Philips Car Systems

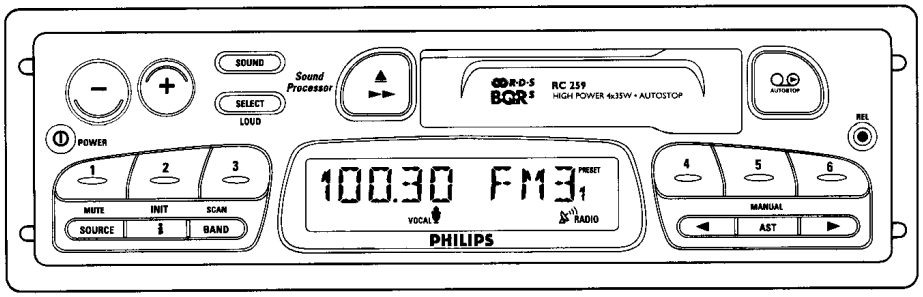
automotive
mannesmann
VDO

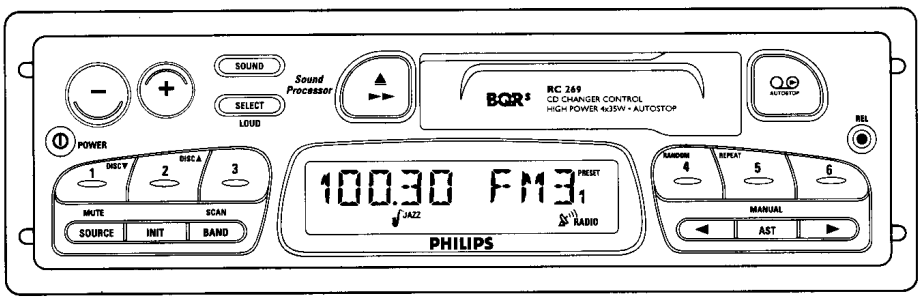
Cassette Car Radio 22 RC 239/00
22 RC 249/00
22 RC 259/00
22 RC 269/00

Service Manual

For repair information of the cassette deck see Service Manual of Car cassette deck TN301NX-227.

12 V





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Technical Specifications

General

Power Supply	:	10.5 - 16V
Quiescent Current (at 12.6V)	:	< 4.0mA
Fuse	:	10A

Radio

TUNING RANGE IN DIFFERENT "INIT" MODE

INIT MODE	BAND	FREQUENCY	GRIDS MANUAL/AUTO
EUROPE	FM	87.5 - 108MHz	50kHz/100kHz
	LW	144 - 288kHz	1kHz/1kHz
	MW	531 - 1629kHz	1kHz/9kHz step
AMERICA	FM	87.5 - 108MHz	100kHz/100kHz
LATAM	AM	530 - 1710kHz	1kHz/10kHz step
ASIA	FM	87.5 - 108MHz	50kHz/50kHz
	MW	531 - 1629kHz	1kHz/9kHz step

Aerial input impedence	:	75 ohm
IF-FM (1/2)	:	10.7MHz/72.2MHz
IF-AM(1/2)	:	10.7MHz/450kHz
α - 3dB	:	7±5µV
SDS (10 dB channel separation)	:	150uV ± 3dB
Stereo channel separation	:	> 21dB
FM sensitivity for 26dB S/N	:	< 4.5µV
MW sensitivity for 26dB S/N	:	< 30µV
LW sensitivity for 26dB S/N	:	< 38µV

Cassette Deck

Number of tracks	:	2
Tape speed	:	4.76 cm/second +3% -1%
Wow and Flutter	:	< 0.35%

Amplifier

Output Power (D=10%)	:	4x5.5W ± 1dB/4Ω (RC239, RC249) 4x16W ± 1dB/4Ω (RC259, RC269)
Fader	:	60dB
Balance	:	60dB

ESD 

WARNING

All IC's and many semiconductors are susceptible to electronic discharges (ESD). Careless handling during repair can reduce life drastically.

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

ESD Equipment:

Anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25mm	4822 466 10958
Anti-static wrist band		4822 395 10223
Connection box (1MOhm)		4822 320 11307
Extendible cable (to connect wrist band to conn. box)		4822 320 11305
Connecting cable (to connect table mat to conn. box)		4822 320 11306
Earth cable (to connect any product to mat or box)		4822 320 11308
Complete kit ESD3 (combining all above products)		4822 310 10671
Wristband tester		4822 344 13999

INSTALLATION

If your car is equipped with ISO connectors, simply insert them in connectors of the car radio. If not, you can use an adaptor cable (Refer to the table on the separate installation card).

PREPARATION

Voltage and polarity: The set must be connected to a 12V car battery with negative terminal to earth (car chassis).

Warning: To prevent short-circuiting, disconnect the negative car battery terminal until the set has been mounted and connected (fig.1). See separate installation card.

CONNECTOR A (fig.2)

Power supply

- **Red lead A7** : Connect to a switched 12V supply (switched on/off by car ignition).
- **Yellow/red lead A4 :** Connect to a permanent 12V supply.
- **Brown lead A8:** Connect to earth (car chassis).

Others connections (fig.2)

- **Pink lead wire** (Telephone mute) : If you car telephone provides a mute signal, it can be used to automatically interrupt the sets's audio output.
  - Connect the telephone mute wire to Pink lead wire (TEL. MUTE).
  - See INITIAL SETTINGS; select Option 'PHONE' and set the Choice to 'LO' or 'HI' according to phone type.
- **Blue lead A5** (Automatic Aerial) : This radio can provide a 12V signal for the control of an automatic motor aerial or the supply of an electronic aerial by connection.
  Do not use this connection for the supply lead of the aerial motor!
- **Orange lead A6:** Connect to a 12V supply.
  When the car headlamps are switched on, the rotary knobs of radio are illuminated (even when the radio is switched off).
- **Line-output ***
  You can connect a power amplifier (with 2 additional loudspeaker) to this set with the RCA cable.
  - Connect Red socket to Right channel and white socket to Left channel.
  - Connect Blue wire to Amplifier Remote on/off.

CONNECTOR B (fig.2)

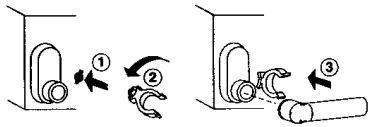
Loudspeakers (use 4 ohm loudspeakers only)

- Do not connect any of the loudspeaker leads to earth or directly to a booster/amplifier.
- **Connecting 4 loudspeakers**

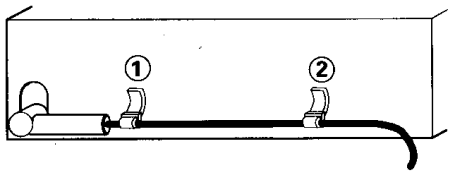
	Front	Rear
Left+	Green [B5]	White [B7]
Left-	Green/black [B6]	White/black [B8]
Right+	Grey [B3]	Blue [B1]
Right-	Grey/black [B4]	Blue/black [B2]

AERIAL

Fix antenna adaptor if needed.



Insert aerial plug into aerial socket (good reception is only possible with a good aerial). (Optional) Secure the aerial wire with cable tie.



CONNECTOR C *

- **CD changer (fig.3)** : You can connect (see mounting instructions for the CD changer) the following CD changer (D^2B type) to this set:
  - RC032
  - RC026/00
  - RC026/50, order new cable EA6263
- **Portable player (fig.4)** : You can connect a portable DCC, CD or cassette player to this set (instead of a CD changer) to this set. Use the cable (EA6786) mentioned in the illustration. The cable must be connected an output of 750mV (in most cases the headphone output of the portable player is suitable).
  - Refer to INITIAL SETTINGS, select Option 'SRC' and set the Choice to 'AUX'.
  - This indicates to the set that a portable player is connected instead of a CD changer.
  - Increase the volume of the portable player to desired level.

CONNECTOR D

- **Philips Remote Control EA2001 (fig.2)** : You can connect a Philips remote control (EA2001) to this set (see mounting instructions for the EA2001).

MOUNTING

METAL SLEEVE (fig.5)

- Install the metal sleeve (dimension182x53) in the dashboard.
- Fix metal sleeve into place by pressing the metal tags outwards using a screwdriver.

MOUNTING RADIO

This radio can be properly installed either from conventional Front Mounting or Rear Mounting.

FRONT MOUNTING

- Slide the radio into the metal sleeve until the springs at either side of the radio snap into the openings of the sleeve (fig.6).
- Finally reconnect the negative car battery terminal (fig.7).

REMOVING RADIO (using the two U- brackets supplied)

- Insert both U-brackets into the holes on the front of the set until they lock. Pull out the radio (Fig.8).

REAR MOUNTING (fig.9)

- Remove the trimplate around the front panel and the side springs.
- Select a position where the screw holes of the mounting bracket and the screw holes of the radio become aligned and tighten the screws at 2 places on each side.
- Only use M5 screws that are not longer than 6mm.

REPLACING FUSE (Fig. 2)

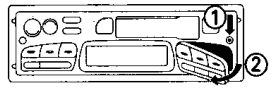
- Use a 10A blade-type fuse.

SECURITY

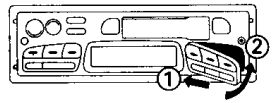
For theft protection this set is provided with the following security features :

DETACHABLE PANEL

- Take the detachable panel with you when leaving the car. Keep it in its protective box which can be used as a key chain. Always replace the detachable panel before starting to drive.
- Remove the panel by pressing the REL button.



- Replace the panel starting with the left-hand side of the set. Then push the panel until it clicks into position.



FLASHING WARNING LED

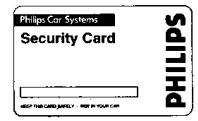
- The red light flashes when the detachable panel is removed with the ignition (ACC) key in off position.

SECURITY WARNING STICKERS

- Stick the supplied 'Security' warning stickers on your car windows.

IDENTIFICATION NUMBER

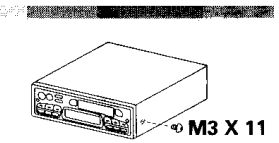
This set has a unique identification number (stated on the 'Security card'). This card is required as a proof of ownership when the set is stolen, when the detachable panel is lost or when requesting service.



- Remove the 'Security card' before installing the set. Do not keep the 'Security Card' in your car.

USEFUL TIPS

The detachable panel can be lock by a M3x11 screw.



INITIAL SETTINGS

It is possible to modify many of the set's initial settings according to your preferences.

- Press the INIT key for at least 2 seconds (until your hear a beep) to enter the Initialisation mode. The display shows 'INIT'.
- Briefly press ◄ or ► key to select the option you want to modify.
- Briefly press the AST key to adjust the chosen option.
  The choice shown on the display will be memorized by the set when you select another option or leave the Initialisation mode.
- Press the INIT key for at least 2 seconds (until your hear a beep) to leave the Initialisation mode.

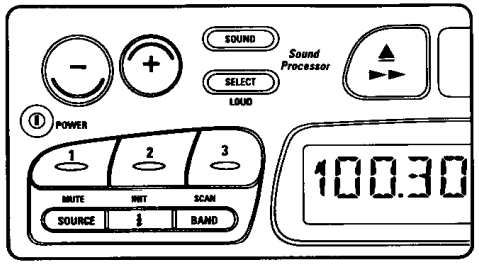
Note : The set automatically leaves the Initialisation mode about 1 minute after your last operation.

Option (◄ or ►)	**Choice** (AST)	**Usage**
COLOUR	[G, O]	Select the desired display colour : Green or Orange.
TIME *	[OFF, 12H, 24H]	Select desired clock format. (See 'SETTING THE CLOCK').
SRC *	[CDC, AUX]	Source connected to Connector C3 - Select 'CDC' for a Philips CD changer (D^2B type); - Select 'AUX' for a portable audio player.
REMOTE	[N, Y]	Select 'Y' to connect a Philips remote control (EA2001).
PHONE	[NO, LO, HI]	Select 'LO' or 'HI' according to phone ('LO' is most cases). See 'PREPARATION', 'CONNECTOR A' to connect phone. Select 'NO' if no phone is connected.
BLEEP	[-2, -1, 0, +1, +2]	Select volume level of confirmation beeps.
TAPE	[-2, -1, 0, +1, +2]	Volume level of cassette relative to tuner.
CDC* or AUX*	[-2, -1, 0, +1, +2]	Volume level of CD changer or AUX input relative to tuner.
TA *	[-2, -1, 0, +1, +2]	Volume level of Traffic Announcement, News bulletins and Alarm messages relative to tuner.
SRCH	[DX, LO]	Select 'LO' if you wish to search only for strong stations during automatic tuning to a frequency).
AF *	[OFF, ON]	Select 'OFF' to prevent the radio from returning to Alternative Frequency.
RADIO	[EUROPE, LATAM, AMERICA, ASIA]	Select the tuner according to European, Latin America, America or Asia standard.
MW	[OFF, ON]	Select 'OFF' to suppress MW if not in use (only applicable when RADIO is in European standard).
AM	[OFF, ON]	Select 'OFF' to suppress AM if not in use (only applicable when RADIO is in Latin America, America or Asia standard).
LW	[OFF, ON]	Select 'OFF' to suppress LW if not in use (only applicable when RADIO is in European standard).

Note : Reference volume can be preset by the volume up or down keys during the Initialisation mode.

* only for certain versions

AUDIO ADJUSTMENT



- **POWER** : Press Power key to switch the set on or off.
- **VOLUME** : Press – key or + key to adjust the volume.
  Please make sure you can still hear the traffic (horns, sirens.....)
- **SOUND** : Choose one of the predefined sound styles with the SOUND key.
  - **BASS-TRE** : Your own settings of bass and treble.
  - **FLAT** : Mid-positions of bass and treble
  - **JAZZ**: Jazz music
  - **VOCAL** : Speech
  - **CLASSIC** : Classic music
  - **ROCK** : Rock music
- **SELECT** : Choose the desired audio mode with SELECT key.
  - BASS (low notes), TREBLE (high notes), BALANCE (left-right), FADER (rear-front).
  - Press – key or + key to adjust the selected audio mode. Adjustment of Bass and treble settings only applicable when 'BASS-TRE' is selected as the sound style.
    Note: After 5 seconds the display goes back to the last mode of operation.
- **LOUD** : To reinforce bass and treble especially when listening at a low volume level. Press the LOUD key at least 2 seconds (until you hear a beep) to switch loudness on or off.
- **MUTE**: Press the MUTE key for at least 2 seconds to mute the sound momentarily. Press any key to restore the same volume level.
  Note: The silent period may be interrupted by traffic announcements (if TA/NEWS is switched on).
- **SOURCE** : Briefly press the SOURCE key to select the desired source. The display shows: RADIO, TAPE or CHANGER * (AUX *).

SETTING THE CLOCK *

- Press INIT key for at least 2 seconds (until your hear a beep) to enter the Initialisation mode.
  - Display shows 'INIT'.
- Press ◄ or ► key to select option 'TIME'.
- Press AST key to select '12H' or '24H'.
- Press ► key :
  - Display shows e.g. '00:00' (24 hour fomat) or 'AM 12:00' (12 hour format).
  - Hour digit start flashing.
- Press AST key to adjust Hour digit.
- Press ► key again :
  - Minute digit start flashing.
- Press AST key to adjust Minute digit.
- Press INIT key for at least 2 seconds (until your hear a beep) to leave the Initialisation mode.
  - 10 seconds after any key operations, the display will always shows time when clock mode is activated.

USEFUL TIPS

You can change the colour of the display.

- See INITIAL SETTINGS; select Option 'COLOUR' and set the Choice to 'G' (Green) or 'O' (Orange).

Set functions but no sound?

- Adjust the volume of the set.
- Adjust Fader Settings.

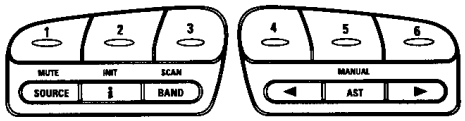
Set mutes when you drive or display shows 'TEL CALL'.

- See INITIAL SETTINGS; select Option 'PHONE' and set the Choice to 'LO' or 'HI' according to phone type or 'NO' if no phone is connected.

Set mutes when you used the telephone, display shows 'TEL CALL', but you may still like to listen to the radio.

- Press MUTE key for more than 2 seconds to restore the same volume level.

RADIO



WAVEBAND

- Briefly press the BAND key to select the desired waveband. The display shows:

  FM1, FM2, or FM3, MW1, or MW2, or LW (when the Choice is set to 'EUROPE' under 'RADIO' option; see INITIAL SETTINGS).

  FM1, FM2, or FM3, AM1, or AM2 (when the Choice is set to 'LATAM' or 'AMERICA' or 'ASIA' under 'RADIO' option; see INITIAL SETTINGS).

SEARCH TUNING

Use search tuning to quickly search for a station.

- Briefly press the ◄ key or ► key .

– You will receive a station after a short time. To search for another station, press the key again.

USEFUL TIPS

You can suppress MW or LW bands if not in used.

- See INITIAL SETTINGS; select Option 'MW' or 'LW' and set the Choice to 'OFF'.

Cannot tune to desired station?

- Desired station is too weak, try Manual Tuning.
- See INITIAL SETTINGS; check option 'RADIO'.
- See INITIAL SETTINGS; select option 'SRCH' and set the Choice to 'DX'.

MANUAL TUNING (if you know the frequency of the required station)

- Press the MANUAL key for at least 2 seconds (until you hear a beep) to switch from search tuning to manual tuning.
- Tune to the desired frequency with ◄ and ► key (keeping the key pressed changes the frequency quickly)
  - ► = higher frequency
  - ◄ = lower frequency

Note: The radio automatically switches back to search tuning after about 50 seconds with a beep.

* only for certain versions

PRESET KEYS 1-6 (STORE AND PRESET)

Six stations per waveband can be stored and recalled using the preset keys (1 to 6).

Storing a station

- Briefly press the BAND key to select the desired waveband.
- Tune-in the desired station frequency.
- Press the desired preset key (1 to 6) for at least 2 seconds (until you hear a beep).

Note: A previously-stored station is automatically erased if a new frequency is stored on the preset.

Recalling a station

- Briefly press the desired preset key. The display will show the band, frequency and preset number.

AUTO STORE (AST)

You can automatically store 6 FM stations on FM3 band or 6 AM(MW) stations on the AM2(MW2) band by using AUTOSTORE (AST) function. When you use Auto Store, the new station replace any station previously stored in the FM3 band or the AM2 (MW2) band.

Automatically storing stations

- Briefly press the BAND key to select the desired waveband.

– Briefly press the AST key, you will hear a beep.
– The set mutes and display shows 'FM3 AST' or 'MW2 AST' or 'AM2 AST'.
– You will hear a beep when it has finished storing 6 stations.
– You will hear the station on preset 1. Sometimes it may not be possible to find six stations. In this case, the remaining presets are programmed with 0000 (radio mute). If no stations are found, the previously stored stations are maintained.

FREQUENCY SCAN

The scan function gives you a quick impression of all the stations which can be received on the current waveband. You hear each station in turn for about 10 seconds.

- Press SCAN key for at least 2 seconds to switch SCAN function on or off.

RADIO DATA SYSTEM (RDS) * ON FM

Many FM stations broadcast RDS information. This car radio uses the RDS information to offer you many advantages, including :

DISPLAY OF STATION-NAME

The set displays the name of the station instead of its frequency.

AUTOMATIC RETUNING

The set continuously check a list of Alternative Frequencies (AF) for the tuned radio station and automatically selects the best frequency.

USEFUL TIPS

Display shows frequency (not station name).

- Set is tuned to non-RDS station.

Radio switches to another station while driving through different reception areas of different transmitters.

- See INITIAL SETTINGS; select Option 'AF' and set the Choice to 'ON'.

DISPLAY OF PROGRAMME TYPE (PTY)

If an RDS station is stored on a preset, you can check the type of programme being transmitted.

- Briefly press the relevant Preset key to see the programme type (if transmitted).

INFORMATION FROM RELATED RADIO STATIONS

Enhanced Other Networks (EON) is an RDS service where the broadcaster links some stations together. If you are tuned to a station where is linked to others by EON, the set is capable of receiving Traffic Announcements (and/or News bulletins) from both the tuned station and related stations.

ALARM MESSAGES (PTY Alarm)

This set automatically receives emergency messages made by the broadcaster.

– During the messages the display shows 'ALARM' and the station-name alternately.

TRAFFIC ANNOUNCEMENTS

You can switch on the TA mode to give priority to Traffic Announcements (even if you play a cassette/CD changer * or mute the set).

- You will hear the Traffic Announcements when broadcast, if you switch on the TA mode.
- If the tuned station does not enable the reception of Traffic Announcements, the display shows 'NO TA'. The radio automatically searches an appropriate station.

USEFUL TIPS

Display shows 'NO TA', and set beeps at intervals.

- The tuned station becomes too weak to enable the reception of Traffic Announcements. Use search tuning to find another station.
- If the TA mode is switched on, search tuning only selects stations which enable the reception of Traffic Announcements.

* only for certain versions

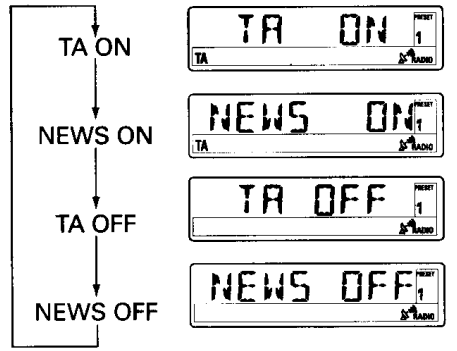
NEWS BULLETINS

You can switch on the NEWS mode to give priority to News bulletins (even if you play a cassette/CD changer* or mute the set). NEWS is not yet implemented in all countries.

Note : News bulletins may be interrupted by Traffic Announcements (if the TA mode is switched on)

Activate the desired TA or NEWS mode

- Select a FM band with BAND key.
- Briefly press the ⁞ key to select the desired RDS mode. When you briefly press the ⁞ key, the mode and display changes cyclically as follows:



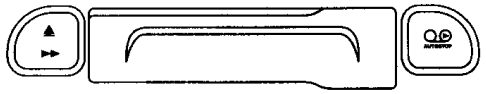
Interrupting Traffic Announcement/News mode

If you do not wish to continue listening to a particular Traffic Announcement or News mode, you can interrupt it without switching off the mode.

