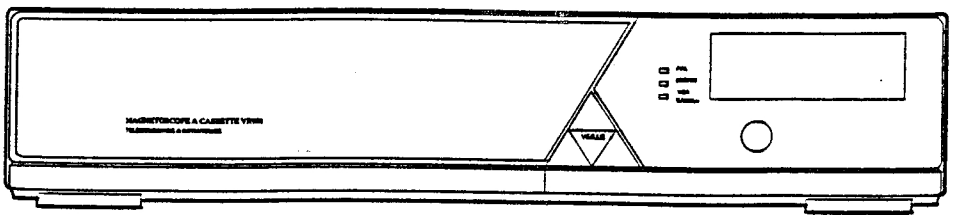
AMSTRAD

VCR9001

FIDELITY

VR901



DOCUMENTATION TECHNIQUE

PRECAUTIONS DE SECURITE

Les appareils décrits dans ce manuel sont reliés au secteur pendant leur fonctionnement. Pendant les opérations de dépannage, ils peuvent présenter des risques de chocs électriques pour l'opérateur si les précautions nécessaires ne sont pas observées.

Les moniteurs décrits dans ce manuel développent des hautes tensions qui peuvent rester présentes même après une inutilisation prolongée. Toute intervention sur ces matérieis doit être effectuée par des opérateurs qualifiés formés en conséquence.

TESTS SECURITE

Tous les moniteurs sont testés selon les spécifications suivantes :

1. **Tests diélectriques :** à 1.5 kV RMS/3 sec entre le câble d'alimentation, avec le neutre et la phase reliés et tous les points métalliques accessibles sur l'extérieur de l'appareil.

2. **Tests d'Isolation :** à 1.5 kV RMS/3 sec entre le câble d'alimentation, avec le neutre et la phase reliés et tous les points metalliques accessibles sur l'extérieur de l'appareil ayant une isolation supérieure à 4 Mohms.

3. **Test de masse :** La résistance du câble d'alimentation ne doit pas excéder 0;5 ohms.

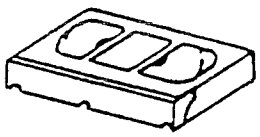
REMARQUE : Lorsque vous avez fini de travailler sur cette unité, les tests suivants doivent être effectués afin d'assurer une sécurité électrique permanente.

REMARQUE : Toutes les pièces portant le numéro de préfixe ! sont des éléments de sécurité et doivent être remplacés par des éléments similaires ayant les mêmes spécifications de sécurité.

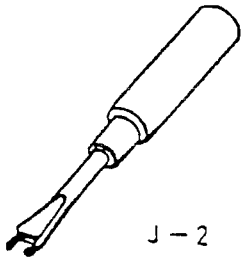
Dans le souci constant d'améliorer son service et la qualité de ses produits, AMSTRAD se réserve le droit de changer de types de composants, de fabricants, de fournisseurs et de spécifications techniques à tout moment, ainsi que de ne pas fournir certains composants standards.

GABARIT ET OUTILS DE REGLAGE

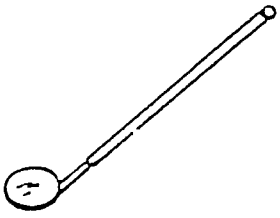
Fig. No.	Jig Item	Part No.	Adjustment
J – 1	Alignment Tape	F6-H or F6-HS	X Value / Envelope Waveform / Audio Control Erase Head Azimuth F6-HS : 2 Head LP Model
	Alignment Tape	F6-A	Audio Control Erase Head Height and Tilt
	Alignment Tape	F6-HI	Audio Output Adjustment (Hi-Fi Stereo Model)
	Alignment Tape	F6-VF	Half Loading Arm Height Adjustment (Index Model)
J – 2	Driver Large (Special)	VT-G-002	X Value
	Driver Small (Special)	VT-G-003	Guide Roller
J – 3	Mirror	VFX-0169	Tape Transportation Check
J – 4	Box Driver M3	Marketing goods	Guide Pole / Audio Control Erase Head Height
	Box Driver M2	Marketing goods	Half Loading Arm Height (Index Model)



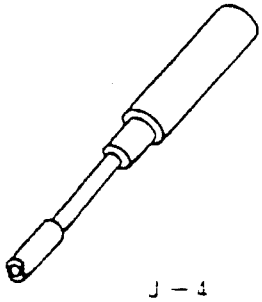
J – 1



J – 2



J – 3

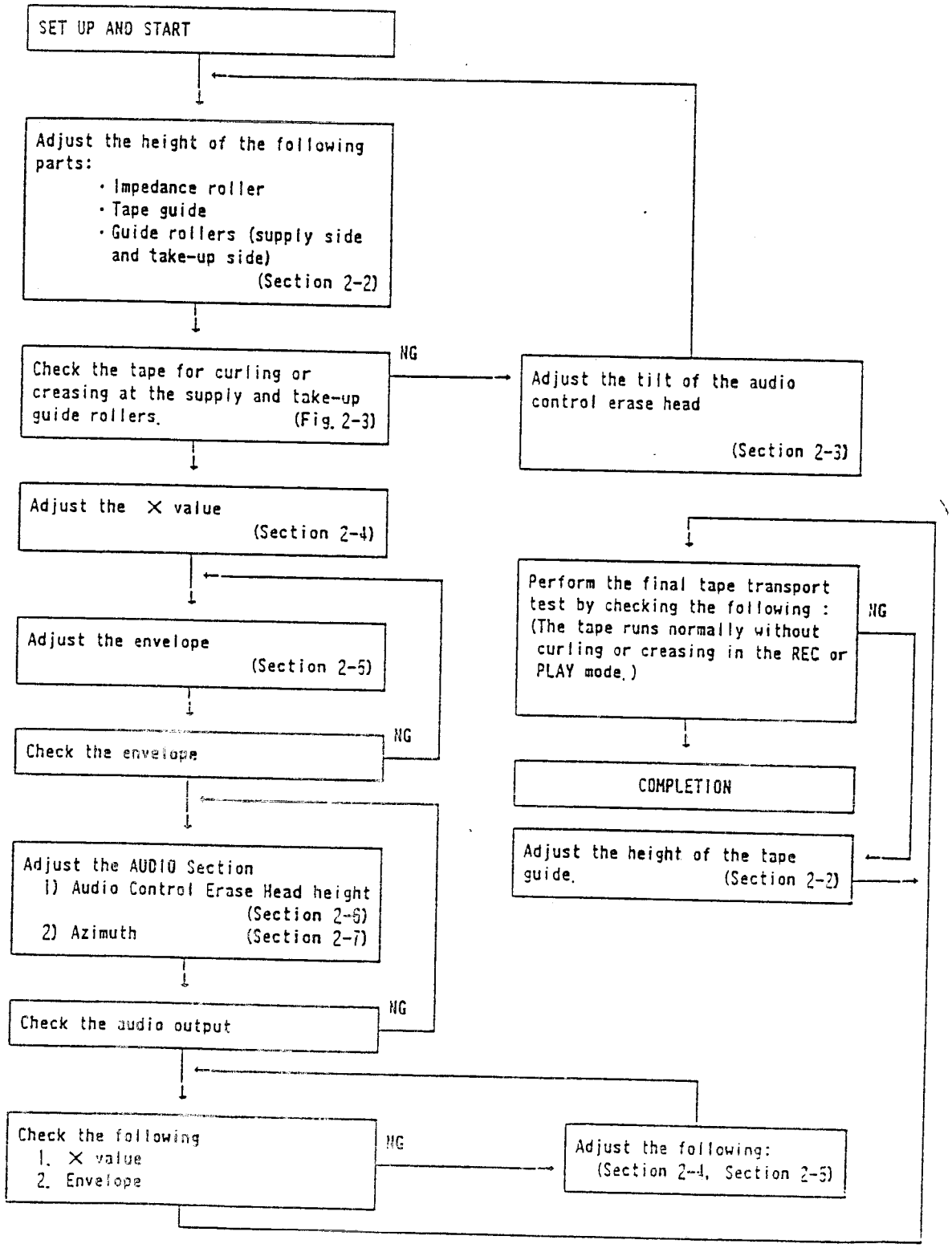


J – 4

NOTE: Jigs and Tools are not supplied by Amstrad PLC. Similar tools can be used.

2. REGLAGES MECANIQUE

2-1 TAPE TRANSPORT ADJUSTMENT FLOW CHART



2-2 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

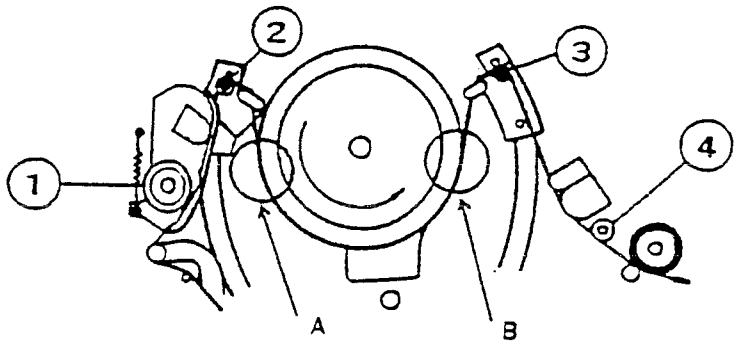


Fig. 2-1

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. 2-1.

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. 2-2.)

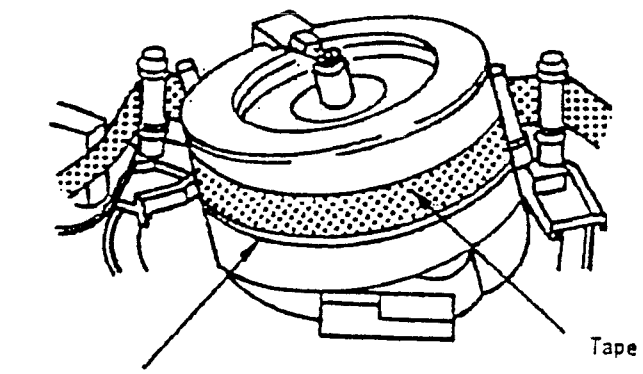


Fig. 2-2

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. 2-3.

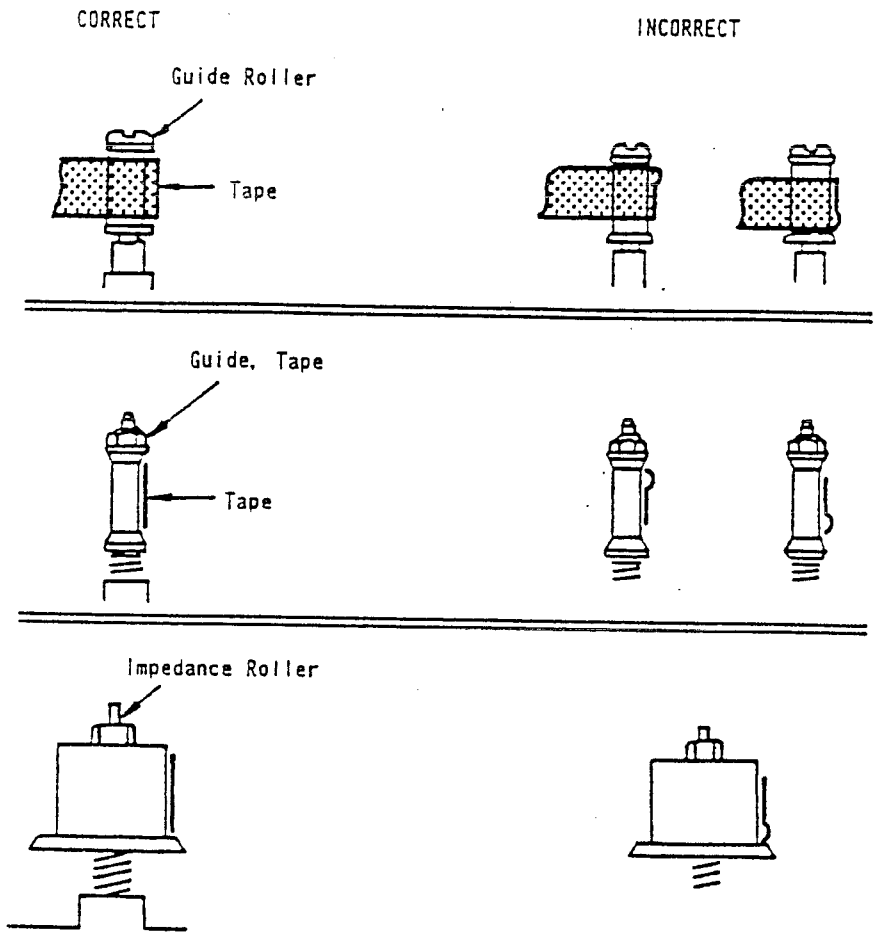


Fig. 2-3

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. 2-4.

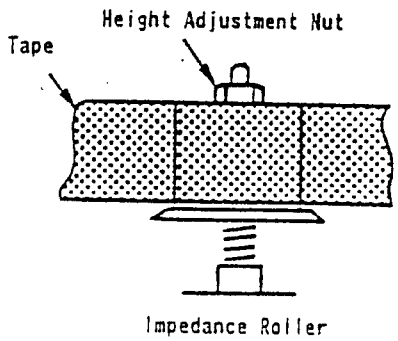


Fig. 2-4

7. Next, adjust the guide roller height. Insert the adjustment driver into the guide roller top. (Refer to Fig. 2-5.)
Adjust the height by turning the driver slightly so that the tape runs on the guide roller as shown in Fig. 2-3, and the lower edge of the tape runs along the lead surface of the cylinder.

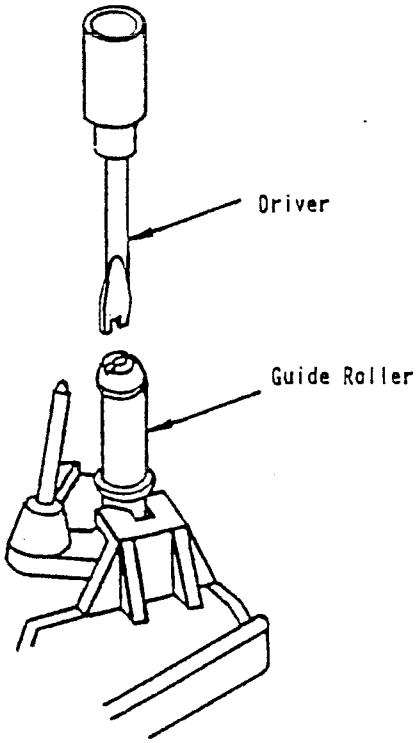


Fig. 2-5

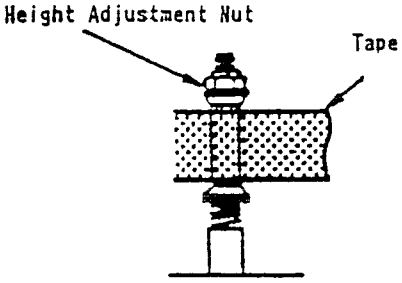


Fig. 2-6

8. After completion of the supply side guide roller adjustments, adjust tape guide so that tape runs as shown in Fig. 2-6, 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.

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. 2-6.

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.

2-3 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 Ⓐ and the tilt adjustment screw Ⓒ so that the tape transport is smooth at the take-up guide pole. Align the audio control head height. (Refer to Fig. 2-7.)

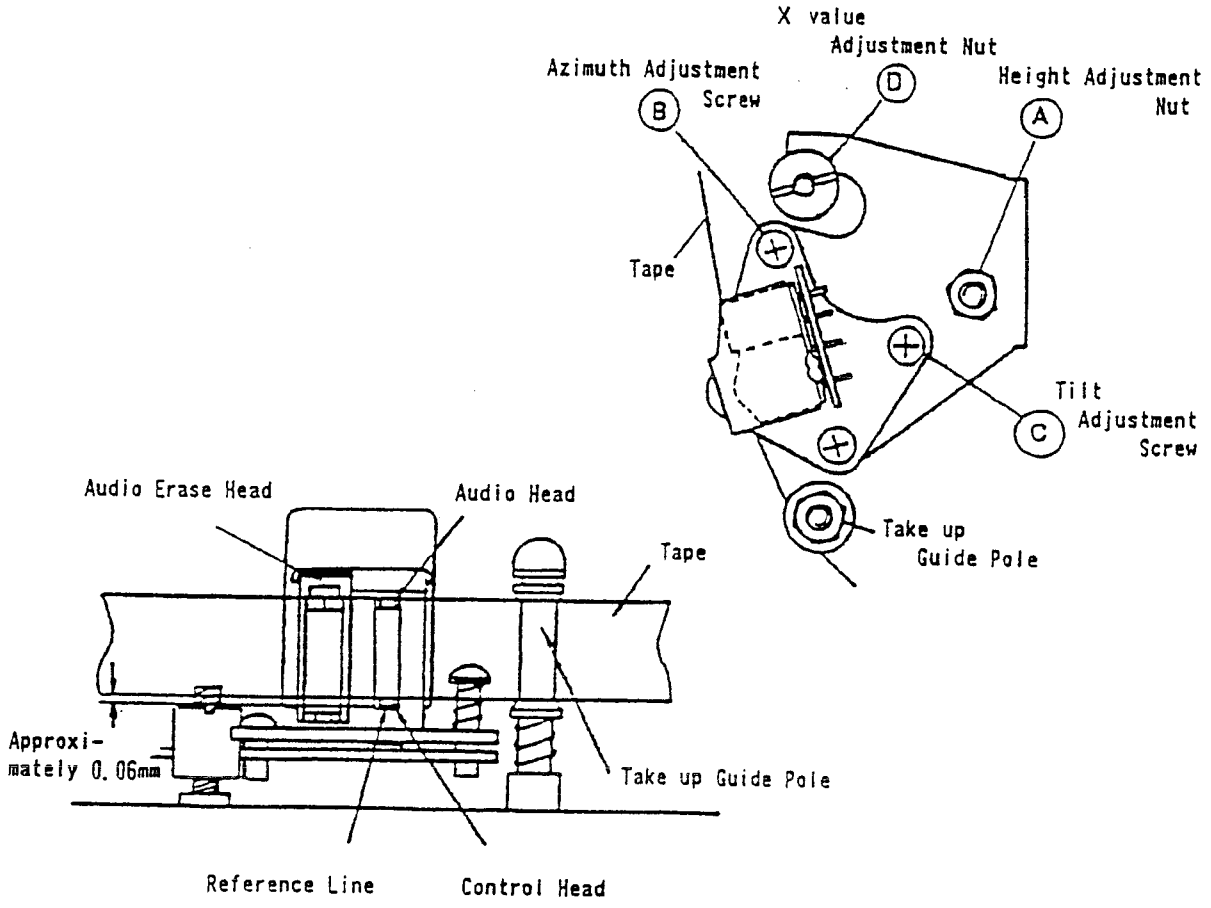


Fig. 2-7

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.)

2-4 × VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
CL-V, Pin 9 GND TP RF-SW	Oscilloscope	PLAY(SP)MODE Test tape F6-N

ADJ. Location	ADJ. Value
× value adjustment nut	Maximum level (CH1 PB FM Signal)

Test Equipment Connecting Diagrams

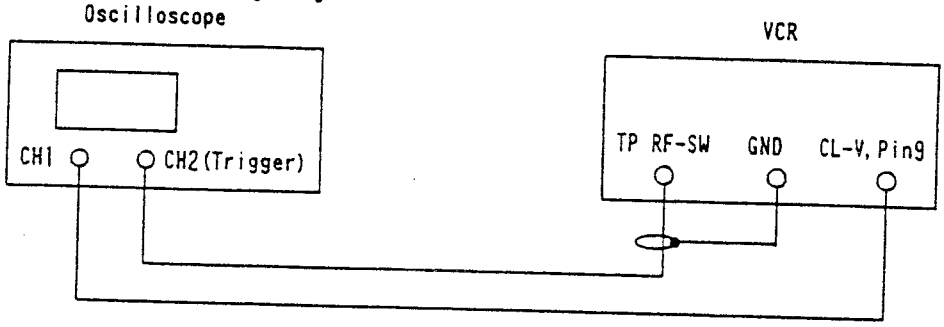


Fig. 2-8

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

Note:
1. X value adjustment above should be done so that the noise can be kept out on the TV screen with Tracking Volume set to its center.
2. Confirm that Electrical Adjustment (Video Head Switching Point and CTL Preset) has been done before Deck Adjustment.

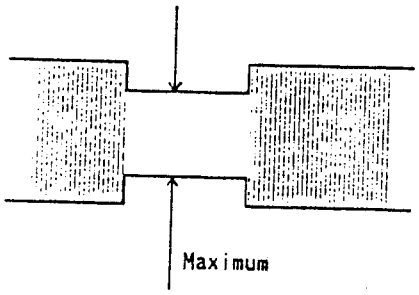


Fig. 2-9

2-5 ENVELOPE WAVEFORM ADJUSTMENT

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
CL-V, Pin 9 GND TP RF-SW	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

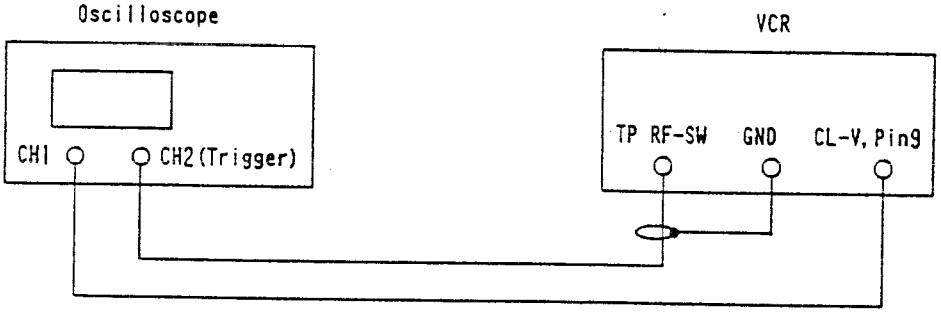


Fig. 2-10

1. Connect equipment as shown in Fig. 2-10.
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 Tracking Volume to its center position and confirm that a nearly maximum level is obtained. Then rotate the 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 lower than helical tape position, the envelope waveforms will take the shape as shown in Fig. 2-11 and Fig. 2-12.
5. Adjust for maximum flatness of the envelope waveform according to the Fig. 2-11 and Fig. 2-12.
6. After adjustment, rotate Tracking Volume counterclockwise and clockwise, and check that the waveform changes symmetrically.
7. Check the tape curl. (Refer to Section 2-2.)

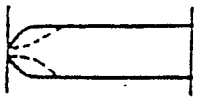
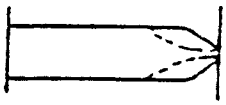
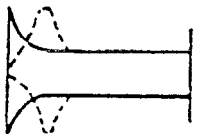
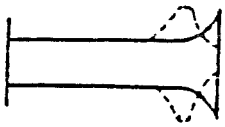
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side guide roller rotated clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated clockwise direction (lowers guide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

Fig. 2-11

	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.

2-6 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

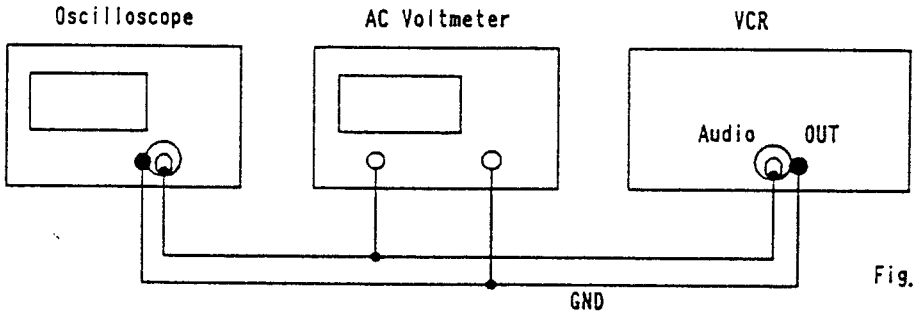


Fig. 2-13

1. Connect equipment as shown in Fig. 2-13.
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 Ⓑ. (Refer to Fig. 2-7.) Then readjust GUIDE ROLLER HEIGHT in section 2-2 and the ✕ value in section 2-4.
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 ⊖ so that the AC voltmeter's reading is brought to its maximum level. (Refer to Fig. 2-7.)
4. Adjust the azimuth adjustment screw Ⓐ so that the AC voltmeter's reading is brought to its maximum level. (Refer to Fig. 2-7.)

2-7 AUDIO CONTROL ERASE HEAD AZIMUTH ADJUSTMENT

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
Audio Output	Oscilloscope AC Voltmeter	PLAY(SP)MODE Test tape F6-N

ADJ. Location	ADJ. Value
Azimuth adjustment nut	Maximum level (AC voltmeter)

Test Equipment Connecting Diagrams

Refer to Fig. 2-13

1. After confirming on the oscilloscope that an audio signal is being output by playing back F6-N test tape, adjust the azimuth adjustment screw Ⓐ so that the AC voltmeter's reading or osilloscope waveform is brought to its maximum lebel (Refer to Fig. 2-7).

Note: Fix the screw Ⓑ with lock paint after readjustment (Refer to Fig. 2-7).

INSTRUCTION D'ALIGNEMENT

NOTE :
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 EQUIPMEMT REQUIRED

1. Oscilloscope : Dual-trace with 10:1 probe.
2. TV Monitor
3. Pattern Generator (Color bar with 100% white)
4. AC Voltmeter (RMS)
5. Test Tape F6-A, F7-A, F7-BELL
6. Spectrum Analyzer
7. Frequency Counter
8. SECAM Video Analyzer

3-1 CTL PRESET ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP401 (CTL) TP RF-SW GND	VR402 (CTL) (MCV-A P. C. Board)	PLAY	F6-A	Fig. 3-1

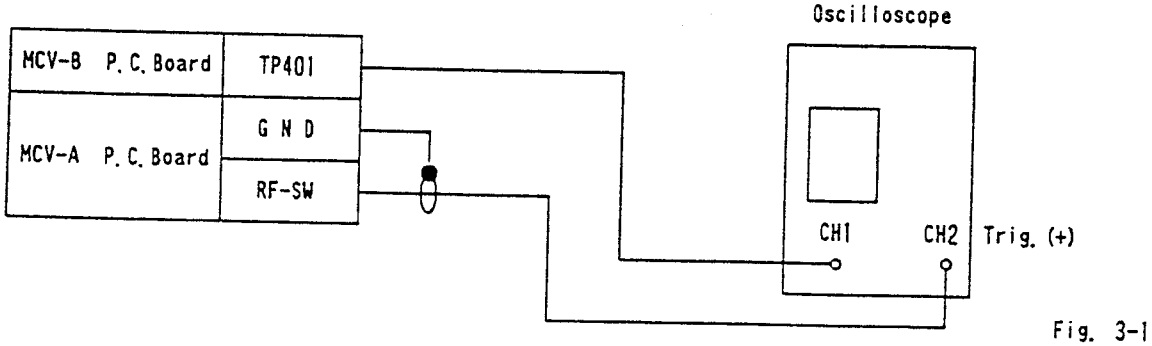
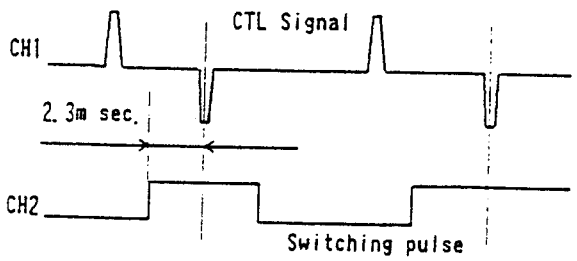


Fig. 3-1

1. Connect the equipment as shown in Fig. 3-1.
2. Set the input trigger mode to CH2 and set trigger slope to (-).
3. Set the tracking volume to the center click position.
4. Playback the tape and adjust VR402 to make the rising point of CH1 CTL signal where delated 2.3msec. from the sitting of CH2 RF switching pulse.



3-2 SWITCHING POINT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CL-V, Pin24 TP RF-SW GND	VR401 (Switching Point) (MSV-A P. C. Board)	PLAY	F6-A	Fig. 3-2

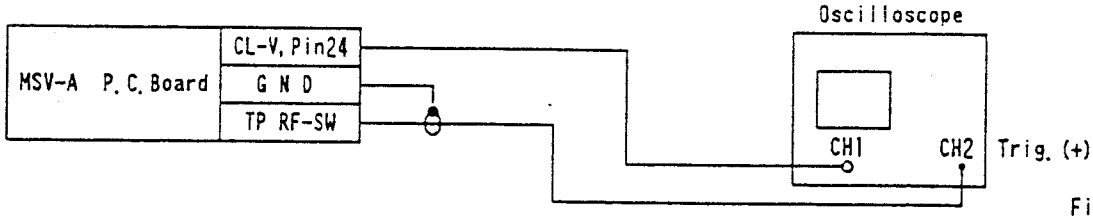
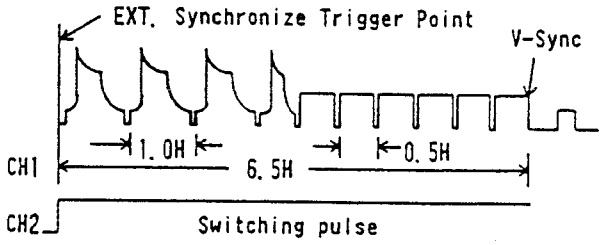


Fig. 3-2

1. Connect the equipment as shown in Fig. 3-2.
2. Set the input trigger mode to CH2 and set trigger slope to (+).
3. Playback the tape and adjust VR401 so that the V-sync front edge of CH1 video output waveform is delayed 6.5H(416μs) from the rising of CH2 Head Switching pulse waveform.



3-3 E-E LEVEL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CL-V, Pin24 GND	VR 55 (E-E) (MSV-A P. C. Board)	E-E	——	Fig. 3-3

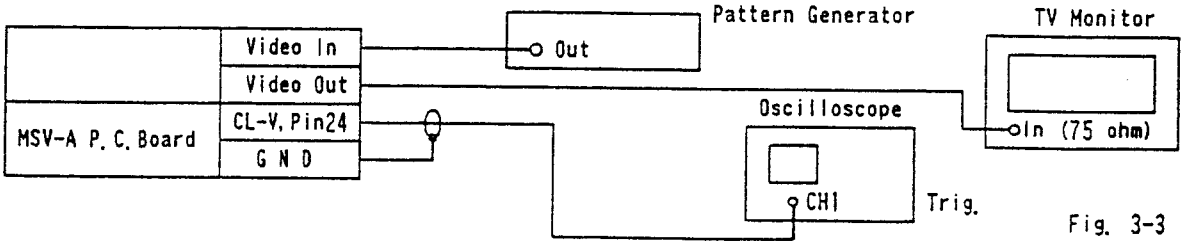
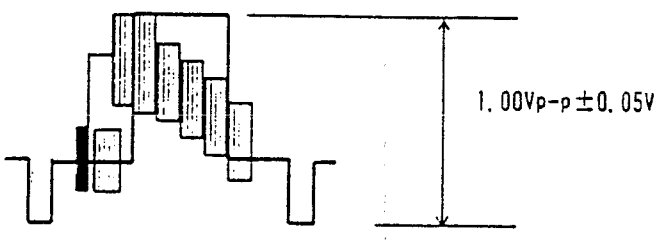


Fig. 3-3

1. Connect the equipment as shown in Fig. 3-3.
2. Input Color Bar signal with 100% white to Video Input.
3. Adjust VR55 so that the video level becomes 1Vp-p±0.05V.



3-4 FM CARRIER DEVIATION ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 1 TP RF-SW GND	VR51 (CCR) VR52 (DEV) (MSV P. C. Board)	REC. (SP)	Blank tape	Fig. 3-4

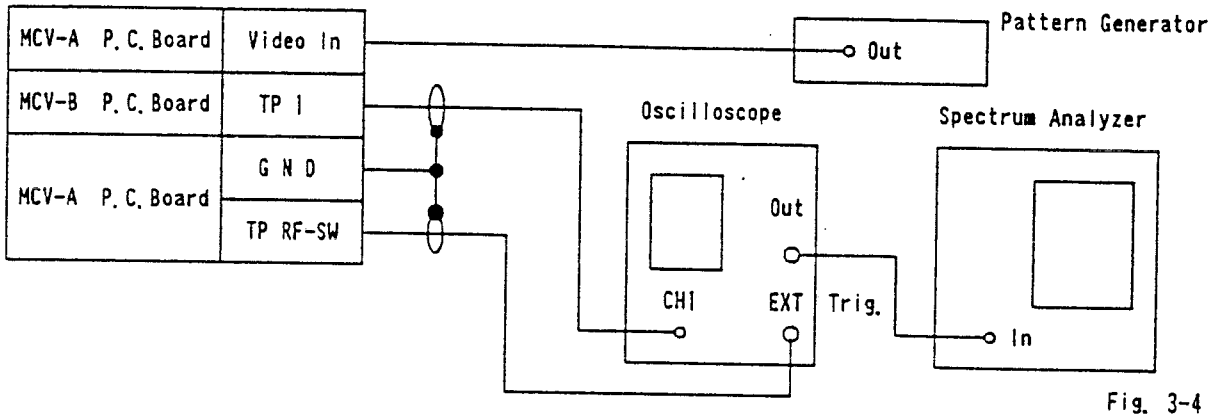
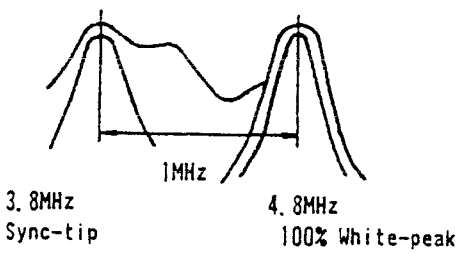


Fig. 3-4

1. Connect the equipment as shown in Fig. 3-4.
2. Input color bar signal with 100% white to Video Input.
3. Adjust Sync-tip to 3.8MHz±0.05MHz by VR 51, White-peak to 4.8MHz±0.05MHz by VR52.



3-5 P. B. OUTPUT LEVEL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CL-V, Pin24 GND	VR 53 (P. B.) (MSV-A P. C. Board)	PLAY	F6-A	Fig. 3-5

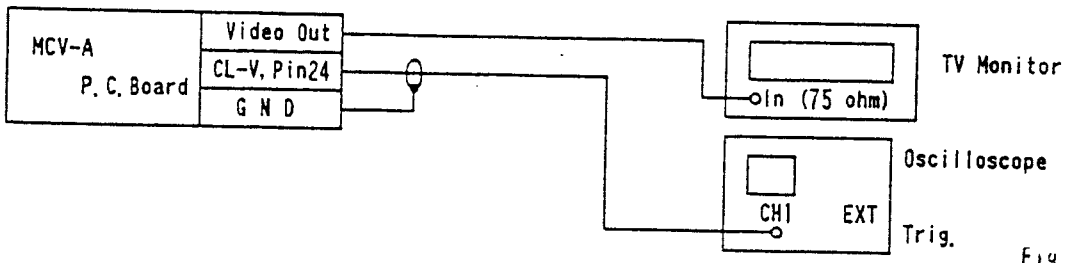
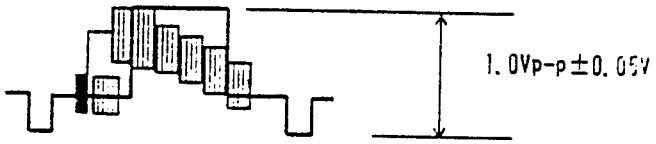


Fig. 3-5

1. Connejct the equipment as shown in Fig. 3-5.
2. Adjust VR53 so that the video level becomes 1.0Vp-p±0.05V.



3-6 NOISE CANCEL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 52 (N. C) TP 53 (N. C) GND	VR 54 (N. C) (MSV-A P. C. Board)	PLAY	F6-A	Fig. 3-6

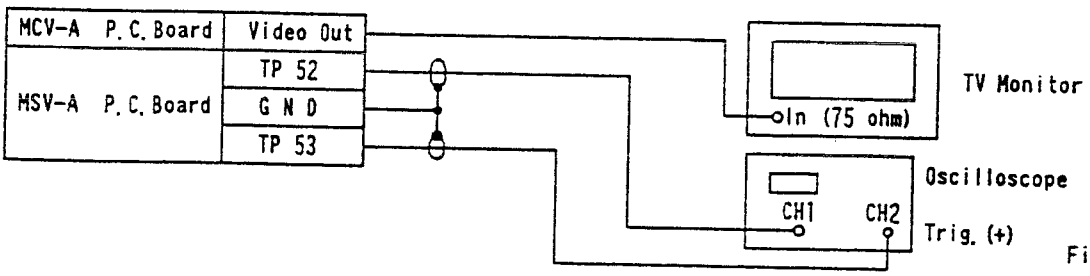


Fig. 3-6

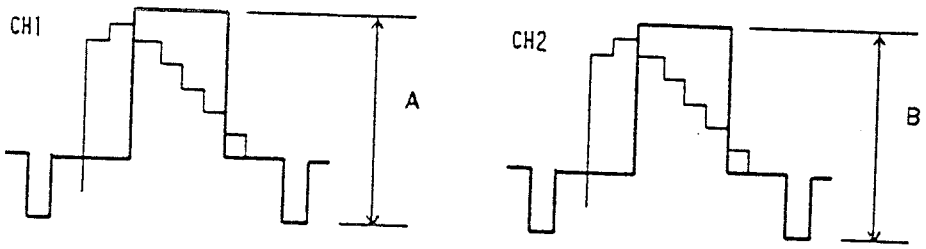
Note : Adjust the Noise Cancel for choise (1) or (2).

(1)

1. Connect the equipment as shown in Fig. 3-4.
2. Set the input trigger mode to CH2 and set trigger slope to (+).
3. Invert CH2 signal(TP53) and select ADD mode.
4. Playback the tape and adjust VR54 so that the level becomes minimum.

(2)

1. Connect the equipment as shown in Fig. 3-4.
2. Set the input trigger mode to CH2 and set trigger slope to (+).
3. Playback the tape and adjust VR54 so that the output levels(A, B) of both channels become the same.



3-7 SECAM 1/2f TUNE ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP141 (SECAM, CH1)	L141 (MSV-A P. C. Board)	E-E	———	Fig. 3-7

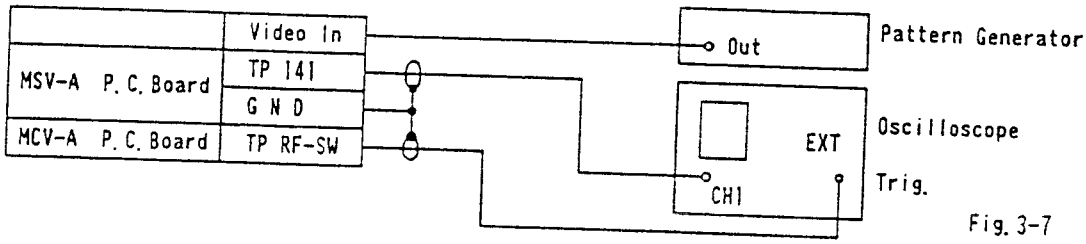
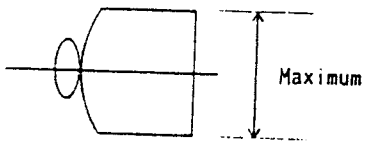


Fig. 3-7

1. Connect CH1 of oscilloscope across TP141 and Ground.
2. Connect EXT. Trigger of oscilloscope across TP RF-SW and Ground.
3. Input SECAM color bar signal VIDEO IN.
4. Adjust by L141 so that ouput level becames maximum.



