

FUNAI

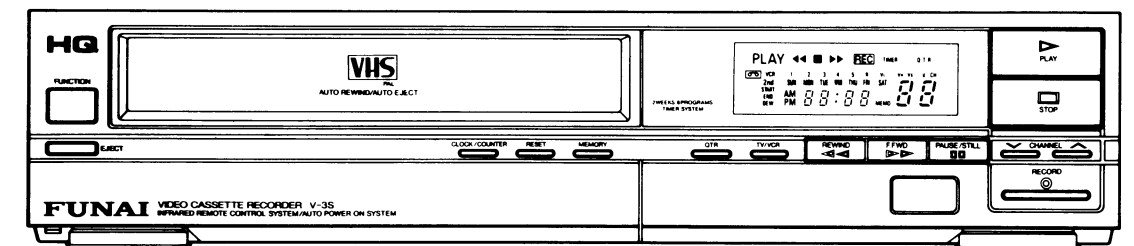
V-3S

VHS HQ
PAL

VIDEO CASSETTE RECORDER

HQ

Video cassette recorders bearing the "HQ" mark incorporate VHS high quality technology. Note that there is interchangeability with former VHS video cassette recorder.



SERVICE MANUAL

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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 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 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 below.

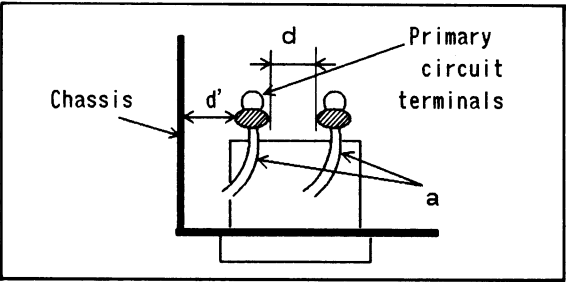


Table 1 : Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance (d) (d')
110 to 130 V	USA & Canada	---	900 V 1minute	≥3.2 mm
* 110 to 130 V	Europe	≥10 MΩ	3 kV 1minute	≥4 mm (d)
200 to 240 V	Australia	/500 V DC		≥6 mm (d')

* Class II model only.

Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

4. Leakage current test

Confirm specified or lower leakage current between B (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 B (earth ground, power cord plug prongs) and exposed accessible parts.
Use an AC voltmeter to measure across both terminals of load Z.
See figure and following table.

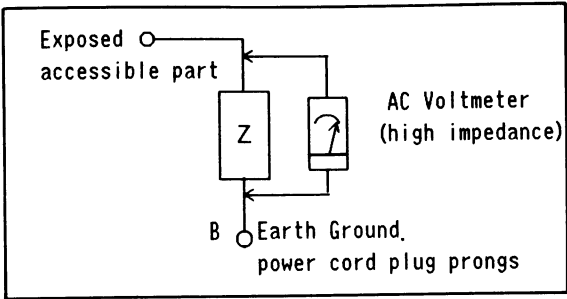


Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to:
110 to 130 V	USA & Canada		$1 \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 200 to 240 V	Europe Australia		$1 \leq 0.7 \text{ mA peak}$ $1 \leq 2 \text{ mA dc}$	Antenna terminals
			$1 \leq 0.7 \text{ mA peak}$ $1 \leq 2 \text{ mA dc}$	Other terminals

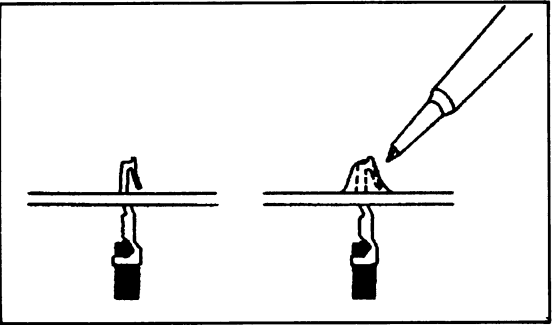
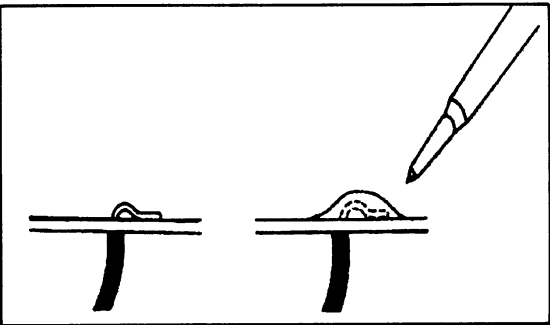
Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

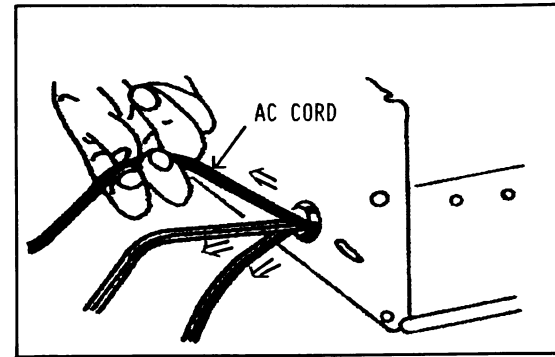
IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected to conform 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

- Locations requiring special caution are denoted by labels and inscribed 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.
- Parts identified by the $\triangle$ symbol parts are critical for safety. Replace only with specified part numbers.
- Use specified internal wiring. Note especially :
 - Wires covered with PVC tubing
 - Double insulated wires
 - High voltage leads
- Use specified insulating materials for hazardous live parts. Note especially :
 - Insulation Tape
 - PVC tubing
 - Spacers
 - Insulation sheets for transistors



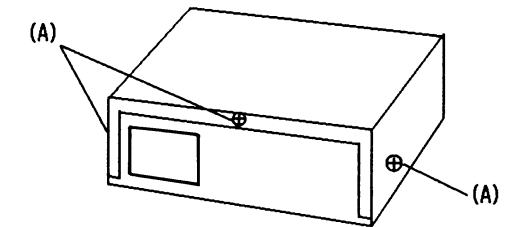


5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely around the terminals before soldering.
6. Observe that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.
9. Also check areas surrounding repaired locations.

1. DISASSEMBLY INSTRUCTIONS (SET)

1-1 Top Cabinet Removal (Fig. 1-1)

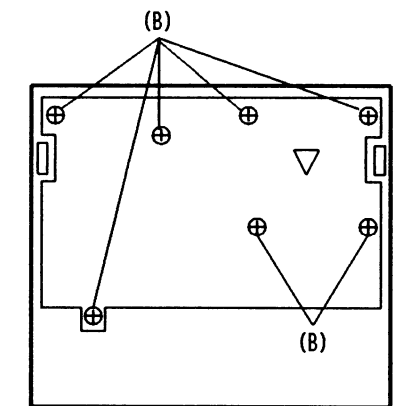
- Remove 3 screws (A).



(Fig. 1-1 Rear)

1-2 Bottom Panel Removal (Fig. 1-2)

- Remove 7 screws (B).



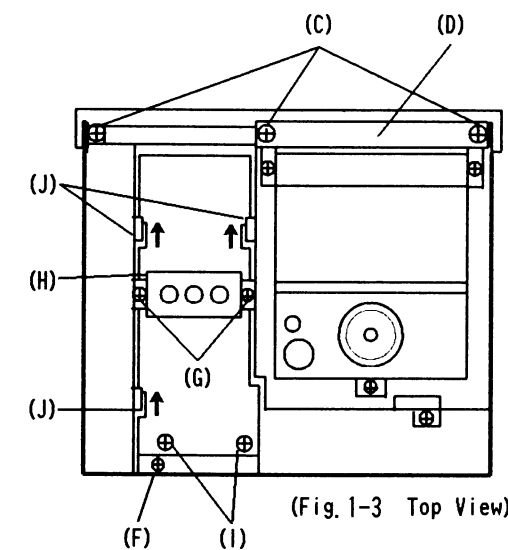
(Fig. 1-2 Bottom View)

1-3 Front Ass'y Removal (Figs. 1-3 and 1-4)

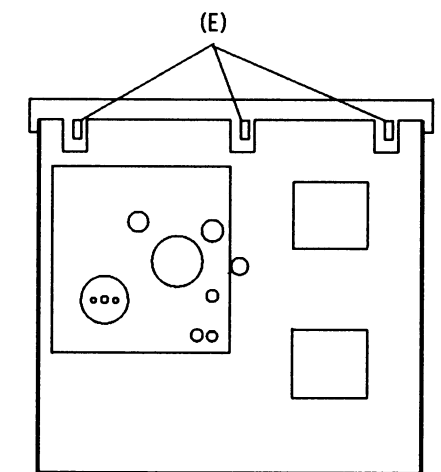
- Remove 3 screws (C).
- Remove Deck Angle (D).
- Unfasten 3 hooks (E) from Cabinet top and bottom.

1-4 Main PCB Removal (Fig. 1-3)

- Remove 1 screw (F).
- Remove 2 screws (G).
- Remove Supporter Holder (H).
- Remove 2 screws (I).
- Unfasten 3 hooks (J) from Cabinet.



(Fig. 1-3 Top View)



(Fig. 1-4 Bottom View)

1-5 Deck Ass'y Removal (Fig. 1-5)

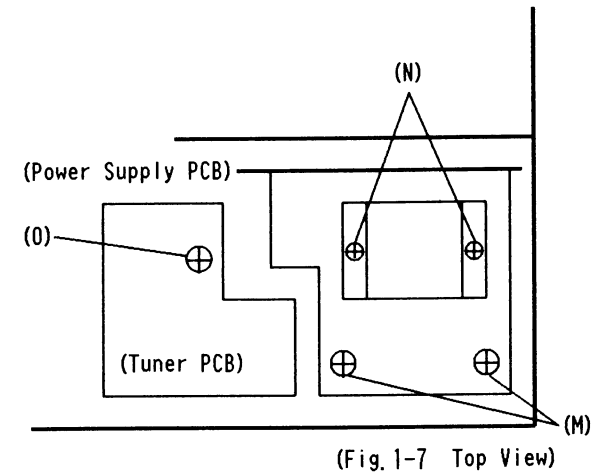
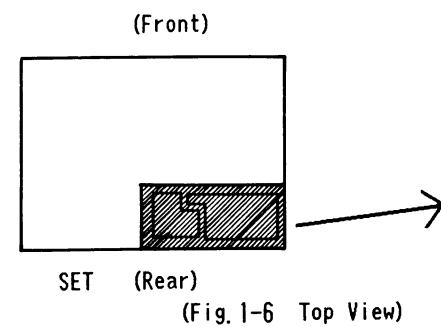
- Remove 3 screws (K).
- Remove 1 screw (L).

1-6 Power Supply PCB Removal (Figs. 1-6 and 1-7)

- Remove 2 screws (M). (Power Supply PCB)
- Remove 2 screws (N). (Power Trans)

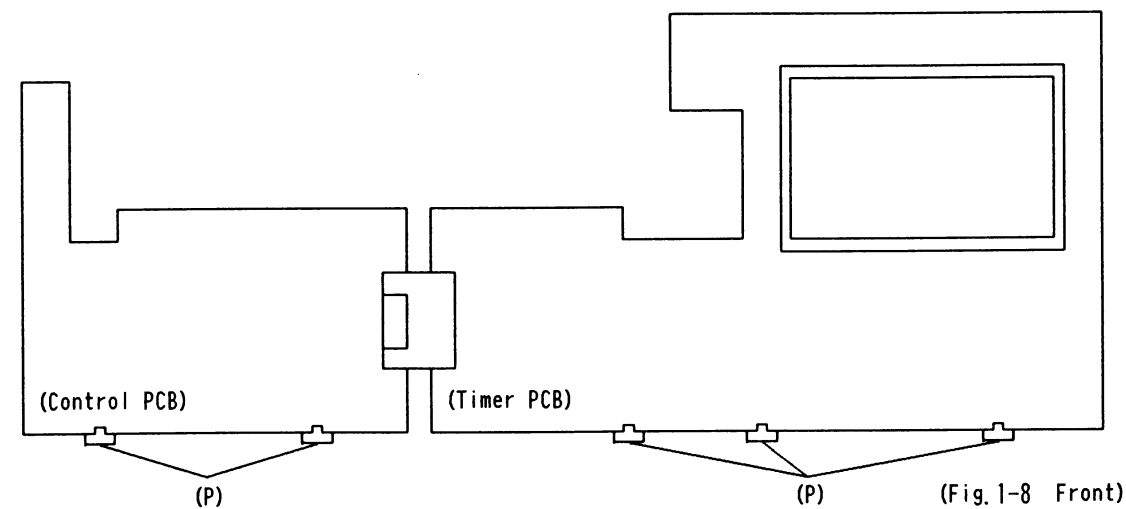
1-7 Tuner PCB Removal (Figs. 1-6 and 1-7)

- Remove 1 screw (O).



1-8 Timer PCB and Control PCB Removal (Fig. 1-8)

- Release 5 hooks (P) from Main Cabinet.



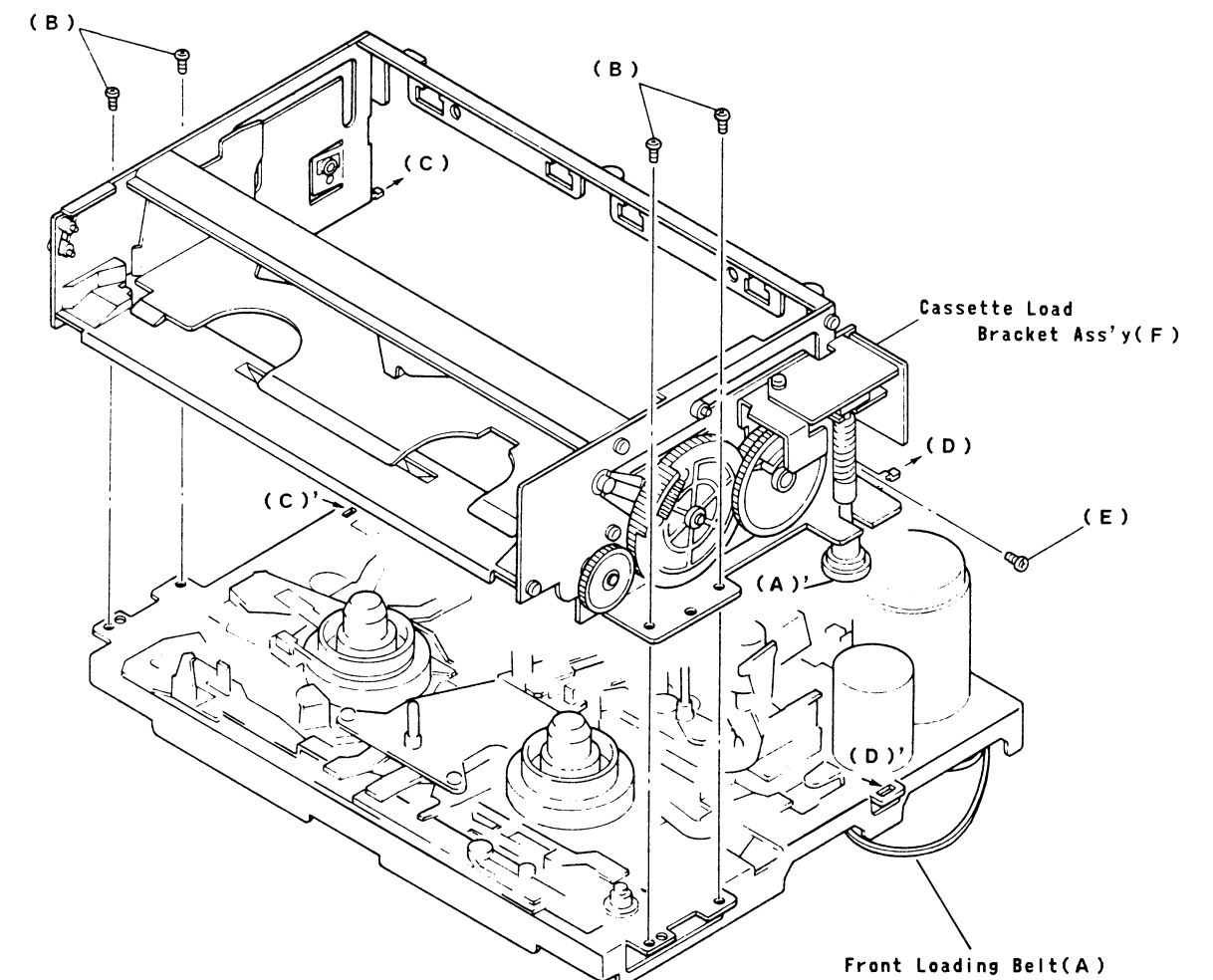
2. DISASSEMBLY INSTRUCTIONS (DECK)

(1) FRONT LOADING UNIT

1. Remove Front Loading Belt (A).
(Hook the Front Loading Belt (A) to (A)'.)
2. Remove 4 screws (B).
3. Take off Left side hook (C) and Right side hook (D).
(To unfasten the hook, hold the front loading unit and lift up and down to this side to take off the hook (C). Similarly to the above, take off hook (D) and hook (C).)

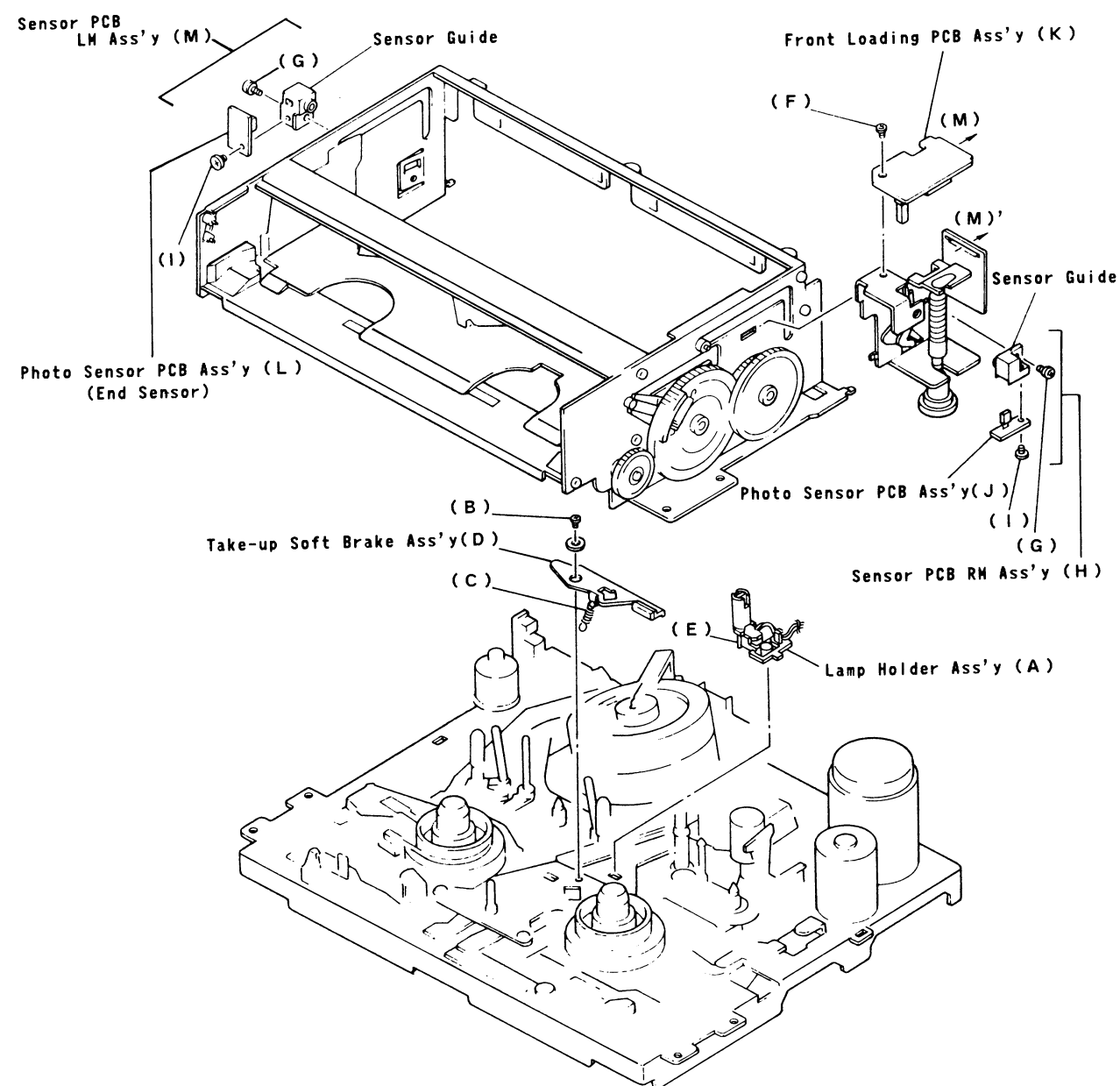
(2) CASSETTE LOAD BRACKET ASS'Y

1. Remove 1 screw (E).
2. Take off the Cassette Load Bracket Ass'y (F).



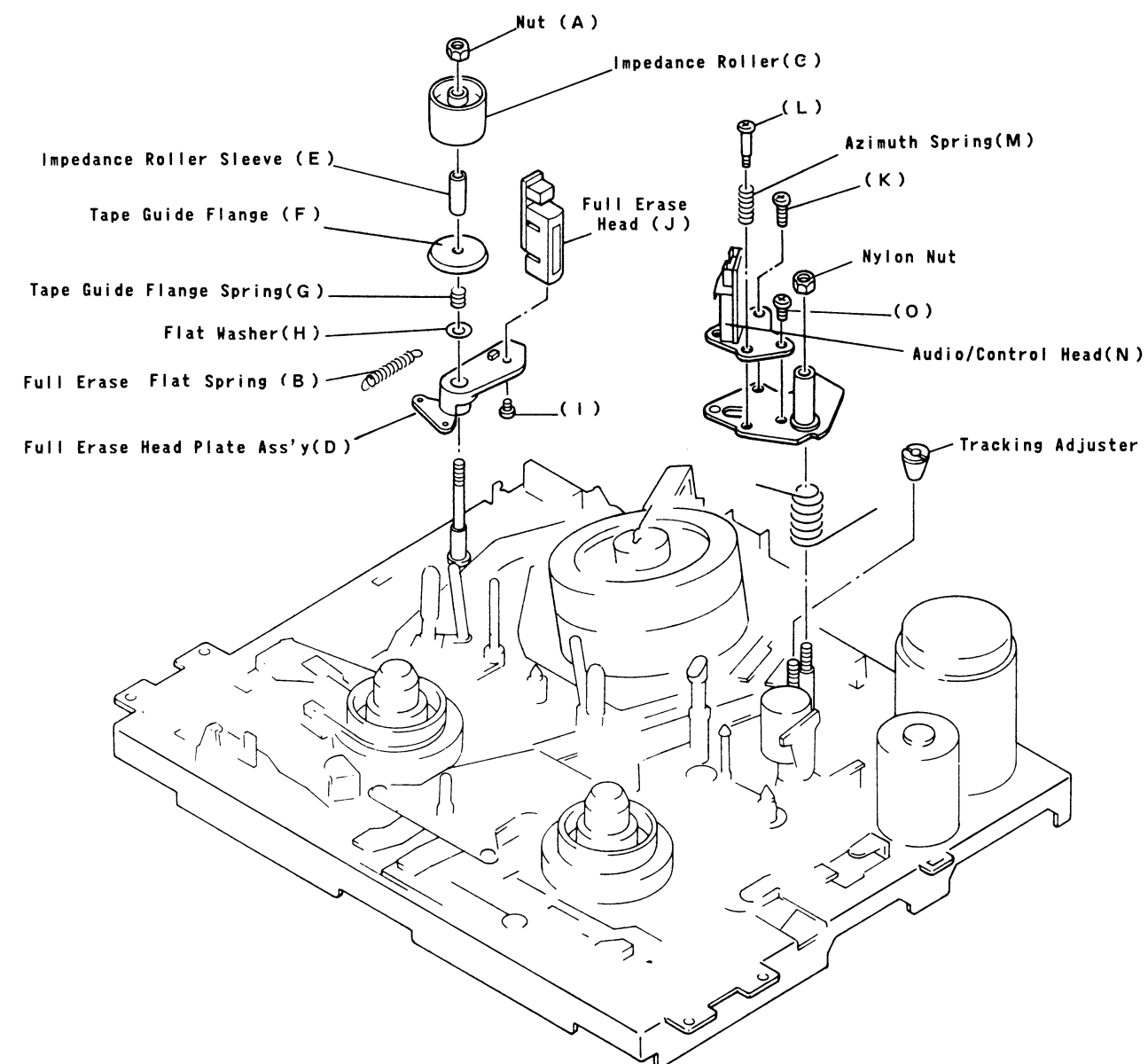
(3) PHOTO SENSOR

1. Replacement of Lamp Holder Ass'y (A).
 - (1) Remove 1 screw (B), and take off the Take-up Soft Brake Ass'y (D).
(At this time, never take off the spring (C).)
 - (2) Hold Lamp Holder Ass'y (A) and pull up to remove the hook (E) from the chassis.
 - (3) Turn the Lamp Holder Ass'y (A) counterclockwise and take out the Lamp Holder Ass'y (A).
2. Replacement of Photo (Start) Sensor.
 - (1) Remove 1 screw (F) and take off the Front Loading PCB Ass'y (K).
 - (2) Remove 1 screw (G) and take off the Sensor PCB RM Ass'y (H).
 - (3) Remove 1 screw (I) and take off the Photo Sensor PCB Ass'y (J).
3. Replacement of Photo (End) Sensor (L).
 - (1) Remove 1 screw (G) and take off the Sensor PCB LM Ass'y (M).
 - (2) Remove 1 screw (I) and take off the Photo Sensor PCB Ass'y (L).



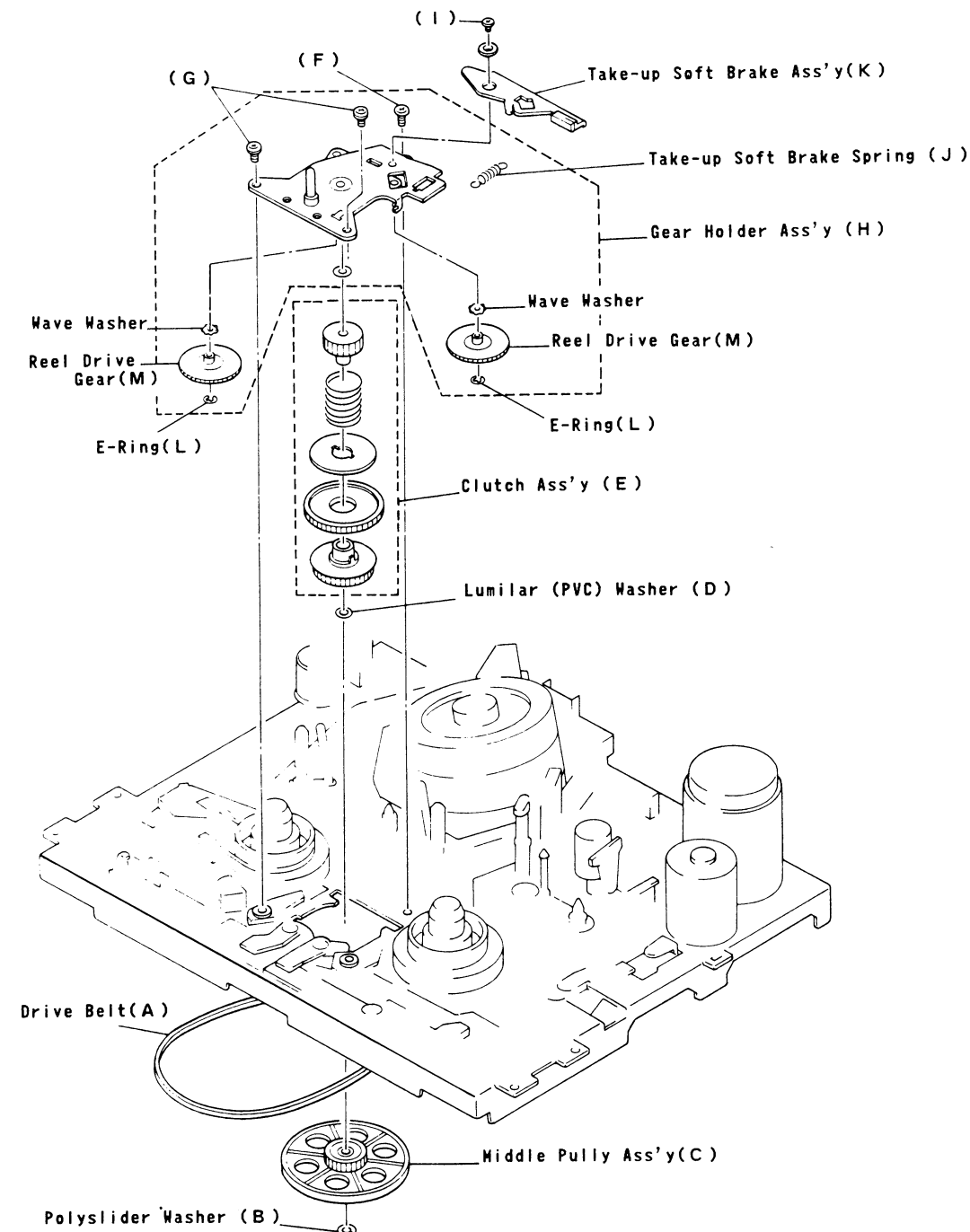
(4) FULL ERASE HEAD / AUDIO CONTROL HEAD

1. Erase Head (except Play Only Model)
 - (1) Remove Nut (A).
 - (2) Remove Spring (B).
 - (3) Take out the Impedance Roller (C), and pull up the Full Erase Head Plate Ass'y (D).
(Take care not to lose parts (E) (F) (G) (H) at the time of the Full Erase plate removal.)
 - (4) Remove 1 screw (I) and take off the Full Erase Head (J).
2. Audio / Control Head
 - (1) Remove 1 screw (K), 1 screw (L) 1 screw (O) and Azimuth Spring (M).
 - (2) Remove Audio/Control Head (N).



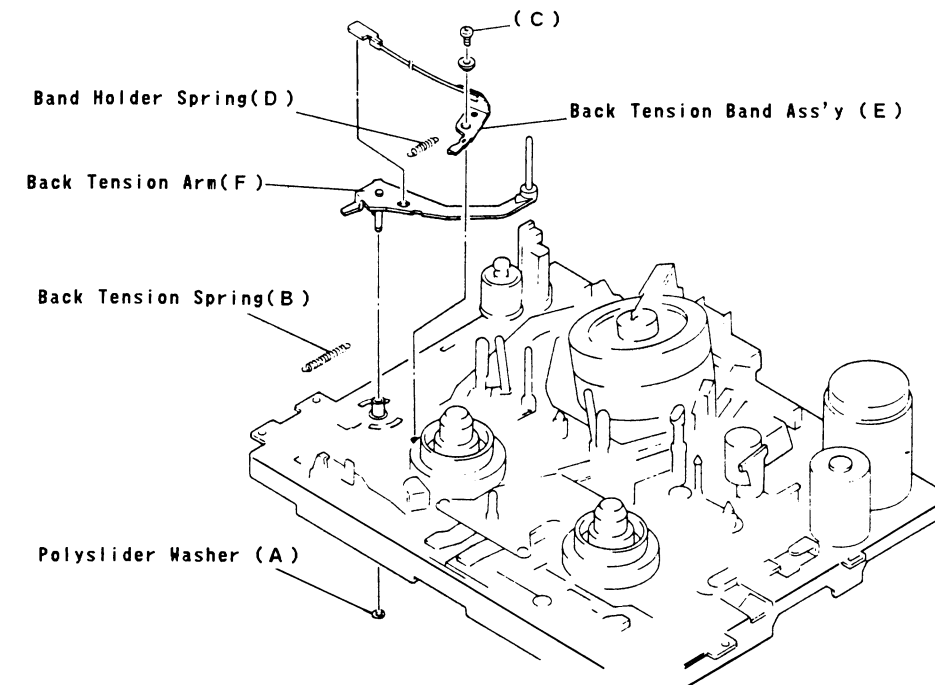
(5) GEAR HOLDER ASS'Y

1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Remove Drive Belt (A).
3. Remove Polyslider Washer (B) and middle Pulley Ass'y (C).
4. Remove Lumilar (PVC) Washer (D) and take off the Clutch Ass'y (E).
5. Remove 1 screw (F) and 2 screws (G) and take off the Gear Holder Ass'y (H).
6. Remove 1 screw (I) and take off the Take-up Soft Brake Spring (J).
7. Take off the Take-up Soft Brake Ass'y (K).
8. Remove 2 E-Rings (L) and take off the 2 Reel Drive Gears (M).



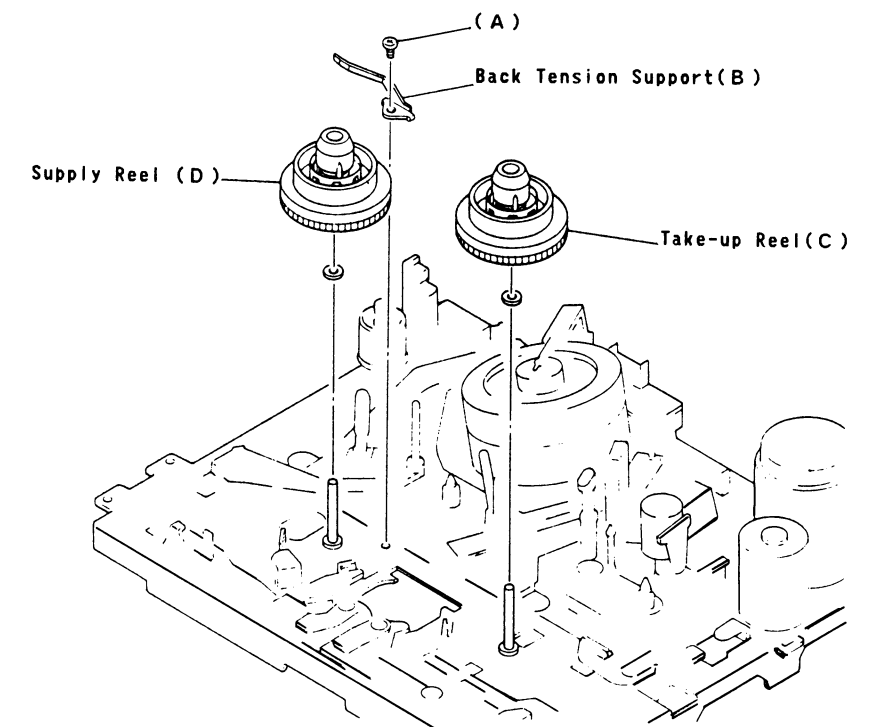
(6) TENSION ARM ASS'Y

1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Remove Polyslider Washer (A) and Back Tension Spring (B) from the Back Tension Arm (F).
3. Remove 1 screw (C) and Band Holder Spring (D).
4. Take off the Back Tension Band Ass'y (E) from the Back Tension Arm (F).



(7) REEL (Take-up and Supply)

1. Remove the Front Loading Unit, Gear Holder Ass'y and Back Tension Band Ass'y.
2. Remove 1 screw (A) and the Back Tension Support (B).
3. Remove the Take-up Reel (C) and the Supply Reel (D).

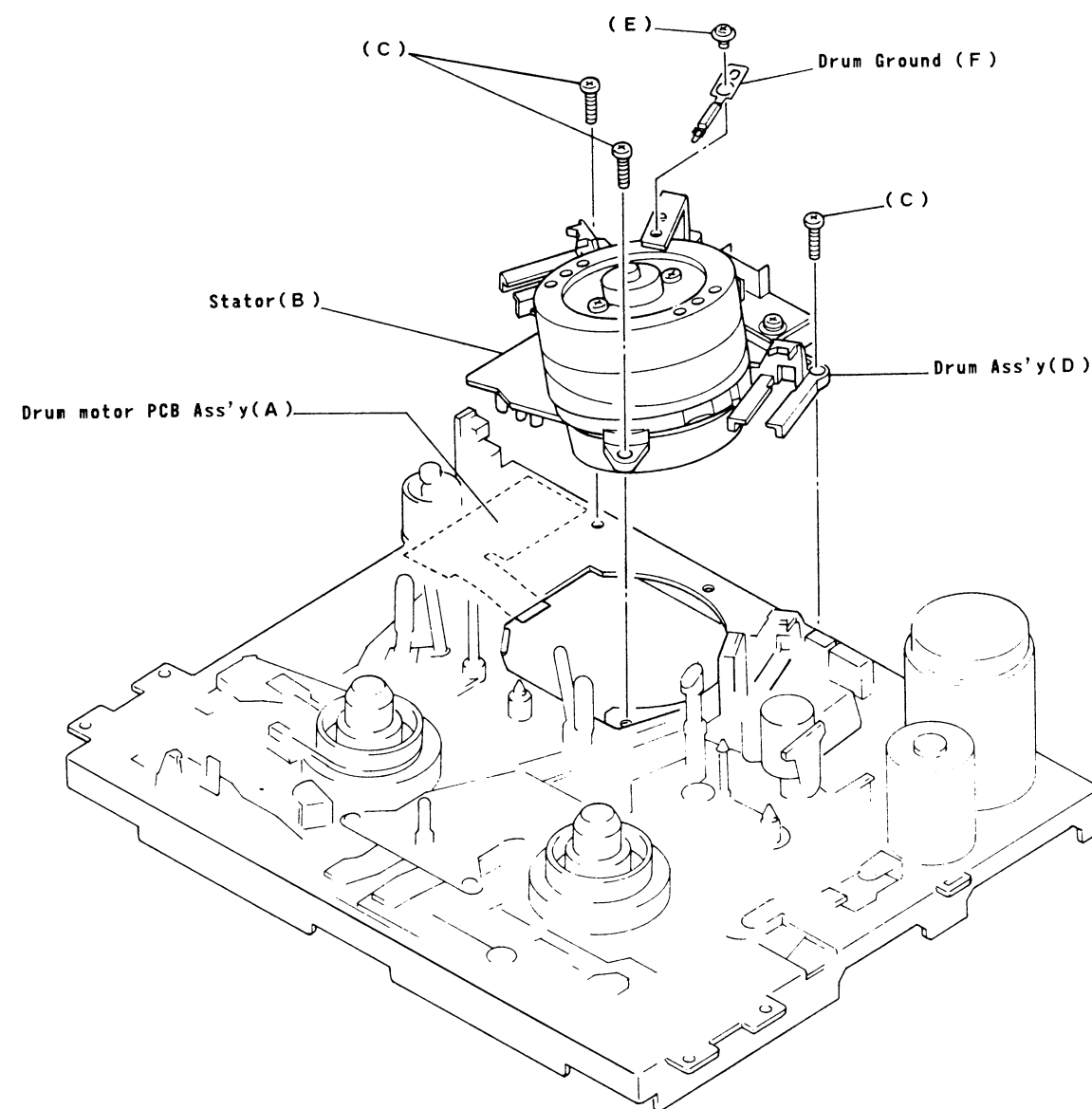


(8) DRUM ASS'Y

1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Pull out the Drum Motor PCB Ass'y (A) from the Stator (B).
3. Remove 1 screw (E) and take off the Drum Ground (F).
4. Remove 3 screws (C) and take off the Drum Ass'y (D).

≡Remarks≡

Take off the Drum Ass'y (D) carefully without any damage.

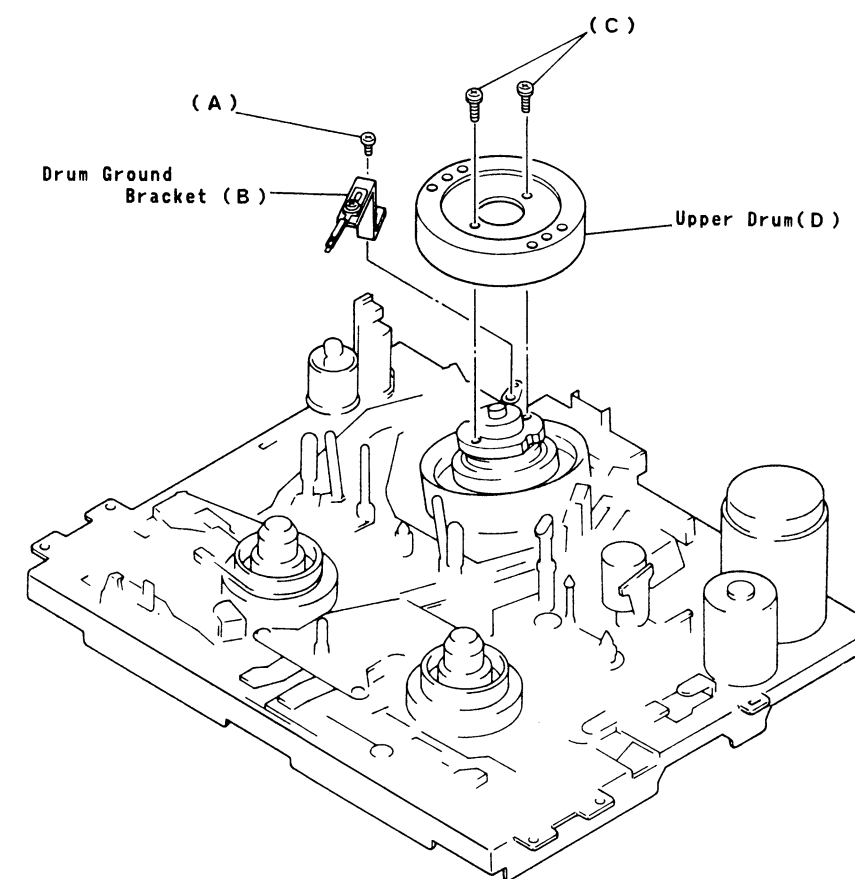
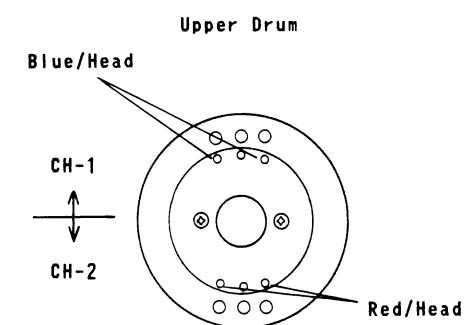


(9) UPPER DRUM

1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Remove 1 screw (A) and take off the Drum Ground Bracket (B).
3. Remove 2 screws (C) and take off the Upper Drum (D).

