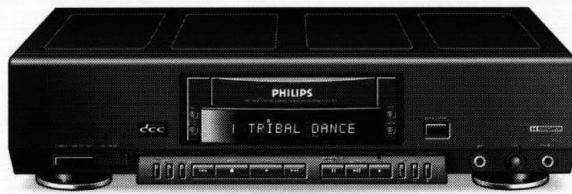


# Service

# Service

# Service



# Service Manual

**DIGITAL**  
**ccc**  
**COMPACT CASSETTE**

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**PHILIPS**

**TECHNICAL SPECIFICATIONS****GENERAL**

<u>Power supply</u>	
/00S	: 230 V ±15%
/01S	: 110, 127, 220-230, 240 V
	: Selectable by voltage selector
/17S	: 117 V ± 10%
<u>Power consumption</u>	
Standby mode	: < 5 W
Maximum	: < 25 W
Dimensions(WXDXH)	: 435 x 300 x 90(excl. feet)
Weight	: 4 Kg

**DIGITAL I/O:**

Format	: AES/EBU format according IEC958 : (consumer format)
Sampling frequency	: 32 / 44.1 / 48 kHz (± 0.1%)
Unbalanced cinch	: 75 Ohm

**ANALOG IN(digital recording from analog input)**

Input sensitivity	: 150 mVrms
Max. input voltage	: 2.5 Vrms (= 2 V + 2 dB)
Input impedance	: 50 kOhm
Levelmeter resolution	: 2 dB : 3 dB : 5 dB : 10 dB
Sampling frequency	: 44.1 kHz
Record level settings	: 0 dB up to -28 dB, 14 steps of -2 dB
Overload	

**DIGITAL OUT**

Format	: AES/EBU format according IEC958 : (consumer format)
Sampling frequency	: 32 / 44.1 / 48 kHz(± 100 ppm)
Unbalanced cinch	: 75 Ohm

**ANALOG OUT DCC PLAYBACK**

Sampling frequency	= 44.1 kHz unless otherwise specified
Output voltage	: 2 Vrms ± 2 dB(0 dB dig.)
Frequency range	: 20 Hz..14.5 kHz, fs = 32 kHz : 20 Hz..20 kHz, fs = 44.1 kHz : 20 Hz..22 kHz, fs = 48 kHz
amplitude linearity	: ± 0.1 dB
channel unbalance	: < 0.85 dB(1 kHz)
output resistance	: 300 Ohm
phase non-linearity	: < 0.2 degrees(1 kHz)
outband attenuation	: 50 dB above 30 kHz
channel separation	: > 90 dB(1 kHz) : > 85 dB(20 Hz..20 kHz) : > 98 dB
muting(search)	: 102 dB
SNR A-weighted	: 98 dB
SNR unweighted	: > 97 dB(1 kHz)
DR	: > 95 dB(20 Hz..20 kHz)
THD + Noise	: > 81 dB(20 Hz..20 kHz)

**ANALOG OUT ACC PLAYBACK**

Noise reduction system according DOLBY B/C NR (for playback only)	
output voltage	: 500 mVrms ± 2 dB(200 nWb/m)
channel unbalance	: < 3 db(1 kHz)
output resistance	: 300 Ohm
amplitude linearity	: typ. 40 Hz..16 kHz within 3 dB
channel separation	: 20 dB(1 kHz, rel.tracks) : 59 dB(non rel.tracks)
muting(search)	: 90 dB
SNR	: Fe CR (DIN reference level, 315 Hz/0 dB)
unweighted	: - 48 dB - 50 dB
weighted	: - 53 dBA - 55 dBA
noise reduction	: Dolby B Dolby C : + 8.5 dB + 17 dB
THD	: < 2%(1 kHz/-10 dB)

**HEADPHONE OUTPUT DCC PLAYBACK**

Sampling frequency	= 44.1 kHz
output voltage	: > 5 Vrms
channel unbalance	: < 4 dB
output impedance	: 120 Ohm
load impedance	: 32 / 120 / 600 Ohm
output power	: 38 / 68 / 48 mW
frequency range	: 20 Hz..14.5 kHz, fs = 32 kHz : 20 Hz..20 kHz, fs = 44.1 kHz : 20 Hz..22 kHz, fs = 48 kHz
amplitude linearity	: +1/-2 dB

Audio specification at 4Vrms in case of 600 Ohm load

output sep.(typ.)	: 75 dB(1 kHz)
muting	: 65 dB(0-20 kHz)
SNR	: 100 dB
DR	: 86 dB
THD+N	: 86 dB(1 kHz) : 82 dB(1 kHz)

**MICROPHONE IN**

Input sensitivity	: 20 mV for max. level
	: 3 mV for ref. level
Input impedance	: 10 kOhm
Microphone impedances	: 200 - 600 - 2000 Ohm
Amplitude linearity	: ± 1 dB(200 Hz - 20 kHz)
S/N ratio	: typ. 75 dB(BW = 20 kHz)
THD + Noise	: typ. 65 dB(1 kHz)

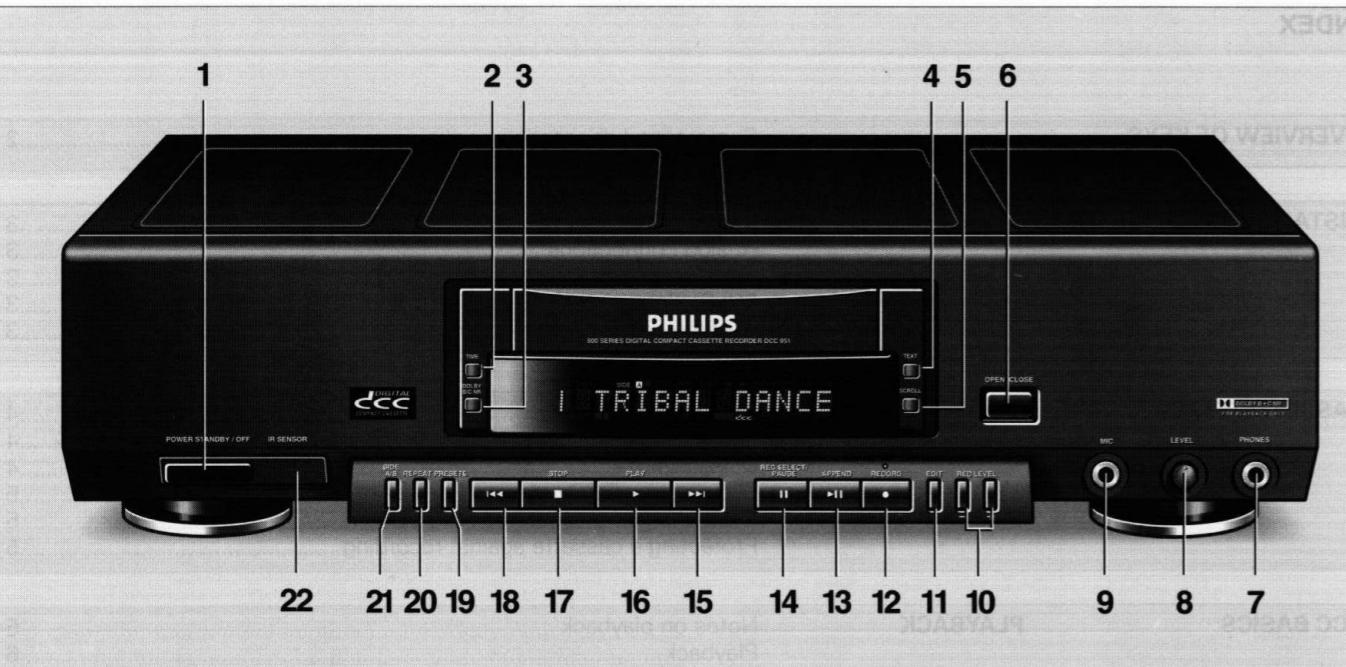
**INSTRUCTIONS FOR USE****INDEX**

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<b>INSTALLATION</b>	Mains connection ..... 3 Analog connections ..... 3 Digital connections ..... 3 ESI BUS ..... 3 Remote control battery loading ..... 3
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The type plate can be found on the back of the unit.

This product complies with the radio interference requirements of the European Community.

Recording is permissible insofar as copyright or other rights of third parties are not infringed.

**KEYS**

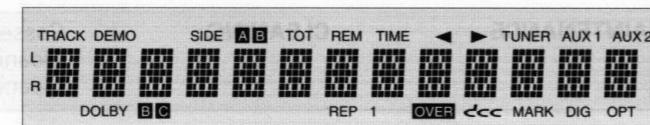
- 1 POWER STANDBY/OFF** to switch the recorder on and off.
- 2 TIME** to select time and level information
- 3 DOLBY NR** to select Dolby Noise Reduction only on conventional musicassettes
- 4 TEXT** to select text information
- 5 SCROLL/DEMO** to scroll text information or to enter the demo mode.
- 6 OPEN/CLOSE** to open and close the tray loader (also push tray to close).
- 7 PHONES** socket for headphone connection.
- 8 LEVEL** to adjust the volume when using headphones
- 9 MIC** socket for a microphone. (automatic source selection)

**RECORDING CONTROLS**

- 10 REC LEVEL +/-** to adjust the recording level (analog and microphone input).
- 11 EDIT** to enter the edit mode. see page 13 'EDIT'
- 12 RECORD ●** to start the actual recording. (only in RECORD PAUSE mode)
- 13 APPEND ▶II** to search for the end of the latest recording after which the recorder switches to the RECORDING PAUSE mode.
- 14 REC. SELECT/ PAUSE II** to select the recording source and to enter the RECORDING PAUSE mode.

**PLAYBACK CONTROLS**

- 15 ►▶** to search for the start of the next track (press < 0.5 sec.) (also for musicassettes)
- 16 PLAY ►** to wind the tape forward (press >0.5 sec.)
- 17 STOP ■** to start playback or recording.
- 18 ▲◀** to stop any action
- 19 PRESETS** to search for the start of the previous track (press <0.5 sec.) (also for music cassettes)
- 20 REPEAT** to wind the tape backward (press >0.5 sec.)
- 21 SIDE A/B** to enter the preset mode. see page 10 'PRESETS'
- 22 IR SENSOR** to repeat the current track, to repeat all tracks or to switch repeat off.
- 23** to reverse the tape travel direction

**DISPLAY INDICATIONS**

- on during playback or recording
- blinking during forward search
- ◀ blinking during backward search
- TUNER, AUX1, AUX2, CD** indicates the selected recording source (user selection).
- REP (1)** lights up to indicate that the current track (REP 1) or all tracks (REP) will be repeated.
- OVER** lights up if the recording level is too high
- MARK** lights up each time a marker is read, written or erased on the tape.
- DIG, OPT, ANA** indicates the corresponding input with the selected recording source. see page 10 'PRESETS'

**ENCLOSED CABLES:**

- 1 x mains cable
- 2 x hifi connection cable (cinch)
- 1 x digital cable (cinch)

**1 MAINS CONNECTION**

- Before connecting the unit to the mains, proceed as follows:
  - If the unit is equipped with a VOLTAGE selector, first adjust the voltage selector to the local mains voltage.
  - If the unit does not have a voltage selector, first check if the mains voltage as shown on the type plate on the back of the unit corresponds to your local mains voltage. If it does not, consult your dealer or service organisation.
- After all other connections have been made, connect the mains lead to the AC MAINS socket and insert the mains plug in the wall socket.

**2 ANALOG CONNECTIONS**

- a ANALOG PLAY** - Connect these sockets via the supplied hifi connection cables to the DCC INPUT sockets of your amplifier. You can also use the TAPE 1, TAPE 2 or AUX INPUT of your amplifier but never the PHONO INPUT socket.
- b ANALOG REC** - Connect these sockets via the supplied hifi connection cables to the DCC OUTPUT sockets of your amplifier. You can also use the TAPE 1/2 or AUX OUTPUT sockets of your amplifier.

**3 DIGITAL CONNECTIONS**

The DCC951 can be connected to your CD player via the digital or via the optical socket, depending on the available outputs on your CD player. Recordings through a digital connection guarantee optimum recording quality; record level setting is then not necessary.

**DIGITAL IN** - Connect this socket via the supplied digital cable to the corresponding digital output socket of e.g. CD and DAT or to the digital selector of some Philips amplifiers (e.g. FA930, 950, 951, DSC950).

**OPTICAL IN** - Pull out the protective plug from the socket. Connect this socket via an optical lead (SBC1150) to the corresponding optical output socket of e.g. CD and DAT.

**NOTE:** when you are not using the DIG IN connections, for the CD, the PRESETS of the DCC must be changed by using the preset key.

For this refer to the chapter PRESETS, page 10

**OPTIONAL CONNECTION**

**DIGITAL OUT** - Connect this socket via a cinch cable to the corresponding digital input socket of e.g. an amplifier with D/A convertor or another digital recorder.

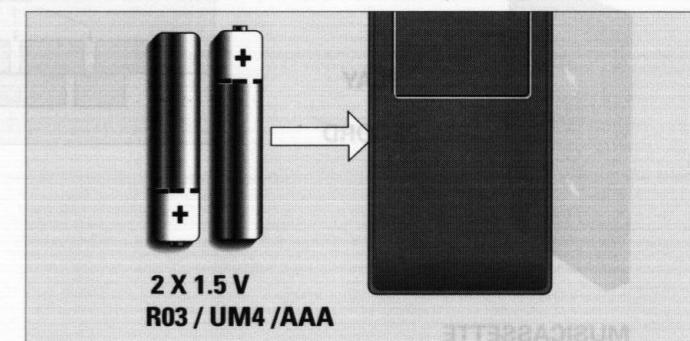
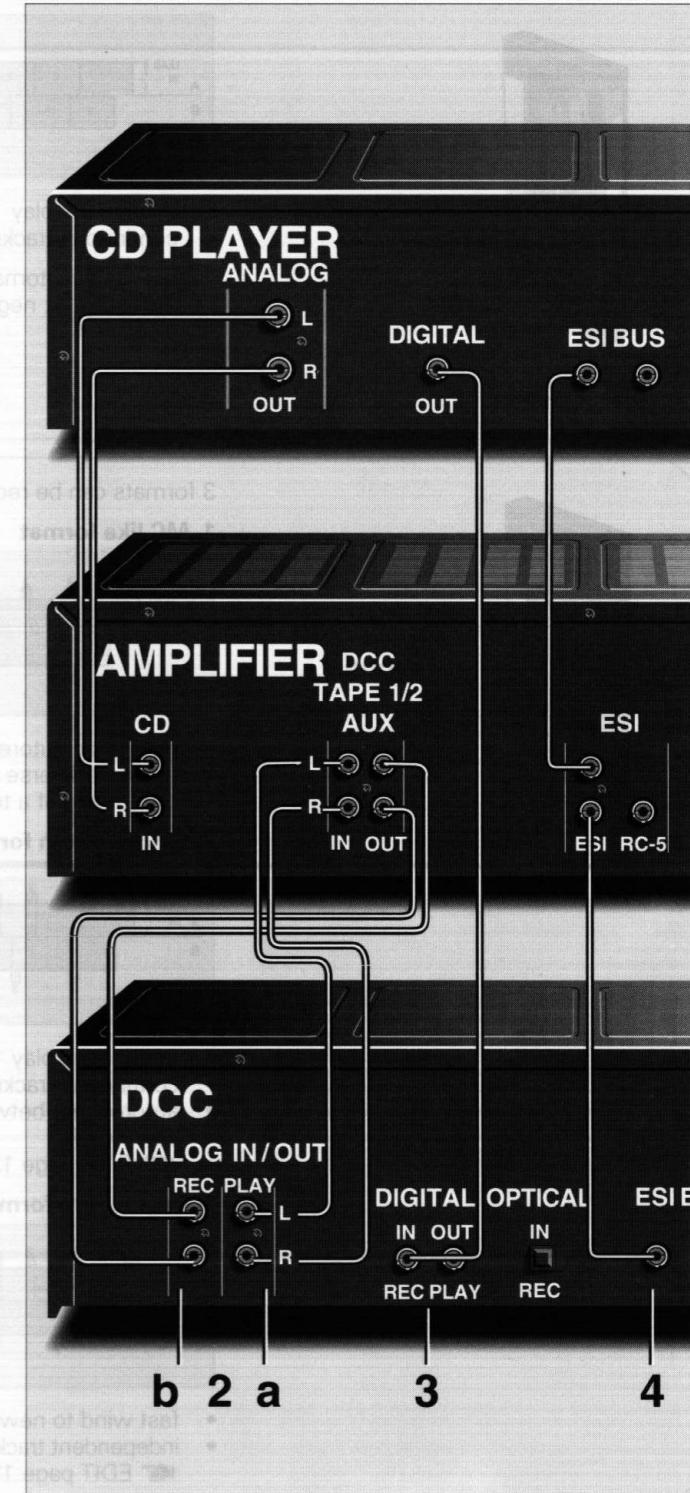
**4 ESI BUS**

In case your system consists of products of the Philips 900 series, the ESI BUS connections are recommended. Connect the ESI BUS socket as shown to the ESI BUS socket of e.g. your amplifier. In this way you can fully enjoy the ease of operation thanks to the intelligent communication between the sets in your Philips 900 system. (Automatic recording source selection)

**5 REMOTE CONTROL**

Open the battery compartment and insert two batteries, type R03, UM-4 or AAA-cells.

see also page 15



## CASSETTE TYPES

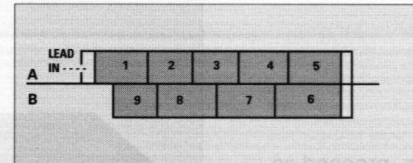
2-4



PLAY

RECORD

DCC ALBUM



- continuous play
- continuous tracknumbering
- \* LEAD IN: automatic search to start of first track; negative time will be displayed.

When using a DCC album the following information is available:

- album-info: title, artist
- tracktitle-list
- song lyrics (if present on cassette)
- tracknumbers
- track time, absolute time, total remaining time.
- direct track search
- title search

This information is continuously repeated in the music track and can be retrieved within a short time.



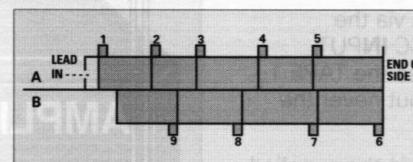
PLAY

RECORD

DCC

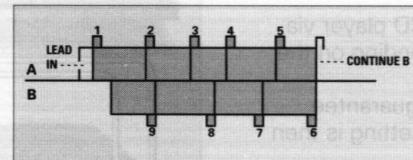
3 formats can be recorded:

## 1. MC like format



- automatic autoreverse at end of side
- this autoreverse action may occur in the middle of a track.

## 2. Single album format



- continuous play
- continuous tracknumbering
- autoreverse between tracks
- continue B

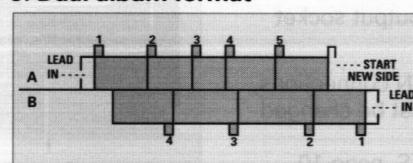
## OPTIONAL

- title at start of track
- see TITLE PROGRAMMING page 16
- renumber

## NOTE:

If a recording is started in a blank area, the player is not able to write tracknumbers and absolute time on the tape. The renumber action is then not possible.

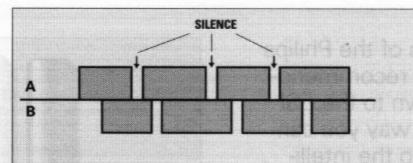
## 3. Dual album format



- fast wind to new side
- independent tracknumbering per side

When using a conventional musicassette the following information is available:

- counter setting
- estimated absolute time
- AMS (search of start if tracks are separated with >3 sec. silence).



PLAY

RECORD

MUSICASSETTE

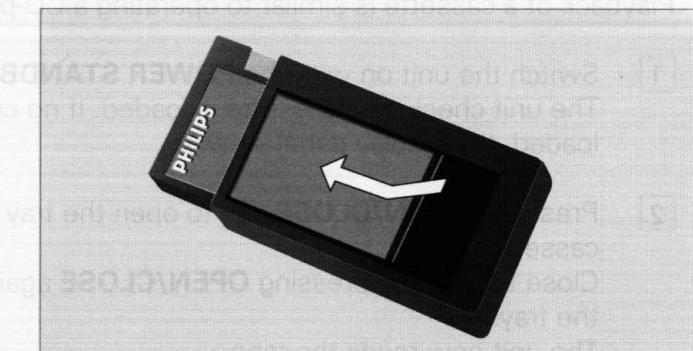
## CASSETTES

2-5

DCC BASICS

## SLIDING OUT A DCC CASSETTE FROM ITS BOX

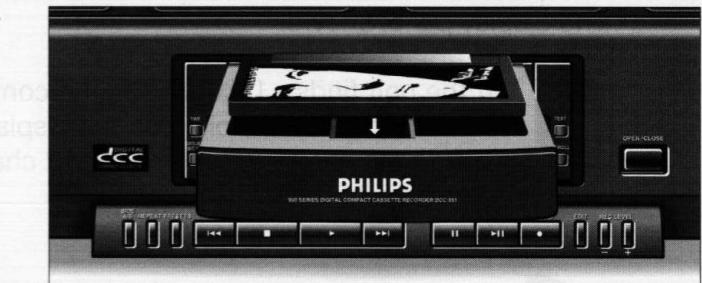
Press the cassette out with your thumb; push the cassette upwards.



## POSITIONING A CASSETTE IN THE TRAY

Insert a DCC with the printed side up and protective slider pointed to the DCC-player.

A conventional musicassette should be inserted with the tape pointed to the DCC-player.

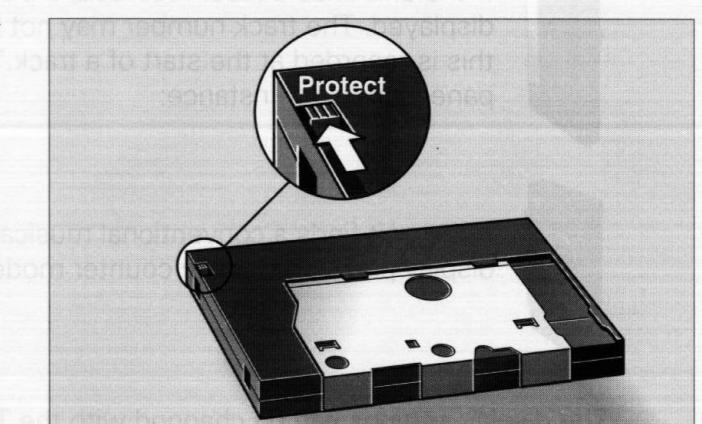


## PROTECTING A CASSETTE AGAINST RECORDING

Accidental overwriting of recordings made on your DCC cassettes can be prevented by sliding the red switch on the back of your cassette upward.

No recording will then be possible on both sides of this tape.

Recording will be possible when the red switch is slid backward again.



## NOTES ON PLAYBACK ( see page 6)

- At the start of a tape (LEAD IN area) the display may show a negative time indication e.g. -0:11 and the player will wind to the start of the first track.
- After closing the tray, the player always selects side A of a cassette. You can reverse the tape travel direction with the SIDE A/B key.  
see also page 12
- When you load a cassette and the tape is positioned near the start of a track, the DCC player will read the tape information and reposition the tape to the start of this track. Reading can take a little longer.
- TROUBLESHOOTING:**  
What to do in case no sound is heard:  
  - Check the connections that are made ( see also page 3).
  - Check the source selection on your amplifier.
  - Check if the inserted cassette is not a blank DCC.
  - Check if a blank area on the tape is being played back.

NOTES: see page 2  
PLAYBACK FUNCTIONS

Playback of a cassette is similar to operating a CD-player.

- 1 Switch the unit on with the **POWER STANDBY/OFF** key.

The unit checks if a cassette is loaded. If no cassette is loaded, the display panel shows:

**NO CASSETTE**

- 2 Press the **OPEN/CLOSE** key to open the tray and insert a cassette.

Close the tray by pressing **OPEN/CLOSE** again or by pushing the tray.

The unit now reads the tape.

This procedure will take maximum 5 seconds.

The display panel shows:



If the unit finds a DCC album, the complete track title will once be scrolled on the display and afterwards the shortened title (max. 12 characters) will appear, e.g.:

**3 MY DESTINY**



If the unit finds a (user-recorded) DCC, the time is displayed. The track number may not be known as this is recorded at the start of a track. The display panel shows for instance:

**-- 23:05 STOP**



If the unit finds a conventional music cassette, the display panel shows the counter mode:

**0000 STOP**

The display settings can be changed with the **TIME/TEXT** key

see also page 7: **DISPLAY**

- 3 Press the **PLAY ▶** key to start playback.

Playback will start from the present position of the tape.

The play indication **▶** on the display lights up.

The display will show for instance:

**2 753 PLAY**

- 4 Press the **STOP ■** key to stop playback.

- 5 Searching for next or previous tracks can be done by shortly pressing the **◀ ▶** keys.

The play indicator **◀** or **▶** on the display will start blinking.

The display shows e.g.:

**2 1053 TO 5**

When the **◀ ▶** keys are pressed > 0.5 sec., the deck starts (re)winding until you release the key.

see also page 12: **PLAYBACK FUNCTIONS**

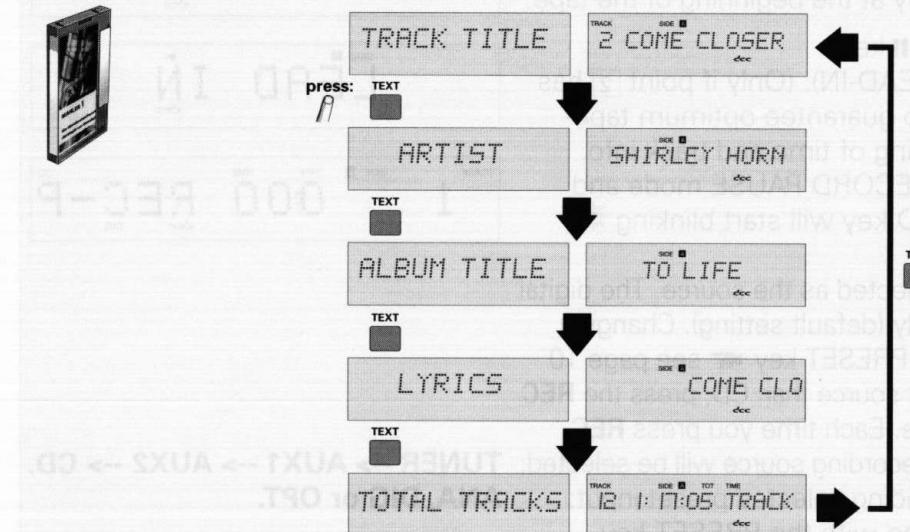
**NOTES:** see page 5.

### TEXT, TIME

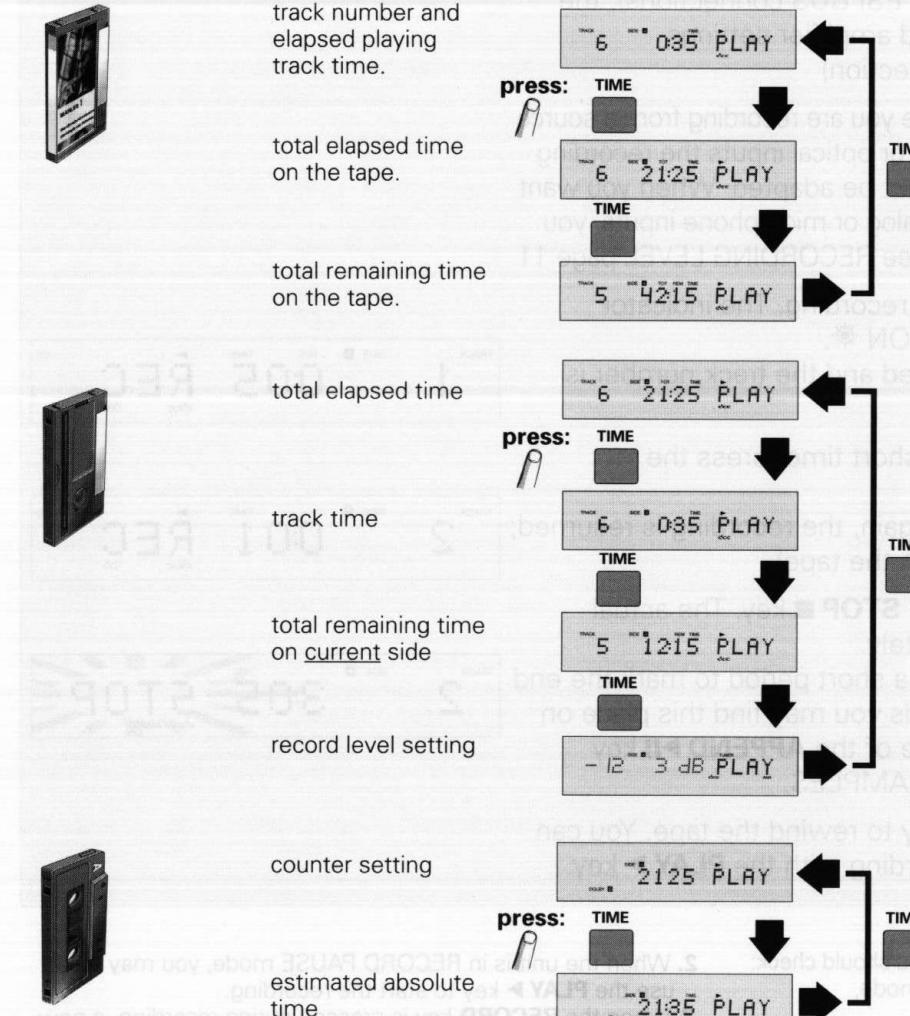
By pressing the **TEXT** or **TIME** key you can select different information to be shown on the display. Different information is available for the different cassette types (see **CASSETTE TYPES** page 4).

If the display is showing time information, pressing the **TEXT** key will result in:

#### When using prerecorded DCC cassettes:



If the display is showing text information, pressing the **TIME** key will result in:



#### COUNTER RESET

By pressing the **TIME** key for 2 seconds the tape counter will be reset to **0000**.

Basically, making recordings on your DCC recorder is similar to making tape recordings on a music cassette.

- 1 Press **OPEN/CLOSE**.
- 2 Insert a **blank** DCC. Close the tray.
- 3 Press **BACKWARD**  for more than 0.5 seconds. The deck will rewind and stop automatically at the beginning of the tape.

- 4 Press the **REC SELECT/PAUSE**  key.
- a The deck writes a buffer area (LEAD-IN). (Only if point 2 has been used.) This buffer area is to guarantee optimum tape-recording conditions and recording of time and track info.
- b The DCC player will enter the RECORD PAUSE mode and the indicator above the RECORD key will start blinking .

#### C SOURCE SELECTION:

- The CD player is automatically selected as the source. The digital input is also selected automatically (default setting). Changing this setting can be done with the PRESET key  see page 10
- If you want to record from another source than CD, press the **REC SELECT/PAUSE**  key once more. Each time you press **REC SELECT/PAUSE**  the following recording source will be selected:

The display shows the corresponding selected preset input:  
Changing this preset can be done with the PRESET key  see page 10

- **Note:** in case you have connected the DCC951 to a Philips 900 series system (with correct ESI BUS connections), the DCC player will use the selected amplifier settings.  
(Automatic recording source selection)

- 5 **RECORD LEVEL SETTING:** In case you are recording from a source which is connected via the digital or optical inputs the recording level does not need to and can not be adapted. When you want to record from a source via the analog or microphone inputs, you should check the peak level.  see RECORDING LEVEL page 11

- 6 Press the **RECORD** key to start recording. The indicator above the RECORD key will be ON .

The time is continuously recorded and the track number is automatically increased by one.

- 7 To interrupt the recording for a short time, press the **REC. PAUSE** key.

By pressing the **RECORD** key again, the recording is resumed; a new tracknumber is written on the tape).

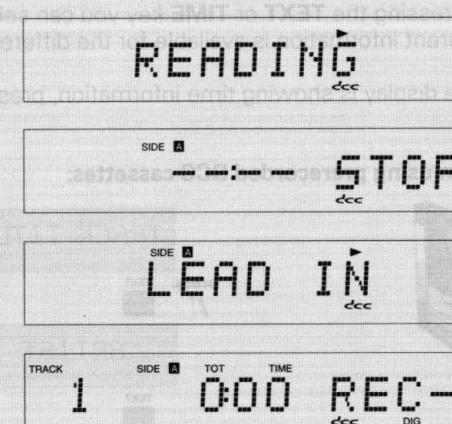
- 8 To stop the recording, press the **STOP**  key. The actual music recording stops immediately.

The deck continues to write for a short period to mark the end of the last recording. Afterwards you may find this place on the tape very easily with the use of the **APPEND**  key  see page 9: RECORDING EXAMPLES.

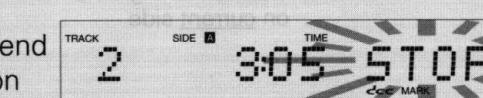
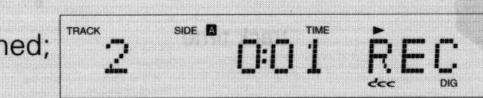
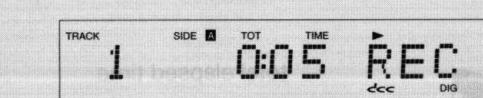
- 9 Press the **BACKWARD**  key to rewind the tape. You can now start playback of your recording with the **PLAY**  key.

#### NOTES:

- 1 In case the display shows **CHECK DIG IN** you should check:
  - if the CD player is switched on and in play mode,
  - if the correct digital connections are made,
  - if the PRESET on the DCC player is set to CD ( see page 10)



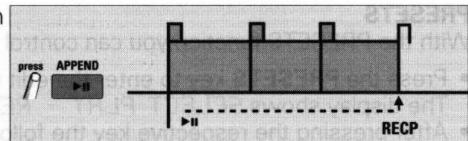
**TUNER --> AUX1 --> AUX2 --> CD. ANA, DIG or OPT.**



- 2 When the unit is in RECORD PAUSE mode, you may also use the **PLAY**  key to start the recording.
- 3 When the **RECORD** key is pressed during recording, a new tracknumber will be written on the tape.

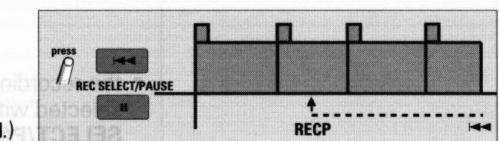
#### KRECORDING ON A PARTIALLY RECORDED DCC

- 1 Press APPEND . The deck will search for the end of the last recording (which was marked when STOP was pressed during recording). APP > or APP < appears. When this position has been found the last 10 seconds of this music track will be played back (APPEND PLAY), after which the RECORD PAUSE (RECP) mode is entered.
- 2 (Select the correct input source by pressing REC SELECT/PAUSE .)
- 3 Press RECORD  to start the actual recording.
- 4 Press STOP  when you want to stop recording. The recording will be stopped and the deck marks the end of the last recording.



#### RECORDING ON A SPECIFIC LOCATION

- 1 Search for the location on the tape where you want to make a recording.
- 2 a Press REC SELECT/ PAUSE . The deck will enter the RECORD PAUSE (RECP) mode at the current position.
- b (Select the correct input source by pressing again REC SELECT/ PAUSE .)
- 3 Press RECORD  to start the actual recording.
- 4 Press STOP  when you want to stop recording.



**Note: the tape must be positioned at a recorded area.**

In case you start recording on an area of the tape on which no previous recording was made (an blank area), the DCC player will not record time information. The tracknumber will not be shown.

#### COMPLETELY OVERWRITING A RECORDED DCC

- 1 Select side A.  see SIDE A/B page 12
- 2 Press BACKWARD . The deck will rewind and stop automatically at the beginning of the tape.
- 3 Press REC SELECT/PAUSE . The deck will now write a LEAD IN area at the beginning of side A and will enter the RECORD PAUSE mode.
- 4 (Select the correct input source and adjust the recording level when needed).
- 5 Press RECORD  to start the actual recording.
- 6 Press STOP  when you want to stop recording. The recording will be stopped and the deck marks the end of the last recording.



#### 1. Using the APPEND key has the following advantages:

- Easy finding of the latest recorded piece of music in order to continue recording at that point.
- Continuous tracknumbering
- Time recording.

#### 2. Using the REC SELECT/PAUSE key has the following advantages:

- Possibility to start recording in the middle of a track.
- In case the RECP key is pressed while the position on the tape is within 2 seconds from the start of a tracknumber, the tape will be repositioned to the start of this track.

#### 3. Press RECORD to actually start the recording:

**example:** press in following order: APPEND —> RECORD (to start recording at end of the latest recording)  
or: REC SELECT —> RECORD (to start recording at the current position)

#### RECORDING IS NOT POSSIBLE:

- On a prerecorded DCC
- On a conventional music cassette
- On a DCC which is protected against recording.  see page 5 'PROTECTING A CASSETTE AGAINST RECORDING'.
- When the **COPY PROHIBIT** message lights up on the display. The DCC deck operates with a **Serial Copy Management System**, which includes that a fully digital copy can be made from Prerecorded digital material but only directly from the original material. It is not possible to make a digital copy of a digitally copied DCC to another DCC deck. When you want to copy this cassette from one DCC deck to another you can only do this via the analog input sockets.
- When no digital signal is available. The display shows **CHECK DIG IN**.  see page 16 'TROUBLESHOOTING'.

## INSTALLATION

## PRESETS

With the PRESETS function you can control the default settings of the DCC-recorder.

- Press the PRESETS key to enter the edit mode.
- The display shows SELECT PLAY - REC SELECT - RECORD - EDIT, indicating that you can select one of these keys.
- After pressing the respective key the following default settings can be adjusted.

## PLAY ▶

- AUTO PLAY: playback will always be started automatically as soon as the tray has been closed.
- AUTO STOP: playback will not be started automatically.

- CD, TUNER, AUX1, AUX2: selection of recording source
- DIG, OPT, ANA: selecting the input: digital, optical or analog

## RECORD ●

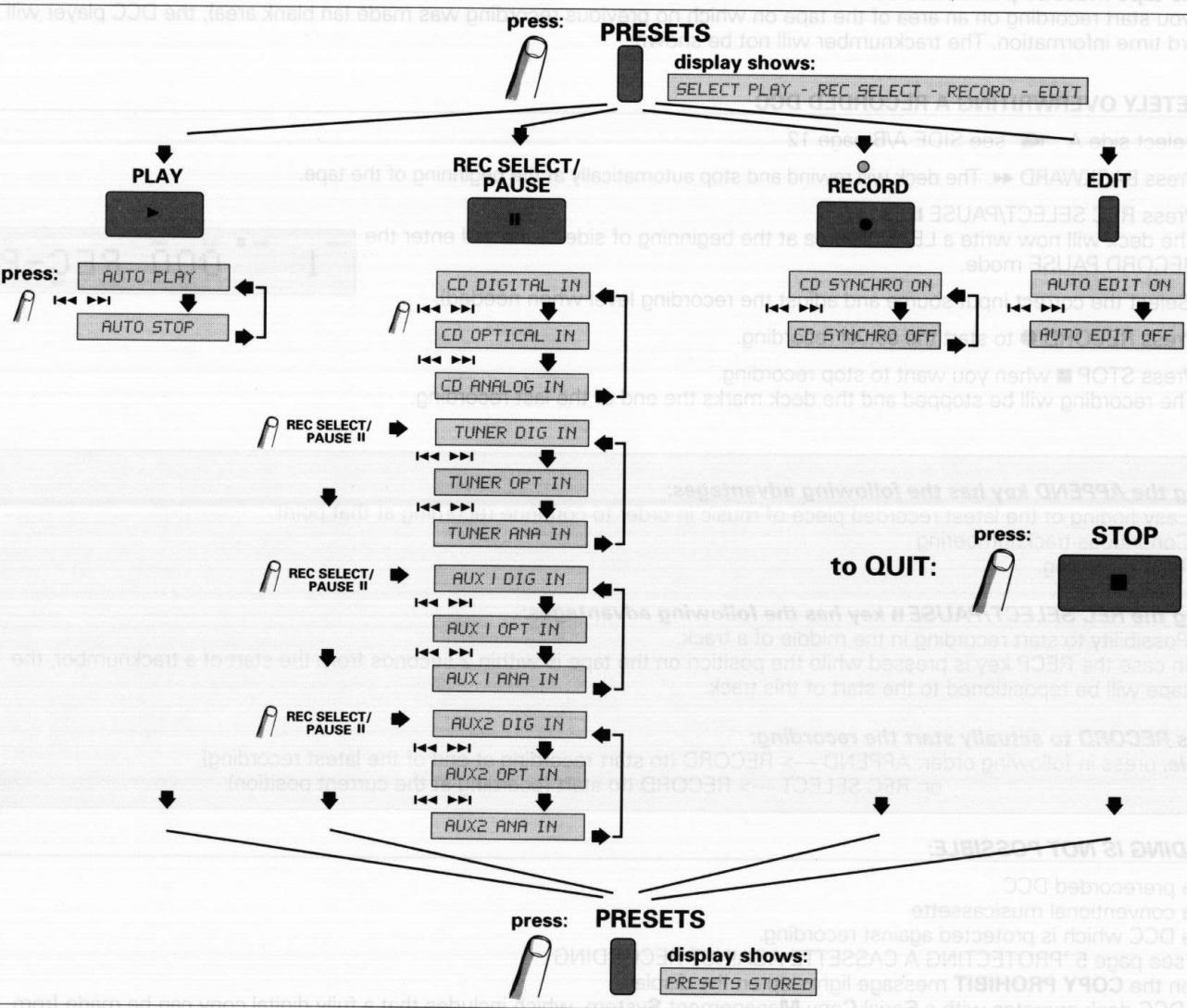
- CD SYNCHRO ON: CD synchro dubbing will be started automatically when you are recording from a CD. (only if the correct ESI BUS connections are made.)
- CD SYNCHRO OFF: CD synchro dubbing will not be started automatically.

## EDIT

- AUTO EDIT ON: the DCC player will write new track nrs on the tape when 3 sec. silence (<60dB) is detected during recording from analog or micro input.
- When a digital source is connected (via digital sockets) this function is always automatically set to AUTO EDIT ON.
- AUTO EDIT OFF: the DCC player will not perform automatic track increment.
- Selection can be made with the REC SELECT/PAUSE II keys.
- Selection can be made with the REC SELECT/PAUSE II keys.
- Press PRESETS again to store the selected values.

- Selection can be made with the REC SELECT/PAUSE II keys.
- The input can be selected with the REC SELECT/PAUSE II keys.
- Press PRESETS again to store the selected values.

- Selection can be made with the REC SELECT/PAUSE II keys.
- Press PRESETS again to store the selected values.



**EXAMPLE:** Changing the input source for CD.

Press PRESETS → Press REC SELECT PAUSE → Display shows current setting CD DIGITAL IN → Select the input e.g. CD OPTICAL IN with the REC SELECT/PAUSE II keys → Press PRESETS again to store the adjustment. The display shows PRESETS STORED.

## INSTALLATION

## RECORD LEVEL SETTING MEMORY

The DCC951 stores the latest record-level setting for each independent source.

As such, you do not have to adjust the record level setting each time another source is selected.

During installation or when making your first recordings you can check and adjust the record level settings for each connected source.

## EXAMPLE:

SOURCE	STORED RECORD LEVEL SETTING
CD	DIG IN
TUNER	ANA
AUX1	ANA
AUX2	OPT IN

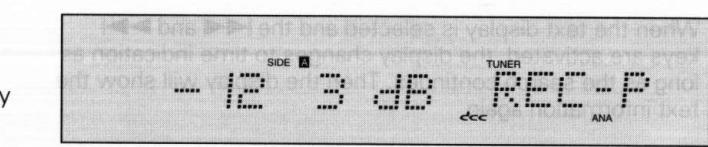
## DISPLAY

## RECORD LEVEL DISPLAY



The peak level can be displayed by pressing:

- REC LEVEL + or -:  
The record level display will be shown temporarily.  
10 seconds after REC LEVEL + or - was pressed the display will go back to showing the previous information.
- TIME:  
see page 7



**CONTINUOUS PEAK LEVEL:** is updated every second.

## HEADROOM:

indicates the absolute highest peak level.  
The headroom will be reset:

- when you press REC LEVEL + or -
- when you start a new recording

## OVER indication:

If the level exceeds the 0 dB level, an overload will be indicated and the recorded signal can be distorted. The OVER indication will also be indicated on the display when the display is not showing the record level setting, e.g. during a recording.

**MAX LEVEL** or **MIN LEVEL**

## ADJUSTING THE RECORD LEVEL SETTING

The sensitivity can be adjusted in maximum 14 steps.

It is advised to set the level between 9 and 12 dB.

The maximum or minimum level is indicated on the display as:

## When in RECORD or REC PAUSE mode:

- Press REC LEVEL + or - to enter the level-meter display mode.  
The recording sensitivity is not yet changed.
- Press + to increase the sensitivity of record-setting step by step
- Press - to decrease the sensitivity of record-setting step by step

If the level exceeds the 0 dB level, an overload OVER will be indicated and the recorded signal can be distorted.  
In this case press REC LEVEL - to decrease the level.

Adjusting the recording level is only needed when you are recording from a source which is connected via the ANALOG LINE IN sockets or via the MICRO(phone) socket to your DCC 951 (Analog In).

## ADVICE:

It is recommended always to use the digital input when it is available.  
Adjustment of the recording level is then not needed.

## PLAYBACK FUNCTIONS

## TRACK SEARCH

The **◀◀** and **▶▶** keys can be used to search for a particular track on the tape or to scroll through the tracklist (see title search).

## In stop mode:

- Press **◀◀** (less than 0,5 seconds) to search for the start of the current track.
- Press **▶▶** (less than 0,5 seconds) to search for a track next to the current track.

**Note:** these keys are also functional when using conventional musicassettes (Automatic Music Search). This function reacts to silent passages of at least 3 seconds between the tracks.

## WIND / REWIND

Searching for a passage during playback can also be done with the **◀◀** and **▶▶** keys.

## In stop mode and during playback:

- Hold **▶▶** pressed down (for more than 0,5 seconds) to wind forward.
  - Hold **◀◀** pressed down (for more than 0,5 seconds) to wind backward.
- When the **◀◀** and **▶▶** keys were pressed during playback, playback will be continued as soon as you release the key. During searching time and track information will be displayed.

- When the text display is selected and the **◀◀** and **▶▶** keys are activated, the display changes to time indication as long as the search continues. Then the display will show the text information again.

## TITLE SEARCH

The **◀◀** and **▶▶** keys can be used to browse through the track-list

## When in stop mode and track title display:

- When you press **▶▶** or **◀◀** while the display is showing the track title, the title of the next or previous track appears on the display.
- Searching for the track does not yet start.
- You can actually search for the track by pressing the **PLAY ▶** key.

## REVERSING THE PLAYING DIRECTION

- The SIDE A/B key is used to reverse the direction in which the tape is travelling. This selected side is indicated on the display with SIDE **A** or SIDE **B**.
- When you press this key during playback, the playing direction will be reversed and playback will be continued at the other side of the tape.

## REPEAT

You can use the REPEAT key to replay a particular track or the total number of tracks on the tape.

- Press this key once to repeat the current track. The indication **REP 1** will appear on the display.
- Repeating the current track is not possible when you are using conventional analogue cassettes.
- Press this key once again if you wish to repeat all tracks on the tape. The display will show **REP**.
- Press this key another time to switch repeat off again.

**NOTE:** When analogue cassettes are used, only the function **REP** can be activated. **REP 1** can not be selected.

## RECORDING FUNCTIONS

## EDIT

The EDIT function is only possible when you are using non protected user-recorded DCC cassettes. In this mode you can edit the tape formats, delete or create track transition and renumber the tracks.

## When in REC PAUSE mode:

- 1 Press the **EDIT** key to enter the edit mode
- 2 You can select the various EDIT functions by pressing **EDIT** several times
- 3 Press the **RECORD** key to actually edit the tape.

• **START NEW SIDE:** When START NEW SIDE is detected during playback, the deck will automatically wind to the beginning of the next side after which playback will be continued with the first track on the next side. During winding the display will show **TO START B** or **TO START A**.

• **CONTINUE B:** mark the position where the tape must be reversed (only possible on side A of the tape). When CONTINUE B is detected during playback, the deck will immediately change to side B after which playback will be continued.

• **GO TO START A:** mark the position on the tape where the deck should start winding to the beginning of side A and stop. When GO TO START A is detected during playback, the deck will wind to the beginning of side A after which the deck stops.

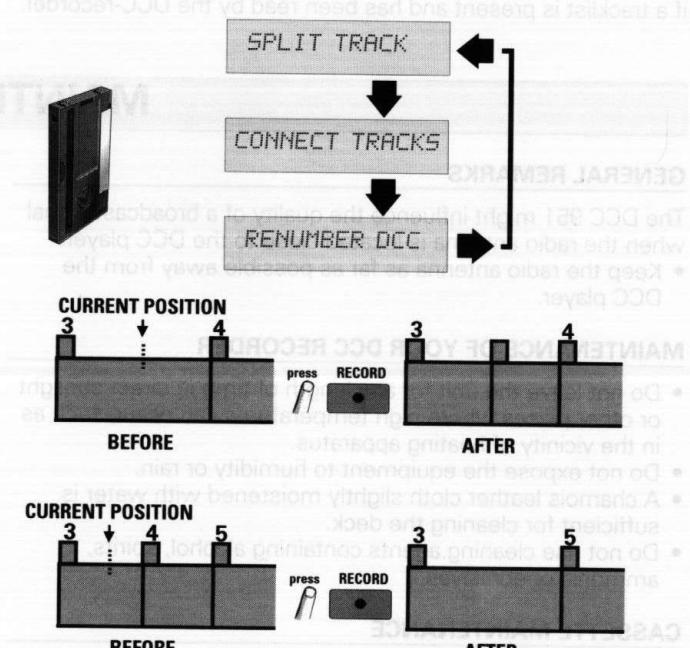
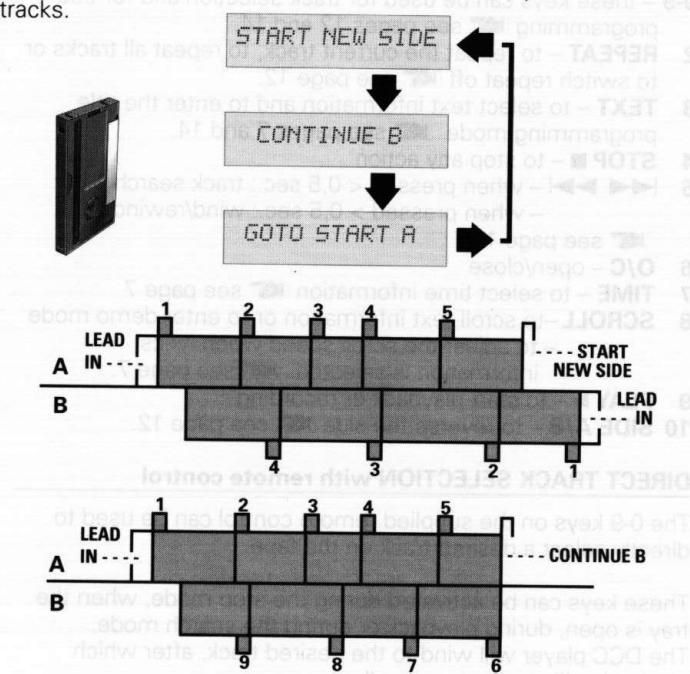
## When in STOP mode:

- 1 Press the **EDIT** key to enter the edit mode.
- 2 You can select the various EDIT functions by pressing **EDIT** several times
- 3 Press the **RECORD** key to actually edit the tape.

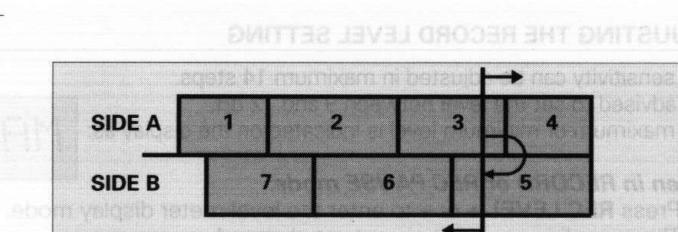
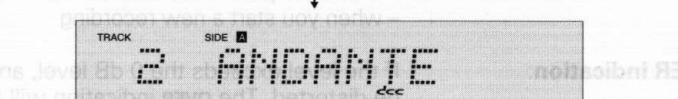
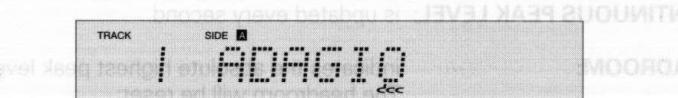
• **SPLIT TRACK:** the DCC starts a new track at the current position. When SPLIT TRACK has been performed a renumber action (see below) is necessary to ensure a correct tracknumber sequence.

• **CONNECT TRACKS:** the current and next track will be connected and recognized as one track. The deck will search for the start of the next track and erase the marker which indicates the start of this track. When tracks have been connected a renumber action (see below) is necessary to ensure a correct tracknumber sequence.

- **RENUMBER:** renumbering the tape. This action is only possible if tracknumbers have been recorded on the tape.
- The renumber action is needed:
  1. When a recording is started at a specific location ( **REC** see page 9).
  2. When a track has been split.
  3. When tracks are connected
- As the complete tape will be checked for correct tracknumber sequence, it is best to finalize all edit-actions before renumbering.