3-8 H. BLANKING ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CL-V, Pin24	VR151 (MSV-B P.C.Board)	P.B	F7-A	Fig. 3-8

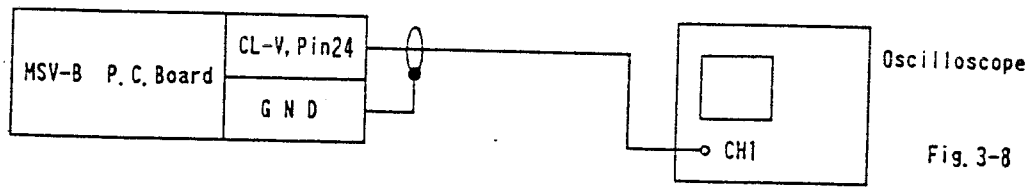
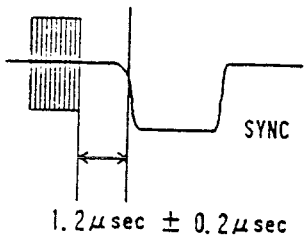


Fig. 3-8

1. Connect the equipment as shown in Fig. 3-8.
2. Playback the tape and adjust VR151 so that the H. BLANKING becomes 1.2μsec ±0.2 μsec.



3-9 REC BELL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP151	T151 (MSV-B P.C.Board)	REC	Blank Tape	Fig. 3-9

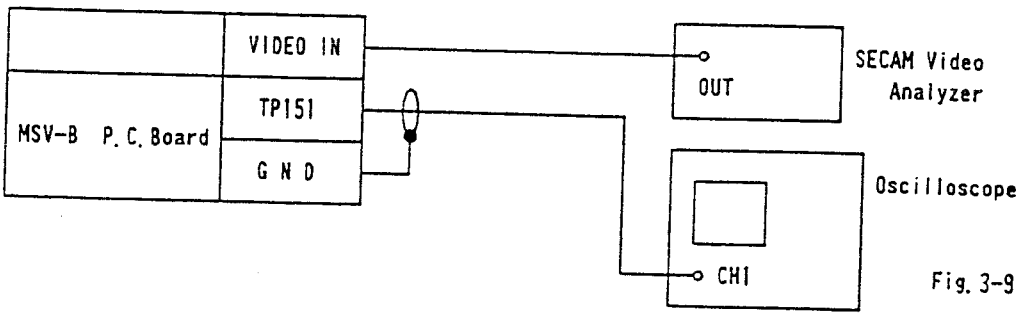
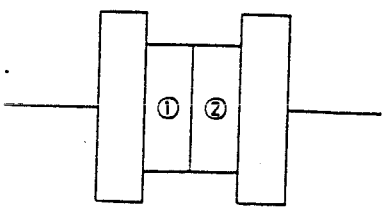


Fig. 3-9

1. Connect the equipment as shown in Fig. 3-9.
2. Input SECAM BELL signal to VIDEO IN.
3. Adjust T155 to make the same voltage at ① and ②.



3-10 REC EQ ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
Q952(E)	T151 (MSV-B P. C. Board)	REC	Blank Tape	Fig. 3-10

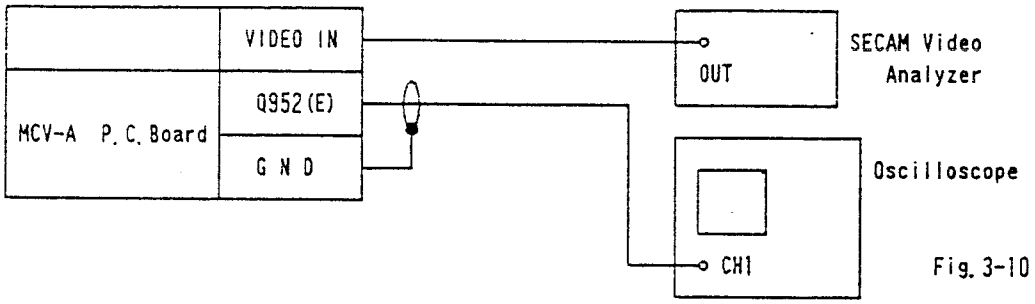
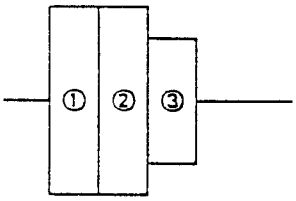


Fig. 3-10

1. Connect the equipment as shown in Fig. 3-10.
2. Input SECAM BELL signal to VIDEO IN.
3. Adjust T151 to make the same voltage at ① and ②.



3-11 PB EQ ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
T153 Pin5	T156 (MSV-B P. C. Board)	P. B	F7-BELL	Fig. 3-11

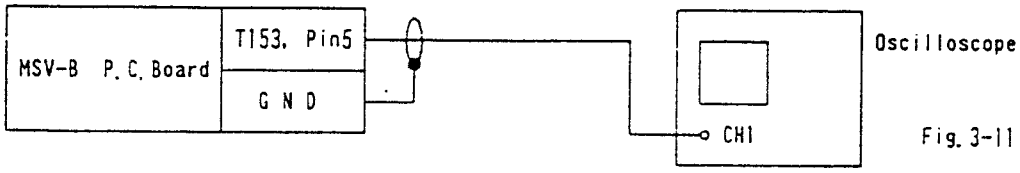
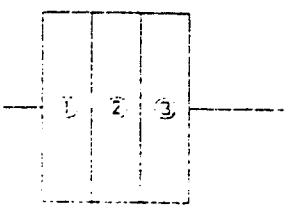


Fig. 3-11

1. Connect the equipment as shown in Fig. 3-11.
2. Playback the tape and adjust T156 to make the same voltage at ① and ②, ③.



3-12 REC. CURRENT ADJUSTMENT (LUMINANCE)

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP-1 TP RF-SW	VR1 (MCV-B P. C. Board)	REC	Blank Tape	Fig. 3-12

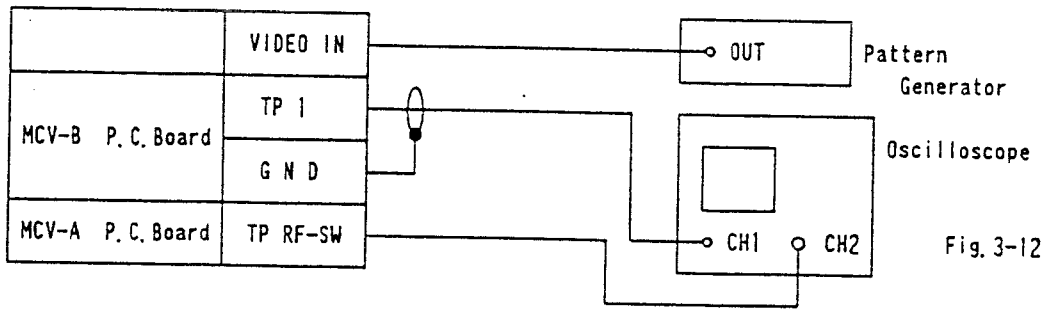
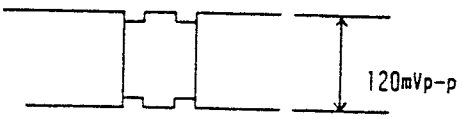


Fig. 3-12

1. Connect the equipment as shwon in Fig. 3-12.
2. Input PAL color bar signal with 100% white to VIDEO IN.
3. Adjust VR1 so that V-SYNC level becomes 120mVp-p.



3-13 REC. CURRENT ADJUSTMENT (PAL CHROMINANCE)

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP-1 CL-V, Pin14	VR951 (MCV-A P. C. Board)	REC	Blank Tape	Fig. 3-13

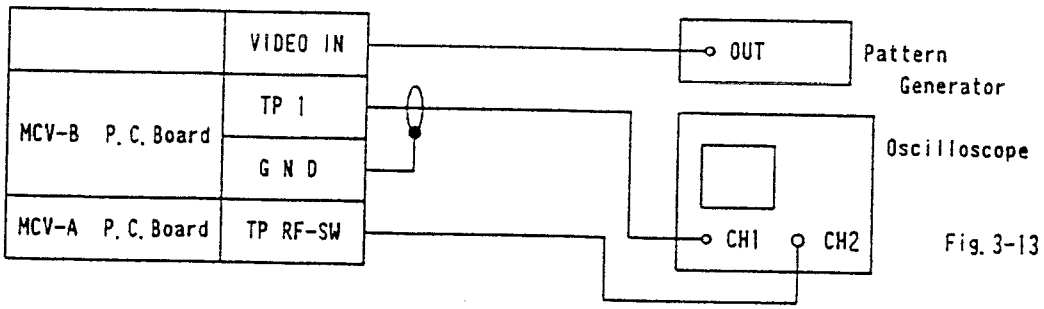
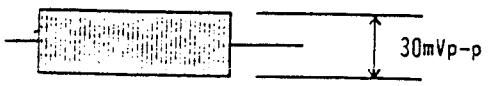


Fig. 3-13

1. Connect the equipment as shown in Fig. 3-13.
2. Input PAL Blue-green signal only to VIDEO IN.
3. Adjust VR951 so that chroma level becomes 30mVp-p.



3-14 REC. CURRENT ADJUSTMENT (SECAM CHROMINANCE)

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP-1 CL-V, Pin14	VR952 (MCV-A P. C. Board)	REC	Blank Tape	Fig. 3-13

1. Connect the equipment as shown in Fig. 3-13.
2. Input SECAM Blue-green signal only to VIDEO IN.
3. Adjust VR952 so that chroma level becomes 30mVp-p.

3-15 REC. BIAS CURRENT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP201 (BIAS⊕) TP202 (BIAS⊖)	VR201 (BIAS) (MCV-B P. C. Board)	REC. (SP)	Blank Tape	Fig. 3-14

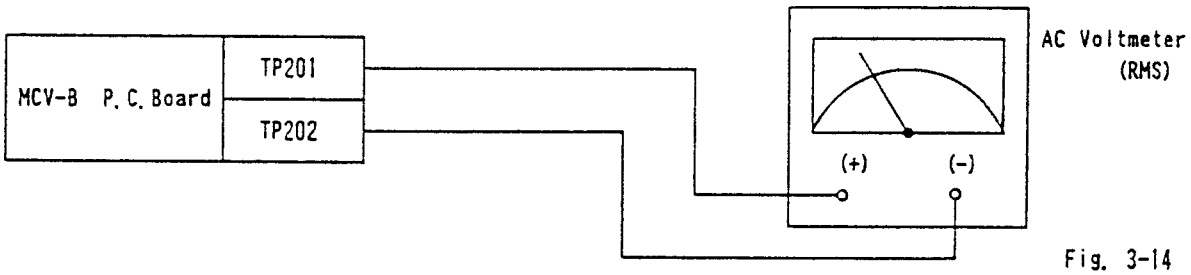


Fig. 3-14

1. Connect the equipment as shown in Fig. 3-13.
2. Insert a blank tape and set the VCR to REC mode.
   (Do not set to PAUSE. In PAUSE mode, the bias oscillation is stopped.)
3. Adjust VR201 so that the voltage becames 23.5mV.

3-16 TIMER CLOCK ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP801	TC801 (TMV-A P. C. Board)	E-E		Fig. 3-15

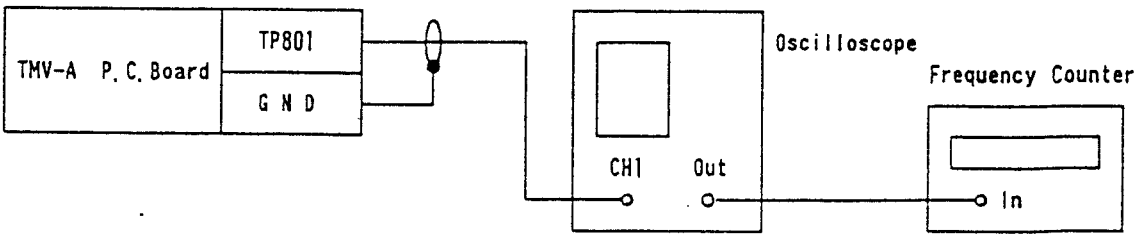
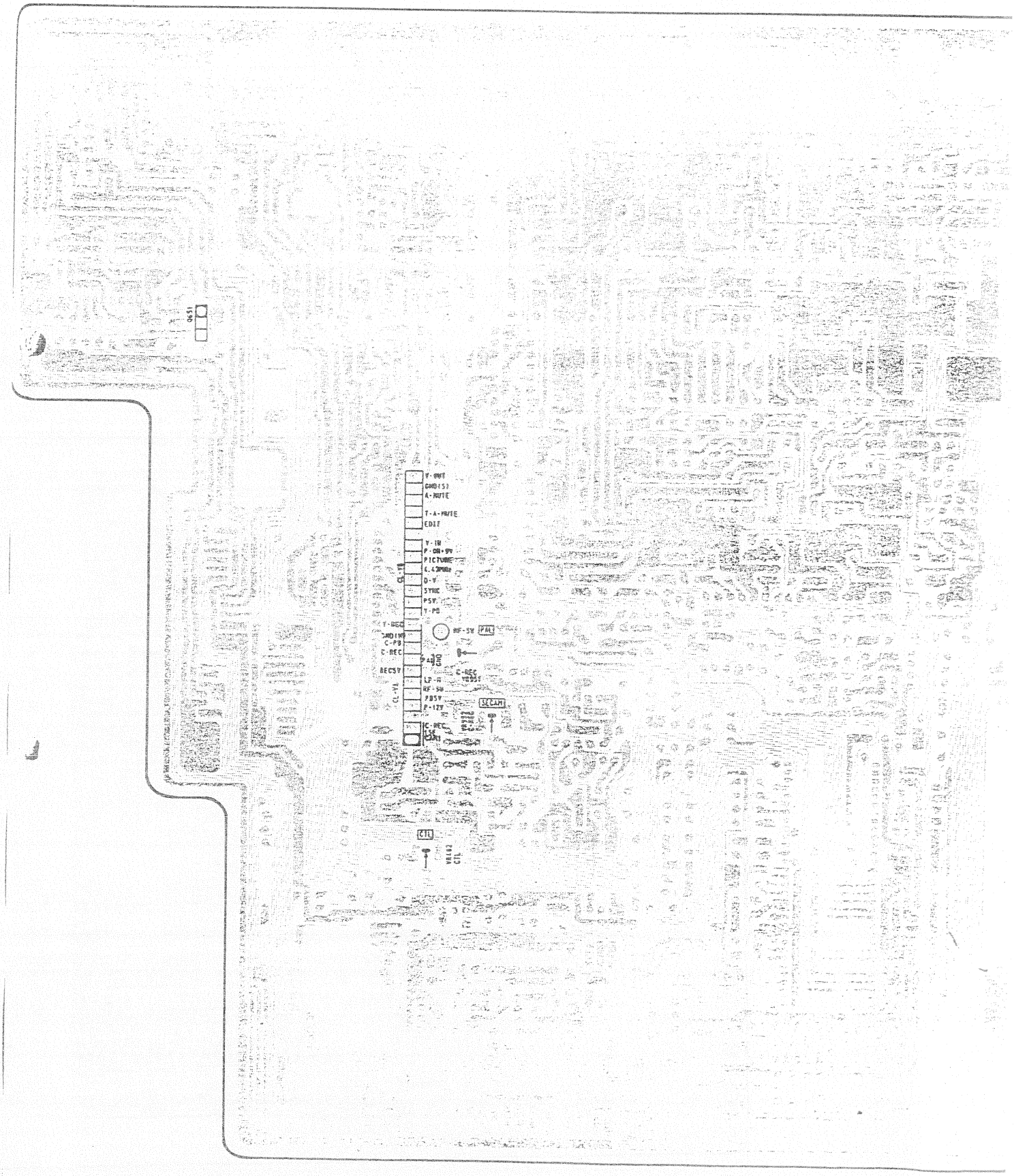


Fig. 3-15

1. Connect the equipment as shown in Fig. 3-14.
2. Adjust the TC801 so that the display of frequency counter becomes 128.000Hz±0.0007Hz.