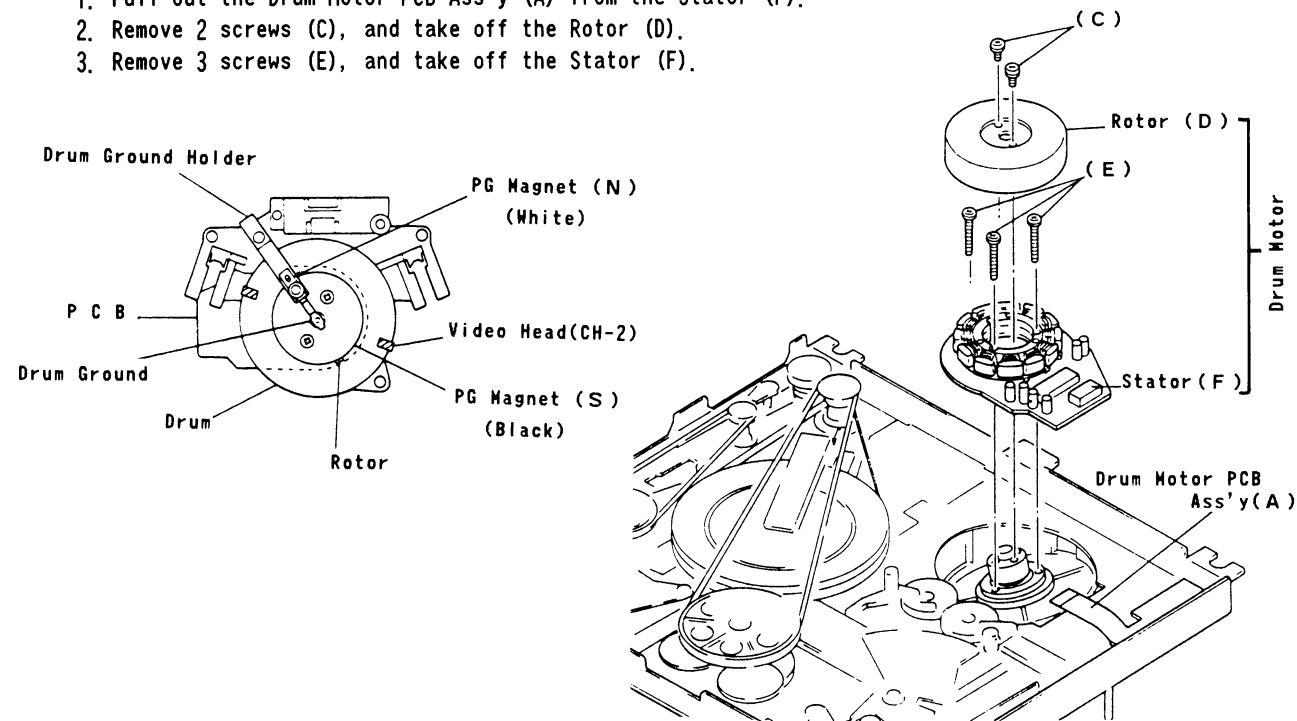
≡Remark≡

1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video Head is defective, replace the complete upper drum with the Head.



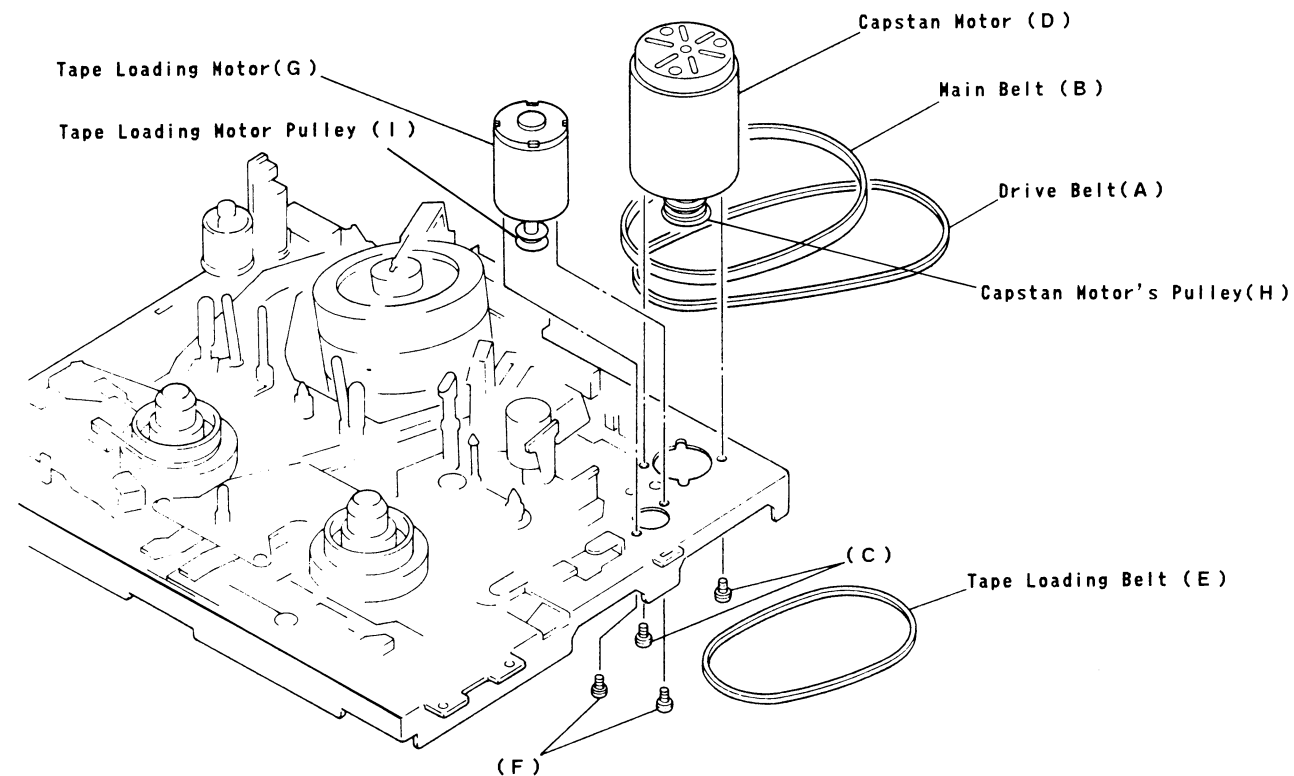
(10) DRUM MOTOR

1. Pull out the Drum Motor PCB Ass'y (A) from the Stator (F).
2. Remove 2 screws (C), and take off the Rotor (D).
3. Remove 3 screws (E), and take off the Stator (F).



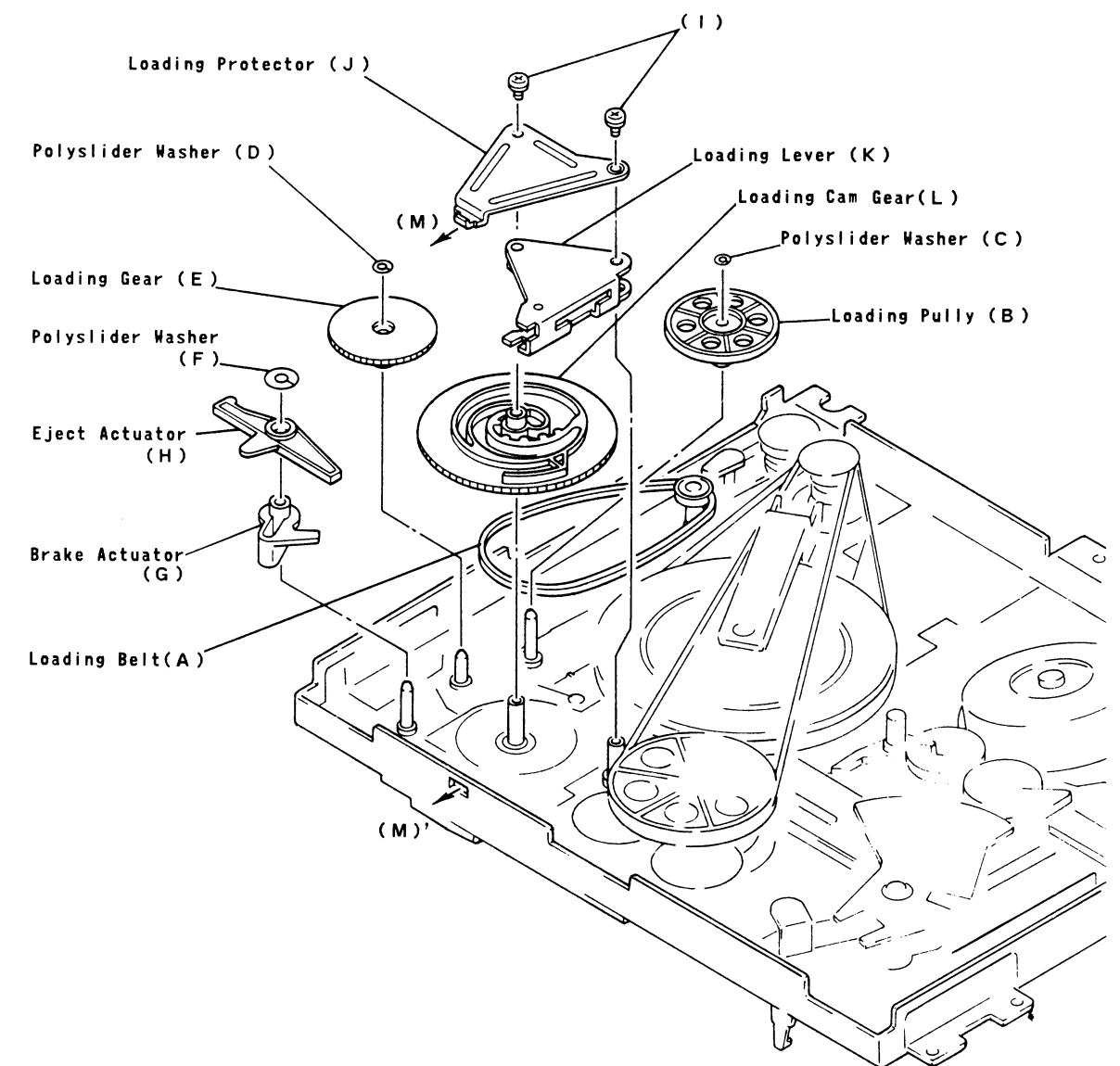
(11) CAPSTAN MOTOR / TAPE LOADING MOTOR

1. Capstan Motor
 - (1) Take off the Drive Belt (A) and Main Belt (B) from the Capstan Motor's Pulley (H).
 - (2) Remove 2 screws (C), and take off the Capstan Motor (D).
2. Tape Loading Motor
 - (1) Take off the Tape Loading Belt (E) from the Tape Loading Motor's Pulley (I).
 - (2) Remove 2 screws (F), and take off the Tape Loading Motor (G).



(12) LOADING CAM GEAR

1. Take off the Loading Belt (A) from the Loading Pulley (B).
2. Remove Polyslider Washer (C), and take off the Loading Pulley (B).
3. Remove Polyslider Washer (D), and take off the Loading Gear (E).
4. Remove Polyslider Washer (F), and take off the Eject Actuator (H) and the Brake Actuator (G).
5. Remove 2 screws (I), and take off the Loading Protector (J) and the Loading Lever (K).
6. Take off the Loading Cam Gear (L).

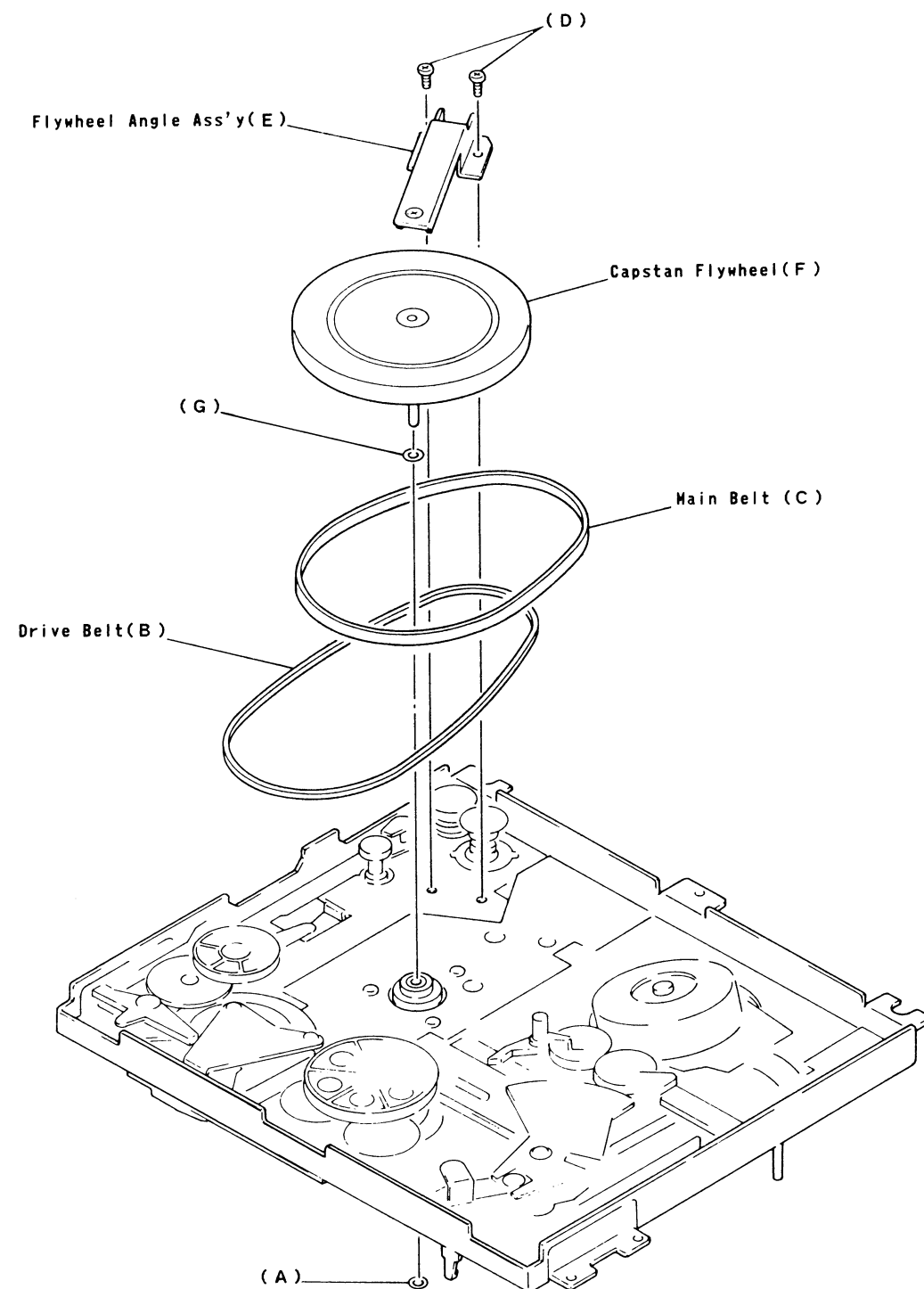


(13) CAPSTAN FLYWHEEL

1. Remove the Washer (A).
2. Take off the Drive Belt (B) and Main Belt (C).
3. Remove 2 screws (D), and Take off the Flywheel Angle Ass'y (E).
4. Take off the Capstan Flywheel (F).

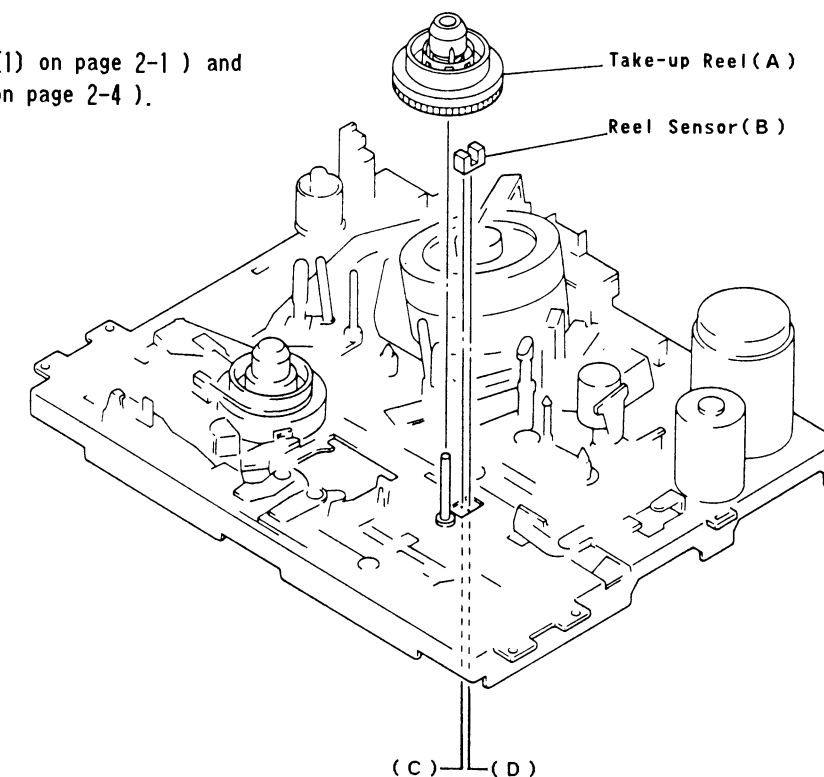
≡Remark≡

Do not miss the Washer (A) and (G) when pulling out the Capstan Flywheel.



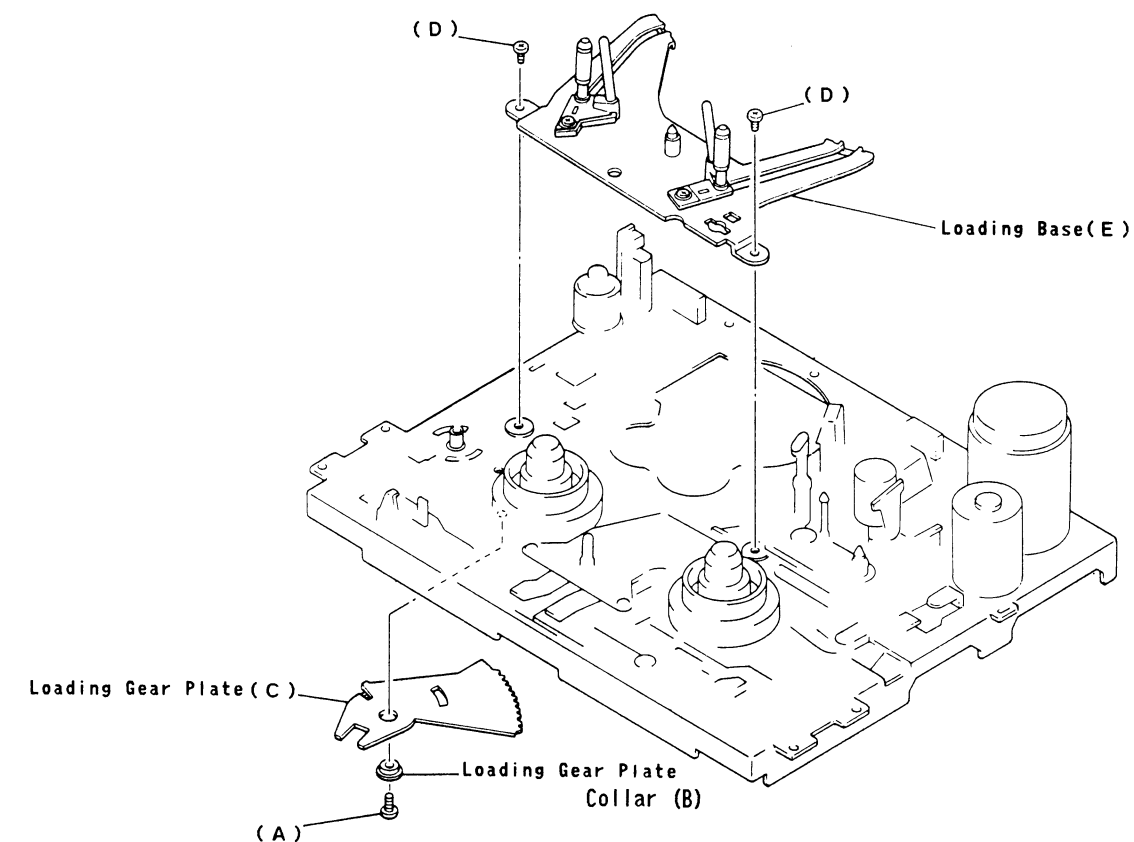
(14) REEL SENSOR

1. Remove Front Loading Unit (2. (1) on page 2-1) and the Gear Holder Ass'y (2. (5) on page 2-4).
2. Remove Take-up Reel (A).
3. Remove Reel Sensor (B).
(Unsolder (C), (D) for bottom.)



(15) LOADING BASE

1. Remove Drum Ass'y, Tension Arm Ass'y and Photo Sensor. (Sensor Lamp)
2. Remove 1 screw (A) and Loading Gear Plate Collar (B), Loading Gear Plate (C).
3. Remove 2 screws (D).
4. Take off the Loading Base (E).



(16) FRONT LOADING WORMWHEEL UNIT

1. Disassembly

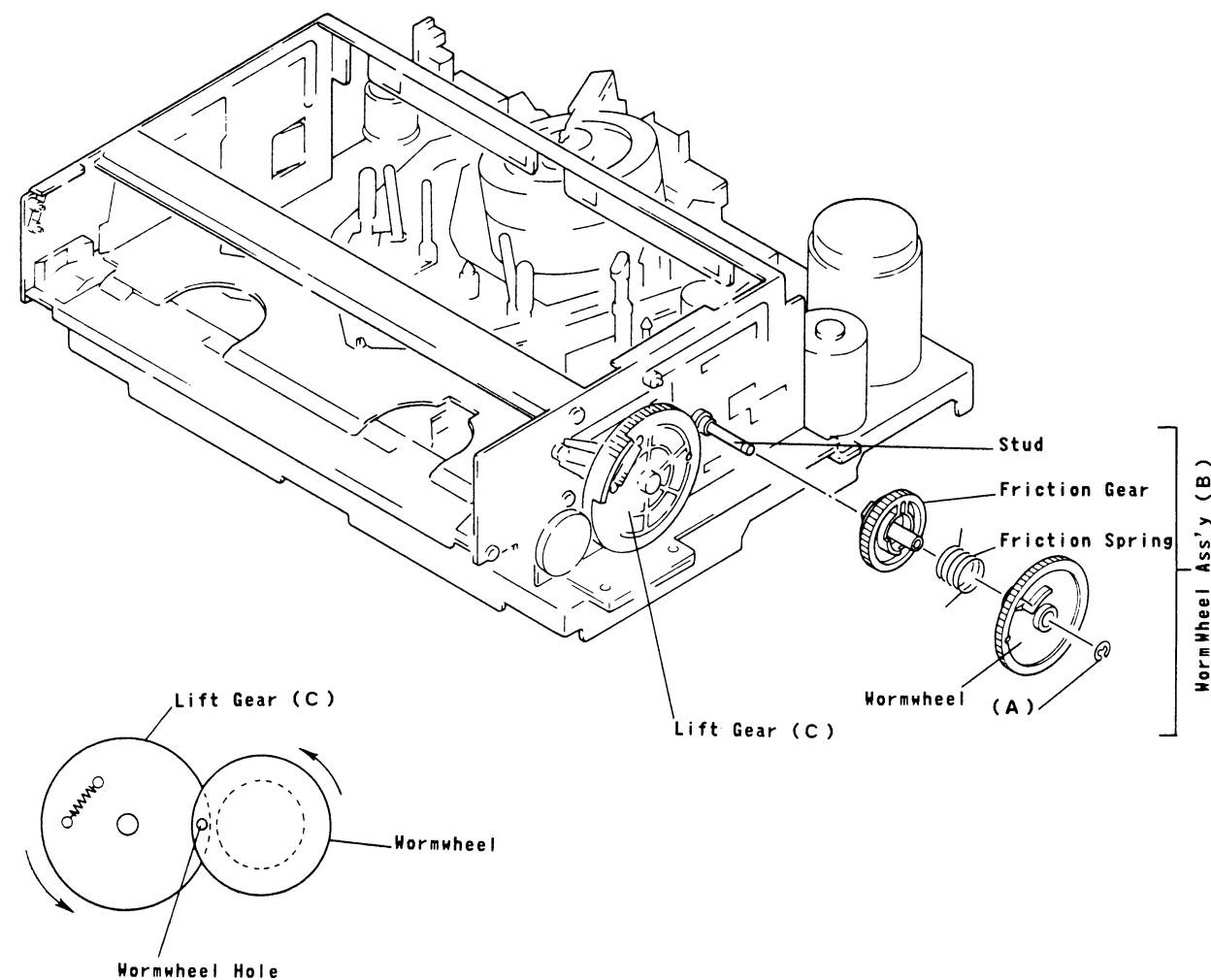
- (1) Remove Front Loading Belt and Bracket Ass'y.
- (2) Remove E-Ring (A).
- (3) Remove Wormwheel Ass'y (B). (Wormwheel, Friction Spring, Friction Gear)

2. Assembly

- (1) Turn the Lift Gear (C) fully counterclockwise.
- (2) Restore Wormwheel Ass'y (B) to the stud.

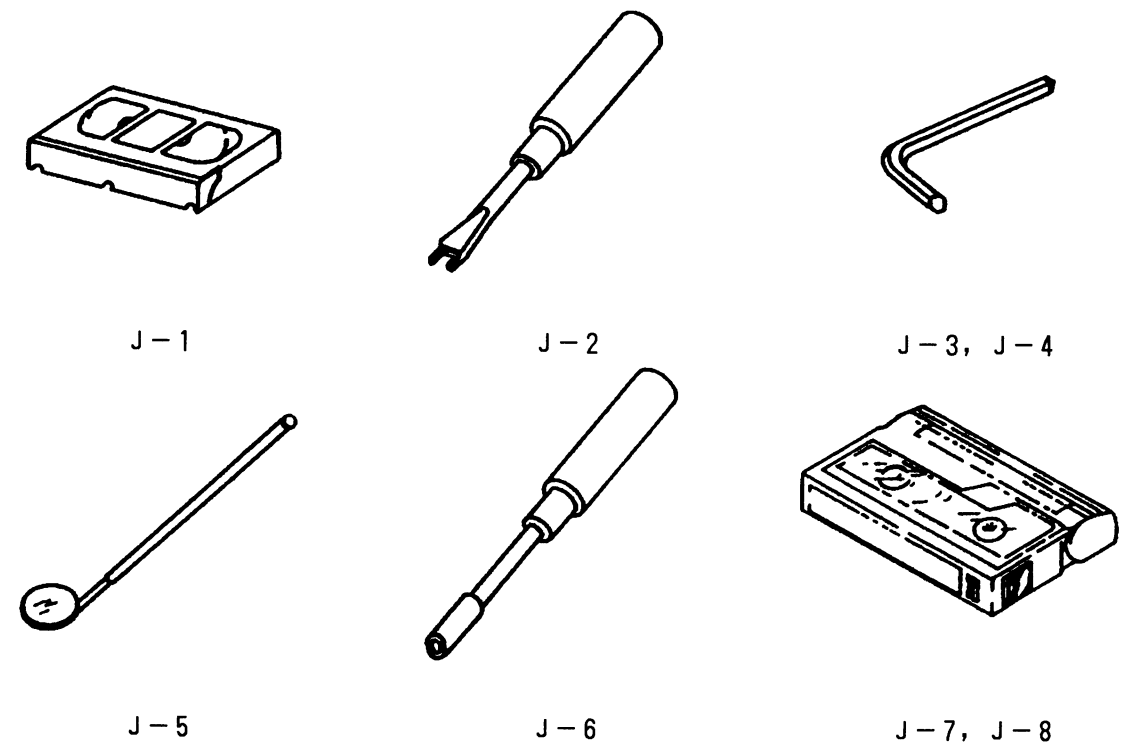
≡Remark≡

Match Lift Gear (C) to the wormwheel hole as illustrated.



3. SERVICE JIG AND TOOLS

Ref No.	Jig Item	Part No.	Adjustment
J-1	Torque Meter	FSJ-VHT-063	Back Tension
J-2	Driver (Special)	FSJ-0001	Control Head / Tape Guide Height
J-3	Wrench M2 Hexagon (0.9 mm)	FSJ-0002	Guide Roller Setting
J-4	Wrench M3 Hexagon (1.5 mm)	FSJ-0003	A/C Head Tilt
J-5	Mirror	FSJ-0004	Tape Transportation Check
J-6	Box Driver M3	FSJ-0005	Guide Pole / A/C Head Height
J-7	Alignment Tape	F6-N	FM Output Level / Azimuth Adjustment
J-8	Alignment Tape	F6-A	Audio Output Adjustment



4. STANDARD MAINTENANCE

4-1 SERVICE SCHEDULE OF COMPONENT ○:Check ●:Change

D E C K		Periodic Service Schedule			
Ref. No.	Parts Name	1000 h	2000 h	3000 h	4000 h
2	Upper Drum	○	●	○	●
134	Pinch Roller(A)		●		●
171	Capstan Motor Assembly		●		●
229	Clutch Assembly		●		●
281	LM Assembly			●	
173	Main Belt		●		●
196	Back Tension Band		●		●
233	Drive Belt		●		●
251	Brake Shoe		●		●
285	Loading Belt		●		●
373	Front Loading Belt		●		●
14	Drum Ground			●	
82	ACE Head			●	
92	Full Erase Head			●	
121	Reel Assembly			●	

NOTE:

1. Clean all parts for the tape transport.
Upper Drum with video head / Pinch Roller
Audio Control Head / Full Erase Head
2. After cleaning up the parts, perform all DECK ADJUSTMENT.

4-2 CLEANING

1. CLEANING OF VIDEO HEAD

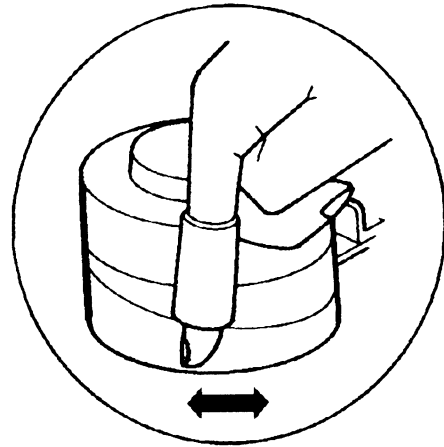
Head cleaning by using a chamois skin.

— Procedure —

- (1) Remove the top cabinet.
- (2) Put on a glove(thin type) to avoid touching the upper drum and lower drum with bare hand.
- (3) Put a few drops of alcohol on the Chamois skin, and by slightly placing it against the head tip, allow the upper drum to turn the right and left.

— Remark —

- (1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
- (2) Wait for the cleaned part to dry out, before operating the unit.
- (3) Do not reuse the stained chamois skin.



2. CLEANING OF AUDIO CONTROL HEAD

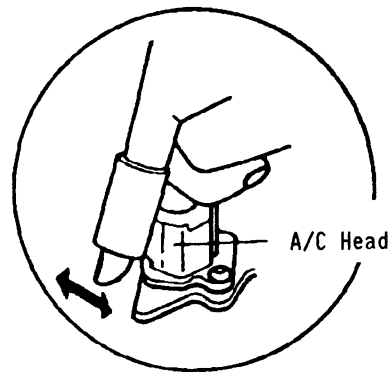
Head cleaning by using a chamois skin.

— Procedure —

- (1) Remove the Top Cabinet.
- (2) Put a few drops of alcohol on the chamois skin, Clean up the audio control head, being careful not to damage the upper drum and other tape running parts.

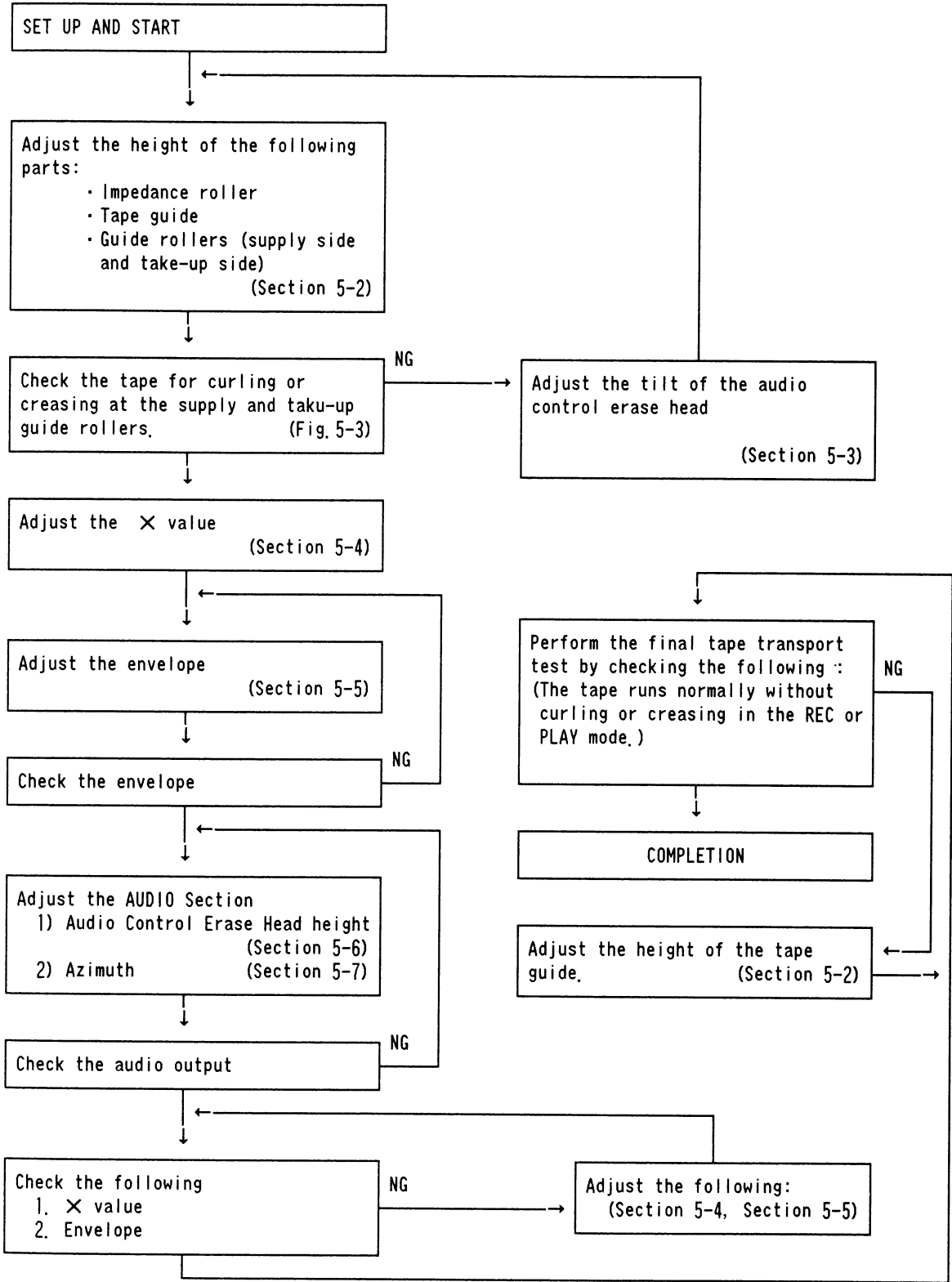
— Remark —

- (1) Avoid cleaning audio control head vertically.
- (2) Wait for the cleaned part to dry well, before operating the unit.



5. MECHANICAL ADJUSTMENT

5-1 TAPE TRANSPORT ADJUSTMENT FLOW CHART



5-2 TAPE RUNNING POSITION ADJUSTMENT (GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

1. Perform the height adjustment for the following items to obtain the proper tape running position.

- ① Impedance Roller
- ② Guide Roller (Supply side)
- ③ Guide Roller (Take-up side)
- ④ Tape Guide

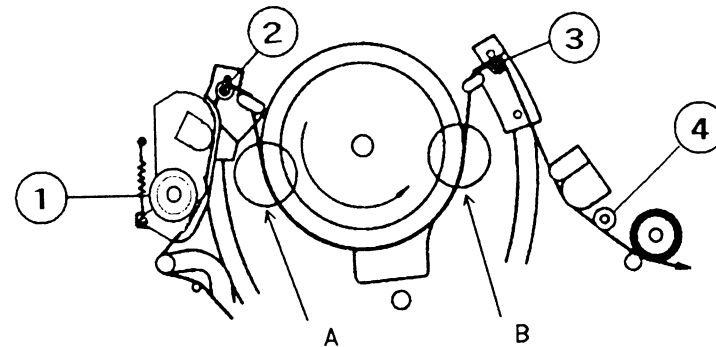


Fig. 5-1

2. Load a blank tape and set the VCR to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Fig. 5-1.
3. Operate the VCR between the PLAY and STOP modes several times.
4. Observe the tape transport at the lead surface of the cylinder during the PLAY mode, and confirm that the tape runs smoothly along the lead surface of the cylinder without slipping downward or upward. (Refer to Fig. 5-2.)

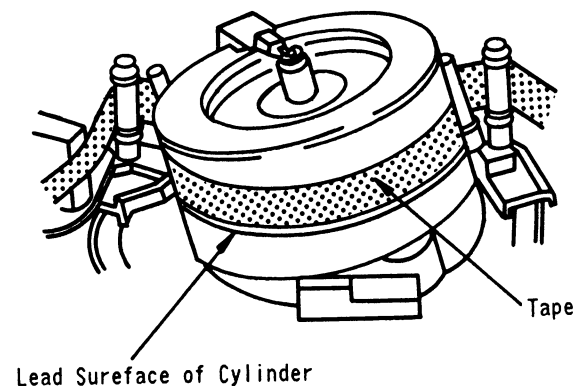


Fig. 5-2

5. During loading, play and unloading, observe the tape at the supply and take-up guide rollers, tape guide and impedance roller. Confirm that there is no curling or creasing etc., as shown in Fig. 5-3.

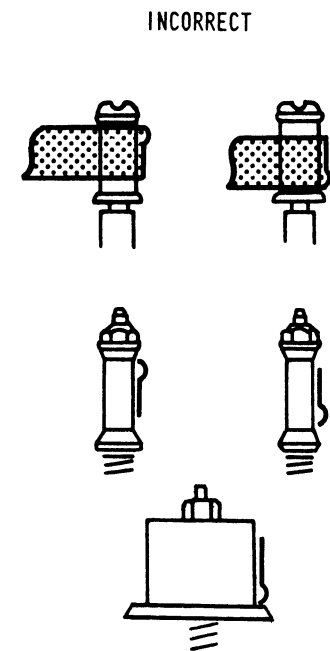
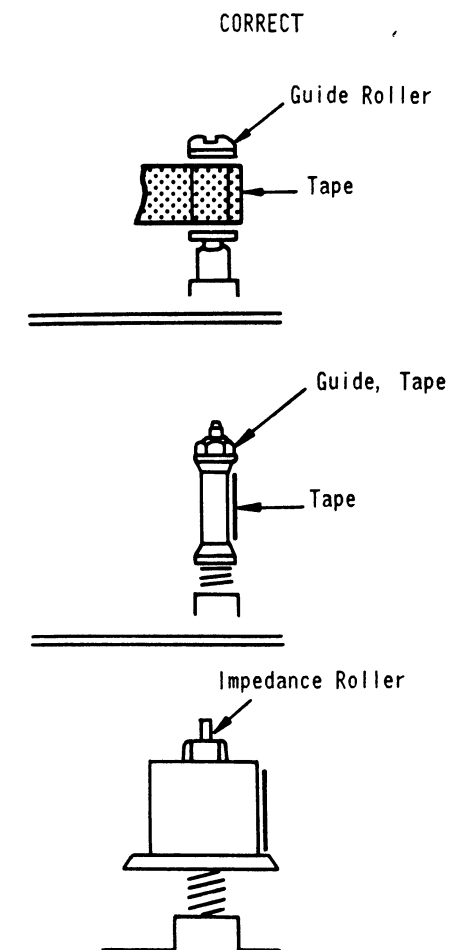


Fig. 5-3

6. If any curling or creasing is noted, adjust tape guide roller and impedance roller first. In this case, adjust the impedance roller in both PLAY and REV modes so that tape runs as shown in Fig. 5-4.

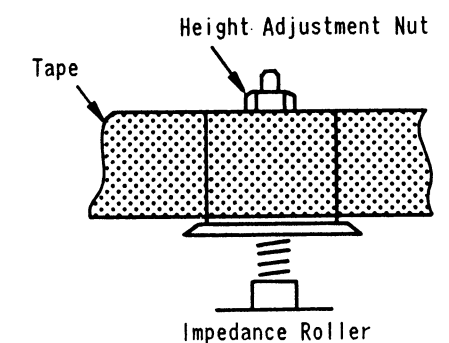


Fig. 5-4.

7. Next, adjust the guide roller height. Insert the adjustment driver (FSJ-0001) into the guide roller top (Refer to Fig. 5-5). Adjust the height by turning the driver slightly so that the tape runs on the guide roller as shown in Fig. 5-3, and the lower edge of the tape runs along the lead surface of the cylinder.

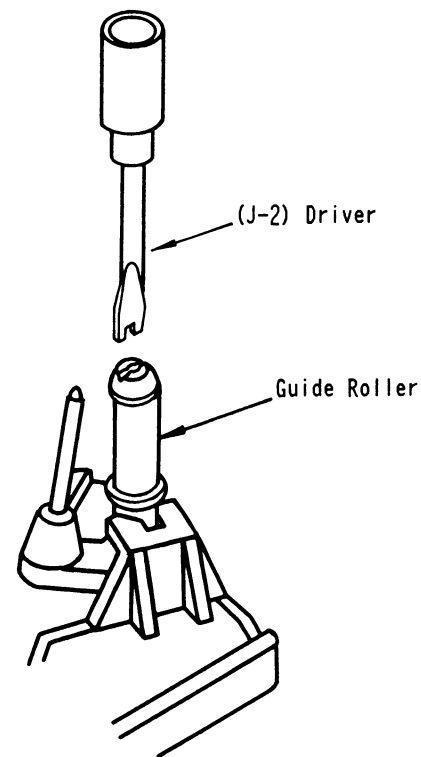


Fig. 5-5

8. After completion of the supply side guide roller adjustments, adjust tape guide so that tape runs as shown in Fig. 5-6, and adjust the take-up side guide roller by using the same procedures as for the supply side adjustments. In this case, adjust the guide roller height first.

