

# EV-DT1

## RMT-443

# SERVICE MANUAL

*AEP Model*  
*UK Model*



# Video 8

### SPECIFICATIONS

#### TV section

Television system	CCIR system B, G and H PAL colour
Programme coverage	VHF: E2-S20 UHF: 21-69
Picture tube	Trinitron, 10.4 × 7.8 cm (4 <sup>1</sup> / <sub>8</sub> × 3 <sup>1</sup> / <sub>8</sub> inches) (w/h), 12.8 cm (5 <sup>1</sup> / <sub>8</sub> inches) measured diagonally

#### VTR section

Video recording system	Rotary two-head helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	CCIR system PAL colour
Usable cassettes	8 mm video format cassettes
Tape speed	SP: approx. 20.051 mm/sec. LP: approx. 10.058 mm/sec.
Recording/playback time	SP: 90 min. LP: 180 min. (with Sony P5-90)
Fast forward/rewind time	Approx. 3 min. (with Sony P5-90)

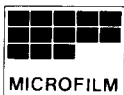
#### Inputs/outputs

Aerial input	75-ohm asymmetrical aerial socket
Video input	Phono jack, 1 V <sub>p-p</sub> , 75 ohms, unbalanced, sync negative
Video output	Phono jack, 1 V <sub>p-p</sub> , 75 ohms, unbalanced, sync negative
Audio input	Phono jack, -10 dBs (0 dBs = 0.775 V <sub>rms</sub> ), input impedance more than 47 kilohms
Audio output	Phono jack, -10 dBs (250 mV) at load impedance 47 kilohms, output impedance less than 10 kilohms
Earphone jack	Minijack
CONTROL S input	Minijack
Speakers	8 ohms, 400 mW

— Continued on next page —

#### • SERVICE OF REMOTE COMMANDER RMT-443

Remote commander RMT-443 is available as a unit. But as individual parts the battery case lid of commander is only available.



TRINITRON® COLOR VIDEO TV  
**SONY®**

### Timer section

Clock	Crystal lock
Time indication	24-hour cycle
Timer setting	Only for recording, 3 events/week
Sleep timer	5 hours max.
Wake up timer	Everyday

### General

Power requirements	UK model: 240 V AC, 50 Hz Other European models: 220 V AC, 50 Hz 12 V/24 V DC
Power consumption	44 W (AC operation) 36 W (DC operation)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Dimensions	Approx. 162 × 227 × 311 mm (w/h/d) (6 <sup>1</sup> / <sub>2</sub> × 9 × 12 <sup>1</sup> / <sub>8</sub> inches)
Weight	Approx. 5.6 kg (12 lb 6 oz)
Accessories supplied	AC power cord (mains lead) (1) Remote Commander RMT-443 (1) with two R6 (size AA) batteries Aerial (1) Aerial holder (1) Car battery cord DCC-16AE (1)

### Remote Commander RMT-443

Remote control system	Infrared control
Command mode	VTR 2
Power requirements	3 V DC 2 R6 (size AA) batteries
Dimensions	Approx. 55 × 20 × 175 mm (w/h/d) (2 <sup>1</sup> / <sub>4</sub> × 7 <sup>7</sup> / <sub>8</sub> × 7 inches)
Weight	Approx. 120 g (4 oz) incl. batteries

### Car battery cord DCC-16AE

Power requirements	12 V or 24 V
Output current	5 amperes (max.)
Cord length	Approx. 3 m (9 feet 9 inches)
Weight	93 g (3 oz)
Fuse	5-ampere fuse

### Optional accessories



Carrying bag	LCS-DT1
Mobile TV aerial	VCA-6

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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# SECTION 1

## GENERAL

### 1-1. WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

#### On colour broadcasting systems

This unit is designed to record and play back using the PAL colour standard. Recording and playback of video sources based on other colour systems cannot be guaranteed.

#### This unit uses 8 mm video format cassettes.

It records in the SP mode (approximately 20.051mm/second), and the LP mode (approximately 10.058mm/second) and can play back in the SP mode and the LP mode.

### NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

#### IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

- Blue: Neutral
- Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows: The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

### 1-2. OVERVIEW

The EV-DT1 is a desk top type TV with a built-in 8mm VTR. You can enjoy watching and recording TV programmes, as well as playing back 8mm video cassettes with this single unit.

It is easy to carry, and can be also used in your car.

Furthermore, it has following useful functions.

- Up to three events can be programmed to be recorded on a certain day of the week or everyday—**Timer recording**.
- You can set the unit to turn off automatically after several hours—**Sleep timer**.
- You can wake up with a TV programme or a VTR playback at the preset time—**Wake up timer**.
- **On-screen displays** for easy reference to operating modes.
- **The full-function Remote Commander** provides wireless control of both the TV and the VTR and various playback modes such as frame-by-frame picture and slow motion picture.

### 1-3. PRECAUTION

#### On safety

- The nameplate indicating operating voltage, power consumption, etc. is located on the bottom exterior.
- Operate the unit on 240 V AC (UK model) and 220 V AC (other European models), 50 Hz.
- When using with a 12/24V car battery, use the supplied car battery cord.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not going to be used for several days or more. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- The unit is not disconnected from the mains (ac power source) as long as it is connected to the mains outlet, even if the unit itself has been turned off.

#### On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as a microwave oven or large loudspeaker.
- Do not place any heavy object on the unit.

#### Operation in the car

- Avoid installing the unit where:
  - it would interfere with normal driving function.
  - it would be exposed to rain or moisture.
  - it would be subject to dust or dirt.
  - it would be subject to excessive vibration.
- Be sure to mount the unit so that the front of the unit is within 30° of the horizontal.

- Be careful not to damage the wiring inside the firewall.
- If your car was parked in direct sunlight and there has been a considerable rise in temperature inside the car, allow the unit to cool off before operating.
- This unit is designed for negative ground 12 V or 24V DC operation only.

#### On operation

- For car battery operation, use the supplied car battery cord. Do not use any other car battery cord.
- When the unit is not in use, turn off the power to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent uneven winding and intrusion of dust.

#### On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene, which might damage the finish.

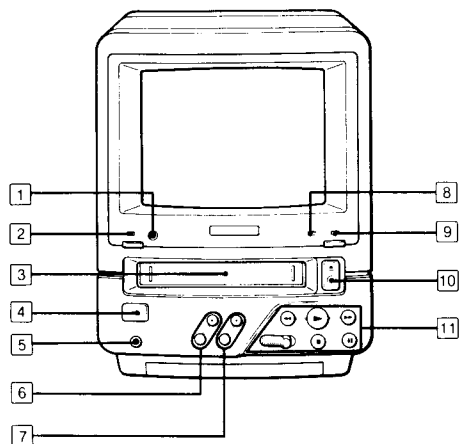
#### On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any questions about this unit, contact your Sony dealer.

## 1-4. LOCATION AND FUNCTION OF CONTROLS

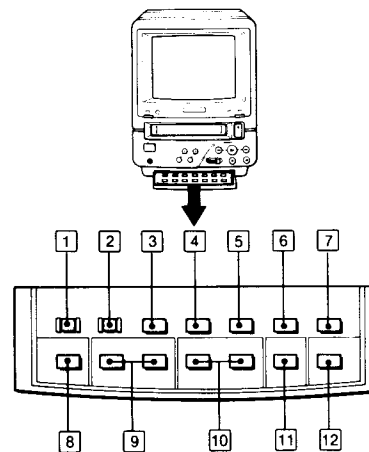
A-1



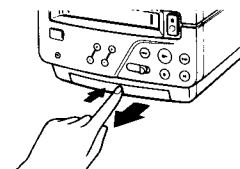
Front A-1

- 1 **Remote sensor**  
Point the supplied Remote Commander toward here.
- 2 **STANDBY lamp**
- 3 **Cassette compartment**
- 4 **ON/STANDBY button**  
Press to turn on the unit.  
Press again to turn off the unit.
- 5 **EARPHONE jack (minijack)**  
Connect an optional earphone for private listening.
- 6 **VOLUME buttons**  
Press "+" to increase volume and "-" to decrease it.
- 7 **PROGRAM buttons**  
Press "+" for higher-numbered programmes and "-" for lower-numbered programmes.
- 8 **TIMER REC (recording) lamp**  
Lights when the unit is in the timer recording standby mode.
- 9 **WAKE UP lamp**  
Lights up when the WAKE UP ON/OFF button is pressed to ON.
- 10 **▲ (cassette eject) button**
- 11 **Tape transport buttons and switch**
  - ◀ (rewind) button
  - ▶ (playback) button
  - ▶▶ (fast-forward) button
  - (stop) button
  - || (pause) button
  - REC (recording) switch

A-2



A-3

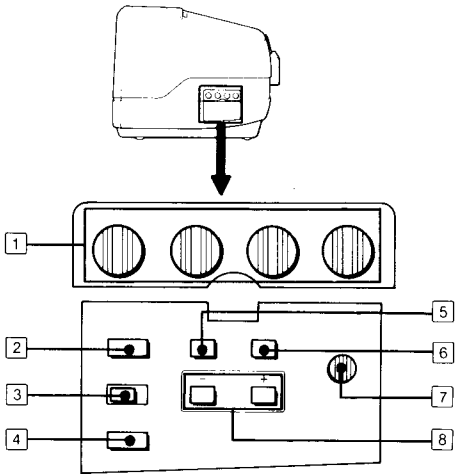


Control table A-2

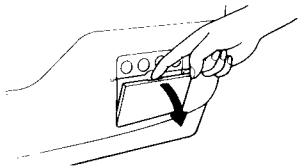
Push so that the table comes out. A-3

- 1 **CLOCK SET/START button**  
Press to set the clock.
- 2 **CLEAR button**  
Press to erase the timer setting of a particular event.
- 3 **TIMER SELECT button**  
Press to select the timer programme number 1, 2 or 3.
- 4 **REC (recording) MODE SP/LP button**  
Press to select the recording speed: SP or LP.
- 5 **WAKE UP SET button**  
Press to set the wake up timer.
- 6 **WAKE UP ON/OFF button**  
Press to set the unit in the wake up timer standby mode.
- 7 **SLEEP button**  
Press to activate the sleep timer.
- 8 **DAY button**  
Press to set the day of the week in the clock or timer setting.
- 9 **TURN ON H (hour) and M (minute) buttons**  
Press to set the turn-on time in the timer setting, the time in the clock setting, or the wake up timer setting.
- 10 **TURN OFF H (hour) and M (minute) buttons**  
Press to set the turn-off time in the timer setting.
- 11 **PROGRAM button**  
Press to select the programme to record in the timer setting or the programme to watch in the wake up timer setting.
- 12 **TIMER REC (recording) ON/OFF button**  
Press to activate the timer.  
Press again to deactivate the timer.

A-4



A-5



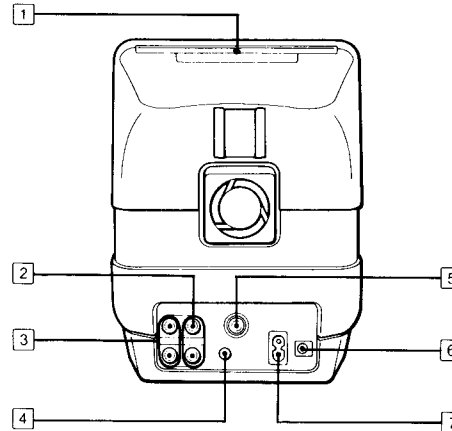
Right side A-4

- 1 **Picture adjustment controls**  
 ● (picture) / ○ (brightness) / ● (colour) / ⊞ (vertical hold)

(Inside the cover)  
Pull the cover towards you. A-5

- 2 **INPUT SELECT button**  
Press to select input signals: built-in TV or inputs to AUDIO/VIDEO IN jacks.
- 3 **AFT (automatic fine tuning) switch**  
Normally set to ON. The automatic fine tuning circuit fine tunes the stations for the best possible picture. Set to OFF to fine tune a station manually.
- 4 **A/V MUTE (audio/video muting) button**  
Press to mute the picture and sound while recording and press again to monitor the recording picture and sound while timer recording.
- 5 **SEARCH button**  
Press to preset stations.
- 6 **CLEAR button**  
Press to erase unused programmes from preset memory.
- 7 **SLOW ADJ (adjustment) control**  
Adjust the slow motion picture quality.
- 8 **TUNING buttons**  
Press repeatedly to tune in a station when the PRESET button is set to ON.  
Keep depressed to fine tune a station when the PRESET button and the AFT switch are set to OFF.

A-6

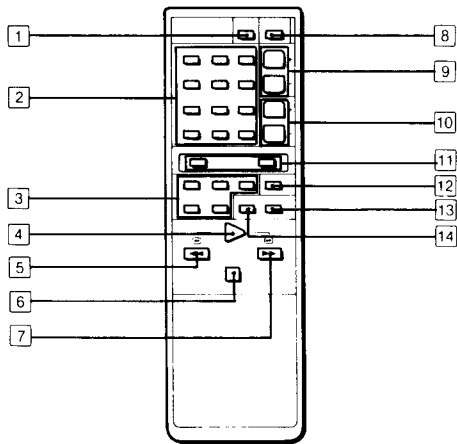


Rear A-6

- 1 **Handle**  
Use to carry the unit.
- 2 **VIDEO IN/OUT jacks** (phono type)  
Connect to the video output/input of the other VTR for editing tape.
- 3 **AUDIO IN/OUT jacks** (phono type)  
Connect to the audio output/input of the other VTR for editing tape.
- 4 **CONTROL S IN jack**  
Connect to the CONTROL S output jack of a Sony product for various systematic operations.
- 5 **AERIAL IN connector** (IEC-type)  
Connect the supplied aerial for TV reception.
- 6 **DC IN 12/24V socket**  
Connect the supplied DCC-16AE car battery cord for car battery operation or to use with the NP-4000.
- 7 **AC IN socket**  
Connect the supplied power cord for AC power operation.



## A-7



## Remote Commander A-7

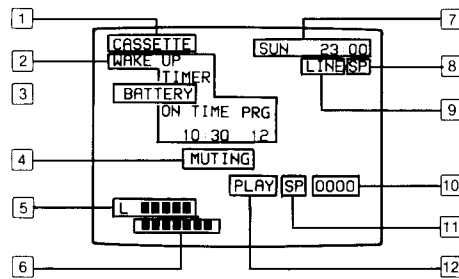
- 1 **DATA SCREEN button**  
Press to keep the on-screen indications displayed. Press again to make them disappear.
- 2 **Programme number buttons**  
Use for selecting programmes.  
For 0 through 9: Press corresponding single-digit numerals.  
For 10 through 19: Press "1-" for tens-digit and then ones-digit.  
For 20 through 29: Press "2-" and then ones-digit.
- 3 **Buttons for various playback modes**  
PAUSE/FRAME (frame-by-frame) / x2 / x<sup>1/10</sup>/x<sup>1/5</sup>
- 4 **PLAY (playback) button\***
- 5 **REW (rewind) button\***
- 6 **STOP button\***
- 7 **FF (fast forward) button\***
- 8 **ON switch\***  
Press to turn on the unit. Press again to turn off the unit.
- 9 **PROG (programme) +/- buttons\***
- 10 **VOLUME +/- buttons\***
- 11 **● REC (recording) buttons\***  
Press both buttons simultaneously to start recording.
- 12 **WAKE UP button**  
Functions the same as WAKE UP ON/OFF button on the unit.
- 13 **COUNTER RESET button**  
Press to reset the tape counter to "0000".
- 14 **MUTING button**  
Press to mute the sound immediately while watching TV programme.

The buttons with the \* mark have the same function as those on the unit.

**Note**

The auto play function cannot be activated with the buttons on the Commander.

## A-8



## On-screen indications A-8

- 1 Appears when there is no cassette in the cassette compartment or the safety tab on the cassette is slid shut in the timer recording mode.
- 2 Indicates the setting of wake up timer or sleep timer.
- 3 Appears when the battery pack NP-4000 is nearly exhausted.
- 4 Appears when MUTING is pressed.
- 5 Indicates the approximate location of the programme scanned in the band when presetting channels.
- 6 Shows the sound volume when VOLUME +/- is pressed and when setting the wake up timer.
- 7 Current time indication
- 8 Shows the REC MODE SP/LP button setting.
- 9 Shows the input signal: TV programme number or LINE input.
- 10 Tape counter
- 11 Indicates the recording mode of the cassette now used.
- 12 Indicates the tape operation mode.  
PLAY, STILL, STILL **II**▶▶ (frame-by-frame picture), ▶▶▶▶ (fast forward), ◀◀ (rewind), ▶▶▶▶ (picture search forward), [◀◀] (picture search in reverse), x<sup>1/5</sup>, x<sup>1/10</sup>, x2, REC (recording), REC PAUSE (recording pause)

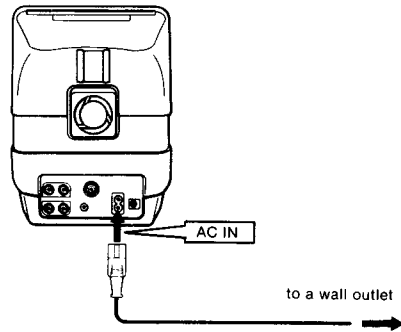
For the indications of timer setting, see page 13.

**Note**

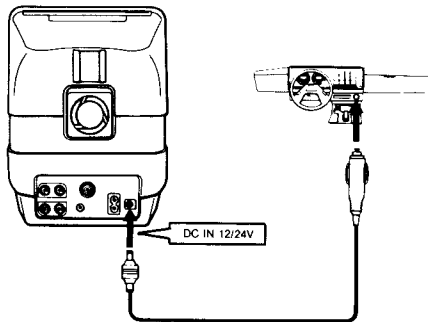
When no video signal is input, upper part of the on-screen indications will be distorted.

## 1-5. POWER SOURCES

**B-1**



**B-2**



Supply power to the EV-DT1 from house current, car battery (DC 12 V or 24 V), or NP-4000 rechargeable battery pack.

### To use the unit indoors **B-1**

- 1 Connect the supplied AC power cord (mains lead) to the AC IN socket.
- 2 Connect the other side of the AC power cord (mains lead) to an AC outlet.

#### Note

Do not connect the AC power and DC power sources simultaneously.

### To use the unit in the car **B-2**

Using the supplied car battery cord, connect the DC IN 12/24 V jack to a 12 V or 24 V cigarette lighter socket of the car and turn on the EV-DT1. For further details, see page 17.

#### Notes

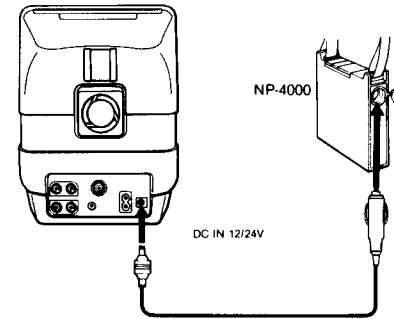
- **Be sure to remove the car battery cord from the unit when not in use.**  
If the car battery cord is connected to the cigarette lighter socket, the car battery will be exhausted, even if the unit is turned off.
- Connect the car battery only to a car that has a negative ground.
- If you use several pieces of equipment that draw heavily on the car battery, such as the high-beam headlights, windshield wipers, or air-conditioner, together with the EV-DT1 while the car engine is idling, the BATTERY indication may blink on the screen.  
When the car engine rotates fast enough after the car starts running, the indication BATTERY will disappear. Note that using the EV-DT1 for a long time when the BATTERY indication is blinking may exhaust the car battery.
- As the condition of the incoming signal fluctuates, a stable picture may not be obtained in a moving car.
- For your safety, do not watch the TV or operate the controls while driving.
- To avoid malfunction, do not use the unit when the temperature inside the car is below 5°C (41°F) or over 40°C (104°F).
- Avoid leaving the unit in a location where the temperature reaches below -20°C (4°F) or over +60°C (140°F). If you do, it may cause distortion of the cabinet or malfunction of the unit.

**Note:** If a car battery cord not manufactured by Sony is used, a fuse must be installed in the battery cord and the polarity of the plug must be as illustrated.



Polarity of Sony type

**B-3**



### To use with Sony NP-4000 rechargeable battery pack **B-3**

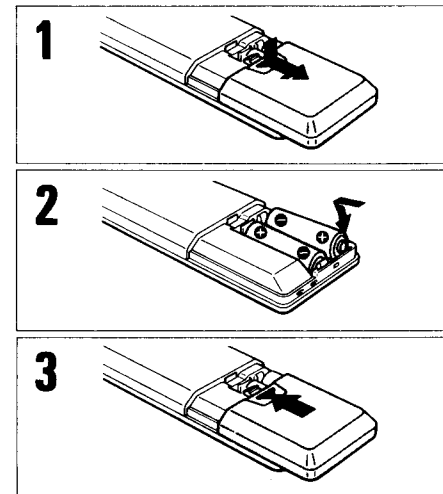
Using the supplied car battery cord, connect the DC IN 12/24 V jack to the cigarette lighter socket of the NP-4000. A fully-charged NP-4000 provides approximately 1 hour of continuous operation. When it is used in a cold location, its operating time is shortened.

#### Note

When the voltage becomes low, the BATTERY indication starts blinking. Replace or recharge the battery pack.

## 1-6. PREPARING THE REMOTE COMMANDER

**C**



### To Insert Batteries **C**

- 1 Open the lid.
- 2 Insert two R6 (size AA) batteries with correct polarity.
- 3 Close the lid.

#### Battery life

Under normal operation, batteries will last for about 6 months. When the batteries are exhausted, the buttons on the Commander will not function. Replace both batteries with new ones.

#### If the Commander is not to be used for a long period of time

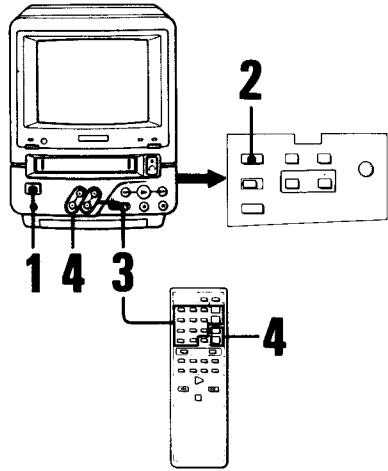
Remove the batteries to avoid possible damage from battery leakage.

#### Operable range

The shorter the distance between the Commander and the unit, the wider the angle within which the Commander can be operated.

## 1-7. WATCHING TV PROGRAMS

D-1



- 1 Press ON/STANDBY to turn on the unit.
- 2 Press INPUT SELECT so that a programme number is displayed on the screen.
- 3 Select a programme.
  - 1) **Using PROGRAM on the unit or PROG on the Commander**  
Press + for higher-numbered programmes and - for lower-numbered programmes. The programme will appear in numerical sequence.
  - 2) **Using the programme number buttons on the Commander**  
Press the numerals of the programme.  
e.g. Programme 21: Press "2-" and then "1".
- 4 Adjust the volume by pressing VOLUME +/-.

### To use the supplied aerial [D-2]

Adjust the aerial for the best reception.  
To connect the supplied aerial, see page 23.

**To keep the on-screen indications displayed**  
Press DATA SCREEN on the Remote Commander.  
Press again to make them disappear.

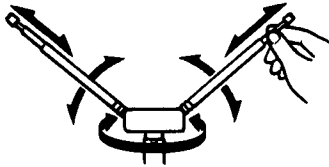
**To erase unused programmes**  
See page 16.

**To mute the sound immediately**  
Press MUTING on the Remote Commander.  
The MUTING indicator will appear.  
To restore the sound to its previous level, press MUTING again or press VOLUME "+".

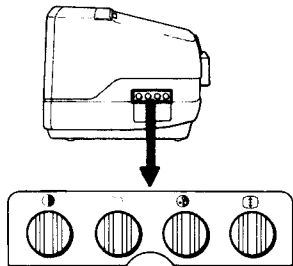
**To turn off the TV**  
Press ON/STANDBY on the unit or ON switch on the Commander.  
The STANDBY lamp will light up.  
Disconnect the power source before sleeping or going out.

**To listen with an earphone**  
Connect an earphone with miniplug to EARPHONE jack.  
No sound will be heard from speakers.  
When using headphones equipped with a miniplug, the sound will be heard through both right and left sides in monaural.

D-2



D-3



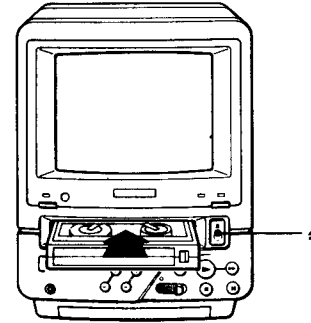
### To Adjust the Picture [D-3]

Adjust the following controls to your preference.

☉	Turn clockwise to increase picture contrast and anticlockwise to decrease picture contrast.
☼	Turn clockwise for more brightness and anticlockwise for less.
☀	Turn clockwise for more colour intensity and anticlockwise for less.
☺	Adjust this control if the picture rolls up and down.

## 1-8. HANDLING A CASSETTE

E-1



### To Insert a cassette [E-1]

Make sure that the power source is connected to the unit.  
**Insert the cassette with the window side up.**  
When the cassette is automatically taken into the cassette compartment, remove your hand from the cassette.  
The unit will automatically turn on when a cassette is inserted.

### To Eject a Cassette

Press ▲.  
(During recording, eject the cassette after pressing ■ to stop the tape.)  
Even when the power is off, you can eject a cassette only by pressing ▲. The unit will automatically turn on and the cassette will come out.

### To Prevent Accidental Erasure [E-2]

(The photo is of Sony type.)

When a new recording is made on a previously recorded tape, the previous recording is automatically erased. To protect a recording, slide the safety tab out to cover the opening.

E-2



### Recording/Playback Time

Two tape speeds can be selected with the REC MODE SP/LP button. The LP mode is twice as long as the SP mode. For better picture and sound, recording in the SP mode is recommended.  
During playback, the mode in which the tape was recorded is selected automatically.

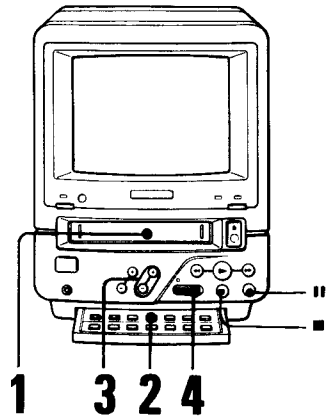
Cassette	SP mode	LP mode
P5-15MP	15 min.	30 min.
P5-30MP	30 min.	1 hr.
P5-60MP	1 hr.	2 hr.
P5-90MP	1 hr. 30 min.	3 hr.

### Notes

- Never insert anything in the small holes on the rear of the cassette.
- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.
- Do not put anything except the cassette into the cassette compartment.

## 1-9. RECORDING TV PROGRAMS

F



- 1 Insert a cassette.
- 2 Push to open the control table and press REC MODE SP/LP to select the recording mode.
- 3 Select the desired TV programme. (See page 11.)
- 4 Slide the ● REC switch to the right to start recording. (If you use the Remote Commander, press both REC buttons simultaneously.)  
The REC lamp will light up and the recording starts.

To stop recording, press ■.

### To stop the tape for a moment

Press ■■.

Press again to resume recording.

To protect the video heads and the tape, the pause mode will be released after about 7 minutes and recording will stop.

### When the tape is recorded to the end

It is rewound automatically.

### To change the programme during recording

Set the unit in the recording pause mode by pressing ■■ and then select another programme.

### To mute the picture and sound during recording

Press A/V MUTE.

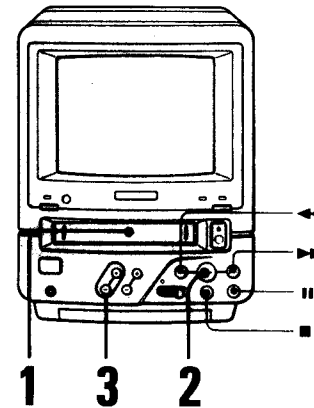
Press again to monitor it.

### Notes

- When you use the supplied aerial, first record on trial to check if the TV programme is recorded clear.
- You cannot watch another programme while recording.

## 1-10. PLAYING BACK

G-1



- 1 Insert a cassette. (See page 11.)  
The unit turns on automatically.
- 2 Press ► to start playback.
- 3 Adjust the volume by pressing VOLUME +/-.

To stop playback, press ■.

To rewind the tape, press ◀◀.

To advance the tape rapidly, press ▶▶.

### To rewind the entire tape and play it back automatically—Auto play

Keep ◀◀ pressed and press ►.

### When the tape is played to the end

It is rewound automatically.

### To Index the Tape

Keep the on-screen indications displayed by pressing DATA SCREEN on the Commander.

Before playback or recording, press COUNTER RESET on the Commander to reset the counter to "0000". Note the counter reading at the desired points. Refer to these readings to locate the desired points later.

### Note

When the cassette is ejected, the counter is reset to "0000".

### Various Playback G-2

Using the Remote Commander, various types of playback are possible.

### To stop the tape for a moment—Still picture

Press PAUSE (or ■■ on the unit) during playback.

To resume normal playback, press PLAY.

The pause mode will be automatically released after about 7 minutes and playback will stop to protect the tape.

### To advance the picture frame by frame

Press FRAME in the still picture mode.

To resume normal playback, press PAUSE or PLAY.

### To view the picture at slow speed—Slow motion picture

In the playback or still picture mode, press x<sup>1/10</sup> to view the picture at <sup>1</sup>/<sub>10</sub> normal speed or x<sup>1/5</sup> to view at <sup>1</sup>/<sub>5</sub> normal speed.

To resume normal playback, press PLAY.

If a noise band appears in the slow motion picture, adjust SLOW ADJ inside the cover at the right side of the unit to improve the picture quality.

### To view the picture at high speed

Press x2 in the playback or still picture mode. Picture and sound at twice normal speed will be obtained.

To resume normal playback, press PLAY.

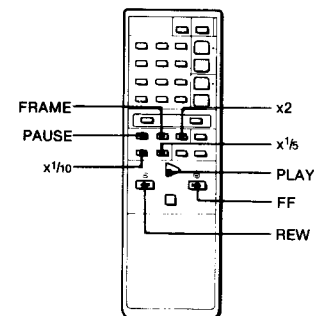
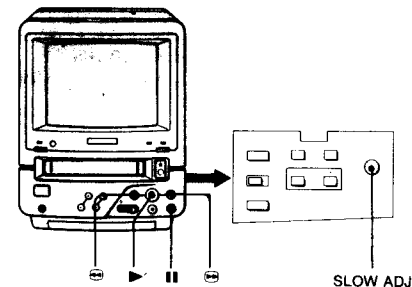
The sound will not be as good as it is during normal playback.

### To locate a particular point while viewing the picture—Picture search

Keep FF or REW (or ◀◀ or ▶▶ on the unit) pressed during playback.

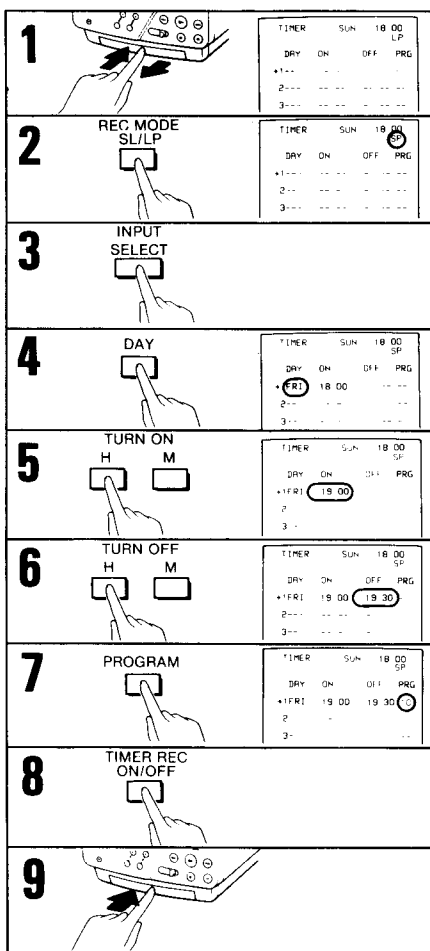
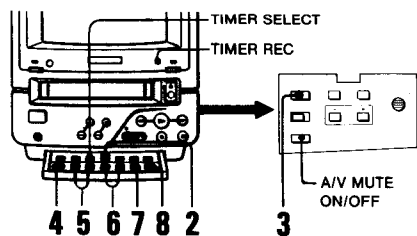
Streaks will appear and the sound will be muted. The picture may become dark.

G-2

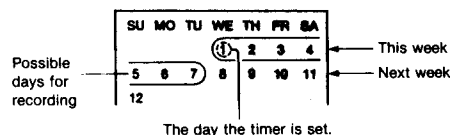


## 1-11. TIMER-ACTIVATED RECORDING

H-1



Up to three events can be programmed to be recorded on a certain day or every day within a seven-day period.



### Before setting the timer

- Set the clock. (See page 16.)
- Insert a cassette. Make sure that there is enough tape for the length of the recording and that the safety tab is slid in.

### To Set the Timer H-1

**Example:** To set the programme 1 to record TV programme 10 from 19:00 (7:00 PM) to 19:30 (7:30 PM) on Friday

- 1 Push to open the control table. The unit will turn on automatically and the display for timer setting will appear on screen.
- 2 Press REC MODE SP/LP to select the recording mode SP or LP.
- 3 If a TV programme is not displayed on screen, press INPUT SELECT to receive TV programme.
- 4 Set the day of the week by pressing DAY.
- 5 Set the turn-on time by pressing TURN ON H and M.
- 6 Set the turn-off time by pressing TURN OFF H and M.
- 7 Select the TV programme to record by pressing PROGRAM.
- 8 Press TIMER REC ON/OFF. The TIMER REC lamp will light up. The TIMER REC display is indicated on the data screen, and the power is turned off and the unit is set to the recording standby mode.
- 9 Close the control table.

Recording starts at the preset time and when it ends, the power is turned off.

### To set the second or third events

Before pressing TIMER REC ON/OFF in step 8, press TIMER SELECT so that the arrow points 2 or 3 of the event number. Then repeat steps 4 to 7.

**To record the same programme at the same time everyday**  
Press DAY until "EVR" lights.

### To check the settings

Push to open the control table. The timer settings will be displayed.

### To watch the picture during timer recording

Press A/V MUTE ON/OFF inside the cover on the right side of the unit. To turn off the display, press A/V MUTE ON/OFF again.

You cannot watch the picture during the timer recording standby mode.

### To record to the end of the tape

Do not set the turn-off time (---:---) or set it to a time after the tape will reach its end.

### If the tape ends before the turn-off time

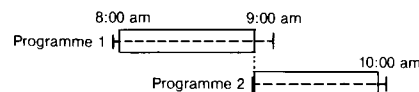
Recording will stop and the power will be turned off.

### When a power interruption occurs (when the unit is connected to the power source for 30 minutes or more)

If the power is interrupted for less than about 10 hours, the timer settings will be retained, so neither the timer nor clock need to be reset. If timer recording is in progress when the power interruption occurs, the recording will stop, but clock resetting is unnecessary. (When power turns, the recording for remaining time will be resumed at that time.) When the power interruption lasts 10 hours or more, the clock will blink showing SUN 0:00. In this case, reset the timer and clock.

### If the settings overlap

- The recording of programme which starts later than the other will be made as set and the end of the first event will be cut off.



- If the turn-on time of events are the same, the recording of the event having lower number will be made. The event having higher number will be cancelled.

### Notes

- When the WAKE UP TIMER is set to ON, TIMER REC cannot be set to ON. Press TIMER SELECT to set the unit to the timer recording setting mode.
- Once the recording mode, SP or LP, has been selected, all other programmes will also be recorded in the same recording mode.

## To Operate the Unit after Setting Timer H-2

### To use the video TV before recording starts

- 1 Push to open the control table to set the timer setting mode.
- 2 Press TIMER REC ON/OFF so that the TIMER REC lamp goes off. The unit can now be used. After operation, press TIMER REC ON/OFF again so that the TIMER REC lamp lights and close the control table.

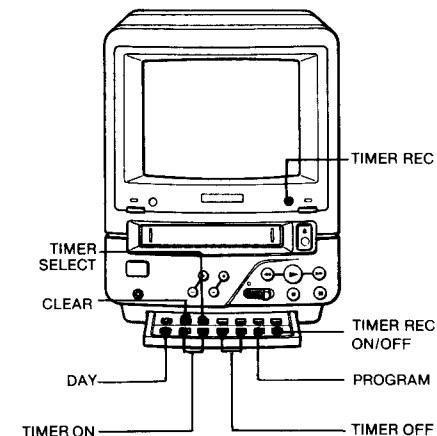
### To change the settings

- 1 Push to open the control table to set the timer setting mode.
- 2 Select the event to change by pressing TIMER SELECT.
- 3 Change the settings by pressing DAY, TIMER ON, TIMER OFF or PROGRAM.
- 4 Press TIMER REC ON/OFF so that the TIMER REC lamp lights and close the control table.

### To erase the setting of a particular event

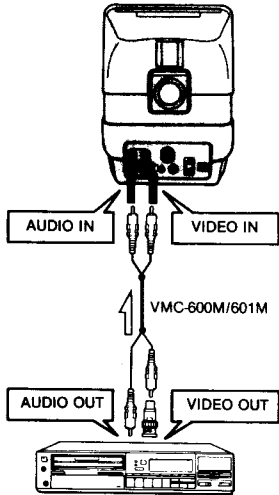
- 1 Push to open the control table to set the timer setting mode.
- 2 Select the event to erase by pressing TIMER SELECT.
- 3 Press CLEAR.
- 4 Press TIMER REC ON/OFF to set the unit to the recording standby mode for the remaining events and close the control table.

H-2



## 1-12. EDITING TAPE

I-1



Tapes can be edited when another VTR (8 mm, **B** or VHS format) equipped with video/audio inputs is connected.

### To Edit from Another VCR to the EV-DT1 I-1

- 1 Connect AUDIO/VIDEO IN jacks of the EV-DT1 and the audio/video outputs of another VTR using the optional VMC-600M/601M\* connecting cord.
- 2 Press INPUT SELECT inside the cover on the right side of the EV-DT1 so that "LINE" appears on screen.
- 3 Start playback on another VTR and start recording on the EV-DT1.

\* If another VTR has stereo audio outputs, use the VMC-602MS/603MS connecting cord (optional).

### To Edit from the EV-DT1 to Another VTR I-2

- 1 Connect AUDIO/VIDEO OUT jacks of the EV-DT1 and the audio/video inputs of another VTR using the optional VMC-600M/601M\* connecting cord.
- 2 Set the input select switch on another VTR to line input, if provided.
- 3 Start playback on the EV-DT1 and start recording on another VTR.

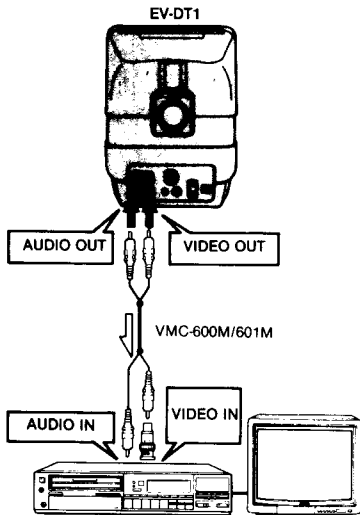
\* If another VTR has stereo audio inputs, use the VMC-602MS/603MS connecting cord (optional).

#### Notes

- Avoid repetition of editing tapes, as the picture and tone quality will be impaired noticeable for newly edited tapes.
- When you make the recording and playback connections simultaneously to the same VTR, noise may come out.

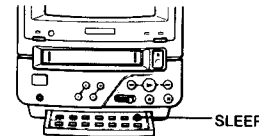
#### Caution

Television programmes, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or programme owner.



## 1-13. TURNING OFF THE UNIT AUTOMATICALLY AFTER A CERTAIN TIME — SLEEP TIMER

J



You can set the unit to turn off automatically after a certain time between 30 minutes and 5 hours while viewing a TV programme or video playback, or while recording.

- 1 Push to open the control table.  
The unit will turn on automatically.
- 2 Press SLEEP so that the display for sleep timer setting appears.
- 3 Press SLEEP repeatedly until desired time duration is displayed.  
Each time SLEEP is pressed, the duration time increases at 30 minute intervals.
- 4 Close the control table.

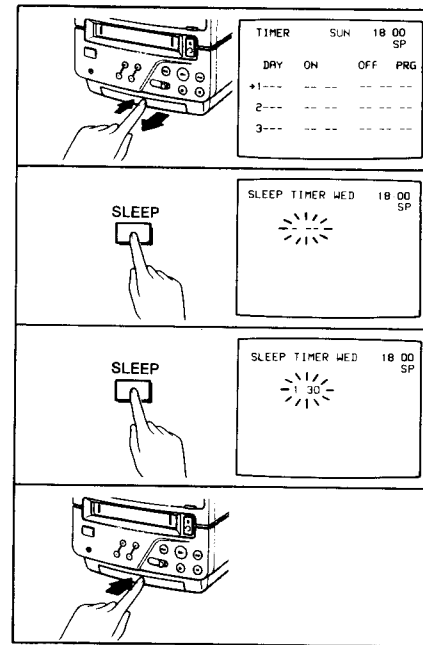
After setting the sleep timer, you can operate the unit normally.

#### To cancel the sleep timer

Press SLEEP repeatedly until "---:--" is displayed.

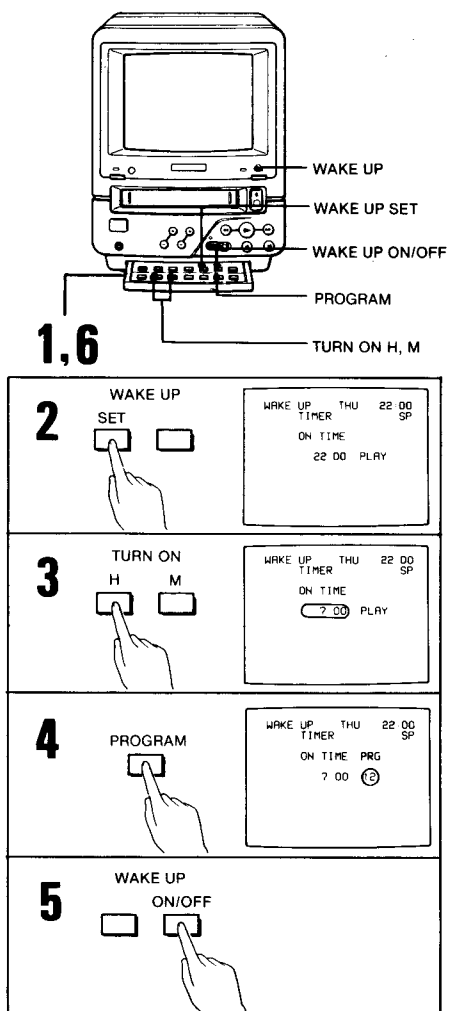
#### Notes

- During the sleep timer operation, the timer recording and the wake up timer will not operate.
- Once the power is turned off, the sleep timer is cancelled.



## 1-14. TURNING ON THE UNIT AT THE PRESET TIME — WAKE UP TIMER

[K]



You can watch a TV programme or a VTR playback at the preset time. You can use this function instead of the alarm clock.

**Before setting the wake up timer, check that the clock is set correctly.**

**Example: To watch TV programme 12 at 7:00 AM**

- 1 Push to open the control table.
- 2 Press WAKE UP SET.
- 3 Set the wake up time by pressing TURN ON H and M.
- 4 To watch the TV programme, select the programme by pressing PROGRAM.
- 5 Press WAKE UP ON/OFF (or WAKE UP on the Commander).  
The WAKE UP lamp lights up.
- 6 Close the control table and turn off the unit.  
Everyday the unit will be turned on at the preset time, and the TV programme or VTR playback will start.

**Each time the PROGRAM button is pressed**  
The preset programme is indicated one by one.

**When one hour has passed after the unit was turned on**  
If no button is pressed, the unit is turned off.

### Notes

- During sleep timer operation, the wake up timer will not operate. (Setting is possible.)
- The wake up timer cannot be used in the timer recording standby mode.
- Timer setting cannot be made with the TURN OFF button.
- The wake up timer will not operate when the unit is turned on.

**To cancel the wake up timer**  
Press WAKE UP ON/OFF so that the WAKE UP lamp goes off.

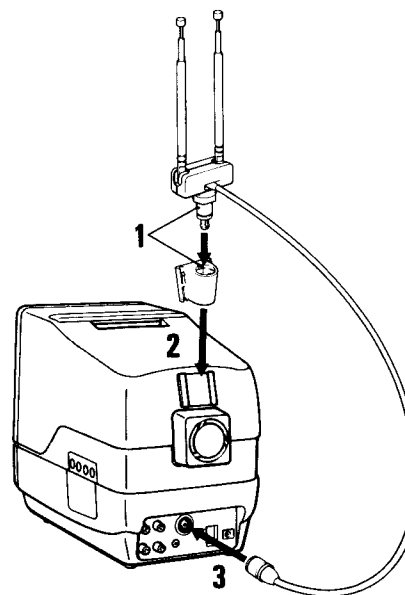
**To watch the VTR playback**  
Skip the step 4 above and check that "PLAY" is displayed on screen. If it is not displayed, press WAKE UP SET so that it appears on screen.  
Insert the cassette and locate the desired position.

## 1-15. TO CONNECT THE SUPPLIED AERIAL

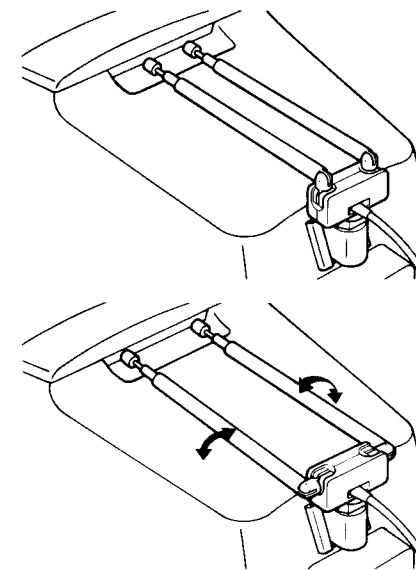
- 1 Align the projection of the supplied indoor aerial with the groove of the aerial holder, and insert the aerial to the aerial holder.
- 2 Attach the supplied aerial holder to the rear of the unit.
- 3 Connect the aerial cable to the AERIAL IN connector.

When carrying the unit or installing the unit into the carrying bag, fold the aerial as shown. [L-3]

[L-2]

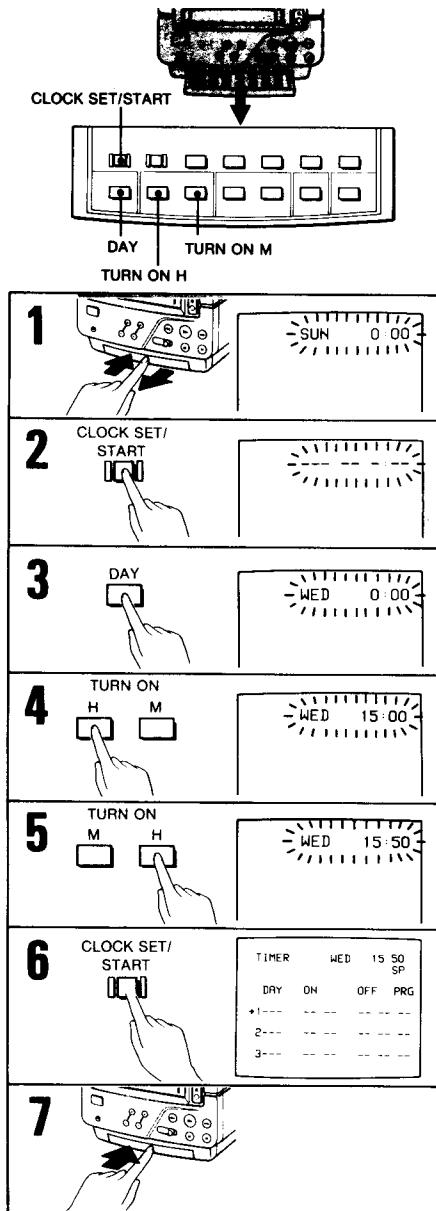


[L-3]



When raising the aerial, move the hinges.

## 1-16. SETTING THE CLOCK



Make sure that the power source is connected to the unit.

- 1 Push to open the control table.  
The unit will turn on automatically.
- 2 Press CLOCK SET/START.
- 3 Set the day of the week by pressing DAY.
- 4 Set the hour by pressing TURN ON H.
- 5 Set the minute by pressing TURN ON M.
- 6 Press CLOCK SET/START at the same time as an announced time signal.  
The clock starts.  
The display for timer setting will appear on screen.
- 7 Close the control table.

### To correct the setting after starting the clock

- 1 Press CLOCK SET/START.  
The clock indication becomes "-----".
- 2 Press DAY, ON H, or ON M depending on the item to correct.  
Once the button is pressed, the indication of the former setting flashes. Press the button repeatedly until you obtain the correct setting.
- 3 Press CLOCK SET/START.

**Note on time indication**  
0:00 = midnight, 12:00 = noon

### Day of the week indication

SUN: Sunday MON: Monday TUE: Tuesday  
WED: Wednesday THU: Thursday FRI: Friday  
SAT: Saturday

### DAY, TURN ON H and M buttons

Kept pressed, the indication will advance continuously.  
When you press and immediately release the button, the indication will advance by one.

### If you disconnect the power source

The clock will be stored in memory for about 10 hours as long as power has been already supplied to the unit for more than 30 minutes.

### During operation

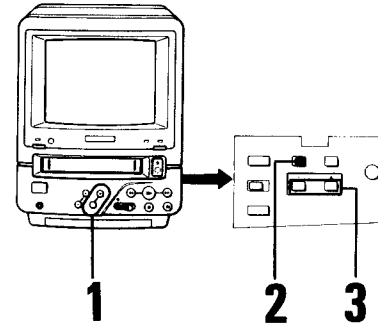
You can set the clock while watching a TV programme or while operating VTR.

### Note

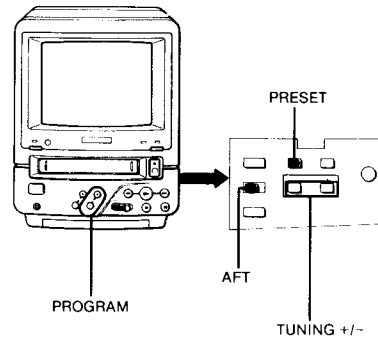
You cannot change the setting during the sleep timer operation. Cancel it first to make the correct settings.

## 1-17. PRESETTING TV CHANNELS

**N-1**



**N-2**

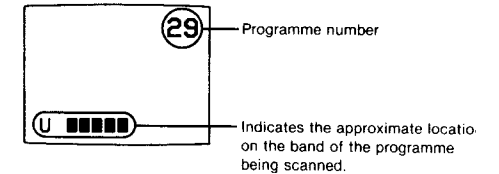


This unit is capable of receiving VHF programmes E2-S20, UHF programmes 21-69 and is preset at the factory to receive certain programmes.

### To Preset New Programmes **N-1**

If the picture of a desired programme does not appear by pressing the programme number buttons and ENTER on the Remote Commander or by pressing PROGRAM, preset the programme as follows.

- 1 Select a programme number at which no picture appears on the monitor screen.
- 2 Press SEARCH.
- 3 Press TUNING +/- until the desired programme appears on the screen.



- 4 Press SEARCH again.

To preset other programmes, repeat steps 1 to 3 before pressing PRESET in step 4.

The newly preset programmes will appear in the proper numerical sequence when PROGRAM is pressed.

### To Erase Programmes **N-2**

You can erase certain programmes, for example, the inactive programmes in your area, so that only the desired programmes will appear in sequence when you press PROGRAM.

- 1 Select the programme number to be erased.
- 2 Press SEARCH.
- 3 Press CLEAR.  
The "----" indication appears momentarily, indicating that the programme has been erased.
- 4 Press SEARCH again.

### To preset the erased programmes again

Proceed the steps to preset new programmes.

### To fine-tune a weak station

Normally set the AFT switch to ON.

If the picture of a particular programme is not acceptable, set the AFT switch to OFF (FINE) and press TUNING + or - until the picture becomes clearer. When viewing this particular programme, do not set the AFT switch to ON.



## 1-18. NOTE ON MOISTURE CONDENSATION

### Moisture inside the Unit

If the unit is suddenly taken from a cold to a warm environment, or if it is kept in a humid room, moisture may condense on the internal assembly of the unit. When a cassette is already inside the cassette compartment, eject the cassette by pressing the **▲** button and leave the unit for about one hour.

### Moisture on the Tape

When the cassette is taken from a cold to a warm environment, moisture may also condense on the tape. In this case, eject the cassette and leave the unit for one hour.

## 1-19. USE OF THE SUPPLIED CAR BATTERY CORD

### Prior to Use

- Before making the connection, check the polarity of your car battery. The supplied car battery cord is designed for use with a negative ground battery.
- If you have any question concerning the car battery polarity or voltage, consult your car dealer.

### Fuse Replacement

If the car battery cord does not seem to function normally, check whether the fuse in the input plug is blown. If the fuse is blown, replace it with a commercially available 5-ampere fuse. Proceed as follows:

- 1 Turn off the EV-DT1 and unplug the car battery cord from the cigarette lighter socket.
- 2 Loosen and remove the plug head. **[O-1]**
- 3 Remove the fuse. **[O-2]**
- 4 Install a new fuse.
- 5 Replace the removed plug head.

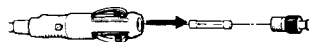
### Notes

- Use only a fuse of the same type and rating of the original one. Never use an ordinary piece of wire in place of the fuse.
- Always keep the cigarette lighter socket of the car clean. If the socket is dirty with cigarette ash, the resulting bad contact may overheat the car battery cord plug.

**[O-1]**



**[O-2]**



## 1-20. TROUBLESHOOTING

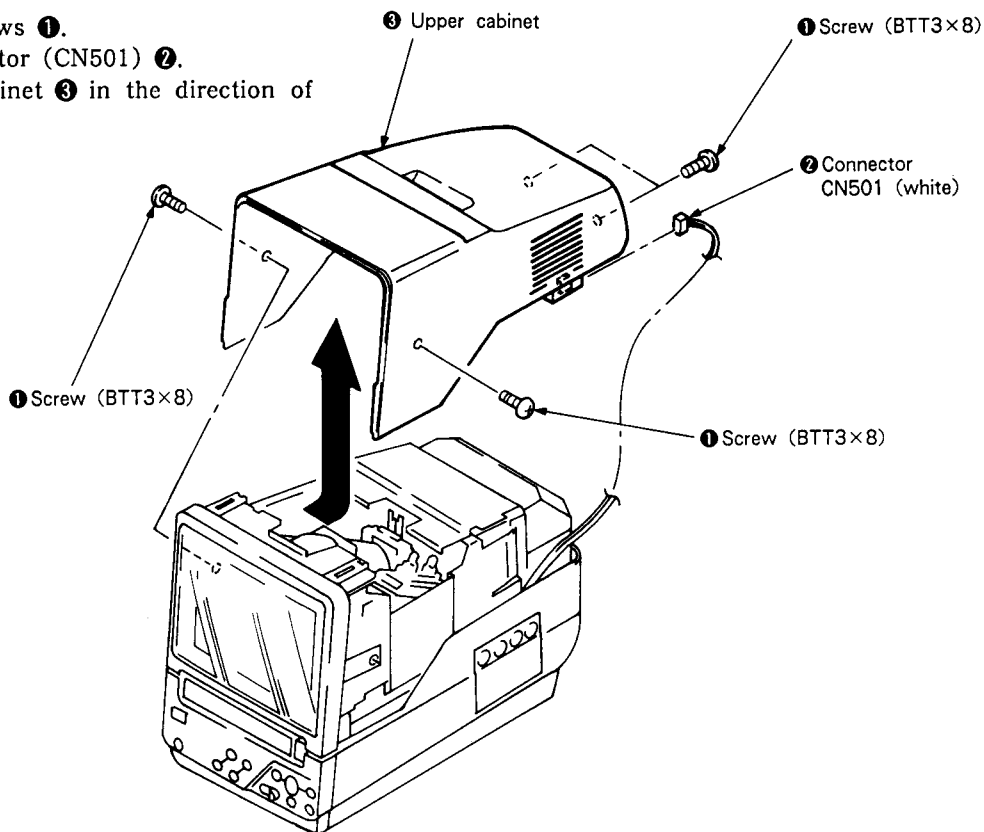
If any difficulty should arise during operation, first check the power cord (mains lead) connection, then check through the following list. Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

	Symptom	Possible causes and corrections
POWER	The unit does not turn on.	<ul style="list-style-type: none"> <li>• The power cord (mains lead) is disconnected.</li> <li>• The recorder is in the timer standby mode. (Press <b>TIMER REC ON/OFF</b> so that the <b>TIMER REC</b> lamp goes off.) (See page 13.)</li> </ul>
	The clock blinks showing "SUN 0:00".	<ul style="list-style-type: none"> <li>• There has been a power interruption for more than 10 hours. Reset the clock and timer setting. (See page 13.)</li> </ul>
TV	Poor or no picture, good sound	<ul style="list-style-type: none"> <li>• Adjust <b>▶</b>. (See page 11.)</li> <li>• Adjust <b>◀</b>. (See page 11.)</li> <li>• Check the aerial connection. (See page 15.)</li> </ul>
	Good picture, no sound	<ul style="list-style-type: none"> <li>• Press <b>VOLUME +</b>.</li> <li>• Release <b>MUTING</b>. (See page 11.)</li> </ul>
	No colour	<ul style="list-style-type: none"> <li>• Adjust <b>◀▶</b>. (See page 11.)</li> </ul>
	Snow and noise only	<ul style="list-style-type: none"> <li>• Check the aerial connection. (See page 15.)</li> </ul>
	Dotted lines or stripes	<ul style="list-style-type: none"> <li>• This is often caused by local interference. (e.g. cars, neon signs, hair dryers etc.) Adjust aerial for minimum interference.</li> </ul>
	Double images or ghosts	<ul style="list-style-type: none"> <li>• Reflections from nearby mountains or buildings often cause this problem. A highly directional aerial may improve the picture.</li> </ul>
VCR	The playback picture is not clear.	<ul style="list-style-type: none"> <li>• The video heads may be contaminated. Clean the heads using the Sony V8-25CL cleaning cassette (optional). For details on cleaning, refer to the instructions furnished with the cleaning cassette.</li> </ul>
	Recording cannot be made.	<ul style="list-style-type: none"> <li>• The safety tab on the cassette is slid shut.</li> </ul>
	The picture being timer-recorded cannot be monitored on screen.	<ul style="list-style-type: none"> <li>• Press the <b>A/V MUTE</b> button.</li> </ul>
	A timer recording is not made.	<ul style="list-style-type: none"> <li>• The clock is not set correctly.</li> <li>• There has been a power interruption.</li> <li>• The <b>TIMER REC ON/OFF</b> button has not been pressed.</li> </ul>
	A timer recording cannot be set.	<ul style="list-style-type: none"> <li>• The wake up timer is set. (See page 15.)</li> </ul>
	The <b>TIMER REC</b> lamp does not light when the <b>TIMER REC ON/OFF</b> button is pressed.	<ul style="list-style-type: none"> <li>• The <b>WAKE UP ON/OFF</b> button is set to <b>ON</b> (<b>WAKE UP</b> lamp lights). (See page 15.)</li> </ul>

## SECTION 2 DISASSEMBLY

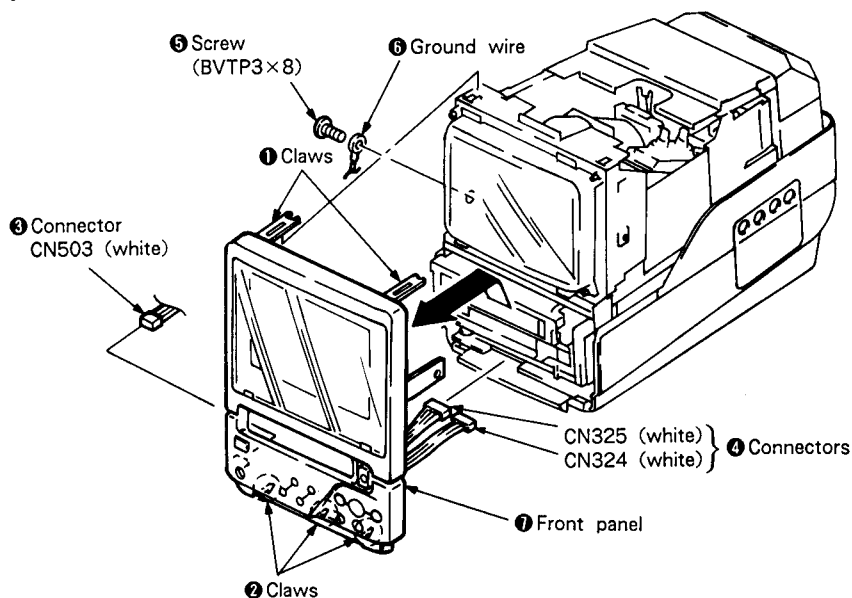
### 2-1. REMOVAL OF UPPER CABINET

- 1) Remove the four screws ①.
- 2) Disconnect the connector (CN501) ②.
- 3) Remove the upper cabinet ③ in the direction of arrow.



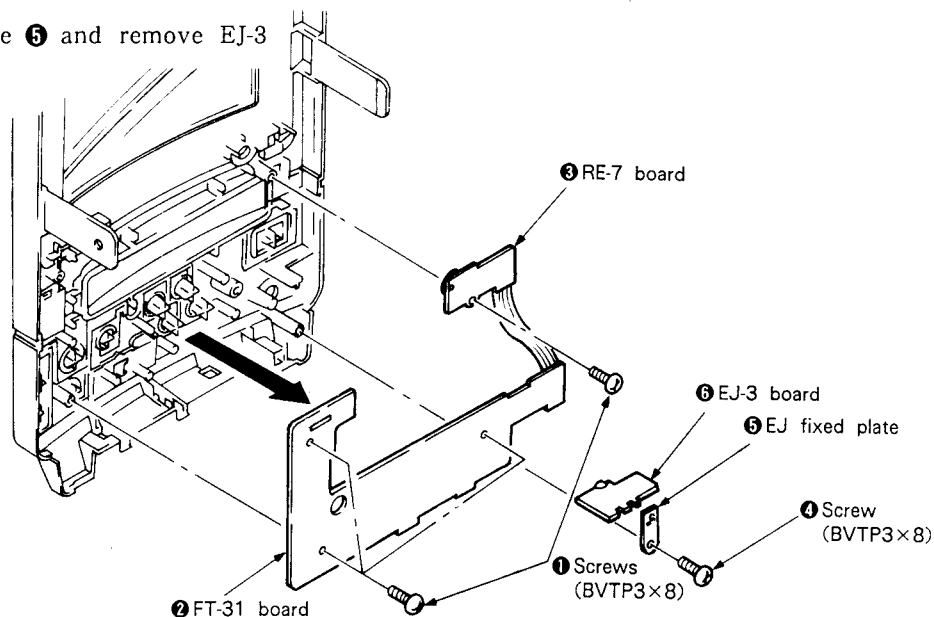
### 2-2. REMOVAL OF FRONT PANEL

- 1) Remove the claws ① in two places.
- 2) Remove the claws ② in three places.
- 3) Disconnect the connector (CN503) ③.
- 4) Disconnect the two connectors (CN324, CN325) ④.
- 5) Remove the screw ⑤ and remove ground wire ⑥.
- 6) Remove the front panel ⑦ in the direction of arrow.



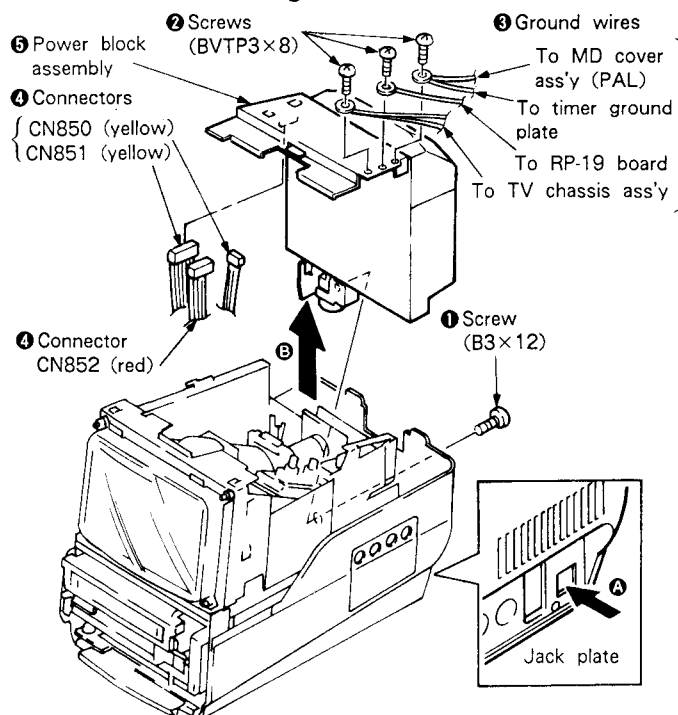
## 2-3. REMOVAL OF FT-31 BOARD

- 1) Remove the four screws ①.
- 2) Remove the FT-31 board ② and RE-7 board ③ in the direction of arrow.
- 3) Remove the screw ④.
- 4) Remove the EJ fixed plate ⑤ and remove EJ-3 board ⑥.



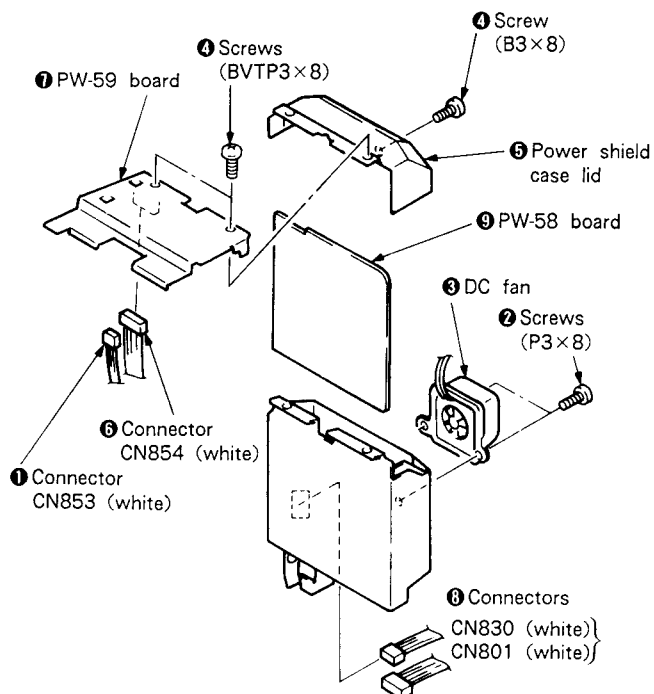
## 2-4. REMOVAL OF POWER BLOCK ASSEMBLY

- 1) Remove the screw ①.
- 2) Remove the two screws ② and remove five ground wire ③.
- 3) Disconnect the three connectors (CN850 to CN852) ④.
- 4) Disconnect the power supply connector from the jack plate in the direction of arrow A.
- 5) Remove the power block assembly ⑤ in the direction of arrow B.



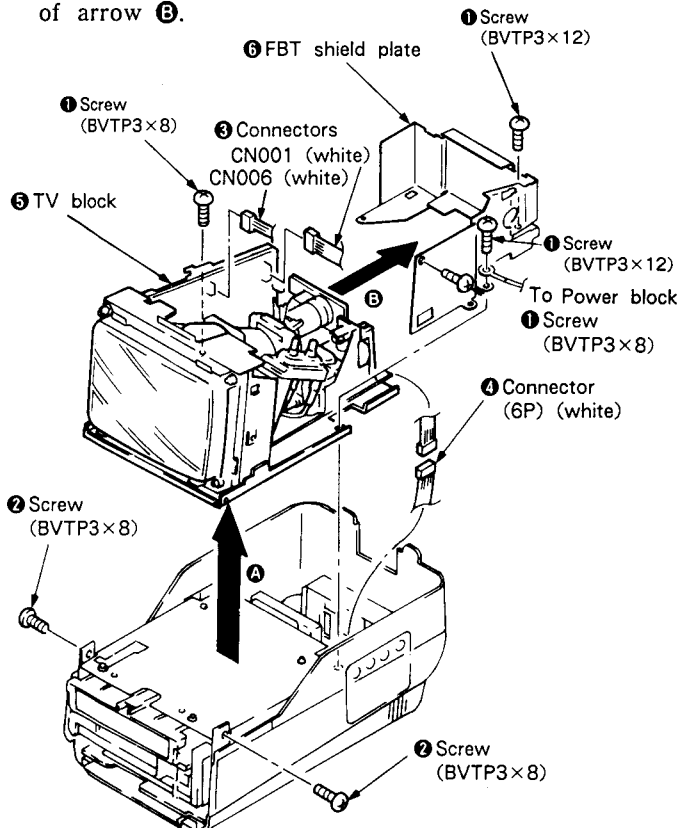
## 2-5. REMOVAL OF PW-58 BOARD

- 1) Disconnect the connector (CN853) ①.
- 2) Remove the two screws ② and remove the DC fan ③.
- 3) Remove the three screws ④ and remove power shield case lid ⑤.
- 4) Disconnect the connector (CN854) ⑥ and remove the PW-59 board ⑦.
- 5) Disconnect the two connectors (CN801, CN830) ⑧ and remove the PW-58 board ⑨.



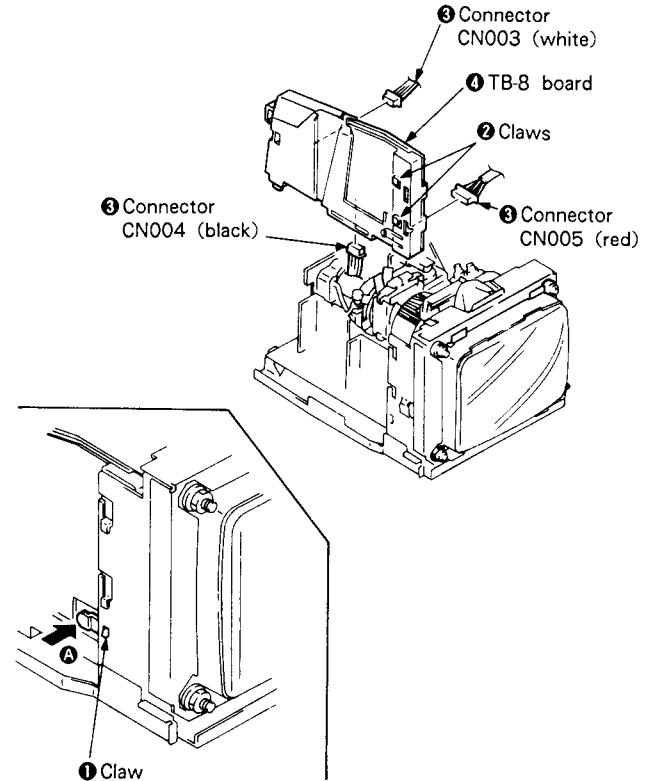
## 2-6. REMOVAL OF TV BLOCK

- 1) Remove the four screws ①.
- 2) Remove the two screws ②.
- 3) Disconnect the two connectors (CN001, CN006) ③.
- 4) Disconnect the connector (6-pin) ④.
- 5) Remove the TV block ⑤ in the direction of arrow A.
- 6) Remove the FBT shield plate ⑥ in the direction of arrow B.



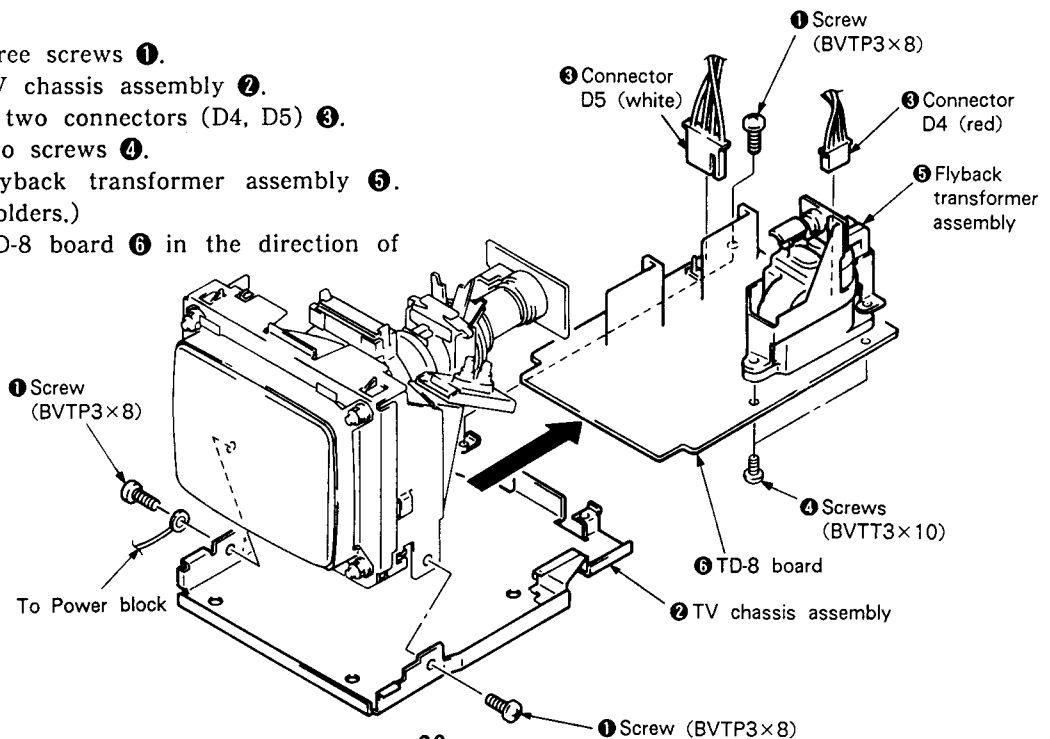
## 2-7. REMOVAL OF TB-8 BOARD

- 1) Remove the claw ① in the direction of arrow A.
- 2) Remove the two claws ②.
- 3) Disconnect the four connectors (CN003 to CN005) ③.
- 4) Remove the TB-8 board ④.



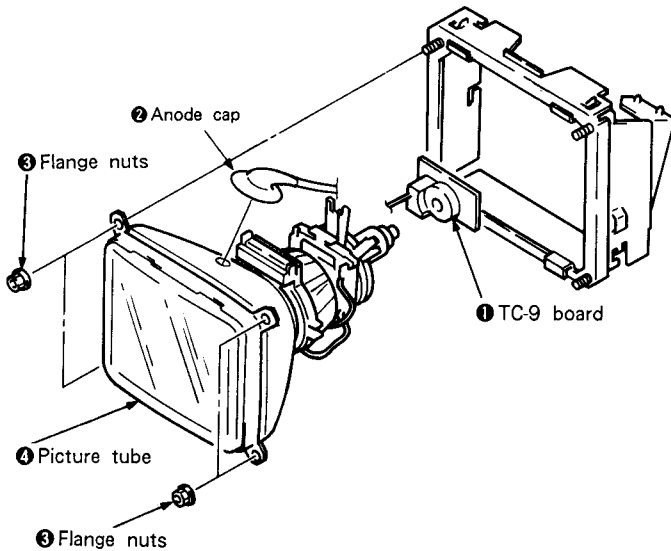
## 2-8. REMOVAL OF TD-8 BOARD

- 1) Remove the three screws ①.
- 2) Remove the TV chassis assembly ②.
- 3) Disconnect the two connectors (D4, D5) ③.
- 4) Remove the two screws ④.
- 5) Remove the flyback transformer assembly ⑤. (Remove ten solders.)
- 6) Remove the TD-8 board ⑥ in the direction of arrow.

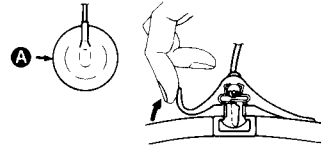


## 2-9. REMOVAL OF PICTURE TUBE ASSEMBLY

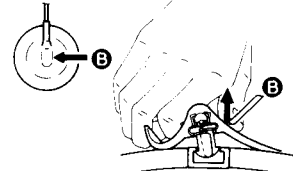
- 1) Remove the TC-9 board ①.
  - 2) Remove the anode cap ②.
  - 3) Remove the four flange nuts ③.
  - 4) Remove the picture tube ④.
- (When replacing the picture tube, see 8-1. TV SECTION SETUP ADJUSTMENT)



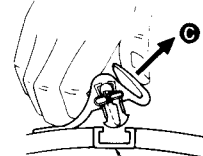
- How to remove anode cap.  
As there is the danger of an electric shock when removing the anode cap, be sure to ground with a screwdriver, etc.



- ① Turn up one side of the rubber cap in the direction indicated by the arrow A.



- ② Using a thumb, pull up the rubber cap firmly in the direction indicated by the arrow B.

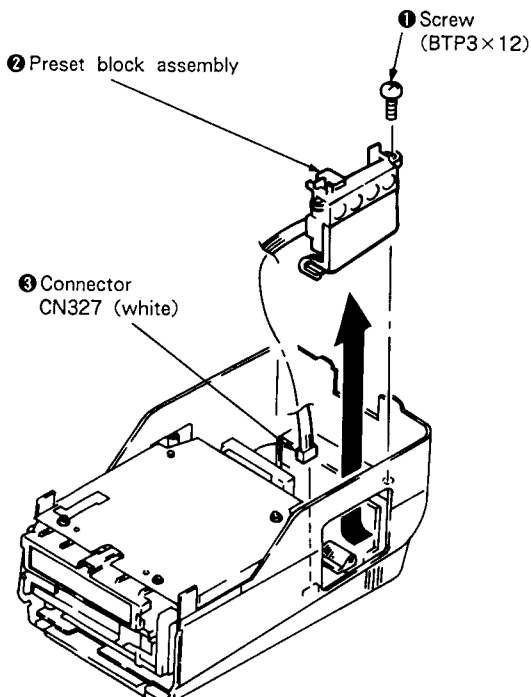


Anode button

- ③ When one side of the rubber cap is separated from the anode button, the anode cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow C.

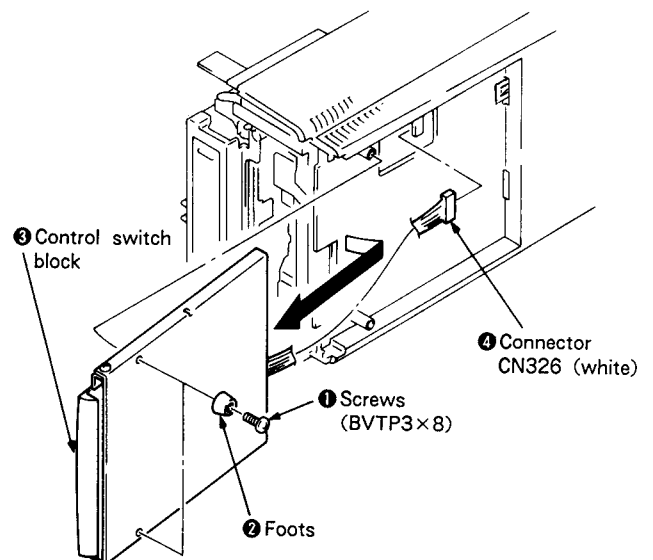
## 2-10. REMOVAL OF PRESET BLOCK ASSEMBLY

- 1) Remove the screw ①.
- 2) Remove the preset block assembly ② in the direction of arrow.
- 3) Disconnect the connector (CN327) ③.



## 2-11. REMOVAL OF CONTROL SWITCH BLOCK

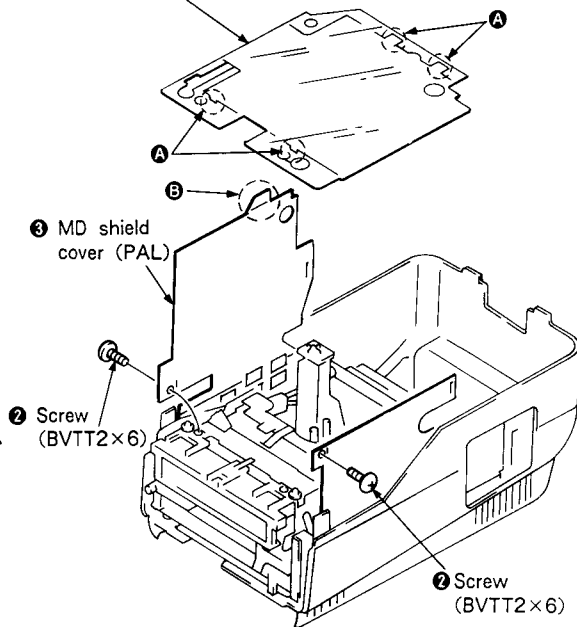
- 1) Remove the two screws ①.
- 2) Remove the two feet ②.
- 3) Remove the control switch block ③ in the direction of arrow.
- 4) Disconnect the connector (CN326) ④.



## 2-12. REMOVAL OF VTR BLOCK

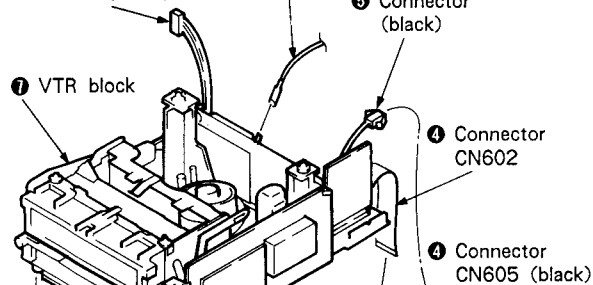
- 1) Remove the section **A** in four places.
- 2) Remove the MD cover assembly (PAL) **1**.
- 3) Remove the two screws **2**.
- 4) Remove the section **B**.
- 5) Open the MD shield cover (PAL) **3**.

**1** MD cover assembly (PAL)



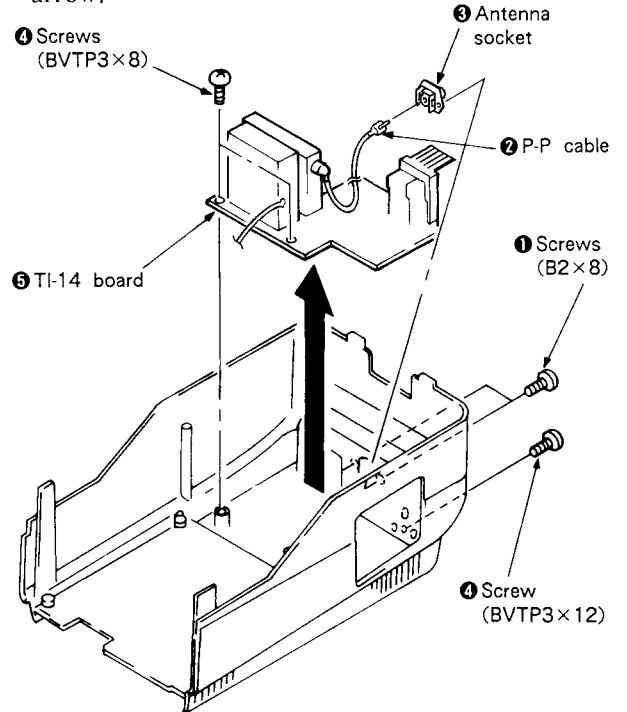
- 6) Disconnect the three connectors (CN001, CN602, CN605) **4**.
- 7) Disconnect the connector **5**.
- 8) Disconnect the terminal **6**.
- 9) Remove the VTR block **7** in the direction of arrow.

**4** Connector (TB-8 board) CN001 (white)



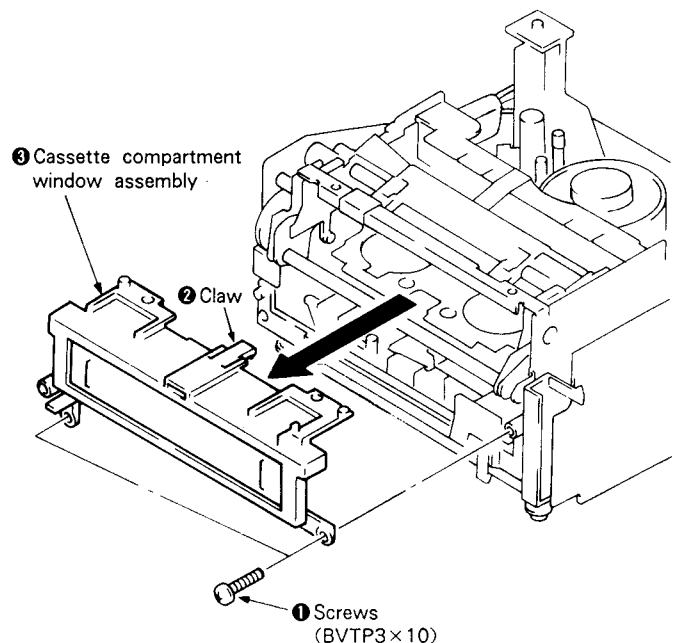
## 2-13. REMOVAL OF TI-14 BOARD

- 1) Remove the two screws **1**.
- 2) Remove the P-P cable **2** and remove the antenna socket **3**.
- 3) Remove the three screws **4**.
- 4) Remove the TI-14 board **5** in the direction of arrow.



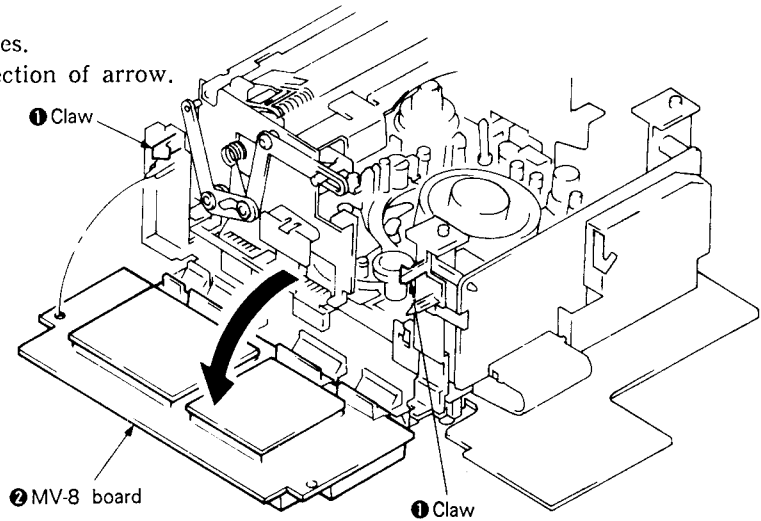
## 2-14. REMOVAL OF CASSETTE COMPARTMENT WINDOW ASSEMBLY

- 1) Remove the two screws **1**.
- 2) Remove the claw **2**.
- 3) Remove the cassette compartment window assembly **3** in the direction of arrow.



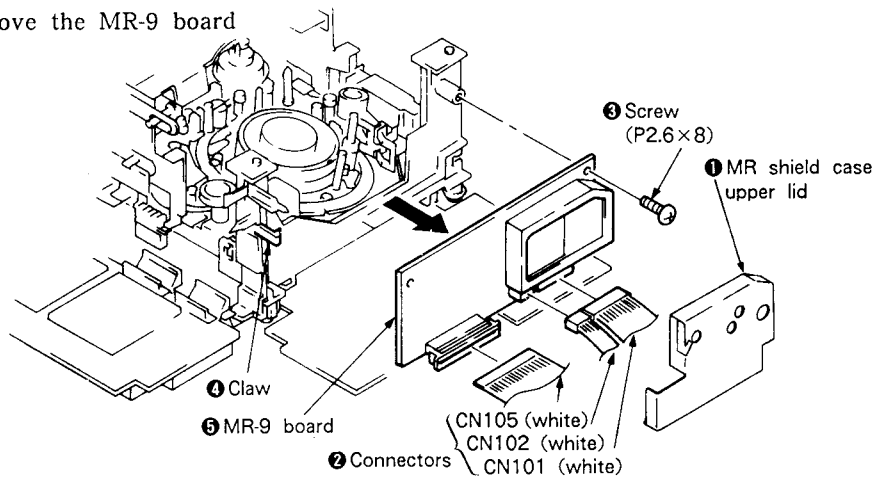
## 2-15. OPENING MV-8 BOARD

- 1) Remove the claws ❶ in two places.
- 2) Open the MV-8 board ❷ in the direction of arrow.



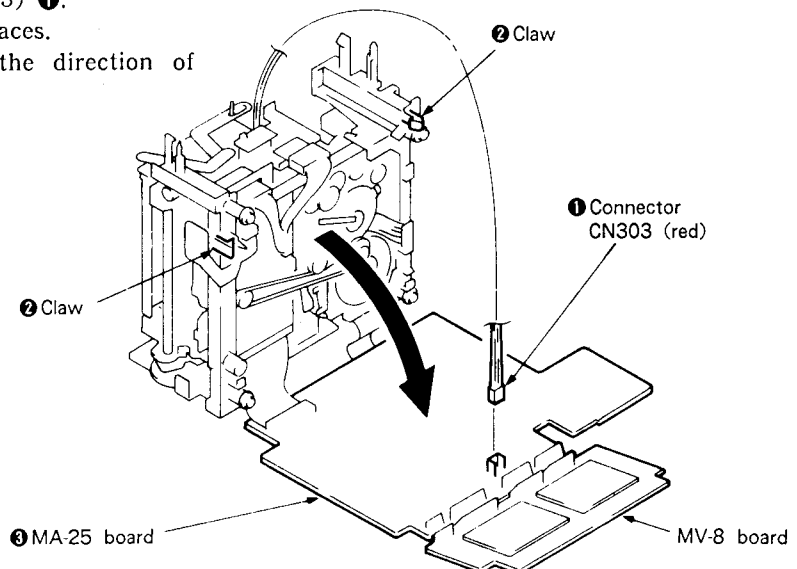
## 2-16. REMOVAL OF MR-9 BOARD

- 1) Remove the MR shield case upper lid ❶.
- 2) Disconnect the three connectors (CN101, CN102 and CN105) ❷.
- 3) Remove the screw ❸.
- 4) Remove the claw ❹ and remove the MR-9 board ❺.



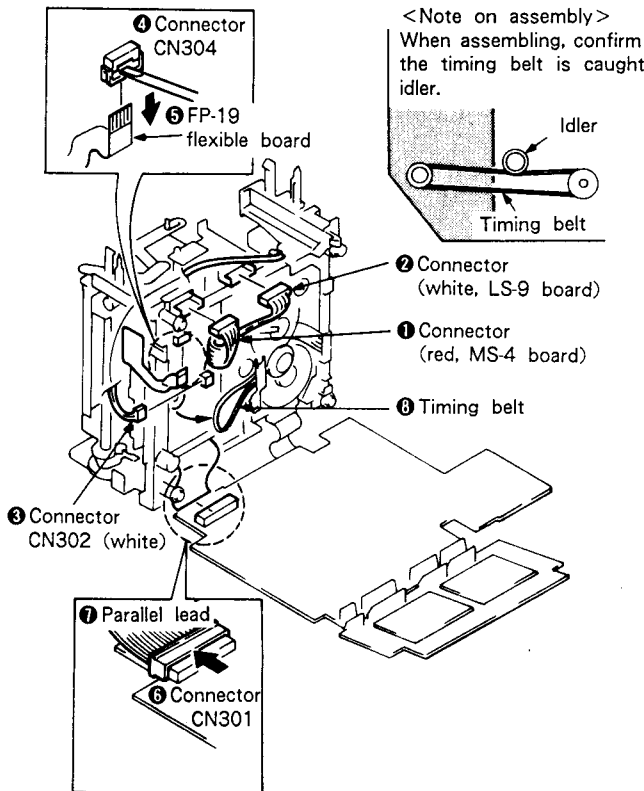
## 2-17. OPENING MA-25 BOARD

- 1) Disconnect the connector (CN303) ❶.
- 2) Remove the claws ❷ in two places.
- 3) Open the MA-25 board ❸ in the direction of arrow.

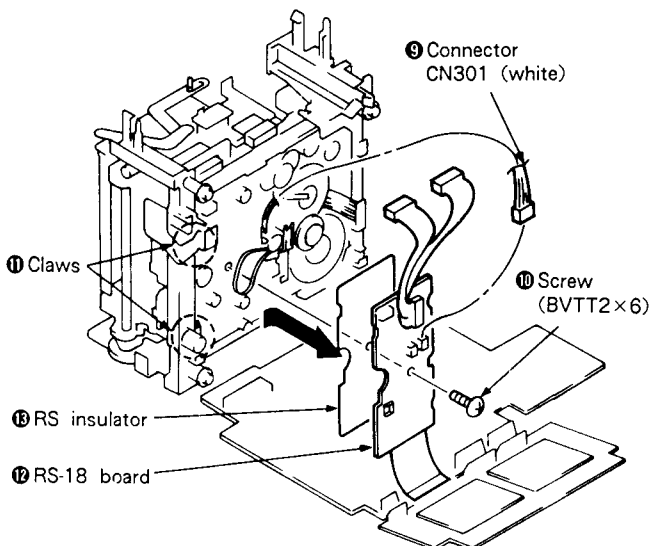


## 2-18. REMOVAL OF RS-18 BOARD

- 1) Disconnect connector (red, MS-4 board) ❶ and connector (white, LS-9 board) ❷.
- 2) Disconnect the connector (CN302) ❸.
- 3) Remove the FP-19 flexible board ❹ from the connector (CN304) ❺.
- 4) Remove the parallel lead ❻ from the connector (CN301) ❼.
- 5) Remove the timing belt ❸.

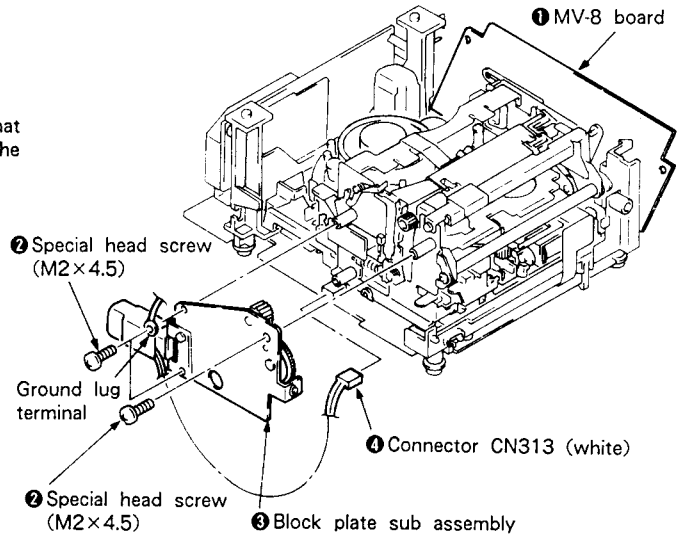


- 6) Disconnect the connector (CN301) ❾.
- 7) Remove the screw ❿.
- 8) Remove the claws ⓫ in two places and remove the RS-18 board ⓬ and RS insulator ⓭ in the direction of the arrow.

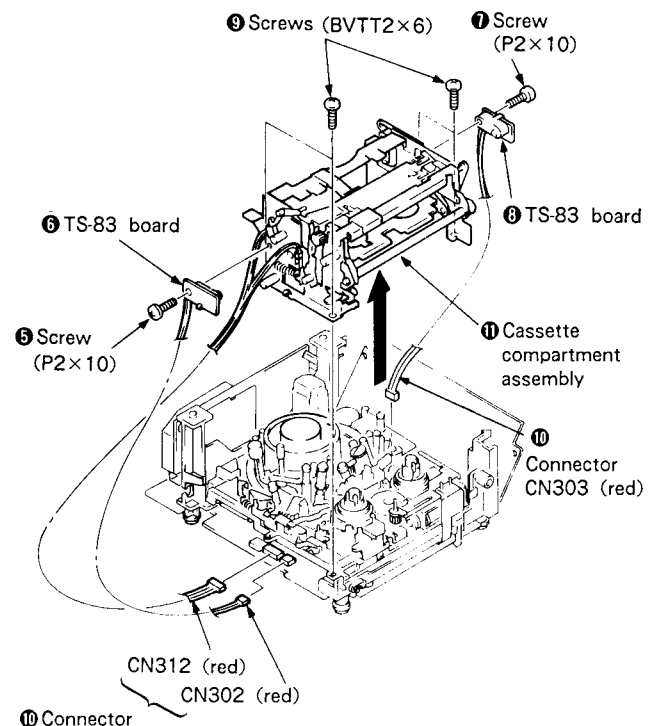


## 2-19. REMOVAL OF CASSETTE COMPARTMENT

- 1) Open the MV-8 board ❶. **Note**: Refer to 2-15. OPENING MV-8 BOARD.
- 2) Remove the three special head screw ❷.
- 3) Remove the block plate sub assembly ❸.
- 4) Disconnect the connector (CN313) ❹.



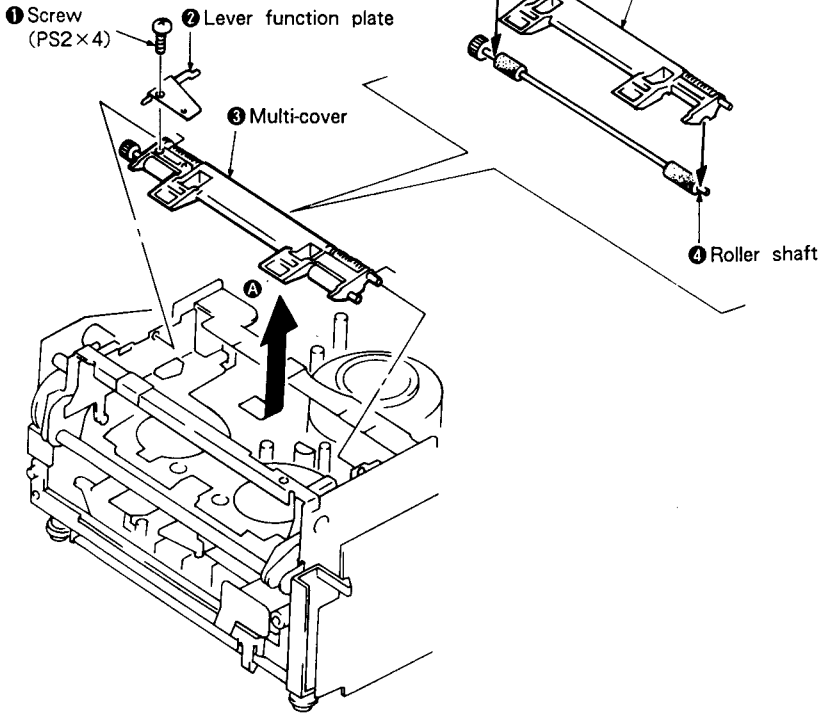
- 5) Remove the screw ❺ and remove the TS-83 board ❻.
- 6) Remove the screw ❼ and remove the TS-83 board ❼.
- 7) Remove the four screws ❸.
- 8) Disconnect the three connectors (CN302, CN303 and CN312) ❿.
- 9) Remove the cassette compartment assembly ⓫ in the direction of arrow.



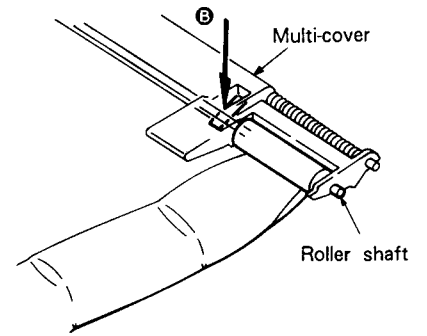


## 2-20. REMOVAL OF MULTI-COVER AND ROLLER SHAFT

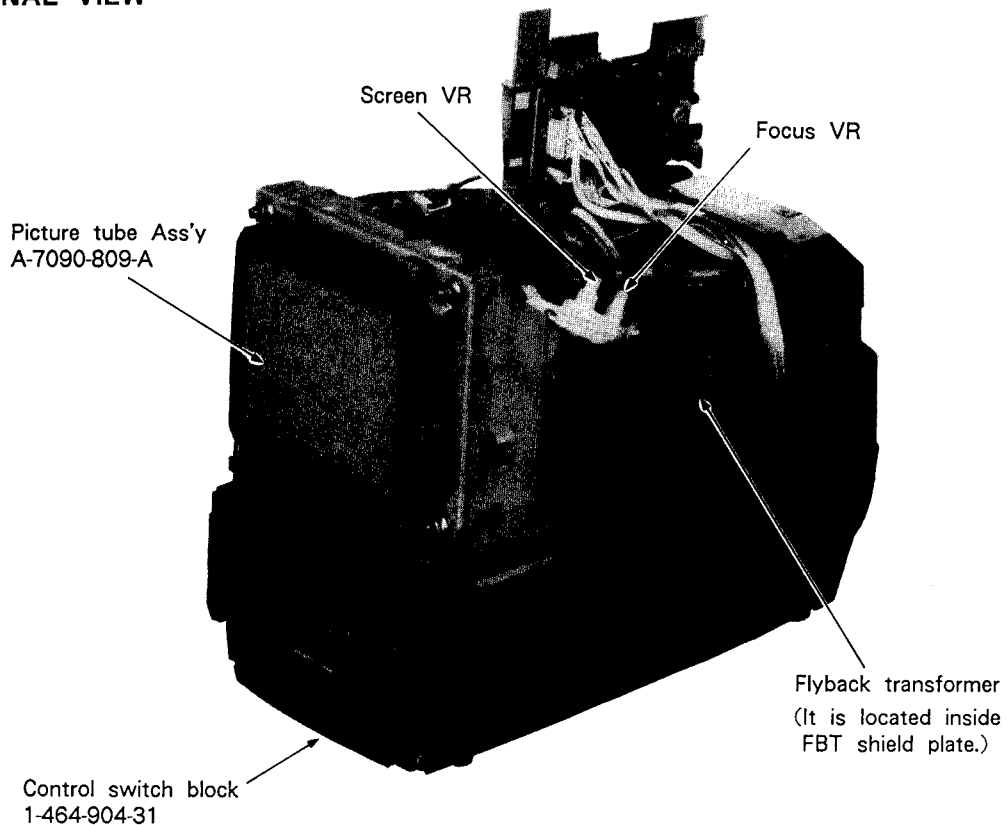
- 1) Remove the screw ① and remove the lever function plate ②.
- 2) Remove the multi-cover ③ in the direction of arrow ④.
- 3) Remove the roller shaft ⑤.

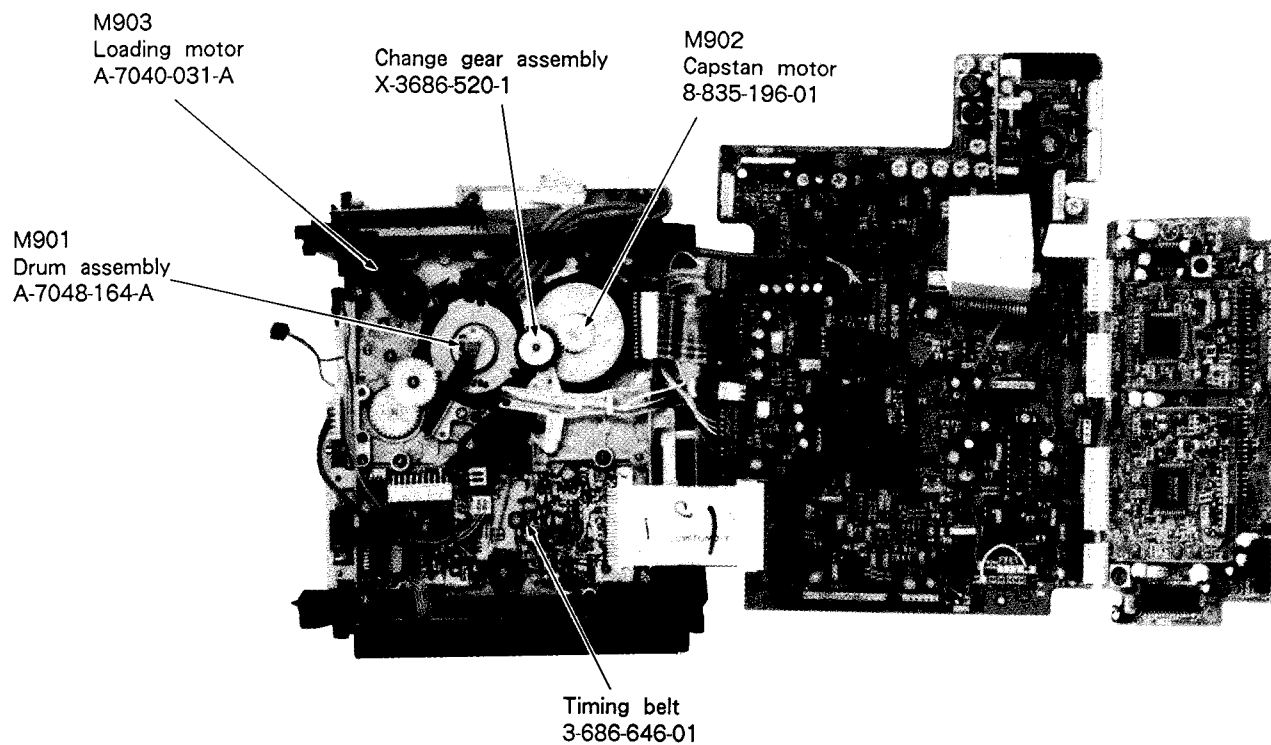
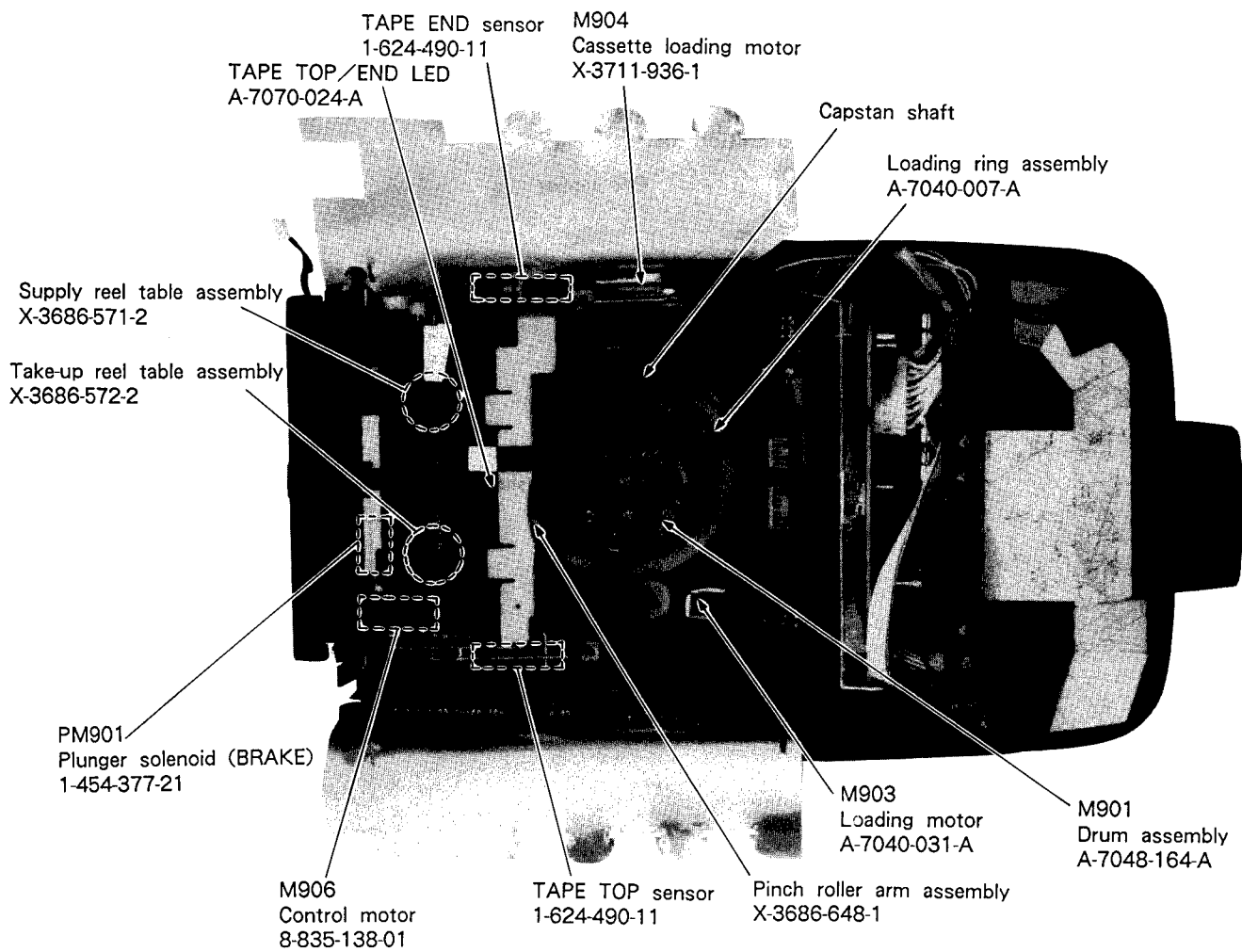


How to attach roller shaft :  
Press in the section indicated by arrow ⑥ with a screwdriver, etc., while supporting the roller shaft with your finger.