**NOTE: to exit edit** **press STOP**



## DOLBY NOISE REDUCTION

The Dolby Noise Reduction function can only be active when you are playing conventional music cassettes. With the Dolby key you can switch the Dolby NR system on or off and select Dolby B or Dolby C NR.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. DOLBY and the double-D symbol **DD** are trademarks of Dolby Laboratories Licensing Corporation.

**NOTE:** When analogue cassettes are used, only the function **REP** can be activated. **REP 1** can not be selected.

- 0-9** – these keys can be used for track selection and for title programming **TEXT** see pages 12 and 14.  
**2 REPEAT** – to repeat the current track, to repeat all tracks or to switch repeat off **REPEAT** see page 12.  
**3 TEXT** – to select text information and to enter the title programming mode **TEXT** see pages 7 and 14.  
**4 STOP ■** – to stop any action  
**5 ▲ ▼** – when pressed < 0,5 sec.: track search – when pressed > 0,5 sec.: wind/rewind **SEE PAGE 12**  
**6 O/C** – open/close  
**7 TIME** – to select time information **TIME** see page 7  
**8 SCROLL** – to scroll text information or to enter demo mode – to adjust the scroll speed when lyrics information is selected **SEE PAGE 7**.  
**9 PLAY ▶** – to start playback or recording  
**10 SIDE A/B** – to reverse the side **SEE PAGE 12**.

**DIRECT TRACK SELECTION with remote control**

The 0-9 keys on the supplied remote control can be used to directly select a desired track on the tape.

These keys can be activated during the stop mode, when the tray is open, during playback or during the search mode. The DCC player will wind to the desired track, after which playback will start automatically.

When using DCC user-recorded tapes this function only works if a tracklist is present and has been read by the DCC-recorder.

**MAINTENANCE****GENERAL REMARKS**

The DCC 951 might influence the quality of a broadcast signal when the radio antenna is located close to the DCC player.

- Keep the radio antenna as far as possible away from the DCC player.

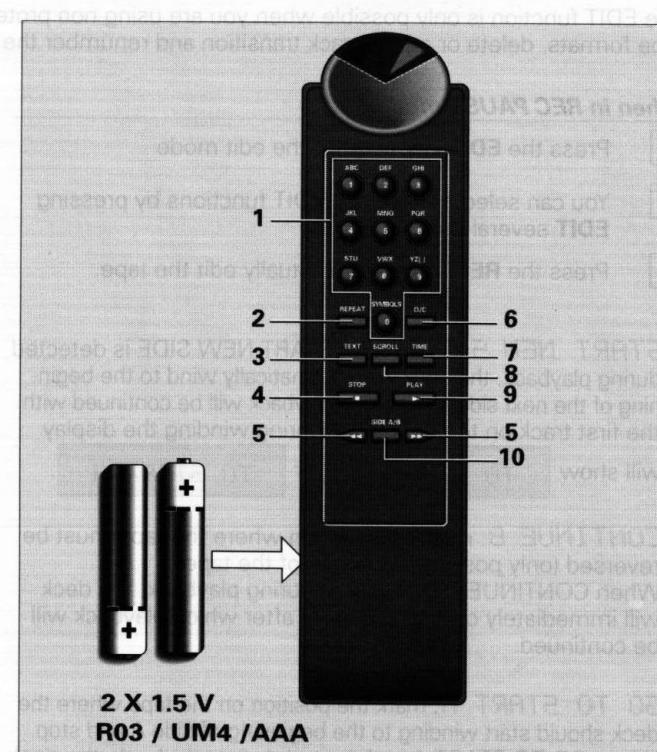
**MAINTENANCE OF YOUR DCC RECORDER**

- Do not leave the unit for any length of time in direct sunlight or other places where high temperatures can occur, such as in the vicinity of heating apparatus.
- Do not expose the equipment to humidity or rain.
- A chamois leather cloth slightly moistened with water is sufficient for cleaning the deck.
- Do not use cleaning agents containing alcohol, spirits, ammonia or abrasives.

**CASSETTE MAINTENANCE**

Keep the cassettes at room temperature and avoid leaving them in the sun or too close to magnets and transformers of e.g. recorders, radios, TV's and loudspeakers.

Do not push the tape protection of DCC cassettes aside and avoid touching the tape.

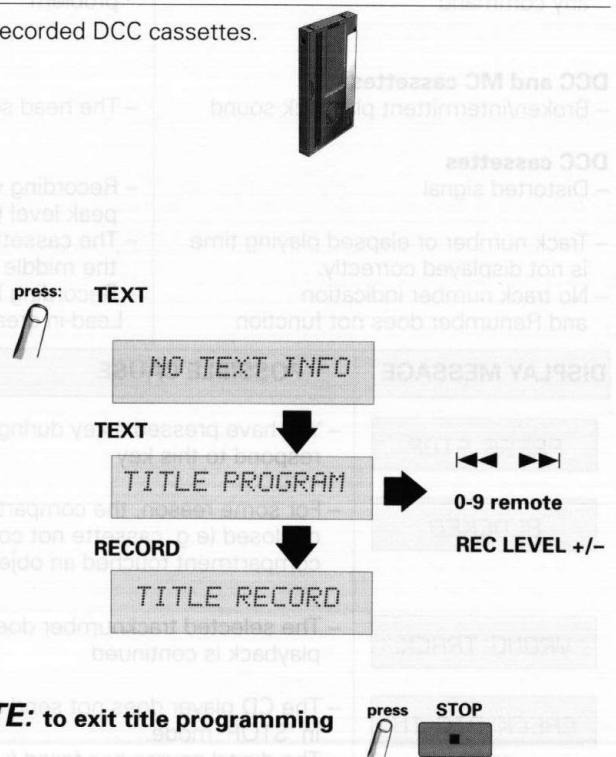
**REMOTE CONTROL****RECORDING FUNCTIONS****TITLE PROGRAMMING**

TITLE recording is only possible when you are using non protected user-recorded DCC cassettes.

**In STOP mode****When no text has been recorded on the tape yet:**

- 1 Press **TEXT**. When a new track is found and no text-info has been recorded yet the display shows **NO TEXT INFO**
- 2 Press **TEXT** again. The display shows **TITLE PROGRAM**. A cursor will be blinking at the first character on the display (left).
- 3 The cursor can be moved on the display with the **◀ ▶** keys. A maximum of 40 characters per title can be programmed.
- 4 Programming is either done with the **0-9** keys on the remote control (1=A,B,C, 2=D,E,F, 3=G,H,I, etc.) or with the **REC LEVEL +/-** keys.
  - Press **REC LEVEL +** to scroll through the alphabet characters in the following sequence: A, B, C, etc.
  - Press **REC LEVEL -** to scroll through the alphabet characters in the opposite sequence: Z, Y, X, etc.
 When these keys are pressed for more than 1 second the scrolling speed will be increased.
- 5 Press the **RECORD** key to store the title. The deck will search for the start of the current track and record the track title at the start of this track. During this time the display will show **TITLE RECORD**

**NOTE: to exit title programming**

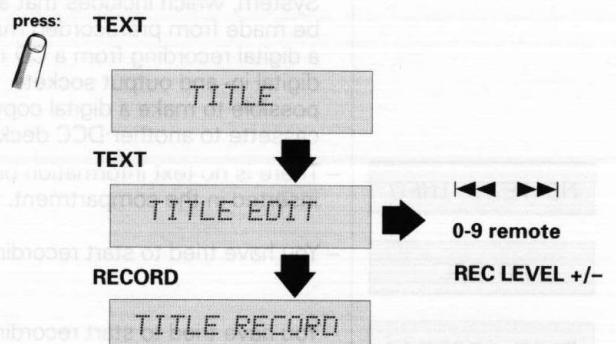


**TITLE RECORD**

**When text info has already been recorded on the tape:**

- 1 Press **TEXT**. When text info has already been recorded the display shows the current title.
- 2 An existing title can be edited by pressing the **TEXT** key again. The display will first show **TITLE EDIT** and then the current title. A cursor will be blinking at the first character on the display (left).
- 3 This cursor can be moved on the display with the **◀ ▶** keys. Programming is done with the **0-9** keys on the remote control or with the **REC LEVEL +/-** keys as described above.
- 4 Press the **RECORD** key to store the new title. The deck will search for the start of the current track and record the track title at the start of this track. During this time the display will show **TITLE RECORD**

**NOTE: to exit title programming**



**TITLE RECORD**

**MICROPHONE RECORDING**

If a microphone (e.g. Philips SBC3036) is connected, your DCC951 will automatically select microphone recording. If 'howling' occurs when using microphones:

- keep the microphones away from the loudspeakers,
- or reduce the reproduction volume
- or use headphones for monitoring.

**AUTOMATIC CD DUBBING**

When the DCC player is incorporated in a Philips 900 series system (with correct ESI BUS connections) and when the preset setting is **CD SYNCHRO ON** (default) (see PRESETS on page 10), CD synchro will always be started automatically when you are recording from a CD. When you start recording on your DCC player by pressing the **RECORD** key, the CD player will start playback automatically.

SYMPTOM	POSSIBLE CAUSE	REMEDY
<b>General problems</b>		
- The unit does not respond to any command	- Electrostatic charge may cause this problem	- Switch off the power. - Switch on the power again after a few seconds.
<b>DCC and MC cassettes</b>		
- Broken/intermittent playback sound	- The head section is dirty	- Clean the head section
<b>DCC cassettes</b>		
- Distorted signal	- Recording was made with too high peak level (OVERLOAD)	- Make a new recording with lower peak level
- Track number or elapsed playing time is not displayed correctly.	- The cassette has been loaded in the middle of one of the tracks	- Rewind the tape to the start of the track and start playback
- No track number indication and Renumber does not function	- Recording has not been started with a Lead-in area at the beginning of each side	- You may consider to re-record the tape
<b>DISPLAY MESSAGE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
PRESS STOP	- You have pressed a key during a function which cannot respond to this key	- Press the STOP key
BLOCKED	- For some reason, the compartment cannot be opened or closed (e.g. cassette not correctly inserted, compartment touched an object when it was opened).	- Do not force anything. Try to reset the player by switching ON and OFF again. If the trouble persists, consult your dealer or service station.
WRONG TRACK	- The selected tracknumber does not exist on the tape, playback is continued	- Enter an existing track number
CHECK DIG IN and CHECK OPT IN	- The CD player does not send any signal in 'STOP' mode. - The digital source has failed (i.e. loosened cable or DIG IN is not connected. The unit is switched to STOP. - 'Digital' or 'Optical' has been selected at the unit. If the digital source is missing, recording can not be started.	- Set the CD player into 'PAUSE' mode. - Check the connections and try again. If the problem persists, your digital/optical cable might be broken. Consult your dealer for a new cable
COPY PROHIBIT	- You can not make a digital copy of a source which is already a digital copy of an original music-program. The DCC951 operates with a Serial Copy Management System, which includes that a fully digital copy can be made from prerecorded material. E.g. you can make a digital recording from a CD to your DCC via the digital in- and output sockets. However, it is not possible to make a digital copy of this recorded DCC cassette to another DCC deck.  - There is no text information on the tape that has been inserted in the compartment.	- When you want to copy this cassette from one DCC deck to another you can only do this via the analogue in- and output sockets. - Select the analog input and start recording again.
NO TEXT INFO		- Program your own text information (see page 16 or select TIME information)
NO DCC	- You have tried to start recording with an 'ACC'.	- Insert a DCC into the tray.
TAPE PROTECT	- You have tried to start recording with a recording protected cassette.	- Push the red button on the DCC down (towards protective touch slider)
CLEAN HEAD	- There is dust or dirt on the head of your DCC player. This indication may appear during playback/recording or recording pause mode.	- Use a special DCC cleaning cassette to clean the head
RENUM FAILED	- Renumber is not possible when a recording was started on an empty area of the tape (no time info recorded)	- You may consider to re-record the tape
TAPE FULL	- indicates that the recording cannot be continued because the tape is full	- Use a new cassette for recording or rewind the tape to overwrite an existing recording
LOAD AGAIN	- The cassette has not been loaded correctly	- Load the cassette again.

If the trouble persists, even after the remedial action has been taken or if the symptoms are not included in the table, consult the dealer where you purchased the unit.

**WARNINGS****GB WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**F ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler 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.

**GB**

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

**NL**

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

**F**

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

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

**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.

**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.

**D WARNUNG**

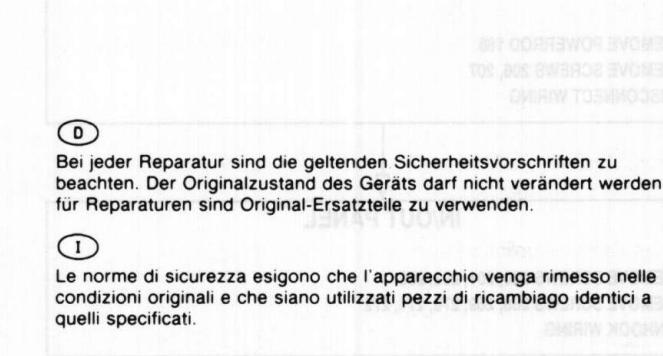
Alle ICs und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD). Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern. Sorgen Sie dafür, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**D**

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

**I**

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

**GB****HANDLING DCC-HEADS**

**CAUTION:** The heads are susceptible to electrostatic voltage higher than 150Vdc! The heads are protected from external electrostatic charging by connecting the head flexible cable to the read/write board. When disconnecting the cable, always place the deck on a bench with required electrostatic discharging measures taken and wear electrostatic discharging band. Moreover, always mount the short-clip on the flexible cable removed.

The heads are also susceptible to strong external magnetic field and the analog output may be affected.

**DO NOT USE HEAD DEMAGNETIZER, MAGNETIC SCREWDRIVER OR DEMAGNETIZER CASSETTE!**

**NL****VOORZORGSMAATREGELEN BIJ DE BEHANDELING VAN DE DCC-KOPPEN.**

**LET OP:** De koppen zijn gevoelig voor een elektrostatische spanning groter dan 150Vdc. Als de kop normaal verbonden is met de Read/Write printplaat, is deze beveiligd tegen externe elektrostatische ontladingen. Zodra deze flex-foil verbinding wordt onderbroken, plaats dan het deck altijd op een werktafel, die voorzien is van elektrostatische ontladingsmiddelen en draag een elektrostatische ontladings-manchet. Schuif, bovenindien, direct na het losnemen de kortsluit-clip over de flex-foil kabel.

De koppen zijn ook gevoelig voor sterke externe magnetische velden, deze kunnen het analoge uitgangsvermogen beïnvloeden.

**GEBRUIK GEEN KOP DEMAGNETISEER SPOEL, MAGNETISCHE SCHROEVENDRAAIER OF DEMAGNETISEER CASSETTE!**

**D****BEHANDLUNG VON DCC-KÖPFEN.**

**VORSICHT!** Die Köpfe sind empfindlich gegenüber elektrostatischen Spannungen ab ca. 150V! Schutz vor Schäden durch statische Entladungen besteht für die Köpfe nur, solange sie über den Flexprint mit dem Lese-/Schreib-Verstärker verbunden sind.

Die Verbindung darf erst unterbrochen werden, wenn der DCC-Recorder auf einer ESD-sicheren Tischauflage steht und nachdem ein ESD-Schutz-Armband angelegt worden ist.

Der vom Verstärker-Print abgezogene Flexprint-Connector muß mit einem Kurzschlußstecker geschützt werden.

Die Köpfe sind ebenfalls empfindlich gegenüber starken äußeren Magnetfeldern; deren Einwirkung kann das analoge Ausgangssignal beeinträchtigen.

Verwendete Werkzeuge müssen antimagnetisch oder entmagnetisiert sein.

**IM DCC-DECK DÜRFEN KEINE ENTMAGNETISIERUNGS-CASSETTEN ODER ENTMAGNETISIERUNGS-SPULEN BENUTZT WERDEN!**

**F****MANIPULATION DES TETES DCC**

**ATTENTION:** Ces têtes sont sensibles aux tensions électrostatiques supérieures à 150Vdc. Les têtes sont protégées des charges électrostatiques extérieures par la connection du câble flexible de tête sur la carte Lecture/Ecriture. Lorsque l'on déconnecte ce câble, placer impérativement la platine sur un établi pour lequel on aura pris les mesures requises de décharge électrostatiques, l'opérateur devant porter l'équipement approprié (bracelet d'écoulement des charges électrostatiques) > De plus monter toujours le clip de court-circuit sur le câble flexible démonté.

Les têtes sont également sensibles à un champ magnétique extérieur puissant et la sortie analogique peut en être affectée.

**NE PAS UTILISER DE DEMAGETISEUR DE TETES - DE TOURNEVIS MAGNETIQUE OU DE CASSETTE DE DEMAGNETISATION.**

**I****MANEGGIAMENTO DELL TESTINA DCC**

**ATTENZIONE:** le testine sono suscettibili a cariche elettrostatiche con tensioni maggiori di 150V DC. Le testine sono protette dall'influenza di cariche elettrostatiche esterne dovute al collegamento del cavo flessibile dalla testina alla basetta di lettura e scrittura (read/write board). Quando viene scollegato il cavo, il deck deve sempre essere riposto sul banco di lavoro, che deve essere necessariamente provvisto delle necessarie protezioni antistatiche (ad esempio tappetino collegato a massa) e il tecnico addetto alla riparazione dovrà trovarsi necessariamente allo stesso potenziale.

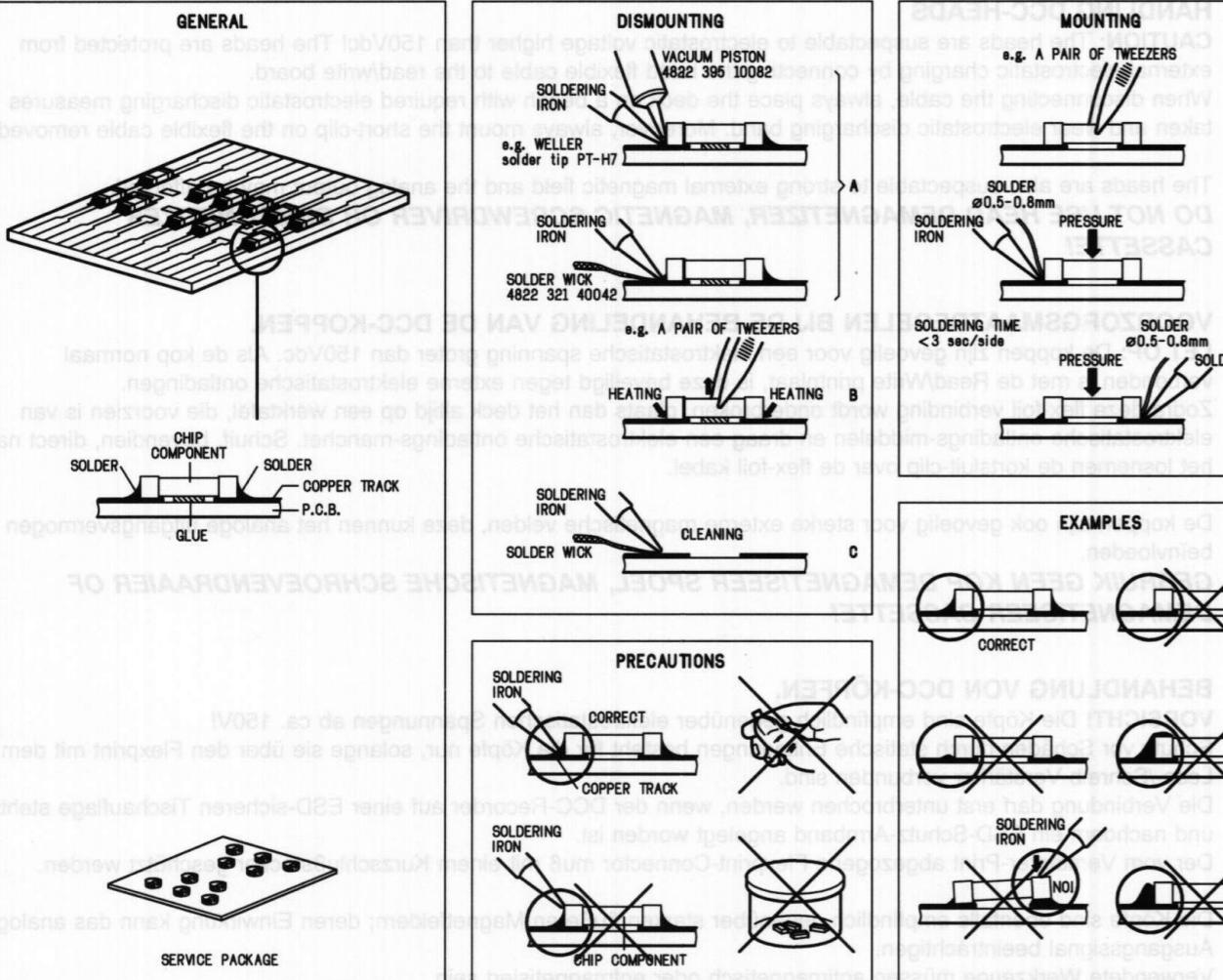
Dopotutto è necessario posizionare la clip (graffetta) in modo da cortocircuitare il cavo rosso.

Le testine sono suscettibili anche alla presenza di forti campi magnetici esterni e l'uscita analogica potrebbe risentirne particolarmente.

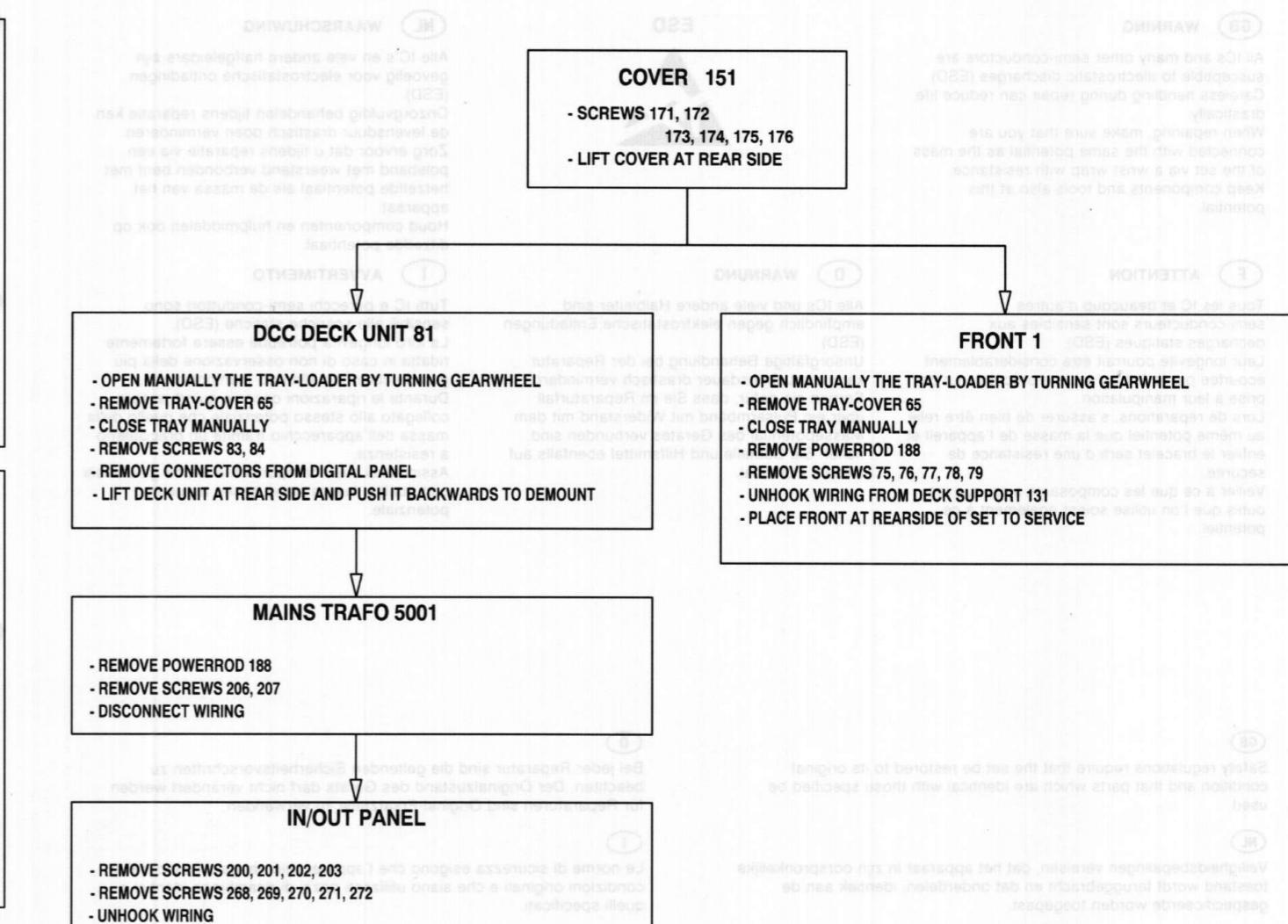
**NON UTILIZZARE TESTINE SMAGNETIZATORI, CACCIAVITI MAGNETIZATI O CASSETTE SMAGNETIZATORI.**

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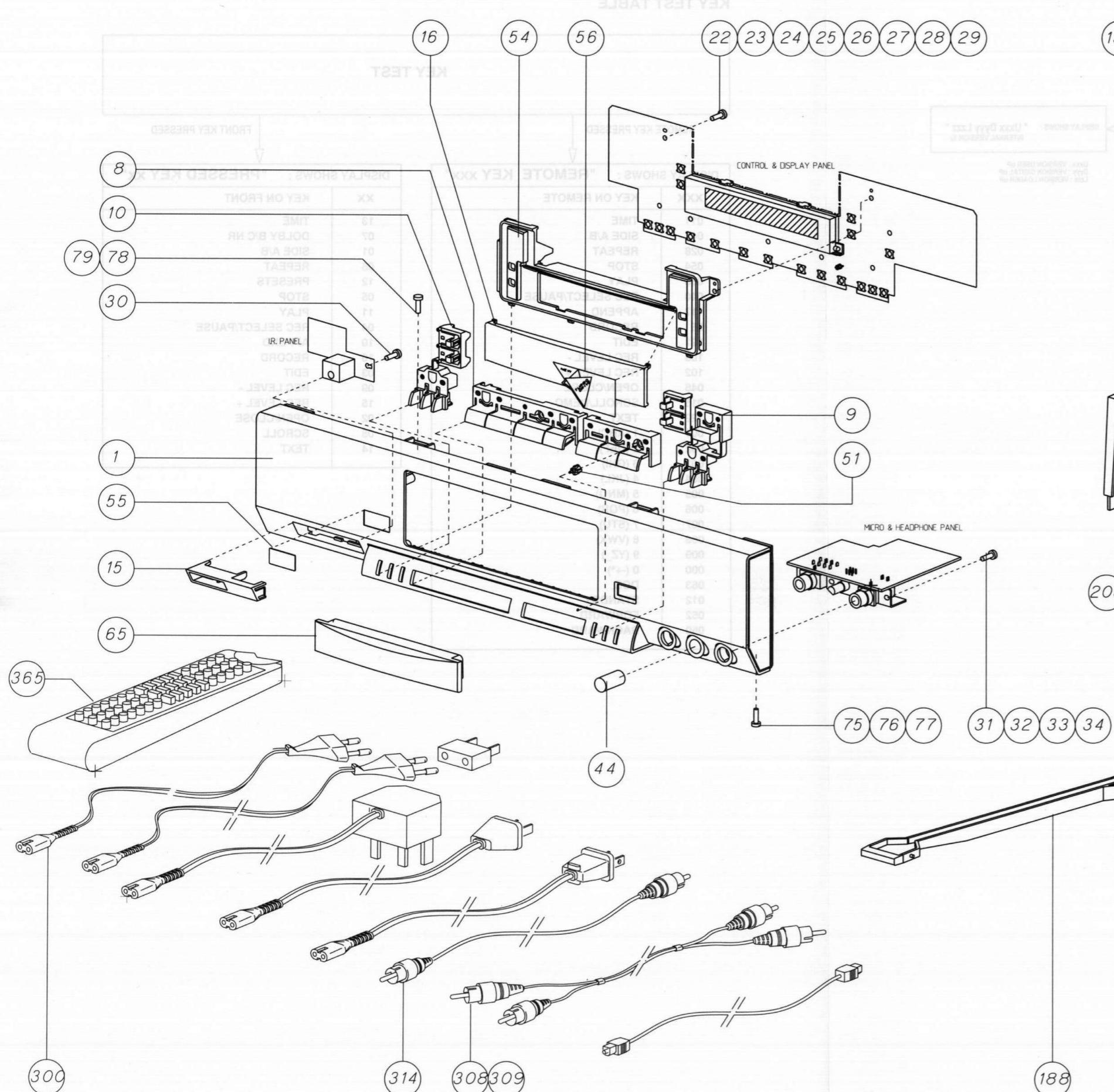
**GENERAL**



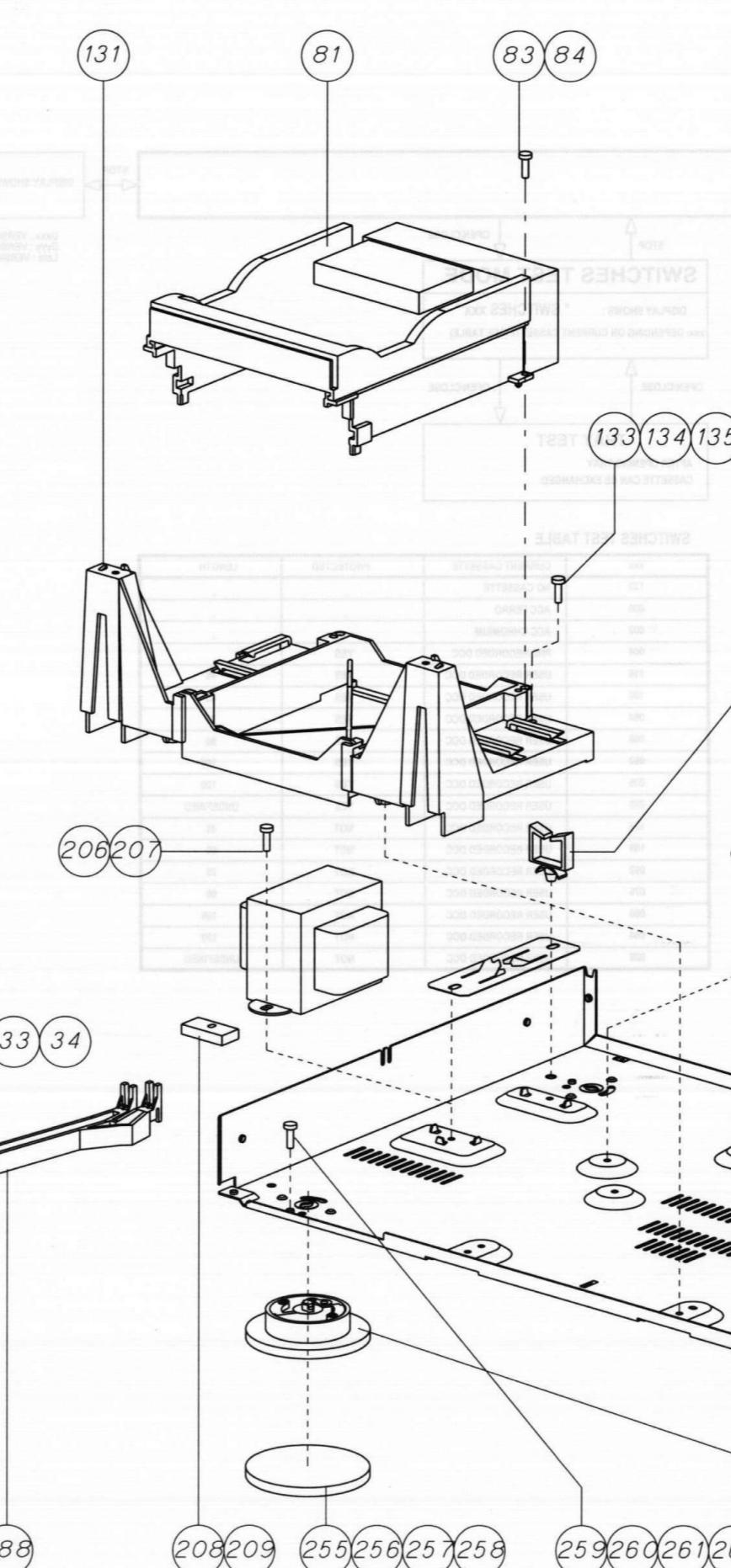
## **DISASSEMBLY INSTRUCTION**



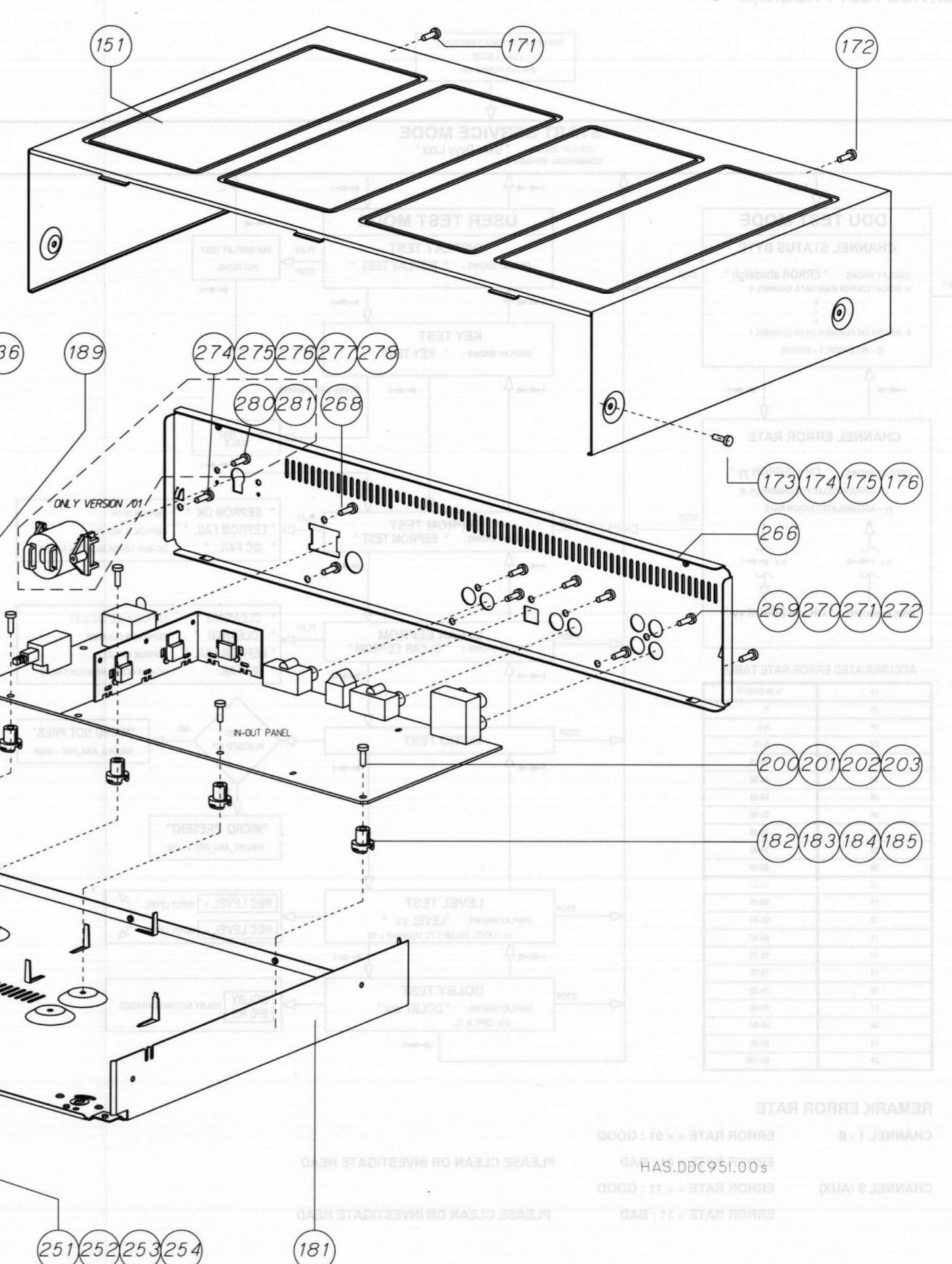
4-2

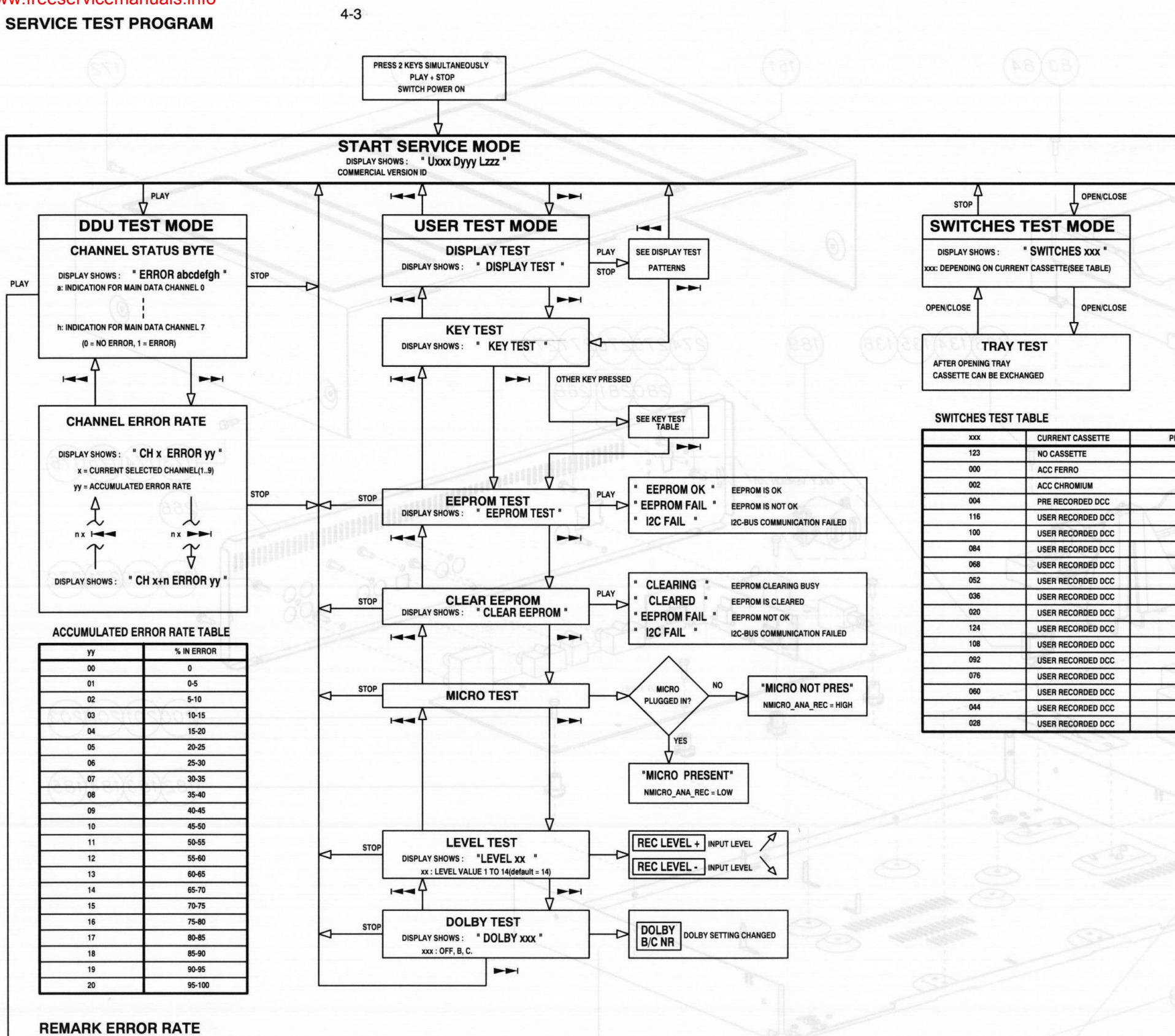


4-2



4-2





#### REMARK ERROR RATE

CHANNEL 1 - 8      ERROR RATE = < 01 : GOOD

                        ERROR RATE > 01 : BAD

                        PLEASE CLEAN OR INVESTIGATE HEAD

CHANNEL 9 (AUX)     ERROR RATE = < 11 : GOOD

                        ERROR RATE > 11 : BAD

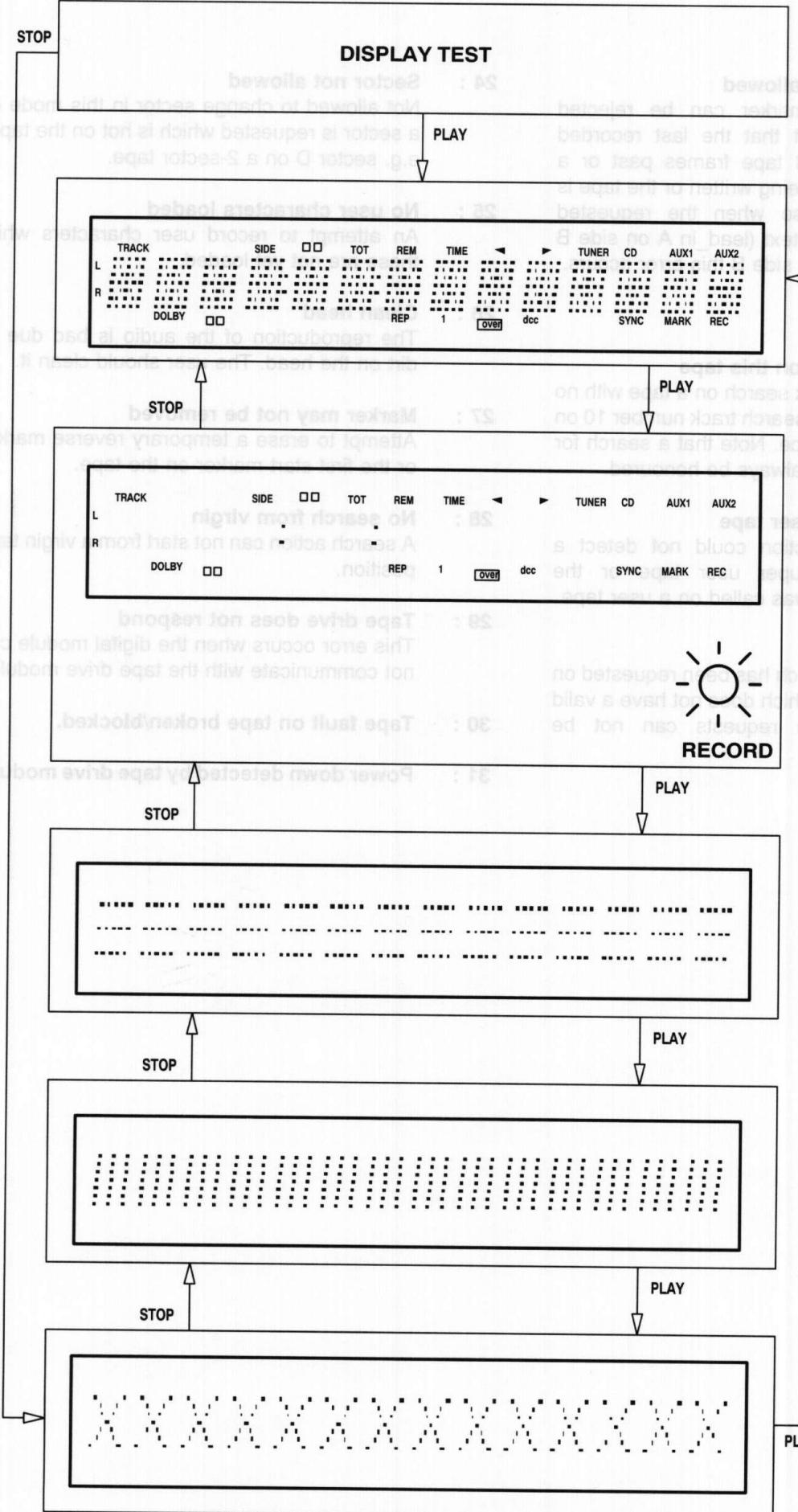
                        PLEASE CLEAN OR INVESTIGATE HEAD

**NORMAL PLAY**  
+ ERROR INDICATION  
DISPLAY SHOWS: "ERROR xx"  
xx : ERROR NUMBER(SEE ERROR NUMBER SURVEY)

KEY TEST	
REMOTE KEY PRESSED	FRONT KEY PRESSED
DISPLAY SHOWS: "REMOTE KEY xxx"	DISPLAY SHOWS: "PRESSED KEY xx"
XX	KEY ON REMOTE
011	TIME
047	SIDE A/B
028	REPEAT
054	STOP
053	PLAY
040	REC SELECT/PAUSE
117	APPEND
55	RECORD
121	EDIT
103	REC LEVEL -
102	REC LEVEL +
045	OPEN/CLOSE
015	SCROLL/DEMO
122	TEXT
001	1 (ABC)
002	2 (DEF)
003	3 (GHI)
004	4 (JKL)
005	5 (MNO)
006	6 (PQR)
007	7 (STU)
008	8 (VWX)
009	9 (YZ)
000	0 (-*)
063	DCC
012	STANDBY
052	FORWARD
050	BACKWARD

## DISPLAY TEST PATTERNS

4-4

HAS1133  
9424

4-4

- 0 : **ERROR NUMBER SURVEY**
- 10 : Internal DCC chip error
- 11 : Record attempt on write protected tape
- 12 : Unreliable TOC access
- 13 : Invalid command received
- 14 : Shuttle too far
- 15 : Column overrun
- 16 : Shuts down after jobbed
- 17 : Unreliable TOC
- 18 : Sector read count not found
- 19 : Copy light protection violation (SCME)
- 20 : Digital audio input has protection class (unlocked)
- 21 : Digital recording from a digital input, source not selected, user audio will be recorded
- 22 : Digital recording from a digital input, source is selected, user audio will be recorded
- 23 : Digital recording from a digital input, source is selected, user audio will be recorded
- 24 : Digital recording from a digital input, source is selected, user audio will be recorded
- 25 : Try playback
- 26 : This slot is busy with a tape ready
- 27 : Try seek
- 28 : No seek
- 29 : No ejection search failed
- 30 : Try buffer open
- 31 : Try buffer open
- 32 : Try buffer open
- 33 : Try buffer open
- 34 : Try buffer open
- 35 : Try buffer open
- 36 : Try buffer open
- 37 : Try buffer open
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- 47 : Try buffer open
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- 96 : Try buffer open
- 97 : Try buffer open
- 98 : Try buffer open
- 99 : Try buffer open

## **ERROR NUMBER SURVEY**

- 00 : No error**

**01 : Deck failed**  
The requested command could not be executed because of a malfunctioning of the mechanics.

**02 : Tray blocked**  
This error is issued when the tray has been blocked, although the tray might be moving out again due to this fact. The blocked indication will hence occur very short in the tray status message and could be missed.

**03 : Tray pulled open**  
During normal operation the tape drive module has sensed that the tray loader is forced to the open state by the user.

**04 : Invalid parameter**  
The parameter going with the last received command is unknown or out of range.

**05 : No cassette**  
The command can not be executed since there is no cassette loaded.

**06 : Digital Audio input out of lock or missing carrier**  
During recording from a digital input, no input signal is detected. When continuing the recording, undefined data will be recorded which may lead to unpredictable audio during playback. The DDU module will refuse to continue the recording.

**07 : Digital Audio input has Professional class (unsupported)**  
During recording from a digital input, a professional source may be detected which is not supported by the DDU module, hence the module will refuse to record from this source.

**08 : Digital Audio input has non-audio format**  
During recording from a digital input, the input data may contain computer data instead of audio. The DDU module will refuse to continue the recording.

**09 : Copy right protection violation (SCMS)**  
During recording from a digital input, which contains user audio data but which is copyright protected, the DDU module will refuse to continue the recording.

- 10 : Internal DCC chip error**  
There has an error occurred within the DCC chips on the DDU digital module. When this error persists over a longer period of time please consult your nearest service officer.

**11 : Record attempted on write protected tape**  
A record or auxiliary record or record-pause command is issued while the loaded cassette is write protected or is an ACC. The DDU module will refuse to record on such a tape.

**12 : Non existent search target**  
The target to search for does not exist on the currently loaded cassette. e.g. search for track number 20 while the tape only contains 18 tracks.

**13 : Invalid command received**  
The command which was received is not allowed in this context.

**14 : Setting not allowed**  
This error message will be returned when the DDU module is performing a TOC search and a next\_previous\_count is downloaded.

**15 : Command overrun**  
The DDU module has received too many start changing commands in a row to handle. This error occurs whenever a command is received while another command is still waiting for execution. The DDU module will not store queue of received commands.

**16 : Signature not yet loaded**  
The record command will only be accepted by the DDU module after the setmakers signature has been loaded. This will make it possible to identify the recording set of each DCC cassette.

**17 : Unreliable TOC**  
During the process of TOC search the DDU module found out that the contents of the TOC does not match the contents of the tape. The search command should be repeated using relative search.

**18 : Search target could not be found**  
The requested search target was valid but could not be found, e.g. a direct track search after track number 5 on a super-user tape while track number 5 was removed by after recording, or an append search on a full tape.

- 19 : Marker writing not allowed**  
A request for a marker can be rejected because of the fact that the last recorded marker is not yet 8 tape frames past or marker is currently being written or the tape is write protected. Also when the requested marker is out of context (lead\_in A on side B or reverse marker on side B this error occurs.

- 20 : Not Us

- 21 : No track numbers on this tape**  
Attempt to do a track search on a tape with no track numbers, e.g, search track number 10 on a non-super user tape. Note that a search for track number 1 will always be honoured.

- 22 : No proper super-user tape**  
The renumber function could not detect marker on this super user tape or the renumber function was called on a user tape.

- 23 : No TOC available**  
A direct access search has been requested on a super-user tape which does not have a valid TOC. This search requests can not be honoured.

- 24 : Sector not allowed**  
Not allowed to change sector in this mode or a sector is requested which is not on the tape, e.g. sector D on a 2-sector tape.

**25 : No user characters loaded**  
An attempt to record user characters while these are not yet loaded.

**26 : Clean head**  
The reproduction of the audio is bad due to dirt on the head. The user should clean it.

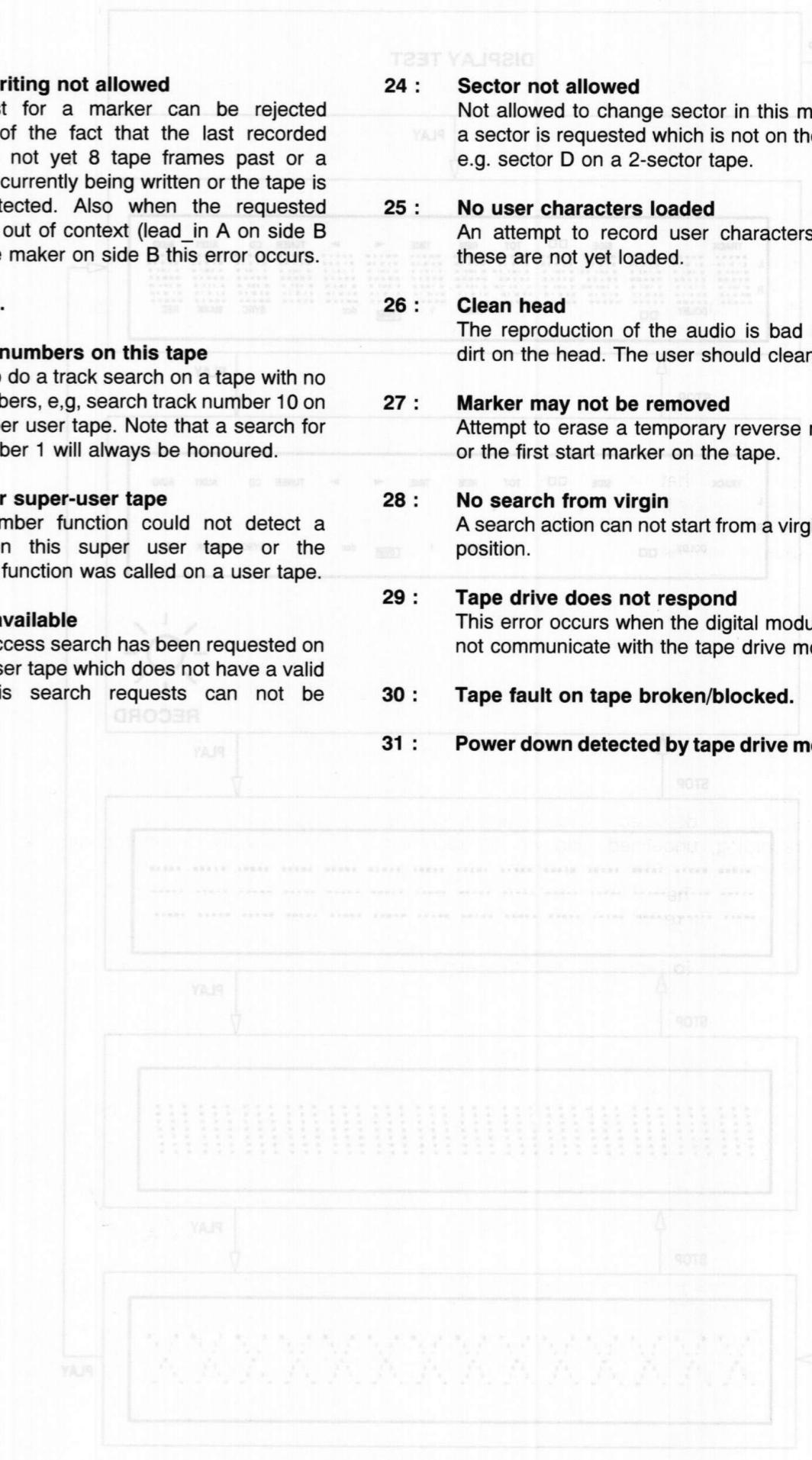
**27 : Marker may not be removed**  
Attempt to erase a temporary reverse marker or the first start marker on the tape.

