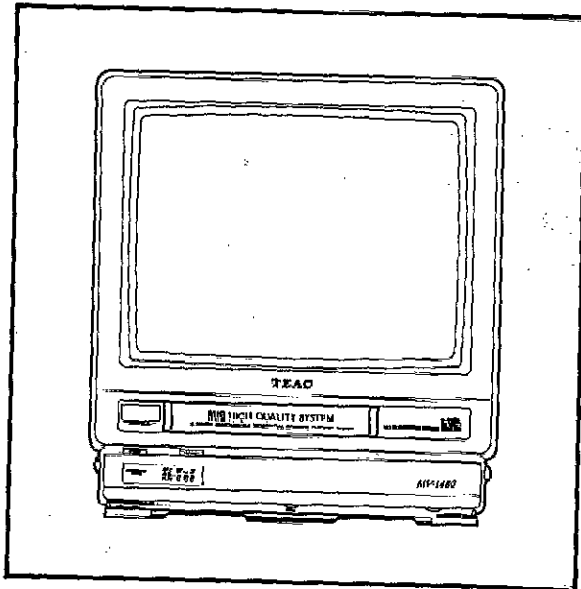


FRONT COUNTER

TEAC®

MASTER COPY
DO NOT REMOVE



VHS
PAL

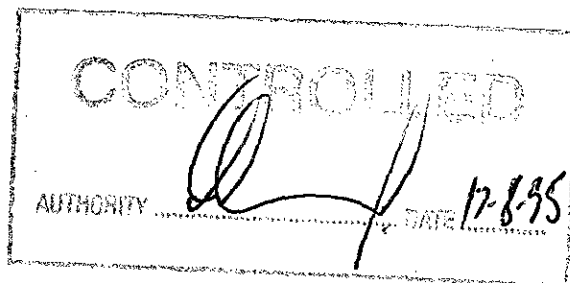
MV-1480TV

HQ

TELEVIDEO

HQ

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



SERVICE MANUAL

Effective; November 1990

5704051000

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CAUTION

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[VCR SECTION]

PRACTICAL SERVICE FIGURE

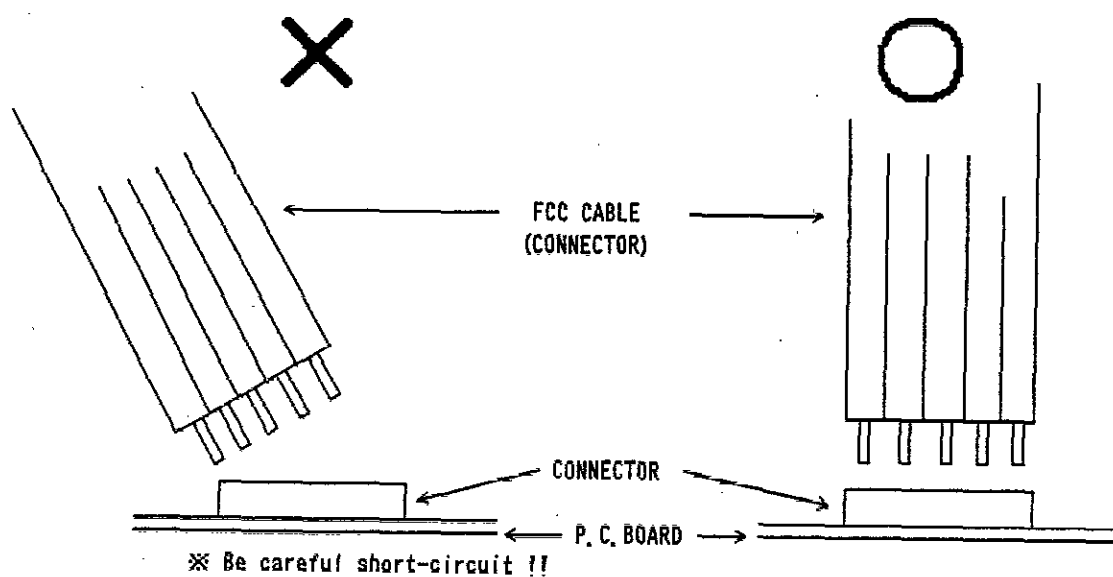
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PRACTICAL SERVICE FIGURE

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CAUTION



1. When you connect or disconnect FCC cable(connector), please make sure the AC cord of the set is disconnected. (Not in a POWER OFF position.)
2. FCC cable(connector) should be inserted parallel into the connector, not aslant.

STANDARD NOTES

Temperature character of mark

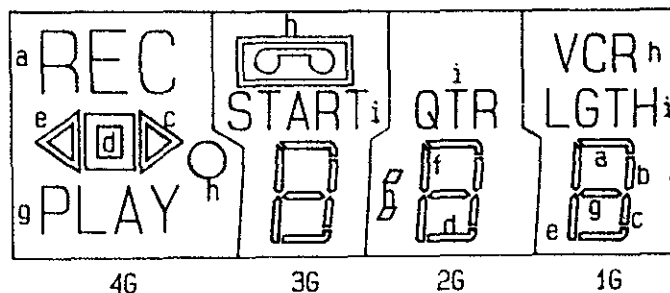
Mark	Capacity change rate	Standard temperature	Use temperature of extent
Ⓑ	$\pm 10 \%$	20 °C	-25 ~ +85°C
Ⓔ	+30-80%	20 °C	-25 ~ +85°C
(SR)	$\pm 15 \%$	20 °C	-25 ~ +85°C
(Z)	+30-80%	20 °C	-10 ~ +70°C

WARNING

Replacement parts which special safety characteristics are identified by $\triangle$ 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=10³, M=10⁶).
- ③ Resister wattage without mentioned are 1/5W.
- ④ All capacitance values are indicated in μ F (P=10⁻⁶ μ F).



[VCR SECTION]

PRACTICAL SERVICE FIGURE

Test Items	Mode	Condition	Unit	Nominal	Limit	Remarks
1. TUNER						
1-1 Channel	E-E	VHF Low	CH	2-4 + CATV		
		VHF High	CH	5-12+ CATV		
		UHF	CH	21-69		
1-2 Intermediate freq.	E-E	Picture	MHz	38.9		
		Sound		33.4		
1-3 Video output	E-E	(10ch)	Vp-p	1.0		
1-4 Video S/N	E-E	(10ch)	dB	44	38	
1-5 Audio output	E-E	(10ch)	dBs	-6		
1-6 Audio S/N (W/LPF)	E-E	(10ch)	dB	45	38	
2. Audio						
All item are measured across 8 ohm speaker output terminal.						
2-1 Audio Max. output	E-E		w	1.0	0.7	
2-2 Audio S/N (W/LPF)	E-E	500mW	dBs	43	38	
2-3 Audio distortion (W/LPF)	E-E	500mW	%	3	5	
2-4 Aduio freq.	E-E	50mW 100Hz	dB	-3	-7	
response (W/LPF)		8kHz	dB	+2	-5	
3. VCR						
*Test input terminal Video input (1 Vp-p)						
..... Audio input (-10dBs)						
3-1 Horizontal resolution	SP	PB	Line	220		F6M
3-2 Video S/N ratio	SP	PB	dB	43	38	F6D
3-3 Aduio output level	SP	PB	W	0.8		F6A
3-4 Aduio S/N ratio	SP	PB	Db	41	38	F6A
3-5 Wow & Flutter WRMS/CCIR	SP	PB	%	0.3	0.5	F6L
3-6 Jitter	SP	PB	us	0.07	0.25	F6N
3-7 Video S/N ratio	SP	R/P	dB	43	38	
3-8 Audio output level	SP	R/P	W	0.8		
3-9 Audio freq. resp.						
100Hz	SP	R/P	dB	-3.6	+/-8	
6kHz	SP	R/P	dB	0	+/-8	
(-20dBsin)						

SAFETY CHECK AFTER SERVICING

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

1. Insulation resistance test

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

2. Dielectric strength test

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

3. Clearance distance

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

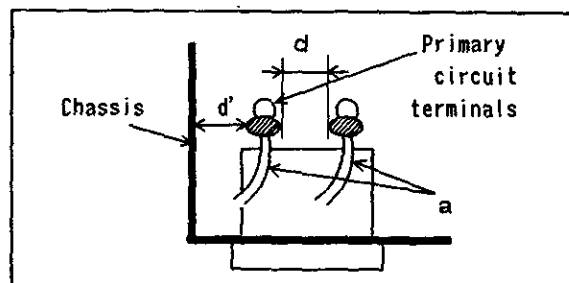


Table 1 : Ratings for selected areas

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

* Class II model only.

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

4. Leakage current test

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

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts.

Use an AC voltmeter to measure across both terminals of load Z.

See figure and following table.

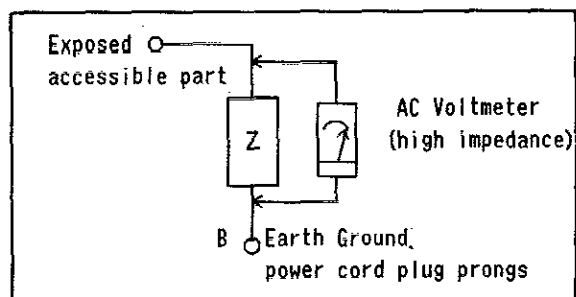


Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA & Canada	$0.15 \mu F$ $1.5 k$	$1 \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 200 to 240 V	Europe Australia	 $2 k\Omega$	$1 \leq 0.7 \text{ mA peak}$ $1 \leq 2 \text{ mA dc}$	Antenna terminals
		 $50 k\Omega$	$1 \leq 0.7 \text{ mA peak}$ $1 \leq 2 \text{ mA dc}$	Other terminals

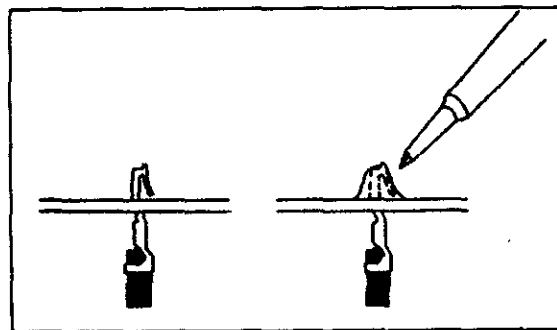
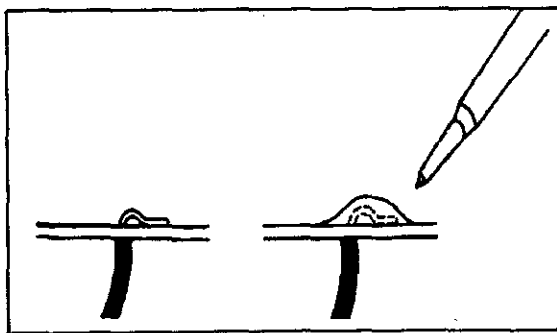
Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

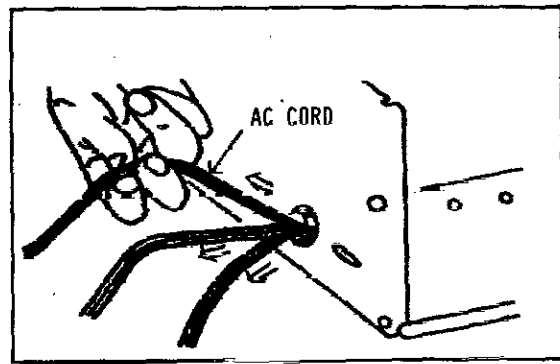
IMPORTANT SAFETY PRECAUTIONS

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

● Precautions during Servicing

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 $\triangle$ 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. DISASSEMBLY INSTRUCTIONS (SET)

Note : TV cabinet removal

1-1. Panel top removal

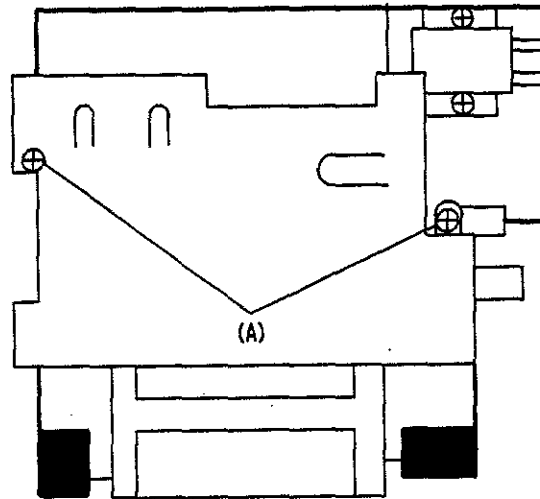
- Remove 2 screws (A). (Fig.1-1)

1-2. MCV-D P.C. Board Removal

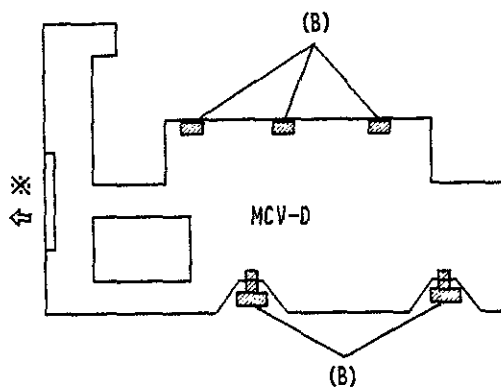
- Unfasten 5 hooks (B). (Fig.1-2)

1-3. MCV-A, B, C, MSV P.C. Board Removal

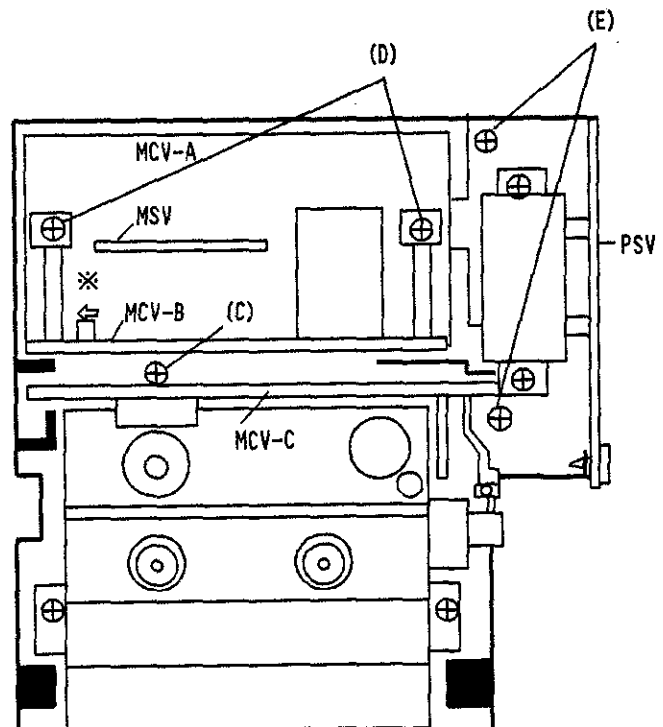
- Remove screw (C). (Fig.1-3)
- Remove 2 screws (D). (Fig.1-3)



(Fig. 1-1 Top View)



(Fig. 1-2 Front)



(Fig. 1-3 Top View)

1-4. PSV P.C. Board

- Remove 2 screws (E). (Fig. 1-3)