- Briefly press the ⁞ key.

– The set will return to the previous operating mode.

CASSETTE PLAYER



PLAYBACK

- Slide the cassette, with the open side to the right into the cassette opening. The radio mutes and cassette playback starts. The direction of playback is shown by indicator >.

FAST FORWARD WIND (▶▶)

- Press the ▶▶ button half-way until it locks.
- Press the ▶▶ button once more to stop fast winding. Playback resumes.

STOPPING PLAYBACK (▲)

- To stop playback, press the ▲ button fully home.
- The unit will switch over to radio reception.
- The cassette is partially ejected.

END OF THE TAPE

If the cassette plays through to the end, the unit automatically switches to radio reception.

- Press the ▲ button fully home and take out the cassette.

MAINTENANCE

After extended use of the cassette player, dust, contamination or grime can accumulate on the playback head.
This results in diminishing high-note reproduction. This can be remedied using a cleaning cassette (once or twice a month) and playing it through like an ordinary cassette.

CARE OF CASSETTES

- Only use good quality cassettes (not longer than C-90).
- To avoid possible tape damage always take out the cassette after use. Put them back in their boxes immediately after use.
- Never expose cassettes to heat or direct sunlight.

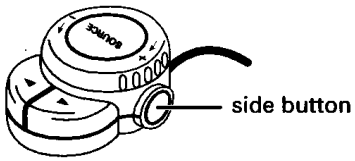
PHILIPS REMOTE CONTROL (EA2001)

A Philips remote control (EA2001) can be connected to this set. See your dealer for more information. The remote control allows you to carry out some of the main functions of the set, without the need to take your eyes off the road while driving. This increases your safety.

USEFUL TIPS

Remote control connected correctly but cannot control the set?

- See INITIAL SETTINGS; select Option 'REMOTE' and set the Choice to 'Y'.



AUDIO

- **Volume** : Adjust the volume by turning the wheel.
- **Audio mute (Silence)** : Press SOURCE key for more than 2 seconds to mute the set or cancel the mute.
- **SOURCE** : Briefly press the SOURCE key to select the desired source. The display shows: RADIO, TAPE or CHANGER * (AUX *).

RADIO

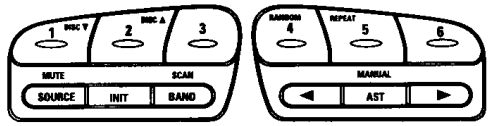
- **Waveband selection** : Press the remote control side button for more than 2 seconds to select the desired waveband.
- **Recalling a preset** : Briefly press the remote control side button to select the next preset (1 to 6).
- **Search tuning** : Briefly press the ◀ key or ▶ key to quickly search for a station.

CD CHANGER *

- **Previous / next track** : Briefly press the ◀ key or ▶ key to select desired track.
- **Fast backward / Forward** : Press and hold ◀ key or ▶ key to move quickly to another part of the disc during playback. Playback resumes when ◀ or ▶ is released.
- **Disc selection** : Briefly press the remote control side button to select the next disc.
- **Track scan**: Press the remote control side button for more than 2 seconds to switch scan on or off.

CD CHANGER*

A Philips CD changer (D²B type) with 6 or 10 discs can be connected to this car radio.



CD PLAYBACK

- Briefly press the SOURCE key to select CHANGER as the source.
- Select the desired disc with DISC▲ or DISC▼. The display shows the track number, elapsed playing time and current disc number during playback.
  At the end of the disc, playback automatically continues with the next disc. Any missing disc is automatically skip.

PREVIOUS/NEXT TRACK

- Briefly press the ◀ or ▶ buttons to select the desired track.
  Playback resumes starting from the chosen track. The display shows the selected track number and elapsed playing time.

FAST BACKWARD/FORWARD

- Press and hold ◀ or ▶ buttons to move quickly to another part of the disc during playback. Playback resumes when ◀ or ▶ is released.

TRACK SCAN

- Press SCAN key during playback to hear the first 10 seconds of each track.
- Press the SCAN key again to resume normal playback.

RANDOM TRACK PLAYBACK

- Press RANDOM key during playback to play the track on the disc in random order.
- Press the RANDOM key again to resume normal playback.

REPEAT TRACK

- Press REPEAT key during playback to repeat the current track.
- Press the REPEAT key again to resume normal playback.

USEFUL TIPS

Display shows 'CD ERROR'.

- The disc is dirty or inserted upside down.

Display shows 'NO CD'.

- No disc is inserted in the CD magazine.

CARE OF DISCS

- Avoid making fingerprints on the disc
- Never expose disc to heat or direct sunlight.

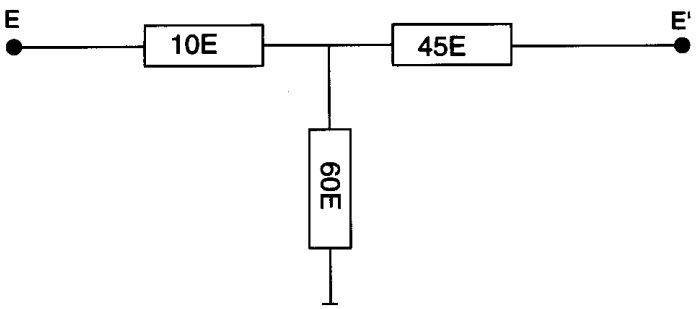
SERVICE HINTS

FM and AM search levels are stored in the EEprom. Service code of the EEprom will be release in the next service newsletter. When you change the tuner module or the Eeprom, in order not to affect the performance of the set, you will need to reprogramme the FM and AM search levels using this service routine.

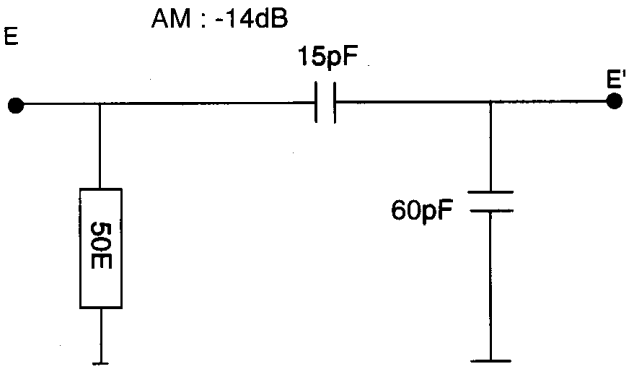
Make sure that you connect the following 75E FM and AM dummy antenna matching unit before reprogramming the search levels.

Use Dummy aerials according Philips PQR DFT-009-0561 :

FM : -6dB



AM : -14dB



FM SEARCH LEVEL ALIGNMENT :

1. Input signal as below for LO (Local) search level alignment via the FM Dummy antenna:
   LO SEARCH LEVEL : FM 93MHz, E= 240uV
2. Tune in and store 93.0MHz into Preset 1 on BAND FM3.
3. Switch off the set.
4. Press and hold both "BAND" and "AST" key while turning on the set.
   Display shows : "93.0 000F"
5. Press Preset 1 for more than 2 seconds (you will hear a bleep) to store the LO (Local) search level.
6. Input signal as below for DX (Distance) search level alignment via the FM Dummy antenna:
   DX SEARCH LEVEL : FM 93.0MHz, E = 15uV
7. Press Preset 2 for more than 2 seconds (you will hear a bleep) to store the DX (Distance) search level
6. Press any key briefly (other than BAND) to exit this service routine.

AM SEARCH LEVEL ALIGNMENT :

1. Input signal as below for LO (Local) search level alignment via the AM Dummy antenna :
   LO SEARCH LEVEL : AM 531kHz, E= 350uV
2. Tune in and store 531kHz into Preset 1 on BAND AM1.
3. Switch off the set.
4. Press and hold both "BAND" and "AST" key while turning on the set.
5. Press BAND to change into AM1
   Display shows : "531 000F"
6. Press Preset 1 for more than 2 seconds (you will hear a bleep) to store the LO (Local) search level.
7. Input signal as below for DX (Distance) level alignment via the AM Dummy antenna :
   DX SEARCH LEVEL : AM 531kHz, E= 70uV
8. Press Preset 2 for more than 2 seconds (you will hear a bleep) to store the DX (Distance) search level.
9. Press any key briefly (other than BAND) to exit this service routine.

How to remove the Power IC heat sink without damaging the solder paste?

There is a solder paste on the power ic which helps to improve heat transfer from the power ic to the heat sink. To prevent damage to the solder paste, remove the heat sink only when the set has cool down.

Service Test Mode :

Tuner reception check (Test mode)

Press Preset 2 and Preset 4 together to activate tuner test mode.

Display shows : " XXXX QRMF "

XXXX - 4 figures of tuned frequency

Q- Selected frequency quality

R- Best AF quality

M - Multipath
range 0 ... F hexadecimal
(0 = NO Multipath)

F- Field strength
range 0 ..... F hexadecimal
(F = Good signal strength)

Keyboard Test

This test is called by switching the set ON while keeping pressed the preset 3 key. A different number will apear each time you press a new key (e.g. Preset 3 corresponds to T03).

This test can be exited at any moment by switching off the set.

LCD Display Test

Press Preset 1 and Preset 5 together to activate LCD display test. All segments of the LCD are lighted up

Software release status

CHECKSUM FOR SOFTWARE RELEASE 1.0 : **12CA**

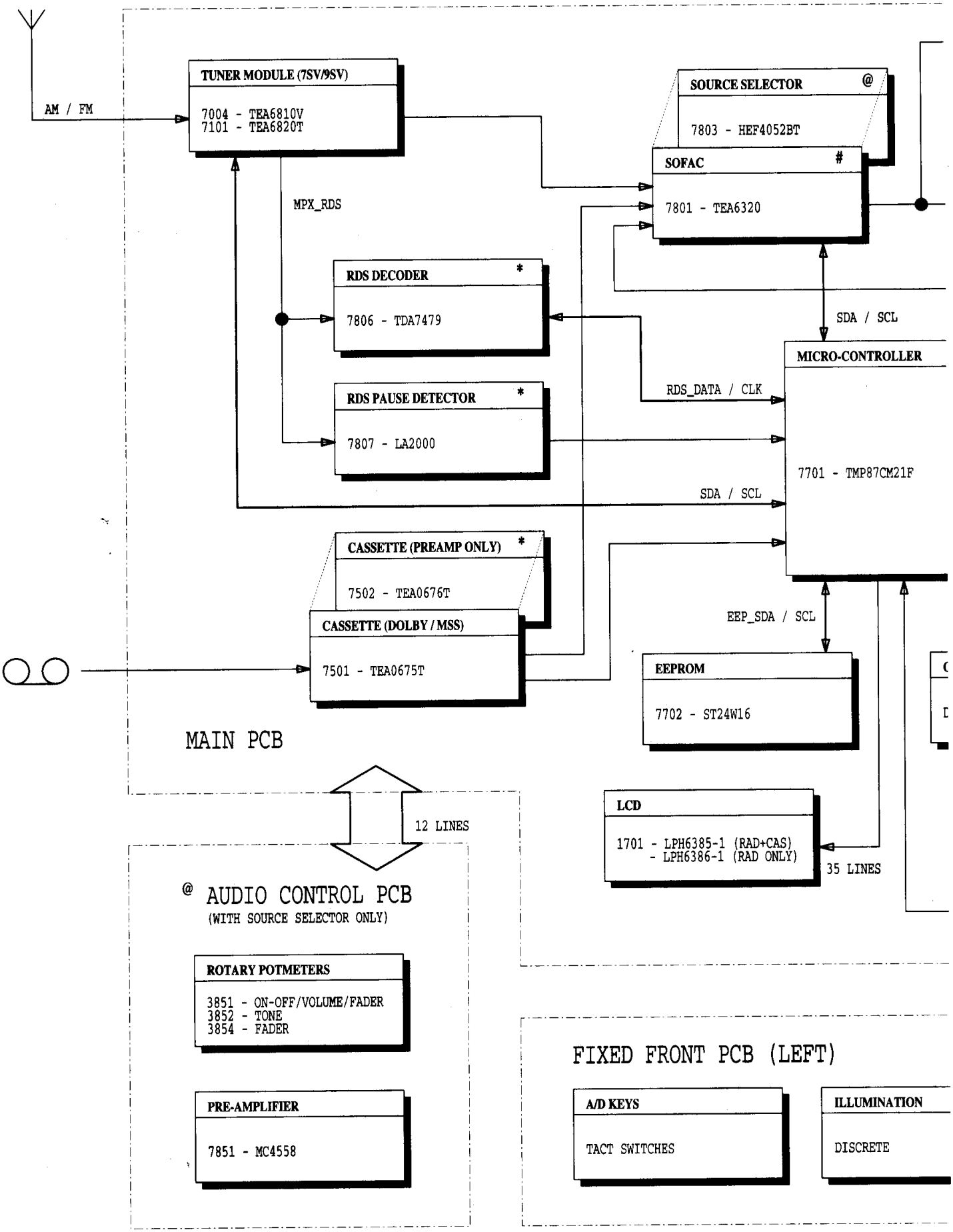
Press Preset 1 and Preset 6 together to see the software release status

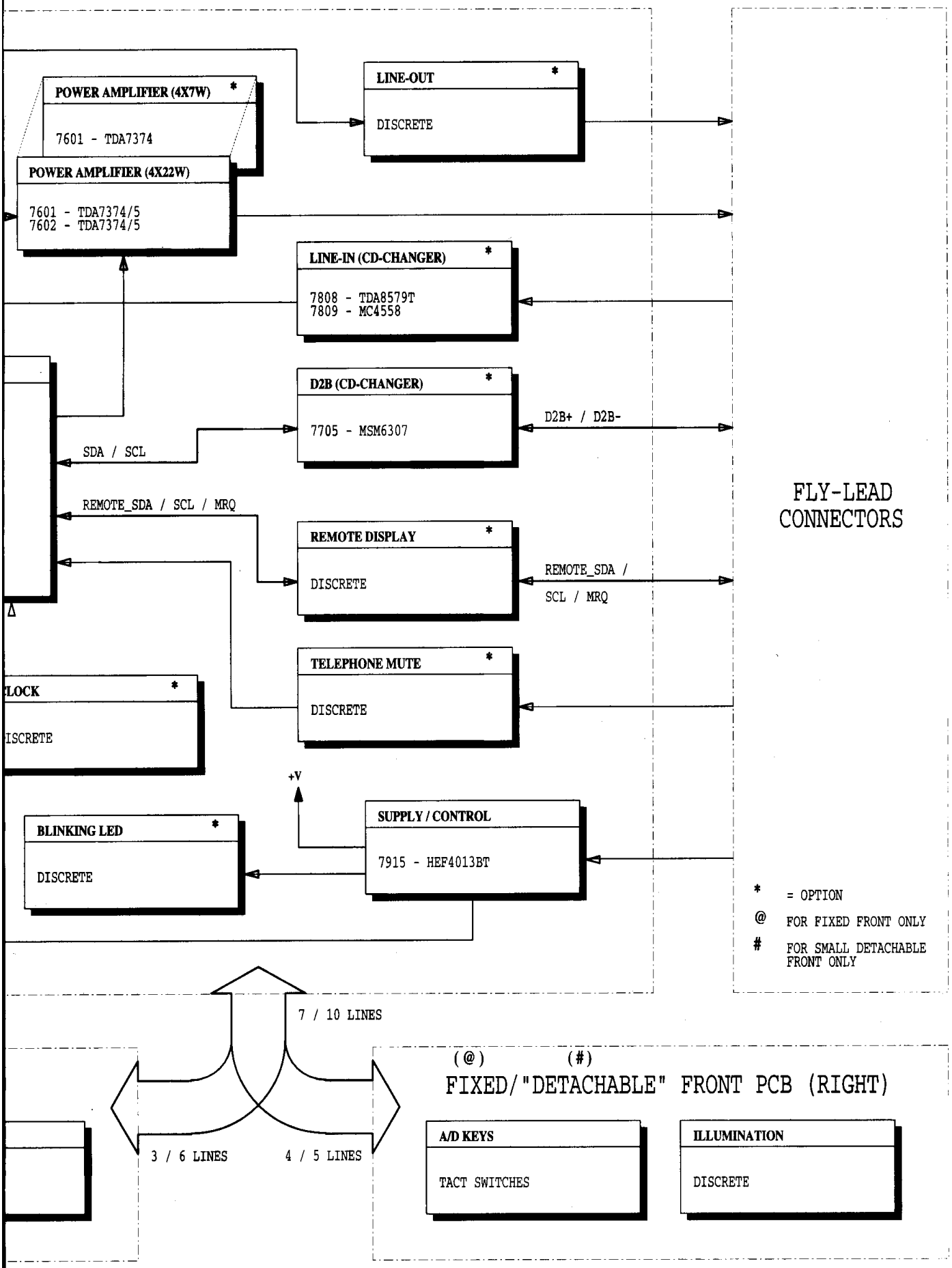
Display shows : "XXXX H"