**28 : No search from virgin**  
A search action can not start from a virgin tape position.

**29 : Tape drive does not respond**  
This error occurs when the digital module can not communicate with the tape drive module.

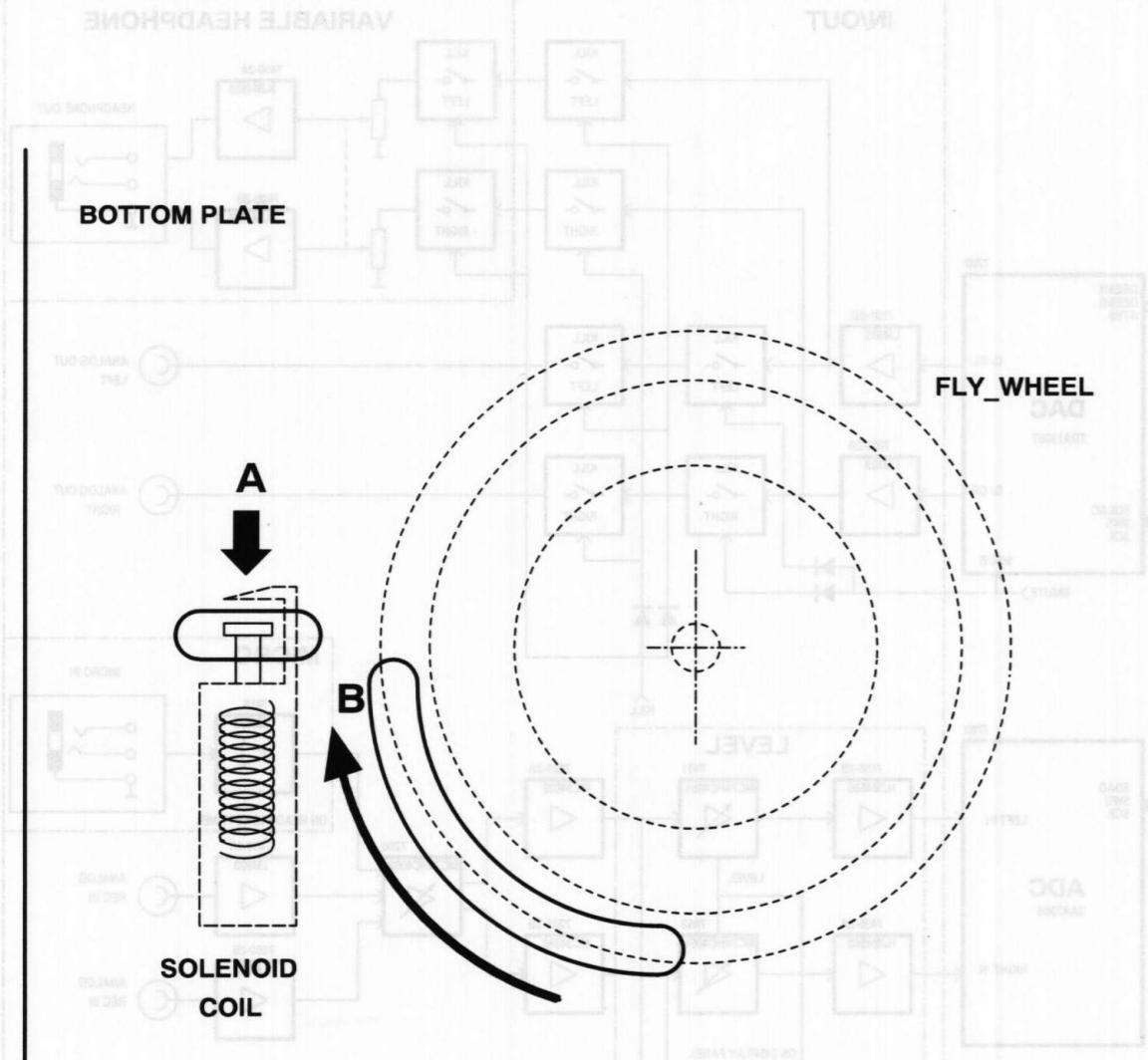
**30 : Tape fault on tape broken/blocked.**

**31 : Power down detected by tape drive module**



## SERVICE HINT

4-6



IN CASE OF TAPE SALAD THE TAPE DECK RISKS TO BE BLOCKED IN THE PLAY POSITION.

TO UNBLOCK THE DECK OUT OFF THE PLAY POSITION, THE FOLLOWING INSTRUCTIONS HAVE TO BE CARRIED OUT:

1. DISCONNECT THE SET FROM THE MAINS.
2. REMOVE COVER ITEM 151.
3. IN THE BOTTOM PLATE OF THE SET ARE 2 HOLES A AND B TO MANIPULATE THE DECK MECHANISM.
4. VIA HOLE A, PUSH THE SHAFT OF THE SOLENOID INWARDS TO LOCK IN THE DECK MECHANISM.
5. VIA HOLE B, TURN FLY-WHEEL IN CLOCKWISE DIRECTION UNTIL THE HEAD PLATE HAS BEEN RETURNED TO THE STOP POSITION.

## DOLBY LEVEL ADJUSTMENT

4-6

TOOLS	REMARKS	DIGITAL	DRAW	RECOMM.	DCC HEAD
<b>DOLBY LEVEL</b>					
USE DOLBY REF. CASSETTE MTT-150 4822 397 30271 OR TCC-130 4822 397 30269	DOLBY REFERENCE LEVEL 200nWb/m DOLBY OFF	ANALOG OUT SOCKET 1005 PIN 2 (LEFT) PIN 3 (RIGHT)	ON DISPLAY PANEL R3199 (LEFT) R3198 (RIGHT)	ADJUST BOTH CHANNELS TO 500 mVrms +/- 2 dB	CONTROLE: +/- 1.5 Vpp 0.5 mS/DIV

## SERVICE TOOLS

Dolby reference cassette MTT-150

4822 397 30271

Universal analog test cassette Fe "SBC420"

4822 397 30071

General purpose test cassette (prerecorded DCC)

4822 397 30256

9.6kHz calibration cassette (prerecorded DCC)

4822 397 30264

Mirror test cassette MC-112C

4822 395 30288

DCC head cleaner cassette (SBC 3500)

4822 015 20646

Ceramic screwdriver D281 1.7

4822 395 50451

TORX screwdriver set "SBC 163"

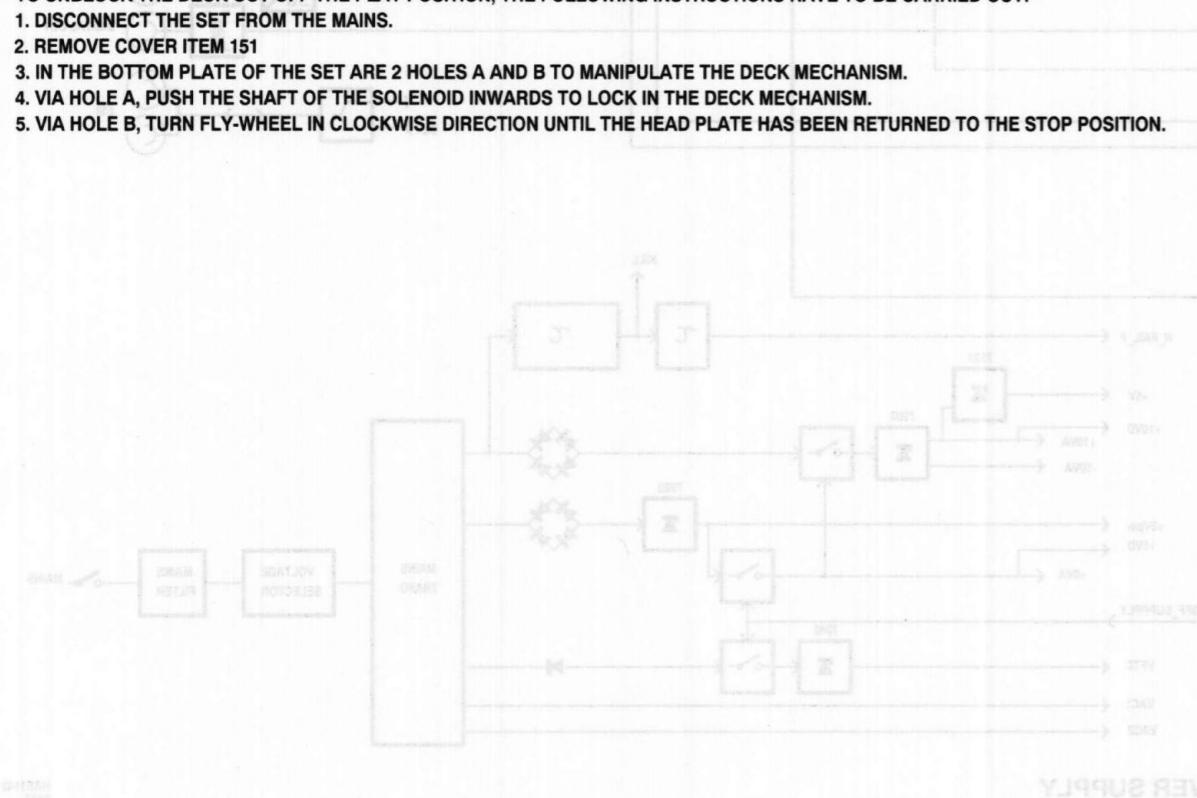
4822 395 50145

Wheel loosener

4822 395 60039

Trimming kit "SBC317"

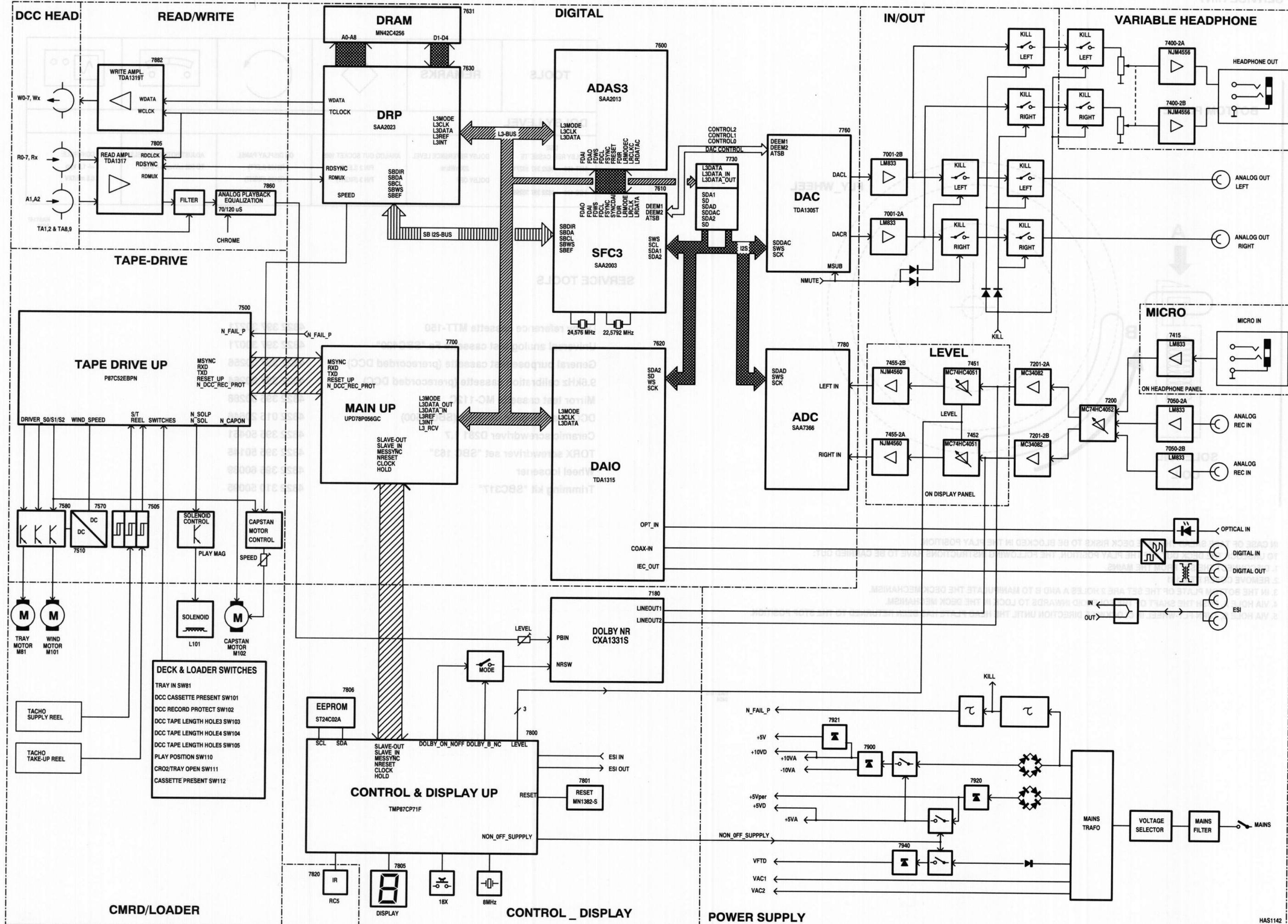
4822 310 50095



CHRG/LOADERS

## BLOCK DIAGRAM

5-1



## ABBREVIATIONS

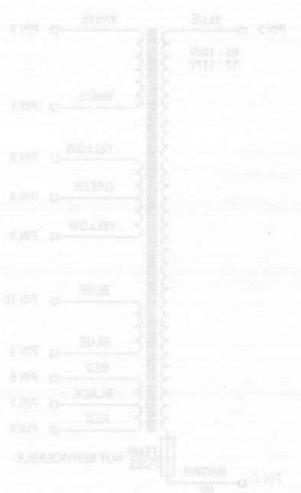
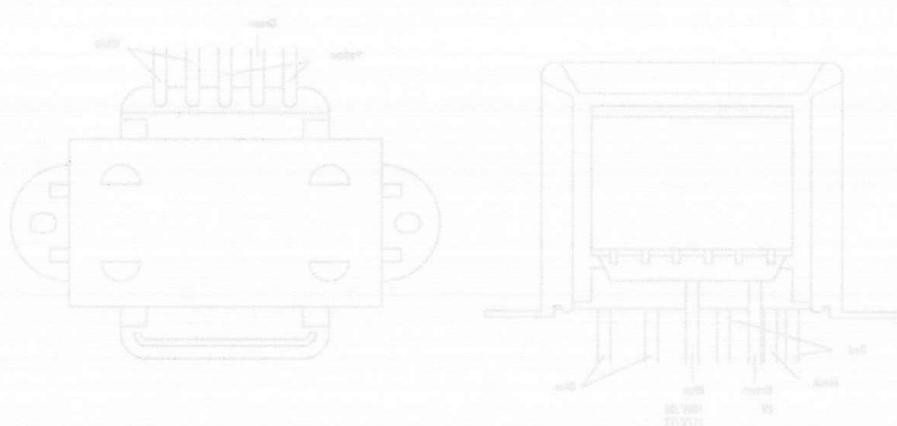
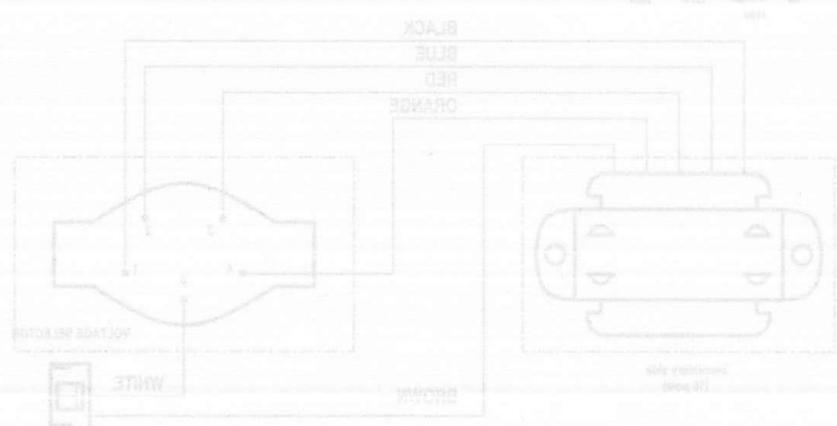
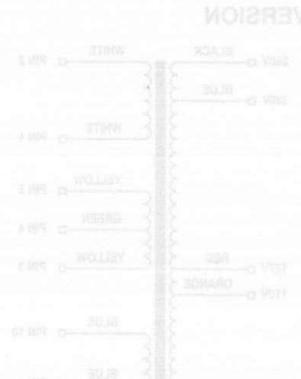
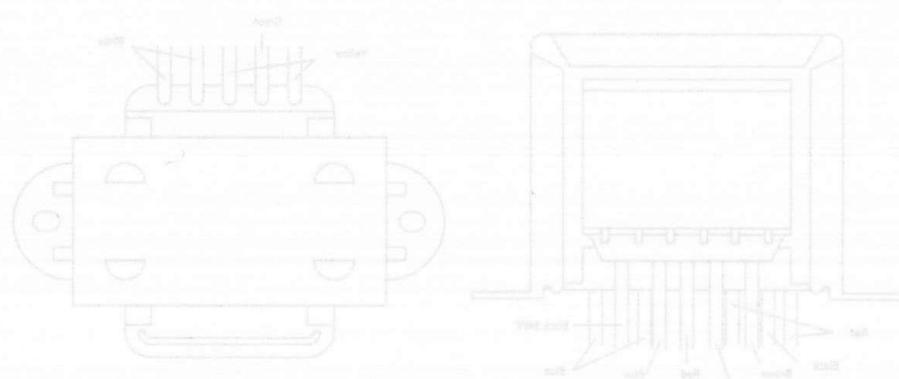
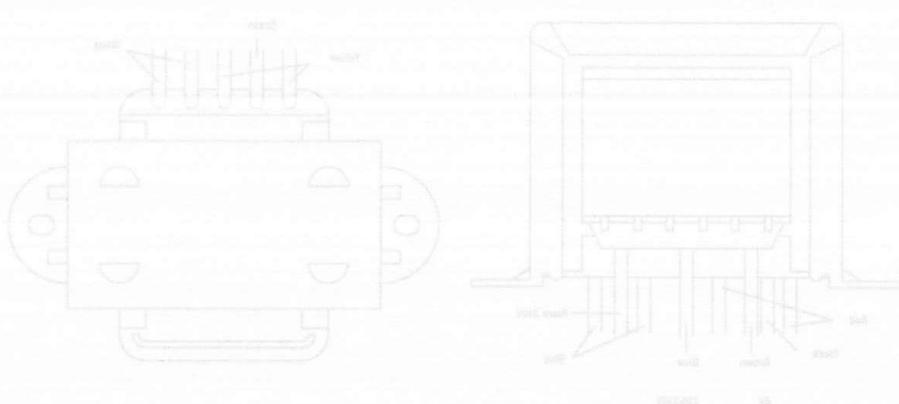
A0	Address SRAM; Address DRAM
A1	Address SRAM; Address DRAM
A1 0/RAS	Address SRAM; RAS DRAM
A1 1	Address SRAM
A1 2/PinO5	Address SRAM; Address DRAM; Port expander output 5
A1 3/PinO2	Address SRAM; Address DRAM; Port expander output 2
A1 4/PinO1	Address SRAM; Address DRAM; Port expander output 1
A1 5/PinO4	Address SRAM; Address DRAM; Port expander output 4
A1 6/PinO3	Address SRAM; Address DRAM; Port expander output 3
A2	Address SRAM; Address DRAM
A3	Address SRAM; Address DRAM
A4	Address SRAM; Address DRAM
A5	Address SRAM; Address DRAM
A6	Address SRAM; Address DRAM
A7	Address SRAM; Address DRAM
A8	Address SRAM; Address DRAM
A9/CAS	Address SRAM; CAS for DRAM
A1+	Analog reader ACC Left channel
A2+	Analog reader ACC Right channel
ACC/NDCC	Analog or DCC playback
ANAEYE	Analogue eye pattern output
ANAL	ACC output Left
ANAR	ACC output Right
ATSB	12 dB attenuation(active LOW)
ATTDAC	DAC attenuation control.
AZCHK	channel 0 and channel 7 azimuth monitor.
BCK	bit clock input.
BIAS	Bias current for ADC
BIL	buffer op-amp inverting input for left channel.
BIR	buffer op-amp inverting input for right channel.
BOL	buffer op-amp inverting input for left channel.
BOR	buffer op-amp output for right channel.
CAP_A	Capstan motor control connection A
CAP_B	Capstan motor control connection B
CAPSTAN	Low output level switches the capstan motor on.
CAPSTAN+	Capstan motor + connection
CAPSTAN-	Capstan motor - connection
CEDC	system clock output.
CHMODE	use of channel status(0=professional use, 1=consumer use)
CHROME	Indication if a chrome analog cassette is inserted.
CHTST1	Channel test pin 1
CHTST2	Channel test pin 2
CKIN	system clock input.
CKSL1	clock selection 1
CKSL2	clock selection 2
CLAMP	Write current output
CLK22	22.5792 MHz buffered clock output of SFC3.
CLK24	24.576 MHz XTAL buffered clock output of SFC3.
CLKSEL	select system clock
CLOCK	Serial data clock from controller
CLOSE_TRAY	Tray motor connection
COA	(+10V = Open tray; 0V = Close tray)
COAXIAL IN	Common analog
COD	IEC958 high sensitive input
COPY	Common digital
CRO2/TRAY_OPEN	copyright status bit
CTRLMODE	CRO2/FE cassette detection switch input
D0	if N_CASS_PRES = L
D1	L = FE; H = CRO2
D2	if N_CASS_PRES = H
D3	L = tray fully opened,
D4	H = tray is not fully opened
D5	select µP/stand-alone mode
D6	Data SRAM; Data DRAM
D7	Data SRAM; Data DRAM
DACL	Data SRAM;
DACR	Analog audio output left
DATA	Analog audio output right
DCC_CASS_PRES	data input
DEEM	DCC cassette present switch input
DEEM1	pre-emphasis output bit
DEEM2	deemphasis on/off
DEEMDAC	deeemphasis on/off
DIGITAL OUT	DAC control output.
DSMB	IEC958 output
ERCOSTAT	double speed mode(active LOW).
FDAI	ERCO status, for test only
FDAO	filtered serial data input(from ADAS)
FDCL	filtered serial data output(to ADAS)
FDIR	filtered data bit clock
FDWS	PASC mode encode/decode
FILTCL	filtered data word select
FILTCR	capacitor for left channel 1st order filter function.
FILTCR	capacitor for right channel 1st order filter function.
FRESET	reset signal from codec.
FS256	master audio clock at 256x sample frequency
FS32	indicates sample frequency=32kHz
FS44	indicates sample frequency=44kHz
FS48	indicates sample frequency=48kHz
FSYNC	subband synchronisation on F-I <sup>2</sup> S bus.
GNDA	Analog ground
GNDD	Digital ground
GNDS	Analog motors ground
HOLD	DDU is busy flag
HPEN	high pass filter enable input.
I <sup>2</sup> SOUTEN	serial audio output enable.
I <sup>2</sup> SSEL	select auxiliary input or normal input in transmit mode.
IECINO	TTL level IEC input.
IECIN1	high sensitivity IEC input.
IECO	digital audio output for optical and transformer link.
IECOEN	digital audio output enable
IECOP	IEC958 digital audio output.
IECSEL	select IEC input 0 or 1
INO-7	Head signals of main data channels
INAUX	Head signal of auxiliary data.

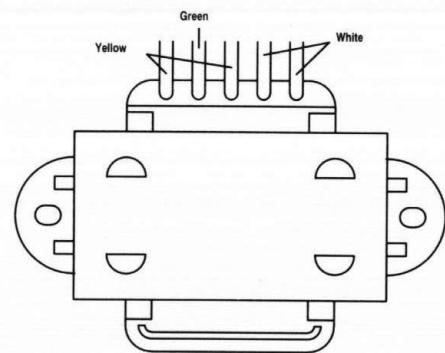
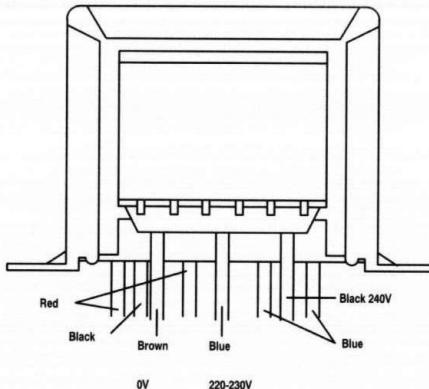
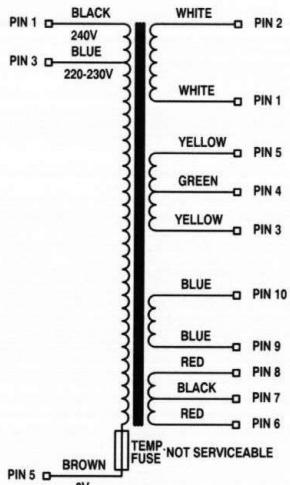
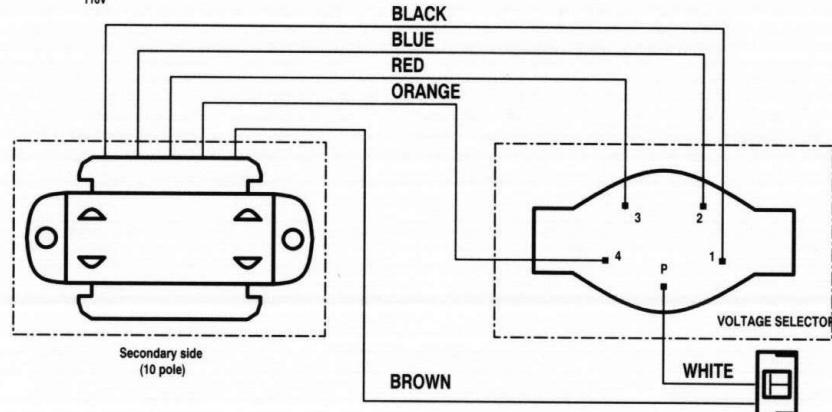
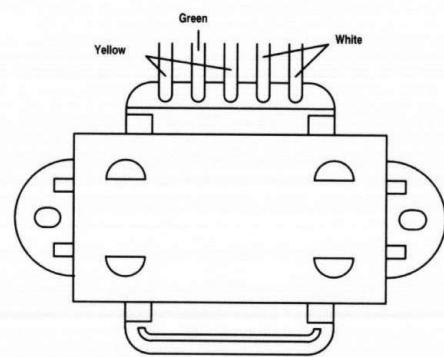
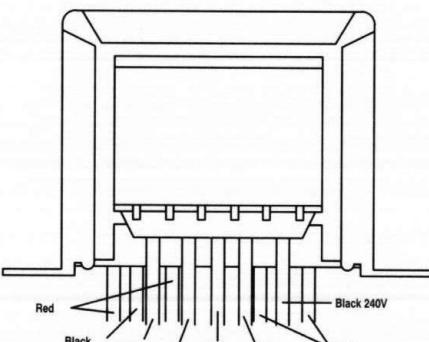
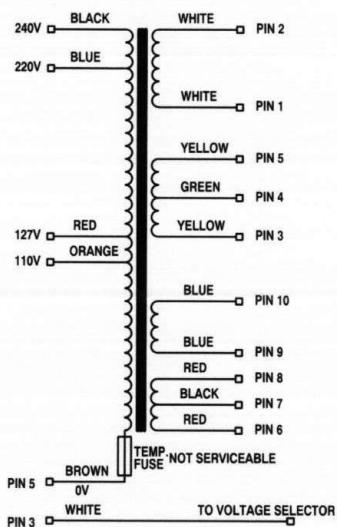
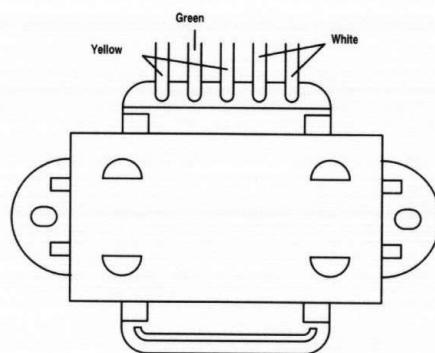
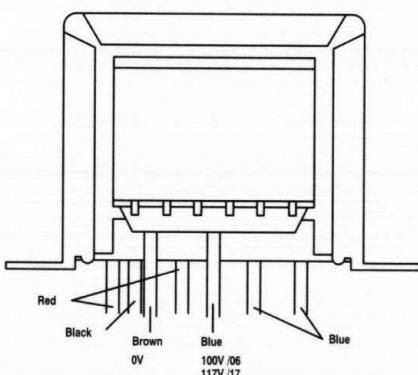
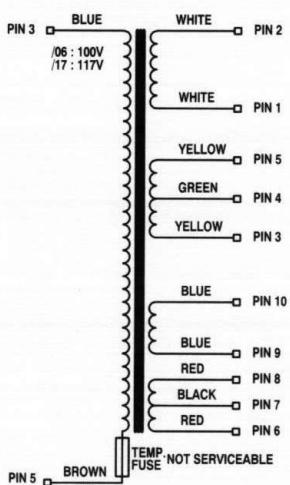
INL	Analog input signals from DCC head.	PIN01	Port expander output 1	STROBE	strobe for control register(active high)																																																																																																																																																																																																																																																																																																				
INMFL	Magnetic feedback amplifier input left.	Pin02/SPEEDB	Port expander output 2/ PWM	SUBSTR	Substrate connection																																																																																																																																																																																																																																																																																																				
INMFR	Magnetic feedback amplifier input right.	PLAY MAG	capstan control output for deck B	SWS	serial interface word select signal.																																																																																																																																																																																																																																																																																																				
INR	Analog input signals from DCC head.	POR	Connection to the solenoid on the	SYNCDAI	settings synchronisation for DAIO																																																																																																																																																																																																																																																																																																				
INVALID	validity of audio sample input/output	PRGSTAT	DDU deck.	SYSCLKI	system clock input																																																																																																																																																																																																																																																																																																				
IREF	current reference node.	PWRDWN	Power On Reset	SYSCLKO	system clock output																																																																																																																																																																																																																																																																																																				
L3CLK	L3 bus clock line	QA-QJ	TFE3 program status, for test only	TA1	Feedback conductor ACC Left channel																																																																																																																																																																																																																																																																																																				
L3CLKC	codec interface clock	QUICK_REVERSE	enable power-down input in the	TA2	Feedback conductor ACC Left channel																																																																																																																																																																																																																																																																																																				
L3CLKM	microcontroller interface clock	R0+	standby mode	TA8	Feedback conductor ACC Right chan-																																																																																																																																																																																																																																																																																																				
L3DATA	L3 bus serial data line	R1+	Put DRP into power down mode	TA9	nel																																																																																																																																																																																																																																																																																																				
L3DATAC	codec interface data	R2+	Signal for write heads.	TCLOCK	Feedback conductor ACC Right chan-																																																																																																																																																																																																																																																																																																				
L3DATAM	microcontroller interface data	R3+	Quick reverse input signal	TD1	nel																																																																																																																																																																																																																																																																																																				
L3INT	L3 interrupt output	R4+	Digital reader CH0(Hot)	TD2	3.072 MHz clock output for tape I/O																																																																																																																																																																																																																																																																																																				
L3MODE	Mode line for L3 interface	R5+	Digital reader CH1(Hot)	TEST0	Test conductor digital																																																																																																																																																																																																																																																																																																				
L3MODEC	codec interface mode	R6+	Digital reader CH2(Hot)	TEST1	test mode select																																																																																																																																																																																																																																																																																																				
L3MODEM	microcontroller interface mode	R7+	Digital reader CH3(Hot)	TEST2	test mode select																																																																																																																																																																																																																																																																																																				
L3REF	L3 bus timing reference	RCfil	Digital reader CH4(Hot)	TREEL	Tacho Take-up reel																																																																																																																																																																																																																																																																																																				
LADDR	microprocessor interface address	RCint	Digital reader CH5(Hot)	LCLK	switch input	RDMUX	Digital reader CH6(Hot)	TXD	Serial data output to tape drive unit	LDATA	microprocessor interface clock line	RDSYNC	Digital reader CH7(Hot)	UDAVAIL	synchronisation for output user da-	LEFT INPUT	input	RESET	pin for PLL loop filter	UNLOCK	ta(0=data available, 1=no data)	LMODE	microprocessor interface data line	RESET_UP	pin for integrating capacitor	URDA	PLL out-of-lock(0=not locked, 1=locked)	LOWPOWER	input/output	RESOL0	Analogue multiplexed input from	VDACN	unreliable data from drive processing	LTCNT0	Analog audio input left	RESOL1	READ AMPLIFIER	VDACP	negative 1 bit DAC reference voltage	LTCNT0C	microprocessor interface mode line	RIGHT INPUT	Synchronisation output for READ	VOL	input.(connected 0V)	LTCNT1	input	RX+	AMPLIFIER	VOR	positive 1 bit DAC reference voltage	LTCNT1C	Low power playback reset	RXD	Reset signal from Digital Unit con-	W01	input.(connected 5V)	M0	LT compatible interface mode control	SBCL	troller	W12	left channel output.	M1	SAA2002 SFC interface mode control	SBCL	Reset tape drive module µP	W23	right channel output.	MCLK	LT compatible interface mode control	SBDA	resolution selection 0	W34	Digital writer(CH0/CH1)	MESSYNC	SAA2002 SFC interface mode control	SBDIR	resolution selection 1	W45	Digital writer(CH1/CH2)	MLE	(test mode input) connect to VDD	SBEF	Analog audio input right	W56	Digital writer(CH2/CH3)	MSYNC	(test mode input) connect to VDD	SBMCLK	Digital writer(AUX channel(Hot))	W67	Digital writer(CH3/CH4)	MUSB	6.144 MHz clock output	SBWS	Serial data input from tape drive unit	W7-	Digital writer(CH4/CH5)	MUTE	Message synchronisation with	SCK	Bit clock for sub-band I <sup>2</sup> S interface.	WDATA	Digital writer(CH5/CH6)	MUTEDAC	controller	SCL	sub-band bit clock	WEN	Digital writer(CH6/CH7)	N_CASS_PRES	Latch enable signal for digital filter	SDA1	Data line for sub-band I <sup>2</sup> S interface	WIND+	Serial output to WRITE AMPLIFIER	N_DCC_REC_PROT	Message synchronisation with	SDA2	DRP	WIND-	Write enable for RAM	N_FAILP	Digital µP	SDAD	Direction line for sub-band I <sup>2</sup> S	WIND-	Reel motor + connection	N_FLAP_PRESENT	muting(active LOW)	SDAUX	interface DRP	WS	Reel motor - connection	N_HOLE3	audio mute input	SDDAC	Sub-band I <sup>2</sup> S error flag line	WX-	Write amplifier stand-by	N_HOLE4	DAC control or general purpose output	SDO	Master clock for sub-band I <sup>2</sup> S	X22IN	word select input/output, I <sup>2</sup> S-bus	N_HOLE5	Cassette present switch input	SFC3COMP	interface DRP.	X22OUT	Digital writer(AUX channel)	N_PLAY_POS	N FAILP	SFOR	Word selector for sub-band I <sup>2</sup> S	X24IN	22.5792 MHz XTAL oscillator input	N_QREV_PRES	Power fail(L = power failure)	SHIELD	interface DRP.	X24OUT	22.5792 MHz XTAL oscillator output	N_TRAY_IN	N FLAP_PRESENT	SLAVE	baseband bit clock	X256	24.576 MHz XTAL oscillator input	NC	DCC tape length indication switch	SLAVE_IN	baseband serial data to/from DAIO	Xin	master audio clock input from external	N_RESET	input	SLAVE_OUT	and ADC		source	N_DDC_REC_PROT	DCC tape length indication switch	SPEED	baseband serial data output to DAC		system clock input	N_MUTE	input	SREEL	Serial data from AD-converter			N_NODONE	Indication if head is in play position	STANDBY	auxiliary serial data input; I <sup>2</sup> S-bus			N_RESET	Quick reverse sensor present	STD	I <sup>2</sup> S bus data line for DAC			OEN	Tray switch input		serial interface data output.			OPEN_TRAY	not connected		SFC3(SAA2003) compatibility mode			OPTICAL IN			input for selecting serial interface			OUTAUX			output format.			OVLD			Shield connection						input for selecting serial interface						operating mode MASTER/SLAVE.						input for selecting serial interface						output format.						Serial data from controller						Serial data to controller						PWM capstan control output for deck						Tacho Sypply reel						device inactive						input for selecting STANDBY mode.		
LCLK	switch input	RDMUX	Digital reader CH6(Hot)	TXD	Serial data output to tape drive unit																																																																																																																																																																																																																																																																																																				
LDATA	microprocessor interface clock line	RDSYNC	Digital reader CH7(Hot)	UDAVAIL	synchronisation for output user da-																																																																																																																																																																																																																																																																																																				
LEFT INPUT	input	RESET	pin for PLL loop filter	UNLOCK	ta(0=data available, 1=no data)																																																																																																																																																																																																																																																																																																				
LMODE	microprocessor interface data line	RESET_UP	pin for integrating capacitor	URDA	PLL out-of-lock(0=not locked, 1=locked)																																																																																																																																																																																																																																																																																																				
LOWPOWER	input/output	RESOL0	Analogue multiplexed input from	VDACN	unreliable data from drive processing																																																																																																																																																																																																																																																																																																				
LTCNT0	Analog audio input left	RESOL1	READ AMPLIFIER	VDACP	negative 1 bit DAC reference voltage																																																																																																																																																																																																																																																																																																				
LTCNT0C	microprocessor interface mode line	RIGHT INPUT	Synchronisation output for READ	VOL	input.(connected 0V)																																																																																																																																																																																																																																																																																																				
LTCNT1	input	RX+	AMPLIFIER	VOR	positive 1 bit DAC reference voltage																																																																																																																																																																																																																																																																																																				
LTCNT1C	Low power playback reset	RXD	Reset signal from Digital Unit con-	W01	input.(connected 5V)																																																																																																																																																																																																																																																																																																				
M0	LT compatible interface mode control	SBCL	troller	W12	left channel output.																																																																																																																																																																																																																																																																																																				
M1	SAA2002 SFC interface mode control	SBCL	Reset tape drive module µP	W23	right channel output.																																																																																																																																																																																																																																																																																																				
MCLK	LT compatible interface mode control	SBDA	resolution selection 0	W34	Digital writer(CH0/CH1)																																																																																																																																																																																																																																																																																																				
MESSYNC	SAA2002 SFC interface mode control	SBDIR	resolution selection 1	W45	Digital writer(CH1/CH2)																																																																																																																																																																																																																																																																																																				
MLE	(test mode input) connect to VDD	SBEF	Analog audio input right	W56	Digital writer(CH2/CH3)																																																																																																																																																																																																																																																																																																				
MSYNC	(test mode input) connect to VDD	SBMCLK	Digital writer(AUX channel(Hot))	W67	Digital writer(CH3/CH4)																																																																																																																																																																																																																																																																																																				
MUSB	6.144 MHz clock output	SBWS	Serial data input from tape drive unit	W7-	Digital writer(CH4/CH5)																																																																																																																																																																																																																																																																																																				
MUTE	Message synchronisation with	SCK	Bit clock for sub-band I <sup>2</sup> S interface.	WDATA	Digital writer(CH5/CH6)																																																																																																																																																																																																																																																																																																				
MUTEDAC	controller	SCL	sub-band bit clock	WEN	Digital writer(CH6/CH7)																																																																																																																																																																																																																																																																																																				
N_CASS_PRES	Latch enable signal for digital filter	SDA1	Data line for sub-band I <sup>2</sup> S interface	WIND+	Serial output to WRITE AMPLIFIER																																																																																																																																																																																																																																																																																																				
N_DCC_REC_PROT	Message synchronisation with	SDA2	DRP	WIND-	Write enable for RAM																																																																																																																																																																																																																																																																																																				
N_FAILP	Digital µP	SDAD	Direction line for sub-band I <sup>2</sup> S	WIND-	Reel motor + connection																																																																																																																																																																																																																																																																																																				
N_FLAP_PRESENT	muting(active LOW)	SDAUX	interface DRP	WS	Reel motor - connection																																																																																																																																																																																																																																																																																																				
N_HOLE3	audio mute input	SDDAC	Sub-band I <sup>2</sup> S error flag line	WX-	Write amplifier stand-by																																																																																																																																																																																																																																																																																																				
N_HOLE4	DAC control or general purpose output	SDO	Master clock for sub-band I <sup>2</sup> S	X22IN	word select input/output, I <sup>2</sup> S-bus																																																																																																																																																																																																																																																																																																				
N_HOLE5	Cassette present switch input	SFC3COMP	interface DRP.	X22OUT	Digital writer(AUX channel)																																																																																																																																																																																																																																																																																																				
N_PLAY_POS	N FAILP	SFOR	Word selector for sub-band I <sup>2</sup> S	X24IN	22.5792 MHz XTAL oscillator input																																																																																																																																																																																																																																																																																																				
N_QREV_PRES	Power fail(L = power failure)	SHIELD	interface DRP.	X24OUT	22.5792 MHz XTAL oscillator output																																																																																																																																																																																																																																																																																																				
N_TRAY_IN	N FLAP_PRESENT	SLAVE	baseband bit clock	X256	24.576 MHz XTAL oscillator input																																																																																																																																																																																																																																																																																																				
NC	DCC tape length indication switch	SLAVE_IN	baseband serial data to/from DAIO	Xin	master audio clock input from external																																																																																																																																																																																																																																																																																																				
N_RESET	input	SLAVE_OUT	and ADC		source																																																																																																																																																																																																																																																																																																				
N_DDC_REC_PROT	DCC tape length indication switch	SPEED	baseband serial data output to DAC		system clock input																																																																																																																																																																																																																																																																																																				
N_MUTE	input	SREEL	Serial data from AD-converter																																																																																																																																																																																																																																																																																																						
N_NODONE	Indication if head is in play position	STANDBY	auxiliary serial data input; I <sup>2</sup> S-bus																																																																																																																																																																																																																																																																																																						
N_RESET	Quick reverse sensor present	STD	I <sup>2</sup> S bus data line for DAC																																																																																																																																																																																																																																																																																																						
OEN	Tray switch input		serial interface data output.																																																																																																																																																																																																																																																																																																						
OPEN_TRAY	not connected		SFC3(SAA2003) compatibility mode																																																																																																																																																																																																																																																																																																						
OPTICAL IN			input for selecting serial interface																																																																																																																																																																																																																																																																																																						
OUTAUX			output format.																																																																																																																																																																																																																																																																																																						
OVLD			Shield connection																																																																																																																																																																																																																																																																																																						
			input for selecting serial interface																																																																																																																																																																																																																																																																																																						
			operating mode MASTER/SLAVE.																																																																																																																																																																																																																																																																																																						
			input for selecting serial interface																																																																																																																																																																																																																																																																																																						
			output format.																																																																																																																																																																																																																																																																																																						
			Serial data from controller																																																																																																																																																																																																																																																																																																						
			Serial data to controller																																																																																																																																																																																																																																																																																																						
			PWM capstan control output for deck																																																																																																																																																																																																																																																																																																						
			Tacho Sypply reel																																																																																																																																																																																																																																																																																																						
			device inactive																																																																																																																																																																																																																																																																																																						
			input for selecting STANDBY mode.																																																																																																																																																																																																																																																																																																						



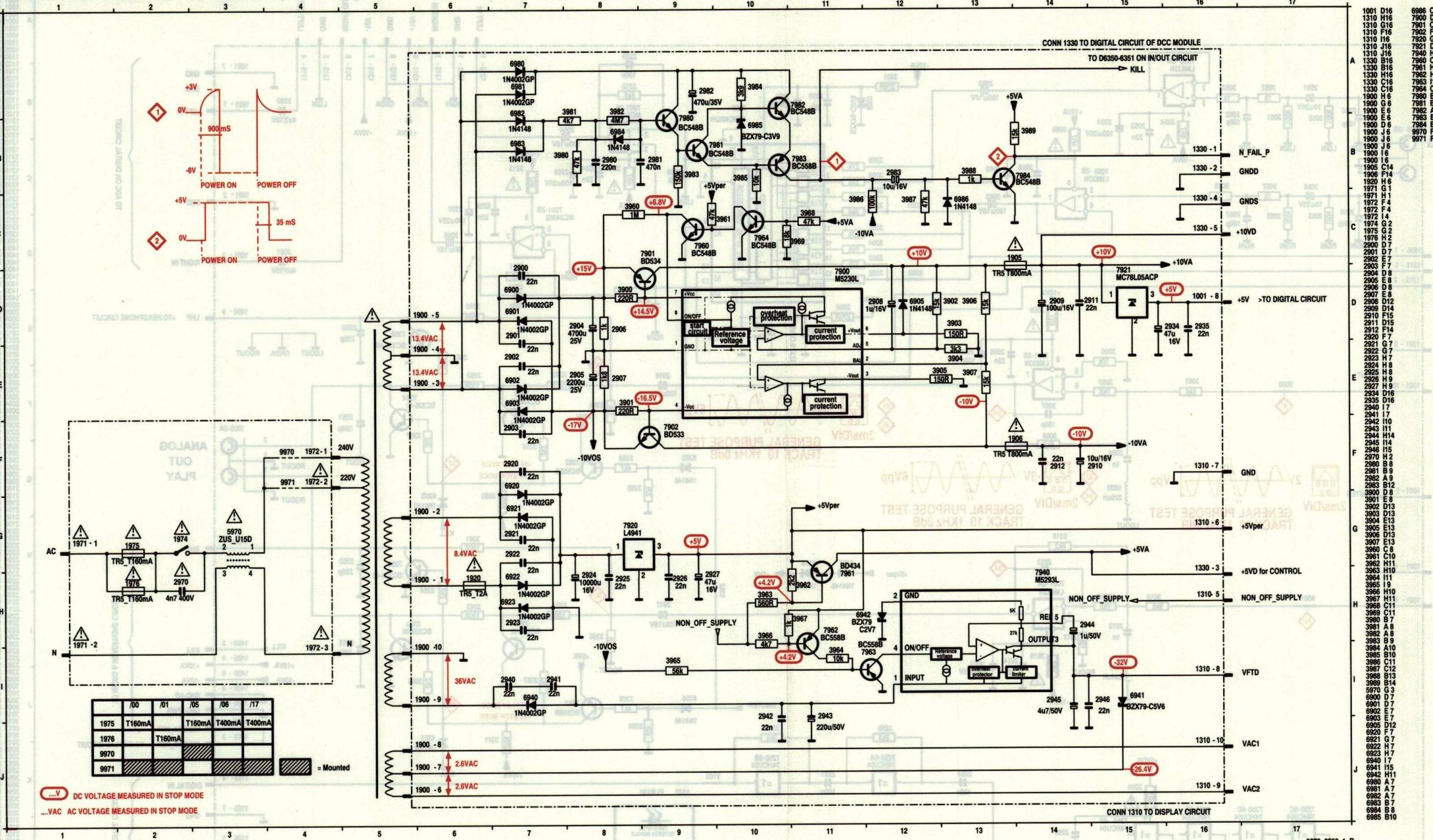
**PERSONAL NOTES****TRANSFORMER CONNECTIONS**