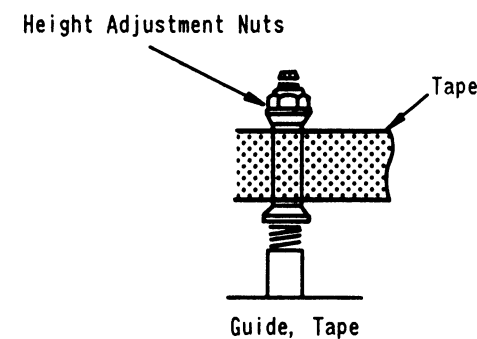


Fig. 5-6

9. Confirm that there is no curling or creasing at the impedance roller. (Both PLAY and REV modes.) If there is any curling or creasing at the impedance roller, adjust the same procedures of Fig. 5-6.
10. Finally, confirm that there is no curling or creasing at the take-up side guide roller and tape guide. If there is any curling or creasing between the take-up side guide roller and the audio control erase head, adjust the audio control erase head.

5-3 AUDIO CONTROL ERASE HEAD ADJUSTMENT

1. Load a recorded tape and set the VCR to PLAY mode.
2. Adjust the height of the edge of the audio track on the audio control head by using the height adjustment nut (A) and the tilt adjustment screw (C) so that the tape transport is smooth at the take-up guide pole. Align the audio control head height. (Refer to Fig. 5-7.)

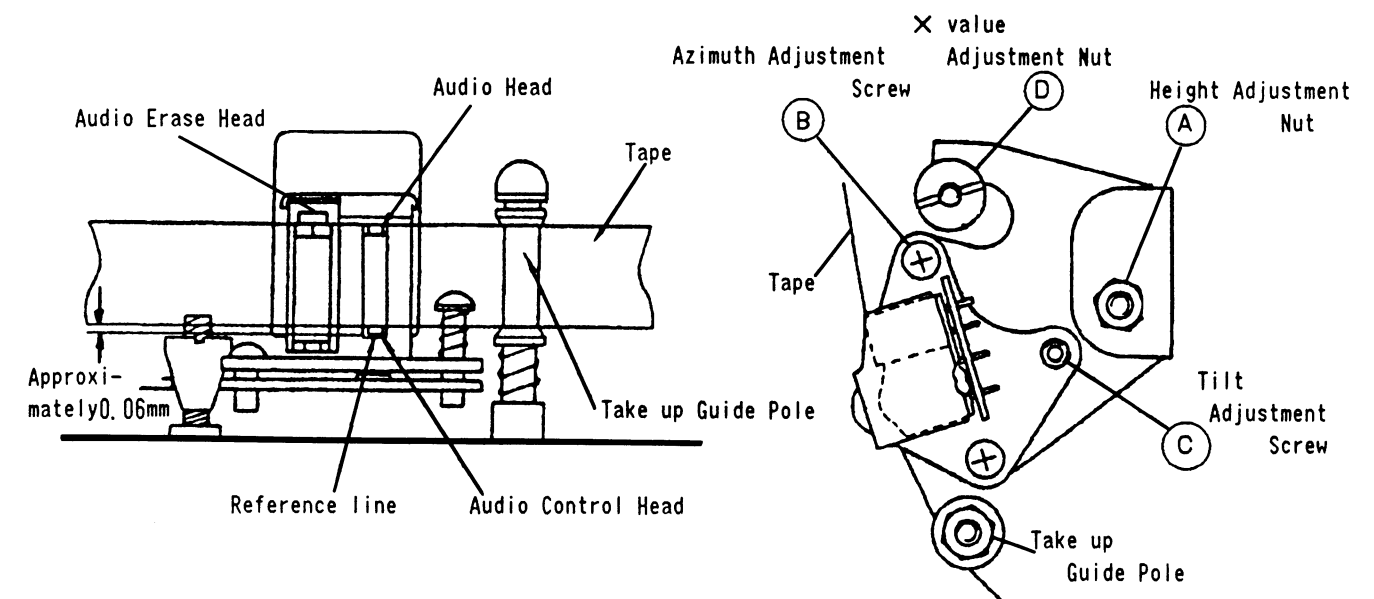


Fig. 5-7

3. The fine adjustment is not required at this time. The following conditions are sufficient :
- (a) Proper tape transport between the audio control head and the take-up guide pole.
 - (b) Stable SERVO system operation. (proper pickup of tape's recorded control signal.)

5-4 X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
TP 9 (PB FM) GND TP401 (SW PULSE)	Oscilloscope	PLAY (SP) MODE Test tape F6-N
ADJ. Location		ADJ. Value
X value adjustment nut		Maximum level (CH1 PB FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

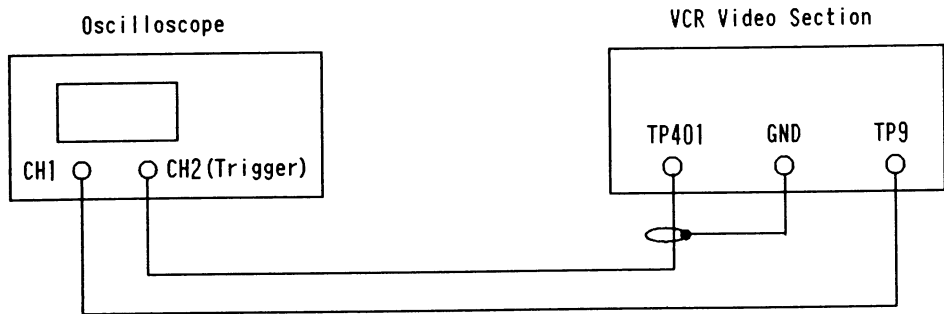


Fig. 5-8

1. Connect the equipment as shown in Fig. 5-8.
2. Adjust VR801 (Tracking Volume) to its center position.
3. Adjust the X value adjustment nut ④ for maximum PB FM Signal for CH1 by using F6-N test tape (Refer to Fig. 5-9).
4. After adjusting the X value, check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating VR801 (Tracking Volume).

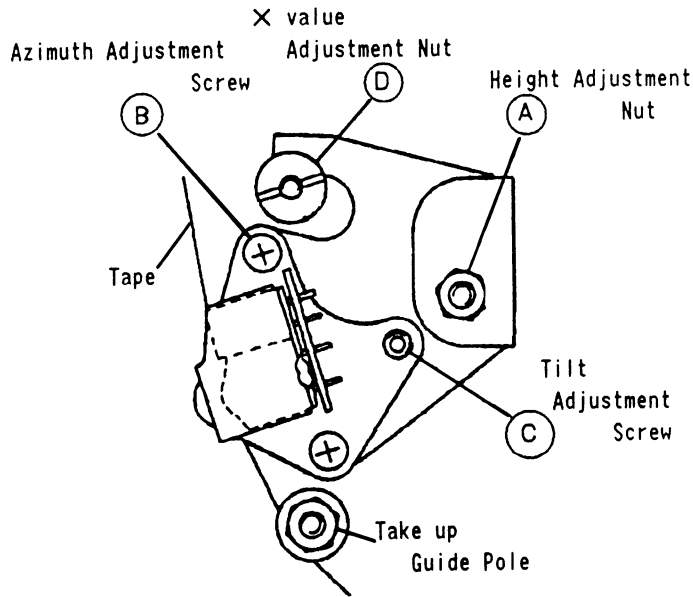


Fig. 5-9

5-5 ENVELOPE WAVEFORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
TP 9 (PB FM) GND TP401 (SW PULSE)	Oscilloscope	PLAY (SP) MODE Test tape F6-N
ADJ. Location		ADJ. Value
Guide rollers		Maximum level and correct waveform (PB FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

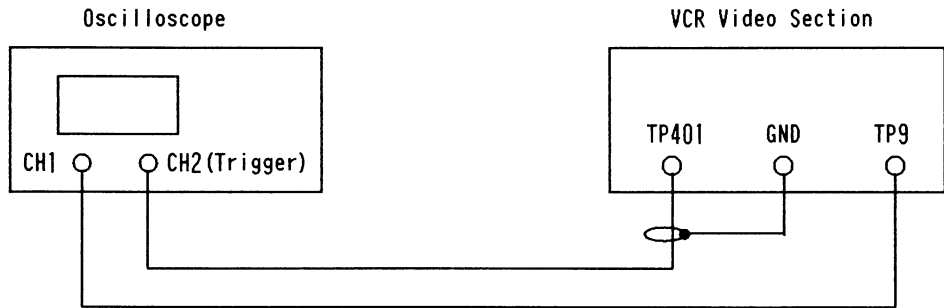


Fig. 5-10

1. Connect equipment as shown in Fig. 5-10.
2. Playback the test tape F6-N.
3. The envelope waveform can be performed by adjusting the height of both the supply side and take-up side guide rollers. Finely adjust the height of guide rollers so that the envelope waveform is as flat as possible.
4. Set VR801 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained. Then rotate the VR801 (Tracking Volume) in both directions while adjusting the height of guide rollers, in order to obtain the envelope waveform which is as flat as possible. If the tape is above or low the helical tape position, the envelope waveforms will take the shape as shown in Fig. 5-11 and Fig. 5-12.
5. Adjust for maximum flatness of the envelope waveform according to the Fig. 5-11 and Fig. 5-12.
6. After adjustment, rotate VR801 (Tracking Volume) to counter-clockwise and clockwise, and check that the waveform changes symmetrically.
7. Check the tape curl (Refer to Section 5-2).

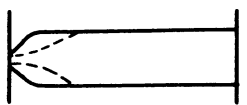
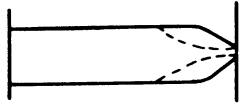
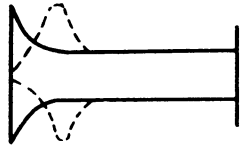
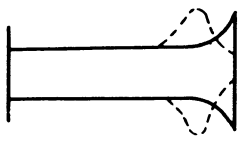
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side guide roller rotated clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated clockwise direction (lowers guide roller) to flatten envelope.

Fig. 5-11

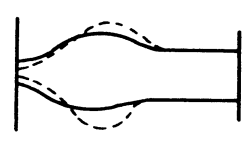
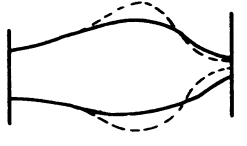
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side guide roller rotated counterclockwise direction (raises guide roller) to flatten envelope.	Take-up side guide roller rotated counterclockwise direction (raises guide roller) to flatten envelope.

Fig. 5-12

5-6 AUDIO CONTROL ERASE HEAD HEIGHT/ AUDIO CONTROL ERASE HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape F6-A
ADJ. Location		ADJ. Value
Height adjustment nut Azimuth adjustment screw		Maximum level (AC voltmeter)
Tilt adjustment screw		

TEST EQUIPMENT CONNECTING DIAGRAMS

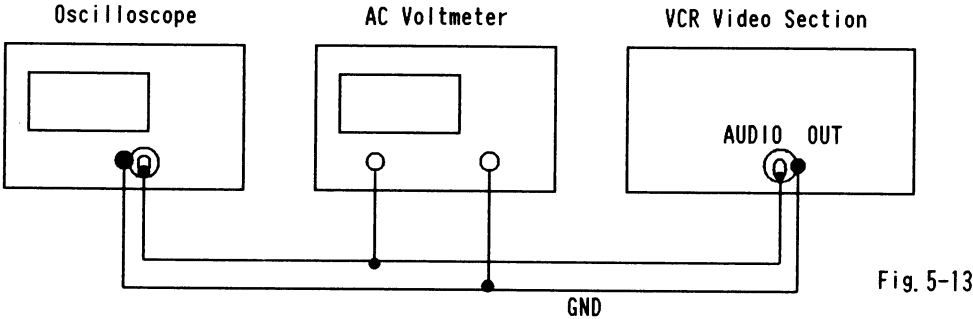


Fig. 5-13

1. Connect equipment as shown in Fig. 5-13.
2. Confirm that the tape running between the take-up guide roller and the audio control erase head has no slack. If the tape has slack, take it up by turning the tilt adjustment screw (C). (Refer to Fig. 5-7.) Then readjust GUIDE ROLLER HEIGHT in section 5-2 and the X value in section 5-4.
3. After confirming on the oscilloscope that a 1 kHz audio signal is being output by playing back F6-A test tape, adjust the height adjustment nut (A) so that the AC voltmeter's reading is brought to its maximum level (Refer to Fig. 5-14).
4. Adjust the azimuth adjustment screw (B) so that the AC voltmeter's reading is brought to its maximum level (Refer to Fig. 5-14).

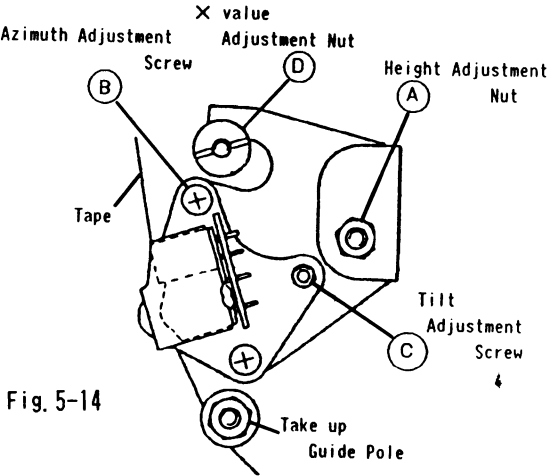
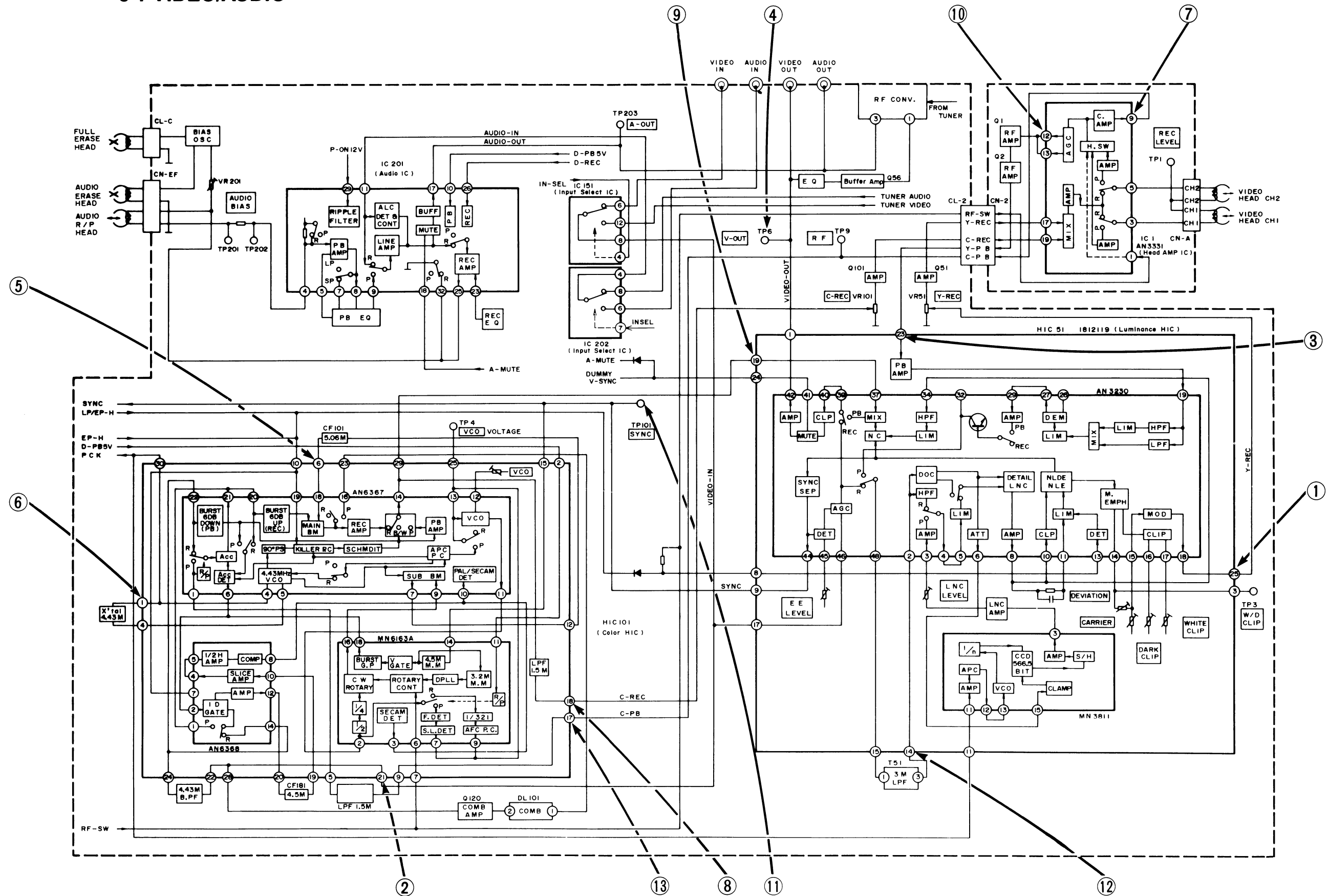


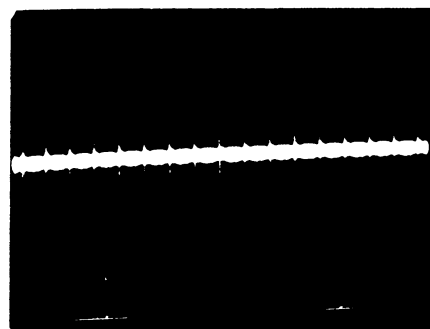
Fig. 5-14

6. BLOCK DIAGRAM

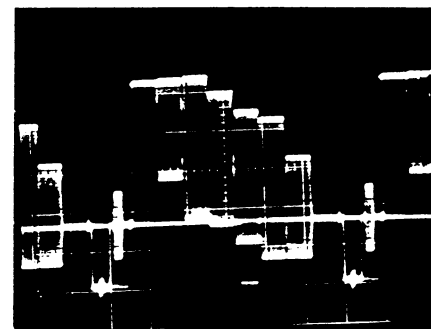
6-1 VIDEO/AUDIO



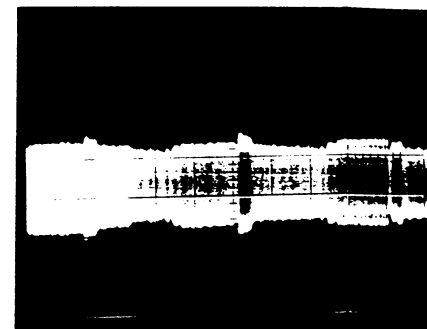
WAVEFORMS



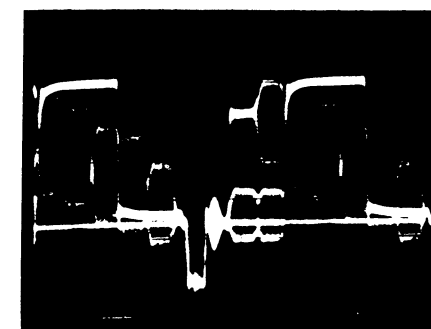
① 0.1mS/div 5mV/div
Mode : REC
Test Tape : Blank Tape
HIC51 Pin 25



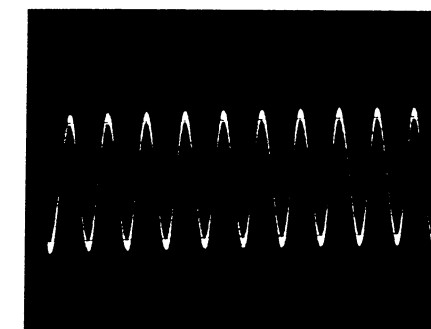
② 10mS/div 20mV/div
Mode : REC
Test Tape : Blank Tape
TP-21



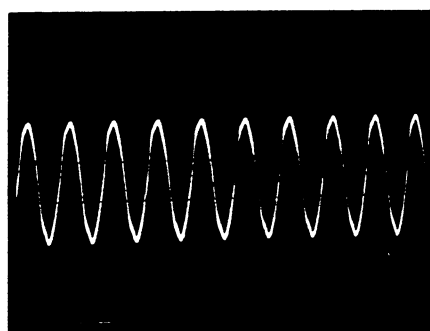
③ 5mS/div 20mV/div
Mode : PLAY
Test Tape : F6-A
HIC51 Pin 23



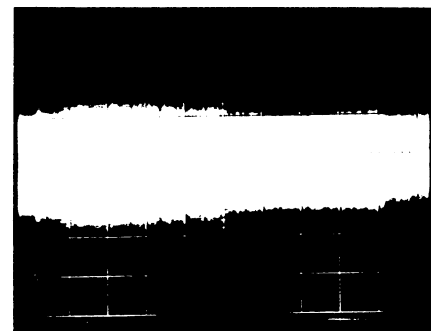
④ 10mS/div 20mV/div
Mode : PLAY
Test Tape : F6-A
TP-6



⑤ 0.2uS/div 5mV/div
Mode : PLAY
Test Tape : F6-A
HIC101 Pin 6



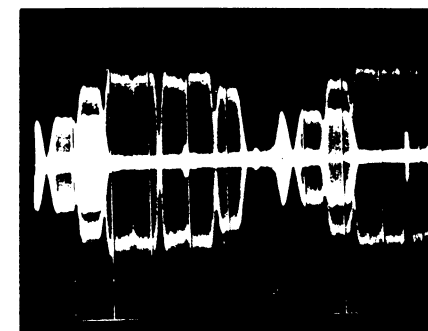
⑥ 0.2uS/div 20mV/div
Mode : PLAY
Test Tape : F6-4
HIC101 Pin 1



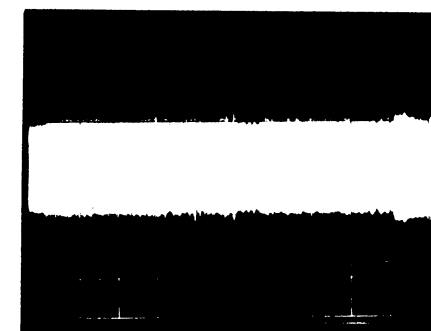
⑦ 2mS/div 10mV/div
Mode : PLAY
Test Tape : F6-A
IC1 Pin 9



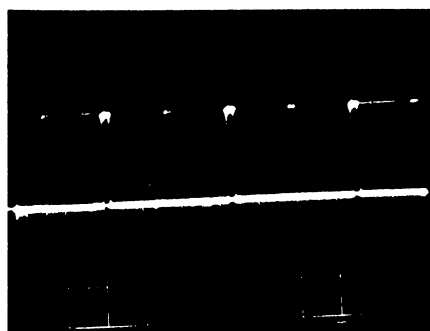
⑧ 20uS/div 10mV/div
Mode : REC
Test Tape : Blank Tape
HIC101 Pin 18



⑨ 10uS/div 20mV/div
Mode : PLAY
Test Tape : F6-A
HIC51 Pin 19



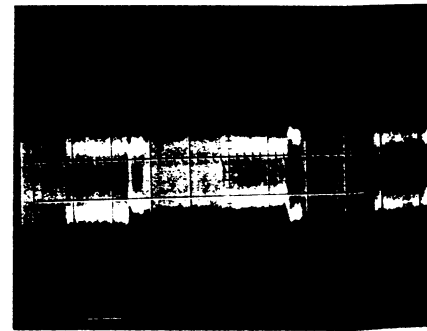
⑩ 2mS/div 10mV/div
Mode : PLAY
Test Tape : F6-A
IC1 Pin 12



⑪ 20uS/div 0.2V/div
Mode : PLAY
Test Tape : F6-A
TP101

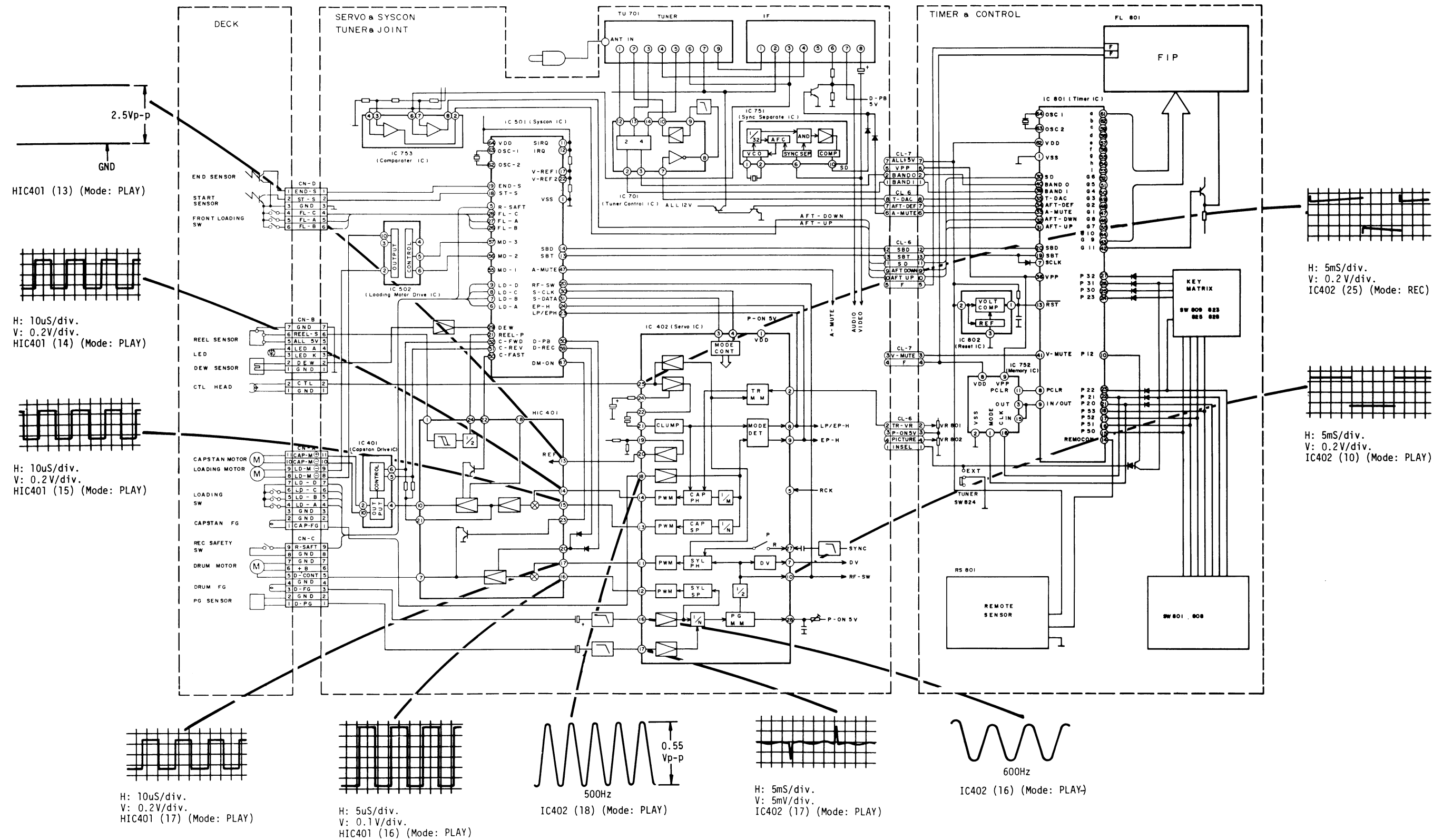


⑫ 10uS/div 10mV/div
Mode : PLAY
Test Tape : F6-A
HIC51 Pin 14



⑬ 5mS/div 10mV/div
Mode : PLAY
Test Tape : F6-A
HIC101 Pin 17

6-2 SYSTEM CONTROL/SERVO/TIMER



7. IC PIN FUNCTION DESCRIPTION

14DN363 (IC402, SERVO IC)

Pin No	IN/OUT	Signal name	Function
1	IN	V _{DD}	POWER TERMINAL "H" INPUT (5V) DIGITAL SEC
2	IN	TRMM	TRACKING MONO-MULT CONTROL (25Hz)
3	IN	SDAT	MODE TRANSFER (DATA SIGNAL)
4	IN	SCLK	MODE TRANSFER (CLOCK SIGNAL)
5	IN	RCK	CLOCK BASE (4.43MHz)
6	IN	TEST	TEST INPUT
7	OUT	VLP	DUMMY V (50Hz)
8	OUT	MOD 0	REC MODE
9	OUT	MOD 1	REC MODE
10	OUT	HSW	VIDEO HEAD SWITCH (25Hz)
11	OUT	PWM 2	CYLINDER SERVO PHASE ERROR (34.5kHz)
12	OUT	PWM 1	CYLINDER SERVO SPEED ERROR (69.4kHz)
13	OUT	PWM 3	CAPSTAN SERVO SPEED ERROR (34.5kHz)
14	OUT	PWM 4	CAPSTAN SERVO PHASE ERROR (34.5kHz)
15	IN	V _{SS}	POWER TERMINAL "L" INPUT (GND) DIGITAL SEC
16	IN	YFG	CYLINDER FG AMP (600Hz)
17	IN	YPG	CYLINDER PG AMP (25Hz)
18	IN	FGI	CAPSTAN FG AMP (504Hz)
19	IN	RI	REFERENCE AMP
20	OUT	VRO	REFERENCE AMP
21	IN	C 1	CONTROL PEAK CLAMP
22	OUT	C 0	CONTROL F/R AMP (25Hz)
23	IN	CTLG	CONTROL GND
24	IN	CTLA	PLAY CONTROL HEAD AMP (NEGATIVE INPUT)
25	IN/OUT	CTLH	PLAY CONTROL HEAD AMP POSITIVE INPUT, REC CONTROL OUTPUT
26	IN	AV	POWER TERMINAL "H" INPUT (5V) ANALOG SEC
27	IN	V-SYNC	V-SYNC SIGNAL (50Hz)
28	IN	PGMM	PG MONO-MULT CONTROL

14DN348 (IC501, SYSCON IC)

Pin No	IN/OUT	Signal name	Function
1	IN	V _{SS}	GND
2	IN	SAFT	POWER ABNORMAL DETECTOR
3	—	—	
4	—	—	
5	IN	R-SAFT	ERASURE PREVENTION SWITCH
6	IN	LD-A	TAPE LOADING POSITION DETECTOR
7	IN	LD-B	TAPE LOADING POSITION DETECTOR
8	IN	LD-C	TAPE LOADING POSITION DETECTOR
9	IN	LD-D	TAPE LOADING POSITION DETECTOR
10	—	—	
11	—	—	
12	—	—	
13	IN/OUT	SBT	SERIAL TRANSFER TIMING CLOCK IN/OUT (BETWEEN CLOCK)
14	IN/OUT	SBD	SERIAL TRANSFER DATA IN/OUT (BETWEEN CLOCK)
15	—	—	
16	IN	RST	RESET
17	IN	V-REF	COMPARATOR INPUT REFERENCE VOLTAGE
18	IN	ST-S	TAPE START POSITION DETECTOR
19	IN	END-S	TAPE END POSITION DETECTOR
20	IN	RF-SW	SWITCHING PULSE
21	IN	REEL-P	COUNTER INPUT PULSE
22	IN	V-REF	COMPARATOR OUTPUT REFERENCE VOLTAGE
23	IN	LP/EP-H	TAPE SPEED
24	IN	EP-HWN	TAPE SPEED
25	—	—	
26	IN	FL-B	CASSETTE OUT DETECTOR
27	IN	FL-A	CASSETTE IN START DETECTOR
28	IN	FL-C	CASSETTE DOWN DETECTOR
29	IN	DEW	DEW SENSOR
30	OUT	S-CLK	SERVO IC TIMING CLOCK
31	OUT	S-DATA	SERVO IC DATA
32	—	—	
33	—	—	
34	—	—	

Pin No	IN/OUT	Signal name	Function
35	—	—	
36	—	—	
37	—	—	
38	—	—	
39	—	—	
40	—	—	
41	—	—	
42	—	—	
43	—	—	
44	—	—	
45	—	—	
46	OUT	TV/VCR	TV/VCR CONTROL
47	OUT	A-MUTE	SOUND MUTE OUTPUT
48	OUT	PAUSE	PAUSE CONTROL
49	OUT	DM-ON	DRUM ROTATION OUTPUT
50	OUT	C-FAST	CAPSTAN MOTOR HIGH SPEED
51	OUT	C-REV	CAPSTAN MOTOR REVERSE
52	OUT	C-FWD	CAPSTAN MOTOR FORWARD
53	—	—	
54	—	—	
55	—	—	
56	OUT	LD-REV	TAPE LOADING/CASSETTE LOADING MOTOR CONTROL
57	OUT	LD-FWD	TAPE LOADING/CASSETTE LOADING MOTOR CONTROL
58	—	—	
59	OUT	D-REC	RECORD CONTROL
60	OUT	D-PB	PLAY CONTROL
61	OUT	P-ON	POWER ON CONTROL
62	OUT	OSC-2	CLOCK OSCILLATION
63	IN	OSC-1	CLOCK OSCILLATION
64	IN	V _{DD}	POWER + 5V

14DN487 (IC801, TIMER IC)

Pin No	IN/OUT	Signal name	Function
1	IN	V _{SS}	GND
2	—	—	
3	—	—	
4	—	—	
5	—	—	
6	—	—	
7	OUT	SCLK	8 BIT SERIAL TRANSFER CLOCK (OUTPUT FOR SYSCON IC)
8	OUT	PCLR	N MOS CONTROL SIGNAL
9	IN/OUT	IN/OUT	M MOS DATA INPUT / M MOS CONTROL SIGNAL
10	OUT	P 12	OPERATION SW KEY SCAN
11	OUT	P 13	OPERATION SW KEY SCAN
12	—	—	
13	IN	RST	RESET AT RESET SIGNAL INPUT "L", NORMAL AT "H"
14	IN	REMOCON	REMOTE CONTROL SERIAL SIGNAL
15	IN	P 50	KEY SCAN 4 BIT PARALLEL SIGNAL
16	IN	P 51	KEY SCAN 4 BIT PARALLEL SIGNAL
17	IN	P 52	KEY SCAN 4 BIT PARALLEL SIGNAL
18	IN	P 53	KEY SCAN 4 BIT PARALLEL SIGNAL
19	IN	SBT	8 BIT SERIAL TRANSFER CLOCK INPUT (INPUT FROM SYSCON IC)
20	IN/OUT	SBD	8 BIT SERIAL TRANSFER DATA IN / OUT (IN / OUT FOR SYSCON IC)
21	OUT	P 20	KEY SCAN SIGNAL OUTPUT
22	OUT	P 21	KEY SCAN SIGNAL OUTPUT
23	OUT	P 22	KEY SCAN SIGNAL OUTPUT
24	OUT	P 23	KEY SCAN SIGNAL OUTPUT
25	OUT	P 30	KEY SCAN SIGNAL OUTPUT
26	OUT	P 31	KEY SCAN SIGNAL OUTPUT
27	OUT	P 32	KEY SCAN SIGNAL OUTPUT
28	—	—	
29	—	—	
30	IN	SD	TUNER VIDEO SIGNAL SYNC SIGNAL INPUT, "L" AT SYNC SIGNAL
31	IN	AFT UP	TUNER AFT VOLTAGE INPUT, "H" AT OVER 8V OF AFT VOLTAGE
32	IN	AFT DOWN	TUNER AFT VOLTAGE INPUT, "L" AT UNDER 4V OF AFT VOLTAGE
33	OUT	A-MUTE	AUDIO MUTE SIGNAL
34	OUT	AFT-DEF	AFT DEFEAT SIGNAL
35	OUT	T-DAC	TUNER TUNING VOLTAGE CONTROL SIGNAL (14 BIT PWM)
36	IN	V _{PP}	

Pin No	IN/OUT	Signal name	Function
37	—	—	
38	—	—	
39	OUT	BAND 1	TUNER BAND SET SIGNAL
40	OUT	BAND 0	TUNER BAND SET SIGNAL
41	OUT	V-MUTE	VIDEO SIGNAL MUTE SIGNAL
42	OUT	G 11	DISPLAY DIGIT
43	OUT	G 9	DISPLAY DIGIT
44	OUT	G 10	DISPLAY DIGIT
45	OUT	G 7	DISPLAY DIGIT
46	OUT	G 8	DISPLAY DIGIT
47	OUT	G 1	DISPLAY DIGIT
48	OUT	G 2	DISPLAY DIGIT
49	OUT	G 3	DISPLAY DIGIT
50	OUT	G 4	DISPLAY DIGIT
51	OUT	G 5	DISPLAY DIGIT
52	OUT	G 6	DISPLAY DIGIT
53	OUT	i	DISPLAY SEGMENT
54	OUT	h	DISPLAY SEGMENT
55	OUT	g	DISPLAY SEGMENT
56	OUT	f	DISPLAY SEGMENT
57	OUT	e	DISPLAY SEGMENT
58	OUT	d	DISPLAY SEGMENT
59	OUT	c	DISPLAY SEGMENT
60	OUT	b	DISPLAY SEGMENT
61	OUT	a	DISPLAY SEGMENT
62	IN	Vdd	5V (POWER)
63	OUT	OSC-2	CRYSTAL OSCILLATOR 4.19MHz
64	IN	OSC-1	CRYSTAL OSCILLATOR 4.19MHz

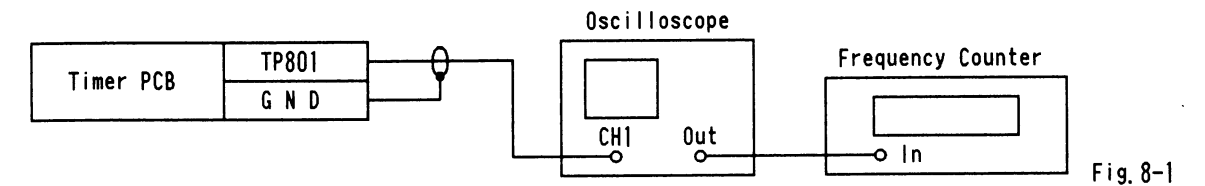
8. ALIGNMENT INSTRUCTIONS

Preparation

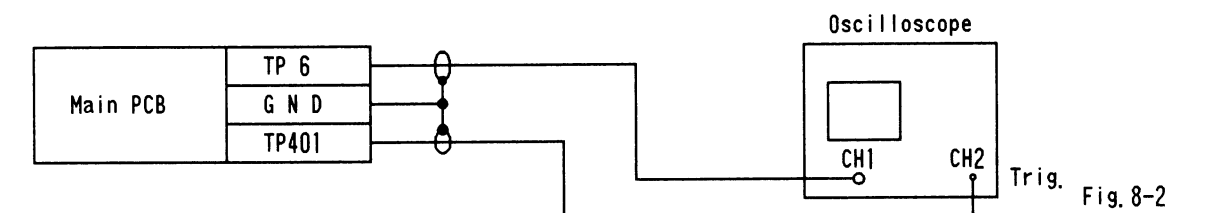
Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

TEST EQUIPMENT REQUIRED

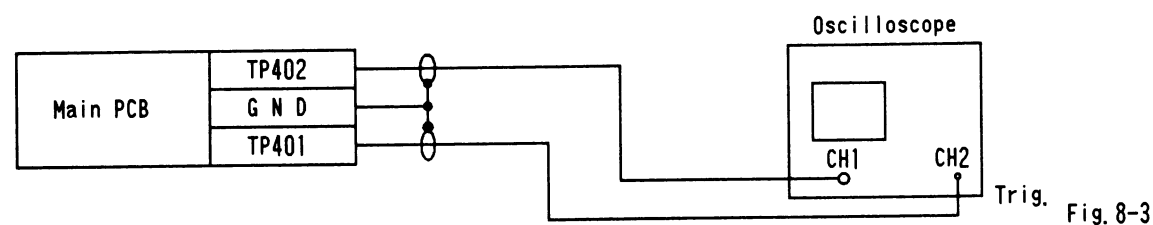
1. Oscilloscope : Dual-trace with 10:1 probe.
2. Frequency Counter
3. Color Monitor
4. Pattern Generator (Color bar with 100% white)
5. AC Voltmeter (RMS)
6. Alignment Tape F6-A (Color bar with 100% white)



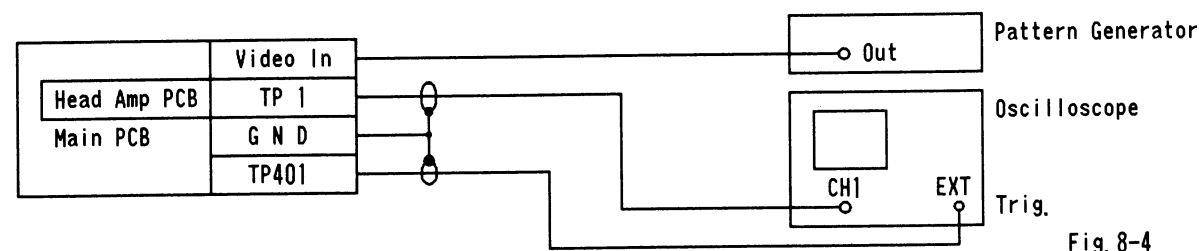
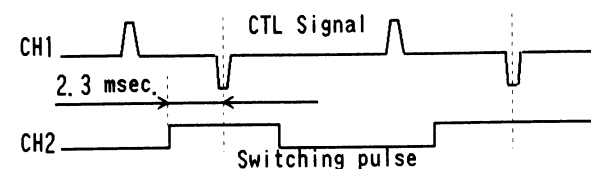
No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-1	Timer clock E-E Mode	TP801 Ground	TC801 (Page 9-2, 9-2 Timer PCB)	1. Connect CH1 oscilloscope across TP801 and Ground. 2. Connect the frequency counter to oscilloscope out. 3. Make adjustment by TC801 so that the indication of frequency counter becomes 524.288 kHz $\pm$ 1 Hz.	Fig. 8-1



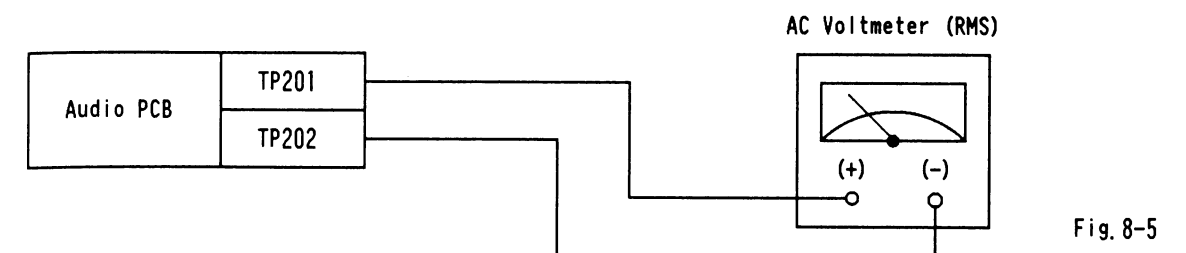
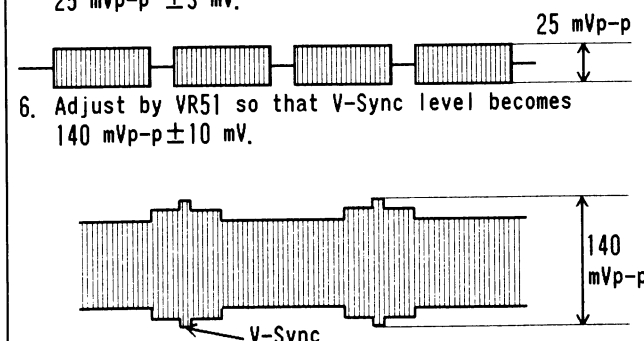
No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-2	Switching point Adjustment Test Tape (F6-A)	TP6 TP401	VR401 (Page 9-1, 9-1 Main PCB)	1. Connect CH1 to TP6 of VIDEO-OUT and CH2 to TP401 and set EXT. Trigger mode (+) Trigger. 2. Playback the tape and adjust VR401 so that the V-sync front edge of CH1 video output waveform comes the position where 6.5 H is delayed from the rising of CH2 Head Switching Pulse waveform.	Fig. 8-2