XXXX = Checksum

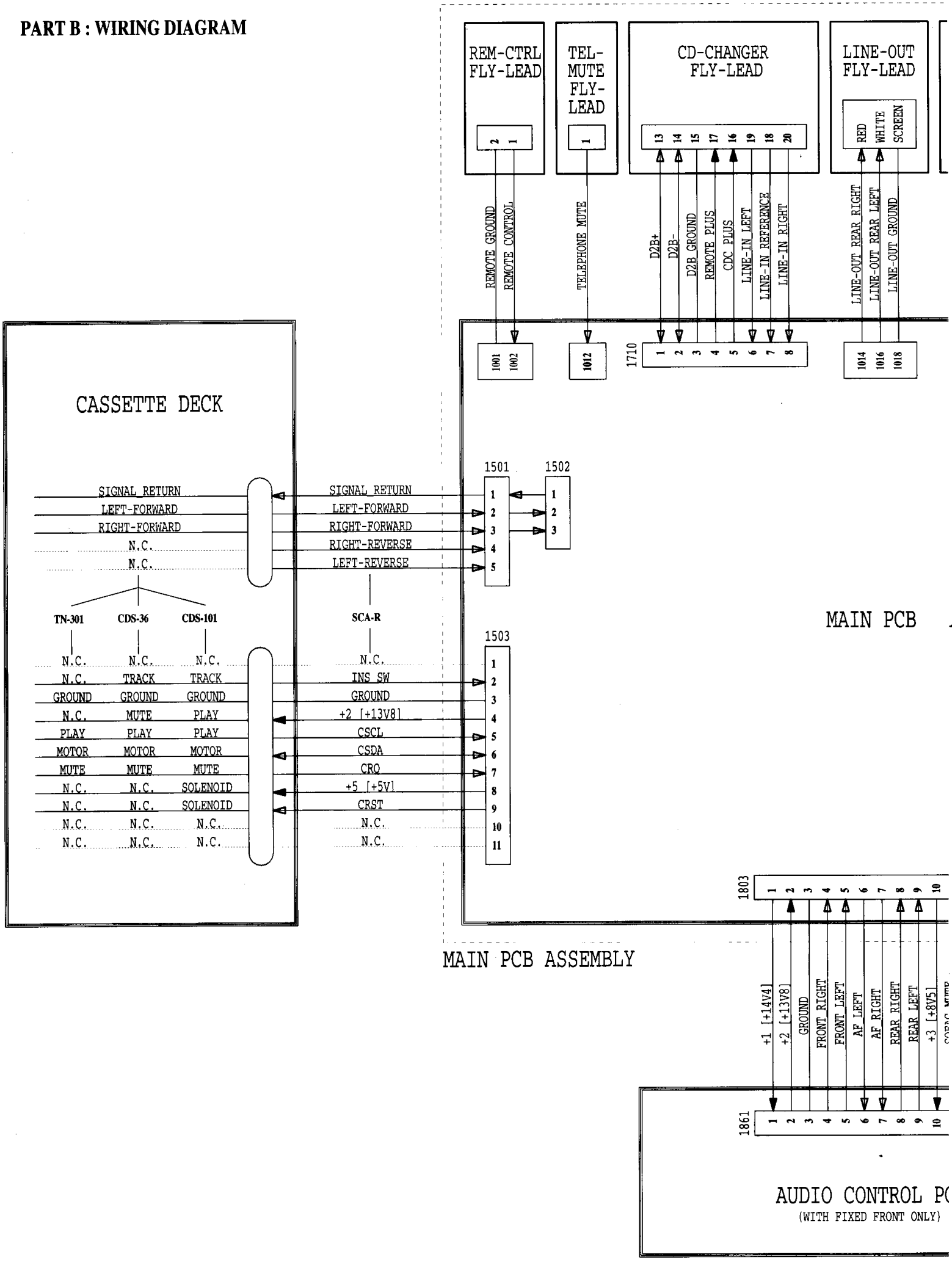
H = Hexa. decimal

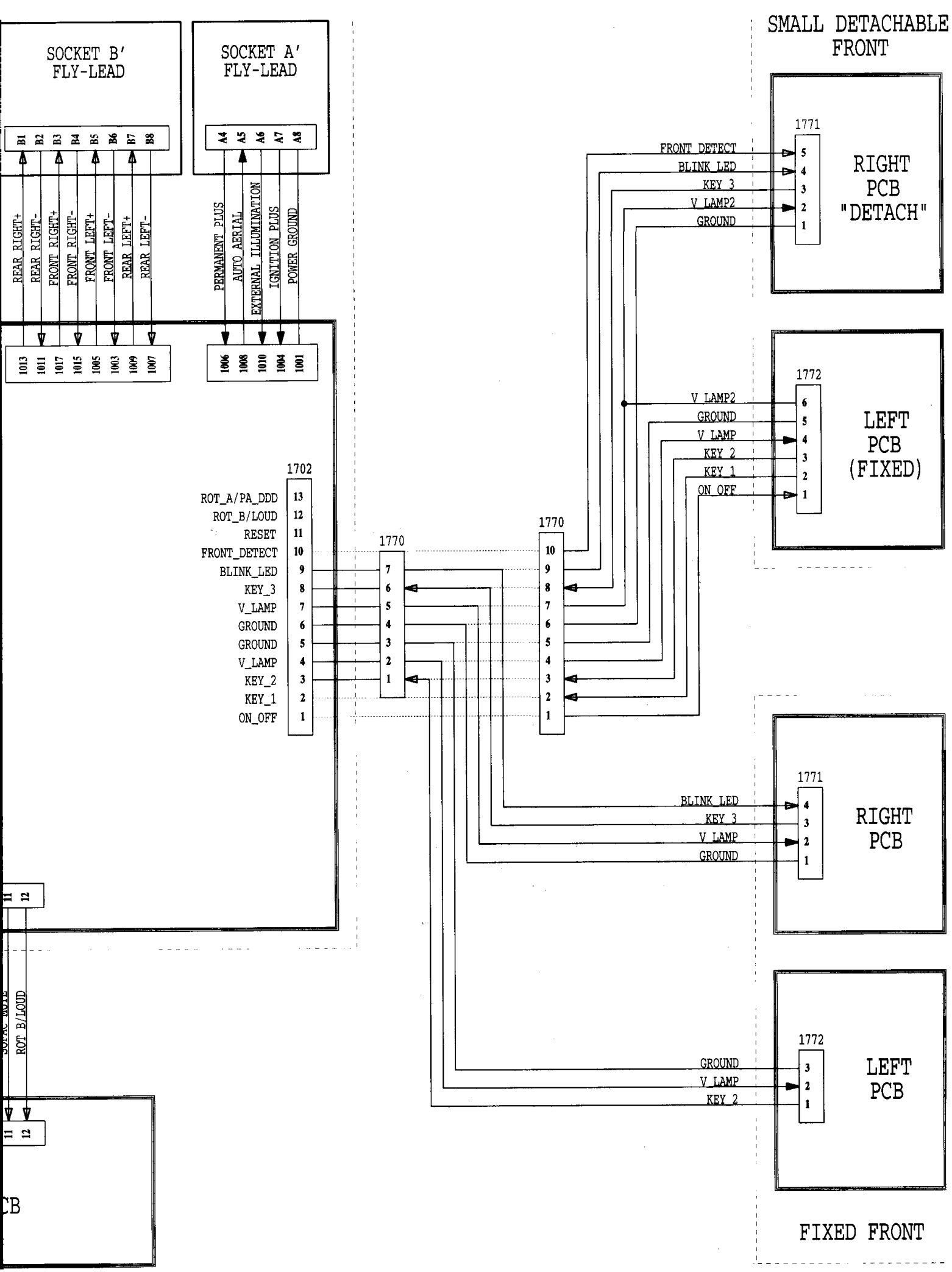
PART A : ELECTRICAL ARCHITECTURE



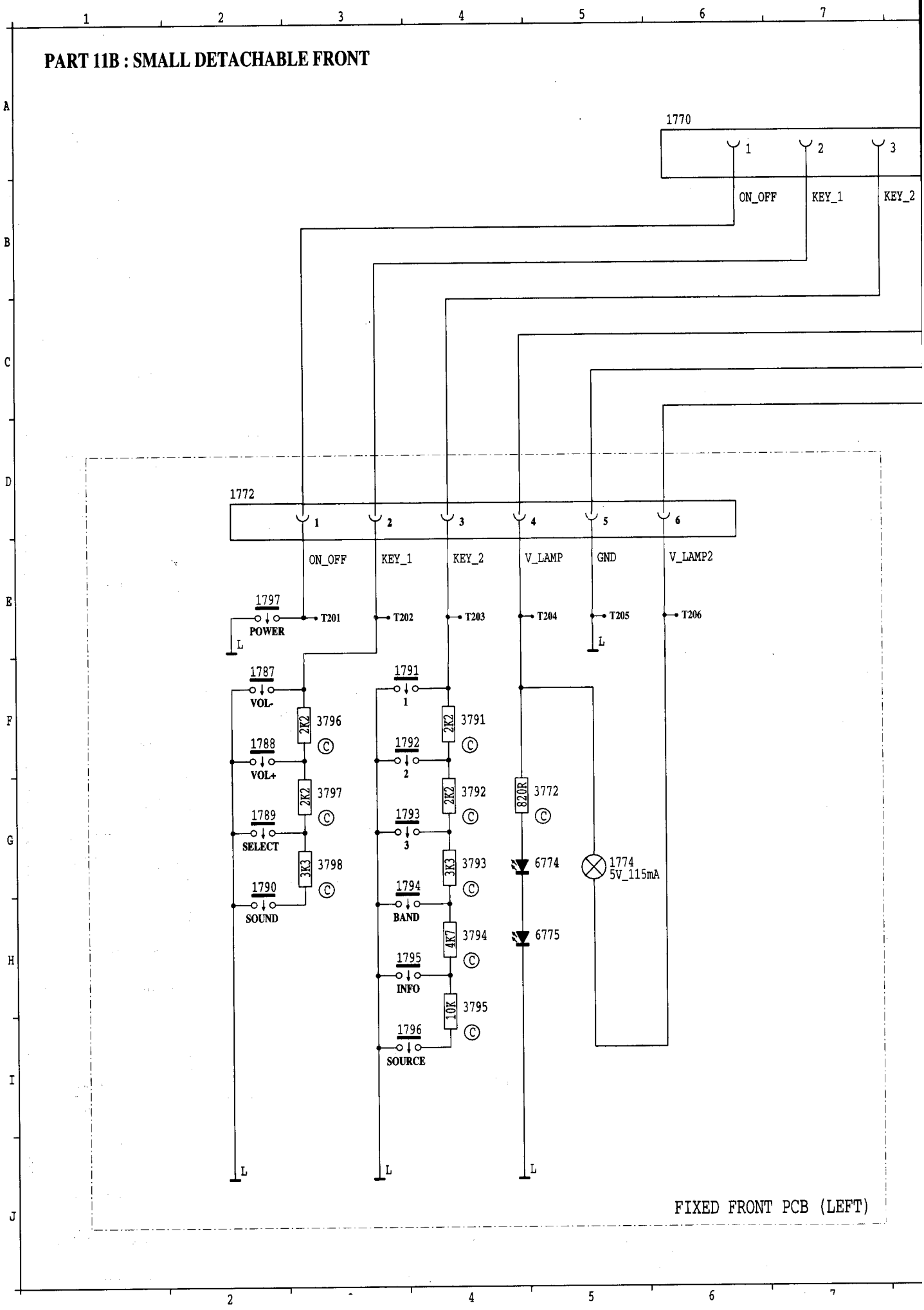

POWER AMPLIFIER (4X7W) *
7601 - TDA7374
POWER AMPLIFIER (4X22W)
7601 - TDA7374/5
7602 - TDA7374/5
LINE-OUT *
DISCRETE
LINE-IN (CD-CHANGER) *
7808 - TDA8579T
7809 - MC4558
D2B (CD-CHANGER) *
7705 - MSM6307
D2B+ / D2B-
SDA / SCL
REMOTE_SDA / SCL / MRQ
REMOTE DISPLAY *
DISCRETE
REMOTE_SDA / SCL / MRQ
TELEPHONE MUTE *
DISCRETE
LOCK *
ISCRETE
+V
SUPPLY / CONTROL
7915 - HEF4013BT
BLINKING LED *
DISCRETE
FLY-LEAD CONNECTORS
* = OPTION
@ FOR FIXED FRONT ONLY
# FOR SMALL DETACHABLE FRONT ONLY
7 / 10 LINES
3 / 6 LINES
4 / 5 LINES
(@) (#)
FIXED/"DETACHABLE" FRONT PCB (RIGHT)
A/D KEYS
TACT SWITCHES
ILLUMINATION
DISCRETE

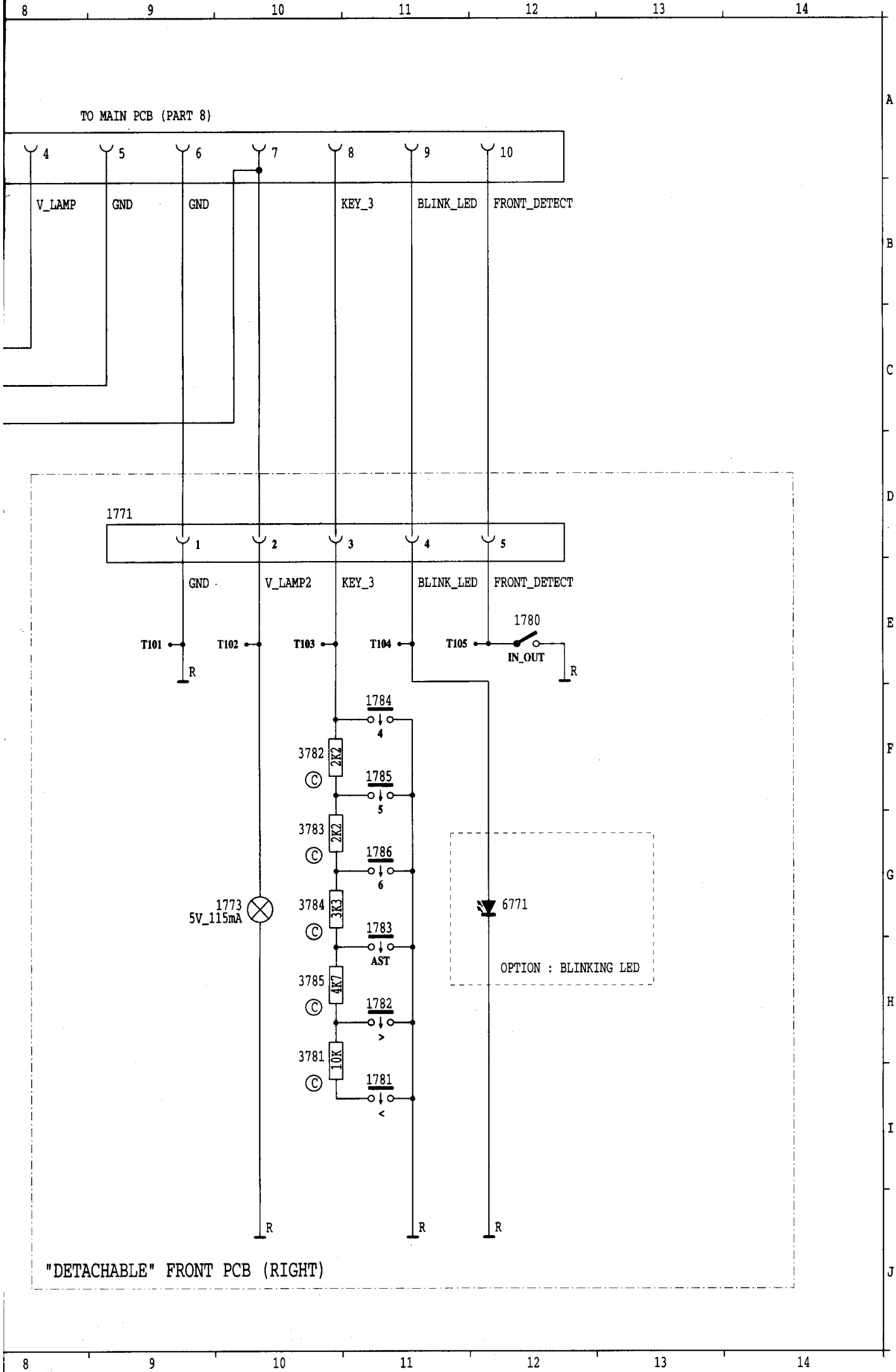
PART B : WIRING DIAGRAM




SOCKET B'
FLY-LEAD
SOCKET A'
FLY-LEAD
B1 B2 B3 B4 B5 B6 B7 B8
A4 A5 A6 A7 A8
REAR RIGHT+
REAR RIGHT-
FRONT RIGHT+
FRONT RIGHT-
FRONT LEFT+
FRONT LEFT-
REAR LEFT+
REAR LEFT-
PERMANENT PLUS
AUTO AERIAL
EXTERNAL ILLUMINATION
IGNITION PLUS
POWER GROUND
1013 1011 1017 1015 1005 1003 1009 1007
1006 1008 1010 1004 1001
1702
ROT_A/PA_DDD 13
ROT_B/LOUD 12
RESET 11
FRONT_DETECT 10
BLINK_LED 9
KEY_3 8
V_LAMP 7
GROUND 6
GROUND 5
V_LAMP 4
KEY_2 3
KEY_1 2
ON_OFF 1
1770
7 6 5 4 3 2 1
1770
10 9 8 7 6 5 4 3 2 1
SMALL DETACHABLE
FRONT
1771
5 4 3 2 1
FRONT DETECT
BLINK LED
KEY 3
V LAMP2
GROUND
RIGHT
PCB
"DETACH"
1772
6 5 4 3 2 1
V LAMP2
GROUND
V LAMP
KEY 2
KEY 1
ON OFF
LEFT
PCB
(FIXED)
1771
4 3 2 1
BLINK LED
KEY 3
V LAMP
GROUND
RIGHT
PCB
1772
3 2 1
GROUND
V LAMP
KEY 2
LEFT
PCB
FIXED FRONT
11 12
ROT B/LOUD
11 12
CB

PART 11B : SMALL DETACHABLE FRONT





1771 D 9
1772 D 2
1773 G10
1774 G 5
1780 E12
1781 I11
1782 H11
1783 G11
1784 F11
1785 F11
1786 G11
1787 F 2
1788 F 2
1789 G 2
1790 G 2
1791 F 4
1792 F 4
1793 G 4
1794 G 4
1795 H 4
1796 I 4
1797 E 2
3772 G 5
3781 H10
3782 F10
3783 G10
3784 G10
3785 H10
3791 F 4
3792 G 4
3793 G 4
3794 H 4
3795 H 4
3796 F 3
3797 G 3
3798 G 3
6771 G12
6774 G 5
6775 H 5

Voltage measured in FM mode
A4 = 14.4V
A7 = 14.4V
unless otherwise stated.

7806 TDA7479

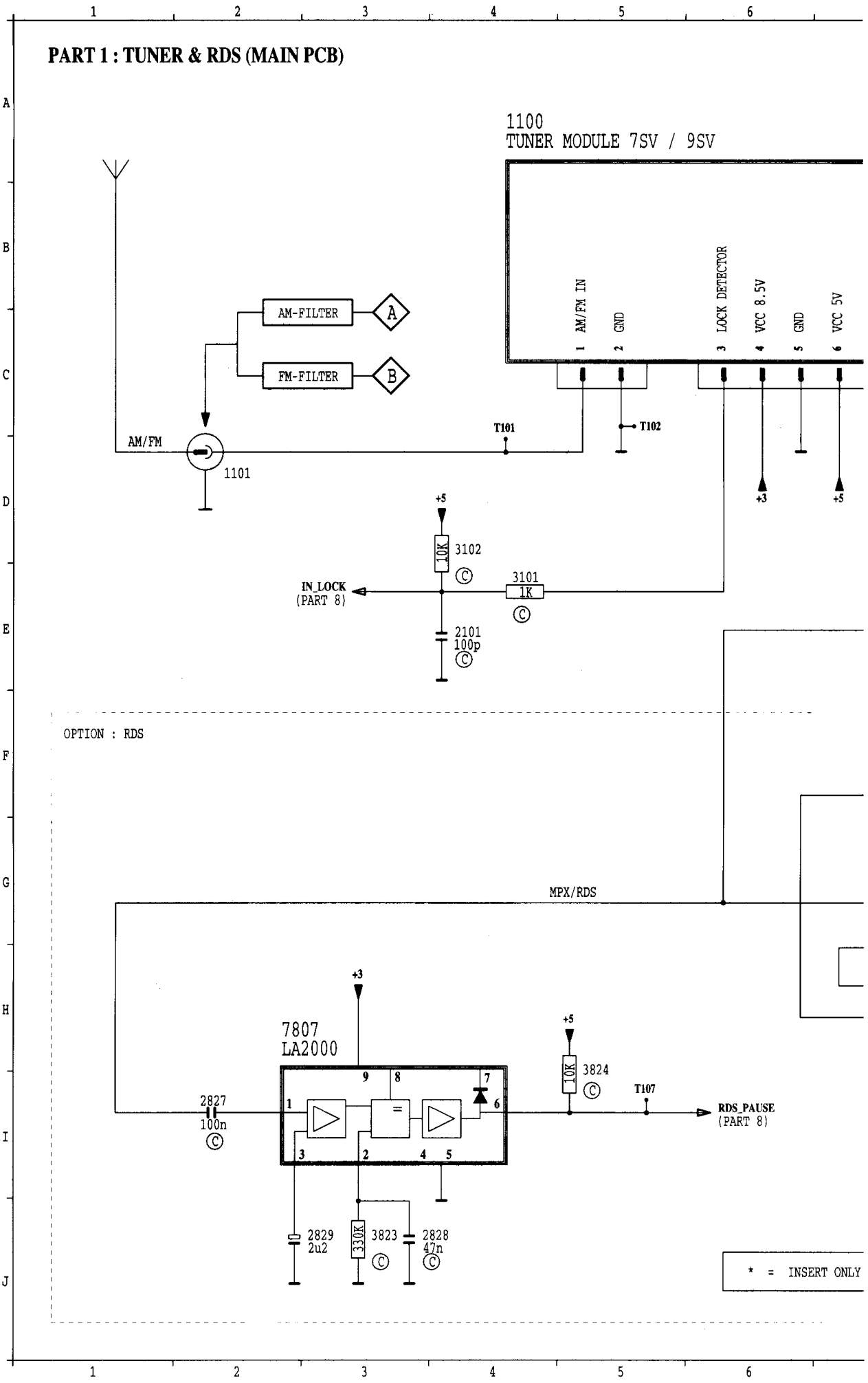
1	Square wave 5V
2	Square wave 5V
3	2.5V
4	Audio signal
5	5V
6	0V
7	Audio signal
8	Audio signal
9-11	0V
12	5V
13	Sine wave 0.6V
14	Sine wave 3.2V
15	N.C.
16	Square wave 5V