V00 VERSION

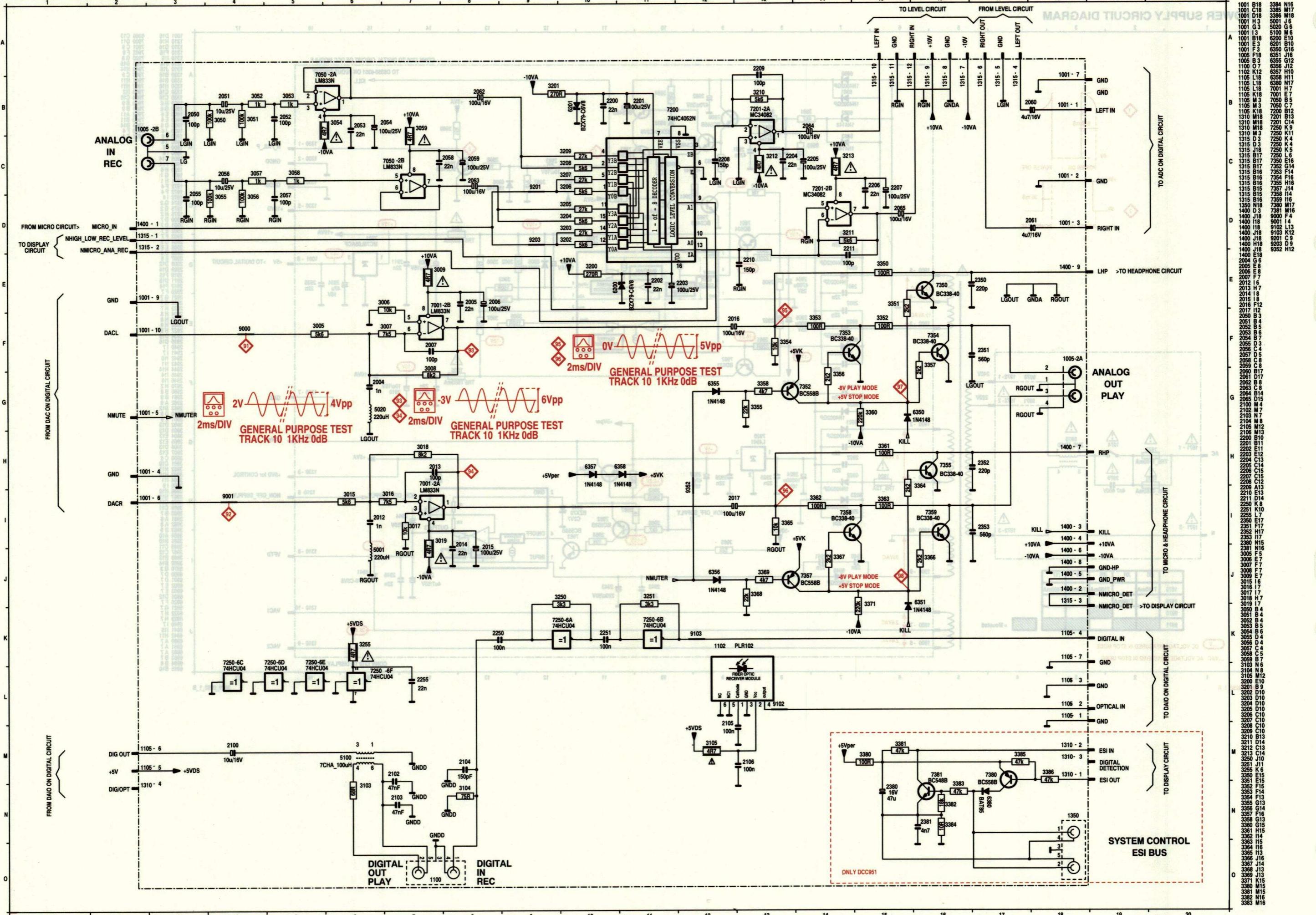


**TRANSFORMER CONNECTIONS****/00 VERSION****/01 VERSION****/06/17 VERSIONS**

## POWER SUPPLY CIRCUIT DIAGRAM

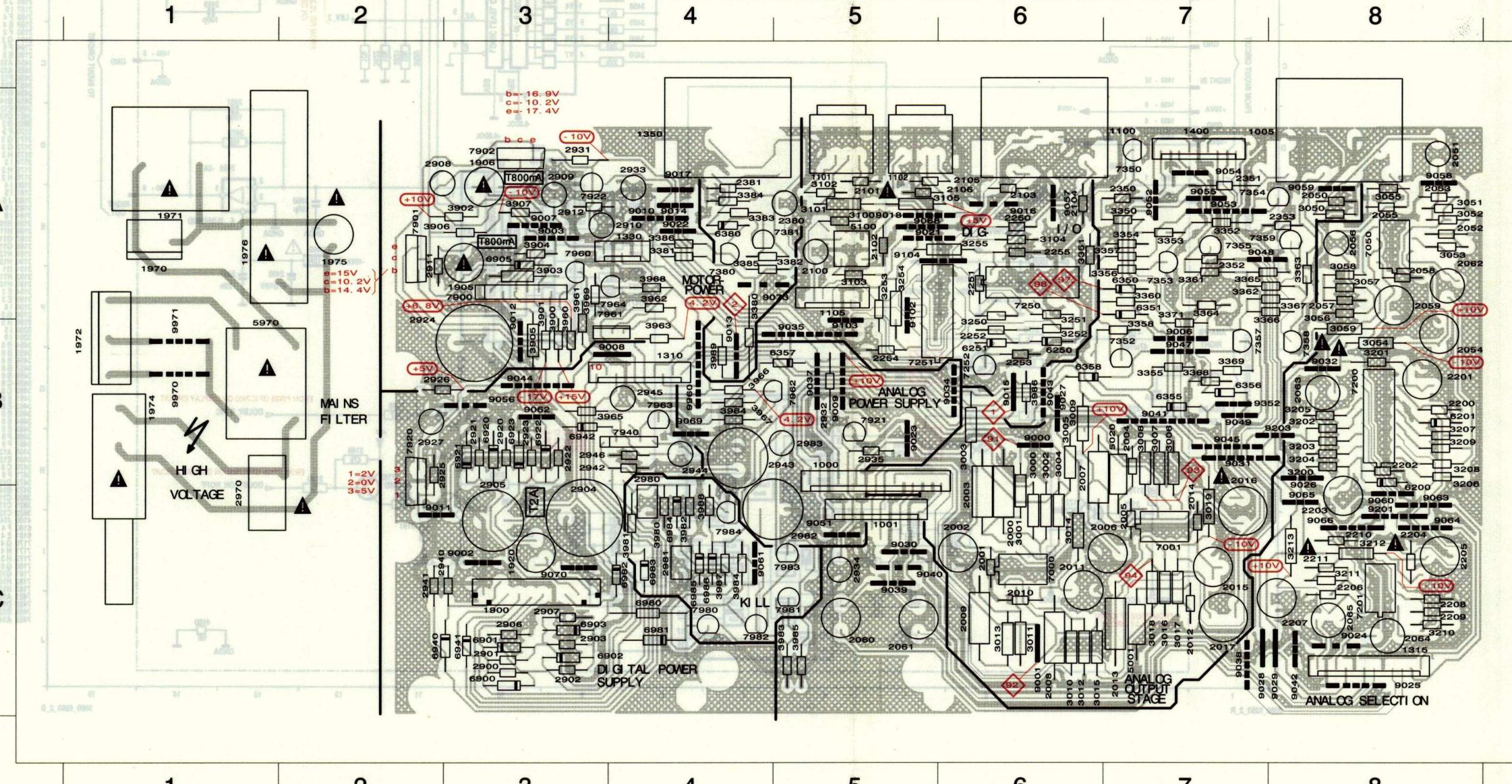


## **IN/OUT CIRCUIT DIAGRAM**

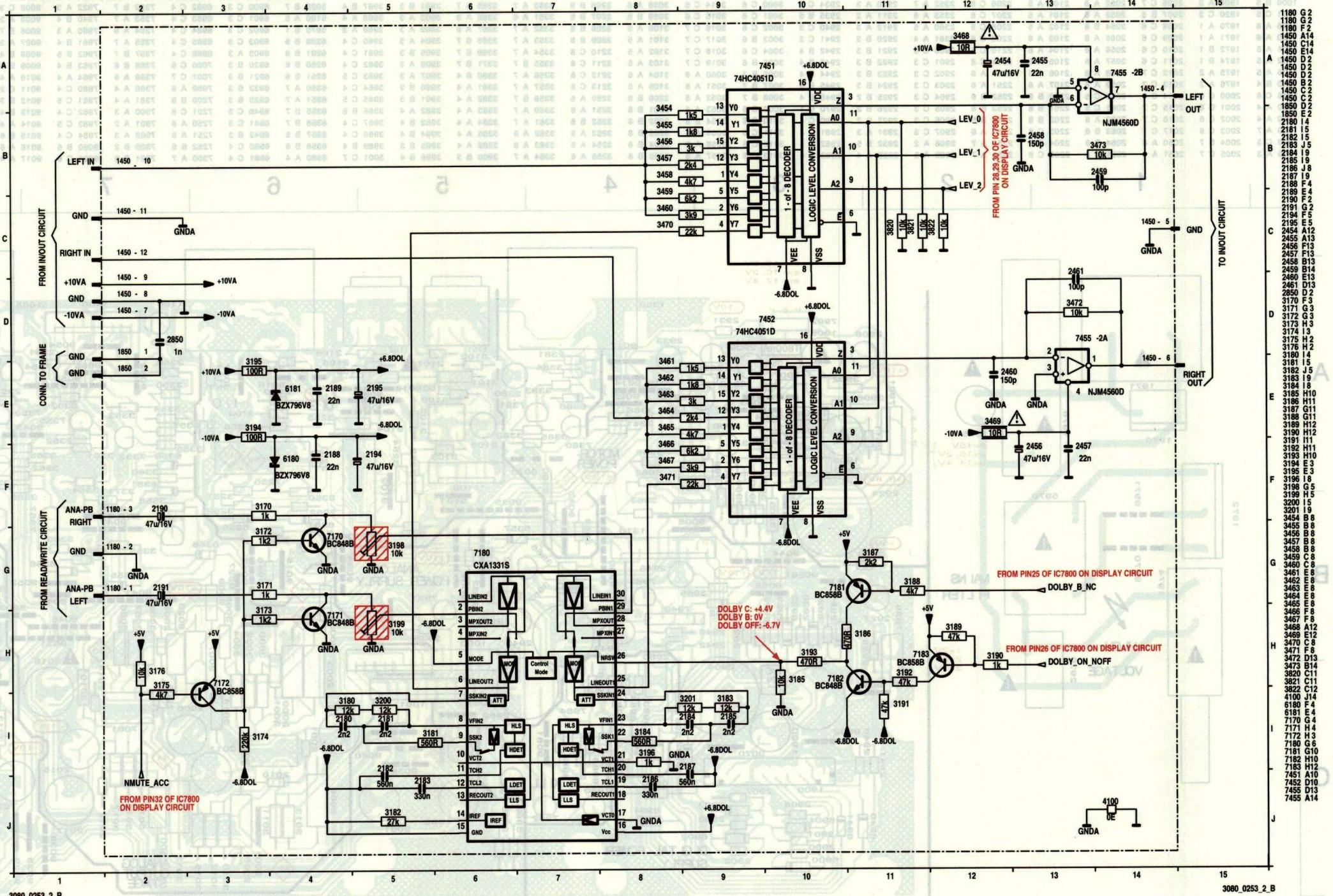


## IN/OUT PANEL

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1001 C 5	1920 C 3	2007 B 6	2053 A 8	2101 A 5	2207 C 8	2353 A 8	2911 A 2	2935 B 5	3001 C 6	3015 C 6	3059 B 8	3207 B 8	3351 A 6	3366 A 8	3902 A 3	3968 A 4	5100 A 5	6901 C 3	6983 C 4	7353 A 7	7940 B 4	9003 A 3	9021 A 5	9037 B 5	9053 A 7	9068 A 5
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1100 A 6	1971 A 1	2009 C 6	2055 A 8	2103 A 6	2209 C 8	2381 A 4	2920 B 3	2941 C 2	3003 B 6	3017 C 7	3101 A 5	3209 B 8	3353 A 7	3368 B 7	3904 A 3	3980 C 4	6200 B 8	6903 C 3	6985 C 4	7355 A 7	7961 B 4	9007 A 3	9023 B 5	9039 C 5	9055 A 7	9070 C 3
1101 A 5	1972 B 1	2010 C 6	2056 A 8	2104 A 6	2210 C 8	2900 C 3	2921 B 3	2942 B 4	3004 C 6	3018 C 7	3102 A 5	3210 C 8	3354 A 7	3369 B 7	3905 B 3	3981 C 4	6201 B 8	6905 A 3	6986 C 4	7357 B 7	7962 B 5	9008 B 4	9024 C 8	9040 C 5	9056 B 3	9073 A 4
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1105 A 5	1975 A 2	2012 C 7	2058 A 8	2106 A 5	2250 A 6	2902 C 3	2923 B 3	2944 B 4	3006 B 7	3050 A 8	3104 A 6	3212 C 8	3356 A 7	3380 B 4	3907 A 3	3983 C 5	6251 B 6	6921 B 3	7001 C 7	7359 A 8	7964 A 4	9010 A 4	9026 B 8	9042 C 8	9058 A 8	9103 B 5
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1315 C 8	2000 C 6	2014 C 7	2060 C 5	2200 B 8	2252 B 6	2904 C 3	2925 B 2	2946 B 4	3008 B 7	3052 A 8	3200 B 8	3250 A 6	3358 B 7	3382 A 4	3961 A 4	3985 C 5	6351 A 7	6923 B 3	7200 B 8	7381 A 4	7981 C 5	9012 B 3	9028 C 7	9044 B 3	9060 C 8	9201 C 8
1330 A 4	2001 C 6	2015 C 7	2061 C 5	2201 B 8	2253 B 6	2905 C 3	2926 B 2	2970 C 1	3009 B 6	3053 A 8	3201 B 8	3251 A 6	3360 A 7	3383 A 4	3962 A 4	3986 B 6	6355 B 7	6940 C 3	7201 C 8	7900 A 3	7982 C 4	9013 B 4	9029 C 8	9045 B 7	9061 C 4	9203 B 8
1350 A 4	2002 C 6	2016 C 7	2062 A 8	2202 B 8	2254 B 5	2906 C 3	2927 B 2	2980 C 4	3010 C 6	3054 B 8	3202 B 8	3252 B 6	3361 A 7	3384 A 4	3963 B 4	3987 C 4	6356 B 7	6941 C 3	7250 A 6	7901 A 2	7983 C 5	9014 A 4	9030 C 5	9047 B 7	9062 B 3	9352 B 7
1400 A 7	2003 C 6	2017 C 7	2063 B 8	2203 C 8	2255 A 6	2907 C 3	2931 A 3	2981 C 4	3011 C 6	3055 A 8	3203 B 8	3253 A 5	3362 A 8	3385 A 4	3964 B 4	3988 C 4	6357 B 5	6942 B 3	7251 A 5	7902 A 3	7984 C 4	9015 B 6	9031 B 7	9048 A 7	9063 C 8	9960 B 4
1900 C 3	2004 B 7	2050 A 8	2064 C 8	2204 C 8	2350 A 7	2908 A 2	2932 B 5	2982 C 4	3012 C 6	3056 A 8	3204 B 8	3254 A 5	3363 A 8	3386 A 4	3965 B 3	3989 B 4	6358 B 6	6980 C 4	7252 B 6	7920 B 2	9000 B 6	9016 A 6	9032 B 8	9049 B 7	9064 C 8	9970 B 1
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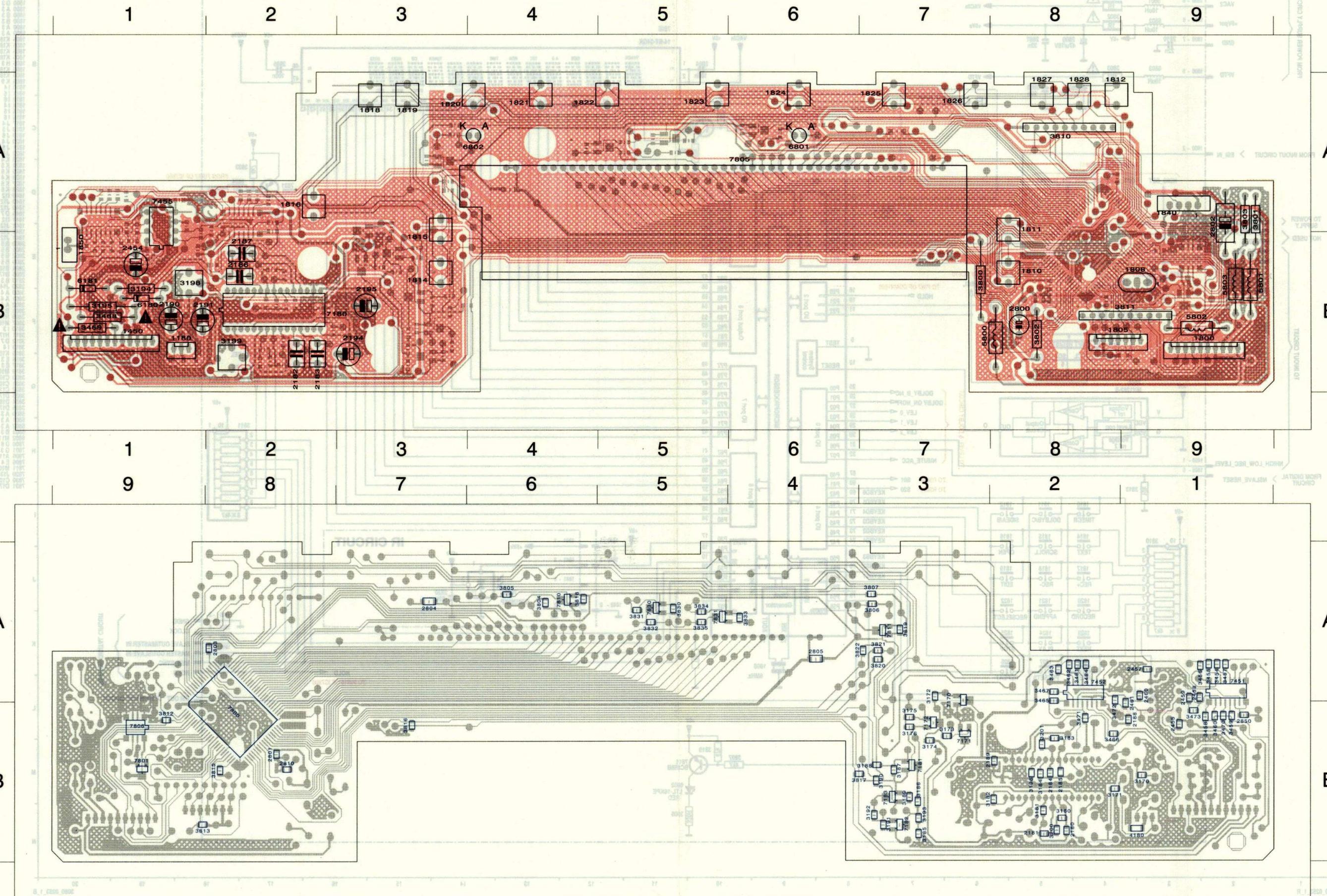
## LEVEL &amp; DOLBY CIRCUIT DIAGRAM



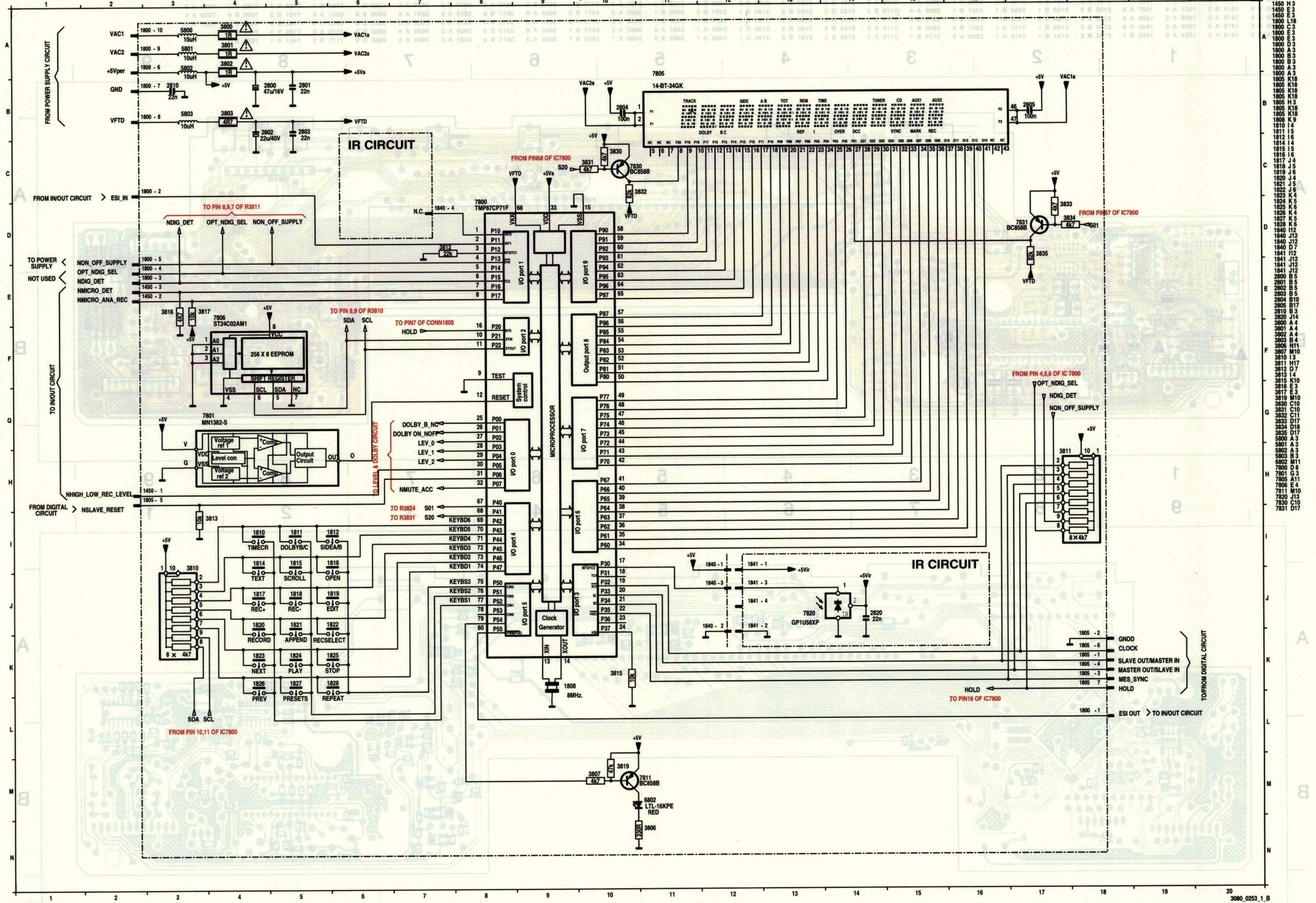
## FRONT PANEL

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1450 B 1	1812 A 8	1820 A 4	1826 A 7	2181 B 2	2187 B 2	2195 B 3	2460 A 1	2804 A 7	3172 A 3	3181 B 2	3187 B 3	3193 B 3	3200 B 2	3458 B 1	3464 A 2	3470 B 1	3802 B 8	3810 A 8	3817 B 3	3830 A 5	4180 B 1	6181 B 1	7180 B 2	7455 A 1	7811 A 3
1800 B 9	1814 B 3	1821 A 4	1827 A 8	2182 B 2	2188 B 1	2454 B 1	2461 B 1	2805 A 4	3173 B 3	3182 B 2	3188 B 3	3194 B 1	3201 B 2	3459 B 1	3465 A 2	3471 B 2	3803 A 9	3811 B 9	3818 A 6	3831 A 5	5800 B 8	6801 A 6	7181 B 3	7800 B 8	7830 A 5
1805 B 8	1815 A 3	1822 A 5	1828 A 8	2183 B 2	2189 B 2	2455 B 1	2800 B 8	3174 B 3	3183 B 2	3189 B 3	3195 B 1	3454 A 1	3460 B 1	3466 B 2	3472 A 2	3804 A 6	3812 B 9	3819 A 3	3832 A 5	5801 B 9	6802 A 4	7182 B 3	7801 B 9	7831 A 5	
1808 B 9	1816 A 2	1823 A 5	1840 A 9	2184 B 2	2190 B 1	2457 A 1	2801 B 1	2850 B 1	3175 B 3	3184 B 2	3190 B 3	3196 B 2	3455 A 1	3461 A 2	3467 A 2	3473 B 1	3805 A 6	3813 B 9	3820 A 3	3833 A 4	5802 B 9	7170 A 7	7183 B 3	7805 A 5	
1810 B 8	1818 A 3	1824 A 6	1850 B 1	2185 B 2	2191 B 1	2458 A 1	2802 A 9	3170 B 1	3176 B 3	3185 B 3	3191 B 3	3198 B 1	3456 A 1	3462 A 2	3468 B 1	3806 B 7	3815 B 8	3821 A 3	3834 A 5	5803 B 9	7171 B 3	7451 A 1	7806 B 9		

## CONTROL &amp; DISPLAY CIRCUIT DIAGRAM



## CONTROL &amp; DISPLAY CIRCUIT DIAGRAM

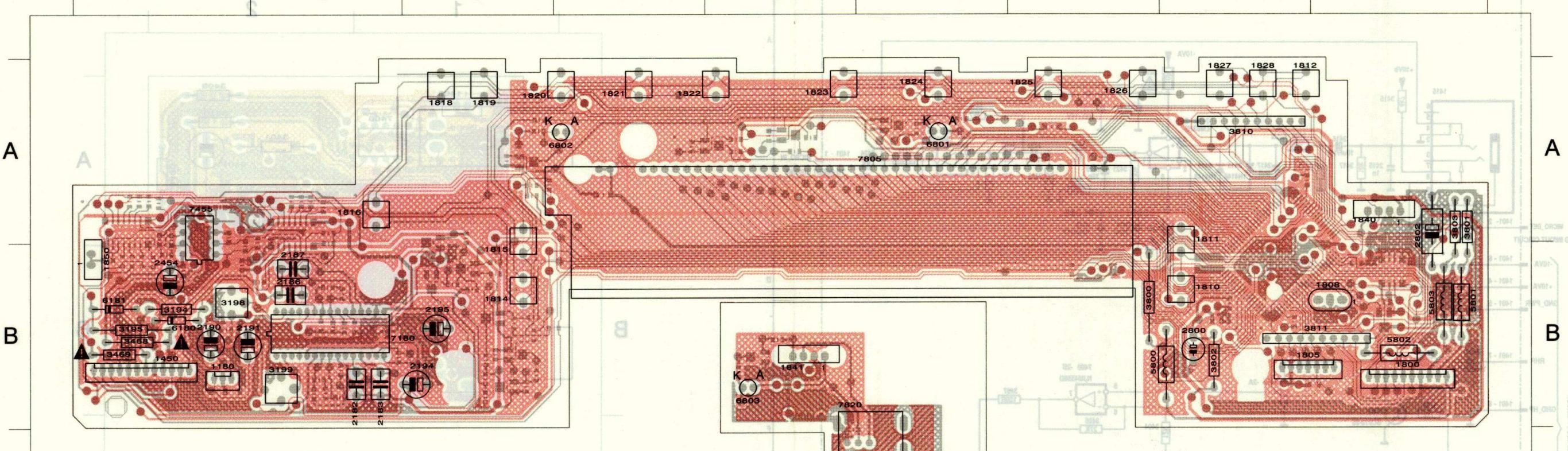


**FRONT & I.R. PANEL**

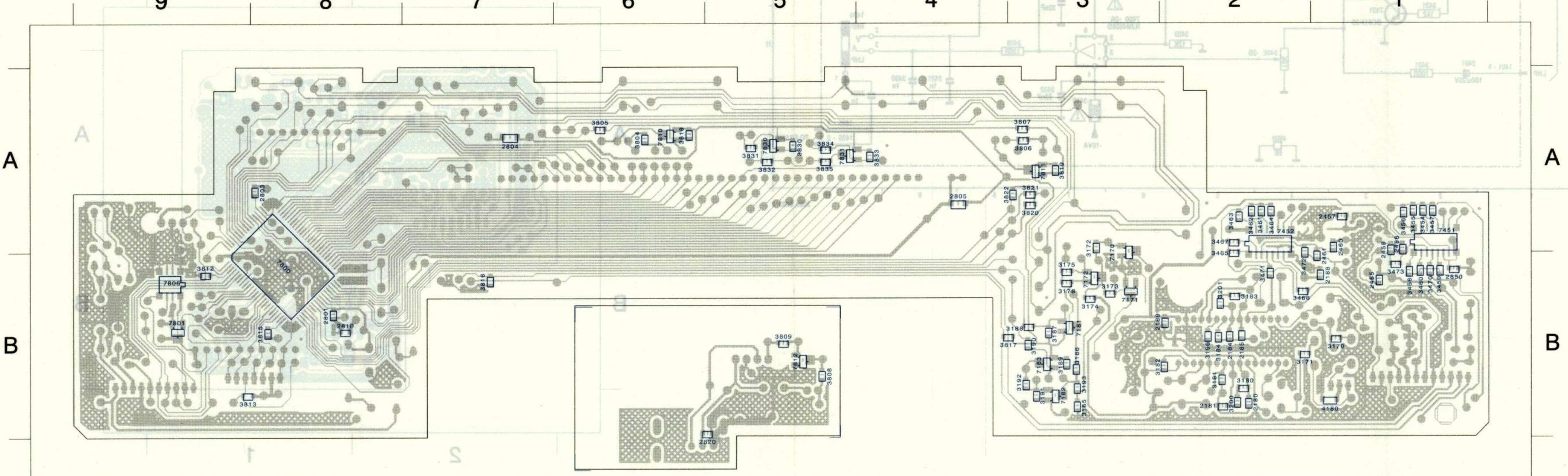
1180 B 1	1811 A 8	1819 A 3	1825 A 7	2180 B 2	2194 B 3	2459 A 1	2803 A 8	3171 B 2	3180 B 2	3186 B 3	3192 B 2	3199 B 2	3457 A 1	3463 A 2	3469 B 1	3801 A 9	3807 A 3	3816 B 7	3822 A 3	3835 A 5	6180 B 1	7172 B 3	7452 A 2	7810 A 6	
1450 B 1	1812 A 8	1820 A 4	1826 A 7	2181 B 2	2187 B 2	2195 B 3	2460 A 1	2804 A 7	3172 A 3	3181 B 2	3187 B 3	3193 B 3	3200 B 2	3458 B 1	3464 A 2	3470 B 1	3802 B 8	3810 A 8	3817 B 3	3830 A 5	4180 B 1	6181 B 1	7180 B 2	7455 A 1	7811 A 3
1800 B 9	1814 B 3	1821 A 4	1827 A 8	2182 B 2	2188 B 1	2454 B 1	2461 B 1	2805 A 4	3173 B 3	3182 B 2	3188 B 3	3194 B 1	3201 B 2	3459 B 1	3465 A 2	3471 B 2	3803 A 9	3811 B 9	3818 A 6	3831 A 5	5800 B 8	6801 A 6	7181 B 3	7800 B 8	7830 A 5
1805 B 8	1815 A 3	1822 A 5	1828 A 8	2183 B 2	2189 B 2	2455 B 1	2800 B 8	2810 B 8	3174 B 3	3183 B 2	3189 B 3	3195 B 1	3454 A 1	3460 B 1	3466 B 2	3472 A 2	3804 A 6	3812 B 9	3819 A 3	3832 A 5	5801 B 9	6802 A 4	7182 B 3	7801 B 9	7831 A 5
1808 B 9	1816 A 2	1823 A 5	1840 A 9	2184 B 2	2190 B 1	2457 A 1	2801 B 8	2850 B 1	3175 B 3	3184 B 2	3190 B 3	3196 B 2	3455 A 1	3461 A 2	3467 A 2	3473 B 1	3805 A 6	3813 B 9	3820 A 3	3833 A 4	5802 B 9	7170 A 3	7183 B 3	7805 A 5	
1810 B 8	1818 A 3	1824 A 6	1850 B 1	2185 B 2	2191 B 1	2458 A 1	2802 A 9	3170 B 1	3176 B 3	3185 B 3	3191 B 3	3198 B 1	3456 A 1	3462 A 2	3468 B 1	3806 A 3	3815 B 8	3821 A 3	3834 A 5	5803 B 9	7171 B 3	7451 A 1	7803 B 9		

**MICRO & HEADPHONE PANEL****MICRO & HEADPHONE CIRCUIT DIAGRAM**

1 2 3 4 5 6 7 8 9



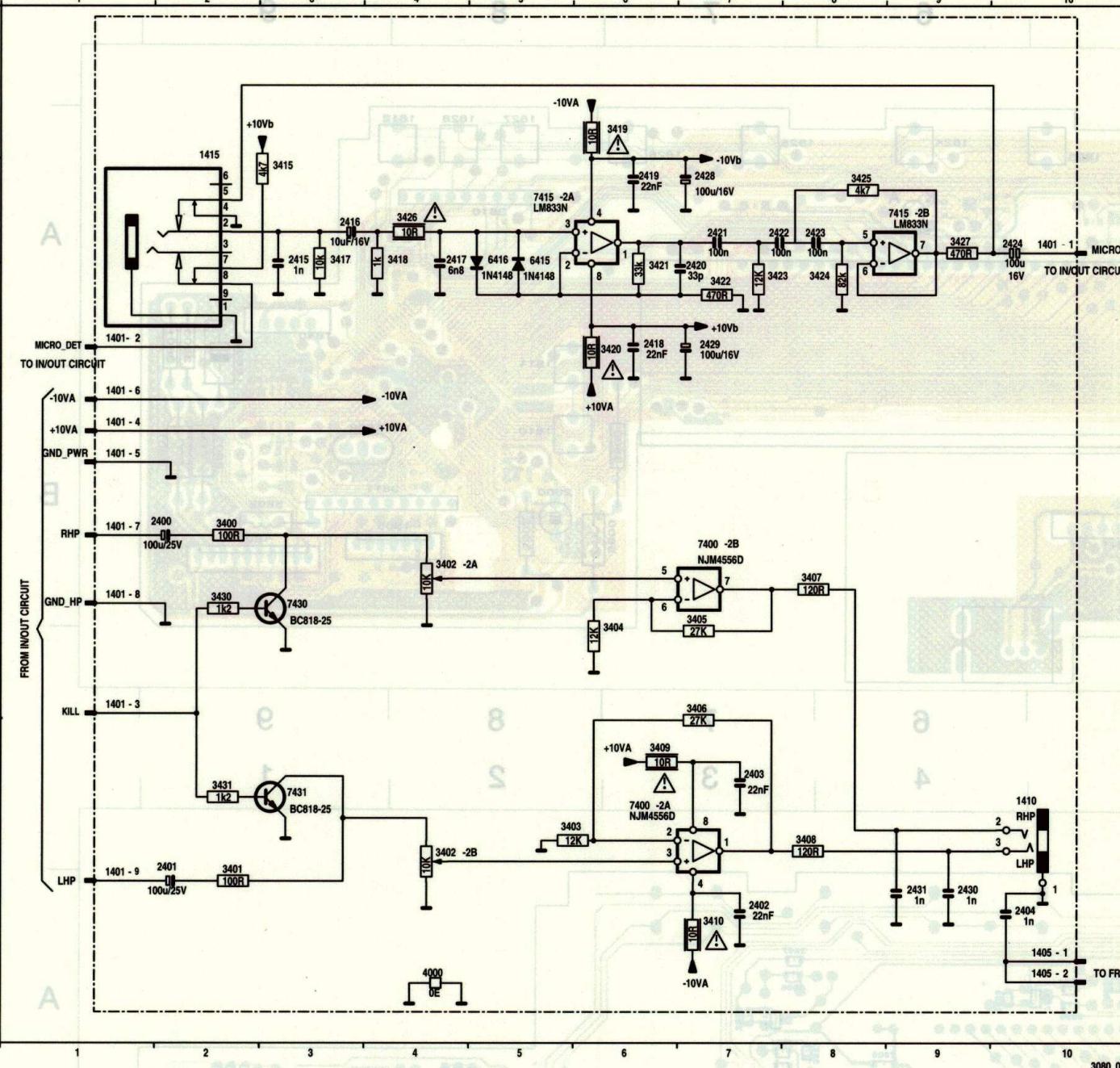
1 2 3 4 5 6 7 8 9



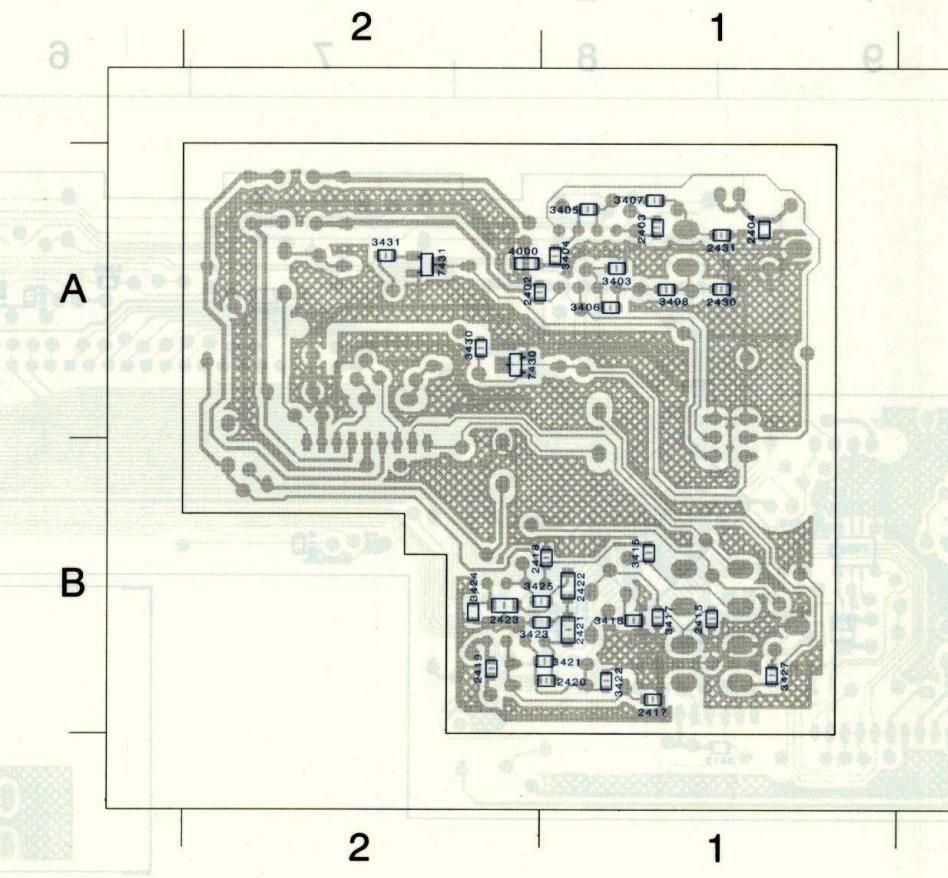
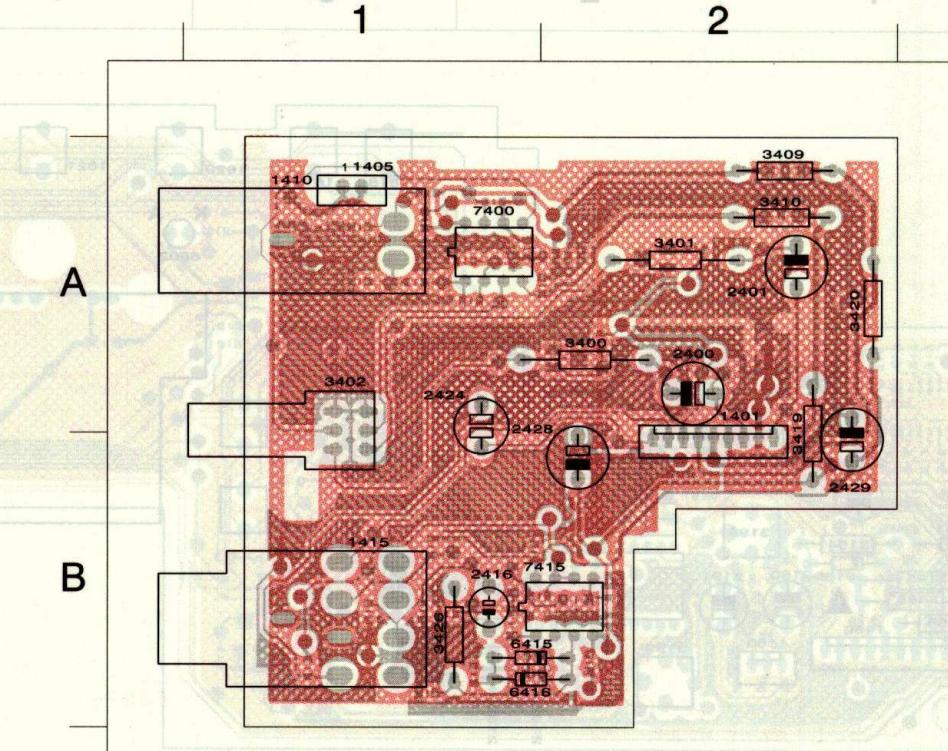
9 8 7 6 5 4 3 2 1

**MICRO & HEADPHONE CIRCUIT DIAGRAM**

1401 B10	1401 D1	1405 H10	2402 I7	2417 B4	2422 B7	2430 I9	3402 H4	3417 B3	3422 C7	3427 B9	6416 B5	7430 F3		1401 B2	2403 A1	2420 B1	2430 A1	3417 B1	3424 B2	6415 B1	
1401 C1	1401 E1	1410 H10	2403 G7	2418 C6	2423 B8	2431 I9	3403 H6	3418 B4	3423 C7	3428 B9	6416 H6	7431 H3		1405 A1	2404 A1	2421 B1	2431 A1	3418 B1	3425 B1	6416 B1	
1401 D1	1401 E1	1415 A2	2404 G7	2419 C9	2424 B10	2431 E2	3404 F6	3409 G6	3424 C8	3431 H2	7400 E7		1405 A1	2404 A1	2421 B1	2431 A1	3419 B2	3426 B1	7400 A1		
1401 D1	1401 H1	1405 I10	2404 H2	2415 B3	2420 B2	2430 F2	3404 F7	3409 G7	3424 C9	3431 H3	7400 F8		1405 A1	2404 A1	2422 B1	2430 A2	3408 A1	3427 B1	7415 B2		
1401 D1	1405 I10	2401 H2	2416 B3	2421 B7	2429 C7	2430 E4	3406 G7	3415 B3	3421 C6	3426 B4	6415 B5	7415 B9		1405 A1	2404 A1	2422 B1	2430 A2	3410 A2	3422 B1	7430 A2	

**MICRO & HEADPHONE PANEL**

1401 B2	2403 A1	2420 B1	2430 A1	3417 B1	3424 B2	6415 B1		1405 A1	2404 A1	2421 B1	2431 A1	3406 A1	3418 B1	3425 B1	6416 B1		
1405 A1	2404 A1	2421 B1	2431 A1	3406 A1	3418 B1	3425 B1	6416 B1		1410 A1	2415 B1	2422 B1	2430 A2	3407 A1	3419 B2	3426 B1	7400 A1	
1410 A1	2415 B1	2422 B1	2430 A2	3407 A1	3419 B2	3426 B1	7400 A1		1415 B1	2416 B1	2423 B2	3401 A2	3408 A1	3420 A2	3427 B1	7415 B2	
1415 B1	2416 B1	2423 B2	3401 A2	3408 A1	3420 A2	3427 B1	7415 B2		2400 A2	2417 B1	2424 A1	3402 A1	3409 A2	3421 B1	3430 A2	7430 A2	
2400 A2	2417 B1	2424 A1	3402 A1	3409 A2	3421 B1	3430 A2	7430 A2		2402 A2	2419 B2	2429 B2	3404 A1	3415 B1	3423 B1	4000 A2		



**DDU DIGITAL DECK UNIT**

In this chapter "Instructions for use" of this unit the description of the DDC-based expansion. See Troubleshooting section A1, A5, B

**SERVICE HINTS**

This unit is equipped with a flexible hinge Circuit board (Flexioli), so handle this unit with care during disassembly and re-assembly.

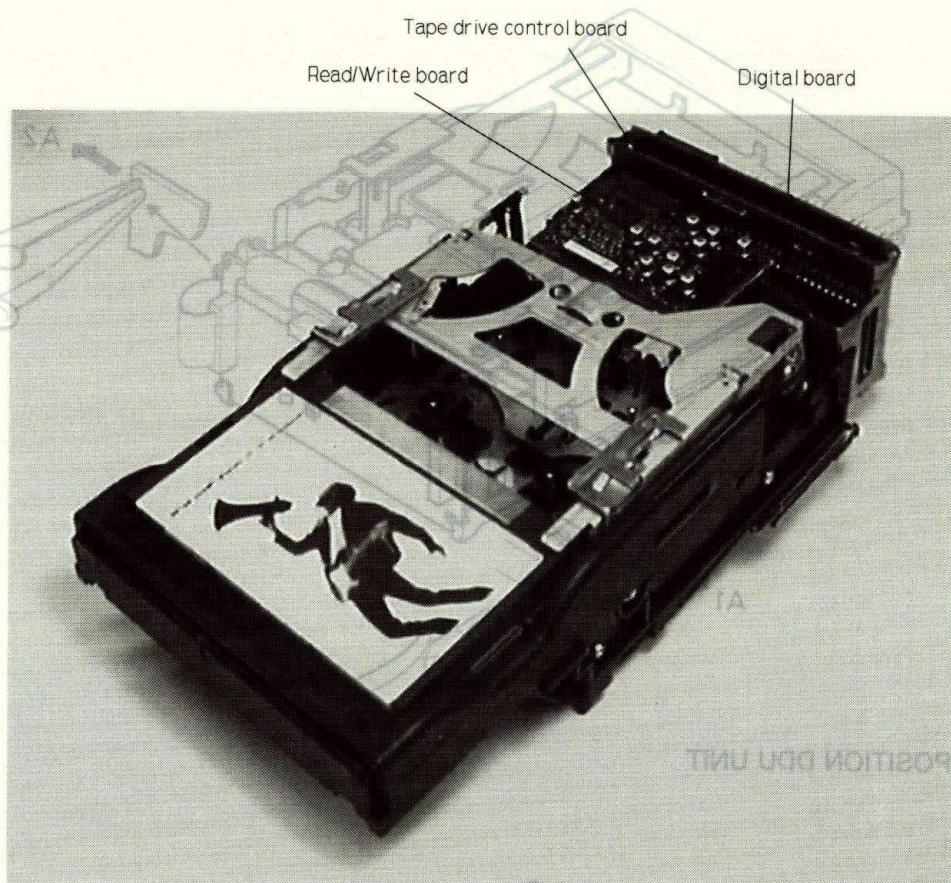
**COME TO SERVICE POSITION OF THE DDU UNIT**

Figure 8.2

**SERVICE POSITION DDU UNIT****DIGITAL DECK UNIT 2113**

Figure 8.1

The Digital deck unit 2113 consists of:

**Mechanical**

Loader mechanism

Tape deck mechanism

**Electrical**

Read / Write board

Tape drive control board

Digital board

Figure 8.3

How selectechos measurement  
Read/Write - tape drive control  
Digital board  
POSTD CSD BE CALMED OUT.

**SERVICE HINTS**

This unit is equipped with a Flexible Printed Circuit board (Flexfoil), so handle that foil with care during disassembly and re-assembly.

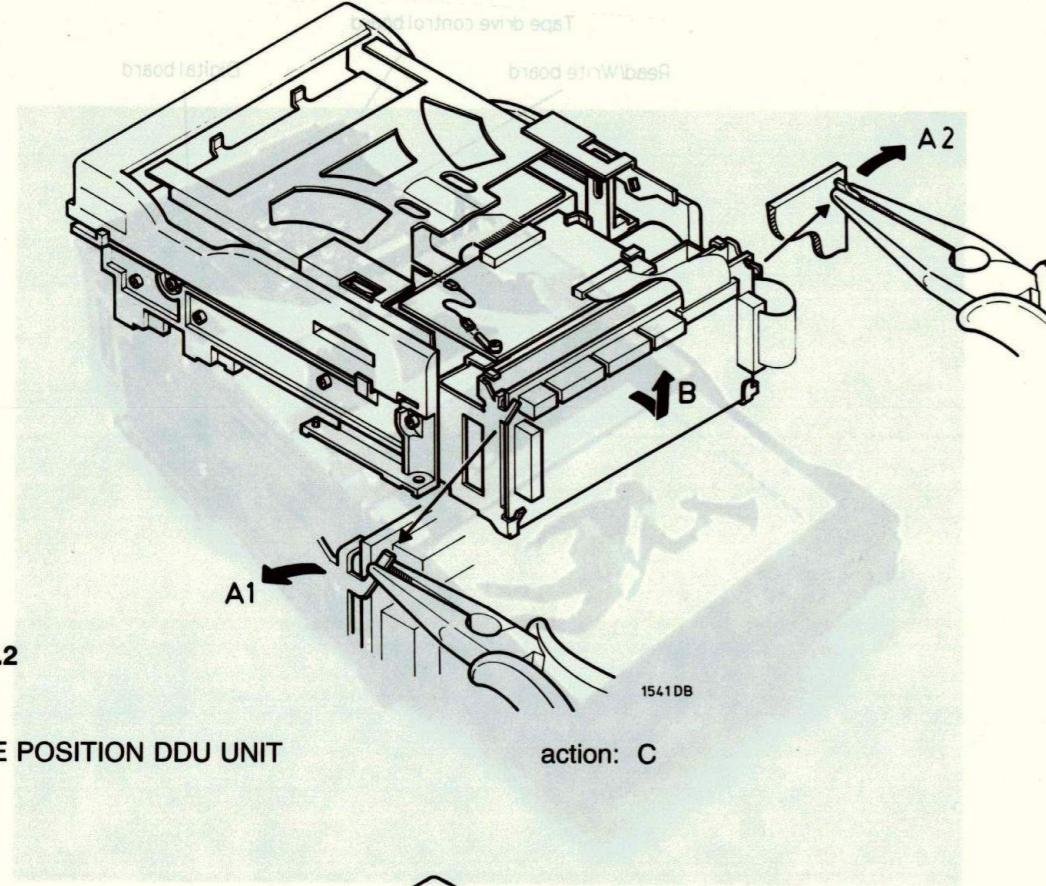
**COME TO SERVICE POSITION OF THE DDU UNIT**

Figure 8.2

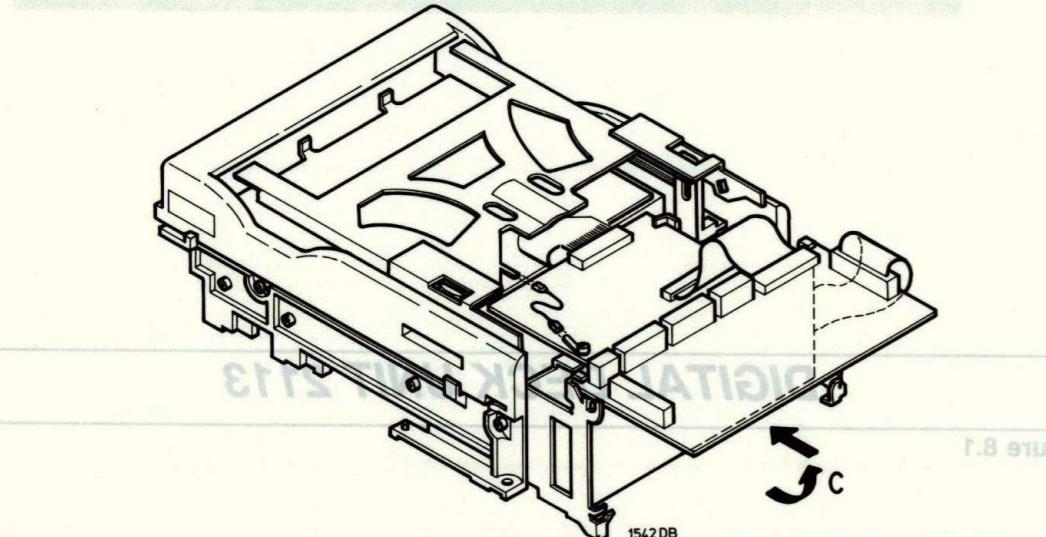
**SERVICE POSITION DDU UNIT**

Figure 8.3

Now electrical measurements and checks on Read/Write-, tape drive control- and digital board can be carried out.

**DISASSEMBLY INSTRUCTIONS****DISASSEMBLY OF THE LOADER**

Open tray manually, by moving - counter clockwise - drive gear wheel 86.

action: D, E

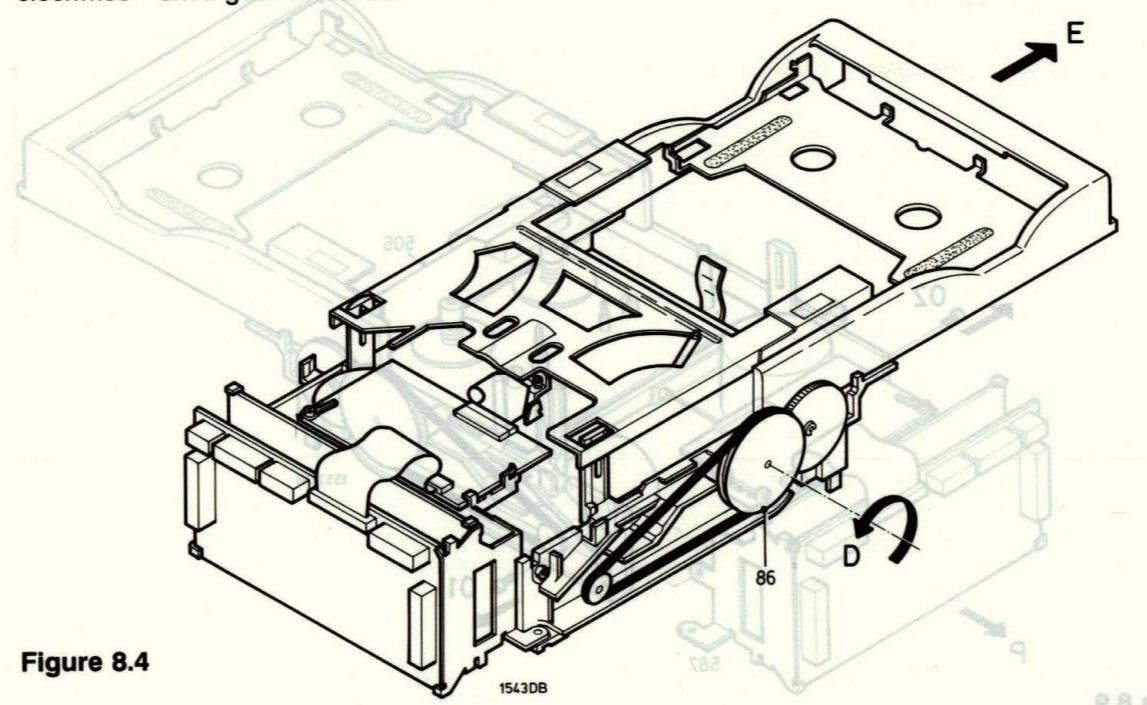


Figure 8.4

**REMOVE CLAMPER ASSEMBLY ITEM 81**

action: F1, F2

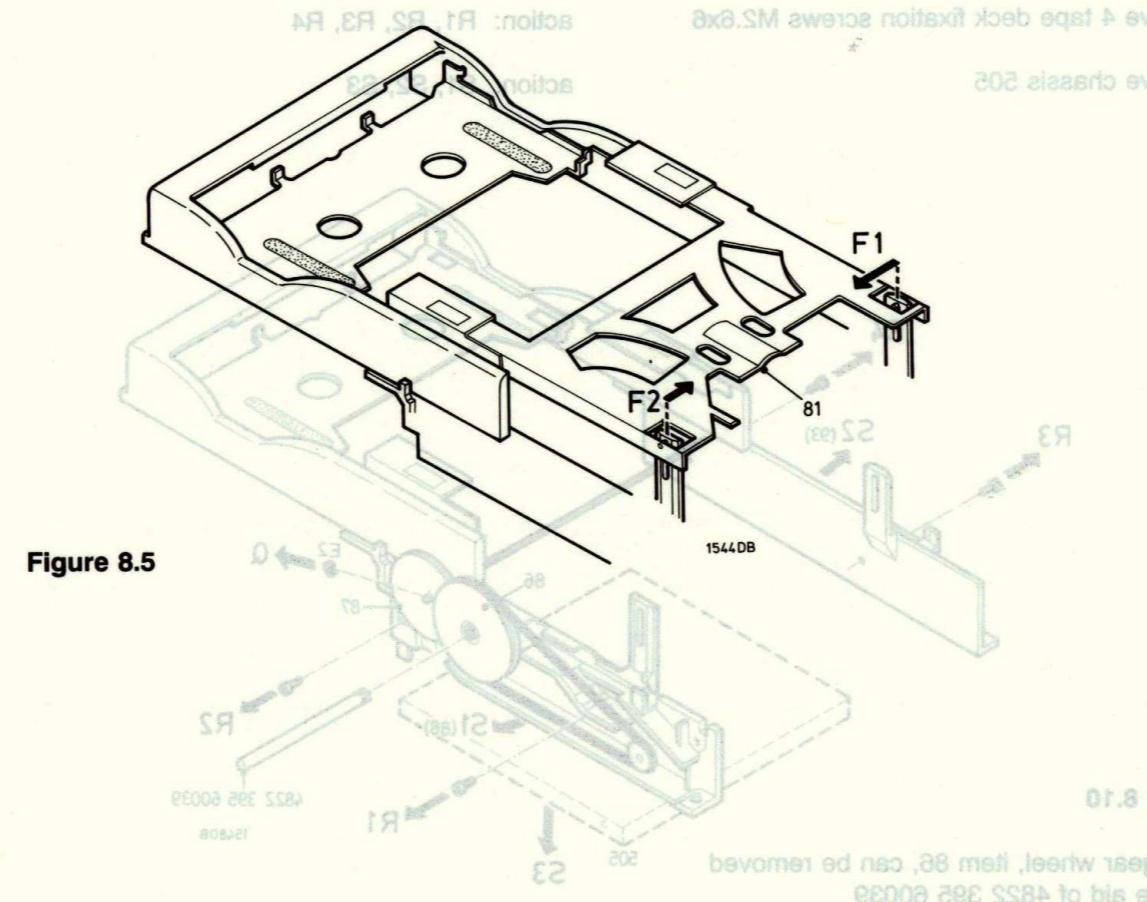


Figure 8.5

**REPLACEMENT OF DCC-HEAD-SUPPORT-ASSEMBLY**

After performing the actions D, E, F1 and F2, a.o., the DCC head support assembly item 117 can be reached.