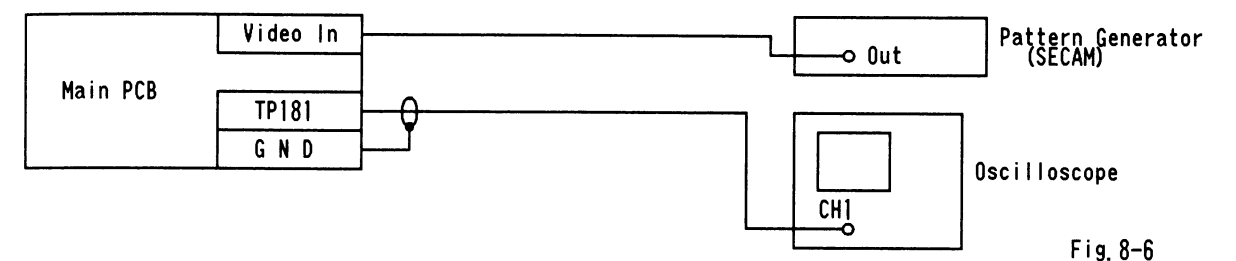
No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-3	CTL Preset Adjustment (P. B. Mode) Test tape F6-A	TP402 TP401	VR402 (Page 9-1, 9-1 Main PCB)	1. Connect CH1 of oscilloscope across TP402 and Ground. 2. Connect CH2 of oscilloscope across TP401 and Ground. 3. Set oscilloscope mode to EXT. Trigger(+) Trigger. 4. Playback the tape by setting tracking volume at center click position. 5. Adjust VR402 to make a position of CTL signal where delayed 2.3 msec. from switching pulse starting position.	Fig. 8-3



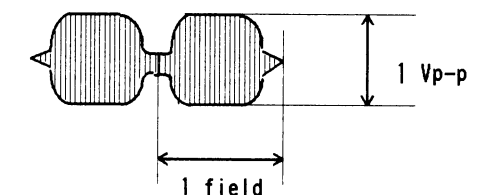
No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-4	REC. Current Adjustment (REC. Mode) Blank tape	TP1 (GND) TP401	VR51 VR101 (Page 9-1, 9-1 Main PCB)	1. Connect CH1 of oscilloscope across TP1 and Ground. 2. Connect EXT. Trigger of oscilloscope across TP401 and Ground. 3. Turn VR51 to fully clockwise direction. 4. Input RED signal only to VIDEO INPUT. 5. Adjust by VR101 so that chrominance level become 25 mVp-p ± 3 mV. 6. Adjust by VR51 so that V-Sync level becomes 140 mVp-p ± 10 mV.	Fig. 8-4



No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-5	REC. Bias Current	TP201 TP202	VR201 (Page 9-2, 9-4 Audio PCB)	1. Set the REC status by the blank tape. (Do not set the PAUSE. In PAUSE mode, the bias oscillation is stopped.) 2. Connect the AC voltmeter to TP201 and TP202. 3. Adjust by VR201 so that the voltage becomes 22 mV.	Fig. 8-5



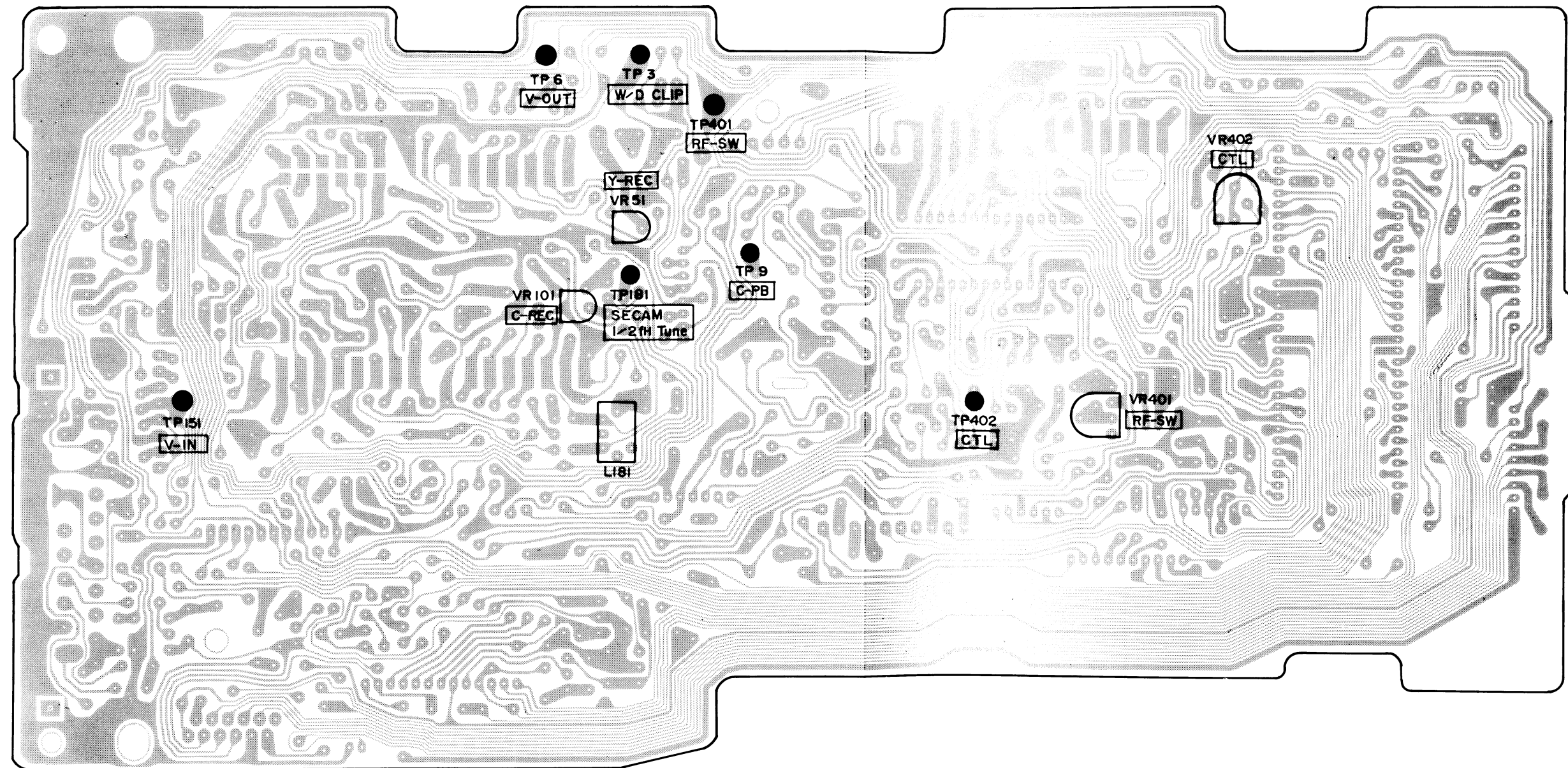
No.	Item	Test Point	Adjustment point	Method	Connection Figure
8-6 *	SECAM 1/2 fH Tune Adjustment (REC. Mode) Blank tape	TP181 GND	L 181 (Page 9-1, 9-1 Main PCB)	1. Connect CH1 of oscilloscope across TP181 and Ground. 2. Input SECAM color bar signal to VIDEO INPUT. 3. Adjust by L181 so that output level becomes maximum.	Fig. 8-6



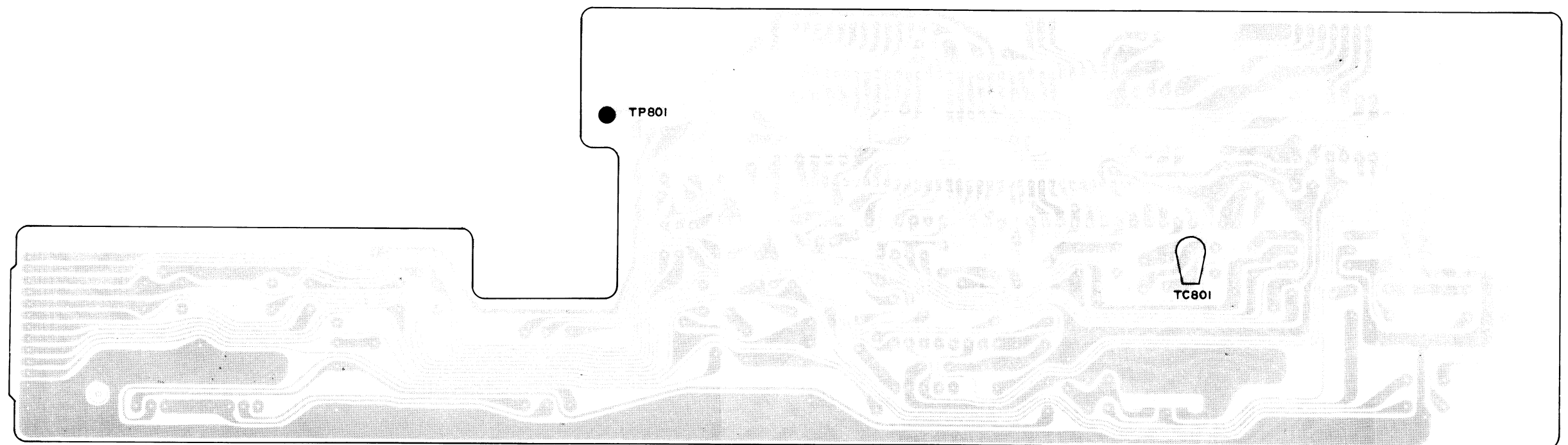
* Note : Make this adjustment for ME-SECAM model only.

9. TEST POINT

9-1 MAIN P.C.BOARD

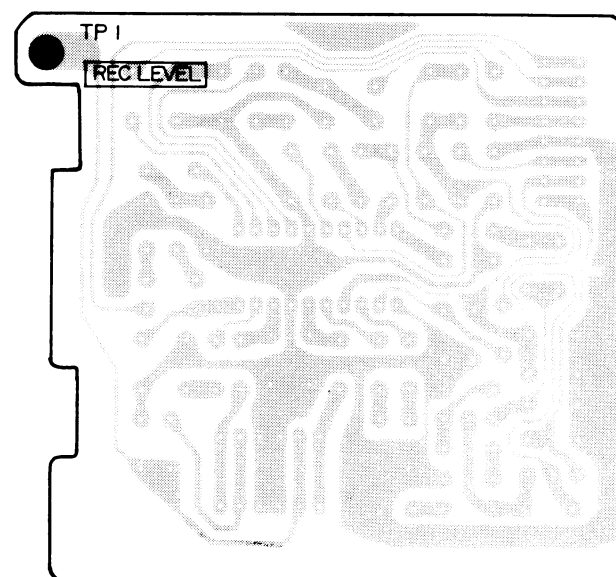


9-2 TIMER P.C.BOARD



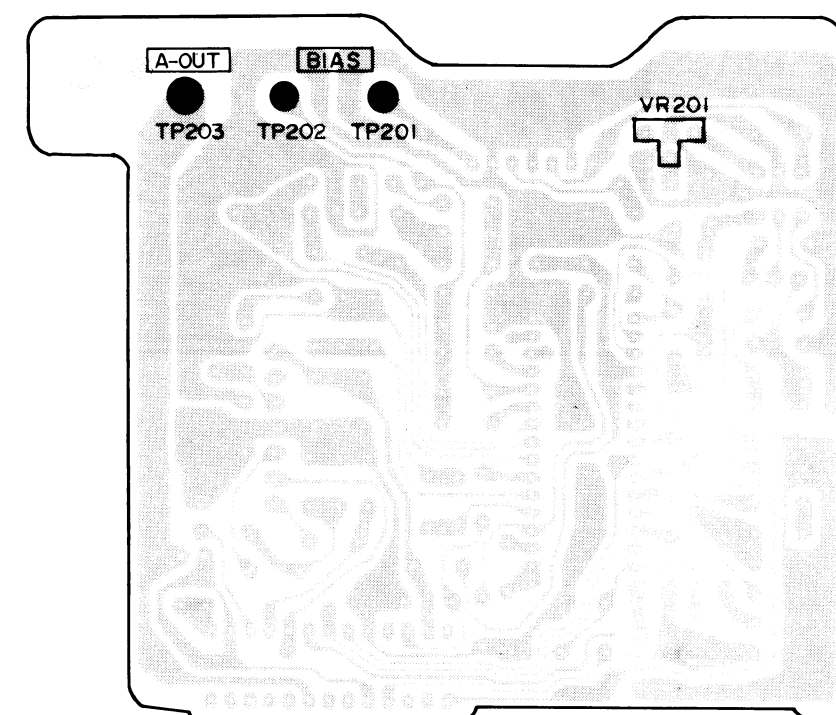
TPT-5

9-3 HEAD AMP P.C.BOARD



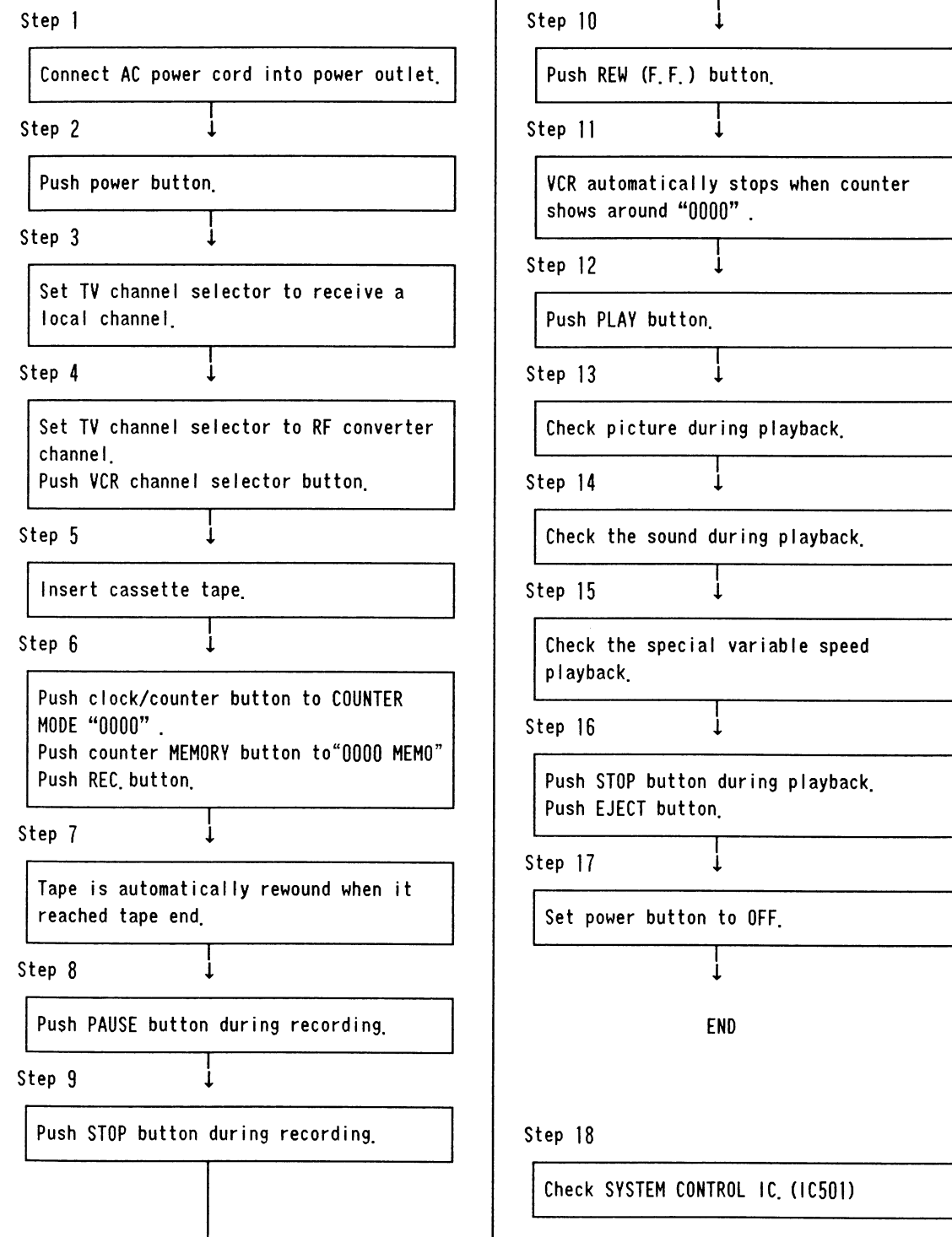
TPH-1

9-4 AUDIO P.C.BOARD

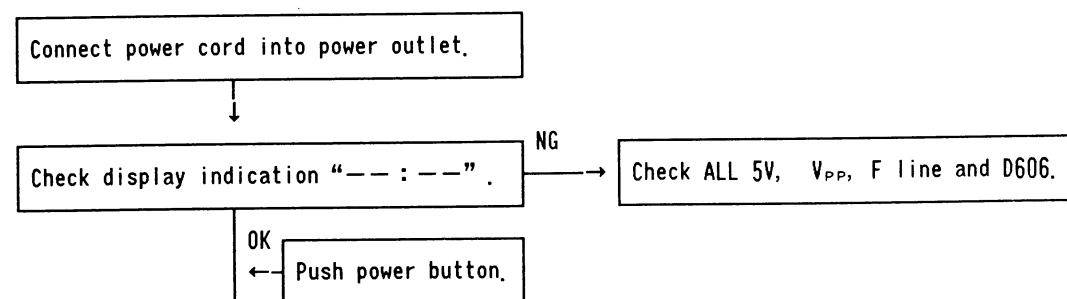


TPA-1

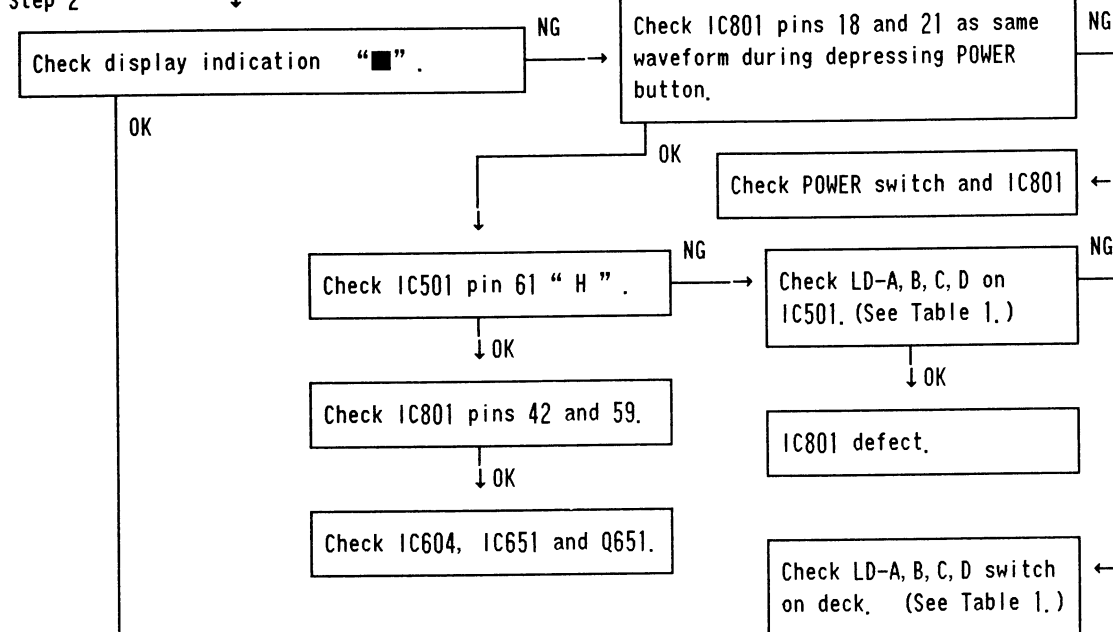
10. TROUBLESHOOTING GUIDES



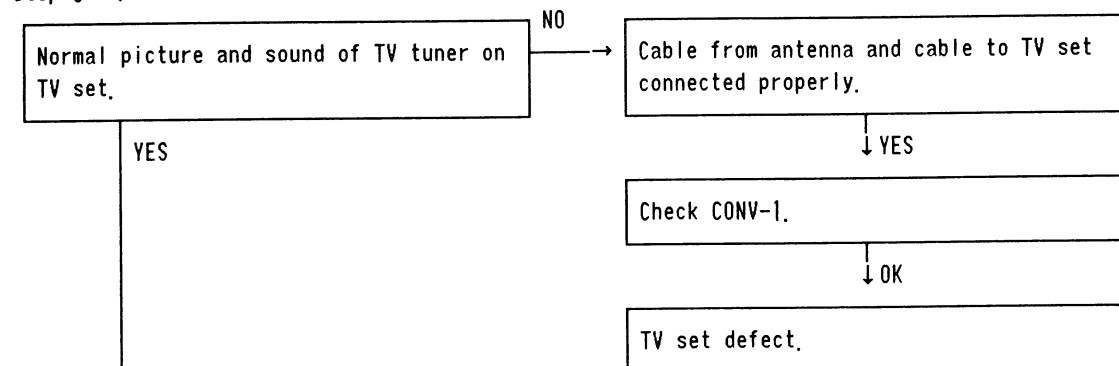
Step 1



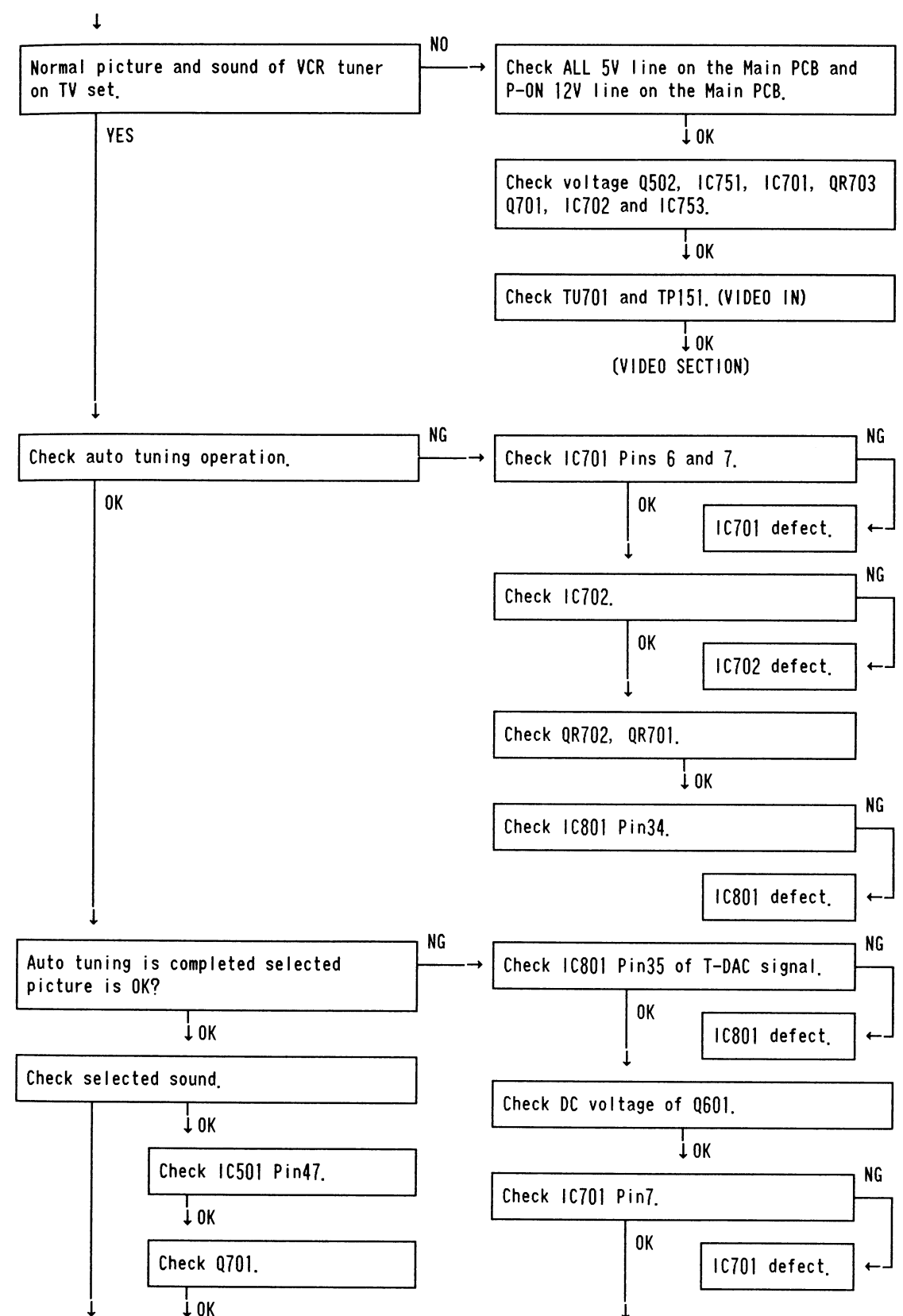
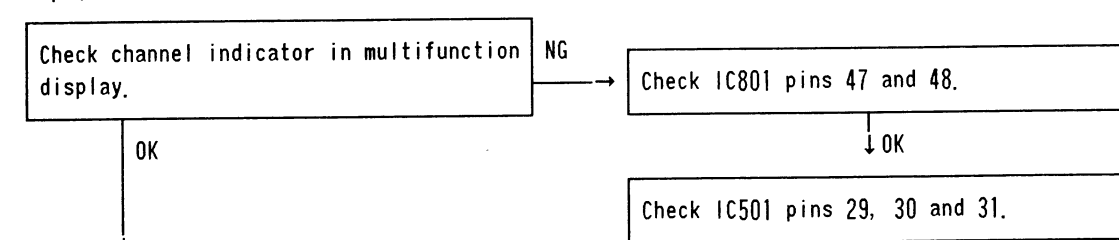
Step 2

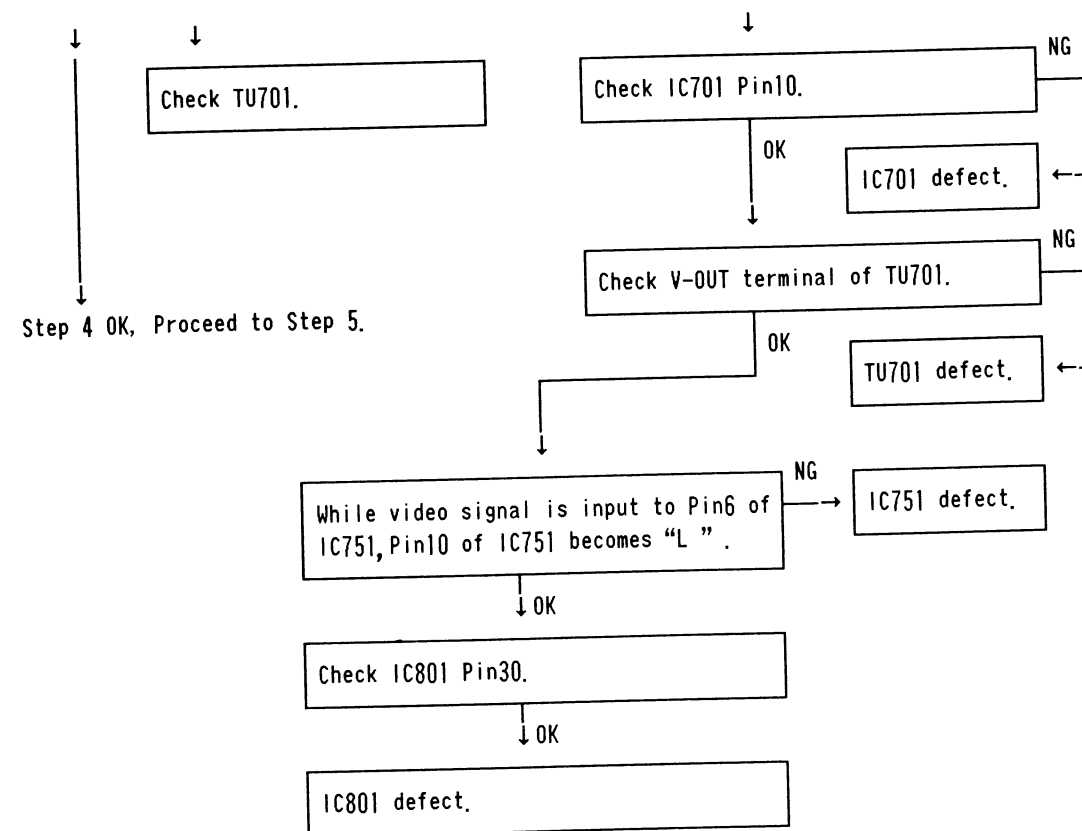


Step 3

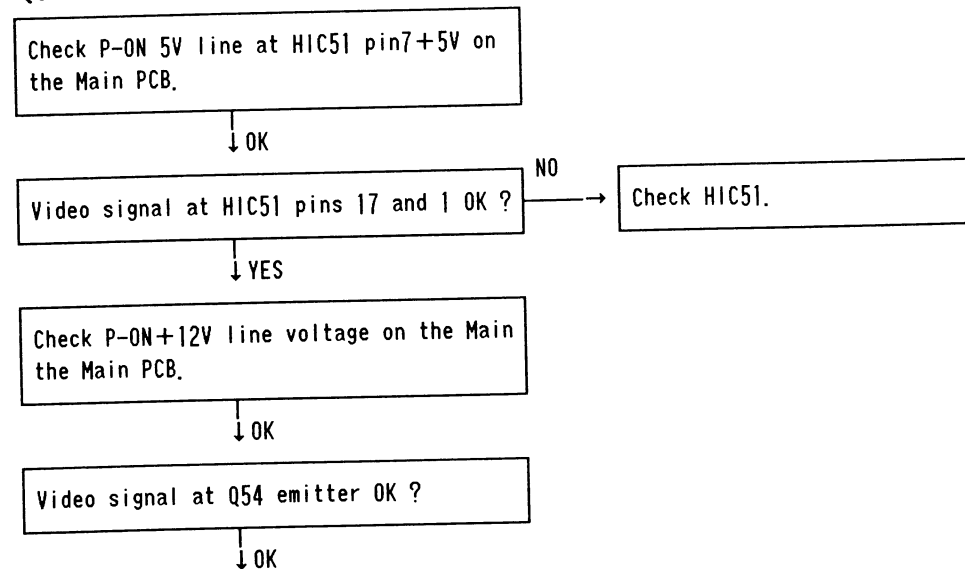


Step 4



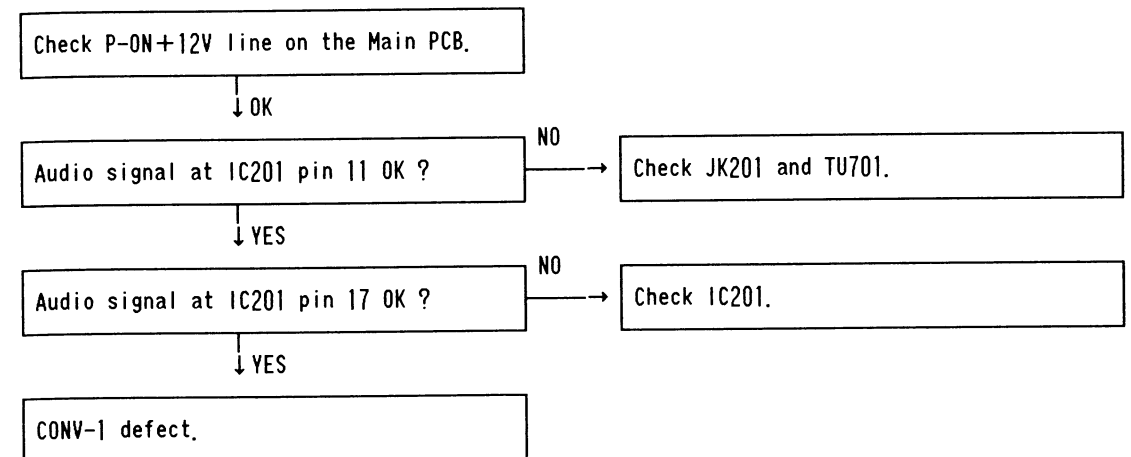


(VIDEO SECTION)

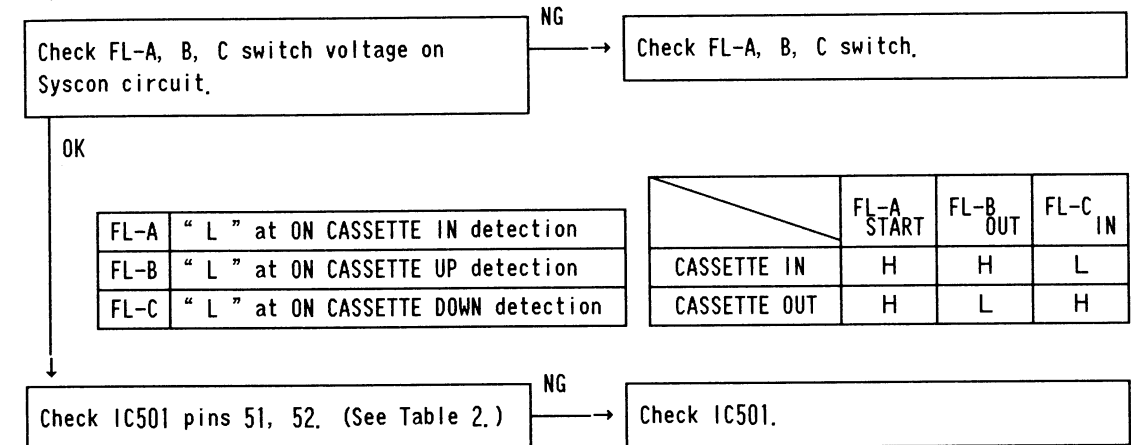


AUDIO SECTION

(AUDIO SECTION)

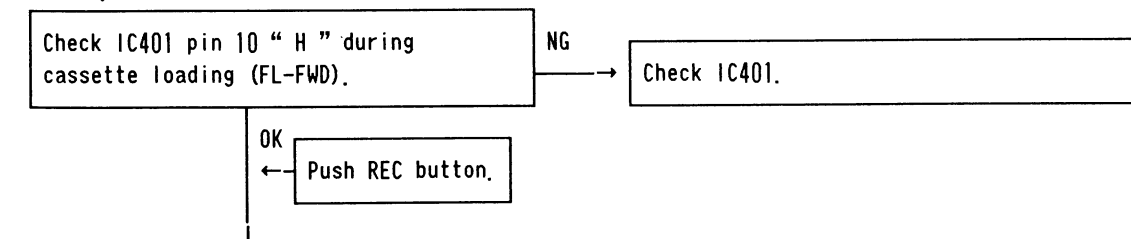


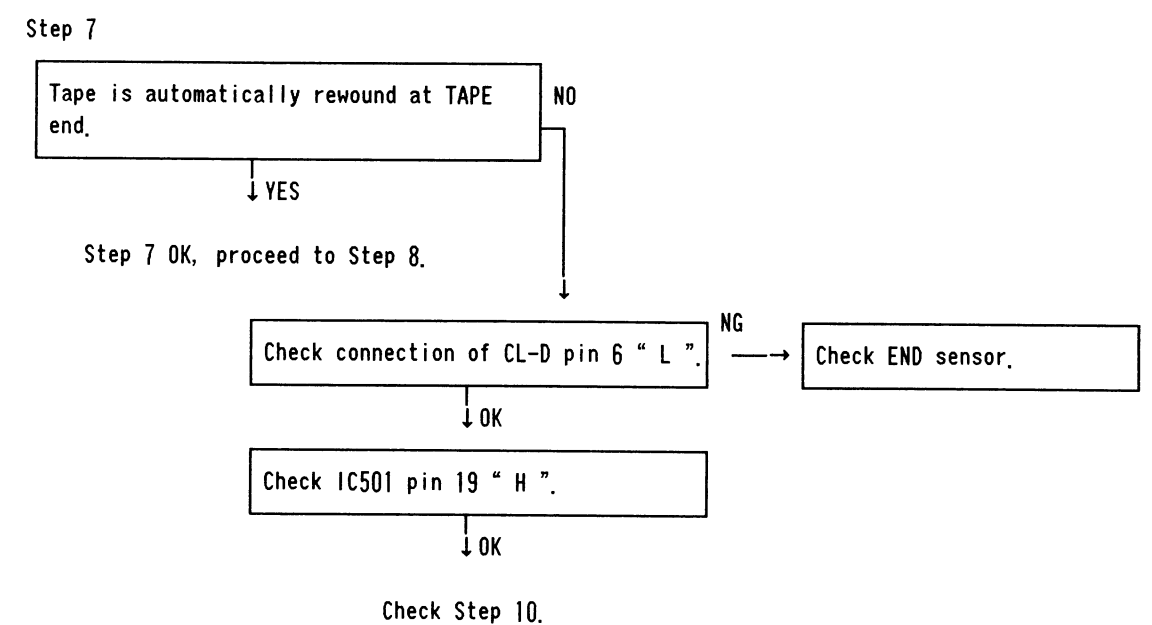
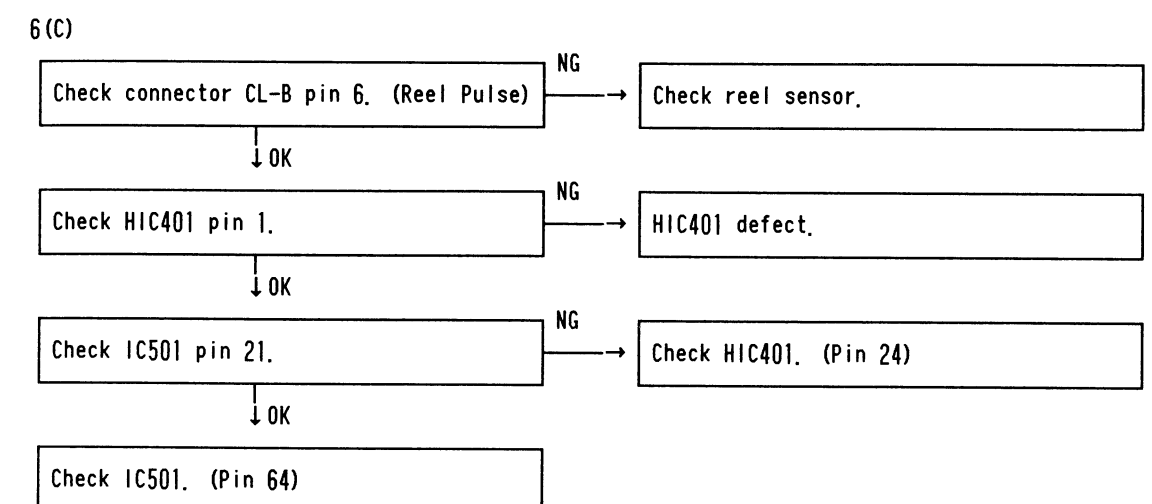
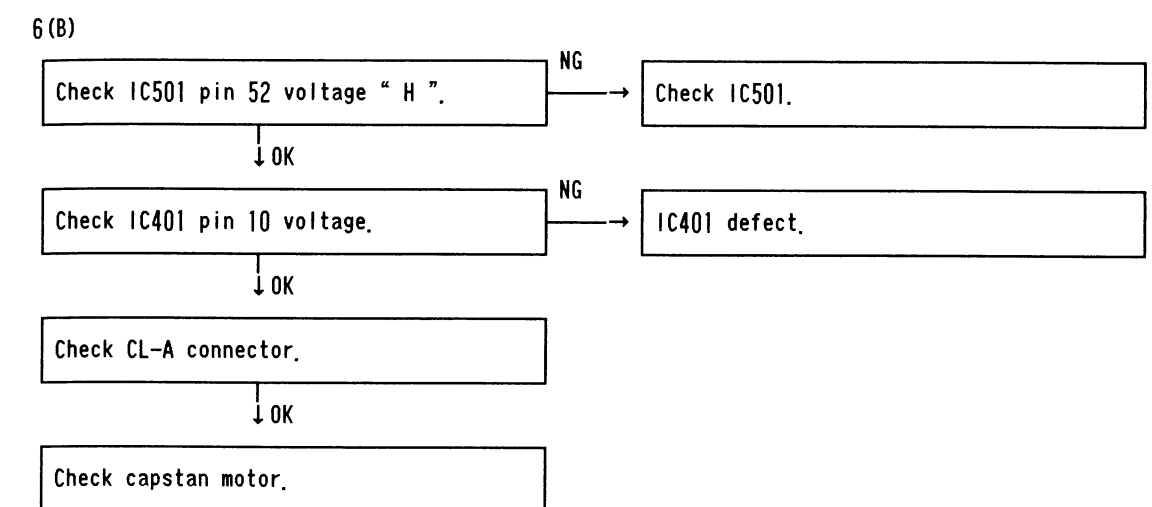
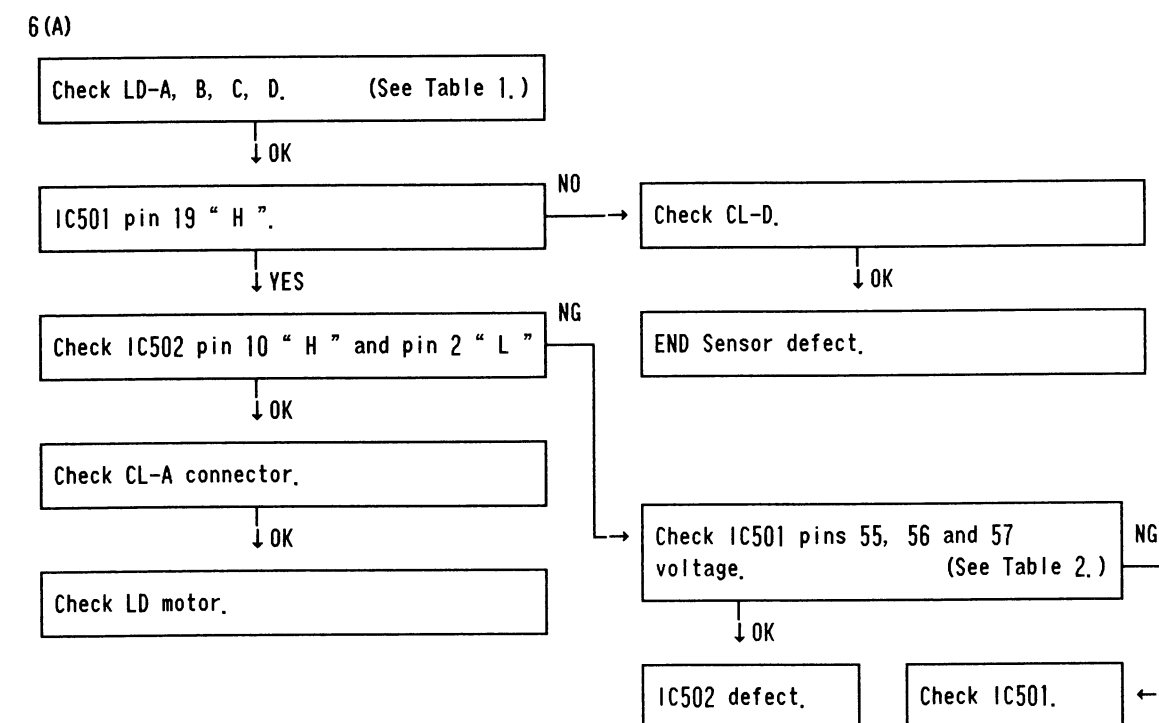
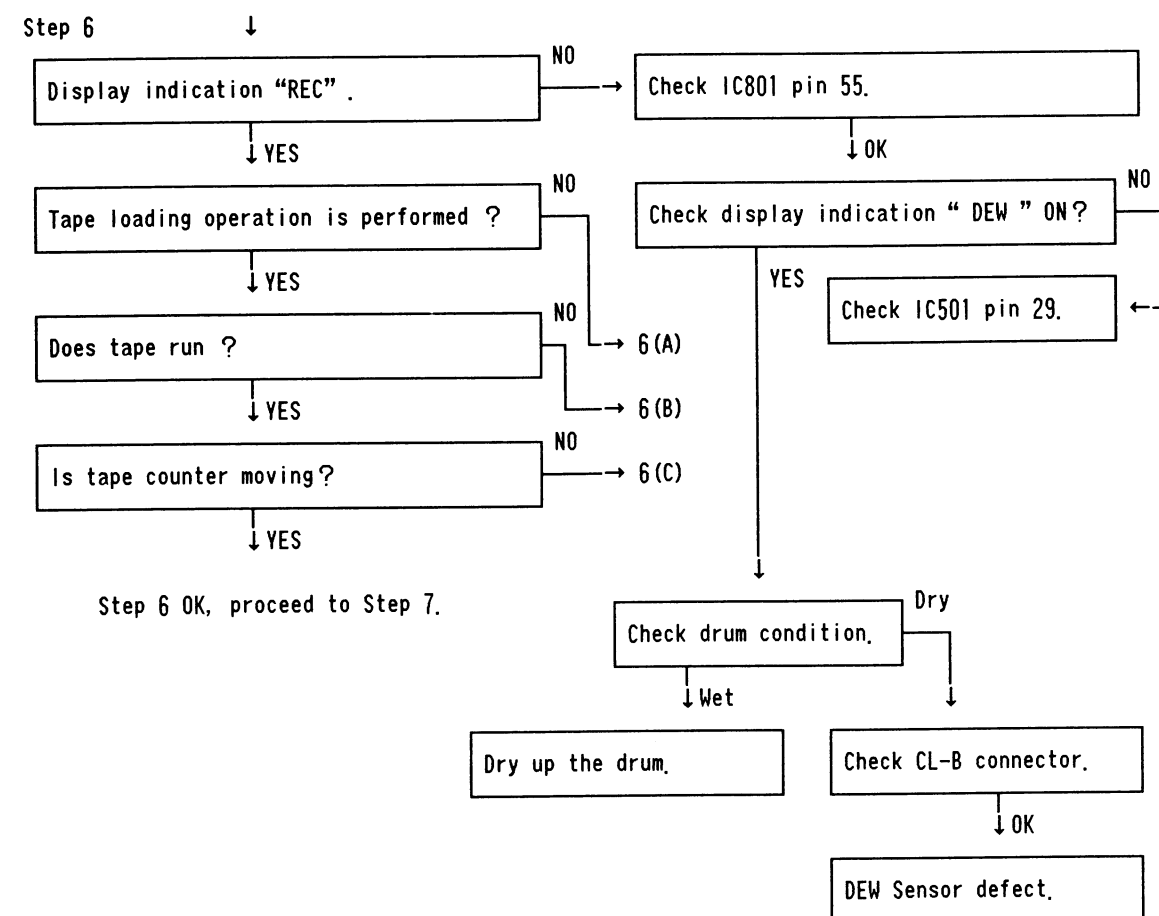
Step 5