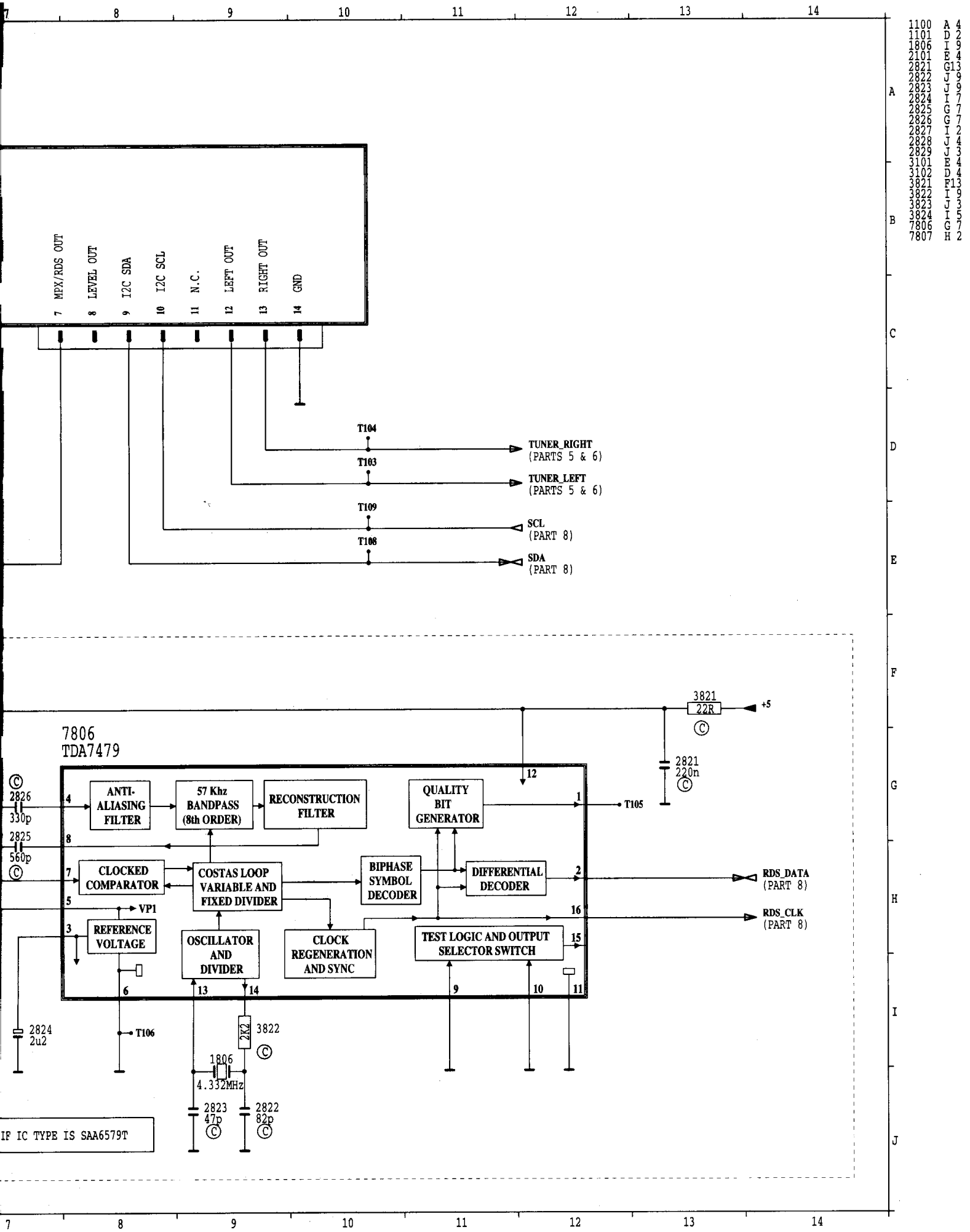
7807 LA200

1	Audio signal
2	8.2V
3	2.3V
4	N.C.
5	GND
6	5V
7-8	N.C.
9	8.5V

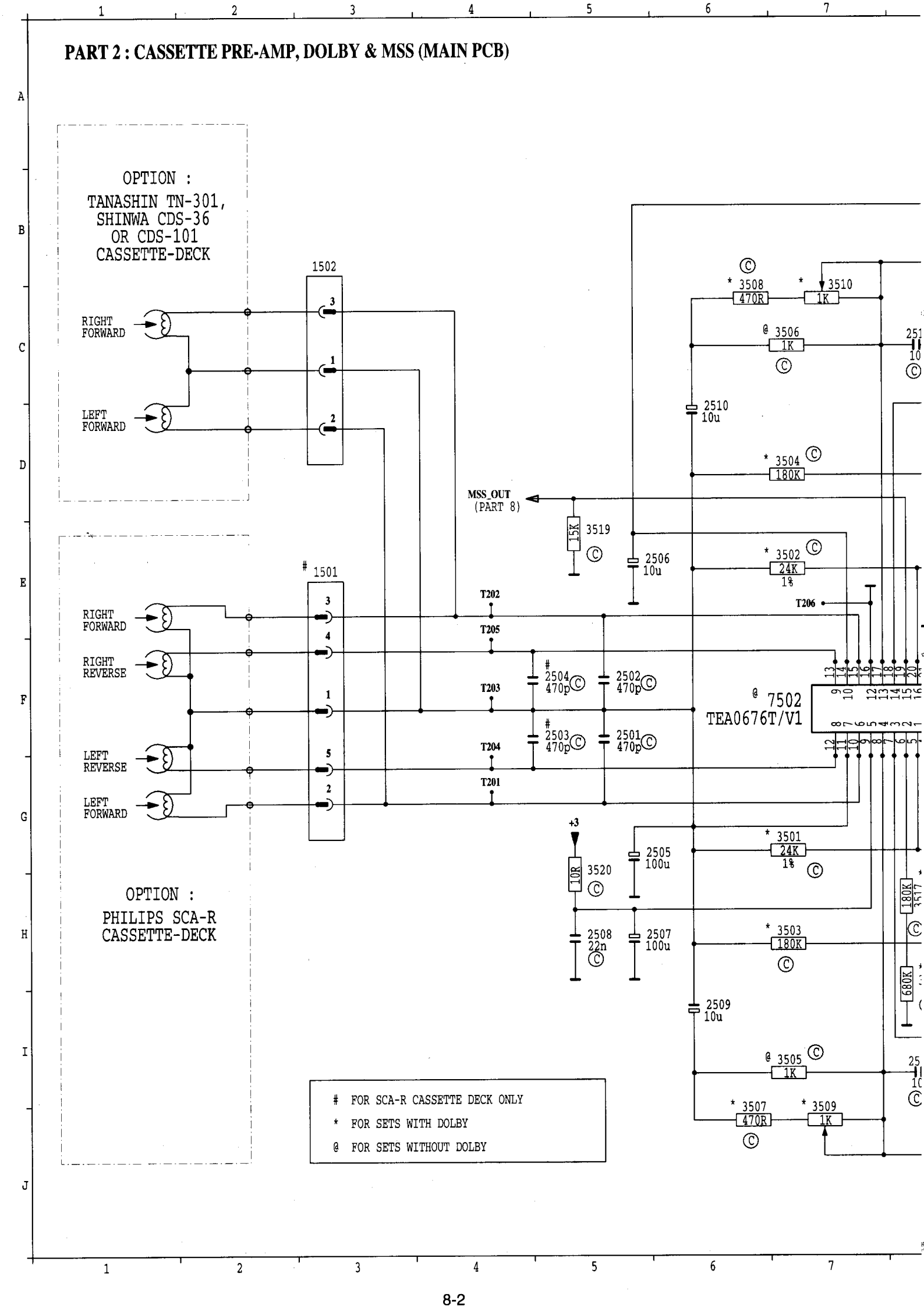
1100 TUNER IC96

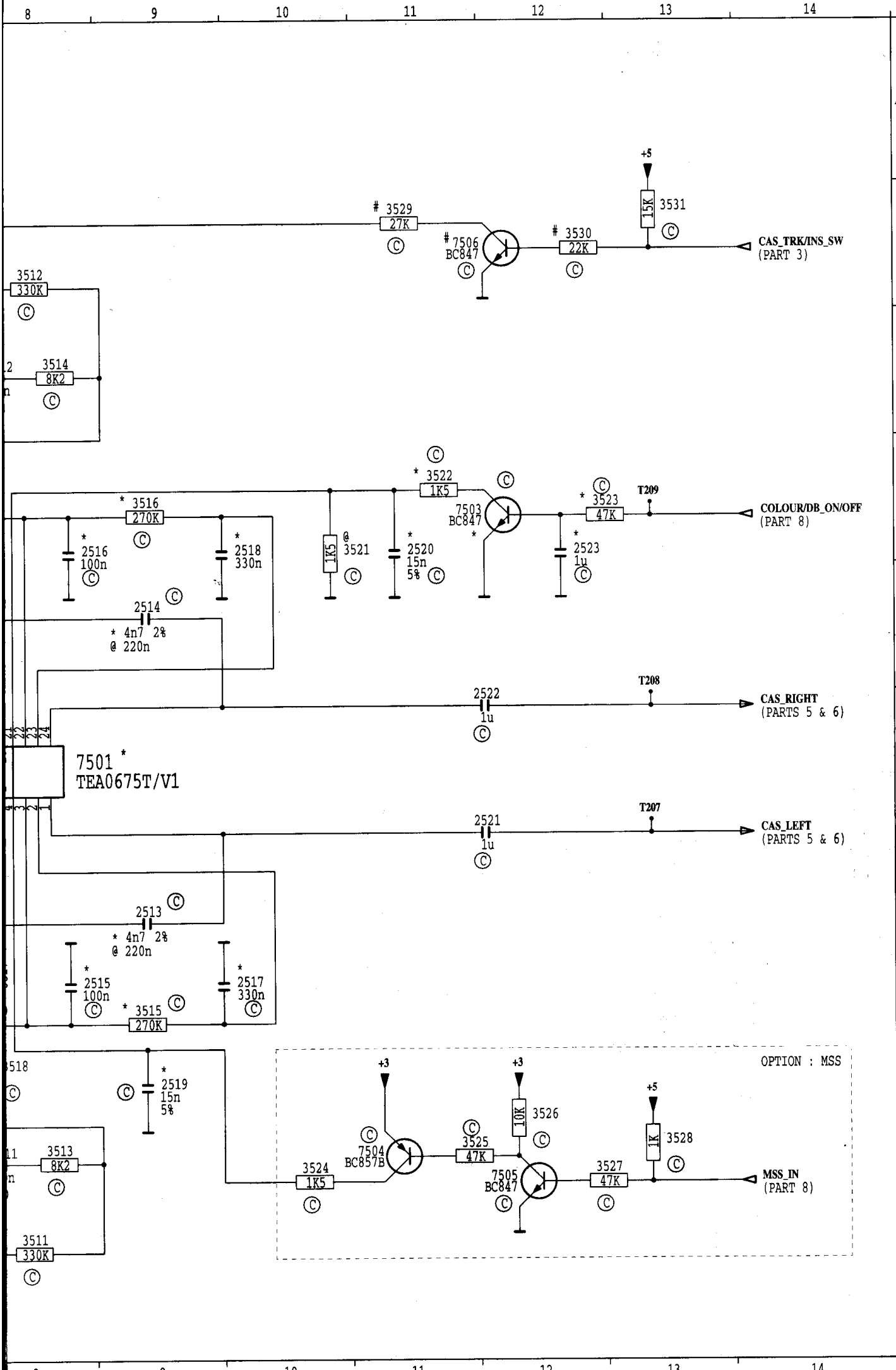
1	AM/FM INPUT
2	GND
3	5V
4	8.5V
5	GND
6	5V
7	Audio signal
8, 11	N.C.
9	5V
10	5V
12	TUNER LEFT
13	TUNER RIGHT
14	GND




1100 A 4
1101 D 2
1806 I 9
2101 E 4
2821 G13
2822 J 9
2823 J 9
2824 I 7
2825 G 7
2826 G 7
2827 I 2
2828 J 4
2829 J 3
3101 E 4
3102 D 4
3821 F13
3822 I 9
3823 J 3
3824 I 5
7806 G 7
7807 H 2
7 MPX/RDS OUT
8 LEVEL OUT
9 I2C SDA
10 I2C SCL
11 N.C.
12 LEFT OUT
13 RIGHT OUT
14 GND
T104
TUNER_RIGHT
(PARTS 5 & 6)
T103
TUNER_LEFT
(PARTS 5 & 6)
T109
SCL
(PART 8)
T108
SDA
(PART 8)
7806
TDA7479
3821
22R
+5
2821
220n
2826
330p
2825
560p
ANTI-
ALIASING
FILTER
57 Khz
BANDPASS
(8th ORDER)
RECONSTRUCTION
FILTER
QUALITY
BIT
GENERATOR
T105
CLOCKED
COMPARATOR
COSTAS LOOP
VARIABLE AND
FIXED DIVIDER
BIPHASE
SYMBOL
DECODER
DIFFERENTIAL
DECODER
RDS_DATA
(PART 8)
RDS_CLK
(PART 8)
VP1
REFERENCE
VOLTAGE
OSCILLATOR
AND
DIVIDER
CLOCK
REGENERATION
AND SYNC
TEST LOGIC AND OUTPUT
SELECTOR SWITCH
2824
2u2
T106
2K2
3822
1806
4.332MHz
2823
47p
2822
82p
IF IC TYPE IS SAA6579T

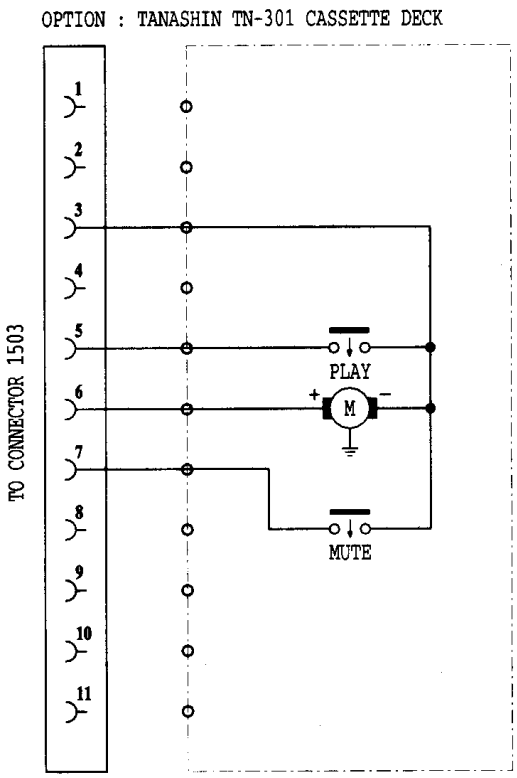
PART 2 : CASSETTE PRE-AMP, DOLBY & MSS (MAIN PCB)

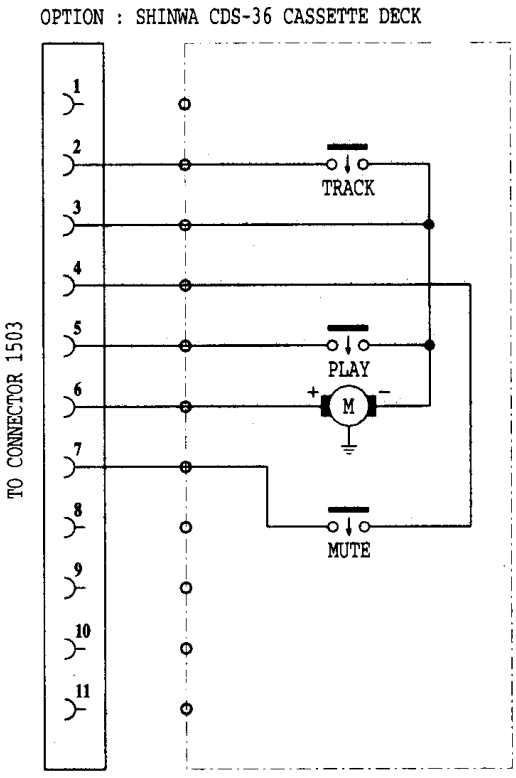




1501 E 3
1502 B 3
2501 F 5
2502 F 5
2503 F 5
2504 F 5
2505 G 6
2506 E 6
2507 H 6
2508 H 5
2509 I 6
2510 D 6
2511 I 8
2512 C 8
2513 G 9
2514 E 9
2515 H 9
2516 D 9
2517 H10
2518 D10
2519 I 9
2520 D11
2521 G12
2522 F12
2523 D12
3501 G 7
3502 E 7
3503 H 7
3504 D 7
3505 I 7
3506 C 7
3507 J 6
3508 C 6
3509 J 7
3510 C 7
3511 J 8
3512 B 8
3513 I 8
3514 C 8
3515 H 9
3516 D 9
3517 H 8
3518 H 8
3519 E 5
3520 H 5
3521 D11
3522 D11
3523 D13
3524 I10
3525 I11
3526 I12
3527 I13
3528 I13
3529 B11
3530 B12
3531 B13
7501 F 9
7502 F 7
7503 D12
7504 I11
7505 I12
7506 B12

PART 3 : CASSETTE DECK CONTROL (MAIN PCB)

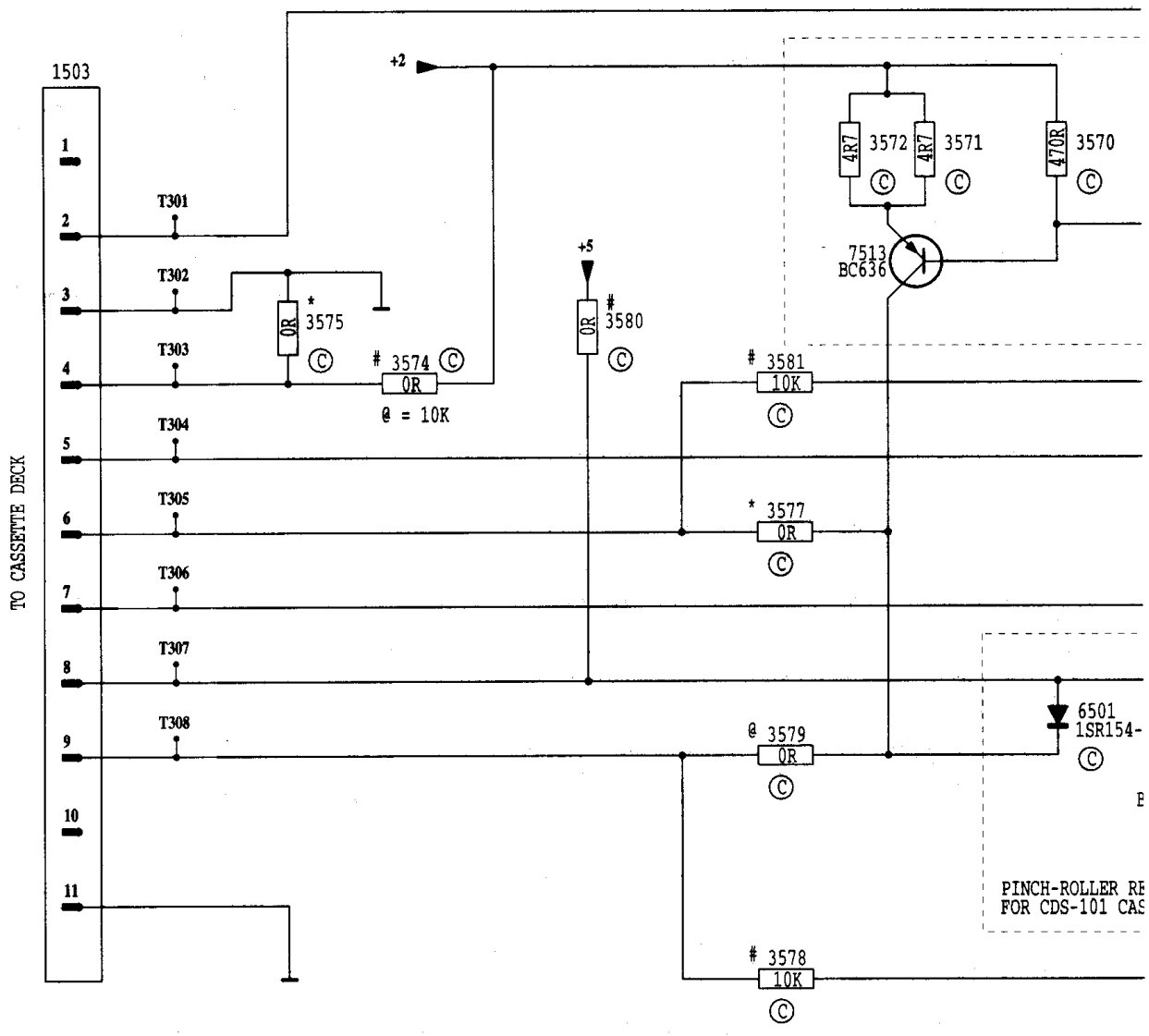


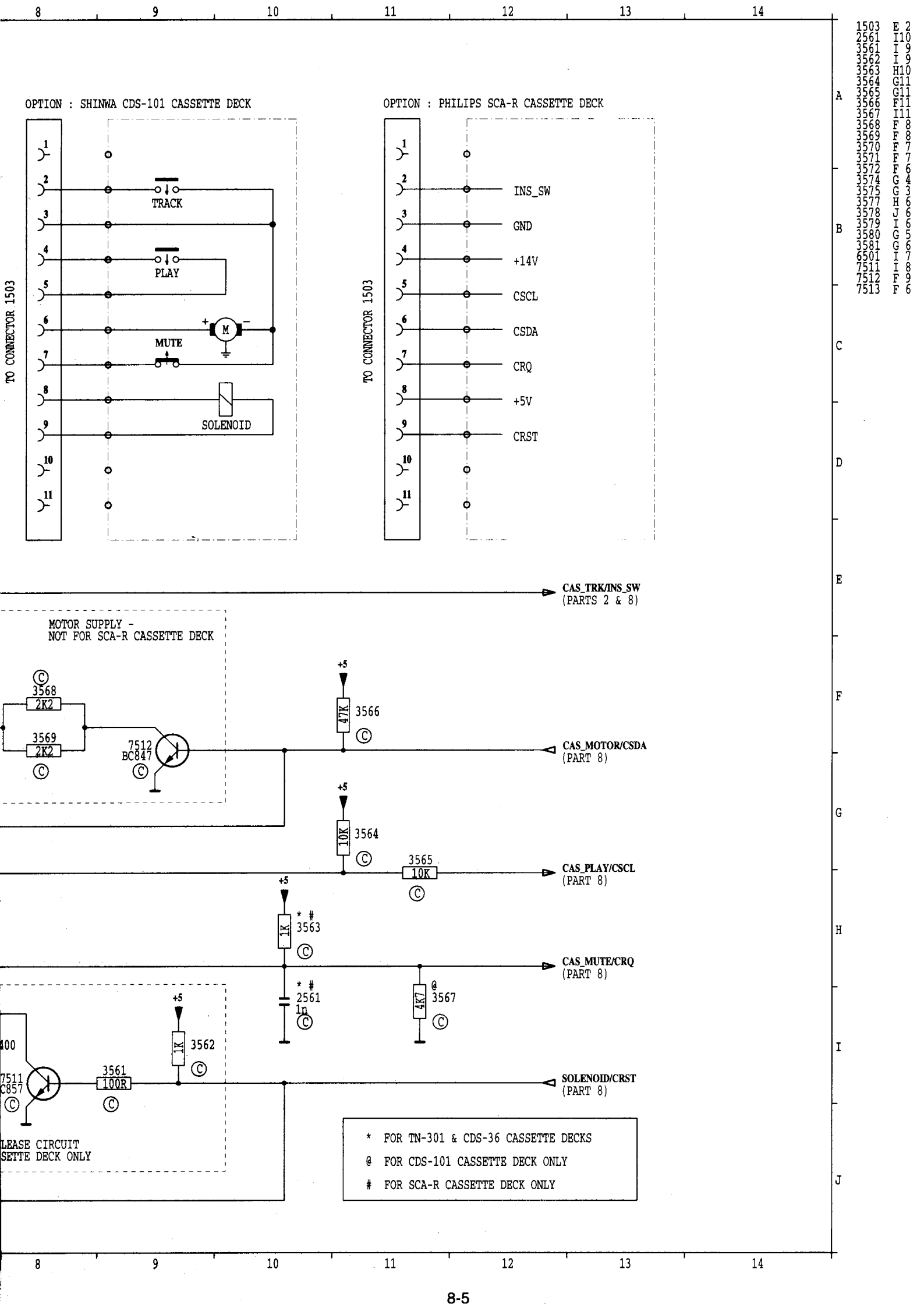


Voltage measured in CASSETTE mode

Connector 1503

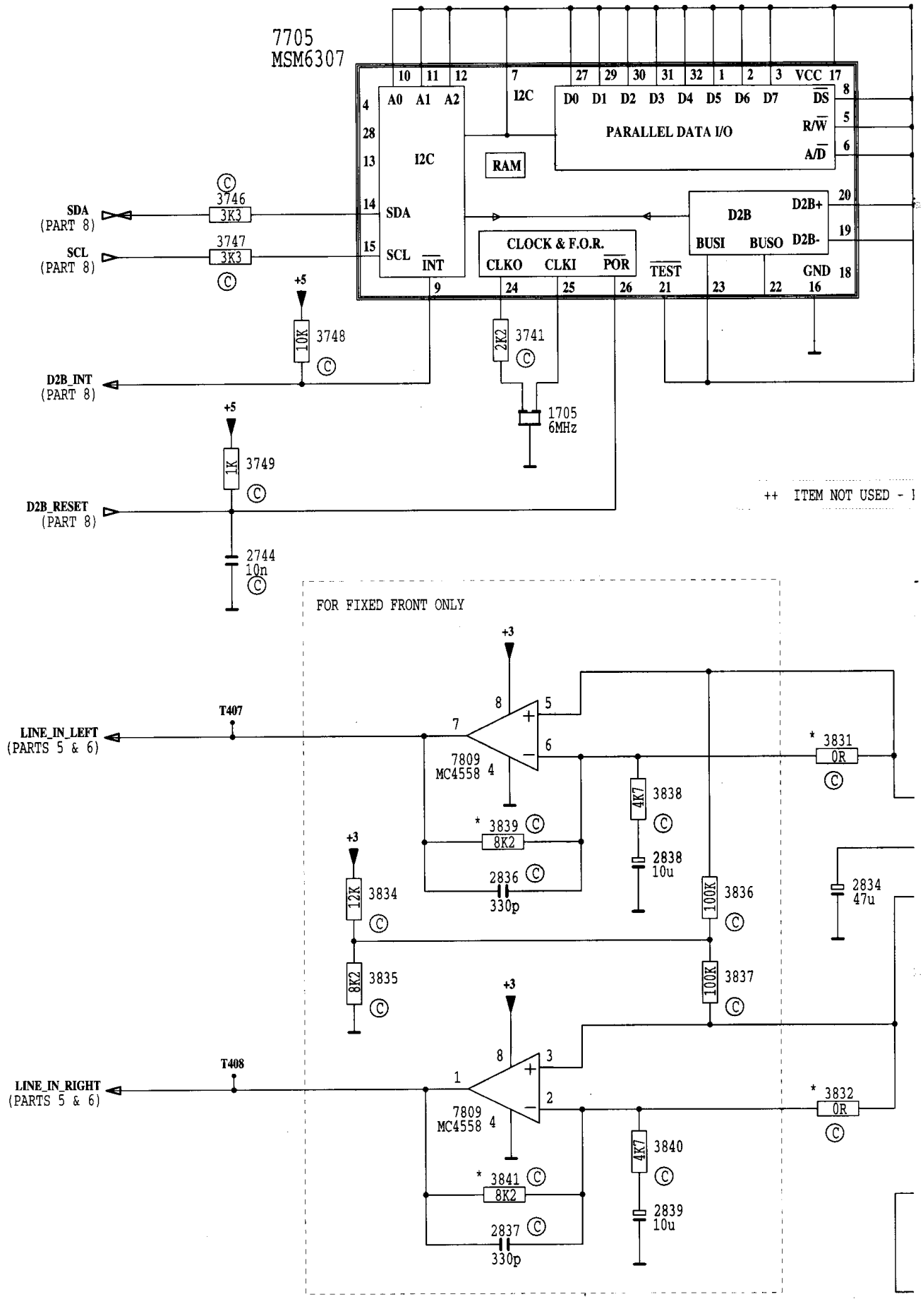
1	N.C.
2	N.C.
3	0V
4	N.C.
5	0V (tape in) 5V (tape out)
6	13.3V (tape in)
7	5V (tape in) 0V (tape out)
8	N.C.
9	N.C.
10	N.C.
11	N.C.

