

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER **VHS**

HR-D560EE



VHS
PAL

SPECIFICATIONS

GENERAL

Power requirement : AC 220 - 240 V~, 50/60 Hz
Power consumption : 19 W
Temperature : 5°C to 40°C (Operating)
 : -20°C to 60°C (Storage)

Operating position : Horizontal only
Dimensions (WxHxD) : 435 x 94 x 355 mm
Weight : 5.2 kg
Format : VHS PAL standard
Tape width : 12.65 mm
Tape speed : 23.39 mm/sec
Maximum recording time : 240 min. with E-240 video cassette

VIDEO

Signal system : PAL colour and CCIR monochrome signals, 625 lines/50 fields
Recording system : Rotary two-head helical scan system
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution : 250 lines

AUDIO

Recording system : Longitudinal track
Input : -3.8 dBs, (GENELEC standard)
 : more than 50 k-ohms, unbalanced
Output : -3.8 dBs, (GENELEC standard)
 : less than 1 k-ohm, unbalanced
 : (100 k-ohms, load)
Frequency range : 70 Hz to 10,000 Hz

TUNER

Tuning system : Voltage synthesized tuner
TV channel storage capacity : 48 positions (+ ALIX position "AUX")
Channel coverage : VHF : 47 - 111 MHz
 : 111 - 300 MHz
 : UHF : 470 - 862 MHz
Aerial input : PAL B/G and D/K system
 : (See IMPORTANT on page 1.)
Aerial output : UHF channel 36
 : (adjustable 32 - 40)
 : System G or K (switchable)

TIMER

Clock reference : Quartz-crystal
Programs capacity : 1-year/8-programme timer
Memory backup time : 60 min.

ACCESSORIES

Provided accessories : Aerial cable
 : Infrared remote control unit
 : "R6" battery x 2
 : Video cassette tape

Optional accessory : VP6 adapter VJ-V110E

Design and specifications subject to change without notice.

NOTE: For a technical description, please refer to Technical Guide VTG82063 General.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the \triangle symbol and shaded () parts are critical for safety.

Replace only with specified part numbers.

Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.

Caution for continued protection against fire hazard.

Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

- | | | |
|--------------------|--------------------------------------|------------|
| 1) Insulation Tape | 3) Spacers | 5) Barrier |
| 2) PVC tubing | 4) Insulation sheets for transistors | |

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

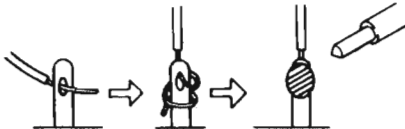


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

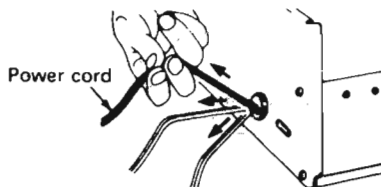


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)

In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector

In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

1) **Connector part number** : E03830-001

2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.

3) **Replacement procedure**

(1) Remove the old connector by cutting the wires at a point close to the connector.

Important : Do not reuse a connector (discard it).

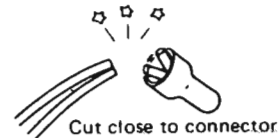


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

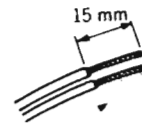


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

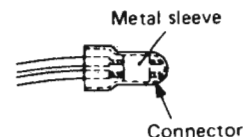


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

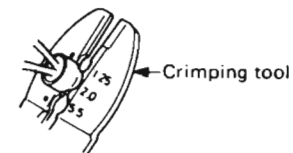


Fig. 6

(5) Check the four points noted in Fig. 7.

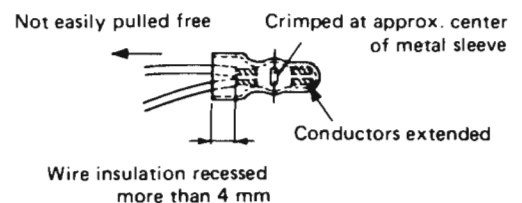


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

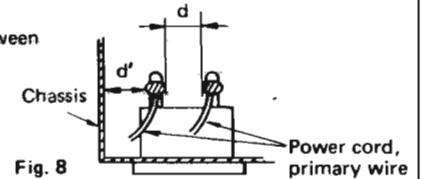
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug, prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

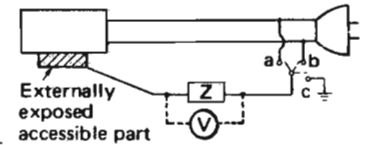


4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

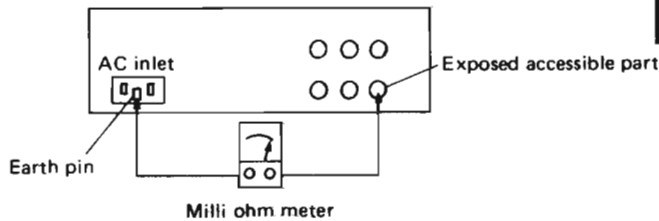


5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega / 500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V	Europe & Australia	$R \geq 10 \text{ M}\Omega / 500 \text{ V DC}$	AC 3 kV 1 minute (Class II)	$d \geq 4 \text{ mm}$
200 to 240 V			AC 1.5 kV 1 minute (Class I)	$d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada		$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia		$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
			$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1

DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 5 screws (A). To remove the top cover, slide in direction of arrow and lift away.

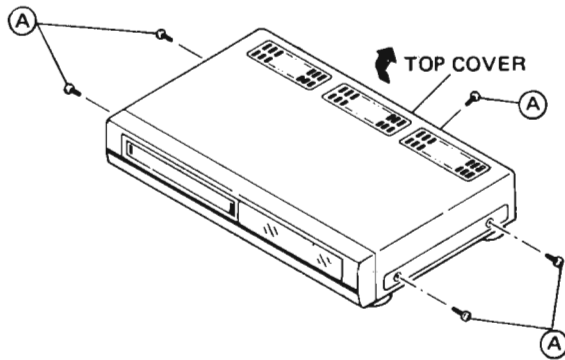


Fig. 1-1-1

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs (B) of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs (C) of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

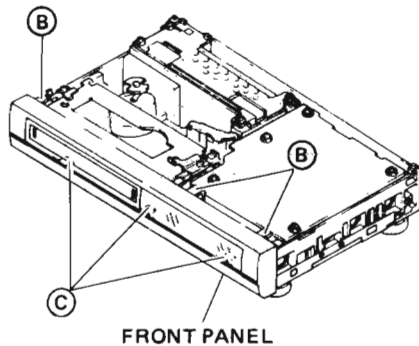


Fig. 1-1-2

1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 5 screws (D) and disengage 4 claws (E) from the bottom of the chassis.
3. Disengage the bottom cover from the bottom of the chassis slide in direction of arrow and disengage 2 tabs (F).

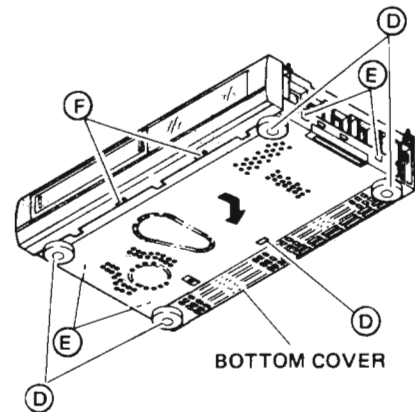


Fig. 1-1-3

1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 5 screws (G) and 1 screw (H) from main board assembly.
3. Remove the main board assembly in the upward direction.

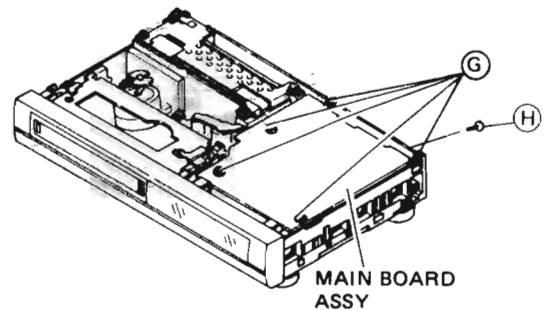


Fig. 1-1-4

1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
Take out 4 screws (J) that secure the cassette housing. Disengage 3 tabs (K) of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
3. Remove the cassette housing in the upward direction.

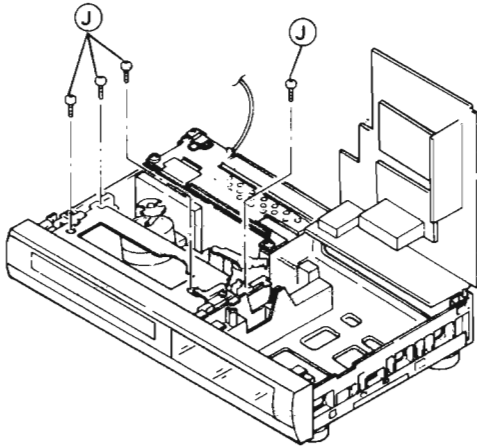


Fig. 1-1-5

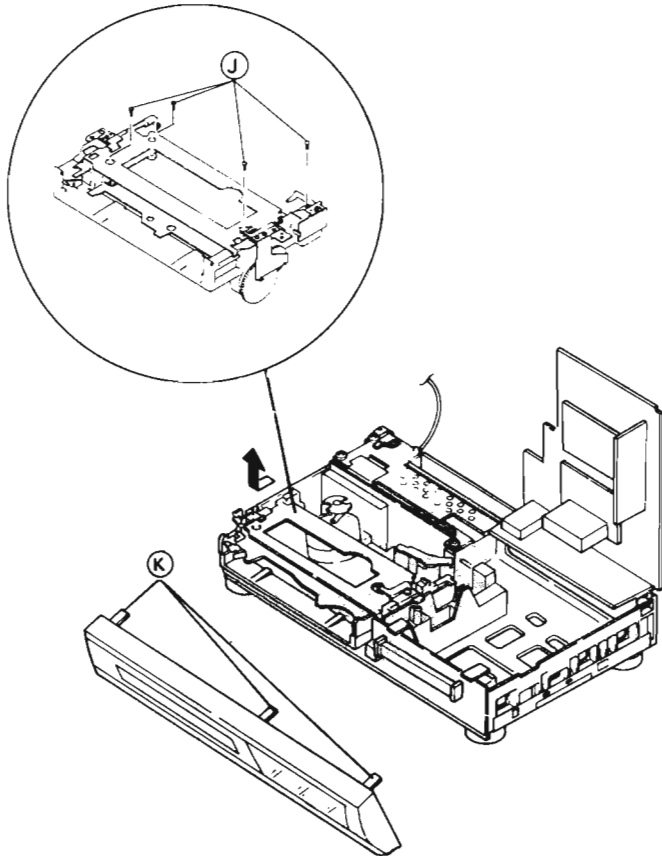


Fig. 1-1-6

1.1.6 Cassette housing installation

1. On the main deck, observe the positional relationships of the parts indicated in Fig. 1-1-7.
If necessary, turn the loading motor by hand to obtain these positions.

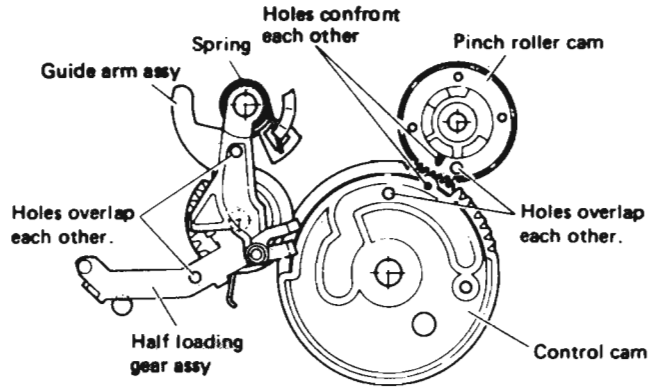


Fig. 1-1-7

2. Refer to Fig. 1-1-8 and confirm that the clutch is engaged.
If necessary, press the lever indicated by the arrow to where the clutch is locked.

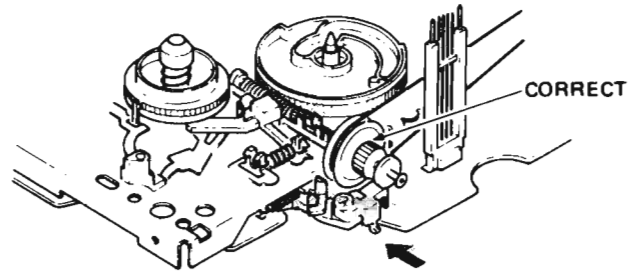


Fig. 1-1-8

3. Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position).
Set the cassette housing into place and secure with 4 screws.
4. Install the front panel as shown in Fig. 1-1-9 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

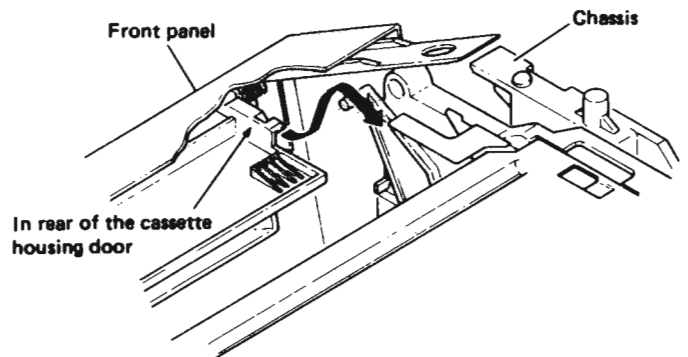


Fig. 1-1-9

5. Disconnect VCR from power, then reinstall the main board assembly and top cover.

1.1.7 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-10 and take out 3 screws (L) from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector CN1 from the DECK TERMINAL board, connectors CN1, from the Pre/Rec board, connector CN1, CN2 from the A/C head board, connector CN1 from the Loading MDA board and connector CN1 from the Drum MDA board.

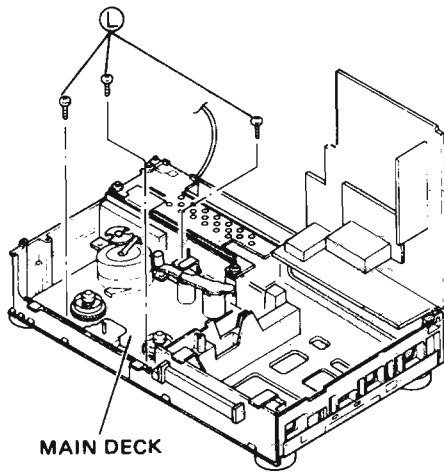


Fig. 1-1-10

1.1.8 Switching regulator board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-11 and take out 4 screws (M) from the switching regulator board assembly.
3. Remove the switching regulator board assembly in the upward direction.

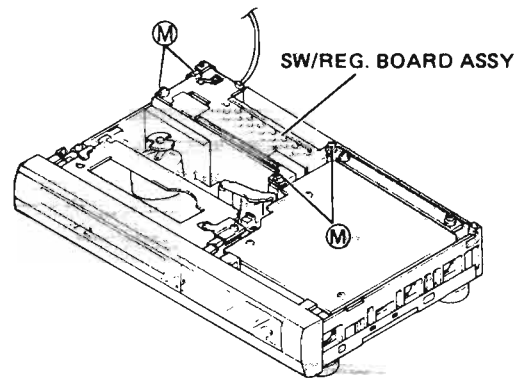


Fig. 1-1-11

1.2 MECHANISM ADJUSTMENTS

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of Main board connector CN601.
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

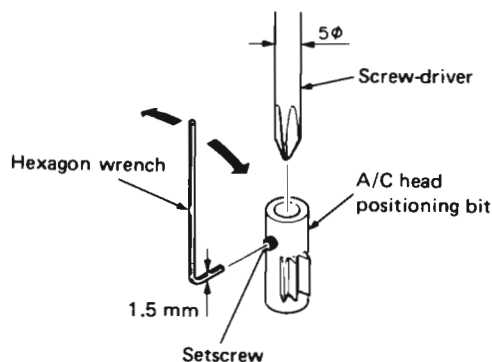


Fig. 1-2-1 A/C head positioning tool

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tapes: MH-2,
Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
Measures tape tension at the supply side.
4. A/C head positioning bit : PTU94010
 - Shifts the head base for adjusting the control head position.
 - The installation of a A/C head positioning bit on the screw-driver.

Refer to Fig. 1-2-1. Set screw-driver into the A/C head positioning bit where it does not interfere with adjusting the A/C head adjusting boss (position the screw-driver point 6 ± 2 mm from point of the A/C head positioning bit). Slightly tighten the setscrew by hexagon-wrench (1.5 mm).
5. Roller driver : PTU94002
Turns the guide roller for adjusting FM linearity.

Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning bit 4	Roller driver 5

Fig. 1-2-2 Test equipment

1.3 MAIN MECHANISM PARTS

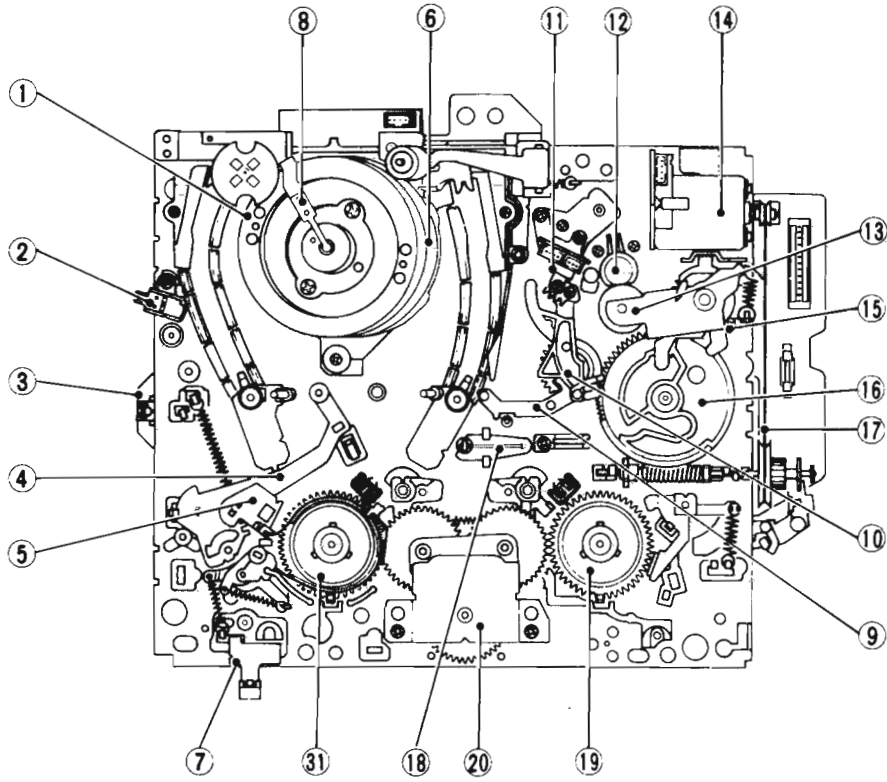


Fig. 1-3-1 Top view of main-deck

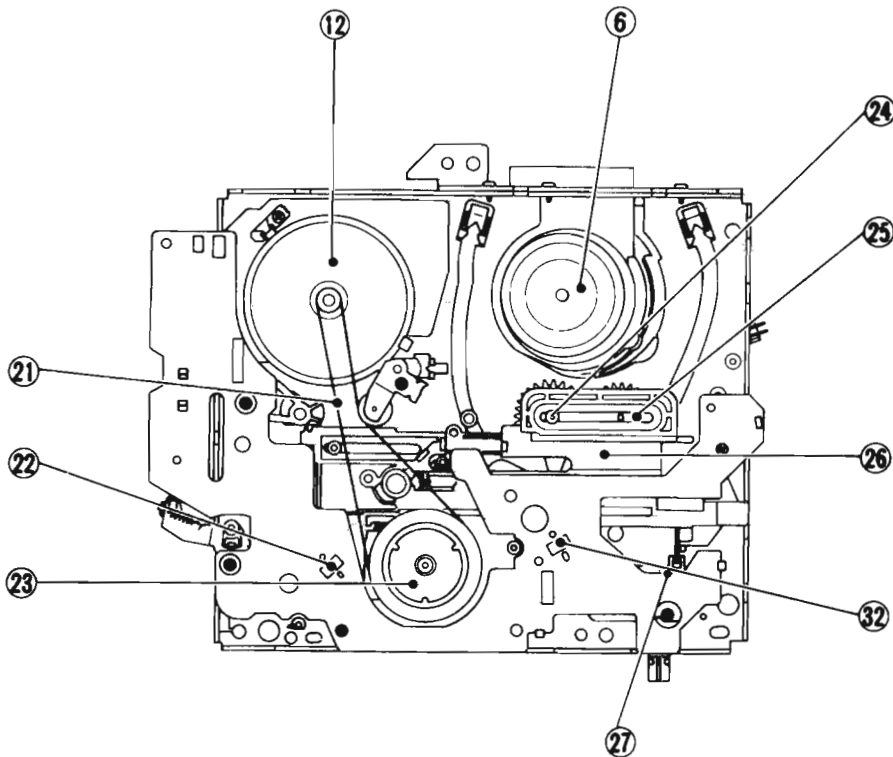


Fig. 1-3-2 Bottom view of main-deck

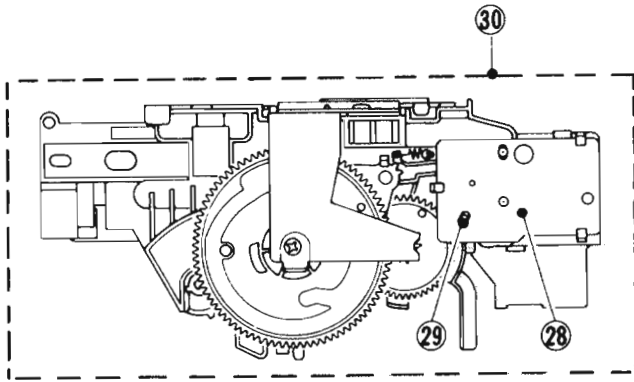


Fig. 1-3-3 Side view of cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not normally require periodic replenishing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.

Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 1-3-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

C. Main mechanical parts

See Fig.s 1-3-1, 1-3-2 and 1-3-3.

No.	Symbol	Parts Name	See Section
1	M32A	Upper drum assy	1.5.1
2	M44	Full erase head	
3	51Q1	End sensor	
4	M41	Tension arm assy	1.5.4
5	M42	Tension band assy	1.5.4
6	M32C	Lower drum motor assy	1.5.2
7	M461	REC safety switch	
8	M32D	Brush assy	
9	M449	Half loading gear assy	1.5.5
10	M447	Guide arm assy	1.5.5
11	M48	A/C head	1.5.3
12	M422	Capstan motor	
13	M442	Pinch roller arm assy	
14	M434	Loading (Mode) motor assy	
15	M446	Pinch roller cam	1.5.5
16	M438	Control cam	1.5.5
17	M437	Loading belt	
18	M460	LED holder	
19	M430	Reel disk (take-up)	
20	M424	Idler gear unit	
21	M429	Reel Belt	
22	51PS1	Take up reel sensor	
23	M426	Clutch unit	1.5.6
24	M433	Take up loading arm assy	1.5.7
25	M432	Supply loading arm assy	1.5.7
26	M439	Plate assy	1.5.7
27	M462	Slide encorder (S3)	
28	56PHS3	Cassette sensor	
29	56Q2	Start sensor	
30	M36	Cassette housing assy	
31	M470	Reel disk (supply)	
32	51PS2	Supply reel sensor	

- Symbol interpretation example



Table 1-3-2

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

System	No.	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)							
				250	500	750	1000	1250	1500	1750	2000
Tape Transport	1	Upper drum assy	M32A	★	★	☆	○	○	○	○	○
	11	A/C head	M48	★	★	★	○	○	○	○	○
	13	pinch roller arm assy	M442	★	★	★	○	○	○	○	○
	2	Full erase head	M44	★	★	★	○	○	○	○	○
	4	Tension arm assy	M41								
	6	Lower drum assy	M32C				○	○	○	○	○
	12	Capstan (shaft) motor	M442	★	★	★	★	★	★	★	★
	9	Half loading gear assy	M449								
	10	Guide arm assy	M447								
	Drive	12	Capstan motor	M422				○	○	○	○
17		Loading Belt	M437				○	○	○	○	○
21		Reel Belt	M429				○	○	○	○	○
19		Take-up reel disk	M430				○	○	○	○	○
31		Supply reel disk	M470				○	○	○	○	○
23		Clutch Unit	M426								○
14		Loading motor assy	M434				○	○	○	○	○
		Worm clutch assy	M436								△
26	Plate assy	M439								△	
Othere	5	Tension band	M42				○				○
	8	Brush	M32D				○				○

★ : Cleaning

☆ : Cleaning (or Replacement if necessary)

△ : Lubrication

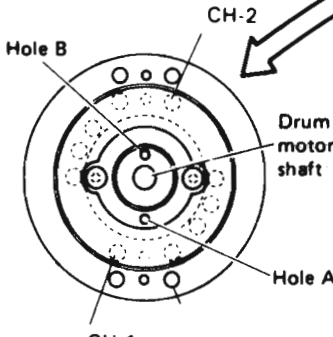
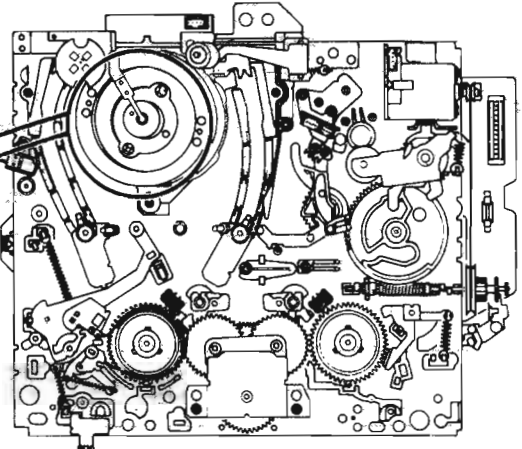

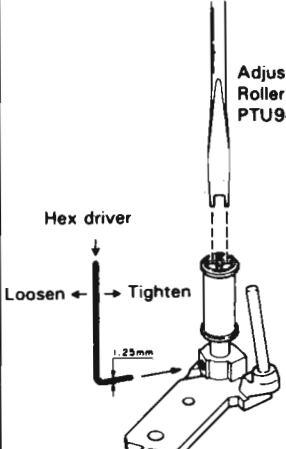
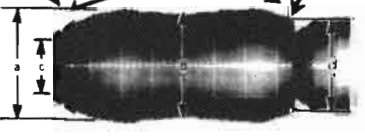
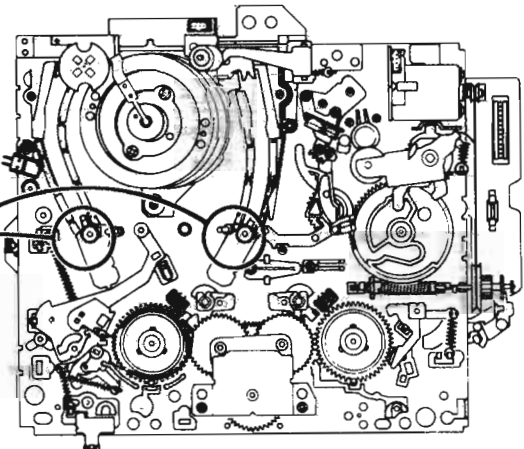
No: Refer to Main mechanical parts

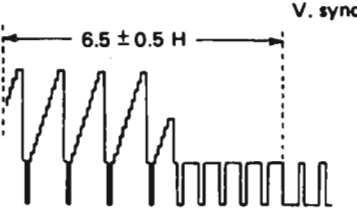
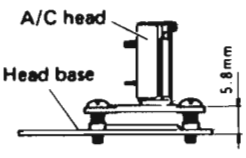
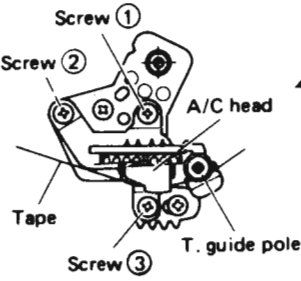
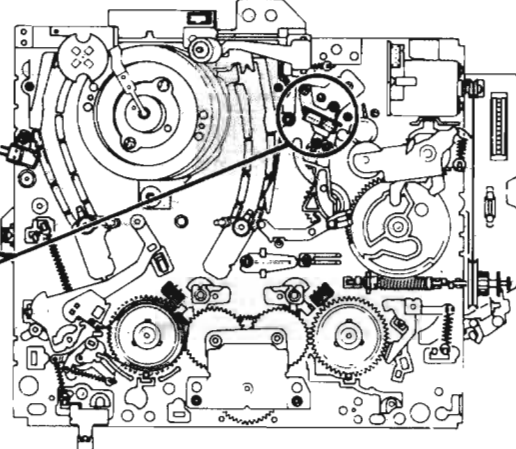
▲ : Lubrication (or Replacement if necessary)

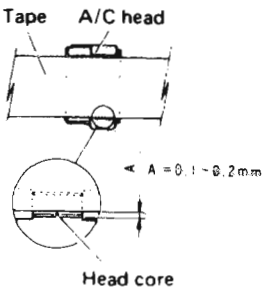
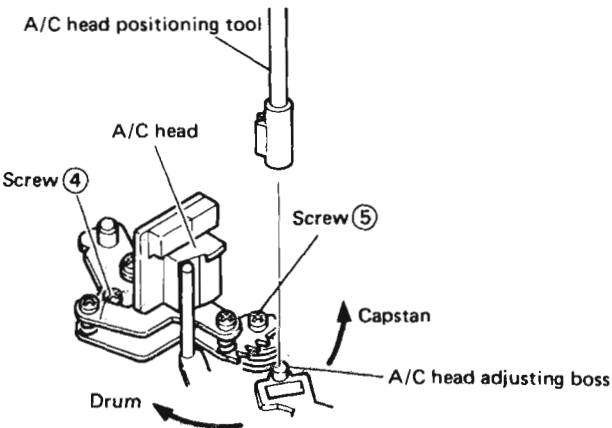
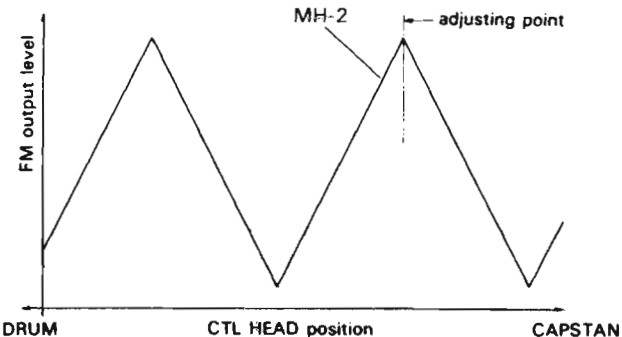
○ : Inspection or Replacement if necessary

Table 1-4-1 Approximate maintenance schedule

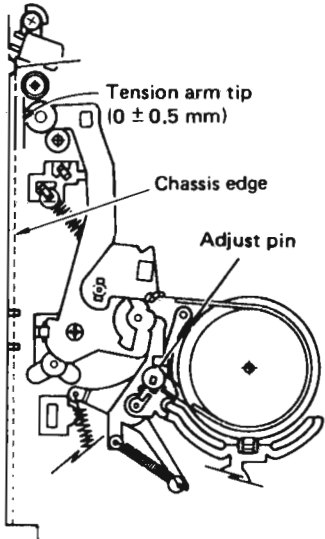
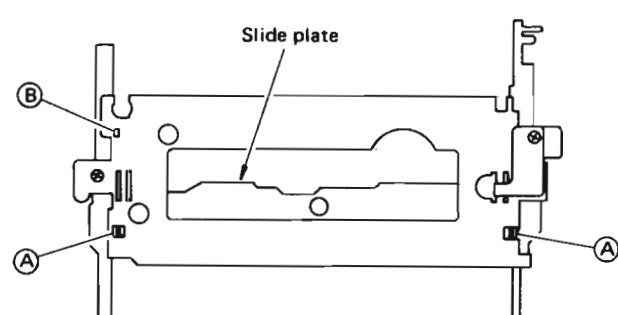
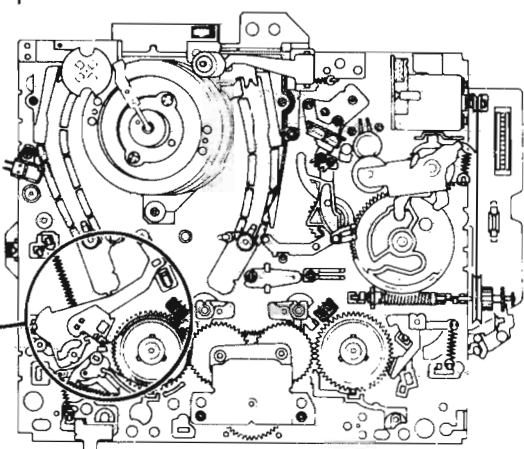
1.5 MAIN PARTS REMOVAL AND REPLACEMENT

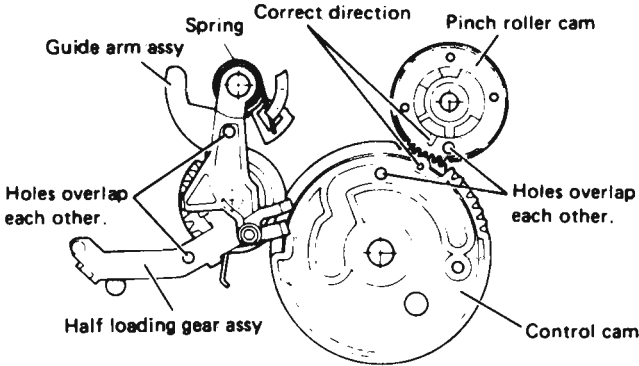
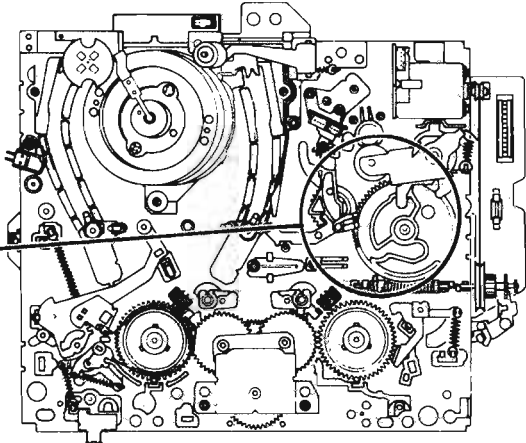
No.	Item	Checkpoints	Adjustment and Checks
1	<p>Upper drum assembly</p> <ul style="list-style-type: none"> •Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels •Cause: Worn or damaged video heads, poor response, etc.  <p>Fig. 1-5-1 Drum Top View</p>  <p>Fig. 1-5-2 Drum Position</p>  <p>Fig. 1-5-3 Axis wobble</p>  <p>Fig. 1-5-4 S.T. Pole base</p>  <p>Fig. 1-5-5 FM linearity</p>  <p>Fig. 1-5-6 S.T. Pole base position</p>	<p>Mounting direction See Fig. 1-5-1. (Symptom: no picture)</p> <p>Axis wobble See Fig. 1-5-2. (Symptom: jitter, poor FM linearity) PB FM: Main board TP206 DRUM FF: Main board TP411</p> <p>FM linearity check See Fig. 1-5-5. (Symptom: vertical sync absent, picture noise) PB FM: Main board TP206 DRUM FF: Main board TP411</p>	<p>After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B.</p> <p>Record and playback in SP mode. Confirm absence of large difference between channels. (Fig. 1-5-3)</p> <p>1) Play staircase signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point.</p> <p>2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) of the FM waveform by turning the guide roller of the take-up pole base.</p> <p>Note: If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.</p>

No.	Item	Checkpoints	Adjustment and Checks
	PB switching point •Symptom: switching noise at picture bottom.	TP210 (VIDEO OUT)  Fig. 1-5-7 PB Switching Point	<ol style="list-style-type: none"> 1) Connect an oscilloscope to TP210. 2) Set the MH-2 alignment tape into the cassette housing. Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 (DRUM FF) of the main board. 4) Adjust R420 (PB switching point) to position the trigger point $6.5 H \pm 0.5 H$ from V. sync as shown in Fig. 1-5-7.
2	Lower drum assembly •Symptoms: Poor FM linearity, noisy rotation, jitter •Cause: Lead and bearing wear	Check FM linearity and switching point. Check control head phase (X value) Symptom: tracking error PB FM: Main board TP206 DRUM FF: Main board TP411	See above upper drum assembly items. <ol style="list-style-type: none"> 1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the + and – buttons simultaneously in the onscreen mode. Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually. <ol style="list-style-type: none"> 2) Refer to the A/C head adjustments.
3	A/C head  Fig. 1-5-8 Temporary height  Fig. 1-5-9 Inclination/Azimuth/ Height adj.	 Fig. 1-5-10 A/C HEAD position Temporarily set height as indicated in Fig. 1-5-8. Tilt (forward inclination) See Fig. 1-5-9. (Symptom: audio level varies greatly.) Azimuth See Fig. 1-5-9. (Symptoms: audio low level or noisy) Audio output: Main board AUDIO OUT	Set the height as indicated in Fig. 1-5-8 to facilitate tape transport checks and adjustments. <ol style="list-style-type: none"> 1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller. 2) Then slowly turn the screw clockwise to where the curling ceases. <ol style="list-style-type: none"> 1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope. 2) Turn screw ② and adjust for maximum audio output level.

No.	Item	Checkpoints	Adjustment and Checks
	 <p>Fig. 1-5-11 Height</p>	<p>Height See Figs 1-5-9 and 1-5-11. (Symptom: low audio and control signal levels)</p>	<p>1) Run tape and observe the control head area. 2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen. Note: <i>If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.</i></p>
	 <p>Fig. 1-5-12 CTL head phase</p>	<p>FM linearity</p> <p>Control head phase See Fig. 1-5-12 PB FM: Main board TP206 FF: Main board TP411 Digital tracking off:</p>	<p>Refer to upper drum assembly items. If adjustment is major, again check the azimuth.</p> <p>1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Digital tracking off by pressing the "V CH" and "^ CH" buttons simultaneously in the playback mode. 2) Loosen screws ④ and ⑤. Set the A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 1-5-12. 3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-13. 4) Tighten screw ⑤. Remove the tool and tighten screw ④.</p>
	 <p>Fig. 1-5-13 CTL head phase</p>		

Note: Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.
This model uses wide heads.

No.	Item	Checkpoints	Adjustment and Checks
4	<p>Tension arm assembly Tension band assembly</p>  <p>Fig. 1-5-14 Tension arm assy</p>  <p>Fig. 1-5-16 Cassette housing</p>	<p>Checkpoints</p> <p>Tension pole position See Fig. 1-5-14. (Symptom: poor FM waveform response)</p>	 <p>Fig. 1-5-15 Tension arm position</p> <ol style="list-style-type: none"> 1) Remove video cassette tape and set for the playback mode as following steps. 2) Disconnect VCR from AC. Slightly rotates the loading motor counterclockwise by hand, then press the lock level portion (A) of the cassette housing by hand as shown in Fig. 1-5-16. 3) Move the raised portion of the cassette housing slide plate to fully forward by hand with loading motor. At this time, again press the lock level portion (B) of the cassette housing slide plate to lower the cassette housing (internal holder of the cassette housing is locked in lowered position). 4) Cover the cassette LED with opaque material (insulated tape with black). 5) Connect VCR to AC. Press the power button on the Front panel and set for the playback mode. 6) Turn the eccentric adjust pin to align the edge of the chassis with the tension arm tip as shown in Fig. 1-5-14.
		<p>Back tension (Symptom: skew)</p>	<ol style="list-style-type: none"> 1) When the tension pole position is correctly adjusted, the back tension will assume the correct value. 2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading of 30 to 43. 3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere.

No.	Item	Checkpoints	Adjustment and Checks
5	Pinch roller cam Control cam Half loading gear assembly Guide arm assembly	 <p>Fig. 1-5-16 Control/Pinch roller cam</p> <p>Important: Do not remove or disturb parts other than those mentioned. See Fig. 1-5-16.</p>	 <p>Fig. 1-5-17 Control cam position</p> <ol style="list-style-type: none"> 1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck. 2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned. (If the control cam does not fit readily, shift the rear plate assembly within the range of play.) 3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring. 4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly.
		Cassette housing assembly	Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked.
6	Clutch assembly	Take-up torque (Symptom: inadequate take-up torque)	<ol style="list-style-type: none"> 1) Remove cassette housing and set for playback mode (see Section 1.2). 2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100.

No.	Item	Checkpoints	Adjustment and Checks
7	Take-up loading arm assembly Supply loading arm assembly Plate assembly		Note: <ul style="list-style-type: none"> • Set mechanism to the Eject or Stop mode before removing these parts. • The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.
		Mounting position alignment <ul style="list-style-type: none"> • Remove the tension arm assembly to facilitate operation. See Fig. 1-5-18.	<ol style="list-style-type: none"> 1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets. 2) Shift the plate assembly and install with the holes of the upper and lower components overlapped.
	Slide switch See Fig. 1-5-18.		Be sure to engage the slide switch slider with the edge of the plate assembly.

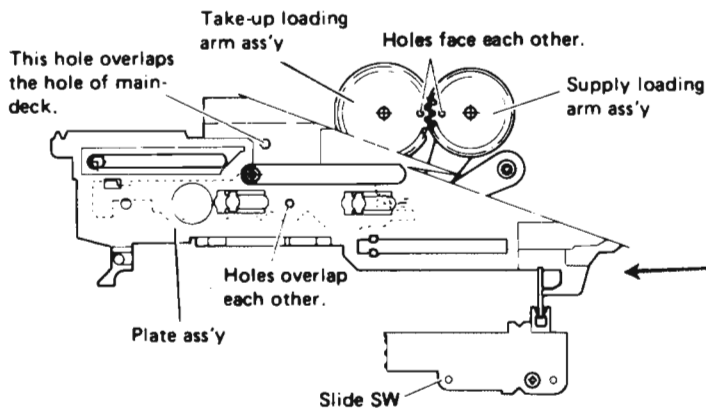


Fig. 1-5-18 Mounting position alignment

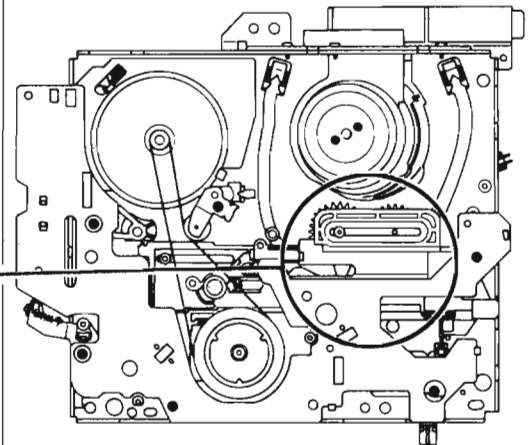


Fig. 1-5-19
T.S. Loading arm position

SECTION 2 ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.

It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2

Fig. 2-1-1 Color bar signal of pattern generator

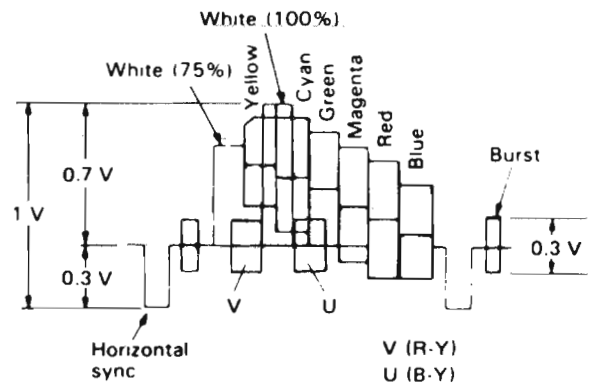


Fig. 2-1-2 Color bar signal waveform

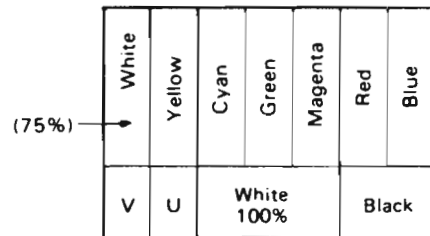
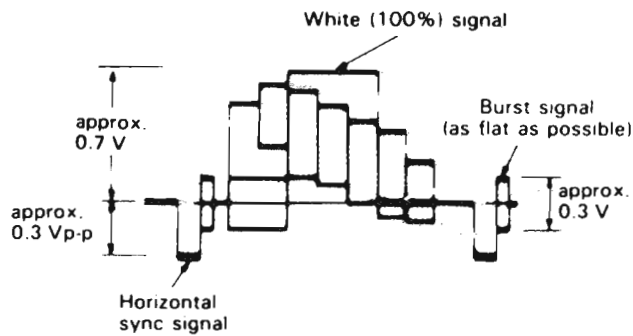


Fig. 2-1-3 Color bar pattern



2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (—) indicates check only.
Signal & Mode	<ul style="list-style-type: none"> • Input signal required to perform adjustment. Dash (—) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.

Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
SP mode	SP recording speed

Description This column provides an explanation of the step, notes and adjustment values, and reference to waveforms where applicable.

2.2 REGULATOR CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	5V DC output voltage	• REC	• TUNER	• Q806-B • TP803 (GND)	• R811 (SWD 5V)	1) Connect a digital voltmeter between Q806-B and TP803. 2) Record in the TUNER mode, adjust R811 for 5.30 ± 0.05 V.

2.3 TIMER CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the T/D/S board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Clock	• EE	• AUX	• IC 1-16	• C6 (CLOCK)	<p>Note: For below adjustments use 10:1 probe with input capacitance less than 100 pf.</p> <p>1) Disconnect VCR from AC. Connect a frequency counter between IC 1-16 and GND. 2) Short IC 1-8 to GND, then short the leads of capacitor C3 once in order to reset IC 1. 3) Connect VCR to AC. All FDP Segments are on. 4) Adjust C6 for 2048.000 ± 0.002 Hz (488.2808 to 488.2818 μs).</p>

2.4 SERVO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	SP PB switching point	• PB	<ul style="list-style-type: none"> • MH-2, MH-1 stairstep • Trigger slope (-) • Auto tracking off 	• TP210	• R420 (PB SW POINT)	<ol style="list-style-type: none"> 1) Connect an oscilloscope to TP210. 2) Play back the stairstep segment of MH-2, (PAL) MH-1 (NTSC) alignment tape. 3) Trigger the oscilloscope externally (- slope) with the signal from TP411. 4) Adjust R420(PAL) to position the trigger point $6.5 \pm 0.5 H$ from V. sync.

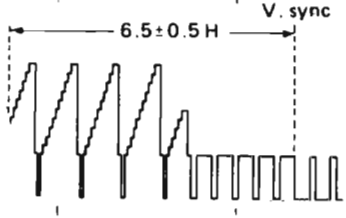


Fig. 2-4-1 PB switching point

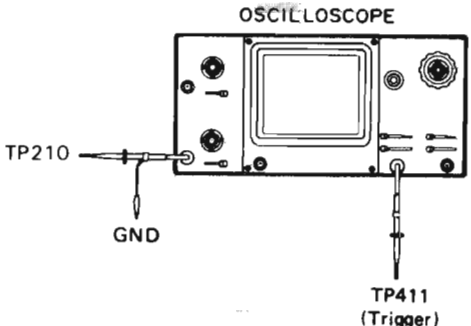


Fig. 2-4-2 oscilloscope

2.5 VIDEO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the VIDEO unit board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
IMPORTANT: Item 1,2,3 and 4						
<ol style="list-style-type: none"> 1. Ordinarily avoid performing these adjustments. It should be performed only if IC 1 of the VIDEO UNIT board has been replaced. 2. To adjust, replace fixed resistor with variable resistor, then adjust as required. 						
1	EE level & White clip	• EE	• Colour bar	<ul style="list-style-type: none"> • CN207-15 (Main board) • IC1-22 	<ul style="list-style-type: none"> • R60 (EE Y LEVEL) • R64 (WHITE CLIP) 	<ol style="list-style-type: none"> 1) When IC1 of the VIDEO UNIT board is replaced, it may also be necessary to replace R60 and R64 with adjustable resistors. 2) Confirm $2.00 \left(\begin{smallmatrix} +0.07 \\ -0.05 \end{smallmatrix} \right) V_{p-p}$ EE level at CN207-15 and white clip of $90 \pm 4\%$ at IC1-22. If necessary, replace R60 with NVP1301-103NU and R64 with NVP1301-332NU. 3) Supply a colour bar signal to VIDEO IN, connect one channel of a dual trace oscilloscope to CN207-15 and the other channel to IC1-22. 4) Alternately adjust R60 and R64 for $2.00 \left(\begin{smallmatrix} +0.07 \\ -0.05 \end{smallmatrix} \right) V_{p-p}$ at CN207-15 and white clip of $90 \pm 4\%$ at IC1-22.