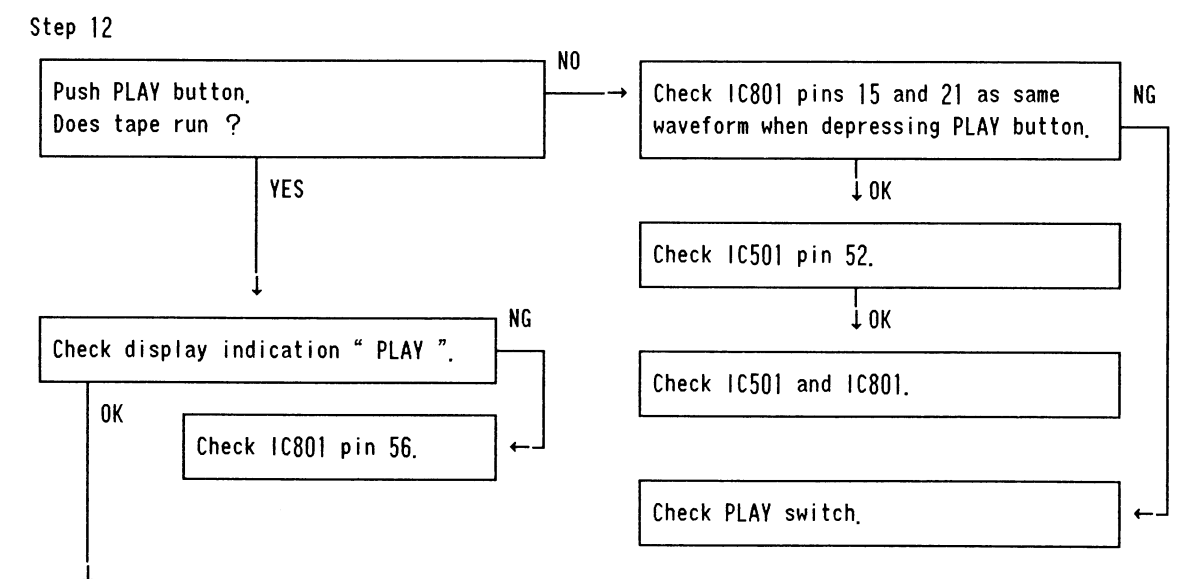
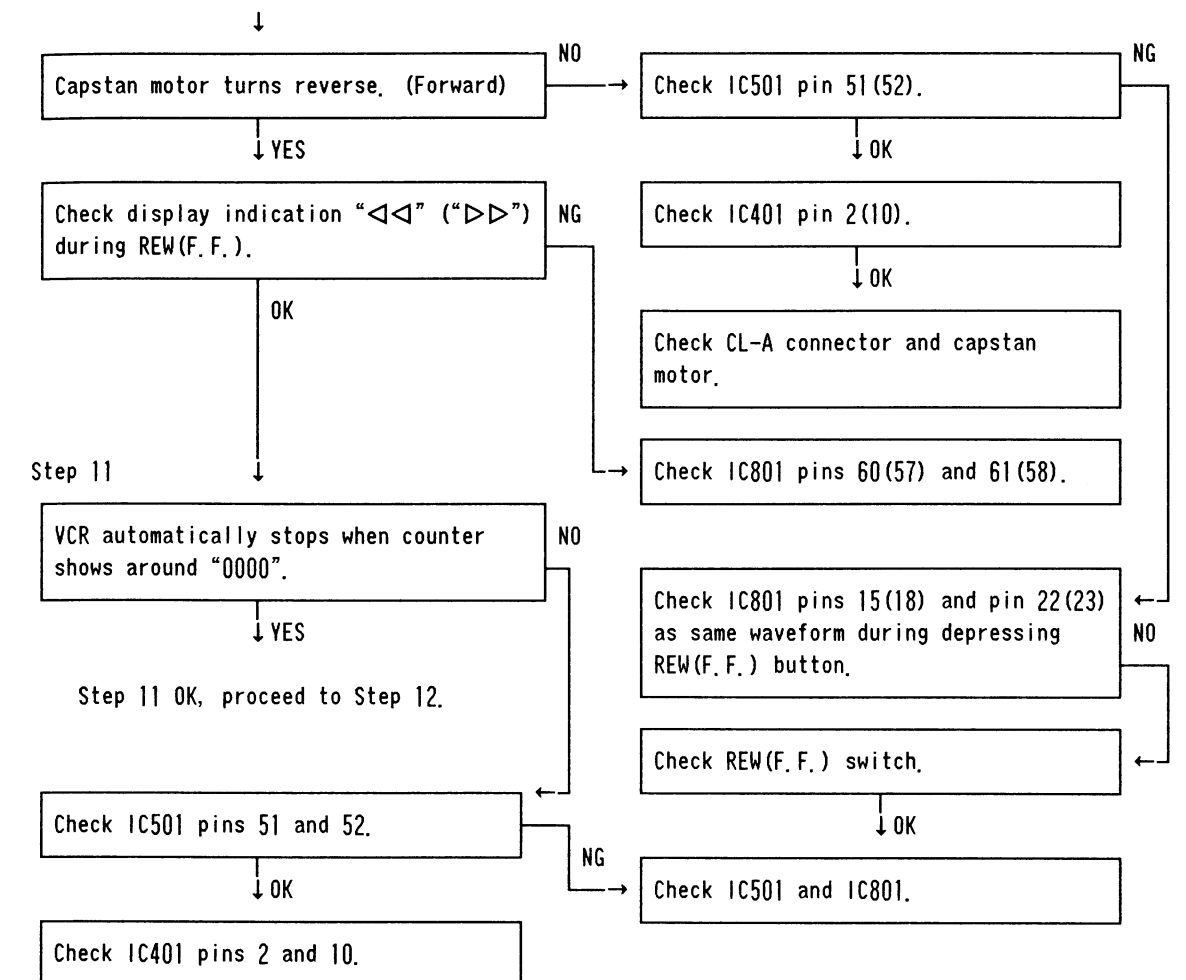
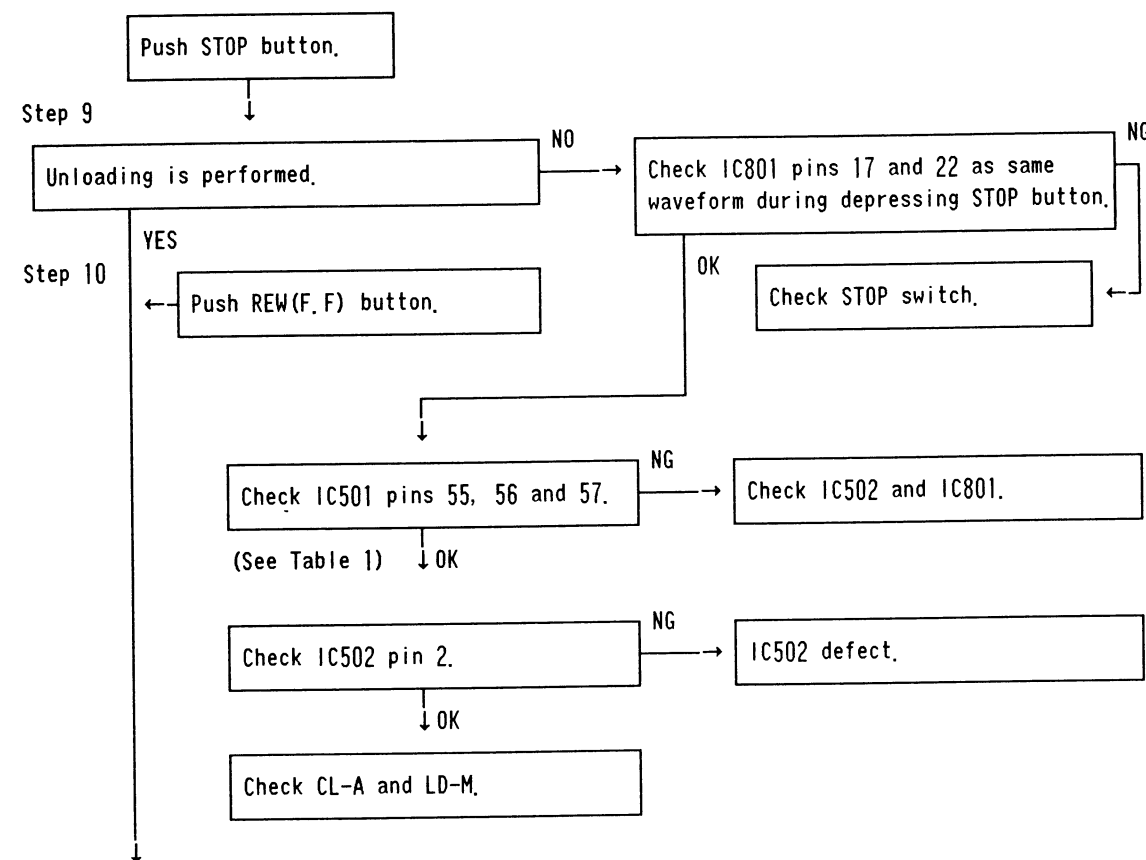
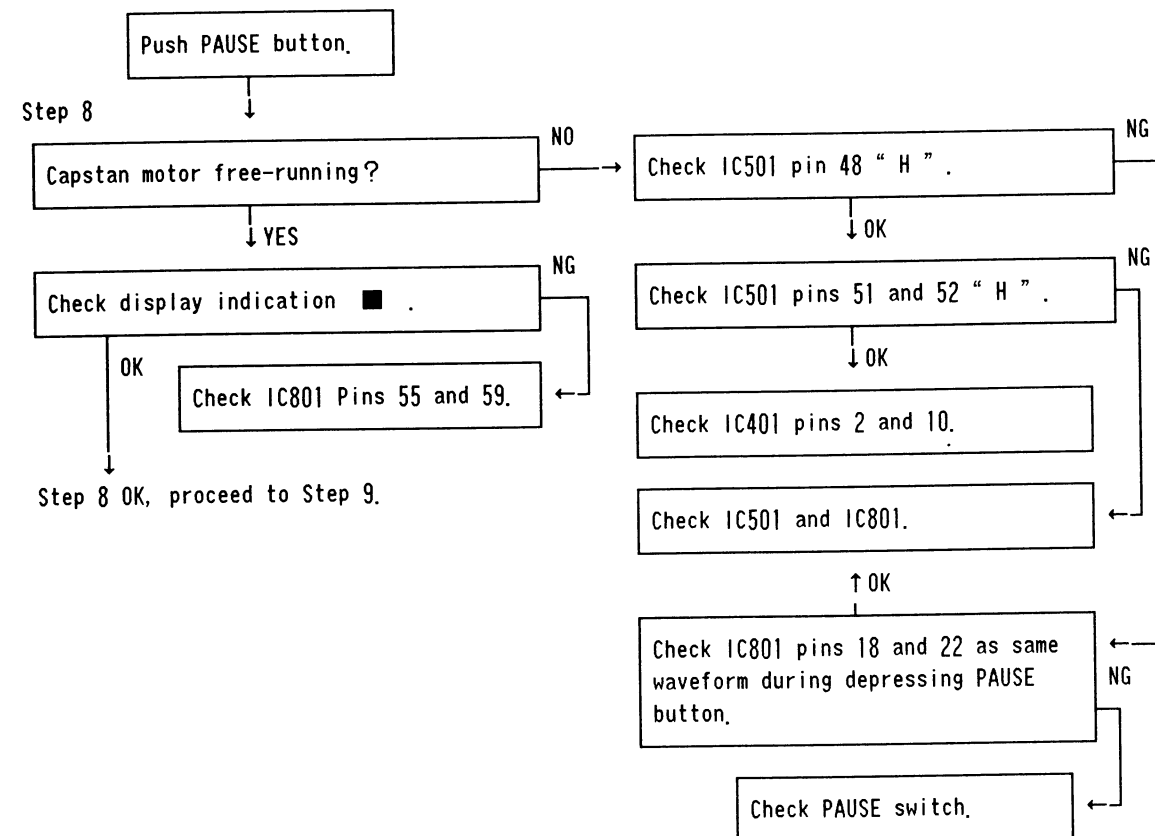


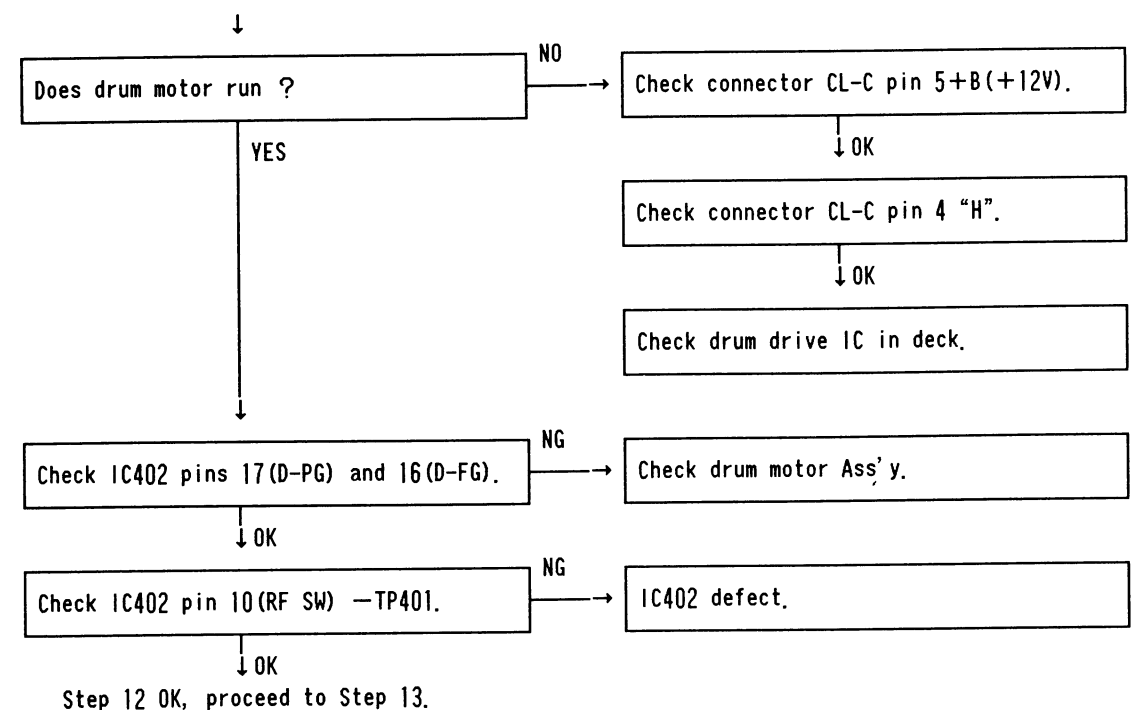
CAP-FWD (52 Pin)	CAP-REV (51 Pin)	MOTOR	MODE
L	L	STOP	Stop Without Brake
H	L	FWD	Capstan Motor FWD Direction, Reel FWD Direction, Cassette Unload Direction.
L	H	RVS	Capstan Motor RVS Direction, Reel RVS Direction, Cassette Load Direction.
H	H	STOP	Stop With Brake.

Table 2

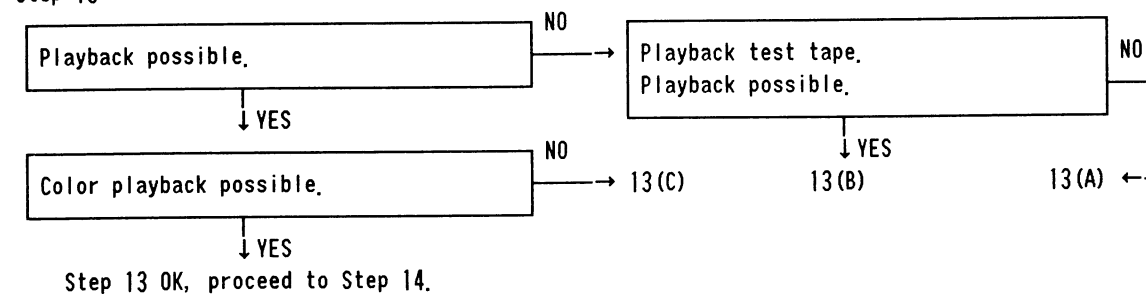




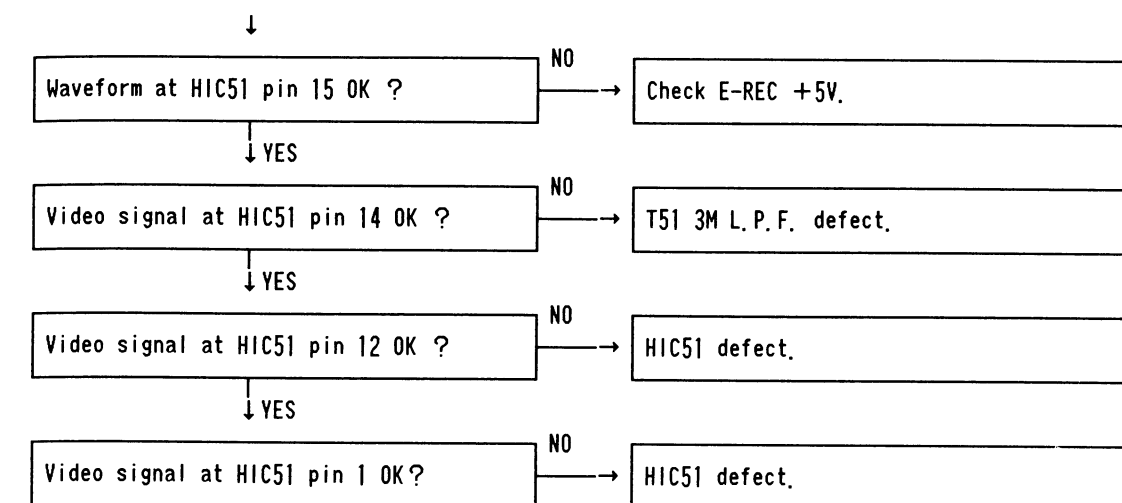
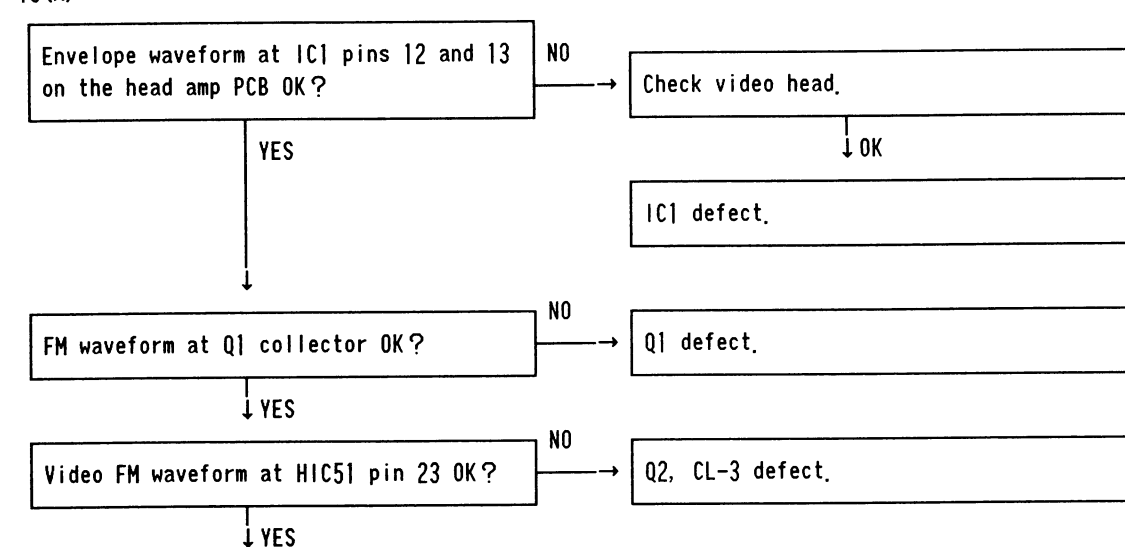




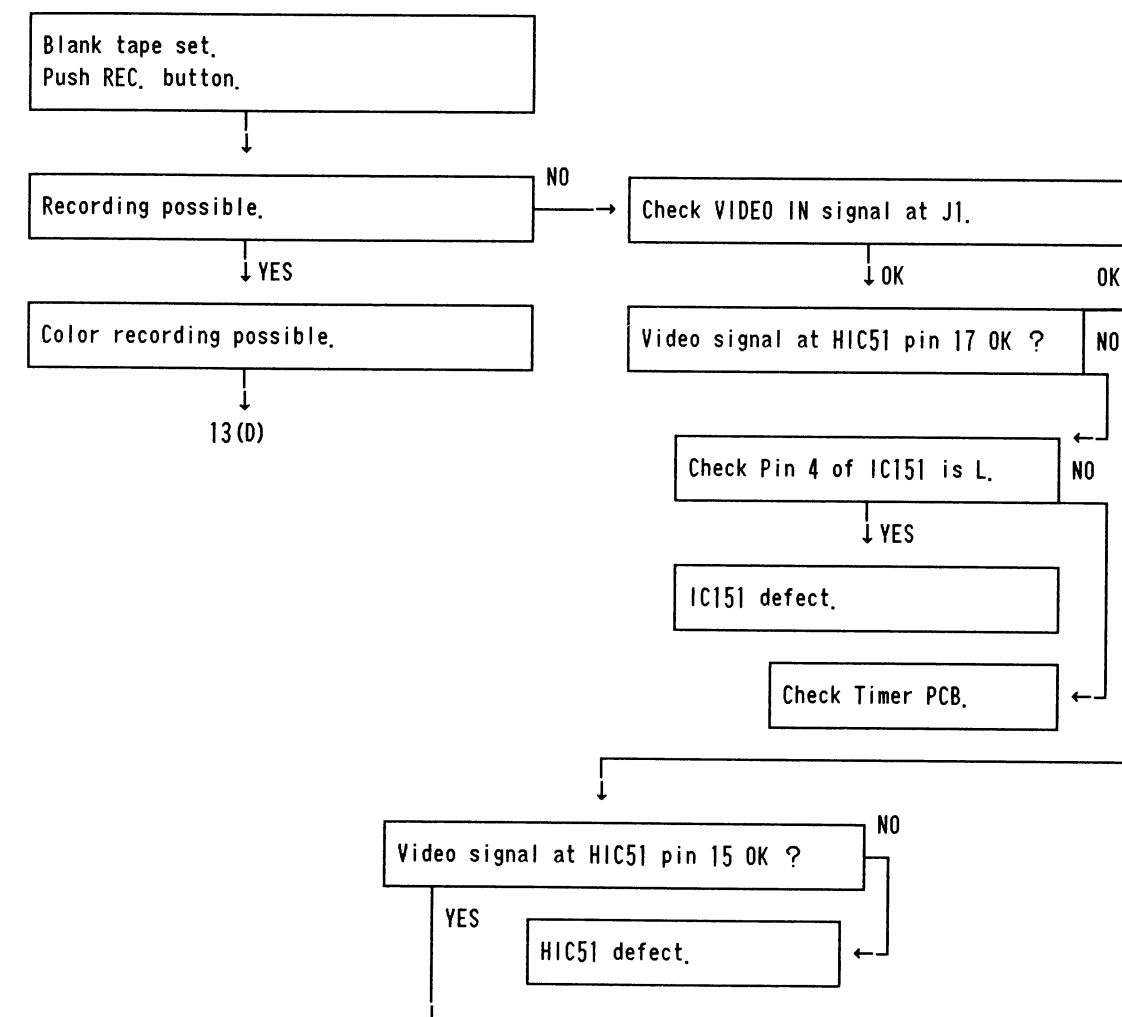
Step 13

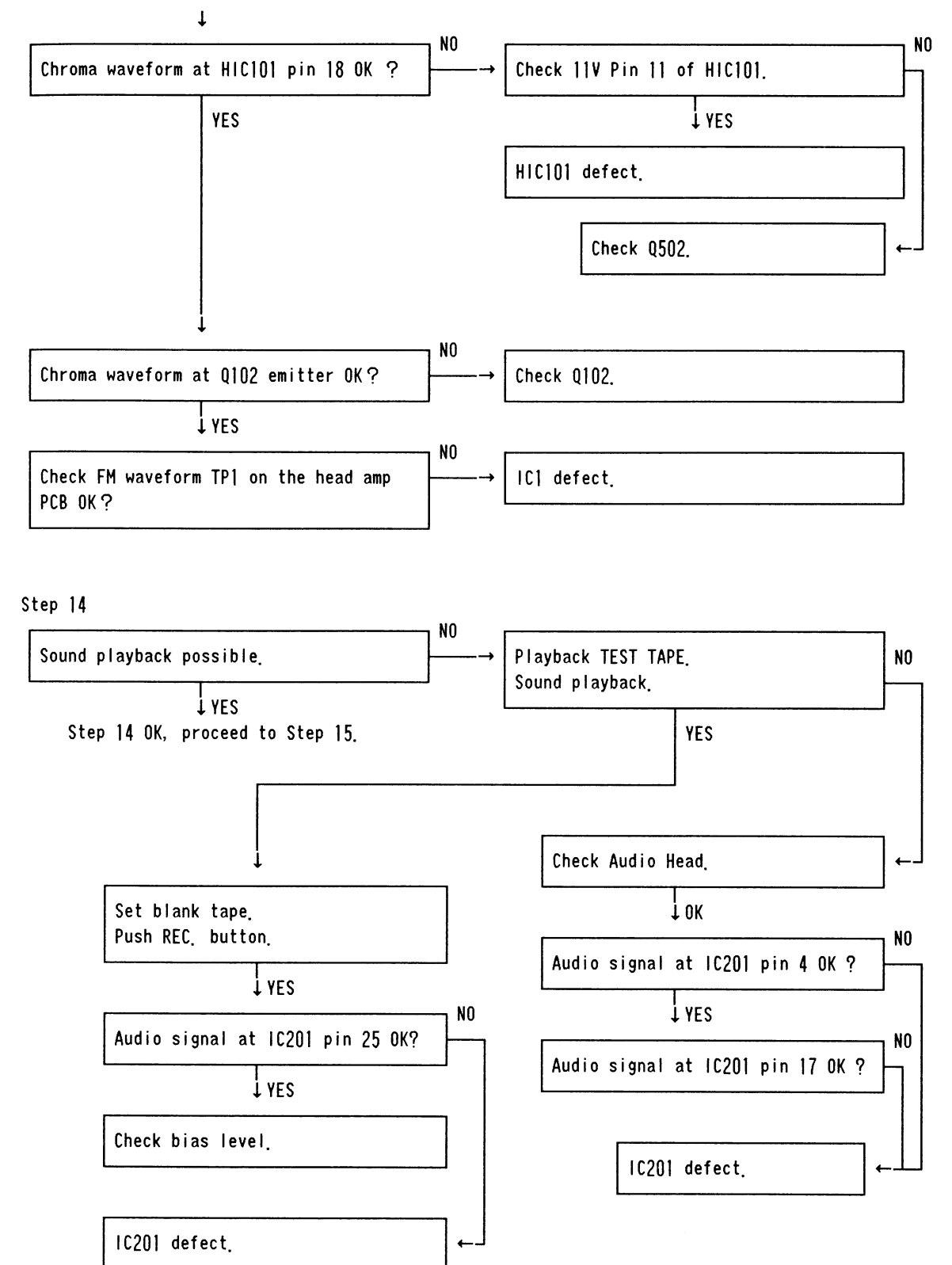
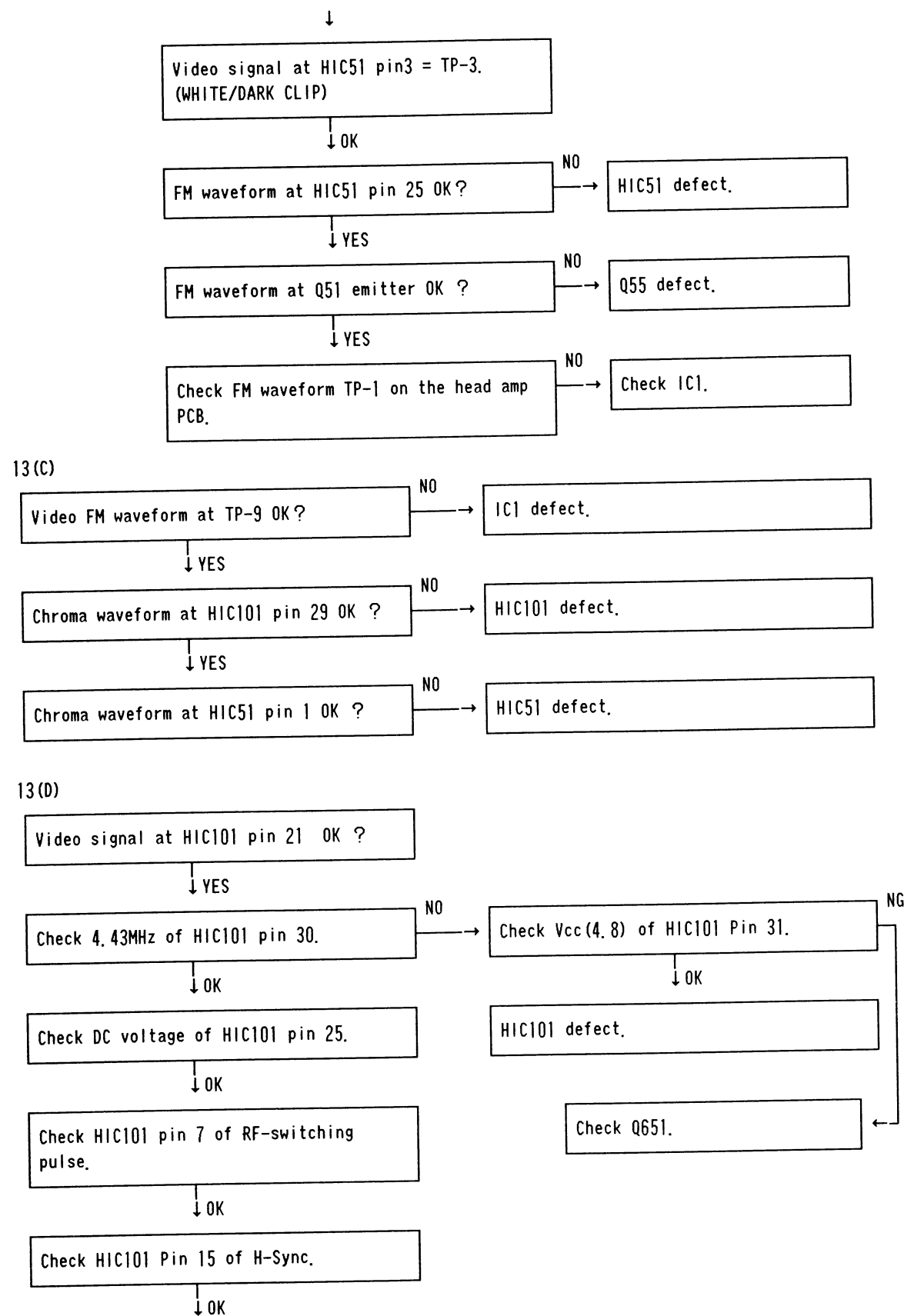


13(A)

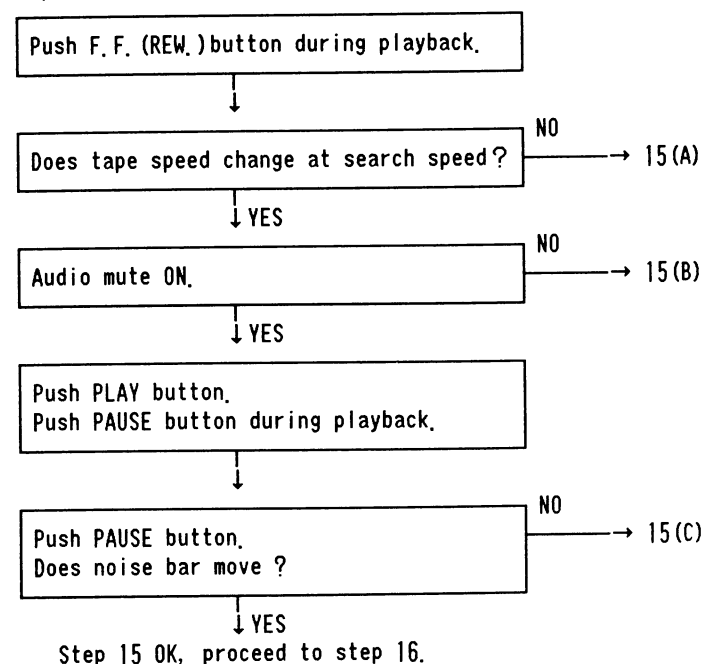


Step 13(B)

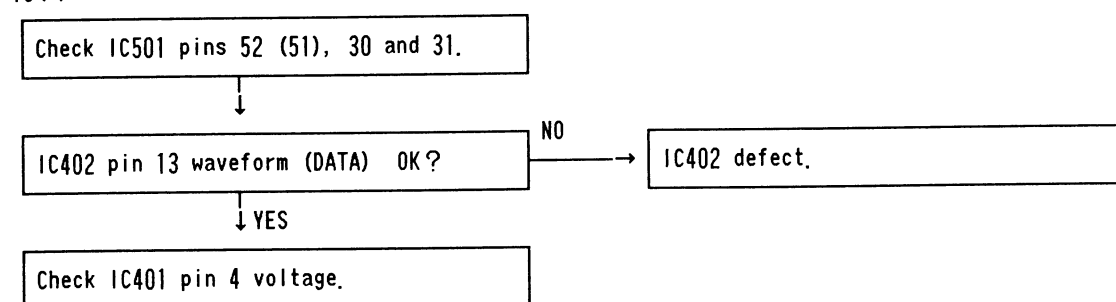




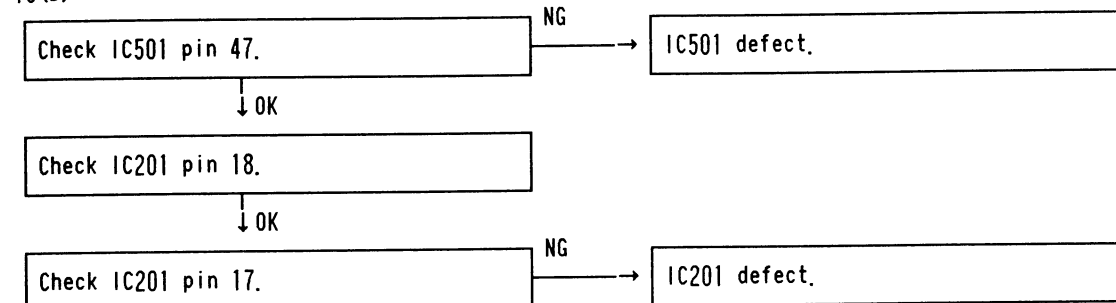
Step 15



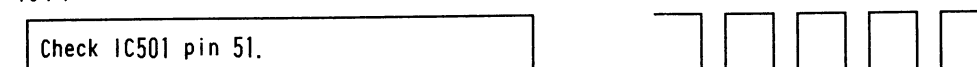
15(A)



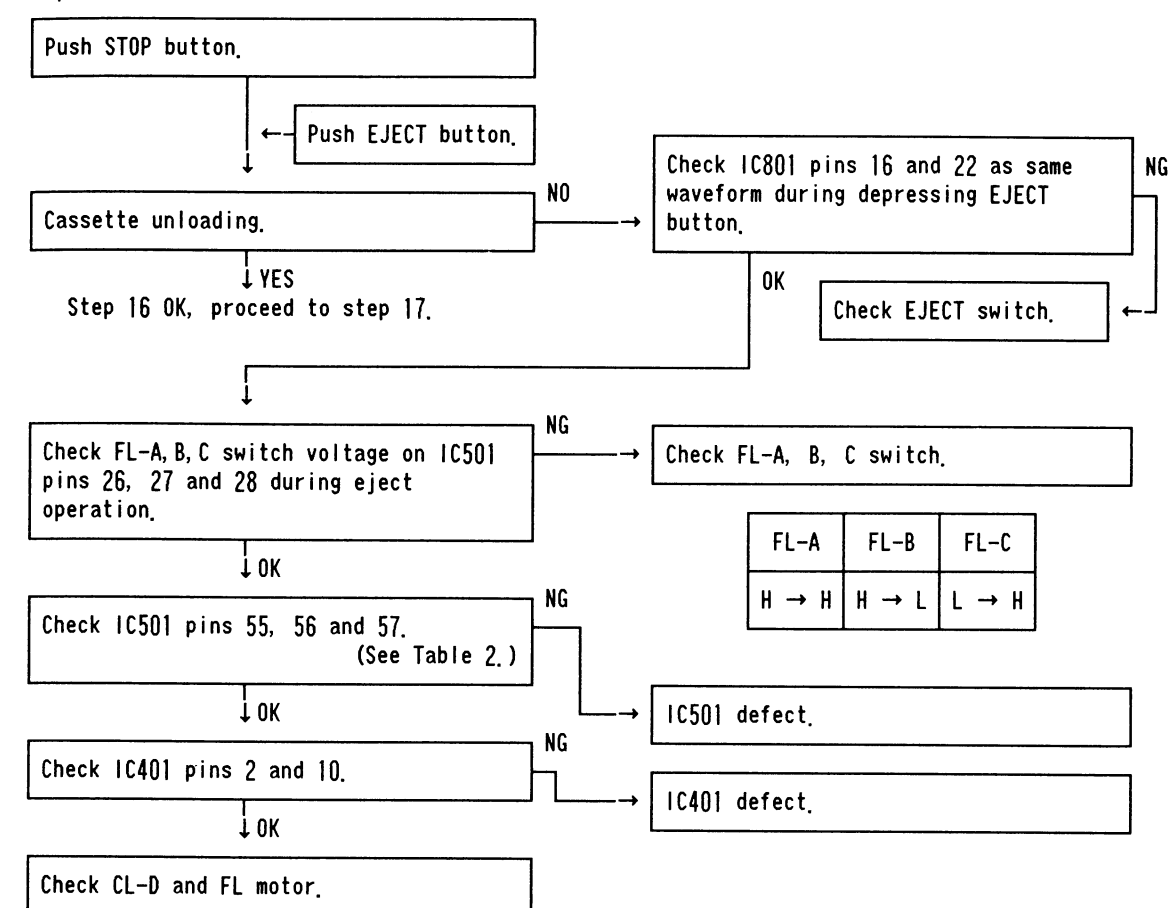
15(B)



