SLV-373/373UB/373VP
RMT-V373

SERVICE MANUAL

AEP Model
SLV-373

UK Model
SLV-373UB

West Germany Model
SLV-373VP

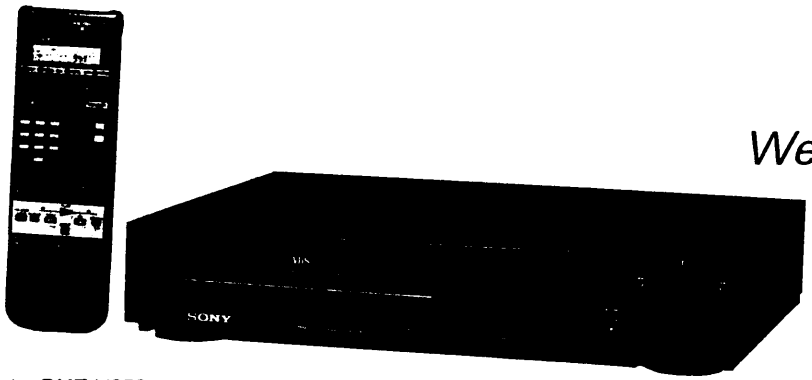


Photo: SLV-373VP

Remote commander RMT-V373 is available as a unit, but as individual parts the battery case lid of commander is only available.

For MECHANICAL ADJUSTMENTS, refer to the "VHS MECHANICAL ADJUSTMENT MANUAL II" (9-972-816-11)

● See Supplement-1 for Adjustments.

SPECIFICATIONS

System

Format	VHS PAL standard
Video recording system	Rotary two-head helical scanning FM system
Video signal	PAL colour (System B and G: SLV-373/373VP, System I: SLV-373UB/373EI)
	DDR SECAM colour (SLV-373VP)
	CCIR monochrome signals 625 lines
Tape speed	SP: 23.39 mm/sec. LP: 11.70 mm/sec.
Maximum recording/playback time	SP: 4 hours (with E-240) LP: 8 hours (with E-240)
Fast-froward/rewind time	Approx. 3 min. 20 sec. (with E-180)
High speed rewind time	Approx. 2 min. 20 sec. (with E-180)

Tuner Section

Tuner system (audio)	Intercarrier system
Channel coverage	SLV-373/373VP
	VHF channels E2 — E12 (A to H only for Italy)
	CATV channels S01 — S03
	CATV channels S1 — S20
	HYPER S21 — S41
	UHF channels E21 — E69
	SLV-373UB
	UHF channels B21 — B68
	SLV-373EI
	VHF channels A — J
	UHF channels E21 — E69
RF output signal	SLV-373/373VP/373EI
	UHF channels E30 — E39 (adjustable)
	SLV-373UB
	UHF channels B30 — B39 (adjustable)
Aerial out	75-ohms asymmetrical aerial socket

—Continued on page 2—

MICROFILM

VHS PAL VHS VIDEO CASSETTE RECORDER

SONY®

Inputs and Outputs

Video inputs	LINE 2: phono jacks EURO-AV: 21-pin (pin 20) 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio inputs	LINE 2: phono jacks 47 kilohms, −7.5 dBs (0 dBs = 0.775 V rms) EURO-AV: 21-pin (pins 2 and 6) More than 10 kilohms, −4 dBs
Video output	EURO-AV: 21-pin (pin 19) 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio output	EURO-AV: 21-pin (pins 1 and 3) Output impedance: less than 1 kilohm −4 dBs with 10 kilohms load
CONTROL S IN	Minijack (1)

Timer Section

Clock	Quartz locked
Time indication	24-hour cycle
Timer setting	Only for recording 8 programmes in one month at max.
Timer back-up	Built-in self-charging capacitor Back-up duration: Up to an hour at one time

General

Power requirements	240 V AC, 50 Hz (SLV-373UB) 220 V AC, 50 Hz (SLV-373/373VP/373EI)
Power consumption	25 W
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	430 × 87 × 358 mm (w/h/d) (17 × 3 3/8 × 14 1/4 inches)
Weight	5.7 kg (12 lb 9 oz)

Wireless Commander RMT-V373

Remote control system	Infrared control
Command mode	VTR 1/2/3
Power requirements	3 V DC, two IEC designation R6 batteries
Dimensions	75 × 45 × 235 mm (w/h/d) (3 × 1 3/4 × 9 1/4 inches)
Weight	220 g (8 oz) excluding batteries

Accessories Supplied

Wireless Remote Commander RMT-V373 with two R6 batteries	(1)
75-ohm coaxial cable	(1)
Screwdriver	(1)
AC power cord	(1)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

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 !!

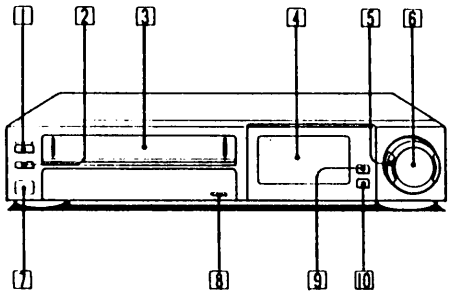
COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

TABLE OF CONTENTS

SECTION 1
GENERAL

This section is extracted from instraction manual.

Identifying the Operational Parts



Front

[1] **ON/STANDBY switch and indicator**

[2] **▲ EJECT button**
Press to eject the cassette. This button does not function during recording.

[3] **Cassette compartment**

[4] **Display window and function mode display**
See "Indications in the Display Window." (page 58)

[5] **DUAL MODE SHUTTLE ring**

In the stop mode	Turn the ring clockwise (►►) to advance the tape rapidly, and counterclockwise (◄◄) to rewind the tape.
In the playback mode	Turn the ring clockwise (FORWARD) to advance and counterclockwise (REVERSE) to reverse the picture in various speeds including a still picture when the ring is released.

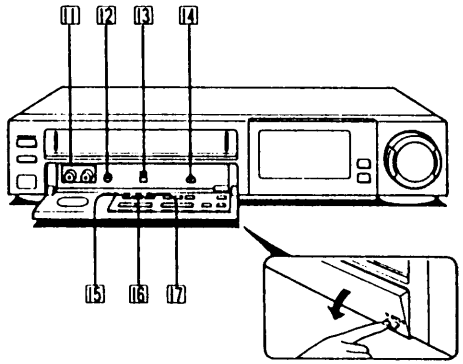
[6] **▷ PLAY button**

[7] **REMOTE Sensor**
Point the Commander here.

[8] **▼ OPEN**
Press to open the front panel.

[9] **II PAUSE/STILL button**
In the playback mode: Press to obtain a still picture.
In the recording mode: Press to pause.

[10] **■ STOP button**



Front

[11] **LINE IN 2 VIDEO/AUDIO jacks (phono type)**
Connect to the video/audio output jacks of another VTR or a video camera recorder.

[12] **SHARPNESS SOFT/SHARP control**
Use to adjust the sharpness of the picture if necessary. Normally set this control at the center position.

[13] **COMMAND MODE VTR 1/2/3 selector** (page 15)
Set to the same position as the COMMAND MODE switch on the Commander.

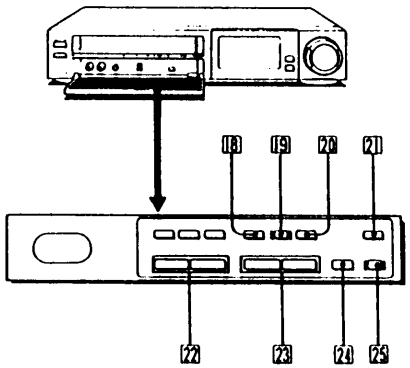
[14] **VPS (Video Programme System) ON/OFF switch (SLV-373VP only)** (page 47)

[15] **TV/VTR button**
Press and light the VTR indicator in the display window to view the playback of the VTR or a programme selected on the VTR. Press this button again to turn off the VTR indicator to view a programme selected on the TV. This button is effective only when the VTR is connected to the TV via EURO-AV.

[16] **INPUT SELECT switch**
Press to select the signals to be recorded by the VTR. The selected mode will be indicated in the display window as follows:
TUNER: To record TV programmes.
LINE L1: To record the signals from equipment connected to the EURO-AV.
LINE L2: To record the signals from equipment connected to the LINE IN 2 jacks.

[17] **REC MODE (SP/LP) button**
Press to select the recording tape speed SP or LP.

Identifying the Operational Parts



Front

18 EDIT ON/OFF button (page 55)
Set to ON during editing to obtain a high quality picture.

19 TIMER REC ON/OFF button
Press this button to enter the timer recording standby mode. Press it again to release the timer recording standby mode before changing or cancelling a timer recording or to operate the unit before a timer recording starts.

20 QUICK TIMER button (page 49)
Press to activate the quick timer recording function.

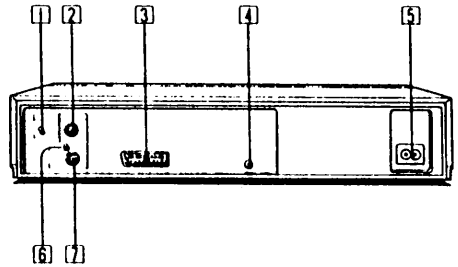
21 ◀◀◀ HIGH SPEED REWIND button

22 PROGRAM + / – buttons
Press to select the programme positions.

23 TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ buttons (page 27)
Press to clear streaks if they appear on the screen in the normal and slow playback. (Manual tracking adjustment)
Press to reduce picture shaking in the still mode. (Still adjustment)

24 TRACKING AUTO/MANUAL button (page 27)
Press to reactivate the automatic tracking function after manual tracking adjustment.

25 ● REC (record) button (page 33)



Rear

1 RF CHANNEL screw (30 to 39) (page 18)

2 AERIAL OUT socket (page 13)

3 EURO-AV (21-pin) (page 13)

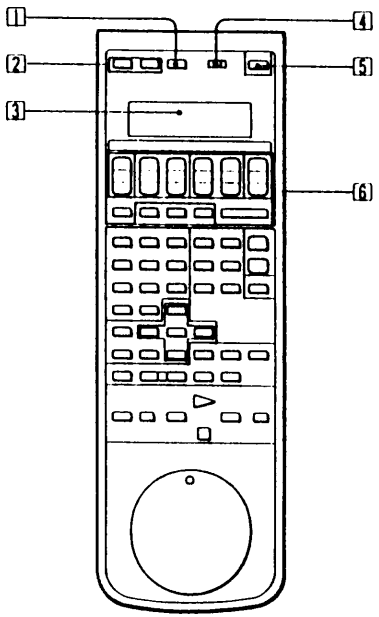
4 CONTROL S IN jack (mini type) (page 55)
Connect to the CONTROL S output jack of other SONY products for systematic operations such as synchronized editing.

5 AC INPUT
Connect the supplied AC power cord.

6 DX/LOCAL switch
Normally set to DX. If the TV signal is very strong, set it to LOCAL with the supplied screwdriver.

7 AERIAL IN socket (page 13)

Identifying the Operational Parts



Remote Commander RMT-V373

- The buttons on the Commander with the same name or mark as those on the unit have the same function.
- The buttons with a red dot can be used to remotely control Sony TVs with the ■ mark when the TV/VTR remote control selector is set to TV. However, the TV/VTR button and/or the -/-- (10's digit) button cannot operate certain Sony's TVs.

[1] TIMER REC (ON/OFF) button

[2] TIMER REC CHECK/CLEAR buttons (page 43)
Press to check, correct, or clear the timer settings.

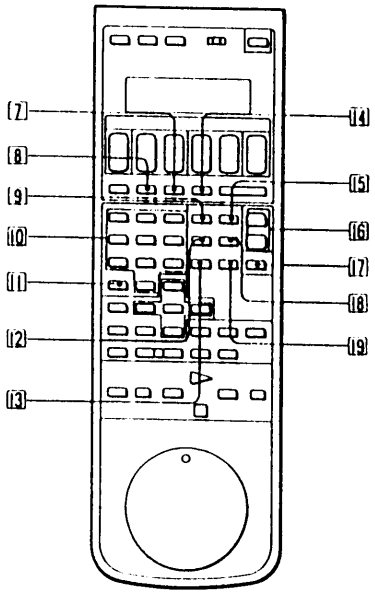
[3] Liquid crystal display

[4] TV /I/ VTR remote control selector (page 15)
Set to VTR to control this VTR and set to TV to control the TV.

[5] ⏻ (on/standby) button
To turn on the TV from the standby mode, press one of the programme position number buttons.

[6] Timer recording/clock set buttons (page 16, 39)
- TIMER SET
- DAY
- TURN ON time
- TURN OFF time
- PROG (programme position) + / - •
- TRANSMIT

• You can use the PROG + / - buttons to select the programme positions during VTR or TV operation as well as in the timer setting procedure



[7] MEMORY button (page 46)

[8] CLOCK SET (SET/START) button (page 16)

[9] REC MODE select button (page 33)

[10] Programme position number buttons
Press to select the programme position directly.

[11] -/-- (10's digit) button
Press to select a programme number over 9. To select 23, press -/--, then 2 and 3.

[12] DATA SCREEN button (page 30)

[13] TIMER ON SCREEN button
Press to display the timer settings.

[14] COMMAND MODE button (page 15)

[15] TV/VTR button (page 35)

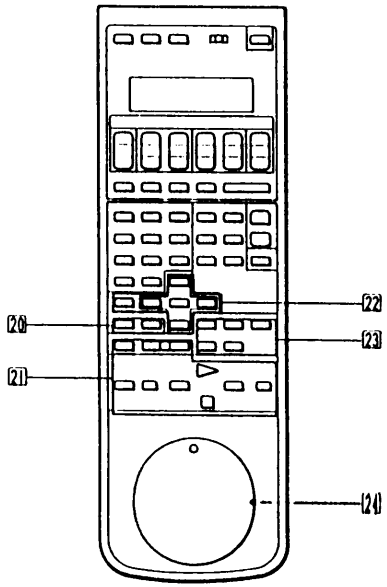
[16] VOL (TV volume) + / - buttons
Press to control the volume of the TV. Effective only for Sony TVs with the ■ mark.

[17] INDEX button (page 52, 53, 54)

[18] INPUT SELECT button
Press to select the source to be recorded. The selected input mode indicator will appear in the display window.

[19] COUNTER RESET button (page 36)

Identifying the Operational Parts



20 **INDEX MARK and ERASE buttons** (page 51, 54)

21 **Tape transport buttons** (page 26, 28)
- ⏸ PAUSE
- ● REC (recording) buttons
- ▷ PLAY
- ◀◀◀ HIGH SPEED REWIND
- ⊖/⊕ SEARCH (reverse/forward)
- ◀◀ REW (rewind)
- ▶▶ FF (fast forward)
- ■ STOP

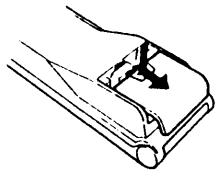
22 **Menu operation buttons**
Press MENU to display or erase the main MENU. Press EXECUTE to store the selected parameters. Press ▲/▼/◀/▶ to move the cursor.

23 **Playback direction set, frame-by-frame, still and SLOW + / – buttons** (page 28)
Press ▸◂ for a still picture.
Press < ◂⏸/⏸▸ > to select the direction for frame-by-frame picture.
Press < ◂⏸/⏸▸ > to select the direction for any playback mode.
Press ▮▸ SLOW + / – for slow playback between 1/5 to 1/30 times normal speed. Press + or – to change the playback speed.

24 **SWING SHUTTLE dial** (page 29)
Turn and hold it at the position where the desired playback speed is obtained. You can select slow (1/5), normal (1), double (× 2) or continuous scan speed (⊖ or ⊕) from any playback mode. Turn the dial clockwise for forward playback, or counterclockwise for reverse playback.
When the dial is released, it will return to the still picture position automatically. To resume normal playback, press ▷.

Remote Control Operation

1



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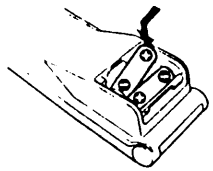


Preparing the Commander

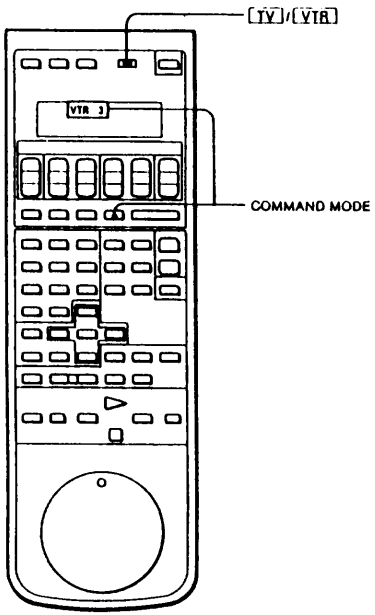
■ **Battery Insertion**

1 Slide and remove the cover.

2 Insert two R6 (size AA) batteries with polarity positioned correctly.

3 Close the cover. Set the date and clock referring to the "Date and Clock Setting."

Note on batteries
With normal operation, batteries will last for about six months. However, if the Commander will not be used for a long period, remove the batteries to avoid possible damage from battery leakage.



Command Mode Setting

Set the COMMAND MODE 1/2/3 selector on the unit to the same number displayed in the LCD display. To change the setting on the Commander, press COMMAND MODE repeatedly. Then, set the [TV]/[VTR] remote control selector to [VTR].

Remotely Controlling Other Sony Equipment

■ **Controlling another VTR equipped with a command mode selector**

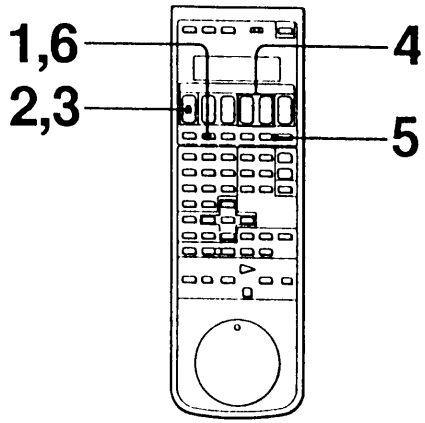
Set different command modes for this VTR (VTR 3, for instance) and the other VTR (VTR 1). Select VTR 1 on the Commander to control the other VTR and VTR 3 to control this VTR.

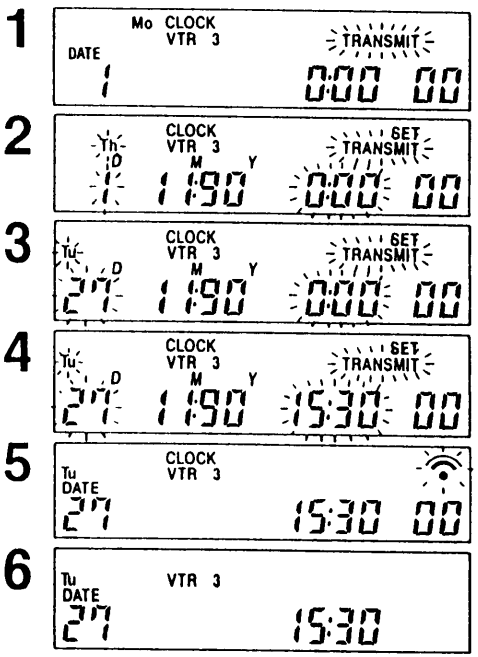
■ **Controlling equipment without a command mode selector**

Change the setting on the Commander as follows to control each type of VTR.

VTR 1: Sony Betamax infrared remote control VTRs
VTR 2: Sony 8 mm format VTRs
VTR 3: Sony VHS format VTRs

Date and Clock Setting





Before You Begin

The time and date between the years 1990 and 2005 can be set with the Commander.

Operation

Example: To set to 15:30, Tuesday, November 27, 1990.

1 **Press CLOCK SET.**

2 **Keep pressing the D (date) button until 11 M 90 Y is displayed.**
The date will be incremented slowly up to 30 days ahead and then the month will be incremented.

3 **Press the + side or − side of the D (date) button until 27 D is displayed.**
The day of the week appears automatically.

4 **Press the H (hour) and M (minute) buttons under TURN OFF to set the current time.**

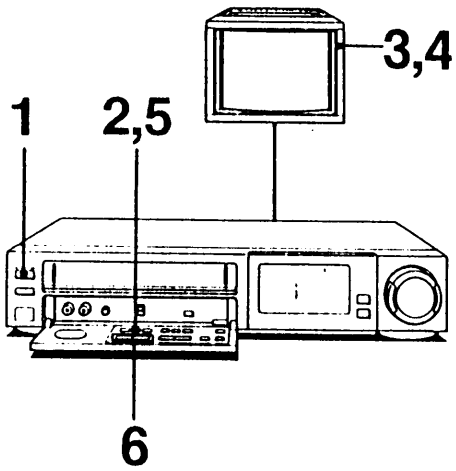
5 **Point the Commander at the VTR and press TRANSMIT.**
A beep sound confirms that the date and clock setting is registered in the VTR as well.

6 **Check the display window on the unit and press CLOCK SET.**

When 0:00 is blinking on the unit
Any time power is interrupted for more than an hour, you will see 0:00 blinking when power is restored. You will have to re-set the date and clock again.

When a short beep sounds repeatedly
The VTR is in the timer recording or quick timer recording modes or standby mode for timer recording and the setting cannot be transmitted.

Adjusting the TV



Before You Begin

If you have connected your VTR and TV using only the aerial sockets, one of the television programme positions must be adjusted to receive the VTR's playback signal. If TV-VTR connection is made via the EURO-AV, skip this step.

Operation

1 Make connections referring to "Connections" and press ON/STANDBY.

2 Press INPUT SELECT to light LINE L2 in the display window.
Do not connect any equipment to the LINE IN 2 VIDEO jack.

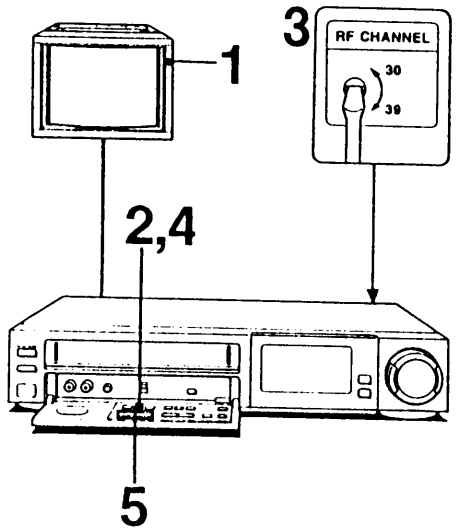
3 Turn on the TV and select a programme position that is not used to receive a TV station.

4 Tune the TV so that a blue screen with tape counter and tape speed indication is clearly displayed on the TV screen.

5 Press INPUT SELECT to light TUNER in the display window.

6 Press the PROGRAM +/– on the VTR and check that the screen changes to a different programme.

Now your TV is tuned to receive the VTR's playback picture. Whenever playing back a tape, select the programme position you chose in step 3.
If you are not sure how to tune your TV, refer to the TV's instruction manual or consult your dealer.



When the Playback Picture is not Free of Disturbance

1 Select a programme position on the TV between UHF channels 30 and 39, so that the TV shows no picture and a steady rustling sound or no sound is heard.

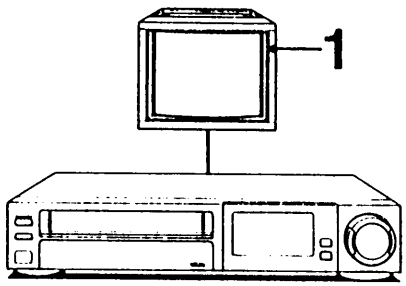
2 Press INPUT SELECT to light LINE L2 in the display window.
Do not connect any equipment to the LINE IN 2 VIDEO jack.

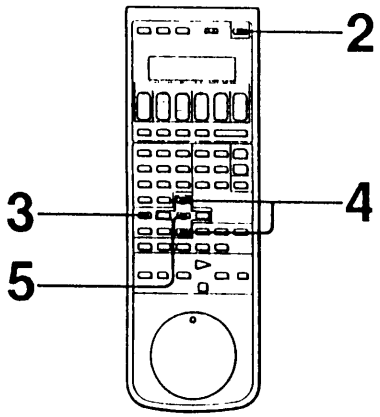
3 Turn the RF CHANNEL screw with the supplied screwdriver so that a blue screen with tape counter and tape speed indication is clearly displayed on the TV screen.

4 Press INPUT SELECT to light TUNER in the display window.

5 Press the PROGRAM +/– on the VTR and check that the screen changes to a different programme.

About the MENU Display





This VTR is equipped with a menu display function. Menu display enables you to perform certain operations which are displayed on the TV or the monitor.

First display the main MENU, and select the item to be operated or preset.

How to Display the main MENU

■ Before you begin

Check the connections between the VTR and the TV.

■ Operation

1 **Turn on the TV.**
Set to the programme position for the VTR if VTR-TV connection is made via the serial sockets. Select VTR input if VTR-TV connection is made via the EURO AV.

2 **Press ⏻.**

3 **Press MENU.**
The main MENU will appear on the screen.

4 **Move cursor to the desired menu by ▲ or ▼.**

5 **Press EXECUTE.**
The selected menu will appear on the screen.

To erase the main MENU display
Press MENU again.

To display other menu displays
1 Press MENU to erase the present display.
2 Press MENU again to display main MENU.
3 Move cursor to the desired menu.
4 Press EXECUTE.

About the MENU Display

Details of Each Menu

Here is a list of the menus in the main MENU. For details, refer to the sections indicated.

■ AUTO MENU
Use to select an automatic tape operation. See "Assigning a Desired Operation Mode" (page 31).

■ MODE SET
Use to select the following mode settings:

TIMER REC-REW ON/OFF
(See "Timer Activated recording" on page 44)

BUZZER ON/OFF
(See "Timer Activated Recording" on page 41)

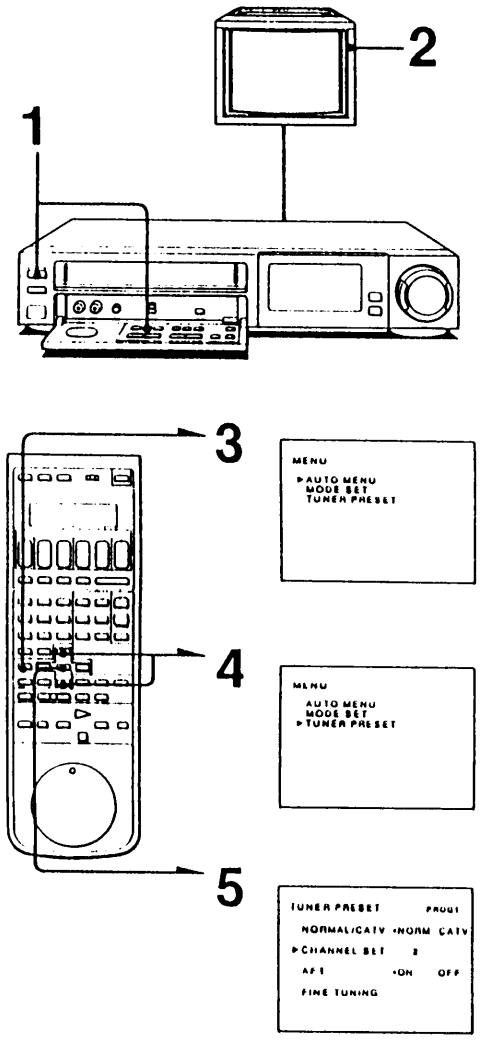
DIMMER ON/OFF
Select ON to dim out the indications in the display window.

BACK COLOUR BL/GR/PK
Select your favourite back colour of the on-screen display from BL (blue), GR (green) and PK (pink).
Back colour is set to BL at the time of shipment.

■ TUNER PRESET
Use to preset the active channels in your area. See "Presetting the Active Channels" (page 21).

Note
The position of the cursor is retained as long as the power cord is connected.

Presetting the Active Channels



Before You Begin

- This VTR is capable of receiving VHF channels E2-E12, UHF channels E21-E69, and cable TV channels S1-S41 and S01-S03.
- The receivable channels are governed by the TV broadcasting system in your area.
- Up to 60 channels can be allocated to any desired programme position.

To Call Up the TUNER PRESET Menu

1 Turn on the VTR and press INPUT SELECT to light the TUNER indicator and the programme position number in the display window.

2 Turn on the TV.
Set to the programme position for the VTR if VTR-TV connection is made via the aerial sockets. Select VTR input if VTR-TV connection is made via the EURO-AV.

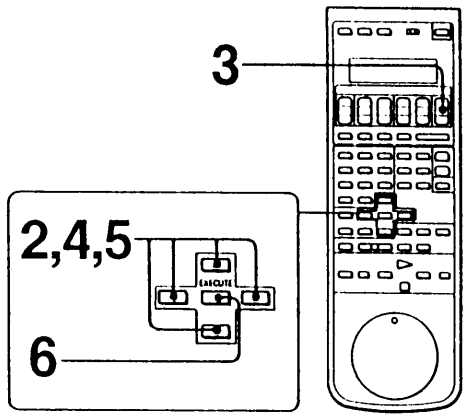
3 Press MENU with the VTR in the stop mode.
The main MENU appears.

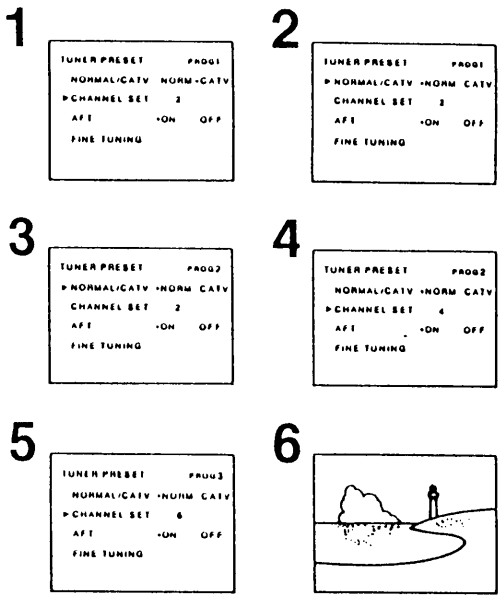
4 Move cursor with ▲ or ▼ to TUNER PRESET.

5 Press EXECUTE.
The TUNER PRESET menu appears.

Note for the users of SLV-373UB
The TUNER PRESET menu of the SLV-373UB does not have the NORMAL/CATV selection as illustrated.

Presetting the Active Channels





Tuning a Desired Channel

1 Call up the TUNER PRESET menu.

2 Move cursor to NORMAL/CATV with ▲ and select NORM with ◀ or ▶.
(For SLV-373UB, skip this step.)
To tune-in CATV channels first, select CATV.

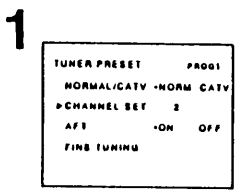
3 Select the desired programme position by pressing PROG +/− on the Commander or PROGRAM +/− on the unit.

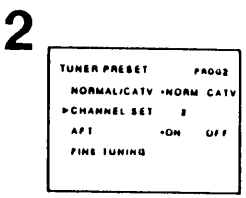
4 Move cursor to CHANNEL SET with ▲ or ▼ and press ◀ or ▶.
The channel number automatically increases with ▶ and decreases with ◀. The number stops changing when the first channel received in your area is detected and the screen returns to the blue background 5 seconds after.

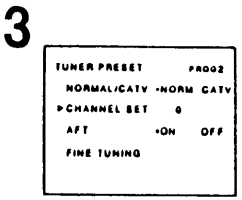
5 To allocate a channel to the next programme position, repeat steps 2 to 4.

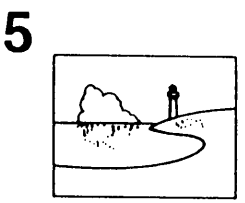
6 Press EXECUTE to store the allocated channels and return to original screen.

Channel scanning on your VTR
- When ▶ is pressed in steps 4 and 5, the channels are scanned in the following order. When ◀ is pressed the scanning order is reversed.
  VHF (E2-E12) → UHF (E21-E69) → CATV (S1-S20) → HYPER BAND (S21-S41) → CATV (S01-S03).
- The SLV-373UB only scans UHF channels B21 to B68.
- In Italy, channel numbers 13 to 20 correspond to channels A to H.









Erasing Unwanted Programme Positions

The VTR can be preset so that only the desired programme positions will appear when you press PROG + / – or PROGRAM + / –.

1 Call up the TUNER PRESET menu.

2 Press PROG + / – on the Commander or PROGRAM + / – on the unit to call up the unused programme position.

3 Press 0 twice or keep pressing ◀ or ▶ until 0 is displayed.

4 Repeat steps 2 and 3 to erase other programme positions.

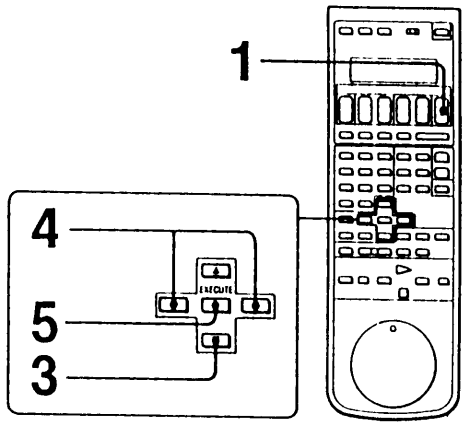
5 Press EXECUTE.

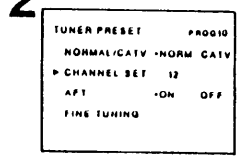
■ **To enter the erased programme positions again**
Follow the operations in "Tuning a Desired Channel."

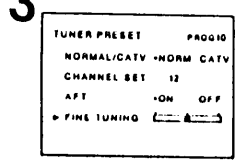
To Allocate the Channels Directly

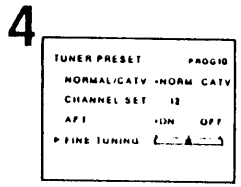
After step 3 in "Tuning a Desired Channel," move cursor to CHANNEL SET.
Enter the desired programme numbers using the programme position number buttons. To enter one's digits, press 0 and then the desired number. To enter two digit numbers, press the ten's digit number and then the one's digit number.

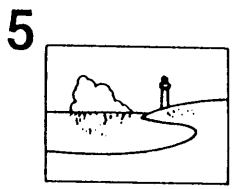
Presetting the Active Channels











Manually Fine-tuning a Weak Station

Normally the AFT (Automatic Fine Tuning) function fine-tunes the picture with the AFT in the TUNER PRESET menu set to ON. (The AFT indicator lights in the display window.) However, when the programme received on the VTR is distorted due to signal interference, manual fine tuning may solve the problem.

1 Select the distorted programme position by pressing PROG + / – on the Commander or PROGRAM + / – on the unit.

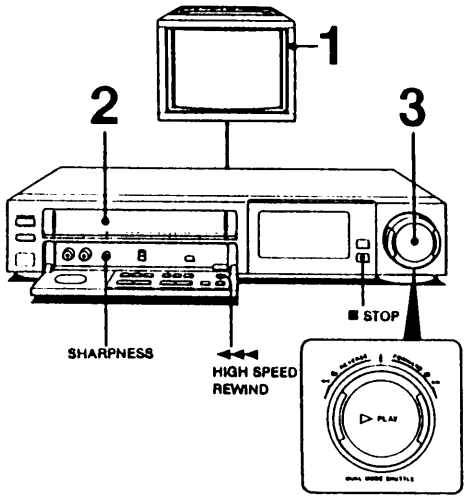
2 Call up the TUNER PRESET menu.

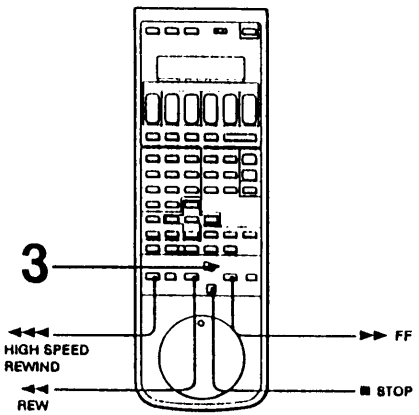
3 Move cursor to FINE TUNING.
The fine tuning meter appears.

4 Press ◀ or ▶ to obtain the best picture.
When ◀ or ▶ is pressed, the dot will move to AFT OFF automatically and the AFT indicator in the display window will be turned off.

5 Press EXECUTE to store that position and return to the original screen.

Playback





Playing a Tape

1 Turn on the TV and select the programme position for the VTR.
If VTR-TV connection is made via EURO-AV, select the input for the VTR.

2 Insert a cassette.
The VTR will be turned on. If your cassette has its safety tab removed, playback starts automatically.

3 Press ▷.
Playback starts.
The VTR automatically rewinds the tape when it reaches the end.

To stop playback
Press ■ STOP.

To advance the tape rapidly
Turn the DUAL MODE SHUTTLE ring clockwise (►►), or press ►► FF on the Commander during stop mode.

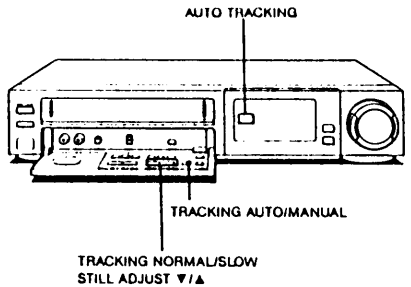
To rewind the tape
Turn the DUAL MODE SHUTTLE ring counterclockwise (◄◄), or press ◄◄ REW on the Commander during stop mode.

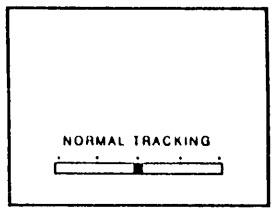
To rewind the tape at high speed
Press ◄◄◄ HIGH SPEED REWIND.

To get a sharper picture
Turn the SHARPNESS control toward SHARP.

To get a softer picture
Turn the SHARPNESS control toward SOFT.

When the tape is played back to the end
The tape will be automatically rewound to the beginning (auto rewind). The power will remain on.





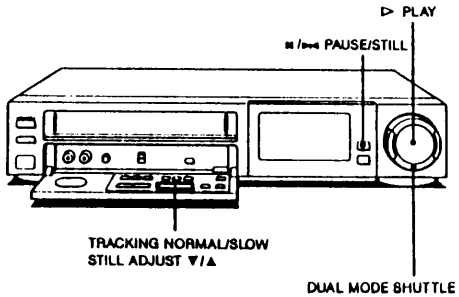
Picture Adjustments

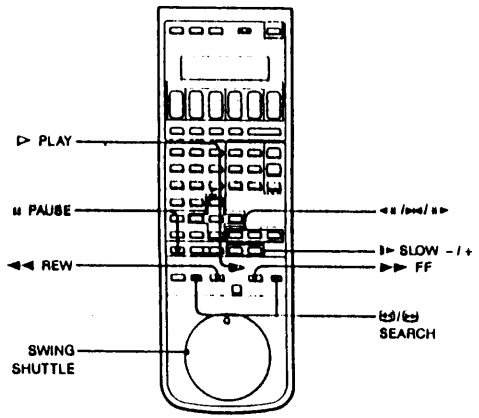
■ Auto tracking function
The tracking condition is automatically adjusted on this VTR. The AUTO TRACKING indicator blinks while the VTR is searching for the best tracking condition and lights when maximum playback picture is obtained. The automatic tracking control is activated in the following conditions:
— when the cassette is inserted and played back.
— when the recording mode on the playback tape is switched between SP and LP.
— when the picture is distorted by scratches etc. on the tape.
— when the AUTO TRACKING indicator is turned on by pressing TRACKING AUTO/MANUAL after the picture is adjusted manually. (See below.)

■ Manual adjustment during normal playback
If streaks or snow appear, adjust the picture using the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲.

Press either ▼ or ▲ to obtain the best possible picture.
The tracking meter will appear on the TV screen and the AUTO TRACKING indicator will be turned off.

Notes on Automatic Tracking
- When the manual adjustment proves unsatisfactory, press both of the TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲. The tracking condition will return to the center position.
- Tracking adjustment may not be possible when the recording condition of the tape is very poor.





Various Playback Modes

■ To obtain a still picture
During playback mode press II /▷II PAUSE/STILL on the unit or II PAUSE or ▷II on the Commander. To resume normal playback, press ▷ PLAY, II /▷II PAUSE/STILL, or II PAUSE. When the pause mode lasts for more than 5 minutes, the unit will re-enter the playback mode automatically.

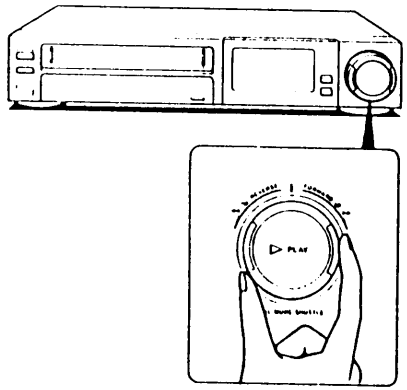
■ To search for a particular scene — Picture search
During playback mode, press ◄◄ REW or ►► FF.
While the button is pressed, a high speed picture without sound will appear on the TV screen. When the button is released, the unit will return to the previous mode.

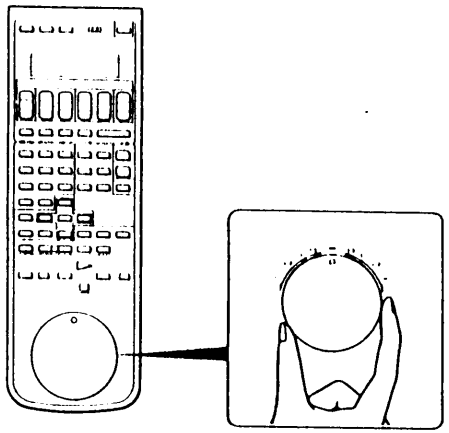
■ To watch the picture during fast-forward or rewind mode — Locked picture search
During the playback mode, press ⊟ SEARCH or ⊟ SEARCH on the Commander. A high speed picture in forward or reverse will appear on the screen even when the button is released. To resume normal playback, press ▷ PLAY.

■ To watch slow motion playback
During playback or still mode, press I► SLOW on the Commander. Change the slow motion speed with the + or – buttons. Press + to increase the playback speed, and – to decrease the playback speed.

■ To see the picture momentarily while the unit is in the fast-forward or rewind mode without picture on the TV screen
During fast-forward, turn the DUAL MODE SHUTTLE ring clockwise (►►) or press ►► FF on the Commander. During rewind, turn the DUAL MODE SHUTTLE ring counterclockwise (◄◄) or press ◄◄ REW on the Commander. The high speed playback picture can be seen as long as the ring is held in that position, or the button is pressed. Release the ring or button to return to the previous mode.

■ To watch a frame-by-frame picture
During still mode, press II► to advance the picture one frame. Press ◄II to reverse the picture one frame. Each press of ◄II / II► will move the picture one frame. Press ▷ PLAY to resume normal playback.





■ To watch reverse direction playback, and slow picture
During forward playback of the desired mode, press < on the Commander. Press ▷ PLAY or > to resume forward playback.

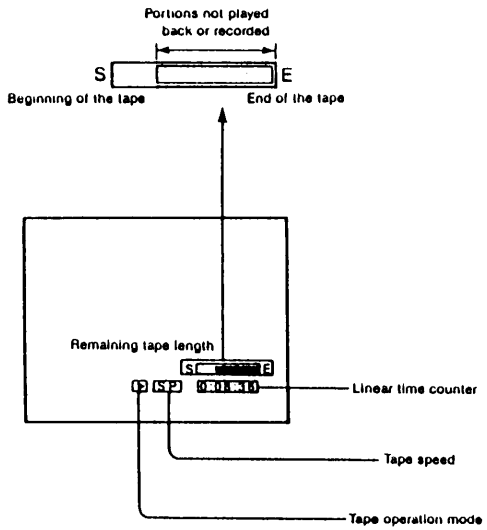
To eliminate streaks or noise bands during slow motion play
Adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ inside the front panel. The picture can be adjusted easily in faster speed playback.