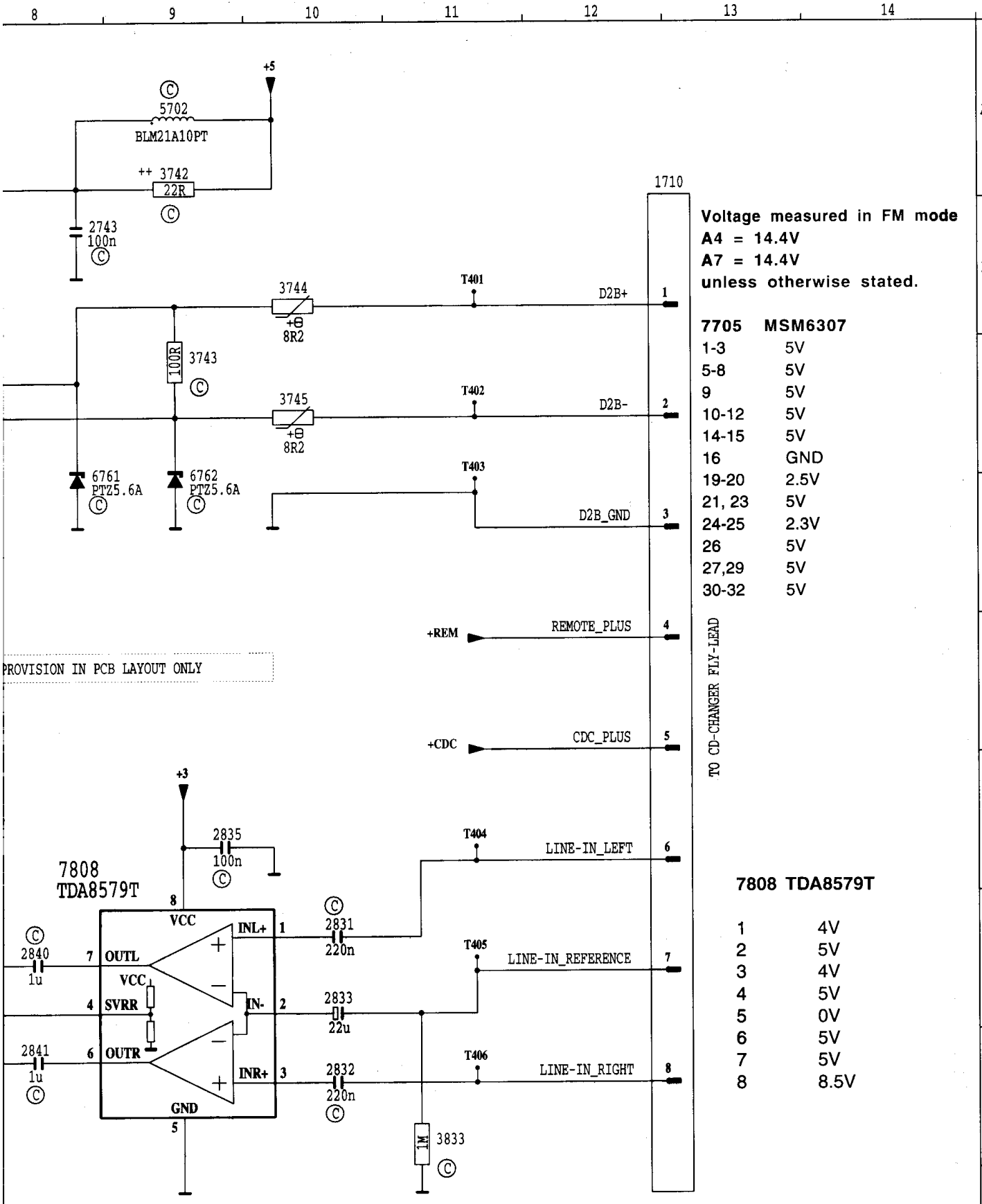



8 9 10 11 12 13 14
1503 E 2
2561 I10
3561 I 9
3562 I 9
3563 H10
3564 G11
3565 G11
3566 F11
3567 I11
3568 F 8
3569 F 8
3570 F 7
3571 F 7
3572 F 6
3574 G 4
3575 G 3
3577 H 6
3578 J 6
3579 I 6
3580 G 5
3581 G 6
6501 I 7
7511 I 8
7512 F 9
7513 F 6
A
B
C
D
E
F
G
H
I
J
OPTION : SHINWA CDS-101 CASSETTE DECK
TO CONNECTOR 1503
TRACK
PLAY
MUTE
SOLENOID
OPTION : PHILIPS SCA-R CASSETTE DECK
TO CONNECTOR 1503
INS_SW
GND
+14V
CSCL
CSDA
CRQ
+5V
CRST
CAS_TRK/INS_SW
(PARTS 2 & 8)
MOTOR SUPPLY -
NOT FOR SCA-R CASSETTE DECK
3568
2K2
3569
2K2
7512
BC847
+5
47K
3566
CAS_MOTOR/CSDA
(PART 8)
+5
10K
3564
3565
10K
CAS_PLAY/CSCL
(PART 8)
+5
1K
* #
3563
CAS_MUTE/CRQ
(PART 8)
* #
2561
1n
@
4K7
3567
+5
1K
3562
400
7511
C857
3561
100R
SOLENOID/CRST
(PART 8)
LEASE CIRCUIT
SETTE DECK ONLY
* FOR TN-301 & CDS-36 CASSETTE DECKS
@ FOR CDS-101 CASSETTE DECK ONLY
# FOR SCA-R CASSETTE DECK ONLY

PART 4 : CD-CHANGER CONTROL / CDCC (MAIN PCB)

N.B. THIS PART IS AN OPTION.





Voltage measured in FM mode
A4 = 14.4V
A7 = 14.4V
unless otherwise stated.

7705	MSM6307
1-3	5V
5-8	5V
9	5V
10-12	5V
14-15	5V
16	GND
19-20	2.5V
21, 23	5V
24-25	2.3V
26	5V
27,29	5V
30-32	5V

7808 TDA8579T

1	4V
2	5V
3	4V
4	5V
5	0V
6	5V
7	5V
8	8.5V

* FOR SMALL DETACHABLE FRONT:
INSERT 3831, 3832, 3839 & 3841
CHANGE 3839 & 3841 VALUES TO 0R

PART 5 : SOFAC (MAIN PCB)

N.B. FOR SMALL DETACHABLE FRONT ONLY

Voltage measured in FM mode

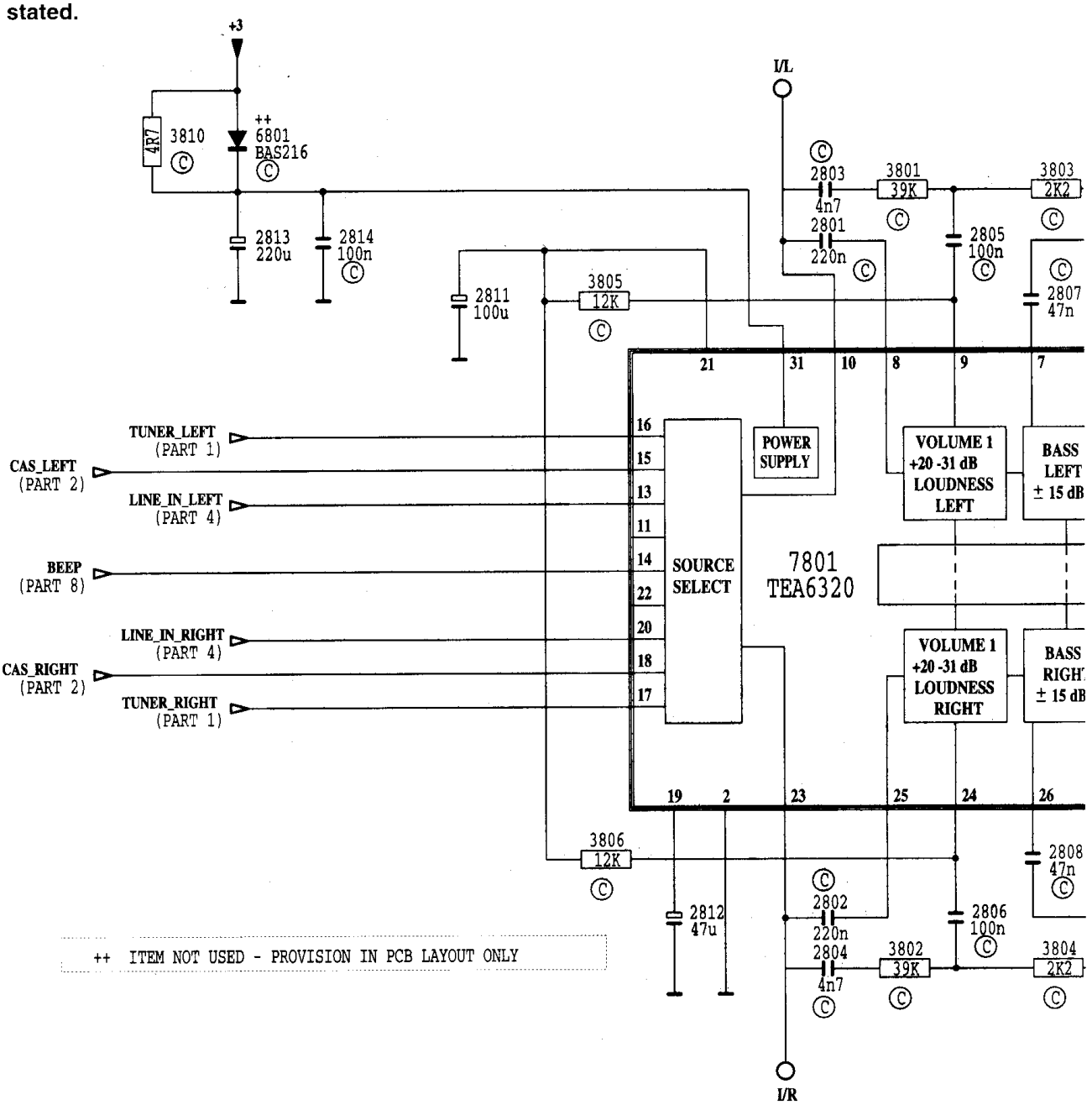
A4 = 14.4V

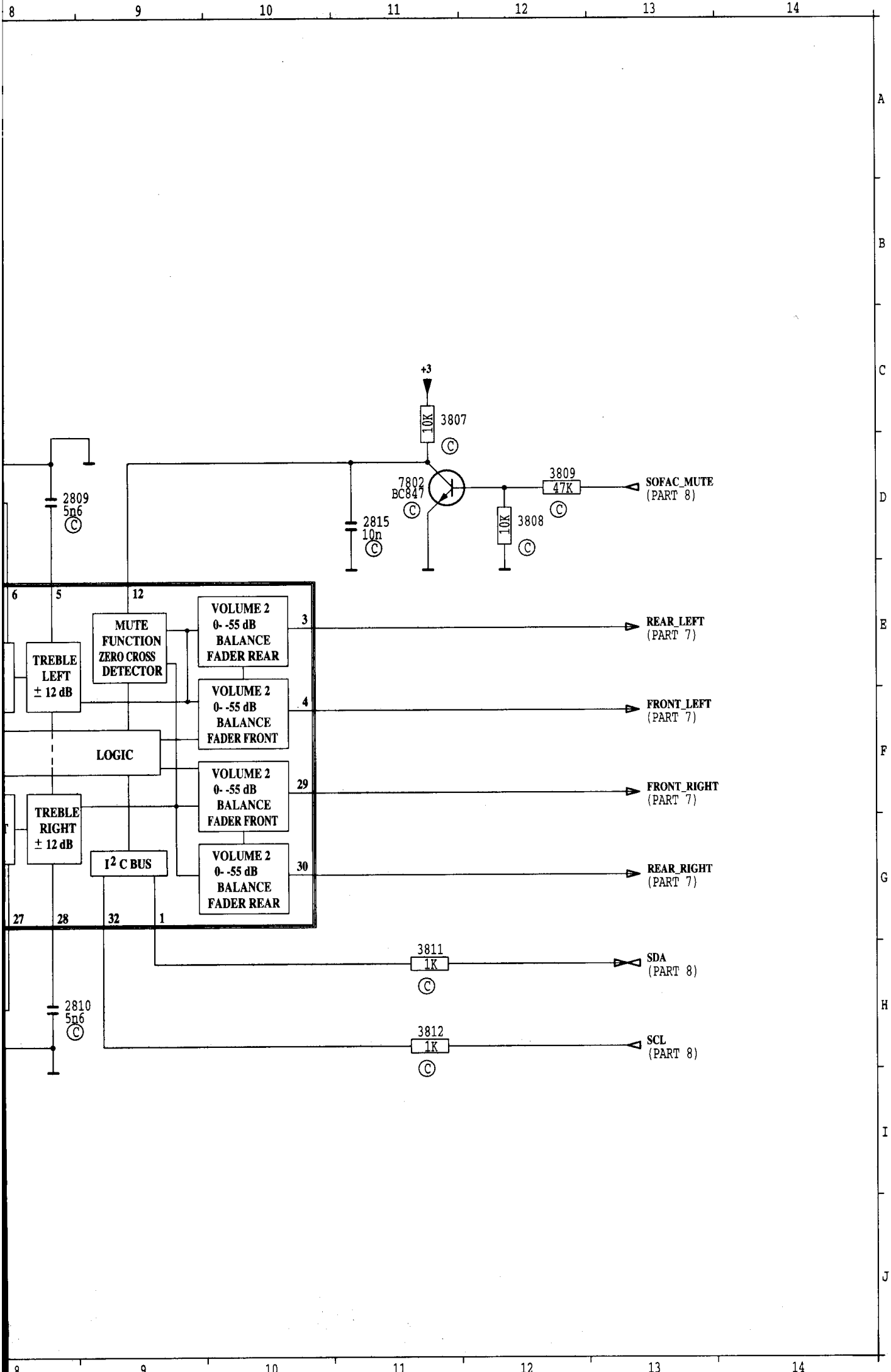
A7 = 14.4V

unless otherwise stated.

7801 TEA6320

1	5V
2	0V
3	4.2V
4	4.2V
5	4.2V
6	4.4V
7	4.4V
8	2.6V
9	4.2V
10	4V
11	N.C.
12	8.5V
13	5V
14	3.8V
15	3.8V
16	3.8V
17	3.8V
18	3.8V
19	7.9V
20	5V
21	4.4V
22	N.C.
23	3.8V
24	4V
25	2.5V
26	4V
27	4.2V
28	4V
29	4.2V
30	4.2V
31	8V
32	5V



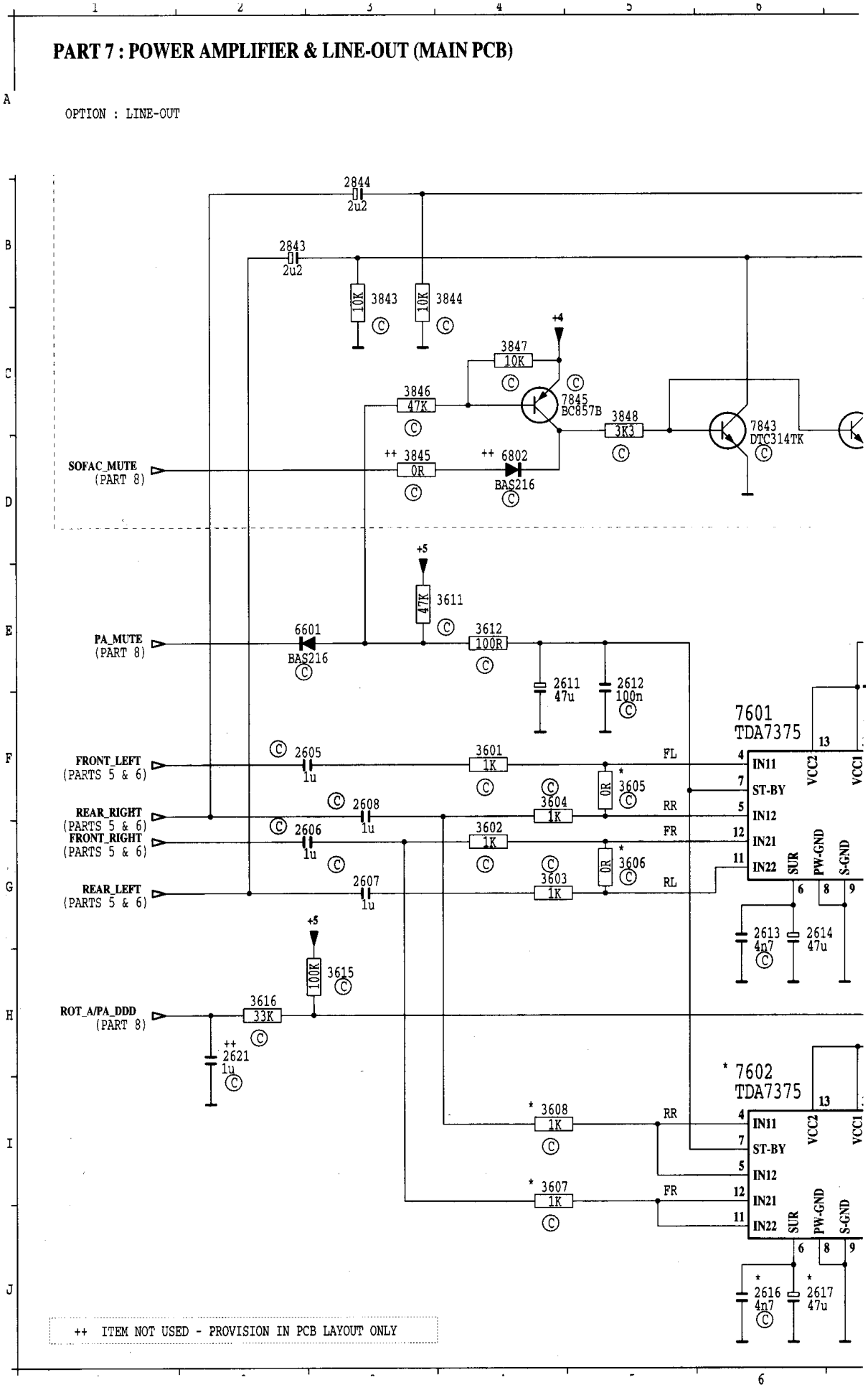


Voltage measured in FM mode

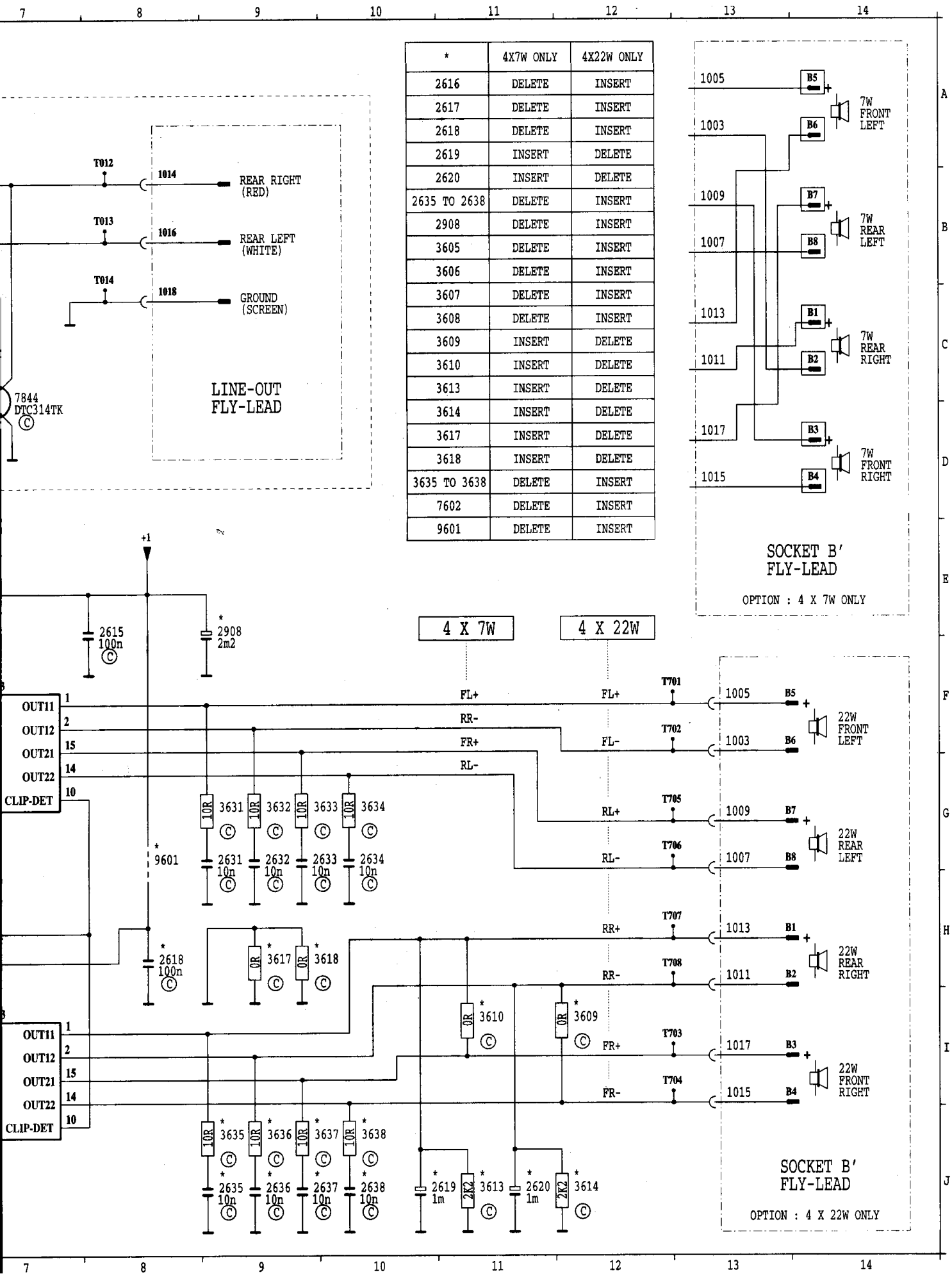
A4 = 14.4V
A7 = 14.4V
unless otherwise stated.