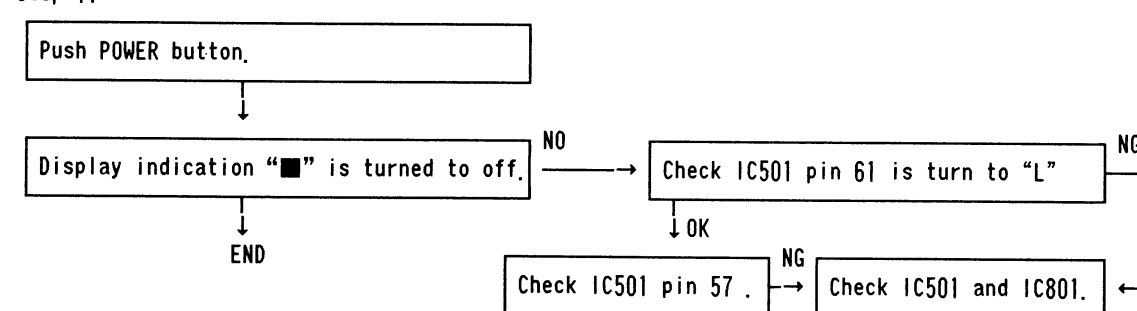
15(C)



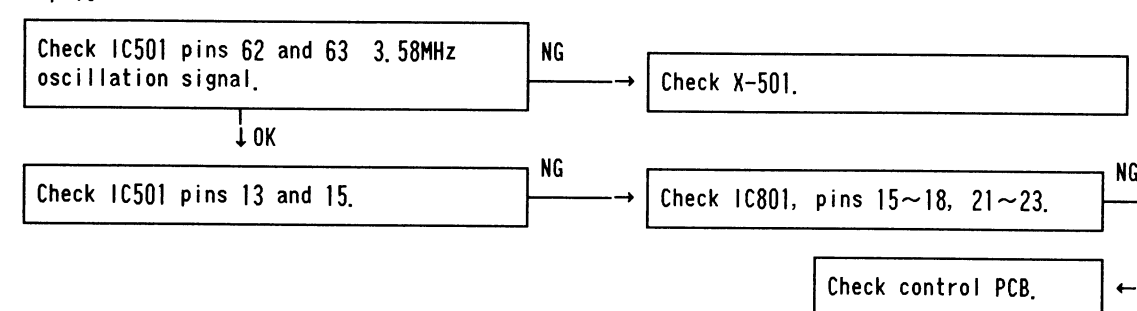
Step 16



Step 17

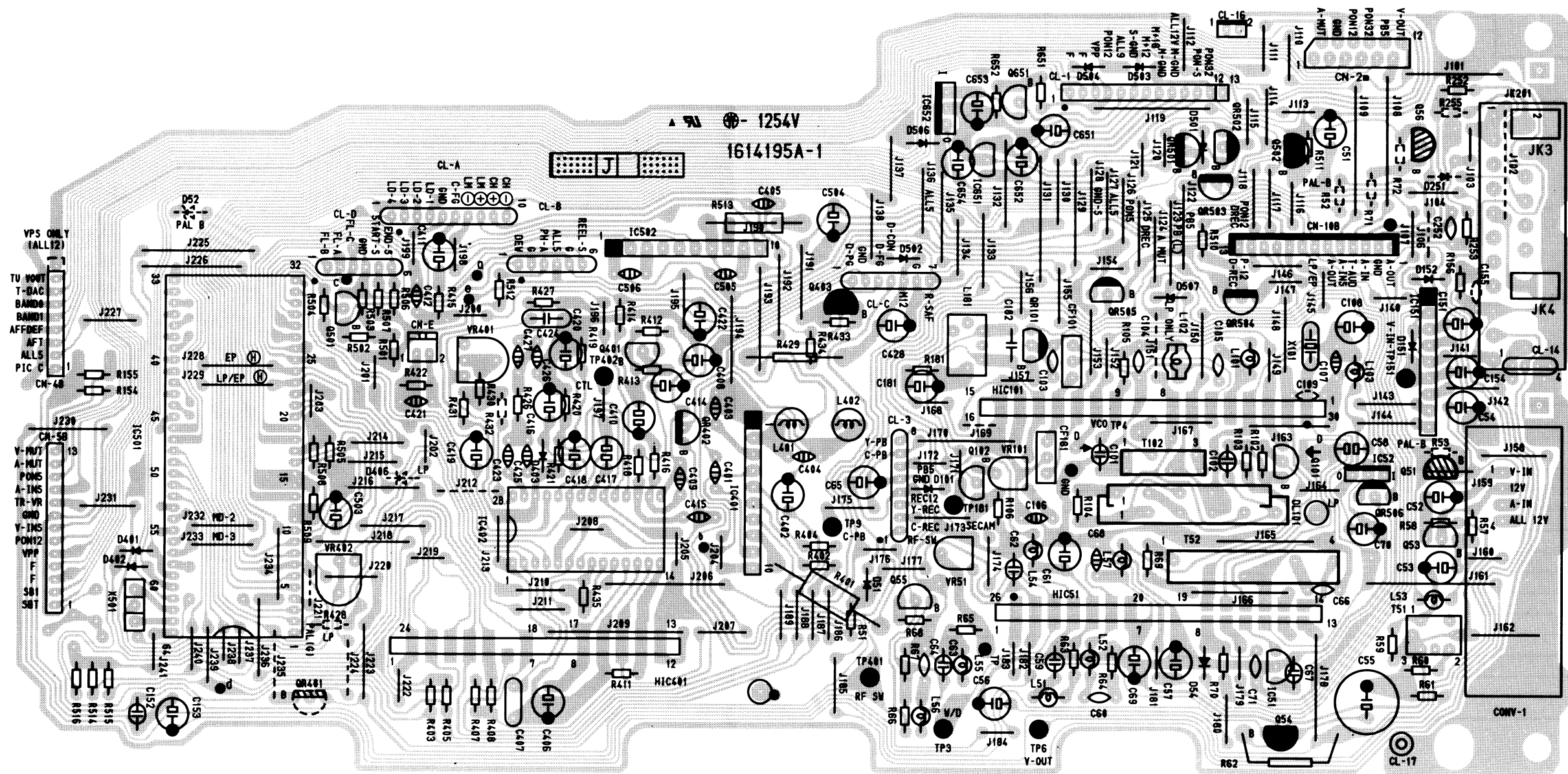


Step 18



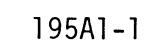
* When SYSTEM CONTROL IC has locked up SYSTEM CONTROL IC will not accept any mode. At this time, disconnect AC cord to reset the SYSTEM CONTROL IC.

11-1-1 MAIN P.C.BOARD TOP VIEW

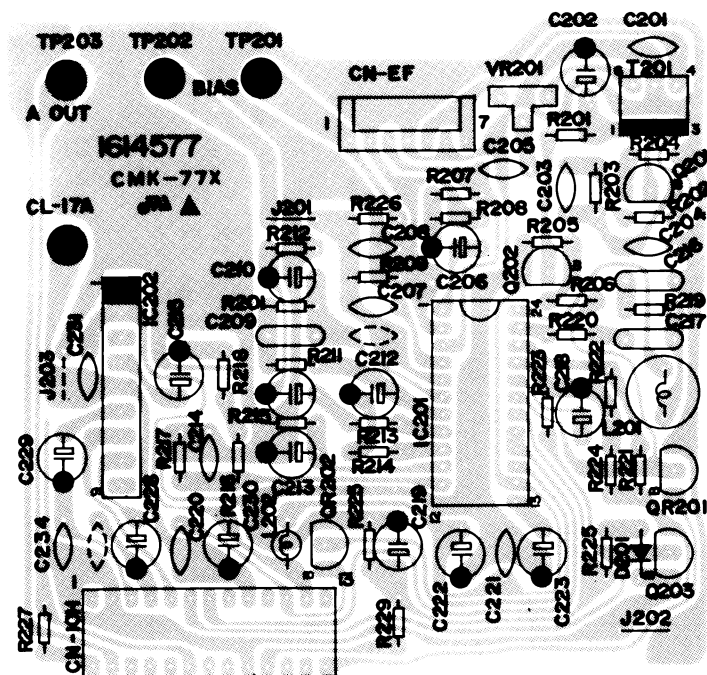


195A1-1

A vertical scale with numbers 1 through 13 on the left and horizontal tick marks on the right. The numbers are aligned with the tick marks.

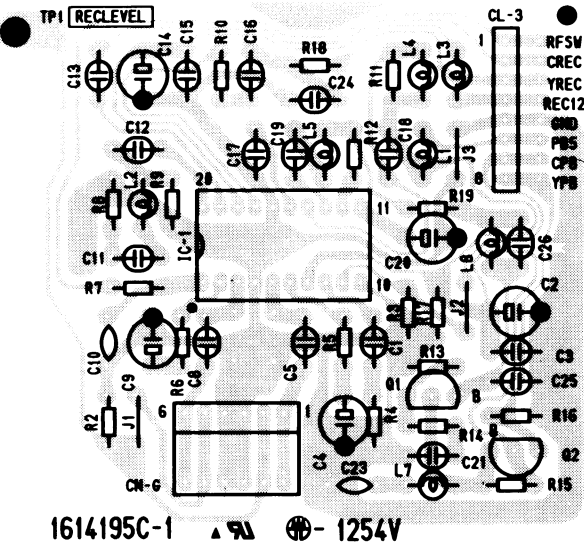


11-2-1 AUDIO P.C.BOARD TOP VIEW



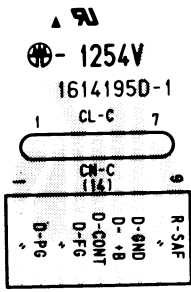
577

11-3-1 HEAD AMP P.C.BOARD TOP VIEW

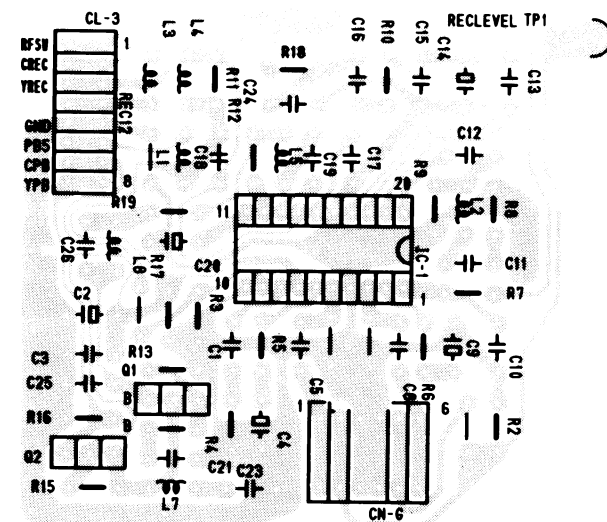


195C1-1

11-4-1 CONNECTOR A P.C.BOARD TOP VIEW

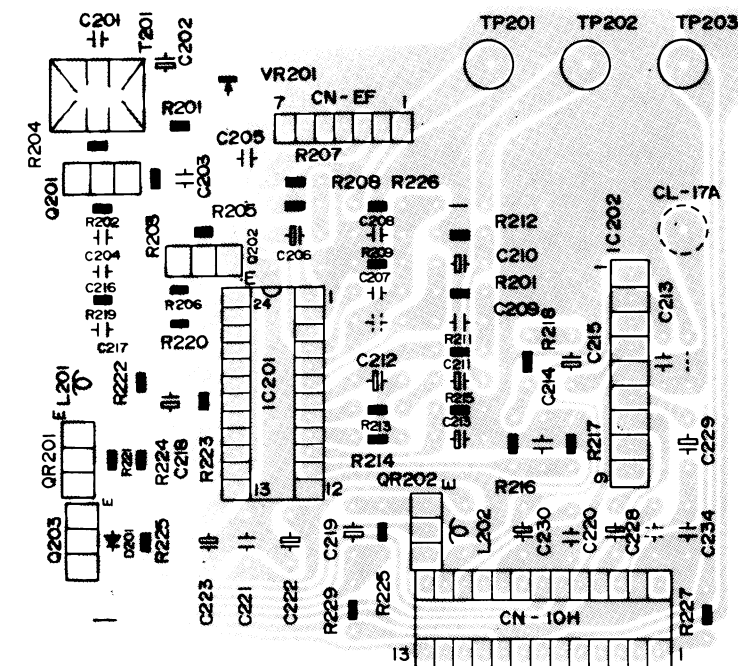


11-3-2 HEAD AMP P.C.BOARD BOTTOM VIEW



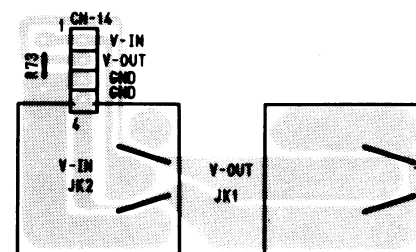
195C1-1

11-2-2 AUDIO P.C.BOARD BOTTOM VIEW



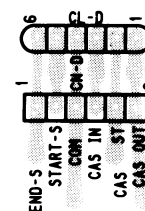
577

11-7-2 JACK P.C.BOARD
BOTTOM VIEW



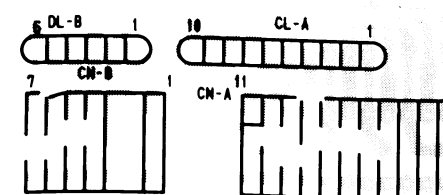
195G1-1

11-6-2 CONNECTOR C
P.C.BOARD BOTTOM VIEW



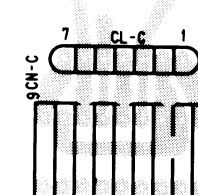
195F1-1

11-5-2 CONNECTOR B
P.C.BOARD BOTTOM VIEW



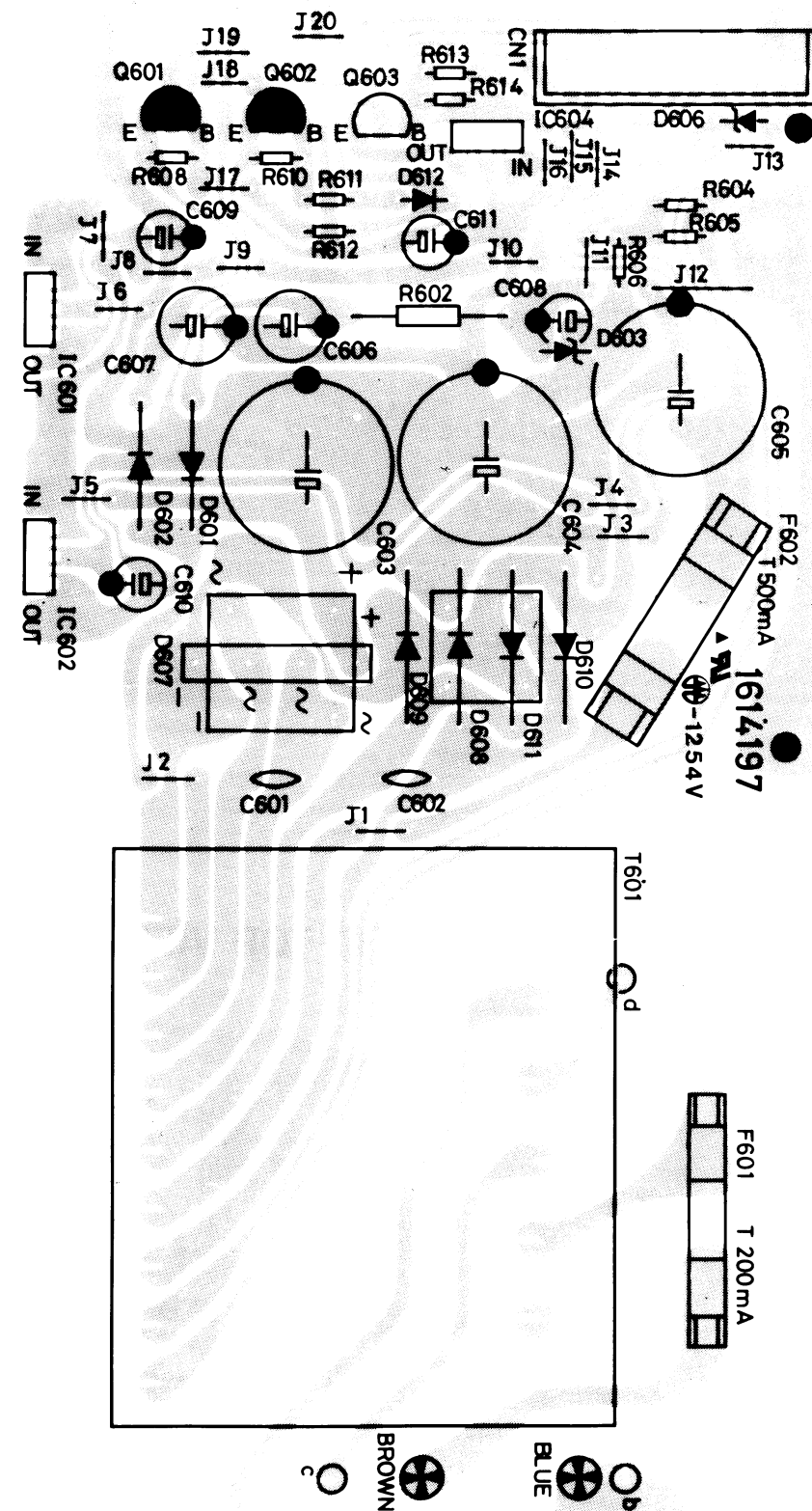
195E1-1

11-4-2 CONNECTOR A
P.C.BOARD BOTTOM VIEW

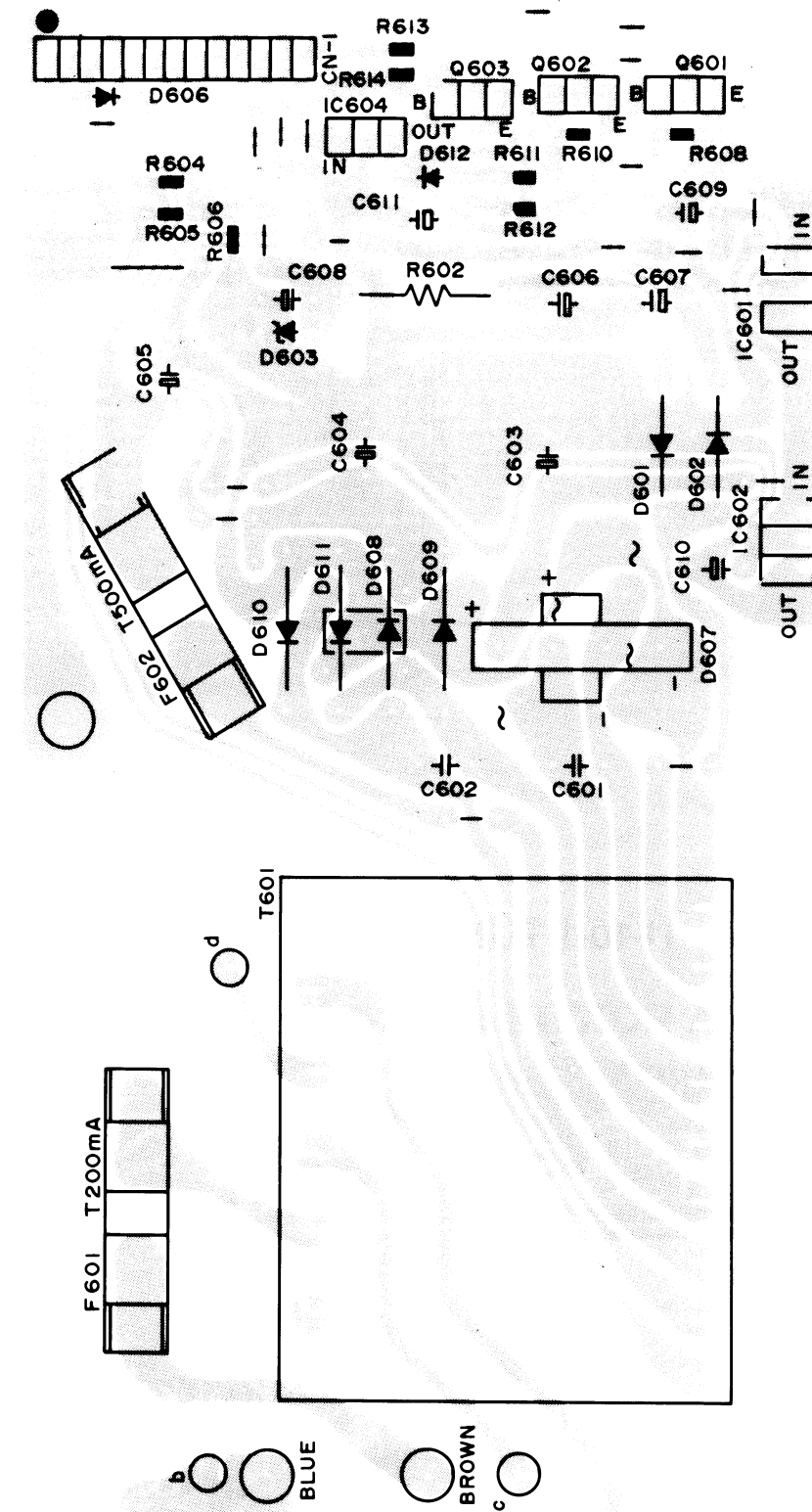


195D1-1

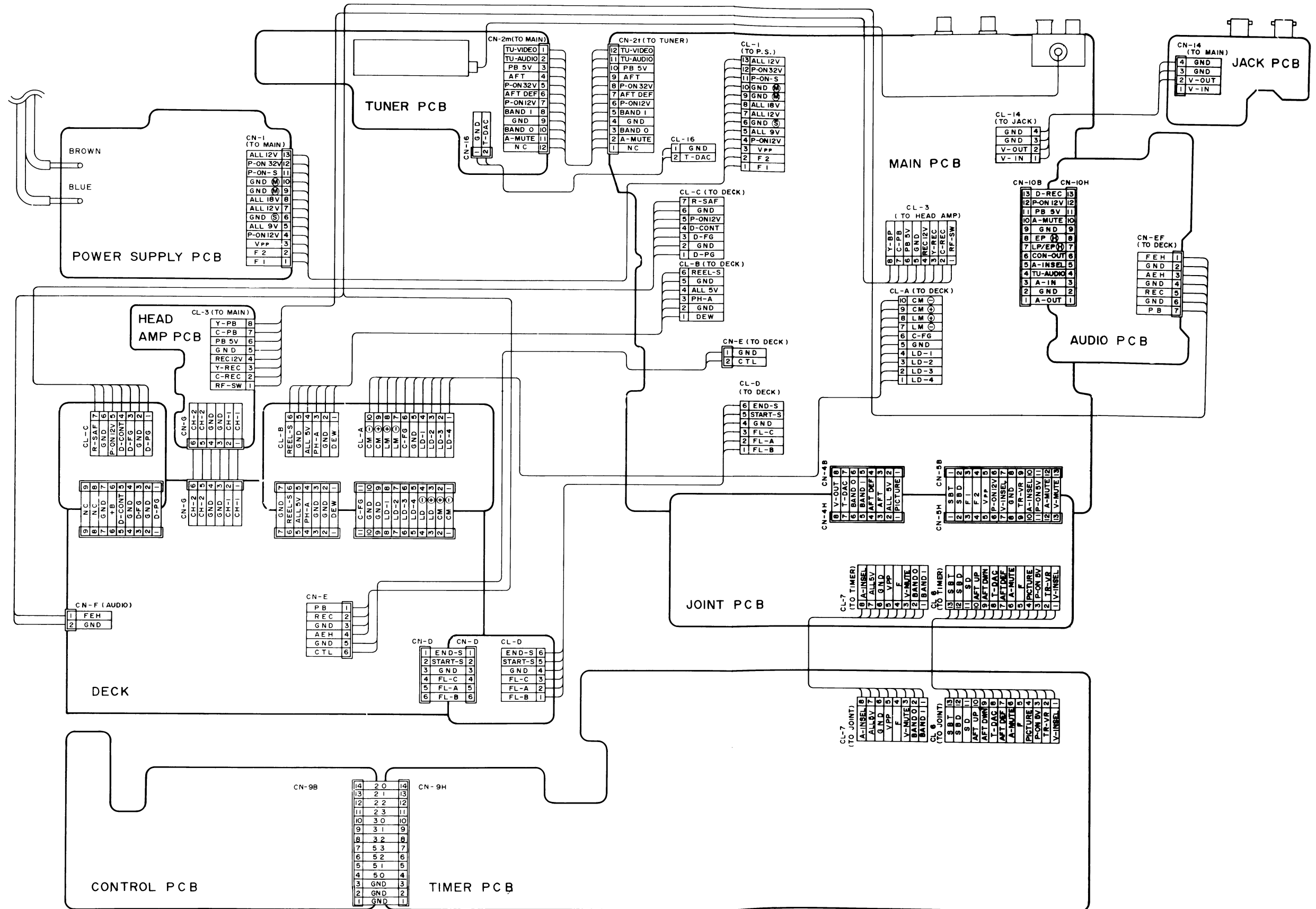
11-12-1 POWER SUPPLY P.C.BOARD TOP VIEW



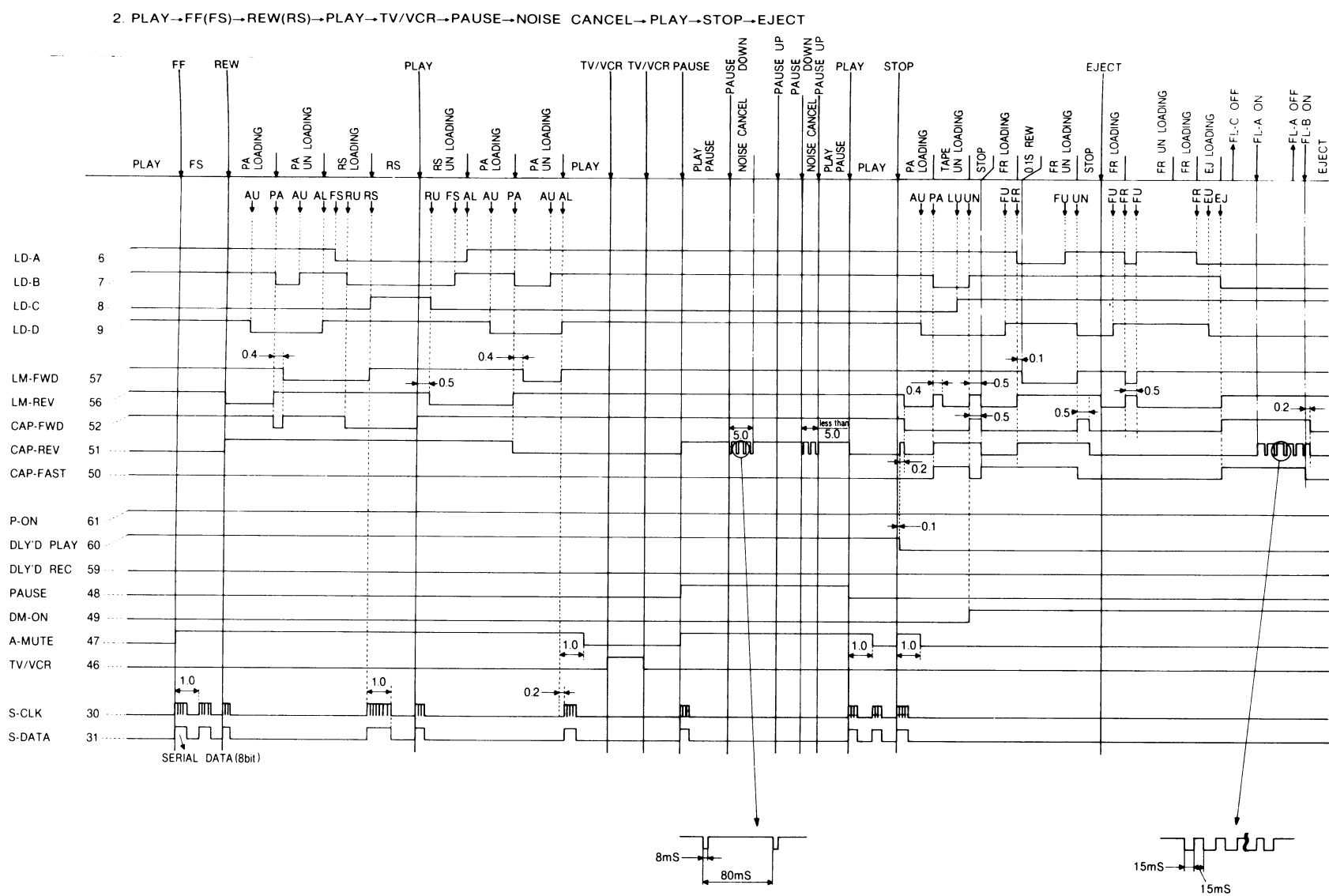
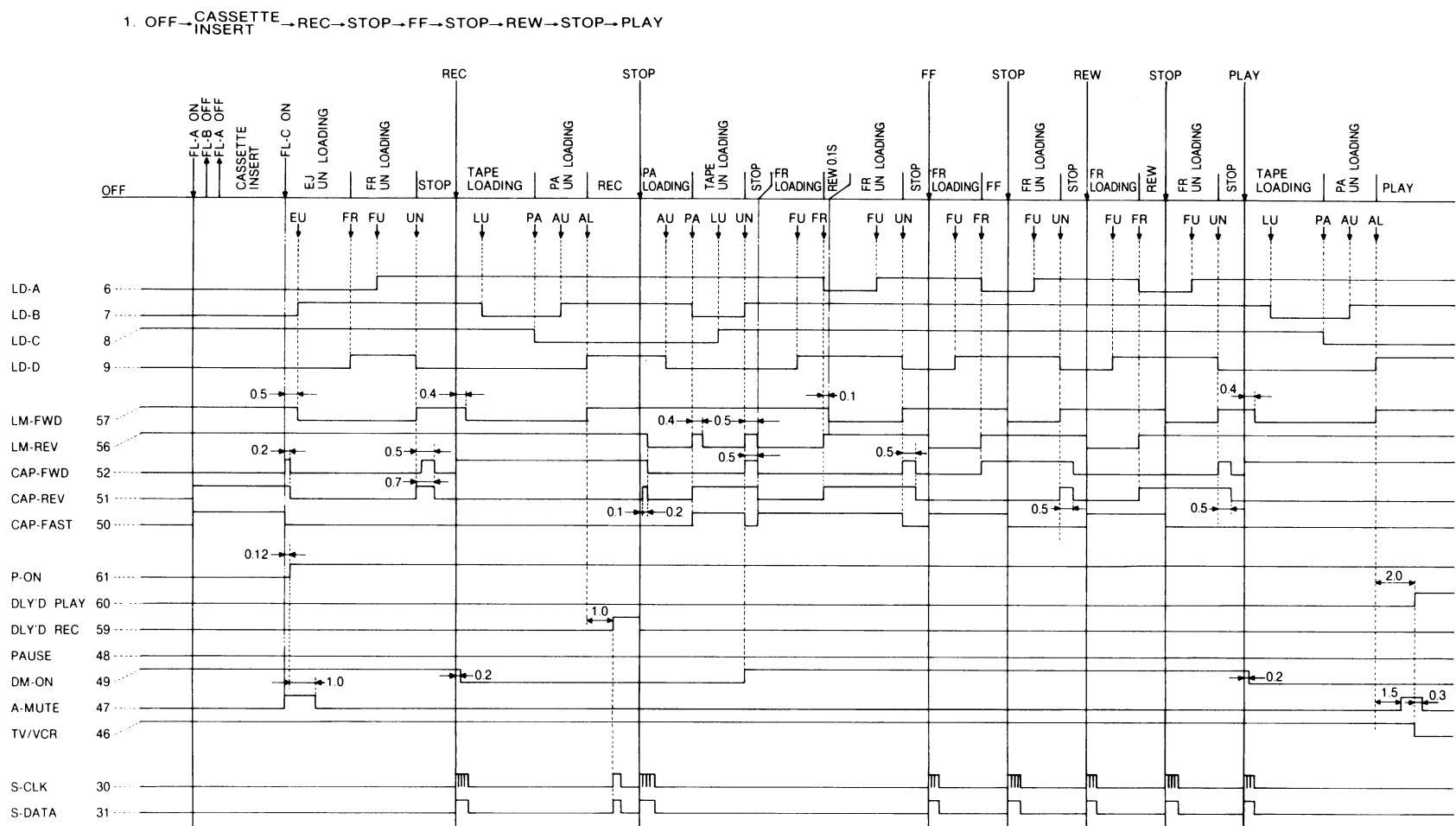
11-12-2 POWER SUPPLY P.C.BOARD BOTTOM VIEW



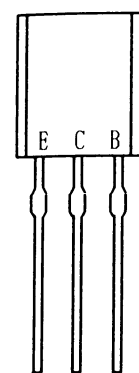
12. WIRING DIAGRAM



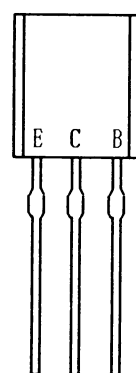
13. SYSTEM CONTROL TIMING CHART



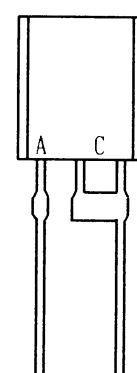
14. LEAD IDENTIFICATIONS



2SA933
2SC1740
2SA608SP
2SA1317
2SC536SP
2SC2839
2SD1012
2SD1468S

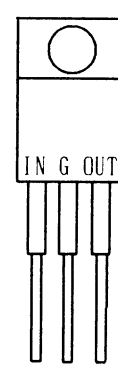


DTA124
DTC124
DTA143XS
DTA114YS
2SC3400
2SA1346

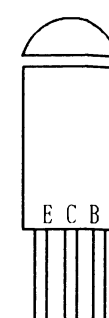


L5631
μPC574J

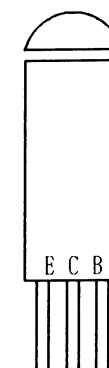
A: Anode
C: Cathode



AN7812F
AN7818F
AN78N05
μPC7818HF



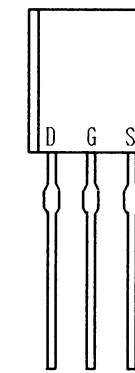
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2SA1038
2SA1016K



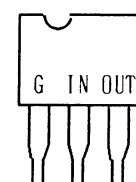
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2SB892
2SD1207
2SC2060
2SD400



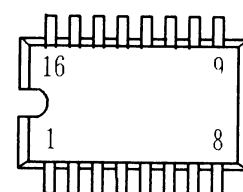
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NJM78L05A



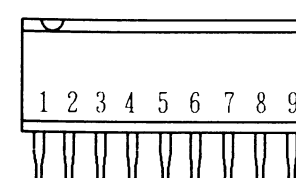
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2SK304



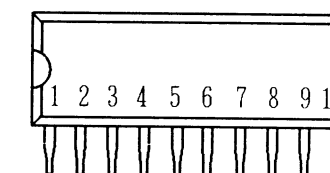
MN1280Q



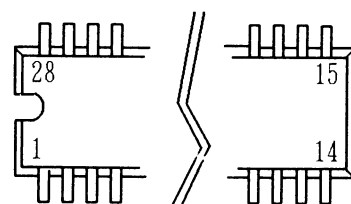
LA7913
MN1225



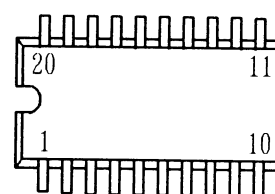
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BA7021
BA6993N
NJM2903S



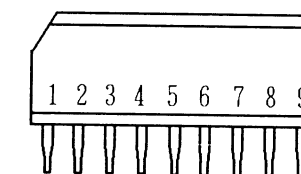
LA7210



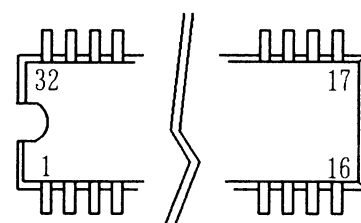
14DN363



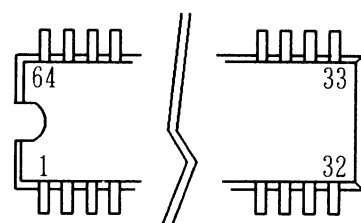
AN3331K



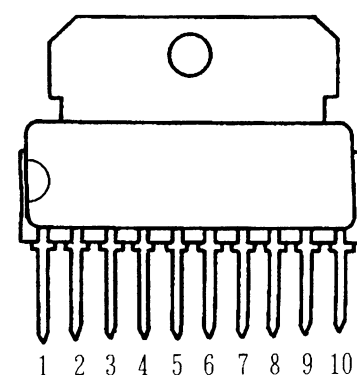
NJM2233S



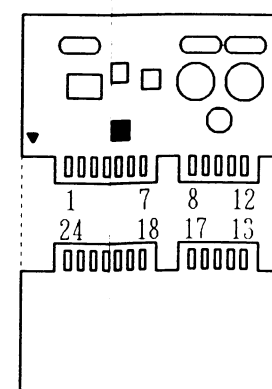
BA7767S
BA7767AS



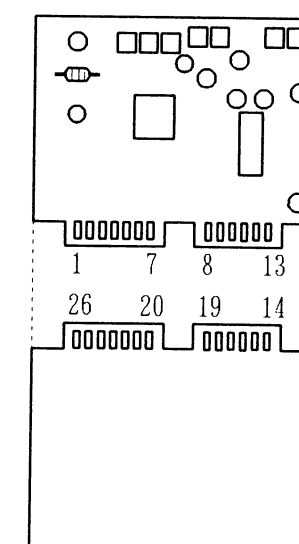
14DN348
14DN487



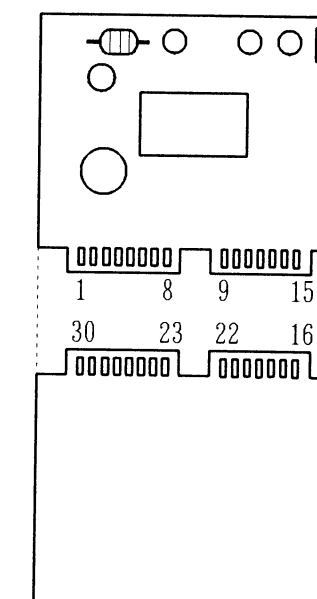
BA6219B
BA6209



1812455
(SERVO)
HIC 401

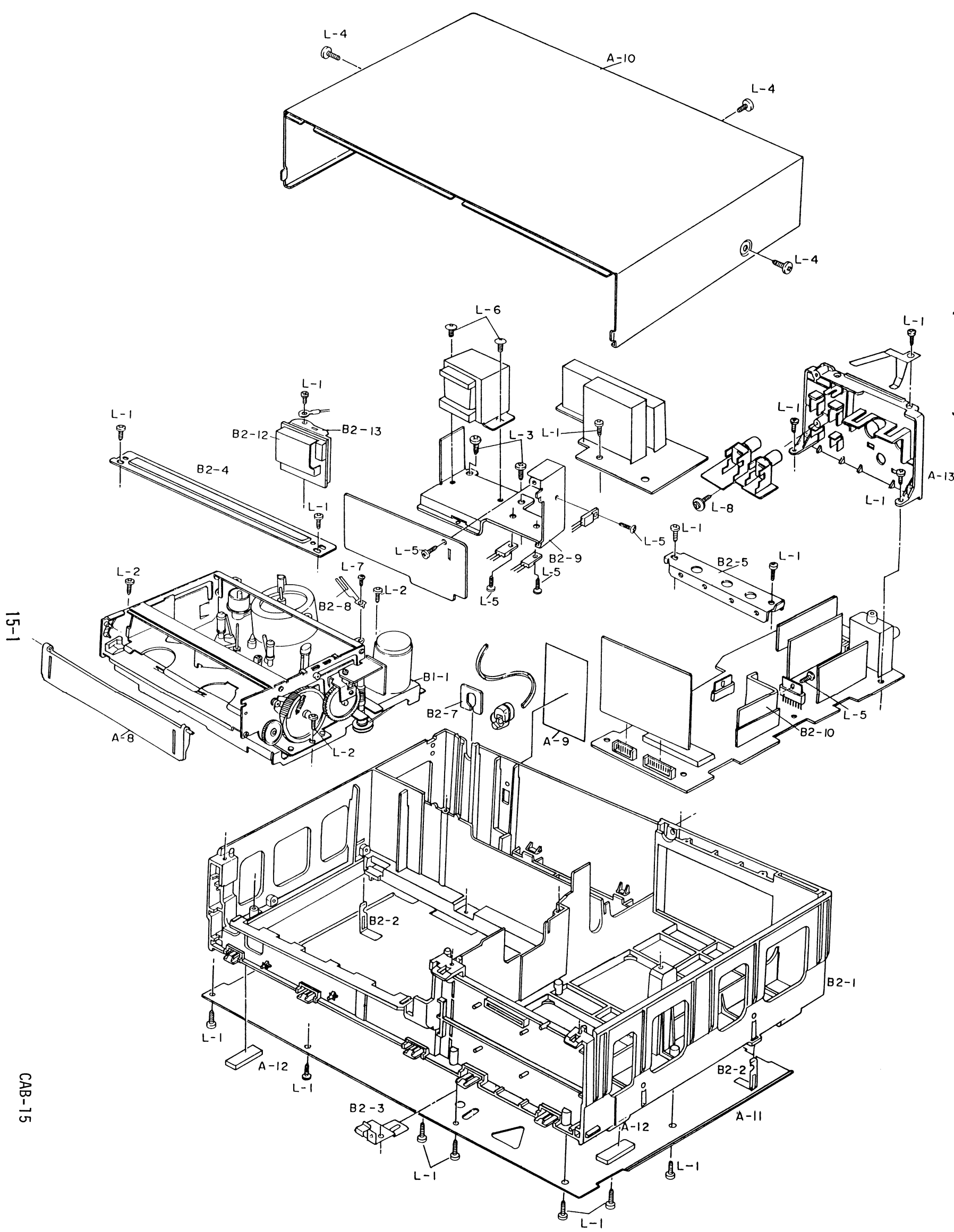


1812119
(VIDEO-Y)
HIC 51



1812421
(VIDEO-C)
HIC 101

15. EXPLODED VIEW/MECHANICAL PARTS LIST
15-1 EXPLODED VIEW (CABINET)



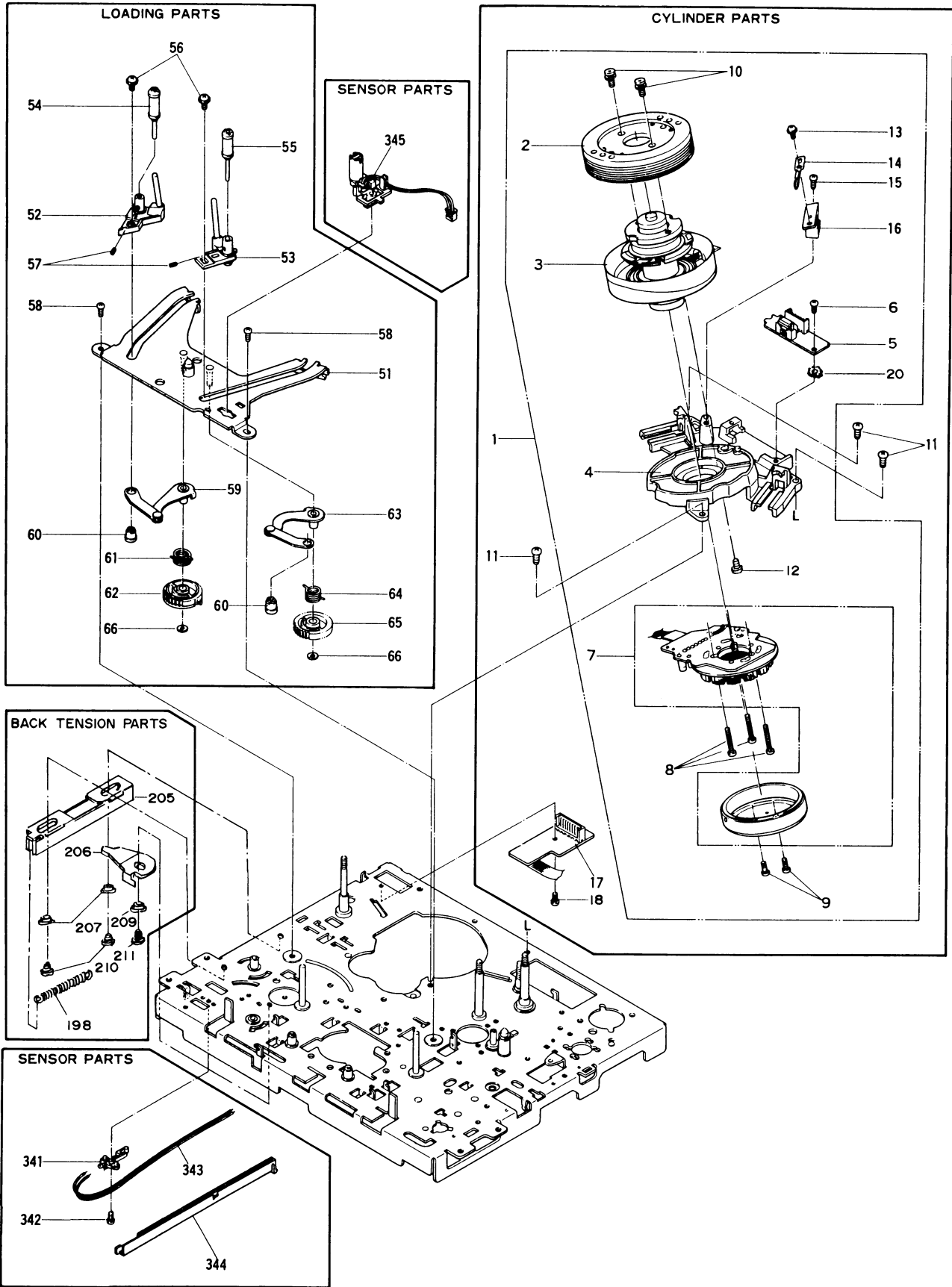
This technical drawing shows an exploded perspective view of a mechanical assembly. The components are labeled as follows:

- A-1**: A small rectangular component at the top right.
- A-2**: A long, thin rectangular component at the bottom right.
- A-3**: A component with a series of rectangular slots, located below A-2.
- A-4**: A component with a series of circular holes, located below A-3.
- A-6**: A small component at the bottom left, indicated by a dashed line.
- A-14**: A small rectangular component on the right side.
- B2-11**: A long, thin component with a series of rectangular slots, located on the left side.
- L-1**: A small component at the top left, indicated by a dashed line.