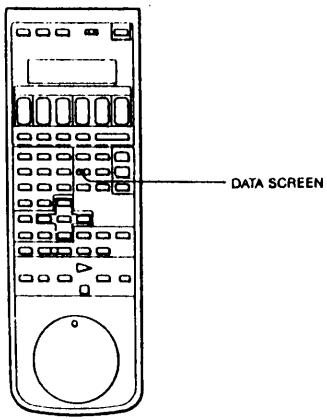
To eliminate the bands on the top or bottom of the screen in still mode
Change to the slow motion play mode and adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲.

To eliminate picture shaking during still mode
Adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ inside the front panel.

Notes on picture search
The picture may turn to a monochrome picture during picture search when playing back tapes recorded in LP mode depending upon the condition of the connected TV.

■ To enjoy various playback modes by the DUAL MODE SHUTTLE ring or the SWING SHUTTLE dial
Various playback modes as illustrated can be selected with DUAL MODE SHUTTLE ring on the unit or the SWING SHUTTLE dial on the Commander from any playback mode.
The same speed is available in the reverse direction.
Turn the ring or the dial and hold it at the position where the desired playback speed is obtained.
When you release the ring or the dial, the picture will freeze.
To resume normal playback, press ▷ PLAY.





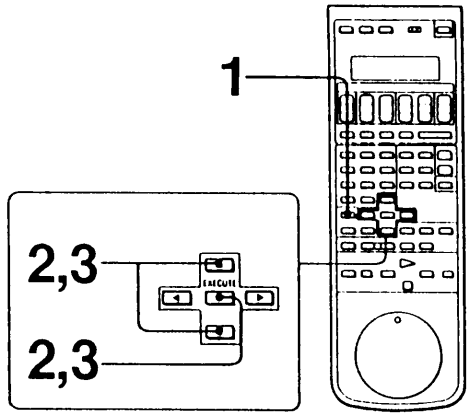
Data Screen

Data screen information illustrated on the left will automatically appear on the screen during playback or recording as a reference. Note, however, that the data screen will not be displayed when the VTR is in slow motion or playback pause mode.

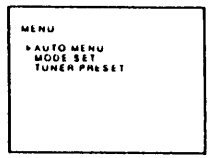
■ **To erase or display the data screen**
Press DATA SCREEN.

Notes on the remaining tape length indicator

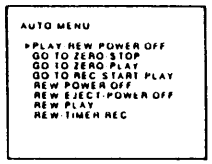
- The remaining tape length indicator only shows the approximate amount of tape left.
- The indication may shift vertically during the fast-forward or rewind mode.
- It may not operate properly when a short tape, such as the E-30 and VHS-C type cassette, or when a non-standardized tape is inserted.



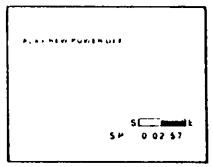
1



2



3



Assigning a Desired Operation Mode

Guided by the AUTO MENU, you can make the VTR enter the desired operational sequence automatically.

1 **Press MENU while the VTR is in the stop mode.**
The main MENU appears.

2 **Move cursor with ▲ or ▼ to AUTO MENU and press EXECUTE.**
The AUTO MENU appears.

3 **Move cursor with ▲ or ▼ to the desired operational sequence and press EXECUTE.**
The selected operation will begin.

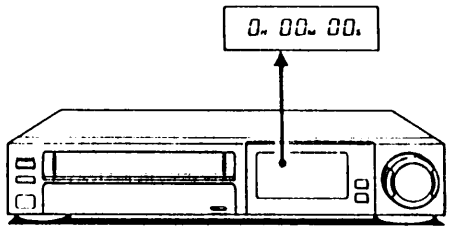
The selected operating mode will be superimposed on the TV screen for a few seconds. The AUTO indicator will light in the display window during AUTO MENU operation.

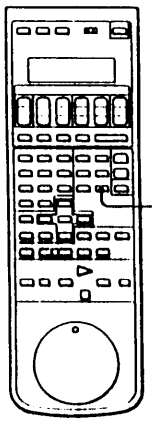
Notes on AUTO MENU operation
AUTO MENU cannot be operated if there is no cassette installed or if the VTR is in modes other than stop mode. A short beep alerts you if the AUTO MENU is not operable.

Note on "GO TO REC START-PLAY"
The recording start point data will be erased from the memory after the following operations and "GO TO REC START-PLAY" will not be operable.

- When COUNTER RESET is pressed.
- When cassette is ejected and re-inserted.
- When HIGH SPEED REWIND is pressed.

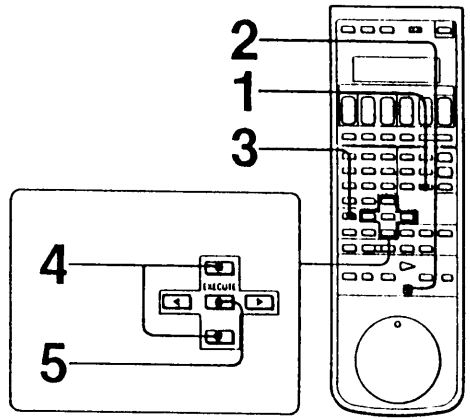
Use of the Tape Counter





Understanding Counter Zero Position

The tape counter on this VTR can be used as a reference when you wish to locate a certain scene after recording or playback. Press COUNTER RESET to set the counter to "0H00M00S" (counter zero position) before operation. The VTR will keep counting the length of tape being played back or recorded. Note, however, that the tape counter will not count the portions of tape with no signals recorded. This VTR automatically resets the counter to zero whenever a cassette is inserted. Two additional features using COUNTER RESET are available on this VTR.



AUTO MENU

PLAY-REW-POWER OFF
▸GO TO ZERO-STOP
GO TO ZERO-PLAY
GO TO REC START-PLAY
REW-POWER OFF
REW-EJECT-POWER OFF
REW-PLAY
REW-TIMER REC

Tape Return

The VTR can search for the counter zero position and stop. This function is useful for locating a particular scene after recording or playback.

1 Press COUNTER RESET at the desired scene during recording or playback.

2 Press ■ to stop recording or playback.

3 Press MENU and select AUTO MENU. See "Assigning a Desired Operation Mode" for operation.

4 Move cursor to "GO TO ZERO-STOP."

5 Press EXECUTE.

AUTO MENU

PLAY-REW-POWER OFF
GO TO ZERO-STOP
▸GO TO ZERO-PLAY
GO TO REC START-PLAY
REW-POWER OFF
REW-EJECT-POWER OFF
REW-PLAY
REW-TIMER REC

Tape Return Play

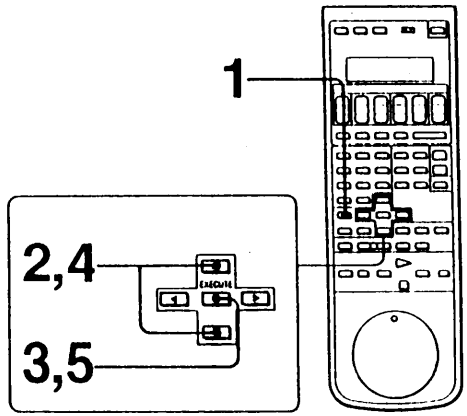
The VTR will even search and start playback from the counter zero position after recording or playback.

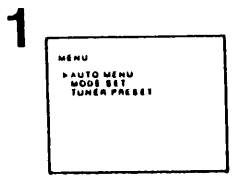
1 Repeat steps 1 to 3 in the Tape Return operation.

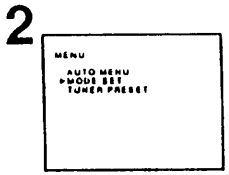
2 Move cursor to "GO TO ZERO-PLAY"

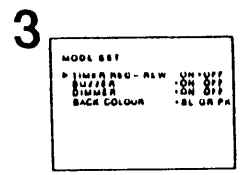
3 Press EXECUTE.

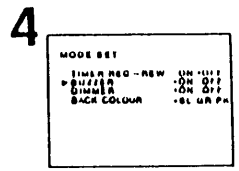
Timer Activated Recording

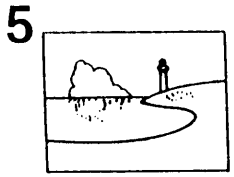












Timer Recording on this VTR

Up to eight preselected programmes, can be set on this unit, up to one month in advance.

Before You Begin

- Turn on the TV and adjust it to view the VTR output.
- Check to see that the clock on the Commander and the VTR shows the present time.
- To operate the SLV 373VP, read "VPS Function" first.

To Turn On/Off the Warning Buzzer

It is possible to turn on or off the beep sound which this VTR will give whenever an illogical operation command is sent from the Commander.

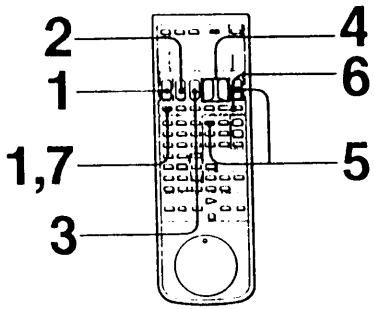
1 Press MENU in the stop mode.
The main MENU appears.

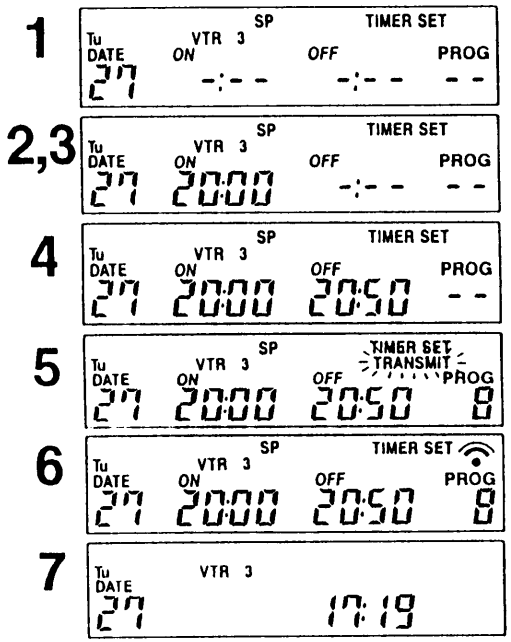
2 Move cursor with ▲ or ▼ to MODE SET.

3 Press EXECUTE.
The MODE SET menu appears.

4 Move cursor with ▲ or ▼ to BUZZER.
Select ON to activate and OFF to deactivate the buzzer by ◄ or ►.

5 Press EXECUTE to store the setting and return to the original screen.





Operation

Example: To record a programme broadcast from 20:00 to 20:50 on Tuesday, November 27, 1990 on programme position 8.

1 Press TIMER SET first, then press D until 27 appears.
The day of the week, Tu (Tuesday), is automatically set.

2 Set the recording start hour with TURN ON H.

3 Set the recording start minute with TURN ON M.

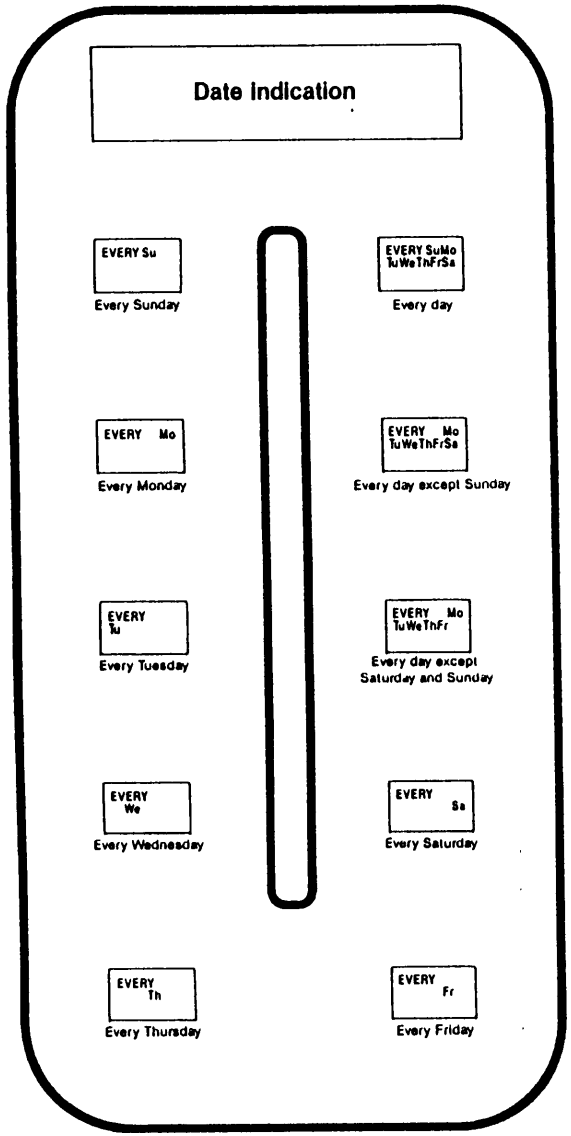
4 Set the recording end hour and minute with TURN OFF H and M referring to step 2 and 3.

5 Set the programme position with the PROG + / – button. To select the recording speed LP, press REC MODE so that the LP indicator appears in the display.
The TRANSMIT indicator blinks to indicate that all of the items are entered.

6 Point the Commander to the VTR and press TRANSMIT.
With a beep sound, the VTR enters the timer recording standby mode. The PROGRAM LIST appears on the screen for a few seconds.

7 Press TIMER SET so that the present time appears on the LCD display.
The VTR turns on, starts recording at the selected time, and turns off after recording ends.

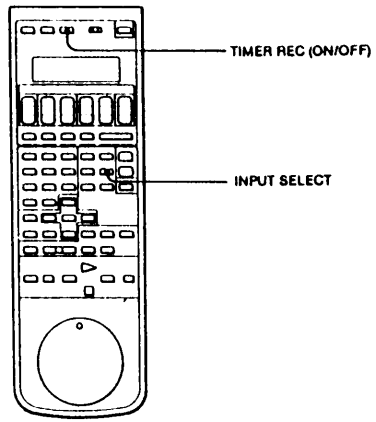
Timer Activated Recording



Daily/Weekly Recording

This VTR can be preset to record the same programme each day of the week (daily recording) or the same programme on a specific day of every week.

Press D – on the Commander to change the LCD display in the order shown in the illustration instead of step 1 in the "Operation." When the desired recording mode is set and transmitted to the VTR, the corresponding indicator lights in the display window.



To Set Other Programmes

Repeat steps 1 to 6 in "Operation" before step 7.

To Stop Timer Recording

Press TIMER REC ON/OFF.

To Record from Equipment Connected to EURO-AV or LINE IN 2 VIDEO/AUDIO Jacks

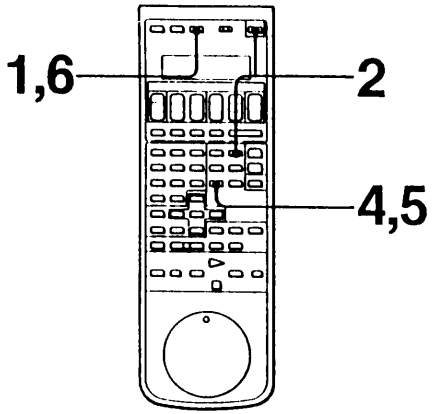
Press INPUT SELECT anytime in step 1 to 5 to change the indication from PROG – – to LINE L1 to LINE L2.

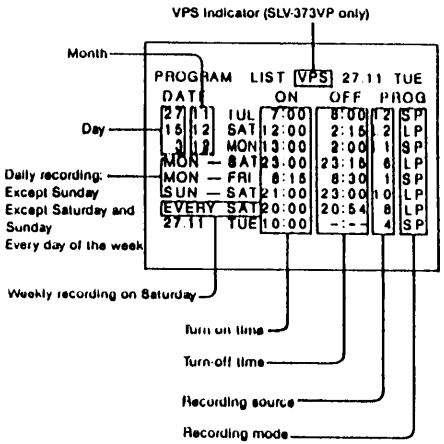
If a short beep sounds repeatedly when TRANSMIT is pressed
When BUZZER ON is selected in the MODE SET menu, the short beep indicates that the transmission is not received on the VTR. Press TRANSMIT again, then check the items below.
- No cassette is inserted
- An illogical setting has been made.
- Timer setting can only be performed when the VTR is in turned off, stop, or timer recording mode.
- Eight timer settings have already been made.
- The tape is at its end.

If the tape is ejected after pressing TRANSMIT
The safety tab of the inserted cassette is removed

Understanding "one month"
This VTR sets the timer to record programmes to be broadcast between today and one day before the same date in the next month.

Timer Activated Recording





Checking the Timer Settings

The timer settings can be checked while the VTR is in the timer standby mode by displaying the programme list on the screen.

1 Press TIMER REC ON/OFF to turn off the TIMER REC ON/OFF indicator in the display window.

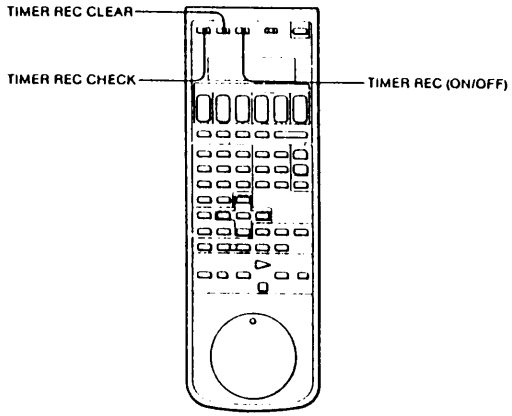
2 Turn on the VTR and press TV/VTR to light the VTR indicator.
(Only when connection is made via EURO-AV.)

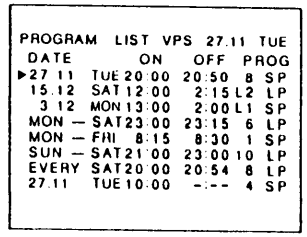
3 Turn on the TV.
Set to the programme position for VTR if VTR-TV connection is made via the aerial sockets. Select VTR input on the TV if VTR-TV connection is made via EURO-AV.

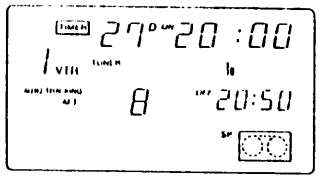
4 Press TIMER ON SCREEN.
The programme list appears.

5 Press TIMER ON SCREEN again to return to the original screen.

6 Press TIMER REC ON/OFF to return to the timer recording standby mode.







Clearing/Correcting the Timer Setting

■ Referring to the programme list

1 Display the programme list referring to steps 1 to 4 in "Checking the Timer Settings."

2 Press TIMER REC CHECK to call up and move cursor to the setting you want to correct or clear.

3 To clear the setting, press TIMER REC CLEAR.
If there are other timer settings on the list, press TIMER REC ON/OFF return to the timer recording standby mode.
To correct the setting, re-enter all of the items using the Commander. Refer to "Timer Activated Recording — Operation" steps 1 to 6.
The VTR automatically enters the timer recording standby mode.

■ Clearing the setting without the programme list

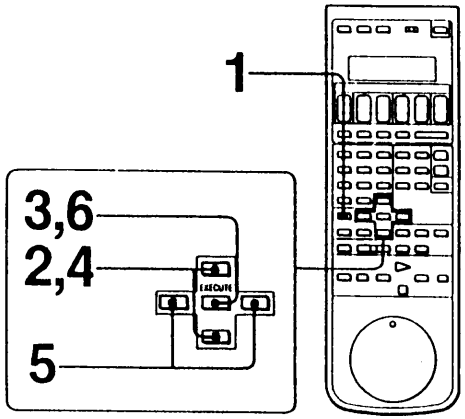
1 Press TIMER REC ON/OFF.

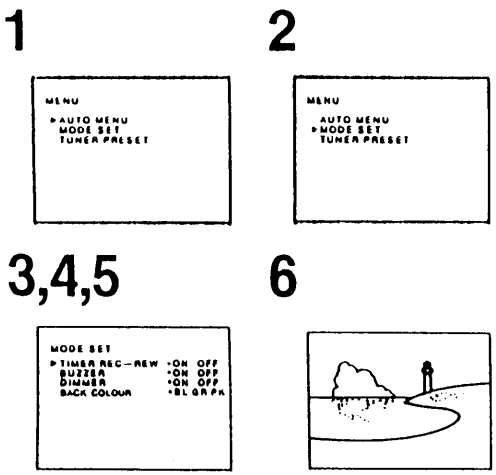
2 Press TIMER REC CHECK repeatedly until the desired programme appears in the display window.

3 Press TIMER REC CLEAR.

4 Press TIMER REC ON/OFF to return to the timer recording standby mode if there are other programmes set for timer recording.

Timer Activated Recording





To Automatically Rewind the Tape After Timer Recording

1 Before setting the timer, press MENU.

2 Move cursor with ▲ or ▼ to MODE SET in the main menu.

3 Press EXECUTE.

4 Move cursor with ▲ or ▼ to TIMER REC-REW.

5 Press ◀ or ▶ to move the dot to ON. To cancel this setting, move the dot to OFF.

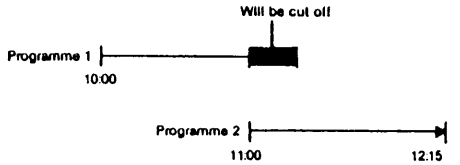
6 Press EXECUTE to store this setting and return to the original screen.

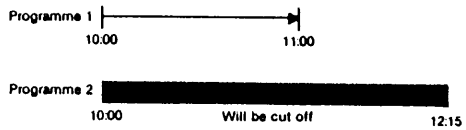
Using the VTR during Timer Recording Standby Mode

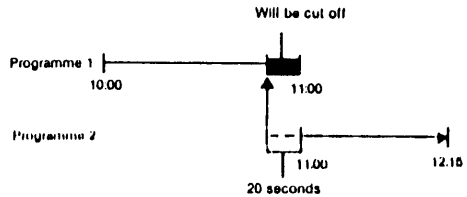
1 Press TIMER REC ON/OFF to turn off the TIMER REC indicator.

2 Turn on the power of the VTR. The VTR is ready to be used.

3 After using the VTR, press TIMER REC ON/OFF and light the TIMER indicator to re-enter the timer recording standby mode.







When the Timer Settings Overlap

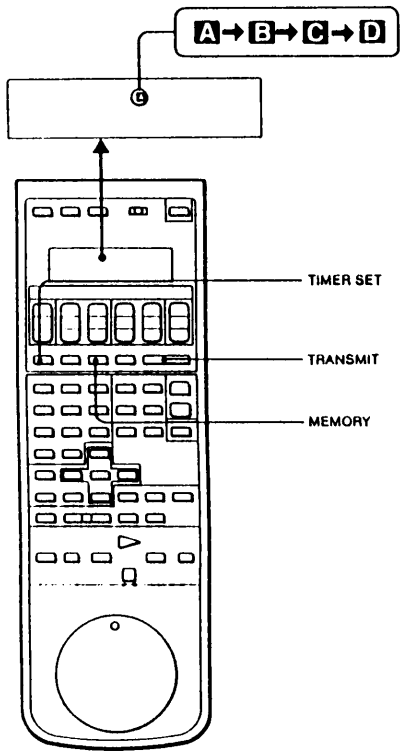
■ **If the setting of two programmes overlap**
The recording of the following programme will begin automatically before the proceeding programme ends.

■ **If the turn on time of two programmes are the same**
The VTR will record the programme with the smaller programme number or listed first on the programme list. The programme with the larger programme number or listed lower in the list will be erased.

■ **If the recording end time of programme 1 and the recording start time of programme 2 are the same**
The last 20 seconds of programme 1 will not be recorded because the VTR will enter the recording pause mode for programme 2 before programme 1 ends.

Power interruption during timer recording standby/timer recording mode
- If the power interruption lasts less than an hour, the VTR will enter the recording standby mode or resume timer recording when the power is recovered.
- If the power interruption exceeds an hour during the recording standby mode, the timer settings will be cleared.
  Reset the clock and re-enter the items for timer recording again. If the power interruption occurred during timer recording, the recording will stop and the VTR will be turned off.

Timer Activated Recording



To Store the Frequently Used Timer Settings in the Commander

The items selected for one timer recording programme will be erased from the LCD when TIMER SET is pressed, and cleared from the programme list as well when recording is over.
However, the turn-on/turn-off time and the programme position of up to four programmes can be stored in the Commander to be recalled later. This enables you to quickly access the most frequently used items, especially your favorite weekly programme, since the recording date will automatically be shifted to the next week after the recording is over.

■Storing the parameters

1 Press TIMER SET and MEMORY to indicate MEMORY A.

2 Set all of the items for timer recording referring to "Timer Activated Recording — Operation."

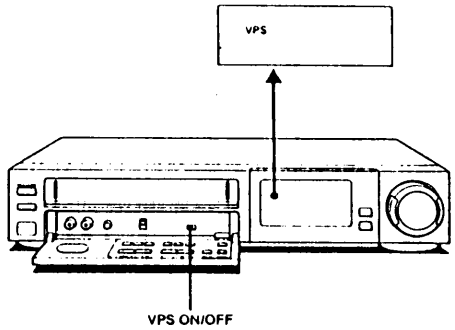
3 Press MEMORY to change the indication to B, C, or D, and repeat step 2 for other programmes.
The items set will be kept in the memory even when TIMER SET is pressed.

■Recalling and re-entering the items

1 Press TIMER SET and MEMORY to call up the desired memory indication (A, B, C, or D).

2 Make whatever changes necessary.

3 Press TRANSMIT.
The VTR enters the timer recording standby mode.



VPS (Video Programme System) Function (SLV-373VP only)

The German broadcasting system transmits VPS signals with the TV programmes which assures that your timer recording will be performed without missing any portion of it regardless of any earliness, time delay, extension, or broadcast interruption which might occur during that programme.

■Operation

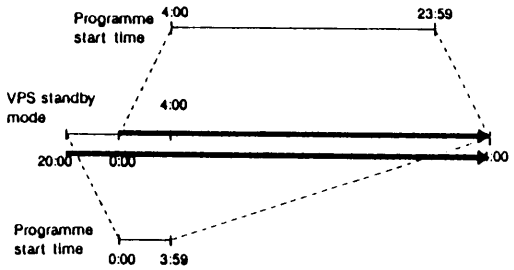
1 Check whether VPS is transmitted with the programme to be recorded.

2 Press VPS ON/OFF so that the VPS indicator lights in the display window.

3 Set the timer referring to "Timer Activated Recording — Operation."

Notes
- The VPS button is effective only when the TIMER REC ON/OFF indicator is turned off.
- If the VPS signal was not received on the VTR because it was too weak or because the station failed to transmit, timer recording will be performed without the VPS function regardless of the VPS indication.
- The recording will stop when the VTR receives a VPS programme interruption code during recording, for example, when an urgent news bulletin was inserted. As soon as the interrupted programme resumes, recording will continue.

Timer Activated Recording



■ **VPS standby mode**

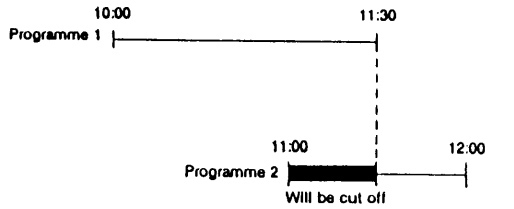
The VTR will enter the standby mode for VPS recording far before the turn on time and remains in the standby mode passed the preset turn on time until the VPS signal is received to prepare for any change in the actual broadcast time.

When the VPS timer recording is set for a programme which is expected to start between 4:00 and 23:59, the VTR will enter the standby mode at 0:00 that day and will keep on waiting for the VPS signal until 4:00 of the next day.

When the VPS timer recording is set for a programme which is expected to start between 0:00 and 3:59, the VTR will enter the standby mode at 20:00 the day before the recording day and will keep on waiting for the VPS signal until 4:00 on the recording day.

Note

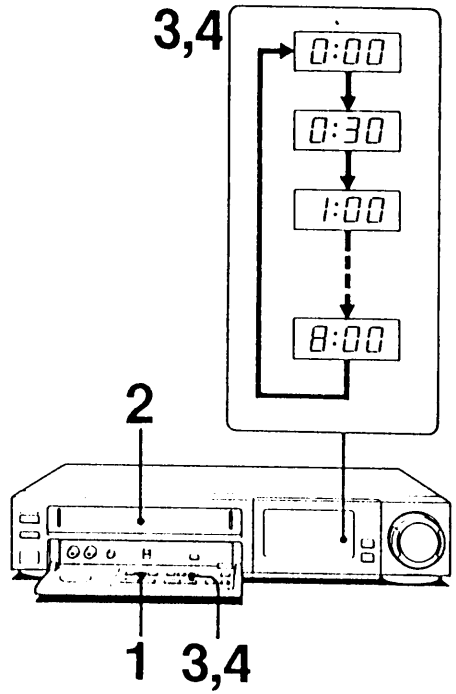
When the VTR is in the VPS standby mode, programme position numbers set for timer recording appear in the display window sequentially by few seconds.



■ **If the actual recording time overlaps with the next timer recording programme**

There may be cases when the actual broadcast time of two timer recording programmes overlap owing to the shift made by the VPS signal. In this case, the programme that was broadcast first always has priority. The recording of the second programme will begin only after the first programme is over.

Quick Timer Recording



What Is Quick Timer Recording?

The quick timer recording function provides a short cut to enter the timer recording mode or to use the timer to turn off the VTR after recording is over. The timer can be set to operate within 8 hours in units of 30 minutes.

Operation

If you are recording, skip steps 1 to 3.

1 **Press INPUT SELECT so that TUNER indicator is turned on.**

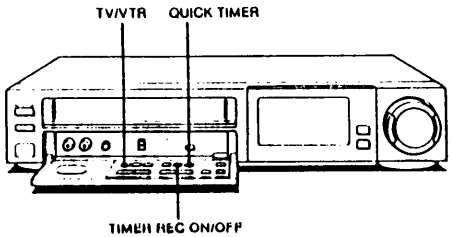
2 **Insert a cassette.**

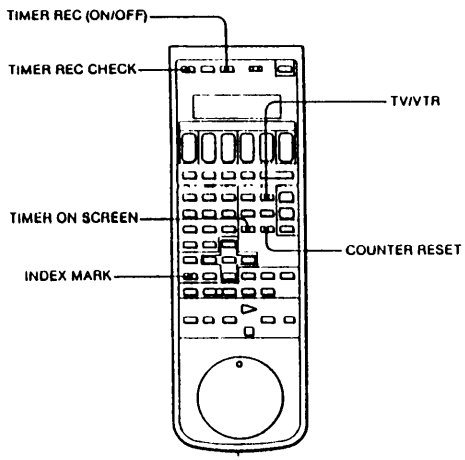
3 **Press QUICK TIMER.**
TIMER indicator lights in the display window. While 0:00 and programme position number is blinking in the display window, select the desired programme number with PROGRAM + / −.
A cassette with its safety tab removed will be ejected.

4 **Press QUICK TIMER again to start recording.**
Press QUICK TIMER again to set the recording duration within 30 seconds from step 3, otherwise the power will be turned off. Each press of QUICK TIMER changes the indication in the display window in units of 30 minutes.

5 **The recording duration will decrease minute by minute until 0:00 when the VTR will be automatically turned off.**

Quick Timer Recording





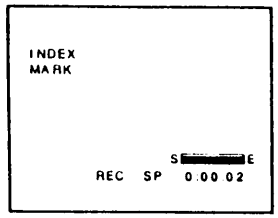
■ **Buttons operable during quick timer recording**

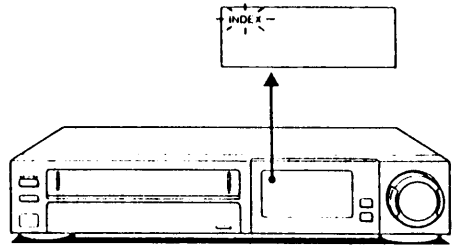
- **TIMER REC ON/OFF** stops quick timer recording.
- **QUICK TIMER** changes the recording duration.
- **TIMER ON SCREEN** displays the programme list.
- **TIMER REC CHECK** changes the programme number in the display window.
- **COUNTER RESET** resets the counter to zero.
- **INDEX MARK** marks an index signal.
- **TV/VTR** switches the screen to another programme received on the TV.

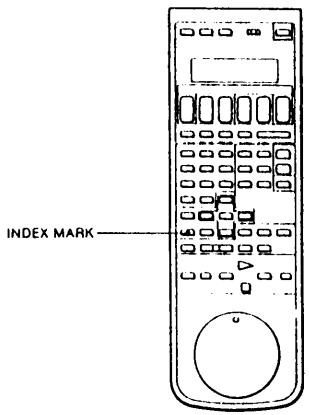
If power interruption occurs during quick timer recording
Recording will stop and the VTR will be turned off. If the power interruption lasted for less than one hour and if the power recovered within the quick timer duration, recording will resume from that instant.

If the unit is in timer recording standby mode
Press TIMER REC ON/OFF to turn off the indicator, then follow steps 4 and 5.

Index Function







Marking Index Signals

The desired position on a tape can be located easily by detecting the index signals. There are two ways in which to mark index signals: automatic and manual. When the index signal is being marked, INDEX flashes in the display window and the INDEX MARK display will appear on the screen.

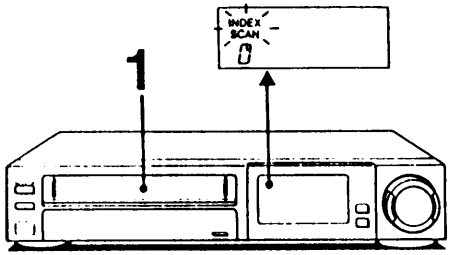
■ **Automatic index mark**
An index signal is automatically marked on the tape when the VTR starts recording.

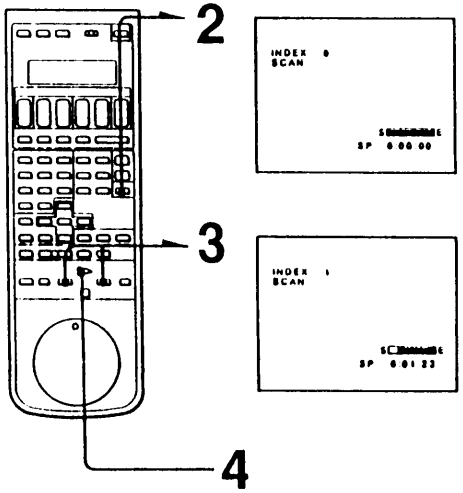
■ **Manual index mark**
Index signals can be marked at desired scenes. Press INDEX MARK to mark an index.

Notes

- Leave an interval of more than 2-minute interval between two index points so that the VTR can detect each INDEX signal accurately.
- The recorded sound will not be heard while marking an index signal. But the signal will not be erased.
- Index signals cannot be marked on a tape whose safety tab is removed or on an unrecorded portion of the tape.

Index Function





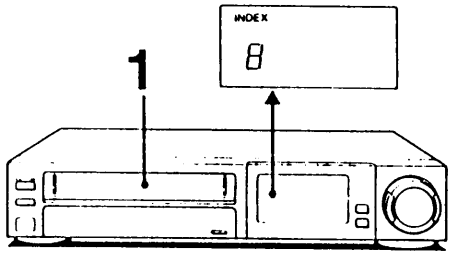
Playing Back from the Index Point — INDEX SCAN

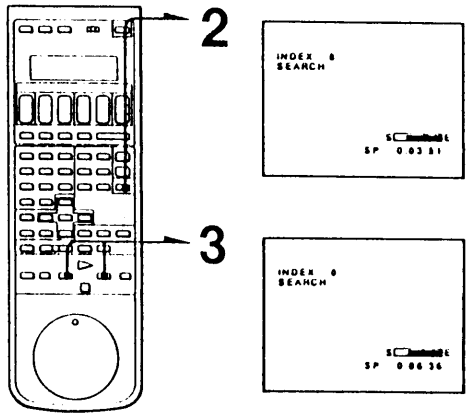
1 Insert a cassette with index signals.

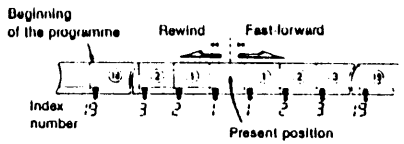
2 Press INDEX once.
INDEX or SCAN indicator blinks alternately and 0 (zero) lights in the display window.

3 Press ◀◀ to playback from the previous programme.
Press ▶▶ to playback from the programme ahead.
The VTR will advance to the next or previous index signal. Then the VTR will play the tape for approximately 10 seconds, and then move to the next index in the selected direction. The index number changes one by one.

4 Press ▷ when the desired index signal is detected.







Locating an Index — INDEX SEARCH

Direct search of the desired index point can be performed by entering the number of how many indexes ahead or behind it is from the current tape position. The VTR counts down how may more indexes should be searched for and displays the sequence in the display window. Up to 19 indexes from the present position can be searched.

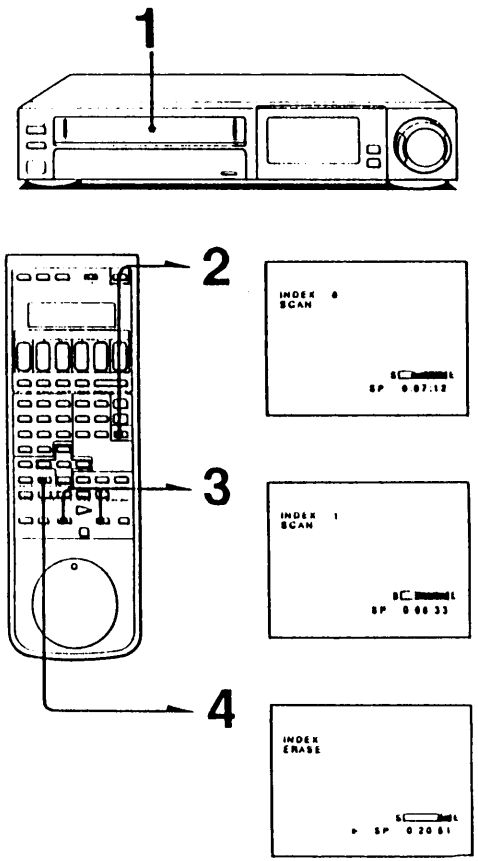
1 Insert a cassette with index signals.

2 Press INDEX to show how many indexes should be counted to reach the desired scene.

3 Press ◀◀ if the index is behind or ▶▶ if the index is ahead of the current tape position.
The VTR starts searching and the index number will be counted down to zero.

Playback from the desired point starts.

Index Function



Erasing an Index

The index marked on the tape can be erased.

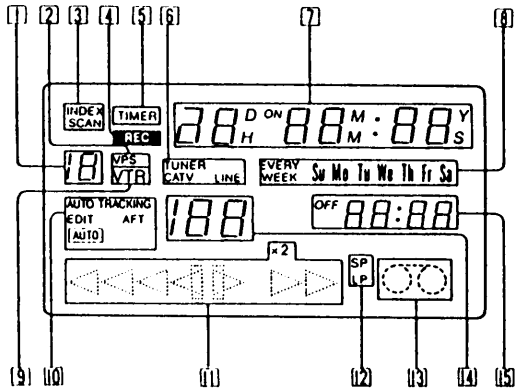
1 Insert a cassette with index signals.

2 Press INDEX once.

3 Press ◀◀ or ▶▶ to search for the index signal.
When the VTR detects an index signal, the VTR will play the tape for approximately 10 seconds from the index. If that is the index you want to erase, go to step 4. If that is not the index you want to erase, wait until the desired index is searched.

4 Press INDEX ERASE while the VTR is in step 3.
That index signal will be erased. While the index signal is being erased, the recorded sound will not be heard, but it will not be erased. If INDEX ERASE is not pressed within the 10 seconds of playback, the VTR will return to step 3.

Indications in the Display Window



[1] Index number indicator

[2] VPS indicator (SLV-373VP only)
Appears while timer recording is performed with VPS (Video Programme Ssytem) function.

[3] INDEX SCAN indicator
Appears while the VTR is scanning the index point.

[4] REC (recording) indicator
Appears while the VTR is performing normal recording, timer recording, or performing quick timer recording.

[5] TIMER recording indicator
Appears while the VTR is performing timer-recording, waiting for the turn-on time of timer recording, or performing quick timer recording.

[6] Input mode indicators

[7] Linear time counter and turn-on time of timer recording

[8] Day of the week indicator

[9] VTR indicator
Appears while viewing the playback of the VTR or a programme selected on the VTR. As long as this indicator lights in the display window, the programme selected on the TV does not appear on the screen.

[10] Various function indicators
AUTO TRACKING (Automatic tracking), EDIT, AFT (Automatic Fine Tuning) and AUTO (AUTO MENU display).

[11] Tape operation indicator

[12] Tape speed indicator

[13] Cassette indicator

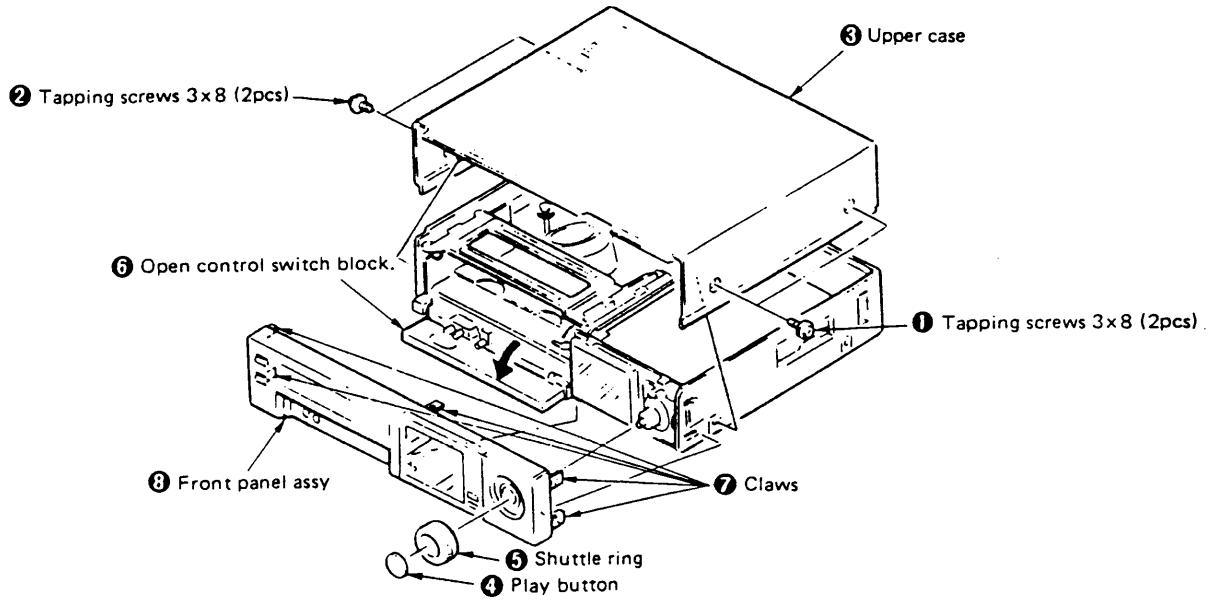
[14] Programme position/input mode indicators

[15] Current time, turn-off time of timer recording, and quick timer recording time.