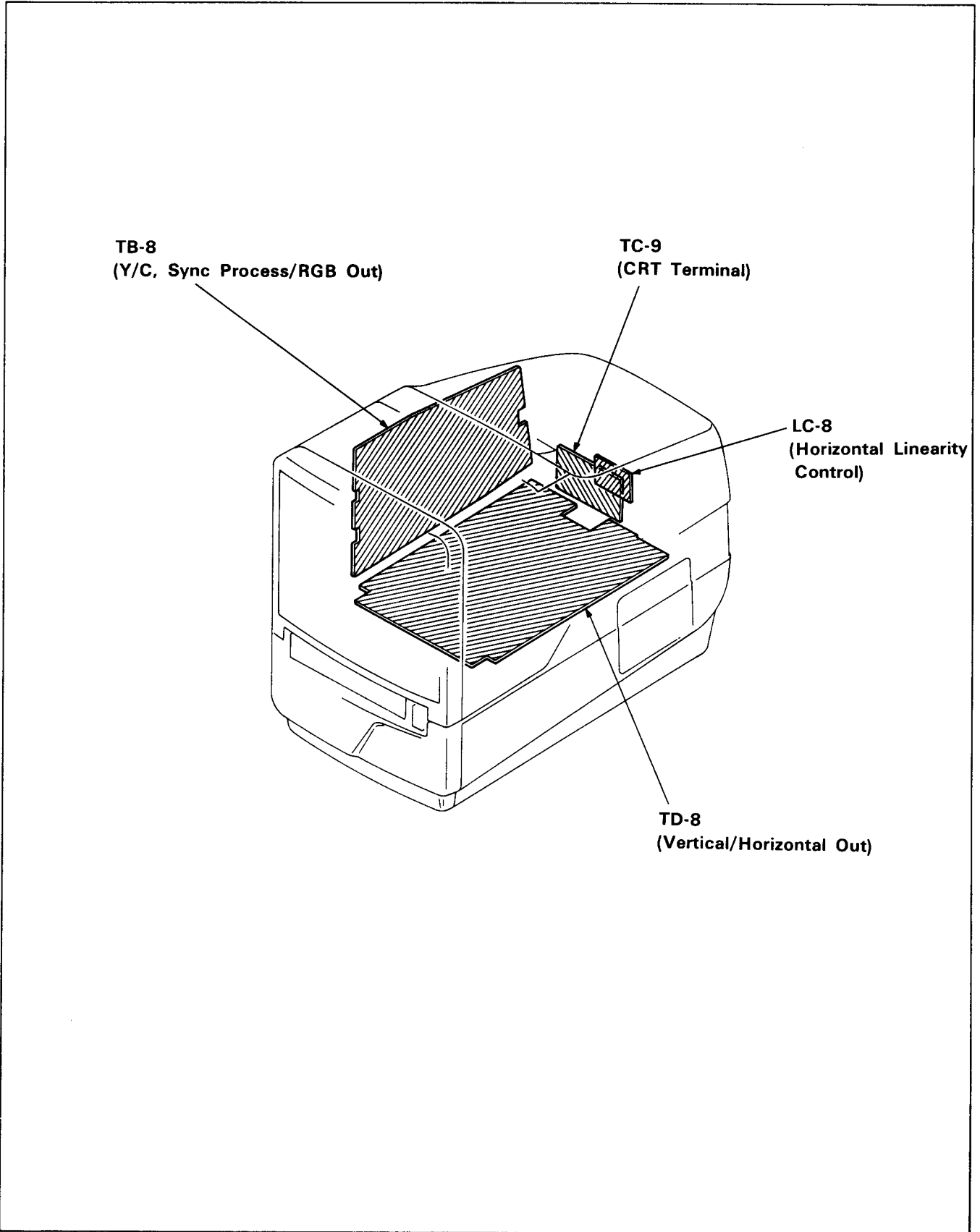
## 2-21. INTERNAL VIEW

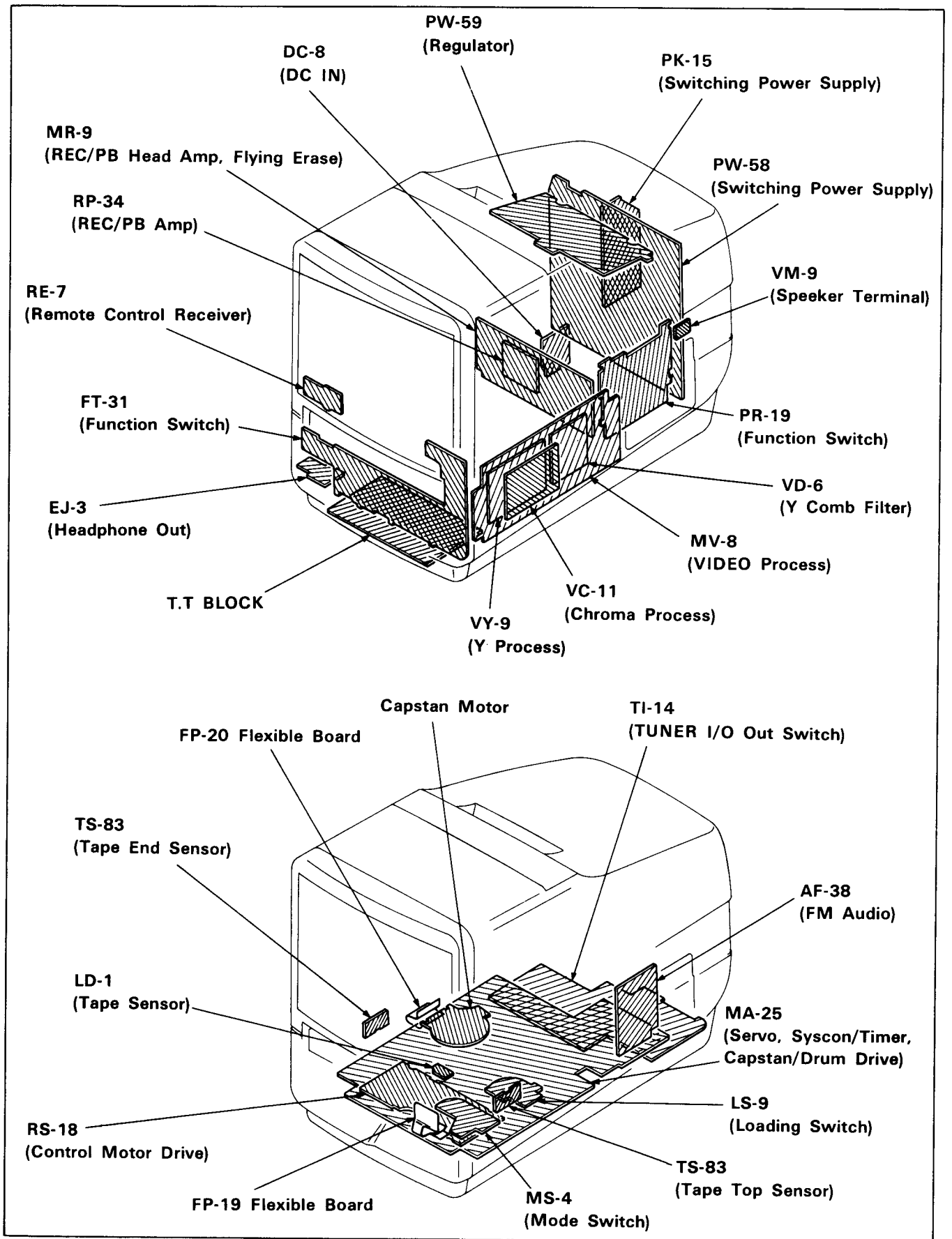




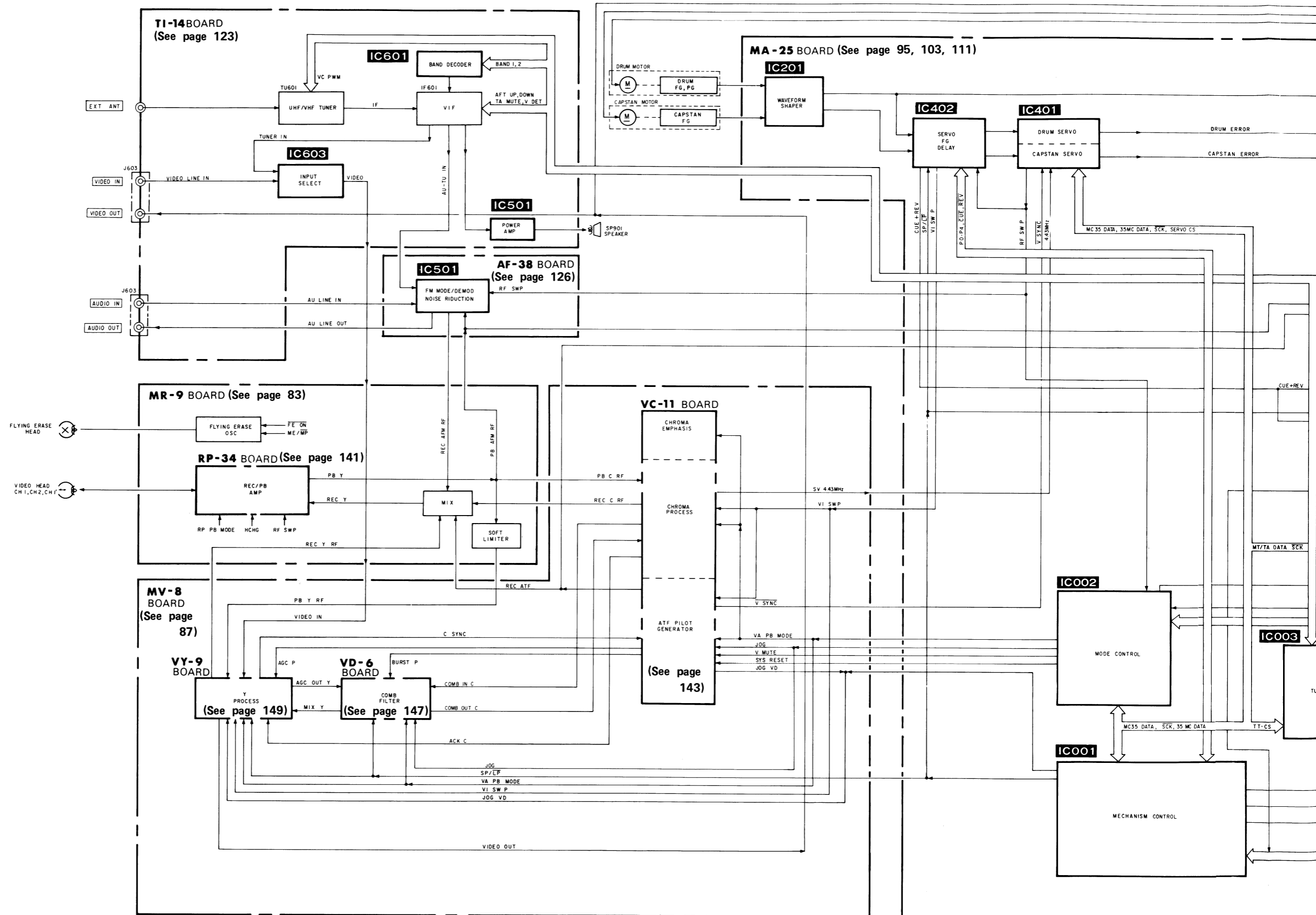
**SECTION 3  
DIAGRAMS**

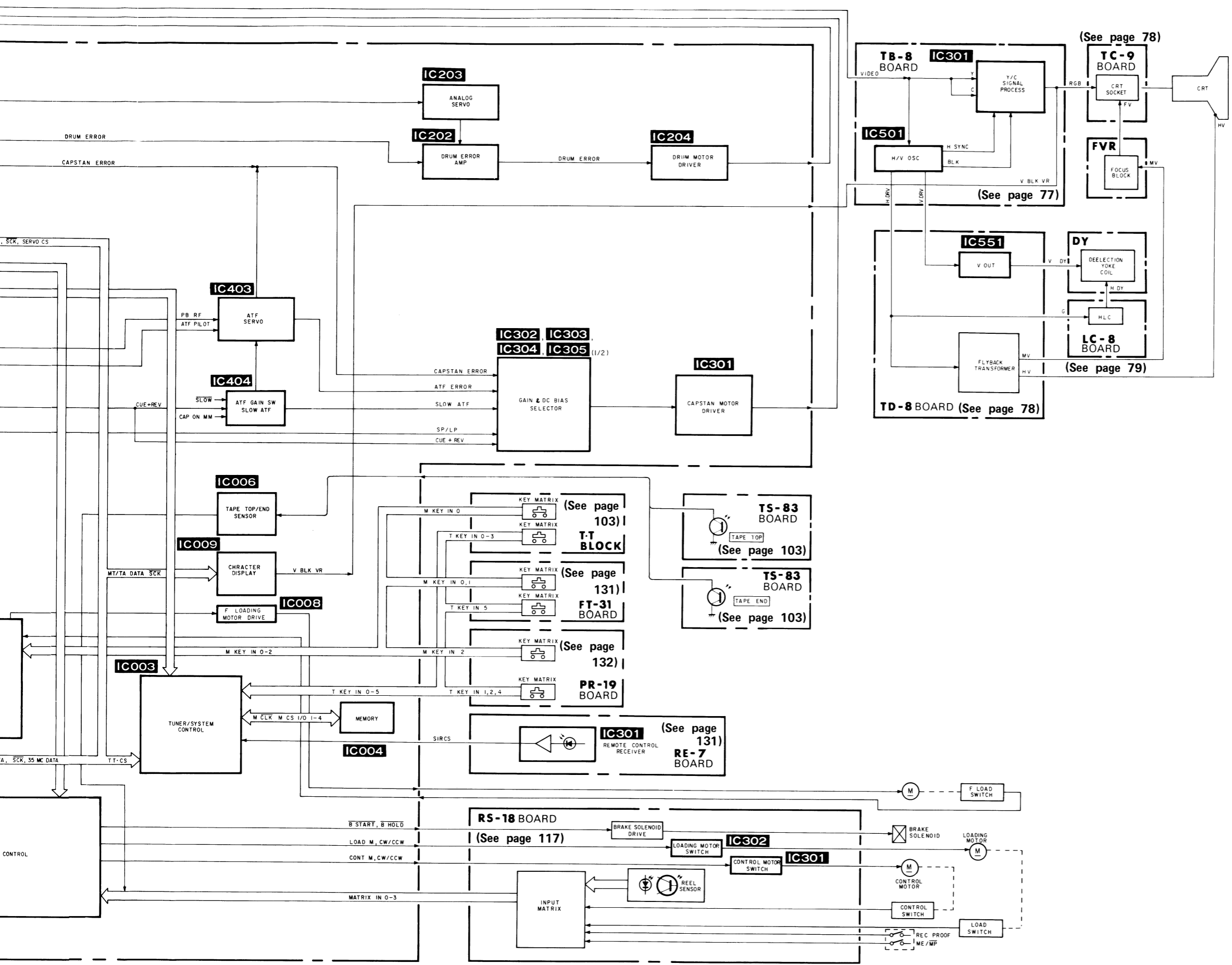
**3-1. CIRCUIT BOARDS LOCATION**



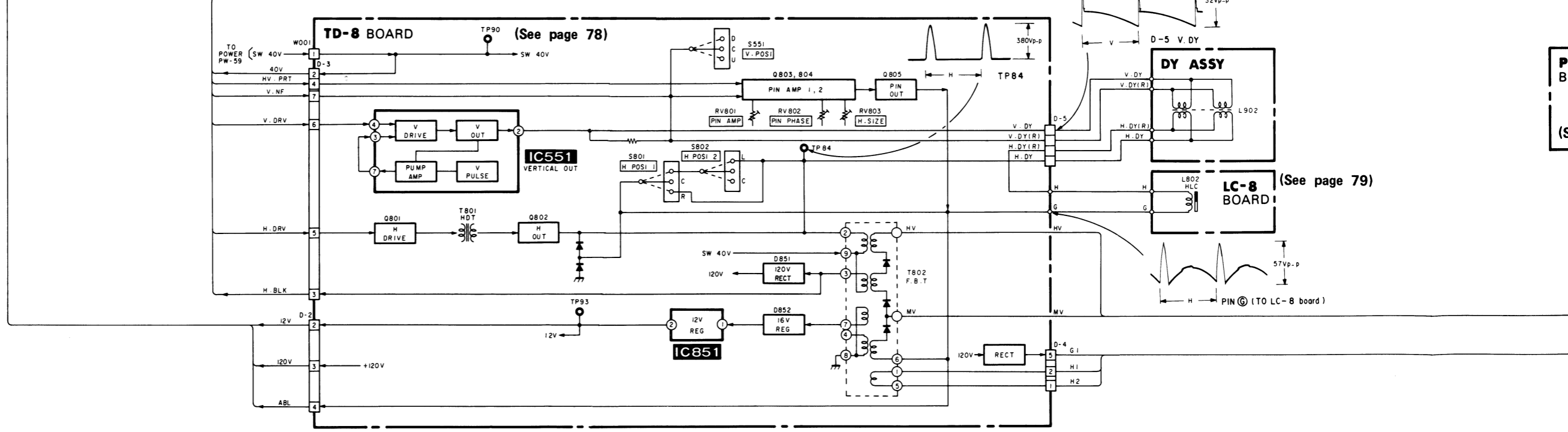
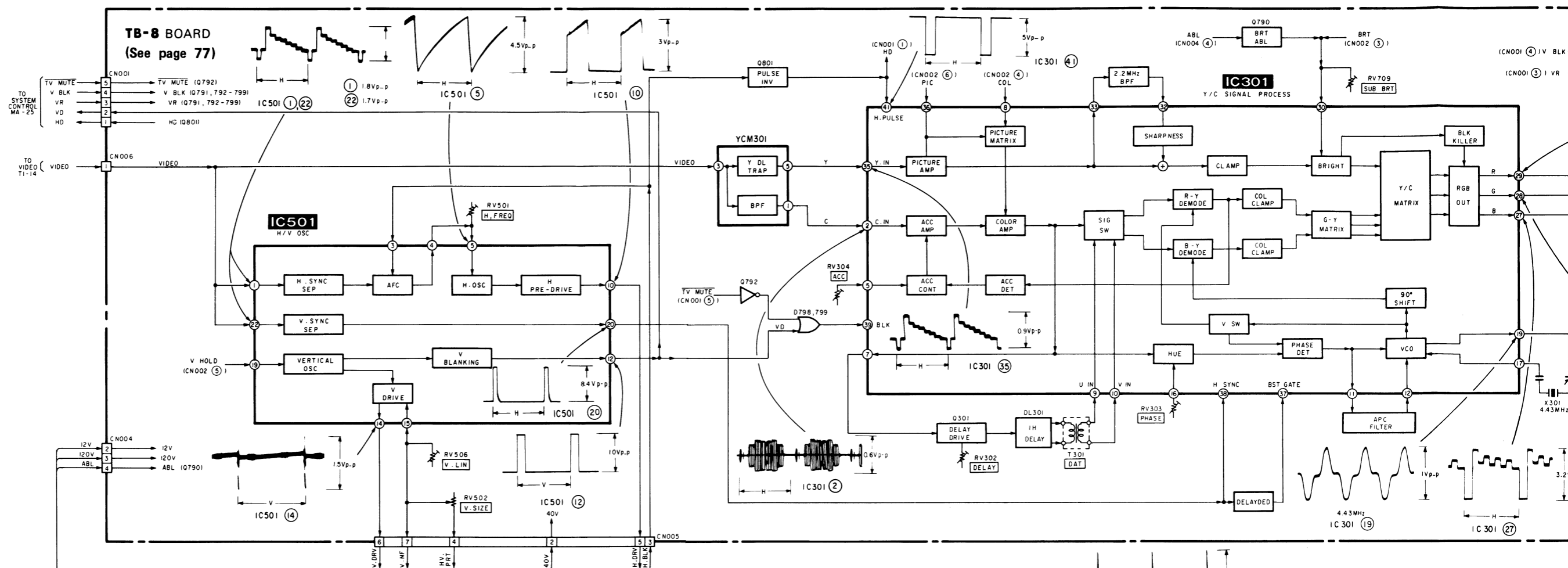


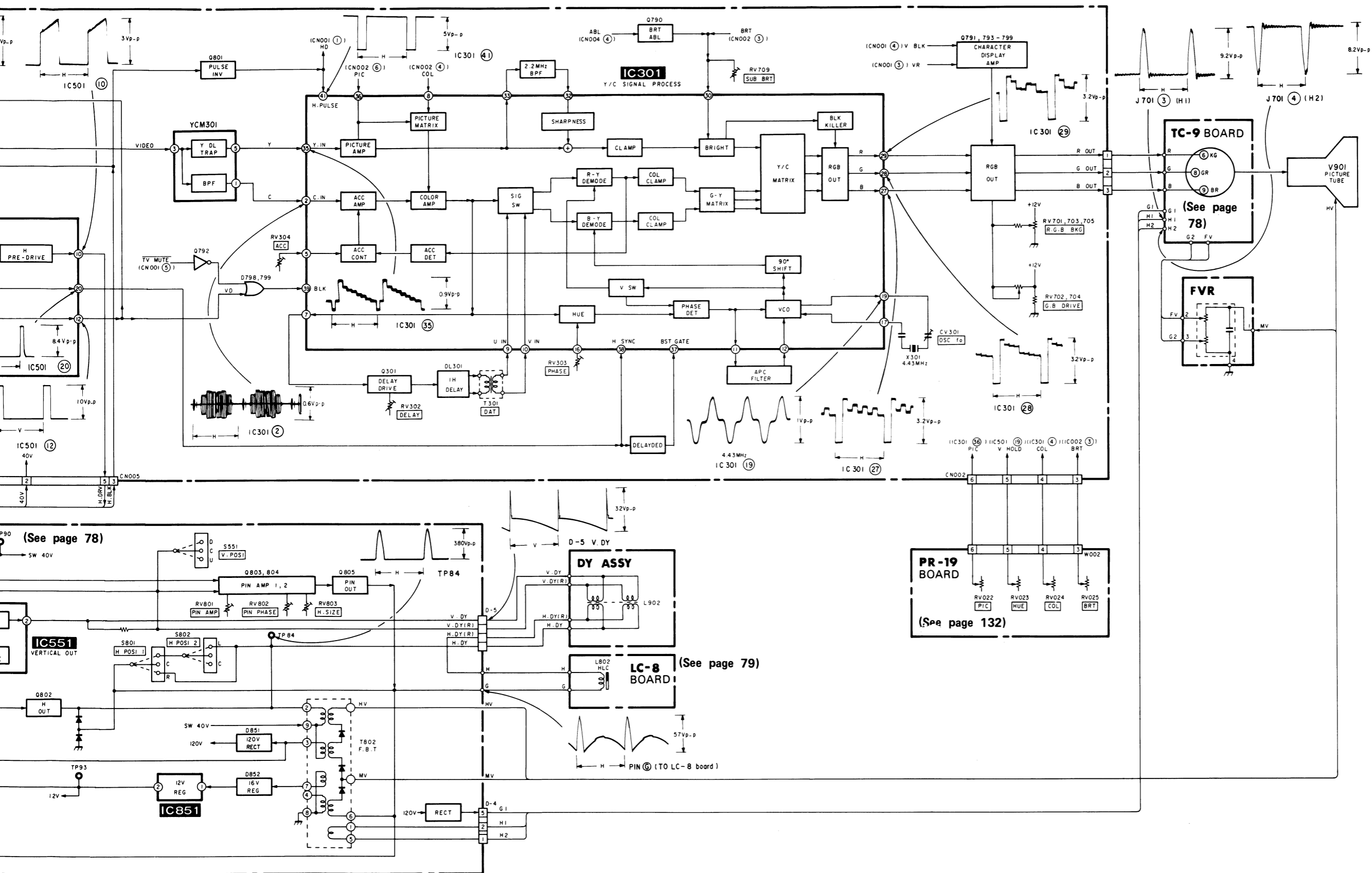
3-2. OVERALL BLOCK DIAGRAM





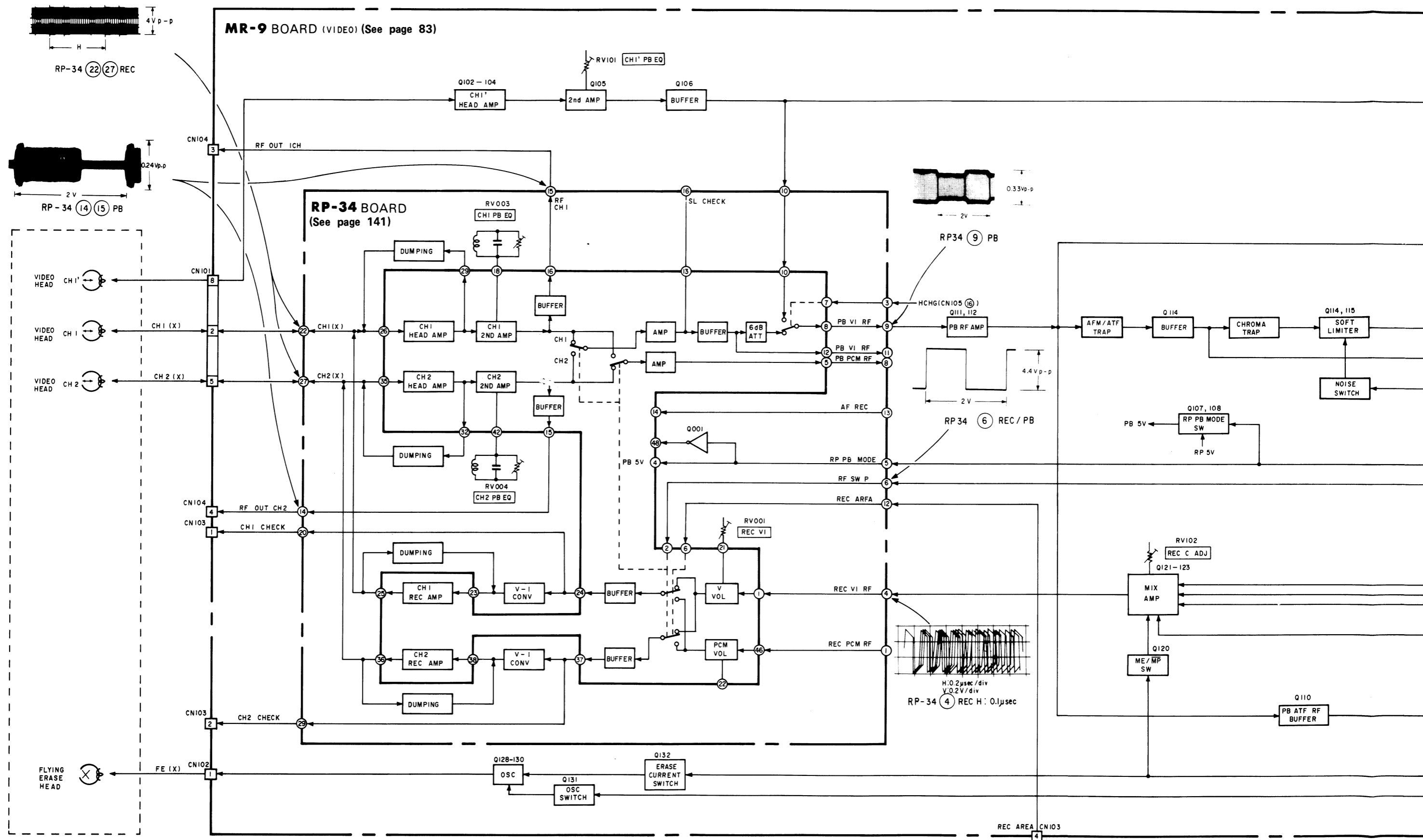
3-3. TV BLOCK DIAGRAM

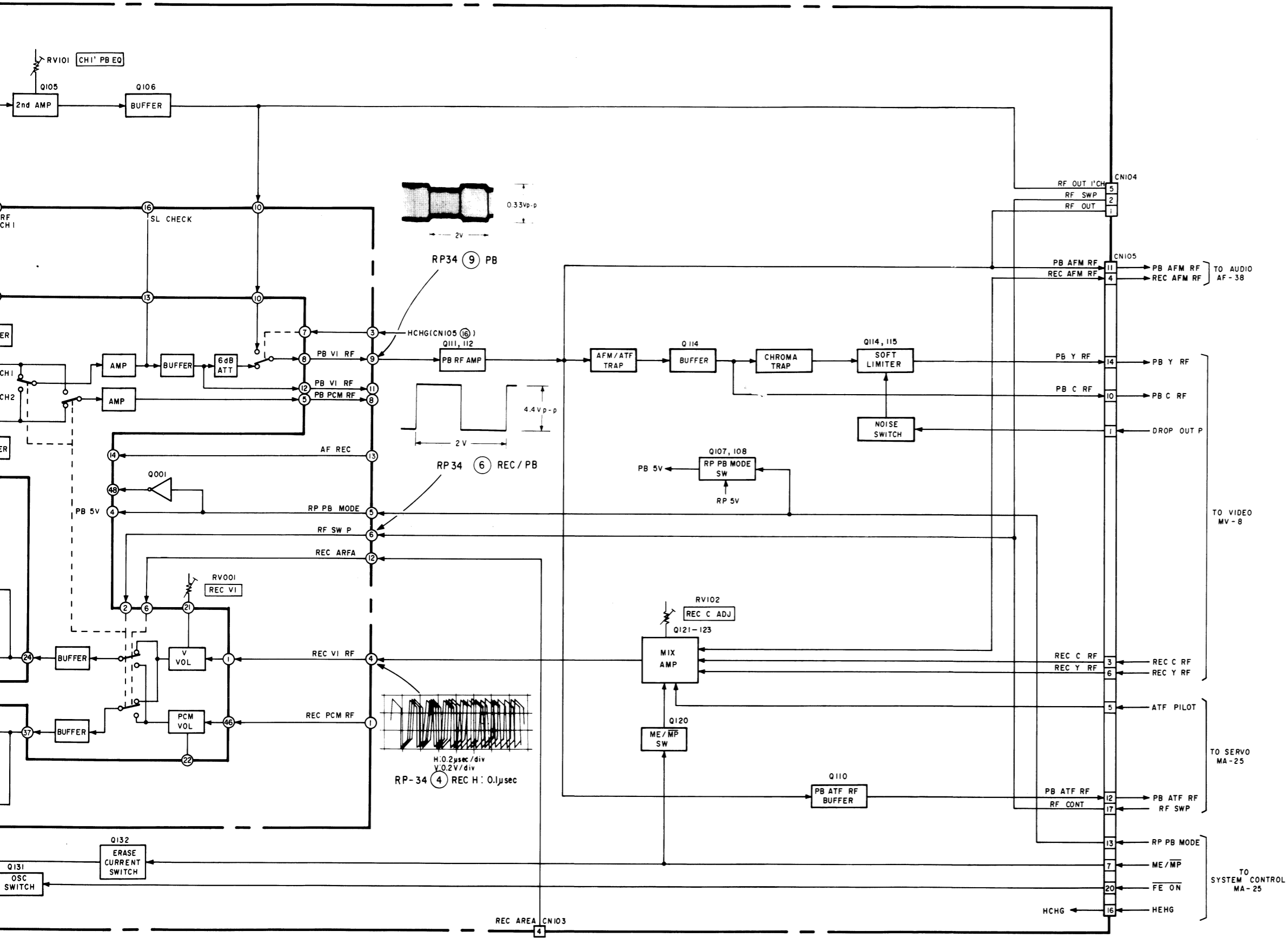




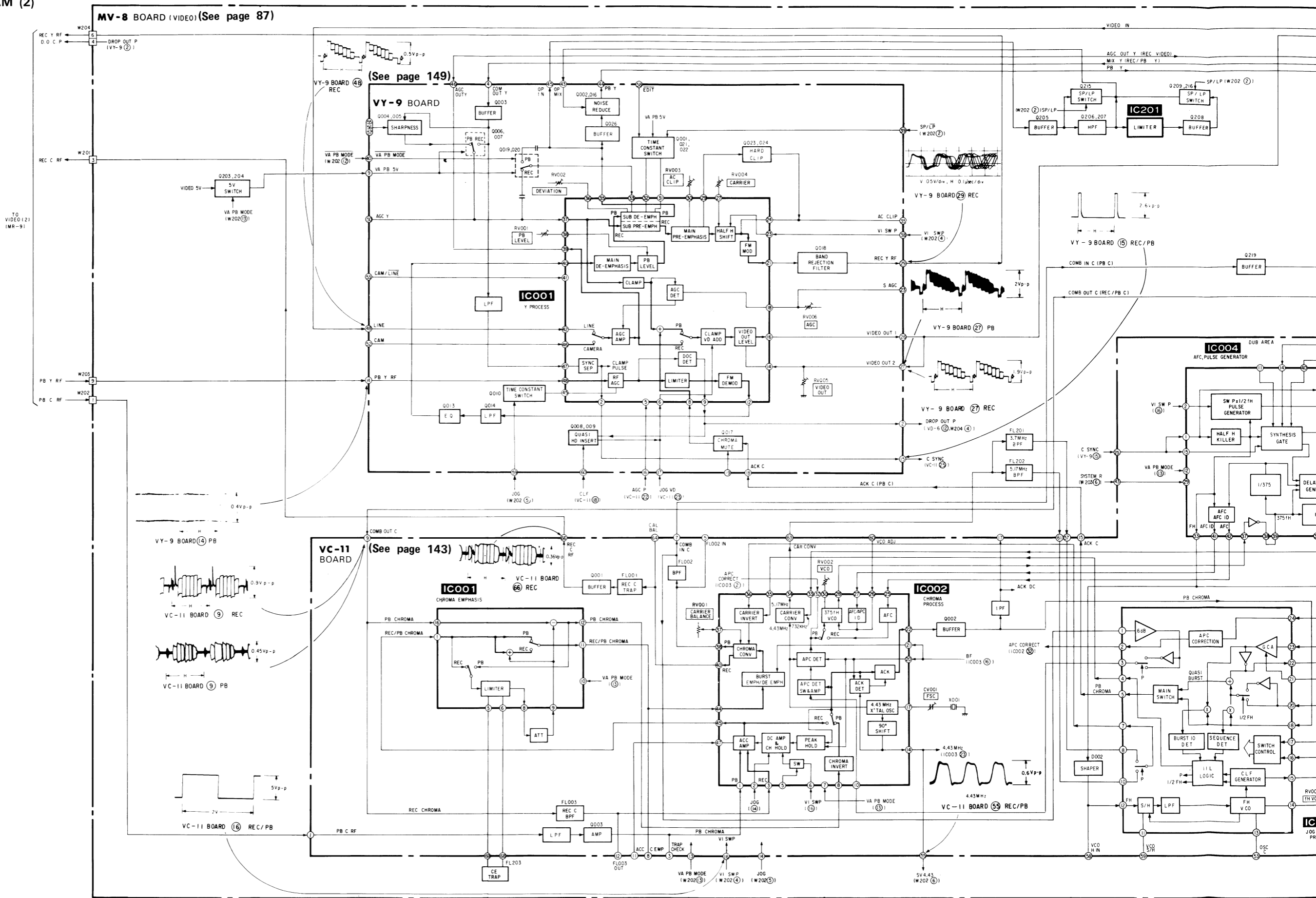


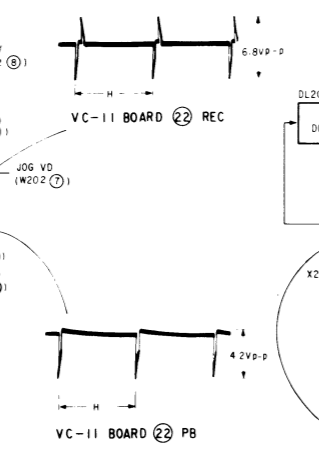
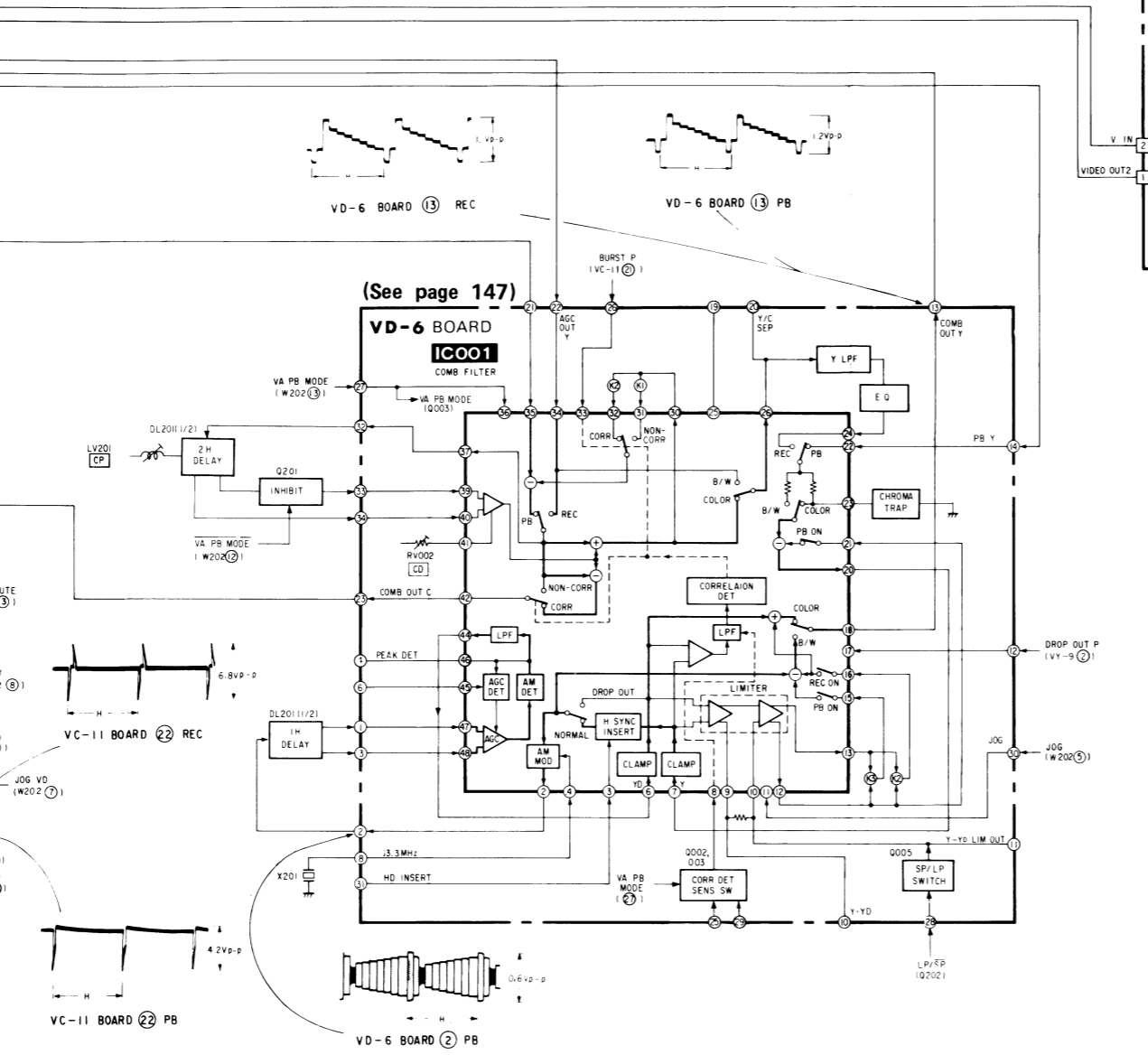
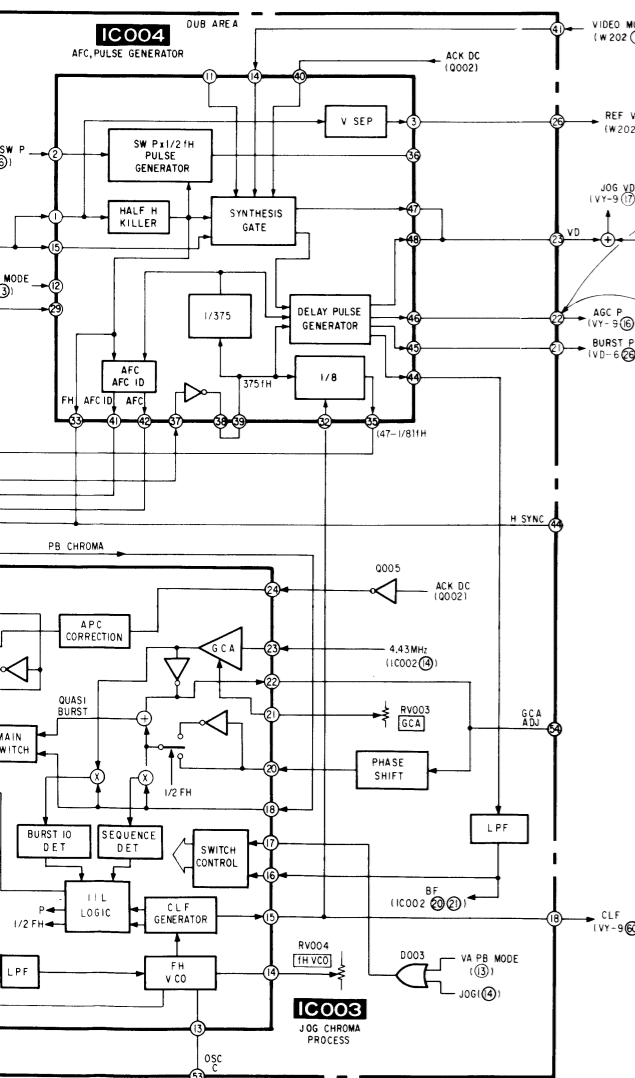
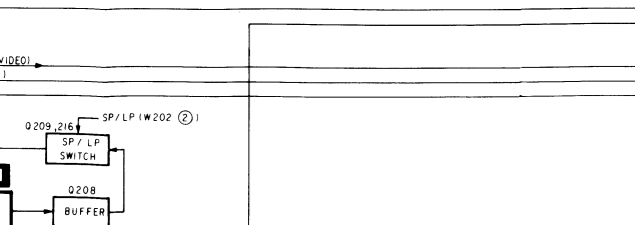
3-4. VIDEO BLOCK DIAGRAM (1)



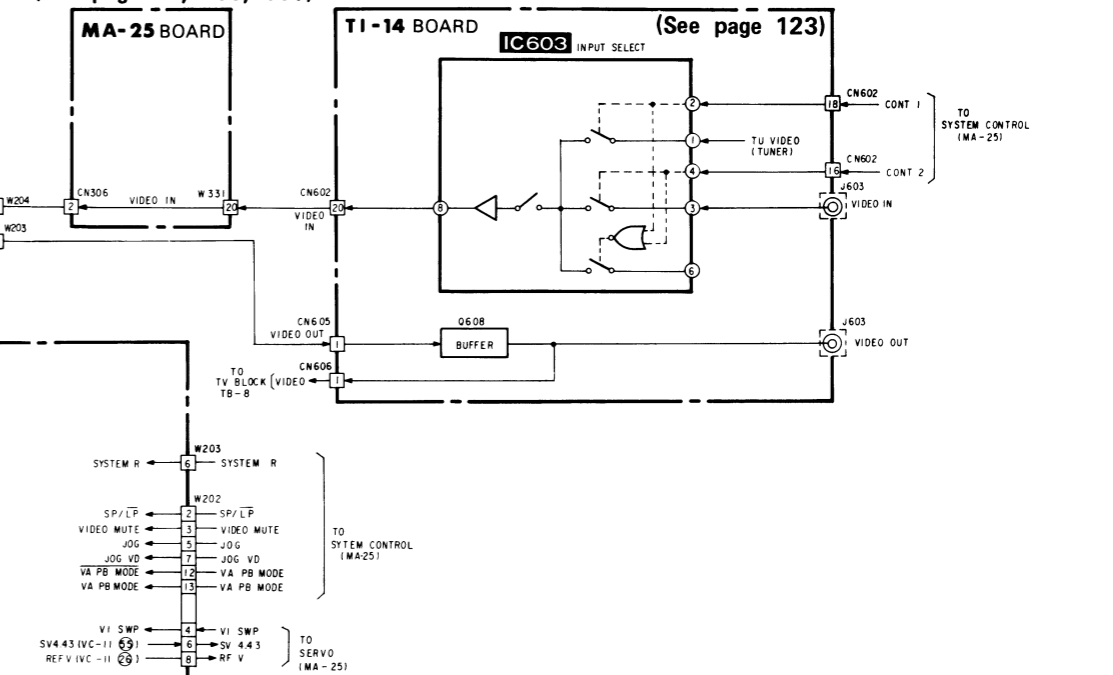


3-5. VIDEO BLOCK DIAGRAM (2)

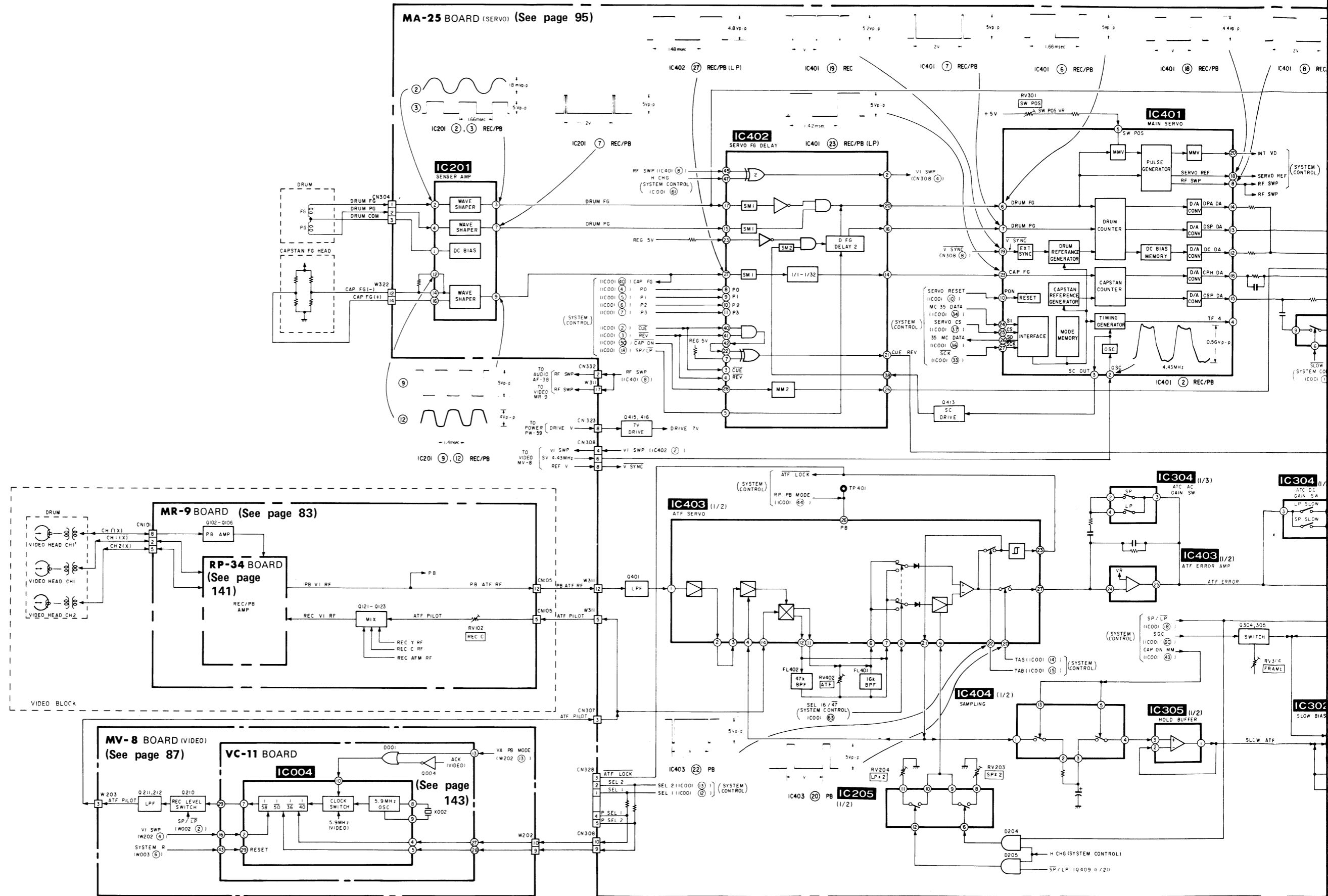


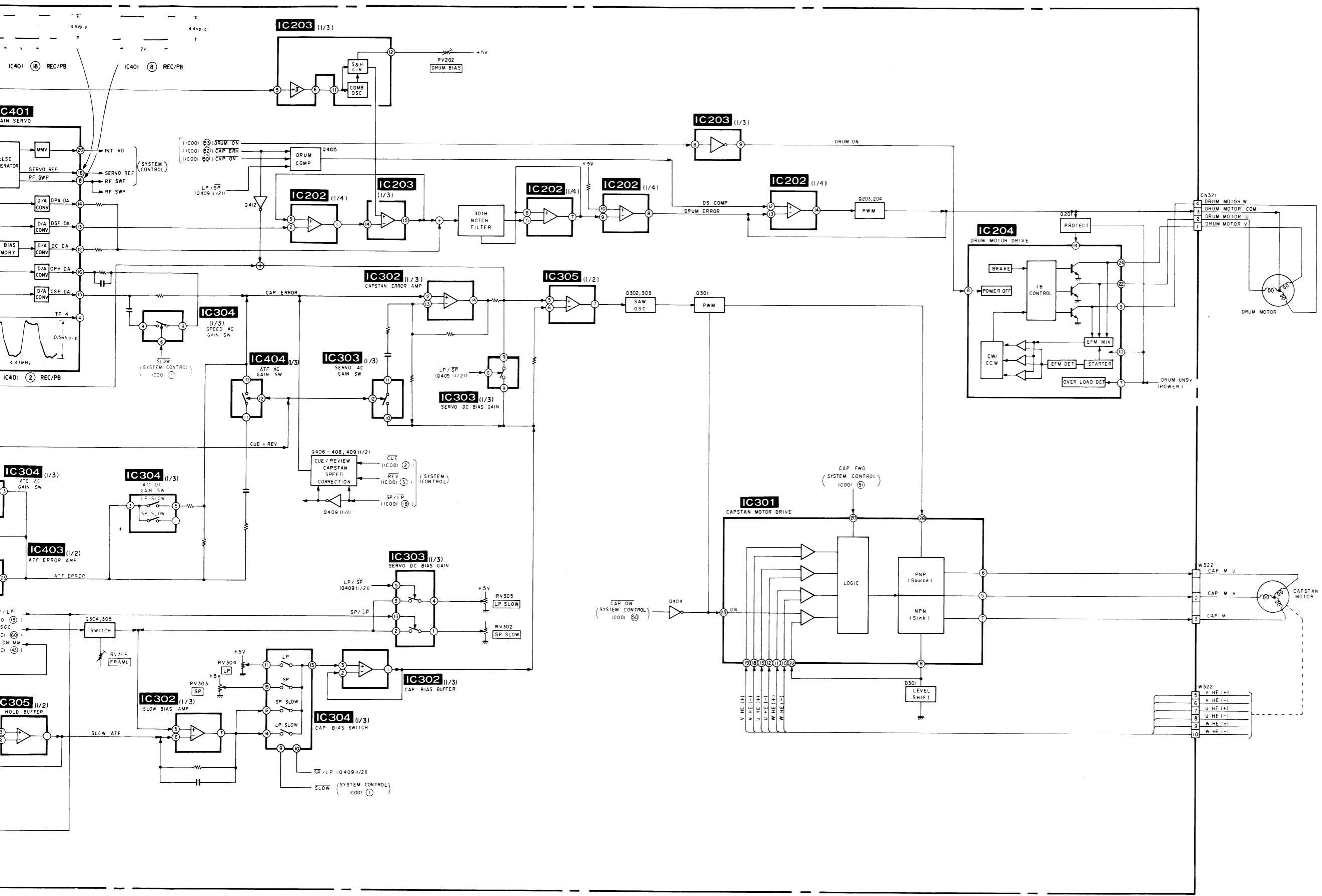


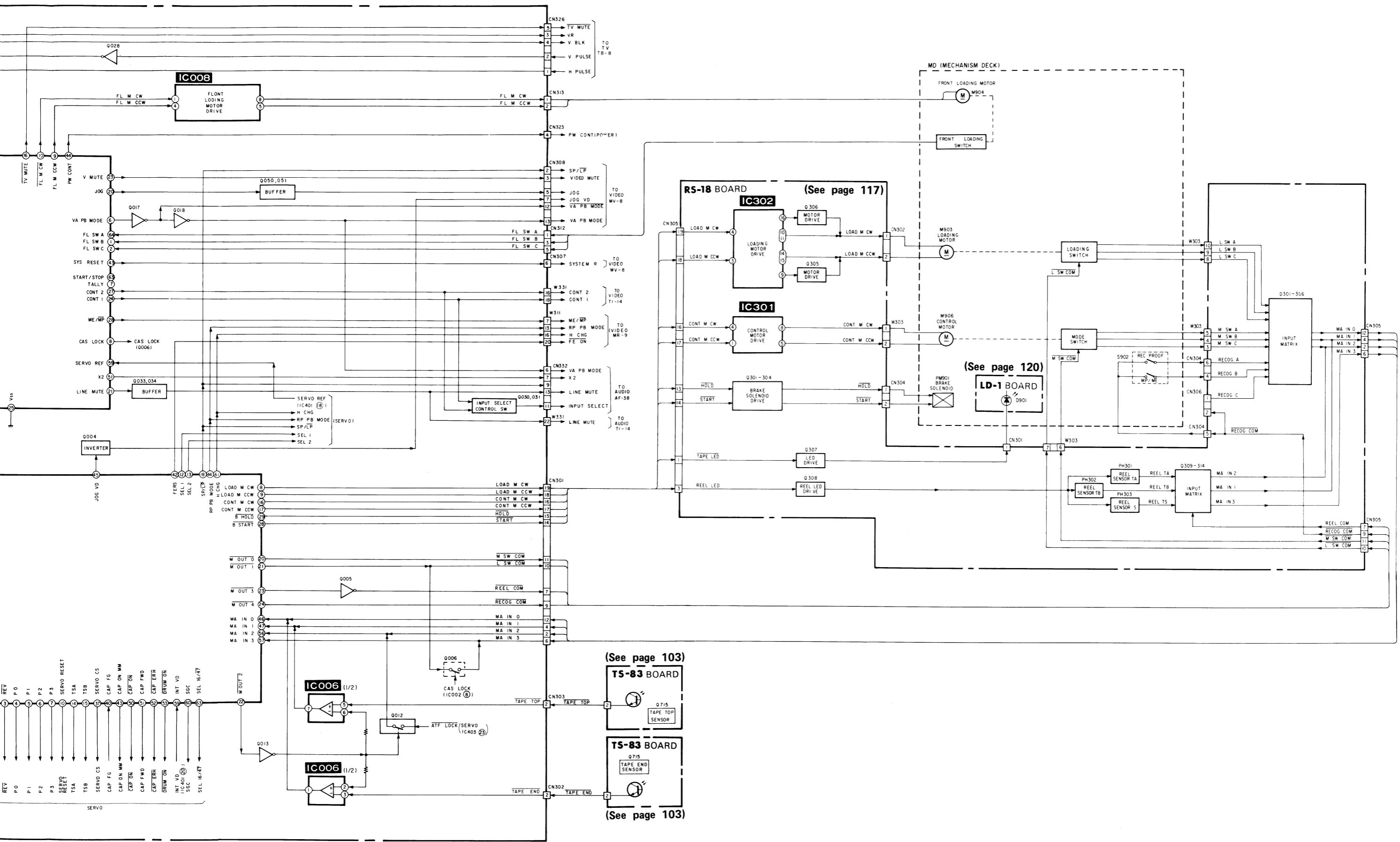
(See page 95, 103, 111)



3-6. SERVO BLOCK DIAGRAM







3-8. SYSTEM CONTROL — RP AMP BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	FRAME	X1/5 X1/10	X2
	I/O	Pin No.												
FERS	O	IC001 42 pin	L	L	H	L	L	L	L	L	L	L	L	L
RP PB MODE	O	IC001 44 pin	H	H	L	H	H	H	H	H	H	H	H	H
H CHG	O	IC001 61 pin	L	L	L	L	L	L	L	*1	L		*1	*1
SP/LP	O	IC001 18 pin	According to SP/LP SW	Automatic evaluation result	According to SP/LP SW	H	H	Automatic evaluation result	←	Hold immediately previous PB mode	According to SP/LP SW		Hold immediately previous PB mode	Automatic evaluation result
ME/MP	O	IC002 28 pin	←						*2					→

\*1. Changes according to still, slow or X2 sequence.

\*2. According to tape type.

3-9. SYSTEM CONTROL — VIDEO BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	FRAME	X1/5 X1/10	X2
	I/O	Pin No.												
V MUTE	O	IC002 23 pin	L	L	L	L	L	L	L	L	L	L	L	L
JOG	O	IC002 20 pin	L	L	L	L	L	H	H	H	L	H	H	H
VA PB MODE	O	IC002 6 pin	L	H	L	L	L	H	H	H	L	H	H	H
SP/LP	O	IC001 18 pin	According to SP/LP SW	Automatic evaluation result	According to SP/LP SW	H	H	Automatic evaluation result	←	Hold immediately previous PB mode	According to SP/LP SW		Hold immediately previous PB mode	Automatic evaluation result
SYS RESET	O	IC002 43 pin	L	L	L	L	L	L	L	L	L	L	L	L
H CHG	O	IC001 61 pin	L	L	L	L	L	L	L	*3	L	*3	*3	*3
ATF LOCK	I	IC001 INPUT (IC403 23 pin)	←						*2					→
SEL 1	O	IC001 12 pin	H	*1	*1	H	H	*1	*1	H	H	H	*1	H
SEL 2	O	IC001 13 pin	H	*1	*1	H	H	*1	*1	*1	H	*1	*1	*1
JOG VD	O	IC001 45 pin	H	H	H	H	H	*4	*4	H	H	*4	*4	*4

\*1. Changes according to ATF sequence.

\*2. Changes according to ATF tracking.

\*3. Changes according to still, slow, or X2 sequence.

\*4. V period "L" pulse.



3-10. SYSTEM CONTROL — SERVO BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	FRAME	X1/5 X1/10	X2
	I/O	Pin No.												
SEL 1	O	IC001 12 pin	H	*1	*1	H	H	*1	*1	H	H	H	*1	H
SEL2	O	IC001 13 pin	H	*1	*1	H	H	*1	*1	*1	H	*1	*1	*1
SERVO RESET	O	IC001 10 pin	L	L	L	L	L	L	L	L	L	L	L	L
TSA	O	IC001 14 pin	L	*1	L	L	L	L	L	L	L	L	L	*1
TSB	O	IC001 15 pin	L	*1	L	L	L	*1	*1	*1	*1	*1	*1	*1
ATF LOCK	I	IC001 INPUT (IC403 23 pin)							*2					
CAP ON	O	IC001 50 pin	H	L	L	L	L	L	L	H	H	H	*3	L
CAP FWD	O	IC001 51 pin	H	H	H	H	L	H	L	H	H	H	H	H
DRUM ON	O	IC001 53 pin	H	L	L	L	L	L	L	L	L	L	L	L
SLOW	O	IC001 1 pin	H	H	H	H	H	H	H	L	H	L	L	H
P 0	O	IC001 4 pin	H	H	H	H	H	H	H	H	H	H	H	L
P 1	O	IC001 5 pin	L	L	L	H	H	L	H	L	L	L	L	H
P 2	O	IC001 6 pin	L	L	L	H	H	L	H	L	L	L	L	L
P 3	O	IC001 7 pin	L	L	L	H	H	H	L	L	L	L	L	L
CAP FG	I	IC001 40 pin	Non-existent	Existent	Existent	Existent	Existent	Existent	Existent	Non-existent	Non-existent	Existent	*3	Existent
RF SWP	I	IC001 48 49 pin	Non-existent	Existent	Existent	Existent	Existent	Existent	Existent	Existent	Existent	Existent	Existent	Existent
SP/LP	O	IC001 18 pin	According to SP/LP SW	Automatic evaluation result	According to SP/LP SW	H	H	Automatic evaluation result	←	Hold immediately previous PB mode	According to SP/LP SW	Hold immediately previous PB mode	Hold immediately previous PB mode	Automatic evaluation result
CUE	O	IC001 2 pin	H	H	H	H	H	L	H	H	H	H	H	H
REV	O	IC001 3 pin	H	H	H	H	H	H	L	H	H	H	H	H
H CHG	O	IC001 61 pin	L	L	L	L	L	L	L	*3	L	L	*3	*3
CAP ERH	O	IC001 52 pin	H	H	H	H	H	H	H	H	H	H	H	H
CAP ON MM	O	IC001 43 pin	L	L	L	L	L	L	L	H	L	H	*3	L
SGC	O	IC001 60 pin	H	H	H	H	H	H	H	L	H	L	H	H
SEL 16/47	O	IC001 63 pin	L	*1	L	L	L	*1	*1	*1	H	*1	*1	*1
RP PB MODE	O	IC001 44 pin	H	H	L	H	H	H	H	H	H	H	H	H
S. VD. T	I	IC001 54 pin	L	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
S. S. T	I	IC001 55 pin	H	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
INT VD	I	IC001 59 pin	L	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
X2	O	IC002 51 pin	L	L	L	L	L	L	L	L	L	L	L	H
SERVO REF	I	IC002 59 pin							*6					

- \*1. Changes according to ATF sequence.
- \*2. Changes according to ATF tracking.
- \*3. Changes according to still, slow, or X2 sequence.
- \*4. 2V period "H" pulse (⌒).
- \*5. V period "H" pulse (⌒).
- \*6. V period "H" pulse (⌒).

3-11. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	THREA-DING	UN-THREA-DING	X1/5 X1/10	X2	LOAD-ING	UN-LOAD-ING	EJECT-ED	FRAME		
	I/O	Pin No.																			
TAPE TOP	I	*4	←								*1									→	
TAPE END	I	*4	←								*2										→
REC PROOF	I	*4	←								*3										→
LOAD CW	O	IC001 8 pin	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L
LOAD CCW	O	IC001 9 pin	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L
CONT CW	O	IC001 16 pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CONT CCW	O	IC001 17 pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
B START	O	IC001 28 pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
B HOLD	O	IC001 29 pin	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CAS LOCK	O	IC002 8 pin	←								*5										→
FL M CW	O	IC002 10 pin	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	H	L	L	L
FL M CCW	O	IC002 9 pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L
FL SWA	I	IC002 64 pin	←								*7										→
FL SWB	I	IC002 1 pin	←								*6										→
FL SWC	I	IC002 2 pin	←								*7										→

- \*1. "L" at tape top.
- \*2. "L" at tape end.
- \*3. "H" when cassette is in accidental erasure prevention state.
- \*4. Read by IC001 key matrix.
- \*5. Signal from IC002 to IC001, IC001 is read by key matrix.
- \*6. "H" when cassette is inserted.
- \*7. "H" when cassette is not inserted.

3-12. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	FRAME	X1/5 X1/10	X2
	I/O	Pin No.												
LINE MUTE	O	IC002 21 pin	L	L	L	L	L	H	H	H	L	H	H	*2
VA PB MODE	O	IC002 6 pin	L	H	L	L	L	H	H	H	L	H	H	H
CONT 1	O	IC002 24 pin	←								*1			
CONT 2	O	IC002 27 pin	←								*1			
SP/LP	O	IC001 18 pin	According to SP/LP SW	Automatic evaluation result	According to SP/LP SW	H	H	Automatic evaluation result	←	Hold immediately previous PB mode	According to SP/LP SW	Hold immediately previous PB mode	Hold immediately previous PB mode	Automatic evaluation result
X2	O	IC002 51 pin	L	L	L	L	L	L	L	L	L	L	L	H

\*1. According to input signal selection.

	TUNER	LINE
CONT 1	H	L
CONT 2	L	H

3-13. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT

SIGNAL	MODE		Function									
	I/O	Pin No.										
PW CONT	O	IC002 44 pin	"H" pulse generation when power ON.									
BATT PRE END	I	IC002 46 pin	"L" when PRE END. Normally "H".									
CONT 1	O	IC002 24 pin	According to input signal selection.									
CONT 2	O	IC002 27 pin	<table border="1"> <thead> <tr> <th></th> <th>TUNER</th> <th>LINE</th> </tr> </thead> <tbody> <tr> <td>CONT 1</td> <td>H</td> <td>L</td> </tr> <tr> <td>CONT 2</td> <td>L</td> <td>H</td> </tr> </tbody> </table>		TUNER	LINE	CONT 1	H	L	CONT 2	L	H
	TUNER	LINE										
CONT 1	H	L										
CONT 2	L	H										

3-14. TIMER/TUNER CONTROL — TUNER BLOCK INTERFACE (MA-25 BOARD)

SIGNAL	MODE		STOP	PB	REC	FF
	I/O	Pin No.				
AFT UP	I	IC003 64 pin	←			
AFT DOWN	I	IC003 63 pin	←			
V DET	I	IC003 65 pin	←			
TA MUTE	O	IC003 54 pin	L	L	L	L
BAND 1	O	IC003 58 pin	←			
BAND 2	O	IC003 57 pin	←			
MCLK	O	IC003 52 pin	←			
MCS	O	IC003 51 pin	←			
I/O 1	I/O	IC003 67 pin	←			
I/O 2	I/O	IC003 68 pin	←			
I/O 3	I/O	IC003 69 pin	←			
I/O 4	I/O	IC003 70 pin	←			
Vc PWM	O	IC003 60 pin	←			

- \*1. Rece
- \*2. Band
- \*3. Cont
- \*4. Stati

3-15. TIMER/TUNER/MODE CONTROL — TV BLOCK INTERFACE

SIGNAL	MODE		Function
	I/O	Pin No.	
CRTC STB	O	IC003 53 pin	Data signal to V period "H" pulse tra
TV MUTE	O	IC002 16 pin	Switches between "H" and "L" each

3-13. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-25 BOARD)

REC PAUSE	THREA- DING	UN- THREA- DING	X1/5 X1/10	X2	LOAD- ING	UN- LOAD- ING	EJECT- ED	FRAME
*1								
*2								
*3								
L	H	L	L	L	L	L	L	L
L	L	H	L	L	L	L	L	L
L	L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L	L
H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	L	L	L
*5								
L	L	L	L	L	H	L	H	L
L	L	L	L	L	L	H	L	L
*7								
*6								
*7								

- \*1. "L" at tape top.
- \*2. "L" at tape end.
- \*3. "H" when cassette is in accidental erasure prevention state.
- \*4. Read by IC001 key matrix.
- \*5. Signal from IC002 to IC001, IC001 is read by key matrix.
- \*6. "H" when cassette is inserted.
- \*7. "H" when cassette is not inserted.

REC PAUSE	FRAME	X1/5 X1/10	X2
L	H	H	*2
L	H	H	H
According to P/LP SW	Hold immediately previous PB mode	Hold immediately previous PB mode	Automatic evaluation result
L	L	L	H

According to input signal selection.

	TUNER	LINE
CONT 1	H	L
CONT 2	L	H

SIGNAL	MODE		Function									
	I/O	Pin No.										
PW CONT	O	IC002 44 pin	"H" pulse generation when power ON.									
BATT PRE END	I	IC002 46 pin	"L" when PRE END. Normally "H".									
CONT 1	O	IC002 24 pin	According to input signal selection.									
CONT 2	O	IC002 27 pin	<table border="1"> <thead> <tr><th></th><th>TUNER</th><th>LINE</th></tr> </thead> <tbody> <tr><td>CONT 1</td><td>H</td><td>L</td></tr> <tr><td>CONT 2</td><td>L</td><td>H</td></tr> </tbody> </table>		TUNER	LINE	CONT 1	H	L	CONT 2	L	H
	TUNER	LINE										
CONT 1	H	L										
CONT 2	L	H										

3-14. TIMER/TUNER CONTROL — TUNER BLOCK INTERFACE (MA-25 BOARD)

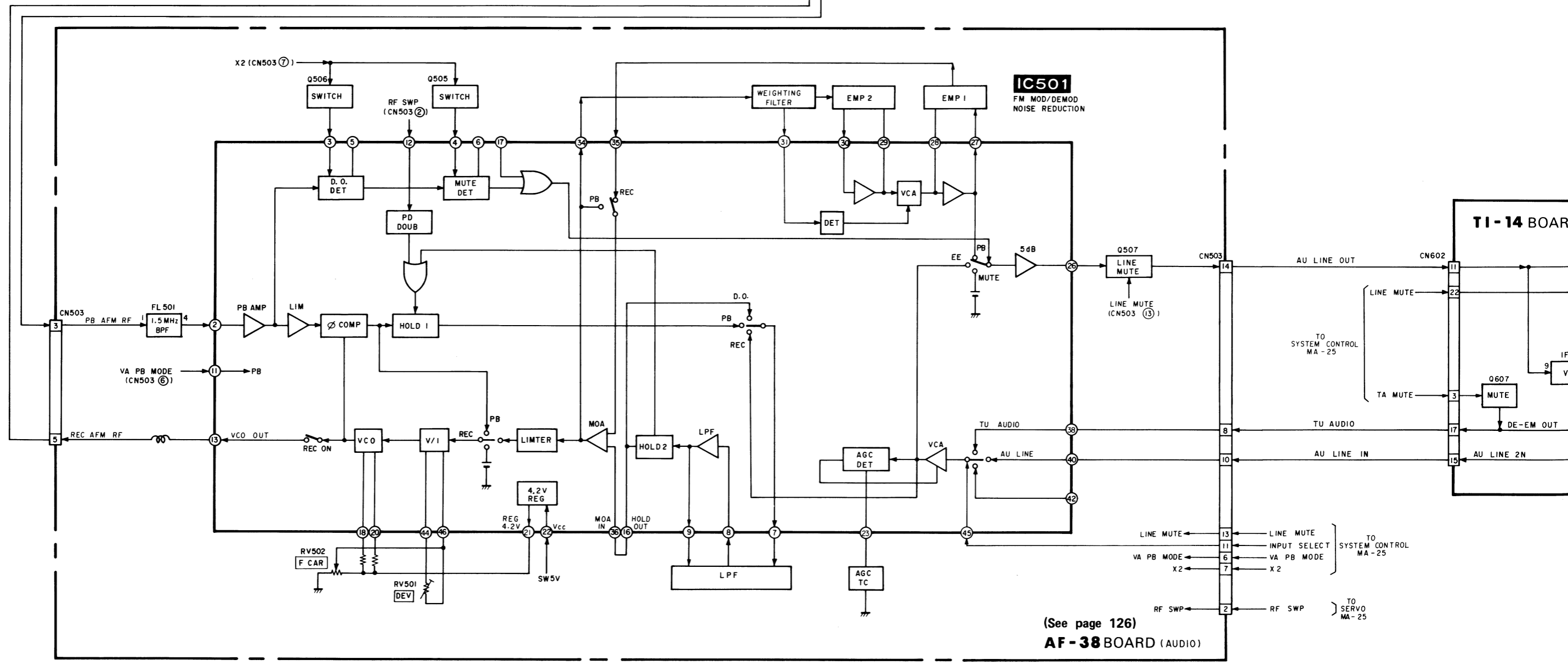
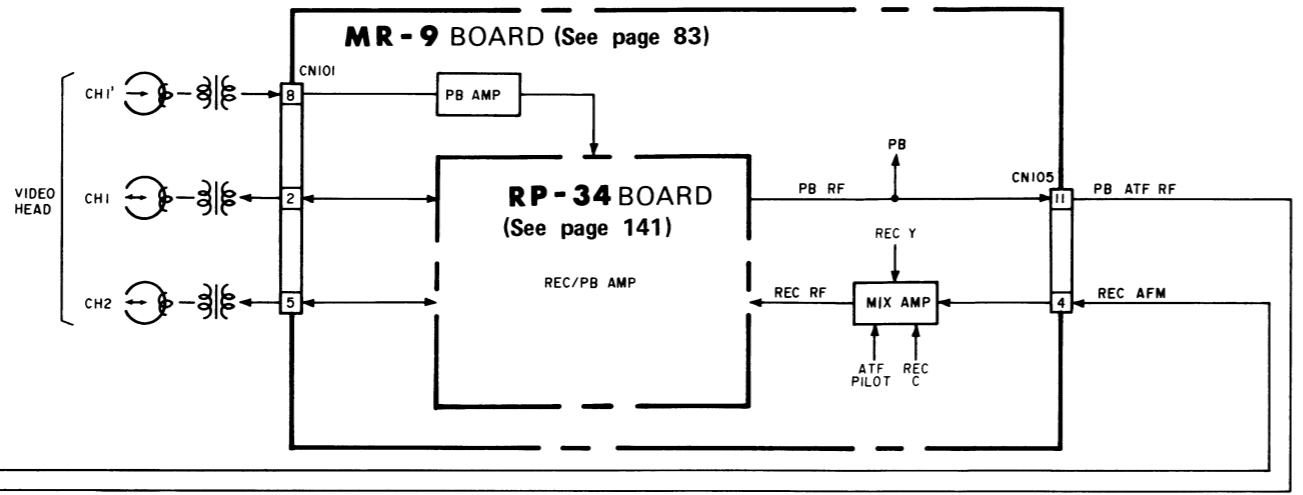
SIGNAL	MODE		STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	FRAME	X1/5 X1/10	X2
	I/O	Pin No.												
AFT UP	I	IC003 64 pin								*1				
AFT DOWN	I	IC003 63 pin								*1				
V DET	I	IC003 65 pin								*1				
TA MUTE	O	IC003 54 pin	L	L	L	L	L	L	L	L	L	L	L	L
BAND 1	O	IC003 58 pin								*2				
BAND 2	O	IC003 57 pin								*2				
MCLK	O	IC003 52 pin								*3				
MCS	O	IC003 51 pin								*3				
I/O 1	I/O	IC003 67 pin								*3				
I/O 2	I/O	IC003 68 pin								*3				
I/O 3	I/O	IC003 69 pin								*3				
I/O 4	I/O	IC003 70 pin								*3				
Vc PWM	O	IC003 60 pin								*4				

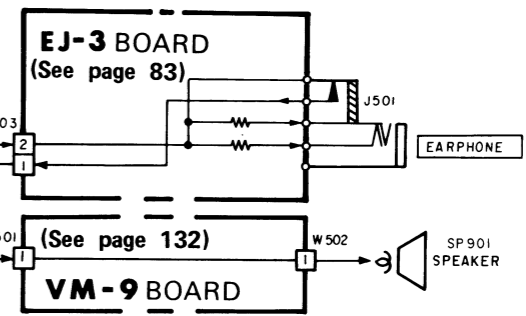
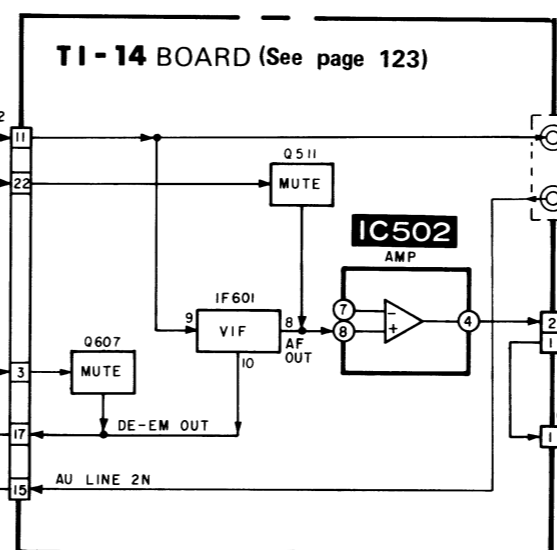
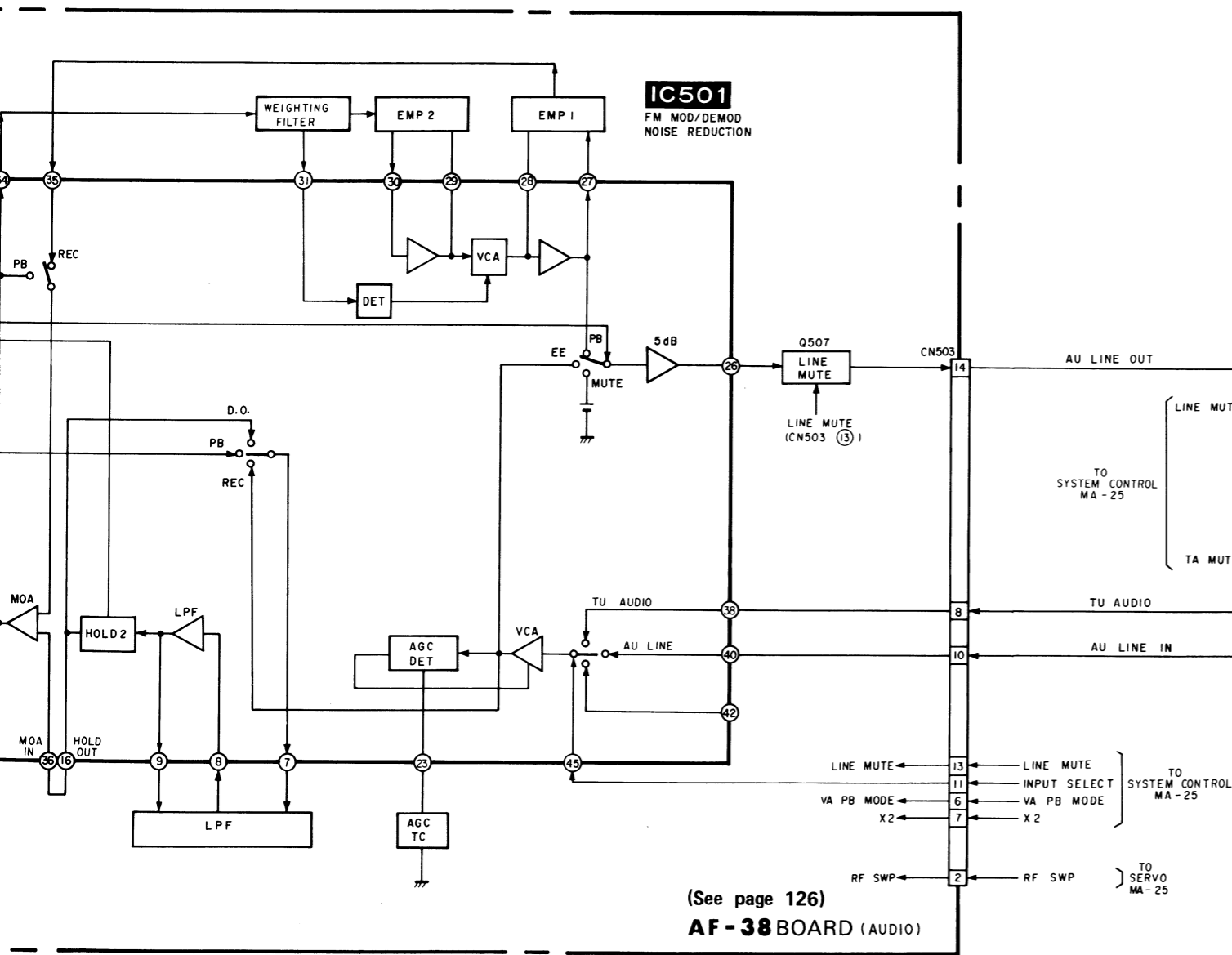
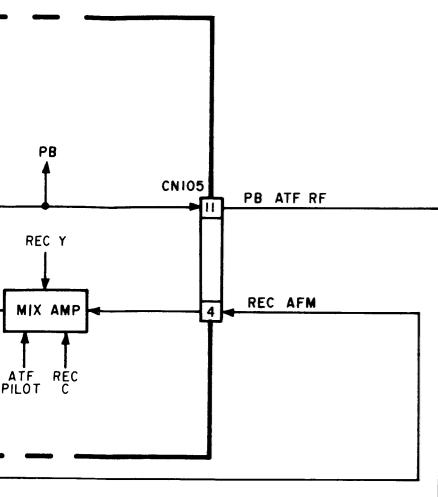
- \*1. Reception status during tuner station selection.
- \*2. Band output of tuner.
- \*3. Control signal and data signal for reading/writing of nonvolatile memory for tuner.
- \*4. Station selection data value for tuner.

3-15. TIMER/TUNER/MODE CONTROL — TV BLOCK INTERFACE (MA-25 BOARD)

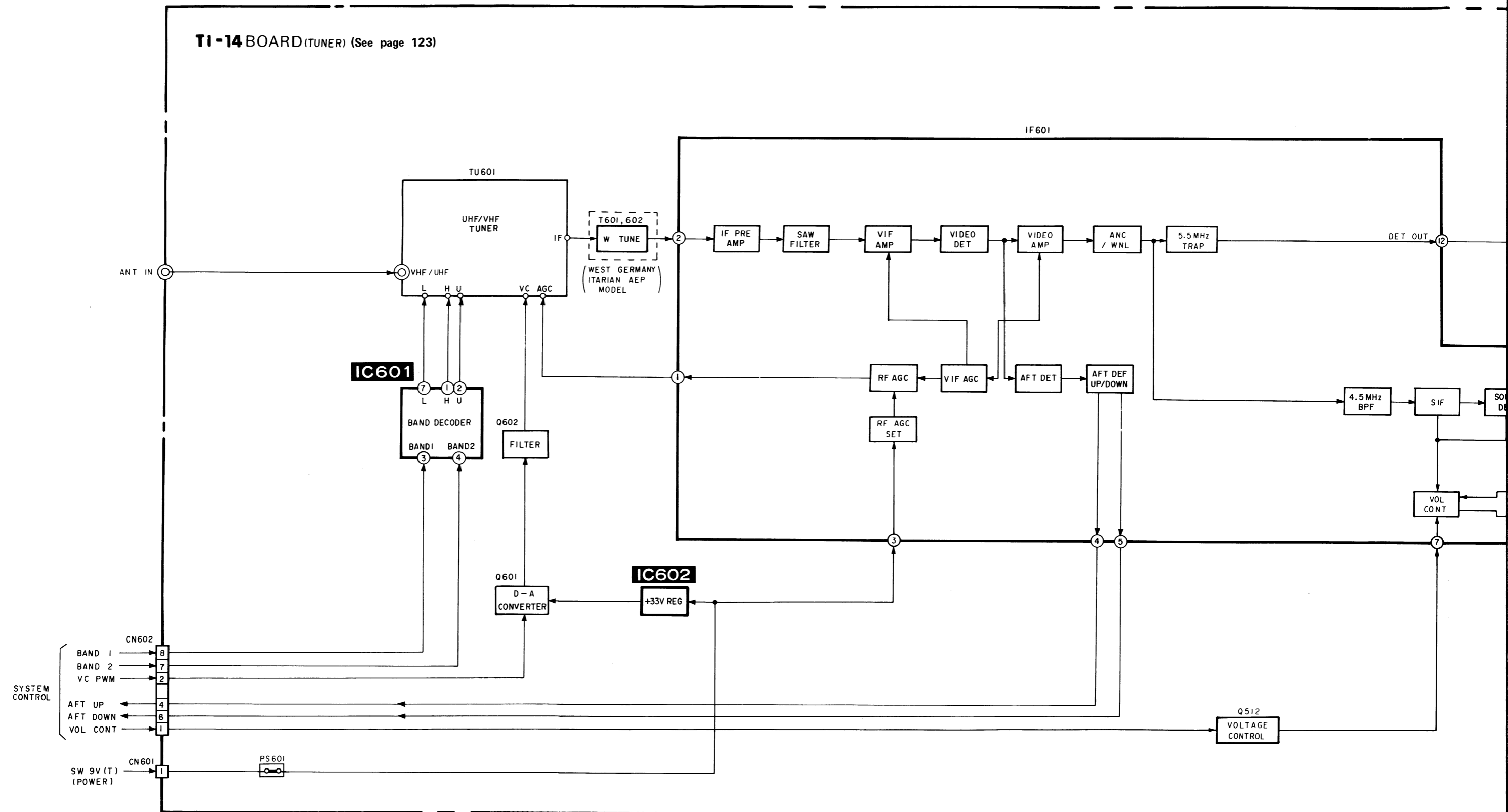
SIGNAL	MODE		Function
	I/O	Pin No.	
CRTC STB	O	IC003 53 pin	Data signal to V period "H" pulse train character display.
TV MUTE	O	IC002 16 pin	Switches between "H" and "L" each time TV MUTE button is pressed.

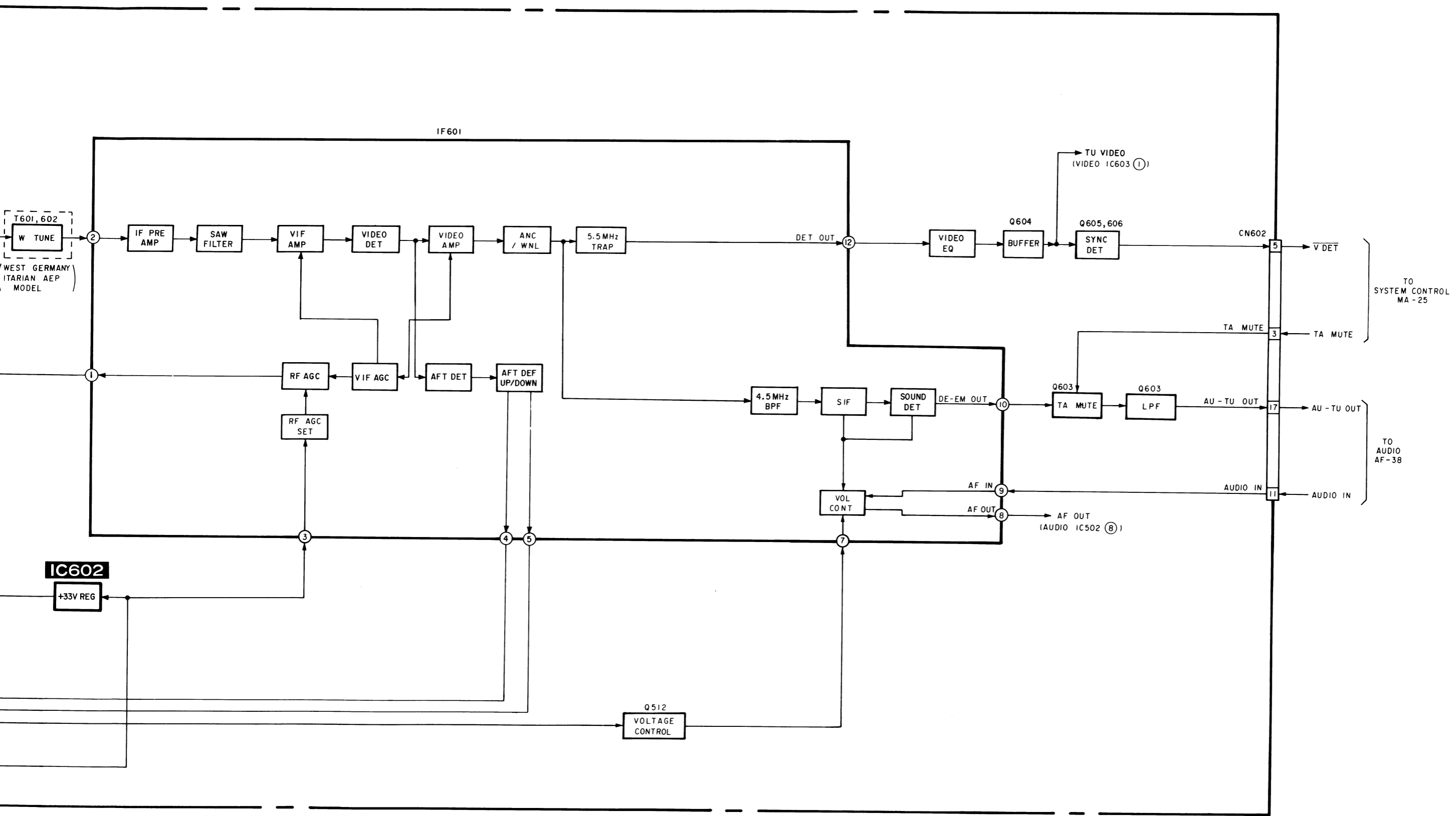
3-16. TUNER BLOCK DIAGRAM



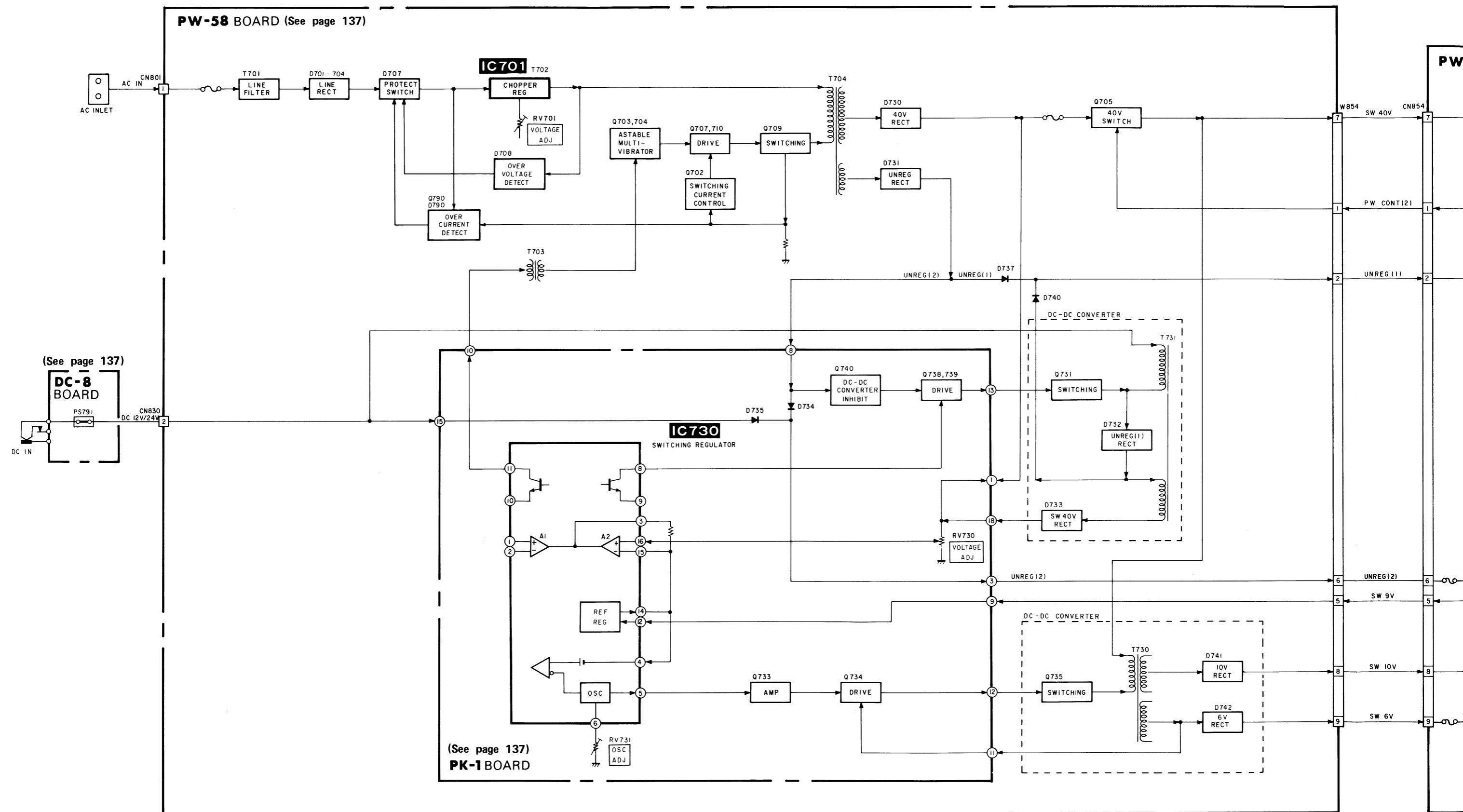


3-17. AUDIO BLOCK DIAGRAM

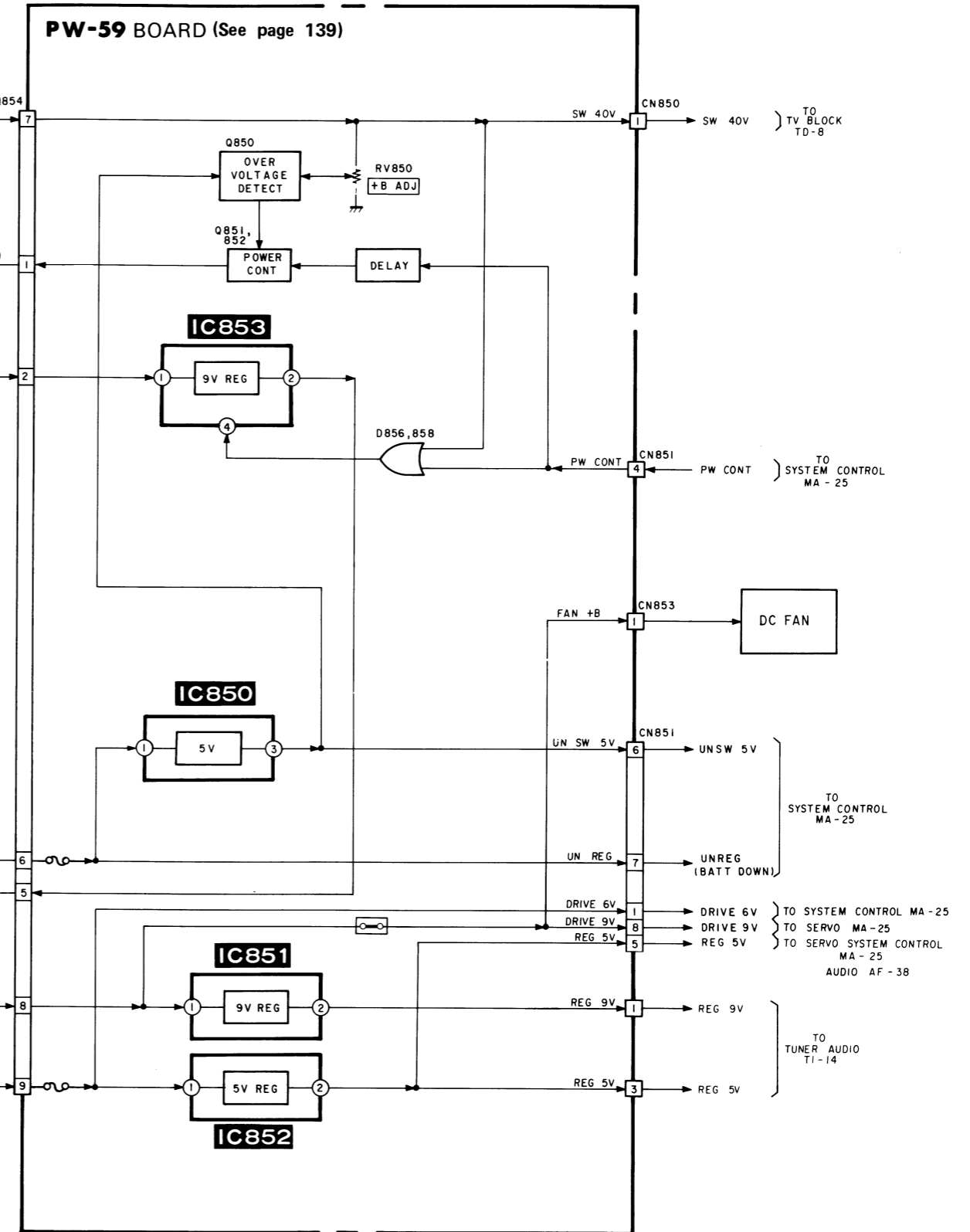
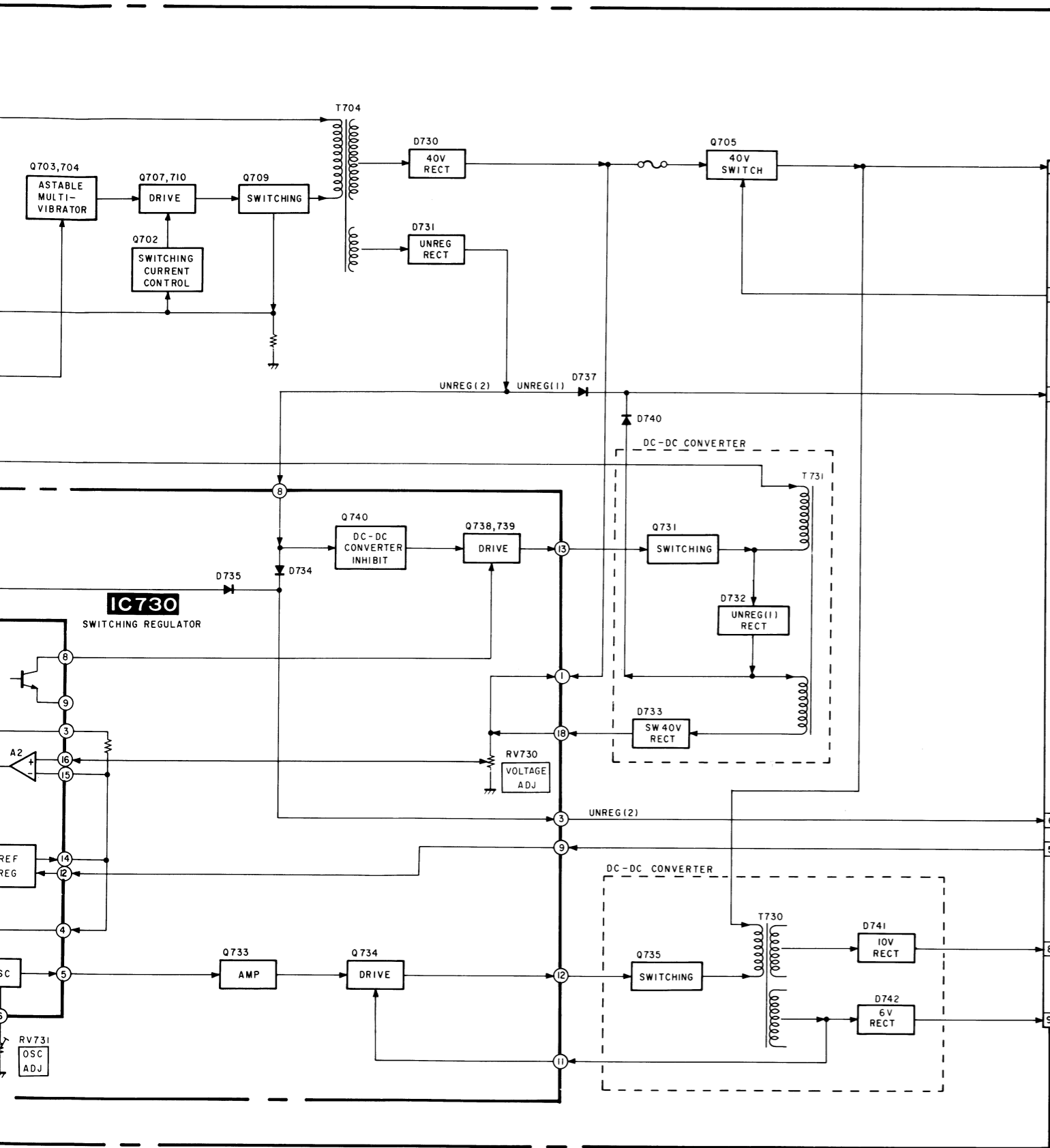




3-18. POWER BLOCK DIAGRAM







SECTION 4

FRAME FRAME

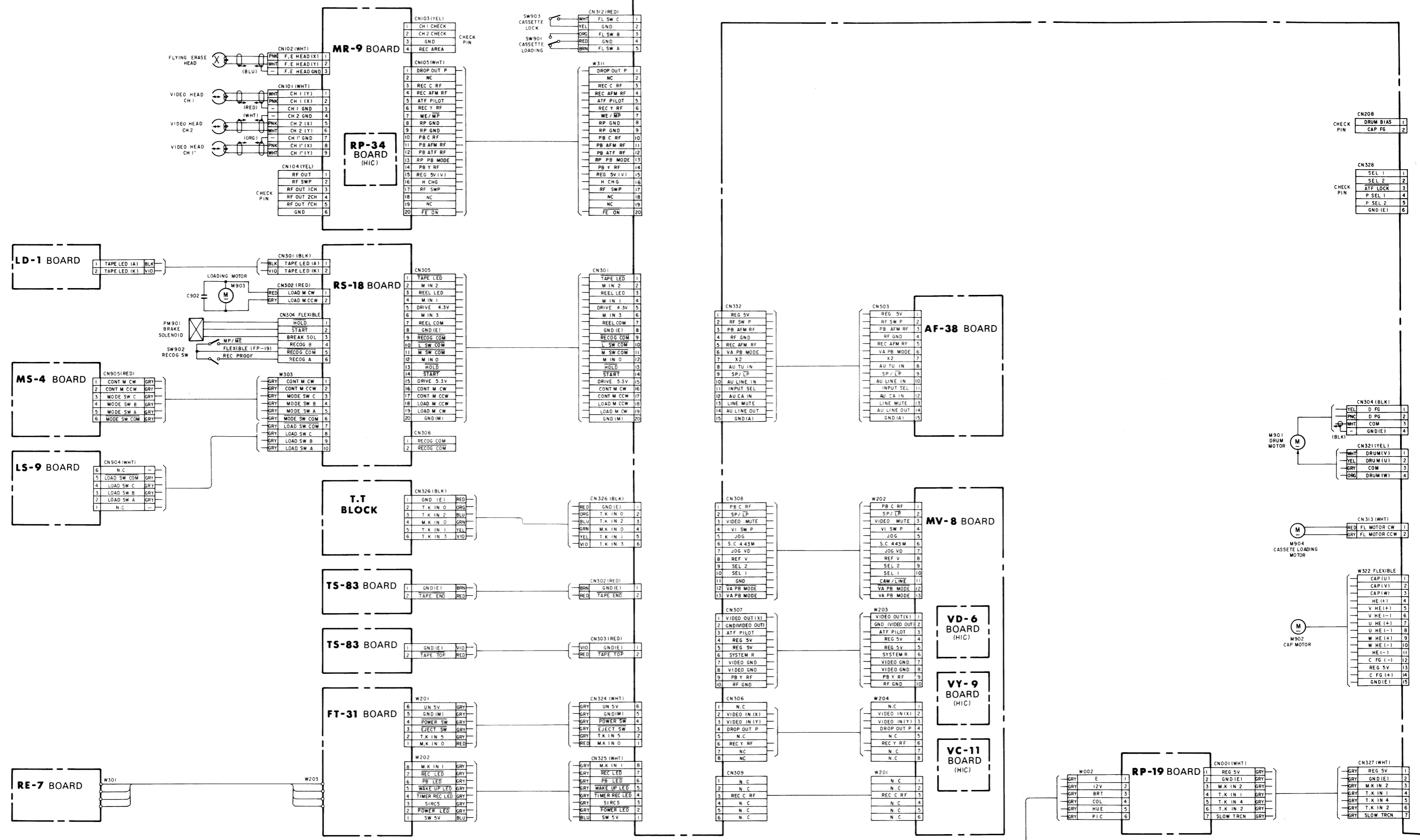
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

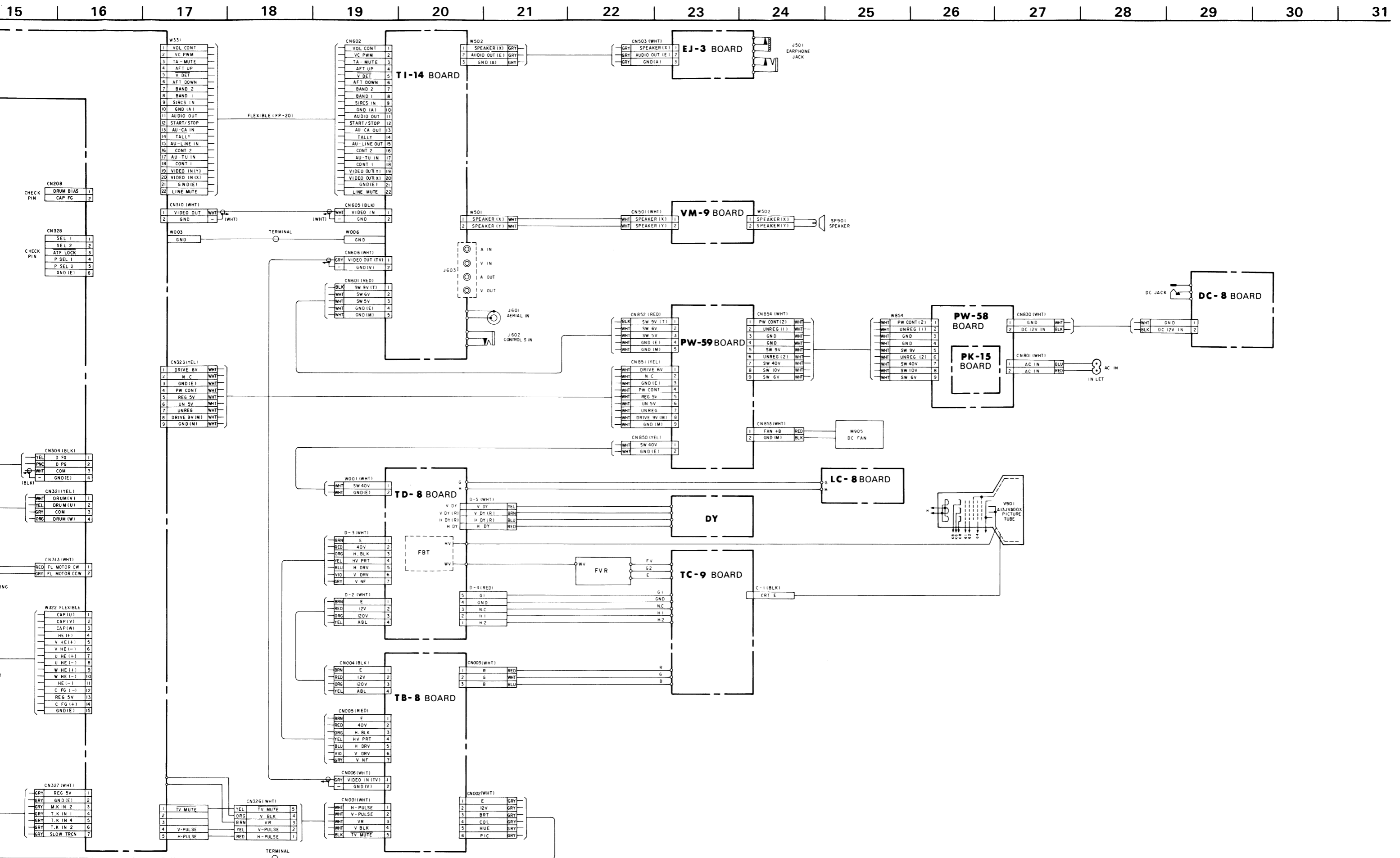
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

4-1. FRAME SCHEMATIC DIAGRAM

MA-25 BOARD










4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS



Note (Printed Wiring Board)

- — : indicates a lead wire mounted on the component side.
- — : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- : conductor side.

- Digital transistors (TB-8: Q729) transistor with resistors. Refer to the TB-8 board schematic diagram for digital transistor.

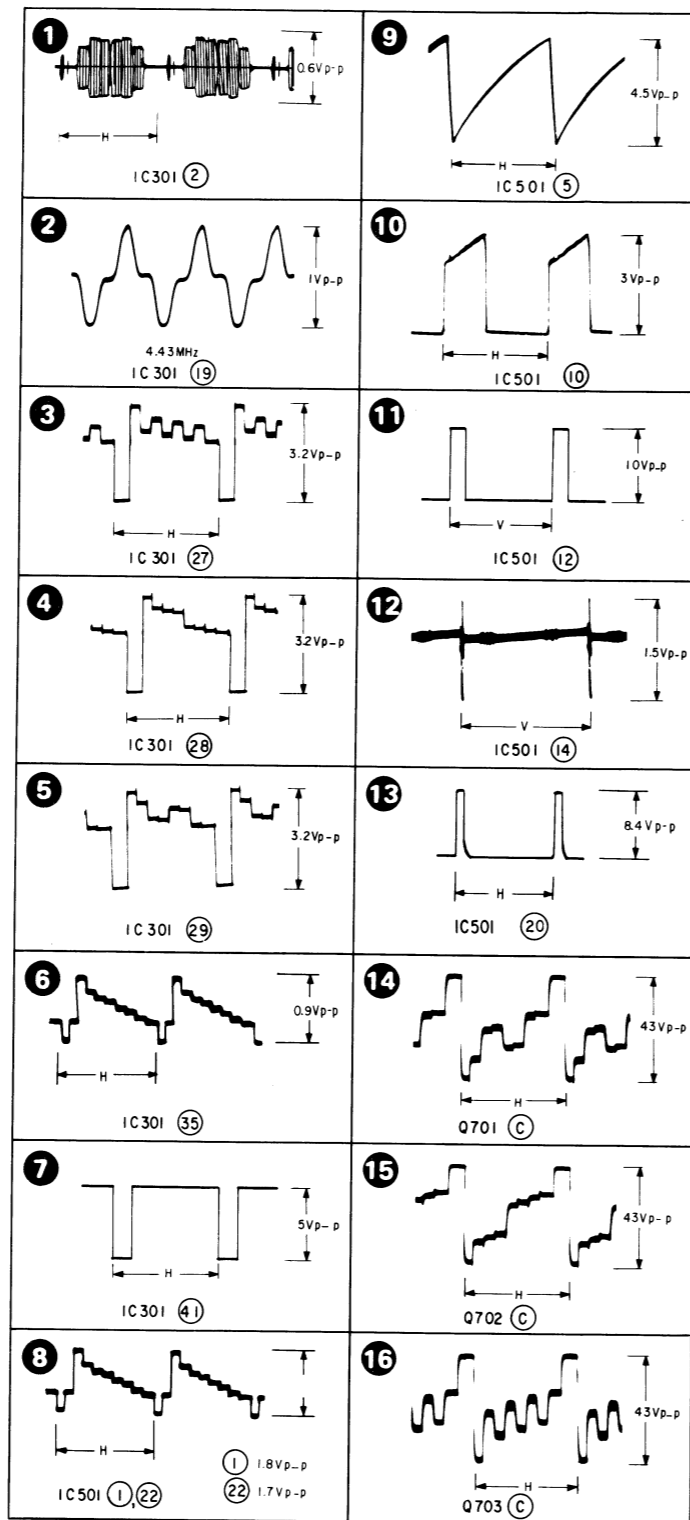
Note (Schematic Diagram)

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W unless otherwise noted.  $\text{k}\Omega$  : 1000 $\Omega$ ,  $\text{M}\Omega$  : 1000 $\text{k}\Omega$ .
- All variable and semi-fixed resistors have characteristics curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.
-  : adjustment for repair.
-  : B + line.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.
- All voltage are dc measured with a VOM (10M $\Omega$ )

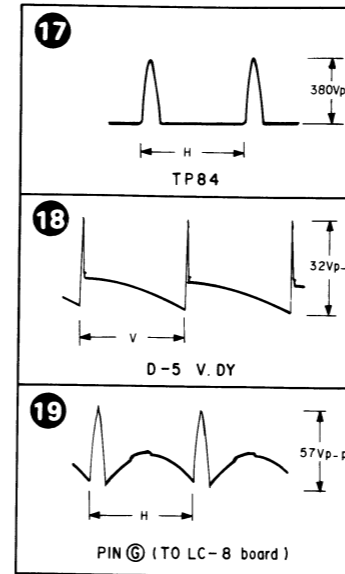
**Note:** The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

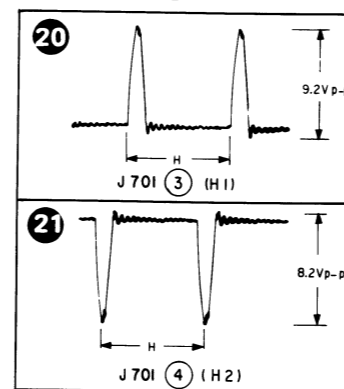
TB-8 BOARD



TD-8 BOARD



TC-9 BOARD

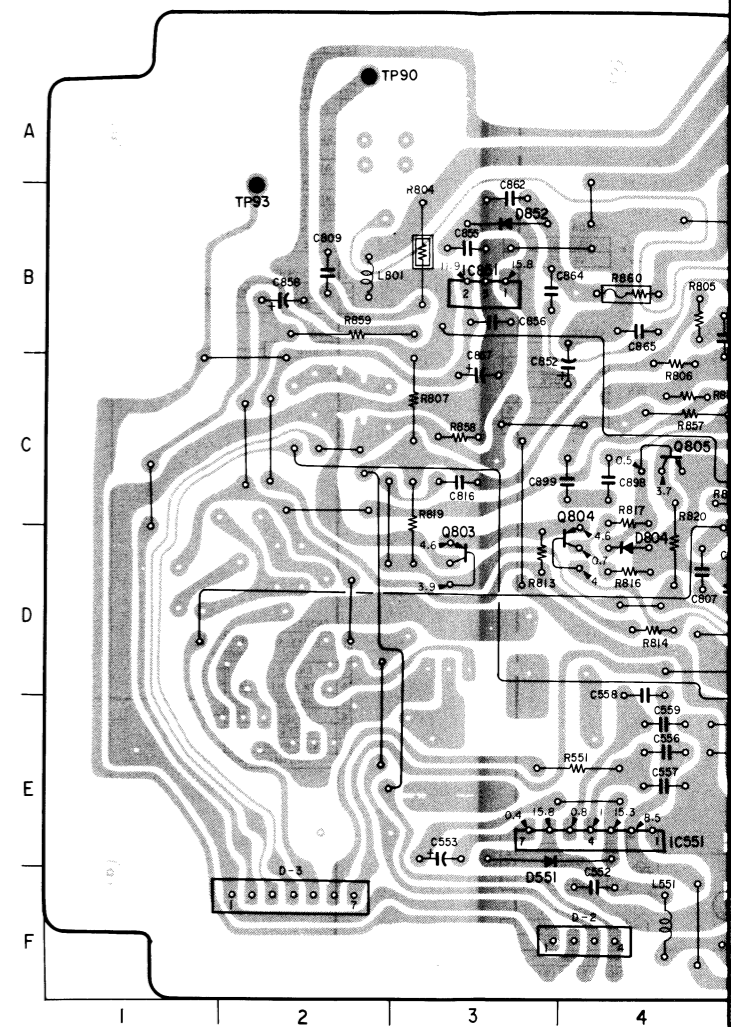


TB-8 (Y/C, SYNC PROCESS/RGB OUT), TD-8 (VERTICAL/HORIZONTAL) — Ref. No. TB-8, LC-8 BOARDS: 1000 series, TD-8, TC-9 BOARDS: 2000 series —

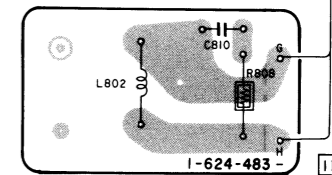
TD-8 BOARD

D2	F-4
D3	F-2
D4	B-8
D5	E-7
D551	E-3
D801	C-7
D802	B-6
D803	B-6
D804	D-4
D805	F-7
D806	F-7
D851	B-5
D852	B-3
IC551	E-4
IC851	B-3
Q801	D-5
Q802	D-7
Q803	D-3
Q804	D-4
Q805	C-4
RV801	F-5
RV802	F-5
RV803	F-5
TP84	E-7
TP90	A-2
TP93	B-2
W001	D-7

TD-8 BOARD



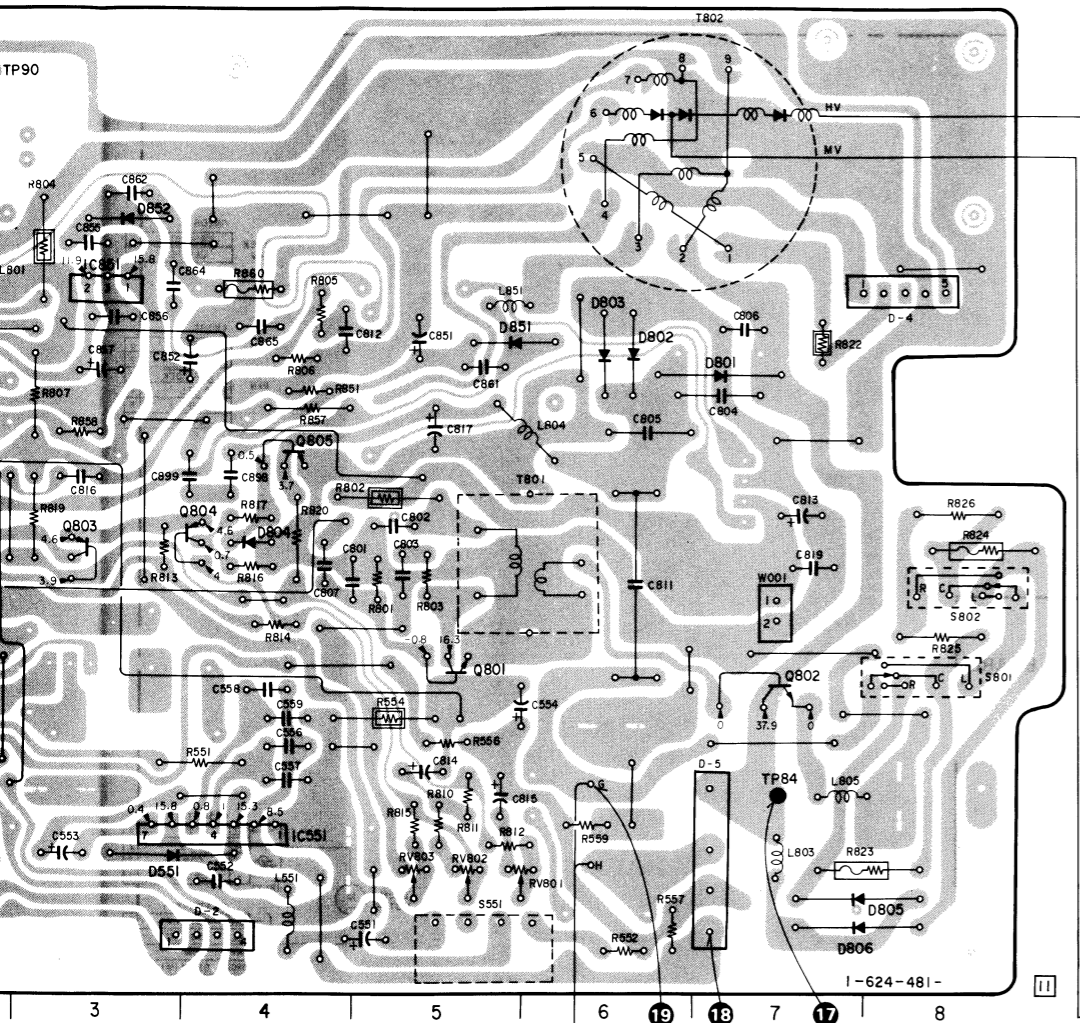
LC-8 BOARD



DY

D-8 (VERTICAL/HORIZONTAL OUT), TC-9 (CRT TERMINAL), LC-8 (HORIZONTAL LINEARITY CONTROL) PRINTED WIRING BOARD

-8, TC-9 BOARDS: 2000 series -



TB-8 BOARD

- CN001 B-1
- CN002 C-6
- CN003 B-2
- CN004 E-7
- CN005 E-8
- CN006 A-6

- CV301 D-5

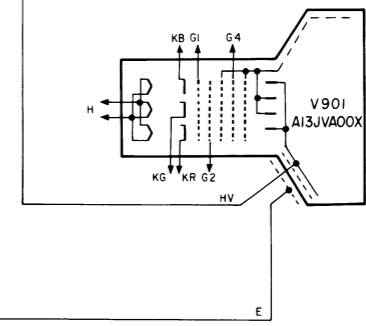
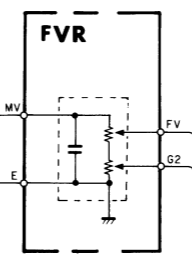
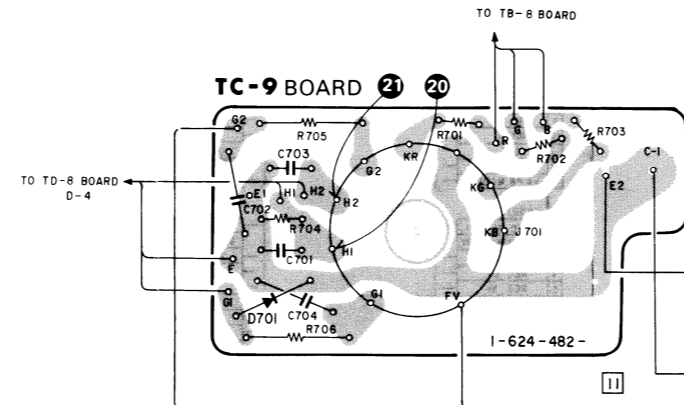
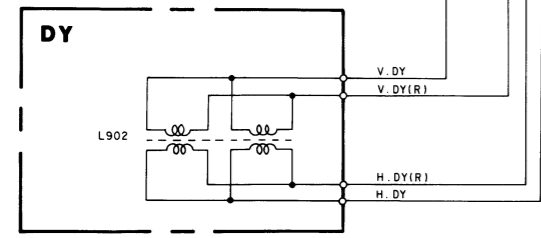
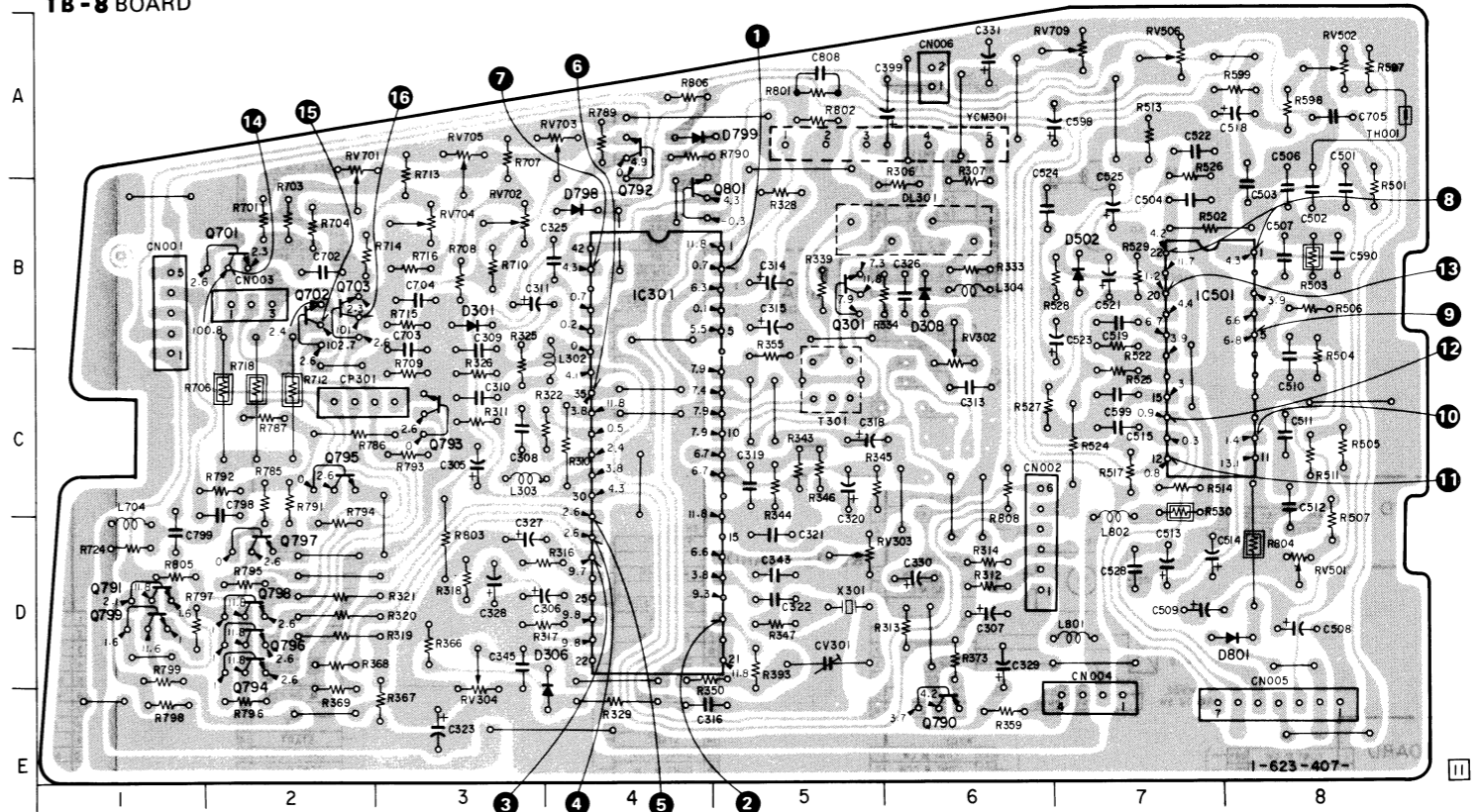
- D301 B-3
- D306 D-4
- D308 B-6
- D502 B-7
- D798 B-4
- D799 A-4
- D801 D-8

- IC301 B-3
- IC501 B-7

- Q301 B-5
- Q701 B-2
- Q702 B-2
- Q703 B-2
- Q790 E-6
- Q791 D-1
- Q792 A-4
- Q793 C-3
- Q794 D-2
- Q795 D-2
- Q796 D-2
- Q797 D-2
- Q798 D-2
- Q799 D-1
- Q801 B-4

- RV302 C-6
- RV303 D-5
- RV304 D-3
- RV501 D-8
- RV502 A-8
- RV506 A-7
- RV701 A-2
- RV702 B-3
- RV703 A-4
- RV704 B-3
- RV705 A-3
- RV709 A-7

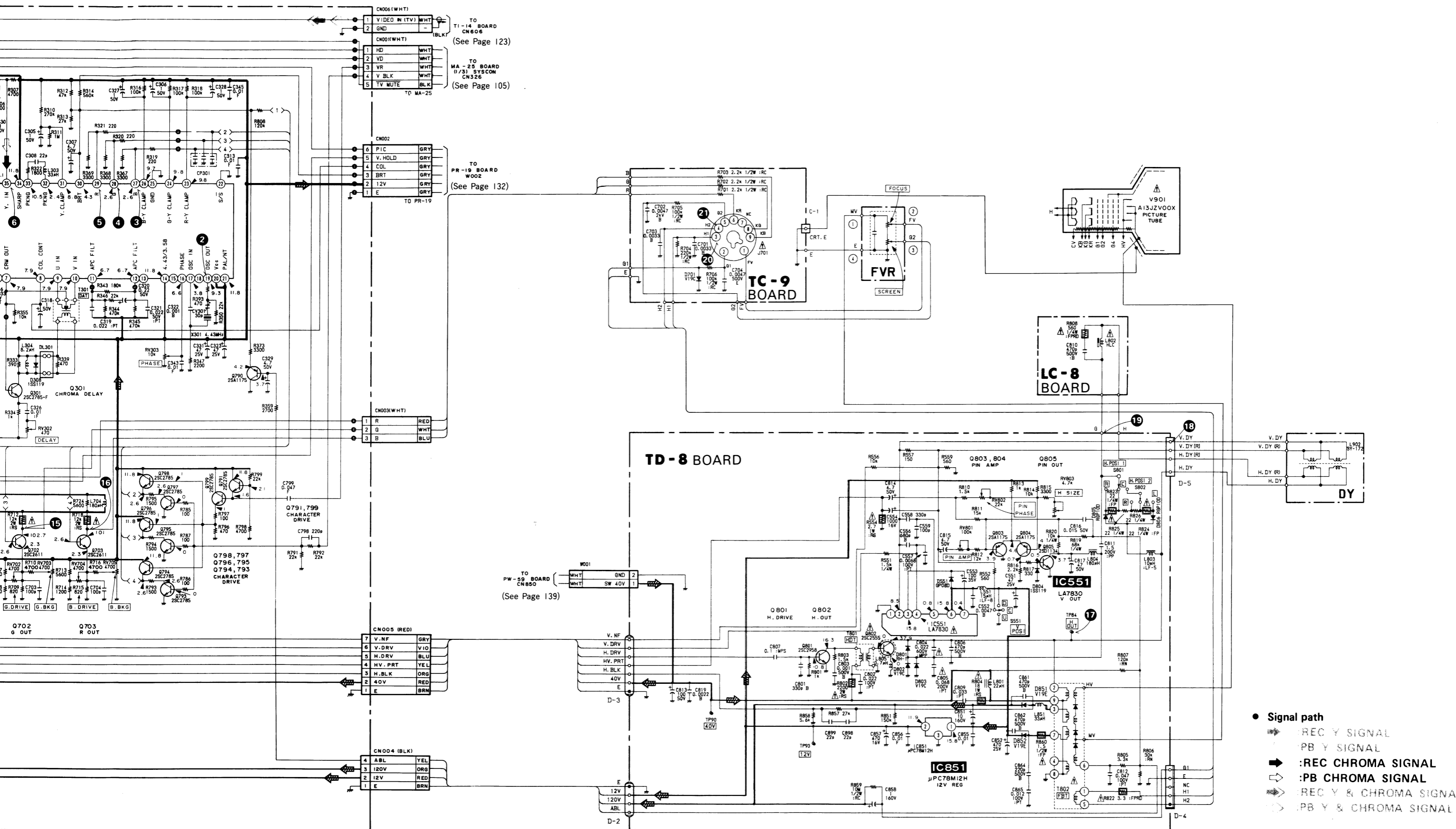
TB-8 BOARD





INAL, LC-8 (HORIZONTAL LINEARITY CONTROL) SCHEMATIC DIAGRAM

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23



Note (Printed Wiring Board)

- — : indicates a lead wire mounted on the component side.
- — : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- Digital transistor (MR-9: Q107, 108, 120, 129, 131) transistor with resistors.  
Refer to the MR-9 board schematic diagram for digital transistor.

Note

Conductor side: Parts on the conductor side being seen from the conductor are stated.  
Component side: Parts on the component side being seen from the component are stated.

Regarding color indication of pattern

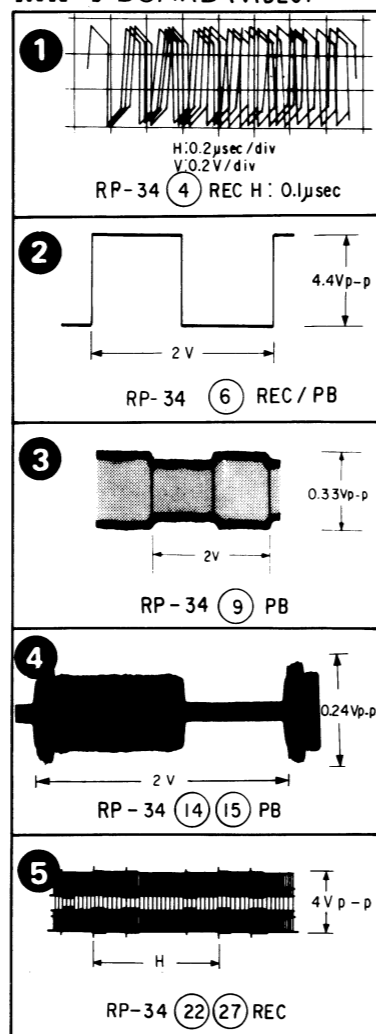
- \* Pattern being seen in the state from the surface side are indicated in gray pattern.
- \* Pattern being seen in the state of the rear surface side is indicated in green pattern.

Note (Schematic Diagram)

- Caution to be exercised when replacing chip components. Do not reuse the removed components but use new components.  
Caution should be taken as the negative side of the tantalum capacitor is weak toward heat.
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/10W unless otherwise noted.  $\text{k}\Omega$ : 1000 $\Omega$ ,  $\text{M}\Omega$ : 1000 $\text{k}\Omega$ .
- All variable and semi-fixed resistors have characteristics curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : adjustment for repair.
- : B + line.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.
- All voltage are dc measured with a VOM (10M $\Omega$ )

When indicating parts by reference number, please include the board name.