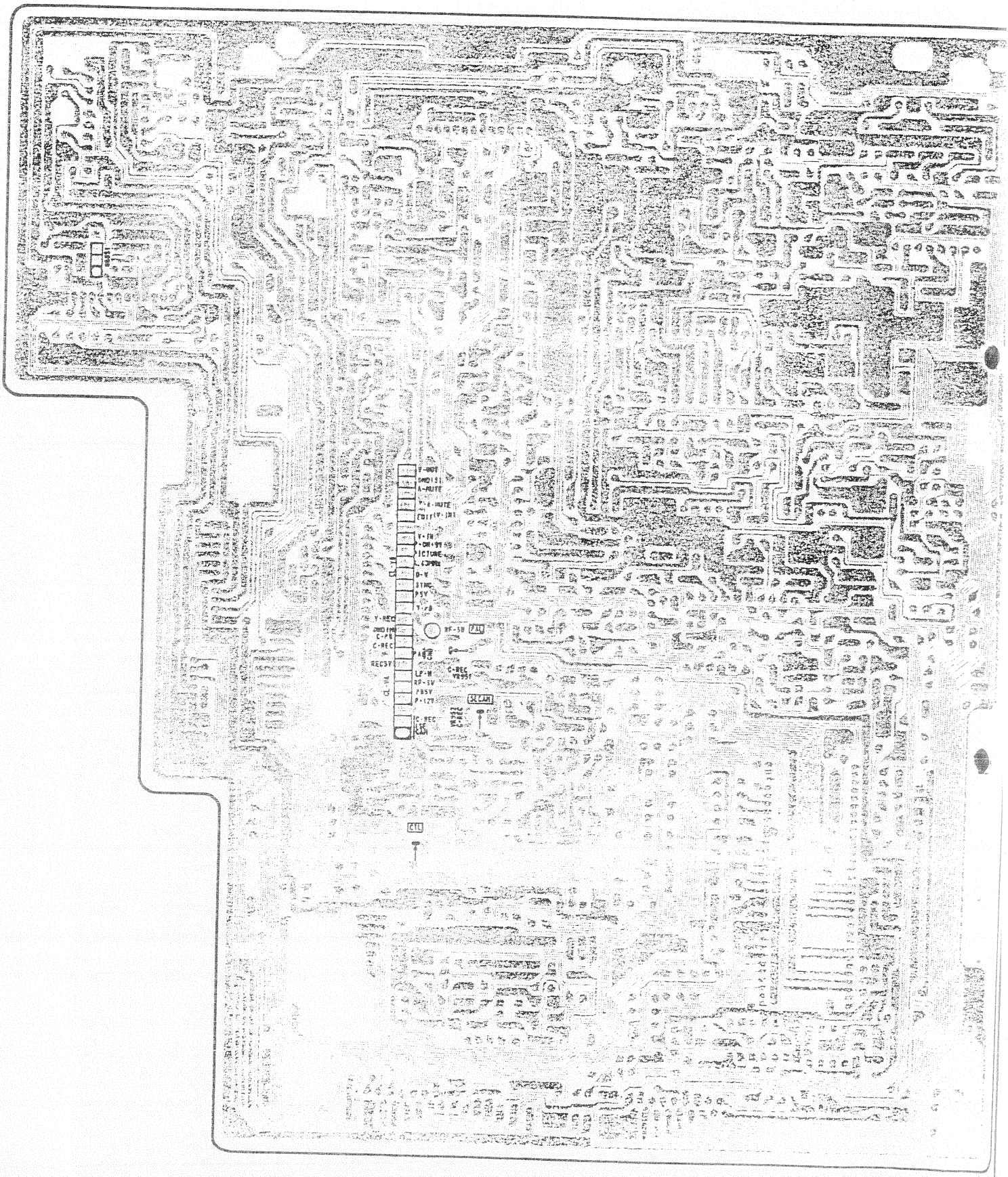
4. TEST POINTS

4-1. MCV-A PCB Mk



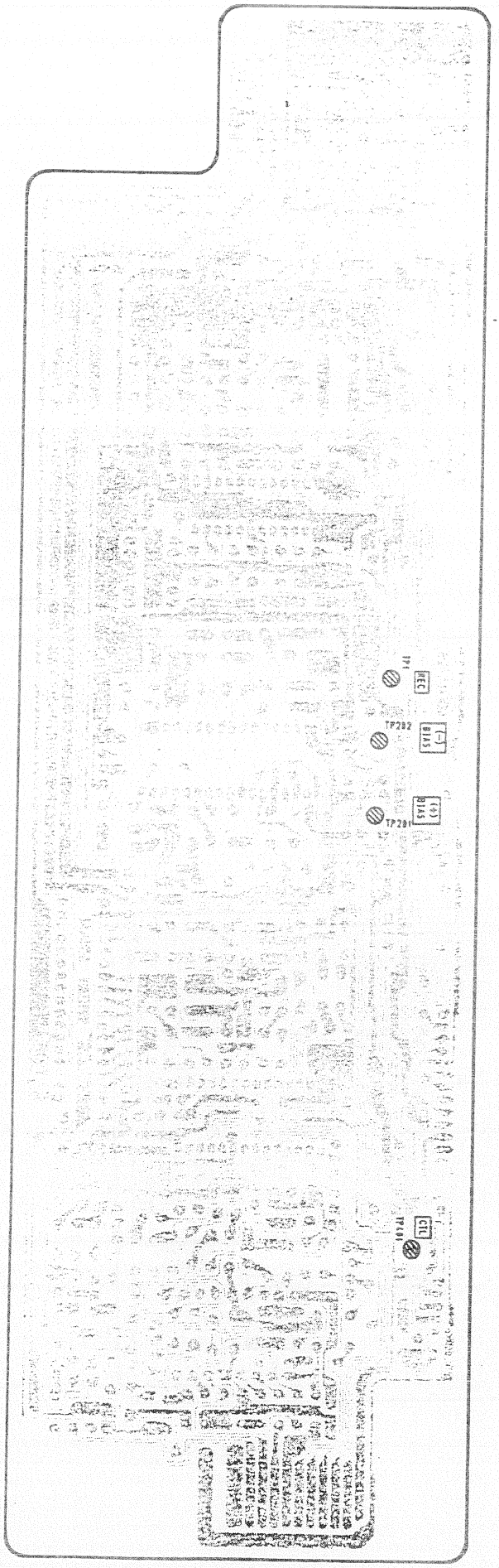
4. TEST POINTS

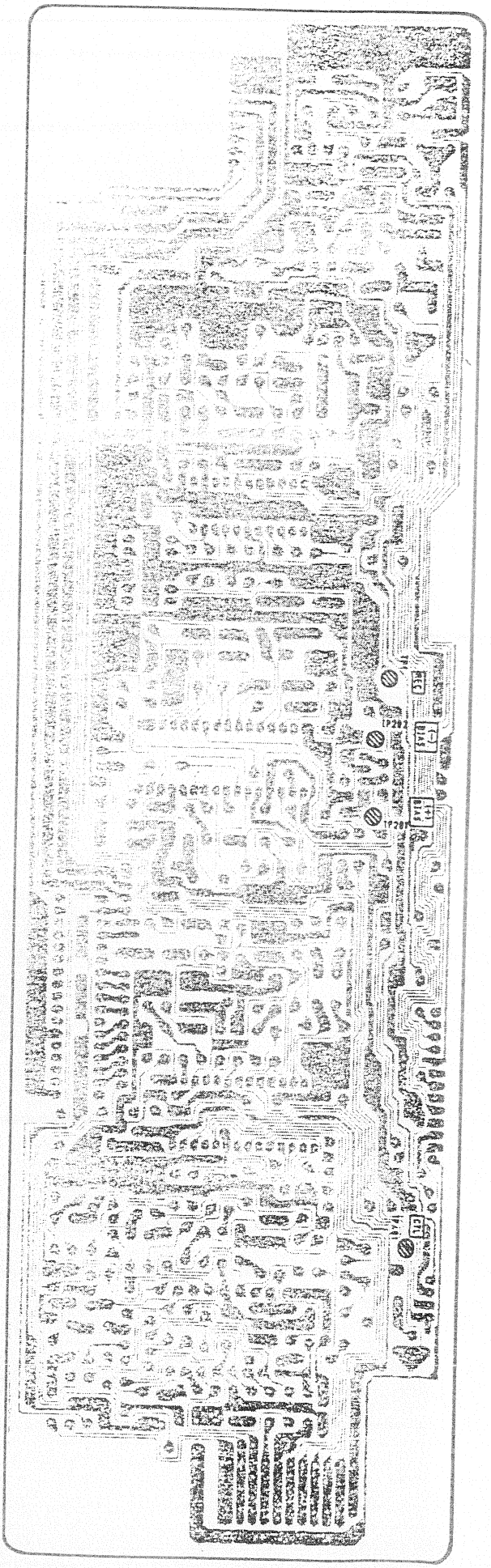
4-1. MCV-A PCB MkII



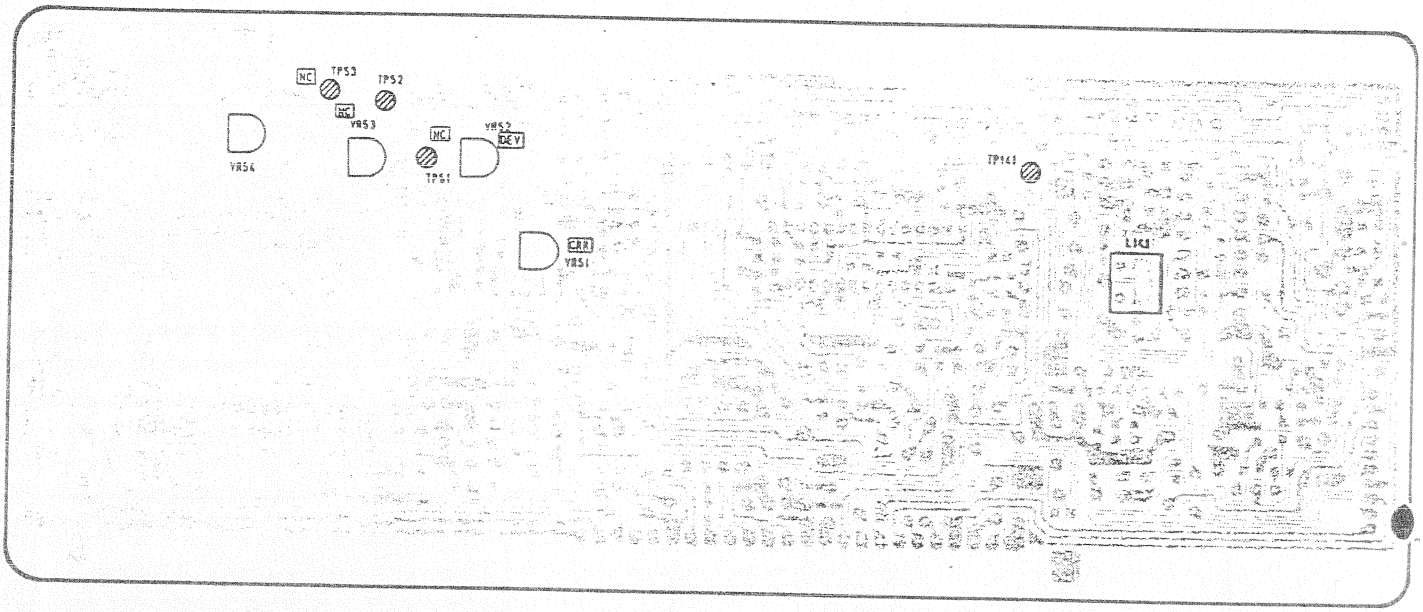
4-2. MCV-B PCB MkI

MkII

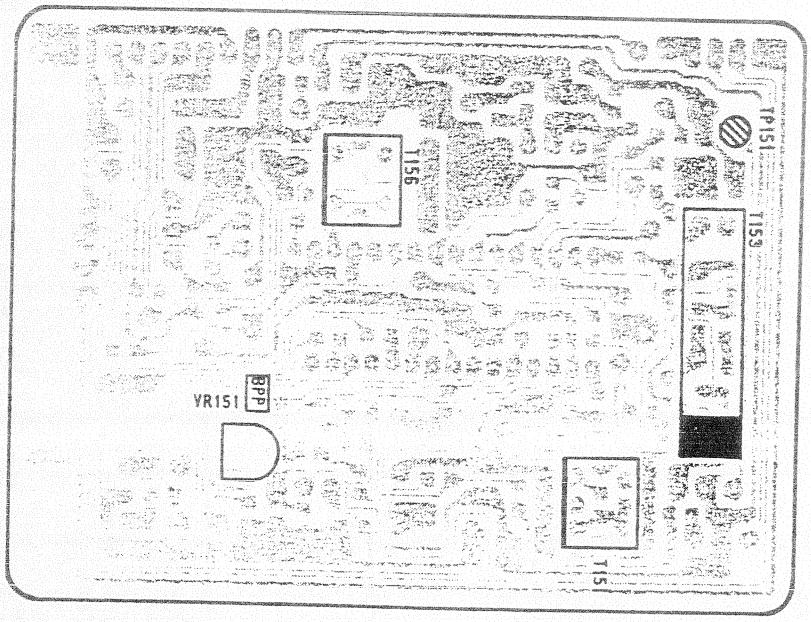




4-3. MSV-A PCB



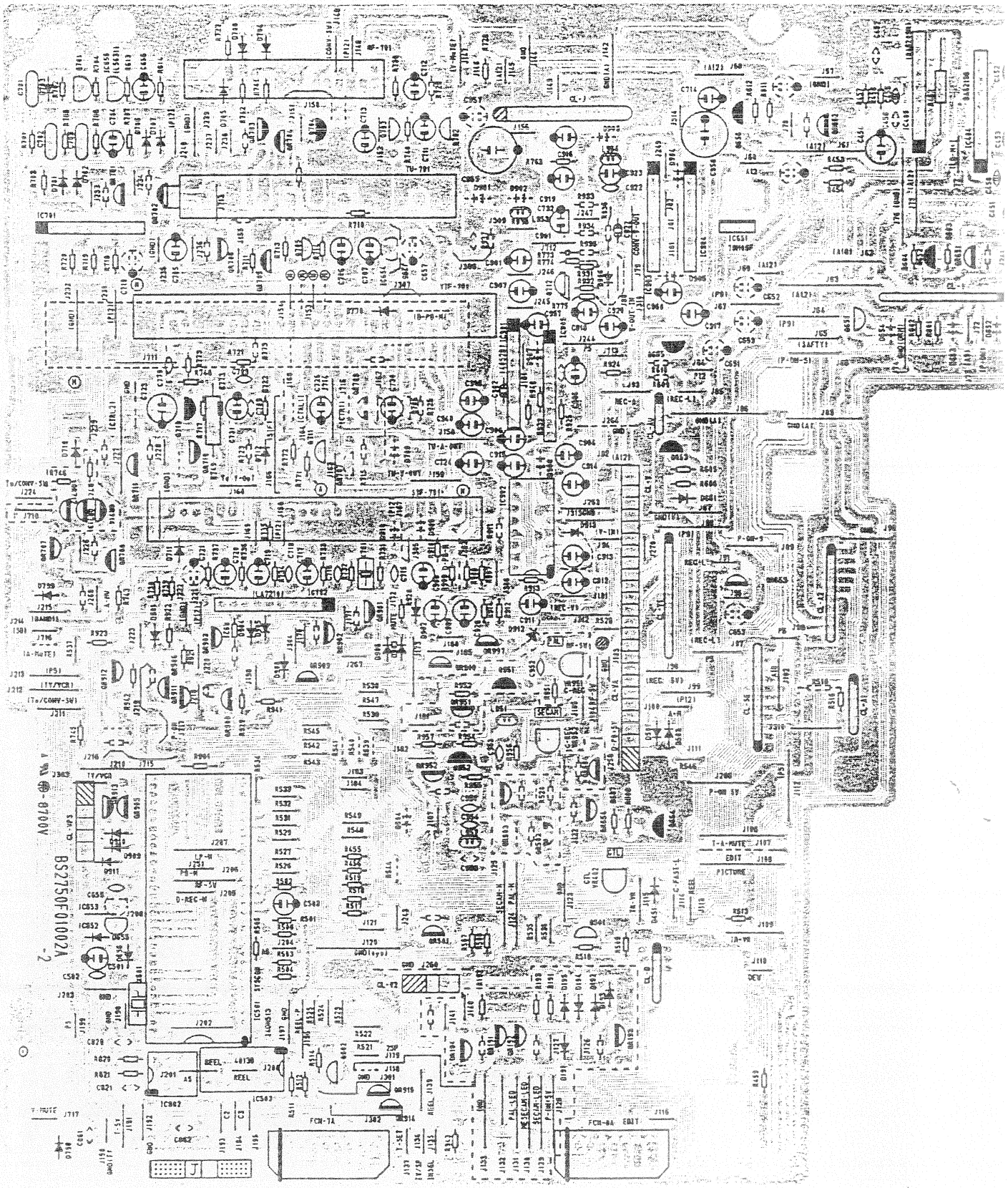
4-4. MSV-B PCB



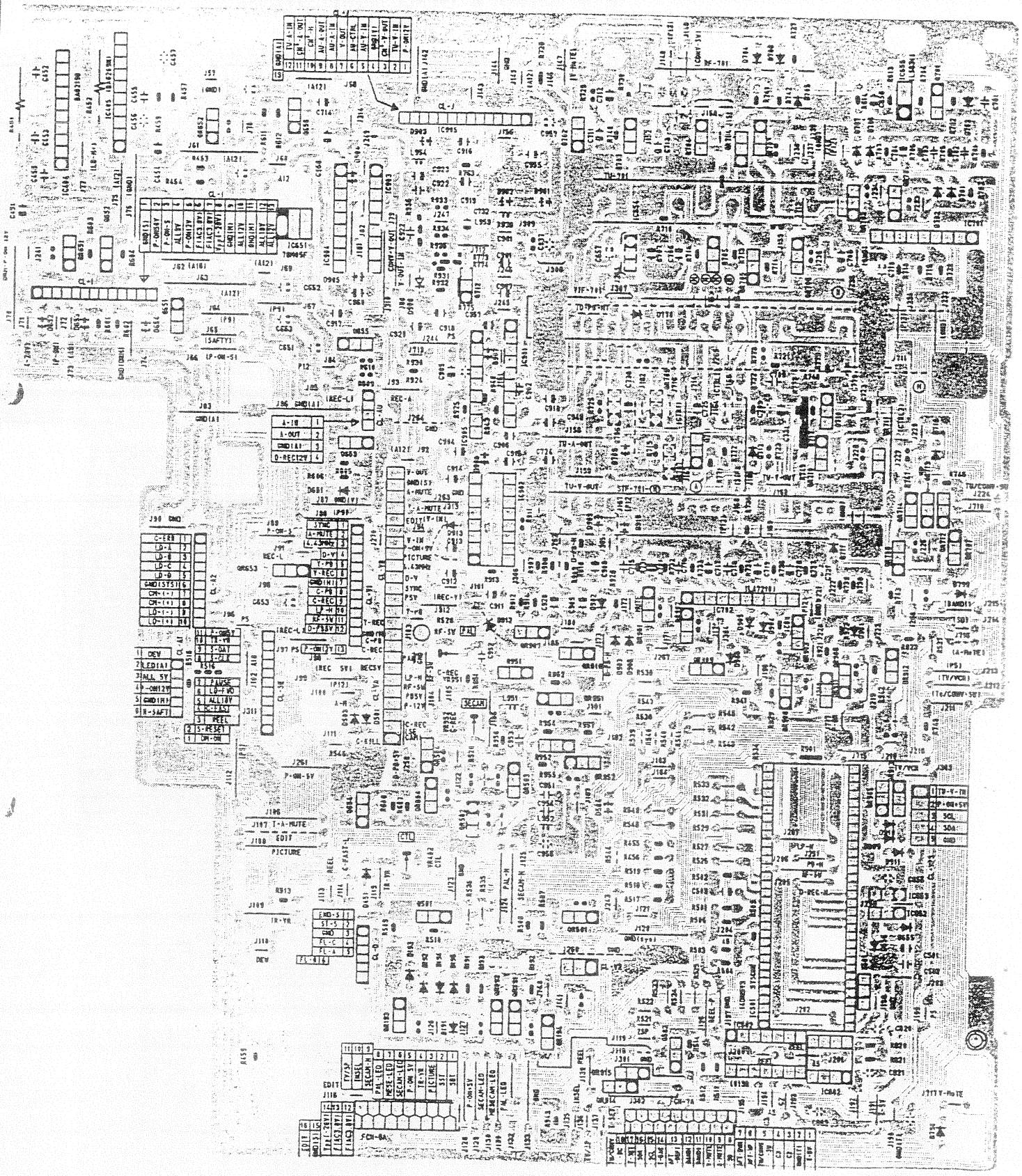
BS2750F01003B

5. P.C.BOARD TOP AND BOTTOM VIEWS

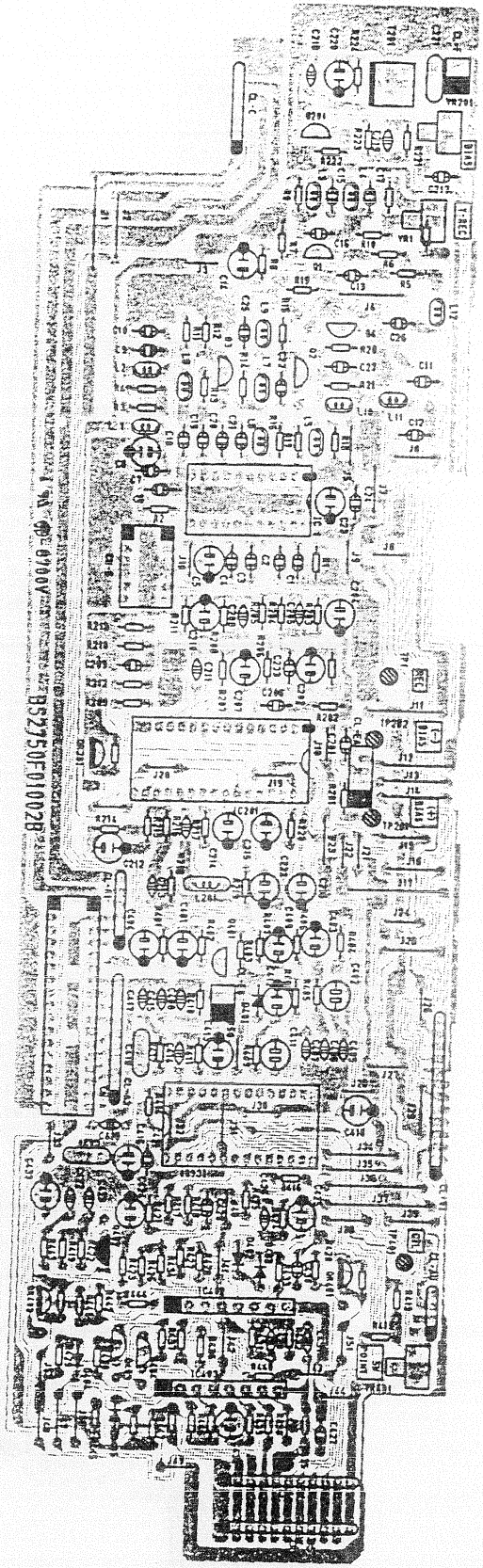
5-1. MCV-A PCB TOP VIEW



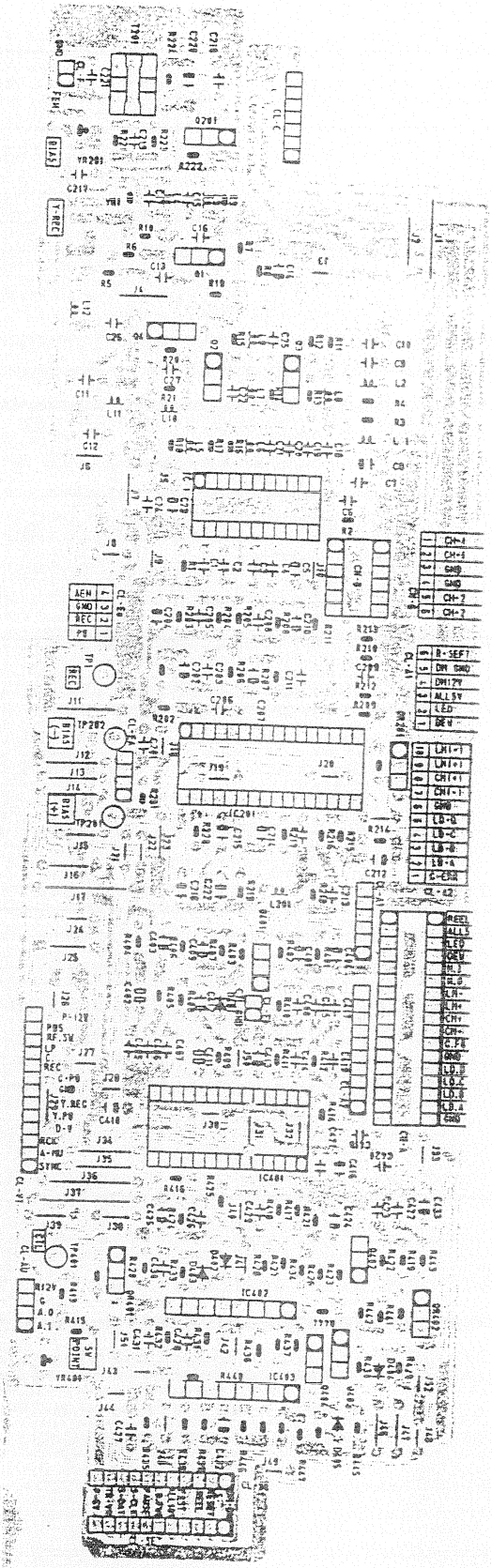
MCV-A PCB BOTTOM VIEW MkII



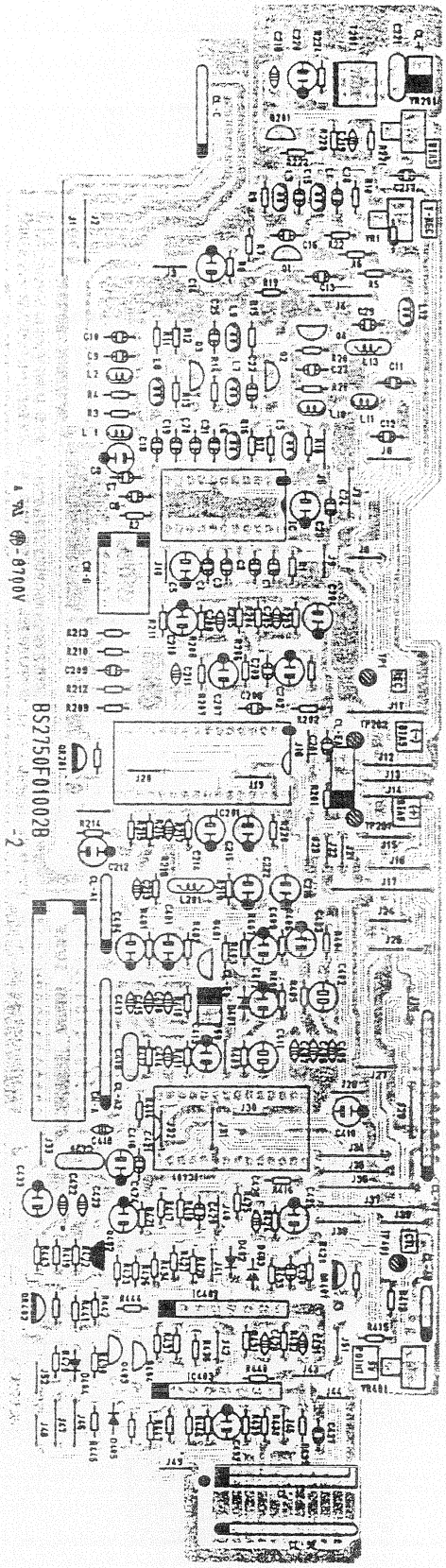
5-2. MCV-B PCB TOP VIEW



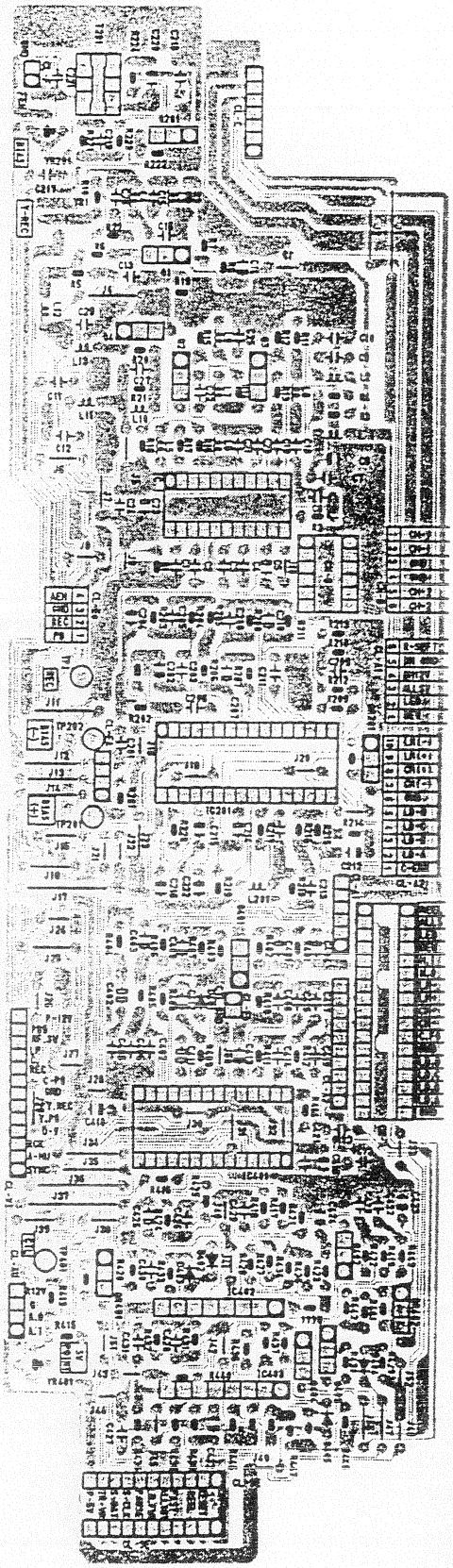
MCV-B PCB BOTTOM VIEW



5-2. MCV-B PCB TOP VIEW



MCV-B PCB BOTTOM VIEW



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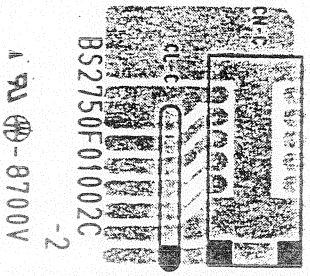
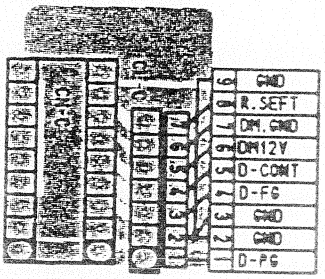
5-3. MCV-C PCB TOP VIEW

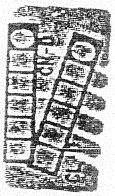


MCV-C PCB BOTTOM VIEW

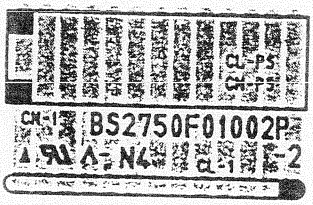


5-4. MCV-D PCB TOP VIEW

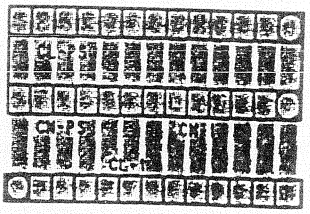
MCV-D PCB BOTTOM VIEW



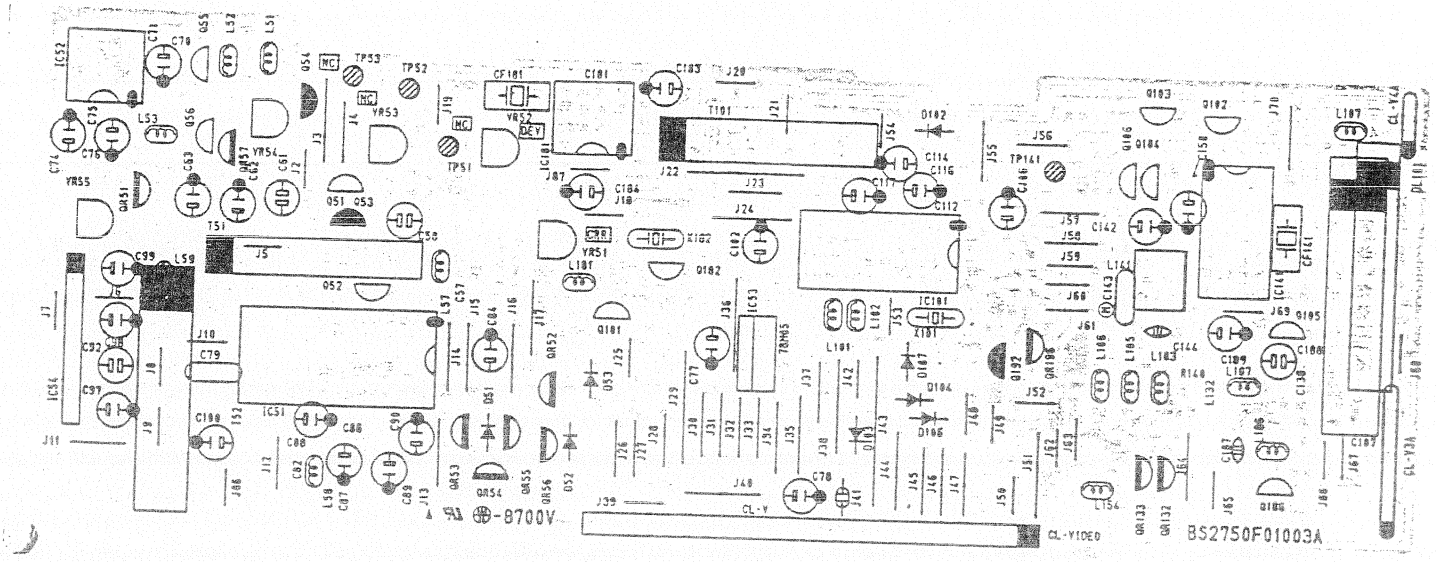
5-5. MCV-P PCB TOP VIEW



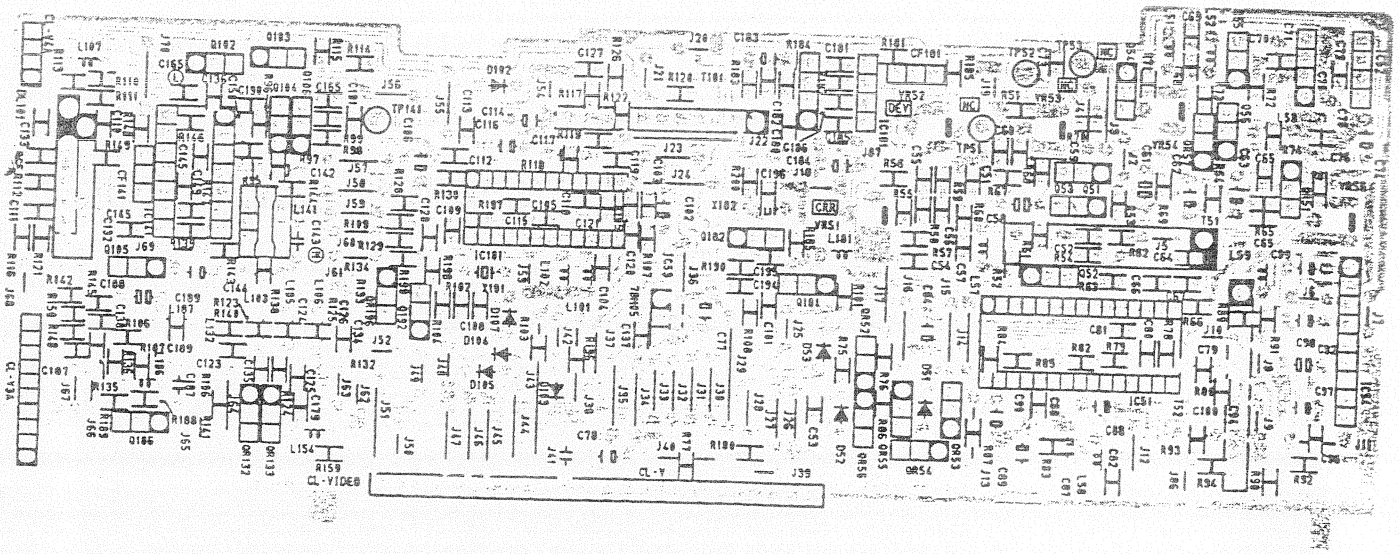
MCV-P PCB BOTTOM VIEW



5-7. MSV-A PCB TOP VIEW



MSV-A PCB BOTTOM VIEW



7-7. STANDARD NOTES

Temperature character of mark

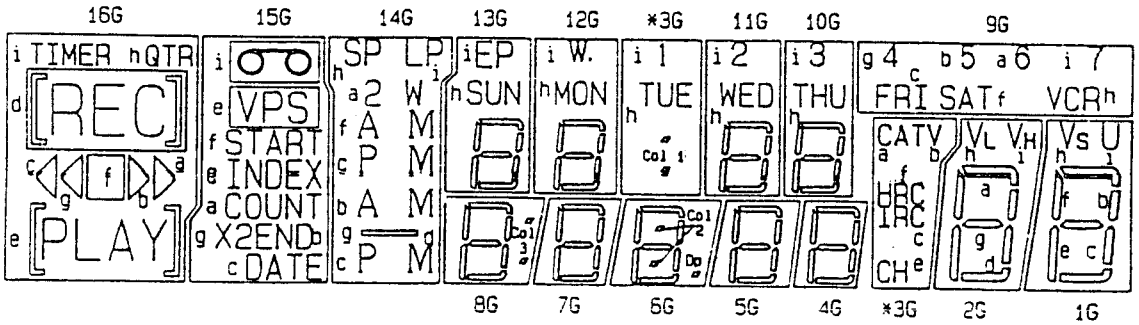
Mark	Capacity change rate	Standard temperature	Use temperature of extent
(B)	± 10 %	20 °C	-25 ~ +85°C
(F)	+30−80%	20 °C	-25 ~ +85°C
(SR)	± 15 %	20 °C	-25 ~ +85°C
(Z)	+30−80%	20 °C	-10 ~ +70°C

WARNING

Replacement parts which special safety characteristics are identified by ⚠ 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 to make leakage current or resistance measurement to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

NOTES

① Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since this drawing was prepared.
② All resistance values are indicated in ohm (K=10^3, M=10^6).
③ Resister wattage without mentioned are 1/5W.
④ All capacitance values are indicated in μF (P=10^{-6}μF).



CONTROLE DE SECURITE APRES INTERVENTION

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.

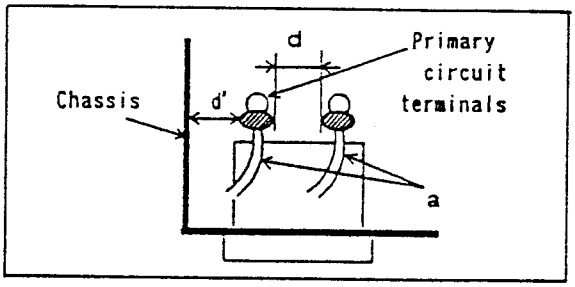


Table 1 : Ratings for selected areas

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 /500 V DC	3 kV 1minute	≧4 mm (d)
200 to 240 V	Australia			≧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.

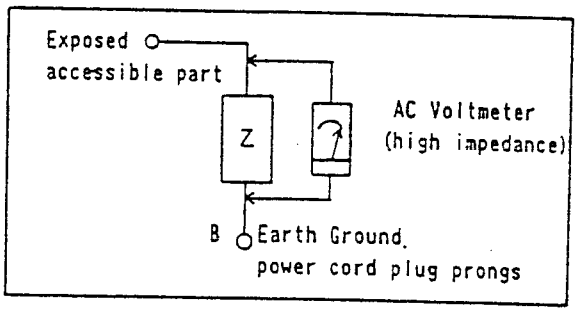


Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA & Canada	0.15 μF, 1.5 k	I ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 200 to 240 V	Europe Australia	2 kΩ	I ≦ 0.7 mA peak I ≦ 2 mA dc	Antenna terminals
		50 kΩ	I ≦ 0.7 mA peak I ≦ 2 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.

PRECAUTIONS DE SECURITE

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.

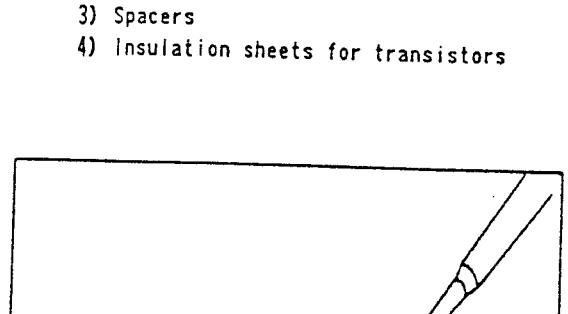
● Precautions during Servicing

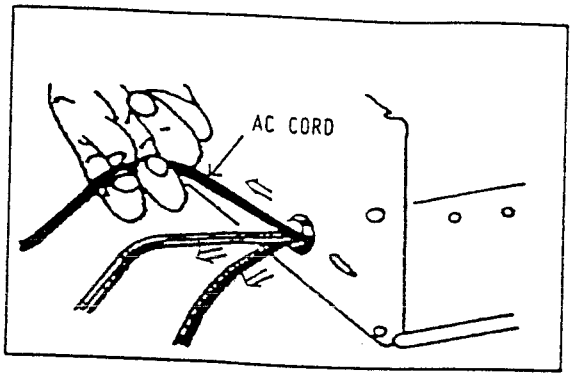
1. Locations requiring special caution are denoted by labels and inscribed on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

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

3. Use specified internal wiring. Note especially :
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially :
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) 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.

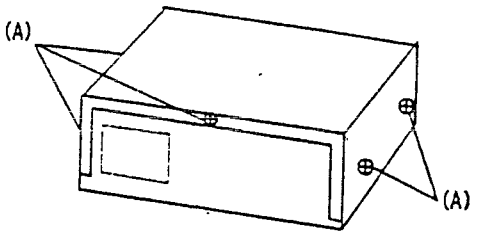
8. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

9. Also check areas surrounding repaired locations.

1. INSTRUCTIONS DEMONTAGES (ENSEMBLE)

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

- Remove 5 screws (A).



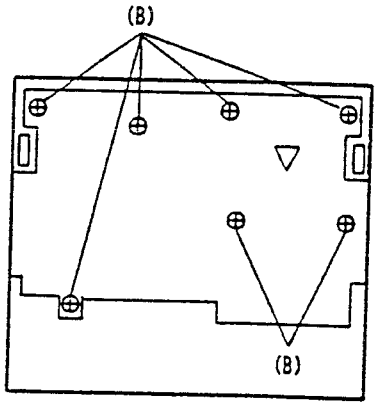
(Fig. 1-1 Rear)

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

- Remove 7 screws (B).

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

- Removal 3 screws (C).
- Unfasten 3 hooks (D) from Cabinet top and bottom.



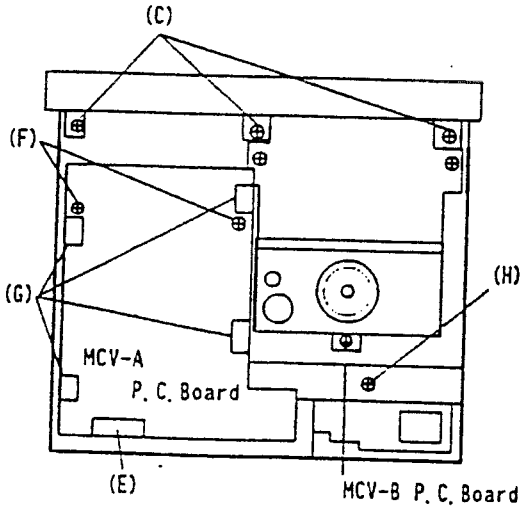
(Fig. 1-2 Bottom View)

1-4 MCV-A P. C. Board Removal (Fig. 1-3)

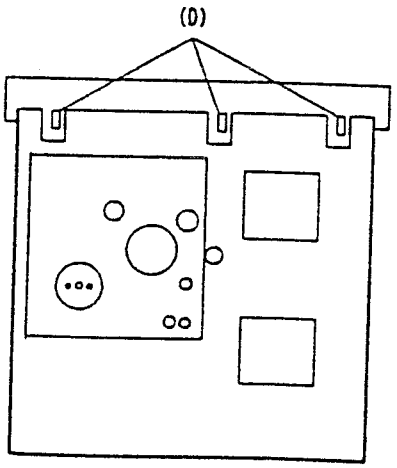
- Removal Ground Plate (E).
- Remove 2 screws (F).
- Unfasten 4 hooks (G) from Cabinet.

1-5 MCV-B P. C. Board Removal (Fig. 1-3)

- Remove 1 screw (H).



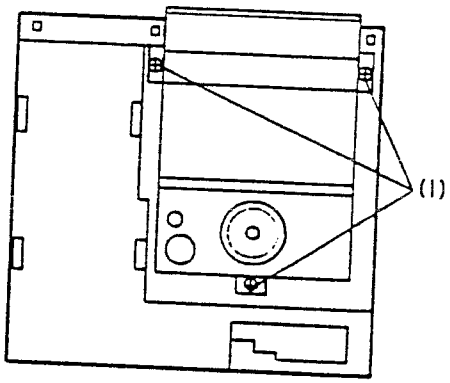
(Fig. 1-3 Top View)



(Fig. 1-4 Bottom View)

1-6 Deck Ass'y Removal (Fig. 1-5)

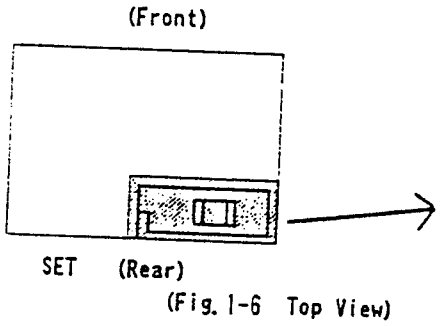
- Remove 3 screws (I).



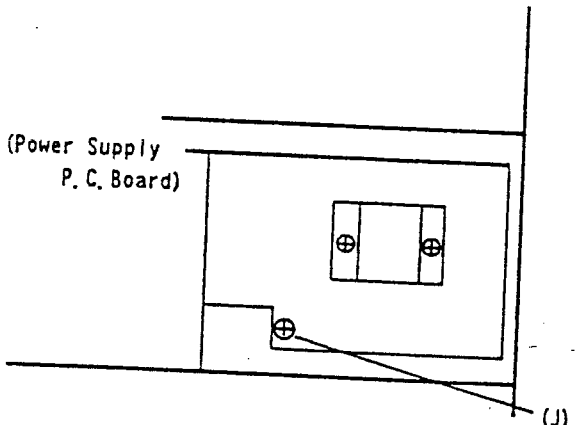
(Fig. 1-5 Top View)

1-7 Power Supply P. C. Board Removal (Figs. 1-6 and 1-7)

- Remove 1 screw (J).



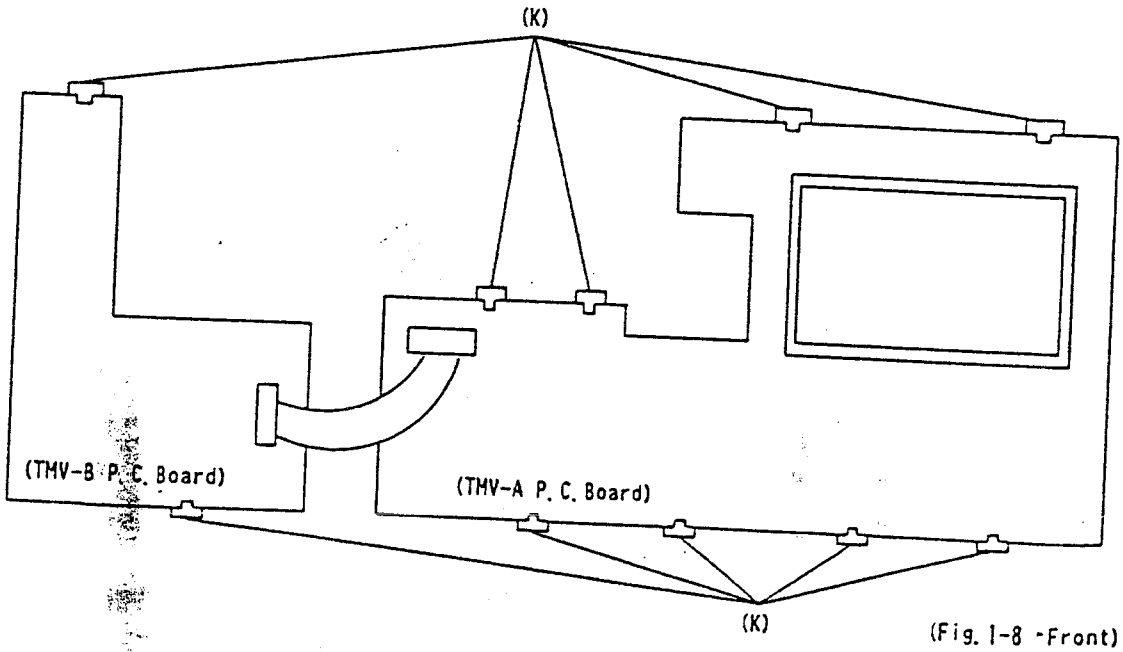
(Fig. 1-6 Top View)



(Fig. 1-7 Top View)

1-8 TMV-A P. C. Board and TMV-B P. C. Board Removal (Fig. 1-8)

- Release 10 hooks (K) from Main Cabinet.



(Fig. 1-8 -Front)

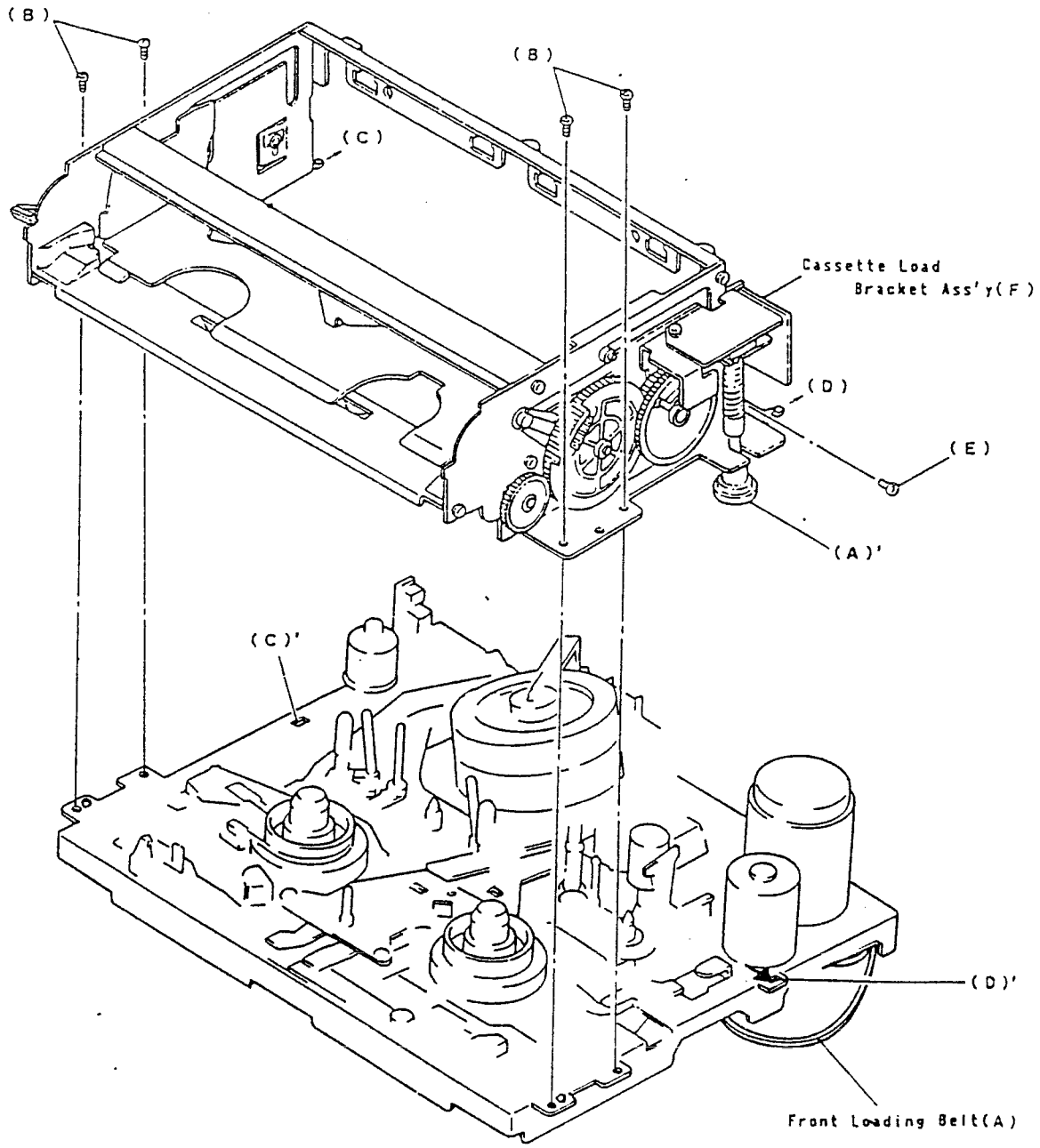
2. INSTRUCTIONS DEMONTAGES (PLATINE)

(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, lift up front edge of the Front Loading Unit and take it to forward.)

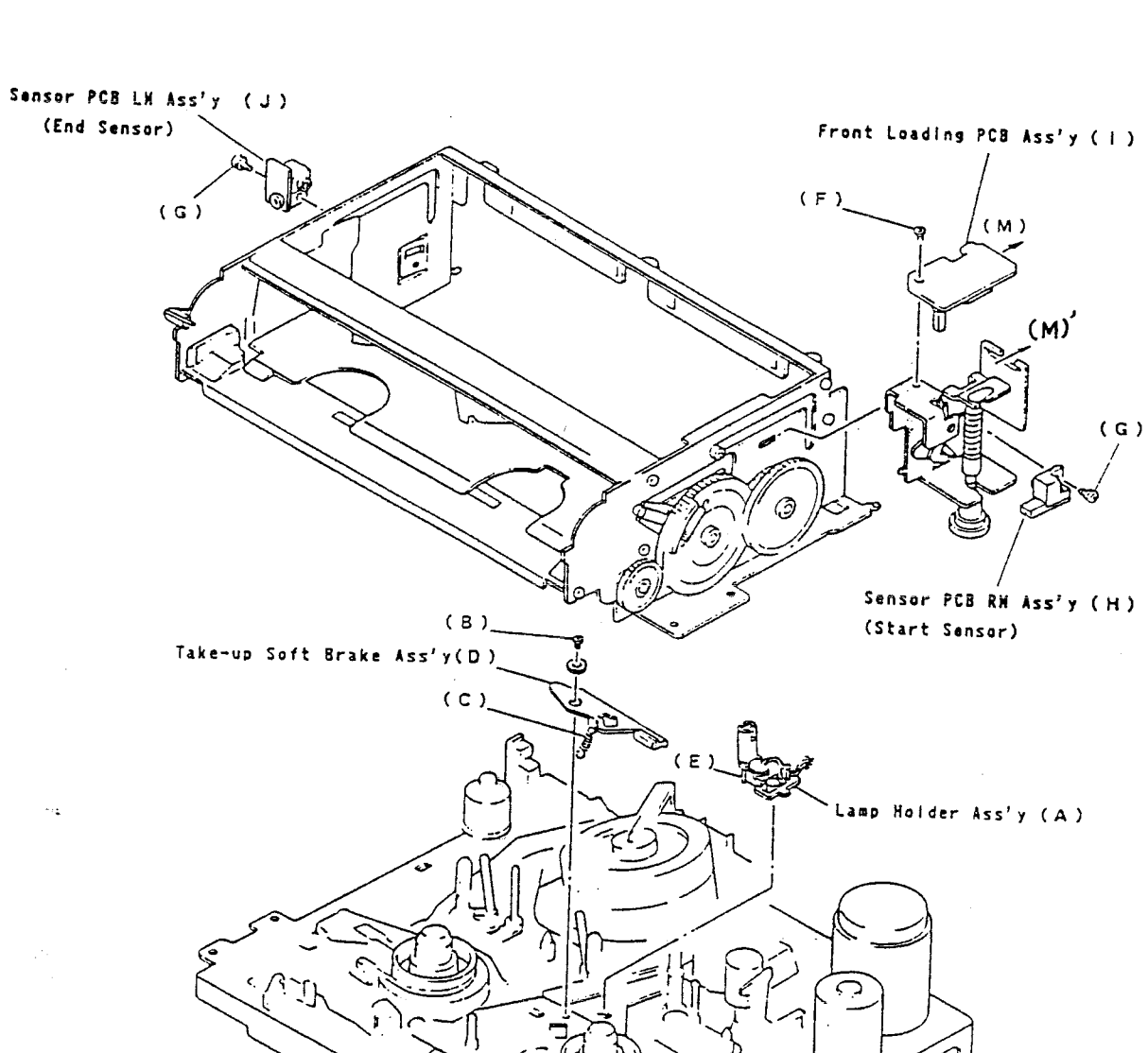
(2) Cassette Load Bracket Ass'y

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



(3) Photo Sensor

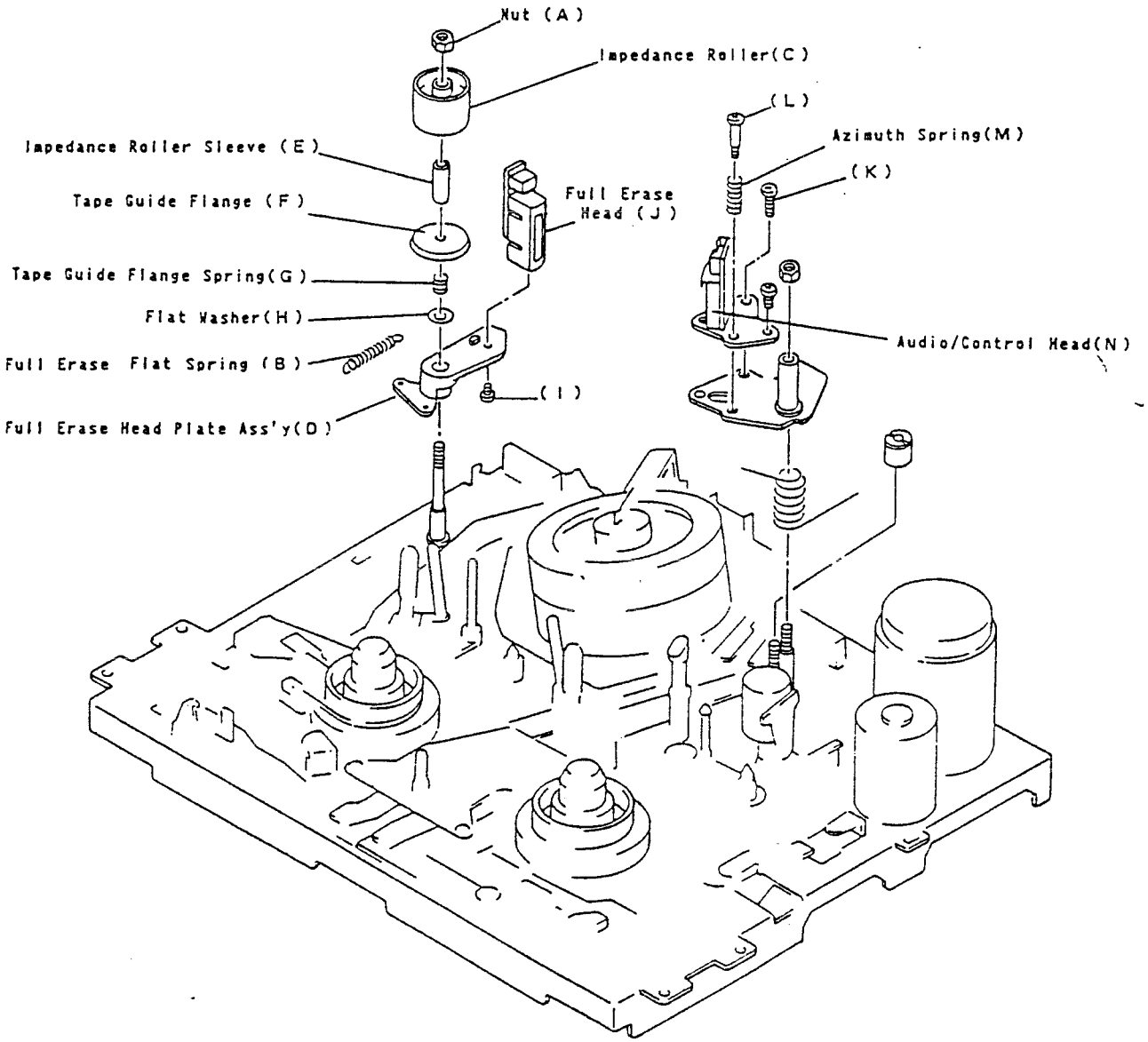
1. Replacement of Lamp Holder Ass'y (A).
   (1) Remove screw (B), move away the Take-up Soft Brake Ass'y (D).
   (At this time, do not take off the spring (C).)
   (2) Hold Lamp Holder Ass'y (A) and pull up to remove the hook (E) from the chassis.
   (3) Turn the Lamp Holder Ass'y (A) counterclockwise and take out the Lamp Holder Ass'y (A).
2. Start Sensor replacement of sensor PCB PM Ass'y (H).
   (1) Remove screw (F) and take off the Front Loading PCB Ass'y (I).
   (2) Remove screw (G) and take off the Sensor PCB RM Ass'y (H).
3. End Sensor replacement of sensor PCB LM Ass'y (J).
   (1) Remove screw (G) and take off the Sensor PCB LM Ass'y (J).