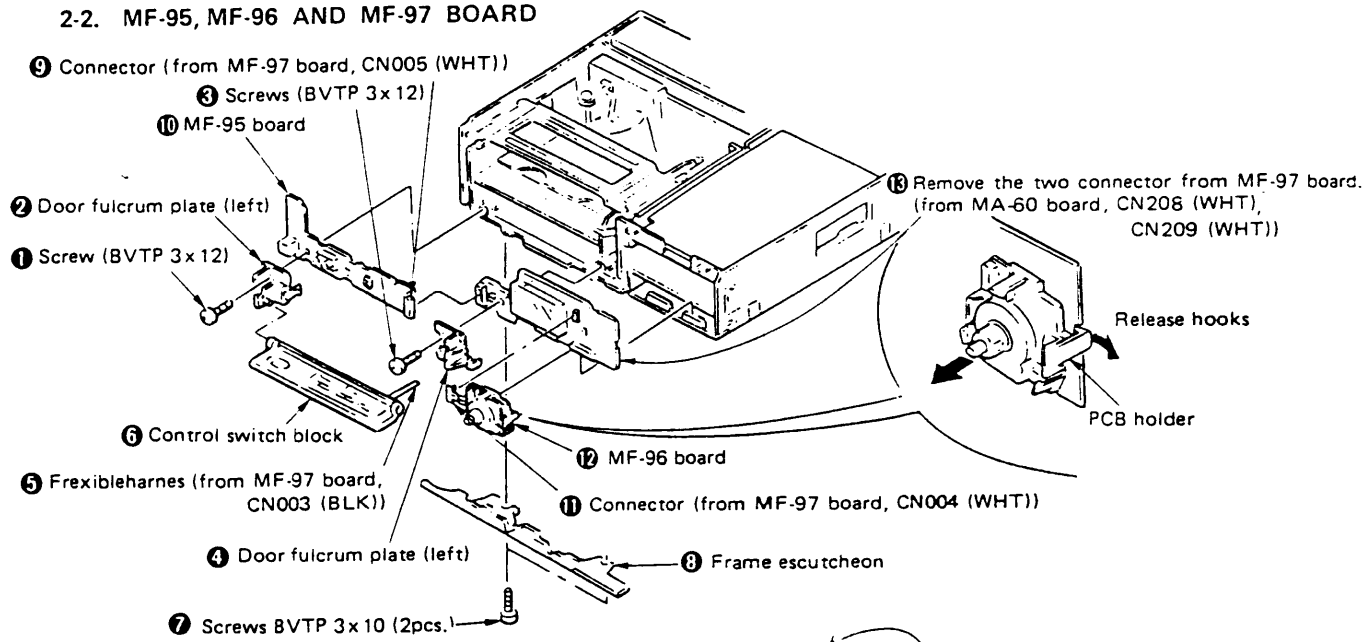
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

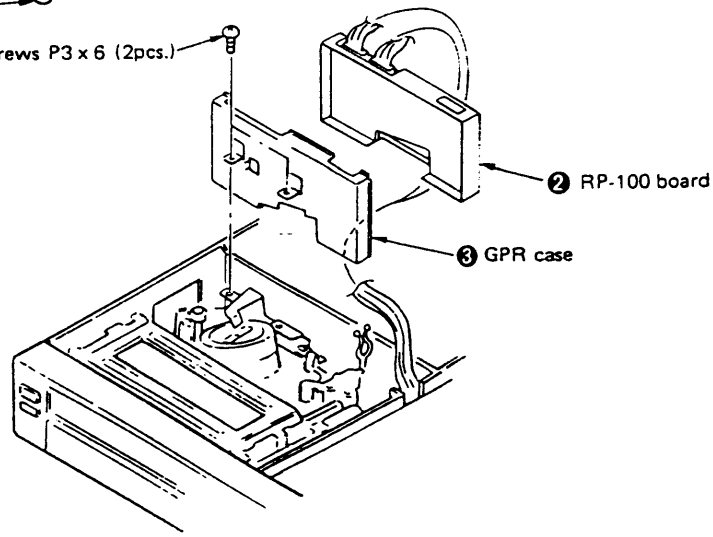
2-1. UPPER CASE, FRONT PANEL ASSY



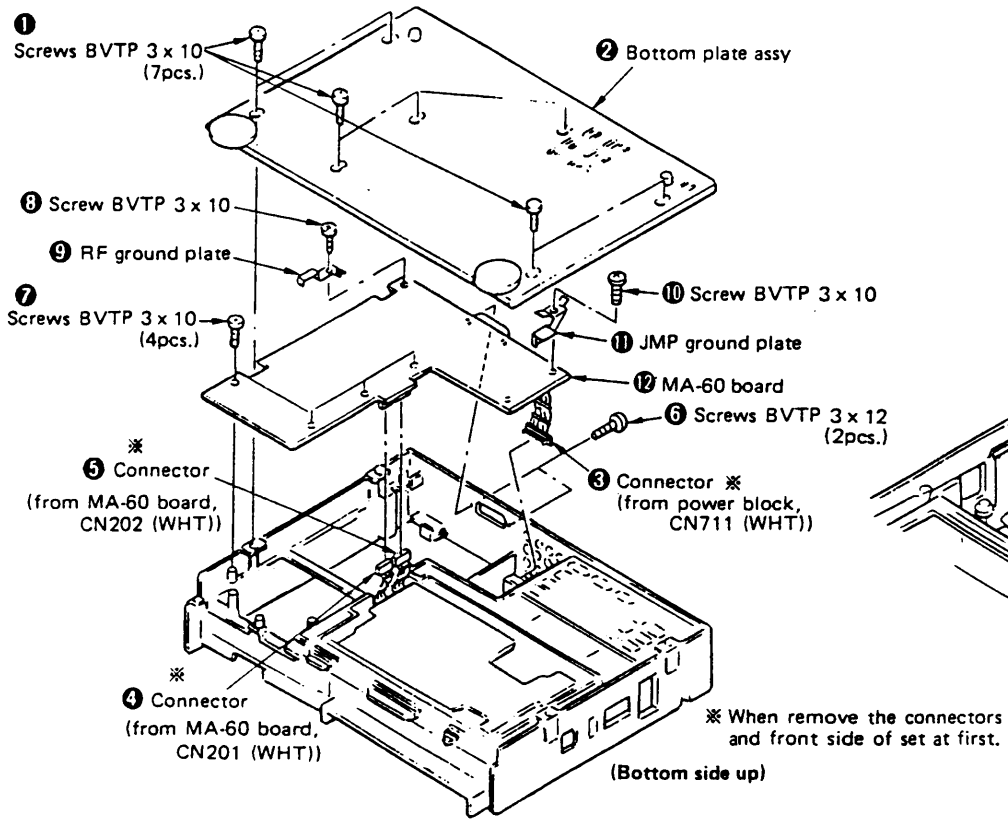
2-2. MF-95, MF-96 AND MF-97 BOARD



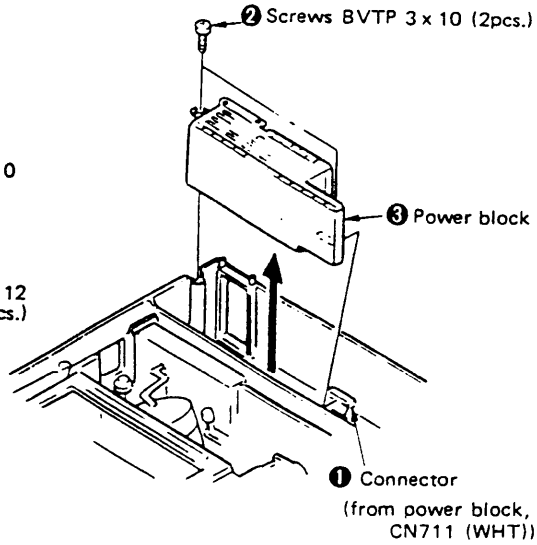
2-3. RP-100 BOARD



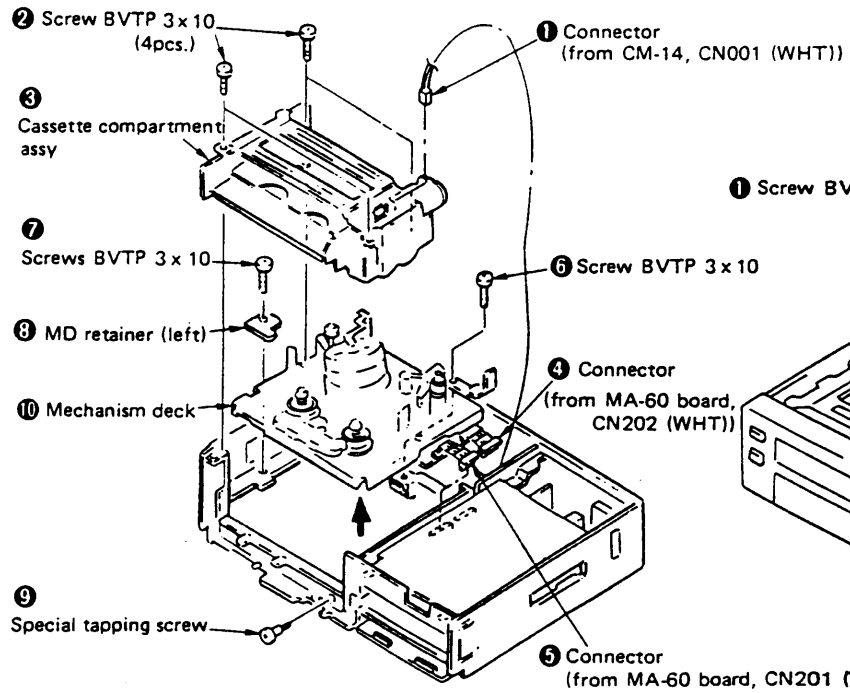
2-4. BOTTOM PLATE, MA-60 BOARD



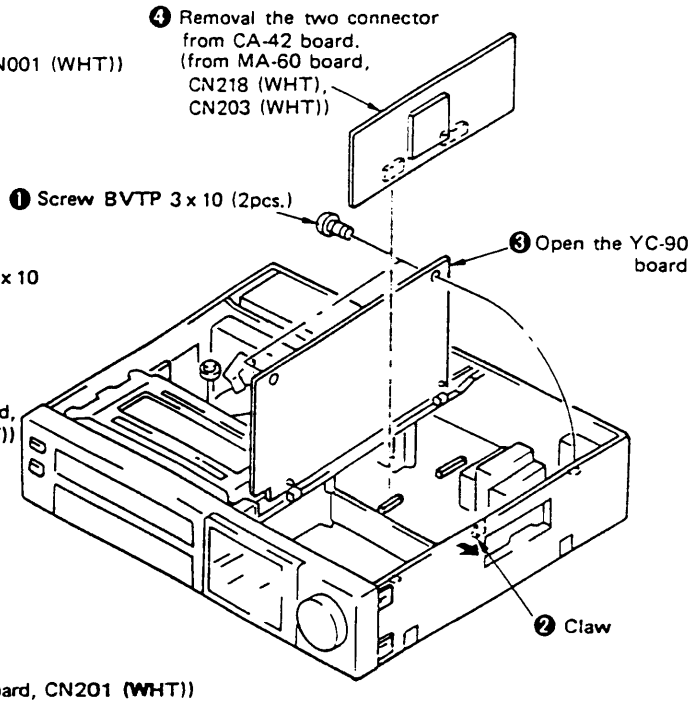
2-5. POWER BLOCK



2-6. CASSETTE COMPARTMENT ASSY AND MECHANISM DECK ASSY

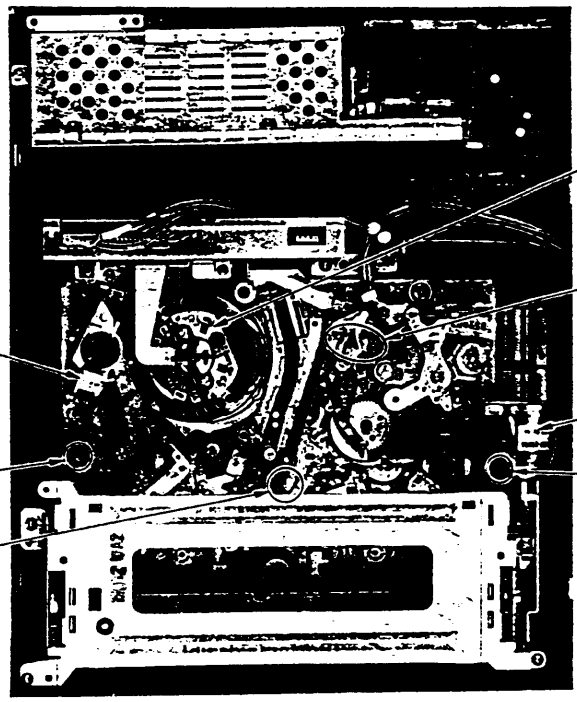


2-7. YC-90 AND CA-42 BOARD

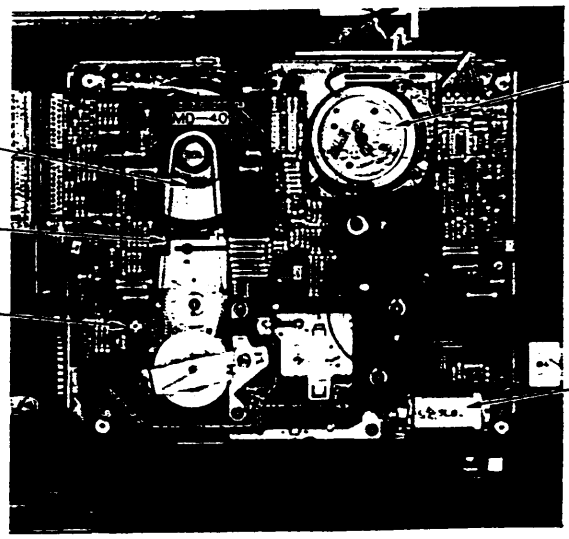


2-8. INTERNAL VIEWS

—Top Side—

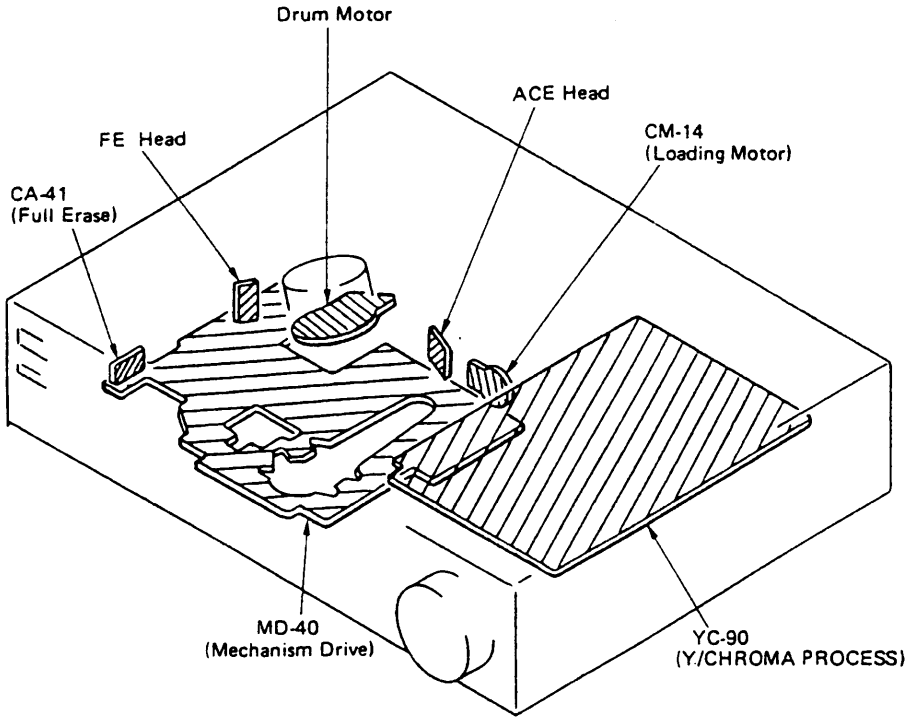


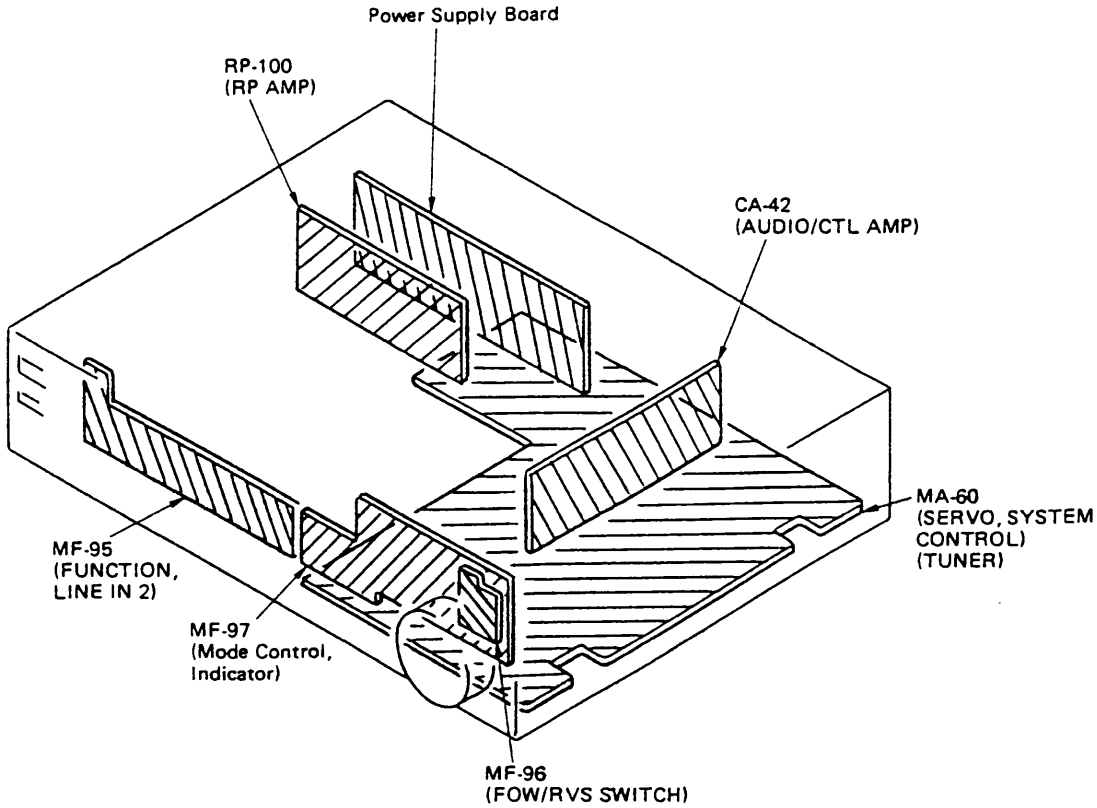
—Botoom Side—



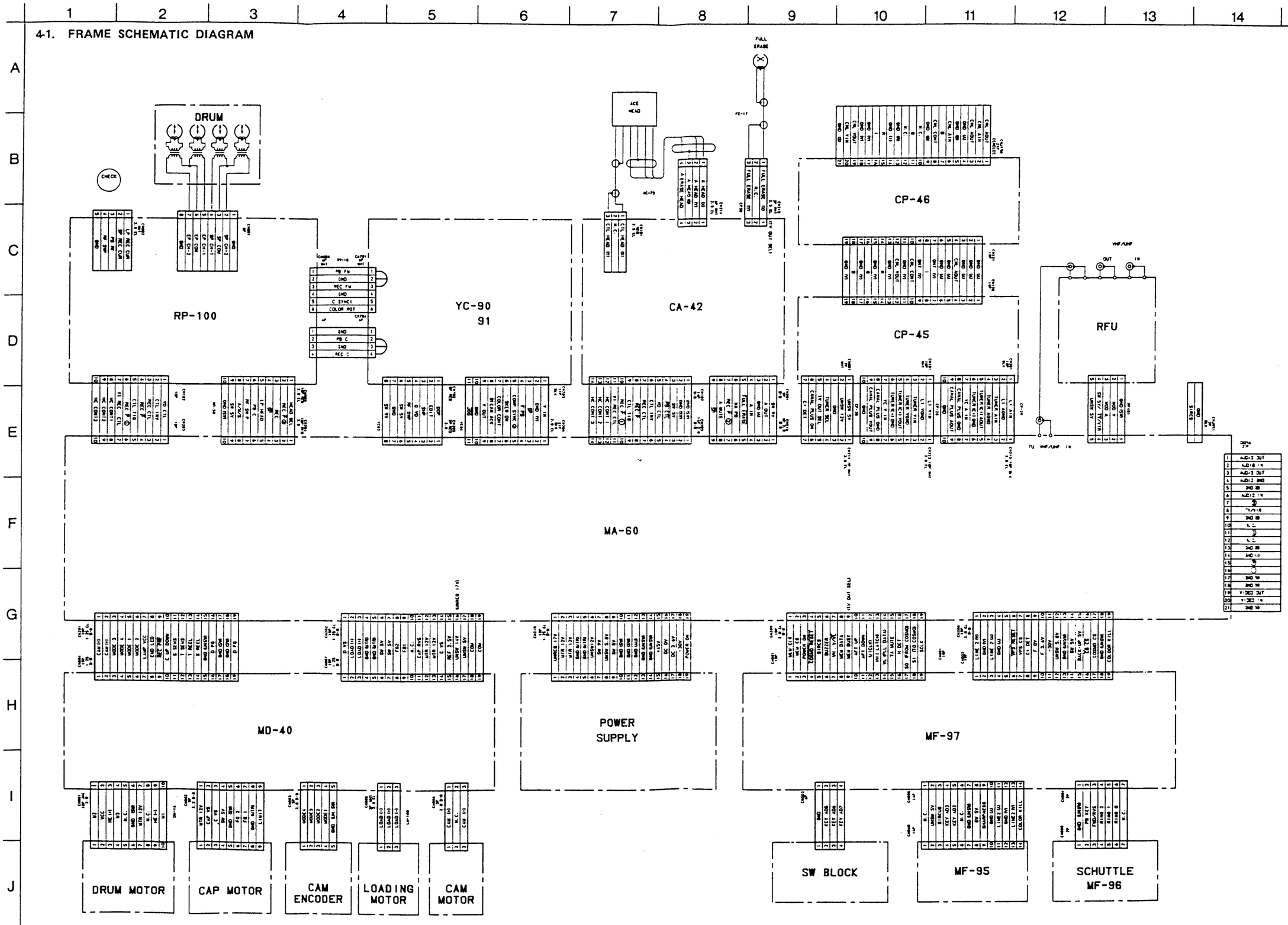
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION





4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○— : indicates a lead wire mounted on the component side.
- —● : indicates a lead wire mounted on the printed side.
- ⊗ or ● : Through hole.
- ▒▒ : Pattern from the side which enables seeing.
- ▒▒ : Pattern of the rear side.

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

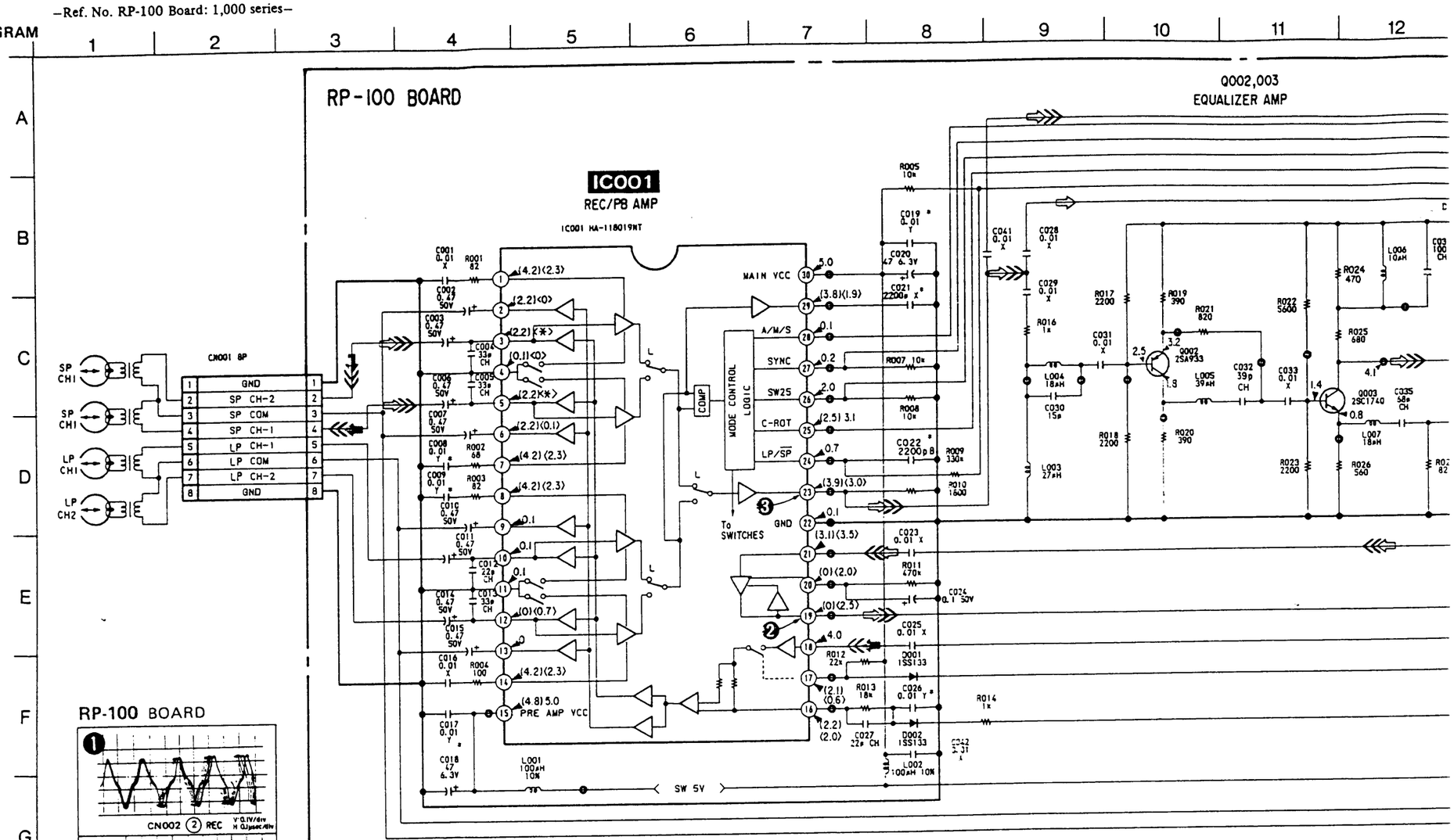
For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ——— : B+ line.
- - - - : B− line.
- Voltages are dc between measurement points and ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- ⇨ : IN/OUT direction of B line (+, −).
- Circled numbers refer to waveforms.

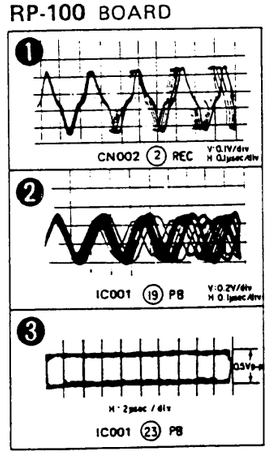
When indicating parts by reference number, please include the board name.

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

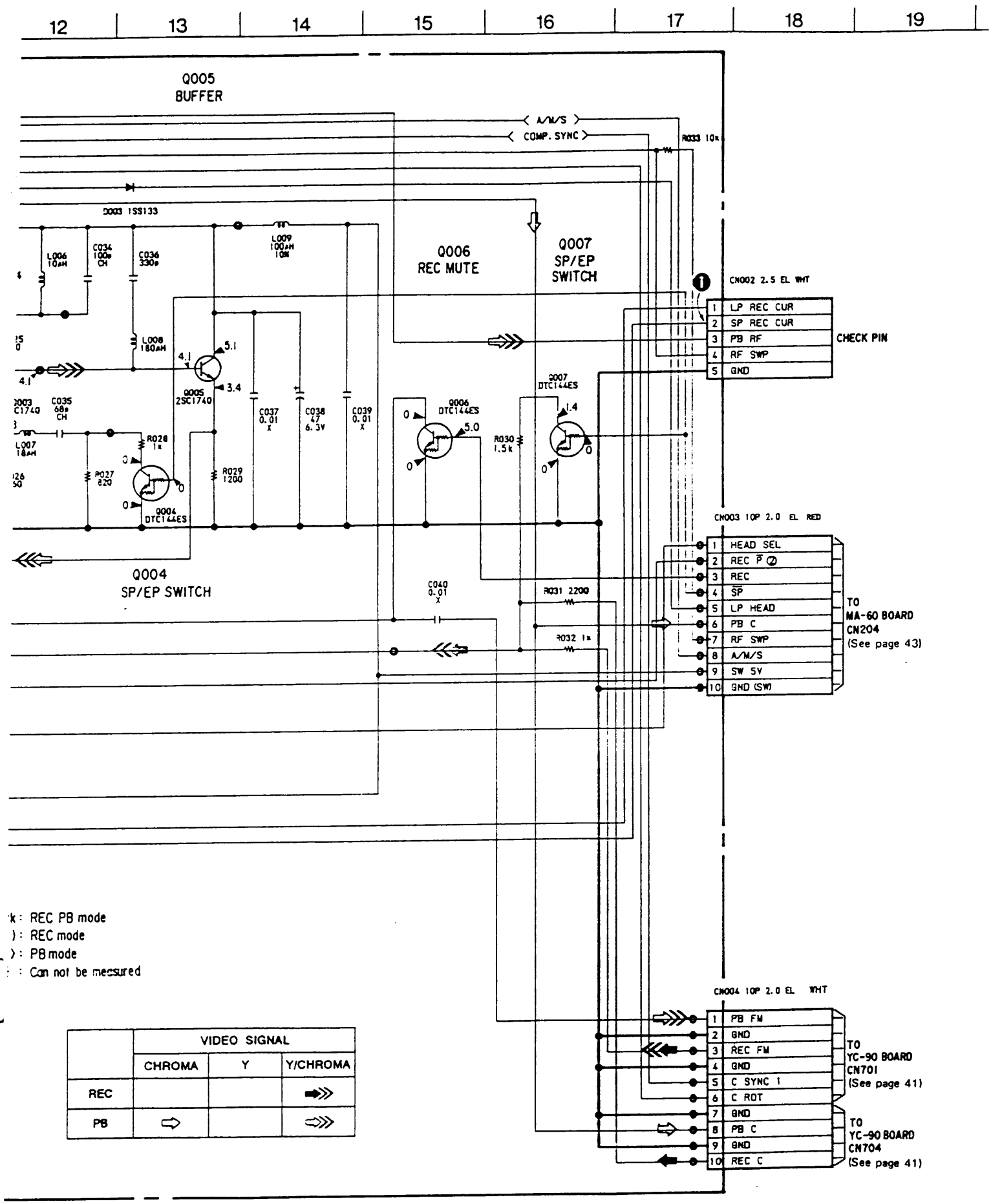
RP-100 (HEAD AMP) SCHEMATIC DIAGRAM
–Ref. No. RP-100 Board: 1,000 series–



RP-100 BOARD



No mark : REC PB mode
( ) : REC mode
〈 〉 : PB mode
✱ : Can not be me



k : REC PB mode
) : REC mode
) : PB mode
: : Can not be measured

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡
PB	⇨		⇨

HEAD AMP

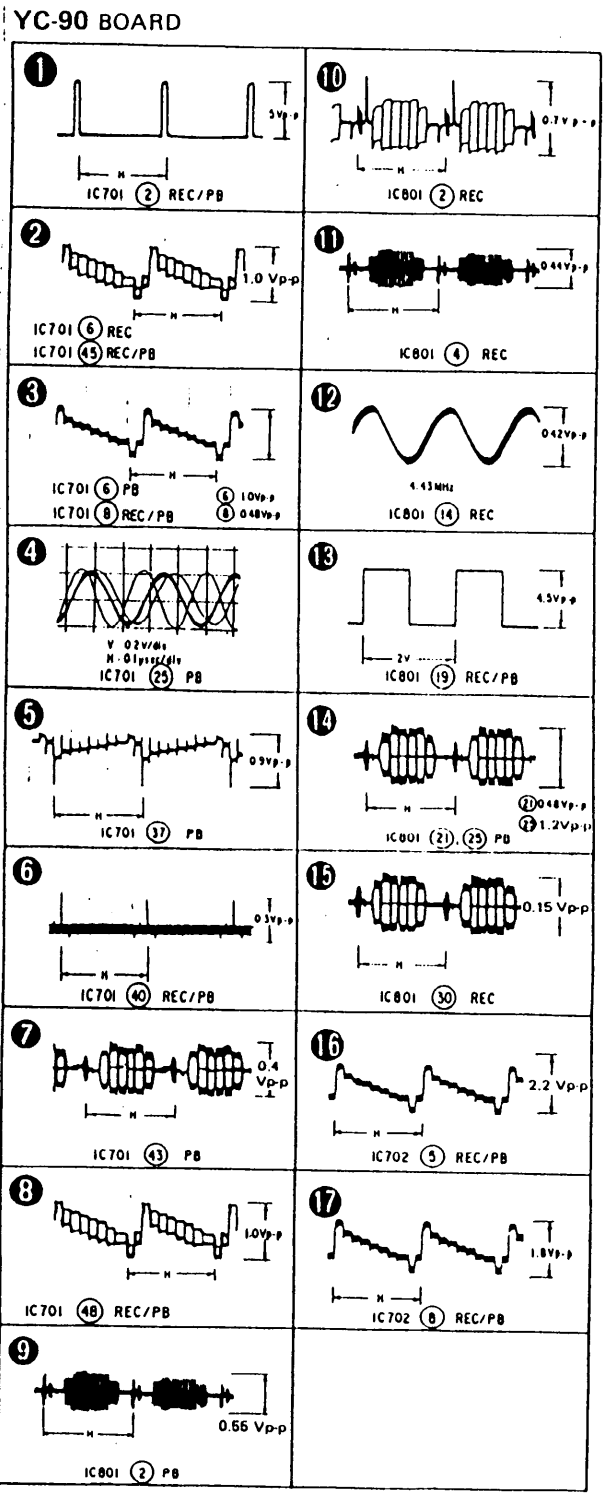
YC-90 (VIDEO) SCHEMATIC DIAGRAM

–Ref. No. YC-90 Board: 2,000 series–

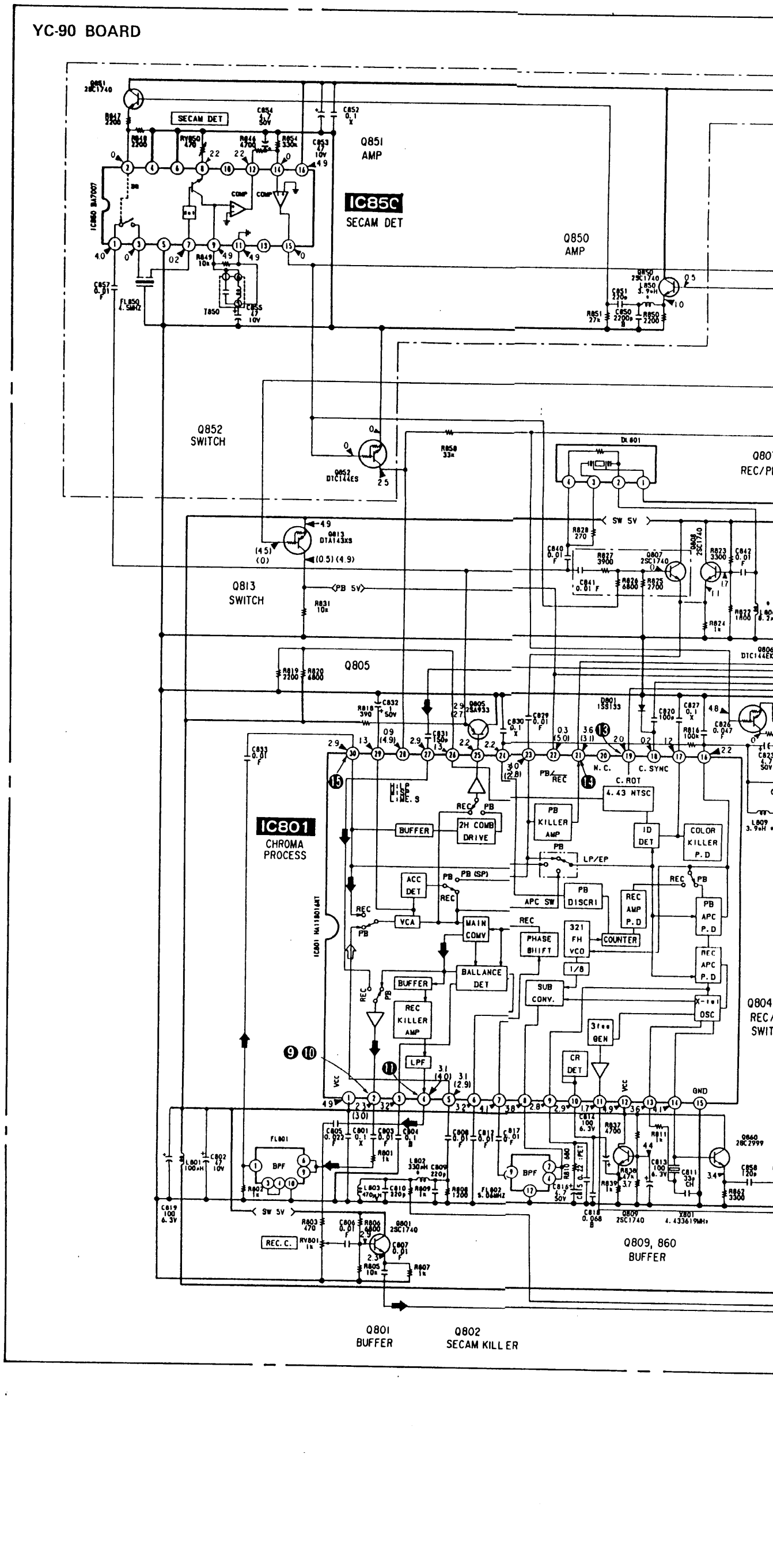
YC -90 BOARD

D701	C-5	Q723	A-7
D705	B-7	Q801	E-1
D801	D-4	Q803	E-3
		Q804	C-4
IC701	C-8	Q805	E-4
IC702	B-6	Q806	C-3
IC801	D-3	Q807	D-4
IC802	B-1	Q808	D-5
IC850	F-2	Q809	C-1
IC860	B-3	Q810	D-1
IC861	F-6	Q813	E-4
IC862	F-9	Q850	E-1
IC863	F-4	Q851	E-1
		Q852	E-4
Q702	D-6	Q860	D-2
Q704	A-8	Q862	B-4
Q705	C-7	Q880	F-7
Q706	C-6	Q881	F-9
Q710	D-9	Q882	F-9
Q711	C-6	Q883	F-5
Q721	A-9	Q884	B-4
Q722	E-10		

YC-90 BOARD



YC-90 BOARD



VIDEO VIDEO

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20

Q850
AMP

Q807, 808
REC/PB SWITCH

Q880
BUFFER

IC861
0.5H CCD

IC862
SWITCH

Q862

Q883
BUFFER

IC863
SYNC SEP

Q884
C CONT
SWITCH

Q722
NOISE CANCE
SWITCH

Q881, 882
AMP

Q804, 806
REC/PB
SWITCH

IC860
0.5H SKEW
DET

Q803
3 fsc AMP

IC802
SYNC SEP

Q810
INVERTER

Q809, 860
BUFFER

Q802
SECAM KILL ER

CN704 4P WHT
1 GND
2 PB C
3 GND
4 REC C

TO
RP-100 BOARD
CN004
(See page 34)

CN701 6P WHT
1 PB FM
2 GND
3 REC FM
4 GND
5 C SYNC I
6 COLOR ROT

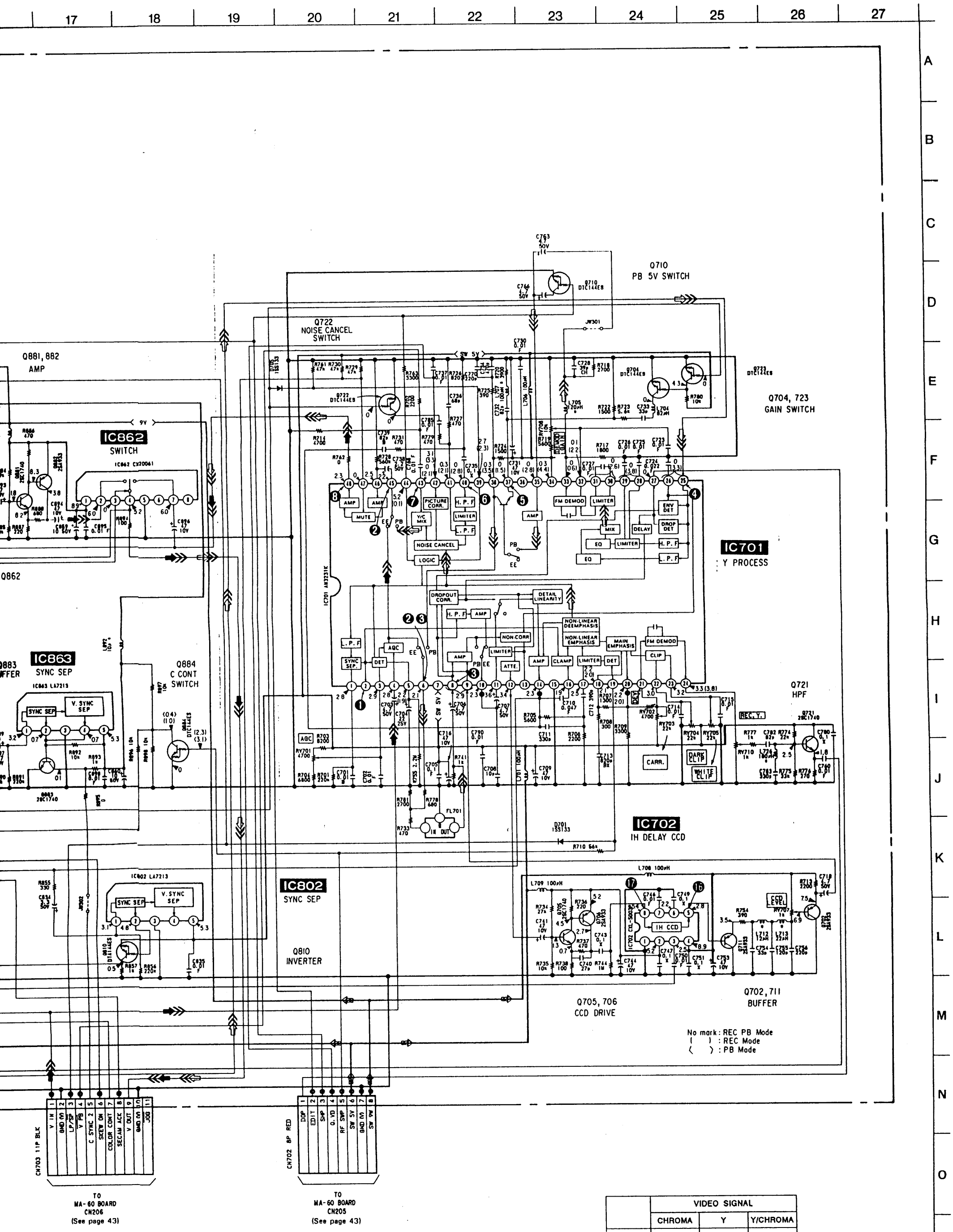
TO
RP-100 BOARD
CN004
(See page 34)

CN703 11P BLK
1 V IN
2 GND (V)
3 LP/SP
4 V PB
5 C SYNC 2
6 SKEW ON
7 COLOR CONT
8 SECAM ACK
9 V OUT
10 GND (V)
11 JOG

TO
MA-60 BOARD
CN206
(See page 43)