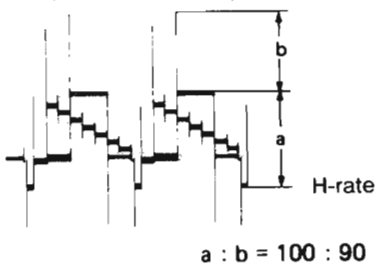


Fig. 2-5-1 White clip




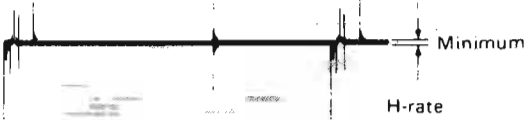
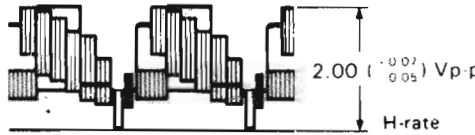

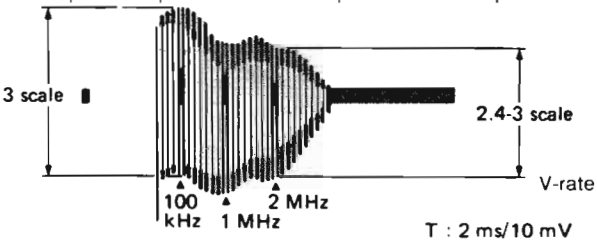
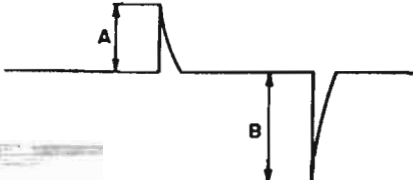


Fig. 2-5-2 EE Level

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
2	Carrier & Deviation	• EE	• AUX • No signal	• CN206-9 (Main board)	• R41 (CARRIER)	<p>1) When IC 1 of the video unit board is replaced, it may also be necessary to replaced R41 and R42 with adjustable resistors.</p> <p>2) Play back a colour bar segment of MH-2 and confirm 1.00 (± 0.06) Vp-p Y level at VIDEO OUT (75Ω load). If necessary, replace R41 with NYVP1301-223NU and R42 with NVP1301-103NU.</p> <p>3) Without an incoming signal. Terminate VIDEO OUT with TV-monitor (75Ω load), connect a frequency counter to CN206-9 on the MAIN board.</p> <p>4) Adjust R41 for 3.80± 0.04 MHz.</p> <p>5) Play back a colour bar segment of MH-2, and confirm 1.00 (± 0.06) Vp-p at VIDEO OUT. If necessary, redplace R17 with NVP1301-222NU.</p>
		• REC then PB	• Colour bar • AUX	• TP210 Video out (Main board)	• R42 (DEVIATION)	<p>6) Record and play back a colour bar signal. If necessary, before recording, adjust R42 so that the Y level becomes 1.00 (± 0.06) Vp-p at VIDEO OUT during playback mode.</p>
 <p>1.00 \pm 0.06 Vp-p H-rate</p> <p>Fig. 2-5-3 Carrier and deviation</p>						
3	REC FM level	• REC	• Colour bar	• TP3 (REC FM OUT) (Pre/rec board)	• R246 (REC FM)	<p>1) Connect the oscilloscope to TP3 of the PRE/REC board.</p> <p>2) Adjust R246 so that FM level of the pedestal portion is 0.62 Vp-p.</p>
 <p>0.62Vp-p</p> <p>Fig. 2-5-4 REC FM level</p>						
4	YNR NC balance	• EE	• Colour bar • AUX	• IC 1-9	• R56 (NC BALANCE)	<p>1) When IC 1 of the video unit board is replaced, it may also be necessary to replace R56 with adjustable resistor.</p> <p>2) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to IC1-9 on the VIDEO UNIT board.</p> <p>3) Confirm minimum DC step difference. If necessary, replace R56 with NVP1301-152NZ.</p> <p>4) Adjust R56 for minimum DC step difference.</p>
 <p>Minimum H-rate</p> <p>Fig. 2-5-5 YNR NC balance</p>						

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
5	PB Y level	<ul style="list-style-type: none"> • REC then PB 	<ul style="list-style-type: none"> • Colour bar • AUX 	<ul style="list-style-type: none"> • CN207-15 (Main board) 	<ul style="list-style-type: none"> • R17 (PB-Y LEVEL) 	<ol style="list-style-type: none"> 1) When IC1 of the video unit board is replaced, it may also be necessary to replace R17 with adjustable resistor. 2) Record and play back a colour bar signal, confirm $2.00 \left(\begin{smallmatrix} 0.07 \\ 0.05 \end{smallmatrix} \right)$ Vp-p Y level at CN207-15. If necessary, replace R17 with NVP1301-222NU. 3) Connect oscilloscope to CN207-15. 4) Record and play back a colour bar signal, adjust R17 for $2.00 \left(\begin{smallmatrix} 0.07 \\ 0.05 \end{smallmatrix} \right)$ Vp-p at CN207-15.
 <p>2.00 $\left(\begin{smallmatrix} 0.07 \\ 0.05 \end{smallmatrix} \right)$ Vp-p H-rate</p> <p>Fig. 2-5-6 PB Y level</p>						
6	REC colour level and Ch balance	<ul style="list-style-type: none"> • PB 	<ul style="list-style-type: none"> • MH-2 colour bar • Auto tracking off 	<ul style="list-style-type: none"> • IC1-41 	<ul style="list-style-type: none"> • R215 (REC COLOR) (Main board) 	<ol style="list-style-type: none"> 1) Connect an oscilloscope to IC1-41 and observe colour signal level. 2) Set the MH-2 alignment tape into the cassette housing, play back the colour bar segment of MH-2 alignment tape. 3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "-" tracking buttons. 4) Adjust by pressing the "+" and "-" tracking buttons of the Front panel for maximum level of the colour waveform and make a note of the higher colour level "A". 5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape.
<ul style="list-style-type: none"> • REC then PB  <p>A V-rate</p> <p>Fig. 2-5-7 REC colour level</p>						<ol style="list-style-type: none"> 6) Set recording video cassette into the cassette housing. Supply a colour bar signal to VIDEO IN. 7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Main board. Use (-) trigger for CH1 and (+) trigger for CH2. 8) Record a colour bar signal in the SP mode. 9) Play back recorded colour bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "-" tracking buttons and confirm $85 \pm 5\%$ of the noted colour level at IC1-41. If necessary, before recording, adjust R215 so that the higher level channel becomes $85 \pm 5\%$ of the noted level "A" during playback as shown in Fig. 2-5-6. At this time, confirm that the channel level difference is within 3 dB. <p>Note: Repeat the above step (9) several times.</p>

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
7	SP PB Frequency	• REC then PB	• Video sweep • Auto tracking off	• TP210 (Main board)	• R208 (PB FREQ RESPONSE) (Main board)	<ol style="list-style-type: none"> 1) Terminate VIDEO OUT with monitor - TV (75 Ω load), supply a video sweep signal without burst to VIDEO IN. 2) Set recording video cassette into the cassette housing. Record a video sweep signal without burst in the SP mode. 3) Connect an oscilloscope to TP210. Play back recorded video sweep signal in the SP mode, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (-) tracking buttons. 4) Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale. 5) Adjust R208 to position the 2 MHz of channel-1 portion at 2.4 – 3.0 (–1 ± 1 dB) of the oscilloscope graduations as shown in Fig. 2-5-7. At this time, confirm that the channel difference is within 2 dB.
 <p>Fig. 2-5-8 PB frequency</p>						
			• TV broadcast • Auto tracking off	• TV monitor	• R208 (PB FREQ RESPONSE) (Main board)	<p>Alternate method</p> <ol style="list-style-type: none"> 1) Set recording video cassette into the cassette housing, receive a colour broadcast on a VHF channel. 2) Record a colour broadcast that shows a good depiction of human facial contours. 3) Play back recorded colour broadcast, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (-) tracking buttons. 4) Adjust R208 to obtain distinct facial features on the monitor. <p>Note: R215 nearly at centre position.</p>
8	MESECAM DET	• EE	• SECAM colour bar	• TP280 (Main board)	• L282 (Main board)	<ol style="list-style-type: none"> 1) Apply video input SECAM color bar. 2) Connect an oscilloscope to TP280 3) Adjust L282 so that A and B are related as follows: $A : B = 3 : 4$  <p>Fig. 2-5-9 MESECAM DET</p>

2.6 AUDIO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Audio Bias level	• REC	• No input signal • AUX	• TP31 (+) • TP32 (-)	• R11 (BIAS)	<ol style="list-style-type: none"> 1) Connect a millivoltmeter between TP31 and TP32. 2) Set for REC mode without Audio signal. 3) Adjust R11 for 3.1 mVrms.

2.7 TUNER/IF CIRCUIT

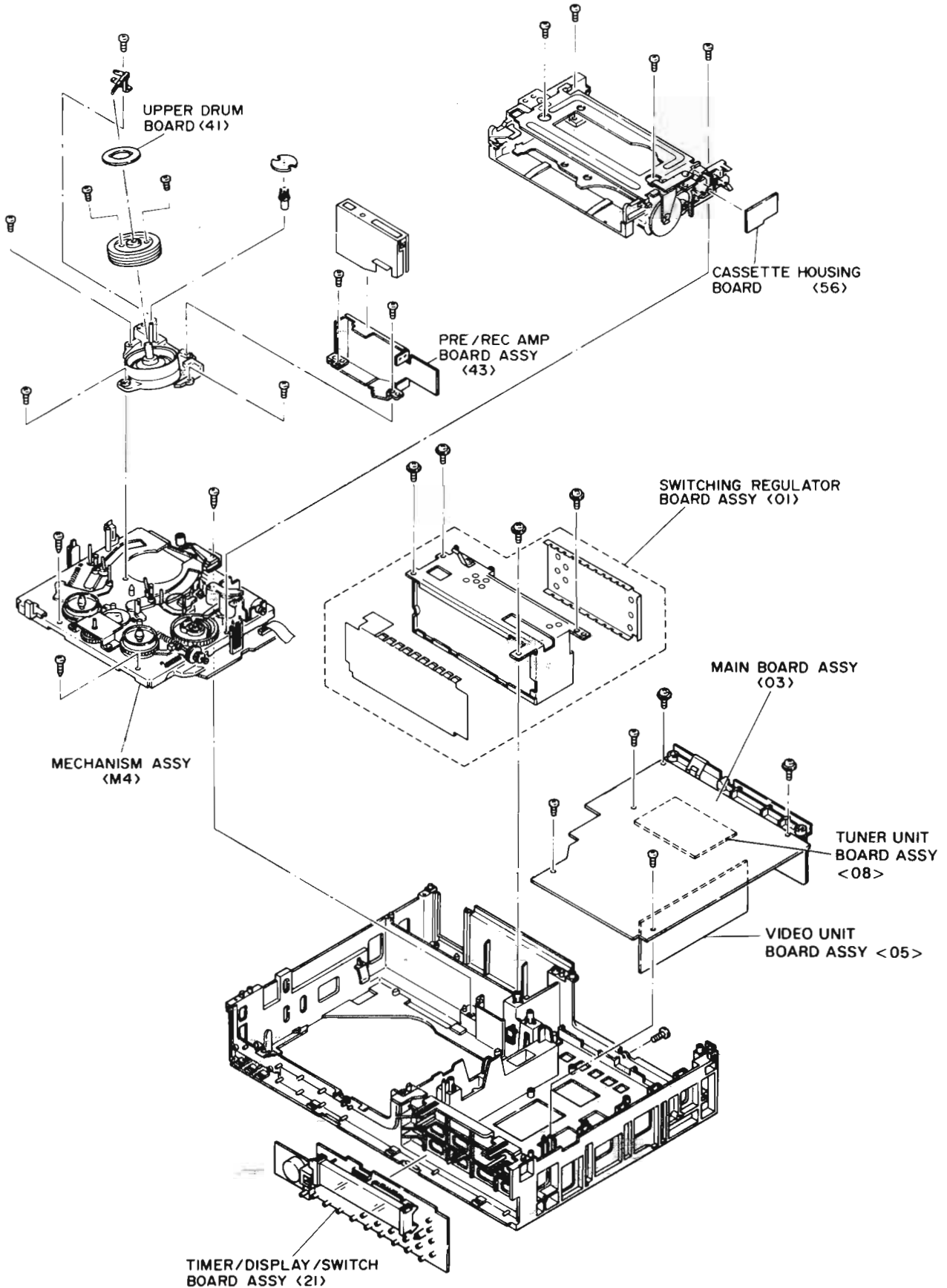
Note: Unless otherwise specified, all test points and adjustments are located on the TUNER/IF board.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
<p>Equipment required:</p> <ol style="list-style-type: none"> Oscilloscope IF sweep signal generator with suitable markers (PIF, etc.) Sweeper probe (sweep signal supply cable) as shown below. 						
<p style="text-align: center;">Fig. 2-7-1 Equipment required</p>						
1	VCO	• EE	• Tuner	• IC1-17	• T1	<ol style="list-style-type: none"> Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. Connect the oscilloscope to pin 17 of IC1 (VIDEO DET OUT) and adjust T1 to align the waveform with the frequency marker as shown in Fig. 2-7-2.
<p style="text-align: center;">Fig. 2-7-2 VCO</p>						
<p>Alternate method:</p> <ol style="list-style-type: none"> Receive a colour broadcast on a VHF-HI channel. Adjust T1 to obtain a fine picture on the monitor. 						
<p>• Before the following adjustments:</p> <ol style="list-style-type: none"> Connect a cable to ANT IN and terminate TV OUT at 75 Ω. Set a TV channel signal generator as follows. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Video: 65 dBμ/75 Ω, colour bar 87.5% modulation Audio: 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation</p> </div>						
2	RF AGC	• EE	• Tuner • TV broadcast	• TV monitor	• R72 (RF AGC)	<ol style="list-style-type: none"> Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R72 for maximum level, then again adjust R72 for -5.0 dB again. <p>Alternate method:</p> <p>Note: Adjust R72 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.</p> <ol style="list-style-type: none"> Adjust R72 to minimize noise or streaks on the TV monitor. Check for absence of abnormality on all channels.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
3	SOUND DET	• EE	• Tuner • TV broadcast	• CN2-5	• T3 (FM DET)	<p>1) Use an adjustment circuit as shown in Fig. 2-7-3, and connect a distortion meter as shown in Fig. 2-7-3.</p> <p>2) Adjust T3 for minimum distortion (less than 2.0%).</p> <hr/> <p>Alternate method:</p> <p>1) Receive a colour broadcast on a VHF-HI channel (7 to 13). Connect an oscilloscope to CN2-5.</p> <p>2) Adjust T3 for maximum level at audio sound.</p>
<p style="text-align: center;">Fig. 2-7-3</p>						
4	AFC	• EE	• Tuner • TV broadcast • AFC SW off	IC1-14	• T2 (AFC)	<p>1) Receive a colour broadcast.</p> <p>2) With AFC SW to OFF, connect an oscilloscope to IC1-14 of the Tuner board.</p> <p>3) Set the oscilloscope to DC mode and adjust T2 to set the lower edge of the ripple waveform to 5VDC.</p>

SECTION 3 CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD AND LOCATION



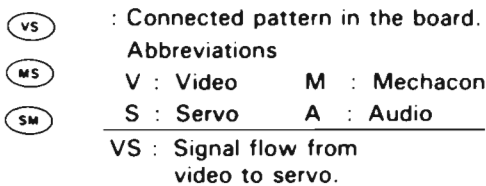
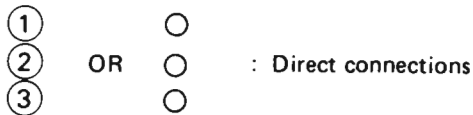
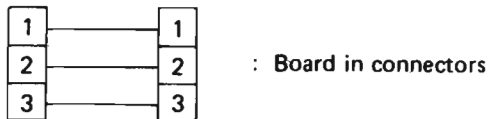
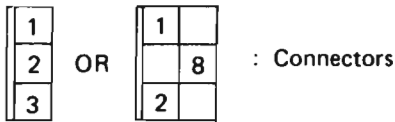
3.2 GENERAL INFORMATION

3.2.1 Connections

Note:

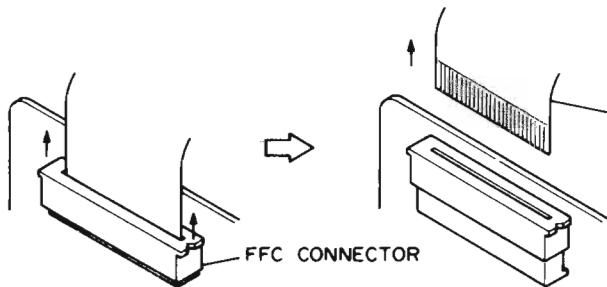
Unless otherwise specified, only signal input flow is indicated.

Connection arrows indicate only signal outputs.

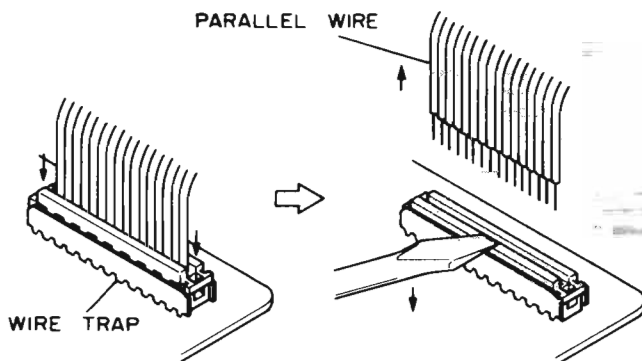


3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

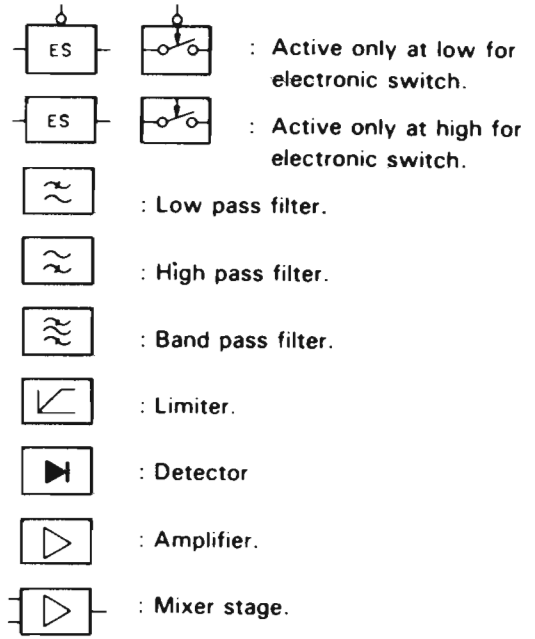


2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.



3.2.3 Indications

AUX : Active only at high.
 $\overline{\text{AUX}}$: Active only at low.
 $\overline{\text{AUX}}$: Active only at middle.
 $\overline{\text{AUX}}$: Active only at open.

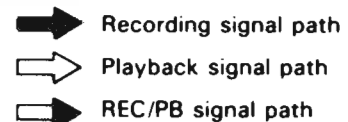


3.2.4 Schematic diagram values

Unless otherwise specified:


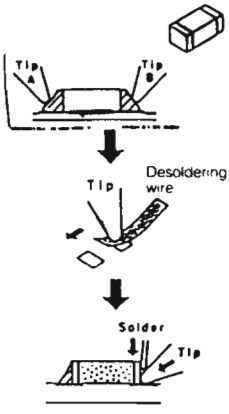







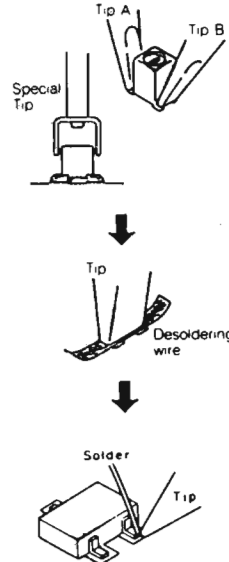









1. All resistance values are in ohms, 1/6 W or 1/8 W (refer to parts list).
2. All capacitance values are in μF , (P; PF).
3. All inductance values are in μH , (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parenthesis.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (-8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (■) parts are critical for safety. Replace only with specified part numbers.

3.2.5 Signal flow in the schematic



3.2.6 Basic knowledge of SMC* parts replacement

Note: For details, refer to "VIDEO SERVICE GUIDE" (VTS81001).

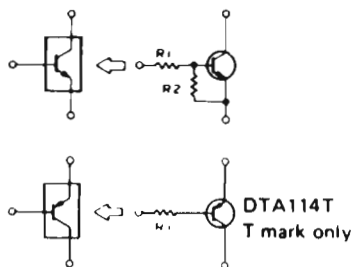
Products	Appearance	Replacement technology	Removal method	Installation method	Soldering tip types	Cautions
Thick Film Chip Resistors			<ul style="list-style-type: none"> • Use 2 soldering irons 1 Use thin tip soldering irons 2 Use soldering tip temperature of about 280°C 3 Simultaneously heat both ends of the part 4 While heating, grasp the part with the tips of the soldering irons and remove it. 5 Use desoldering wire to completely remove the old solder from the part location of the board 6 A clean pattern for installing the new part is very important. 	<ol style="list-style-type: none"> 1 Clean the area where the new part is to be mounted (use alcohol). 2 Apply flux. 3 Set part correctly into position, prevent it from shifting. 4 Bring the soldering iron tip close to the part contact without actually touching it. Melt thin (0.3 mm) solder between the tip and part so that it flows into the part contact. 5 Check work quality with a magnifier 	<p>Thin tip type</p>  <p>Small flat-blade tip type</p> 	<p>Some parts can be damaged by sudden heating. Preheat the part at about 100°C for several minutes before installing it.</p> <p>Do not touch the part body with the soldering iron.</p> <p>The thin (0.3 mm) solder for miniature parts does not contain adequate flux. Supplementary flux is thus needed in most cases.</p> <p>Set the position carefully and secure the part.</p> <p>A defective trimming resistor cannot be adjusted externally. Replace with an ordinary variable resistor</p>
Carbon Film Chip Resistors						
Metal Film Chip Resistors						
Chip Ceramic Capacitors						
Chip Trimming Resistors						
Chip Inductors			<ul style="list-style-type: none"> • Special desoldering iron 1. Select soldering tip according to part size. 2. Bring the tip into contact with the soldered points. 3. When the solder melts, remove the part 4. Remove the old solder with desoldering wire. <ul style="list-style-type: none"> • 2 soldering irons 1 Use small flat-blade tips. 2. Heat both ends of the part simultaneously 3. When the solder melts, grasp and remove the part with the soldering iron tips. 4. Remove the old solder with desoldering wire. 	<ol style="list-style-type: none"> 1 Clean the area where the new part is to be mounted (use alcohol). 2 Apply flux. 3 Set part correctly into position, prevent it from shifting. 4 Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact. 5. Check work quality with a magnifier. 	<p>Special: Soldering tip</p>  <p>Small flat-blade tip type</p>  <p>Thin tip type</p> 	<p>Use care not to damage plastic components when soldering.</p> <p>Position the part carefully. This will also affect the soldering operation.</p> <p>Use care regarding soldering iron tip and avoid rapidly heating parts.</p> <p>For larger parts, use a slightly higher temperature (about 300°C).</p> <p>Check after installing (cold solder joints, etc.).</p> <p>Use care not to damage the circuit pattern, especially when removing.</p>
Chip Resistor Networks						
Chip Tantalum Capacitors						
Chip Tantalum Electrolytic Capacitors						
Chip Aluminum Electrolytic Capacitors						
Chip Transformers						
Chip Filters						

* SMC: Surface Mounted Component

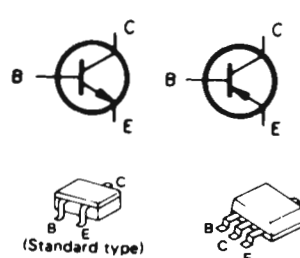
Products	Appearance	Replacement technology	Removal method	Installation method	Soldering tip types	Cautions
Chip VRs			<ul style="list-style-type: none"> • 2 soldering irons 1 Use small flat-blade tips 2 Heat the leads of the part simultaneously 3 When the solder melts, grasp and remove the part with the soldering iron tips 4 Remove the old solder with desoldering wire 	<ol style="list-style-type: none"> 1 Clean the area where the new part is to be mounted (use alcohol) 2 Apply flux 3 Set part correctly into position, prevent it from shifting 4 Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact. 	 	<p>Use care not to damage the part when soldering.</p> <p>Check for solder joints, especially miniature parts with small leads</p>
Chip Trimmer Capacitors						
Diodes						
Transistors						
IC (SOP) (Small Outline Package)			<ul style="list-style-type: none"> • Special desoldering iron 1 Select the tip according to the size and shape of the IC 2 "Tin" the tip with a small amount of solder 3 Set the tip squarely over the IC leads. 4 When the solder melts, carefully twist the iron 5 Raise and remove the IC <ul style="list-style-type: none"> • Shaped airblower unit 1 Select the correct nozzle 2 Select the temperature and airflow (suggested temp 7, airflow 4) 3 Engage the IC removing tool 4 Use the airflow to preheat the IC for about 5 seconds, then heat with the nozzle until the IC remover lifts the part from the board 	<ol style="list-style-type: none"> 1 Use desoldering wire to remove the previous solder 2 Clean the location with alcohol 3 Apply flux 4 Position the IC and solder two pins at opposite sides 5 Use a sharp tipped soldering iron and carefully solder each pin. (After gaining experience, a thicker tip can be used for better work efficiency.) 6 Remove any solder bridges with desoldering wire. 7 Inspect the work with a magnifier 	 	<p>Do not reuse removed parts</p> <p>Use care to avoid solder bridges. Remove any that occurs.</p> <p>Remove the old IC carefully so as not to damage the circuit pattern.</p> <p>Because of the many pins, cleanliness of the pattern is extremely important after removing the IC.</p> <p>Be very precise in positioning the IC.</p> <p>Soldering opposite pins first holds the IC in place and makes soldering the other pins easier.</p> <p>It is important to inspect the work with a magnifier.</p> <p>ICs (especially TSOP) are easily damaged by heat. Do not touch directly with the soldering iron.</p>
IC (SSOP) (Shrink Small Outline Package)						
IC (VSOP) (Very Small Outline Package)						
IC (QFP) (Quad Flat Package)						
IC (VQFP) (Very Small Quad Flat Package)						
IC (PLCC) (Plastic Leaded Chip Carrier)						
IC (TSOP) (Thin Small Outline Package)						

3.2.7 Semiconductors

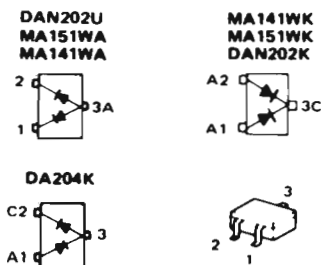
1. Digital transistor



2. Chip transistor



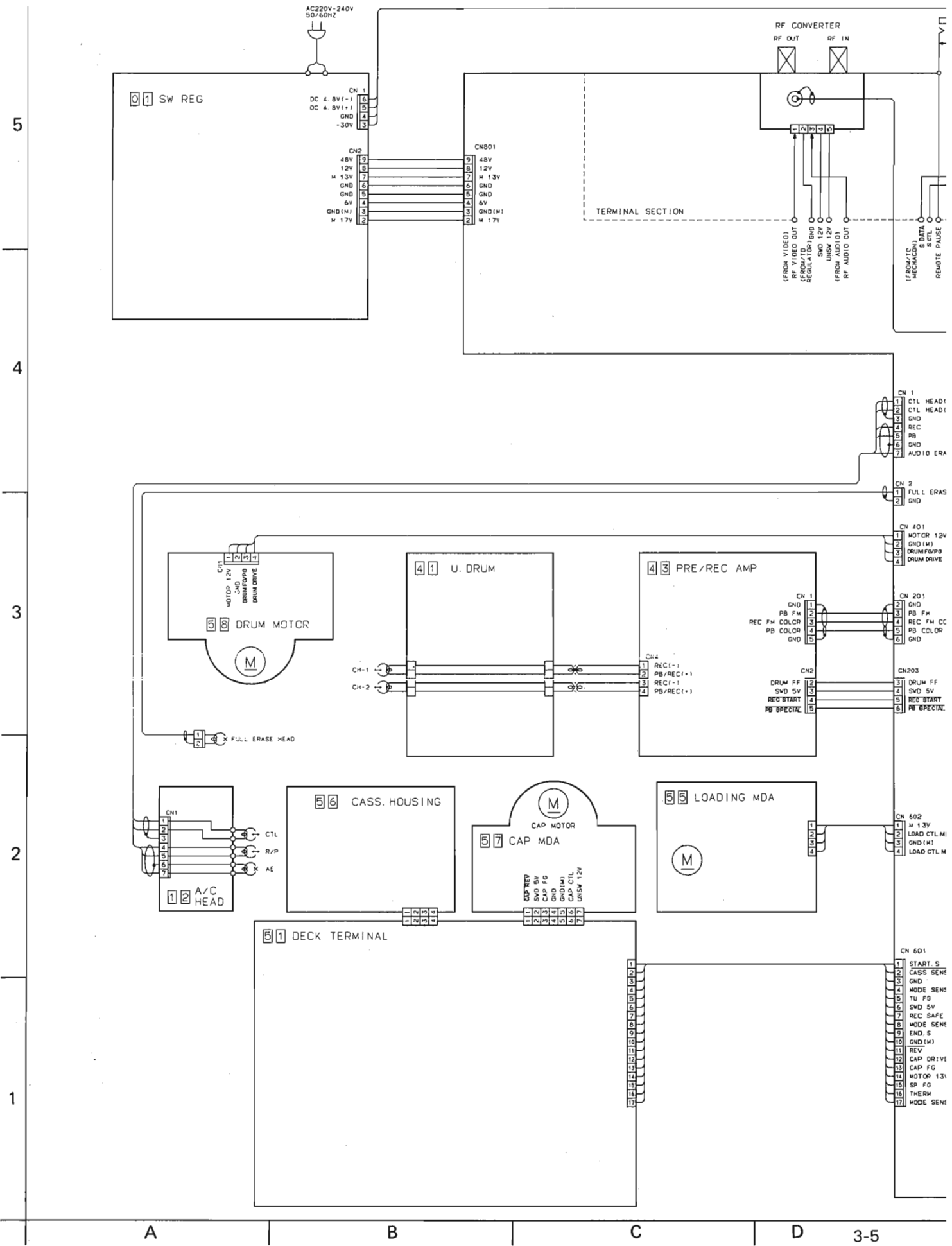
3. Chip diode

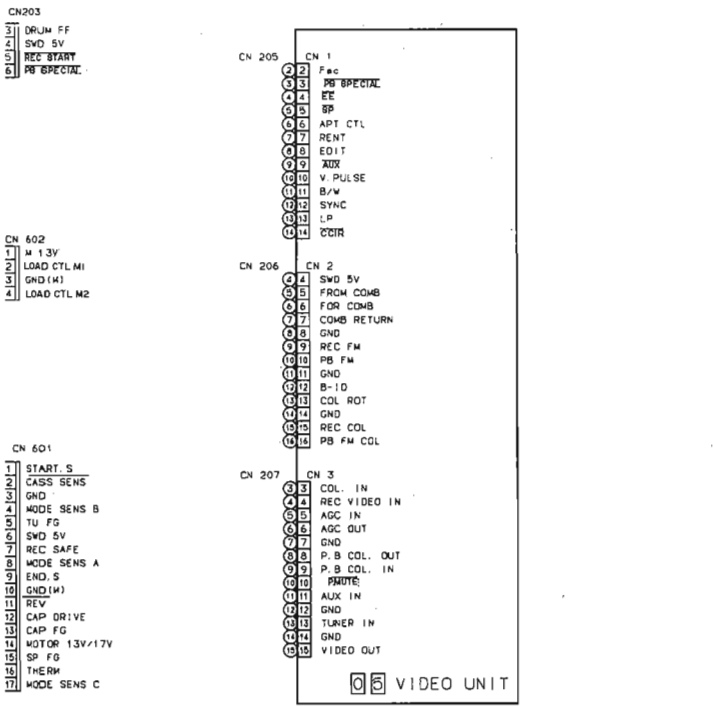
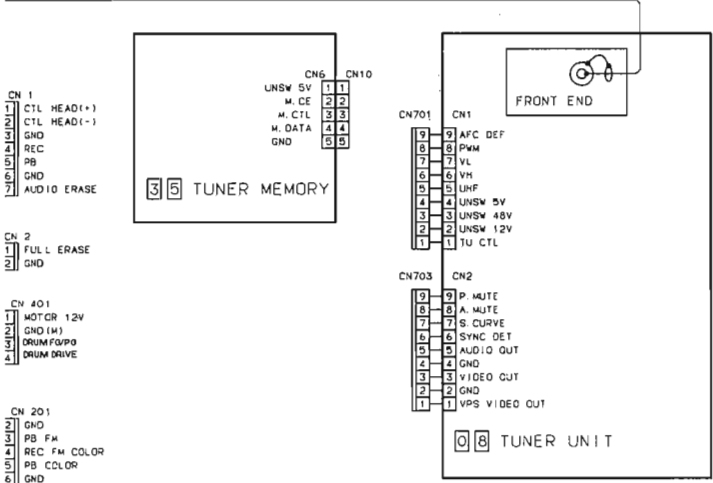
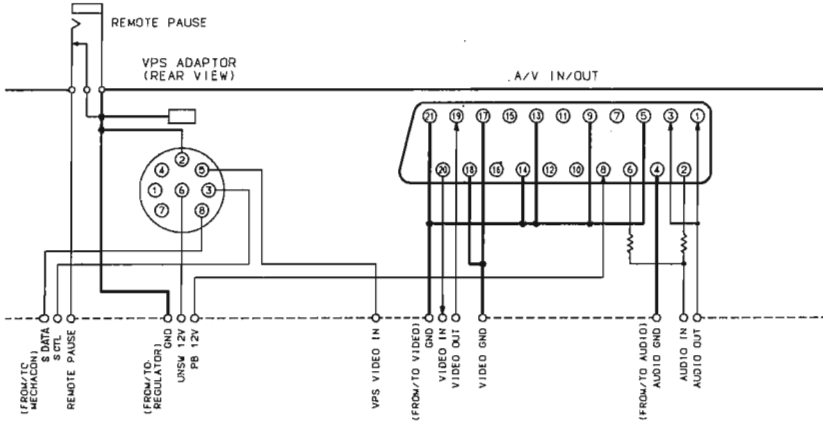


Note: The digital transistor includes built in resistors. It features small size and high reliability. Both PNP and NPN types are available.

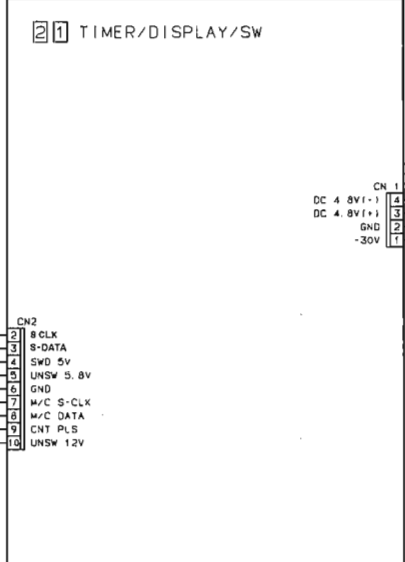
Uses: Inverter, interface, driver circuits.

3.3 BOARD INTERCONNECTIONS



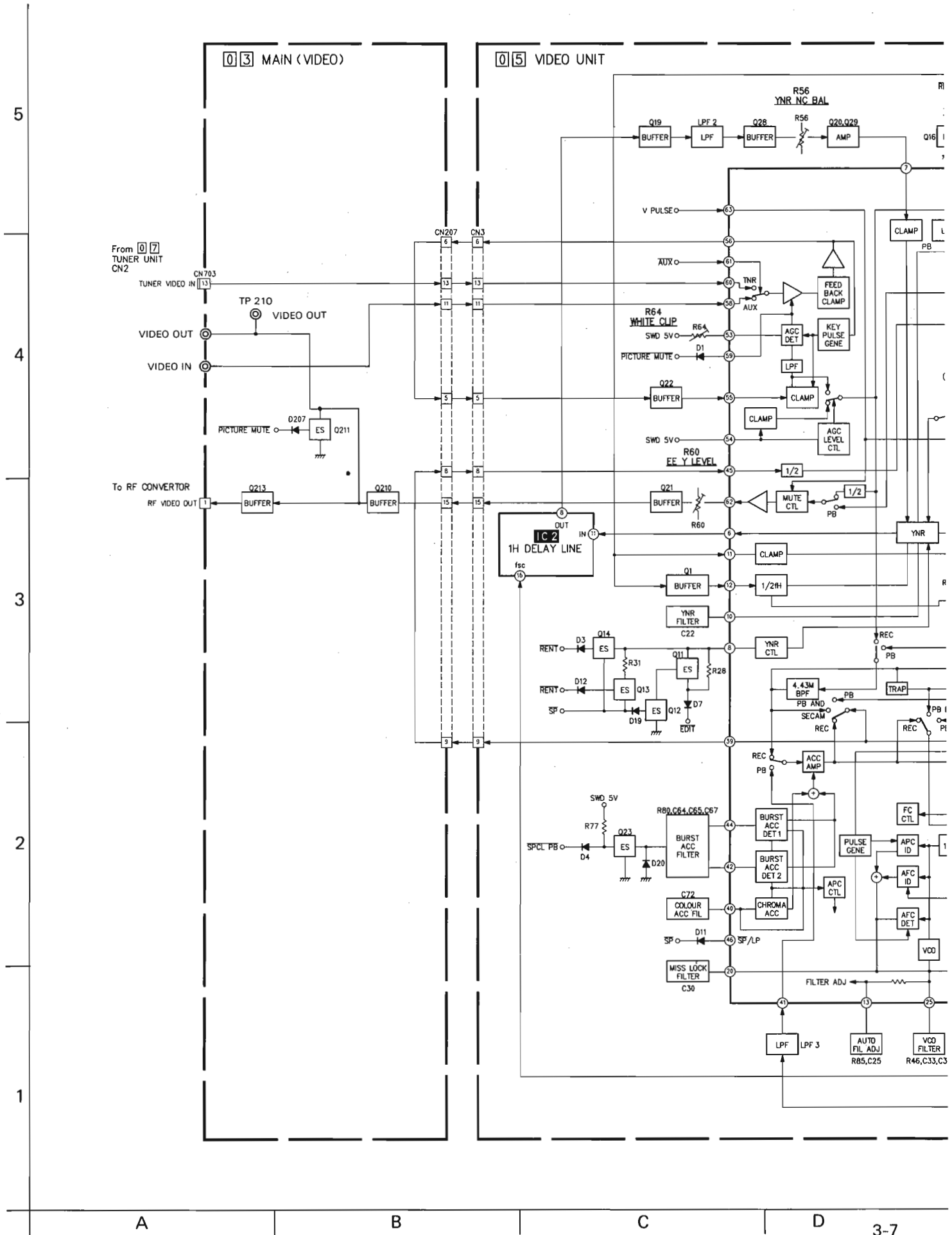


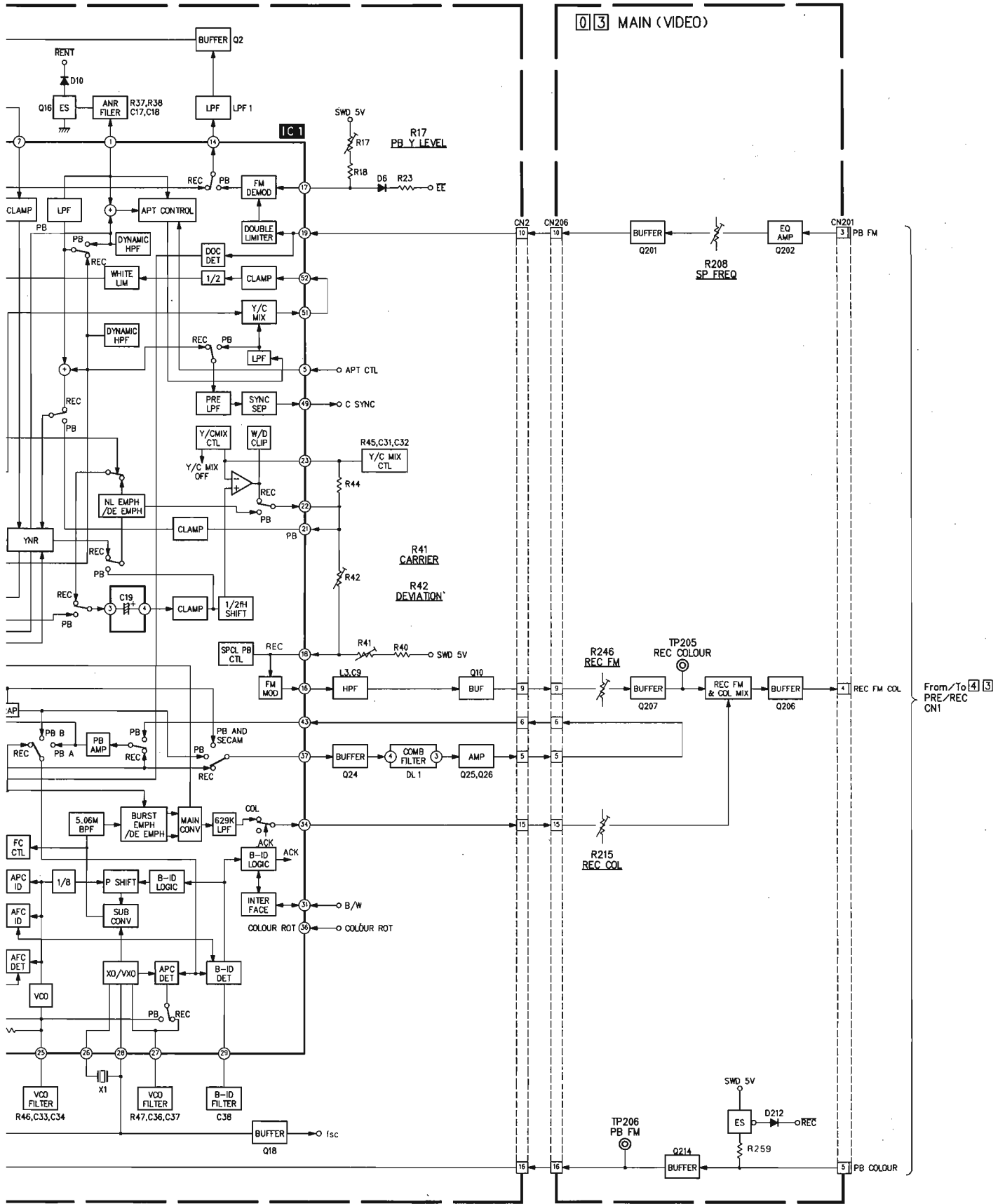
03 MAIN
(VIDEO, AUDIO, SERVO, M-CTL, REGULATOR, VPS)



5 8	DRUM MOTOR
5 7	CAP. MDA
5 6	CASS. HOUSING
5 5	LOADING MDA
5 4	
5 3	
5 2	
5 1	DECK TERMINAL
5 0	
4 3	PRE/REC AMP
4 1	U. DRUM
3 5	TUNER MEMORY
2 8	
2 7	
2 6	
2 5	
2 4	
2 3	
2 2	
2 1	TIMER/DISPLAY/SW
2 0	
1 9	
1 8	
1 7	
1 5	
1 4	
1 3	
1 2	A/C HEAD
1 1	
1 0	
0 9	
0 8	TUNER UNIT
0 7	
0 6	
0 5	VIDEO UNIT
0 4	
0 3	MAIN
0 2	
0 1	SW. REG
N 0	NAME

