

CD Stereo Radio Recorder

AZ1018
all versions

Service
Service
Service



Service Manual



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

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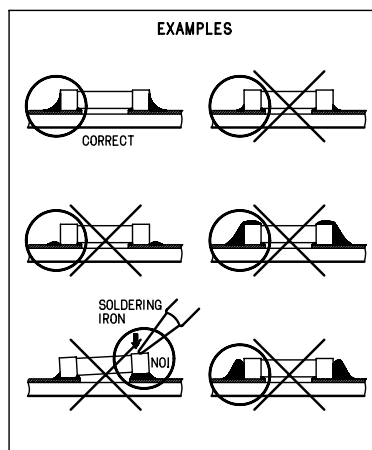
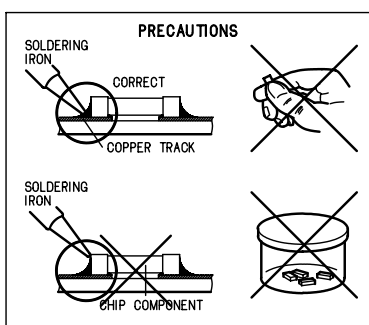
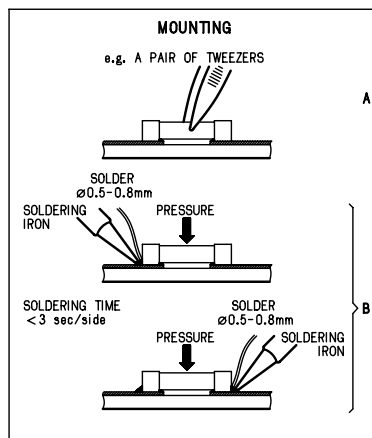
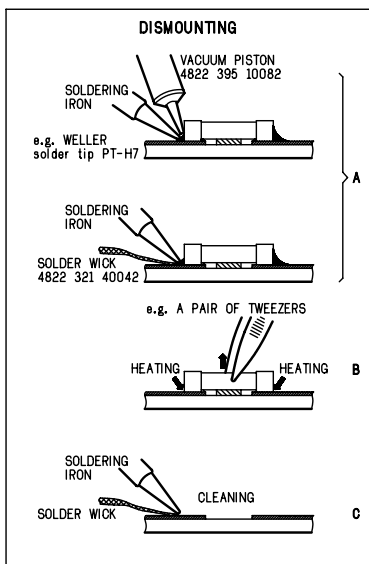
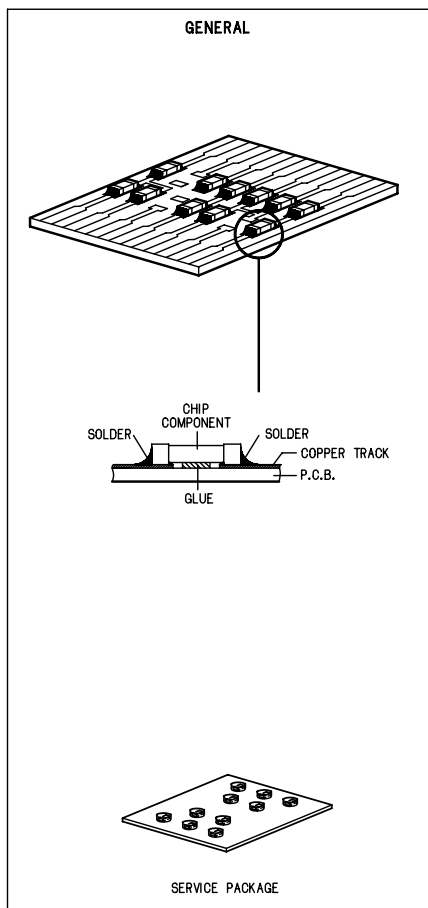
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PHILIPS

HANDLING CHIP COMPONENTS

**(GB) 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.

ESD**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilier le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. 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.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

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

(F)

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

SAFETY**(D)**

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.

(NL)

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 ▲

(I)

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 ▲

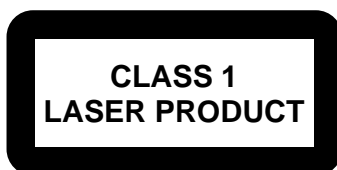
(GB) DANGER: Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

(S) Varning !

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

Advarsel !

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

**(FIN) Varoituis !**

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

(GB)

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.

(F)

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

TECHNICAL SPECIFICATIONS

GENERAL

| | |
|-----------------------|--------------------------|
| Mains voltage | -/00/05/14 : 230 V |
| | -/01/11/16 : 120 / 230 V |
| | -/17 : 120 V |
| Mains frequency | -/00/05/14 : 50 Hz |
| | -/01/11/16 : 50 / 60 Hz |
| | -/17 : 60 Hz |
| Battery | mains : 9 V (R20 x 6) |
| Power consumption | : 5 W |
| Dimension (W x H x D) | : 400 x 237 x 162mm |
| Weight | : 3.4 Kg |

AMPLIFIER

| | |
|--------------------|---------------------------------|
| Output power | mains : 2 x 1 W |
| | battery : 2 x 1 W |
| Speaker impedance | : 2 x 8 ohm |
| Frequency response | : 100 Hz - 10 kHz (± 3 dB) |

TUNER - FM SECTION

| | |
|-----------------|--------------------------|
| Tuning range | : 87.5 - 108 MHz |
| IF frequency | : 10.7 MHz \pm 0.2 MHz |
| Sensitivity | : 18 dBf at 26dB S/N |
| Selectivity | : 24 dB at 300kHz |
| IF rejection | : 85 dB |
| Image rejection | : 24 dB |

TUNER - AM SECTION

| | |
|-----------------|------------------------------|
| Tuning range | : 531 - 1602 kHz |
| | -/17 : 530 - 1700 kHz |
| IF frequency | : 468 kHz \pm 3 kHz |
| Sensitivity | : 3200 μ V/m at 26dB S/N |
| Selectivity | : 22 dB |
| IF rejection | : 64 dB |
| Image rejection | : 32 dB |

AUDIO CASSETTE RECORDER

| | |
|----------------------|------------------------|
| Number of tracks | : 1 stereo |
| Tape speed | : 4.76 cm/sec \pm 3% |
| Wow & flutter | : < 0.48 JIS UWTD |
| Fast wind/rewind C60 | : 110 sec. |
| Frequency response | P/B : 125 - 8000 Hz |
| S/N ratio | : > 36 dB |

COMPACT DISC

| | |
|--------------------|-------------------|
| Frequency response | : 100 Hz - 10 kHz |
| S/N ratio | : 60 dB |
| Channel difference | 1 kHz : 2 dB |
| Channel crosstalk | 1 kHz : 40 dB |
| Laser wavelength | : 780 \pm 20 nm |
| Laser light power | : < 0.5 mW |

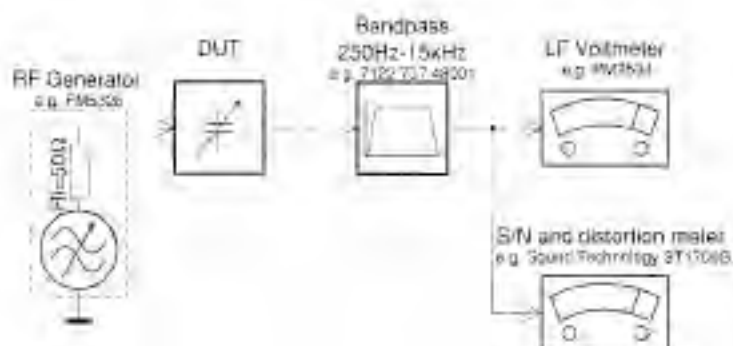
SERVICE TOOLS

| | |
|---|----------------|
| TORX T10 screwdriver with shaftlength 150mm..... | 4822 395 50423 |
| TORX screwdriver set SBC 163..... | 4822 295 50145 |
| Audio signal disc SBC 429..... | 4822 397 30184 |
| Playability test disc SBC 444..... | 4822 397 30245 |
| Test disc 5 (disc without errors) + | |
| Test disc 5A (disc with dropout errors, black spots and fingerprints) | |
| SBC 426/426A..... | 4822 397 30096 |
| Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause")..... | 4822 397 30155 |
| Universal test cassette Fe SBC 420..... | 4822 397 30071 |

AVAILABLE ESD PROTECTION EQUIPMENT

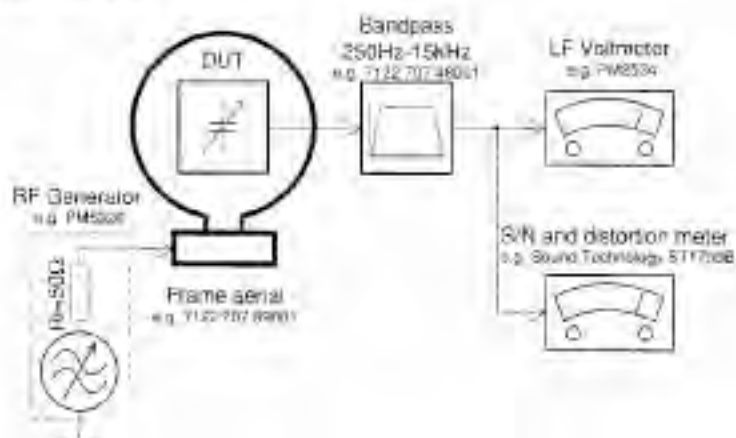
| | |
|--|----------------|
| anti-static table mat large 1200x650x1.25mm | 4822 466 10953 |
| small 600x650x1.25mm | 4822 466 10958 |
| anti-static wristband | 4822 395 10223 |
| connection box (3 press stud connections, 1M) | 4822 320 11307 |
| extendible cable (2m, 2M , to connect wristband to connection box) | 4822 320 11305 |
| connecting cable (3m, 2M , to connect table mat to connection box) | 4822 320 11306 |
| earth cable (1M , to connect any product to mat or to connection box) | 4822 320 11308 |
| KIT ESD3 (combining all 6 prior products - small table mat) | 4822 310 10671 |
| wristband tester | 4822 344 13999 |

Tuner FM



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

Tuner AM (MW/LW)



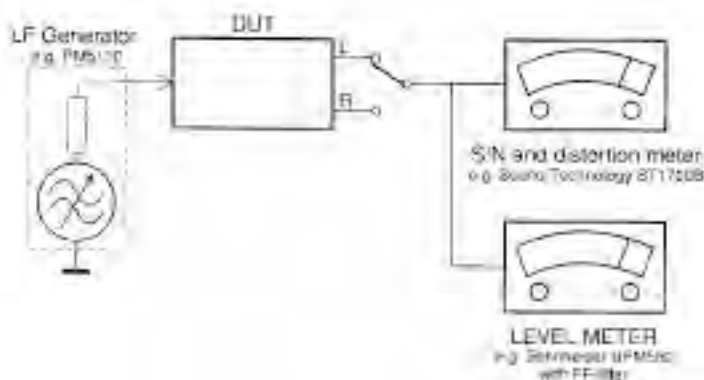
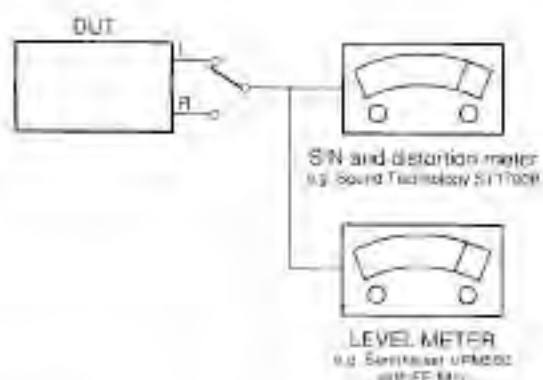
To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

CD

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

RECORDER

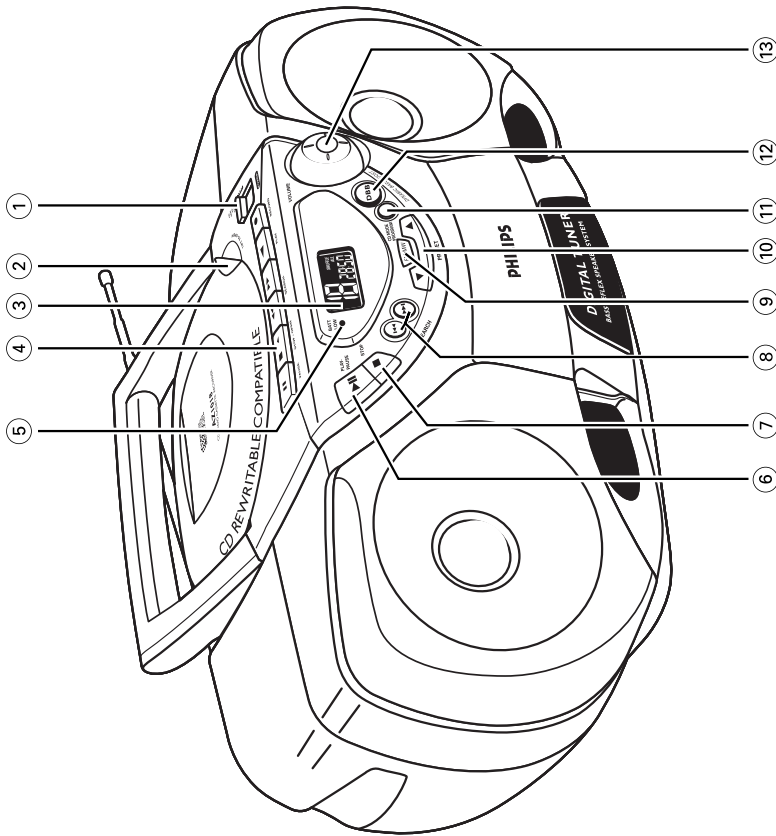
Use Universal Test Cassette Fe SBC420 4822 397 30071



Controls

Top and front panels

- 1 **Power slider: CD, RADIO, TAPE/OFF** – selects source of sound CD, RADIO, TAPE/OFF, and the power on/ off switch
- 2 **LIFT TO OPEN** – opens/ closes the CD door
- 3 **Display** – shows the status of the set
- 4 **CASSETTE RECORDER: PAUSE II** – pauses recording or playback
- STOP•OPEN** – stops the tape; opens the cassette door
- SEARCH** ◀◀ or ▶▶ – fast rewinds / winds the tape
- PLAY** ▶ – starts playback
- RECORD** ● – starts recording
- 5 **BATT LOW** – indicator lights up if battery power is running low
- 6 **PLAY•PAUSE** ▶II – starts or pauses CD playback
- 7 **STOP** ■ – stops CD playback; erases a CD programme
- 8 **SEARCH** ◀◀, ▶▶ – skips or searches a passage/track backwards or forward
- RADIO – tunes to a radio station (up, down)
- 9 **FM•MW** – selects FM/ MW (AM) waveband
- 10 **PRESET** ▲, ▼ – selects a preset station (up, down)
- 11 **CD MODE/ PROGRAM** – programmes and reviews programmed track numbers; – plays tracks CD/ programme in random order; – repeats a track/CD/ programme RADIO – programmes radio preset stations

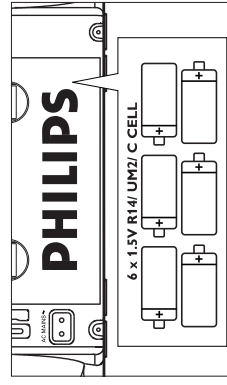


Power Supply

- 12 **DBB (Dynamic Bass Boost)** – enhances bass response
 - 13 **VOLUME** – adjusts volume level
- Back Panel**
- 14 **Telescopic aerial** – to improve FM reception
 - 15 **Voltage selector** – (not all versions) adjust the selector to match the local mains. Disconnect the mains lead if this selector has to be reset.
 - 16 **AC MAINS** – inlet for mains lead
 - 17 **Battery door** – open to insert 6 x 1.5V R14/UM2/ C-cell batteries

Power Supply

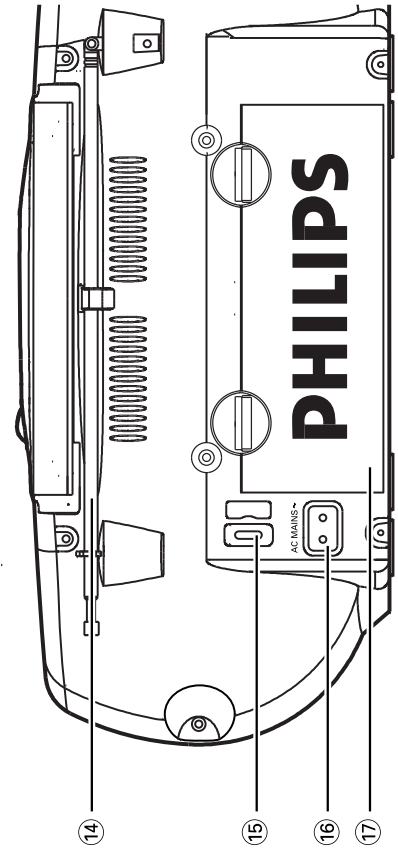
Whenever convenient, use the power supply if you want to conserve battery life.



Make sure you remove the plug from the set and wall socket before inserting batteries.

Batteries (not included)

- 1 Open the battery compartment and insert six batteries, type **R-14, UM-2** or **C-cells**, (preferably alkaline) with the correct polarity as indicated by the "+" and "-" symbols inside the compartment.
- 2 Close the compartment door, and make sure the batteries are firmly and correctly in place. The set is now ready to operate.



Power Supply

If **BATT LOW** lights up, battery power is running low. The **BATT LOW** indicator eventually goes out if the batteries are too weak.

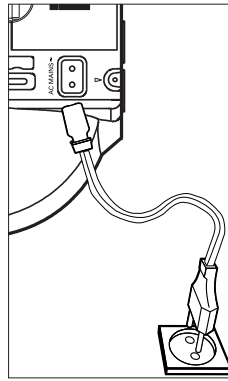
Batteries contain chemical substances, so they should be disposed of properly.

Incorrect use of batteries can cause electrolyte leakage and will corrode the compartment or cause the batteries to burst. Therefore:

- Do not mix battery types: e.g. alkaline with carbon zinc. Only use batteries of the same type for the set.
- When inserting new batteries, do not try to mix old batteries with the new ones.
- Remove the batteries if the set is not to be used for a long time.

Using AC Power

- 1 Check if the mains voltage, as shown on the **type plate located on the bottom of the set**, corresponds to your local mains supply. If it does not, consult your dealer or service centre.



- 2 Connect the mains lead to the AC MAINS inlet and the wall socket. The power supply is now connected and ready for use.

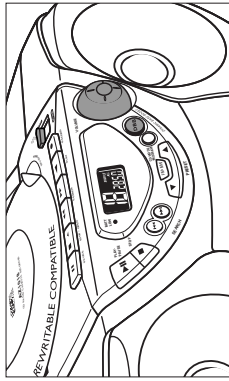
- 3 If your set is equipped with a voltage selector, adjust the selector to match the local mains. Disconnect the mains lead if this selector has to be reset.

- 4 To switch off completely, unplug the mains lead from the wall socket.
- Unplug the mains lead from the wall socket to protect your set during heavy thunderstorms.

The type plate is located on the bottom of the set.

Switching power on/off: Save energy

Whether you are using mains or battery supply, to avoid unnecessary energy consumption always adjust the **POWER slider to TAPE/OFF** and check if the cassette keys are released.



General operation

- 1 To select your sound source adjust the **POWER slider to CD, RADIO or TAPE/OFF**.
- 2 Adjust the sound with the **VOLUME** and **DBB** (Dynamic Bass Boost) controls.
- 3 To switch off the set, adjust the **POWER slider to TAPE/OFF** position and check the cassette keys are released.

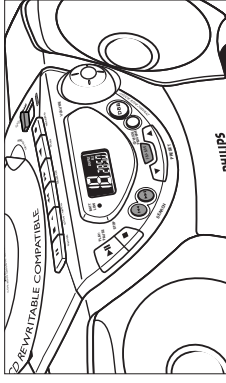
Note: When the set is switched off the tuner presets will be retained in the set's memory.

INSTRUCTIONS FOR USE

Radio

Programming radio stations

You can store up to a total of 30 radio stations in the memory.

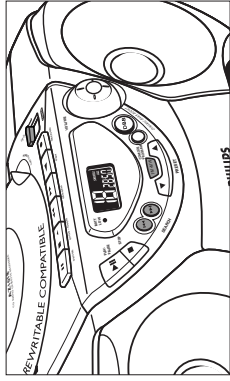


- 1 Tune to your desired station (see Radio Reception).
 - 2 Press **CD MODE/PROGRAM** to activate programming.
Display: **PROGRAM** flashes.
 - 3 Press **PRESET ▲** or **▼** once or more to allocate a number from 1 to 30 to this station.
 - 4 Press **CD MODE/PROGRAM** again to confirm the setting.
Display: **PROGRAM** disappears, the preset number and the frequency of the preset station are shown.
 - 5 Repeat the above four steps to store other stations.
- You can erase a preset station by storing another frequency in its place.

Tuning to preset stations

Press **PRESET ▲** or **▼** until the desired preset station is shown.

Radio reception



- 1 Adjust the **POWER slider to RADIO**.
Display: shows **FM** briefly. The radio frequency is then shown.
 - 2 Press **FM•MW** once or more to select the desired waveband.
Display: shows your waveband
 - 3 Press and hold down **SEARCH** or **▶▶** briefly to tune to a radio station. Release when the frequency in the display starts to change.
The radio automatically tunes to a radio station of sufficient reception. Display shows **5 r z h** during automatic tuning.
 - To tune to a weak station, press **SEARCH** or **▶▶** briefly and repeatedly until you have found optimal reception.
- To improve reception**
- For **FM**, pull out the telescopic aerial. Incline and turn the aerial. Reduce its length if the signal is too strong (very close to a transmitter).
 - For **MW (AM)** the set is provided with a built-in aerial so the telescopic aerial is not needed. Direct the aerial by turning the whole set.
- 4 To switch off the radio, adjust the **POWER slider to TAPE/OFF** position and check the cassette keys are released.

INSTRUCTIONS FOR USE

CD-Player

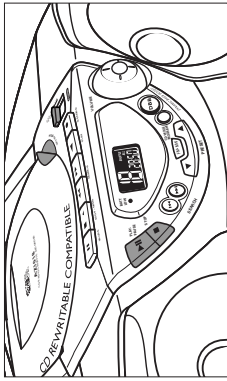
CD Player

Display indication

- **CD OPEN**: CD door open
- **d 15 t**: when reading CD contents
- **In stop mode**: total track number and total playback time
- **During CD playback**: elapsed playback time of current track and current track number
- **Pause**: elapsed playback time freezes and flashes
- **SHUFFLE/ REPEAT** modes: when the respective mode is activated
- **PROGRAM**: when CD programme active; **prog** also appears briefly when you store a track
- **no 5 t t**: programme activated but no tracks selected
- **Full t**: programme memory full
- **no prog**: programme cancelled
- **t d Err, no d 15 t** or **nF d 15 t**: error in CD operation /no disc/ or a CD-R(W) is blank or the disc is not finalized (see Troubleshooting)

Playing a CD

This CD-player can play all kinds of Audio Discs such as CD-Recordables and CD-Rewritables. Do not try to play a CD-ROM, CDI, VCD, DVD or computer CD.



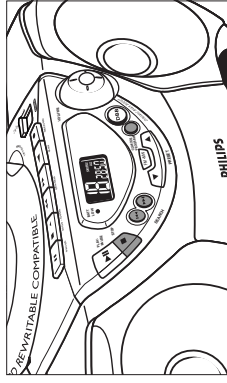
- 1 Adjust the **POWER slider** to CD.
Display: shows **t d** briefly.
- 2 To open the CD door: lift the CD door at the edge marked **LIFT TO OPEN**.
- 3 Insert a CD or CD-R(W) with the printed side facing up and press the CD door gently close.
- 4 Press **PLAY•PAUSE ▶||** on the set to start playback.
- 5 To pause playback press **PLAY•PAUSE ▶||** again. To resume, press **PLAY•PAUSE ▶||** again.
The elapsed playback time freezes and flashes.
- 6 To stop CD playback, press **STOP ■**.
- 7 To switch off the set, adjust the **POWER slider** to **TAPE/OFF** position and check the cassette keys are released.
Note: CD play will also stop when:
- you open the CD compartment;
- you select **RADIO** or **TAPE** sound source;
- the CD has reached to the end.

CD-Player

Different play modes

CD MODE/ PROGRAM allows you to select various play modes. The modes can be selected or changed during playback of an entire CD/ CD programme in the following sequence:

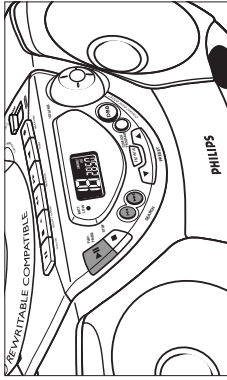
- SHUFFLE** – all tracks are played in random order
- SHUFFLE REPEAT ALL** – repeats the entire CD in random order
- REPEAT** – plays the current track continuously
- REPEAT ALL** – plays the entire CD continuously



- 1 During playback, select your play mode by pressing **CD MODE/ PROGRAM** once or more until the desired play mode is shown.
 - You can use **SEARCH** or **▶▶** to skip tracks during the **SHUFFLE/ REPEAT** modes.
 - The **SHUFFLE/ REPEAT** play options can be combined and used with a programme: e.g. **SHUFFLE/ REPEAT ALL** repeats the entire CD programme in random order.
- 2 To return to normal playback press **CD MODE/ PROGRAM** until the **SHUFFLE/ REPEAT** modes are no longer shown.
 - You can also press **STOP ■** to quit the play mode.

Selecting a different track

During playback you can use the **SEARCH** buttons to select a particular track.