CN702 8P RED
1 DOP
2 EDIT
3 SHP
4 Q. VD
5 RF SWP

TO
MA-60 80
CN205
(See page



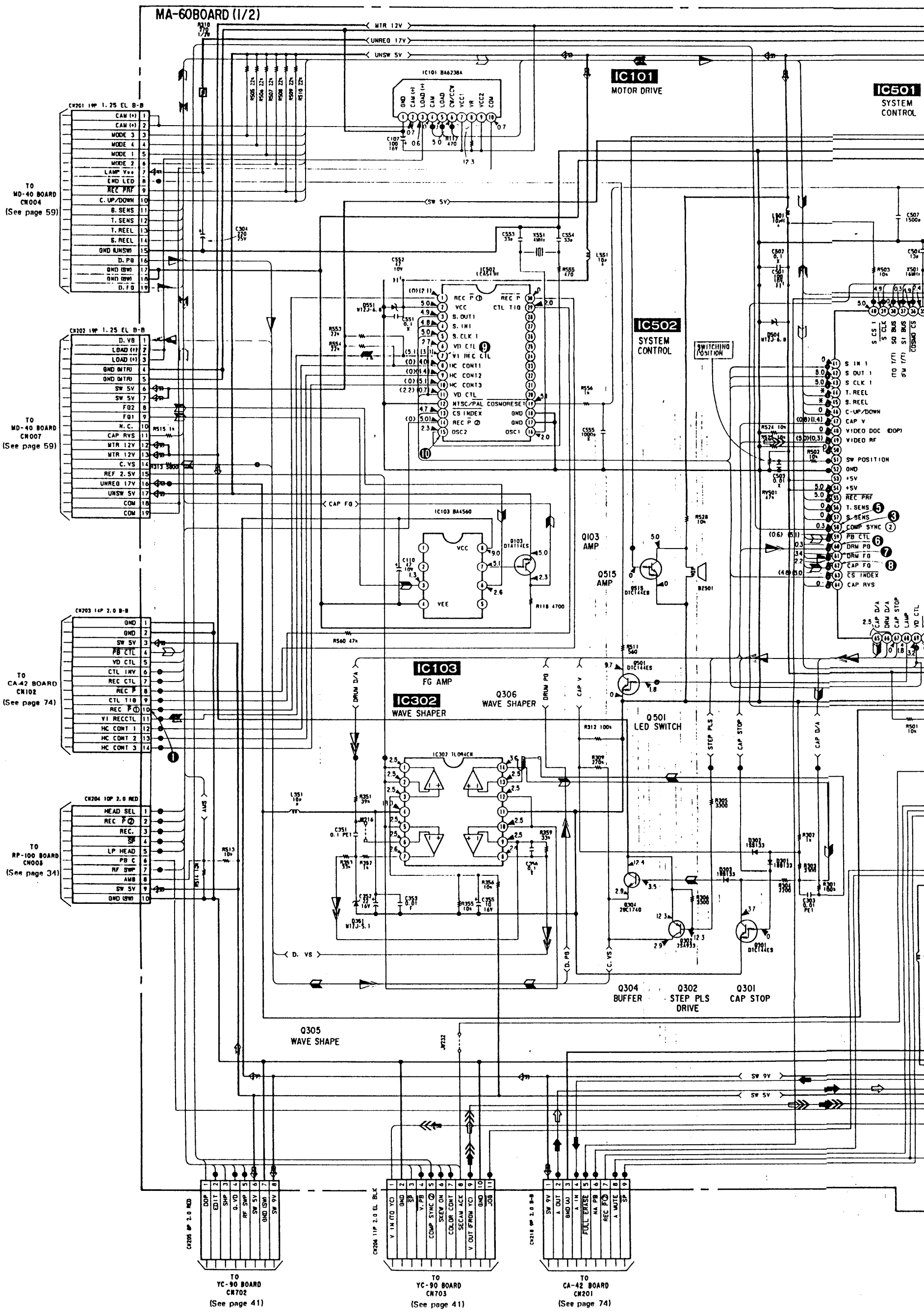
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB	⇨	⇨	⇨

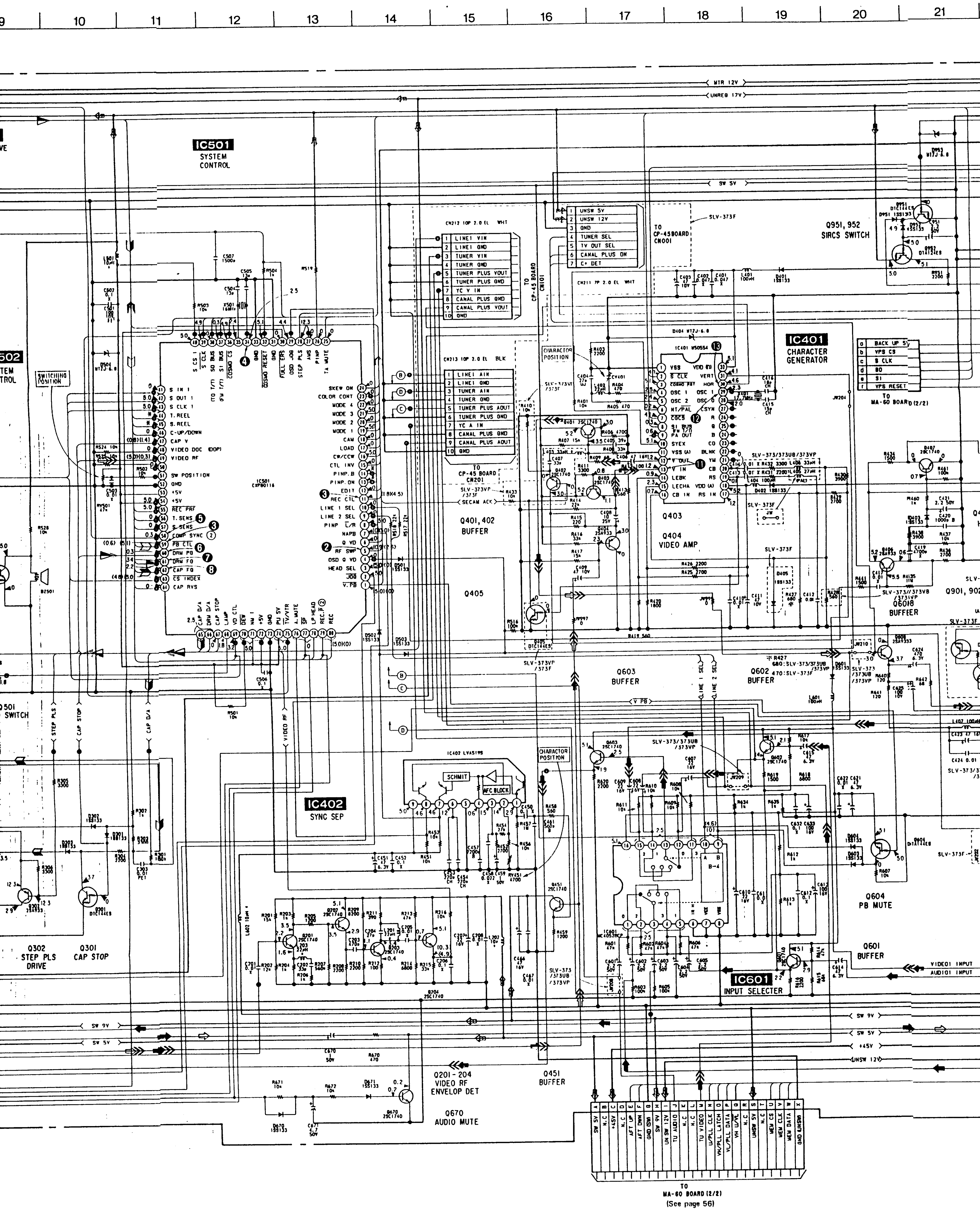
No mark : REC PB Mode
( ) : REC Mode
〈 〉 : PB Mode

VIDEO VIDEO

MA-60 (1/2) (SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

–Ref. No. MA-60 Board: 3,000 series–




IC501
SYSTEM CONTROL
IC501 CXP80116
SWITCHING POSITION
IC401
CHARACTER GENERATOR
IC401 M50554
IC402
SYNC SEP
IC402 LVA519S
SCHMIT
AFC BLOCK
IC601
INPUT SELECTER
IC601 MC4052BCP
CHARACTOR POSITION
Q401, 402 BUFFER
Q403
Q404 VIDEO AMP
Q405
Q451 BUFFER
Q601 BUFFER
Q602 BUFFER
Q603 BUFFER
Q604 PB MUTE
Q6018 BUFFER
Q901, 902
Q951, 952 SIRCS SWITCH
Q201 - 204 VIDEO RF ENVELOP DET
Q670 AUDIO MUTE
Q301 CAP STOP
Q302 STEP PLS DRIVE
Q501 SWITCH
MTR 12V
UNREG 17V
SW 5V
SW 9V
+45V
UNSW 12V
V PB
LINE 1 SEL
LINE 2 SEL
STEP PLS
CAP STOP
CAP D/A
VIDEO RF
VIDEO1 INPUT
AUDIO1 INPUT
CN212 10P 2.0 EL WHT
CN213 10P 2.0 EL BLK
CN211 7P 2.0 EL WHT
TO CP-45 BOARD CN201
TO CP-45 BOARD CN101
TO CP-45BOARD CN001
TO MA-60 BOARD (2/2)
TO MA-60 BOARD (2/2)
(See page 56)
SLV-373F
SLV-373VP/373F
SLV-373/373UB/373VP

MTR 12V
UNREG 17V
SW 5V
SW 9V
+45V
UNSW 12V
TV/VTR

SLV-373F
TO CP-45BOARD CN001

0951, 952 SIRCS SWITCH

IC401 CHARACTER GENERATOR

TO MA-60 BOARD (2/2)

Q403 Q404 VIDEO AMP

Q406, 407 H SYNC DET

Q901, 902 (AV CTRL)

Q6018 BUFFER

Q602 BUFFER

Q604 PB MUTE

Q601 BUFFER

IC601 INPUT SELECTER

VIDEO1 INPUT
AUDIO1 INPUT

Q609, 610 SWITCH

CHASSIS(GND)

SLV-373F
SLV-373/373UB/373VP
SLV-373/373UB
SLV-373/373VP

CN210 19P 1.25 EL B-B

1	UNREG 17V
2	MTR 12V
3	MTR 12V
4	GND (MTR)
5	GND (MTR)
6	UNREG 12V
7	SW 9V
8	UNSW 5.8V
9	SW 5V
10	GND (SW)
11	GND (SW)
12	GND (AUD)
13	GND (UNSW)
14	GND (UNSW)
15	+45V
16	DC 0V
17	DC 3.6V
18	-30V
19	POWER ON

TO POWER SUPPLY BOARD (See page 80)

CN209 19P 2.0 EL B-B

1	MEM CLK
2	MEM CS
3	POWER ON
4	COSMO RESET
5	SIRCS
6	BUZZER
7	VH U/VL
8	MEM DATA
9	TV OUT SEL
10	AFT UP
11	AFT DOWN
12	PLL CLK
13	PLL LATCH
14	PLL DATA
15	TA MUTE
16	H DET
17	SO (FROM COSMO)
18	SI (TO COSMO)
19	SCLK

TO MF-97 BOARD CN001 (See page 70)

CN208 19P 2.0 EL B-B

1	LINE 2 (V)
2	GND (V)
3	LINE 2 (A)
4	GND (A)
5	SHP
6	VPS RESET(AV CTRL)
7	VPS CS (C+ ON)
8	C+ DET
9	F 0V
10	F 6V
11	-30V
12	UNSW 5.8V
13	GND (UNSW)
14	SW 5V
15	BACK UP 5V (T SEL)
16	CD CS
17	COSMO CS
18	GND
19	SECAM

TO MF-97 BOARD CN002 (See page 70)

RF 401

1	GND (SW)
2	MOD V
3	MOD A
4	SWSV / TV/VTR
5	UNSW 5V

TO RFU

CN214 8P

1	GND (I)
2	I
3	GND (B)
4	B
5	GND (G)
6	G
7	GND (R)
8	R

MOUSE

a	BACK UP 5V
b	VPS CS
c	S CLK
d	SO
e	SI
f	VPS RESET

TO MA-60 BOARD (2/2)

TO MA-60 BOARD (2/2) (See page 56)

A	GND (SW)
B	SW 5V
C	SW 9V
D	UNSW 12V
E	TU AUDIO
F	N.C
G	N.C
H	TU VIDEO
I	U/PLL CLK
J	VH/PLL LATCH
K	VL/PLL DATA
L	VH U/VL
M	N.C
N	UNSW 5V
O	N.C
P	MEM CS
Q	MEM CLK
R	MEM DATA
S	GND (UNSW)

MA-60 BOARD

1 — 2.6 Vp-p, 2V — CN203 (9) PB

2 — 5 Vp-p, 2V — RF SWP — IC501 (2) REC/PB

3 — 5.2 Vp-p, 2V — REC CTL / PB CTL — IC501 (11), (59) PB

4 — 5 Vp-p — 10MHz — IC501 (34) EE

5 — 2.3 Vp-p, H — IC501 (58) REC/PB

6 — 5.2 Vp-p, 2V — IC501 (60) REC/PB

7 — 5.1 Vp-p, 6.6 msec — IC501 (61) REC/PB

8 — 5.0 Vp-p, 0.66 msec — IC501 (62) REC/PB

9 — 5.2 Vp-p, 2V — IC602 (7) REC

10 — 4.2 Vp-p — 4.2MHz — IC503 (15) REC/PB

11 — 2.0 Vp-p, H — IC401 (12), (13) REC/PB

12 — 3.2 Vp-p — 17.7 MHz — IC401 (29) REC

13 — 5 Vp-p, H — IC401 (30) REC/PB

• Signal path

	AUDIO Signal
REC	➡
PB	⇨

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡⋙
PB			

	REC	REC/PB	PB
Ref. signal	➡		⇨

MA-60 (2/2) (SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

–Ref. No. MA60 Board: 3,000 series–

MA-60 BOARD (2/2)

SLV-373VP

IC801
VPS DATA
DECORDER

IC802
VPS CONTROL

VPS BACK UP

TV VIDEO IN

GND

a	BACK UP 5V
b	VPS CS
c	S CLK
d	SO
e	SI
f	VPS RESET

UNSW 5V

TO MA-60 BOARD(1/2)

IC801 SDA5642

IC802 μPD75004GB562

Q751
30V REG

SW 5V

L702 220μH

L701 10μH

※ TU701
BTP-2C401 : SLV-373/373VP
BTP-2U601 : SLV-373UB
BTP-2F301 : SLV-373F

Q710-712
EQUALIZER

SLV-373VP

SERVO, SYSTEM CONTROL

※ IF701
IFB-389 : SLV-373
IFB-395 : SLV-373UB
IFV-389A : SLV-373VP
IFW-327 : SLV-373F

※ R726,727
150k : SLV-373/373UB
4.7k : SLV-373F
NON : SLV-373VP

※ R730
1.9k : SLV-373/373UB/373F
NON : SLV-373VP

※ R731
10k : SLV-373/373UB
NON : SLV-373VP/373F

IC802
CONTROL

IF701
SLV-373F
SLV-373VP
SLV-373/373UB

IC703
(NJM2903S)

CASE

SLV-373/373UB /373VP

SLV-373F

SLV-373/373UB /373F

SLV-373/373UB/373VP

SLV-373/373UB /373VP

SLV-373 /373UB /373VP

SLV-373UB

Q751
30V REG

Q710-712
EQUALIZER

IF702 (SIF-372L)

IC702 ST93C

IC702

SW 5V

L702 220μH

L706 10μH

L703 22μH

L705

L751

L752 10μH

L753 10μH

L754 10μH

R709 1k

R712 220

R713 1k

A	SW 5V
B	N.C
C	VC 45V
D	N.C
E	AFT UP
F	AFT DN
G	GND (SW)
H	SW 9V
I	UNSW 12V
J	TU AUDIO
K	N.C
L	N.C
M	TU VIDEO
N	PLL CLK
O	PLL LATCH
P	PLL DATA
Q	VH U/VL
R	N.C
S	UNSW 5V
T	N.C
U	MEM CS
V	MEM CLK
W	MEM DATA
X	GND (UNSW)

※ C713
27P : SLV-373UB
56P : SLV-373/373VP
NON : SLV-373F

※ C716
82P : SLV-373UB
62P : SLV-373/373VP
NON : SLV-373F

※ L705
22μH : SLV-373UB
33μH : SLV-373/373VP
NON : SLV-373F

※ R717
1k : SLV-373/373UB/373VP
180 : SLV-373F

※ R720
1k : SLV-373/373UB/373VP
330 : SLV-373F

※ R725
620 : SLV-373UB
1k : SLV-373/373VP
NON : SLV-373F

No mark : EE mode

※ R730
3.9k : SLV-373/373UB/373F
ION : SLV-373VP

※ R731
10k : SLV-373/373UB
NON : SLV-373VP/373F

A	SW 5V
B	N.C
C	VC 45V
D	N.C
E	AFT UP
F	AFT DN
G	GND (SW)
H	SW 9V
I	UNSW 12V
J	TU AUDIO
K	N.C
L	N.C
M	TU VIDEO
N	PLL CLK
O	PLL LATCH
P	PLL DATA
Q	VH U/VL
R	N.C
S	UNSW 5V
T	N.C
U	MEM CS
V	MEM CLK
W	MEM DATA
X	GND (UNSW)

TO
MA-60 BOARD(1/2)
(See page 45)

CASE

AFT OUT (6) VOL CONT (7) AF OUT (8) AF IN (9) IDE-EN (10) N.C. (11) DET OUT (12)

SLV-373/373UB /373VP
SLV-373/373UB
SLV-373F
SLV-373VP
JW706
JW701
JW703
C723 50
R738 1k
R757 1.2k
R731 ※
R730 ※
C719 2200P
C721 4.7 50V
R758 2.2k
L706 10μH
R735 2200
L751
L752 10μH
R737 3900
C757 4.7
C726 33 16V
C758 47 16V
Q712 2SA933

※ C716
82P : SLV-373UB
62P : SLV-373/373VP
NON : SLV-373F

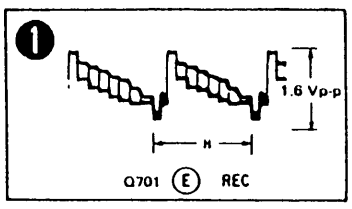
※ L705
22μH : SLV-373UB
33μH : SLV-373/373VP
NON : SLV-373F

※ R720
1k : SLV-373/373UB/373VP
330 : SLV-373F

※ R725
620 : SLV-373UB
1k : SLV-373/373VP
NON : SLV-373F

No mark : EE mode

MA-60 BOARD



	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡⋙
PB			

	AUDIO
PB	⇨

MD-40 (MECHANISM DRIVE) SCHEMATIC DIAGRAM

–Ref. No. MD-40 Board: 4,000 series–

MD-40 BOARD

R001 3300
R002 3300
R003 5600
R005 1800
R004 5600
R013 10k
PH001 SUPPLY REEL
PH002 TAKE UP REEL
D002 MTZJ-T72-6.8
D003 MTZJ-T72-6.8
R008 4700
R009 220
Q001 PT481F
Q002 PT481F
5.0
C001 0.022 F
C002 0.022 F
PH001
PH002
R006 100k
R007 100k
C003 10 25V
R010 4700
C004 0.01 Y
IC002 BA10324
0.9
R011 47k
2.0
R012 2200
3.0
5.0
VCC
2.2
2.5
0
IC002 AMP
Q001 S SENSOR
Q002 T SENSOR
R022 12k
R024 12k
R026 47k
R025 10k
3.4
5.1
0.5
1.2
3.3
1.3
R023 10k
1.2
0
C025 10 25V
IC005 LM393
IC005 FG/PG AMP
R032 0.68
C0 0.1

CN002 9P 2.0 B-B

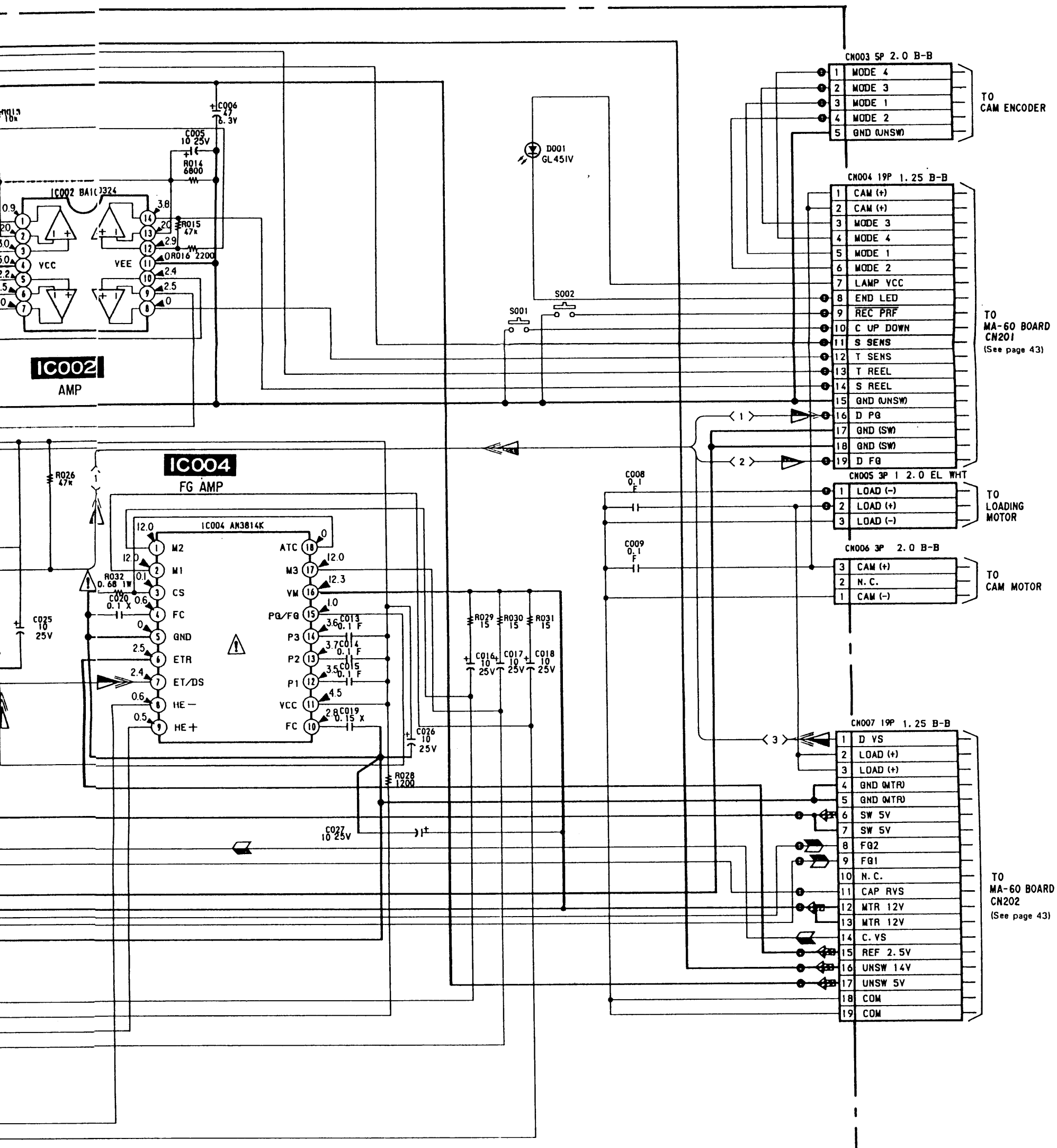
MTR 12V	1
C. VS	2
CAP RVS	3
SW 5V	4
GND (SW)	5
FG 2	6
FG 1	7
GND (MTR)	8
LIMIT	9

TO CAP MOTOR

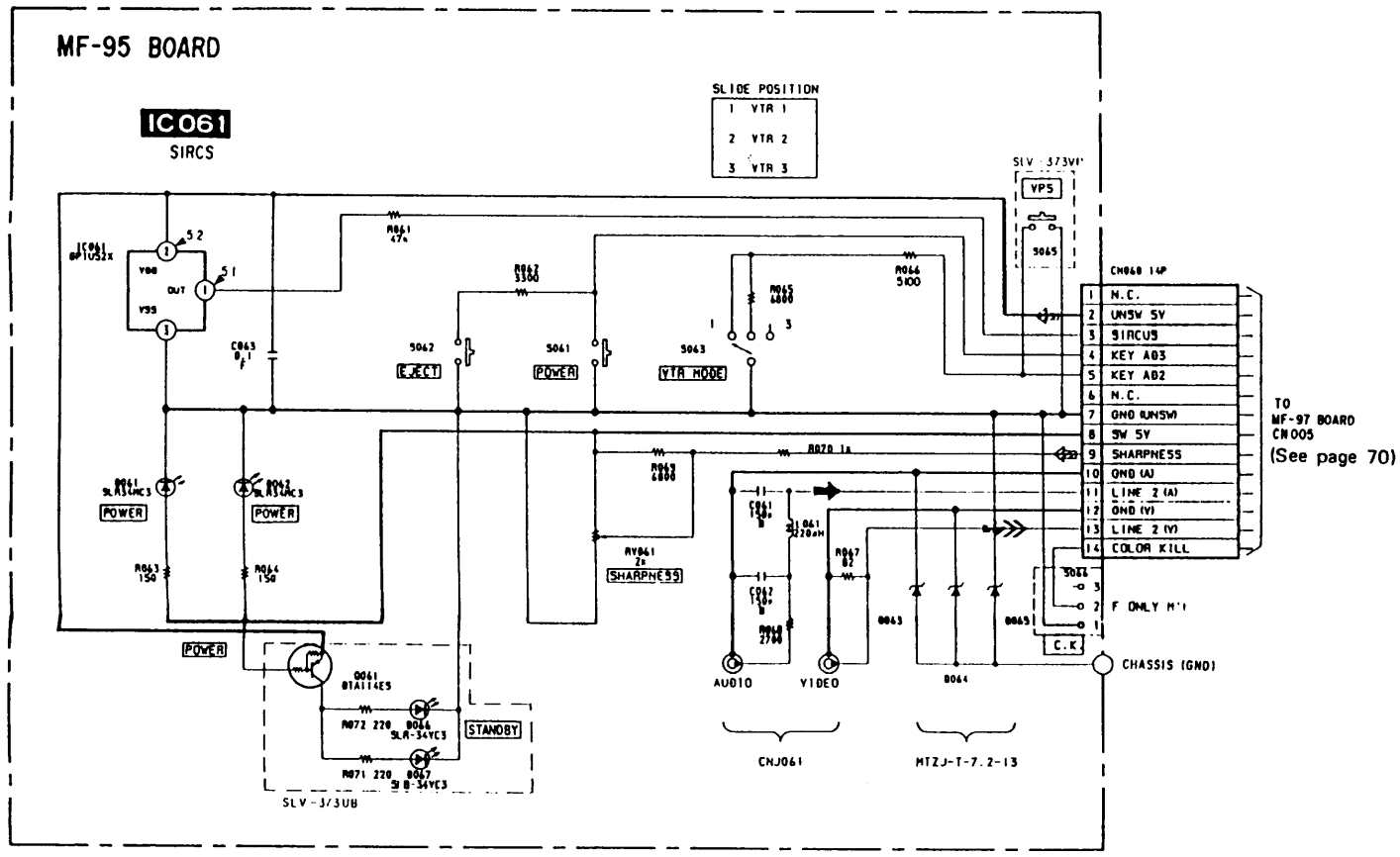
CN001 10P 2.0 JAE

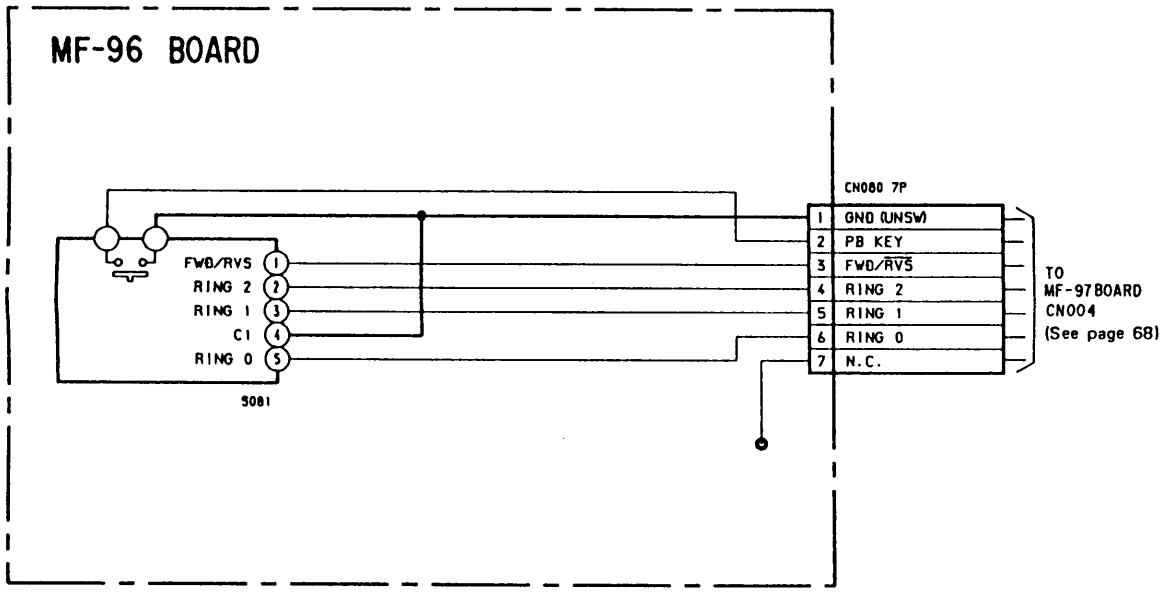
M2	1
VCC	2
HE (+)	3
M3	4
N. C.	5
GND (SW)	6
MTR 12V	7
N. C.	8
HE (–)	9
M1	10

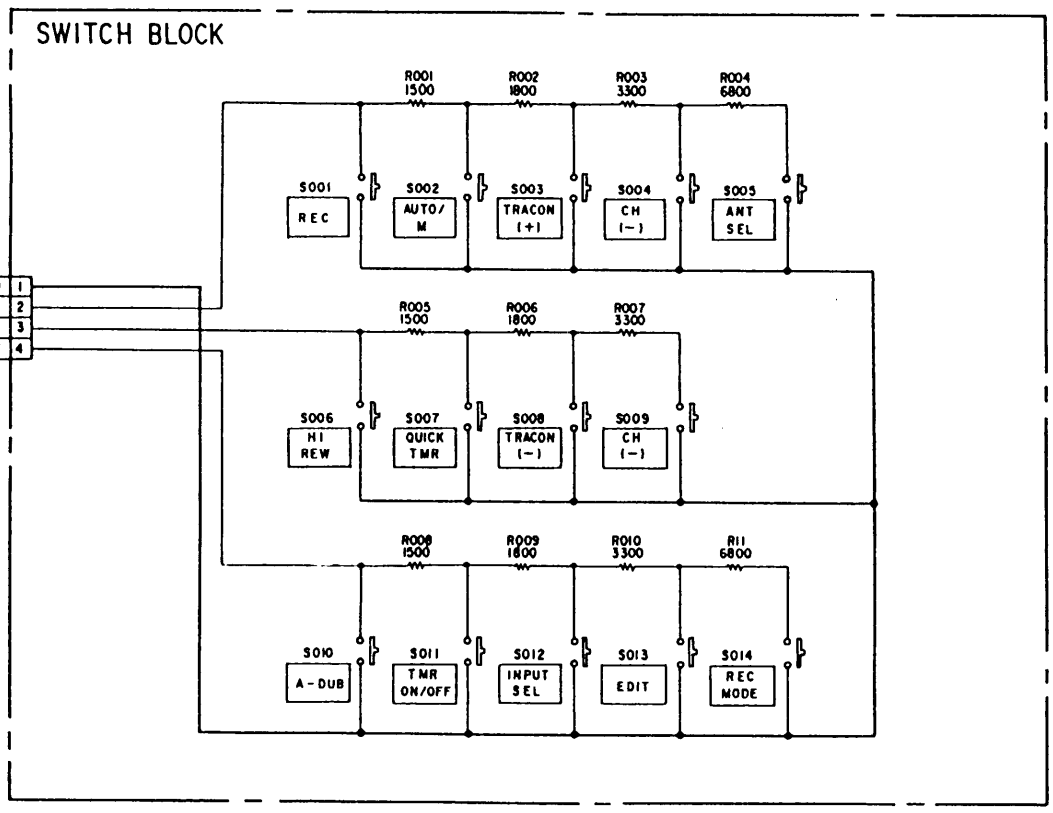
TO DRUM MOTOR

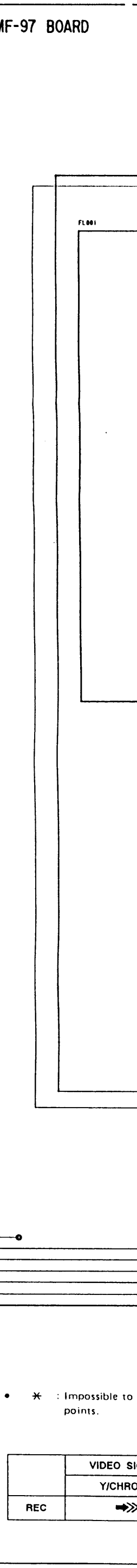


No mark : REC PB mode







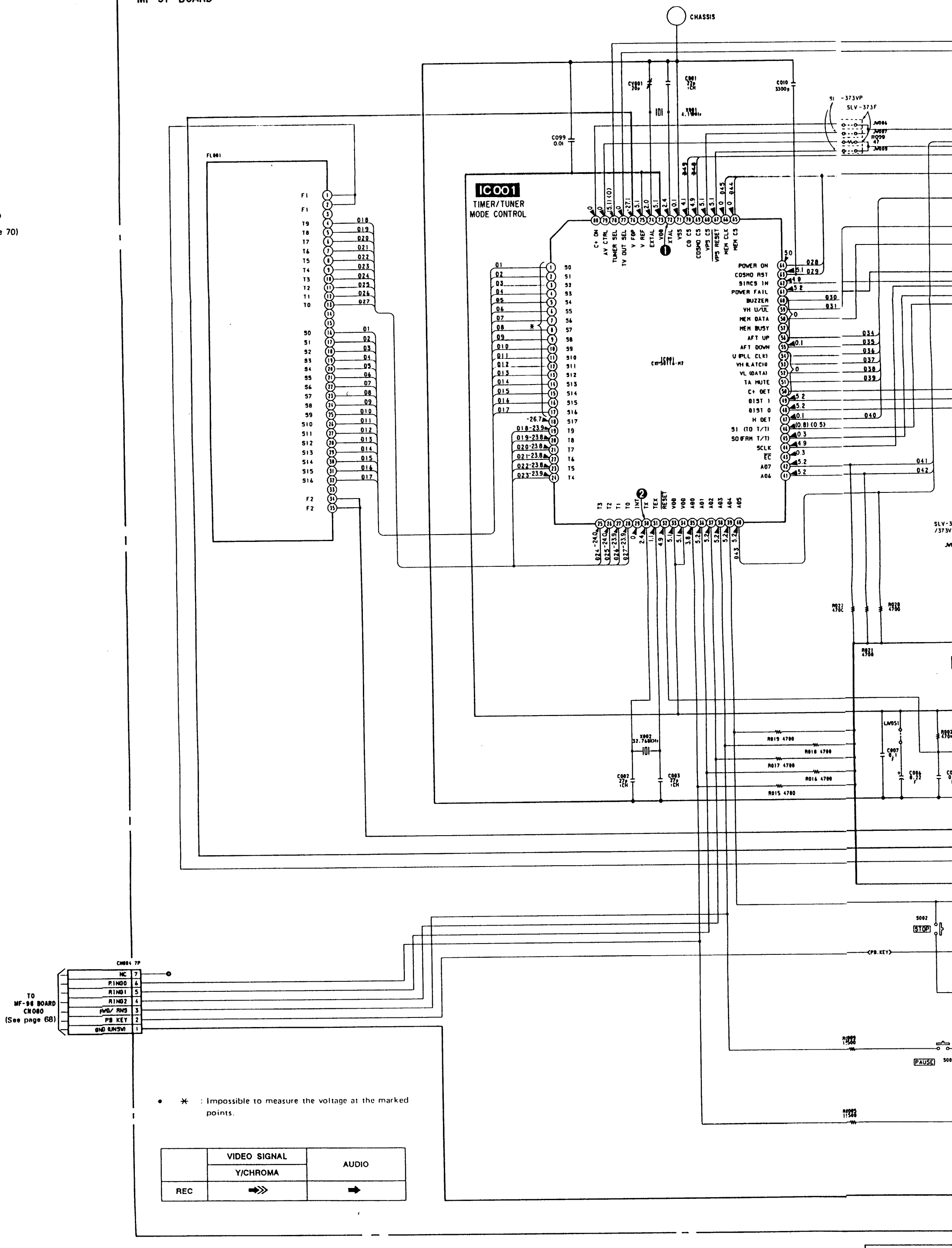


FUNCTION FUNCTION

AMS

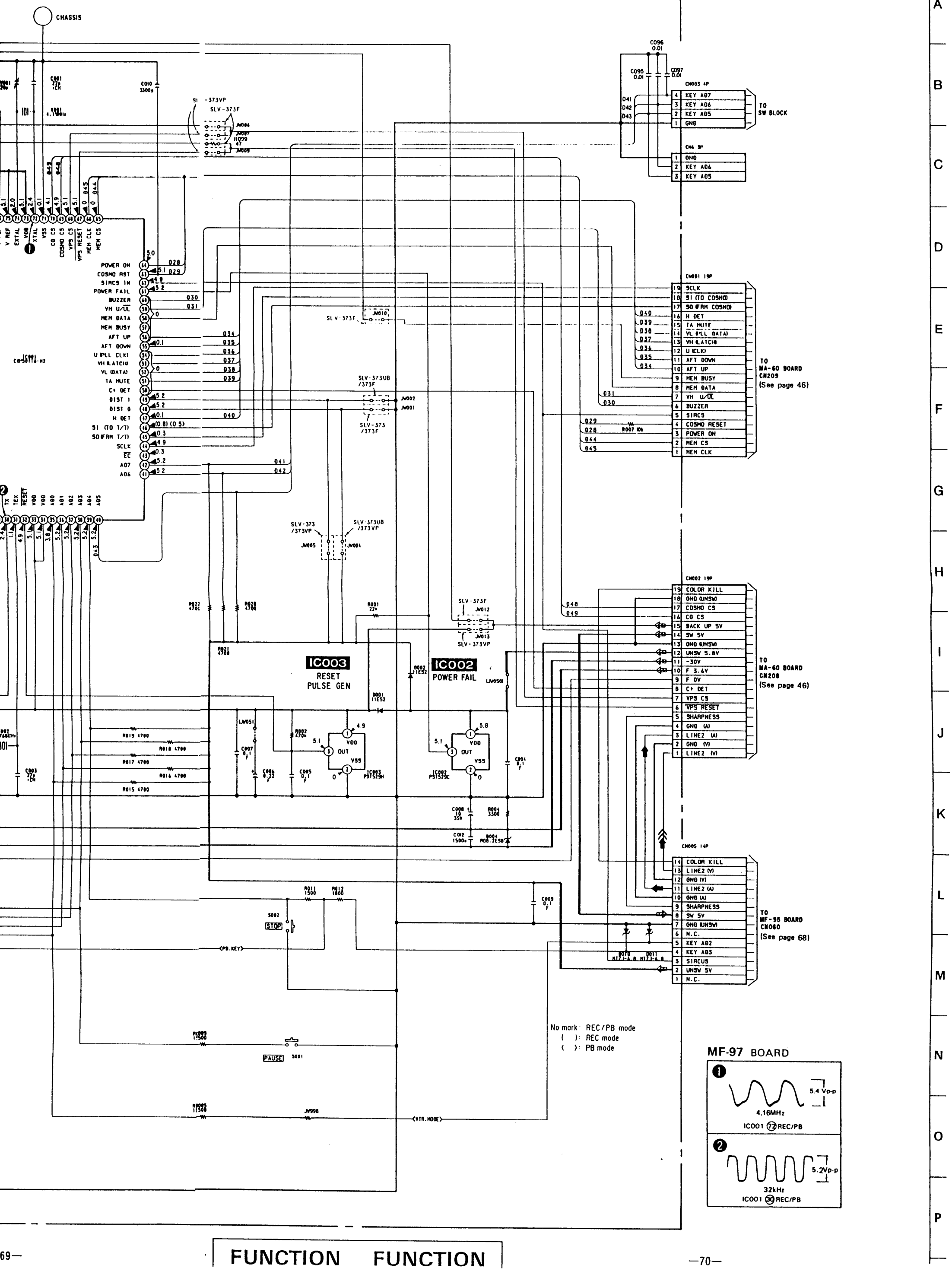
97 BOARD
005
e page 70)

MF-97 BOARD

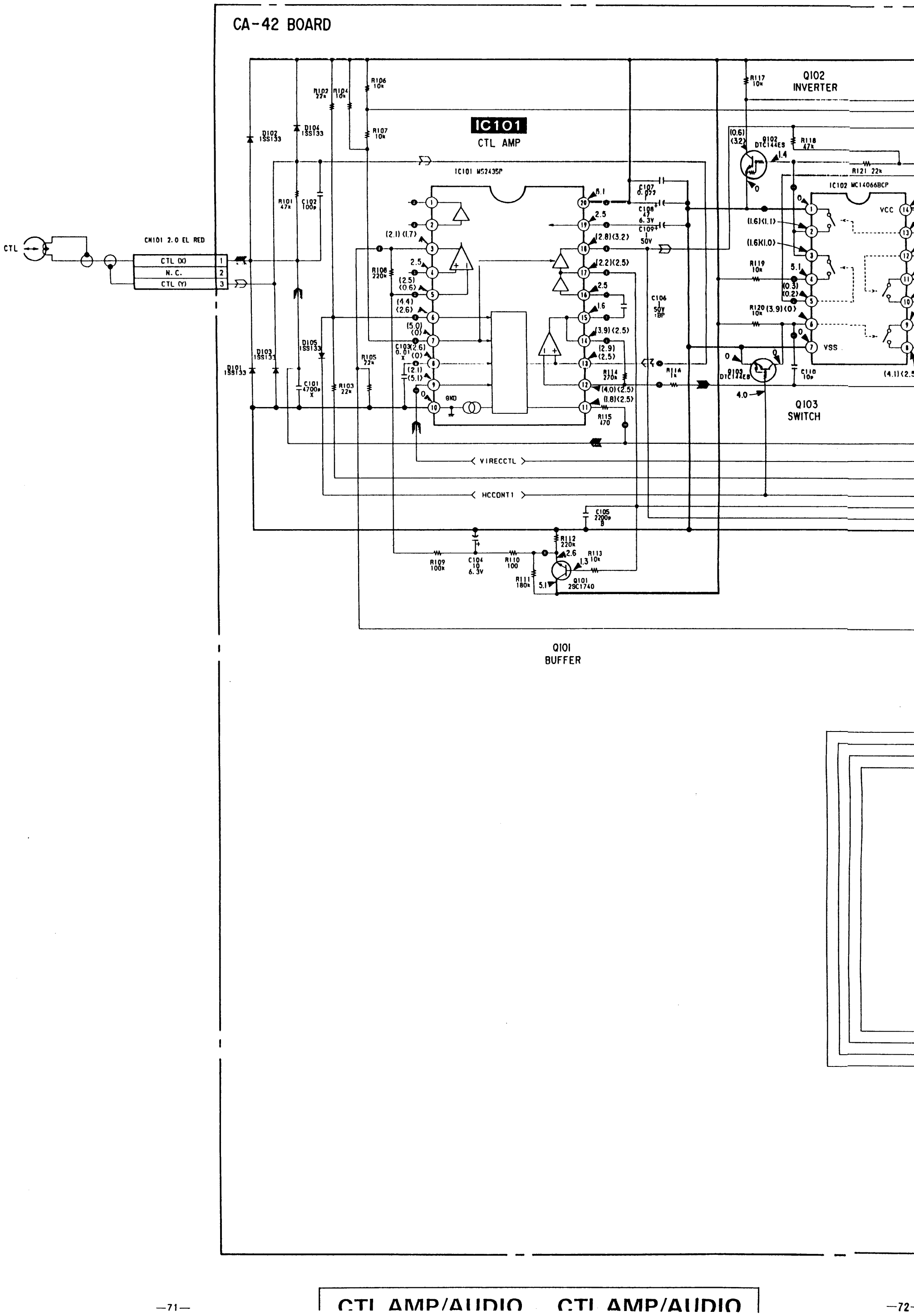


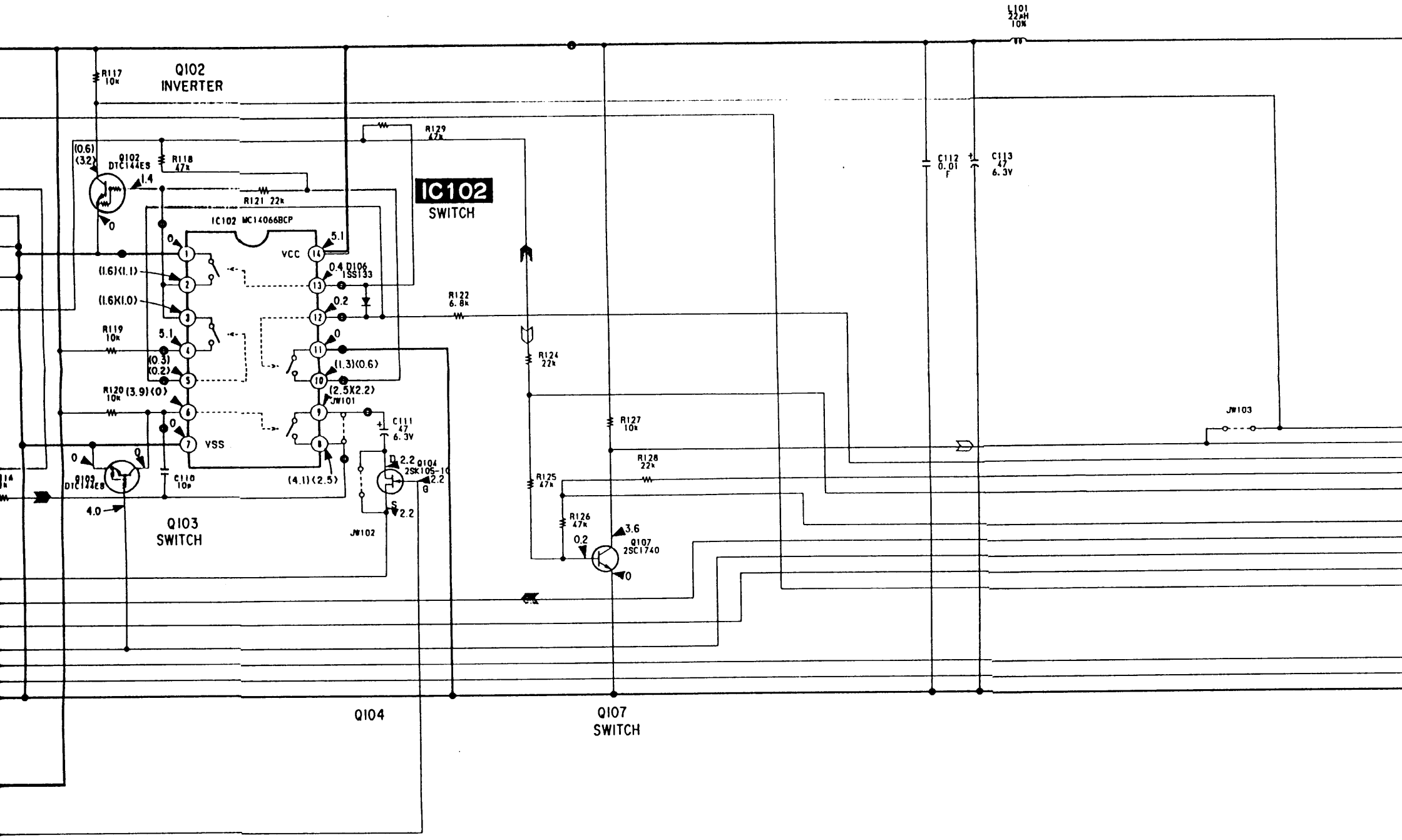
• ✳ : Impossible to measure the voltage at the marked points.