3.4 VIDEO BLOCK DIAGRAM





3-8

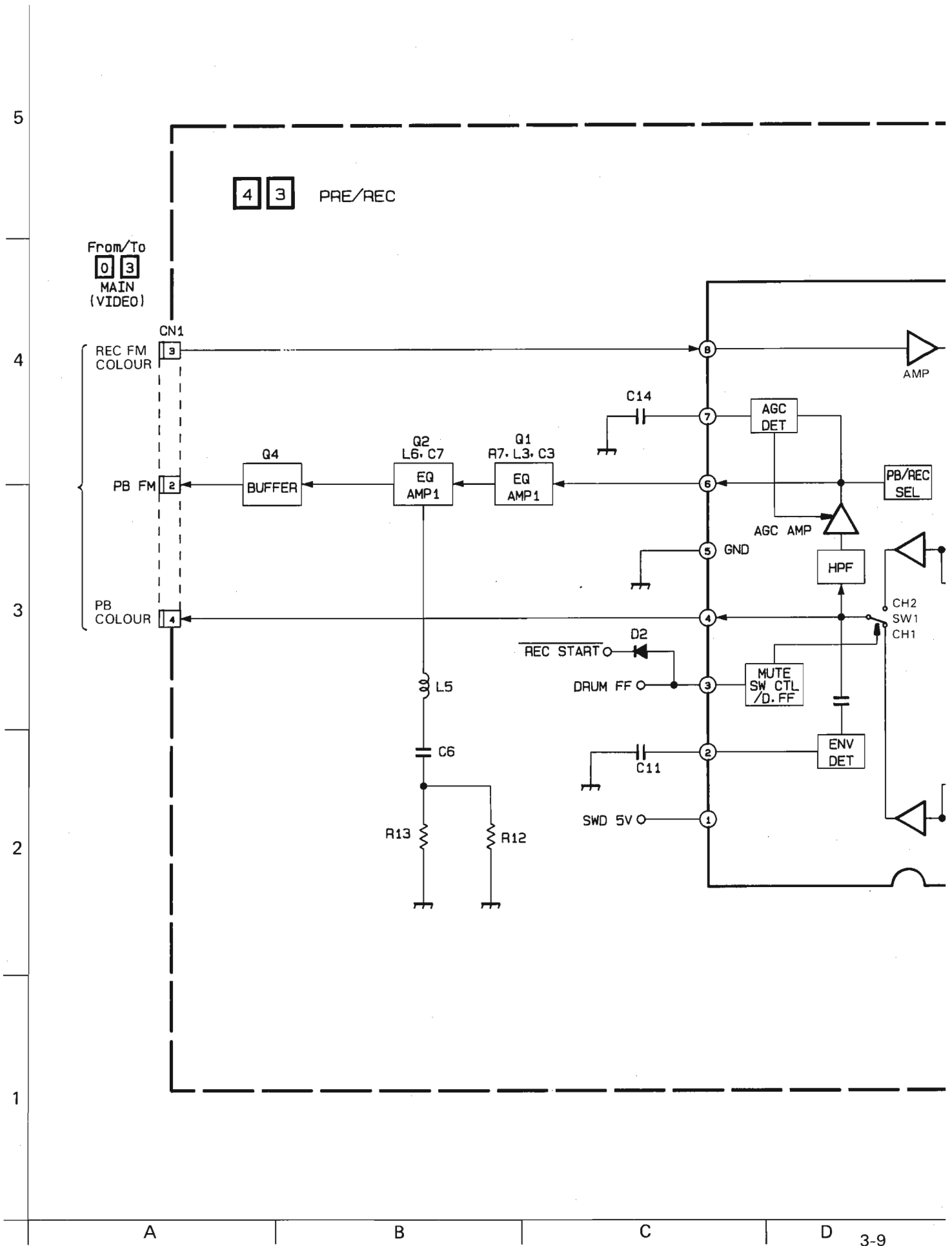
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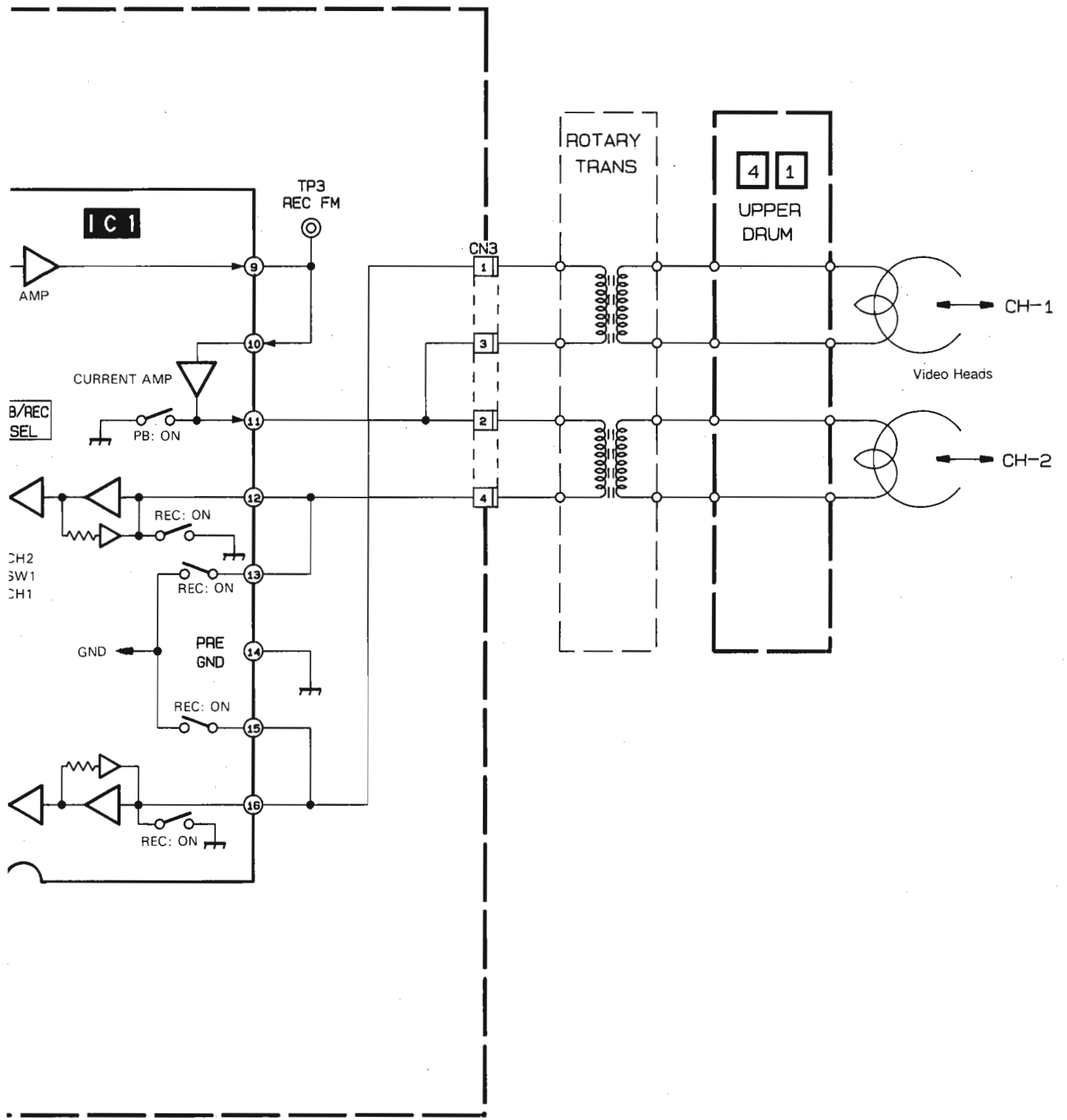
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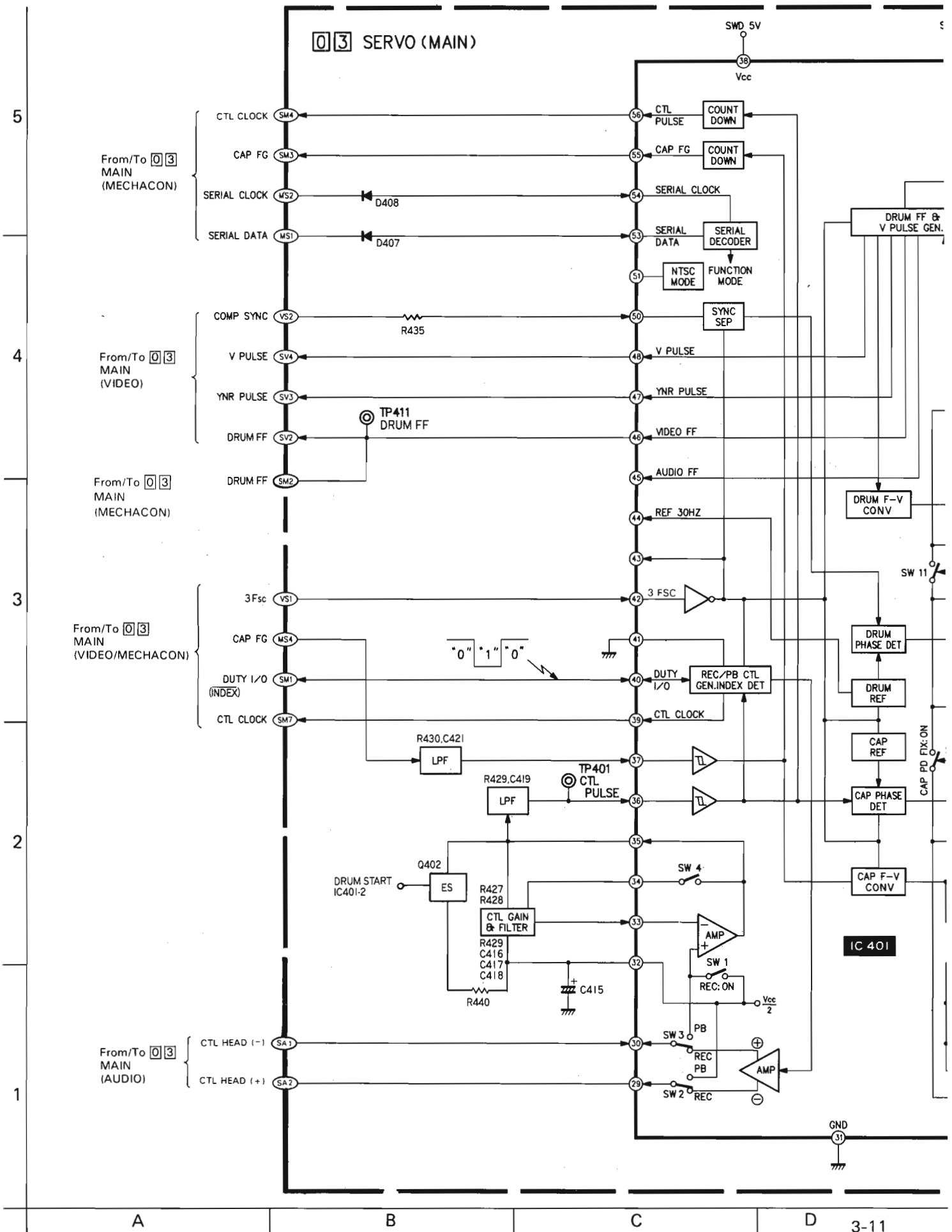
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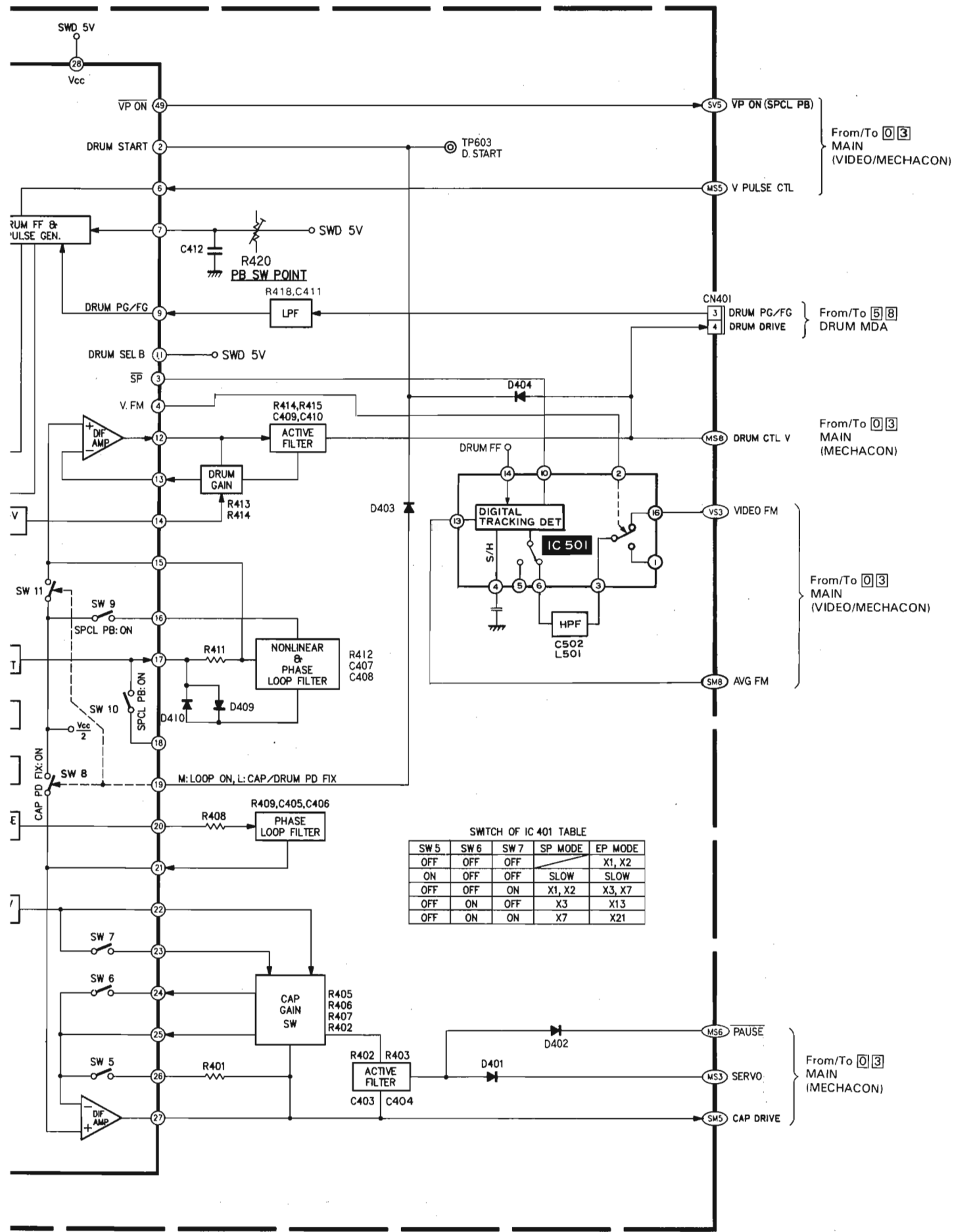
3.5 PRE/REC BLOCK DIAGRAM





3.6 SERVO BLOCK DIAGRAM





SWITCH OF IC 401 TABLE

SW 5	SW 6	SW 7	SP MODE	EP MODE
OFF	OFF	OFF		X1, X2
ON	OFF	OFF	SLOW	SLOW
OFF	OFF	ON	X1, X2	X3, X7
OFF	ON	OFF	X3	X13
OFF	ON	ON	X7	X21

3-12

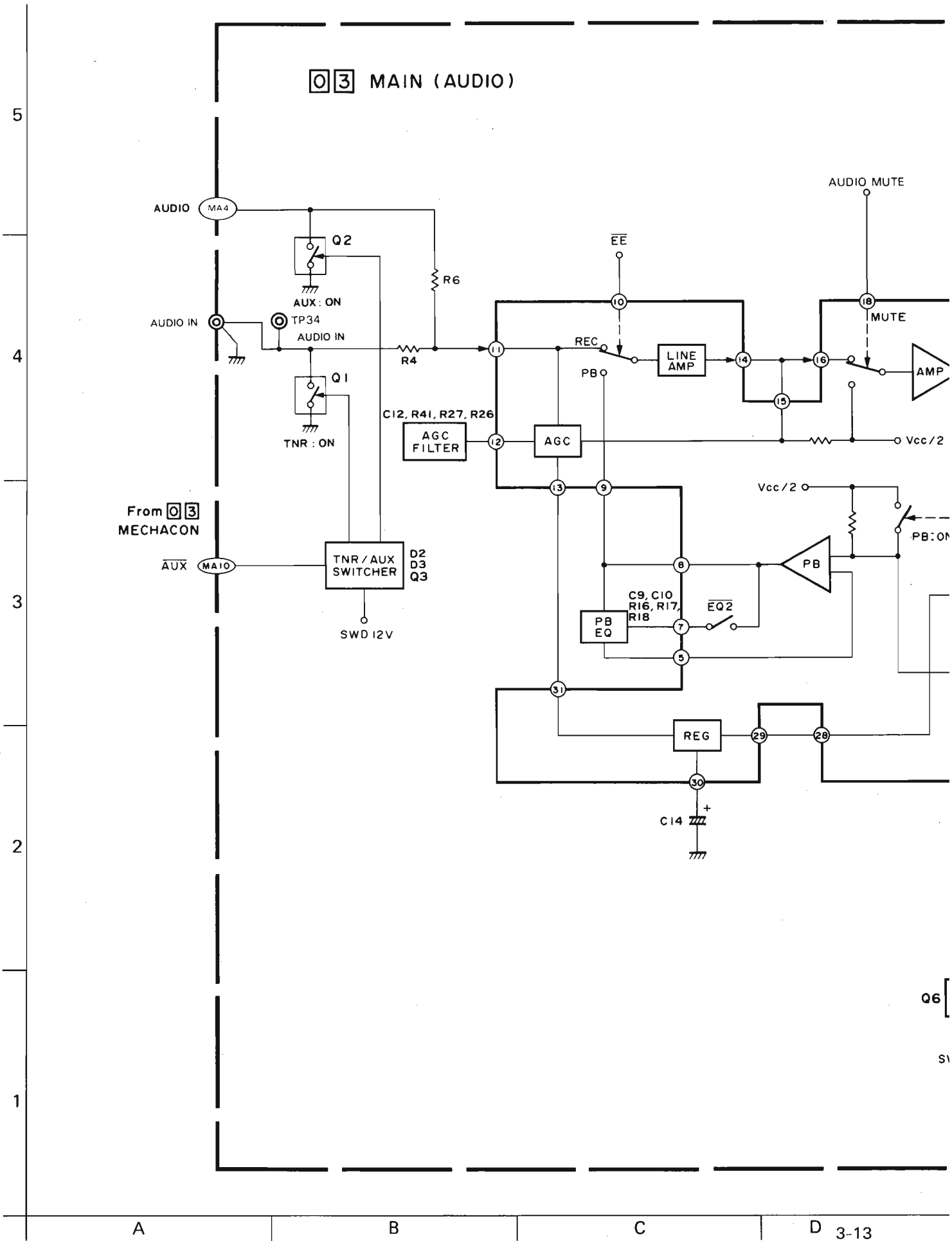
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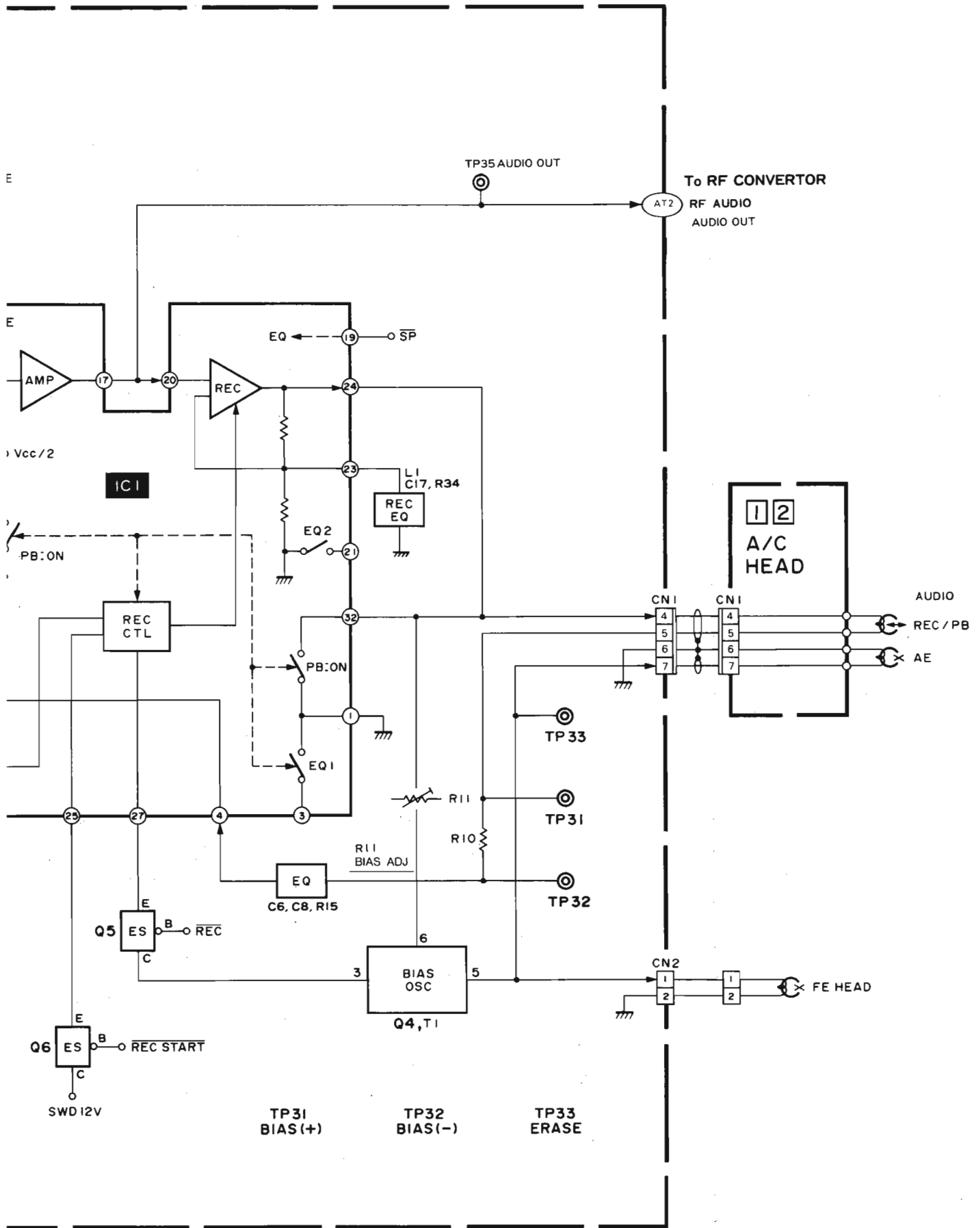
H

3.7 AUDIO BLOCK DIAGRAM

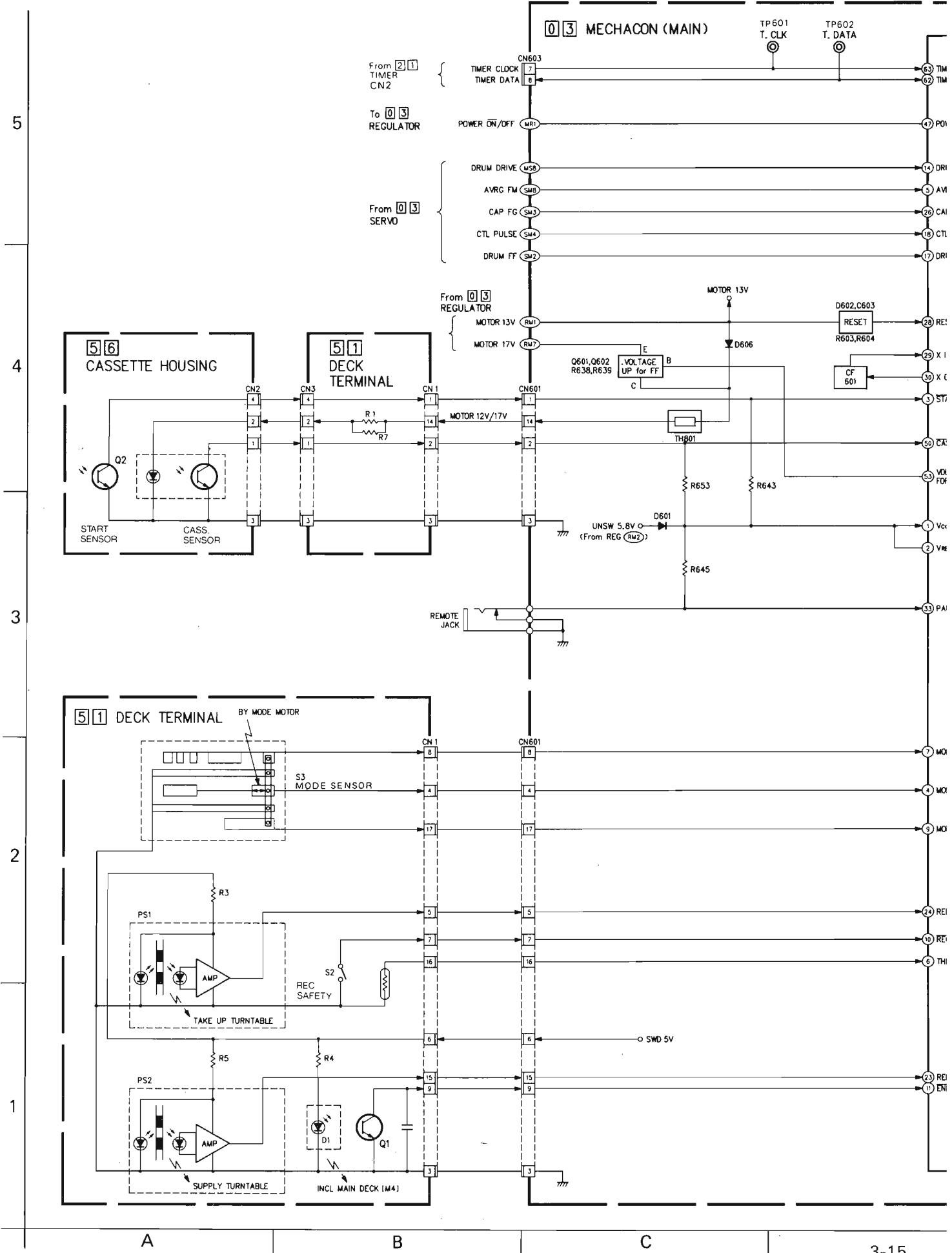


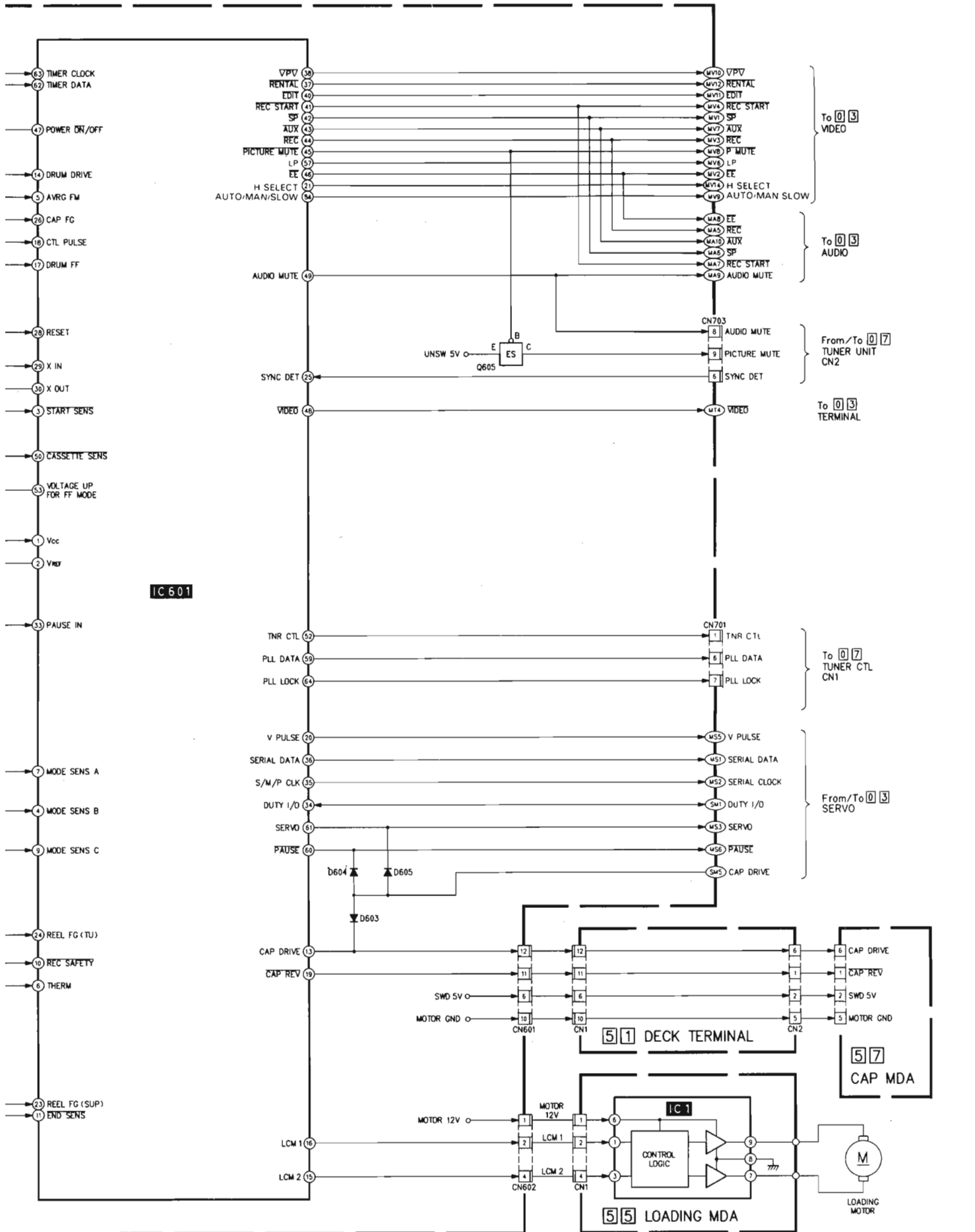
Q6

51

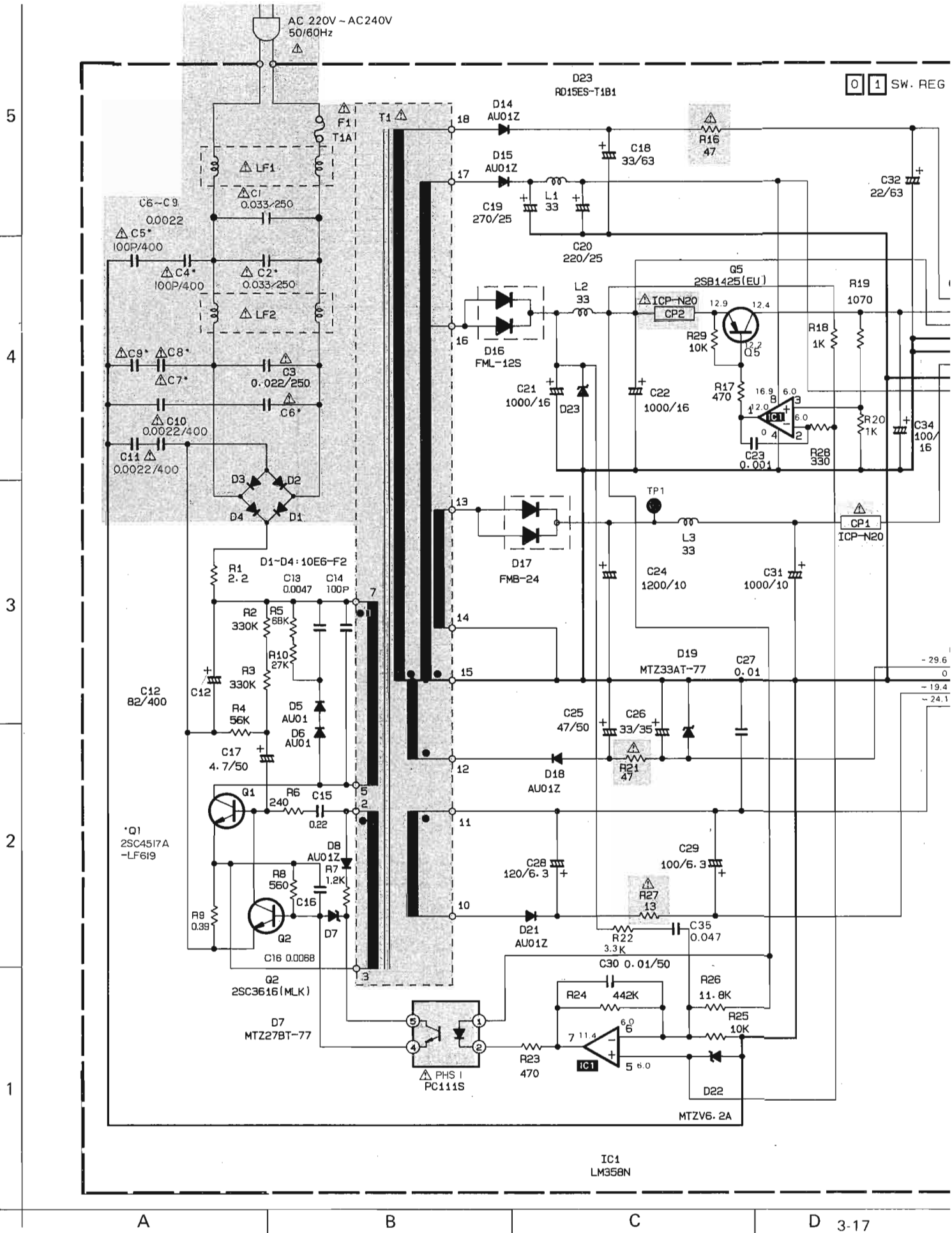


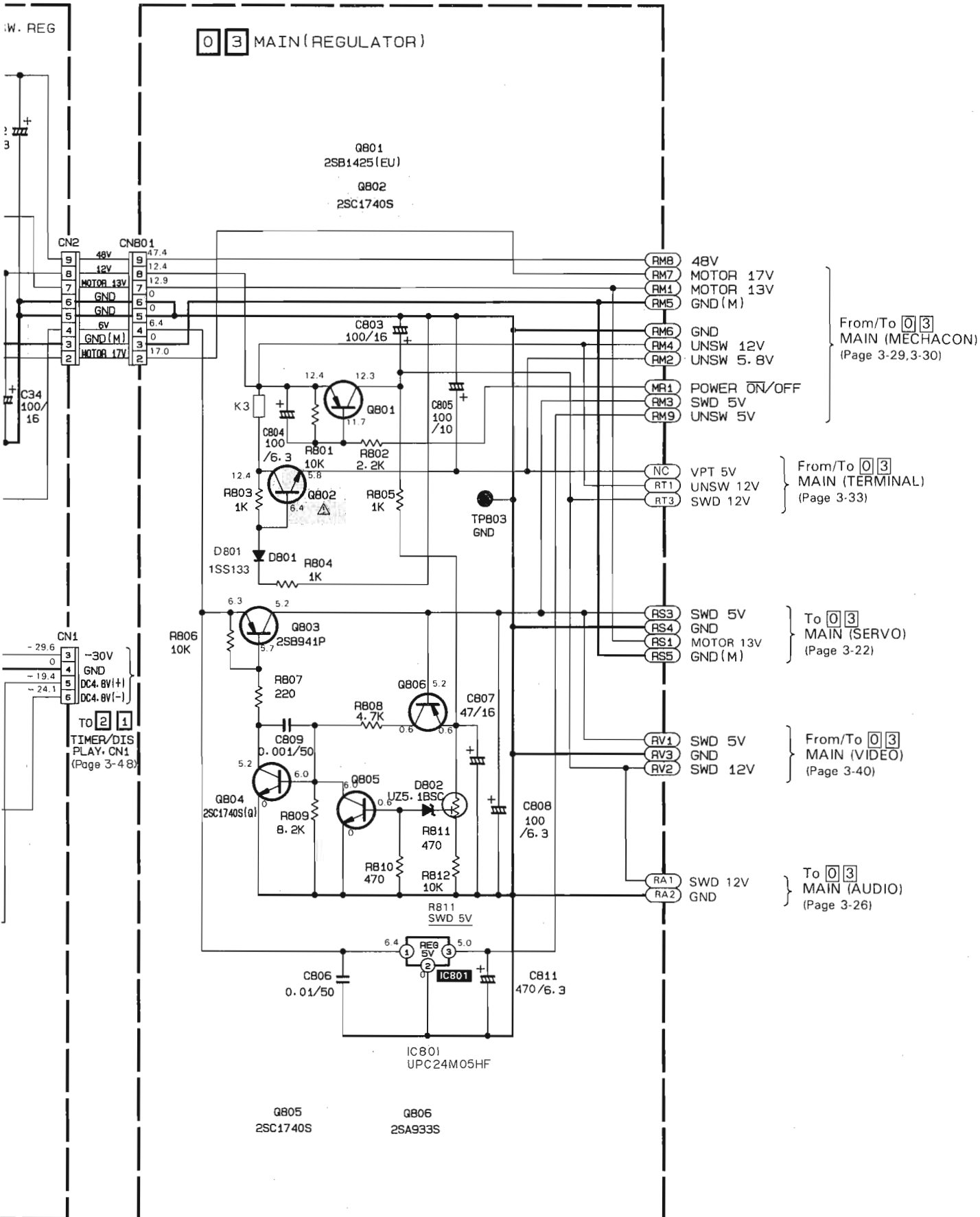
3.8 MECHACON BLOCK DIAGRAM



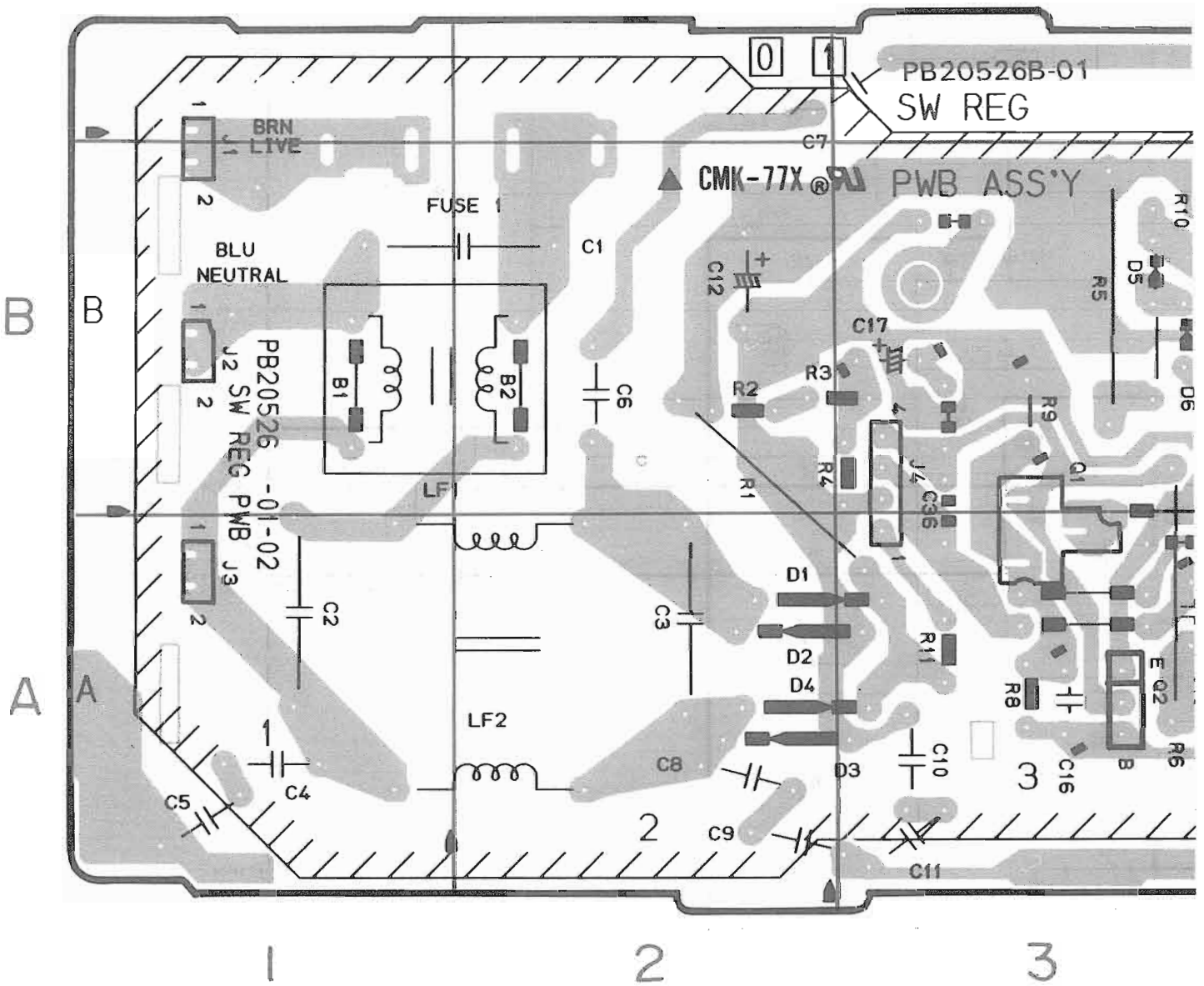


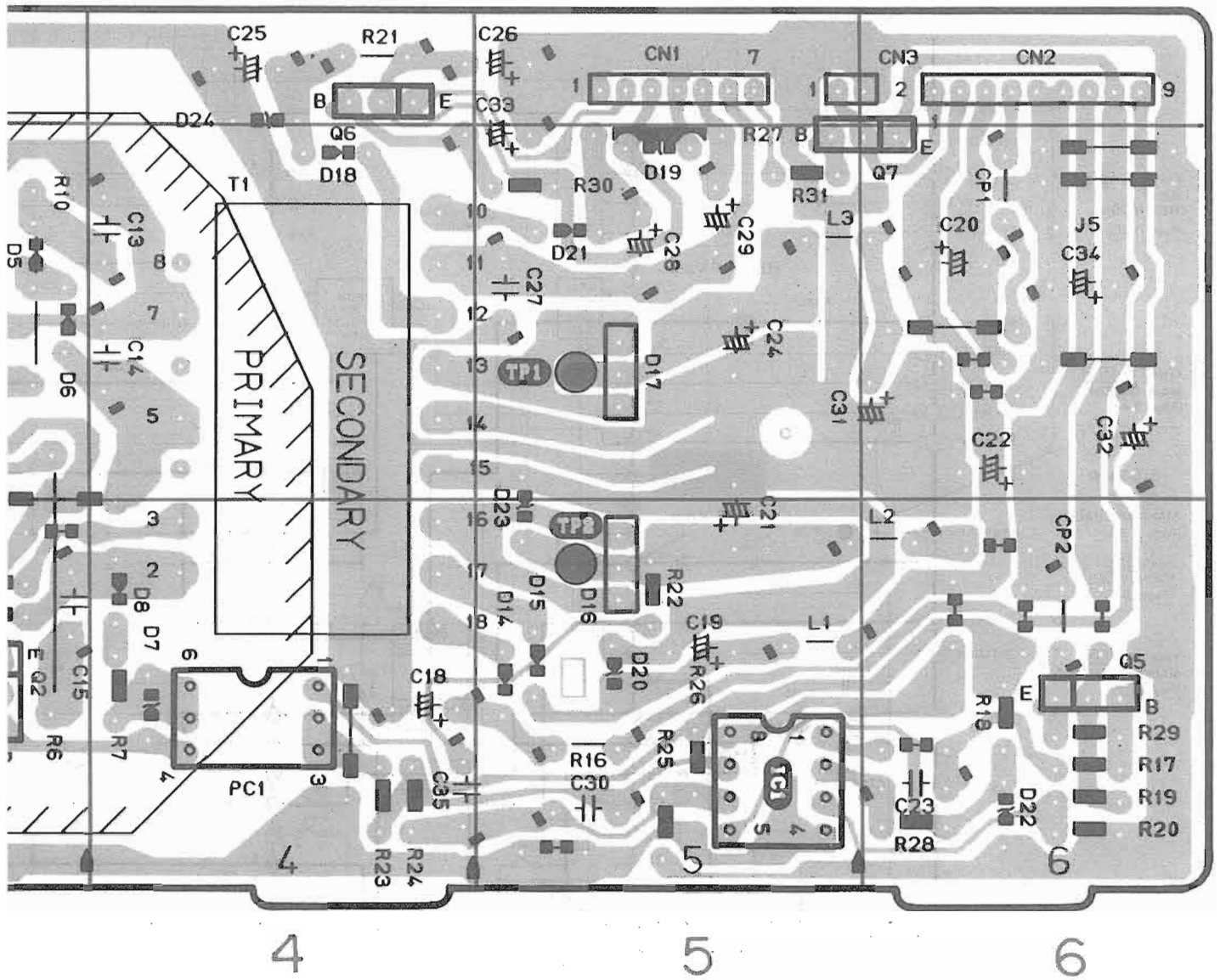
3.9 SWITCH REGULATOR & REGULATOR (MAIN) SCHEMATIC DIAGRAMS



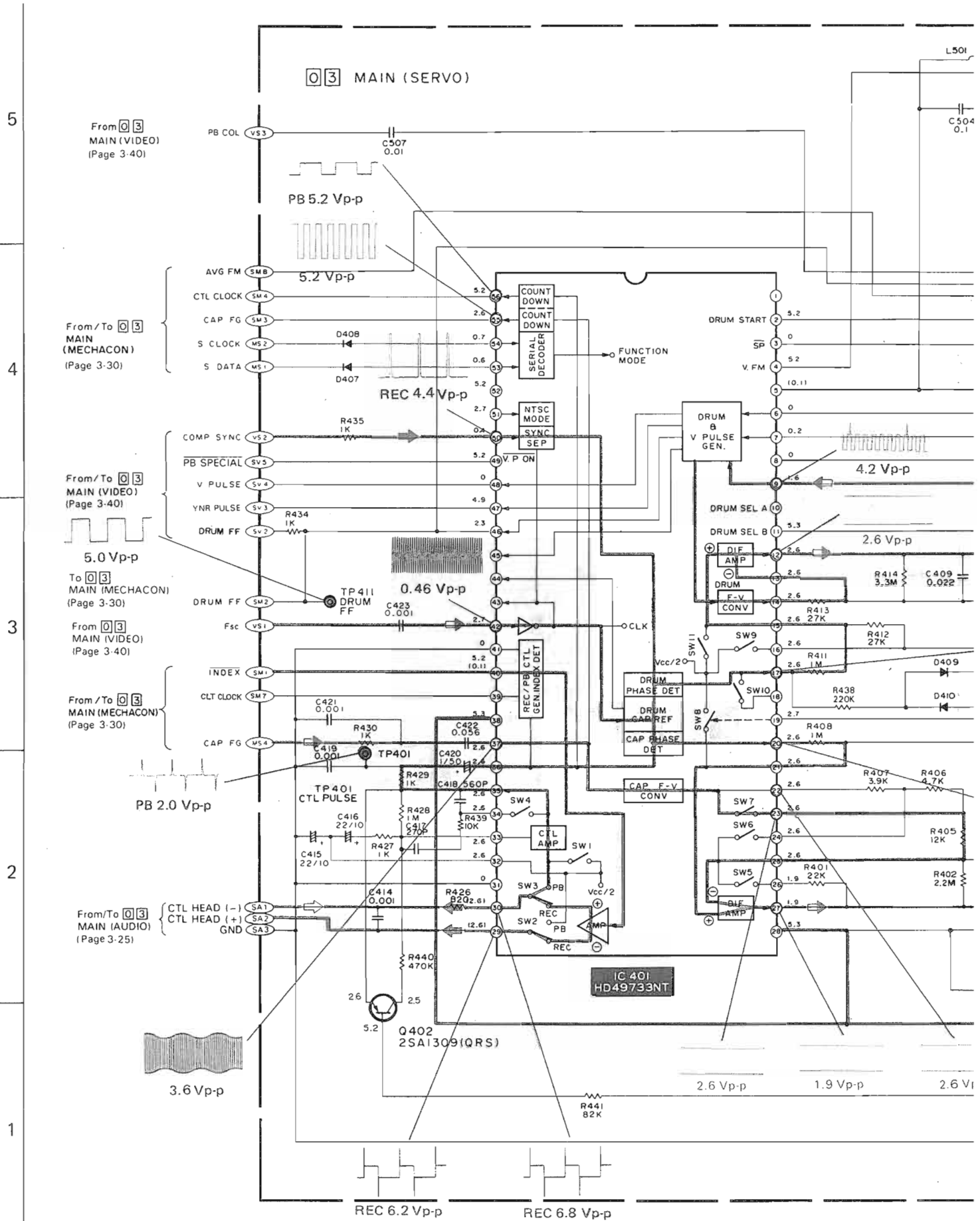


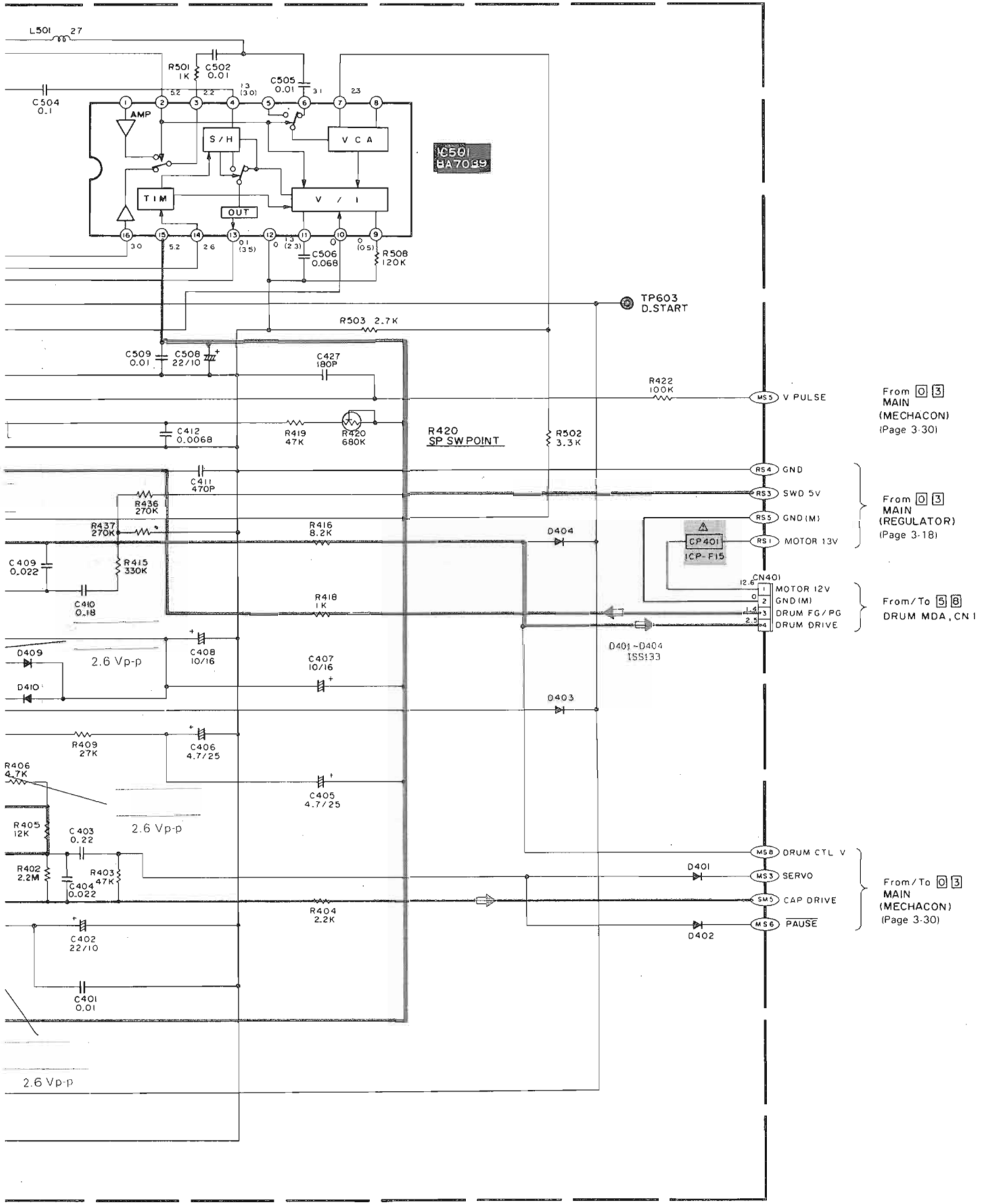
3.10 SWITCHING REGULATOR CIRCUIT BOARD





3.11 SERVO SCHEMATIC DIAGRAM





3-22

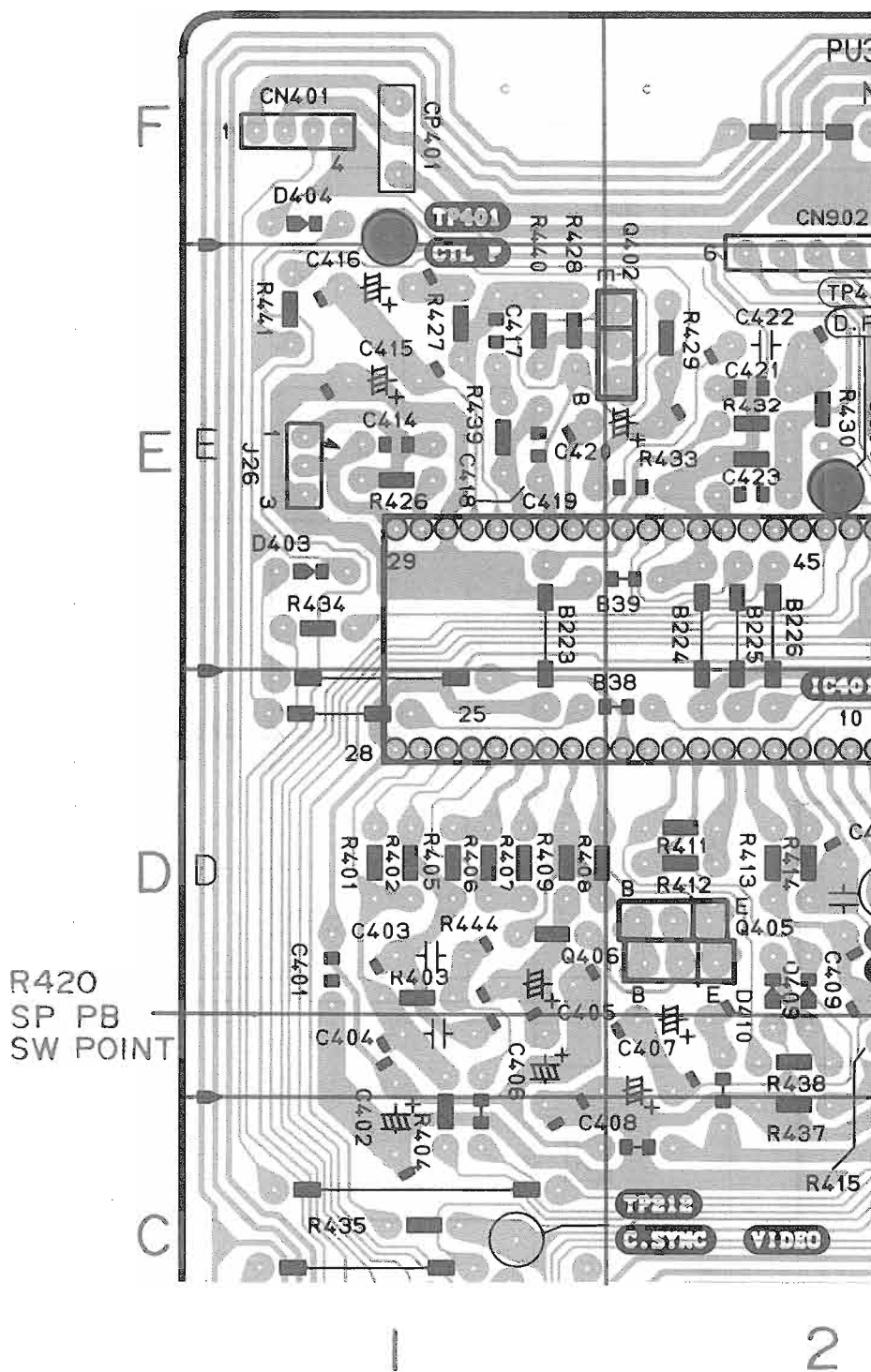
E

F

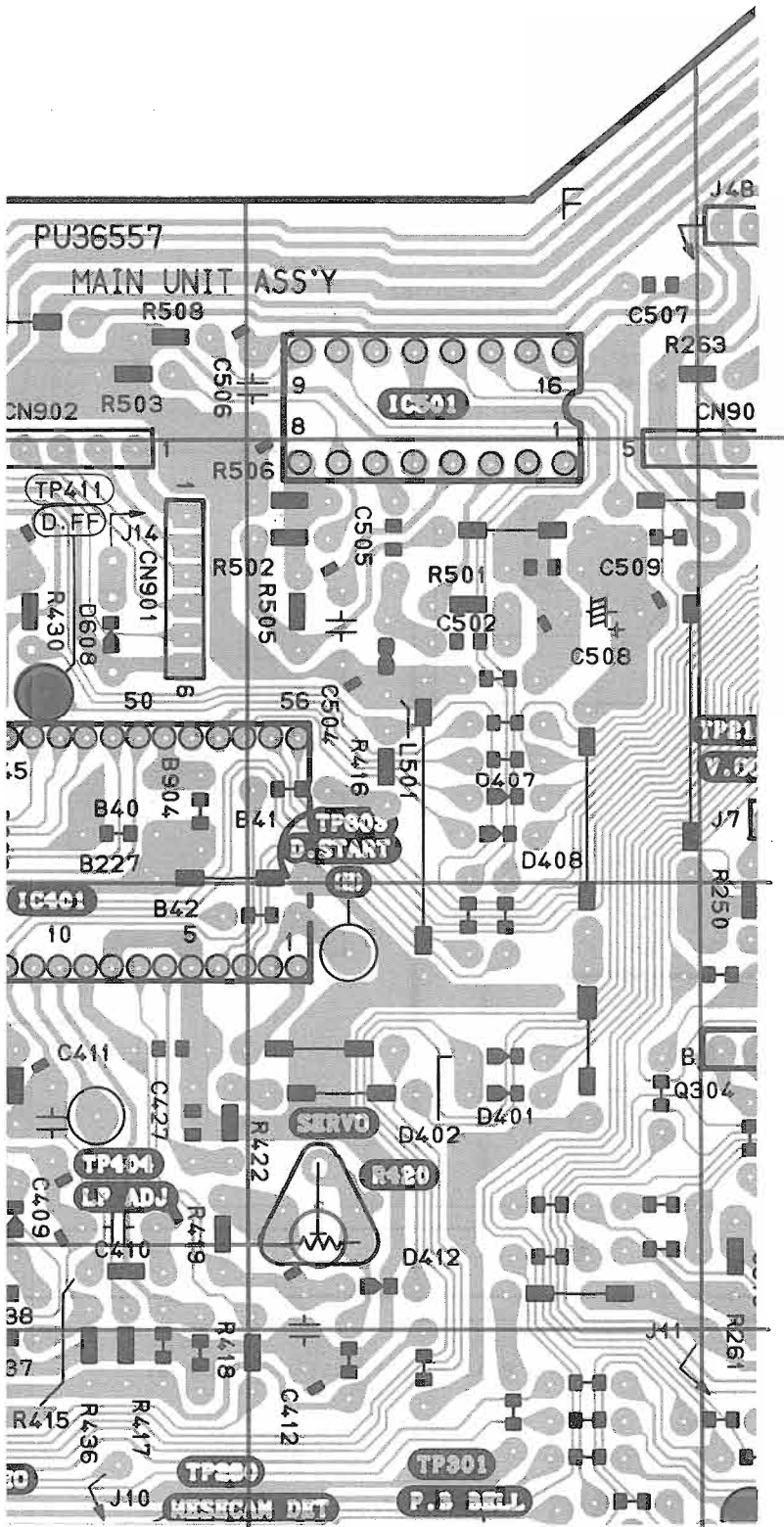
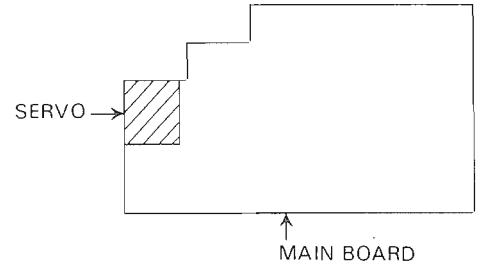
G