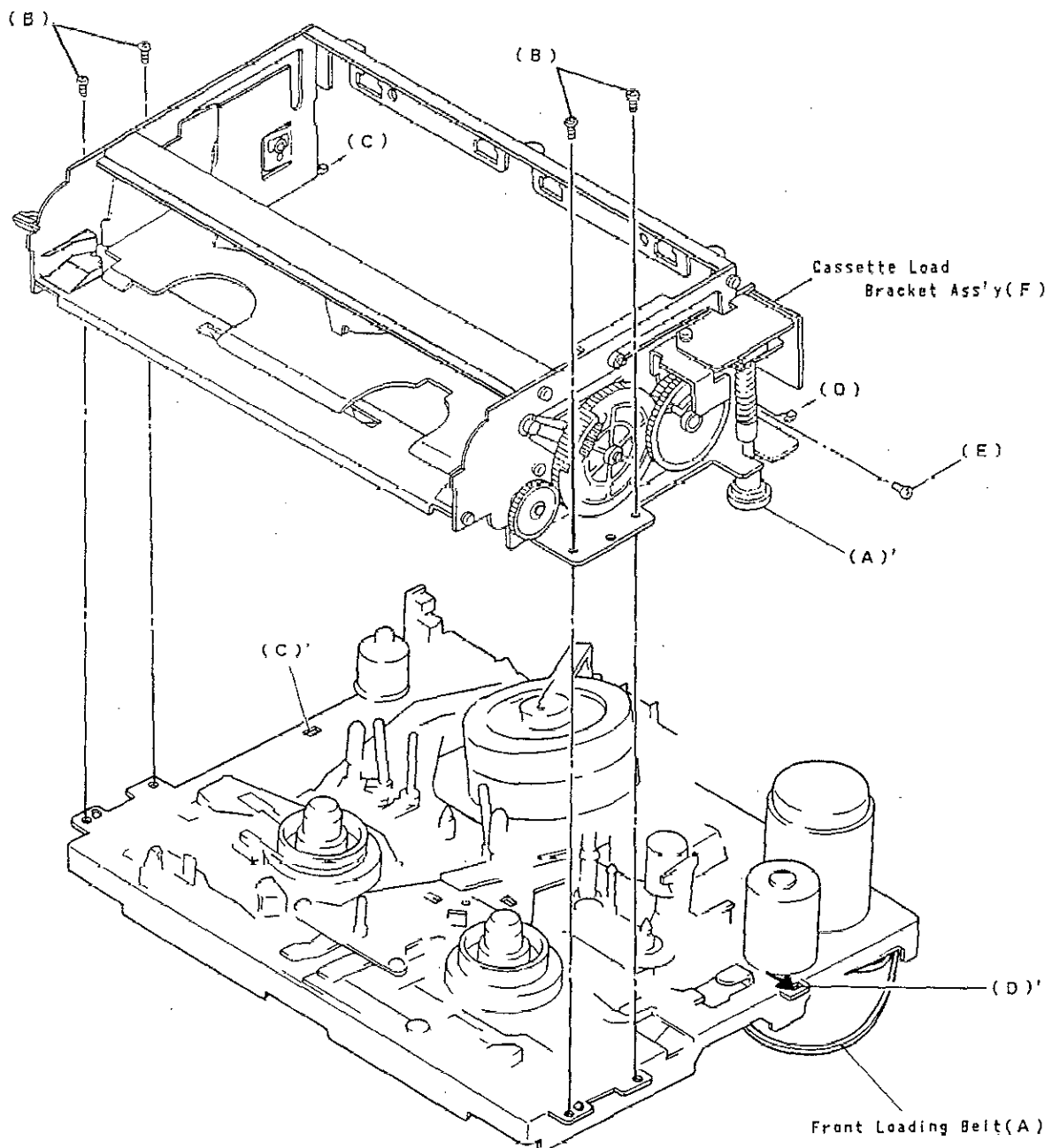
2. DISASSEMBLY INSTRUCTIONS (DECK)

(1) Front Loading Unit

1. Remove Front Loading Belt (A).
(Hook the Front Loading Belt (A) to (A').)
2. Remove 4 screws (B).
3. Take off Left side hook (C) and Right side hook (D).
(To unfasten the hook, lift up front edge of the Front Loading Unit and take it to forward.)

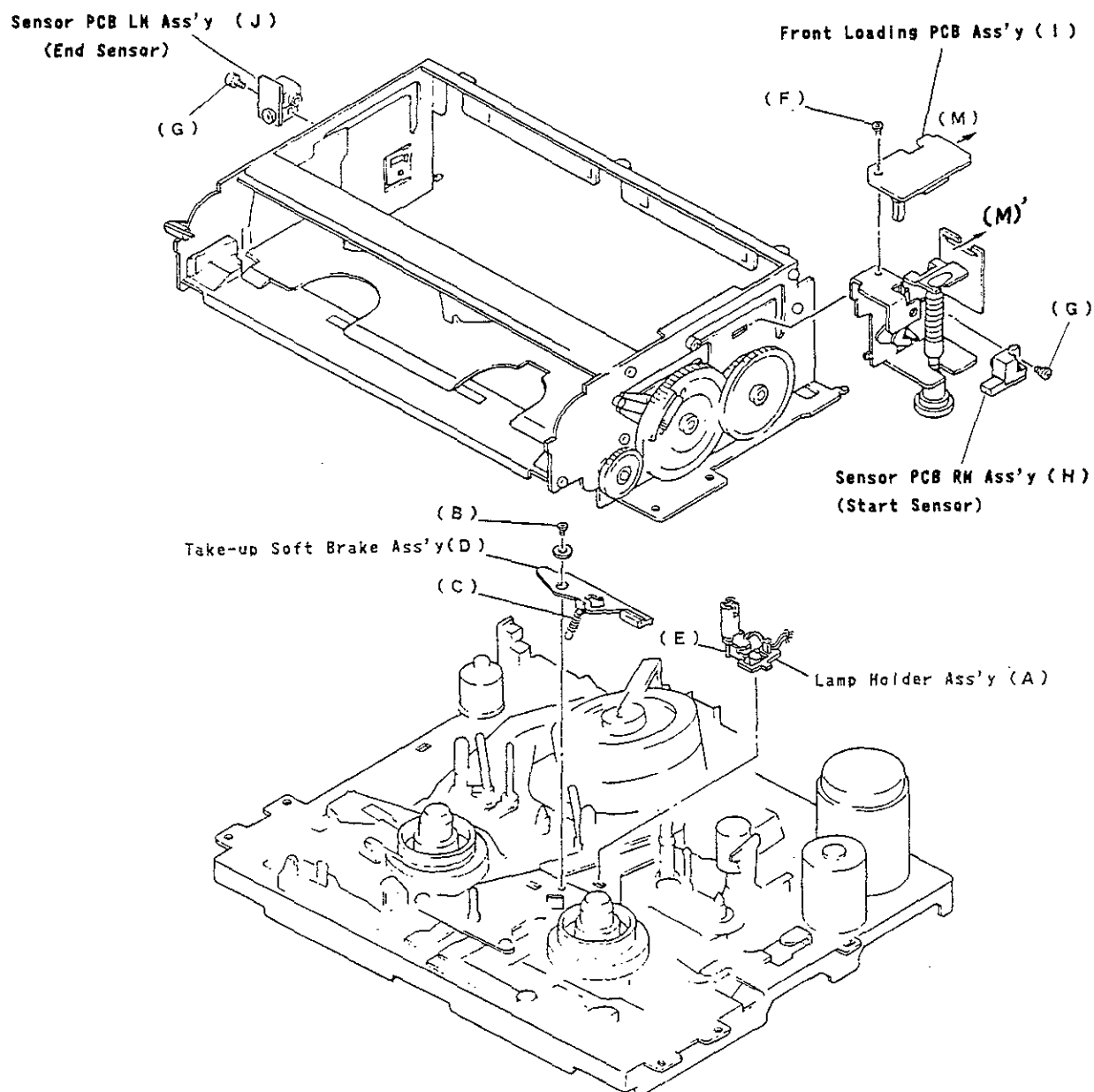
(2) Cassette Load Bracket Ass'y

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

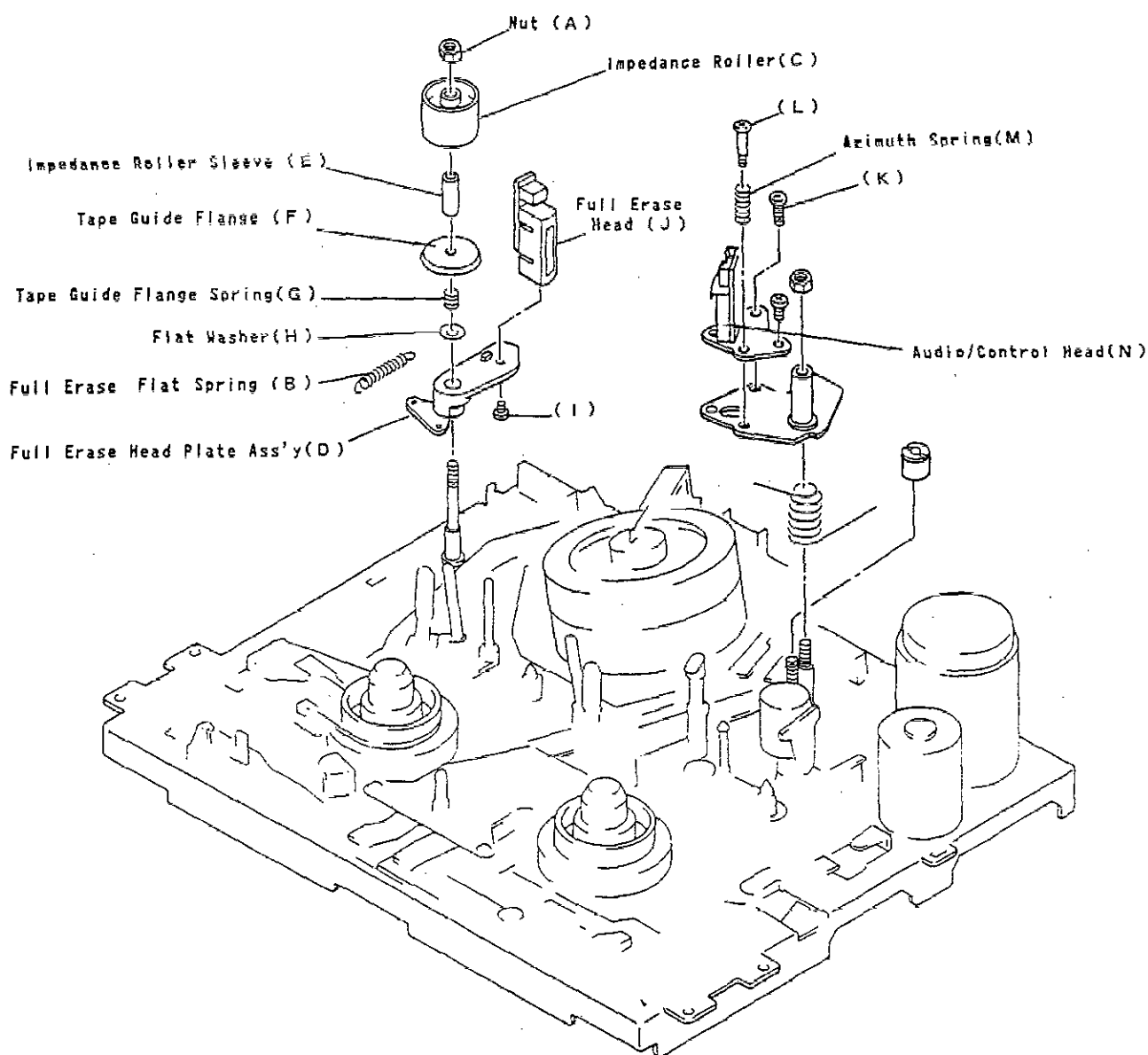
1. Erase Head (except Play Only Model)

- (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

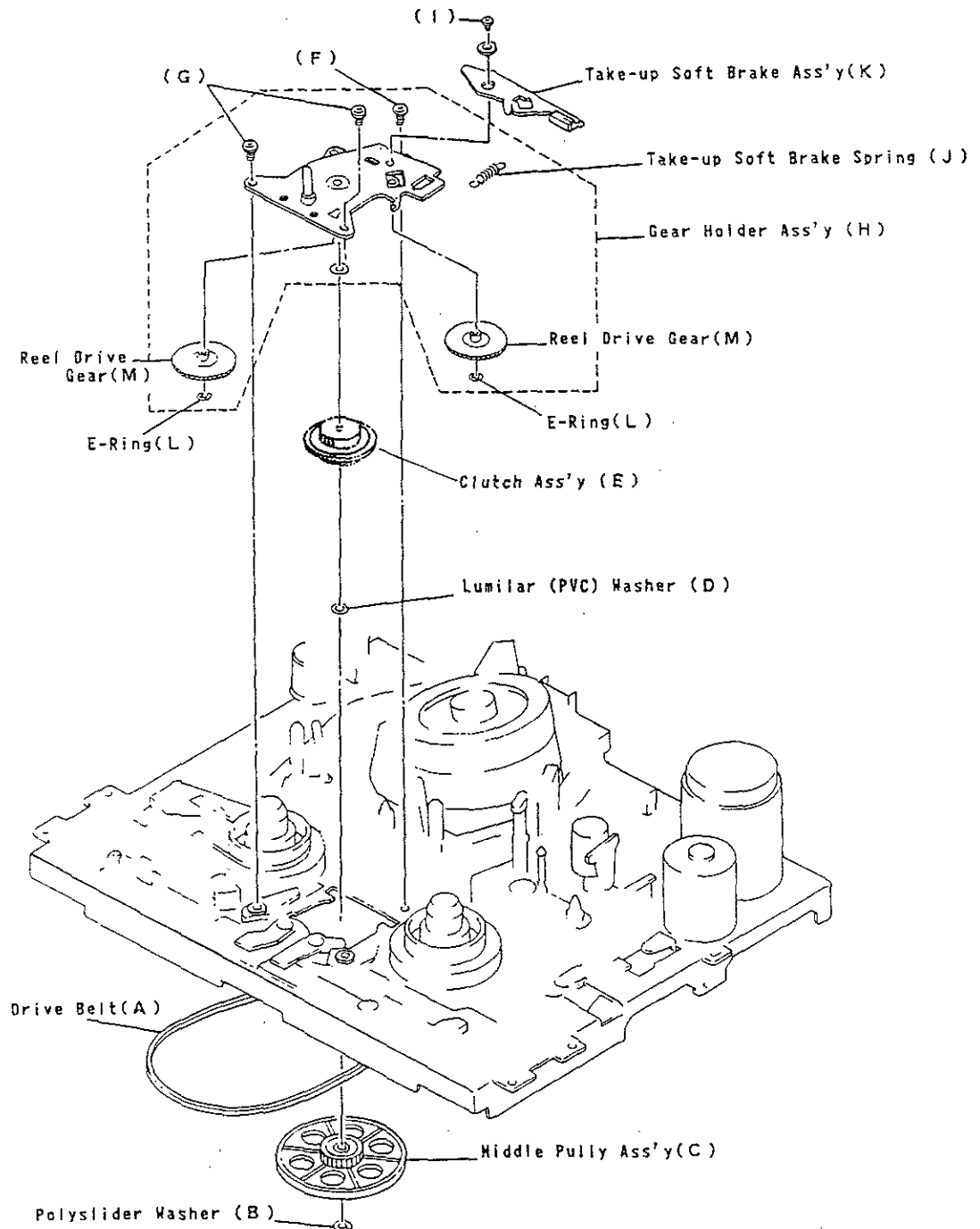
- (1) Remove screw (K), (L) and Azimuth Spring (M).
- (2) Remove Audio/Control Head (N).

