

# Service Manual

Video Cassette Player

**Panasonic** **VHS** **HQ**

PAL NTSC4.43

**NV-P05** REE  
REU

**K-MECHANISM**



**SPECIFICATIONS\ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ**

**SERVICE INFORMATION\СЕРВИСНАЯ ИНФОРМАЦИЯ**

**ADJUSTMENT PROCEDURES\МЕТОДИКА НАСТРОЙКИ**

**SYSTEM CONTROL & SERVO SECTION BLOCK DIAGRAM\БЛОК-СХЕМА СИСТЕМЫ  
УПРАВЛЕНИЯ И СЕРВОПРИВОДА**

**LUMINANCE & CHROMINANCE SECTION BLOCK DIAGRAM\БЛОК-СХЕМА КАНАЛОВ  
ЯРКОСТИ И ЦВЕТНОСТИ**

**SCHEMATIC DIAGRAM\ПРИНЦИПИАЛЬНЫЕ СХЕМЫ**

Power schematic diagram\принципиальная схема источника питания

System control & servo section in main schematic diagram\принципиальная схема  
системы управления и сервопривода (основная плата)

Luminance & chrominance section in main schematic diagram\принципиальная схема  
каналов яркости и цветности (основная плата)

LED schematic diagram\принципиальная схема индикатора

Head AMP schematic diagram\принципиальная схема усилителя видеоголовок

Luminance & chrominance pack schematic diagram\принципиальная схема каналов  
яркости и цветности (дополнительная плата)

**EXPLODED VIEWS & PARTS LIST\СБОРОЧНЫЕ ЧЕРТЕЖИ И СПИСОК ЗАПАСНЫХ ЧАСТЕЙ**

Chassis parts section (1)\шасси, секция 1

Chassis parts section (2)\шасси, секция 2

Casing parts section\корпус

Packing parts section\упаковочные материалы

**ELECTRICAL REPLACEMENT PARTS LIST\СПИСОК ЭЛЕКТРИЧЕСКИХ ЗАПАСНЫХ ЧАСТЕЙ**

# Panasonic

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## SPECIFICATIONS

| ITEM             | SPECIFICATION                                                                                                                                                                             | ITEM                 | SPECIFICATION                                                                                                                                            |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| POWER            | SOURCE: 110/127/220/230-240V 50/60 Hz<br>CONSUMPTION: 30 watts                                                                                                                            | TAPE FORMAT          | VHS Cassette tape (Tape width 12.7 mm)                                                                                                                   |
| RECORDING SYSTEM | 2 rotary heads, helical scanning system<br>PAL NTSC4.43                                                                                                                                   | TAPE SPEED           | 23.39 mm/s<br>Record/Playback Time:<br>4 hours with 240 min. type tape (NV-E240)<br>FF/REW Time:<br>Less than 3.0 min. with 180 min. type tape (NV-E180) |
| RF OUT SYSTEM    | UHF: CH38<br>73 ± 3 dBu, 75Ω terminated                                                                                                                                                   | DIMENSIONS           | 320 (W) × 91 (H) × 293 (D) mm                                                                                                                            |
| VIDEO            | HEADS: 2 rotary heads<br>INPUT: VIDEO IN Connector (Phono type)<br>1.0 Vp-p, 75Ω terminated<br>OUTPUT: VIDEO OUT Connector (Phono type)<br>1.0 Vp-p, 75Ω terminated                       | WEIGHT               | 4.1 kg                                                                                                                                                   |
| AUDIO            | HEAD: 1 Stationary head (Normal Audio)<br>INPUT: AUDIO IN Connector (Phono type)<br>-8 dBV (400 mV), 47 kΩ<br>OUTPUT: AUDIO OUT Connector (Phono type)<br>-8 dBV (400 mV), Less than 1 kΩ | STANDARD ACCESSORIES | 1 pc. DIN-RF Cable<br>1 pc. Remote Controller<br>1 pc. AC Plug Adaptor                                                                                   |

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

## SECTION 1

### GENERAL DESCRIPTIONS

#### 1-1. SERVICE INFORMATION

##### 1-1-1. SERVICE POSITION

##### A. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame and turn over.

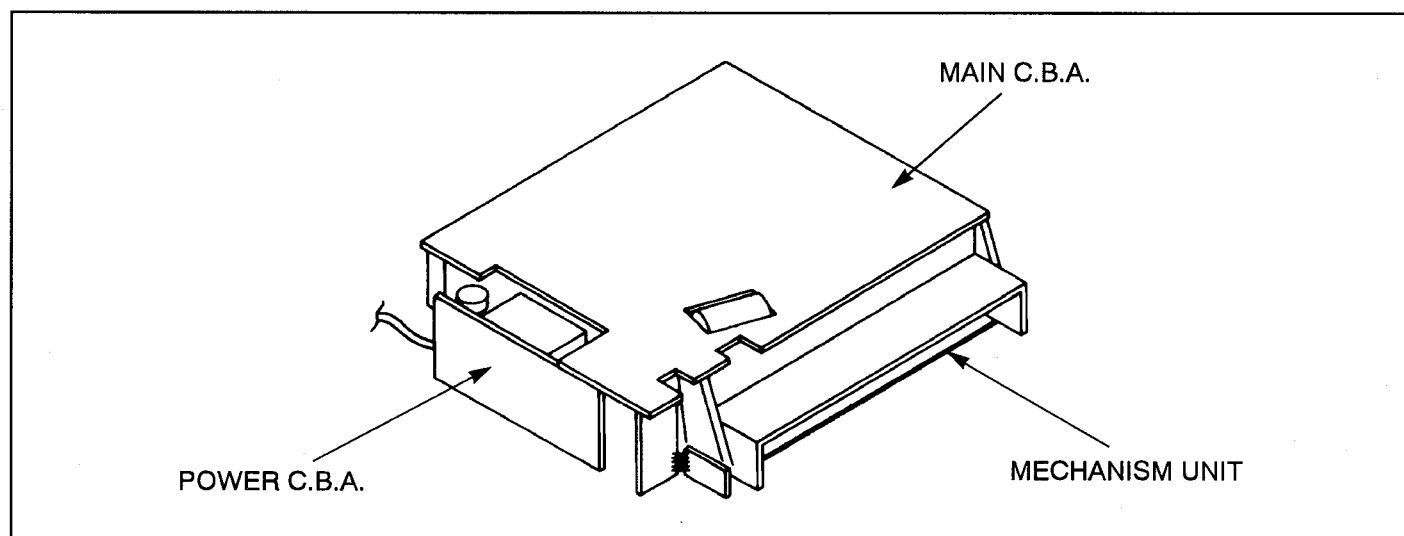


Fig.S1

##### B. MECHANISM SERVICE POSITION

When servicing the K-Mechanism, take out the mechanism from the MAIN C.B.A. and connect Extension Cable (VFK0889) between the Loading motor connector and P1503 as shown in Fig. S2. In this position, the following services are possible.

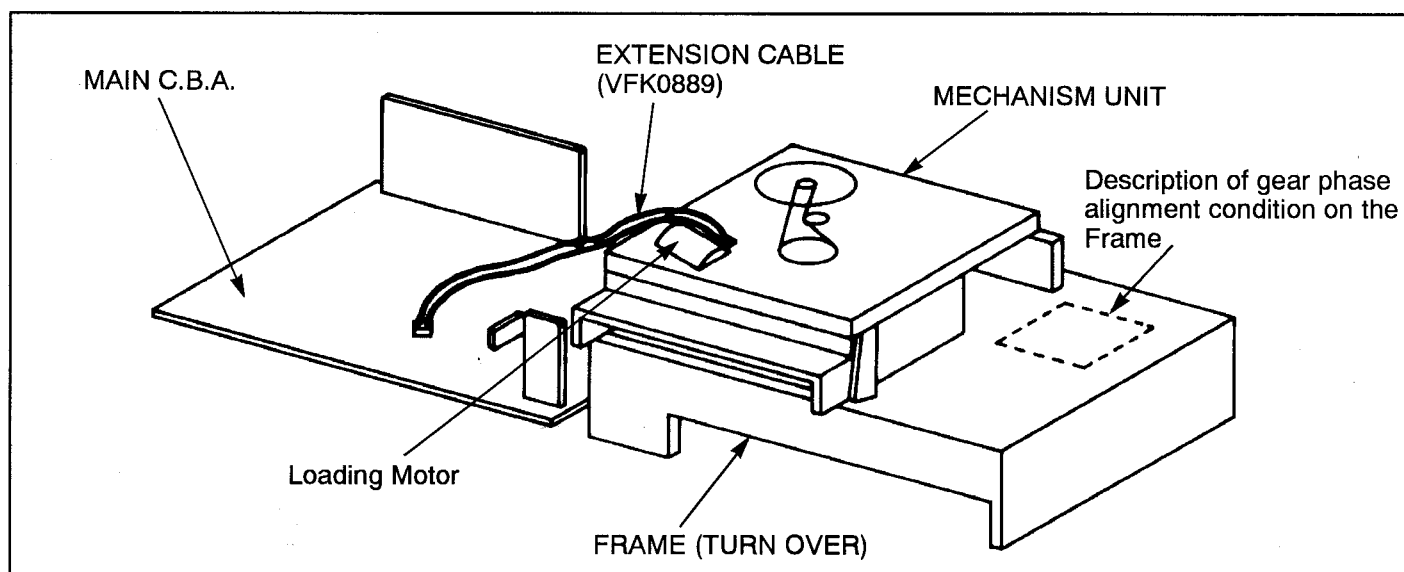


Fig.S2

### B-1. CHECKING OF GEAR PHASE ALIGNMENT CONDITION

- 1) Check gear phase Alignment Condition of Mechanism.

### B-2. CHECKING OF LOADING/UNLOADING OPERATION

There are 3 methods for checking of loading/unloading operation as follows.

#### 1. HAND OPERATION

- 1) Turn the Worm Gear of the Worm Wheel Gear (Remove the Loading Motor unit) ,manually.

#### 2. BATTERY OPERATION

- 1) Disconnect the Extension cable (VFK0889) from connection of loading motor unit.
- 2) Connect the Battery (Manganes-Type R6(AA) 3pcs. /+4.5v) to the Loading Motor Terminals.

#### 3. SERVICE MODE OPERATION

- 1) Set the Service Mode.(Press the FF,REW and EJECT buttons simultaneously.)
- 2) Press the FF,REW and EJECT buttons 2 times to set the Service Mode 2.  
In this Service Mode 2, the LEDs are illuminated as follows.

FF/REW LED : Light up

PLAY LED : Blinking at 0.25 seconds interval

- 3) In the above Service Mode, the Loading Motor rotates for loading operation when the "PLAY" button is pressed. The Loading Moter rotates for unloading operation when the "STOP" button ispressed.

Remark:

Use the "SERVICE MODE" for a final check of Mechanism movement.

### B-3. CHECKING OF REEL GEARS OPERATION

- 1) Move the mechanism to "PLAY" position by loading operation. (Refer to B-2)
- 2) Turn the Capstan Rotor Unit to check the movement of reel gears.

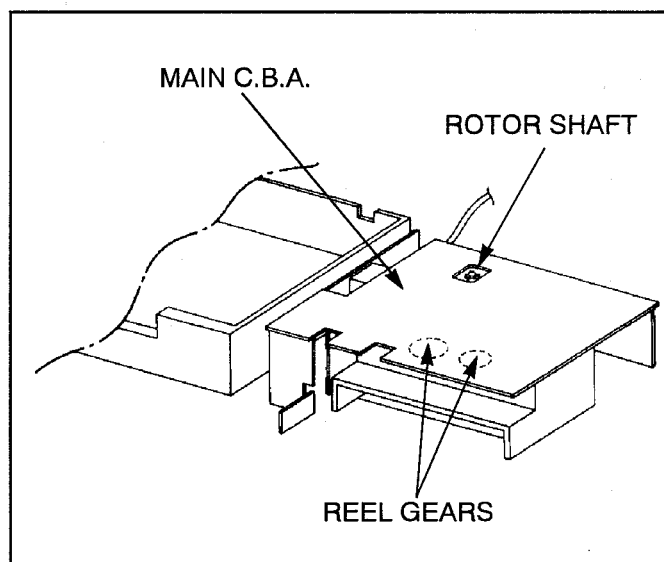


Fig.S3

### C. UDD CYLINDER UNIT REPLACEMENT

Remove the 3 screws of the CYLINDER UNIT with a magnetized screw driver in the MECHANISM SERVICE POSITION.

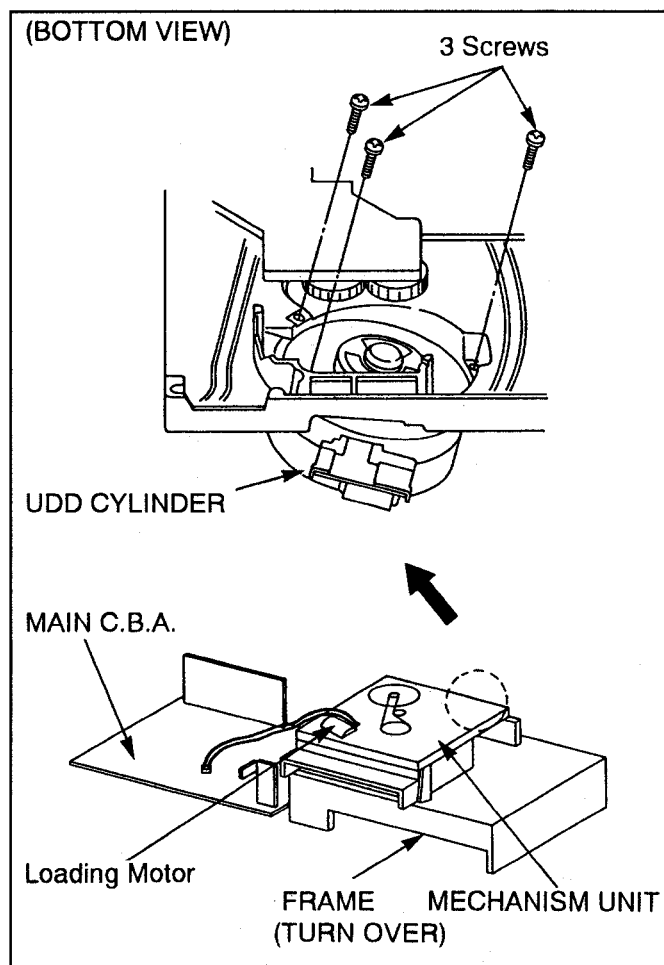


Fig.S4

## D. UPPER CYLINDER REPLACEMENT

### D-1. UPPER CYLINDER DISASSEMBLY

1. Remove 2 screws (A).
2. Remove the CYLINDER STATOR UNIT.
3. Remove 2 screws (B).
4. Remove the CYLINDER ROTOR UNIT.
5. Loosen Hex screw (C) and remove the CYLINDER RETAINER. (Use Hex. Key Wrench 1.5mm)
6. Remove the UPPER CYLINDER UNIT.

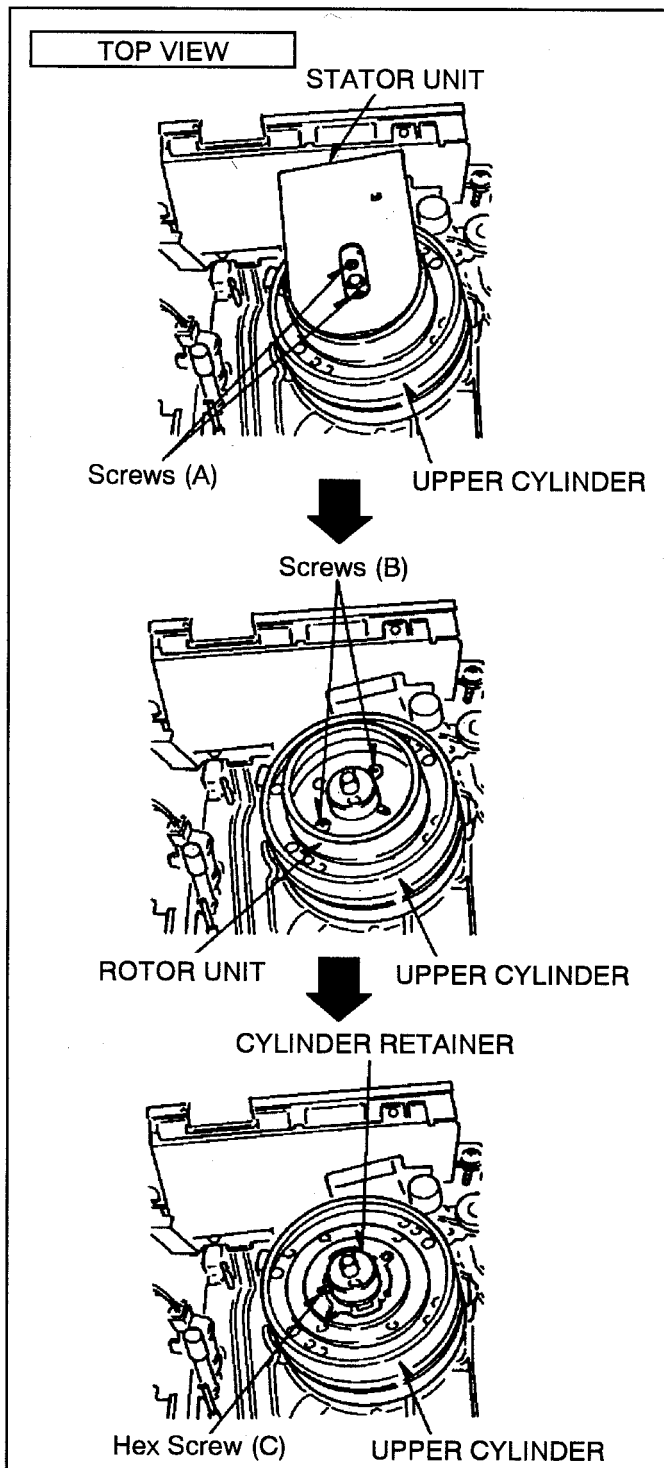


Fig.S5

### D-2. UPPER CYLINDER ASSEMBLY

When reassembling, perform the steps in the reverse order.

Notes:

- 1) Install the Cylinder Retainer so that the 2 holes on top of the Cylinder Retainer are at right angles with the Head Amp Shield.
- 2) Tighten the Hex screw (C) while pressing down on top of the Cylinder Retainer. (Use Hex. Key Wrench 1.5mm)

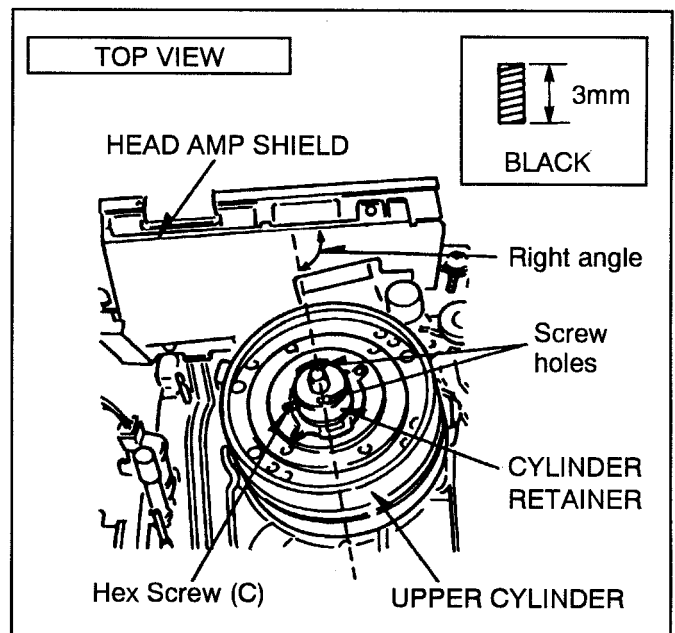


Fig.S6

- 3) Install the Cylinder Rotor Unit so that the inner hole of the Cylinder Rotor Unit fits to the small projection (D) on top of the Upper Cylinder.
- 4) Tighten 2 screws (B).

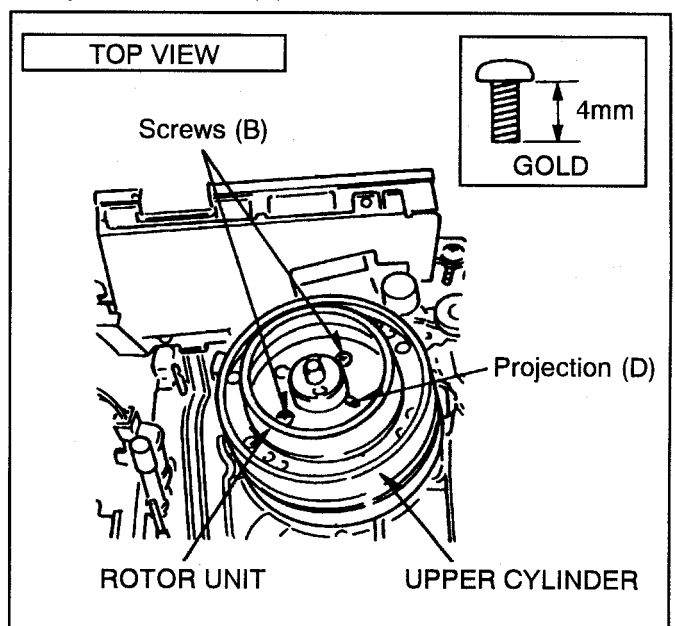


Fig.S7

- 5) Install the Cylinder Stator Unit.
- 6) Tighten 2 screws (A).