H

3.12 SERVO (MAIN) CIRCUIT BOARD



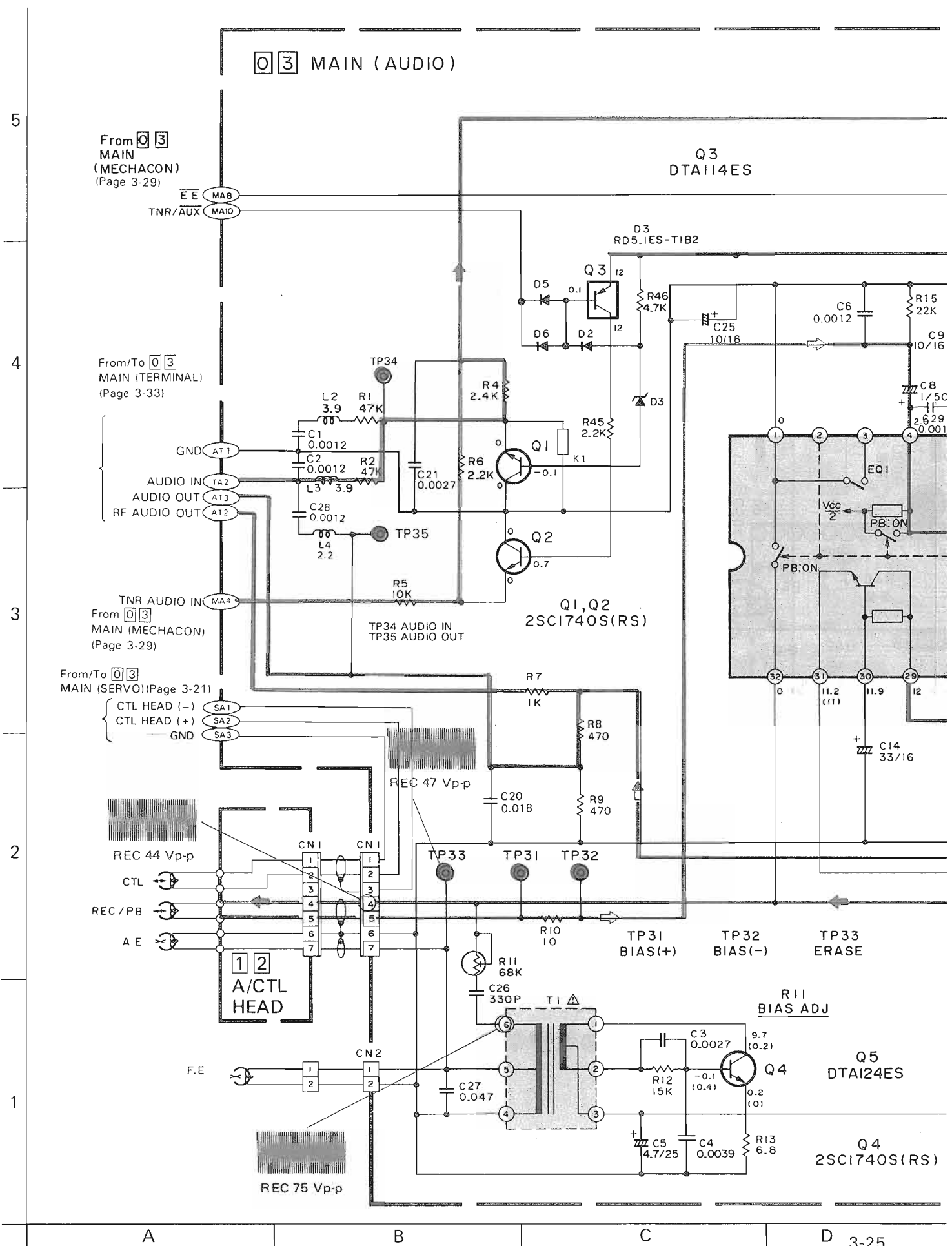
• MAIN board assembly is located in page 37,38

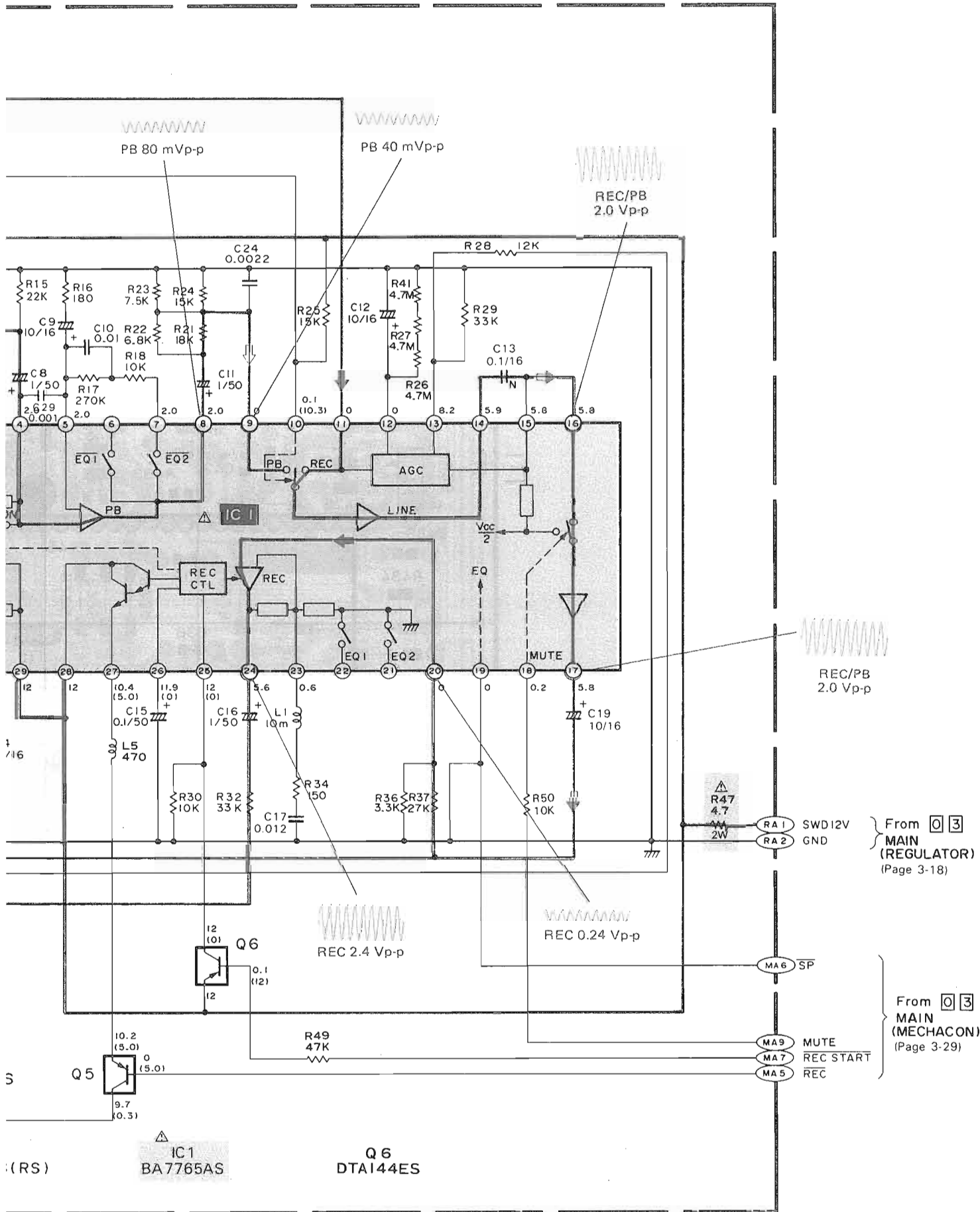


2

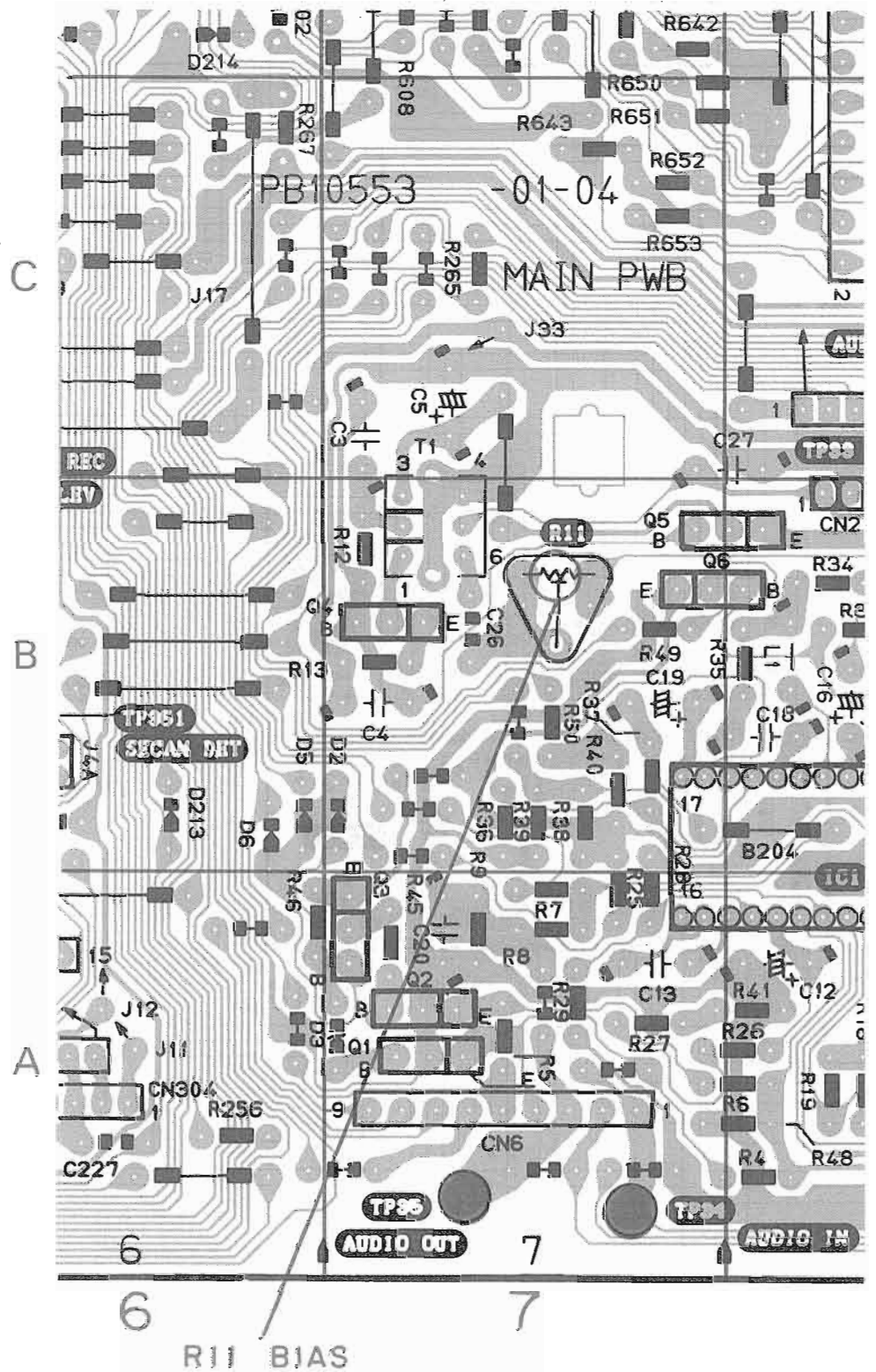
3

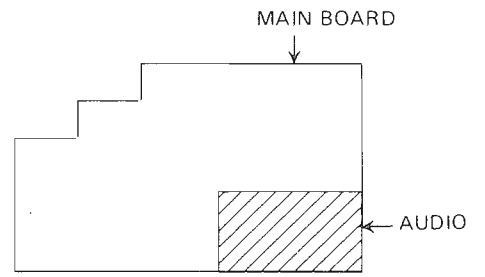
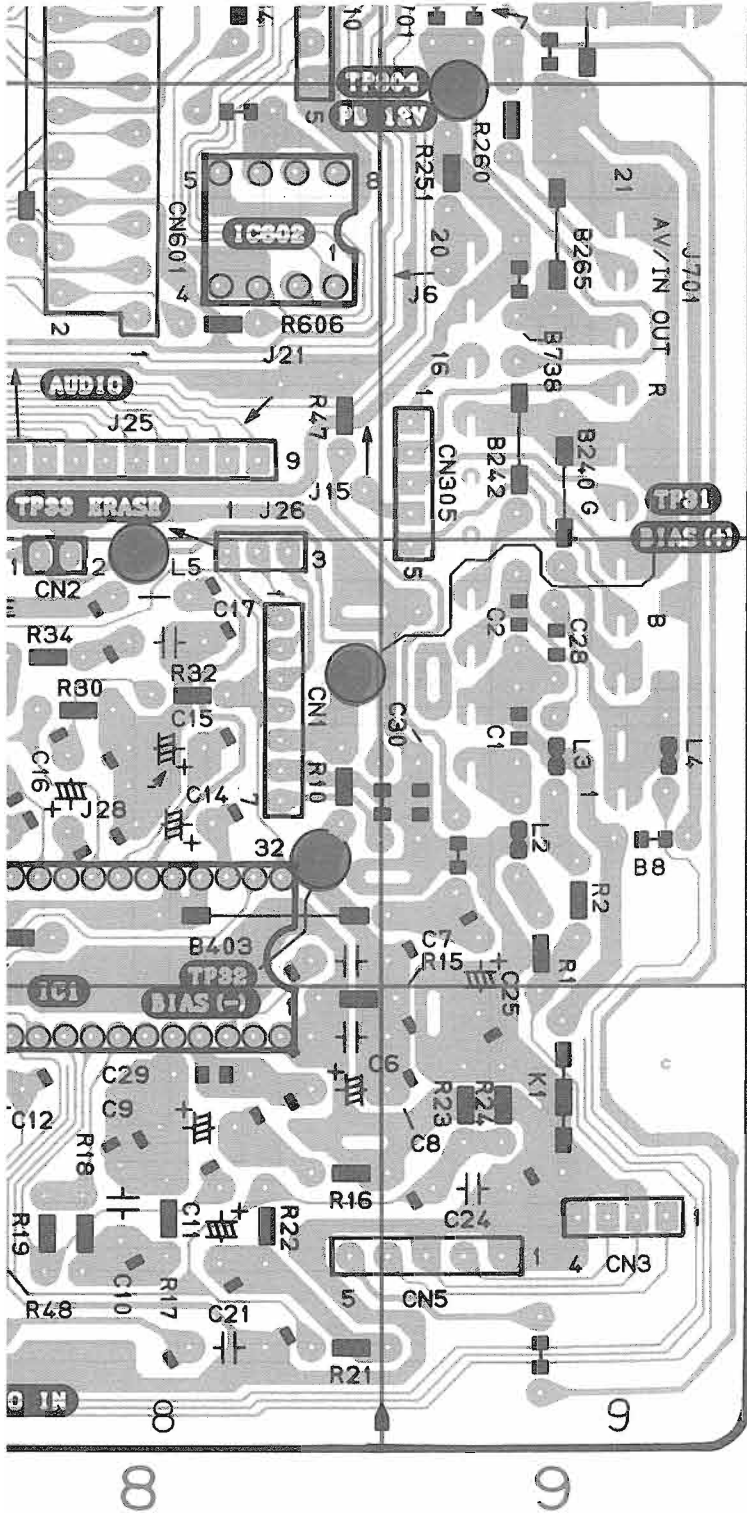
3.13 AUDIO SCHEMATIC DIAGRAM





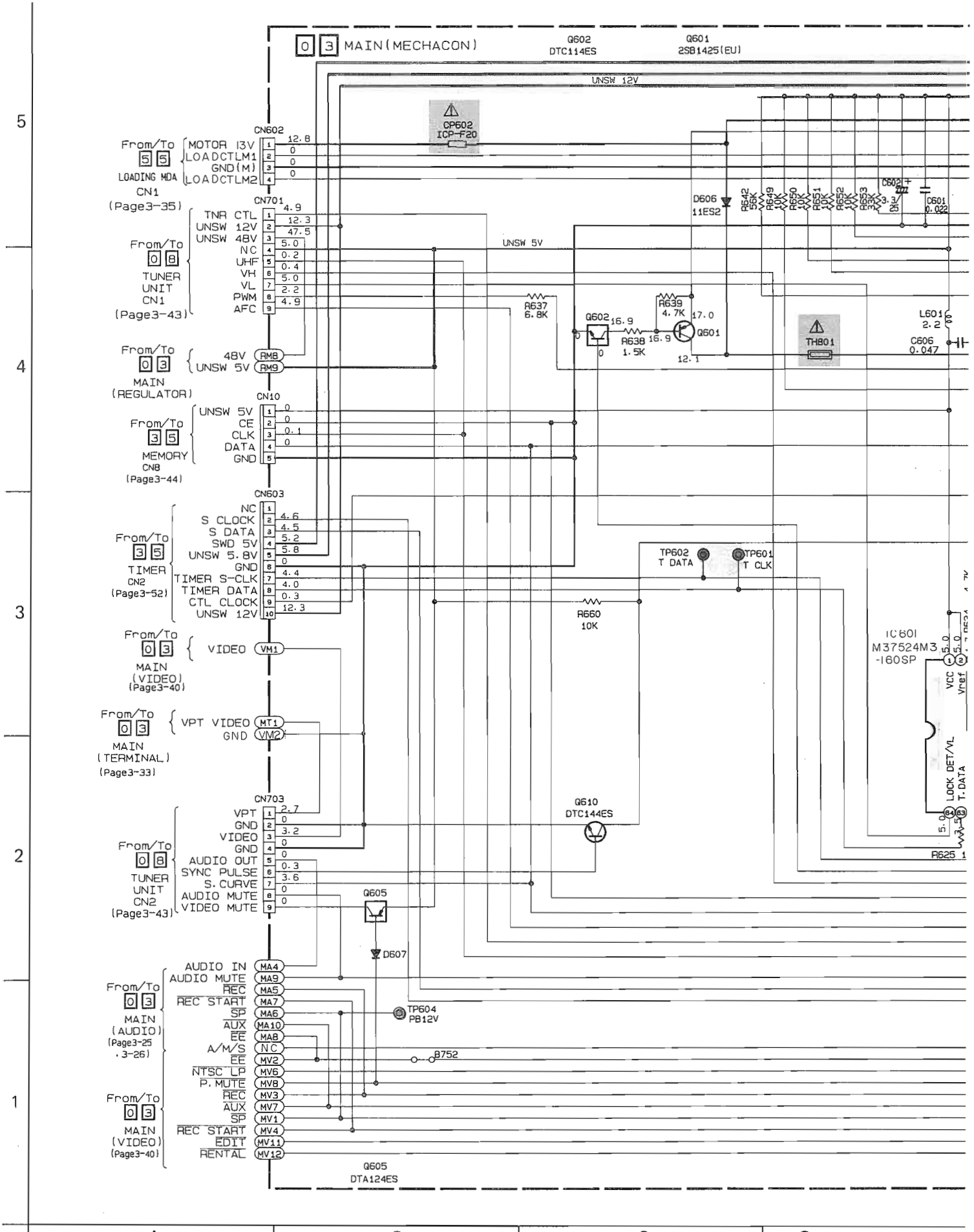
3.14 AUDIO (MAIN) CIRCUIT BOARD

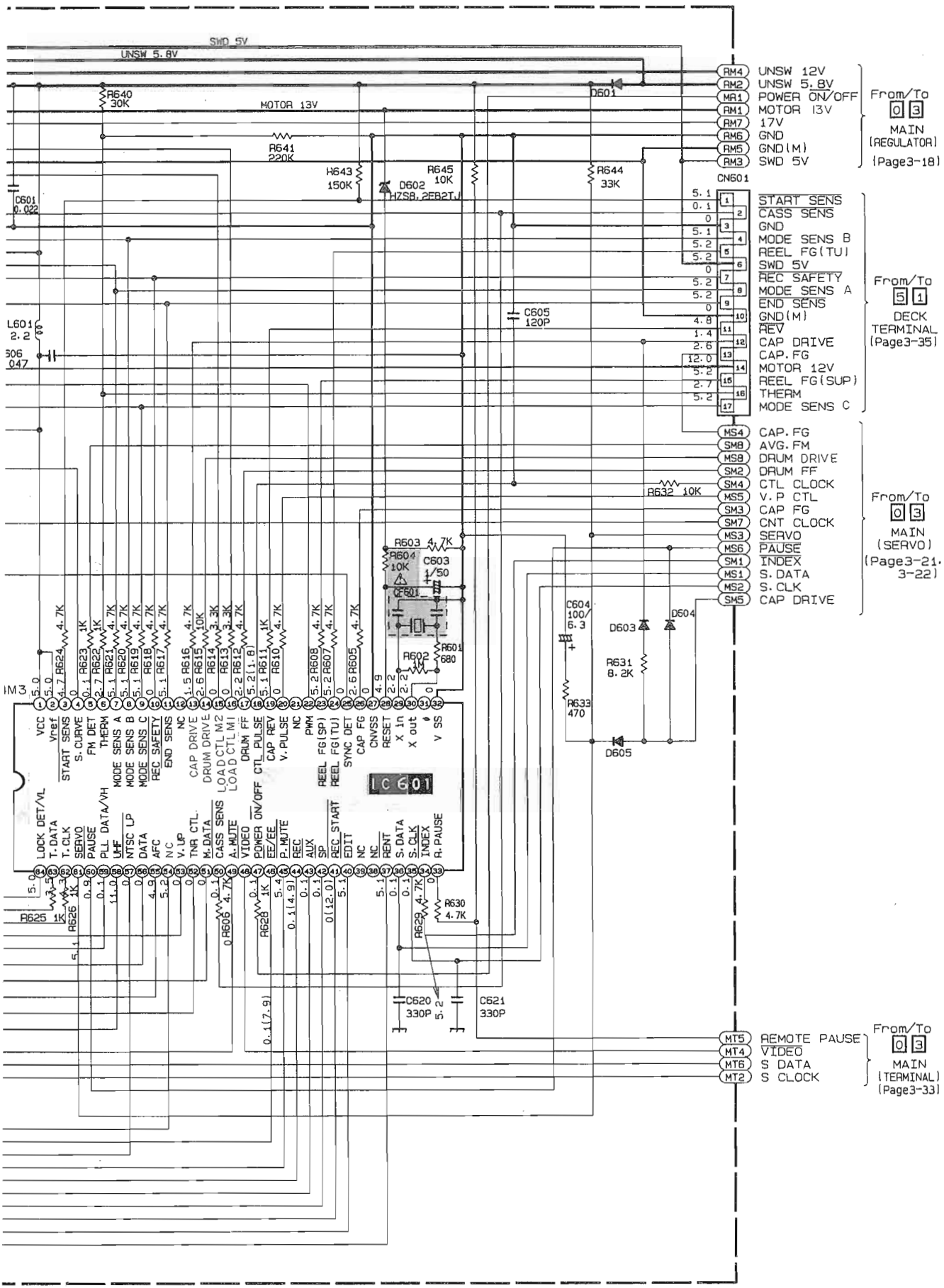




• MAIN board assembly is located in page 37,38

3.15 MECHACON SCHEMATIC DIAGRAM





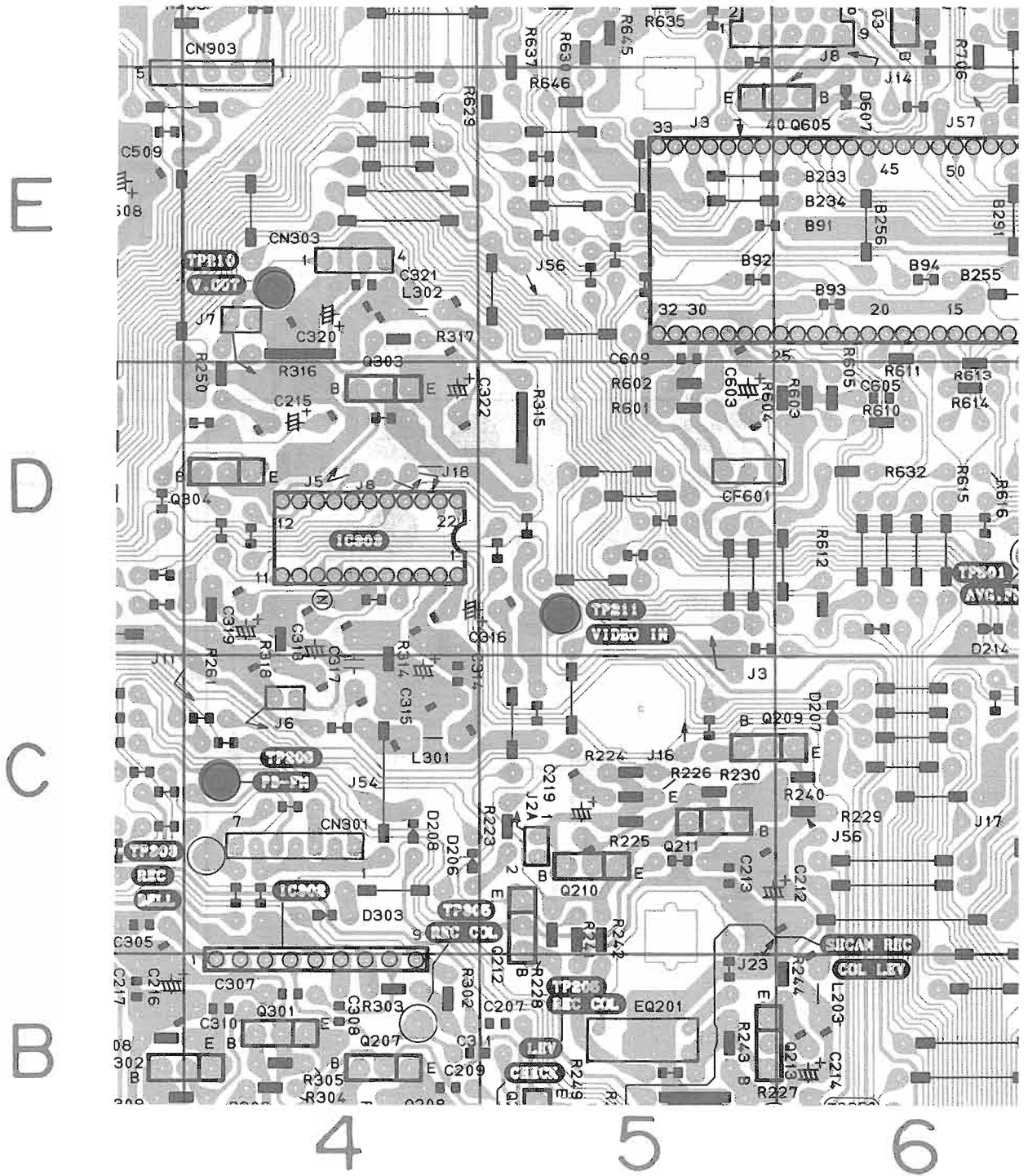
From/To
 0 3
 MAIN
 (REGULATOR)
 (Page3-18)

From/To
 5 1
 DECK
 TERMINAL
 (Page3-35)

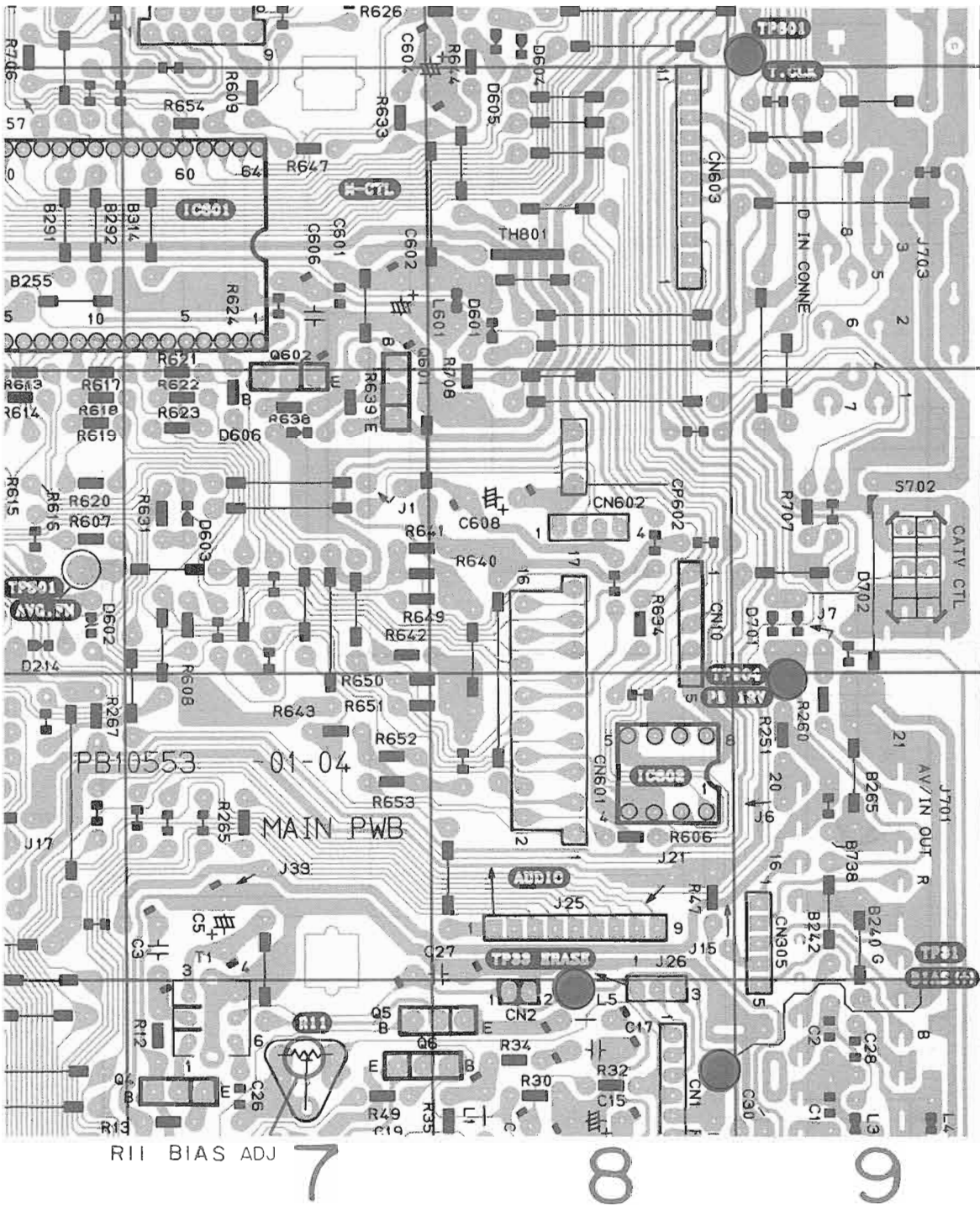
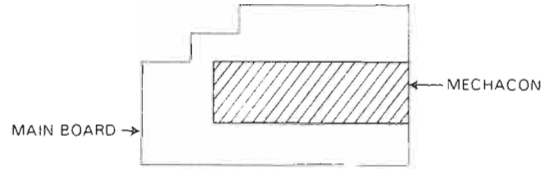
From/To
 0 3
 MAIN
 (SERVO)
 (Page3-21,
 3-22)

From/To
 0 3
 MAIN
 (TERMINAL)
 (Page3-33)

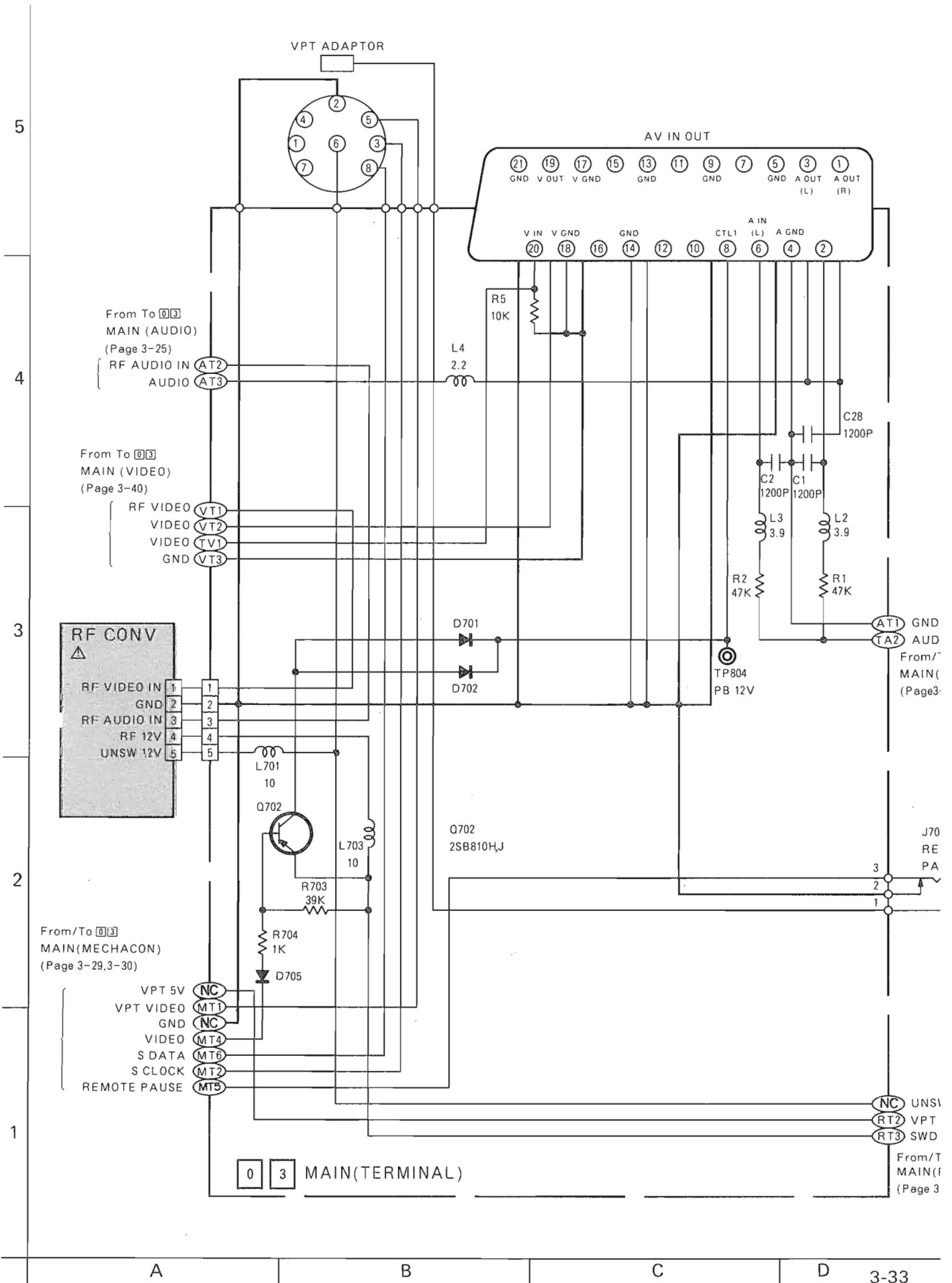
3.16 MECHACON (MAIN) CIRCUIT BOARD



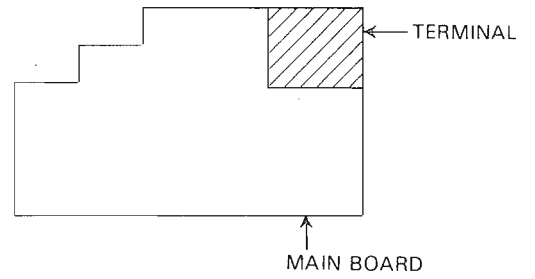
• MAIN board assembly is located in page 37,38



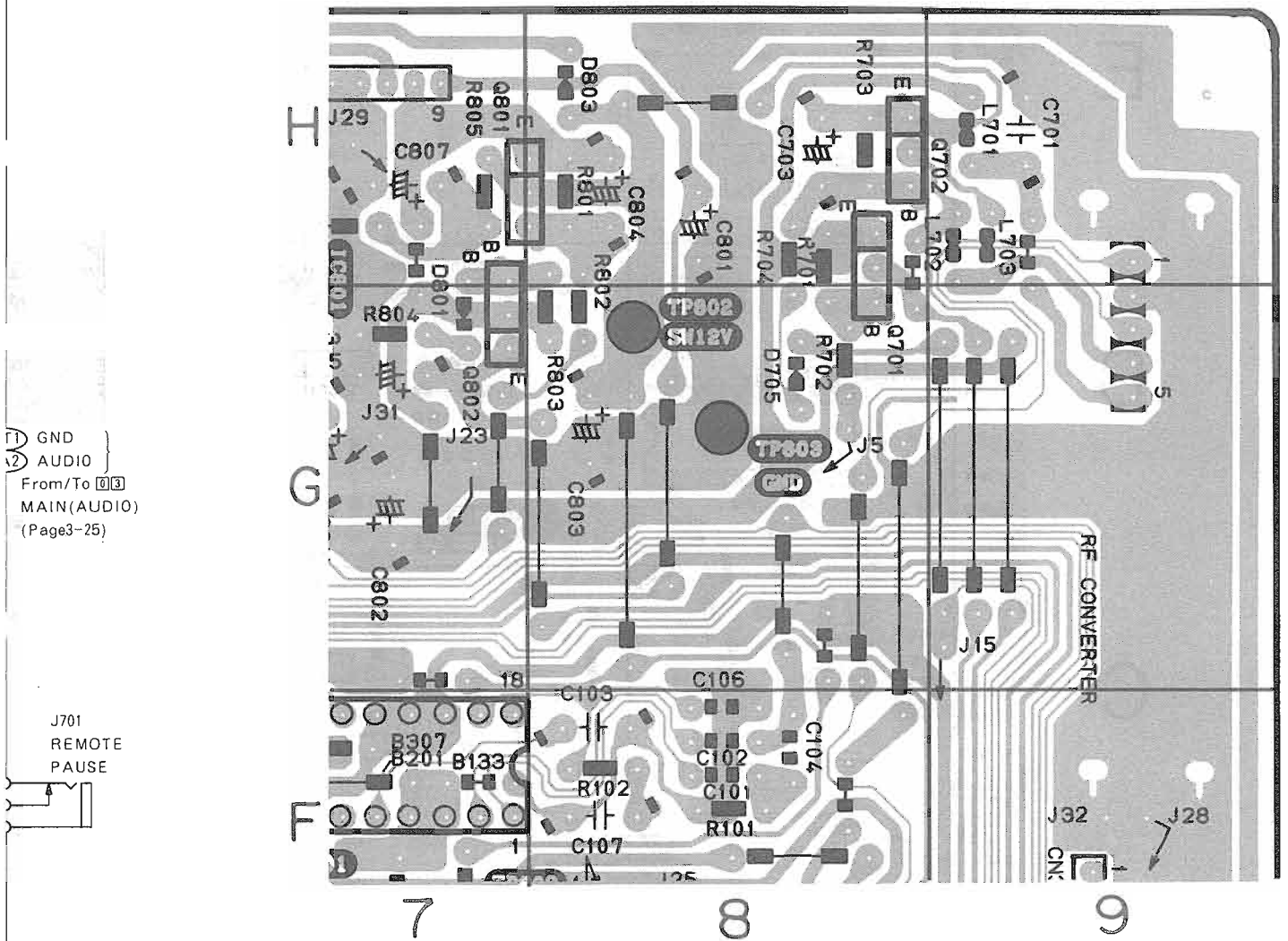
3.17 TERMINAL SCHEMATIC DIAGRAM



3.18 TERMINAL (MAIN) CIRCUIT BOARD



• MAIN board assembly is located in page 37,38



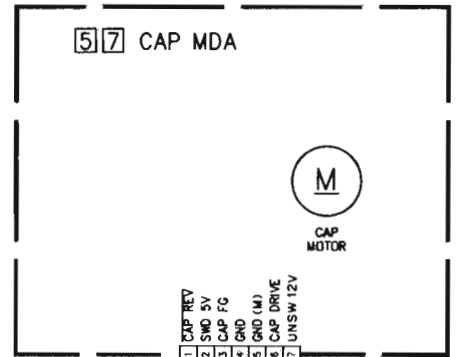
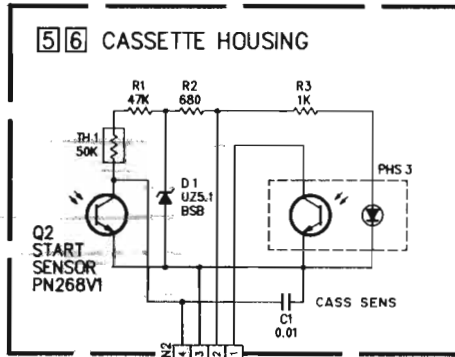
① GND
 ② AUDIO }
 From/To ③
 MAIN(AUDIO)
 (Page3-25)