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



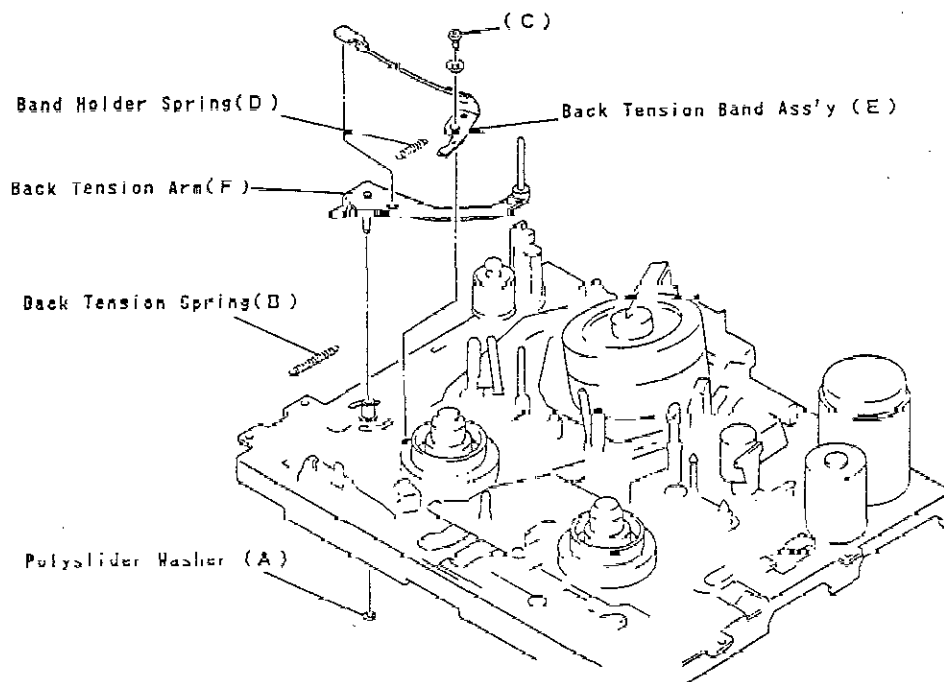
(5) Gear Holder Ass'y

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).



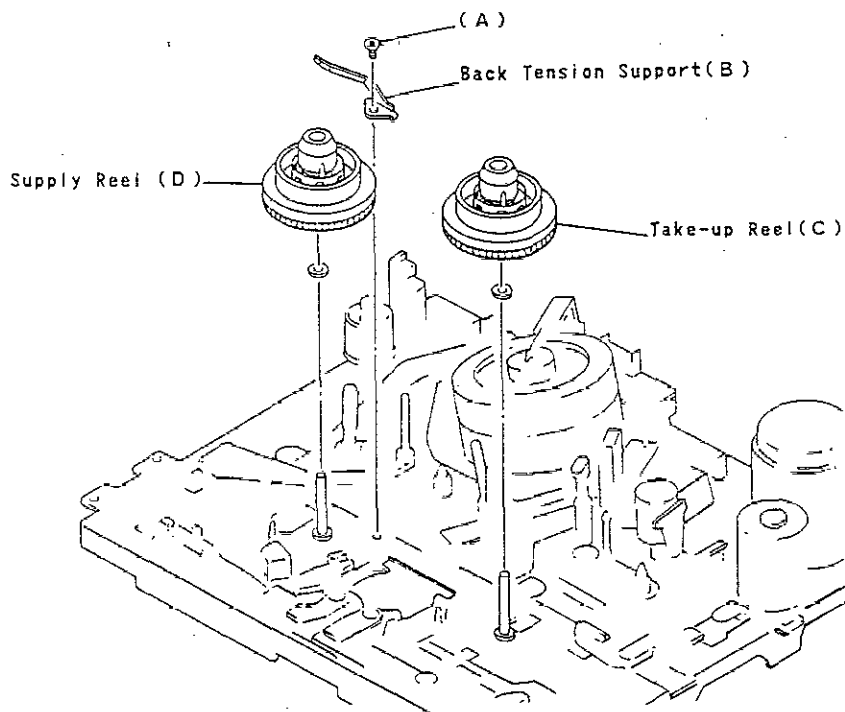
(6) Tension Arm Ass'y

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).

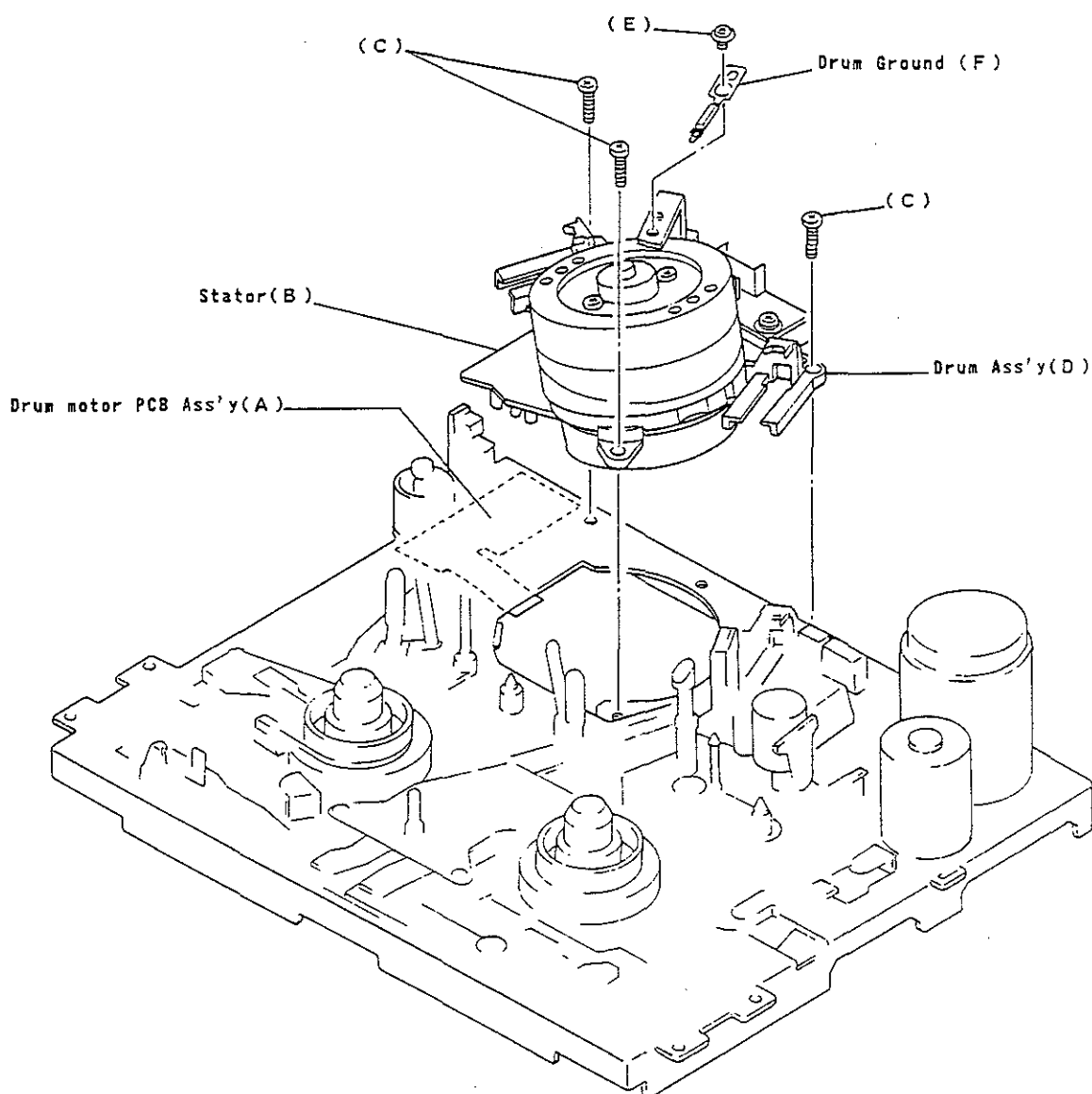


(8) Drum Ass'y

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.

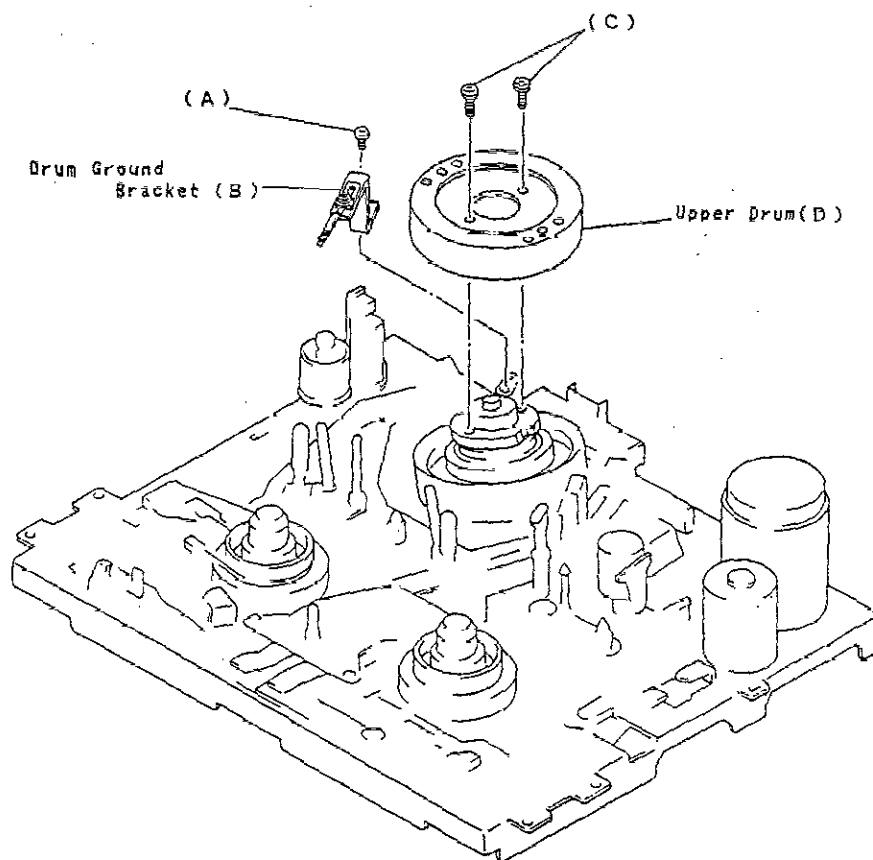
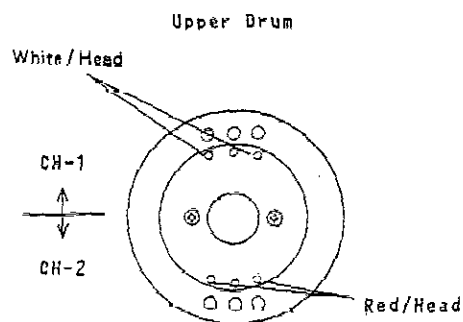


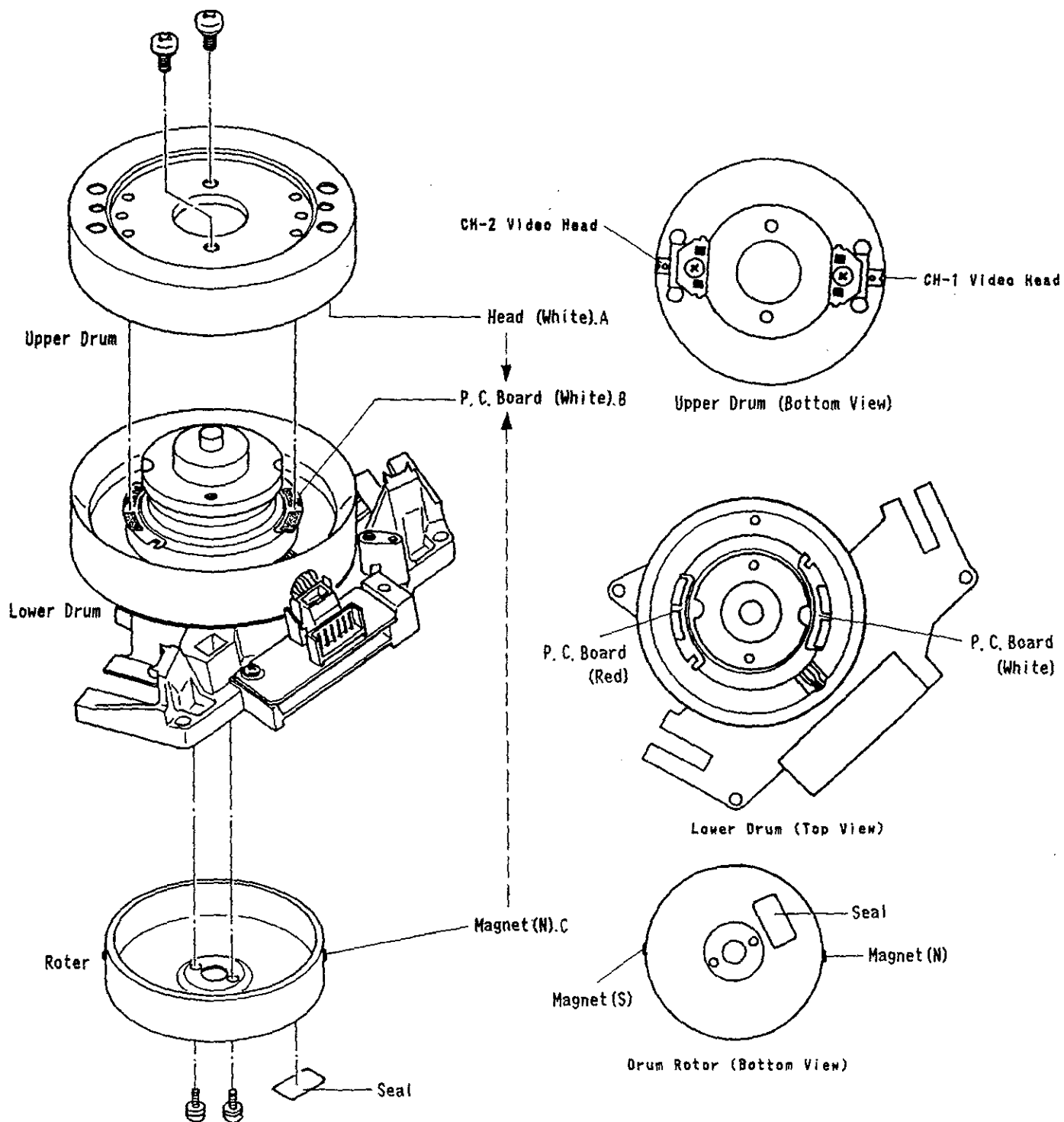
(9) Upper Drum / Reinstallation Upper, Lower Drums and Rotor

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≡

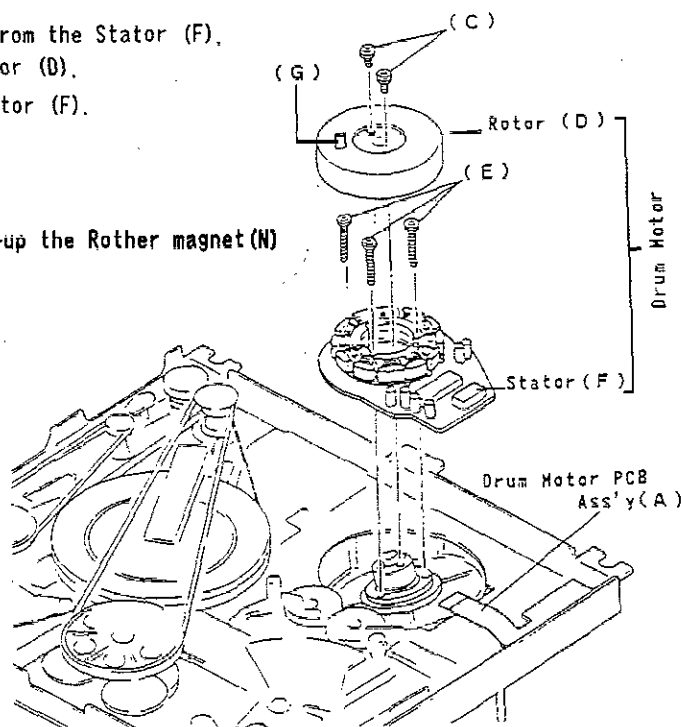
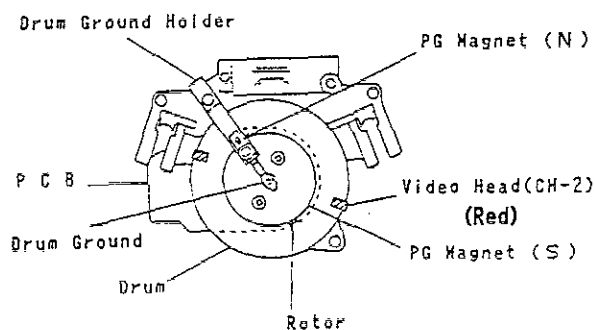
Upper Drum point-A, Lower Drum point-B and Rotor point-C these Points A, B, C, must line-up each other, Otherwise it will creates problem.