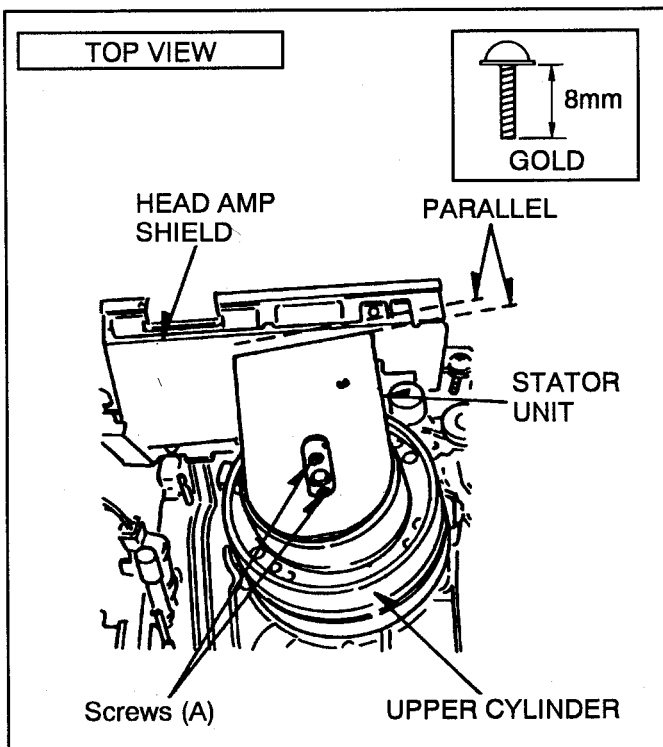


Fig.S8

- 7) Confirm the PG SHIFTER ADJUSTMENT with the alignment tape (PAL : VFJ8125H3F) and adjust it if necessary.

## E. CAPSTAN STATOR UNIT ASSEMBLY

When replacing the CAPSTAN STATOR UNIT, the Centre Fixing Tool (VFK0851) must be used to fix the centre of CAPSTAN STATOR UNIT.

Method:

- 1) Place the CAPSTAN STATOR UNIT into position.
- 2) Loosely tighten the 3 screws.
- 3) Insert the Centre Fixing Tool (VFK0851) as show in Fig.S9.
- 4) Tighten the 3 screws.
- 5) Remove the Centre Fixing Tool.

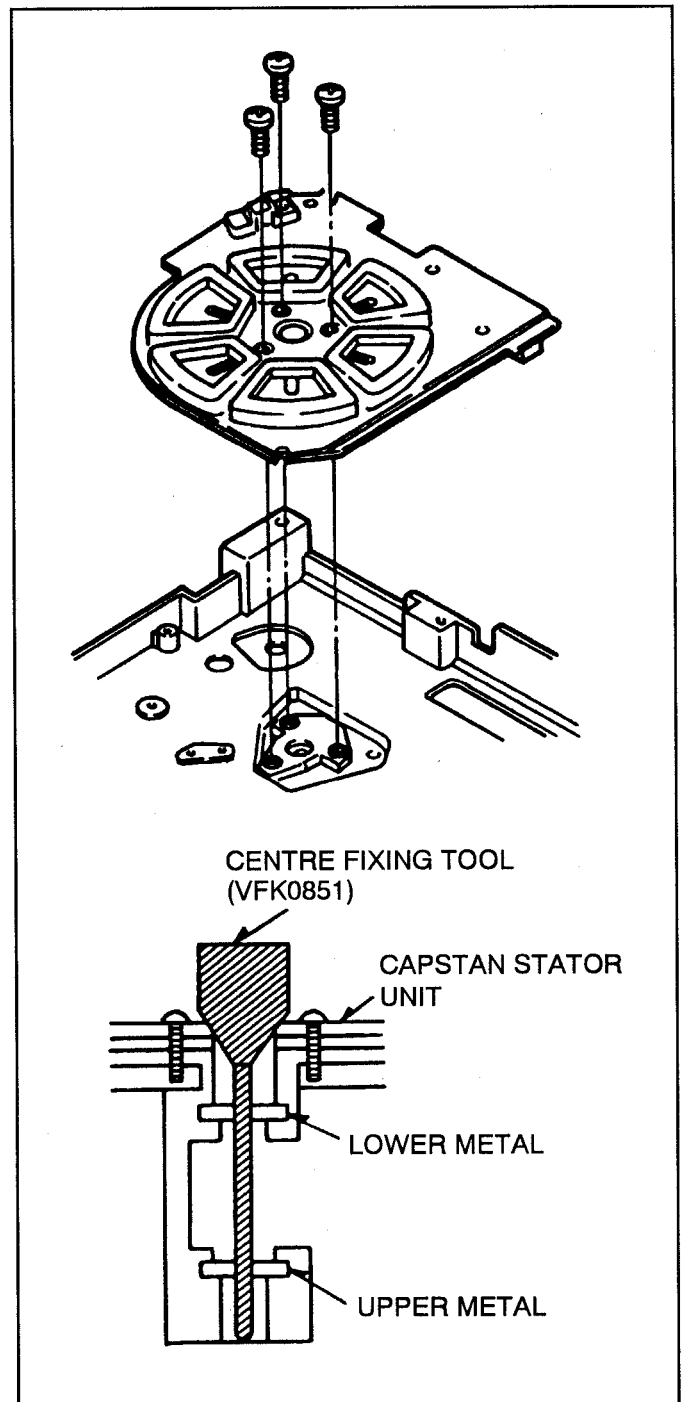


Fig.S9

## F. EJECT OPERATION

The main cam gear rotates in the direction of the arrow. The projection (B) of the carriage connection gear engages with the recession (A) of the main cam gear. The carriage connection gear rotates in the direction of the arrow to perform the Eject operation.

### <NOTE>

If the Eject operation is performed without the cassette carriage installed while repairing or making the mechanical phase alignment, the main cam gear will not engage with the carriage connection gear and will not rotate.

To perform the Eject operation with the cassette carriage not installed, it is necessary to rotate the carriage connection gear by hand in the direction of the arrow.

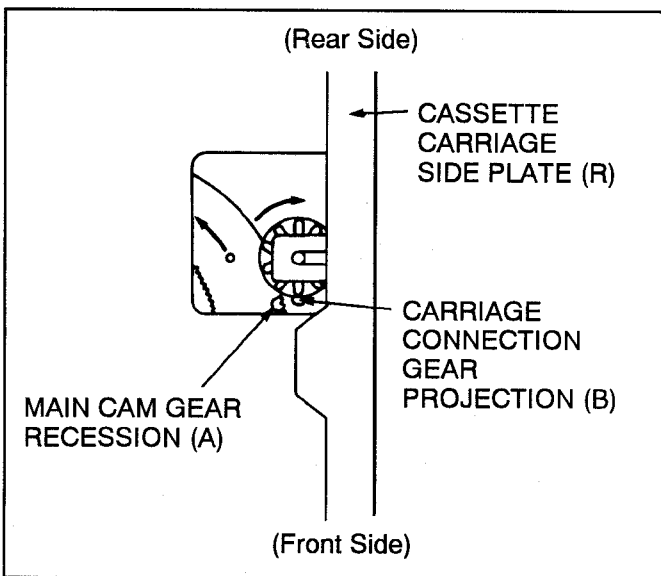


Fig. S10 Top View of Eject Operation

## G. TAKE-UP PHOTO SENSOR OPERATION

Note the following matters for Take-up Photo Sensor Operation.

- 1) While servicing of the K-Mechanism, the unit will not operate properly if a strong light (ex, Fluorescent Light) falls on the Take-up Photo Sensor.

In this case, cover the Take-up Photo sensor to prevent the light from falling on it.

- 2) While servicing of the K-Mechanism with "Power On" and without cassette tape inserted, the Unit will not operate properly.

## H. POWER TRANSISTOR SERVICING

When removing the connector of the Power Transistor, hold the Power Transistor by hand to prevent damage.

### 1-1-2. REMOVAL OF THE CASSETTE TAPE

If the electrical circuit is defective and the action of unloading and front unloading do not work properly, it is possible to remove the cassette manually.

There are 2 methods of removing the cassette.

#### 1. HAND OPERATION

- 1) Take out the mechanism from MAIN C.B.A.
- 2) Turn the Worm Gear manually, moving the Loading Post to the unloaded position.
- 3) Turn the CAPSTAN ROTOR UNIT clockwise to take up the tape.
- 4) Turn the Worm Gear again to eject the cassette.

#### 2. BATTERY OPERATION

- 1) Take out the mechanism from MAIN C.B.A.
- 2) Connect the Battery (Manganese-Type R6 (AA) 3pcs./+4.5V) to the LOADING MOTOR terminals as shown in Fig.S11.
- 3) After moving the LOADING POST to the unloaded position, disconnect the battery to stop the motor.
- 4) Turn the CAPSTAN ROTOR UNIT to clockwise to take up the tape.
- 5) Reconnect the battery to eject the cassette.

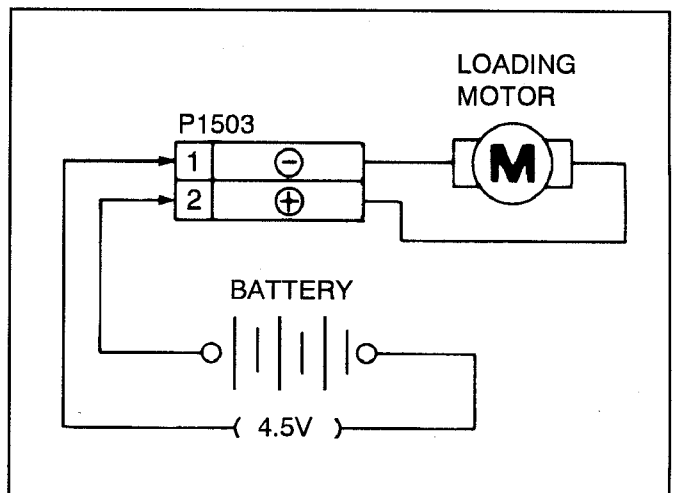


Fig. S11

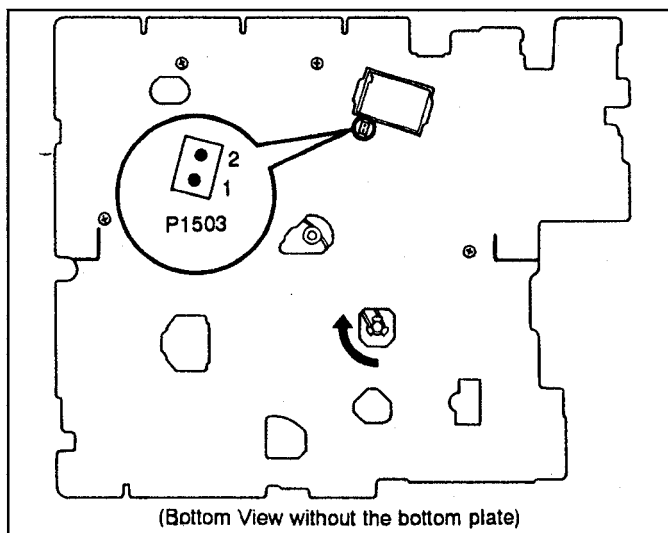


Fig. S12

If the cassette tape can not be removed by the above 2 methods, remove it by the following method.

- 1) Remove the Top Panel.
- 2) Remove the Front Panel Unit.
- 3) Lift up the Pinch Arm after removing spring.
- 4) Push the P5 Arm and remove the Tape from tape transportation (P3, P2, P5 and P1 Post).
- 5) Turn the Capstan Motor to take up the Tape.
- 6) Remove 1 screw from the Side Plate (R) Unit to disconnect the Rack Gear from the Carriage Connection Gear.
- 7) Take out the Cassette Tape from the Cassette Compartment.

### 1-1-3. FLAT RIBBON CABLE INSTALLATION

When installing the Flat Ribbon Cable on the connector, install the Flat Ribbon Cable with the cable contacts facing the connector contacts.

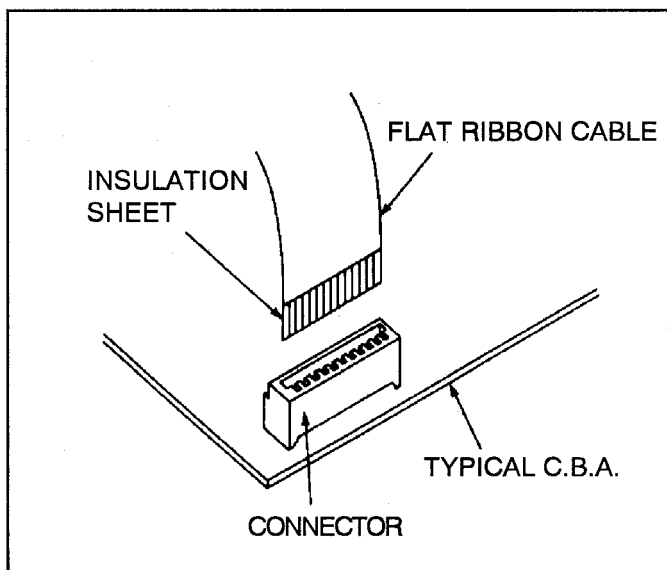


Fig. S13

### 1-1-4. SERVICE MODE

#### 1) Purpose of Service Mode

This service mode allow the service Technicians to check the VCP mechanism freely without a cassette tape, which enables accessing faulty mechanical part quickly and shortening total repair time.

#### 2) Turning on Service Mode

By pressing the FF,REW and EJECT buttons simultaneously, the service mode will be activated.

In the service mode, two types of checking modes are available as follows:

**MODE 1 :** For checking Tape Transport mechanism.

In cassette down condition without cassette tape, the mechanism goes to PLAY, REV,CUE,FF or REW position when the operation button is pressed.

In this mode, LEDs are illuminated as follows:

|        |                                    |
|--------|------------------------------------|
| FF/REW | : Light up                         |
| PLAY   | : Blinking at 0.5 seconds interval |

**MODE 2 :** For checking loading/unloading operation.

The loading motor rotates for loading operation when the PLAY button is pressed .

The loading motor rotates for unloading operation when the STOP button is pressed.

In this mode, LEDs illuminated as follows:

|        |                                     |
|--------|-------------------------------------|
| FF/REW | : Light up                          |
| PLAY   | : Blinking at 0.25 seconds interval |

This service mode is released when the POWER Button is pressed.

### 1-1-5. Timing Chart of Mode SW Signals

System control IC6001 detects the mechanism position through the Mode SW.

Fig. S14 shows the timing chart of Mode SW.

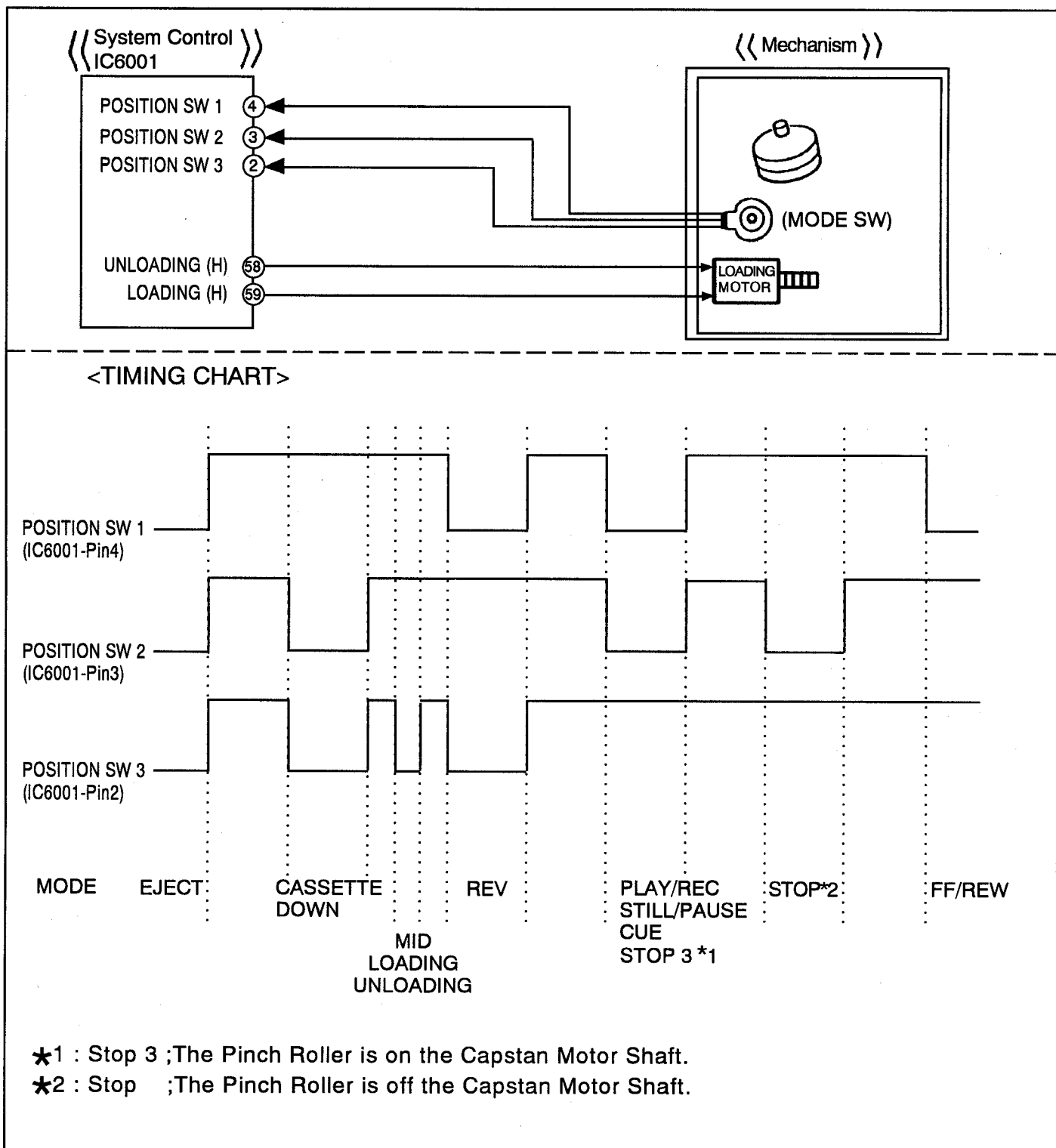


Fig. S14 Timing Chart of Mode SW

### 1-1-6. Input/Output Chart for IC6001

| Pin Number | Input/Output | Port Name           | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
|------------|--------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------|--------|----------------------|---|---|---|-------|---|---|---|---------------|---|---|---|-----|---|---|---|---------------------------|---|---|---|------------------------------------------|---|---|---|------|---|---|---|--------|---|---|---|--------------|
| 1          | I            | SAFETY TAB          | When inserting the cassette tape with safety tab, this port is low. When there is no safety tab, this port is high to prevent recording.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 2          | I            | POSITION SW 3       | <table><tr><th>P.SW 3</th><th>P.SW 2</th><th>P.SW 1</th><th>Position (Mode) Name</th></tr><tr><td>0</td><td>0</td><td>0</td><td>EJECT</td></tr><tr><td>0</td><td>0</td><td>1</td><td>CASSETTE DOWN</td></tr><tr><td>0</td><td>1</td><td>0</td><td>REV</td></tr><tr><td>0</td><td>1</td><td>1</td><td>MID (LOADING / UNLOADING)</td></tr><tr><td>1</td><td>0</td><td>0</td><td>PLAY/REC, STILL/PAUSE, CUE, FWD STOP3 *1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>STOP</td></tr><tr><td>1</td><td>1</td><td>0</td><td>FF/REW</td></tr><tr><td>1</td><td>1</td><td>1</td><td>INTERMEDIATE</td></tr></table> <p>(*1) The Pinch Roller is on the capstan motor shaft.</p> | P.SW 3                                   | P.SW 2 | P.SW 1 | Position (Mode) Name | 0 | 0 | 0 | EJECT | 0 | 0 | 1 | CASSETTE DOWN | 0 | 1 | 0 | REV | 0 | 1 | 1 | MID (LOADING / UNLOADING) | 1 | 0 | 0 | PLAY/REC, STILL/PAUSE, CUE, FWD STOP3 *1 | 1 | 0 | 1 | STOP | 1 | 1 | 0 | FF/REW | 1 | 1 | 1 | INTERMEDIATE |
| P.SW 3     | P.SW 2       | P.SW 1              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Position (Mode) Name                     |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 0          | 0            | 0                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EJECT                                    |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 0          | 0            | 1                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CASSETTE DOWN                            |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 0          | 1            | 0                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | REV                                      |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 0          | 1            | 1                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | MID (LOADING / UNLOADING)                |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 1          | 0            | 0                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PLAY/REC, STILL/PAUSE, CUE, FWD STOP3 *1 |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 1          | 0            | 1                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | STOP                                     |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 1          | 1            | 0                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | FF/REW                                   |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 1          | 1            | 1                   | INTERMEDIATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 3          | I            | POSITION SW 2       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 4          | I            | POSITION SW 1       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 5          | I            | SUPPLY REEL PULSE   | Supply Reel Pulse Input<br>(For detecting tape remaining)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 6          | I            | NORMAL/SERVICE/TEST | Service Mode Setting<br>Normal Mode : High<br>Service Mode: Middle<br>Test Mode : Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 8          | I            | TEST                | Not used (Low setting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 9          | I            | ENVELOPE SELECT     | The playback envelope video signal level is detected at this input to select the video head in the special playback modes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 10         | O            | ROTARY SW           | Normally this signal is supplied to the chrominance circuit to perform the phase rotation. But this model use VIDEO H. SW instead of ROTARY SW.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 12         | O            | HEAD AMP SWITCH     | This signal is supplied to the head amp circuit to switch the video head, SP or LP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 14         | O            | ARTIFICIAL V/H/N    | Artificial Vertical Sync Signal is supplied to video circuit to stabilize the picture in the special playback modes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 17         | I            | TAKE-UP PHOTO       | Take-up Side Photo Sensor Input<br>(For detecting tape beginning)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 18         | I            | SUPPLY PHOTO        | Supply Side Photo Sensor Input (For detecting tape end.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |
| 19         | I            | TAKE-UP REEL        | Take-up Reel Pulse Input<br>(For detecting tape remaining and reel (Cap.) lock.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |        |        |                      |   |   |   |       |   |   |   |               |   |   |   |     |   |   |   |                           |   |   |   |                                          |   |   |   |      |   |   |   |        |   |   |   |              |