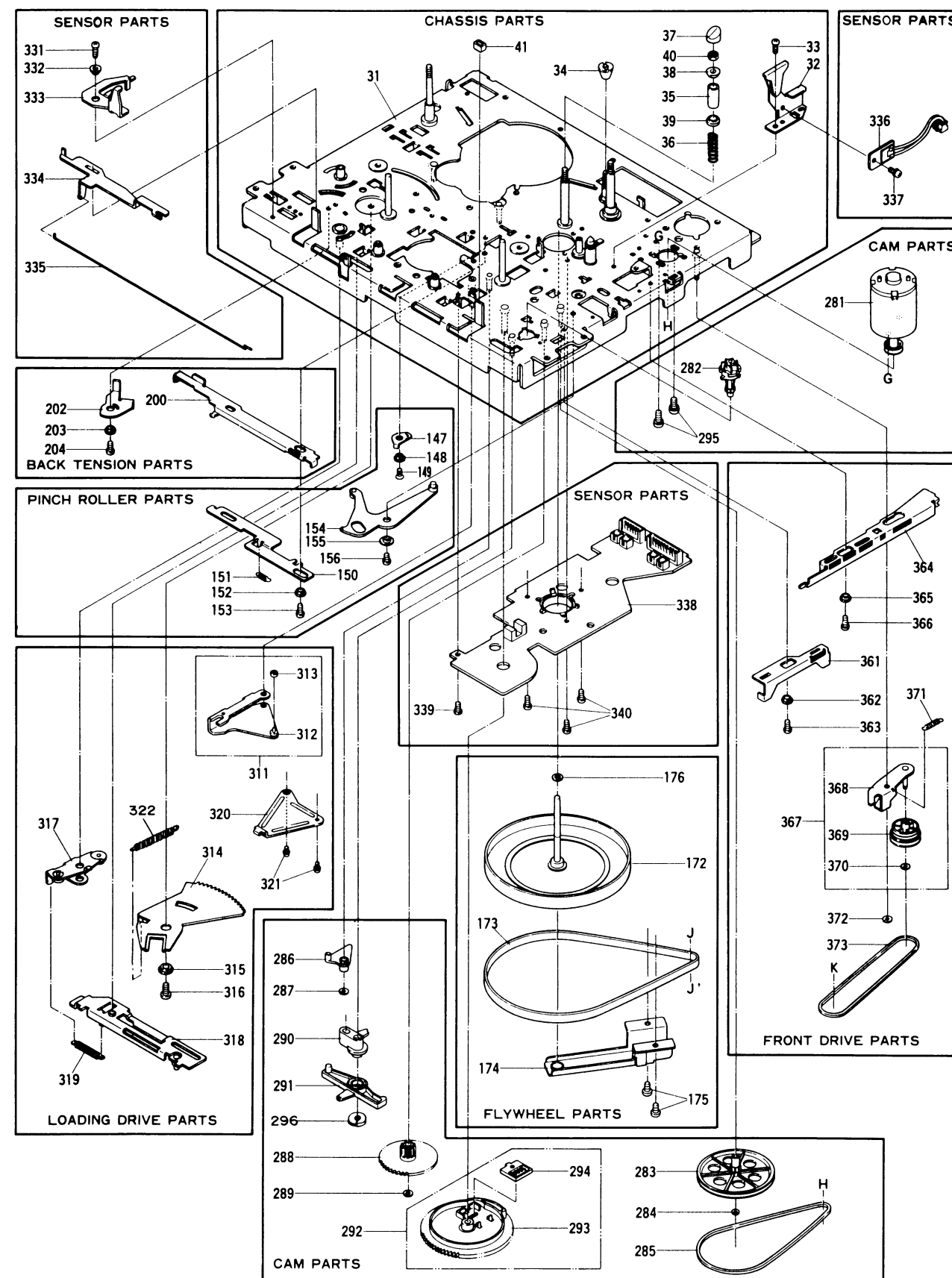
The drawing illustrates the assembly of these components into a larger structure, with various fasteners and alignment features visible.

Description	Ref. No.	Parts No.	Description	Ref. No.	Parts No.
Front Ass'y consists of following Front Panel Ass'y (Non-repairable) Front Button, Counter Button, Power (FUNCTION) Button, Eject Button, Mode Button, Play Button, Stop Button, Channel Button, Record Plate, (F)	A-1X A-1	6A50702A 6A50702X	***Hardware Kits *** Screw, P-Tight, Bind Head M3X10 (for Front Ass'y---1pc.) (for Panel, Bottom---7pcs.) Screw, P-Tight, Bind Head M4X12 (for Case, Top---3pcs.)	L-1 L-4	GBMP310 GBKP412
Door, Timer Plate, Counter Plate, Timer Filter, Remote Control Latch	A-2 A-3 A-4 A-5 A-6	6D51581A 6E51400 6E51523 6E51399 6D51218	Accessory RF Code Remote Control Box △Owner's Manual		1750967 or 1750665 1812931 7E50838
Door, Cassette △Label, Type △Case, Top Panel, Bottom Foot Jack Board Badge	A-8 A-9 A-10 A-11 A-12 A-13 A-15	6D51580 6E51552A 6G50084 6G50085 6E50453 6C50338 6H50181			
Deck Ass'y (See Deck List)	B1-1	TN5900P2 SRN104			
Cabinet, Main Ground Plate, Main Ground Plate, PCB Holder, Deck Angle Holder, Supporter Stopper Holder, AC Cord Plate, Ground Plate, Ground (RF Converter) Heat Sink Heat Sink, IC Holder, FIP Shield, Top Shield, Bottom	B2-1 B2-2 B2-3 B2-4 B2-5 B2-7 B2-8 B2-14 B2-9 B2-10 B2-11 B2-12 B2-13	6C50300 6S50356 6S50367 6S50323 6S50355 6S50286 6S50212 6S50447 6S50368 6S50354 6N50151 6S50357 6S50358			
Screw, P-Tight, Bind Head M3X10 (for Holder, Supporter---2pcs.) (for Holder, Deck Angle---2pcs.) (for Jack Board---3pcs.) (for Tuner PCB---1pc.) (for Shield, Bottom---1pc.)	L-1	GBMP310			
Screw, P-Tight, Brazier, Flange M3X10 (for Deck Ass'y---3pcs.)	L-2	GCMP310			
Screw, P-Tight, Bind Head M4X12 (for Holder, Transformer---2pcs.)	L-3	GBMP412			
Screw, Tapping, Bind Head M3X10 (for Power Supply PCB---1pc.) (for Heat Sink---3pcs.) (for Heat Sink IC---1pc.)	L-5	DBM1310			
Screw, C-Tight or CE-Tight M4X8 (for Transformer---2pcs.)	L-6	GTMC408 or GZMC408			
Screw, Sems, Pan Head M3X5 (for Plate, Ground---1pc.)	L-7	CPM3305			
Screw, P-Tight, Brazier, Flange M3X10 (for BNC Jack---1pcs.)	L-8	23X9251			

15-4 DECK PARTS LIST

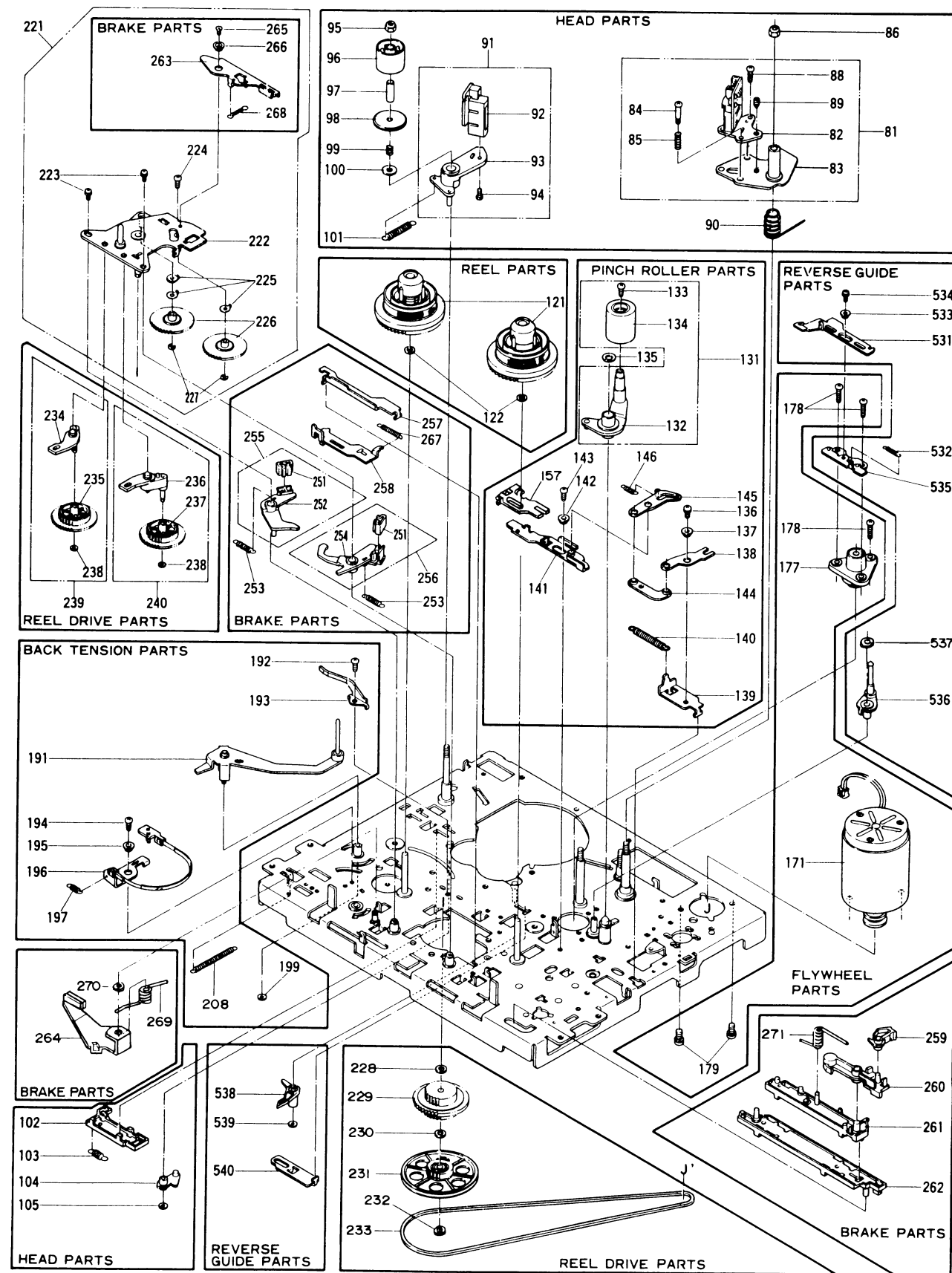


CYLINDER PARTS			
Ref No.	Description	MFR' No.	Q' ty
1	Cylinder Assembly (Consists of 2-10, 12-16, 20)	8059-01-310	1
2	Drum, Upper	8059-01-19	1
3	Drum Assembly, Lower	8059-01-304	1
4	Mount, Cylinder	8059-01-01	1
5	P.C.B. Assembly, Video Out	8059-01-305	1
6	Screw, W Sems, M2.6 X6	9973-00-00	1
7	Motor TM82	6004-09-01	1
8	Screw, Sems, M2.6 X20	9050-00-00	3
9	Screw, Sems, M2.6 X6	9098-00-00	2
10	Screw, Bind Sems, M3X8	9972-00-00	2
12	Screw (For Camera) M2 X5	9552-00-00	1
13	Screw, Cap, M2.6X3	9665-00-00	1
14	Ground, Durm	8059-01-23	1
15	Screw, C Tapping, M2.6X5	9192-00-00	1
16	Bracket, Drum Ground	8059-01-02	1
20	Washer, Toothed Lock, M2.6	9715-00-00	1
11	Screw, C Tapping, M3X10	9205-00-00	3
17	P.C.B. Assembly, DM	8059-01-303	1
18	Screw, C Tapping, M2.6X5	9192-00-00	1
LOADING PARTS			
51	Loading Base	8059-03-501	1
52	Block (L), Loading	8059-03-04	1
53	Block (R), Loading	8059-03-05	1
54	SIS, Roller Post	8000-03-33	1
55	ST, Roller Post	8000-03-37	1
56	Screw, Cup, M2.6X3	9665-00-00	2
57	Screw, Set, M2.0X3 (Plane Type)	9952-00-00	2
58	Screw, C Tapping, M2.6X5	9192-00-00	2
59	Plate (L), Loading	8059-03-502	1
60	Boss, Loading	8059-03-14	2
61	Spring (L), Loading Gear	8059-03-08	1
62	Gear (L), T Loading	8059-03-06	1
63	Plate (R), Loading	8059-03-503	1
64	Spring (R), Loading Gear	8059-03-09	1
65	Gear (R), T Loading	8059-03-07	1
66	Washer, Polyslider, ø2.6 X ø6 X t0.5	9884-00-00	2
BACK TENSION PARTS			
198	Spring, Back Tension	8059-08-13	1
205	Plate, BT Actuate	8059-08-19	1
206	Lever, BT Actuate	8059-08-18	1
207	Collar, BT Actuate Plate	8059-08-21	2
209	Collar	8059-06-18	1
210	Screw, S Tapping (For Camera) M2.6X3.5	9840-00-00	2
211	Screw, C Tapping M2.6 X5	9192-00-00	1
SENSOR PARTS			
341	Switch, Leaf	6401-01-151	1
342	Screw, C Tapping, M2.6X5	9192-00-00	1
343	Wire	8059-13-08	2
344	Holder, Wire	8059-13-10	1
345	Lamp Holder Assembly	8059-13-303	1



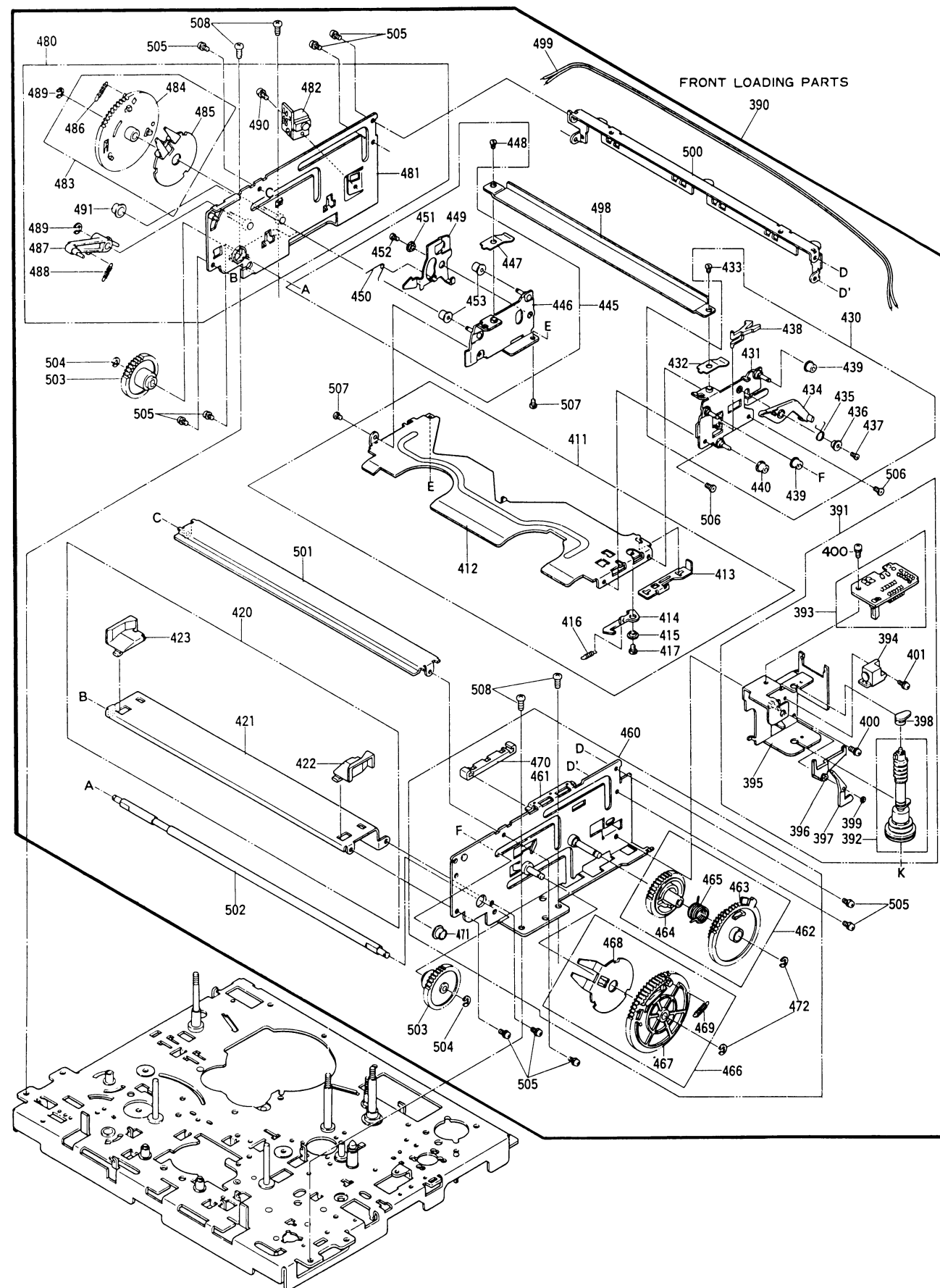
CHASSIS PARTS			
Ref No.	Description	MFR' No.	Q'ty
31	Chassis	8059-02-501	1
32	Angle Assembly, Open	8059-02-301	1
33	Screw, C Tapping, M2.6X4	9191-00-00	1
34	Adjuster, Tracking	8000-03-16	1
35	Guide, Tape	8000-03-14	1
36	Spring, Tape Guide	8059-02-26	1
37	Cap, Guide	8000-03-19	1
38	Flange (C), Tape Guide	8059-03-28	1
39	Flange (F), Tape Guide	8059-02-25	1
40	Nut M3.0	9453-00-00	1
41	Rubber, Damper	8059-02-23	1
PINCH ROLLER PARTS			
147	Crank, P	8059-06-12	1
148	Collar, P Crank	8059-06-13	1
149	Screw, C Tapping FH (For Camera), M2.6X4	9999-18-10	1
150	Slider, P	8059-06-10	1
151	Spring, P Slider	8059-06-23	1
152	Collar, P Slider	8059-06-11	1
153	Screw, C Tapping, Screw, M2.6 X5	9192-00-00	1
154	Leber, P Cam	8059-06-502	1
155	Collar, P Cam Lever	8059-06-17	1
156	Screw, C Tapping, M2.6X5	9192-00-00	1
FLYWHEEL PARTS			
172	Capstan, Flywheel	8059-07-14	1
173	Belt, Main	8059-07-10	1
174	Angle Assembly, Flywheel	8059-07-303	1
175	Screw, C Tapping, M3X5	9202-00-00	2
176	Washer, $\phi 3.1 \times \phi 6 \times t 0.5$	9912-00-00	1
FRONT DRIVE PARTS			
361	Actuator, Eject	8059-15-08	1
362	Collar	8059-06-18	1
363	Screw, C Tapping, M2.6X5	9192-00-00	1
364	Plate, L Brake	8059-15-07	1
365	Collar	8059-06-18	1
366	Screw, C Tapping, M2.6X5	9192-00-00	1
367	Arm Assembly, E Idler (Consists of 368-370)	8059-15-303	1
368	Arm Semi Assembly, E Idler	8059-15-502	1
369	Pulley, Eject	8059-15-15	1
370	Washer, Polyslider, $\phi 2.1 \times \phi 6 \times t 0.5$	9876-00-00	1
371	Spring, Idler Arm	8059-15-11	1
372	Washer, Polyslider, $\phi 2.1 \times \phi 6 \times t 0.5$	9876-00-00	1
373	Belt, Front Loading	8059-15-06	1

LOADING DRIVE PARTS			
Ref No.	Description	MFR' No.	Q'ty
311	Lever Assembly, Loading (Consists of 312-313)	8059-12-301	1
312	Lever Semi Assembly, Loading	8059-12-501	1
313	Roller, Cam	8059-12-13	1
314	Plate, Loading Gear	8059-12-09	1
315	Collar, Loading Gear Plate	8059-12-10	1
316	Screw, C Tapping, M3X6	9203-00-00	1
317	Lever Semi Assembly, Loading Actuate	8059-12-502	1
318	Plate, Semi Assembly, Loading Actuate	8059-12-503	1
319	Spring, Loading Actuate	8059-12-05	1
320	Plate, Loading Lever Reinforce	8059-12-11	1
321	Screw, Sems, M2 X4	9077-00-00	2
322	Spring, L Gear Plate	8059-12-12	1
SENSOR PARTS			
331	Screw, C Tapping, M2.6X5	9192-00-00	1
332	Collar	8059-06-18	1
333	Lever, REC	8059-13-06	1
334	Actuator, REC	8059-13-07	1
335	Spoke, REC Actuate	8059-13-11	1
336	Sensor, DEW	6808-08-04	1
337	Screw, Sems, M2.6 X4	9096-00-00	1
338	Plate, Base	8059-13-302	1
339	Screw, S Tapping (For Camera), M2.6X5	9691-00-00	1
340	Screw, C Tapping, M2.6X6	9193-00-00	3
BACK TENSION PARTS			
200	Plate, BT Change	8059-08-10	1
202	Lever, BT Return	8059-08-23	1
203	Collar	8059-06-18	1
204	Screw, C Tapping, M2.6X5	9192-00-00	1
CAM PARTS			
281	LM Assembly	8059-11-301	1
282	Bearing Assembly, Trigger	8059-11-302	1
283	Pulley, Loading	8059-11-03	1
284	Washer, Polyslider, $\phi 1.6 \times \phi 3.8 \times t 0.3$	9743-00-00	1
285	Belt, Loading	8059-11-06	1
286	Arm (B), Search	8059-11-12	1
287	Washer, Polyslider, $\phi 2.6 \times \phi 6 \times t 0.5$	9884-00-00	1
288	Gear, Loading	8059-11-04	1
289	Washer, Polyslider, $\phi 2.1 \times \phi 5 \times t 0.5$	9876-00-00	1
290	Arm, Brake Actuate	8059-11-13	1
291	Arm, Eject Actuate	8059-11-14	1
292	Cam Assembly, Loading (Consists of 293-294)	8059-11-303	1
293	Cam, Loading	8059-11-01	1
294	Brush, S	8059-11-02	1
295	Screw, C Tapping, M3X4	9105-00-00	2
296	Washer, Polyslider, $\phi 2.6 \times \phi 8 \times t 0.5$	9999-03-10	1



HEAD PARTS			
Ref No.	Description	MFR' No.	Q'ty
81	Head Base Assembly (Consists of 82-85, 88-89)	8059-04-303	1
82	Head, ACE	6204-15-06	1
83	Base, Head	8059-04-501	1
84	Screw, Azimuth Spring	8000-06-26	1
85	Spring, Azimuth	8000-06-04	1
88	Screw, M2.6 X 7	9041-00-00	1
89	Screw, Set, M3 X 6 (Shape Type)	9999-20-25	1
86	Nut, Nylon M3	9953-00-00	1
87	Not used		
90	Spring, Head	8059-04-15	1
91	Plate Assembly, Full Erase (Consists of 92-94)	8059-04-302	1
92	Head, Full Erase	6204-15-03	1
93	Plate, Full Erase	8059-04-04	1
94	Screw, Flange Bind, M2 X 3	9114-00-00	1
95	Nut, Nylon M3	9953-00-00	1
96	Roller, Impedance	8059-04-05	1
97	Sleeve, Impedance Roller	8059-04-06	1
98	Flange (A), Tape Guide	8059-04-07	1
99	Spring, Tape Guide Flange	8059-04-09	1
100	Washer, Plane φ 3 X φ 8 X t 0.5	9337-00-00	1
101	Spring, FE Plate	8059-04-08	1
102	Plate, FE Slide	8059-04-10	1
103	Spring, FE Actuate	8059-04-12	1
104	Lever, FE Actuate	8059-04-11	1
105	Washer, Polyslider, φ 2.1 X φ 5 X t 0.5	9876-00-00	1
REEL PARTS			
121	Reel Assembly	8059-05-301	2
122	Washer, φ 3.1 X φ 6 X t 0.5	9912-00-00	2
PINCH ROLLER PARTS			
131	Arm Assembly, Pinch Roller (Consists of 132-134)	8059-06-301	1
132	Arm Pinch Roller	8059-06-501	1
133	Screw, M2.6 X 4	9038-00-00	1
134	Roller (A), Pinch	8000-09-22	1
135	Washer, Polyslider, φ 5 X φ 8 X t 0.5	9999-03-11	1
136	Screw, Sems, M2.6 X 4	9096-00-00	1
137	Collar	8059-06-18	1
138	Angle, P Actuate	8059-06-05	1
139	Holder, P Angle	8059-06-19	1
140	Spring, P Roller	8059-06-20	1
141	Plate (A), P Slide	8059-06-24	1
142	Collar	8059-06-18	1
143	Screw, C Tapping, M2.6 X 5	9192-00-00	1
144	Joint Plate	8059-06-06	1
145	Arm, P Actuate	8059-06-04	1
146	Spring, P Actuate Arm	8059-06-09	1
157	Plate (B), P Slide	8059-06-25	1
FLYWHEEL PARTS			
171	Motor Assembly, Capstan	8059-07-302	1
177	Housing Assembly, Metal	8059-07-301	1
178	Screw, C Tapping, M2.6 X 8	9195-00-00	3
179	Screw, Sems, M3 X 4	9105-00-00	2
BACK TENSION PARTS			
191	Arm, Back Tension	8059-08-501	1
192	Screw, C Tapping, M2.6 X 4	9191-00-00	1
193	Support, Back Tension	8059-08-09	1
194	Screw, C Tapping, M2.6 X 4	9191-00-00	1
195	Collar, Band Holder	8059-08-15	1
196	Band, BT	8059-08-302	1
197	Spring, Band Holder	8059-08-17	1
199	Washer, Polyslider, φ 2.1 X φ 4 X t 0.5	9999-03-15	1
208	Spring, BT Actuate Plate	8059-08-20	1

BRAKE PARTS			
Ref No.	Description	MFR' No.	Q'ty
221	Plate Assembly (Consists of 222-227, 263, 265-266, 268)	8059-09-307	1
222	Plate Semi Assembly	8059-09-501	1
223	Screw, Sems, M2 X 4	9077-00-00	2
224	Screw, C Tapping, M2.6 X 4	9191-00-00	1
225	Washer, Wave	8000-10-25	3
226	Gear, Reel Drive	8059-09-06	2
227	E Ring S 1.5	9500-00-00	2
263	Brake, Take-up soft	8059-10-303	1
265	Screw, SL FH (For Camera), M2 X 3	9974-00-00	1
266	Collar, Take-up Soft Brake Arm	8059-10-07	1
268	Spring, Take-up Soft Brake Arm	8059-10-06	1
228	Washer, Nylon, φ 3.1 X φ 6 X t 0.3	9853-00-00	1
229	Clutch Assembly	8059-09-302	1
230	Washer, Nylon, φ 2.98 X φ 6 X t 0.3	9999-06-04	1
231	Pulley Assembly, Middle	8059-09-301	1
232	Washer, Polyslider, φ 2.6 X φ 6 X t 0.5	9884-00-00	1
233	Belt, Drive	8059-09-17	1
REEL DRIVE PARTS			
239	Gear Assembly, P (Consists of 234-235, 238)	8059-09-305	1
234	Arm Assembly, P Gear	8059-09-303	1
235	Gear, Play	8059-09-20	1
238	Washer, Polyslider, φ 1.6 X φ 3.8 X t 0.3	9743-00-00	1
240	Gear Assembly, RF (Consists of 236-237, 238)	8059-09-306	1
236	Arm Assembly, RF Gear	8059-09-304	1
237	Gear, FF	8059-09-22	1
238	Washer, Polyslider, φ 1.6 X φ 3.8 X t 0.3	9743-00-00	1
BRAKE PARTS			
253	Spring, Brake Arm	8059-10-02	2
255	Arm Assembly, S Brake (Consists of 251-252)	8059-10-301	1
251	Shoe, Brake	8059-10-19	1
252	Arm, S Brake	8059-10-01	1
256	Arm Assembly, T Brake (Consists of 251, 254)	8059-10-302	1
251	Shoe, Brake	8059-10-19	1
254	Arm, T Brake	8059-10-03	1
257	Lifter, Brake	8059-10-16	1
258	Actuator, L Brake	8059-10-17	1
259	Hook, Trigger	8059-10-14	1
260	Lever, Trigger	8059-10-13	1
261	Plate, Brake	8059-10-11	1
262	Brake Actuate, Base	8059-10-09	1
264	Brake, S Soft	8059-10-304	1
267	Spring, L Brake Actuator	8059-10-18	1
269	Spring, S Soft Brake	8059-10-22	1
270	Washer, Polyslider, φ 2.1 X φ 5 X t 0.5	9876-00-00	1
271	Spring, Trigger Lever	8059-10-23	1
REVERSE GUIDE PARTS			
531	Plate, RG Slide	8059-17-03	1
532	Spring, RG Slide	8059-17-11	1
533	Collar, RG Slide Plate	8059-17-10	1
534	Screw, Sems, M2 X 4	9077-00-00	1
535	Base, RG Slide	8059-17-09	1
536	Arm Semi Assembly, RG	8059-17-501	1
537	Washer, Polyslider, φ 2.6 X φ 6 X t 0.5	9884-00-00	1
538	Arm, RG Actuate	8059-17-01	1
539	Washer, Polyslider, φ 2.1 X φ 5 X t 0.5	9876-00-00	1
540	RG Actuator	8059-17-02	1



FRONT LOADING PARTS			
Ref No.	Description	MFR' No.	Q' ty
390	Loading Assembly, Front (Consists of 391, 411, 420, 430, 455, 460, 480, 498-508)	8059-16-317	1
391	Bracket Assembly, Cassette Load (Consists of 392-401)	8059-16-318	1
392	Clutch Assembly, Front Loading	8059-16-319	1
393	P.C.B. Assembly, Front Loading	8059-16-320	1
394	Sensor, P.C.B. (RM)	8059-16-316	1
395	Bracket Semi Assembly, Cassette Load	8059-16-506	1
396	Lever, IN SW	8059-16-34	1
397	Lever, S SW	8059-16-33	1
398	Bearing (A), F Worm	8059-16-06	1
399	Washer, Polyslider, φ1.6 × φ3.8 × t0.3	9743-00-00	1
400	Screw, Sems, M2.6 × 4	9096-00-00	2
401	Screw, Sems, M2 × 5	9078-00-00	1

FRONT LOADING PARTS			
411	Holder Assembly, Cassette (Consists of 412-417)	8059-16-306	1
412	Holder, Cassette	8000-22-03	1
413	Plate, Slide	8000-22-13	1
414	Plate (A), C Lock	8000-22-12	1
415	Collar	8059-06-18	1
416	Spring, Lock	8059-16-29	1
417	Screw, SL (For Camera), M2.6 × 3	9968-00-00	1

FRONT LOADING PARTS			
430	Plate (R) Assembly, Side (Consists of 431-440)	8059-16-308	1
431	Plate (R), Side	8059-16-502	1
432	Plate, Cassette Push	8059-16-28	1
433	Screw (For Camera), M2.3 × 2	9833-00-00	1
434	Lever, Open	8000-22-25	1
435	Spring, Open Lever	8000-22-44	1
436	Lever Collar, Open	8000-22-42	1
437	Screw, SL (For Camera), M2 × 4	9967-00-00	1
438	Lever, Lock Release	8000-22-16	1
439	Roller, Guide	8000-22-75	2
440	Roller, Guide	8000-22-23	1

FRONT LOADING PARTS			
445	Plate (L) Assembly, Side (Consists of 446-453)	8059-16-309	1
446	Plate (L), Side	8059-16-503	1
447	Plate, Cassette Push	8059-16-28	1
448	Screw (For Camera), M2.3 × 2	9833-00-00	1
449	Plate (L), C Lock	8000-22-66	1
450	Spring (L), Lock Plate	8059-16-30	1
451	Collar, Lock Plate	8000-19-63	1
452	Screw (For Camera), M2 × 2.5	9966-00-00	1
453	Roller, Guide	8000-22-75	2

FRONT LOADING PARTS			
Ref No.	Description	MFR' No.	Q' ty
460	Frame (R) Assembly (Consists of 461-462, 466, 470-472)	8059-16-322	1
461	Frame (R)	8059-16-504	1
462	Wheel Assembly, Worm (Consists of 463-465)	8059-16-321	1
463	Wheel, Worm	8059-16-36	1
464	Gear, Friction	8059-16-45	1
465	Spring, Friction	8059-16-31	1
466	Gear (R) Assembly, Lift (Consists of 467-469)	8059-16-312	1
467	Gear (R), Lift	8059-16-21	1
468	Arm, Lift	8000-22-11	1
469	Spring, LP	8000-22-45	1
470	Guide, Open Lever	8000-22-26	1
471	Sleeve, Guide	8000-22-24	1
472	E Ring S 2.5	9504-00-00	2

FRONT LOADING PARTS			
480	Frame (L) Assembly (Consists of 481-483, 487-491)	8059-16-313	1
481	Frame (L)	8059-16-505	1
482	Sensor, P.C.B. (LM)	8059-16-301	1
483	Gear (L) Assembly, Lift (Consists of 484-486)	8059-16-314	1
484	Gear, Lift	8059-16-22	1
485	Arm, Lift	8000-22-11	1
486	Spring, LP	8000-22-45	1
487	Lever, Lift	8000-22-76	1
488	Spring, Lift Lever	8000-22-47	1
489	E Ring S 2.5	9504-00-00	2
490	Screw, Sems, M2.6 × 7	9099-00-00	1
491	Sleeve, Guide	8000-22-24	1

FRONT LOADING PARTS			
498	Stay, Top	8000-22-65	1
499	Wire, End Sensor	8059-16-19	1
500	Angle, Rear	8059-16-09	1
501	Plate, Upper	8000-22-07	1
502	Shaft, Synchronize	8000-22-46	1
503	Gear (A), Synchronize	8059-16-17	2
504	E Ring S 2.5	9504-00-00	2
505	Screw, Sems, M2.6 × 4	9096-00-00	10
506	Screw (For Camera), M2.6 × 3	9556-00-00	2
507	Screw (For Camera), M2.3 × 2.5	9991-00-00	2
508	Screw, C Tapping, M2.6 × 5	9192-00-00	4

FRONT LOADING PARTS			
420	Angle Assembly, Front (Consists of 421-423)	8059-16-307	1
421	Angle, Front	8059-16-18	1
422	Guide (R), Tape	8059-16-25	1
423	Guide (L), Tape	8059-16-24	1