MR-9 BOARD (VIDEO)



MR-9 (REC/PB HEAD AMP, FLYING ERASE), EJ-3 (HEADPHONE OUT) PRINTED WIRING BOARD

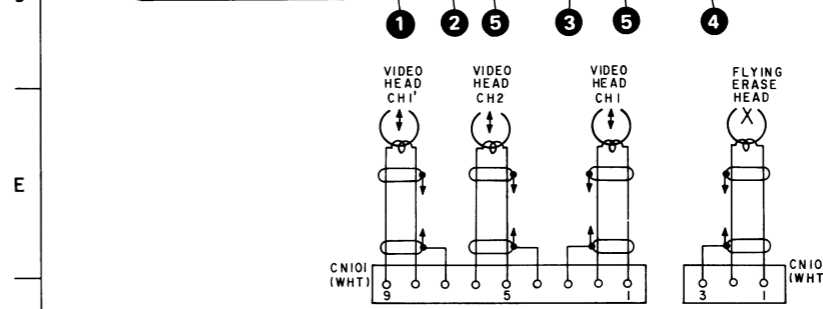
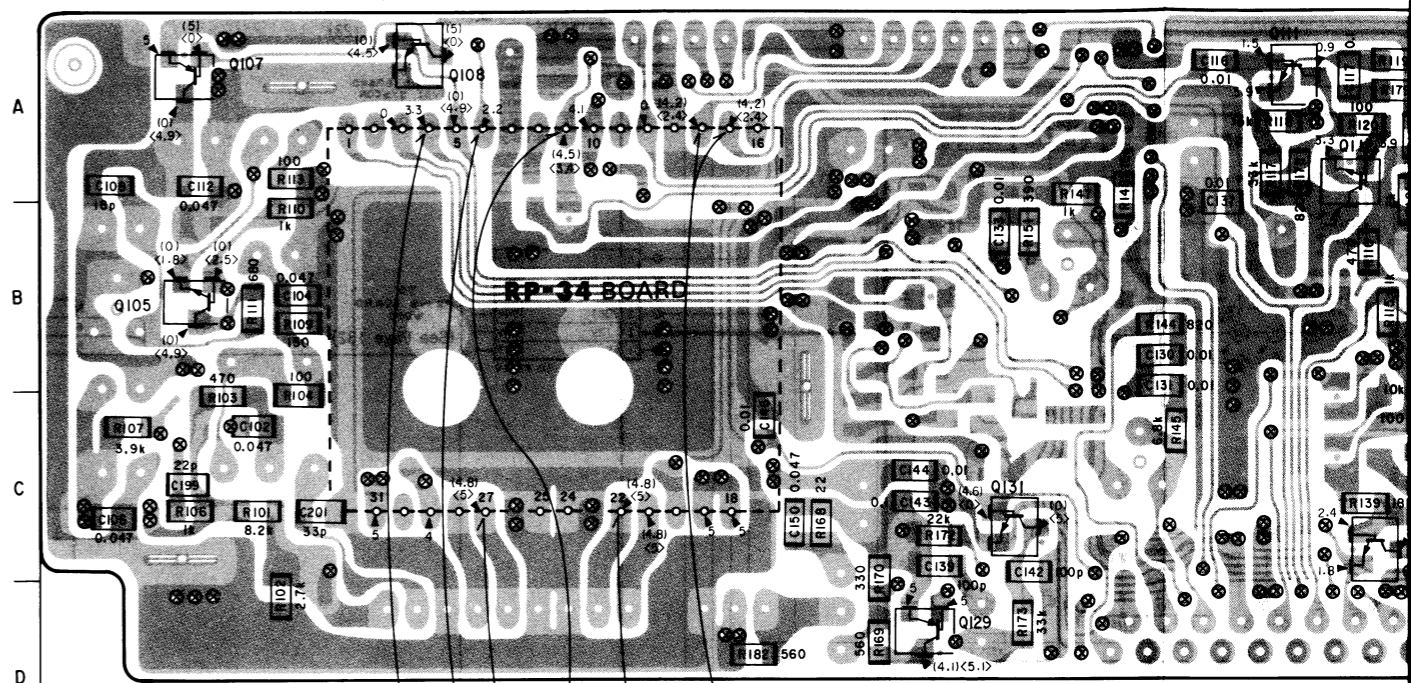
— Ref. No. MR-9 BOARD: 1000 series, EJ-3 BOARD: 6000 series —

MR-9 BOARD

CN101	F-3
CN102	F-4
CN103	I-4
CN104	I-5
CN105	F-6
D101	B-9
Q102	G-2
Q103	G-1
Q104	H-1
Q105	B-1
Q106	H-1
Q107	A-1
Q108	A-3
Q110	B-10
Q111	A-7
Q112	B-7
Q113	B-8
Q114	C-8
Q115	C-7
Q116	G-8
Q117	G-7
Q120	G-6
Q121	H-6
Q122	H-5
Q123	I-5
Q128	F-5
Q129	D-5
Q130	F-5
Q131	C-5
Q132	G-5

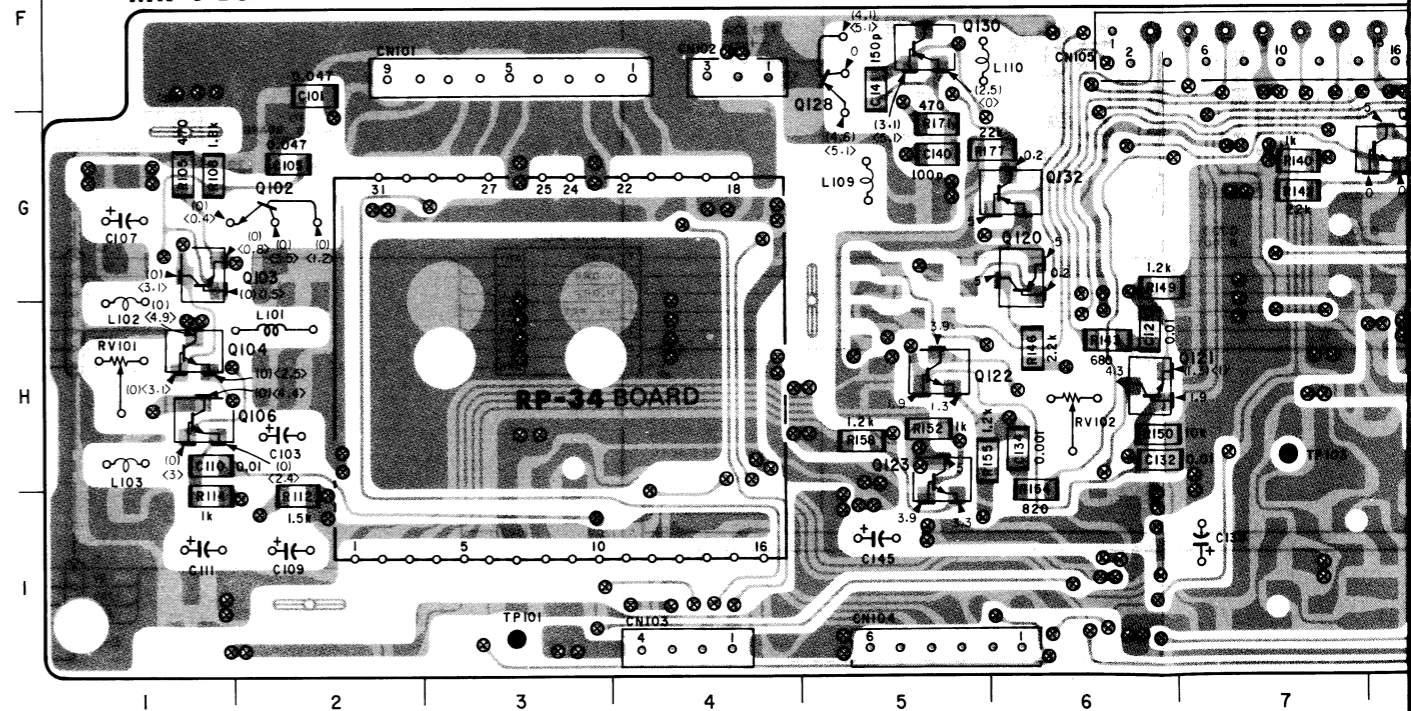
MR-9 BOARD (CONDUCTOR SIDE)

no mark : REC/PB mode (SP mode)  
( ) : REC mode (SP mode)  
< > : PB mode (SP mode)



MR-9 BOARD (COMPONENT SIDE)

no mark : REC/PB mode (SP mode)  
( ) : REC mode (SP mode)  
< > : PB mode (SP mode)



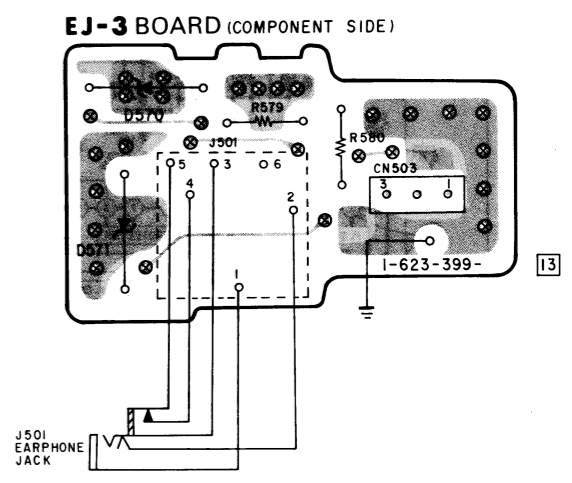
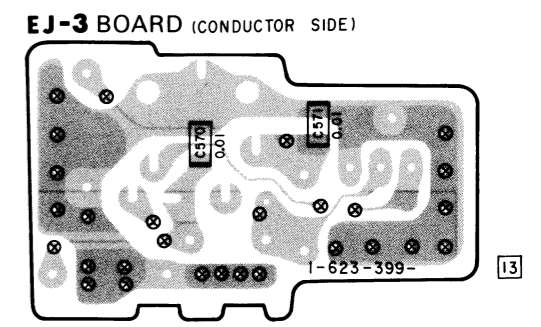
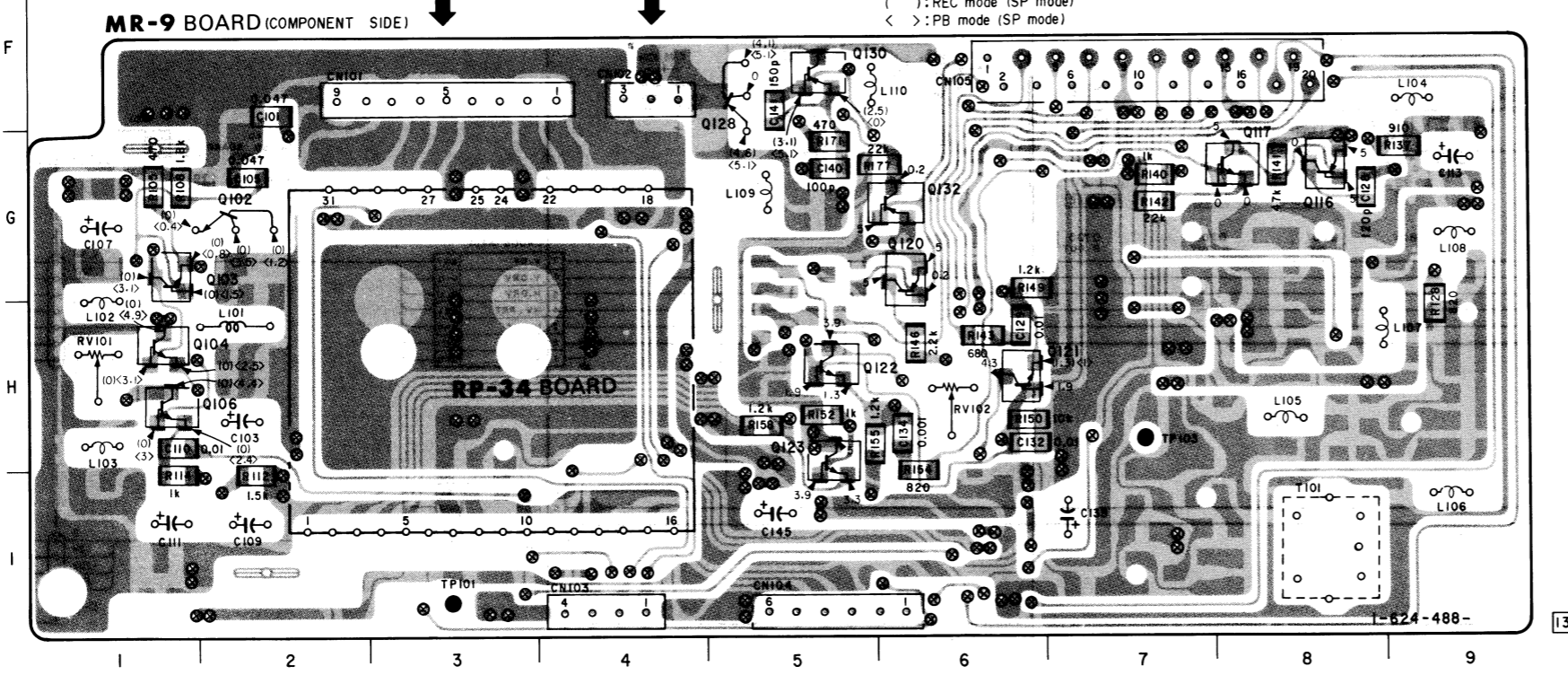
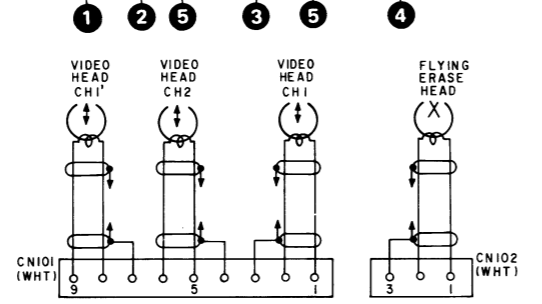
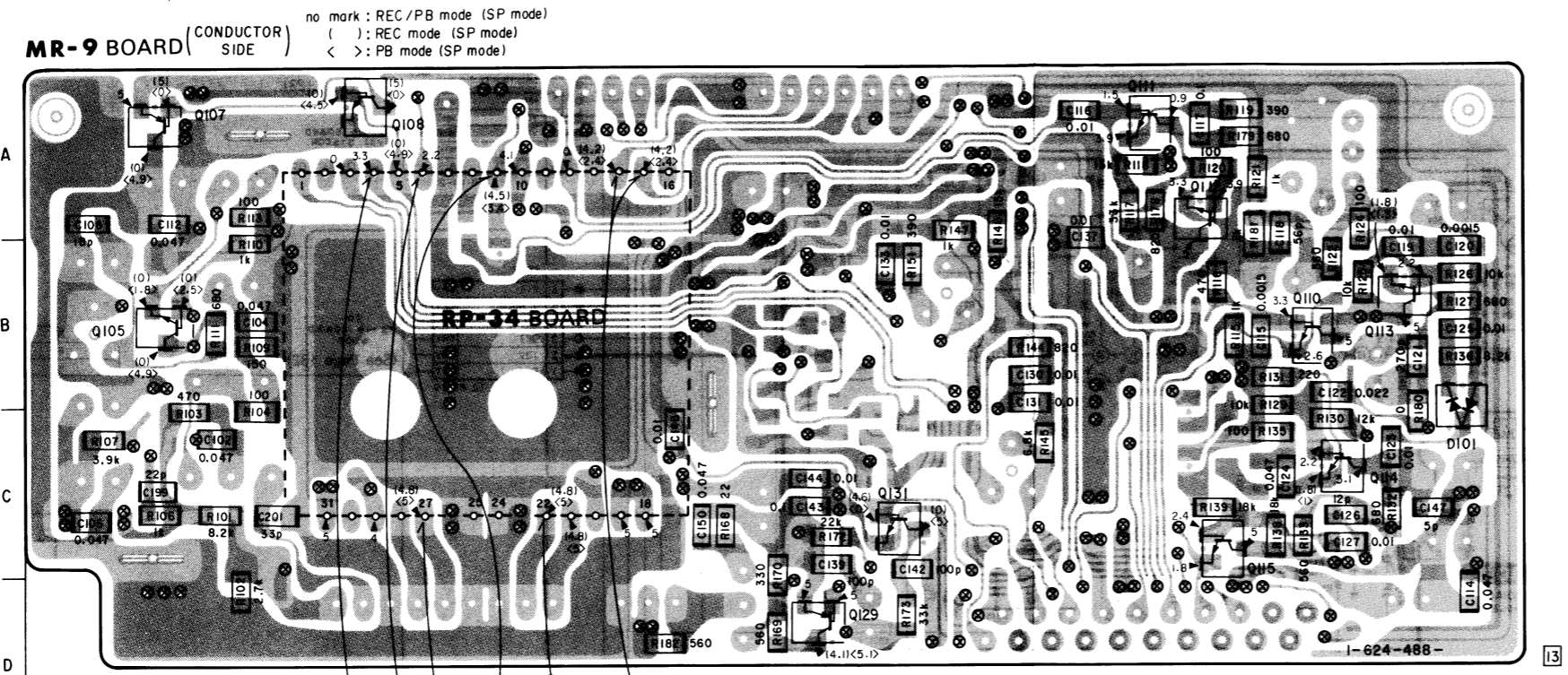


# HEAD AMP HEAD AMP

## MR-9 (REC/PB HEAD AMP, FLYING ERASE), EJ-3 (HEADPHONE OUT) PRINTED WIRING BOARD

— Ref. No. MR-9 BOARD: 1000 series, EJ-3 BOARD: 6000 series —

- MR-9 BOARD
- CN101 F-3
  - CN102 F-4
  - CN103 F-4
  - CN104 I-5
  - CN105 F-6
  - D101 B-9
  - Q102 G-2
  - Q103 G-1
  - Q104 H-1
  - Q105 B-1
  - Q106 H-1
  - Q107 A-1
  - Q108 A-3
  - Q110 B-10
  - Q111 A-7
  - Q112 B-7
  - Q113 B-8
  - Q114 C-8
  - Q115 C-7
  - Q116 G-8
  - Q117 G-7
  - Q120 G-6
  - Q121 H-6
  - Q122 H-5
  - Q123 I-5
  - Q128 F-5
  - Q129 D-5
  - Q130 F-5
  - Q131 C-5
  - Q132 G-5



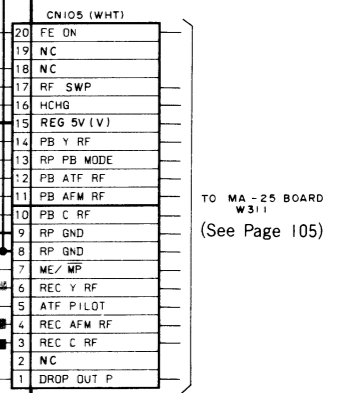
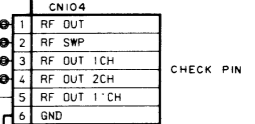
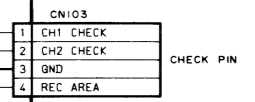
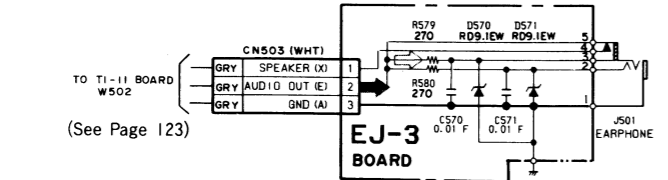
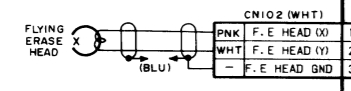
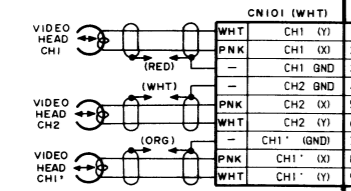
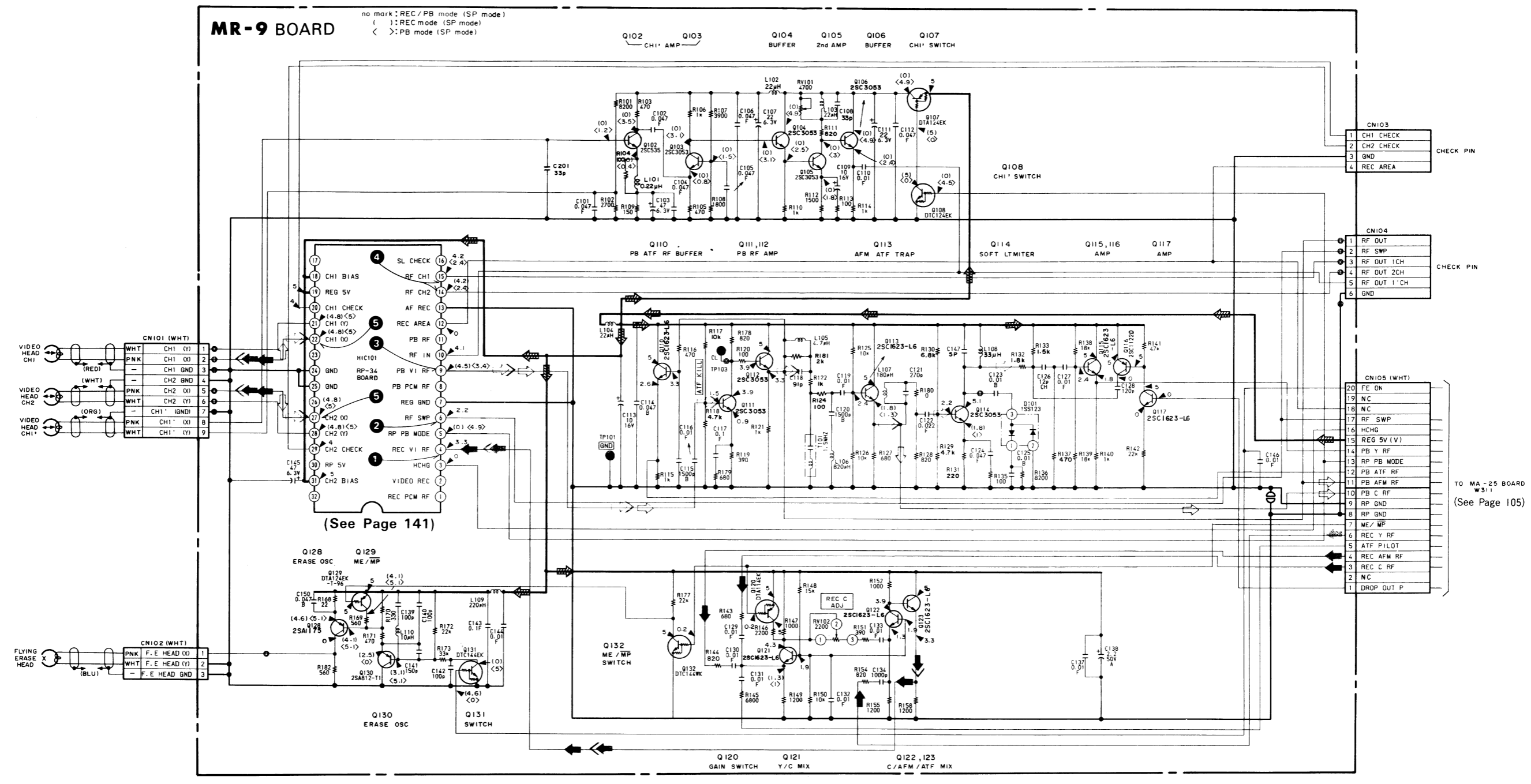
HEAD AMP HEAD AMP

MR-9 (REC/PB HEAD AMP, FLYING ERASE), EJ-3 (HEADPHONE OUT) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

— Ref. No. MR-9 BOARD: 1000 series, EJ-3 BOARD: 6000 series —

A B C D E F G H I J



- Signal path
- REC Y SIGNAL
- PB Y SIGNAL
- :REC CHROMA SIGNAL
- :PB CHROMA SIGNAL
- REC Y & CHROMA SIGNAL
- PB Y & CHROMA SIGNAL
- :REC AUDIO SIGNAL
- :PB AUDIO SIGNAL

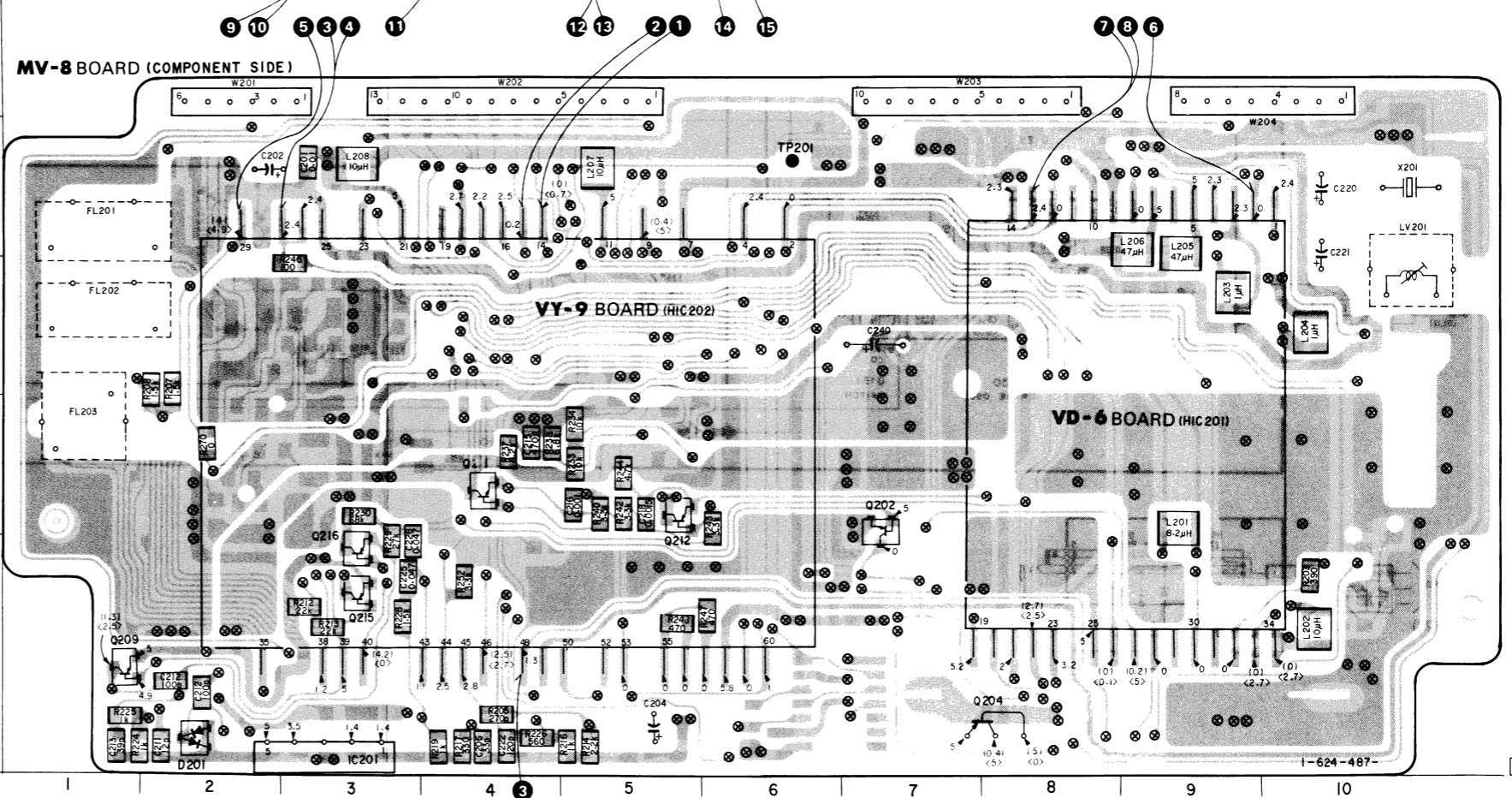
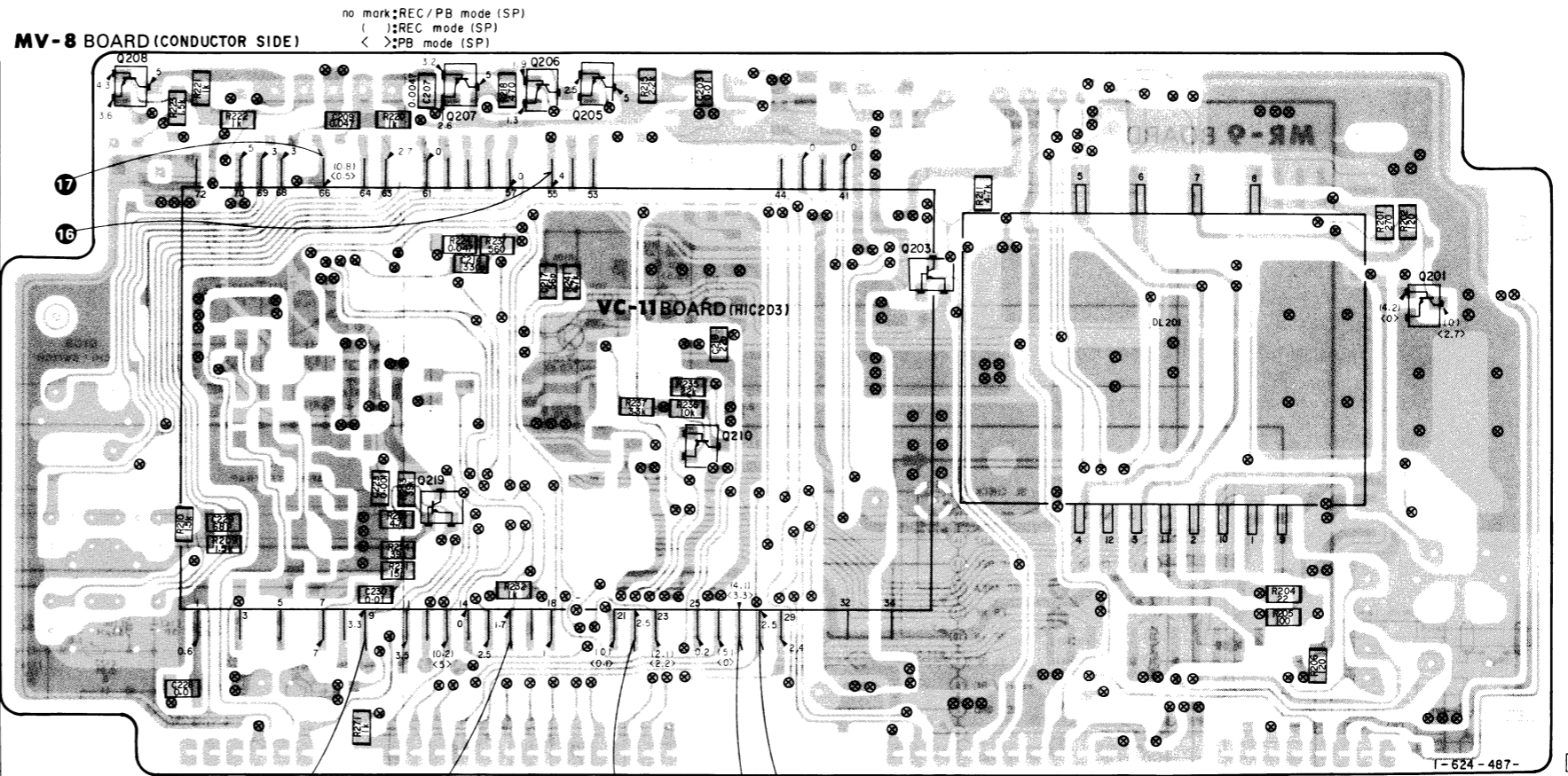
**MV-8 (VIDEO PROCESS) PRINTED WIRING BOARD**

— Ref. No. MV-8 BOARD: 2000 series —

- Digital transistors (MV-8: Q201, 202, 203, 204, 209, 210, 215) transistor with resistors.  
Refer to the MV-8 board schematic diagram for digital transistor.

MV-8 BOARD

D201	J-2
IC201	J-3
LV201	H-10
Q201	B-10
Q202	I-7
Q203	B-7
Q204	J-8
Q205	A-5
Q206	A-4
Q207	A-4
Q208	A-1
Q209	J-1
Q210	C-5
Q211	I-4
Q212	I-5
Q215	J-3
Q216	J-3
Q219	D-4
TP201	G-6



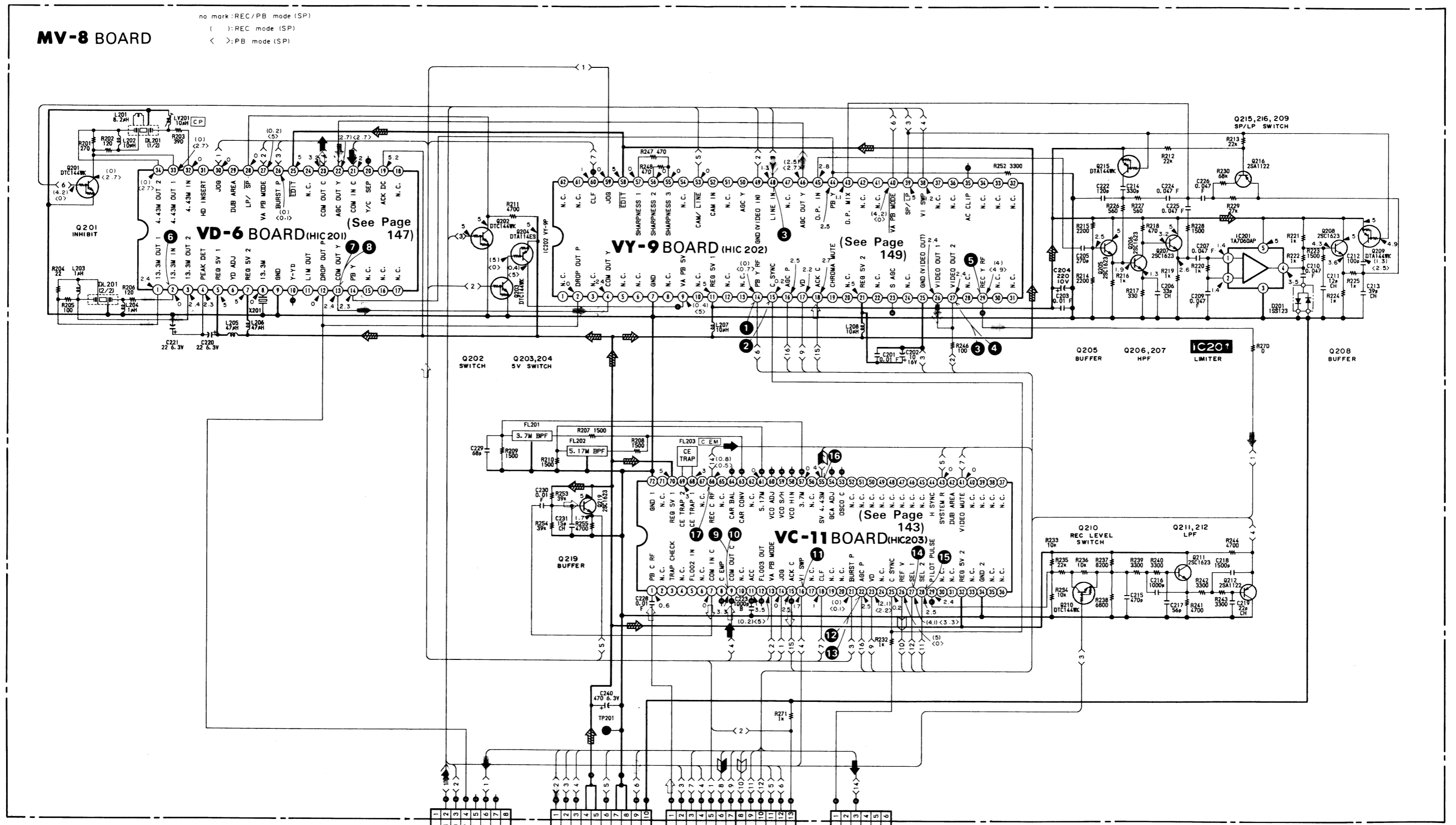
VIDEO VIDEO

MV-8 (VIDEO PROCESS) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

— Ref. No. MV-8 BOARD: 2000 series —

A B C D E F G H I J

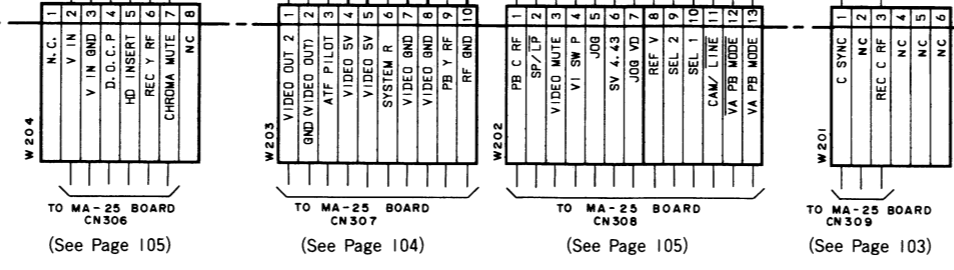


no mark: REC/PB mode (SP)  
 ( ): REC mode (SP)  
 < >: PB mode (SP)

(See Page 147)

(See Page 149)

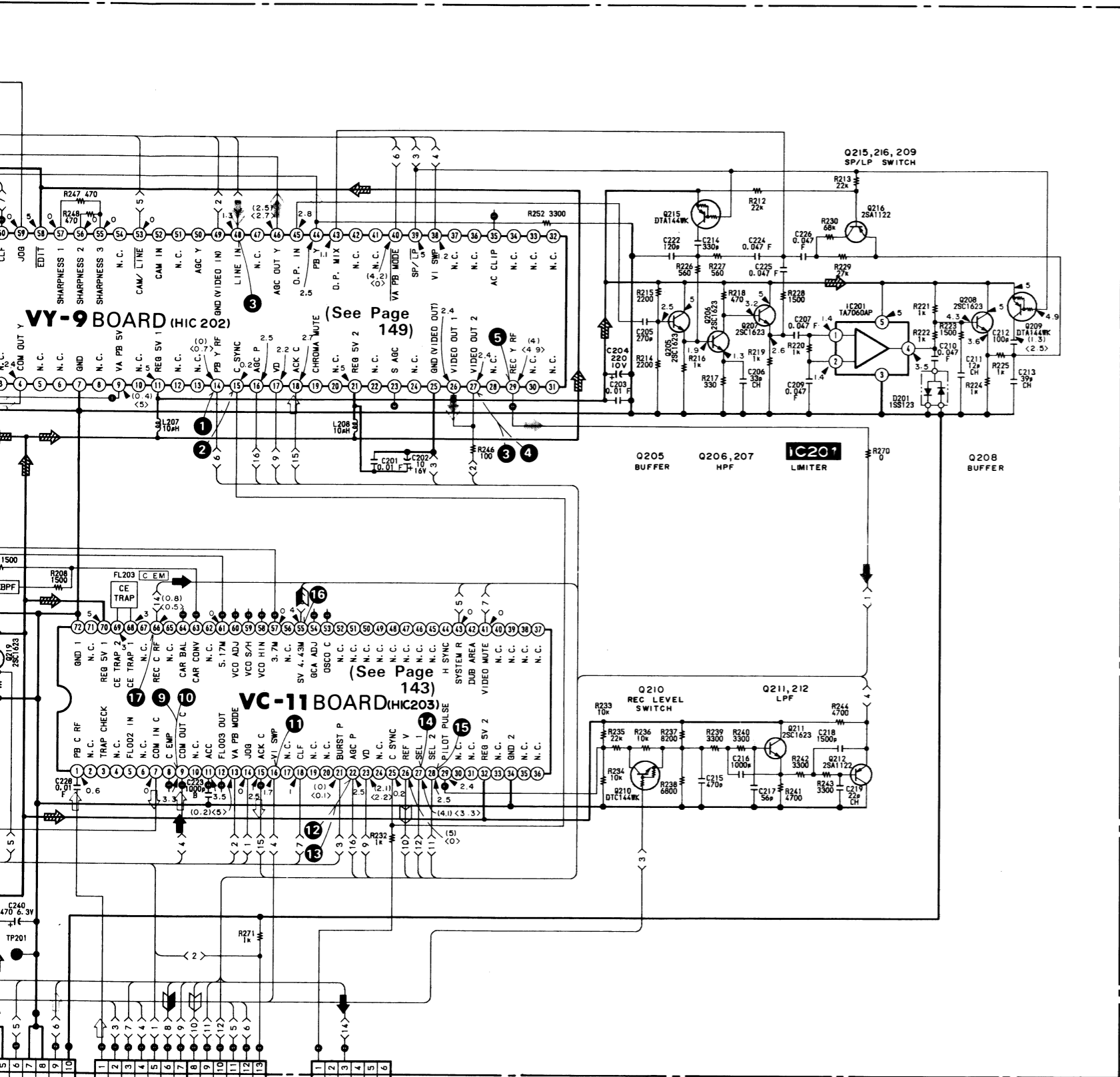
(See Page 143)



- Signal path
- ➔ : REC CHROMA SIGNAL
- ➔ : PB CHROMA SIGNAL

Ref. signal	REC	REC/PB	PB
-------------	-----	--------	----

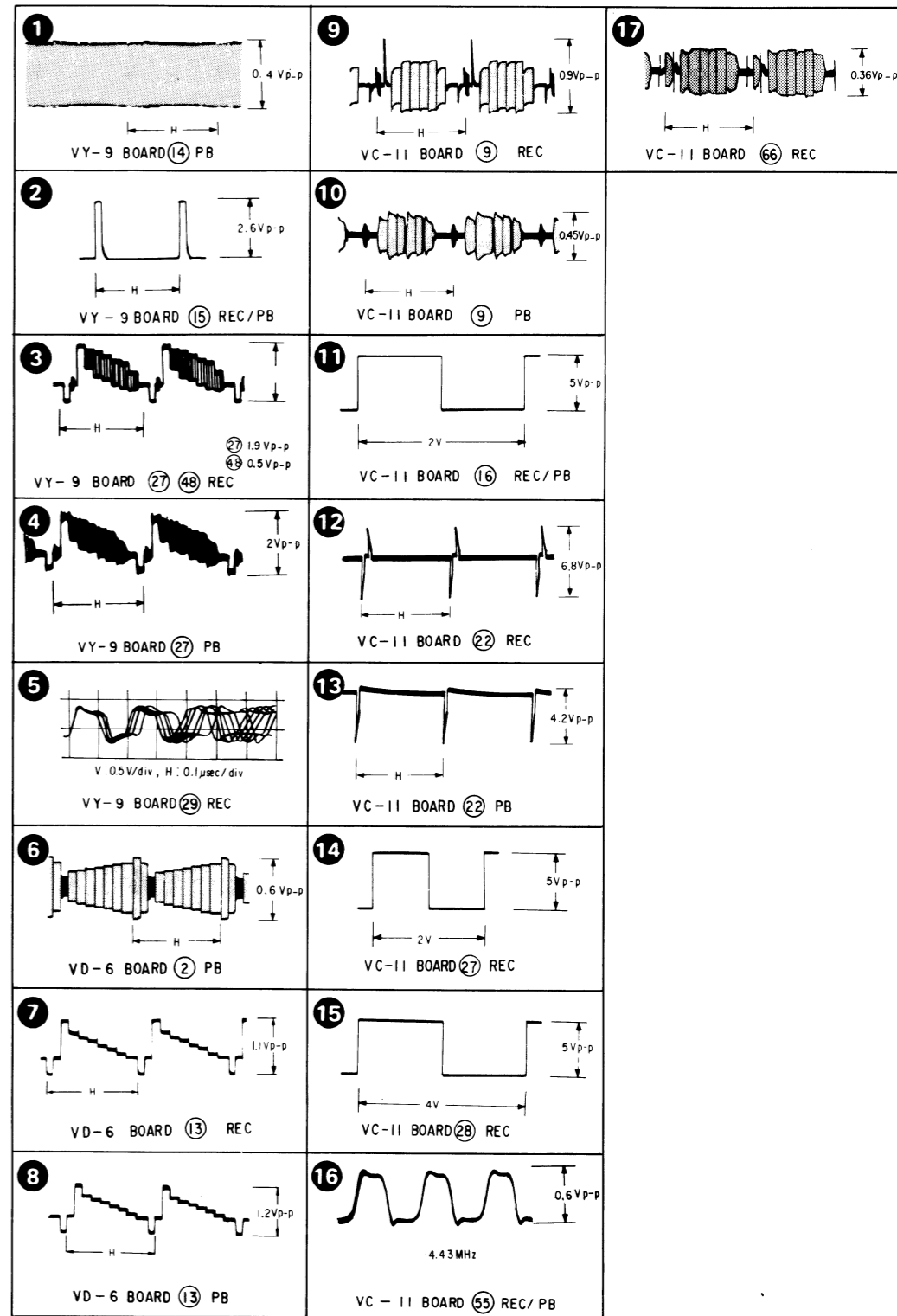
When the...



● Signal path  
 ○ REC CHROMA SIGNAL  
 ○ PB CHROMA SIGNAL

Ref. signal	REC	REC/PB	PB
-------------	-----	--------	----

MV-8 BOARD (VIDEO)



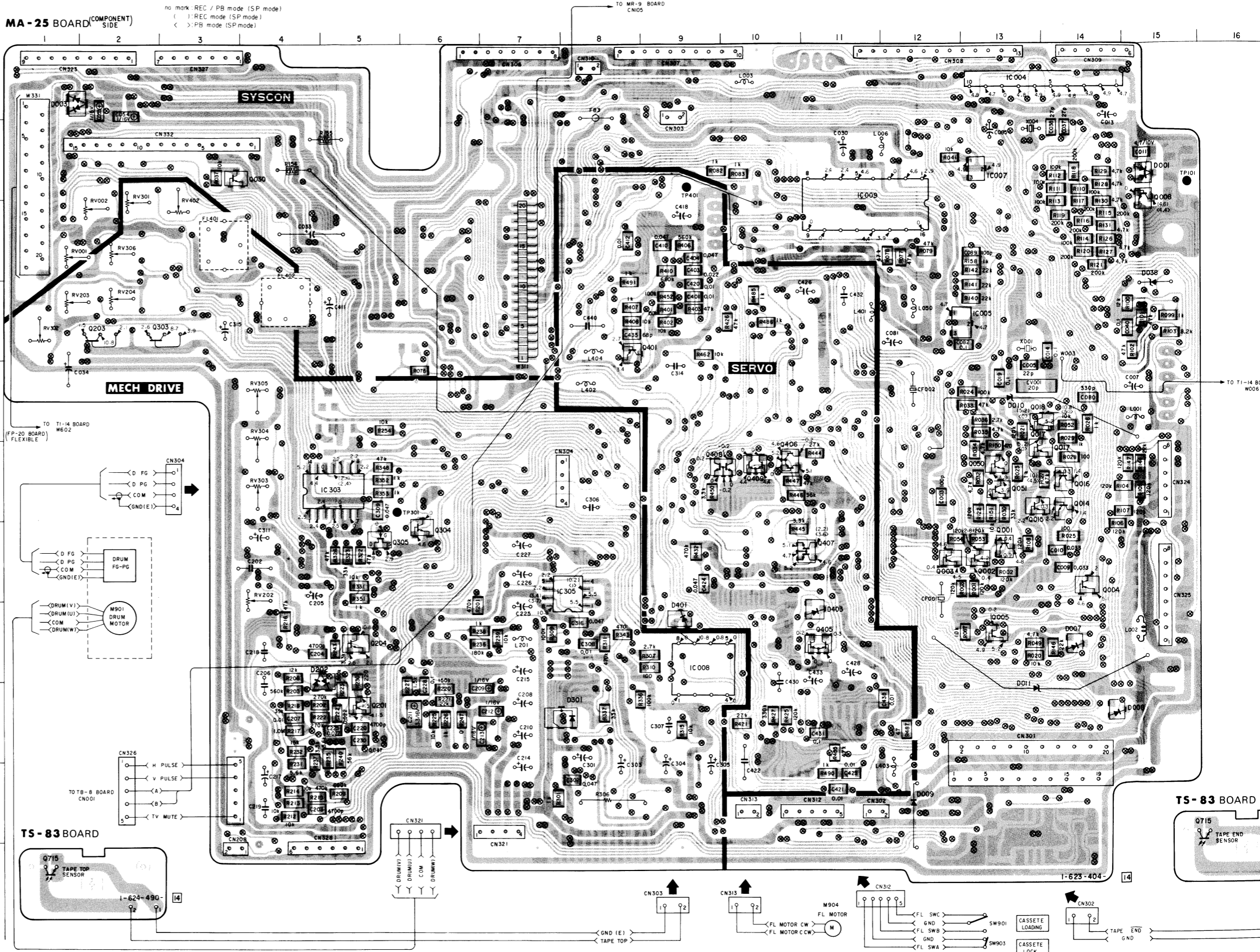
When indicating parts by reference number, please include the board name.

MA-25 (SERVO) PRINTED WIRING BOARD

— Ref. No. MA-25 BOARD: 3000 series —

MA-25 BOARD

CN208	K-3	Q001	G-13
CN301	I-13	Q002	G-13
CN302	J-11	Q003	G-12
CN303	B-9	Q004	G-14
CN304	F-8	Q005	H-13
CN306	A-7	Q006	I-17
CN307	A-9	Q008	C-15
CN308	A-12	Q009	B-17
CN309	A-14	Q012	I-20
CN310	A-8	Q013	H-20
CN312	J-11	Q014	F-14
CN313	J-10	Q015	F-13
CN321	J-7	Q016	F-16
CN323	A-1	Q017	F-13
CN324	F-15	Q018	E-13
CN325	G-15	Q027	A-25
CN326	C-23	Q028	C-20
CN327	A-3	Q030	B-4
CN328	K-5	Q031	B-29
CN332	B-3	Q033	F-21
CV001	E-13	Q034	F-21
CV002	B-22	Q050	F-13
		Q051	F-13
		Q201	I-5
		Q203	D-2
D001	B-15	Q204	H-5
D002	D-20	Q301	I-23
D003	A-1	Q302	F-26
D007	H-14	Q303	D-2
D008	I-14	Q304	G-6
D009	J-12	Q401	D-8
D010	E-13	Q404	H-22
D011	I-13	Q405	H-11
D012	B-20	Q406	F-10
D013	C-20	Q407	G-11
D038	D-15	Q408	F-10
D201	J-28	Q409	F-10
D204	E-27	Q412	H-21
D205	F-27	Q413	G-24
D301	I-8	Q415	E-25
D401	H-9	Q416	F-26
D403	H-11		
IC001	H-19	RV001	C-1
IC002	E-19	RV002	C-2
IC003	C-19	RV202	G-4
IC004	A-13	RV301	C-2
IC005	D-13	RV302	D-1
IC006	J-19	RV303	F-4
IC007	B-13	RV304	E-4
IC008	H-9	RV305	E-4
IC009	C-11	RV306	C-3
IC012	D-17	RV402	C-3
IC201	H-26		
IC202	I-28	TP101	B-15
IC203	H-27	TP301	F-5
IC204	I-26	TP401	B-9
IC205	F-27		
IC301	H-24	W311	D-7
IC302	G-24	W322	K-24
IC303	F-5	W331	B-1
IC304	G-27		
IC305	G-8		
IC401	I-21		
IC402	G-22		
IC403	D-23		
IC404	D-22		

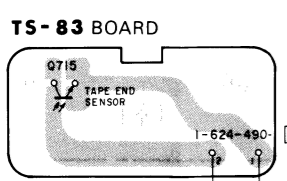
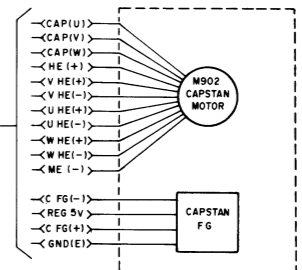
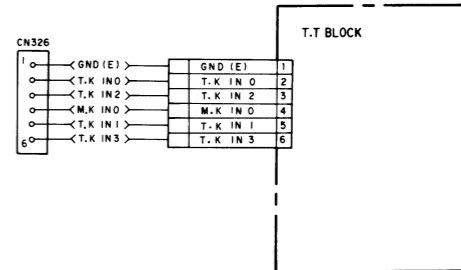
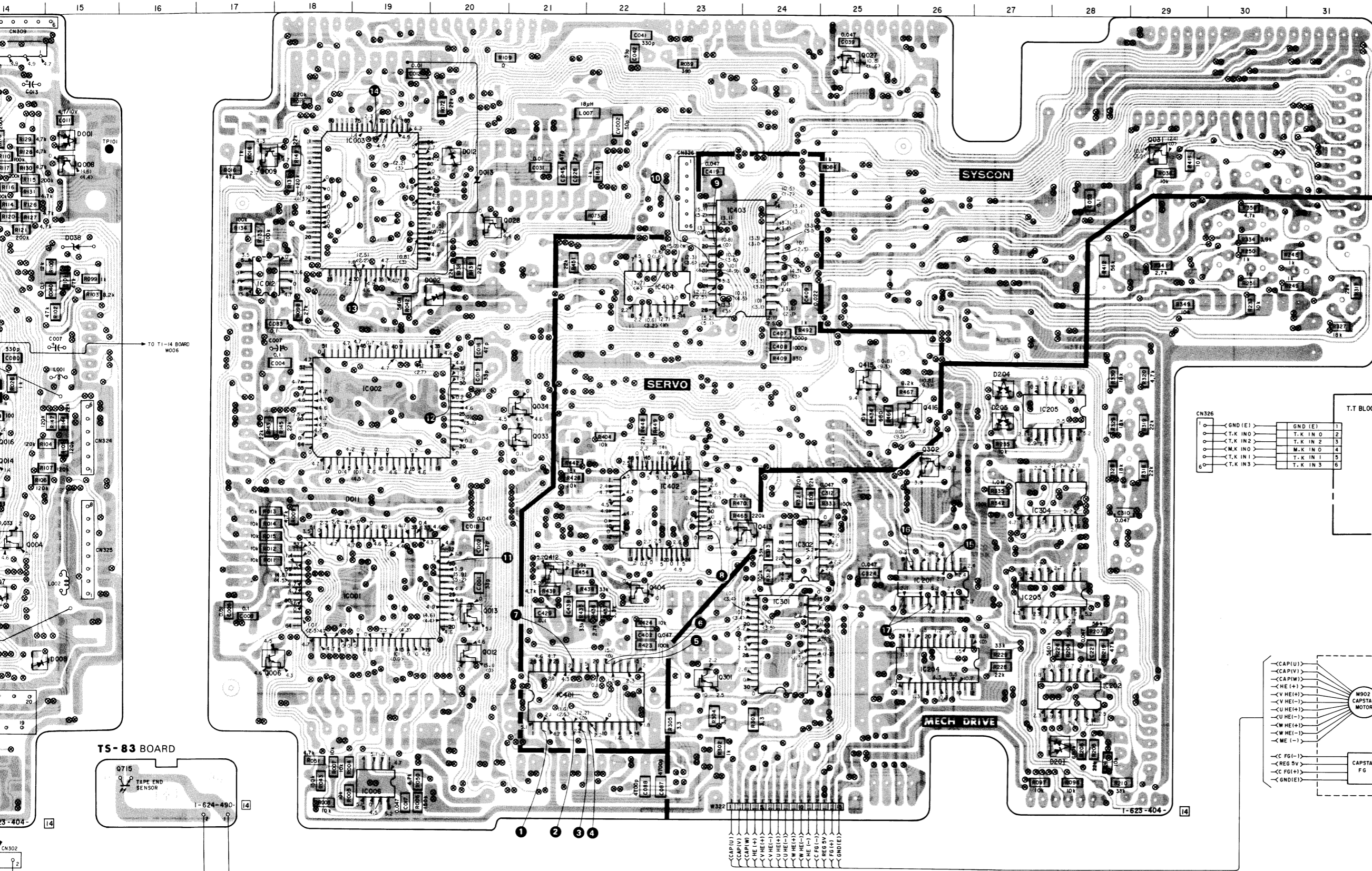


• Digital transistor (MA-25: Q001, 002, 003, 004, 005, 006, 008, 009, 012, 013, 014, 015, 016, 017, 018, 027, 030, 031, 033, 034, 050, 051, 304, 404, 412) transistor with resistors. Refer to the MA-25 board schematic diagram for digital transistor.

# SERVO SERVO

MA-25 BOARD (CONDUCTOR SIDE)

no mark REC/PB mode (SP mode)  
 ( ) : REC mode (SP mode)  
 < > : PB mode (SP mode)

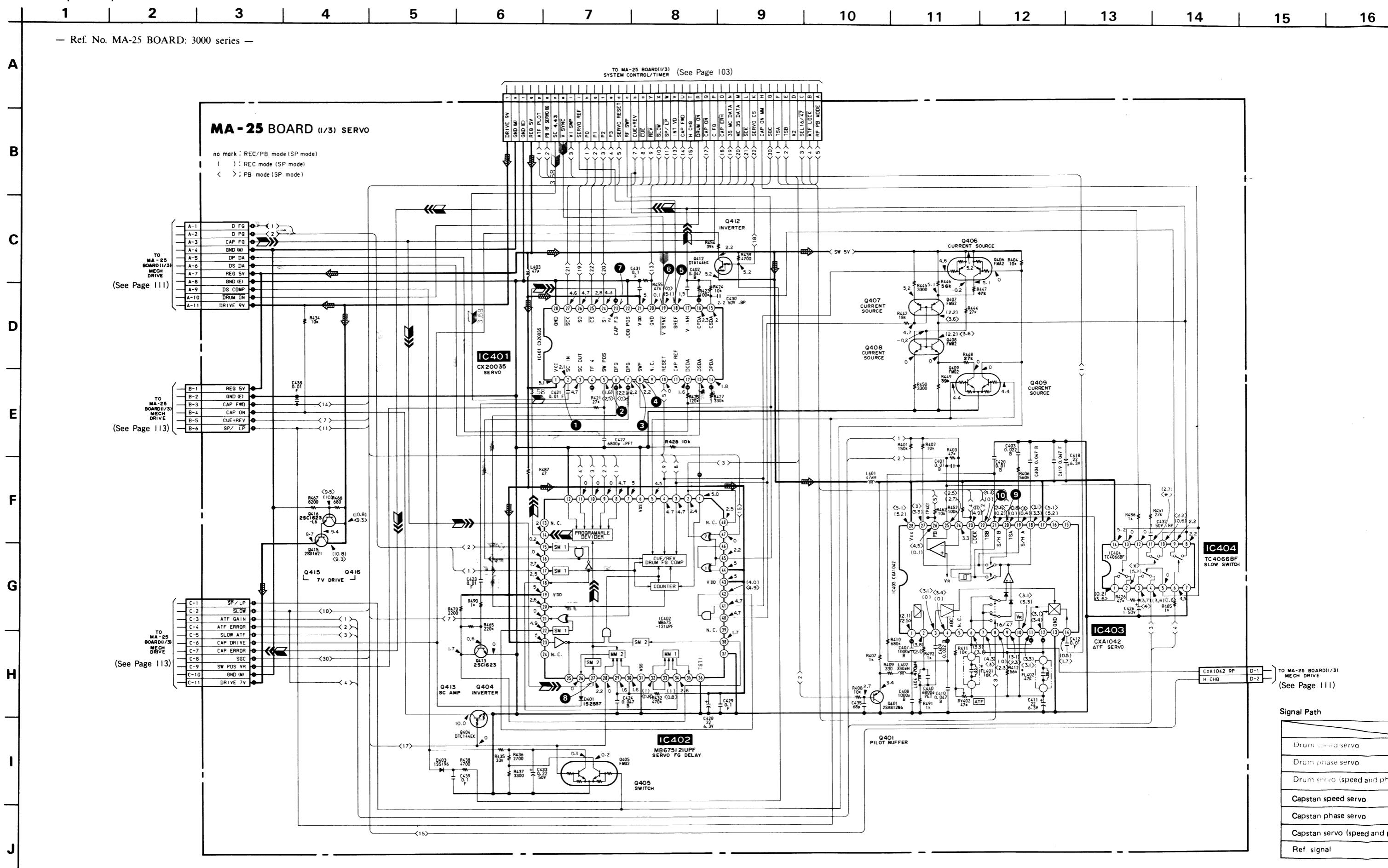


- <CAP(U)
- <CAP(V)
- <HE (+)
- <V HE(+)
- <U HE(+)
- <W HE(+)
- <ME (-)
- <C FG(-)
- <REG 5V
- <C FG(+)
- <GND(E)

# SERVO SERVO

## MA-25 (SERVO) SCHEMATIC DIAGRAM

— Ref. No. MA-25 BOARD: 3000 series —



**MA-25 BOARD (1/3) SERVO**

no mark : REC/PB mode (SP mode)  
 ( ) : REC mode (SP mode)  
 < > : PB mode (SP mode)

TO MA-25 BOARD (1/3) MECH DRIVE (See Page 111)

A-1	D FG	1
A-2	D PB	2
A-3	CAP FG	3
A-4	GND 00	4
A-5	DP DA	5
A-6	DS DA	6
A-7	REG SV	7
A-8	GND IE	8
A-9	DS COMP	9
A-10	DRUM ON	10
A-11	DRIVE 9V	11

TO MA-25 BOARD (2/3) MECH DRIVE (See Page 113)

B-1	REG SV	14
B-2	GND IE	15
B-3	CAP FWD	16
B-4	CAP ON	17
B-5	CUE+REV	18
B-6	SP/ LP	19

TO MA-25 BOARD (3/3) MECH DRIVE (See Page 113)

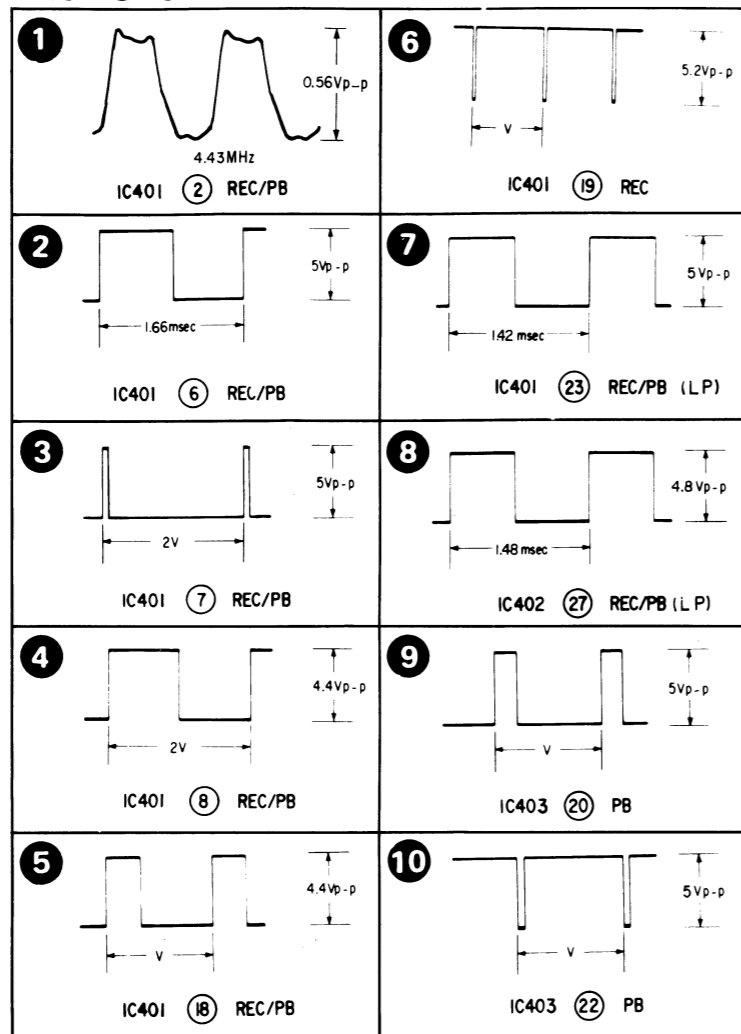
C-1	SP/ LP	10
C-2	SLOW	11
C-3	ATF GAIN	12
C-4	ATF ERROR	13
C-5	SLOW ATF	14
C-6	CAP DRIVE	15
C-7	CAP ERROR	16
C-8	SBC	17
C-9	SW POS VR	18
C-10	GND IM	19
C-11	DRIVE 7V	20

Signal Path

Drum speed servo
Drum phase servo
Drum servo (speed and phase)
Capstan speed servo
Capstan phase servo
Capstan servo (speed and phase)
Ref. signal



MA-25 BOARD (SERVO)



TO MA-25 BOARD(1/3)  
MECH DRIVE  
(See Page 111)

Signal Path

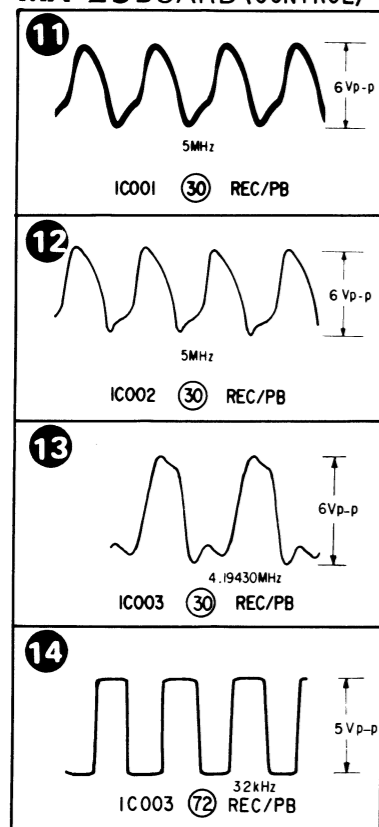
	REC	REC/PB	PB
Drum speed servo		➤	
Drum phase servo		➤➤	
Drum servo (speed and phase)		➤➤➤	
Capstan speed servo		➤	
Capstan phase servo	➤➤		➤➤
Capstan servo (speed and phase)		➤➤➤	
Ref signal	➤	➤	➤

When indicating parts by reference number, please include the board name.

MA-25 (SYSTEM CONTROL/TIMER), TS-83 (TAPE END SENSOR, TAPE TOP SENSOR), T.T BLOCK (FUNCTION SWITCH) PRINTED WIRING BOARD

— Ref. No. MA-25, TS-83 BOARDS: 3000 series, T.T BLOCK: 6000 series —

MA-25 BOARD (SYSTEM CONTROL)

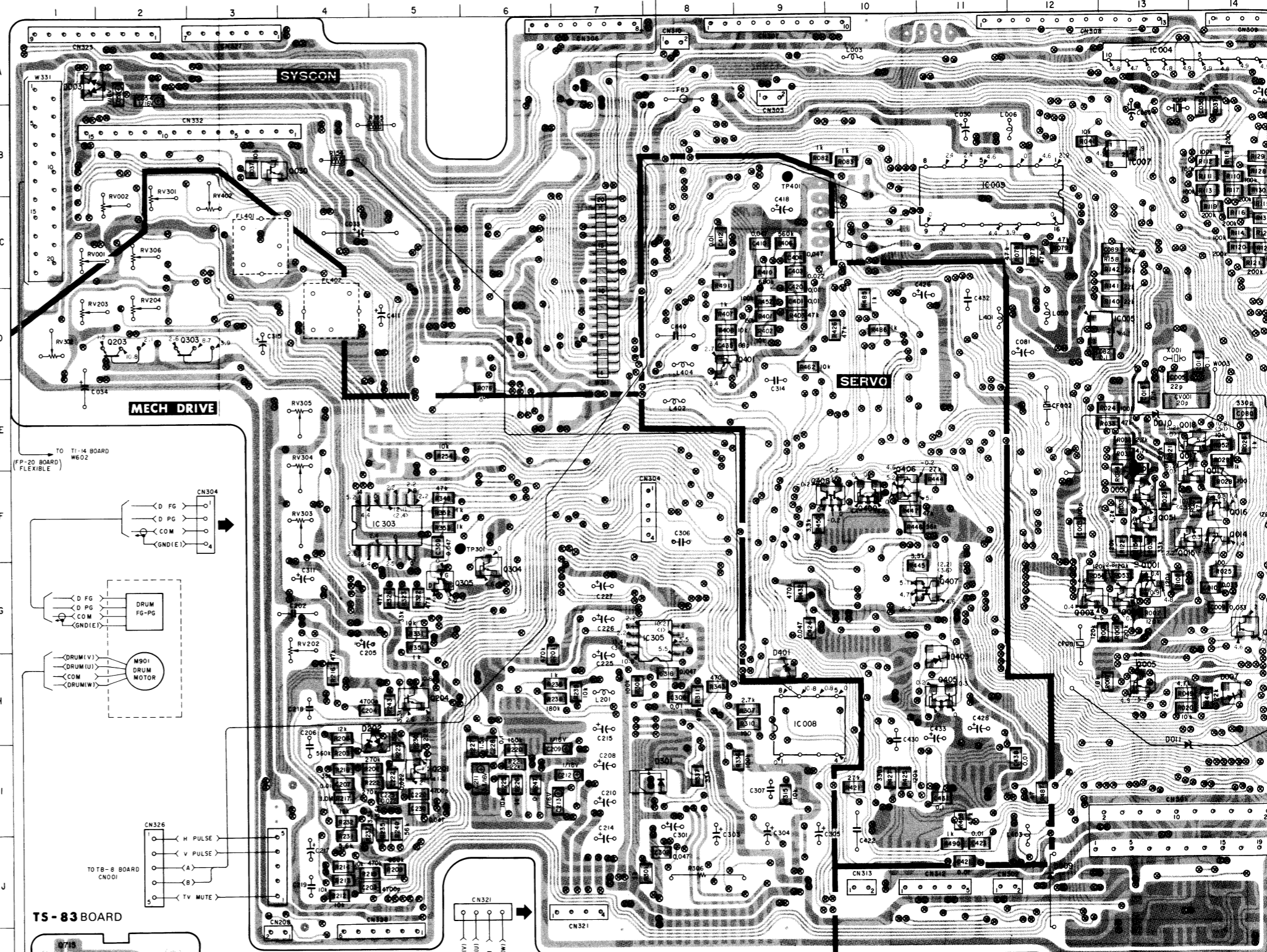


MA-25 BOARD

CN208	K-3
CN301	I-13
CN302	J-11
CN303	B-9
CN304	F-8
CN306	A-7
CN307	A-9
CN308	A-12
CN309	A-14
CN310	A-8
CN312	J-11
CN313	J-10
CN321	J-7
CN323	A-1
CN324	F-15
CN325	G-15
CN326	C-23
CN327	A-3
CN328	K-5
CN332	B-3
CV001	E-13
CV002	B-22
DO01	B-15
DO02	D-20
DO03	A-1
DO07	H-14
DO08	I-14
DO09	J-12
DO10	E-13
DO11	I-13
DO12	B-20
DO13	C-20
DO38	D-15
D201	J-28
D204	E-27
D205	F-27
D301	I-8
D401	H-9
D403	H-11
IC001	H-19
IC002	E-19
IC003	C-19
IC004	A-13
IC005	D-13
IC006	J-19
IC007	B-13
IC008	H-9
IC009	C-11
IC012	D-17
IC201	H-26
IC202	I-28
IC203	H-27
IC204	I-26
IC205	F-27
IC301	H-24
IC302	G-24
IC303	F-5
IC304	G-27
IC305	G-8
IC401	I-21
IC402	G-22
IC403	D-23
IC404	D-22

Q001	G-13
Q002	G-13
Q003	G-12
Q004	G-14
Q005	H-13
Q006	I-17
Q008	C-15
Q009	B-17
Q012	I-20
Q013	H-20
Q014	F-14
Q015	F-13
Q016	F-16
Q017	F-13
Q018	E-13
Q027	A-25
Q028	C-20
Q030	B-4
Q031	B-29
Q033	F-21
Q034	F-21
Q050	F-13
Q051	F-13
Q201	I-5
Q202	D-2
Q204	H-5
Q301	I-23
Q302	F-26
Q303	D-2
Q304	G-6
Q401	D-8
Q404	H-22
Q405	H-11
Q406	F-10
Q407	G-11
Q408	F-10
Q409	F-10
Q412	H-21
Q413	G-24
Q415	E-25
Q416	F-26
RV001	C-1
RV002	C-2
RV202	G-4
RV301	C-2
RV302	D-1
RV303	F-4
RV304	E-4
RV305	E-4
RV306	C-2
RV402	C-3
TP101	B-15
TP301	F-5
TP401	B-9
W311	D-7
W322	K-24
W331	B-1

MA-25 BOARD (COMPONENT SIDE)



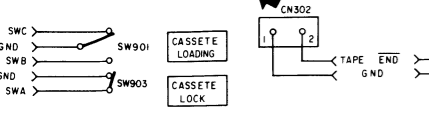
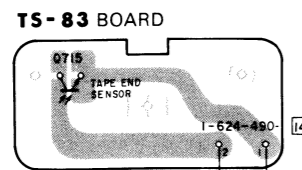
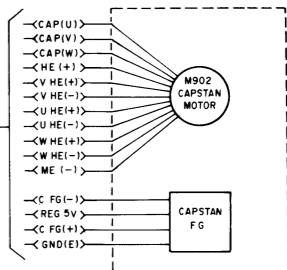
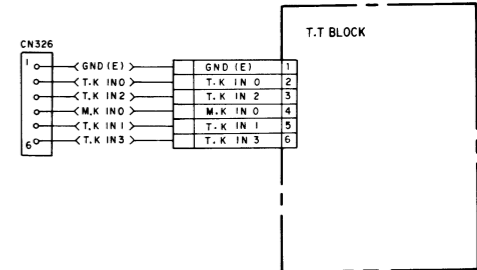
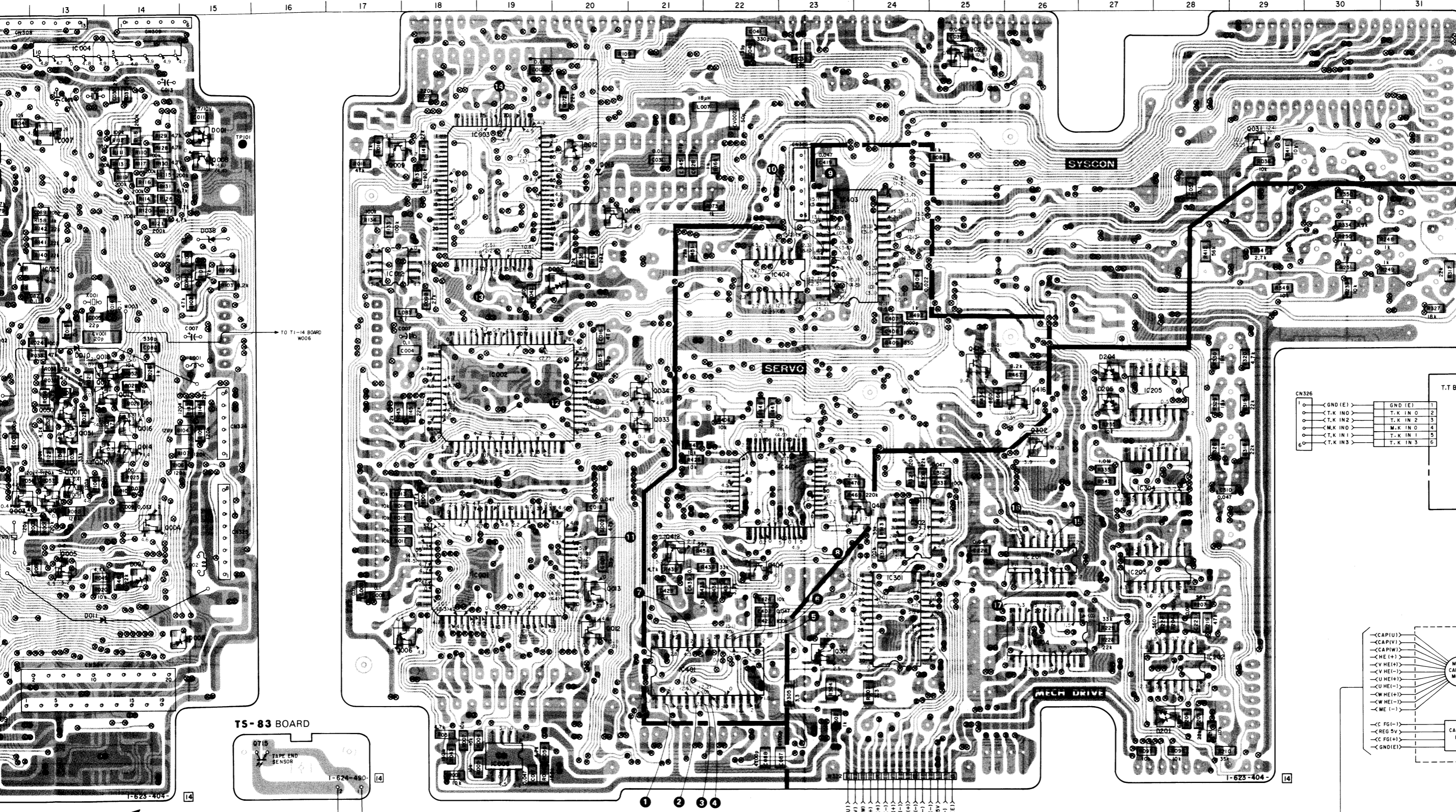
TS-83 BOARD



• Digital transistor (MA-25: Q001, 002, 003, 004, 005, 006, 008, 009, 012, 013, 014, 015, 016, 017, 018, 027, 030, 031, 033, 034, 050, 051, 304, 404, 412) transistor with resistors. Refer to the MA-25 board schematic diagram for digital transistor.

MA-25 BOARD (CONDUCTOR SIDE)

no mark: REC/PB mode (SP mode)  
[ ]: REC mode (SP mode)  
< >: PB mode (SP mode)



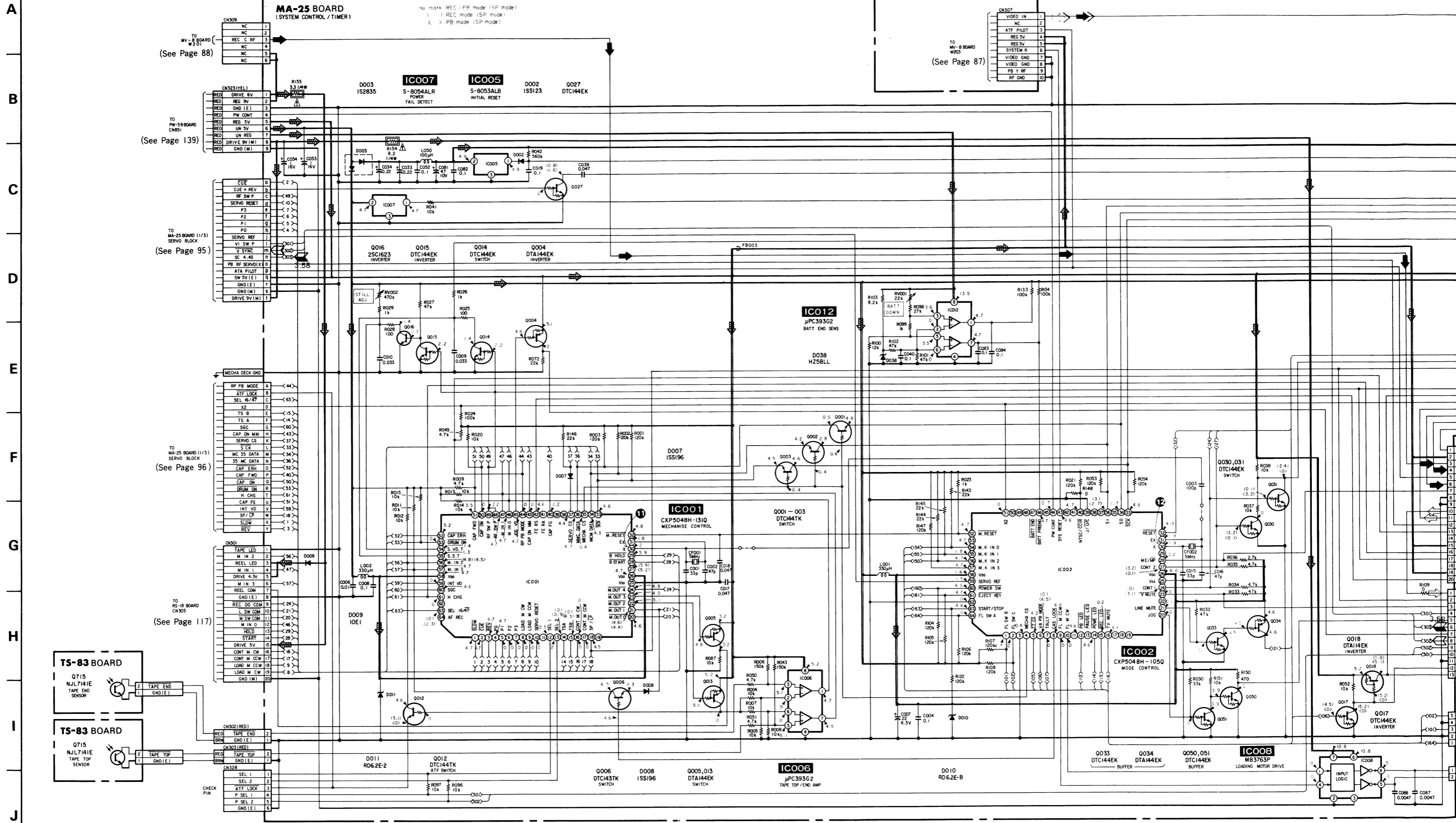
- 1 <CAP(I)>
- 2 <CAP(V)>
- 3 <HE(+)>
- 4 <HE(-)>
- 5 <V HE(+)>
- 6 <V HE(-)>
- 7 <U HE(+)>
- 8 <U HE(-)>
- 9 <W HE(+)>
- 10 <W HE(-)>
- 11 <ME(+)>
- 12 <ME(-)>
- 13 <REG SV>
- 14 <FG(+)>
- 15 <FG(-)>
- 16 <GND(E)>

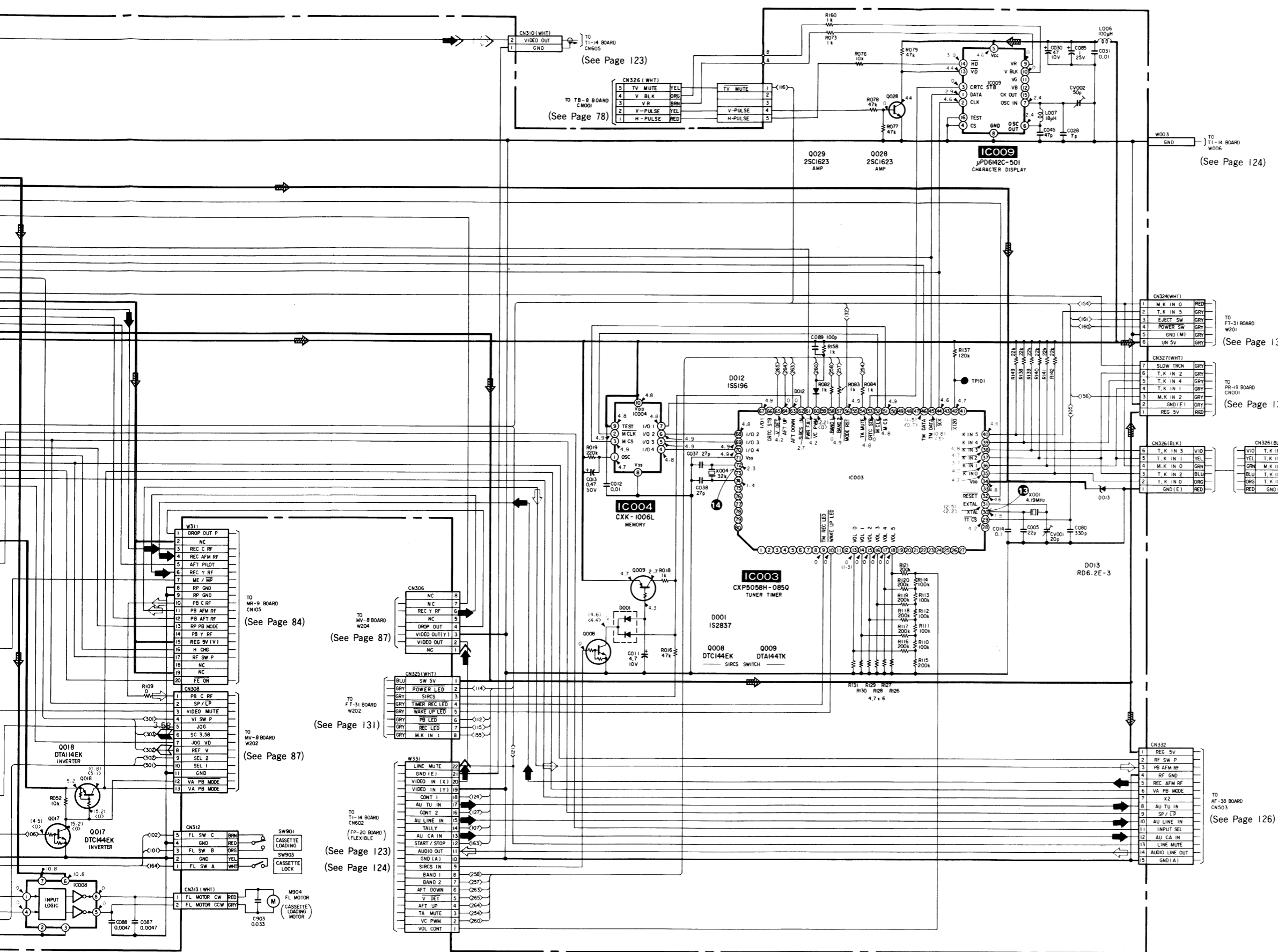
# SYSTEM CONTROL, TIMER SYSTEM CONTROL, TIMER

MA-25 (SYSTEM CONTROL/TIMER), TS-83 (TAPE END SENSOR, TAPE TOP SENSOR), T.T BLOCK (FUNCTION SWITCH) SCHEMATIC DIAGRAM

1      2      3      4      5      6      7      8      9      10      11      12      13      14      15      16

— Ref. No. MA-25, TS-83 BOARDS: 3000 series, T.T BLOCK: 6000 series —

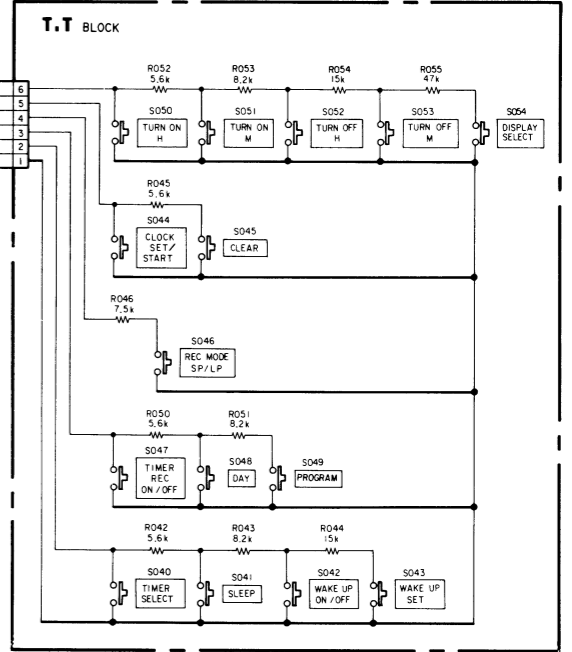




- Signal path
- REC Y SIGNAL
- PB Y SIGNAL
- ➔ : REC CHROMA SIGNAL
- ➔ : PB CHROMA SIGNAL
- ➔ : REC Y & CHROMA SIGNAL
- ➔ : PB Y & CHROMA SIGNAL
- ➔ : REC AUDIO SIGNAL
- ➔ : PB AUDIO SIGNAL

Signal Path

Ref. signal	REC	REC/PB	PB
	➔	➔	➔



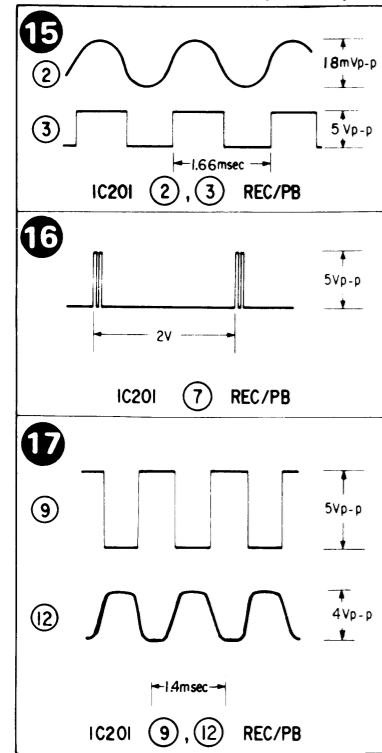
Note: The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

MA-25 (CAPSTAN/DRUM DRIVE) PRINTED WIRING BOARD

— Ref. No. MA-25 BOARD: 3000 series —

MA-25 BOARD (MECH. DRIVE)



MA-25 BOARD

- CN208 K-3
- CN301 I-13
- CN302 J-11
- CN303 B-9
- CN304 F-8
- CN306 A-7
- CN307 A-9
- CN308 A-12
- CN309 A-14
- CN310 A-8
- CN312 J-11
- CN313 J-10
- CN321 J-7
- CN323 A-1
- CN324 F-15
- CN325 G-15
- CN326 C-23
- CN327 A-3
- CN328 K-5
- CN332 B-3
- CV001 E-13
- CV002 B-22

- D001 B-15
- D002 D-20
- D003 A-1
- D007 H-14
- D008 I-14
- D009 J-12
- D010 E-13
- D011 I-13
- D012 B-20
- D013 C-20
- D038 D-15
- D201 J-28
- D204 E-27
- D205 F-27
- D301 I-8
- D401 H-9
- D403 H-11

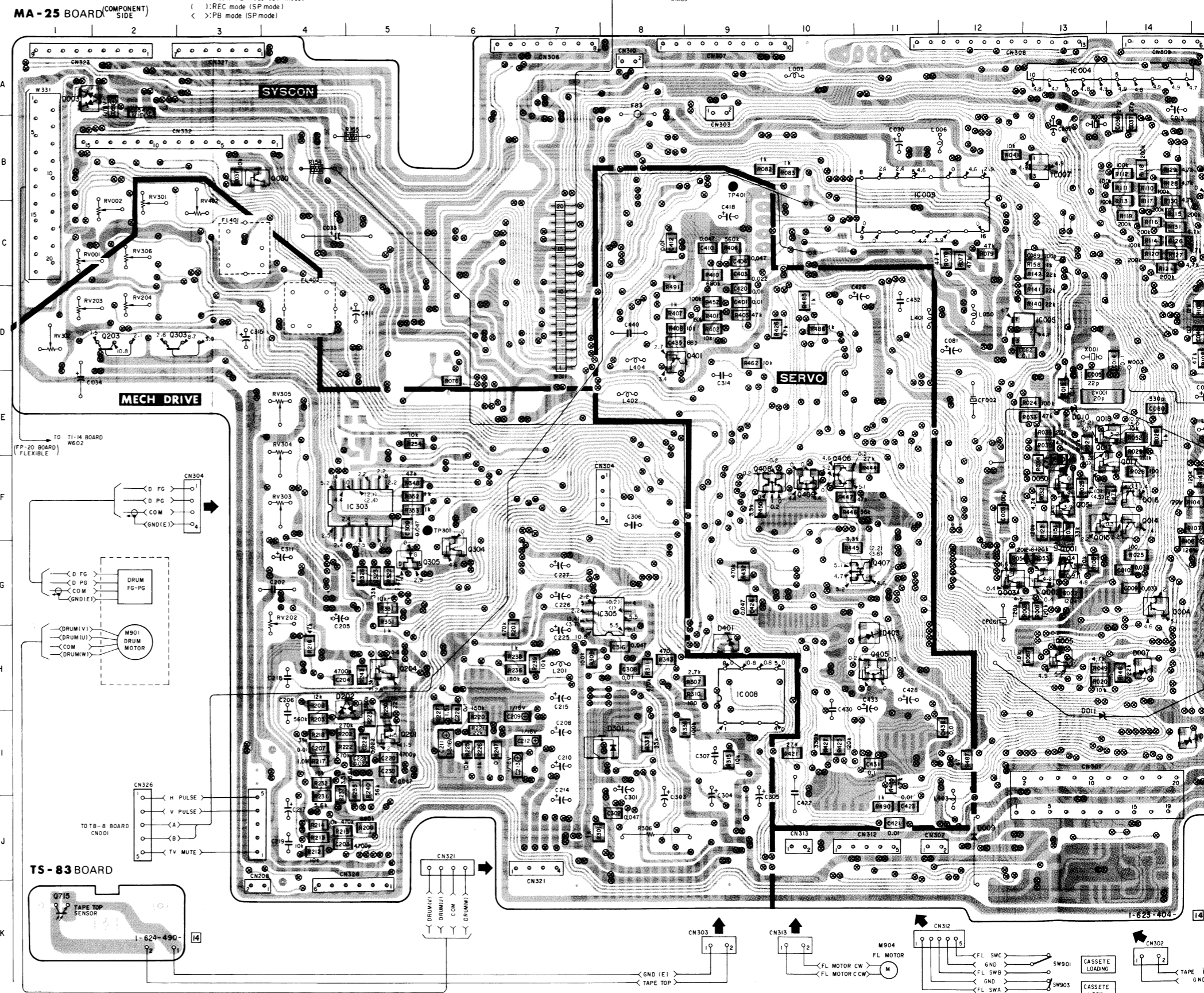
- IC001 H-19
- IC002 E-19
- IC003 C-19
- IC004 A-13
- IC005 D-13
- IC006 J-19
- IC007 B-13
- IC008 H-9
- IC009 C-11
- IC012 D-17
- IC201 H-26
- IC202 I-28
- IC203 H-27
- IC204 I-26
- IC205 F-27
- IC301 H-24
- IC302 G-24
- IC303 F-5
- IC304 G-27
- IC305 G-8
- IC401 I-21
- IC402 G-22
- IC403 D-23
- IC404 D-22

- Q001 G-13
- Q002 G-13
- Q003 G-12
- Q004 G-14
- Q005 H-13
- Q006 I-17
- Q008 C-15
- Q009 B-17
- Q012 I-20
- Q013 H-20
- Q014 F-14
- Q015 F-13
- Q016 F-16
- Q017 F-13
- Q018 E-13
- Q028 A-25
- Q028 C-20
- Q030 B-4
- Q031 B-29
- Q033 F-21
- Q034 F-21
- Q050 F-13
- Q051 F-13
- Q201 I-5
- Q203 D-2
- Q204 H-5
- Q301 I-23
- Q302 F-26
- Q303 D-2
- Q304 G-6
- Q401 D-8
- Q404 H-22
- Q405 H-11
- Q406 F-10
- Q407 G-11
- Q408 F-10
- Q409 F-10
- Q412 H-21
- Q413 G-24
- Q415 E-25
- Q416 F-26

- RV001 C-1
- RV002 C-2
- RV202 G-4
- RV301 C-2
- RV302 D-1
- RV303 F-4
- RV304 E-4
- RV305 E-4
- RV306 C-2
- RV402 C-3

- TP101 B-15
- TP301 F-5
- TP401 B-9

- W311 D-7
- W322 K-24
- W331 B-1

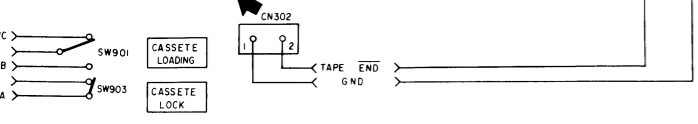
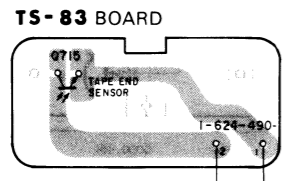
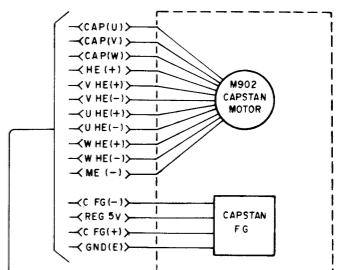
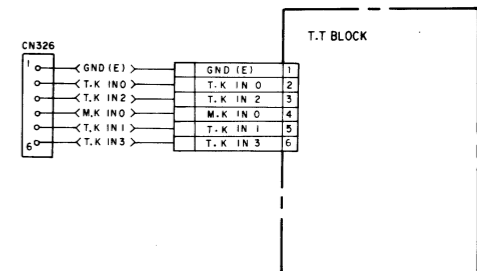
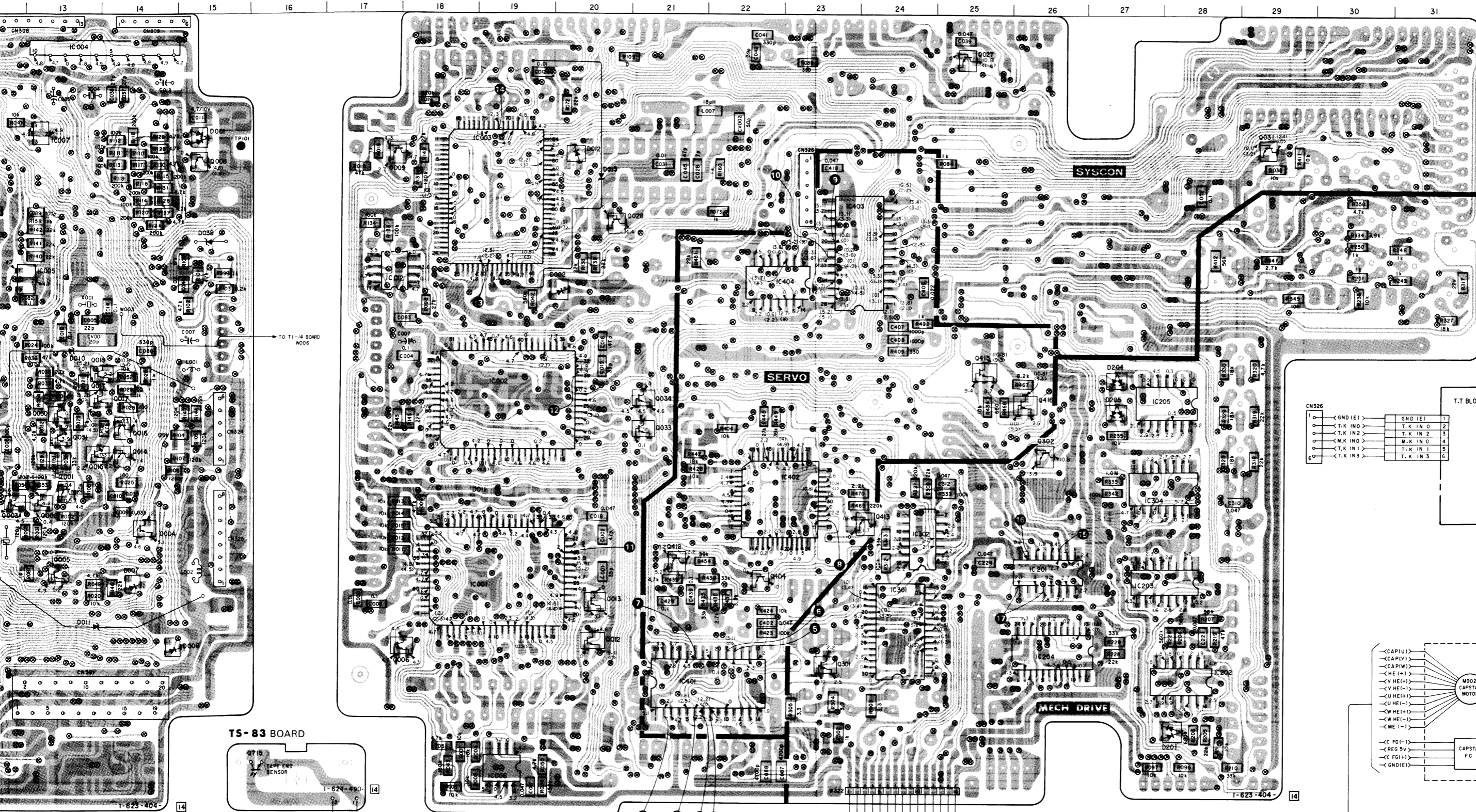


• Digital transistor (MA-25: Q001, 002, 003, 004, 005, 006, 008, 009, 012, 013, 014, 015, 016, 017, 018, 027, 030, 031, 033, 034, 050, 051, 304, 404, 412) transistor with resistors. Refer to the MA-25 board schematic diagram for digital transistor.

# MECHANISM DRIVE      MECHANISM DRIVE

**MA-25 BOARD (CONDUCTOR SIDE)**

no mark: REC/PB mode (SP mode)  
 ( ): REC mode (SP mode)  
 < > : PB mode (SP mode)



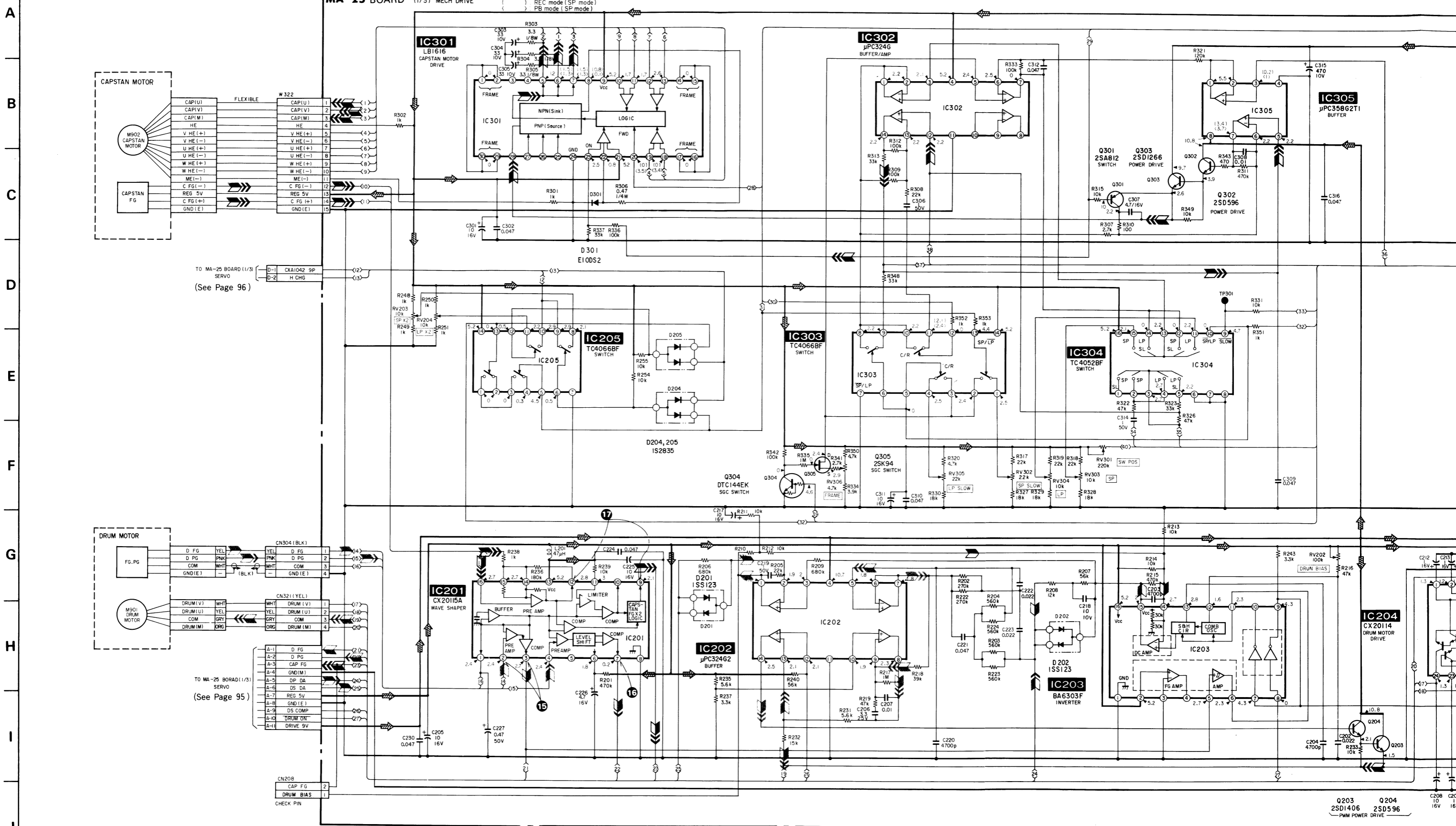
(CAP(U))  
 (CAP(V))  
 (HE(+))  
 (V HE(+))  
 (U HE(+))  
 (W HE(+))  
 (ME (-))  
 (C FG(-))  
 (REG 5V)  
 (C FG(+))  
 (GND(E))

# MECHANISM DRIVE MECHANISM DRIVE

MA-25 (CAPSTAN/DRUM DRIVE) SCHEMATIC DIAGRAM

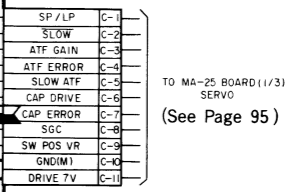
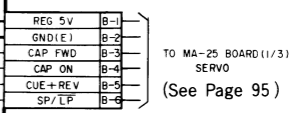
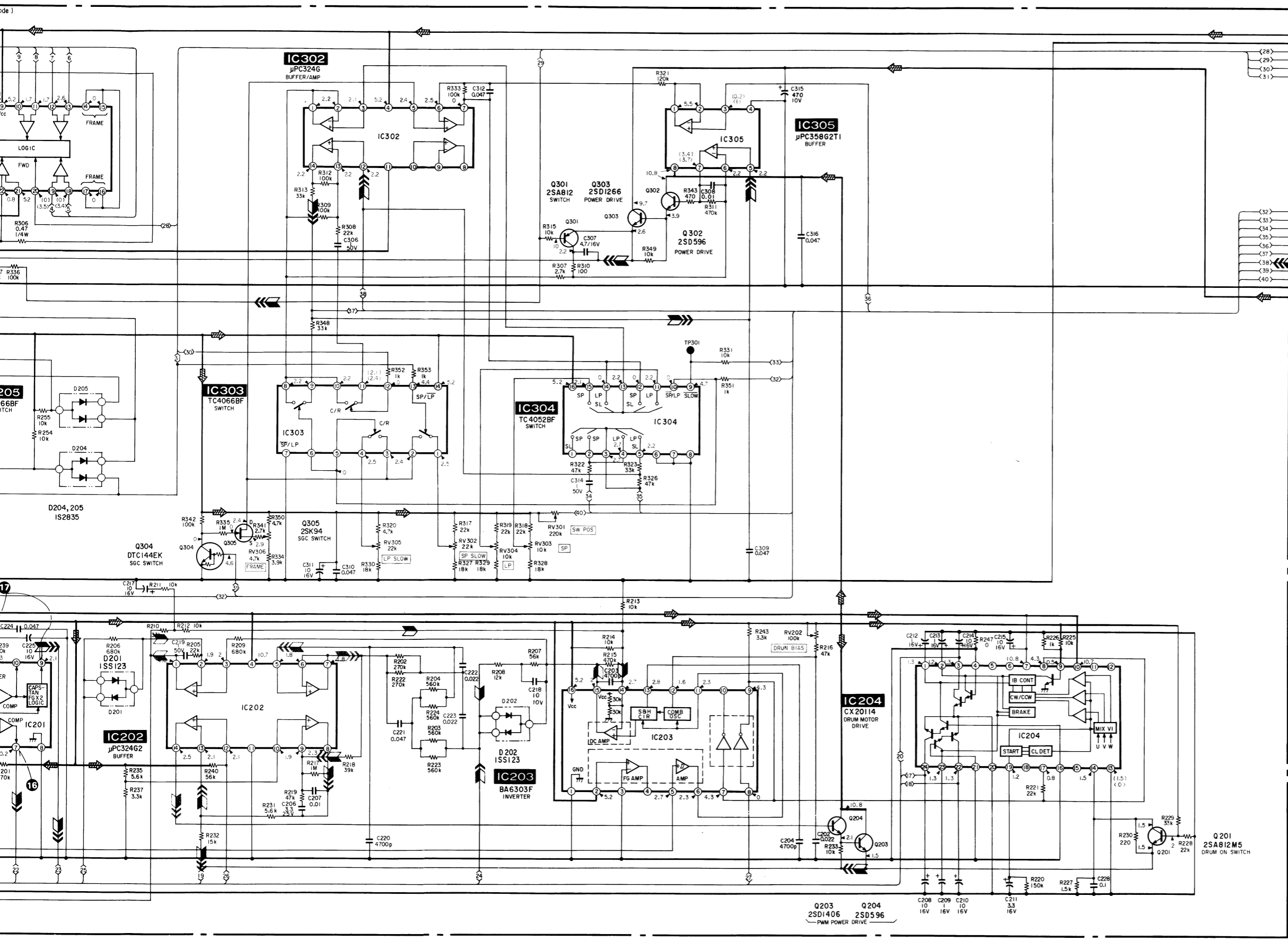
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

— Ref. No. MA-25 BOARD: 3000 series —



Q203 2SD1406  
 Q204 2SD596  
 — PWM POWER DRIVE —





Signal Path

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)		▶▶▶	
Capstan speed servo		▶	
Capstan phase servo	▶▶		▶▶
Capstan servo (speed and phase)	▶▶▶		▶▶▶

Q203 Q204  
 2SD1406 2SD596  
 PWM POWER DRIVE

When indicating parts by reference number, please include the board name.

RS-18 (CONTROL MOTOR DRIVE), LD-1 (TAPE SENSOR), LS-9 (LOADING SWITCH), MS-4 (MODE SWITCH) PRINTED WIRING BOARD

— Ref. No. RS-18 BOARD: 4000 series, LD-1 BOARD: 6000 series, MS-4 BOARD: 8000 series —

- Digital transistor (RS-18: Q302, 303, 304, 307, 310, 312, 314) transistor with resistors.  
Refer to the RS-18 board schematic diagram for digital transistor.