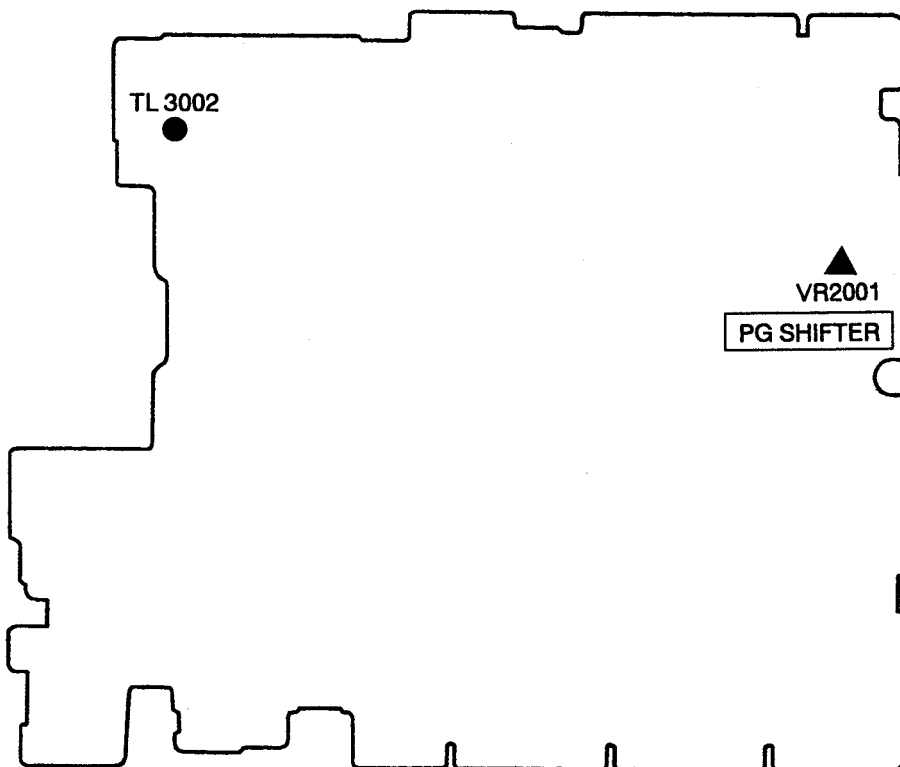
| Pin Number | Input/Output | Port Name          | Function                                                                                                                                                                                                                                                                                                      |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
|------------|--------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|----------|-------|------|-----|----------|-------|------|-------|----------|-----|----|-------|
| 47         | O            | VTR (H)            | VTR Switch Output<br>VTR(PAL) : High<br>VTR(NTSC): Low                                                                                                                                                                                                                                                        |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 49         | O            | KEY OUT 2          | KEY SCAN OUTPUT<br><table><tr><td></td><td>KEY OUT 0</td><td>KEY OUT 1</td><td>KEY OUT 2</td></tr><tr><td>KEY IN 0</td><td>POWER</td><td>PLAY</td><td>REC</td></tr><tr><td>KEY IN 1</td><td>EJECT</td><td>STOP</td><td>STILL</td></tr><tr><td>KEY IN 2</td><td>REW</td><td>FF</td><td>A.DUB</td></tr></table> |           | KEY OUT 0 | KEY OUT 1 | KEY OUT 2 | KEY IN 0 | POWER | PLAY | REC | KEY IN 1 | EJECT | STOP | STILL | KEY IN 2 | REW | FF | A.DUB |
|            | KEY OUT 0    | KEY OUT 1          |                                                                                                                                                                                                                                                                                                               | KEY OUT 2 |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| KEY IN 0   | POWER        | PLAY               |                                                                                                                                                                                                                                                                                                               | REC       |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| KEY IN 1   | EJECT        | STOP               |                                                                                                                                                                                                                                                                                                               | STILL     |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| KEY IN 2   | REW          | FF                 |                                                                                                                                                                                                                                                                                                               | A.DUB     |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 51         | O            | KEY OUT 1          |                                                                                                                                                                                                                                                                                                               |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 52         | O            | KEY OUT 0          |                                                                                                                                                                                                                                                                                                               |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 53         | I            | KEY IN 2           |                                                                                                                                                                                                                                                                                                               |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 56         | I            | KEY IN 1           |                                                                                                                                                                                                                                                                                                               |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 57         | I            | KEY IN 0           |                                                                                                                                                                                                                                                                                                               |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 54         | O            | SENSOR LED ON (L)  | When turning on the Sensor LED, this port is low.<br>1) STOP Mode : No lit.<br>2) FF, REW, CUE, REV Modes : DC is lit.<br>3) EJECT Mode : Pulse blinking.<br><br>(Cycle: 320[msec])                                                                                                                           |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 55         | O            | VOLTAGE CHANGE (H) | When increasing the drive torque of loading motor to perform the FF/ REW mode, this port is high.                                                                                                                                                                                                             |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 58         | O            | UNLOADING (H)      | When unloading, this port is high.                                                                                                                                                                                                                                                                            |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 59         | O            | LOADING (H)        | When unloading, this port is low.                                                                                                                                                                                                                                                                             |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 63         | O            | SERIAL CLOCK       | Serial Clock Output                                                                                                                                                                                                                                                                                           |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 64         | I            | REC SELECT         | When the recording system goes to NTSC, this port is Low.                                                                                                                                                                                                                                                     |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 68         | O            | FULL ERASE (H)     | When the video goes to the recording mode, this port is high.                                                                                                                                                                                                                                                 |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 69         | O            | REC (H)            | When the video goes to the recording mode, this port is high.                                                                                                                                                                                                                                                 |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 70         | O            | NTSC (L)           | System Output<br>NTSC : Low<br>PAL : High                                                                                                                                                                                                                                                                     |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |
| 71         | O            | AUDIO MUTE (H)     | When the audio goes to the mute mode, this port is high.                                                                                                                                                                                                                                                      |           |           |           |           |          |       |      |     |          |       |      |       |          |     |    |       |

| Pin Number | Input/Output | Port Name            | Function                                                                                    |
|------------|--------------|----------------------|---------------------------------------------------------------------------------------------|
| 75         | O            | CURRENT EMPHASIS (H) | When the servo goes to the edit mode, this port is high.                                    |
| 76         | O            | FF/REW (L)           | When the servo goes to the FF/REW mode, this port is low.                                   |
| 78         | O            | VIDEO EE (L)         | When the video goes to the EE mode, this port is low.                                       |
| 79         | O            | TRICK (L)            | When the video goes to the special playback (CUE, REV, SLOW, STILL) mode, this port is low. |
| 80         | O            | POWER OFF (H)        | Power ON/OFF Control is low when the power switch is turned on.                             |
| 84         | I            | RESET (L)            | When resetting the IC6001, this port is low.                                                |

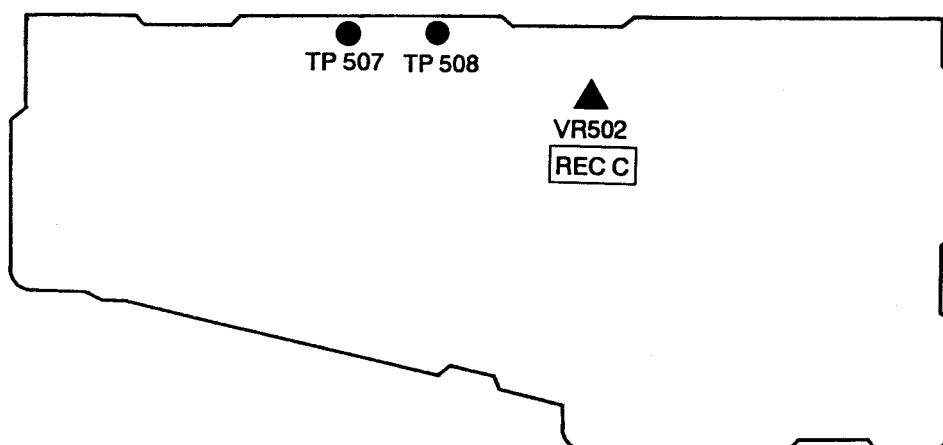
SECTION 2

LOCATION OF TEST POINTS & CONTROLS

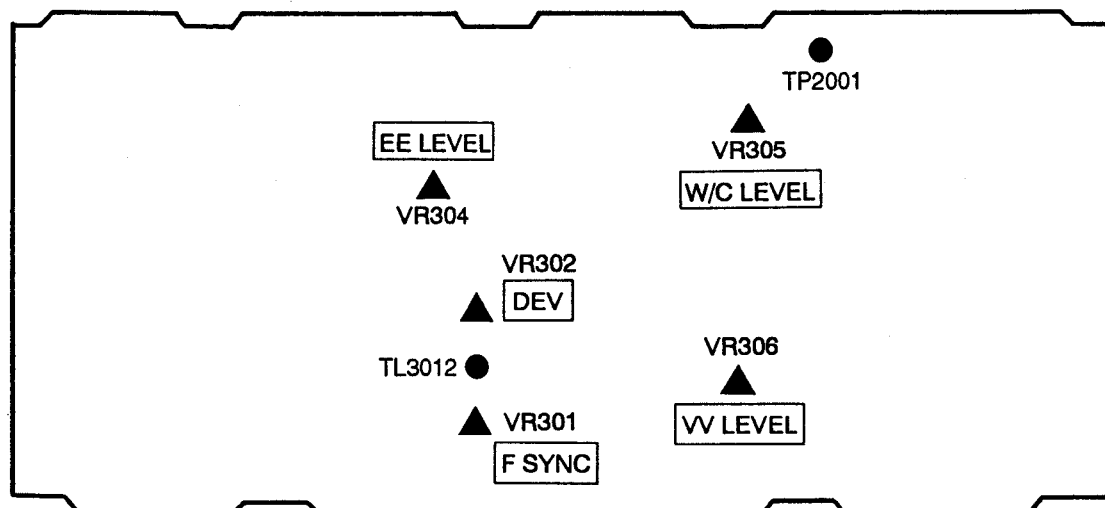
MAIN C.B.A.



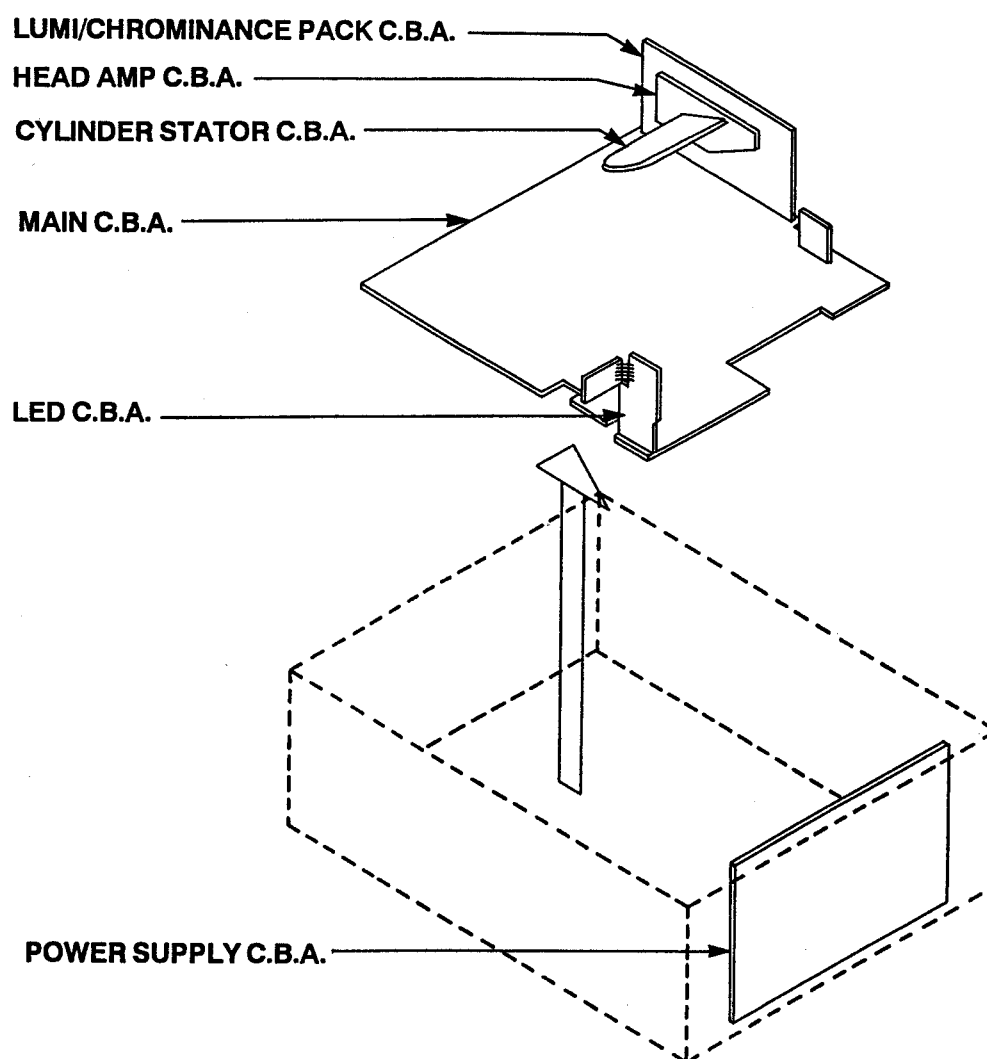
HEAD AMP C.B.A.



## LUMINANCE & CHROMINANCE PACK C.B.A.



## CIRCUIT BOARD LAYOUT



## 2-3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCP.

### 2-3-1. TEST EQUIPMENT

To perform electrical adjustments following equipment is required.

1. Dual-Trace Oscilloscope. (More than 35MHz)  
Voltage Range : 0.005-5V/ div  
Frequency Range : DC-35MHz  
Probes : 10:1
2. Frequency Counter.  
Frequency Range: 0-10MHz  
Probes : 1:1
3. Universal Counter.
4. Video Sweep Generator.
5. Sine Wave Generator.
6. Video Pattern Generator.
7. VHS Alignment Tape. (VFJ8125H3F)
8. VHS Blank Tape.
9. Plastic Tip Driver.
10. Vacuum Tube Volt Meter (V.T.V.M)
11. Monitor

### 2-3-2. PREPARATION

During adjustment, set each selector as follows: when no indication in the procedure.

PAL/MESECAM SELECT SW ..... PAL  
CONVERTER SELECT SW ..... PAL D/K  
PAL/ NTSC 4.43 SW ..... PAL

### 2-3-3. HOW TO READ ADJUSTMENT PROCEDURES

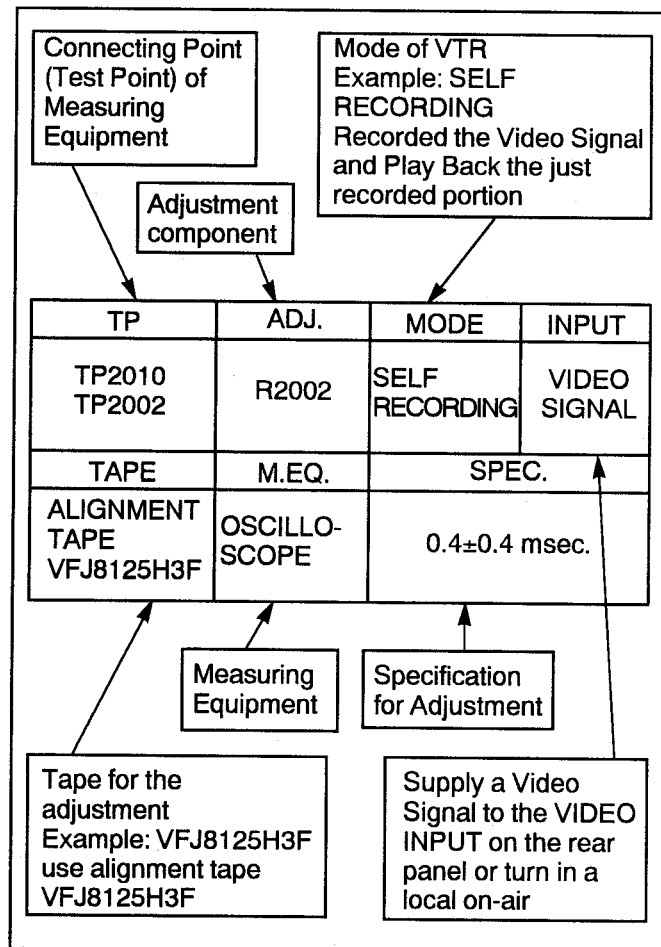


Fig.E1

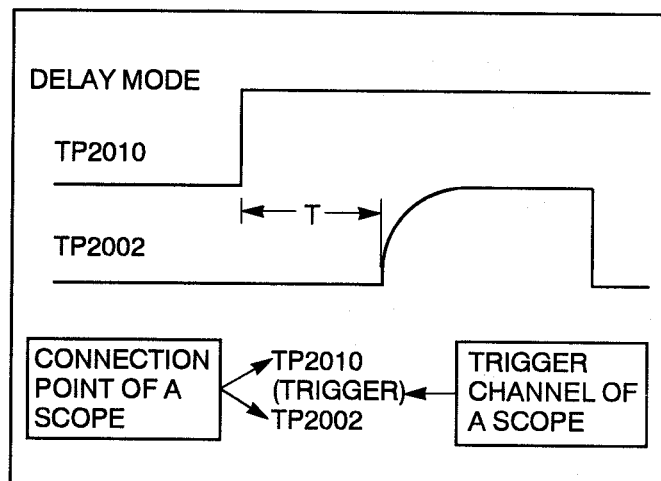


Fig.E2

## SERVO SECTION

### 2-3-4. PG SHIFTER ADJUSTMENT

| TP                              | ADJ.              | MODE       | INPUT |
|---------------------------------|-------------------|------------|-------|
| TP2001<br>TP3002                | VR2001            | PLAYBACK   |       |
| TAPE                            | M.EQ.             | SPEC.      |       |
| ALIGNMENT<br>TAPE<br>VFJ8125H3F | OSCILLO-<br>SCOPE | 6.5±0.5(H) |       |

1. Connect the oscilloscope to TP2001(H.SW) and TP3002(V.OUT).
2. Playback the alignment tape.
3. Adjust VR2001 until the phase difference between falling edge of Head SW pulse and V-Sync is  $6.5 \pm 0.5(H)$ .

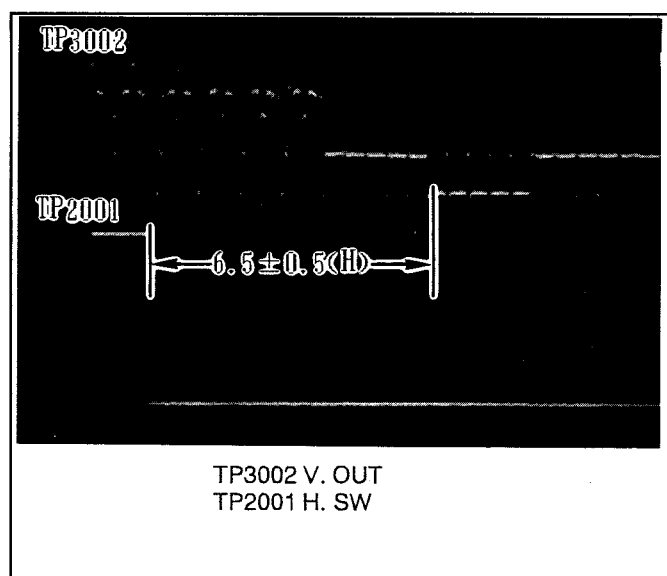


Fig.E3

## VIDEO SECTION

### 2-3-5. VIDEO EE LEVEL ADJUSTMENT

| TP            | ADJ.              | MODE           | INPUT         |
|---------------|-------------------|----------------|---------------|
| VIDEO<br>OUT  | VR304             | RECORDING      | COLOUR<br>BAR |
| TAPE          | M.EQ.             | SPEC.          |               |
| BLANK<br>TAPE | OSCILLO-<br>SCOPE | 1.0±0.05(Vp-p) |               |

1. Supply the colour bar signal to video input.
2. Connect the oscilloscope to video output.
3. Adjust VR304 so that the video output signal level is  $1.0 \pm 0.05V_{p-p}$ .

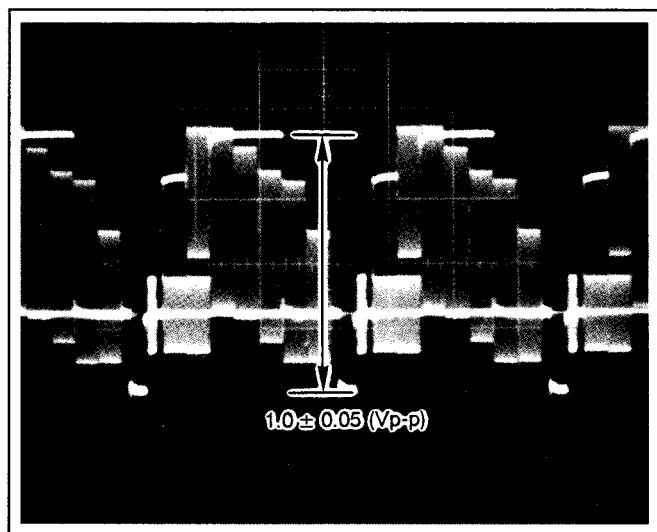


Fig.E4

### 2-3-6. VIDEO VV LEVEL ADJUSTMENT

| TP        | ADJ.              | MODE                          | INPUT         |
|-----------|-------------------|-------------------------------|---------------|
| VIDEO OUT | VR306             | SELF<br>RECORDING<br>PLAYBACK | COLOUR<br>BAR |
| TAPE      | M.EQ.             | SPEC.                         |               |
|           | OSCILLO-<br>SCOPE | 1.0±0.05(Vp-p)                |               |

1. Supply the colour bar signal to video input.
2. Connect the oscilloscope to video output.
3. Record the colour bar signal and playback the just recorded portion.
4. Adjust VR306 so that the video output signal level is  $1.0 \pm 0.05V_{p-p}$  (Unterminated).