- If you have selected a track number in the stop or pause position, press **PLAY•PAUSE ▶||** to start playback.
- Press **SEARCH ▶▶** once briefly for the next track, or press repeatedly until the desired track number appears in the display.
- Press **SEARCH** once briefly to return to the beginning of a current track.
- Press **SEARCH** more than once briefly for a previous track.

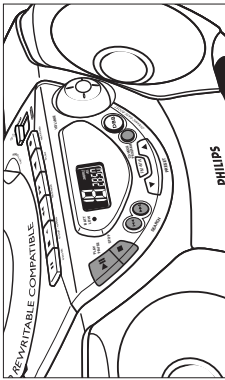
Finding a passage within a track

- 1 During playback, press and hold down **SEARCH** or **▶▶**.
 - The CD is played at high speed and low volume.
- 2 When you recognize the passage you want release the **SEARCH** button.
Normal playback resumes.
Note: During a CD programme or when **SHUFFLE/REPEAT** is active, searching is only possible within a track.

CD-Player

Programming track numbers

You may store up to 20 tracks in the desired sequence. If you like, store any track more than once.



1 In the STOP mode, press **SEARCH** or **▶▶** for your desired track.

2 When your chosen track number appears, press **CD MODE/ PROGRAM** once to store the track.

The display shows **PROGRAM** and 'P' followed by your selected track number. If you attempt to programme without first selecting a track number, 'P' is shown.

3 Repeat steps 1 to 2 to select and store all desired tracks in this way.

'P' is displayed if you attempt to programme more than 20 tracks.

4 To play your programme, press **PLAY•PAUSE ▶|**.

Reviewing your programme

In the STOP mode, press and hold down **CD MODE/ PROGRAM** for more than one second.

The display shows all your stored track numbers in sequence.

Erasing a programme

You can erase the contents of the memory by:

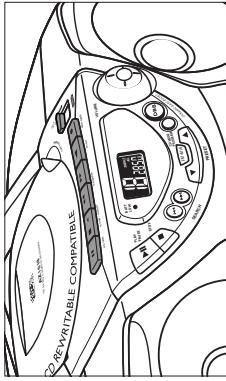
- opening the CD door;
- selecting **RADIO** or **TAPE** source;
- pressing **STOP** (twice during playback or in the stop position).

Display: shows 'P' briefly when the programme is cancelled.

Cassette Recorder

CASSETTE RECORDER

Cassette playback



1 Adjust the **POWER slider** to **TAPE/OFF**.

2 Press **STOP•OPEN** to open the cassette door and insert a recorded cassette.

3 Close the cassette door.

4 Press **PLAY** to start playback.

Display: shows **TRP E** throughout tape operation.

5 To pause playback press **PAUSE II**. To resume, press the key again.

6 By pressing **◀◀** or **▶▶**, fast winding of the tape is possible in both directions. To stop fast winding, press **STOP•OPEN**.

7 To stop the tape, press **STOP•OPEN**.

- The keys are automatically released at the end of the tape, the **TRP E** indication goes out and the set is switched off, except if **PAUSE II** has been activated.

Recording

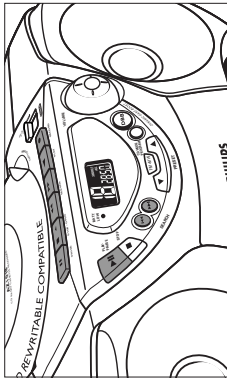
General information on recording

- Recording is permissible insofar as copyright or other rights of third parties are not infringed.
- This deck is not suited for recording on **CHROME (IEC II)** or **METAL (IEC IV)** type cassettes. For recording, use only **NORMAL** type cassettes (IEC type I) on which the tabs have not been broken.
- The best recording level is set automatically. Altering the **VOLUME** and **DBB** controls will not affect the recording in progress.
- At the very beginning and end of the tape, no recording will take place during the 7 seconds when the leader tape passes the recorder heads.
- To protect a tape from accidental erasure, have the tape in front of you and break out the left tab. Recording on this side is no longer possible. To record over this side again, cover the tabs with a piece of adhesive tape.

INSTRUCTIONS FOR USE

Recording

Synchro Start CD recording



- 1 Select CD source.
 - 2 Insert a CD and if desired, programme track numbers.
 - 3 Press **STOP•OPEN** to open the cassette door. Insert a blank tape.
 - 4 Close the cassette door.
 - 5 Press **RECORD** to start recording.
- Playing of the CD programme starts automatically from the beginning of the programme. It is not necessary to start the CD player separately.
- 6 For brief interruptions press **PAUSE II**. To resume recording, press **PAUSE II** again.
 - 7 To stop recording, press **STOP•OPEN**.

Selecting and recording a particular passage

- During CD playback, press and hold down the **SEARCH** buttons or **▶▶** on the set to find your passage.
- Press **PLAY•PAUSE ▶II** to put the CD player on pause at the selected passage. Recording will begin from this exact point in the track when you press **RECORD**.

Maintenance

Recording from the Radio

- 1 Select **RADIO** source and your waveband.

- 2 Tune to the desired radio station (see **Radio reception**).

- 3 Press **STOP•OPEN** to open the cassette door. Insert a blank tape.
- 4 Close the cassette door.

- 5 Press **RECORD** to start recording.
- 6 For brief interruptions, press **PAUSE II**. To resume recording, press **PAUSE II** again.

- 7 To stop recording, press **STOP•OPEN**.

Precautions & General Maintenance

- Place the set on a hard and flat surface so that the system does not tilt.
- Do not expose the set, batteries, CDs or cassettes to humidity, rain, sand or excessive heat caused by heating equipment or direct sunlight.
- Do not cover the set. Adequate ventilation with a minimum gap of 6 inches between the ventilation holes and surrounding surfaces is necessary to prevent heat build-up.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- To clean the set, use a soft, slightly dampened chamois leather. Do not use any cleaning agents containing alcohol, ammonia, benzene or abrasives as these may harm the housing.

Troubleshooting

If a fault occurs, first check the points listed below before taking the set for repair. Do not open the set as there is a risk of electric shock. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

WARNING: Under no circumstances should you try to repair the set yourself, as this will invalidate the guarantee.

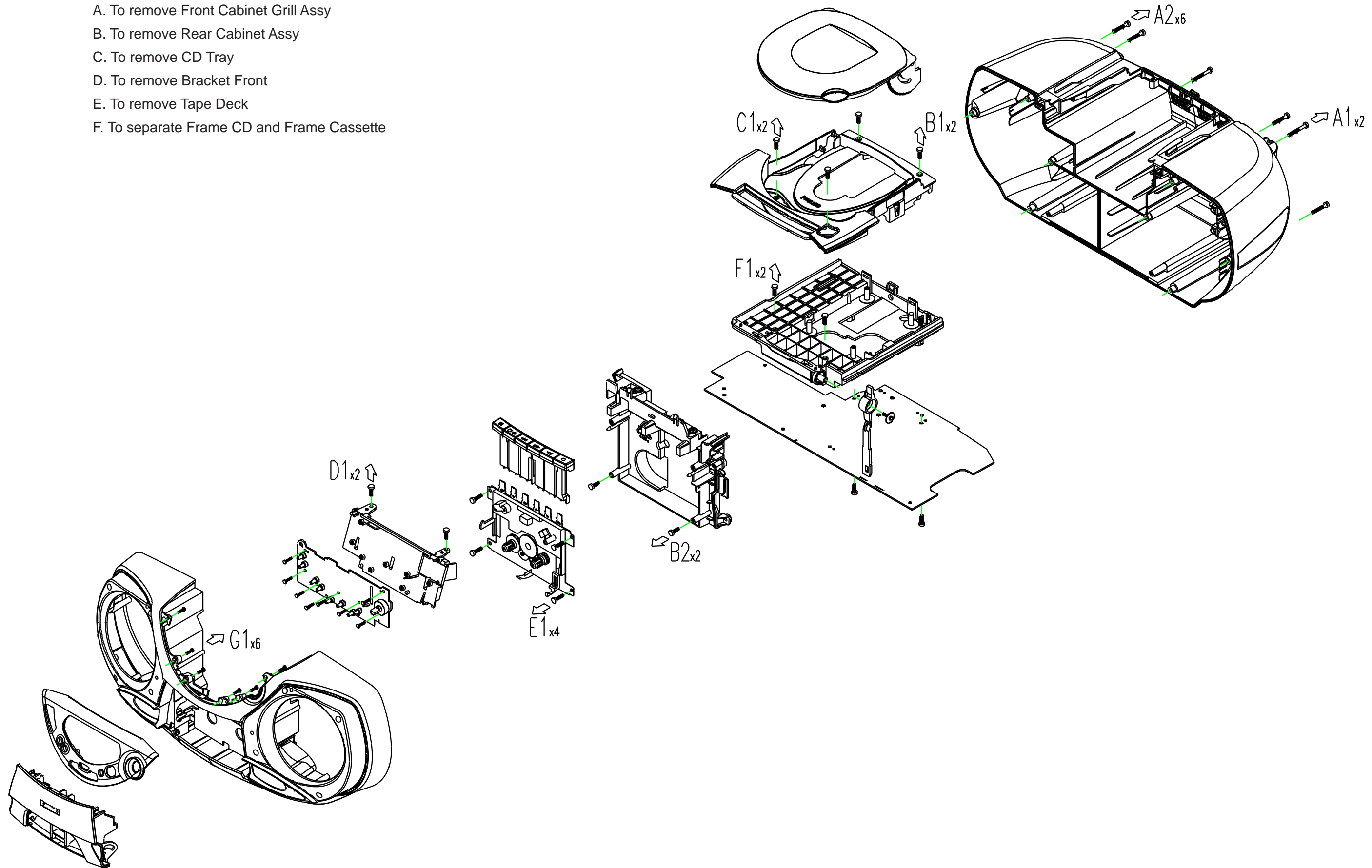
| Problem | Solution |
|--|---|
| No sound | – Adjust the VOLUME |
| No power | – Mains lead not securely connected. Connect AC mains lead properly – Batteries exhausted /incorrectly inserted. Insert (fresh) batteries correctly |
| Display does not function properly/ No reaction to operation of any of the controls | – Electrostatic discharge Switch off and unplug the set. Reconnect after a few seconds. – No CD inserted, insert a CD – CD badly scratched/ dirty. Replace/ clean CD (see maintenance) – CD-R(W) is blank or the disc is not finalized. Use a finalized CD-R(W) – Laser lens steamed up. Wait until lens has acclimatized |
| Laser lens steamed up | – Wait until lens has cleared – Wait until lens has acclimatized |
| CD playback does not work | – CD badly scratched/ dirty. Replace/ clean CD (see maintenance) |
| The CD skips tracks | – CD damaged or dirty. Replace or clean CD. – Programme is active. Quit programme mode |
| Poor cassette sound quality | – Dust and dirt on the heads, etc. Clean deck parts, see maintenance. – Use of incompatible cassette types (METAL or CHROME). Only use NORMAL (IEC I) for recording |
| Recording does not work | – Cassette tab(s) may be broken. Apply a piece of adhesive tape over the missing tab space. |

DISASSEMBLY DIAGRAM

4-1

4-1

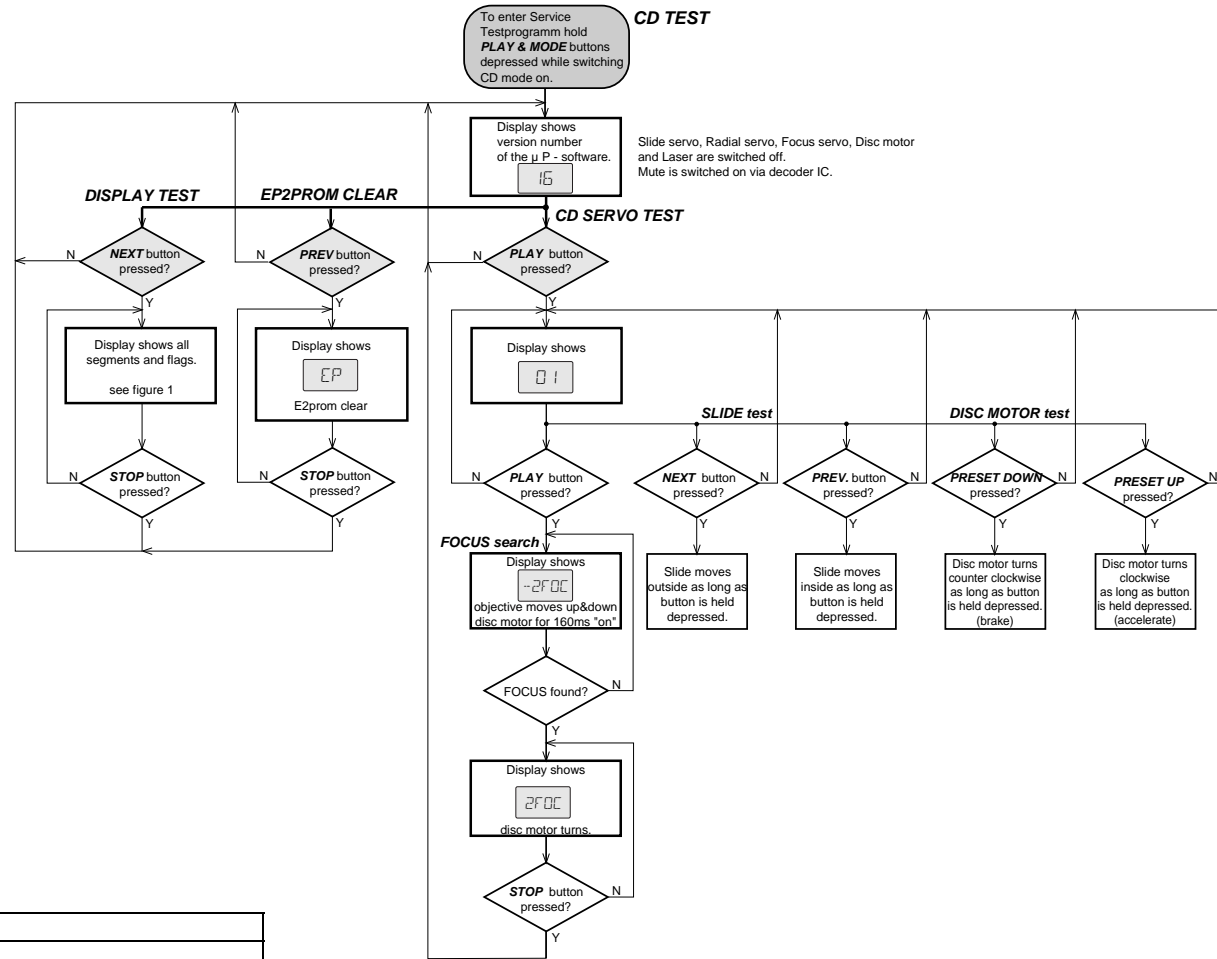
- A. To remove Front Cabinet Grill Assy
- B. To remove Rear Cabinet Assy
- C. To remove CD Tray
- D. To remove Bracket Front
- E. To remove Tape Deck
- F. To separate Frame CD and Frame Cassette



- STOP button pressed in any step returns to begin of Service Testprogram.
- To leave Service Testprogram switch mode switch to off-position.
- Door switch is ignored CD door can be opened.
- Volume up/down buttons function independently of the service testprogram.



fig. 1



| ERROR | MEANING |
|-------|--|
| Err 1 | No focus found |
| Err 2 | Time out error for disc motor reach the normal speed |
| Err 3 | Focus error during tracking initialization |
| Err 4 | Subcode error on play mode |
| Err 5 | Focus error on play mode |
| Err 6 | Radial error on search mode |
| Err 7 | Focus error |

table 2

| STATUS | MEANING |
|---------|--------------|
| Sta 0 | Silde mode |
| Sta 1 | Silde mode |
| Sta 2 | Silde mode |
| Sta 3 | Silde mode |
| Sta 8 | Play mode |
| Sta > 8 | Recover mode |

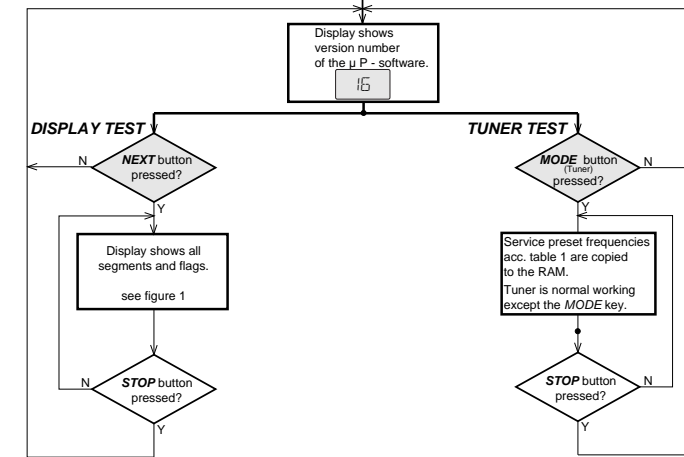
table 3

SERVICE PRESET FREQUENCIES

| REGION | EUROPE FM/MW/LW | EUROPE2B FM/MW | OVERSEAS FM/MW ¹⁾ Grid switchable 10-100kHz/9-50kHz | EAST-EUROPE FM/MW | USA FM/MW |
|--------|-----------------|----------------|---|-------------------|-----------|
| PRESET | /00/05/20/25 | /00 | /01/21 | /14 | /14/37 |
| 1 | 87.5 MHz | 87.5 MHz | 87.5 MHz | 65.81 MHz | 87.5 MHz |
| 2 | 108 MHz | 108 MHz | 108 MHz | 108 MHz | 108 MHz |
| 3 | 531 kHz | 531 kHz | 531/530 kHz | 74 MHz | 530 kHz |
| 4 | 1602 kHz | 1602 kHz | 1602/1700 kHz | 87.5 MHz | 1700 kHz |
| 5 | 558 kHz | 558 kHz | 558/560 kHz | 531 kHz | 560 kHz |
| 6 | 1494 kHz | 1494 kHz | 1494/1500 kHz | 1602 kHz | 1500 kHz |
| 7 | 153 kHz | - | - | 558 kHz | - |
| 8 | 279 kHz | - | - | 1494 kHz | - |
| 9 | 198 kHz | - | - | - | - |
| 10 | - | - | - | - | - |
| 11 | - | - | - | - | - |
| 12 | - | - | - | - | - |
| 13 | - | - | - | - | - |

table 1

TUNER TEST



1) How to set frequency grid:

AM - 9 kHz / FM - 50 kHz : Hold PLAY KEY with the PRESET DOWN KEY simultaneously and then switch to TUNER.

AM - 10 kHz / FM - 100 kHz : Hold PLAY KEY with the PRESET UP KEY simultaneously and then switch to TUNER.

Selected frequency grid is stored in the EEPROM.

2) In sets with 30kHz grid on FM band it may occur that the tuned frequency is indicated wrong on the display because of tolerances of the discriminator filter.

For that reason the testsoftware is prepared for an automatic IF-offset correction.

Note: This test functions only with the East European tuner version used in /14/34 set versions.

The test was executed on every set in the production line.

In case the discriminator filter or the EEPROM has to be exchanged the automatic IF-offset correction should also be executed after repair.

To execute the automatic IF-offset correction proceed as follows:

* feed a strong 87.5MHz signal to the antenna

* press the PLAY button

The µP starts now several times the search mode.

If the transmitter was found at 87.5MHz the stop-frequency sent by the radio IC is compared with the nominal frequency else the display shows "00E".

When the same difference is found twice the value will be stored as offset.

The actual used offset is shown on the display (-3, -2, -1, 0, 1, 2, 3).

Abbreviations and Pin-description of CD Ics

SERVO PROCESSOR SAA7325H

| SYMBOL | PIN | DESCRIPTION |
|-------------------|-------------------|---|
| HFREF | 1 | comparator common mode input |
| HFIN | 2 | comparator signal input |
| ISLICE | 3 | current feedback output from data slicer |
| V _{SSA1} | 4 ⁽¹⁾ | analog ground 1 |
| V _{DDA1} | 5 ⁽¹⁾ | analog supply voltage 1 |
| I _{ref} | 6 | reference current output pin |
| V _{RIN} | 7 | reference voltage for servo ADC's |
| D1 | 8 | unipolar current input (central diode signal input) |
| D2 | 9 | unipolar current input (central diode signal input) |
| D3 | 10 | unipolar current input (central diode signal input) |
| D4 | 11 | unipolar current input (central diode signal input) |
| R1 | 12 | unipolar current input (satellite diode signal input) |
| R2 | 13 | unipolar current input (satellite diode signal input) |
| V _{SSA2} | 14 ⁽¹⁾ | analog ground 2 |
| CROUT | 15 | crystal/resonator output |
| CRIN | 16 | crystal/resonator input |
| V _{DDA2} | 17 ⁽¹⁾ | analog supply voltage 2 |
| LN | 18 | DAC left channel differential output - negative |
| LP | 19 | DAC left channel differential output - positive |
| V _{neg} | 20 | DAC negative reference input |
| V _{pos} | 21 | DAC positive reference input |
| RN | 22 | DAC right channel differential output - negative |
| RP | 23 | DAC right channel differential output - positive |
| SELPLL | 24 | selects whether internal clock multiplier PLL is used |
| TEST1 | 25 | test control input 1; this pin should be tied LOW |
| CL16 | 26 | 16.9344 MHz system clock output |
| DATA | 27 | serial d4(1)ata output (3-state) |
| WCLK | 28 | word clock output (3-state) |
| SCLK | 29 | serial bit clock output (3-state) |
| EF | 30 | C2 error flag output (3-state) |
| TEST2 | 31 | test control input 2; this pin should be tied LOW |
| KILL | 32 | kill output (programmable; open-drain) |
| V _{SSD1} | 33 ⁽¹⁾ | digital ground 2 |
| V2/V3 | 34 | versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain) |
| WCLI | 35 | word clock iutput (for data loopback to DAC) |
| SDI | 36 | serial data input (for data loopback to DAC) |
| SCLI | 37 | serial bit clock input (for data loopback to DAC) |
| RESET | 38 | power-on reset input (active LOW) |
| SDA | 39 | microcontroller interface data I/O line (open-drain output) |
| SCL | 40 | microcontroller interface clock line input |