(4) Full Erase Head / Audio Control Head

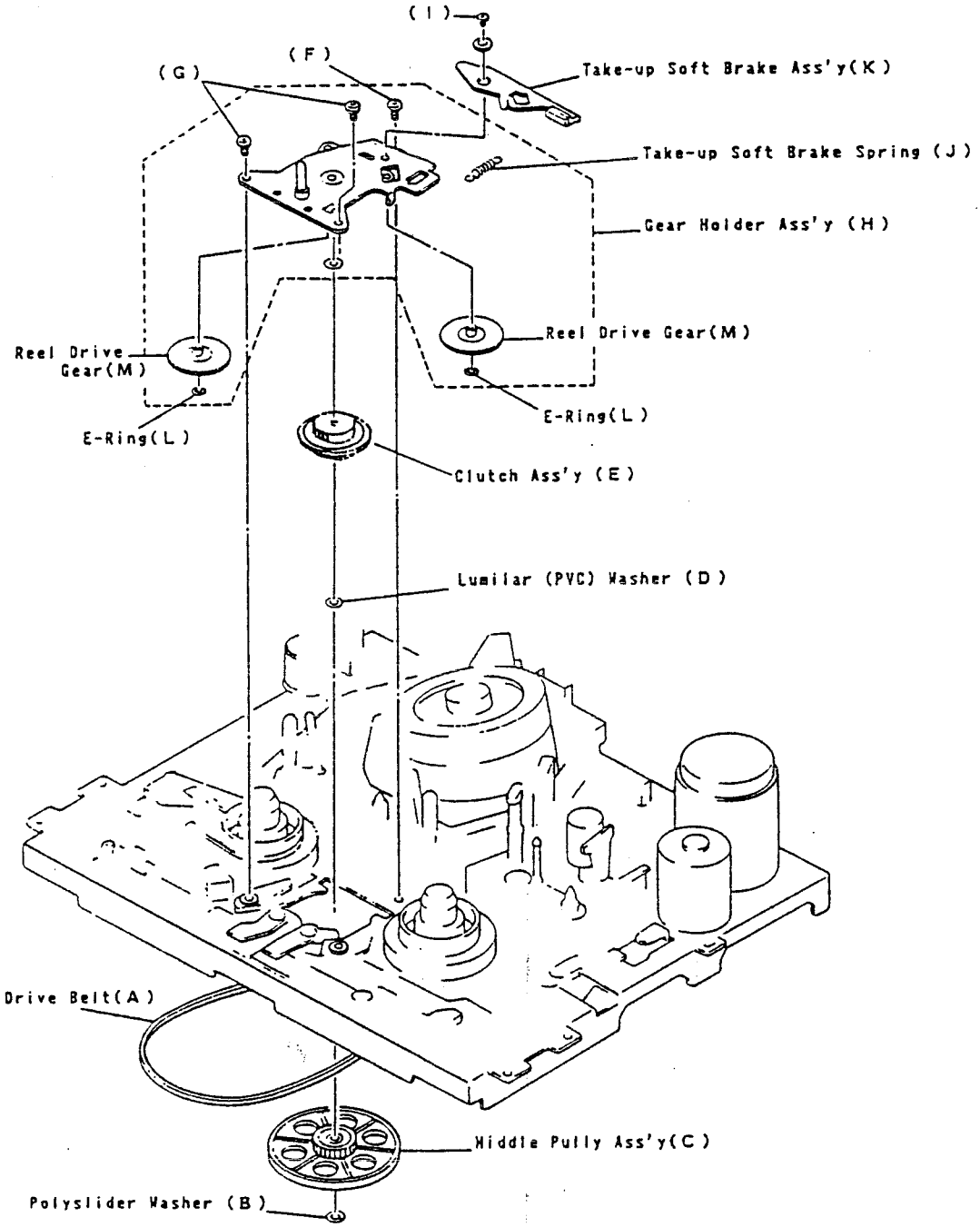
1. Erase Head (except Play Only Model)
   (1) Remove Nut (A).
   (2) Remove Spring (B).
   (3) Take out the Impedance Roller (C), and pull up the Full Erase Head Plate Ass'y (D).
   (Carefully not to lose parts (E) (F) (G) (H) at the time of the Full Erase plate removal.)
   (4) Remove screw (I) and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

Note : When reinstalling the Full Erase Head/Audio Control Head Unit, mechanical adjustment should be performed for proper operation.



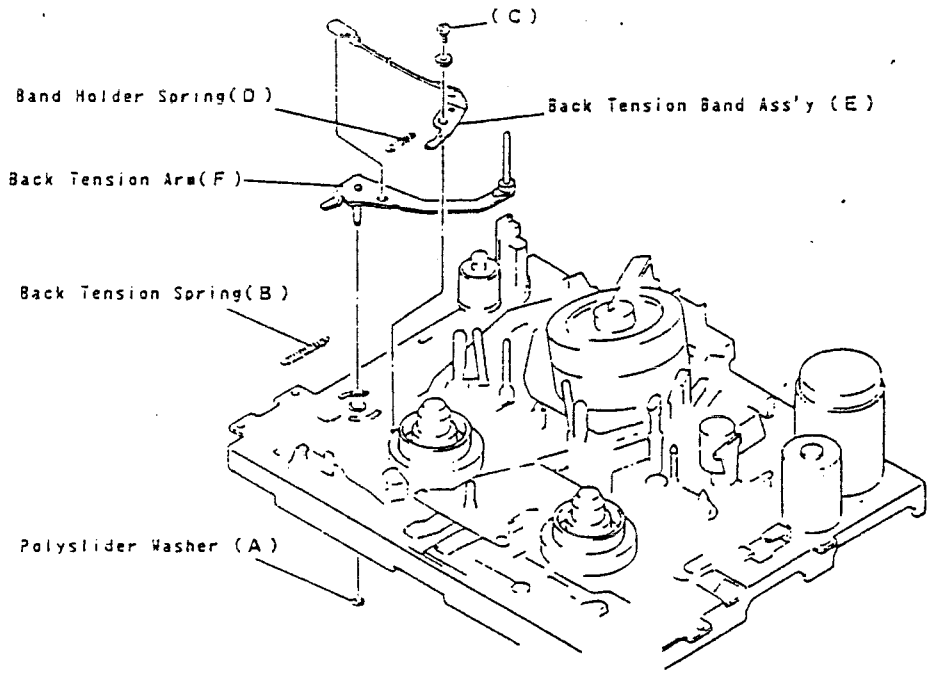
(5) Gear Holder Ass'y

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 screw (F) and 2 screws (G) and take off the Gear Holder Ass'y (H).
6. Remove 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).



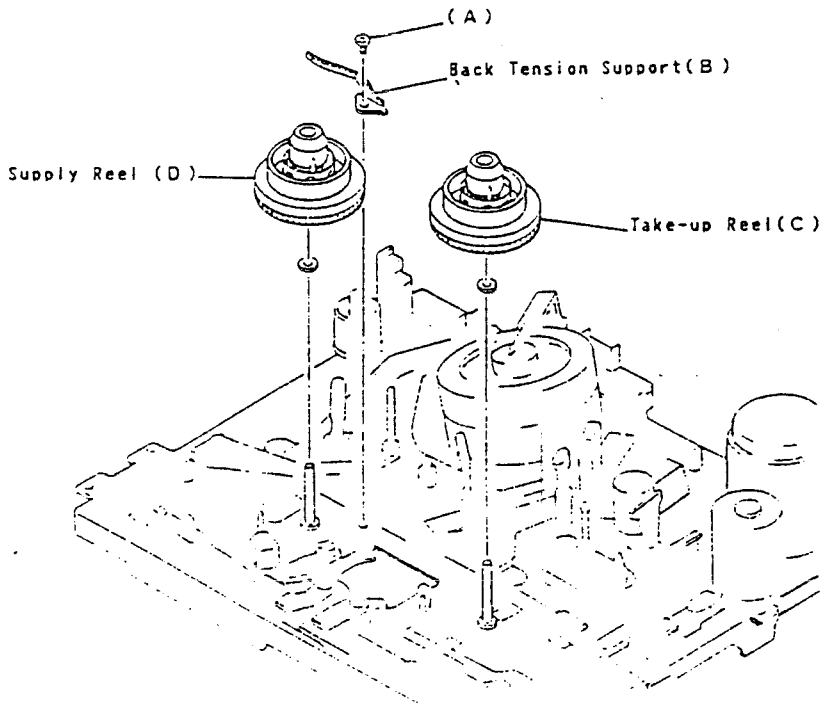
(6) Tension Arm Ass'y

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 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 screw (A) and the Back Tension Support (B).
3. Remove the Take-up Reel (C) and the Supply Reel (D).

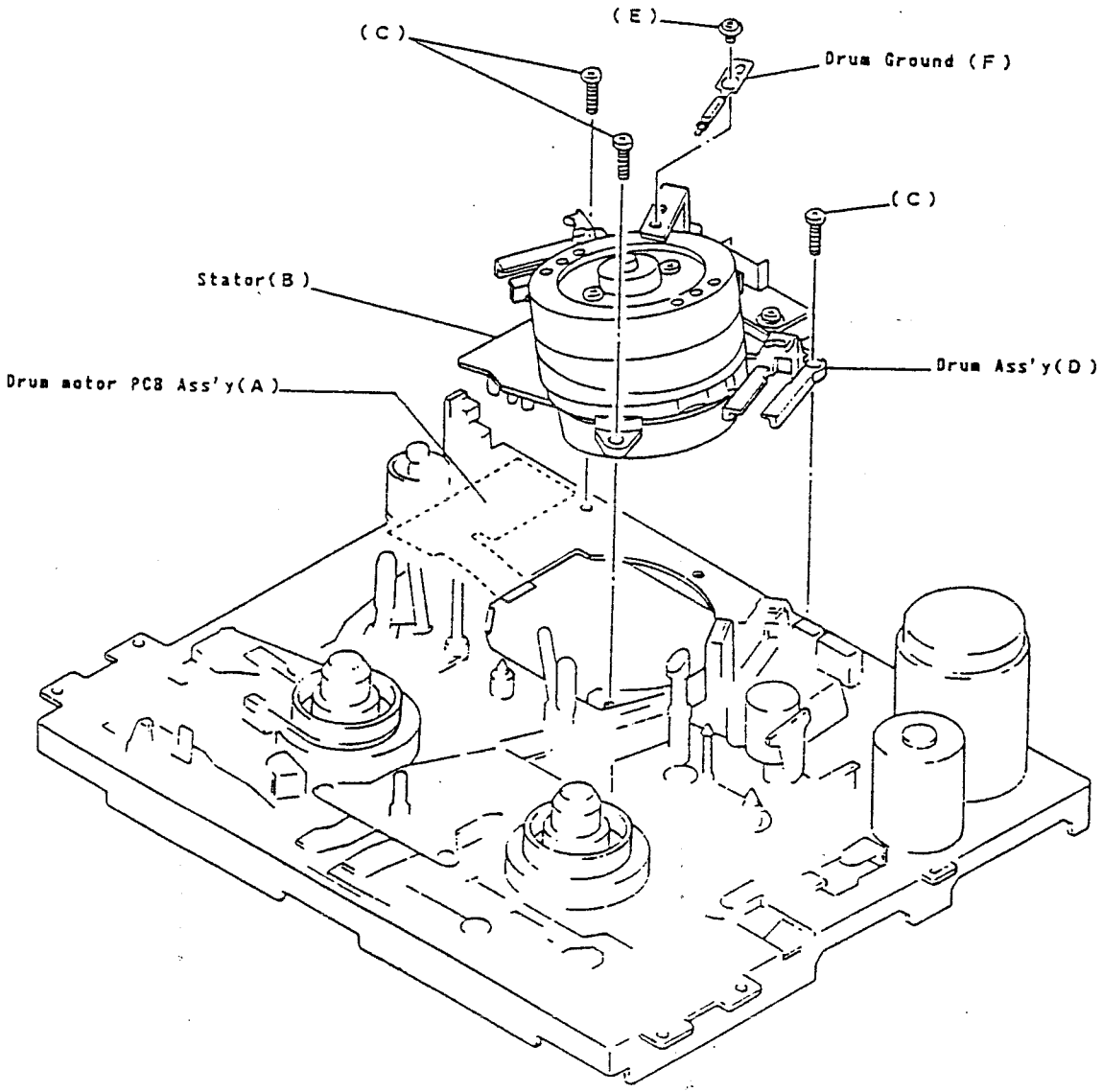


(8) Drum Ass'y

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

≡Remark≡

Take off the Drum Ass'y (D) carefully do not scratch or damage.

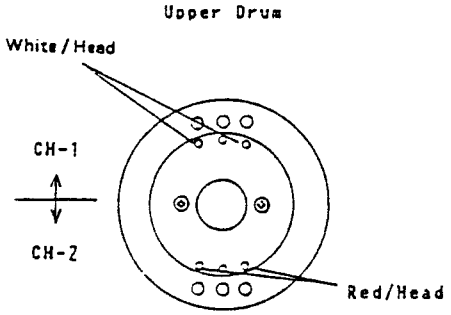


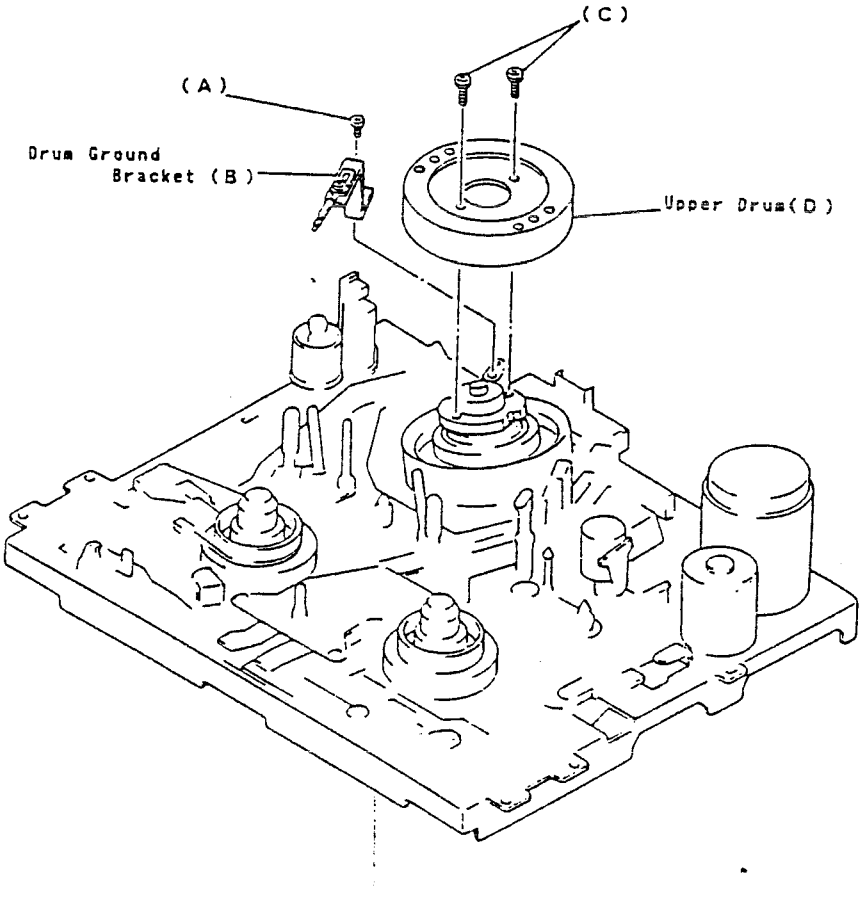
(9) Upper Drum / Reinstallation Upper, Lower Drums and Rotor

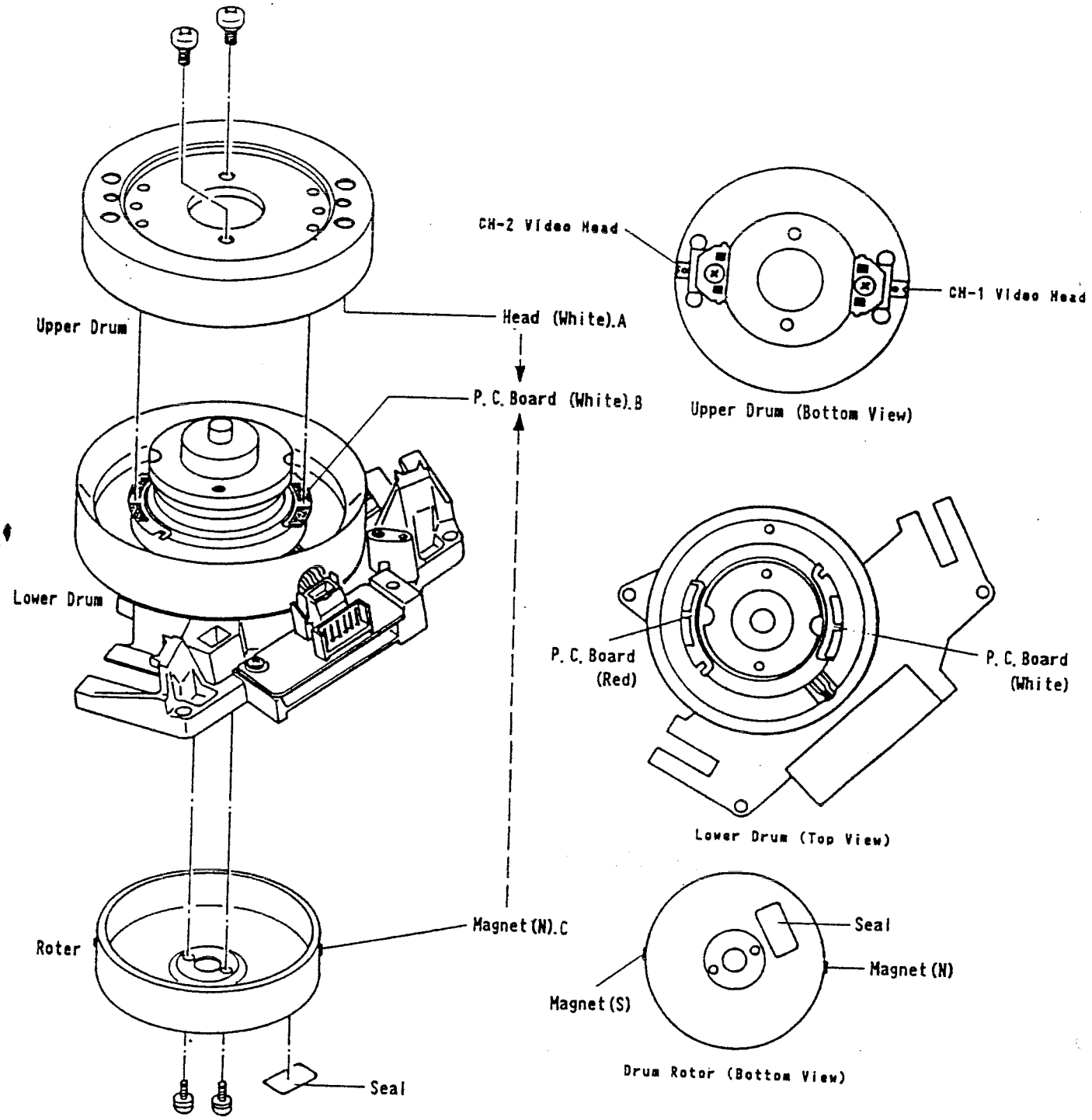
1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Remove screw (A) and take off the Drum Ground Bracket (B).
3. Remove 2 screws (C) and take off the Upper Drum (D).

≡Remark≡

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







≡Remark≡

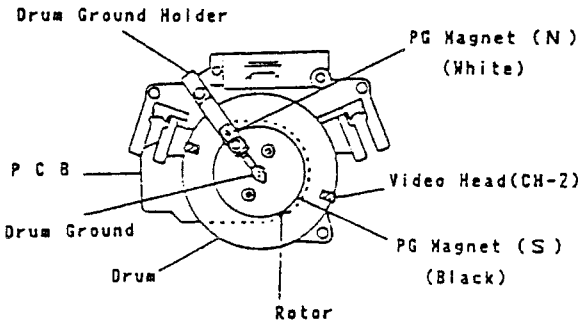
Upper Drum point-A, Lower Drum point-B and Rotor point-C these Points A, B, C, must line-up each other.
Otherwise it will creates problem.

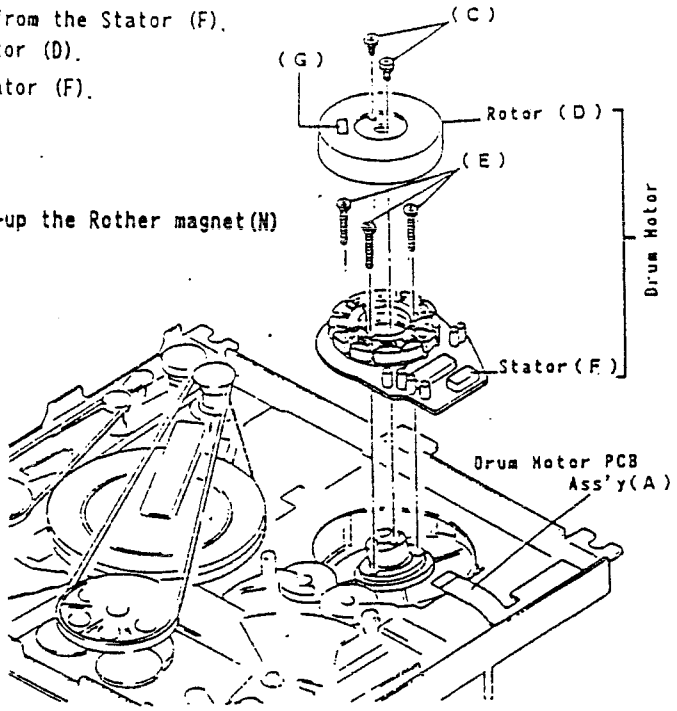
(10) Drum Motor

1. Disconnect 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).

≡Remark≡

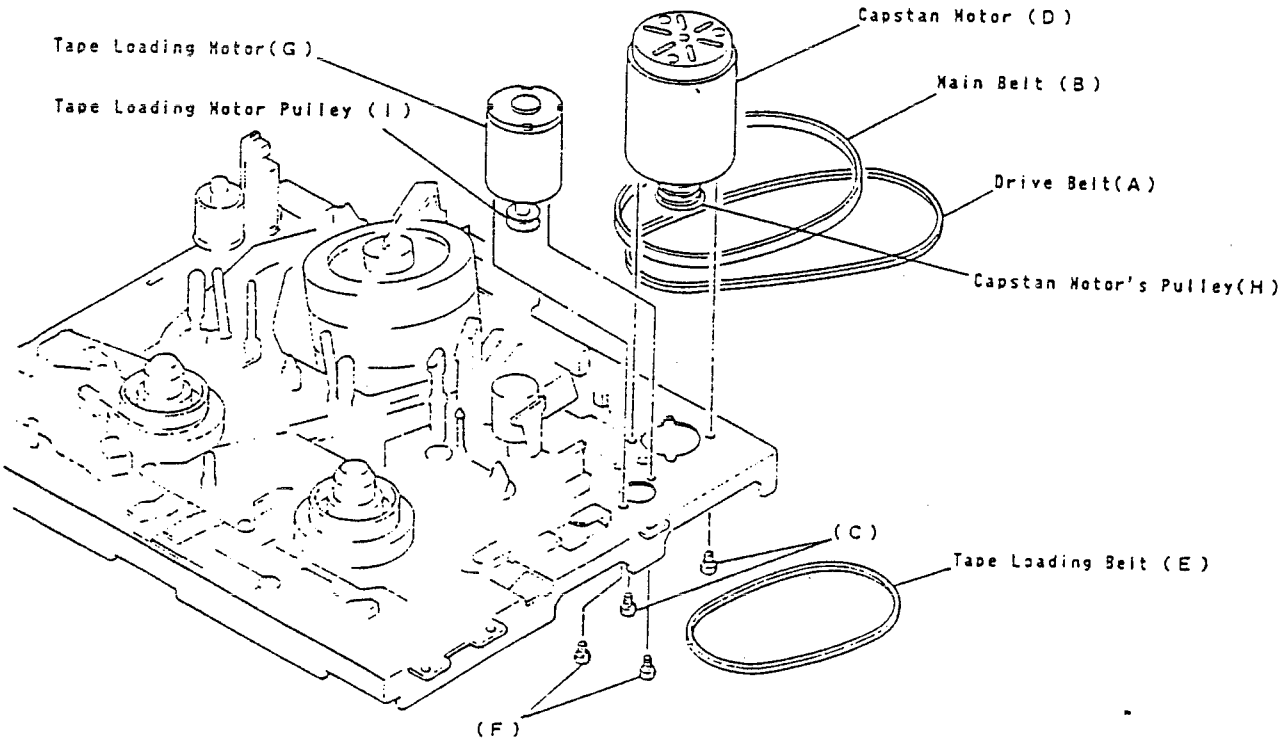
When you reinstoll the Roter. You must align-up the Rother magnet(N) white CH-1 video head. (See Page 2-8.)





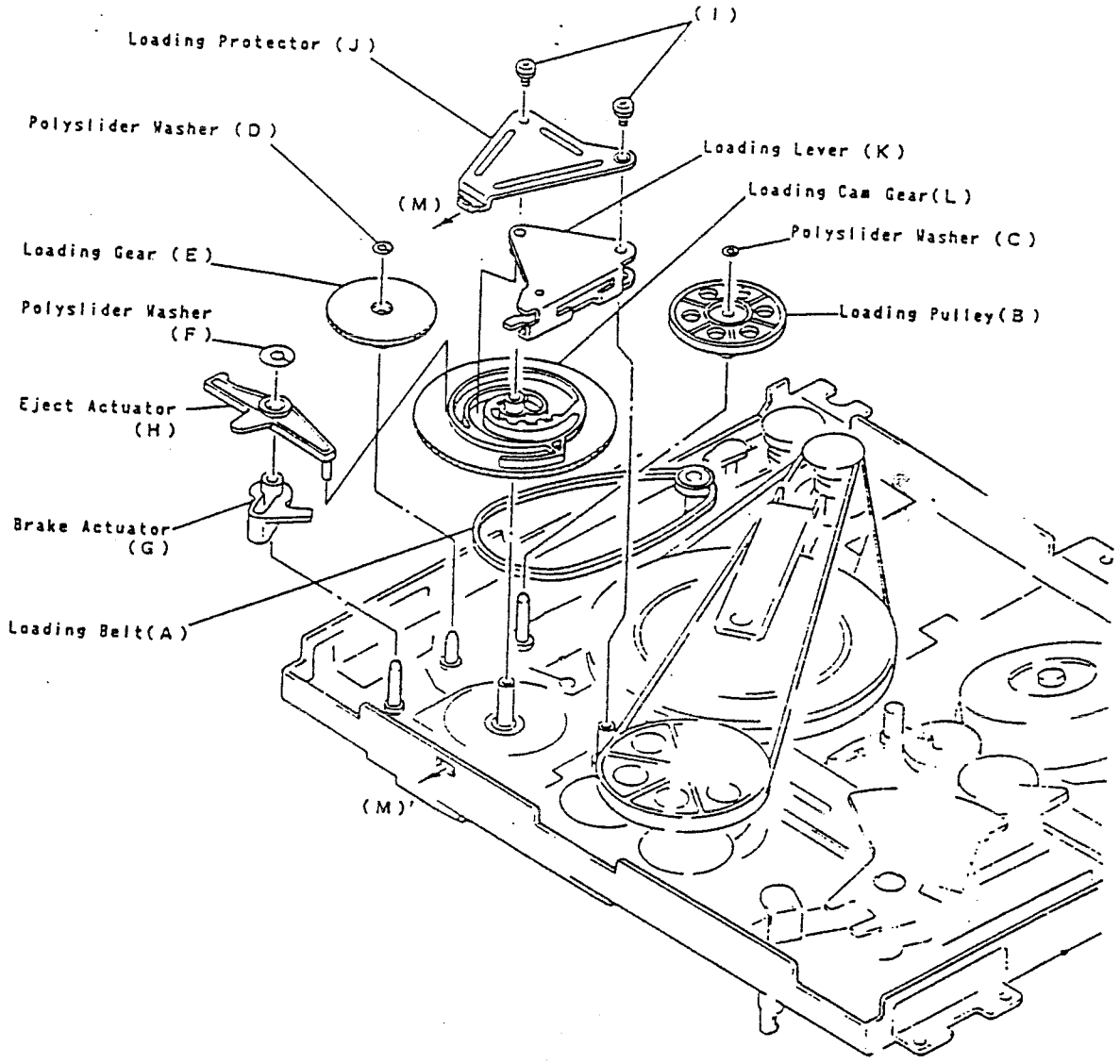
(11) Capstan Motor / Tape Loading Motor

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).

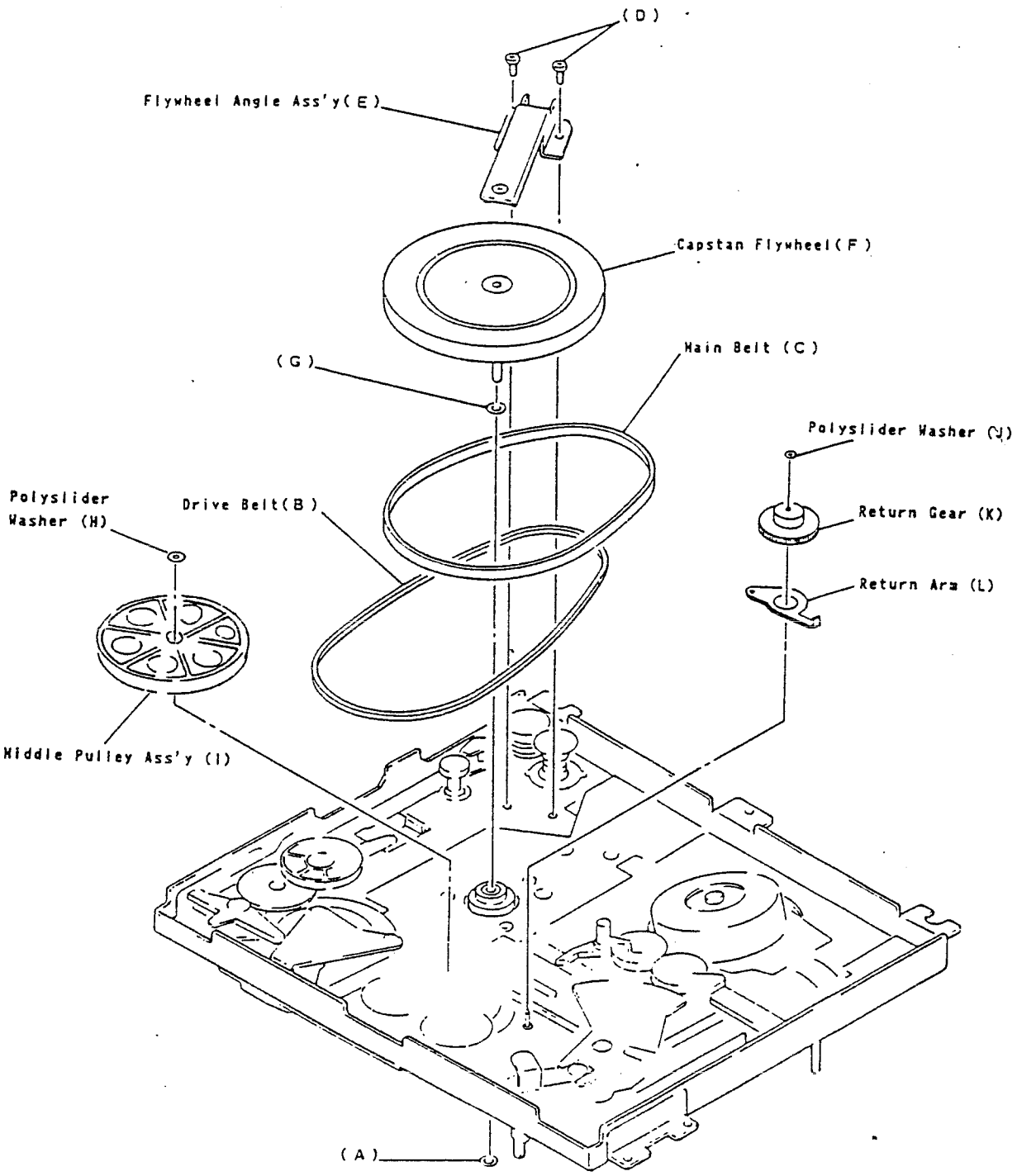


(13) Capstan Flywheel / Return Arm

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).
5. Remove Polyslider Washer (H).
6. Take off the Middle Pulley Ass'y (I).
7. Remove Polyslider Washer (J).
8. Take off the Return Gear (K) and Return Arm (L).

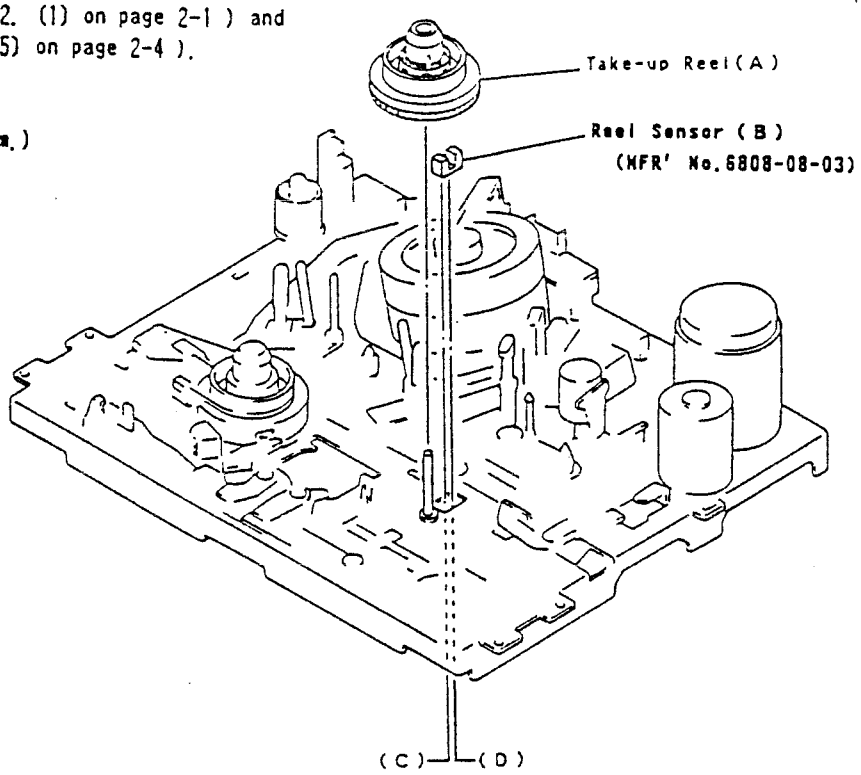
≡Remark≡

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



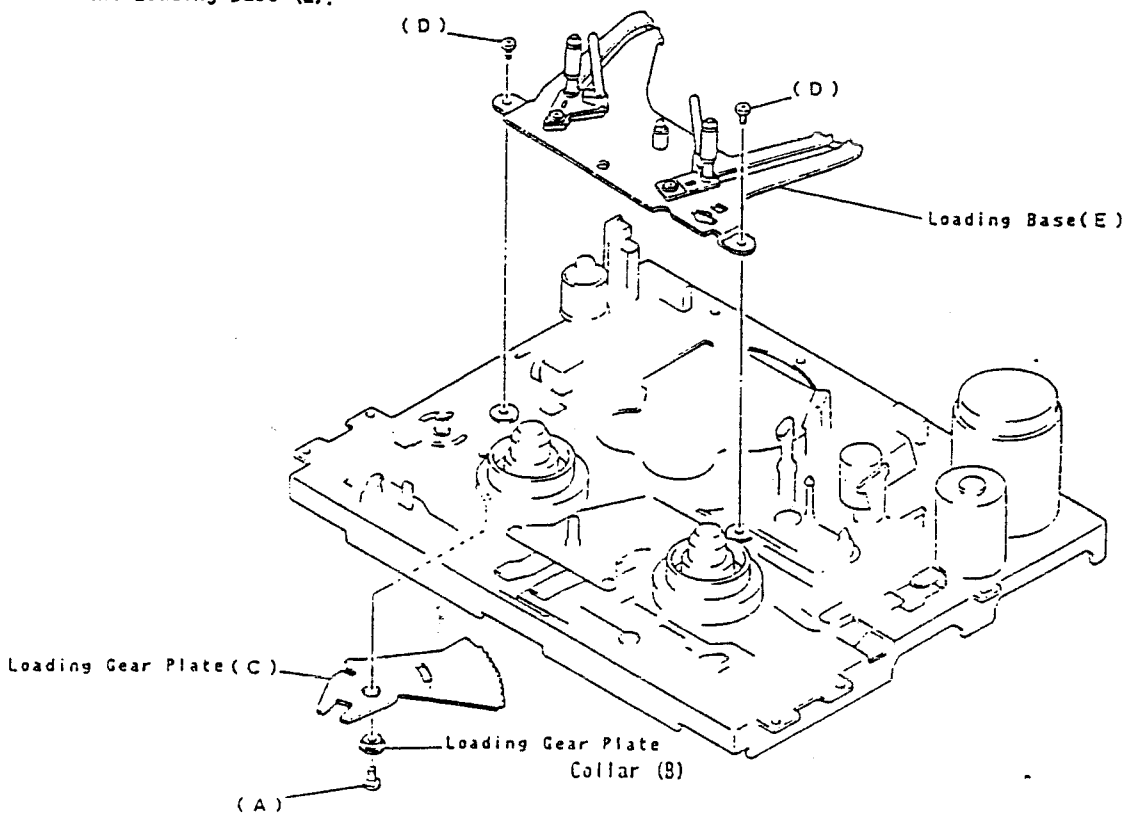
(14) Reel Sensor

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) from bottom.)



(15) Loading Base

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

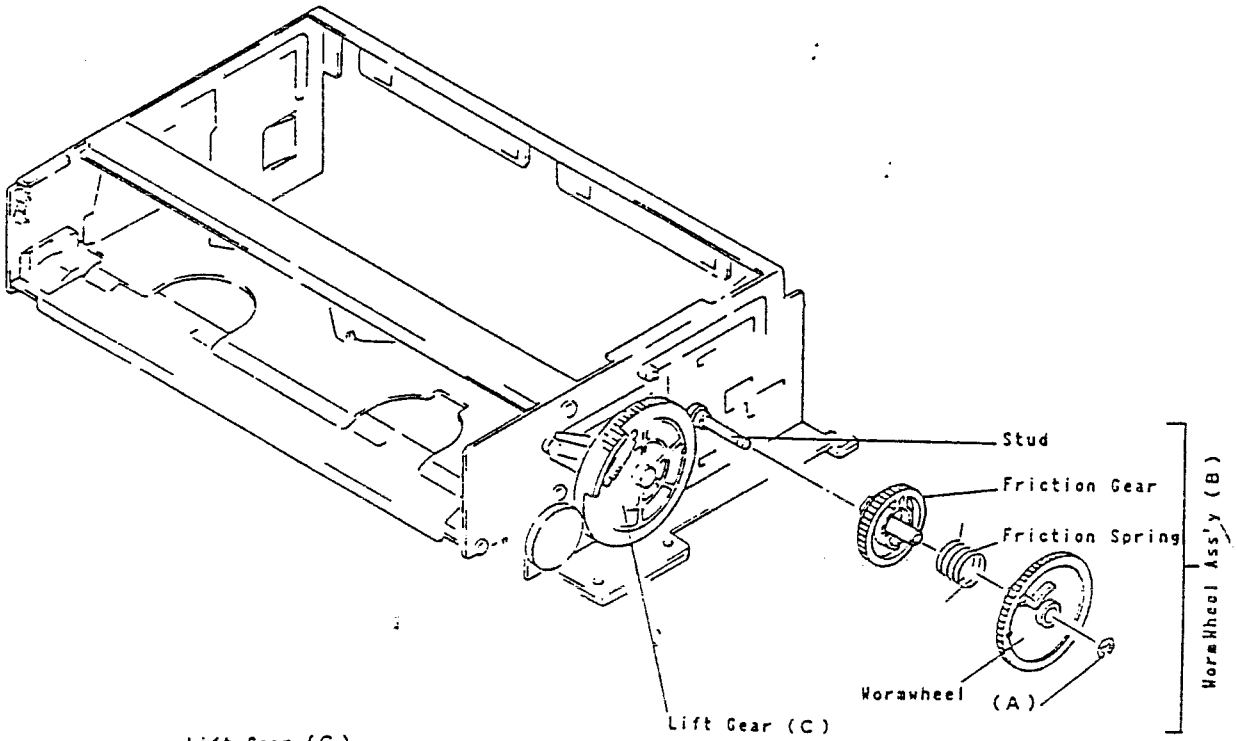


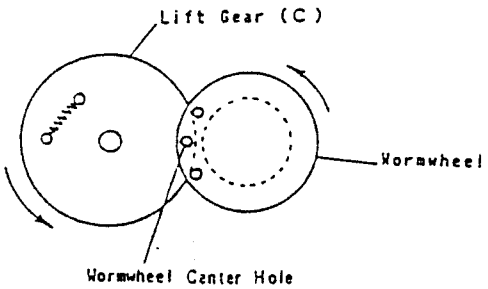
(16) Front Loading Wormwheel Unit

1. Disassembly
   (1) Remove Front Loading Belt and Bracket Ass'y. (See the Page 2-1 (2))
   (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≡

Align the Lift Gear (C) Hole with Wormwheel Center Hole as illustrated.





3. STANDARD MAINTENANCE

3-1 Service schedule of components

○:Check ●:Change

Deck		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 (except Play Only Model)			●	
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 ADJUSTMENTS.