J701
 REMOTE
 PAUSE

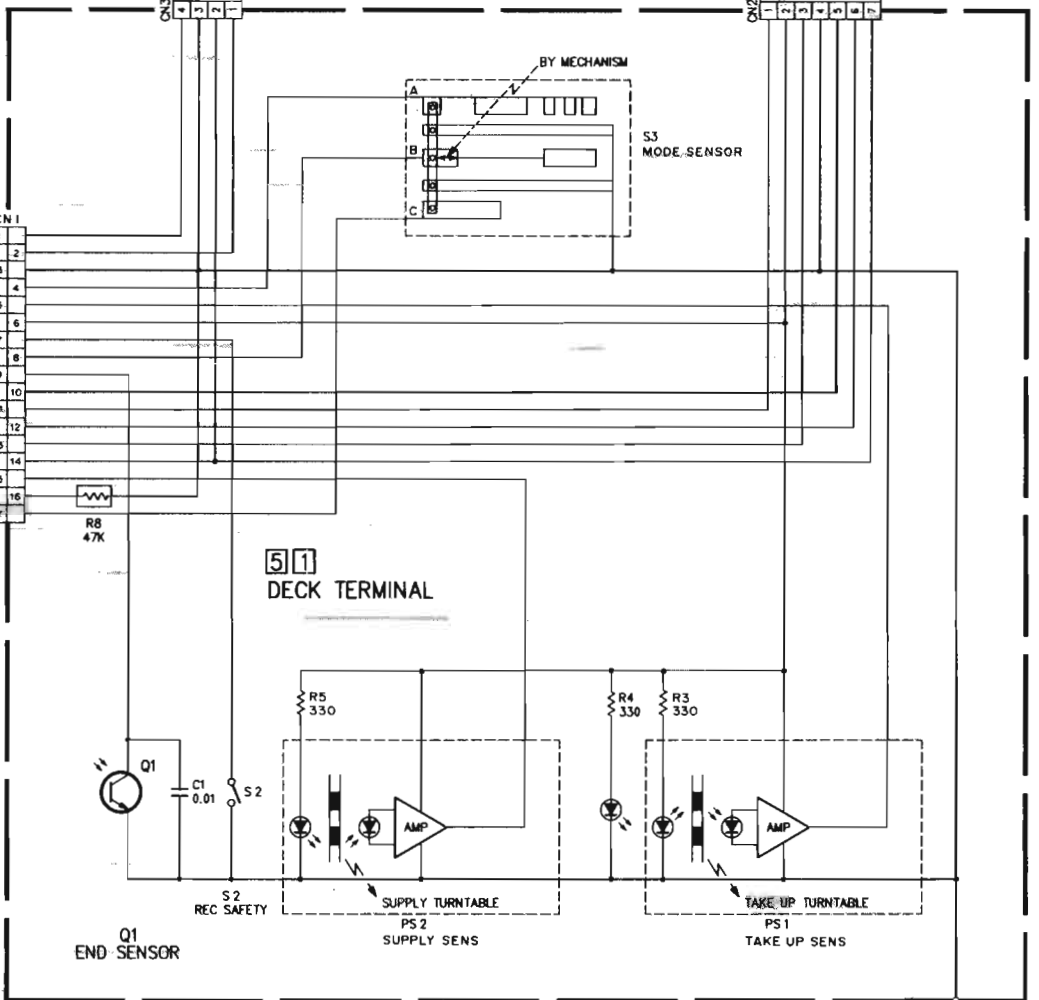
④ UNSW 12V
 ⑤ VPT 5V }
 ⑥ SWD 12V }
 From/To ③
 MAIN(P SUPPLY)
 (Page 3-18)

3.19 DECK TERMINAL, MODE MOTOR, CAPSTAN MDA AND CASS. HOUSING SCHEMATIC DIAGRAMS

5



4

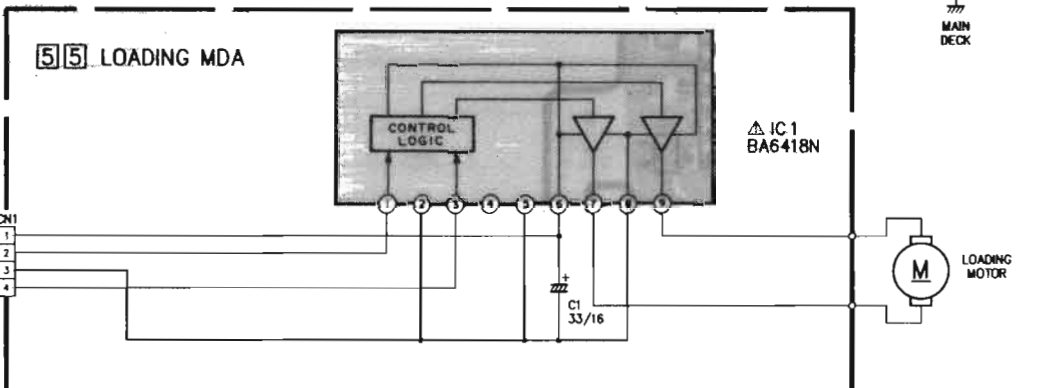


From/To 03
MECHACON (MAIN)
CN601
(Page 3 - 30)

3

2

1



From/To 03
MECHACON (MAIN)
CN602
(Page 3 - 29)

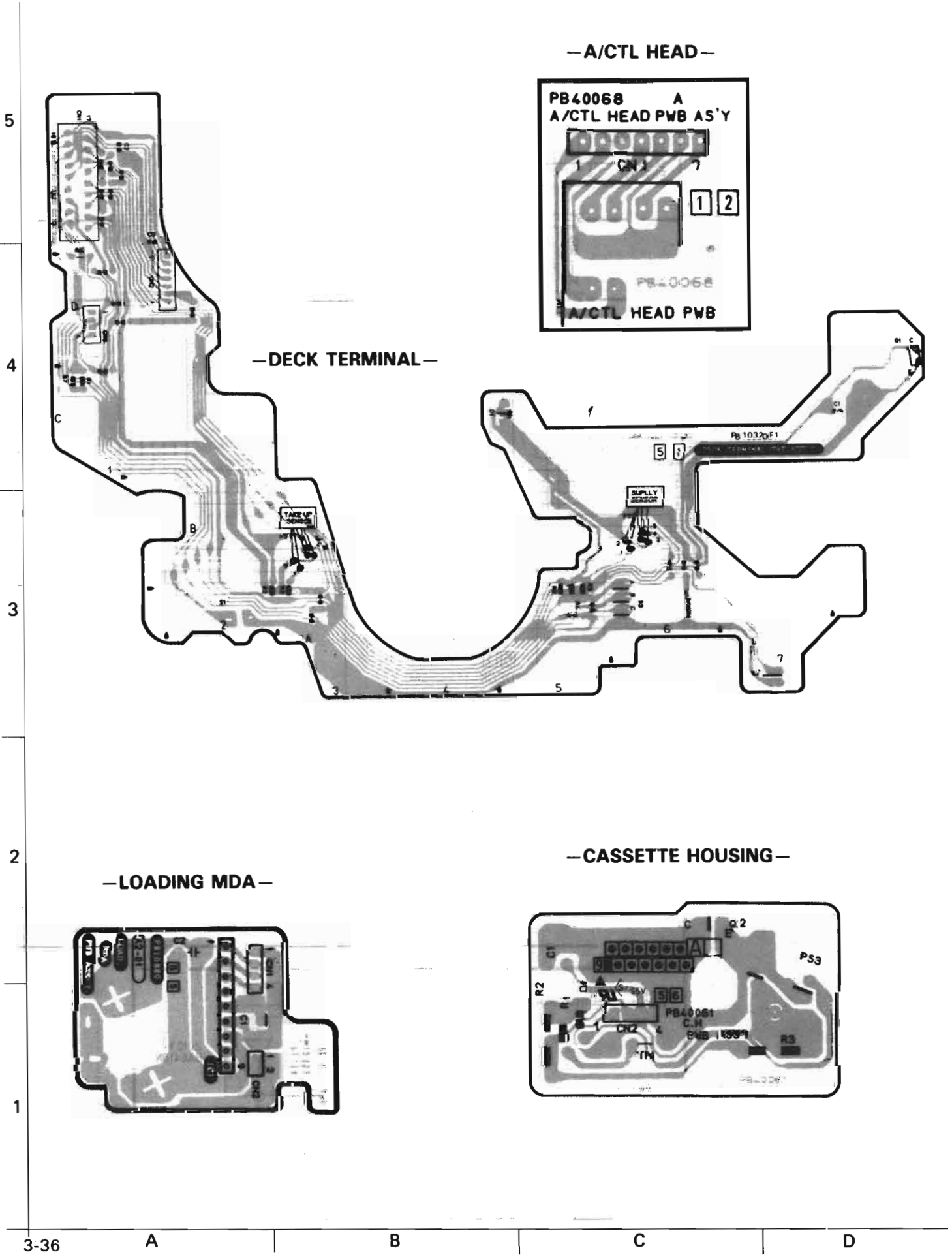
A

B

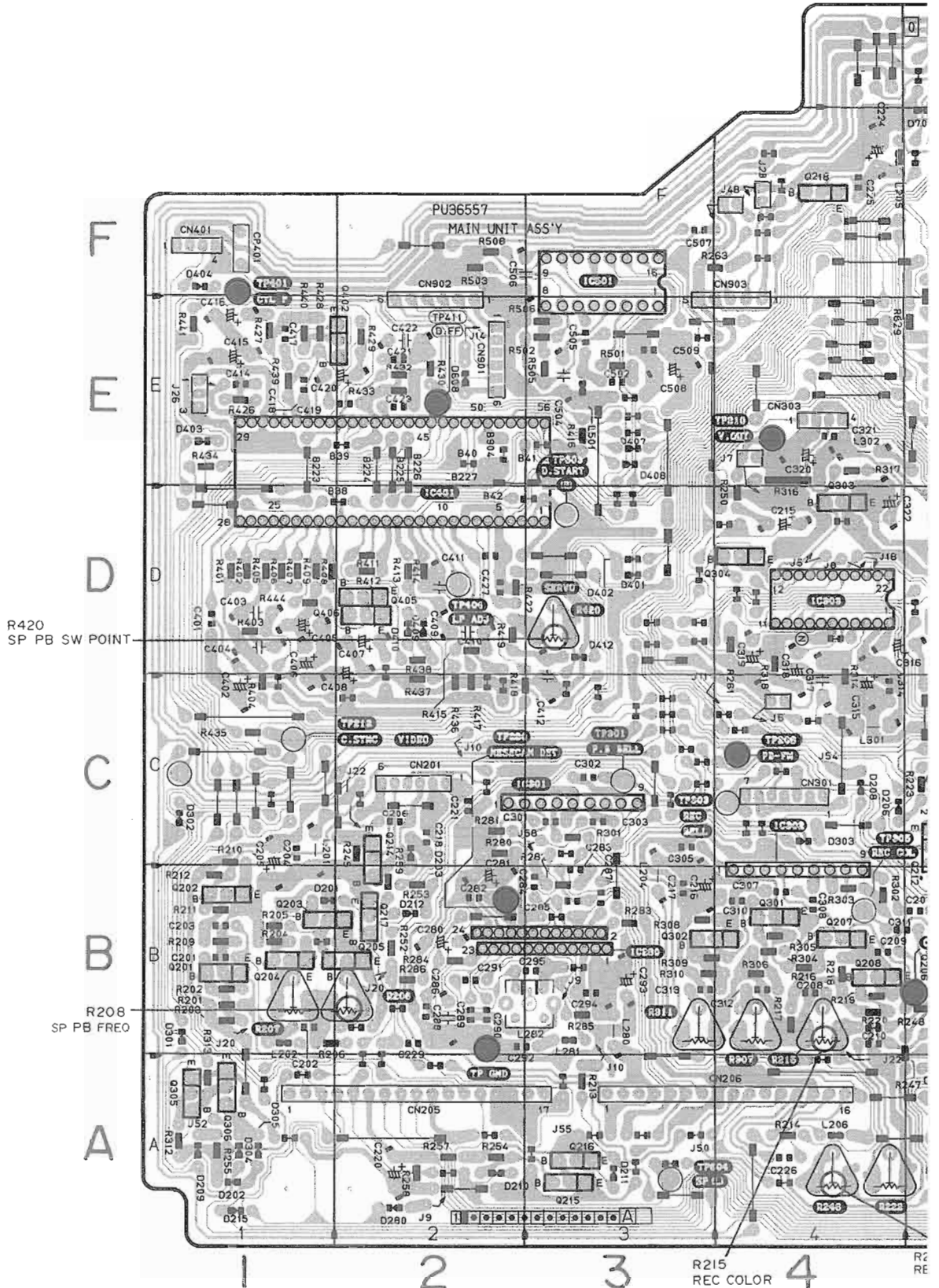
C

D

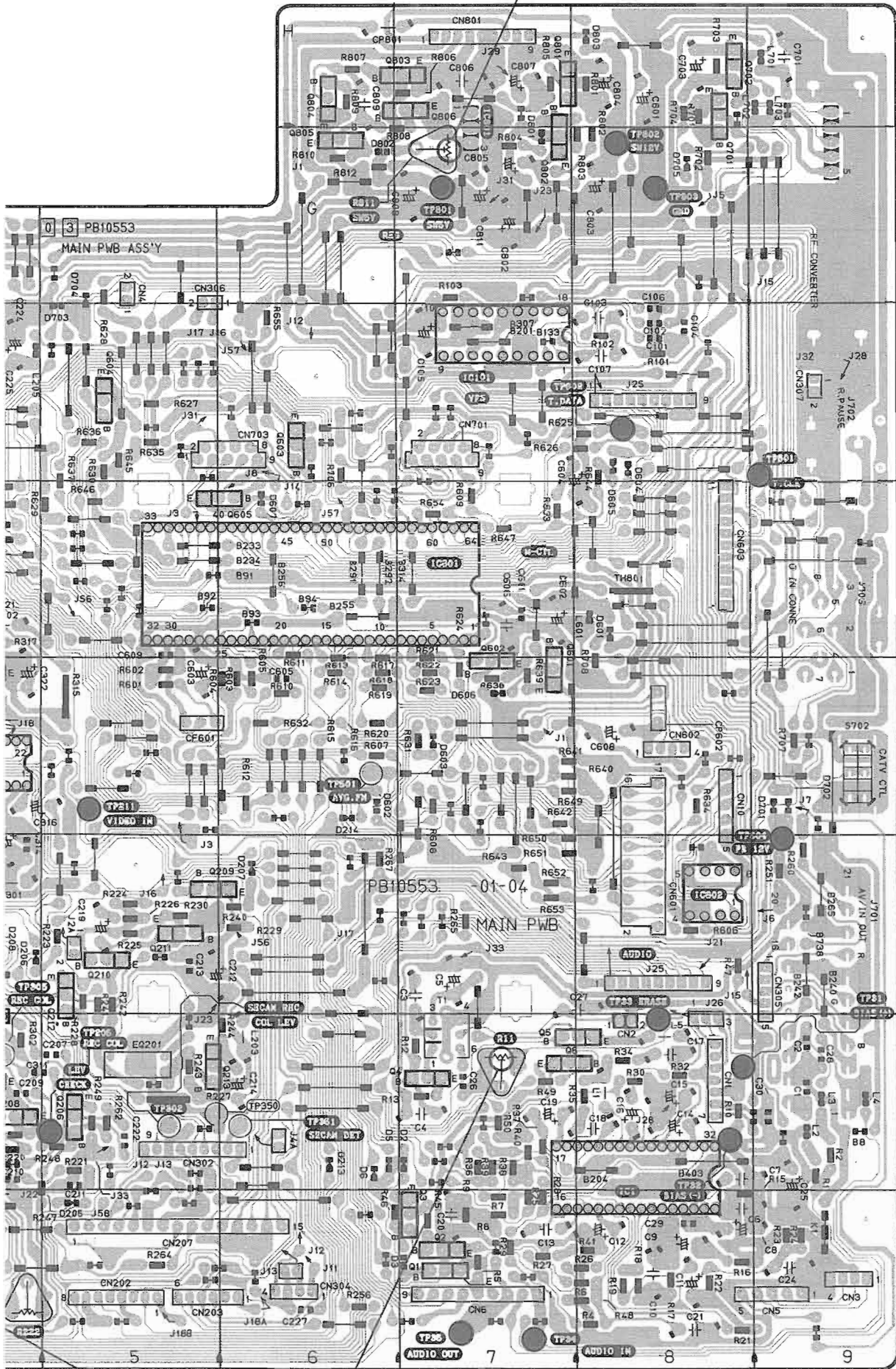
3.20 DECK TERMINAL, LOADING MDA, CASS. HOUSING AND A/CTL HEAD CIRCUIT BOARDS



3.21 MAIN CIRCUIT BOARD



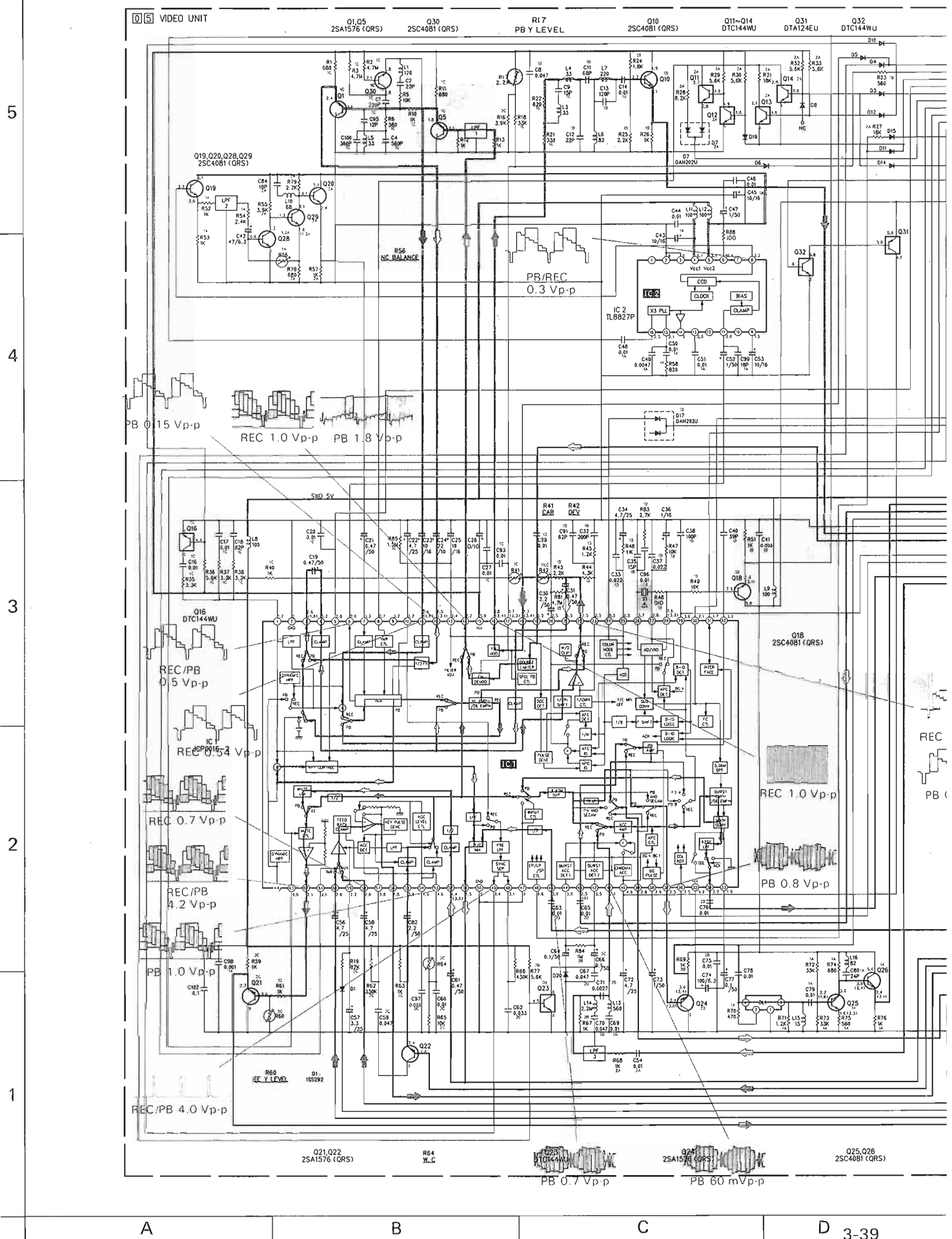
R811
SWD 5V



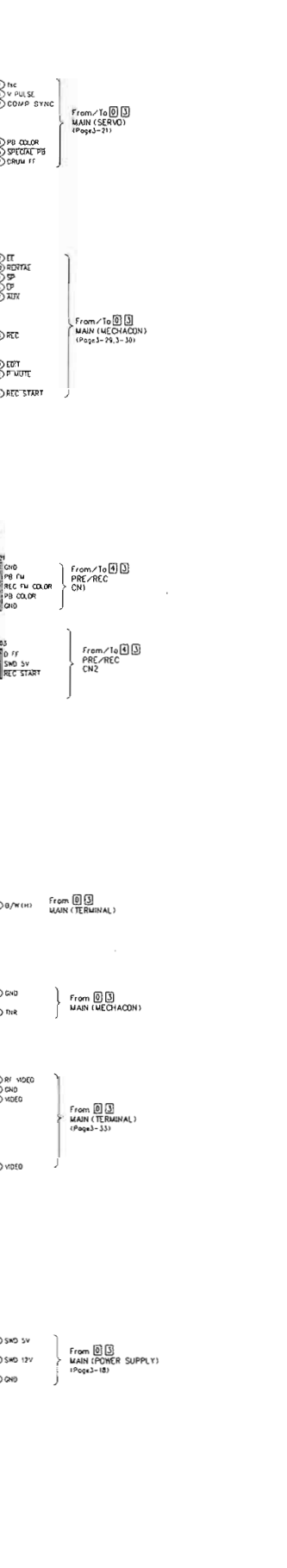
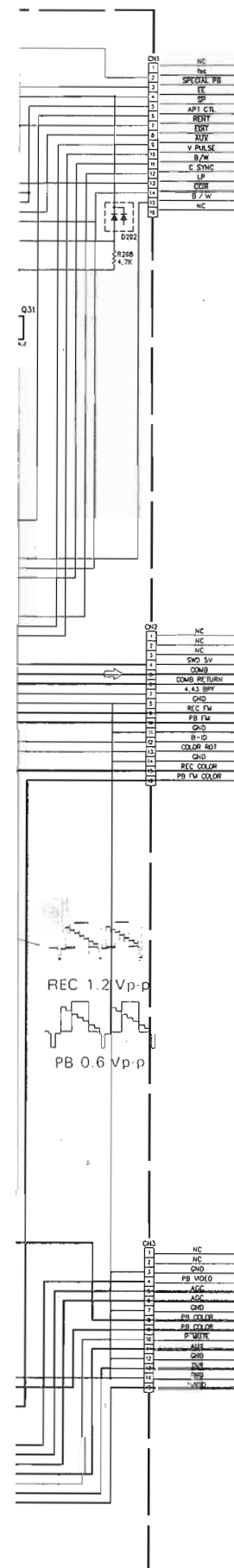
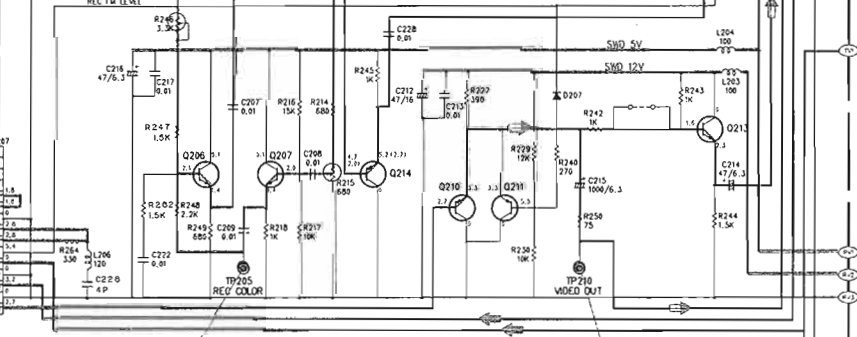
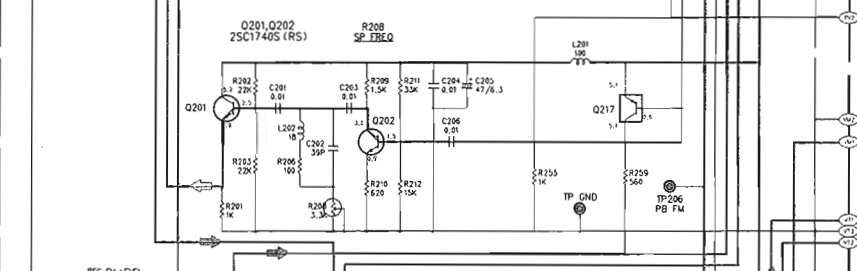
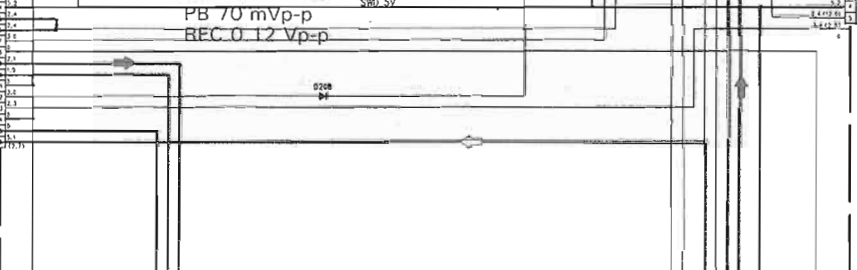
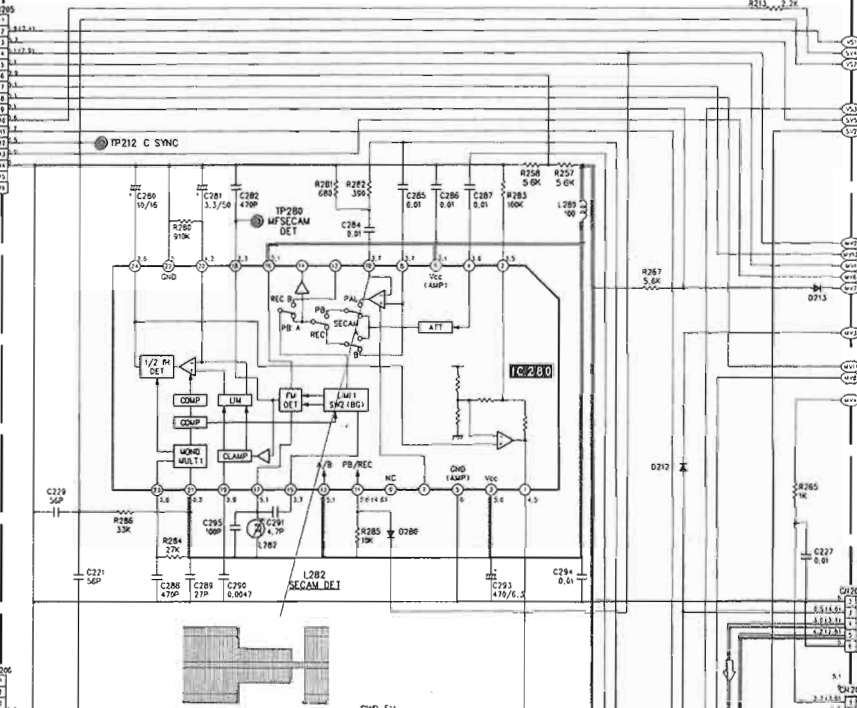
R246
REC FM ADJ

6 R11 BIAS ADJ

3.22 VIDEO UNIT & VIDEO (MAIN) SCHEMATIC DIAGRAMS

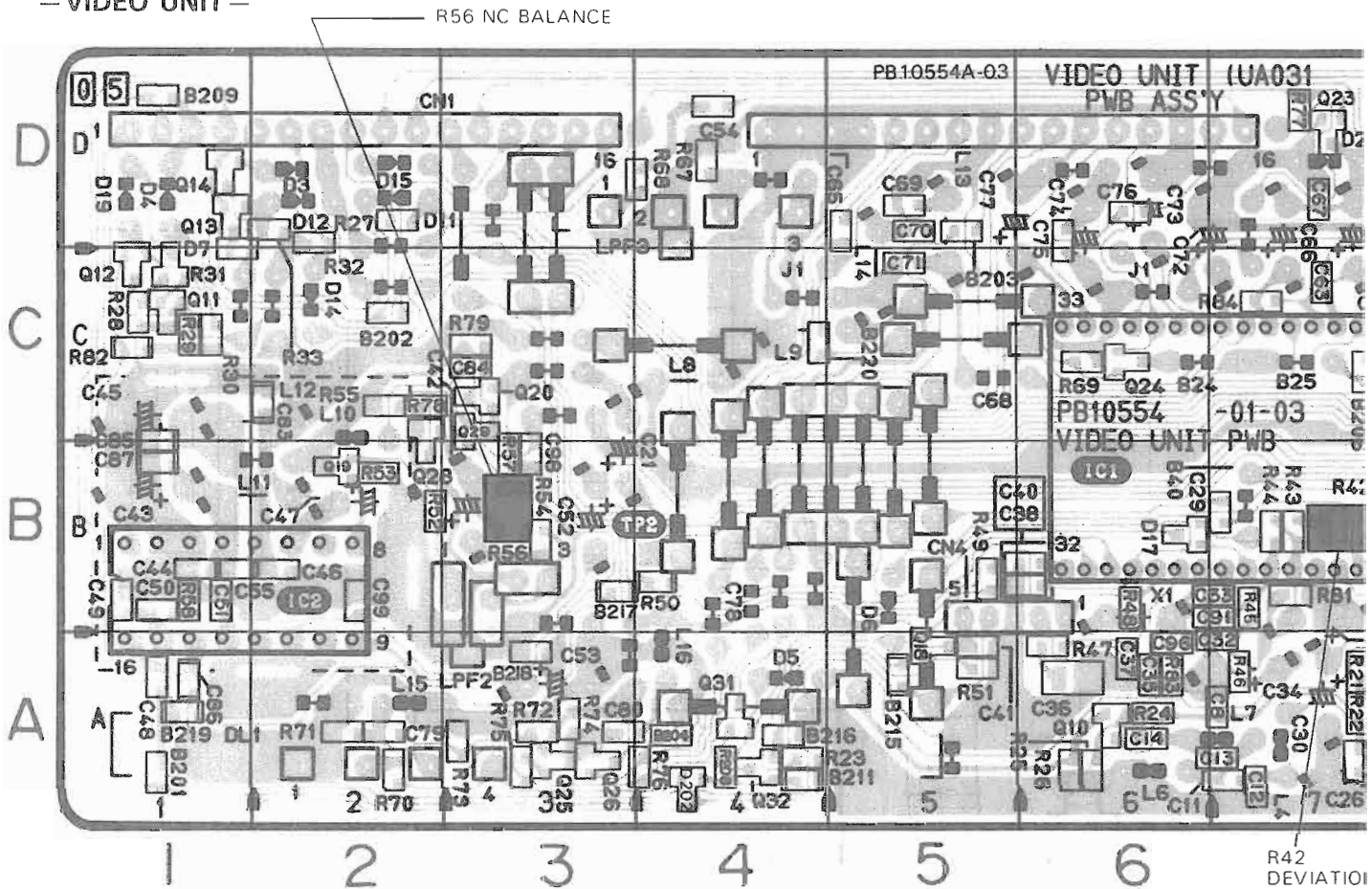


03 MAIN (VIDEO)
IC 280
BA7106LS



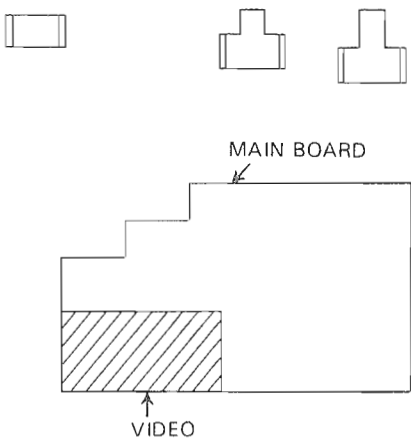
3.23 VIDEO UNIT & VIDEO (MAIN) CIRCUIT BOARDS

— VIDEO UNIT —

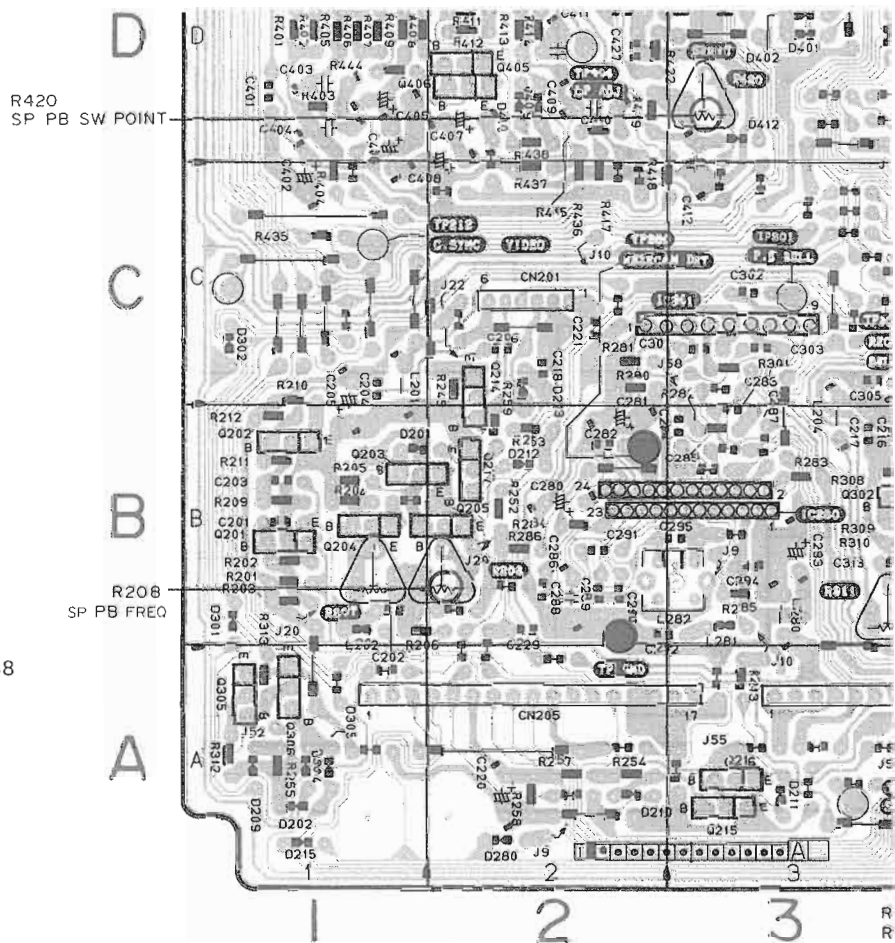


— VIDEO (MAIN) —

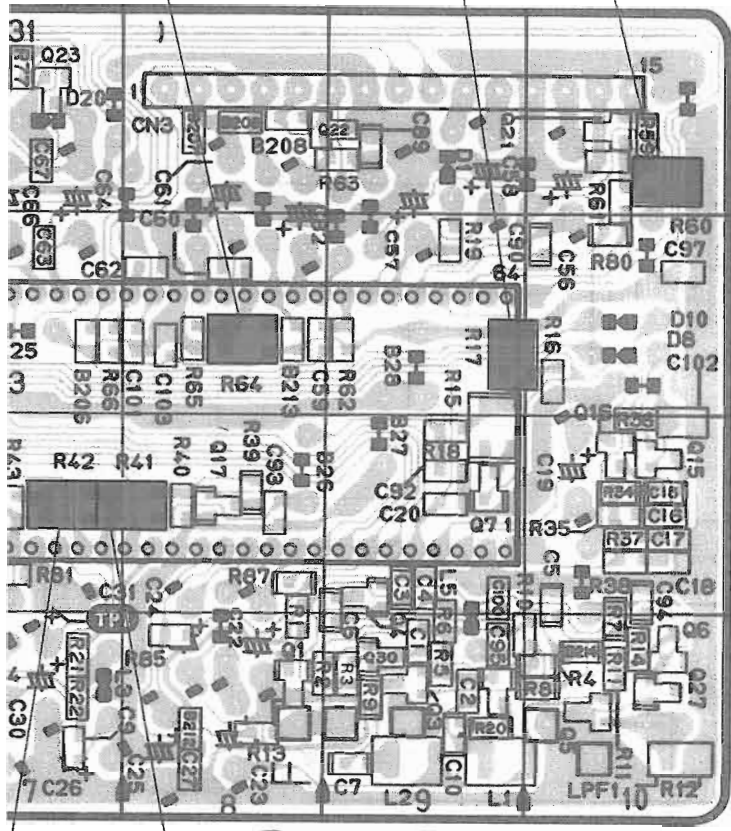
Note: Double edging indicates not used in this model.
Examples; Resistor, Capacitor, Transistor, DIODE



• MAIN board assembly is located in page 37,38



R64 WHITE CLIP
R17 PB Y LEVEL
R60 EE Y LEVEL

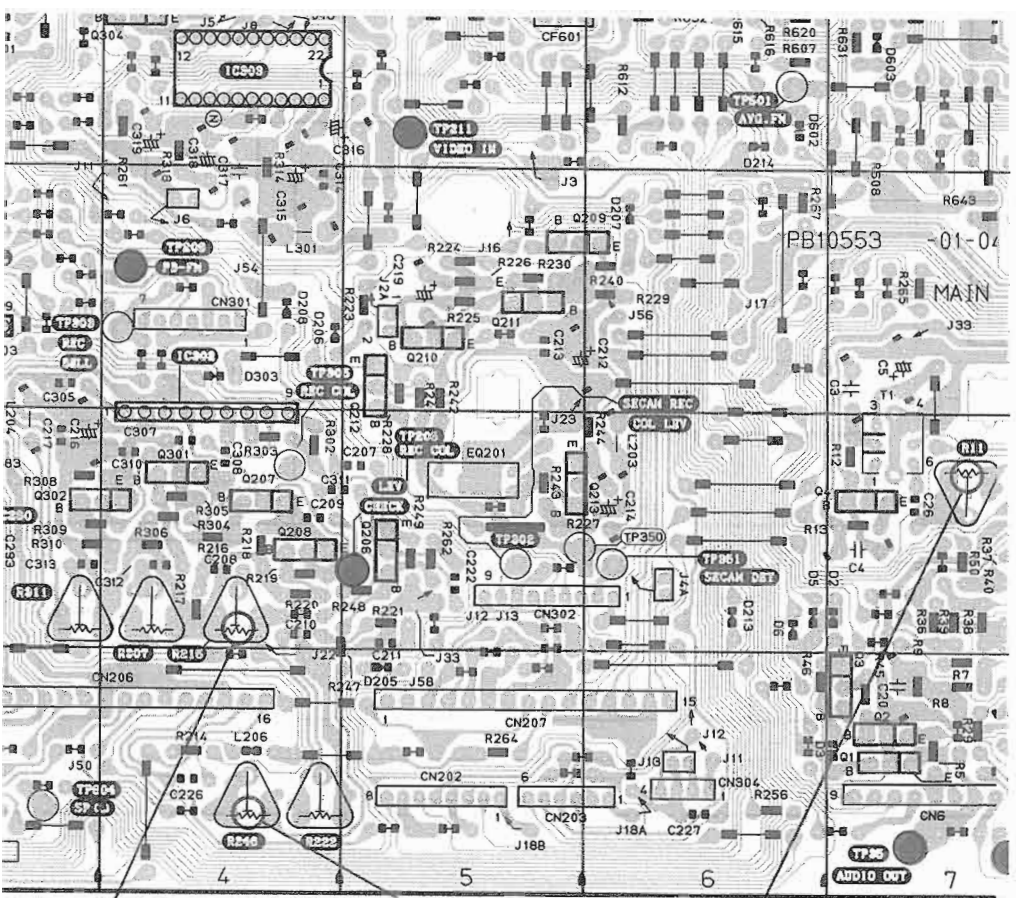


— VIDEO UNIT —

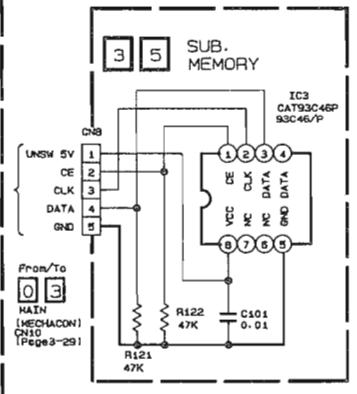
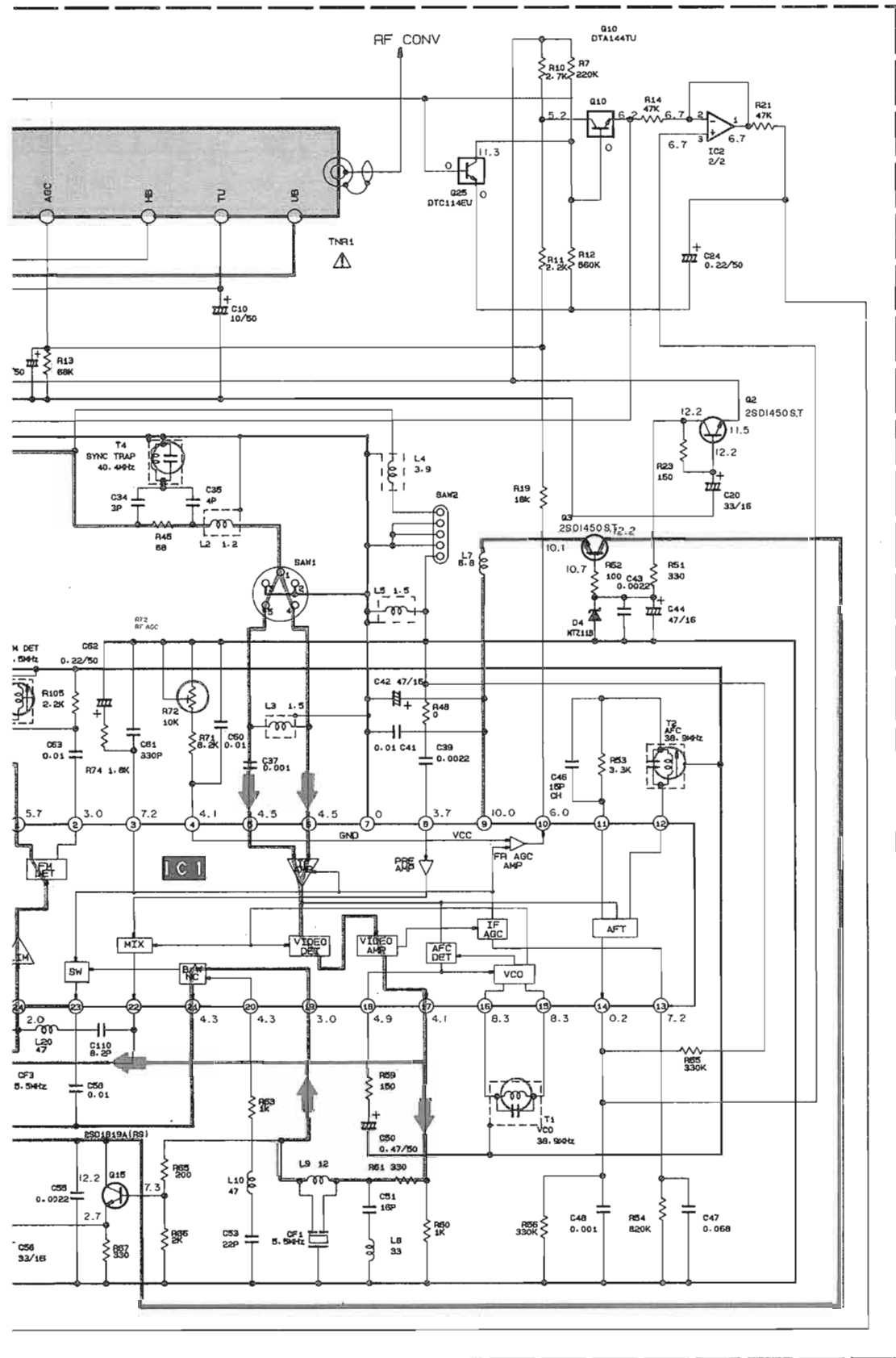
• Only chip parts

REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION
TRANSISTOR		RESISTOR		RESISTOR		RESISTOR		CAPACITOR	
Q1	A8	R1	B8	R44	B7	R79	C3	C44	B1
Q5	A10	R2	A9	R45	B7	R81	B7	C46	B2
Q10	A6	R3	A9	R46	A7	R83	A6	C48	A1
Q11	C1	R5	A9	R47	A6	R84	C7	C49	B1
Q12	C1	R6	B9	R48	B6	R85	A8	C50	B1
Q13	D1	R10	A9	R49	B5	R208	A4	C51	B1
Q14	D1	R11	A10	R51	A5			C54	D4
Q16	B10	R12	A10	R52	B2			C59	C8
Q18	A5	R13	A8	R53	B2	CAPACITOR		C60	C8
Q19	B2	R16	C10	R54	B3	C1	A9	C62	C8
Q20	C3	R18	B9	R55	C2	C2	A9	C63	C7
Q21	D10	R19	C9	R57	B3	C4	B9	C65	D5
Q22	D9	R21	A7	R58	B1	C8	A7	C67	D7
Q23	D7	R22	A7	R59	D10	C9	A7	C69	D5
Q24	C6	R23	A4	R61	D10	C11	A7	C70	D5
Q25	A3	R24	A6	R62	C9	C12	A7	C71	C5
Q26	A3	R25	A6	R63	D9	C13	A7	C75	D6
Q28	B2	R26	A6	R65	C8	C14	A6	C76	D6
Q29	C3	R27	D2	R66	C7	C16	B10	C79	A2
Q30	A9	R28	C1	R67	D4	C17	B10	C80	A3
		R29	C1	R68	D4	C18	B10	C84	C3
		R30	C1	R69	C6	C20	B9	C91	B7
		R31	C1	R70	A2	C27	A8	C93	B8
		R32	C2	R71	A2	C29	B7	C95	A9
DIODE		R33	D2	R72	A3	C32	A7	C96	A6
D7	C1	R35	B10	R73	A3	C33	B6	C97	C10
D202	A4	R36	B10	R74	A3	C35	A6	C98	B3
		R37	B10	R75	A3	C37	A6	C99	B2
		R38	B10	R76	A4	C38	B6	C100	B9
		R40	B8	R77	D7	C40	B6		
		R43	B7	R78	C2	C41	A5		