Abbreviations and Pin-description of CD Ics

SERVO PROCESSOR SAA7325H

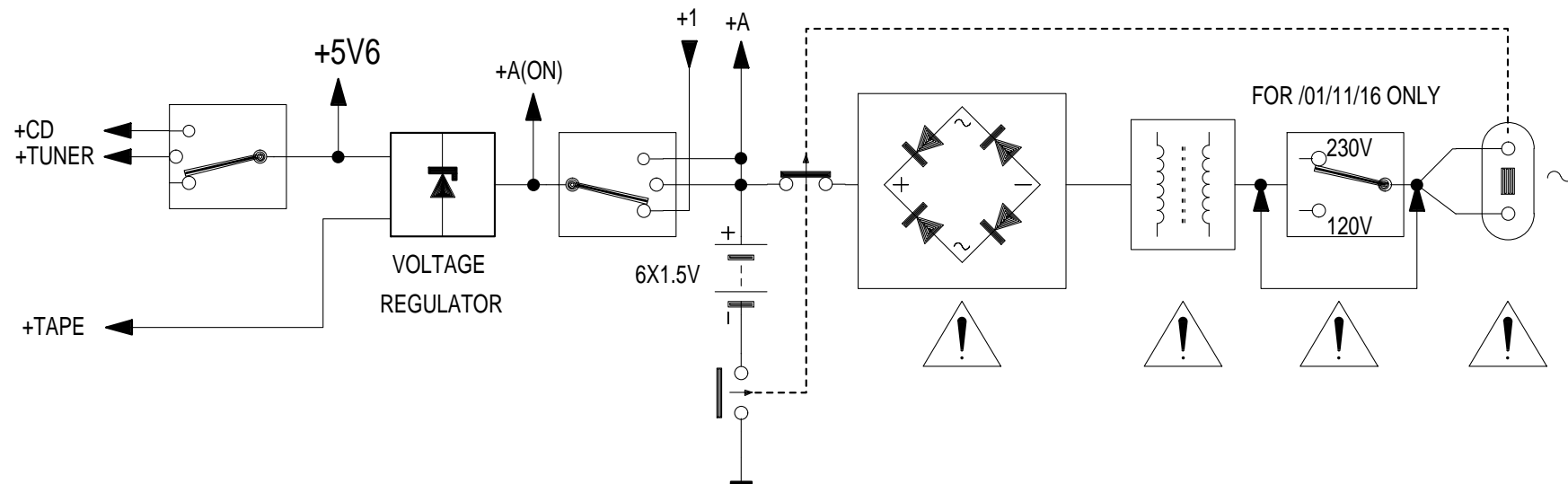
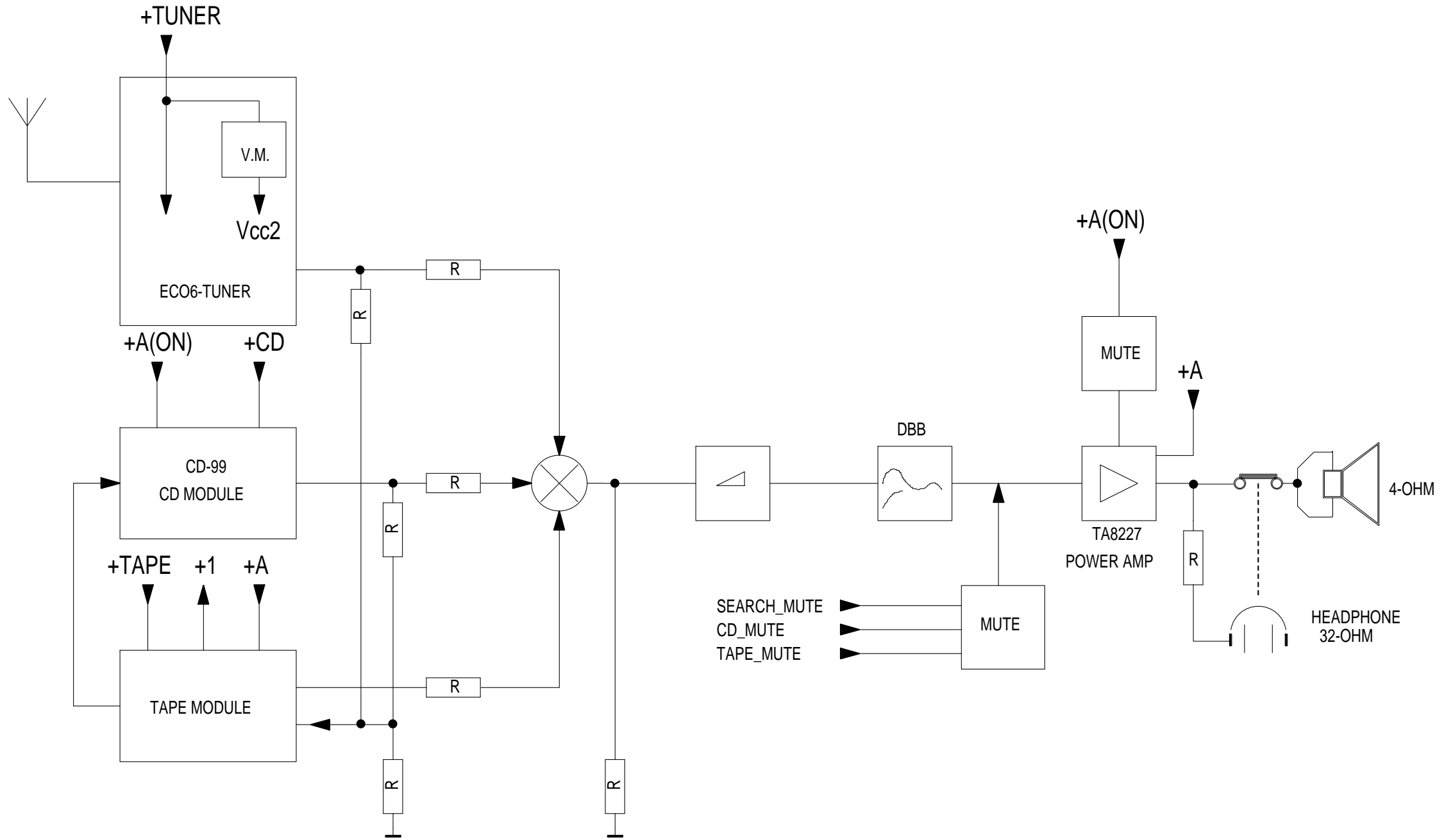
| SYMBOL | PIN | DESCRIPTION |
|---------------------|-------------------|---|
| RAB | 41 | microcontroller interface R \bar{W} and load control line input (4-wire bus mode) |
| SILD | 42 | microcontroller interface \bar{R}/W and load control line input (4-wire bus mode) |
| STATUS | 43 | servo interrupt request line/decoder status register output (open-drain) |
| TEST3 | 44 | test control input 3; this pin should be tied LOW |
| RCK | 45 | subcode clock input |
| SUB | 46 | P-to-W subcode bits output (3-state) |
| SFSY | 47 | subcode frame sync output (3-state) |
| SBSY | 48 | subcode block sync output (3-state) |
| CL11/4 | 49 | 11.2896 MHz or 4.2336 MHz (for microcontroller) clock output |
| V _{SSD2} | 50 ⁽¹⁾ | digital ground 3 |
| DOBM | 51 | bi-phase mark output (externally buffered; 3-state) |
| V _{DD1(P)} | 52 ⁽¹⁾ | digital supply voltage 2 for periphery |
| CFLG | 53 | correction flag output (open-drain) |
| RA | 54 | radial actuator output |
| FO | 55 | focus actuator output |
| SL | 56 | sledge control output |
| V _{DD2(C)} | 57 ⁽¹⁾ | digital supply voltage 3 for core |
| V _{SSD3} | 58 ⁽¹⁾ | digital ground 4 |
| MOTO1 | 59 | motor output 1; versatile (3-state) |
| MOTO2 | 60 | motor output 2; versatile (3-state) |
| V4 | 61 | versatile output pin 4 |
| V5 | 62 | versatile output pin 5 |
| V1 | 63 | versatile intput pin 1 |
| LDON | 64 | laser drive on output (open-drain) |

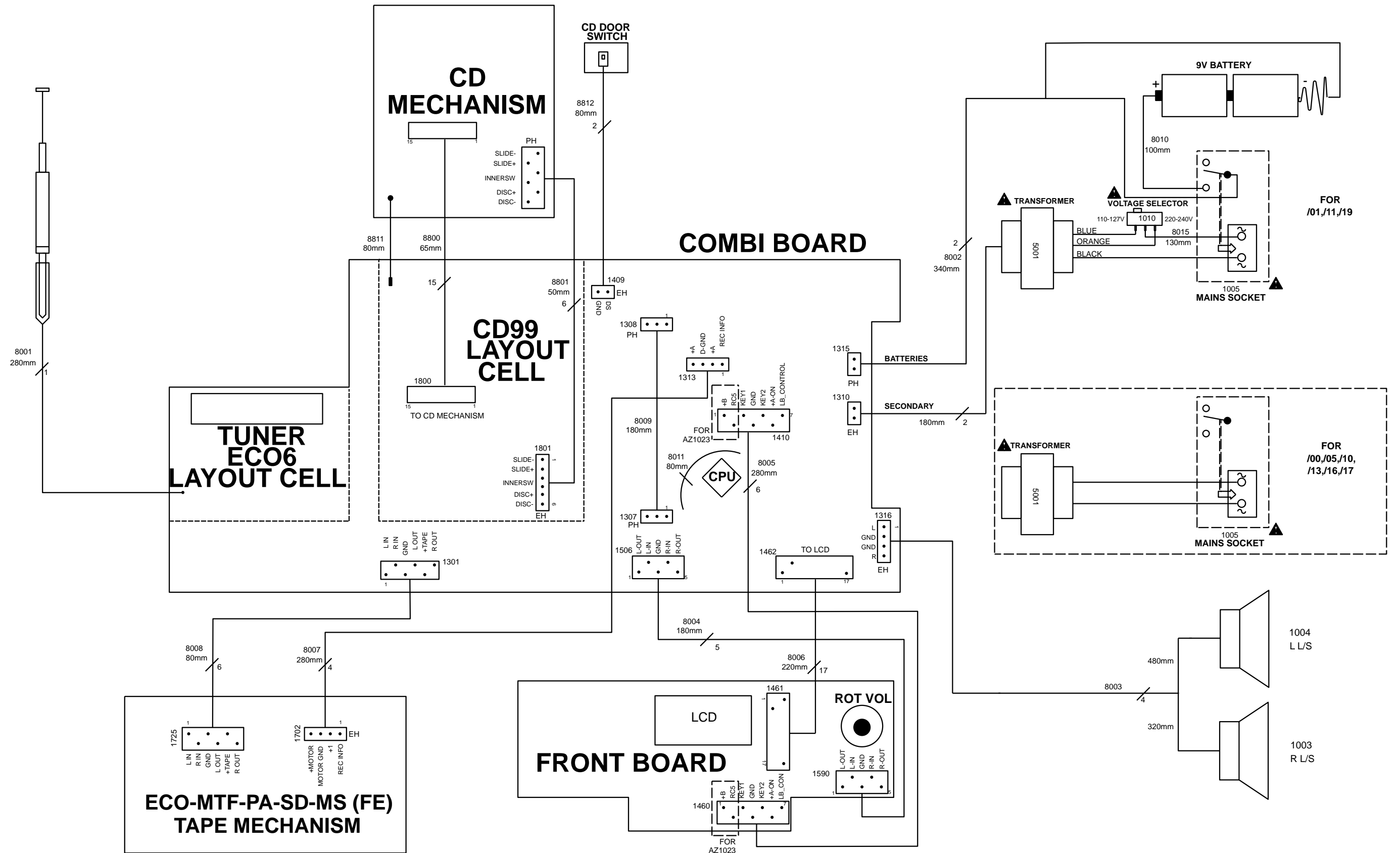
Note : All supply pins must be connected to the same external power supply voltage.

BLOCK DIAGRAM

5-1

5-1





FRONT BOARD - CIRCUIT DIAGRAM

7-1

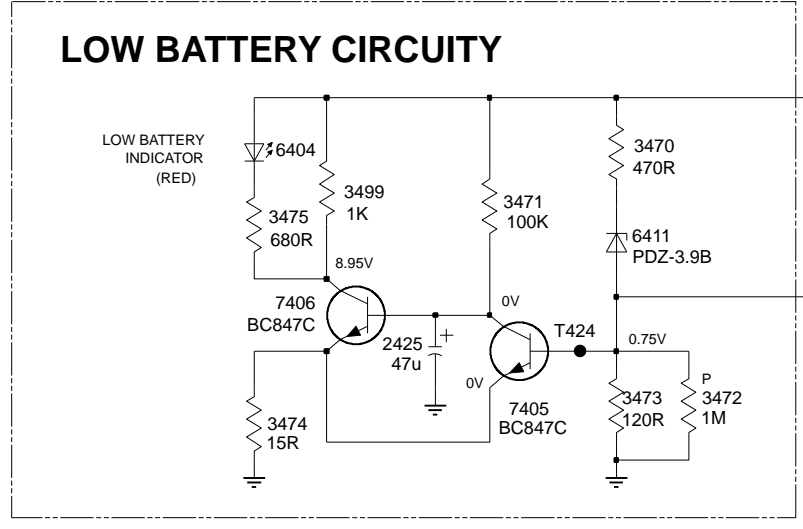
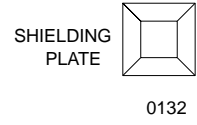
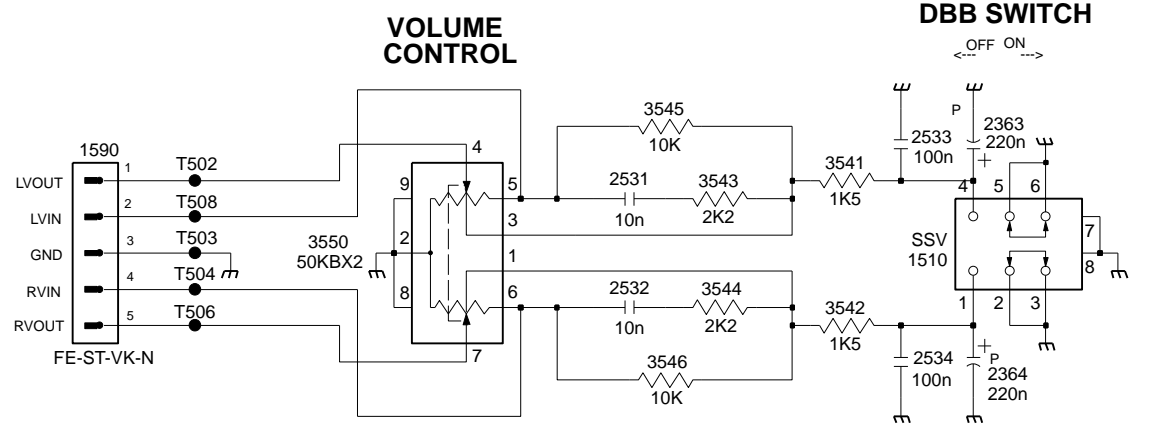
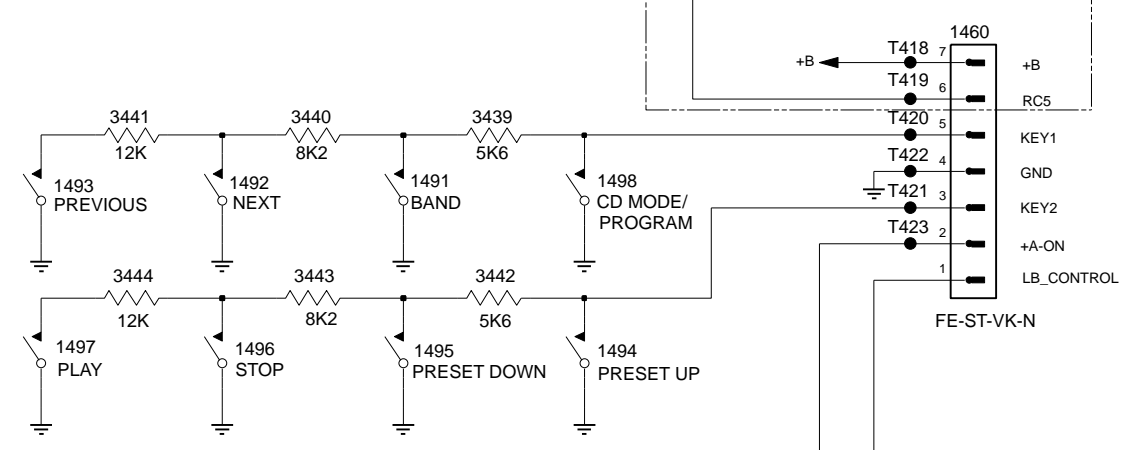
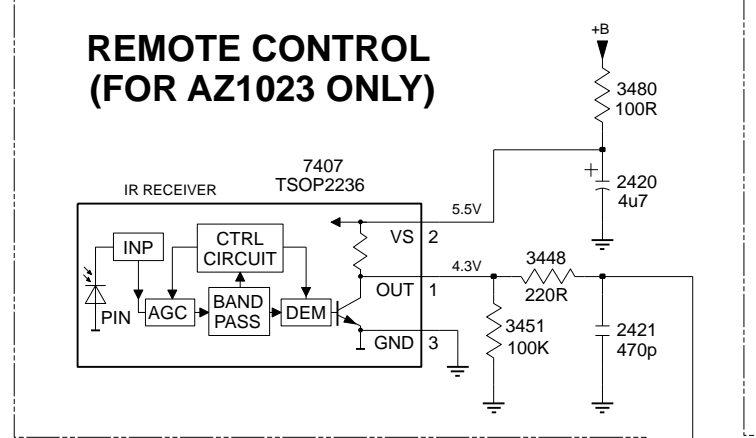
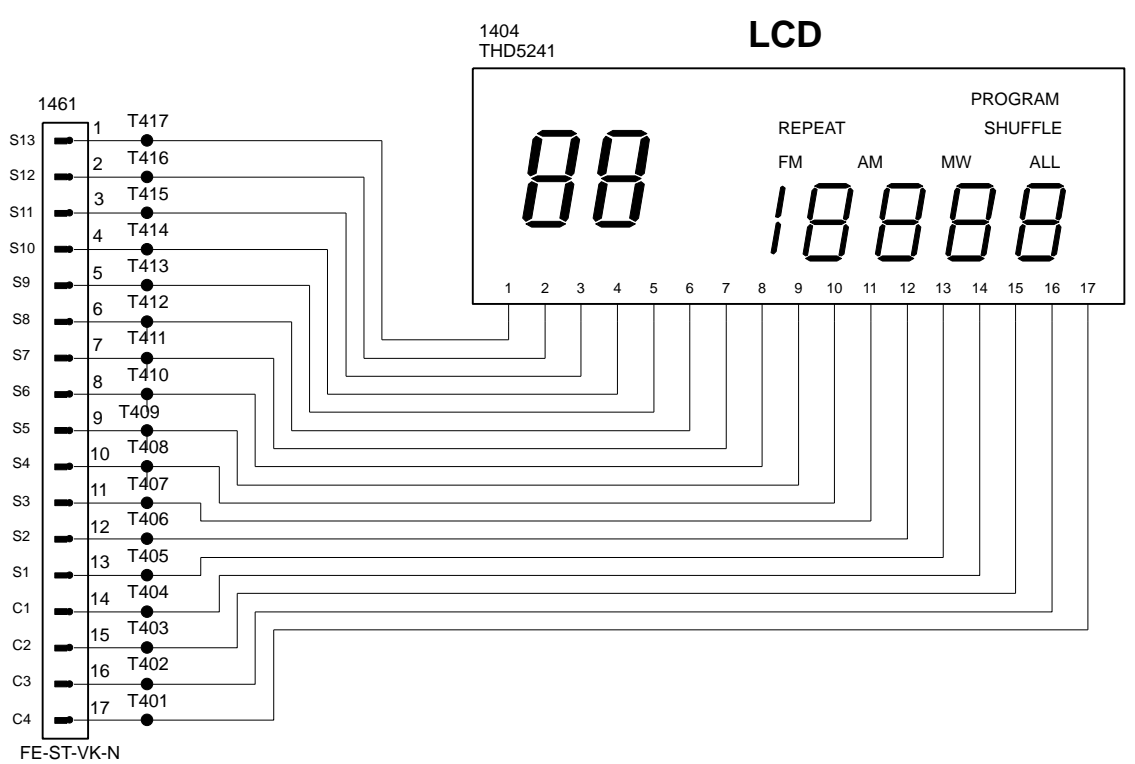
7-1

0132 H2 1461 A2 1493 D8 1496 E9 1510 F6 2364 G7 2425 G10 2533 F6 3440 D10 3443 E10 3451 B11 3472 H12 3475 G9 3541 F6 3544 G5 3550 F3 7405 H11 T401 E2 T404 D2 T407 C2 T410 C2 T413 B2 T416 B2 T419 C13 T422 D13 T502 F2 T506 G2
 1404 A4 1491 D10 1494 E11 1497 E8 1590 F2 2420 B11 2531 F5 2534 G6 3441 D9 3444 E9 3470 F11 3473 H11 3480 A11 3542 G6 3545 F5 6404 F9 7406 G10 T402 D2 T405 D2 T408 C2 T411 C2 T414 B2 T417 A2 T420 D13 T423 D13 T503 F2 T508 F2
 1460 C13 1492 D9 1495 E10 1498 D11 2363 F7 2421 B11 2532 G5 3439 D11 3442 E11 3448 B11 3471 G11 3474 H9 3499 G10 3543 F5 3546 G5 6411 G11 7407 A10 T403 D2 T406 D2 T409 C2 T412 B2 T415 B2 T418 C13 T421 D13 T424 G11 T504 G2

1 2 3 4 5 6 7 8 9 10 11 12 13 14

A
B
C
D
E
F
G
H

A
B
C
D
E
F
G
H



P: PROVISIONAL

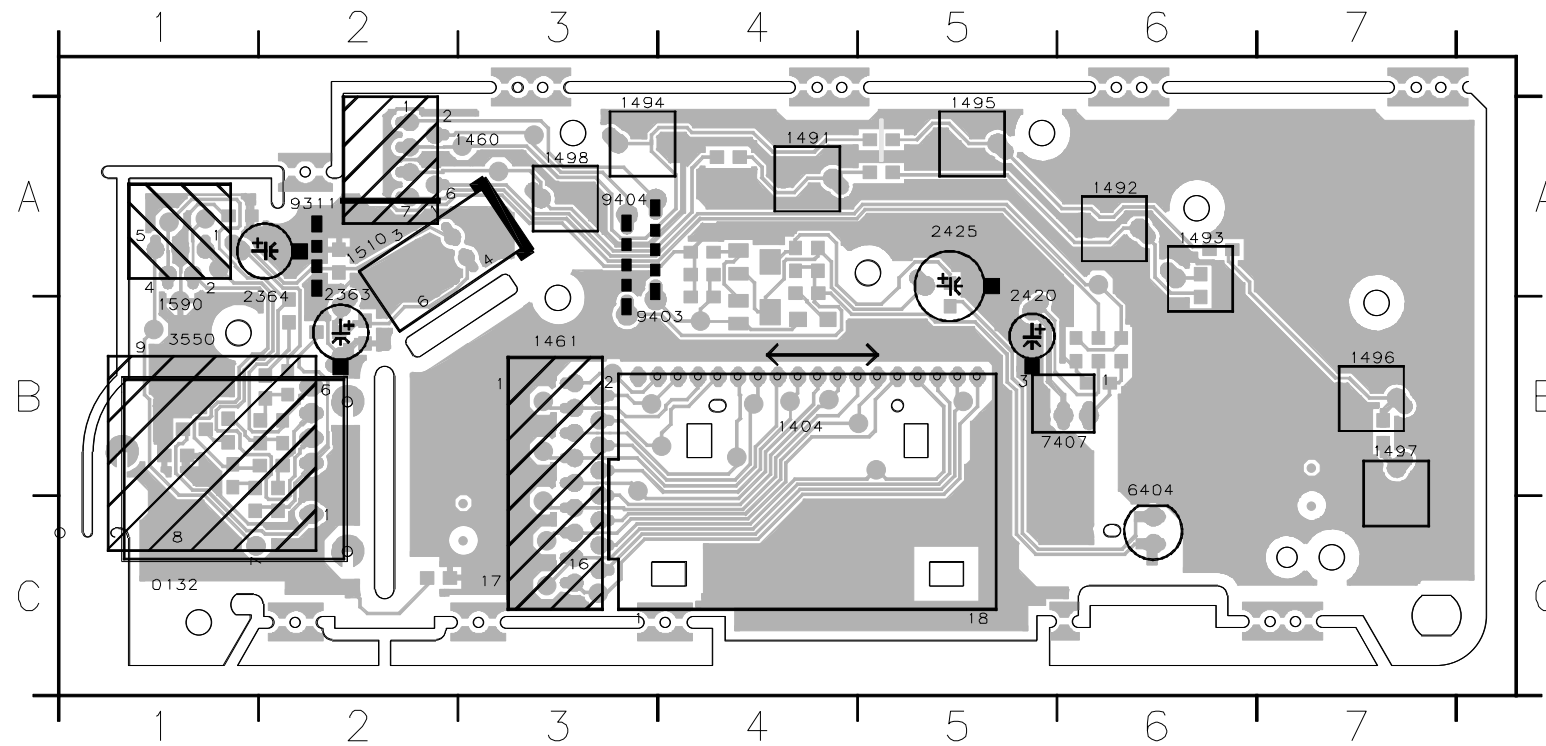
1 2 3 4 5 6 7 8 9 10 11 12 13 14

FRONT BOARD - LAYOUT DIAGRAM

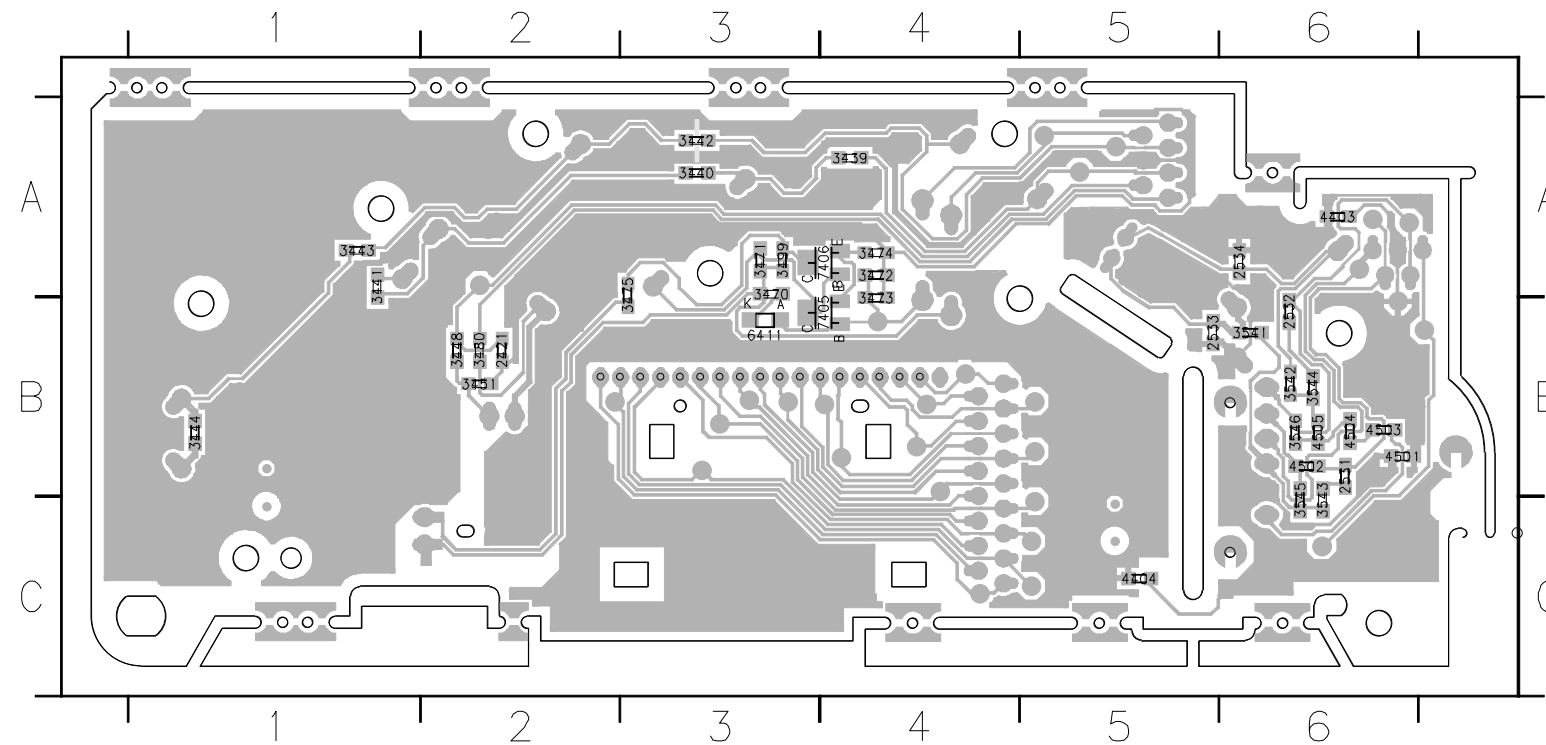
7-2

7-2

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|---------|---------|---------|---------|---------|---------|---------|---------|
| 0132 C1 | 1461 B3 | 1493 A6 | 1496 B7 | 1510 A2 | 2364 A2 | 3550 B1 | 9311 A2 |
| 1404 B4 | 1491 A4 | 1494 A3 | 1497 B7 | 1590 B1 | 2420 A5 | 6404 B6 | 9403 B4 |
| 1460 A3 | 1492 A6 | 1495 A5 | 1498 A3 | 2363 A2 | 2425 A5 | 7407 B6 | 9404 A3 |



| | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2421 B2 | 2534 A6 | 3442 A3 | 3451 B2 | 3473 B4 | 3499 A3 | 3544 B6 | 4404 C5 | 4504 B6 | 7406 A4 |
| 2531 B6 | 3439 A4 | 3443 A1 | 3470 A3 | 3474 A4 | 3541 B6 | 3545 C6 | 4501 B6 | 4505 B6 | |
| 2532 B6 | 3440 A3 | 3444 B1 | 3471 A3 | 3475 A3 | 3542 B6 | 3546 B6 | 4502 B6 | 6411 B3 | |
| 2533 B5 | 3441 A1 | 3448 B2 | 3472 A4 | 3480 B2 | 3543 C6 | 4403 A6 | 4503 B6 | 7405 B4 | |