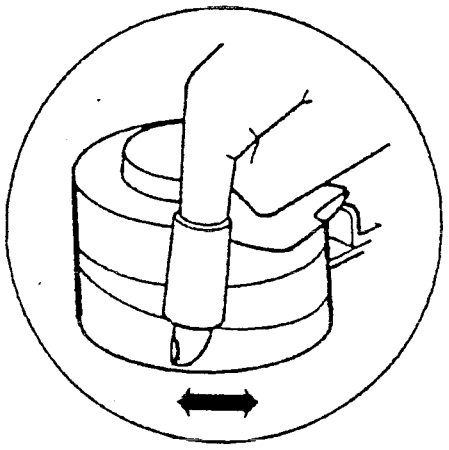
3-2 Cleaning

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 —

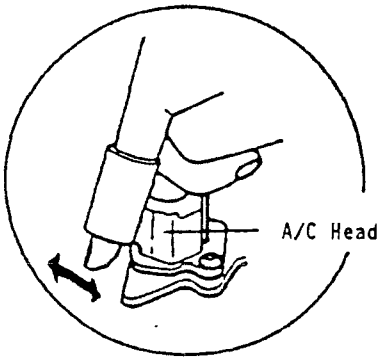
(1) The video head is very hard material, but since it is very thin, avoid cleaning it vertically.
(2) Wait for the cleaned part to dry out before operating the unit.
(3) Do not reuse the stained chamois skin.

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.

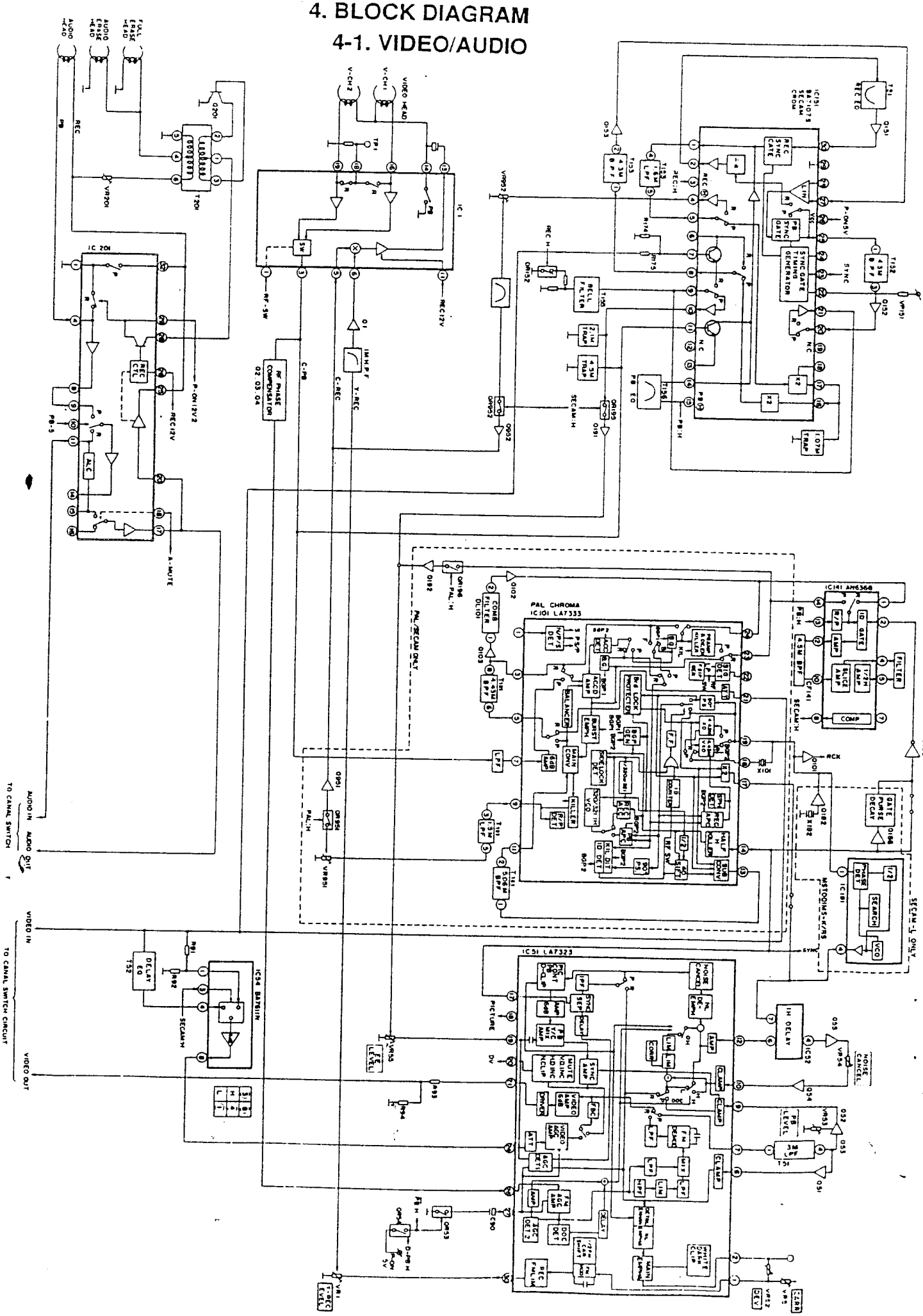


— Remark —

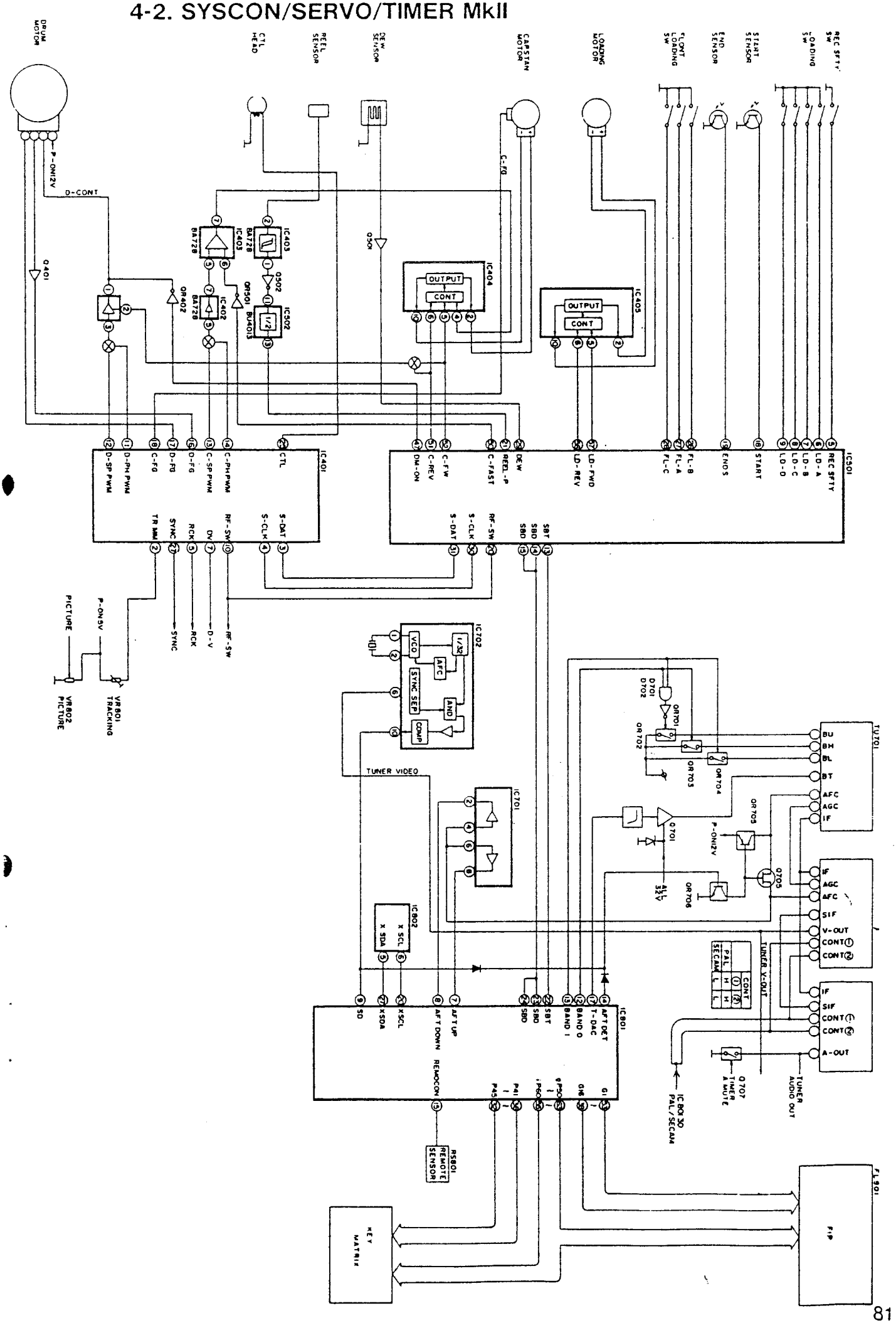
(1) Avoid cleaning audio control head vertically.
(2) Wait for the cleaned part to dry well, before operating the unit.

4. BLOCK DIAGRAM

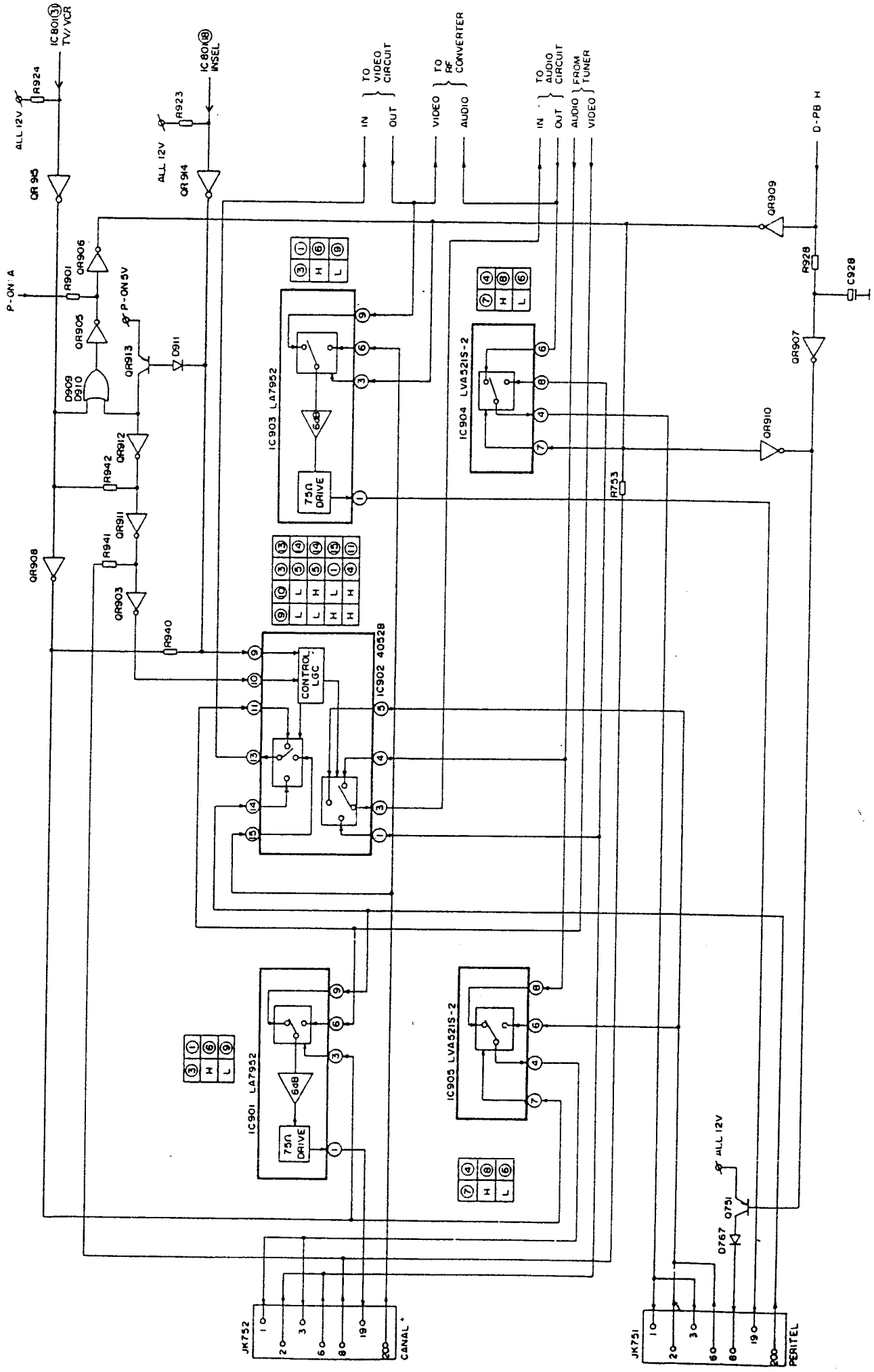
4-1. VIDEO/AUDIO



4-2. SYSCON/SERVO/TIMER MkII



4-3. CANAL+ SWITCH MkII



5. IC PIN FUNCTION

14DN363 (SERVO IC)

H : 5V L : 0V

Pin No	IN/OUT	Signal name	Function	Active Level
1	IN	V_{DD}	Power Terminal "H" Input (5V) Digital	H
2	IN	TRMM	Tracking Mono-mult Control (25Hz)	L
3	IN	SDAT	Mode Transfer (Data Signal)	H
4	IN	SCLK	Mode Transfer (Clock Signal)	H
5	IN	RCK	Clock Base (4.43MHz)	2.5V
6	IN	TEST	Test Input (GND)	H
7	OUT	D-V	Dummy V (50Hz)	L
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	Vss	Power Terminal "L" Input (GND) Digital	L
16	IN	D-FG	Cylinder FG Amp (600Hz)	2.5V
17	IN	D-PG	Cylinder PG Amp (25Hz)	2.5V
18	IN	C-FG	Capstan FG Amp (504Hz)	2.5V
19	IN	RI	Reference Amp	2.5V
20	OUT	V-REF	Reference Amp	2.5V
21	IN	C I	Control Peak Clamp	2.5V
22	OUT	C O	Control F/R Amp (25Hz)	2.5V
23	IN	CTLG	Control GND	L
24	IN	CTLA	Play Control Head Amp (Negative Input)	2.5V
25	IN/OUT	CTLH	Play Control Head Amp Positive Input. REC Control Output	2.5V
26	IN	AV	Power Terminal "H" Input (5V) Analog	H
27	IN	V-SYNC	V-Sync Signal (50Hz)	2.5V
28	IN	RF-SW	PG Mono-mult Control	L

14DN513 (IC501, SYSCON IC)

H : 5V L : 0V

Pin No	IN/OUT	Signal name	Function	Active Level
1	IN	Vss	GND	0V
2	IN	SAFT	Power Abnormal Detector	L
3	—	—		—
4	—	—		—
5	IN	R-SAFT	Erasere Prevention Switch	H
6	IN	LD-A	Tape Loading Position Detector	L
7	IN	LD-B	Tape Loading Position Detector	L
8	IN	LD-C	Tape Loading Position Detector	L
9	IN	LD-D	Tape Loading Position Detector	L
10	—	—		—
11	—	—		—
12	—	—		—
13	IN/OUT	SBT	Serial Transfer Timing Clock IN/OUT (between Clock)	L→H
14	IN/OUT	SBD	Serial Transfer Data IN/OUT (between Clock)	H
15	—	—		H
16	IN	RST	Reset	L
17	IN	V-REF	Comparator Input Reference Volatge	—
18	IN	ST-S	Tape Start Position Detector	L
19	IN	END-S	Tape End Position Detector	L
20	IN	RF-SW	Switching Pulse	H/L
21	IN	REEL-P	Control Input Pulse	H/L
22	IN	V-REF	Comparator Output Reference Voltage	—
23	IN	LP/EP-H	Tape Speed	H
24	IN	EP-HWN	Tape Speed	L
25	—	—		—
26	IN	FL-B	Cassette out Detector	L
27	IN	FL-A	Cassette in Start Detector	L
28	IN	FL-C	Cassette down Detector	L
29	IN	DEW	Dew Sensor	L
30	OUT	S-CLK	Servo IC Timing Clock	L→H
31	OUT	S-DATA	Servo IC Data	H/L
32	—	—		—
33	—	—		—
34	—	—		—
35	—	—		—

Pin No	IN/OUT	Signal name	Function	Active Level
36	—	—		—
37	—	—		—
38	—	—		—
39	—	—		—
40	—	—		—
41	—	—		—
42	—	—		—
43	—	—		—
44	—	—		—
45	—	—		—
46	OUT	TV/VCR	TV/VCR Control	H:TV, L:VCR
47	OUT	A-MUTE	Sound Mute Output	H
48	OUT	PAUSE	Pause Control	H
49	OUT	DM-ON	Drum Rotation Output	L
50	OUT	C-FAST	Capstan Motor High Speed	H
51	OUT	C-REV	Capstan Motor Reverse	H
52	OUT	C-FWD	Capstan Motor Forward	H
53	—	—		—
54	—	—		—
55	—	—		—
56	OUT	LD-REV	Tape Loading/Cassette Loading Motor Control	H
57	OUT	LD-FWD	Tape Loading/Cassette Loading Motor Control	H
58	—	—		—
59	OUT	D-REC	Record Control	H
60	OUT	D-PB	Play Contorl	H
61	OUT	P-ON	Power on Contorl	H
62	OUT	OSC-2	Clock Oscillation	1V
63	IN	OSC-1	Clock Oscillation	-1V
64	IN	V_{DD}	Power + 5V	+5V

14DN728 (Timer IC)

H : 5V L : 0V

Pin No	IN/OUT	Signal name	Function	Active Level
1	IN	V_{DD}	+ 5 V	+5V
2	OUT	OSC2	Crystal Oscillator (4.19 MHz)	+5V~-28V
3	IN	OSC1	Crystal Oscillator (4.19 MHz)	+5V~-28V
4	IN	V_{SS}	GND	0V
5	IN	XI	Crystal Oscillator (32 kHz)	~
6	OUT	XO	Crystal Oscillator (32 kHz)	~
7	IN	AFT UP	Tuner AFT Voltage Input, "H" at over 8V of AFT Voltage	H
8	IN	AFT DOWN	Tuner AFT Voltage Input, "L" at under 4V of AFT Volatage	L
9	IN	SD	Tuner Video Signal Sync Signal Input, "L" at Sync Signal	L
10	OUT	A-MUTE	Audio Mute Signal	H
11	OUT	V-MUTE	Video Mute Signal	H
12	OUT	BAND 0	Tuner Band Set Signal 0	H
13	OUT	BAND 1	Tuner Band Set Signal 1	H
14	OUT	AFT DEF	AFT Defeat Signal	H
15	IN	REMOCON	Remote Control Signal	H/L
16	IN	POWER DOWN	Power Down Input Signal	L
17	OUT	T-DAC	Tuner Tuning Voltage Control (Serial Data Line 14Bit PWM)	H
18	OUT	A CONT 1	Audio Control 1	H
19	OUT	BUZZER	Buzzer Control Output	H/L
20	OUT	C_2	VPS Interface Clock	L
21	IN	RESET	System Intialize Signal	L
22	IN/OUT	SBT	Serial Transfer Clock IN/OUT Control Signal (Syscon IC)	L
23	IN	SST	16Bit Serial Transfer Data Input Port (From Syscon IC)	H
24	OUT	STS	8Bit Serial Transfer Data Output Port (To Syscon IC)	H
25	OUT	SCL	MNOS Interface Clock	H
26	—	SDA	VPS Interface Data	H/L
27	—	C_3	MNOS Interface Data	H
28	OUT	SYNC	Sync Signal Output (128 Hz Clock Signal)	H/L
29	IN	CM	GND	L
30	—	——	————————	—
31	—	——	————————	—
32	IN	P 45	Key Scan Input Signal	H
33	IN	P 44	Key Scan Input Signal	H
34	IN	P 43	Key Scan Input Signal	H
35	IN	P 42	Key Scan Input Signal	H

Pin No	IN/OUT	Signal name	Function	Active Level
36	IN	P 41	Key Scan Input Signal	H
37	IN	T-SET-OUT	Key Scan Input Data Signal	H
38	OUT	G 16	Display Digit	H／Vp-p
39	OUT	G 15	Display Digit	H／Vp-p
40	OUT	G 14	Display Digit	H／Vp-p
41	OUT	G 13	Display Digit	H／Vp-p
42	OUT	G 12	Display Digit	H／Vp-p
43	OUT	G 11	Display Digit	H／Vp-p
44	OUT	G 10	Display Digit	H／Vp-p
45	OUT	G 9	Display Digit	H／Vp-p
46	OUT	G 8	Display Digit	H／Vp-p
47	OUT	G 7	Display Digit	H／Vp-p
48	OUT	G 6	Display Digit	H／Vp-p
49	OUT	G 5	Display Digit	H／Vp-p
50	OUT	G 4	Display Digit	H／Vp-p
51	OUT	G 3	Display Digit	H／Vp-p
52	OUT	G 2	Display Digit	H／Vp-p
53	OUT	G 1	Display Digit	H／Vp-p
54	OUT	A CONT 2	Audio Control 2	H
55	OUT	i P 60	Display Segment / Key Scan Output Signal	H
56	OUT	h P 57	Display Segment / Key Scan Output Signal	H
57	OUT	a P 56	Display Segment / Key Scan Output Signal	H
58	OUT	b P 55	Display Segment / Key Scan Output Signal	H
59	OUT	c P 54	Display Segment / Key Scan Output Signal	H
60	OUT	d P 53	Display Segment / Key Scan Output Signal	H
61	OUT	e P 52	Display Segment / Key Scan Output Signal	H
62	OUT	f P 51	Display Segment / Key Scan Output Signal	H
63	OUT	g P 50	Display Segment / Key Scan Output Signal	H
64	IN	Vpp	-28 V Input	-28V

VCR 9001 TMV-A/B BOTTOM

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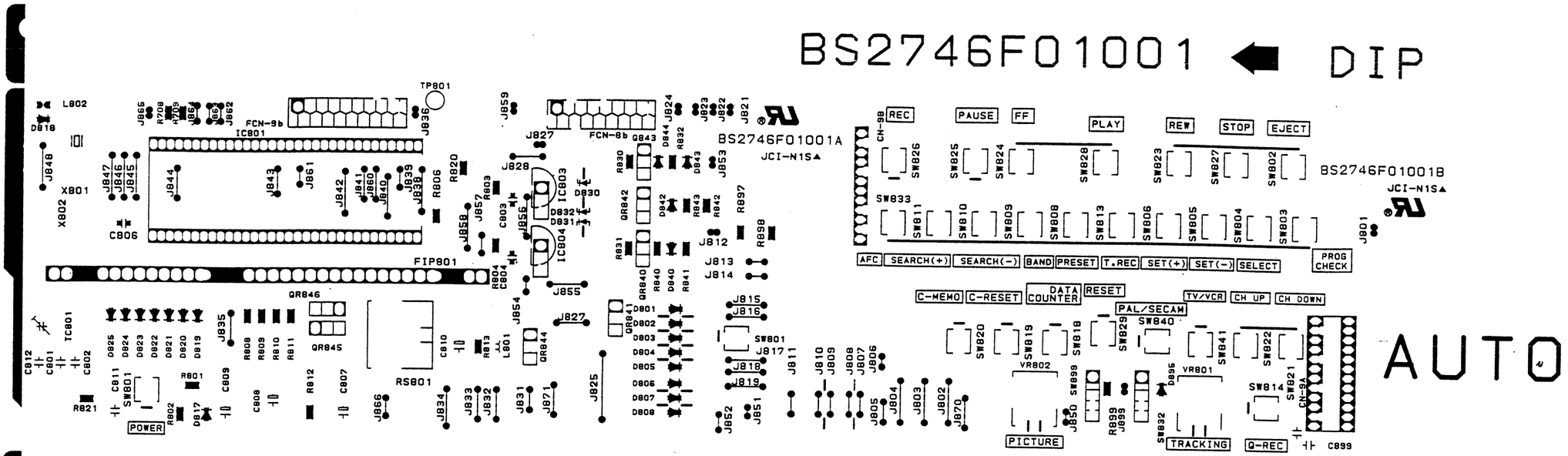
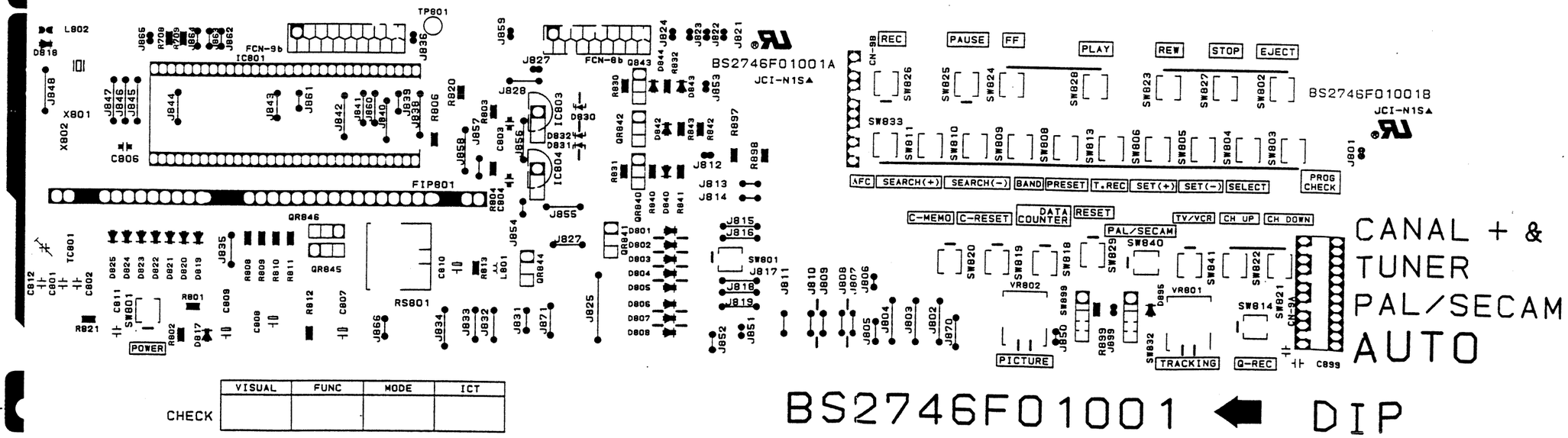
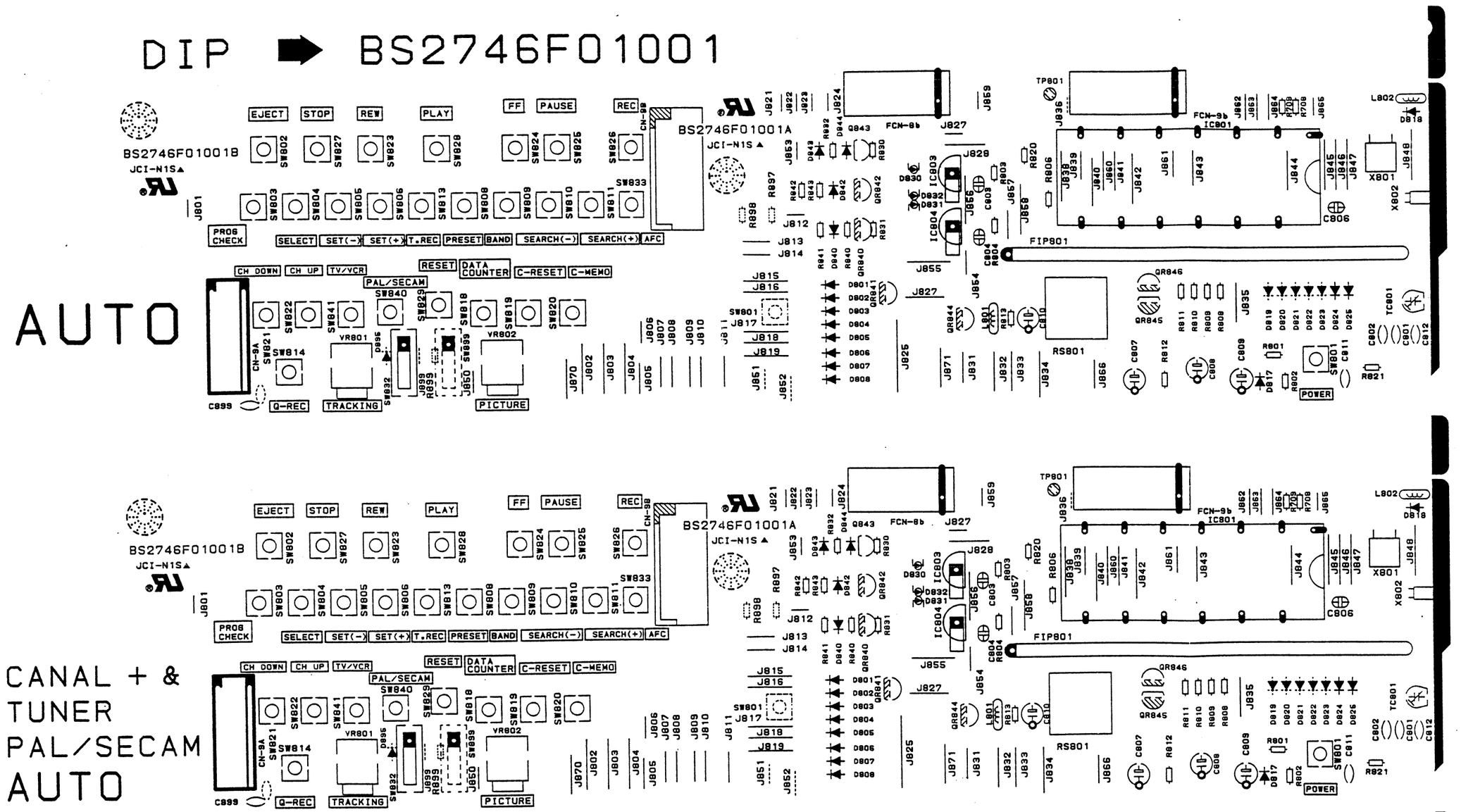




CHECK	VISUAL	FUNC	MODE	ICT

BS2746F01001 ◀ DIP

DIP ➡ BS2746F01001

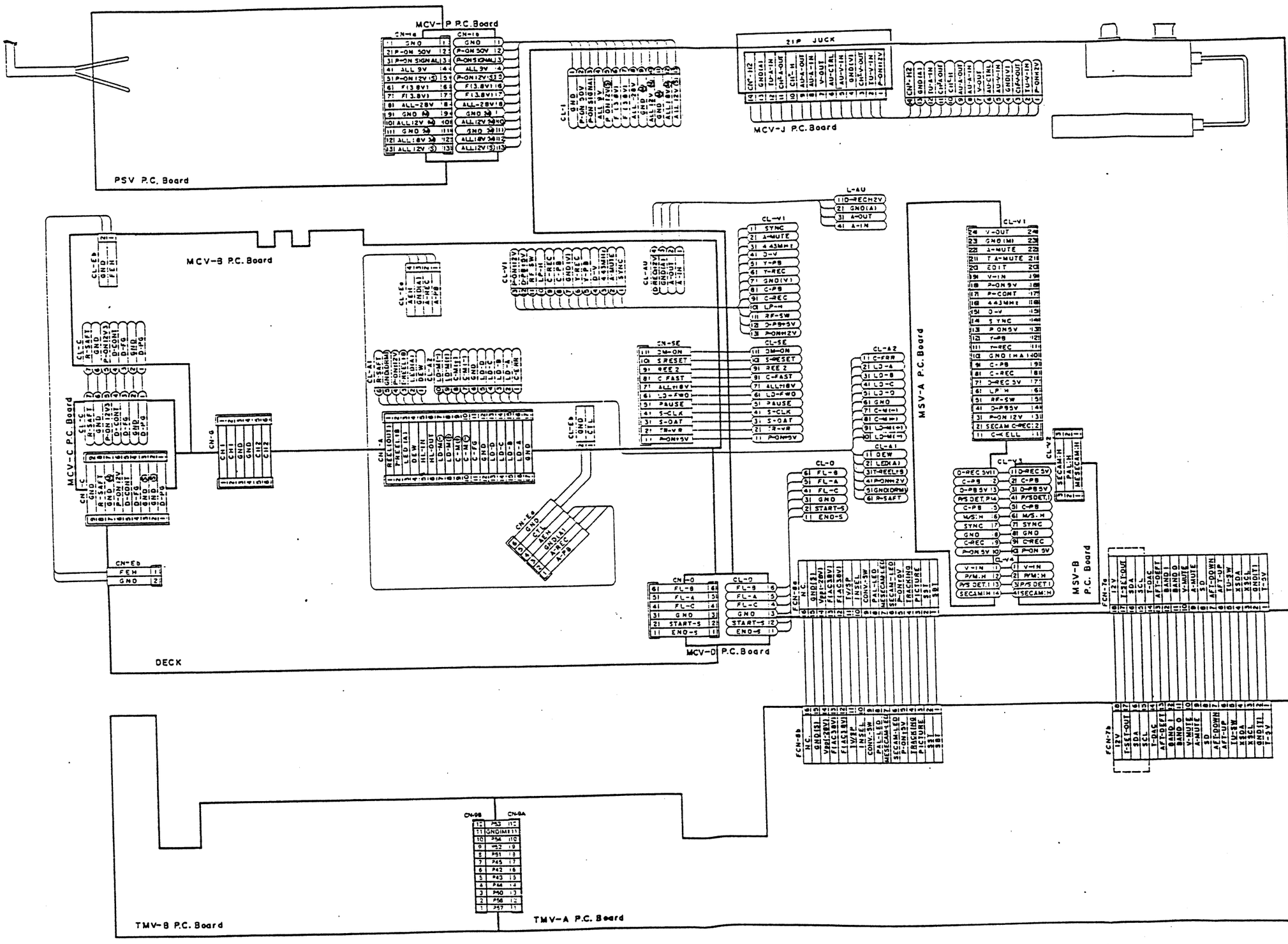


DIP ➡ BS2746F01001

ICT	MODE	FUNC	VISUAL

CHECK

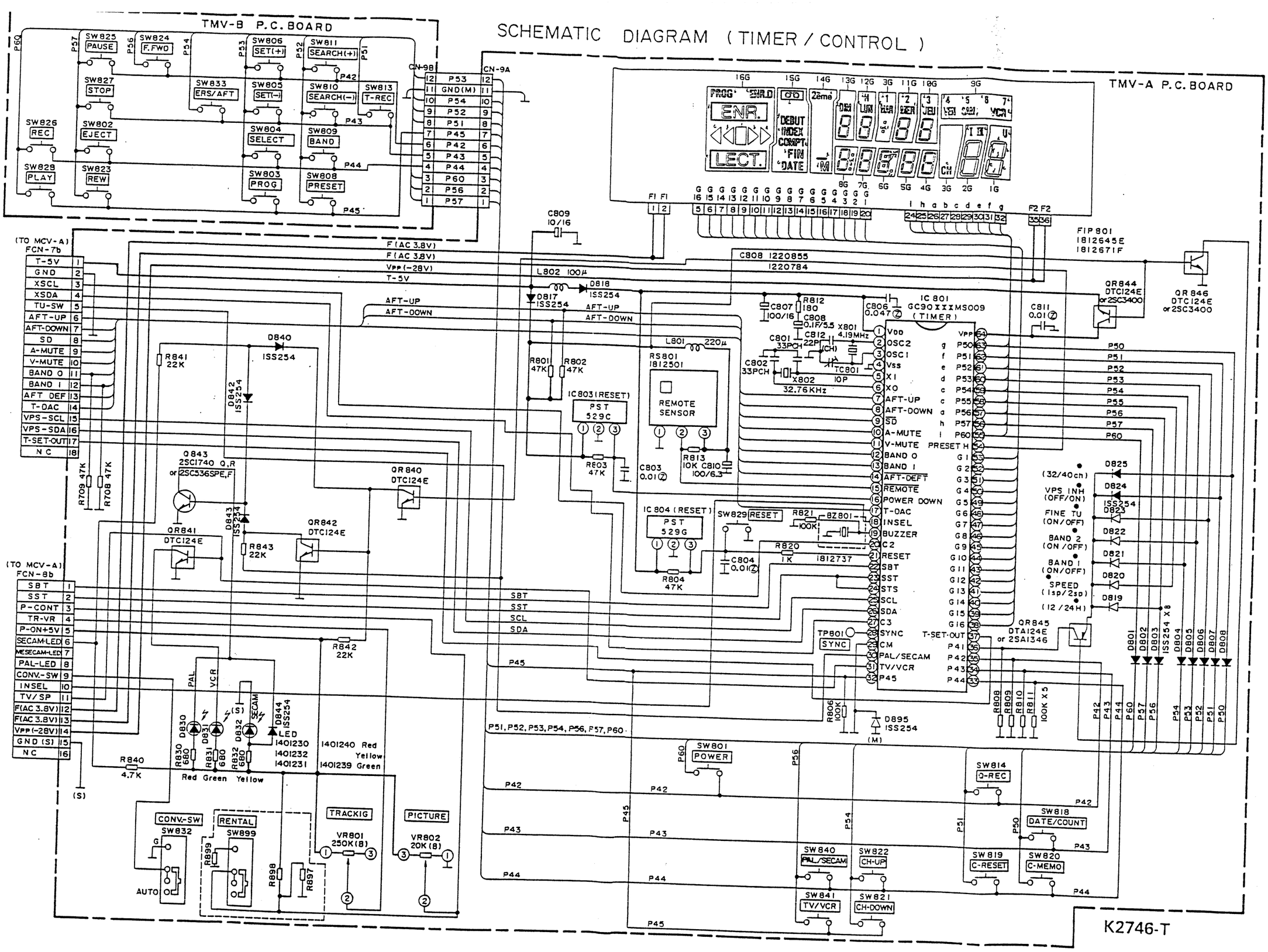
WIRING DIAGRAM



K2746-W

9001 /901

SCHEMATIC DIAGRAM (TIMER / CONTROL)



7. SCHEMATIC DIAGRAM

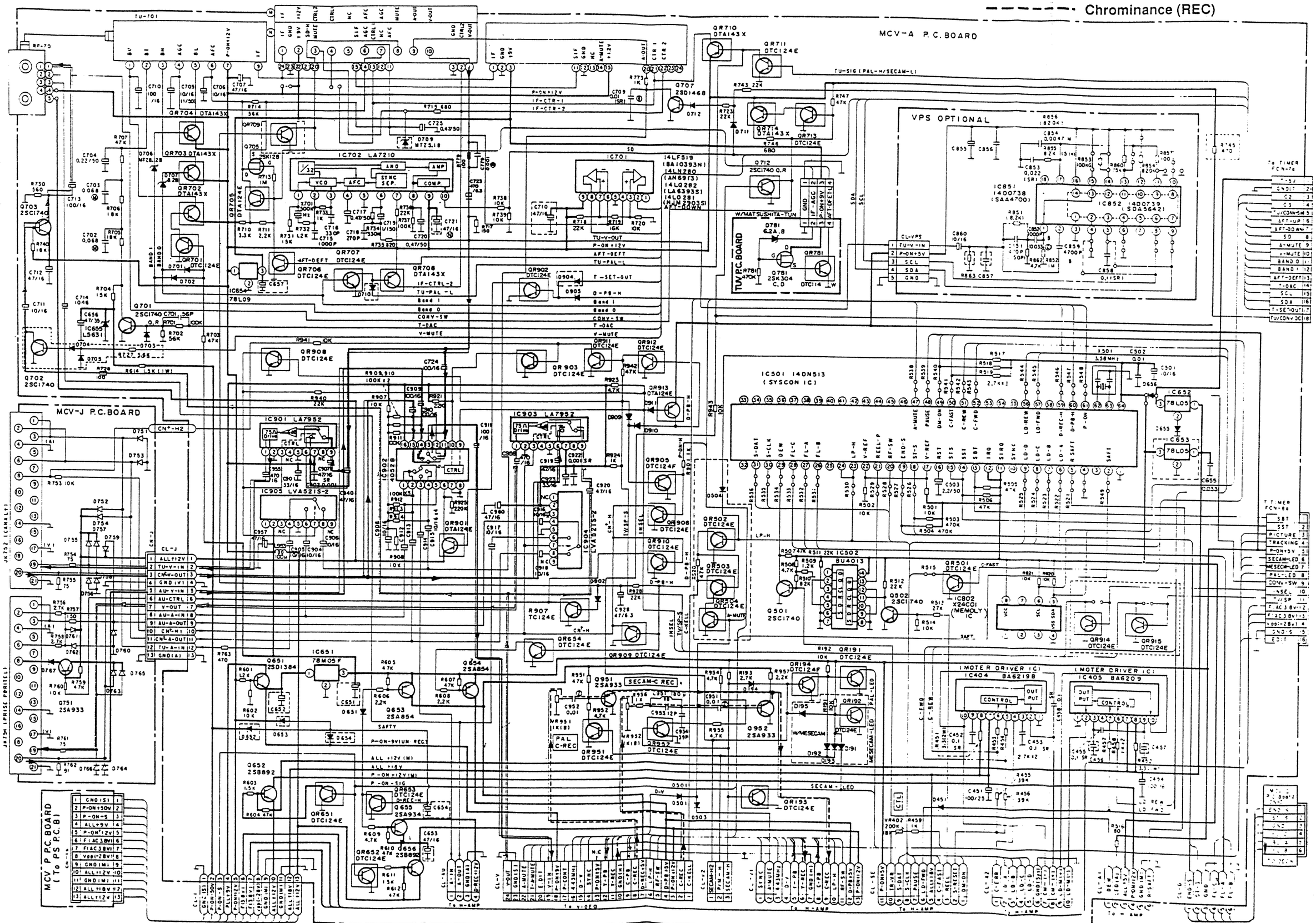
7-1. SYSTEM CONTROL/TUNER

Luminance + Chrominance (PLAY)