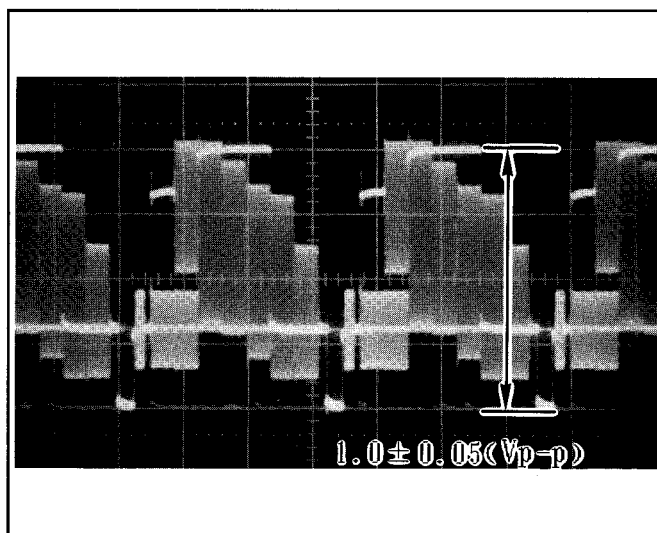


Fig.E5

### 2-3-7. WHITE CLIP ADJUSTMENT

| TP     | ADJ.         | MODE                              | INPUT      |
|--------|--------------|-----------------------------------|------------|
| TL3012 | VR305        | RECORDING                         | COLOUR BAR |
| TAPE   | M.EQ.        | SPEC.                             |            |
|        | OSCILLOSCOPE | WHITE CLIP LEVEL<br>$185 \pm 3\%$ |            |

1. Supply the colour bar signal to video input.
2. Connect the oscilloscope to TL3012.
3. Record the colour bar signal.
4. Adjust VR305 so that the white clip level is  $185 \pm 3\%$ .

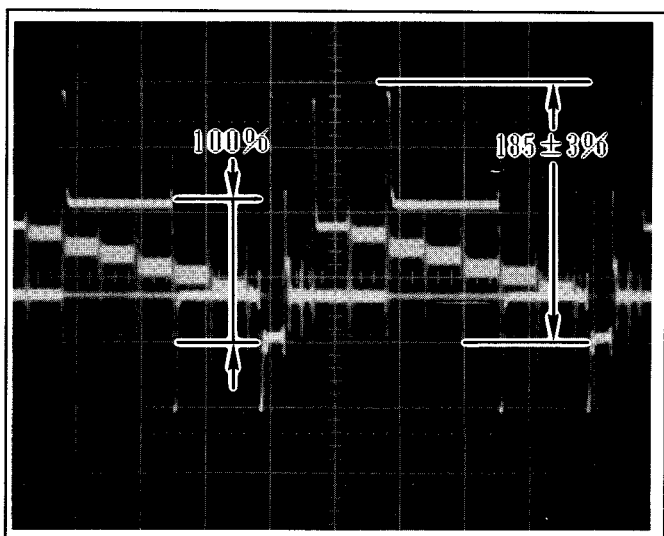


Fig.E6

### 2-3-8 RECORDING CURRENT ADJUSTMENT

| TP                       | ADJ.         | MODE                                             | INPUT      |
|--------------------------|--------------|--------------------------------------------------|------------|
| TP507(HOT)<br>TP508(GND) | VR502(C)     | RECORDING                                        | COLOUR BAR |
| TAPE                     | M.EQ.        | SPEC.                                            |            |
| BLANK TAPE               | OSCILLOSCOPE | Y: $150 \pm 15$ (mVp-p)<br>C: $27 \pm 2$ (mVp-p) |            |

1. Record the colour bar.
2. Connect the oscilloscope to TP507(HOT) and TP508(GND).
3. Confirm the amplitude of sync tip portion is  $150 \pm 15$  mVp-p.
4. Supply +5V DC to TL3008 to reduce luminance Component.
5. Adjust VR502 until the amplitude of Cyan is  $27 \pm 2$  mVp-p.

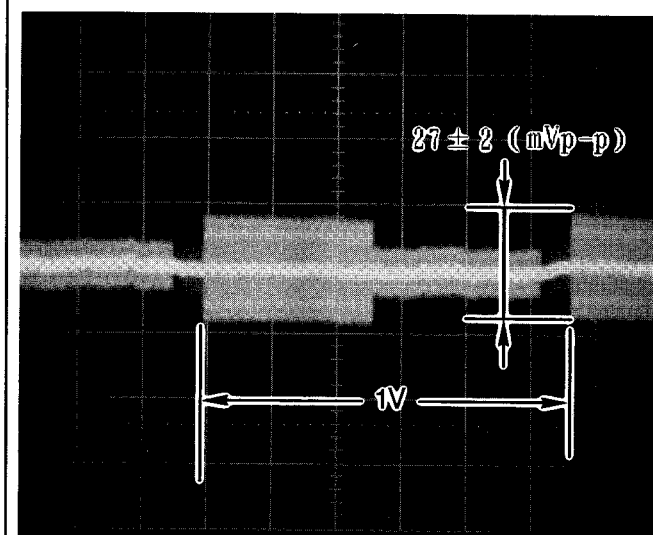
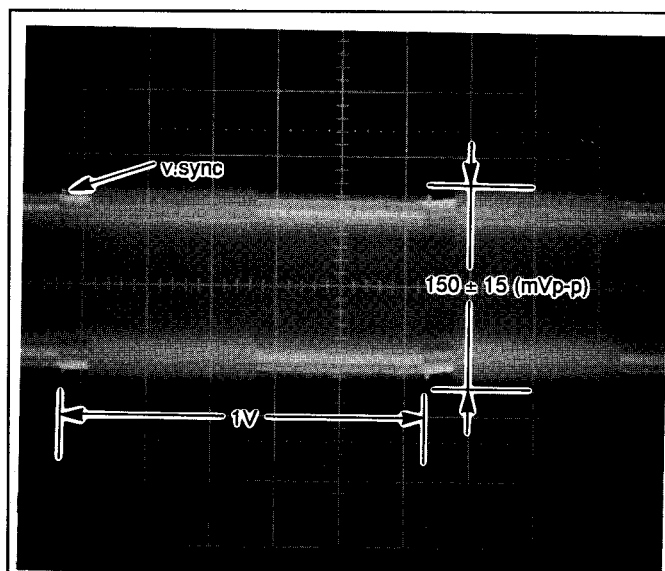


Fig. E7

### 2-3-9. SYNC TIP FREQUENCY ADJUSTMENT

| TP         | ADJ.              | MODE                 | INPUT |
|------------|-------------------|----------------------|-------|
| IC302-5    | VR301             | RECORDING            |       |
| TAPE       | M.EQ.             | SPEC.                |       |
| BLANK TAPE | FREQUENCY COUNTER | $3.8 \pm 0.05$ (MHz) |       |

1. Connect the frequency counter to IC302-5.
2. Adjust VR301 so that sync tip frequency is  $3.8 \pm 0.05$  (MHz) in recording mode.

## 2-3-10. DEVIATION ADJUSTMENT

| TP            | ADJ.              | MODE                           | INPUT         |
|---------------|-------------------|--------------------------------|---------------|
| VIDEO OUT     | VR302             | (SELF<br>RECORDED)<br>PLAYBACK | COLOUR<br>BAR |
| TAPE          | M.EQ.             | SPEC.                          |               |
| BLANK<br>TAPE | OSCILLO-<br>SCOPE | 2.0±0.1(Vp-p)                  |               |

Note :

(1) Before this adjustment, the PLAYBACK LEVEL ADJUSTMENT must be adjusted.

1. Supply the colour bar signal.
2. Connect the oscilloscope to VIDEO OUTPUT.
3. Record the colour bar signal and adjust VR302 during recording.
4. Playback the just recorded portion and confirm the playback DEVIATION level is 2.0±0.1Vp-p (unterminated).

If the signal level is out of the specification, repeat item 3 and item 4 until the signal becomes the specification.

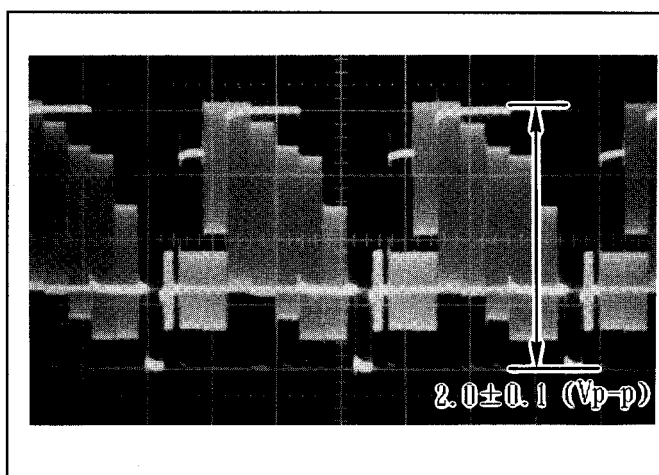
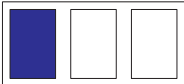
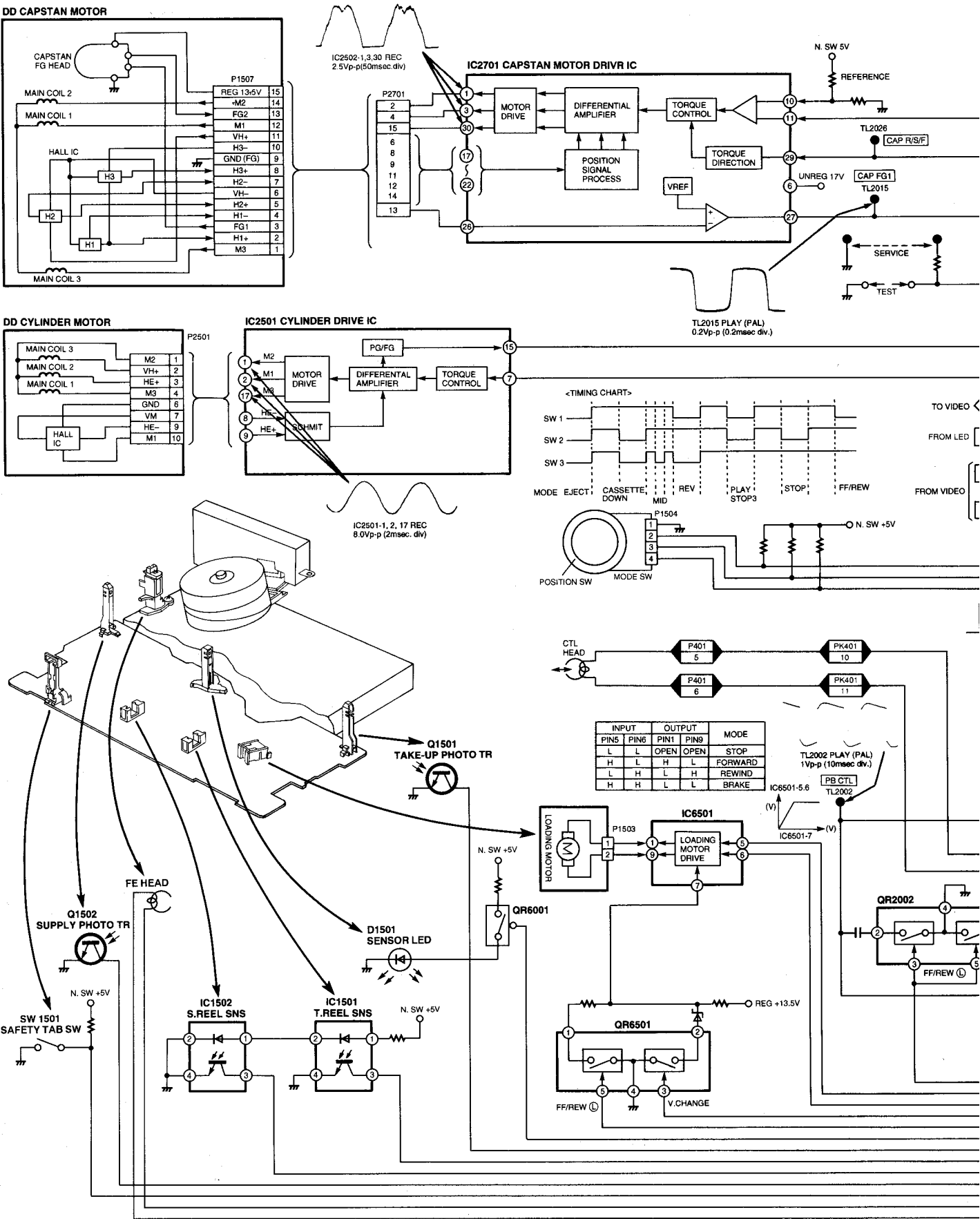
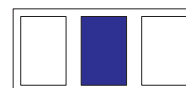
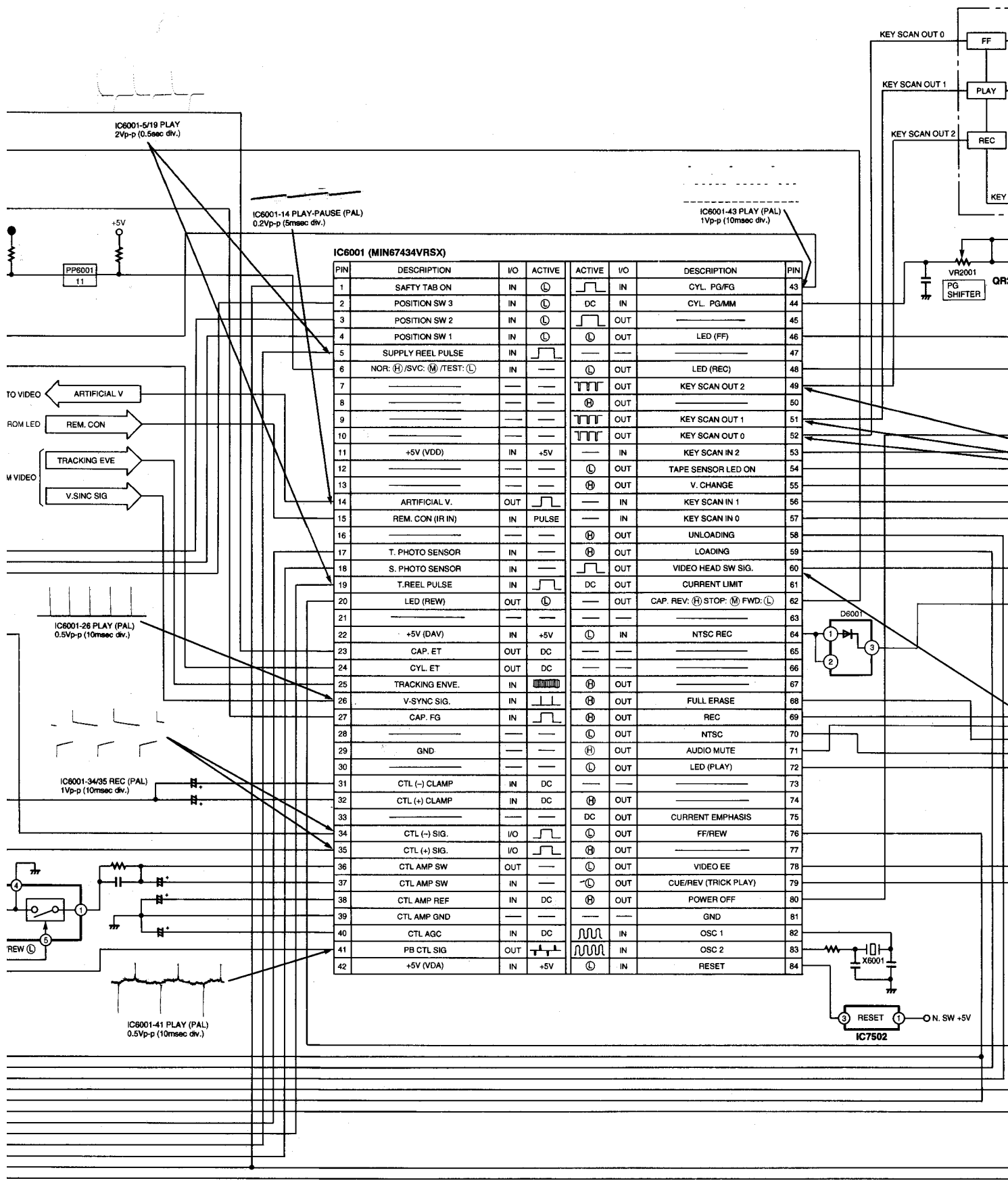
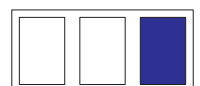
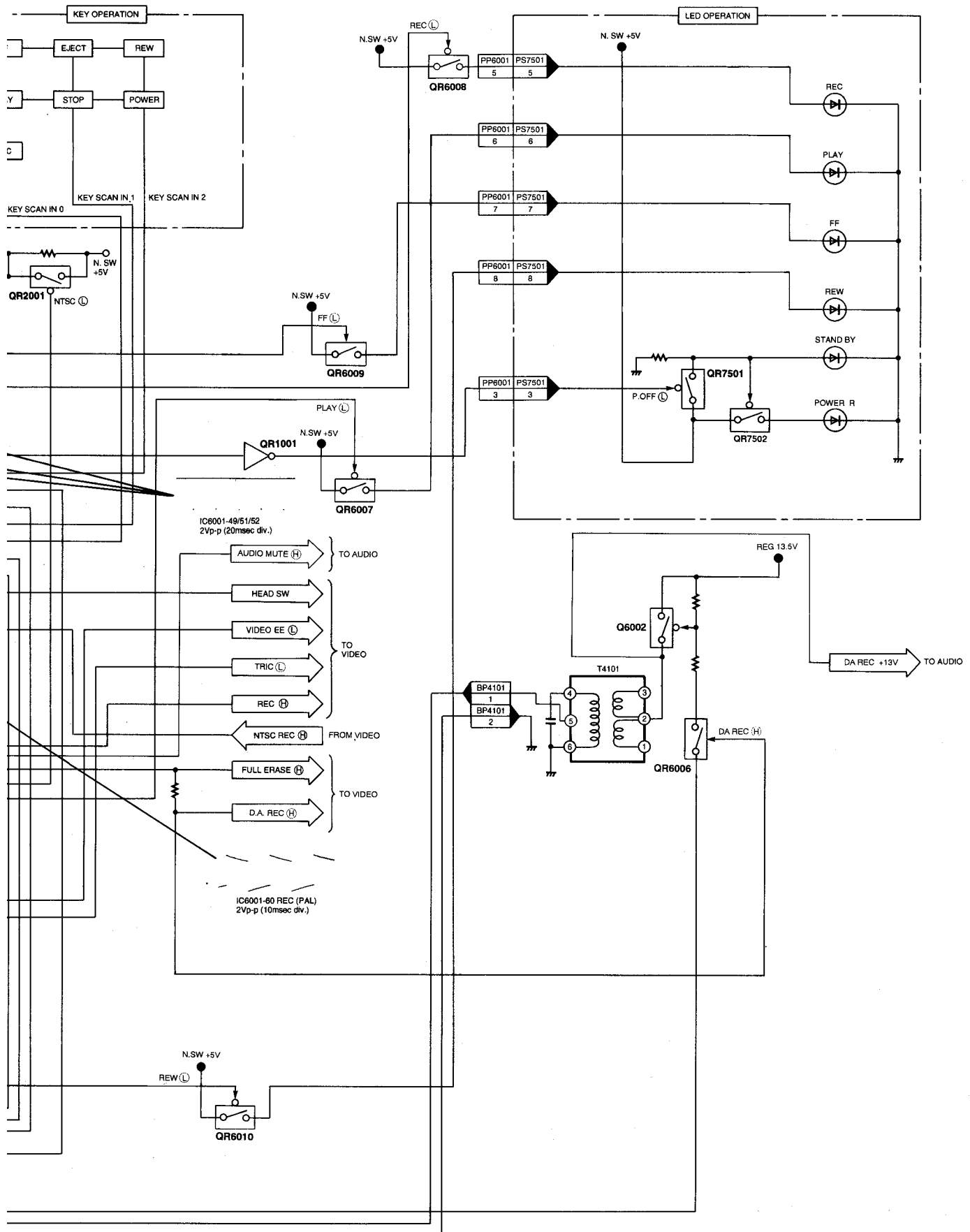