**REMOVAL HEAD SUPPORT ASSEMBLY****ITEM 117**

Open with action G1 connector 1800 and disconnect head's flexfoil. (action: G2)  
Warning! Do not open G1 too far, it will damage the connector. Do not forget to short-circuit the head's flexfoil, action G3.

Remove pinch-rollers 102 and 118

Remove head support fixation screw 105

Remove head support assembly 117.

action: G1, G2, G3

action: H1, H2

action: J

action: K

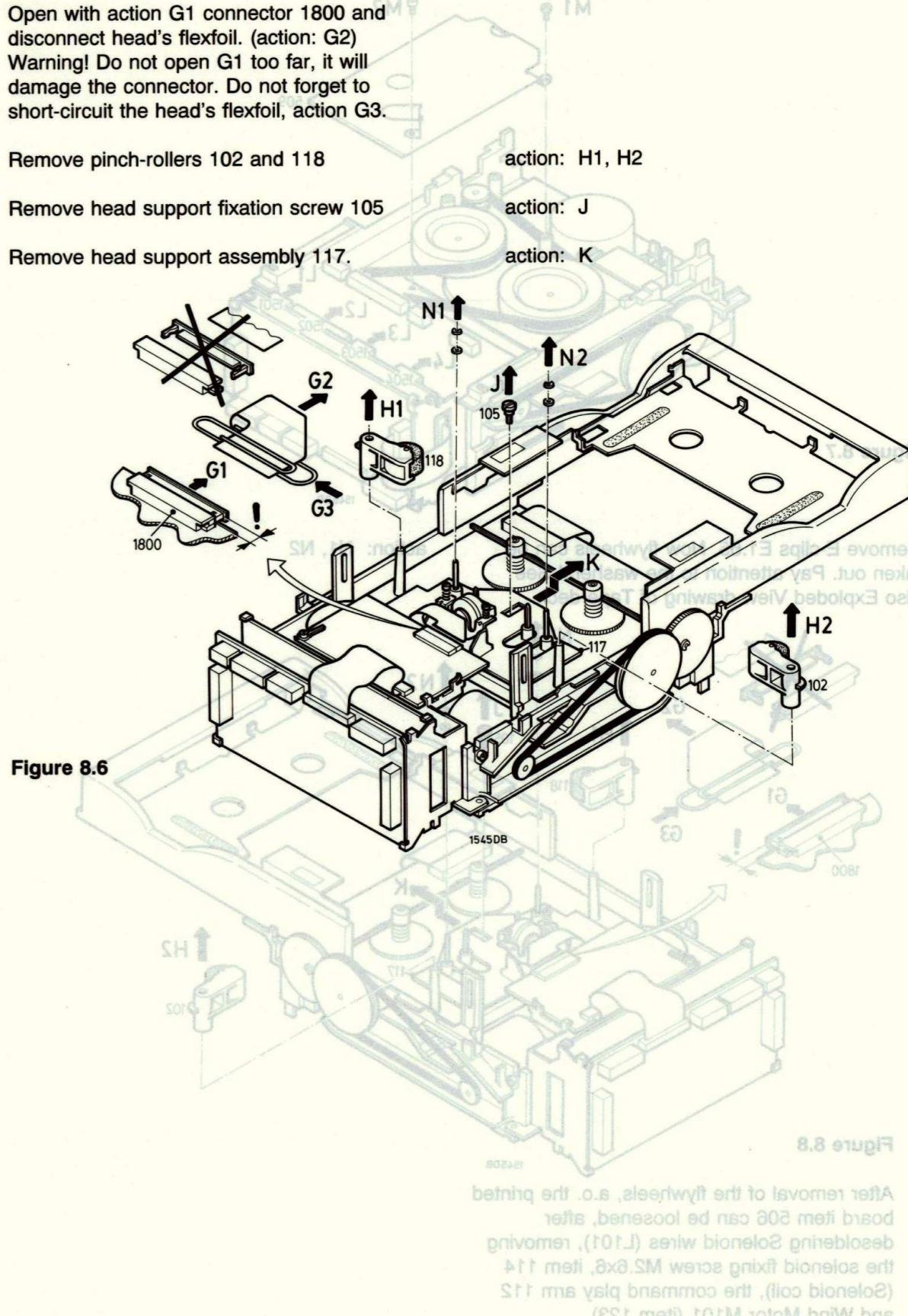


Figure 8.6

action: M1, M2

Remove cover 208

Remove connectors 1201, 1202, 1203 and 1204



**REMOVAL FLYWHEELS ITEMS 108 AND 126.**  
Remove connectors 1501, 1502, 1503 and  
1504.

Remove cover 509

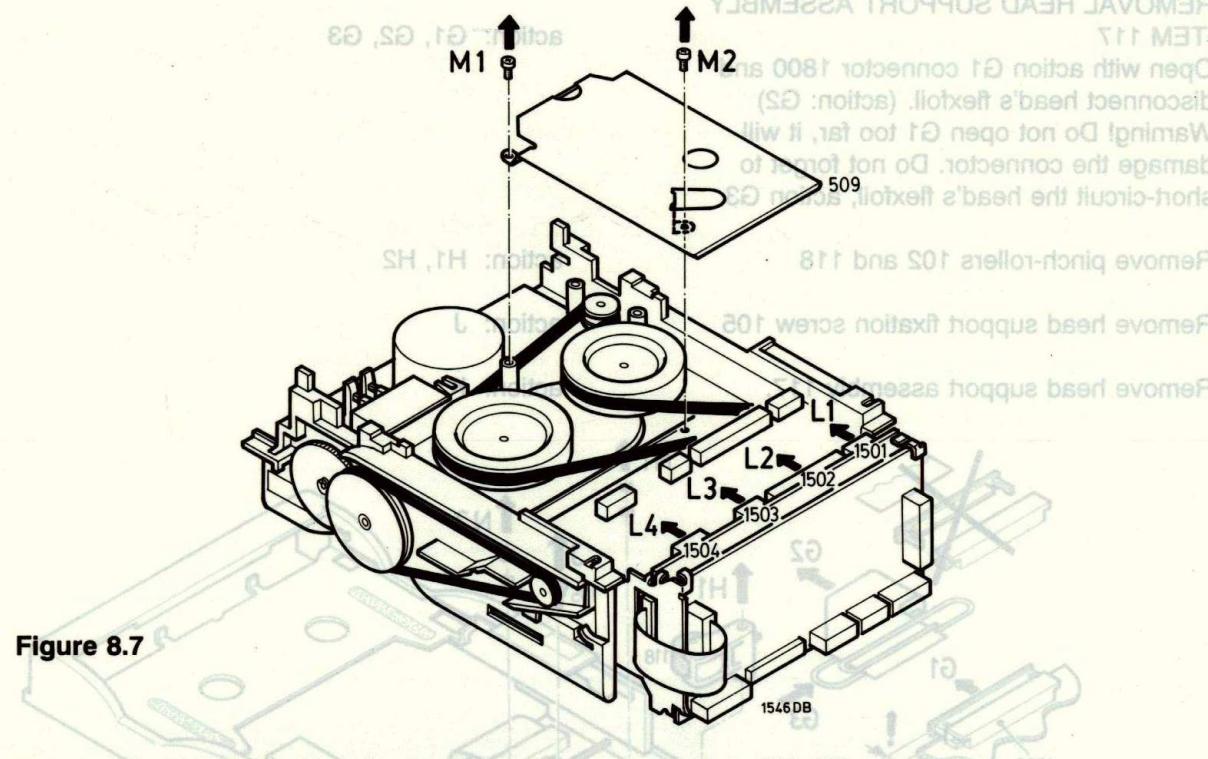


Figure 8.7

Remove E-clips E1.65. Now flywheels can be taken out. Pay attention to the washers! See also Exploded View drawing of Tape deck.

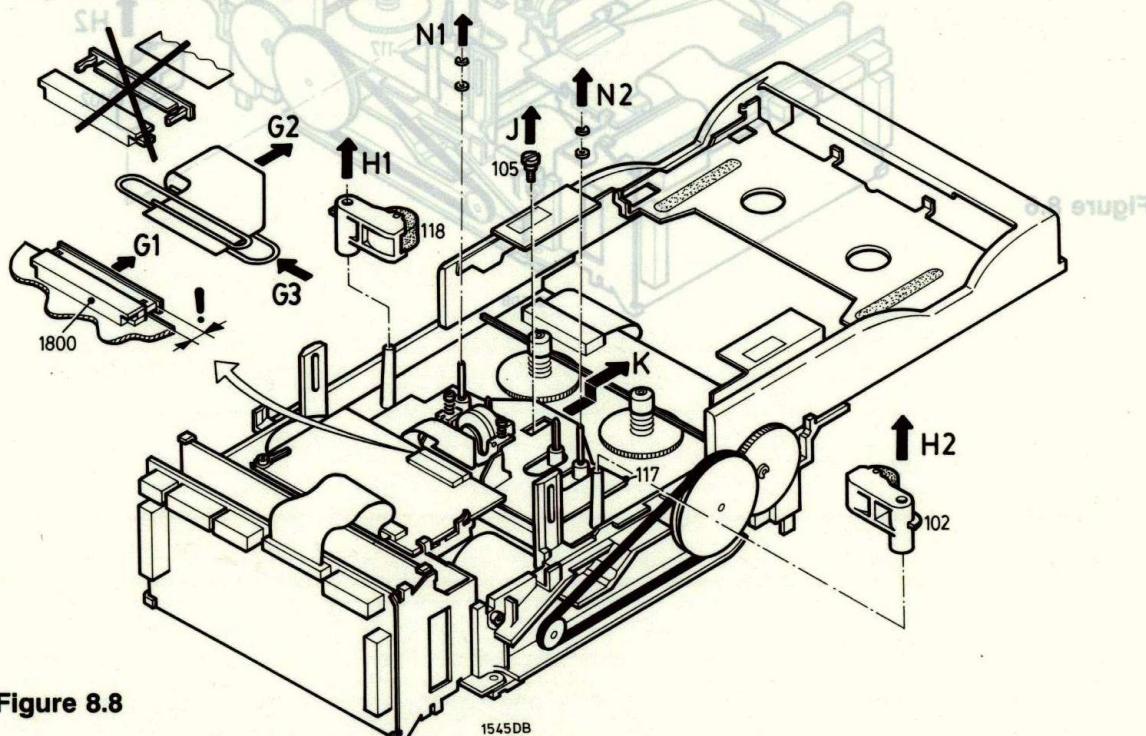


Figure 8.8

After removal of the flywheels, a.o. the printed board item 506 can be loosened, after desoldering Solenoid wires (L101), removing the solenoid fixing screw M2.6x6, item 114 (Solenoid coil), the command play arm 112 and Wind Motor M101 (item 123).

**REMOVAL TAPE DECK CHASSIS 505.** (Previous actions: G1, G2, G3)  
Remove screws printed board block item 587  
action: O1, O2

Remove block item 587

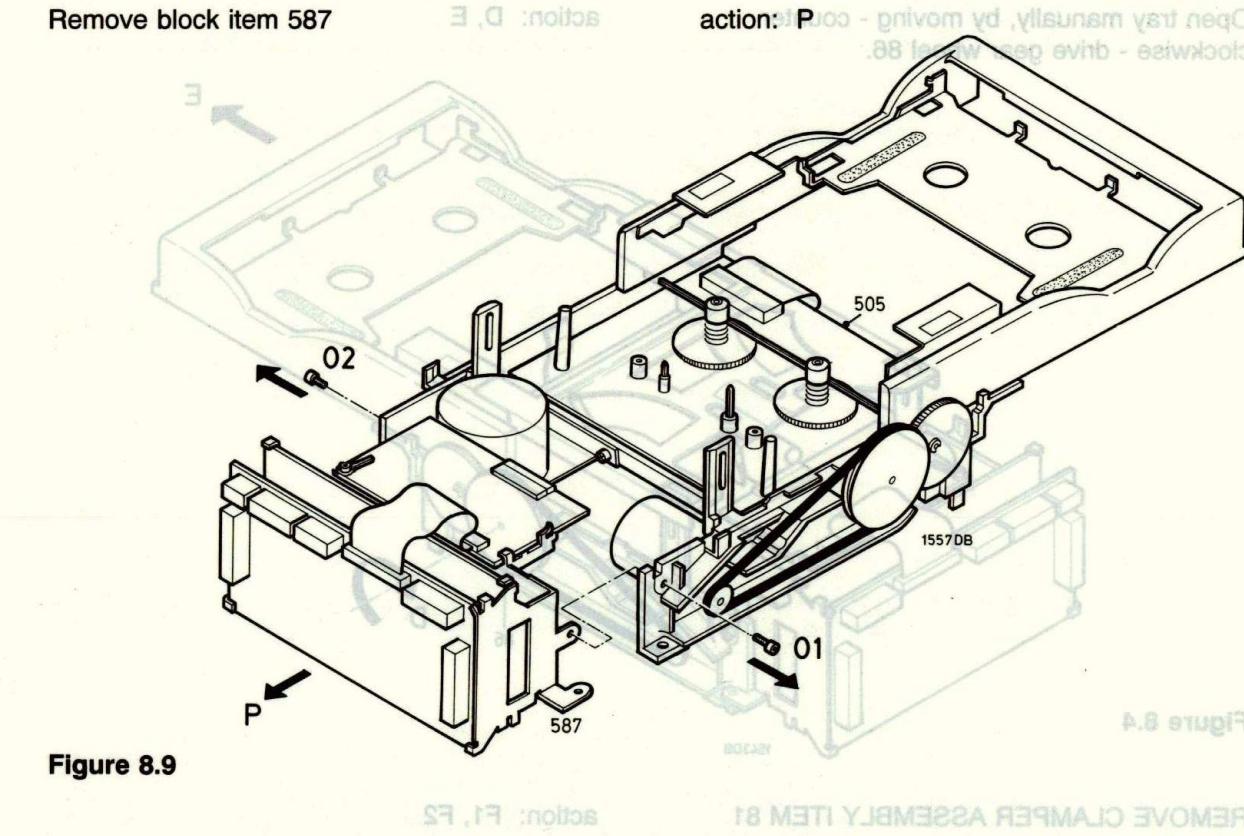


Figure 8.9

Remove E-ring E2 from axle 94

Remove 4 tape deck fixation screws M2.6x6

Remove chassis 505

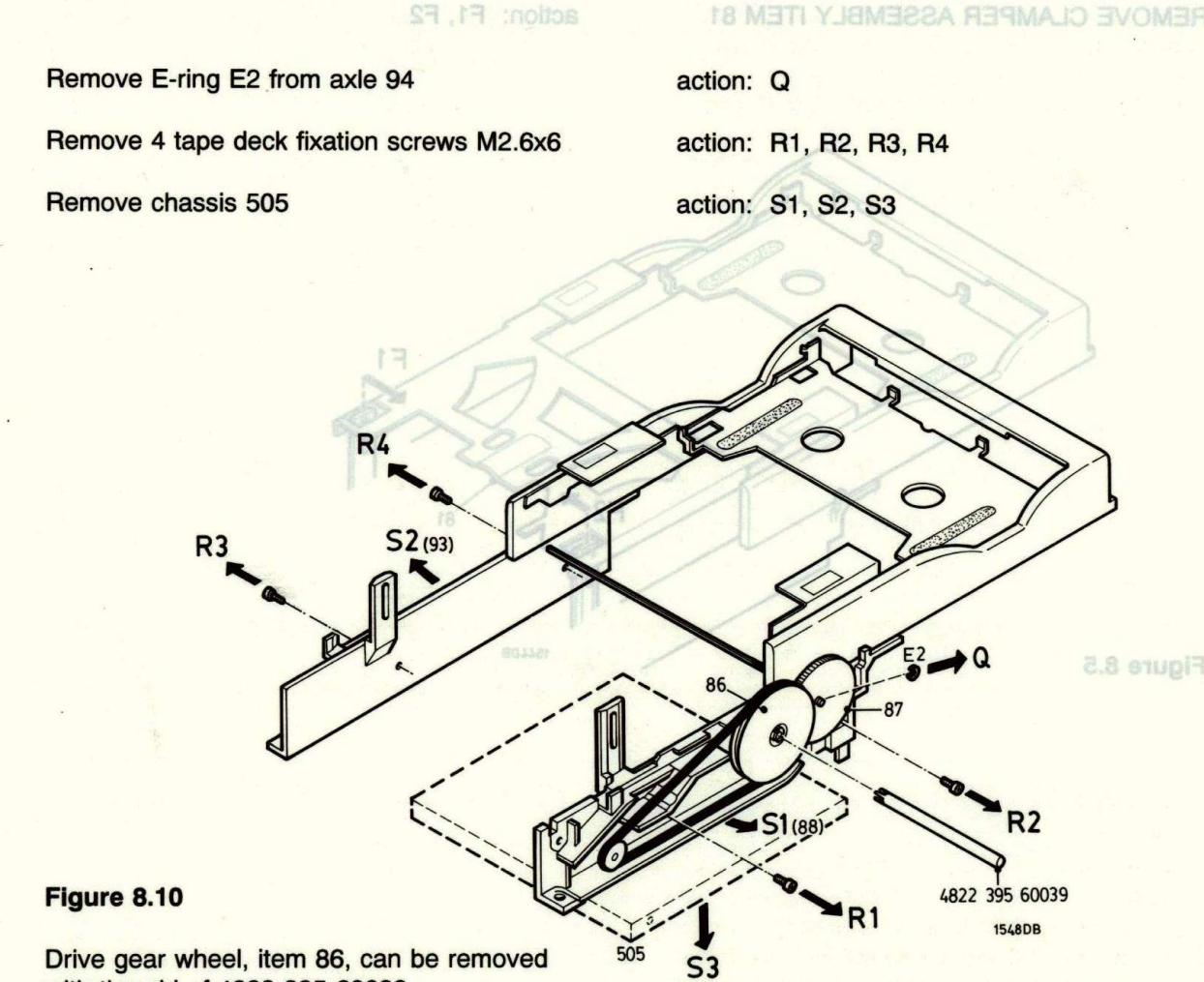
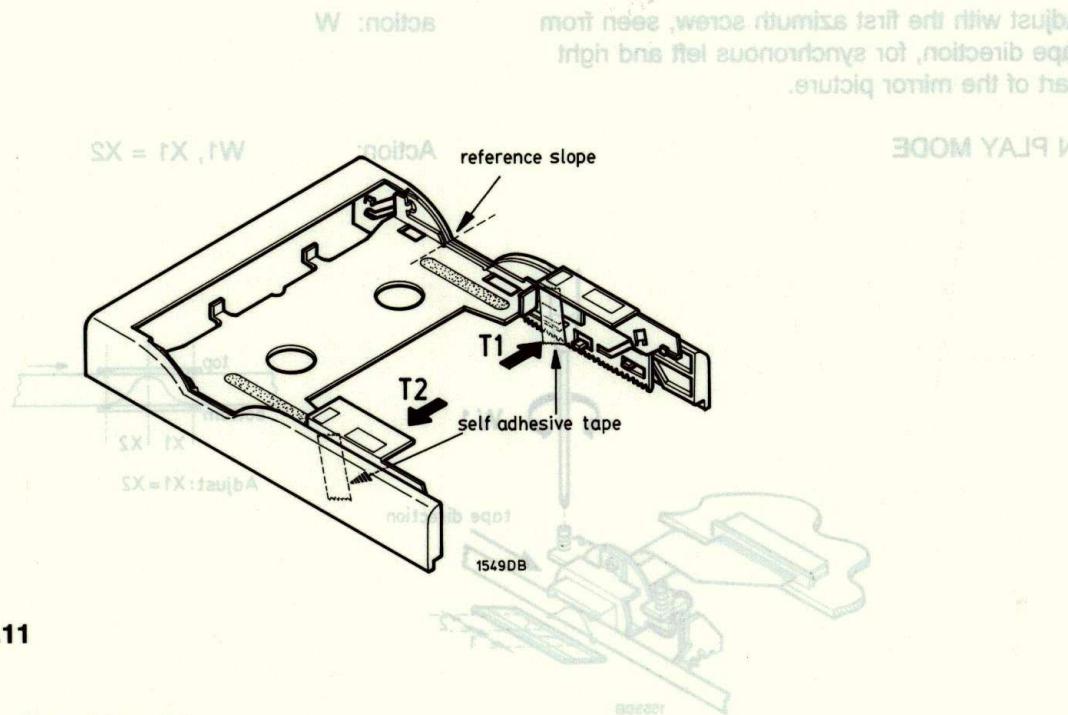


Figure 8.10

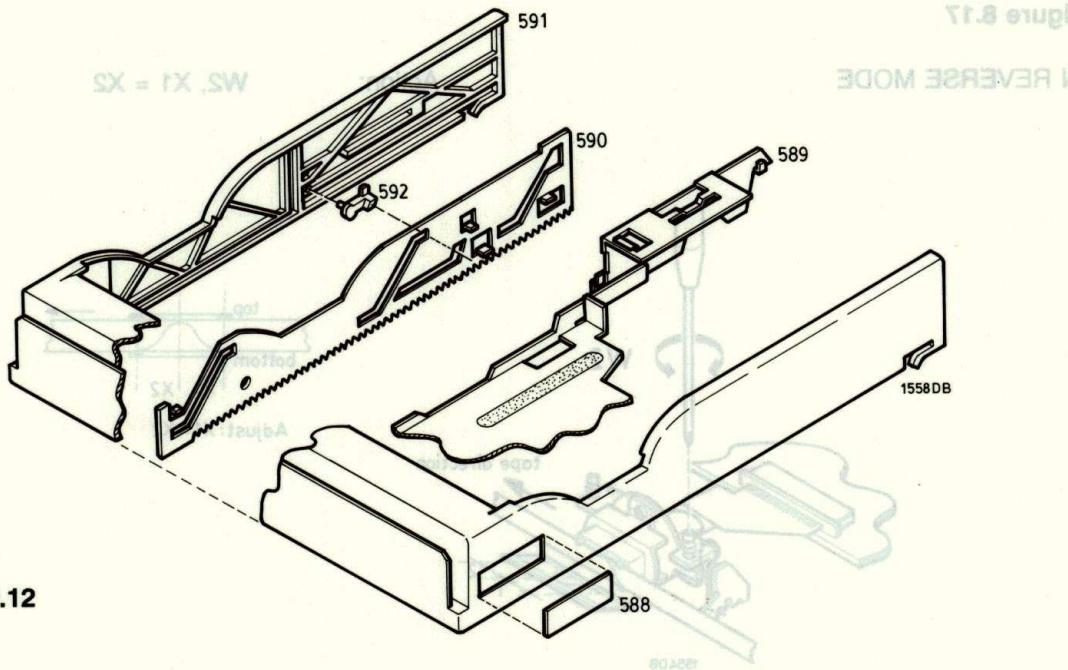
Drive gear wheel, item 86, can be removed with the aid of 4822 395 60039

**DEMOUNTING AND MOUNTING TRAY ASSEMBLY ITEM 82**

*See next figure. Turn item 82 into two parts. One part has two pins. Drive these into the base of the loader/tape deck.*  
**Keep with self-adhesive tape item 82 in mounted condition before loosening from the rest of the loader/tape deck.**

**Figure 8.11**

Exploded view of item 82

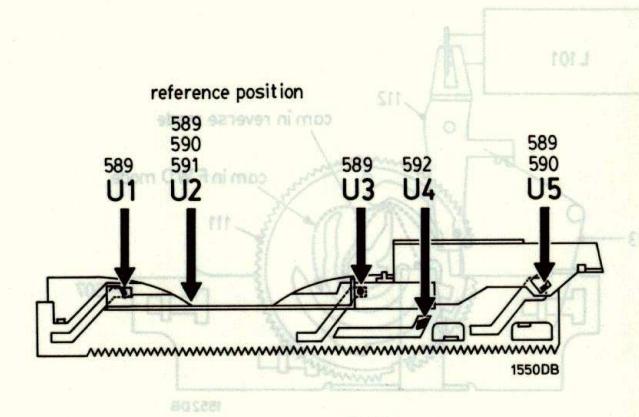
**Figure 8.12**

**ADJUSTMENT ADJUSTMENT**  
*Due to the fact that the adjustment of the assembly is done by hand, it is recommended to use a fine adjustment tool (T1G) and a fine adjustment tool (T2G) with a micrometer scale (4855 305 302).*  
**Action: T1, T2**  
*action: 4855 305 302*  
*is a micrometer scale (4855 305 302).*

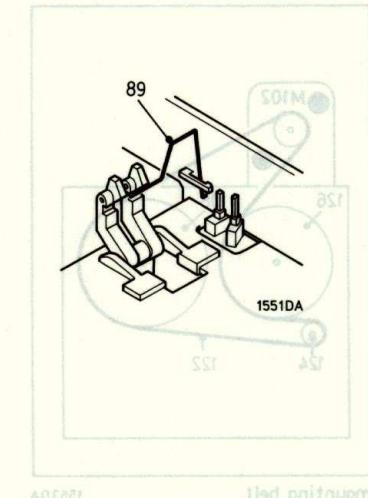
**HINTS FOR MOUNTING**

**Mounting the loose components of tray assembly (item 82)**

**action: U1, U2, U3, U4**

**Figure 8.13**

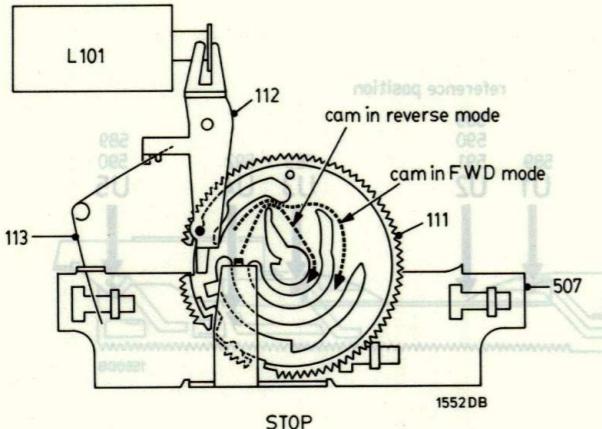
Mounting spring 89

**Figure 8.14**

Mounting gearwheel item 111

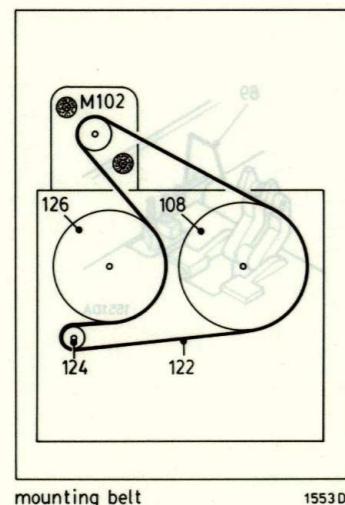
Positioning gearwheel 111, SU, SU, SU

**STOP MODE**



**Figure 8.15**

Mounting belt 122



**Figure 8.16**

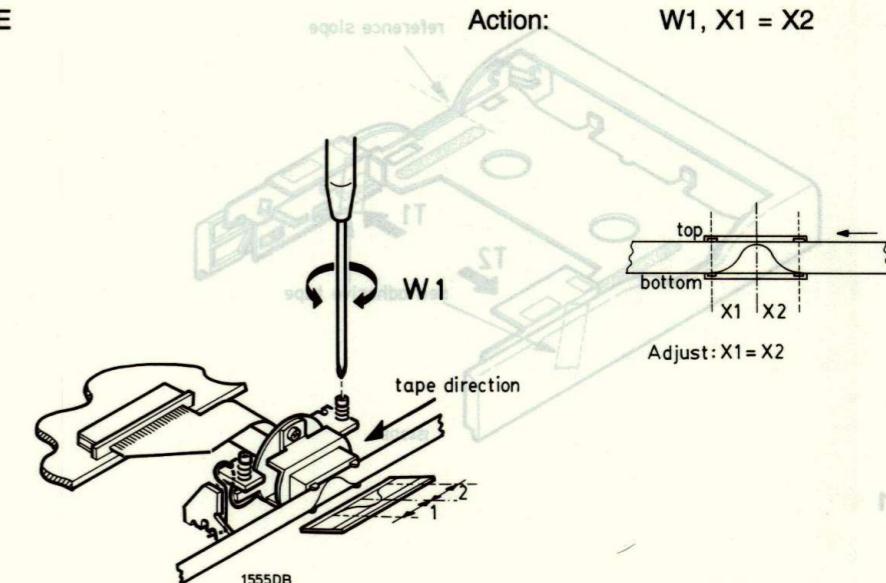
**HINTS FOR MOUNTING**  
Mounting gearwheel components to fit  
assembly (item 88 met)

### AZIMUTH ADJUSTMENT

Due to the Fixed Azimuth Tape Guides (FATG) and Azimuth Locking Pins (ALP), with a mirror cassette (4822 395 30288) the azimuth can be adjusted.

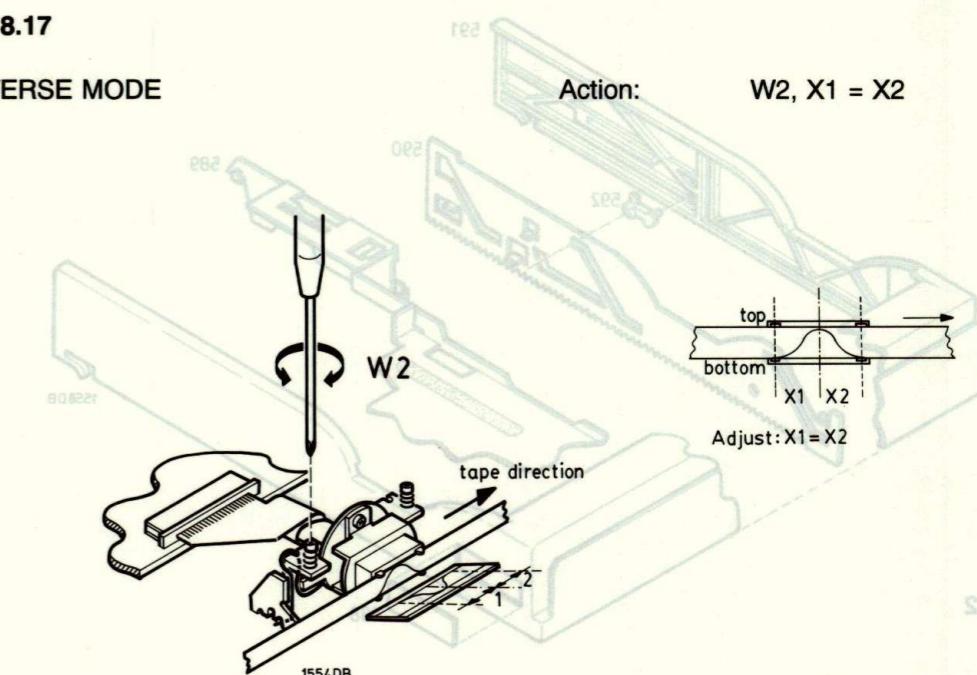
Adjust with the first azimuth screw, seen from tape direction, for synchronous left and right part of the mirror picture.

#### IN PLAY MODE



**Figure 8.17**

#### IN REVERSE MODE



**Figure 8.18**

**DEMOUNTING AND MOUNTING TRAY**  
See next figure. The mirror picture can be divided into two parts. One part reaches from first FATG to Head mid position, and the other part from Head mid position to the other FATG.

action: W

**Figure 8.19**

A0	Address SRAM; Address DRAM
A1	Address SRAM; Address DRAM
A1 0/RAS	Address SRAM; RAS DRAM
A1 1	Address SRAM
A1 2/Pin05	Address SRAM; Address DRAM; Port expander output 5
A1 3/Pin02	Address SRAM; Address DRAM; Port expander output 2
A1 4/Pin01	Address SRAM; Address DRAM; Port expander output 1
A1 5/Pin04	Address SRAM; Address DRAM; Port expander output 4
A1 6/Pin03	Address SRAM; Address DRAM; Port expander output 3
A2	Address SRAM; Address DRAM
A3	Address SRAM; Address DRAM
A4	Address SRAM; Address DRAM
A5	Address SRAM; Address DRAM
A6	Address SRAM; Address DRAM
A7	Address SRAM; Address DRAM
A8	Address SRAM; Address DRAM
A9/CAS	Address SRAM; CAS for DRAM
A1+	Analog reader ACC Left channel
A2+	Analog reader ACC Right channel- ACC/NDCC
ANAEYE	Analog or DCC playback
ANAL	Analogue eye pattern output
ANAR	ACC output Left
ATSB	12 dB attenuation(active LOW)
ATTDAC	DAC attenuation control.
AZCHK	channel 0 and channel 7 azimuth monitor.
BCK	bit clock input.
BIAS	Bias current for ADC
BIL	buffer op-amp inverting input for left channel.
BIR	buffer op-amp inverting input for right channel.
BOL	buffer op-amp inverting input for left channel.
BOR	buffer op-amp output for right channel.
CAP_A	Capstan motor control connection A
CAP_B	Capstan motor control connection B
CAPSTAN	Low output level switches the capstan motor on.
CAPSTAN+	Capstan motor + connection
CAPSTAN-	Capstan motor - connection
CEDC	system clock output.
CHMODE	use of channel status(0=professional use, 1=consumer use)
CHROME	Indication if a chrome analog cassette is inserted.
CHTST1	Channel test pin 1
CHTST2	Channel test pin 2
CKIN	system clock input.
CKSL1	clock selection 1
CKSL2	clock selection 2
CLK22	22.5792 MHz buffered clock output of SFC3.
CLK24	24.576 MHz XTAL buffered clock output of SFC3.
CLKSEL	select system clock
CLOCK	Serial data clock from controller
CLOSE_TRAY	Tray motor connection (+10V = Open tray; 0V = Close tray)

INL	Analog input signals from DCC head.
INMFL	Magnetic feedback amplifier input left.
INMFR	Magnetic feedback amplifier input right.
INR	Analog input signals from DCC head.
INVALID	validity of audio sample input/output
IREF	current reference node.
L3CLK	L3 bus clock line
L3CLKC	codec interface clock
L3CLKM	microcontroller interface clock
L3DATA	L3 bus serial data line
L3DATAC	codec interface data
L3DATAM	microcontroller interface data
L3INT	L3 interrupt output
L3MODE	Mode line for L3 interface
L3MODEC	codec interface mode
L3MODEM	microcontroller interface mode
L3REF	L3 bus timing reference
LADDR	microprocessor interface address switch input
LCLK	microprocessor interface clock line input
LDATA	microprocessor interface data line input/output
LEFT INPUT	Analog audio input left
LMODE	microprocessor interface mode line input
LOWPOWER	Low power playback reset
LTCNT0	LT compatible interface mode control
LTCNT0C	SAA2002 SFC interface mode control
LTCNT1	LT compatible interface mode control
LTCNT1C	SAA2002 SFC interface mode control (test mode input) connect to VDD
M0	(test mode input) connect to VDD
M1	6.144 MHz clock output
MCLK	Message synchronisation with controller
MESSYNC	Latch enable signal for digital filter
MLE	Message synchronisation with Digital µP
MSYNC	muting(active LOW)
MUSB	audio mute input
MUTE	DAC control or general purpose output
MUTEDAC	Cassette present switch input
N_CASS_PRES	DCC record protect switch input
N_DCC_REC_PROT	Power fail(L = power failure)
N_FAILP	Flap loader present indication
N_FLAP_PRESENT	DCC tape length indication switch input
N_HOLE3	DCC tape length indication switch input
N_HOLE4	DCC tape length indication switch input
N_HOLE5	DCC tape length indication switch input
N_PLAY_POS	Indication if head is in play position
N_QREV_PRES	Quick reverse sensor present
N_TRAY_IN	Tray switch input
NC	not connected
N_DDC_REC_PROT	Mute for audio channels(active low)
N_MUTE	No done state selection
N_NODONE	Master reset Digital Unit
N_RESET	Output Enable for RAM
OEN	Tray motor connection(+10V = Close tray; 0V = Open tray)
OPEN_TRAY	IEC958 input from optical receiver
OPTICAL IN	Parallel output of read IC.
OUTAUX	Head signal of auxiliary data.
OVLD	overload indication output.

PIN01	Port expander output 1
Pin02/SPEEDB	Port expander output 2/ PWM
	capstan control output for deck B
PLAY MAG	Connection to the solenoid on the DDU deck.
POR	Power On Reset
PRGSTAT	TFE3 program status, for test only
PWRDWN	enable power-down input in the standby mode
QA-QJ	Put DRP into power down mode
QUICK_REVERSE	Signal for write heads.
R0+	Quick reverse input signal
R1+	Digital reader CH0(Hot)
R2+	Digital reader CH1(Hot)
R3+	Digital reader CH2(Hot)
R4+	Digital reader CH3(Hot)
R5+	Digital reader CH4(Hot)
R6+	Digital reader CH5(Hot)
R7+	Digital reader CH6(Hot)
RCfil	Digital reader CH7(Hot)
RCint	pin for PLL loop filter
RDMUX	pin for integrating capacitor
RDSYNC	Analogue multiplexed input from READ AMPLIFIER
RESET	Synchronisation output for READ AMPLIFIER
RESET_UP	Reset signal from Digital Unit controller
RESOL0	Reset tape drive module µP
RESOL1	resolution selection 0
RIGHT INPUT	resolution selection 1
RX+	Analog audio input right
RXD	Digital reader AUX channel(Hot)
SBCL	Serial data input from tape drive unit
SBCL	Bit clock for sub-band I2S interface.
SBDA	sub-band bit clock
SBDR	Data line for sub-band I2S interface
SBDIR	DRP
SBEF	Direction line for sub-band I2S interface DRP
SBMCLK	Sub-band I2S error flag line
SBWS	Master clock for sub-band I2S interface DRP
SCK	Word selector for sub-band I2S interface DRP.
SCL	I2S bus clock line
SD	baseband bit clock
SDA1	serial audio data input/output; I2S-bus
SDA2	baseband serial data to/from DAIO and ADC
SDAD	baseband serial data output to DAC
SDAUX	Serial data from AD-converter
SDDAC	auxiliary serial data input; I2S-bus
SDO	I2S bus data line for DAC
SFC3COMP	serial interface data output.
SFOR	SFC3(SAA2003) compatibility mode input for selecting serial interface output format.
SHIELD	Shield connection
SLAVE	input for selecting serial interface operating mode MASTER/SLAVE.
SLAVE_IN	Serial data from controller
SLAVE_OUT	Serial data to controller
SPEED	PWM capstan control output for deck
SREEL	Tacho Sypply reel
STANDBY	device inactive
STD	input for selecting STANDBY mode.

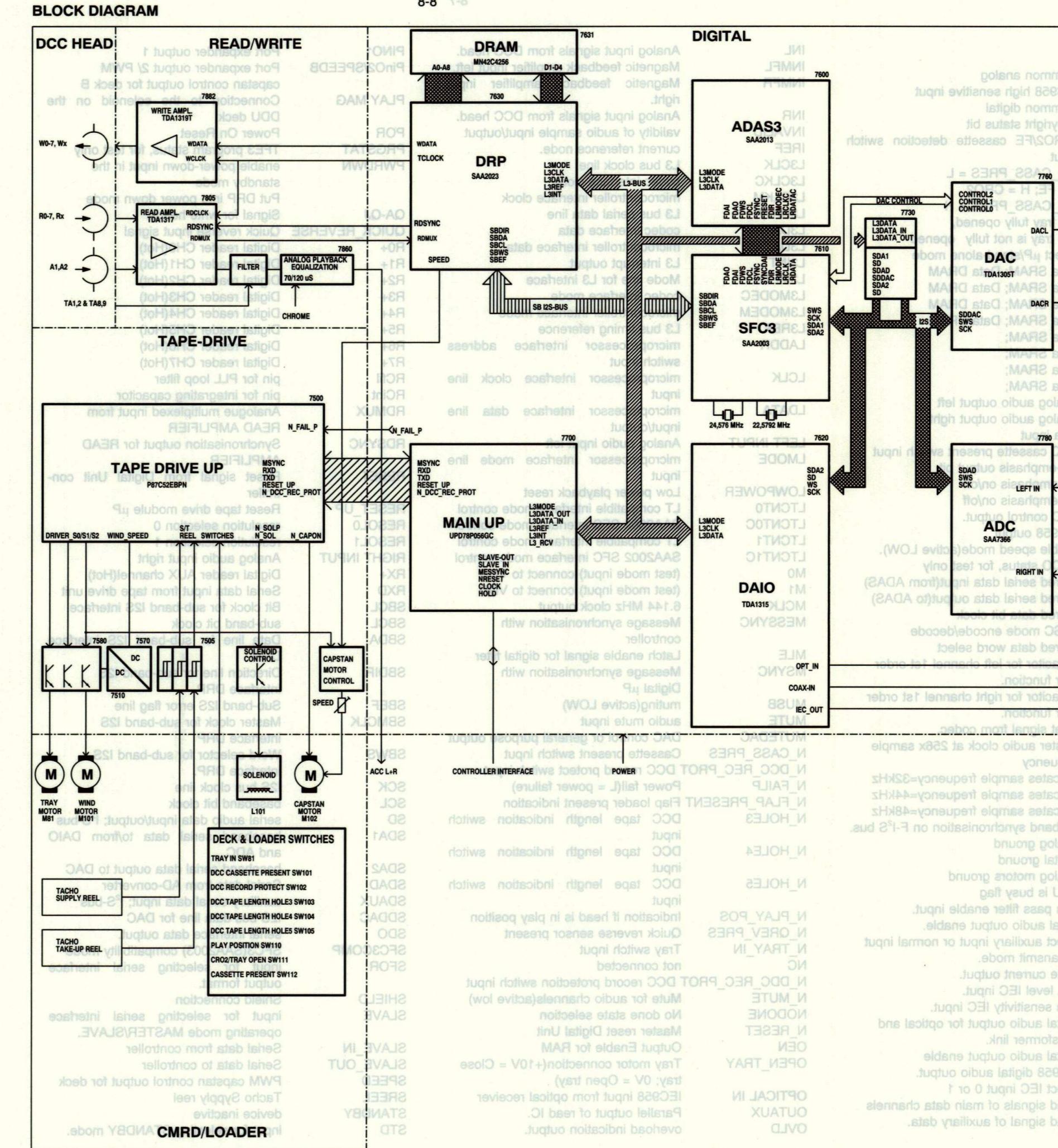
STROBE	strobe for control register(active high)
SUBSTR	Substrate connection
SWS	serial interface word select signal.
SYNCDAI	settings synchronisation for DAIO
SYSLCKI	system clock input
SYSLKO	system clock output
TA1	Feedback conductor ACC Left channel
TA2	Feedback conductor ACC Left channel
TA8	Feedback conductor ACC Right channel
TA9	Feedback conductor ACC Right channel
TCLOCK	3.072 MHz clock output for tape I/O
TD1	Test conductor digital
TD2	Test conductor digital
TEST0	test mode select
TEST1	test mode select
TEST2	Test mode select
TREEL	Tacho Take-up reel
TXD	Serial data output to tape drive unit
UDAVAIL	synchronisation for output user data(0=data available, 1=no data)
UNLOCK	PLL out-of-lock(0=not locked, 1=locked)
URDA	unreliable data from drive processing
VDACN	negative 1 bit DAC reference voltage
VDACP	positive 1 bit DAC reference voltage
VOL	input.(connected 0V)
VOR	left channel output.
W01	right channel output.
W12	Digital writer(CH0/CH1)
W23	Digital writer(CH1/CH2)
W34	Digital writer(CH2/CH3)
W45	Digital writer(CH3/CH4)
W56	Digital writer(CH4/CH5)
W67	Digital writer(CH5/CH6)
W7-	Digital writer(CH7)
WDATA	Serial output to WRITE AMPLIFIER
WEN	Write enable for RAM
WIND+	Reel motor + connection
WIND-	Reel motor - connection
WRITE-STDBY	Write amplifier stand-by
WS	word select input/output, I2S-bus
WX-	Digital writer(AUX channel)
WX0	Digital writer(AUX channel/CH0)
X22IN	22.5792 MHz XTAL oscillator input
X22OUT	22.5792 MHz XTAL oscillator output
X24IN	24.576 MHz XTAL oscillator input
X24OUT	24.576 MHz XTAL oscillator output
X256	master audio clock input from external source

## ADJUSTMENT TABLE

TOOLS	REMARKS		C	
<b>TAPE SPEED</b>				
TEST CASSETTE "SBC420" 3150 Hz 4822 397 30071	PLAYBACK MODE	5 OR 6 ANAR ANAL	ON TAPE DRIVE PANEL R3543 (A-SIDE) R3542 (B-SIDE)	USE I-COUNTER ADJUST BOTH SIDES TO $f = 3150 \text{ Hz} \pm 0.25\%$
<b>WRITE CURRENT</b>				
9.6 kHz CALIBRATION TAPE 4822 397 30264	PLAYBACK MODE ON READ/WRITE PANEL SHORT CIRCUIT AGC	7 IF RDMUX OUTPUT CLIPS (>3Vpp) CONNECT 8 VIA POTMETER OF 47k TO GROUND 10	2 RD SYNC RDMUX POTMETER 47K	MEASURE PEAK TO PEAK VALUE OF RDMUX SIGNAL TRIGGER ON RD SYNC (AVERAGE VALUE)
USE DCC BLANC CASSETTE	RECORD MODE	9 VCLAMP	ON READ/WRITE PANEL R3688	VCLAMP = $I_{write}(\text{pp}) \times R_{rot}$ ADJUST VCLAMP TO 1.2Vpp(*)
	MAKE RECORDING ON VIRGIN PIECE OF TAPE			
	PLAYBACK MODE PLAYBACK OWN RECORDING	2 RD SYNC RDMUX	ON READ/WRITE PANEL R3688	MEASURE PEAK TO PEAK VALUE OF RDMUX SIGNAL TRIGGER ON RD SYNC (AVERAGE VALUE)
	RECORD MODE	9 VCLAMP	ON READ/WRITE PANEL R3688	ADJUST TO DESIRED WRITE CURRENT = $\frac{V_{pp} \text{ RDMUX } 9.6\text{kHz}}{V_{pp} \text{ OWN RECORDING}} \times 110\text{mA}$
	REMOVE SHORT CIRCUIT 7 TO ACTIVATE AGC			X5201 X5201 X5201 X5201 X5201 X5201

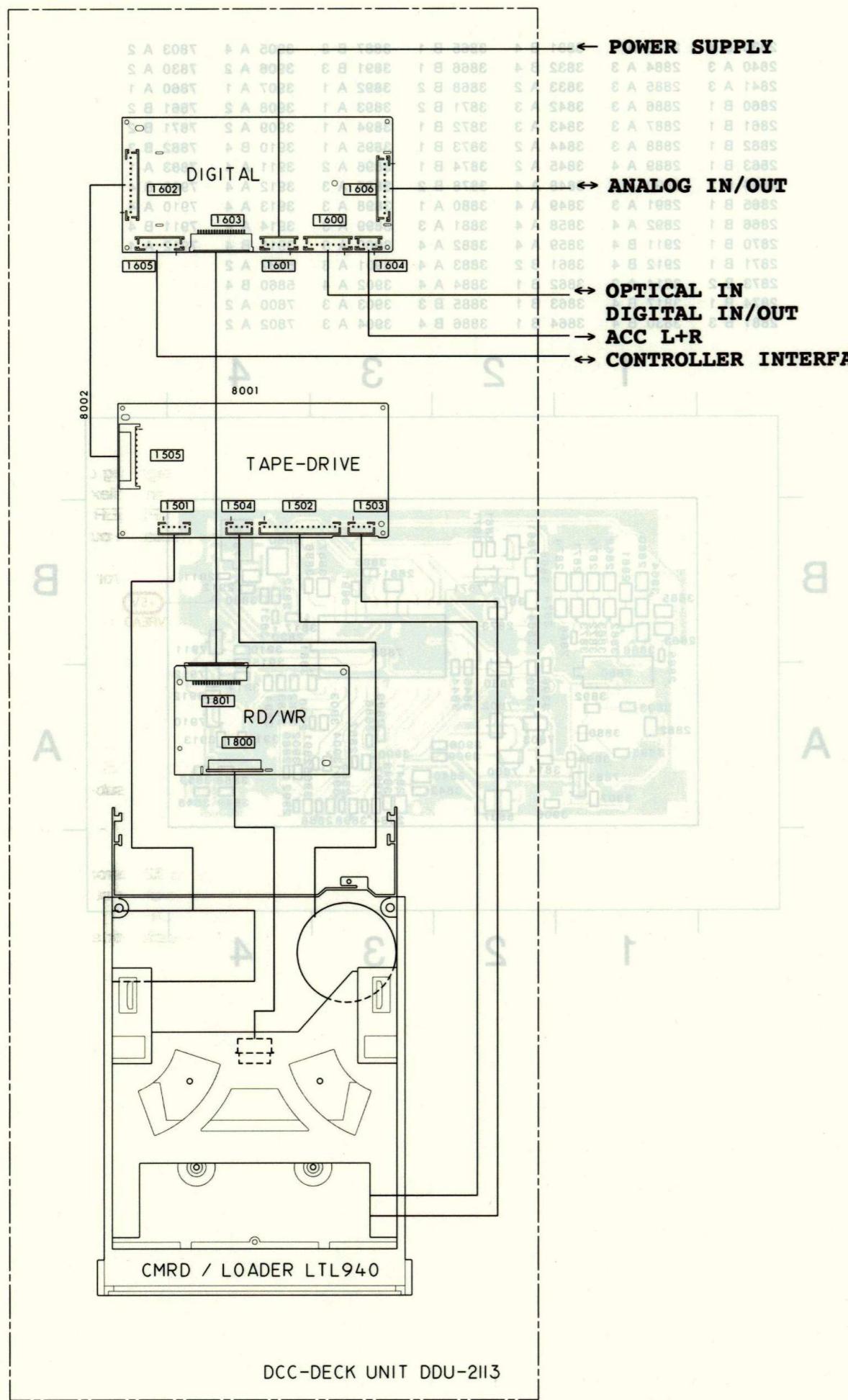
(\*) ON FLEXIBLE CABLE OF DCC HEAD, THE ADVISED WRITE CURRENT HAS BEEN INDICATED. VCLAMP = NOTED WRITE CURRENT  $\times R_{rot}$  (10 Ohm)HAS1148  
9425

## BLOCK DIAGRAM

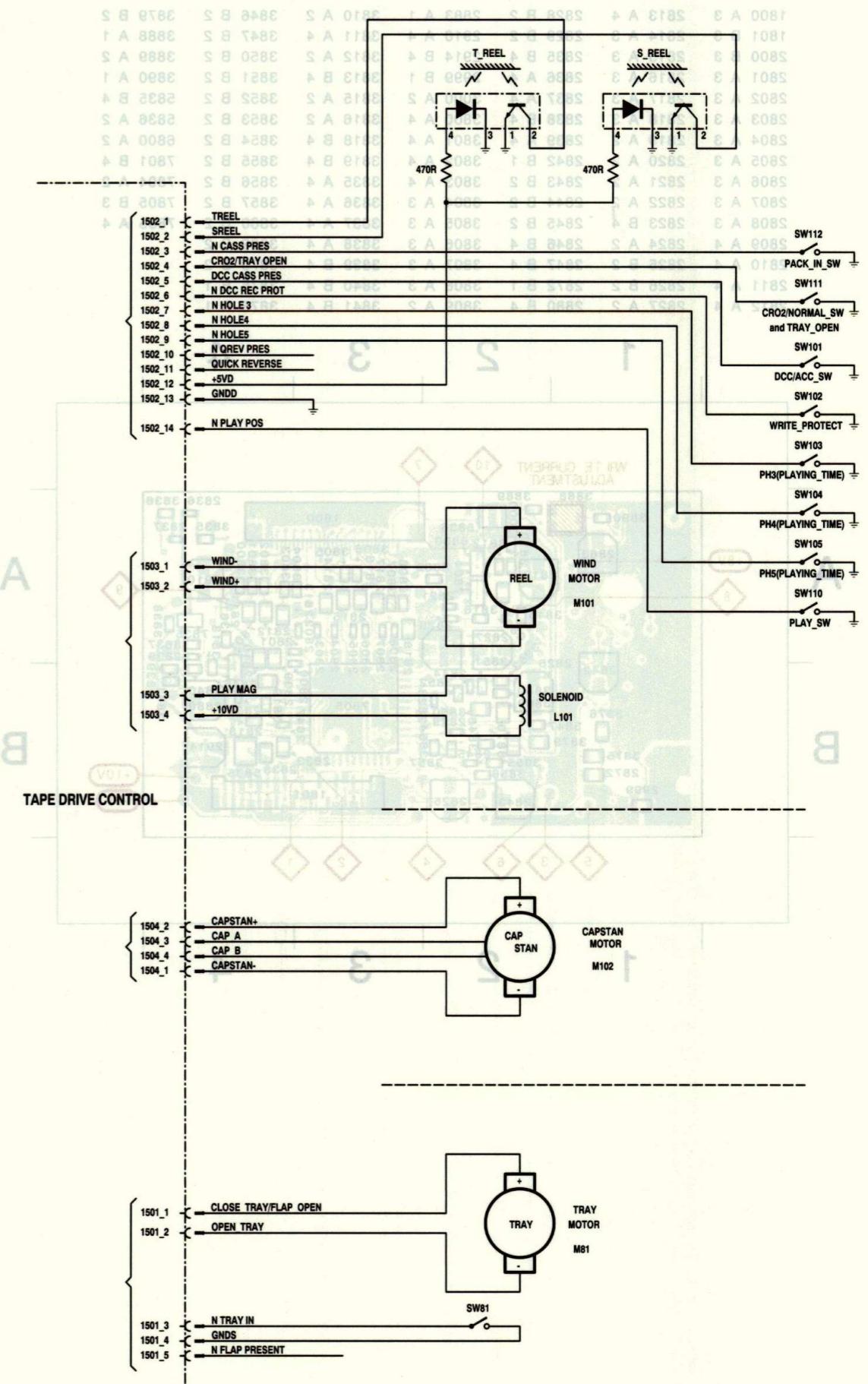


1600	1 = GNDD	1605	1 = TXD
2 = OPTICAL IN	2 = GNDD	2 = WX-	2 = WX-
3 = GNDD	3 = MESSYNC	3 = RX+	3 = RX0
4 = COAXIAL IN	4 = SLAVE_IN	4 = WX0	4 = W0+
5 = +5VD	5 = NRESET	5 = W01	5 = W12
6 = DIGITAL OUT	6 = CLOCK	6 = W1+	6 = W12
7 = GNDD	7 = HOLD	7 = R1+	7 = R2+
		8 = W12	10 = W23
		11 = R3+	11 = R3A
		12 = W34	12 = W34
		13 = COD	13 = COD
		14 = W45	14 = W45
		15 = R4+	15 = R4+
		16 = W56	16 = W56
		17 = R5+	17 = R5+
		18 = W67	18 = W67
		19 = R6+	19 = R6+
		20 = W7-	20 = W7-
		21 = R7+	21 = R7+
		22 = TD2	22 = TD2
		23 = TA8	23 = TA8
		24 = A2+	24 = A2+
		25 = TA9	25 = TA9
		26 = TA1	26 = TA1
		27 = A1+	27 = A1+
		28 = COA	28 = COA
		29 = TA2	29 = TA2
		30 = SHIELD	30 = SHIELD