(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 reinstall the Rotor, You must align-up the Rother magnet(N) white CH-1 video head. (See Page 2-8.)



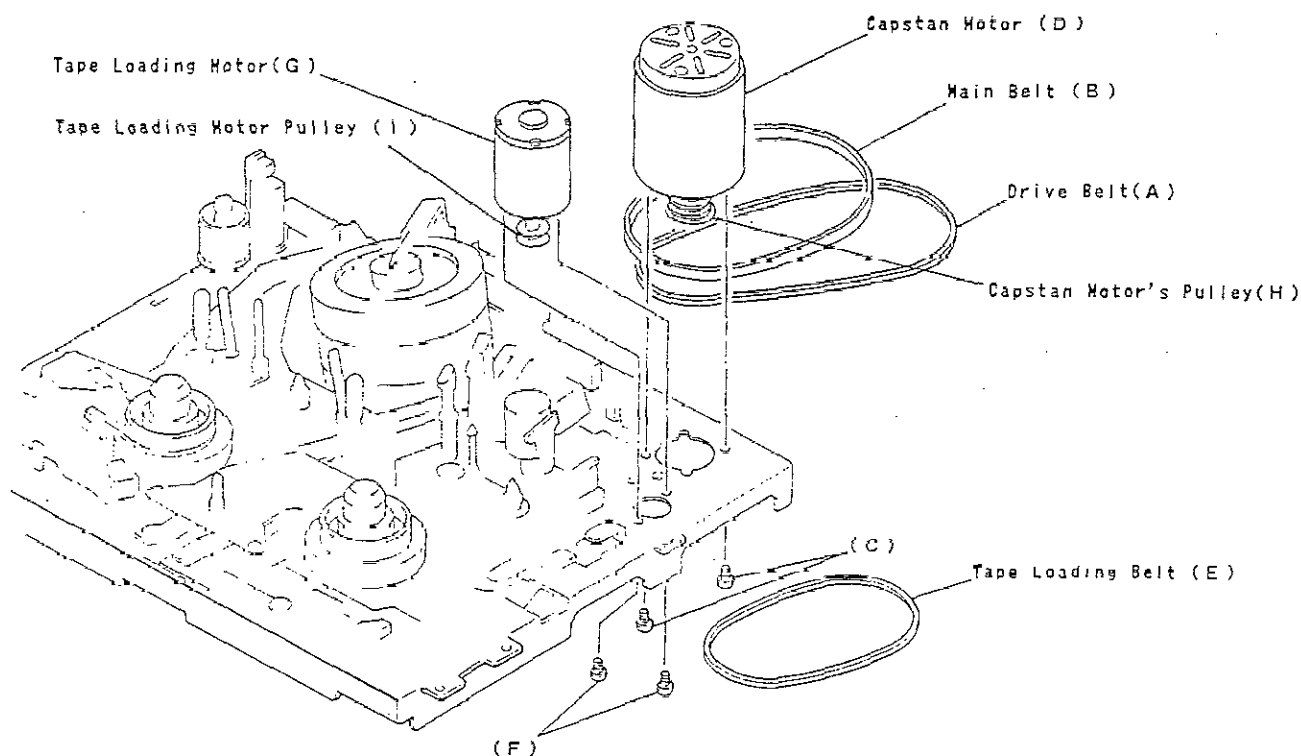
(11) Capstan Motor / Tape Loading Motor

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).

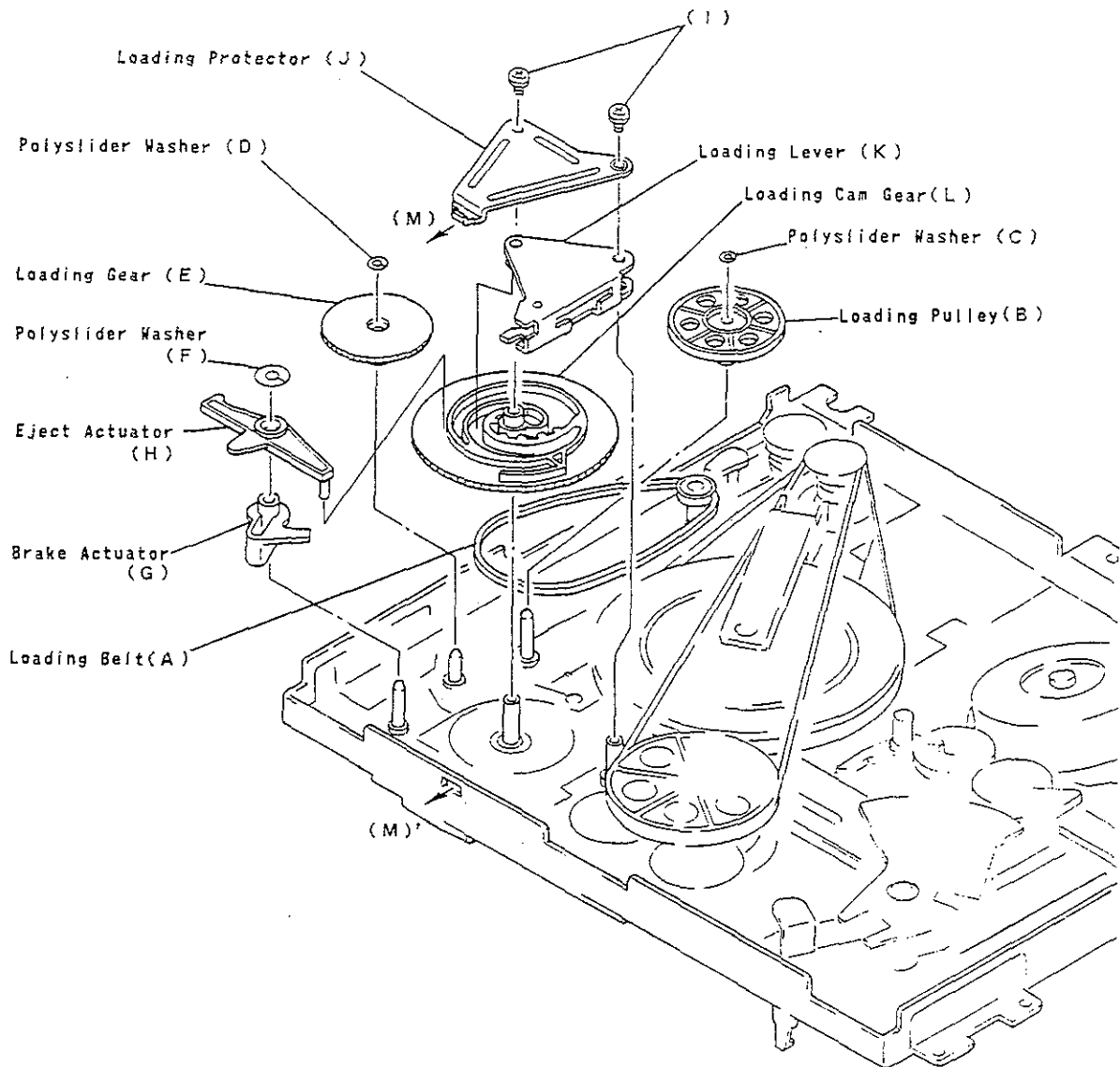
2. Tape Loading Motor

- (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).

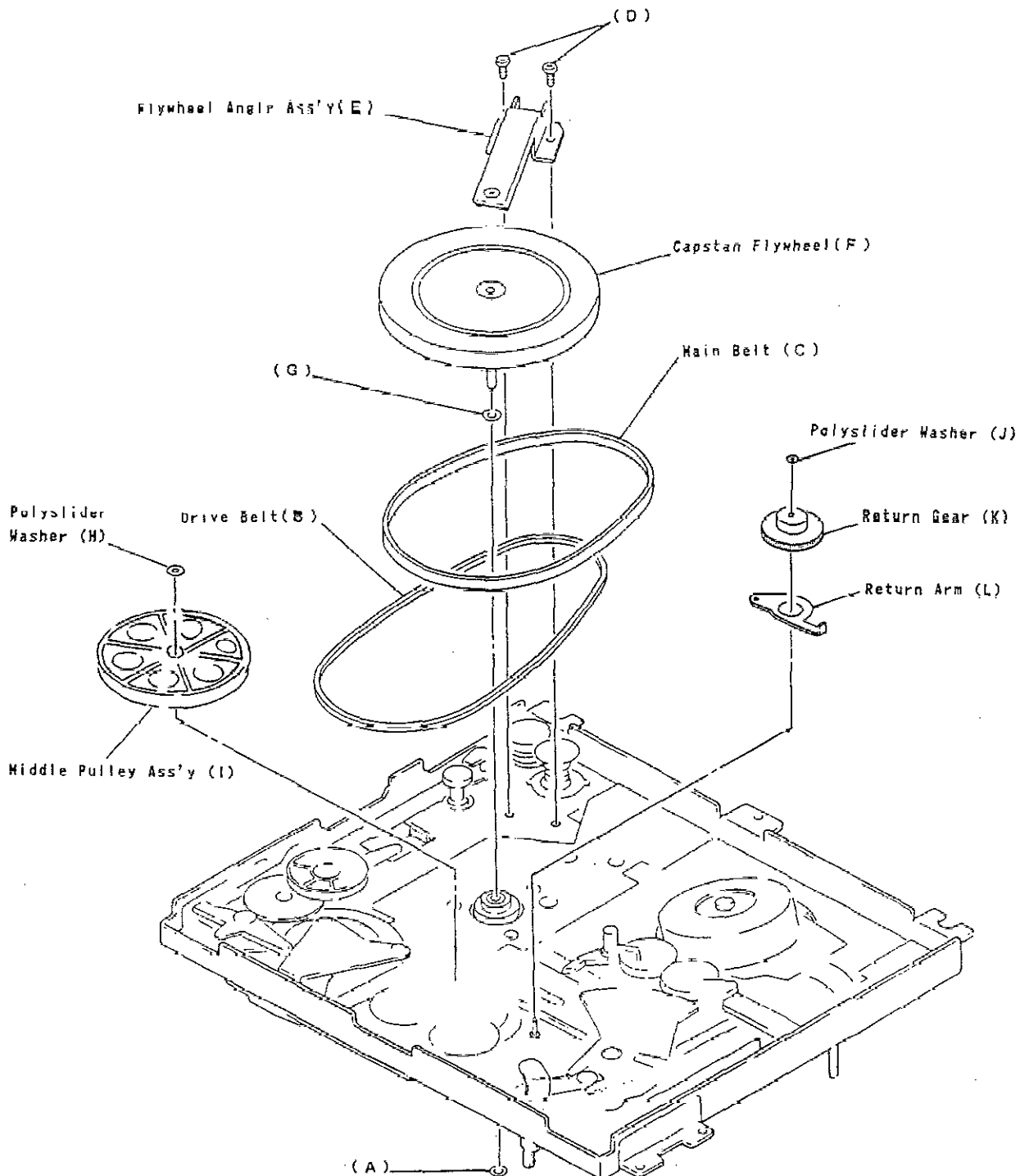


(13) Capstan Flywheel / Return Arm

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).