Fig.E8

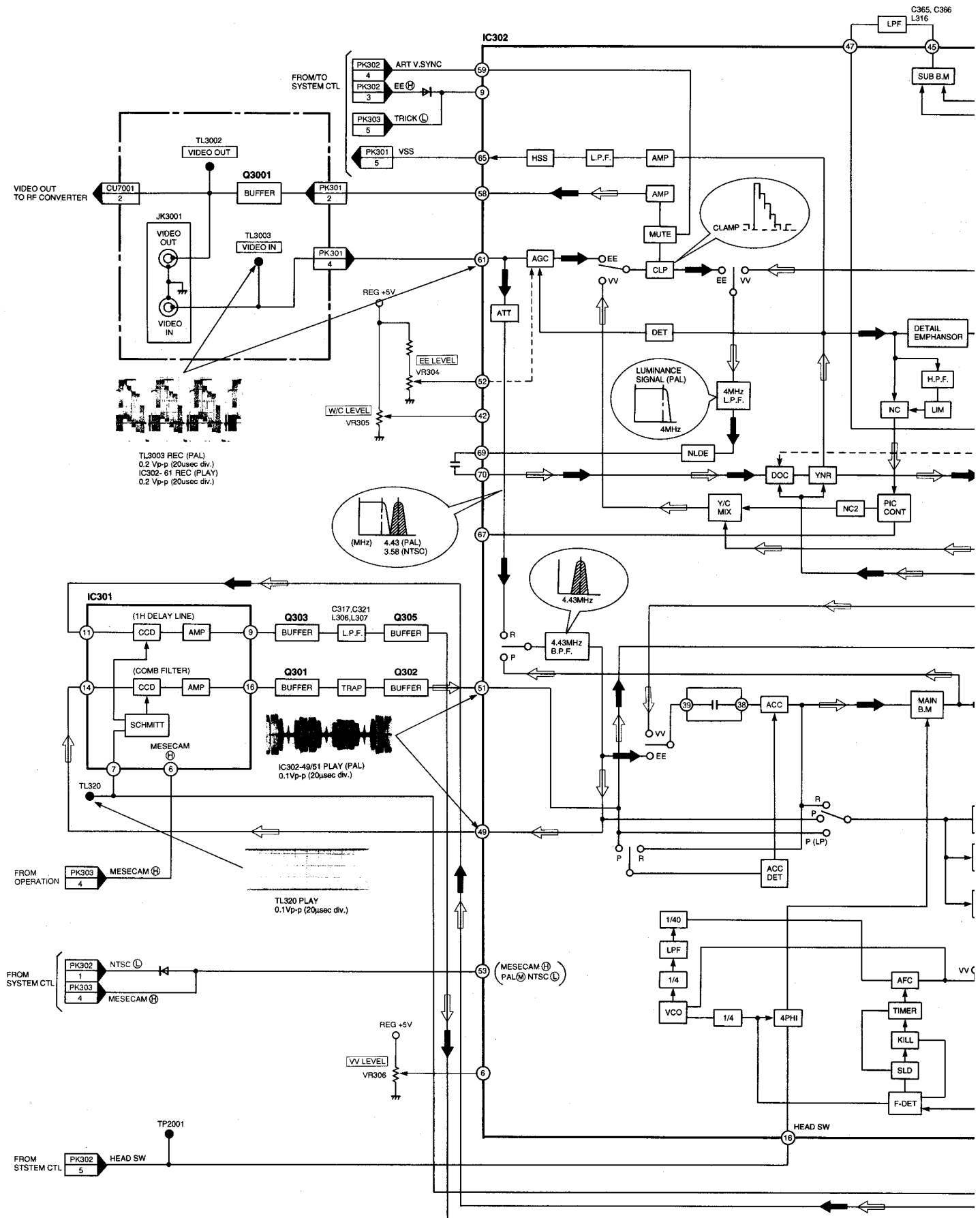
3-2.SYSTEM CONTROL & SERVO SECTION BLOCK DIAGRAM





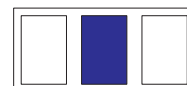
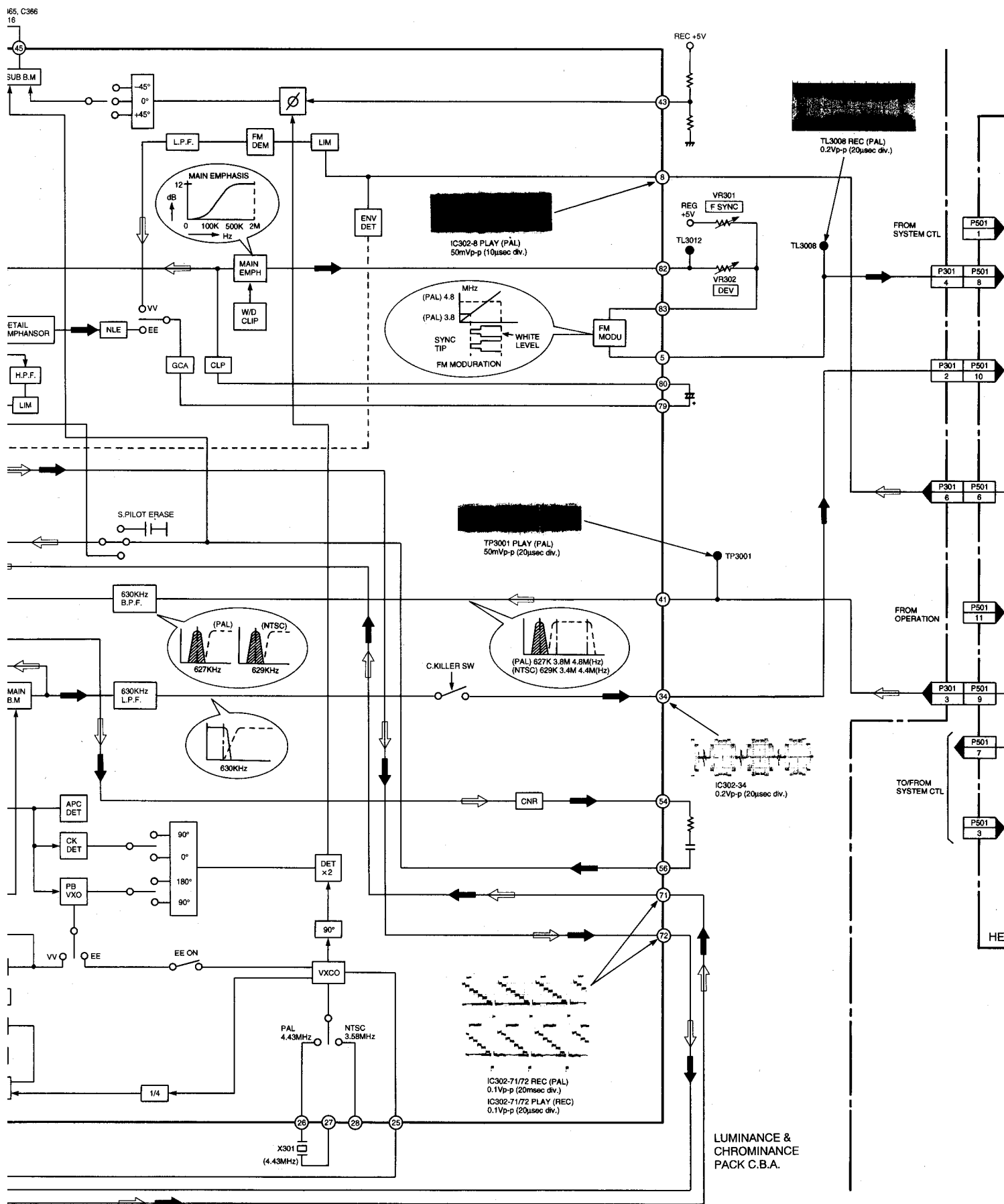


### 3-3.LUMINANCE & CHROMINANCE SECTION BLOCK DIAGRAM

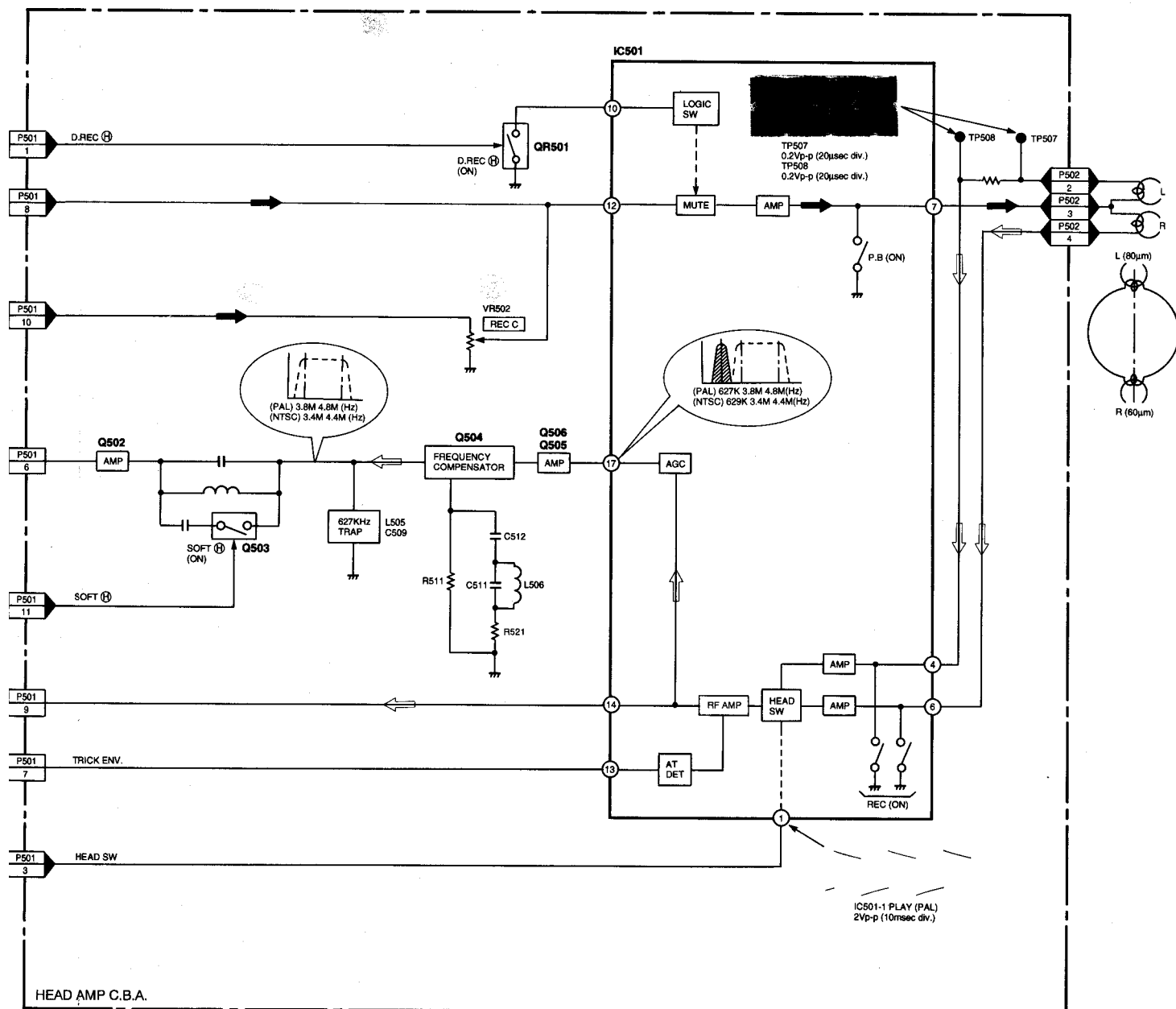


← VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

← VIDEO MAIN SIGNAL PATH

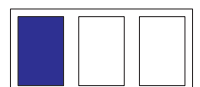
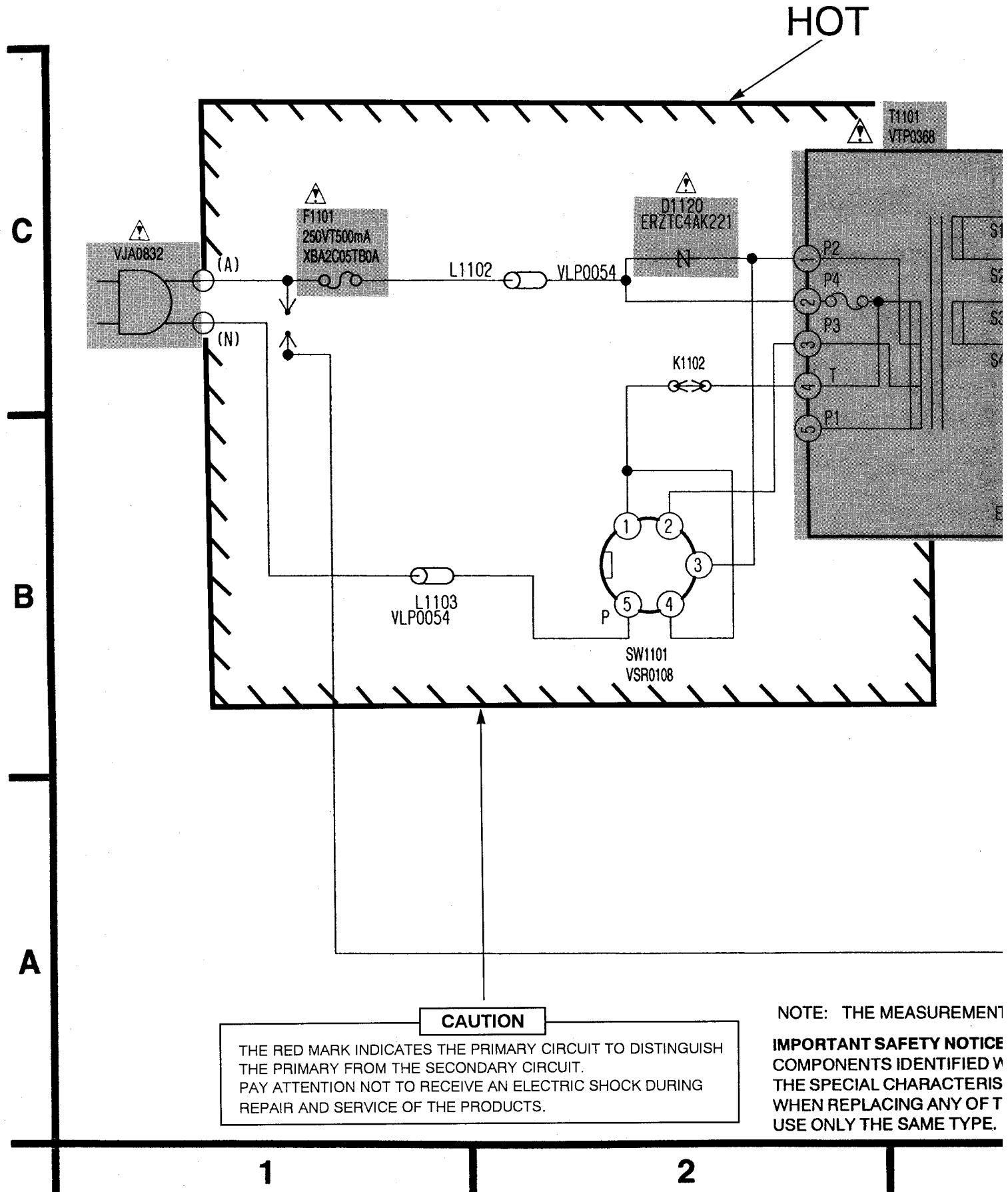


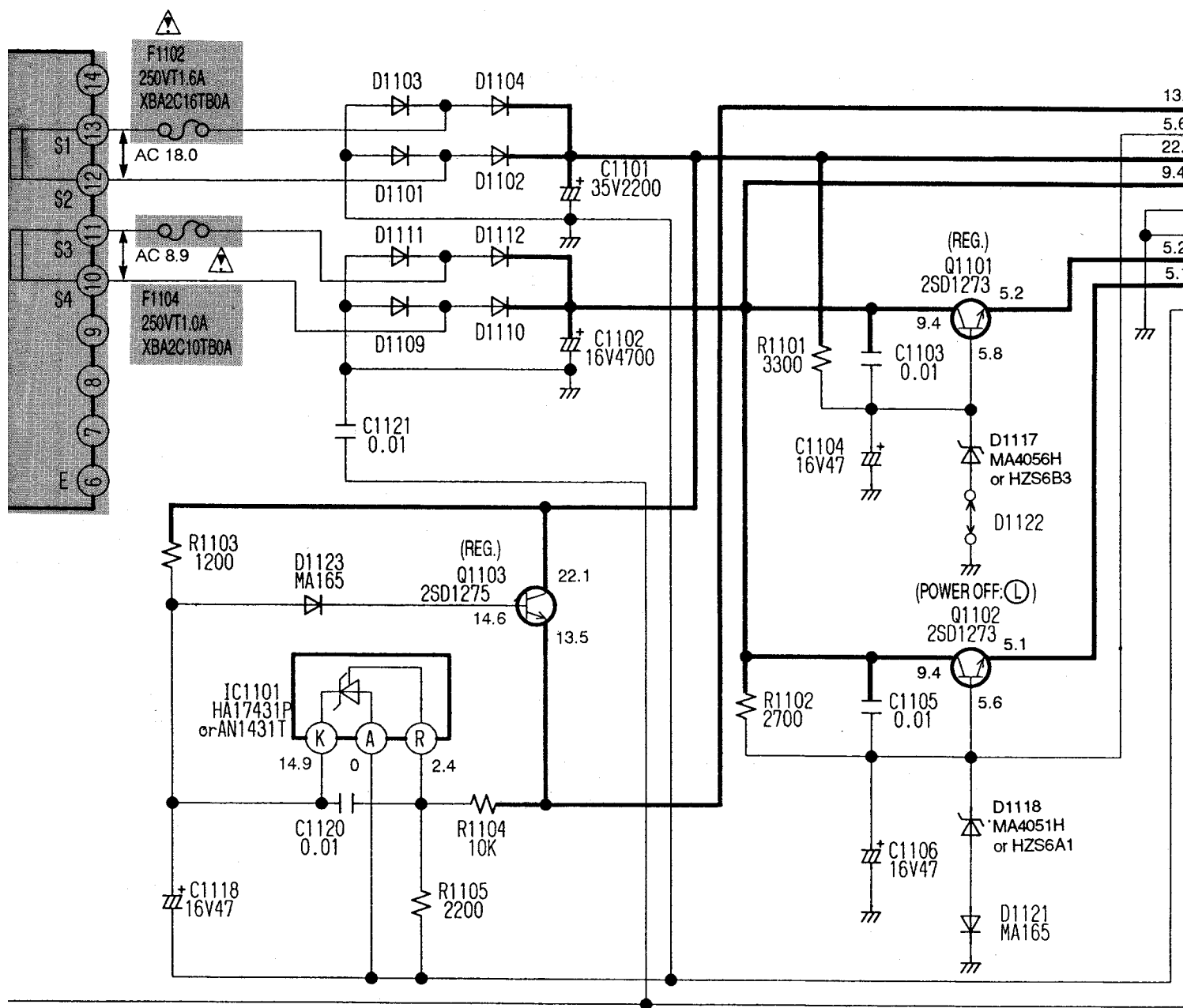
# L PATH IN REC MODE



# SECTION 4 SCHEMATIC DIAGRAMS

## 4-1.POWER SCHEMATIC DIAGRAM



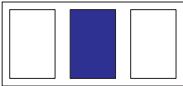


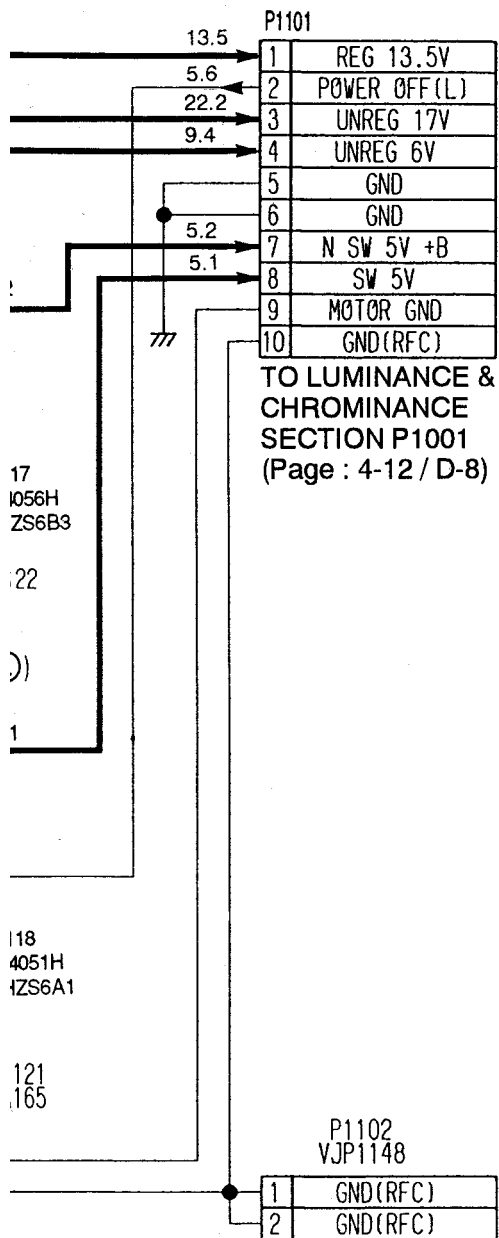
EMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

**NOTICE:**  
 FIED WITH THE MARK HAVE  
 TERISTICS FOR SAFETY.  
 Y OF THESE COMPONENTS,  
 TYPE.

NOTE 1. WHEN MEASURE THE VOLTAGE ON THE POWER CIRCUIT, SET  
 THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.  
 SECONDARY SIDE ..... P1101-5Pin

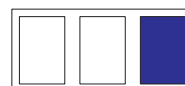
NOTE 2. THE DC VOLTAGE INDICATED IN PRIMART SIDE IS SHOWN THE VOLTAGE WH



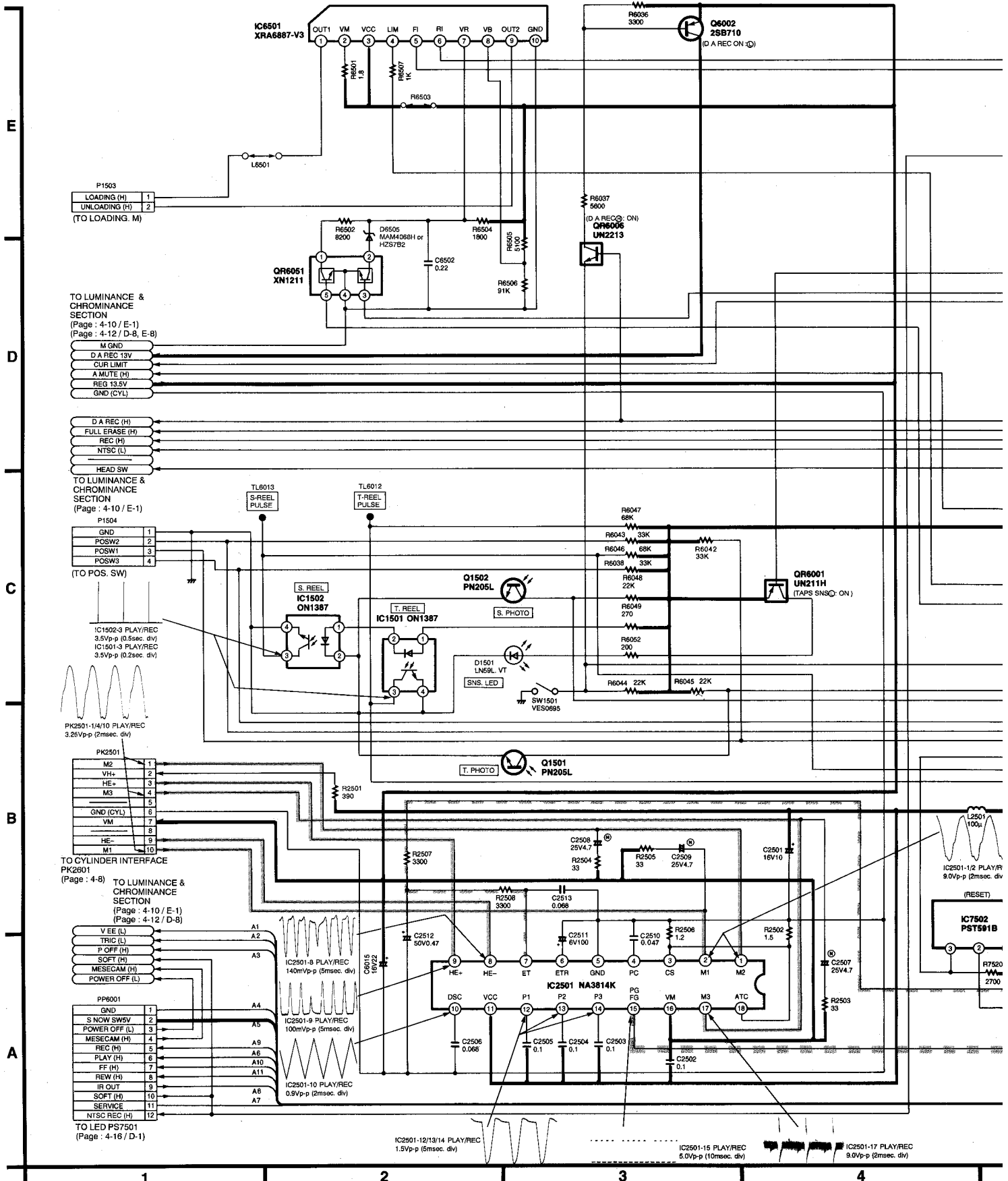


SET

THE VOLTAGE WHEN INPUT AC IS 220V.