## WIRING DIAGRAM DDU



## WIRING DIAGRAM DCC DECK

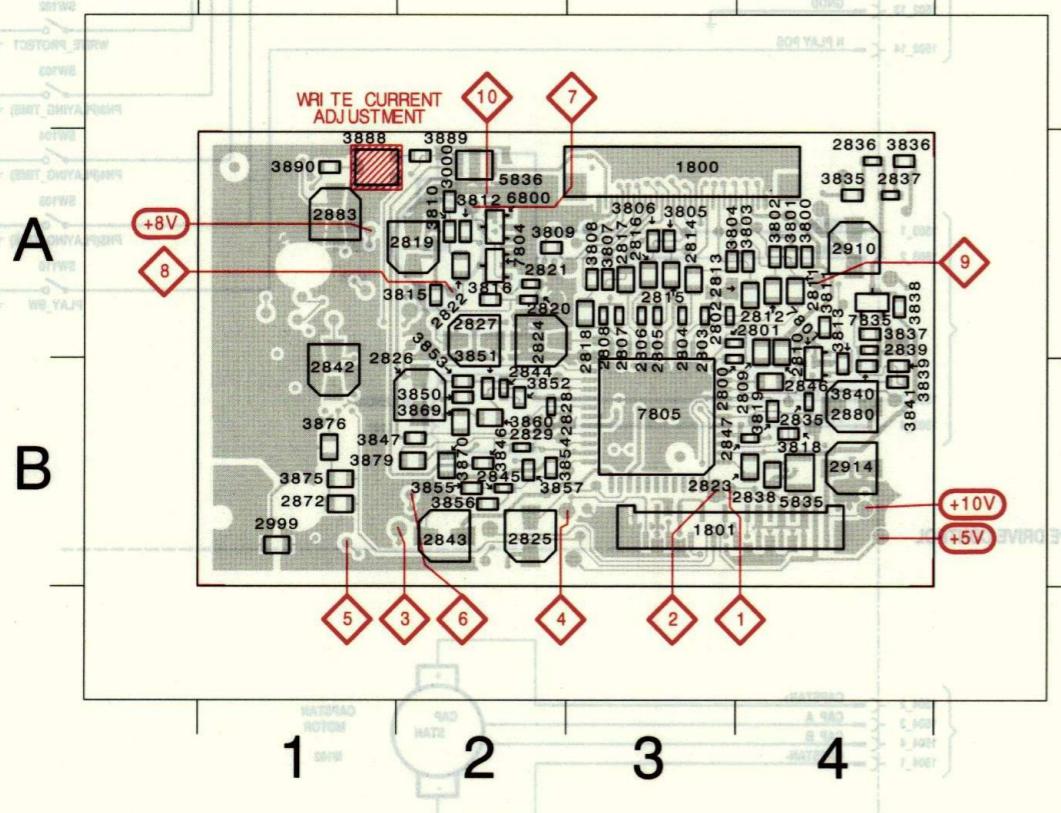


## READ/WRITE PANEL

WIRING DIAGRAM DDC DECK

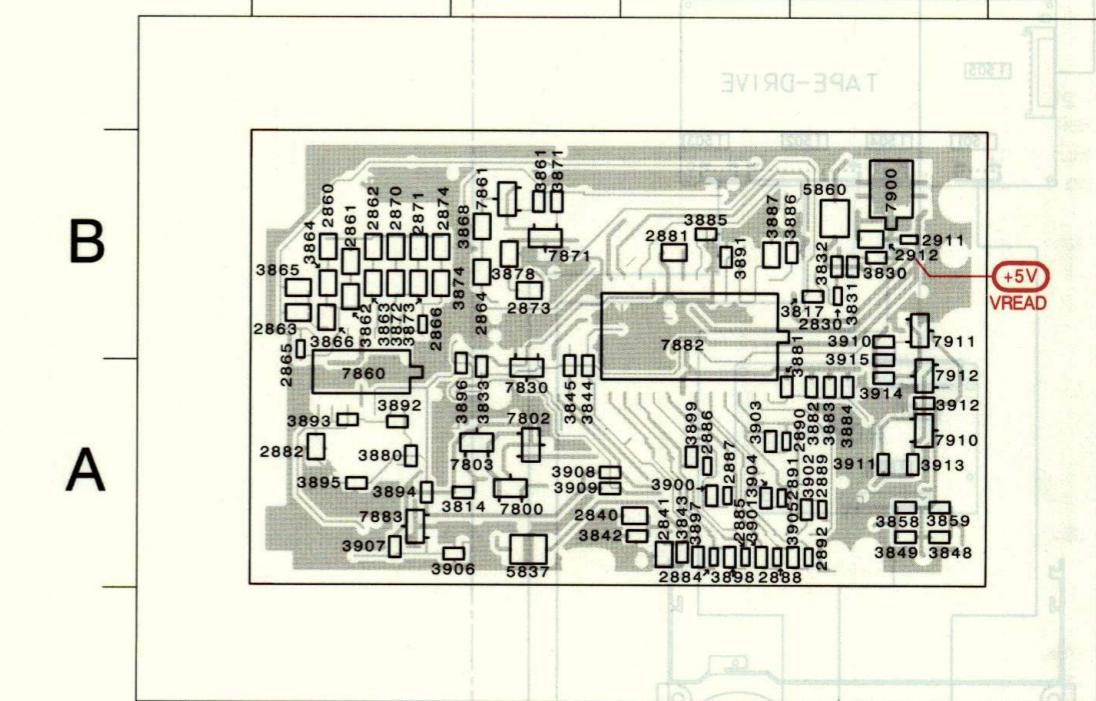
1800 A 3	2813 A 4	2828 B 2	2883 A 1	3810 A 2	3846 B 2	3879 B 2
1801 B 3	2814 A 3	2829 B 2	2910 A 4	3811 A 4	3847 B 2	3888 A 1
2800 B 3	2815 A 3	2835 B 4	2914 B 4	3812 A 2	3850 B 2	3889 A 2
2801 A 3	2816 A 3	2836 A 4	2999 B 1	3813 B 4	3851 B 2	3890 A 1
2802 A 3	2817 A 3	2837 A 4	3000 A 2	3815 A 2	3852 B 2	5835 B 4
2803 A 3	2818 A 3	2838 B 4	3800 A 4	3816 A 2	3853 B 2	5836 A 2
2804 A 3	2819 A 2	2839 A 4	3801 A 4	3818 B 4	3854 B 2	6800 A 2
2805 A 3	2820 A 2	2842 B 1	3802 A 4	3819 B 4	3855 B 2	7801 B 4
2806 A 3	2821 A 2	2843 B 2	3803 A 4	3835 A 4	3856 B 2	7804 A 2
2807 A 3	2822 A 2	2844 B 2	3804 A 3	3836 A 4	3857 B 2	7805 B 3
2808 A 3	2823 B 4	2845 B 2	3805 A 3	3837 A 4	3860 B 2	7835 A 4
2809 A 4	2824 A 2	2846 B 4	3806 A 3	3838 A 4	3869 B 2	
2810 A 4	2825 B 2	2847 B 4	3807 A 3	3839 B 4	3870 B 2	
2811 A 4	2826 B 2	2872 B 1	3808 A 3	3840 B 4	3875 B 1	
2812 A 4	2827 A 2	2880 B 4	3809 A 2	3841 B 4	3876 B 1	

1      2      3      4

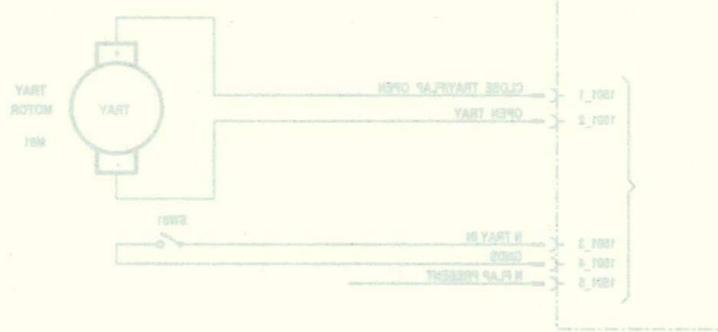


2830 B 4	2882 A 1	3831 B 4	3865 B 1	3887 B 3	3905 A 4	7803 A 2
2840 A 3	2884 A 3	3832 B 4	3866 B 1	3891 B 3	3906 A 2	7830 A 2
2841 A 3	2885 A 3	3833 A 2	3868 B 2	3892 A 1	3907 A 1	7860 A 1
2860 B 1	2886 A 3	3842 A 3	3871 B 2	3893 A 1	3908 A 2	7861 B 2
2861 B 1	2887 A 3	3843 A 3	3872 B 1	3894 A 1	3909 A 2	7871 B 2
2862 B 1	2888 A 3	3844 A 2	3873 B 1	3895 A 1	3910 B 4	7882 B 3
2863 B 1	2889 A 4	3845 A 2	3874 B 1	3896 A 2	3911 A 4	7883 A 1
2864 B 2	2890 A 3	3848 A 4	3878 B 2	3897 A 3	3912 A 4	7900 B 4
2865 B 1	2891 A 3	3849 A 4	3880 A 1	3898 A 3	3913 A 4	7910 A 4
2866 B 1	2892 A 4	3858 A 4	3881 A 3	3899 A 3	3914 A 4	7911 B 4
2870 B 1	2911 B 4	3859 A 4	3882 A 4	3900 A 3	3915 B 4	7912 A 4
2871 B 1	2912 B 4	3861 B 2	3883 A 4	3901 A 3	5837 A 2	
2873 B 2	3814 A 2	3862 B 1	3884 A 4	3902 A 4	5860 B 4	
2874 B 1	3817 B 4	3863 B 1	3885 B 3	3903 A 3	7800 A 2	
2881 B 3	3830 B 4	3864 B 1	3886 B 4	3904 A 3	7802 A 2	

1      2      3      4

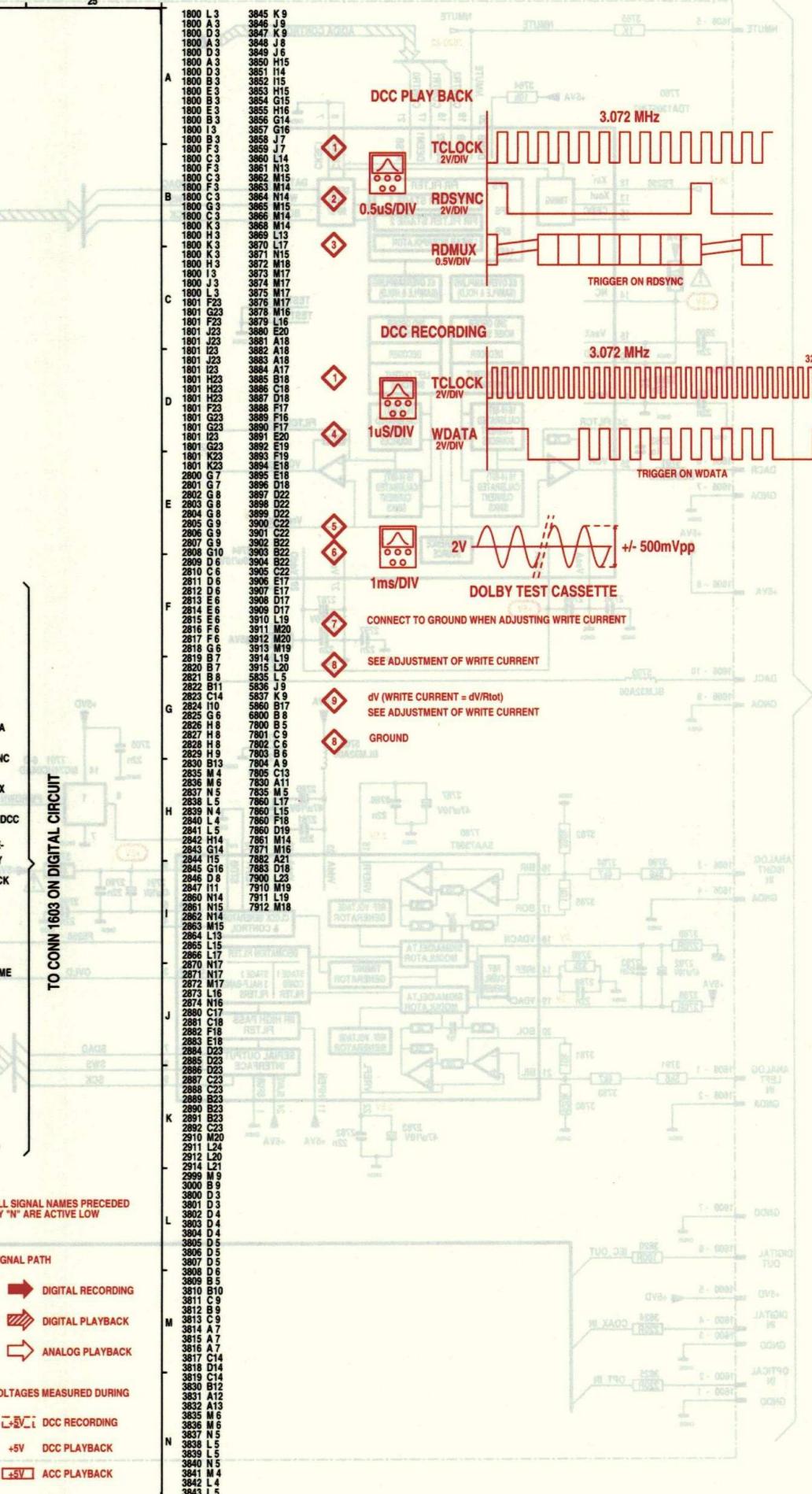
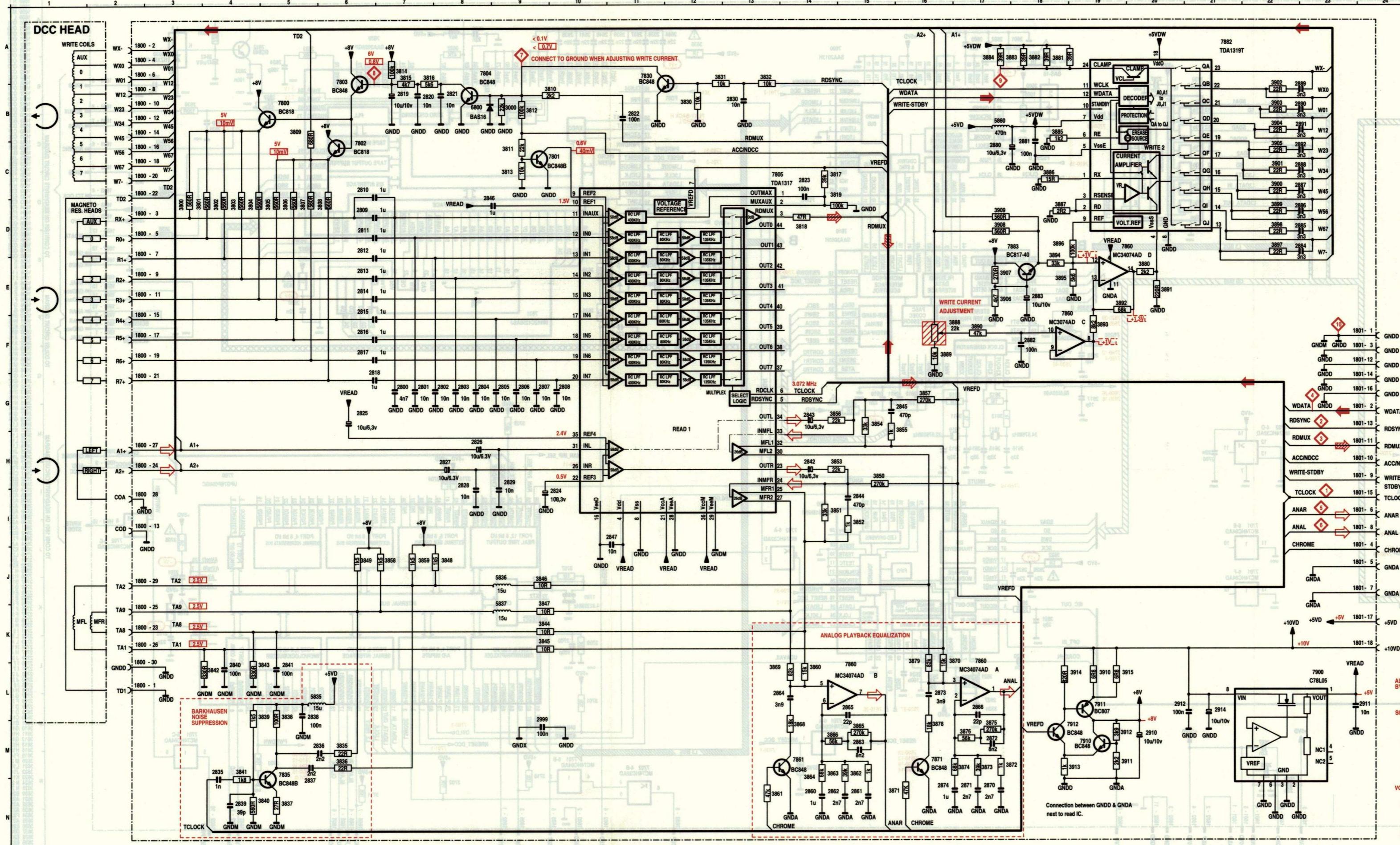


1      2      3      4



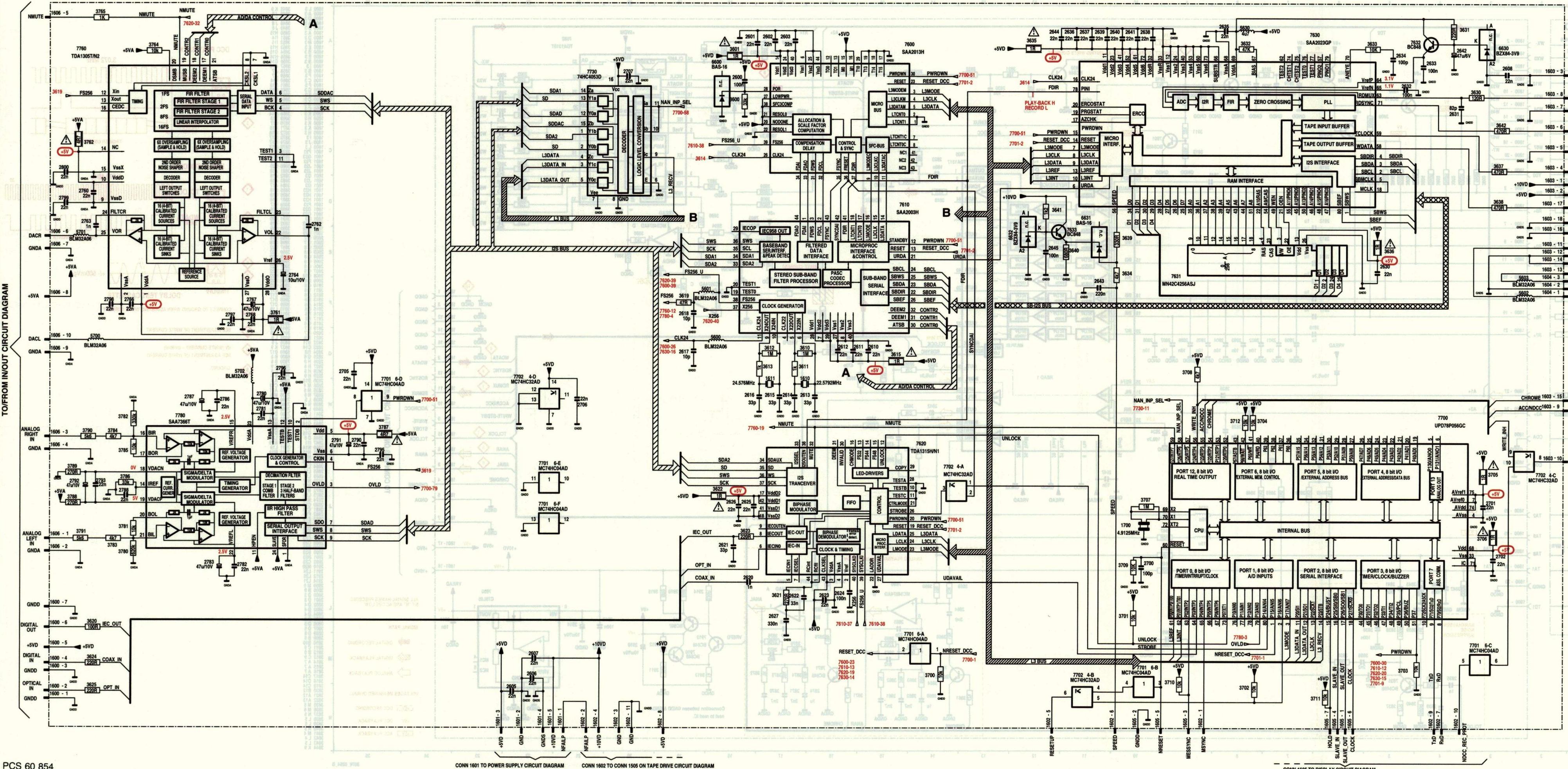
DCC-DECK UNIT DDN-513

## READ/WRITE CIRCUIT DIAGRAM



## DIGITAL CIRCUIT DIAGRAM

8-12

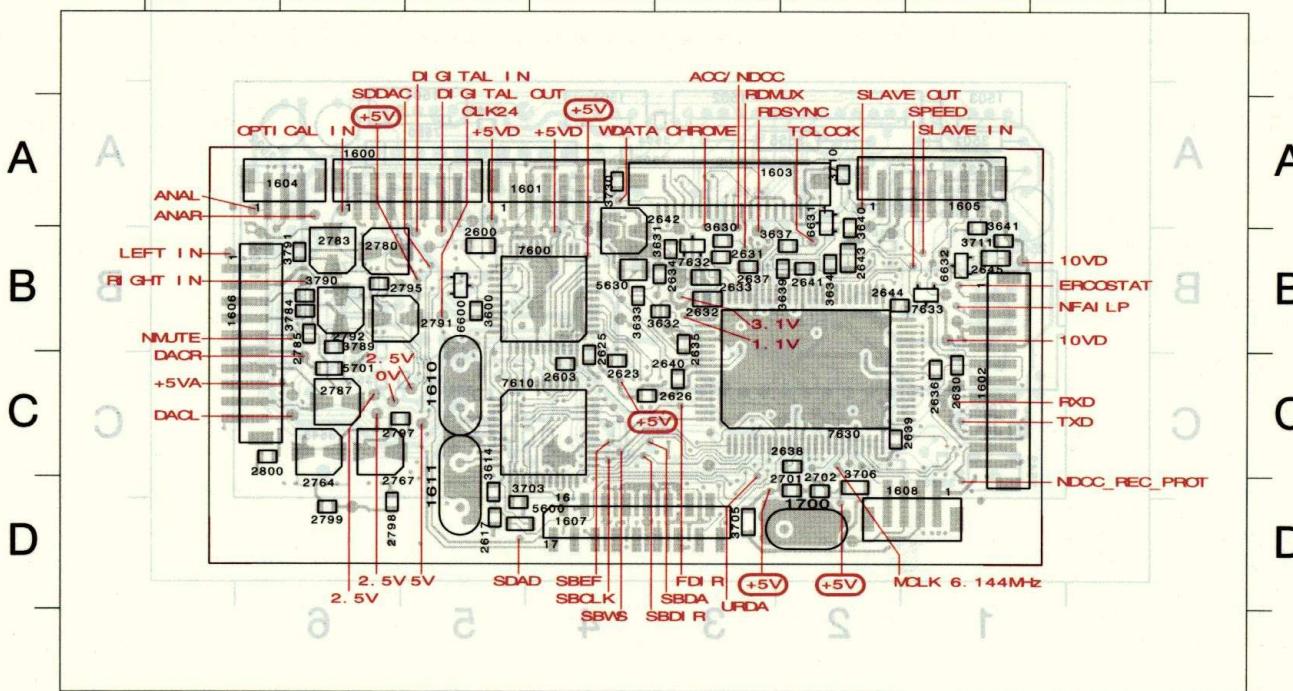


A	1600 N 1
B	1600 N 1
C	1600 N 1
D	1600 N 1
E	1600 N 1
F	1600 N 1
G	1600 N 1
H	1600 N 1
I	1600 N 1
J	1600 N 1
K	1600 N 1
L	1600 N 1
M	1600 N 1
N	1600 N 1
O	1600 N 1
P	1600 N 1
Q	1600 N 1
R	1600 N 1
S	1600 N 1
T	1600 N 1
U	1600 N 1
V	1600 N 1
W	1600 N 1
X	1600 N 1
Y	1600 N 1
Z	1600 N 1
A	3704 K25
B	3705 J30
C	3706 K29
D	3707 H24
E	3708 L22
F	3709 M23
G	3710 N22
H	3711 O25
I	3712 P23
J	3713 Q23
K	3714 R23
L	3715 S23
M	3716 T23
N	3717 U23
O	3718 V23
P	3719 W23
Q	3720 X23
R	3721 Y23
S	3722 Z23
T	3723 A23
U	3724 B23
V	3725 C23
W	3726 D23
X	3727 E23
Y	3728 F23
Z	3729 G23
A	3730 H23
B	3731 I23
C	3732 J23
D	3733 K23
E	3734 L23
F	3735 M23
G	3736 N23
H	3737 O23
I	3738 P23
J	3739 Q23
K	3740 R23
L	3741 S23
M	3742 T23
N	3743 U23
O	3744 V23
P	3745 W23
Q	3746 X23
R	3747 Y23
S	3748 Z23
T	3749 A23
U	3750 B23
V	3751 C23
W	3752 D23
X	3753 E23
Y	3754 F23
Z	3755 G23
A	3756 H23
B	3757 I23
C	3758 J23
D	3759 K23
E	3760 L23
F	3761 M23
G	3762 N23
H	3763 O23
I	3764 P23
J	3765 Q23
K	3766 R23
L	3767 S23
M	3768 T23
N	3769 U23
O	3770 V23
P	3771 W23
Q	3772 X23
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V	3777 C23
W	3778 D23
X	3779 E23
Y	3780 F23
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B	3783 I23
C	3784 J23
D	3785 K23
E	3786 L23
F	3787 M23
G	3788 N23
H	3789 O23
I	3790 P23
J	3791 Q23
K	3792 R23
L	3793 S23
M	3794 T23
N	3795 U23
O	3796 V23
P	3797 W23
Q	3798 X23
R	3799 Y23
S	3799 Z23
T	3800 A23
U	3801 B23
V	3802 C23
W	3803 D23
X	3804 E23
Y	3805 F23
Z	3806 G23
A	3807 H23
B	3808 I23
C	3809 J23
D	3810 K23
E	3811 L23
F	3812 M23
G	3813 N23
H	3814 O23
I	3815 P23
J	3816 Q23
K	3817 R23
L	3818 S23
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Q	3822 X23
R	3823 Y23
S	3824 Z23
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U	3826 B23
V	3827 C23
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Q	3894 X23
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Y	3899 F23
Z	3899 G23
A	3899 H23
B	3899 I23
C	3899 J23
D	3899 K23
E	3899 L23
F	3899 M23
G	

**DIGITAL PANEL**

1600 A 3	1607 D 4	2617 D 3	2633 B 5	2640 C 5	2702 D 6	2791 B 2	3600 B 3	3637 B 6	3710 A 6	5600 D 3	7610 C 4
1601 A 4	1608 D 7	2623 C 4	2634 B 5	2641 B 6	2764 C 2	2792 B 2	3614 D 3	3639 B 6	3711 B 7	5630 B 4	7630 C 6
1602 C 7	1610 C 3	2625 C 4	2635 B 5	2642 B 4	2767 C 2	2795 C 2	3639 B 5	3640 B 6	3730 A 4	5701 C 2	7632 B 5
1603 A 5	1611 D 3	2626 C 4	2636 C 7	2643 B 6	2780 B 2	2797 C 2	3631 B 5	3641 B 7	3784 B 2	6600 B 3	7633 B 7
1604 A 2	1700 D 6	2630 C 7	2637 B 5	2644 B 6	2783 B 2	2798 D 2	3632 B 5	3703 D 3	3789 B 2	6631 A 6	
1605 A 7	2600 B 3	2631 B 5	2638 C 6	2645 B 7	2785 B 2	2799 D 2	3633 B 4	3705 D 5	3790 B 2	6632 B 7	
1606 B 1	2603 C 4	2632 B 5	2639 C 6	2701 D 6	2787 C 2	2800 C 1	3634 B 6	3706 D 6	3791 B 2	7600 B 4	

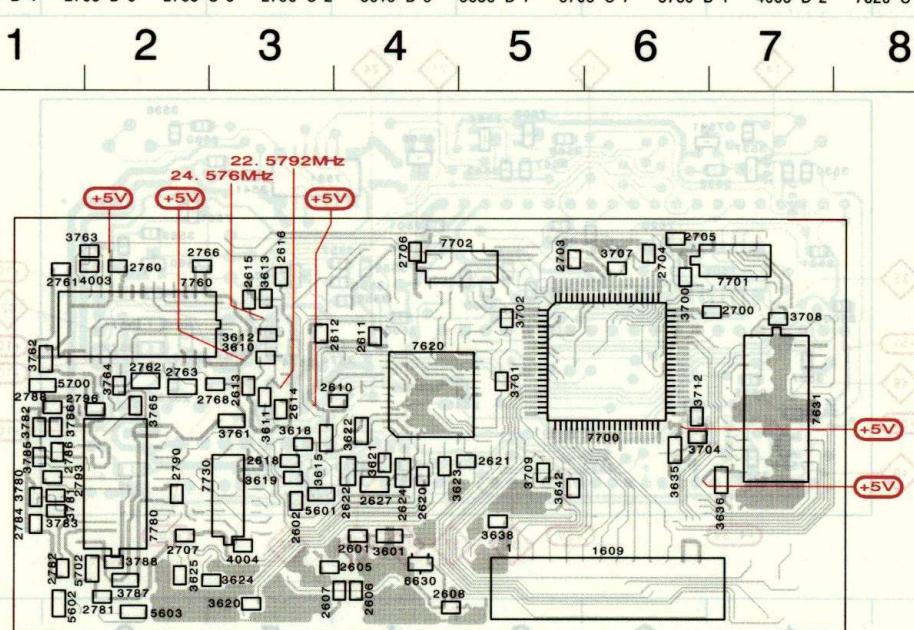
1            2            3            4            5            6            7            8



1            2            3            4            5            6            7            8

1609 B 6	2611 C 4	2621 B 5	2706 D 4	2781 A 2	3601 B 4	3620 A 3	3638 B 5	3709 B 5	3781 B 1	4004 B 3	7631 C 7
2601 B 4	2612 C 3	2622 B 4	2707 B 2	2782 A 1	3610 C 3	3621 B 4	3642 B 5	3712 C 6	3782 C 1	5601 B 3	7700 C 6
2602 B 3	2613 C 3	2624 B 4	2760 D 2	2784 B 1	3611 C 3	3622 B 4	3700 D 6	3761 C 3	3783 B 1	5602 A 1	7701 D 7
2605 A 3	2614 C 3	2627 B 4	2761 D 1	2786 B 1	3612 C 3	3623 B 4	3701 C 5	3762 C 1	3785 B 1	5603 A 2	7702 D 5
2606 A 4	2615 D 3	2700 C 7	2762 C 2	2788 C 1	3613 D 3	3624 A 3	3702 C 5	3763 D 2	3786 C 1	5700 C 1	7730 B 3
2607 A 4	2616 D 3	2703 D 5	2763 C 2	2790 B 2	3615 B 3	3625 A 2	3704 B 6	3764 C 2	3787 A 2	5702 A 2	7760 C 2
2608 A 4	2618 B 3	2704 D 6	2766 D 2	2793 B 1	3618 B 3	3635 B 6	3707 D 6	3765 C 2	3788 A 2	6630 A 4	7780 B 2
2610 C 4	2620 B 4	2705 D 6	2768 C 3	2796 C 2	3619 B 3	3636 B 7	3708 C 7	3780 B 1	4003 D 2	7620 C 4	

1            2            3            4            5            6            7            8

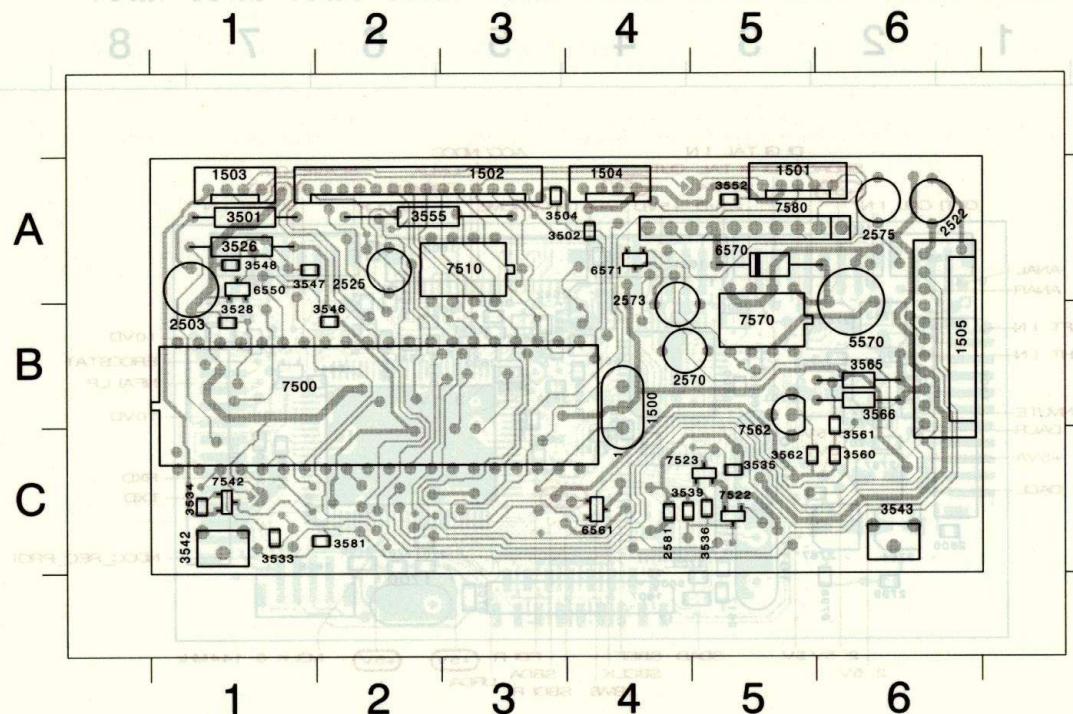


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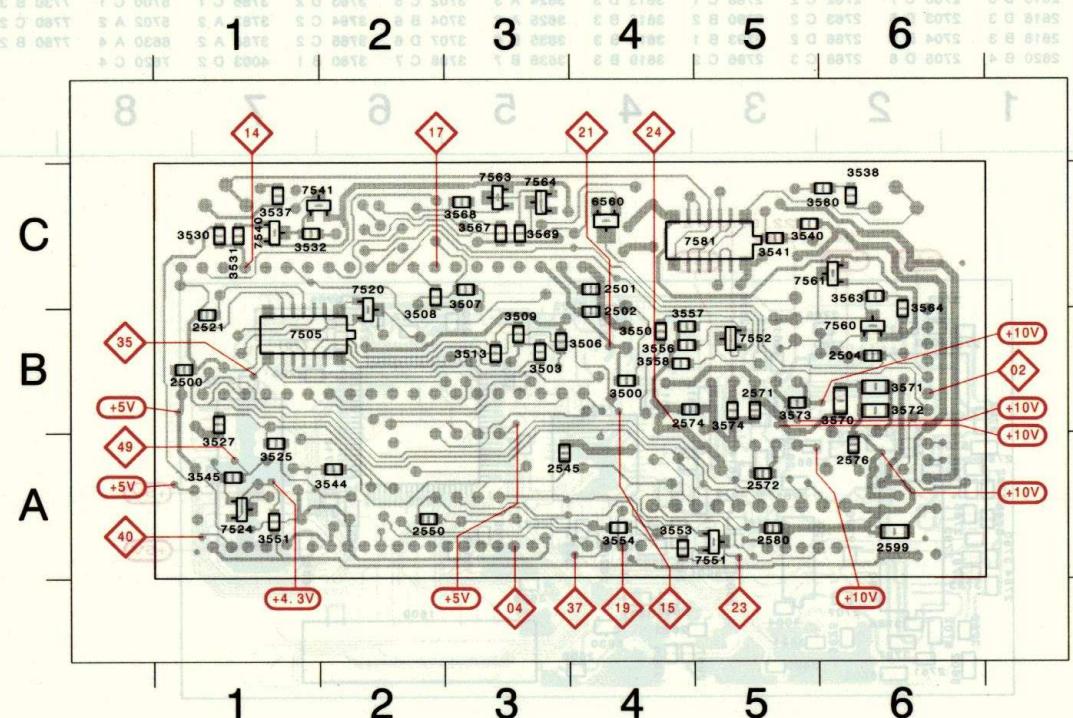
## TAPE DRIVE CONTROL PANEL

DIGITAL PANEL

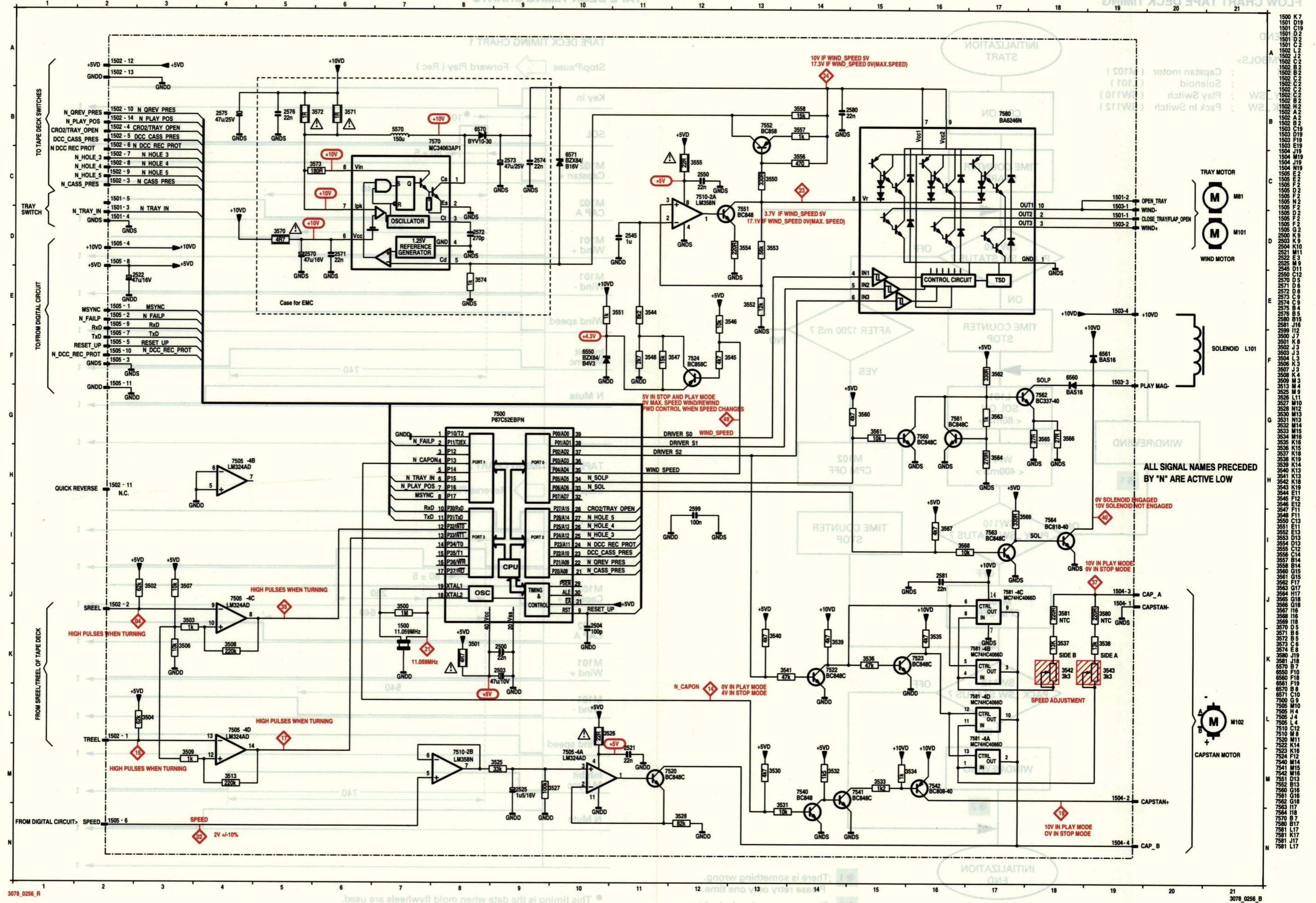
1500 B 4	1505 B 6	2573 B 4	3504 A 3	3535 C 5	3546 B 2	3560 C 6	3581 C 2	6571 A 4	7542 C 1
1501 A 5	2503 A 1	2575 A 6	3526 A 1	3536 C 5	3547 A 3	3561 B 6	5570 B 2	7562 B 5	
1502 A 2	2522 A 6	2581 C 4	3528 B 1	3539 C 4	3548 A 1	3562 C 5	6550 A 1	7510 A 3	7570 B 5
1503 A 1	2525 A 2	3501 A 1	3533 C 1	3542 C 1	3552 A 5	3565 B 6	6561 C 4	7522 C 5	7580 A 5
1504 A 4	2570 B 4	3502 A 4	3534 C 1	3543 C 6	3555 A 2	3566 B 6	6570 A 5	7523 C 5	



2500 B 1	2571 B 5	3503 B 3	3527 B 1	3541 C 5	3556 B 4	3569 C 3	6560 C 4	7552 B 5
2501 C 4	2572 A 5	3506 B 3	3530 C 1	3544 A 2	3557 B 4	3570 B 6	7505 B 1	7560 B 6
2502 B 4	2574 B 4	3507 C 3	3531 C 1	3545 A 1	3558 B 4	3571 B 6	7520 B 2	7561 C 6
2504 B 6	2576 A 6	3508 C 2	3532 C 1	3550 B 4	3563 C 6	3572 B 6	7524 A 1	7563 C 3
2521 B 1	2580 A 5	3509 B 3	3537 C 1	3551 A 1	3564 B 6	3573 B 5	7540 C 1	7564 C 3
2545 A 3	2599 A 6	3513 B 3	3538 C 6	3553 A 4	3567 C 3	3574 C 1	7541 C 1	7581 C 5
2550 A 2	3500 B 4	3525 A 1	3540 C 5	3554 A 4	3568 C 3	3580 C 6	7551 A 5	



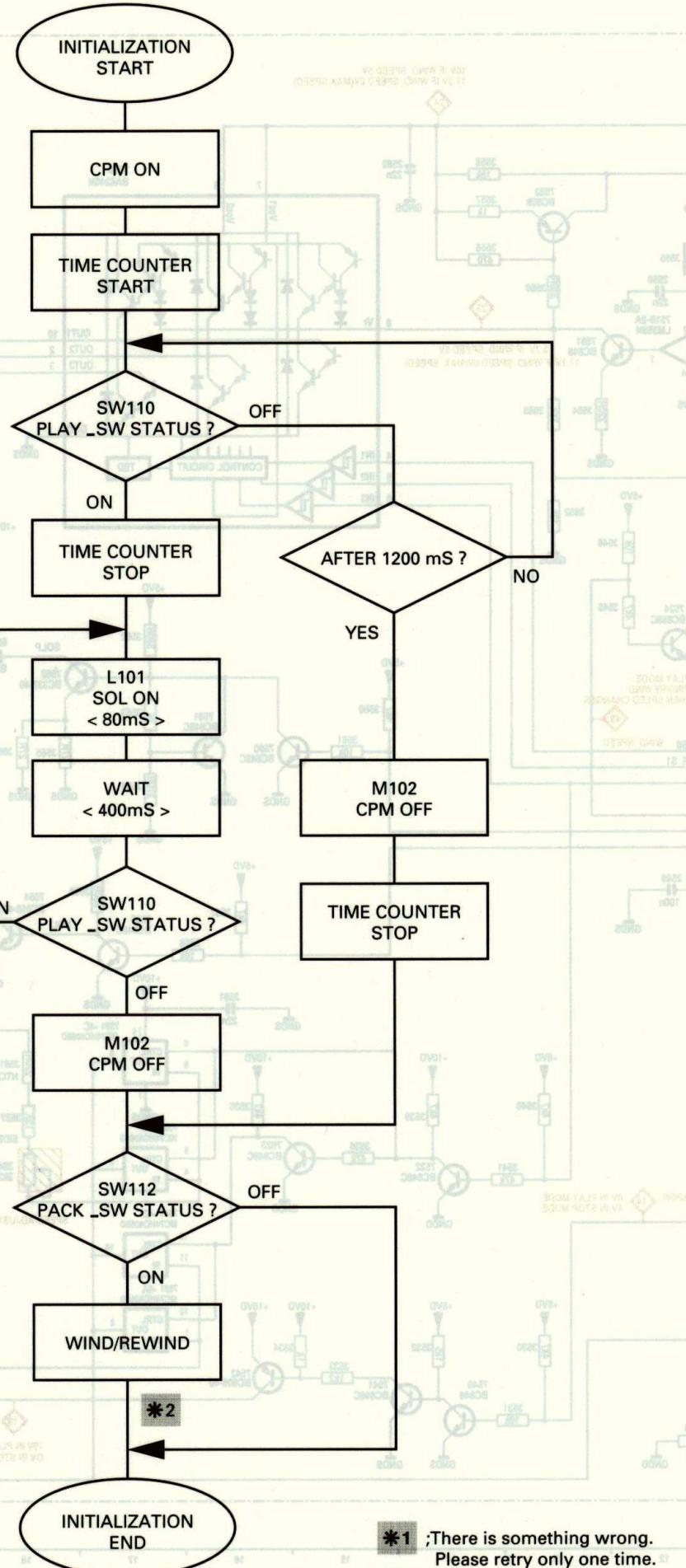
## TAPE DRIVE CONTROL CIRCUIT DIAGRAM



## FLOW CHART TAPE DECK TIMING

## LEGEND

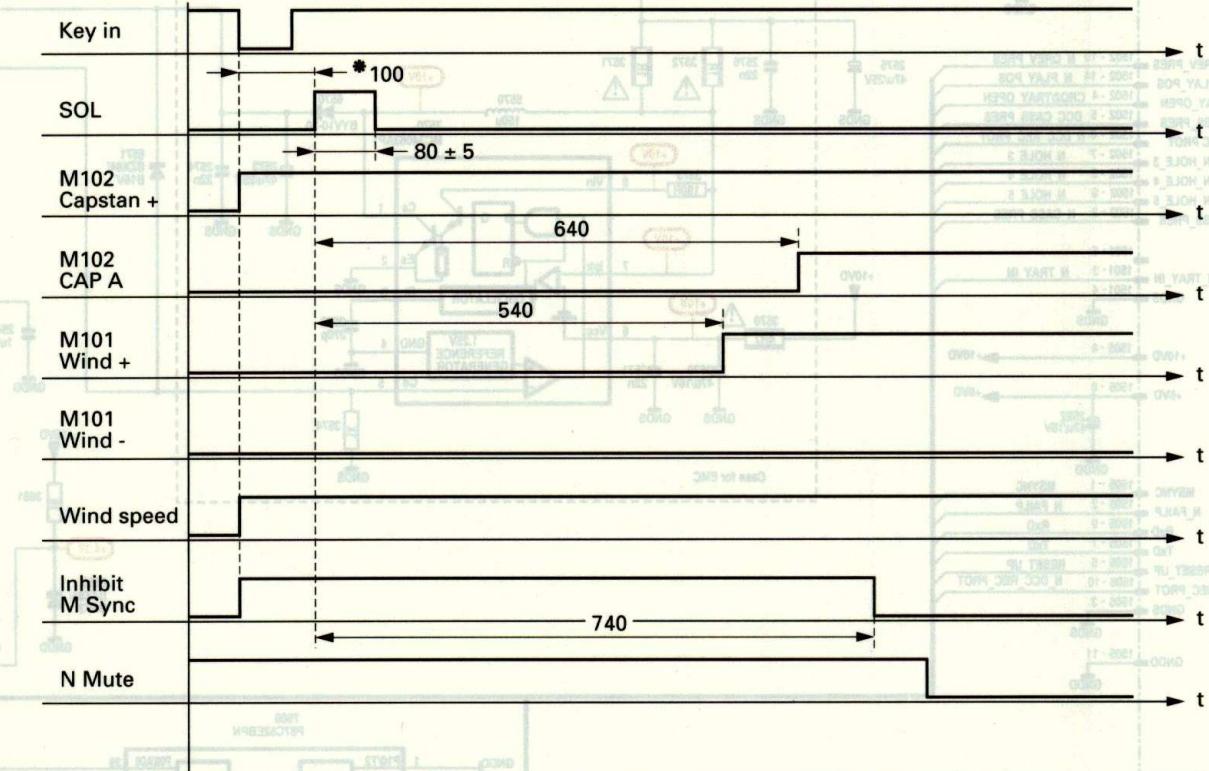
< SYMBOLS >  
 CPM ; Capstan motor ( M102 )  
 SOL ; Solenoid ( L101 )  
 PLAY\_SW ; Play Switch ( SW110 )  
 PACK\_SW ; Pack In Switch ( SW112 )



## TAPE DECK TIMING CHARTS

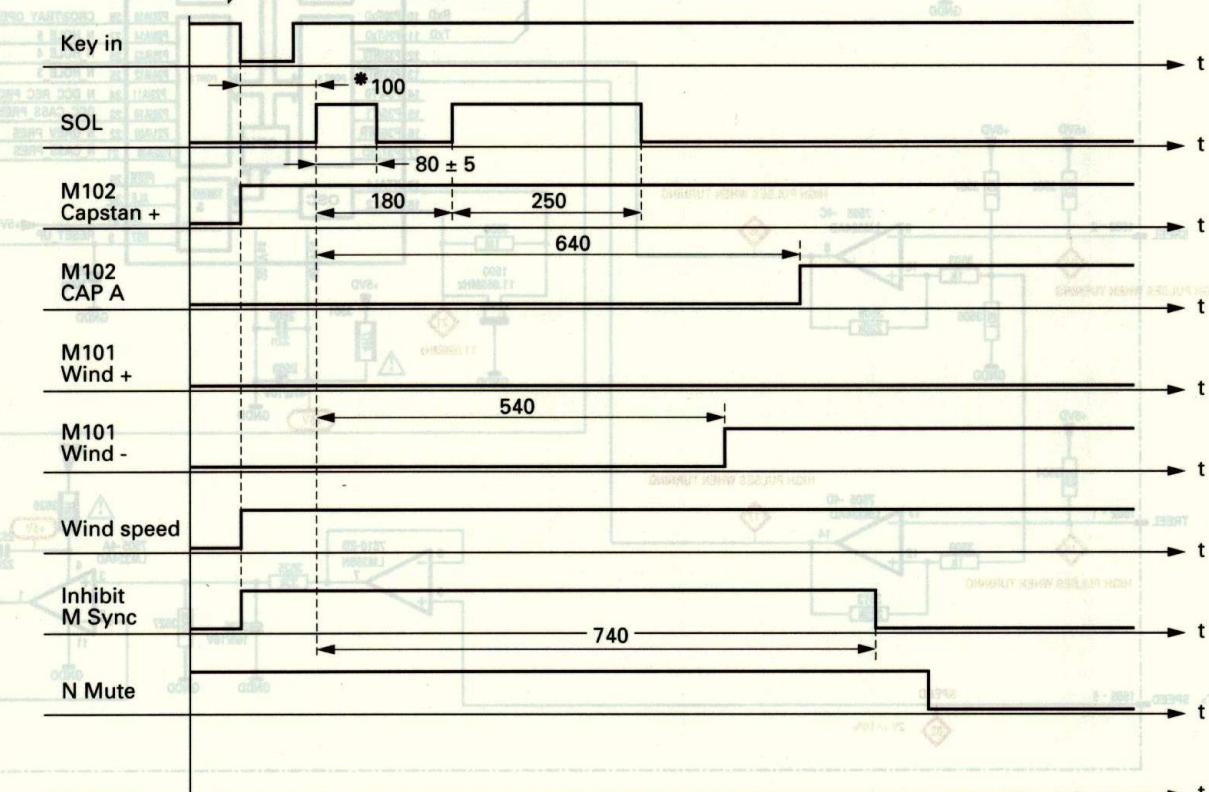
## TAPE DECK TIMING CHART 1

Stop/Pause → Forward Play ( Rec )



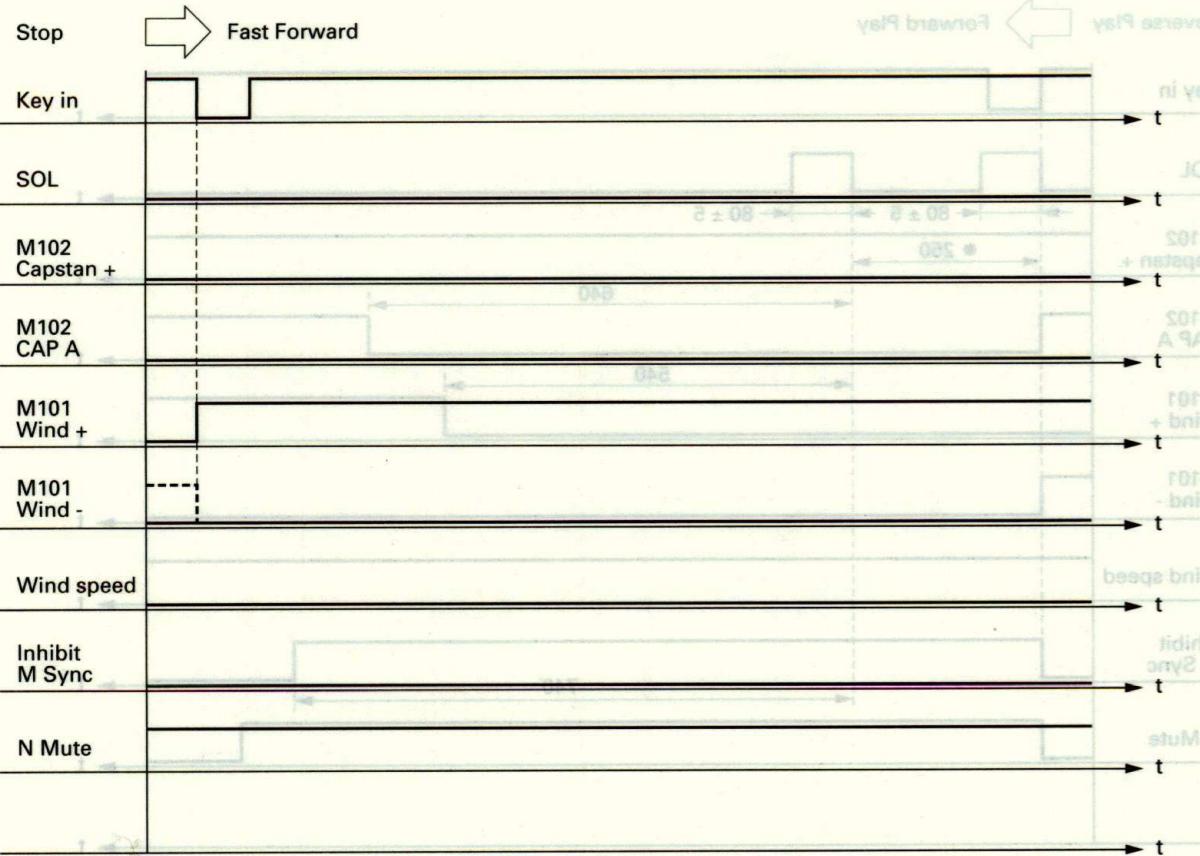
## TAPE DECK TIMING CHART 2

Stop/Pause → Reverse Play ( Rec )

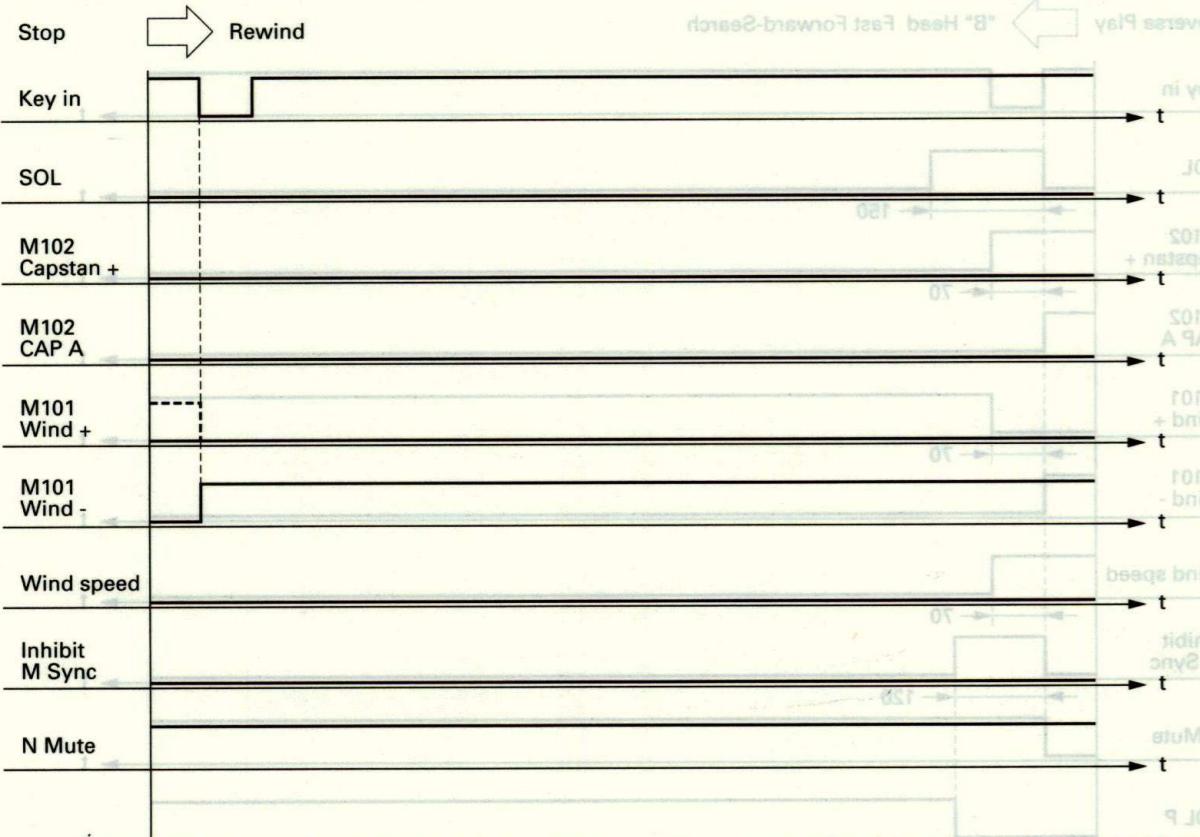


\* This timing is the data when mold flywheels are used.  
Please change to more than 150 mS at Zn-diecasting or sintered flywheels.