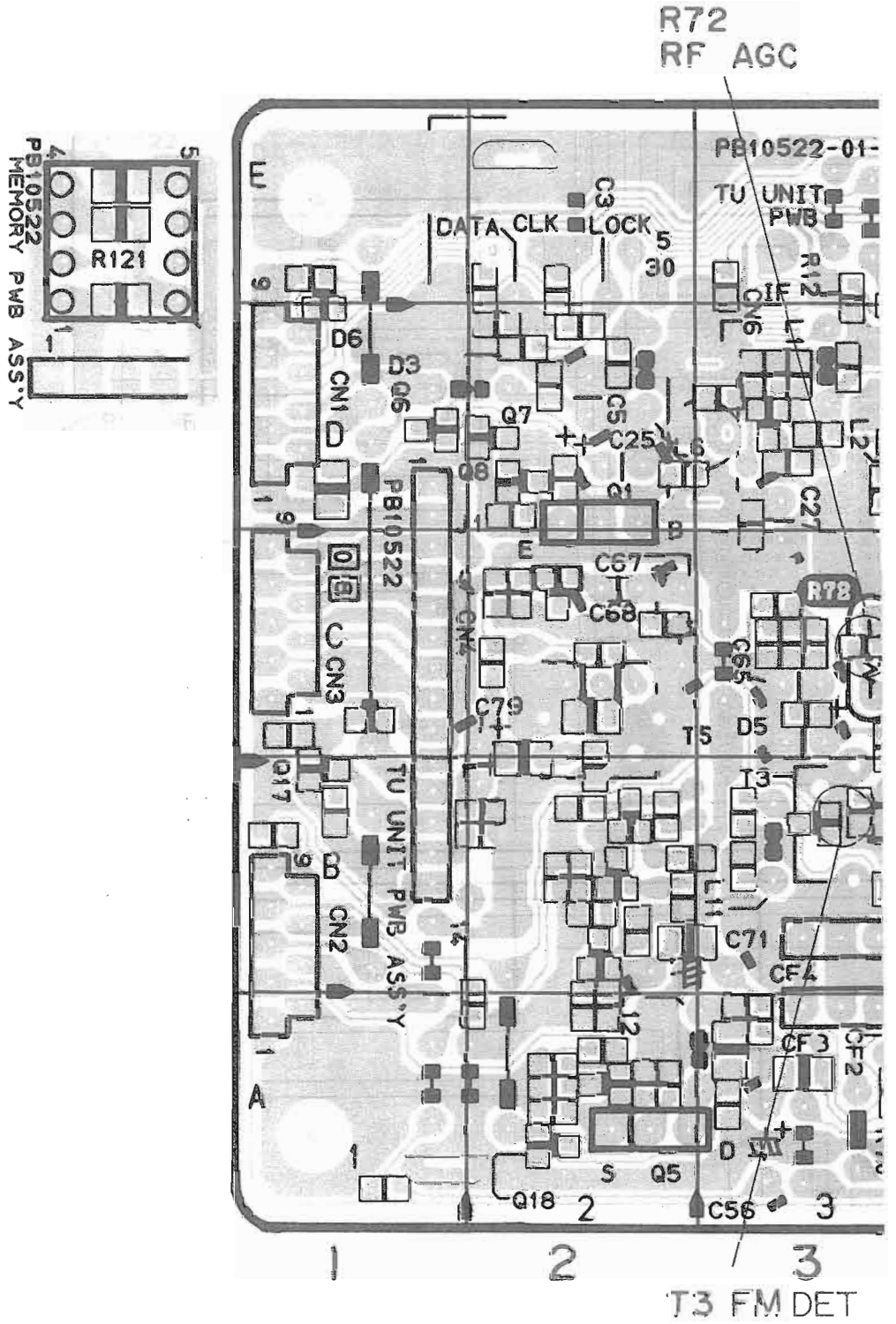
2 VIATION
R41 CARRIER
8 9 10



R215 REC COLOR 4
R246 REC FM ADJ 5
R11 BIAS ADJ 6
7



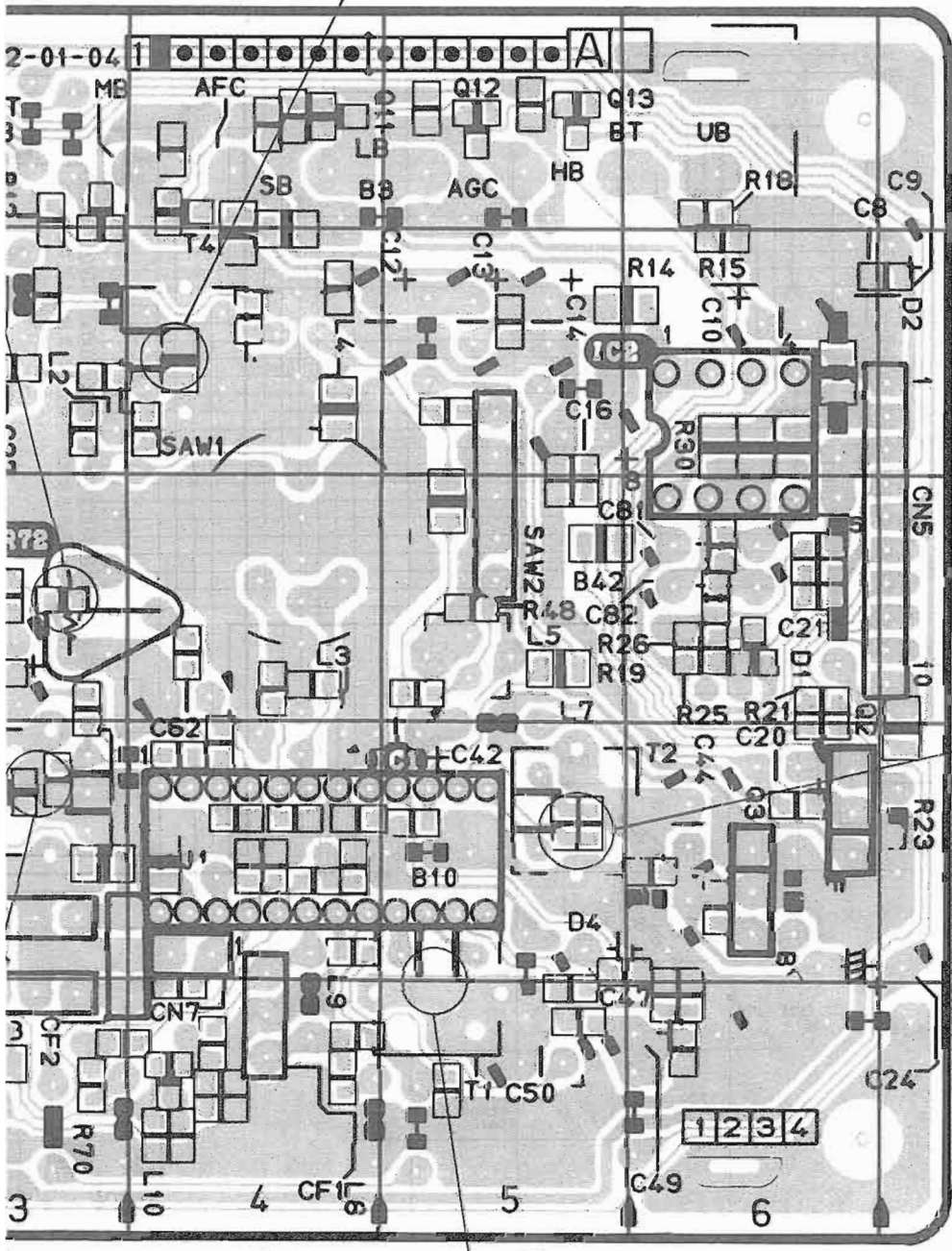
3.25 TUNER UNIT CIRCUIT BOARD



Note: Double edging indicates not used in this model.
 Examples; Resistor, Capacitor, Transistor, DIODE



T4
 SYNC TRAP



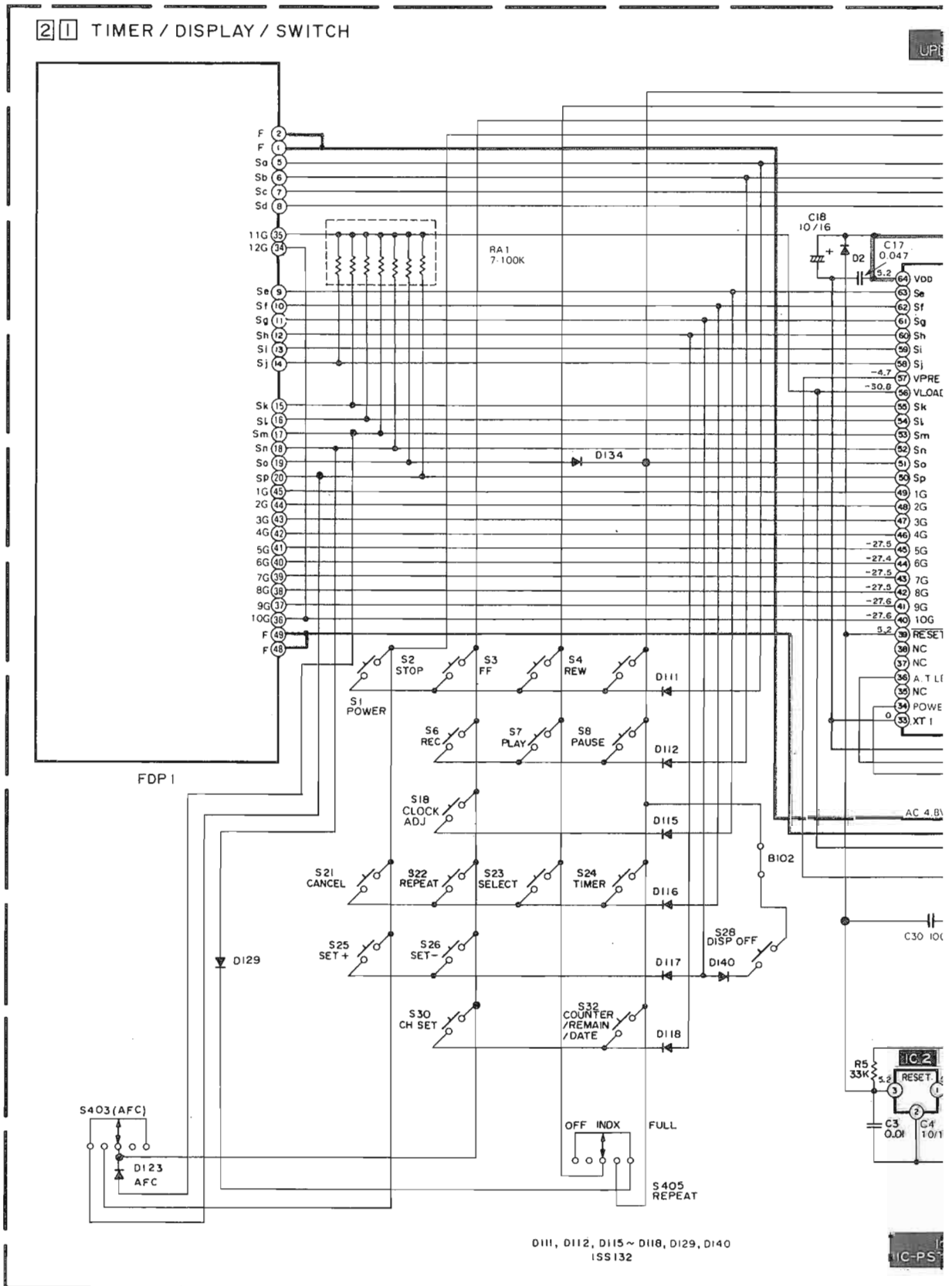
E
 D
 C
 B
 A

T2
 AFC

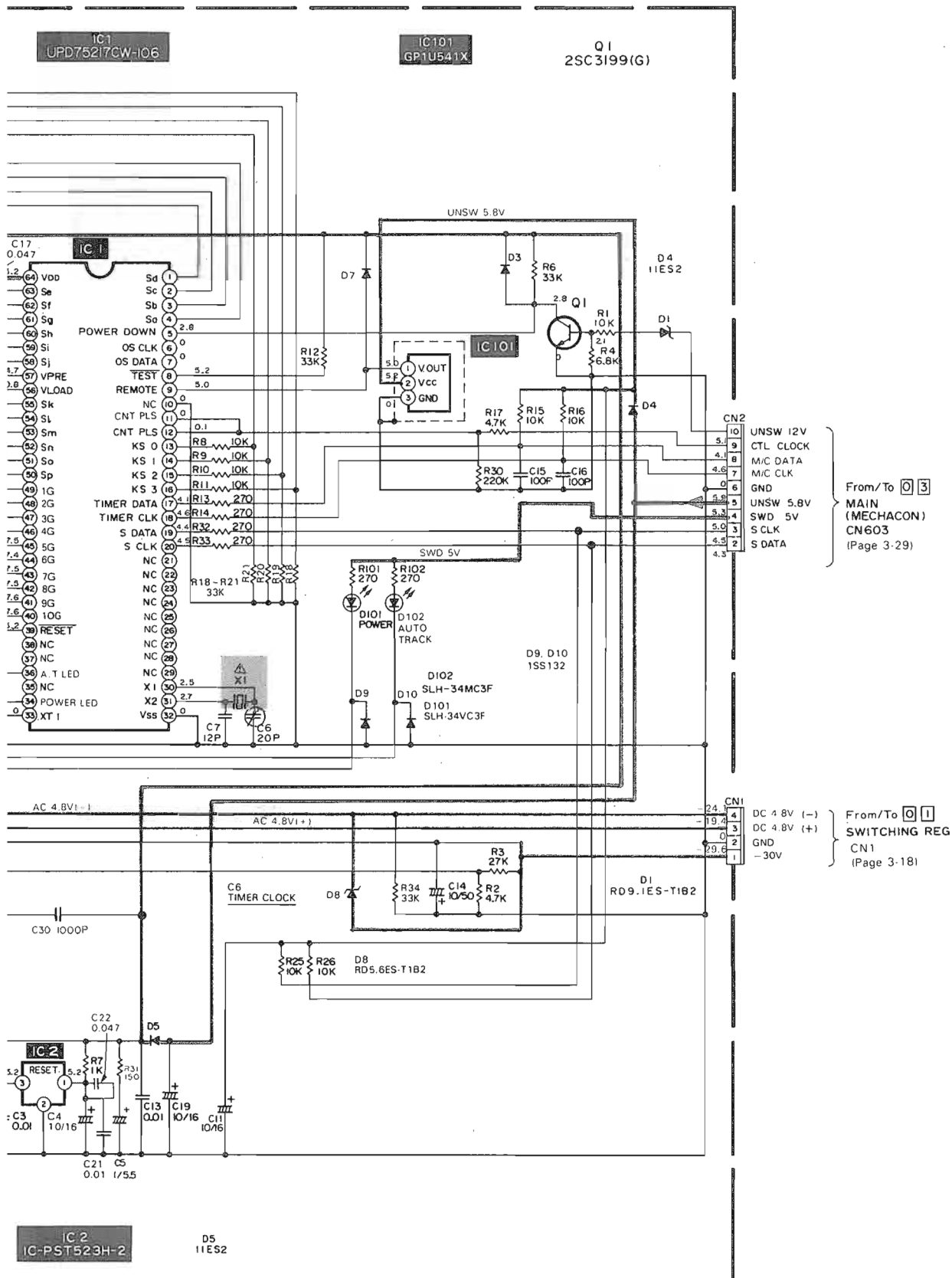
T1 VCO

ET

3.26 TIMER/DISPLAY/SW SCHEMATIC DIAGRAM

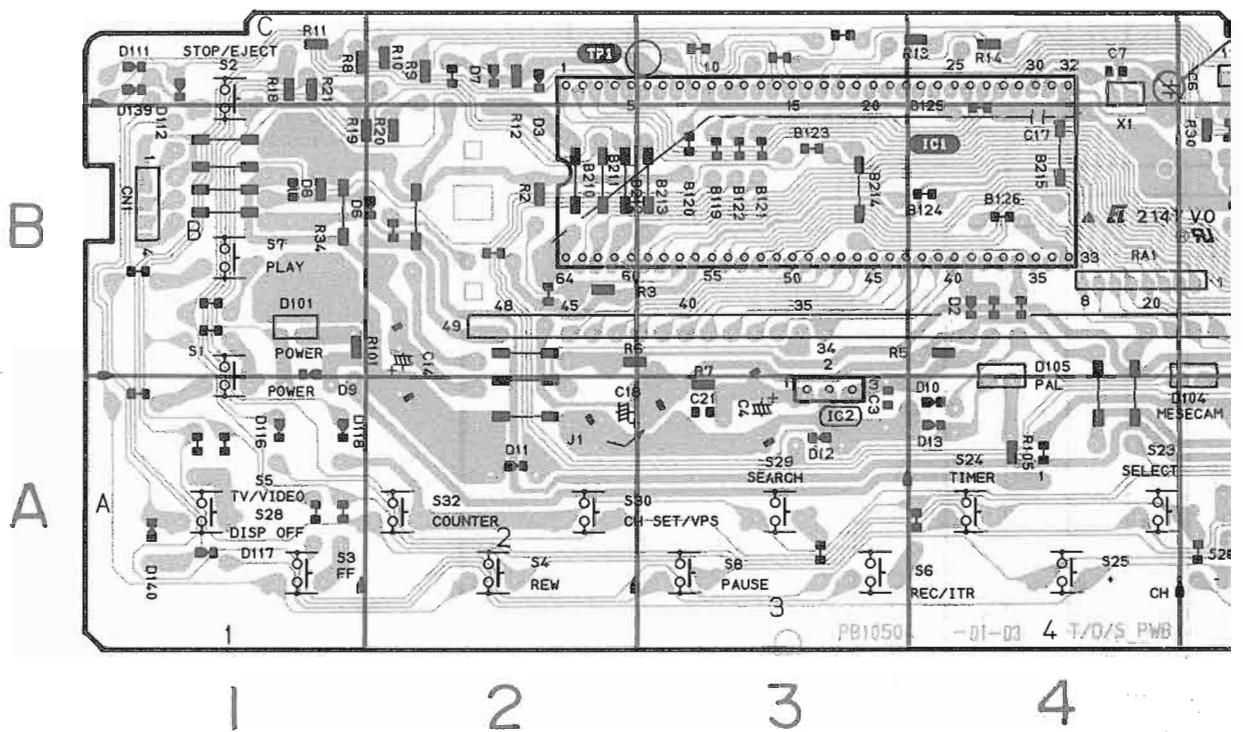


D111, D112, D115 ~ D118, D129, D140
ISS 132

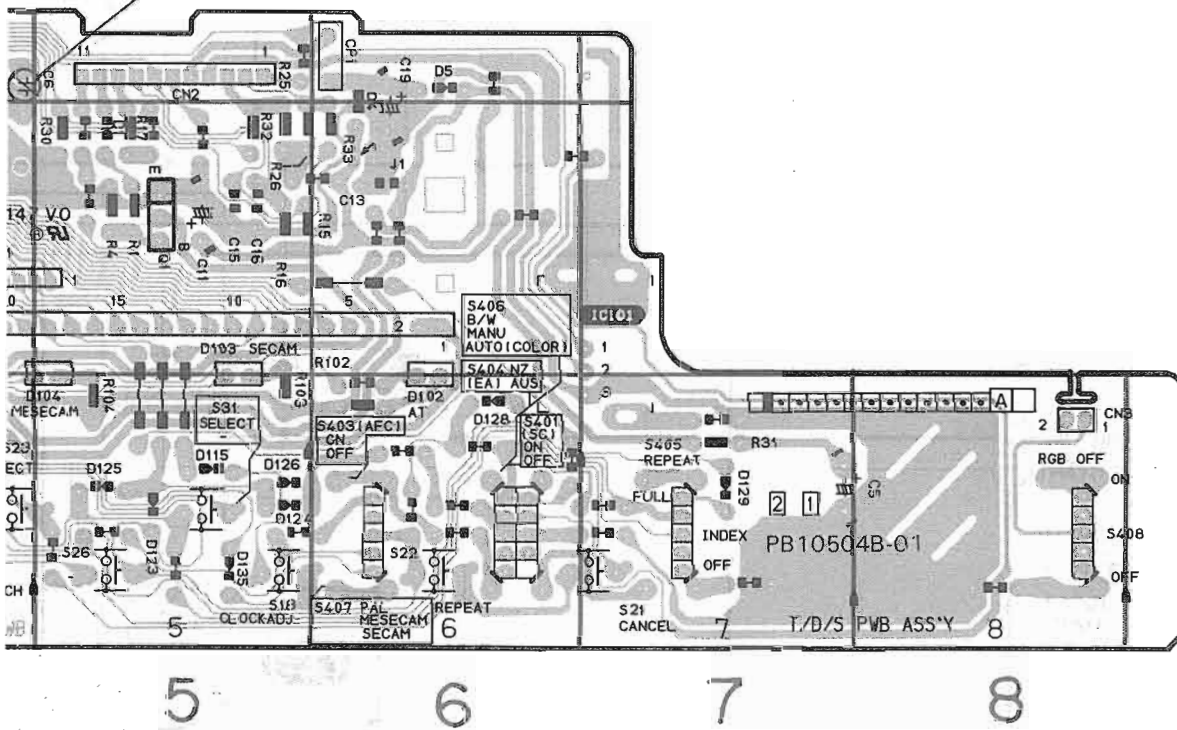


NOTE: Voltages are DC-measured with a digital voltmeter during stop and tuner mode.

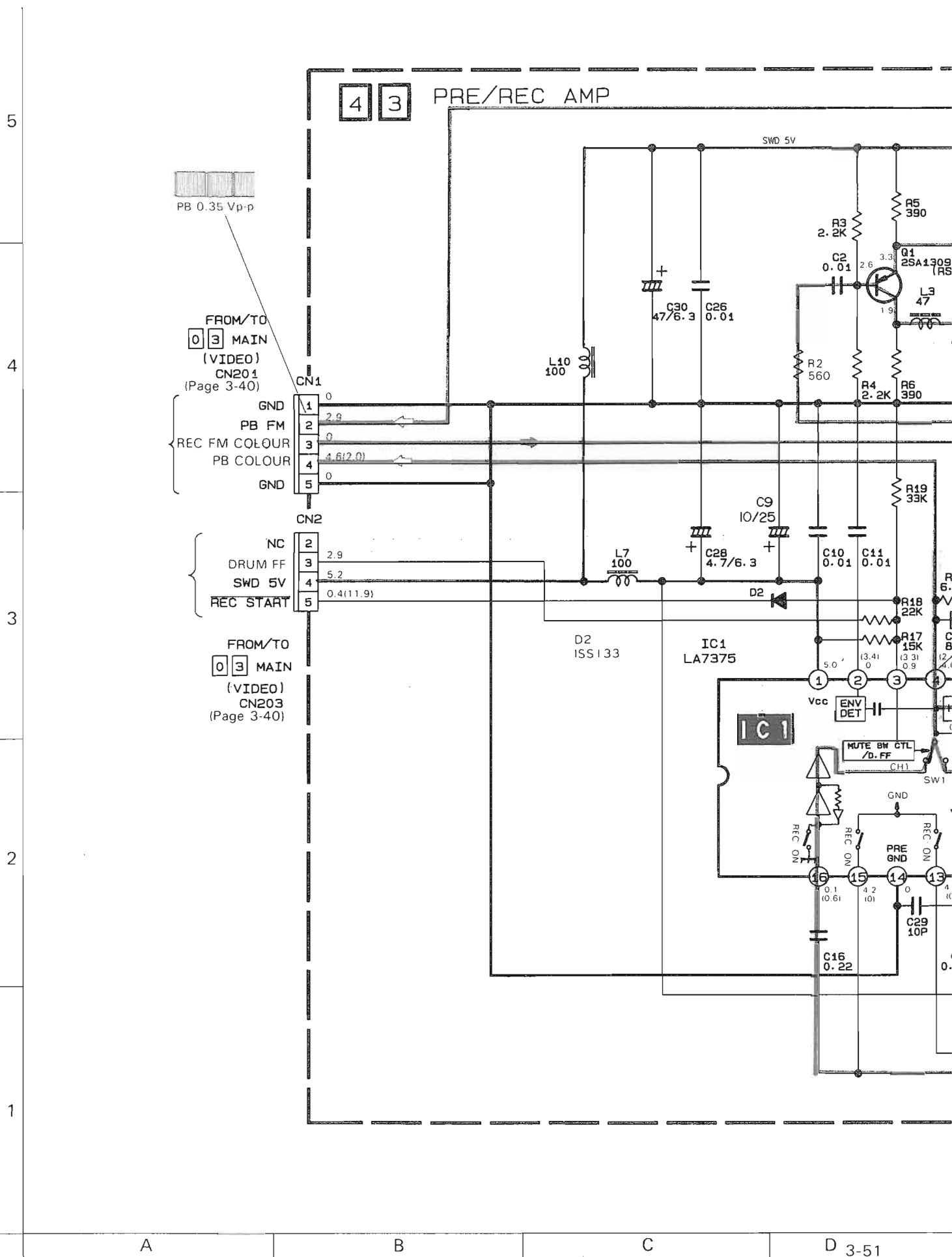
3.27 TIMER/DISPLAY/SW CIRCUIT BOARD

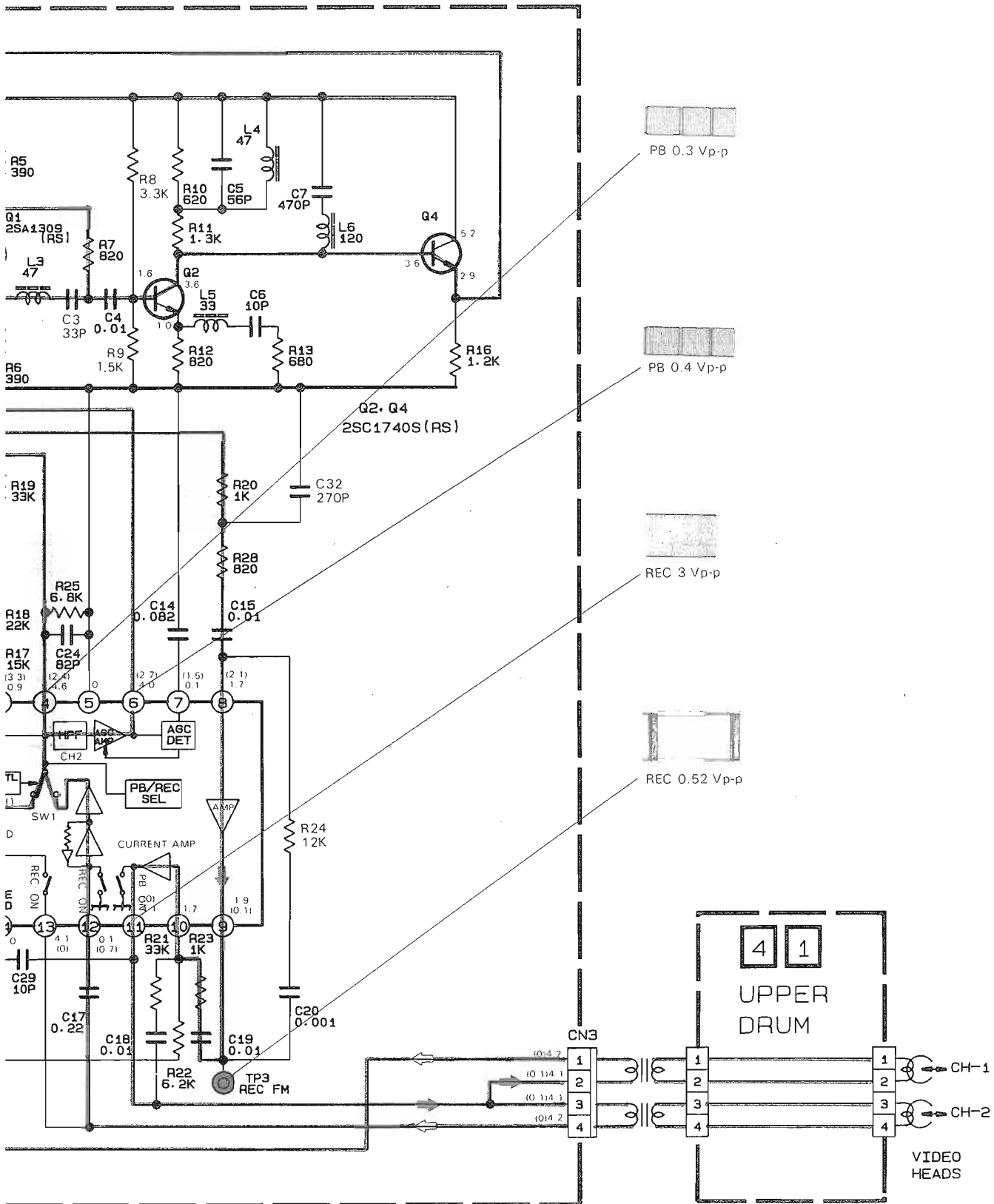


C6
TIMER CLOCK

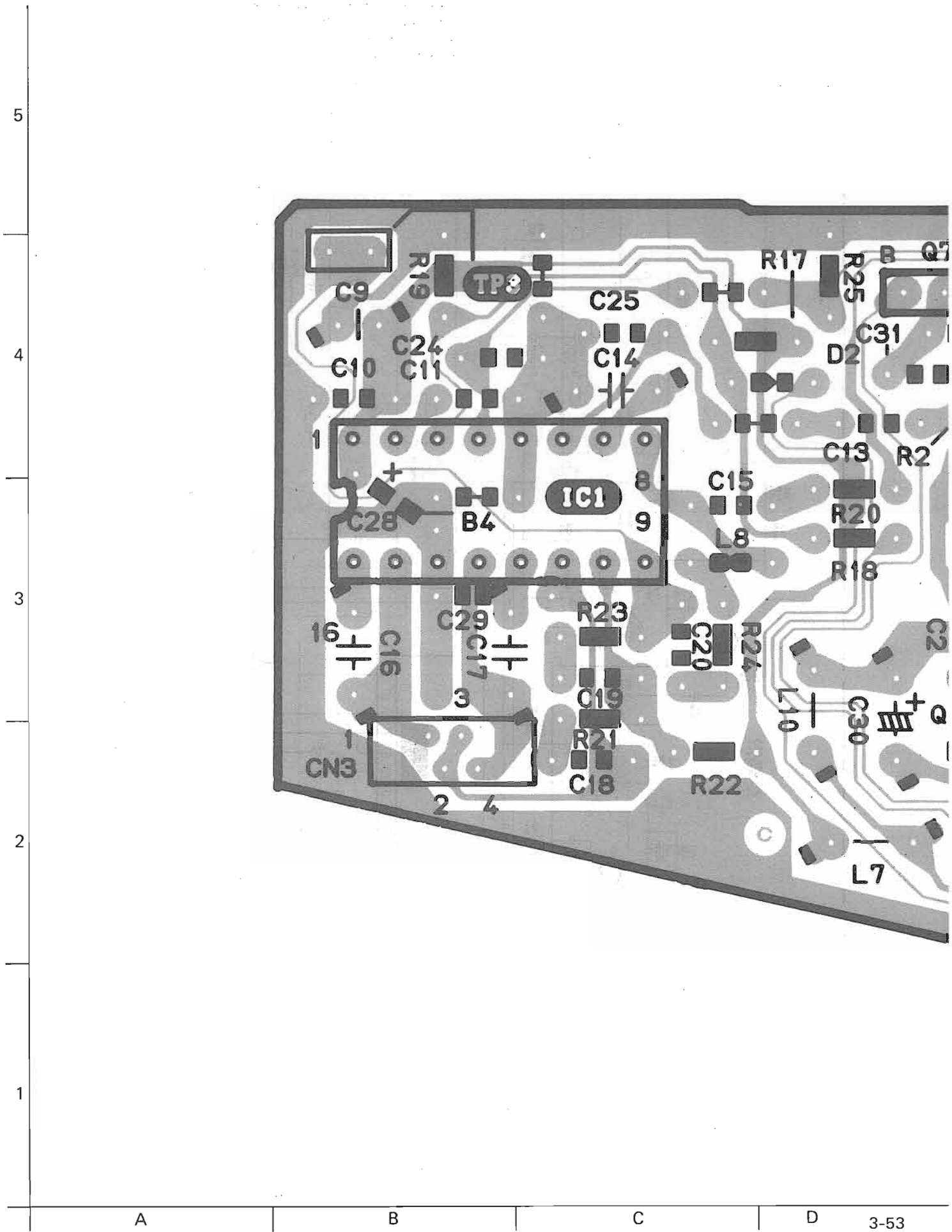


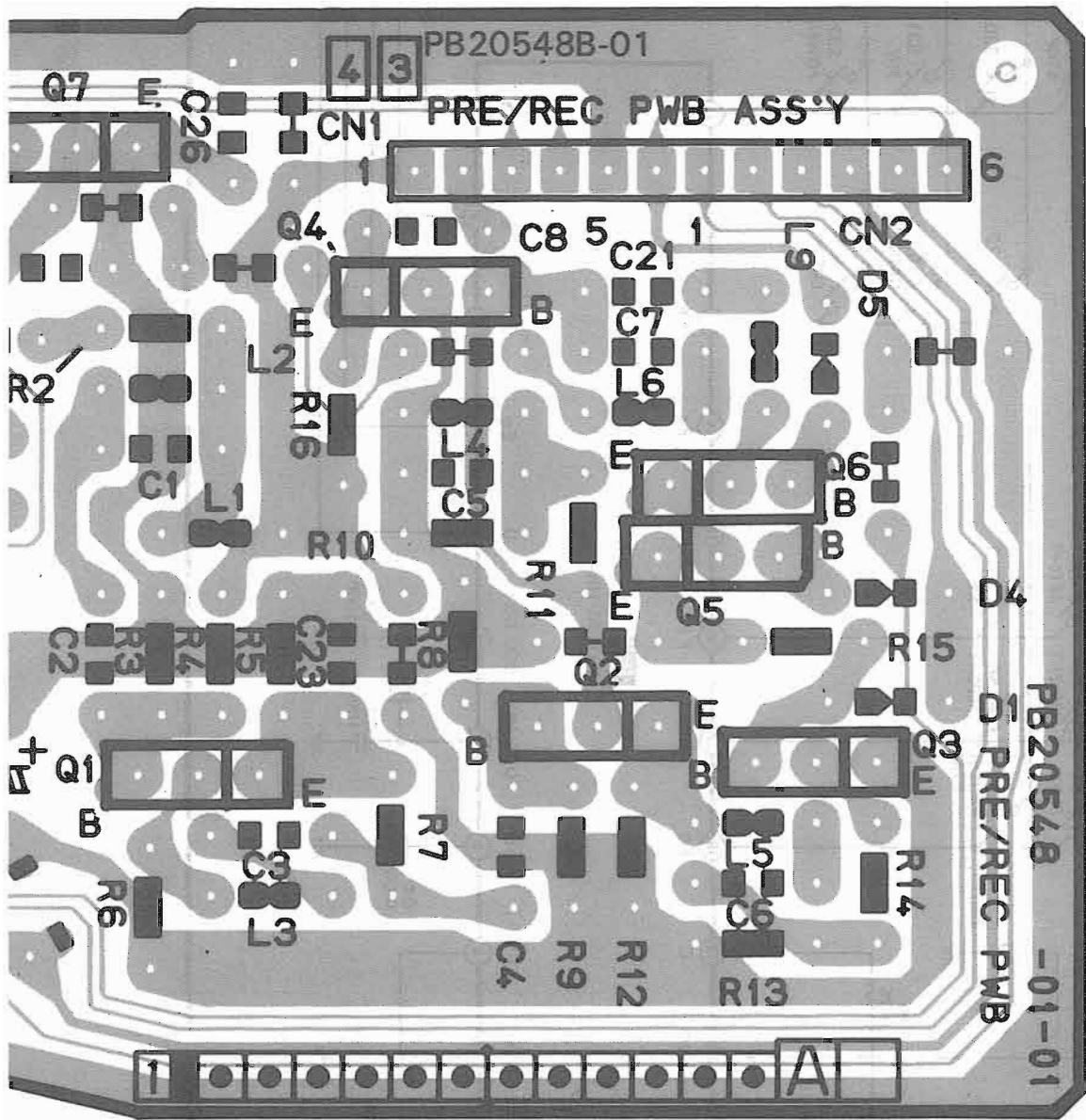
3.28 PRE/REC SCHEMATIC DIAGRAM





3.29 PRE/REC CIRCUIT BOARD

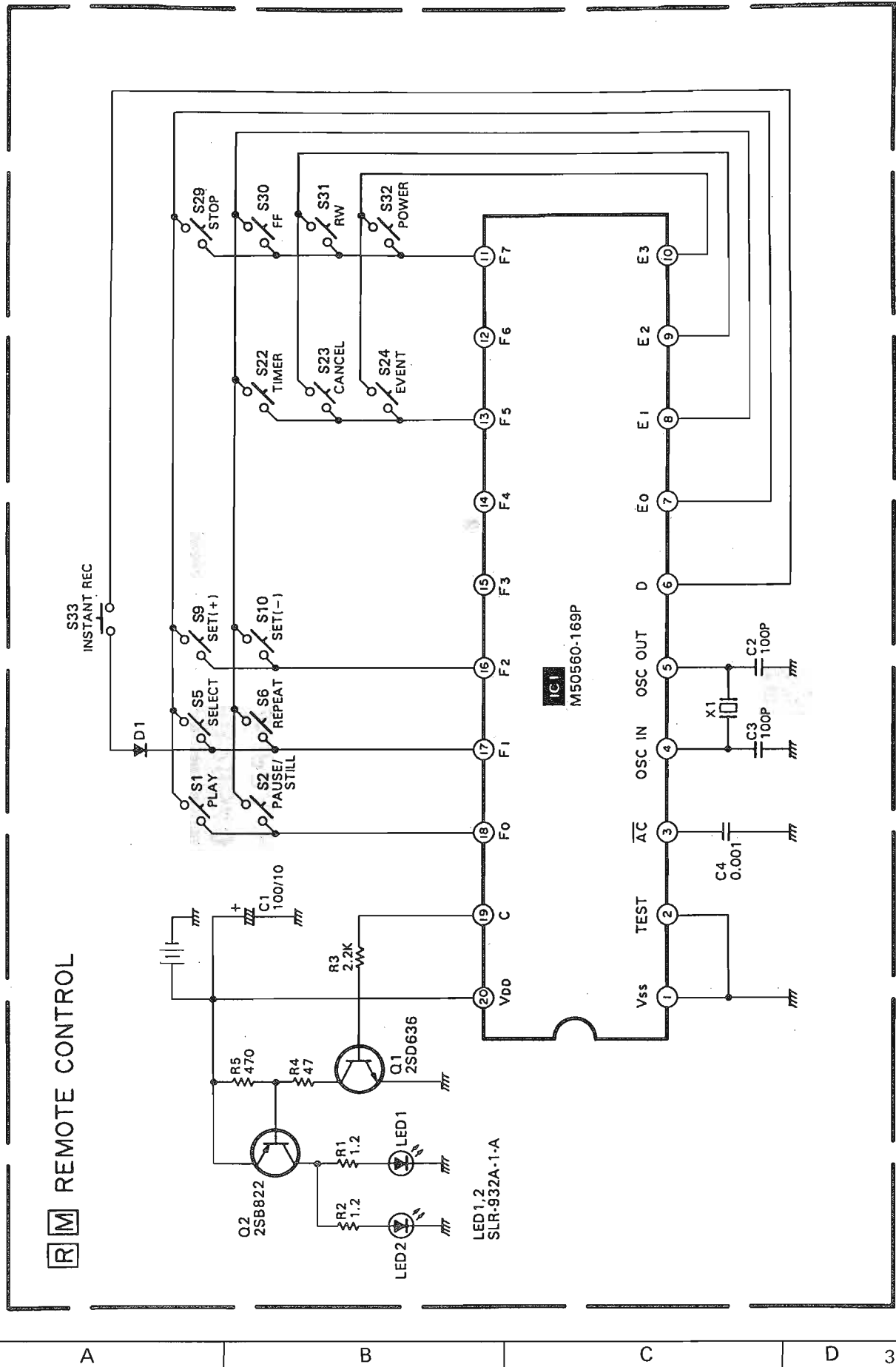




3.30 REMOTE CONTROL SCHEMATIC DIAGRAM

Note:

1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.



5

4

3

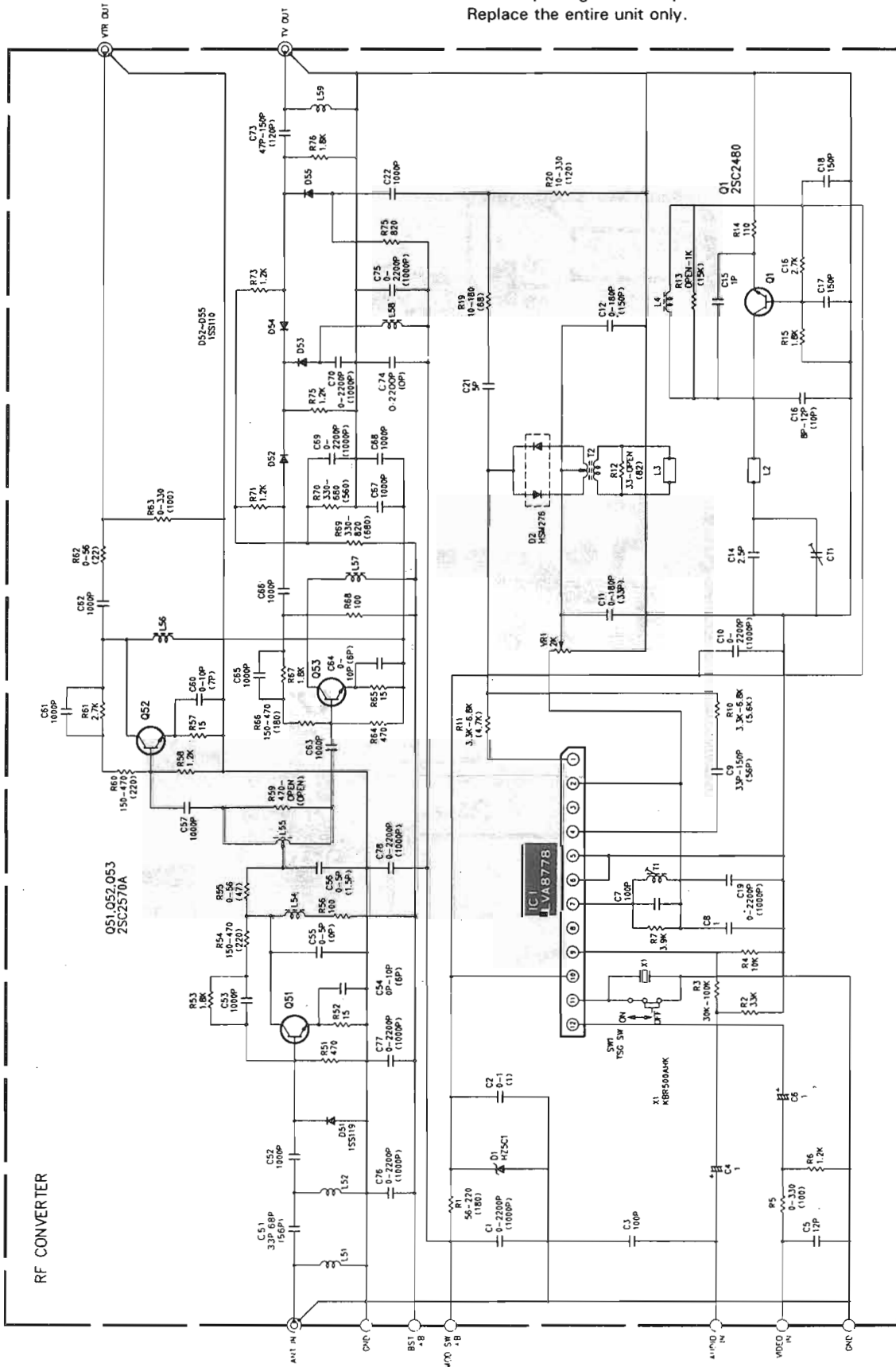
2

1

3.31 RF CONVERTER & MIX BOOSTER SCHEMATIC DIAGRAM

NOTES:

1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.



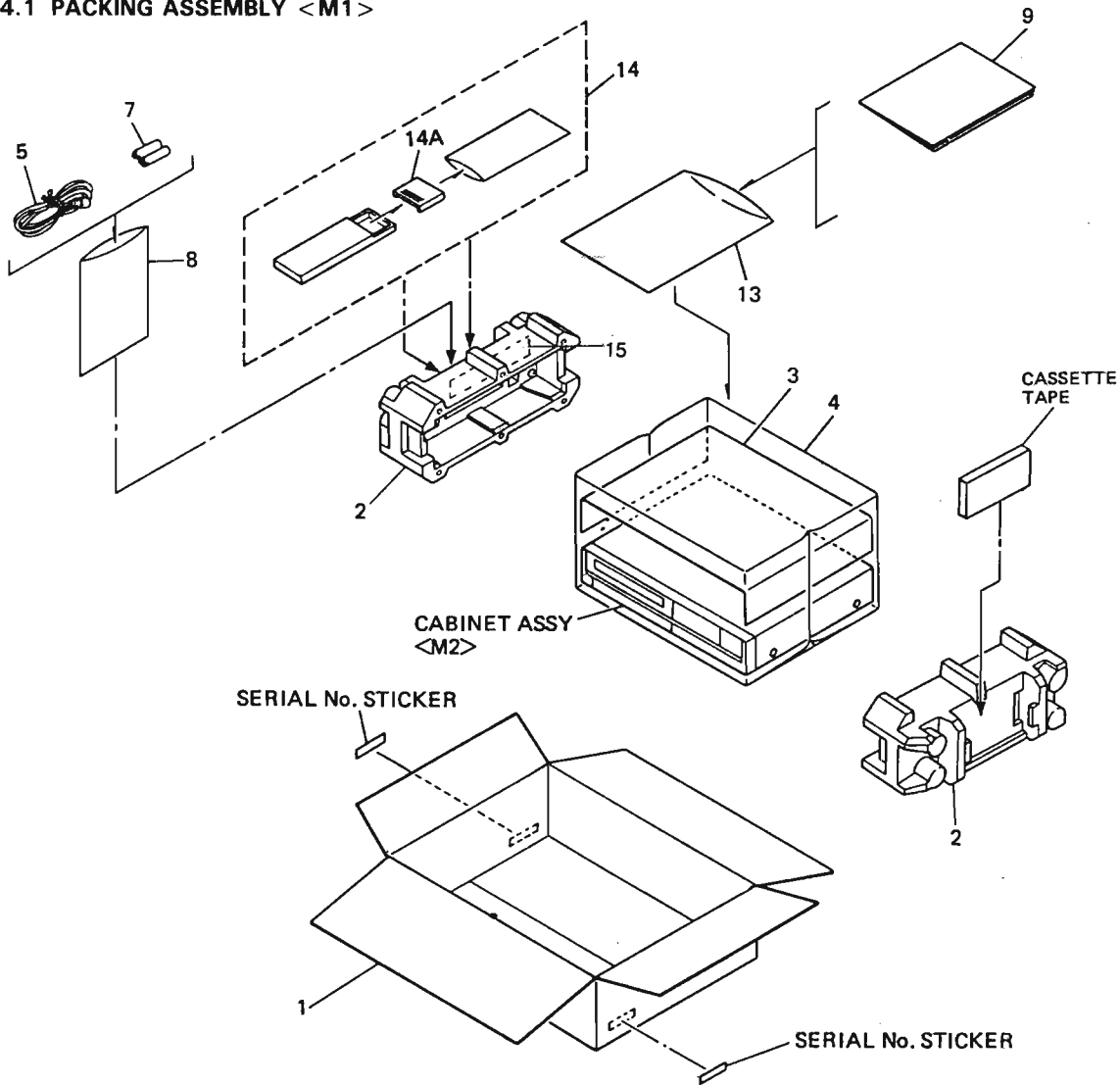
SECTION 4 EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the Δ symbol are critical for safety. Replace only with specified part numbers.

NOTE: < M > indicates mechanical symbol number.