Luminance + Chrominance (REC)

Luminance (REC)

Chrominance (REC)



Luminance (PLAY)

Luminance + Chrominance (PLAY)

Chrominance (PLAY)

Luminance (REC)

Luminance + Chrominance (REC)

Chrominance (REC)

MSV-B P.C. BOARD

MSV-A P.C. BOARD

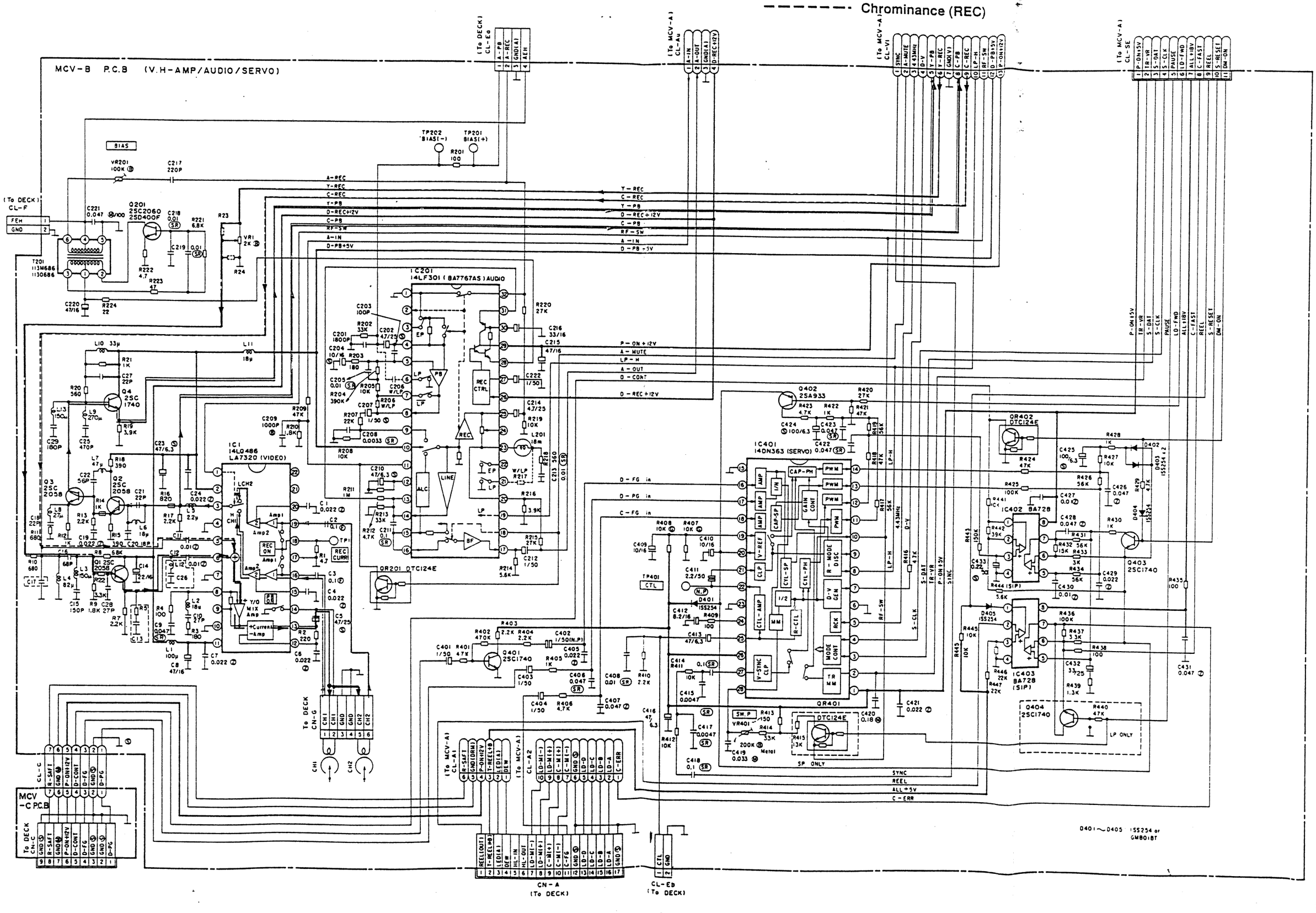
7-3. HEAD AMP/AUDIO/ SERVO

Luminance + Chrominance (PLAY)

Luminance + Chrominance (REC)

Luminance (REC)

Chrominance (REC)



SERVICE INFORMATION

A. How to set the Mechanism in Tape Loading / Unloading position without Cassette Tape.
To load, turn the Loading Pulley (Fig. MA-M2) Clockwise. To unload, turn the Loading Pulley counterclockwise.
B. How to place the Cassette Holder in the down position without a Cassette Tape.
Use one of the following procedures.

METHOD 1

1. Remove the Top Case and then connect AC Plug.
2. Protect the Start Sensor and End Sensor or LED Sensor by keeping them away from Electrostatic Discharge.
3. Push the Cassette Holder to the Deck Rear Side (in Fig. MA-M1 as shown by the arrow) while pushing the Cassette Lock Plate (L) / (R) (in Fig. MA-M1 as shown by the arrow) to release the lock. The Cassette Holder will move into the down position by itself.

METHOD 2 (MANUAL)

1. Remove the Top Case and Bottom Panel. Then disconnect AC Plug.
2. Turn the Middle Pulley in Fig.MA-M2 clockwise (for down position) while pushing the Cassette Lock Plate (L) / (R) (in Fig. MA-M1 as shown by the arrow) to release the lock. The Cassette Holder may be moved into the down position by turning the Middle Pulley.

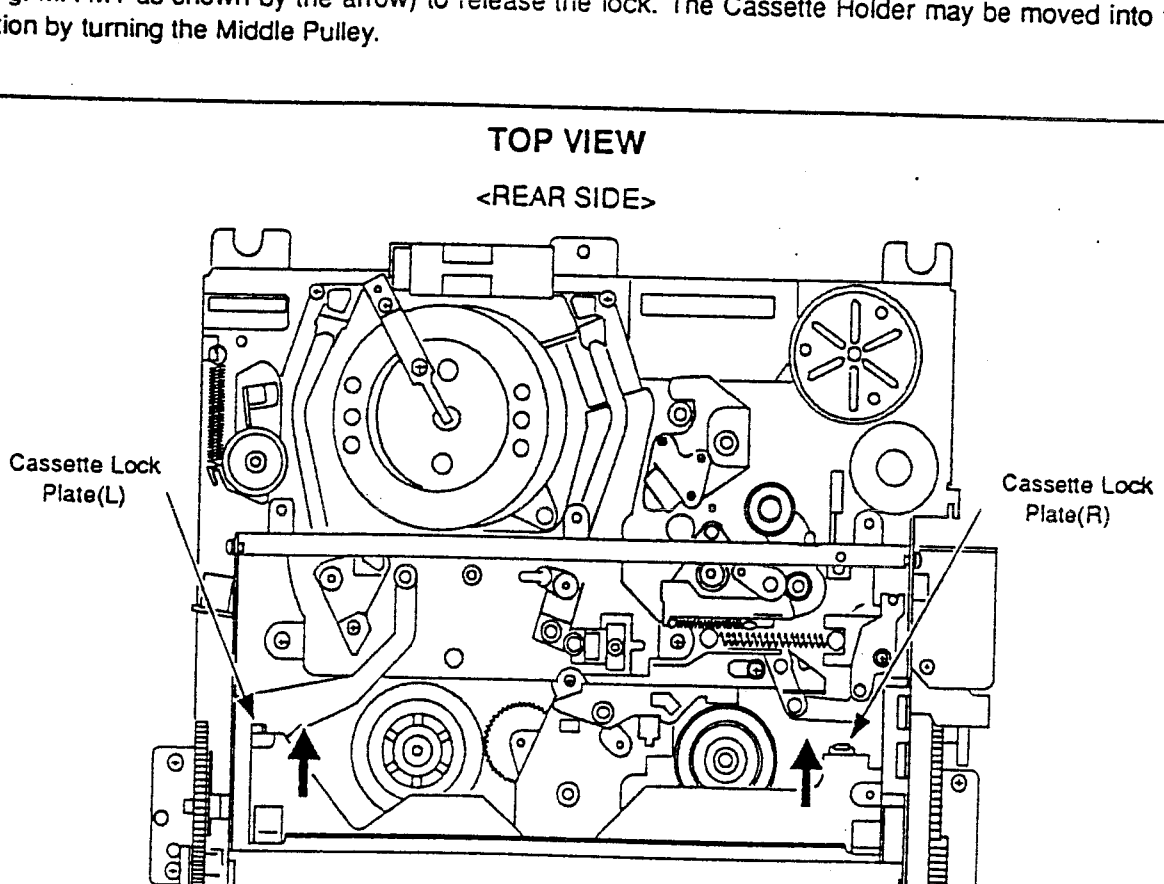


Fig. MA-M1

BOTTOM VIEW

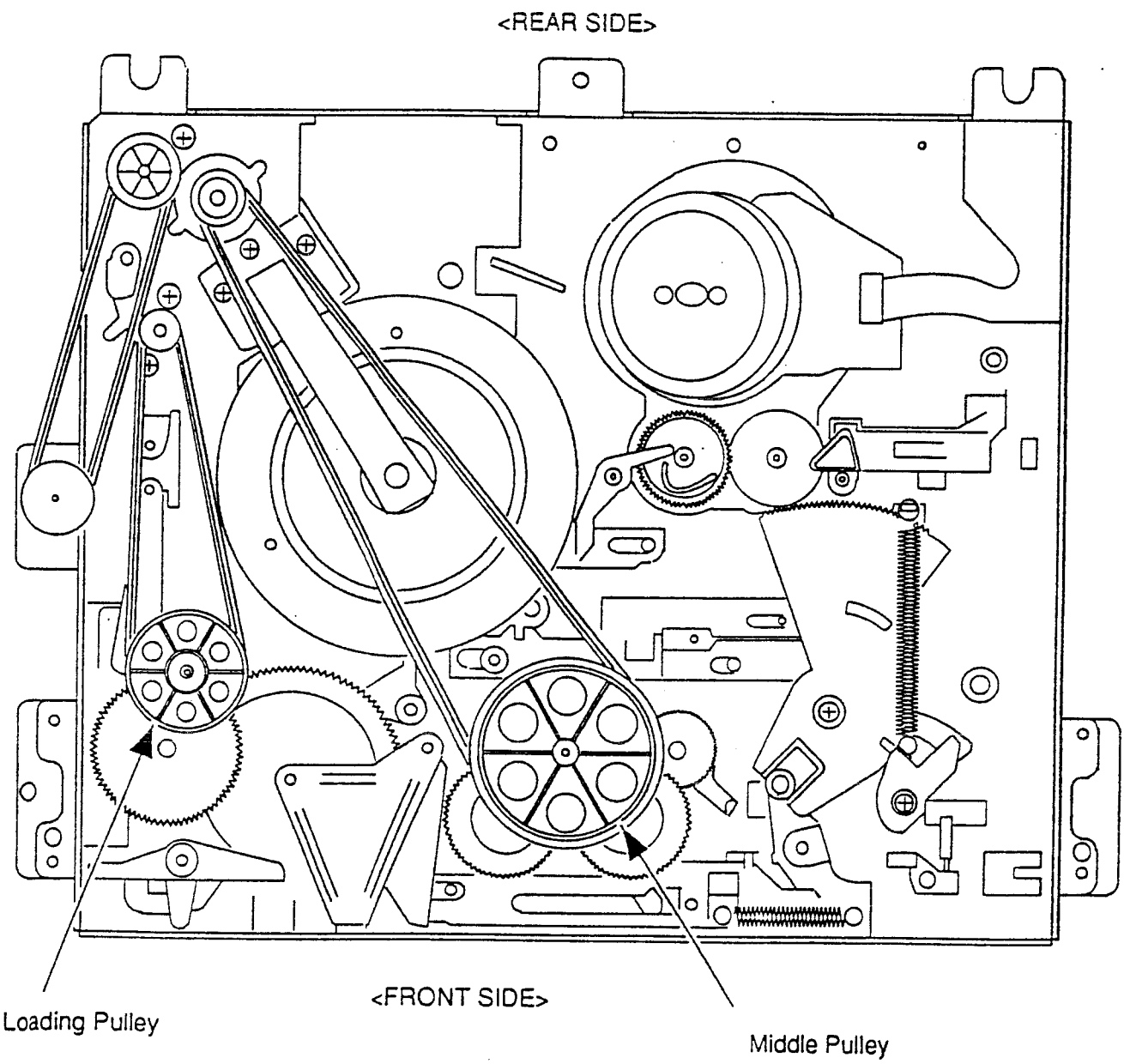


Fig. MA-M2

MECHANICAL ADJUSTMENT PROCEDURES

1. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

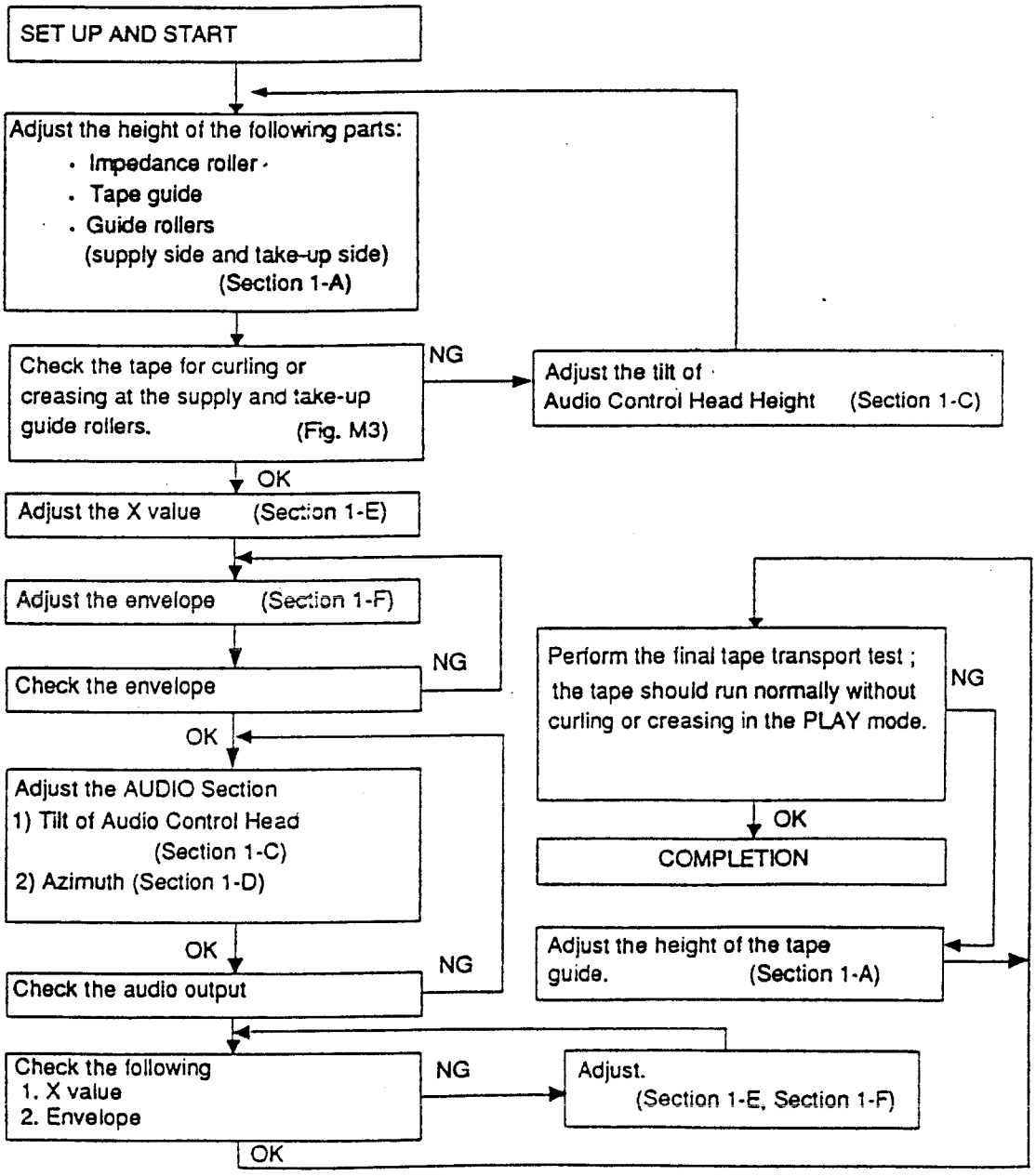
NOTE:

To perform these adjustment procedures, make sure that the Tracking Control is set in the neutral position.

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape { F6-A, F6-N, F6-NS (LP Model)}
Post Adjustment Screwdriver
X-Position Adjustment Fixture
Screwdriver (To fasten Lock Screw of Tape Guide Rollers).
Box screw Driver M3

Tape Transport Adjustment Flow Chart



Note: Before attempting these mechanical adjustments, you must complete the ELECTRICAL ALIGNMENT INSTRUCTIONS.

1-A. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING POSITION

Purpose:

To make sure that the tape running is well stabilized.

Symptom of Misadjustment:

If the tape runs with instability, the tape will be damaged.

1. Play back a cassette tape and confirm that the tape runs without curling or creasing at the guide rollers [2] and [and at points A and B on the lead surface. (Refer to Fig. M1 and M2)
2. If curling or creasing is apparent, adjust the height of guide rollers by turning the top of guide rollers [2] and [with the Post Adjustment Screwdriver. (Refer to Fig. M1 and M3)
3. Confirm that the tape runs without curling or creasing at the lower flange of Impedance Roller. If curling or creasi is apparent, adjust the height of Impedance Roller in both PLAY and REV modes by turning the Nut M3 with BC DRIVER M3. (Refer to Fig. M4)

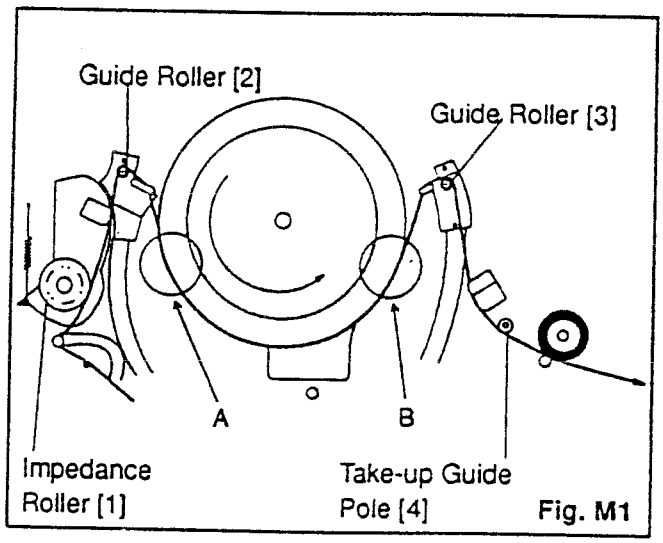


Fig. M1

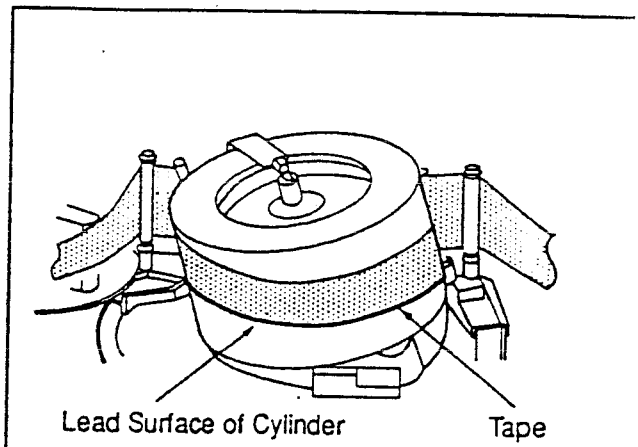


Fig. M2

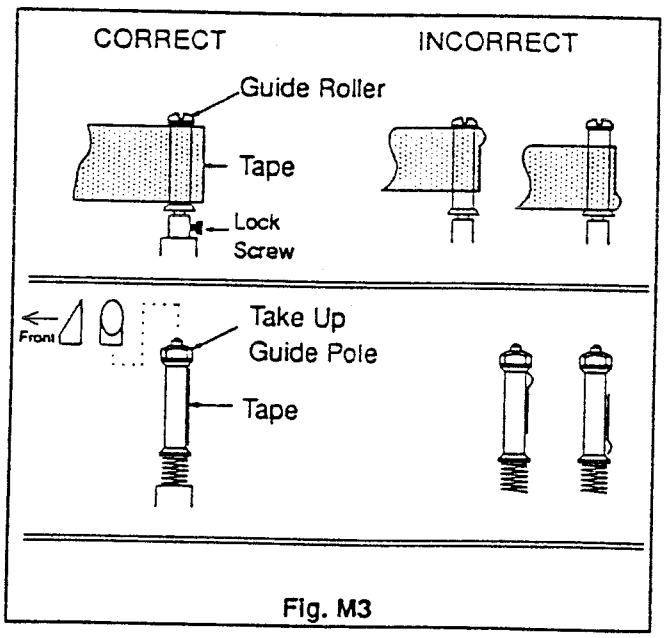


Fig. M3

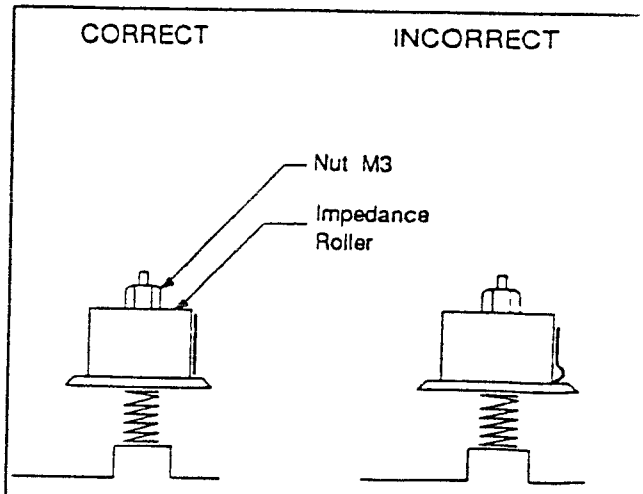


Fig. M4

1-B. CONFIRMATION OF AUDIO CONTROL HEAD HEIGHT

Purpose:

To make sure that the tape runs properly along the Control Head.

Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation can not be achieved.

This confirmation is required for a preliminary height adjustment after replacing the Audio control Head. For final adjustments, perform items 1-C and 1-D.

1. Play back a cassette tape. Looking at the lower edge of the Control Head with the tape in motion, ensure that the lower edge of the tape runs 0.15mm above the lower edge of the Control Head. If it doesn't, turn Height Adjustment Nut [A] slightly in either direction as necessary to correct it. Turn clockwise to lower the head and counter clockwise to raise it. (Refer to Fig. M5)

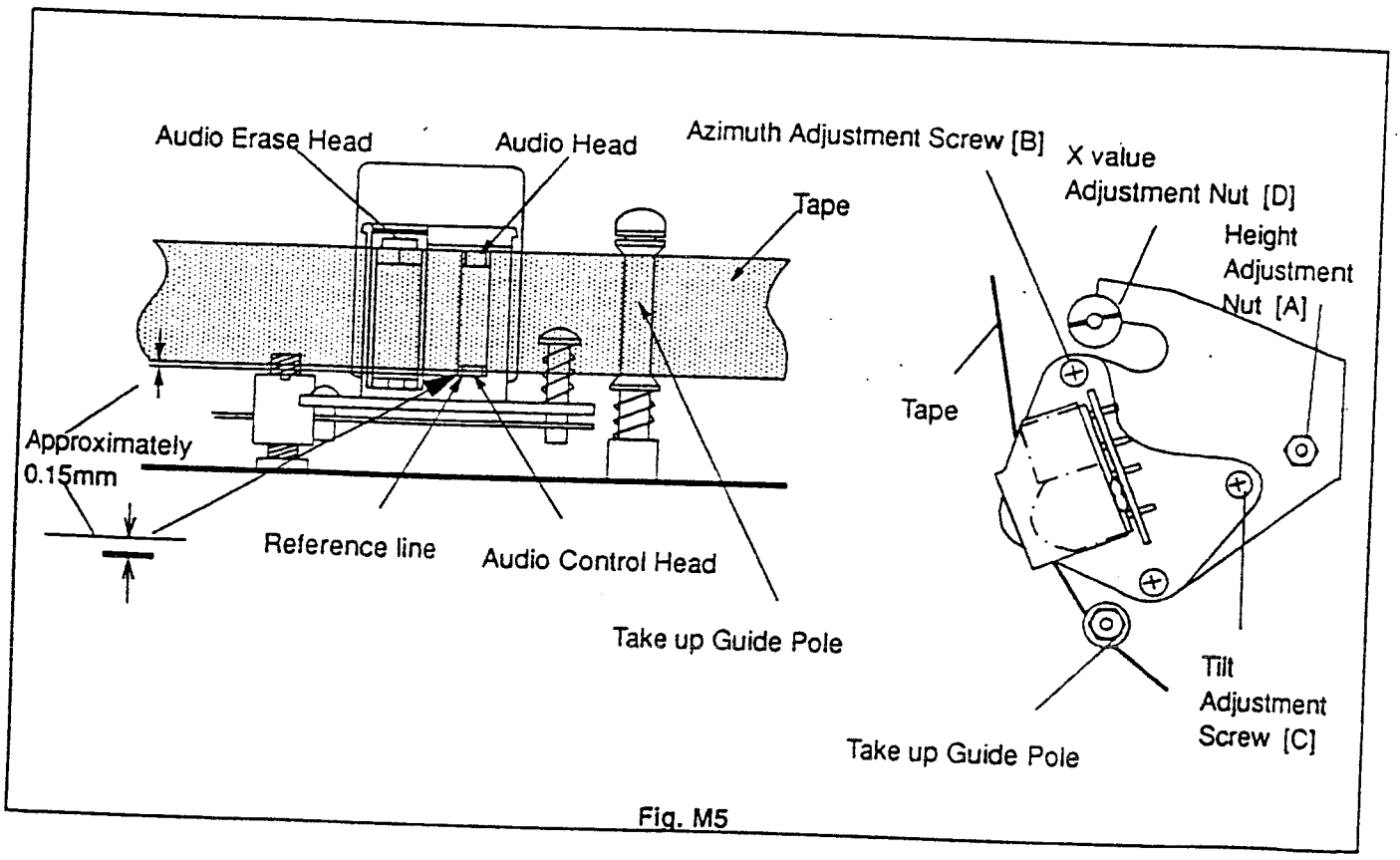


Fig. M5

1-C. CONFIRMATION OF TILT OF AUDIO CONTROL HEAD

Purpose:

To confirm that the tape running is well stabilized. In particular, confirm that tape properly picks up the Audio Signal at the upper part and Control Signal at the lower part.

Symptom of Misadjustment:

If the tilt of the Audio Control Head is poorly adjusted, the tape will be eventually damaged.

Play back a cassette tape and confirm that the tape running between Take-up Guide Pole [4] in Fig.M1 and Audio Control Head has no slack. If the tape has slack, adjust the Control Head by turning tilt adjustment screw [C] in Fig. M5 so that the tape has no slack.

1-D. HEIGHT ADJUSTMENT OF AUDIO CONTROL HEAD

Purpose:

To adjust the height of Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment

If the position of Audio Control Head is not properly adjusted, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the Audio output on the rear of the set.
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 if up by turning the tilt adjustment screw [C]. Then readjust GUIDE ROLLER HEIGHT in section 1-A and the X value in section 1-E.
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 adjust the height adjustment nut [A] so that the AC voltmeter's reading is brought to its maximum level.
4. Adjust the azimuth adjustment screw [B] so that the AC voltmeter's reading is brought to its maximum level.

NOTE: Fix the screw [C] with lock paint after readjustment.

AZIMUTH ADJUSTMENT OF AUDIO CONTROL HEAD

Purpose:

To adjust the height of Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment

If the position of Audio Control Head is not properly adjusted, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the Audio output on the rear of the set.
2. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back F6-N test tape, adjust the azimuth adjustment screw [B] so that the AC voltmeter's reading or osilloscope waveform is brought to its maximum level.(Refer to Fig. M6)

NOTE: Fix the screw [C] with lock paint after readjustment.

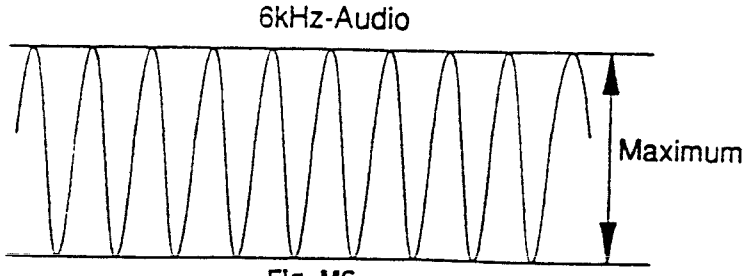


Fig. M6

1-E. X VALUE ADJUSTMENT

Purpose:

To adjust the horizontal position of the Audio Control Head.

Symptom of Misadjustment:

If the horizontal position of the Audio Control Head is not properly adjusted, maximum envelope cannot be obtaine at the neutral position of the Tracking Control.

1. Connect the oscilloscope to J178(C-PB) on the Main PCB. Use JM3 (RF-SW) as a trigger.
2. Play back the monoscope portion of the alignment tape .{ F6-N, F6-NS (LP Model)}
3. Cancel the Auto Tracking by pressing the Auto Tracking button, and confirm the Tracking signal indicator turns o
4. Adjust the Tracking Control to neutral position by pressin " + " and " - " Tracking Control Buttons together.
5. Adjust the X Value Adjustment Nut D in Fig. M7 for maximum PB FM signal.

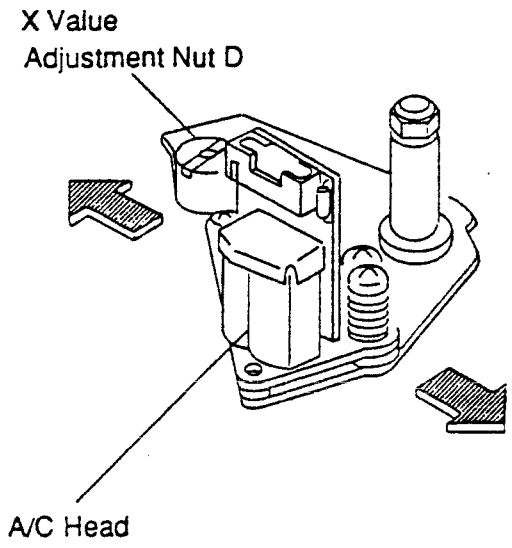


Fig. M7

1-F. CONFIRMATION / ADJUSTMENT OF ENVELOPE WAVEFORM

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope output is poor, much noise will appear in the picture. The tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control.

1. Cancel the Auto Tracking. (Press the Auto Tracking Button of VCR , check that the Auto Tracking signal of display go out.)
   Adjust the Tracking control to its center position .
   Press + and - of Tracking control Button at same time.
2. Connect the oscilloscope to J178(C-PB) on the Main PCB. Use J173 (RF-SW) as a trigger.
3. Play back the monoscope portion of the alignment tape { F6-N, F6-NS(LP Model)} and adjust the height of guide rollers [2] and [3], watching the scope display so that the envelope becomes as flat as possible.
   If adjustment is required, turn top of guide roller with the Post Adjustment Screwdriver.
4. When the scope display is as shown in Fig. M8, adjust the height of [2] so that the waveform looks like Fig. M10.

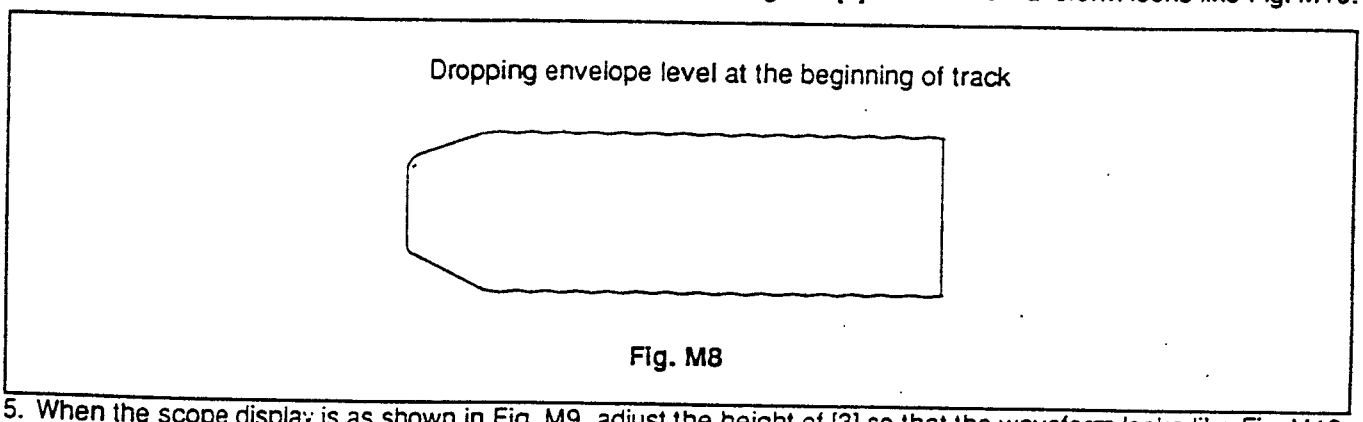


Fig. M8

5. When the scope display is as shown in Fig. M9, adjust the height of [3] so that the waveform looks like Fig. M10.

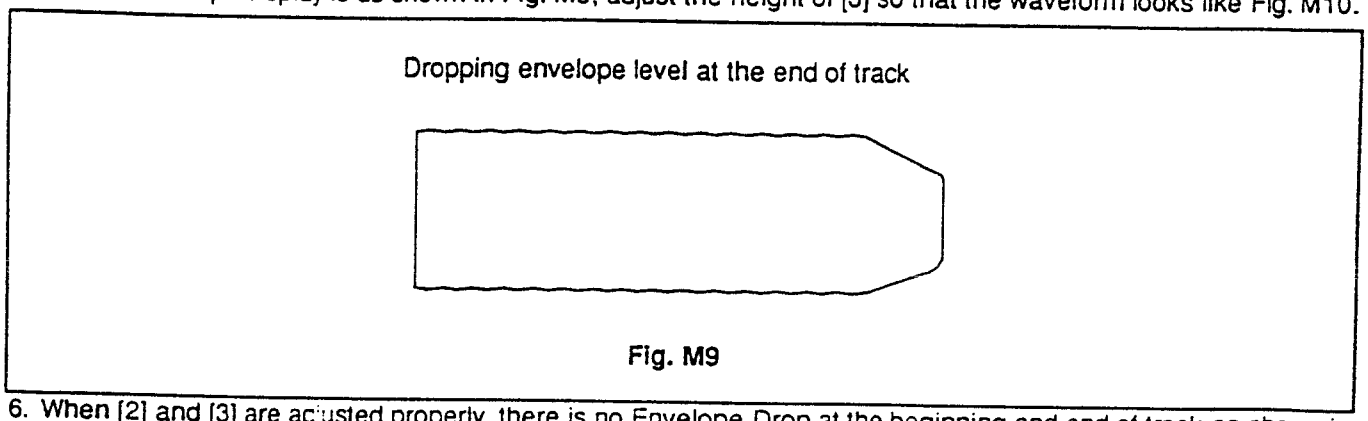


Fig. M9

6. When [2] and [3] are adjusted properly, there is no Envelope Drop at the beginning and end of track as shown in Fig. M10.

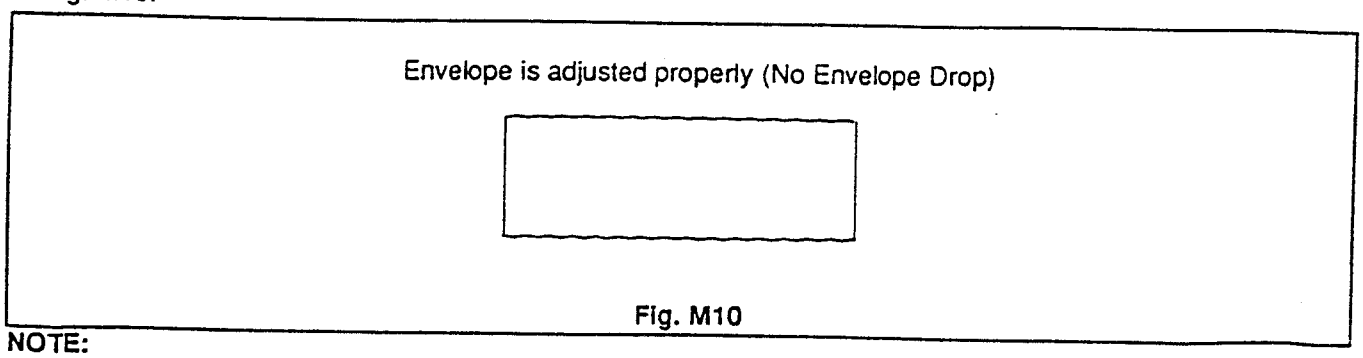


Fig. M10

NOTE:

After adjustment, confirm the X VALUE by pushing the Tracking Control Up or Down Buttons alternately, to check the symmetry of the envelope. If required, perform "X VALUE ADJUSTMENT".