## TAPE DECK TIMING CHART 3

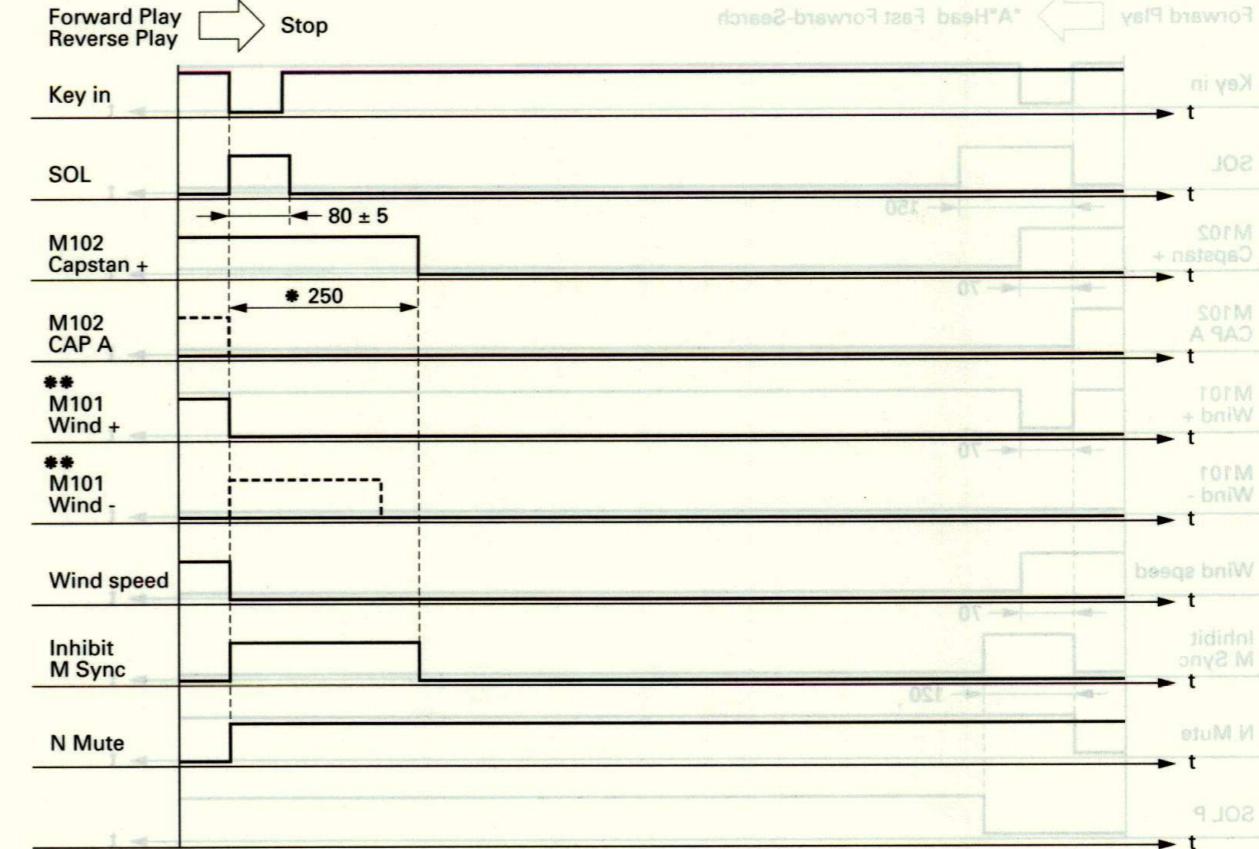


## TAPE DECK TIMING CHART 4

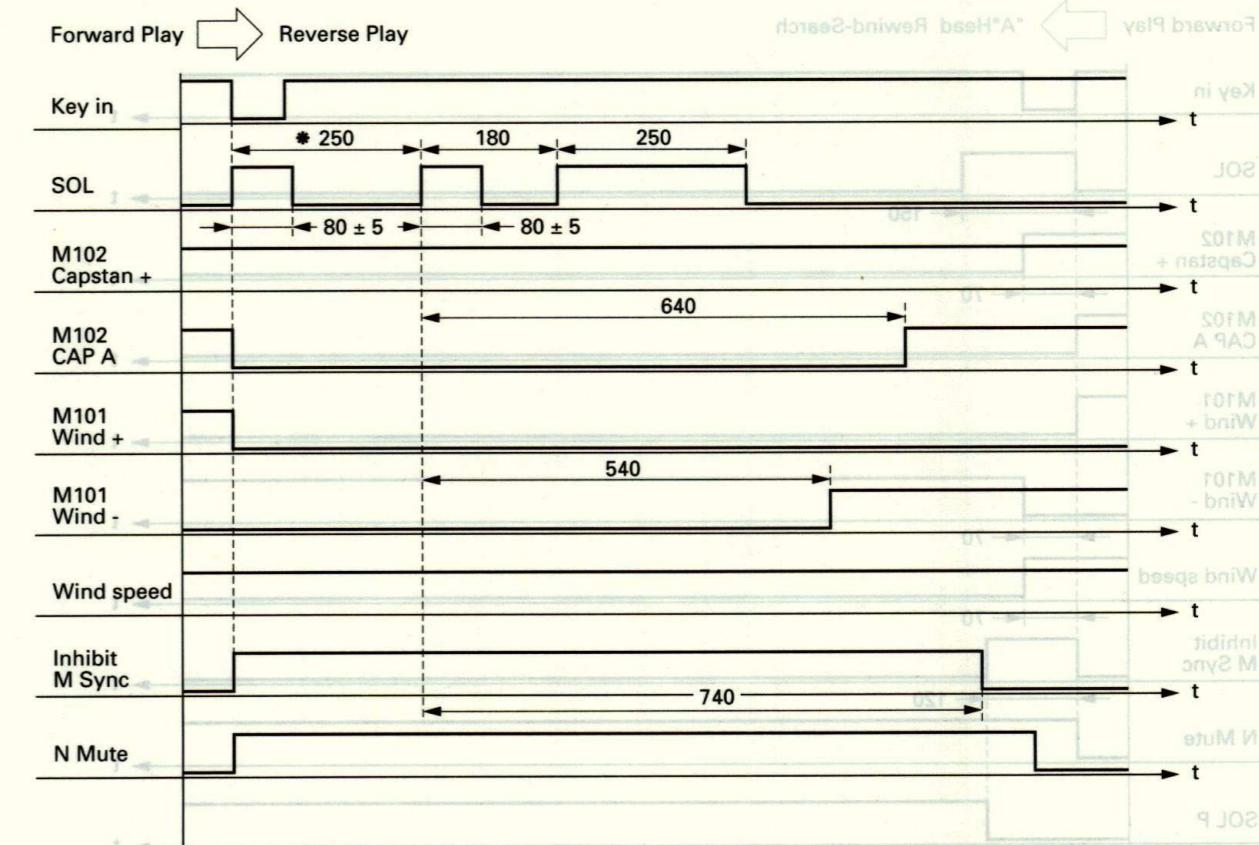


## TAPE DECK TIMING CHART 5

## TAPE DECK TIMING CHART 5



## TAPE DECK TIMING CHART 6

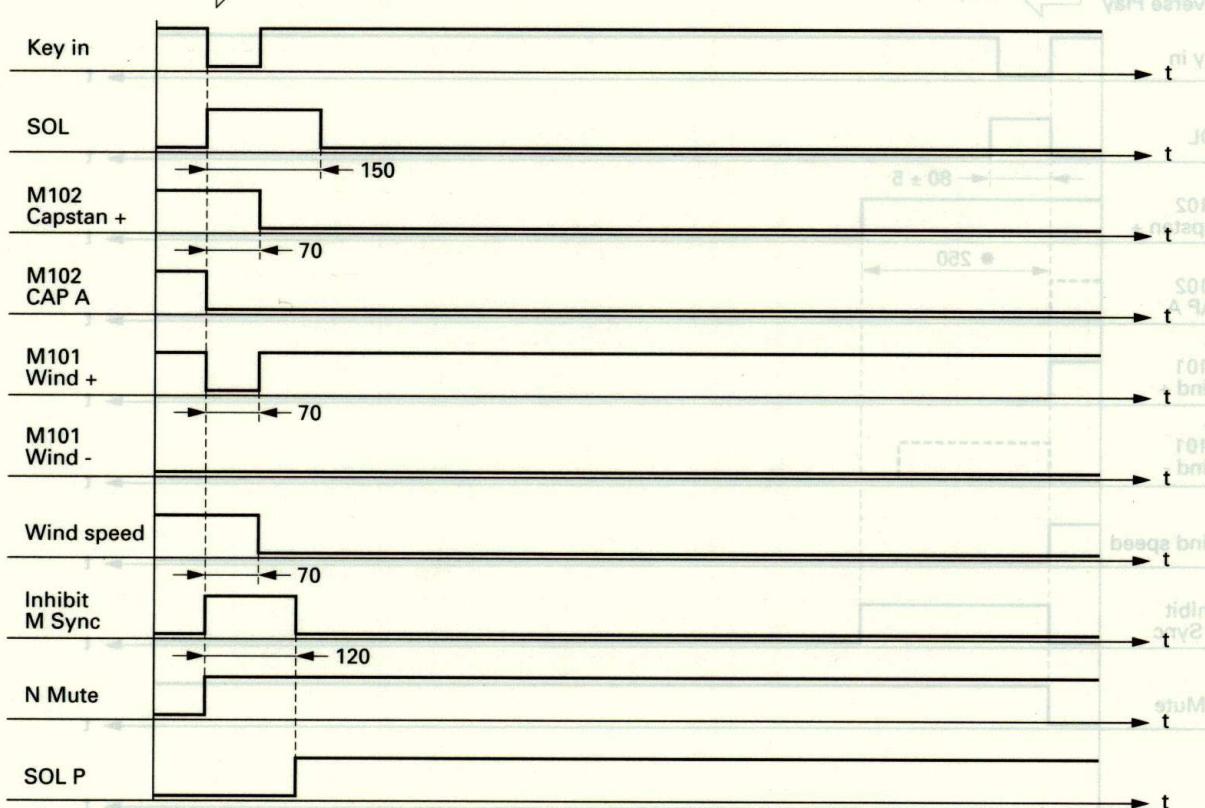


\* Please change 250ms to 400ms at double speed PLAY mode.

\*\* Interchange M101 Wind + and M101 Wind - timing at REVERSE PLAY mode.

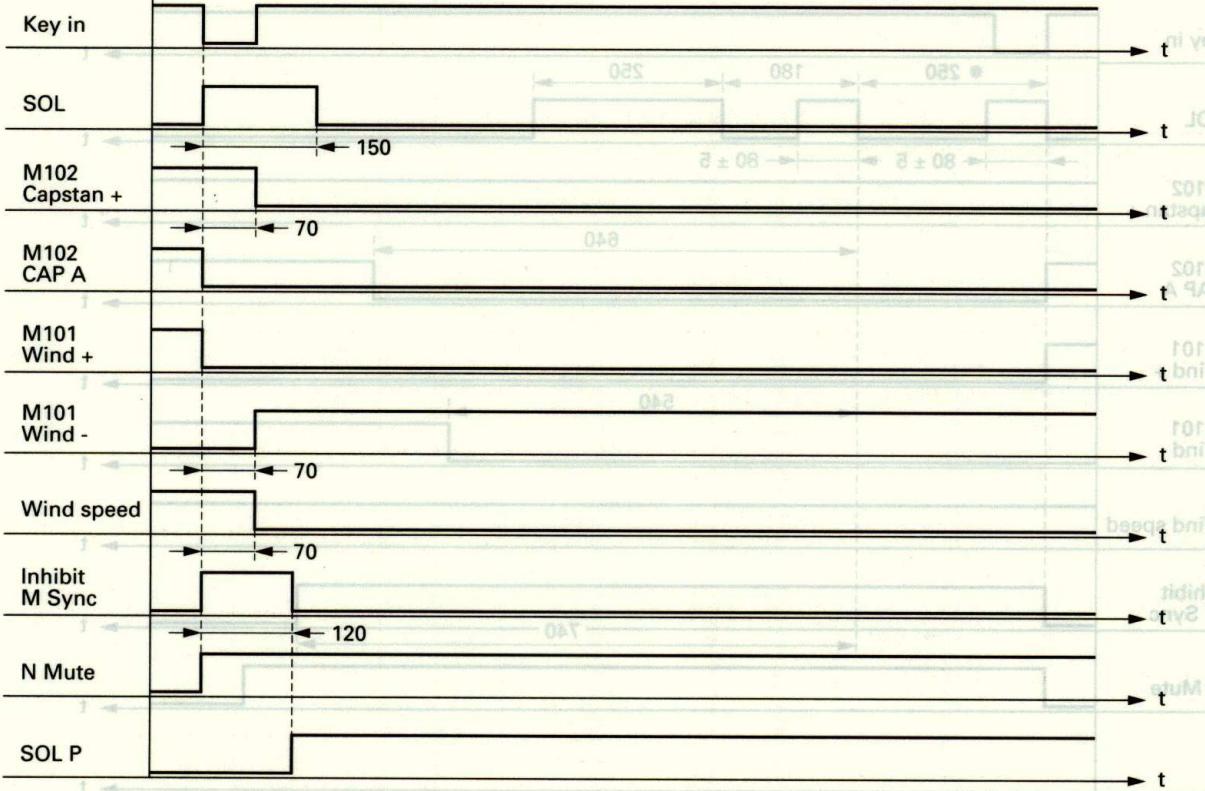
## TAPE DECK TIMING CHART 7

Forward Play → "A" Head Fast Forward-Search



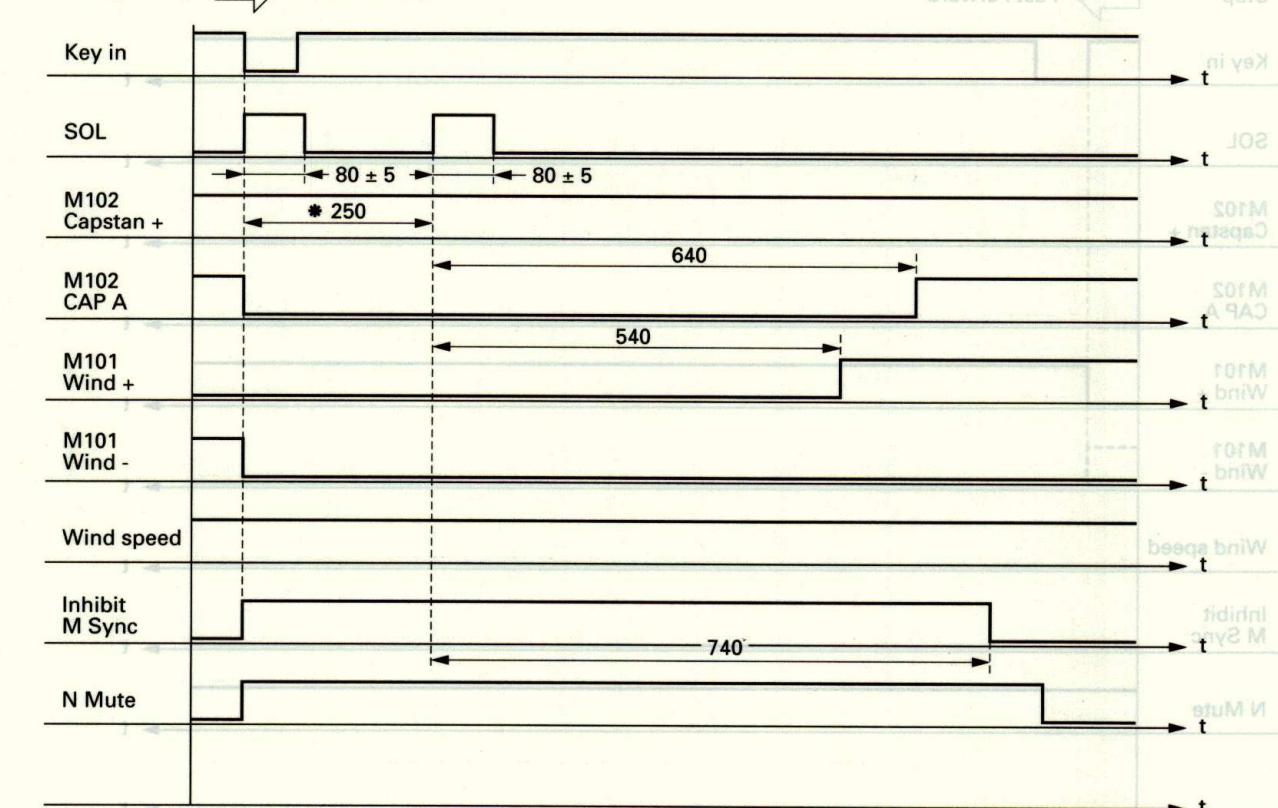
## TAPE DECK TIMING CHART 8

Forward Play → "A" Head Rewind-Search



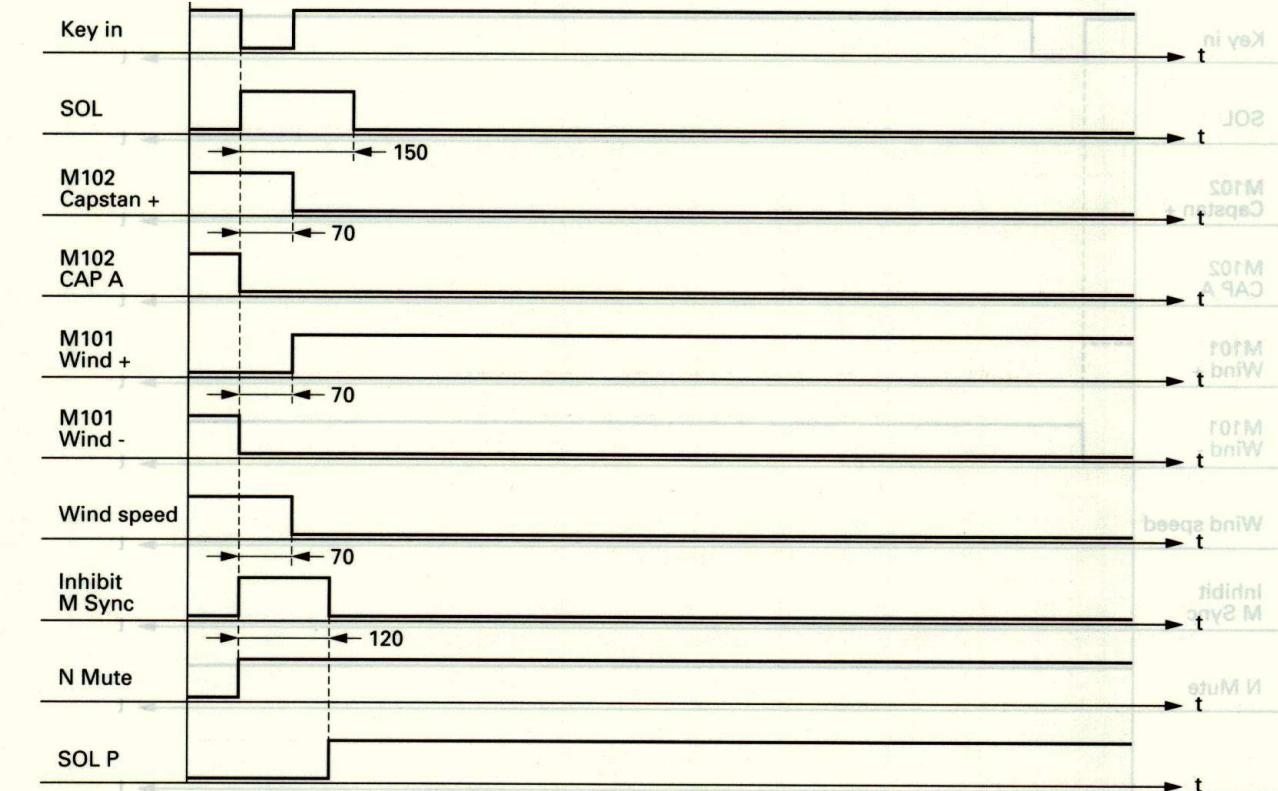
## TAPE DECK TIMING CHART 9

Reverse Play → Forward Play

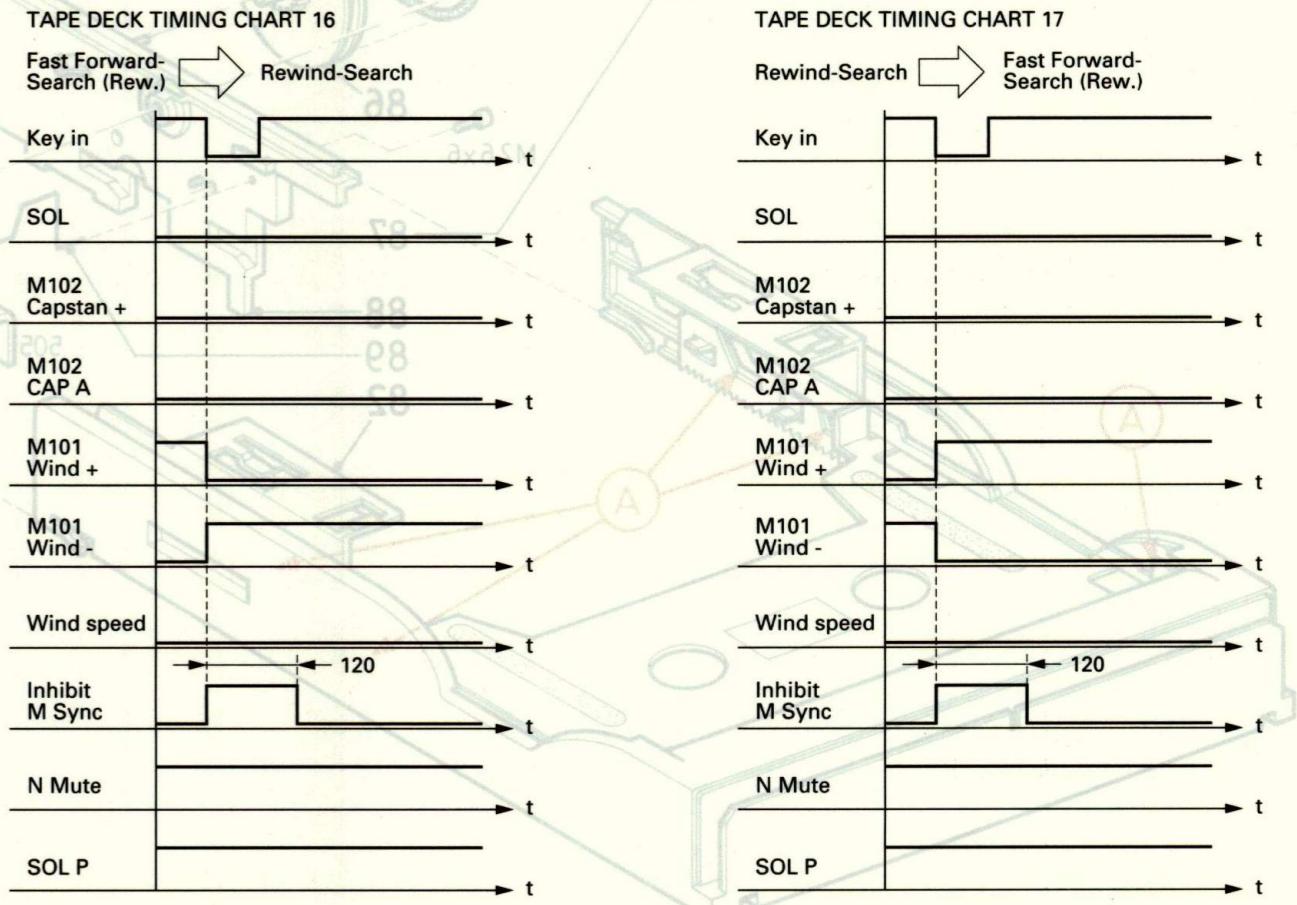
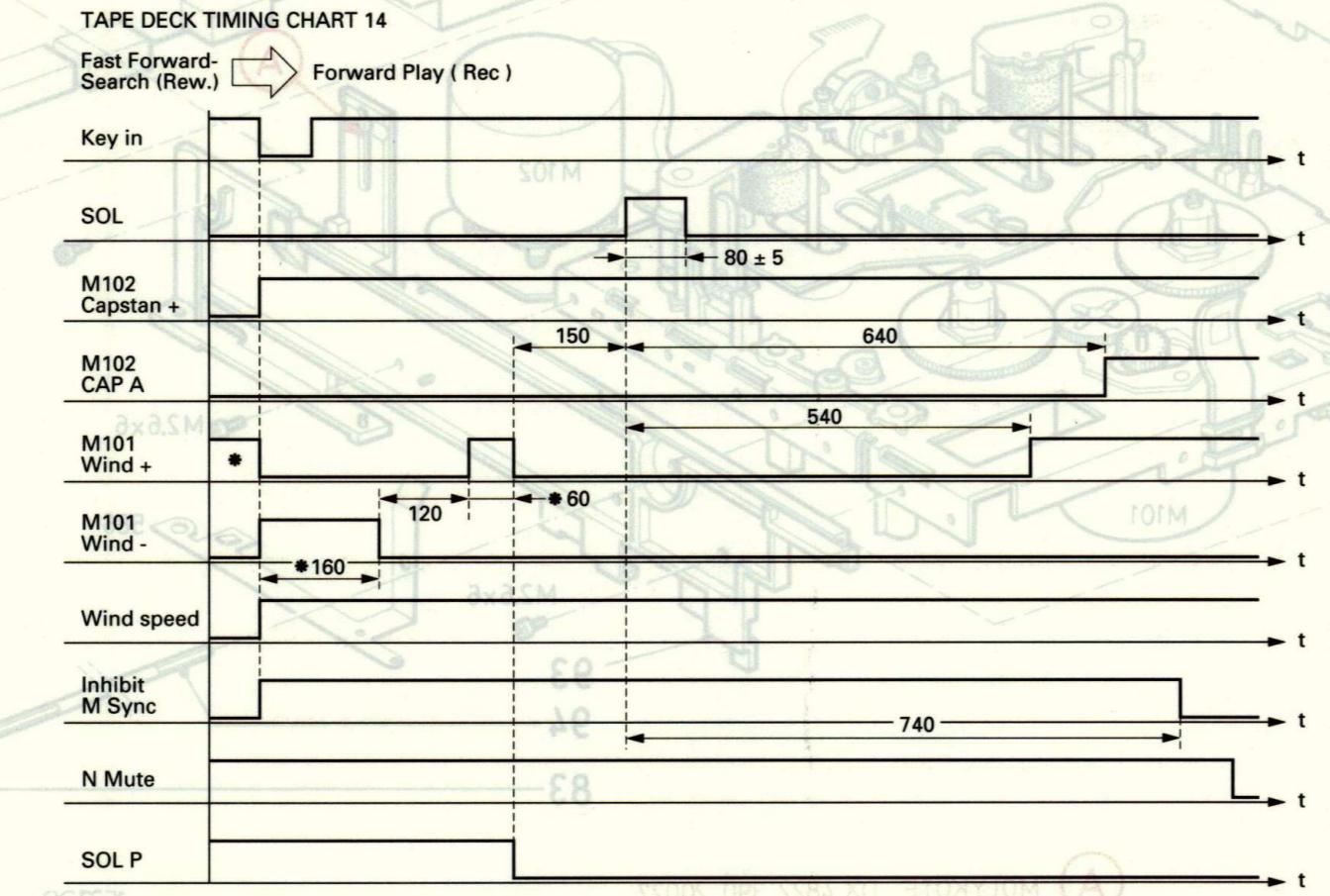
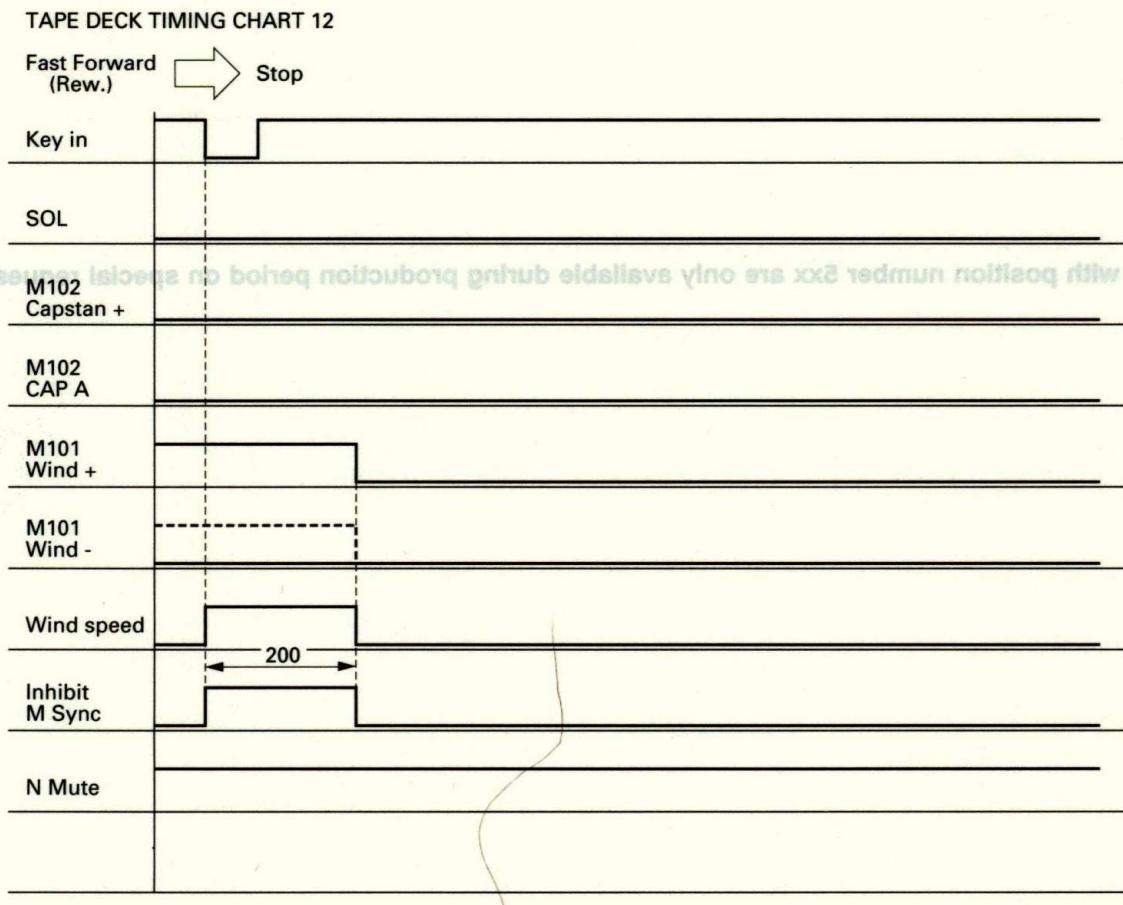
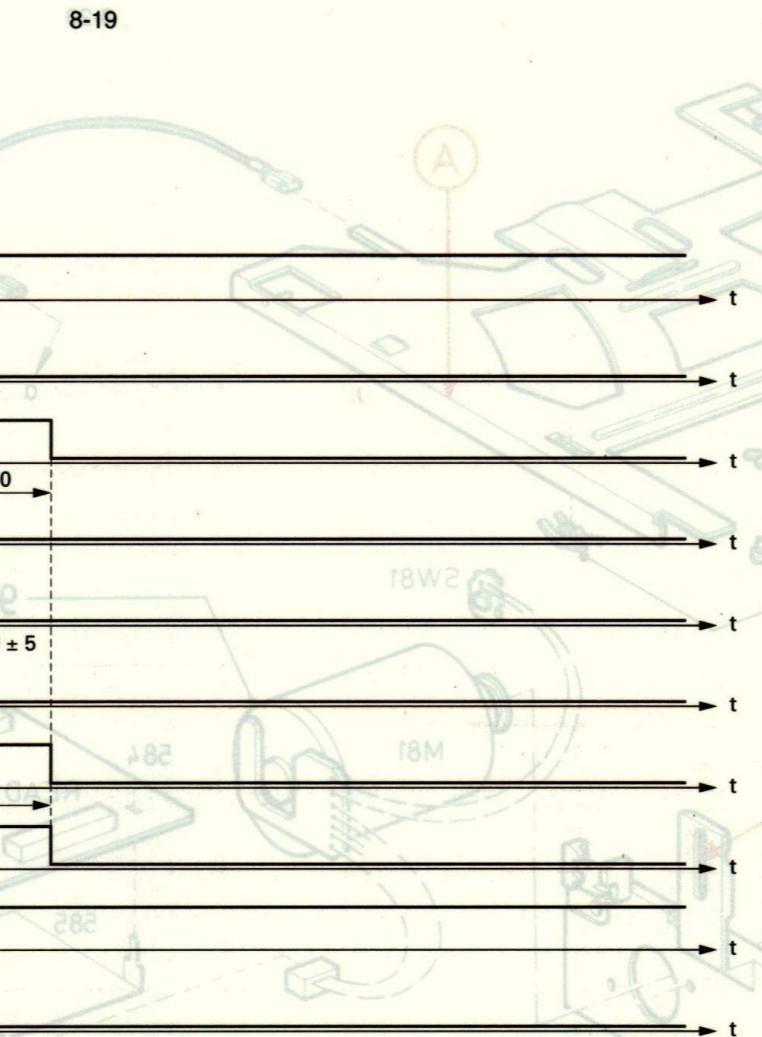
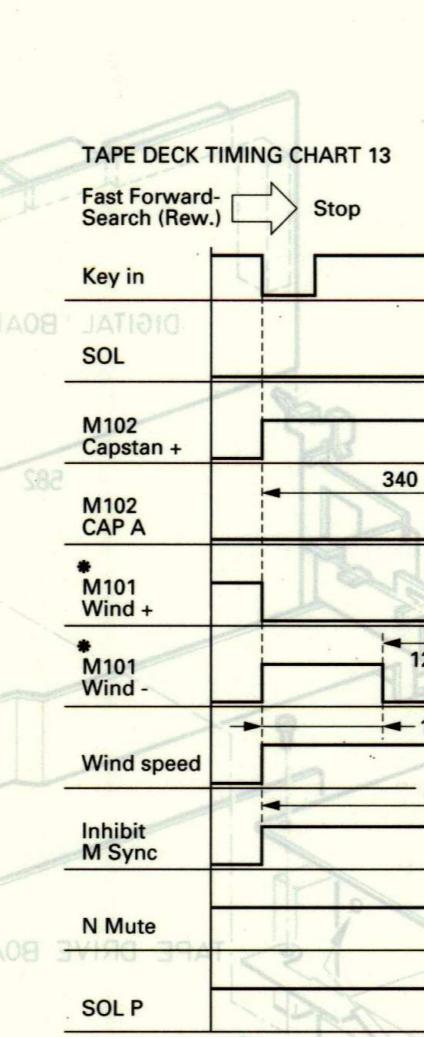
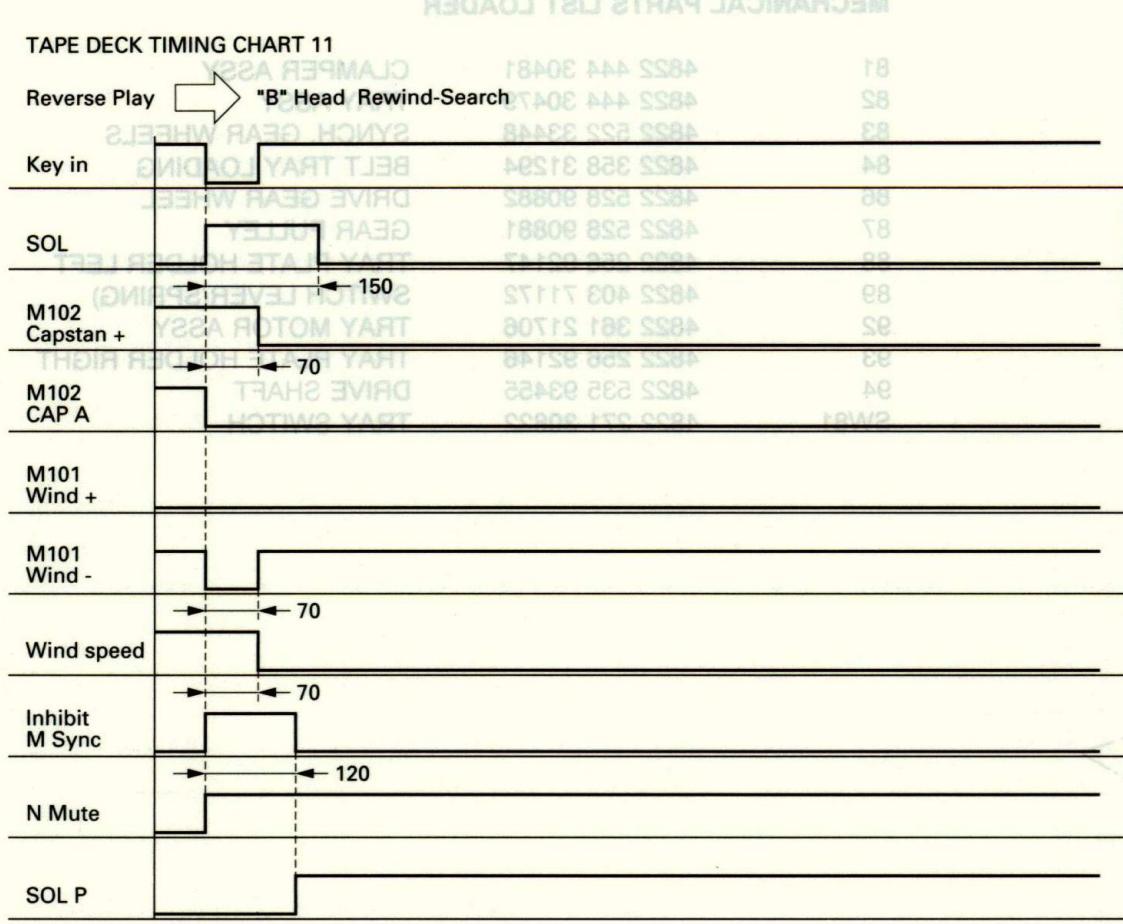


## TAPE DECK TIMING CHART 10

Reverse Play → "B" Head Fast Forward-Search



8-19



\* Interchange M101 Wind + and M101 Wind - timing at Rewind-Search mode.

SBP0185

SBP0186

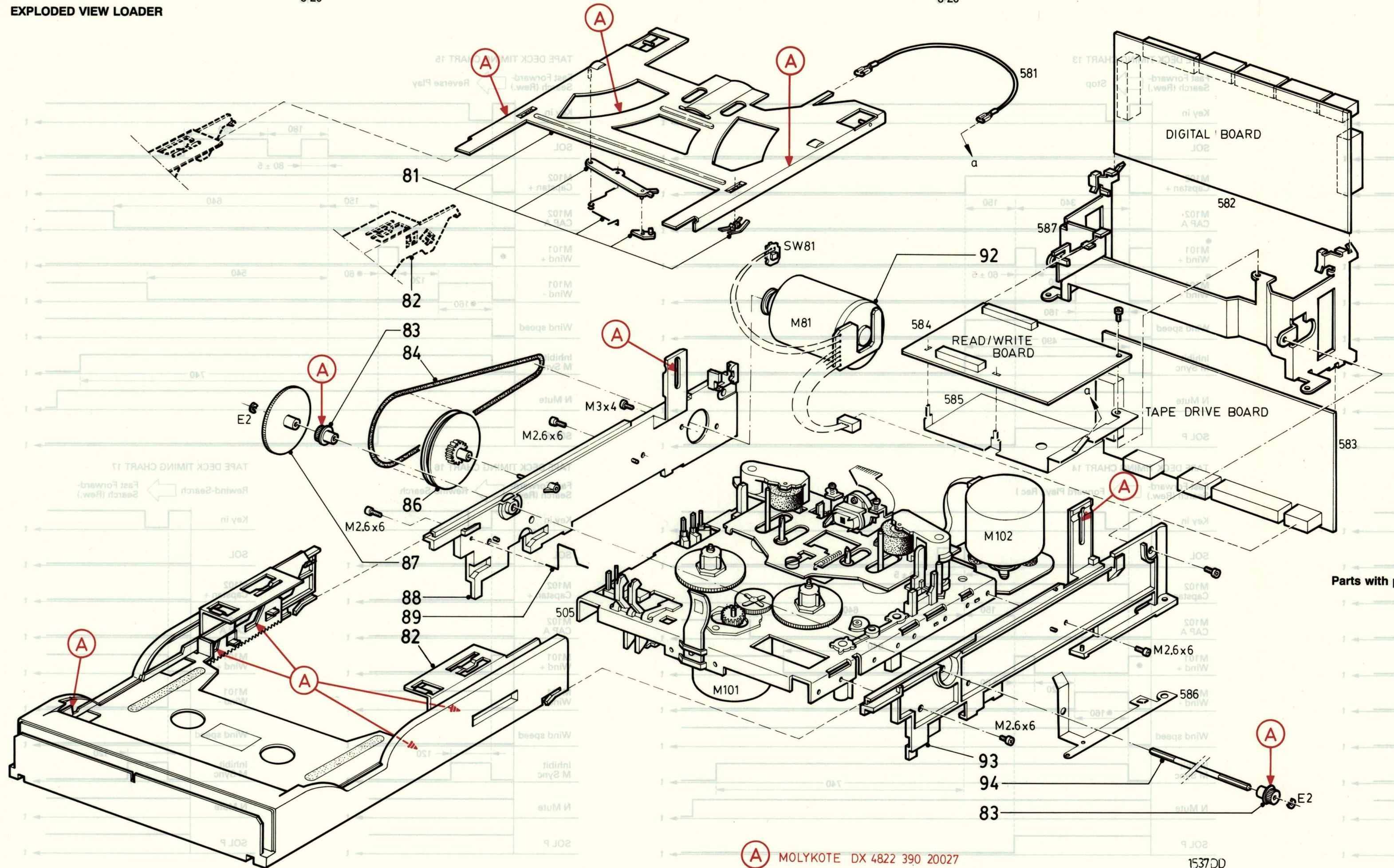
\* Interchange M101 Wind + and M101 Wind - timing at Rewind-Search mode.

SBP0187

PCS 60 861

8-20

## EXPLODED VIEW LOADER



8-20

8-20

## MECHANICAL PARTS LIST LOADER

81	4822 444 30481	CLAMPER ASSY
82	4822 444 30479	TRAY ASSY
83	4822 522 33448	SYNCH. GEAR WHEELS
84	4822 358 31294	BELT TRAY LOADING
86	4822 528 90882	DRIVE GEAR WHEEL
87	4822 528 90881	GEAR PULLEY
88	4822 256 92147	TRAY PLATE HOLDER LEFT
89	4822 403 71172	SWITCH LEVER(SPRING)
92	4822 361 21706	TRAY MOTOR ASSY
93	4822 256 92146	TRAY PLATE HOLDER RIGHT
94	4822 535 93455	DRIVE SHAFT
SW81	4822 271 30822	TRAY SWITCH

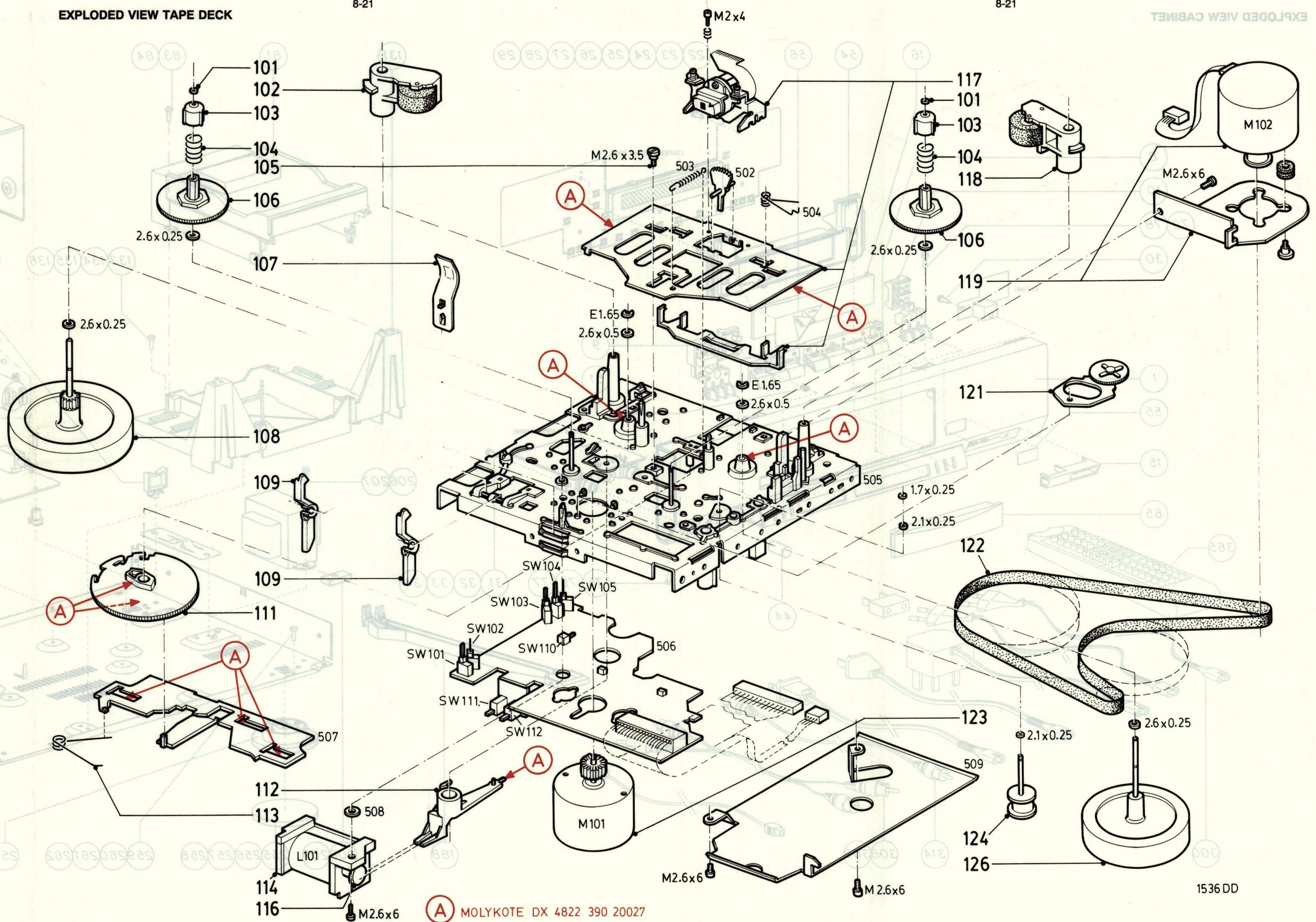
8-21

## MECHANICAL PARTS LIST DECK

101	4822 532 52211	WASHER 1.7x0.25 PS
102	4822 403 40525	PINCH ROLLER ASSY RIGHT
103	4822 522 33501	REEL HUBS CAP
104	4822 492 52412	REEL HUBS SPRING
105	4822 502 21547	SCREW HEADSUPPORT M2.6x3.5
106	4822 522 20458	REEL HUB TOOTH WHEEL
107	4822 492 71477	CASSETTE LEAF SPRING
108	4822 528 60419	CAPSTAN WHEEL LEFT
109	4822 403 71102	PACK LEVER CASSETTE SWITCH
111	4822 522 33449	COMMAND WHEEL CAM GEAR
112	4822 403 71103	COMMAND PLAY ARM
113	4822 492 42699	TORSION SPRING COMMAND PLATE
114	4822 281 11065	SOLENOID COIL ASSY
116	4822 526 10607	"PLANGER" SOLENOID CORE
117	4822 520 10769	HEAD SUPPORT ASSY
118	4822 403 40524	PINCH ROLLER ASSY LEFT
119	4822 361 21699	CAPSTAN MOTOR ASSY
121	4822 358 20456	IDLER WHEEL WINDMOTOR
122	4822 358 31293	MAIN BELT
123	4822 361 21701	REEL MOTOR ASSY
124	4822 528 70841	IDLER WHEEL BELT
126	4822 528 60421	CAPSTAN WHEEL RIGHT
SW101	4822 130 91328	DCC SENSORSWITCH
SW102	4822 130 91328	DCC SENSORSWITCH
SW103	4822 130 91328	DCC SENSORSWITCH
SW104	4822 130 91328	DCC SENSORSWITCH
SW105	4822 130 91328	DCC SENSORSWITCH
SW110	4822 271 30821	PLAY SWITCH
SW111	4822 271 30823	SWITCH CRO2
SW112	4822 271 30823	SWITCH TRAY IN

Parts with position number 5xx are only available during production period on special request.