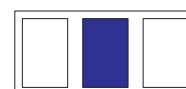


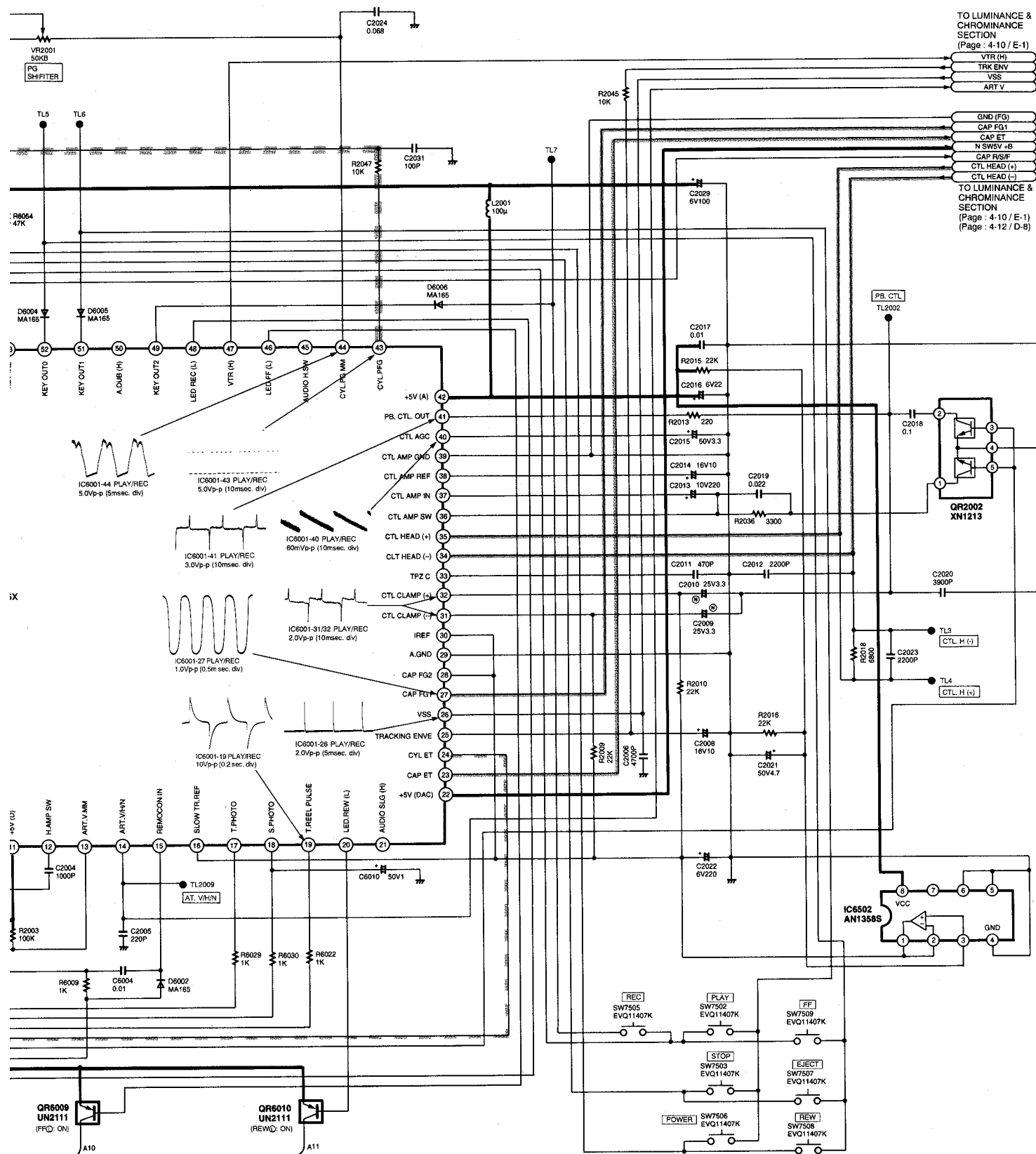
## 4-3.SYSTEM CONTROL &amp; SERVO SECTION IN MAIN SCHEMATIC DIAGRAM



**POWER / C.B.A.**

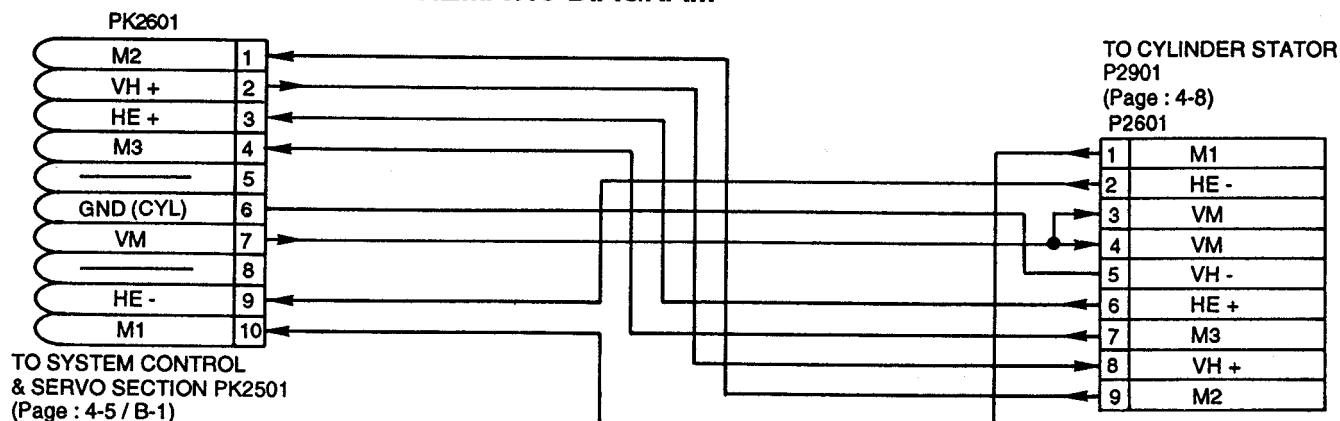
## CYLINDER SERVO PHASE LOOP



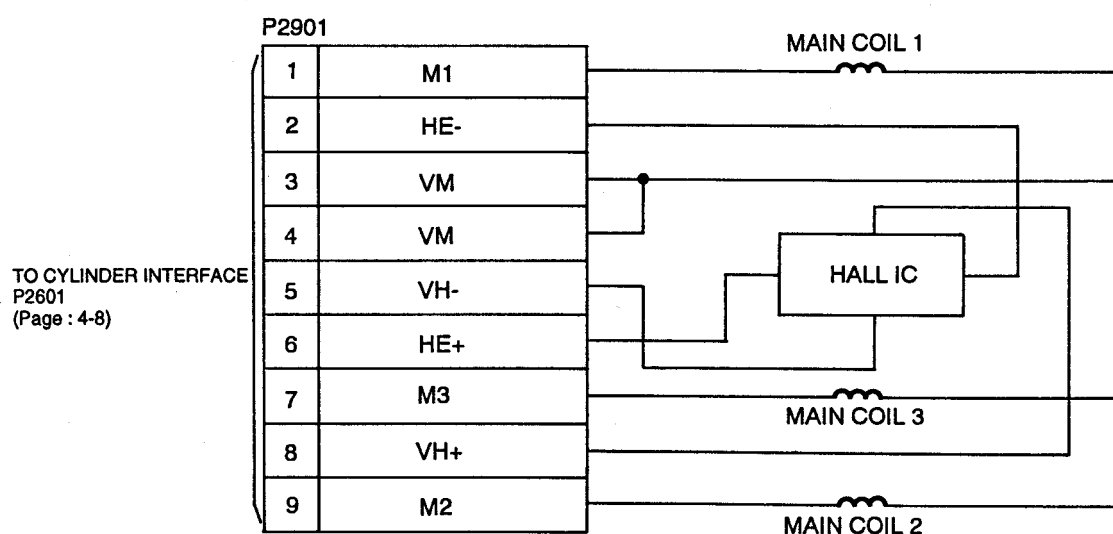


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.  
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

## ■ CYLINDER INTERFACE SCHEMATIC DIAGRAM



## ■ CYLINDER STATOR SCHEMATIC DIAGRAM



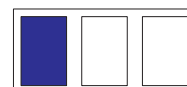
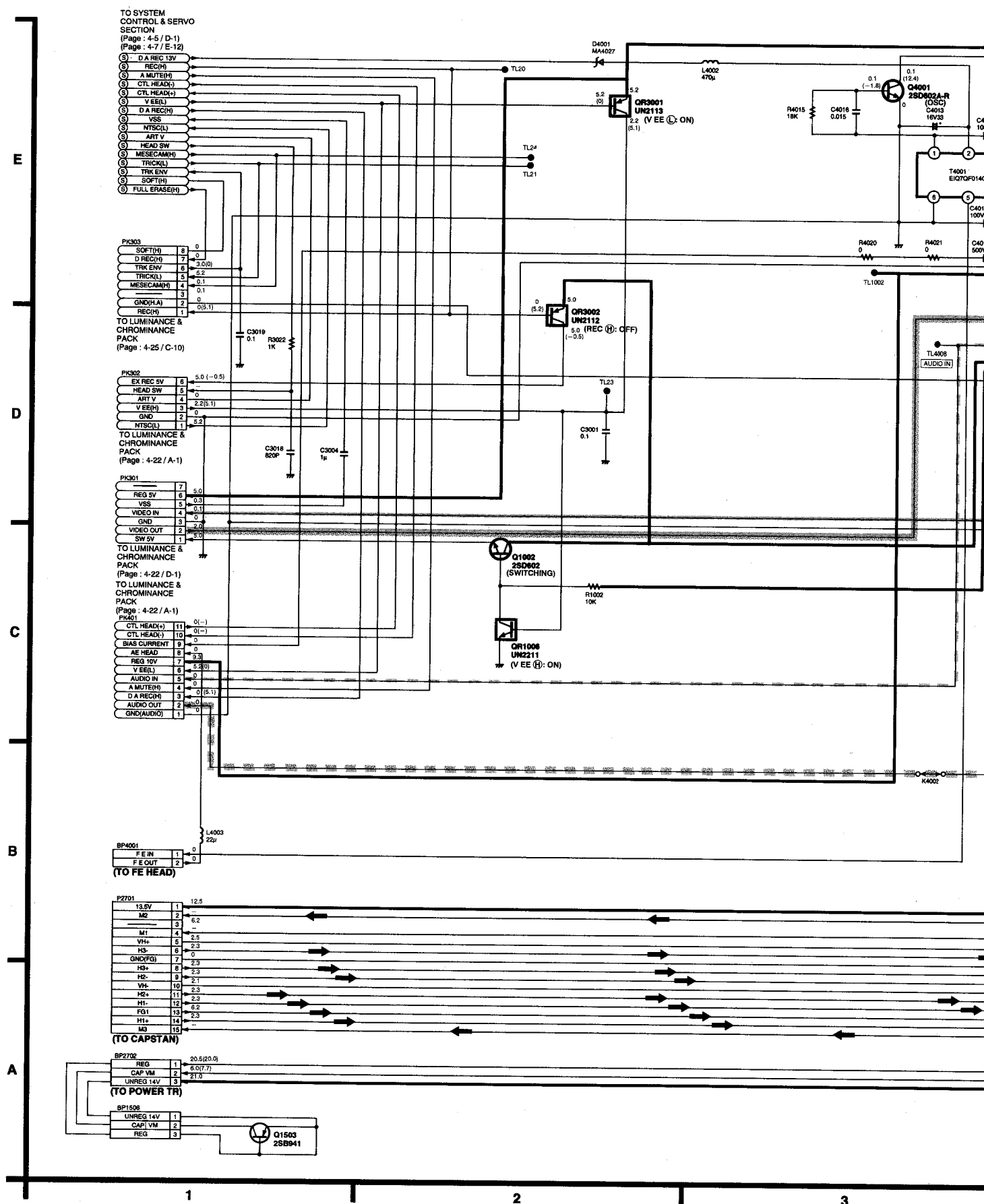
## SYSTEM CONTROL & SERVO TRANSISTORS DC VOLTAGE CHART (SP MODE)

| REF.NO. | Q1501  |     |     | Q1502  |     |     | Q6002  |      |        |        |      |        |     |      |        |     |      |     |
|---------|--------|-----|-----|--------|-----|-----|--------|------|--------|--------|------|--------|-----|------|--------|-----|------|-----|
| MODE    | +      | -   |     | +      | -   |     | E      | C    | B      |        |      |        |     |      |        |     |      |     |
| STOP    | 5.1    | 0   |     | 5.1    | 0   |     | 13.4   | 0.1  | 13.4   |        |      |        |     |      |        |     |      |     |
| PLAY    | 5.1    | 0   |     | 5.1    | 0   |     | 13.4   | 0.1  | 13.4   |        |      |        |     |      |        |     |      |     |
| REC     | 5.1    | 0   |     | 5.1    | 0   |     | 13.4   | 13.3 | 12.6   |        |      |        |     |      |        |     |      |     |
| F.F     | 5.1    | 0   |     | 5.1    | 0   |     | 13.4   | 0.1  | 13.4   |        |      |        |     |      |        |     |      |     |
| REW     | 5.1    | 0   |     | 5.1    | 0   |     | 13.4   | 0.1  | 13.4   |        |      |        |     |      |        |     |      |     |
| REF.NO. | QR2001 |     |     | QR2002 |     |     |        |      | QR6001 |        |      | QR6006 |     |      | QR6007 |     |      |     |
| MODE    | E      | C   | B   | 1      | 2   | 3   | 4      | 5    |        | E      | C    | B      | E   | C    | B      | E   | C    | B   |
| STOP    | 5.2    | 4.9 | 5.2 | 0      | 0   | 5.1 | 0      | 5.1  |        | 5.2    | -0.9 | 5.2    | 4.2 | 13.4 | 0      | 5.2 | -1.3 | 5.2 |
| PLAY    | 5.2    | 4.9 | 5.2 | 0      | 0   | 5.1 | 0      | 5.1  |        | 5.2    | 5.1  | 0      | 4.2 | 13.4 | 0      | 5.2 | 5.2  | 0   |
| REC     | 5.2    | 4.9 | 5.2 | 0      | 0   | 5.1 | 0      | 5.1  |        | 5.2    | 5.1  | 0      | 0   | 0    | 5.1    | 5.2 | -1.3 | 5.2 |
| F.F     | 5.2    | 4.9 | 5.2 | 0      | 2.6 | 0   | 0      | 0    |        | 5.2    | 5.1  | 0      | 0   | 13.4 | 0      | 5.2 | -1.3 | 5.2 |
| REW     | 5.2    | 4.9 | 5.2 | 0      | 2.6 | 0   | 0      | 0    |        | 5.2    | 5.1  | 0      | 0   | 13.4 | 0      | 5.2 | -1.3 | 5.2 |
| REF.NO. | QR6008 |     |     | QR6009 |     |     | QR6010 |      |        | QR6501 |      |        |     |      |        |     |      |     |
| MODE    | E      | C   | B   | E      | C   | B   | E      | C    | B      | 1      | 2    | 3      | 4   | 5    |        |     |      |     |
| STOP    | 5.2    | -   | 5.2 | 5.2    | -   | 5.2 | 5.2    | 0.1  | 5.2    | 0      | 0    | 5.1    | 0   | 5.1  |        |     |      |     |
| PLAY    | 5.2    | -   | 5.2 | 5.2    | -   | 5.2 | 5.2    | 0.1  | 5.2    | 0      | 0    | 5.1    | 0   | 5.1  |        |     |      |     |
| REC     | 5.2    | 5.1 | 0   | 5.2    | -   | 5.2 | 5.2    | -0.9 | 5.2    | 0      | 0    | 5.1    | 0   | 5.1  |        |     |      |     |
| F.F     | 5.2    | -   | 5.2 | 5.2    | 5.1 | 0   | 5.2    | 0.1  | 5.2    | 13.4   | 7.6  | 0      | 0   | 0    |        |     |      |     |
| REW     | 5.2    | -   | 5.2 | 5.2    | -   | 5.2 | 5.2    | 5.1  | 0      | 13.4   | 7.6  | 0      | 0   | 0    |        |     |      |     |