RS-18 BOARD

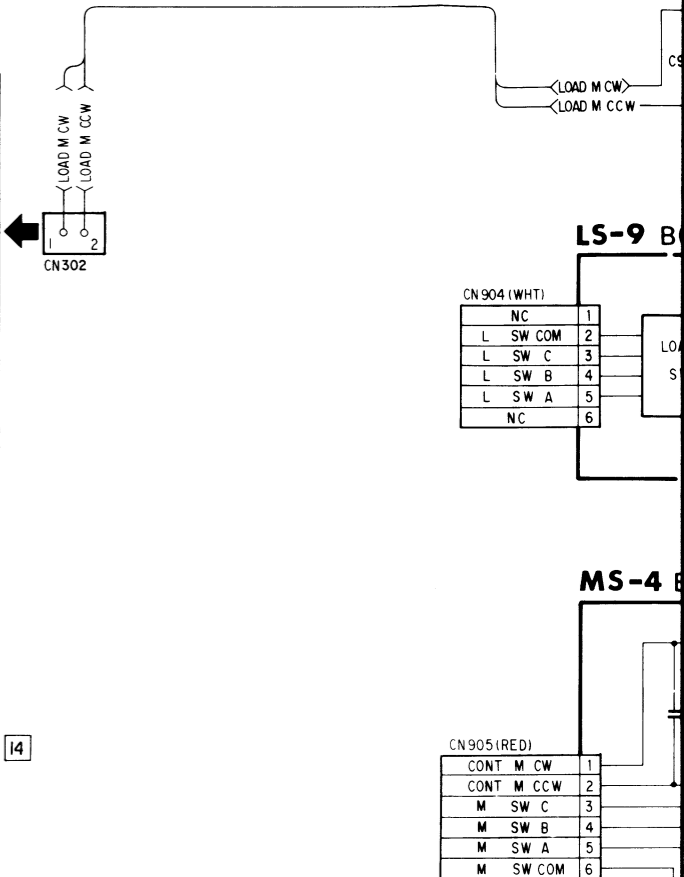
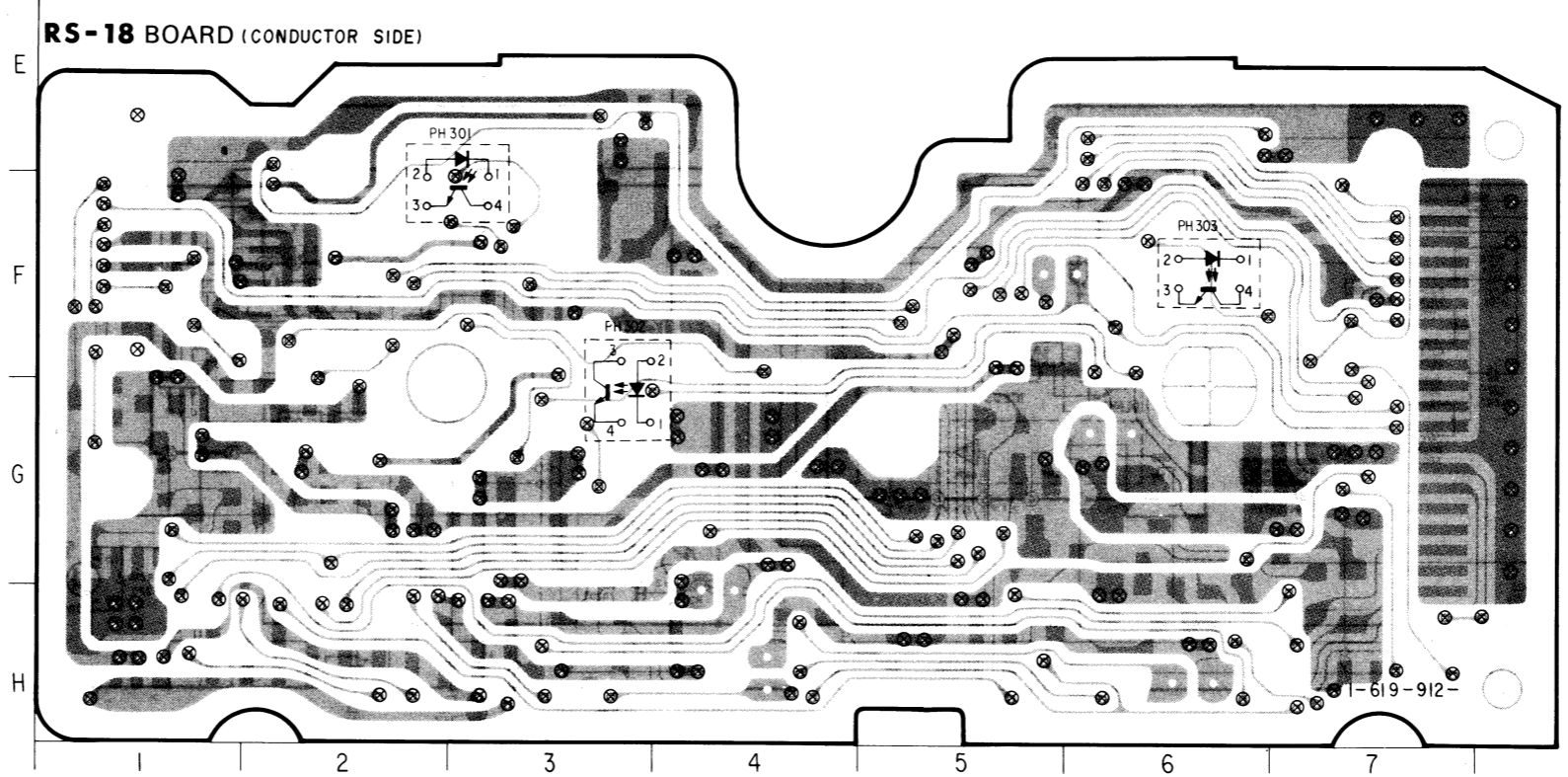
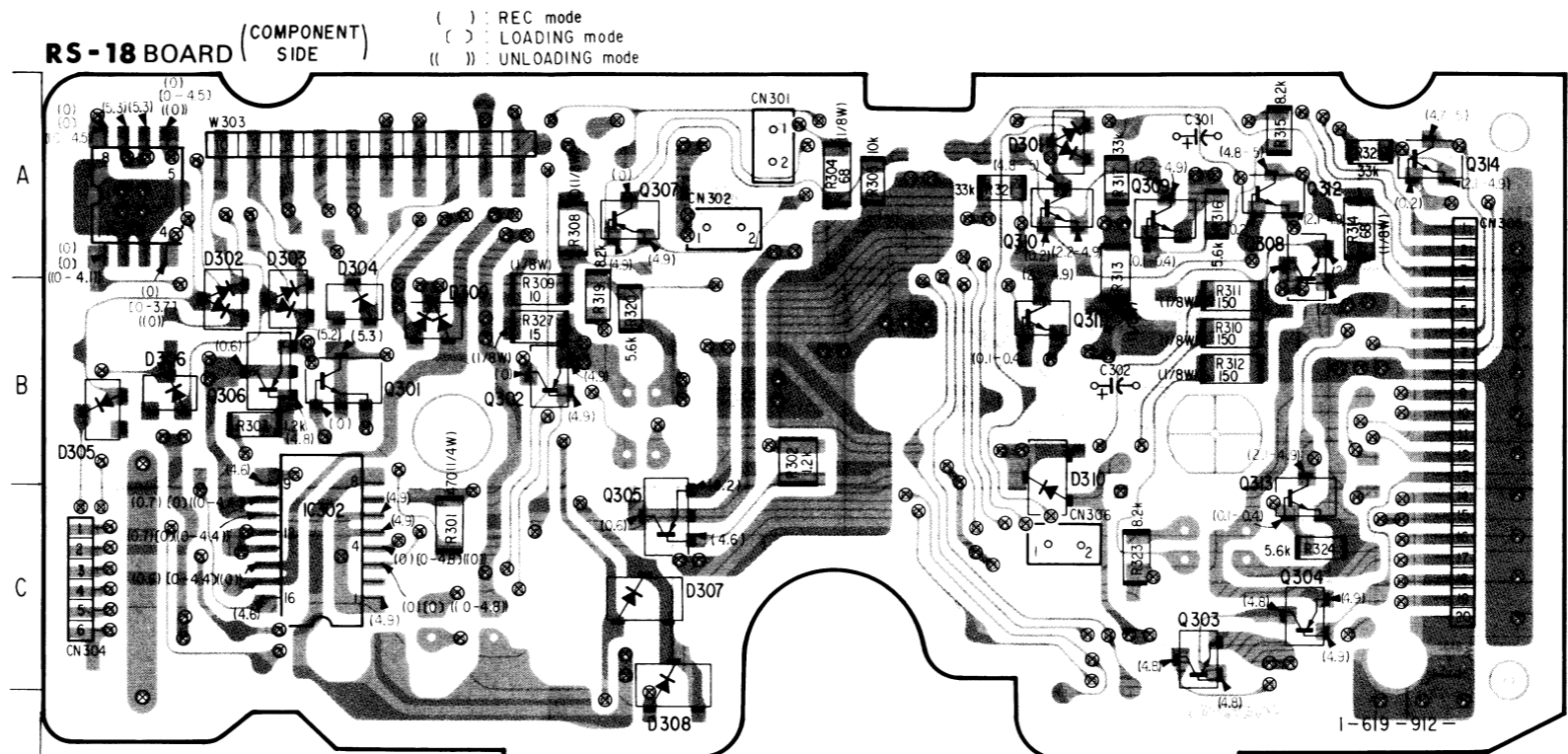
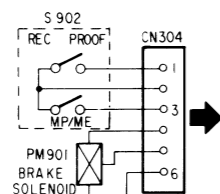
CN301	A-4
CN302	A-4
CN304	C-1
CN305	A-7
CN306	C-6

D301	A-5
D302	B-1
D303	B-2
D304	B-2
D305	B-1
D306	B-1
D307	C-4
D308	C-4
D309	B-2
D310	B-6

IC301	A-1
IC302	C-2

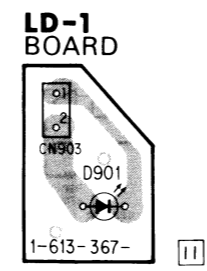
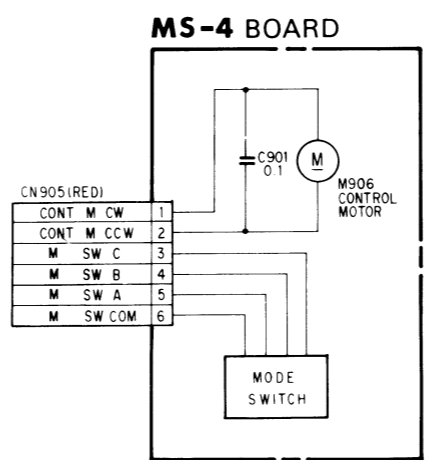
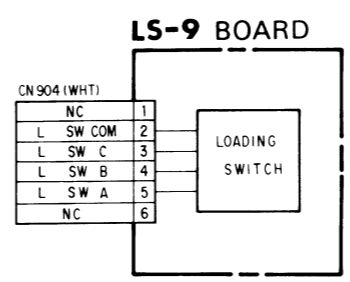
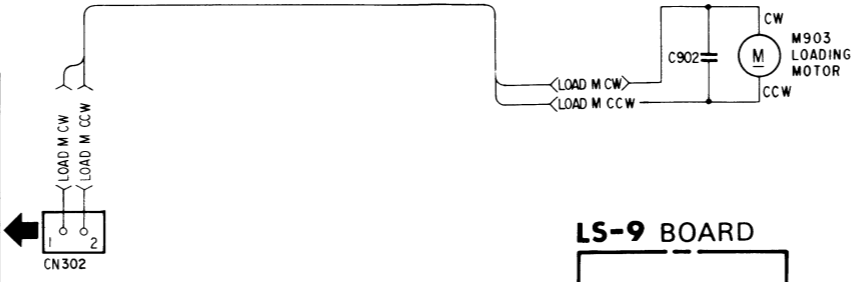
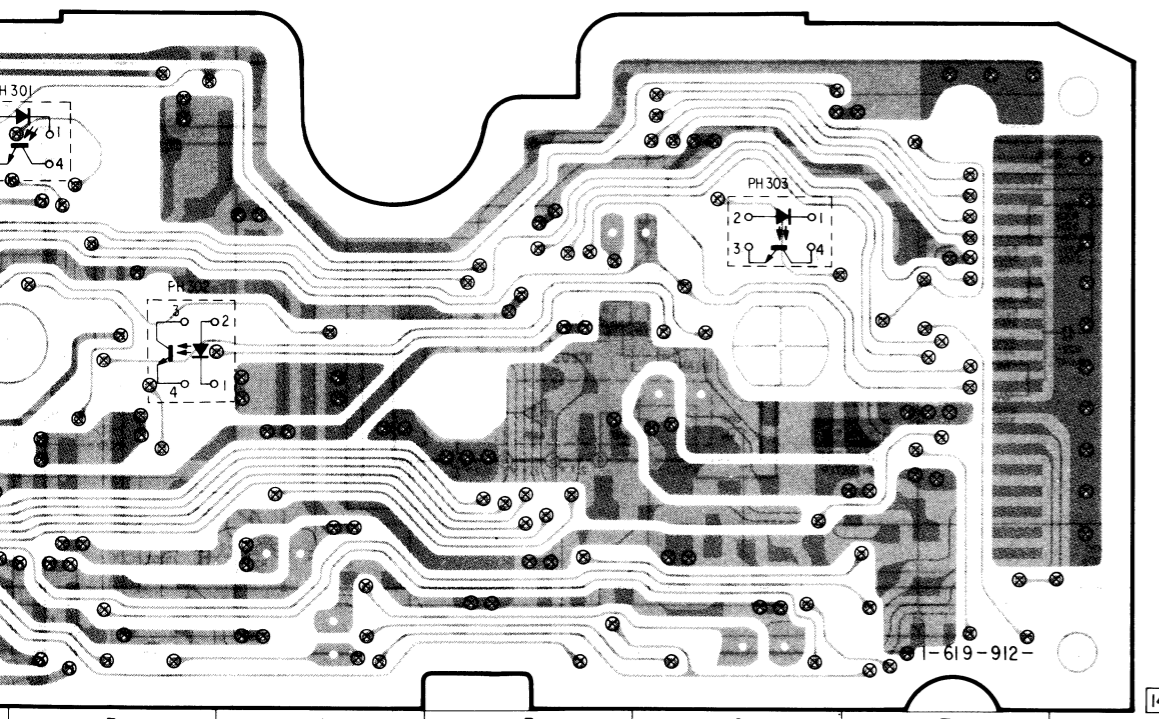
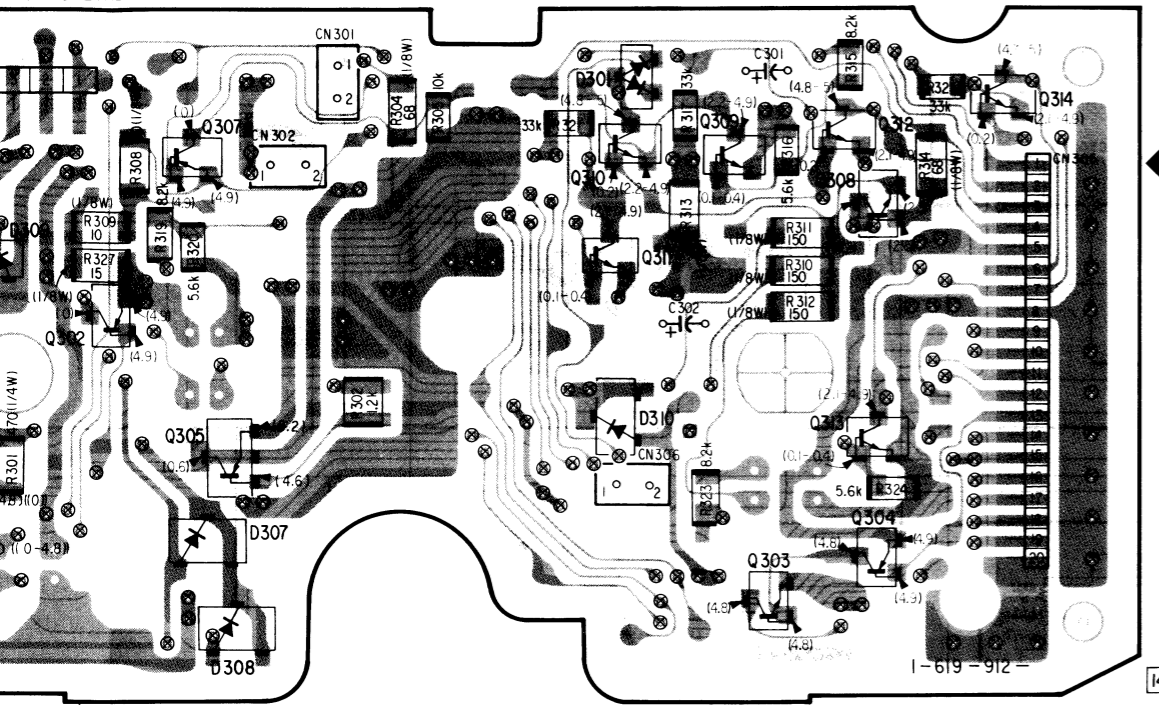
PH301	F-3
PH302	G-3
PH303	F-6

Q301	B-2
Q302	B-3
Q303	C-6
Q304	C-7
Q305	C-4
Q306	B-2
Q307	A-3
Q308	A-7
Q309	A-6
Q310	A-5
Q311	B-5
Q312	A-7
Q313	C-7
Q314	A-7



E SWITCH) PRINTED WIRING BOARD

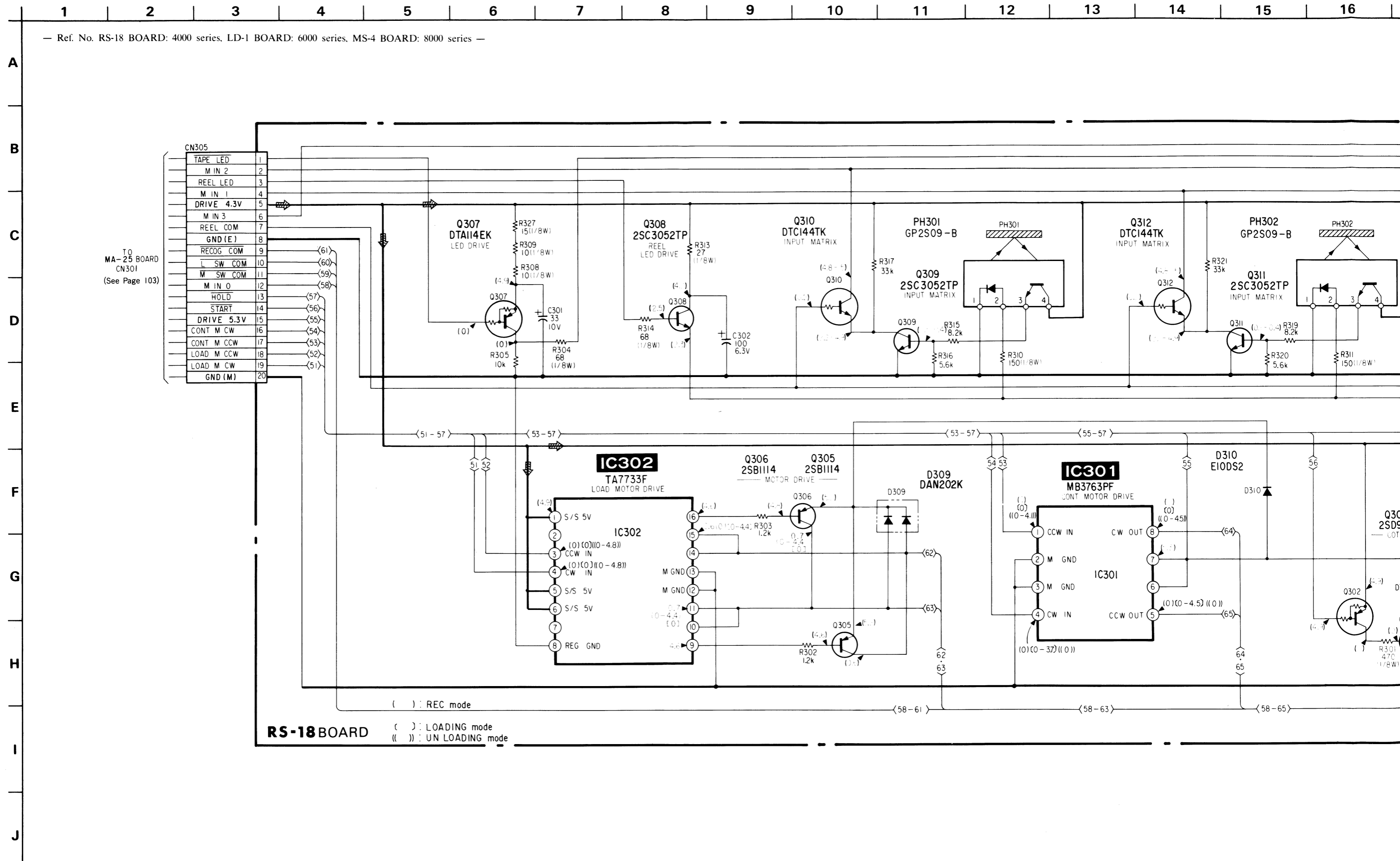
- ) : REC mode
- ( ) : LOADING mode
- ) : UNLOADING mode



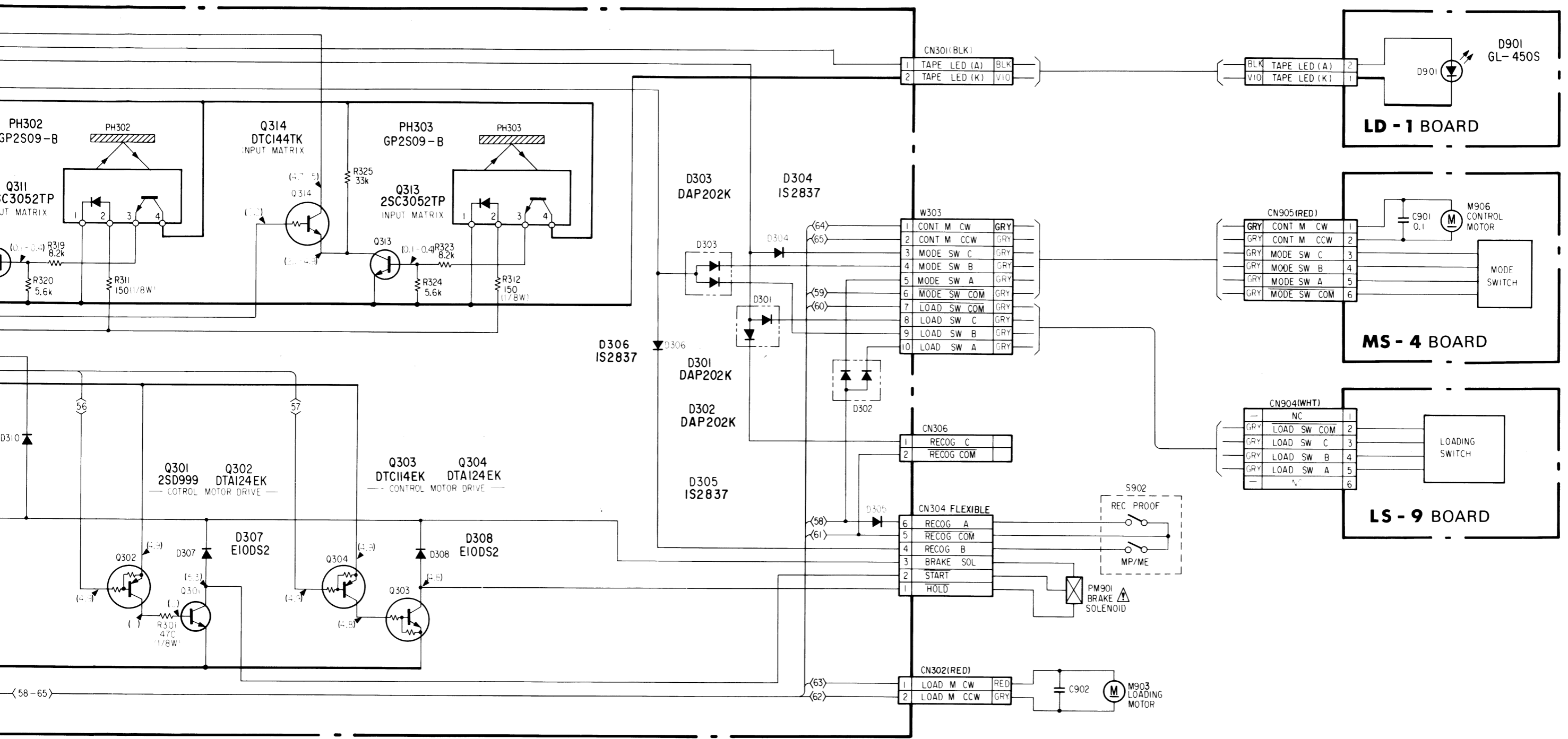
# CONTROL MOTOR DRIVE    CONTROL MOTOR DRIVE

RS-18 (CONTROL MOTOR DRIVE), LD-1 (TAPE SENSOR), LS-9 (LOADING SWITCH), MS-4 (MODE SWITCH) SCHEMATIC DIAGRAM

— Ref. No. RS-18 BOARD: 4000 series, LD-1 BOARD: 6000 series, MS-4 BOARD: 8000 series —



15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



When indicating parts by reference number, please include the board name.

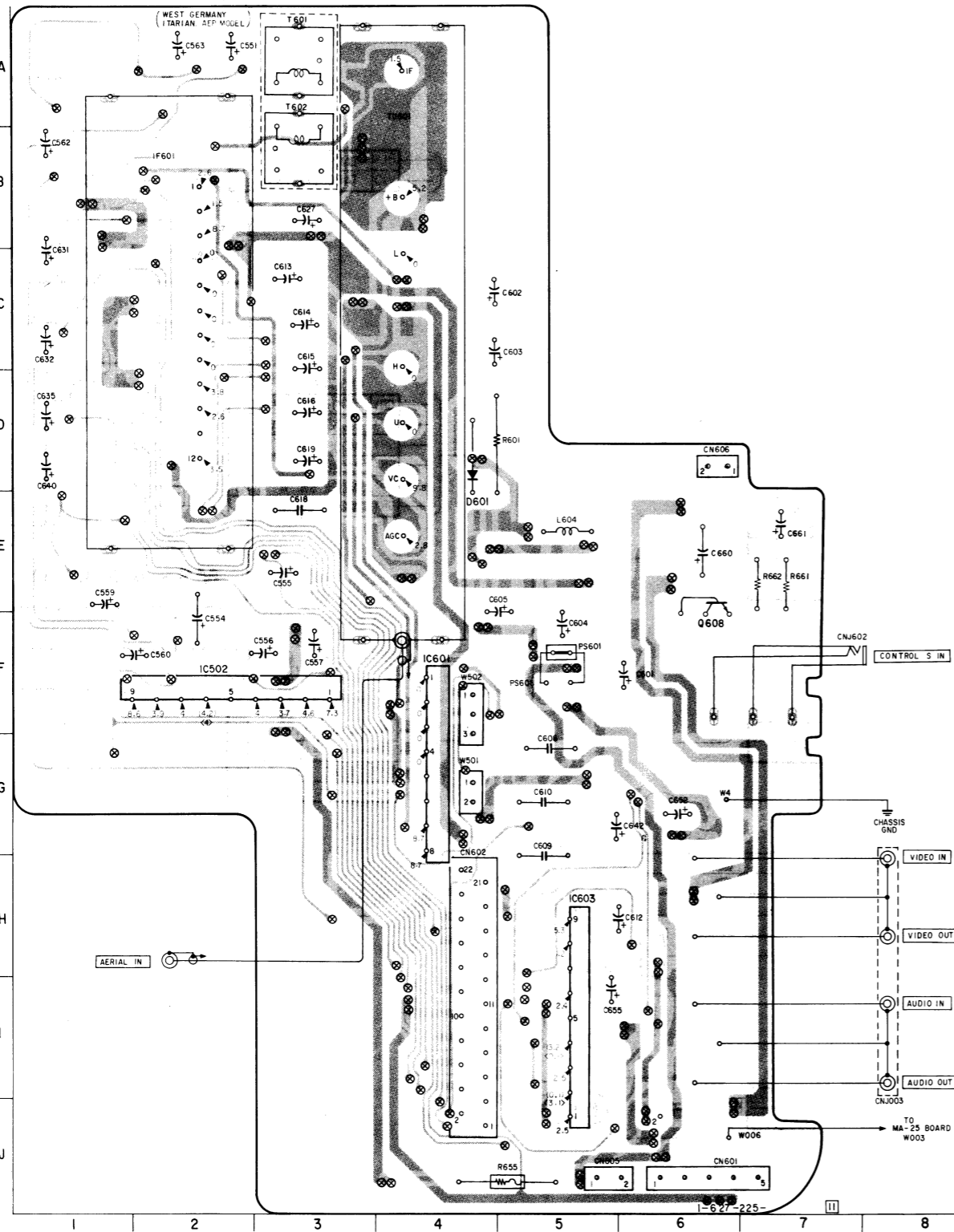
TI-14 (TUNER I/O OUT SWITCH) PRINTED WIRING BOARD

— Ref. No. TI-14 BOARD: 3000 series —

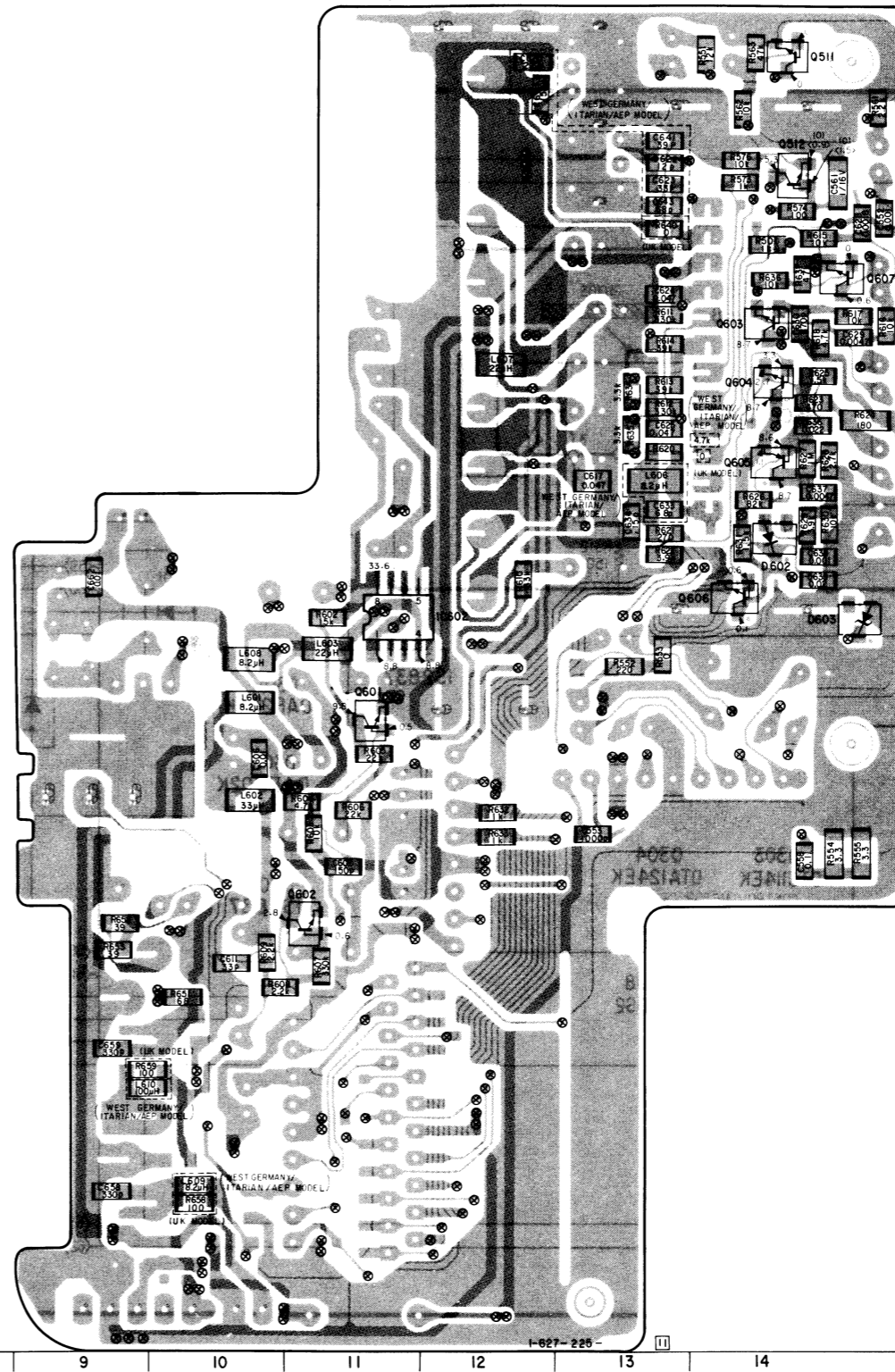
TI-14 BOARD

- CN601 J-6
- CN602 I-4
- CN605 J-5
- CN606 D-6
- D601 F-11
- D602 U-14
- D603 E-14
- IC502 F-2
- IC601 G-4
- IC602 E-11
- IC603 I-5
- Q511 A-14
- Q512 B-14
- Q601 F-11
- Q602 G-11
- Q603 C-14
- Q604 U-14
- Q605 E-14
- Q606 U-14
- Q607 C-14
- Q608 E-6
- W006 J-6
- W501 G-4
- W502 F-4

TI-14 BOARD (COMPONENT SIDE)  
 no mark: REC./PB mode (SP mode)  
 ( ) : REC mode (SP mode)  
 < > : PB mode (SP mode)

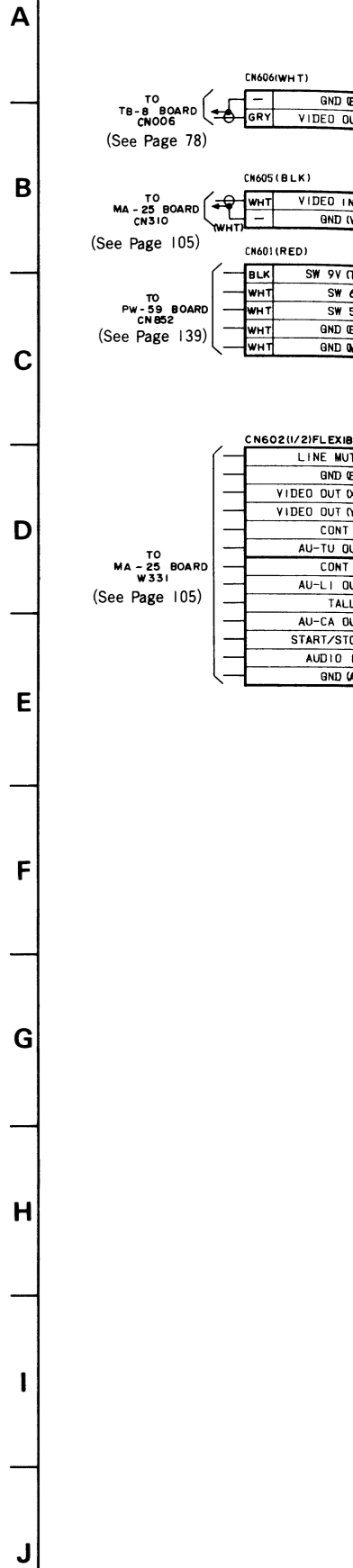


TI-14 BOARD (CONDUCTOR SIDE)  
 no mark: REC./PB mode (SP mode)  
 ( ) : REC mode (SP mode)  
 < > : PB mode (SP mode)



TI-14 (TUNER I/O OUT SW)

1 2  
 — Ref. No. TI-14 BOARD: 3000

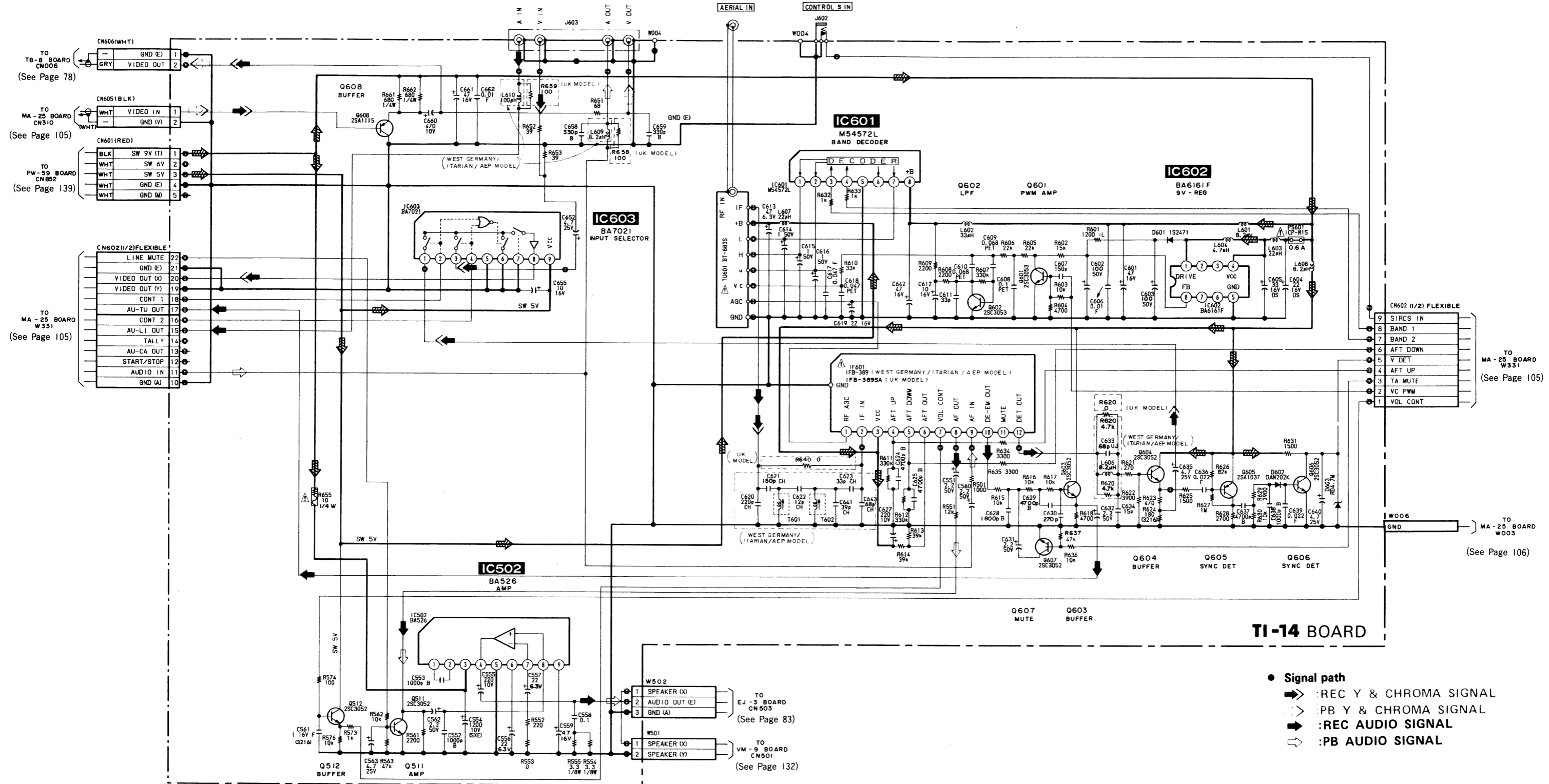


# TUNER, SWITCH TUNER, SWITCH

TI-14 (TUNER I/O OUT SWITCH) SCHEMATIC DIAGRAM

1      2      3      4      5      6      7      8      9      10      11      12      13      14      15      16

— Ref. No. TI-14 BOARD: 3000 series —



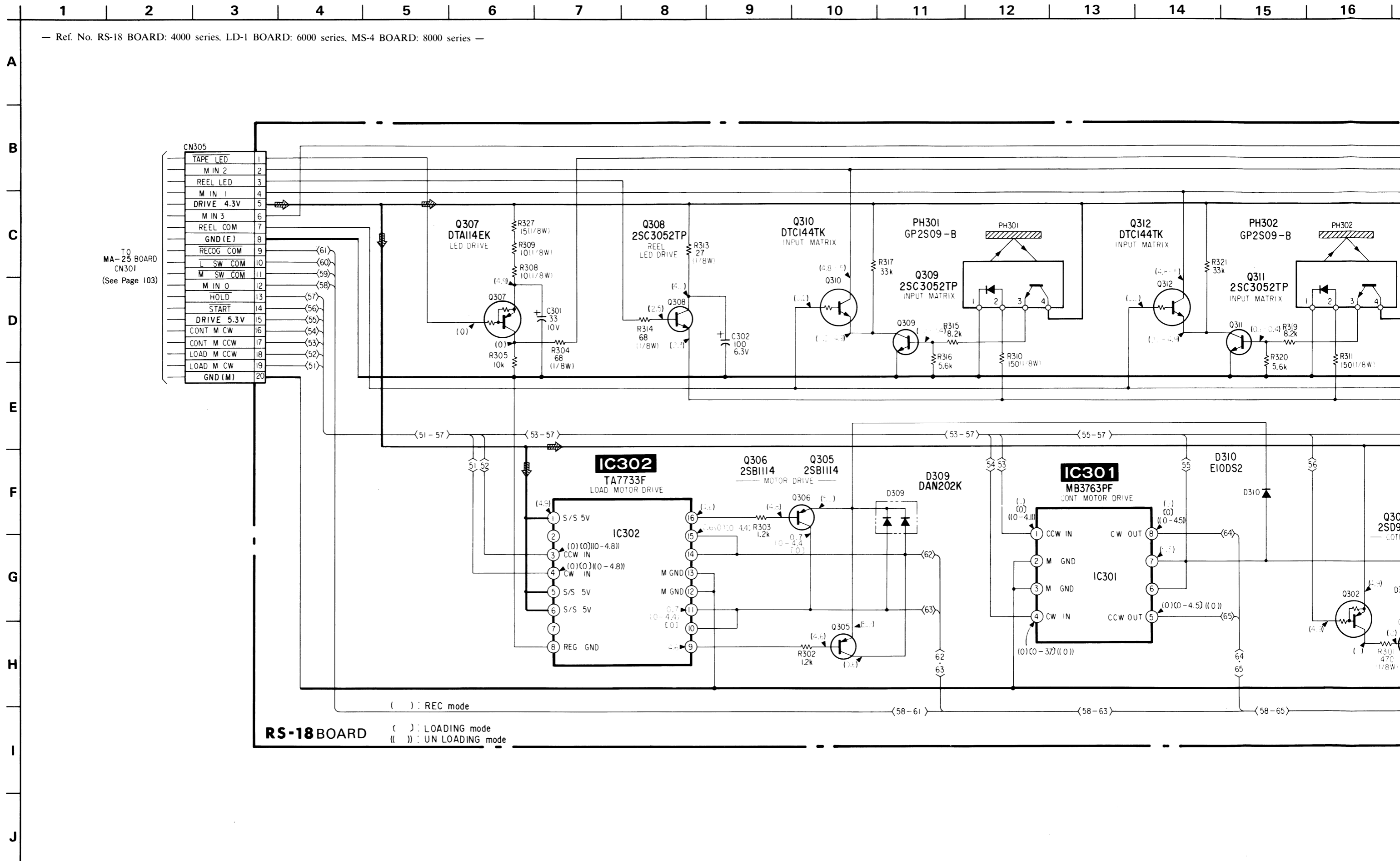
**Note:** The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

# CONTROL MOTOR DRIVE CONTROL MOTOR DRIVE

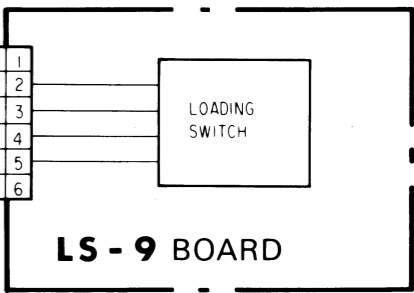
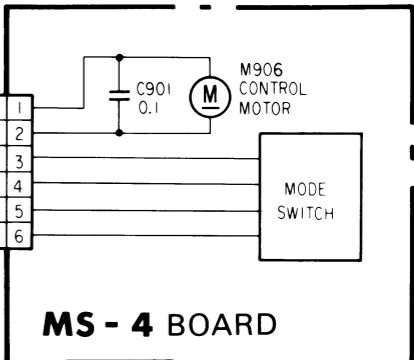
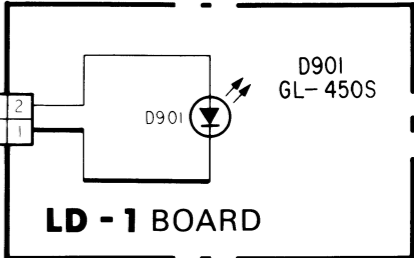
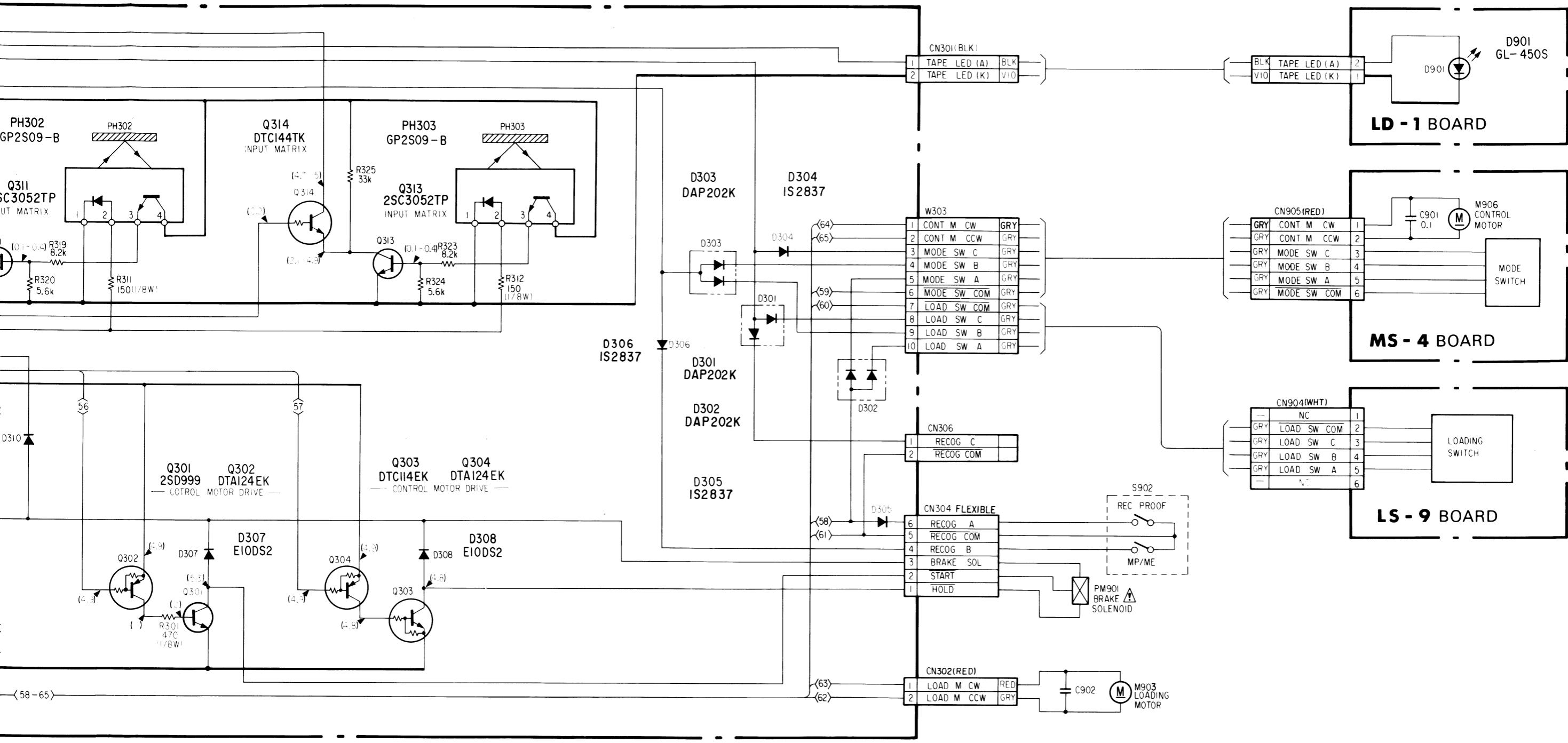
RS-18 (CONTROL MOTOR DRIVE), LD-1 (TAPE SENSOR), LS-9 (LOADING SWITCH), MS-4 (MODE SWITCH) SCHEMATIC DIAGRAM

— Ref. No. RS-18 BOARD: 4000 series, LD-1 BOARD: 6000 series, MS-4 BOARD: 8000 series —





15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

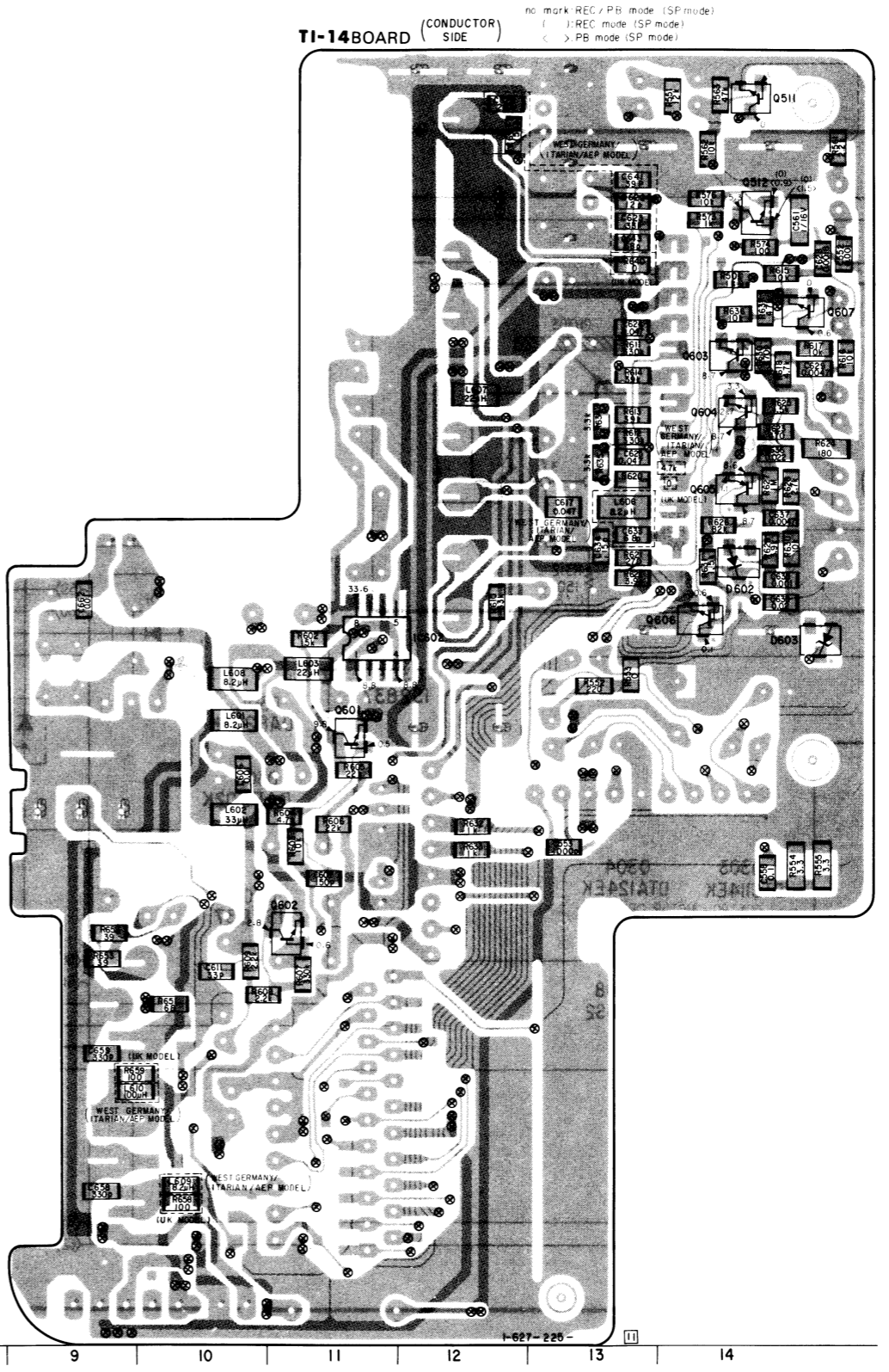
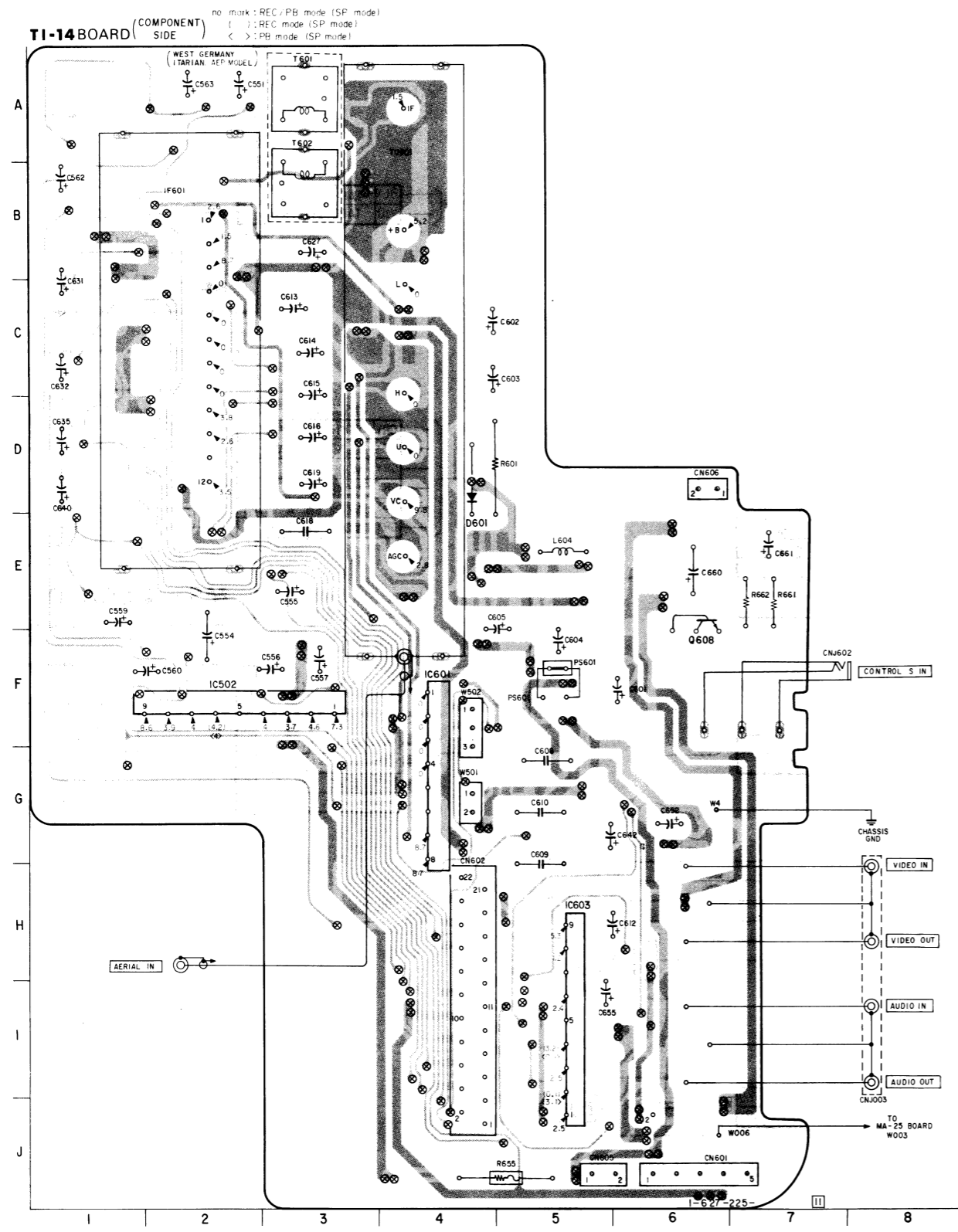


When indicating parts by reference number, please include the board name.

TI-14 (TUNER I/O OUT SWITCH) PRINTED WIRING BOARD

— Ref. No. TI-14 BOARD: 3000 series —

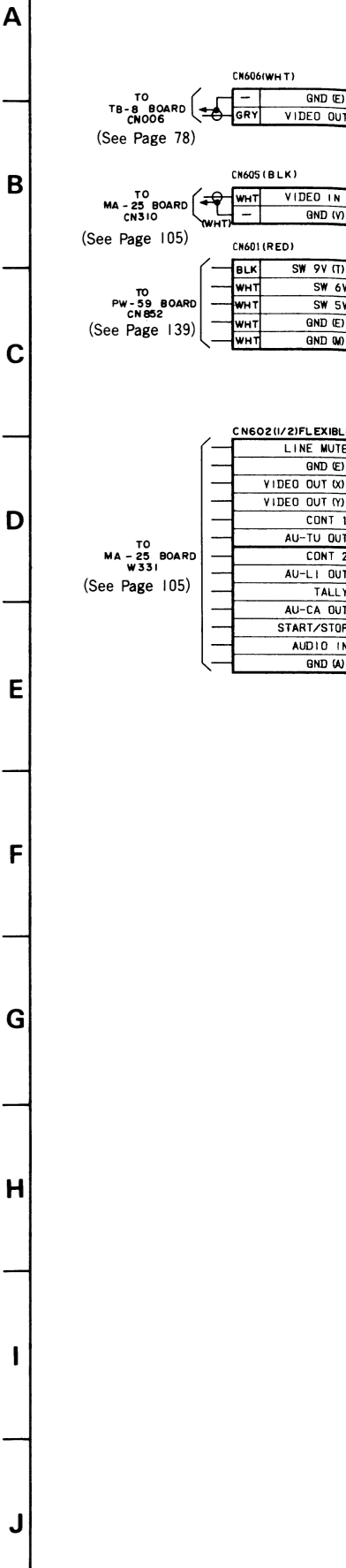
- TI-14 BOARD
- |       |      |
|-------|------|
| JN601 | J-6  |
| CN602 | I-4  |
| JN605 | J-5  |
| CN606 | D-6  |
|       |      |
| D601  | F-11 |
| D602  | D-14 |
| D603  | E-14 |
|       |      |
| IC502 | F-2  |
| IC601 | G-4  |
| IC602 | E-11 |
| IC603 | I-5  |
|       |      |
| Q511  | A-14 |
| Q512  | B-14 |
| Q601  | F-11 |
| Q602  | G-11 |
| Q603  | C-14 |
| Q604  | C-14 |
| Q605  | D-14 |
| Q606  | E-14 |
| Q607  | C-14 |
| Q608  | E-6  |
|       |      |
| W006  | J-6  |
| W501  | G-4  |
| W502  | F-4  |



TI-14 (TUNER I/O OUT SWITCH)

1 2

— Ref. No. TI-14 BOARD: 3000 series —

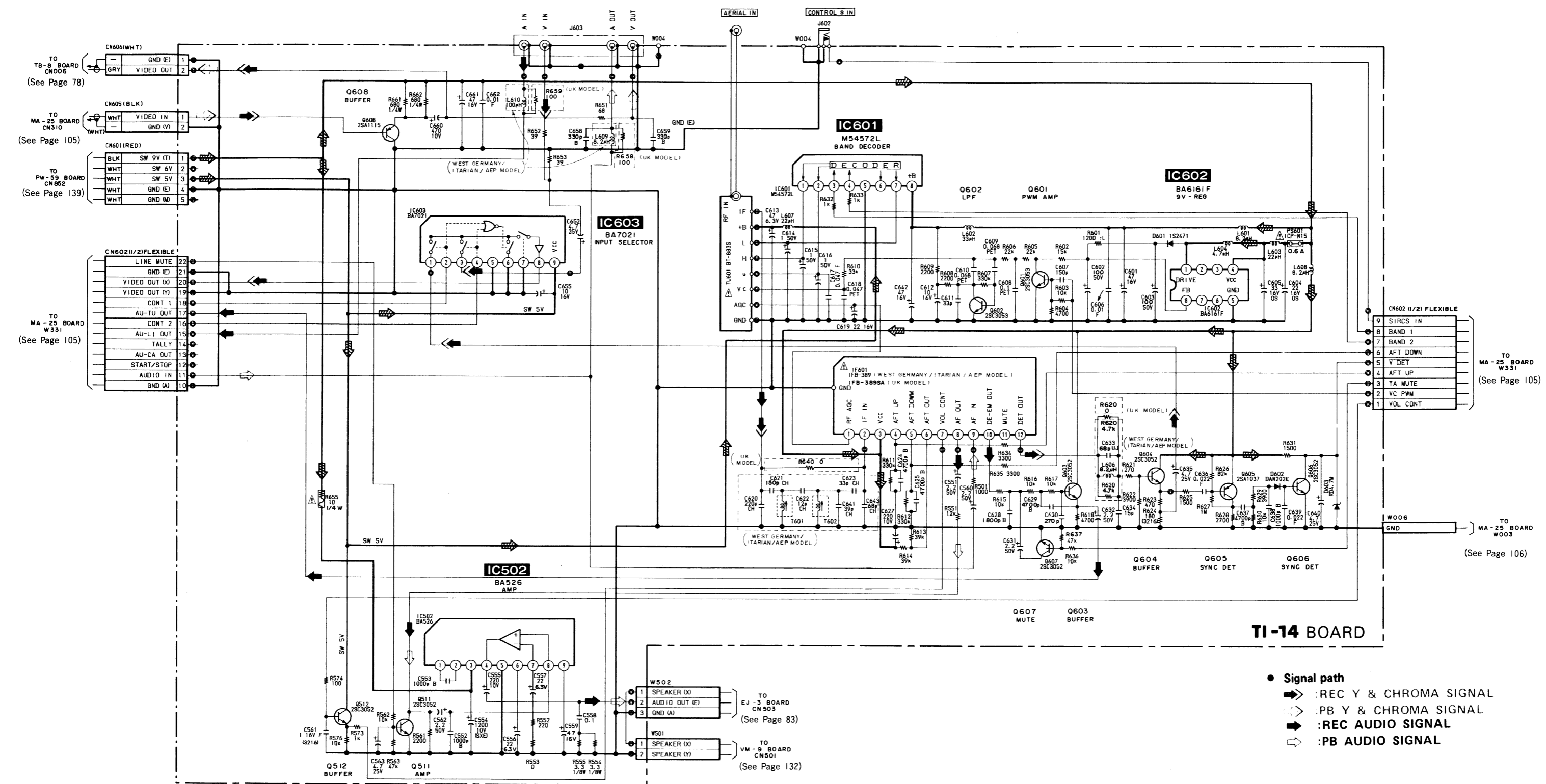


# TUNER, SWITCH TUNER, SWITCH

TI-14 (TUNER I/O OUT SWITCH) SCHEMATIC DIAGRAM

1      2      3      4      5      6      7      8      9      10      11      12      13      14      15      16

— Ref. No. TI-14 BOARD: 3000 series —



- Signal path
- ➔ : REC Y & CHROMA SIGNAL
- : PB Y & CHROMA SIGNAL
- ➡ : REC AUDIO SIGNAL
- ➦ : PB AUDIO SIGNAL

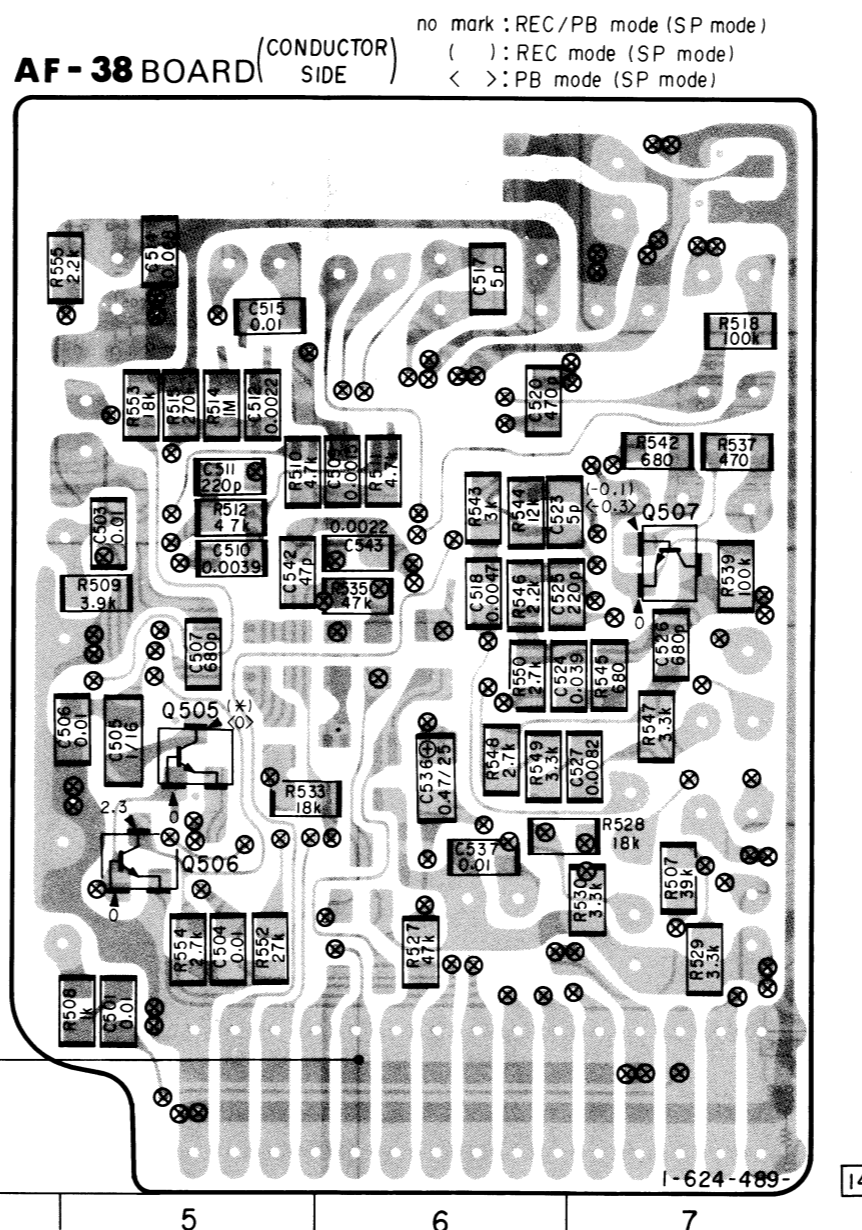
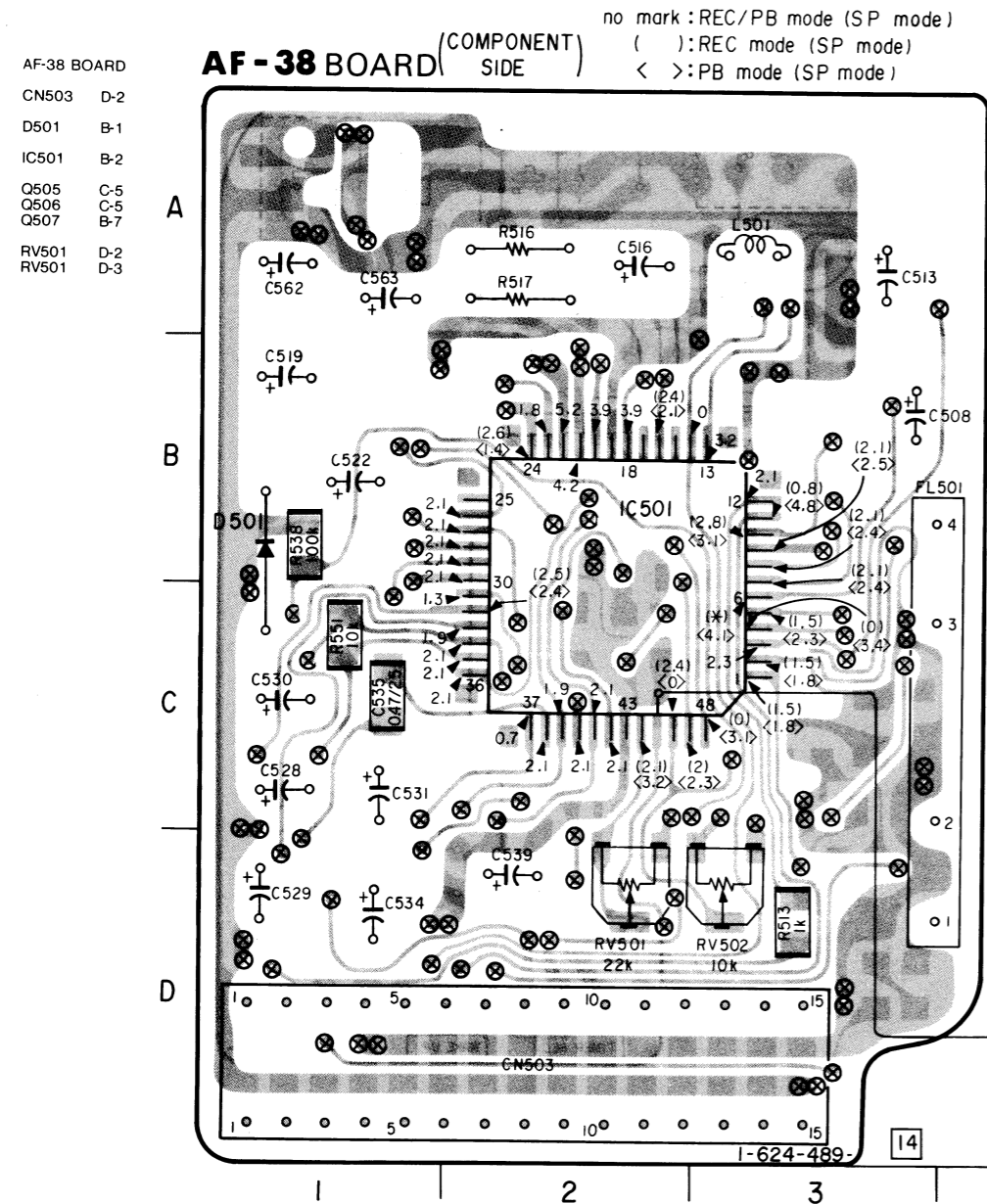
**Note:** The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

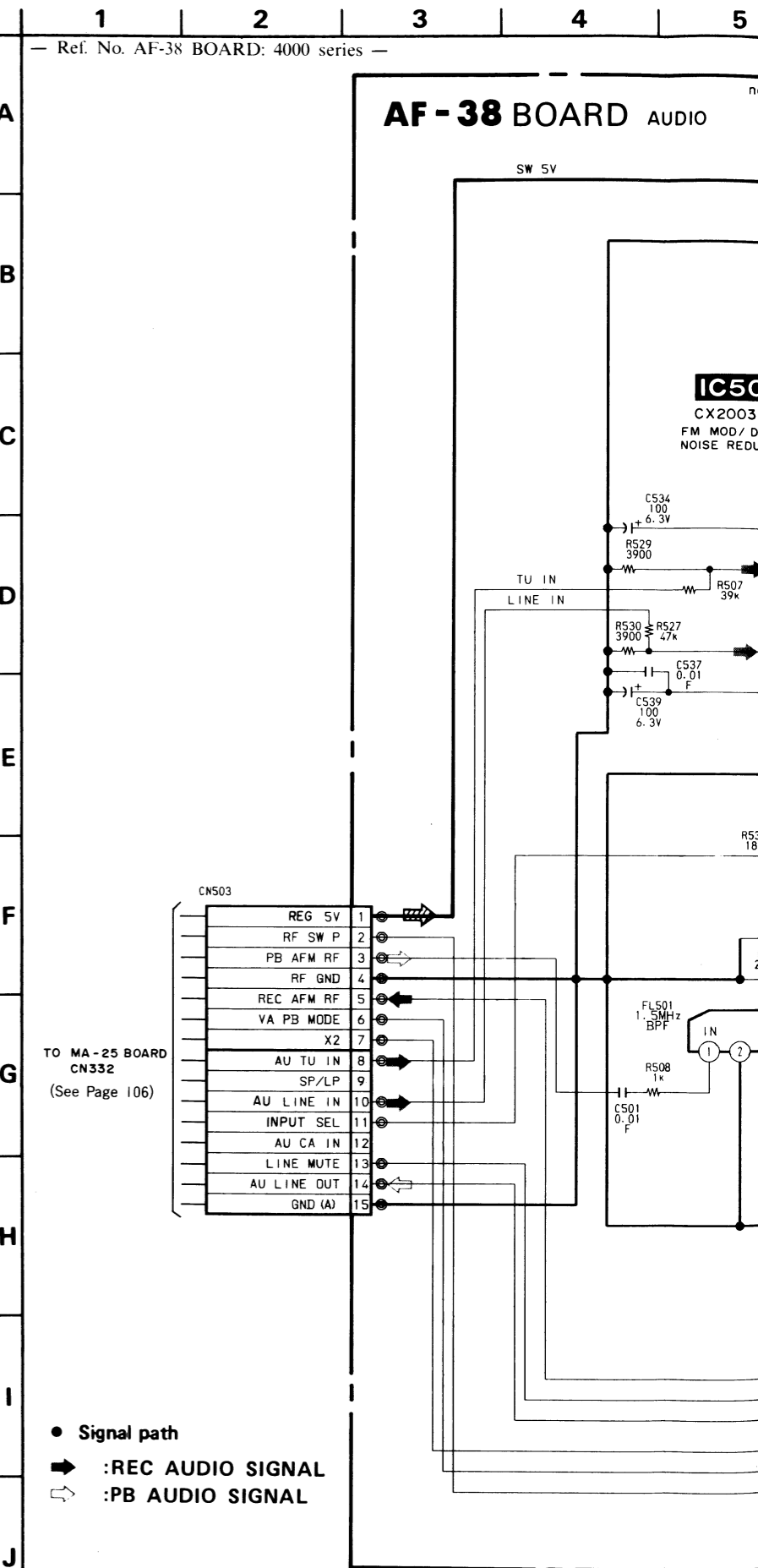
AF-38 (FM AUDIO) PRINTED WIRING BOARD

— Ref. No. AF-38 BOARD: 4000 series —

- Digital transistors (AF-38: Q505, 506) transistor with resistors. Refer to the AF-38 board schematic diagram for digital transistor.



AF-38 (FM AUDIO) SCHEMATIC DIAGRAM



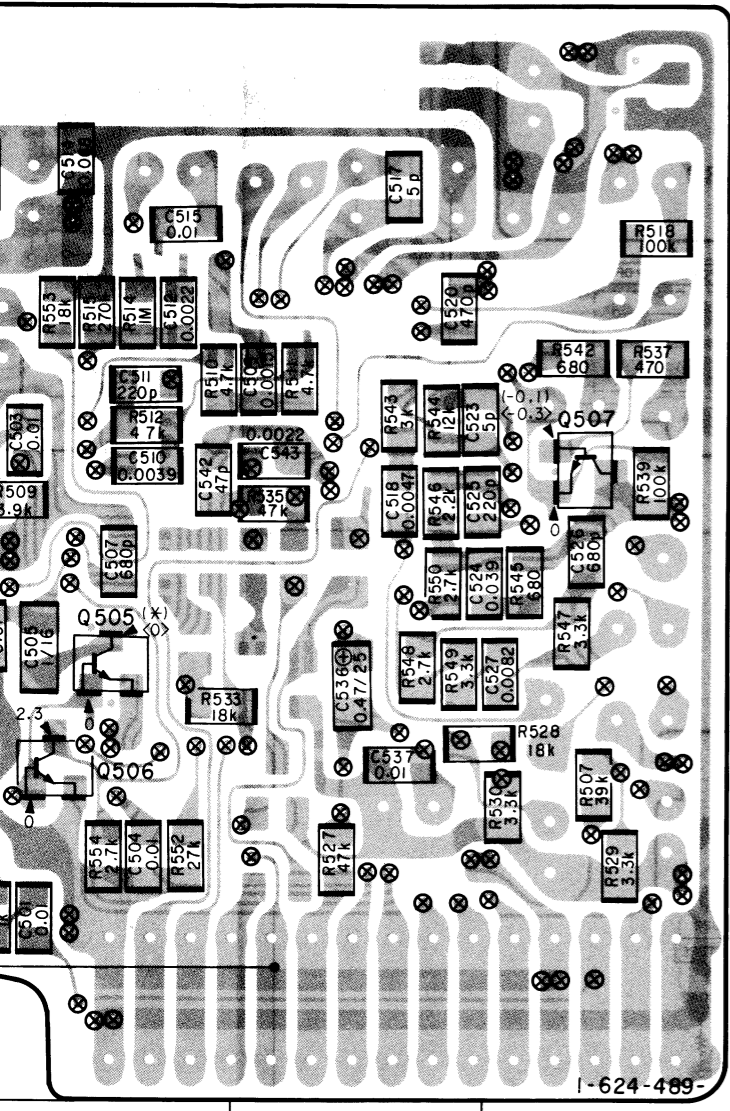
When indicating parts by reference number, please include the board name.

AF-38 (FM AUDIO) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11

Ref. No. AF-38 BOARD: 4000 series

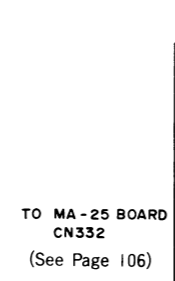
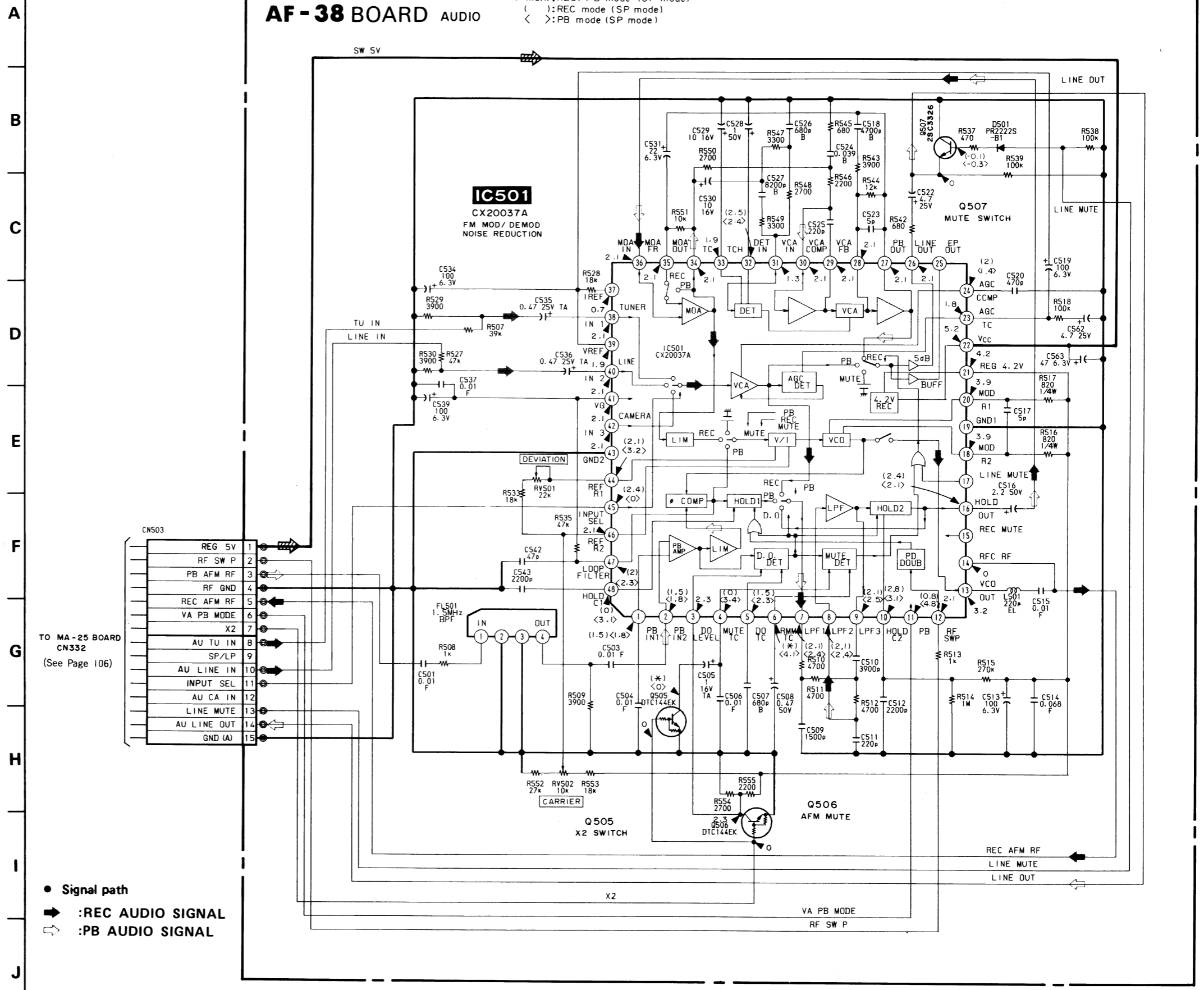
38 BOARD (CONDUCTOR SIDE) no mark : REC/PB mode (SP mode) ( ) : REC mode (SP mode) < > : PB mode (SP mode)



14

AF-38 BOARD AUDIO

no mark : REC/PB mode (SP mode) ( ) : REC mode (SP mode) < > : PB mode (SP mode)



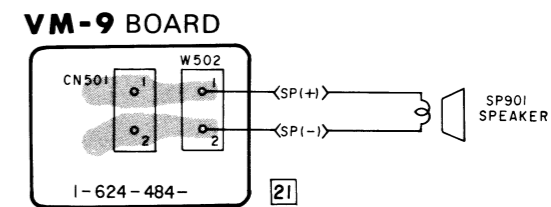
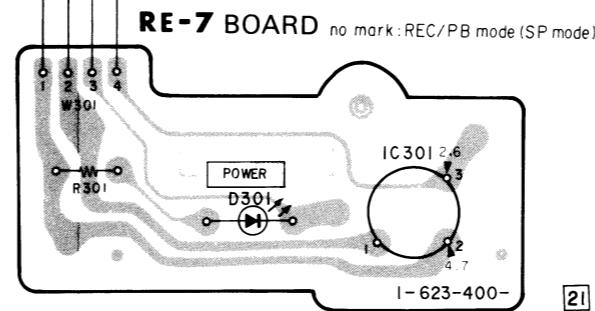
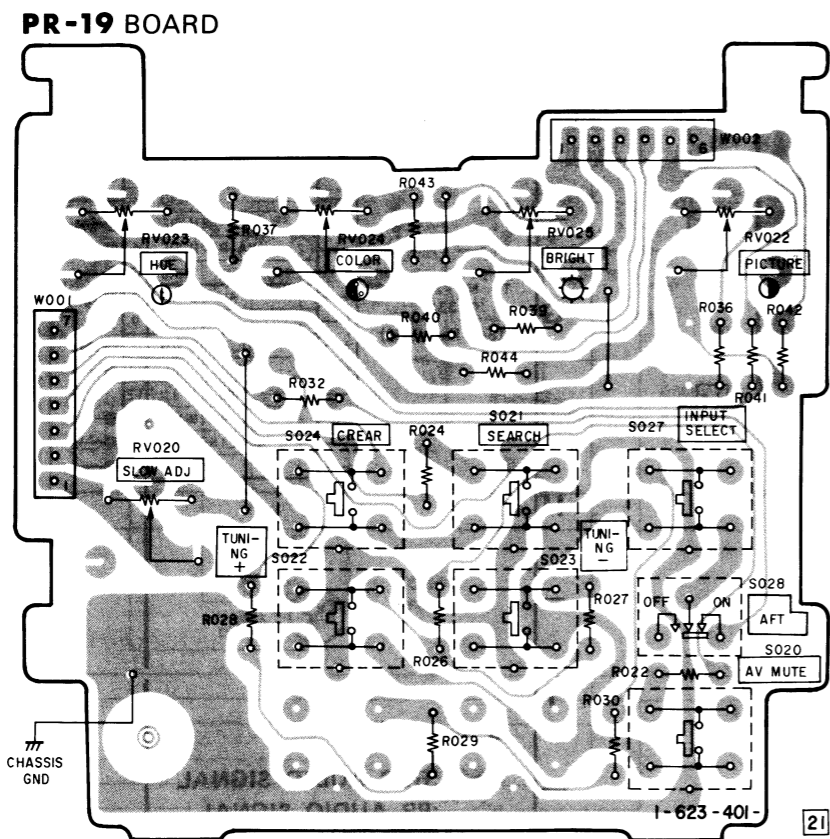
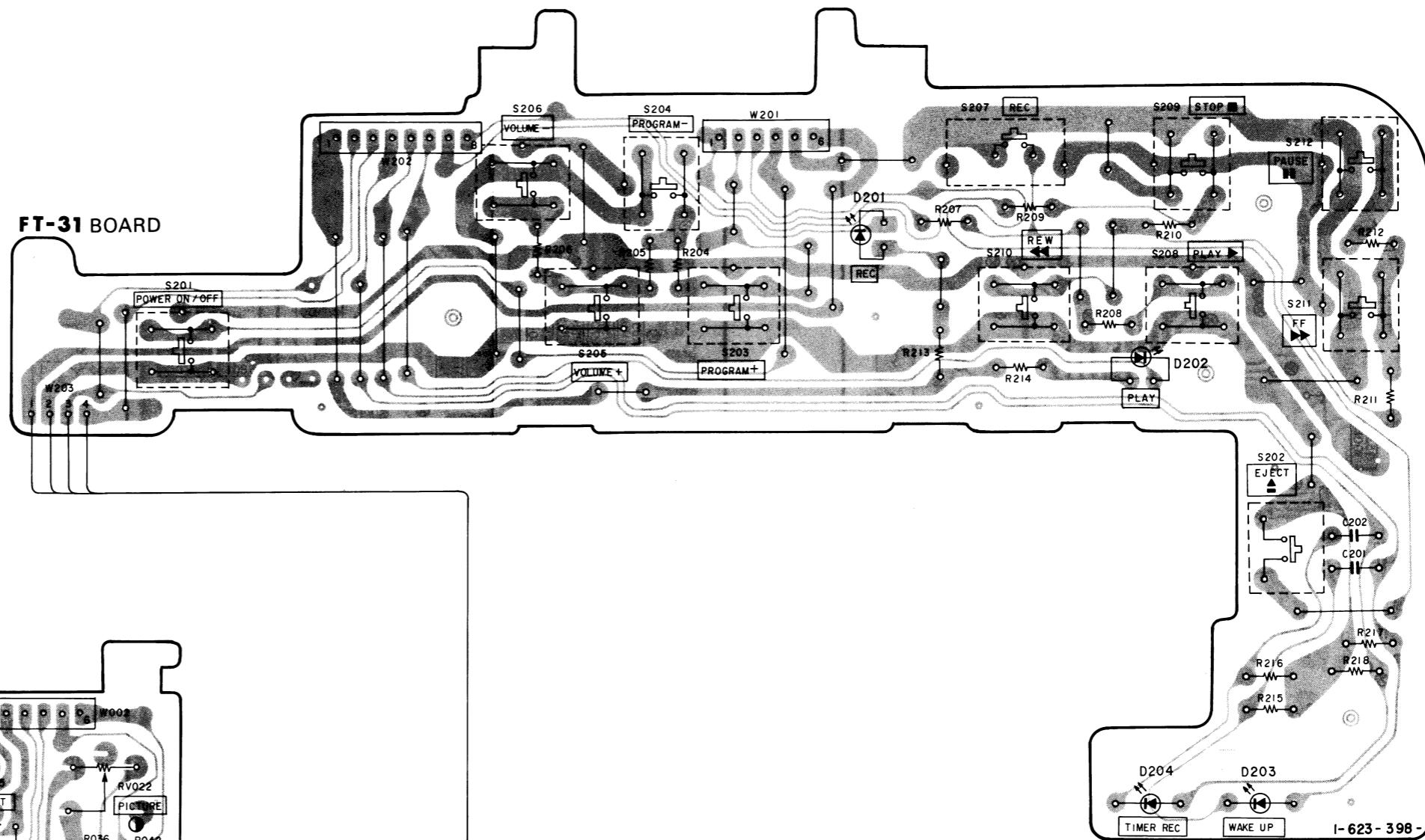
- Signal path
- ➔ : REC AUDIO SIGNAL
- ➞ : PB AUDIO SIGNAL

When indicating parts by reference number, please include the board name.

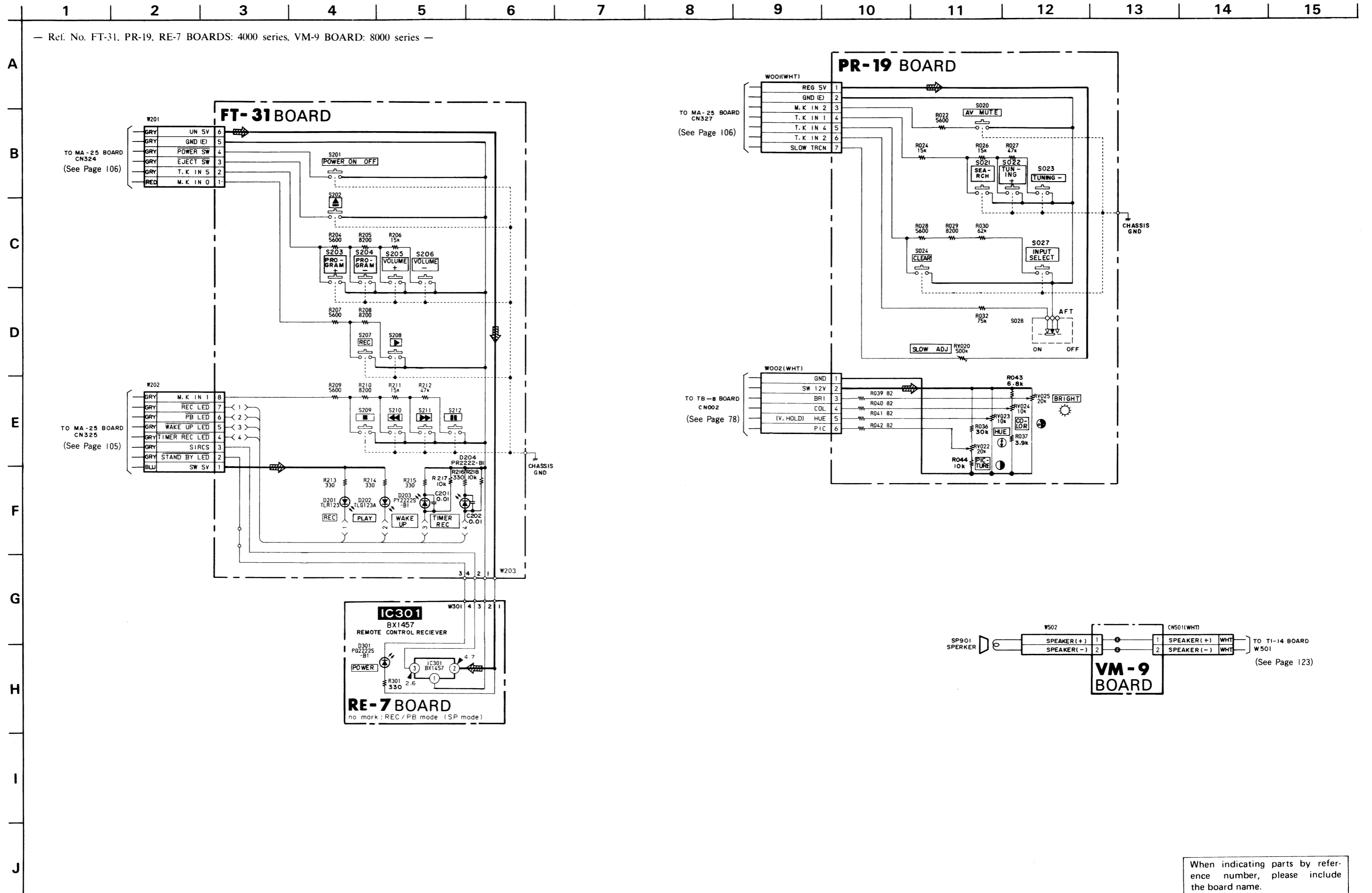
FT-31 (FUNCTION SWITCH), PR-19 (FUNCTION SWITCH), RE-7 (REMOTE CONTROL RECEIVER), VM-9 (SPEEKER TERMINAL) PRINTED WIRING BOARD

— Ref. No. FT-31, PR-19, RE-7 BOARDS: 4000 series, VM-9 BOARD: 8000 series —

- Digital transistor (FT-31: Q201) transistor with resistors.  
Refer to the FT-31 board schematic diagram for digital transistor.



FT-31 (FUNCTION SWITCH), PR-19 (FUNCTION SWITCH), RE-7 (REMOTE CONTROL RECEIVER), VM-9 (SPEAKER TERMINAL) SCHEMATIC DIAGRAM



— Ref. No. FT-31, PR-19, RE-7 BOARDS: 4000 series, VM-9 BOARD: 8000 series —

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

When indicating parts by reference number, please include the board name.

PW-58 (SWITCHING POWER SUPPLY), PW-59 (REGULATOR), PK-15 (SWITCHING POWER SUPPLY), DC-8 (DC IN) PRINTED WIRING BOARD

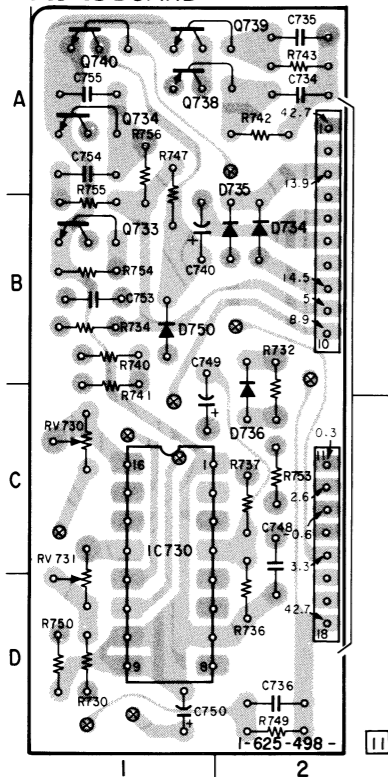
- Ref. No. PW-58 BOARD: 5000 series, PK-15 BOARD: 6000 series, PW-59 BOARD: 7000 series, DC-8 BOARD: 8000 series -

This board is equipped with two types of grounds. Use caution when performing voltage and waveform measurement. The voltage within ( ) is the value between Pin ① of IC701.

PK-15 BOARD

- D734 B-2
- D735 B-2
- D736 C-2
- D750 B-1
- IC730 C-1
- Q733 B-1
- Q738 A-1
- Q739 A-1
- Q740 A-1
- RV730 C-1
- RV731 D-1

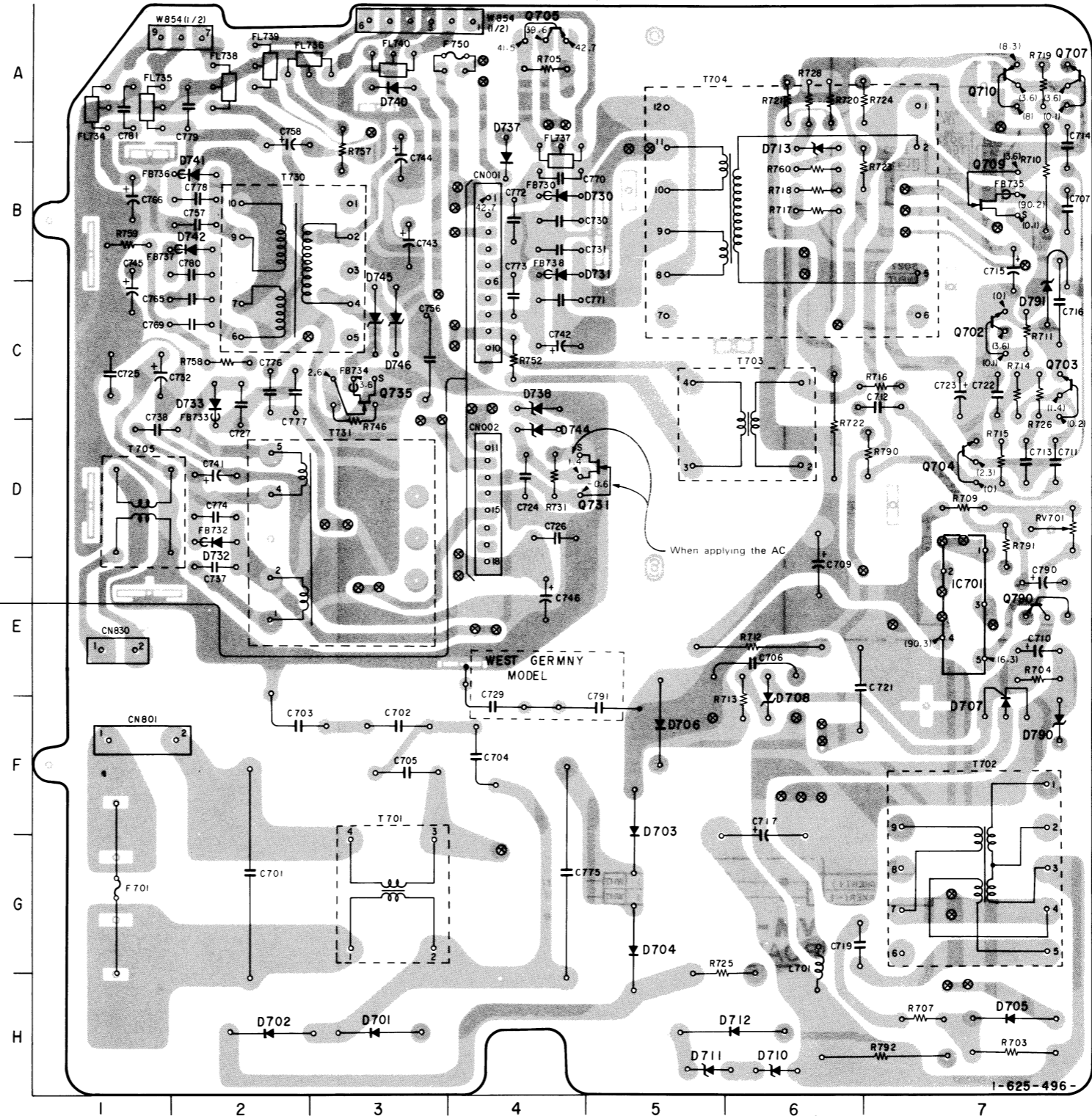
PK-15 BOARD no mark: E - E mode



PW-58 BOARD

- CN001 B-4
- CN002 D-4
- CN801 F-1
- CN830 E-1
- D701 H-3
- D702 H-2
- D703 F-5
- D704 G-5
- D705 H-7
- D706 F-5
- D707 F-7
- D708 F-6
- D710 H-6
- D711 H-5
- D712 H-6
- D713 B-6
- D730 B-4
- D731 B-4
- D732 D-2
- D733 C-2
- D737 B-4
- D738 C-4
- D740 A-1
- D741 B-2
- D742 B-2
- D744 D-4
- D745 C-3
- D746 C-3
- D790 F-7
- D791 B-7
- IC701 E-7
- Q702 C-7
- Q703 C-7
- Q704 D-7
- Q705 A-4
- Q707 A-7
- Q709 B-7
- Q710 A-7
- Q731 D-5
- Q735 C-3
- Q790 E-7
- RV701 D-7

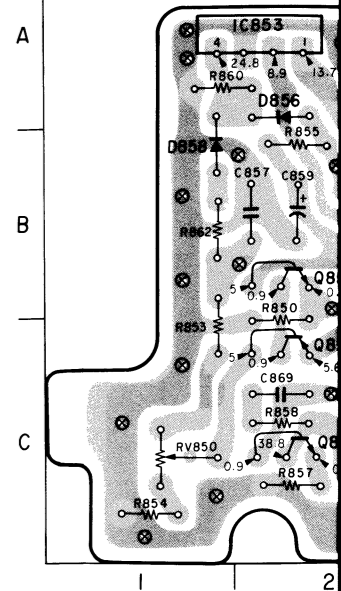
PW-58 BOARD no mark: E - E mode



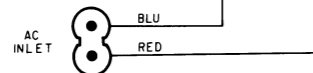
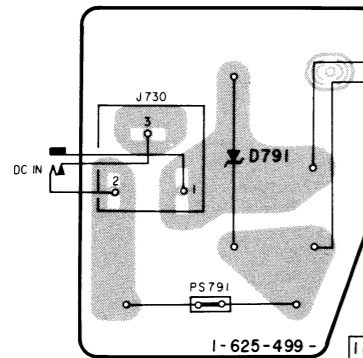
PW-59 BOARD

- CN850 C-5
- CN851 B-6
- CN852 B-6
- CN853 C-6
- CN854 C-6
- D850 A-2
- D851 B-3
- D852 B-2
- D856 A-2
- D858 B-1
- D870 A-3
- IC850 A-3
- IC851 A-6
- IC852 A-6
- IC853 A-2
- Q850 C-2
- Q851 B-2
- Q852 C-2
- RV850 C-1

PW-59 BOARD



DC-8 BOARD

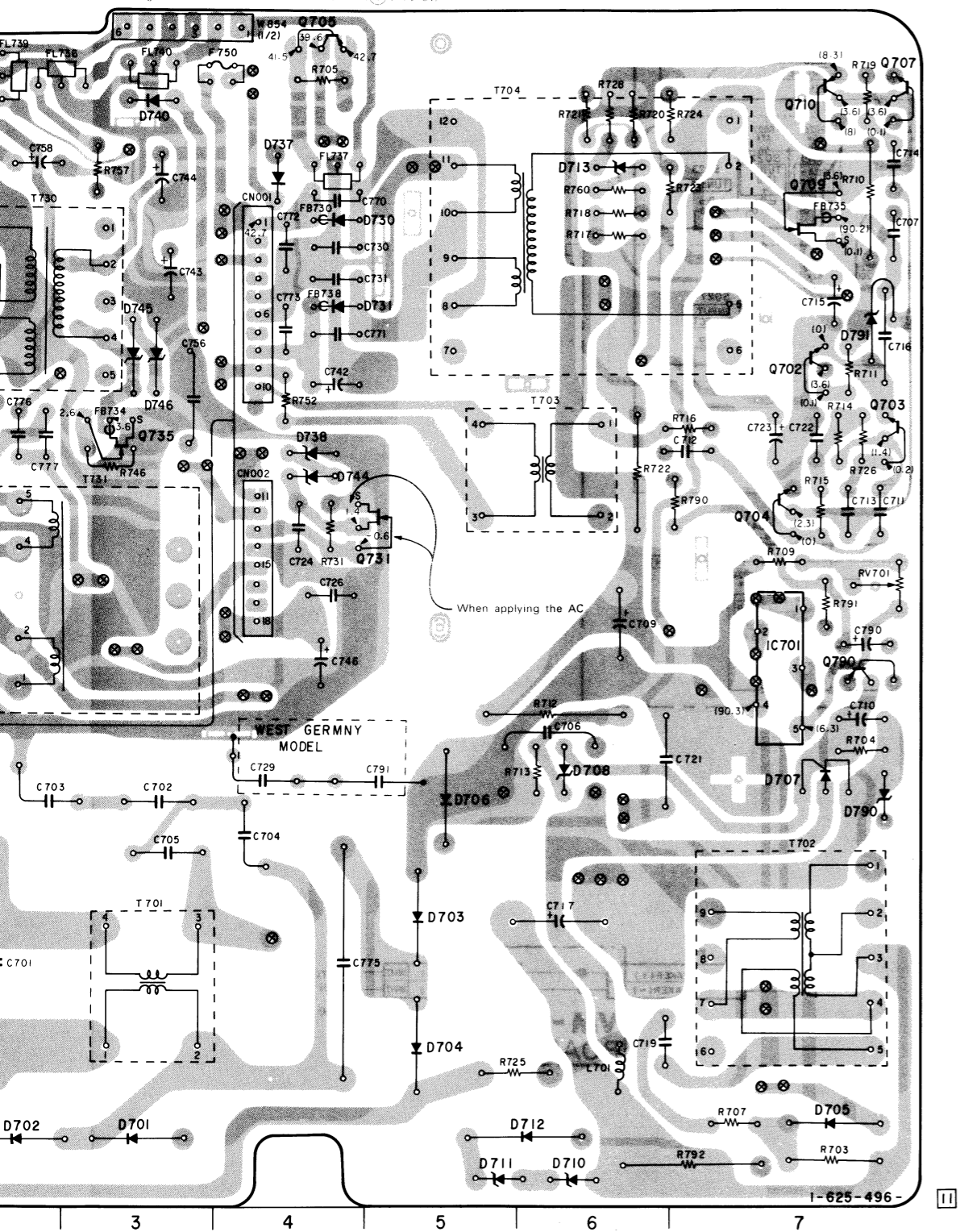


• Digital transistors (PK-15: Q746, PW-59: Q851) transistor with resistors.  
Refer to the PK-15, PW-59 boards schematic diagram for digital transistor.



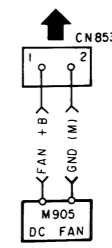
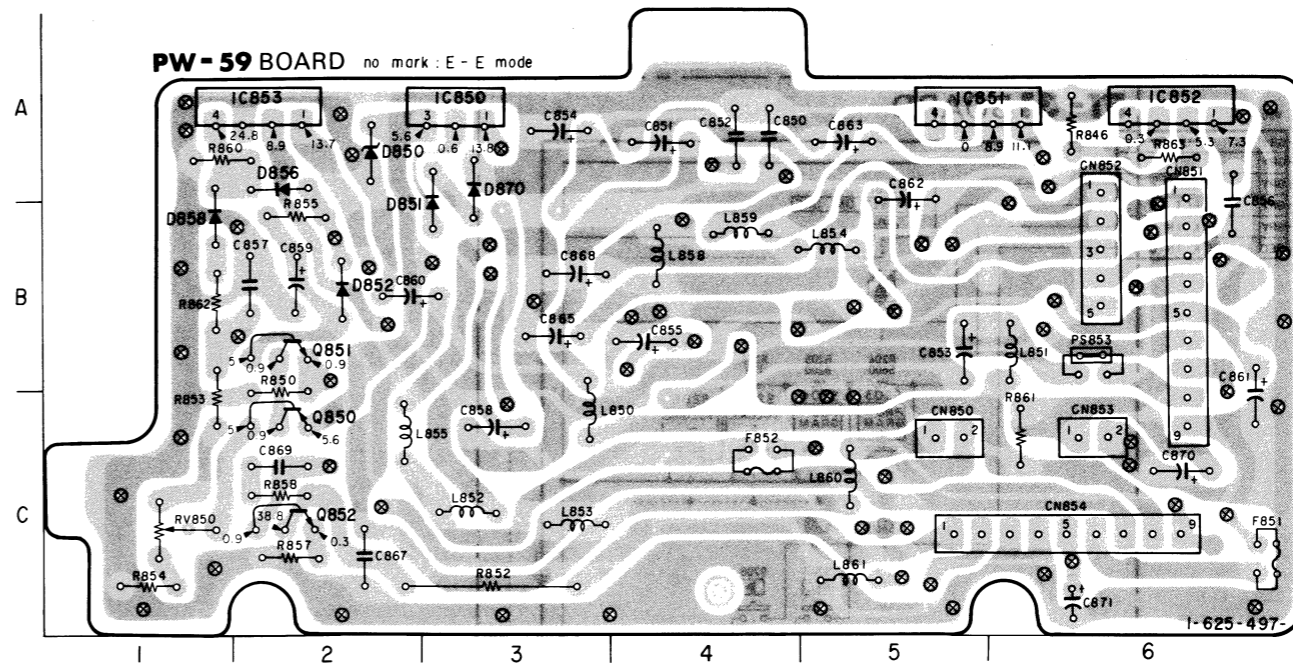
DC-8 (DC IN) PRINTED WIRING BOARD

Note: This board is equipped with two types of grounds. Use caution when performing voltage and waveform measurement. The voltage within ( ) is the value between Pin 1 of IC701.



PW-59 BOARD

- CN850 C-5
- CN851 B-6
- CN852 B-6
- CN853 C-6
- CN854 C-6
- D850 A-2
- D851 B-3
- D852 B-2
- D856 A-2
- D858 B-1
- D870 A-3
- IC850 A-3
- IC851 A-5
- IC852 A-6
- IC853 A-2
- Q850 C-2
- Q851 B-2
- Q852 C-2
- RV850 C-1

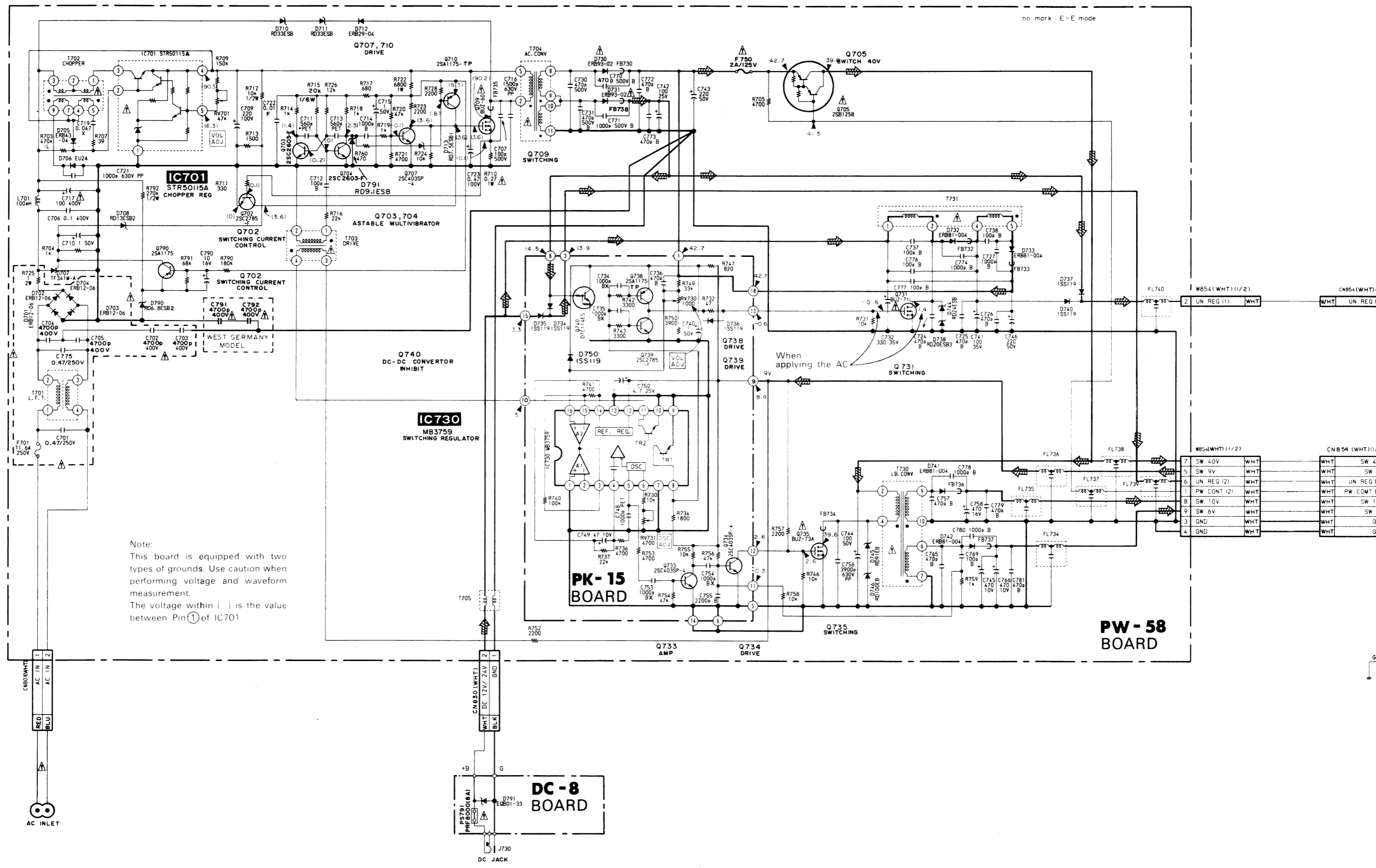


PW-58 (SWITCHING POWER SUPPLY), PW-59 (REGULATOR), PK-15 (SWITCHING POWER SUPPLY), DC-8 (DC IN) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

— Ref. No. PW-58 BOARD: 5000 series, PK-15 BOARD: 6000 series, PW-59 BOARD: 7000 series, DC-8 BOARD: 8000 series —

A  
B  
C  
D  
E  
F  
G  
H  
I  
J



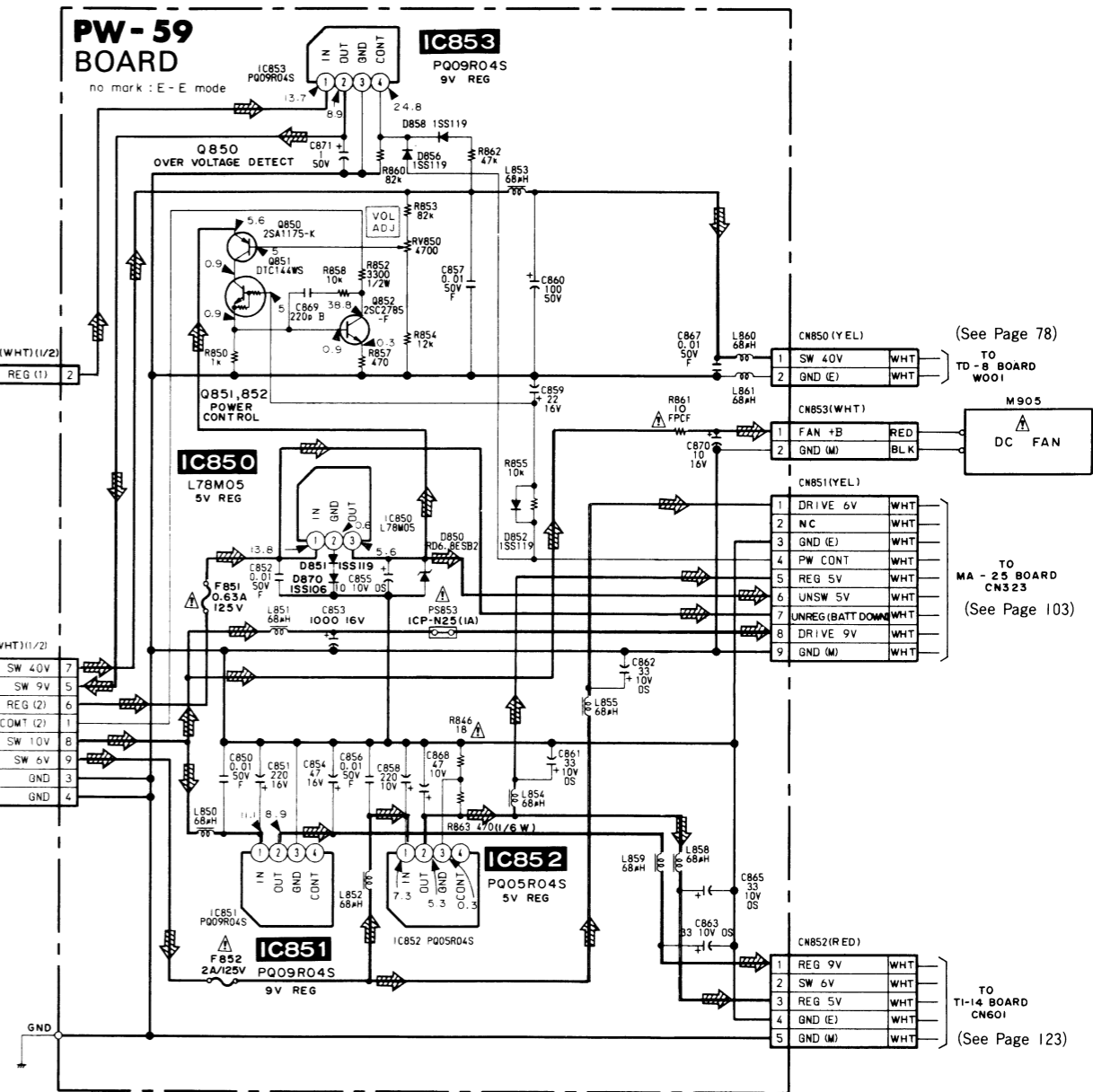
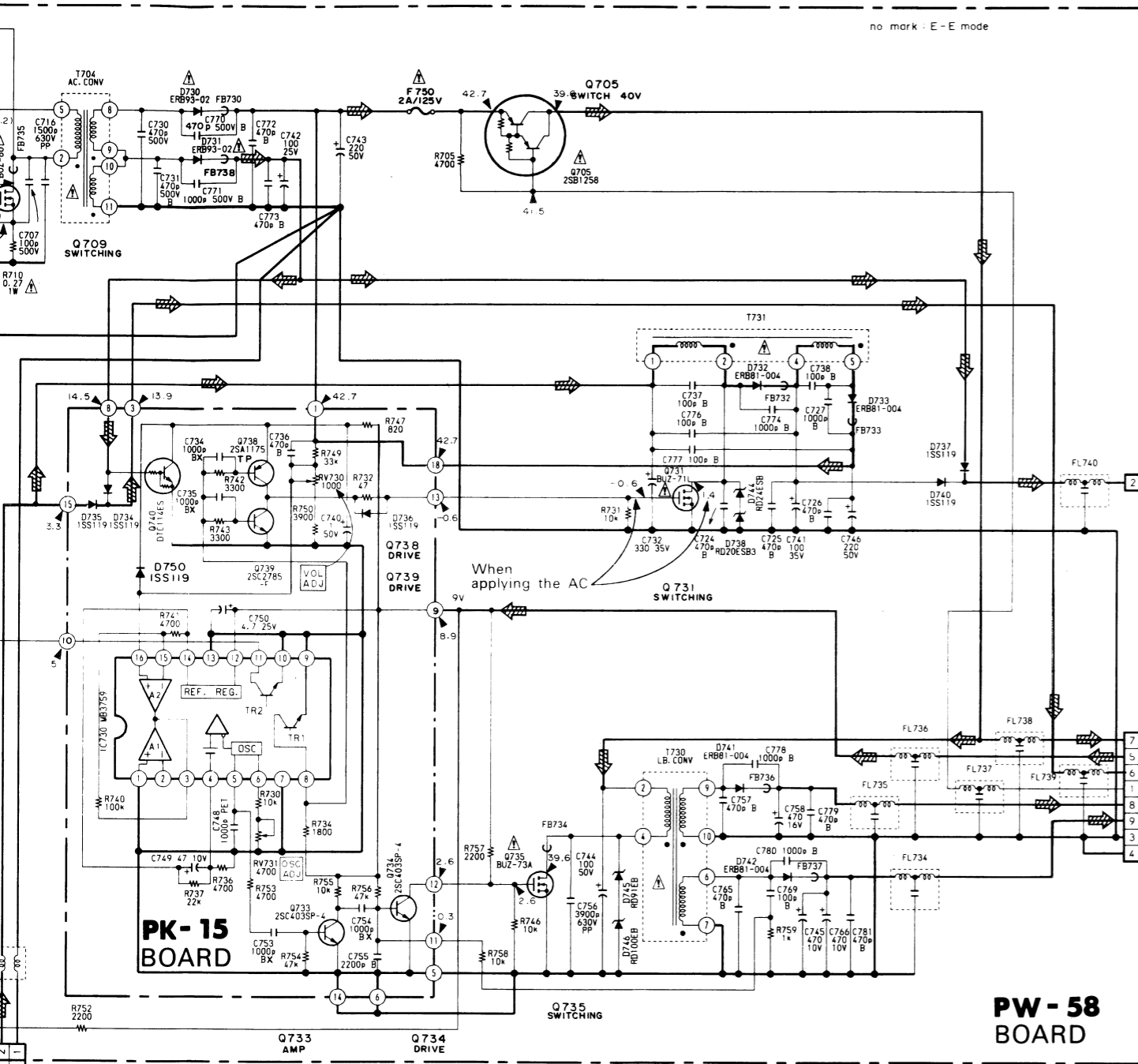
Note:  
This board is equipped with two types of grounds. Use caution when performing voltage and waveform measurement.  
The voltage within ( ) is the value between Pin ① of IC701.

7	SW 40V	WHT	SW 40V
5	SW 9V	WHT	SW 9V
6	UN REG (2)	WHT	UN REG (2)
1	PW CONT (2)	WHT	PW CONT (2)
8	SW 10V	WHT	SW 10V
9	SW 6V	WHT	SW 6V
3	GND	WHT	GND
4	GND	WHT	GND

PLY), DC-8 (DC IN) SCHEMATIC DIAGRAM

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

8000 series —

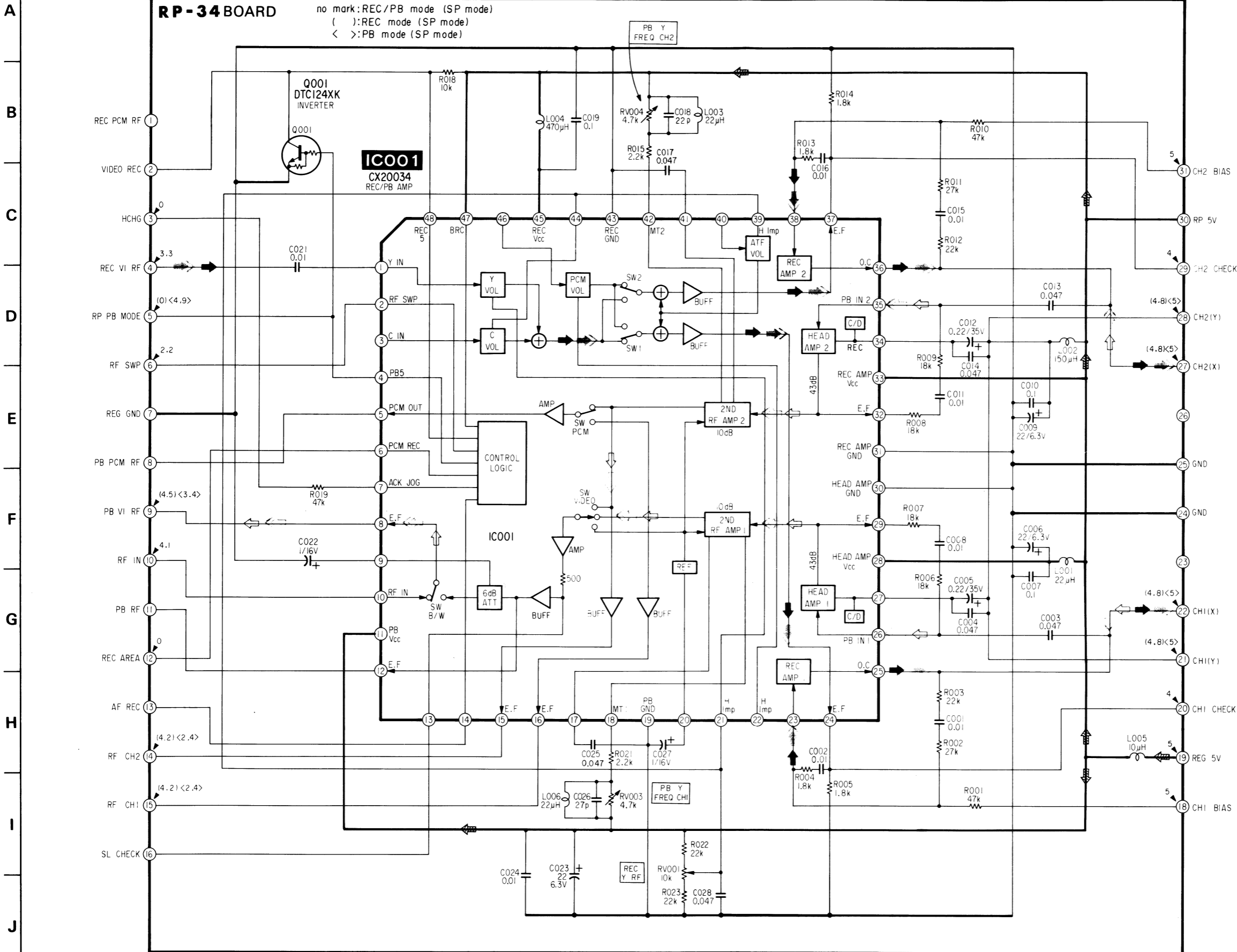


**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

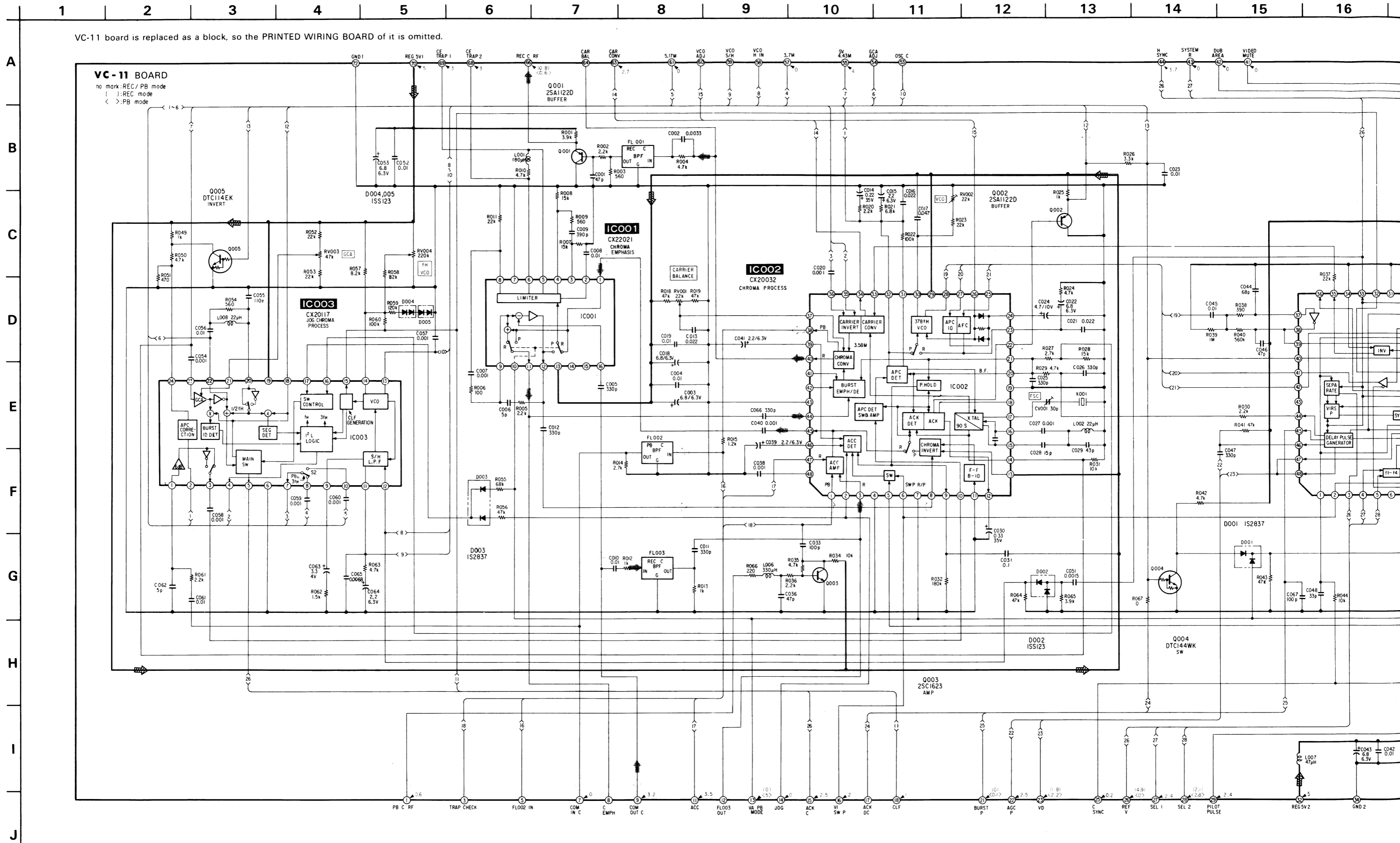
When indicating parts by reference number, please include the board name.