7601/7602	TDA7375
1	6.9V
2	6.9V
3	14.1V
4	0.7V
5	0.7V
6	0.7V
7	4.7V
8	0V
9	0V
10	0V
11	0.7V
12	0.7V
13	14.1V
14	6.9V
15	6.9V

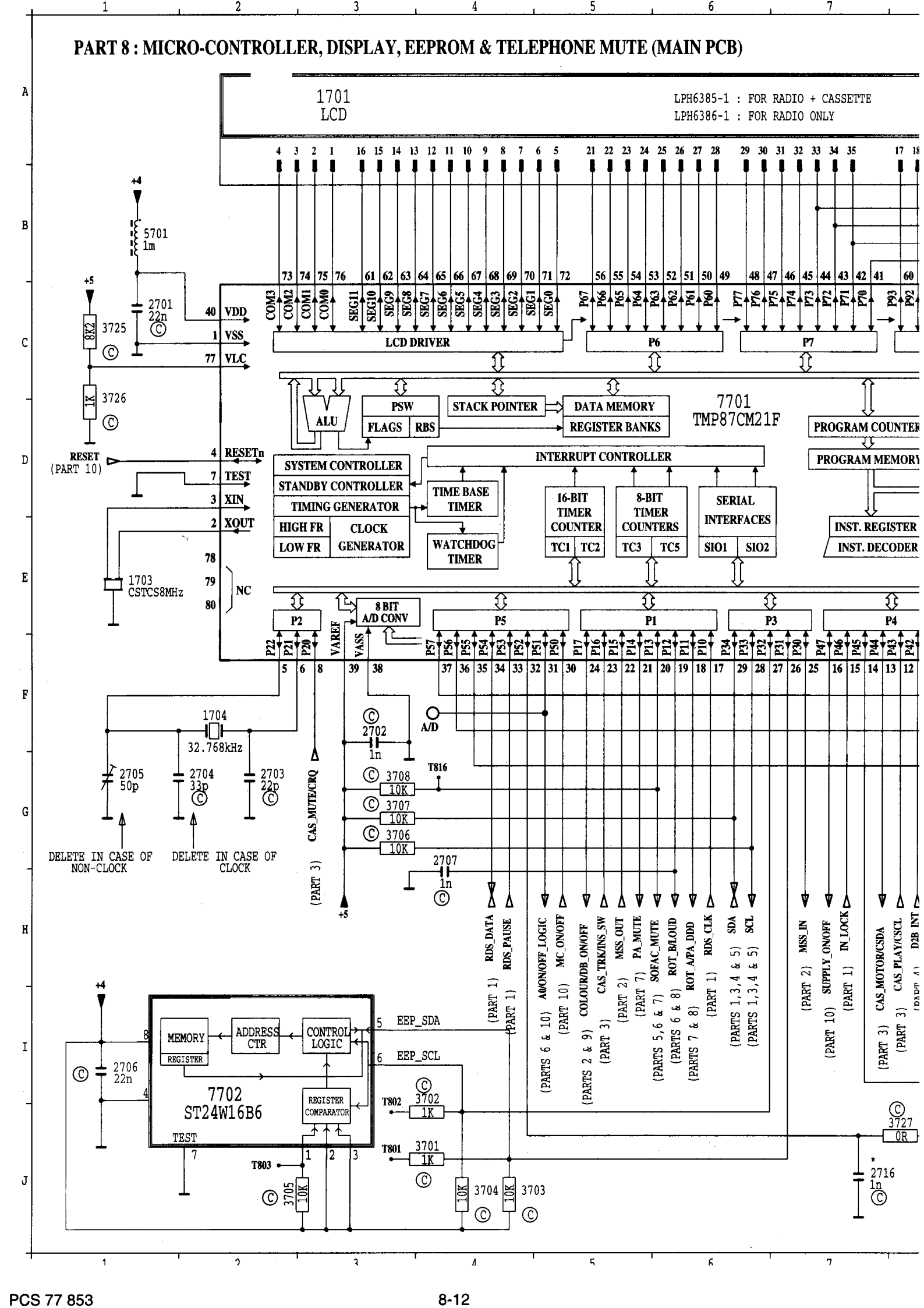
PART 7 : POWER AMPLIFIER & LINE-OUT (MAIN PCB)

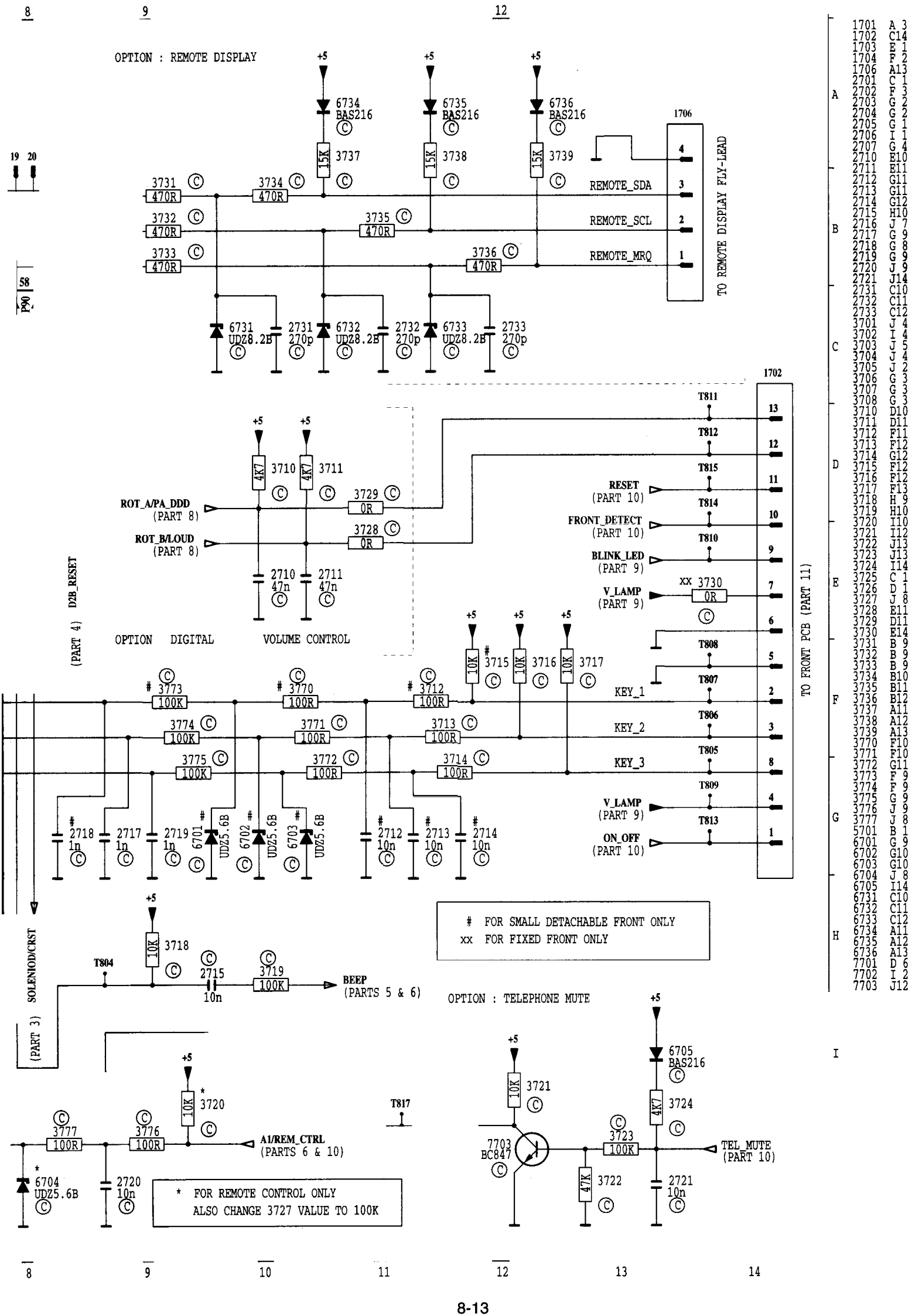


*	4X7W ONLY	4X22W ONLY
2616	DELETE	INSERT
2617	DELETE	INSERT
2618	DELETE	INSERT
2619	INSERT	DELETE
2620	INSERT	DELETE
2635 TO 2638	DELETE	INSERT
2908	DELETE	INSERT
3605	DELETE	INSERT
3606	DELETE	INSERT
3607	DELETE	INSERT
3608	DELETE	INSERT
3609	INSERT	DELETE
3610	INSERT	DELETE
3613	INSERT	DELETE
3614	INSERT	DELETE
3617	INSERT	DELETE
3618	INSERT	DELETE
3635 TO 3638	DELETE	INSERT
7602	DELETE	INSERT
9601	DELETE	INSERT



PART 8 : MICRO-CONTROLLER, DISPLAY, EEPROM & TELEPHONE MUTE (MAIN PCB)




OPTION : REMOTE DISPLAY
6734 BAS216
6735 BAS216
6736 BAS216
3737
3738
3739
15K
1706
REMOTE_SDA
REMOTE_SCL
REMOTE_MRQ
TO REMOTE DISPLAY FLY-LEAD
3731 470R
3732 470R
3733 470R
3734 470R
3735 470R
3736 470R
6731 UDZ8.2B
6732 UDZ8.2B
6733 UDZ8.2B
2731 270p
2732 270p
2733 270p
1702
T811
T812
T815
T814
T810
T808
T807
T806
T805
T809
T813
RESET (PART 10)
FRONT_DETECT (PART 10)
BLINK_LED (PART 9)
V_LAMP (PART 9)
ON_OFF (PART 10)
TO FRONT PCB (PART 11)
ROT_A/PA_DDD (PART 8)
ROT_B/LOUD (PART 8)
3710 4K7
3711 4K7
3729 0R
3728 0R
2710 47n
2711 47n
D2B_RESET (PART 4)
OPTION DIGITAL VOLUME CONTROL
3715 10K
3716 10K
3717 10K
KEY_1
KEY_2
KEY_3
3773 100K
3774 100K
3775 100K
3770 100R
3771 100R
3772 100R
3712 100R
3713 100R
3714 100R
2718 1n
2717 1n
2719 1n
2712 10n
2713 10n
2714 10n
6701 UDZ5.6B
6702 UDZ5.6B
6703 UDZ5.6B
FOR SMALL DETACHABLE FRONT ONLY
xx FOR FIXED FRONT ONLY
SOLENOID/CRST (PART 3)
T804
3718 10K
2715 10n
3719 100K
BEEP (PARTS 5 & 6)
OPTION : TELEPHONE MUTE
6705 BAS216
3721 10K
3724 4K7
3723 100K
7703 BC847
3722 47K
2721 10n
TEL_MUTE (PART 10)
T817
3720 10K
3777 100R
3776 100R
A1/REM_CTRL (PARTS 6 & 10)
6704 UDZ5.6B
2720 10n
* FOR REMOTE CONTROL ONLY
ALSO CHANGE 3727 VALUE TO 100K

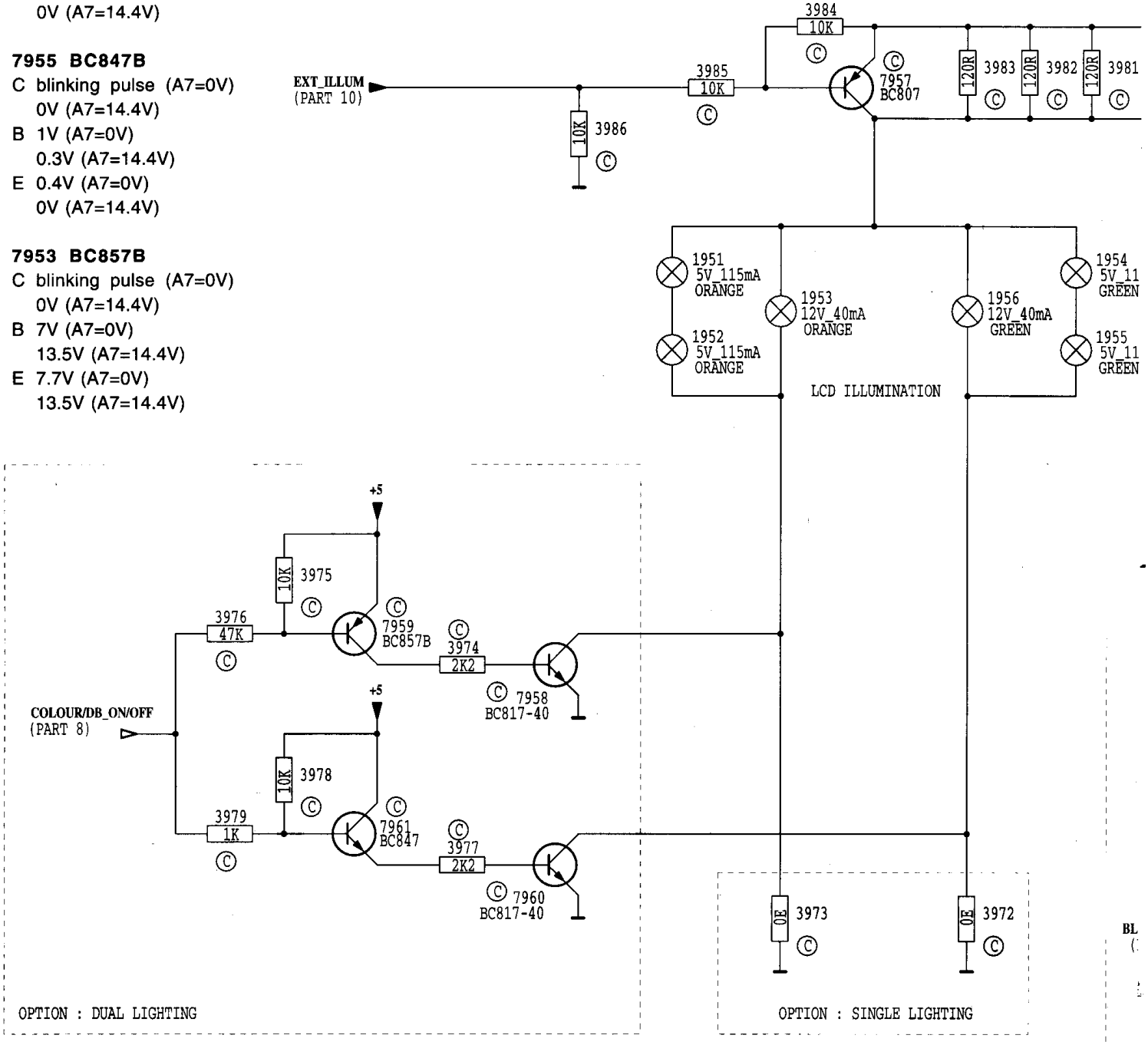
PART 9 : ILLUMINATION & BLINKING LED (MAIN PCB)