2. REPLACEMENT OF DRUM MOTOR

1. Disconnect the P.C.B Assembly DM from the stator of Drum Motor.
2. Remove 2 screws (S-11), and then take off the rotor of Drum Motor.
3. Remove 3 screws (S-12), and then take off the stator of Drum Motor.
4. Replace the stator of Drum Motor, and then tighten 3 screws (S-12).
5. Replace the rotor of Drum Motor, and then tighten 2 screws (S-11).
6. Connect the P.C.B Assembly DM to the stator of Drum Motor. (Refer to Fig. M11)
   Upon completion of above procedure, confirm and adjust the following items.
7. Play back Switching Point. (Refer to Electrical Adjustment)
8. X value. (Refer to MECHANICAL ADJUSTMENT PROCEDURES Item 1-E)

Note:

Install the rotor of Drum Motor so that the PG Magnet on the side of Drum Motor Type No. Label (TM-84) aligns with the Video Head CHR. (Refer to Fig. M11)

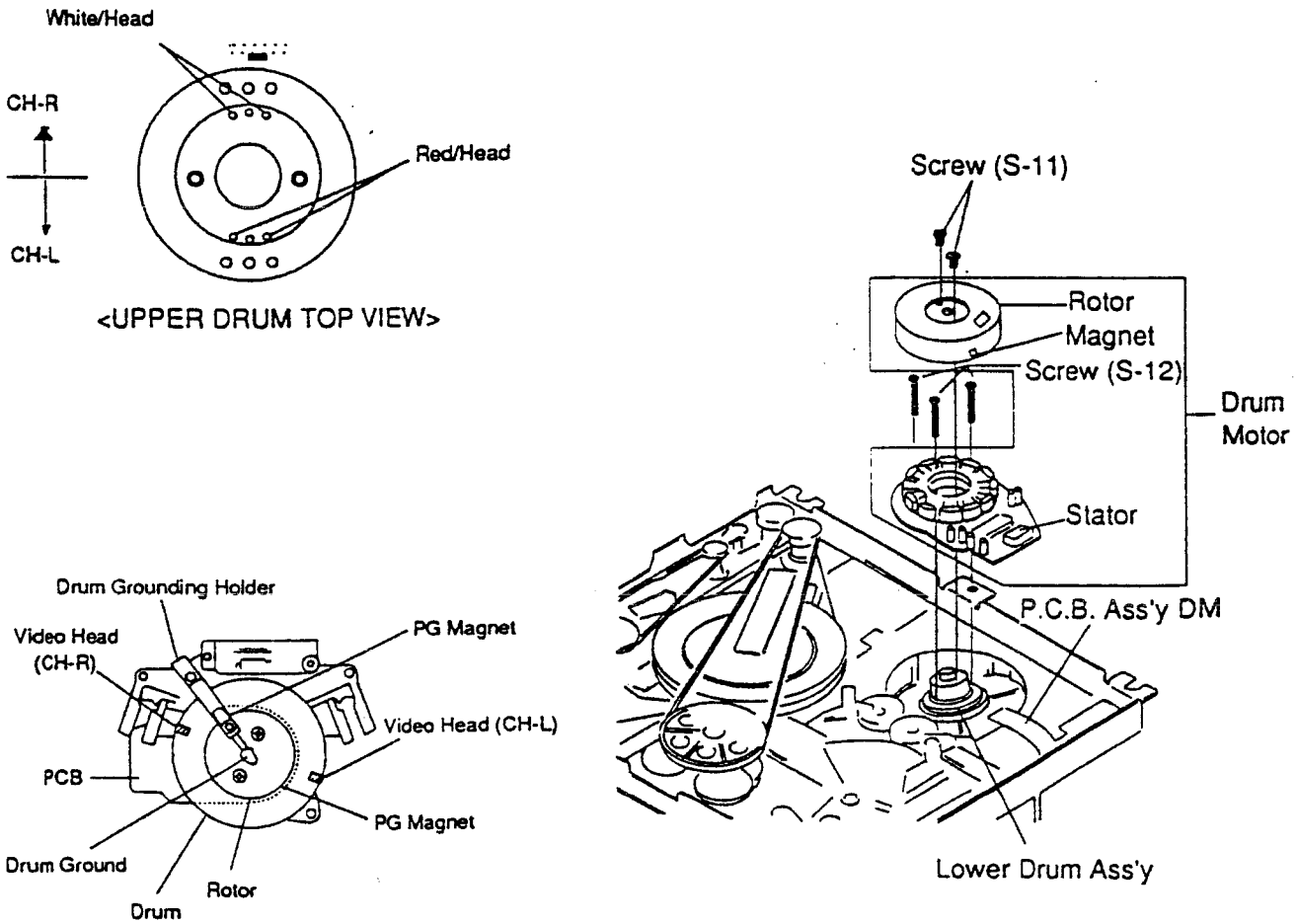


Fig. M11

3. REPLACEMENT OF CYLINDER ASSEMBLY

1. Disconnect the P.C.B Ass'y DM from the stator of DRUM MOTOR.
2. Remove 3 screws (S-3), and then take off the CYLINDER ASSEMBLY.
3. Replace the CYLINDER ASSEMBLY, and tighten 3 screws (S-3).
4. Connect the P.C.B Ass'y DM to the CYLINDER ASSEMBLY. (Refer to Fig. M12)
   Upon completion of above procedure, confirm and adjust the following items:
5. Play back Switching Point. (Refer to Electrical Adjustment.)
6. Azimuth (Refer to Mechanical Adjustment Procedures Item 1-D).
7. Audio Output Level. (Refer to Mechanical Adjustment Procedures Item 1-D).
8. X value. (Refer to Alignment Procedure for Mechanism Item 1-E).
9. Envelope Waveform. (Refer to Mechanical Adjustment Procedures Item 1-F).

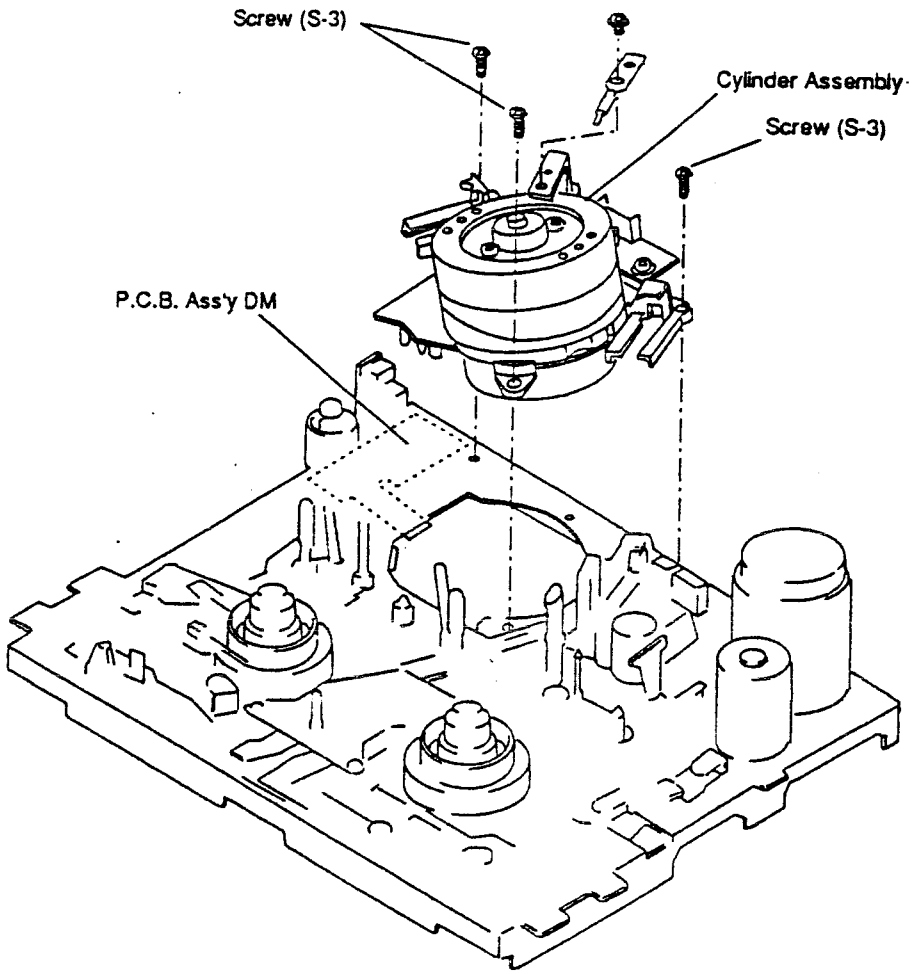


Fig. M12

4.REPLACEMENT OF UPPER DRUM/LOWER DRUM

When reinstalling the Upper, Lower Drums, confirm and adjust the following items:

- Playback switching point (Refer to Electrical Adjustment Instructions).
- Azimuth (Refer to Mechanical Adjustment Procedures Item 1-D).
- Audio output level (Refer to Mechanical Adjustment Procedures Item 1-D).
- X value (Refer to Mechanical Adjustment Procedures Item 1-E).
- Envelope waveform. (Refer to Mechanical Adjustment Procedures Item 1-F).

Note:

Install the Upper Drum so that the Video Head CHR aligns with the PG Magnet on the side of Drum Motor.

UPPER DRUM / REINSTALLATION OF UPPER, LOWER DRUMS AND ROTOR

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

NOTE:

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

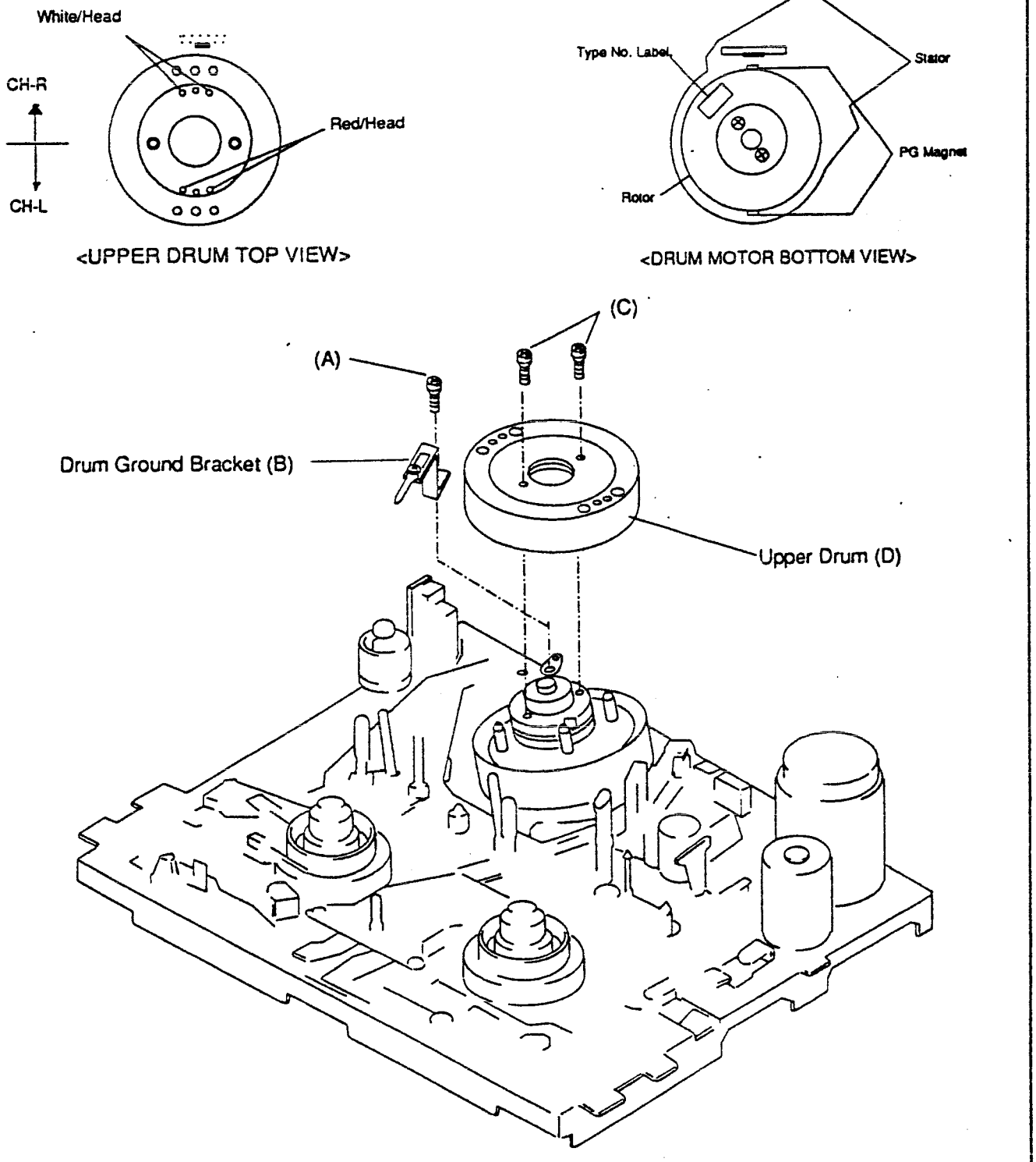


Fig. M13

Note:

Upper Drum (A), Lower Drum (B) and Rotor (C) must be assembled so that the white marks are lined up as shown below. (Fig. M14)

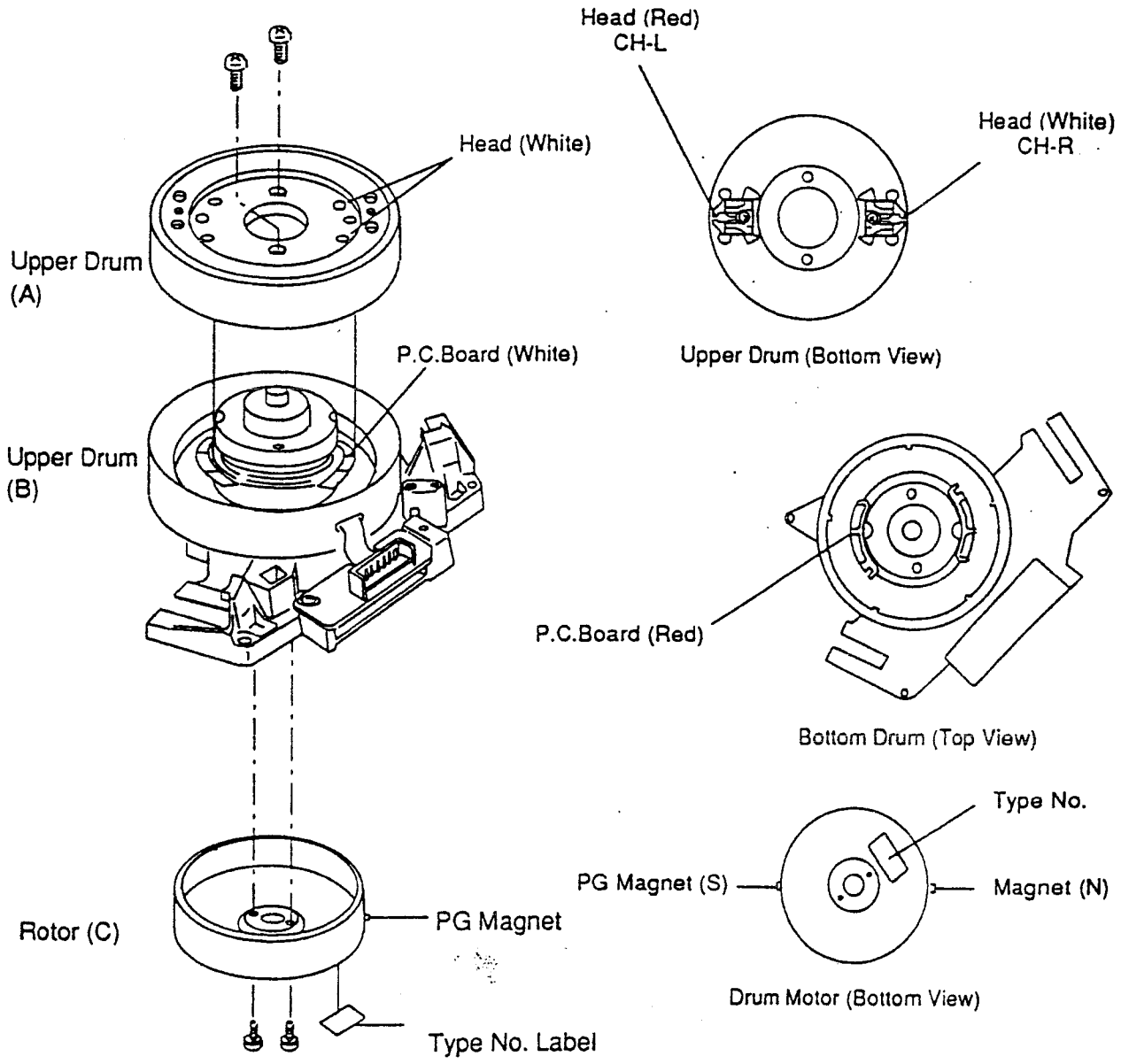
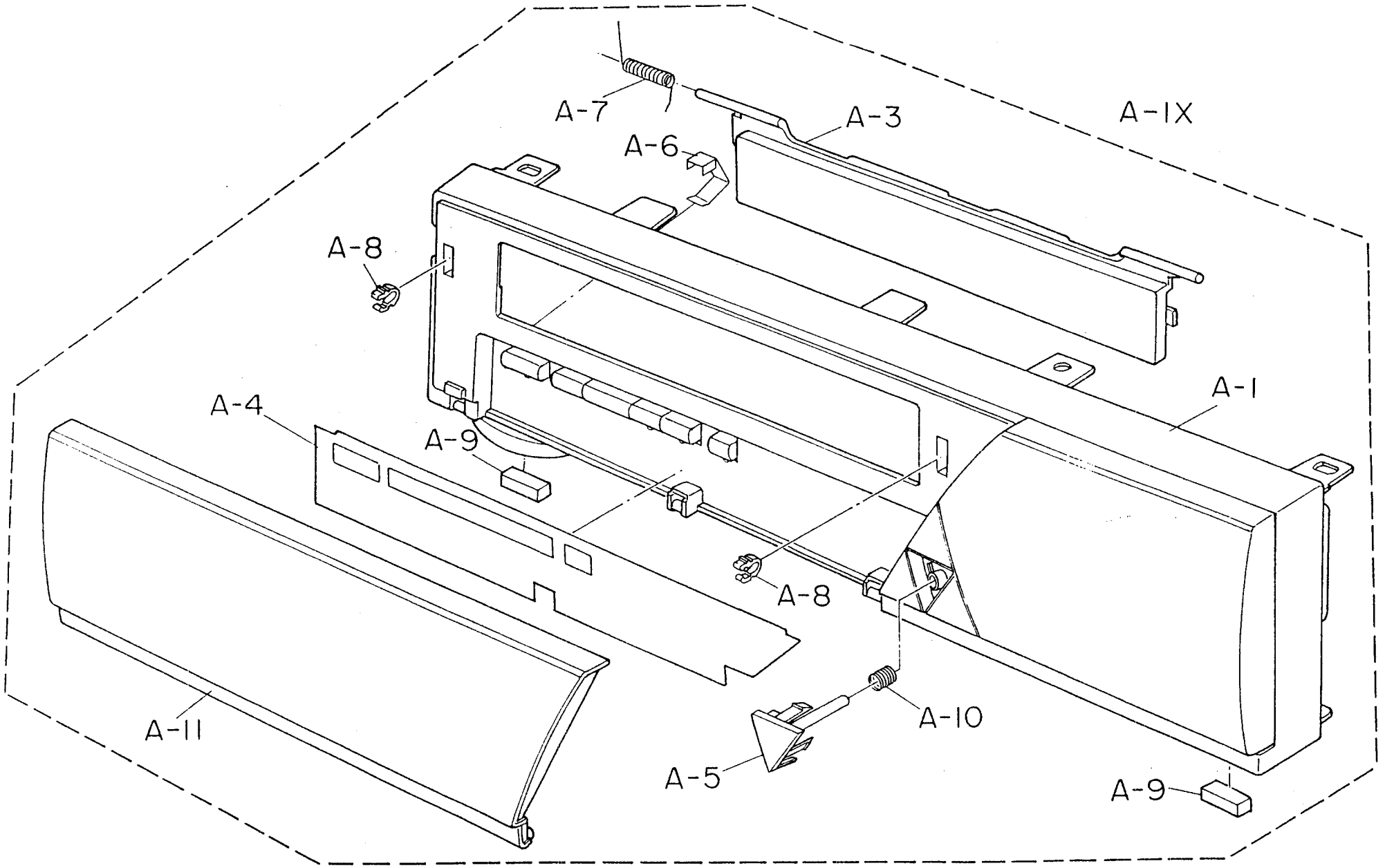


Fig. M14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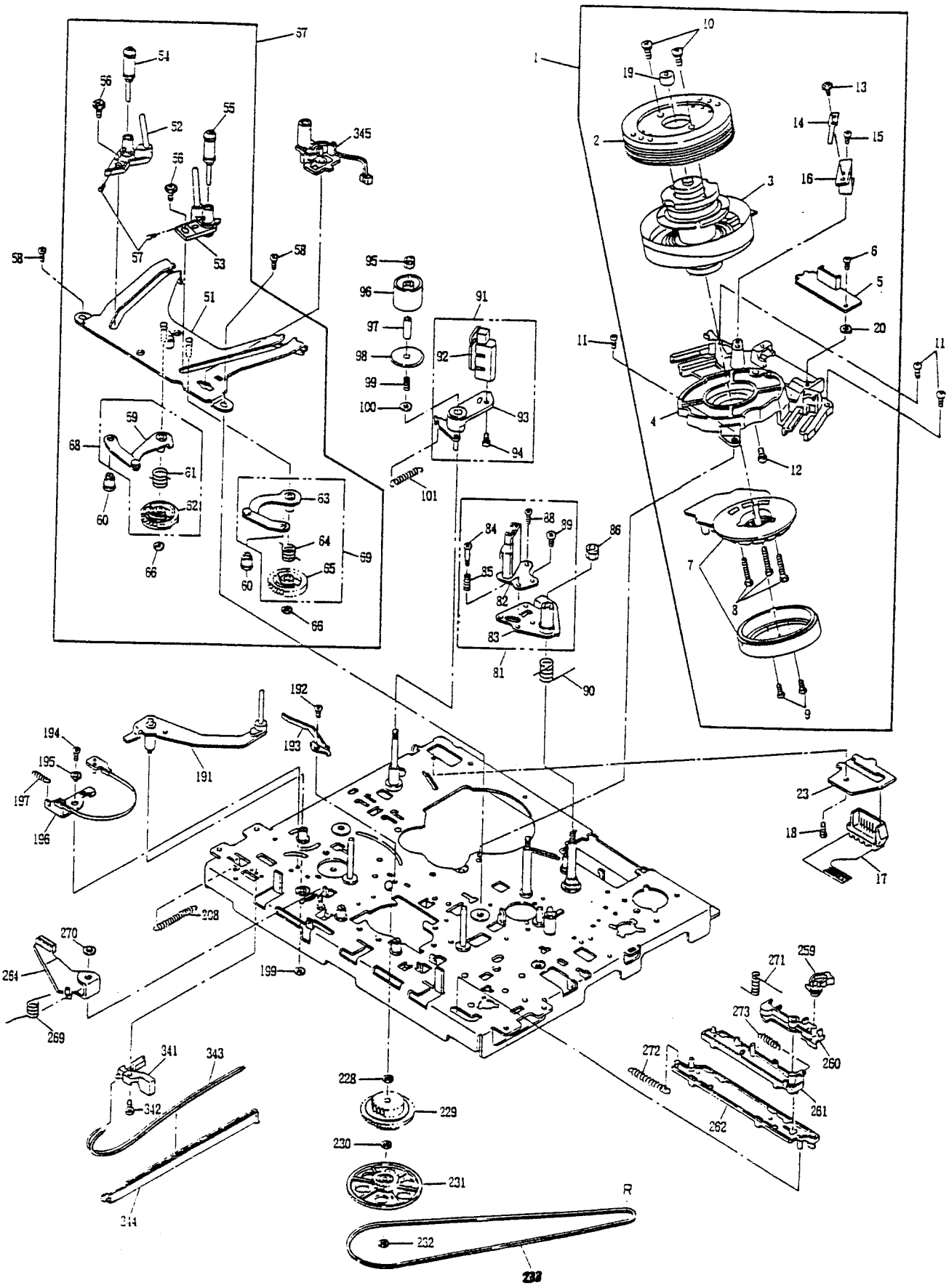
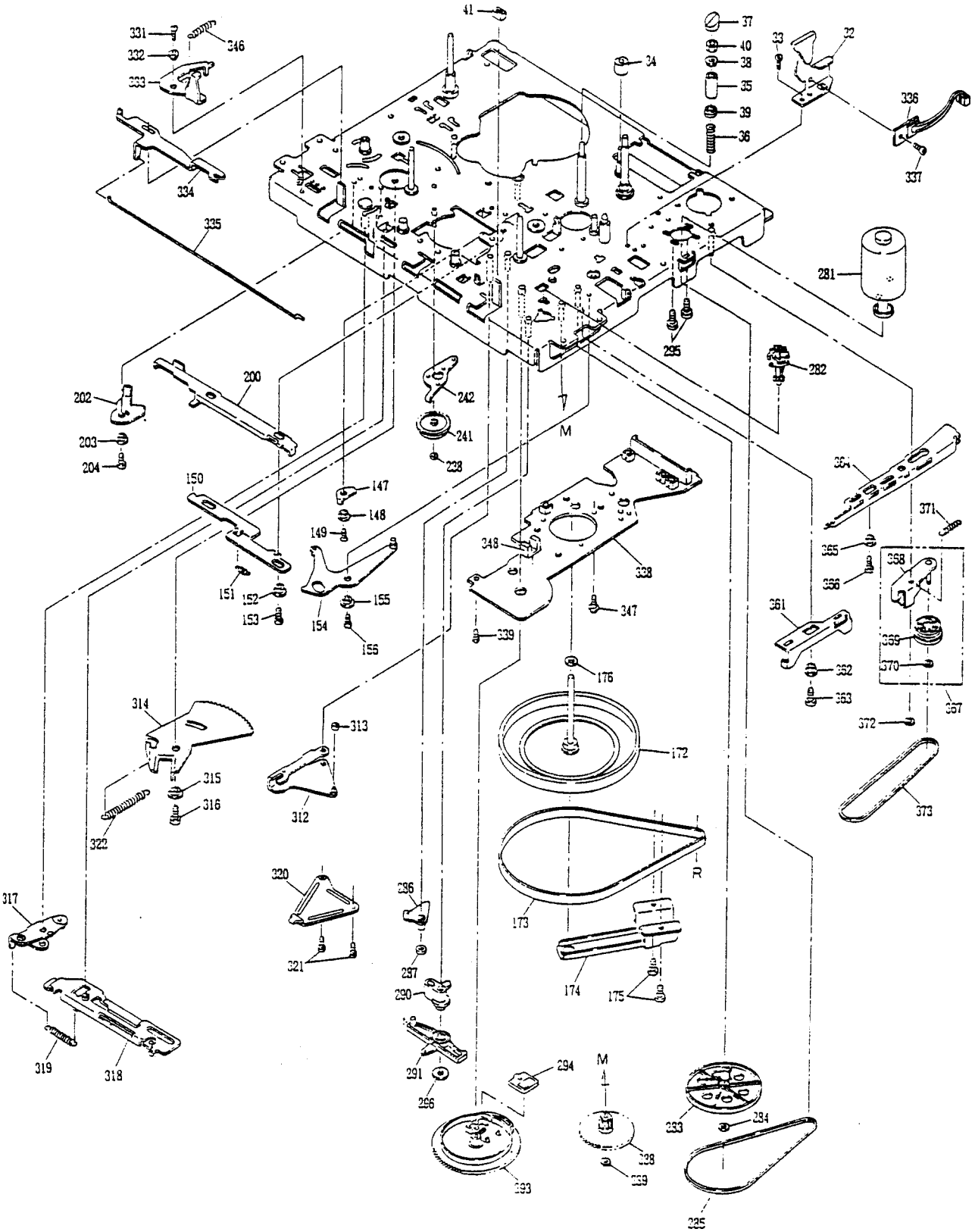
6-3. EXPLODED VIEW (DECK)

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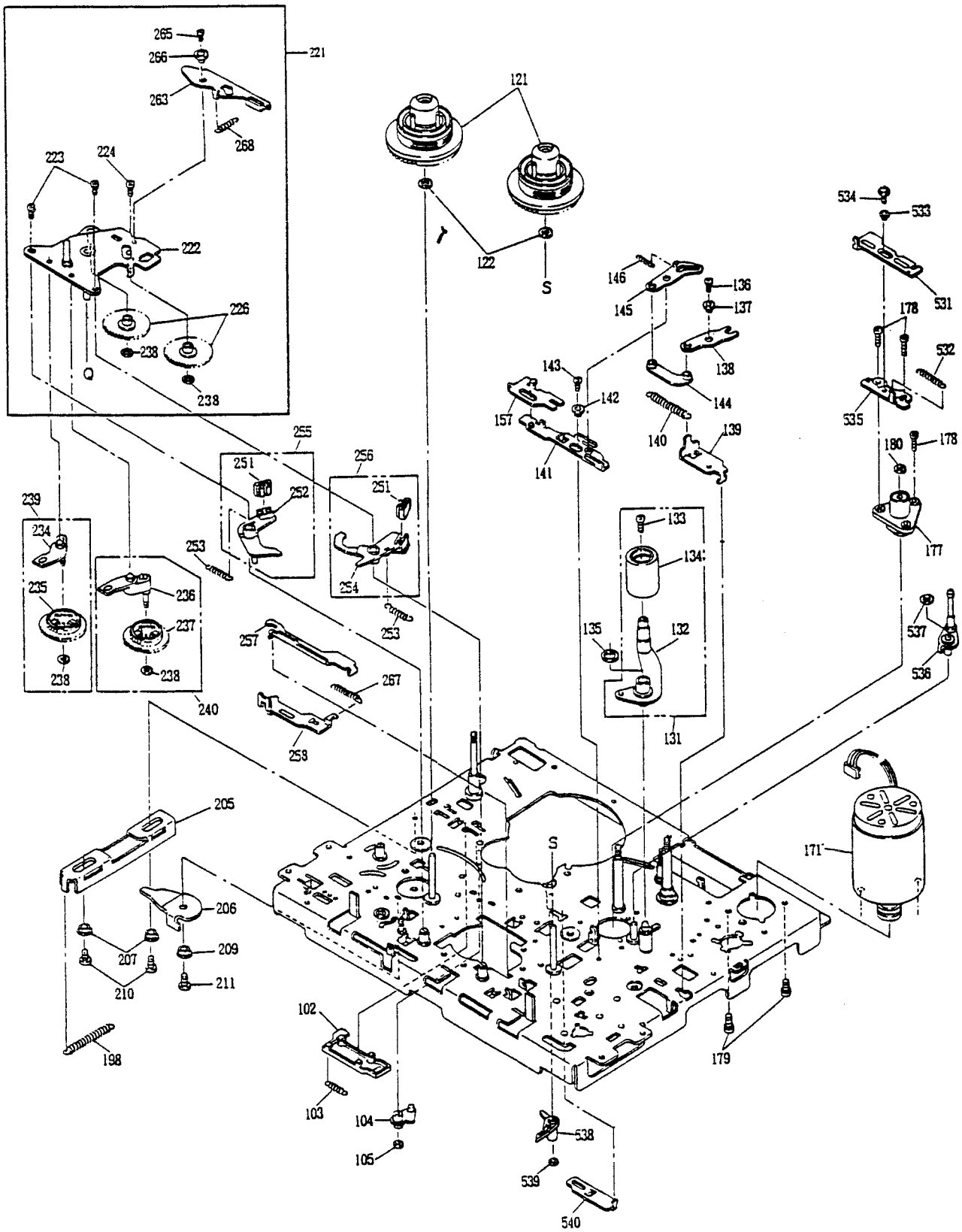
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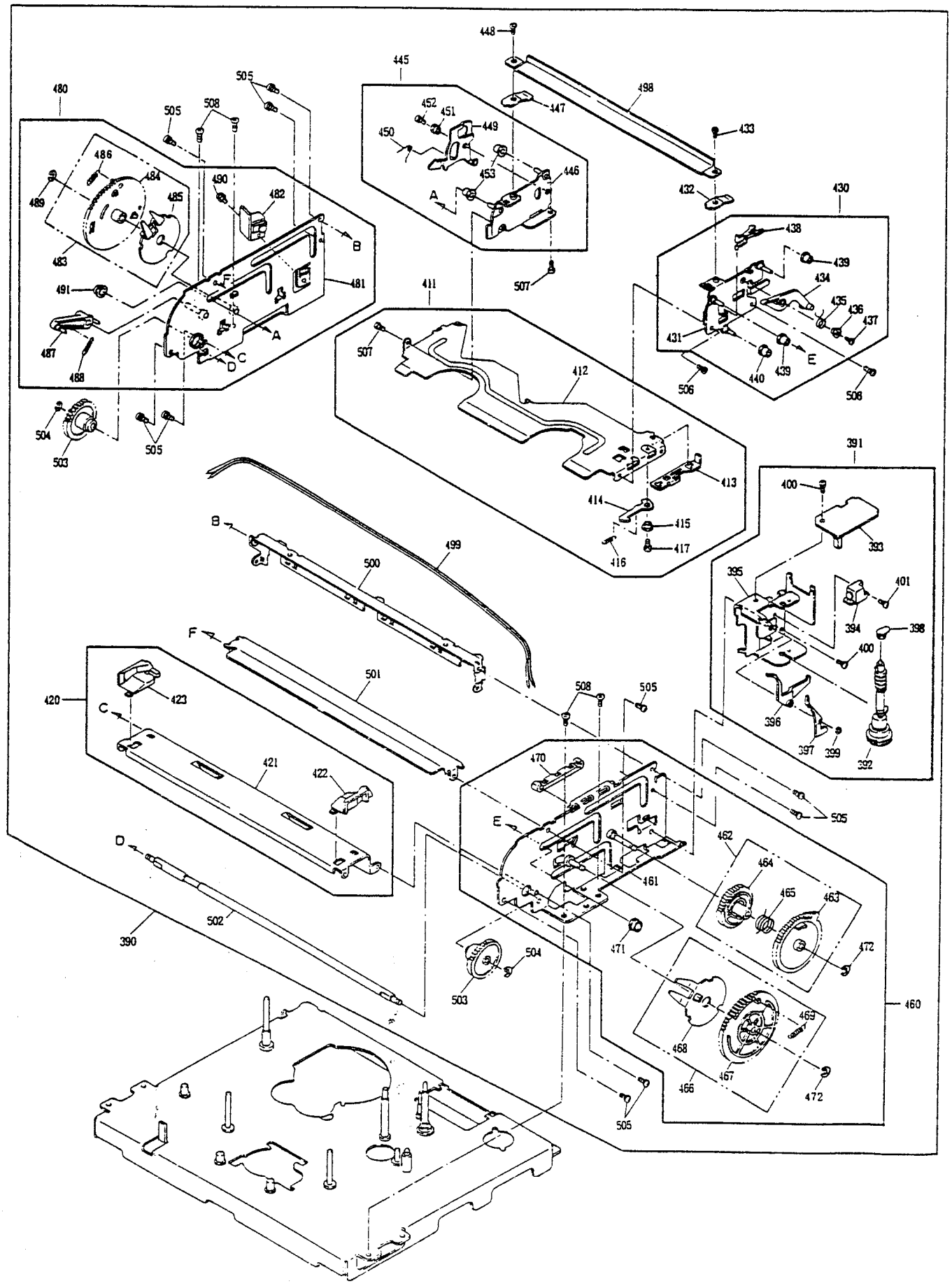
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LISTE DES PIECES MECANIQUES

Ref.	Description	Part No.
1	Cylinder Assembly	250801
2	Drum, Upper	250846
3	Drum Assembly Lower	153064
4	Mount Cylinder	153065
5	PCB Assembly Video Out	153066
6	Screw W Sems M2.6φ6	
7	Motor TM84	250802
8	Screw C-Tight M2.6φ20	
9	Screw Sems Ms.6φ6	
10	Screw Bind M3φ8	
11	Screw C-Tight M3φ10	
12	Screw B-Tight M2φ6	
13	Screw Cap M2.6φ3	
14	Ground Drum	153068
15, 18, 58, 143, 156, 204, 211, 331, 342, 363, 366, 508	Screw C-Tight M2.6φ5	
16	Bracket Drum Ground	153069
17	PCB Assembly DM	153070
20	Washer Toothed Lock M2.6	
23	Connector Bracket	250803
32	Open Angle	153807
33, 192, 194, 224	Screw C-tight M2.6φ4	
34	Adjuster Tracking	250804
35	Guide Tape	150727
36	Spring Tape Guide	153088
37	Cap, Guide	151252
38	Flange (C), Tape Guide	153089
39	Flange (D), Tape Guide	250805
40	Nut M3.0	
41	Rubber Damper	153091
51	Loading Base	153071
52	Block (L) Loading	153072
53	Block (R) Loading	153073
54, 55	Roller Post ST	153314
56	Screw, Cup M2.6φ3	
57	Screw Set M2.0φ3 (Plane Type)	
59	Plate (L) Loading	153074
60	Boss Loading	153075
61	Spring (L) Loading Gear	153076
62	Gear (L) T Loading	153047
63	Plate (R) Loading	153077
64	Spring (R) Loading Gear	153078
65	Gear (R) T Loading	153079
66, 232, 287, 537	Washer, Polyslider, 02.6φ06φt0.5	
67	Loading Base Assembly	250806
68	Loading Gear (L) Assembly	250807
69	Loading Gear (R) Assembly	250808
81	Head Base Assembly	250809
82	Head, Ace	153134
83	Base, Head	250810
84	Screw, Azimuth Spring	
85	Spring, Azimuth	151268
86, 95	Nut Nylon M3	150754
88	Screw M2.6φ7	
89	Screw Set M3φ6	
90	Spring Head	153136
91	Plate Assembly Full Erase	153137
92	Head Full Erase	150759
93	Plate Full Erase	153138
94	Screw Flange Bind M2φ3	
96	Roller Impedance	153139
97	Sleeve Impedance Roller	153140
98	Flange (A) Tape Guide	153141
99	Spring Tape Guide Flange	153142
100	Washer Plane 03φ08φt0.5	
101	Spring FE Plate	153143
102	Plate FE Slide	153144
103	Spring FE Actuate	153145
104	Lever FE Actuate	153146
105, 270, 289, 539	Washer Polyslider, 02.1φ05φt0.5	

Ref.	Description	Part No.
121	Reel Assembly	153147
122, 176	Washer, 03.1φ06φt0.5	
131	Arm Assembly, Pinch Roller	153148
132	Arm Pinch Roller	153149
133	Screw M2.6φ4	
134	Roller (A), Pinch	150768
135	Washer, Polyslider 05φ08φt0.5	
136, 337, 400, 505	Screw Sems M2.6φ4	
137, 142, 203, 209, 332, 362, 365, 415	Collar	153084
138	Angle, P Actuate	153150
139	Holder, P Angle	153151
140	Spring, P Roller	153152
141	Plate (A), P Slide	153153
144	Joint Plate	153154
145	Arm, P Actuate	153155
146	Spring, P Actuate Arm	153156
147	Crank, P	153092
148	Collar, P Crank	153093
149	Screw, C-Tight FH (For Camera), M2.6φ4	
150	Slider, P	153094
151	Spring, P Slider	153095
152	Collar, P Slider	153096
153	Screw, C Tapping, M2.6φ5	
154	Lever, P Cam	153097
155	Collar, P Cam Lever	153098
157	Plate (B) P Slide	153157
171	Motor Assembly Capstan	153158
172	Capstan, Flywheel	153099
173	Belt, Main	153100
174	Angle Assembly, Flywheel	153101
175	Screw C-Tight M3φ5	
177	Housing Assembly, Metal	153159
178	Screw C-Tight M2.6φ8	
179	Screw Sems M3φ4	
180	Nylon Washer 2.92φ5φ0.5	
191	Arm, Back Tension	153160
193	Support, Back Tension	153161
195	Collar, Band Holder	153162
196	Band, BT	153163
197	Spring, Band Holder	153164
198	Spring, Back Tension	153080
199	Washer, Polyslider, 02.1φ04φt0.5	
200	Plate BT Change	153102
202	Lever BT Return	153257
205	Plate, BT Actuate	153081
206	Lever, BT Actuate	153082
207	Collar, BT Actuate Plate	153083
208	Spring, BT Actuate Plate	153165
210	Screw, S-Tight (For Camera) M2.6φ3.5	
221	Plate Assembly	250811
222	Plate Semi Assembly	250812
223	Screw Sems M2φ4	
226	Gear, Reel Drive	250813
228	Washer, Nylon, 03.1φ06φt0.3	
229	Clutch Assembly	250814
230	Washer, Nylon, 02.98φ06φt0.3	
231	Pulley Assembly, Middle	153203
233	Belt, Drive	153204
234	Arm Assembly, P Gear	153206
235	Gear, Play	250815
236	Arm Assembly, RF Gear	153209
237	Gear, FF	250816
238, 284, 370, 399	Washer, Polyslider, 01.6φ03.8φt0.3	
239	Gear Assembly, P	250817
240	Gear Assembly, RF	250818
241	Return Gear Assembly	250819
242	Return Arm	250820