RP-34 (REC/PB AMP) SCHEMATIC DIAGRAM

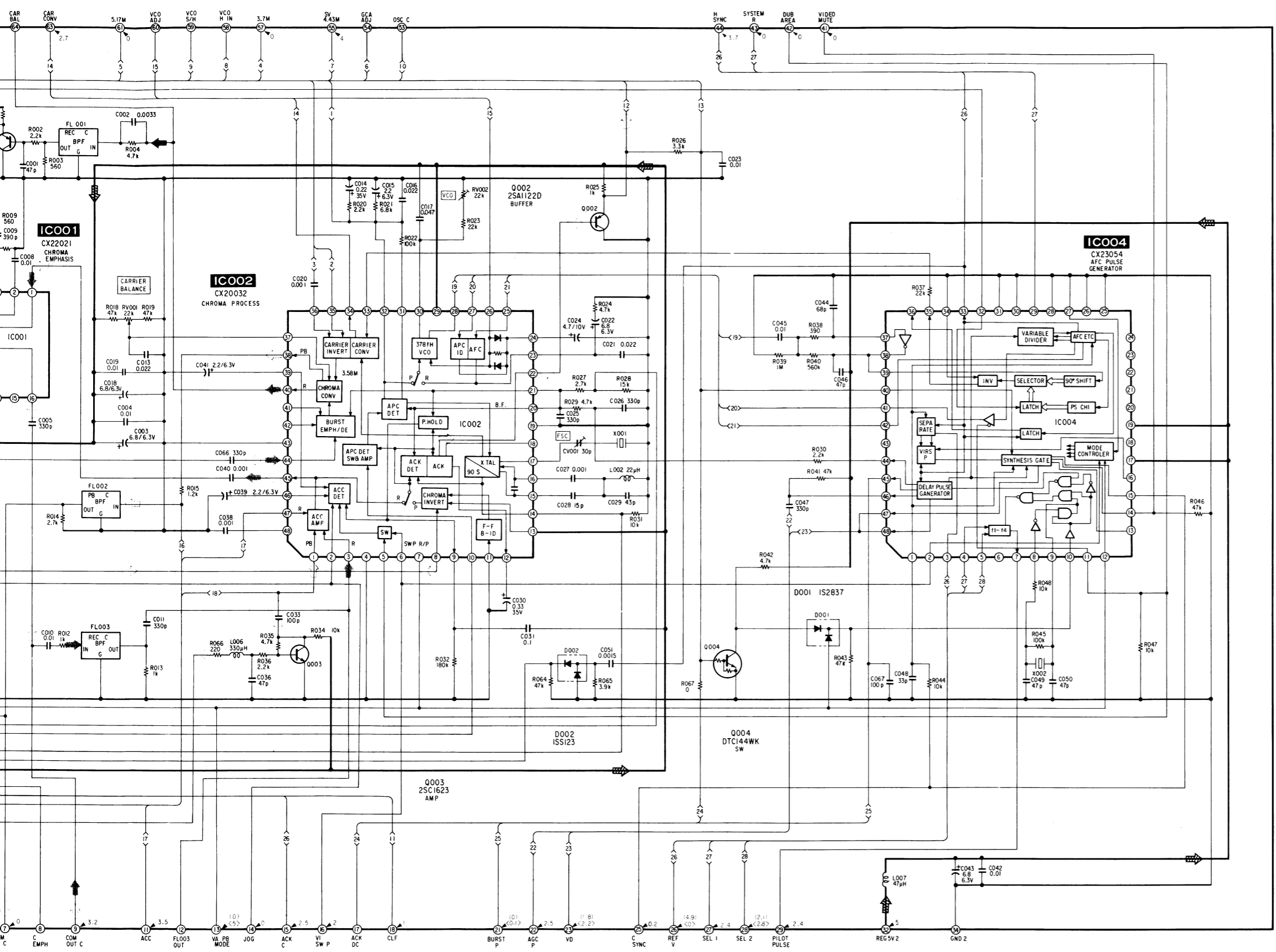
1 2 3 4 5 6 7 8 9 10 11 12 13



VC-11 (CHROMA PROCESS) SCHEMATIC DIAGRAM



7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

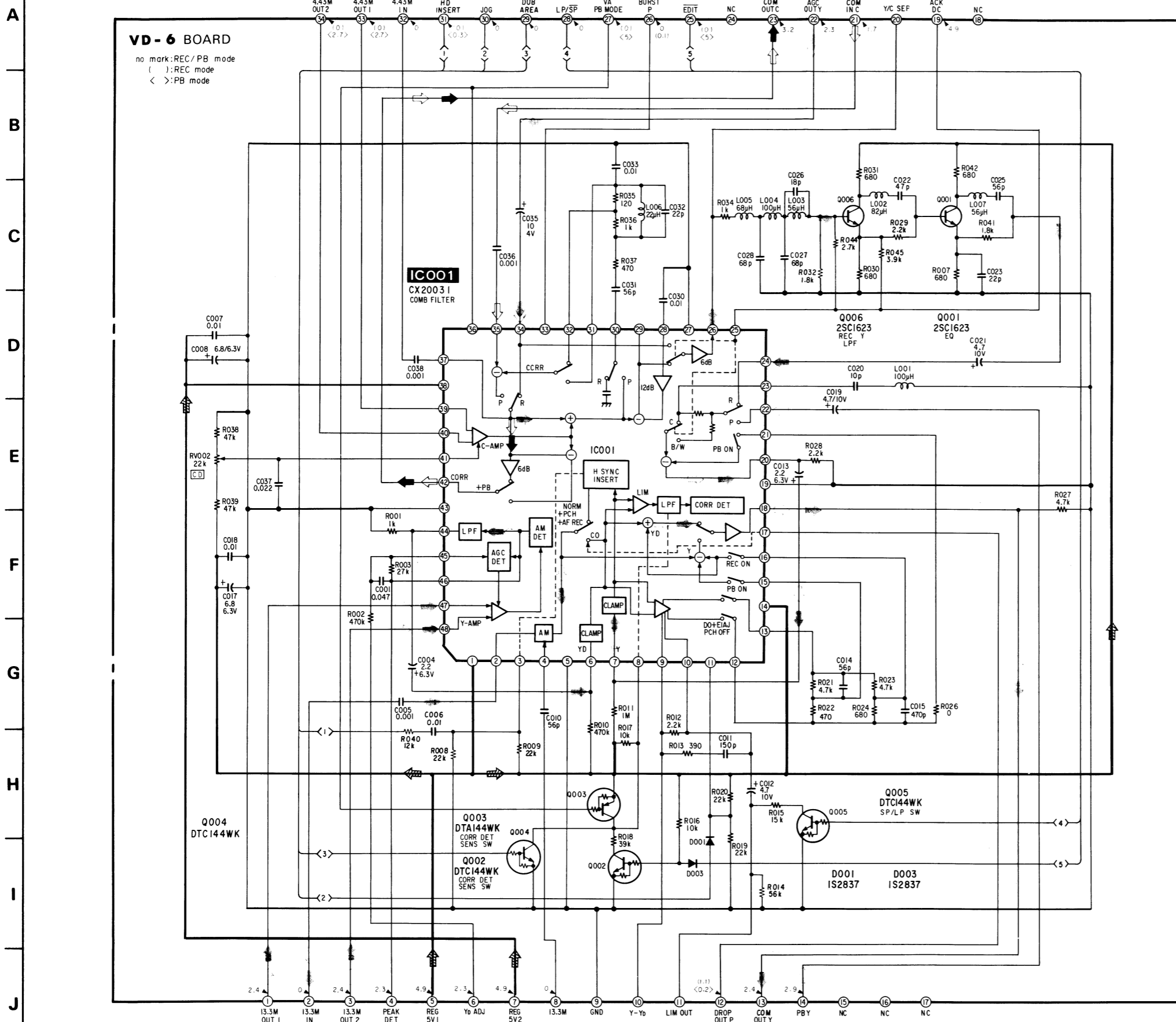


● Signal path  
 — REC Y SIGNAL  
 - - - PB Y SIGNAL

VD-6 (Y COMB FILTER) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

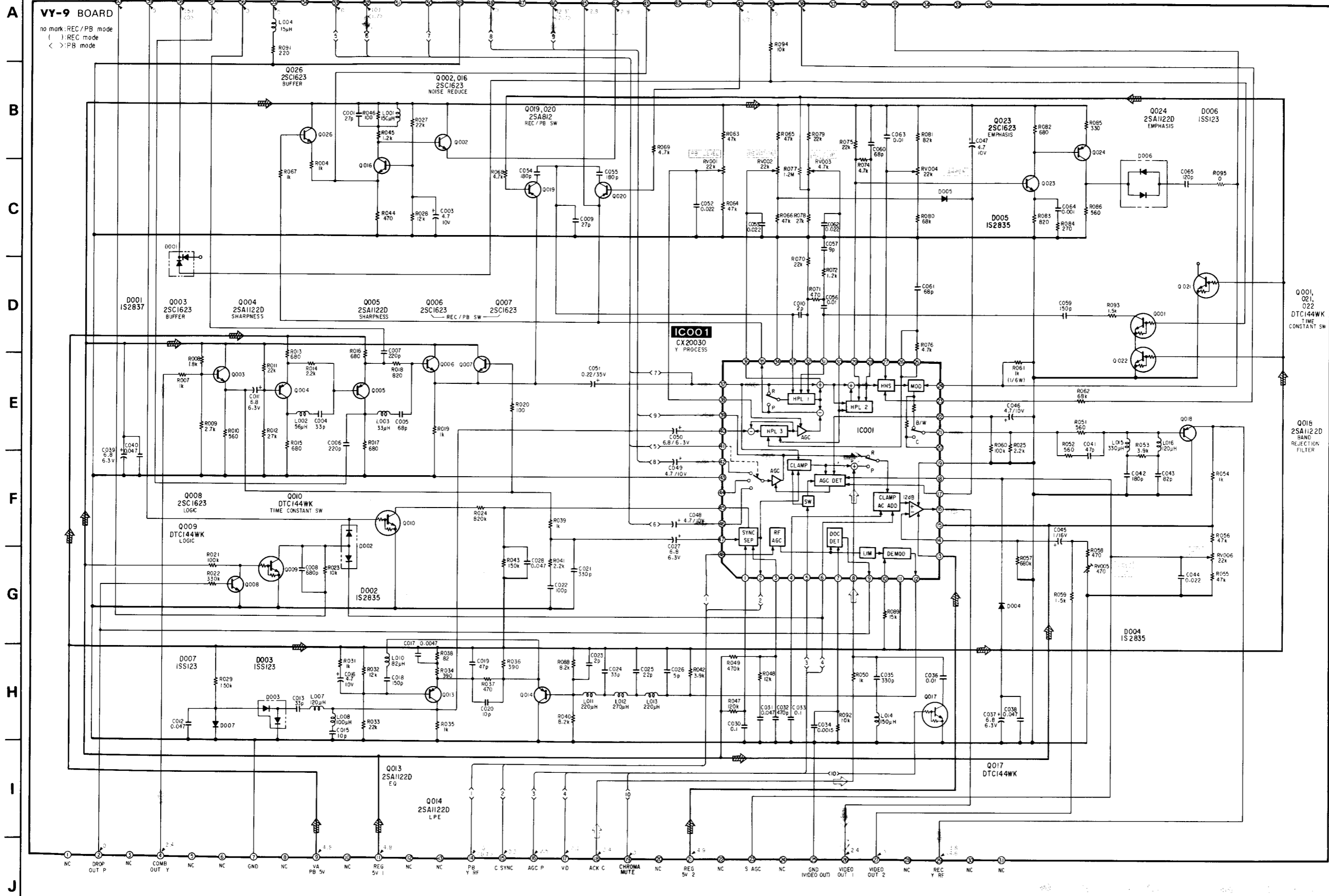
VD-6 board is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.



VY-9 (Y PROCESS) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15


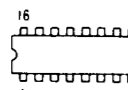
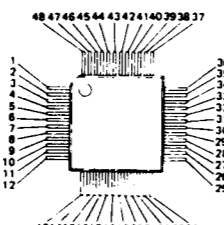

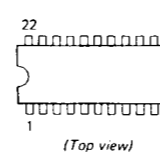
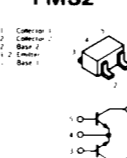


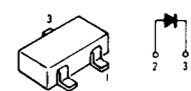

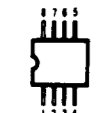
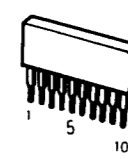
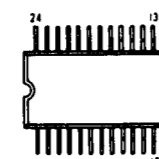
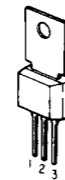
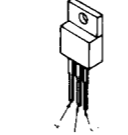
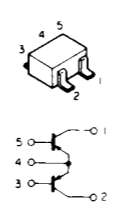

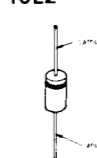
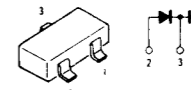
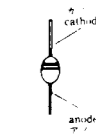
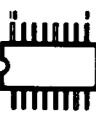
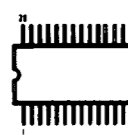
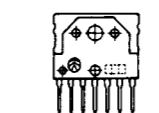

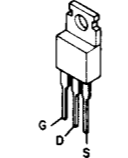


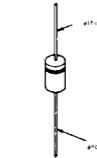
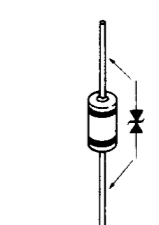
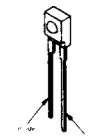

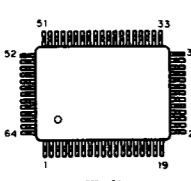
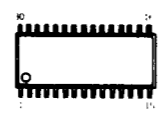

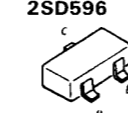
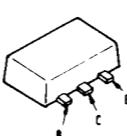

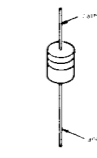
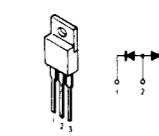
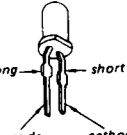
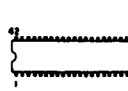
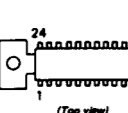
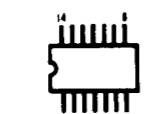

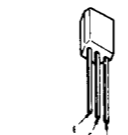
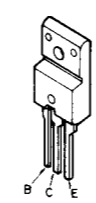
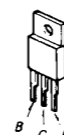
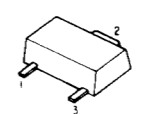
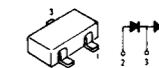
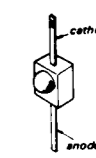
VY-9 board is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.



:PB CHROMA SIGNAL



4-3. SEMICONDUCTORS

<p>BA526 BA7021 M54572L</p> 	<p>CXA1042 MB3759 μPD6142C-501</p>  <p>(Top view)</p>	<p>CX20037A MB675121UPF</p> 	<p>PQ05R04S</p> 	<p>μPC1377C</p>  <p>(Top view)</p>	<p>FMA2 FMS2</p> 	<p>2SC535</p> 	<p>2SK94 2SK94-X3</p> 	<p>RD4.7M-B2</p> 	<p>1SS196</p> 
<p>BA6161F MB3763P MB3763PF μPC358G2 μPC393G2</p>  <p>(TOP VIEW)</p>	<p>CXK1004L CXK1008L</p> 	<p>CX20114</p>  <p>(TOP VIEW)</p>	<p>PQ09R04S</p> 	<p>μPC78M05H μPC78M12H</p> 	<p>FMG2 FMW2</p> 	<p>2SC2555</p> 	<p>EL-1Z ERB43-08 EU-2A RD100E-B RD5.6E-B2 RD91E-B RH-1A 1SS106 1S2471 10E2</p> 	<p>1S2837</p> 	<p>U05G V19C V19G</p> 
<p>BA6303F CX20115A TA7733F TC4052BF</p>  <p>(TOP VIEW)</p>	<p>CX20035</p>  <p>(TOP VIEW)</p>	<p>LA7830</p> 	<p>STR50115A</p> 	<p>BUZ-60 BUZ71L BUZ73A</p> 	<p>NJL7141E-S</p> 	<p>2SC2611</p>  <p>letter side</p>	<p>ERB29-04 ERB81-004 ERB93-02 ERC24-06S</p> 	<p>RD9.1EW</p> 	<p>GL-450S</p> 
<p>BX-1457</p> 	<p>CXP5048H-105Q CXP5048H-131Q CXP5058H-085Q</p>  <p>TOP VIEW</p>	<p>LB1616M</p>  <p>Top view</p>	<p>S-8053ALB</p> 	<p>DTA114EK DTA124EK DTA144EK DTA144TK DTA144WK DTC114EK DTC124EK DTC124XK DTC143TK DTC144EK DTC144TK DTC144WK 2SA1122 2SA1122C 2SA812 2SC1623 2SC1623-L7 2SC2712 2SC2712G 2SD596</p> 	<p>2SB1114-ZL 2SD1621 2SD999</p> 	<p>2SC2958</p> 	<p>RD11ES-B3 RD13ES-B2 RD20ES-B3 RD24ES-B RD33ES-B RD3ES-B RD6.8ESB RD7.5ES-B 1SS119</p> 	<p>TF341M-A</p> 	<p>TLG123A TLR123</p> 
<p>CXA1001AP CX-848</p>  <p>(Top view)</p>	<p>CX20013</p>  <p>(Top view)</p>	<p>NJM3403AM TC4025BF TC4066BF μPC324G2</p>  <p>(TOP VIEW)</p>	<p>TA7060AP</p> 	<p>DTA114ES DTC114ES DTC124XS DTC144ES DTC144WS 2SA1048 2SA1048-GR 2SC403SP 2SC634SP</p> 	<p>2SB1258</p> 	<p>2SA812 2SD1134 2SD1266-Q</p> 	<p>E10DS2</p>  <p>1 Anode 2 Cathode 3 NC</p>	<p>1SS123</p> 	<p>PG2222SY-B1 PR2222S-B1 PR2222S-B1-1 PY2222S-B1</p> 

## SECTION 5 EXPLODED VIEWS

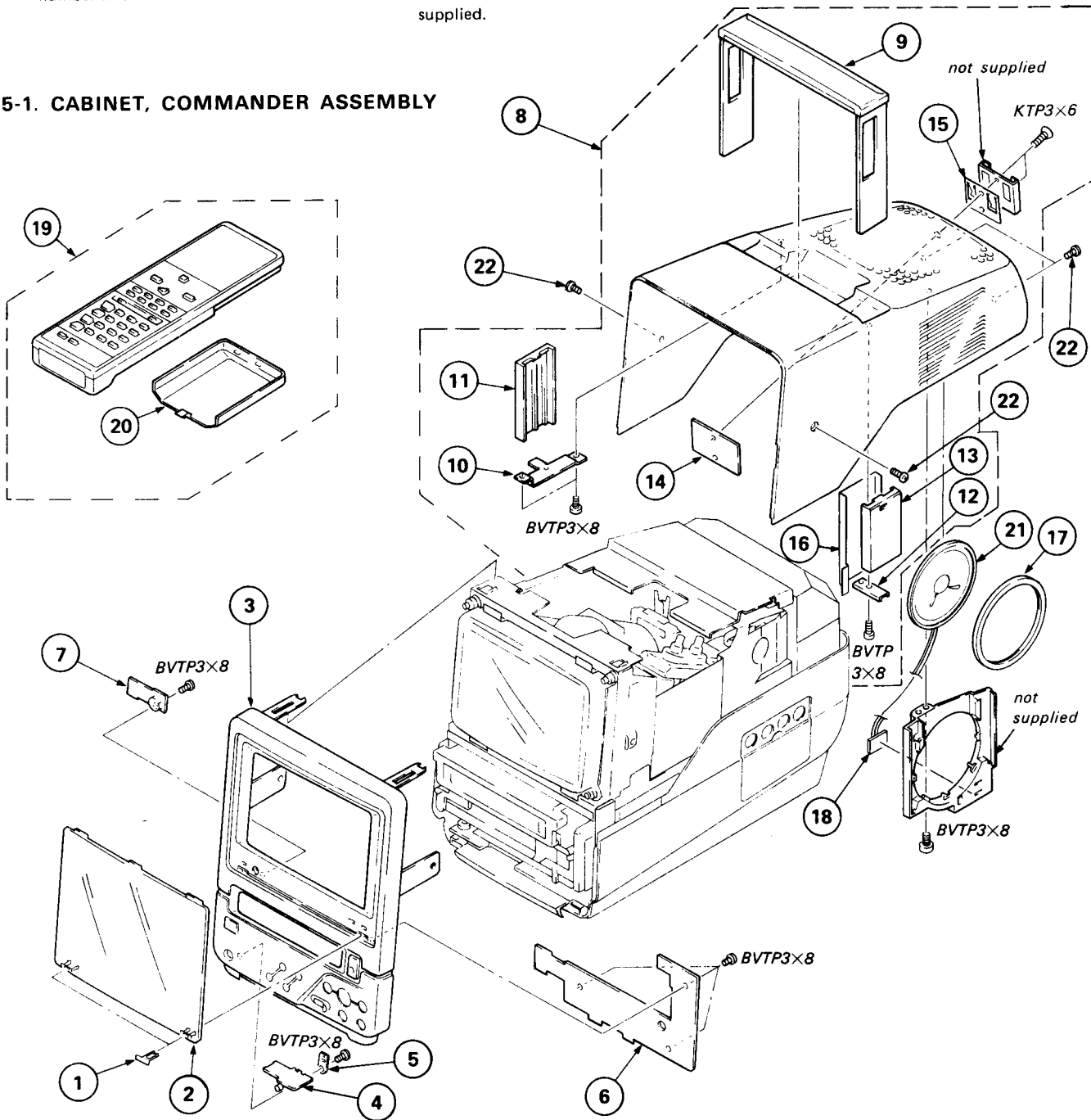
**NOTE:**

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

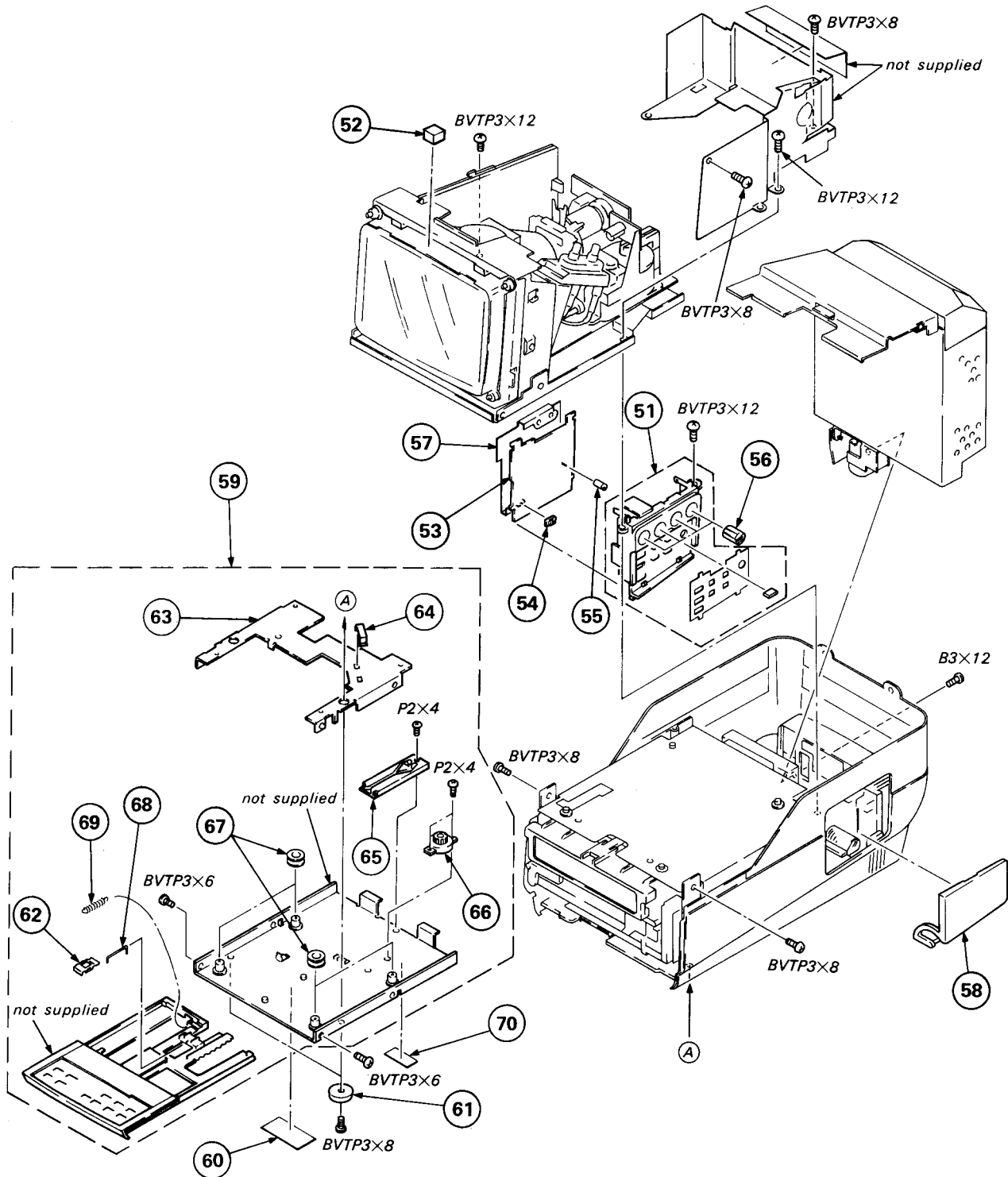
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

### 5-1. CABINET, COMMANDER ASSEMBLY



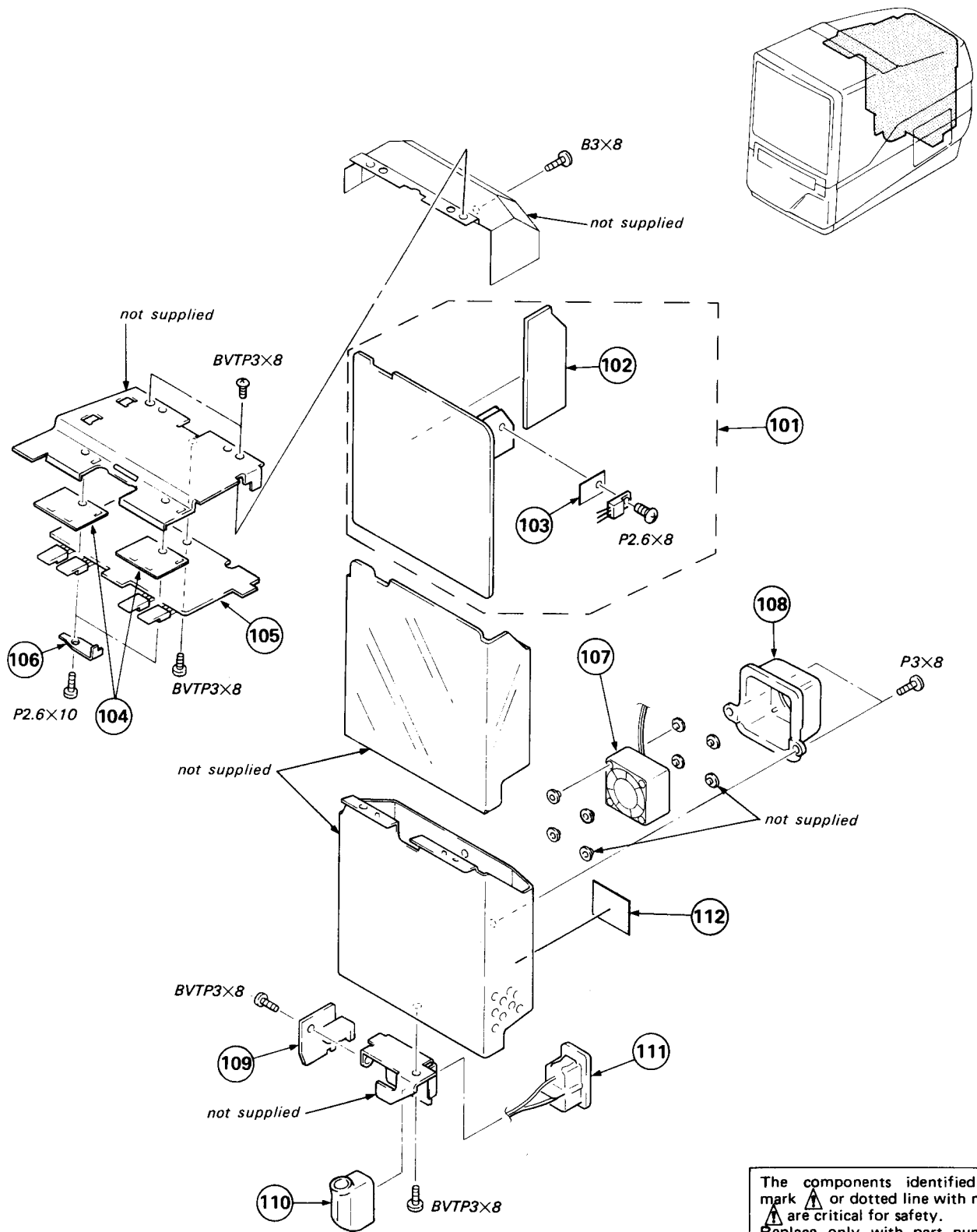
Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
1	3-721-111-01	CLAW, LOCK		12	*3-721-145-01	STOPPER (SP), HANDLE	
2	3-721-132-01	PLATE, FROSTED		13	*3-721-146-01	GUIDE (SP), HANDLE	
3	X-3714-174-1	PANEL ASSY, FRONT		14	*3-721-151-01	RETAINER, HOLDER	
4	*1-623-399-11	EJ-3 BOARD		15	3-721-184-01	SPRING	
5	*3-721-107-01	PLATE, FIXED, EJ		16	*3-721-195-01	SPACER (HA)	
6	A-7070-578-A	FT-31 BOARD, COMPLETE		17	3-721-113-01	RUBBER, SP VIBRATION PROOF	
7	*1-623-400-12	RE-7 BOARD		18	*1-624-484-11	VM-9 BOARD	
8	X-3714-172-1	CABINET ASSY (A), UPPER	9-16	19	A-6767-633-A	COMMANDER ASSY (RMT-443)	20
9	X-3719-428-1	HANDLE ASSY		20	2-357-280-01	COVER, BATTERY	
10	*3-721-148-01	STOPPER (B), HANDLE		21	1-503-898-11	SPEAKER (SP901)	
11	*3-721-147-01	GUIDE (B), HANDLE		22	3-721-187-01	SCREW (3X8)	

## 5-2. CONTROL SWITCH BLOCK



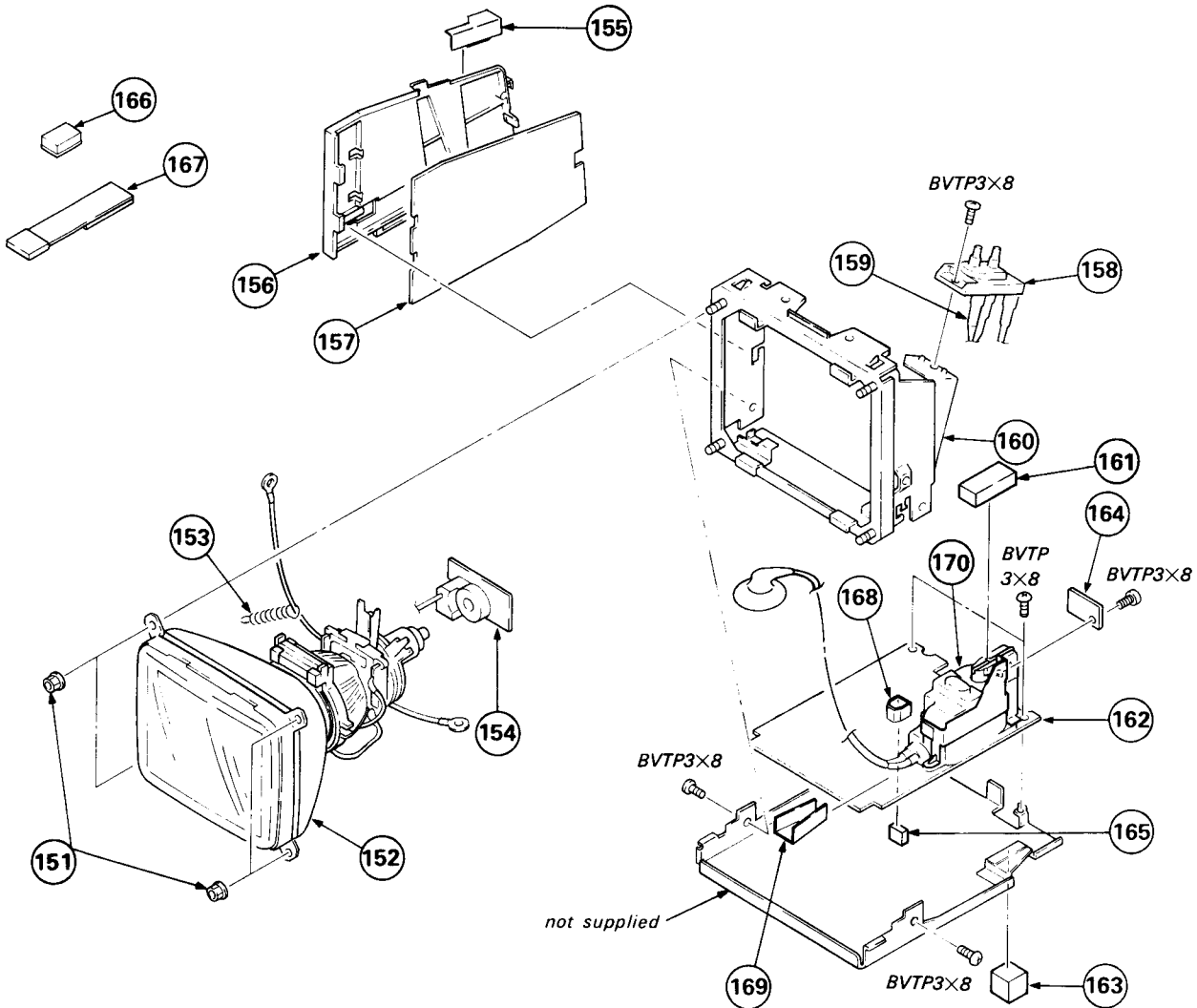
Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
51	X-3714-171-1	PRESET ASSY		61	3-719-597-01	FOOT	
52	3-884-171-00	STOPPER		62	3-724-905-01	SPRING	
53	*A-7070-548-A	PR-19 BOARD, COMPLETE		63	3-724-903-01	FRAME (B)	
54	3-721-117-01	KNOB, SLIDE		64	3-724-906-01	CLAMP	
55	3-721-118-01	KNOB, VTR-VR		65	3-724-909-01	CAM	
56	3-724-915-01	KNOB, TV ADJUSTMENT		66	3-712-786-01	DAMPER, OIL	
57	*3-724-914-01	COVER, PR PC BOARD		67	3-724-908-01	PULLEY	
58	X-3714-163-1	LID ASSY, PRESET		68	3-724-904-01	PIN, LOCK	
59	1-464-904-31	SWITCH BLOCK, CONTROL	62-69	69	3-724-907-01	SPRING, TENSION	
60	*3-721-144-01	LABEL, MODEL NUMBER (WG)		70	*3-704-367-01	LABEL	
	*3-724-933-01	LABEL, MODEL NUMBER (AEP)					
	*3-724-938-01	LABEL, MODEL NUMBER (UK)					

### 5-3. POWER BLOCK ASSEMBLY



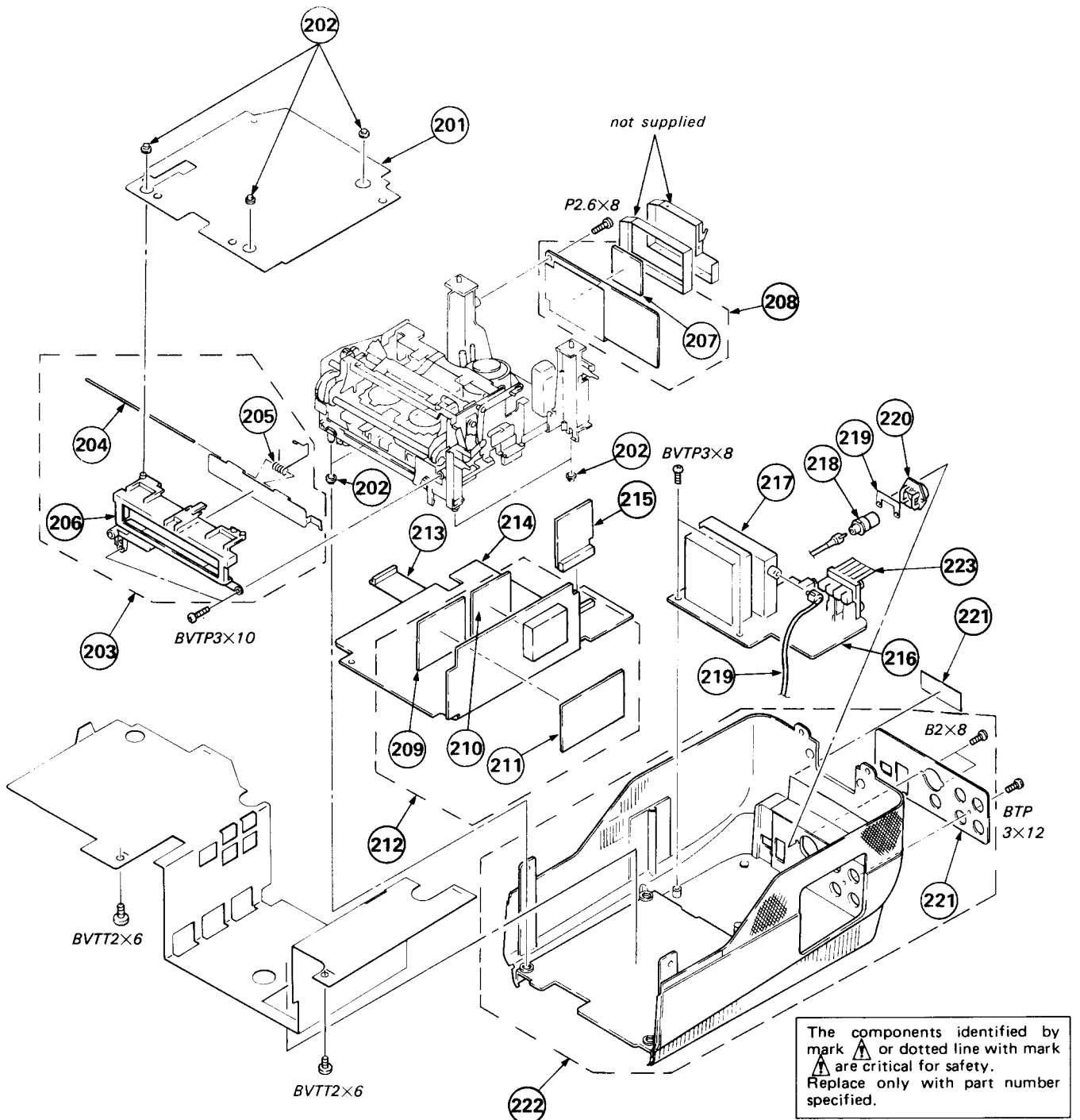
Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
101	*A-7060-990-A	PW-58 BOARD, COMPLETE (AEP, UK MODLE)		106	3-719-594-01	RETAINER, TRANSISTOR	
	*A-7061-237-A	PW-58 BOARD, COMPLETE (WG MODEL)		107	⚠.1-541-562-11	MOTOR, DC FAN (SJ-40A12C) (M905)	
			102, 103	108	*3-721-157-01	COVER, FAN	
102	*A-7070-631-A	PK-15 BOARD, COMPLETE		109	*1-625-499-11	DC-8 BOARD	
103	3-719-591-01	SHEET (SMALL), SILICON		110	3-659-969-21	COVER, SWITCH	
104	3-721-104-01	SHEET (A), SILICON		111	⚠.1-561-867-00	INLET 2P	
105	*A-7060-991-A	PW-59 BOARD, COMPLETE		112	*3-724-902-01	LABEL, FUSE RATING	

## 5-4. TV BLOCK ASSEMBLY



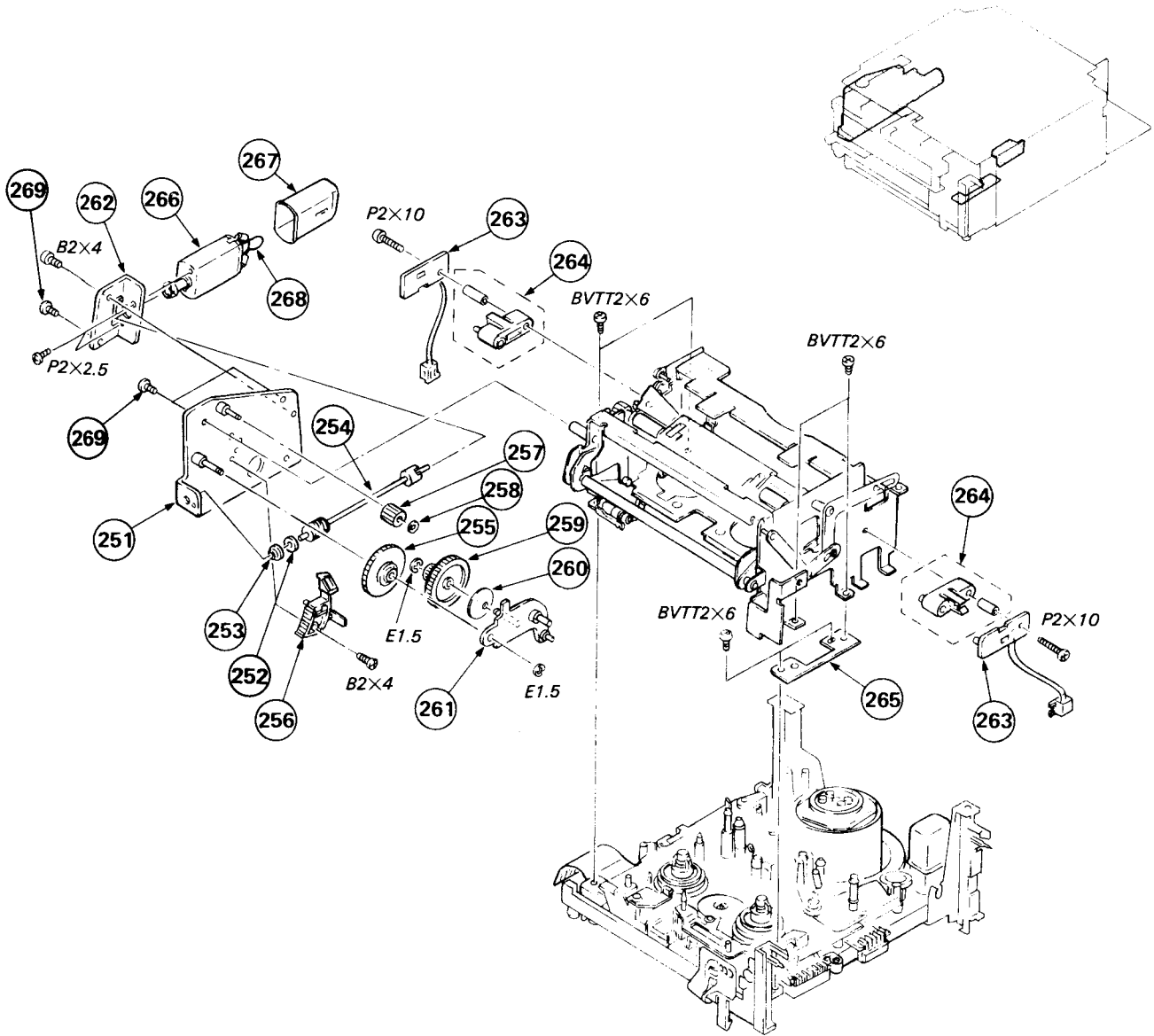
Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
151	4-304-511-00	FLANGE NUT, 5MM		161	*3-721-189-01	COVER, FBT	
152	⚠.8-733-921-71	PICTURE TUBE (A13JZV00X)		162	*A-7060-988-A	TD-8 BOARD, COMPLETE	168
153	*4-380-539-01	SPRING, TENSION		163	*3-721-185-01	RETAINER, PC BOARD	
154	*A-7060-989-A	TC-9 BOARD, COMPLETE		164	*A-7070-547-A	LC-8 BOARD, COMPLETE	
155	*3-724-916-01	COVER (PAL), VOL		165	*3-716-605-01	SPACER, RUBBER	
156	*3-721-128-02	HOLDER, B7 BOARD		166	1-452-126-11	MAGNET	
157	*A-7060-987-A	TB-8 BOARD, COMPLETE		167	4-380-538-01	PERMALLOY ASSY, CONVERGENCE	
158	⚠.1-237-624-12	RESISTOR ASSY, HIGH-VOLTAGE (FVR)		168	*X-3714-168-1	COVER ASSY, HDT	
159	3-707-276-01	HOLDER, LEAD		169	*3-721-190-01	COVER, ANODE LEAD	
160	*3-721-143-02	BRACKET, CRT		170	⚠1-439-411-11	TRANSFORMER ASSY, FLYBACK	

### 5-5. MAIN BOARDS ASSEMBLY



Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
201	*X-3714-180-1	COVER ASSY (PAL), MD		213	A-7070-249-A	FP-20 FLEXIBLE BOARD	
202	3-721-102-01	RUBBER, VIBRATION PROOF		214	*A-7060-978-A	MA-25 BOARD, COMPLETE	213
203	X-3714-181-1	WINDOW ASSY (PAL)	204-206	215	*A-7061-009-A	AF-38 BOARD, COMPLETE	
204	*3-713-490-01	SHAFT, DOOR		216	*A-7061-234-A	TI-14 BOARD, COMPLETE (UK MODEL)	
205	3-721-174-01	SPRING, TORSION			*A-7060-995-A	TI-14 BOARD, COMPLETE (AEP, WG MODEL)	
206	3-721-131-01	WINDOW, CASSETTE COMPARTMENT		217	⚠.1-463-907-11	TUNER, ET (BT-883S) (TU-601)	
207	A-7068-096-A	RP-34 BOARD, COMPLETE		218	1-563-204-11	SOCKET, ANTENNA (PAL/SECAM)	
208	*A-7060-985-A	MR-9 BOARD, COMPLETE	207	219	*3-724-923-01	BRACKET, IEC	
209	A-7068-103-A	VY-9 BOARD, COMPLETE		220	*3-724-924-01	HOLDER, IEC	
210	A-7068-100-A	VD-6 BOARD, COMPLETE		221	*3-724-928-01	LABEL (WG), CAR BATTERY CORD (WG MODEL)	
211	A-7068-102-A	VC-11 BOARD, COMPLETE		222	X-3714-173-1	CABINET ASSY (A), LOWER	219, 220
212	*A-7060-996-A	MV-8 BOARD, COMPLETE	209-211	223	3-724-925-01	PLATE, GROUND	

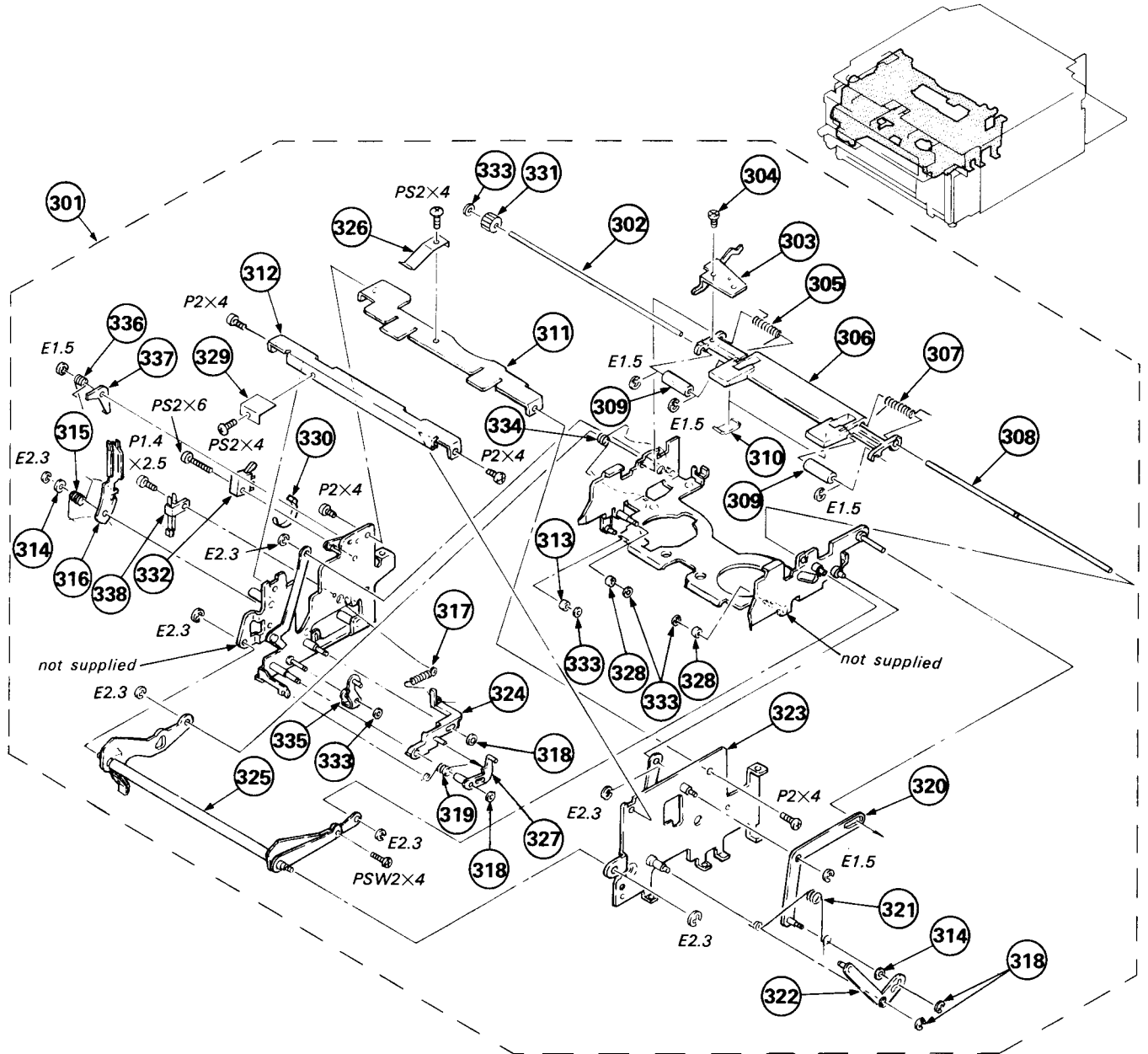
## 5-6. CASSETTE COMPARTMENT ASSEMBLY 1



No.	Part No.	Description
251	*X-3711-934-1	PLATE SUB ASSY, BLOCK
252	3-701-437-11	WASHER
253	3-713-439-01	BEARING
254	X-3711-935-3	SHAFT ASSY, WORM
255	3-713-433-01	GEAR (A)
256	3-724-913-01	RACK
257	3-713-452-01	GEAR (C)
258	3-669-465-00	WASHER (1.5), STOPPER
259	3-713-430-01	GEAR (B)
260	*3-713-441-01	SPRING, LEAF

No.	Part No.	Description	Remark
261	X-3711-933-2	LEVER ASSY, GEAR	
262	*3-713-431-01	BRACKET, MOTOR	
263	*1-624-490-11	TS-83 BOARD	
264	*X-3686-592-1	HOLDER ASSY, SV END	
265	*3-713-422-01	BRACKET	
266	X-3711-936-1	MOTOR ASSY, FL (CASSETTE LOADING) (M904)	
267	*3-686-757-01	CAP, SHIELD, L MOTOR	
268	1-161-057-00	CAP, CERAMIC 0.033MF X	
269	3-719-696-11	SCREW (M2X4.5), SPECIAL HEAD	

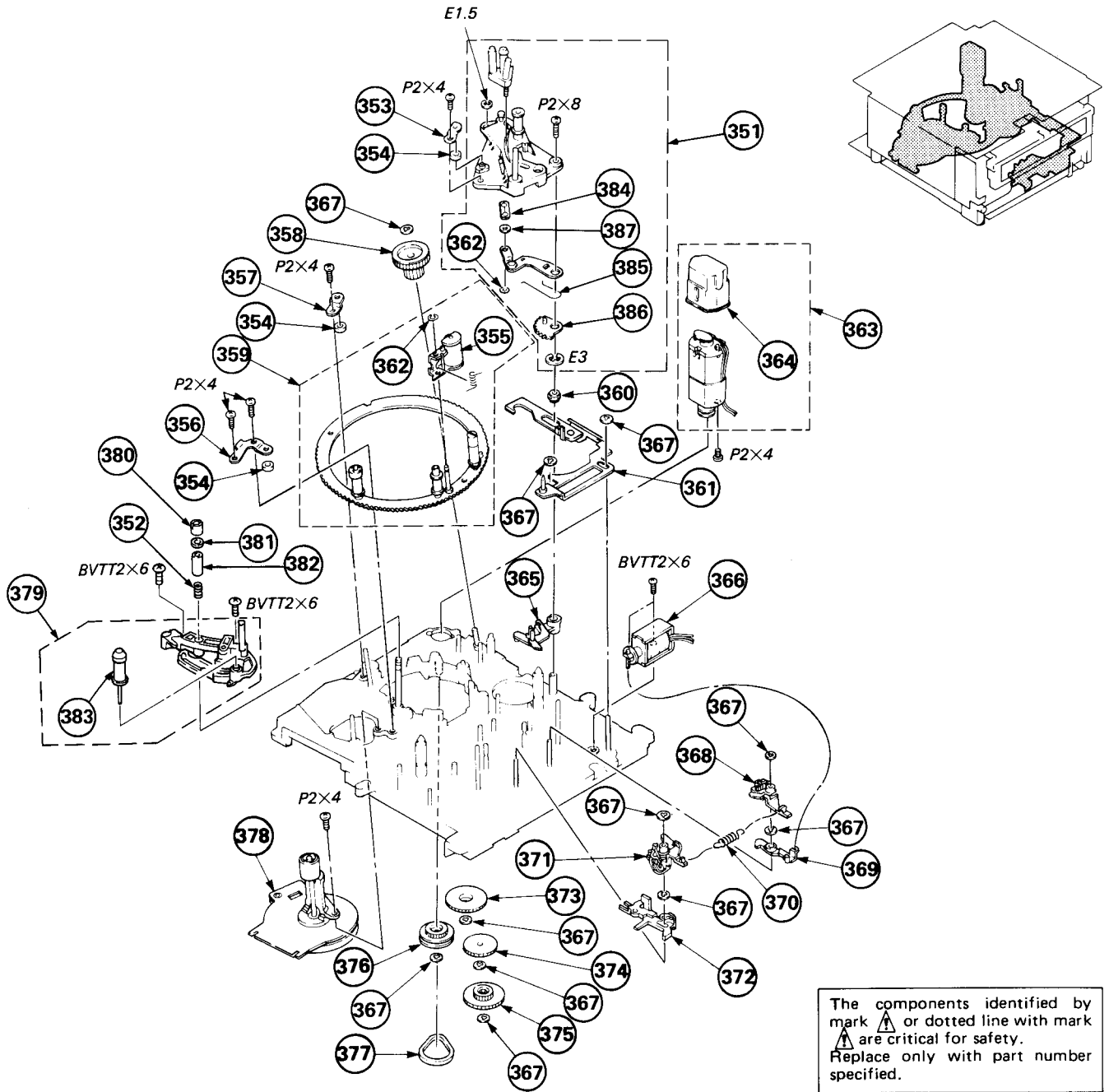
## 5-7. CASSETTE COMPARTMENT ASSEMBLY 2



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	A-7090-645-A	CASSETTE COMPARTMENT BLOCK ASSY 302-338		320	X-3711-930-1	LEVER ASSY, HOLDER	
302	*3-713-440-01	SHAFT, ROLLER		321	3-713-628-01	SPRING, TORSION	
303	3-724-912-01	PLATE, FUNCTION, LEVER		322	X-3711-931-4	LEVER ASSY, DOOR	
304	3-713-622-01	SCREW (M1.3X4), TAPPING, 0		323	*X-3711-932-1	PLATE (R) ASSY, SIDE	
305	3-713-445-01	SPRING (LEFT)		324	3-721-136-01	SLIDER, LOCK	
306	3-713-626-01	COVER, MULTI		325	*X-3711-937-1	JOINT ASSY	
307	3-713-442-01	SPRING (RIGHT)		326	3-713-658-01	SPRING	
308	*3-713-457-01	SHAFT, JOINT		327	3-686-692-01	PREVENTION, SLIDER	
309	3-713-466-01	ROLLER		328	3-719-590-01	ROLLER, ASSIST	
310	3-713-625-01	SHOE, BRAKE		329	3-716-921-01	SPRING, LEAF	
311	*3-713-462-01	STOPPER, HOLDER		330	*3-337-402-01	BAND, BINDING	
312	*3-713-458-01	REINFORCEMENT		331	3-713-429-01	GEAR (D)	
313	*3-686-693-01	ROLLER, LOCK		332	1-570-407-11	SWITCH, SLIDE (CASSETTE LOADING) (S901)	
314	3-533-073-01	WASHER		333	3-578-265-11	WASHER, STOPPER	
315	3-713-488-01	SPRING (2), TORSION		334	3-713-620-01	SPRING (1), TORSION	
316	3-721-125-01	LEVER, LOCK		335	*X-3686-541-1	CLAW ASSY, LOCK	
317	3-696-047-01	SPRING, TENSION		336	3-721-163-01	SPRING	
318	3-669-465-00	WASHER (1.5), STOPPER		337	3-721-166-01	LEVER, SWITCH	
319	3-686-694-01	SPRING, TORSION		338	1-553-226-00	SWITCH, LEAF (CASSETTE LOCK) (S903)	

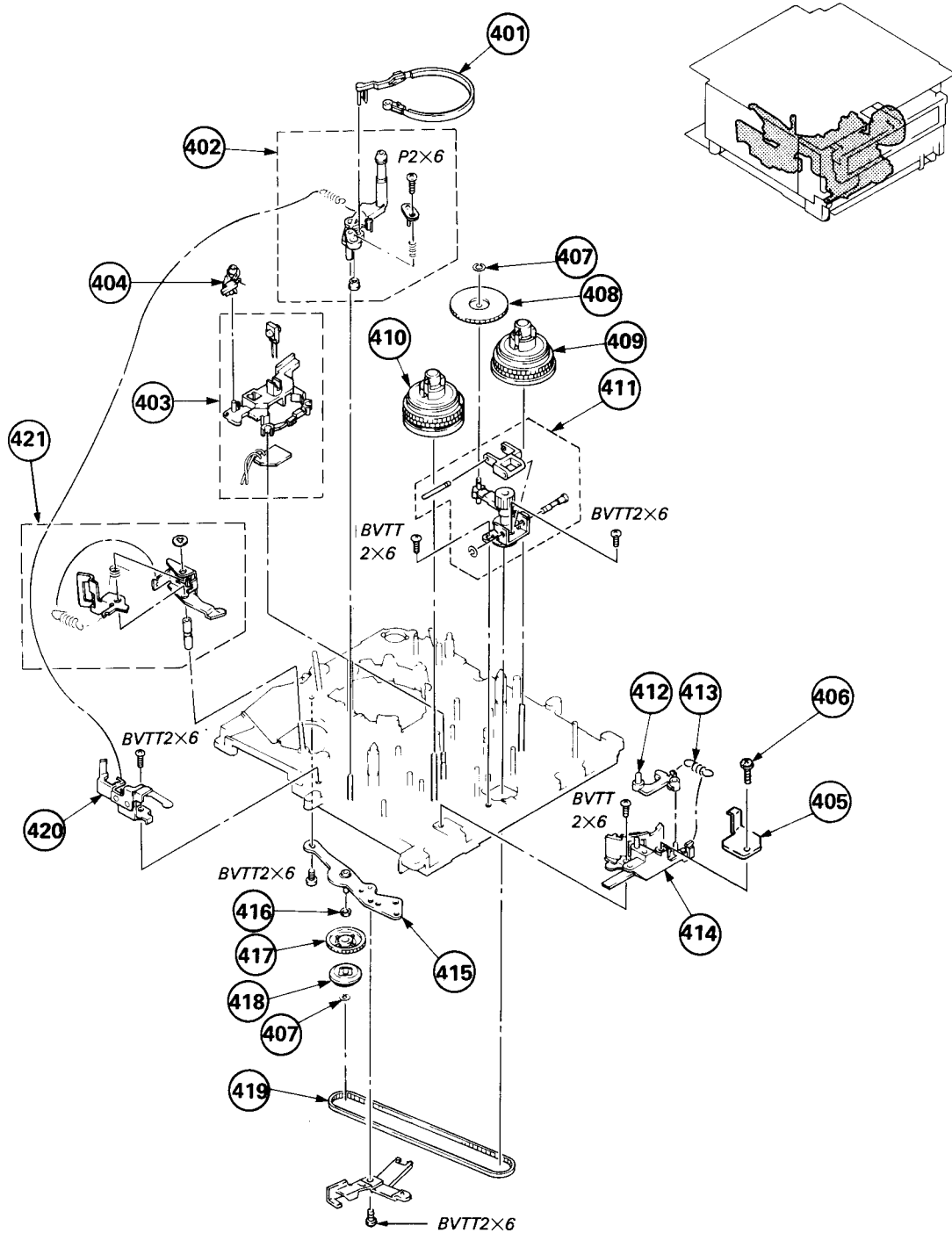


# 5-8. CHASSIS ASSEMBLY 1



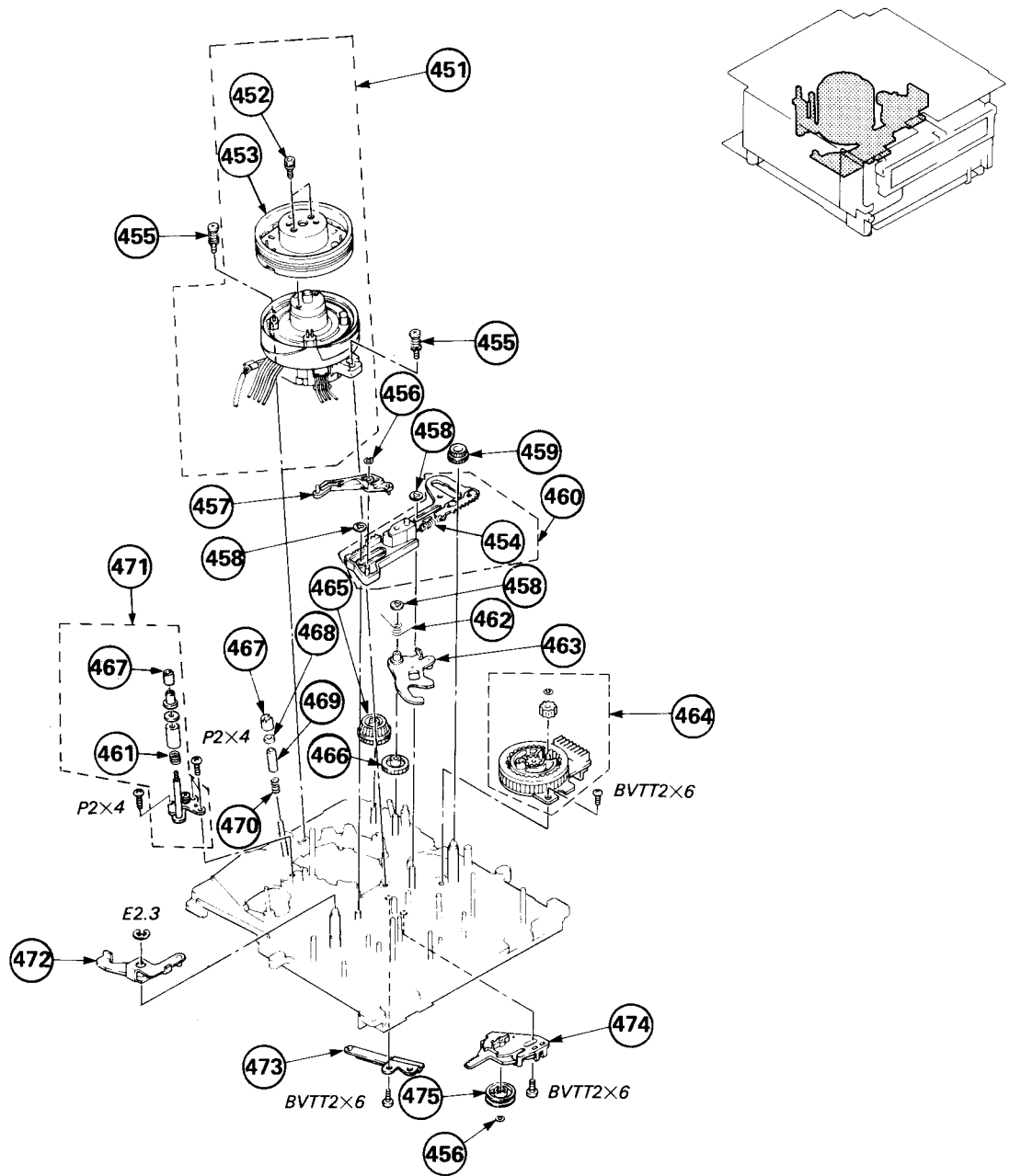
Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
351	A-7040-001-A	GUIDE BLOCK ASSY, SLANT	362, 384-387	370	3-686-882-01	SPRING, TENSION	
352	3-699-609-01	SPRING, COMPRESSION		371	X-3711-991-1	BRAKE ASSY, S MAIN	
353	*3-686-503-01	RETAINER, ROLLER		372	*3-686-629-01	SLIDER, SELECTION, UPPER & LOWER	
354	3-697-538-01	ROLLER, RING		373	3-686-508-01	GEAR, NO.2	
355	X-3686-648-1	ARM ASSY, PINCH ROLLER		374	3-686-545-01	GEAR, NO.3	
356	*3-686-675-01	STOPPER, RING		375	3-686-544-01	GEAR, NO.4	
357	*3-686-911-01	PLATE, TOP, ROLLER		376	X-3686-514-1	GEAR ASSY, NO.1	
358	3-697-518-01	GEAR, NO.10		377	3-686-546-01	BELT, L- MOTOR	
359	A-7040-007-A	RING ASSY, LOADING	355, 362	378	8-835-196-01	MOTOR, DC BHF-2802A (CAPSTAN) (M902)	
360	3-686-537-01	RETAINER, LOCK SLODER		379	A-7040-054-A	GUIDE (P) ASSY, ENTRANCE	383
361	A-7040-103-A	SLIDER ASSY, LOCK		380	3-686-724-01	NUT, GUIDE	
362	3-315-384-31	WASHER, STOPPER		381	*3-686-894-01	FLANGE, #3 #4 GUIDE	
363	A-7040-031-A	MOTOR ASSY, L (LOADING) (M903)	364	382	3-686-912-01	GUIDE, #3 #4	
364	*3-686-757-01	CAP, SHIELD, L MOTOR		383	X-3686-676-1	GUIDE ASSY, #2	
365	*3-686-636-04	ARM, T.S RELEASE		384	3-686-663-01	WASHER, STOPPER, 2 GANG	
366	⚠.1-454-377-21	SOLENOID, PLUNGER (BRAKE) (PM901)		385	3-686-701-01	SPRING	
367	3-669-465-00	WASHER (1.5), STOPPER		386	3-699-509-01	GEAR, SECTOR	
368	X-3686-574-1	BRAKE ASSY, MAIN, TAKE-UP		387	3-701-436-21	WASHER, POLYETHYLENE	
369	*3-686-635-01	ARM, P					

## 5-9. CHASSIS ASSEMBLY 2



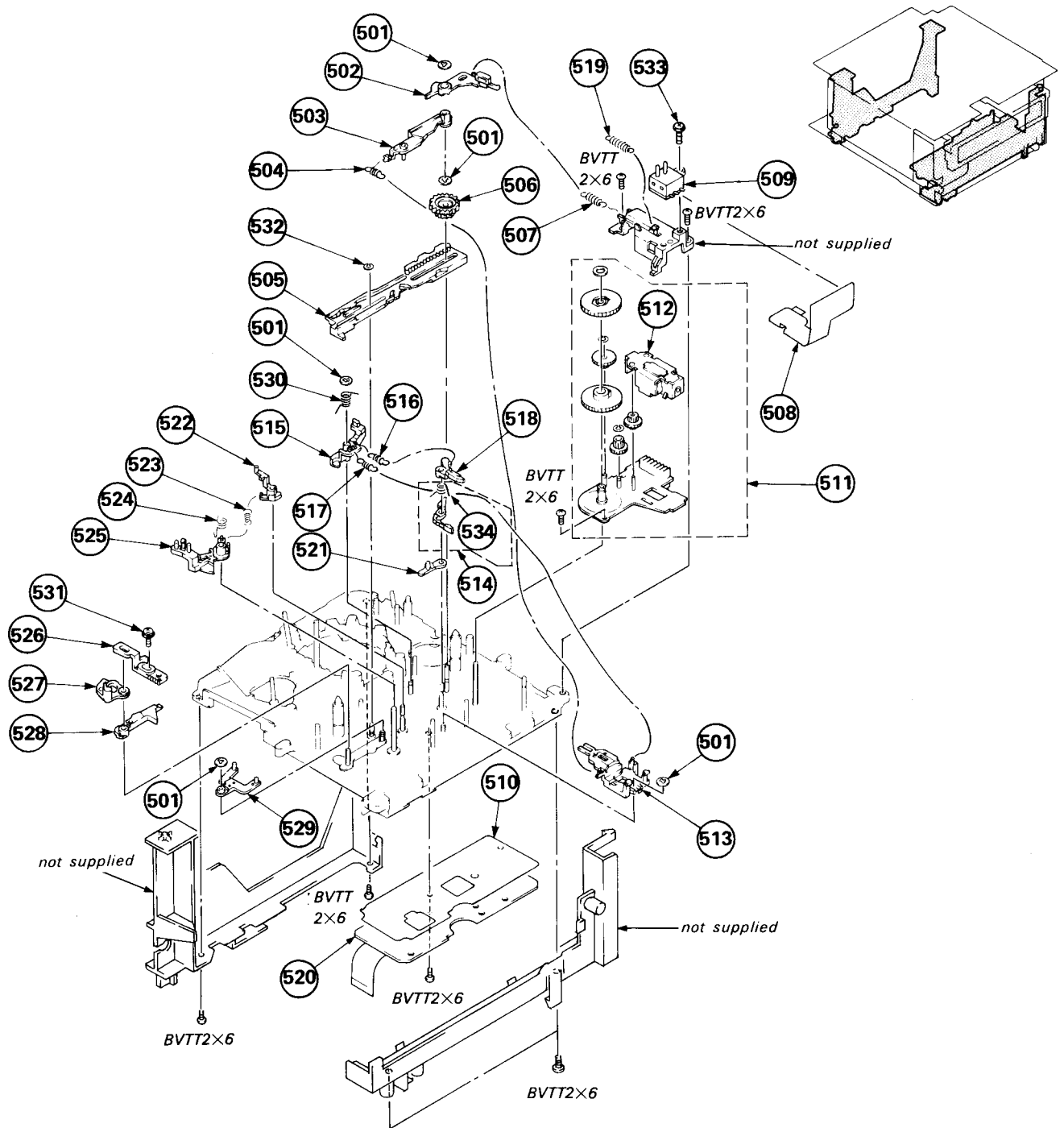
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
401	X-3686-531-1	BAND ASSY, TENSION REGULATOR		412	*3-686-637-01	BRAKE (S), SOFT	
402	A-7040-059-A	ARM ASSY, TENSION REGULATOR		413	3-714-014-01	SPRING, TENSION	
403	*A-7070-024-A	LD-1 BOARD, COMPLETE		414	*3-686-760-01	GUIDE, BAND	
404	X-3686-590-1	BRAKE ASSY, REV		415	*X-3686-529-1	BASE ASSY, CHANGE GEAR	
405	*3-686-991-01	STOPPER, REEL TABLE		416	3-701-436-11	WASHER, 1.6 POLYETHYLENE	
406	3-669-480-11	+ PTPWH 2		417	X-3686-520-1	GEAR ASSY, CHANGE	
407	3-315-384-31	WASHER, STOPPER		418	*3-686-596-01	FLANGE, GEAR	
408	X-3686-763-1	GEAR (B) ASSY, DRIVING		419	3-686-646-01	BELT, TIMING	
409	X-3686-572-2	TABLE ASSY, REEL, TAKE-UP		420	*X-3686-525-1	HOOK ASSY, SPRING	
410	X-3686-571-2	TABLE ASSY, REEL, SUPPLY		421	A-7040-008-A	ARM ASSY, PINCH PRESS	
411	X-3686-750-1	DRIVING COMPLETE ASSY					

5-10. CHASSIS ASSEMBLY 3



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
451	A-7048-164-A	DRUM ASSY (DGH-04D-R)	452, 453	464	X-3712-403-1	L-SW ASSY	
452	3-686-403-02	SCREW (2X5), BOLT WASHER		465	3-686-539-01	GEAR, NO.9	
453	A-7049-087-A	DRUM ASSY, ROTARY UPPER (DGR-04D-R)		466	3-686-535-01	GEAR, NO.8	
454	3-686-886-01	SPRING, TENSION		467	3-686-724-01	NUT, GUIDE	
455	X-3686-569-1	SCREW ASSY, FITTING		468	*3-686-894-01	FLANGE, #3 #4 GUIDE	
456	3-315-384-31	WASHER, STOPPER		469	3-686-912-11	GUIDE, #3 #4	
457	*X-3686-518-3	ARM ASSY		470	3-699-609-01	SPRING, COMPRESSION	
458	3-669-465-00	WASHER (1.5), STOPPER		471	A-7040-058-A	GUIDE BLOCK COMPLETE ASSY, #5	461, 467
459	3-686-702-01	GEAR, DRIVING, GUIDE, SLANT		472	*X-3686-509-1	LEVER ASSY, PINCH PRESS	
460	*A-7040-010-A	SLIDER ASSY, L	454	473	1-535-535-11	TERMINAL, SHAFT GROUND	
461	3-699-514-01	SPRING, COMPRESSION		474	X-3686-521-1	BASE ASSY, IDLER	
462	3-686-540-01	SPRING, TORSION		475	X-3686-522-1	IDLER ASSY	
463	X-3686-579-1	CHANGE ASSY, DRIVE					

5-11. CHASSIS ASSEMBLY 4



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
501	3-669-465-00	WASHER (1.5), STOPPER		518	X-3686-510-1	BRAKE ASSY, REW	
502	X-3711-987-2	BRAKE ASSY, T.S		519	3-699-650-01	SPRING, TENSION	
503	*X-3686-528-4	ARM ASSY, B RELEASE		520	*A-7060-343-A	RS-18 BOARD, COMPLETE	
504	3-686-903-01	SPRING, TENSION		521	*3-686-580-01	ARM, SET UP	
505	*3-686-657-11	SLIDER, M		522	3-686-996-01	BRAKE (S), HARD	
506	3-686-909-01	GEAR, MODE OUTPUT		523	3-686-905-02	SPRING, TENSION	
507	3-699-649-01	SPRING, TENSION		524	3-686-603-04	SPRING	
508	1-619-921-11	FP-19 FLEXIBLE BOARD		525	*3-686-644-01	ARM, BAND	
509	1-554-942-11	SWITCH, PUSH (RECOG) (S902)		526	*3-686-642-01	PLATE, ADJUSTMENT, BAND	
510	3-712-411-01	INSULATOR, RS		527	*3-686-755-01	DISK, EJECT	
511	A-7090-029-A	M-SW ASSY	512	528	*3-686-643-01	ARM, MODE	
512	8-835-138-01	MOTOR, DC (DNR-5301B) (CONTROL) (M906)		529	*X-3686-530-1	ARM (A) ASSY, SELECTION	
513	*3-686-656-01	SLIDER, B RELEASE		530	3-686-579-01	SPRING	
514	A-7040-016-D	ARM ASSY, RVS	534	531	3-686-528-01	SCREW (2X6), +	
515	*3-686-634-01	ARM, RL		532	3-315-384-31	WASHER, STOPPER	
516	3-686-906-01	SPRING, TENSION		533	3-669-480-11	+ PTPWH 2	
517	3-686-904-01	SPRING, TENSION		534	3-686-617-01	SPRING	

SECTION 6  
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms  
METAL : Metal-film resistor  
METAL OXIDE : Metal Oxide-film resistor  
F : nonflammable
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, U :  $\mu$ , for example:  
UA...:  $\mu$ A..., UPA...:  $\mu$ PA...,  
UPB...:  $\mu$ PB..., UPC...:  $\mu$ PC...,  
UPD...:  $\mu$ PD...
- CAPACITORS  
MF :  $\mu$ F, PF :  $\mu$  $\mu$ F
- COILS  
MMH : mH, UH :  $\mu$ H

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
*A-7060-978-A	MA-25 BOARD, COMPLETE	*****		C212	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
3-712-106-01	REINFORCEMENT (333)			C213	1-135-091-00	TANTAL. CHIP 1MF	20% 16V
	CAPACITOR			C214	1-126-157-11	ELECT 10MF	20% 16V
C001	1-163-103-00	CERAMIC CHIP 27PF	5% 50V	C215	1-126-157-11	ELECT 10MF	20% 16V
C002	1-163-109-00	CERAMIC CHIP 47PF	5% 50V	C217	1-126-157-11	ELECT 10MF	20% 16V
C003	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	C218	1-124-967-11	ELECT 10MF	20% 10V
C004	1-163-077-00	CERAMIC CHIP 0.1MF	5% 50V	C219	1-124-499-11	ELECT 1MF	20% 50V
C005	1-163-101-00	CERAMIC CHIP 22PF	5% 50V	C220	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V
C006	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C221	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C007	1-126-153-11	ELECT 22MF	20% 6.3V	C222	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C008	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C223	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C009	1-163-989-11	CERAMIC CHIP 0.033MF	10% 25V	C224	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C010	1-163-989-11	CERAMIC CHIP 0.033MF	10% 25V	C225	1-126-157-11	ELECT 10MF	20% 16V
C011	1-135-096-21	TANTAL. CHIP 4.7MF	20% 10V	C226	1-126-094-11	ELECT 4.7MF	20% 16V
C012	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C227	1-124-465-00	ELECT 0.47MF	20% 50V
C014	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C228	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C015	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	C230	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C016	1-163-109-00	CERAMIC CHIP 47PF	5% 50V	C301	1-126-157-11	ELECT 10MF	20% 16V
C018	1-163-035-00	CERAMIC CHIP 0.047MF	50V	C302	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C019	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C303	1-124-229-00	ELECT 33MF	20% 10V
C030	1-124-589-11	ELECT 47MF	20% 10V	C304	1-124-229-00	ELECT 33MF	20% 10V
C031	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C306	1-124-499-11	ELECT 1MF	20% 50V
C033	1-125-507-11	DOUBLE LAYERS 0.22MF	5.5V	C307	1-126-151-11	ELECT 4.7MF	20% 16V
C034	1-125-507-11	DOUBLE LAYERS 0.22F	5.5V	C308	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C037	1-163-103-00	CERAMIC CHIP 27PF	5% 50V	C309	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C038	1-163-103-00	CERAMIC CHIP 27PF	5% 50V	C310	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C039	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	C311	1-126-157-11	ELECT 10MF	20% 16V
C040	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C312	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C041	1-135-099-00	TANTAL. CHIP 2.2MF	20% 6.3V	C314	1-124-499-11	ELECT 1MF	20% 50V
C045	1-163-482-91	CERAMIC CHIP 47PF	5% 50V	C315	1-124-472-11	ELECT 470MF	20% 10V
C052	1-163-021-00	CERAMIC CHIP 0.01MF	50V	C316	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C053	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	C401	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C054	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	C402	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C080	1-163-129-00	CERAMIC CHIP 330PF	10% 50V	C403	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C081	1-124-589-11	ELECT 47MF	20% 10V	C404	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C082	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C407	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C083	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C408	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V
C085	1-127-506-00	ELECT(SOLID) 1MF	20% 25V	C409	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
C087	1-163-055-00	CERAMIC CHIP 0.0047MF	10% 50V	C410	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C088	1-163-055-00	CERAMIC CHIP 0.0047MF	10% 50V	C411	1-126-153-11	ELECT 22MF	20% 6.3V
C202	1-136-157-00	MYLAR 0.022MF	10% 50V	C412	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C203	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	C418	1-126-153-11	ELECT 22MF	20% 6.3V
C204	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	C419	1-163-035-00	CERAMIC CHIP 0.047MF	50V
C205	1-126-157-11	ELECT 10MF	20% 16V	C420	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C206	1-124-279-11	ELECT 3.3MF	20% 25V	C421	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C207	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	C422	1-130-481-00	MYLAR 0.0068MF	10% 50V
C208	1-126-157-11	ELECT 10MF	20% 16V	C423	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C209	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	C424	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C210	1-126-157-11	ELECT 10MF	20% 16V	C426	1-124-255-00	ELECT 1MF	20% 50V
C211	1-135-092-21	TANTAL. CHIP 3.3MF	20% 16V	C428	1-126-153-11	ELECT 22MF	20% 6.3V
				C429	1-163-038-00	CERAMIC CHIP 0.1MF	25V
				C430	1-124-767-00	ELECT 2.2MF	20% 50V

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C431	1-163-038-00	CERAMIC CHIP 0.1MF	25V	D205	8-719-100-03	DIODE 1S2835	
C432	1-124-499-11	ELECT 1MF	20% 50V	D301	8-719-200-27	DIODE E100S2	
C433	1-124-464-11	ELECT 0.22MF	20% 50V	D401	8-719-100-05	DIODE 1S2837	
C435	1-163-113-00	CERAMIC CHIP 68PF	5% 50V	D403	8-719-801-41	DIODE 1SS196	
C438	1-163-021-00	CERAMIC CHIP 0.01MF	50V			<u>DELAY LINE</u>	
C439	1-163-038-00	CERAMIC CHIP 0.1MF	25V	DL201	1-415-517-11	DELAY LINE, DUAL 1H-2H	
C440	1-130-481-00	MYLAR 0.0068MF	10% 50V			<u>FERRITE BEAD</u>	
		<u>FILTER</u>		F8003	1-410-397-21	FERRITE BEAD INDUCTOR	
CF001	1-567-346-11	OSCILLATOR, CERAMIC				<u>FILTER</u>	
CF002	1-567-346-11	OSCILLATOR, CERAMIC					
		<u>CONNECTOR</u>		FL401	1-235-612-21	BPF	
CN208	*1-564-001-11	PIN, CONNECTOR 2P		FL402	1-235-611-21	BPF	
CN301	1-562-887-11	CONNECTOR, F.P.C 20P				<u>IC</u>	
CN302	*1-564-012-00	PIN, CONNECTOR 2P		IC001	8-752-804-73	IC CXP5048H-131Q	
CN303	*1-564-001-11	PIN, CONNECTOR 2P		IC002	8-752-803-74	IC CXP5048H-105Q	
CN304	*1-564-014-00	PIN, CONNECTOR 4P		IC003	8-752-804-74	IC CXP5058H-085Q	
CN306	1-564-098-00	CONNECTOR, BOARD TO BOARD 8P		IC004	8-759-803-25	IC CXK1006L	
CN307	1-564-610-31	CONNECTOR, BOARD TO BOARD		IC005	8-759-941-78	IC S-8053ALB	
CN308	*1-506-979-21	CONNECTOR, BOARD TO BOARD 13P		IC006	8-759-100-93	IC UPC393G2	
CN309	1-506-978-11	CONNECTOR, BOARD TO BOARD 6P		IC007	8-759-946-03	IC S-8054ALR	
CN312	*1-564-015-00	PIN, CONNECTOR 5P		IC008	8-759-913-67	IC MB3763P	
CN313	*1-564-012-00	PIN, CONNECTOR 2P		IC009	8-759-109-63	IC UPD6142C-501	
CN321	*1-564-014-00	PIN, CONNECTOR 4P		IC012	8-759-100-93	IC UPC393G2	
CN323	*1-564-008-00	PIN, CONNECTOR 9P		IC201	8-759-107-68	IC CX20115A	
CN324	*1-564-016-00	PIN, CONNECTOR 6P		IC202	8-759-100-95	IC UPC324G2	
CN325	*1-564-018-11	PIN, CONNECTOR 8P		IC203	8-759-925-66	IC BA6303F	
CN326	*1-564-016-00	PIN, CONNECTOR 6P		IC204	8-759-202-45	IC CX20114	
CN327	*1-564-006-11	PIN, CONNECTOR 7P		IC205	8-759-201-01	IC TC4066BF	
CN328	*1-564-005-00	PIN, CONNECTOR 6P		IC301	8-759-802-79	IC LB1616M	
CN331	1-565-052-11	CONNECTOR, FC 22P		IC302	8-759-100-95	IC UPC324G2	
CN332	*1-506-744-11	PIN, CONNECTOR 15P		IC303	8-759-201-01	IC TC4066BF	
		<u>TRIMMER</u>		IC304	8-759-201-00	IC TC4052BF	
CV001	1-141-311-11	CAP, VAR, TRIMMER (CHIP) 20P		IC305	8-759-100-94	IC UPC358G2	
CV002	1-141-359-51	CAP, VAR, TRIMMER (CHIP) 50P		IC401	8-752-003-50	IC CX20035	
		<u>DIODE</u>		IC402	8-759-939-69	IC MB675121UPF	
D001	8-719-100-05	DIODE 1S2837		IC403	8-759-928-56	IC CXA1042M	
D002	8-719-101-23	DIODE 1SS123		IC404	8-759-201-01	IC TC4066BF	
D003	8-719-100-03	DIODE 1S2835				<u>COIL</u>	
D007	8-719-801-41	DIODE 1SS196		L001	1-408-987-21	INDUCTOR 330UH	
D008	8-719-801-41	DIODE 1SS196		L002	1-408-987-21	INDUCTOR 330UH	
D009	8-719-200-02	DIODE 10E-2		L006	1-408-982-11	INDUCTOR 100UH	
D010	8-719-100-38	DIODE RD6.2E-B		L007	1-410-945-41	INDUCTOR CHIP 18UH	
D011	8-719-100-38	DIODE RD6.2E-B		L050	1-408-982-11	INDUCTOR 100UH	
D012	8-719-801-41	DIODE 1SS196		L201	1-408-978-21	INDUCTOR 47UH	
D013	8-719-100-38	DIODE RD6.2E-B		L401	1-408-978-21	INDUCTOR 47UH	
D038	8-719-995-12	DIODE HZ5BLLTP		L402	1-408-987-21	INDUCTOR 330UH	
D201	8-719-101-23	DIODE 1SS123		L403	1-408-978-21	INDUCTOR 47UH	
D204	8-719-100-03	DIODE 1S2835		L404	1-408-989-21	INDUCTOR 470UH	

When indicating parts by reference number, please include the board name.

# MA-25

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>TRANSISTOR</u>				R009	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q001	8-729-903-30	TRANSISTOR DTC144TK		R011	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q002	8-729-903-30	TRANSISTOR DTC144TK		R012	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q003	8-729-903-30	TRANSISTOR DTC144TK		R013	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q004	8-729-901-06	TRANSISTOR DTA144EK		R014	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q005	8-729-901-06	TRANSISTOR DTA144EK		R015	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q006	8-729-900-98	TRANSISTOR DTC143TK		R016	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q008	8-729-901-01	TRANSISTOR DTC144EK		R018	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q009	8-729-903-29	TRANSISTOR DTA144TK		R019	1-216-105-00	METAL GLAZE 220K 5%	1/10W
Q012	8-729-903-30	TRANSISTOR DTC144TK		R020	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q013	8-729-901-06	TRANSISTOR DTA144EK		R021	1-216-099-00	METAL GLAZE 120K 5%	1/10W
Q014	8-729-901-01	TRANSISTOR DTC144EK		R023	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q016	8-729-600-91	TRANSISTOR 2SC3052TP-1F		R024	1-216-097-00	METAL GLAZE 100K 5%	1/10W
Q017	8-729-901-01	TRANSISTOR DTC144EK		R025	1-216-174-00	METAL GLAZE 100 5%	1/8W
Q018	8-729-901-04	TRANSISTOR DTA114EK		R026	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q027	8-729-901-01	TRANSISTOR DTC144EK		R027	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q028	8-729-600-91	TRANSISTOR 2SC3052TP-1F		R028	1-216-174-00	METAL GLAZE 100 5%	1/8W
Q030	8-729-901-01	TRANSISTOR DTC144EK		R029	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q031	8-729-901-01	TRANSISTOR DTC144EK		R030	1-216-085-00	METAL GLAZE 33K 5%	1/10W
Q033	8-729-901-01	TRANSISTOR DTC144EK		R032	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q034	8-729-901-06	TRANSISTOR DTA144EK		R033	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q050	8-729-901-01	TRANSISTOR DTC144EK		R034	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q051	8-729-901-01	TRANSISTOR DTC144EK		R035	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q201	8-729-100-76	TRANSISTOR 2SA812		R036	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
Q203	8-729-400-81	TRANSISTOR 2SD1266-Q		R037	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q204	8-729-159-64	TRANSISTOR 2SD596		R038	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q301	8-729-100-76	TRANSISTOR 2SA812		R041	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q302	8-729-159-64	TRANSISTOR 2SD596		R042	1-216-115-00	METAL GLAZE 560K 5%	1/10W
Q303	8-729-400-81	TRANSISTOR 2SD1266-Q		R043	1-216-101-00	METAL GLAZE 150K 5%	1/10W
Q304	8-729-901-01	TRANSISTOR DTC144EK		R049	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q305	8-729-109-42	TRANSISTOR 2SK94		R050	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q401	8-729-100-76	TRANSISTOR 2SA812		R051	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
Q404	8-729-901-01	TRANSISTOR DTC144EK		R052	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q405	8-729-904-07	TRANSISTOR FMG2		R053	1-216-099-00	METAL GLAZE 120K 5%	1/10W
Q406	8-729-904-20	TRANSISTOR FMA2		R054	1-216-099-00	METAL GLAZE 120K 5%	1/10W
Q407	8-729-904-04	TRANSISTOR FMS2		R072	1-216-081-00	METAL GLAZE 22K 5%	1/10W
Q408	8-729-903-82	TRANSISTOR FMW2		R073	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q409	8-729-904-07	TRANSISTOR FMG2		R076	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q412	8-729-901-06	TRANSISTOR DTA144EK		R077	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q413	8-729-600-91	TRANSISTOR 2SC3052TP-1F		R078	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q415	8-729-807-16	TRANSISTOR 2SD1621		R079	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q416	8-729-600-91	TRANSISTOR 2SC3052TP-1F		R082	1-216-049-00	METAL GLAZE 1K 5%	1/10W
<u>RESISTOR</u>				R083	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R001	1-216-099-00	METAL GLAZE 120K 5%	1/10W	R084	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R002	1-216-099-00	METAL GLAZE 120K 5%	1/10W	R087	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R003	1-216-099-00	METAL GLAZE 120K 5%	1/10W	R096	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R004	1-216-073-00	METAL GLAZE 10K 5%	1/10W	R097	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R005	1-216-073-00	METAL GLAZE 10K 5%	1/10W	R098	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R006	1-216-101-00	METAL GLAZE 150K 5%	1/10W	R099	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R007	1-216-073-00	METAL GLAZE 10K 5%	1/10W	R100	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R008	1-216-073-00	METAL GLAZE 10K 5%	1/10W	R101	1-216-089-00	METAL GLAZE 47K 5%	1/10W
				R102	1-216-089-00	METAL GLAZE 47K 5%	1/10W
				R103	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R104	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R208	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R105	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R209	1-216-117-00	METAL GLAZE	680K 5% 1/10W
R106	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R210	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R107	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R211	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R108	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R212	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R109	1-216-295-00	METAL GLAZE	0 5% 1/10W	R213	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R110	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R214	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R111	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R215	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R112	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R216	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R113	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R217	1-216-121-00	METAL GLAZE	1M 5% 1/10W
R114	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R218	1-216-748-11	METAL GLAZE	39K 5% 1/10W
R115	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R219	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R116	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R220	1-216-101-00	METAL GLAZE	150K 5% 1/10W
R117	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R221	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R118	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R222	1-216-107-00	METAL GLAZE	270K 5% 1/10W
R119	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R223	1-216-115-00	METAL GLAZE	560K 5% 1/10W
R120	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R224	1-216-115-00	METAL GLAZE	560K 5% 1/10W
R121	1-216-104-00	METAL GLAZE	200K 5% 1/10W	R225	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R122	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R226	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R126	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R227	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R127	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R228	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R128	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R229	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R129	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R230	1-216-033-00	METAL GLAZE	220 5% 1/10W
R130	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R231	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W
R131	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R232	1-216-077-00	METAL GLAZE	15K 5% 1/10W
R133	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R233	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R134	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R235	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W
R137	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R236	1-216-103-00	METAL GLAZE	180K 5% 1/10W
R138	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R237	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R139	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R238	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R140	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R239	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R141	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R240	1-216-091-00	METAL GLAZE	56K 5% 1/10W
R142	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R243	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R143	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R248	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R144	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R249	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R145	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R250	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R146	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R251	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R147	1-216-099-00	METAL GLAZE	120K 5% 1/10W	R254	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R148	1-216-295-00	METAL GLAZE	0 5% 1/10W	R255	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R149	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R301	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R150	1-216-041-00	METAL GLAZE	470 5% 1/10W	R302	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R151	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R303	1-216-138-00	METAL GLAZE	3.3 5% 1/8W
R154	▲ 1-249-392-11	CARBON	8.2 5% 1/4W F	R304	1-216-138-00	METAL GLAZE	3.3 5% 1/8W
R155	▲ 1-249-387-11	CARBON	3.3 5% 1/4W F	R305	1-216-138-00	METAL GLAZE	3.3 5% 1/8W
R158	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R306	1-249-443-11	CARBON	0.47 5% 1/4W F
R160	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R307	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R201	1-216-113-00	METAL GLAZE	470K 5% 1/10W	R308	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R202	1-216-107-00	METAL GLAZE	270K 5% 1/10W	R309	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R203	1-216-115-00	METAL GLAZE	560K 5% 1/10W	R310	1-216-025-00	METAL GLAZE	100 5% 1/10W
R204	1-216-115-00	METAL GLAZE	560K 5% 1/10W	R311	1-216-113-00	METAL GLAZE	470K 5% 1/10W
R205	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R312	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R206	1-216-117-00	METAL GLAZE	680K 5% 1/10W	R313	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R207	1-216-091-00	METAL GLAZE	56K 5% 1/10W	R315	1-216-073-00	METAL GLAZE	10K 5% 1/10W

The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.



# MA-25 MV-8

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R317	1-216-081-00	METAL GLAZE 22K 5%	1/10W	R444	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R318	1-216-081-00	METAL GLAZE 22K 5%	1/10W	R445	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R319	1-216-081-00	METAL GLAZE 22K 5%	1/10W	R446	1-216-091-00	METAL GLAZE 56K 5%	1/10W
R320	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	R447	1-216-089-00	METAL GLAZE 47K 5%	1/10W
R321	1-216-099-00	METAL GLAZE 120K 5%	1/10W	R448	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R322	1-216-089-00	METAL GLAZE 47K 5%	1/10W	R449	1-216-748-11	METAL GLAZE 39K 5%	1/10W
R323	1-216-085-00	METAL GLAZE 33K 5%	1/10W	R450	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R326	1-216-089-00	METAL GLAZE 47K 5%	1/10W	R451	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R327	1-216-079-00	METAL GLAZE 18K 5%	1/10W	R452	1-216-097-00	METAL GLAZE 100K 5%	1/10W
R328	1-216-079-00	METAL GLAZE 18K 5%	1/10W	R454	1-216-748-11	METAL GLAZE 39K 5%	1/10W
R329	1-216-079-00	METAL GLAZE 18K 5%	1/10W	R455	1-216-089-00	METAL GLAZE 47K 5%	1/10W
R330	1-216-079-00	METAL GLAZE 18K 5%	1/10W	R462	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R331	1-216-073-00	METAL GLAZE 10K 5%	1/10W	R465	1-216-105-00	METAL GLAZE 220K 5%	1/10W
R333	1-216-097-00	METAL GLAZE 100K 5%	1/10W	R466	1-216-045-00	METAL GLAZE 680 5%	1/10W
R334	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W	R467	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W
R335	1-216-121-00	METAL GLAZE 1M 5%	1/10W	R470	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R336	1-216-097-00	METAL GLAZE 100K 5%	1/10W	R485	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R337	1-216-085-00	METAL GLAZE 33K 5%	1/10W	R486	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R341	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W	R487	1-216-017-00	METAL GLAZE 47 5%	1/10W
R342	1-216-097-00	METAL GLAZE 100K 5%	1/10W	R490	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R343	1-216-041-00	METAL GLAZE 470 5%	1/10W	R491	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R348	1-216-085-00	METAL GLAZE 33K 5%	1/10W	R492	1-216-049-00	METAL GLAZE 1K 5%	1/10W
R349	1-216-073-00	METAL GLAZE 10K 5%	1/10W	<u>VARIABLE RESISTOR</u>			
R350	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	RV001	1-230-524-11	RES, ADJ, SOLID 22K	
R351	1-216-049-00	METAL GLAZE 1K 5%	1/10W	RV002	1-230-529-11	RES, ADJ, SOLID 470K	
R352	1-216-049-00	METAL GLAZE 1K 5%	1/10W	RV202	1-230-527-11	RES, ADJ, SOLID 100K	
R353	1-216-049-00	METAL GLAZE 1K 5%	1/10W	RV203	1-230-523-11	RES, ADJ, SOLID 10K	
R401	1-216-101-00	METAL GLAZE 150K 5%	1/10W	RV204	1-230-523-11	RES, ADJ, SOLID 10K	
R402	1-216-073-00	METAL GLAZE 10K 5%	1/10W	RV301	1-230-528-11	RES, ADJ, SOLID 220K	
R403	1-216-089-00	METAL GLAZE 47K 5%	1/10W	RV302	1-230-524-11	RES, ADJ, SOLID 22K	
R404	1-216-073-00	METAL GLAZE 10K 5%	1/10W	RV303	1-230-523-11	RES, ADJ, SOLID 10K	
R406	1-216-115-00	METAL GLAZE 560K 5%	1/10W	RV304	1-230-523-11	RES, ADJ, SOLID 10K	
R407	1-216-049-00	METAL GLAZE 1K 5%	1/10W	RV305	1-230-524-11	RES, ADJ, SOLID 22K	
R408	1-216-073-00	METAL GLAZE 10K 5%	1/10W	RV306	1-230-522-11	RES, ADJ, SOLID 4.7K	
R409	1-216-037-00	METAL GLAZE 330 5%	1/10W	RV402	1-230-526-11	RES, ADJ, SOLID 47K	
R410	1-216-117-00	METAL GLAZE 680K 5%	1/10W	W311	*1-559-667-11	WIRE, FLAT TYPE (20 CORE)	
R411	1-216-073-00	METAL GLAZE 10K 5%	1/10W	W331	*1-559-666-11	WIRE, FLAT TYPE (22 CORE)	
R412	1-216-091-00	METAL GLAZE 56K 5%	1/10W	<u>CRYSTAL</u>			
R421	1-216-083-00	METAL GLAZE 27K 5%	1/10W	X001	1-567-519-11	VIBRATOR, CRYSTAL (4.19MHz)	
R423	1-216-097-00	METAL GLAZE 100K 5%	1/10W	X004	1-527-997-00	VIBRATOR, CRYSTAL (32KHz)	
R424	1-216-073-00	METAL GLAZE 10K 5%	1/10W	*****			
R425	1-216-099-00	METAL GLAZE 120K 5%	1/10W	*A-7060-996-A	MV-8 BOARD, COMPLETE		
R426	1-216-089-00	METAL GLAZE 47K 5%	1/10W	*****			
R427	1-216-109-00	METAL GLAZE 330K 5%	1/10W	A-7068-100-A	VD-6 (HIC201) BOARD, COMPLETE		
R428	1-216-073-00	METAL GLAZE 10K 5%	1/10W	A-7068-102-A	VC-11 (HIC203) BOARD, COMPLETE		
R432	1-216-113-00	METAL GLAZE 470K 5%	1/10W	A-7068-103-A	VY-9 (HIC202) BOARD, COMPLETE		
R434	1-216-073-00	METAL GLAZE 10K 5%	1/10W	<u>CAPACITOR</u>			
R435	1-216-085-00	METAL GLAZE 33K 5%	1/10W	C201	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R436	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W	C202	1-126-157-11	ELECT 10MF	20% 16V
R437	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W	C203	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R438	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W				
R439	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W				
R442	1-216-079-00	METAL GLAZE 18K 5%	1/10W				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C204	1-126-176-11	ELECT 220MF	20%			TRANSISTOR	
C205	1-163-127-00	CERAMIC CHIP 270PF	5%				
C206	1-163-105-00	CERAMIC CHIP 33PF	5%	Q201	8-729-901-27	TRANSISTOR DTC144WK	
C207	1-163-035-00	CERAMIC CHIP 0.047MF		Q202	8-729-901-27	TRANSISTOR DTC144WK	
C209	1-163-035-00	CERAMIC CHIP 0.047MF		Q203	8-729-901-27	TRANSISTOR DTC144WK	
C210	1-163-035-00	CERAMIC CHIP 0.047MF		Q204	8-729-900-61	TRANSISTOR DTA114ES	
C211	1-163-095-00	CERAMIC CHIP 12PF	5%	Q205	8-729-100-66	TRANSISTOR 2SC1623-L6	
C212	1-163-117-00	CERAMIC CHIP 100PF	5%	Q206	8-729-100-66	TRANSISTOR 2SC1623-L6	
C213	1-163-241-11	CERAMIC CHIP 39PF	5%	Q207	8-729-100-66	TRANSISTOR 2SC1623-L6	
C214	1-163-129-00	CERAMIC CHIP 330PF	5%	Q208	8-729-100-66	TRANSISTOR 2SC1623-L6	
C215	1-163-133-00	CERAMIC CHIP 470PF	5%	Q209	8-729-900-99	TRANSISTOR DTA144WK	
C216	1-163-141-00	CERAMIC CHIP 0.001MF	5%	Q210	8-729-900-99	TRANSISTOR DTC144WK	
C217	1-163-111-00	CERAMIC CHIP 56PF	5%	Q211	8-729-100-66	TRANSISTOR 2SC1623-L6	
C218	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	Q212	8-729-312-22	TRANSISTOR 2SA1122C	
C219	1-163-101-00	CERAMIC CHIP 22PF	5%	Q215	8-729-900-99	TRANSISTOR DTA144WK	
C220	1-126-153-11	ELECT 22MF	20%	Q216	8-729-312-22	TRANSISTOR 2SA1122C	
C221	1-126-153-11	ELECT 22MF	20%	Q219	8-729-100-66	TRANSISTOR 2SC1623-L6	
C222	1-163-119-00	CERAMIC CHIP 120PF	5%	R201	1-216-035-00	METAL GLAZE 270 5%	1/10W
C223	1-163-141-00	CERAMIC CHIP 0.001MF	10%	R202	1-216-027-00	METAL GLAZE 120 5%	1/10W
C224	1-163-035-00	CERAMIC CHIP 0.047MF		R203	1-216-039-00	METAL GLAZE 390 5%	1/10W
C225	1-163-035-00	CERAMIC CHIP 0.047MF		R204	1-216-009-00	METAL GLAZE 22 5%	1/10W
C226	1-163-035-00	CERAMIC CHIP 0.047MF		R205	1-216-025-00	METAL GLAZE 100 5%	1/10W
C228	1-163-021-00	CERAMIC CHIP 0.01MF		R206	1-216-027-00	METAL GLAZE 120 5%	1/10W
C229	1-163-113-00	CERAMIC CHIP 68PF	5%	R207	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
C230	1-163-021-00	CERAMIC CHIP 0.01MF		R208	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
C231	1-163-097-00	CERAMIC CHIP 15PF	5%	R209	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
C240	1-124-472-11	ELECT 470MF	20%	R210	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
<u>DIODE</u>				R211	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W
D201	8-719-101-23	DIODE 1SS123		R212	1-216-081-00	METAL GLAZE 22K 5%	1/10W
<u>FILTER</u>				R213	1-216-081-00	METAL GLAZE 22K 5%	1/10W
FL201	1-235-632-11	BPF		R214	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
FL202	1-235-633-11	BPF		R215	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
FL203	1-409-394-11	TRAP, CHROMA EMPHASIS		R216	1-216-049-00	METAL GLAZE 1K 5%	1/10W
<u>IC</u>				R217	1-216-037-00	METAL GLAZE 330 5%	1/10W
IC201	8-759-200-60	IC TA7060AP		R218	1-216-041-00	METAL GLAZE 470 5%	1/10W
<u>COIL</u>				R219	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L201	1-410-380-21	INDUCTOR CHIP 8.2UH		R220	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L202	1-410-381-11	INDUCTOR CHIP 10UH		R221	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L203	1-410-369-11	INDUCTOR CHIP 1UH		R222	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L204	1-410-369-11	INDUCTOR CHIP 1UH		R223	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
L205	1-410-389-11	INDUCTOR CHIP 47UH		R224	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L206	1-410-389-11	INDUCTOR CHIP 47UH		R225	1-216-049-00	METAL GLAZE 1K 5%	1/10W
L207	1-410-381-11	INDUCTOR CHIP 10UH		R226	1-216-043-00	METAL GLAZE 560 5%	1/10W
L208	1-410-381-11	INDUCTOR CHIP 10UH		R227	1-216-043-00	METAL GLAZE 560 5%	1/10W
<u>VARIABLE COIL</u>				R228	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
LV201	1-404-594-11	COIL, VARIABLE 10UH		R229	1-216-083-00	METAL GLAZE 27K 5%	1/10W
				R230	1-216-093-00	METAL GLAZE 68K 5%	1/10W
				R232	1-216-049-00	METAL GLAZE 1K 5%	1/10W
				R233	1-216-073-00	METAL GLAZE 10K 5%	1/10W
				R234	1-216-073-00	METAL GLAZE 10K 5%	1/10W
				R235	1-216-081-00	METAL GLAZE 22K 5%	1/10W
				R236	1-216-073-00	METAL GLAZE 10K 5%	1/10W
				R237	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W

When indicating parts by reference number, please include the board name.

# MV-8 AF-38

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R238	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	C530	1-126-157-11	ELECT 10MF	20% 16V
R239	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C531	1-124-638-11	ELECT 22MF	20% 6.3V
R240	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C534	1-123-661-00	ELECT 100MF	20% 6.3V
R241	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C535	1-135-145-11	TANTAL. CHIP 0.47MF	20% 25V
R242	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C536	1-135-145-11	TANTAL. CHIP 0.47MF	20% 25V
R243	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C537	1-163-021-00	CERAMIC CHIP 0.01MF	50V
R244	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C539	1-123-661-00	ELECT 100MF	20% 6.3V
R246	1-216-025-00	METAL GLAZE	100 5% 1/10W	C542	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
R247	1-216-041-00	METAL GLAZE	470 5% 1/10W	C543	1-163-013-00	CERAMIC CHIP 0.0022MF	10% 50V
R248	1-216-041-00	METAL GLAZE	470 5% 1/10W	C562	1-126-094-11	ELECT 4.7MF	20% 25V
R252	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C563	1-126-154-11	ELECT 47MF	20% 6.3V
R253	1-216-748-11	METAL GLAZE	39K 5% 1/10W	<u>CONNECTOR</u>			
R254	1-216-748-11	METAL GLAZE	39K 5% 1/10W	CN503	*1-563-258-11	SOCKET, CONNECTOR 15P	
R255	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	<u>DIODE</u>			
R270	1-216-295-00	METAL GLAZE	0 5% 1/10W	D501	8-719-913-36	DIODE PR2222S-B1	
R271	1-216-049-00	METAL GLAZE	1K 5% 1/10W	<u>IC</u>			
<u>CRYSTAL</u>				IC501	8-752-003-79	IC CX20037A	
X201	1-567-347-11	OSCILLATOR, CERAMIC		<u>COIL</u>			
*****							
*A-7061-009-A AF-38 BOARD, COMPLETE				<u>INDUCTOR</u>			
*****				L501	1-408-948-00	INDUCTOR 220UH	
<u>CAPACITOR</u>				<u>TRANSISTOR</u>			
C501	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q505	8-729-901-01	TRANSISTOR DTC144EK	
C503	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q506	8-729-901-01	TRANSISTOR DTC144EK	
C504	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q507	8-729-203-24	TRANSISTOR 2SC3326A	
C505	1-135-091-00	TANTAL. CHIP 1MF	20% 16V	<u>RESISTOR</u>			
C506	1-163-021-00	CERAMIC CHIP 0.01MF	50V	R507	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
C507	1-163-137-00	CERAMIC CHIP 680PF	10% 50V	R508	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
C508	1-124-465-00	ELECT 0.47MF	20% 50V	R509	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
C509	1-163-145-00	CERAMIC CHIP 0.0015MF	5% 50V	R510	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
C510	1-163-016-00	CERAMIC CHIP 0.0039MF	10% 50V	R511	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
C511	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	R512	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
C512	1-163-013-00	CERAMIC CHIP 0.0022MF	10% 50V	R513	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
C513	1-123-661-00	ELECT 100MF	20% 6.3V	R514	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
C514	1-163-833-00	CERAMIC CHIP 0.068MF	25V	R515	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
C515	1-163-021-00	CERAMIC CHIP 0.01MF	50V	R516	1-249-416-11	CARBON 820 5% 1/4W	
C516	1-124-257-00	ELECT 2.2MF	20% 50V	R517	1-249-416-11	CARBON 820 5% 1/4W	
C517	1-163-088-00	CERAMIC CHIP 5PF	0.25PF 50V	R518	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
C518	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	R527	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
C519	1-123-661-00	ELECT 100MF	20% 6.3V	R528	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
C520	1-163-133-00	CERAMIC CHIP 470PF	5% 50V	R529	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
C522	1-126-094-11	ELECT 4.7MF	20% 25V	R530	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
C523	1-163-088-00	CERAMIC CHIP 5PF	0.25PF 50V	R533	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
C524	1-162-587-91	CERAMIC CHIP 0.039MF	10% 25V	R535	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
C525	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	R537	1-216-041-00	METAL GLAZE 470 5% 1/10W	
C526	1-163-137-00	CERAMIC CHIP 680PF	10% 50V	R538	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
C527	1-163-020-00	CERAMIC CHIP 0.0082MF	10% 50V	R539	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
C528	1-123-611-00	ELECT 1MF	20% 50V				
C529	1-126-157-11	ELECT 10MF	20% 16V				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R542	1-216-045-00	METAL GLAZE 680 5%	1/10W
R543	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
R544	1-216-075-00	METAL GLAZE 12K 5%	1/10W
R545	1-216-045-00	METAL GLAZE 680 5%	1/10W
R546	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R547	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R548	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R549	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R550	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R551	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R552	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R553	1-216-079-00	METAL GLAZE 18K 5%	1/10W
R554	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R555	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
<u>VARIABLE RESISTOR</u>			
RV501	1-237-090-11	RES, ADJ, METAL GLAZE 22K	
RV502	1-230-870-11	RES, ADJ, METAL GLAZE 10K	
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*A-7060-343-A	RS-18 BOARD, COMPLETE		
*****			
3-712-106-01	REINFORCEMENT (333)		
3-712-410-01	HOLDER, RS		
<u>CAPACITOR</u>			
C301	1-124-229-00	ELECT 33MF 20%	10V
C302	1-124-225-00	ELECT 100MF 20%	6.3V
<u>CONNECTOR</u>			
CN301	*1-564-012-00	PIN, CONNECTOR 2P	
CN302	*1-564-012-00	PIN, CONNECTOR 2P	
CN304	*1-563-494-11	CONNECTOR, F.P.C 6P	
CN306	*1-564-012-00	PIN, CONNECTOR 2P	
<u>DIODE</u>			
D301	8-719-100-03	DIODE 1S2835	
D302	8-719-100-03	DIODE 1S2835	
D303	8-719-100-03	DIODE 1S2835	
D304	8-719-100-05	DIODE 1S2837	
D305	8-719-100-05	DIODE 1S2837	
D306	8-719-100-05	DIODE 1S2837	
D307	8-719-200-27	DIODE E10DS2	
D308	8-719-200-27	DIODE E10DS2	
D309	8-719-100-05	DIODE 1S2837	
D310	8-719-200-27	DIODE E10DS2	
<u>IC</u>			
IC301	8-759-908-81	IC MB3763PF	
IC302	8-759-207-00	IC TA7733F	

Ref.No	Part No.	Description	Remark
<u>DIODE</u>			
PH301	8-719-939-11	GP2S09-B	
PH302	8-719-939-11	GP2S09-B	
PH303	8-719-939-11	GP2S09-B	
<u>TRANSISTOR</u>			
Q301	8-729-199-92	TRANSISTOR 2SD999	
Q302	8-729-901-05	TRANSISTOR DTA124EK	
Q303	8-729-900-53	TRANSISTOR DTC114EK	
Q304	8-729-901-05	TRANSISTOR DTA124EK	
Q305	8-729-106-41	TRANSISTOR 2SB1114-ZL	
Q306	8-729-106-41	TRANSISTOR 2SB1114-ZL	
Q307	8-729-901-04	TRANSISTOR DTA114EK	
Q308	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q309	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q310	8-729-903-30	TRANSISTOR DTC144TK	
Q311	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q312	8-729-903-30	TRANSISTOR DTC144TK	
Q313	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q314	8-729-903-30	TRANSISTOR DTC144TK	
<u>RESISTOR</u>			
R301	1-216-190-00	METAL GLAZE 470 5%	1/8W
R302	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R303	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
R304	1-216-170-00	METAL GLAZE 68 5%	1/8W
R305	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R308	1-216-150-00	METAL GLAZE 10 5%	1/8W
R309	1-216-150-00	METAL GLAZE 10 5%	1/8W
R310	1-216-178-00	METAL GLAZE 150 5%	1/8W
R311	1-216-178-00	METAL GLAZE 150 5%	1/8W
R312	1-216-178-00	METAL GLAZE 150 5%	1/8W
R313	1-216-160-00	METAL GLAZE 27 5%	1/8W
R314	1-216-170-00	METAL GLAZE 68 5%	1/8W
R315	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W
R316	1-216-067-00	METAL GLAZE 5.6K 5%	1/10W
R317	1-216-085-00	METAL GLAZE 33K 5%	1/10W
R319	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W
R320	1-216-067-00	METAL GLAZE 5.6K 5%	1/10W
R321	1-216-085-00	METAL GLAZE 33K 5%	1/10W
R323	1-216-071-00	METAL GLAZE 8.2K 5%	1/10W
R324	1-216-067-00	METAL GLAZE 5.6K 5%	1/10W
R325	1-216-085-00	METAL GLAZE 33K 5%	1/10W
R327	1-216-154-00	METAL GLAZE 15 5%	1/8W
W305	*1-558-782-11	WIRE, FLAT TYPE 20P	
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When indicating parts by reference number, please include the board name.

# MR-9

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
*A-7060-985-A	MR-9	BOARD, COMPLETE					
		*****					
A-7068-098-A	RP-34	(HIC101) BOARD, COMPLETE					
		<u>CAPACITOR</u>				<u>CONNECTOR</u>	
C101	1-163-035-00	CERAMIC CHIP 0.047MF	50V	CN101	*1-564-008-00	PIN, CONNECTOR 9P	
C102	1-163-035-00	CERAMIC CHIP 0.047MF	50V	CN102	*1-564-002-00	PIN, CONNECTOR 3P	
C103	1-126-154-11	ELECT 47MF	20% 6.3V	CN103	*1-564-003-00	PIN, CONNECTOR 4P	
C104	1-163-035-00	CERAMIC CHIP 0.047MF	50V	CN104	*1-564-005-00	PIN, CONNECTOR 6P	
C105	1-163-035-00	CERAMIC CHIP 0.047MF	50V	CN105	*1-562-883-11	SOCKET, CONNECTOR 20P	
						<u>DIODE</u>	
C106	1-163-035-00	CERAMIC CHIP 0.047MF	50V	D101	8-719-101-23	DIODE ISS123	
C107	1-124-638-11	ELECT 22MF	20% 6.3V			<u>COIL</u>	
C108	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	L101	1-410-844-11	INDUCTOR 0.22UH	
C109	1-126-157-11	ELECT 10MF	20% 16V	L102	1-408-974-21	INDUCTOR 22UH	
C110	1-163-021-00	CERAMIC CHIP 0.01MF	50V	L103	1-408-974-21	INDUCTOR 22UH	
				L104	1-408-974-21	INDUCTOR 22UH	
C111	1-124-638-11	ELECT 22MF	20% 6.3V	L105	1-408-966-21	INDUCTOR 4.7UH	
C112	1-163-035-00	CERAMIC CHIP 0.047MF	50V	L106	1-410-072-21	INDUCTOR 820UH	
C113	1-126-157-11	ELECT 10MF	20% 16V	L107	1-408-985-21	INDUCTOR 180UH	
C114	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V	L108	1-408-976-21	INDUCTOR 33UH	
C115	1-163-145-00	CERAMIC CHIP 0.0015MF	10% 50V	L109	1-408-948-00	INDUCTOR 220UH	
				L110	1-408-970-21	INDUCTOR 10UH	
C116	1-163-021-00	CERAMIC CHIP 0.01MF	50V			<u>TRANSISTOR</u>	
C117	1-163-038-00	CERAMIC CHIP 0.1MF	25V	Q102	8-729-353-53	TRANSISTOR 2SC535	
C118	1-163-116-00	CERAMIC CHIP 91PF	5% 50V	Q103	8-729-100-67	TRANSISTOR 2SC1623-L7	
C119	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q104	8-729-100-67	TRANSISTOR 2SC1623-L7	
C120	1-163-145-00	CERAMIC CHIP 0.0015MF	10% 50V	Q105	8-729-100-67	TRANSISTOR 2SC1623-L7	
				Q106	8-729-100-67	TRANSISTOR 2SC1623-L7	
C121	1-163-127-00	CERAMIC CHIP 270PF	5% 50V	Q107	8-729-901-05	TRANSISTOR DTA124EK	
C122	1-163-033-00	CERAMIC CHIP 0.022MF	50V	Q108	8-729-901-00	TRANSISTOR DTC124EK	
C123	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	Q110	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C124	1-163-035-00	CERAMIC CHIP 0.047MF	50V	Q111	8-729-100-67	TRANSISTOR 2SC1623-L7	
C125	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V	Q112	8-729-100-67	TRANSISTOR 2SC1623-L7	
				Q113	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C126	1-163-095-00	CERAMIC CHIP 12PF	5% 50V	Q114	8-729-271-23	TRANSISTOR 2SC2712	
C127	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q115	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C128	1-163-119-00	CERAMIC CHIP 120PF	5% 50V	Q116	8-729-312-22	TRANSISTOR 2SA1122D	
C129	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q117	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C130	1-163-021-00	CERAMIC CHIP 0.01MF	50V				
				Q120	8-729-901-04	TRANSISTOR DTA114EK	
C131	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q121	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C132	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q122	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C133	1-163-021-00	CERAMIC CHIP 0.01MF	50V	Q123	8-729-600-91	TRANSISTOR 2SC3052TP-1F	
C134	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V	Q128	8-729-117-54	TRANSISTOR 2SA1175	
C137	1-163-021-00	CERAMIC CHIP 0.01MF	50V				
				Q129	8-729-901-05	TRANSISTOR DTA124EK	
C138	1-124-257-00	ELECT 2.2MF	20% 50V	Q130	8-729-100-76	TRANSISTOR 2SA812	
C139	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	Q131	8-729-901-01	TRANSISTOR DTC144EK	
C140	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	Q132	8-729-901-03	TRANSISTOR DTC144WK	
C141	1-163-121-00	CERAMIC CHIP 150PF	5% 50V			<u>RESISTOR</u>	
C142	1-163-117-00	CERAMIC CHIP 100PF	5% 50V	R101	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
				R102	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
C143	1-163-038-00	CERAMIC CHIP 0.1MF	25V	R103	1-216-041-00	METAL GLAZE 470 5% 1/10W	
C144	1-163-021-00	CERAMIC CHIP 0.01MF	50V	R104	1-216-025-00	METAL GLAZE 100 5% 1/10W	
C145	1-126-154-11	ELECT 47MF	20% 6.3V				
C146	1-163-021-00	CERAMIC CHIP 0.01MF	50V				
C147	1-163-088-00	CERAMIC CHIP 5PF	0.25PF 50V				
C150	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V				
C201	1-163-105-00	CERAMIC CHIP 33PF	5% 50V				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R105	1-216-041-00	METAL GLAZE	470 5% 1/10W	R172	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R106	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R173	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R107	1-216-063-00	METAL GLAZE	3.9K 5% 1/10W	R177	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R108	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	R178	1-216-047-00	METAL GLAZE	820 5% 1/10W
R109	1-216-029-00	METAL GLAZE	150 5% 1/10W	R179	1-216-045-00	METAL GLAZE	680 5% 1/10W
R110	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R180	1-216-295-00	METAL GLAZE	0 5% 1/10W
R111	1-216-047-00	METAL GLAZE	820 5% 1/10W	R181	1-216-056-00	METAL GLAZE	2K 5% 1/10W
R112	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	R182	1-216-043-00	METAL GLAZE	560 5% 1/10W
R113	1-216-025-00	METAL GLAZE	100 5% 1/10W	<u>VARIABLE RESISTOR</u>			
R114	1-216-049-00	METAL GLAZE	1K 5% 1/10W	RV101	1-230-522-11	RES, ADJ, SOLID 4.7K	
R115	1-216-049-00	METAL GLAZE	1K 5% 1/10W	RV102	1-230-521-11	RES, ADJ, SOLID 2.2K	
R116	1-216-041-00	METAL GLAZE	470 5% 1/10W	<u>TRANSFORMER</u>			
R117	1-216-073-00	METAL GLAZE	10K 5% 1/10W	T101	1-409-397-11	TRAP	
R118	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	*****			
R119	1-216-039-00	METAL GLAZE	390 5% 1/10W	*A-7060-987-A	TB-8 BOARD, COMPLETE		
R120	1-216-025-00	METAL GLAZE	100 5% 1/10W	*****			
R121	1-216-049-00	METAL GLAZE	1K 5% 1/10W	*3-662-075-00	COVER, CONTROL		
R122	1-216-049-00	METAL GLAZE	1K 5% 1/10W	*3-710-578-01	COVER, VOLUME, 6 MOLD		
R124	1-216-025-00	METAL GLAZE	100 5% 1/10W	<u>CAPACITOR</u>			
R125	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C305	1-124-499-11	ELECT	1MF 20% 50V
R126	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C306	1-124-499-11	ELECT	1MF 20% 50V
R127	1-216-045-00	METAL GLAZE	680 5% 1/10W	C307	1-124-927-11	ELECT	4.7MF 20% 50V
R128	1-216-047-00	METAL GLAZE	820 5% 1/10W	C308	1-102-959-00	CERAMIC	22PF 5% 50V
R129	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C309	1-102-111-00	CERAMIC	270PF 10% 50V
R130	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	C310	1-102-111-00	CERAMIC	270PF 10% 50V
R131	1-216-033-00	METAL GLAZE	220 5% 1/10W	C311	1-124-499-11	ELECT	1MF 20% 50V
R132	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	C313	1-101-004-00	CERAMIC	0.01MF 50V
R133	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W	C314	1-124-927-11	ELECT	4.7MF 20% 50V
R135	1-216-025-00	METAL GLAZE	100 5% 1/10W	C315	1-126-101-11	ELECT	100MF 20% 16V
R136	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W	C316	1-106-355-12	MYLAR	0.0033MF 10% 50V
R137	1-216-041-00	METAL GLAZE	470 5% 1/10W	C318	1-124-499-11	ELECT	1MF 20% 50V
R138	1-216-079-00	METAL GLAZE	18K 5% 1/10W	C319	1-108-808-11	MYLAR	0.022MF 10% 50V
R139	1-216-079-00	METAL GLAZE	18K 5% 1/10W	C320	1-124-464-11	ELECT	0.22MF 20% 50V
R140	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C321	1-108-808-11	MYLAR	0.022MF 10% 50V
R141	1-216-089-00	METAL GLAZE	47K 5% 1/10W	C322	1-102-074-00	CERAMIC	0.001MF 10% 50V
R142	1-216-081-00	METAL GLAZE	22K 5% 1/10W	C323	1-124-477-11	ELECT	47MF 20% 25V
R143	1-216-045-00	METAL GLAZE	680 5% 1/10W	C325	1-101-004-00	CERAMIC	0.01MF 50V
R144	1-216-047-00	METAL GLAZE	820 5% 1/10W	C326	1-101-004-00	CERAMIC	0.01MF 50V
R145	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W	C327	1-124-499-11	ELECT	1MF 20% 50V
R146	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	C328	1-124-499-11	ELECT	1MF 20% 50V
R147	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C329	1-124-927-11	ELECT	4.7MF 20% 50V
R148	1-216-077-00	METAL GLAZE	15K 5% 1/10W	C330	1-124-499-11	ELECT	1MF 20% 50V
R149	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W	C331	1-124-477-11	ELECT	47MF 20% 25V
R150	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C343	1-101-004-00	CERAMIC	0.01MF 50V
R151	1-216-039-00	METAL GLAZE	390 5% 1/10W	C345	1-101-004-00	CERAMIC	0.01MF 50V
R152	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C399	1-124-477-11	ELECT	47MF 20% 16V
R154	1-216-047-00	METAL GLAZE	820 5% 1/10W	C501	1-136-161-00	FILM	0.047MF 5% 50V
R155	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W	C502	1-102-074-00	CERAMIC	0.001MF 10% 50V
R158	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W				
R168	1-216-009-00	METAL GLAZE	22 5% 1/10W				
R169	1-216-043-00	METAL GLAZE	560 5% 1/10W				
R170	1-216-037-00	METAL GLAZE	330 5% 1/10W				
R171	1-216-041-00	METAL GLAZE	470 5% 1/10W				

When indicating parts by reference number, please include the board name.