4.1 PACKING ASSEMBLY < M1 >

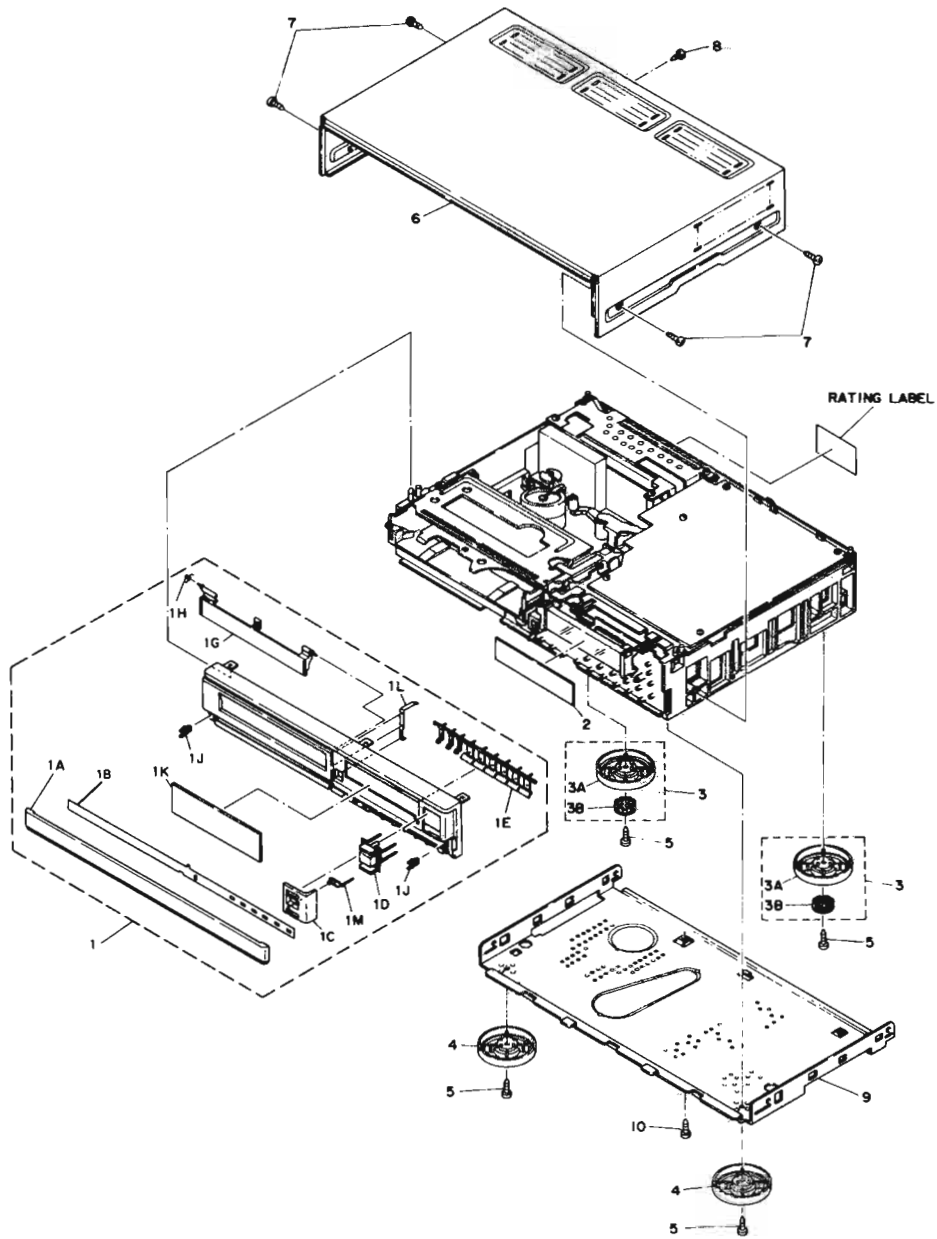


REF. No.	PART No.	PART NAME, DESCRIPTION

PACKING ASSEMBLY < M1 >		
1	PQ33868-39	PACKING CASE
2	PQ33989A	CUSHION ASSY
3	PQ41026-8	PROTECT SHEET
4	PQM30021-59-11	POLY BAG

REF. No.	PART No.	PART NAME, DESCRIPTION
5	PU59168-3 or PU59167-3	RF CABLE RF CABLE
7	UM-3DJ2P	BATTERY
8	QPGA020-02005	POLY BAG
Δ 9	PU30425-1273	INSTRUCTIONS
13	QPGA025-03505	POLY BAG
Δ 14	PQ10344CG	REMOTE CONTROLLER
14A	PQ31323	BATTERY CAP
15	PQ33533-2	POLY BAG

4.2 CABINET ASSEMBLY <M2>



△ REF. No. PART No. PART NAME, DESCRIPTION

CABINET ASSEMBLY <M2>

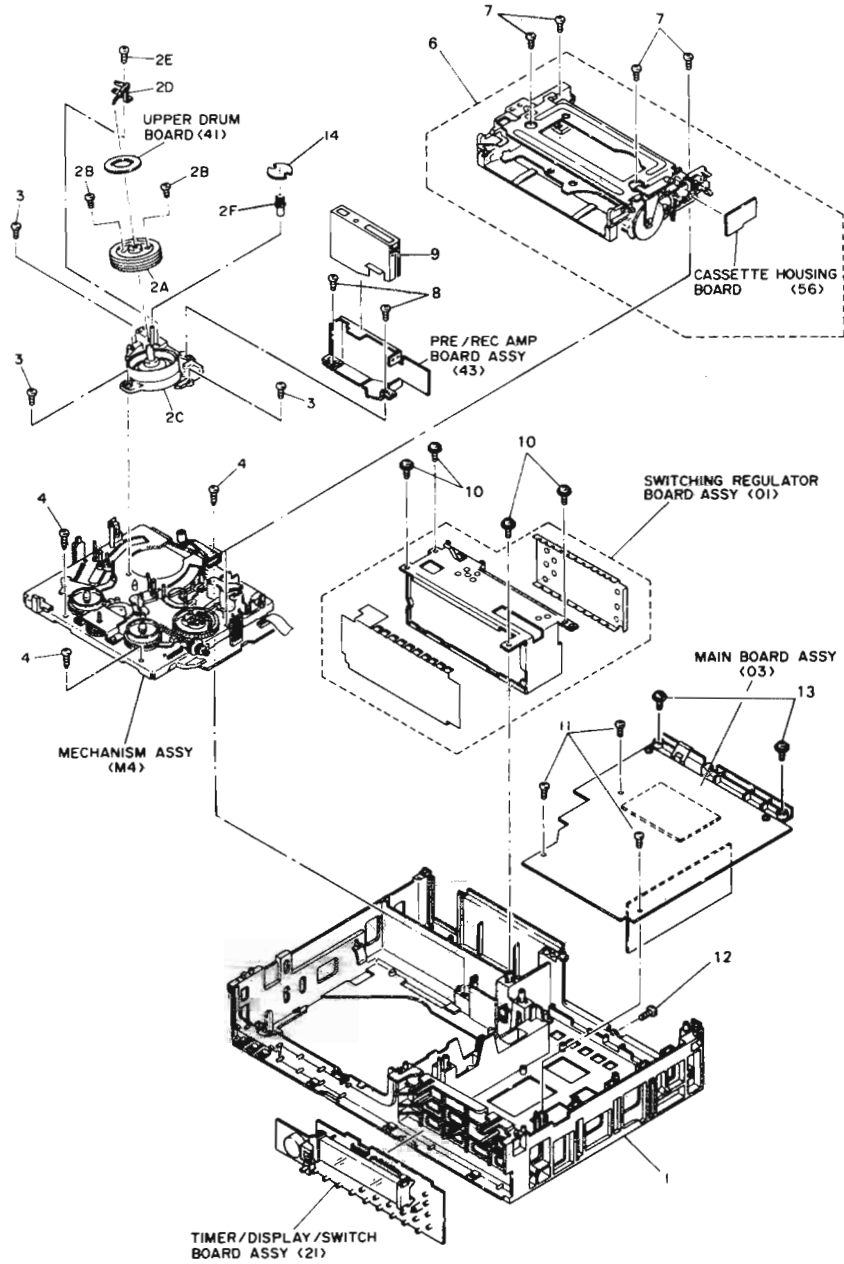
REF. No.	PART No.	PART NAME, DESCRIPTION
1	PQ11071J	FRONT PANEL ASSY
1A	PQ21128J	DOOR ASSY
1B	PQ21127-8	PLATE(PROG.)
1C	PQ21213-1-2	COVER
1D	PQ21214-1-1	BUTTON(COVER)
1E	PQ21126-2	BUTTON
1G	PQ21125-7	CASSETTE HOUSING DOOR
1H	PQ45165	TORSION SPRING
1J	PU60109	CATCHER,X2

△ REF. No. PART No. PART NAME, DESCRIPTION

1K	PQ33764	WINDOW
1L	PQ33911	PLATE(EARTH)
1M	PQ45105-1-1	INDICATOR
2	PQ45251	FILTER(FDP)
3	PQ33012D	FOOT ASSY,X2
3A	PQ33013-4	FOOT(1)
3B	PQ33014	FOOT(2)
4	PQ33013-4	FOOT(1),X2
5	SDSF3010Z	SCREW,X4 FOR FOOT
△ 6	PQ11144-1-3	TOP COVER
7	PQ43827	SPECIAL SCREW,X4 FOR TOP COVE
8	SDSF3010M	SCREW,FOR TOP COVER
△ 9	PQ11145	BOTTOM COVER
10	SDSF3010Z	SCREW,FOR BOTTOM COVER

4.3 CHASSIS ASSEMBLY < M3 >

BEWARE OF BOGUS PARTS
 Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

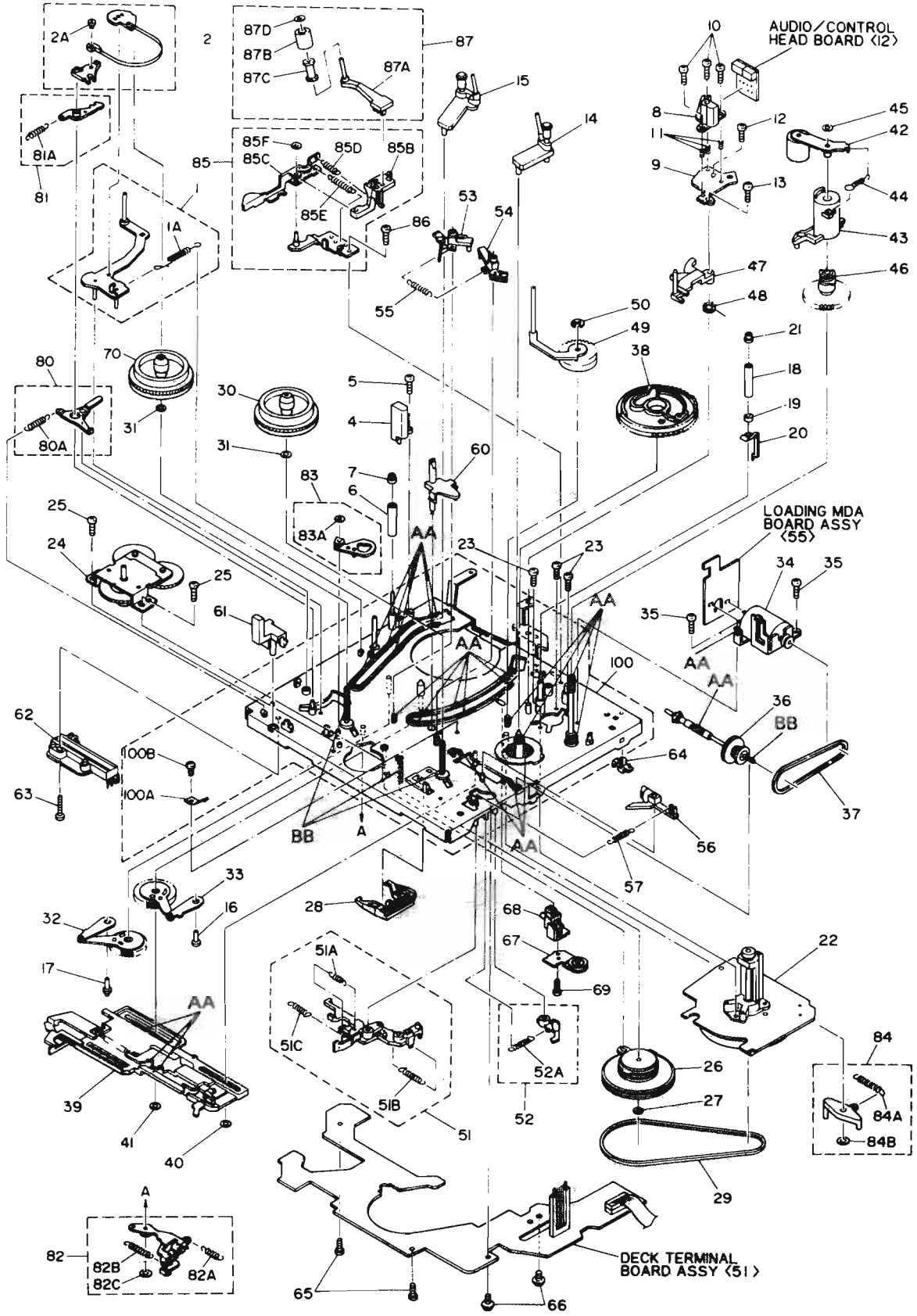


△ REF. No.	PART No.	PART NAME, DESCRIPTION

CHASSIS ASSEMBLY < M3 >		
△ 1	PQ11060	BOTTOM CHASSIS
2A	PDM2008B-5	UPPER DRUM ASSEMBLY
2B	PDM4165A	DRUM SCREW ASSEMBLY, X2
2C	PDM2138G	LOWER DRUM MOTOR ASSEMBLY
2D	PDM4229A-1	BRUSH ASSY
2E	SPSG2606Z	SCREW, FOR BRUSH ASSEMBLY
2F	PDM4226A	ROLLER ASSY
3	SPST2610Z	SCREW, X3 FOR DRUM ASSY
	or SDST2610Z	SCREW, X3 FOR DRUM ASSY
4	PQ43831	SPECIAL SCREW, X3 FOR MAIN DECK

△ REF. No.	PART No.	PART NAME, DESCRIPTION
6	PUS29499D	CASSETTE HOUSING ASSY
7	SDST2608Z	SCREW, X4 FOR CASSETTE HOUSING
	or SPST2608Z	SCREW, X4 FOR CASSETTE HOUSING
8	SDSG2606Z	SCREW, X2 FOR PRE/REC BOARD
9	PQ32217-2	SHIELD CASE(2), FOR P/R BOARD
10	SDSF2610Z	SCREW, X4 FOR SW REG BOARD
11	SDSF2610Z	SCREW, X3 FOR MAIN BOARD
12	SDSF3010M	SCREW, FOR TERMINAL BOARD
13	GPSF2610Z	SCREW, X2 FOR TERMINAL BOARD
14	PQ45160	INERTIA PLATE

4.4 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

Δ REF No. PART No. PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

1	PQ43497E-11	TENSION ARM ASSY
1A	PQ43500	TENSION SPRING
2	PQ44734A-7	TENSION BAND ASSY
2A	PQ45456	ADJUST PIN
4	PU60616	FULL ERASE HEAD
5	SDSF2614Z	SCREW
6	PQ43505-1-1	ROLLER
7	PQ43506	GUIDE POLE CAP
8	PU61002	AUDIO/CONTROL HEAD
9	PQ43509	HEAD BASE
10	PQ43687A	SPECIAL SCREW,X3
11	PQM30002-192	COMPRESSION SPRING,X3
12	SPSF2608M	SCREW
13	SPSP2606Z	SCREW
14	PU61103-2	POLE BASE(TAKE-UP) ASSY
15	PU61151-2-3	POLE BASE(SUPPLY) ASSY
16	PQ43524	STOPPER
17	PQ43525	STOPPER 2
18	PQ43526-1-3	TAPE GUIDE
19	PQ43670-1-1	GUIDE FLANGE
20	PQ43675	TAPE GUARD
21	PQ43506	GUIDE POLE CAP
Δ 22	PU61003-1-2	CAPSTAN MOTOR
23	SPSG2608Z	SCREW,X3
24	PU61246	IDLER GEAR UNIT
25	SPST2606Z	SCREW,X2
26	PU61245-1-1	CLUTCH UNIT
27	PQM30017-8	SLIT WASHER
28	PQ43532B	CHANGE LEVER ASSY
29	PU61006	TIMING BELT
30	PU60858-1-4	REEL DISK (TAKE-UP)
31	PQM30018-54	SPACER,X2
32	PQ43537A	LOADING ARM ASSY (SUPPLY)
33	PQ43542B	LOADING ARM ASSY (TAKE-UP)
Δ 34	PQ43676B-5	MODE MOTOR ASSY
	or PQ43676C-7	MODE MOTOR ASSY
35	SPST2606Z	SCREW,X2
36	PQ43548A-3	WORM CLUTCH ASSY
37	PQM30003-23	BELT
38	PQ20822-2-7	CONTROL CAM
39	PQ44581A-6	PLATE ASSY
40	PQM30017-12	SLIT WASHER
41	PQM30017-8	SLIT WASHER
42	PQ43558A	PINCH ROLLER ARM ASSY
	or PQ43558B	PINCH ROLLER ARM ASSY
43	PQ32415	PINCH ROLLER PRESS LEVER
44	PQM30001-233	TENSION SPRING
45	PQM30017-12	SLIT WASHER
46	PQ32416-2	PINCH ROLLER CAM
47	PQ43567A-13	GUIDE ARM ASSY
48	PQ43569-1-3	TORSION SPRING
49	PQ43570A-2	HALF LOADING GEAR ASSY
50	PQM30017-12	SLIT WASHER

Δ REF No. PART No. PART NAME, DESCRIPTION

51	PQ43575A-5	CANCEL LEVER ASSY
51A	PQM30001-273	TENSION SPRING
51B	PQM30001-237	TENSION SPRING
51C	PQM30001-274	TENSION SPRING
52	PQ43578A-2	HOOK ASSY
52A	PQM30001-238	TENSION SPRING
53	PQ43581C	MAIN BRAKE(SUPPLY) ASSY
54	PQ43582B	MAIN BRAKE(TAKE-UP) ASSY
55	PQM30001-251	TENSION SPRING
56	PQ43583A	SUB BRAKE ASSY (TAKE-UP)
57	PQM30001-346	TENSION SPRING
60	PU60621-1-2	LED HOLDER,(INCL.D1)
61	PU60624-1-4	REC SAFETY SWITCH
62	PU61247	SLIDE ENCORDER,(S3)
63	SDSF2614Z	SCREW
64	PQ32516	PWB HOLDER
65	SDST2616Z	SCREW,X2
66	GPSF2608Z	SCREW,X2
67	PQ43912A-7	PULLEY ARM ASSY
68	PQ33249	PULLEY BASE
69	PQ45121A	SCREW
70	PU60859-1-4	REEL DISK (SUPPLY)
80	PQ44739A-1	LOCK LEVER 1 ASSY
80A	PQM30001-278-46	TENSION SPRING
81	PQ44741A-3	LOCK LEVER 2 ASSY
81A	PQM30001-279-52	TENSION SPRING
82	PQ44743A-7	IDLER LEVER ASSY
82A	PQM30001-344	TENSION SPRING
82B	PQM30001-301	TENSION SPRING
82C	PQM30017-5	SLIT WASHER
83	PQ44746A-2	OFF LEVER ASSY
83A	PQM30017-5	SLIT WASHER
84	PQ44585A-6	CAPSTAN BRAKE ASSEMBLY
84A	PQM30001-282-52	SPRING
84B	PQM30017-8	SLIT WASHER
85	PQ44843B	ARM BASE ASSY
85B	PQ33511-1-2	CLEANER ARM
85C	PQ44841-1-3	CANCEL LEVER
85D	PQM30001-299	TENSION SPRING
85E	PQM30001-300	TENSION SPRING
85F	PQM30017-5	SLIT WASHER
86	SPST2606Z	SCREW
87	PQ44840A-3	CLEANER BASE ASSY
87A	PQ44844A	CLEANER BASE SUB ASSY
87B	PQ44837	CLEANER
87C	PQ44838	CLEANER HOLDER
87D	PQM30017-38	SLIT WASHER
100	PQ20994B-5	MAIN DECK ASSY
	or PQ21232B-1	MAIN DECK ASSY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW

SECTION 5 ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the Δ symbol are critical for safety. Replace only with specified part numbers.

Δ REF No. PART No. PART NAME, DESCRIPTION

SWITCH REGULATOR BOARD ASSEMBLY <01>

PWBA PB20526A-01 SW.REGULATOR BOARD ASSY

IC1	LM358N or LM358P or XRA10358 or BA10358	IC IC IC IC
Q1	2SC4517A-LF619	TRANSISTOR
Q2	2SC3616(MLK)	TRANSISTOR
Q5	2SB1425(EU)	TRANSISTOR
D1	10E6-F2	DIODE
D2	10E6-F2	DIODE
D3	10E6-F2	DIODE
D4	10E6-F2	DIODE
D5	AU01 or 1SR153-400-T2	FR DIODE FR DIODE
D6	AU01 or 1SR153-400-T2	FR DIODE FR DIODE
D7	MTZ27BT-77	ZENER DIODE
D8	AU01Z or 1SR153-200-T2 or ERA18-02-T2	FR DIODE FR DIODE FR DIODE
D14	AU01Z or ERA18-02-T2 or 1SR153-200-T2	FR DIODE FR DIODE FR DIODE
D15	AU01Z or 1SR153-200-T2 or ERA18-02-T2	FR DIODE FR DIODE FR DIODE
D16	FML-12S or 5DL2CZ41A or MA649-VE or FCF06A20	FR DIODE FR DIODE FR DIODE FR DIODE
D17	FMB-24 or F5KQ40B or 5GWJ2CZ42	BARRIER DIODE BARRIER DIODE SB DIODE
D18	AU01Z or ERA18-02-T2 or 1SR153-200-T2	FR DIODE FR DIODE FR DIODE
D19	MTZ33AT-77	ZENER DIODE

# Δ REF No.	PART No.	PART NAME, DESCRIPTION	
D21	AU01Z	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or ERA18-02-T2	FR DIODE	
D22	MTZV6.2A	ZENER DIODE	
D23	RD15ES-T1B1	ZENER DIODE	
R1	YU40344-2R2	WW RESISTOR	2.2 Ω ,2W
	or PERE0505-2R2	WW RESISTOR	2.2 Ω ,2W
R2	QRD161J-334	RESISTOR	330K Ω ,1/6W
R3	QRD161J-334	RESISTOR	330K Ω ,1/6W
R4	QRD161J-563	RESISTOR	56K Ω ,1/6W
R5	QRG029J-683G	OMF RESISTOR	68K Ω ,2W
R6	QRG029J-241G	OMF RESISTOR	240 Ω ,2W
R7	QRD161J-122	RESISTOR	1.2K Ω ,1/6W
R8	QRD161J-561	RESISTOR	560 Ω ,1/6W
R9	QRX014J-R39Z	MF RESISTOR	0.39 Ω ,1W
R10	QRG029J-273A	OMF RESISTOR	27K Ω ,2W
Δ R16	QRZ0077-470	FUSIBLE RESISTOR	47 Ω ,1/4W
R17	QRD161J-471	RESISTOR	470 Ω ,1/6W
R18	QRD161J-102	RESISTOR	1K Ω ,1/6W
R19	QRV144F-1071A	CMF RESISTOR	1.07K Ω ,1/4W
R20	QRV144F-1001A	CMF RESISTOR	1K Ω ,1/4W
Δ R21	QRZ0077-470	FUSIBLE RESISTOR	47 Ω ,1/4W
R22	QRD161J-332	RESISTOR	3.3K Ω ,1/6W
R23	QRD161J-471	RESISTOR	470 Ω ,1/6W
R24	QRV144F-4423A	CMF RESISTOR	442K Ω ,1/4W
R25	QRV144F-1002A	CMF RESISTOR	10K Ω ,1/4W
R26	QRV144F-1182A	CMF RESISTOR	11.8K Ω ,1/4W
Δ R27	QRZ0052-130	FUSIBLE RESISTOR	13 Ω ,1/4W
R28	QRD161J-331	RESISTOR	330 Ω ,1/6W
R29	QRD161J-103	RESISTOR	10K Ω ,1/6W
Δ C1	QFZ9022-333	MM CAPACITOR	0.033 μ F,250V
Δ	or QFZ9037-333	M CAPACITOR	0.033 μ F,250V
Δ C2	QFZ9022-333	MM CAPACITOR	0.033 μ F,250V
Δ	or QFZ9037-333	M CAPACITOR	0.033 μ F,250V
Δ C3	QFZ9022-223	MM CAPACITOR	0.022 μ F,250V
Δ C4	QCZ9016-101K	CAPACITOR	100PF,400V
Δ C5	QCZ9016-101K	CAPACITOR	100PF,400V
Δ C6	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V
Δ	or QCZ9048-222	CAPACITOR	0.0022 μ F,400V
Δ C7	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V
Δ	or QCZ9048-222	CAPACITOR	0.0022 μ F,400V
Δ C8	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V
Δ C9	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V
Δ C10	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
△	C11	QCZ9016-222M	CAPACITOR	0.0022 μ F,400V
	C12	PECA0738-826	E CAPACITOR	82 μ F,400V
		or PECA0793-826	E CAPACITOR	82 μ F,400V
	C13	QCZ0212-472	CAPACITOR	0.0047 μ F,1KV
	C14	QCZ0213-101	CAPACITOR	100PF,1KV
	C15	QFV11HJ-224	TF CAPACITOR	0.22 μ F,50V
		or PECA0780-224	M CAPACITOR	0.22 μ F,50V
	C16	QFL41HJ-682	M CAPACITOR	0.0068 μ F,50V
		or QFLA1HJ-682	M CAPACITOR	0.0068 μ F,50V
	C17	QETC1HM-475	E CAPACITOR	4.7 μ F,50V
	C18	QETC1JM-336	E CAPACITOR	33 μ F,63V
	C19	QEZO125-277	E CAPACITOR	270 μ F,25V
		or QEZO138-277	E CAPACITOR	270 μ F,25V
	C20	QETC1EM-227	E CAPACITOR	220 μ F,25V
	C21	QEZO105-108	E CAPACITOR	1000 μ F,16V
		or QEZO137-108	E CAPACITOR	1000 μ F,16V
	C22	QETB1CM-108	E CAPACITOR	1000 μ F,16V
	C23	QFL41HJ-102	M CAPACITOR	0.001 μ F,50V
		or QFLA1HJ-102	M CAPACITOR	0.001 μ F,50V
	C24	QEZO136-128	E CAPACITOR	1200 μ F,10V
		or QEZO106-128	E CAPACITOR	1200 μ F,10V
	C25	QETC1HM-476	E CAPACITOR	47 μ F,50V
	C26	QETC1VM-336	E CAPACITOR	33 μ F,35V
	C27	QFLA1HJ-103	M CAPACITOR	0.01 μ F,50V
	C28	QEZO156-127	E CAPACITOR	120 μ F,6.3V
		or QEZO135-127	E CAPACITOR	120 μ F,3V
	C29	QETC0JM-107	E CAPACITOR	100 μ F,6.3V
	C30	QFLA1HJ-103	M CAPACITOR	0.01 μ F,50V
	C31	QETB1AM-108	E CAPACITOR	1000 μ F,10V
	C32	QETC1JM-226	E CAPACITOR	22 μ F,63V
	C34	QETC1CM-107	E CAPACITOR	100 μ F,16V
	C35	QFV11HJ-473	MM CAPACITOR	0.047 μ F,50V
		or QFV41HJ-473	TF CAPACITOR	0.047 μ F,50V
	L1	PU60943-330K	COIL	33 μ H
		or PELN0270-330K	COIL	33 μ H
		or PELN0490-330K	COIL	33 μ H
	L2	PU60943-330K	COIL	33 μ H
		or PELN0270-330K	COIL	33 μ H
		or PELN0490-330K	COIL	33 μ H
	L3	PU60943-330K	COIL	33 μ H
		or PELN0270-330K	COIL	33 μ H
		or PELN0490-330K	COIL	33 μ H
△	PHS1	PC111S	PHOTO COUPLER,PC1	
△	POC1	QMP3980-200	POWER CORD	
△	T1	PELN0480	SW TRANS	
△	BKT1	PQ33738	BRACKET(SW REG)	

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
	ETH1	PQ43872	EARTH PLATE,X2	
△	HD1	QHS3771-108	STRAIN RELIEF	
△	HD2	PU57505	FUSE CLIP,X2	
△	HS1	PQ45175	HEAT SINK,FOR Q1	
△	LF1	PU59707	LINE FILTER	
△		or PELN0255	LINE FILTER	
△	LF2	PU61108	LINE FILTER	
△		or PU60347	LINE FILTER	
	SCW3	SDST2605Z	SCREW,X2	
	SCW3	SDSG3008Z	SCREW,FOR Q1	
	SCW4	SDSG3006Z	SCREW	
	SLD1	PQ21202-1-3	SHIELD CASE(1)	
	SLD2	PQ33739	SHIELD CASE(2)	
	SLD3	PQ33740	SHIELD CASE(3)	
	SLD4	PQ33741	SHIELD CASE(4)	
△	TAB1	A74316	TAB,X2	
	TP1	PU56347	TEST POINT,X2(TP1,TP2)	
	CN1	PU60910-104	WIRE TRAP	
	CN2	PU60910-108	CONNECTOR	
△	CP1	ICP-N20	CIRCUIT PROTECTOR	
△	CP2	ICP-N20	CIRCUIT PROTECTOR	
△	F1	QMF51E2-1R0	FUSE	
△		or QMF51E2-1R0J1	FUSE	

MAIN BOARD ASSEMBLY <03>				
	PWBA	PB10553P	MAIN BOARD ASSY	
△	RF1	PERF0075	RF CONVERTER	
△	TB1	PQ21199-7	TERMINAL BOARD	
	CL1	PEME0837	CLAMP	
	ETH1	PQ43012-1-1	EARTH PLATE,FOR RF CONV	

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
	HD1	PEME0831	HOLDER,X2
	HD2	PEME0841	HOLDER,X2
	SCW1	SDST2605Z	SCREW
	SCW2	SDSF2608Z	SCREW,X2
	SPC1	PU60010	SPACER
	J25	PU60910-9	WIRE TRAP, X2
	TP31	PU57545	TEST PIN,X18

— AUDIO SECTION —

△	IC1	BA7765AS	IC
△		or XRA7765AS	IC
	Q1	2SC1740S(RS) or 2SC3199(G)	TRANSISTOR
	Q2	2SC1740S(RS) or 2SC3199(G)	TRANSISTOR
	Q3	DTA114ES	TRANSISTOR
	Q4	2SC1740S(RS) or 2SC3199(G)	TRANSISTOR
	Q5	DTA124ES	TRANSISTOR
	Q6	DTA144ES	TRANSISTOR
	D2	1SS133 or MA165	DIODE
	D3	RD5.1ES-T1B2 or UZ5.1BSB or HZS5.1EB2	ZENER DIODE
	R1	QRD161J-473	RESISTOR 47KΩ, 1/6W
	R2	QRD161J-473	RESISTOR 47KΩ, 1/6W
	R4	QRD162J-242	RESISTOR 2.4KΩ, 1/6W
	R5	QRD161J-103	RESISTOR 10KΩ, 1/6W
	R6	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
	R7	QRD161J-102	RESISTOR 1KΩ, 1/6W
	R8	QRD161J-471	RESISTOR 470Ω, 1/6W
	R9	QRD161J-471	RESISTOR 470Ω, 1/6W
	R10	QRD161J-100	RESISTOR 10Ω, 1/6W
	R11	QVZ3518-683AZ or QVZ3523-683AZ	V RESISTOR, BIAS ADJ 68KΩ
	R12	QRD161J-153	RESISTOR 15KΩ, 1/6W
	R13	QRD161J-6R8	RESISTOR 6.8Ω, 1/6W
	R15	QRD161J-223	RESISTOR 22KΩ, 1/6W
	R16	QRD161J-181	RESISTOR 180Ω, 1/6W
	R17	QRD161J-274	RESISTOR 270KΩ, 1/6W

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
	R18	QRD161J-103	RESISTOR 10KΩ, 1/6W
	R21	QRD161J-183	RESISTOR 18KΩ, 1/6W
	R22	QRD161J-682	RESISTOR 6.8KΩ, 1/6W
	R23	QRD161J-752	RESISTOR 7.5KΩ, 1/6W
	R24	QRD161J-153	RESISTOR 15KΩ, 1/6W
	R25	QRD161J-153	RESISTOR 15KΩ, 1/6W
	R26	QRD161J-475	RESISTOR 4.7MΩ, 1/6W
	R27	QRD161J-475	RESISTOR 4.7MΩ, 1/6W
	R28	QRD161J-123	RESISTOR 12KΩ, 1/6W
	R29	QRD161J-333	RESISTOR 33KΩ, 1/6W
	R30	QRD161J-103	RESISTOR 10KΩ, 1/6W
	R32	QRD161J-333	RESISTOR 33KΩ, 1/6W
	R34	QRD161J-151	RESISTOR 150Ω, 1/6W
	R36	QRD161J-332	RESISTOR 3.3KΩ, 1/6W
	R37	QRD161J-273	RESISTOR 27KΩ, 1/6W
	R41	QRD161J-475	RESISTOR 4.7MΩ, 1/6W
	R45	QRD161J-222	RESISTOR 2.2KΩ, 1/6W
	R46	QRD161J-472	RESISTOR 4.7KΩ, 1/6W
△	R47	QRZ0077-4R7X	FUSIBLE RESISTOR 4.7Ω, 2W
	R49	QRD161J-473	RESISTOR 47KΩ, 1/6W
	R50	QRD161J-103	RESISTOR 10KΩ, 1/6W
	C1	QCXB1CM-122	CAPACITOR 0.0012μ, 16V
	C2	QCXB1CM-122	CAPACITOR 0.0012μ, 16V
	C3	QCC11EJ-272	CAPACITOR 0.0027μ, 25V
	C4	QCC11EJ-392	CAPACITOR 0.0039μ, 25V
	C5	QETA1EM-475	E CAPACITOR 4.7μ F, 25V
	C6	QFLC1HJ-122Z	M CAPACITOR 0.0012μ F, 50V
	C8	PU60550-105	E CAPACITOR 1μ F, 50V
	C9	QETC1CM-106	E CAPACITOR 10μ F, 16V
	C10	QFV71HJ-103	TF CAPACITOR 0.01μ F, 50V
	C11	QEK61HM-105	E CAPACITOR 1μ F, 50V
	C12	QETC1CM-106	E CAPACITOR 10μ F, 16V
	C13	QCC11CJ-104	CAPACITOR 0.1μ F, 16V
	C14	QETC1CM-336	E CAPACITOR 33μ F, 16V
	C15	QETC1HM-104	E CAPACITOR 0.1μ F, 50V
	C16	QETC1HM-105	E CAPACITOR 1μ F, 50V
	C17	QFV71HJ-123	TF CAPACITOR 0.012μ F, 50V
	C19	QETC1CM-106	E CAPACITOR 10μ F, 16V
	C20	QCC11EJ-183	CAPACITOR 0.018μ F, 25V
	C21	QCC11EJ-272	CAPACITOR 0.0027μ, 25V
	C24	QCC11EJ-222	CAPACITOR 0.0022μ, 25V
	C25	QETC1CM-106	E CAPACITOR 10μ F, 16V
	C26	QCBB1HJ-331	CAPACITOR 330PF, 50V
	C27	QFV71HJ-473	TF CAPACITOR 0.047μ F, 50V
	C28	QCXB1CM-122	CAPACITOR 0.0012μ, 16V
	C29	QCBB1HJ-102	CAPACITOR 0.001μ F, 50V
	L1	PU58308-103J	COIL 10μ H
	L2	PU59152-3R9J	COIL 3.9μ H
	L3	PU59152-3R9J	COIL 3.9μ H
	L4	PU59152-2R2J	COIL 2.2μ H

#	REF No.	PART No.	PART NAME, DESCRIPTION	
	L5	PU48530-471K	COIL	470 μ H
	K1	PU60281-5	FERRITE BEADS	
	K2	PU60281-4	FERRITE BEADS	
	K3	PU60281-4	FERRITE BEADS	

Δ T1 PU60510-3 OSC TRANSFORMER
 Δ or PELN0533 OSC TRANSFORMER

CN1 PU59555-7 CONNECTOR
 CN2 PU58844-2 CONNECTOR

— VIDEO SECTION —

IC280 BA7106LS IC
 or XRA7106LS IC

Q201 2SC1740S(RS) TRANSISTOR
 or 2SC3199(GB)-TJK TRANSISTOR
 Q202 2SC1740S(RS) TRANSISTOR
 or 2SC3199(GB)-TJK TRANSISTOR
 Q206 2SC1740S(RS) TRANSISTOR
 or 2SC3199(GB)-TJK TRANSISTOR

Q207 2SC1740S(RS) TRANSISTOR
 or 2SC3199(GB)-TJK TRANSISTOR
 Q210 2SA933S(RS) TRANSISTOR
 or 2SA1267(YG)-TJK TRANSISTOR
 Q211 2SA933S(RS) TRANSISTOR
 or 2SA1267(YG)-TJK TRANSISTOR

Q213 2SC1740S(RS) TRANSISTOR
 or 2SC3199(GB)-TJK TRANSISTOR
 Q214 2SA933S(RS) TRANSISTOR
 or 2SA1267(YG)-TJK TRANSISTOR
 Q217 DTA114ES TRANSISTOR

D207 1SS133 DIODE
 or MA165 DIODE

D208 1SS133 DIODE
 or MA165 DIODE

D212 1SS133 DIODE
 or MA165 DIODE

D213 1SS133 DIODE
 or MA165 DIODE

D280 1SS133 DIODE
 or MA165 DIODE

R201 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R202 QRD161J-223 RESISTOR 22K Ω , 1/6W
 R203 QRD161J-223 RESISTOR 22K Ω , 1/6W
 R206 QRD161J-101 RESISTOR 100 Ω , 1/6W

#	REF No.	PART No.	PART NAME, DESCRIPTION	
	R208	QVZ3518-332AZ	V RESISTOR, SP PB FREQ	3.3K Ω
		or QVZ3523-332AZ	V RESISTOR	3.3K Ω
	R209	QRD161J-152	RESISTOR	1.5K Ω , 1/6W
	R210	QRD161J-621	RESISTOR	620 Ω , 1/6W
	R211	QRD161J-333	RESISTOR	33K Ω , 1/6W
	R212	QRD161J-153	RESISTOR	15K Ω , 1/6W
	R213	QRD161J-222	RESISTOR	2.2K Ω , 1/6W
	R214	QRD161J-681	RESISTOR	680 Ω , 1/6W
	R215	QVZ3518-681AZ	V RESISTOR, REC COLOR	680 Ω
		or QVZ3523-681AZ	V RESISTOR	680 Ω

R216 QRD161J-153 RESISTOR 15K Ω , 1/6W
 R217 QRD161J-103 RESISTOR 10K Ω , 1/6W
 R218 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R227 QRD121J-391S RESISTOR 390 Ω , 1/2W
 R229 QRD161J-123 RESISTOR 12K Ω , 1/6W

R230 QRD161J-103 RESISTOR 10K Ω , 1/6W
 R240 QRD161J-271 RESISTOR 270 Ω , 1/6W
 R242 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R243 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R244 QRD161J-152 RESISTOR 1.5K Ω , 1/6W

R245 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R246 QVZ3518-332AZ V RESISTOR, REC FM ADJ 3.3K Ω
 or QVZ3523-332AZ V RESISTOR, REC FM ADJ 3.3K Ω
 R247 QRD161J-152 RESISTOR 1.5K Ω , 1/6W
 R248 QRD161J-222 RESISTOR 2.2K Ω , 1/6W

R249 QRD161J-681 RESISTOR 680 Ω , 1/6W
 R250 QRD161J-750 RESISTOR 75 Ω , 1/6W
 R251 QRD161J-750 RESISTOR 75 Ω , 1/6W
 R257 QRD161J-562 RESISTOR 5.6K Ω , 1/6W
 R258 QRD161J-562 RESISTOR 5.6K Ω , 1/6W

R259 QRD161J-561 RESISTOR 560 Ω , 1/6W
 R262 QRD161J-152 RESISTOR 1.5K Ω , 1/6W
 R264 QRD161J-331 RESISTOR 330 Ω , 1/6W
 R265 QRD161J-102 RESISTOR 1K Ω , 1/6W
 R267 QRD161J-562 RESISTOR 5.6K Ω , 1/6W

R280 QRD161J-914 RESISTOR 910K Ω , 1/6W
 R281 QRD161J-681 RESISTOR 680 Ω , 1/6W
 R282 QRD161J-391 RESISTOR 390 Ω , 1/6W
 R283 QRD161J-104 RESISTOR 100K Ω , 1/6W
 R284 QRD161J-273 RESISTOR 27K Ω , 1/6W

R285 QRD161J-103 RESISTOR 10K Ω , 1/6W
 R286 QRD161J-333 RESISTOR 33K Ω , 1/6W

C201 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C202 QCSB1HJ-390 CAPACITOR 39PF, 50V
 C203 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C204 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C205 QETC0JM-476 E CAPACITOR 47 μ F, 6.3V

C206 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C207 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C208 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C209 QCVB1CN-103 CAPACITOR 0.01 μ F, 16V
 C212 QER61CM-476 E CAPACITOR 47 μ F, 16V

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
C213		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C214		QETC0JM-476	E CAPACITOR	47 μ F,6.3V
C215		QETC0JM-108	E CAPACITOR	1000 μ F,6.3V
C216		QETC0JM-476	E CAPACITOR	47 μ F,6.3V
C217		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C221		QCSB1HJ-560	CAPACITOR	56PF,50V
C222		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C226		QCSB1HK-4R7	CAPACITOR	4R0 μ F,50V
C227		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C228		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C229		QCSB1HJ-560	CAPACITOR	56PF,50V
C280		QETC1CM-106	E CAPACITOR	10 μ F,16V
C281		QETC1HM-335	E CAPACITOR	3.3 μ F,50V
C282		QCBB1HJ-471	CAPACITOR	470PF,50V
C284		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C285		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C286		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C287		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C288		QFN31HJ-471	M CAPACITOR	470PF,50V
C289		QCSB1HJ-270	CAPACITOR	27PF,50V
C290		QCXB1CN-472	CAPACITOR	0.0047 μ F,16V
C291		QCSB1HK-4R7	CAPACITOR	4.7PF,50V
C293		QETC0JM-477	E CAPACITOR	470 μ F,6.3V
C294		QCVB1CN-103	CAPACITOR	0.01 μ F,16V
C295		QCT25CH-101	CAPACITOR	100PF,50V
L201		PU48530-101K	COIL	100 μ H
L202		PU59152-180J	COIL	18 μ H
L203		PU48530-101K	COIL	100 μ H
L204		PU48530-101K	COIL	100 μ H
L206		PU59152-121J	COIL	120 μ H
L280		PU48530-101K	COIL	100 μ H
L282		PU60655-2	COIL SECAM DET	
CN201		PU58844-5	CONNECTOR	
CN203		PU59555-3	CONNECTOR	
— SERVO SECTION —				
IC401		HD49733NT	IC	
		or HD49733ANT	IC	
IC501		BA7039	IC	
		or XRA7039	IC	
Q402		2SA1309(QRS)	TRANSISTOR	
		or 2SA933S(QRS)	TRANSISTOR	
		or 2SA1267(YG)-TJK	TRANSISTOR	
D401		1SS133	DIODE	
		or MA165	DIODE	
D402		1SS133	DIODE	
		or MA165	DIODE	

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
D403		1SS133	DIODE	
		or MA165	DIODE	
D404		1SS133	DIODE	
		or MA165	DIODE	
D407		1SS133	DIODE	
		or MA165	DIODE	
D408		1SS133	DIODE	
		or MA165	DIODE	
D409		1SS133	DIODE	
		or MA165	DIODE	
D410		1SS133	DIODE	
		or MA165	DIODE	
R401		QRD161J-223	RESISTOR	22K Ω ,1/6W
R402		QRD161J-225	RESISTOR	2.2M Ω ,1/6W
R403		QRD161J-473	RESISTOR	47K Ω ,1/6W
R404		QRD161J-222	RESISTOR	2.2K Ω ,1/6W
R405		QRD161J-123	RESISTOR	12K Ω ,1/6W
R406		QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R407		QRD161J-392	RESISTOR	3.9K Ω ,1/6W
R408		QRD161J-105	RESISTOR	1.0M Ω ,1/6W
R409		QRD161J-273	RESISTOR	27K Ω ,1/6W
R411		QRD161J-105	RESISTOR	1.0M Ω ,1/6W
R412		QRD161J-273	RESISTOR	27K Ω ,1/6W
R413		QRD161J-273	RESISTOR	27K Ω ,1/6W
R414		QRD161J-335	RESISTOR	3.3M Ω ,1/6W
R415		QRD161J-334	RESISTOR	330K Ω ,1/6W
R416		QRD161J-822	RESISTOR	8.2K Ω ,1/6W
R418		QRD161J-102	RESISTOR	1K Ω ,1/6W
R419		QRD161J-473	RESISTOR	47K Ω ,1/6W
R420		QVZ3518-684	V RESISTOR,SP PB SW POINT	680K Ω
R422		QRD161J-104	RESISTOR	100K Ω ,1/6W
R426		QRD161J-821	RESISTOR	820 Ω ,1/6W
R427		QRD161J-102	RESISTOR	1K Ω ,1/6W
R428		QRD161J-105	RESISTOR	1.0M Ω ,1/6W
R429		QRD161J-102	RESISTOR	1K Ω ,1/6W
R430		QRD161J-102	RESISTOR	1K Ω ,1/6W
R434		QRD161J-102	RESISTOR	1K Ω ,1/6W
R435		QRD161J-102	RESISTOR	1K Ω ,1/6W
R436		QRD161J-274	RESISTOR	270K Ω ,1/6W
R437		QRD161J-274	RESISTOR	270K Ω ,1/6W
R438		QRD161J-224	RESISTOR	220K Ω ,1/6W
R439		QRD161J-103	RESISTOR	10K Ω ,1/6W
R440		QRD161J-474	RESISTOR	470K Ω ,1/6W
R441		QRD161J-823	RESISTOR	82K Ω ,1/6W
R501		QRD161J-102	RESISTOR	1K Ω ,1/6W
R502		QRD161J-332	RESISTOR	3.3K Ω ,1/6W
R503		QRD161J-272	RESISTOR	2.7K Ω ,1/6W
R508		QRD161J-124	RESISTOR	120K Ω ,1/6W
C401		QCVB1CM-103	CAPACITOR	0.01 μ F,16V
C402		QEK61AM-226	E CAPACITOR	22 μ F,10V
C403		QFV11HJ-224	TF CAPACITOR	0.22 μ F,50V

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
C404			QFV71HJ-223	TF CAPACITOR	0.022 μ F,50V
			or QFN31HJ-223	M CAPACITOR	0.022 μ F,50V
C405			QEK61EM-475	E CAPACITOR	4.7 μ F,25V
C406			QEK61EM-475	E CAPACITOR	4.7 μ F,25V
C407			QEK61CM-106	E CAPACITOR	10 μ F,16V
C408			QEK61CM-106	E CAPACITOR	10 μ F,16V
C409			QCC31CK-223	CAPACITOR	0.022 μ F,16V
C410			QFV71HJ-184	TF CAPACITOR	0.18 μ F,50V
			or QFV11HJ-184	MMT CAPACITOR	0.18 μ F,50V
C411			QCBB1HJ-471	CAPACITOR	470PF,50V
C412			QFLC1HJ-682Z	M CAPACITOR	0.0068 μ ,50V
			or QFN31HJ-682	M CAPACITOR	0.0068 μ ,50V
C414			QCBB1HJ-102	CAPACITOR	0.001 μ F,50V
C415			QEK61AM-226	E CAPACITOR	22 μ F,10V
C416			QEK61AM-226	E CAPACITOR	22 μ F,10V
C417			QCBB1HJ-271	CAPACITOR	270PF,50V
C418			QCBB1HJ-561	CAPACITOR	560PF,50V
C419			QCBB1HJ-102	CAPACITOR	0.001 μ F,50V
C420			QEK61HM-105	E CAPACITOR	1 μ F,50V
C421			QCBB1HJ-102	CAPACITOR	0.001 μ F,50V
C422			QFV71HJ-563	TF CAPACITOR	0.056 μ F,50V
			or QFV11HJ-563	MMT CAPACITOR	0.056 μ F,50V
C423			QCBB1HJ-102	CAPACITOR	0.001 μ F,50V
C427			QCBB1HJ-181	CAPACITOR	180PF,50V
C502			QCVB1CM-103	CAPACITOR	0.01 μ F,16V
C504			QFV71HJ-104	TF CAPACITOR	0.1 μ F,50V
			or QFV11HJ-104	MM CAPACITOR	0.1 μ F,50V
C505			QCVB1CM-103	CAPACITOR	0.01 μ F,16V
C506			QFV71HJ-683	TF CAPACITOR	0.068 μ F,50V
			or QFV11HJ-683	MMT CAP	0.068 μ F,50V
C507			QCVB1CM-103	CAPACITOR	0.01 μ F,16V
C508			QEK61AM-226	E CAPACITOR	22 μ F,10V
C509			QCVB1CM-103	CAPACITOR	0.01 μ F,16V
L501			PU59152-270J	COIL	27 μ H
CN401			PU59555-4	CONNECTOR	
△ CP401			ICP-F15	CIRCUIT PROTECTOR	

— MECHACON SECTION —

IC601	M37524M3-160SP	IC
Q601	2SB1425(EU)	TRANSISTOR
Q602	DTC114ES	TRANSISTOR
Q605	DTA124ES	TRANSISTOR
Q610	DTC144ES	TRANSISTOR
D601	MA165	DIODE
	or 1SS133	DIODE

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
D602			HZS8.2EB2TJ	ZENER DIODE	
			or MTZ8.2BT-77	ZENER DIODE	
			or UZ8.2BSB	ZENER DIODE	
D603			MA165	DIODE	
			or 1SS133	DIODE	
D604			MA165	DIODE	
			or 1SS133	DIODE	
D605			MA165	DIODE	
			or 1SS133	DIODE	
D606			11ES2	DIODE	
			or ERA15-02	DIODE	
			or S5688G	DIODE	
			or 1SR139-200	DIODE	
D607			MA165	DIODE	
			or 1SS133	DIODE	
R601			QRD161J-681	RESISTOR	680 Ω ,1/6W
R602			QRD161J-105	RESISTOR	1.0M Ω ,1/6W
R603			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R604			QRD161J-103	RESISTOR	10K Ω ,1/6W
R605			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R606			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R607			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R608			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R610			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R611			QRD161J-102	RESISTOR	1K Ω ,1/6W
R612			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R613			QRD161J-332	RESISTOR	3.3K Ω ,1/6W
R614			QRD161J-332	RESISTOR	3.3K Ω ,1/6W
R615			QRD161J-103	RESISTOR	10K Ω ,1/6W
R616			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R617			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R618			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R619			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R620			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R621			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R622			QRD161J-102	RESISTOR	1K Ω ,1/6W
R623			QRD161J-102	RESISTOR	1K Ω ,1/6W
R624			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R625			QRD161J-102	RESISTOR	1K Ω ,1/6W
R626			QRD161J-102	RESISTOR	1K Ω ,1/6W
R628			QRD161J-102	RESISTOR	1K Ω ,1/6W
R629			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R630			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R631			QRD161J-822	RESISTOR	8.2K Ω ,1/6W
R632			QRD161J-103	RESISTOR	10K Ω ,1/6W
R633			QRD161J-471	RESISTOR	470 Ω ,1/6W
R637			QRD161J-682	RESISTOR	6.8K Ω ,1/6W
R638			QRD161J-152	RESISTOR	1.5K Ω ,1/6W
R639			QRD161J-472	RESISTOR	4.7K Ω ,1/6W
R640			QRD161J-303	RESISTOR	30K Ω ,1/6W
R641			QRD161J-224	RESISTOR	220K Ω ,1/6W
R642			QRD161J-563	RESISTOR	56K Ω ,1/6W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
R643			QRD161J-154	RESISTOR 150K Ω , 1/6W
R644			QRD161J-333	RESISTOR 33K Ω , 1/6W
R645			QRD161J-103	RESISTOR 10K Ω , 1/6W
R649			QRD161J-103	RESISTOR 10K Ω , 1/6W
R650			QRD161J-103	RESISTOR 10K Ω , 1/6W
R651			QRD161J-103	RESISTOR 10K Ω , 1/6W
R652			QRD161J-103	RESISTOR 10K Ω , 1/6W
R653			QRD161J-333	RESISTOR 33K Ω , 1/6W
R654			QRD161J-561	RESISTOR 560 Ω , 1/6W
R660			QRD161J-103	RESISTOR 10K Ω , 1/6W
C601			QCFB1EZ-223	CAPACITOR 0.022 μ F, 25V
C602			QEK61EM-335	E CAPACITOR 3.3 μ F, 25V
C603			QER61HM-105	E CAPACITOR 1 μ F, 50V
C604			QEK60JM-107	E CAPACITOR 100 μ F, 6.3V
C605			QCBB1HJ-121	CAPACITOR 120PF, 50V
C606			QCC11EK-473	CAPACITOR 0.047 μ F, 25V
C620			QCBB1HJ-331	CAPACITOR 330PF, 50V
C621			QCBB1HJ-331	CAPACITOR 330PF, 50V
L601			PU59152-2R2J	COIL 2.2 μ H
△	CF601		PEVB0340	RESONATOR
△	TH801		PESC1041	POSITIVE THERMISTOR
CN10			PEMC0714-005	CONNECTOR
CN601			PEMC0722-017	WIRE TRAP
			or PEMC0753-017	WIRE TRAP
CN602			PU59555-4	CONNECTOR
CN603			PU60910-9	WIRE TRAP
CN701			PEMC0823-009	CONNECTOR
CN703			PEMC0823-009	CONNECTOR
△	CP602		ICP-F20	CIRCUIT PROTECTOR