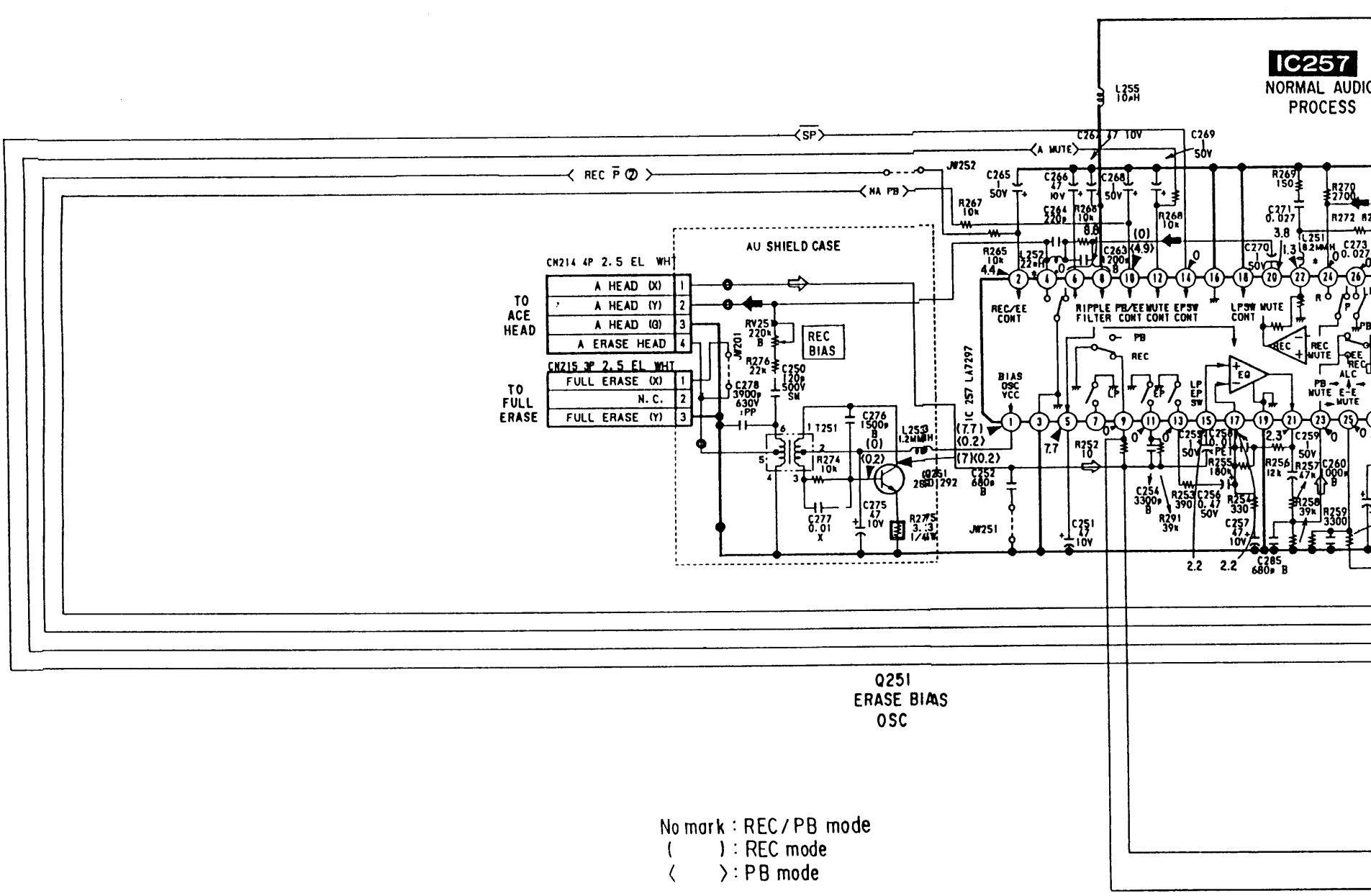
	VIDEO SIGNAL	AUDIO
	Y/CHROMA	
REC	➡⋙	➡


CHASSIS
C096 0.01
C095 0.01
C097 0.01
CN003 4P
4 KEY AD7
3 KEY AD6
2 KEY AD5
1 GND
TO SW BLOCK
CN4 3P
1 GND
2 KEY AD6
3 KEY AD5
SLV-373VP
SLV-373F
JW006
JW007
R029 47
JW009
C010 3300p
C001 22p
POWER ON
COSMO RST
SIRCS IN
POWER FAIL
BUZZER
VH U/UL
MEM DATA
MEM BUSY
AFT UP
AFT DOWN
U (PLL CLK)
VH (LATCH)
VL (DATA)
TA MUTE
C+ DET
DIST I
DIST O
H DET
SI (TO T/T)
SO (FRM T/T)
SCLK
EC
AD7
AD6
SLV-373F JW010
SLV-373UB /373F
JW002
JW001
SLV-373 /373F
SLV-373 /373VP
SLV-373UB /373VP
JW005
JW004
SLV-373F JW012
JW013
SLV-373VP
IC003
RESET PULSE GEN
IC002
POWER FAIL
JW050
JW051
D002 11ES2
D001 11ES2
R022 470Ω
R020 4700
R021 4700
R001 22k
R019 4700
R018 4700
R017 4700
R016 4700
R015 4700
R002 470k
C007 0.1
C006 0.22
C005 0.1
C004 0.1
C003 22p
IC003 PST529H
IC002 PST529C
VDD
OUT
VSS
C008 10 35V
R004 3300
C012 1500p
D004 RGB.2ES2
CN001 19P
19 SCLK
18 SI (TO COSMO)
17 SO (FRM COSMO)
16 H DET
15 TA MUTE
14 VL (PLL DATA)
13 VH (LATCH)
12 U (CLK)
11 AFT DOWN
10 AFT UP
9 MEM BUSY
8 MEM DATA
7 VH U/UL
6 BUZZER
5 SIRCS
4 COSMO RESET
3 POWER ON
2 MEM CS
1 MEM CLK
TO MA-60 BOARD CN209
(See page 46)
CN002 19P
19 COLOR KILL
18 GND (UNSW)
17 COSMO CS
16 CO CS
15 BACK UP 5V
14 SW 5V
13 GND (UNSW)
12 UNSW 5.8V
11 -30V
10 F 3.6V
9 F 0V
8 C+ DET
7 VPS CS
6 VPS RESET
5 SHARPNESS
4 GND (A)
3 LINE2 (A)
2 GND (V)
1 LINE2 (V)
TO MA-60 BOARD CN208
(See page 46)
CN005 14P
14 COLOR KILL
13 LINE2 (V)
12 GND (V)
11 LINE2 (A)
10 GND (A)
9 SHARPNESS
8 SW 5V
7 GND (UNSW)
6 N.C.
5 KEY AD2
4 KEY AD3
3 SIRCUS
2 UNSW 5V
1 N.C.
TO MF-95 BOARD CN060
(See page 68)
R010 MTZJ-6.8
R011 MTZJ-6.8
R011 1500
R012 1800
C009 0.1
S002 STOP
<PB.KEY>
R0003 11500
S001 PAUSE
R0005 11500
JW998
<VTR.MODE>
No mark: REC/PB mode
( ): REC mode
( ): PB mode
MF-97 BOARD
1 5.4 Vp-p 4.16MHz IC001 72 REC/PB
2 5.2 Vp-p 32kHz IC001 50 REC/PB

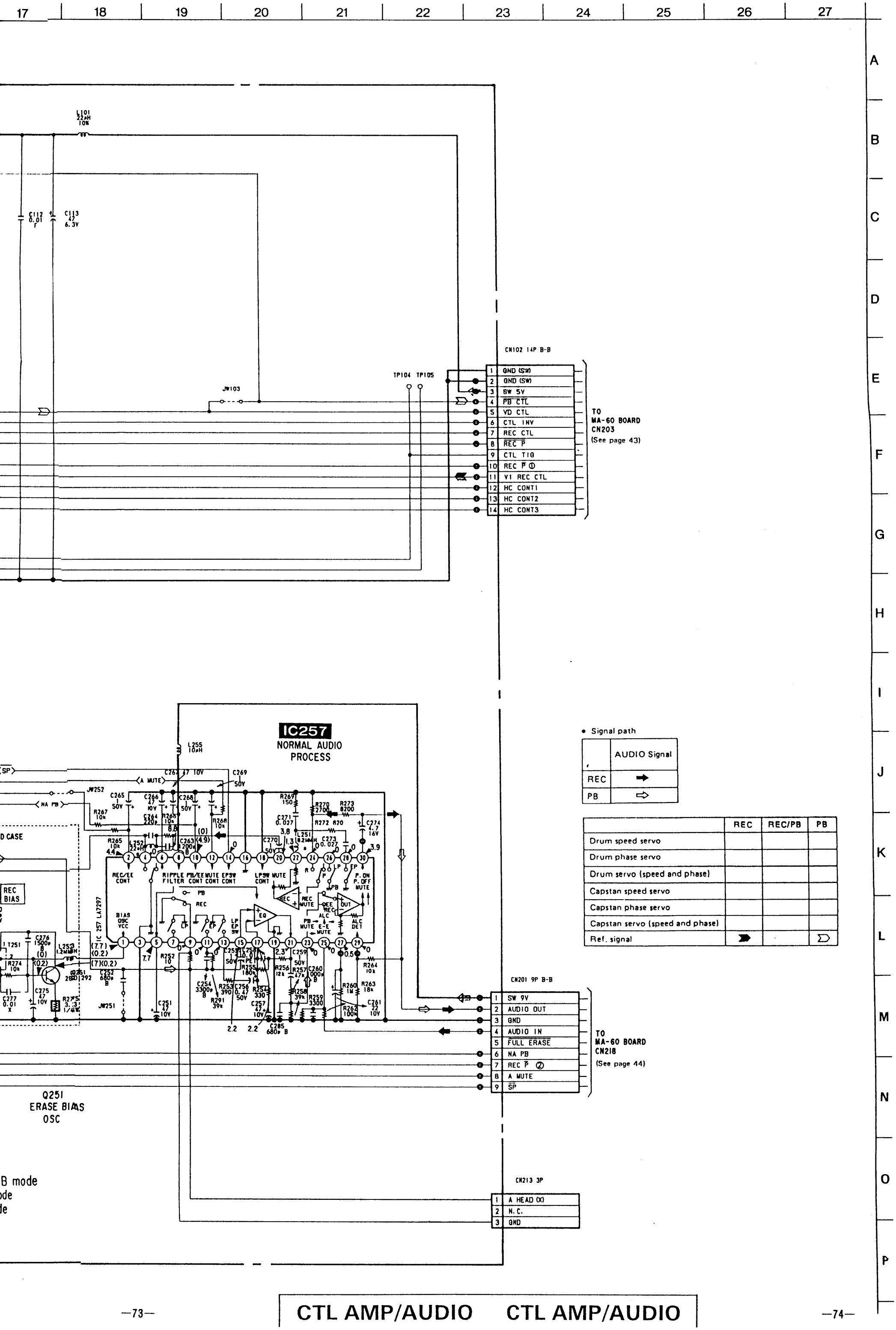
CA-42 BOARD


IC101
CTL AMP
IC101 M52435P
CN101 2.0 EL RED
CTL
CTL (X)
N. C.
CTL (Y)
Q102
INVERTER
Q102 DTC144ES
IC102 MC14066BCP
VCC
VSS
Q103
SWITCH
Q103 DTC144EB
Q101
BUFFER
Q101 2SC1740
VIRECCTL
HCCONT1
GND
D101 1SS131
D102 1SS133
D103 1SS131
D104 1SS133
D105 1SS133
R101 47k
R102 22k
R103 22k
R104 10k
R105 22k
R106 10k
R107 10k
R108 220k
R109 100k
R110 100
R111 180k
R112 220k
R113 10k
R114 270k
R115 470
R117 10k
R118 47k
R119 10k
R120 10k
R121 22k
C101 4700p
C102 100p
C103 0.01
C104 10 6.3V
C105 2200p
C106 50V
C107 0.022
C108 47 6.3V
C109 1 50V
C110 10p





No mark : REC / PB mode
( ) : REC mode
⟨ ⟩ : PB mode



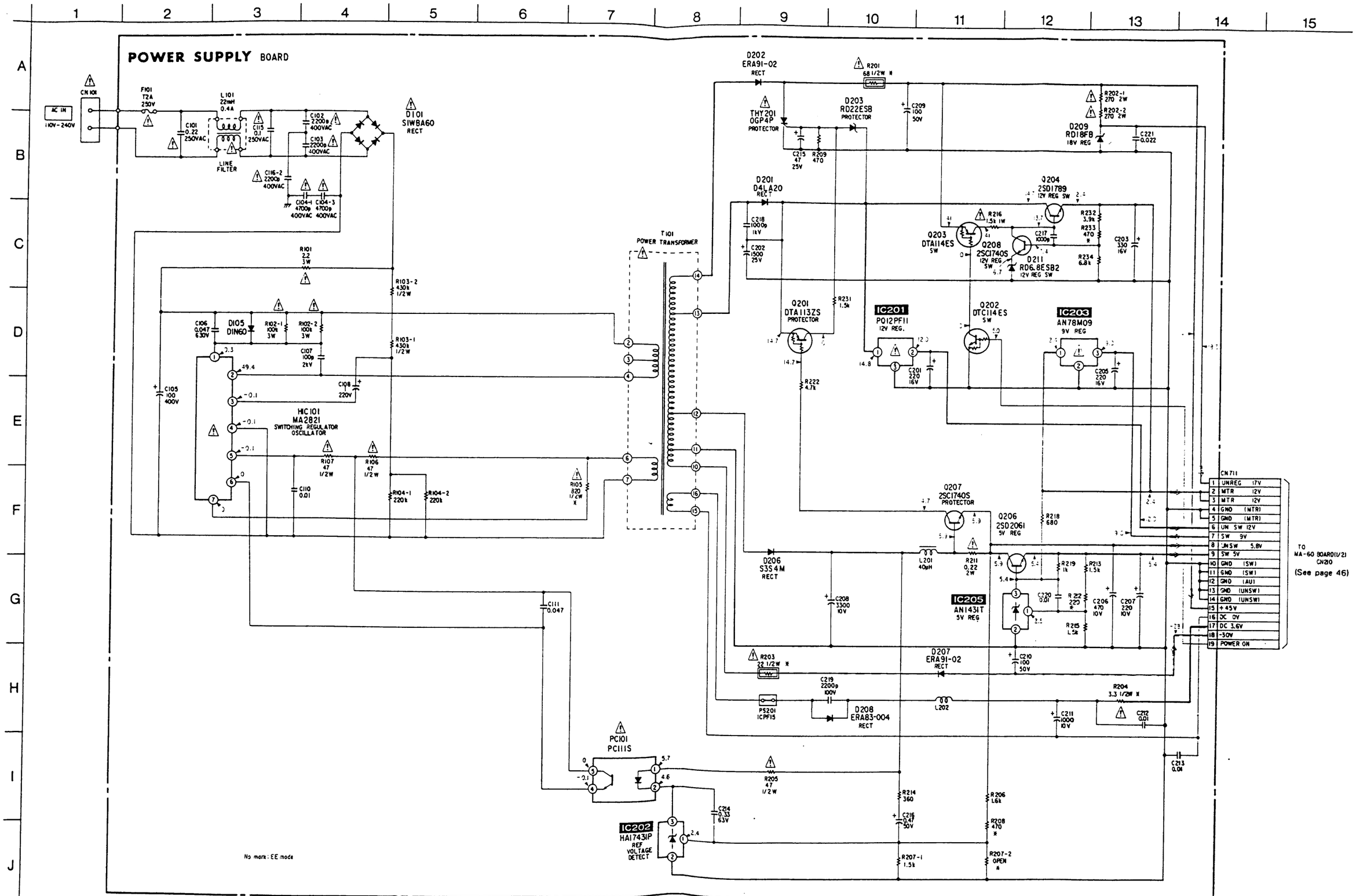
• Signal path

	AUDIO Signal
REC	➡
PB	⇨

	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	➡	·	⇨

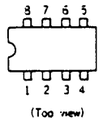
POWER SUPPLY SCHEMATIC DIAGRAM

– Ref. No. 9,000 series–

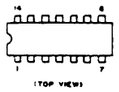


4-3. SEMICONDUCTOR LEAD LAYOUTS

BA4560
CXL5003P
LM393N
MSM6989RS
ST93C46AB1

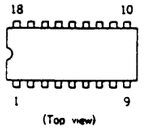


BA10324
LM324N
MC14066BCP
SDA5642

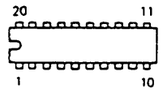


TC4052BPHB

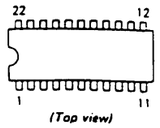
AN3814K



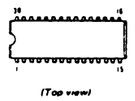
M52435P



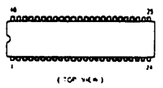
AN3592K



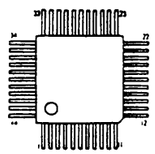
HA118016NT
HA118019NT
LC6543H-4374



AN3231K



UPD75004GB-VSX182

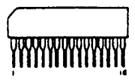


LA7213

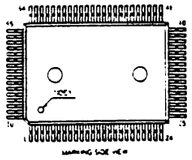
CX20061

LVA519S

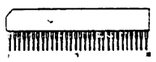
BA7007



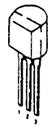
CXP50116-VSX350



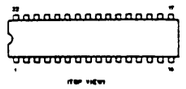
LA7297



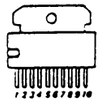
PST529C
PST529H



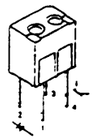
M50554-182SP



BA6238A



PS6002



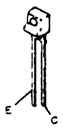
2SK105A-10

2SA922S-QR

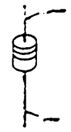
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC144ES
2SC1740S-QR
2SD1292

DTA143XS

PT483F1



RD5.1ES-B2
RD6.8ES-B2
RD8.2ES-B2
RD13ES-B2
RD33ES-B2
1SR139-100
1SS119



SLR-34MC3

GL451V

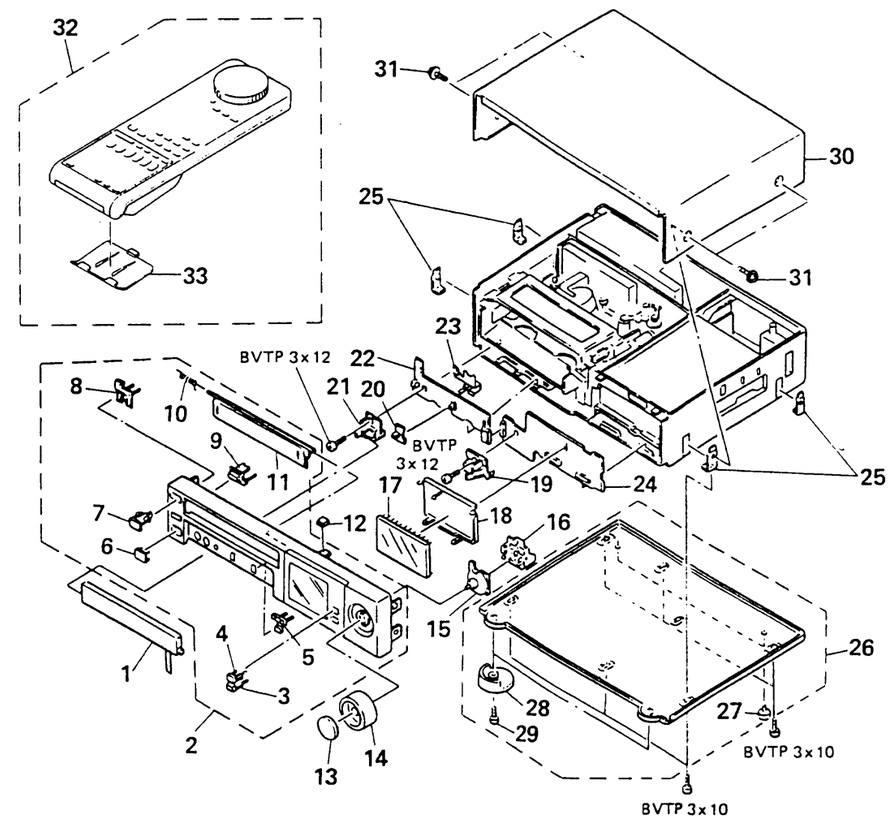
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- 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.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

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

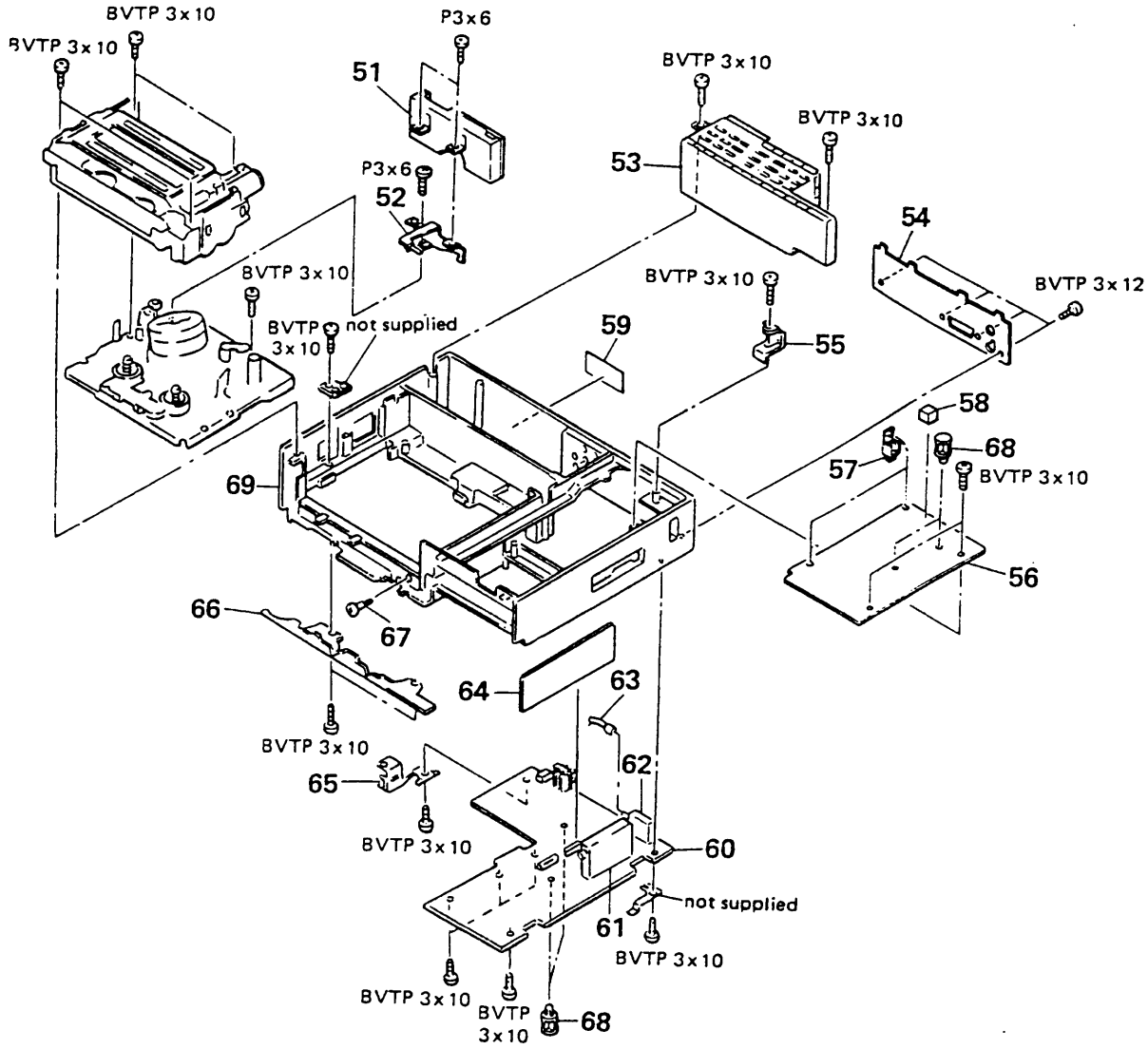
5-1. FRONT PANEL, CABINET ASSEMBLIES



No.	Part No.	Description	Remark
1	1-466-315-11	SWITCH BLOCK, CONTROL (SLV-373UB)	
	1-466-315-21	SWITCH BLOCK, CONTROL (SLV-373)	
	1-466-315-31	SWITCH BLOCK, CONTROL (SLV-373VP)	
2	X-3746-001-1	PANEL ASSY, FRONT (SLV-373VP)	3-11
	X-3746-002-1	PANEL ASSY, FRONT (SLV-373/373UB)	3-11
3	3-741-971-21	BUTTON, STOP (■)	
4	3-741-978-21	BUTTON, STOP (■/▶▶)	
5	3-746-010-01	BUTTON, VPS (SLV-373VP)	
6	3-741-981-31	WINDOW, LAY CATCHER BLOCK	
7	3-741-973-01	BUTTON, POWER (ON/STANDBY)	
8	3-741-975-01	TIP, POWER BUTTON	
9	3-741-974-01	BUTTON, EJECT (⏏ EJECT)	
10	3-741-977-01	SPRING (FL), TORSION	
11	3-746-028-01	DOOR (E), CASSETTE	
12	9-911-841-XX	CUSHION (B)	
13	3-741-951-21	BUTTON, PLAY (▷ PLAY)	
14	3-741-952-01	RING, SHUTTLE	
15	*1-635-173-11	MF-96 BOARD	
16	*3-741-965-01	HOLDER, PC BOARD	
17	1-519-580-11	INDICATOR TUBE, FLUORESCENT	

No.	Part No.	Description	Remark
18	*3-744-220-01	HOLDER, FL	
19	3-741-967-01	PLATE (RIGHT), FULCRUM, DOOR	
20	3-744-217-01	KNOB, SELECTION (COMMAND MODE)	
21	3-741-966-01	PLATE (LEFT), FULCRUM, DOOR	
22	*A-6754-047-A	MF-95 BOARD, COMPLETE (SLV-373UB)	
22	*A-6754-052-A	MF-95 BOARD, COMPLETE (SLV-373VP)	
	*A-6754-053-A	MF-95 BOARD, COMPLETE (SLV-373)	
23	3-741-968-01	PLATE, GROUND, MF	
24	*A-6721-328-A	MF-97 BOARD, COMPLETE (SLV-373UB)	
	*A-6721-330-A	MF-97 BOARD, COMPLETE (SLV-373VP)	
24	*A-6721-331-A	MF-97 BOARD, COMPLETE (SLV-373)	
25	*3-741-992-01	STOPPER, UPPER CASE	
26	X-3733-346-2	PLATE ASSY, BOTTOM	27-29
27	3-670-155-11	LEG	
28	X-3733-345-1	INSULATOR ASSY	
29	3-721-343-01	SCREW, FIXED, M4X7	
30	3-746-051-01	CASE, UPPER	
31	3-710-901-11	SCREW (3X8), TAPPING	
32	1-465-514-11	REMOTE COMMANDER ASSY (RMT-V373)	33
33	3-746-029-01	COVER, BATTERY	

5-2. CHASSIS ASSEMBLY

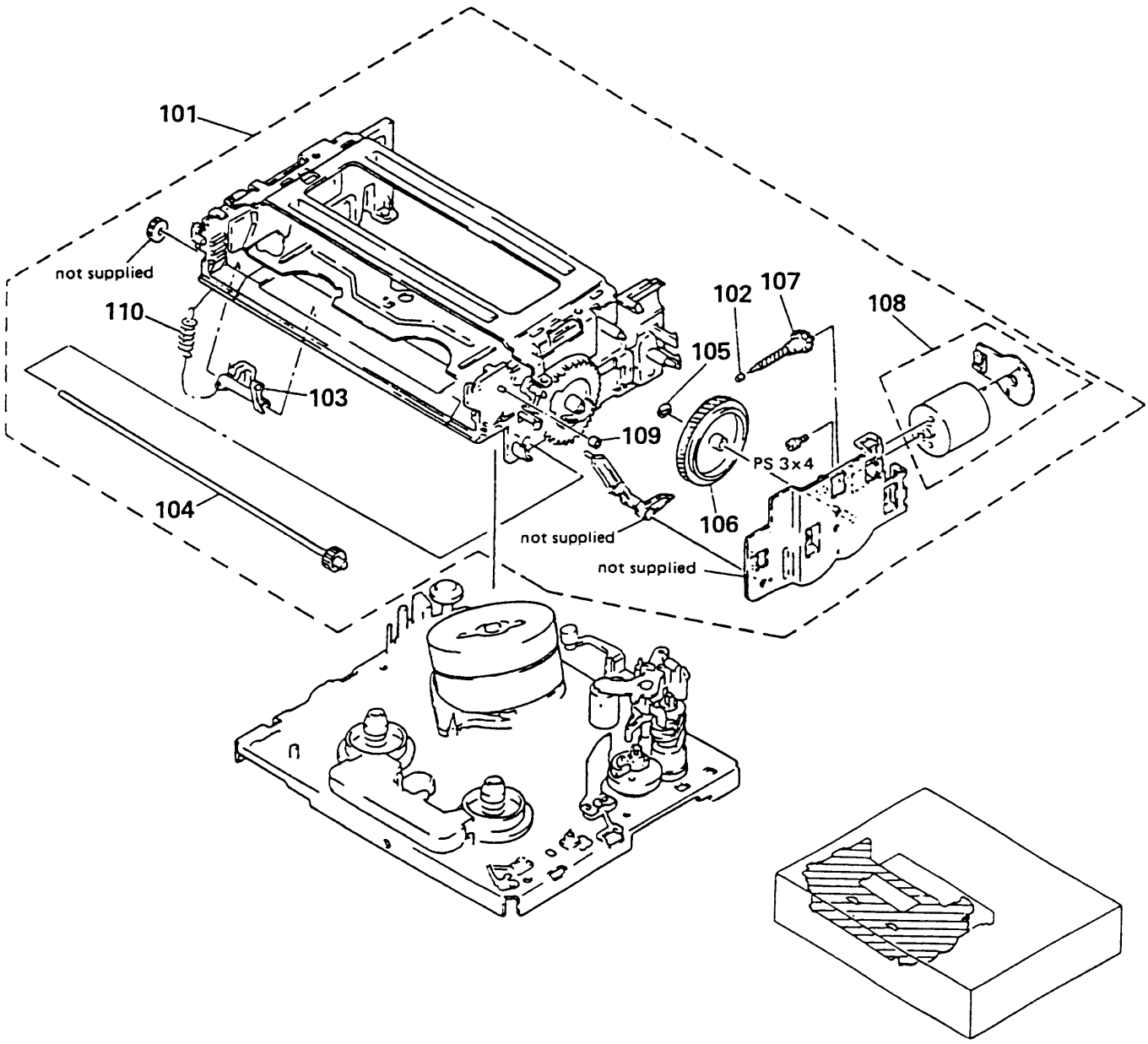


No.	Part No.	Description	Remark
51	*A-6727-189-A	RP-100 BOARD, COMPLETE	
52	X-3746-004-1	GROUND ASSY, SHAFT	
53	⚠1-413-535-11	BLOCK, POWER (SLV-373UB)	
	⚠1-413-537-11	BLOCK, POWER (SLV-373VP)	
	⚠1-413-538-11	BLOCK, POWER (SLV-373)	
54	3-746-011-01	PLATE, ORNAMENTAL, JACK	
55	*3-741-963-01	BRACKET, RF	
56	*A-6727-187-A	YC-90 BOARD, COMPLETE	
57	3-736-704-01	HINGE, PC BOARD	
58	9-911-843-XX	CUSHION	
59	*3-746-001-01	LABEL, MODEL NUMBER (NO.2) (SLV-373UB)	
	*3-746-002-01	LABEL, MODEL NUMBER (NO.2) (SLV-373)	
	*3-746-003-01	LABEL, MODEL NUMBER (NO.2) (SLV-373VP)	

No.	Part No.	Description	Remark
60	*A-6725-799-A	MA-60 BOARD, COMPLETE (SLV-373UB)	
	*A-6725-801-A	MA-60 BOARD, COMPLETE (SLV-373VP)	
	*A-6725-802-A	MA-60 BOARD, COMPLETE (SLV-373)	
61	1-465-260-11	TUNER, ET (BTP-2C401) (SLV-373/373VP)	
	1-465-262-11	TUNER, ET (SLV-373UB)	
62	⚠1-466-328-11	MODULATOR, RF (RFU-2017) (SLV-373/373VP)	
	⚠1-466-347-11	MODULATOR, RF (RFU-2024) (SLV-373UB)	
63	1-558-924-41	CABLE, PIN	
64	*A-6713-386-A	CA-42 BOARD, COMPLETE	
65	*3-741-962-01	PLATE, GROUND, JMP	
66	3-741-953-03	ESCUTCHEON, FRAME	
67	3-741-948-11	SCREW (3), SPECIAL (+) TAPPING	
68	3-682-057-11	SPACER (SMALL)	
69	*3-741-990-01	FRAME, MOLD	

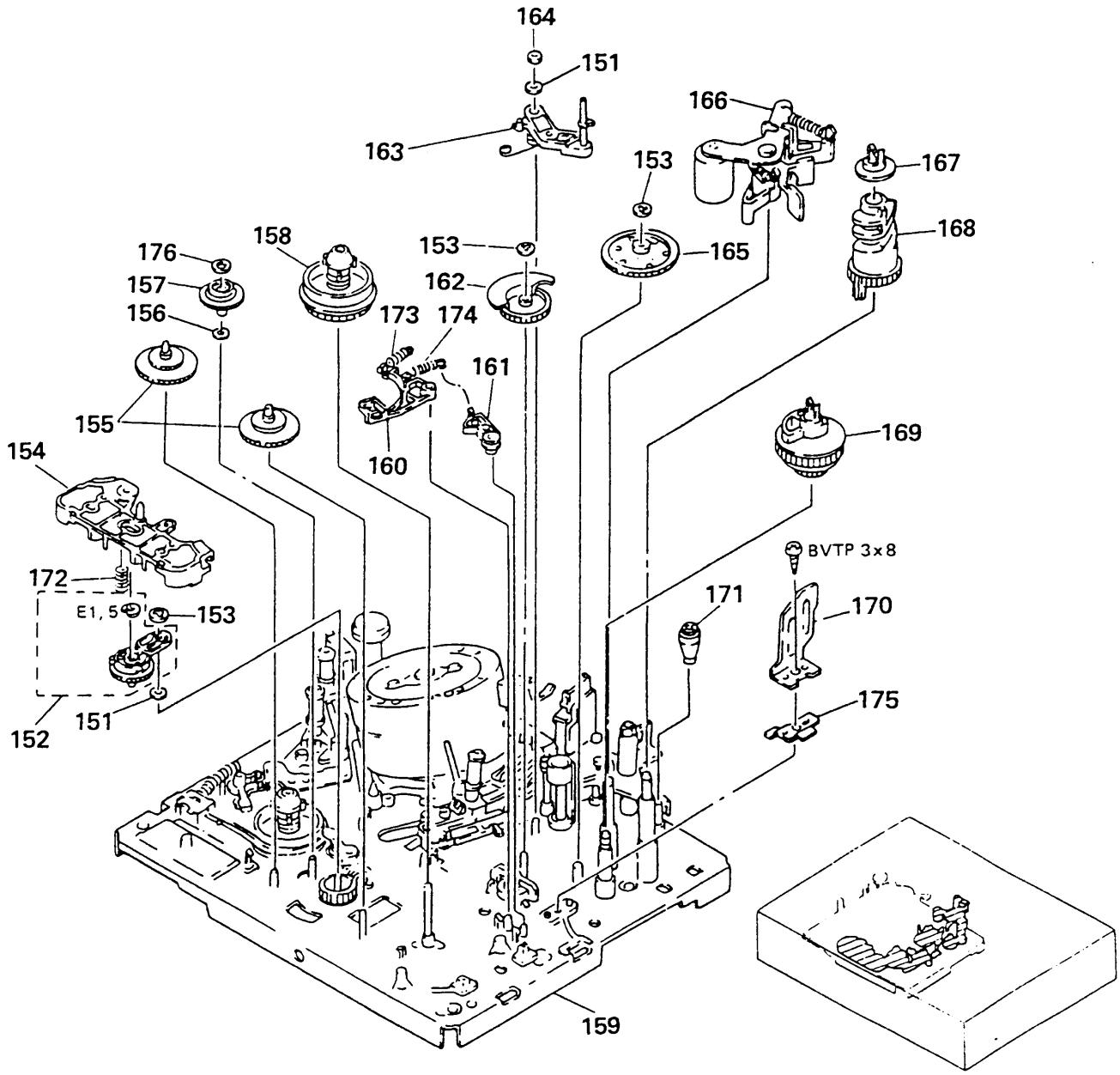
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-3. FL CASSETTE COMPARTMENT



No.	Part No.	Description	Remark
101	A-6751-421-A	FL BLOCK ASSY (M2)	102-110
102	3-716-144-02	RETAINER, WORM	
103	3-736-163-01	LEVER, ERASING PROTECTION	
104	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY	
105	3-696-510-01	WASHER (3), STOPPER	
106	3-736-164-01	WHEEL (FL), WORM	
107	3-736-100-01	GEAR (FL), WORM	
108	X-3727-784-1	MOTOR ASSY (LOADING) (M904)	
109	3-696-388-01	RUBBER, JOINT	
110	3-739-687-01	SPRING, TENSION	