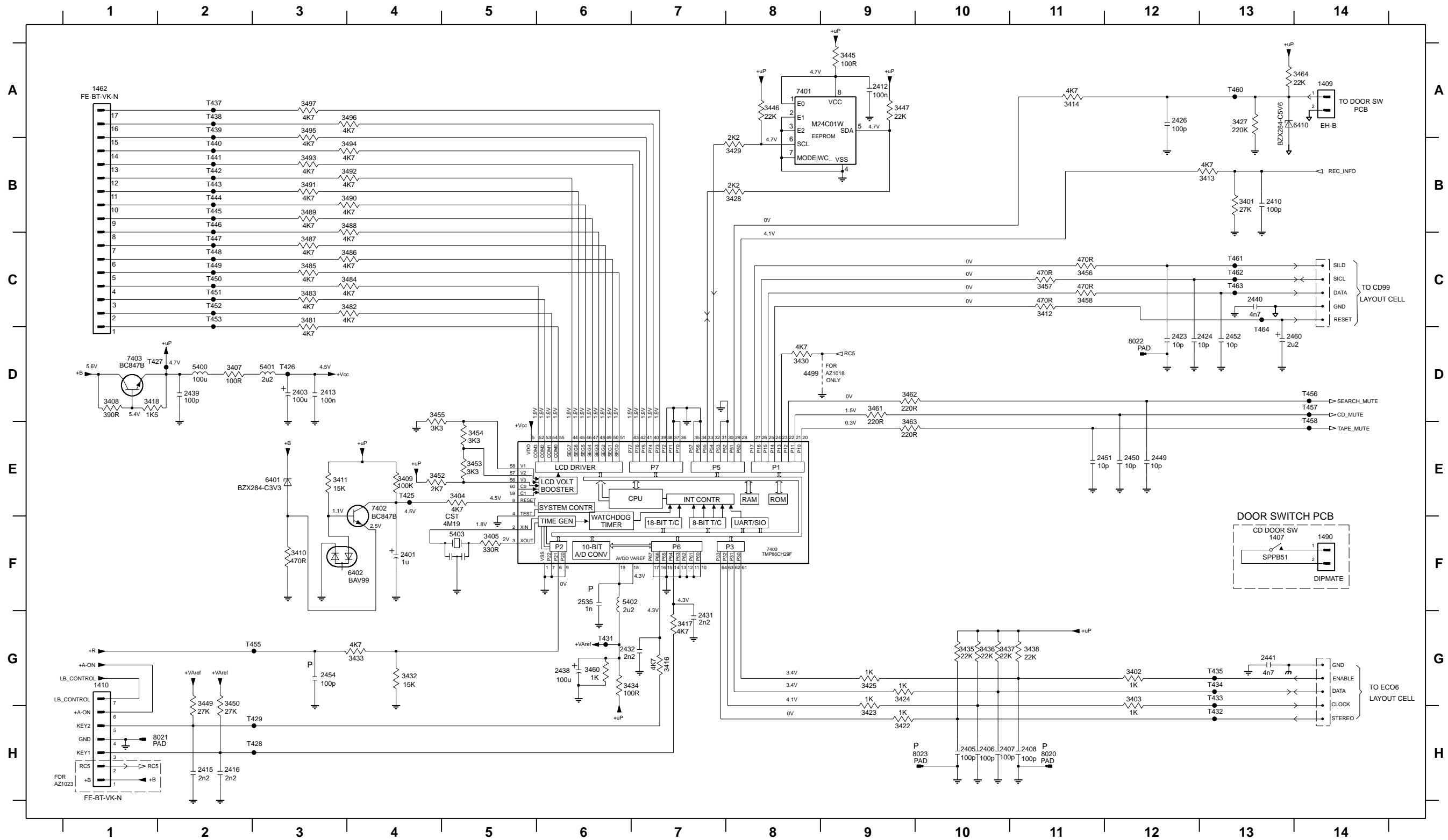


COMBI BOARD (Control Part) - CIRCUIT DIAGRAM

8-1

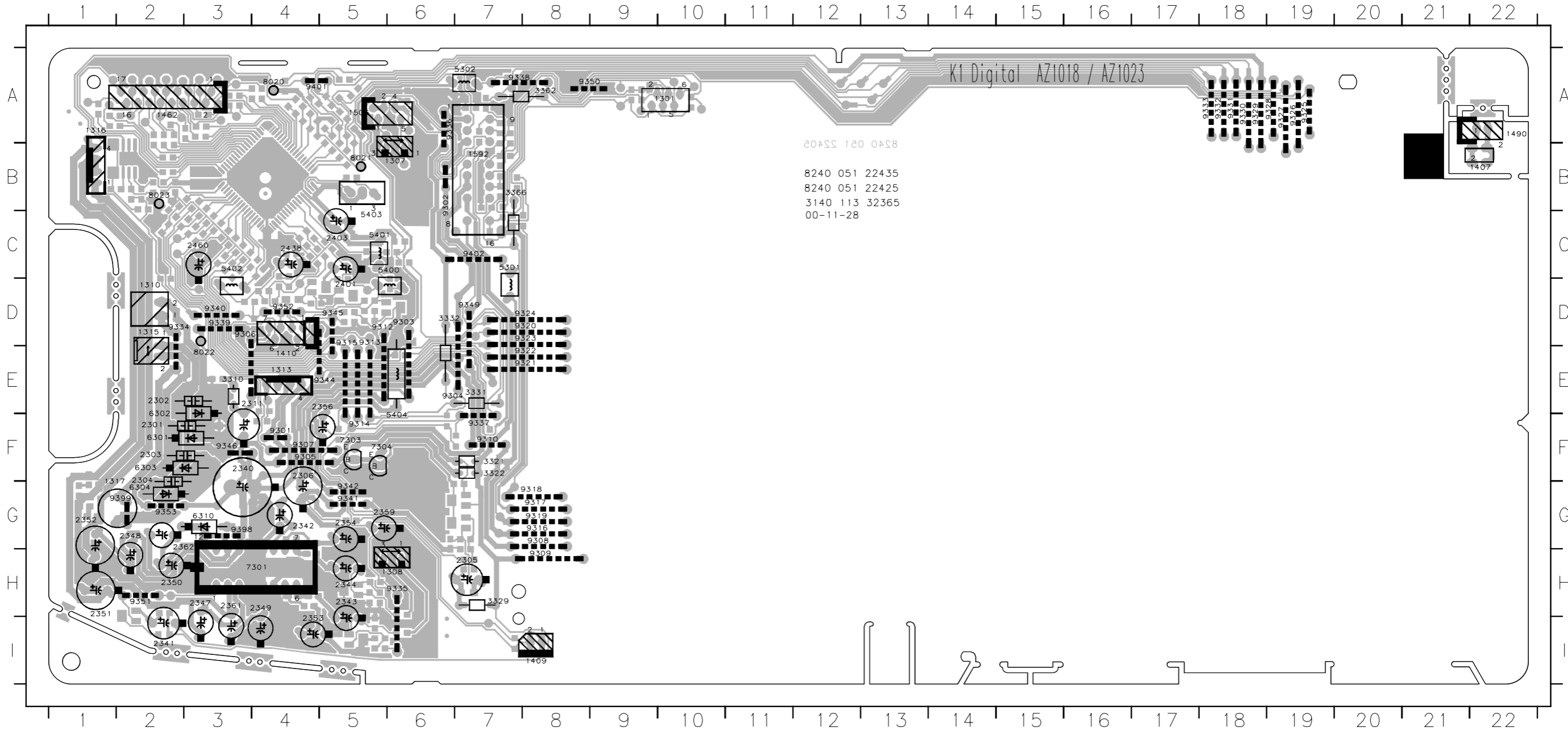
8-1

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|---------|----------|---------|----------|----------|----------|---------|----------|----------|---------|---------|---------|---------|----------|----------|----------|----------|----------|---------|---------|---------|----------|----------|
| 1407 F13 | 2401 F4 | 2408 H11 | 2416 H2 | 2432 G7 | 2449 E12 | 2460 D13 | 3404 E5 | 3410 F3 | 3416 G7 | 3424 G9 | 3430 D8 | 3436 G10 | 3447 A9 | 3454 E5 | 3460 G6 | 3481 C3 | 3486 C4 | 3491 B3 | 3496 A4 | 5402 F6 | 7400 F8 | 8021 H2 | T427 D1 | T433 G13 | T439 A2 | T444 B2 | T449 C2 | T455 G3 | T461 C13 |
| 1409 A14 | 2403 D3 | 2410 B13 | 2423 D12 | 2438 G6 | 2450 E12 | 2535 F6 | 3405 F5 | 3411 C3 | 3417 G7 | 3425 G9 | 3432 G4 | 3437 G10 | 3449 G2 | 3455 D4 | 3461 D9 | 3482 C4 | 3487 C3 | 3492 B4 | 3497 A3 | 5403 F5 | 7401 A8 | 8022 D12 | T428 H3 | T434 G13 | T440 B2 | T445 B2 | T450 C2 | T456 D14 | T462 C13 |
| 1410 G1 | 2405 H10 | 2412 A9 | 2424 D12 | 2439 D2 | 2451 E11 | 3401 B13 | 3407 D2 | 3412 C11 | 3418 D1 | 3427 A13 | 3433 G4 | 3438 G11 | 3450 G2 | 3456 C11 | 3462 D9 | 3483 C3 | 3488 B4 | 3493 B3 | 4499 D8 | 6401 E3 | 7402 E4 | 8023 H9 | T429 H3 | T435 G13 | T441 B2 | T446 B2 | T451 C2 | T457 D14 | T463 C13 |
| 1462 A1 | 2406 H10 | 2413 D3 | 2426 A12 | 2440 C13 | 2452 D13 | 3402 G12 | 3408 D1 | 3413 B13 | 3422 H9 | 3428 B8 | 3434 G6 | 3445 A9 | 3452 E4 | 3457 C11 | 3463 E9 | 3484 C4 | 3489 B3 | 3494 B4 | 5400 D2 | 6402 F4 | 7403 D1 | T425 E4 | T431 G6 | T437 A2 | T442 B2 | T447 C2 | T452 C2 | T458 E14 | T464 D13 |
| 1490 F14 | 2407 H10 | 2415 H2 | 2431 G7 | 2441 G13 | 2454 G3 | 3403 G12 | 3409 E4 | 3414 A11 | 3423 H9 | 3429 B8 | 3435 G10 | 3446 A8 | 3453 E5 | 3458 C11 | 3464 A13 | 3485 C3 | 3490 B4 | 3495 A3 | 5401 D3 | 6410 A14 | 8020 H11 | T426 D3 | T432 H13 | T438 A2 | T443 B2 | T448 C2 | T453 C2 | T459 A13 | |



COMBI BOARD (Component Side) - LAYOUT DIAGRAM

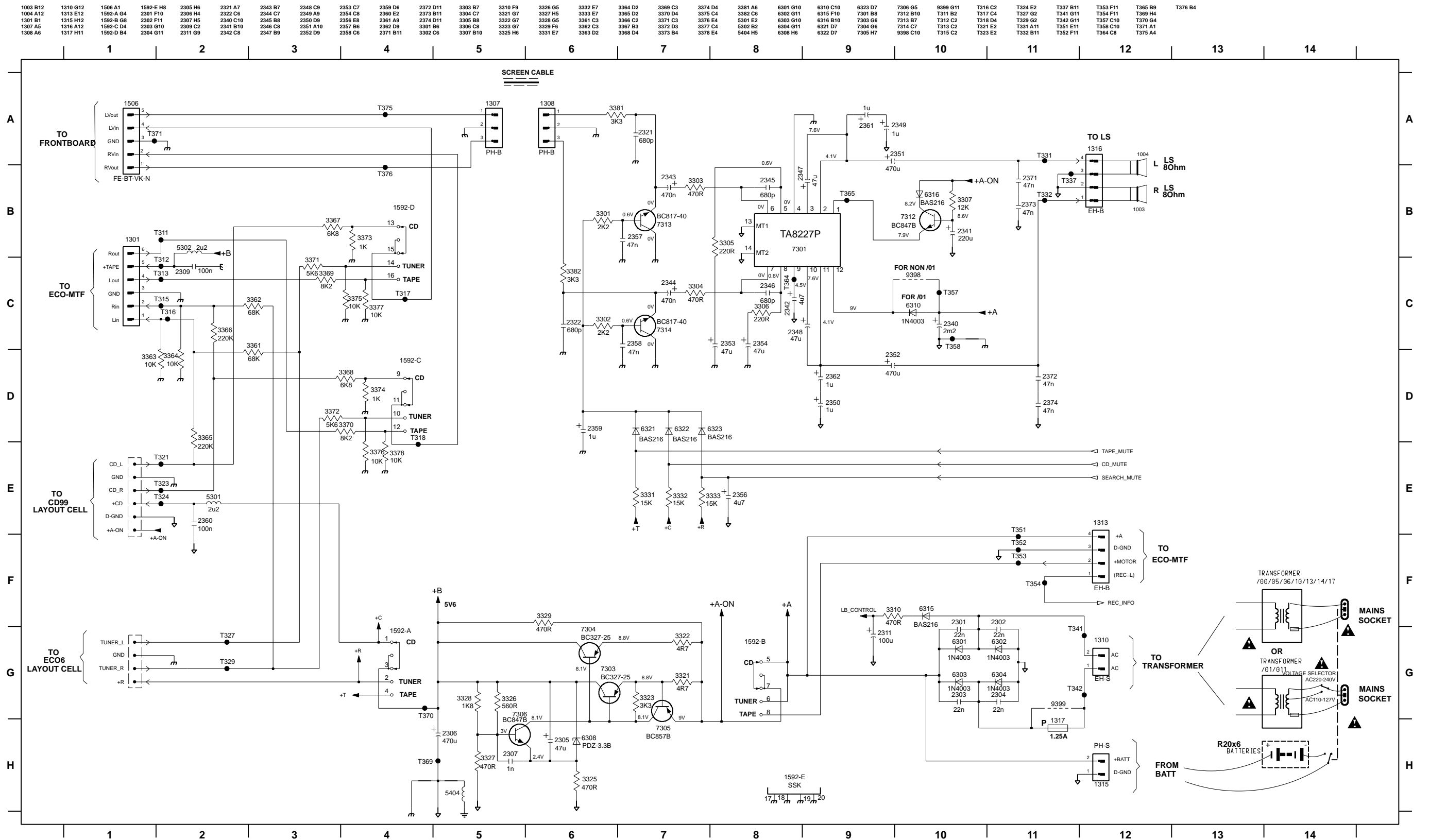
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| 0132 I14 | 1316 A1 | 1461 G16 | 1495 F19 | 1592 B7 | 2311 E4 | 2348 G2 | 2356 E5 | 2403 C5 | 3322 F7 | 5301 C7 | 6301 F2 | 7303 F5 | 9301 F4 | 9308 G8 | 9315 D5 | 9322 E8 | 9329 A18 | 9336 A6 | 9344 E5 | 9353 G2 |
| 1301 A10 | 1317 F1 | 1462 A2 | 1496 G22 | 2301 F2 | 2340 F3 | 2349 H4 | 2359 G5 | 2420 G19 | 3329 H7 | 5302 A7 | 6302 E2 | 7304 F5 | 9302 B6 | 9309 H8 | 9316 G8 | 9323 D8 | 9330 A18 | 9337 F7 | 9345 D5 | 9398 G3 |
| 1307 B6 | 1404 H18 | 1490 A22 | 1497 H22 | 2302 E2 | 2341 I2 | 2350 H2 | 2361 H3 | 2425 G19 | 3331 E7 | 5400 C6 | 6303 F2 | 7407 H20 | 9303 D6 | 9310 F7 | 9317 G8 | 9324 D8 | 9331 A18 | 9338 A7 | 9346 F3 | 9399 G2 |
| 1308 H6 | 1407 B22 | 1491 F18 | 1498 F16 | 2303 F2 | 2342 G4 | 2351 H1 | 2362 G2 | 2438 C4 | 3332 D6 | 5401 C5 | 6304 G2 | 8020 A4 | 9304 E6 | 9311 F15 | 9318 G8 | 9325 A19 | 9332 A18 | 9339 D3 | 9349 D7 | 9401 A4 |
| 1310 D2 | 1409 I8 | 1492 F20 | 1506 A5 | 2304 F2 | 2343 H5 | 2352 G1 | 2363 G15 | 2460 C3 | 3362 A8 | 5402 C3 | 6310 G3 | 8021 B5 | 9305 F4 | 9312 D5 | 9319 G8 | 9326 A19 | 9333 A18 | 9340 D3 | 9350 A8 | 9402 C7 |
| 1313 E4 | 1410 E4 | 1493 G20 | 1510 G15 | 2305 H7 | 2344 H5 | 2353 I4 | 2364 G14 | 3310 E3 | 3366 B7 | 5403 C5 | 6404 H20 | 8022 E3 | 9306 D3 | 9313 D5 | 9320 D8 | 9327 A19 | 9334 D2 | 9341 G5 | 9351 H2 | 9403 G17 |
| 1315 D2 | 1460 F16 | 1494 F17 | 1590 G14 | 2306 F4 | 2347 H3 | 2354 G5 | 2401 D5 | 3321 F7 | 3550 G14 | 5404 F6 | 7301 H4 | 8023 B2 | 9307 F4 | 9314 F5 | 9321 E8 | 9328 A19 | 9335 H6 | 9342 G5 | 9352 D4 | 9404 F17 |



COMBI BOARD (AF Part) - CIRCUIT DIAGRAM

8-3

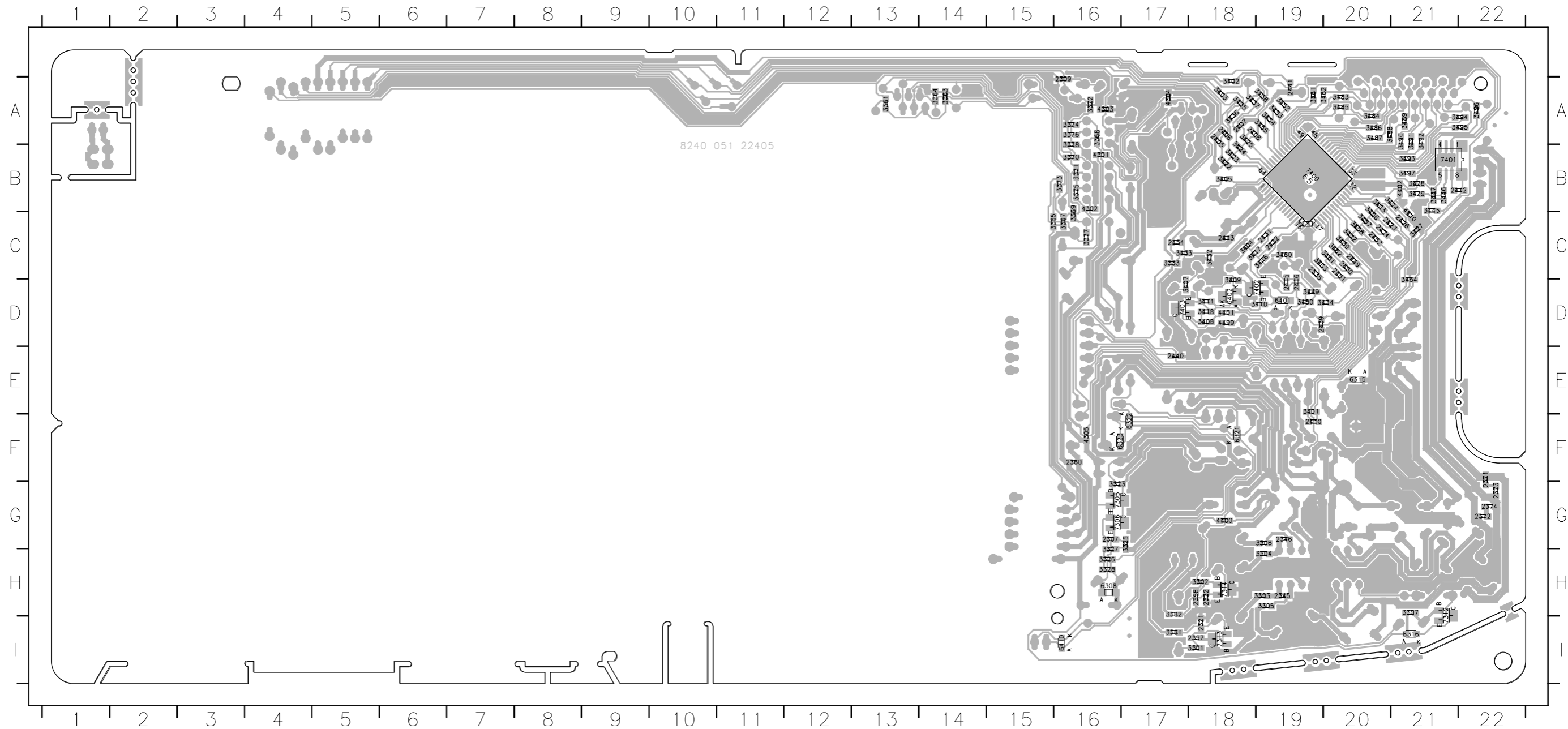
8-3



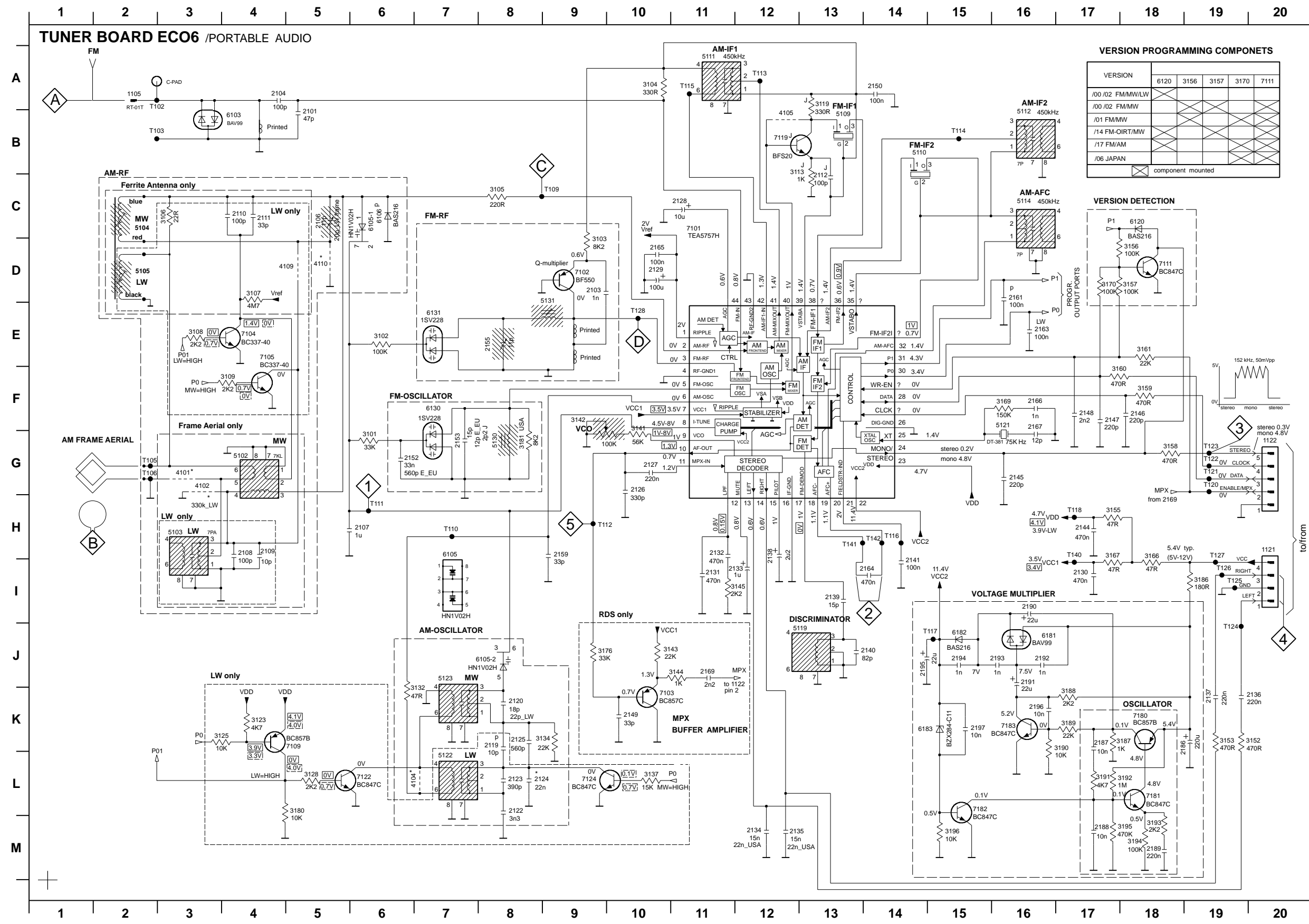
8-4
COMBI BOARD (Solder Side) - LAYOUT DIAGRAM