Ref.	Description	Part No.
251	Shoe, Brake	153213
252	Arm, S Brake	153214
253	Spring, Brake Arm	153211
254	Arm, T Brake	153252
255	Arm Assembly, S Brake	153212
256	Arm Assembly, T Brake	153251
257	Lifter, Brake	153201
258	Actuator, L Brake	153218
259	Hook, Trigger	153219
260	Lever, Trigger	153220
261	Plate, Brake	153221
262	Brake Actuate, Base	153222
263	Brake, Take-Up Soft	250821
264	Brake, S Soft	153223
265	Screw SL FH (For Camera) M2φ3	
266	Collar, Take-Up Soft Brake Arm	250822
267	Spring, L Brake Actuator	153224
268	Spring, Take-Up Soft Brake Arm	250823
269	Spring S Soft Brake	153225
271	Spring, Trigger Lever	153226
272	Brake Actuate Base Spring	250824
273	Brake Plate Spring	250825
281	LM Assembly	153104
282	Bearing Assembly, Trigger	153105
283	Pulley, Loading	153106
285	Belt, Loading	153107
286	Arm (B) Search	153108
288	Gear, Loading	153109
290	Arm, Brake Actuate	153110
291	Arm, Eject Actuate	153111
293	Cam, Loading	153113
294	Brush, S	153114
295	Screw C-Tight M3φ4	
296	Washer, Polyslider, 02.6φ08φt0.5	
312	Lever Semi Assembly Loading	153366
313	Roller, Cam	153367
314	Plate Loading Gear	153116
315	Collar, Loading Gear Plate	153117
316	Screw C-Tight M3φ6	
317	Lever Semi Assembly, Loading Actuate	153118
318	Plate Semi Assembly, Loading Actuate	153119
319	Spring, Loading Actuate	153120
320	Plate Loading Lever Reinforce	153121
321, 401	Screw Sems M2φ5	
322	Spring, L Gear Plate	153122
333	Lever, Rec	153123
334	Actuator, Rec	153124
335	Spoke, Rec Actuate	153125
336	Sensor, Dew	250826
338	Plate, Base	250827
339	Screw S-Tight (For Camera) M2.6φ5	
341	Switch, Leaf	153085
343	Wire	
344	Holder, Wire	
345	Lamp Holder Assembly	153086
346	Spring, Rec Lever	250828
347	Collar, Screw	250829
361	Actuator, Eject	153259
364	Plate, L Brake	153129
367	Arm Assembly, E Idler	153260
368	Arm Semi Assembly, E Idler	153261
369	Pulley, Eject	153254
371	Spring, Idler Arm	153131
372	Washer, Polyslider, 02.1φ06φt0.5	
373	Belt, Front Loading	153132
390	Loading Assembly, Front	250830
391	Bracket Assembly, Cassette Loading	153235
392	Clutch Assembly, Front Loading	153236
393	PCB Assembly, Front Loading	153237

Ref.	Description	Part No.
394	Sensor PCB (RM)	153238
395	Bracket Semi Assembly, Cassette Load	153239
396	Lever, IN SW	153240
397	Lever S SW	153241
398	Bearing (A) F Worm	153009
411	Holder Assembly, Cassette	153166
412	Holder, Cassette	151520
413	Plate, Slide	151521
414	Plate (A), C Lock	151522
416	Spring, Lock	153167
417, 506	Screw SL (For Camera) M2.6φ3	
420	Angle Assembly, Front	153168
421	Angle, Front	153169
422	Guide (R), Tape	153370
423	Guide (L), Tape	153171
430	Plate (R) Assembly, Side	153172
431	Plate (R), Side	153173
432	Plate, Cassette Push	153174
433, 448	Screw (For Camera) M2.3φ2	
434	Lever, Open	151530
435	Spring, Open Lever	151531
436	Lever Collar, Open	151532
437	Screw, SL (For Camera) M2φ4	
438	Lever, Lock Release	151533
439	Roller, Guide	153175
440	Roller, Guide	151534
445	Plate (L) Assembly Side	153176
446	Plate (L) Side	153177
447	Plate, Cassette Push	153174
449	Plate (L) C Lock	150840
450	Spring (L) Lock Plate	153178
451	Collar, Lock Plate	151539
452	Screw (For Camera) M2φ2.5	
453	Roller Guide	153175
460	Frame (R) Assembly	250832
461	Frame (R)	250833
462	Wheel Assembly, Worm	153181
463	Wheel Worm	153182
464	Gear, Friction	153250
465	Spring Friction	153184
466	Gear (R) Assembly Lift	153185
467	Gear (R) Lift	250834
468	Arm, Lift	151549
469, 486	Spring, LP	151550
470	Guide, Open Lever	151551
471, 491	Sleeve Guide	151552
472, 489, 504	E Ring S 2.5	151264
480	Frame (L) Assembly	250835
481	Frame (L)	250836
482	Sensor PCB (LM)	153189
483	Gear (L) Assembly Lift	153190
484	Gear, Lift	250837
485	Arm, Lift	151549
487	Lever, Lift	250838
488	Spring, Lift Lever	250839
490	Screw Sems M2.6φ7	
498	Stay, Top	151535
499	Wire, End Sensor	153193
500	Angle, Rear	153194
501	Plate, Upper	250840
502	Shaft, Synchronize	250841
503	Gear (A), Synchronize	153195
507	Screw (For Camera) M2.3φ2.5	
531	Plate, RG Slide	153227
532	Spring, RG Slide	153228
533	Collar, RG Slide Plate	153229
534	Screw Sems M2φ4	
535	Base, RG Slide	153230
536	Arm Semi Assembly RG	250842
538	Arm, RG Actuate	153232
540	RG Actuator	153233

MODEL NO.VCR9001

MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION.	PT. NO.
A 1X	FRONT PANEL ASS;Y	
A1	FRONT ASS;Y	254105
	FRONT	
	BUTTON MODE	
	PANEL COUNTER	
	PLATE,COUNTER	
	PLATE TIMER	
A2	DOOR,TIMER	254106
A3	DOOR CASSETTE	254107
A5	BUTTON,POWER	
A6	SPRING,TIMER DOOR	
A7	SPRING DOOR	
A8	LATCH	
A9	FOOT	
A16	CASE,TOP	254103
A17	PANEL,BOTTOM	
A18	LABEL RATING	
B1	DECK ASS'Y TN5900P1NRM554	
	CHASSIS U1LC(ST-P)	
	GROUND PLATE U1	
	CUSHION	
	SHIELD PLATE	
	METAL GROUND (L) V3	
	PLATE, GROUND PCB V3	
	OWNER MANUAL	
	REMOTE CONTROL HANDSET	254110
	(REMOCON BOX (AIT) EUR-651303A)	
	RF CABLE	
	RF CABLE JXP0517-01-020	
	RF CORD SECAM	
	SET POLY PACK	
	CARTON	

ELECTRICAL PARTS LIST

REF.NO.	DESCRIPTION	PT.NO.
	MISCELLANEOUS	
CF141	CERAMIC FILTER 4.5MHZ	251718
DL101	COMB FILTER 4.433619MHZ	254056
T52	EQUALISER FILTER SDL102421F6E-4240	253287
T101	LC FILTER ELB4W009N	254065
T51	L.P.F. 3MHZ, ELB-4M031N /LPF-U30-A	153332
L601	LINE FILTER FK0B160MH16 TF2317C-102Y2R0-01	250268
T201	COIL,OSC AUDIO 113M/0/D686	254595
X101	CRYSTAL 4.433619MHZ	153024
X801	CRYSTAL 4.194304MHZ HC49U	153027
X802	CRYSTAL 32KHZ (10PPM)	153359
X501	CERAMIC RESONATOR 3.58MHZ	153026
X701	CERAMIC RESONATOR 500KHZ CSB500E	254069
FIP801	F.I.P 16MT-17GK	250565
RS801	REMOTE SENSOR UNIT SFN-R0011	250026
TC801	TRIMMER CAP. 10PF NPO	250402
F601	FUSE T200MA/250V	150973
F602	FUSE T500MA/250V	150974
T601	POWER TRANS 1150939	250590
TU701	TUNER VIF, VP7M / TPS7-BGL01 TUNER 250560/TU	Fi:250560/F
RF701	RF CONVERTOR ENC-87987 /MDF33-UM3815	253280
	CORD STOPPER SR-4N-4	
	RCA PLUG CORD	
	COILS	
L1,802,953	MICRO INDUCTOR 100UH-K-AXT	253299
L3,13	MICRO INDUCTOR 150UH-K-AXT	253348
L4	MICRO INDUCTOR 82UH-K-AXT	253298
L5	MICRO INDUCTOR 2.2UH-K-AXT	240998
L7	MICRO INDUCTOR 47UH-K-AXT	250493
L8	MICRO INDUCTOR 27UH-K-AXT	253294
L9	MICRO INDUCTOR 270UH-K-AXT	1400521
L10	MICRO INDUCTOR 33UH-K-AXT	253295
L51,52	MICRO INDUCTOR 68UH-K-AXT	253297
L53,59	MICRO INDUCTOR 100UH-K-5FT	253300
L2,6,11,55,101	MICRO INDUCTOR 18UH-K-AXT	253291
L102	MICRO INDUCTOR 3.9UH-K-AXT	250014
L103,106	MICRO INDUCTOR 680UH-K-5FT	253523
L105	MICRO INDUCTOR 330UH-K-AXT	253522
L107	MICRO INDUCTOR 15UH-K-AXT	253290
L151,152	MICRO INDUCTOR 220UH-K-AXT	253521
L153	MICRO INDUCTOR 56UH-K-AXT	253296
L154	MICRO INDUCTOR 22UH-K-AXT	253292
L181	MICRO INDUCTOR 100UH-K	253347
L801	MICRO INDUCTOR 220UH-K-5FT	253362

L951	MICRO INDUCTOR 180UH-K-AXT	253350
L201	INDUCTOR 18MH	250497
L141	COIL 5MH 113M747	253525
T151,156	COIL REC EQUALISER 113M717	250585

DIODES

D51,102,141 142,143 194,401-405 451,501,503,651 655,656,701 702,710,711 712, 767,798,799 801-808,817 818,824,825 840,842-844 909-911	1SS254 / US104M	253061
D612	D 1SS252 / GMB01U / US1090M	250578
D613	DZ MTZ5.1B / UZ5.1BSB	250207
D614	DZ MTZ30A / UZ30BSA	175066
D706,707	DZ MTZ8.2B / UZ8.2BSB	272308
D830	LED SLR-34VR5 RED	250576
D831	LED SLR-34MG5 GREEN	250583
D832	LED SLR-34YY5 YELLOW	250577
D601-604 !	D 1N4003F2 / GP10-4003	254031
D610-611	D 1SR35-200A / 1N4003T	152073
D605 !	D S4VB20 / RS403L BRIDGE	151626

ICs

IC51	IC LA7323	250002
IC52	IC LC8992	250003
IC54	IC BA7611N, VIDEO SWITCH	250567
IC101	IC LA7333, CHROMA	250568
IC141	IC AN6368	250266
IC151	IC BA7107S	250665
IC405	IC BA6209N, MOTOR DRIVER	254016
IC404	IC BA6219B, MOTOR DRIVER	150608
IC501	MICROCONT'R 4 BIT 14DN513	152048/A
IC502	IC BU4013B / NJU4013BD	250570
IC53,651	IC AN78M05F /NJM78M05FA/UPC78M05HF	254020
IC601	IC AN7818F /NJM7818FA, VOLTAGE REG.	157660
IC602-604	IC AN7812F/ NJM7812FA, VOLTAGE REG.	152035
IC652	IC AN78L05 / NJM78L05A/UPC78L05J	250009
IC654	IC AN78L09 / NJM78L09A	254553
IC655	IC L5631 / UPC574J	152401
IC701	IC BA10393N / ANLN280 /LA6393S/ NJM2903S	250372
IC702	IC LA7210	152027
IC801	MICROCONT'R 8BIT GC90***MS009	254710

IC802	IC X24C01P	254015
IC803	IC PST-529C-2 /MN1280-T, RESET	253263
IC804	IC PST529G-2 / MN1280-M, RESET	251117
IC901,903	IC LA7952	250573
IC902	IC BU4052B /NJU4052BD/MN4052B	254712
IC904,905	IC LVA521S-2 VIDEO SWTICH	254019
IC 1	IC LA7320	250366
IC201	IC BA7767AS	250005
IC401	IC SERVO CONTRL 14DN363	152047
IC402,403	IC BA728N DUAL OPE AMP	254013

SWITCHES

SW801-806, 808-811,813 814 818-829,833 840,841,801A	EVQ-335 05R/SK0HV00059 PUSH SW.	254037
SW832	1C-2P SLIDE SWITCH	254332

TRANSISTORS

Q1-3,105	2SC2058 / 2SC2839	151417
Q4,52,53 55,56,101 103,151-153 401,403 501,502 701,703 843,QR712	2SC1740 /2SC536SP	50016
Q201	2SC2060 / 2SD400	192586
Q191 402,751	2SA933 / 2SA608SP	150874
Q601	2SA1038 / 2SA1016K	152039
Q602	2SC2808	254036
Q603,652	2SB1010 / 2SB892	250476
Q651	2SD1384 / 2SD1207	170451
Q653,654	2SA854S	254717
Q655	2SA934	152037
Q656	2SB892 / 2SB1010	250476
Q705	FET 2SK128 / 2SK304	157532
Q51,54 192,951,952	2SA933 / 2SA608SP	150874
QR53,54,57, 152,195 196,191,193 194,501,651 401,402 652-654,701 706,707,711 713,840-842 844,846,902,903	DTC124ES / 2SC3400	152050

905-912,914 915,951,952		
QR702-704 708,710,714	DTA143XS	152406
QR707	2SD1468 /2SD1012	152041
QR705,845,901 913	DTA124ES / 2SA1346	176660

VARIABLE RESISTORS

VR54	500 OHM CARBON P.O.T	251503
VR402	200K OHM CARBON P.O.T	254719
VR951,952	1K OHM CARBON P.O.T	254593
VR1,53	2K OHM CARBON P.O.T	253418
VR51,52,55	5K OHM CARBON P.O.T	254394
VR151	20K OHM B METAL P.O.T	251508/250486
VR201	100K OHM CARBON P.O.T	254054
VR401	200K OHM B METAL P.O.T	250489
VR801	250K OHM B VOLUME	251509
VR802	20K OHM B VOLUME	250486

DESCRIPTION	REF. NO.	PT. NO.

CAPACITORS

CERAMIC

12 PF/50V	C953	150877
18 PF/50V	C20,	250116
22 PF/50V	C18,21,27,812	240225
27 PF/50V	C10,28,	240235
33 PF/50V	C801,802	150514
39 PF/50V	C954	150490
56 PF/50V	C22,701	250404
68 PF/50V	C16	193721
100 PF/50V	C203	157573
150 PF/50V	C15	240237
180 PF/50V	C29	157574
220 PF/50V	C25,217	157575
270 PF/50V	C718	157677
330 PF/50V	C716	240233
0.001 UF/50V	C209,715	157679
0.0018 UF/16V	C201	200974
0.0033 UF/16V	C208	240663
0.0047 UF/16V	C415,417,709	153916
0.01 UF/16V	C11,12,91,427,430,502,803,804,811 951,952,	240229
0.022 UF/50V	C1,4,6,7,19,24,421,429 C612,613	251125
0.033 UF/16V	C655	240663
0.047 UF/25V	C426,428,431,751,806	201719
0.1 UF/50V	C2,3,211	240223

CHIP CERAMIC

5 PF/50V	C54	250164
15 PF/50V	C57,64,	250165
18 PF/50V	C83	250166
22 PF/50V	C68,70,	250167
33 PF/50V	C56	250061
47 PF/50V	C59,67,104,	270508
56 PF/50V	C179	240470
68 PF/50V	C105	253433
82 PF/50V	C51,69,	250169
100 PF/50V	C66,108,163,176	250170
150 PF/50V	C123	240472
180 PF/50V	C60	250171
200 PF/50V	C124	250062
220 PF/50V	C52,158,169	250172
330 PF/50V	C125	250174
390 PF/50V	C55	250063
0.01 UF/50V	C72,73,80,81,88,101,103,109-111,113 115,119,120,126,128,133,148,149,153 160,162,164,165,168,170-172,178	270517
0.022 UF/50V	C118,154,155,	270518
0.047 UF/25V	C53,76,94,96,121,132,137,152,156,185 174	270515

ELECTROLYTIC

0.1 UF/50V	C144,808	150908
0.22 UF/50V	C433,704	152546
0.47 UF/50V	C63,89,717,720,725,	157670
0.47 UF/50V NP	C58	250060
1 UF/50V	C71,102,114,116,117,207,212,222 401,403,404,719240862	20062
1 UF/50V NPO	C402	240862
2.2 UF/50V	C62,86,87,411,503	157672
2.2 UF/50V NPO	C61	250405
4.7 UF/25V	C5,74,202,214,	250407
8.2 UF/16V	C412	250408
10 UF/16V	C75,77,90,98,99,141,142,204 409,410,501,705,809 706,711,714 904-906,908,912-918,940	151578
22 UF/16V	C14	1409170
22 UF/63V	C606	170609
33 UF/16V	C216,901,923	250054
33 UF/25V	C432	250592
47 UF/6.3V	C23,78,,84,92,97,16,150,151,157,184 173,210,413,416,928	151327
47 UF/16V	C8,215,220,610,611,615,707,712 907,919,920,957,960	157629
47 UF/25V	C609	157650
47 UF/35V	C608,656	157651
47 UF/63V	C607	157652

100 UF/6.3V	C424,425,810,807	250410
100 UF/16V	C454,710,713,724,909,	157568
100 UF/25V	C451	157569
330 UF/16V	C910,911	800371
470 UF/6.3V	C100,723	253452
470 UF/10V	C955,958	270963
2200 UF/35V	C604,605	157654
4700 UF/16V	C603	170613

MYLAR

0.033 UF/50V	C419	21012
0.047 UF/100V	C221	175990
0.068 UF/50V	C79,702,703	157732
0.18 UF/50V	C420	250602

SEMICON

0.001 UF/25V	C902,922	250593
0.022 UF/25V	C405	254029
0.047 UF/25V	C9,112,406,407,422,423	1420142
0.01 UF/25V	C205,213,218,219,408	250594
0.1 UF/12V	C161,414,418	202857
0.1 UF/25V	C452,453,455,458	

RESISTORS

CARBON

ALL RESISTORS BELOW ARE 1/5 OR 1/6W UNLESS OTHERWISE INDICATED

4.7 OHM	R222	152146
22 OHM	R224	157602
47 OHM	R223	152160
75 OHM	R754,755,761	152163
82 OHM	R717	152164
91 OHM	R762	152165
100 OHM	R4,201,409,435,438,602,603,728	152166
150 OHM	R413,757	152168
160 OHM	R601	240677
180 OHM	R3,203,516,812	152169
220 OHM	R2	251534
330 OHM	R832	240492
390 OHM	R15,18	157605
470 OHM	R763	152174
560 OHM	R20,218,730	152175
680 OHM	R10,11,746,830,831	152176
820 OHM	R16,439	152178
1K OHM	C731,R12,14,21,405,422,428, 430,457-459,820,733 901,924,956,773 M.773 N,	152179
1.2K OHM	R509,601,604,732	152180

1.5K OHM	R603,611	152181
1.8K OHM	R9,210	152182
2.2K OHM	R7,13,17,136,403,404,410,606,608 ,711,957	152183
2.7K OHM	R193,453,454,517-519,756,758	152184
3K OHM	R433	240951
3.3K OHM	R22,437,710	152185
3.9K OHM	R19,216	152187
4.7K OHM	R1,212,406,416,423,429,508,609 840,923,951,952,954,955	152188
5.6K OHM	R214,444	152189
6.8K OHM	R8,221	251536
10K OHM	R192,205,208,219,407,408 411,412,427,441,445,501 502,514,602,720,738,739,760 813,820,821,907,908,941.943,	253389
13K OHM	R415	250138
15K OHM	R432,704,731,	152196
16K OHM	R719	253546
18K OHM	R705,706,740	157608
22K OHM	R207,446,447,511,512,605-607,718 723,736,743,753,841-843,928,940 921,	270558
27K OHM	R215,220,420,513	152199
33K OHM	R213,202,414	240498
39K OHM	R442,455,456,	1420145
47K OHM	R209,401,418,421,424,505-507,604,605 607-610,612,703,707,708,709,747,759 801-804,942,	240499
56K OHM	R417,419,426,431,434,702,714	152204
82K OHM	R510	152207
100K OHM	C861,862 R425,436,610,701,737,806-811 821,909-914,	152209
150K OHM	R443	152211
220K OHM	R925	193562
330K OHM	R734	152215
390K OHM	R204	152216
470K OHM	R402,503,504	152217
820K OHM	R735	152221
1M OHM	R211,713	152223

CHIP RESISTORS
1/10W UNLESS OTHERWISE STATED

0 OHM	C65,145,R129,181	270535
18 OHM	R180	250603
33 OHM	R176	270539
68 OHM	R81,	250157
150 OHM	R93,94,110,	250427
220 OHM	R60	250158
270 OHM	R112,173	250159
330 OHM	R164,	240533
390 OHM	R174	250160
470 OHM	R111,125,	270543

560 OHM	R58,71,100,165,166	270544
680 OHM	R177,178	254080
820 OHM	R152,163,199	254534
1K OHM	R51,62,67,72,79,80,84,85,89-92,109 117,120,121,128,144,146,149,159,135 154,158,162,169-172,	270547
1.1K OHM	R54,	253548
1.2K OHM	R119,147	250161
1.5K OHM	R175	240535
1.8K OHM	R73,113,116,123,124,131,161,168	250162
2.2K OHM	R52,65,69,70,87,160,167,196	270548
2.7K OHM	R53,57,115,	270549
3.3K OHM	R59,101,153	270550
3.9K OHM	R66	240536
4.7K OHM	R55,68,108,194,195	250029
5.6K OHM	R114,	250030
8.2K OHM	R56,107,151,179,	250031
10K OHM	R143,155	250135
12K OHM	R74,	250033
15K OHM	R141,148	253402
22K OHM	R106,118,142	250034
33K OHM	R77,	250035
39K OHM	R197,198	250036
47K OHM	R130,145	250037
62K OHM	R157	253551
100K OHM	R83,104	253384
470K OHM	R82,	250040
560K OHM	R138,	254082
1M OHM	R61,63,64	250163

METAL

1.5K OHM 1W	R614	250516
3.3 OHM 1W	R452	176479
3.3 OHM2W	R451	157610

MODEL NO.V R901

MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION.	PT. NO.
A 1X	FRONT PANEL ASS;Y	254266
A1	FRONT ASS;Y	
A2	DOOR,TIMER	254267
A3	DOOR CASSETTE	254264
A5	BUTTON,POWER	
A6	SPRING,TIMER DOOR	
A7	SPRING DOOR	
A8	LATCH	
A9	FOOT	
A16	CASE,TOP	254223
A17	PANEL,BOTTOM	
A18	LABEL RATING	
B1	DECK ASS'Y TN5900P1NRM554	
B2 1	CABINET MAIN	
B2 3	GROUND PLATE MAIN	
B2 4	GROUND PLATE PCB	
B2 12	GROUND PLATE CONV.	
B2 13	HOLDER TRANS. MER	
B2 14	HOLDER STOPPER	
B2 15	HOLDER FIP	
B2 16	HEAT SINK IC	
B2 17	SHEILD BOTTOM	
B2 18	SHIELD TOP ASS'Y	
B2 19	HOLDER LED	
B2 21	SPACER DECK	
B2 22	CUSHION DECK	
B2 23	SHIELD PLATE	
B2 24	COVER PS	
B2 25	CUSHION PCB	
	OWNER MANUAL	
	REMOCON BOX (AIT) EUR-651303A	254087
	RF CABLE	
	RF CABLE JXP0517-01-020	
	RF CORD SECAM	
	POLY PACK SET	
	CARTON	

ELECTRICAL PARTS LIST

REF.NO.	DESCRIPTION	PT.NO.
	MISCELLANEOUS	
CF141	CERAMIC FILTER 4.5MHZ	251718
DL101	COMB FILTER 4.433619MHZ	254056
T52	EQUALISER FILTER SDL102421F6E-4240	253287
T101	LC FILTER ELB4W009N	254065
T51	L.P.F. 3MHZ, ELB-4M031N /LPF-U30-A	153332
L601	LINE FILTER FK0B160MH16	250268
	TF2317C-102Y2R0-01	254722
T201	COIL,OSC AUDIO 113M/0/D686	254595
X101	CRYSTAL 4.433619MHZ	153024
X801	CRYSTAL 4.194304MHZ HC49U	153027
X802	CRYSTAL 32KHZ (10PPM)	153359
X501	CERAMIC RESONATOR 3.58MHZ	153026
X701	CERAMIC RESONATOR 500KHZ CSB500E	254069
FIP801	F.I.P 16MT-17GK	250565
RS801	REMOTE SENSOR UNIT SFN-R0011	250026
TC801	TRIMMER CAP. 10PF NPO	250402
F601	FUSE T200MA/250V	150973
F602	FUSE T500MA/250V	150974
T601	POWER TRANS 1150939	250590
TU701	TUNER VIF, VP7M / TPS7-BGL01 TUNER: 250560/TU FI: 250560/FI	
RF701	RF CONVERTOR ENC-87987 /MDF33-UM3815	253280
	BATTERY COVER, UR6SEC252A	
	CORD STOPPER SR-4N-4	
	RCA PLUG CORD	
	COILS	
L1,802,953	MICRO INDUCTOR 100UH-K-AXT	253299
L3,13	MICRO INDUCTOR 150UH-K-AXT	253348
L4	MICRO INDUCTOR 82UH-K-AXT	253298
L5	MICRO INDUCTOR 2.2UH-K-AXT	240998
L7	MICRO INDUCTOR 47UH-K-AXT	250493
L8	MICRO INDUCTOR 27UH-K-AXT	253294
L9	MICRO INDUCTOR 270UH-K-AXT	1400521
L10	MICRO INDUCTOR 33UH-K-AXT	253295
L51,52	MICRO INDUCTOR 68UH-K-AXT	253297
L53,59	MICRO INDUCTOR 100UH-K-5FT	253300
L2,6,11,55,101	MICRO INDUCTOR 18UH-K-AXT	253291
L102	MICRO INDUCTOR 3.9UH-K-AXT	250014
L103,106	MICRO INDUCTOR 680UH-K-5FT	253523
L105	MICRO INDUCTOR 330UH-K-AXT	253522
L107	MICRO INDUCTOR 15UH-K-AXT	253290
L151,152	MICRO INDUCTOR 220UH-K-AXT	253521
L153	MICRO INDUCTOR 56UH-K-AXT	253296
L154	MICRO INDUCTOR 22UH-K-AXT	253292
L181	MICRO INDUCTOR 100UH-K	253347

L801	MICRO INDUCTOR 220UH-K-5FT	253362
L951	MICRO INDUCTOR 180UH-K-AXT	253350
L201	INDUCTOR 18MH	250497
L141	COIL 5MH 113M747	253525
T151,156	COIL REC EQUALISER 113M717	250585

DIODES

D51,102,141 142,143 194,401-405 451,501,503,651 655,656,701 702,710,711 712, 767,798,799 801-808,817 818,824,825 840,842-844 909-911	1SS254 / US104M	253061
D612	D 1SS252 / GMB01U / US1090M	250578
D613	DZ MTZ5.1B / UZ5.1BSB	250207
D614	DZ MTZ30A / UZ30BSA	175066
D706,707	DZ MTZ8.2B / UZ8.2BSB	272308
D830	LED SLR-34VR5 RED	250576
D831	LED SLR-34MG5 GREEN	250583
D832	LED SLR-34YY5 YELLOW	250577
D601-604 !	D 1N4003F2 / GP10-4003	254031
D610-611	D 1SR35-200A / 1N4003T	152073
D605 !	D S4VB20 / RS403L BRIDGE	151626

ICs

IC51	IC LA7323	250002
IC52	IC LC8992	250003
IC54	IC BA7611N, VIDEO SWITCH	250567
IC101	IC LA7333, CHROMA	250568
IC141	IC AN6368	250266
IC151	IC BA7107S	250665
IC405	IC BA6209N, MOTOR DRIVER	254016
IC404	IC BA6219B, MOTOR DRIVER	150608
IC501	MICROCONT'R 4 BIT 14DN513	152048/A
IC502	IC BU4013B / NJU4013BD	250570
IC53,651	IC AN78M05F /NJM78M05FA/UPC78M05HF	254020
IC601	IC AN7818F /NJM7818FA, VOLTAGE REG.	157660
IC602-604	IC AN7812F/ NJM7812FA, VOLTAGE REG.	152035
IC652	IC AN78L05 / NJM78L05A/UPC78L05J	250009
IC654	IC AN78L09 / NJM78L09A	254553
IC655	IC L5631 / UPC574J	152401
IC701	IC BA10393N / ANLN280 /LA6393S/ NJM2903S	250372
IC702	IC LA7210	152027

IC801	MICROCONT'R 8BIT GC90***MS009	254710
IC802	IC X24C01P	254015
IC803	IC PST-529C-2 /MN1280-T, RESET	253263
IC804	IC PST529G-2 / MN1280-M, RESET	251117
IC901,903	IC LA7952	250573
IC902	IC BU4052B /NJU4052BD/MN4052B	254712
IC904,905	IC LVA521S-2 VIDEO SWTICH	254019
IC 1	IC LA7320	250366
IC201	IC BA7767AS	250005
IC401	IC SERVO CONTRL 14DN363	152047
IC402,403	IC BA728N DUAL OPE AMP	254013

SWITCHES

SW801-806, 808-811,813 814 818-829,833 840,841,801A	EVQ-335 05R/SK0HV00059 PUSH SW.	254037
SW832	1C-2P SLIDE SWITCH	254332

TRANSISTORS

Q1-3,105	2SC2058 / 2SC2839	151417
Q4,52,53 55,56,101 103,151-153 401,403 501,502 701,703 843,QR712	2SC1740 /2SC536SP	50016
Q201	2SC2060 / 2SD400	192586
Q191 402,751	2SA933 / 2SA608SP	150874
Q601	2SA1038 / 2SA1016K	152039
Q602	2SC2808	254036
Q603,652	2SB1010 / 2SB892	250476
Q651	2SD1384 / 2SD1207	170451
Q653,654	2SA854S	254717
Q655	2SA934	152037
Q656	2SB892 / 2SB1010	250476
Q705	FET 2SK128 / 2SK304	157532
Q51,54 192,951,952	2SA933 / 2SA608SP	150874
QR53,54,57, 152,195 196,191,193 194,501,651 401,402 652-654,701 706,707,711 713,840-842	DTC124ES / 2SC3400	152050

844,846,902,903 905-912,914 915,951,952		
QR702-704 708,710,714	DTA143XS	152406
QR707	2SD1468 /2SD1012	152041
QR705,845,901 913	DTA124ES / 2SA1346	176660

VARIABLE RESISTORS

VR54	500 OHM CARBON P.O.T	251503
VR402	200K OHM CARBON P.O.T	254719
VR951,952	1K OHM CARBON P.O.T	254593
VR1,53	2K OHM CARBON P.O.T	253418
VR51,52,55	5K OHM CARBON P.O.T	254394
VR151	20K OHM B METAL P.O.T	251508/250486
VR201	100K OHM CARBON P.O.T	254054
VR401	200K OHM B METAL P.O.T	250489
VR801	250K OHM B VOLUME	251509
VR802	20K OHM B VOLUME	250486

DESCRIPTION	REF. NO.	PT. NO.

CAPACITORS

CERAMIC

12 PF/50V	C953	150877
18 PF/50V	C20,	250116
22 PF/50V	C18,21,27,812	240225
27 PF/50V	C10,28,	240235
33 PF/50V	C801,802	150514
39 PF/50V	C954	150490
56 PF/50V	C22,701	250404
68 PF/50V	C16	193721
100 PF/50V	C203	157573
150 PF/50V	C15	240237
180 PF/50V	C29	157574
220 PF/50V	C25,217	157575
270 PF/50V	C718	157677
330 PF/50V	C716	240233
0.001 UF/50V	C209,715	157679
0.0018 UF/16V	C201	200974
0.0033 UF/16V	C208	240663
0.0047 UF/16V	C415,417,709	153916
0.01 UF/16V	C11,12,91,427,430,502,803,804,811 951,952,	240229
0.022 UF/50V	C1,4,6,7,19,24,421,429 C612,613	251125
0.033 UF/16V	C655	240663

0.047 UF/25V	C426,428,431,751,806	201719
0.1 UF/50V	C2,3,211	240223

CHIP CERAMIC

5 PF/50V	C54	250164
15 PF/50V	C57,64,	250165
18 PF/50V	C83	250166
22 PF/50V	C68,70,	250167
33 PF/50V	C56	250061
47 PF/50V	C59,67,104,	270508
56 PF/50V	C179	240470
68 PF/50V	C105	253433
82 PF/50V	C51,69,	250169
100 PF/50V	C66,108,163,176	250170
150 PF/50V	C123	240472
180 PF/50V	C60	250171
200 PF/50V	C124	250062
220 PF/50V	C52,158,169	250172
330 PF/50V	C125	250174
390 PF/50V	C55	250063
0.01 UF/50V	C72,73,80,81,88,101,103,109-111,113 115,119,120,126,128,133,148,149,153 160,162,164,165,168,170-172,178	270517
0.022 UF/50V	C118,154,155,	270518
0.047 UF/25V	C53,76,94,96,121,132,137,152,156,185 174	270515

ELECTROLYTIC

0.1 UF/50V	C144,808	150908
0.22 UF/50V	C433,704	152546
0.47 UF/50V	C63,89,717,720,725,	157670
0.47 UF/50V NP	C58	250060
1 UF/50V	C71,102,114,116,117,207,212,222 401,403,404,719240862	20062
1 UF/50V NPO	C402	240862
2.2 UF/50V	C62,86,87,411,503	157672
2.2 UF/50V NPO	C61	250405
4.7 UF/25V	C5,74,202,214,	250407
8.2 UF/16V	C412	250408
10 UF/16V	C75,77,90,98,99,141,142,204 409,410,501,705,809 706,711,714 904-906,908,912-918,940	151578
22 UF/16V	C14	1409170
22 UF/63V	C606	170609
33 UF/16V	C216,901,923	250054
33 UF/25V	C432	250592
47 UF/6.3V	C23,78,,84,92,97,16,150,151,157,184 173,210,413,416,928	151327
47 UF/16V	C8,215,220,610,611,615,707,712 907,919,920,957,960	157629

47 UF/25V	C609	157650
47 UF/35V	C608,656	157651
47 UF/63V	C607	157652
100 UF/6.3V	C424,425,810,807	250410
100 UF/16V	C454,710,713,724,909,	157568
100 UF/25V	C451	157569
330 UF/16V	C910,911	800371
470 UF/6.3V	C100,723	253452
470 UF/10V	C955,958	270963
2200 UF/35V	C604,605	157654
4700 UF/16V	C603	170613

MYLAR

0.033 UF/50V	C419	21012
0.047 UF/100V	C221	175990
0.068 UF/50V	C79,702,703	157732
0.18 UF/50V	C420	250602

SEMICON

0.001 UF/25V	C902,922	
0.022 UF/25V	C405	250593
0.047 UF/25V	C9,112,406,407,422,423	254029
0.01 UF/25V	C205,213,218,219,408	1420142
0.1 UF/12V	C161,414,418	250594
0.1 UF/25V	C452,453,455,458	202857

RESISTORS

CARBON

ALL RESISTORS BELOW ARE 1/5 OR 1/6W UNLESS OTHERWISE INDICATED

4.7 OHM	R222	152146
22 OHM	R224	157602
47 OHM	R223	152160
75 OHM	R754,755,761	152163
82 OHM	R717	152164
91 OHM	R762	152165
100 OHM	R4,201,409,435,438,602,603,728	152166
150 OHM	R413,757	152168
160 OHM	R601	240677
180 OHM	R3,203,516,812	152169
220 OHM	R2	251534
330 OHM	R832	240492
390 OHM	R15,18	157605
470 OHM	R763	152174
560 OHM	R20,218,730	152175
680 OHM	R10,11,746,830,831	152176
820 OHM	R16,439	152178
1K OHM	C731,R12,14,21,405,422,428.	152179

	430,457-459,820,733 901,924,956,773 M,773 N,	
1.2K OHM	R509,601,604,732	152180
1.5K OHM	R603,611	152181
1.8K OHM	R9,210	152182
2.2K OHM	R7,13,17,136,403,404,410,606,608 ,711,957	152183
2.7K OHM	R193,453,454,517-519,756,758	152184
3K OHM	R433	240951
3.3K OHM	R22,437,710	152185
3.9K OHM	R19,216	152187
4.7K OHM	R1,212,406,416,423,429,508,609 840,923,951,952,954,955	152188
5.6K OHM	R214,444	152189
6.8K OHM	R8,221	251536
10K OHM	R192,205,208,219,407,408 411,412,427,441,445,501 502,514,602,720,738,739,760 813,820,821,907,908,941,943,	253389
13K OHM	R415	250138
15K OHM	R432,704,731,	152196
16K OHM	R719	253546
18K OHM	R705,706,740	157608
22K OHM	R207,446,447,511,512,605-607,718 723,736,743,753,841-843,928,940 921,	270558
27K OHM	R215,220,420,513	152199
33K OHM	R213,202,414	240498
39K OHM	R442,455,456,	1420145
47K OHM	R209,401,418,421,424,505-507,604,605 607-610,612,703,707,708,709,747,759 801-804,942,	240499
56K OHM	R417,419,426,431,434,702,714	152204
82K OHM	R510	152207
100K OHM	C861,862 R425,436,610,701,737,806-811 821,909-914,	152209
150K OHM	R443	152211
220K OHM	R925	193562
330K OHM	R734	152215
390K OHM	R204	152216
470K OHM	R402,503,504	152217
820K OHM	R735	152221
1M OHM	R211,713	152223

CHIP RESISTORS
1/10W UNLESS OTHERWISE STATED

0 OHM	C65,145,R129,181	270535
18 OHM	R180	250603
33 OHM	R176	270539
68 OHM	R81,	250157
150 OHM	R93,94,110,	250427
220 OHM	R60	250158
270 OHM	R112,173	250159

330 OHM	R164,	240533
390 OHM	R174	250160
470 OHM	R111,125,	270543
560 OHM	R58,71,100,165,166	270544
680 OHM	R177,178	254080
820 OHM	R152,163,199	254534
1K OHM	R51,62,67,72,79,80,84,85,89-92,109 117,120,121,128,144,146,149,159,135 154,158,162,169-172,	270547
1.1K OHM	R54,	253548
1.2K OHM	R119,147	250161
1.5K OHM	R175	240535
1.8K OHM	R73,113,116,123,124,131,161,168	250162
2.2K OHM	R52,65,69,70,87,160,167,196	270548
2.7K OHM	R53,57,115,	270549
3.3K OHM	R59,101,153	270550
3.9K OHM	R66	240536
4.7K OHM	R55,68,108,194,195	250029
5.6K OHM	R114,	250030
8.2K OHM	R56,107,151,179,	250031
10K OHM	R143,155	250135
12K OHM	R74,	250033
15K OHM	R141,148	253402
22K OHM	R106,118,142	250034
33K OHM	R77,	250035
39K OHM	R197,198	250036
47K OHM	R130,145	250037
62K OHM	R157	253551
100K OHM	R83,104	253384
470K OHM	R82,	250040
560K OHM	R138,	254082
1M OHM	R61,63,64	250163

METAL

1.5K OHM 1W	R614	250516
3.3 OHM 1W	R452	176479
3.3 OHM2W	R451	157610