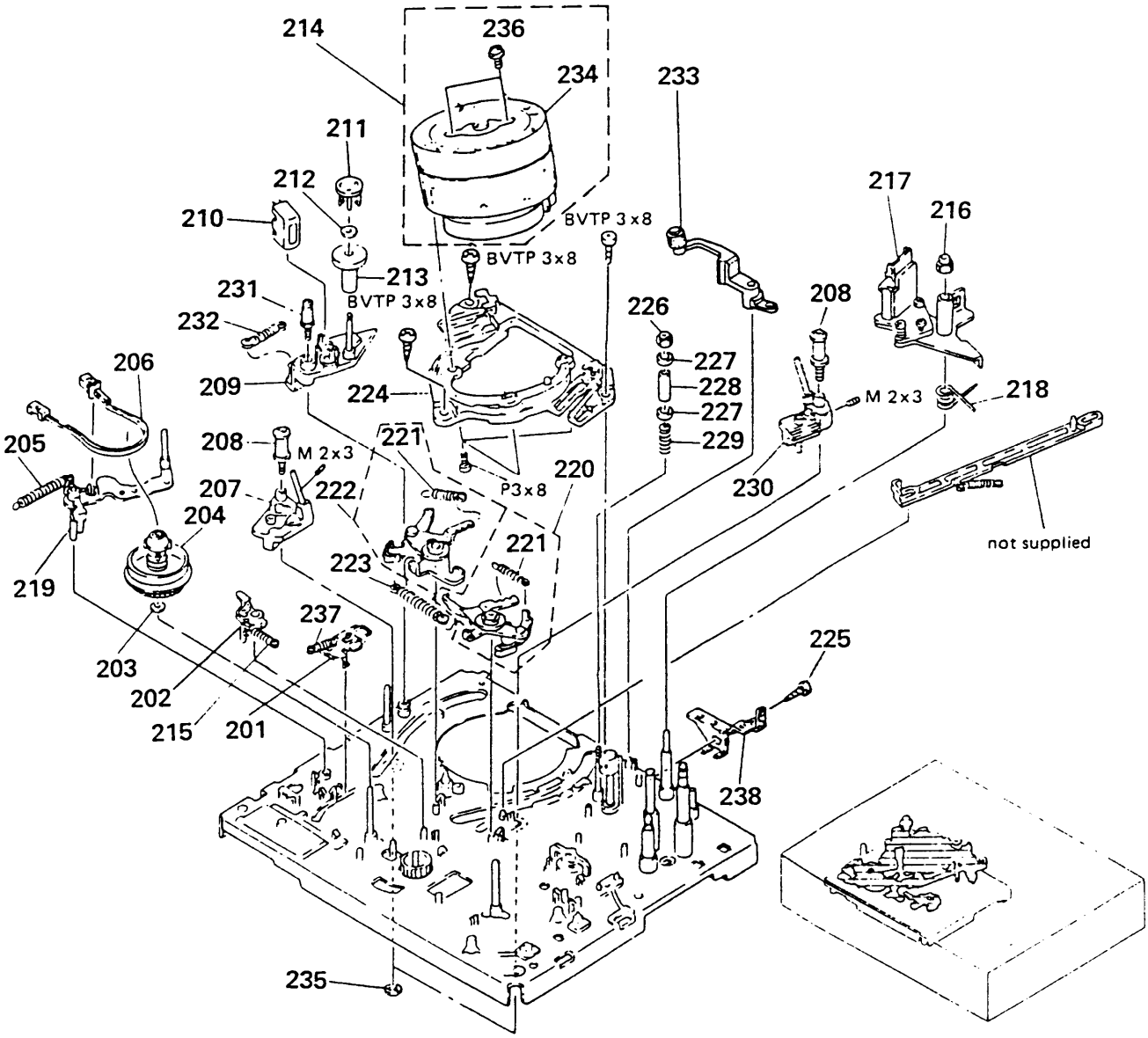
5-4. MECHANISM DECK 1



No.	Part No.	Description	Remark
151	3-701-438-11	WASHER, 2.5	
152	X-3727-776-1	ARM ASSY, PENDULUM	
153	3-669-595-00	WASHER (2), STOPPER	
154	3-736-172-02	RELEASE, LOCK, REEL	
155	X-3727-795-1	GEAR ASSY, RELAY	
156	3-736-074-01	RETAINER (SMALL), THRUST	
157	3-736-037-01	GEAR, REW	
158	X-3727-798-1	TABLE ASSY, REEL	
159	*A-6773-084-A	MD BLOCK ASSY 151-157,160-172,175,176 201-203,205-208,216,218,219,226-230 235,237,251-260,262,267-277,280-285 287-289,291,292,297	
160	X-3733-335-1	BRAKE ASSY (AT), T SOFT	
161	3-736-105-01	ARM, REV BRAKE	
162	3-736-143-01	GEAR, RVS CAM	

No.	Part No.	Description	Remark
163	X-3729-911-1	ARM ASSY, RVS	
164	3-736-740-01	NUT (M2X0.25), NYLON	
165	3-736-116-01	GEAR, COMMUNICATION	
166	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
167	3-736-111-01	STOPPER	
168	3-736-136-01	CAM, ELEVATOR	
169	3-736-135-01	GEAR, PRESS CAM	
170	3-736-109-01	PLATE, OPEN, LID	
171	3-738-250-01	SCREW, AC ADJUSTMENT	
172	3-736-020-11	SPRING, COMPRESSION	
173	3-736-024-01	SPRING, TENSION	
174	3-736-025-01	SPRING (REV BRAKE), TENSION	
175	3-744-227-01	SPRING (ATOM), FL GROUND	
176	3-736-069-01	RETAINER, SPRING	

5-5. MECHANISM DECK 2

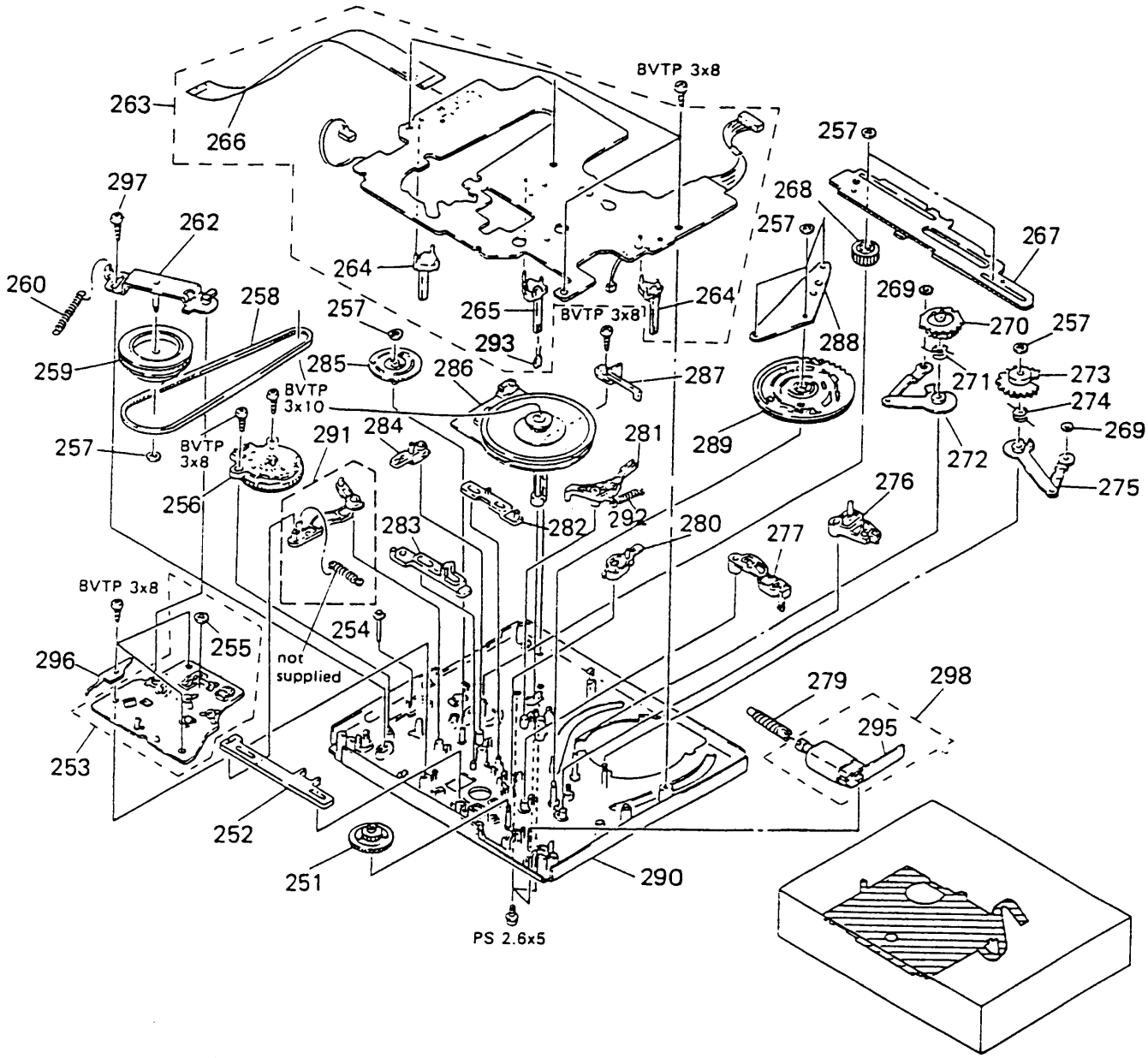


No.	Part No.	Description	Remark
201	A-6759-483-A	TAKE-UP BLOCK ASSY (AT), S	
202	3-736-075-01	BRAKE, S SOFT	
203	3-738-212-21	RETAINER, THRUST, REEL TABLE	
204	X-3729-935-3	TABLE ASSY, REEL, SUPPLY	
205	3-733-389-11	SPRING, TENSION	
206	X-3727-797-1	BAND ASSY, TENSION REGULATOR	
207	X-3727-786-1	SHUTTLE (LEFT) ASSY	
208	X-3733-301-1	ROLLER ASSY, GUIDE	
209	X-3727-767-1	BASE ASSY, STABILIZER	
210	1-543-647-11	HEAD, FE	
211	3-736-082-01	RETAINER, TS THRUST	
212	3-741-925-01	RING, RETAINING	
213	X-3727-771-1	STABLILIZER ASSY, TAPE	
214	⚠8-848-537-11	DRUM ASSY (DZH-21A-R) (M901)	234, 236
215	3-736-047-01	SPRING (S SOFT), TENSION	
216	3-736-041-01	NUT (N3), NYLON	
217	A-6761-129-A	HEAD BLOCK ASSY, ACE	
218	3-736-042-01	SPRING, TORSION	
219	3-736-151-11	ARM (POM), TENSION REGULATOR	

No.	Part No.	Description	Remark
220	X-3729-926-1	BRAKE ASSY (2), T	221
221	3-738-220-01	SPRING (MAIN BRAKE 2), TENSION	
222	X-3733-336-2	BRAKE ASSY (2) (AT), S	221
223	3-738-221-01	SPRING (MAIN BRAKE 1), TENSION	
224	*X-3746-005-1	BASE ASSY (G), DRUM	
225	3-736-055-01	SCREW (3X8), TAPPING	
226	3-736-740-01	NUT (M2X0.25), NYLON	
227	3-736-733-01	FLANGE, 7 GUIDE	
228	3-736-730-01	SLEEVE, #7 GUIDE	
229	3-736-729-01	SPRING, COMPRESSION	
230	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
231	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
232	3-736-745-01	SPRING	
233	A-6747-267-C	ARM BLOCK ASSY (S), C ROLLER	
234	8-848-540-01	UPPER DRUM ASSY (DZR-21R)	
235	3-736-073-01	SLIDER, POLYETHYLENE	
236	2-643-205-01	SCREW, FITTING +PW 3X8, UPPER DRUM	
237	3-738-284-01	SPRING, TENSION	
238	*3-738-249-01	PLATE, FIXED, MD	

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

5-6. MECHANISM DECK 3



No.	Part No.	Description	Remark
251	3-736-015-01	WHEEL (CAM), WORM	
252	3-736-158-01	PLATE, SLIDE, PENDULUM	
253	A-6739-084-A	CHASSIS BLOCK ASSY, SUB	255
254	3-736-091-01	PIN, SWITCH	
255	3-669-465-00	WASHER (1.5), STOPPER	
256	1-571-920-11	SWITCH, ROTARY (S1)	
257	3-669-595-00	WASHER (2), STOPPER	
258	3-736-013-01	BELT, TIMING	
259	X-3727-782-1	PULLEY ASSY	
260	3-736-089-01	SPRING, TENSION	
262	X-3727-761-1	ARM ASSY, ADJUSTMENT	
263	*A-6754-055-A	MD-40 BOARD, COMPLETE	264, 265, 293
264	3-736-149-01	HOLDER, ST SENSOR	
265	*3-736-144-01	HOLDER, LED	
267	3-736-177-01	PLATE, SLIDE, MODE	
268	3-733-394-01	GEAR, RVS RELAY	
269	3-736-073-01	SLIDER, POLYETHYLENE	
270	3-736-148-01	GEAR (RIGHT), THREADING	
271	3-736-092-01	SPRING (RIGHT), TORSION	
272	X-3727-777-1	ARM (RIGHT) ASSY, THREADING	
273	3-736-147-01	GEAR (LEFT), THREADING	
274	3-736-040-01	SPRING (LEFT), TORSION	

No.	Part No.	Description	Remark
275	X-3727-778-1	ARM (LEFT) ASSY, THREADING	
276	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
277	3-736-140-03	ARM, S TAKE-UP	
278	X-3733-302-1	MOTOR ASSY, CAM (M903)	295
279	3-733-395-01	GEAR (CAM), WORM	
280	3-733-397-01	ARM, BRAKE FUNCTION	
281	X-3733-338-1	BRAKE ASSY (AT), CAP	
282	3-733-398-04	PLATE, SLIDE, BRAKE	
283	3-736-103-03	PLATE, SLIDE, LIMITER	
284	3-736-016-01	ARM, LIMITER FUNCTION	
285	3-736-170-01	GEAR, RKB CAM	
286	8-835-382-01	MOTOR, DC U-26B (CAPSTAN) (M902)	
287	3-736-744-01	RETAINER, ROTOR	
288	3-733-396-01	HOLDER, CAM GEAR	
289	3-736-176-01	GEAR, CAM	
291	3-736-139-03	ARM, PENDULUM FUNCTION	
292	3-738-237-01	SPRING (CAP BRAKE), TENSION	
293	8-719-974-65	DIODE GL451Y (D001)	
295	*1-633-460-11	CA-41 BOARD	
296	3-741-950-01	SPRING (AT), LEAF, SC GROUND	
297	3-733-386-01	SCREW (3X8), WASHER	

SECTION 7
MECHANICAL ADJUSTMENTS

Refer to "VHS MECHANICAL ADJUSTMENT MANUAL II " separately issued for MECHANICAL ADJUSTMENTS.

PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

- The following must be done after every repair regardless of how many hours the user has operated the machine.

CLEANING OF ROTATING HEAD DISK ASSEMBLY

1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is doen.

CLEANING OF THE TAPE MOVEMENT SYSTEM

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

CLEANING THE DRIVE SYSTEM

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

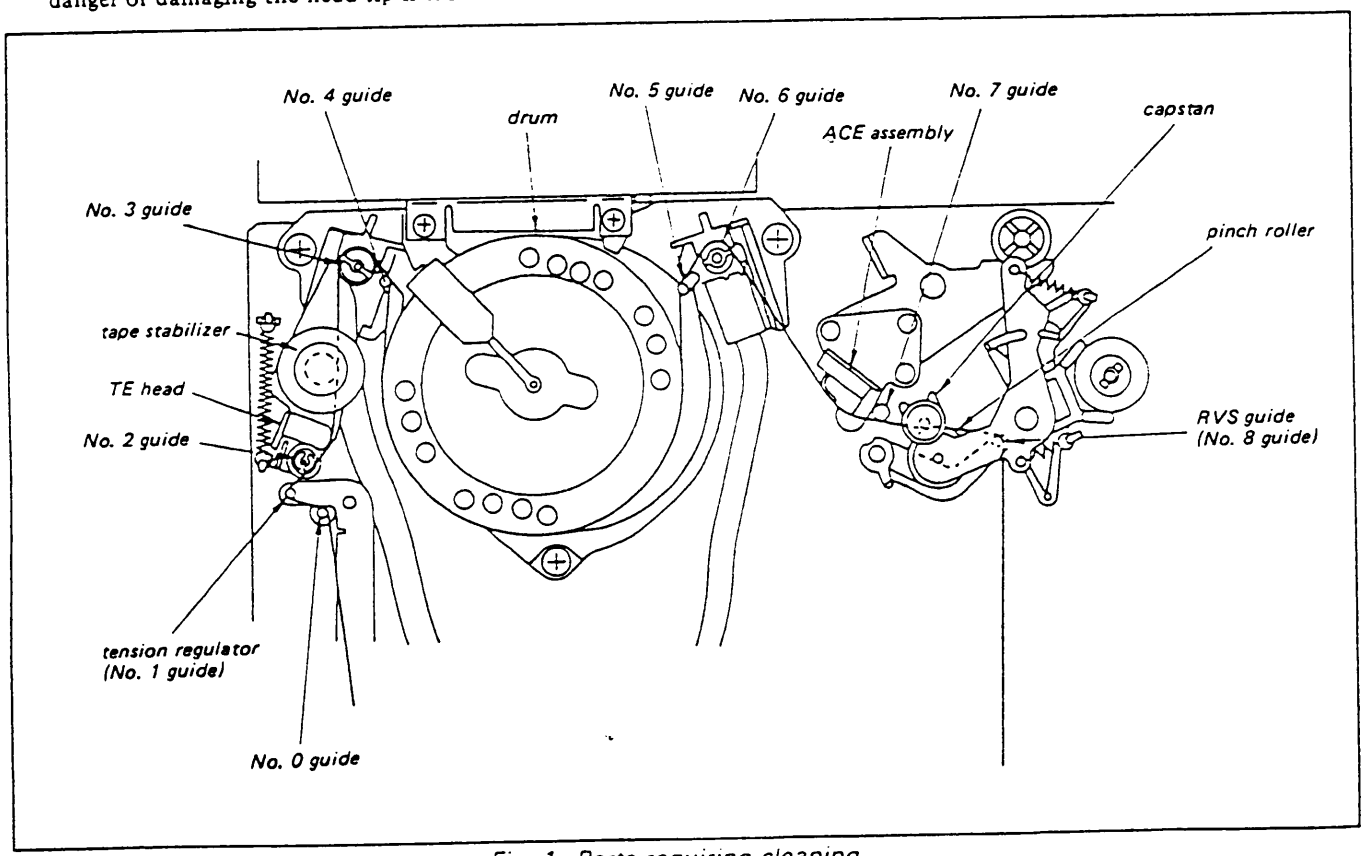


Fig. 1. Parts requiring cleaning

PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users operating hours.

	Maintenance & Check	Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Transportation System	Cleaning of tape transportation system		○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y	A-6761-129-A	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y		○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Timing belt	3-736-013-01	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	This cleaning must be done whenever a repair is made.
Performance Confirmation	Abnormal sound		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension		-	☆	-	☆	-	☆	-	☆	-	☆	Confirmation must be made according to "VHS MECHANICAL ADJUSTMENT MANUAL II" item 4-1-1. Specified value: adjust to 30 to 42 g-cm (when measured with torque cassette tape)
	Confirmation of brake system		-	☆	-	☆	-	☆	-	☆	-	☆	Confirmation must be made according to section
	Confirmation of record & playback functions		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 80-170 g-cm

○ Cleaning ☆ Confirmation

Note: On overhaul
When overhauling the unit, replace parts as indicated in the above table.

SLV-373/373UB/373VP
RMT-V373

SONY

SERVICE MANUAL

AEP Model
SLV-373

UK Model
SLV-373UB

West Germany Model
SLV-373VP

SUPPLEMENT-1

File this supplement with the service manual.

This SUPPLEMENT-1 is for the Block Diagram and Adjustments.

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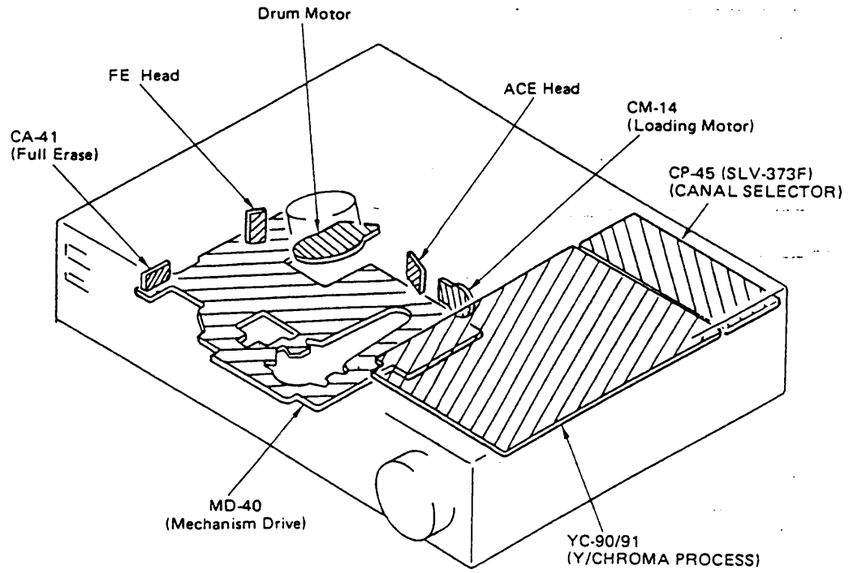
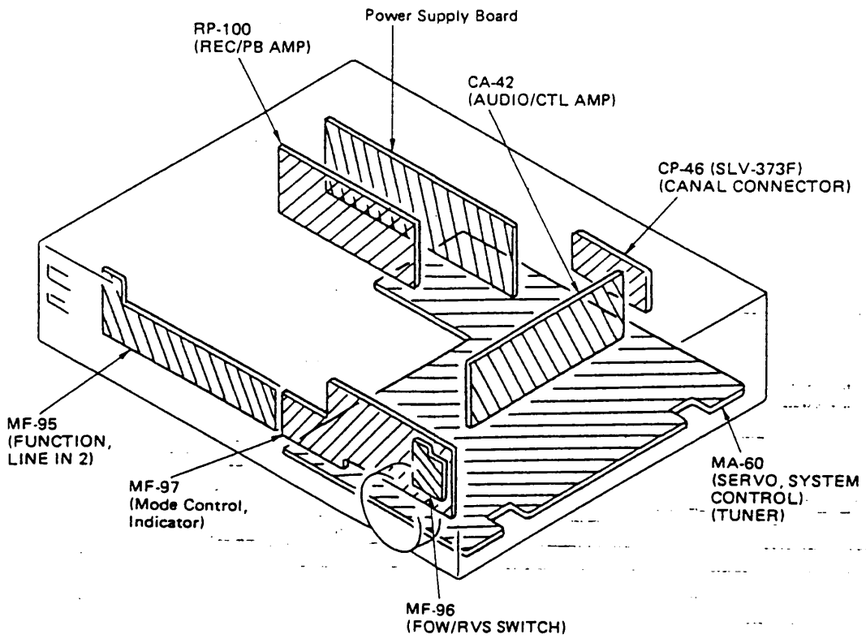
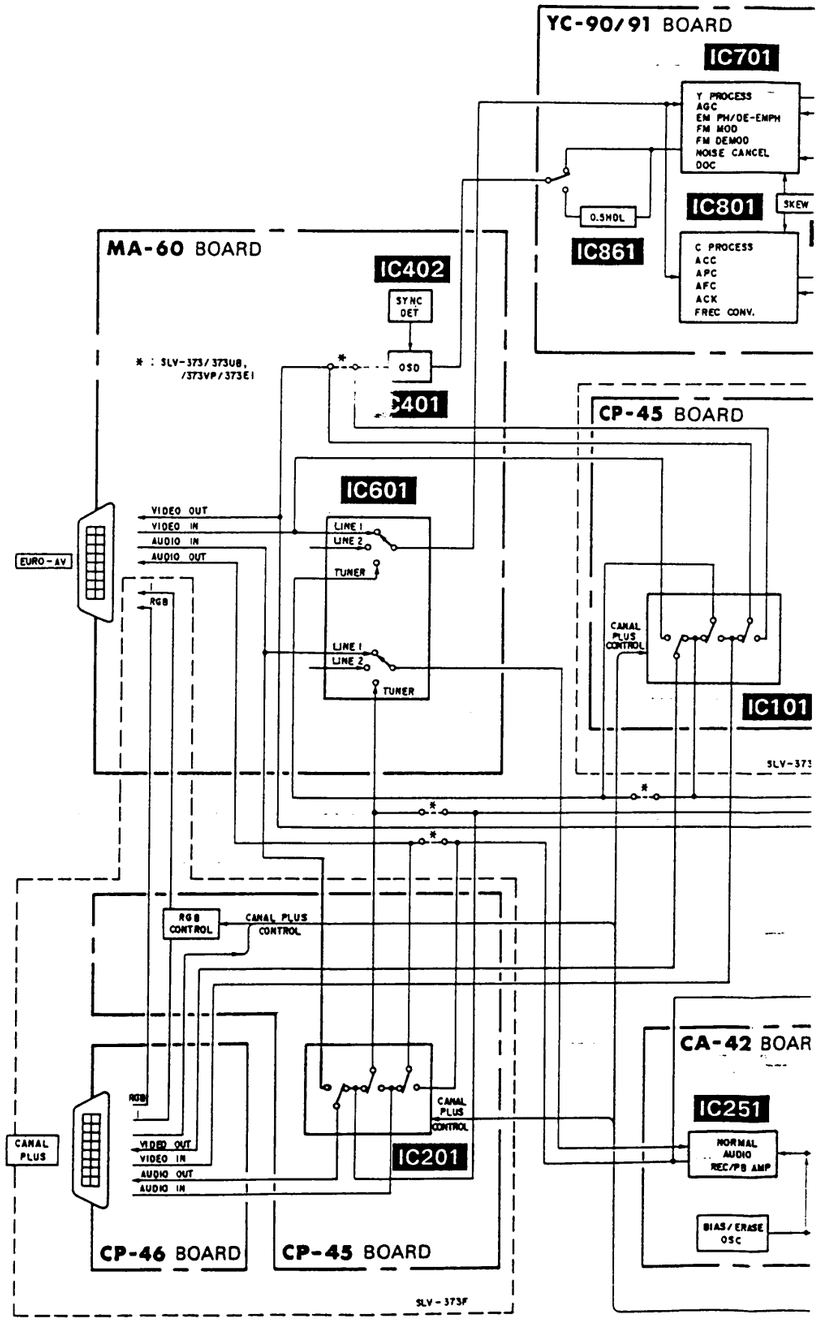
SECTION 1
DIAGRAMS

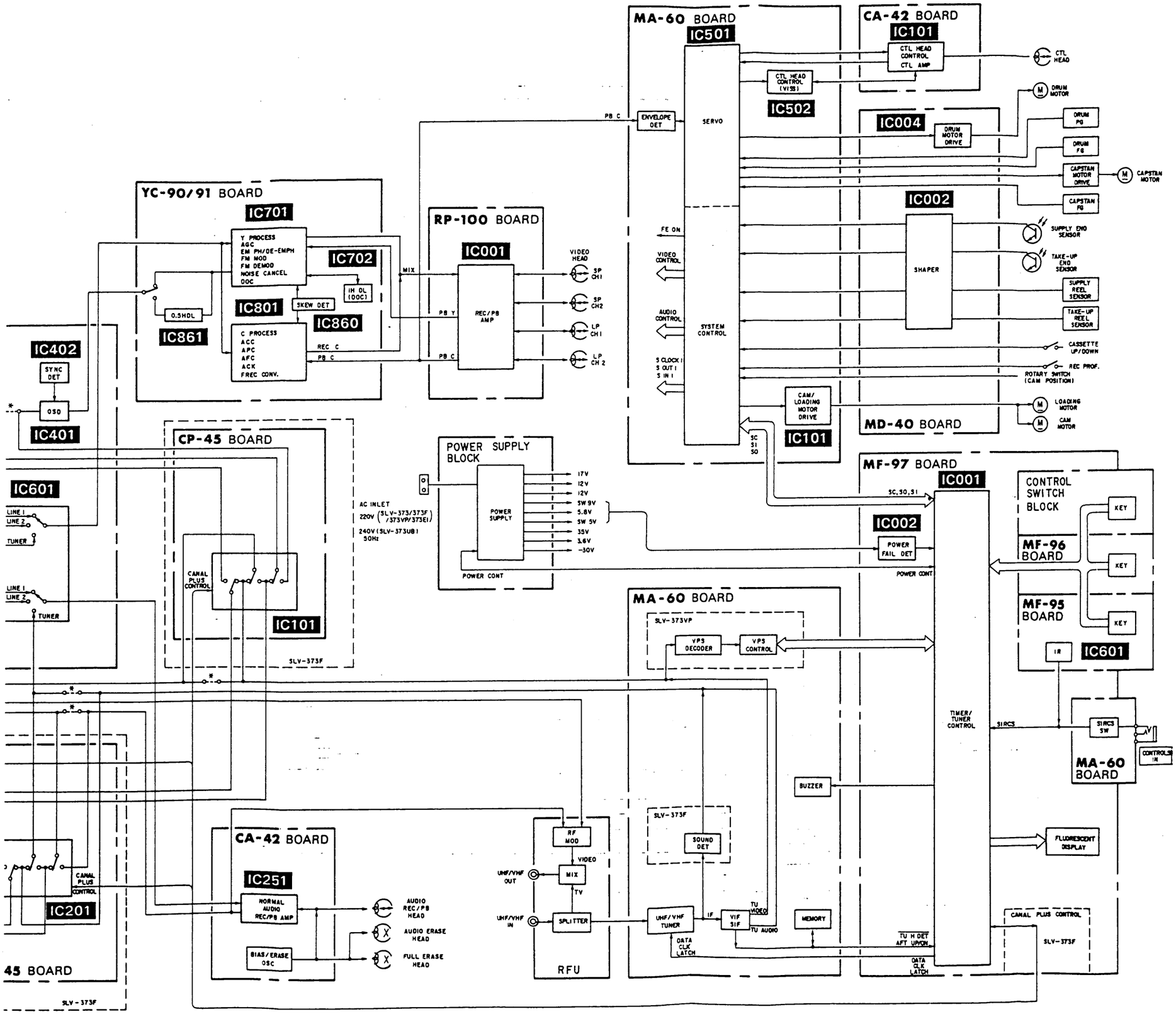
1-1. CIRCUIT BOARDS LOCATION





1-2. OVER ALL BLOCK DIAGRAM




MA-60 BOARD
IC501
SERVO
SYSTEM CONTROL
ENVELOPE DET
PB C
FE ON
VIDEO CONTROL
AUDIO CONTROL
S CLOCK I
S OUT I
S IN I
SC
SI
SO
CA-42 BOARD
IC101
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CTL HEAD CONTROL (VISS)
IC502
CTL HEAD
DRUM MOTOR
IC004
DRUM MOTOR DRIVE
DRUM PG
DRUM FG
CAPSTAN MOTOR DRIVE
CAPSTAN MOTOR
CAPSTAN FG
IC002
SHAPER
SUPPLY END SENSOR
TAKE-UP END SENSOR
SUPPLY REEL SENSOR
TAKE-UP REEL SENSOR
CASSETTE UP/DOWN
REC PROF.
ROTARY SWITCH (CAM POSITION)
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LOADING MOTOR
CAM MOTOR
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Y PROCESS
AGC
EM PH/DE-EMPH
FM MOD
FM DEMOD
NOISE CANCEL
DOC
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IH OL (DOC)
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APC
AFC
ACK
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REC C
PB C
MIX
PB Y
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SP CH2
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IC601
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LINE 2
TUNER
CANAL PLUS CONTROL
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KEY
KEY
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VIDEO
MIX
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UHF/VHF OUT
UHF/VHF IN
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IF
VIF SIF
TU VIDEO
TU AUDIO
MEMORY
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RFU
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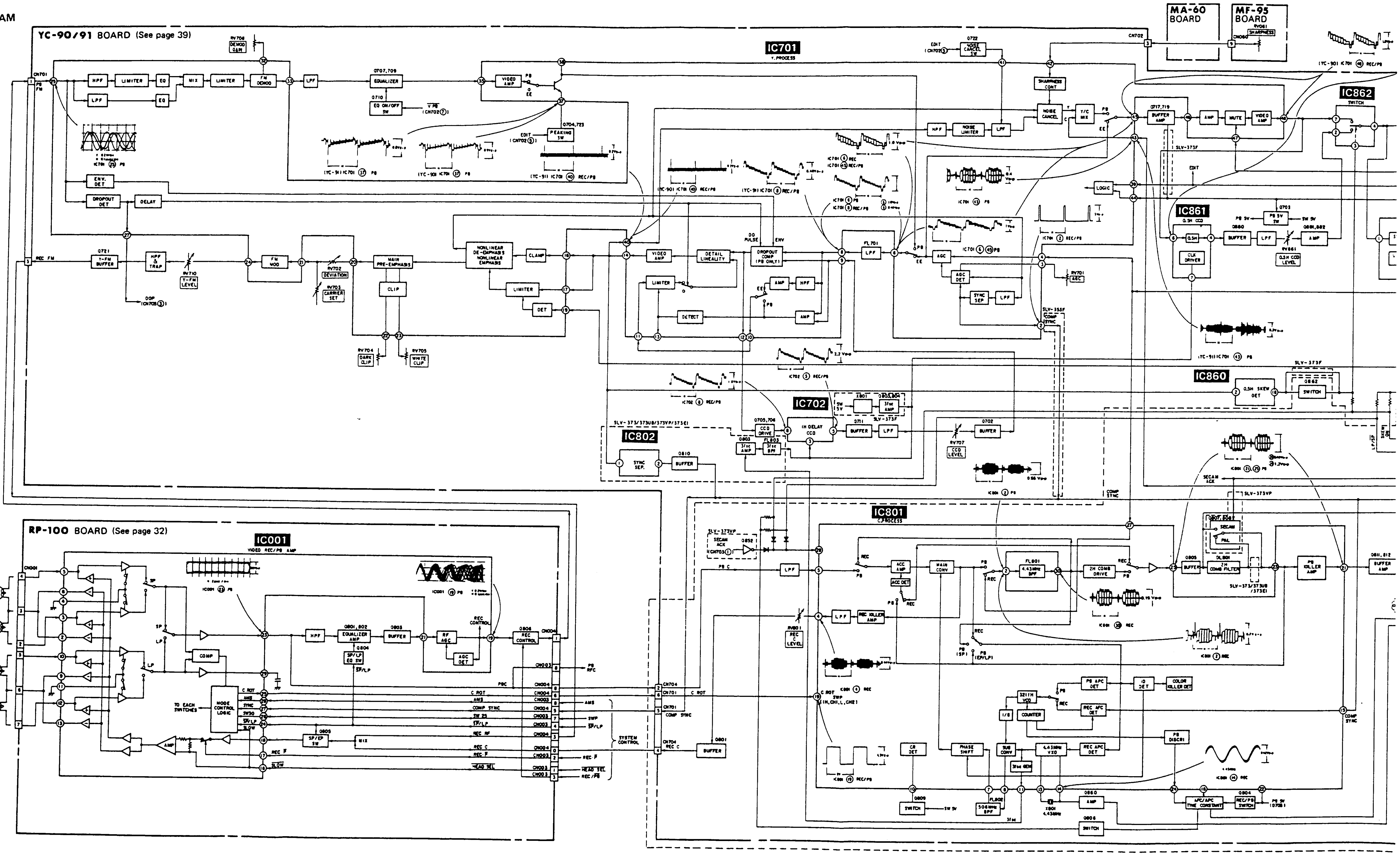
BIAS/ERASE OSC
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
IC201
CANAL PLUS CONTROL
45 BOARD
SLV-373F


YC-90/91 BOARD (See page 39)
MA-60 BOARD
MF-95 BOARD
RV061 SHARPNESS
IC701
Y. PROCESS
RV706 DEMOD GAIN
CN701
PB FM
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LIMITER
EQ
MIX
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LPF
EQUALIZER
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Q710
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DROPOUT DET
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Q721
Y-FM BUFFER
HPF & TRAP
RV710 Y-FM LEVEL
DOP (CN703 3)
FM MOD
RV702 DEVIATION
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RV705 WHITE CLIP
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DET
DETAIL LINEALITY
DO PULSE
ENV
DROPOUT COMP (PB ONLY)
DETECT
AMP
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AGC
AGC DET
SYNC SEP
RV701 AGC
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SHARPNESS CONT
NOISE CANCEL
NOISE LIMITER
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PB 5V
SW 5V
Q860
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RV861 0.5H CCD LEVEL
IC860
0.5H SKEW DET
Q862
LP/SP
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1H DELAY CCD
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X801
Q803,804
3fsc AMP
SW 5V
Q711
Q702
RV707 CCD LEVEL
SLV-373/373UB/373VP/373EI
IC802
SYNC SEP.
Q810
Q803
FL803
3fsc BPF
IC801
C.PROCESS
SLV-373VP
SECAM ACK (CN703 1)
Q852
PB C
REC
ACC AMP
ACC DET
MAIN CONV
FL801
4.43MHz BPF
2H COMB DRIVE
Q805
DL801
2H COMB FILTER
SLV-373/373UB/373EI
PB KILLER AMP
Q811,812
SECAM ACK
SECAM
PAL
Q807,808
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REC KILLER AMP
PB (SP)
PB (EP/LP)
PB APC DET
ID DET
COLOR KILLER DET
321fH VCO
1/8
COUNTER
REC AFC DET
PB DISCRI
CR DET
PHASE SHIFT
SUB CONV
4.43MHz VXO
REC APC DET
3fsc GEN
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SWITCH
SW 5V
FL802
5.06MHz BPF
X801 4.43MHz
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SP/LP
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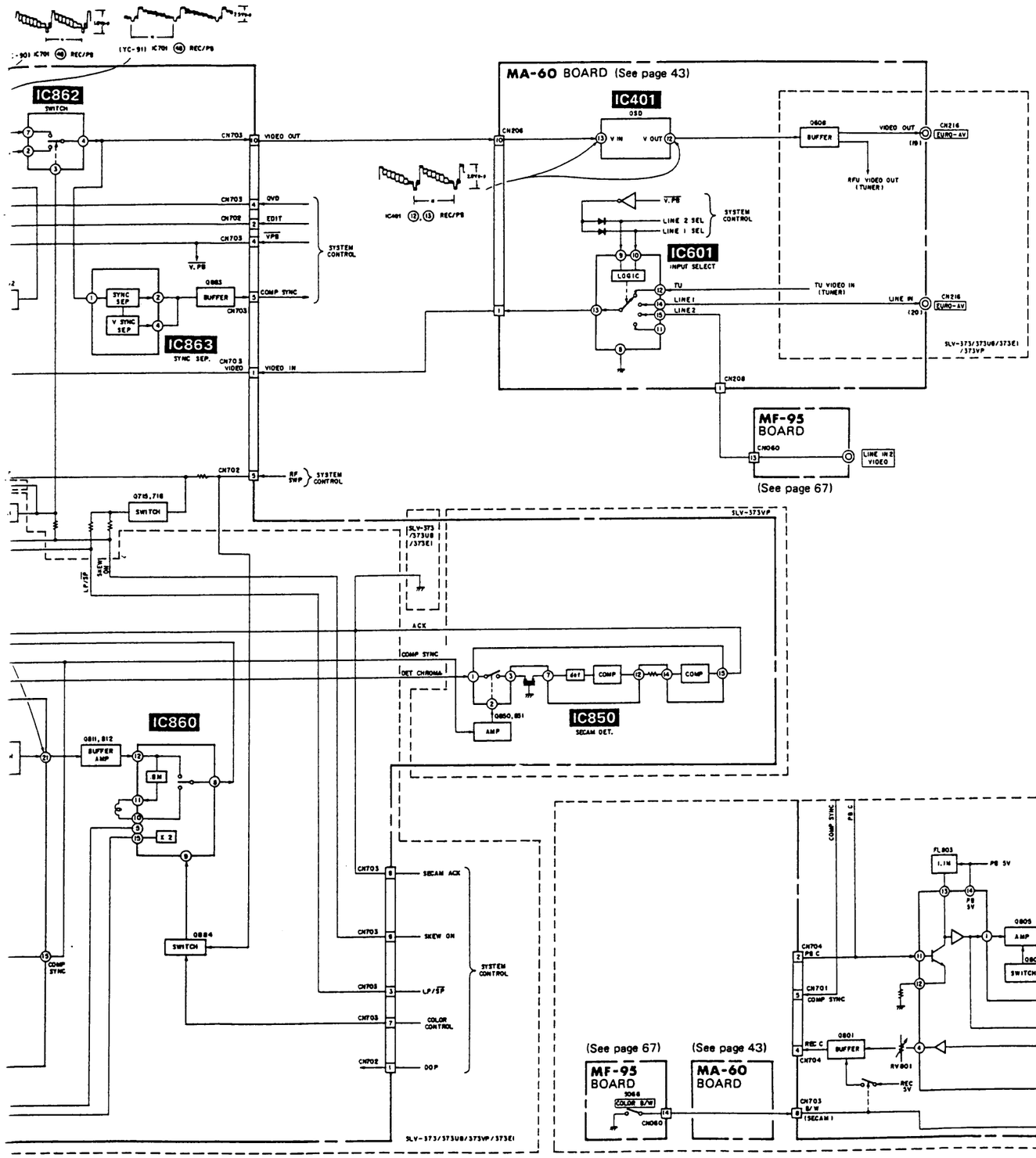
EQUALIZER AMP
Q804
SP/LP EQ SW
Q803
RF AGC
AGC DET
REC CONTROL
Q806
CN004
CN003
PB RFC
PBC
COMP SYNC
SW 25
REC RF
HEAD SEL
REC/PB
SWP
SYSTEM CONTROL