8-4

| | | | | | | | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 2307 G16 | 2371 F22 | 2412 B22 | 2432 C19 | 2531 H9 | 3305 H19 | 3361 A13 | 3372 A16 | 3401 E19 | 3411 D18 | 3424 B18 | 3435 A18 | 3444 H1 | 3453 A19 | 3463 C19 | 3481 A19 | 3490 A21 | 3541 G8 | 4304 A17 | 4501 H9 | 6322 F17 | 7313 I18 |
| 2309 A16 | 2372 G22 | 2413 C18 | 2439 D19 | 2532 G9 | 3306 G19 | 3363 A14 | 3373 B16 | 3402 A18 | 3412 C20 | 3425 A18 | 3436 A18 | 3445 B21 | 3454 A19 | 3464 D21 | 3482 A19 | 3491 A21 | 3542 H9 | 4305 F16 | 4502 H9 | 6323 F16 | 7314 H18 |
| 2321 I18 | 2373 G22 | 2415 D19 | 2440 E17 | 2533 G8 | 3307 H21 | 3364 A14 | 3374 A16 | 3403 A18 | 3413 B20 | 3427 C21 | 3437 A18 | 3446 B21 | 3455 A19 | 3470 G5 | 3483 A20 | 3492 A21 | 3543 H9 | 4400 G18 | 4503 H9 | 6401 D19 | 7400 B19 |
| 2322 H18 | 2374 G22 | 2416 D19 | 2441 A19 | 2534 G8 | 3323 G16 | 3365 C15 | 3375 B16 | 3404 C18 | 3414 B21 | 3428 B21 | 3438 A19 | 3447 B21 | 3456 C20 | 3471 G5 | 3484 A20 | 3493 B21 | 3544 H9 | 4401 D18 | 4504 H9 | 6402 D18 | 7401 B21 |
| 2345 H19 | 2405 A18 | 2421 G3 | 2449 C20 | 2535 C19 | 3325 G17 | 3367 C16 | 3376 A16 | 3405 B18 | 3416 C19 | 3429 B21 | 3439 F6 | 3448 G3 | 3457 C20 | 3472 G6 | 3485 A20 | 3494 A22 | 3545 H9 | 4402 B21 | 4505 H9 | 6410 I16 | 7402 D19 |
| 2346 G19 | 2406 A18 | 2423 C20 | 2450 C20 | 3301 I18 | 3326 H16 | 3368 A16 | 3377 C16 | 3407 D17 | 3417 C18 | 3430 C20 | 3440 F5 | 3449 D19 | 3458 C20 | 3473 G6 | 3486 A20 | 3495 A22 | 3546 H9 | 4403 F9 | 6308 H16 | 6411 G5 | 7403 D17 |
| 2357 I18 | 2407 A18 | 2424 C20 | 2451 C20 | 3302 H18 | 3327 H16 | 3369 C16 | 3378 B16 | 3408 D18 | 3418 D18 | 3432 C18 | 3441 G3 | 3450 D19 | 3460 C19 | 3474 G6 | 3487 A20 | 3496 A22 | 4301 B16 | 4404 I8 | 6315 E20 | 7305 G16 | 7405 G6 |
| 2358 H18 | 2408 A18 | 2426 C21 | 2452 C20 | 3303 H19 | 3328 H16 | 3370 B16 | 3381 I17 | 3409 D18 | 3422 B18 | 3433 C17 | 3442 F5 | 3451 H3 | 3461 C20 | 3475 G4 | 3488 A20 | 3497 B21 | 4302 B16 | 4410 C21 | 6316 I21 | 7306 G16 | 7406 G6 |
| 2360 F16 | 2410 F19 | 2431 C19 | 2454 C17 | 3304 H19 | 3333 C17 | 3371 B16 | 3382 H17 | 3410 D19 | 3423 B18 | 3434 D20 | 3443 G2 | 3452 A19 | 3462 C20 | 3480 G3 | 3489 A21 | 3499 G5 | 4303 A16 | 4499 D18 | 6321 F18 | 7312 H21 | |



TUNER BOARD ECO6 - CIRCUIT DIAGRAM

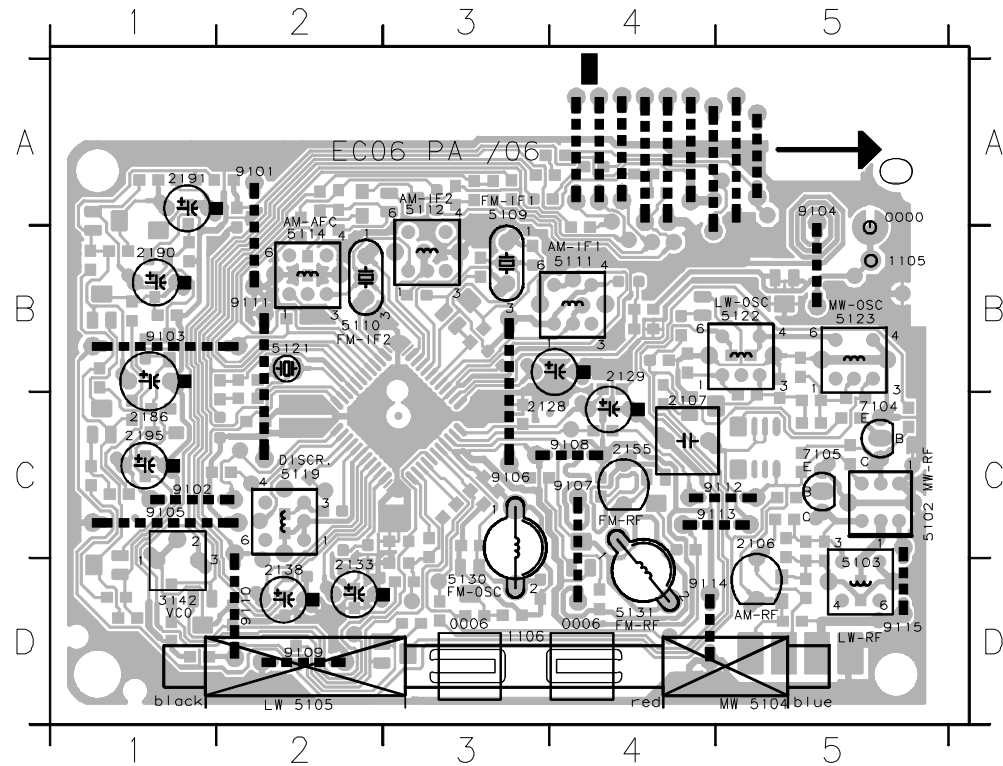


| VERSION | 6120 | 3156 | 3157 | 3170 | 7111 |
|------------------|------|------|------|------|------|
| /00 /02 FM/MW/LW | | | | | |
| /00 /02 FM/MW | | | | | |
| /01 FM/MW | | | | | |
| /14 FM-OIRT/MW | | | | | |
| /17 FM/AM | | | | | |
| /06 JAPAN | | | | | |

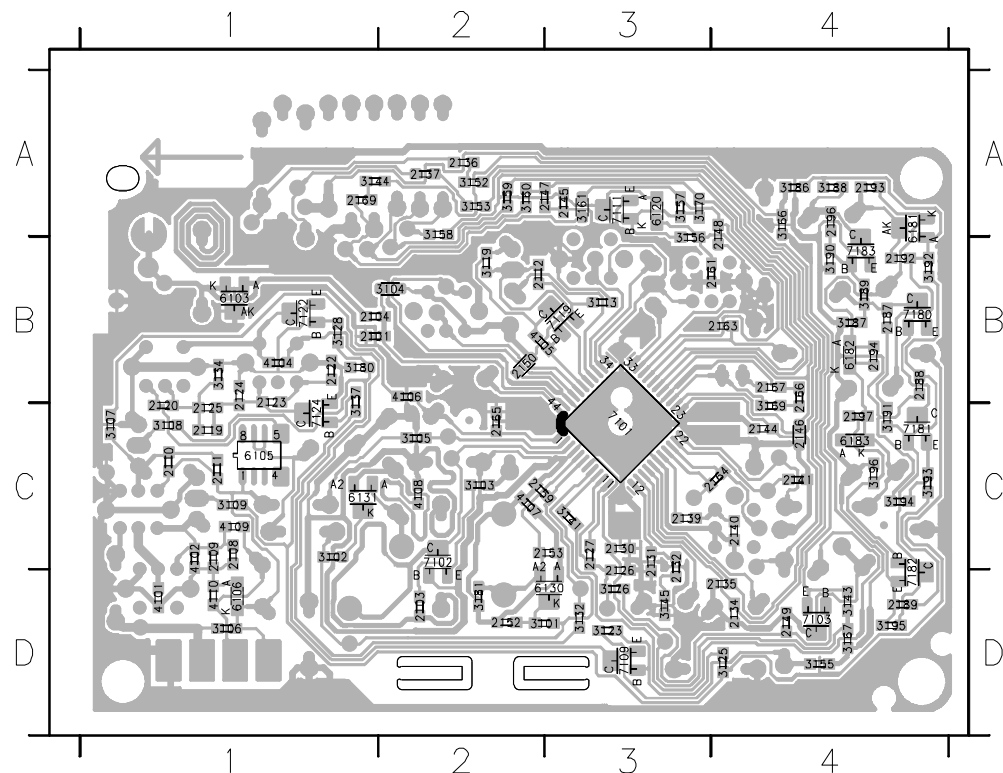
component mounted

TUNER BOARD ECO6 - LAYOUT DIAGRM

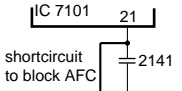
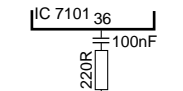
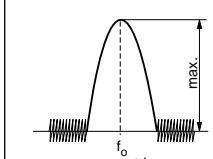
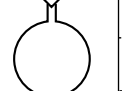
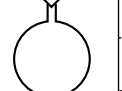
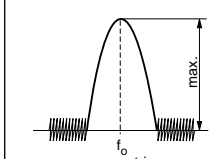
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 J2 A4 J8 A4 2106 C5 2138 D2 2195 C1 5110 B2 5121 B2 7104 C5 9104 A5 9109 D2 9114 D4
 J3 A4 J9 A4 2107 C4 2155 C4 3142 D1 5111 B4 5122 B5 7105 C5 9105 C1 9110 D2 9115 D5
 J4 A4 J10 A4 2128 C3 2186 C1 5102 C5 5112 A3 5123 B5 9101 A2 9106 C3 9111 B2
 J6 A4 0000 A5 2129 B4 2190 B1 5103 D5 5114 B2 5130 D3 9102 C1 9107 C4 9112 C5



2101 B1 2123 B1 2137 A2 2152 D2 2188 B4 3105 C2 3134 B1 3158 A2 3186 A4 4101 D1 6106 D1 7111 A3
 2103 D2 2124 B1 2139 C3 2153 C3 2189 D4 3106 D1 3137 B1 3159 A2 3187 B4 4102 C1 6120 A3 7119 B3
 2104 B1 2125 C1 2140 C4 2159 C2 2192 B4 3107 C1 3141 C3 3160 A2 3188 A4 4104 B1 6130 D3 7122 B1
 2108 C1 2126 D3 2141 C4 2161 B4 2193 A4 3108 C1 3143 D4 3161 A3 3189 B4 4105 B2 6131 C1 7124 C1
 2109 C1 2127 C3 2144 C4 2163 B4 2194 B4 3109 C1 3144 A1 3166 A4 3190 B4 4106 B2 6181 A4 7180 B4
 2110 C1 2130 C3 2145 A3 2164 C4 2196 A4 3113 B3 3145 D3 3167 D4 3191 C4 4107 C2 6182 B4 7181 C4
 2111 C1 2131 C3 2146 C4 2165 C2 2197 C4 3119 B2 3152 A2 3169 C4 3192 B4 4108 C2 6183 C4 7182 D4
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 2119 C1 2134 D4 2148 A4 2167 B4 3102 C1 3125 D4 3155 D4 3176 D3 3194 C4 4110 D1 7102 C2
 2120 C1 2135 D4 2149 D4 2169 A1 3103 C2 3128 B1 3156 B3 3180 B1 3195 D4 6103 B1 7103 D4
 2122 B1 2136 A2 2150 B2 2187 B4 3104 B2 3132 D3 3157 A3 3181 D2 3196 C4 6105 C1 7109 D3



TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with ferrite antenna)

| Waverange | Input frequency | Input | Tuned to | Adjust | Output | Scope/Voltmeter |
|--|---|--|---|-------------------------|--------|---|
| VARICAP ALIGNMENT | | | | | | |
| FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz) | | | 108MHz | 5130 | | 8V ±0.2V |
| | | | 87.5MHz (65.81MHz) | check | | 4.3V ±0.5V (1.2V ±0.5V) |
| MW FM/AM-version, 10kHz grid 530 - 1700kHz | | | 1700kHz | 5123 | | 8V ±0.2V |
| | | | 530kHz | check | | 1.1V ±0.4V |
| FM/MW-version, 9kHz grid 531 - 1602kHz | | | 1602kHz | 5123 | 1 | 6.9V ±0.2V |
| | | | 531kHz | check | | 1.1V ±0.4V |
| LW 153 - 279kHz | | | 279kHz | 5122 | | 8V ±0.2V |
| | | | 153kHz | check | | 1.1V ±0.4V |
| MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz | | | 1602kHz | 5123 | | 8V ±0.2V |
| | | | 531kHz | check | | 1.1V ±0.4V |
| FM IF | | | | | | |
| FM | 10.7MHz, 45mV continuous wave | D |  | 5119 | 2 | 0 ± 3 mV DC |
| FM RF | | | | | | |
| FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz) | 108MHz | A mod=1kHz f=±22.5kHz | 108MHz | 2155 | 4 | MAX |
| | 87.5MHz (65.81MHz) | | 87.5MHz (65.81MHz) | 5131 | | |
| VCO | | | | | | |
| FM | 98MHz, 1mV continuous wave | A | 98MHz | 3142 | 3 | 152kHz ±1kHz ¹⁾ |
| AM IF | | | | | | |
| MW | 450kHz connect pin 6 of IC 7101 (AM Osc.) with 2.2k to Vcc | C f=±10kHz V _{RF} = 0.5mV (as low as possible) see remark 2) |  | 5111 | 5 |  |
| | | |  | 5112 | | |
| AM AFC | | C | | 5114 | 2 | 0 ± 2 mV DC |
| AM RF³⁾ | | | | | | |
| LW | 198kHz | B  | 198kHz | 5105 LW ferrite coil | 5 |  |
| MW FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz | 1494kHz | | 2106 | | | |
| | 558kHz | | 5104 MW ferrite coil | | | |
| MW FM/AM-version, 10kHz grid 530 - 1700kHz | 1500kHz | f = ±30kHz V _{RF} as low as possible | 1500kHz | 2106 | | |
| | 560kHz | | 5104 MW ferrite coil | | | |

ECO6, general with ferrite antenna, 070799

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

¹⁾ If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum) ²⁾ RC network serves for damping the IF-filter while adjusting the other one.

³⁾ LW has to be aligned before MW.

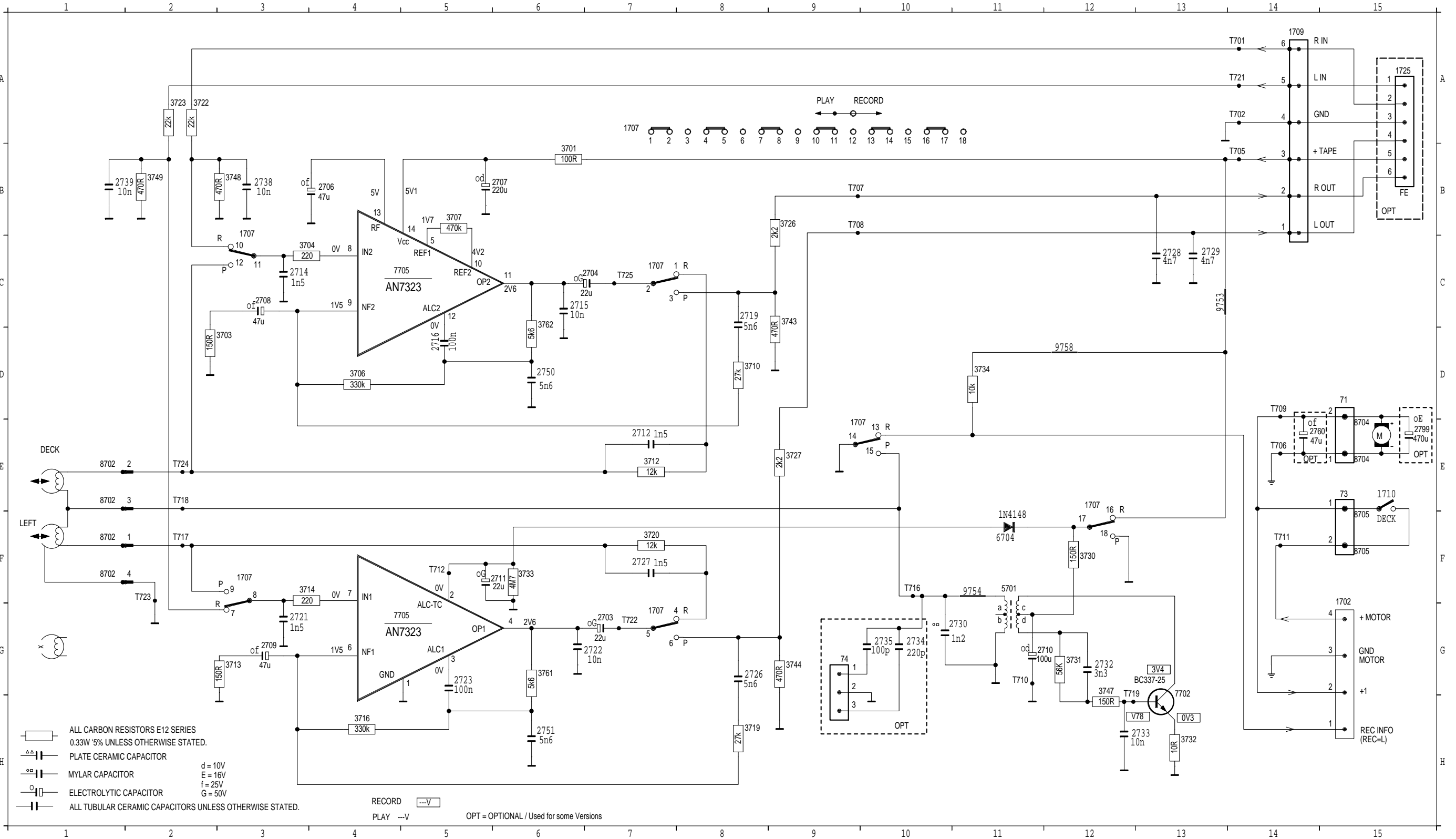
↑ Repeat

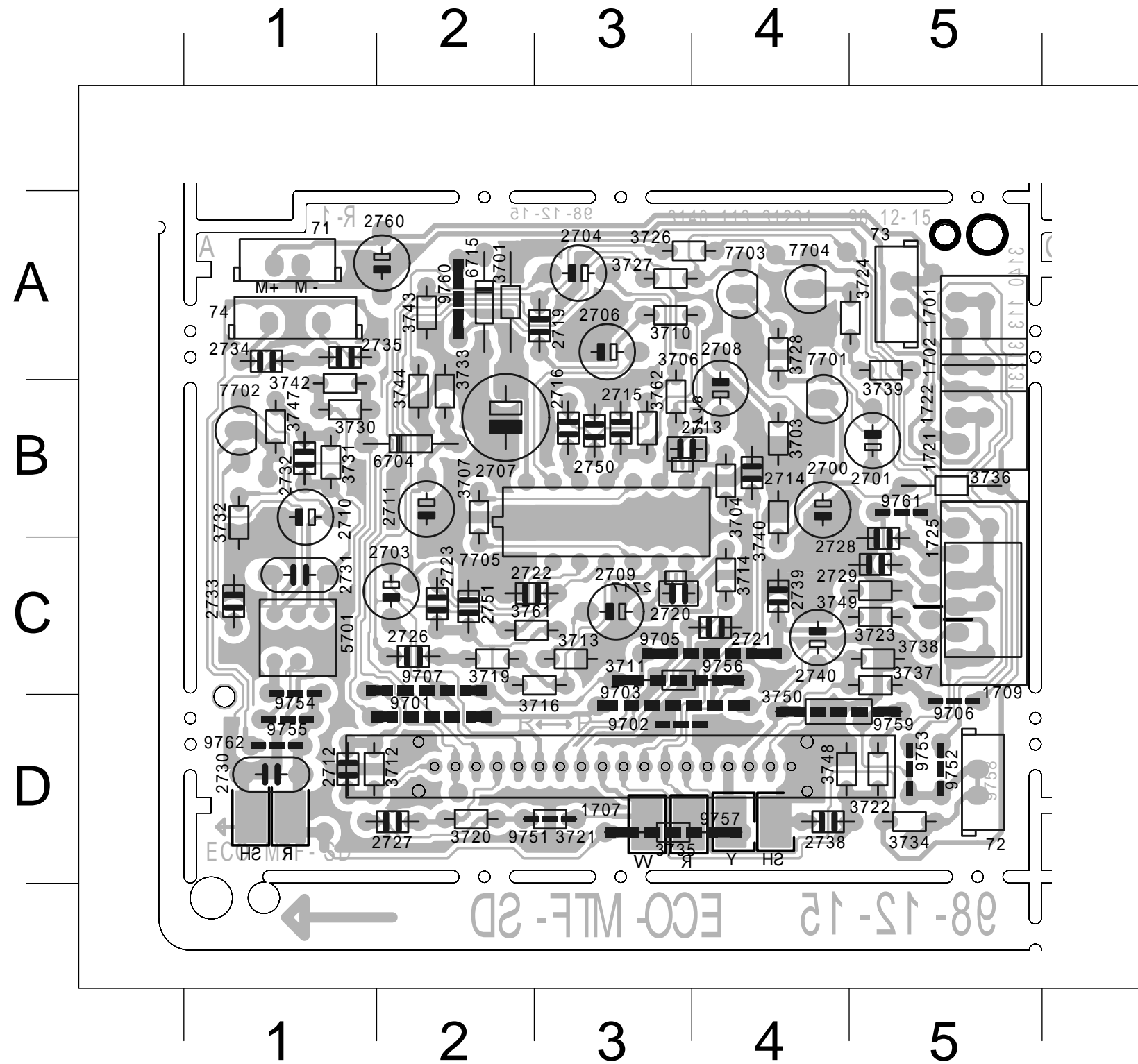
RECORDER BOARD - CIRCUIT DIAGRAM

10-1

10-1

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| 71 | D15 | 1707 | C 3 | 1709 | A14 | 2706 | B 4 | 2711 | F 6 | 2719 | C 8 | 2727 | F 7 | 2733 | H13 | 2750 | D 6 | 3703 | D 3 | 3712 | E 7 | 3720 | F 7 | 3730 | F12 | 3743 | C 9 | 3761 | G 6 | 7705 | G 4 | 8702 | E 1 | 9753 | C13 | T705 | B14 | T710 | G11 | T718 | E 2 | T724 | E 2 |
| 73 | E15 | 1707 | C 7 | 1710 | E15 | 2707 | B 4 | 2712 | F 6 | 2721 | C 8 | 2728 | F 7 | 2734 | G10 | 2751 | H 6 | 3704 | C 3 | 3713 | E 7 | 3722 | F 7 | 3731 | F12 | 3744 | C 9 | 3762 | D 6 | 7705 | G 4 | 8704 | E 1 | 9754 | F11 | T706 | E14 | T711 | F14 | T719 | H13 | T725 | C 7 |
| 74 | G 9 | 1707 | C 7 | 1725 | A15 | 2708 | B 4 | 2714 | C 8 | 2722 | F 7 | 2729 | C13 | 2735 | F10 | 2760 | E14 | 3706 | D 3 | 3714 | F 7 | 3723 | F 7 | 3732 | H13 | 3747 | G12 | 5701 | F11 | 8702 | E 1 | 8704 | E 1 | 9756 | D12 | T707 | B10 | T712 | F 5 | T721 | A14 | T722 | G 7 |
| 1702 | G15 | 1707 | E 9 | 2703 | C 7 | 2709 | G12 | 2715 | D 5 | 2723 | G 8 | 2730 | G11 | 2738 | B 3 | 2759 | E15 | 3707 | B 5 | 3716 | H 8 | 3726 | E 9 | 3733 | F 6 | 3748 | B 2 | 6704 | F11 | 8702 | E 1 | 8705 | F15 | T701 | A14 | T708 | B10 | T716 | F 2 | T722 | G 7 | | |
| 1707 | F 3 | 1707 | E12 | 2704 | C 7 | 2710 | G12 | 2716 | D 5 | 2726 | G 8 | 2732 | G12 | 2739 | B 1 | 3701 | B 6 | 3710 | D 3 | 3719 | H 8 | 3727 | E 9 | 3734 | D11 | 3749 | B 2 | 7702 | H13 | 8702 | E 1 | 8705 | F15 | T702 | A14 | T709 | D14 | T717 | F 2 | T723 | F 2 | | |