# SYSTEM CONTROL & SERVO ICs VOLTAGE CHART (SP MODE)

| REF.NO. | IC1501 |      |     |     |     |     |     |     |     |     | IC1502 |      |      |     |     |      |      |     |     |     |
|---------|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|--------|------|------|-----|-----|------|------|-----|-----|-----|
| MODE    | 1      | 2    | 3   | 4   |     |     |     |     |     |     | 1      | 2    | 3    | 4   |     |      |      |     |     |     |
| STOP    | 2.3    | 1.1  | —   | 0   |     |     |     |     |     |     | 1.1    | 0    | —    | 0   |     |      |      |     |     |     |
| PLAY    | 2.3    | 1.1  | —   | 0   |     |     |     |     |     |     | 1.1    | 0    | —    | 0   |     |      |      |     |     |     |
| REC     | 2.3    | 1.1  | —   | 0   |     |     |     |     |     |     | 1.1    | 0    | —    | 0   |     |      |      |     |     |     |
| F.F     | 2.3    | 1.1  | —   | 0   |     |     |     |     |     |     | 1.1    | 0    | —    | 0   |     |      |      |     |     |     |
| REW     | 2.3    | 1.1  | —   | 0   |     |     |     |     |     |     | 1.1    | 0    | —    | 0   |     |      |      |     |     |     |
| REF.NO. | IC2501 |      |     |     |     |     |     |     |     |     |        |      |      |     |     |      |      |     |     |     |
| MODE    | 1      | 2    | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11     | 12   | 13   | 14  | 15  | 16   | 17   | 18  |     |     |
| STOP    | 13.7   | 13.7 | 0   | 0.4 | 0   | 2.5 | 2.5 | 0.7 | 0.7 | 2.8 | 5.1    | 3.7  | 3.7  | 3.7 | —   | 13.4 | 13.7 | 0   |     |     |
| PLAY    | 13.7   | 13.7 | 0   | 0.4 | 0   | 2.5 | 2.5 | 0.7 | 0.7 | 2.8 | 5.1    | 3.7  | 3.7  | 3.7 | —   | 13.4 | 13.7 | 0   |     |     |
| REC     | 13.7   | 13.7 | 0   | 0.4 | 0   | 2.5 | 2.5 | 0.7 | 0.7 | 2.8 | 5.1    | 3.7  | 3.7  | 3.7 | —   | 13.4 | 13.7 | 0   |     |     |
| F.F     | 13.7   | 13.7 | 0   | 0.4 | 0   | 2.5 | 2.5 | 0.7 | 0.7 | 2.8 | 5.1    | 3.7  | 3.7  | 3.7 | —   | 13.4 | 13.7 | 0   |     |     |
| REW     | 13.7   | 13.7 | 0   | 0.4 | 0   | 2.5 | 2.5 | 0.7 | 0.7 | 2.8 | 5.1    | 3.7  | 3.7  | 3.7 | —   | 13.4 | 13.7 | 0   |     |     |
| REF.NO. | IC6001 |      |     |     |     |     |     |     |     |     |        |      |      |     |     |      |      |     |     |     |
| MODE    | 1      | 2    | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11     | 12   | 13   | 14  | 15  | 16   | 17   | 18  | 19  | 20  |
| STOP    | 0      | 5.2  | 0   | 0   | 5.2 | 5.2 | 0   | 0   | 0   | —   | 5.2    | 0    | 0    | 0   | —   | 2.5  | 5.1  | 4.9 | 5.2 | 5.2 |
| PLAY    | 0      | 5.2  | 0   | 0   | —   | 5.2 | 0   | 0   | 0   | —   | 5.2    | 0    | 0    | 0   | —   | 2.5  | 5.1  | 4.9 | —   | 5.2 |
| REC     | 0      | 5.2  | 0   | 0   | 0   | 5.2 | 0   | 0   | 0   | —   | 5.2    | 0    | 0    | 0   | 0.1 | 2.5  | 5.1  | 4.9 | —   | 5.2 |
| F.F     | 0      | 5.2  | 5.2 | 0   | —   | 5.2 | 0   | 0   | 0   | —   | 5.2    | 0    | 0    | 0   | —   | 2.5  | 5.1  | 4.9 | —   | 5.2 |
| REW     | 0      | 5.2  | 5.2 | 0   | —   | 5.2 | 0   | 0   | 0   | —   | 5.2    | 0    | 0    | 0   | 0.1 | 2.5  | 5.1  | 4.9 | —   | 0   |
| REF.NO. |        |      |     |     |     |     |     |     |     |     |        |      |      |     |     |      |      |     |     |     |
| MODE    | 21     | 22   | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31     | 32   | 33   | 34  | 35  | 36   | 37   | 38  | 39  | 40  |
| STOP    | 5.2    | 5.2  | 0.1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0   | 2.5 | 2.4    | 2.5  | 5.1  | 0   | 0   | 0    | 2.5  | 2.5 | 0   | 2.5 |
| PLAY    | 5.2    | 5.2  | 2.7 | 2.5 | 2.9 | 2.5 | 2.5 | 2.5 | 0   | 2.5 | 2.7    | 2.5  | 5.1  | 0   | 0   | 0    | 2.5  | 2.5 | 0   | 2.8 |
| REC     | 5.2    | 5.2  | 2.7 | 2.5 | 0   | 2.5 | 2.5 | 2.5 | 0   | 2.5 | 2.4    | 2.5  | 5.1  | —   | —   | 0    | 2.5  | 2.5 | 0   | 2.4 |
| F.F     | 5.2    | 5.2  | 2.5 | 2.5 | 2.1 | 2.5 | 2.5 | 2.5 | 0   | 2.5 | 2.5    | 2.5  | 5.1  | 0   | 0   | 0    | 2.5  | 2.5 | 0   | 3.0 |
| REW     | 5.2    | 5.2  | 2.5 | 2.5 | 3.5 | 2.5 | 2.5 | 2.5 | 0   | 2.5 | 2.5    | 2.5  | 5.1  | 0   | 0   | 0    | 2.5  | 2.5 | 0   | 3.0 |
| REF.NO. |        |      |     |     |     |     |     |     |     |     |        |      |      |     |     |      |      |     |     |     |
| MODE    | 41     | 42   | 43  | 44  | 45  | 46  | 47  | 48  | 49  | 50  | 51     | 52   | 53   | 54  | 55  | 56   | 57   | 58  | 59  | 60  |
| STOP    | 2.5    | 5.2  | —   | —   | 0   | 5.2 | 5.2 | 5.2 | 5.2 | 0   | 5.2    | 5.2  | 5.2  | 5.2 | 5.1 | 5.2  | 5.2  | 0   | 0   | —   |
| PLAY    | 2.5    | 5.2  | —   | —   | —   | 5.2 | 5.2 | 5.2 | 5.2 | 0   | 5.2    | 5.2  | 5.2  | 0   | 5.1 | 5.2  | 5.2  | 0   | 0   | —   |
| REC     | 2.5    | 5.2  | —   | —   | 0   | 5.2 | 5.2 | 0   | 5.2 | 0   | 5.2    | 5.2  | 5.2  | 0   | 5.1 | 5.2  | 5.2  | 0   | 0   | —   |
| F.F     | 2.5    | 5.2  | —   | —   | 0   | 0   | 5.2 | 5.2 | 5.2 | 0   | 5.2    | 5.2  | 5.2  | 0   | 0   | 5.2  | 5.2  | 0   | 0   | —   |
| REW     | 2.5    | 5.2  | —   | —   | 0   | 5.2 | 5.2 | 5.2 | 5.2 | 0   | 5.2    | 5.2  | 5.2  | 0   | 0   | 5.2  | 5.2  | 0   | 0   | —   |
| REF.NO. |        |      |     |     |     |     |     |     |     |     |        |      |      |     |     |      |      |     |     |     |
| MODE    | 61     | 62   | 63  | 64  | 65  | 66  | 67  | 68  | 69  | 70  | 71     | 72   | 73   | 74  | 75  | 76   | 77   | 78  | 79  | 80  |
| STOP    | 5.2    | 2.1  | 5.2 | 5.2 | 0   | 0   | 0   | 0   | 0   | 5.2 | 0      | 5.2  | 5.2  | 0   | 0   | 5.1  | 0    | 0   | 5.2 | 0   |
| PLAY    | 5.2    | 0    | 5.2 | 5.2 | 0   | 0   | 0   | 0   | 0   | 5.2 | 0      | 0    | 0    | 0   | 0   | 5.1  | 0    | 5.2 | 5.2 | 0   |
| REC     | 5.2    | 0    | 5.1 | 5.2 | 0   | 0   | 5.2 | 5.2 | 5.2 | 5.2 | 0      | 5.2  | 5.2  | 0   | 0   | 5.1  | 0    | 0   | 5.2 | 0   |
| F.F     | 5.2    | 0    | 5.2 | 5.2 | 0   | 0   | 0   | 0   | 0   | 5.2 | 0      | 5.2  | 5.2  | 0   | 0   | 0    | 0    | 0   | 5.2 | 0   |
| REW     | 5.2    | 5.2  | 5.2 | 5.2 | 0   | 0   | 0   | 0   | 0   | 5.2 | 0      | 5.2  | 5.2  | 0   | 0   | 0    | 0    | 0   | 5.2 | 0   |
| REF.NO. |        |      |     |     |     |     |     |     |     |     | IC6501 |      |      |     |     |      |      |     |     |     |
| MODE    | 81     | 82   | 83  | 84  |     |     |     |     |     |     | 1      | 2    | 3    | 4   | 5   | 6    | 7    | 8   | 9   | 10  |
| STOP    | 0      | —    | —   | 5.2 |     |     |     |     |     |     | 2.0    | 13.4 | 13.4 | 0   | 0   | 0    | 6.9  | 8.6 | 2.6 | 0   |
| PLAY    | 0      | —    | —   | 5.2 |     |     |     |     |     |     | 2.0    | 13.4 | 13.4 | 0   | 0   | 0    | 6.9  | 8.6 | 2.6 | 0   |
| REC     | 0      | —    | —   | 5.2 |     |     |     |     |     |     | 2.0    | 13.4 | 13.4 | 0   | 0   | 0    | 6.9  | 8.6 | 2.6 | 0   |
| F.F     | 0      | —    | —   | 5.2 |     |     |     |     |     |     | 2.0    | 13.4 | 13.4 | 0   | 0   | 0    | 13.4 | 8.6 | 2.6 | 0   |
| REW     | 0      | —    | —   | 5.2 |     |     |     |     |     |     | 2.0    | 13.4 | 13.4 | 0   | 0   | 0    | 13.4 | 8.6 | 2.6 | 0   |
| REF.NO. | IC6502 |      |     |     |     |     |     |     |     |     | IC7502 |      |      |     |     |      |      |     |     |     |
| MODE    | 1      | 2    | 3   | 4   | 5   | 6   | 7   | 8   |     |     | 1      | 2    | 3    |     |     |      |      |     |     |     |
| STOP    | 2.5    | 2.5  | 2.5 | 0   | 0   | 0   | 3.9 | 5.1 |     |     | 5.2    | 0    | 5.2  |     |     |      |      |     |     |     |
| PLAY    | 2.5    | 2.5  | 2.5 | 0   | 0   | 0   | 3.9 | 5.1 |     |     | 5.2    | 0    | 5.2  |     |     |      |      |     |     |     |
| REC     | 2.5    | 2.5  | 2.5 | 0   | 0   | 0   | 3.9 | 5.1 |     |     | 5.2    | 0    | 5.2  |     |     |      |      |     |     |     |
| F.F     | 2.5    | 2.5  | 2.5 | 0   | 0   | 0   | 3.9 | 5.1 |     |     | 5.2    | 0    | 5.2  |     |     |      |      |     |     |     |
| REW     | 2.5    | 2.5  | 2.5 | 0   | 0   | 0   | 3.9 | 5.1 |     |     | 5.2    | 0    | 5.2  |     |     |      |      |     |     |     |

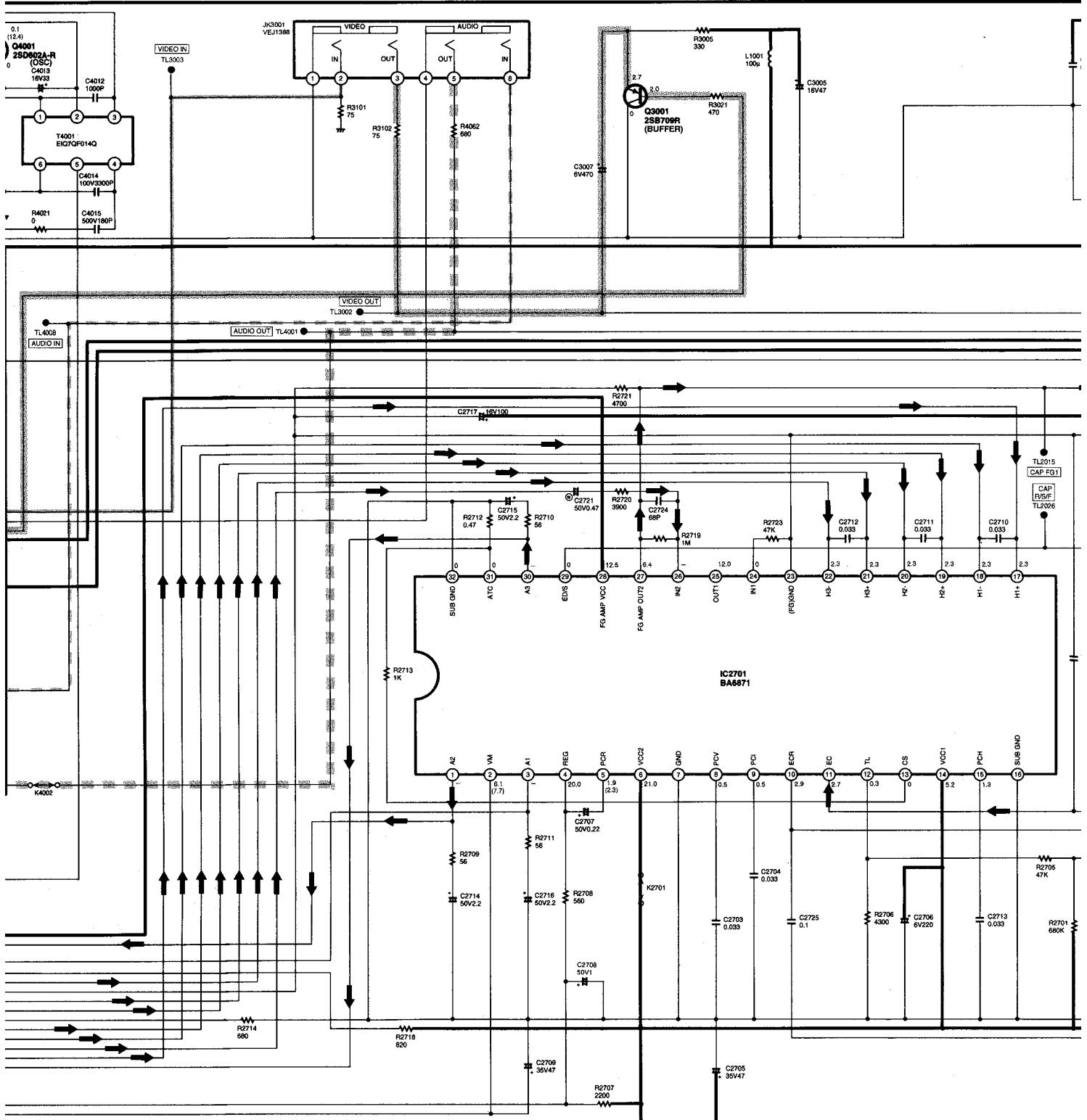
#### 4.4.LUMINANCE & CHROMINANCE SECTION IN MAIN SCHEMATIC DIAGRAM



# ← CAPSTAN SERVO PHASE LOOP

VIDEO MAIN

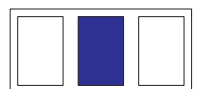
VIDEO MAIN



4

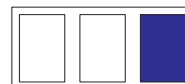
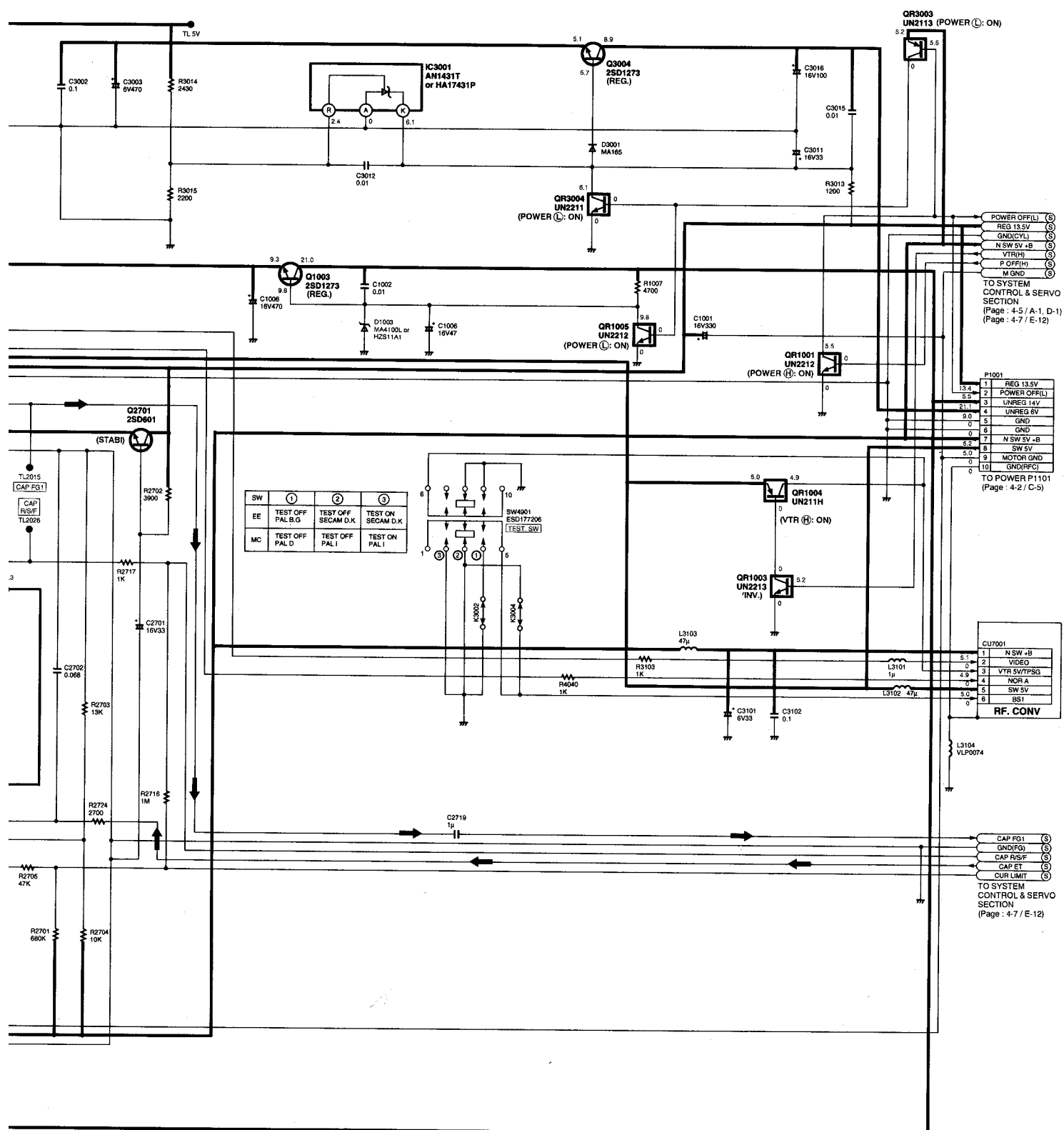
5

6

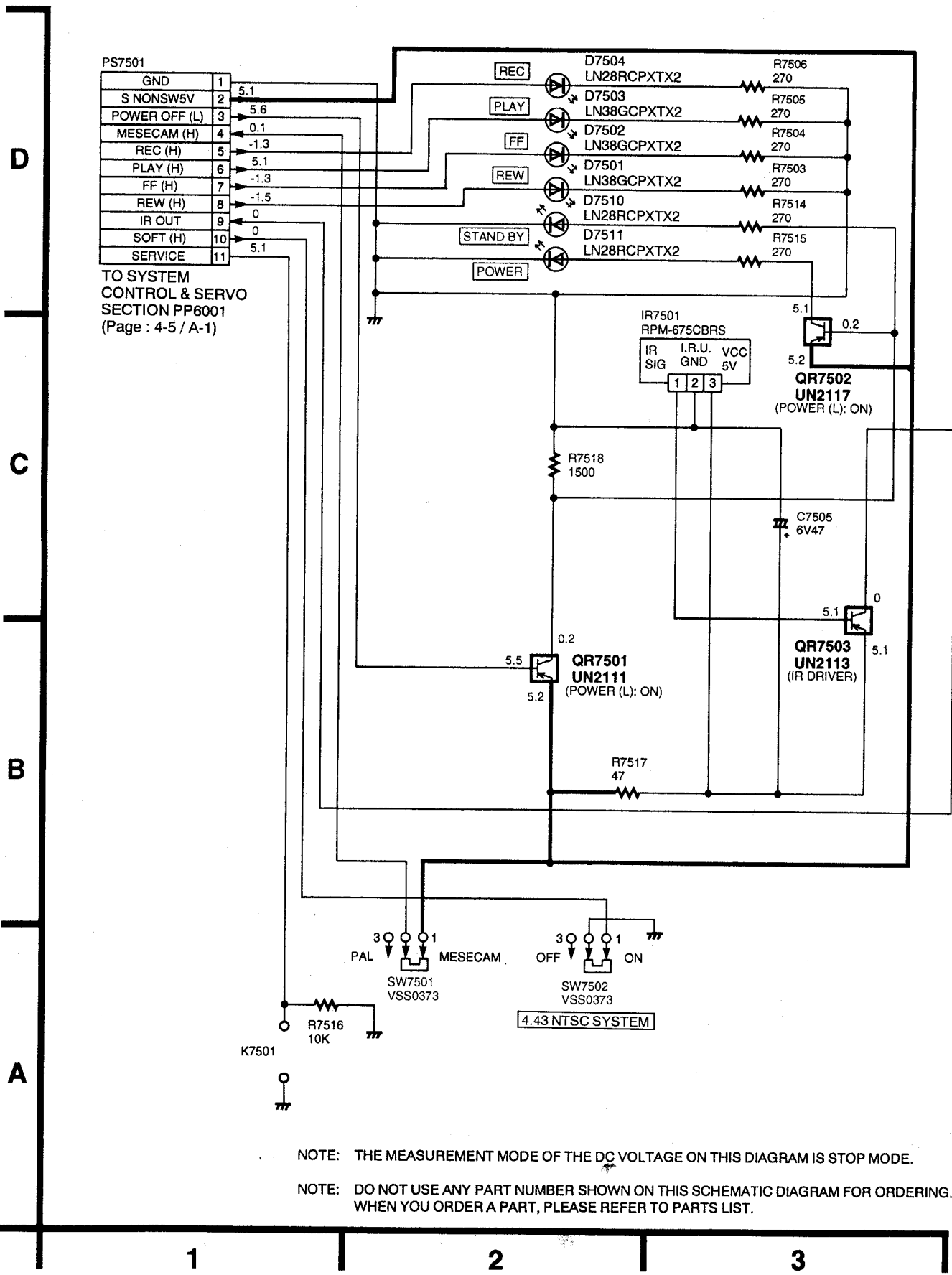


O MAIN SIGNAL PATH IN REC MODE  
O MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE  
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