# TB-8

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C503	1-124-499-11	ELECT	1MF 20%			IC	
C504	1-106-347-00	MYLAR	0.0015MF 10%				
C506	1-130-483-00	MYLAR	0.01MF 10%	IC301	8-752-030-86	IC CXA1001AP	
C507	1-108-808-11	MYLAR	0.022MF 10%	IC501	8-759-100-60	IC UPC1377C	
C508	1-124-499-11	ELECT	1MF 20%				
C509	1-124-499-11	ELECT	1MF 20%			COIL	
C510	1-108-808-11	MYLAR	0.022MF 10%	L302	1-410-090-41	INDUCTOR	18MMH
C511	1-106-351-00	MYLAR	0.0022MF 10%	L303	1-410-476-11	INDUCTOR	33UH
C512	1-129-794-00	FILM	0.0033MF 5%	L304	1-408-408-00	INDUCTOR	8.2UH
C513	1-124-499-11	ELECT	1MF 20%	L704	1-408-424-00	INDUCTOR	180UH
C514	1-124-477-11	ELECT	47MF 20%	L801	1-410-470-11	INDUCTOR	10UH
C515	1-136-161-00	FILM	0.047MF 5%	L802	1-410-470-11	INDUCTOR	10UH
C518	1-124-260-00	ELECT	6.8MF 20%			TRANSISTOR	
C519	1-136-173-00	FILM	0.47MF 5%	Q301	8-729-178-54	TRANSISTOR	2SC2785-F
C521	1-124-499-11	ELECT	1MF 20%	Q701	8-729-326-11	TRANSISTOR	2SC2611
C522	1-130-483-00	MYLAR	0.01MF 10%	Q702	8-729-326-11	TRANSISTOR	2SC2611
C523	1-124-499-11	ELECT	1MF 20%	Q703	8-729-326-11	TRANSISTOR	2SC2611
C524	1-130-490-11	MYLAR	0.039MF 10%	Q790	8-729-117-54	TRANSISTOR	2SA1175-F
C525	1-126-103-11	ELECT	470MF 20%	Q791	8-729-178-54	TRANSISTOR	2SC2785-F
C528	1-102-978-00	CERAMIC	220PF 5%	Q792	8-729-900-89	TRANSISTOR	DTC144ES-TP
C590	1-102-820-00	CERAMIC	330PF 5%	Q793	8-729-178-54	TRANSISTOR	2SC2785-F
C598	1-124-963-11	ELECT	33MF 20%	Q794	8-729-178-54	TRANSISTOR	2SC2785-F
C599	1-101-004-00	CERAMIC	0.01MF 50V	Q795	8-729-178-54	TRANSISTOR	2SC2785-F
C702	1-102-973-00	CERAMIC	100PF 5%	Q796	8-729-178-54	TRANSISTOR	2SC2785-F
C703	1-102-973-00	CERAMIC	100PF 5%	Q797	8-729-178-54	TRANSISTOR	2SC2785-F
C704	1-102-973-00	CERAMIC	100PF 5%	Q798	8-729-178-54	TRANSISTOR	2SC2785-F
C705	1-101-004-00	CERAMIC	0.01MF 50V	Q799	8-729-178-54	TRANSISTOR	2SC2785-F
C798	1-102-978-00	CERAMIC	220PF 5%	Q801	8-729-600-32	TRANSISTOR	2SC403SPTP-4
C799	1-101-006-00	CERAMIC	0.047MF 50V			RESISTOR	
<u>CONNECTOR</u>				R306	1-249-421-11	CARBON	2.2K 5% 1/4W
CN001	*1-566-057-11	PIN, CONNECTOR	5P	R307	1-249-425-11	CARBON	4.7K 5% 1/4W
CN003	*1-566-055-11	PIN, CONNECTOR	3P	R310	1-246-531-00	CARBON	270K 5% 1/4W
CN004	*1-566-043-11	PIN, CONNECTOR	4P	R311	1-247-903-00	CARBON	1M 5% 1/4W
CN005	*1-566-059-11	PIN, CONNECTOR	7P	R312	1-249-437-11	CARBON	47K 5% 1/4W
CN006	*1-566-054-11	PIN, CONNECTOR	2P	R313	1-249-434-11	CARBON	27K 5% 1/4W
<u>TRIMMER</u>				R314	1-247-897-11	CARBON	560K 5% 1/4W
CV301	1-141-181-11	CAP, TRIMMER		R316	1-249-441-11	CARBON	100K 5% 1/4W
<u>DIODE</u>				R317	1-249-441-11	CARBON	100K 5% 1/4W
D301	8-719-911-19	DIODE	1SS119	R318	1-249-441-11	CARBON	100K 5% 1/4W
D306	8-719-911-19	DIODE	1SS119	R319	1-247-704-11	CARBON	220 5% 1/4W
D308	8-719-911-19	DIODE	1SS119	R320	1-247-704-11	CARBON	220 5% 1/4W
D502	8-719-911-19	DIODE	1SS119	R321	1-247-704-11	CARBON	220 5% 1/4W
D798	8-719-911-19	DIODE	1SS119	R322	1-249-420-11	CARBON	1.8K 5% 1/4W
D799	8-719-911-19	DIODE	1SS119	R325	1-249-427-11	CARBON	6.8K 5% 1/4W
D801	8-719-911-19	DIODE	1SS119	R326	1-249-426-11	CARBON	5.6K 5% 1/4W
<u>DELAY LINE</u>				R328	1-249-436-11	CARBON	39K 5% 1/4W
DL301	1-415-122-31	DELAY LINE, 1H (PAL)		R329	1-247-883-00	CARBON	150K 5% 1/4W
				R333	1-249-412-11	CARBON	390 5% 1/4W
				R334	1-249-417-11	CARBON	1K 5% 1/4W
				R339	1-249-413-11	CARBON	470 5% 1/4W
				R343	1-247-885-00	CARBON	180K 5% 1/4W

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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R344	1-247-895-00	CARBON		R787	1-249-405-11	CARBON	
R345	1-247-895-00	CARBON		R789	1-249-425-11	CARBON	
R346	1-249-433-11	CARBON		R790	1-249-441-11	CARBON	
R347	1-249-421-11	CARBON		R791	1-249-433-11	CARBON	
R350	1-249-433-11	CARBON		R792	1-249-433-11	CARBON	
R355	1-249-429-11	CARBON		R793	1-249-419-11	CARBON	
R359	1-249-422-11	CARBON		R794	1-249-419-11	CARBON	
R362	1-249-438-11	CARBON		R795	1-249-419-11	CARBON	
R366	1-249-435-11	CARBON		R796	1-249-413-11	CARBON	
R367	1-249-423-11	CARBON		R797	1-249-405-11	CARBON	
R368	1-249-423-11	CARBON		R798	1-249-425-11	CARBON	
R369	1-249-423-11	CARBON		R799	1-249-433-11	CARBON	
R373	1-249-423-11	CARBON		R801	1-249-425-11	CARBON	
R393	1-249-413-11	CARBON		R802	1-249-425-11	CARBON	
R501	1-249-411-11	CARBON		R803	1-247-721-11	CARBON	
R502	1-247-705-11	CARBON		R804	1-216-458-11	METAL OXIDE	
R503 $\Delta$	1-249-427-11	CARBON	F	R805	1-249-430-11	CARBON	F
R504	1-249-440-11	CARBON		R806	1-249-426-11	CARBON	
R505	1-249-423-11	CARBON		R808	1-247-881-00	CARBON	
R506	1-247-868-11	CARBON		<u>VARIABLE RESISTOR</u>			
R507	1-215-447-00	METAL		RV302	1-230-626-41	RES, ADJ, CARBON 470	
R511	1-249-440-11	CARBON		RV303	1-228-994-00	RES, ADJ, CARBON 10K	
R513	1-249-423-11	CARBON		RV304	1-228-995-00	RES, ADJ, CARBON 22K	
R514	1-215-460-00	METAL		RV501	1-226-772-11	RES, ADJ, METAL GLAZE 4.7K	
R517	1-249-422-11	CARBON		RV502	1-230-624-41	RES, ADJ, CARBON 220	
R522	1-215-463-00	METAL		RV506	1-228-993-00	RES, ADJ, CARBON 4.7K	
R524	1-214-783-00	METAL		RV701	1-228-993-00	RES, ADJ, CARBON 4.7K	
R525	1-215-455-00	METAL		RV702	1-228-993-00	RES, ADJ, CARBON 4.7K	
R526	1-249-438-11	CARBON		RV703	1-228-993-00	RES, ADJ, CARBON 4.7K	
R527	1-249-422-11	CARBON		RV704	1-228-993-00	RES, ADJ, CARBON 4.7K	
R528	1-249-424-11	CARBON		RV705	1-228-993-00	RES, ADJ, CARBON 4.7K	
R529	1-215-461-00	METAL		RV709	1-228-995-00	RES, ADJ, CARBON 22K	
R530 $\Delta$	1-249-393-11	CARBON	F	<u>TRANSFORMER</u>			
R597	1-249-410-11	CARBON		T301	1-404-524-11	DAT	
R598	1-249-417-11	CARBON		<u>THERMISTOR</u>			
R599	1-249-426-11	CARBON		TH001	1-800-944-00	THERMISTOR TH-4700	
R701	1-249-427-11	CARBON		<u>CRYSTAL</u>			
R703	1-249-414-11	CARBON		X301	1-567-504-11	OSCILLATOR, CRYSTAL (4.43MHz)	
R704	1-249-426-11	CARBON		<u>MODULE</u>			
R706 $\Delta$	1-216-463-00	METAL OXIDE	F	YCM301	1-235-833-11	YC MODULE	
R707	1-249-426-11	CARBON		*****			
R708	1-249-418-11	CARBON		*A-7060-988-A	TD-8 BOARD, COMPLETE		
R709	1-249-416-11	CARBON		*****			
R710	1-249-425-11	CARBON		*3-721-189-01	COVER, FBT		
R712 $\Delta$	1-216-463-00	METAL OXIDE	F	*3-721-190-01	COVER, ANODE LEAD		
R713	1-249-426-11	CARBON					
R714	1-249-418-11	CARBON					
R715	1-249-416-11	CARBON					
R716	1-249-425-11	CARBON					
R718 $\Delta$	1-216-463-00	METAL OXIDE	F				
R724	1-249-426-11	CARBON					
R785	1-249-405-11	CARBON					
R786	1-247-700-11	CARBON					

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.





Ref.No	Part No.	Description	Remark
R822	△ 1-249-387-11	CARBON	3.3 5% 1/4W F
R823	△ 1-212-865-00	FUSIBLE	22 5% 1/4W F
R824	△ 1-212-865-00	FUSIBLE	22 5% 1/4W F
R825	1-247-692-11	CARBON	22 5% 1/4W
R826	1-247-692-11	CARBON	22 5% 1/4W
R851	1-247-883-00	CARBON	150K 5% 1/4W
R857	1-249-463-11	CARBON	27K 5% 1/4W
R858	1-249-426-11	CARBON	5.6K 5% 1/4W
R859	1-202-731-00	SOLID	10M 10% 1/2W
R860	△ 1-212-938-00	FUSIBLE	1.5 5% 1/2W F

VARIABLE RESISTOR

RV801	1-226-775-11	RES, ADJ, METAL GLAZE 100K
RV802	1-226-773-11	RES, ADJ, METAL GLAZE 22K
RV803	1-226-772-11	RES, ADJ, METAL GLAZE 4.7K

SWITCH

S551	1-554-186-00	SWITCH, LEVER
S801	1-554-186-00	SWITCH, LEVER
S802	1-554-186-00	SWITCH, LEVER

TRANSFORMER

T801	1-437-082-00	HDT
T802	△ 1-439-411-11	TRANSFORMER ASSY, FLYBACK

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\*A-7060-989-A TC-9 BOARD, COMPLETE  
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CAPACITOR

C1	*1-508-784-00	1P PLUG			
C701	1-102-123-00	CERAMIC	0.0033MF	10%	50V
C702	1-162-114-00	CERAMIC	0.0047MF	10%	2KV
C703	1-102-123-00	CERAMIC	0.0033MF	10%	50V
C704	1-161-830-00	CERAMIC	0.0047MF	99%	500V

DIODE

D701	8-719-901-93	DIODE V19C
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SOCKET

J701	△ 1-526-958-11	SOCKET, CRT
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RESISTOR

R701	1-202-822-00	SOLID	2.2K	10%	1/2W
R702	1-202-822-00	SOLID	2.2K	10%	1/2W
R703	1-202-822-00	SOLID	2.2K	10%	1/2W
R704	1-202-842-11	SOLID	220K	10%	1/2W
R705	1-202-838-00	SOLID	100K	10%	1/2W
R706	1-202-838-00	SOLID	100K	10%	1/2W

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Ref.No	Part No.	Description	Remark
	*A-7070-547-A	LC-8 BOARD, COMPLETE *****	
		<u>CAPACITOR</u>	
C810	1-102-228-00	CERAMIC 470PF	10% 500V
		<u>COIL</u>	
L802	△ 1-459-256-00	COIL, HORIZONTAL LINEARITY	
		<u>RESISTOR</u>	
R808	△ 1-247-710-11	CARBON 560 5% 1/4W F	

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\*A-7060-990-A PW-58 BOARD, COMPLETE  
(UK/AEP MODEL)  
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\*A-7061-237-A PW-58 BOARD, COMPLETE  
(WEST GERMANY MODEL)  
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\*1-533-189-11 HOLDER, FUSE  
2-832-007-00 BUSHING (K), INSULATING  
3-719-591-01 SHEET (SMALL), SILICON  
3-719-592-01 SHEET (MIDDLE), SILICON  
3-721-740-01 PROTECTOR, IC

4-374-846-01 COVER, CAPACITOR, CAP TYPE  
7-621-770-XX SCREW +P 2.6X8  
7-621-773-95 SCREW +B 2.6X6  
7-682-548-09 SCREW +B 3X8

CAPACITOR

C701	△ 1-136-537-11	FILM	0.47MF	20%	250V
C702	△ 1-162-599-12	CERAMIC	0.0047MF	20%	400V
C703	△ 1-162-599-12	CERAMIC	0.0047MF	20%	400V
C704	△ 1-162-599-12	CERAMIC	0.0047MF	20%	400V
C705	△ 1-162-599-12	CERAMIC	0.0047MF	20%	400V
C706	1-136-130-00	FILM	0.1MF	5%	400V
C707	1-162-117-00	CERAMIC	100PF	10%	500V
C709	1-124-628-11	ELECT	220MF	20%	100V
C710	1-124-791-11	ELECT	1MF	20%	50V
C711	1-130-468-00	MYLAR	560PF	5%	50V
C712	1-102-106-00	CERAMIC	100PF	10%	50V
C713	1-130-468-00	MYLAR	560PF	5%	50V
C714	1-102-074-00	CERAMIC	0.001MF	10%	50V
C715	1-124-791-11	ELECT	1MF	20%	50V
C716	1-130-061-00	FILM	0.0015MF	5%	630V
C717	△ 1-125-533-11	ELECT(BLOCK)	100MF	20%	400V
C719	1-161-059-00	CERAMIC	0.047MF	10%	50V
C721	1-129-702-00	FILM	0.001MF	10%	630V
C722	1-101-004-00	CERAMIC	0.01MF		50V
C723	1-124-790-91	ELECT	0.47MF	20%	100V
C724	1-102-114-00	CERAMIC	470PF	10%	50V

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

# PW-58

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C725	1-102-114-00	CERAMIC	470PF 10%	50V	D711	8-719-110-76	DIODE RD33ESB
C726	1-102-114-00	CERAMIC	470PF 10%	50V	D712	8-719-929-04	DIODE ERB29-04
C727	1-102-074-00	CERAMIC	0.001MF 10%	50V	D713	8-719-110-02	DIODE RD7.5ESB1
C730	1-102-228-00	CERAMIC	470PF 10%	500V	D730	8-719-948-59	DIODE ERB93-02
C731	1-102-228-00	CERAMIC	470PF 10%	500V	D731	8-719-948-59	DIODE ERB93-02
C732	1-124-580-11	ELECT	330MF 20%	35V	D732	8-719-982-04	DIODE ERB81-004
C737	1-102-106-00	CERAMIC	100PF 10%	50V	D733	8-719-982-04	DIODE ERB81-004
C738	1-102-106-00	CERAMIC	100PF 10%	50V	D737	8-719-911-19	DIODE 1SS119
C741	1-126-142-11	ELECT	100MF 20%	35V	D738	8-719-110-54	DIODE RD20ESB3
C742	1-123-333-00	ELECT	100MF 20%	25V	D740	8-719-911-19	DIODE 1SS119
C743	1-126-317-51	ELECT	220MF 20%	50V	D741	8-719-982-04	DIODE ERB81-004
C744	1-124-514-11	ELECT	100MF 20%	50V	D742	8-719-982-04	DIODE ERB81-004
C745	1-124-558-51	ELECT	470MF 20%	10V	D744	8-719-110-60	DIODE RD24ESB
C746	1-126-317-51	ELECT	220MF 20%	50V	D745	8-719-123-89	DIODE RD91E-B
C756	1-129-709-00	FILM	0.0039MF 10%	630V	D746	8-719-110-00	DIODE RD100E-B
C757	1-102-114-00	CERAMIC	470PF 10%	50V	D790	8-719-109-97	DIODE RD6.8ESB2
C758	1-126-316-51	ELECT	470MF 20%	16V	D791	8-719-110-11	DIODE RD9.1ESB
C765	1-102-114-00	CERAMIC	470PF 10%	50V			
C766	1-124-558-51	ELECT	470MF 20%	10V			
C769	1-102-106-00	CERAMIC	100PF 10%	50V			
C770	1-102-228-00	CERAMIC	470PF 10%	500V			
C771	1-102-038-00	CERAMIC	0.001MF 99%	500V			
C772	1-102-114-00	CERAMIC	470PF 10%	50V			
C773	1-102-114-00	CERAMIC	470PF 10%	50V			
C774	1-102-074-00	CERAMIC	0.001MF 10%	50V			
C775	1-136-537-11	FILM	0.47MF 20%	250V			
C776	1-102-106-00	CERAMIC	100PF 10%	50V			
C777	1-102-106-00	CERAMIC	100PF 10%	50V			
C778	1-102-074-00	CERAMIC	0.001MF 10%	50V			
C779	1-102-114-00	CERAMIC	470PF 10%	50V			
C780	1-102-074-00	CERAMIC	0.001MF 10%	50V			
C781	1-102-114-00	CERAMIC	470PF 10%	50V			
C790	1-123-356-00	ELECT	10MF 20%	16V			
C791	1-164-194-12	CERAMIC	0.0047MF 400V				
C792	1-164-599-12	CERAMIC	0.0047MF 20% 400V (WEST GERMANY MODEL) (WEST GERMANY MODEL)				
<u>CONNECTOR</u>							
CN001	*1-564-318-00	PIN, BOARD TO BOARD 10P					
CN002	*1-566-093-11	PIN, BOARD TO BOARD 8P					
CN801	*1-564-321-00	PIN, CONNECTOR 2P					
CN830	1-564-320-00	PIN, CONNECTOR 2P					
<u>DIODE</u>							
D701	8-719-924-06	DIODE	ERC24-06S				
D702	8-719-924-06	DIODE	ERC24-06S				
D703	8-719-924-06	DIODE	ERC24-06S				
D704	8-719-924-06	DIODE	ERC24-06S				
D705	1-806-549-41	DIODE	ERB43-08				
D706	8-719-302-06	DIODE	EU2A				
D707	8-719-304-50	THYRISTOR	TF341M-A				
D708	8-719-110-36	DIODE	RD13ESB2				
D710	8-719-110-76	DIODE	RD33ESB				
<u>FUSE</u>							
F701	1-532-259-00	FUSE, TIME-LAG (1.6A/250V)					
F750	1-576-026-11	FUSE, MICRO (2A/125V)					
<u>FERRITE BEAD</u>							
FB730	1-543-508-11	BEAD, FERRITE					
FB732	1-543-508-11	BEAD, FERRITE					
FB733	1-543-508-11	BEAD, FERRITE					
FB734	1-543-508-11	BEAD, FERRITE					
FB735	1-543-508-11	BEAD, FERRITE					
FB736	1-543-508-11	BEAD, FERRITE					
FB737	1-543-508-11	BEAD, FERRITE					
FB738	1-543-508-11	BEAD, FERRITE					
<u>ENCAPSULATED COMPONENT</u>							
FL734	1-236-071-11	ENCAPSULATED COMPONENT					
FL735	1-236-071-11	ENCAPSULATED COMPONENT					
FL736	1-236-071-11	ENCAPSULATED COMPONENT					
FL737	1-236-071-11	ENCAPSULATED COMPONENT					
FL738	1-236-071-11	ENCAPSULATED COMPONENT					
FL739	1-236-071-11	ENCAPSULATED COMPONENT					
FL740	1-236-071-11	ENCAPSULATED COMPONENT					
<u>IC</u>							
IC701	8-749-900-83	IC STR50115A					
<u>COIL</u>							
L701	1-412-012-11	INDUCTOR					100UH
<u>TRANSISTOR</u>							
Q702	8-729-178-54	TRANSISTOR 2SC2785-F					
Q703	8-729-802-05	TRANSISTOR 2SC2603F-TP					
Q704	8-729-802-05	TRANSISTOR 2SC2603F-TP					
Q705	8-729-305-02	TRANSISTOR 2SB1258					

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q707	8-729-600-24	TRANSISTOR 2SC403SP-4	
Q709	△ 8-729-000-19	TRANSISTOR BUZ-60	
Q710	8-729-117-54	TRANSISTOR 2SA1175-F	
Q731	△ 8-729-000-17	TRANSISTOR BUZ71L	
Q735	△ 8-729-000-18	TRANSISTOR BUZ73A	
Q790	8-729-117-54	TRANSISTOR 2SA1175-F	
<u>RESISTOR</u>			
R703	1-247-895-00	CARBON 470K 5% 1/4W	
R704	1-249-417-11	CARBON 1K 5% 1/4W	
R705	1-249-425-11	CARBON 4.7K 5% 1/4W	
R707	1-249-400-11	CARBON 39 5% 1/4W	
R709	1-247-883-00	CARBON 150K 5% 1/4W	
R710	△ 1-216-342-11	METAL OXIDE 0.27 5% 1W	F
R711	1-249-411-11	CARBON 330 5% 1/4W	
R712	1-247-764-11	CARBON 10K 5% 1/2W	
R713	1-249-419-11	CARBON 1.5K 5% 1/4W	
R714	1-249-417-11	CARBON 1K 5% 1/4W	
R715	1-215-452-00	METAL 20K 1% 1/6W	
R716	1-249-433-11	CARBON 22K 5% 1/4W	
R717	1-249-415-11	CARBON 680 5% 1/4W	
R718	1-249-417-11	CARBON 1K 5% 1/4W	
R719	1-249-417-11	CARBON 1K 5% 1/4W	
R720	1-249-437-11	CARBON 47K 5% 1/4W	
R721	1-249-425-11	CARBON 4.7K 5% 1/4W	
R722	1-215-874-11	METAL OXIDE 6.8K 5% 1W	F
R723	1-249-421-11	CARBON 2.2K 5% 1/4W	
R724	1-249-429-11	CARBON 10K 5% 1/4W	
R725	△ 1-217-200-00	WIREWOUND 1 10% 2W	F
R726	1-249-430-11	CARBON 12K 5% 1/4W	
R728	1-249-421-11	CARBON 2.2K 5% 1/4W	
R731	1-249-429-11	CARBON 10K 5% 1/4W	
R746	1-249-429-11	CARBON 10K 5% 1/4W	
R752	1-249-421-11	CARBON 2.2K 5% 1/4W	
R757	1-249-421-11	CARBON 2.2K 5% 1/4W	
R758	1-249-429-11	CARBON 10K 5% 1/4W	
R759	1-249-417-11	CARBON 1K 5% 1/4W	
R760	1-249-413-11	CARBON 470 5% 1/4W	
R790	1-247-885-00	CARBON 180K 5% 1/4W	
R791	1-249-439-11	CARBON 68K 5% 1/4W	
R792	1-214-923-00	CARBON 270K 5% 1/2W	
<u>VARIABLE RESISTOR</u>			
RV701	1-228-996-00	RES, ADJ, CARBON 47K	
<u>TRANSFORMER</u>			
T701	△ 1-424-121-11	TRANSFORMER, LINE FILTER	
T702	△ 1-449-115-11	TRANSFORMER, DC-DC CONVERTER	
T703	△ 1-449-114-11	TRANSFORMER, DC-DC CONVERTER	
T704	△ 1-449-117-11	TRANSFORMER, DC-DC CONVERTER	
T705	1-421-622-11	TRANSFORMER, LINE FILTER	
T730	△ 1-449-113-11	TRANSFORMER, DC-DC CONVERTER	

Ref.No	Part No.	Description	Remark
T731	△ 1-449-116-11	TRANSFORMER, DC-DC CONVERTER	
*****			
*A-7070-631-A PK-15 BOARD, COMPLETE			
*****			
<u>CAPACITOR</u>			
C734	1-162-294-31	CERAMIC 0.001MF 10% 50V	
C735	1-162-294-31	CERAMIC 0.001MF 10% 50V	
C736	1-162-290-31	CERAMIC 470PF 10% 50V	
C740	1-124-791-11	ELECT 1MF 20% 50V	
C748	1-130-471-00	MYLAR 0.001MF 10% 50V	
C749	1-124-446-11	ELECT 47MF 20% 10V	
C750	1-126-094-11	ELECT 4.7MF 20% 25V	
C753	1-162-294-31	CERAMIC 0.001MF 10% 50V	
C754	1-162-294-31	CERAMIC 0.001MF 10% 50V	
C755	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
<u>DIODE</u>			
D734	8-719-911-19	DIODE 1SS119	
D735	8-719-911-19	DIODE 1SS119	
D736	8-719-911-19	DIODE 1SS119	
D750	8-719-921-20	DIODE 1SS119	
<u>IC</u>			
IC730	8-759-937-59	IC MB3759	
<u>TRANSISTOR</u>			
Q733	8-729-600-24	TRANSISTOR 2SC403SP-4	
Q734	8-729-600-24	TRANSISTOR 2SC403SP-4	
Q738	8-729-117-54	TRANSISTOR 2SA1175-F	
Q739	8-729-178-54	TRANSISTOR 2SC2785-F	
Q740	8-729-900-80	TRANSISTOR DTC114ES	
<u>RESISTOR</u>			
R730	1-249-429-11	CARBON 10K 5% 1/4W	
R732	1-249-401-11	CARBON 47 5% 1/4W	
R734	1-249-420-11	CARBON 1.8K 5% 1/4W	
R736	1-249-425-11	CARBON 4.7K 5% 1/4W	
R737	1-249-433-11	CARBON 22K 5% 1/4W	
R740	1-249-441-11	CARBON 100K 5% 1/4W	
R741	1-249-425-11	CARBON 4.7K 5% 1/4W	
R742	1-249-423-11	CARBON 3.3K 5% 1/4W	
R743	1-249-423-11	CARBON 3.3K 5% 1/4W	
R747	1-249-416-11	CARBON 820 5% 1/4W	
R749	1-249-435-11	CARBON 33K 5% 1/4W	
R750	1-249-424-11	CARBON 3.9K 5% 1/4W	
R753	1-249-425-11	CARBON 4.7K 5% 1/4W	
R754	1-249-437-11	CARBON 47K 5% 1/4W	
R755	1-249-429-11	CARBON 10K 5% 1/4W	
R756	1-249-437-11	CARBON 47K 5% 1/4W	

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When indicating parts by reference number, please include the board name.

<b>PK-15</b>	<b>PW-59</b>	<b>TI-14</b>
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Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark			
<u>VARIABLE RESISTOR</u>										
RV730	1-230-718-11	RES, ADJ, CARBON 1K		IC852	8-759-945-50	IC PQ05R04S				
RV731	1-230-720-11	RES, ADJ, CARBON 4.7K		IC853	8-759-945-51	IC PQ09R04S				
*****				<u>COIL</u>						
*A-7060-991-A PW-59 BOARD, COMPLETE *****				L850	1-410-958-11	INDUCTOR	68UH			
<u>CAPACITOR</u>				L851	1-410-958-11	INDUCTOR	68UH			
C850	1-101-004-00	CERAMIC	0.01MF	50V	L852	1-410-958-11	INDUCTOR	68UH		
C851	1-123-321-00	ELECT	220MF	20%	16V	L853	1-410-958-11	INDUCTOR	68UH	
C852	1-101-004-00	CERAMIC	0.01MF	50V	L854	1-410-958-11	INDUCTOR	68UH		
C853	1-124-360-00	ELECT	1000MF	20%	16V	L855	1-410-958-11	INDUCTOR	68UH	
C854	1-124-126-00	ELECT	47MF	20%	16V	L858	1-410-958-11	INDUCTOR	68UH	
C855	1-127-489-00	ELECT(SOLID)	10MF	20%	10V	L859	1-410-958-11	INDUCTOR	68UH	
C856	1-101-004-00	CERAMIC	0.01MF	50V	L860	1-410-958-11	INDUCTOR	68UH		
C857	1-101-004-00	CERAMIC	0.01MF	50V	L861	1-410-958-11	INDUCTOR	68UH		
C858	1-126-335-11	ELECT	220MF	20%	10V	<u>IC LINK</u>				
C859	1-124-234-00	ELECT	22MF	20%	16V	PS853A	1-532-637-00 LINK, IC ICP-N25 (1A)			
C860	1-124-514-11	ELECT	100MF	20%	50V	<u>TRANSISTOR</u>				
C861	1-127-492-00	ELECT(SOLID)	33MF	20%	10V	Q850	8-729-117-54 TRANSISTOR 2SA1175-K			
C862	1-127-492-00	ELECT(SOLID)	33MF	20%	10V	Q851	8-729-900-85 TRANSISTOR DTC144WS			
C863	1-127-492-00	ELECT(SOLID)	33MF	20%	10V	Q852	8-729-178-54 TRANSISTOR 2SC2785-F			
C865	1-127-492-00	ELECT(SOLID)	33MF	20%	10V	<u>RESISTOR</u>				
C867	1-101-004-00	CERAMIC	0.01MF	50V	R846	1-215-379-00 METAL	18 1% 1/6W			
C868	1-124-446-11	ELECT	47MF	20%	10V	R850	1-249-417-11 CARBON	1K 5% 1/4W		
C869	1-102-110-00	CERAMIC	220PF	10%	50V	R852	1-247-758-11 CARBON	3.3K 5% 1/2W		
C870	1-126-157-11	ELECT	10MF	20%	16V	R853	1-249-440-11 CARBON	82K 5% 1/4W		
C871	1-124-791-11	ELECT	1MF	20%	50V	R854	1-249-430-11 CARBON	12K 5% 1/4W		
<u>CONNECTOR</u>				R855	1-249-429-11	CARBON	10K 5% 1/4W			
CN850	*1-560-890-00	PIN, CONNECTOR	2P		R857	1-249-413-11	CARBON	470 5% 1/4W		
CN851	*1-560-897-00	PIN, CONNECTOR	9P		R858	1-249-429-11	CARBON	10K 5% 1/4W		
CN852	*1-560-893-00	PIN, CONNECTOR	5P		R860	1-249-440-11	CARBON	82K 5% 1/4W		
CN853	*1-508-796-00	PIN, CONNECTOR	2P		R861	1-249-393-11	CARBON	10 5% 1/4W F		
CN854	*1-560-897-00	PIN, CONNECTOR	9P		R862	1-249-437-11	CARBON	47K 5% 1/4W		
<u>DIODE</u>				R863	1-215-413-00	METAL	470 1% 1/6W			
D850	8-719-109-97	DIODE	RD6.8ESB2		<u>VARIABLE RESISTOR</u>					
D851	8-719-911-19	DIODE	ISS119		RV850	1-228-993-00	RES, ADJ, CARBON 4.7K			
D852	8-719-911-19	DIODE	ISS119		*****					
D856	8-719-911-19	DIODE	ISS119		*A-7060-995-A TI-14 BOARD, COMPLETE (WG/AEP MODEL) *****					
D858	8-719-911-19	DIODE	ISS119		*A-7061-234-A TI-14 BOARD, COMPLETE (UK MODEL) *****					
D870	8-719-911-06	DIODE	ISS106		<u>CAPACITOR</u>					
<u>FUSE</u>				C551	1-124-257-00	ELECT	2.2MF	20%	50V	
F851	1-576-025-11	FUSE, MICRO	(0.63A/125V)		C552	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
F852	1-576-026-11	FUSE, MICRO	(2A/125V)		C553	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
<u>IC</u>				C554	1-124-567-00	ELECT	1200MF	20%	10V	
IC850	8-759-801-27	IC	L78M05							
IC851	8-759-945-51	IC	PQ09R04S							

The components identified by mark **A** or dotted line with mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C555	1-126-176-11	ELECT 220MF	20% 10V	C641	1-163-241-11	CERAMIC CHIP 39PF	5% 50V
C556	1-124-638-11	ELECT 22MF	20% 6.3V			(WG/AEP MODEL)	
C557	1-124-638-11	ELECT 22MF	20% 6.3V	C642	1-124-589-11	ELECT 47MF	20% 16V
C558	1-163-038-00	CERAMIC CHIP 0.1MF	25V	C643	1-163-113-00	CERAMIC CHIP 68PF	5% 50V
C559	1-124-589-11	ELECT 47MF	20% 16V			(WG/AEP MODEL)	
C560	1-124-257-00	ELECT 2.2MF	20% 50V	C652	1-126-094-11	ELECT 4.7MF	20% 25V
C561	1-162-638-11	CERAMIC CHIP 1MF	16V	C655	1-126-157-11	ELECT 10MF	20% 16V
C562	1-124-257-00	ELECT 2.2MF	20% 50V	C658	1-163-129-00	CERAMIC CHIP 330PF	10% 50V
C563	1-126-094-11	ELECT 4.7MF	20% 25V	C659	1-163-129-00	CERAMIC CHIP 330PF	10% 50V
C601	1-124-589-11	ELECT 47MF	20% 16V	C660	1-124-472-11	ELECT 470MF	20% 10V
C602	1-124-122-11	ELECT 100MF	20% 50V	C661	1-124-589-11	ELECT 47MF	20% 16V
C603	1-124-122-11	ELECT 100MF	20% 50V	C662	1-163-021-00	CERAMIC CHIP 0.01MF	50V
C604	1-127-499-00	ELECT(SOLID) 22MF	20% 16V	<u>CONNECTOR</u>			
C605	1-127-514-00	ELECT(SOLID) 33MF	20% 16V	CN601	*1-560-893-00	PIN, CONNECTOR 5P	
C606	1-163-021-00	CERAMIC CHIP 0.01MF	50V	CN602	*1-563-599-11	CONNECTOR, FLEXIBLE 22P	
C607	1-163-121-00	CERAMIC CHIP 150PF	5% 50V	CN605	*1-560-890-00	PIN, CONNECTOR 2P	
C608	1-136-165-00	MYLAR 0.1MF	10% 50V	CN606	*1-564-001-11	PIN, CONNECTOR 2P	
C609	1-136-163-00	MYLAR 0.068MF	10% 50V	<u>DIODE</u>			
C610	1-136-163-00	MYLAR 0.068MF	10% 50V	D601	8-719-939-23	DIODE 1S2471	
C611	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	D602	8-719-100-05	DIODE 1S2837	
C612	1-126-157-11	ELECT 10MF	20% 16V	D603	8-719-105-73	DIODE RD4.7M-2	
C613	1-126-154-11	ELECT 47MF	20% 6.3V	<u>IC</u>			
C614	1-123-611-00	ELECT 1MF	20% 50V	IC502	8-759-952-60	IC BA526	
C615	1-123-611-00	ELECT 1MF	20% 50V	IC601	8-759-602-16	IC M54572L	
C616	1-123-611-00	ELECT 1MF	20% 50V	IC602	8-759-945-44	IC BA6161F-T1	
C617	1-163-035-00	CERAMIC CHIP 0.047MF	50V	IC603	8-759-927-56	IC BA7021	
C618	1-136-161-00	MYLAR 0.047MF	10% 50V	<u>IF BLOCK</u>			
C619	1-124-234-00	ELECT 22MF	20% 16V	IF601A	1-464-553-21	IF BLOCK (IFB-389) (WG/AEP MODEL)	
C620	1-163-125-00	CERAMIC CHIP 220PF	5% 50V	IF601A	1-464-760-21	IF BLOCK (IFB-389SA) (UK MODEL)	
		(WG/AEP MODEL)		<u>JACK</u>			
C621	1-163-121-00	CERAMIC CHIP 150PF	5% 50V	J602	1-507-678-00	JACK	
		(WG/AEP MODEL)		J603	1-507-963-11	JACK, PIN 4P	
C622	1-163-095-00	CERAMIC CHIP 12PF	5% 50V	<u>COIL</u>			
		(WG/AEP MODEL)		L601	1-410-380-21	INDUCTOR CHIP 8.2UH	
C623	1-163-105-00	CERAMIC CHIP 33PF	5% 50V	L602	1-410-387-11	INDUCTOR CHIP 33UH	
		(WG/AEP MODEL)		L603	1-410-385-11	INDUCTOR CHIP 22UH	
C624	1-163-035-00	CERAMIC CHIP 0.047MF	50V	L604	1-421-984-11	COIL, CHOKE 4.7MMH	
C625	1-163-035-00	CERAMIC CHIP 0.047MF	50V	L606	1-410-380-21	INDUCTOR CHIP 8.2UH	
C627	1-126-176-11	ELECT 220MF	20% 10V			(WG/AEP MODEL)	
C628	1-163-012-00	CERAMIC CHIP 0.0018MF	10% 50V	L607	1-410-385-11	INDUCTOR CHIP 22UH	
C629	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V	L608	1-410-380-21	INDUCTOR CHIP 8.2UH	
C630	1-163-127-00	CERAMIC CHIP 270PF	5% 50V	L609	1-410-380-21	INDUCTOR CHIP 8.2UH	
C631	1-124-257-00	ELECT 2.2MF	20% 50V			(WG/AEP MODEL)	
C632	1-124-257-00	ELECT 2.2MF	20% 50V	L610	1-410-393-11	INDUCTOR CHIP 100UH	
C633	1-163-113-00	CERAMIC CHIP 68PF	5% 50V			(WG/AEP MODEL)	
		(WG/AEP MODEL)		<u>IC LINK</u>			
C634	1-163-097-00	CERAMIC CHIP 15PF	5% 50V	PS 601A	1-532-679-00	LINK, IC ICP-N15 (0.6A)	
C635	1-126-094-11	ELECT 4.7MF	20% 25V				
C636	1-163-033-00	CERAMIC CHIP 0.022MF	50V				
C637	1-163-017-00	CERAMIC CHIP 0.0047MF	10% 50V				
C638	1-163-141-00	CERAMIC CHIP 0.001MF	10% 50V				
C639	1-163-033-00	CERAMIC CHIP 0.022MF	50V				
C640	1-126-094-11	ELECT 4.7MF	20% 25V				

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

**TI-14 DC-8 LD-1**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>TRANSISTOR</u>				R628	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
Q511	8-729-100-66	TRANSISTOR 2SC1623-L6		R629	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W
Q512	8-729-100-66	TRANSISTOR 2SC1623-L6		R630	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q601	8-729-601-65	TRANSISTOR 2SC3053TP-1C		R631	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W
Q602	8-729-100-66	TRANSISTOR 2SC1623-L6		R632	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q603	8-729-100-66	TRANSISTOR 2SC1623-L6		R633	1-216-049-00	METAL GLAZE 1K 5%	1/10W
Q604	8-729-100-66	TRANSISTOR 2SC1623-L6		R634	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
Q605	8-729-100-76	TRANSISTOR 2SA812		R635	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
Q606	8-729-100-66	TRANSISTOR 2SC1623-L6		R636	1-216-073-00	METAL GLAZE 10K 5%	1/10W
Q607	8-729-100-66	TRANSISTOR 2SC1623-L6		R637	1-216-089-00	METAL GLAZE 47K 5%	1/10W
Q608	8-729-611-53	TRANSISTOR 2SA1115-F		R651	1-216-021-00	METAL GLAZE 68 5%	1/10W
<u>RESISTOR</u>				R652	1-216-015-00	METAL GLAZE 39 5%	1/10W
R501	1-216-049-00	METAL GLAZE 1K 5%	1/10W	R653	1-216-015-00	METAL GLAZE 39 5%	1/10W
R551	1-216-075-00	METAL GLAZE 12K 5%	1/10W	R655	1-212-857-00	FUSIBLE 10 5%	1/4W F
R552	1-216-033-00	METAL GLAZE 220 5%	1/10W	R658	1-216-025-00	METAL GLAZE 100 5%	1/10W (UK MODEL)
R553	1-216-295-00	METAL GLAZE 0 5%	1/10W	R659	1-216-025-00	METAL GLAZE 100 5%	1/10W (UK MODEL)
R554	1-216-138-00	METAL GLAZE 3.3 5%	1/8W	R661	1-249-415-11	CARBON 680 5%	1/4W
R555	1-216-138-00	METAL GLAZE 3.3 5%	1/8W	R662	1-249-415-11	CARBON 680 5%	1/4W
R561	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	<u>COIL</u>			
R562	1-216-073-00	METAL GLAZE 10K 5%	1/10W	T601	1-404-476-00	COIL, IF (WG/AEP MODEL)	
R563	1-216-089-00	METAL GLAZE 47K 5%	1/10W	T602	1-404-476-00	COIL, IF (WG/AEP MODEL)	
R573	1-216-049-00	METAL GLAZE 1K 5%	1/10W	<u>TUNER</u>			
R574	1-216-025-00	METAL GLAZE 100 5%	1/10W	TU601	1-463-907-11	TUNER, ET (BT-883S)	
R576	1-216-073-00	METAL GLAZE 10K 5%	1/10W	*****			
R601	1-247-714-11	CARBON 1.2K 5%	1/4W	*1-625-499-11 DC-8 BOARD			
R602	1-216-077-00	METAL GLAZE 15K 5%	1/10W	*****			
R603	1-216-073-00	METAL GLAZE 10K 5%	1/10W	<u>DIODE</u>			
R604	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	D791	8-719-931-33	DIODE EQB01-33	
R605	1-216-081-00	METAL GLAZE 22K 5%	1/10W	<u>JACK</u>			
R606	1-216-081-00	METAL GLAZE 22K 5%	1/10W	J730	1-507-563-00	JACK, DC	
R607	1-216-109-00	METAL GLAZE 330K 5%	1/10W	<u>IC LINK</u>			
R608	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	PS791	1-532-985-21	LINK, IC PRF8000 (8A/125V)	
R609	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	*****			
R610	1-216-085-00	METAL GLAZE 33K 5%	1/10W	*A-7070-024-A LD-1 BOARD, COMPLETE			
R611	1-216-109-00	METAL GLAZE 330K 5%	1/10W	*****			
R612	1-216-109-00	METAL GLAZE 330K 5%	1/10W	<u>DIODE</u>			
R613	1-216-748-11	METAL GLAZE 39K 5%	1/10W	D901	8-719-928-54	DIODE GL-450S	
R614	1-216-748-11	METAL GLAZE 39K 5%	1/10W	*****			
R615	1-216-073-00	METAL GLAZE 10K 5%	1/10W	*****			
R616	1-216-073-00	METAL GLAZE 10K 5%	1/10W	*****			
R617	1-216-073-00	METAL GLAZE 10K 5%	1/10W	*****			
R618	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	*****			
R620	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W (WG/AEP MODEL)	*****			
R620	1-216-295-00	METAL GLAZE 0 5%	1/10W (UK MODEL)	*****			
R621	1-216-035-00	METAL GLAZE 270 5%	1/10W	*****			
R622	1-216-063-00	METAL GLAZE 3.9K 5%	1/10W	*****			
R623	1-216-041-00	METAL GLAZE 470 5%	1/10W	*****			
R624	1-216-180-00	METAL GLAZE 180 5%	1/8W	*****			
R625	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W	*****			
R626	1-216-095-00	METAL GLAZE 82K 5%	1/10W	*****			
R627	1-216-121-00	METAL GLAZE 1M 5%	1/10W	*****			

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

MS-4

LS-9

EJ-3

PR-19

FT-31

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
*A-7090-029-A	MS-4	BOARD, COMPLETE *****		R042	1-249-404-00	CARBON 82 5% 1/4W	
1-163-038-00		CERAMIC CHIP 0.1MF	25V	R043	1-249-427-11	CARBON 6.8K 5% 1/4W	
*1-564-671-31		PIN, CONNECTOR (HOOK TYPE)		R044	1-249-431-11	CARBON 15K 5% 1/4W	
*****				<u>VARIABLE RESISTOR</u>			
	LS-9	BOARD *****		RV020	1-237-951-11	RES, VAR, CARBON 500K (SLOW ADJ)	
*1-564-671-11		PIN, CONNECTOR (HOOK TYPE)		RV022	1-237-952-11	RES, VAR, CARBON 20K ( PICTURE)	
*****				RV023	1-237-211-11	RES, VAR, CARBON 10K ( COLOR)	
	EJ-3	BOARD *****		RV024	1-237-211-11	RES, VAR, CARBON 10K ( HUE)	
*1-623-399-13				RV025	1-237-952-11	RES, VAR, CARBON 20K ( BRIGHT)	
*****				<u>SWITCH</u>			
	CAPACITOR			S020	1-554-174-00	SWITCH, KEY BOARD (AV MUTE)	
C570	1-163-021-00	CERAMIC CHIP 0.01MF	50V	S021	1-554-174-00	SWITCH, KEY BOARD (SEARCH)	
C571	1-163-021-00	CERAMIC CHIP 0.01MF	50V	S022	1-554-174-00	SWITCH, KEY BOARD (TUNING +)	
	CONNECTOR			S023	1-554-174-00	SWITCH, KEY BOARD (TUNING -)	
CN503	*1-564-013-00	PIN, CONNECTOR 3P		S024	1-554-174-00	SWITCH, KEY BOARD (CLEAR)	
	DIODE			S027	1-554-174-00	SWITCH, KEY BOARD (INPUT SELECT)	
D570	8-719-108-12	DIODE RD9.1EW		S028	1-553-977-00	SWITCH, SLIDE (AFT ON/OFF)	
D571	8-719-108-12	DIODE RD9.1EW		*****			
	JACK			*A-7070-578-A	FT-31	BOARD, COMPLETE *****	
J501	1-563-282-11	JACK, SMALL TYPE			CAPACITOR		
	RESISTOR			C201	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R579	1-249-410-11	CARBON 270 5% 1/4W		C202	1-161-379-00	CERAMIC 0.01MF 20% 16V	
R580	1-249-410-11	CARBON 270 5% 1/4W			DIODE		
*****				D201	8-719-812-31	DIODE TLR123	
*A-7070-548-A	PR-19	BOARD, COMPLETE *****		D202	8-719-920-05	DIODE TLG123A	
	RESISTOR			D203	8-719-913-39	DIODE PY2225-B1	
R022	1-249-426-11	CARBON 5.6K 5% 1/4W		D204	8-719-913-36	DIODE PR2225-B1	
R024	1-249-431-11	CARBON 15K 5% 1/4W			RESISTOR		
R026	1-249-431-11	CARBON 15K 5% 1/4W		R204	1-249-426-11	CARBON 5.6K 5% 1/4W	
R027	1-249-437-11	CARBON 47K 5% 1/4W		R205	1-249-428-11	CARBON 8.2K 5% 1/4W	
R028	1-249-426-11	CARBON 5.6K 5% 1/4W		R206	1-249-431-11	CARBON 15K 5% 1/4W	
R029	1-249-428-11	CARBON 8.2K 5% 1/4W		R207	1-249-426-11	CARBON 5.6K 5% 1/4W	
R030	1-247-874-11	CARBON 62K 5% 1/4W		R208	1-249-428-11	CARBON 8.2K 5% 1/4W	
R032	1-247-876-11	CARBON 75K 5% 1/4W		R209	1-249-426-11	CARBON 5.6K 5% 1/4W	
R036	1-249-433-11	CARBON 22K 5% 1/4W		R210	1-249-428-11	CARBON 8.2K 5% 1/4W	
R037	1-249-424-11	CARBON 3.9K 5% 1/4W		R211	1-249-431-11	CARBON 15K 5% 1/4W	
R039	1-249-404-00	CARBON 82 5% 1/4W		R212	1-249-437-11	CARBON 47K 5% 1/4W	
R040	1-249-404-00	CARBON 82 5% 1/4W		R213	1-249-411-11	CARBON 330 5% 1/4W	
R041	1-249-404-00	CARBON 82 5% 1/4W		R214	1-249-411-11	CARBON 330 5% 1/4W	
				R215	1-249-411-11	CARBON 330 5% 1/4W	
				R216	1-249-411-11	CARBON 330 5% 1/4W	
				R217	1-249-429-11	CARBON 10K 5% 1/4W	
				R218	1-249-429-11	CARBON 10K 5% 1/4W	
					SWITCH		
				S201	1-554-174-00	SWITCH, KEY BOARD (STANDBY/ON)	

When indicating parts by reference number, please include the board name.





## HARDWARE LIST

### SCREW

7-621-255-15 SCREW +PTT 2X3 (S)  
7-621-255-20 SCREW +P 2X4  
7-621-255-25 SCREW +P 2X4  
7-621-255-45 SCREW +BVTT 2X6 (S)  
7-621-255-50 SCREW +P 2X8  
  
7-621-255-65 SCREW +P 2X10  
7-621-772-10 SCREW +B 2X4  
7-621-772-40 SCREW +B 2X8  
7-621-773-87 SCREW +P 2.6X10  
7-628-253-00 SCREW +PS 2X4  
  
7-628-253-20 SCREW +PS 2X6  
7-682-548-09 SCREW +P 3X8  
7-682-550-09 SCREW +B 3X12  
7-685-134-19 SCREW +P 2.6X8 TYPE2 SLIT  
7-685-246-19 SCREW +KTP 3X8 TYPE2 NON-SLIT  
  
7-685-346-19 SCREW +RKTP 3X8 TYPE2 N-S  
7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3  
7-685-646-79 SCREW +BVTP 3X8 TYPE2  
7-685-647-79 SCREW +BVTP 3X10 TYPE2 IT-3  
7-685-647-79 SCREW +BVTP 3X10 TYPE2  
  
7-685-648-79 SCREW +BTP 3X12 TYPE2 N-S

### STOP RING

7-624-102-04 STOP RING 1.5, TYPE -E  
7-624-105-04 STOP RING 2.3, TYPE -E  
7-624-106-04 STOP RING 3.0, TYPE -E

### PRECISION SCREW

7-627-553-18 SCREW,PRECISION +P 2X2  
7-627-553-28 SCREW,PRECISION +P 2X2.5  
7-627-553-48 SCREW,PRECISION +P 2X4  
7-627-850-18 SCREW,PRECISION +P 1.4X2.5

### STEEL BALL

7-671-112-01 STEEL, BALL

\*\*\*\*\*

When indicating parts by reference number, please include the board name.

## SECTION 7 MECHANICAL ADJUSTMENTS

### 7-1. MECHANICAL CHECK, ADJUSTMENT AND PREPARATIONS FOR REPLACEMENT

**Note :** Regarding the removal procedures of the cabinet and boards, see Section 2. DISASSEMBLY.

#### 7-1-1. Cassette Compartment Assembly and Operation without Tape Inserted

**Note :** The set will not operate if there is a strong light source near it.

##### 1. Loading

- 1) Remove the VTR section according to Section 2. DISASSEMBLY 2-1, 2-2, 2-4, 2-6, 2-11 and 2-12. (Do not remove the connectors.)
- 2) Remove the cassette compartment assembly ① according to Section 2. DISASSEMBLY 2-19.
- 3) Connect to power supply.
- 4) Apply tape to the RECOG switch ② to keep the pin pressed down.
- 5) Push microswitch ③ once in the direction of arrow A and release. (See Fig. 7-1.)
- 6) Turn on the leaf switch ④. (See Fig. 7-1.)

##### 2. Putting into playback state

- 1) Perform 1. Loading.
- 2) Hook the rubber band ⑤ between S reel and T reel.
- 3) Press the playback button, and when the T reel side starts to rotate, push the tension regulator arm assembly ⑥ in the direction of arrow B. (At this time, the tension regulator band is released and S reel side rotates.)
- 4) Press the stop button to stop.

##### 3. Eject

- 1) Press the EJECT button.

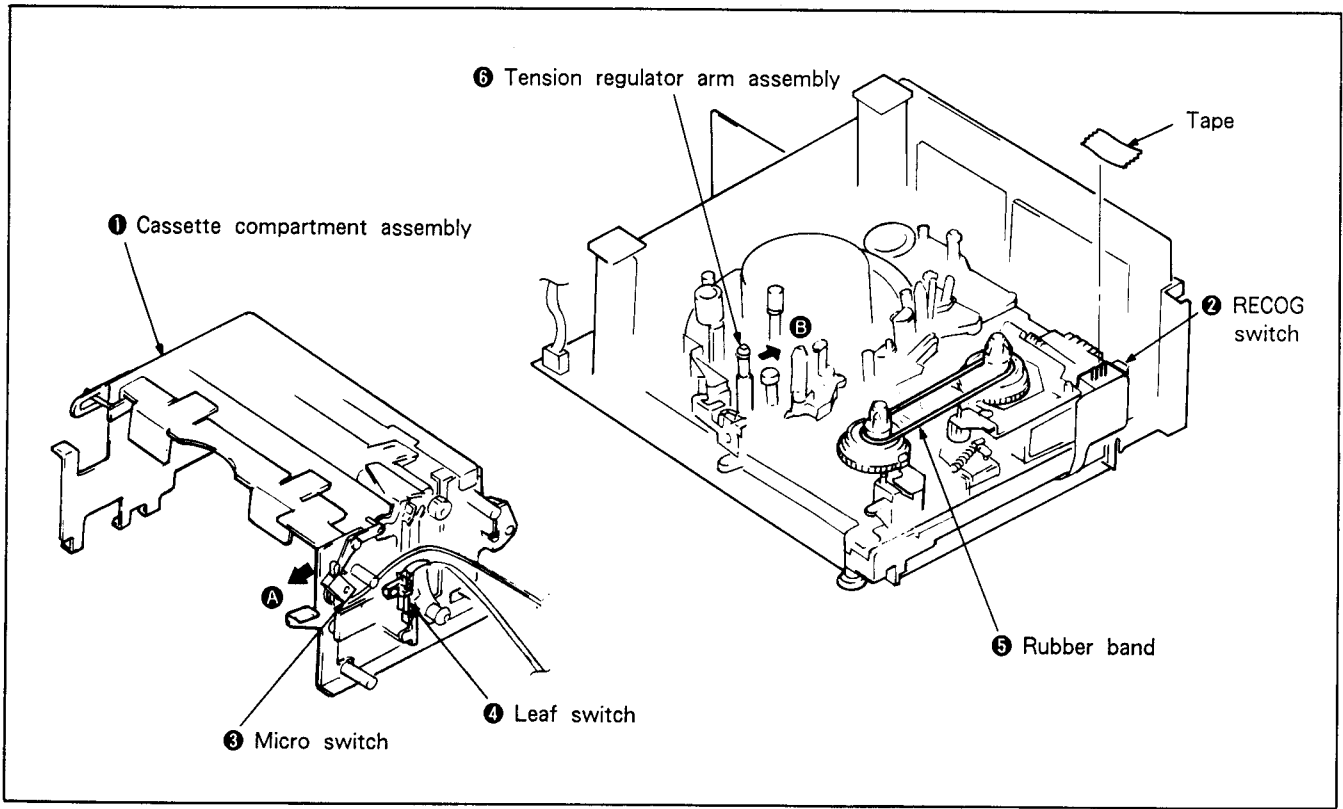


Fig. 7-1.

## 7-1-2. Handling of Mode Selector

### 1. Name of individual parts (Exterior)

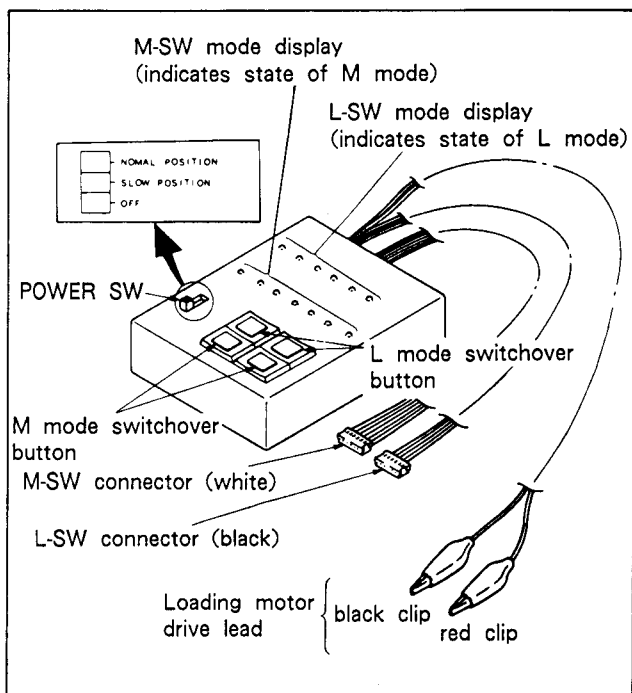


Fig. 7-2.

### 2. Connection

- 1) Open the MA-25 board ❶ according to Section 2. DISASSEMBLY 2-17.
- 2) Remove the two connectors on the MS-4 and LS-9 boards.
- 3) Insert the M-SW connector (6P connector, 6 harness, white) ❷ into the MS-4 board on the set.
- 4) Insert the L-SW connector (6P connector, 4 harness, black) ❸ into the LS-9 board on the set.
- 5) Connect the red clip of the loading motor drive lead ❹ to the red lead wire side of the loading motor and the black clip to the gray lead wire side. (See Figs. 7-2. and 7-3.)

### 3. Caution

- 1) When operating L-SW, be sure to set the M-SW mode to LOADING/UNLOADING.
- 2) When operating M-SW, be sure to set the L-SW mode to LOADING TOP or LOADING END.

### 4. Handling

BLANK lights up regardless of L MODE or M MODE when it is in neither mode during select.

#### 1) L-MODE

- When the right L-MODE switch button is pressed continuously, the display lights up from LOADING TOP → LOADING END, in order in right direction.
- To go from LOADING END → LOADING TOP, press the left switch button continuously until the desired MODE is reached.
- In slow position, the L mode operates more slowly than for normal position.

#### 2) M-MODE

- Set L-SW to LOADING TOP before performing EJECT.
- Set L-SW to LOADING END to perform FF/REW → RVS or RVS → FF/REW.
- When the right M-MODE switch button is pressed continuously, the display lights up from EJECT → RVS, in order in right direction.
- To go from RVS → EJECT, press the left switch button continuously until the desired MODE is reached.

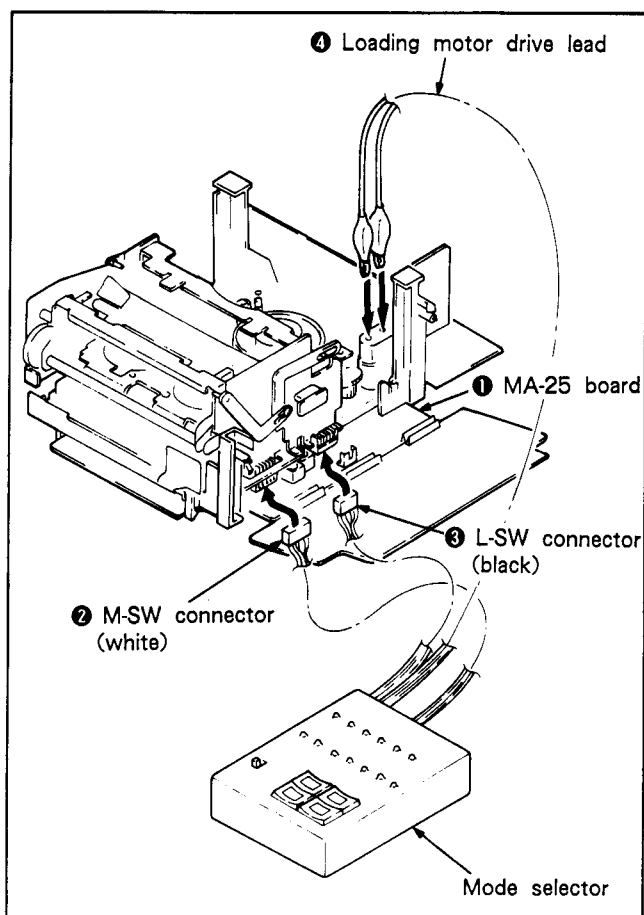


Fig. 7-3.

## 7-2. PERIODIC CHECK AND MAINTENANCE

Please perform the following periodic checks and maintenance in order to obtain optimum set function and performance, and to keep the mechanism and tape in good condition. Also, perform the maintenance below after repair, regardless of the length of time the set has been used by the user.

### 7-2-1. Cleaning of Rotary Drum Assembly

- 1) Press a chamois cloth (Ref. No. J-2) soaked in cleaning fluid (Ref. No. J-1) lightly against the rotary drum assembly, and slowly rotate the rotary upper drum assembly counterclockwise by hand to clean.

**Note :** Do not use the power supply to rotate the motor, and do not rotate the motor clockwise by hand.

Also, there is a danger of damaging the head tip if the chamois cloth is moved vertically relative to the head tip (up/down direction of drum), so please follow the instruction above for cleaning.

### 7-2-2. Cleaning of Tape Path

- 1) Place the cassette compartment assembly in EJECT state, and clean the tape path (No.1 to No.11 guides, capstan shaft, pinch roller) with a chamois cloth soaked in cleaning fluid. (See Fig. 7-4.)

### 7-2-3. Cleaning of Drive System

- 1) Clean the drive system (timing belt, surface of reel tables) with a chamois cloth soaked in cleaning fluid.

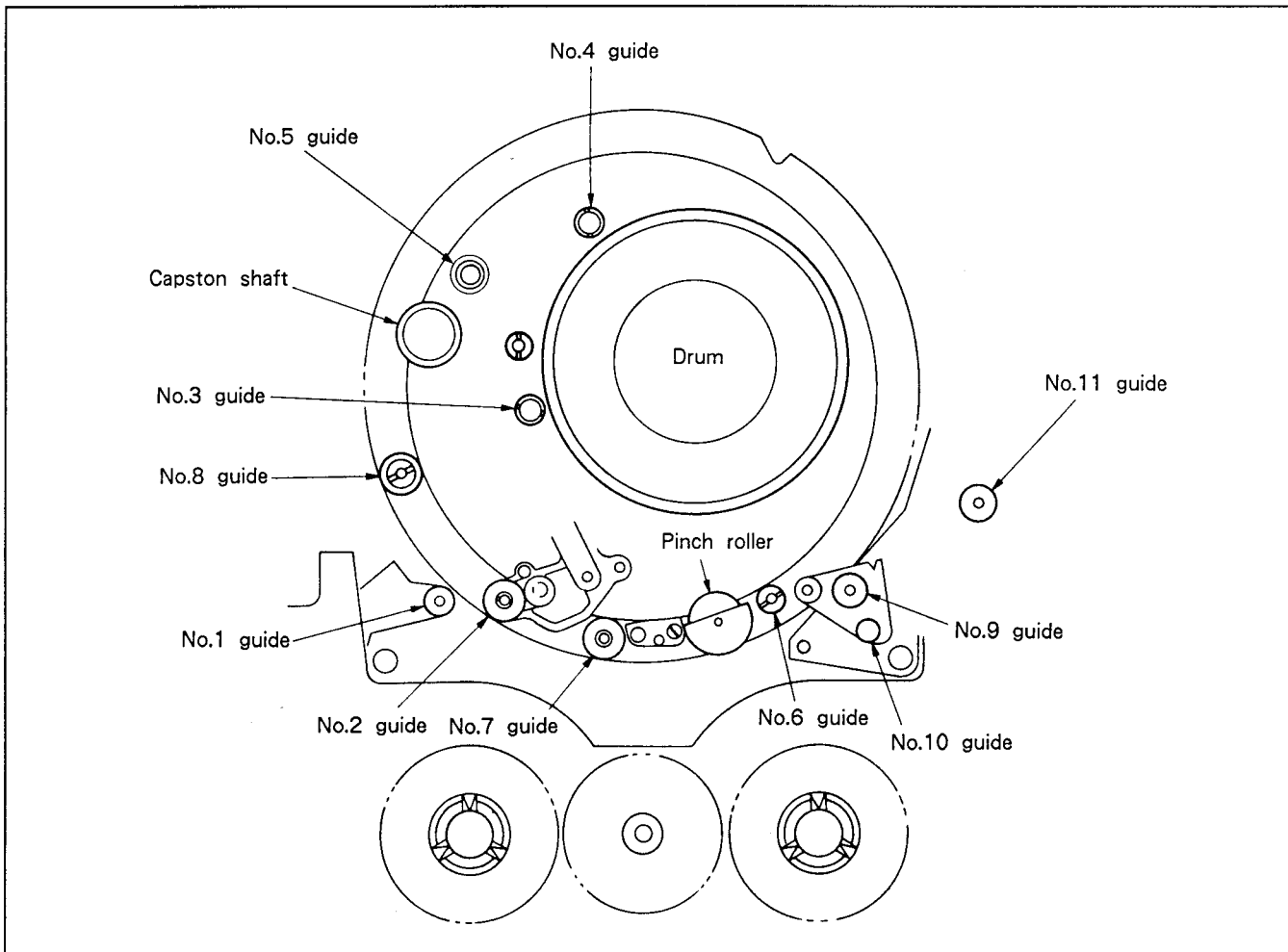


Fig. 7-4.

### 7-2.4. Periodic Check

Perform following according to number of hours of use.

○ Cleaning    ◎ Lubrication    ★ Replacement    ☆ Check

Location		Hours of Use (H)										Notes
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Path	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Drive System	L motor belt	○	○	○	○	○	○	○	★	○	○	3-686-546-01 Replace here, or replace every two years.
	Timing belt	○	○	○	○	○	○	○	○	○	○	3-686-646-01
	Planger solenoid	-	-	-	○	-	-	-	○	-	-	1-454-377-21
	Capstan shaft bearing	-	◎	-	◎	-	◎	-	◎	-	◎	Be careful not to get oil on the tape path surface.
	Loading motor	-	☆	-	☆	-	☆	-	☆	-	☆	A-7040-031-A
	Control motor	-	☆	-	☆	-	☆	-	☆	-	☆	8-835-138-01
Performance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	-	☆	-	☆	-	☆	-	☆	-	☆	
	Brake system	-	☆	-	☆	-	☆	-	☆	-	☆	
	FWD, RVS torque measurement	-	☆	-	☆	-	☆	-	☆	-	☆	

**Note:** When performing an overhaul, refer to the items above when replacing parts.

**Note:** Regarding oil

- Be sure to use designated oil. (There is a danger of trouble occurring if a different viscosity is used.)

Oil : Parts No.7-661-018-18

(Mitsubishi Diamond Oil hydrofluid NT-68)

- Be sure to use clean oil when lubricating the shaft bearing, because there is a danger of wear and burning if dirty oil is used.
- One drop of oil means the amount which sticks to a 2 mm diameter rod, as shown in Fig. (See Fig. 7-5.)

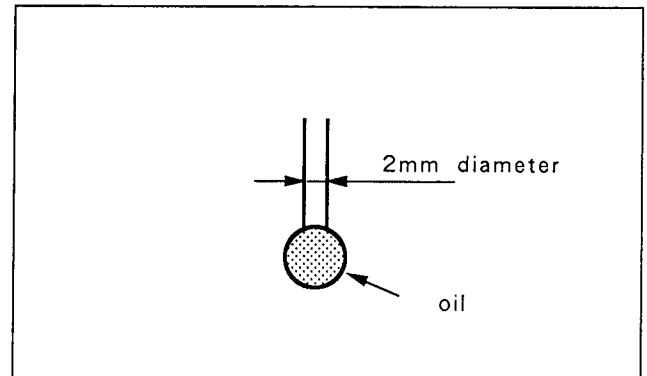

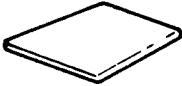
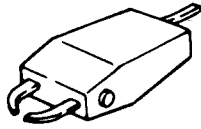
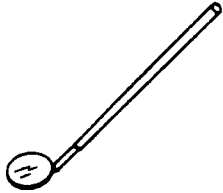
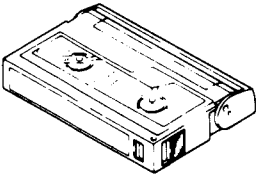
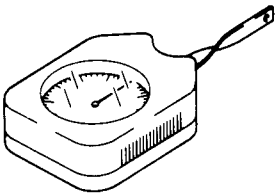
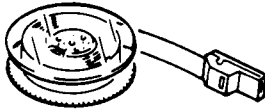
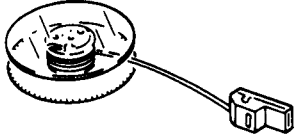
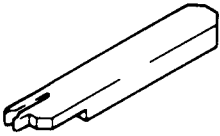


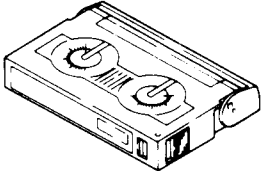
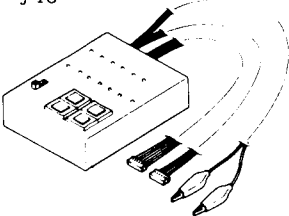
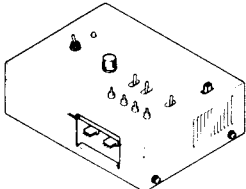
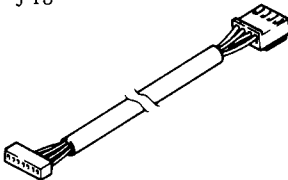
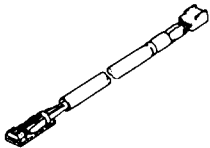


Fig. 7-5.

7-2-5. Service Jig Table

Ref. No.	Name	Part No.	Jig	Use Notes
J-1	Cleaning fluid	Y-2031-001-1		
J-2	Chamois cloth	2-034-697-00		
J-3	Head degausser	Commercially sold		
J-4	Small adjustment mirror, Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape (WR5-1C)	8-967-995-06		Tape path
J-6	Dial tension gauge	J-6080-827-A		torque measurement
J-7	Tension measurement reel	J-6080-831-A		with $\phi$ 30 tape
J-8	Tension measurement reel	J-6080-832-A		with $\phi$ 16 string
J-9	No.10 gear phase jig	J-6080-823-A	GD-2047	
J-10	Rotary drum jig	(packed with the repair rotary upper drum)		
J-11	No.6 guide lock screwdriver	J-6080-826-A		
J-12	FWD, RVS winding torque cassette	J-6080-824-A	GD-2086	
J-13	Mode selector	J-6080-825-A		for all models
J-14	Track shift jig	J-6080-891-A		Tape path
J-15	CTL connector connecting cord	J-6080-879-A		Tape path
J-16	RF/SWP connector connecting cord	J-6080-878-A		Tape path

Other equipment : • Oscilloscope  
• Analog tester (20k  $\Omega$ )

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-7 	J-8 
J-9 	J-10 (Packed with the rotary upper drum for repair) 	J-11 	J-12 
J-13 	J-14 	J-15 	J-16 

### 7-3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

- Note :**
- Use the mode selector (Ref. No. J-13) for this mechanical check, adjustment and replacement.
  - The mode inside the  is the mode set by pressing the mode selector button.

#### 7-3-1. S Reel Table Assembly

##### 1. Removal (See Fig. 7-6.)

- 1) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.
- 2) Set to **FF/REW** mode.
- 3) Remove screw ❶ and remove reel table stopper ❷.
- 4) Remove the REV brake assembly ❸.
- 5) Remove the S reel table assembly ❹.

**Note :** Be sure to hold the upper reel claw section when removing. (See Fig. 7-6.(Note))

##### 2. Mounting (See Fig. 7-6.)

- 1) Put a half drop of oil on the upper point of shaft ❺.
- 2) Move the S main brake assembly ❻ in the direction of arrow.
- 3) Mount the S reel table assembly ❹, being careful not to hit the tension regulator band assembly ❶.
- 4) Mount the REV brake assembly ❸.
- 5) Mount the reel table stopper ❷ and tighten with screw ❶.
- 6) Set to **LOADING/UNLOADING** mode.
- 7) Mount the cassette compartment assembly in opposite procedure of Section 2. DISASSEMBLY 2-19.

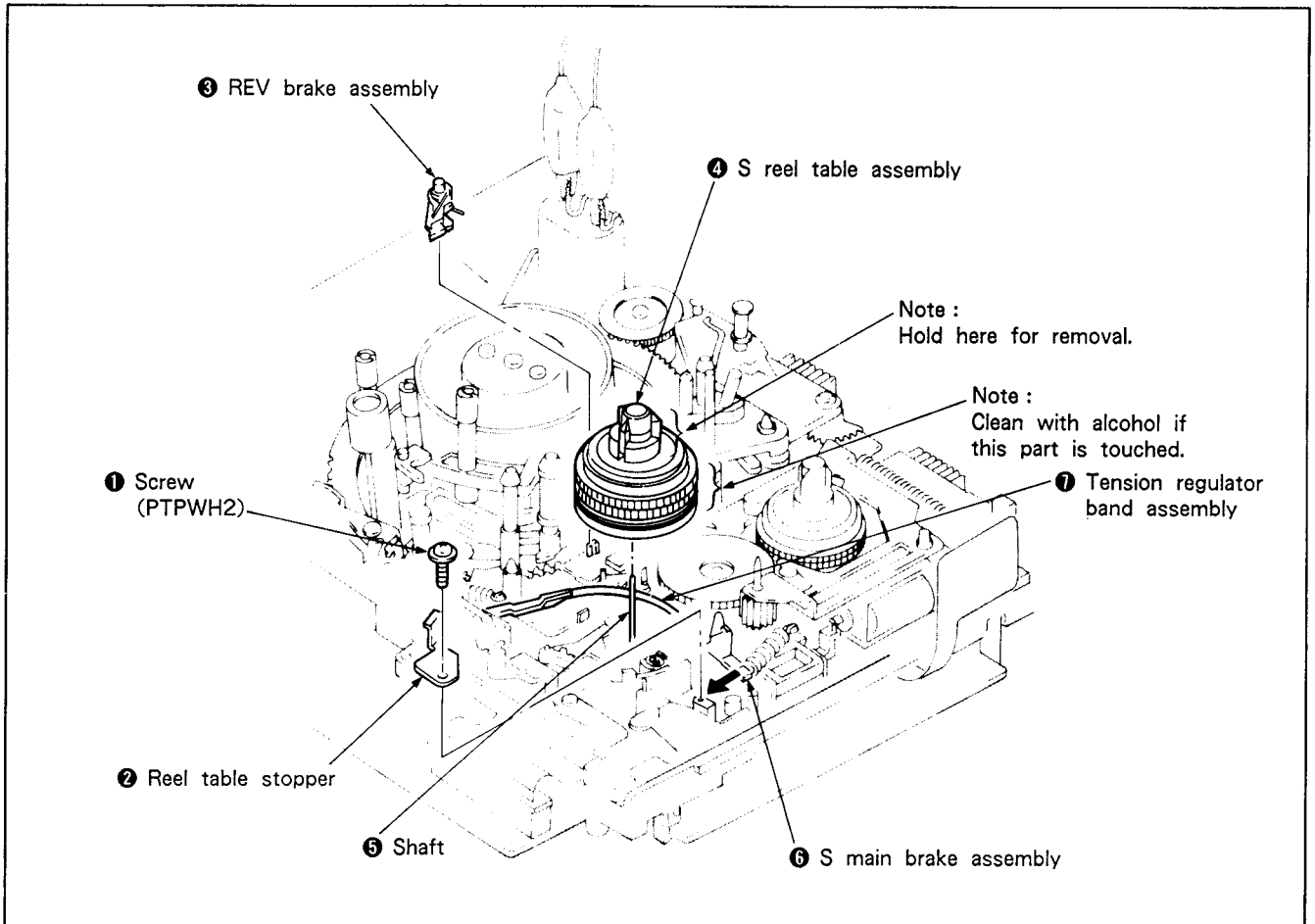


Fig. 7-6.



### 7-3-2. T Reel Table Assembly

#### 1. Removal (See Fig. 7-7.)

- 1) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.
- 2) Set to **UNLOADING WAIT** mode.
- 3) Hook the spring ② on the T.S brake assembly ① to the claw of lock slider.
- 4) Remove the stopper washer ③ and remove the T.S brake assembly ①.
- 5) Set to **EJECT** mode.
- 6) Move drive gear B assembly ④ in the direction of the arrow.
- 7) Remove T reel table assembly ⑤.

**Note:** Be sure to hold the upper reel claw section when removing. (See Fig. 7-7. (Note))

#### 2. Mounting (See Fig. 7-7.)

- 1) Put a half drop of oil on the upper point of shaft ⑥.
- 2) Move the drive gear B assembly ④ in the direction of the arrow. (Confirm **EJECT** mode.)
- 3) Mount the T reel table assembly ⑤.
- 4) Mount the T.S brake assembly ① and fix the stopper washer ③.
- 5) Hook the spring ② on the T.S brake assembly ① claw.
- 6) Set to **LOADING TOP** , **LOADING/UNLOADING** mode.
- 7) Mount the cassette compartment assembly in opposite procedure of Section 2. DISASSEMBLY 2-19.

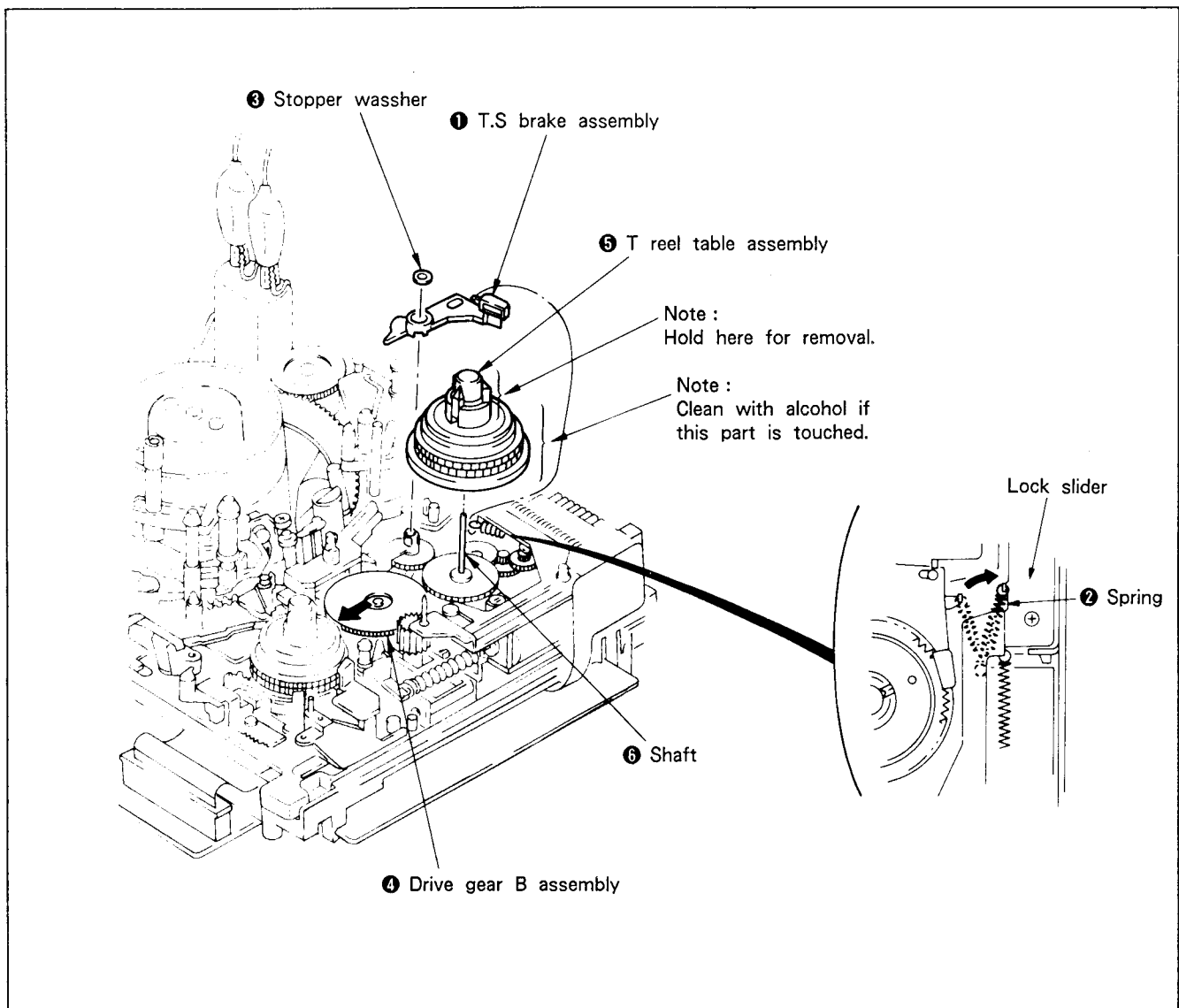


Fig. 7-7.

### 7-3-3. Pinch Press Arm Assembly

#### 1. Removal (See Fig. 7-8.)

- 1) Hook the spring ① on the pinch press arm assembly ②.
- 2) Remove the stopper washer ③ and remove the pinch press arm assembly ②.

#### 2. Mounting (See Fig. 7-8.)

- 1) Put a half drop of oil on the shaft ④.
- 2) Mount the pinch press arm assembly ② and fix the stopper washer ③.
- 3) Hook the spring ① on the spring hook assembly ⑤.

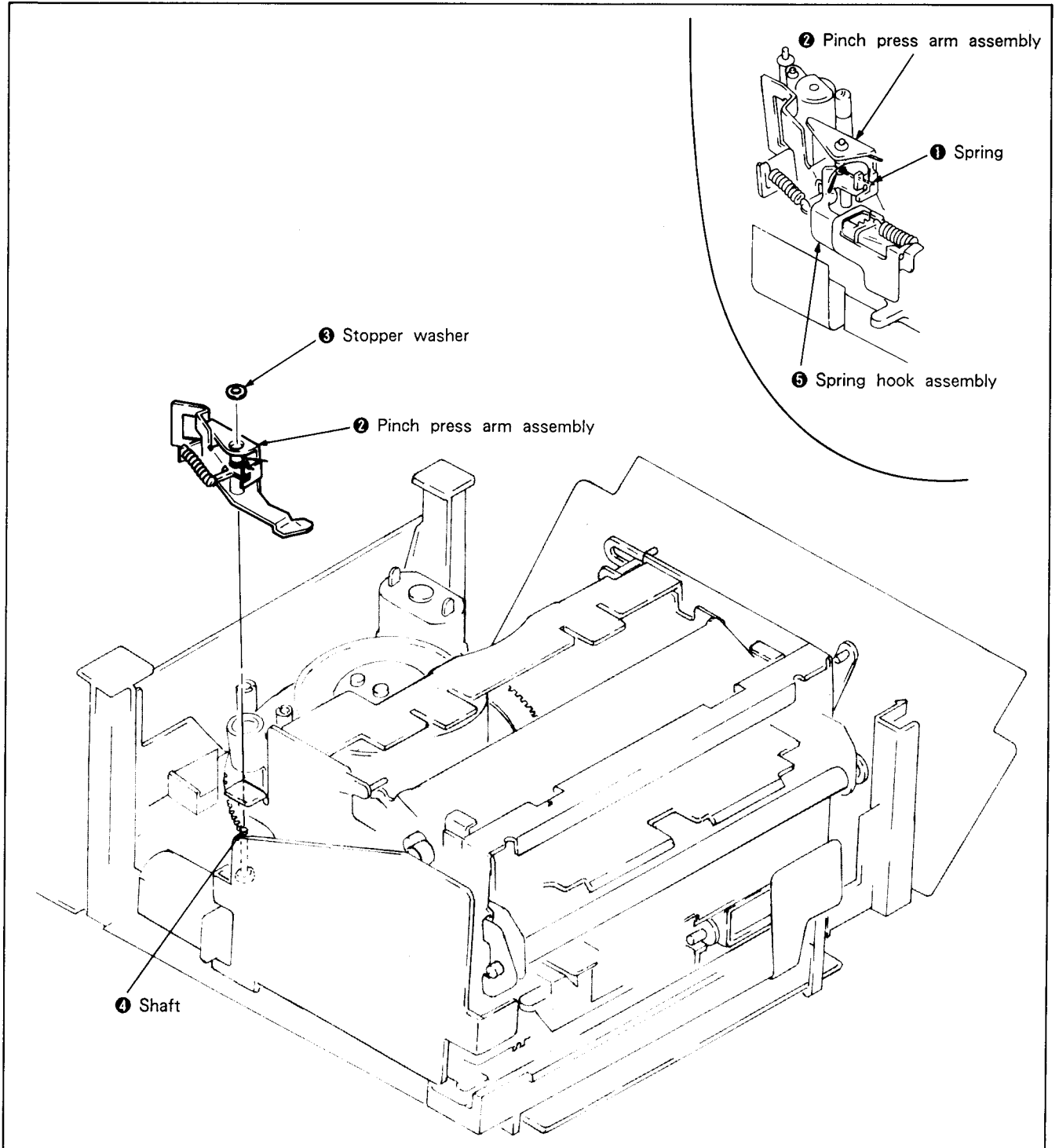


Fig. 7-8.

### 7-3-4. Tension Regulator Arm Assembly

#### 1. Removal (See Fig. 7-9.)

- 1) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.
- 2) Change the spring position as described in 7-3-3. 1. Removal, 1). (See Fig. 7-8.)
- 3) Remove spring ①. (Note its hooking position.)
- 4) Remove screw ② and remove the spring hook assembly ③.
- 5) Set to **FF/REW** mode.
- 6) Remove the tension regulator band assembly claw ④.
- 7) Remove the tension regulator arm assembly ⑤.

#### 2. Mounting (See Fig. 7-9.)

- 1) Put a half drop of oil on the shaft ⑥.
- 2) Mount the tension regulator arm assembly ⑤, inserting the tension regulator load arm assembly pin ⑦ in the tension regulator arm assembly ⑤ cam groove (on the back).
- 3) Mount the tension regulator band assembly claw ④. (Do not touch the band or change its shape.)
- 4) Set to **LOADING/UNLOADING** mode.
- 5) Mount the spring hook assembly ③ and tighten with screw ②.
- 6) Replace spring ① in its original position and lock the screw.
- 7) Hook the spring according to 7-3-3. 2. Mounting, 3).
- 8) Mount the cassette compartment assembly in opposite procedure of Section 2. DISASSEMBLY 2-19.

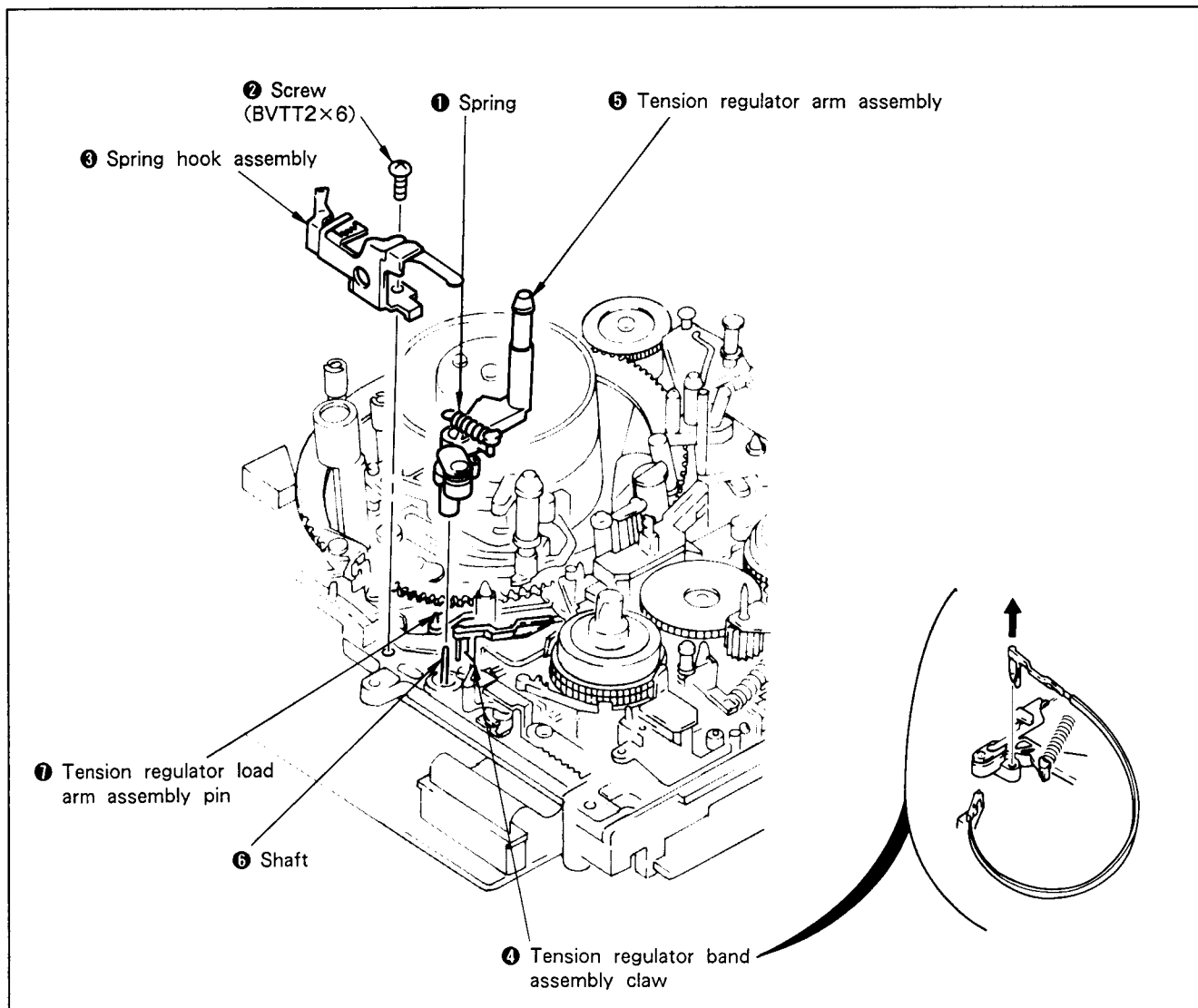


Fig. 7-9.

### 7-3-5. Tension Regulator Band Assembly

#### 1. Removal (See Fig. 7-10.)

- 1) Remove the S reel table assembly according to 7-3-1. 1. Removal.
- 2) Remove the band arm claw ❶.
- 3) Remove claw ❷ and remove the tension regulator band assembly ❸.

#### 2. Mounting (See Fig. 7-10.)

- 1) Mount the tension regulator band assembly ❸.  
(Do not touch the band or change its shape.)
- 2) Fit on the band arm claw ❶.
- 3) Mount the S reel table assembly according to 7-3-1. 2. Mounting. (See Fig. 7-6.)
- 4) Perform 7-3-21. FWD Back Tension Adjustment.

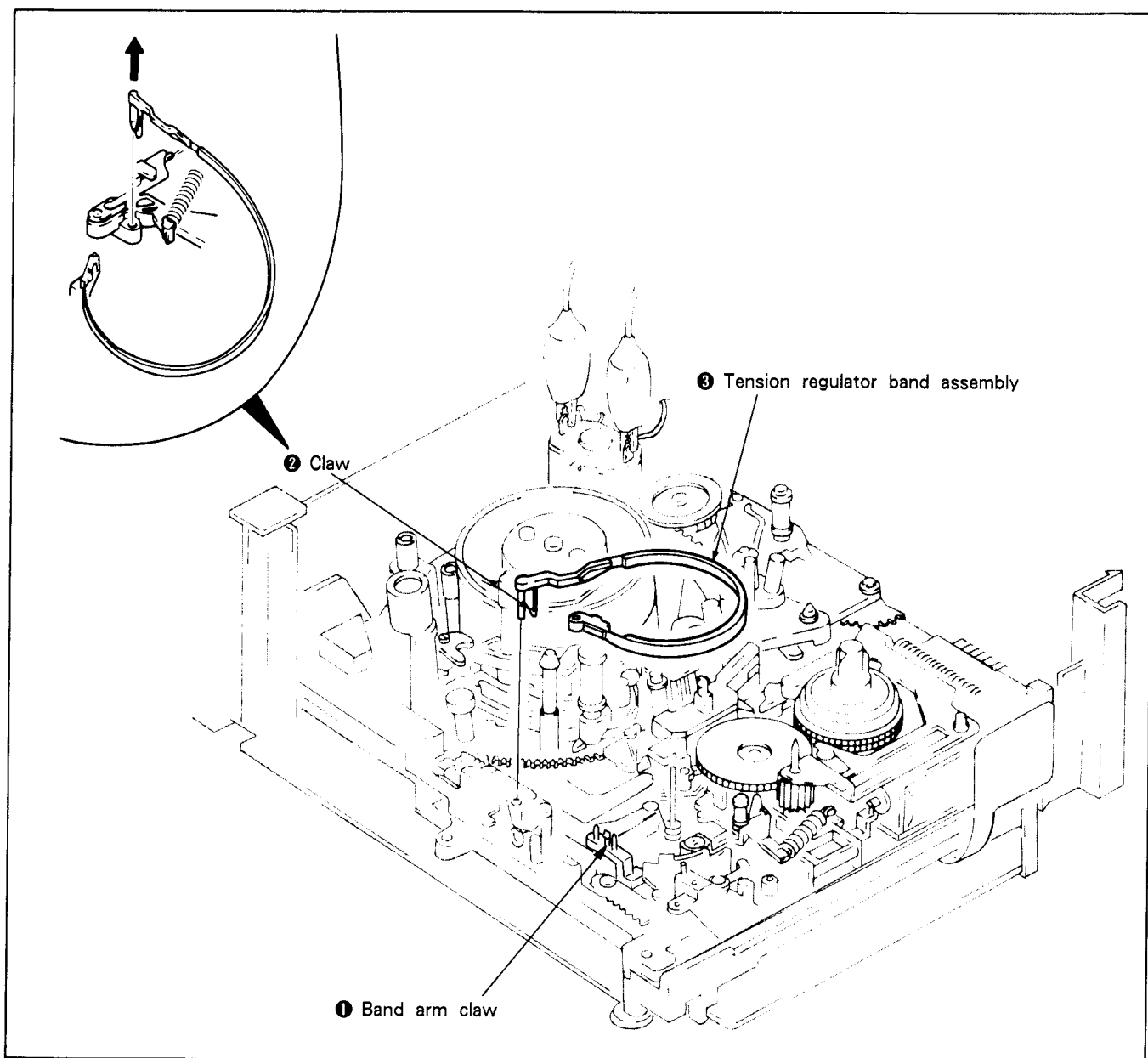


Fig. 7-10.

### 7-3-6. Loading Motor Assembly

#### 1. Removal (See Fig. 7-11.)

- 1) Open the MA-25 board according to Section 2. DISASSEMBLY 2-17.
- 2) Remove L motor belt ①.
- 3) Remove the CN302 connector (red) 2P ② from the RS-18 board.
- 4) Remove the two screws ③ and remove the loading motor assembly ④.

#### 2. Mounting (See Fig. 7-11.)

- 1) Mount the loading motor assembly ④ and tighten with the two screws ③.
- 2) Connect CN302 connector (red) 2P ② to RS-18 board.
- 3) Mount L motor belt ①.
- 4) Mount each board in opposite procedure of Section 2. DISASSEMBLY 2-17.

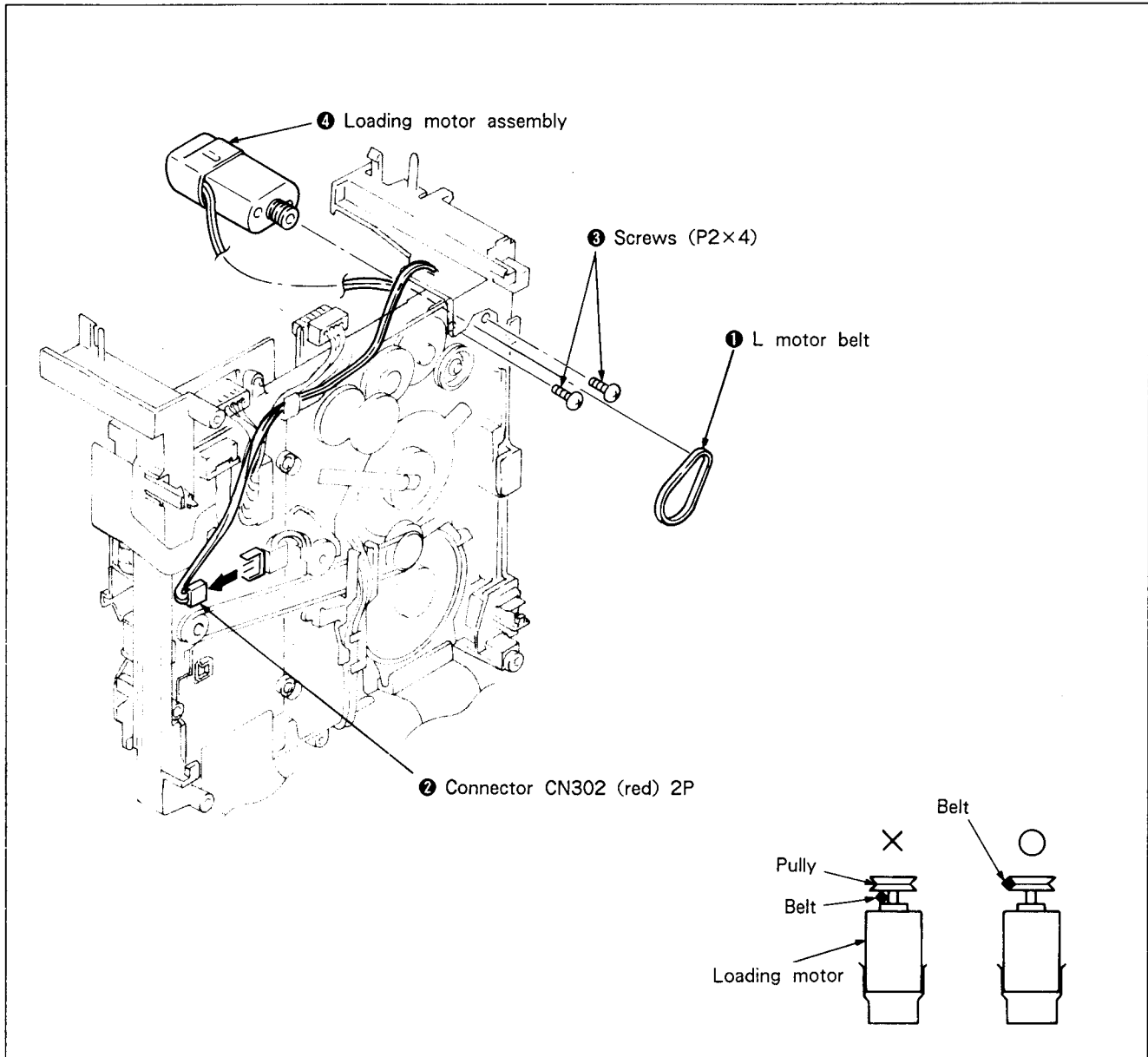


Fig. 7-11.

### 7-3-7. Loading Ring Assembly

#### 1. Removal (See Fig. 7-12.)

- 1) Remove the cassette compartment assembly according to Section 2, DISASSEMBLY 2-19.
- 2) Operate the mode selector, and move the guide base assembly ① until just before it locks, and the No.2 guide assembly ② until just before it locks where the ring stopper ③ screw is visible. (Do not move loading ring assembly ⑩.)
- 3) Remove the stopper washer ④ and remove No.10 gear ⑤.
- 4) Remove screw ⑥, and remove the roller top plate ⑦ and ring roller ⑧.
- 5) Remove the two screws ⑨, and remove the ring stopper ③ and ring roller ⑩.
- 6) Remove the loading ring assembly ⑪ in the direction of arrow.

**Note:** Be careful that the loading ring assembly ⑪ does not touch the drum when it is removed.

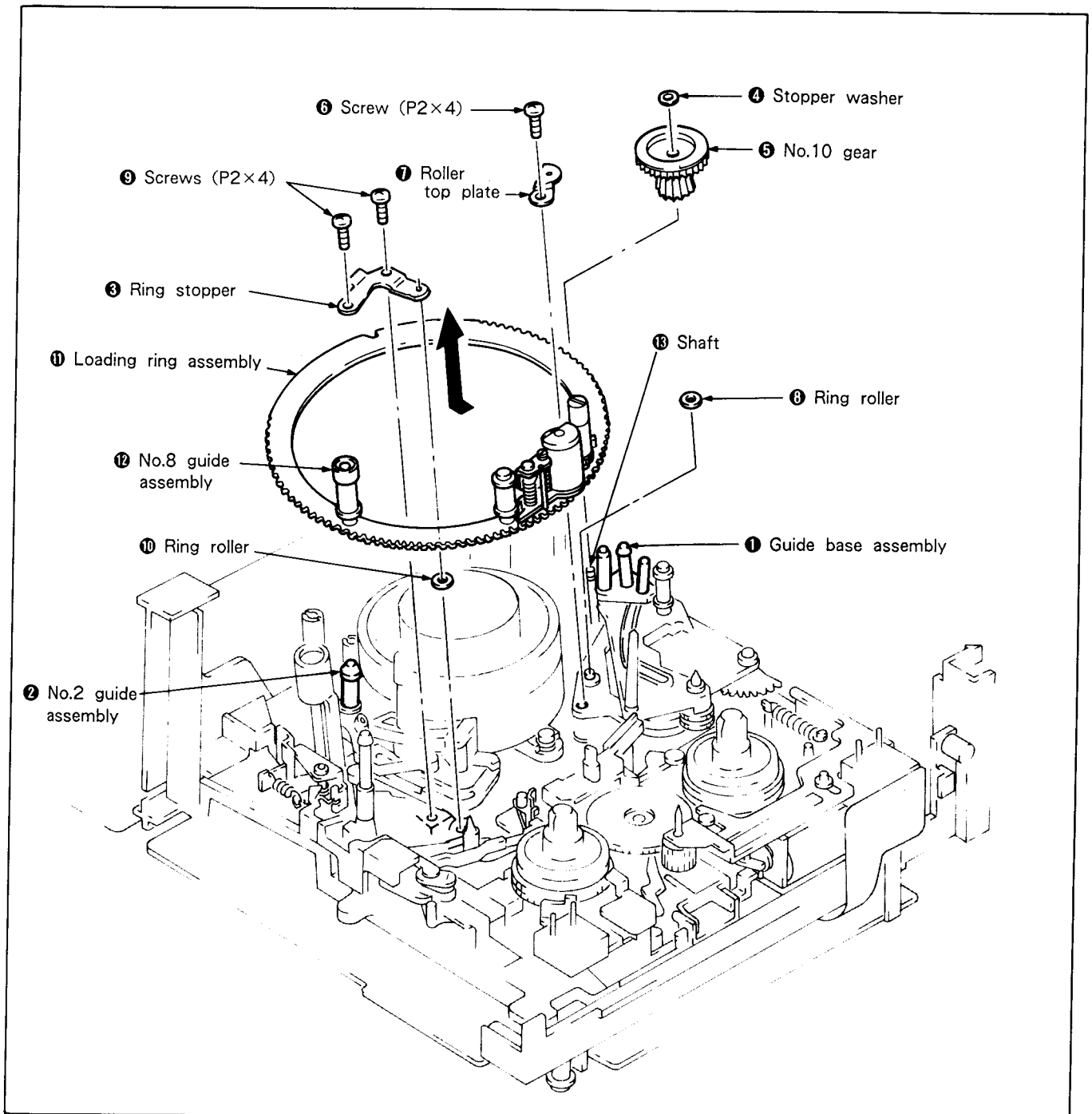


Fig. 7-12.



## 2. Mounting

- 1) Hook spring ③. (See Fig. 7-19.)
- 2) Insert the end of the clip ⑤ or another thin rod inside the pinch roller arm assembly hole ⑥. (See Figs. 7-20, and 7-21.)
- 3) Put the end of the clip ⑤ to the loading ring assembly shaft ⑦ and mount the pinch roller arm assembly ④. (See Figs. 7-22, and 7-23.)
- 4) Hook the spring ③ on No.7 guide assembly ②. At this time, confirm that the spring ③ is hooked onto section A. (See Fig. 7-24.)
- 5) Fix the stopper washer ①. (See Fig. 7-25.)
- 6) Mount the loading ring assembly according to 7-3-7. 2. Mounting.

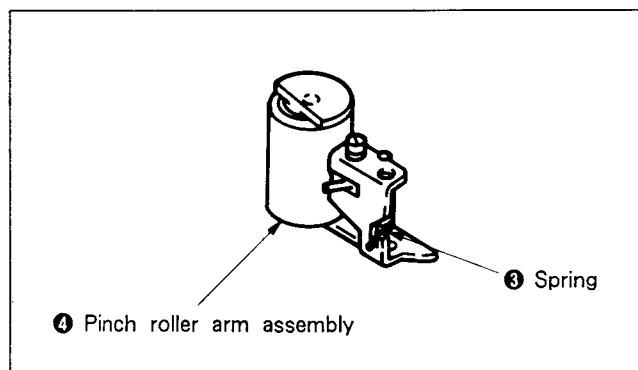


Fig. 7-19.

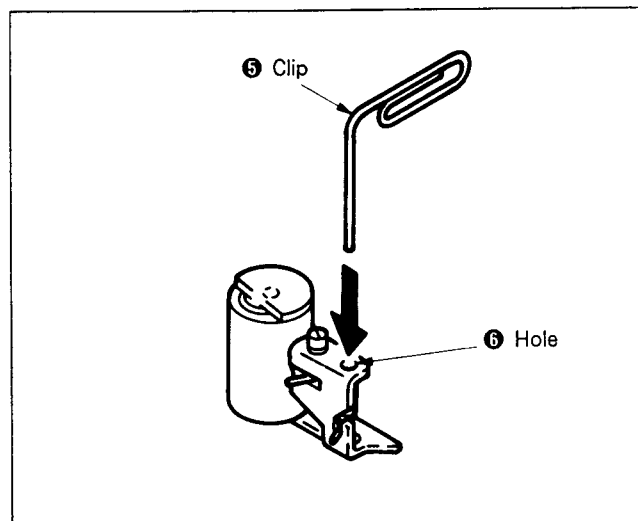


Fig. 7-20.

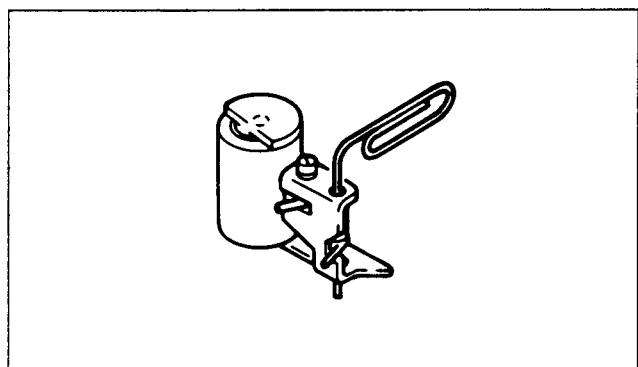


Fig. 7-21.

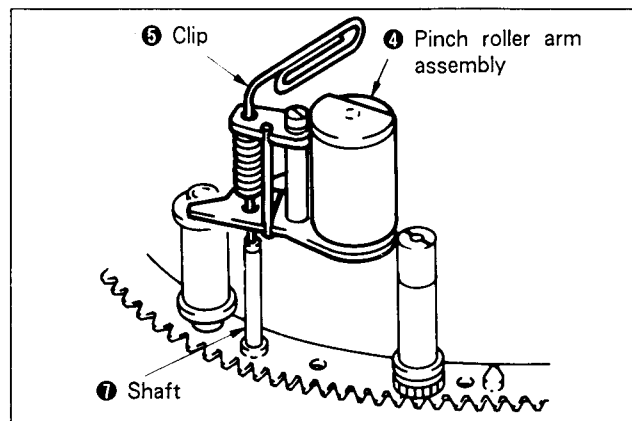


Fig. 7-22.

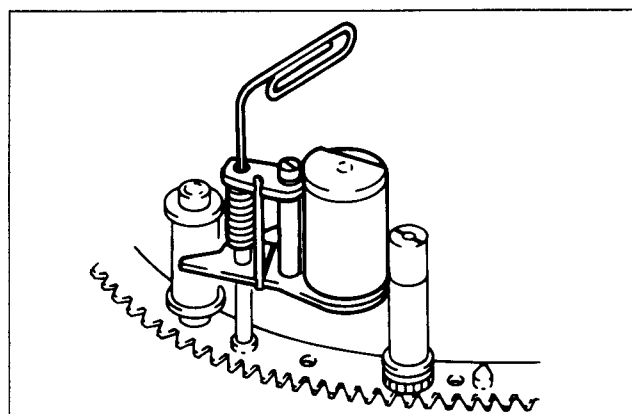


Fig. 7-23.

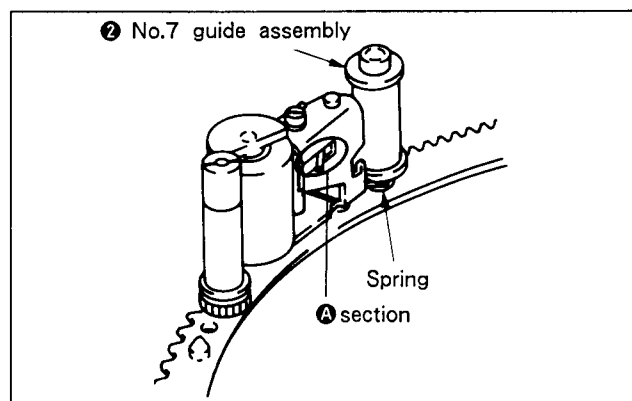


Fig. 7-24.

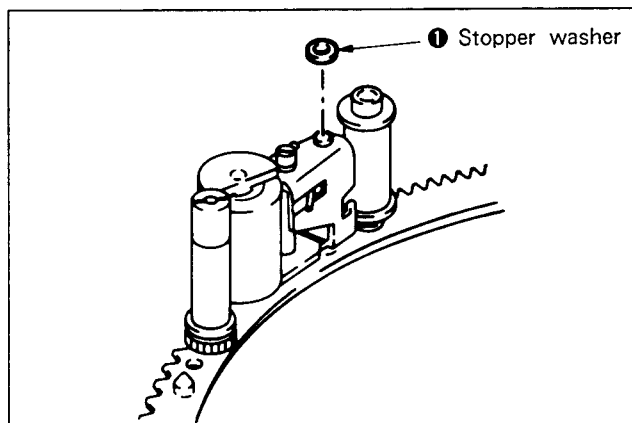


Fig. 7-25.



### 7-3-9. Slant Guide Block Assembly

#### 1. Removal (See Fig. 7-26.)

- 1) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.
- 2) Remove the loading ring assembly according to 7-3-7. 1. Removal. (See Fig. 7-12.)
- 3) Remove screw ❶ and E ring ❷.
- 4) Remove the slant guide block assembly ❸.

#### 2. Mounting

- 1) Operate the mode selector, and line up the right edge of the L slider assembly and the right edge of the lock slider assembly. (See Fig. 7-27.)
- 2) Set the slant guide block assembly guide base assembly in unthreaded state (guide base assembly is on front panel side) and mount. (See Fig. 7-28.)

**Note:** At this time, confirm the engagement position of the slant guide drive gear and L slider assembly gear. (See Fig. 7-27.)

- 3) Insert the E ring ❷ and tighten with screw ❶. (See Fig. 7-26.)
- 4) Put in the state in 7-3-7. 1. Removal, 2).
- 5) Mount the loading ring assembly according to 7-3-7. 2. Mounting. (See Fig. 7-12.)
- 6) Mount the cassette compartment assembly in opposite procedure of Section 2. DISASSEMBLY 2-19.

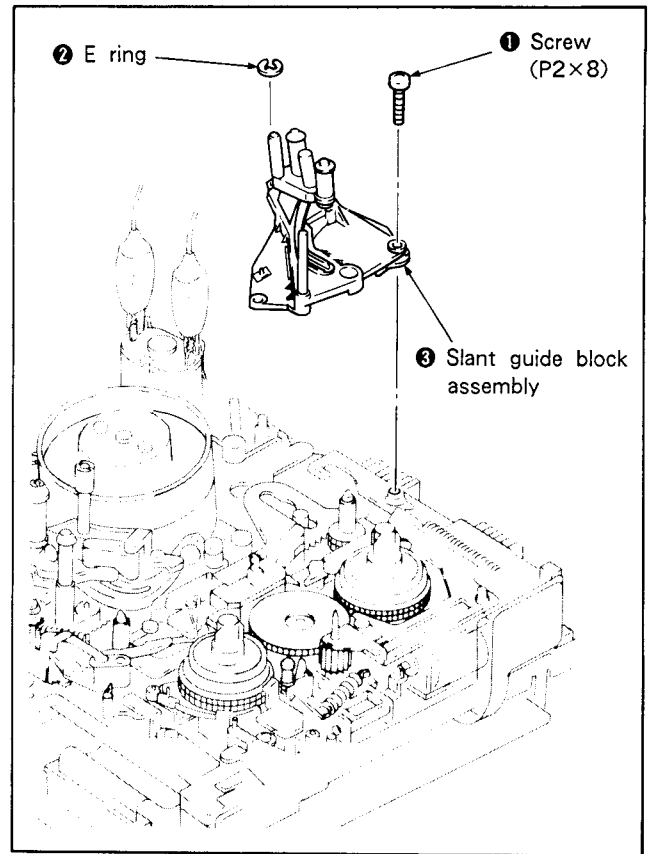


Fig. 7-26.

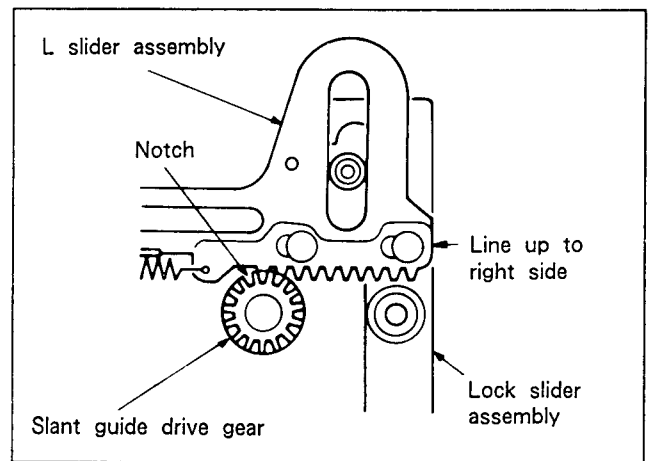


Fig. 7-27.

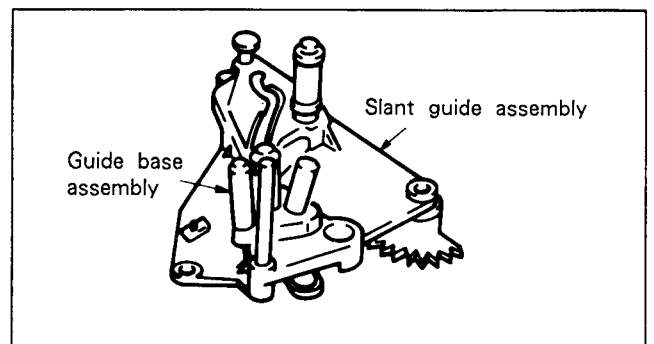


Fig. 7-28.

**7-3-10. Entrance Guide (P) Assembly  
(No. 2 Guide Assembly)**

**1. Removal (See Fig. 7-29.)**

- 1) Turn the rotary upper drum counterclockwise and remove the head section from the entrance guide (P) assembly ①.
- 2) Remove the two screws ②.
- 3) Remove No.3 guide nut ③, and remove guide flange ④, guide ⑤ and coil spring ⑥.
- 4) Remove the entrance guide (P) assembly ①.

**2. Mounting (See Fig. 7-29.)**

- 1) Confirm that **LOADING TOP** mode is set.
- 2) Engage the entrance guide (P) assembly and L slider assembly with their flat portions **A** and **B** as shown.
- 3) Mount the coil spring ⑥, guide ⑤ and guide flange ④ in that order and then temporarily tighten the guide nut ③.
- 4) Tighten the two screws ②.