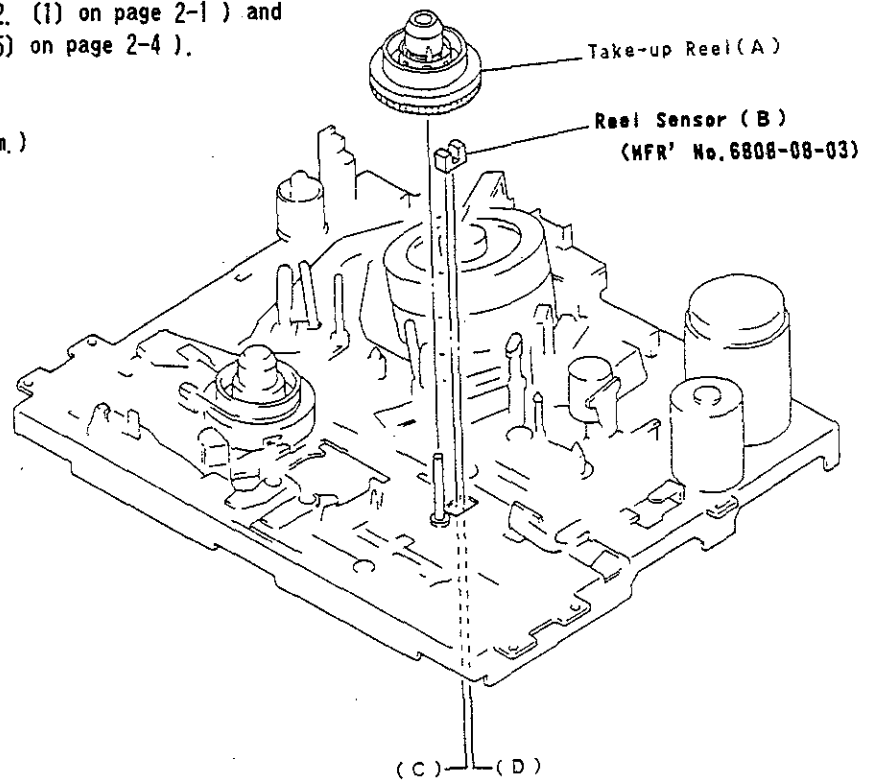
≡Remark≡

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



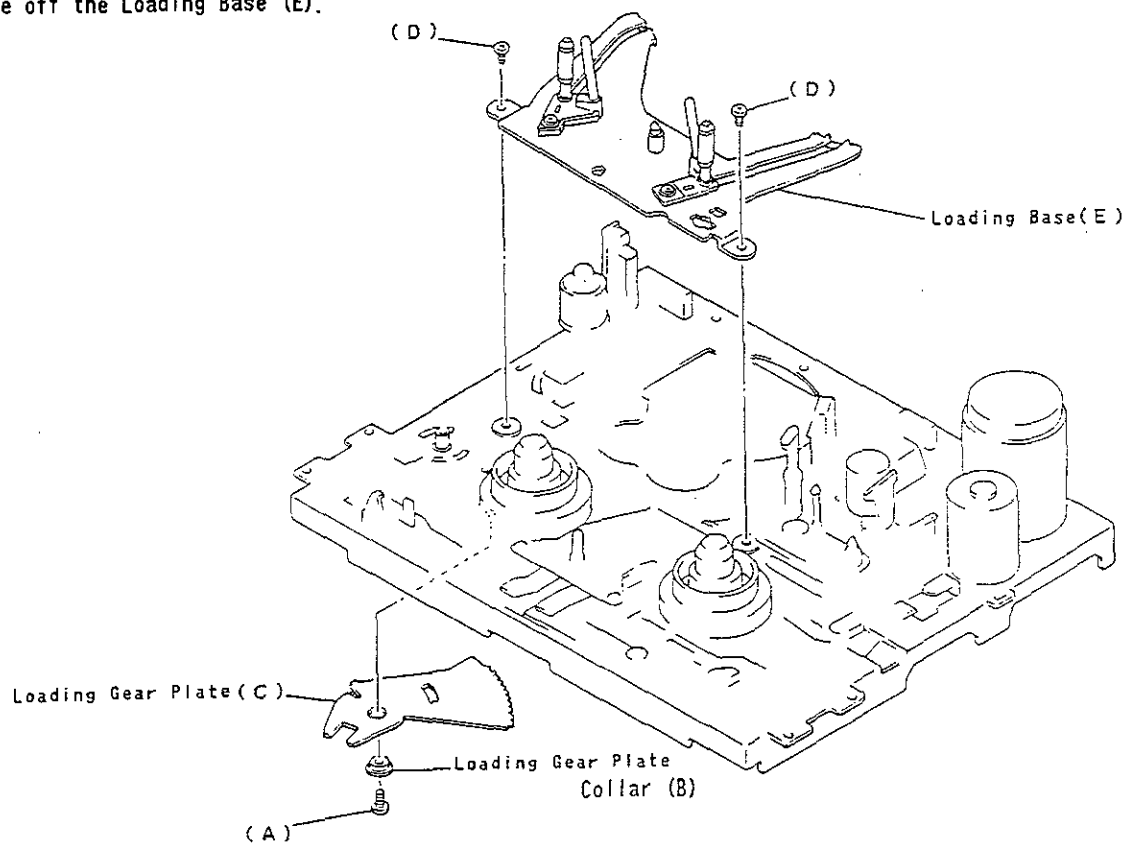
(14) Reel Sensor

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

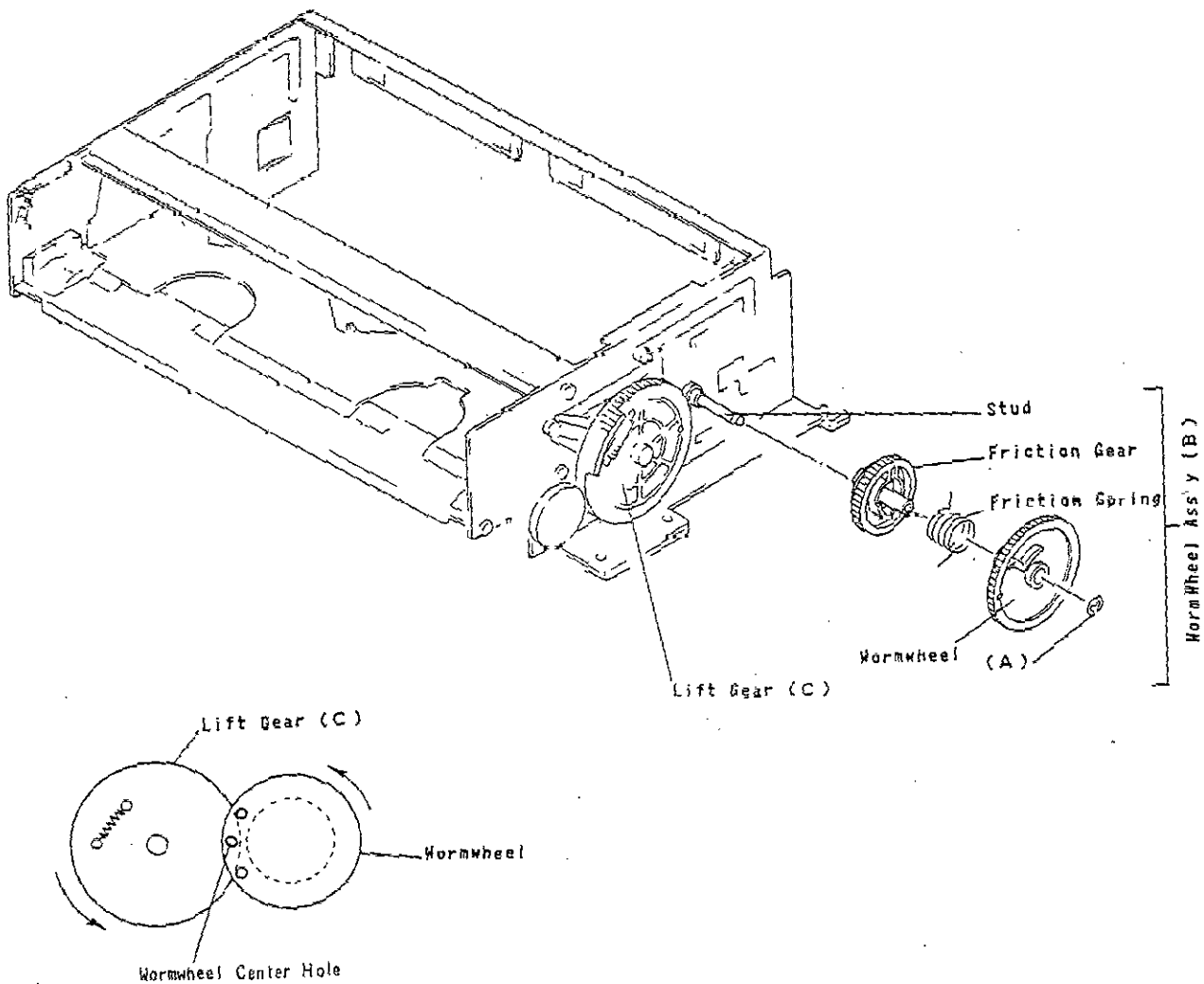
- (1) Remove Front Loading Belt and Bracket Ass'y. (See the Page 2-1 (2))
- (2) Remove E-Ring (A).
- (3) Remove Wormwheel Ass'y (B). (Wormwheel, Friction Spring, Friction Gear)

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.

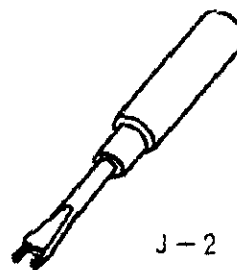


3. SERVICE JIG AND TOOLS

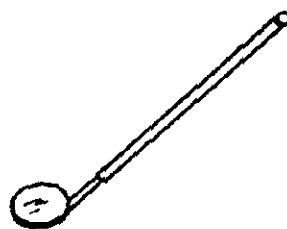
Fig. No.	Jig Item	Part No.	Adjustment
J-1	Alignment Tape	F6-N or F6-NS	X Value / Envelope Waveform / Audio Control Erase Head Azimuth F6-NS : 2 Head LP Model
	Alignment Tape	F6-A	Audio Control Erase Head Height and Tilt
	Alignment Tape	F6-HI	Audio Output Adjustment (Hi-Fi Stereo Model)
	Alignment Tape	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)



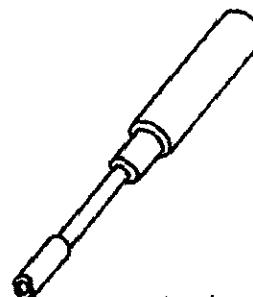
J-1



J-2



J-3



J-4

4. STANDARD MAINTENANCE

4-1 Service schedule of components

○:Check ●:Change

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

Note:

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

4-2 Cleaning

1. Cleaning of Video Head

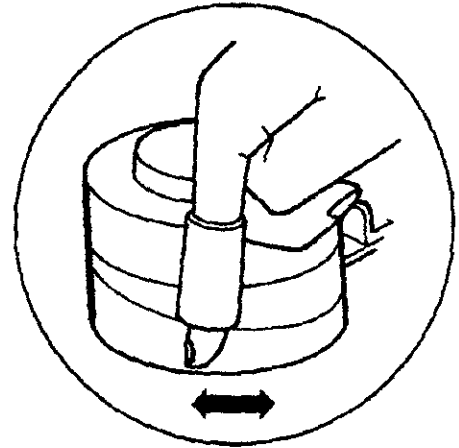
Head cleaning by using a chamois skin.

— Procedure —

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

— Remark —

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



2. Cleaning of Audio Control Head

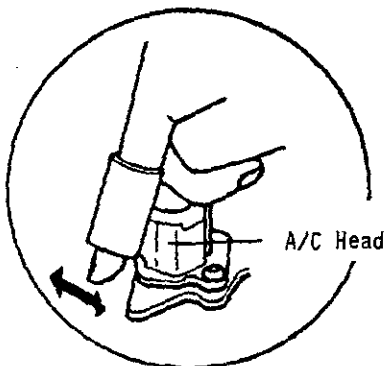
Head cleaning by using a chamois skin.

— Procedure —

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

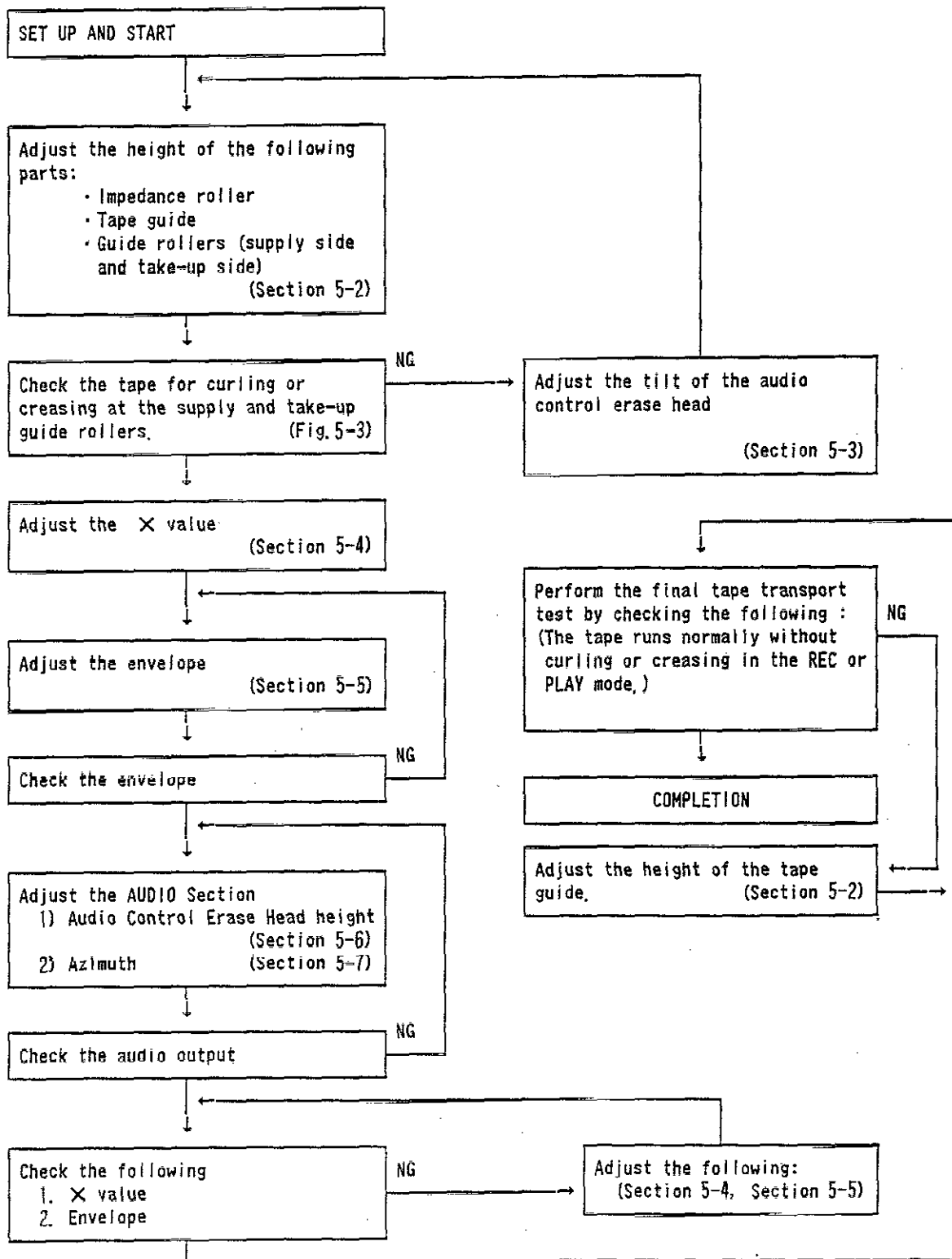
— Remark —

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



5. MECHANICAL ADJUSTMENT

5-1 Tape Transport Adjustment Flow Chart



5-2 Tape Running Position Adjustment (Guide Roller / Tape Guide / Impedance Roller)

1. Perform the height adjustment for the following items to obtain the proper tape running position.
 - ① Impedance Roller
 - ② Guide Roller (Supply side)
 - ③ Guide Roller (Take-up side)
 - ④ Tape Guide