MA-60 BOARD (See page 43)
IC862
SWITCH
IC863
SYNC SEP.
IC401
OSD
IC601
INPUT SELECT
LOGIC
BUFFER
SYNC SEP
V SYNC SEP
SYSTEM CONTROL
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VIDEO IN
COMP SYNC
EDIT
OVD
V. PB
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LINE 1 SEL
TU
LINE1
LINE2
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RFU VIDEO OUT (TUNER)
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AMP
SECAM ACK
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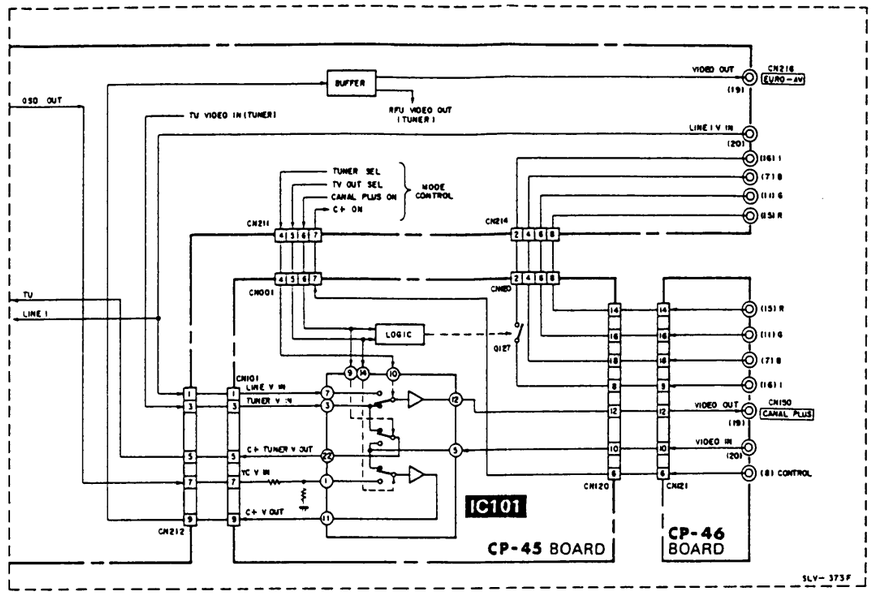
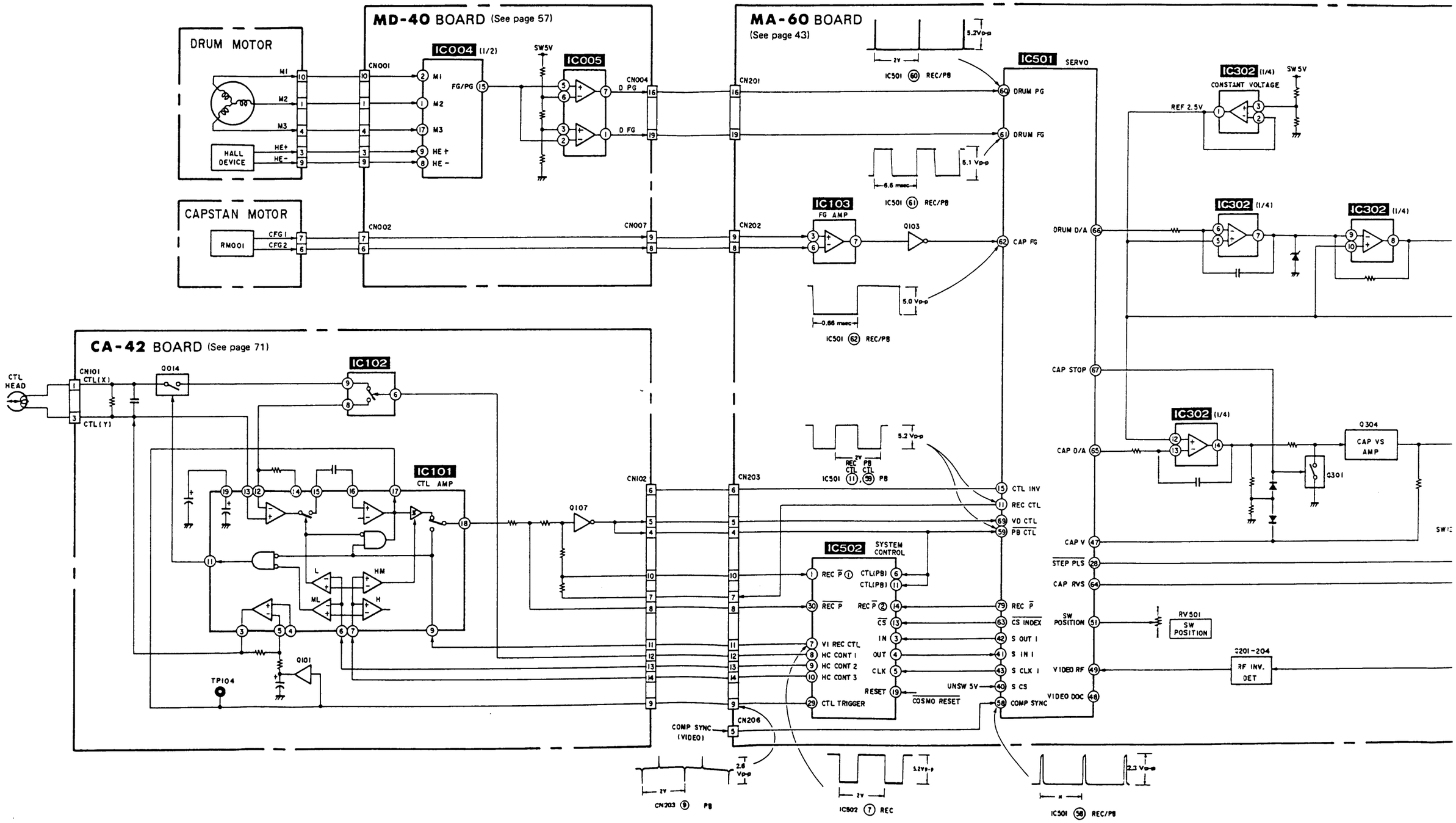
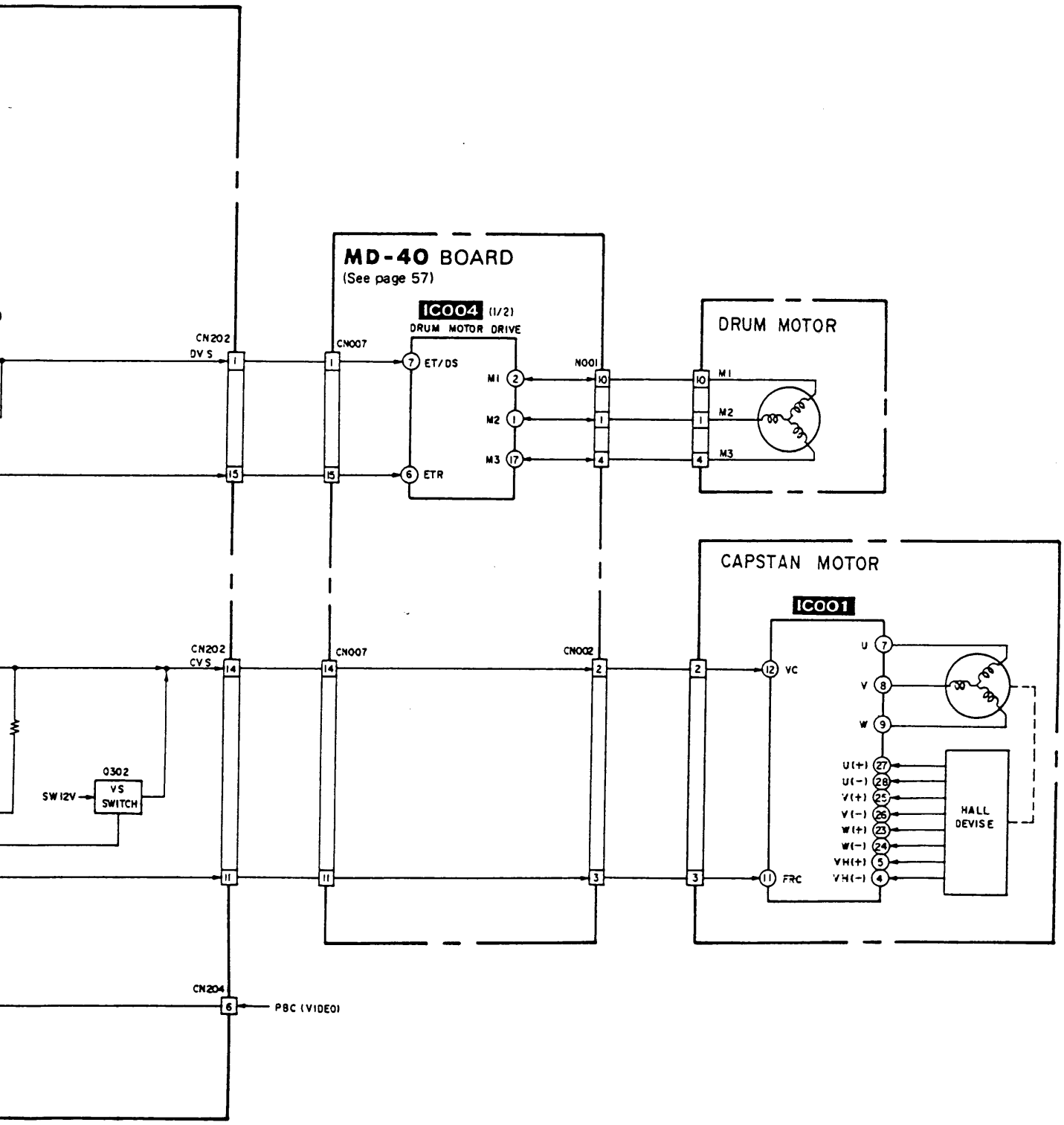
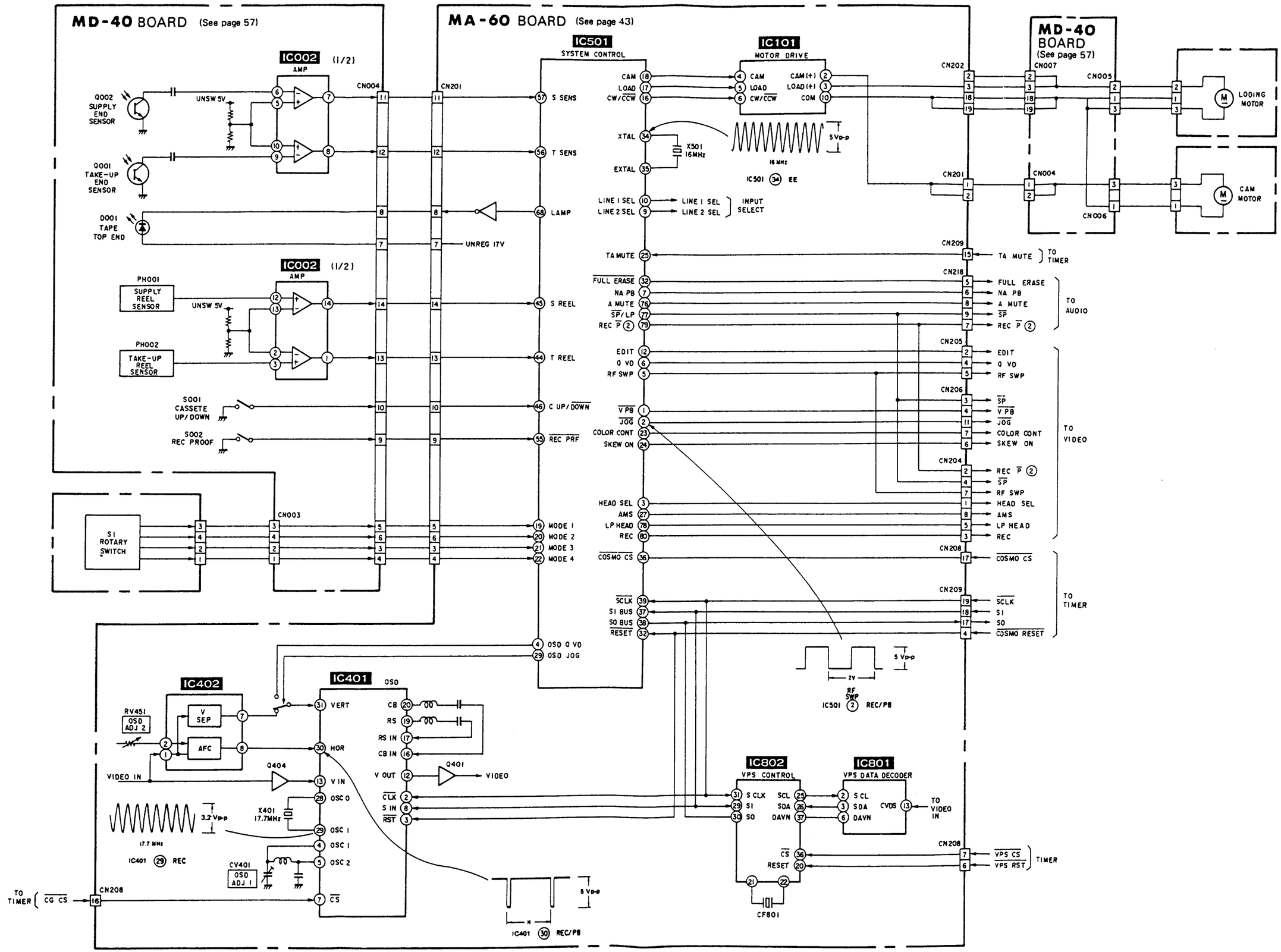
COLOR CONTROL
DOP
ACK
DET CHROMA
SLV-373/373UB/373VP/373EI
IC801
CHROM PROCESS
SYNC GATE
SYNC GATE TIMING GEN.
COLOR KILLER
(See page 67)
(See page 43)
MF-95 BOARD
MA-60 BOARD


OSD OUT
TU VIDEO IN (TUNER)
BUFFER
RFU VIDEO OUT (TUNER)
VIDEO OUT
LINE 1 V IN
TUNER SEL
TV OUT SEL
CANAL PLUS ON
C+ ON
MODE CONTROL
TU
LINE 1
LOGIC
TUNER V IN
C+ TUNER V OUT
VC V IN
C+ V OUT
IC101
CP-45 BOARD
CP-46 BOARD
CANAL PLUS
CONTROL

1-4. SERVO BLOCK DIAGRAM




MD-40 BOARD
(See page 57)
IC004 (1/2)
DRUM MOTOR DRIVE
DRUM MOTOR
CAPSTAN MOTOR
IC001
CN202
DVS
CN007
ET/DS
ETR
M1
M2
M3
NO01
CN202
CVS
CN007
CN002
VC
FRC
U
V
W
U(+)
U(-)
V(+)
V(-)
W(+)
W(-)
VH(+)
VH(-)
HALL
DEVISE
0302
VS
SWITCH
SW12V
CN204
PBC (VIDEO)


MD-40 BOARD (See page 57)
MA-60 BOARD (See page 43)
IC002 (1/2) AMP
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
D001 TAPE TOP END
UNSW 5V
CN004
CN201
IC501 SYSTEM CONTROL
IC101 MOTOR DRIVE
S SENS
T SENS
LAMP
UNREG 17V
PH001 SUPPLY REEL SENSOR
PH002 TAKE-UP REEL SENSOR
S REEL
T REEL
S001 CASSETE UP/DOWN
C UP/DOWN
S002 REC PROOF
REC PRF
S1 ROTARY SWITCH
CN003
MODE 1
MODE 2
MODE 3
MODE 4
CAM
LOAD
CW/CW
XTAL
EXTAL
X501 16MHz
5Vp-p
16 MHz
IC501 (34) EE
LINE 1 SEL
LINE 2 SEL
INPUT SELECT
TA MUTE
FULL ERASE
NA PB
A MUTE
SP/LP
REC P (2)
EDIT
Q VD
RF SWP
VPB
JOG
COLOR CONT
SKEW ON
HEAD SEL
AMS
LP HEAD
REC
COSMO CS
SCLK
SI BUS
SO BUS
RESET
OSD Q VD
OSD JOG
CN202
CN201
CN209
CN218
CN205
CN206
CN204
CN208
CN209
TO TIMER
TO AUDIO
TO VIDEO
MD-40 BOARD (See page 57)
CN007
CN005
CN004
CN006
LOADING MOTOR
CAM MOTOR
IC402
IC401 OSD
RV451 OSD ADJ 2
V SEP
AFC
VERT
HOR
V IN
OSC 0
OSC 1
OSC 1
OSC 2
CB
RS
RS IN
CB IN
V OUT
Q404
Q401
VIDEO IN
VIDEO
X401 17.7MHz
3.2Vp-p
17.7 MHz
IC401 (29) REC
CV401 OSD ADJ 1
CLK
S IN
RST
CS
TO TIMER CG CS
CN208
5 Vp-p
IC401 (30) REC/PB
IC802 VPS CONTROL
IC801 VPS DATA DECODER
S CLK
SI
SO
SCL
SDA
DAVN
S CL
SDA
DAVN
CVDS
TO VIDEO IN
CF801
RESET
VPS CS
VPS RST
TIMER
5 Vp-p
2V
RF SWP
IC501 (2) REC/PB

1-6. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal Name	Pin No.	I/O	STOP/FF/REW	TAPE LOADING	TAPE UNLOADING	PB	PB·PAUSE	SLOW	x2	CUE	REVIEW	REC	REC·PAUSE	−x1	−x2
V PB	MA-60 BOARD IC501 ①	O	H	H	H	L	L	L	L	L	L	H	H	L	L
HEAD SEL	MA-60 BOARD IC501 ③	O	L	L	L	L	H	*1	H	L	L	H	H	L	H
RF SW P	MA-60 BOARD IC501 5	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-60 BOARD IC501 ⑥	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L	*4	*4
EDIT	MA-60 BOARD IC501 ⑫	O	L	L	L	*5	*5	*5	*5	*5	*5	*5	L	*5	*5
AMS	MA-60 BOARD IC501 ㉗	O	L	L	L	L	L	*6	L	*7	*7	L	L	*7	*7
$\overline{SP}$/LP	MA-60 BOARD IC501 ㉗	O	*8	*8	*8	*9	*9	*9	*9	*9	*9	*8	*8	*9	*9
LP HEAD	MA-60 BOARD IC501 ㉘	O	*8	*8	*8	*9	L	L	L	L	L	*8	*8	L	L
REC/$\overline{P}$	MA-60 BOARD IC501 ㉙	O	L	L	L	L	L	L	L	L	L	H	L	L	L
REC	MA-60 BOARD IC501 ㉚	O	L	L	L	L	L	L	L	L	L	H	H	L	L
COMP SYNC	MA-60 BOARD IC501 ㊽	I	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10
SKEW ON	MA-60 BOARD IC501 ㉔	O	L	L	L	L	L	L	L	*11	*11	L	L	*11	*11
COLOR CONT	MA-60 BOARD IC501 ㉓	O	L	L	L	L	*12	*13	*12	*11	*11	L	L	*11	*11

*1. "H" when the tape stops, and "L" when it runs (for approx. 40 msec).
*2. Synchronized with drum rotation. 25 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL single is not played back.
*4. V-cycle "H" pulse.
*5. Normally "L". "H" during EDIT mode.
*6. HI-Z when the tape runs reverse during SP mode "L" the other conditions.
*7. HI-Z (2.5 V) during SP mode, or "L" during LP mode.
*8. By SP/LP selector, "L" during SP mode, or "H" during LP mode.
*9. By the mode on the recorded tape, "L" when it is SP mode, or "H" when "LP" mode.
*10. Composite sync. signal (positive polarity).
*11. "H" during LP mode.
*12. HI-Z during LP mode.
*13. HI-Z when the tapes STOP during LP mode "L" the other conditions.

1-7. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal Name	Pin No.	I/O	STOP	FF	REW	TAPE LOADING	TAPE UNLOADING	PB	PB• PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC• PAUSE
REC CTL *1	MA-60 BOARD IC501 ⑪	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
CAP STOP	MA-60 BOARD IC501 ⑰	O	H	L	L	L	L	L	H	H	L	L	L	L	H
$\overline{\text{STEP PLS}}$	MA-60 BOARD IC501 ㉘	O	H	H	H	H	H	H	H	*2	H	H	H	H	H
CAP V *3	MA-60 BOARD IC501 ㊼	I													
SW POSITION *4	MA-60 BOARD IC501 ㊶	I													
$\overline{\text{PB CTL}}$	MA-60 BOARD IC501 ㊾	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H
VD CTL	MA-60 BOARD IC501 ㊾	I	H	*6	*6			*1	H	*2	*6	*6	*6	*1	H
DRUM PG	MA-60 BOARD IC501 ㊿	I	L	L	L	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7
DRUM FG	MA-60 BOARD IC501 ㊶	I	L	L	L	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8
CAP FG	MA-60 BOARD IC501 ㊷	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L
INDEX $\overline{\text{CS}}$	MA-60 BOARD IC501 ㊸	O							*10						
CAP RVS	MA-60 BOARD IC501 ㊹	O	H	L	H	L	H	L	L	*2	L	L	H	L	L
CAP DA *14	MA-60 BOARD IC501 ㊺	O	*11	L	L	*11	*11	*12	*11	*11	*12	*12	*12	*12	*11
DRUM DA *14	MA-60 BOARD IC501 ㊻	O	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13	*13
REC•$\overline{\text{P}}$	MA-60 BOARD IC501 ⑲	O	L	L	L	L	L	L	L	L	L	L	L	H	L

*1. 25 Hz pulse.
*2. "L"pulse when the tape runs.
*3. Input terminal for capstan constant-voltage drive.
Used in the FF/REW mode and for cassette loading/unloading.
*4. Input terminal for switching position sdjustment.
*5. Indefinite cycle pulse.
*6. Cycle pulse proportional to a tape speed.
*7. 25 Hz "H" pulse.
*8. 300 Hz pulse.
*9. Tape run time pulse.
*10. V-cycle "L" pulse.
*11. "H" or "L" pulse in a cycle of approx. 2 msec.
*12. "H" or "L" pulse in a cycle of approx. 1.5 msec.
*13. "H" or "L" pulse in a cycle of approx. 3 msec.
*14. 3-value output of "H", "L" and HI-Z (2.5V).

1-8. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal Name	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE LOADING	TAPE UNLOADING	STOP	FF	REW	PB	PB• PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC PAUSE
CAM *1	MA-60 BOARD IC501 ⑱	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-60 BOARD IC501 ⑰	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/$\overline{CCW}$	MA-60 BOARD IC501 ⑯	O			H	L	H	L											
MODE 1	MA-60 BOARD IC501 ⑲	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	H
MODE2	MA-60 BOARD IC501 ⑳	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-60 BOARD IC501 ㉑	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-60 BOARD IC501 ㉒	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-60 BOARD IC501 ㊺	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/$\overline{DOWN}$	MA-60 BOARD IC501 ㊻	I	L	H	H→L	H→L	L	L	L	L	L	L	L	L	L	L	L	L	L
T REEL	MA-60 BOARD IC501 ㊹	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL	MA-60 BOARD IC501 ㊺	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
LAMP	MA-60 BOARD IC501 ㊽	O	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP V	MA-60 BOARD IC501 ㊼	I	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
CAP STOP	MA-60 BOARD IC501 ㊼	O	L	H			L	L	H	L	L	L	H	H	L	L	L	L	H
CAP RVS	MA-60 BOARD IC501 ㊹	O	H	H			L	H	H/L	L	H	L	L	L	L	L	H	L	L
CAP DA *8	MA-60 BOARD IC501 ㊺	O																	
T SENS	MA-60 BOARD IC501 ㊻	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-60 BOARD IC501 ㊼	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when progressing to the MECHA mode.
*2. "L" when a cassette erasure preventive finger is bent, and "H" when not bent.
*3. Cycle pulse proportional to a reel speed.
*4. "H" pulse in a cycle of approx. 2 msec.
*6. Input terminal for capstant constant-voltage drive.
Used in the FF/REW mode and for cassette loading/unloading.
*7. Narmally "L", "H" pulse in a cycle of 2 msec. when tape top or tape end is detected.
*8. 3-value output of "H", "L" and HI-Z (2.5V).

1-9. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal Name	Pin No.	I/O	I/O LEVEL
$\overline{\text{RESET}}$	MA-60 BOARD IC501 ㊲	I	Normally "H". Set to "L" when a power failure is delected or power is restored.
$\overline{\text{COSMO CS}}$	MA-60 BOARD IC501 ㊱	I	Chip select signal from the timer microcomputer (MF-97 board IC001). V-cycle "L" pulse.
SI BUS	MA-60 BOARD IC501 ㊲	I	Serial communication data from the timer microcomputer. V-cycle "L" pulse.
SO BUS	MA-60 BOARD IC501 ㊳	O	Serial communication data to the timer microcomputer. V-cycle "L" pulse.
$\overline{\text{S CLK}}$	MA-60 BOARD IC501 ㊴	O	Serial communication clock to the timer microcomputer. V-cycle "L" pulse.
S IN 1	MA-60 BOARD IC501 ㊶	I	Serial communication data from the INDEX IC (IC502). V-cycle "L" pulse.
S OUT 1	MA-60 BOARD IC501 ㊷	O	Serial communication data to the INDEX IC. V-cycle "L" pulse.
S CLK 1	MA-60 BOARD IC501 ㊸	O	Serial communication clock to the INDEX IC. V-cycle "L" pulse.
$\overline{\text{CS INDEX}}$	MA-60 BOARD IC501 ㊸	O	Chip select signal to the INDEX IC (IC502). V-cycle "L" pulse.

1-10. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal Name	Pin No.	I/O	STOP/ FF/REW	TAPE LOADING	TAPE UNLOADING	PB	PB• PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC PAUSE	− × 1	− × 2
NA•PB	MA-60 BOARD IC501 ⑦	O	L	L	L	H	H	H	H	H	H	L	L		
A MUTE	MA-60 BOARD IC501 ⑯	O	L	L	L	*1	H	H	H	H	H	L	L	H	H
SP/LP	MA-60 BOARD IC501 ⑰	O	*2	*2	*2	*3	*3	*3	*3	*3	*3	*2	*2	L	*3
REC/$\overline{\text{P}}$	MA-60 BOARD IC501 ⑲	O	L	L	L	L	L	L	L	L	L	H	L	H	L

*1. "H" when CTL signal is not played back.
*2. By SP/LP selector, "L" during SP mode, or "H" during LP mode.
*3. By the mode on the recorded tape, "L" when it is SP mode, or "H" when "LP" mode.

1-11. SYSTEM CONTROL MICROCOMPUTER (CXP80116: IC501 on MA-60 Board)
PORT FUNCTIONS DESCRIPTION

Port	Pin No.	Signal	I/O	Description
PA0	2	$\overline{JOG}$	O	L in viariable speed
PA1	1	$\overline{V\text{-}PB}$	O	L in PB mode
PA2	80	REC	O	H in REC or REC-PAUSE mode
PA3	79	REC/$\overline{P}$	O	H during record
PA4	78	LP HEAD	O	LP head select signal
PA5	77	$\overline{SP}$/LP	O	L in SP mode
PA6	76	A-MUTE	O	Audio mute signal
PA7	75	$\overline{TV}$/VTR	O	TV/VTR selection
PB0	10	LINE1	O	Input control 1
PB1	9	LINE2	O	Input control 2
PB2	8	NC	O	
PB3	7	NA-PB	O	Normal audio PB
PB4	6	Q-VD/V MUTE	O	Quasi VD signal/V mute
PB5	5	RF-SWP	O	RF switching pulse
PB6	4	OSD-VD	O	Quasi VD for OSD (This is different logically from the quasi VD.)
PB7	3	HEAD-SEL	O	Head select signal
PC0	18	CAM	O	Cam select signal
PC1	17	LOAD	O	Load select signal
PC2	16	CW/$\overline{CCW}$	O	Rotation direction set
PC3	15	CTL-INV	O	CTL inversion
PC4	14	NC	O	
PC5	13	NC	O	
PC6	12	EDIT	O	H during edit
PC7	11	REC-CTL	O	REC CTL output

Port	Pin No.	Signal	I/O	Description
PD0	26	NC	O	
PD1	25	TA-MUTE	I	Tuner audio mute signal input
PD2	24	SKEW ON	O	Picture control while SKEW
PD3	23	COLOR CONT	O	Color control while JOG
PD4	22	MODE4	I	MD encoder input (MSB) ↕ (LSB)
PD5	21	MODE3	I	
PD6	20	MODE2	I	
PD7	19	MODE1	I	
PE0	70	$\overline{DEW}$	I	DEW sensor input
PE1	69	VD-CTL	I	CTL counter input
PE2	68	LAMP	O	End sensor lamp signal
PE3	67	CAPSTOP	O	Capstan ON/OFF
PE4	66	DRM-DA	O	Drum DA output
PE5	65	CAP-DA	O	Capstan DA output
PE6	64	CAP-RVS	O	Capstan inversion
PE7	63	$\overline{CS\ INDEX}$	O	INDEX μcom chip select
PF0	47	CAP-V	I	Capstan constant voltage FB input
PF1	46	C-UP/DWN	I	Cassette UP/DOWN
PF2	45	S-REEL	I	S reel FG
PF3	44	T-REEL	I	T reel FG
PH0	30	$\overline{FULL\text{-}ERASE}$	O	Full erase ON
PH1	29	OSD JOG	O	OSD-VD signal select
PH2	28	$\overline{STEP\text{-}PLS}$	O	Step pulse output
PH3	27	AMS	O	AMS control

Port	Pin No.	Signal	I/O	Description
PG0	62	CAP-FG	I	Capstan FG input
PG1	61	DRM-FG	I	Drum FG input
PG2	60	DRM-PG	I	Drum PG input
PG3	59	PB-CTL	I	PB-CTL input
PG4	58	COMP-SYNC	I	Composite sync input
PG5	57	S-SENS	I	S end sensor
PG6	56	T-SENS	I	T end sensor
PG7	55	$\overline{\text{REC-PRF}}$	I	REC-PROOF switch
AN0	51	SW-POSI	I	Switch position adjustment
AN1	50	NC	I	
AN2	49	VIDEO-RF	I	Video RF input
AN3	48	VIDEO-DOC	I	Video DOC input (Not used)
CS0	36	$\overline{\text{COSMO CS}}$	I	Serial line for TT handshake
SI0	37	SI BUS	I	
SO0	38	SO BUS	O	
SCK0	39	$\overline{\text{S CLK}}$	I	
CS1	40	S CS1	I	Serial line for INDEX handshake
SI1	41	S IN1	I	
SO1	42	S OUT1	O	
SCK1	43	S CLK1	O	
AVDD	54	AVDD	–	A/D converter. Positive power supply terminal
AVREF	53	AVREF	I	A/D converter. Reference voltage input
AVSS	52	AVSS	–	A/D converter. GND
VDD	72	VDD	–	Positive power supply terminal
VSS	33/73	VSS	–	GND
EXTAL	35	EXTAL	I	System clock. 16 MHz crystal
XTAL	34	XTAL	O	
$\overline{\text{PST}}$	32	$\overline{\text{RESET}}$	I	Reset input
MP	31	MP	I	Microprocessor mode input (L always set)
NMI	71	NMI	I	Non-maskable interruption input (H in no use)

1-12. MODE CONTROL MICRO COMPUTER (CXP50116: IC001 on MF-97 Board) PORT FUNCTION DESCRIPTION

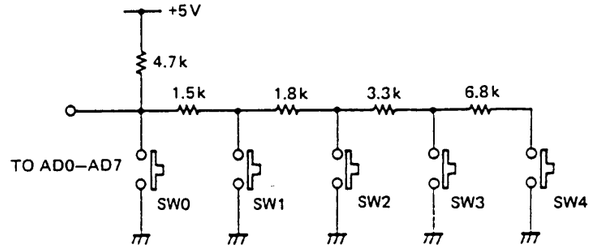
Port	Pin No.	Signal	I/O	Description
VDD	34	VDD	–	Positive power supply terminal
VSS	71	VSS	–	GND
EXTAL	74	EXTAL	I	Clock input (4.194304 MHz)
XTAL	72	XTAL	O	Clock output
TEX	31	TEX	I	Backup clock input (32.768 kHz)
TX	30	TX	O	Backup clock output
PA3	50	C+ DET	I	C+ DETECT input
PA2	49	DIST1	I	Destination setting port (MSB) ↕ (LSB)
PA1	48	DIST0	I	
PA0	47	$\overline{\text{H-DET}}$	I	VIDEO H-sync DETECT input
PC3	70	$\overline{\text{CG-CS}}$	O	OSD CS signal
PC2	69	$\overline{\text{COSMO-CS}}$	O	COSMO CS signal
PC1	68	$\overline{\text{VPS-CS}}$	O	VPS CS signal
PC0	67	$\overline{\text{VPS-RESET}}$	O	VPS RESET signal
PD3	66	MEM-CLK	O	EEP-ROM clock signal
PD2	65	MEM-CS	O	EEP-ROM CHIP-SEL signal
PD1	64	POWER-ON	O	Power control (H when the power is on.)
PD0	63	$\overline{\text{COSMO-RST}}$	O	COSMO reset signal
PE3	58	MEM-DATA	I/O	EEP-ROM data signal
PE2	57	NC	I	
PE1	56	AFT-UP	I	Tuner AFT-UP signal
PE0	55	AFT-DOWN	I	Tuner AFT-DOWN signal
PF3	54	PLL-CLK	O	FS tuner clock output
PF2	53	PLL-LATCH	O	FS tuner latch output
PF1	52	PLL-DATA	O	FS tuner data output
PF0	51	TA-MUTE	O	Tuner audio mute

Port	Pin No.	Signal	I/O	Description
PH3	80	C+ ON	O	C+ ON/OFF
PH2	79	AV CTRL	O	AV control
PH1	78	TUNER SEL	O	TUNER select
PH0	77	TV OUT SEL	O	AV output select
PY3	62	SIRCS-IN	I	Remote control input
PY2	61	POWER-FAIL	I	Service interruption detection
PY1	60	BUZZER	O	Buzzer signal
PY0	59	VH U/$\overline{VL}$	O	Tuner band select
AD7	42	AD7	OUTPUT	Key input reading A/D (including shuttle switch)
AD6	41	AD6		
AD5	40	AD5		
AD4	39	AD4		
AD3	38	AD3		
AD2	37	AD2		
AD1	36	AD1		
AD0	35	AD0		
T9 | T0	19 | 28	T9 | T0	OUT	FIP grid signal
S21	18	S17	O	(Not used)
S20 | S4	17 | 1	S16 | S0	OUTPUT	FIP segment signal
VFDP	76	VFDP	I	Power supply for FDP
VREF	75	VREF	I	Reference voltage for resetting circuit (to Vdd)

Port	Pin No.	Signal	I/O	Description
$\overline{EC}$	43		I	Event count input (Not used)
INT	29		I	Interruption from externals (Not used)
$\overline{RESET}$	32	$\overline{RESET}$	I	Reset input
$\overline{SC}$	44	SCLK	O	Serial bus clock output
SO	45	SO (from TT)	O	Serial bus SOUT
SI	46	SI (to TT)	I	Serial bus SIN

● A/D PORT ALLOCATION

- The A/D ports are allocated as shown below.

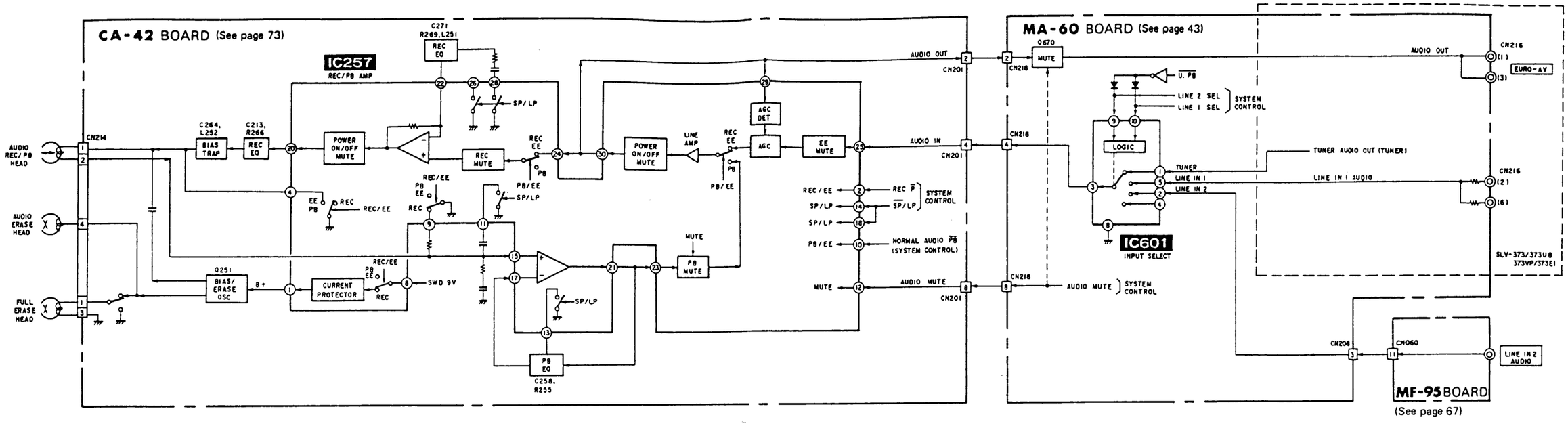


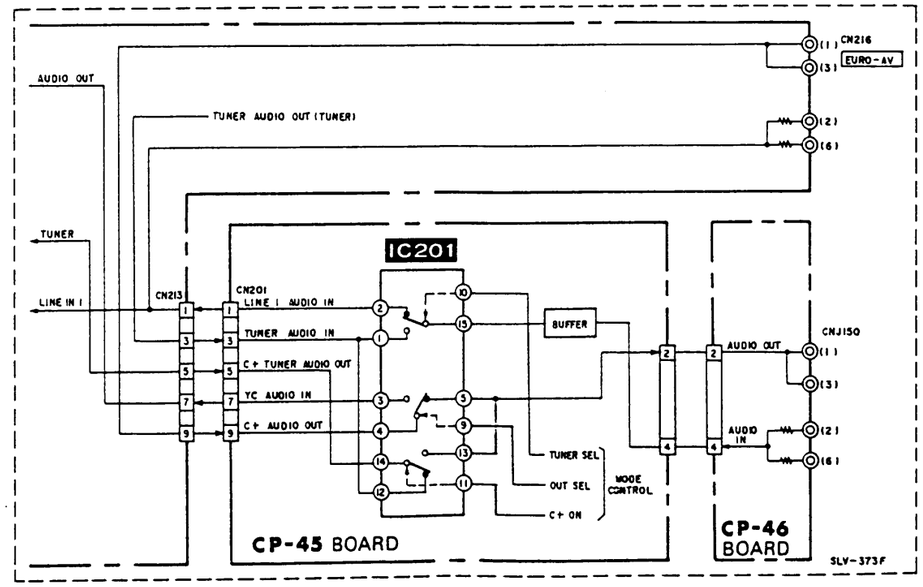
AD \ SW	Pin No.	SW0 0.00 [V]	SW1 1.21 [V]	SW2 2.06 [V]	SW3 2.92 [V]	SW4 3.70 [V]
AD0	35	RING0	VPS	TEST	R. MODE1	R. MODE2
AD1	36	RING1	–	–	–	–
AD2	37	RING2	–	–	–	–
AD3	38	FWD/RVS	PAUSE	–	–	–
AD4	39	STOP	PLAY	POWER	EJECT	–
AD5	40	REC	AUTO/MENU	TRACK (-)	POS (+)	TV/VTR
AD6	41	H. speed REW	QUICK TMR	TRACK (+)	POS (-)	–
AD7	42	–	TMR ON/OFF	INPUT SEL	EDIT	SP/LP

- KEY input signals pass through the A/D ports as shown above.
- Chattering-cancel time is 30 msec. KEY input is assumed when there are two input signals of the same voltage within 30 msec.
- Remote control modes are selected by R. MODE 1/2.

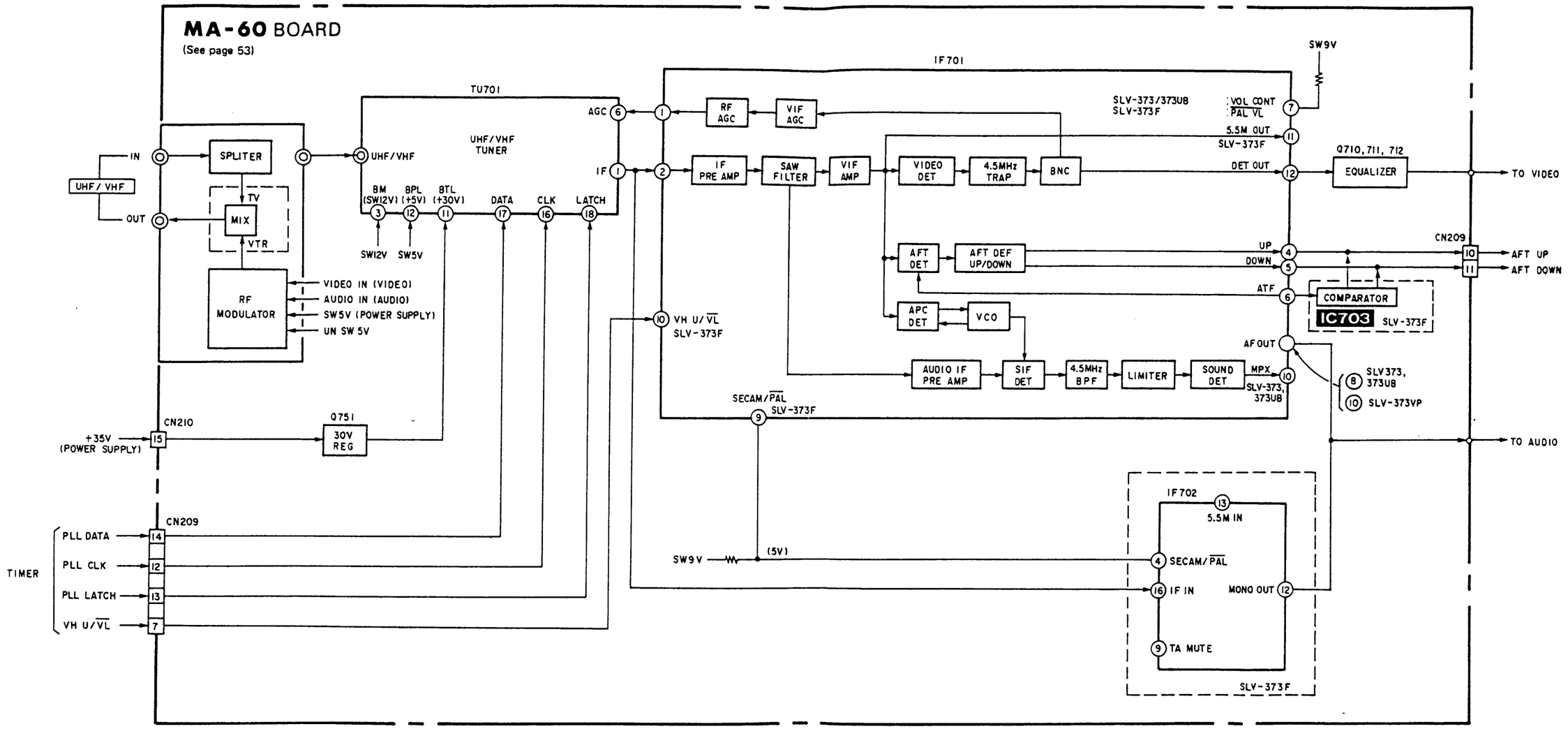
Remote control mode	VTR1	VTR2	VTR3
R. MODE1	make	brake	brake
R. MODE2	brake	make	brake