## EXPLODED VIEW TAPE DECK

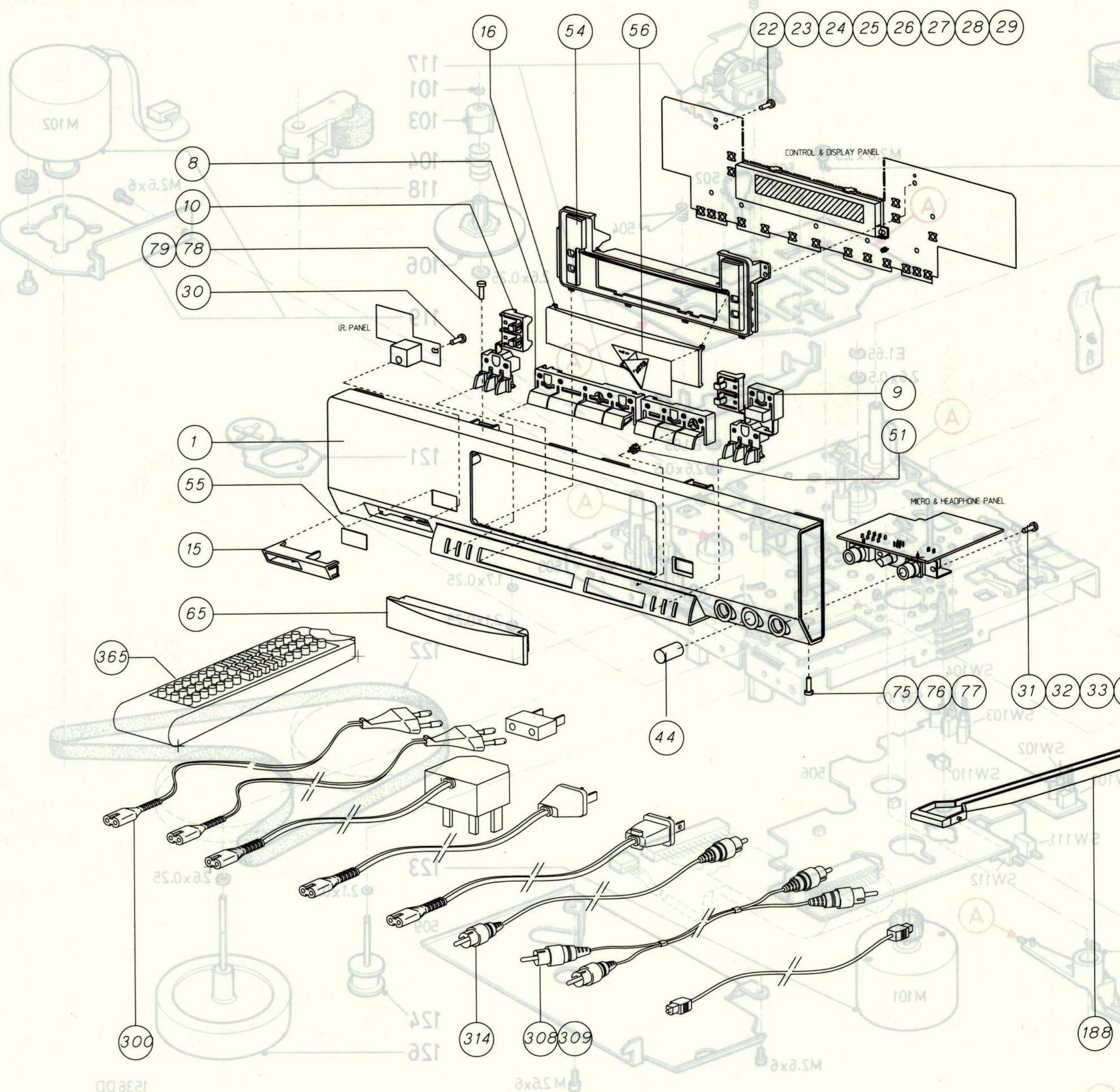


8-21

## EXPLODED VIEW CABINET

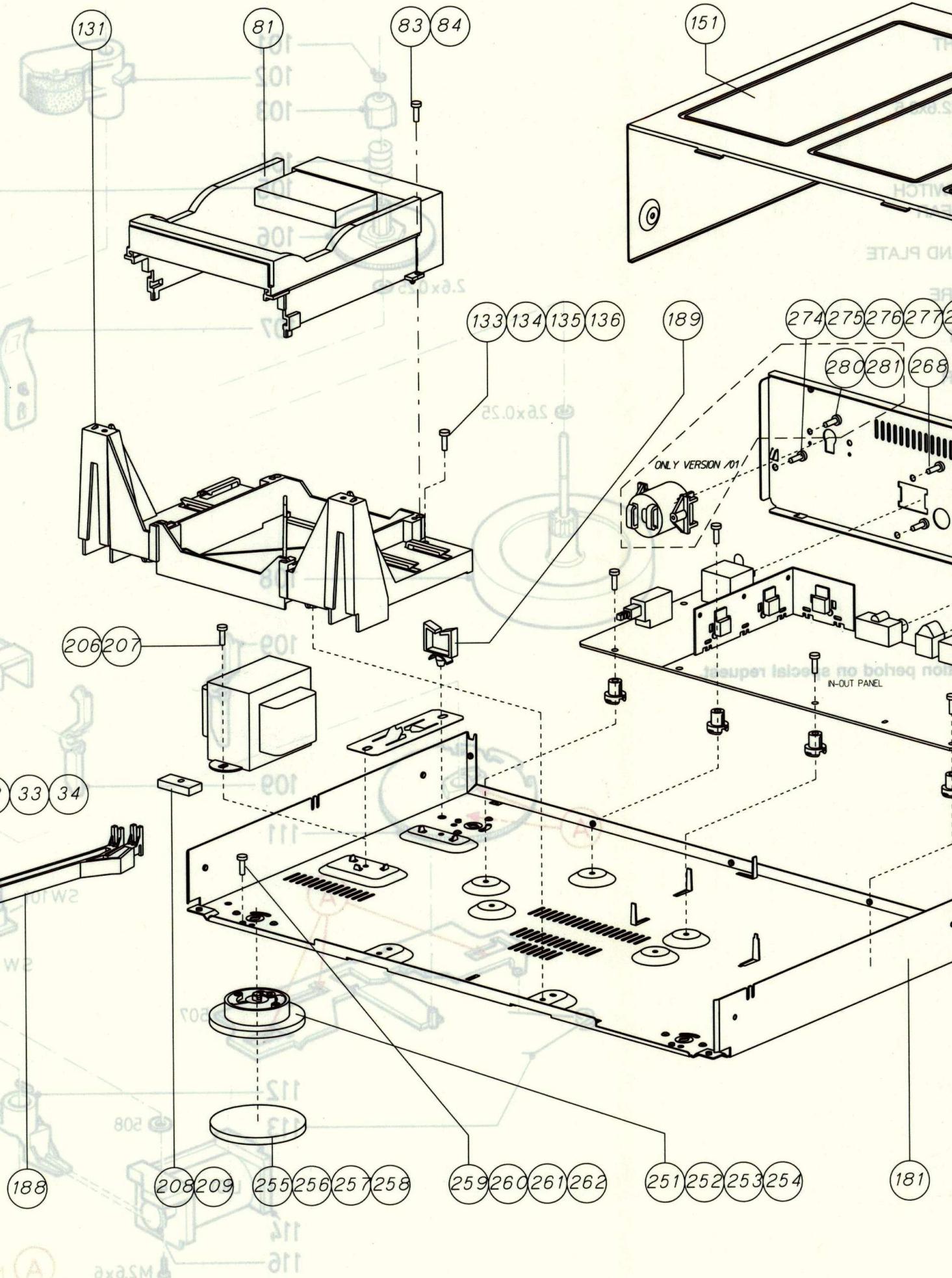
9-1

## EXPLODED VIEW CABINET



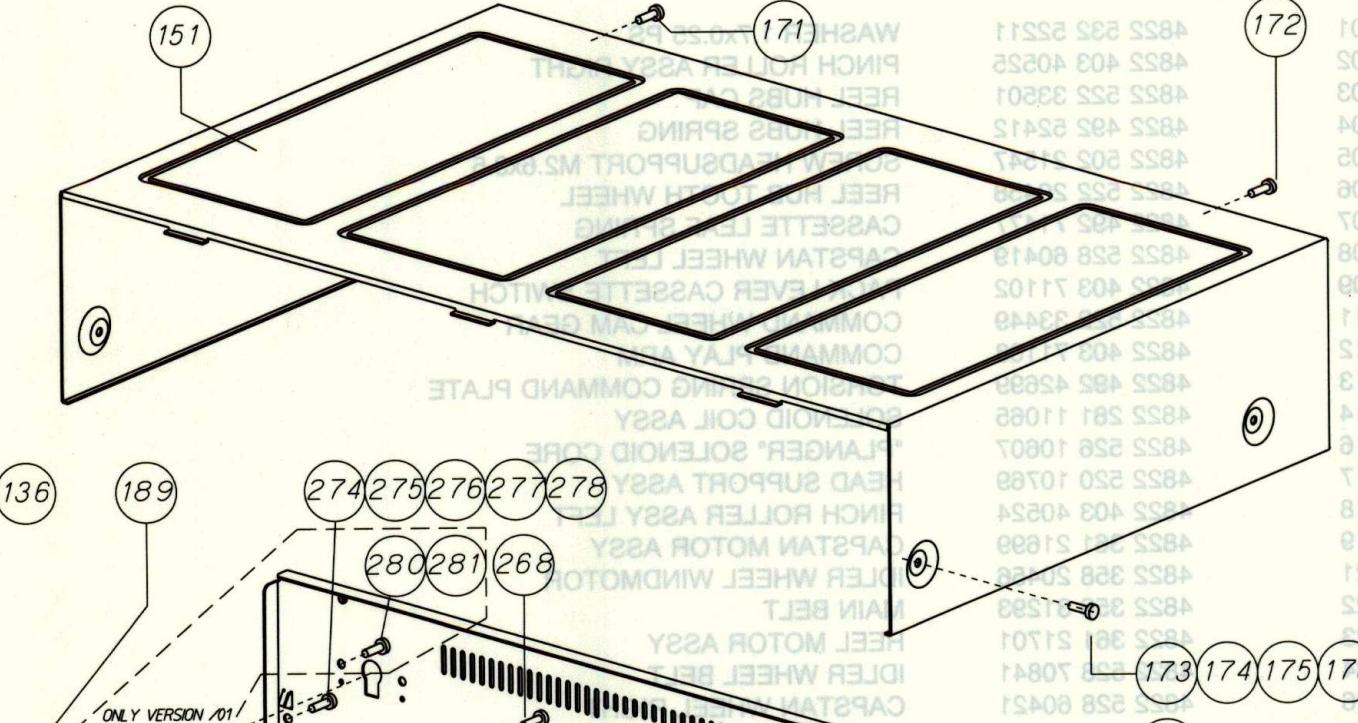
9-1

## EXPLODED VIEW TAPE DECK



9-1

## MECHANICAL PARTS LIST DECK



**MECHANICAL PARTS LIST CABINET**

ELECTRICAL PARTS LIST

1	4822 443 41373	FRONT ASSY	INDUST PANEL
8	4822 410 63215	BUTTON UNIT NOSE	
9	4822 410 63213	BUTTON UNIT DISPLAY	
10	4822 410 63214	BUTTON UNIT	
15	4822 450 61831	IR WINDOW	MISCELLANEOUS
16	4822 450 62235	WINDOW	
44	4822 410 61705	VOLUME KNOB	4822 485 83026 CLAMPING SPRING
51	4822 380 20425	REFLECTOR	1002 4822 525 33823 ANALOG INPUT SOCKET
54	4822 460 20809	SET IN PART ASSY	1100 4822 525 33848 DIGITAL INPUT SOCKET
65	4822 443 41374	TRAY FRONT ASSY	1105 4822 515 33834 OPTICAL INPUT
151	4822 444 60975	COVER	1120 4822 505 31266 EBI BUS SOCKET
188	4822 535 93475	POWER ROD	1182 4822 525 31267 FUSE T 800mA
251	4822 462 41888	FOOT	1308 4822 525 31268 FUSE T 800mA
252	4822 462 41888	FOOT	1320 4822 525 31269 FUSE T AS
253	4822 462 41888	FOOT	1321 4822 525 31270 MAINS INPUT
254	4822 462 41888	FOOT	1344 4822 525 31271 MAINS SWITCH
255	4822 462 41887	FELT	1352 4822 525 31272 FUSE T 100mA (800)
256	4822 462 41887	FELT	1358 4822 525 31273 FUSE T 400mA (112)
257	4822 462 41887	FELT	1362 4822 525 31274 FUSE T 800mA
258	4822 462 41887	FELT	1368 4822 525 31275 CAPACITORS
282A	4822 256 30402	FUSE CARRIER(01S)	
300A	4822 321 10831	MAINS CORD /00S/01S	1402 4822 525 33182 FUSE 10mA 20A
302A	4822 321 10883	MAINS CORD /17S	1406 4822 525 33282 SSUf+80-20mA 20A
308	4822 321 22832	SBC1072 CINCH CABLE	1408 4822 525 41252 100mA 20A
309	4822 321 22832	SBC1072 CINCH CABLE	1409 4822 525 33198 100mA 80A
314	4822 321 61452	CINCH CABLE DIGITAL IN	1413 4822 525 33183 100mA 20A
365	4822 218 10543	REMOTE CONTROLE RD6842/00	1419 4822 525 33288 100mA 80A

**Not mentioned parts are only available during production period on special request.****Screws**

Self-tapping screw for metal M3x6: 75,76,77

Self-tapping screw for metal with washer 3x6: 171,172,173,174,175,176  
274,275,276,277,278

Self-tapping screw for metal M3x10: 206,207

Self-tapping screw for metal M3x15: 133,134,135,136  
200,201,202,203Self-tapping screw for plastic 3x10: 22,23,24,25,26,27,28,29  
30  
31,32,33,34  
78,79  
259,260,261,262  
268  
269,270,271,272

## ELECTRICAL PARTS LIST

IN/OUT PANEL			
MISCELLANEOUS			
			2203 4822 124 41525 100μF 20% 25V
			2204 4822 126 11585 22nF +80-20% 25V
			2205 4822 124 41525 100μF 20% 25V
			2206 4822 126 11585 22nF +80-20% 25V
			2207 4822 124 41525 100μF 20% 25V
			2208 4822 122 33849 150pF 10% Y5P 50V
			2209 4822 122 33195 100pF 10% 50V
			2210 4822 122 33849 150pF 10% Y5P 50V
			2211 4822 122 33195 100pF 10% 50V
			2250 4822 126 12882 100nF +80-20% 50V
			2251 4822 126 12882 100nF +80-20% 50V
			2255 4822 126 11585 22nF +80-20% 25V
			2350 4822 122 10466 220pF 10% 50V
			2351 4822 122 10459 560pF 10% 50V
			2352 4822 122 10466 220pF 10% 50V
			2353 4822 122 10459 560pF 10% 50V
			2380 4822 124 40433 47μF 20% 25V
			2381 4822 126 11714 4,7nF 20%
			2900 4822 126 11585 22nF +80-20% 25V
			2901 4822 126 11585 22nF +80-20% 25V
			2902 4822 126 11585 22nF +80-20% 25V
			2903 4822 126 11585 22nF +80-20% 25V
			2904 4822 124 42119 4700μF 20% 25V
			2908 4822 124 40242 1μF 20% 63V
			2909 4822 124 41525 100μF 20% 25V
			2910 4822 124 40248 10μF 20% 63V
			2911 4822 126 11585 22nF +80-20% 25V
			2912 4822 126 11585 22nF +80-20% 25V
			2920 4822 126 11585 22nF +80-20% 25V
			2921 4822 126 11585 22nF +80-20% 25V
			2922 4822 126 11585 22nF +80-20% 25V
			2923 4822 126 11585 22nF +80-20% 25V
			2924 4822 124 80153 1000μF 20% 16V
			2925 4822 126 11585 22nF +80-20% 25V
			2926 4822 126 11585 22nF +80-20% 25V
			2927 4822 124 40433 47μF 20% 25V
			2934 4822 124 40433 47μF 20% 25V
			2935 4822 126 11585 22nF +80-20% 25V
			2940 4822 126 11585 22nF +80-20% 25V
			2941 4822 126 11585 22nF +80-20% 25V
			2942 4822 126 11585 22nF +80-20% 25V
			2943 5322 124 22094 220μF 20% 50V
			2944 4822 124 40242 1μF 20% 63V
			2945 4822 124 40246 4,7μF 20% 63V
			2946 4822 126 11585 22nF +80-20% 25V
			2970 4822 126 12224 4,7nF 20% 125V
			2980 4822 121 42408 220nF 5% 63V
			2981 4822 121 51252 470nF 5% 63V
			2982 4822 124 41334 470μF 20% 35V
			2983 4822 124 80865 10μF 20% 25V

RESISTORS			
2906	4822 050 11002	1k 1% 0,4W	3361 4822 116 52175 100Ω 5% 0,5W
2907	4822 116 52249	1k8 5% 0,5W	3362 4822 116 52175 100Ω 5% 0,5W
3005	4822 050 25602	5k6 1% 0,6W	3363 4822 116 52175 100Ω 5% 0,5W
3006	4822 050 21003	10k 1% 0,6W	3364 4822 116 52256 2k2 5% 0,5W
3007	4822 050 27502	7k5 1% 0,6W	3365 4822 116 52233 10k 5% 0,5W
3008	4822 050 28202	8k2 1% 0,6W	3366 4822 116 52256 2k2 5% 0,5W
3009 ▲	4822 052 10478	4Ω7 5% 0,33W	3367 4822 116 52257 22k 5% 0,5W
3015	4822 050 25602	5k6 1% 0,6W	3368 4822 116 52283 4k7 5% 0,5W
3016	4822 050 27502	7k5 1% 0,6W	3371 4822 116 52258 220k 5% 0,5W
3017	4822 050 21003	10k 1% 0,6W	3380 4822 116 52175 100Ω 5% 0,5W
3018	4822 050 28202	8k2 1% 0,6W	3381 4822 116 52284 47k 5% 0,5W
3019 ▲	4822 052 10478	4Ω7 5% 0,33W	3382 4822 116 52251 18k 5% 0,5W
3050	4822 116 52234	100Ω 5% 0,5W	3383 4822 116 52284 47k 5% 0,5W
3051	4822 116 52234	100Ω 5% 0,5W	3384 4822 116 52176 10Ω 5% 0,5W
3052	4822 050 11002	1k 1% 0,4W	3385 4822 116 52284 47k 5% 0,5W
3053	4822 050 11002	1k 1% 0,4W	3900 4822 116 52215 220Ω 5% 0,5W
3054 ▲	4822 052 10478	4Ω7 5% 0,33W	3901 4822 116 52215 220Ω 5% 0,5W
3055	4822 116 52234	100Ω 5% 0,5W	3902 4822 116 52244 15k 5% 0,5W
3056	4822 116 52234	100Ω 5% 0,5W	3903 4822 050 21501 150Ω 1% 0,6W
3057	4822 050 11002	1k 1% 0,4W	3904 4822 116 52269 3k3 5% 0,5W
3058	4822 050 11002	1k 1% 0,4W	3905 4822 050 21501 150Ω 1% 0,6W
3059 ▲	4822 052 10478	4Ω7 5% 0,33W	3906 4822 116 52244 15k 5% 0,5W
3103	4822 116 52199	68Ω 5% 0,5W	3907 4822 116 52244 15k 5% 0,5W
3104	4822 116 52201	75Ω 5% 0,5W	3960 4822 116 52235 1M 5% 0,5W
3105 ▲	4822 052 10478	4Ω7 5% 0,33W	3961 4822 116 52284 47k 5% 0,5W
3200	4822 116 52217	270Ω 5% 0,5W	3962 4822 116 52256 2k2 5% 0,5W
3201	4822 116 52217	270Ω 5% 0,5W	3963 4822 116 52226 560Ω 5% 0,5W
3202	4822 116 52289	5k6 5% 0,5W	3964 4822 116 52233 10k 5% 0,5W
3203	4822 116 52264	27k 5% 0,5W	3965 4822 116 52291 56k 5% 0,5W
3204	4822 116 52289	5k6 5% 0,5W	3966 4822 116 52283 4k7 5% 0,5W
3205	4822 116 52264	27k 5% 0,5W	3967 4822 050 11002 1k 1% 0,4W
3206	4822 116 52289	5k6 5% 0,5W	3968 4822 116 52284 47k 5% 0,5W
3207	4822 116 52264	27k 5% 0,5W	3969 4822 116 52251 18k 5% 0,5W
3208	4822 116 52289	5k6 5% 0,5W	3980 4822 116 52284 47k 5% 0,5W
3209	4822 116 52264	27k 5% 0,5W	3981 4822 116 52283 4k7 5% 0,5W
3210	4822 116 52289	5k6 5% 0,5W	3982 4822 050 24705 4M7 1% 0,6W
3211	4822 116 52289	5k6 5% 0,5W	3983 4822 116 52245 150k 5% 0,5W
3212 ▲	4822 052 10478	4Ω7 5% 0,33W	3984 4822 116 52276 3k9 5% 0,5W
3213 ▲	4822 052 10478	4Ω7 5% 0,33W	3985 4822 116 52233 10k 5% 0,5W
3250	4822 116 52269	3k3 5% 0,5W	3986 4822 116 52234 100Ω 5% 0,5W
3251	4822 116 52269	3k3 5% 0,5W	3987 4822 116 52284 47k 5% 0,5W
3255 ▲	4822 052 10478	4Ω7 5% 0,33W	3988 4822 050 11002 1k 1% 0,4W
3350	4822 116 52175	100Ω 5% 0,5W	3989 4822 116 52244 15k 5% 0,5W
3351	4822 116 52256	2k2 5% 0,5W	
3352	4822 116 52175	100Ω 5% 0,5W	
3353	4822 116 52175	100Ω 5% 0,5W	
3354	4822 116 52233	10k 5% 0,5W	
3355	4822 116 52257	22k 5% 0,5W	
3356	4822 116 52256	2k2 5% 0,5W	
3357	4822 116 52256	2k2 5% 0,5W	
3358	4822 116 52283	4k7 5% 0,5W	
3360	4822 116 52258	220k 5% 0,5W	

	<b>COILS</b>		
5001	4822 157 51192	220mH	
5020	4822 157 51192	220mH	
5100	4822 157 70601	DIGITAL TRAFO	
5970	▲ 4822 214 51841	MAINS FILTER	
	<b>DIODES</b>		
6200	4822 130 34278	BZX79-C6V8	
6201	4822 130 34278	BZX79-C6V8	
6350	4822 130 30621	1N4148	
6351	4822 130 30621	1N4148	
6355	4822 130 30621	1N4148	
6356	4822 130 30621	1N4148	
6357	4822 130 30621	1N4148	
6358	4822 130 30621	1N4148	
6380	4822 130 31983	BAT85	
6900	4822 130 80291	1N4002GP	
6901	4822 130 80291	1N4002GP	
6902	4822 130 80291	1N4002GP	
6903	4822 130 80291	1N4002GP	
6905	4822 130 30621	1N4148	
6920	4822 130 80291	1N4002GP	
6921	4822 130 80291	1N4002GP	
6922	4822 130 80291	1N4002GP	
6923	4822 130 80291	1N4002GP	
6940	4822 130 80291	1N4002GP	
6941	4822 130 34173	BZX79-C5V6	
6942	5322 130 34563	BZX79-C2V7	
6980	4822 130 80291	1N4002GP	
6981	4822 130 80291	1N4002GP	
6982	4822 130 30621	1N4148	
6983	4822 130 30621	1N4148	
6984	4822 130 30621	1N4148	
6985	4822 130 31981	BZX79-C3V9	
6986	4822 130 30621	1N4148	
	<b>TRANSISTORS &amp; I.C.'S</b>		
7001	4822 209 83163	LM833N	
7050	4822 209 83163	LM833N	
7200	4822 209 60002	74HC4052N	
7201	5322 209 12377	MC34082P	
7250	5322 209 11323	74HCU04P	
	<b>CAPACITORS</b>		
7350	5322 130 44779	BC338-40	
7352	4822 130 44197	BC558B	
7353	5322 130 44779	BC338-40	
7354	5322 130 44779	BC338-40	
7355	5322 130 44779	BC338-40	
7357	4822 130 44197	BC558B	
7358	5322 130 44779	BC338-40	
7359	5322 130 44779	BC338-40	
7380	4822 130 44197	BC558B	
7381	4822 130 40937	BC548B	
7900	4822 209 72868	M5230L	

2190	4822 124 23624	47μF 20% 16V	3458	4822 117 11145	4k7 1% 0,1W
2191	4822 124 23624	47μF 20% 16V	3459	4822 117 11146	6k2 1% 0,1W
2194	4822 124 23624	47μF 20% 16V	3460	4822 117 11144	3k9 1% 0,1W
2195	4822 124 23624	47μF 20% 16V	3461	4822 117 11139	1k5 1% 0,1W
2454	4822 124 23624	47μF 20% 16V	3462	4822 117 11141	1k8 1% 0,1W
2455	4822 122 33809	22nF 20% 50V	3463	4822 117 11143	3k 1% 0,1W
2456	4822 124 23624	47μF 20% 16V	3464	4822 117 11142	2k4 1% 0,1W
2457	4822 122 33809	22nF 20% 50V	3465	4822 117 11145	4k7 1% 0,1W
2458	5322 122 33538	150pF 2% 63V	3466	4822 117 11146	6k2 1% 0,1W
2459	5322 122 32531	100pF 5% 50V	3467	4822 117 11144	3k9 1% 0,1W
2460	5322 122 33538	150pF 2% 63V	3468 ▲	4822 052 10109	10Ω 5% 0,33W
2461	5322 122 32531	100pF 5% 50V	3469 ▲	4822 052 10109	10Ω 5% 0,33W
2800	4822 124 23624	47μF 20% 16V	3470	4822 117 10354	22k 1% 0,1W
2801	4822 122 33809	22nF 20% 50V	3471	4822 117 10354	22k 1% 0,1W
2802	5322 124 21643	22μF 20% 40V	3472	4822 117 10833	10k 1% 0,1W
2803	4822 122 33809	22nF 20% 50V	3473	4822 117 10833	10k 1% 0,1W
2804	4822 122 33496	100nF 10% 63V	3800 ▲	4822 052 10108	1Ω 5% 0,33W
2805	4822 122 33496	100nF 10% 63V	3801 ▲	4822 052 10108	1Ω 5% 0,33W
2850	5322 122 34123	1nF 10% 50V	3802 ▲	4822 052 10108	1Ω 5% 0,33W
	<b>FRONT PANEL</b>		3803 ▲	4822 052 10478	4Ω7 5% 0,33W
	<b>MISCELLANEOUS</b>		3806	4822 051 20331	330Ω 5% 0,1W
	4822 256 92194	FTD HOLDER	3807	4822 051 20472	4k7 5% 0,1W
1808	5322 242 73697	RESONATOR 8MHz	3810	4822 116 90877	4k7X8 5%
1810	4822 276 13213	TACT SWITCH	3811	4822 116 90877	4k7X8 5%
1811	4822 276 13213	TACT SWITCH	3812	4822 051 20223	22k 5% 0,1W
1812	4822 276 13213	TACT SWITCH	3813	4822 117 10833	10k 1% 0,1W
1814	4822 276 13213	TACT SWITCH	3815	4822 117 10833	10k 1% 0,1W
1815	4822 276 13213	TACT SWITCH	3816	4822 051 20472	4k7 5% 0,1W
1816	4822 276 13213	TACT SWITCH	3817	4822 117 10833	10k 1% 0,1W
1817	4822 276 13213	TACT SWITCH	3818	4822 051 20561	560Ω 5% 0,1W
1818	4822 276 13213	TACT SWITCH	3819	4822 051 20561	560Ω 5% 0,1W
1819	4822 276 13213	TACT SWITCH	3820	4822 051 20273	27k 5% 0,1W
1820	4822 276 13213	TACT SWITCH	3821	4822 051 20273	10k 1% 0,1W
1821	4822 276 13213	TACT SWITCH	3822	4822 117 10833	10k 1% 0,1W
1822	4822 276 13213	TACT SWITCH	3830	4822 051 20472	4k7 5% 0,1W
1823	4822 276 13213	TACT SWITCH	3831	4822 051 20472	4k7 5% 0,1W
1824	4822 276 13213	TACT SWITCH	3832	4822 051 20823	82k 5% 0,1W
1825	4822 276 13213	TACT SWITCH	3833	4822 051 20472	4k7 5% 0,1W
1826	4822 276 13213	TACT SWITCH	3834	4822 051 20472	4k7 5% 0,1W
1827	4822 276 13213	TACT SWITCH	3835	4822 051 20823	82k 5% 0,1W
1828	4822 276 13213	TACT SWITCH	<b>COILS</b>		
2180	4822 122 33175	2,2nF 20% 50V	3193	4822 051 20471	470Ω 5% 0,1W
2181	4822 122 33175	2,2nF 20% 50V	3194	4822 050 21001	100Ω 1% 0,6W
2182	4822 121 51412	560nF 5% 63V	3195	4822 050 21001	100Ω 1% 0,6W
2183	5322 121 42661	330nF 5% 63V	3196	4822 051 10102	1k 2% 0,25W
2184	4822 122 33175	2,2nF 20% 50V	3198	4822 100 11676	10k 30%LIN 0.2W
2185	4822 122 33175	2,2nF 20% 50V	3199	4822 100 11676	10k 30%LIN 0.2W
2186	5322 121 42661	330nF 5% 63V	3200	4822 051 20123	12k 5% 0,1W
2187	4822 121 51412	560nF 5% 63V	3201	4822 051 20123	12k 5% 0,1W
2188	4822 122 33809	22nF 20% 50V	3454	4822 117 11139	1k5 1% 0,1W
2189	4822 122 33809	22nF 20% 50V	3455	4822 117 11141	1k8 1% 0,1W
7900	4822 209 72868	M5230L	3456	4822 117 11143	3k 1% 0,1W
	<b>DIODES, TRANSISTORS &amp; IC'S</b>		3457	4822 117 11142	2k4 1% 0,1W
			7172	5322 130 41983	BC858B

7180	4822 209 31134	CXA1331S	8248	<b>RESISTORS</b>	
7181	5322 130 41983	BC858B	8249	3400	4822 116 52175 100Ω 5% 0,5W
7182	5322 130 41982	BC848B	8249	3401	4822 116 52175 100Ω 5% 0,5W
7183	5322 130 41983	BC858B	8249	3402	4822 101 21199 10kX2 20% 0,025W
7451	5322 209 61483	74HC4051D	8249	3403	4822 051 20123 12k 5% 0,1W
7452	5322 209 61483	74HC4051D	8249	3404	4822 051 20123 12k 5% 0,1W
7455	4822 209 83274	NJM4560D	8249	3405	4822 051 20273 27k 5% 0,1W
7800	4822 209 33369	TMP87CP70F	8249	3406	4822 051 20273 27k 5% 0,1W
7998	4822 209 33381	TMP87PP71F	8249	3407	4822 051 20121 120Ω 5% 0,1W
7801	4822 209 33378	MN1382-S	8249	3408	4822 051 20121 120Ω 5% 0,1W
7805	4822 130 91349	DCC951	8249	3409	▲ 4822 052 10109 10Ω 5% 0,33W
7806	5322 209 63719	ST24C02A	8249	3410	▲ 4822 052 10109 10Ω 5% 0,33W
7811	5322 130 41983	BC858B	8249	3415	4822 051 20472 4k7 5% 0,1W
7830	5322 130 41983	BC858B	8249	3417	4822 117 10833 10k 1% 0,1W
7831	5322 130 41983	BC858B	8249	3418	4822 051 10102 1k 2% 0,25W
				3419	▲ 4822 052 10109 10Ω 5% 0,33W
<b>I.R. PANEL</b>					
2820	4822 122 33809	22nF 20% 50V	8250	3420	▲ 4822 052 10109 10Ω 5% 0,33W
7820	4822 214 52009	GP1U58XP	8250	3421	4822 051 20333 33k 5% 0,1W
<b>MICRO &amp; HEADPHONE PANEL</b>					
<b>MISCELLANEOUS</b>					
1410	4822 267 31453	MICROPHONE SOCKET	8251	<b>DIODES, TRANSISTORS &amp; I.C.'s</b>	
1415	4822 267 31479	HEADPHONE SOCKET	8251	6415	4822 130 30621 1N4148
<b>CAPACITORS</b>				6416	4822 130 30621 1N4148
2400	4822 124 41525	100μF 20% 25V	8252	7400	4822 209 82362 NJM4556D
2401	4822 124 41525	100μF 20% 25V	8252	7415	4822 209 83163 LM833N
2402	4822 122 33809	22nF 20% 50V	8252	7430	4822 130 42696 BC818-25
2403	4822 122 33809	22nF 20% 50V	8252	7431	4822 130 42696 BC818-25
2404	5322 122 34123	1nF 10% 50V	8252	<b>MAINS VOLTAGE</b>	
2415	5322 122 34123	1nF 10% 50V	8253	1976	4822 070 31601 FUSE T 160mA(01)
2416	4822 124 40248	10μF 20% 63V	8253	5001	▲ 4822 146 31355 MAINS TRAFO(00)
2417	5322 122 31866	6,8nF 10% 63V	8253	5001	▲ 4822 146 31396 MAINS TRAFO(01)
2418	5322 122 32654	22nF 10% 63V	8253	5001	▲ 4822 277 21366 VOLTAGE SELECTOR(01)
2419	5322 122 32654	22nF 10% 63V	8253	5001	▲ 4822 444 60655 COVER(01)
2420	5322 122 32659	33pF 5% 50V	8253	5001	▲ 4822 146 31397 MAINS TRAFO(17)
2421	4822 122 33496	100nF 10% 63V	8253		
2422	4822 122 33496	100nF 10% 63V	8253		
2423	4822 122 33496	100nF 10% 63V	8253		
2424	4822 124 22339	100μF 16V	8253		
2428	4822 124 41525	100μF 20% 25V	8254		
2429	4822 124 41525	100μF 20% 25V	8254		
2430	5322 122 34123	1nF 10% 50V	8254		
2431	5322 122 34123	1nF 10% 50V	8254		

2865	4822 122 33761	22pF 5% 50V	8255	<b>READ/ WRITE PANEL</b>	
2866	4822 122 33761	22pF 5% 50V	8256		
2870	4822 122 32627	2.7nF 10% 50V	8256		
2871	4822 122 32627	2.7nF 10% 50V	8256		
2874	4822 126 13189	1μF 80-20% 16V	8257	<b>CAPACITORS</b>	
2880	4822 124 80867	10μF 20% 16V	8257		
2881	4822 126 13196	100nF 10% 25V	8257		
2882	4822 126 13196	100nF 10% 25V	8257		
2883	4822 124 80867	10μF 20% 16V	8257		
2884	5322 126 11579	3,3nF 10% 63V	8258		
2885	5322 126 11579	3,3nF 10% 63V	8258		
2886	5322 126 11579	3,3nF 10% 63V	8258		
2887	5322 126 11579	3,3nF 10% 63V	8258		
2888	5322 126 11579	3,3nF 10% 63V	8258		
2889	5322 126 11579	3,3nF 10% 63V	8258		
2890	5322 126 11579	3,3nF 10% 63V	8258		
2891	5322 126 11579	3,3nF 10% 63V	8258		
2892	5322 126 11579	3,3nF 10% 63V	8258		
2910	4822 124 80867	10μF 20% 16V	8258	<b>RESISTORS</b>	
2911	5322 126 11583	10nF 10% 63V	8259		
2912	4822 126 13196	100nF 10% 25V	8259		
2914	4822 124 80867	10μF 20% 16V	8259		
2999	4822 126 13196	100nF 10% 25V	8259		
3000	4822 051 30223	22k 5% 0,062W	8260		
3800	4822 051 30561	560Ω 5% 0,062W	8260		
3801	4822 051 30561	560Ω 5% 0,062W	8260		
3802	4822 051 30561	560Ω 5% 0,062W	8260		
3803	4822 051 30561	560Ω 5% 0,062W	8260		
3804	4822 051 30561	560Ω 5% 0,062W	8260		
3805	4822 051 30561	560Ω 5% 0,062W	8260		
3806	4822 051 30561	560Ω 5% 0,062W	8260		
3807	4822 051 30561	560Ω 5% 0,062W	8260		
3808	4822 051 30561	560Ω 5% 0,062W	8260		
3809	4822 051 30681	680Ω 5% 0,062W	8260		
3810	4822 051 30222	2k2 5% 0,062W	8260		
3811	4822 051 30473	47k 5% 0,062W	8260		
3812	4822 051 30104	100k 5% 0,062W	8260		
3813	4822 051 30103	10k 5% 0,062W	8260		
3814	4822 051 30104	100k 5% 0,062W	8260		
3815	4822 051 30472	4k7 5% 0,062W	8260		
3816	4822 051 30562	5k6 5% 0,062W	8260		
3817	4822 051 30393	39k 5% 0,062W	8260		
3818	4822 051 30479	47Ω 5% 0,062W	8260		
3819	4822 051 30104	100k 5% 0,062W	8260		
3830	4822 051 30103	10k 5% 0,062W	8260		
3831	4822 051 30103	10k 5% 0,062W	8260		
3832	4822 051 30103	10k 5% 0,062W	8260		
3833	4822 051 30229	22Ω 5% 0,062W	8260		
3836	4822 051 30229	22Ω 5% 0,062W	8260		

3837	4822 051 30279	27Ω 5% 0,062W
3838	4822 051 30101	100Ω 5% 0,062W
3839	4822 051 30152	1k5 5% 0,062W
3840	4822 051 30561	560Ω 5% 0,062W
3841	4822 051 30182	1k8 5% 0,062W
3842	4822 051 30331	330Ω 5% 0,062W
3843	4822 051 30331	330Ω 5% 0,062W
3844	4822 051 30109	10Ω 5% 0,062W
3845	4822 051 30109	10Ω 5% 0,062W
3846	4822 051 30109	10Ω 5% 0,062W
3847	4822 051 30109	10Ω 5% 0,062W
3848	4822 051 30152	1k5 5% 0,062W
3849	4822 051 30152	1k5 5% 0,062W
3850	4822 051 30274	270k 5% 0,062W
3851	4822 051 30333	33k 5% 0,062W
3852	4822 051 30102	1k 5% 0,062W
3853	4822 051 30183	18k 5% 0,062W
3854	4822 051 30333	33k 5% 0,062W
3855	4822 051 30102	1k 5% 0,062W
3856	4822 051 30183	18k 5% 0,062W
3857	4822 051 30274	270k 5% 0,062W
3858	4822 051 30152	1k5 5% 0,062W
3859	4822 051 30152	1k5 5% 0,062W
3860	4822 116 83933	15k 1% 0,1W
<b>COILS</b>		
3861	4822 051 30473	47k 5% 0,062W
3862	4822 117 11154	1k 1% 0,1W
3863	4822 117 10356	39k 1% 0,2W
3864	4822 117 11137	68k 1% 0,1W
3865	4822 117 11147	270k 1% 0,1W
<b>DIODES, TRANSISTORS &amp; I.C.'s</b>		
3866	4822 117 11148	56k 1% 0,1W
3868	4822 117 10965	18k 1% 0,1W
3869	4822 117 11149	82k 1% 0,1W
3870	4822 116 83933	15k 1% 0,1W
3871	4822 051 30473	47k 5% 0,062W
3872	4822 117 11154	1k 1% 0,1W
3873	4822 117 10356	39k 1% 0,2W
3874	4822 117 11137	68k 1% 0,1W
3875	4822 117 11147	270k 1% 0,1W
3876	4822 117 11148	56k 1% 0,1W
3878	4822 117 10965	18k 1% 0,1W
3879	4822 117 11149	82k 1% 0,1W
3880	4822 051 30222	2k2 5% 0,062W
3881	4822 051 30399	39Ω 5% 0,062W
3882	4822 051 30399	39Ω 5% 0,062W
3883	4822 051 30399	39Ω 5% 0,062W
3884	4822 051 30399	39Ω 5% 0,062W
3885	4822 051 30122	1k2 5% 0,062W
3886	4822 051 30159	15Ω 5% 0,062W
3887	4822 051 20228	2Ω2 5% 0,1W
3888	4822 101 11318	POTMETER 22k LIN
3889	4822 051 30103	10k 5% 0,062W
3890	4822 051 30473	47k 5% 0,062W
3891	4822 051 30221	220Ω 5% 0,062W
3892	4822 051 30683	68k 5% 0,062W

<b>DIGITAL PANEL</b>		
2706	4822 122 33809	22nF 20% 50V
2707	4822 122 33809	22nF 20% 50V
2760	4822 122 33809	22nF 20% 50V
2762	4822 122 31746	1000pF 2% 63V
2763	4822 122 31746	1000pF 2% 63V
2764	4822 124 80867	10μF 20% 16V
2766	4822 122 33809	22nF 20% 50V
2767	4822 124 80866	47μF 20% 6,3V
2768	4822 122 33809	22nF 20% 50V
2780	4822 124 80866	47μF 20% 6,3V
2781	4822 122 33809	22nF 20% 50V
2782	4822 122 33809	22nF 20% 50V
2783	4822 124 80866	47μF 20% 6,3V
2786	4822 122 33809	22nF 20% 50V
2787	4822 124 80866	47μF 20% 6,3V
2788	4822 122 33809	22nF 20% 50V
2790	4822 122 33809	22nF 20% 50V
2791	4822 124 80866	47μF 20% 6,3V
2792	4822 124 80866	47μF 20% 6,3V
2793	4822 122 33809	22nF 20% 50V
2795	4822 122 33809	22nF 20% 50V
<b>RESISTORS</b>		
3600	4822 051 20333	33k 5% 0,1W
3601	▲ 4822 117 11151	1Ω 5%
3610	4822 051 20105	1M 5% 0,1W
3611	4822 051 10102	1k 2% 0,25W
3612	4822 051 20105	1M 5% 0,1W
3613	4822 051 10102	1k 2% 0,25W
3615	▲ 4822 117 11151	1Ω 5%
3619	4822 051 20479	47Ω 5% 0,1W
3620	4822 051 20101	100Ω 5% 0,1W
3621	4822 051 20271	270Ω 5% 0,1W
3622	▲ 4822 117 11151	1Ω 5%
3623	4822 051 20221	220Ω 5% 0,1W
3624	4822 051 20221	220Ω 5% 0,1W
3625	4822 051 20221	220Ω 5% 0,1W
3626	4822 051 20221	220Ω 5% 0,1W
3627	4822 051 20221	220Ω 5% 0,1W
3628	4822 051 20221	220Ω 5% 0,1W
3629	4822 051 20221	220Ω 5% 0,1W
3630	4822 051 20221	120Ω 5% 0,1W
3631	4822 051 20221	220Ω 5% 0,1W
3632	4822 051 20221	220Ω 5% 0,1W
3633	4822 051 20221	10k 1% 0,1W
3634	4822 051 20472	4k7 5% 0,1W
3635	▲ 4822 117 11151	1Ω 5%
3636	▲ 4822 117 11151	1Ω 5%
3637	4822 051 20471	470Ω 5% 0,1W
3638	4822 051 20471	470Ω 5% 0,1W
3639	4822 051 20331	330Ω 5% 0,1W
3640	4822 051 20331	330Ω 5% 0,1W

3641	V	4822 051 20122	1k2 5% 0,1W
3642	V	4822 051 20471	470Ω 5% 0,1W
3700	V	4822 117 10833	10k 1% 0,1W
3701	V	4822 117 10833	10k 1% 0,1W
3702	V	4822 117 10833	10k 1% 0,1W
3703	V	4822 117 10833	10k 1% 0,1W
3704	V	4822 117 10833	10k 1% 0,1W
3705	▲	4822 117 11151	1Ω 5%
3706	▲	4822 117 11151	1Ω 5%
3707	V	4822 051 20105	1M 5% 0,1W
3708	V	4822 051 20472	4k7 5% 0,1W
3709	V	4822 117 10833	10k 1% 0,1W
3710	V	4822 117 10833	10k 1% 0,1W
3711	V	4822 117 10833	10k 1% 0,1W
3712	V	4822 117 10833	10k 1% 0,1W
3761	▲	4822 117 11151	1Ω 5%
3762	▲	4822 117 11152	4Ω7 5%
3764	V	4822 117 10833	10k 1% 0,1W
3765	V	4822 051 10102	1k 2% 0,25W
3780	V	4822 051 20624	620k 5% 0,1W
3781	V	4822 117 10833	10k 1% 0,1W
3782	V	4822 051 20334	330k 5% 0,1W
3783	V	4822 051 20472	4k7 5% 0,1W
3784	V	4822 051 20472	4k7 5% 0,1W
3785	V	4822 117 10833	10k 1% 0,1W
3786	V	4822 051 20333	33k 5% 0,1W
3787	▲	4822 117 11152	4Ω7 5%
3788	V	4822 051 20271	270Ω 5% 0,1W
3789	V	4822 051 20271	270Ω 5% 0,1W
3790	V	4822 051 20562	5k6 5% 0,1W
3791	V	4822 051 20562	5k6 5% 0,1W
<b>COILS</b>			
5600	V	4822 157 71267	COIL
5601	V	4822 157 71267	COIL
5602	V	4822 157 71267	COIL
5603	V	4822 157 71267	COIL
5630	V	4822 157 70298	15μH
5700	V	4822 157 71267	COIL
5701	V	4822 157 71267	COIL
5702	V	4822 157 71267	COIL
<b>DIODES, TRANSISTORS &amp; I.C.'s</b>			
6600	V	5322 130 31928	BAS16
6630	V	4822 130 80654	BZX84-B3V9
6631	V	5322 130 31928	BAS16
6632	V	4822 130 80654	BZX84-B3V9
7600	V	4822 209 33401	SAA2013H
7610	V	4822 209 33399	SAA2003H
7620	V	4822 209 33395	TDA1315H/N1
7630	V	4822 209 33402	SAA2023GP
7631	V	4822 209 33387	MN41C4256ASJ
7632	V	4822 130 61207	BC848
7633	V	4822 130 61207	BC848
7700	V	4822 209 33388	UPD78P056GC
7701	V	4822 209 30739	MC74HC04AD
7702	V	4822 209 33389	MC74HC32AD
7730	V	4822 209 60792	74HC4053D
7760	V	4822 209 33403	TDA1305T/N2
7780	V	4822 209 33397	SAA7366T
<b>TAPE/DRIVE PANEL</b>			
1500	V	4822 242 81738	RESONATOR 11.059 MHz
<b>CAPACITORS</b>			
2500	V	4822 122 33809	22nF 20% 50V
2503	V	4822 124 40433	47μF 20% 25V
2504	V	5322 122 32531	100pF 5% 50V
2521	V	4822 122 33809	22nF 20% 50V
2522	V	4822 124 40433	47μF 20% 25V
2525	V	4822 124 40243	1,5μF 20% 63V
2545	V	4822 126 13189	1μF 80-20%16V
2550	V	4822 122 33809	22nF 20% 50V
2570	V	4822 124 40433	47μF 20% 25V
2571	V	4822 122 33809	22nF 20% 50V
2572	V	4822 122 33216	270pF 5% 50V
2573	V	4822 124 40433	47μF 20% 25V
2574	V	4822 122 33809	22nF 20% 50V
2575	V	4822 124 40433	47μF 20% 25V
2576	V	4822 122 33809	22nF 20% 50V
2580	V	4822 122 33809	22nF 20% 50V
2581	V	4822 122 33809	22nF 20% 50V
2599	V	4822 122 33496	100nF 10% 63V
<b>RESISTORS</b>			
3500	V	4822 051 20105	1M 5% 0,1W
3501	▲	4822 052 10478	4Ω7 5% 0,33W
3502	V	4822 117 11158	62k 5% 0,1W
3503	V	4822 051 10102	1k 2% 0,25W
3504	V	4822 117 11158	62k 5% 0,1W
3506	V	4822 117 10833	10k 1% 0,1W
3507	V	4822 117 10833	10k 1% 0,1W
3508	V	4822 051 20224	220k 5% 0,1W
3509	V	4822 051 10102	1k 2% 0,25W
3513	V	4822 051 20224	220k 5% 0,1W
3525	V	4822 051 20333	33k 5% 0,1W
3526	▲	4822 052 10229	22Ω 5% 0,33W
3527	V	4822 051 20104	100k 5% 0,1W
3528	V	4822 051 20823	82k 5% 0,1W
3530	V	4822 051 20472	4k7 5% 0,1W
3531	V	4822 117 10833	10k 1% 0,1W
3532	V	4822 117 11139	1k5 1% 0,1W

3533	V	4822 051 20122	1k2 5% 0,1W
3534	V	4822 051 10102	1k 2% 0,25W
3535	V	4822 051 20472	4k7 5% 0,1W
3536	V	4822 117 10834	47k 1% 0,1W
3537	V	4822 051 20133	13k 5% 0,1W
3538	V	4822 051 20133	13k 5% 0,1W
3539	V	4822 051 20472	4k7 5% 0,1W
3540	V	4822 051 20472	4k7 5% 0,1W
3541	V	4822 117 10834	47k 1% 0,1W
3542	V	4822 100 12137	3k3 30% 0,1W
3543	V	4822 100 12137	3k3 30% 0,1W
3544	V	4822 051 20822	8k2 5% 0,1W
3545	V	4822 051 20472	4k7 5% 0,1W
3546	V	4822 117 10833	10k 1% 0,1W
3547	V	4822 116 83933	15k 1% 0,1W
3548	V	4822 117 11384	2k7 1% 0,1W
3550	V	4822 051 20331	330Ω 5% 0,1W
3551	V	4822 051 10102	1k 2% 0,25W
3552	V	4822 117 11383	12k 1% 0,1W
3553	V	4822 117 11148	56k 1% 0,1W
3554	V	4822 051 20221	220Ω 5% 0,1W
3555	▲	4822 052 10229	22Ω 5% 0,33W
3556	V	4822 051 20471	470Ω 5% 0,1W
3557	V	4822 051 10102	1k 2% 0,25W
3558	V	4822 051 20153	15k 5% 0,1W
3560	V	4822 051 20472	4k7 5% 0,1W
3561	V	4822 117 10833	10k 1% 0,1W
3562	V	4822 051 20331	330Ω 5% 0,1W
3563	V	4822 051 10102	1k 2% 0,25W
3564	V	4822 051 20271	270Ω 5% 0,1W
3565	V	4822 050 22709	27Ω 1% 0,6W
3566	V	4822 050 22709	27Ω 1% 0,6W
3567	V	4822 051 20472	4k7 5% 0,1W
3568	V	4822 117 10833	10k 1% 0,1W
3569	V	4822 051 20331	330Ω 5% 0,1W
3570	▲	4822 117 11152	4Ω7 5%
3571	▲	4822 117 11151	1Ω 5%
3572	▲	4822 117 11151	1Ω 5%
3573	V	4822 051 20181	180Ω 5% 0,1W
3574	V	4822 051 10102	1k 2% 0,25W</td