- 71 A 1
- 72 D 5
- 73 A 5
- 74 A 1
- 1701 A 5
- 1702 B 5
- 1707 D 3
- 1709 C 5
- 1721 B 5
- 1722 B 5
- 1725 C 5
- 2700 B 4
- 2701 B 5
- 2703 C 2
- 2704 A 3
- 2706 A 3
- 2707 B 2
- 2708 B 4
- 2709 C 3
- 2710 B 1
- 2711 B 2
- 2712 D 1
- 2713 B 3
- 2714 B 4
- 2715 B 3
- 2716 B 3
- 2717 C 3
- 2718 B 3
- 2719 A 3
- 2720 C 3
- 2721 C 4
- 2722 C 2
- 2723 C 2
- 2726 C 2
- 2727 D 2
- 2728 C 5
- 2729 C 5
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- 2760 A 2
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- 3706 B 3
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- 3738 C 5
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- 3750 D 4
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- 3762 B 3
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- 6704 B 2
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- 7702 B 1
- 7703 A 4
- 7704 A 4
- 7705 B 3
- 9701 D 2
- 9702 D 3
- 9703 D 3
- 9705 C 4
- 9706 D 5
- 9707 C 2
- 9751 D 3
- 9752 D 5
- 9753 D 5
- 9754 C 1
- 9755 D 1

CASSETTE ADJUSTMENT

| Adjustment | Cassette | SK | Deck 1 | Measure on | Read on | Adjust with | Adjust to |
|-------------|------------------|---------|--------|------------|-----------------------|--------------------------|-----------|
| Azimuth | 10 kHz SBC420* | Tape | Play | H/P Jack | mV meter | Left hand Screw R/P head | max. |
| Motor Speed | 3150 kHz SBC420* | Tape | Play | H/P Jack | Wow and flutter meter | Preset in motor | **a |

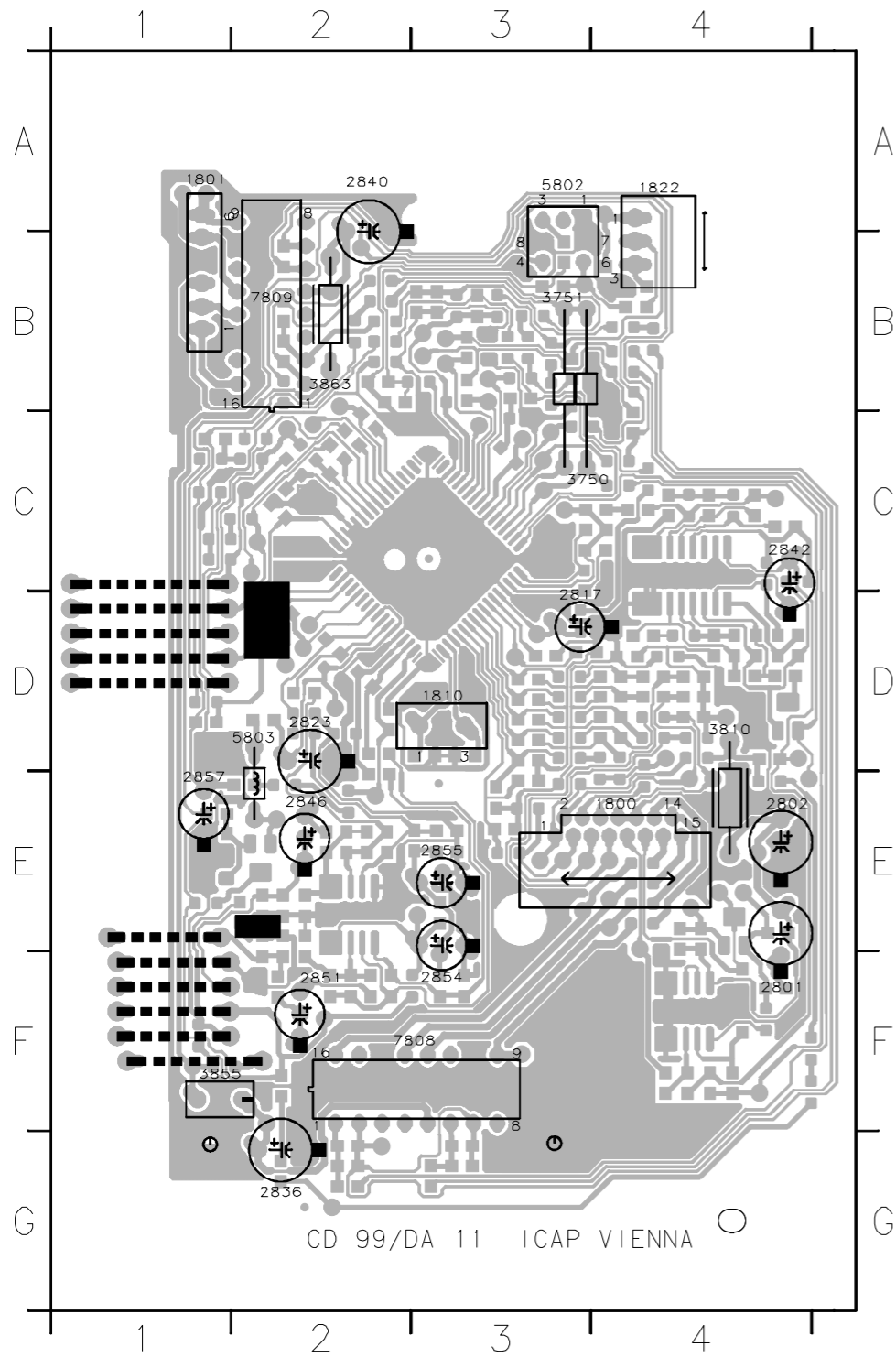
* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%. Moreover, the wow and flutter value can be read.

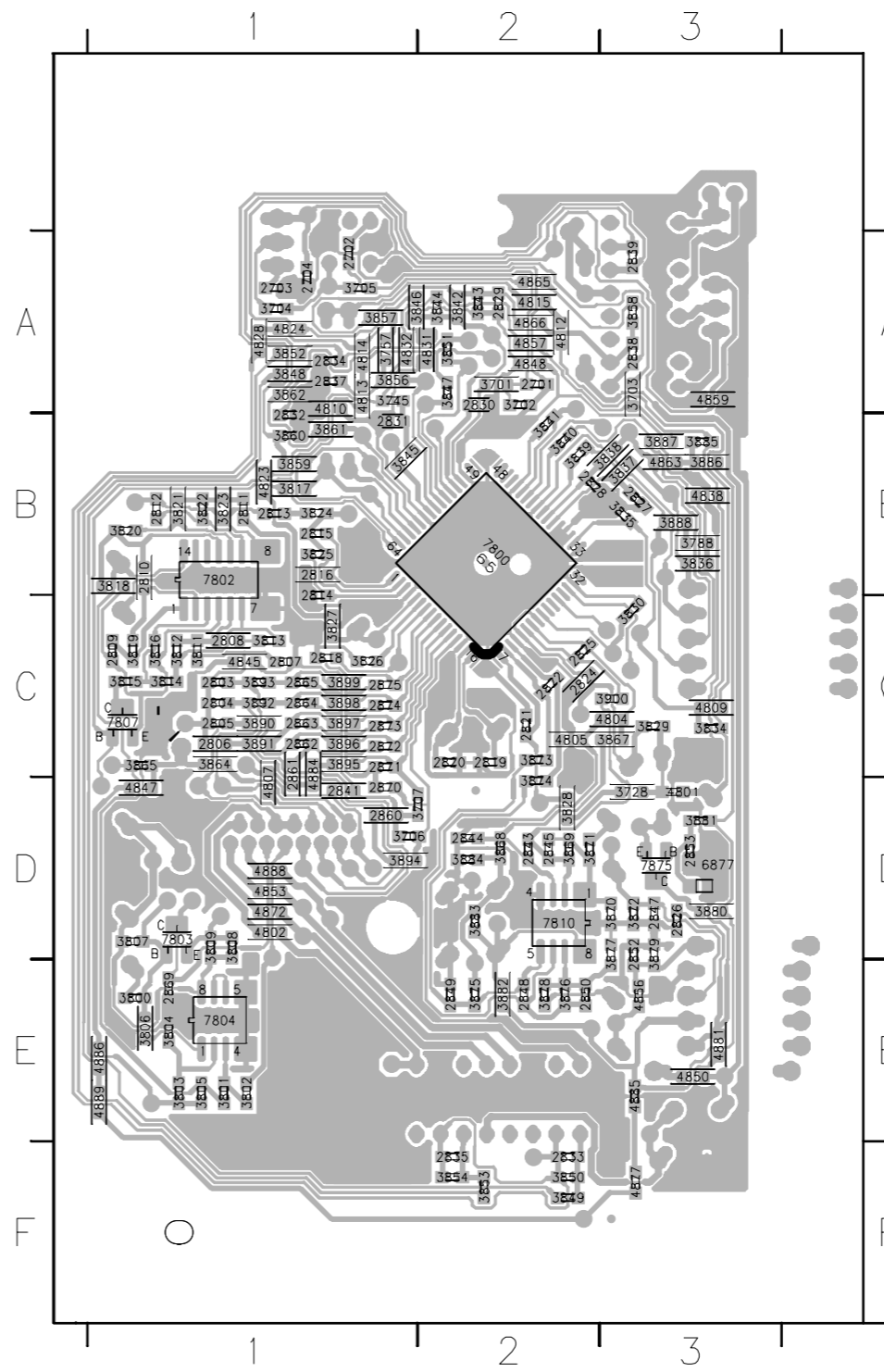
CD99 DA11 - LAYOUT DIAGRAM

11-1

11-1



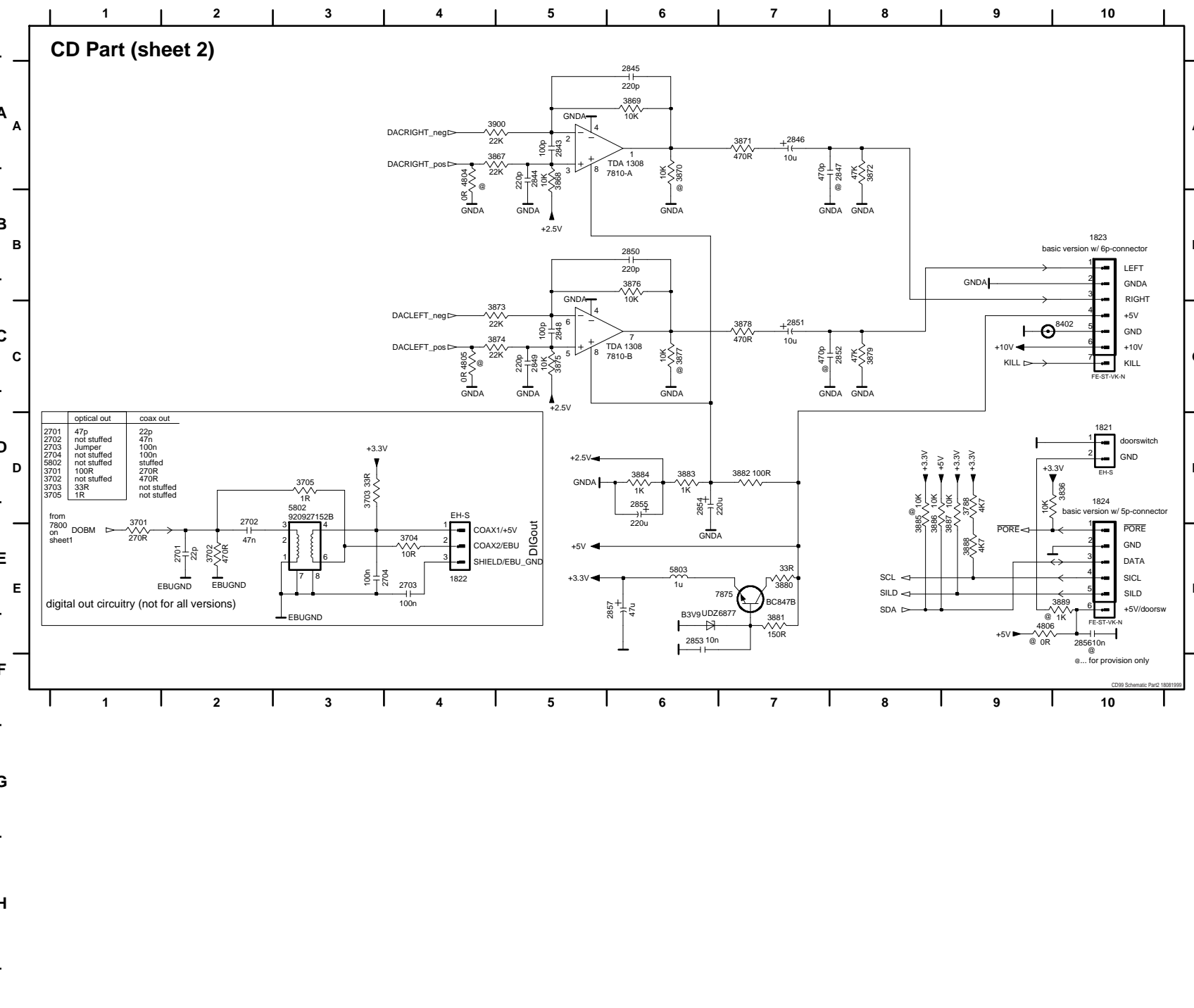
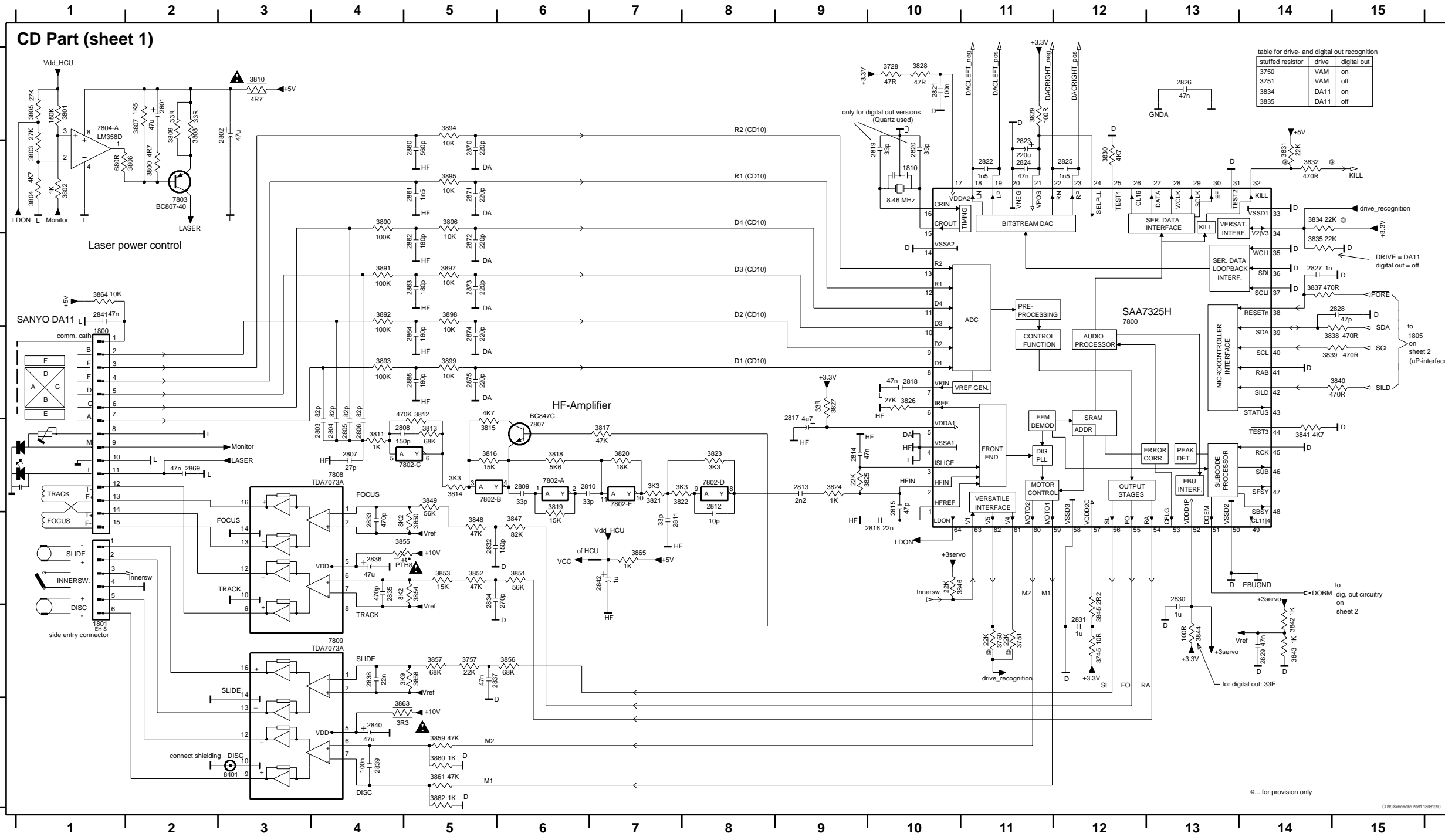
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- 2802 E4
- 2817 D3
- 2823 D2
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- 2842 C4
- 2846 E2
- 2851 F2
- 2854 F3
- 2855 E3
- 2857 E1
- 3750 C3
- 3751 B3
- 3810 D4
- 3855 F1
- 3863 B2
- 5802 A3
- 5803 D2
- 7808 F3
- 7809 B2
- 8401 G3
- 8402 G1
- 9000 E2
- 9001 E2
- 9002 E2
- 9003 E2
- 9004 E2
- 9005 E2
- 9007 D2
- 9008 D2
- 9009 D2
- 9010 D2
- 9011 D2

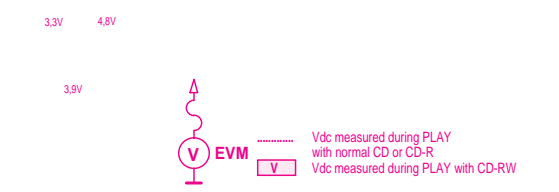
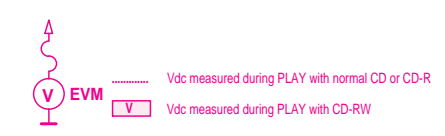
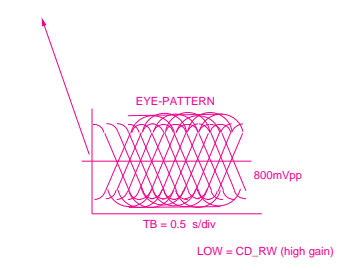
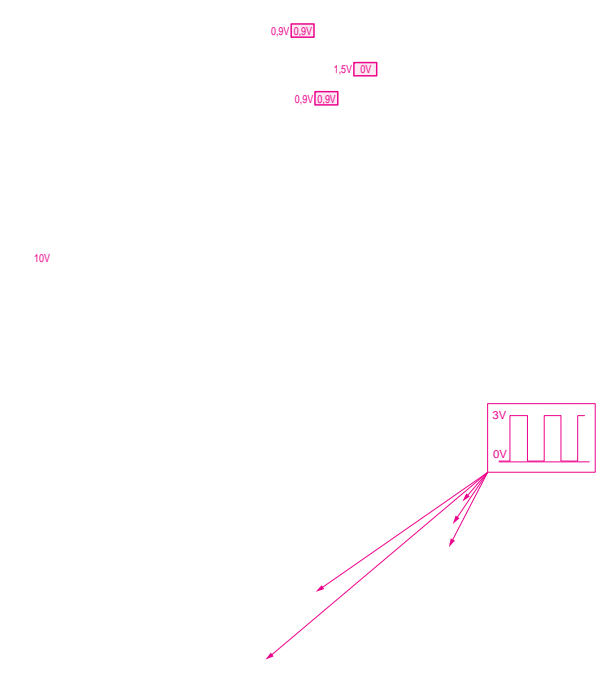
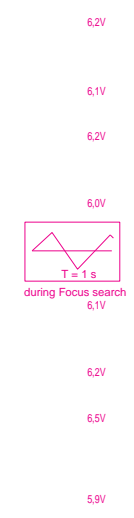


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- 7875 D3

| | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|----------|----------|----------|---------|---------|---------|---------|----------|---------|---------|----------|----------|----------|----------|----------|---------|---------|-----------|-----------|-----------|---------|
| 1800 D1 | 2806 E4 | 2813 E9 | 2820 B10 | 2827 C14 | 2834 F5 | 2841 C1 | 2848 D5 | 2855 D5 | 2875 D5 | 3801 A1 | 3808 A2 | 3815 E5 | 3822 E7 | 3829 A11 | 3836 D14 | 3843 G12 | 3852 F5 | 3859 H5 | 3890 B4 | 3897 C5 | 7802-D E8 | 7808 E4 |
| 1801 D4 | 2807 E4 | 2814 E9 | 2821 B11 | 2828 C14 | 2835 F4 | 2842 F7 | 2849 E2 | 2869 E2 | 3728 A10 | 3802 B1 | 3809 A2 | 3816 E5 | 3823 E8 | 3830 B12 | 3837 D14 | 3844 F10 | 3853 F5 | 3860 H5 | 3891 C4 | 3898 C5 | 7802-E F7 | 7809 G4 |
| 1801 A2 | 2808 E4 | 2815 E10 | 2822 B11 | 2829 G14 | 2836 F4 | 2843 B5 | 2850 B5 | 2870 B5 | 3745 G12 | 3803 B1 | 3810 A3 | 3817 E7 | 3824 E9 | 3831 B14 | 3838 D15 | 3845 F6 | 3854 F5 | 3861 H5 | 3892 C4 | 3899 D5 | 7802-F F8 | 8401 H3 |
| 2802 A3 | 2809 E6 | 2816 F10 | 2823 B11 | 2830 F13 | 2837 G5 | 2844 B5 | 2871 B5 | 2878 B5 | 3750 G11 | 3804 B1 | 3811 E4 | 3818 E6 | 3825 E9 | 3832 B14 | 3841 E14 | 3848 F5 | 3855 F4 | 3862 H5 | 3893 D4 | 7800 D12 | 7803 B2 | |
| 2803 E4 | 2810 E6 | 2817 D9 | 2824 B11 | 2831 G12 | 2838 G4 | 2845 C3 | 2872 C5 | 2879 C5 | 3751 G11 | 3805 A1 | 3812 D5 | 3819 E6 | 3826 D10 | 3834 B14 | 3843 G14 | 3850 F5 | 3856 G6 | 3863 H4 | 3894 A5 | 7802-A E6 | 7804-A A1 | |
| 2804 E4 | 2811 F7 | 2818 D9 | 2825 B12 | 2832 F5 | 2839 H4 | 2846 C3 | 2873 C5 | 2875 G5 | 3752 G5 | 3806 B2 | 3813 E5 | 3820 E7 | 3827 D9 | 3835 C14 | 3843 G14 | 3850 F5 | 3857 G5 | 3864 C1 | 3895 B5 | 7802-B E5 | 7804-B C3 | |
| 2805 E4 | 2812 E8 | 2819 B10 | 2826 A13 | 2833 F4 | 2840 H4 | 2847 D5 | 2874 D5 | 2880 B2 | 3807 A2 | 3814 E5 | 3821 E7 | 3828 A10 | 3837 C14 | 3844 G13 | 3851 F6 | 3858 G5 | 3865 F7 | 3896 B5 | 7802-C E5 | 7807 E6 | | |

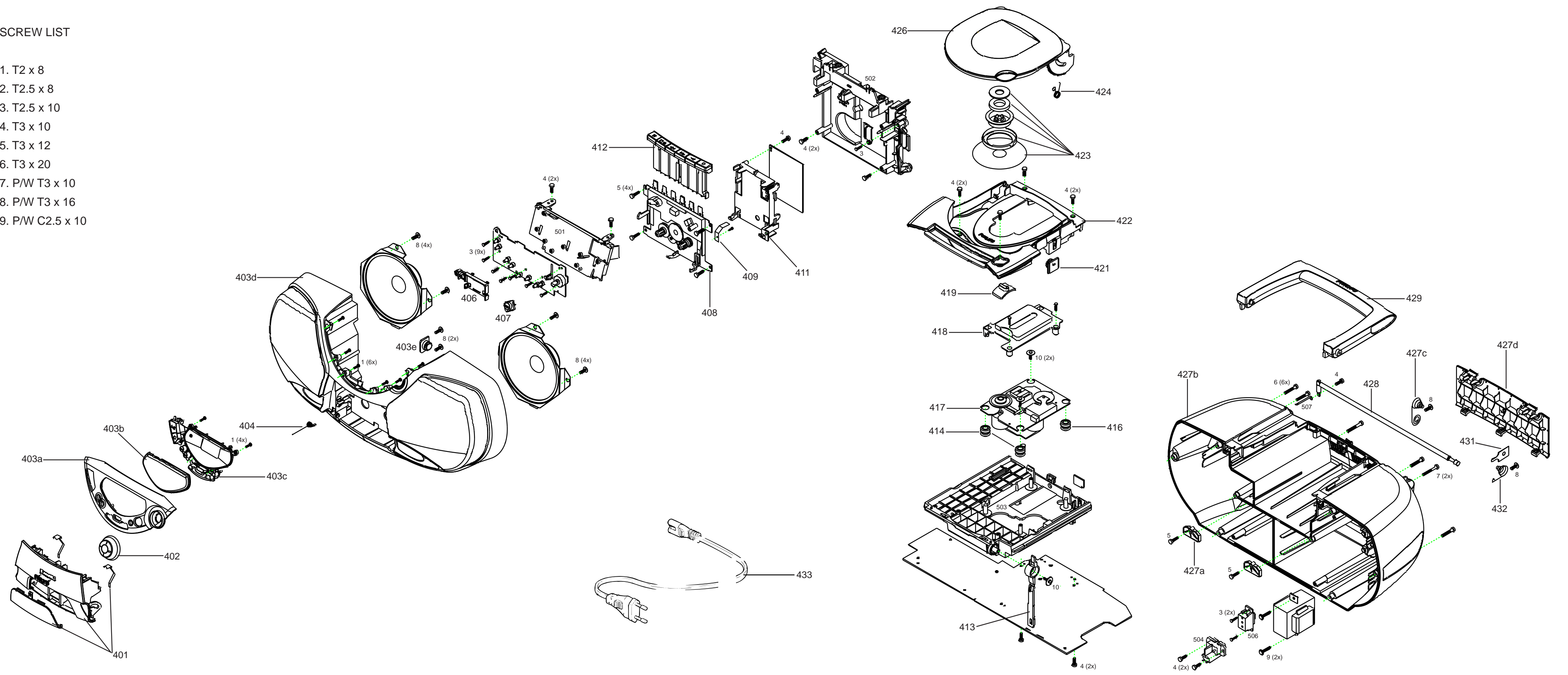
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|----------|---------|---------|---------|----------|----------|---------|---------|---------|---------|----------|---------|-----------|
| 1821 D10 | 2702 E2 | 2845 A6 | 2850 B6 | 2855 D6 | 3703 D3 | 3867 A5 | 3872 A8 | 3877 C6 | 3882 D7 | 3887 E9 | 4805 C4 | 7810-A A5 |
| 1822 E4 | 2703 E4 | 2846 A7 | 2851 C7 | 2856 E10 | 3704 E4 | 3868 A6 | 3873 C5 | 3878 C7 | 3883 D6 | 3888 E9 | 4806 E9 | 7810-B C5 |
| 1823 B10 | 2704 E3 | 2847 A8 | 2852 C8 | 2857 E6 | 3705 D3 | 3869 A6 | 3874 C5 | 3879 C8 | 3884 D6 | 3889 E10 | 5802 D3 | 7810-B C5 |
| 1824 D10 | 2843 A5 | 2848 C5 | 2853 E8 | 3701 E1 | 3788 E9 | 3870 A6 | 3875 C5 | 3880 E7 | 3885 E8 | 3900 A5 | 5803 E6 | 8402 C9 |
| 2701 E2 | 2844 A5 | 2849 C5 | 2854 D6 | 3702 E2 | 3836 D10 | 3871 A7 | 3876 B6 | 3881 E7 | 3886 E8 | 4804 A4 | 6877 E7 | |