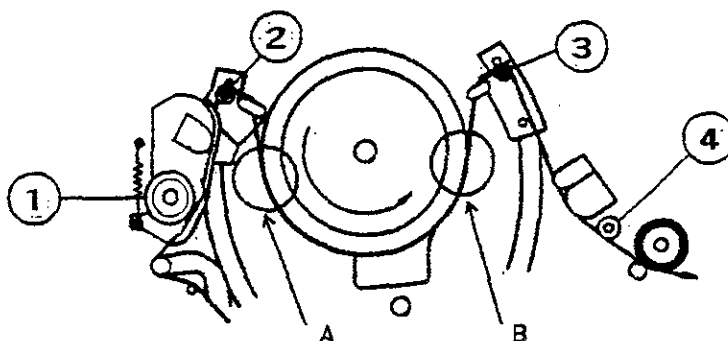


Fig. 5-1

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

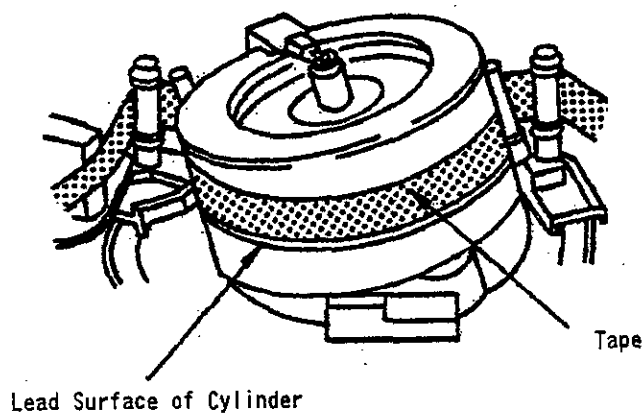


Fig. 5-2

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

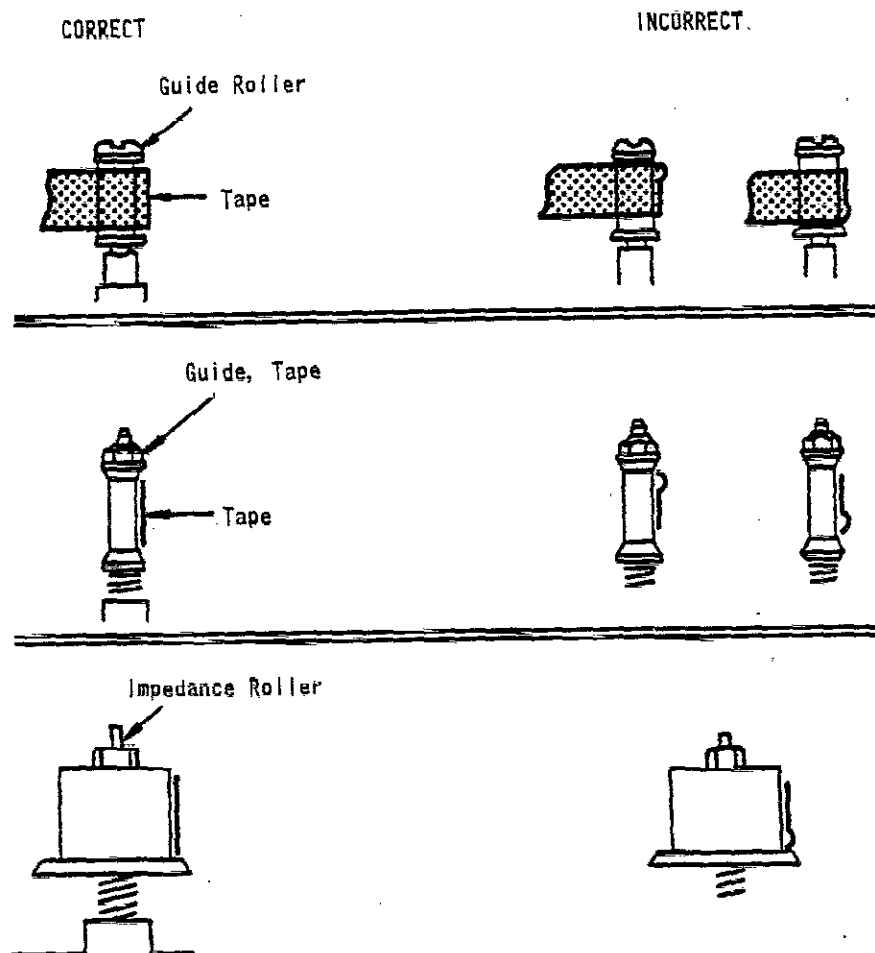


Fig. 5-3

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

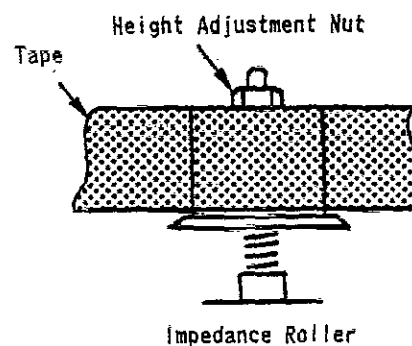


Fig. 5-4.

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

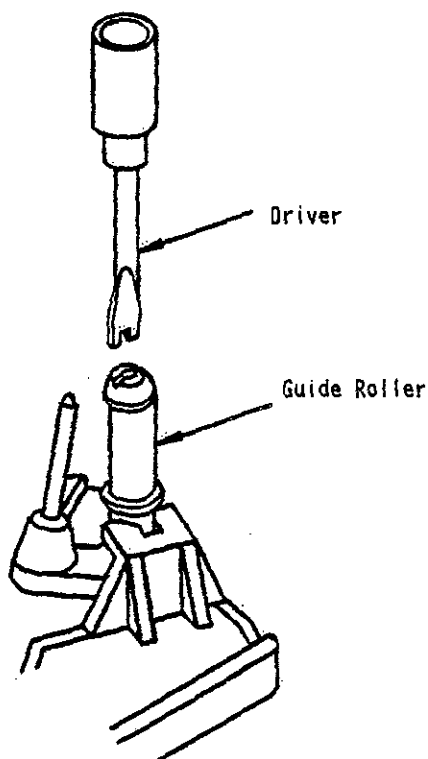


Fig. 5-5

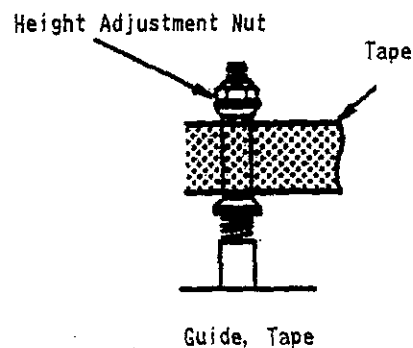


Fig. 5-6

8. After completion of the supply side guide roller adjustments, adjust tape guide so that tape runs as shown in Fig. 5-6, and adjust the take-up side guide roller by using the same procedures as for the supply side adjustments. In this case, adjust the guide roller height first.
9. Confirm that there is no curling or creasing at the impedance roller. (Both PLAY and REV modes.) If there is any curling or creasing at the impedance roller, adjust the same procedures of Fig. 5-6.
10. Finally, confirm that there is no curling or creasing at the take-up side guide roller and tape guide. If there is any curling or creasing between the take-up side guide roller and the audio control erase head, adjust the audio control erase head.

5-3. Audio Control Erase Head Adjustment

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

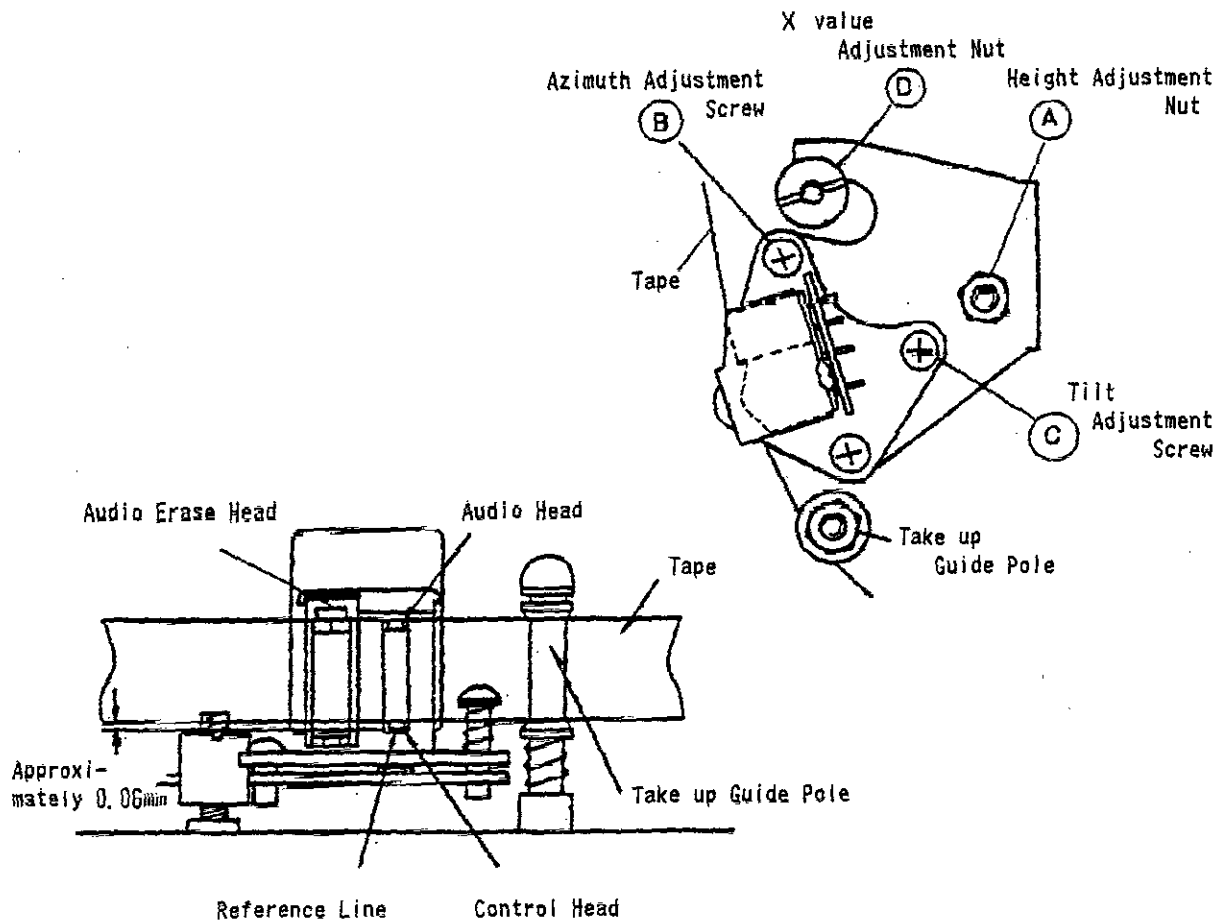


Fig. 5-7

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

5-4 X Value Adjustment (PB FM Peak Adjustment)

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
TP 4 (ENV) GND TP 2 (RF SW)	Oscilloscope	PLAY MODE Test tape F6-N
ADJ. Location		ADJ. Value
X value adjustment nut		Maximum level (CH1 ENVE Signal)

Test Equipment Connecting Diagrams

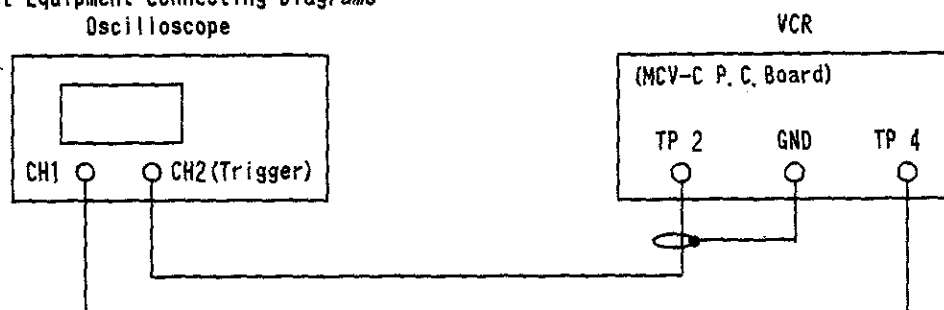


Fig. 5-8

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

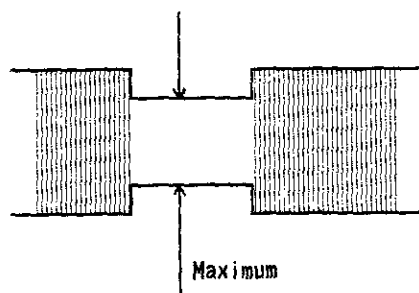


Fig. 5-9

5-5 Envelope Waveform Adjustment

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
TP 4 (ENV) GND TP 2 (RF SW)	Oscilloscope	PLAY MODE Test tape F6-N
ADJ. Location		ADJ. Value
Guide rollers		Maximum level and correct waveform (ENVE Signal)

Test Equipment Connecting Diagrams

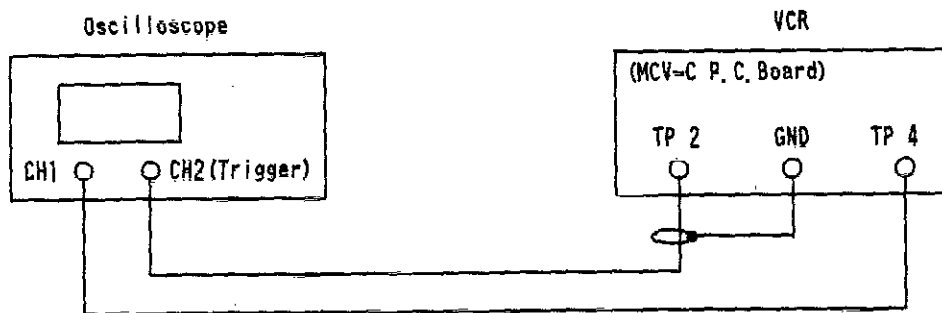


Fig. 5-10

1. Connect equipment as shown in Fig. 5-10.
2. Playback the test tape F6-N.
3. The envelope waveform can be performed by adjusting the height of both the supply side and take-up side guide rollers. Finally 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. 5-11 and Fig. 5-12.
5. Adjust for maximum flatness of the envelope waveform according to the Fig. 5-11 and Fig. 5-12.
6. After adjustment, rotate Tracking Volume counterclockwise and clockwise, and check that the waveform changes symmetrically.
7. Check the tape curl. (Refer to Section 5-2.)