16. ELECTRICAL PARTS LIST

DESCRIPTION	REF. NO.	MFR. PART NO.	DESCRIPTION	REF. NO.	MFR. PART NO.
PCB Ass'y, Main		1614195AX	Filter, LPF 1.5MHz	T101	1130621 or 1134621
Cap. Ceramic 10 pF/50V ±5 % SL	C62	3541100	Filter, LPF 3MHz	T52	1810805 or 1810994
Cap. Ceramic 33 pF/50V ±5 % SL	C59	3541330	Filter, BPF 4.43MHz	T102	1810804 or 1810770
Cap. Ceramic 68 pF/50V ±5 % SL	C63	3541680	Filter, Comb	DL101	1812112 or 1812215
Cap. Ceramic 120 pF/50V ±5 % SL	C60, C103	1270121	Filter, Ceramic 4.5 MHz	CF181	1810359
Cap. Ceramic 150 pF/50V ±5 % SL	C64, C104	1270151	Filter, Ceramic 5.06MHz	CF101	1810497
Cap. Ceramic 220 pF/50V ±5 % SL	C66, C71, C105, C155	1270221			
Cap. Ceramic 220 pF/50V ±5 %	C72	3841221	IC MN158461 FVAM (Mos /Microprocessor)	IC501	140N348
Cap. Ceramic 0.0039 μF/50V ±10% VB	C252	1283392	(System control)		
Cap. Ceramic 0.01 μF/16V +80/-20%	C101, C102	1220842 or 3Y4D103	IC MN6748 FVAP (Mos /other) (Servo)	IC402	140N363
Cap. Ceramic 0.022 μF/25V +80/-20%	C67, C152	1220843 or 1222122	IC BA6209 (Linear) (Motor Drive)	IC502	14L0106
Cap. Ceramic 0.022 μF/50V +80/-20%	C109	12F3223	IC BA6219B (Linear) (Capstan Drive)	IC401	14LF232
Cap. Semi-Conductive 0.0047 μF/25V ±10%	C425, C426	12Y2472	IC BA7021 (Linear) (Input Selector)	IC151	14LF276
Cap. Semi-Conductive 0.01 μF/25V ±10%	C421	12Y2103	IC AN78L05 or NJM78L05A	IC51, IC651	AN78L05 or J78L05A
Cap. Semi-Conductive 0.047 μF/25V ±10%	C415	12Y2473	(Linear) (3 terminal Voltage Regulator)	IC52, IC652	AN78M05
Cap. Semi-Conductive 0.047 μF/16V +80/-20%	C106, C107, C68, C412	1220523	IC AN78N05		
Cap. Semi-Conductive 0.1 μF/12V ±10%	C423, C427	12Y1104	(Linear) (3 terminal Voltage Regulator)		
Cap. Semi-Conductive 0.1 μF/25V +80/-20%	C401, C403, C404, C505, C506, C405	1220461 or 1220520	Hybrid C (Color HIC) (Other)	HIC101	1812422
Cap. Semi-Conductive 0.022 μF/25V ±10%	C409	12Y2223	Hybrid Y (Luminance) (Other)	HIC51	1812119
Cap. Electrolytic 0.22 μF/50V ±20%	C153, C406	126F224	Hybrid Servo (Servo) (Other)	HIC401	1812455
Cap. Electrolytic 1 μF/50V ±20%	C408, C411, C414, C654, C181, C652	126F105			
Cap. Electrolytic 1 μF/50V ±20% (NP)	C410	126X105	Res. Carbon 68 ohm 1/5W ±5 %	R61	1324680
Cap. Electrolytic 2.2 μF/50V ±20%	C503	126F225	Res. Carbon 82 ohm 1/5W ±5 %	R73, R156	1324820
Cap. Electrolytic 2.2 μF/50V ±20% (NP)	C417	126X225	Res. Carbon 100 ohm 1/5W ±5 %	R419	1324101
Cap. Electrolytic 8.2 μF/16V ±20%	C418	126C825	Res. Carbon 150 ohm 1/5W ±5 %	R431	1324151
Cap. Electrolytic 10 μF/16V ±20%	C53, C54, C57, C151	126C106	Res. Carbon 180 ohm 1/5W ±5 %	R512	1324181
	C154, C416, C420, C653, C651		Res. Carbon 270 ohm 1/5W ±5 %	R104	1324271
Cap. Electrolytic 10 μF/16V ±20% (NP)	C58	126U106	Res. Carbon 390 ohm 1/5W ±5 %	R63	1324391
Cap. Electrolytic 22 μF/16V ±20%	C65	126C226	Res. Carbon 560 ohm 1/5W ±5 %	R58	1324561
Cap. Electrolytic 47 μF/6.3V ±20%	C419	126A476	Res. Carbon 680 ohm 1/5W ±5 %	R65	1324681
Cap. Electrolytic 47 μF/10V ±20%	C422	126B476	Res. Carbon 1k ohm 1/5W ±5 %	R60, R64, R69, R105	1324102
Cap. Electrolytic 47 μF/16V ±20%	C51, C52	126C476		R181, R418	
Cap. Electrolytic 100 μF/16V ±20%	C56, C504	126C107	Res. Carbon 1.2k ohm 1/5W ±5 %	R59, R503, R651	1324122
Cap. Electrolytic 100 μF/25V ±20%	C402	126D107	Res. Carbon 1.5k ohm 1/5W ±5 %	R67, R411, R434, R253	1324152
Cap. Electrolytic 220 μF/6.3V ±20%	C61, C108	126A227	Res. Carbon 1.8k ohm 1/5W ±5 %	R103	1324182
Cap. Electrolytic 330 μF/6.3V ±20%	C69, C70	126A337	Res. Carbon 2.2k ohm 1/5W ±5 %	R68, R106, R414, R416, R422	1324222
Cap. Electrolytic 470 μF/16V ±20%	C428	626C477	Res. Carbon 2.7k ohm 1/5W ±5 %	R402, R404, R514, R515, R516	1324272
Cap. Electrolytic 1000 μF/6.3V ±20%	C55	126A108	Res. Carbon 3.6k ohm 1/5W ±5 %	R510	1324362
Cap. Polyester Film 0.033 μF/50V ±5 %	C424	125A333	Res. Carbon 4.7k ohm 1/5W ±5 %	R51, R408, R415, R501, R52	1324472
Cap. Polyester Film 0.082 μF/50V ±5 %	C182	125A823	Res. Carbon 5.6k ohm 1/5W ±5 %	R102	1324562
Cap. Polyester Film 0.15 μF/50V ±5 %	C407	125A154	Res. Carbon 6.8k ohm 1/5W ±5 %	R66, R435	1324682
Coil, Microinductor 5 mH	L181	1130747 or 113M747 or 113N747	Res. Carbon 10k ohm 1/5W ±5 %	R154, R407, R426, R505, R508, R652, R427	1324103
Coil, Microinductor 22 μH	L51	2165220	Res. Carbon 10k ohm 1/5W ±2 %	R420, R421	1354103
Coil, Microinductor 39 μH	L52	2165390	Res. Carbon 12k ohm 1/5W ±5 %	R252	1324123
Coil, Microinductor 68 μH	L103	2165680	Res. Carbon 13k ohm 1/5W ±5 %	R432	1324133
Coil, Microinductor 82 μH	L55	2165820	Res. Carbon 18k ohm 1/5W ±5 %	R57	1324183
Coil, Microinductor 100 μH	L54, L57	2162101	Res. Carbon 33k ohm 1/5W ±5 %	R430	1324333
Coil, Microinductor 100 μH	L53	2165101	Res. Carbon 39k ohm 1/5W ±5 %	R403, R405	1324393
Coil, Microinductor 180 μH	L56	2165181	Res. Carbon 47k ohm 1/5W ±5 %	R412, R433, R504, R509, R511, R53	1324473
Coil, Microinductor 330 μH	L101	2162331		R70	1324563
Coil, Microinductor 680 μH	L102	1170491 or 117M491	Res. Carbon 56k ohm 1/5W ±5 %	R502	1324823
Coil, Choke 200 μH	L401, L402	117B441 or 117J441	Res. Carbon 82k ohm 1/5W ±5 %	R155	1324104
EQ Coil	T51	1810585 or 1810710 or 1812895	Res. Carbon 100k ohm 1/5W ±5 %	R413, R506, R507	1324474
Diode, 1SS254 or US1040M or GMB01B	D51, D54, D101, D402, D403, D501, D503, D504, D506, D151, D152, D401, D502, D507, D52	1SS254 or US1040M or GMB01B	Res. Carbon 470k ohm 1/5W ±5 %	R429	1330391 or 1330317
Diode, UZ8.2B or MTZ8.2	D52	UZ8.2 or MTZ8.2	Res. Oxide Film 1.5 ohm 1W ±5 %	R513	1330395 or 1330320
			Res. Oxide Film 3.3 ohm 1W ±5 %	R401	1330460 or 1330318
			Res. Oxide Film 3.3 ohm 2W ±5 %	R62	1330419 or 1330363
			Res. Oxide Film 330 ohm 1W ±5 %		

DESCRIPTION	REF. NO.	MFR. PART NO.
Res. Semi-Fixed 1k ohm (B)	VR51, VR101	138J777 or 638A102
Res. Semi-Fixed 200k ohm (B)	VR402	138J786 or 638A224
Res. Semi-Fixed 200k ohm (B) (Metal)	VR401	238J017 or 1380832
Transistor, 2SA933Q, R or 2SA608SPE, F	Q54	A933Q, R or A608SE, F
Transistor, 2SA934Q, R or 2SA1317S, T	Q51	A934Q, R or A1317S, T
Transistor, 2SA854SQ, R or 2SA1317S, T	Q502	A854SQ, R or A1317S, T
Transistor, 2SC1740Q, R or 2SC536SPE, F	Q53, Q55, Q101, Q401, Q501, Q102	C1740Q, R or C536SE, F
Transistor, 2SD1384Q, R or 2SD1207S, T	Q651	D1384Q, R or D1207S, T
Transistor, 2SB892S, T or 2SB1010Q, R	Q403	B892S, T or B1010Q, R
Digital Transistor, DTA124ES or 2SA1346	QR101, QR503	A124ES or A1346
Digital Transistor, DTC124ES or 2SC3400	QR401, QR402, QR501, QR504	C124ES or C3400
Digital Transistor, DTA143XS	QR502, QR505	A143XS
Digital Transistor, DTA114YS	QR506	A114YS
Connector Base 2P (Top)	CN-E	1740764
Connector Base 8P (Top)	CN-4B	1770628
Connector Base 13P (Top)	CN-5B, CN-10B	1770633
Connector Base (FFC) 12P (Top)	CN-2m	1770586 or 1770587
RCA Plug Cord		5750160
X' tal 4.43MHz	X101	1811259
Resonator, Ceramic 3.58MHz	X501	1812206 or 1811211
Heat Sink Cushion		6S50354
RF CONV.	CONV-1	6P50155
JACK, RCA	JK3, JK4	1812210
		1780176
PCB Ass'y, Audio		16141958X
Cap. Ceramic 100 pF/50V ±5 %	C226	3841101
Cap. Ceramic 220 pF/50V ±5 % SL	C205	1270221
Cap. Ceramic 330 pF/50V ±5 % SL	C234	1270331
Cap. Ceramic 0.022 μF /25V +80/-20%	C231, C232, C233	1220843 or 1222122
Cap. Ceramic 0.001 μF /50V ±10% YB	C216	1283102
Cap. Ceramic 0.0018 μF /50V ±10% YB	C223	1283182
Cap. Semi-conductive 0.0033 μF /25V ±10%	C217	12Y2332
Cap. Semi-conductive 0.01 μF /25V ±10%	C203, C204, C210, C219	12Y2103
Cap. Semi-conductive 0.1 μF /25V +80/-20%	C215	1220520
Cap. Electrolytic 0.47 μF /50V ±20%	C227	126F474
Cap. Electrolytic 1 μF /50V ±20%	C213, C218	126F105
Cap. Electrolytic 2.2 μF /50V ±20%	C214	126F225
Cap. Electrolytic 3.3 μF /50V ±20%	C208	126F335
Cap. Electrolytic 4.7 μF /25V ±20%	C209	126D475
Cap. Electrolytic 4.7 μF /25V ±20% (LL)	C222	124L475
Cap. Electrolytic 10 μF /16V ±20%	C228, C229, C220	126C106
Cap. Electrolytic 33 μF /16V ±20%	C207	126C336
Cap. Electrolytic 47 μF /16V ±20%	C202	126C476
Cap. Electrolytic 47 μF /6.3V ±20%	C221	126A476
Cap. Electrolytic 100 μF /16V ±20%	C206, C230	126C107
Cap. Polyester Film 0.047 μF /100V ±5 %	C201	1255473
Coil, Microinductor 18 mH	L201	1170498 or 117M500 or 1170524
Coil, Microinductor 100 μH	L202	2162101
Audio OSC	T201	113M686 or 1130686

DESCRIPTION	REF. NO.	MFR. PART NO.
IC BA7767S or BA7767AS (Linear) (Audio IC)	IC201	14LF301
IC NJM2233S (Linear) (Video Switch)	IC202	14L0325
Res. Carbon 4.7 ohm 1/5W ±5 %	R204	1324479
Res. Carbon 22 ohm 1/5W ±5 %	R201	1324220
Res. Carbon 47 ohm 1/5W ±5 %	R202	1324470
Res. Carbon 100 ohm 1/5W ±5 %	R226	1324101
Res. Carbon 180 ohm 1/5W ±5 %	R224	1324181
Res. Carbon 470 ohm 1/5W ±5 %	R227	1324471
Res. Carbon 560 ohm 1/5W ±5 %	R207	1324561
Res. Carbon 1.5k ohm 1/5W ±5 %	R218	1324152
Res. Carbon 3.9k ohm 1/5W ±5 %	R211	1324392
Res. Carbon 4.7k ohm 1/5W ±5 %	R214	1324472
Res. Carbon 5.6k ohm 1/5W ±5 %	R213	1324562
Res. Carbon 6.8k ohm 1/5W ±5 %	R203	1324682
Res. Carbon 8.2k ohm 1/5W ±5 %	R219	1324822
Res. Carbon 10k ohm 1/5W ±5 %	R206, R212, R222, R228, R229	1324103
Res. Carbon 22k ohm 1/5W ±5 %	R205, R210, R220, R217	1324223
Res. Carbon 33k ohm 1/5W ±5 %	R215, R225	1324333
Res. Carbon 390k ohm 1/5W ±5 %	R221	1324394
Res. Carbon 1M ohm 1/5W ±5 %	R216	1324105
Res. Semi-Fixed 100k ohm (B)	VR201	138A965 or 138J921
Transistor, 2SD400F or 2SC2060Q	Q201	D400F or C2060Q
Connector	CN-17a	1730688
Connector Base 7P (Side)	CN-EF	1740777
Connector Housing 13P (Side)	CN-10H	1770608
PCB Ass'y, Head AMP		1614195CX
Cap. Ceramic 12 pF/50V ±5 % SL	C11	3541120
Cap. Ceramic 22 pF/50V ±5 % SL	C18, C25	3541220
Cap. Ceramic 27 pF/50V ±5 % SL	C26	3541270
Cap. Ceramic 56 pF/50V ±5 % SL	C21	3541560
Cap. Ceramic 82 pF/50V ±10%	C24	3841820
Cap. Ceramic 100 pF/50V ±10%	C19	3841101
Cap. Ceramic 390 pF/50V ±5 % SL	C23	1270391
Cap. Ceramic 1000 pF/50V ±5 % YB	C10	1283102
Cap. Ceramic 0.033 μF /50V +80/-20%	C5, C8	1220887
Cap. Ceramic 0.01 μF /50V, +80/-20%	C1, C3, C12, C13, C15, C16, C17	1220842 or 3Y40103
Cap. Electrolytic 1 μF /50V ±20%	C4, C9, C20	526W105
Cap. Electrolytic 47 μF /16V ±20%	C14	526T476
Cap. Electrolytic 220 μF /6.3V ±20%	C2	526R227
Coil, Microinductor 18 μH	L8	2165180
Coil, Microinductor 27 μH	L2	2165270
Coil, Microinductor 33 μH	L4	2165330
Coil, Microinductor 47 μH	L5	2165470
Coil, Microinductor 100 μH	L1, L3	2162101
Coil, Microinductor 180 μH	L7	2165181
IC AN3331K (Linear) (Head AMP)	IC1	14LN235
Res. Carbon 4.7 ohm 1/5W ±5 %	R2	1324479
Res. Carbon 270 ohm 1/5W ±5 %	R14	1324271
Res. Carbon 470 ohm 1/5W ±5 %	R4, R11	1324471
Res. Carbon 560 ohm 1/5W ±5 %	R6, R8, R19	1324561
Res. Carbon 680 ohm 1/5W ±5 %	R9	1324681
Res. Carbon 820 ohm 1/5W ±5 %	R12	1324821
Res. Carbon 1k ohm 1/5W ±5 %	R5, R10, R15	1324102
Res. Carbon 1.5k ohm 1/5W ±5 %	R3	1324152
Res. Carbon 1.8k ohm 1/5W ±5 %	R13	1324182
Res. Carbon 2.2k ohm 1/5W ±5 %	R16, R17, R18	1324222
Res. Carbon 10k ohm 1/5W ±5 %	R7	1324103

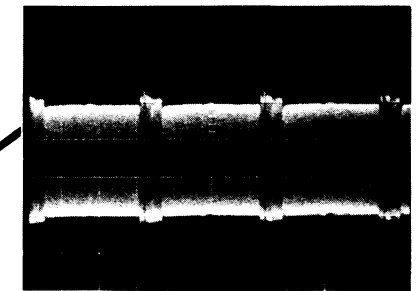
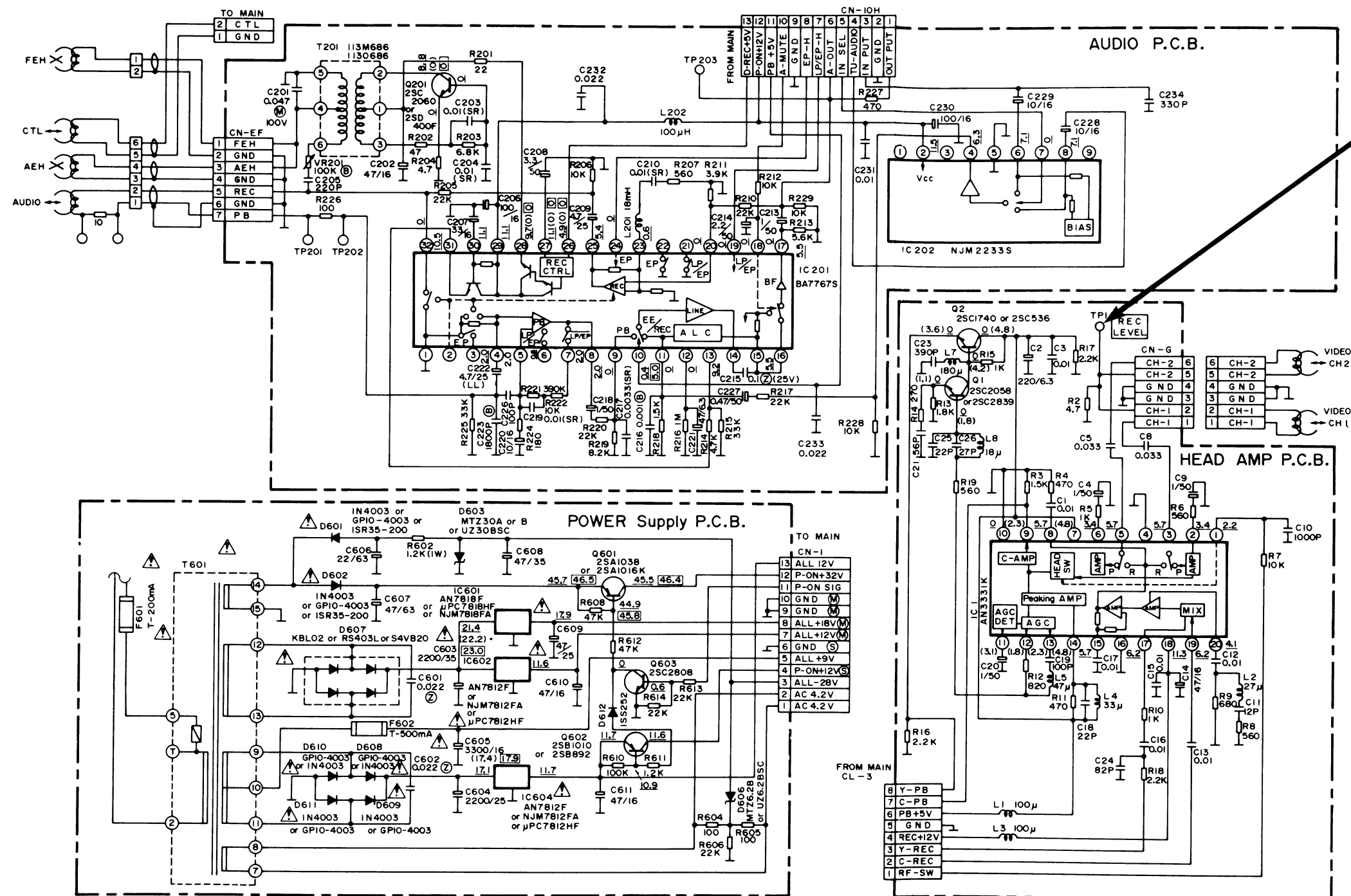
DESCRIPTION	REF. NO.	MFR. PART NO.
Transistor, 2SC1740Q, R or 2SC536SPE, F	Q2	C1740Q, R or C536SE, F
Transistor, 2SC2058Q, R or 2SC2839E, F	Q1	C2058Q, R or C2839E, F
Connector Housing 6P (Side)	CN-G	1770601
Top Shield		6S50357
Bottom Shield		6S50358
PCB Ass'y, Connector A		1614195DX
Connector Housing 9P (Side)	CN-C	1770645
PCB Ass'y, Connector B		1614195EX
Connector Housing 7P (Side)	CN-B	1770602
Connector Housing 11P (Side)	CN-A	1770606
PCB Ass'y, Connector C		1614195FX
Connector Base 6P (Top)	CN-D	1770626
PCB Ass'y, Jack		1614195GX
Jack, BNC	JK1, JK2	1780207
Connector Base 4P (Top)	CN-14	1770916

DESCRIPTION	REF. NO.	MFR. PART NO.	DESCRIPTION	REF. NO.	MFR. PART NO.
PCB Ass'y. Timer		1614323AX	PCB Ass'y. Joint		1614323CX
Cap. Ceramic 10pF ± 0.5 pF /50V (NP)	C801	3C41100	Cap. Ceramic 270 pF /50V $\pm 5\%$	C754	1270271
Cap. Ceramic 0.022 μ F /25V +80/-20%	C802, C803	1222122 or 1220843	Cap. Ceramic 330 pF /50V $\pm 5\%$	C756	1270331
Cap. Electrolytic 220 μ F /6.3V $\pm 20\%$	C804	526R227	Cap. Ceramic 680 pF /50V $\pm 5\%$	C760	1270681
Diode, US1040M or 1SS254 or GMB01B	D801, D802, D803, D806, D807, D808, D810, D811, D805, D809,	US1040M or 1SS254 or GMB01B	Cap. Ceramic 0.022 μ F /25V +80/-20%	C758	1222122 or 1220843
IC MN1225 (Mos /Memory) (Memory)	IC752	140N269	Cap. Ceramic 0.001 μ F /50V $\pm 10\%$	C757	1283102
IC MN1280Q (Mos /other) (Reset)	IC802	140N185	Cap. Electrolytic 0.47 μ F /50V $\pm 20\%$	C752, C755	126F474
IC MN15283FVAE-2 or MN15283FVBH (Mos /Micro Processor) (Timer))	IC801	140N487	Cap. Electrolytic 1 μ F /50V $\pm 20\%$	C753	126F105
Switch, Push	SW804, SW801, SW810, SW811, SW808, SW803, SW816, SW817, SW819, SW805, SW818, SW806, SW826	5622101 or 5622102 or 5622123	Cap. Electrolytic 47 μ F /6.3V $\pm 20\%$	C759	126A476
Switch, Slide IC-2P	SW824	1621752	Cap. Electrolytic 47 μ F /16V $\pm 20\%$	C751	126C476
Res. Carbon 2.2k ohm 1/5W $\pm 5\%$	R802	1324222	Diode, US1040M or 1SS254 or GMB01B	D751, D752, D754	US1040M or 1SS254 or GMB01B
Res. Carbon 10k ohm 1/5W $\pm 5\%$	R807	1324103	IC AN6913 or NJM2903S or BA6993N (Linear) (Comparator)	IC753	AN6913 or J2903S or 14LF330
Res. Carbon 33k ohm 1/5W $\pm 5\%$	R803	1324333	IC LA7210 (Linear) (Sync Separate)	IC751	14LQ115
Res. Carbon 47k ohm 1/5W $\pm 5\%$	R801	1324473	Res. Carbon 750 ohm 1/5W $\pm 5\%$	R759	1324751
Potentiometer 250k ohm (B) (Tracking)	VR801	539N661	Res. Carbon 820 ohm 1/5W $\pm 5\%$	R756	1324821
Potentiometer 20k ohm (B) (Picture)	VR802	539N703	Res. Carbon 1k ohm 1/5W $\pm 5\%$	R758, R763	1324102
Transistor, 2SC1740Q, R or 2SC536SPE, F	Q801	C1740Q, R or C536SE, F	Res. Carbon 1.5k ohm 1/5W $\pm 5\%$	R768, R766	1324152
Digital Transistor, DTA124ES or 2SA1346	QR801	A124ES or A1346	Res. Carbon 3.3k ohm 1/5W $\pm 5\%$	R804, R805	1324332
X'tal 4.19MHz	X801	1811191	Res. Carbon 4.7k ohm 1/5W $\pm 5\%$	R751, R771, R773	1324472
Remote Sensor	RS801	1812501	Res. Carbon 10k ohm 1/5W $\pm 5\%$	R752, R753	1324103
FIP Holder	FIP801	6N50151	Res. Carbon 12k ohm 1/5W $\pm 2\%$	R760, R761, R762	1354123
FIP FIP118AH6	TC801	1812397	Res. Carbon 15k ohm 1/5W $\pm 5\%$	R765	1324153
Trimer cap, 20pF		1280154 or 1280122	Res. Carbon 22k ohm 1/5W $\pm 5\%$	R755, R767	1324223
Connector Base 14P (Side)	CN-98	1770871	Res. Carbon 47k ohm 1/5W $\pm 5\%$	R769, R770	1324473
PCB Ass'y. Control		1614323BX	Res. Carbon 100k ohm 1/5W $\pm 5\%$	R754	1324104
Switch, Push	SW807, SW802, SW809, SW812, SW813, SW814, SW815, SW820, SW821, SW822, SW823, SW825	5622101 or 5622102 or 5622123	Res. Carbon 330k ohm 1/5W $\pm 5\%$	R757	1324334
Connector Housing 14P (Side)	CN-9H	1770868	Connector Housing 8P (Side)	CN-4H	1770603
			Connector Housing 13P (Side)	CN-5H	1770608
			Ceramic Resonator 500kHz	X751	1811103 or 1810414
			PCB Ass'y. Tuner		1614323DX
			Cap. Ceramic 0.022 μ F /25V +80/-20%	C712	1222122 or 1220843
			Cap. Ceramic 0.001 μ F /50V $\pm 10\%$ Y8	C710	1283102
			Cap. Semi-conductive 0.033 μ F /50V +80/-20%	C705, C708	1220887
			Cap. Electrolytic 0.1 μ F /50V $\pm 20\%$	C703, C704	126F104
			Cap. Electrolytic 10 μ F /16V $\pm 20\%$	C709	126C106
			Cap. Electrolytic 47 μ F /35V $\pm 20\%$	C701	126E476
			Cap. Electrolytic 100 μ F /16V $\pm 20\%$	C702	126C107
			Cap. Electrolytic 1000 μ F /6.3V $\pm 20\%$	C711	126A108
			Cap. Polyester Film 0.015 μ F /50V $\pm 5\%$	C706, C707	1254153
			Diode, US1040M or 1SS254 or GMB01B	D701	US1040M or 1SS254 or GMB01B
			IC LA7913 (Linear) (Tuner Control)	IC701	14LQ237
			IC L5631 or μ pc574J (Liner) (Zener IC)	IC702	L5631 or μ pc574J

DESCRIPTION	REF. NO.	MFR. PART NO.
Res. Carbon 1.5k ohm 1/2W $\pm 5\%$	R708	1322152
Res. Carbon 3.3k ohm 1/5W $\pm 5\%$	R711	1324332
Res. Carbon 3.9k ohm 1/5W $\pm 5\%$	R712	1324392
Res. Carbon 10k ohm 1/5W $\pm 5\%$	R709, R716	1324103
Res. Carbon 15k ohm 1/5W $\pm 5\%$	R713	1324153
Res. Carbon 22k ohm 1/5W $\pm 5\%$	R702	1324223
Res. Carbon 33k ohm 1/5W $\pm 5\%$	R707	1324333
Res. Carbon 47k ohm 1/5W $\pm 5\%$	R714	1324473
Res. Carbon 56k ohm 1/5W $\pm 5\%$	R710	1324563
Res. Carbon 220k ohm 1/5W $\pm 5\%$	R703, R704, R705	1324224
Res. Carbon 470k ohm 1/5W $\pm 5\%$	R706	1324474
Digital Transistor, DTC124ES or 2SC3400	QR702, QR703	C124ES or C3400
Digital Transistor, DTA124ES or 2SA1346	QR701	A124ES or A1346
Transistor, 2SD1012F, G or 2SD1468SR, S	Q701	D1012F, G or D1468SR, S
Connector Base 2P (Top)	CN-16	1740764
Connector Base 12P (Top) (FFC)	CN-21	1770586 or 1770587
TUNER IF	TU701	1812699 or 1812208

17. SCHEMATIC DIAGRAM

17-1 AUDIO/HEAD AMP/POWER SUPPLY



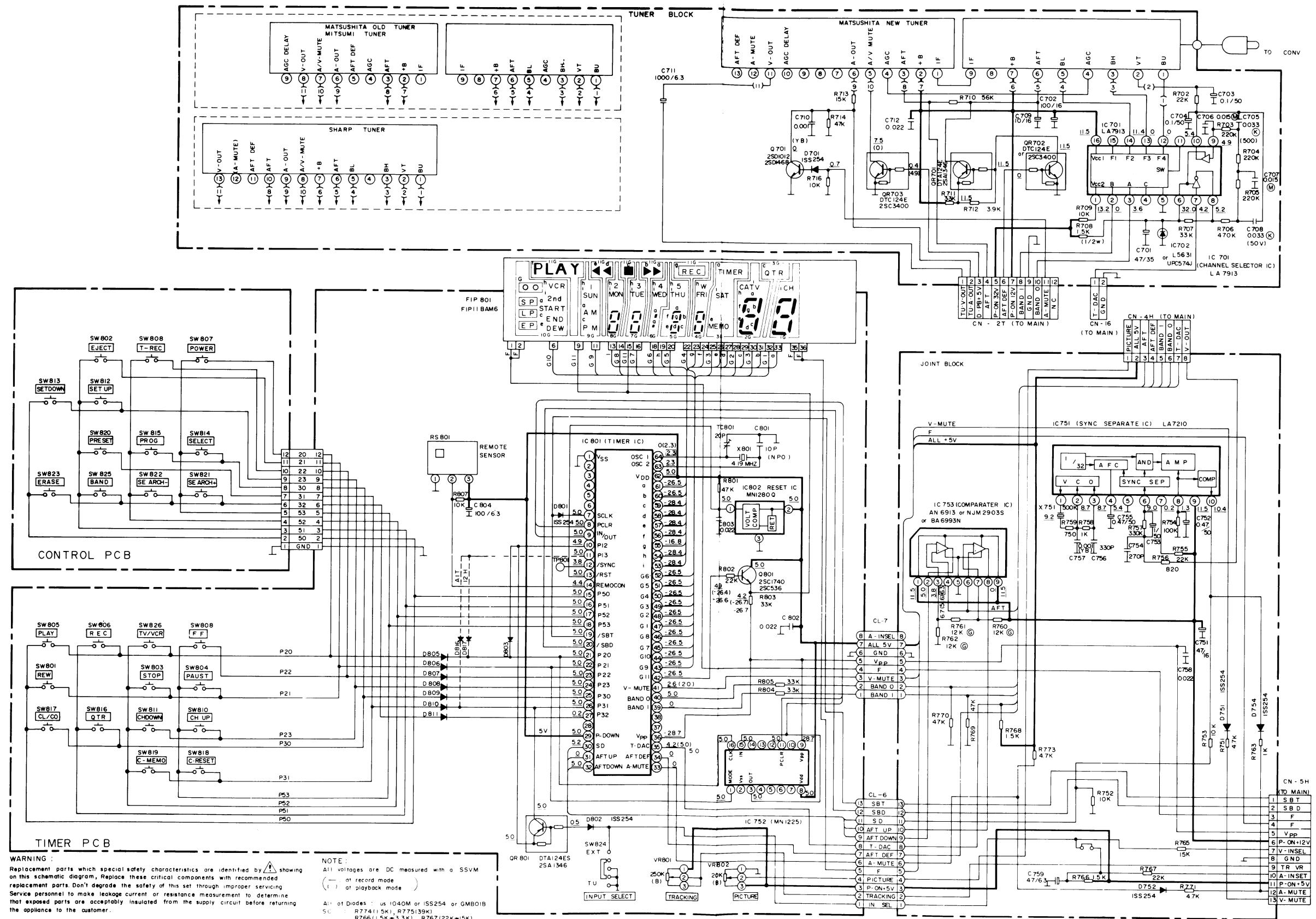
5mV/div.
20uS/div. REC MODE

WARNING:
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY Δ SHOWING ON THIS SCHEMATIC DIAGRAM. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS. DON'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING. SERVICE PERSONNEL SHOULD MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

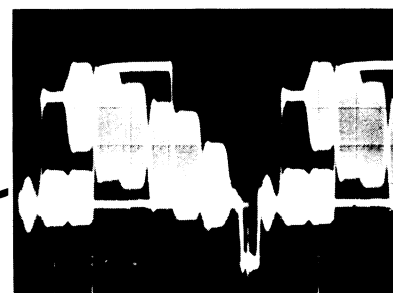
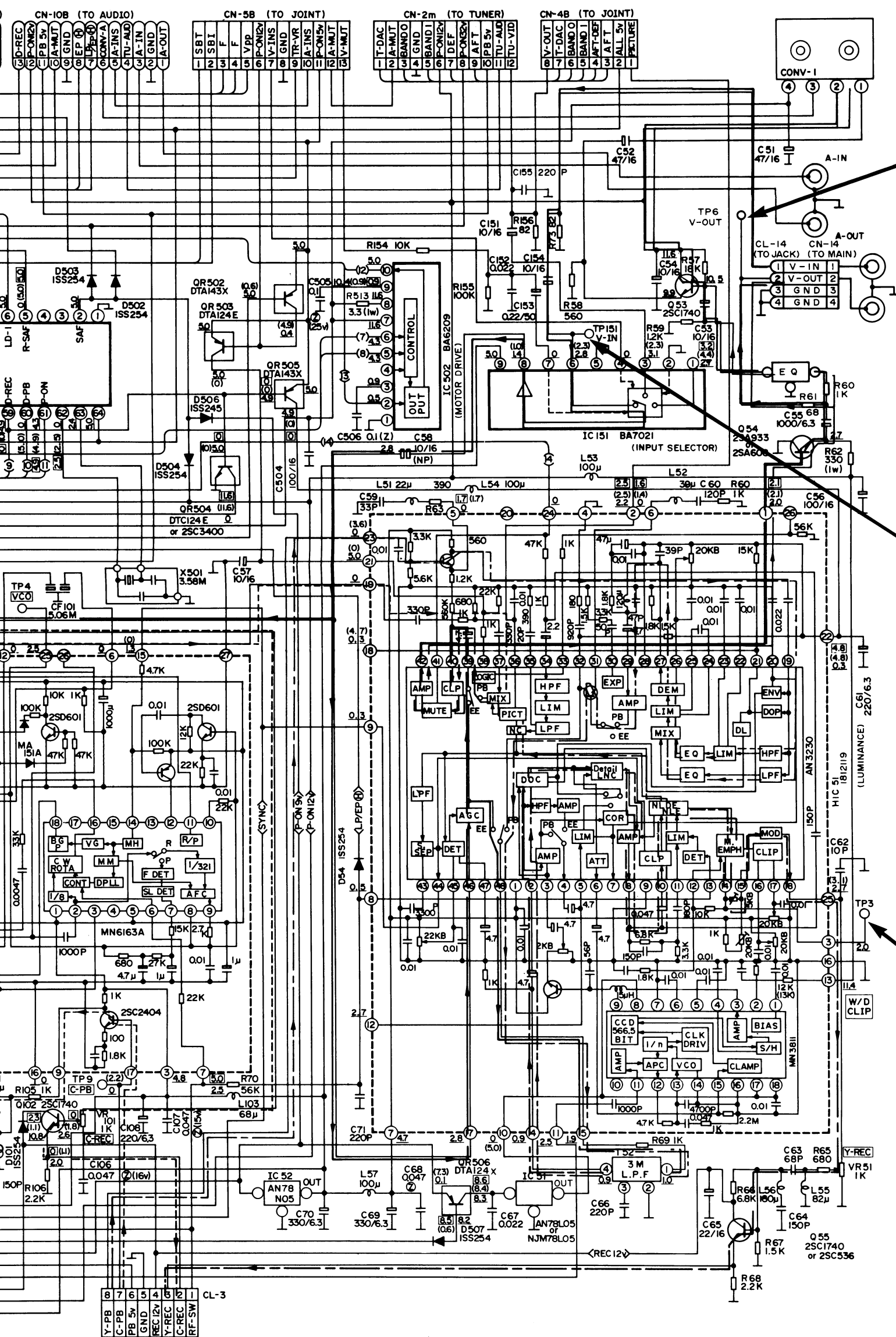
NOTES:

1. ALL RESISTANCE VALUES ARE INDICATED IN OHM ($K = 10^3$, $M = 10^6$).
2. ALL CAPACITANCE VALUES ARE INDICATED IN μF ($P = 10^{-6} \mu F$).
3. VOLTAGES ARE MEASURED WITH SSVM ($Z > 10K \text{ OHM}$) FRONT POINT INDICATED TO CHASSIS GROUND AT NO SIGNAL CONDITION UNLESS OTHERWISE NOTED. (SEE VOLTAGE CHART.)
4. CAPACITOR TYPES ARE (PL) = POLYPROPYLENE, (SC) = SEMI-CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

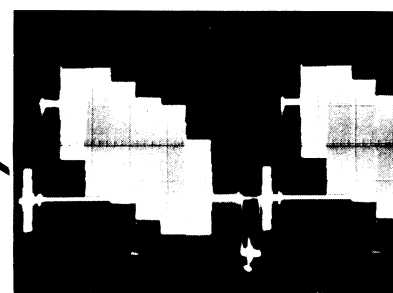
17-2 TIMER/CONTROL/TUNER/JOINT



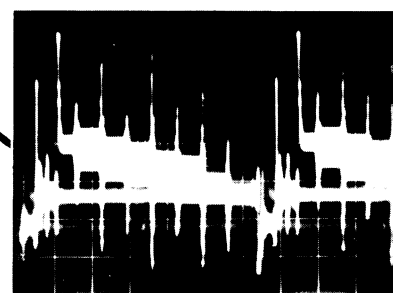
———— Luminance + Chrominance(PLAY)
 ———— Luminance(PLAY)
 ———— Chrominance(PLAY)
 ———— Luminance + Chrominance(REC)
 ———— Luminance(REC)
 ———— Chrominance(REC)



10uS/div.
20mV/div. PLAY MODE



10uS/div.
20uV/div. E-E MODE



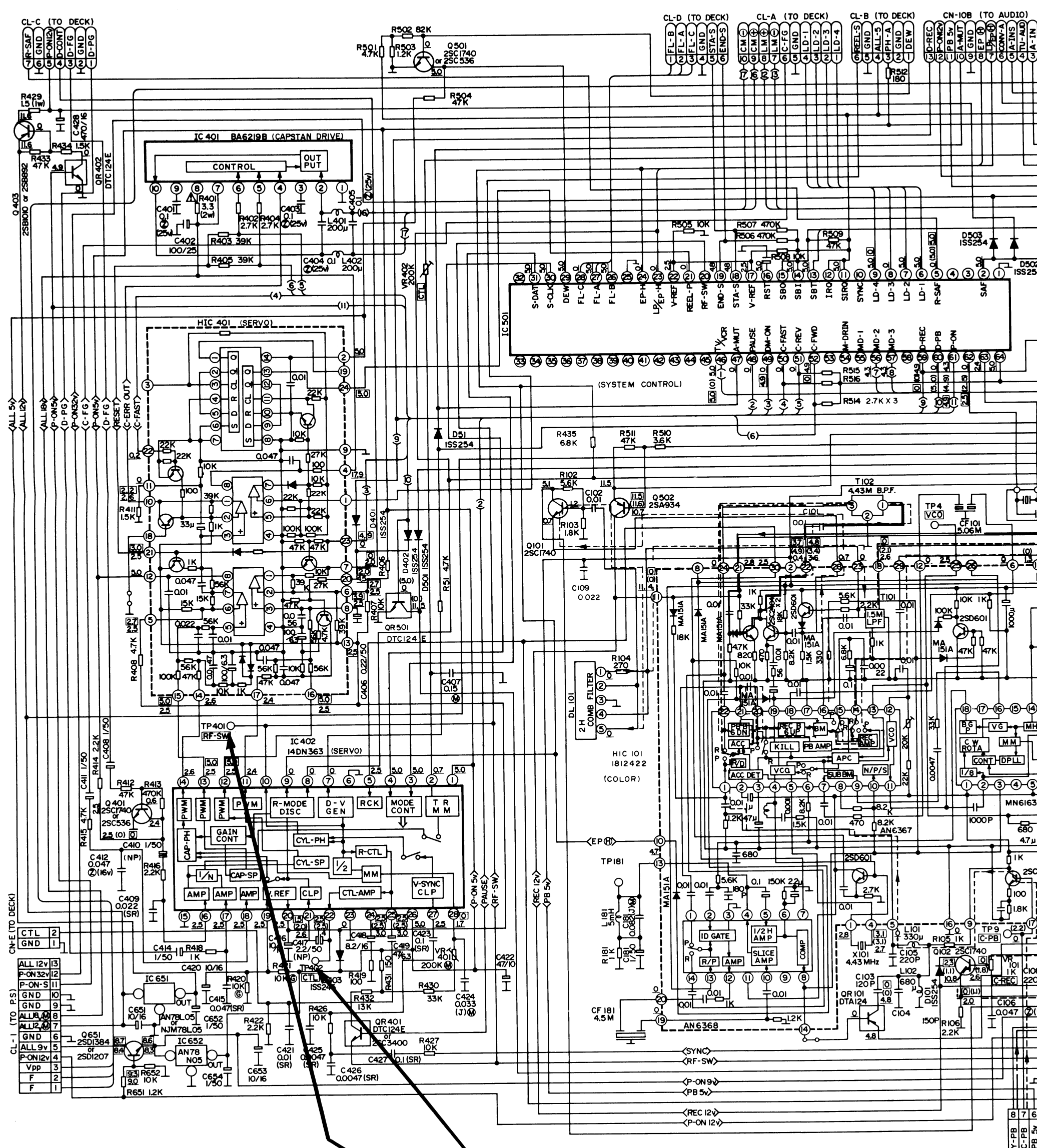
10mV/div.
10uS/div. REC MODE

WARNING:
 REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY Δ SHOWING ON THIS SCHEMATIC DIAGRAM. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS. DON'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING. SERVICE PERSONNEL SHOULD MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

NOTES:

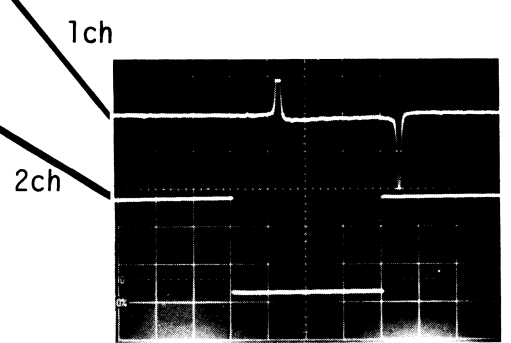
1. ALL RESISTANCE VALUES ARE INDICATED IN OHM ($K = 10^3$, $M = 10^6$).
2. ALL CAPACITANCE VALUES ARE INDICATED IN μF ($P = 10^{-6} \mu F$).
3. VOLTAGES ARE MEASURED WITH SSVM ($Z > 10K OHM$) FRONT POINT INDICATED TO CHASSIS GROUND AT NO SIGNAL CONDITION UNLESS OTHERWISE NOTED. (SEE VOLTAGE CHART.)
4. CAPACITOR TYPES ARE (PL) = POLYPROPYLENE, (SC) = SEMI-CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

--- Lumini
 --- Lumini
 --- Chro



NOTE: All voltages are DC measured with a SSVM.
 The DC voltage measured at E-E mode.

- (---) : at record mode.)
- (---) : at playback mode.)
- (⊕) : Fusing resistor
- (⚠) : Safety material



1ch (CTL)
 0.1mV/div.
 5mS/div.

2ch (RF SW)
 0.2mV/div.
 5mS/div.

PLAY MODE

PLAY MODE

WARNING:
 REPLACEMENT
 IDENTIFIED
 CRITICAL
 DEGRADE
 PERSONNEL
 TO DETERMINE
 SUPPLY CIRCUIT