SCREW LIST

- 1. T2 x 8
- 2. T2.5 x 8
- 3. T2.5 x 10
- 4. T3 x 10
- 5. T3 x 12
- 6. T3 x 20
- 7. P/W T3 x 10
- 8. P/W T3 x 16
- 9. P/W C2.5 x 10



MECHANICAL PARTSLIST - CABINET

- | | | | | | |
|-----|----------------|-----------------------------------|----------------|----------------------------------|-----------------------|
| 401 | 3140 117 60330 | Cassette Door Assy | 433 | 2422 070 98148 | Mains Cord (For -/10) |
| 402 | 3140 114 35570 | Knob Volume | 433 | 2422 070 98152 | Mains Cord (For -/17) |
| 403 | 3140 117 60300 | Front Cabinet Assy (Not for -/17) | 4822 256 90463 | Holder Ferrite Bar | |
| 403 | 3140 117 60490 | Front Cabinet Assy (For -/17) | 3140 115 27850 | Instr Manual (For -/00/05) | |
| 404 | 4822 492 11776 | Spring Cass Door | 3140 115 27940 | Instr Manual (For -/01/10/11/16) | |
| | | | | | |
| 406 | 3140 114 35560 | Bracket LCD | 3140 115 27960 | Instr Manual (For -/14) | |
| 407 | 3140 114 35600 | Knob DBB | 3140 115 27970 | Instr Manual (For -/17) | |
| 408 | 4822 691 10612 | Tape Deck | | | |
| 409 | 3140 111 20800 | Spring Recording | | | |
| 411 | 3140 114 20430 | Bracket Recording | | | |
| | | | | | |
| 412 | 3140 114 35510 | Keyset Cass | | | |
| 413 | 3140 114 35590 | Lever Mode | | | |
| 414 | 4822 529 10387 | Damper Rubber (40 DEG) | | | |
| 416 | 4822 529 10386 | Damper Rubber (30 DEG) | | | |
| 417 | 3103 309 05290 | CD DA11N Drive | | | |
| | | | | | |
| 417 | 4822 691 10747 | CD DA11 Drive Sanyo | | | |
| 418 | 4822 442 01096 | CD Drive Cover | | | |
| 419 | 3140 114 35580 | Knob Cap Mode | | | |
| 421 | 4822 529 10322 | Damper Assy | | | |
| 422 | 3140 114 35450 | Tray CD | | | |
| | | | | | |
| 423 | 3140 117 59800 | Clamper Ring Assy CDM-DA11 | | | |
| 424 | 3140 111 00800 | Spring CD Door | | | |
| 426 | 3140 114 35470 | Door CD | | | |
| 427 | 3140 117 60310 | Rear Cabinet Assy | | | |
| 428 | 3140 118 71570 | Telescopic Aerial | | | |
| | | | | | |
| 429 | 3140 114 35630 | Handle | | | |
| 431 | 3140 111 21320 | Contact Plate | | | |
| 432 | 3140 111 00780 | Spring Compression | | | |
| 433 | 2422 070 98151 | Mains Cord (For -/00/01/11/14/16) | | | |
| 433 | 2422 070 98147 | Mains Cord (For -/05) | | | |

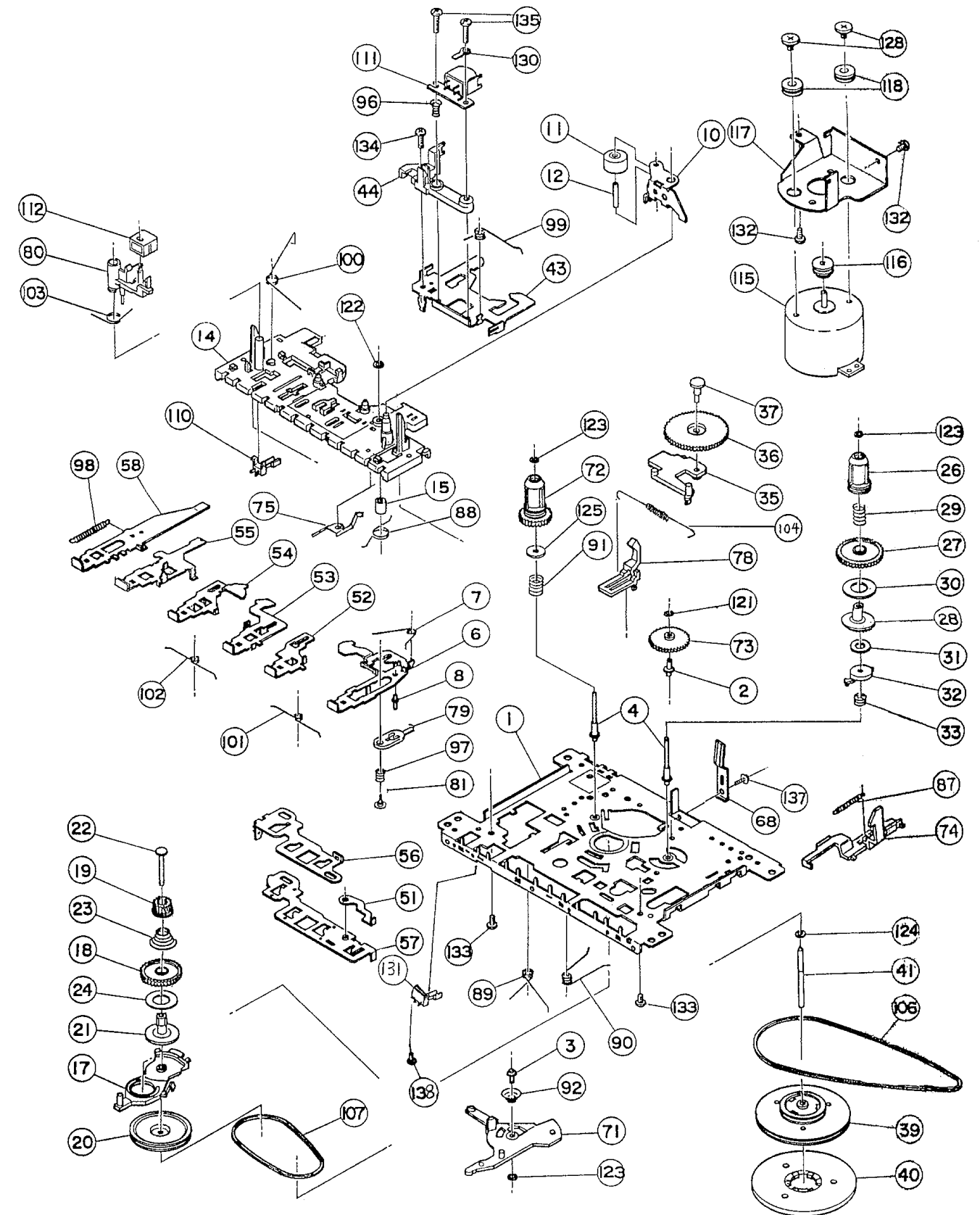
Note: Only these parts mentioned in the list are normal service parts.

MECHANICAL PARTSLIST - TAPE DECK

- | | | | | | |
|-----|----------------|----------------------|-----|----------------|-------------------|
| 10 | 4822 528 70849 | Pinch Roller Arm (B) | 110 | 4822 278 90721 | Leaf Switch |
| 11 | 4822 528 70695 | Pinch Roller Assy | 111 | 4822 249 30218 | MS18R-AKONI |
| 74 | 4822 403 70968 | Eject Hook (A) | 112 | 4822 249 40306 | E. Head |
| 106 | 4822 358 31325 | Main Belt 45.2 x 1.2 | 115 | 4822 361 21565 | Motor EG-530AD-9B |
| 107 | 4822 358 31124 | Sub Belt 44.7 x 1.2 | 116 | 4822 528 81497 | Motor Pulley |

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

EXPLODED VIEW DIAGRAM - TAPE DECK



ELECTRICAL PARTSLIST

- CAPACITORS -

| | | | |
|------|----------------|-------------------|------|
| 2101 | 4822 122 33777 | 47pF 5% NP0 | 63V |
| 2103 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2104 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2106 | 2020 800 00191 | Var Cap 3pF-11pF | 100V |
| 2107 | 4822 121 51319 | 1µF 10% | 63V |
| 2120 | 4822 126 14507 | 18pF 5% 50V | |
| 2124 | 4822 126 14494 | 22nF 10% X7R | 25V |
| 2125 | 2238 861 18561 | 560pF 1% NP0 | 50V |
| 2126 | 4822 126 14241 | 330pF NPO | 50V |
| 2127 | 4822 126 13879 | 220nF +80-20% | 16V |
| 2128 | 4822 124 40248 | 10µF 20% | 63V |
| 2129 | 4822 124 41584 | 100µF 20% | 10V |
| 2130 | 3198 017 44740 | 470nF Y5V | 10V |
| 2131 | 3198 017 44740 | 470nF Y5V | 10V |
| 2132 | 3198 017 44740 | 470nF Y5V | 10V |
| 2133 | 4822 124 21913 | 1µF 20% | 63V |
| 2134 | 3198 017 31530 | 15nF X7R | 50V |
| 2135 | 3198 017 31530 | 15nF X7R | 50V |
| 2136 | 4822 126 13879 | 220nF +80-20% | 16V |
| 2137 | 4822 126 13879 | 220nF +80-20% | 16V |
| 2138 | 4822 124 22652 | 2,2µF 20% | 50V |
| 2139 | 4822 122 33752 | 15pF 5% NP0 | 50V |
| 2140 | 4822 126 14226 | 82pF 5% NP0 | 50V |
| 2141 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2144 | 3198 017 44740 | 470nF Y5V | 10V |
| 2145 | 4822 126 13883 | 220pF 5% 50V | |
| 2146 | 4822 122 33575 | 220pF 5% NP0 | 63V |
| 2147 | 4822 126 13883 | 220pF 5% 50V | |
| 2148 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2150 | 4822 126 13838 | 100nF Y5V +80-20% | 50V |
| 2152 | 4822 126 14549 | 33nF 16V X7R | |
| 2153 | 4822 122 33752 | 15pF 5% NP0 | 50V |
| 2155 | 2020 800 00191 | Var Cap 3pF-11pF | 100V |
| 2159 | 4822 126 11671 | 33pF | |
| 2164 | 3198 017 44740 | 470nF Y5V | 10V |
| 2165 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2166 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2167 | 4822 126 11663 | 1pF | |
| 2186 | 4822 124 40196 | 220µF 20% | 16V |
| 2187 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2188 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2189 | 4822 126 13879 | 220nF +80-20% | 16V |
| 2190 | 4822 124 81151 | 22µF 50V | |
| 2191 | 4822 124 81151 | 22µF 50V | |
| 2192 | 5322 126 11578 | 1nF 10% X7R | 50V |

- CAPACITORS -

| | | | |
|------|----------------|---------------|---------|
| 2193 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2194 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2195 | 4822 124 81151 | 22µF 50V | |
| 2196 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2197 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2301 | 4822 126 11585 | 22nF+80-20% | Y5V 25V |
| 2302 | 4822 126 11585 | 22nF+80-20% | Y5V 25V |
| 2303 | 4822 126 11585 | 22nF+80-20% | Y5V 25V |
| 2304 | 4822 126 11585 | 22nF+80-20% | Y5V 25V |
| 2305 | 4822 124 81286 | 47µF 20% | 16V |
| 2306 | 4822 124 80195 | 47µF 20% | 16V |
| 2307 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2309 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2311 | 4822 124 40207 | 100µF 20% | 25V |
| 2321 | 3198 016 36810 | 680pF NP0 | 25V |
| 2322 | 3198 016 36810 | 680pF NP0 | 25V |
| 2340 | 4822 123 14025 | 2200µF 20% | 16V |
| 2341 | 4822 124 40196 | 220µF 20% | 16V |
| 2342 | 4822 124 40769 | 4,7µF 20% | 100V |
| 2343 | 4822 124 41407 | 0,47µF 20% | 63V |
| 2344 | 4822 124 41407 | 0,47µF 20% | 63V |
| 2345 | 3198 016 36810 | 680pF NP0 | 25V |
| 2346 | 3198 016 36810 | 680pF NP0 | 25V |
| 2347 | 4822 124 40433 | 47µF 20% | 25V |
| 2348 | 4822 124 40433 | 47µF 20% | 25V |
| 2349 | 4822 124 21913 | 1µF 20% | 63V |
| 2350 | 4822 124 21913 | 1µF 20% | 63V |
| 2351 | 4822 124 80195 | 470µF 20% | 10V |
| 2352 | 4822 124 80195 | 470µF 20% | 10V |
| 2353 | 4822 124 40433 | 47µF 20% | 25V |
| 2354 | 4822 124 40433 | 47µF 20% | 25V |
| 2356 | 4822 124 40769 | 4,7µF 20% | 100V |
| 2357 | 3198 017 34730 | 47nF X7R | 16V |
| 2358 | 3198 017 34730 | 47nF X7R | 16V |
| 2359 | 4822 124 21913 | 1µF 20% | 63V |
| 2360 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2361 | 4822 124 21913 | 1µF 20% | 63V |
| 2362 | 4822 124 21913 | 1µF 20% | 63V |
| 2371 | 3198 017 34730 | 47nF X7R | 16V |
| 2372 | 3198 017 34730 | 47nF X7R | 16V |
| 2373 | 3198 017 34730 | 47nF X7R | 16V |
| 2374 | 3198 017 34730 | 47nF X7R | 16V |
| 2401 | 4822 124 21913 | 1µF 20% | 63V |
| 2403 | 4822 124 23432 | 100µF 20% | 10V |
| 2405 | 4822 122 31765 | 100pF 2% NP0 | 63V |

ELECTRICAL PARTSLIST

- CAPACITORS -

| | | | |
|------|----------------|---------------|------|
| 2406 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2407 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2408 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2410 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2412 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2413 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2415 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2416 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2423 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2424 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2425 | 4822 124 81286 | 47µF 20% | 16V |
| 2426 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2431 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2432 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2438 | 4822 124 41584 | 100µF 20% | 10V |
| 2439 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2440 | 4822 126 13193 | 4,7nF 10% X7R | 63V |
| 2441 | 4822 126 13193 | 4,7nF 10% X7R | 63V |
| 2449 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2450 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2451 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2452 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2460 | 4822 124 22652 | 2,2µF 20% | 50V |
| 2531 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2532 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2533 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2534 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2801 | 4822 124 41751 | 47µF 20% | 50V |
| 2802 | 4822 124 41751 | 47µF 20% | 50V |
| 2803 | 4822 126 14226 | 82pF 5% NP0 | 50V |
| 2804 | 4822 126 14226 | 82pF 5% NP0 | 50V |
| 2805 | 4822 126 14226 | 82pF 5% NP0 | 50V |
| 2806 | 4822 126 13695 | 82pF 1% NP0 | 63V |
| 2807 | 4822 126 11669 | 27pF | |
| 2808 | 5322 122 33538 | 150pF 2% NP0 | 63V |
| 2809 | 4822 126 11669 | 27pF | |
| 2810 | 4822 126 13692 | 47pF 1% NP0 | 63V |
| 2811 | 4822 126 11671 | 33pF | |
| 2812 | 4822 122 33741 | 10pF 10% NP0 | 50V |
| 2813 | 4822 126 14238 | 2,2nF X7R | 50V |
| 2814 | 3198 024 44730 | 47nF Y5V | 50V |
| 2815 | 4822 122 33777 | 47pF 5% NP0 | 63V |
| 2816 | 5322 122 32654 | 22nF X7R 10% | 63V |
| 2817 | 4822 124 40769 | 4,7µF 20% | 100V |
| 2818 | 3198 024 44730 | 47nF Y5V | 50V |

- CAPACITORS -

| | | | |
|------|----------------|---------------|---------|
| 2821 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2822 | 4822 126 13344 | 1,5nF 5% | 63V |
| 2823 | 4822 124 42383 | 220µF 20% | 4V |
| 2824 | 4822 126 13751 | 47nF 10% X7R | 63V |
| 2825 | 4822 126 13344 | 1,5nF 5% | 63V |
| 2826 | 3198 024 44730 | 47nF Y5V | 50V |
| 2827 | 5322 126 11578 | 1nF 10% X7R | 50V |
| 2828 | 4822 122 33777 | 47pF 5% NP0 | 63V |
| 2829 | 3198 024 44730 | 47nF Y5V | 50V |
| 2830 | 3198 017 41050 | 1µF Y5V | 10V |
| 2831 | 4822 126 14043 | 1µF +80-20% | Y5V 16V |
| 2832 | 4822 122 33753 | 150pF 5% NP0 | 50V |
| 2833 | 4822 126 13881 | 470pF 5% | 50V |
| 2834 | 4822 126 14506 | 270pF 5% | 50V |
| 2835 | 4822 126 13881 | 470pF 5% | 50V |
| 2836 | 4822 124 41751 | 47µF 20% | 50V |
| 2837 | 3198 024 44730 | 47nF Y5V | 50V |
| 2838 | 3198 017 42230 | 22nF Y5V | 50V |
| 2839 | 4822 126 14305 | 100nF 10% X7R | 16V |
| 2840 | 4822 124 41751 | 47µF 20% | 50V |
| 2841 | 4822 126 13751 | 47nF 10% X7R | 63V |
| 2842 | 4822 124 21913 | 1µF 20% | 63V |
| 2843 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2844 | 4822 126 13883 | 220pF 5% | 50V |
| 2845 | 4822 126 13883 | 220pF 5% | 50V |
| 2846 | 4822 124 40248 | 10µF 20% | 63V |
| 2848 | 4822 122 31765 | 100pF 2% NP0 | 63V |
| 2849 | 4822 126 13883 | 220pF 5% | 50V |
| 2850 | 4822 126 13883 | 220pF 5% | 50V |
| 2851 | 4822 124 40248 | 10µF 20% | 63V |
| 2853 | 5322 126 11583 | 10nF 10% X7R | 50V |
| 2854 | 4822 124 11912 | 220µF 20% | 6,3V |
| 2855 | 4822 124 11912 | 220µF 20% | 6,3V |
| 2857 | 4822 124 12362 | 47µF 4V 20% | |
| 2860 | 5322 116 80853 | 560pF 5% NP0 | 63V |
| 2861 | 5322 122 31865 | 1,5nF X7R 10% | 63V |
| 2862 | 4822 126 14508 | 180pF 5% | 50V |
| 2863 | 4822 126 14508 | 180pF 5% | 50V |
| 2864 | 4822 126 14508 | 180pF 5% | 50V |
| 2865 | 4822 126 14508 | 180pF 5% | 50V |
| 2869 | 3198 024 44730 | 47nF Y5V | 50V |
| 2870 | 4822 126 13883 | 220pF 5% | 50V |
| 2871 | 4822 126 13883 | 220pF 5% | 50V |
| 2872 | 4822 126 13883 | 220pF 5% | 50V |
| 2873 | 4822 126 13883 | 220pF 5% | 50V |

ELECTRICAL PARTSLIST

- CAPACITORS -

2874 4822 126 13883 220pF 5% 50V
 2875 4822 126 13883 220pF 5% 50V

- RESISTORS -

3101 4822 051 30333 33K 5% 0,062W
 3102 4822 117 13632 100K 1% 0.62W
 3103 4822 117 12902 8K2 1% 0.063W
 3104 4822 117 13577 330R 1% 1,25W
 3105 4822 051 30221 220R 5% 0,062W

3132 4822 051 30479 47R 5% 0,062W
 3134 4822 051 30223 22K 5% 0,062W
 3141 4822 051 30563 56K 5% 0,062W
 3142 4822 100 12159 Var Resistor 100K 30%
 3145 4822 051 30222 2K2 5% 0,062W

3152 4822 051 30471 470R 5% 0,062W
 3153 4822 051 30471 470R0 5% 0,062W
 3155 4822 051 30479 47R 5% 0,062W
 3156 4822 117 13632 100K 1% 0.62W
 3157 4822 117 13632 100K 1% 0.62W

3158 4822 051 30471 470R 5% 0,062W
 3159 4822 051 30471 470R 5% 0,062W
 3160 4822 051 30471 470R 5% 0,062W
 3161 4822 051 20223 22K 5% 0,1W
 3166 4822 051 20479 47R 5% 0,1W

3167 4822 051 20479 47R 5% 0,1W
 3169 4822 051 20154 150K 5% 0,1W
 3186 4822 117 11448 180R 1% 0,1W
 3187 4822 051 30102 1K 5% 0,062W
 3188 4822 051 30222 2K2 5% 0,062W

3189 4822 051 30223 22K 5% 0,062W
 3190 4822 051 30103 10K 5% 0,062W
 3191 4822 051 30472 4K7 5% 0,062W
 3192 4822 051 30105 1M 5% 0,062W
 3193 4822 051 30222 2K2 5% 0,062W

3194 4822 117 13632 100K 1% 0.62W
 3195 4822 051 30474 470K 5% 0,062W
 3196 4822 051 30103 10K 5% 0,062W
 3301 4822 051 30222 2K2 5% 0,062W
 3302 4822 051 30222 2K2 5% 0,062W

3303 4822 051 30471 470R 5% 0,062W
 3304 4822 051 30471 470R 5% 0,062W
 3305 4822 051 30221 220R 5% 0,062W
 3306 4822 051 30221 220R 5% 0,062W
 3307 4822 051 30123 12K 5% 0,062W

- RESISTORS -

3310 4822 116 83883 470R 5% 0,5W
 3321 4822 050 24708 4R7 1% 0,6W
 3322 4822 050 24708 4R7 1% 0,6W
 3323 4822 051 30332 3K3 5% 0,062W
 3325 4822 051 30471 470R 5% 0,062W

3326 4822 051 30561 560R 5% 0,062W
 3327 4822 051 30471 470R 5% 0,062W
 3328 4822 117 12903 1K8 1% 0.063W
 3329 4822 116 83883 470R 5% 0,5W
 3331 4822 116 52244 15K 5% 0,5W

3332 4822 116 52244 15K 5% 0,5W
 3333 4822 051 30153 15K 5% 0,062W
 3361 4822 051 30683 68K 5% 0,062W
 3362 4822 116 52297 68K 5% 0,5W
 3363 4822 051 30103 10K 5% 0,062W

3364 4822 051 30103 10K 5% 0,062W
 3365 4822 117 12891 220K 1%
 3366 4822 116 83874 220K 5% 0,5W
 3367 4822 051 30682 6K8 5% 0,062W
 3368 4822 051 30682 6K8 5% 0,062W

3369 4822 117 12902 8K2 1% 0.063W
 3370 4822 117 12902 8K2 1% 0.063W
 3371 4822 051 30562 5K6 5% 0,063W
 3372 4822 051 30562 5K6 5% 0,063W
 3373 4822 051 30102 1K 5% 0,062W

3374 4822 051 30102 1K 5% 0,062W
 3375 4822 051 30103 10K 5% 0,062W
 3376 4822 051 30103 10K 5% 0,062W
 3377 4822 051 30103 10K 5% 0,062W
 3378 4822 051 30103 10K 5% 0,062W

3381 4822 051 30332 3K3 5% 0,062W
 3382 4822 051 30332 3K3 5% 0,062W
 3401 4822 051 30273 27K 5% 0,062W
 3402 4822 051 30102 1K 5% 0,062W
 3403 4822 051 30102 1K 5% 0,062W

3404 4822 051 30472 4K7 5% 0,062W
 3405 4822 051 30331 330R 5% 0,062W
 3407 4822 051 30101 100R 5% 0,062W
 3408 4822 051 30391 390R 5% 0,062W
 3409 4822 117 13632 100K 1% 0.62W

3410 4822 051 30471 470R 5% 0,062W
 3411 4822 051 30153 15K 5% 0,062W
 3412 4822 051 30471 470R 5% 0,062W
 3413 4822 051 30472 4K7 5% 0,062W
 3414 4822 051 30472 4K7 5% 0,062W

ELECTRICAL PARTSLIST

- RESISTORS -

3415 4822 117 12891 220K 1%
 3416 4822 051 30472 4K7 5% 0,062W
 3417 4822 051 30472 4K7 5% 0,062W
 3418 4822 051 30152 1K5 5% 0,062W
 3422 4822 051 30102 1K 5% 0,062W