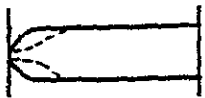
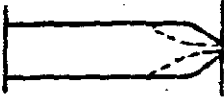
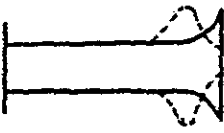
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side guide roller rotated clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated clockwise direction (lowers guide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

Fig. 5-11

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

Fig. 5-12

5-6 Audio Control Erase Head Height / Audio Control Erase Head Tilt Adjustment

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
Audio Output	Oscilloscope AC voltmeter	PLAY MODE Test tape F6-A
ADJ. Location		ADJ. Value
Height adjustment nut Azimuth adjustment screw		Maximum level (1KHz Audio Output Signal)
Tilt adjustment screw		

Test Equipment Connecting Diagrams

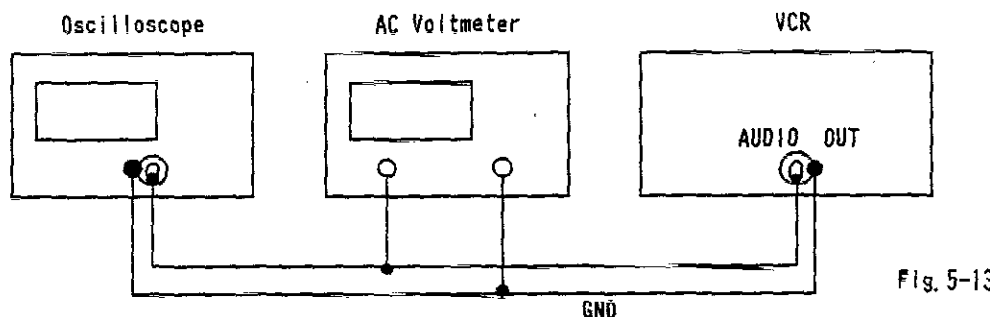


Fig. 5-13

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

5-7 Audio Control Erase Head Azimuth Adjustment

Measuring Method

Measuring Point	Measuring Equip.	ADJ. Condition
Audio Output	Oscilloscope AC voltmeter	PLAY MODE Test tape F6-N
ADJ. Location		ADJ. Value
Azimuth adjustment nut		Maximum level (6KHz Audio Output Signal)

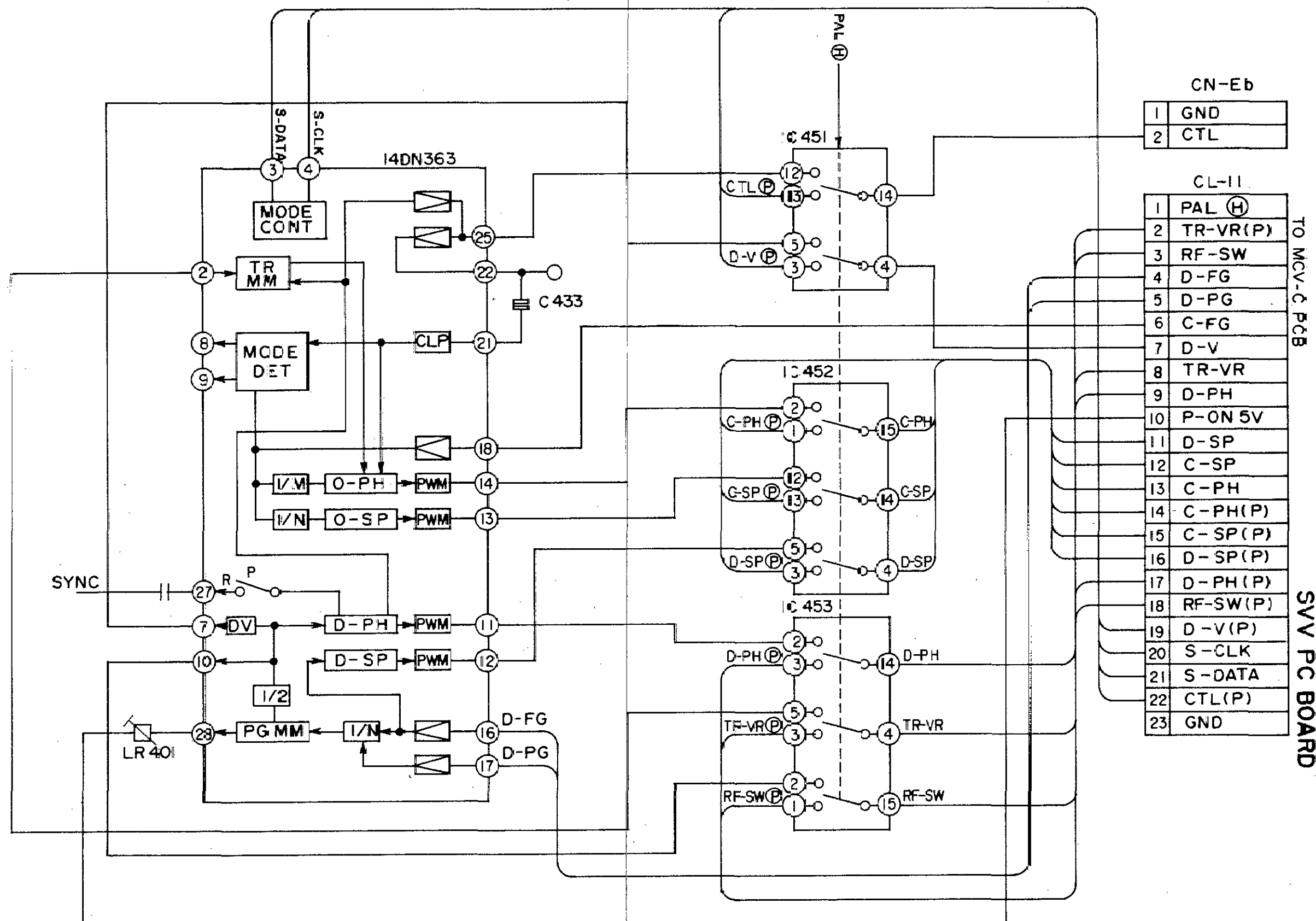
Test Equipment Connecting Diagrams

Refer to Fig. 5-13

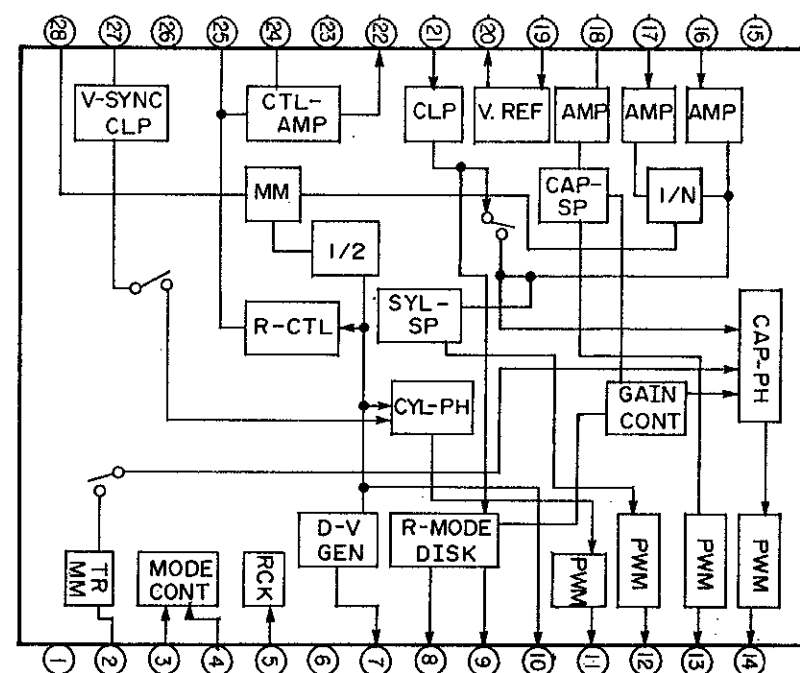
1. After confirming on the oscilloscope that an audio signal is being output by playing back F6-N test tape, adjust the azimuth adjustment screw ⑧ so that the AC voltmeter's reading or oscilloscope waveform is brought to its maximum level (Refer to Fig. 5-7).

Note: Fix the screw ⑧ with lock paint after readjustment (Refer to Fig. 5-7).

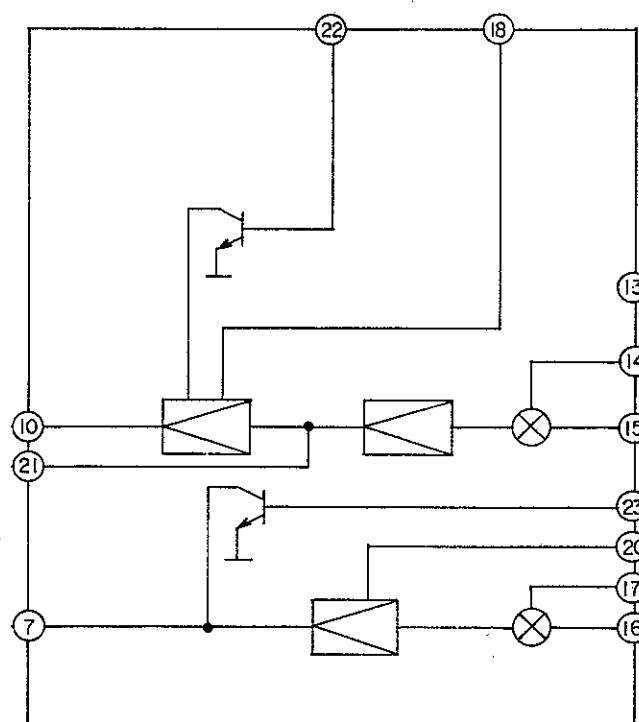
3 SYSTEM (3 SYSTEM Model Only)



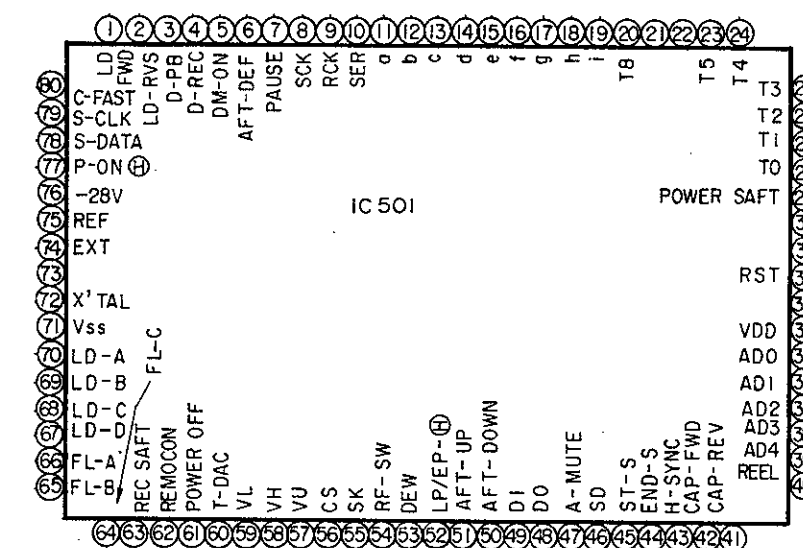
IC 402 (14DN363)



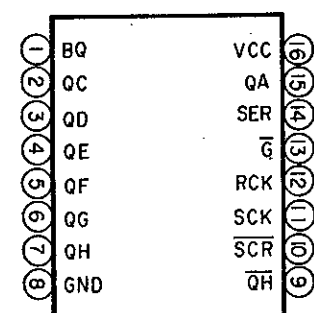
HIC 402 (1812240)



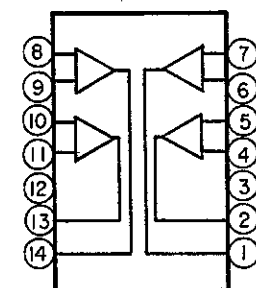
IC 501 (14D0800)



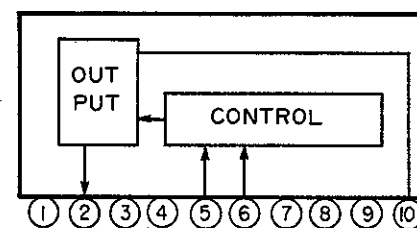
IC 505 (HD74HC595)



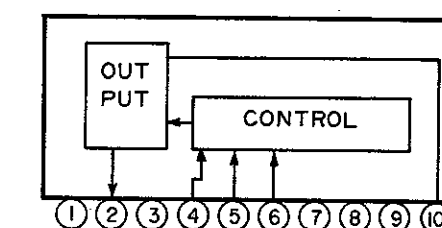
IC 502 (BA10339)



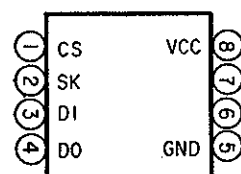
IC 504 (BA6209N)



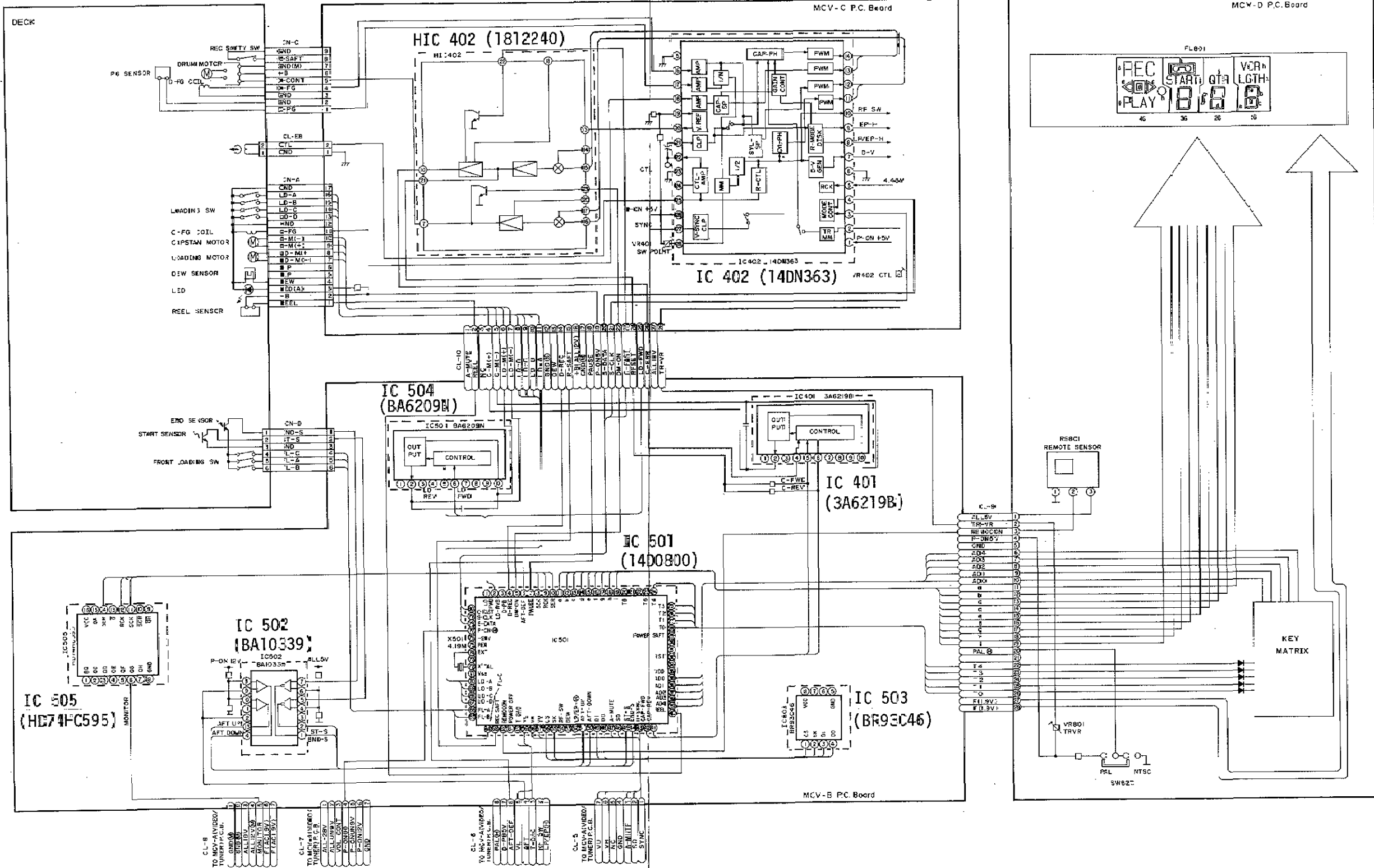
IC 401 (3A6219B)