— REGULATOR SECTION —

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
D801			1SS133	DIODE
			or MA165	DIODE
D802			UZ5.1BSC	ZENER DIODE
			or MTZV5.1C	ZENER DIODE
			or RD5.1ES-T1B3	ZENER DIODE
R801			QRD161J-103	RESISTOR 10K Ω , 1/6W
R802			QRD161J-222	RESISTOR 2.2K Ω , 1/6W
R803			QRD161J-102	RESISTOR 1K Ω , 1/6W
R804			QRD161J-102	RESISTOR 1K Ω , 1/6W
R805			QRD161J-102	RESISTOR 1K Ω , 1/6W
R806			QRD161J-103	RESISTOR 10K Ω , 1/6W
R807			QRD161J-221	RESISTOR 220 Ω , 1/6W
R808			QRD161J-472	RESISTOR 4.7K Ω , 1/6W
R809			QRD161J-822	RESISTOR 8.2K Ω , 1/6W
R810			QRD161J-471	RESISTOR 470 Ω , 1/6W
R811			QVZ3518-471A	V RESISTOR, SWD 5V 470 Ω
			or QVZ3523-471A	V RESISTOR, SWD 5V 470 Ω
R812			QRD161J-103	RESISTOR 10K Ω , 1/6W
C803			QETC1CM-107	E CAPACITOR 100 μ F, 16V
C804			QETC0JM-107	E CAPACITOR 100 μ F, 6.3V
C805			QETC1AM-107	E CAPACITOR 100 μ F, 10V
C806			QFLA1HJ-103Z	M CAPACITOR 0.01 μ F, 50V
C807			QETC1CM-476	E CAPACITOR 47 μ F, 16V
C808			QETC0JM-107	E CAPACITOR 100 μ F, 6.3V
C809			QFN31HJ-102	M CAPACITOR 0.001 μ F, 50V
C811			QETA0JM-477	E CAPACITOR 470 μ F, 6.3V
CN801			PU61044-8	WIRE TRAP

— TERMINAL SECTION —

Q702			2SB810H,J	TRANSISTOR
D701			1SS133	DIODE
			or MA165	DIODE
D702			1SS133	DIODE
			or MA165	DIODE
D705			1SS133	DIODE
			or MA165	DIODE
R703			QRD161J-393	RESISTOR 39K Ω , 1/6W
R704			QRD161J-102	RESISTOR 1K Ω , 1/6W
L701			PU59152-100J	COIL 10 μ H
L703			PU59152-100J	COIL 10 μ H
J701			PEMC0766	RGB21PIN SOCKET
J702			PU60612	EARPHONE JACK
			or PU61012	MINI JACK
J703			PEMC0824	DIN CONNECTOR

Δ REF No. PART No. PART NAME, DESCRIPTION

VIDEO UNIT BOARD ASSEMBLY <05 >

PWBA	PB10554A-07	VIDEO UNIT BOARD ASSY
IC1	JCP0016-2	IC
IC2	TL8827P	IC
Q1	2SA1576(QRS)	TRANSISTOR
Q5	2SA1576(QRS)	TRANSISTOR
Q10	2SC4081(QRS)	TRANSISTOR
Q11	DTC144WU	TRANSISTOR
Q12	DTC144WU	TRANSISTOR
Q13	DTC144WU	TRANSISTOR
Q14	DTC144WU	TRANSISTOR
Q16	DTC144WU	TRANSISTOR
Q18	2SC4081(QRS)	TRANSISTOR
Q19	2SC4081(QRS)	TRANSISTOR
Q20	2SC4081(QRS)	TRANSISTOR
Q21	2SA1576(QRS)	TRANSISTOR
Q22	2SA1576(QRS)	TRANSISTOR
Q23	DTC144WU	TRANSISTOR
Q24	2SA1576(QRS)	TRANSISTOR
Q25	2SC4081(QRS)	TRANSISTOR
Q26	2SC4081(QRS)	TRANSISTOR
Q28	2SC4081(QRS)	TRANSISTOR
Q29	2SC4081(QRS)	TRANSISTOR
Q30	2SC4081(QRS)	TRANSISTOR
Q31	DTA124EU	TRANSISTOR
Q32	DTC144WU	TRANSISTOR
D1	1SS292	DIODE
D3	1SS133	DIODE
	or MA165	DIODE
D4	1SS133	DIODE
	or MA165	DIODE
D5	1SS133	DIODE
	or MA165	DIODE
D6	1SS133	DIODE
	or MA165	DIODE
D7	DAN202U	DIODE
D10	1SS133	DIODE
	or MA165	DIODE
D11	1SS133	DIODE
	or MA165	DIODE
D12	1SS133	DIODE
	or MA165	DIODE
D14	1SS133	DIODE
	or MA165	DIODE
D15	1SS133	DIODE
	or MA165	DIODE

Δ REF No. PART No. PART NAME, DESCRIPTION

D17	DAN202U	DIODE	
D19	1SS133	DIODE	
	or MA165	DIODE	
D20	1SS133	DIODE	
	or MA165	DIODE	
D21	1SS133	DIODE	
D202	DAN202U	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω, 1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ, 1/16W
R3	NRSA63J-475N	RESISTOR	4.7MΩ, 1/16W
R5	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R6	NRSA63J-361N	RESISTOR	360Ω, 1/16W
R10	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R11	NRSA63J-681N	RESISTOR	680Ω, 1/16W
R12	ERS-L39J-102U	RESISTOR	1KΩ
R13	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R16	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W
R17	NVP1301-222N	V RESISTOR, PB Y LEVEL	2.2KΩ
R18	NRSA63J-333N	RESISTOR	33KΩ, 1/16W
R19	NRSA63J-823N	RESISTOR	82KΩ, 1/16W
R21	NRSA63J-331N	RESISTOR	330Ω, 1/16W
R22	NRSA63J-621N	RESISTOR	620Ω, 1/16W
R23	NRSA63J-561N	RESISTOR	560Ω, 1/16W
R24	NRSA63J-182N	RESISTOR	1.8KΩ, 1/16W
R25	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
R26	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R27	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
R28	NRSA63J-822N	RESISTOR	8.2KΩ, 1/16W
R29	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
R30	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
R31	NRSA63J-183N	RESISTOR	18KΩ, 1/16W
R32	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
R33	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
R35	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
R36	NRSA63J-562N	RESISTOR	5.6KΩ, 1/16W
R37	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
R38	NRSA63J-332N	RESISTOR	3.3KΩ, 1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R41	NVP1301-223N	V RESISTOR, CARRIER	22KΩ
R42	NVP1301-103N	V RESISTOR, DEVIATION	10KΩ
R43	NRSA63J-222N	RESISTOR	2.2KΩ, 1/16W
R44	NRSA63J-432N	RESISTOR	4.3KΩ, 1/16W
R45	NRSA63J-122N	RESISTOR	1.2KΩ, 1/16W
R46	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R47	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R48	NRSA63G-911N	RESISTOR	910Ω, 1/16W
R49	NRSA63J-103N	RESISTOR	10KΩ, 1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R52	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R53	NRSA63J-102N	RESISTOR	1KΩ, 1/16W
R54	NRSA63J-242N	RESISTOR	2.4KΩ, 1/16W
R55	NRSA63J-392N	RESISTOR	3.9KΩ, 1/16W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	#	△	REF No.	PART No.	PART NAME, DESCRIPTION
R56			NVP1301-152N	V RESISTOR,N C BALANCE 1.5KΩ	C30			QETC1HM-225	E CAPACITOR 2.2μ F,50V
R57			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C31			QETC1HM-474	E CAPACITOR 0.47μ F,50V
R58			NRSA63J-821N	RESISTOR 820Ω,1/16W	C32			NCS31HG-201A	CAPACITOR 200PF,50V
R59			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C33			NCB31EK-223A	CAPACITOR 0.022μ F,25V
R60			NVP1301-103N	V RESISTOR,EE Y LEVEL 10KΩ	C34			QETC1EM-475	E CAPACITOR 4.7μ F,25V
R61			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C35			NCS31HG-150A	CAPACITOR 15PF,50V
R62			NRSA63J-334N	RESISTOR 330KΩ,1/16W	C36			QCF81CZ-105	CAPACITOR 1μ F,16V
R63			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C37			NCB31EK-223A	CAPACITOR 0.022μ F,25V
R64			NVP1301-332N	V RESISTOR,WHITE CLIP 3.3KΩ	C38			NCS31HJ-101A	CAPACITOR 100PF,50V
R65			NRSA63J-103N	RESISTOR 10KΩ,1/16W	C40			NCS31HJ-390A	CAPACITOR 39PF,50V
R66			NRSA63J-434N	RESISTOR 430KΩ,1/16W	C41			NCB31CK-333A	CAPACITOR 0.033μ F,16V
R67			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C42			QETC0JM-476	E CAPACITOR 47μ F,6.3V
R68			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C43			QETC1CM-106	E CAPACITOR 10μ F,16V
R69			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C44			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R70			NRSA63J-471N	RESISTOR 470Ω,1/16W	C45			QETC1CM-106	E CAPACITOR 10μ F,16V
R71			NRSA63J-122N	RESISTOR 1.2KΩ,1/16W	C46			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R72			NRSA63J-333N	RESISTOR 33KΩ,1/16W	C47			QETC1HM-105	E CAPACITOR 1μ F,50V
R73			NRSA63J-333N	RESISTOR 33KΩ,1/16W	C48			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R74			NRSA63J-681N	RESISTOR 680Ω,1/16W	C49			NCB31HK-472A	CAPACITOR 0.0047μ F,50V
R75			NRSA63J-561N	RESISTOR 560Ω,1/16W	C50			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R76			NRSA63J-102N	RESISTOR 1KΩ,1/16W	C51			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R77			NRSA63J-562N	RESISTOR 5.6KΩ,1/16W	C52			QETC1HM-105	E CAPACITOR 1μ F,50V
R78			NRSA63J-681N	RESISTOR 680Ω,1/16W	C53			QETC1CM-106	E CAPACITOR 10μ F,16V
R79			NRSA63J-222N	RESISTOR 2.2KΩ,1/16W	C54			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
R81			NRSA63J-475N	RESISTOR 4.7MΩ,1/16W	C56			QEN61EM-475	NP E CAPACITOR 4.7μ F,25V
R83			NRSA63J-272N	RESISTOR 2.7KΩ,1/16W				or QENC1EM-475	NP E CAPACITOR 4.7μ F,25V
R84			NRSA63J-105N	RESISTOR 1.0MΩ,1/16W	C57			QETC1EM-335	E CAPACITOR 3.3μ F,25V
R85			NRSA63J-155N	RESISTOR 1.5MΩ,1/16W	C58			QETC1EM-475	E CAPACITOR 4.7μ F,25V
R208			NRSA63J-472N	RESISTOR 4.7KΩ,1/16W	C59			NCF31CZ-473A	CAPACITOR 0.047μ F,16V
C1			NCS31HJ-221A	CAPACITOR 220PF,50V	C60			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C2			NCS31HJ-220A	CAPACITOR 22PF,50V	C61			QETC1HM-474	E CAPACITOR 0.47μ F,50V
C4			NCS31HG-561A	CAPACITOR 560PF,50V	C62			NCB31CK-333A	CAPACITOR 0.033μ F,16V
C8			QCF1EZ-473	CAPACITOR 0.047μ F,25V	C63			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C9			NCS31HJ-150A	CAPACITOR 15PF,50V	C64			QETC1HM-104	E CAPACITOR 0.1μ F,50V
C11			NCS31HJ-680A	CAPACITOR 68PF,50V	C65			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C12			NCS31HJ-220A	CAPACITOR 22PF,50V	C66			QETC1HM-104	E CAPACITOR 0.1μ F,50V
C13			NCS31HG-121A	CAPACITOR 120PF,50V	C67			NCF31CZ-473A	CAPACITOR 0.047μ F,16V
C14			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C69			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C16			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C70			NCF31CZ-473A	CAPACITOR 0.047μ F,16V
C17			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C71			NCB31HK-272A	CAPACITOR 0.0027μ F,50V
C18			NCS31HJ-820A	CAPACITOR 82PF,50V	C72			QETC1EM-475	E CAPACITOR 4.7μ F,25V
C19			QETC1HM-474	E CAPACITOR 0.47μ F,50V	C73			QETC1HM-105	E CAPACITOR 1μ F,50V
C20			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C74			QETC0JM-107	E CAPACITOR 100μ F,6.3V
C21			QETC1HM-474	E CAPACITOR 0.47μ F,50V	C75			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C22			QETC1EM-475	E CAPACITOR 4.7μ F,25V	C76			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
C23			QETC1CM-106	E CAPACITOR 10μ F,16V	C77			QETC1HM-104	E CAPACITOR 0.1μ F,50V
C24			QEN61AM-226	NP E CAPACITOR 22μ F,10V	C78			QCVB1CN-103	CAPACITOR 0.01μ F,16V
C25		or	QENC1AM-226	NP E CAPACITOR 22μ F,10V	C79			NCF31HZ-103A	CAPACITOR 0.01μ F,50V
			QETC1CM-106	E CAPACITOR 10μ F,16V	C80			NCS31HJ-240A	CAPACITOR 24PF,50V
C26			PU57601-106MA	E CAPACITOR 10μ F,10V	C82			QETC1HM-225	E CAPACITOR 2.2μ F,50V
C27			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C84			NCS31HJ-180A	CAPACITOR 18PF,50V
C29			NCF31HZ-103A	CAPACITOR 0.01μ F,50V	C91			NCS31HJ-620A	CAPACITOR 62PF,50V
					C93			NCF31HZ-103A	CAPACITOR 0.01μ F,50V

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
C95			NCS31HJ-120A	CAPACITOR	12PF,50V
C96			NCF31HZ-103A	CAPACITOR	0.01 μ F,50V
C97			NCB31CK-333A	CAPACITOR	0.033 μ F,16V
C98			NCB31HK-102A	CAPACITOR	0.001 μ F,50V
C99			NCS31HJ-180A	CAPACITOR	18PF,50V
C100			NCS31HG-361A	CAPACITOR	360PF,50V
C102			QCYA1EK-104	CAPACITOR	0.1 μ F,25V
L1			PU58201-121J	COIL	120 μ H
L3			PU59152-330J	COIL	33 μ H
L4			PU59152-330J	COIL	33 μ H
L5			PU59152-330J	COIL	33 μ H
L6			PU59152-820J	COIL	82 μ H
L7			PU59152-221J	COIL	220 μ H
L8			PU48530-101K	COIL	100 μ H
L9			PU48530-101K	COIL	100 μ H
L10			PU59152-680J	COIL	68 μ H
L11			PU48530-101K	COIL	100 μ H
L12			PU48530-101K	COIL	100 μ H
L13			PU48530-561J	COIL	560 μ H
L14			PU48530-222J	COIL	2.2mH
L15			PU59152-150J	COIL	15 μ H
L16			PU59152-820J	COIL	82 μ H
LPF1			PELN0477	LOW PASS FILTER	
			or PELN0623	LOW PASS FILTER	
LPF2			PELN0478	LOW PASS FILTER	
			or PELN0621	LOW PASS FILTER	
LPF3			PU60128-2	LOW PASS FILTER	
			or PELN0622	LOW PASS FILTER	
DL1			PU60490	COMB FILTER	
			or PU60222	2H DELAY LINE	
			or PU58971-4	2H DELAY LINE	
			or PU60340-3	2H DELAY LINE	
△ X1			PEVB0386	CRYSTAL RESONATOR	
			or PU60653-2	CRYSTAL RESONATOR	
SLD1			PQ45174	SHIELD PLATE	
SLD2			PQ45173-1-1	SHIELD CASE	
CN1			PEMC0712-114	PIN HEADER	
CN2			PEMC0712-113	PIN HEADER	
CN3			PEMC0712-113	PIN HEADER	

TUNER UNIT BOARD ASSEMBLY <08>

PWBA	PB10522L-02	TU UNIT BOARD ASSY
△ TNR1	PERF0069	TUNER

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
IC1			LA7577V	IC	
IC2			AN1358	IC	
			or M5223P	IC	
Q1			2SB810H,J	TRANSISTOR	
Q2			2SD1450S,T	TRANSISTOR	
Q3			2SD1450S,T	TRANSISTOR	
Q4			2SD1819A(RS)	TRANSISTOR	
Q5			2SK381(C)	FE TRANSISTOR	
Q6			DTC114EU	TRANSISTOR	
Q7			DTA144EU	TRANSISTOR	
Q8			2SA1532(C)	TRANSISTOR	
Q10			DTA144TU	TRANSISTOR	
Q11			2SA1532(C)	TRANSISTOR	
Q12			2SA1532(C)	TRANSISTOR	
Q13			2SA1532(C)	TRANSISTOR	
Q15			2SD1819A(RS)	TRANSISTOR	
Q17			2SD1819A(RS)	TRANSISTOR	
Q18			DTC144EU	TRANSISTOR	
Q19			2SD1819A(RS)	TRANSISTOR	
Q21			2SA1532(C)	TRANSISTOR	
Q23			2SD1819A(S)	TRANSISTOR	
Q25			DTC114EU	TRANSISTOR	
D1			E-103	DIODE	
D2			HZT33-02	ZENER DIODE	
D4			MTZ11B	ZENER DIODE	
D5			SVC321SPA-B-1	V.DIODE	
R1			NRSA63J-182N	RESISTOR	1.8K Ω, 1/16W
R2			NRSA63J-182N	RESISTOR	1.8K Ω, 1/16W
R3			NRSA63J-182N	RESISTOR	1.8K Ω, 1/16W
R4			NRSA63J-153N	RESISTOR	15K Ω, 1/16W
R5			NRSA63J-153N	RESISTOR	15K Ω, 1/16W
R6			NRSA63J-153N	RESISTOR	15K Ω, 1/16W
R7			NRSA63J-224N	RESISTOR	220K Ω, 1/16W
R10			NRSA63J-272N	RESISTOR	2.7K Ω, 1/16W
R11			QRSA08J-222YN	RESISTOR	2.2K Ω, 1/10W
R12			NRSA63J-564N	RESISTOR	560K Ω, 1/16W
R13			NRSA63J-683N	RESISTOR	68K Ω, 1/16W
R14			QRSA08J-473YN	RESISTOR	47K Ω, 1/10W
R17			QRSA08J-102YN	RESISTOR	1K Ω, 1/10W
R19			QRSA08J-183YN	RESISTOR	18K Ω, 1/10W
R21			NRSA63J-473N	RESISTOR	47K Ω, 1/16W
R23			QRD161J-151	RESISTOR	150 Ω, 1/6W
R24			NRSA63J-103N	RESISTOR	10K Ω, 1/16W
R25			NRSA63J-103N	RESISTOR	10K Ω, 1/16W
R26			NRSA63J-271N	RESISTOR	270 Ω, 1/16W
R27			NRSA63J-333N	RESISTOR	33K Ω, 1/16W
R28			NRSA63J-154N	RESISTOR	150K Ω, 1/16W
R29			NRSA63J-154N	RESISTOR	150K Ω, 1/16W
R30			QRSA08J-223YN	RESISTOR	22K Ω, 1/10W

# Δ REF No.	PART No.	PART NAME, DESCRIPTION	# Δ REF No.	PART No.	PART NAME, DESCRIPTION
R31	QRSA08J-223YN	RESISTOR 22KΩ, 1/10W	C35	NCT06CH-4R0A	CAPACITOR 4.0PF,50V
R32	NRSA63J-182N	RESISTOR 1.8KΩ, 1/16W	C37	NCB31HK-102A	CAPACITOR 0.001 μ F,50V
R33	NRSA63J-103N	RESISTOR 10KΩ, 1/16W	C39	NCB31HK-222A	CAPACITOR 0.0022 μ , 50V
R34	NRSA63J-153N	RESISTOR 15KΩ, 1/16W	C41	NCF31HZ-103A	CAPACITOR 0.01 μ F,50V
R45	NRSA63J-680N	RESISTOR 68Ω, 1/16W	C42	QETF1CM-476	E CAPACITOR 47 μ F,16V
R51	QRD161J-331	RESISTOR 330Ω, 1/6W	C43	NCB31HK-222A	CAPACITOR 0.0022 μ ,50V
R52	NRSA63J-101N	RESISTOR 100Ω, 1/16W	C44	QETF1CM-476	E CAPACITOR 47 μ F,16V
R53	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W	C46	NCT06CH-150A	CAPACITOR 15PF,50V
R54	NRSA63J-824N	RESISTOR 820KΩ, 1/16W	C47	QFN31HK-683	M CAPACITOR 0.068 μ F,50V
R55	NRSA63J-334N	RESISTOR 330KΩ, 1/16W	C48	NCB31HK-102A	CAPACITOR 0.001 μ F,50V
R56	NRSA63J-334N	RESISTOR 330KΩ, 1/16W	C50	QETF1HM-474	E CAPACITOR 0.47 μ F,50V
R59	NRSA63J-151N	RESISTOR 150Ω, 1/16W	C51	NCT06CH-160A	CAPACITOR 16PF,50V
R60	NRSA63J-102N	RESISTOR 1KΩ, 1/16W	C53	NCT06CH-220A	CAPACITOR 22PF,50V
R61	NRSA63J-331N	RESISTOR 330Ω, 1/16W	C55	NCB31HK-222A	CAPACITOR 0.0022 μ , 50V
R63	NRSA63J-102N	RESISTOR 1KΩ, 1/16W	C56	QETC1CM-336	E CAPACITOR 33 μ F,16V
R65	NRSA63J-201N	RESISTOR 200Ω, 1/16W	C58	QCYA1EK-103	CAPACITOR 0.01 μ F,25V
R66	NRSA63J-202N	RESISTOR 2KΩ, 1/16W	C59	NCT06CH-8R0A	CAPACITOR 8PF,50V
R67	NRSA63J-331N	RESISTOR 330Ω, 1/16W	C60	NCF31HZ-103A	CAPACITOR 0.01 μ F,50V
R71	NRSA63J-822N	RESISTOR 8.2KΩ, 1/16W	C61	NCS31HJ-331A	CAPACITOR 330PF,50V
R72	QVZ3518-103	V RESISTOR,RF AGC 10KΩ	C62	QETF1HM-224	E CAPACITOR 0.22 μ F,50V
R74	NRSA63J-182N	RESISTOR 1.8KΩ, 1/16W	C63	NCF31HZ-103A	CAPACITOR 0.01 μ F,50V
R75	NRSA63J-104N	RESISTOR 100KΩ, 1/16W	C65	QETF1HM-225	E CAPACITOR 2.2 μ F,50V
R77	NRSA63J-104N	RESISTOR 100KΩ, 1/16W	C66	NCB31HK-102A	CAPACITOR 0.001 μ F,50V
R78	NRSA63J-392N	RESISTOR 3.9KΩ, 1/16W	C67	QFV81HJ-473	TF CAPACITOR 0.047 μ F,50V
R79	NRSA63J-162N	RESISTOR 1.6KΩ, 1/16W	C68	QETF1HM-105	E CAPACITOR 1 μ F,50V
R80	NRSA63J-103N	RESISTOR 10KΩ, 1/16W	C69	NCB31HK-222A	CAPACITOR 0.0022 μ , 50V
R81	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W	C71	QETC1HM-104	E CAPACITOR 0.1 μ F,50V
R82	QRSA08J-391YN	RESISTOR 390Ω, 1/10W	C81	QFN31HJ-153	M CAPACITOR 0.015 μ F,50V
R83	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W	C82	QFN31HJ-333	M CAPACITOR 0.033 μ F,50V
R84	NRSA63J-105N	RESISTOR 1.0MΩ, 1/16W	C102	NCS31HJ-121A	CAPACITOR 120PF,50V
R85	NRSA63J-623N	RESISTOR 62KΩ, 1/16W	C103	NCS31HJ-471A	CAPACITOR 470PF,50V
R86	NRSA63J-273N	RESISTOR 27KΩ, 1/16W	C110	QCT30CH-8R2	CAPACITOR 8.2PF,50V
R87	NRSA63J-681N	RESISTOR 680Ω, 1/16W	L2	PU60025-1R2	COIL 1.2 μ H
R89	NRSA63J-471N	RESISTOR 470Ω, 1/16W	L3	PU60025-1R5	COIL 1.5 μ H
R91	QRSA08J-184YN	RESISTOR 180KΩ, 1/10W	L4	PU60025-3R9	COIL 3.9 μ H
R92	NRSA63J-223N	RESISTOR 22KΩ, 1/16W	L5	PU60025-1R5	COIL 1.5 μ H
R93	NRSA63J-123N	RESISTOR 12KΩ, 1/16W	L7	PU59152-6R8J	COIL 6.8 μ H
R94	NRSA63J-822N	RESISTOR 8.2KΩ, 1/16W	L8	PU59152-330J	COIL 33 μ H
R95	NRSA63J-332N	RESISTOR 3.3KΩ, 1/16W	L9	PU59152-120J	COIL 12 μ H
R96	NRSA63J-392N	RESISTOR 3.9KΩ, 1/16W	L10	PU59152-470J	COIL 47 μ H
R97	NRSA63J-822N	RESISTOR 8.2KΩ, 1/16W	L11	PU59152-470J	COIL 47 μ H
R105	NRSA63J-222N	RESISTOR 2.2KΩ, 1/16W	L20	PU59152-470J	COIL 47 μ H
C8	QETF1HM-106	E CAPACITOR 10 μ F,50V	CF1	PU32990-2	CERAMIC FILTER
C10	QETF1HM-106	E CAPACITOR 10 μ F,50V	CF2	PU49295-2	N FILTER
C12	QETF1CM-336	E CAPACITOR 33 μ F,16V	CF3	PU49295-4	CERAMIC FILTER
C14	QETF1HM-225	E CAPACITOR 2.2 μ F,50V	SAW1	PU35557-7	SAW FILTER
C16	QETF1HM-475	E CAPACITOR 4.7 μ F,50V	SAW2	PU60954	SAW FILTER
C20	QETF1CM-336	E CAPACITOR 33 μ F,16V	T1	PELN0444	IF.TRANSFORMER
C21	NCF31HZ-103A	CAPACITOR 0.01 μ F,50V			
C24	QETC1HM-224	E CAPACITOR 0.22 μ F,50V			
C25	QETF1HM-104	E CAPACITOR 0.1 μ F,50V			
C34	NCT06CH-3R0A	CAPACITOR 3.0PF,50V			

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
T2		PELN0443	IF.TRANSFORMER
T3		PELN0620	IF.TRANSFORMER
T4		PELN0449	LC TRAP
CN1		PEMC0825-009	CONNECTOR (Board to Board)
CN2		PEMC0825-009	CONNECTOR (Board to Board)

AUDIO CONTROL HEAD BOARD <12>

PWB1	PB40068	AUDIO CONTROL HEAD BOARD
CN1	PU59555-107	CONNECTOR

TIMER/DISPLAY/SW BOARD ASSEMBLY <21>

PWBA	PB10504G	T/D/S BOARD ASSY
IC1	UPD75217CW-106	IC
IC2	IC-PST523H-2	IC
IC101	GP1U541X	IR DETECT UNIT
Q1	2SC3199(G) or 2SC3311A(RS) or 2SC536SPA(FG) or 2SC1740S(RS)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR
D1	RD9.1ES-T1B2	ZENER DIODE
D2	1SS133	DIODE
D3	1SS133	DIODE
D4	11ES2	DIODE
D5	11ES2	DIODE
D7	1SS133	DIODE
D8	RD5.6ES-T1B2	ZENER DIODE
D9	1SS132	DIODE
D10	1SS132	DIODE
D101	SLH-34VC3F	LE DIODE,POWER
D102	SLH-34MC3F	LE DIODE,AUTO TRACKING
D111	1SS132	DIODE
D112	1SS132	DIODE
D115	1SS132	DIODE
D116	1SS132	DIODE
D117	1SS132	DIODE
D118	1SS132	DIODE
D123	1SS132	DIODE
D129	1SS132	DIODE
D134	1SS132	DIODE

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
D140		1SS132	DIODE
R1		QRD161J-103	RESISTOR 10K Ω,1/6W
R2		QRD161J-472	RESISTOR 4.7K Ω,1/6W
R3		QRD161J-273	RESISTOR 27K Ω,1/6W
R4		QRD161J-682	RESISTOR 6.8K Ω,1/6W
R5		QRD161J-333	RESISTOR 33K Ω,1/6W
R6		QRD161J-333	RESISTOR 33K Ω,1/6W
R7		QRD161J-102	RESISTOR 1K Ω,1/6W
R8		QRD161J-103	RESISTOR 10K Ω,1/6W
R9		QRD161J-103	RESISTOR 10K Ω,1/6W
R10		QRD161J-103	RESISTOR 10K Ω,1/6W
R11		QRD161J-103	RESISTOR 10K Ω,1/6W
R12		QRD161J-333	RESISTOR 33K Ω,1/6W
R13		QRD161J-271	RESISTOR 270 Ω,1/6W
R14		QRD161J-271	RESISTOR 270 Ω,1/6W
R15		QRD161J-103	RESISTOR 10K Ω,1/6W
R16		QRD161J-103	RESISTOR 10K Ω,1/6W
R17		QRD161J-472	RESISTOR 4.7K Ω,1/6W
R18		QRD161J-333	RESISTOR 33K Ω,1/6W
R19		QRD161J-333	RESISTOR 33K Ω,1/6W
R20		QRD161J-333	RESISTOR 33K Ω,1/6W
R21		QRD161J-333	RESISTOR 33K Ω,1/6W
R25		QRD161J-103	RESISTOR 10K Ω,1/6W
R26		QRD161J-103	RESISTOR 10K Ω,1/6W
R30		QRD161J-224	RESISTOR 220K Ω,1/6W
R31		QRD162J-151	RESISTOR 150 Ω,1/6W
R32		QRD161J-271	RESISTOR 270 Ω,1/6W
R33		QRD161J-271	RESISTOR 270 Ω,1/6W
R34		QRD161J-333	RESISTOR 33K Ω,1/6W
R101		QRD161J-271	RESISTOR 270 Ω,1/6W
R102		QRD161J-271	RESISTOR 270 Ω,1/6W
RA1		QRB077J-104 or QRB079J-104	RESISTOR ARRAY 100K Ω NETWORK RESISTOR 100K Ω
C3		QCVB1CN-103	CAPACITOR 0.01 μF,16V
C4		QER61CM-106	E CAPACITOR 10 μF,16V
C5		QEA40HZ-105	E CAPACITOR (DOUBLE) 1 μF,5.5V
C6		QAT3123-200	TRIMMER CAPACITOR,TIMER CLOCK
C7		QCSB1HJ-120	CAPACITOR 12PF,50V
C11		QER61CM-106	E CAPACITOR 10 μF,16V
C13		QCVB1CN-103	CAPACITOR 0.01 μF,16V
C14		QER61HM-106	E CAPACITOR 10 μF,50V
C15		QCB1HJ-101	CAPACITOR 100PF,50V
C16		QCB1HJ-101	CAPACITOR 100PF,50V
C17		QCF11HP-473	CAPACITOR 0.047 μF,50V
C18		QER61CM-106	E CAPACITOR 10 μF,16V
C19		QER61CM-106	E CAPACITOR 10 μF,16V
C21		QCVB1CN-103	CAPACITOR 0.01 μF,16V
C22		QCC11EK-473	CAPACITOR 0.047 μF,25V
C30		QCY41HK-102	CAPACITOR 0.001 μF,50V

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
△	X1		PU60226-4	CRYSTAL RESONATOR
S1			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,POWER TACT SWITCH TACT SWITCH
S2			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,STOP TACT SWITCH TACT SWITCH
S3			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,FF TACT SWITCH TACT SWITCH
S4			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,REW TACT SWITCH TACT SWITCH
S6			PU60392-2-2 or PESW0525-02Z or PU60975-2Z	TACT SWITCH,REC TACT SWITCH TACT SWITCH
S7			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,PLAY TACT SWITCH TACT SWITCH
S8			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,PAUSE TACT SWITCH TACT SWITCH
S18			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,CLOCK ADJ TACT SWITCH TACT SWITCH
S21			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,CANCEL TACT SWITCH TACT SWITCH
S22			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,REPEAT TACT SWITCH TACT SWITCH
S23			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,SELECT TACT SWITCH TACT SWITCH
S24			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,TIMER TACT SWITCH TACT SWITCH
S25			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,SET+ TACT SWITCH TACT SWITCH
S26			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,SET- TACT SWITCH TACT SWITCH
S28			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,DISPLY OFF TACT SWITCH TACT SWITCH
S30			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,CH SET TACT SWITCH TACT SWITCH
S32			PU60392-2-2 or PU60975-2Z or PESW0525-02Z	TACT SWITCH,CNT/REM/DATE TACT SWITCH TACT SWITCH

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
S403			PESW0575-02	SLIDE SWITCH
S405			PESW0574-02	SLIDE SWITCH,REPEAT
FDP1			PEDP0039	FLUORESCENT DISPLAY PANEL
CL1			PU56729-2	WIRE CLAMP
HD1			PQ33662	FDP HOLDER(R)
HD2			PQ33661	FDP HOLDER(L)
HD3			PQM30038-2-2	LED HOLDER,FOR D101
HD4			PQM30038-1-2	LED HOLDER
J3			QWE211-04A1A1	WIRE
CN1			PU61044-4 or PEMC0848-004	CONNECTOR WIRE TRAP
CN2			PU61044-9	WIRE TRAP
CN2			PW30613-09938 or PEMC0848-009	WIRE WIRE TRAP

MEMORY BOARD ASSEMBLY <35>

PWBA	PB10522J2-01	MEMORY BOARD ASSY	
IC3	CAT93C46P or 93C46/P	IC	
R121	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
R122	QRSA08J-473YN	RESISTOR	47KΩ, 1/10W
C101	QCYA1EK-103	CAPACITOR	0.01 μ F, 25V
CN8	PEMC0757-105	HOUSING	

UPPER DRUM BOARD <41>

PWB1	PDM3017	BOARD (UPPER DRUM)	
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Δ REF No. PART No. PART NAME, DESCRIPTION

PRE/REC AMP BOARD ASSEMBLY <43>

PWBA	PB20548B-02	PRE/REC BOARD ASSY	
IC1	LA7375	IC	
Q1	2SA1309(RS) or 2SA1267(G)-TJK or 2SA933S(RS)	TRANSISTOR TRANSISTOR TRANSISTOR	
Q2	2SC1740S(RS) or 2SC3199(G) or 2SC3311A(RS) or 2SC536SPA(G)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	
Q4	2SC1740S(RS) or 2SC3199(G) or 2SC3311A(RS) or 2SC536SPA(G)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	
D2	1SS133 or MA165	DIODE DIODE	
R2	QRD161J-561	RESISTOR	560 Ω, 1/6W
R3	QRD161J-222	RESISTOR	2.2K Ω, 1/6W
R4	QRD161J-222	RESISTOR	2.2K Ω, 1/6W
R5	QRD161J-391	RESISTOR	390 Ω, 1/6W
R6	QRD161J-391	RESISTOR	390 Ω, 1/6W
R7	QRD161J-821	RESISTOR	820 Ω, 1/6W
R8	QRD161J-332	RESISTOR	3.3K Ω, 1/6W
R9	QRD161J-152	RESISTOR	1.5K Ω, 1/6W
R10	QRD161J-621	RESISTOR	620 Ω, 1/6W
R11	QRD161J-132	RESISTOR	1.3K Ω, 1/6W
R12	QRD161J-821	RESISTOR	820 Ω, 1/6W
R13	QRD161J-681	RESISTOR	680 Ω, 1/6W
R16	QRD161J-122	RESISTOR	1.2K Ω, 1/6W
R17	QRD161J-153	RESISTOR	15K Ω, 1/6W
R18	QRD161J-223	RESISTOR	22K Ω, 1/6W
R19	QRD161J-333	RESISTOR	33K Ω, 1/6W
R20	QRD161J-102	RESISTOR	1K Ω, 1/6W
R21	QRD161J-333	RESISTOR	33K Ω, 1/6W
R22	QRD161J-622	RESISTOR	6.2K Ω, 1/6W
R23	QRD161J-102	RESISTOR	1K Ω, 1/6W
R24	QRD161J-123	RESISTOR	12K Ω, 1/6W
R25	QRD161J-682	RESISTOR	6.8K Ω, 1/6W
R28	QRD161J-821	RESISTOR	820 Ω, 1/6W
C2	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C3	QCSB1HJ-330	CAPACITOR	33PF, 50V
C4	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C5	QCSB1HJ-560	CAPACITOR	56PF, 50V

Δ REF No. PART No. PART NAME, DESCRIPTION

C6	QCSB1HJ-100	CAPACITOR	10PF, 50V
C7	QCBB1HJ-471	CAPACITOR	470PF, 50V
C9	PU57601-106MA	E CAPACITOR	10 μ F, 25V
C10	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C11	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C14	QFV11HJ-823	MMT CAPACITOR	0.082 μ F, 50V
C15	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C16	QFV11HJ-224	TF CAPACITOR	0.22 μ F, 50V
C17	QFV11HJ-224	TF CAPACITOR	0.22 μ F, 50V
C18	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C19	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C20	QCBB1HJ-102	CAPACITOR	0.001 μ F, 50V
C24	QCBB1HJ-820	CAPACITOR	82PF, 50V
C26	QCVB1CN-103	CAPACITOR	0.01 μ F, 16V
C28	QEE40JM-475	TANTAL CAPACITOR	4.7 μ F, 6.3V
C29	QCSB1HJ-100	CAPACITOR	10PF, 50V
C30	QER60JM-476	E CAPACITOR	47 μ F, 6.3V
C32	QCBB1HJ-271	CAPACITOR	270PF, 50V
L3	PU59152-470J	COIL	47 μ H
L4	PU59152-470J	COIL	47 μ H
L5	PU59152-330J	COIL	33 μ H
L6	PU59152-121J	COIL	120 μ H
L7	PU54223-101K	COIL	100 μ H
L10	PU54223-101K	COIL	100 μ H
SLD1	PQ32216-1-1	SHIELD CASE(1)	
TP3	PU60142-2	TEST PIN	
CN1	PU58844-105	CONNECTOR	
CN2	PU59555-103	CONNECTOR	
CN3	PU59973-4	CONNECTOR	

DECK TERMINAL BOARD ASSEMBLY <51>

PWBA	PB10481E	DECK TERMINAL BOARD ASSY	
Q1	PU60625	END SENSOR	
R3	QRD161J-331	RESISTOR	330 Ω, 1/6W
R4	QRD161J-331	RESISTOR	330 Ω, 1/6W
R5	QRD161J-331	RESISTOR	330 Ω, 1/6W
R8	NTH5D473KB or ERT-D2ZHK473S or NTH5D473KA	THERMISTOR NEGA THERMISTOR RESISTOR	
C1	QCVB1CM-103	CAPACITOR	0.01 μ F, 16V

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
	PS1	PS5705HR	PH INTERRUPTER	
	PS2	PS5705HR	PH INTERRUPTER	
	CN1	PEMC0722-017 or PEMC0753-017	WIRE TRAP	
	CN2	PU60642	CONNECTOR(7PIN)	
	CN3	PU60640	CONNECTOR(4PIN)	

LOADING MDA BOARD ASSEMBLY <55>

	PWBA	PB10481A2	LOADING MDA BOARD ASSY	
	⚠ IC1	BA6418N or XRA6418N	IC	
	C1	QETA1CM-336	E CAPACITOR	33 μ F,16V
	CN1	PU59555-104	CAP HOUSING	

CASSETTE HOUSING BOARD <56>

	PWB1	PB40061	CASSETTE HOUSING BOARD	
	Q2	PN268VI	PHOTO TRANSISTOR	
	D1	UZ5.1BSB or RD5.1ESB2	ZENER DIODE	
	R1	QRD162J-473	RESISTOR	47KΩ, 1/6W
	R2	QRD182J-681	RESISTOR	680Ω, 1/8W
	R3	QRD122J-102	RESISTOR	1KΩ, 1/2W
	C1	QCC11EJ-103	CAPACITOR	0.01 μ F,25V
	TH1	ERT-D2FHJ503S or PESC1084 or ERT-D2FHK503S	THERMISTOR NEGA THERMISTOR THERMISTOR	

SECTION 6

TECHNICAL INFORMATIONS

6.1 CPU pin functions

1. Mechacon CPU pin function (IC601)

Pin No.	Symbol	I/O format	Label	IN/OUT	Contents	
1	Vcc	--	Vcc	--	For the SYSTEM CONTROL, DC 5V (AL 5V)	
2	VREF	--	Vref	--		
3	DA	Analog	START SENS	I	LEADER TAPE DETECT (DET ON: L)	
4	PWM	PWM	NC	--	NC	
5	Port 6	N-ch OPEN DRAIN	4	FM DET	I	AUTO TRACKING DATA IN THERMIC CORRECTION (CAPSTAN BRAKE TIMING CONTROL)
6			3	THERM		
7			2	MODE SENS A		MECHANISM MODE DETECT
8			1	MODE SENS B		
9	0	MODE SENS C				
10	AN	Analog	7	REC SAFETY	I	DETECTS ERASE PROTECT TAB (TAB ABSENT: H) TRAILER TAPE DETECT (DET ON: L)
11			6	END SENS		
12			5	NC	--	NC
13			4	CAP. V	O	CAPSTAN MOTOR DRIVE VOLTAGE SERVO
14	3	DRUM. V	DRUM MOTOR DRIVE VOLTAGE SERVO			
15	Port 4	N-ch OPEN DRAIN	2	LCM 2	O	LOADING MOTOR CONTROL
16			1	LCM 1		
17			0	DRUM FF	I	REC TIMING CONTROL, DRUM ROTATION DETECT (25 Hz)
18			7	CTL PULSE	I	MODE DETECT (SP/LP), BLANK DETECT
19	Port 3	N-ch OPEN DRAIN	6	CAP REV	O	CAPSTAN ROTATION CONTROL (REV: L)
20			5	V. PULSE	O	V PULSE CONTROL
21			4	HEAD SELECT	O	HEAD SELECT SIGNAL OUTPUT
22			3	NC	--	NC
23			2	REEL FG	I	REEL ROTATION DETECT/TAPE REMAIN
24			1	REEL FG (TU)		
25			0	SYNC DET	I	INPUT SIGNAL DETECT (NO SYNC: H)
26			INT-1	--	CAP FG	I
27	CN Vss	CN Vss	GND			
28	RESET	RESET	.		RESET AT CONNECT VCR TO AC	
29	X IN	X IN	I		MAIN SYSTEM CLOCK	
30	X OUT	X OUT	O			
31	ø	NC	--		NC	
32	Vss	Vss	--		GND	
33	Port 5	with Input Latch	7		R PAUSE	I
34			6	INDEX	I/O	VISS DATA WRITE/DETECT
35			5	S. CLK	O	CLOCK
36			4	S. DATA	O	SERVO CONTROL DATA OUTPUT
37		3	High Impedance	RENT	O	RENTAL MODE: L
38		2		TEXT		TEXT MODE: L
39		1		NC	--	NC
40		0		EDIT	O	EDIT MODE: L
41	Port 1	N-ch OPEN DRAIN	7	REC START	O	REC START: L
42			5	AUX		INPUT SIGNAL CONTROL (AUX: L)
43			4	REC		REC: L
44			3	P MUTE		PICTURE MUTE CONTROL (MUTE ON: L)
45			2	EE		EE: L
46			1	POWER ON		POWER ON: L
47			0	VIDEO		VIDEO MODE: L
48			0			
49	Port 0	N-ch OPEN DRAIN	7	A. MUTE	O	AUDIO MUTE CONTROL (MUTE ON: H)
50			6	CASS SENS	I	CASSETTE IN/OUT DETECT
51			5	M DATA	I/O	MEMORY IC CONTROL (DATA READ/WRITE)
52			4	TNR CTL	O	TNR MODE: H
53			3	V. UP	O	CAPSTAN ROTATION SPEED CONTROL (V. UP: H)
54			2	AUTO/MAN/SLOW	O	HEAD SELECT
55			1	NC	--	NC
56			0	M CE	O	MEMORY IC CHIP ENABLE
57	Port 2	C MOS			O	
58			6	NC	--	NC
59			5	PLL DATA	O	TUNING DATA OUTPUT
60			4	PAUSE	O	CAPSTAN MOTOR SERVO (SERVO MODE: H)
61			3	SERVO		
62			2	T. CLK	I	CLOCK
63			1	T. DATA	I/O	M-CTL/TIMER CPU BUS DATA (16 BIT SERIAL)
64			0	PLL LOCK	I	TUNING CHECK DATA INPUT

Table 6-1 Mechacon CPU pin function

2. IC1 pin function (Timer)

Pin No.	Symbol	Label	I/O	Contents
1	S3	Sd	0	SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT /KEY SCAN PULSE OUTPUT
2	S2	Sc		
3	S1	Sb		
4	S0	Sa		
5	P00/INT4	POWER DOWN	I	POWER DOWN DETECT (P DOWN: L)
6	P01/SCK	OS CLK	-	NC
7	P02/SD	OS DATA		
8	P03/SI	TEST	I	TEST POINT (TP1)
9	P10/INT0	REMOTE	I	16 bit REMOTE DATA INPUT (A/B CODE)
10	P11/INT1	NC	-	NC
11	P12/INT2	CNT PLS	0	COUNTER DATA INPUT
12	P13/T10	CNT PLS		
13	P20	KS0	I	KEY SCAN DATA INPUT
14	P21	KS1		
15	P22	KS2		
16	P23/BUZ	KS3		
17	P30	TIMER DATA	I/O	TM (TIMER/M-CTL CPU) BUS : 16 bit SERIAL DATA : CLOCK VIDEO PROGRAMMING SYSTEM : I ² C BUS DATA : CLOCK
18	P31	TIMER CLK	I	
19	P32	SDA TA	I/O	
20	P33	SCL K	O	
21	P60	OS CE	0	ON SCREEN IC CONTROL
22	P61	OS RESET	0	
23	P62	NC	-	NC
24	P63	NC		
25	P40	NC		
26	P41	NC		
27	R42	NC		
28	P43	NC		
29	PPO	NC		
30	X1	X1	I	MAIN SYSTEM CLOCK
31	X2	X2	O	
32	Vss	Vss	-	GND
33	XT1	XT1	I	
34	XT2	POWER	0	LED CONTROL (LED ON: L)
35	P50	NC	-	NC
36	P51	AUTO TRACK	0	LED CONTROL (LED ON: L)
37	P52	NC	-	NC
38	P53	PROGRAM	0	BLUE BACK MODE: H
39	RESET	RESET	I	RESET AT CONNECT VCR TO AC
40	T0	10G	0	COLUMN DISPLAY DATA OUTPUT
41	T1	9G		
42	T2	8G		
43	T3	7G		
44	T4	6G		
45	T5	5G		
46	T6	4G		
47	T7	3G		
48	T8	2G		
49	T9	1G		
50	T10/S15/PH3	Sp	0	SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT
51	T11/S14/PH2	So		
52	T12/S13/PH1	Sn		
53	T13/S12/PH0	Sm		
54	T14/S11	Sl		
55	T15/S10	Sk		
56	VLOAD	VLOAD	I	FDP DRIVE
57	VPRE	VPRE		
58	S9	Sj	0	SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT /KEY SCAN PULSE OUTPUT /KEY SCAN PULSE OUTPUT /KEY SCAN PULSE OUTPUT
59	S8	Si		
60	S7	Sh		
61	S6	Sg		
62	S6	Sf		
63	S4	Se		
64	VDD	VDD		

Table 6-2 IC1 pin function

JVC

VICTOR COMPANY OF JAPAN, LIMITED



Printed in Japan
9201 (VP-TKV04A)