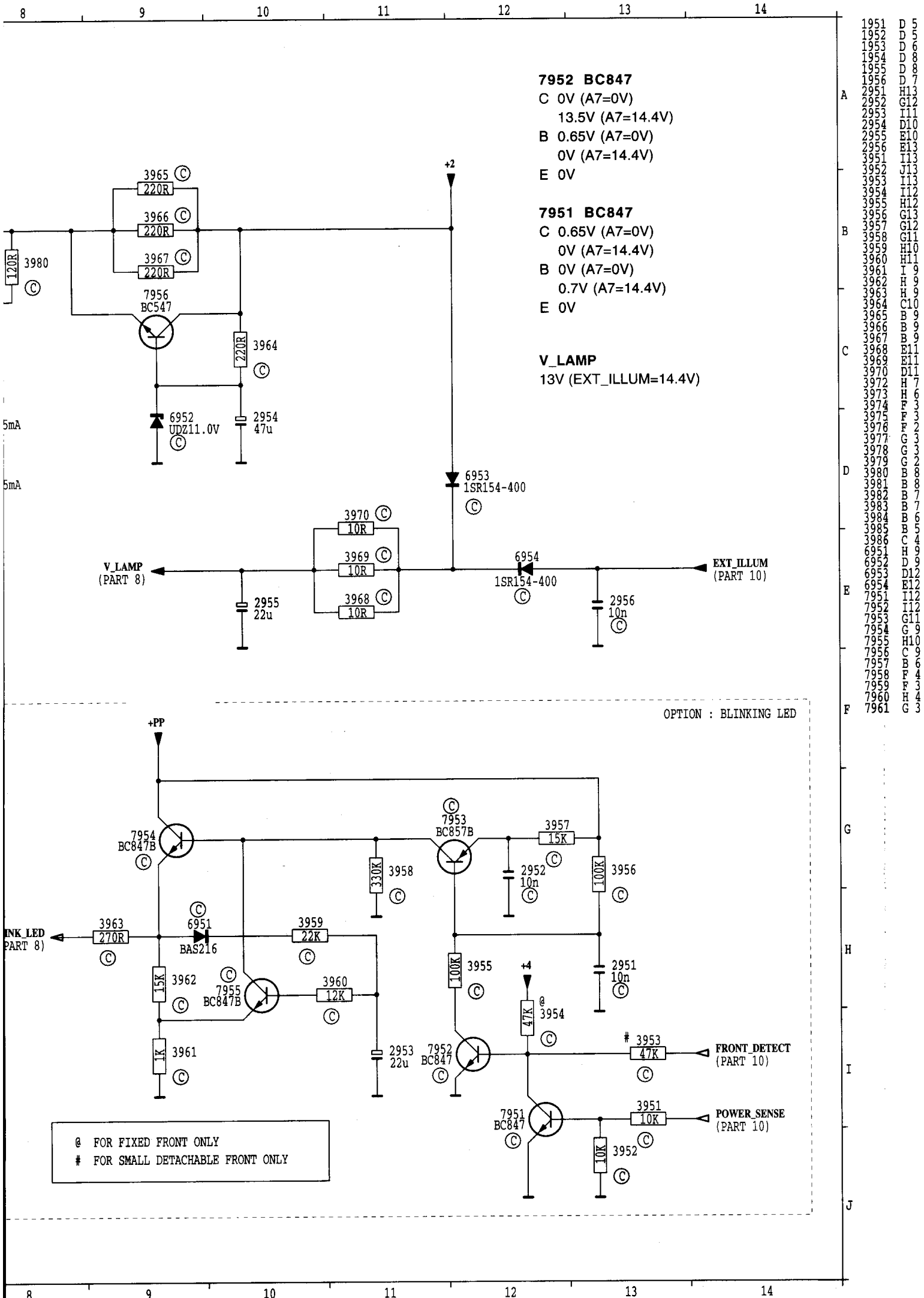
Voltage measured in FM mode

7954 BC847B
C 13.8V
B blinking pulse (A7=0V)
0V (A7=14.4V)
E blinking pulse (A7=0V)
0V (A7=14.4V)

7955 BC847B
C blinking pulse (A7=0V)
0V (A7=14.4V)
B 1V (A7=0V)
0.3V (A7=14.4V)
E 0.4V (A7=0V)
0V (A7=14.4V)

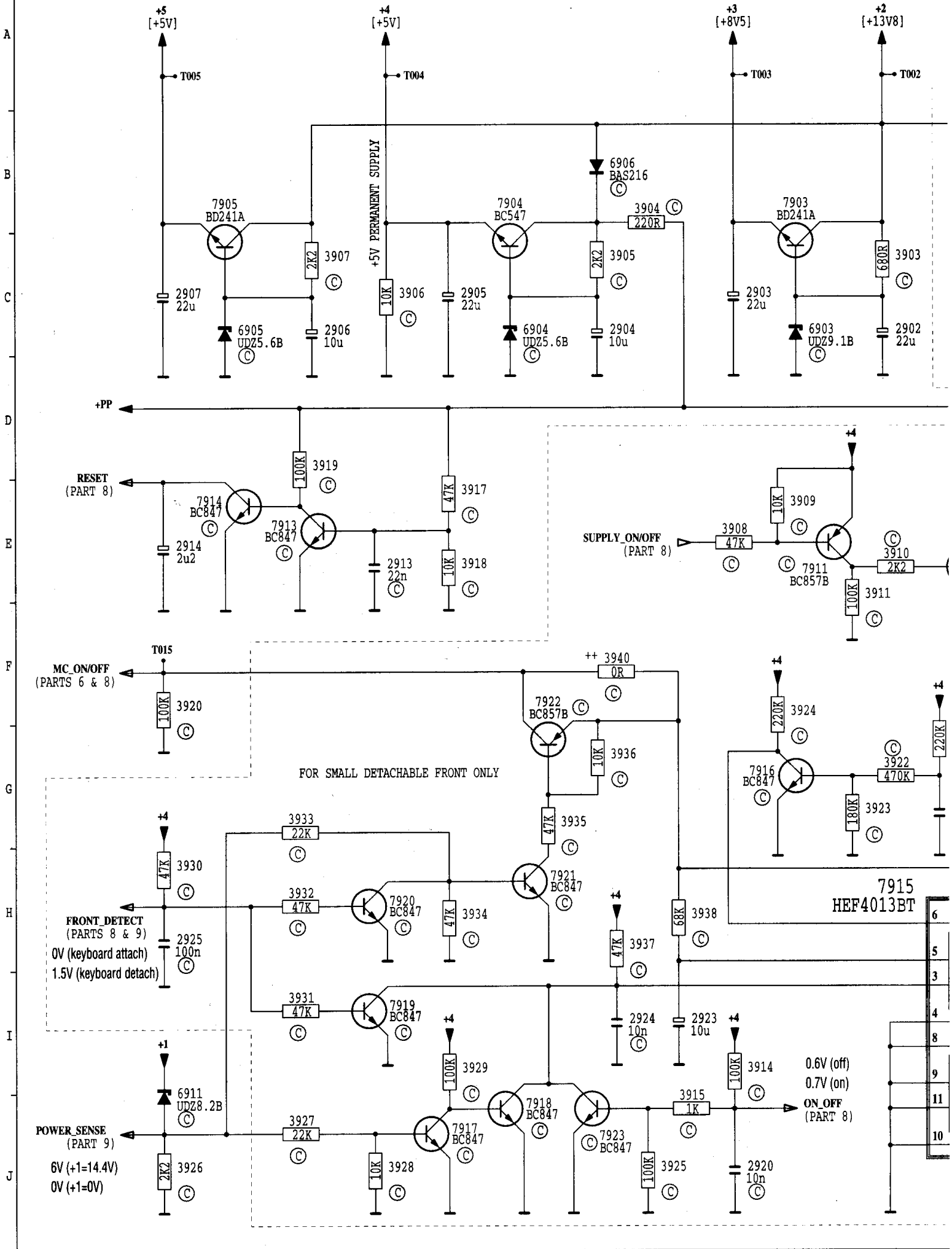
7953 BC857B
C blinking pulse (A7=0V)
0V (A7=14.4V)
B 7V (A7=0V)
13.5V (A7=14.4V)
E 7.7V (A7=0V)
13.5V (A7=14.4V)

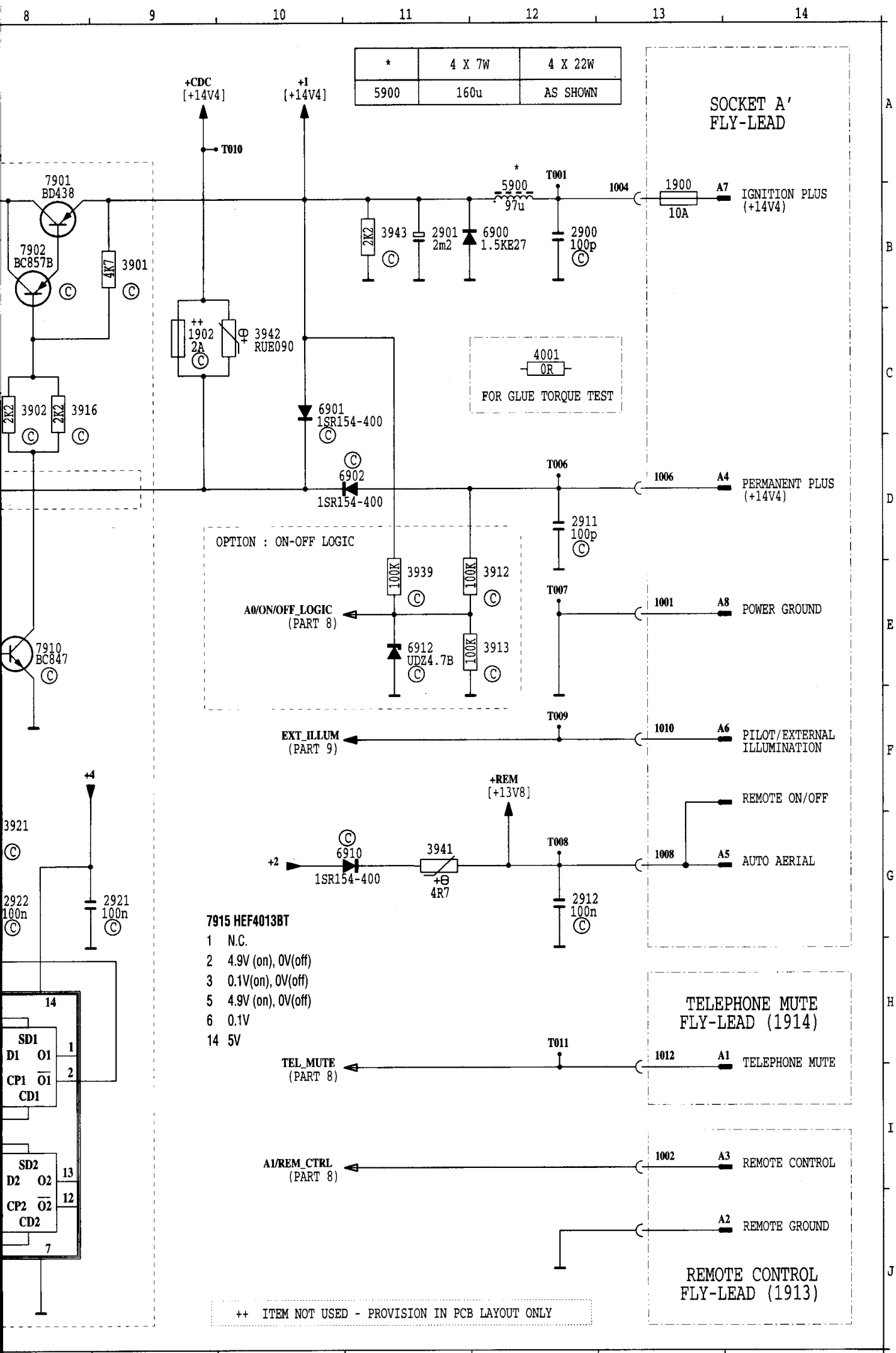




1951 D 5
1952 D 5
1953 D 6
1954 D 8
1955 D 8
1956 D 7
2951 H13
2952 G12
2953 I11
2954 D10
2955 E10
2956 E13
3951 I13
3952 J13
3953 I13
3954 I12
3955 H12
3956 G13
3957 G12
3958 G11
3959 H10
3960 H11
3961 I 9
3962 H 9
3963 H 9
3964 C10
3965 B 9
3966 B 9
3967 B 9
3968 E11
3969 E11
3970 D11
3972 H 7
3973 H 6
3974 F 3
3975 F 3
3976 F 2
3977 G 3
3978 G 3
3979 G 2
3980 B 8
3981 B 8
3982 B 7
3983 B 7
3984 B 6
3985 B 5
3986 C 4
6951 H 9
6952 D 9
6953 D12
6954 E12
7951 I12
7952 I12
7953 G11
7954 G 9
7955 H10
7956 C 9
7957 B 6
7958 F 4
7959 F 3
7960 H 4
7961 G 3

PART 10 : SUPPLY & CONTROL (MAIN PCB)




8 9 10 11 12 13 14
* 4 X 7W 4 X 22W
5900 160u AS SHOWN
+CDC [+14V4]
+1 [+14V4]
T010
7901 BD438
7902 BC857B
4K7 3901
2K2 3902
2K2 3916
7910 BC847
++ 1902 2A
3942 RUE090
6901 1SR154-400
6902 1SR154-400
2K2 3943
2901 2m2
* 5900 97u
T001
6900 1.5KE27
2900 100p
1004
1900 10A
A7 IGNITION PLUS (+14V4)
4001 0R
FOR GLUE TORQUE TEST
T006
1006 A4 PERMANENT PLUS (+14V4)
2911 100p
OPTION : ON-OFF LOGIC
100K 3939
100K 3912
A0/ON/OFF_LOGIC (PART 8)
6912 UDZ4.7B
100K 3913
T007
1001 A8 POWER GROUND
T009
EXT_ILLUM (PART 9)
1010 A6 PILOT/EXTERNAL ILLUMINATION
+4
3921
2922 100n
2921 100n
+REM [+13V8]
REMOTE ON/OFF
+2
6910 1SR154-400
3941 +⊖ 4R7
T008
1008 A5 AUTO AERIAL
2912 100n
7915 HEF4013BT
1 N.C.
2 4.9V (on), 0V(off)
3 0.1V(on), 0V(off)
5 4.9V (on), 0V(off)
6 0.1V
14 5V
SD1 D1 O1 CP1 O1 CD1
SD2 D2 O2 CP2 O2 CD2
TELEPHONE MUTE FLY-LEAD (1914)
T011
TEL_MUTE (PART 8)
1012 A1 TELEPHONE MUTE
A1/REM_CTRL (PART 8)
1002 A3 REMOTE CONTROL
A2 REMOTE GROUND
REMOTE CONTROL FLY-LEAD (1913)
++ ITEM NOT USED - PROVISION IN PCB LAYOUT ONLY
SOCKET A' FLY-LEAD
A B C D E F G H I J
1001 E13
1002 I13
1004 B13
1006 D13
1008 G13
1010 F13
1012 H13
1902 C 9
2900 B12
2901 B11
2902 C 7
2903 C 6
2904 C 5
2905 C 4
2906 C 3
2907 C 2
2911 D12
2912 G12
2913 E 3
2914 E 2
2920 J 6
2921 G 9
2922 G 8
2923 I 6
2924 I 5
2925 H 2
3901 B 9
3902 C 8
3903 C 7
3904 B 5
3905 C 5
3906 C 3
3907 C 3
3908 E 6
3909 E 7
3910 E 7
3911 E 7
3912 E12
3913 E12
3914 I 6
3915 J 6
3916 C 8
3917 E 4
3918 E 4
3919 D 3
3920 F 2
3921 G 7
3922 G 7
3923 G 7
3924 F 7
3925 J 6
3926 J 2
3927 J 3
3928 J 3
3929 I 4
3930 H 2
3931 I 3
3932 H 3
3933 G 3
3934 H 4
3935 G 5
3936 G 5
3937 H 5
3938 H 6
3939 E11
3940 F 5
3941 G11
3942 C10
3943 B11
4001 C12
5900 B12
6900 B12
6901 C10
6902 D11
6903 C 7
6904 C 4
6905 C 2
6906 B 5
6910 G11
6911 J 2
6912 E11
7901 A 8
7902 B 8
7903 B 6
7904 B 4
7905 B 2
7910 E 8
7911 E 7
7913 E 3
7914 E 2
7915 H 7
7916 G 6
7917 J 4
7918 J 4
7919 I 3
7920 H 3
7921 H 5
7922 F 4
7923 J 5

Some useful tips on Micro-processor

Voltage and waveform are measured with A4 & A7 with 14.4V unless otherwised stated.

(on) = Power on

(off) = Power off

Pin No.	Name	I/O	Function description	Voltage/Waveform
1	VSS	I	uP GND	0V
2			High clock oscillator	2V, SINE WAVE
3			High clock oscillator	1.7V, SINE WAVE
4	RESET	I	uP reset	4.6V
5			Slow clock oscillator	2.5V, SINE WAVE
6			Slow clock oscillator	1.9V, SINE WAVE
7				0V
8	CAS_MUTE		Mute tape output when fast forward	0V (TUNER), 5V (TAPE), 0V (FAST FORWARD)
9	SOLENDO	O	OPTION	
10	Beep	O	Roger beep	
11	D2B_INT	I	D2B interrupt from CDC	
12	CAS_PLAY	I	Cassette play	5V (tape in), 0V (tape out)
13	CAS_MOTOR	O	Cassette motor	5V (TAPE), 0V (TUNER)
14	TEL_MUTE	I	OPTION	
15	IN_LOCK	I		5V (on), 0V (off)
16	SUPPLY_ON/OFF	O		40mV square wave, 50% duty cycle (on), 0V (off)
17	RDS_CLK	I	RDS clock	5V (on), 0V (off)
18	ROT_A	O	OPTION	
19	ROT_B	O	OPTION	
20	SOFAC_MUTE	O	SOFAC IC MUTE	5V (on), 0V (off)
21	PA_MUTE	o	Power amplifier mute	5V (on), 0V (off)
22	MSS_OUT	I	OPTION	
23	CAS_TRK	I	Side A or Side B of tape	Toggle between state "0" or "1" when direction of tape is change
24	COLOUR	O	Change display colour	
25	MSS_IN	O	OPTION	
26	EEP_SDA		Eeprom serial data	
27	EEP_SCL		Eeprom serial clock	
28	SCL	O	Serial clock	
29	SDA	I/O	Serial data	
30	MC_ON/OFF	I	uP on/off status	5V (on), 0V (off)
31	A0	O		5V
32	A1	O		0V
33	RDS_PAUSE	I		5V ((on), 0V (off)
34	RDS_DATA	I/O		5V (on), 0V (off)
35-37	KEY1-KEY3			
38				0V
39	+5			5V
40	VDD	I	uP supply	5V
41	D2B_RESET	O	D2B IC RESET	
42-76		o	LCD driver output	
77	VLC	I	GND	0V
78-80			no connection	

ADDITIONAL FUNCTION CHECK:

Item	Input	Output
External illumination +	Set off Inject +12V at pin A6	Power pilot light turns ON
Auto Antenna	Connect a resistor of 25Ω from A5 to GND. Switch on set.	Voltage drop between pin A7 & A5 < 1V.
Line-out	Tuner set to FM mode, 97MHz Inject 97Mhz, 22.5kHz dev. E'=1mV, 1kHz mod. Set volume setting at 1Vrms at speaker output.	Measure at Line-out Flyleads a 1kHz AF signal of 200mVrms.

POWER IGNITION CHECK

Steps	Permanent (A4)	Ignition (A7)	Action	Observation
1	ON	ON	Turn set ON with power key.	Set is turn on.
2	ON	OFF	Switch OFF ignition	Set switches off. Blinking LED (if any) should blink.
3	ON	ON	Switch ON ignition.	Set will be on.

TUNER CHECK:

IC96 7SV/9SV module is a Non repairable module, complete spare parts as an module is readily available. For general check, please refer to the manual " General Check & Alignment procedures for Car Systems" 4822 725 25456. Use a matching circuit (artifical aerials) with Zi = 75ohm.

CHECK	TUNE IN	OUTPUT
α – 3 dB	FM 93MHz, 1mV, Dev=22.5kHz, f mod. = 1kHz FM 93MHz, 8uV, Dev=22.5kHz, f mod. = 1kHz	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3, B5 = -3dB
SDS 10dB Crosstalk	FM 93MHz, 1mV, Dev=22.5kHz, f mod. = 1kHz FM 93MHz, 150uV, Dev=22.5kHz, f mod. = 1kHz (L)	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3 = -10dB
Stereo Channel separation	FM 93MHz, 1mV, Dev=22.5kHz, f mod. = 1kHz FM 93MHz, 1mV, Dev=22.5kHz, f mod. = 1kHz (L)	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3 ≤ -21dB
26dB SNR	FM 93MHz, 4.5uV, Dev=22.5kHz, f mod. = 1kHz FM 93MHz, 4.5uV, Dev=22.5kHz, unmodulated	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3, B5 ≤ -26dB
FM Demodulated level	FM 93MHz, 1mV, Dev=22.5kHz mod. = 1kHz	Pin 13 of Tuner module = 280mV (AC) ± 3dB Pin 7 of IC96 = 215mV (AC) ± 2dB
FM Search Sensitivity	FM 93MHz, unmodulated	DX : 10uV < E < 20uV LO : 190uV < E < 290uV
AM Demodulated level	AM 1053kHz, 1mV, m=30%, f mod. = 1kHz	Pin 13 of Tuner module = 280mV (AC) ± 2dB
26dB SNR	MW 1053kHz, 30uV, m=30%, f mod. = 1kHz MW 1053kHz, 30uV, unmodulated	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3, B5 ≤ -26dB
26dB SNR	LW 207kHz, 38uV, m=30%, f mod. = 1kHz LW 207kHz, 38uV, unmodulated	Conn. Block B3, B5 = 0dB (reference level) Conn. Block B3, B5 ≤ -26dB
AM Search Sensitivity	AM 1053kHz, unmodulated	DX : E = 14uV LO : E = 70uV

CLOCK ALIGNMENT :

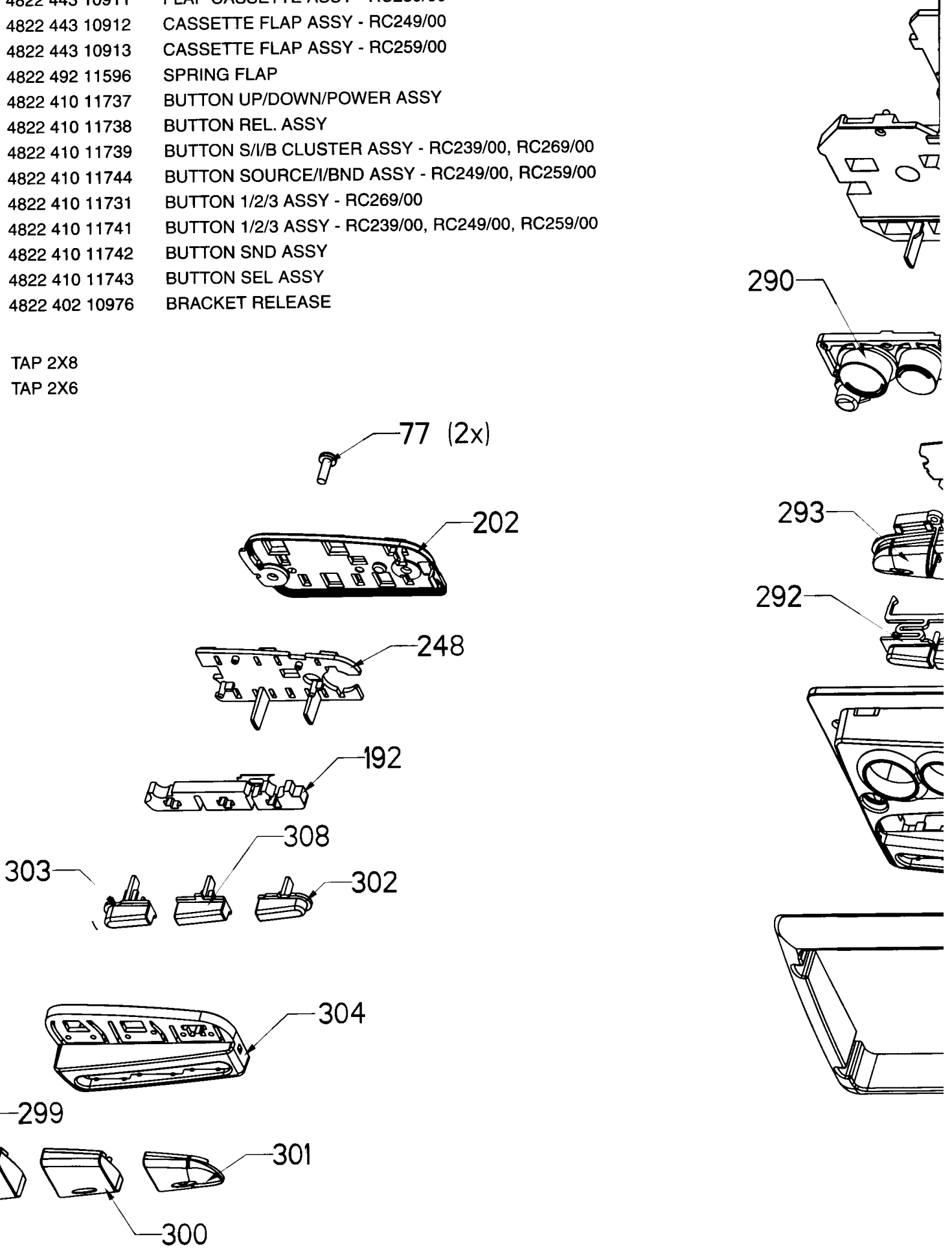
Set T802 (EEP_SCL) TO GND and turn the set on to do clock alignment.