**Note :** Be sure to perform 7-4. TAPE PATH ADJUSTMENT after mounting.

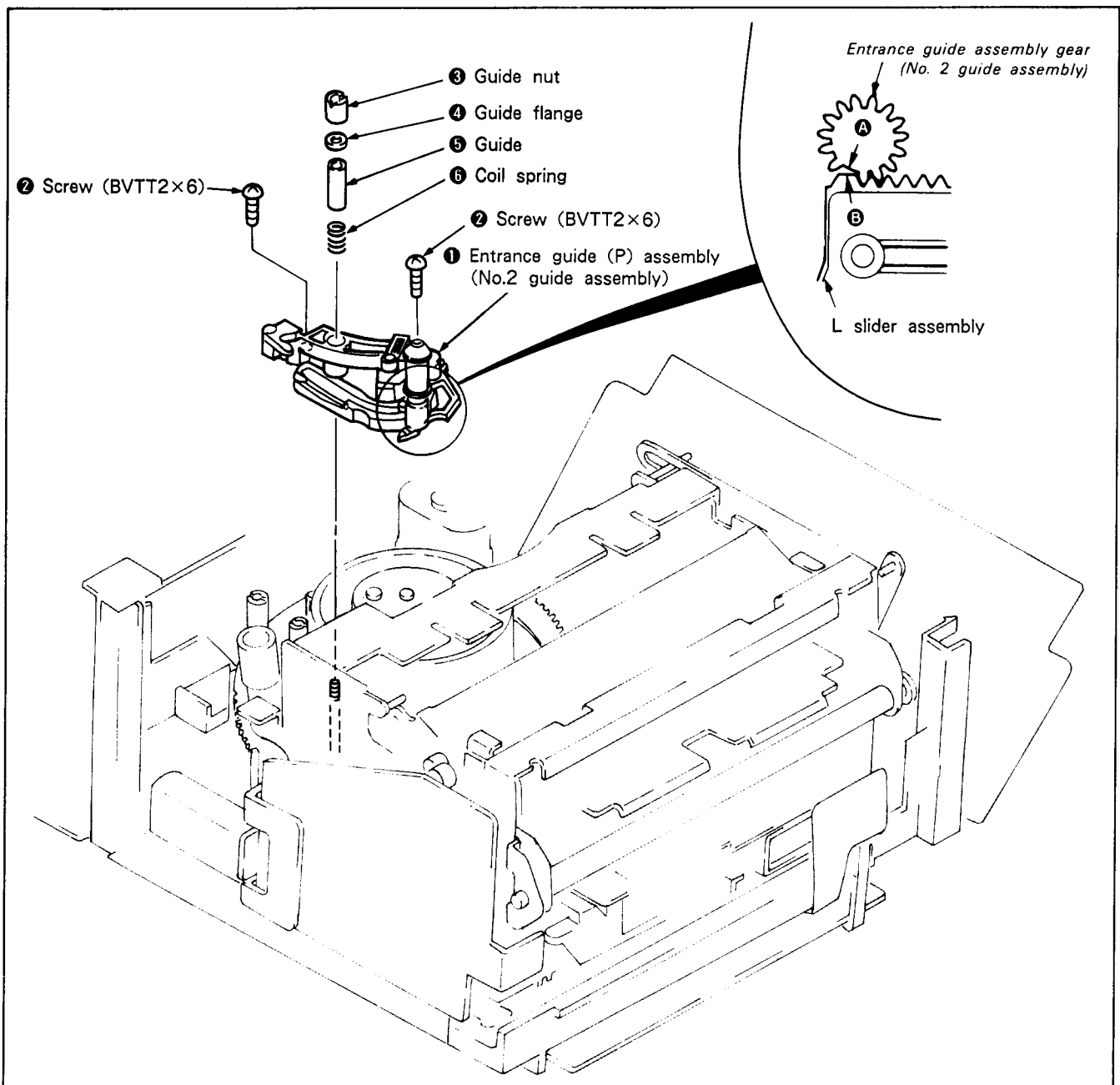


Fig. 7-29.

### 7-3-11. L Slider Assembly

#### 1. Removal (See Fig. 7-30.)

- 1) Remove the slant guide block assembly according to 7-3-9. 1. Removal.
- 2) Remove the entrance guide (P) assembly according to 7-3-10. 1. Removal.
- 3) Set to **DRUM START** mode.
- 4) Remove slant guide drive gear ①.
- 5) Remove the tension regulator load arm assembly ② pin from the cam groove of the tension regulator arm assembly. (See 7-3-4. Tension Regulator Arm Assembly.)
- 6) Remove the two stopper washers ③.
- 7) Remove the L slider assembly ⑤ while pushing the RL arm assembly protrusion ④ in the direction of arrow.
- 8) Remove the stopper washer ⑥ and remove the arm assembly ②.

- 3) Mount the L slider assembly ⑤ while pushing the RL arm assembly protrusion ④ in the direction of the arrow.
- 4) Fix the two stopper washers ③.
- 5) Put the arm assembly ② pin into the M slider groove. (See 7-3-15. M Slider.)
- 6) Refer to 7-3-4. 2. Mounting, 2), and insert the arm assembly ② pin in the tension regulator arm assembly cam groove. (See 7-3-4. Tension Regulator Arm Assembly.)
- 7) By operating the mode selector, match the right edge of the L slider assembly and that of the lock slider assembly. (See 7-3-9. 2. Mounting, 1).
- 8) Engage the slant guide drive gear ① so that the notch is 1 tooth away from the L slider assembly left side tooth. (See Fig. 7-32.)
- 9) Mount the entrance guide (P) assembly according to 7-3-10. 2. Mounting.
- 10) Mount the slant guide block assembly according to 7-3-9. 2. Mounting.

#### 2. Mounting

- 1) Grease. (See Fig. 7-31.)
- 2) Mount the arm assembly ② and fix the stopper washer ⑥. (See Fig. 7-30.)

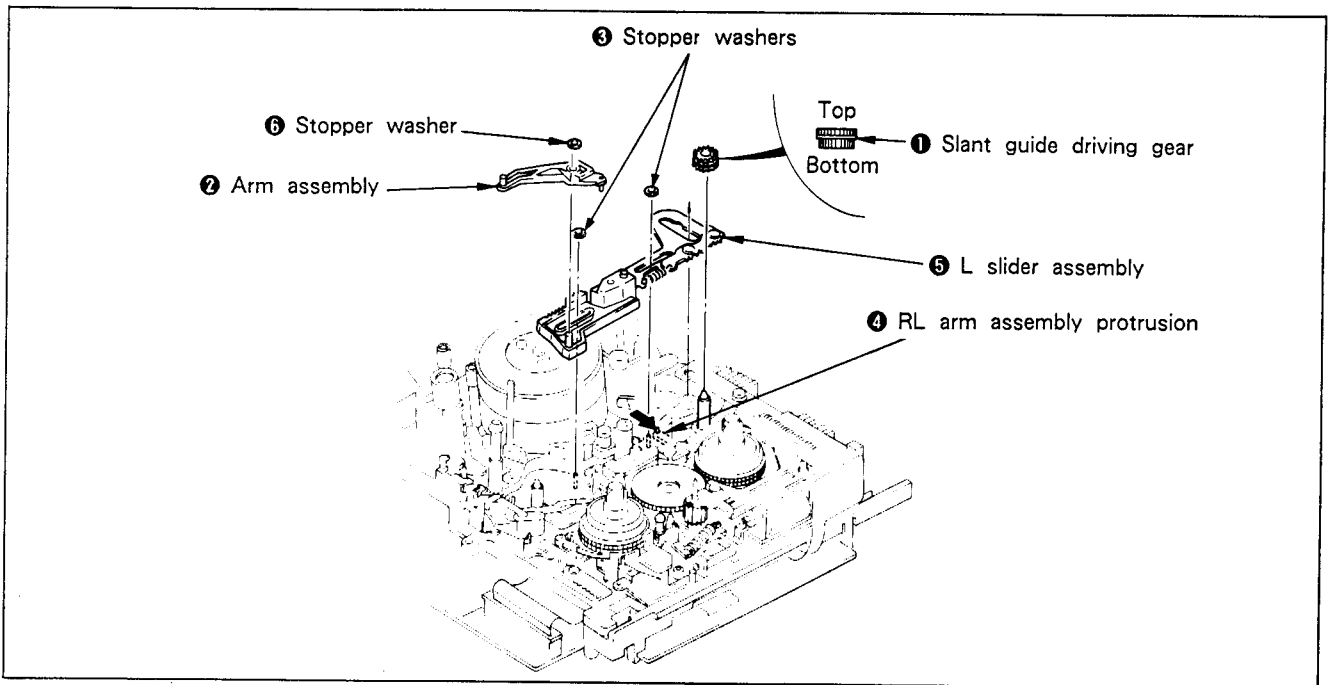


Fig. 7-30.

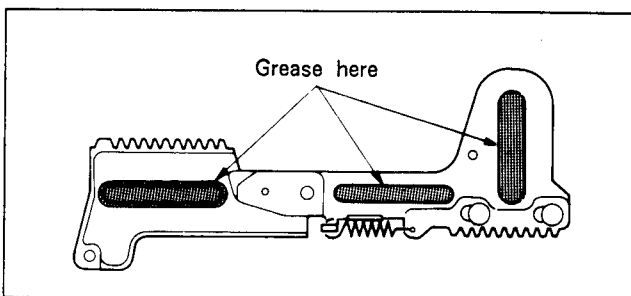


Fig. 7-31.

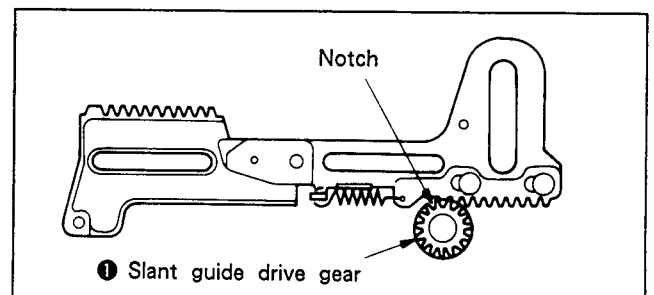


Fig. 7-32.

### 7-3-12. L-SW Assembly

#### 1. Removal (See Fig. 7-33.)

- 1) Remove the L slider assembly according to 7-3-11, 1, Removal.
- 2) Remove lock slider retainer ①.
- 3) Remove screw ② and lock slider A ③.
- 4) Remove stopper washer ④ and remove torsion spring ⑤.
- 5) Remove drive changer assembly ⑥.
- 6) Remove connector ⑦.
- 7) Remove the two screws ⑧ and remove the L-SW assembly ⑨.

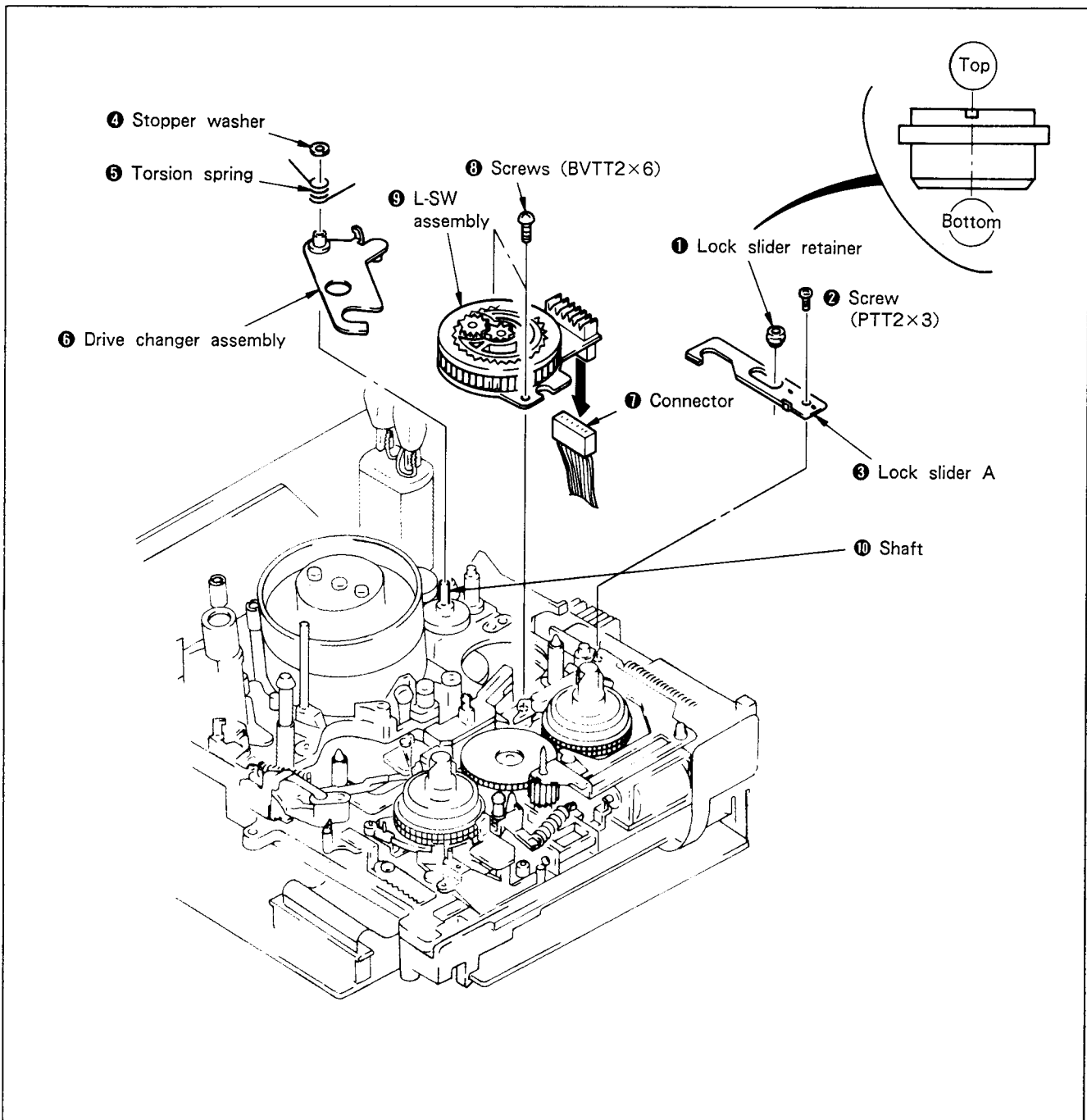


Fig. 7-33.

## 2. Mounting (See Fig. 7-33)

- 1) Put a half drop of oil on the L-SW assembly ⑨ shaft (planetary roller shaft).
- 2) Mount L-SW assembly ⑨ and tighten with the two screws ⑧.
- 3) Connect connector ⑦.
- 4) Operate the mode selector and confirm that the L-SW assembly ⑨ rotates.
- 5) Put a half drop of oil on the shaft ⑩.
- 6) Grease the drive changer assembly ⑥. (See Fig. 7-34.)
- 7) Mount the drive changer assembly ⑥. (See Fig. 7-33.)
- 8) Hook the torsion spring ① and fix the stopper washer ④.
- 9) Operate the mode selector and confirm that the L-SW assembly ⑨ rotates.
- 10) Mount lock slider A ③ and tighten with screw ②.
- 11) Mount lock slider retainer ①. (See Fig. 7-33.)
- 12) Operate the mode selector and set to the position in Fig. 7-35.
- 13) Mount the L slider assembly according to 7-3-11. 2. Mounting.

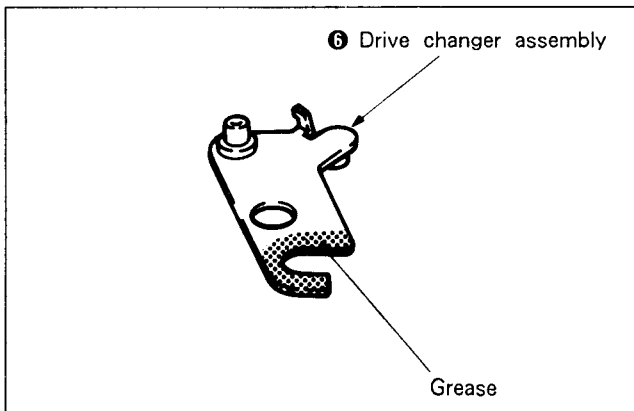


Fig. 7-34.

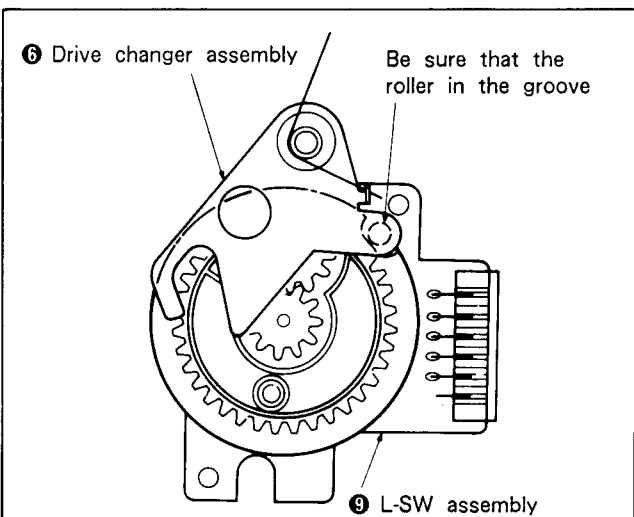


Fig. 7-35.

## 7-3-13. Plunger Solenoid

### 1. Removal (See Fig. 7-36.)

- 1) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.
- 2) Remove the T reel table assembly according to 7-3-2. 1. Removal.
- 3) Remove spring ①.
- 4) Remove the screw ② according to 7-3-12. 1. Removal, 3).
- 5) Remove the two stopper washers ③.
- 6) Remove the lock slider assembly ④.
- 7) Unsolder plunger solenoid ⑤ at three places.
- 8) Remove the two screws ⑥ and the plunger solenoid ⑤.

### 2. Mounting (See Fig. 7-36.)

- 1) Insert the plunger solenoid pin ⑦ into the P arm hole ⑧ and mount with the two screws ⑥.
- 2) Solder pins of plunger solenoid ⑤ at three places.
- 3) Mount lock slider assembly ④.
- 4) Fix the two stopper washers ③.
- 5) Fix the screw ② according to 7-3-12. 2. Mounting, 10).
- 6) Hook the spring ①.
- 7) Mount the T reel table assembly according to 7-3-2. 2. Mounting.
- 8) Mount the cassette compartment assembly in opposite procedure of Section 2. DISASSEMBLY 2-19.

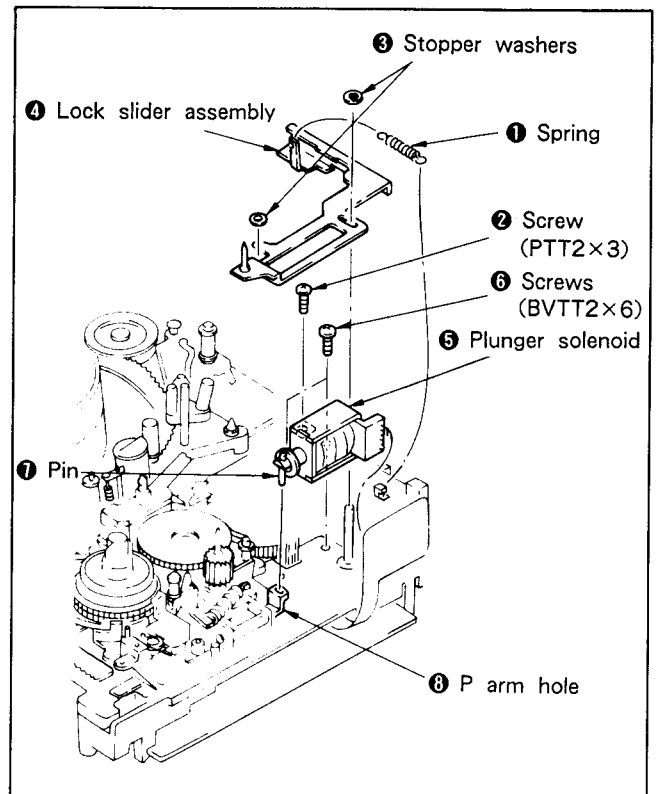


Fig. 7-36.

### 7-3-14. M-SW Assembly

#### 1. Removal (See Fig. 7-38.)

- 1) Open the MA-25 board according to Section 2. DISASSEMBLY 2-17. and remove CN301 connector (black) 2P from the RS-18 board and lengthen the wiring which comes outside.
- 2) Remove the T reel table assembly according to 7-3-2. 1. Removal. (See Fig. 7-7.)
- 3) Remove stopper washer ① and remove the drive gear B assembly ②.
- 4) Remove the LD-1 board ③. (See Fig. 7-37.)
- 5) Remove lock slider according to 7-3-13. 1. Removal, 3) to 6).
- 6) Remove the spring ④ and remove B release arm assembly ⑤.
- 7) Confirm **EJECT** mode.
- 8) Remove stopper washer ⑥ and remove the mode output gear ⑦.
- 9) Unsolder RECOG switch ⑨ terminal at three places.
- 10) Remove the screw ⑧ and RECOG switch ⑨.
- 11) Disconnect connector ⑩.
- 12) Remove three screws ⑪, and remove the control motor cover assembly ⑫.

- 13) Push the T.S release arm assembly ⑭ in the direction of arrow **A**. And then, push the T main brake assembly ⑮ in the direction of arrow **B** and remove the M-SW assembly ⑬.
- 14) Remove solder **C** and remove the control motor ⑯.

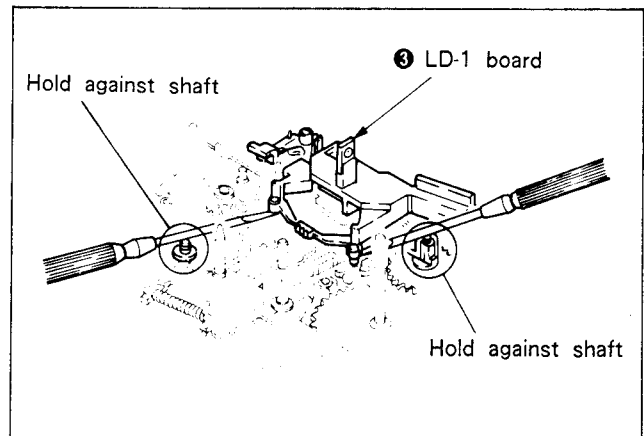


Fig. 7-37.

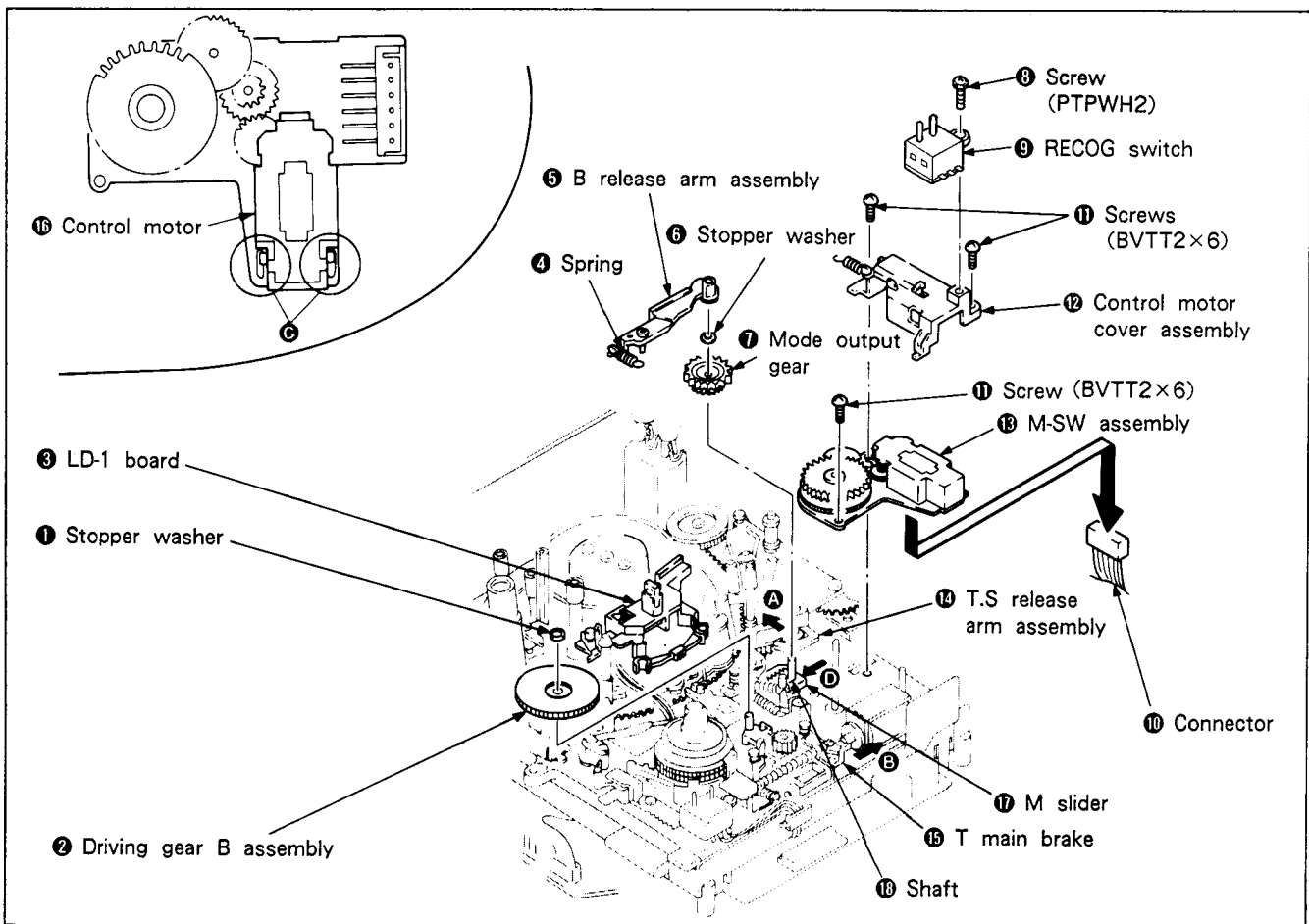


Fig. 7-38.

## 2. Mounting (See Fig. 7-38.)

- 1) Solder the control motor ⑩.
- 2) Mount the M-SW assembly in opposite procedure of 7-3-14, 1. Removal, 13).
- 3) Mount the control motor cover assembly ⑫, and tighten with the three screws ⑪.
- 4) Connect the connector ⑩.
- 5) Mount RECOG switch ⑨ and tighten with the screw ⑧.
- 6) Solder terminal of RECOG switch ⑨.
- 7) Confirm **EJECT** mode.
- 8) Confirm that M slider ⑰ is moved fully in the direction of arrow ⑯.
- 9) Put a half drop of oil on the shaft ⑱.
- 10) Mount the mode output gear ⑦ so that the positioning holes are lined up. (See Fig. 7-39.)
- 11) Fix stopper washer ⑥.
- 12) Set to **LOADING/UNLOADING** mode.
- 13) Mount B release arm assembly ⑤ and hook spring ④.
- 14) Mount the lock slider assembly according to 7-3-13, 2. Mounting, 3) to 6).
- 15) Mount the LD-1 board ③.
- 16) Mount drive gear B assembly ② and fix stopper washer ①.
- 17) Mount the T reel table assembly according to 7-3-2, 2. Mounting.
- 18) Connect the CN301 connector (white) 2P to the RS-18 board.
- 19) Mount the MA-25 board in opposite procedure of Section 2. DISASSEMBLY 2-17.

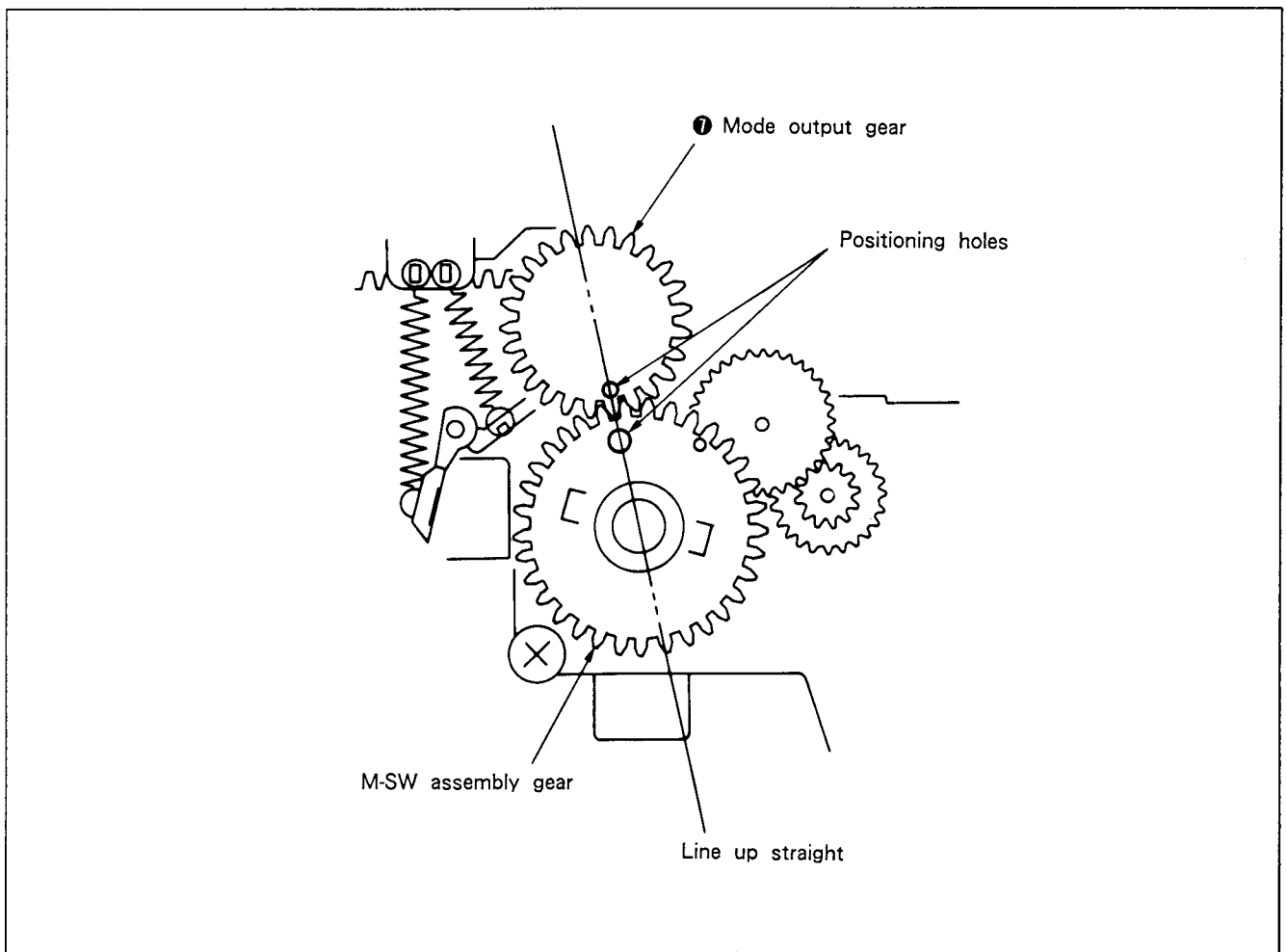


Fig. 7-39.

### 7-3-15. M Slider

#### 1. Removal (See Fig. 7-40.)

- 1) Open the MA-25 board according to Section 2. DISASSEMBLY 2-17, and remove timing belt ①.
- 2) Remove the S reel table assembly according to 7-3-1. 1. Removal. (See Fig. 7-6.)
- 3) Remove the T reel table assembly according to 7-3-2. 1. Removal. (See Fig. 7-7.)
- 4) Remove the pinch press arm assembly according to 7-3-3. 1. Removal. (See Fig. 7-8.)
- 5) Remove the tension regulator arm assembly according to 7-3-4. 1. Removal. (See Fig. 7-9.)
- 6) Remove the tension regulator band assembly according to 7-3-5. 1. Removal. (See Fig. 7-10.)
- 7) Remove the loading ring assembly according to 7-3-7. 1. Removal. (See Fig. 7-12.)
- 8) Perform 7-3-14. 1. Removal, 2) to 6).
- 9) Remove the tension regulator load arm assembly according to 7-3-11. 1. Removal, 8).
- 10) Remove the spring ②.
- 11) Remove the two stopper washers ③ and remove the S main brake assembly ④ and the T main brake assembly ⑤.
- 12) Set to LOADING TOP and LOADING/UNLOADING modes.
- 13) Remove the two screws ⑥ and the driving complete assembly ⑦.
- 14) Perform 7-3-14. 1. Removal, 7) and 8).
- 15) Remove the two springs ⑧.
- 16) Remove REW brake assembly ⑨.
- 17) Remove RVS arm ⑩.
- 18) Remove stopper washer ⑪ and remove the B release slider ⑫.
- 19) Remove stopper washer ⑬, and remove the spring ⑭ and RL arm assembly ⑮.
- 20) Move the M slider ⑯ to the right. (Leave about 5 mm at the left.)
- 21) Remove the E ring ⑰ and remove the pinch press lever assembly ⑱.
- 22) Remove spring ⑲ and remove the hard brake S ⑳.
- 23) Remove stopper washer ㉑, push the mode arm ㉒ in the direction of the arrow, and lift up the left side of the M slider ⑯ to remove.

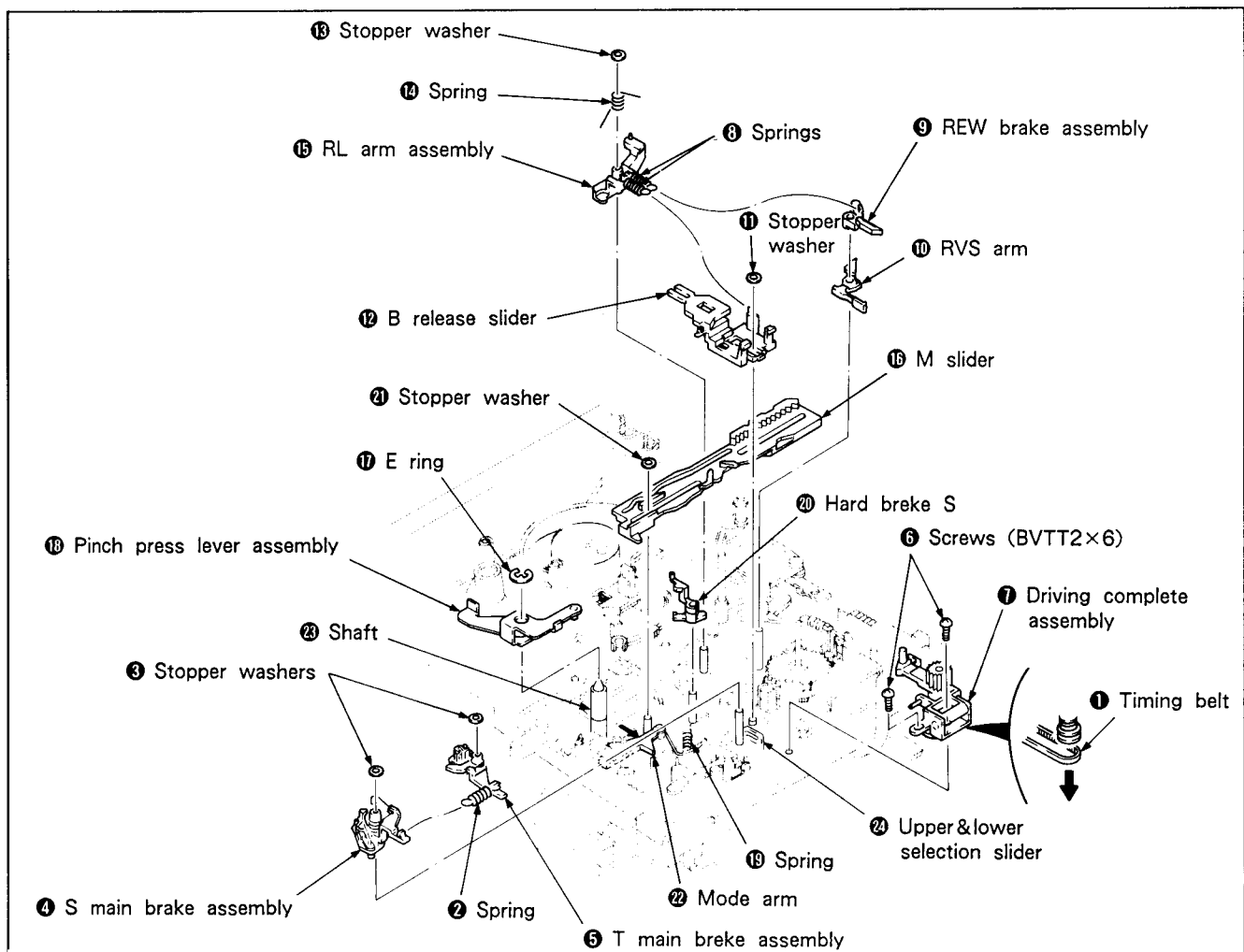


Fig. 7-40.



## 2. Mounting (See Fig. 7-40.)

- 1) Grease. (See Fig. 7-41.)
- 2) Push mode arm 22 in the direction of the arrow, and mount the M slider 16, noting the positioning of the other parts in Fig. 7-42, and fix the stopper washer 21.
- 3) Mount hard brake S 20 and hook spring 19.
- 4) Grease. (See Fig. 7-43.)
- 5) Put a half drop of oil from the shaft 23 groove to the bottom, mount the pinch press lever assembly 18 and insert the E ring 17.
- 6) Mount RL arm assembly 15, hook the spring 14 and fix the stopper washer 13.
- 7) Mount B release slider 12 and fix stopper washer 11.
- 8) Move the B release slider 12 to the drum side and mount the RVS arm 10.
- 9) Mount REW brake assembly 9.
- 10) Hook the two springs 8.

**Note:** Hook the two springs as follows, being careful not to mix them up.

- B release slider spring : total diameter 2 mm, wire diameter 0.18 mm
- REW brake assembly spring : total diameter 1.6 mm, wire diameter 0.12 mm

- 11) Move the M slider 16 to the left fully.
- 12) Set to **EJECT** mode.
- 13) Perform 7-3-14. 2. Mounting, 7), 8) and 9).
- 14) Set to **LOADING/UNLOADING** mode.
- 15) Insert the driving arm complete assembly 7 horizontal shaft into the upper & lower selection slider 24 groove, and insert the protrusion on the RVS arm 10 into the notch in the driving arm complete assembly 7 and mount with the two screws 6.
- 16) Mount the T main brake assembly 5 and S main brake assembly 4. Fix the two stopper washers 3 and hook the spring 2.
- 17) Mount the tension regulator load arm assembly according to 7-3-11. 2. Mounting, 2).
- 18) Perform 7-3-14. 2. Mounting, 11) to 16).
- 19) Mount the loading ring assembly according to 7-3-7. 2. Mounting.
- 20) Mount the tension regulator band assembly according to 7-3-5. 2. Mounting.
- 21) Mount the tension regulator arm assembly according to 7-3-4. 2. Mounting.
- 22) Mount the pinch press arm assembly according to 7-3-3. 2. Mounting.
- 23) Mount the T reel table assembly according to 7-3-2. 2. Mounting.
- 24) Mount the S reel table assembly according to 7-3-1. 2. Mounting.
- 25) Mount the timing belt 1.
- 26) Mount the MA-25 board in opposite procedure of Section 2. DISASSEMBLY 2-17.

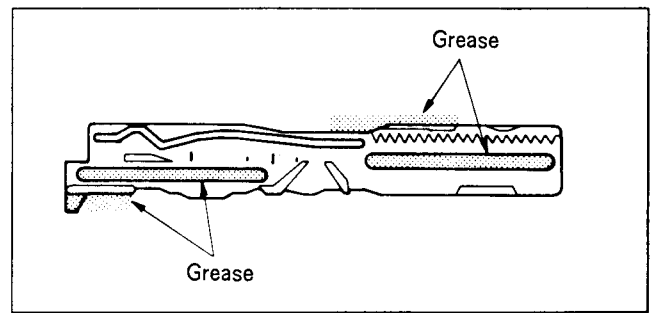


Fig. 7-41.

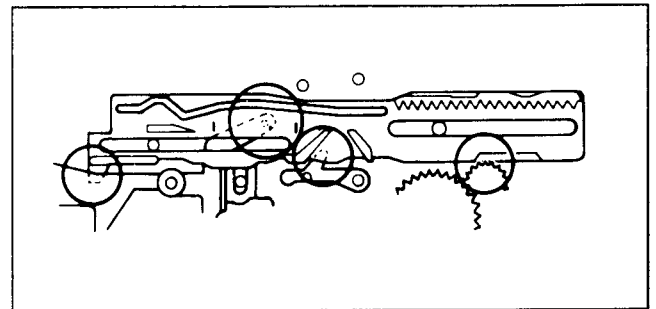


Fig. 7-42.

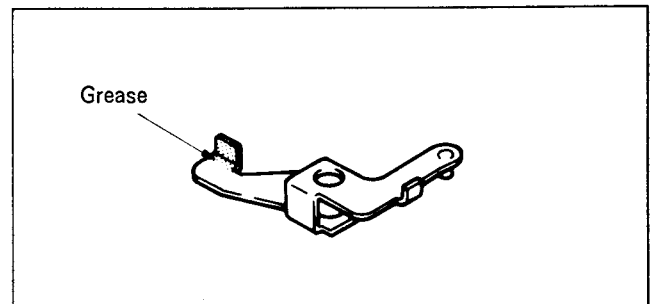


Fig. 7-43.

### 7-3-16. Capstan Motor Assembly

#### 1. Removal (See Fig. 7-44. and 7-45.)

- 1) Remove the loading ring assembly according to 7-3-7. 1. Removal.
- 2) Open the MA-25 board according to Section 2. DISASSEMBLY 2-17.
- 3) Remove the screw ② and remove the wire clamp ①.
- 4) Remove the timing belt ③.
- 5) Remove the screw ④ and remove the change gear base assembly ⑤ with a screwdriver, etc.(See Fig. 7-44.)

- 6) Remove the flexible connector ⑥.
- 7) Remove the two screws ⑦ and remove the capstan motor assembly ⑧ in the direction of the arrow.

#### 2. Mounting (See Fig. 7-45.)

- 1) Mount capstan motor assembly ⑧ and tighten with two screws ⑦.
- 2) Connect the flexible connector ⑥.
- 3) Mount the change gear base assembly ⑤ and tighten with screw ④.
- 4) Hook the timing belt ③.
- 5) Mount the wire clamp ① and tighten with the screw ②.
- 6) Arrange the wires using the wire holder.
- 7) Mount the MA-25 board in opposite procedure of Section 2. DISASSEMBLY 2-17.
- 8) Mount the loading ring assembly according to 7-3-7. 2. Mounting.

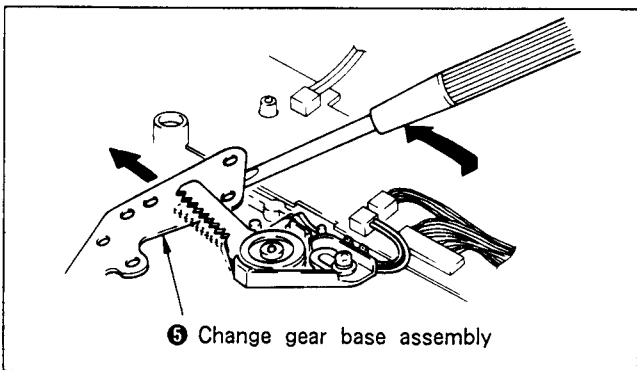


Fig. 7-44.

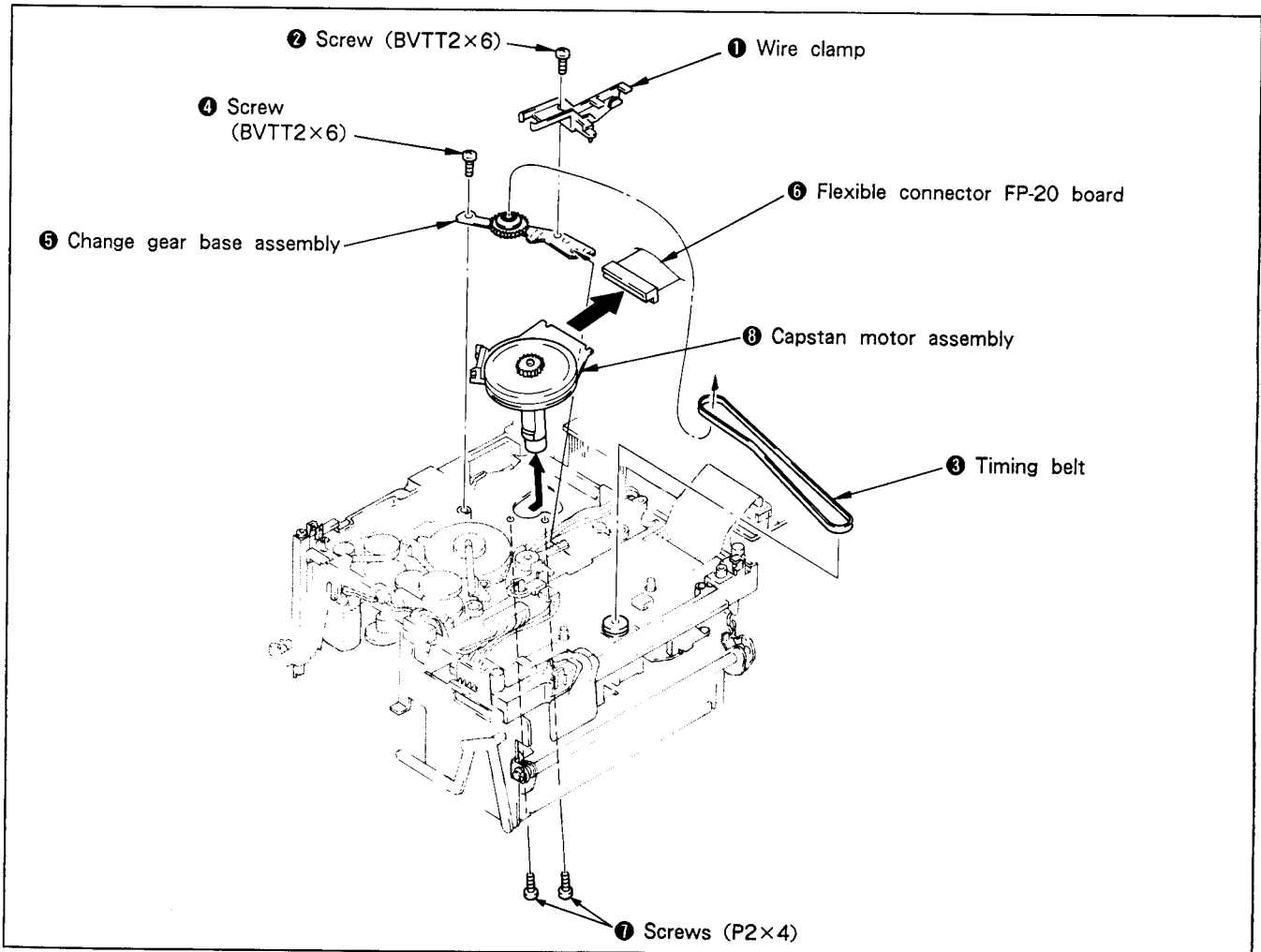


Fig. 7-45.

### 7-3-17. Replacement of Rotary Upper Drum

#### 1. Removal

- 1) Remove all eight solders in section **A** and confirm that the board and the pins on the bottom can move freely, using tweezers or the like. (See Fig. 7-46.)
- 2) Remove the two hexagonal bolt screws **1**. (See Fig. 7-46.)
- 3) Mount the supplied jig **B** (Ref. No. J-10) on the mounting hole with the two supplied screws **2**, and mount the supplied hexagonal bolt screw **3** on supplied jig **B**, then remove the rotary upper drum **4**. (See Fig. 7-47.)

• Repair rotary upper drum assembly  
DGR-04D-R A-7049-087-A

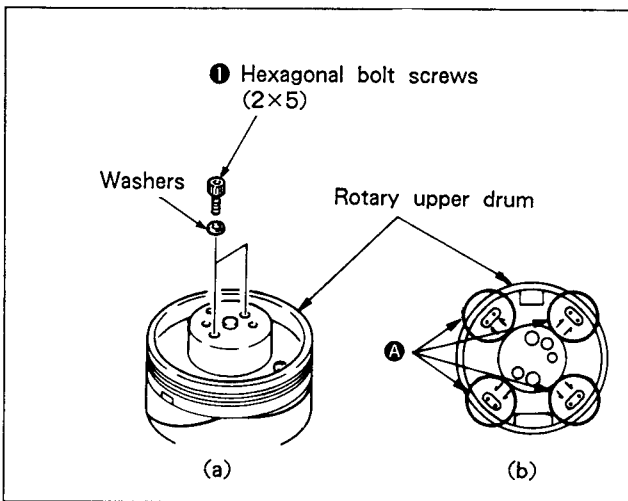


Fig. 7-46.

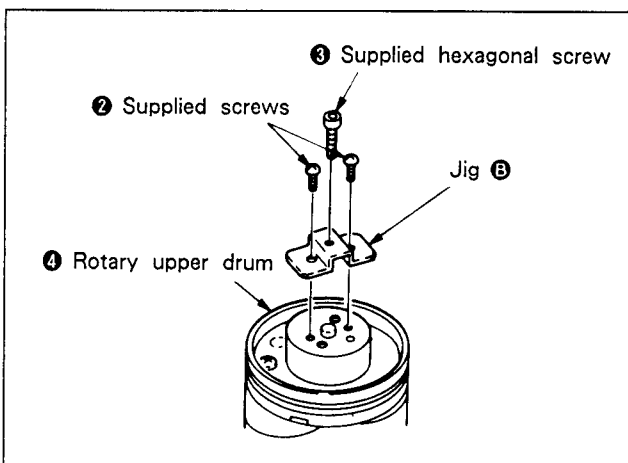


Fig. 7-47.

#### 2. Mounting

- 1) Clean the flange surface and the surface of the rotary upper drum which contacts it, and confirm that there is no dirt or scratches.
- 2) Use jig **C** (Ref. No. J-10) to line up rotary upper drum **4** and the positioning hole **D**, and lightly insert the rotary upper drum. At this time, confirm that the pins stick up the hole of rotary upper drum board. Fix with tweezers if the pins catch. (See Fig. 7-48.)
- 3) Remove jig **C** and push the rotary upper drum in by hand, lightly. (See Fig. 7-49.) When it is not inserted all the way, tighten the two hexagonal bolt screws **1** alternately to temporarily fix it.
- 4) Insert jig **C** into the positioning hole **D** again and confirm that it goes in smoothly. If not, loosen the two hexagonal bolt screws **1** and adjust it by inserting a clock screwdriver into the hole.
- 5) Tighten the two hexagonal bolt screws **1**.  
**Note**: Be careful not to tighten too much.
- 6) Solder the pins in section **A**. (See Fig. 7-46.)  
**Note**: Be careful that the solder does not go under the board.

**Note**: After mounting, be sure to perform 7-4. TAPE PATH ADJUSTMENT.

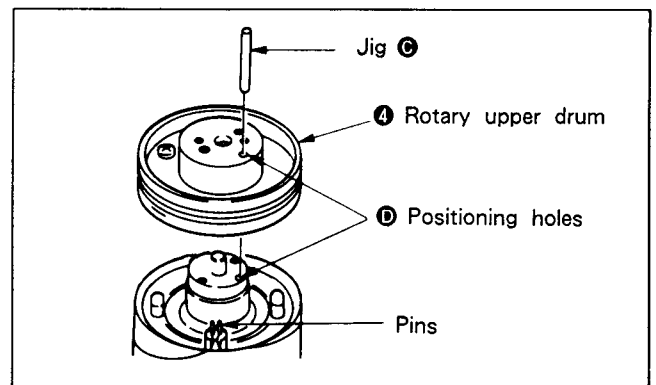


Fig. 7-48.

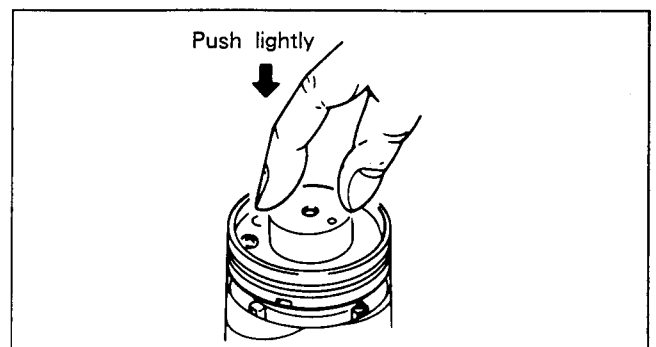


Fig. 7-49.

[Notes on drum assembly and rotary upper drum mounting]

1. When mounting the drum assembly with a magnetized screwdriver, mount with the head tip in the position shown below to prevent it from being affected by the screwdriver.
2. Be sure to perform TAPE PATH ADJUSTMENT after mounting.

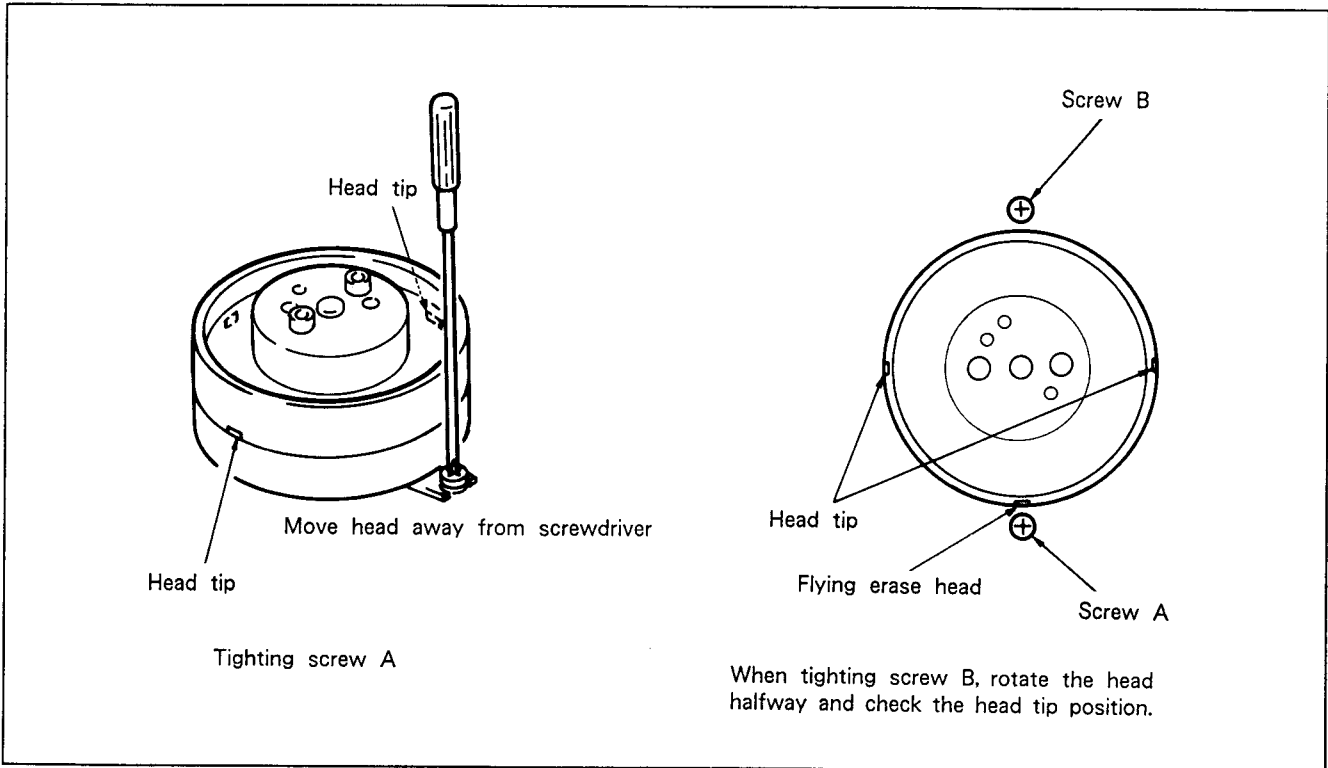


Fig. 7-50.

### 7-3-18. Replacement of Drum Assembly

#### 1. Removal (See Figs. 7-51. and 7-52.)

- 1) Open the MA-25 board according to Section 2. DISASSEMBLY 2-17.
- 2) Remove the screw ①.
- 3) Remove the screw ② and remove the shaft ground terminal ③.
- 4) Remove the four connectors ④.
- 5) Remove the two screws ⑤.
- 6) Remove the drum assembly ⑥.

**Note :**At this time, be careful that the drum assembly does not hit No.3 guide, etc.

#### 2. Mounting (See Figs. 7-51. and 7-52.)

- 1) Mount the drum assembly ⑥ and tighten with the two screws ⑤.
- 2) Connect the four connectors ④.
- 3) Mount the shaft ground terminal ③ and tighten with the screw ②.
- 4) Tighten the screw ①.
- 5) Mount the MA-25 board in opposite procedure of Section 2. DISASSEMBLY 2-17.

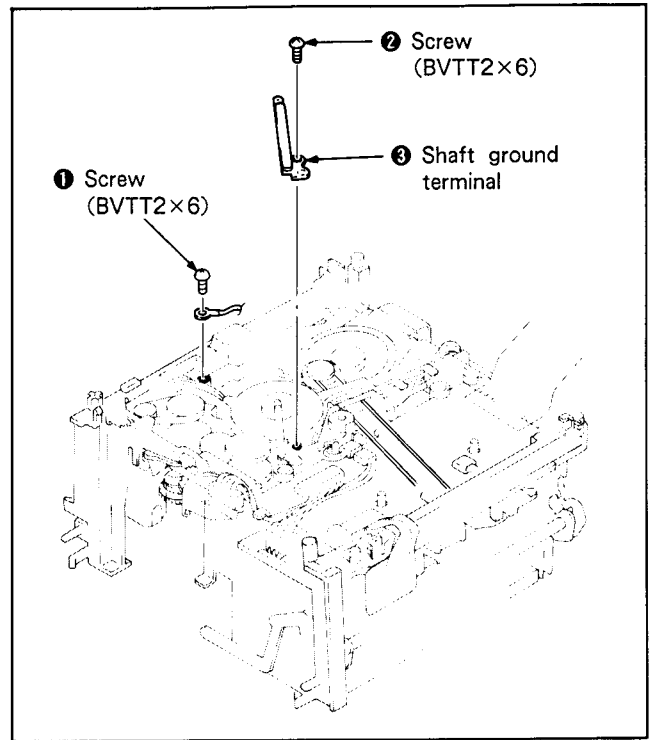


Fig. 7-51.

**Note :** Be sure to perform 7-4. TAPE PATH ADJUST-MENT after mounting.

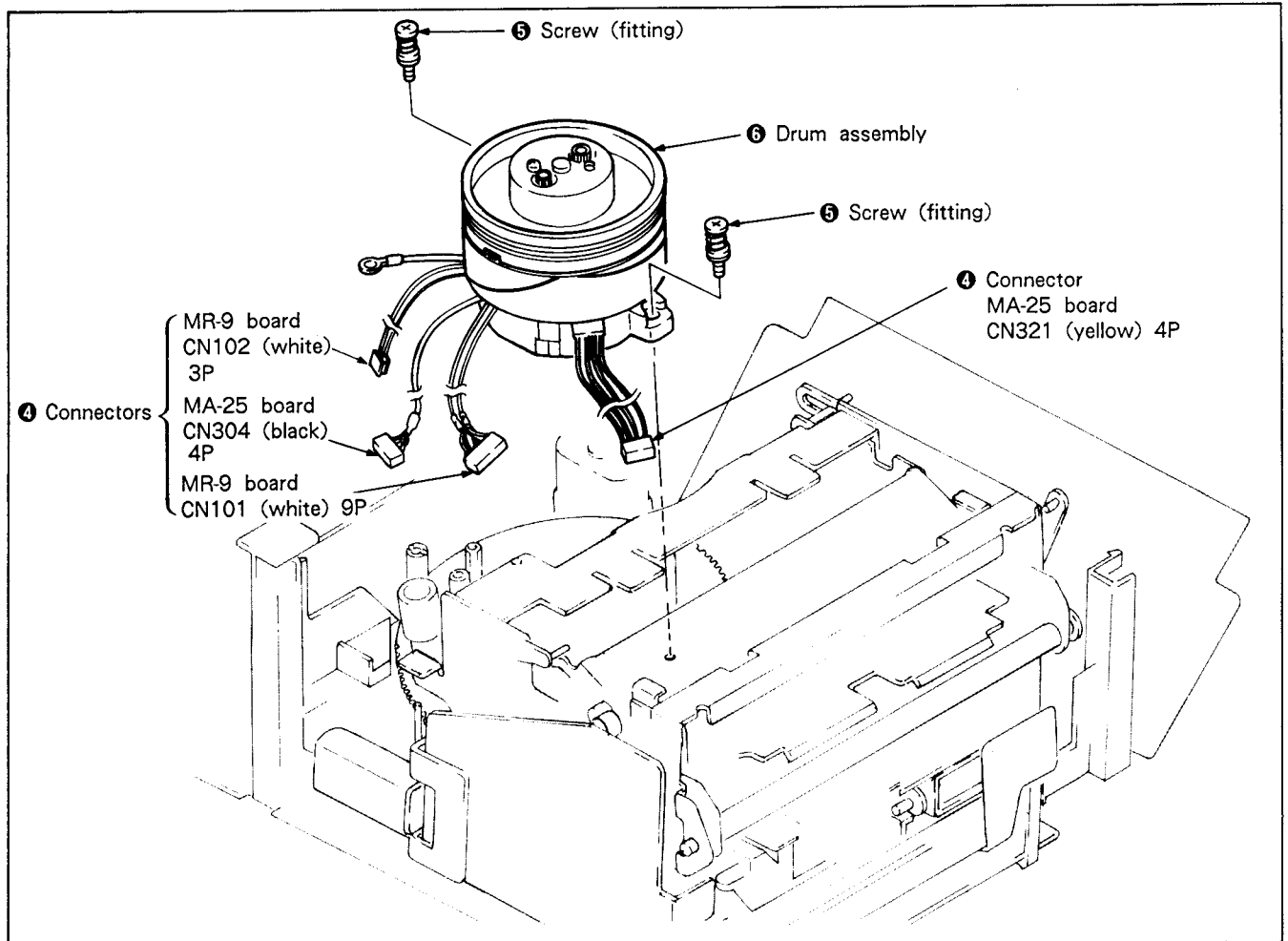


Fig. 7-52.

### 7-3-19. Adjustment after Replacement of No.3 Guide and No.4 Guide

For replacement of both No.3 and No.4 guides, line up the tape along the upper flange after replacing. (Fig. 7-95.)

### 7-3-20. No.5 Guide Assembly

#### 1. Removal (See Fig. 7-53.)

- 1) Remove the three screws ① and remove the No.5 guide assembly.
- 2) Remove the guide nut ② and remove No.5 guide boss ③.
- 3) Remove the No.5 guide flange ④, No.5 guide ⑤ and spring ⑥.

#### 2. Mounting (See Fig. 7-53.)

- 1) Mount the spring ⑥, No.5 guide ⑤ and No.5 guide flange ④ with No.5 guide shaft ⑦.
- 2) Mount the No.5 guide boss ③ and tighten the guide nut ②.
- 3) Mount the No.5 guide assembly and tighten with the three screws ①.

**Note:** Be sure to perform 7-4. TAPE PATH ADJUSTMENT after mounting.

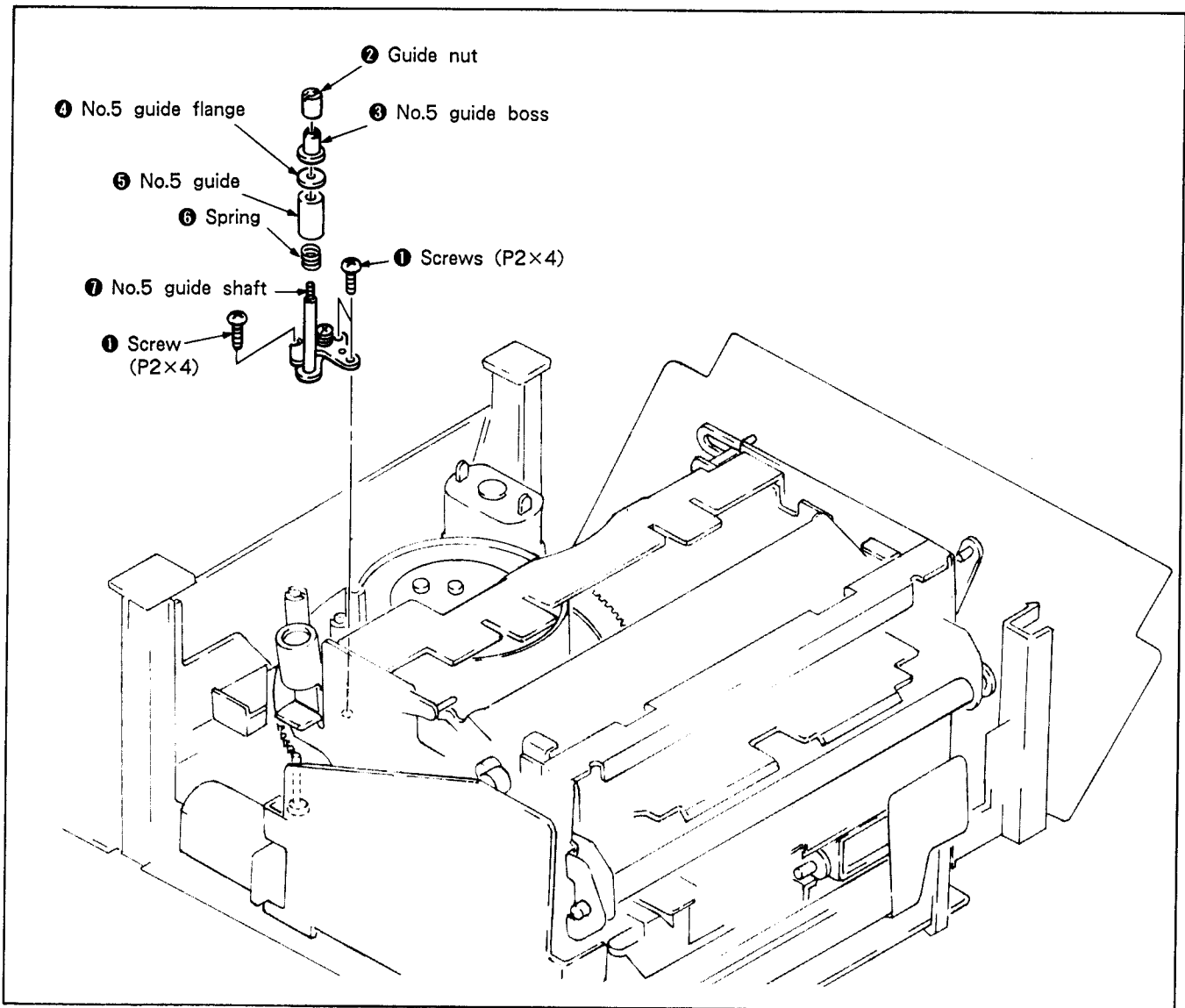


Fig. 7-53.

**7-3-21. FWD Back Tension Adjustment**  
 (See Fig. 7-54.)

- 1) Remove the cassette compartment assembly according to Section 2, DISASSEMBLY 2-19.
- 2) Set to **LOADING END**, **FWD** mode.
- 3) Loosen band adjustment plate ① screw ② and adjust as shown by arrow **A** so that the tension regulator arm assembly slit ③ and tension regulator arm assembly pin ④ are positioned as shown, and tighten screw ②.
- 4) Place tension measurement reel (Ref. No. J-7) ⑥ on the S reel table assembly ⑤ and fix the tape along No.1 guide, No.2 guide, No.3 guide and the drum.
- 5) Pull dial tension gauge (Ref. No. J-6) ⑦ in the direction of arrow **B** and hook the spring ⑨ onto the spring hook assembly ⑧ so that the value becomes  $12.5 \pm 1$  g, as shown below.  
 Value too large : arrow **C** direction  
 Value too small : arrow **D** direction

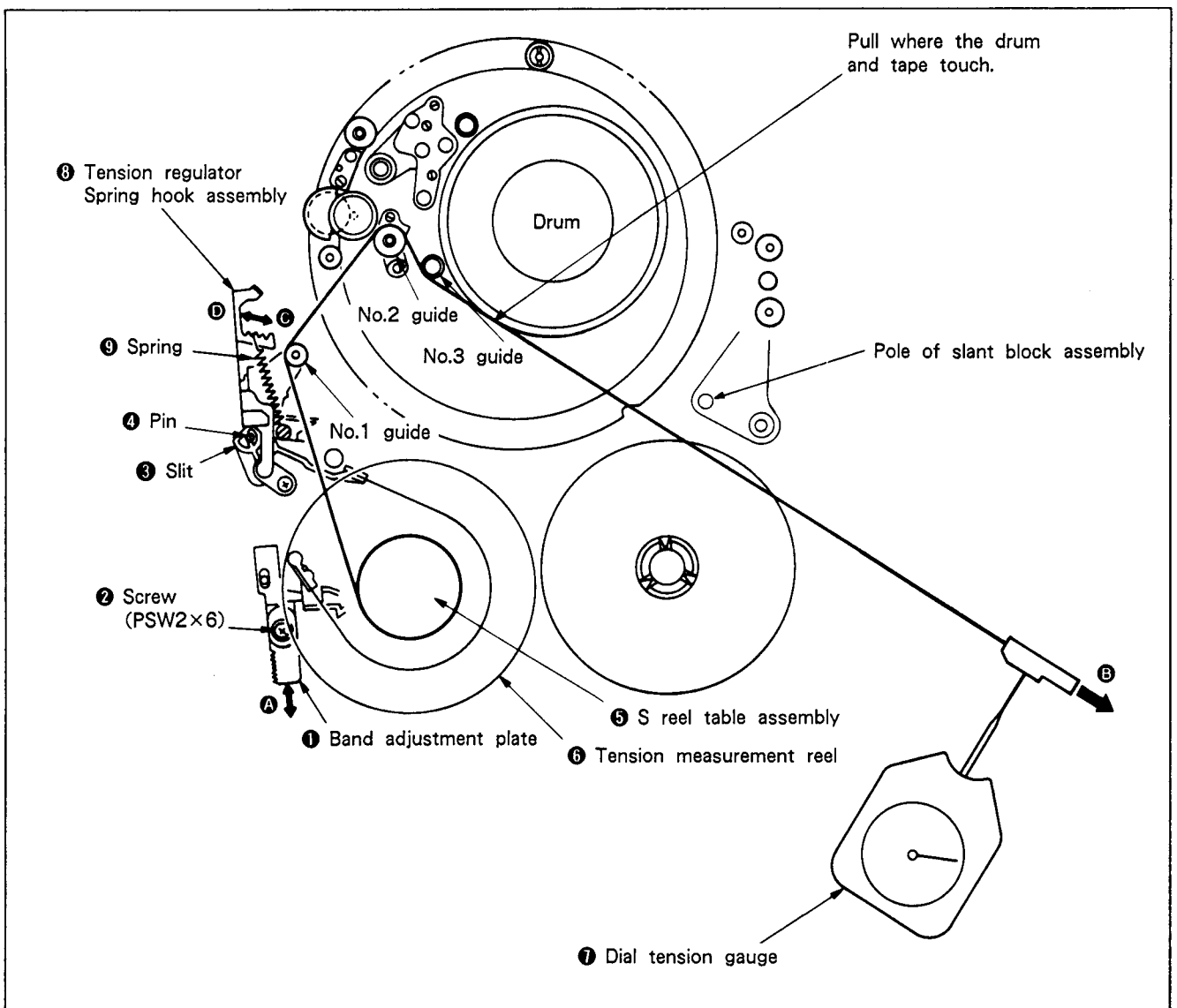


Fig. 7-54.

### 7-3-22. Check and Adjustment of Timing Belt Tension

- 1) Remove the timing belt. (See 7-3-15. 1. Removal, 1).)
- 2) Short TP101 of the MA-25 board and Pin ⑤ of CN324. (See Fig.7-55.)
- 3) Remove the pinch press arm side (round hook) of the tension spring attached to the pinch press arm assembly. (See Fig. 7-56.)
- 4) Hold the RECOG switch pin in using tape. (See Fig. 7-1.)
- 5) Cover the LED assembly with non-transparent tape and turn on the power to cause loading. (When the cassette compartment assembly is removed, also turn on the leaf switch.) (See Fig. 7-1.)
- 6) Select the PLAY mode and measure the voltage ( $V_o$ ) at both sides of R306 on the MA-25 board using a multitester (no load state). (See Fig. 7-55.)
- 7) Turn off the power and mount the timing belt. (See 7-3-16. 2. Mounting, 4).)
- 8) Remove the drive gear B assembly according to 7-3-14. 1. Removal, 3).)
- 9) Select the PLAY mode again and measure the voltage ( $V_x$ ) at both sides of R306. (tension adjustment)
- 10) Confirm that the voltage ( $V_x$ ) for tension adjustment is 5 mV to 10 mV higher than the voltage in the no load state ( $V_o$ ). If not, adjust by the procedure described below.  
**Adjustment Procedure :**
  - i ) Loosen screw ❶ and slide the idler assembly in the direction of arrow A, then tighten with screw ❶. (See Fig. 7-57.)
  - ii ) Perform 9) and confirm again.
  - iii) Repeat i ) and ii ) until the specifications are met.
- 11) Remove the short between TP101 on the MA-25 board and Pin ⑤ of CN324.
- 12) Mount the drive gear B assembly and pinch press arm assembly tension spring. (See Fig. 7-56.)

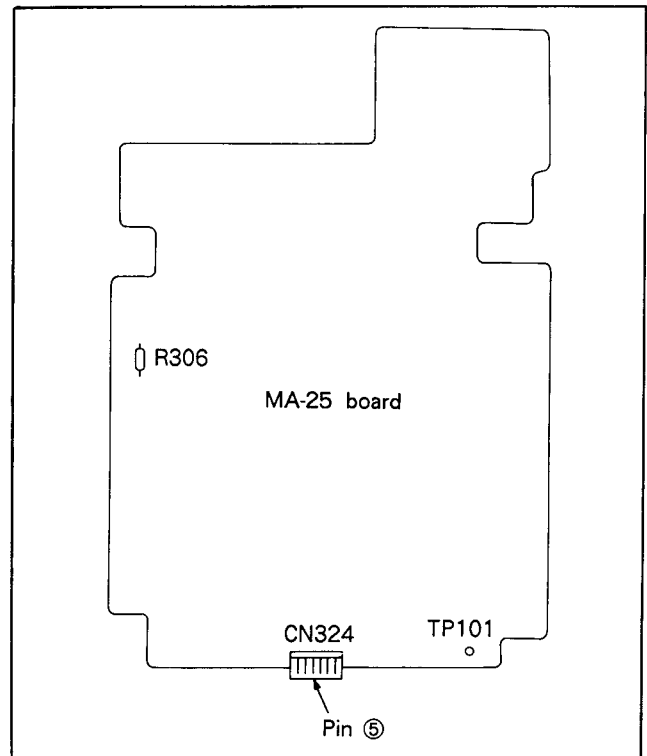


Fig. 7-55.

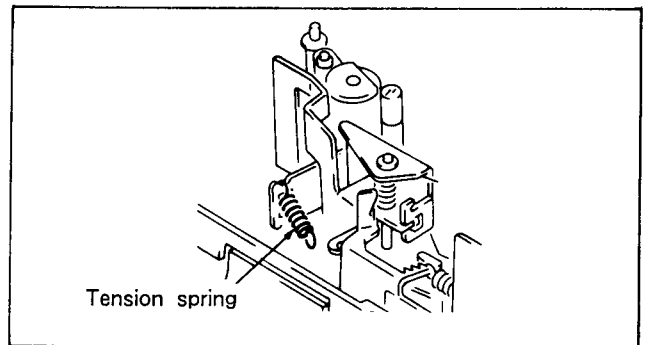


Fig. 7-56.

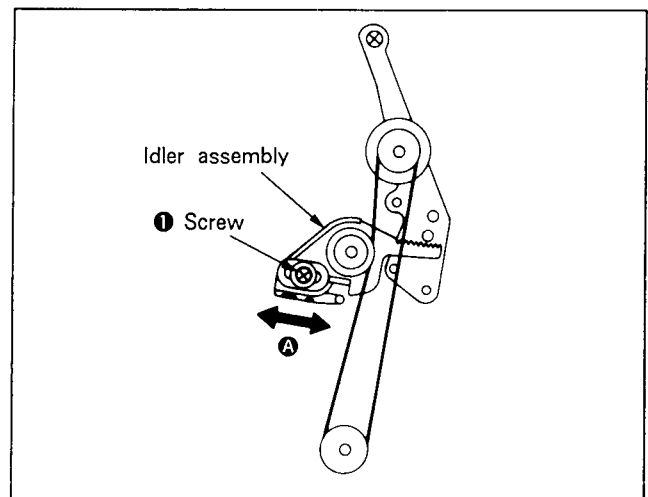


Fig. 7-57.



### 7-3-23. Mounting of Block Plate

- 1) Push the lock slider **1** in the direction of arrow and lift up the cassette holder **2**.
- 2) Confirm that the lock lever **3** is at the position shown in Fig. A in relation to Pin **4**.
- 3) Rotate the worm gear **5** in the direction of arrow **A**, so that gear B **6** and gear C **7** are engaged.
- 4) Tighten the three screws **10** of the block plate **9** while confirming that Pin **8** of the gear lever assembly is in position shown in Fig. B in relation to lock lever **3**.
- 5) Confirm that gear C **7** and gear D **11** are engaged.

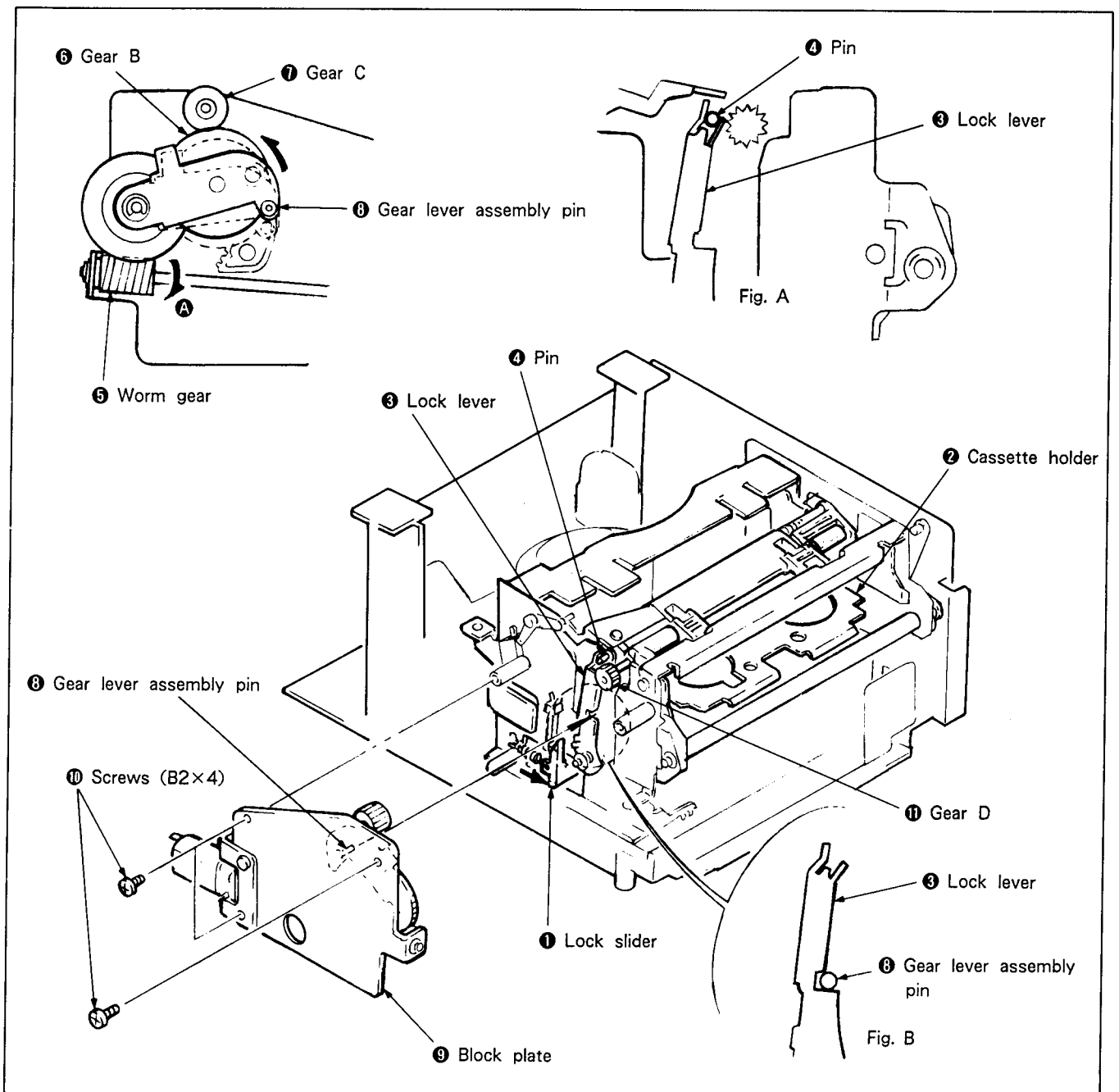


Fig. 7-58.

### 7-3-24. Adjustment of Cassette Holder Section Twisting

• Perform this adjustment when the following symptoms occur :

Symptoms : The cassette comes into contact with the cassette holder section ② or connecting rod ④, etc., when inserted or ejected, and does not move smoothly.

- 1) Loosen screw ①.
- 2) Adjust so that there is no gap between cassette holder section ② and reinforcing plate ③ (section A, section B). (See Fig. 7-59.)
- 3) Tighten screw ①.
- 4) Apply a screw locking compound to screw ①.

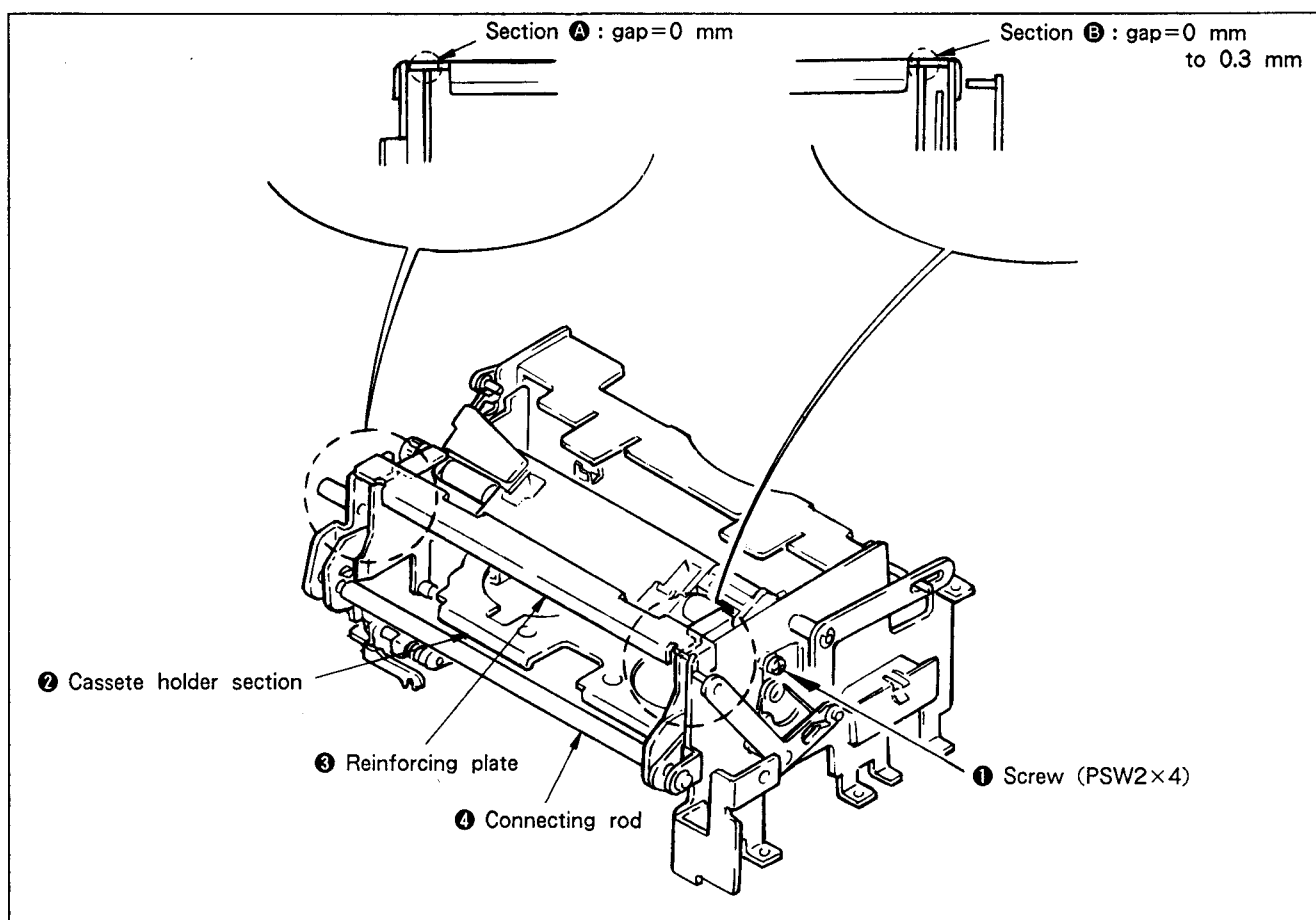


Fig. 7-59.

**7-3-25. Check of S and T Main Brake Torque**

- 1) Remove the VTR section according to Section 2. DISASSEMBLY 2-12.
- 2) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.

**1. S main brake torque (See Figs. 7-60. and 7-61.)**

- 1) Set to **FF/REW** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
- 3) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the specifications are satisfied.

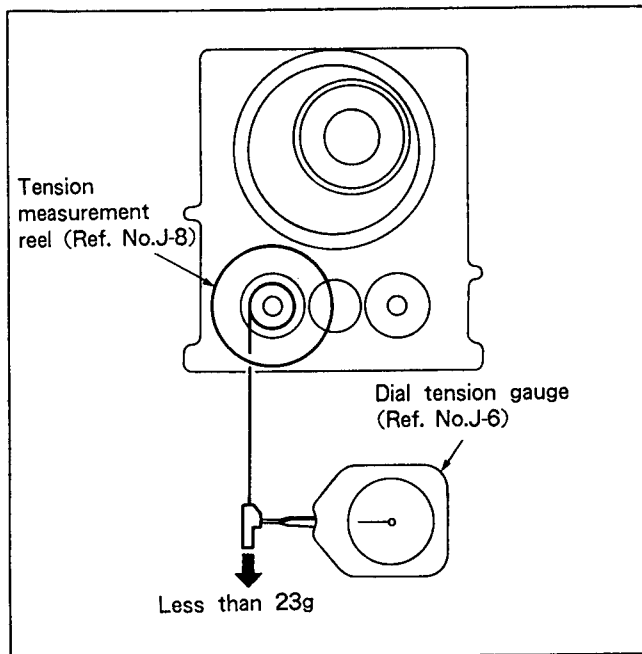


Fig. 7-60.

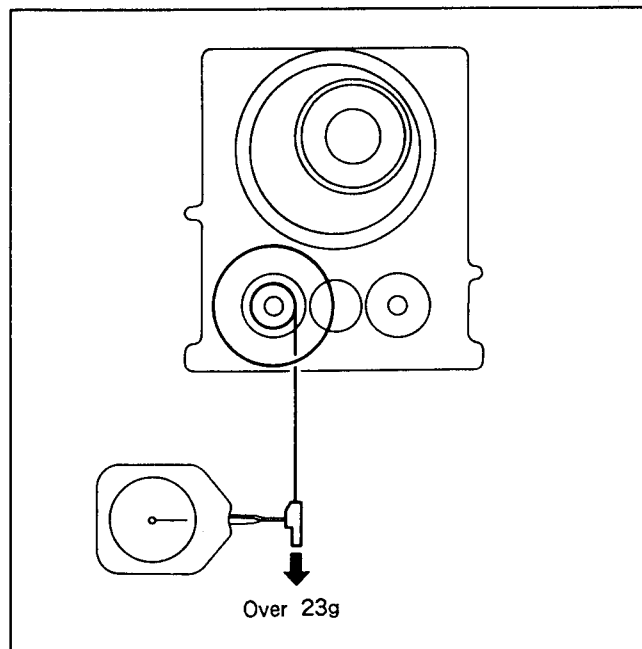


Fig. 7-61.

**2. T main brake torque (See Figs. 7-62. and 7-63.)**

- 1) Set to **FF/REW** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
- 3) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the specifications are satisfied.

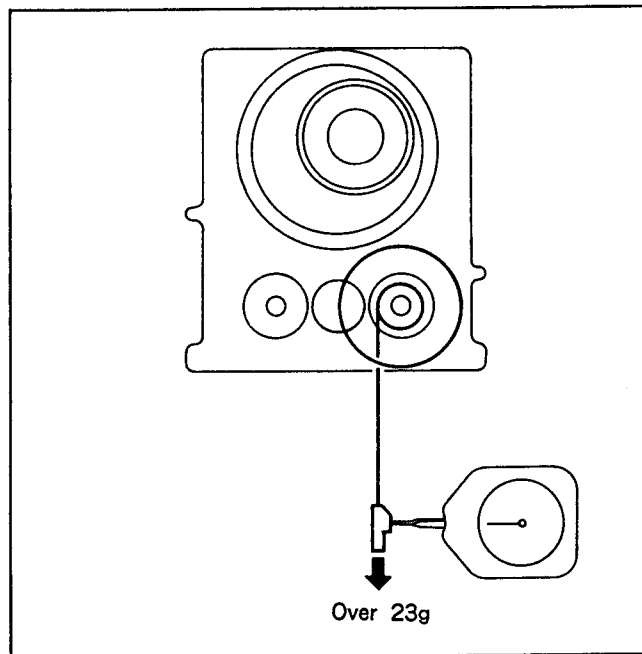


Fig. 7-62.

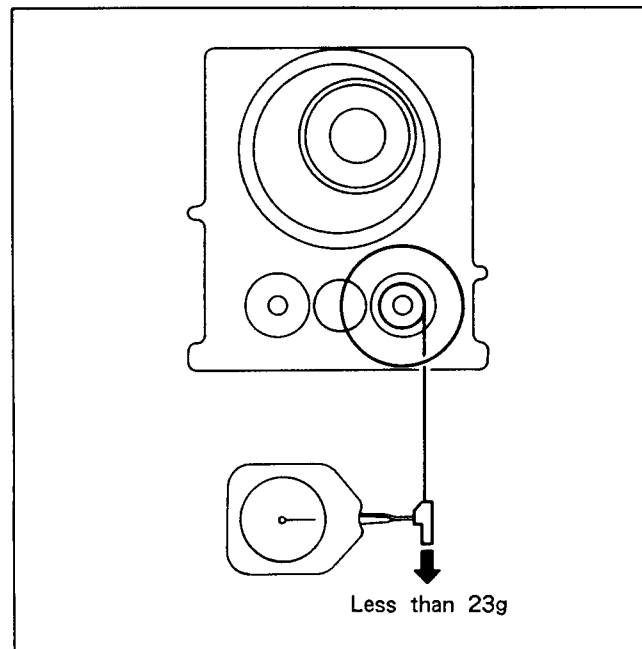


Fig. 7-63.

### 7-3-26. Check of S and T Soft Brake Torque

- 1) Remove the VTR section according to Section 2. DISASSEMBLY 2-12.
- 2) Remove the cassette compartment assembly according to Section 2. DISASSEMBLY 2-19.

#### 1. S soft brake torque (See Fig. 7-64.)

- 1) Set to **FF/REW** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
- 3) Release the S main brake with a finger.
- 4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the specifications are satisfied.

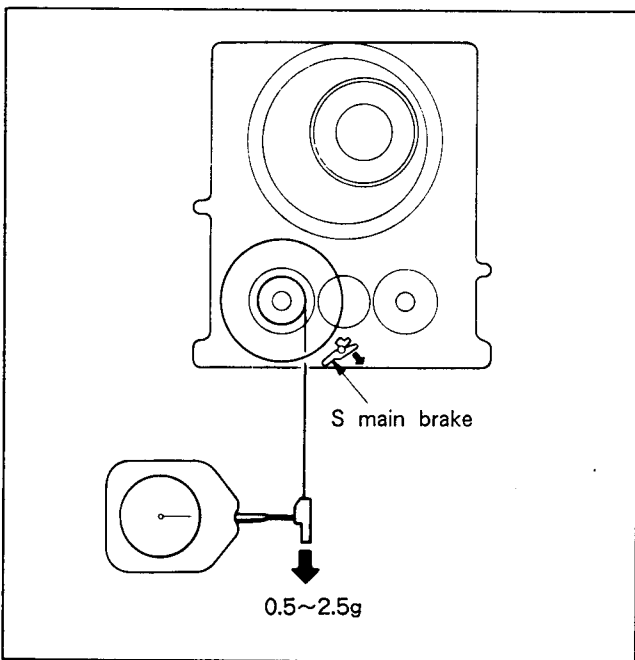


Fig. 7-64.

#### 2. T soft brake torque (See Fig. 7-65.)

- 1) Set to **REV** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
- 3) Release the T main brake with a finger.
- 4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the specifications are satisfied.

**Note :** In REV mode, both T soft brake and REW brake are operated.

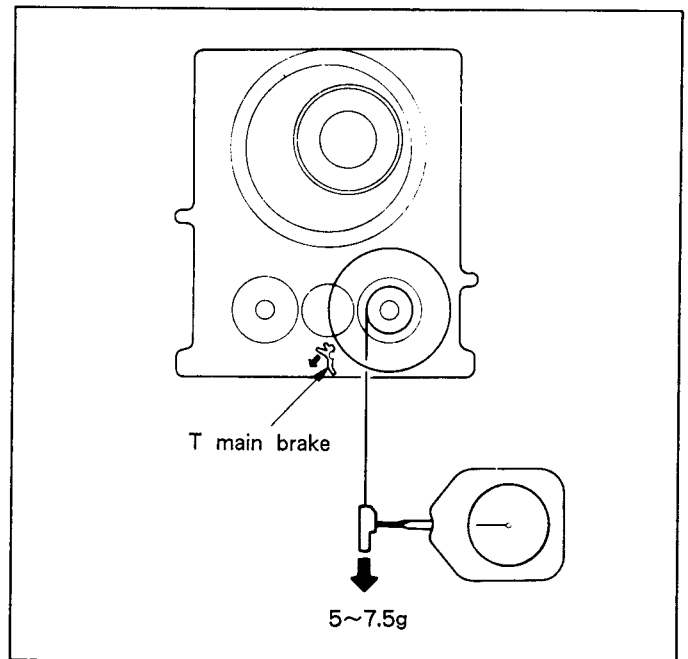


Fig. 7-65.

### 7-3-27. Check of REV and REW Brake Torque

- 1) Remove the VTR section according to Section 2, DISASSEMBLY 2-12.
- 2) Remove the cassette compartment assembly according to Section 2, DISASSEMBLY 2-19.

#### 1. REV brake torque (See Fig. 7-66.)

- 1) Set to **REV** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
- 3) Release the S main brake with a finger.
- 4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the specifications are satisfied.

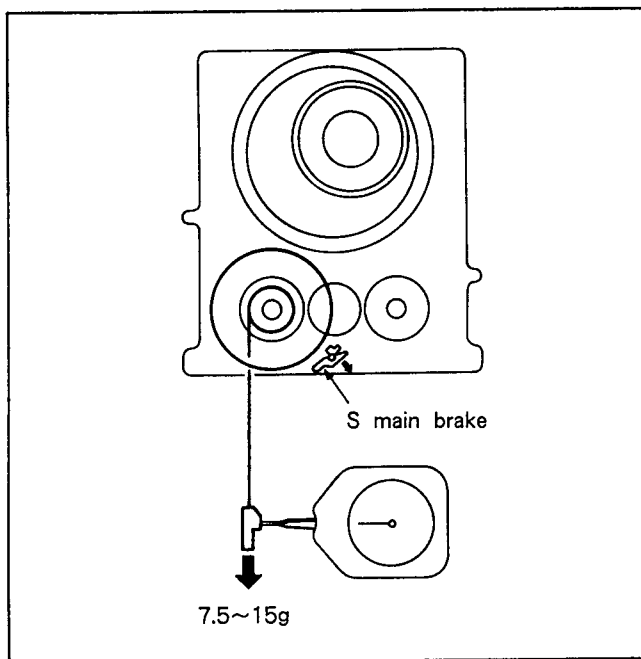


Fig. 7-66.

#### 2. REW brake torque (See Fig. 7-67.)

- 1) Set to **FF/REW** mode.
- 2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
- 3) Release the T main brake with a finger.
- 4) Pull the dial tension gauge (Ref. No. J-6) in the direction of arrow and confirm that the specifications are satisfied.

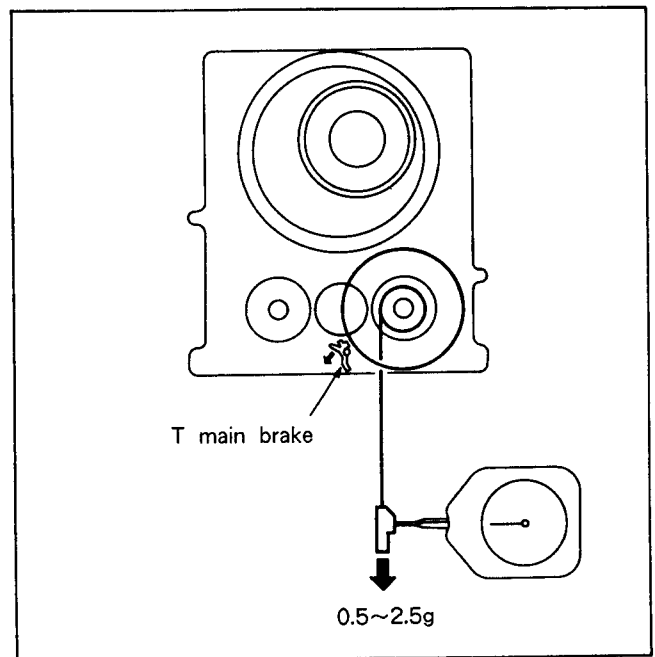


Fig. 7-67.

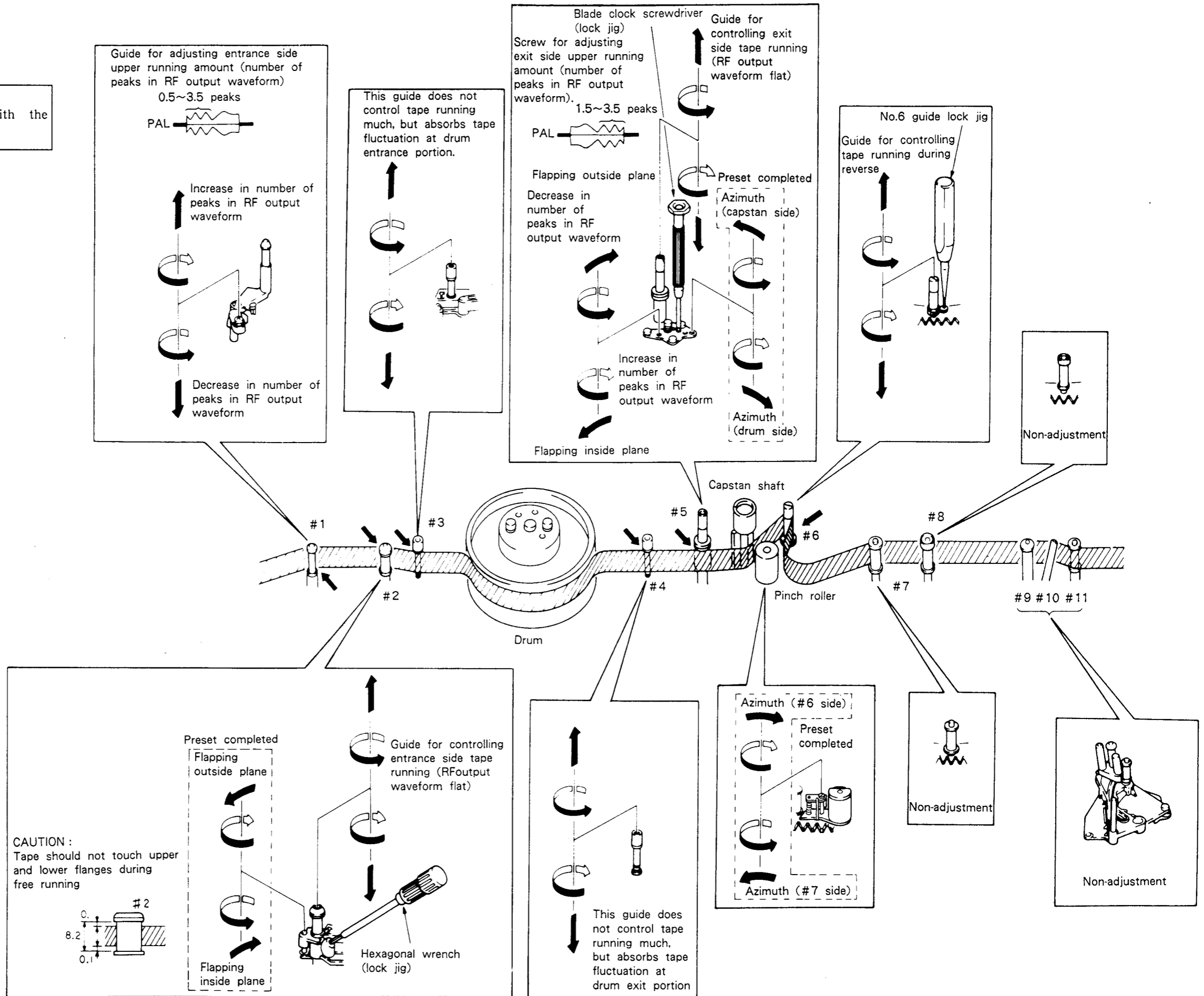
**7-3-28. Check by FWD and RVS Winding Torque  
Cassette**

- 1) Insert the FWD and RVS winding torque cassette (Ref. No. J-12).
- 2) Set to playback mode and confirm that T reel table torque is 9.5 to 15.5 g-cm.
- 3) Set to playback mode and confirm that the S reel table torque immediately after the REW button is pressed is 17 to 23 g-cm.
- 4) Replace the appropriate reel table if the above specifications are not satisfied.

# 7-4. TAPE PATH ADJUSTMENT

## TAPE RUNNING SYSTEM DIAGRAM

**Precautions on Adjustment :**  
Be sure to perform this adjustment with the mechanism and lower cabinet assembled.



- Perform this adjustment after confirming that Section 8. ELECTRICAL ADJUSTMENT is completed.

**[REGARDING TRACK SHIFT JIG]**

The 8 mm video system employs a high precision tracking ATF ( auto track finding ) which instantaneously controls the tape running speed with the four kinds of pilot signals. In this way, the tracking adjustment knob becomes unnecessary, and accurate tracing has become possible.

On the other hand however, there has been difficulty in adjusting the tape path system with the ATF method, that is it was impossible to make a perfect adjustment because the ATF automatically corrected even small head-tracing errors.

Because of this, adjustment is carried out to the tape path system by using the track shift jig (Ref. No. J-14). As the track shift jig forcibly releases the ATF and sets the tracking amount (track shift) manually, the adjustment of the tape path system can easily be carried out.

- Previous track shift & monitor jig (J-6080-851-A) also can be used.

**7-4-1. Connection of Track Shift Jig**

**[Connector connections]**

For connection, use the connection cord (Ref. No. J-15, J-16).

Connect track shift jig to the unit referring to Fig. 7-68.

- RF/SWP connector.....MR-9 board CN104
  - CTL connector.....MA-25 board CN328
- (For details, see the Instruction Manual of Track Shift Jig.)

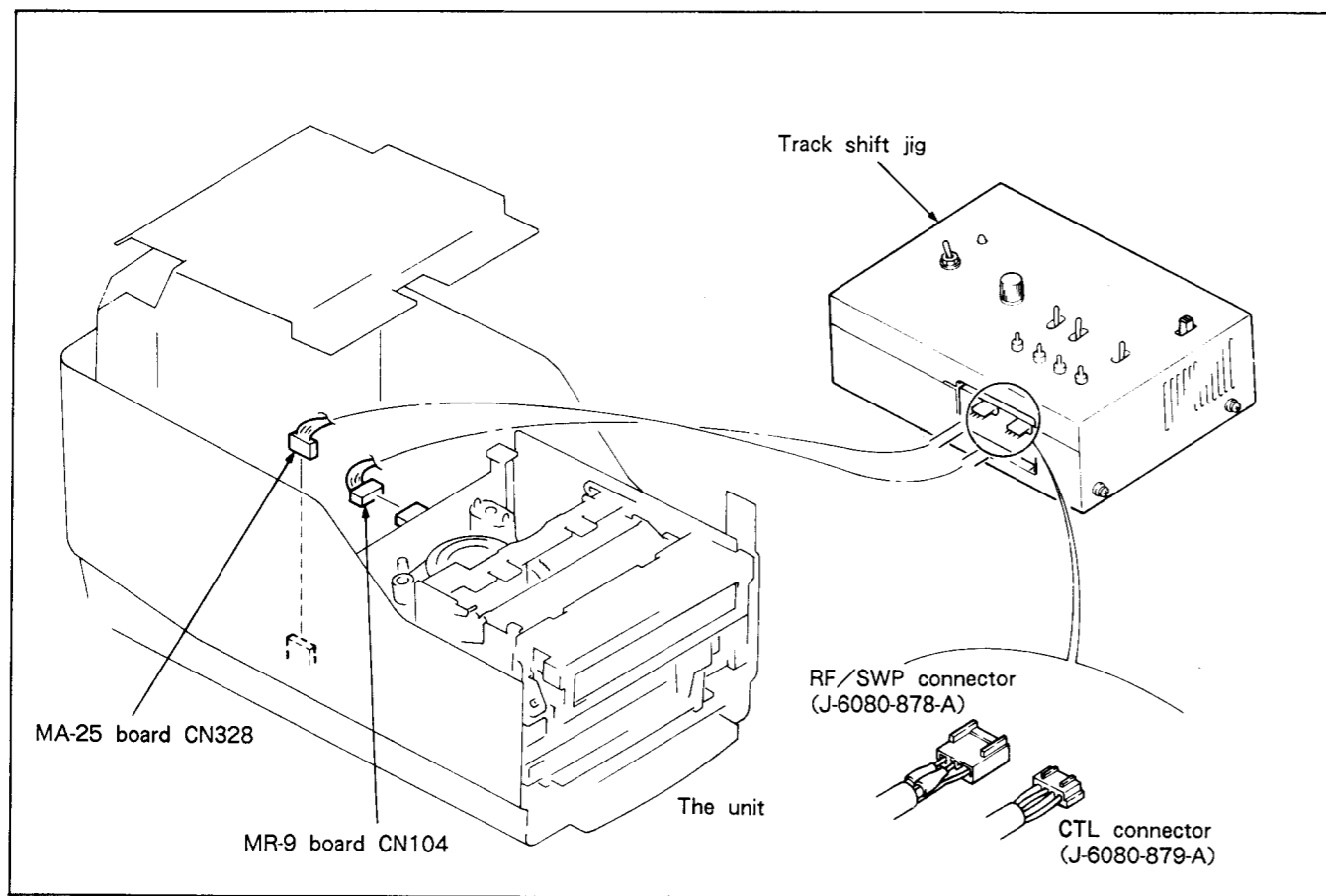
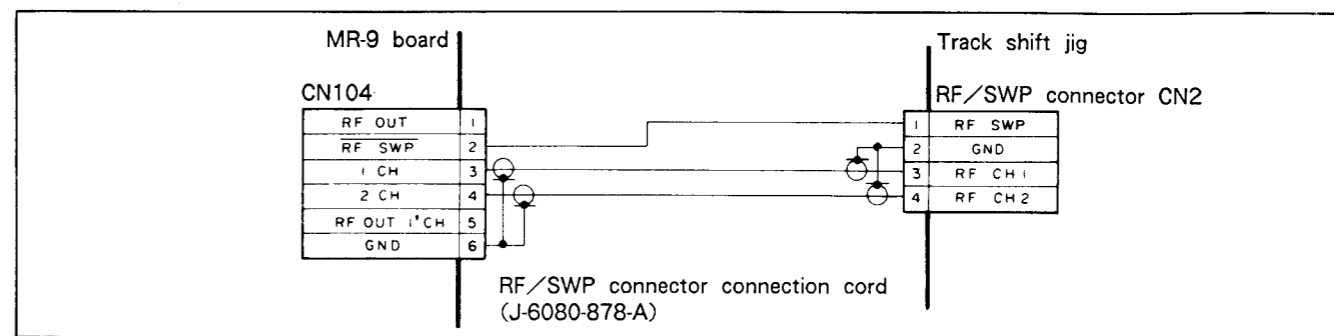


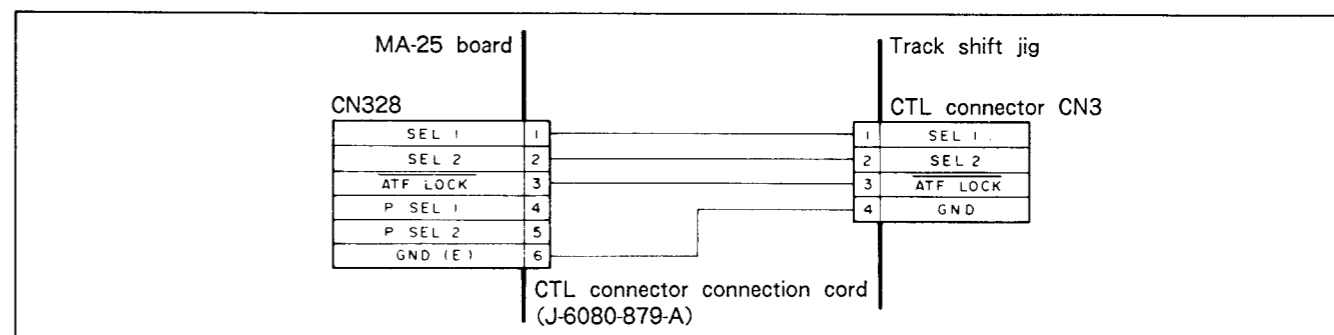
Fig. 7-68. Connection of track shift jig

**[Designated connecting cord]**

- RF/SWP connector connecting cord (J-6080-878-A)



- CTL connector connecting cord (J-6080-879-A)



**[Position setting of respective switches]**

- SEL switch.....When performing track shift, set to ON. At OFF position it becomes control of the unit side.
- PATTERN switch.....Set to EV side.
- ATF ADJ.....Set to OFF side.
- Other switches are not used when adjusting the unit.



### 7-4-2. Preparation for Adjustment

- 1) Perform cleaning of the tape running surface (the individual tape guides, drum, capstan shaft and pinch roller).
- 2) Connection of oscilloscope  
 1ch : CH2 checking pin of track shift jig  
 2ch : RF SWP checking pin of track shift jig
- 3) Set the SEL switch of the track shift jig to OFF, then playback the alignment tape (WR5-1C) for tracking, and confirm that the RF waveform of both the entrance and exit sides become flat (Fig. 7-69. ㊸).

If the RF waveform of both sides is not flat, the adjustment should be carried out as described below.

- In case the RF waveform on the entrance side is not flat (Fig. 7-69. ㊹)  
 .....Perform the adjustment according to 7-4-3. Entrance Side Adjustment.
- In case the RF waveform on the exit side is not flat (Fig. 7-69. ㊺)  
 .....Perform the adjustment according to 7-4-4. Exit Side Adjustment.

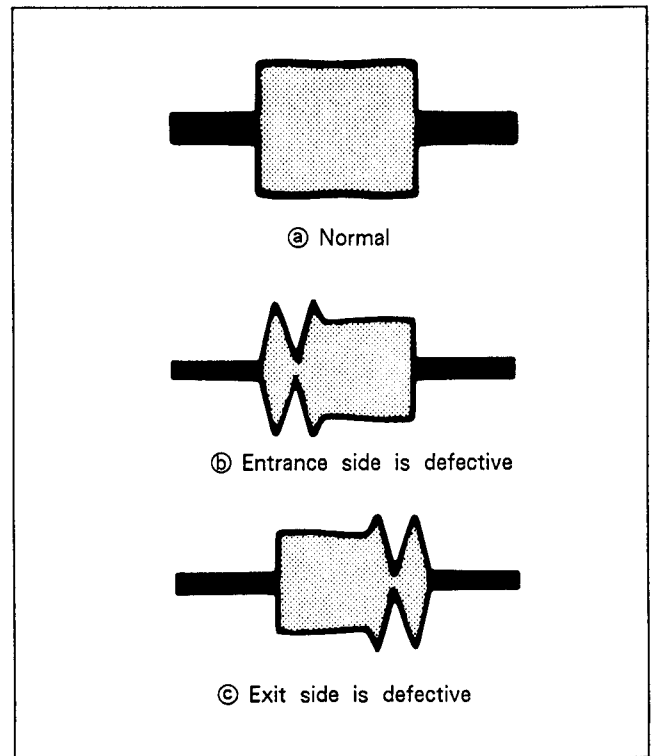


Fig. 7-69.

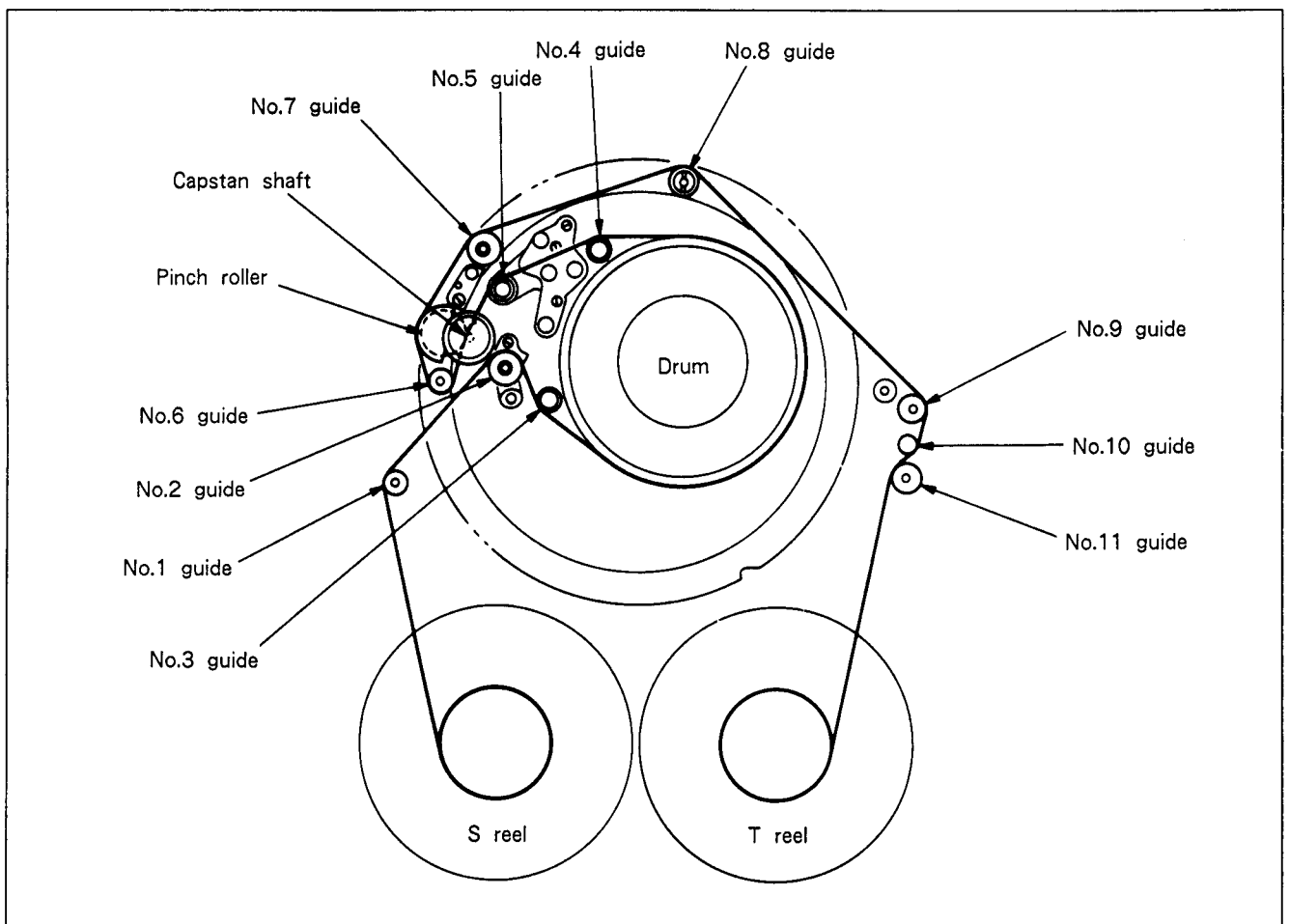


Fig. 7-70. Tape guide arrangement diagram

### 7-4-3. Entrance Side Adjustment

- 1) Play back the alignment tape (WR5-1C) for tracking and loosen No.2 guide lock screw ❶, and rotate No.2 and No.3 guides counterclockwise to free tape running on the entrance side (See Fig. 7-71.)

**Note:** Since the space between the top and bottom flanges of No.2 guide is narrow, confirm that the tape is touching neither top nor bottom flanges at this point. Note that if No.2 guide is loosened too much, the tape touches the bottom flange and the RF waveform on the entrance side exceeds the original free waveform.

- 2) Confirm that the RF waveform on the entrance side has 0.5 to 3.5 peaks in this condition. If not, adjust as follows. (See Fig. 7-72.)

<less than 1 peak>

Adjust the No.2 guide zenith screw ❷ by turning it counterclockwise 90° at a time. (See Fig. 7-71.)

<more than 6 peaks>

Adjust the height adjustment screw of No.1 guide (tension regulator arm assembly) by turning it counterclockwise 90° at a time. (See Fig. 7-73.)

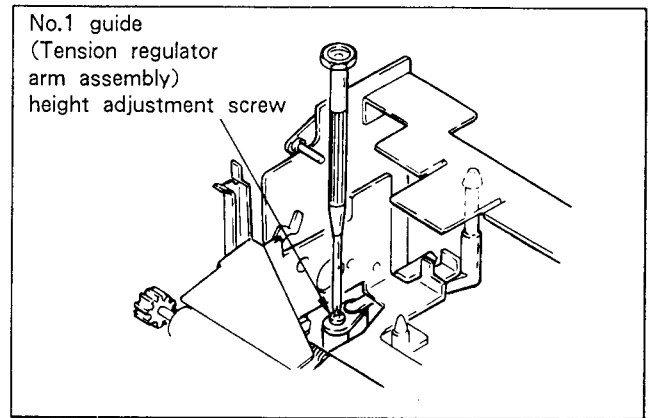


Fig. 7-73.

- 3) Slowly rotate the No.2 guide clockwise to make the entrance side waveform approximately flat. (Fig. 7-74.)

**Note:** Do not rotate No.2 guide excessively.

- 4) Set the SEL switch of the track shift jig to ON, then turn the track shift knob until the RF waveform amplitude becomes 2/3. (See Fig. 7-75.)

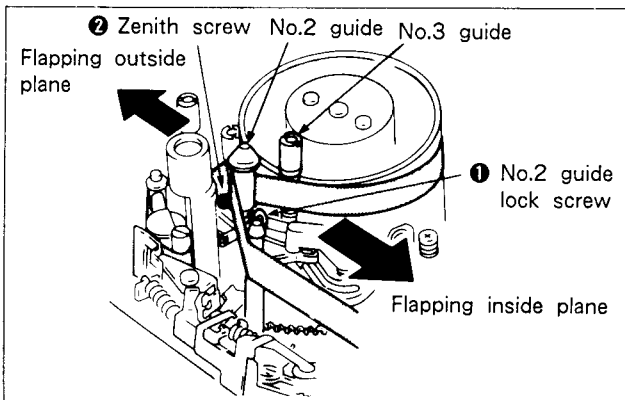


Fig. 7-71.

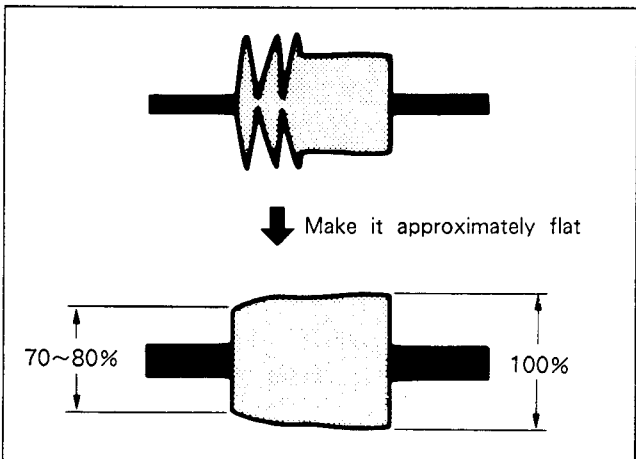


Fig. 7-74.