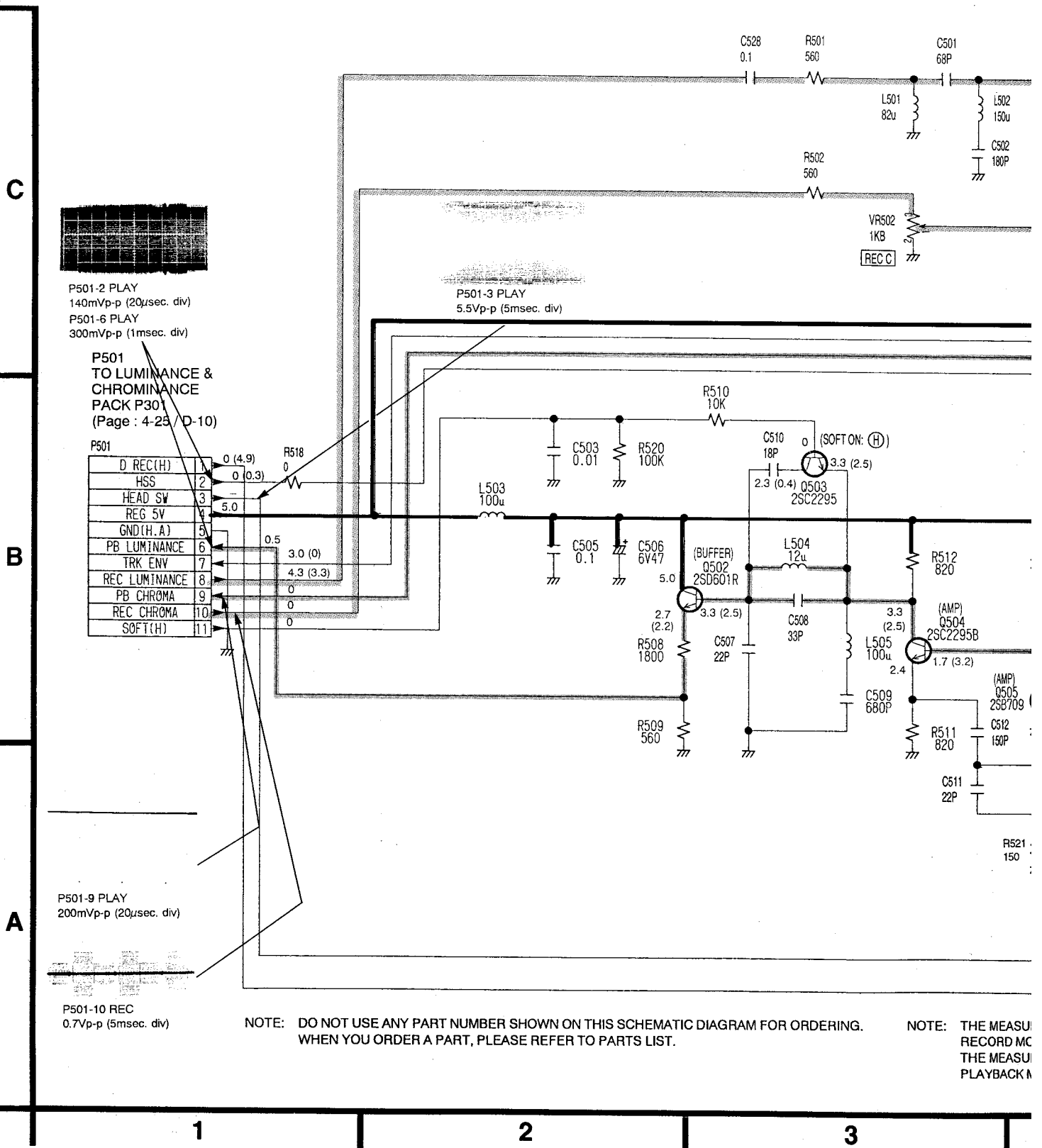
4-6.LED SCHEMATIC DIAGRAM



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

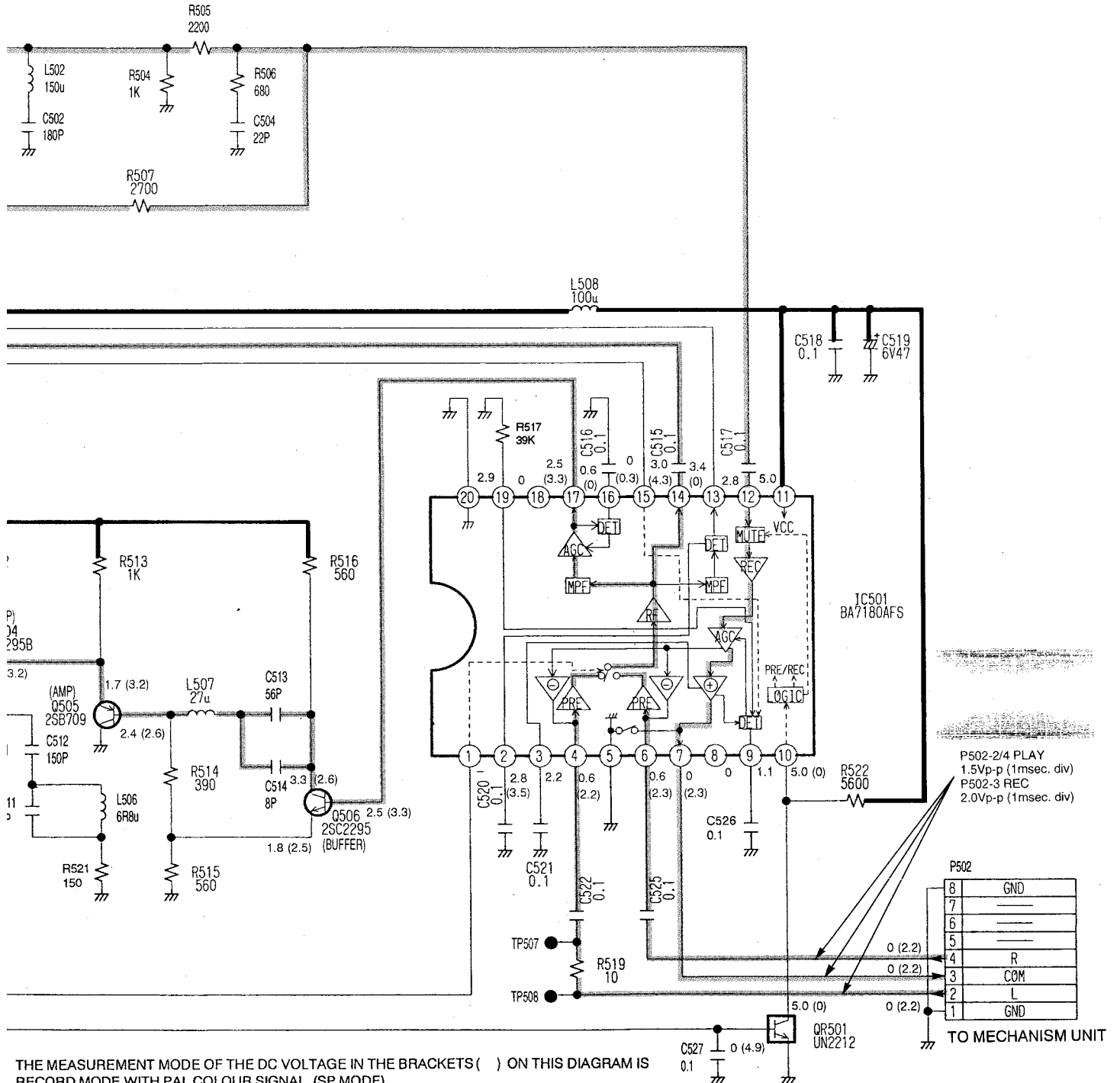
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

## 4-8.HEAD AMP SCHEMATIC DIAGRAM



# VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

# VIDEO MAIN SIGNAL PATH IN REC MODE



## 4-10.LUMINANCE &amp; CHROMINANCE PACK SCHEMATIC DIAGRAM

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS  
DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)  
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS  
DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

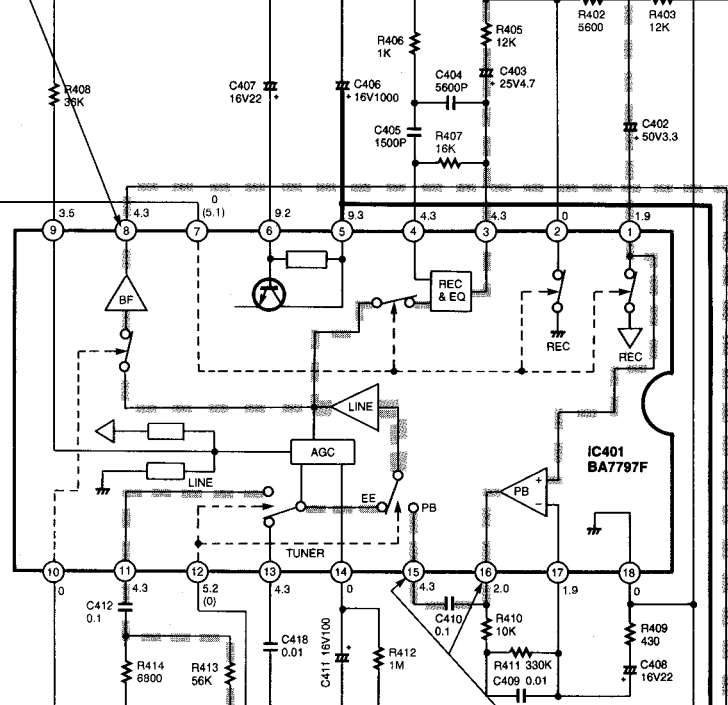
TO LUMINANCE &  
CHROMINANCE  
SECTION  
(Page : 4-10 / C-1)

|           |   |
|-----------|---|
| PK301     |   |
| SW 5V     | 1 |
| VIDEO OUT | 2 |
| GND       | 3 |
| VIDEO IN  | 4 |
| VSS       | 5 |
| REG 5V    | 6 |

|              |   |
|--------------|---|
| P401         |   |
| AE HEAD      | 1 |
| AUDIO GND    | 2 |
| A HEAD (R)   | 3 |
| A HEAD (W)   | 4 |
| CTL HEAD (-) | 5 |
| CTL HEAD (+) | 6 |

TO AC HEAD

IC401-8 PLAY  
0.5Vp-p (0.2msec. div)



|              |    |
|--------------|----|
| PK401        |    |
| CTL HEAD (+) | 11 |
| CTL HEAD (-) | 10 |
| BIAS CURRENT | 9  |
| AE HEAD      | 8  |
| REG 10V      | 7  |
| V EE (L)     | 6  |
| AUDIO IN     | 5  |
| A MUTE (H)   | 4  |
| D A REC (H)  | 3  |
| AUDIO OUT    | 2  |
| GND (AUDIO)  | 1  |

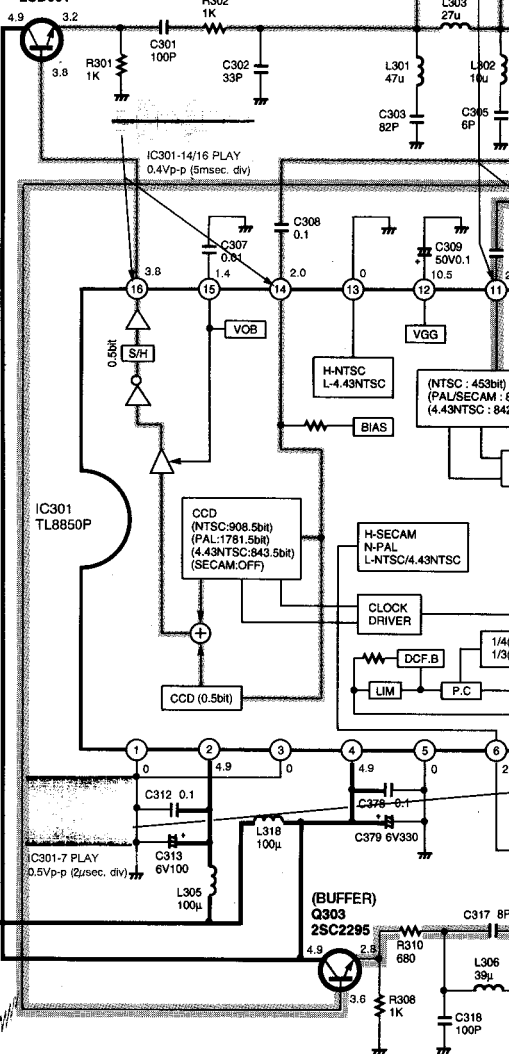
TO LUMINANCE &  
CHROMINANCE  
SECTION  
(Page : 4-10 / C-1)

TO LUMINANCE &  
CHROMINANCE  
SECTION  
(Page : 4-10 / D-1)

|            |   |
|------------|---|
| PK302      |   |
| NTSC(L)    | 1 |
| GND        | 2 |
| V EE(H)    | 3 |
| ART V      | 4 |
| HEAD SW    | 5 |
| EX. REC 5V | 6 |

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.  
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

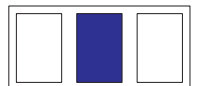
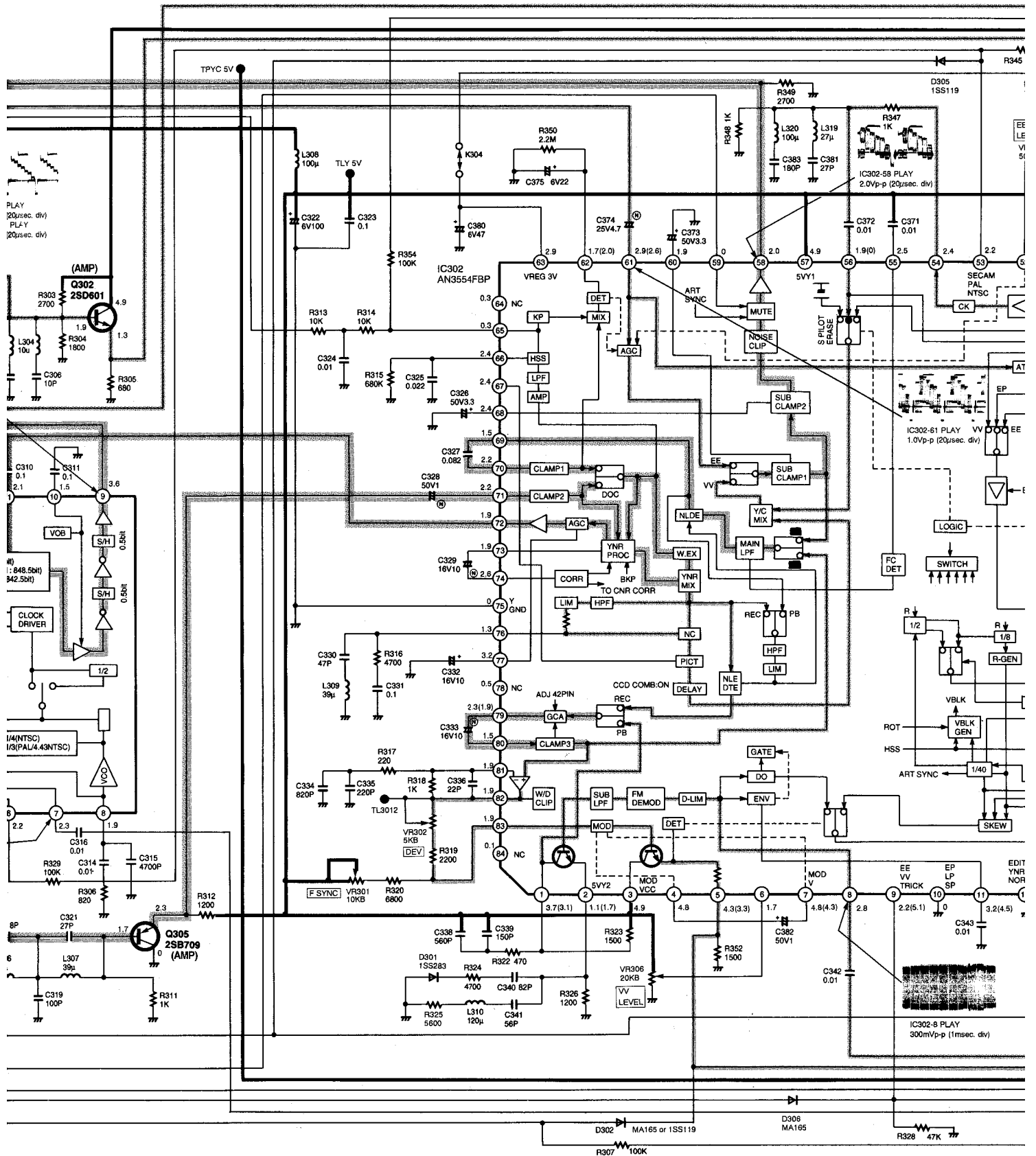
(BUFFER)  
Q301  
2SD601



(BUFFER)  
Q303  
2SC2295

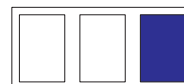
# AUDIO MAIN SIGNAL PATH IN REC MODE

# AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



Downloaded from <http://ajphaphapublications.org/> on November 10, 2015

**CONCLUSIONS**

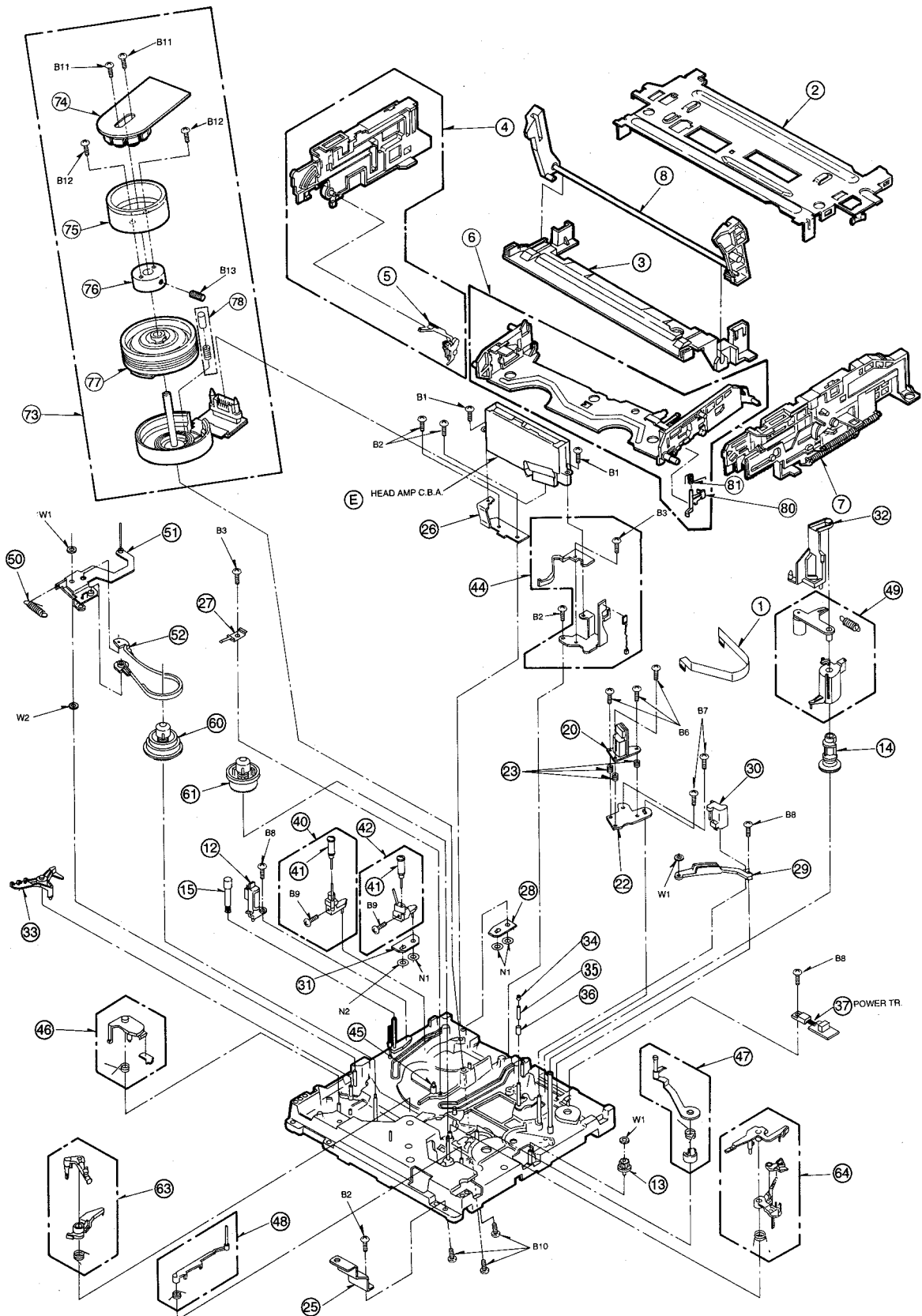


# SECTION 5

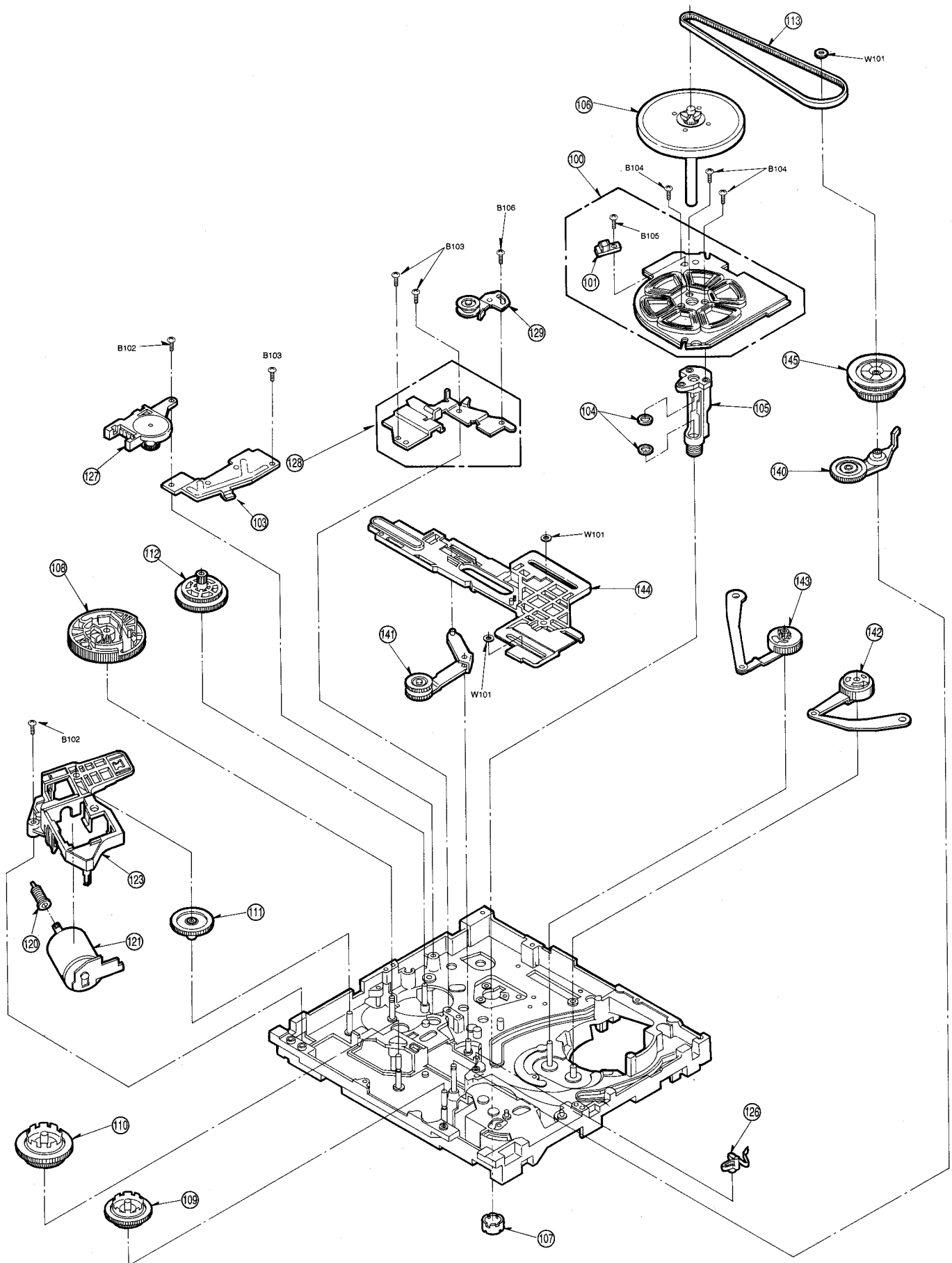
## EXPLODED VIEWS & PARTS LIST

### 5-1. EXPLODED VIEW MECHANICAL REPLACEMENT PARTS LIST

#### 1. CHASSIS PARTS SECTION (1)



## 2.CHASSIS PARTS SECTION (2)



## SECTION 5

### 3.CASING PARTS SECTION