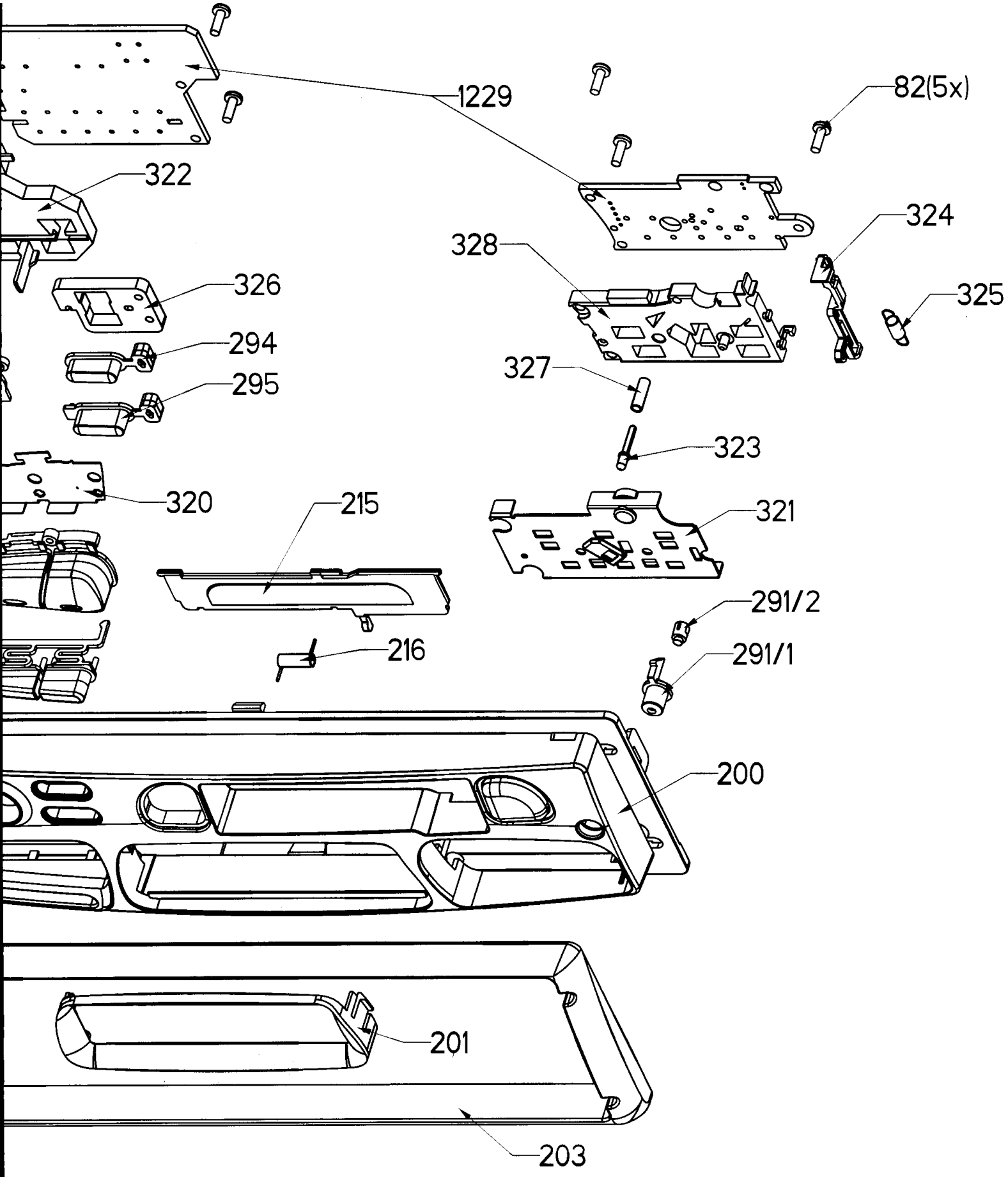
Signal	Test point	Frequency	Aligned with
CLK	(T816) Pin 20 of main uP	1024Hz	2705
GND	(T808) Power supply Gnd		

Only those parts of which the item number stated below are considered service parts.

200	4822 459 04935	PLATE ORNAMENTAL ASSY - RC239/00, RC269/00
200	4822 459 04936	PLATE ORNAMENTAL ASSY - RC249/00, RC259/00
201	4822 450 10475	WINDOW DISPLAY FRONT
203	4822 466 11858	RIM ASSY
215	4822 443 10909	FLAP CASSETTE ASSY - RC269/00
215	4822 443 10911	FLAP CASSETTE ASSY - RC239/00
215	4822 443 10912	CASSETTE FLAP ASSY - RC249/00
215	4822 443 10913	CASSETTE FLAP ASSY - RC259/00
216	4822 492 11596	SPRING FLAP
290	4822 410 11737	BUTTON UP/DOWN/POWER ASSY
291	4822 410 11738	BUTTON REL. ASSY
292	4822 410 11739	BUTTON S/I/B CLUSTER ASSY - RC239/00, RC269/00
292	4822 410 11744	BUTTON SOURCE/I/BND ASSY - RC249/00, RC259/00
293	4822 410 11731	BUTTON 1/2/3 ASSY - RC269/00
293	4822 410 11741	BUTTON 1/2/3 ASSY - RC239/00, RC249/00, RC259/00
294	4822 410 11742	BUTTON SND ASSY
295	4822 410 11743	BUTTON SEL ASSY
324	4822 402 10976	BRACKET RELEASE

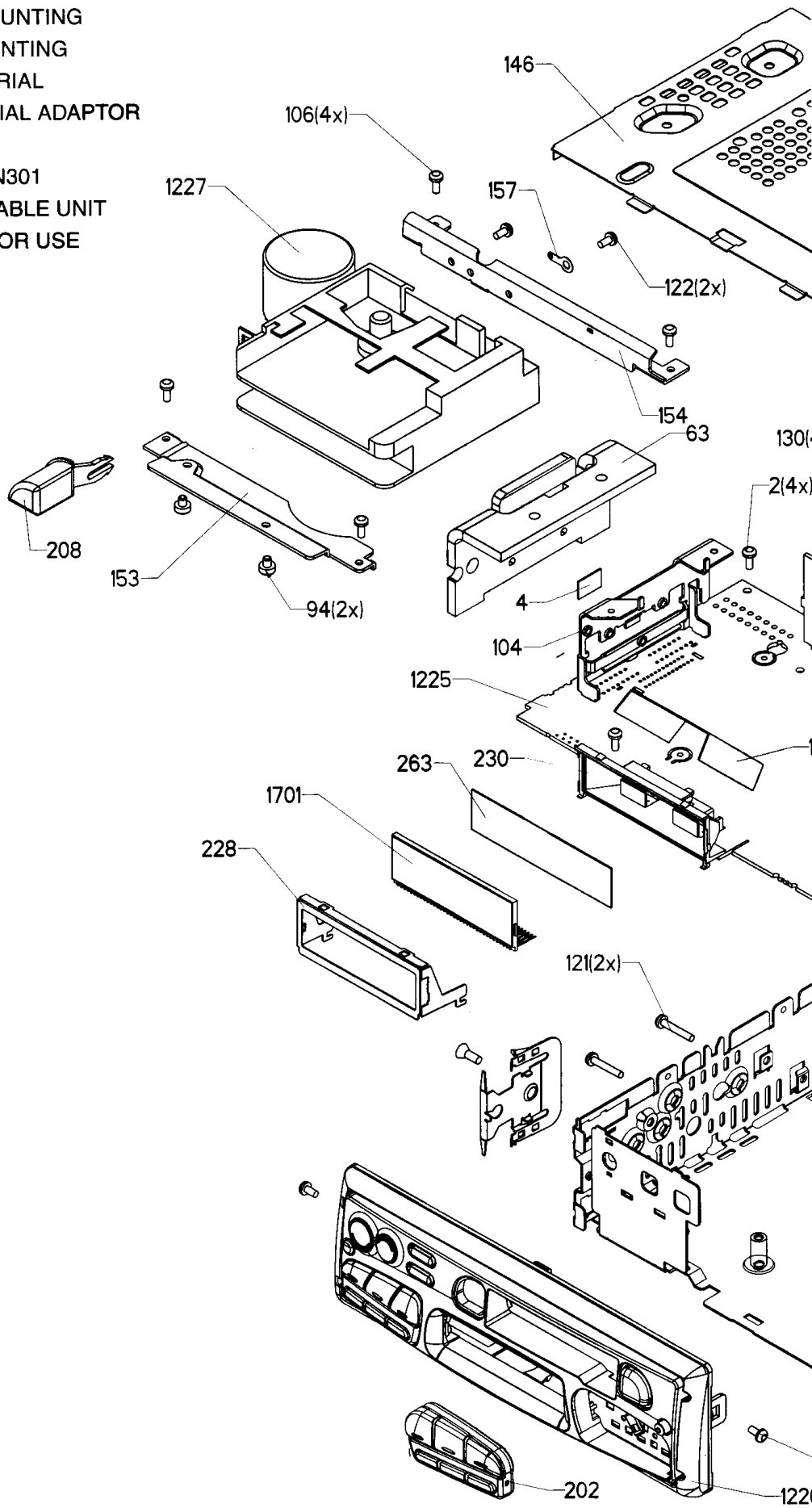
82	TAP 2X8
77	TAP 2X6

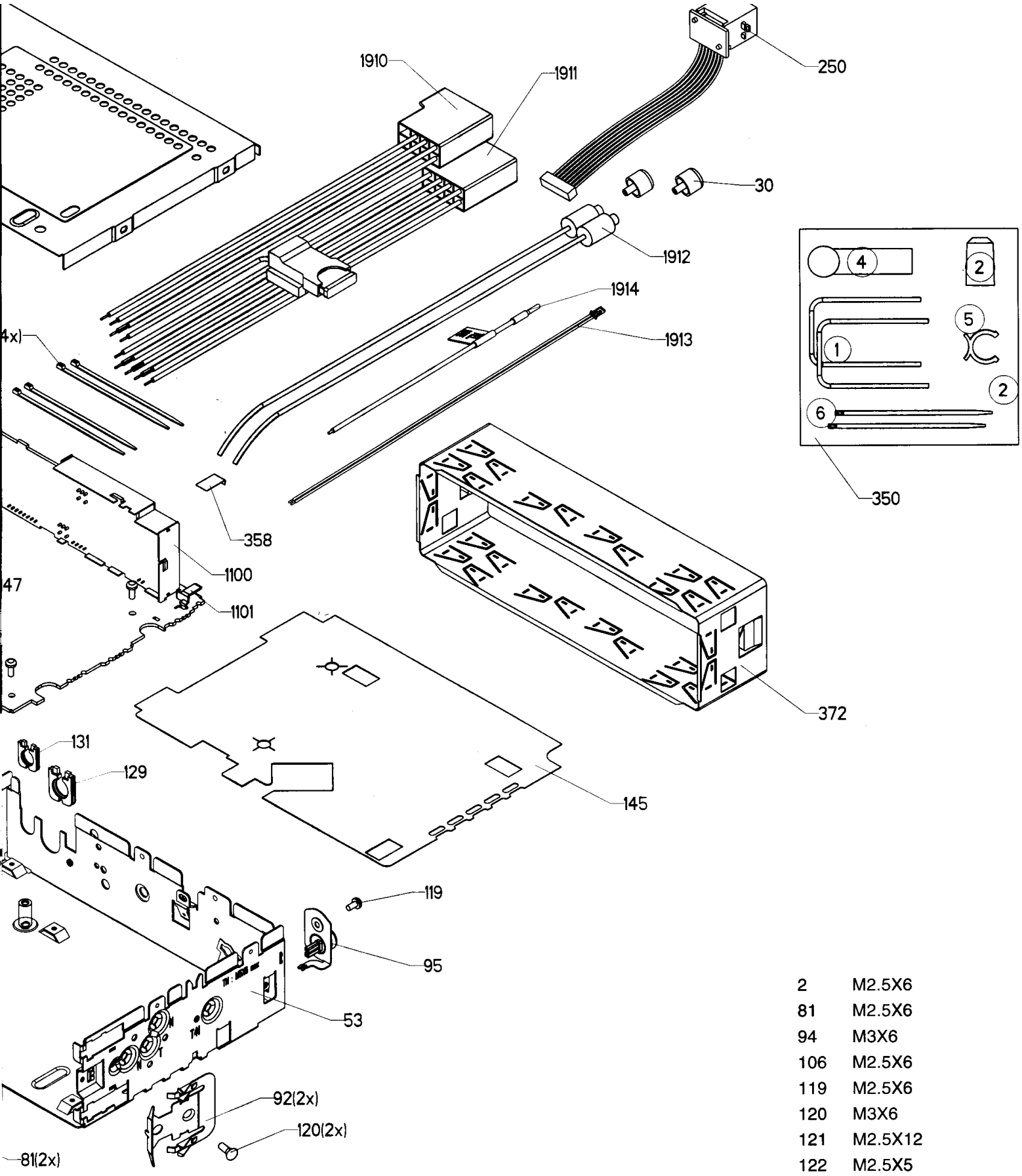



1229
82(5x)
322
324
328
326
325
294
327
295
323
320
215
321
291/2
216
291/1
200
201
203

Only those parts of which the item number stated below are considered service parts.

92	4822 492 71046	SPRING MOUTING
95	4822 265 10717	CONNECTOR AERIAL ASSY
202	4822 459 04933	DETACHABLE UNIT - RC269/00
202	4822 459 04934	DETACHABLE UNIT - RC239/00, RC249/00, RC259/00
208	4822 410 11736	BUTTON EJECT ASSY
250	4822 265 11228	CONNECTOR ASSY CDCC - RC269/00
350/1	4822 404 20437	BRACKET MOUNTING
350/2	4822 532 11092	BUFFER MOUNTING
350/4	4822 263 21164	ADAPTOR AERIAL
350/5	4822 256 10293	HOLDER AERIAL ADAPTOR
372	4822 423 90186	SLEEVE
1227	4822 691 10686	TAPEDECK TN301
	4822 418 10337	BOX DETACHABLE UNIT
	4822 736 15986	DIRECTION FOR USE





2	M2.5X6
81	M2.5X6
94	M3X6
106	M2.5X6
119	M2.5X6
120	M3X6
121	M2.5X12
122	M2.5X5

MAIN PCB : MISCELLANEOUS

1100	4822 210 10746	TUNER IC96 7SV
1503	4822 265 11111	CONNECTOR 11PIN
1701	4822 135 00168	LCD NEGATIVE
1702	4822 265 41508	CONNECTOR 13PIN
1703	4822 242 72066	FILTER, CERAMIC CST8,00MT
1704	4822 242 70938	CRYSTAL 32,768KHZ
1705	4822 242 81002	FILTER, CERAMIC 6,00MHZ - RC269/00
1806	4822 242 72195	CRYSTAL 4,333MHZ - RC249/00, RC259/00
1910	4822 320 12239	CABLE FLYLEAD ASSY POWER
1911	4822 320 12241	CABLE FLYLEAD ASSY SPEAKER
1912	4822 320 12238	CABLE FLYLEAD ASSY LINE-OUT - RC269/00
1913	4822 320 12277	CABLE LE MOUSE
1914	4822 320 12278	CABLE TELEPHONE MUTE
1951	4822 134 10111	LAMP T1 5V 115MA ORANGE
1952	4822 134 10111	LAMP T1 5V 115MA ORANGE
1954	4822 134 10109	LAMP T1 5V 115MA ORANGE
1955	4822 134 10109	LAMP T1 5V 115MA ORANGE
1958	4822 134 10004	LAMP T1 5V 115MA
1960	4822 134 10004	LAMP T1 5V 115MA

MAIN PCB : ELECTROLYTIC CAPACITOR

2505	4822 124 80453	100UF20% 10V
2506	4822 124 41017	10UF 16V
2507	4822 124 80453	100UF20% 10V
2509	4822 124 41017	10UF 16V
2510	4822 124 41017	10UF 16V
2611	4822 124 22646	47UF20% 16V
2614	4822 124 22646	47UF20% 16V
2617	4822 124 22646	47UF20% 16V - RC259/00, RC269/00
2619	4822 123 14024	16V 1000U 20% - RC259/00, RC269/00
2620	4822 123 14024	16V 1000U 20% - RC259/00, RC269/00
2705	5322 125 50295	6P0-50PF - RC269/00
2811	4822 124 80453	100UF20% 10V
2812	4822 124 22646	47UF20% 16V
2813	4822 124 23582	220UF 10V
2824	4822 124 23504	2.2UF20% 50V - RC249/00, RC259/00
2829	4822 124 23504	2.2UF20% 50V - RC249/00, RC259/00
2833	4822 124 23279	22UF20% 16V - RC269/00
2834	4822 124 22646	47UF20% 16V - RC269/00
2843	4822 124 23504	2.2UF20% 50V - RC269/00
2844	4822 124 23504	2.2UF20% 50V - RC269/00
2901	4822 124 80769	2200UF20% 16V
2902	4822 124 23279	22UF20% 16V
2903	4822 124 23279	22UF20% 16V
2904	4822 124 41017	10UF 16V
2905	4822 124 23279	22UF20% 16V
2906	4822 124 41017	10UF 16V
2907	4822 124 23279	22UF20% 16V
2908	4822 124 80769	2200UF20% 16V - RC259/00, RC269/00
2914	4822 124 23504	2.2UF20% 50V
2923	4822 124 41017	10UF 16V
2953	4822 124 23279	22UF20% 16V

MAIN PCB : ELECTROLYTIC CAPACITOR

2954	4822 124 22646	47UF20% 16V
2955	4822 124 23279	22UF20% 16V

MAIN PCB : PTC RESISTORS

3744	4822 116 10063	8,2R 25% 30V PTC - RC269/00
3745	4822 116 10063	8,2R 25% 30V PTC - RC269/00
3941	4822 116 40267	PTC 3R3 25% 20V
3942	4822 252 11299	RESETTABLE RUE090 - RC269/00

MAIN PCB : COIL, DIODES

5701	4822 157 53473	COIL 1000UH 10%
5900	4822 157 70839	COIL ASSY 160UH 5A - RC239/00, RC249/00
5900	4822 157 70935	COIL ASSY 97UH 10A - RC259/00, RC269/00
6601	4822 130 83757	BAS216
6701	4822 130 10185	UDZ5.6B
6702	4822 130 10185	UDZ5.6B
6703	4822 130 10185	UDZ5.6B
6704	4822 130 10185	UDZ5.6B
6705	4822 130 83757	BAS216
6801	4822 130 83757	BAS216
6802	4822 130 83757	BAS216
6900	4822 130 81624	1.5KE27
6901	4822 130 10655	1SR154-400
6902	4822 130 10655	1SR154-400
6903	4822 130 10877	UDZ9.1B
6904	4822 130 10185	UDZ5.6B
6905	4822 130 10185	UDZ5.6B
6906	4822 130 83757	BAS216
6910	4822 130 10655	1SR154-400
6911	4822 130 10837	UDZ8.2B
6951	4822 130 83757	BAS216
6952	4822 130 10658	UDZ11B
6953	4822 130 10655	1SR154-400
6954	4822 130 10655	1SR154-400

MAIN PCB : TRANSISTORS / IC

7501	4822 209 33237	TEA0677T
7512	4822 130 60511	BC847B
7513	4822 130 44283	BC636
7601	4822 209 31132	TDA7374V PINN.VERTIC - RC239/00, RC249/00
7601	4822 209 33629	TDA7375 - RC259/00, RC269/00
7602	4822 209 33629	TDA7375 - RC259/00, RC269/00
7701	4822 209 16247	TMP87CM21F-50890
7703	4822 130 60511	BC847B
7705	4822 209 32743	MSM6307GS - RC269/00
7801	4822 209 32745	TEA6320/V1
7802	4822 130 60511	BC847B
7806	4822 209 16164	TDA7479D - RC249/00, RC259/00
7807	4822 209 83159	LA2000 - RC249/00, RC259/00

MAIN PCB : TRANSISTORS / IC

7808	4822 209 33985	TDA8579T/N1 - RC269/00
7843	4822 130 63747	DTC314TK - RC269/00
7844	4822 130 63747	DTC314TK - RC269/00
7901	4822 130 40995	BD438
7902	5322 130 60508	BC857B
7903	4822 130 63539	BD241A
7904	4822 130 40959	BC547B
7905	4822 130 63539	BD241A
7910	4822 130 60511	BC847B
7911	5322 130 60508	BC857B
7913	4822 130 60511	BC847B
7914	4822 130 60511	BC847B
7915	5322 209 14477	HEF4013BT
7916	4822 130 60511	BC847B
7917	4822 130 60511	BC847B
7918	4822 130 60511	BC847B
7919	4822 130 60511	BC847B
7920	4822 130 60511	BC847B
7921	4822 130 60511	BC847B
7922	5322 130 60508	BC857B
7923	4822 130 60511	BC847B
7951	4822 130 60511	BC847B
7952	4822 130 60511	BC847B
7953	5322 130 60508	BC857B
7954	4822 130 60511	BC847B
7955	4822 130 60511	BC847B
7956	4822 130 40959	BC547B
7957	4822 130 42132	BC807
7958	4822 130 42615	BC817-40
7959	5322 130 60508	BC857B
7960	4822 130 42615	BC817-40
7961	4822 130 60511	BC847B

NOTE : "Service code for standard components are not listed here, please refer to Components catalogue from Philips Consumer Service."

FRONT PCB

4822 134 10004	LAMP FILAMENT 5V 115MA
4822 134 10004	LAMP FILAMENT 5V 115MA
4822 276 12889	SWITCH
4822 276 13454	SWITCH TACT 50MA 12V
4822 276 13454	SWITCH TACT 50MA 12V
4822 276 13454	SWITCH TACT 50MA 12V
4822 276 13454	SWITCH TACT 50MA 12V
4822 276 13454	SWITCH TACT 50MA 12V
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4822 276 13454	SWITCH TACT 50MA 12V
4822 276 13454	SWITCH TACT 50MA 12V
4822 130 11164	LED L-34HD

NOTE : "Service code for standard components are not listed here, please refer to Components catalogue from Philips Consumer Service."