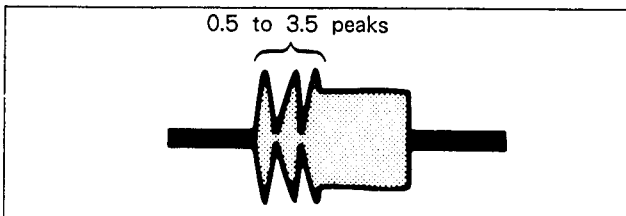


Fig. 7-72.

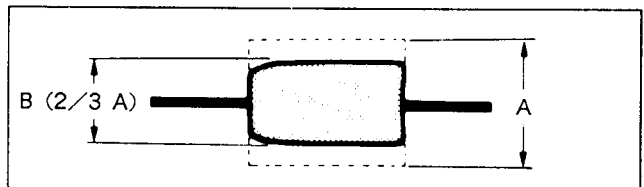


Fig. 7-75.

- 5) Raise the entrance side waveform slightly by rotating No.2 guide. (See Fig. 7-76.)
- 6) Flatten the waveform with No.3 guide. (See Fig. 7-77.)
- 7) Tighten No.2 guide lock screw ❶. (See Fig. 7-71.)

**Note :** Be sure to perform checking in accordance with 7-4-5. Checking After Adjustment.

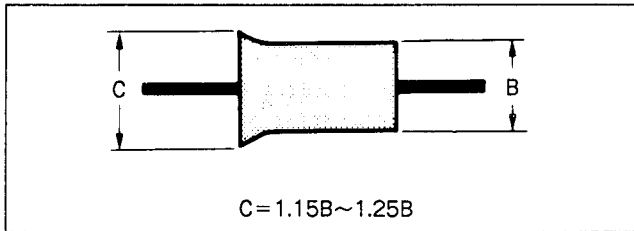


Fig. 7-76.

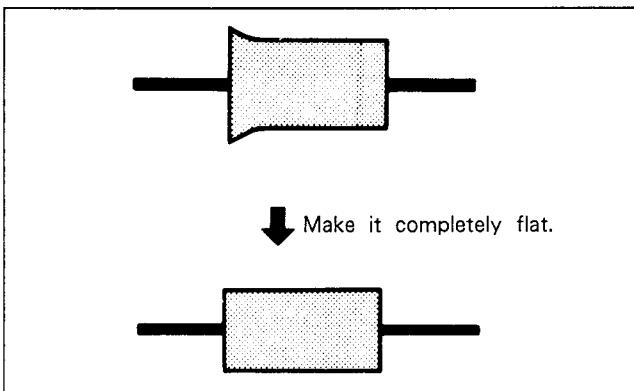


Fig. 7-77.

#### 7-4-4. Exit Side Adjustment

- 1) Play back the alignment tape (WR5-1C) for tracking and rotate No.4 guide and No.5 guide counterclockwise in order to make the tape running on the exit side free. (See Fig. 7-78.)

**Note :**

- If the No.5 guide nut does not loosen (it is locked with screw-paint), dissolve the paint with alcohol.
- Confirm that the tape is not touching the top and bottom of flanges of No.5 guide during free tape running.

- 2) Confirm that the RF waveform on the exit side has 1.5 to 3.5 peaks. If not, readjust as follows. (See Fig. 7-79.)

**<If off standard>**

- i) Rotate the lock screw ❶ counterclockwise to loosen.
- ii) Slowly rotate the zenith screw ❷ 45° at a time and wait until the RF waveform varies.
- iii) Rotate the lock screw ❶ clockwise to tighten. (See Fig. 7-78.)

**Note :**

- The waveform varies if the lock screw is tightened too strongly. Tighten moderately.
- Never rotate the azimuth screw of No.5 guide.

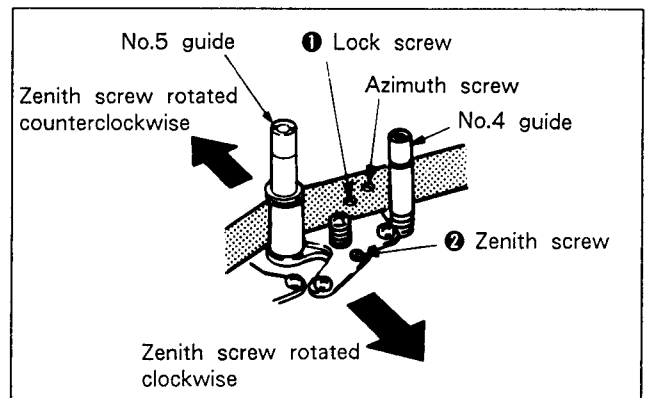


Fig. 7-78.

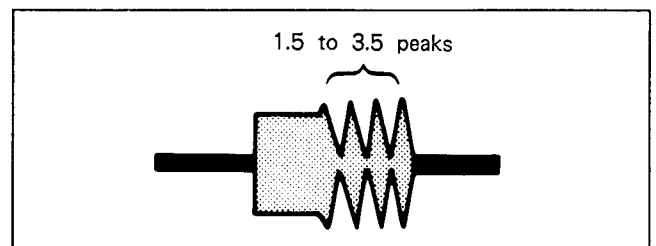


Fig. 7-79.

- 3) Rotate the No.5 guide clockwise to make the RF waveform on the exit side approximately flat. (Fig. 7-80.)

**Note:** The waveform reaction is slow against nut rotation. Rotate the nut after the waveform variations are stabilized.

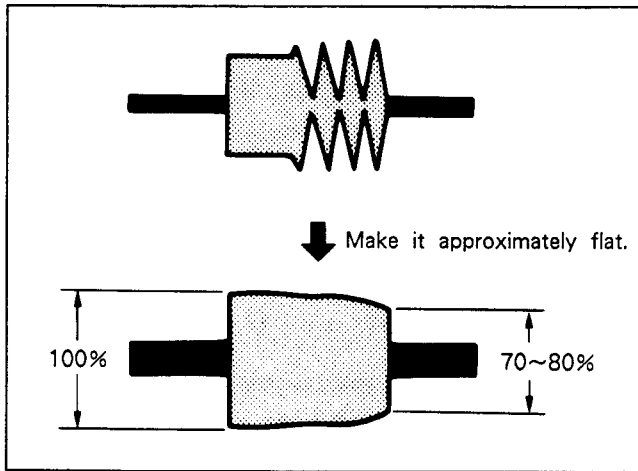


Fig. 7-80.

- 4) Set the SEL switch of the track shift jig to ON, then turn the track shift knob until the RF waveform amplitude becomes  $2/3$ . (See Fig. 7-81.)
- 5) Raise the exit side waveform slightly by rotating No.5 guide. (See Fig. 7-82.)
- 6) Turn No.4 guide so that waveform is flat. (See Fig. 7-83.)

**Note:** Be sure to perform checking in accordance with 7-4-5. Checking After Adjustment.

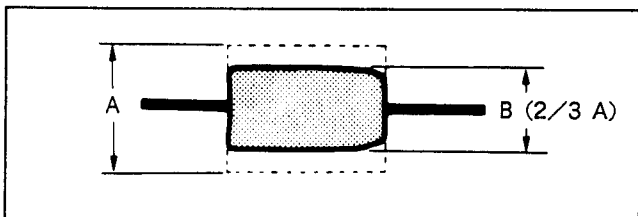


Fig. 7-81.

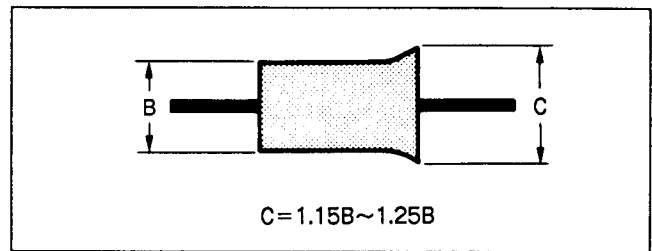


Fig. 7-82.

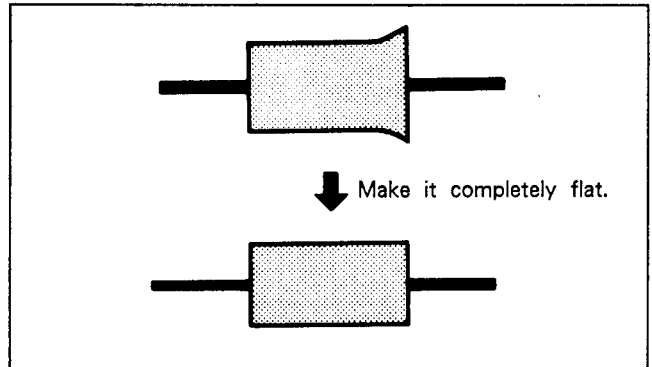


Fig. 7-83.

### 7-45. Checking After Adjustment

#### 1. Tracking check

- 1) Play back the alignment tape (WR5-1C) for tracking.
- 2) Set the SEL switch of the track shift jig to ON, and turn the track shift knob, until the RF waveform amplitude becomes  $2/3$ . (See Fig. 7-84.)
- 3) Confirm that the RF waveform amplitude minimum value ( $E_{MIN}$ ) at this time is more than 80% of maximum value ( $E_{MAX}$ ). (See Fig. 7-85.)
- 4) Confirm that the fluctuation amount of both RF waveform entrance and exit sides is as shown in Fig. 7-86.
- 5) Set the SEL switch of the track shift jig to OFF.
- 6) Set to the REV mode and confirm that the waveform noise pitches are uniform. If not, adjust as follows. (See Fig. 7-87.)

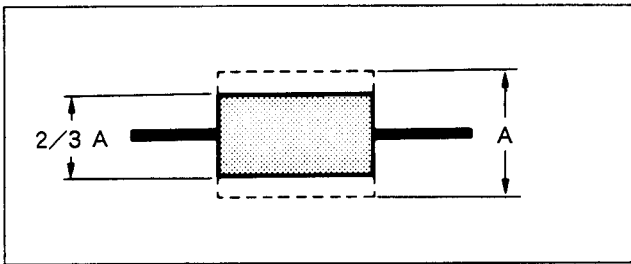


Fig. 7-84.

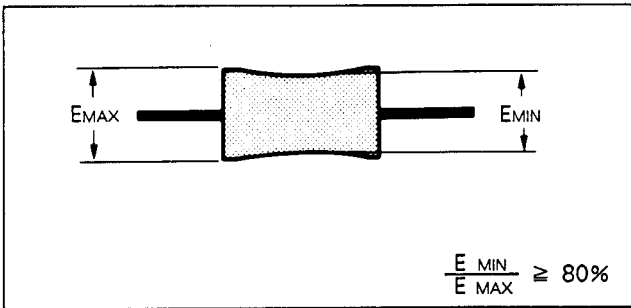


Fig. 7-85.

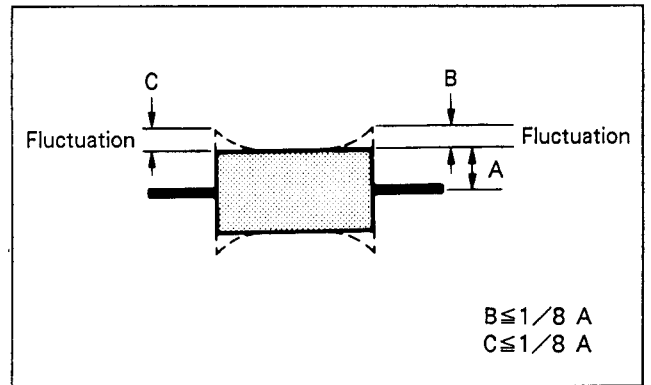


Fig. 7-86.

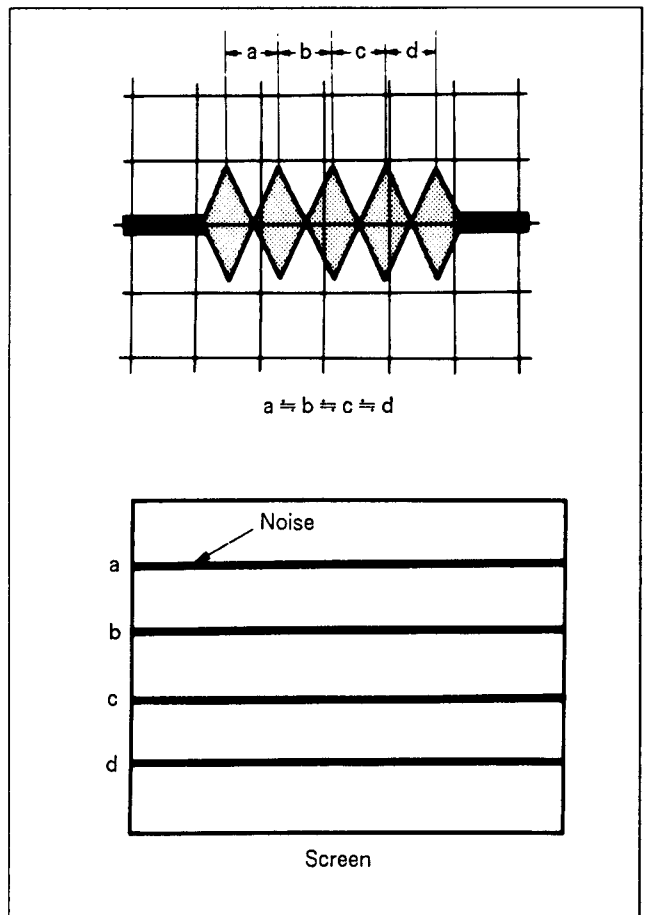


Fig. 7-87.

<Narrow noise pitch on entrance side (upper screen)>  
 (See Fig. 7-88.)

Confirm that the RF waveforms are flat in the PLAYBACK mode.

**Waveform is not flat :**

Perform height adjustment of No.2 guide and No.3 guide according to 7-4-3. Entrance Side Adjustment.

**Waveform is flat :**

Confirm again by performing No.1 guide height and No.2 guide zenith adjustment according to 7-4-3. Entrance Side Adjustment.

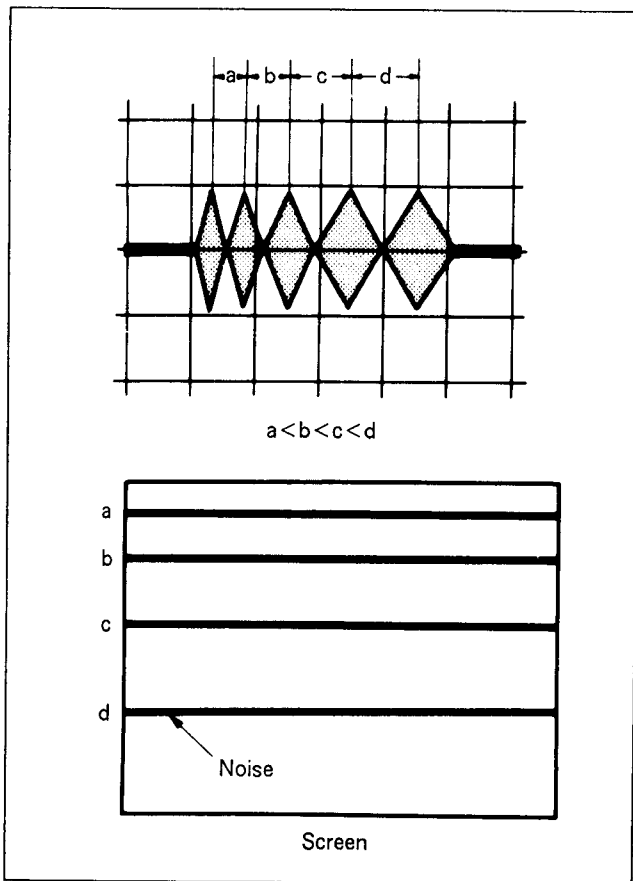


Fig. 7-88.

<Narrow noise pitch on exit side (lower screen)>  
 (See Fig.7-89.)

Set to the PLAYBACK mode and perform height adjustment of No.4 guide and No.5 guide according to 7-4-4. Exit Side Adjustment.

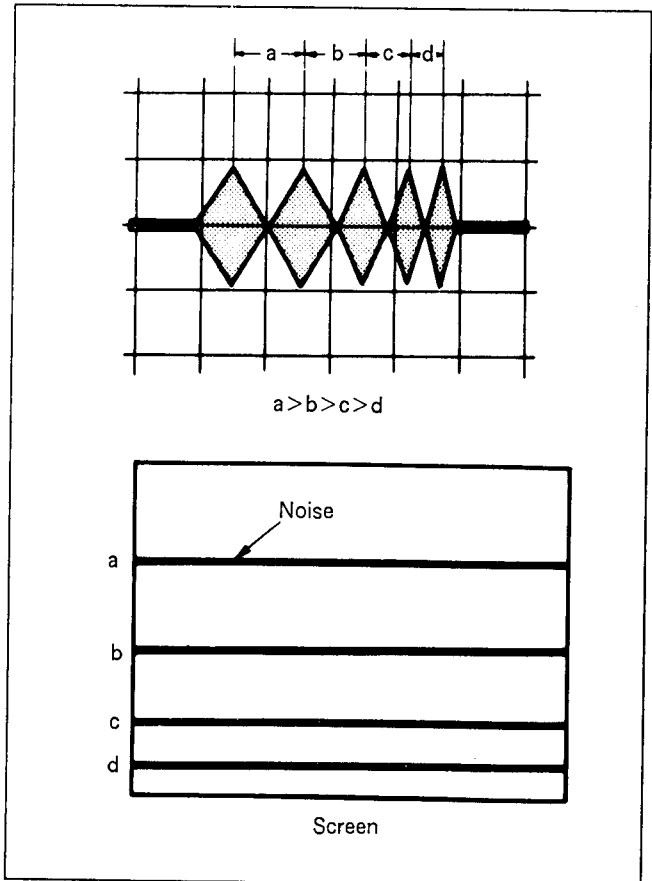


Fig. 7-89.

(Wide noise pitch on exit side (lower screen))  
 (See Fig. 7-90.)

Set to the PLAYBACK mode and confirm that the RF waveform is flat.

**Waveform is not flat :**

Perform height adjustment of No.4 guide and No.5 guide according to 7-4-4. Exit Side Adjustment.

**Waveform is flat :**

Rotate the guide lower toothed wheel counterclockwise with No.6 guide lock jig (Ref. No. J-11) to loosen, and rotate No.6 guide counterclockwise 45° to tighten the lower toothed wheel. Confirm the RF waveform of the REV mode again. (See Fig. 7-91.)

**Note :** If No.6 guide is raised too much, wrinkles may occur in section A between the capstan spindle and No.5 guide. Confirm that no wrinkles are occurring. (See Fig. 7-92.)

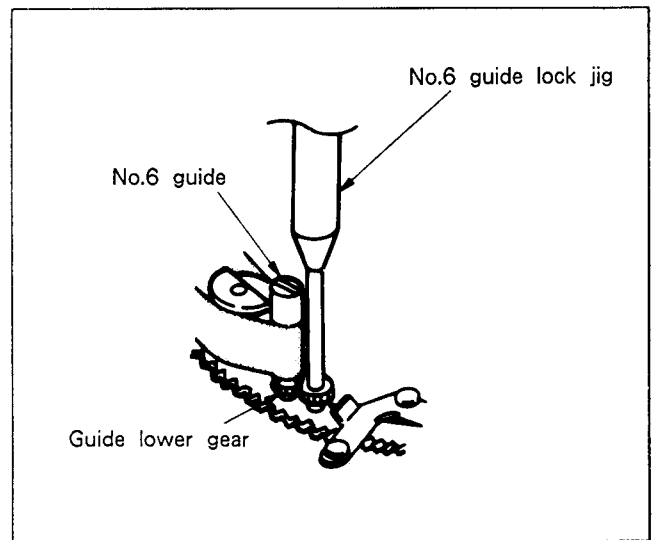


Fig. 7-91.

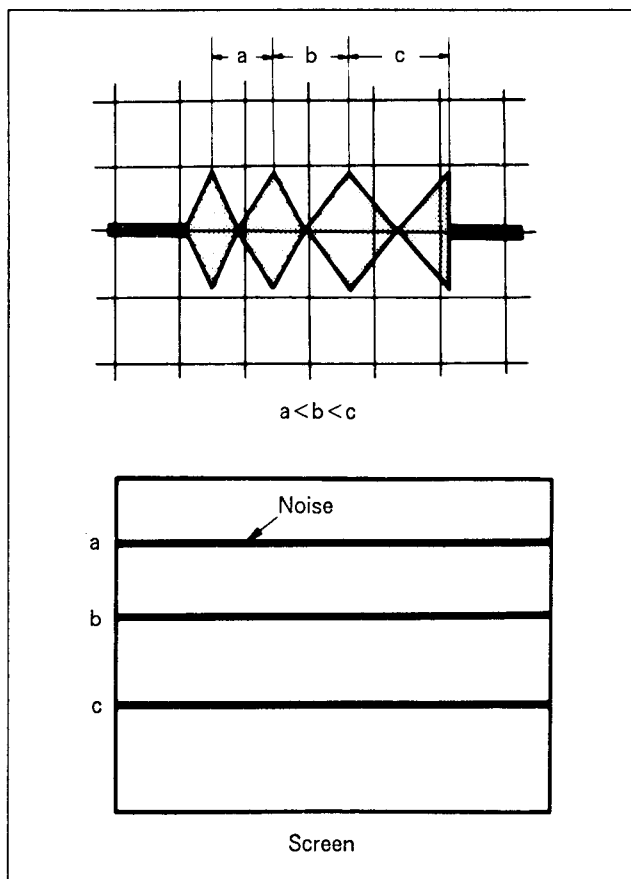


Fig. 7-90.

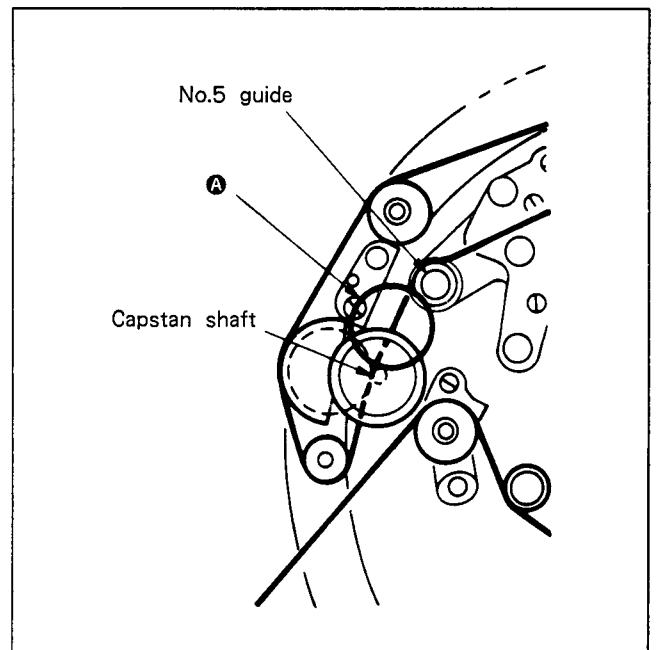


Fig. 7-92.

## 2. Checking rising edge

- 1) Confirm that the RF waveform rises horizontally during playback after finishing loading, after CUE /REV, and during playing back after FF. If not, adjust as follows.

(In case noise occurs on the exit side (lower screen) at rising of playback after completing loading)  
(See Fig. 7-93.)

Confirm that the FWD back tension is not too low.  
**If too low :**  
Readjust according to 7-3-21. FWD Back Tension Adjustment.

**If normal :**

Rotate the azimuth screw of the pinch roller clockwise  $5^\circ$  at a time and adjust while rechecking the rising edge. (See Fig. 7-94.)

(In case noise occurs on the exit side (lower screen) at rising of playback after REV)

(See Fig. 7-93.)

Loosen the guide lower toothed wheel of No.6 guide using No.6 guide lock jig, rotate No.6 guide  $90^\circ$  counterclockwise to tighten the guide lower toothed wheel, then recheck the rising edge.

**Note :** If No.6 guide is raised too much, wrinkles may occur between the capstan spindle and No.5 guide (in section A of Fig. 7-92.). Confirm that no wrinkles are occurring.

(In case noise occurs on the exit side (lower screen) at rising of playback after FF)

(See Fig. 7-93.)

Confirm that the FWD back tension is not too low.  
**If too low :**  
Readjust according to 7-3-21. FWD Back Tension Adjustment.

**If normal :**

Rotate the azimuth screw of the pinch roller clockwise approx.  $5^\circ$  at a time and adjust while checking the rising edge. (See Fig. 7-94.)

**Note :** After finishing adjustment, be sure to check rising of playback following to completion of loading.

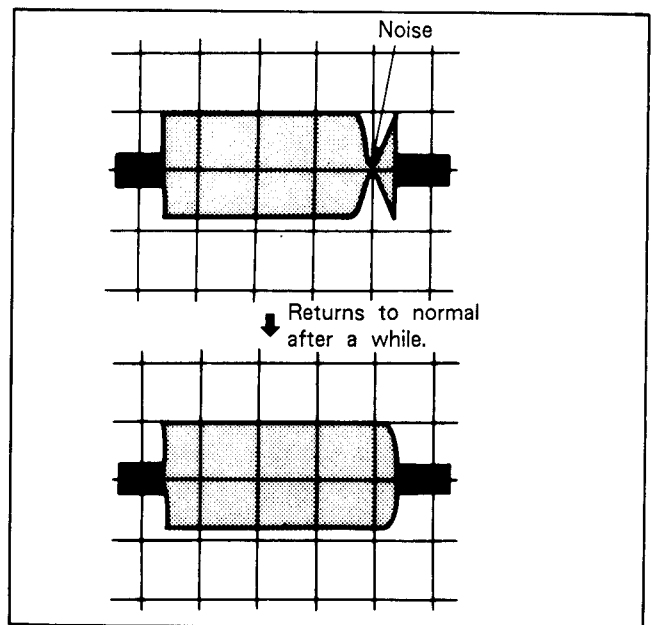


Fig. 7-93.

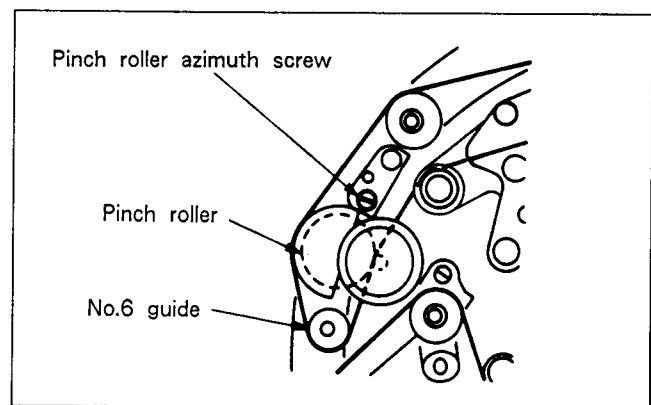


Fig. 7-94.

## 3. Tape running check

In playback and REV modes, confirm the following for the flange sections (arrows in Fig. 7-95.) of guides No.1 to 6: there should be no gaps and the tape should not be curled more than 0.3 mm at tape guides No.1, 2 and 5, and there should be neither gaps nor curls at guides No.3, 4 and 6.

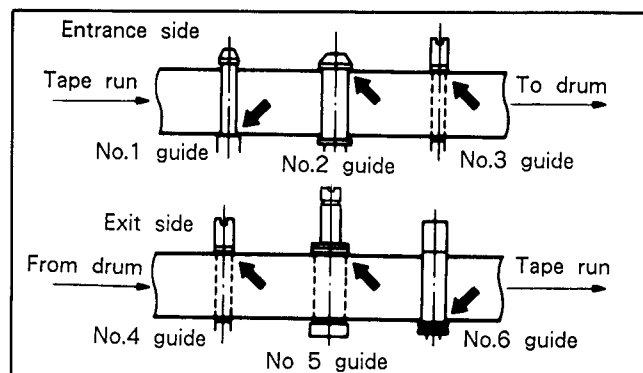


Fig. 7-95.



## SECTION 8 ELECTRICAL ADJUSTMENTS

During these adjustments, see the parts arrangement diagram relevant to the adjustment on page 260.

### [Measuring instruments of TV section]

- 1) Dual-trace oscilloscope
- 2) Pattern generator with video output terminal
- 3) Digital voltmeter
- 4) Regulated power supply
- 5) Frequency counter

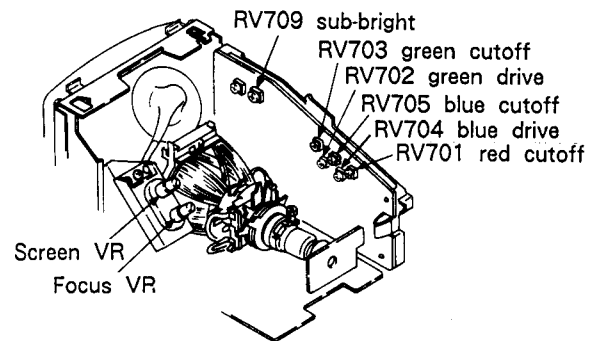


Fig. 8-1.

### 8-1. TV SECTION SETUP ADJUSTMENT

#### Precautions on Replacement of Picture Tube

- When replacing the Picture tube, an ITC (component pre-adjusted for Picture tube characteristics containing both Picture tube and deflection yoke) is supplied. Thus, there is no need to adjust the landing and convergence. However, adjustment is made by the following procedures if there is a shift in the Picture tube characteristics.

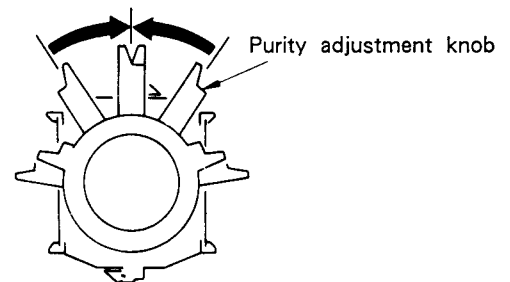


Fig. 8-2.

#### 8-1-1. Landing Adjustment

##### Preparations :

- 1) Face the CRT of the unit to the east or west in order to minimize the effects of terrestrial magnetism.
- 2) Turn on the power and demagnetize with a degausser.

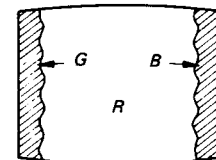


Fig. 8-3.

##### Landing :

- 1) Set a pattern generator for reception of dots or an all white signal.
- 2) Set the picture knob to the center click position and roughly adjust the convergence, G2, white balance, and focus.
- 3) Loosen the bracket holding the deflection yoke and set the purity adjustment knob to the center. (Fig. 8-2.)
- 4) Set the red cutoff (RV701) control to maximum and the blue and green cutoff (RV705, RV703) controls to minimum.
- 5) Shift the deflection yoke (DY) to the back and adjust the purity so that the center of the picture is red and there is left-right symmetry. (Fig. 8-3.)
- 6) Shift the DY forward and set so that entire screen is red. (Repeat steps 4) through 6) for blue and green.)
- 7) Correct with the magnets (a to d) if there is improper landing in the corners. (Fig. 8-4.)
- 8) Tighten the bracket after the proper DY position has been determined.

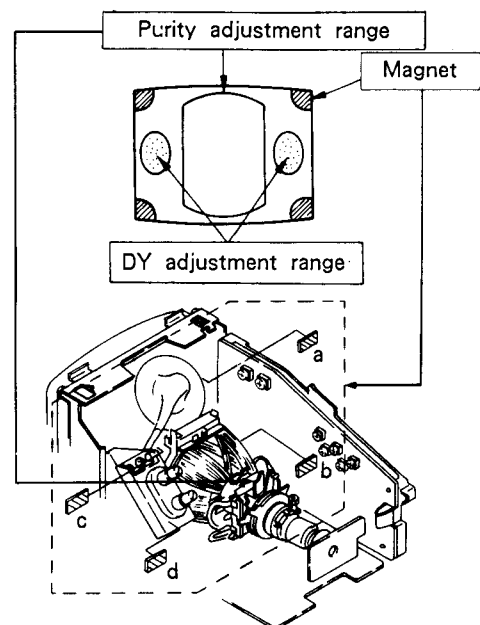


Fig. 8-4.

### 8-1-2. Convergence Adjustment

#### 1. Center screen convergence (static convergence)

- 1) Adjust the H size and V size in advance.
- 2) Receive a dot signal.
- 3) Overlap the red, green, and blue dots in the vertical direction in the center of the screen by opening/closing the 4-pole magnet and align the red, green, and blue dots in the horizontal direction by rotating the magnet.

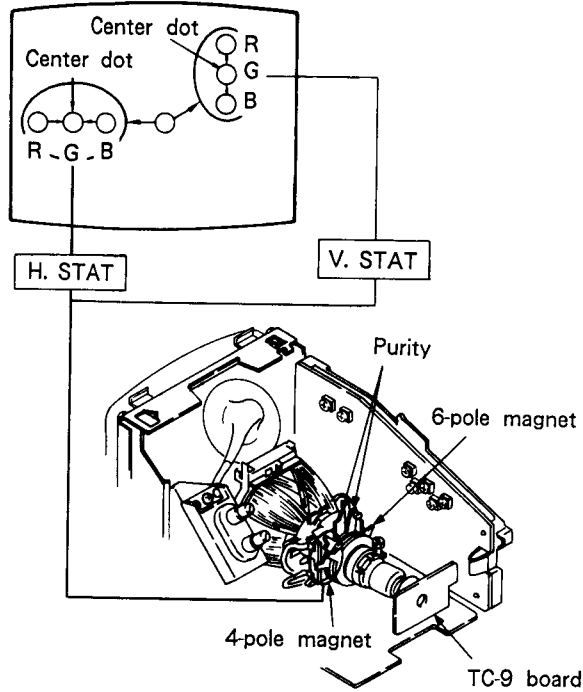
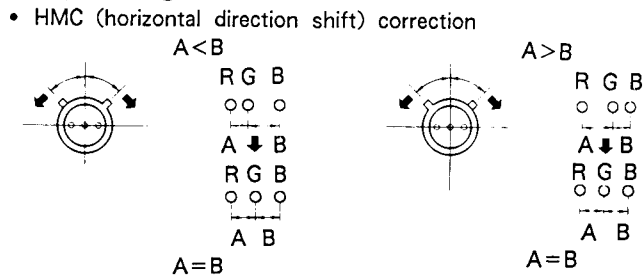


Fig. 8-5.

- 4) If the blue dot does not line up with the red and green dots (HMC, VMC), correct with the 6-pole magnet.



- VMC (vertical direction shift) correction

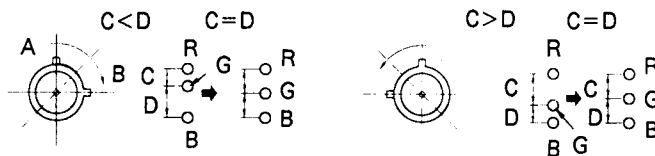
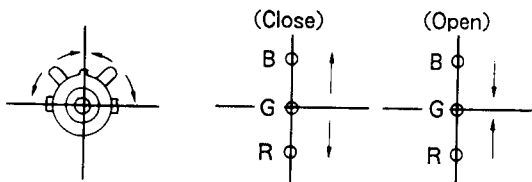


Fig. 8-7.

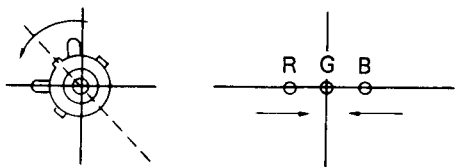
- \* Adjust while adjusting tracking with 4-pole and 6-pole magnets.
- \* Perform the landing adjustment again after adjustment.
- \* If the magnets block the rotation or opening/closing of the 4-pole and 6-pole magnets, cut the magnet knobs leaving 5 mm.

- Motion of red, green, and blue dots by rotating and opening/closing the 4-pole magnet.

#### ① Opening/closing 4-pole magnet



#### ② Rotating 4-pole magnet in counterclockwise direction



#### ③ Rotating 4-pole magnet in clockwise direction

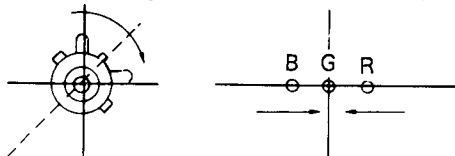


Fig. 8-6.

**2. Screen peripheral convergence adjustment  
(Dynamic convergence)**

DY rotational adjustment :

- 1) If there is cross misconvergence at the edges of the screen, adjust for optimum conditions by rotating the deflection yoke.
- 2) Fix the deflection yoke in place by inserting the three wedges in the DY and Picture tube funnel section.

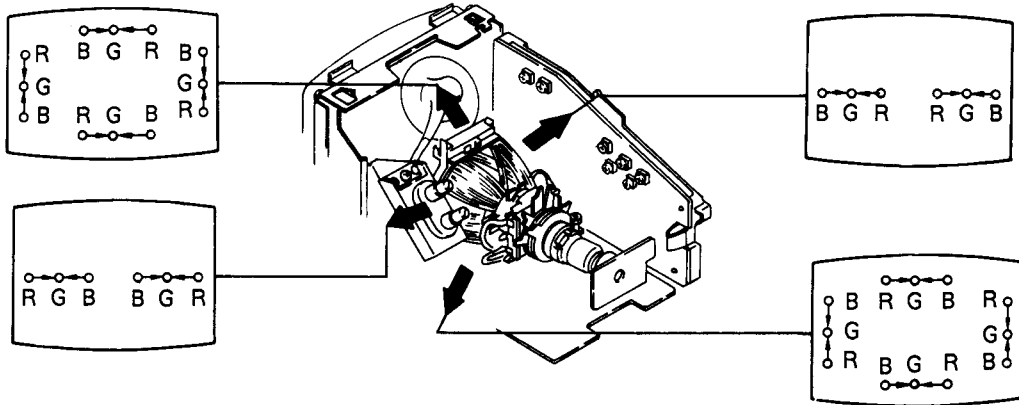


Fig. 8-8.

Corner section convergence :

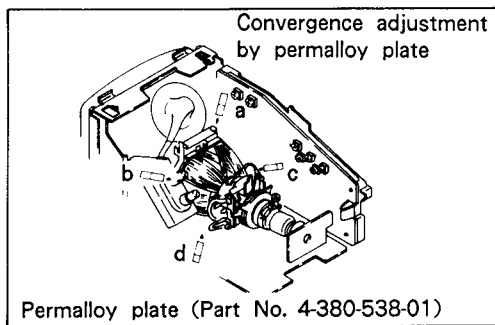
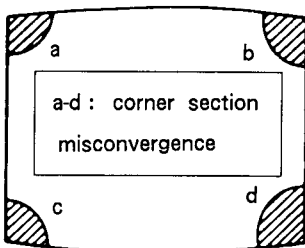


Fig. 8-9.

**8-1-3. Focus Adjustment**

- 1) Receive a broadcast.
- 2) Set the picture control to the center click.
- 3) Adjust the focus VR so that the focus at the center of the screen is optimum.

**8-1-4. White Balance Adjustment**

- Receive a dot signal from the pattern generator.
- Picture control ..... center click
- Bright control ..... center click

Screen (G2) :

- 1) Using an oscilloscope, adjust with the cutoff VR (RV701, RV703, and RV705) so that cathode voltage (between cathode and ground) of red, green, and blue is 100 Vdc. (Fig. 8-10.)

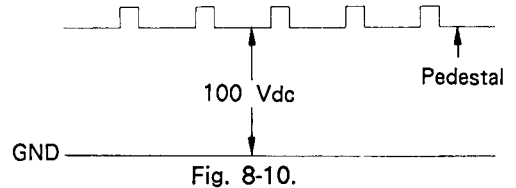


Fig. 8-10.

- 2) While watching the screen, adjust with the screen VR so that the background of the dot signal glows slightly.
  - Rotate the screen VR while paying attention to the colour. Do not rotate the cutoff VR for that colour.

White Balance :

- 1) Receive the all white signal from the pattern generator.
- 2) Adjust with the picture control so that screen glows slightly.
- 3) While watching the screen, adjust the white balance with the other two cutoff VR.
- 4) Set the picture control to maximum.
- 5) While watching the screen, adjust the white balance using the drive VR (RV702, RV704).
- 6) Repeat steps 2) through 5) several times and check the white balance.

## 8-2. TV SECTION CIRCUIT ADJUSTMENT

### 8-2-1. 4.43 MHz Oscillator f<sub>0</sub> Adjustment (TB-8 Board)

- 1) Receive a colour bar signal.
- 2) Connect Pin ③ of IC301 to 5V through a 10 k $\Omega$  resistor.
- 3) Short-circuit Pins ⑪ and ⑫ of IC301.
- 4) Adjust the colour synchronization by CV301 (trimmer capacitor).

### 8-2-2. H. FREQ Adjustment (TB-8 Board)

- 1) Connect Pin ① of IC501 to GND through a 100  $\mu$ F/16V electrolytic capacitor. (GND is on the negative side of the capacitor.)
- 2) Adjust RV501 (H. FREQ) so that flow of the screen stops.

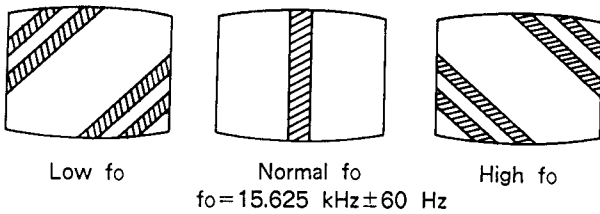


Fig. 8-11.

### 8-2-3. ACC Adjustment (TB-8 Board)

- 1) Receive a colour bar signal.
  - Picture..... center click
  - Bright..... center click
  - Hue..... center
  - Colour..... center
- 2) Connect an oscilloscope to Pin ⑦ of IC301.
- 3) Adjust with RV304 (ACC VR) the burst level to  $170 \pm 10$  mV<sub>p-p</sub>.

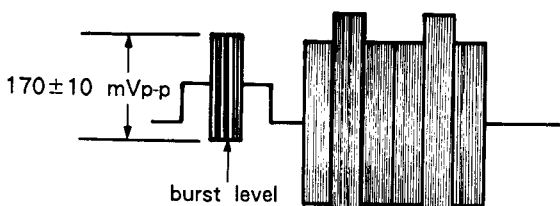


Fig. 8-12.

### 8-2-4. 1H Delay Adjustment (TB-8 Board)

- 1) Receive a colour bar signal.
- 2) Connect an oscilloscope to Pin ⑳ of IC301.
- 3) Adjust T301 and RV302 to obtain the waveform as shown.

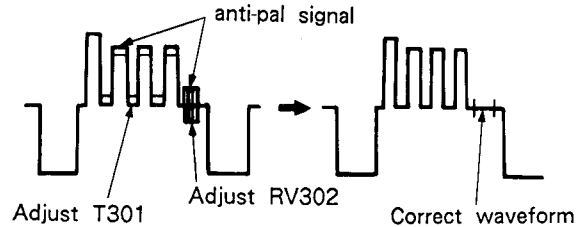


Fig. 8-13.

### 8-2-5. Phase Adjustment (TB-8 Board)

- 1) Receive a colour bar signal.
- 2) Connect an oscilloscope to Pin ⑳ of IC301.
- 3) Adjust RV303 so that the anti-pal signal of the red output is disappeared.

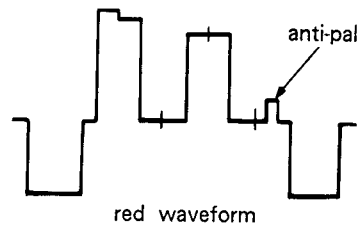


Fig. 8-14.

### 8-2-6. Vertical linearity Adjustment (TB-8 Board)

- 1) Input the cross hatch signal.
- 2) Adjust the vertical linearity by RV506.
- 3) Check the vertical amplitude after adjustment.

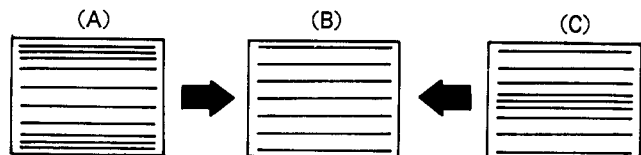


Fig. 8-15.

**8-2-7. Vertical Amplitude Adjustment (TB-8 Board)**

- 1) Input the cross hatch signal.
- 2) Picture..... center click  
Bright..... center click
- 3) Adjust with RV502 for optimum position (At that time, the bottom frame should come 0.8 frame or less.)
- 4) Check the vertical linearity after adjustment.

**8-2-8. Vertical Position Adjustment (TD-8 Board)**

- 1) Input the cross hatch signal.
- 2) Switch the vertical position (S551) switch so that the number of upper and lower frames is the same.

**8-2-9. Pin Distortion Adjustment (TD-8 Board)**

- 1) Input the cross hatch signal.
- 2) Adjust the pin phase by RV802.



Fig. 8-16.

- 3) Adjust the pin amplification by RV801.

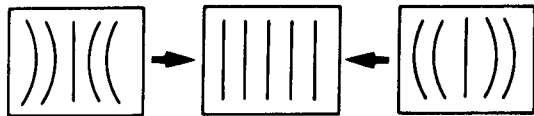


Fig. 8-17.

**8-2-10. Horizontal Amplitude Adjustment (TD-8 Board)**

- 1) Input the cross hatch signal.
- 2) Picture..... center click  
Bright..... center click
- 3) Adjust with RV803 for optimum position (approx. 18 frames).

**8-2-11. Horizontal Position Adjustment (TD-8 Board)**

- 1) Input the cross hatch signal.
- 2) Adjust with S801 and S802 for optimum position.

**8-2-12. Sub-bright Adjustment (TB-8 Board)**

- 1) Input the colour bar signal.
- 2) Picture..... center click  
Bright..... center click
- 3) Adjust with RV709 for optimum brightness.

### 8-3. PREPARATION FOR VTR SECTION ADJUSTMENT

For VTR section electrical adjustment, use the following measuring instruments.

**[Instruments to be used]**

- 1) Oscilloscope : 2 phenomena, band 10 MHz or wider, with delay mode (Use probe 10 : 1 unless specified otherwise)
- 2) Frequency counter
- 3) Pattern generator with video output terminal
- 4) Digital voltmeter
- 5) Audio generator
- 6) Audio level meter
- 7) Audio distortion meter
- 8) Audio attenuator
- 9) Regulated power supply
- 10) Alignment tape

- Tracking adjustment (WR5-1C)  
Parts Code : 8-967-995-06
- Video frequency characteristics adjustment (WR5-2C)  
Parts Code : 8-967-995-16
- Operation check (WR5-3CL)  
Parts Code : 8-967-995-36
- Operation check (WR5-3CSP)  
Parts Code : 8-967-995-27

**[Connection of the instruments]**

Unless specified otherwise, perform the adjustment by connecting the measuring instruments as shown in the figure below.

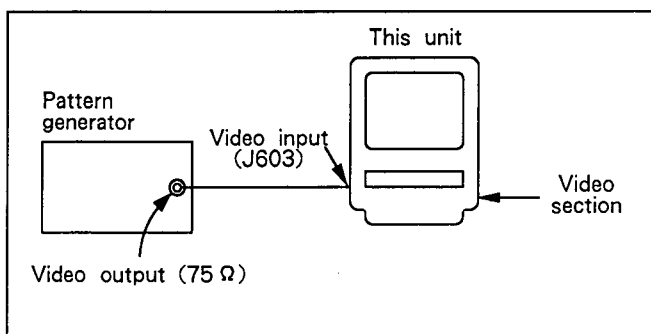


Fig. 8-18.

**[Setup for adjustment]**

For the electrical adjustment, the video signal obtained from the PAL pattern generator is used as the adjustment signal. Therefore, it is necessary that this video output signal should be within the standard. Connect the oscilloscope to the video input terminal and confirm that the amplitude of the SYNC signal of the video signal is approx. 0.3V and that of the video section is approx. 0.7V. Also confirm that the burst signal amplitude is approx. 0.3V and flat, and that the level ratio of the burst signal and the "red" signal is 0.30 : 0.66. The video signal (colour bar signal) to be used for adjustment is shown in Fig. 8-19.

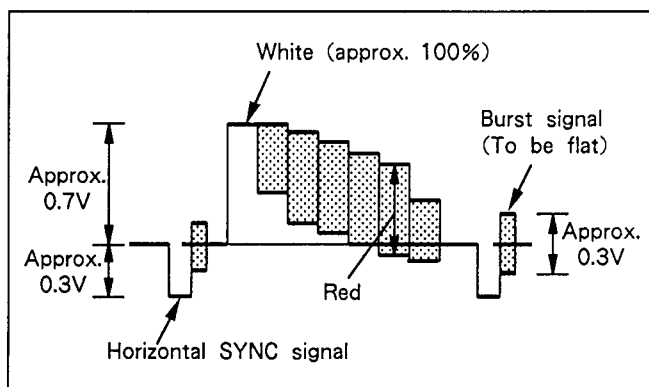
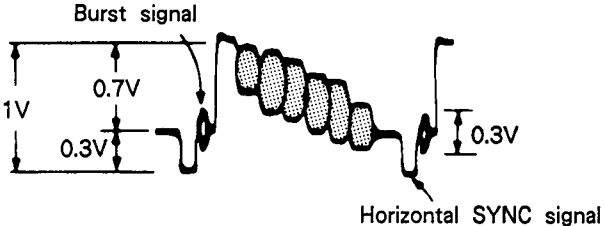
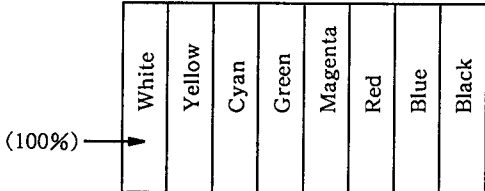


Fig. 8-19. Colour bar signal of pattern generator

[Alignment tape]

Tape	Content	Use									
Tracking (WR5-1C)	1. Recording area : PCM-video 2. Recording content : CH2 : 1MHz linearity adjustment signal (CH1 : 9MHz)	Drum linearity adjustment									
Video Frequency Characteristics (WR5-2C)	1. Recording area : Video 2. Recording content : RF sweep 0 to 10MHz 3. Maker : 1, 3.58, 5.5 and 7MHz	Frequency characteristics adjustment									
Operation Check  SP mode (WR5-3CSP) LP mode (WR5-3CL)	<p>1. Recording area : Video 2. Recording content :</p> <p>■ Video track</p> <ul style="list-style-type: none"> <li>• Video signals Colour bars 10sec Monoscope 8sec } Iterative</li> </ul> <p>(Colour bars)</p>   <ul style="list-style-type: none"> <li>• Audio signals (AFM) 400Hz 60% modulation</li> </ul> <p>Note : PCM area is not included in WR5-3CL</p> <p>■ PCM area (WR5-3CSP only)</p> <ul style="list-style-type: none"> <li>• Audio signals (PCM)</li> </ul> <table border="0"> <tr> <td>1kHz</td> <td>10sec</td> <td rowspan="4">} Iterative</td> </tr> <tr> <td>20Hz</td> <td>2sec</td> </tr> <tr> <td>400Hz</td> <td>4sec</td> </tr> <tr> <td>14kHz</td> <td>2sec</td> </tr> </table>	1kHz	10sec	} Iterative	20Hz	2sec	400Hz	4sec	14kHz	2sec	Operation check
1kHz	10sec	} Iterative									
20Hz	2sec										
400Hz	4sec										
14kHz	2sec										

[Output level and impedance]

Video input Pin jack  
Input signal : 1 Vp-p, 75 Ω unbranched.  
sync-negative

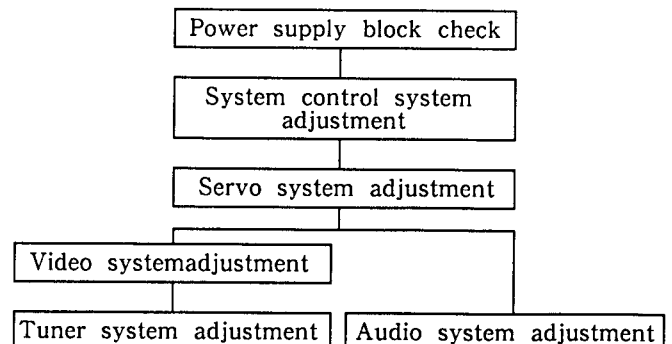
Video output Pin jack  
Output signal : 1 Vp-p, 75 Ω unbranched.  
sync-negative

Audio input Pin jack  
Input signal : -10 dBs  
(0 dBs=0.775Vrms)  
Input impedance : 47 k Ω or more

Audio output Pin jack  
Standard output : -10 dBs (250 mV)  
Output impedance : 10 k Ω or less

[Adjustment order]

Perform the adjustments in the following order.



## 8-4. POWER SUPPLY ADJUSTMENTS

### 8-4-1. DC/DC Converter Frequency Adjustment (PK-15/PW-58 Boards)

Power Supply Input	AC IN
Mode	E-E
Measurement Point	Pin ② on PK-15 board (gate of Q735)
Measuring Instrument	Frequency counter
Adjusting Element	RV731
Specified Value	91.0±2.0 kHz

Adjusting method :

- 1) Adjust RV731 to 91.0±2.0 kHz.

### 8-4-2. SW 40V Adjustment (PW-59 Board)

Power Supply Input	AC IN
Mode	E-E
Measurement Point	⊕ : Pin ① of CN850 ⊖ : Pin ② of CN850
Measuring Instrument	Digital voltmeter
Adjusting Element	RV850
Specified Value	39.5±0.1 Vdc

Adjusting method :

- 1) Adjust RV850 to 39.5±0.1 Vdc.

### 8-4-3. DC/DC Converter Output Voltage Adjustment (PK-15/PW-58 Boards)

Preparations :

- 1) Remove the AC power supply.
- 2) Connect the ⊕ terminal of a regulated power supply to +B and the ⊖ terminal to GND on the DC-8 board, and supply 13.5 Vdc.

Power Supply Input	DC IN (13.5 Vdc)
Mode	E-E
Measurement Point	Emitter of Q705 on PW-58 board
Measuring Instrument	Digital voltmeter
Adjusting Element	RV730
Specified Value	41.5±0.1 Vdc

Adjusting method :

- 1) Adjust RV730 to 41.5±0.1 Vdc.

### 8-4-4. AC/DC Converter Output Voltage Adjustment (PW-58 Board)

Power Supply Input	AC IN
Mode	E-E
Measurement Point	Emitter of Q705
Measuring Instrument	Digital voltmeter
Adjusting Element	RV701
Specified Value	43.1±0.2 Vdc

Adjusting method :

- 1) Adjust RV701 to 43.1±0.2 Vdc.
- 2) Press the POWER button to turn off the power supply.
- 3) Confirm that the emitter of Q705 voltage is within the range of 43.5 to 49.5 Vdc.



#### 8-4-5. Output Voltage Confirmation (PW-59 Board)

Power Supply Input	AC IN
Mode	E-E
Measuring Instrument	Digital voltmeter
SW 9V	
Measurement Point	Pin ⑤ of CN854
Specified Value	8.90±0.20 Vdc
DRIVE 6V	
Measurement Point	Pin ① of CN851
Specified Value	7.50±0.40 Vdc
REG 5V	
Adjusting Element	Pin ⑤ of CN851
Specified Value	5.25±0.2 Vdc
UN SW 5V	
Measurement Point	Pin ⑥ of CN851
Specified Value	6.15±0.30 Vdc
UN REG (BATT DOWN)	
Measurement Point	Pin ⑦ of CN851
Specified Value	13.75±0.40 Vdc
DRIVE 9V	
Measurement Point	Pin ⑧ of CN851
Specified Value	10.90±0.40 Vdc
REG 9V	
Measurement Point	Pin ① of CN852
Specified Value	8.90±0.30 Vdc
REG 5V	
Measurement Point	Pin ③ of CN852
Specified Value	5.30±0.20 Vdc
FAN +B	
Measurement Point	Pin ① of CN853
Specified Value	10.55±0.40 Vdc

Checking method :

- 1) Confirm that the output voltage of the various section is within the specified range.

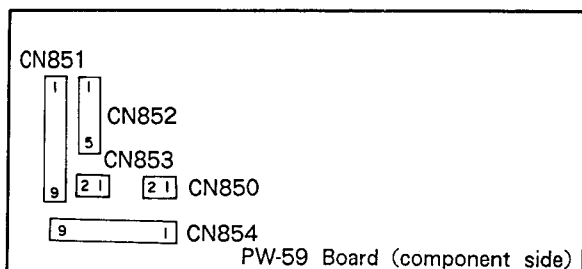


Fig. 8-20.

## 8-5. SYSTEM CONTROL SYSTEM ADJUSTMENTS

### 8-5-1. Timer Clock Adjustment (MA-25 Board)

Signal	Arbitrary
Measurement Point	Pin ⑩ of IC003
Measuring Instrument	Frequency counter
Adjusting Element	CV001
Specified Value	2097152±4 Hz

Connection :

- 1) Connect Pin ⑩ (RESET) of IC003 and GND, and Pin ⑩ (VC PWM) of IC003 and GND with jumper.

Adjusting method :

- 1) Adjust CV001 so that it becomes 2097152±4 Hz.

### 8-5-2. Mode Control Microcomputer Oscillator Confirmation (MA-25 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ⑩ of IC002
Measuring Instrument	Frequency counter
Specified Value	5.00±0.05 MHz

Checking method :

- 1) Confirm that it is 5.00±0.05 MHz.

### 8-5-3. Mechanism Control Microcomputer Oscillator Check (MA-25 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ⑩ of IC001
Measuring Instrument	Frequency counter
Specified Value	5.00±0.05 MHz

Checking method :

- 1) Confirm that it is 5.00±0.05 MHz.

#### 8-5-4. Battery down Adjustment (MA-25 Board)

Mode	E-E
Measurement Point	Pin ⑦ of IC012
Measuring Instrument	Oscilloscope, digital voltmeter
Adjusting Element	RV001
Specified Value	H : more than 4.5V L : more than 0.3V

##### Preparations :

- 1) Confirm that there is no connection to the AC power supply input and DC jack.
- 2) As shown in Fig. 8-21, connect the regulated power supply and digital voltmeter.

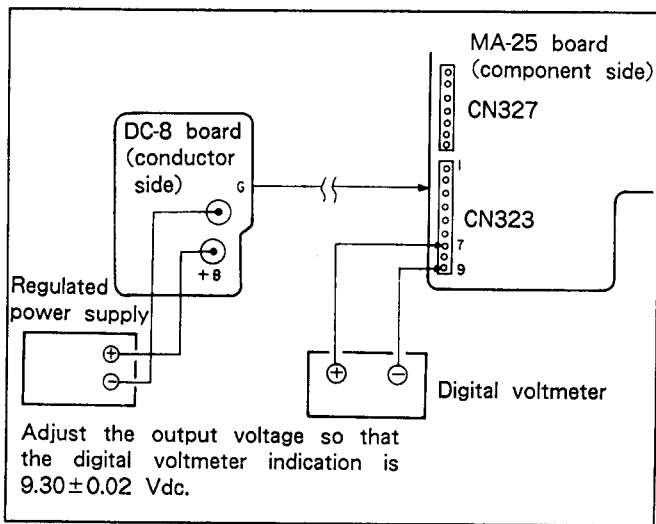


Fig. 8-21.

##### Adjusting method :

- 1) Adjust the output voltage of the regulated power supply so that the voltage at Pin ⑦ of CN323 is  $9.30 \pm 0.02V$ .
- 2) Connect the oscilloscope to Pin ⑦ of IC012, and slowly rotate RV001 to find the point where the level at Pin ⑦ of IC012 goes from "H" to "L".

Adjust so that there are slight peaks

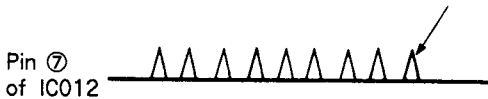


Fig. 8-22.

##### Pre-down check method :

- 1) Adjust the voltage at Pin ⑦ of CN323 to  $9.25 \pm 0.02V$ .  
Confirm that the level at Pin ⑦ of IC012 is "H" at this time.
- 2) Adjust the voltage at Pin ⑦ of CN323 to  $9.15 \pm 0.02V$ .  
Confirm that the level at Pin ⑦ of IC012 is "L" at this time.

#### 8-5-5. Character Generator Position Adjustment (MA-25 Board)

Mode	E-E
Subject	Arbitrary
Measurement Point	CH1 : Pin ② of CN333 CH2 : Pin ⑭ of IC009
Measuring Instrument	Oscilloscope (TRIG SOURCE : CH2)
Adjusting Element	CV002
Specified Value	Refer to Fig. 8-23

**Note :** Perform this adjustment with the timer operation switch block open.

##### Adjusting method :

- 1) Adjust CV002 so that it becomes  $4.2 \pm 0.2 \mu\text{sec}$ .

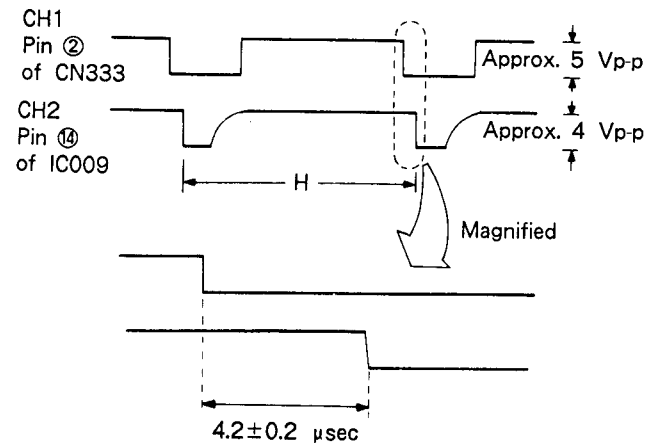


Fig. 8-23. Character generator position adjustment

## 8-6. SERVO SYSTEM ADJUSTMENTS

### 8-6-1. Drum Bias Adjustment (MA-25 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ① of CN208 (DRUM BIAS)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV202
Specified Value	$3.5 \pm 0.1$ Vdc

Adjusting method :

- 1) Adjust RV202 so that it becomes  $3.5 \pm 0.1$  Vdc.

### 8-6-2. Capstan Free Speed Adjustment (MA-25 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ② of CN208 (CAP FG)
Measuring Instrument	Frequency counter
Adjusting Element	SP mode : RV303 LP mode : RV304
Specified Value	SP mode : $1341 \pm 1$ Hz LP mode : $670 \pm 1$ Hz

Connections :

- 1) Connect the following two points with jumpers.
  1. TP103 (ATF KILL) on MR-9 board  
—— TP101 (GND) on MR-9 board
  2. TP101 on MA-25 board —— GND

Adjusting method :

The adjusting element for LP mode is shown in parenthesis [ ].

- 1) Set to SP [LP] mode with the SP/LP button in the timer operation switch block. (Confirm that SP [LP] is displayed on the screen.)
- 2) Select the playback mode and adjust with RV303 [RV304] so that it becomes  $1341 \pm 1$  Hz [ $670 \pm 1$  Hz].

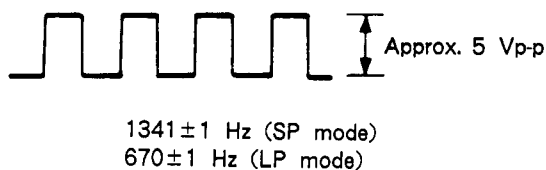


Fig. 8-24. Capstan free speed adjustment

### 8-6-3. Switching Position Adjustment (MA-25 Board)

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP)
Measurement Point	CH1 : Pin ① (VIDEO IN (X)) of CN605 on TI-14 board CH2 : Pin ② (RF SWP) of CN104 on MR-9 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV301
Specified Value	$6.5 \pm 0.3$ H

Adjusting method :

- 1) Adjust RV301 so that it becomes  $6.5 \pm 0.3$ H.

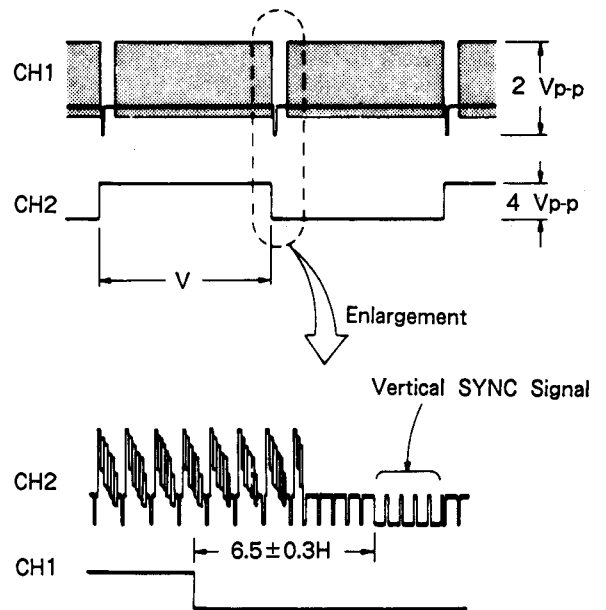


Fig. 8-25.

### 8-6-4. Still VD Adjustment (MA-25 Board)

Mode	Playback pause
Signal	TV picture self-recording tape in SP mode
Measurement Point	Confirm on monitor screen
Measuring Instrument	Confirm on monitor screen
Adjusting Element	RV002
Specified Value	Adjust for minimum vertical fluctuation

Adjusting method :

- 1) Adjust RV002 for minimum vertical fluctuation at center of monitor screen.

### 8-6-5. ATF BPF Balance Adjustment (MA-25 Board)

Mode	Playback
Signal	TV picture self-recording tape in SP mode
Measurement Point	Pin ⑫ of IC403 and Pin ⑪ of IC403
Measuring Instrument	Oscilloscope
Adjusting Element	RV402
Specified Value	Confirm that the 16 kHz signal level is equivalent to the 47 kHz signal level

Adjusting method :

- 1) Playback the self-recording tape in the SP mode.
- 2) Connect an oscilloscope to Pin ⑫ of IC403 and read the 47 kHz signal level (approx. 1 Vp-p).
- 3) Connect the oscilloscope to Pin ⑪ of IC403.
- 4) Adjust RV402 so that the level of the 16 kHz signal becomes equivalent to that of the 47 kHz signal.

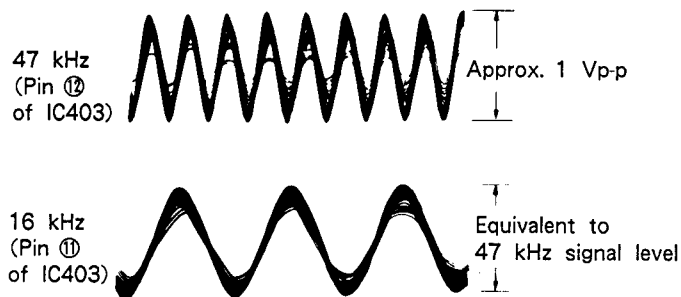


Fig. 8-26.

### 8-6-6. Capstan Free Speed Slow Adjustment (MA-25 Board)

Adjusting element in LP mode is shown in parenthesis [ ].

Mode	1/5 slow playback
Signal	Self-recording tape in SP [LP] mode
Measurement Point	CH1 : Pin ⑨ (PB VI RF) on RP-34 board CH2 : Pin ⑥ (RF SWP) on RP-34 board
Measuring Instrument	Oscilloscope (TRIG SOURCE : CH2)
Adjusting Element	RV302 [RV305]
Specified Value	Confirm that the RF signal level immediately before and after head selection are equivalent

Adjusting method :

- 1) Repeat transitional operation from playback to playback pause, and during playback pause, adjust with the slow adjustment knob on the upper panel so that the RF signal levels immediately before and after head selection become equivalent. (Be sure that noise amount is minimum on the monitor TV screen.)
- 2) Select 1/5 slow playback mode with Remote Commander.
- 3) Adjust RV302 [RV305] so that the RF signal levels immediately before and after head selection become equivalent. (Be sure that noise amount is minimum on the monitor TV screen.)

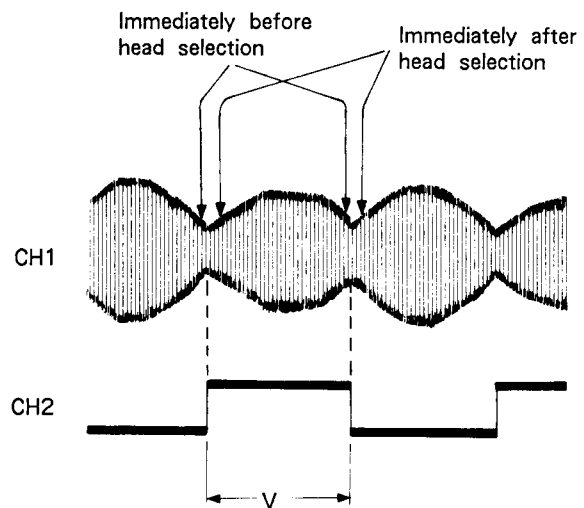


Fig. 8-27.

### 8-6-7. ×2 Tracking Adjustment (MA-25 Board)

Adjusting element in LP mode is shown in parenthesis [ ].

Mode	×2 playback
Signal	Self-recording tape in SP [LP] mode
Measurement Point	CH1 : Pin ⑨ (PB VI RF) on RP-34 board CH2 : Pin ⑩ (RF SWP) on RP-34 board
Measuring Instrument	Oscilloscope (TRIG SOURCE : CH2)
Measuring Instrument	Frequency counter
Adjusting Element	RV203 [RV204]
Specified Value	Confirm that the RF signal level immediately before and after head selection are equivalent

Adjusting method :

- 1) Select the ×2 playback mode with Remote Commander.
- 2) Adjust RV203 [RV204] so that the RF signal levels immediately before and after head selection become equivalent. (Be sure that noise amount is minimum on the monitor TV screen.)

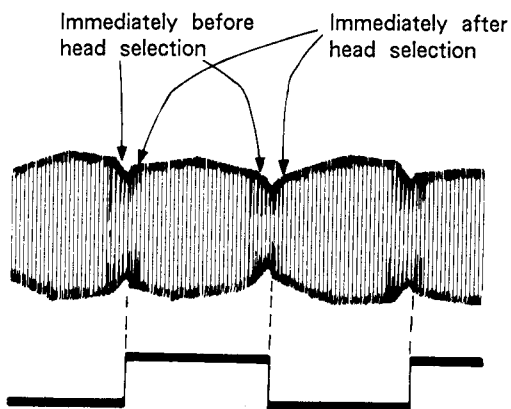


Fig. 8-28.

### 8-6-8. Capstan Free Speed Frame Adjustment (MA-25 Board)

Mode	Playback pause + frame feeding
Signal	Alignment tape (WR5-3CL) Monoscope section
Adjusting Element	RV306

Adjusting method :

- 1) Set to playback mode.
- 2) Set to playback pause mode.
- 3) Press the frame-feeding button of Remote Commander once.
- 4) Confirm that no white-tailed noise or black-tailed noise appears on the monitor TV screen.
- 5) If noise appears on the monitor TV screen, adjust RV306 as shown in Table 8-1.

	Rotating direction viewed from parts side
Noise in upper section of screen	Clockwise (⌚)
Noise in lower section of screen	Counterclockwise (⌚)

Table 8-1.

- 6) Adjust by repeating steps 1) to 5) so that noise on the screen become minimum.

## 8-7. VIDEO ADJUSTMENT

As a rule, video system adjustment should be performed in accordance with the following order. The colour video signal supplied from the pattern generator is used as video input signal for video system adjusting in the recording mode. Confirm that the SYNC signal and colour burst signal conform to the set-up specifications during adjustment as shown in Fig. 8-19.

### [Adjusting order]

1. Playback frequency characteristics adjustment
2. Flying erase check
3. X'tal oscillator fo adjustment
4. Y/C separation adjustment
5. Y comb-type filter adjustment
6. SYNC AGC adjustment
7. VIDEO OUT level adjustment
8. PB Y level adjustment
9. Y FM carrier frequency adjustment
10. Y FM deviation adjustment
11. Emphasis adjustment
12. 375f<sub>H</sub> VCO adjustment
13. Chroma emphasis fo adjustment
14. Carrier balance adjustment
15. GCA adjustment
16. f<sub>H</sub> VCO adjustment
17. REC Y recording current adjustment
18. REC C level adjustment
19. REC ATF level confirmation
20. REC AFM recording current confirmation

### 8-7-1. Playback Frequency Characteristics Adjustment (RP-34/MR-9 Boards)

#### 1. CH1 and CH2 adjustment

The adjusting element for CH2 is shown in parenthesis [ ].

Mode	Playback
Signal	Alignment tape : For frequency characteristics adjustment (WR5-2C)
Measurement Point	Pin ③ of CN104 [Pin ④ of CN104] on MR-9 board External trigger : Pin ② of CN104 Trigger slope : - [ + ]
Measuring Instrument	Oscilloscope
Adjusting Element	RV003 [RV004] on RP-34 board
Specified Value	3.58 MHz level : 5.5 MHz level is 4 : 2.5

Adjusting method :

- 1) Adjust RV003 [RV004] on the RP-34 board so that the ratio of the 3.58 MHz level and 5.5 MHz level is 4 : 2.5 [4 : 2.5].

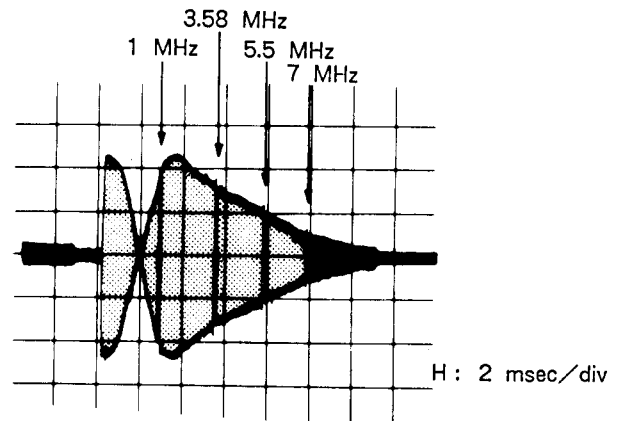


Fig. 8-29. Playback frequency characteristics adjustment

#### 2. CH1' Adjustment

Mode	Playback Pause (Still)
Signal	Alignment tape : For frequency characteristics adjustment (WR5-2C)
Measurement Point	Pin ⑤ of CN104 on MR-9 board External trigger : Pin ② of CN104 on MR-9 board Trigger slope : +
Measuring Instrument	Oscilloscope
Adjusting Element	RV101 on MR-9 board
Specified Value	3.58 MHz level : 5.5 MHz level is 4 : 2.5

Adjusting method :

- 1) Adjust RV101 on the MR-9 board so that the ratio of 3.58 MHz level and 5.5 MHz level is 4 : 2.5.

### 8-7-2. Flying Erase Check (MR-9 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Collector of Q128 (Pin ① of CN102 : FEH (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency : 7.3 MHz or more Voltage : 8.5 Vp-p or more

Checking method :

- 1) Confirm that the oscillation frequency is 7.3 MHz or more and oscillation voltage is 8.5 Vp-p or more.

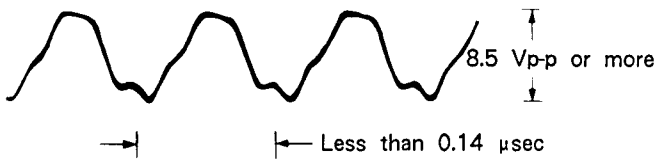


Fig. 8-30. Flying erase check

### 8-7-3. X'tal Oscillator fo Adjustment (VC-11/MV-8 Boards)

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP)
Measurement Point	Pin ⑥ of CN202 on MV-8 board
Measuring Instrument	Frequency counter
Adjusting Element	CV001 on VC-11 board
Specified Value	4433619±100 Hz

**Note :** Connect the frequency counter through a buffer having high impedance (approx. 10 MΩ) and low capacity (less than 10 pF).

Adjusting method :

- 1) Adjust CV001 on VC-11 board so that it becomes 4433619±100 Hz.

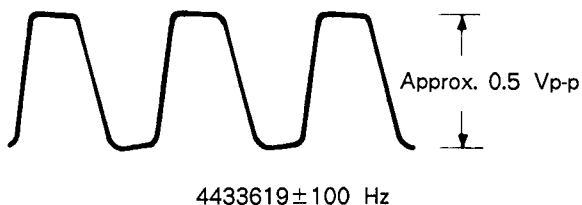


Fig. 8-31. X'tal oscillator fo adjustment

### 8-7-4. Y/C Separation Adjustment (VD-6/MV-8 Boards)

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ⑫ on VD-6 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV002 on VD-6 board, LV201 on MV-8 board
Specified Value	Minimum residual chroma component

Adjusting method :

- 1) Adjust alternately RV002 on VD-6 board and LV201 on MV-8 board so that residual chroma component becomes minimum.

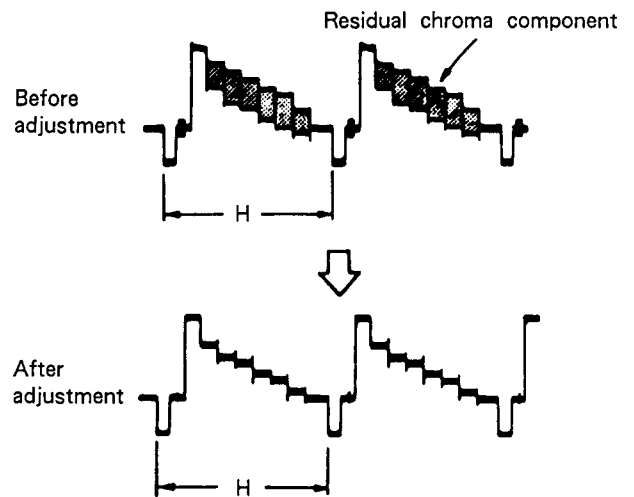


Fig. 8-32. Y/C separation adjustment

**8-7-5. Y Comb-type Filter Adjustment**  
(VD-6/MV-8 Boards)

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ⑩ on VD-6 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV001 on VD-6 board
Specified Value	Minimum amplitude

Adjusting method :

- 1) Connect a 22 kΩ resistor in series between Pin ⑩ on VD-6 board and the probe (10 : 1).
- 2) Adjust with RV001 on VD-6 board for minimum amplitude.

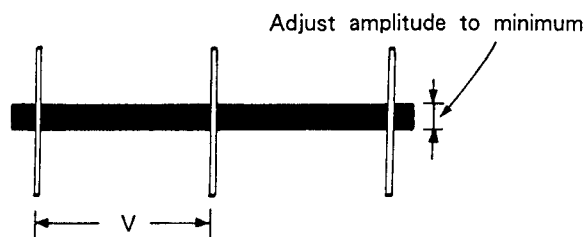


Fig. 8-33. Y Comb-type filter adjustment

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑩ of VY-9 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV006 on VY-9 board
Specified Value	$0.50 \pm 0.02$ V <sub>p-p</sub>

**8-7-6. SYNC AGC Adjustment (VY-9/MV-8 Boards)**

Adjusting method :

- 1) Adjust RV006 on the VY-9 board so that it becomes  $0.50 \pm 0.02$  V<sub>p-p</sub>.

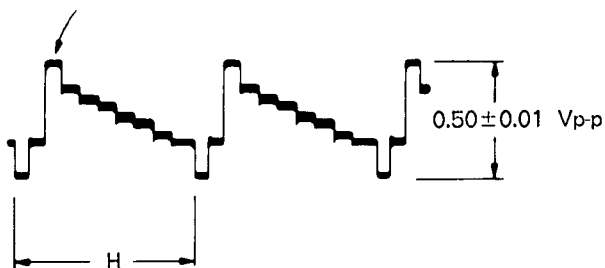


Fig. 8-34. SYNC AGC adjustment

**8-7-7. VIDEO OUT Level Adjustment**  
(VY-9/MV-8 Board)

Mode	E-E
Signal	Colour bar
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV005 on VY-9 board
Specified Value	$1.00 \begin{matrix} +0.025 \\ -0.05 \end{matrix}$ V <sub>p-p</sub>

**Note :** VIDEO OUT terminal (J603 on TI-14 board) should be terminated with 75 Ω.

Adjusting method :

- 1) Adjust RV005 on VY-9 board so that it becomes  $1.00 \begin{matrix} +0.025 \\ -0.05 \end{matrix}$  V<sub>p-p</sub>.

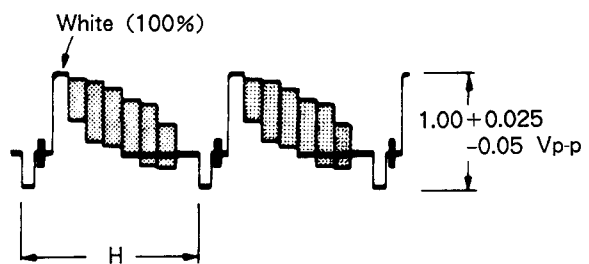


Fig. 8-35. VIDEO OUT level adjustment



**8-7-8. PB Y Level Adjustment (VY-9/MV-8 Boards)**

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP) Colour bar section
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV001 on VY-9 board
Specified Value	$1.00 \begin{matrix} +0.025 \\ -0.05 \end{matrix}$ Vp-p

**Note :** VIDEO OUT terminal (J603 on TI-14 board) should be terminated with 75  $\Omega$ .

Adjusting method :

- 1) Adjust RV001 on VY-9 board so that it becomes  $1.00 \pm 0.05$  Vp-p.

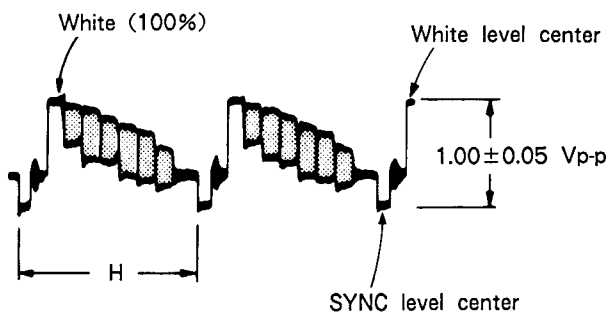


Fig. 8-36. PB Y level adjustment

**8-7-9. Y FM Carrier Frequency Adjustment (VY-9/MV-8 boards)**

Mode	E-E
Signal	No signal
Measurement Point	Pin ② on VY-9 board (REC Y RF)
Measuring Instrument	Frequency counter
Adjusting Element	RV004 on VY-9 board
Specified Value	$4.20 \pm 0.05$ MHz

Adjusting method :

- 1) Set RV003 (AC CLIP) to the mechanical center.
- 2) Adjust RV004 on the VY-9 board so that it becomes  $4.20 \pm 0.05$  MHz.
- 3) Perform "Deviation Adjustment" and "AC Clip Adjustment" after this adjustment.

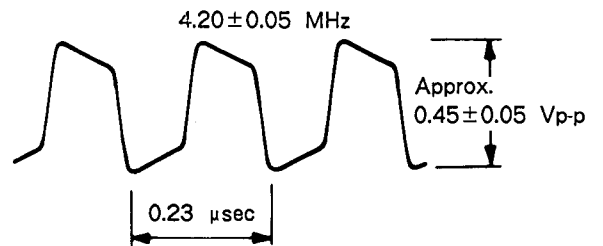


Fig. 8-37. Y FM carrier frequency adjustment

**8-7-10. Y FM Deviation Adjustment  
(VY-9/MV-8 Boards)**

Mode	Recording and playback
Signal	Colour bar
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV002 on VY-9 board
Specified Value	Playback level is $1.00 \pm 0.05$ V <sub>p-p</sub>

**Note :** 1) "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" should have been completed.  
2) VIDEO OUT terminal (J603 on TI-14 board) should be terminated with 75 Ω.

Adjusting method :

- 1) Record colour bar signal.
- 2) Play back the recorded section.
- 3) Confirm the playback output level.  
Specification :  $1.00 \pm 0.05$  V<sub>p-p</sub>
- 4) If the specified value is not satisfied, repeat steps 1) to 3) after turning RV002 on the VY-9 board as shown in the table below.

	RV002 (VY-9 board) rotation direction
When larger than specified value	Clockwise (⌚)
When smaller than specified value	Counterclockwise (⌚)

Table 8-2.

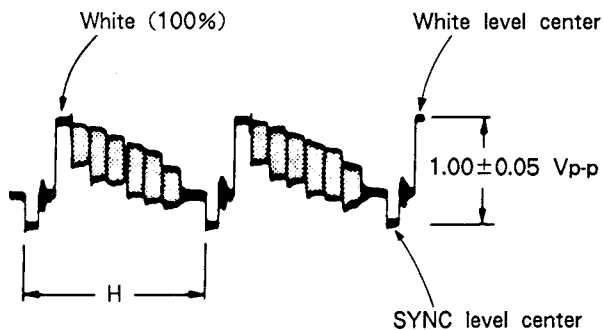


Fig. 8-38. Y FM deviation adjustment

**8-7-11. AC Clip Adjustment (VY-9/MV-8 Boards)**

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ⑤ on VY-9 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV003 on VY-9 board
Specified Value	$240 \pm 5\%$

Adjusting method :

- 1) Adjust RV003 on VY-9 board so that the peak of white 100% becomes  $240 \pm 5\%$ .

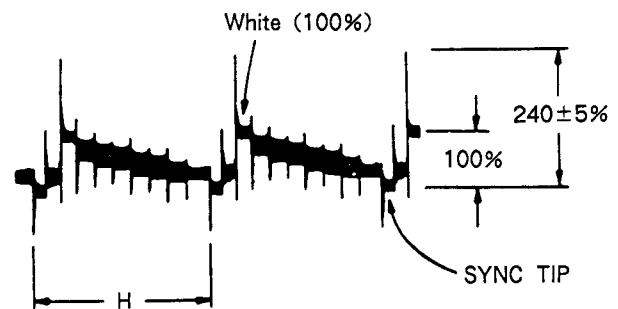


Fig. 8-39. AC clip adjustment

**8-7-12. 375f<sub>H</sub> VCO Adjustment  
(VC-11/MV-8 Boards)**

Mode	Recording
Signal	Colour bar
Measurement Point	Pin ⑥ on VC-11 board
Measuring Instrument	Digital voltmeter
Adjusting Element	RV002 on VC-11 board
Specified Value	$3.0 \pm 0.1$ Vdc

Adjusting method :

- 1) Adjust RV002 on VC-11 board so that it becomes  $3.0 \pm 0.1$  Vdc.

**8-7-13. Chroma Emphasis fo Adjustment (MV-8 Boards)**

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ⑧ on VC-11 board
Measuring Instrument	Oscilloscope
Adjusting Element	FL203 on MV-8 board
Specified Value	Be sure to confirm that the fo component is minimum and zero cross appears between green and magenta.

**Connection :**

- 1) Connect the following two places of VC-11 board with 47 kΩ resistors.
  1. Pin ⑪ (ACC) — Pin ⑳ (GND 1)
  2. Pin ⑪ (ACC) — Pin ⑳ (REG 5V 1)

**Adjusting method :**

- 1) Adjust with FL203 on the MV-8 board so that the amplitude of the flat cyan portion of the chroma signal becomes minimum. At this point, be sure to confirm that the zero cross appears between the green and magenta.

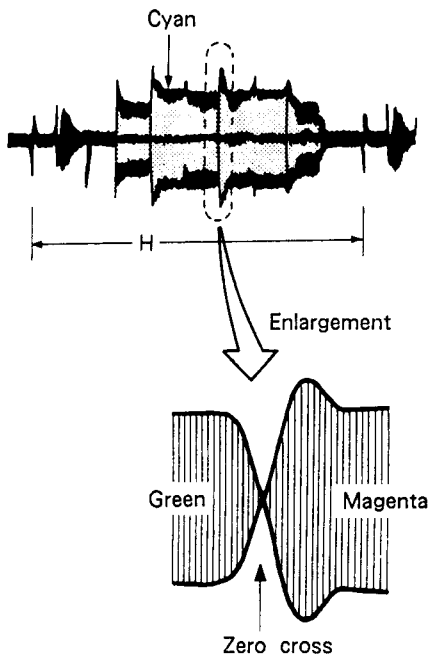


Fig. 8-40. Chroma emphasis fo adjustment

**8-7-14. Carrier Balance Adjustment (VC-11/MV-8 Boards)**

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ④ on VC-11 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV001 on VC-11 board
Specified Value	Minimum 5.17 MHz component

**Adjusting method :**

- 1) Adjust RV001 on the VC-11 board so that the 5.17 MHz component becomes minimum.

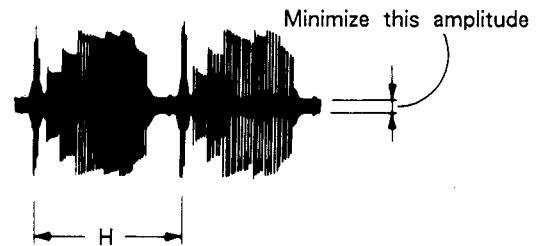


Fig. 8-41. Carrier balance adjustment

**8-7-15. GCA Adjustment (VC-11/MV-8 Boards)**

Mode	Playback Pause
Signal	Arbitrary tape
Measurement Point	Pin ⑤ on VC-11 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV003 on VC-11 board
Specified Value	500±25 mVp-p

**Adjusting method :**

- 1) Adjust with RV003 on the VC-11 board so that it becomes 500±25 mVp-p.

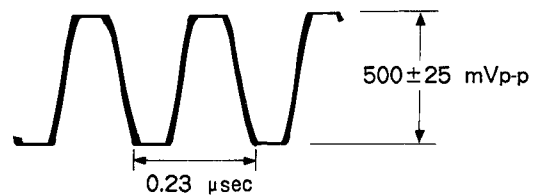


Fig. 8-42.

8-7-16. fH VCO Adjustment (VC-11/MV-8 Boards)

Mode	E-E
Signal	Colour bar
Measurement Point	CH1 : Pin ③ on VC-1 board CH2 : Pin ① of CN203 on MV-8 board (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV004 on VC-11 board
Specified Value	$1.45 \pm 0.2 \mu\text{sec}$

Adjustment method :

- 1) Adjust RV004 on the VC-11 board so that the  $T_R$  of CH1 is  $14.5 \pm 0.2 \mu\text{sec}$ .
- 2) Confirm that the H (time) of CH1 and CH2 is stable.

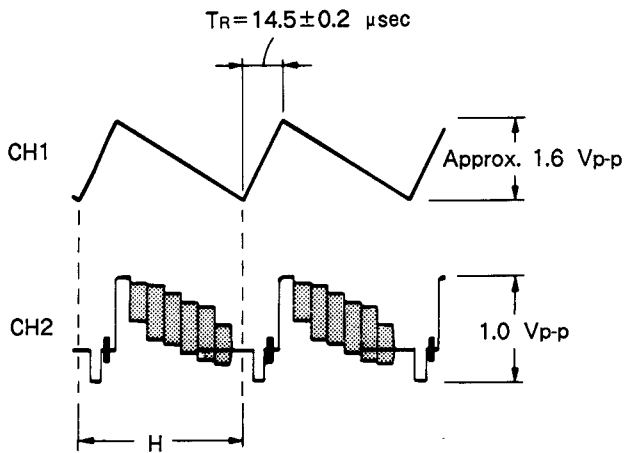


Fig. 8-43. fH VCO adjustment

8-7-17. REC Y Recording Current Adjustment (RP-34/MR-9 Boards)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑥ (REC Y) of CN105 on MR-9 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV001 on RP-34 board
Specified value	$600 \pm 50 \text{ mVp-p}$

Adjusting method :

- 1) Adjust RV001 on RP-34 board so that it becomes  $600 \pm 50 \text{ mVp-p}$ .

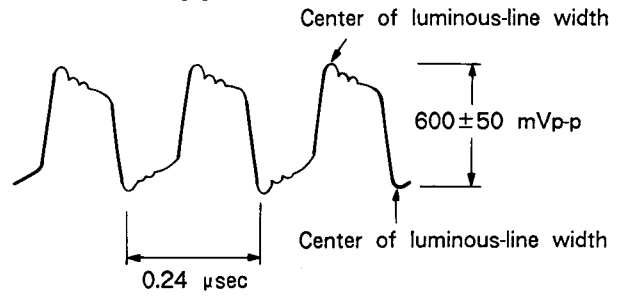


Fig. 8-44. REC Y recording current adjustment

### 8-7-18. REC C Level Adjustment (MR-9 Board)

Mode	E-E
Signal	Colour bar
Measurement Point	Pin ④ (REC VI RF) on RP-34 board
Measuring Instrument	Oscilloscope
Adjusting Element	RV102 on MR-9 board
Specified Value	$135 \pm 10$ mV

**Note :** Use MP-type tape. (Pin ⑦ of CN105 on MR-9 board should be "L")

Connection :

- 1) Connect the following three points with jumpers.
  1. Pin ⑤ (ATF PILOT) of CN105 — GND
  2. Pin ④ (REC AFM) of CN105 — GND
  3. Pin ⑥ (REC Y RF) of CN105 — Pin ⑮ (RP 5V) of CN105

Adjusting method :

- 1) Adjust RV102 so that it becomes  $135 \pm 10$  mV.

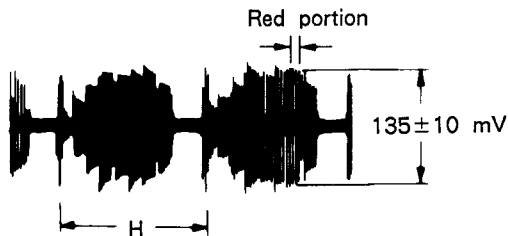


Fig. 8-45. REC C level adjustment

### 8-7-19. REC ATF Level Confirmation (MV-8 Board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ③ (ATF PILOT) of W203
Measuring Instrument	Oscilloscope
Specified Value	$540 \pm 50$ mVp-p

**Note :** Use MP-type tape. (Pin ⑦ of CN105 on MR-9 board should be "L")

Adjusting method :

- 1) Confirm so that the level at Pin ③ (ATF PILOT) of CN203 is  $540 \pm 50$  mVp-p.



Fig. 8-46. REC ATF level confirmation

### 8-7-20. REC AFM Recording Current Confirmation (MR-9 Board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ④ (REC AFM RF) of CN105
Measuring Instrument	Oscilloscope
Specified Value	$120 \pm 20$ mVp-p

**Note :** Use MP-type tape. (Pin ⑦ of CN105 should be "L")

Checking method :

- 1) Confirm that the level at Pin ④ (REC AFM RF) of CN105 is  $120 \pm 20$  mVp-p.

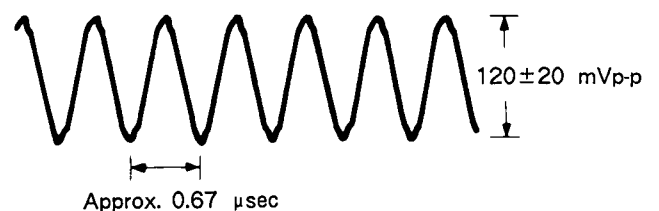


Fig. 8-47. AFM recording current confirmation

## 8-8. AUDIO SYSTEM ADJUSTMENTS

- Perform the adjustment by using the colour bar signal as video signal input.

### [Connection of audio measuring instruments]

Connect audio system measuring instruments as shown in the following diagram in addition to the video system measuring instruments.

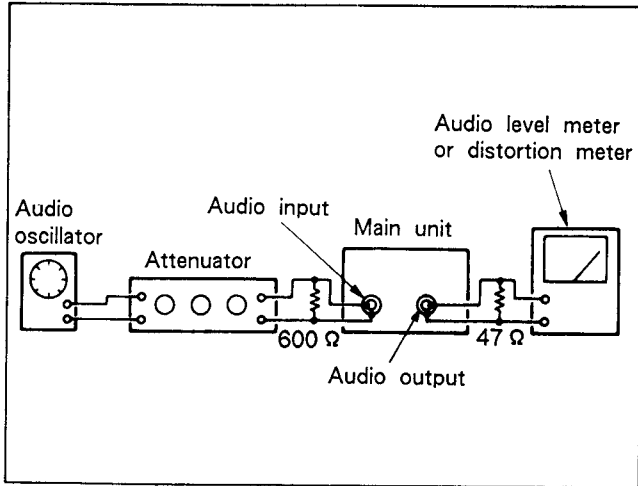


Fig. 8-48.

Unless specified otherwise, set the switches and controls of the VTR to the following positions when performing adjustment.

- Input selection button .....LINE

### [Adjusting order]

1. AFM Carrier Frequency Adjustment
2. AFM Deviation Adjustment
3. E-E Output Level Check
4. Overall Level Characteristics Check
5. Overall Frequency Characteristics Check
6. Overall Distortion Check
7. Overall Noise Level Check

### 8-8-1. AFM Carrier Frequency Adjustment (AF-38 Board)

Mode	Recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑤ of CN503 (Pin ⑭ of IC501)
Measuring Instrument	Frequency counter and oscilloscope
Adjusting Element	RV502
Specified Value	1500±2 kHz

Adjusting method :

- 1) Adjust RV502 so that it becomes 1500±2 kHz.

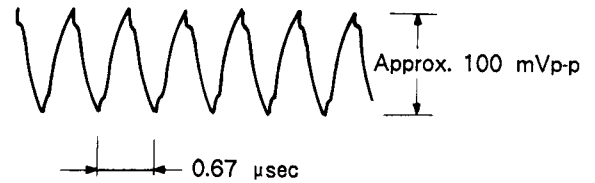


Fig. 8-49.

### 8-8-2. AFM Deviation Adjustment (AF-38 Board)

Mode	Playback
Signal	Alignment tape (WR5-3CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjusting Element	RV501
Specified Value	-10.0±0.2 dBs

Adjusting method :

- 1) Adjust RV501 so that the audio output level is -10.0±0.2 dBs.

### 8-8-3. E-E Output Level Check

Mode	E-E
Signal	400 Hz, -10 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-10±2 dBs

Checking method :

- 1) Confirm that the audio output level is -10±2 dBs.

#### 8-8-4. Overall Level Characteristics Check

Mode	Self-recording (SP mode)
Signal	400 Hz, -10 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-10±3 dBs

Checking method :

- 1) Record the signal.
- 2) Play back the recorded section.
- 3) Confirm that the audio output level is -10±3 dBs.

#### 8-8-5. Overall Frequency Characteristics Check

Mode	Self-recording				
Signal	<table border="0"> <tr> <td>Ⓐ 400 Hz, -20 dBs</td> <td rowspan="3">} Audio input</td> </tr> <tr> <td>Ⓑ 30 Hz, -20 dBs</td> </tr> <tr> <td>Ⓒ 14 kHz, -20 dBs</td> </tr> </table>	Ⓐ 400 Hz, -20 dBs	} Audio input	Ⓑ 30 Hz, -20 dBs	Ⓒ 14 kHz, -20 dBs
Ⓐ 400 Hz, -20 dBs	} Audio input				
Ⓑ 30 Hz, -20 dBs					
Ⓒ 14 kHz, -20 dBs					
Measurement Point	Audio output terminal				
Measuring Instrument	Audio level meter				
Specified Value	When 400 Hz playback output level is 0dB, 30 Hz and 14 kHz playback output level should be 0±3 dB				

Checking method :

- 1) Record signals Ⓐ through Ⓒ in sequence.
- 2) Play back the recorded section.
- 3) Confirm that when the 400 Hz playback output level is 0 dB, the 30 Hz and 14 kHz playback output levels are both 0±3 dB.

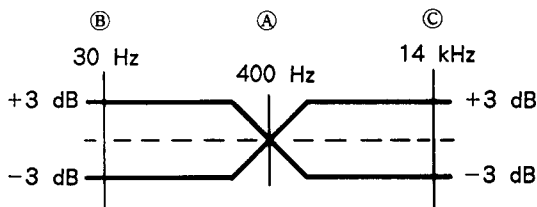


Fig. 8-50. AFM overall frequency characteristics

#### 8-8-6. Overall Distortion Check

Mode	Self-recording
Signal	400 Hz, -10 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% *

Checking method :

- 1) Record the signal.
  - 2) Play back the recorded section.
  - 3) Distortion should be less than 0.5%. \*
- \* This is the value when the distortion measurement filter (Fig. 8-51) is used. When the filter is not used, the value should be less than 1.0%.

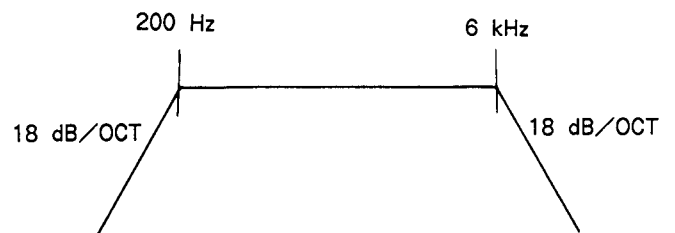


Fig. 8-51. Distortion measuring filter

#### 8-8-7. Overall Noise Level Check

Mode	Self-recording
Signal	No signal Plug in shorting plugs to audio input terminal
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	Less than -65 dBs *

Checking method :

- 1) Record the signal.
  - 2) Play back the recorded section.
  - 3) Noise level should be less than -65 dBs. \*
- \* This is the value when an IHF-A hearing sensitivity correction filter is used.

## 8-9. TUNER SYSTEM ADJUSTMENTS

### 8-9-1. RF AGC Adjustment (IF601 Unit/TI-14 Board)

Signal	TV broadcast signal
Adjusting Element	VR on IF601 unit (Fig. 8-52)

Adjusting method :

- 1) Adjust monitor TV for best contrast.
- 2) Turn VR so that snow noise begins to appear.
- 3) Turn VR in the opposite direction and set at a position where snow noise disappears.
- 4) Receive each channel and confirm that there is no beat picture distortion or snow noise due to cross modulation.

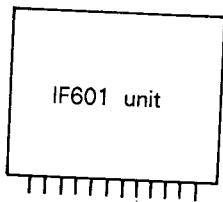
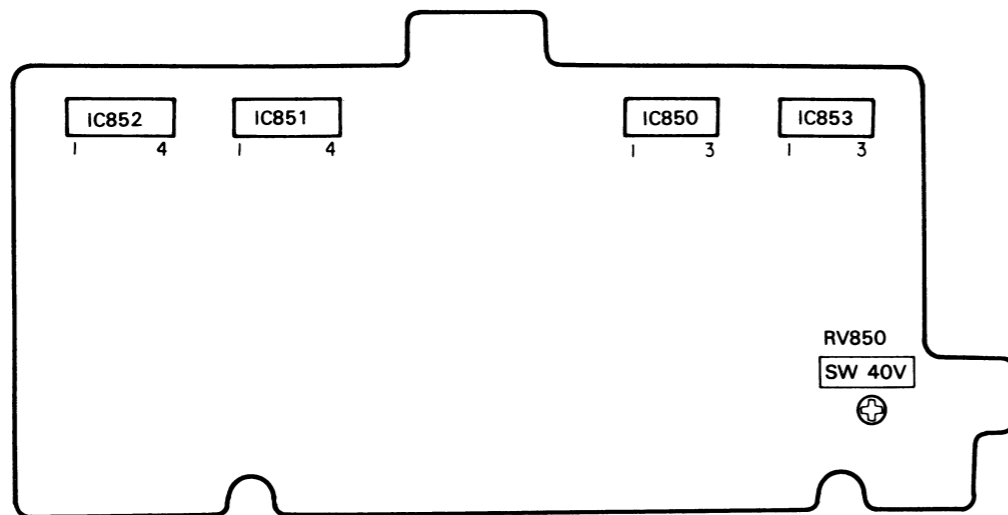


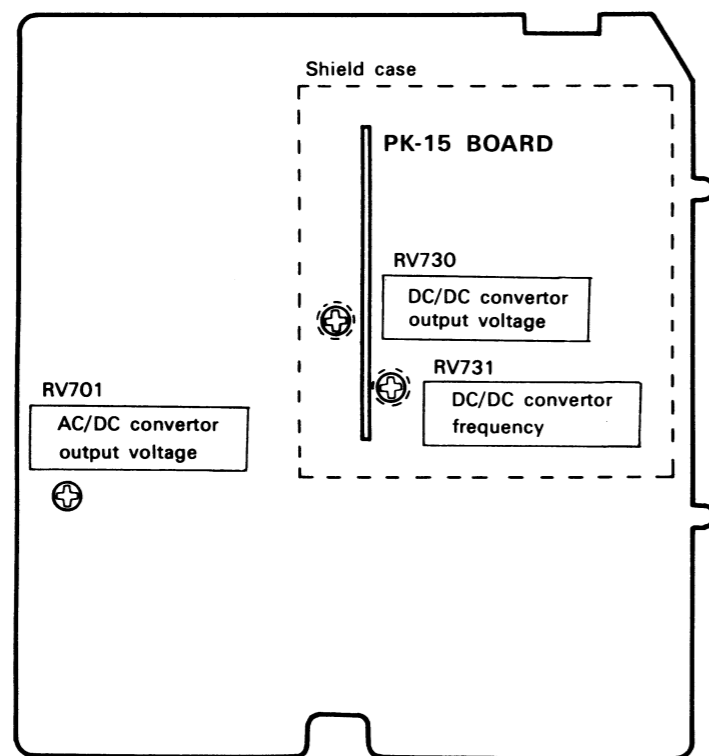
Fig. 8-52. RF AGC adjustment



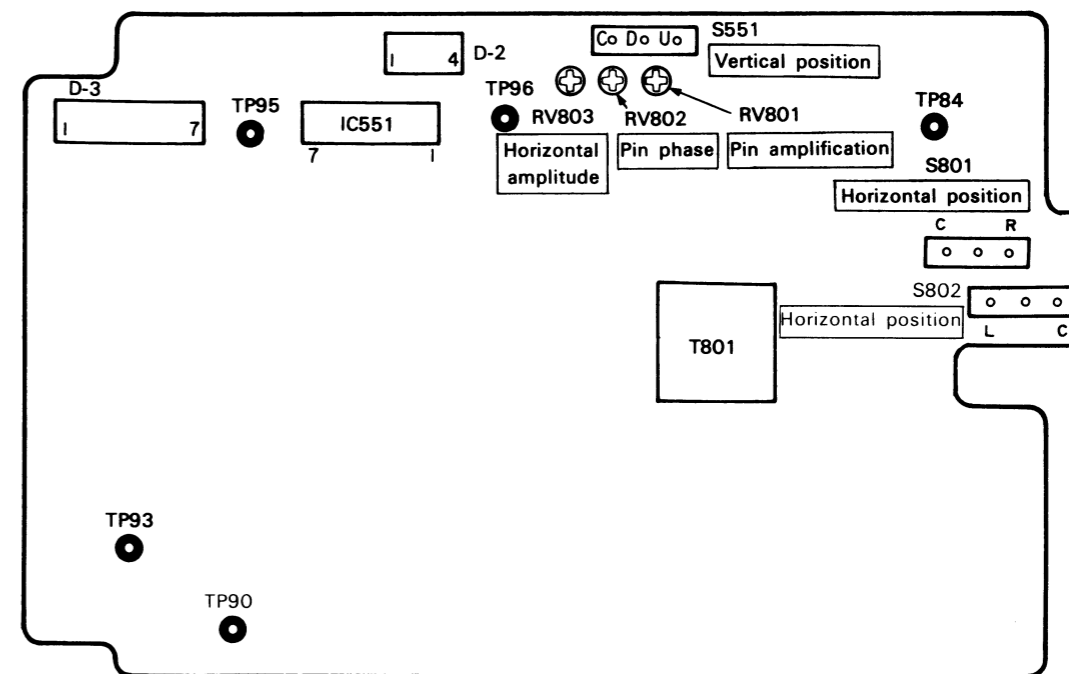
LOCATION OF PARTS RELATED TO ADJUSTMENT  
PW-59 BOARD (COMPONENT SIDE)



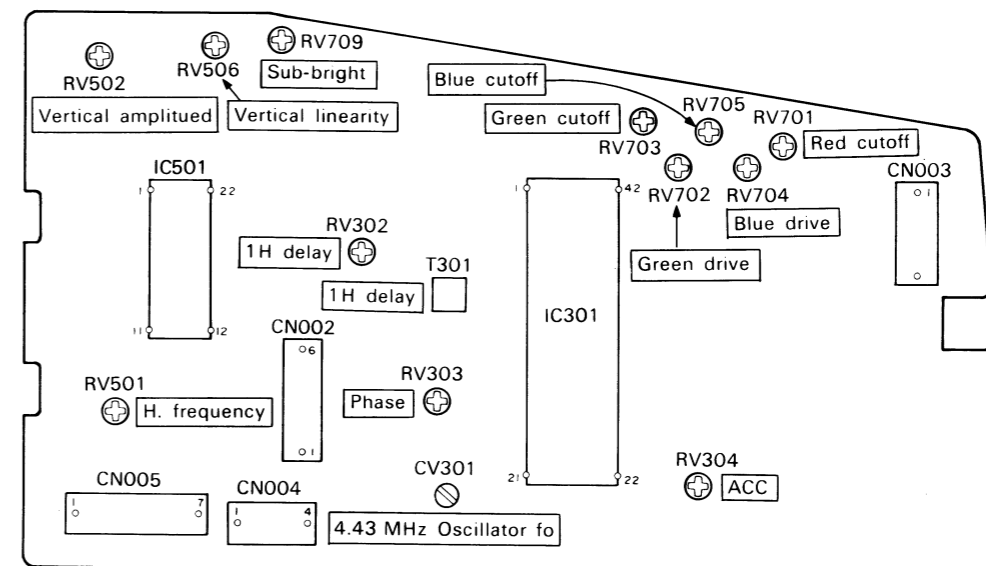
PW-58 BOARD (COMPONENT SIDE)



TD-8 BOARD (COMPONENT SIDE)

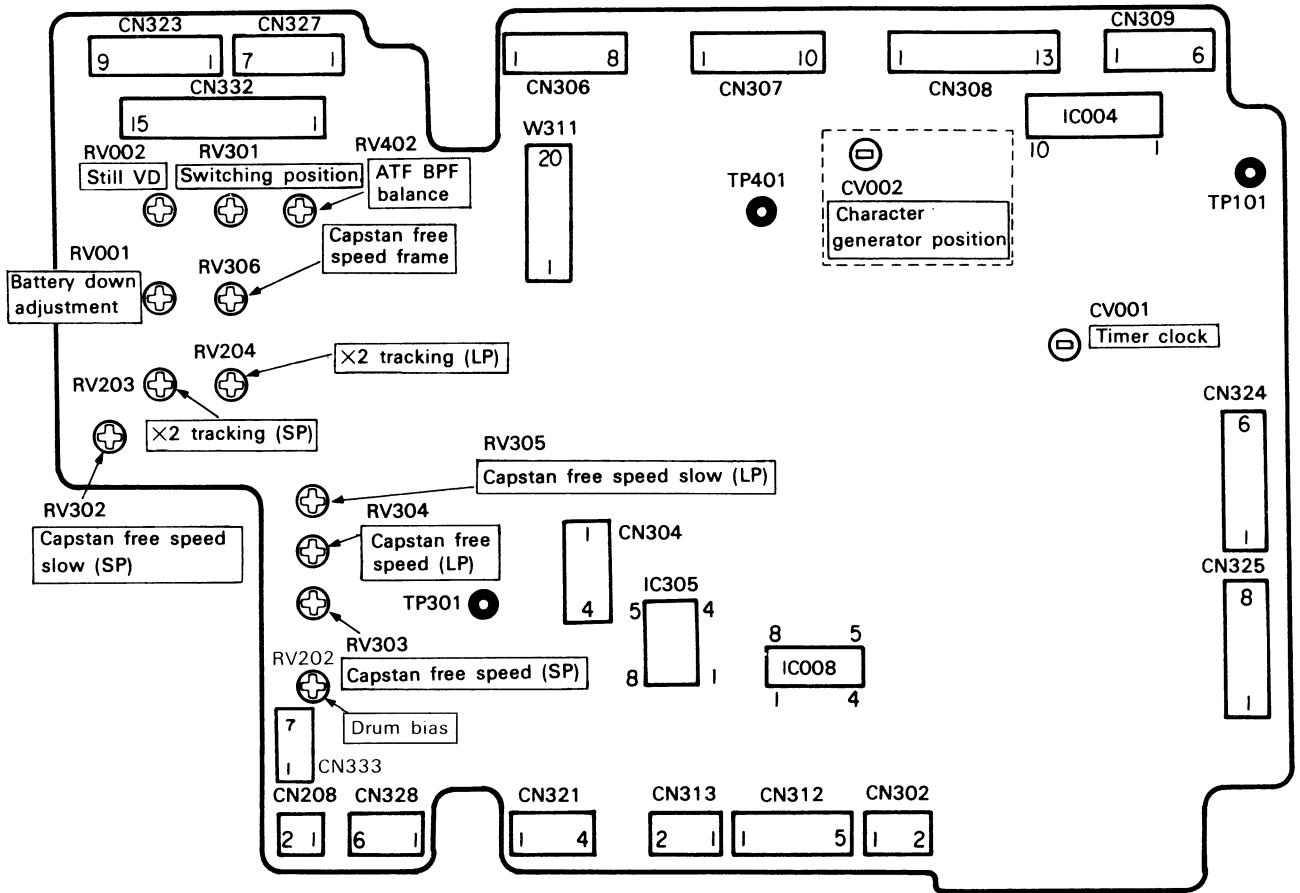


TB-8 BOARD (COMPONENT SIDE)

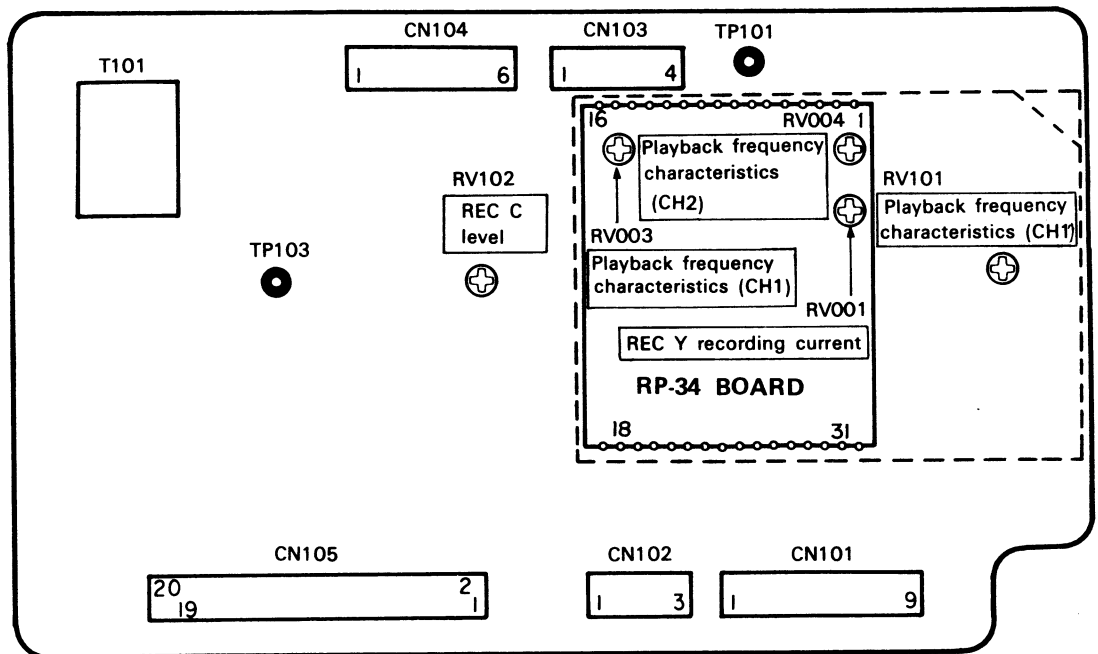


**MA-25 BOARD (COMPONENT SIDE)**

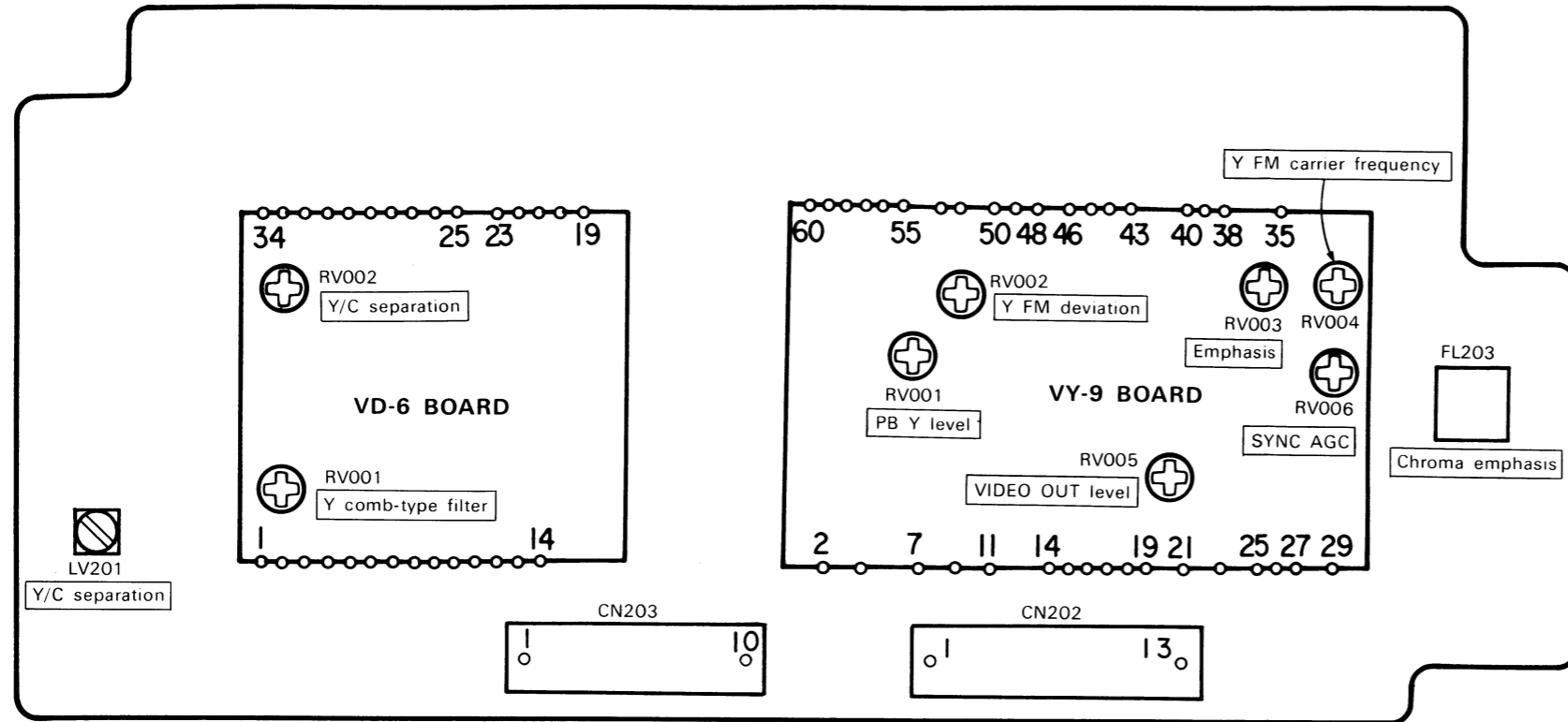
Note: CV002 is mounted on the soldered side (cannot be adjusted from component side).



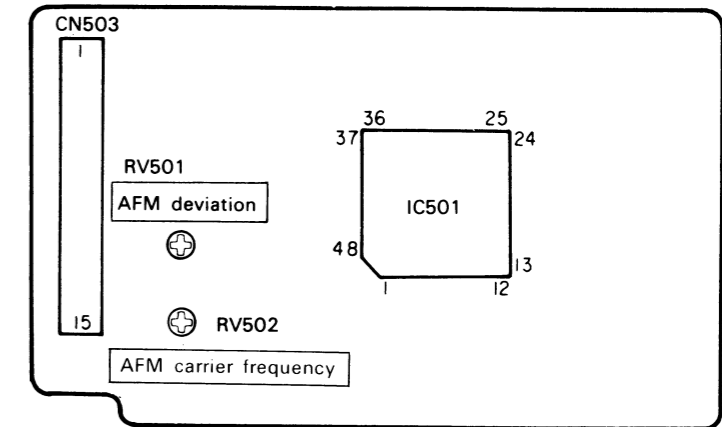
**MR-9 BOARD (COMPONENT SIDE)**



MV-8 BOARD (COMPONENT SIDE)



AF-38 BOARD (COMPONENT SIDE)



MV-8 BOARD (CONDUCTOR SIDE)