3423 4822 051 30102 1K 5% 0,062W
 3424 4822 051 30102 1K 5% 0,062W
 3425 4822 051 30102 1K 5% 0,062W
 3427 4822 117 12891 220K 1%
 3428 4822 051 30222 2K2 5% 0,062W

3429 4822 051 30222 2K2 5% 0,062W
 3430 4822 051 30472 4K7 5% 0,062W
 3432 4822 051 30153 15K 5% 0,062W
 3433 4822 051 30472 4K7 5% 0,062W
 3434 4822 051 30101 100R 5% 0,062W

3435 4822 051 30223 22K 5% 0,062W
 3436 4822 051 30223 22K 5% 0,062W
 3437 4822 051 30223 22K 5% 0,062W
 3438 4822 051 30223 22K 5% 0,062W
 3439 4822 051 30562 5K6 5% 0,063W

3440 4822 117 12902 8K2 1% 0.063W
 3441 4822 051 30123 12K 5% 0,062W
 3442 4822 051 30562 5K6 5% 0,063W
 3443 4822 117 12902 8K2 1% 0.063W
 3444 4822 051 30123 12K 5% 0,062W

3445 4822 051 30101 100R 5% 0,062W
 3446 4822 051 30223 22K 5% 0,062W
 3447 4822 051 30223 22K 5% 0,062W
 3449 4822 051 30273 27K 5% 0,062W
 3450 4822 051 30273 27K 5% 0,062W

3452 4822 051 30272 2K7 5% 0,062W
 3453 4822 051 30332 3K3 5% 0,062W
 3454 4822 051 30332 3K3 5% 0,062W
 3455 4822 051 30332 3K3 5% 0,062W
 3456 4822 051 30471 470R 5% 0,062W

3457 4822 051 30471 470R 5% 0,062W
 3458 4822 051 30471 470R 5% 0,062W
 3460 4822 051 30102 1K 5% 0,062W
 3461 4822 051 30221 220R 5% 0,062W
 3462 4822 051 30221 220R 5% 0,062W

3463 4822 051 30221 220R 5% 0,062W
 3464 4822 051 30223 22K 5% 0,062W
 3470 4822 051 30471 470R 5% 0,062W
 3471 4822 117 13632 100K 1% 0.62W
 3473 4822 051 30121 120R 5% 0,062W

- RESISTORS -

3474 4822 117 12971 15R 5% 0,62W
 3475 4822 051 30681 680R 5% 0,062W
 3481 4822 051 30472 4K7 5% 0,062W
 3482 4822 051 30472 4K7 5% 0,062W
 3483 4822 051 30472 4K7 5% 0,062W

3484 4822 051 30472 4K7 5% 0,062W
 3485 4822 051 30472 4K7 5% 0,062W
 3486 4822 051 30472 4K7 5% 0,062W
 3487 4822 051 30472 4K7 5% 0,062W
 3488 4822 051 30472 4K7 5% 0,062W

3489 4822 051 30472 4K7 5% 0,062W
 3490 4822 051 30472 4K7 5% 0,062W
 3491 4822 051 30472 4K7 5% 0,062W
 3492 4822 051 30472 4K7 5% 0,062W
 3493 4822 051 30472 4K7 5% 0,062W

3494 4822 051 30472 4K7 5% 0,062W
 3495 4822 051 30472 4K7 5% 0,062W
 3496 4822 051 30472 4K7 5% 0,062W
 3497 4822 051 30472 4K7 5% 0,062W
 3499 4822 051 30102 1K 5% 0,062W

3541 4822 051 30152 1K5 5% 0,062W
 3542 4822 051 30152 1K5 5% 0,062W
 3543 4822 051 30222 2K2 5% 0,062W
 3544 4822 051 30222 2K2 5% 0,062W
 3545 4822 051 30103 10K 5% 0,062W

3546 4822 051 30103 10K 5% 0,062W
 3550 2120 354 90029 Var Resistor 50KX2
 3728 4822 051 20479 47R 5% 0,1W
 3745 4822 051 30109 10R 5% 0,062W
 3757 4822 051 20223 22K 5% 0,1W

3788 4822 051 20472 4K7 5% 0,1W
 3800 4822 117 13608 4,7R 5% 0,0016W
 3801 4822 051 30154 150K 5% 0,062W
 3802 4822 051 30102 1K 5% 0,062W
 3803 4822 051 30273 27K 5% 0,062W

3804 4822 051 30472 4K7 5% 0,062W
 3805 4822 051 30273 27K 5% 0,062W
 3806 4822 117 10361 680R 1% 0,1W
 3807 4822 051 30152 1K5 5% 0,062W
 3808 4822 051 30339 33R 5% 0,062W

3809 4822 051 30339 33R 5% 0,062W
 3810 4822 052 10478 4R7 5% 0,33W
 3811 4822 051 30102 1K 5% 0,062W
 3812 4822 051 30474 470K 5% 0,062W
 3813 4822 051 30683 68K 5% 0,062W

ELECTRICAL PARTSLIST

- RESISTORS -

| | | | | |
|------|----------------|------|-----|--------|
| 3814 | 4822 051 30332 | 3K3 | 5% | 0,062W |
| 3815 | 4822 051 30472 | 4K7 | 5% | 0,062W |
| 3816 | 4822 051 30153 | 15K | 5% | 0,062W |
| 3817 | 4822 117 10834 | 47K | 1% | 0,1W |
| 3818 | 4822 051 20562 | 5K6 | 5% | 0,1W |
| 3819 | 4822 051 30153 | 15K | 5% | 0,062W |
| 3820 | 4822 051 30183 | 18K | 5% | 0,062W |
| 3821 | 4822 051 20332 | 3K3 | 5% | 0,1W |
| 3822 | 4822 051 30332 | 3K3 | 5% | 0,062W |
| 3823 | 4822 051 20332 | 3K3 | 5% | 0,1W |
| 3824 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3825 | 4822 051 30223 | 22K | 5% | 0,062W |
| 3826 | 4822 051 30273 | 27K | 5% | 0,062W |
| 3827 | 4822 051 20339 | 33R | 5% | 0,1W |
| 3828 | 4822 051 20479 | 47R | 5% | 0,1W |
| 3829 | 4822 051 30101 | 100R | 5% | 0,062W |
| 3830 | 4822 051 30472 | 4K7 | 5% | 0,062W |
| 3835 | 4822 051 30223 | 22K | 5% | 0,062W |
| 3836 | 4822 051 30103 | 10K | 5% | 0,062W |
| 3837 | 4822 051 20471 | 470R | 5% | 0,1W |
| 3838 | 4822 051 20471 | 470R | 5% | 0,1W |
| 3839 | 4822 051 30471 | 470R | 5% | 0,062W |
| 3840 | 4822 051 30471 | 470R | 5% | 0,062W |
| 3841 | 4822 051 30472 | 4K7 | 5% | 0,062W |
| 3842 | 4822 051 10102 | 1K | 2% | 0,25W |
| 3843 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3844 | 4822 051 30101 | 100R | 5% | 0,062W |
| 3845 | 4822 051 20109 | 10R | 5% | 0,1W |
| 3846 | 4822 051 20223 | 22K | 5% | 0,1W |
| 3847 | 4822 117 12864 | 82K | 5% | 0,6W |
| 3848 | 4822 117 10834 | 47K | 1% | 0,1W |
| 3849 | 4822 051 30563 | 56K | 5% | 0,062W |
| 3850 | 4822 117 12902 | 8K2 | 1% | 0,063W |
| 3851 | 4822 051 30563 | 56K | 5% | 0,062W |
| 3852 | 4822 117 10834 | 47K | 1% | 0,1W |
| 3853 | 4822 051 30153 | 15K | 5% | 0,062W |
| 3854 | 4822 117 12902 | 8K2 | 1% | 0,063W |
| 3855 | 4822 116 40227 | 4R6 | 25% | 12V |
| 3856 | 4822 051 20683 | 68K | 5% | 0,1W |
| 3857 | 4822 051 20154 | 150K | 5% | 0,1W |
| 3858 | 4822 051 30392 | 3K9 | 5% | 0,063W |
| 3859 | 4822 117 10834 | 47K | 1% | 0,1W |
| 3860 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3861 | 4822 117 10834 | 47K | 1% | 0,1W |
| 3862 | 4822 051 10102 | 1K | 2% | 0,25W |

- RESISTORS -

| | | | | |
|------|----------------|--------|----|--------|
| 3863 | 4822 052 10338 | 3R3 | 5% | 0,33W |
| 3864 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3865 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3867 | 4822 051 20223 | 22K | 5% | 0,1W |
| 3868 | 4822 051 30103 | 10K | 5% | 0,062W |
| 3869 | 4822 051 30103 | 10K | 5% | 0,062W |
| 3871 | 4822 051 30471 | 470R | 5% | 0,062W |
| 3872 | 4822 117 12925 | 47K | 1% | 0,063W |
| 3873 | 4822 051 30223 | 22K | 5% | 0,062W |
| 3874 | 4822 051 30223 | 22K | 5% | 0,062W |
| 3875 | 4822 051 30103 | 10K | 5% | 0,062W |
| 3876 | 4822 051 30103 | 10K | 5% | 0,062W |
| 3878 | 4822 051 30471 | 470R | 5% | 0,062W |
| 3879 | 4822 117 12925 | 47K | 1% | 0,063W |
| 3880 | 4822 051 20339 | 33R | 5% | 0,1W |
| 3881 | 4822 051 30151 | 150R | 5% | 0,062W |
| 3882 | 4822 117 11373 | 100R | 1% | |
| 3883 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3884 | 4822 051 30102 | 1K | 5% | 0,062W |
| 3886 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3887 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3888 | 4822 051 20472 | 4K7 | 5% | 0,1W |
| 3890 | 4822 117 10837 | 100K | 1% | 0,1W |
| 3891 | 4822 117 10837 | 100K | 1% | 0,1W |
| 3892 | 4822 117 13632 | 100K | 1% | 0,62W |
| 3893 | 4822 117 13632 | 100K | 1% | 0,62W |
| 3894 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3895 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3896 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3897 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3898 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3899 | 4822 117 10833 | 10K | 1% | 0,1W |
| 3900 | 4822 051 30223 | 22K | 5% | 0,062W |
| 4104 | 4822 051 30008 | Jumper | | |
| 4105 | 4822 051 30008 | Jumper | | |
| 4107 | 4822 051 30008 | Jumper | | |
| 4108 | 4822 051 30008 | Jumper | | |
| 4110 | 4822 051 30008 | Jumper | | |
| 4301 | 4822 051 30008 | Jumper | | |
| 4302 | 4822 051 30008 | Jumper | | |
| 4303 | 4822 051 30008 | Jumper | | |
| 4304 | 4822 051 30008 | Jumper | | |
| 4305 | 4822 051 30008 | Jumper | | |
| 4400 | 4822 051 30008 | Jumper | | |
| 4401 | 4822 051 30008 | Jumper | | |

ELECTRICAL PARTSLIST

- RESISTORS -

| | | | | |
|------|----------------|--------|----|--|
| 4402 | 4822 051 30008 | Jumper | | |
| 4403 | 4822 051 30008 | Jumper | | |
| 4499 | 4822 051 30008 | Jumper | | |
| 4501 | 4822 051 30008 | Jumper | | |
| 4502 | 4822 051 30008 | Jumper | | |
| 4503 | 4822 051 30008 | Jumper | | |
| 4504 | 4822 051 30008 | Jumper | | |
| 4505 | 4822 051 30008 | Jumper | | |
| 4801 | 4822 051 30008 | Jumper | | |
| 4802 | 4822 051 20008 | Jumper | | |
| 4807 | 4822 051 20008 | Jumper | | |
| 4808 | 4822 051 30008 | Jumper | | |
| 4809 | 4822 051 20008 | Jumper | | |
| 4810 | 4822 051 20008 | Jumper | | |
| 4812 | 4822 051 20008 | Jumper | | |
| 4813 | 4822 051 20008 | Jumper | | |
| 4814 | 4822 051 20008 | Jumper | | |
| 4815 | 4822 051 20008 | Jumper | | |
| 4823 | 4822 051 20008 | Jumper | | |
| 4824 | 4822 051 20008 | Jumper | | |
| 4828 | 4822 051 20008 | Jumper | | |
| 4831 | 4822 051 20008 | Jumper | | |
| 4832 | 4822 051 20008 | Jumper | | |
| 4838 | 4822 051 20008 | Jumper | | |
| 4845 | 4822 051 20008 | Jumper | | |
| 4847 | 4822 051 20008 | Jumper | | |
| 4848 | 4822 051 20008 | Jumper | | |
| 4850 | 4822 051 20008 | Jumper | | |
| 4853 | 4822 051 20008 | Jumper | | |
| 4856 | 4822 051 30008 | Jumper | | |
| 4857 | 4822 051 20008 | Jumper | | |
| 4859 | 4822 051 20008 | Jumper | | |
| 4863 | 4822 051 20008 | Jumper | | |
| 4865 | 4822 051 20008 | Jumper | | |
| 4866 | 4822 051 20008 | Jumper | | |
| 4872 | 4822 051 20008 | Jumper | | |
| 4877 | 4822 051 30008 | Jumper | | |
| 4881 | 4822 051 20008 | Jumper | | |
| 4884 | 4822 051 20008 | Jumper | | |
| 4885 | 4822 051 30008 | Jumper | | |
| 4886 | 4822 051 20008 | Jumper | | |
| 4888 | 4822 051 20008 | Jumper | | |
| 4889 | 4822 051 20008 | Jumper | | |
| 6308 | 2322 734 63308 | 3,3R | 1% | |

- COILS & FILTERS -

| | | | | |
|-------------------|----------------|------------------------|--|--|
| 1810 | 4822 242 73557 | Filter CST8,46MTW-TF01 | | |
| 5104 | 2422 535 91074 | Ind Fxd 185µH 5% | | |
| 5109 | 4822 242 70665 | Filter SFE10,7MS3-A | | |
| 5110 | 4822 242 70665 | Filter SFE10,7MS3-A | | |
| 5111 | 2422 549 44023 | Ind Var 450kHz | | |
| 5112 | 4822 157 70302 | Coil F7MCS-12216N | | |
| 5114 | 4822 157 70302 | Coil F7MCS-12216N | | |
| 5119 | 4822 157 11443 | Coil 2,4µH | | |
| 5121 | 4822 242 10261 | Crystal 75kHz | | |
| 5123 | 2422 549 44108 | Ind Var 796kHz | | |
| 5130 | 4822 157 11843 | Coil MD7B-01F | | |
| 5131 | 4822 157 11843 | Coil MD7B-01F | | |
| 5301 | 4822 157 11823 | Coil 2,2µH 5% | | |
| 5302 | 4822 157 11823 | Coil 2,2µH 5% | | |
| 5400 | 2422 535 94279 | Ind Fxd 100µH 5% | | |
| 5401 | 4822 157 11823 | Coil 2,2µH 5% | | |
| 5402 | 4822 157 11823 | Coil 2,2µH 5% | | |
| 5403 | 4822 242 73769 | Filter CST4,19MGW | | |
| 5404 | 4822 157 70826 | Coil 2,4µH | | |
| 5803 | 4822 157 11231 | Coil LAN02TB1R0J | | |
| - DIODES - | | | | |
| 6103 | 5322 130 34337 | Diode BAV99 | | |
| 6105 | 4822 130 83075 | Diode HN1V02H-B | | |
| 6130 | 4822 130 82833 | Diode 1SV228 | | |
| 6131 | 4822 130 82833 | Diode 1SV228 | | |
| 6181 | 5322 130 34337 | Diode BAV99 | | |
| 6182 | 4822 130 83757 | Diode BAS216 | | |
| 6183 | 9340 386 90115 | Diode BZX284-C11 | | |
| 6301 | 4822 130 31878 | Diode 1N4003G | | |
| 6302 | 4822 130 31878 | Diode 1N4003G | | |
| 6303 | 4822 130 31878 | Diode 1N4003G | | |
| 6304 | 4822 130 31878 | Diode 1N4003G | | |
| 6308 | 4822 130 10838 | Diode UDZ3.3B | | |
| 6315 | 4822 130 83757 | Diode BAS216 | | |
| 6316 | 4822 130 83757 | Diode BAS216 | | |
| 6321 | 4822 130 83757 | Diode BAS216 | | |
| 6322 | 4822 130 83757 | Diode BAS216 | | |
| 6323 | 4822 130 83757 | Diode BAS216 | | |
| 6401 | 4822 130 10838 | Diode UDZ3.3B | | |
| 6402 | 5322 130 34337 | Diode BAV99 | | |
| 6404 | 4822 130 83059 | LED TLUR4400 | | |
| 6410 | 3198 020 55680 | Diode BZX384-C5V6 | | |
| 6411 | 4822 130 11564 | Diode UDZ3.9B | | |
| 6877 | 4822 130 11564 | Diode UDZ3.9B | | |

ELECTRICAL PARTSLIST**- IC & TRANSISTORS -**

| | | |
|------|----------------|-------------------|
| 7101 | 4822 209 90924 | IC TEA5757H/V1 |
| 7102 | 4822 130 42131 | Trans BF550 |
| 7111 | 5322 130 42755 | Trans BC847C |
| 7180 | 4822 130 60373 | Trans BC856B |
| 7181 | 5322 130 42755 | Trans BC847C |
| 7182 | 5322 130 42755 | Trans BC847C |
| 7183 | 5322 130 42755 | Trans BC847C |
| 7301 | 4822 209 31544 | IC TA8227P |
| 7303 | 4822 130 41246 | Trans BC327-25 |
| 7304 | 4822 130 41246 | Trans BC327-25 |
| 7305 | 4822 130 60373 | Trans BC856B |
| 7306 | 5322 130 60159 | Trans BC846B |
| 7312 | 5322 130 60159 | Trans BC846B |
| 7313 | 4822 130 42615 | Trans BC817-40 |
| 7314 | 4822 130 42615 | Trans BC817-40 |
| 7400 | 3140 110 50970 | IC MCU TMP86CH29F |
| 7401 | 9965 000 04931 | IC M24C01-WMN6 |
| 7402 | 5322 130 60159 | Trans BC846B |
| 7403 | 5322 130 60159 | Trans BC846B |
| 7405 | 5322 130 42755 | Trans BC847C |
| 7406 | 5322 130 42755 | Trans BC847C |
| 7800 | 9352 642 17557 | IC SAA7325H/M2B |
| 7802 | 5322 209 11517 | IC PC74HCU04T |
| 7803 | 5322 130 60123 | Trans BC807-40 |
| 7804 | 5322 209 82941 | IC LM358D |
| 7807 | 5322 130 42755 | Trans BC847C |
| 7808 | 4822 209 32852 | IC TDA7073A/N2 |
| 7809 | 4822 209 32852 | IC TDA7073A/N2 |
| 7810 | 4822 209 33165 | IC TDA1308T/N1 |
| 7875 | 5322 130 60159 | Trans BC846B |

- MISCELLANEOUS -

| | | |
|------|------------------|--------------------------------|
| 1003 | 4822 240 10111 | Loudspeaker 8 Ohm 4 W |
| 1004 | 4822 240 10111 | Loudspeaker 8 Ohm 4 W |
| 1005 | 2422 030 00333 | Mains Socket |
| 1010 | △ 4822 277 21794 | Volt Selector (For -/01/11/16) |
| 1106 | 2422 549 44211 | Ferrite Bar 5X13X55 |
| 1301 | 4822 267 10731 | Connector 6P |
| 1404 | 3140 110 51100 | LCD Panel |
| 1404 | 3140 110 51090 | LCD Panel |
| 1407 | 4822 276 12889 | Push Switch |
| 1410 | 4822 267 10954 | Connector 5P |

- MISCELLANEOUS -

| | | |
|------|------------------|---------------------------------|
| 1460 | 4822 267 10958 | Connector 5P |
| 1462 | 4822 267 10871 | Connector 17P |
| 1491 | 2422 128 02922 | Tact Switch |
| 1492 | 2422 128 02922 | Tact Switch |
| 1493 | 2422 128 02922 | Tact Switch |
| 1494 | 2422 128 02922 | Tact Switch |
| 1495 | 2422 128 02922 | Tact Switch |
| 1496 | 2422 128 02922 | Tact Switch |
| 1497 | 2422 128 02922 | Tact Switch |
| 1498 | 2422 128 02922 | Tact Switch |
| 1506 | 4822 267 10954 | Connector 5P |
| 1510 | 2422 127 00537 | Slide Switch |
| 1590 | 4822 267 10958 | Connector 5P |
| 1592 | 4822 277 11846 | Slide Switch |
| 5001 | △ 3140 118 32980 | Transformer (For -/00/05/10/14) |
| 5001 | △ 3140 118 32990 | Transformer (For -/01/11/16) |
| 5001 | △ 3140 118 33000 | Transformer (For -/17) |
| 8004 | 3139 110 35190 | FFC Foil 5P |
| 8005 | 3139 110 35200 | FFC Foil 5P |
| 8006 | 3140 110 21710 | FFC Foil 17P |
| 8006 | 3139 110 35550 | FFC Foil 17P |
| 8008 | 3139 110 35210 | FFC Foil 6P |
| 8800 | 4822 320 12637 | FFC Foil 15P |

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

ELECTRICAL PARTSLIST - RECORDER BOARD**- CAPACITORS -**

| | | | |
|------|---------------|-------|-------------|
| 2703 | 482212481151 | 22µF | 50V |
| 2704 | 482212481151 | 22µF | 50V |
| 2706 | 482212440433 | 47µF | 20% 25V |
| 2707 | 482212440196 | 220µF | 20% 16V |
| 2708 | 482212440433 | 47µF | 20% 25V |
| 2709 | 482212440433 | 47µF | 20% 25V |
| 2710 | 482212441584 | 100µF | 20% 10V |
| 2711 | 482212481151 | 22µF | 50V |
| 2712 | 482212612878 | 1,5nF | 10% 16V |
| 2714 | 482212612878 | 1,5nF | 10% 16V |
| 2715 | 482212151387 | 10nF | 20% 16V |
| 2716 | 482212612882 | 100nF | +80-20% 50V |
| 2719 | 482212613098 | 5,6nF | 20% 16V |
| 2721 | 482212612878 | 1,5nF | 10% 16V |
| 2722 | 482212151387 | 10nF | 20% 16V |
| 2723 | 482212612882 | 100nF | +80-20% 50V |
| 2726 | 482212613098 | 5,6nF | 20% 16V |
| 2727 | 482212612878 | 1,5nF | 10% 16V |
| 2728 | 482212611714 | 4,7nF | 20% |
| 2729 | 482212611714 | 4,7nF | 20% |
| 2730 | 202030090561 | 1,2nF | 10% |
| 2732 | 4822122210577 | 3,3nF | 10% 16V |
| 2733 | 482212151387 | 10nF | 20% 16V |
| 2738 | 482212151387 | 10nF | 20% 16V |
| 2739 | 482212151387 | 10nF | 20% 16V |
| 2750 | 482212613098 | 5,6nF | 20% 16V |
| 2751 | 482212613098 | 5,6nF | 20% 16V |

- RESISTORS -

| | | | | |
|------|--------------|------|----|------|
| 3701 | 482211652175 | 100R | 5% | 0,5W |
| 3703 | 482211683868 | 150R | 5% | 0,5W |
| 3704 | 482211683872 | 220R | 5% | 0,5W |
| 3706 | 482211652272 | 330K | 5% | 0,5W |
| 3707 | 482211652285 | 470K | 5% | 0,5W |
| 3710 | 482211652264 | 27K | 5% | 0,5W |
| 3712 | 482211652238 | 12K | 5% | 0,5W |
| 3713 | 482211683868 | 150R | 5% | 0,5W |
| 3714 | 482211683872 | 220R | 5% | 0,5W |
| 3716 | 482211652272 | 330K | 5% | 0,5W |
| 3719 | 482211652264 | 27K | 5% | 0,5W |
| 3720 | 482211652238 | 12K | 5% | 0,5W |
| 3722 | 482211652257 | 22K | 5% | 0,5W |
| 3723 | 482211652257 | 22K | 5% | 0,5W |
| 3726 | 482211652256 | 2K2 | 5% | 0,5W |

- RESISTORS -

| | | | | |
|------|--------------|------|----|------|
| 3727 | 482211652256 | 2K2 | 5% | 0,5W |
| 3730 | 482211683868 | 150R | 5% | 0,5W |
| 3731 | 482211652291 | 56K | 5% | 0,5W |
| 3732 | 482211652176 | 10R | 5% | 0,5W |
| 3733 | 482211130893 | 4M7 | 5% | 0,2W |
| 3734 | 482205021003 | 10K | 1% | 0,6W |
| 3743 | 482211683883 | 470R | 5% | 0,5W |
| 3744 | 482211683883 | 470R | 5% | 0,5W |
| 3747 | 482211683868 | 150R | 5% | 0,5W |
| 3748 | 482211683883 | 470R | 5% | 0,5W |
| 3749 | 482211683883 | 470R | 5% | 0,5W |
| 3761 | 482211652289 | 5K6 | 5% | 0,5W |
| 3762 | 482211652289 | 5K6 | 5% | 0,5W |

- COIL -

| | | |
|------|--------------|-------------|
| 5701 | 482215710371 | Coil 100kHz |
|------|--------------|-------------|

- DIODE -

| | | |
|------|--------------|--------------|
| 6704 | 482213030621 | Diode 1N4148 |
|------|--------------|--------------|

- IC & TRANSISTORS -

| | | |
|------|--------------|----------------|
| 7702 | 482213040981 | Trans BC337-25 |
| 7705 | 482220917498 | IC AN7323 |

- MISCELLANEOUS -

| | | |
|------|--------------|--------------|
| 1707 | 482227711504 | Push Switch |
| 1725 | 482226511207 | Connector 6P |

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