1-13. AUDIO BLOCK DIAGRAM

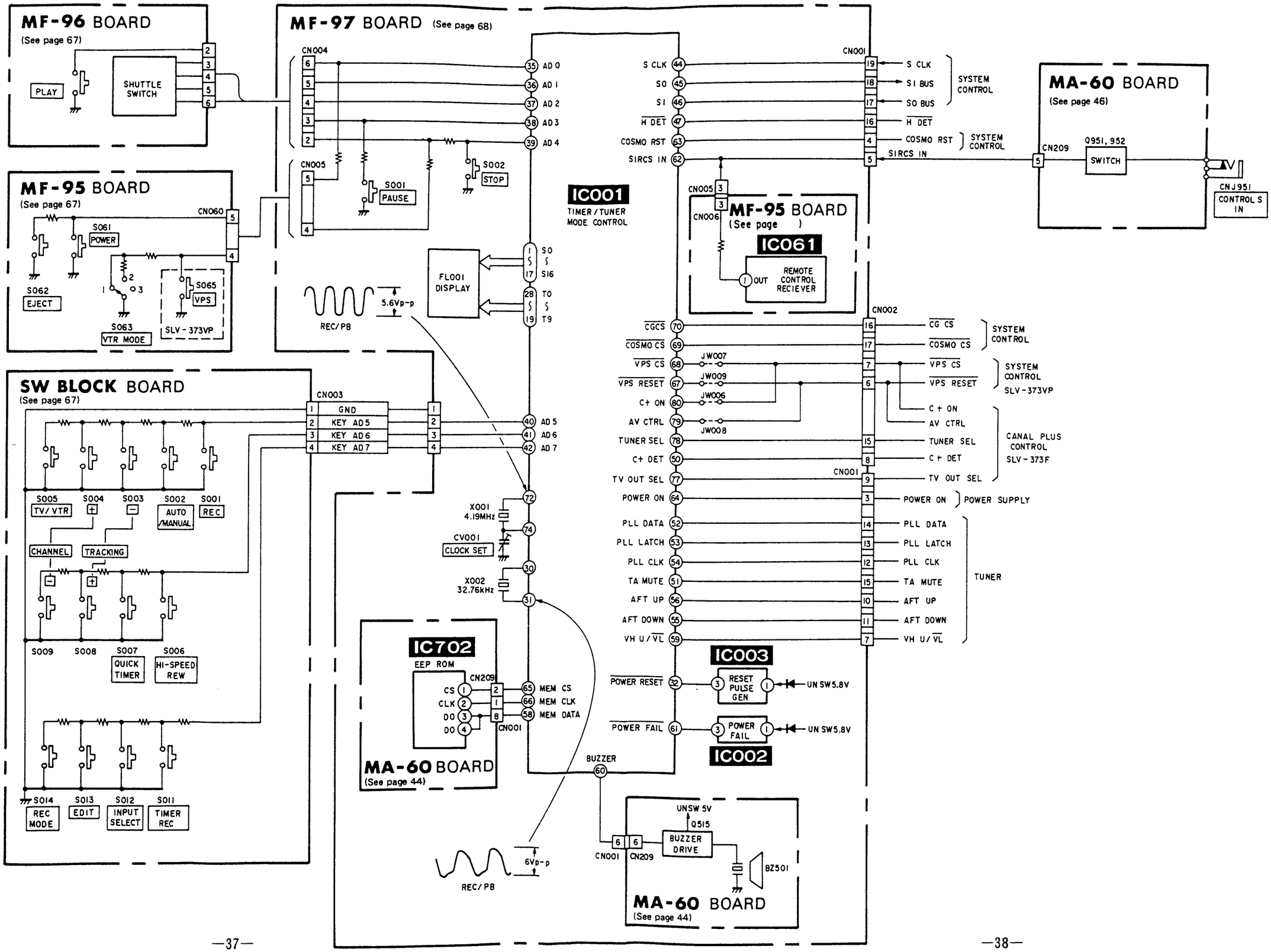




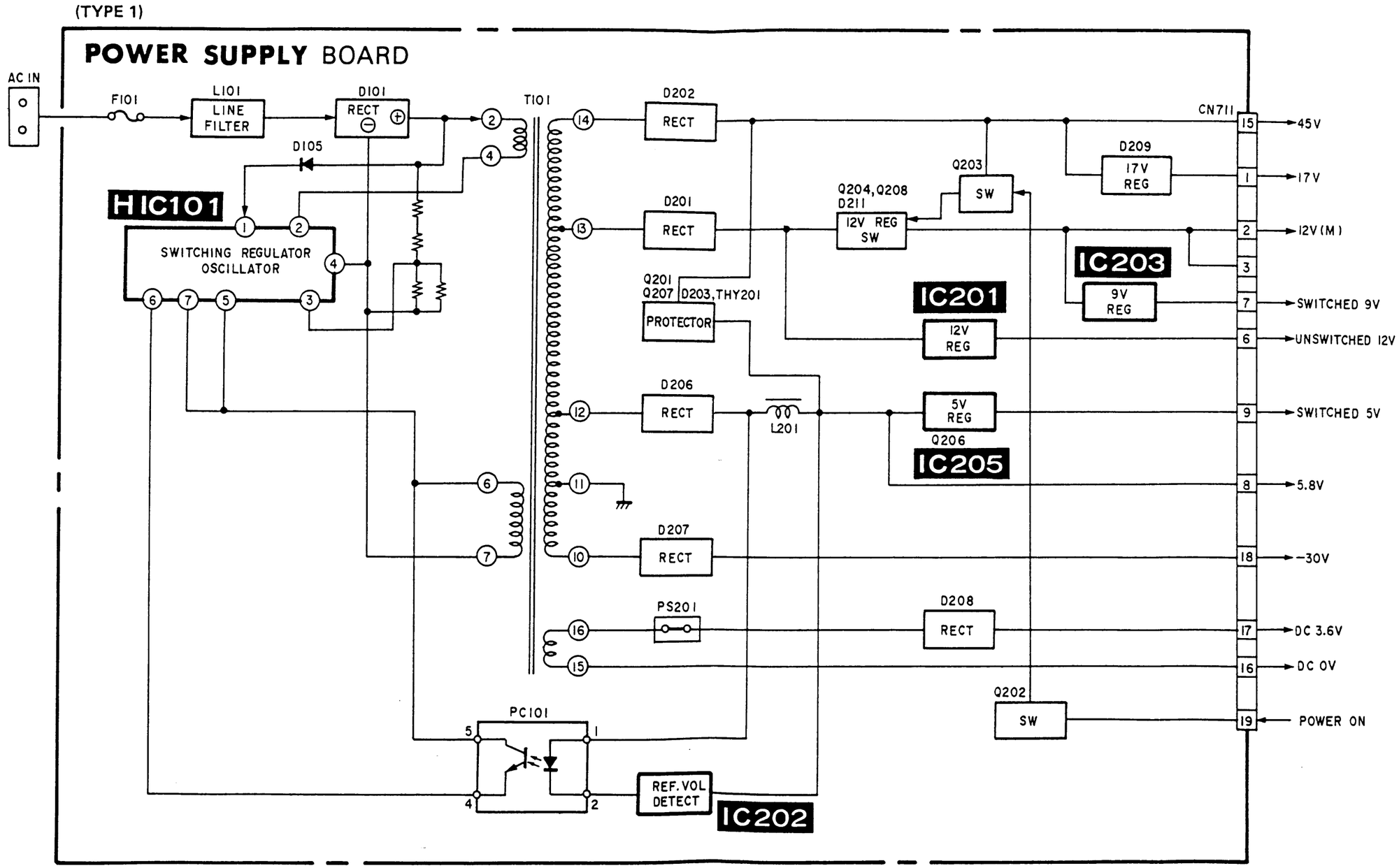
1-14. TUNER BLOCK DIAGRAM



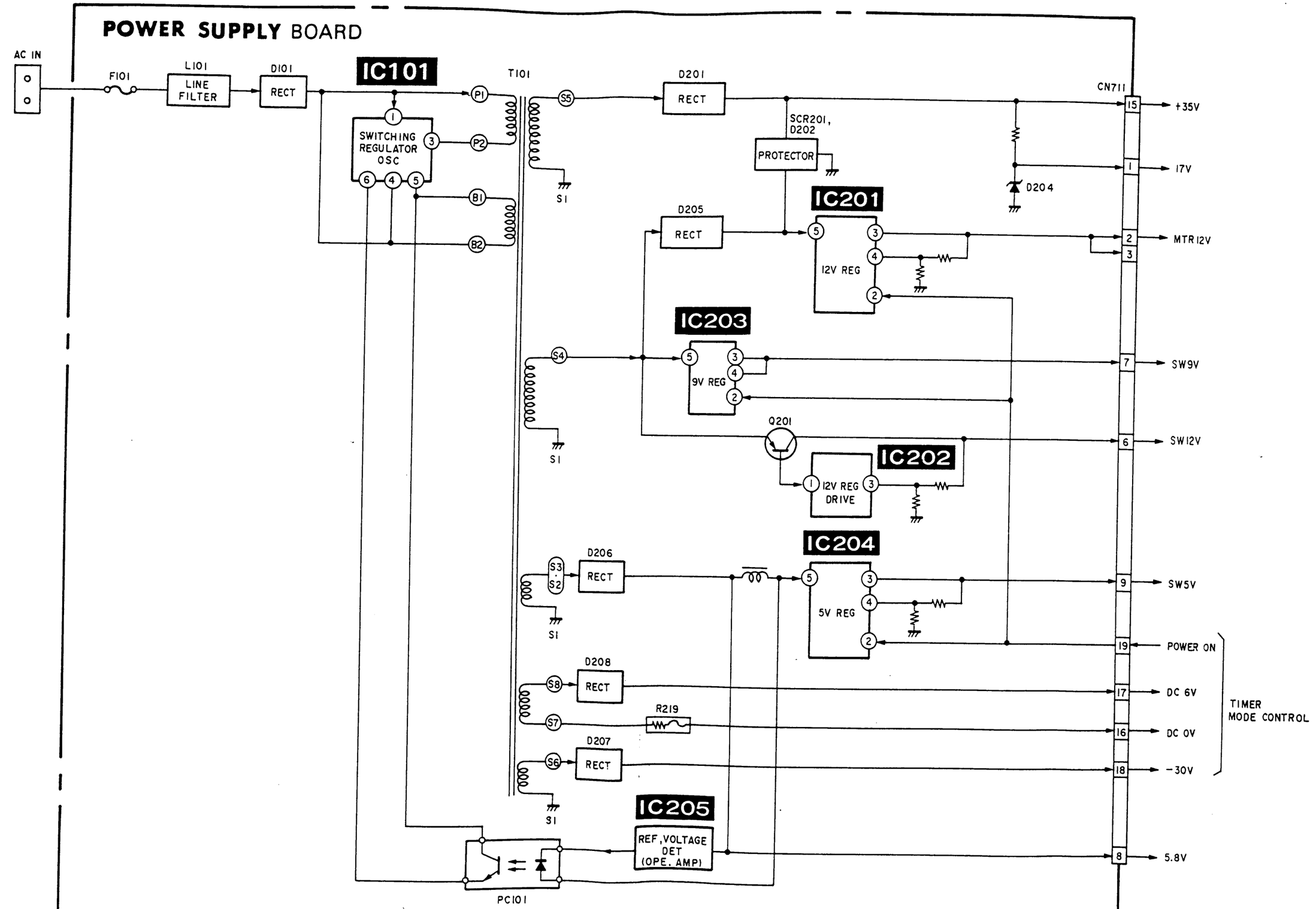
1-15. TIMER, MODE CONTROL BLOCK DIAGRAM



1-16. POWER SUPPLY BLOCK DIAGRAM (1/2)



POWER SUPPLY BLOCK DIAGRAM (2/2) (TYPE 2)



SECTION 2
ELECTRICAL ADJUSTMENTS

During the Adjustment, See the Parts Arrangement Diagram for the Adjustments on Page 53–54.

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

[Using Instruments]

1) Color TV
2) Osicilloscope 1 or 2 phenomera, band 15MHz min, delay mode, as provided.
3) Frequency counter (min. 8 digits)
4) PAL pattern generator
   SECAM pattern generator (SLV-373F)
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion factor meter
10) Alignment tape
    Part Code: PAL; H7099052H (MH-2)
    SECAM; H7099053H
11) RF sweep signal generator

[Connection]

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

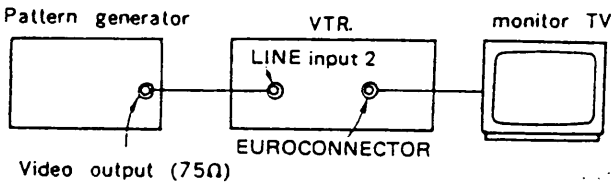


Fig. 2-1.

[Set-up Adjustment]

Video signals output by a pattern generator are used as adjustment signals when marking the electrical adjustments, and these video output signals should be within the required standard. Connect an oscilloscope CN208 pin ① (LINE IN VIDEO) on the MA-60 Board. Check that the amplitudes of video SYNC signals, picture portions, and burst signals are flat at approximately 0.3, 0.7, and 0.3 V, respectively, and the level ratio of the burst signal and "red" signal is 0.30 : 0.66 (PAL). Fig. 2-2. shows video signals (color bars) used in marking the electrical adjustment.

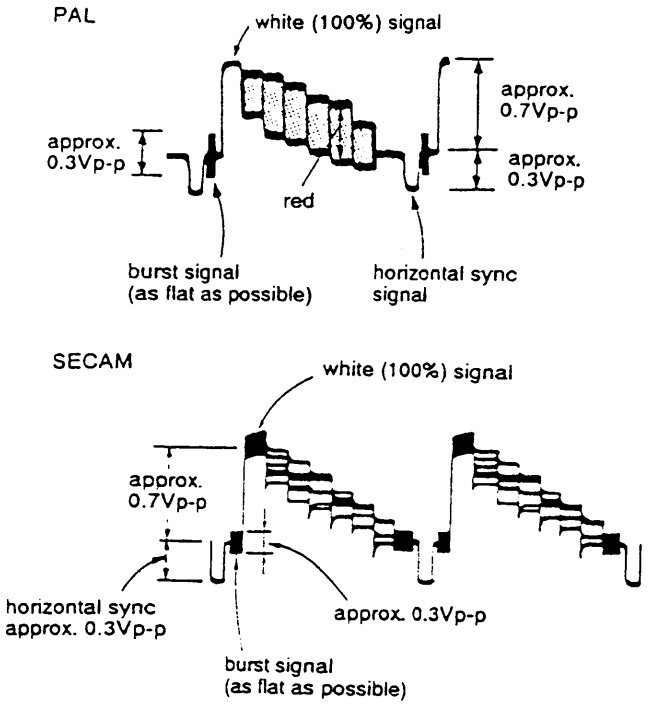


Fig. 2-2.

[PAL Alignment Tape (MH-2)]

	Mode	Time	Video signal	Audio signal
1	SP	10 minutes	Stair-step	6 kHz
2		5 minutes	–	3 kHz
3		10 minutes	Color bar	1 kHz
4		3 minutes	RF sweep	–

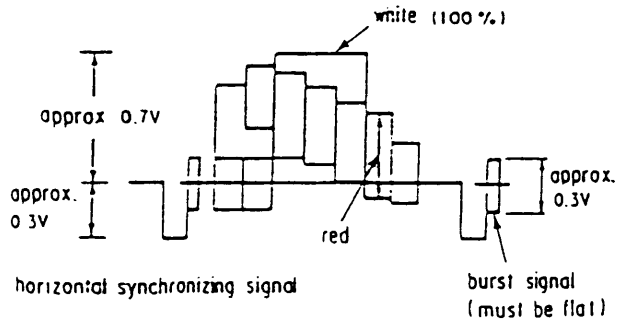


Fig. 2-3.

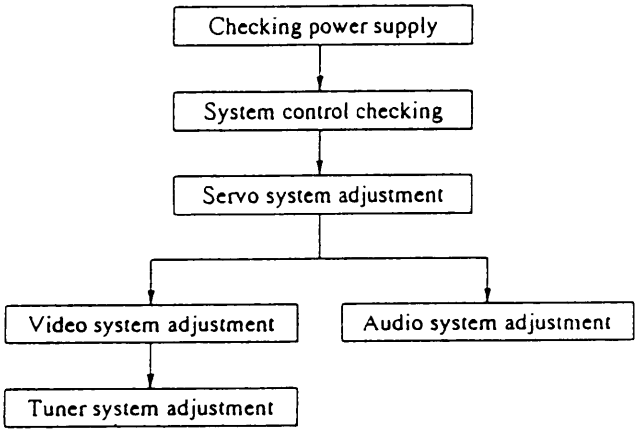
[Standard Input/output level and Impedance]

Input/output terminal

Video inputs	LINE IN 2: phono jacks EUROCONNECTOR: 21-pin (pin 20) 1Vp-p, 75ohms, unbalanced, sync negative
Audio inputs	LINE IN 2: phono jacks 47kilohms, − 7.5dBs (0dBs=0.775Vrms) EUROCONNECTOR: 21-pin (pins 2 and 6) More than 10kilohms, − 4dBs
Video outputs	EUROCONNECTOR: 21-pin (pin 19) 1Vp-p, 75ohms, unbalanced sync negative
Audio outputs	EUROCONNECTOR: 21-pin (pins 1 and 3) Output impedance: less than 1kilohm − 4dBs with 10kilohms load
CONTROL S IN	Minijack (1)

[Adjusting Sequence]

Make the electrical adjustment in the following sequence.



2-1. POWER SUPPLY CHECK (MA-60 BOARD)

Mode	E-E
Measurement equipment	Digital voltmeter
MTR 12V check	
Measurement point	CN210 pins ②, ③
Specified value	12.0±0.3V dc
UNREG 17V check	
Measurement point	CN210 pin ①
Specified value	17.0±0.3V dc
SWD 5V check	
Measurement point	CN210 pin ⑨
Specified value	5.2±0.1V dc
UNSWD 5.8V check	
Measurement point	CN210 pin ⑧
Specified value	5.8±0.2V dc
UNREG 45V check	
Measurement point	CN210 pin ⑮
Specified value	45.0±3.0V dc
UNREG −30V check	
Measurement point	CN210 pin ⑱
Specified value	−30.0±2.0V dc
DC 3.6V check	
Measurement point	CN210 pin ⑰
Specified value	3.6±0.2V dc
UNSW 12V check	
Measurement point	CN210 pin ⑥
Specified value	12.0±0.3V dc
SW 9V check	
Measurement point	CN210 pin ⑦
Specified value	9.0±0.0V dc

[Checking Method]

1) Confirm that each voltage satisfies its specified value.

2-2. SYSTEM CONTROL CHECK
(MA-60 Board)

2-2-1. Clock Oscillation Frequency Check
(MA-60 Board)

Mode	E-E
Signal	None
Measurement point	IC401 pin ㉘
Measurement equipment	Frequency counter
Specified value	17,734,475 ± 100Hz

Note: Connect a 10KΩ resistor to the frequency counter.

[Checking Method]

1) Confirm that the frequency at the IC401 pin ㉘ is 17,734,475 ± 100Hz.

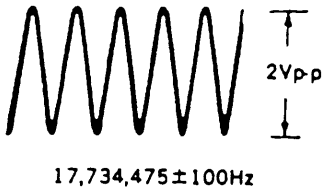


Fig. 2-4.

2-3. SERVO SYSTEM ADJUSTMENT

[Adjustment Sequence]

2-3-1. Character Position Adjustment 1
2-3-2. Character Position Adjustment 2
2-3-3. Switching Position Adjustment

2-3-1. Character Position Adjustment 1
(MA-60 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC401 pin ㉚
Measurement equipment	Oscilloscope
Adjustment element	RV451
Specified value	64 ± 0.5 μsec

[Adjustment Method]

1) Adjust to 64±0.5μsec.

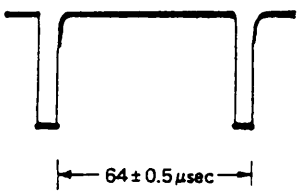


Fig. 2-5.

2-3-2. Character Position Adjustment 2
(MA-60 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC401 pin ⑤
Measurement equipment	Frequency counter
Adjustment element	CV401
Specified value	6,900 ± 200kHz

Note 1: Connect a 10KΩ resistor to the frequency counter.

Note 2: Connect the frequency counter through a prove of high input impedance (about 10MΩ) and low capacity (10pF or less).

[Adjustment Method]

1) Adjust to 6,980±200 kHz with CV401.

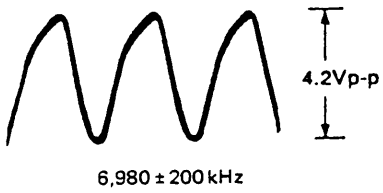


Fig. 2-6.

2-3-3. Switching Position Adjustment (MA-60 Board)

Mode	PB
Signal	Alignment tape SP stair-step
Measurement point	CH1: CN216 pin ⑲ (VIDEO) CH2: CN204 pin ⑦ (RFSWP)
Measurement equipment	Oscilloscope
Adjustment element	RV501
Specified value	6.5 ± 0.5H (410 ± 30 μsec)

[Adjustment Method]

1) Press the tracking adjustment buttons ▲ and ▼ at the same time so that the tracking condition is the center portion.
(AUTO TRACKING indicator is turns off.)
2) Adjust to 6.5±0.5H (410±30μsec) with RV501.

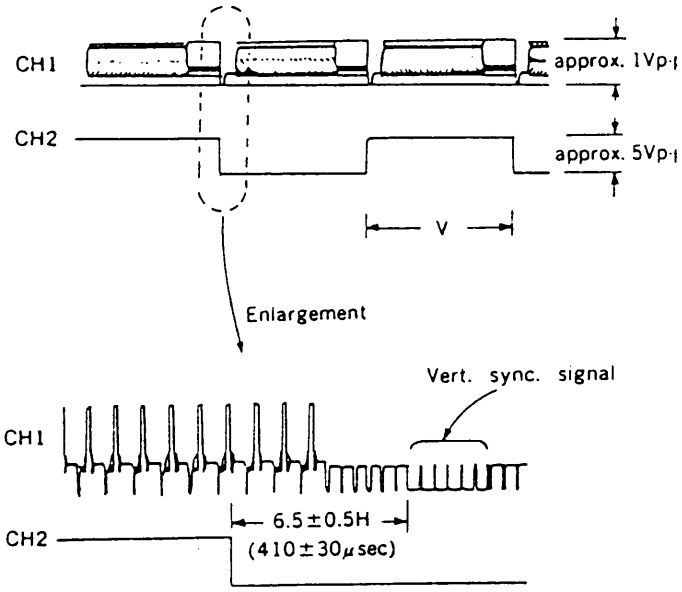


Fig. 2-7.

2-4. VIDEO SYSTEM ADJUSTMENT

Adjust the video system in the following sequence as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system sdjustment in the recording mode.
Make sure that sync. and color burst signals meet requirements specified at set up of adjustment shown in Fig.8-1.

[Adjustment Sequence]

2-4-1. X'tal Oscillation Frequency Check
2-4-2. Sync. AGC Adjustment
2-4-3. CCD Level Adjustment
2-4-4. Sync. Chip Carrier Set and Deviation Adjustment
2-4-5. White Clip, Dark Clip Adjustment
2-4-6. Recording Y Signal Level Adjustment
2-4-7. Recording Chroma Level Adjustment
2-4-8. Playback Y Signal Level Adjustment
2-4-9. PAL Jog AFC Adjustment
2-4-10. 0.5H CCD Level Adjustment
2-4-11. SECAM Sync Gate Timing Adjustment
2-4-12. SECAM Detection Adjustment

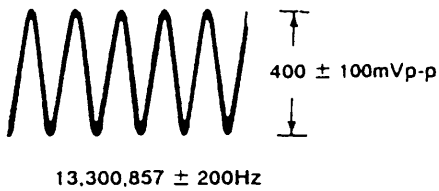
2-4-1. X'tal Oscillation Frequency Check (YC-90/91 Board)

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	IC702 pin ③
Measurement equipment	Frequency counter, Oscilloscope
Specified value	13,300,857 ± 200Hz

Note: Connect the frequency counter through a probe of high input impedance (about 10MΩ) and low capacity (10pF or less).

[Adjustment Method]

1) Confirm the frequency of IC702 pin ③ 13,300,857 ± 200Hz.
2) At the same time confirm the level is 400 ± 10mVp-p.



13,300,857 ± 200Hz

Fig. 2-8.

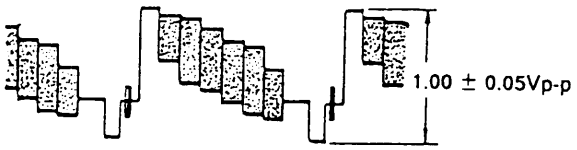
2-4-2. Sync. AGC Adjustment (YC-90/91 Board)

Mode	E-E
Signal	Color bar
Measurement point	EUROCONNECTOR: 21 pin (Pin ⑲)
Measurement equipment	Oscilloscope
Adjustment element	RV701
Specified value	1.00 ± 0.05Vp-p

[Adjustment Method]

1) Adjust to 1.00 ± 0.05Vp-p with RV701.

YC-90 BOARD:



YC-91 BOARD:

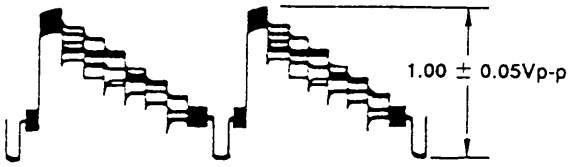


Fig. 2-9.

2-4-3. CCD Level Adjustment (YC-90/91 Board)

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	IC701 pin ⑩
Measurement equipment	Oscilloscope
Adjustment element	RV707
Specified value	Minimum (within 150mVp-p)

[Adjustment Method]

1) Adjust the level to the minimum (within 150mVp-p) with RV707.

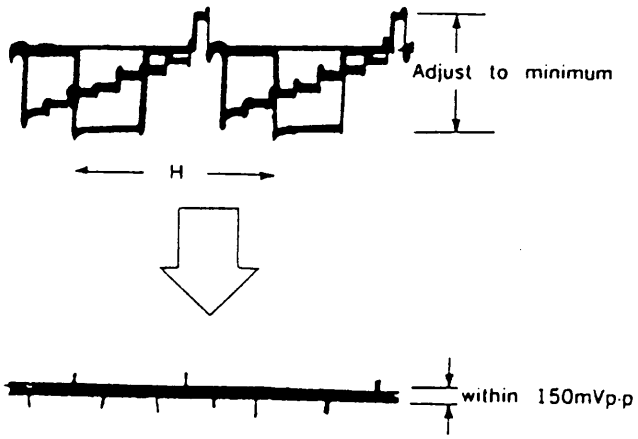


Fig. 2-10.

2-4-4. Sync. Chip Carrier Set and Deviation Adjustment (YC-90/91 Board)

Sync chip carrier set	
Mode	E-E
Signal	None (Note 2)
Measurement point	IC701 pin ㉔
Measurement equipment	Frequency counter
Adjustment element	RV703
Specified value	3.80 ± 0.05MHz
Deviation adjustment	
Mode	REC and PB
Signal	Color bar
Measurement point	EUROCONNECTOR: 21 pin (Pin ⑲)
Measurement equipment	Oscilloscope
Adjustment element	RV702
Specified value	1.00 ± 0.05Vp-p

Note 1: Video output terminal must be terminated at 75Ω.

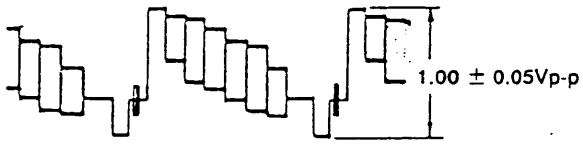
Note 2: To make no signal input, insert a shorting plug into a LINE INPUT terminal.

[Adjustment Method]

1) Input the color bar signal to place the system in the E-E mode.
2) Make a no-signal state and select the E-E mode. (Note 2)
3) Connect the frequency counter to the IC701 pin ㉔ and adjust to 3.80 ± 0.05MHz with RV703.
4) Input the color bar signal to make recording.
5) Play back a recorded tape portion and check the playback Y signal level of VIDEO OUT terminal.
   Specified value: 1.00 ± 0.05Vp-p.
6) When the specified value is not met, input the color bar signal to select the E-E mode. Adjust RV702 to correct a play back Y signal level error, and then, repeat the steps 2) through 5) above.

PB Y Level

YC-90 BOARD:



YC-91 BOARD:

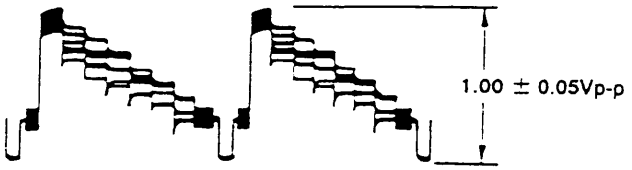


Fig. 2-11.

2-4-5. White Clip, Dark Clip Adjustment (YC-90/91 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC701 pin ⑳
Measurement equipment	Oscilloscope
Adjustment element	White clip: RV705 Dark clip: RV704
Specified value	White clip: 185±10% Dark clip: 45±10%

[Adjustment Method]

1) Adjust with RV705 so that the white clip level becomes to 185±10% of the white level (100%).
2) Adjust with RV704 so that the dark clip level becomes to 45 ± 10% of the white level (100%).

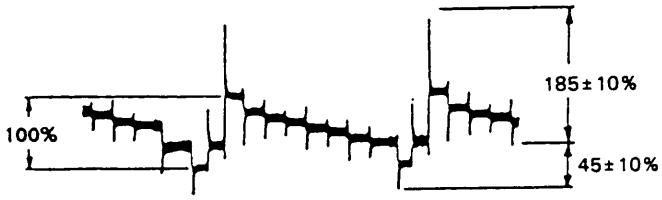


Fig. 2-12.

2-4-6. Recording Y Signal Level Adjustment (YC-90/91 Board)

Mode	E-E
Signal	None
Measurement point	CN002 pin②(RP-100 Board)
Measurement equipment	Oscilloscope
Adjusting element	RV710
Specified value	2.2±0.1 Vp-p

[Adjustment Method]

1) Adjust with RV710 so that the waveform on CN002 pin ② becomes 2.2 ± 0.1 Vp-p.

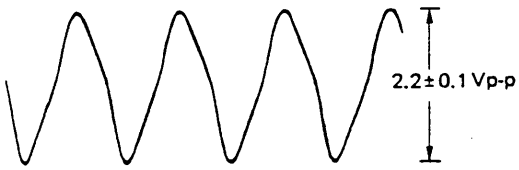


Fig. 2-13.

2-4-7. Recording Chroma Level Adjustment (YC-90/91 Board)

Mode	E-E
Signal	Color bar
Measurement point	CN704 pin ④
Measurement equipment	Oscilloscope
Adjustment element	RV801
Specified value	PAL (YC-90 Board): 165±10mVp-p SECAM (YC-91 Board): 65±10mVp-p

[Adjustment Method]

1) Adjust to the specified value with RV801.

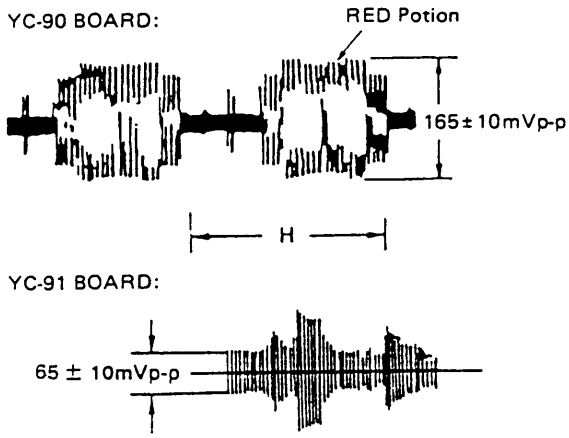


Fig. 2-14.

2-4-8. Playback Y Signal Level Adjustment (YC-90/91 Board)

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	EUROCONNECTOR: 21 pin (Pin ⑲)
Measurement equipment	Oscilloscope
Adjustment element	RV708
Specified value	1.00 ± 0.05Vp-p

Note: Make this adjustment with the EDIT switch turned off.

[Adjustment Method]

1) Adjust to 1.00 ± 0.05Vp-p with RV708.

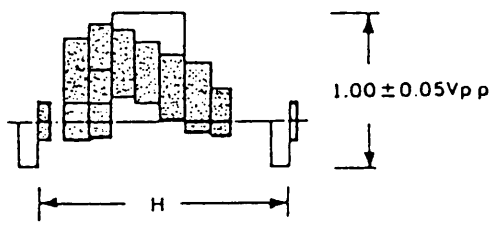


Fig. 2-15.

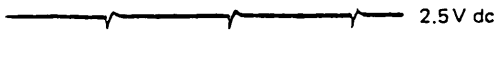
2-4-9. PAL Jog AFC Adjustment (YC-90/91 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC860 pin ⑲ and ⑳
Measurement equipment	Digital voltmeter Oscilloscope
Adjustment element	RV860
Specified value	2.50 ± 0.05Vdc

[Adjustment Method]

1) Adjust with RV860 so that the voltage on IC860 pin ⑲ becomes 2.50 ± 0.05Vdc.
2) At the same time, confirm the waveform on IC860 pin ⑳ becomes to as following figure.

IC860⑲



IC860⑳

Fig. 2-16.

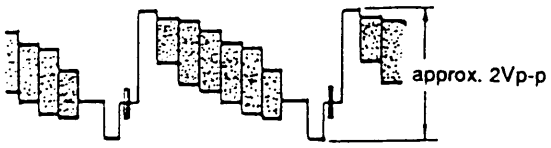
2-4-10. 0.5H CCD Level Adjustment (YC-90/91 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC862 pin ② and ⑦
Measurement equipment	Oscilloscope
Adjustment element	RV861
Specified value	Following

[Adjustment Method]

1) Adjust with RV861 so that the level of the waveform on IC862 pin ② becomes the same level as on pin ⑦

YC-90 BOARD:



YC-91 BOARD:

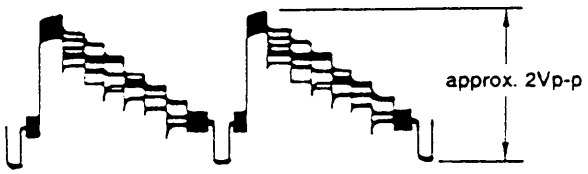


Fig. 2-17.

2-4-11. SECAM Sync Gate Timing Adjustment (SLV-373F) (YC-91 Board)

Mode	Playback
Signal	Color bar
Measurement point	CH1: EUROCONNECTOR: pin ⑲ CH2: CN704 pin ④
Measurement equipment	Oscilloscope
Adjustment element	T_1: RV803 T_2: RV804
Specified value	T_1: 2.0±0.5μsec T_2: 0±0.3μsec

[Adjustment Method]

1) Adjust with RV803 and RV804 so that the color bar signal on VIDEO OUT terminal becomes to the specified value.

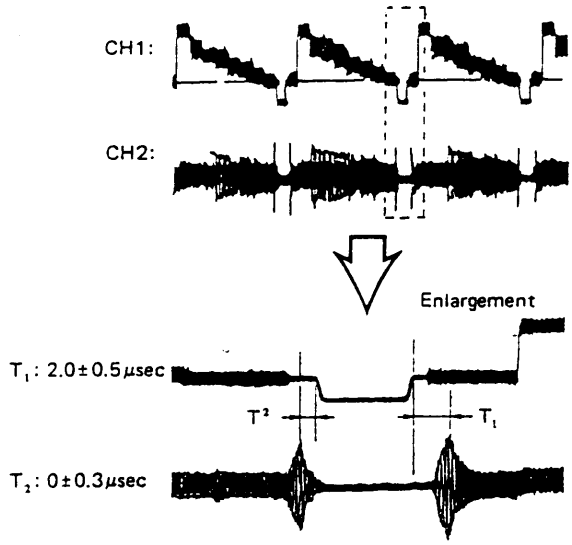


Fig. 2-18.

2-4-12. SECAM Detection Adjustment (SLV-373VP) (YC-90 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC850 pin ⑨
Measurement equipment	Oscilloscope
Adjustment element	RV850
Specified value	4.0 ± 0.1Vp-p

[Adjustment Method]

1) Adjust with RV850 so that the waveform on IC850 pin ⑨ becomes to the specified value.

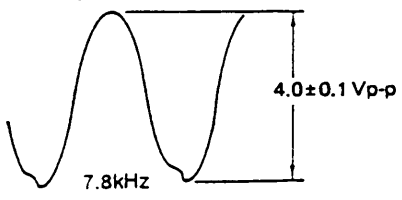


Fig. 2-19.

2-4-13. PB Bell Filter Adjustment (YC-91 Board)

Mode	Playback
Signal	Alignment tape color bar portion (SECAM)
Measurement point	IC801 pin ⑤
Measurement equipment	Oscilloscope
Adjustment element	FL803
Specified value	Flat waveform

[Adjustment Method]

1) Adjust FL803 until the waveform is flat.

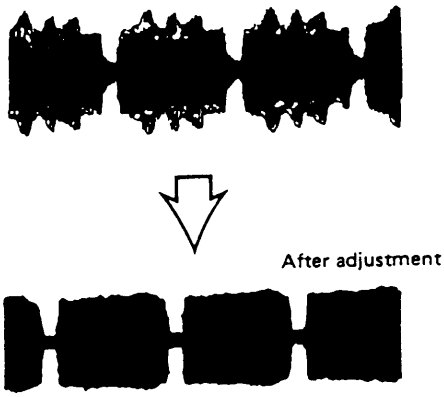


Fig. 2-20.

2-4-14. REC Bell Filter Adjustment (YC-91 Board)

Mode	E-E
Signal	SECAM Color bar
Measurement point	CN704 pin ④
Measurement equipment	Oscilloscope
Adjustment element	FL804
Specified value	Same level

[Adjustment Method]

1) Adjust FL804 so that the levels of CN704 pin ④ becomes the same.

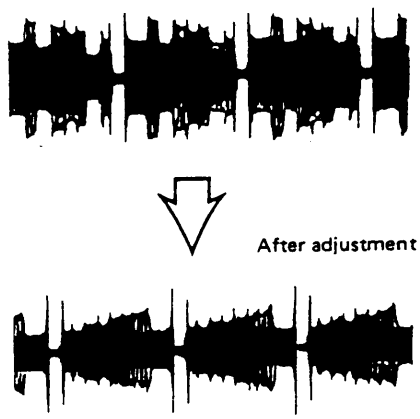


Fig. 2-21.

2-5. AUDIO SYSTEM ADJUSTMENT

- Adjust the audio system in the SP mode, unless otherwise specified.
  Use the alignment tape.

[Connection]

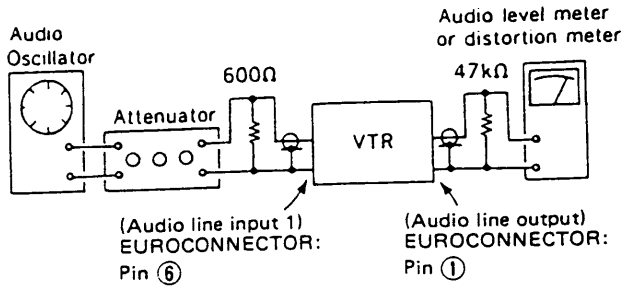


Fig. 2-22.

2-5-1. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Make adjustment with the switches set to the following positions:
  INPUT SELECT ····· LINE 1

[Adjustment Sequence]

1. ACE Head Adjustment ···· See "VHS MECHANICAL ADJUSTMENT MANUAL II ".
2. E-E Output Level Check
3. Recording Bias Adjustment
4. Overall Level Characteristic and Distortion Factor Check
5. Overall S/N Check

1. ACE Head Adjustment
   See "VHS MECHANICAL ADJUSTMENT MANUAL II ".

2. E-E Output Level Check

Mode	E-E
Signal	400Hz, − 7.5dBs
Measurement point	EUROCONNECTOR: Pin ①
Measurement equipment	Audio level meter
Specified value	− 7.5 ± 2dBs

[Confirmation Method]

1) Input a signal of 400Hz, −7.5dBs to Audio Line Input (EUROCONNECTOR: Pin ⑥).
2) Confirm that the audio output level is −7.5±2dBs.

3. Recording Bias Adjustment (CA-42 Board)

Mode	REC and PB
Signal	400Hz, − 30dBs 7kHz, − 30dBs
Measurement point	EUROCONNECTOR: Pin ①
Measurement equipment	Audio level meter
Adjustment element	RV251
Specified value	0 ± 1dB

[Adjustment Method]

1) Supply a signal of 400Hz, −30dBs to Audio Line Input.
2) Connect the audio level meter to the Audio Line Output (EUROCONNECTOR: Pin ①).
3) Adjust the attenuator so that the audio level meter will indicate −30dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7kHz and make recording.
6) Play back a recorded portion, and measure output levels at 400Hz and 7kHz.
7) Confirm that the 7kHz playback output level is within a range of the 400Hz playback output level 0 ± 1dB. When it is out of this range, adjust RV251 and repeat the steps 1) through 7) above.

4. Overall Level Characteristic and Distortion Factor Check

Mode	REC and PB
Signal	400Hz, − 7.5dBs
Measurement point	EUROCONNECTOR: Pin ①
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: − 7.5 ± 2dBs Distortion factor: 4% or less

[Confirmation Method]

1) Supply an audio signal of 400Hz, − 7.5dBs Audio Line Input. (EUROCONNECTOR: Pin ⑥).
2) Make recording.
3) Play back a recorded portion.
4) Confirm that a playback level is − 7.5 ± 2dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Mode	REC and PB
Signal	400Hz, − 7.5dBs, and no signal
Measurement point	EUROCONNECTOR: Pin ①
Measurement equipment	Audio level meter
Specified value	35dB or more

[Confirmation Method]

1) Supply a signal of 400Hz to Audio Line Input. Adjust the attenuator so that the audio line output level will be − 7.5dBs.
2) Make recording.
3) With the REC mode held, make the no-signal state. (Short an input.)
4) Play back a recorded portion, and confirm that there is a level difference of 35dB or more between 400Hz portion and no-signal portion (immediately after a 400Hz signal).

2-6. TUNER SYSTEM ADJUSTMENT

2-6-1. RF AGC Adjustment (IF701 Unit/MA-60 Board)

Signal	Broadcast TV signal
Adjustment element	VR of IF701 unit (Fig. 2-23.)

[Adjustment Method]

1) Adjust the monitor TV to a maximum contrast.
2) Turn the VR to make snow noise visible.
3) Turn the VR in an opposite direction and set it to the point where the snow noise disappears.
4) Receive each channel and that there are no beat picture corruption snow noises due to cross modulation.

[Adjustment Method]

1) Adjust with the volume of IF701 so that the tuner AGC terminal voltage becomes to the adjustment valve.

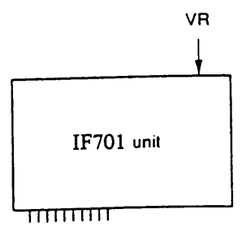


Fig. 2-23.

2-7. MODE CONTROL SYSTEM ADJUSTMENT

2-7-1. Clock Adjustment (MF-97 Board)

Mode	E-E
Measurement point	IC001 pin ⑯ (PWR FAIL)
Measurement equipment	Frequency counter
Adjustment element	CV001
Adjusting value	2,097,152±4Hz

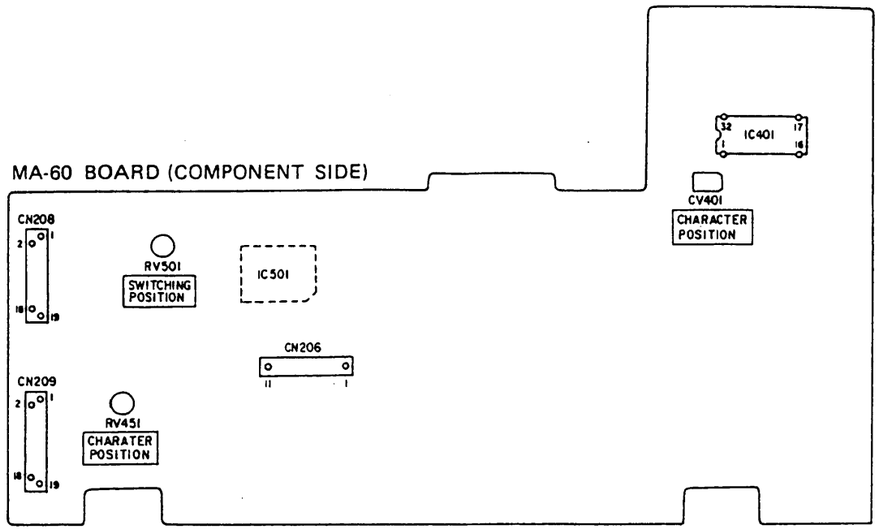
Note: Connect the following two points with jumpers.
- Pin ⑥ of CN001 (BUZZER) − GND.
- Pin ③ of IC003 (RESET) − GND.

[Adjustment Method]

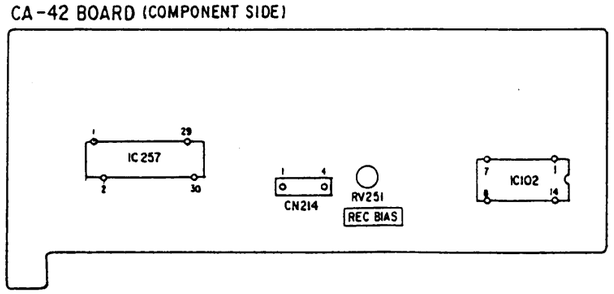
1) Adjust with CV001 so that the reading on the frequency counter becomes 2,097,152±4Hz.

2-8. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

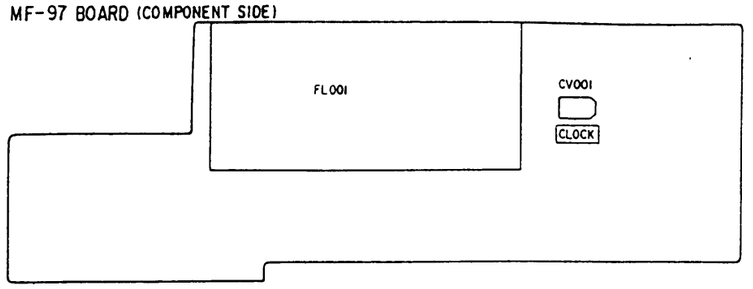
MA-60 BOARD (COMPONENT SIDE)



CA-42 BOARD (COMPONENT SIDE)



MF-97 BOARD (COMPONENT SIDE)



YC-90/91 BOARD (COMPONENT SIDE)