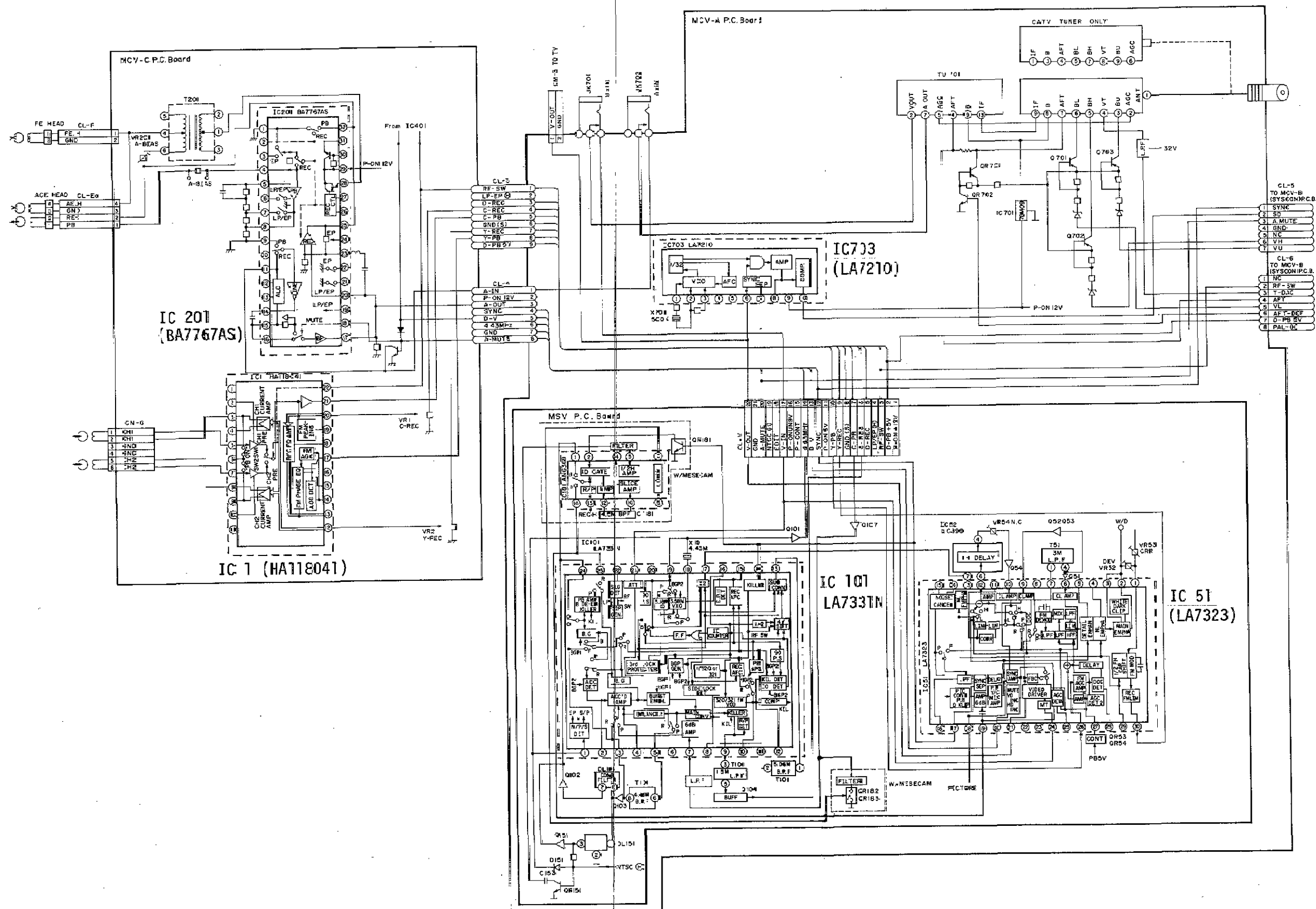
IC 503 (BR93C46)



SERVO/SYSTEM CONTROL/FUNCTION



6. BLOCK DIAGRAM VIDEO/HEAD AMP/AUDIO/TUNER



7. 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	V _{SS}	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 1	Control Peak Clamp	2.5V
22	OUT	C 0	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

14D0800 (SYSTEM CONTROL TIMER IC)

Pin No	IN/OUT	Signal Name	Function	Active Level
1	OUT	LD-FWD	Tape Loading / Cassette Loading Motor Control	H
2	OUT	LD-RVS	Tape Loading / Cassette Loading Motor Control	H
3	OUT	D-PB	Play Control	L
4	OUT	D-REC	Record Control	H
5	OUT	DM-ON	Drum Rotation Output	L
6	OUT	AFT DEF	AFT Defeat Signal	H
7	OUT	PAUSE	Pause Control	H
8	OUT	SCK	Servo IC Timing Clock	L → H
9	IN	RCK	Clock Base (3.58MHz)	~
10	IN	SER	Serial Data Input	~
11	OUT	a	Display Segment Output	H
12	OUT	b	Display Segment Output	H
13	OUT	c	Display Segment Output	H
14	OUT	d	Display Segment Output	H
15	OUT	e	Display Segment Output	H
16	OUT	f	Display Segment Output	H
17	OUT	g	Display Segment Output	H
18	OUT	h	Display Segment Output	H
19	OUT	i	Display Segment Output	H
20	OUT	T8	Key Scan Signal Output	H
21	—	—	—	—
22	—	—	—	—
23	OUT	T5	Key Scan Signal Output	H
24	OUT	T4	Key Scan Signal Output	H
25	OUT	T3	Key Scan Signal Output	H
26	OUT	T2	Key Scan Signal Output	H
27	OUT	T1	Key Scan Signal Output	H
28	OUT	T0	Key Scan Signal Output	H
29	IN	POWER SAF	Power Abnormal Detector	L
30	—	—	—	—
31	—	—	—	—
32	IN	RST	Reset at Reset Signal Input "L", Normal at "H"	L
33	—	—	—	—
34	IN	VDD	5V (Power)	+5V
35	IN	AD 0	Key Scan Signal Input	H

Pin No	IN/OUT	Signal Name	Function	Active Level
36	IN	AD 1	Key Scan Signal Input	H
37	IN	AD 2	Key Scan Signal Input	H
38	IN	AD 3	Key Scan Signal Input	H
39	IN	AD 4	Key Scan Signal Input	H
40	IN	REEL	Control Input Pulse	~
41	IN	CAP REV	Capstan Motor Reverse	L
42	IN	CAP FWD	Capstan Motor Forward	L
43	IN	H SYNC	H Sync Signal Input	L
44	IN	END S	END Sensor on at "L"	L
45	IN	STS	Tape Start Position Detector	L
46	IN	SD	Tuner Video Signal SYNC signal input, "L" at SYNC signal	L
47	OUT	A-MUTE	Audio Mute Signal	H
48	OUT	DO	Serial Data out	H
49	IN	DI	Serial Data in	H
50	IN	AFT DOWN	Tuner AFT Voltage Input, "L" at under 4V of AFT Voltage	L
51	IN	AFT UP	Tuner AFT Voltage Input, "H" at over 8V of AFT Voltage	H
52	IN	LP/EP-H	Tape Speed	H
53	IN	DEM	Dew Sensor	L
54	IN	RF-SW	Switching Pulse	H or L
55	IN	SK	Serial Data Clock	L or H
56	IN	CS	Chip Select	H or L
57	OUT	VU	Tuner Control Signal	H~
58	OUT	VH	Tuner Band Control Signal	H~
59	OUT	VL	Tuner Control Signal	H~
60	OUT	T-DAC	Tuner Tuning Voltage Control Signal	H or L
61	IN	POWER-OFF	"L" at Power Failure, "H" at Normal	L
62	IN	REMOCON	Remote Control Serial Signal Input	L
63	IN	REC-SAFETY	Erase Prevention Switch	H
64	IN	FL-C	Cassette In Detector	L
65	IN	FL-B	Cassette Out Detector	L
66	IN	FL-A	Cassette Down Start Detector	L
67	IN	LD-D	Tape Loading Position Detector	L
68	IN	LD-C	Tape Loading Position Detector	L
69	IN	LD-B	Tape Loading Position Detector	L
70	IN	LD-A	Tape Loading Position Detector	L

8. ALIGNMENT INSTRUCTIONS

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 EQUIPMENT 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, F8-N
6. Spectrum Analyzer
7. Frequency Counter

8-1 SWITCHING POINT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
V-OUT TP 2 (RF-SW) GND	VR401 (Switching Point) (MCV-C P.C. Board)	PLAY	F6-A	Fig. 8-1

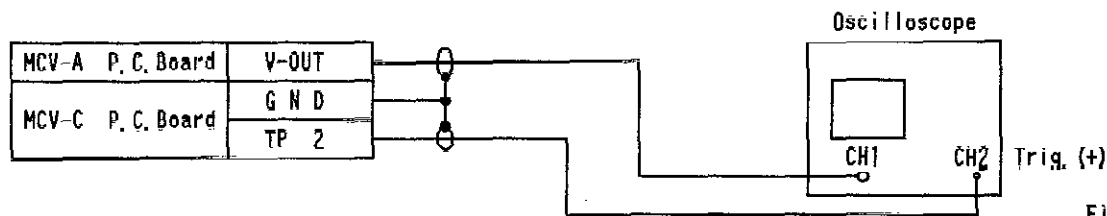
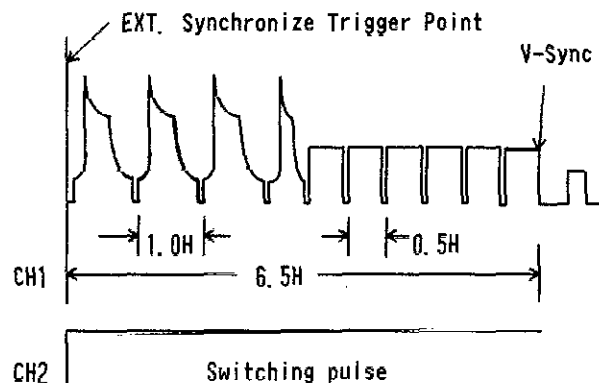


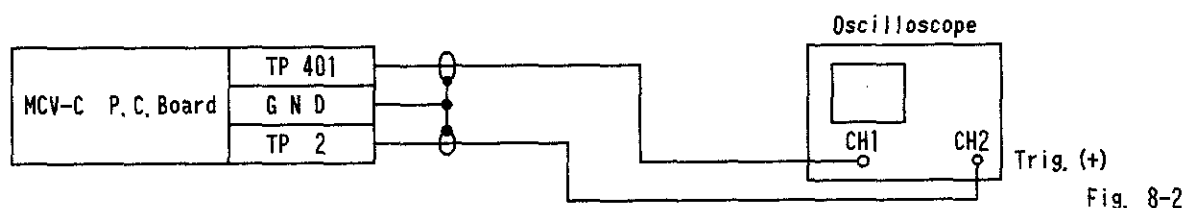
Fig. 8-1

1. Connect the equipment as shown in Fig. 8-1.
2. Set the input trigger mode to CH2 and set trigger slope to (+).
3. Tracking VR is center of lock position.
4. Playback the tape and adjust VR401 so that the V-sync front edge of CH1 video output waveform is delayed 6.5H (416 μ s) from the rising of CH2 Head Switching pulse waveform.

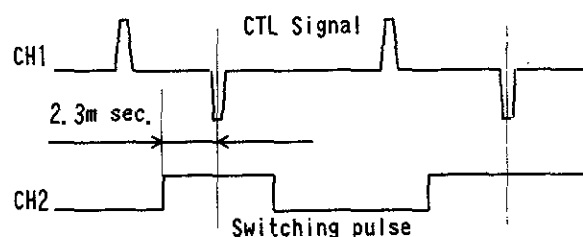


8-2 CTL PRESET ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 401 (CTL) TP 2 (RF SW) GND	VR402 (CTL) (MCV-C P. C. Board)	PLAY	F6-A	Fig. 8-2

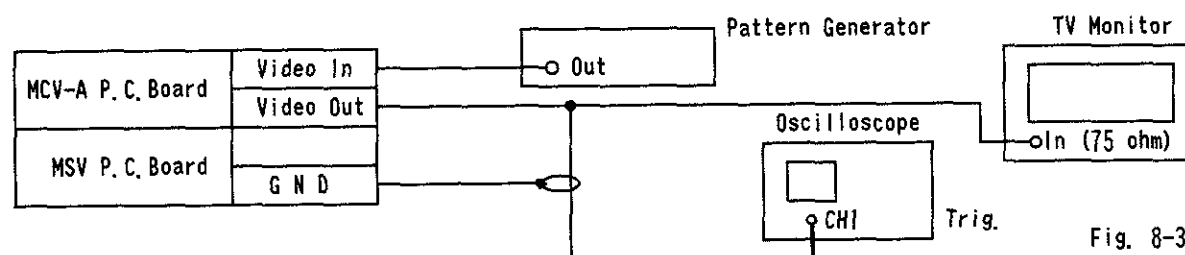


1. Connect the equipment as shown in Fig. 8-2.
2. Set the input trigger mode to CH2 and set trigger slope to (-).
3. Set the tracking volume to the center click position.
4. Playback the tape and adjust VR402 to make the rising point of CH1 CTL signal where delayed 2.3msec. from the sitting of CH2 RF Switching pulse.

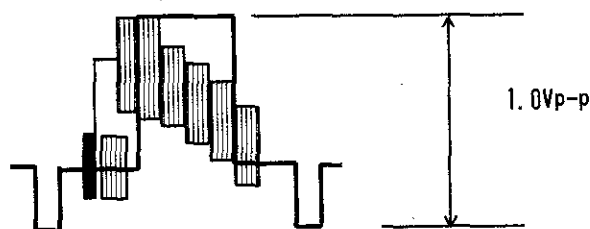


8-3 E-E LEVEL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
V-OUT GND	VR 55 (E-E) (MSV P. C. Board)	E-E	—	Fig. 8-3



1. Connect the equipment as shown in Fig. 8-3.
2. Input Color Bar signal with 100% white to Video Input.
3. Adjust VR55 so that the video level becomes 1.0Vp-p±0.05V.



8-4 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 P. C. Board)	PLAY	F6-A	Fig. 8-4

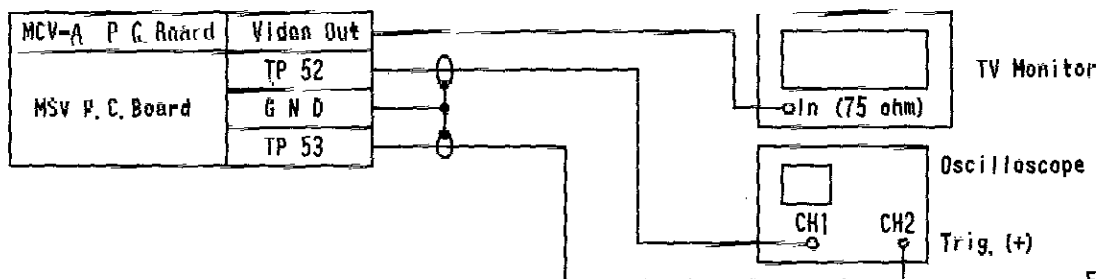


Fig. 8-4

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

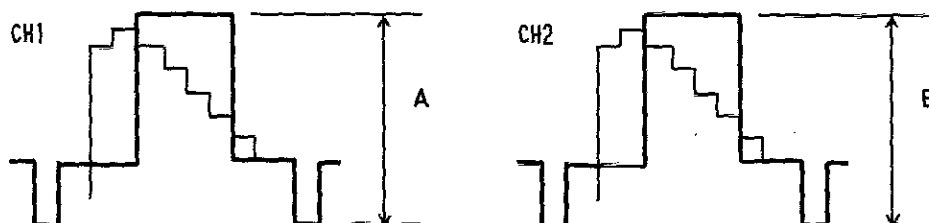
(1)

1. Connect the equipment as shown in Fig. 8-4.
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.



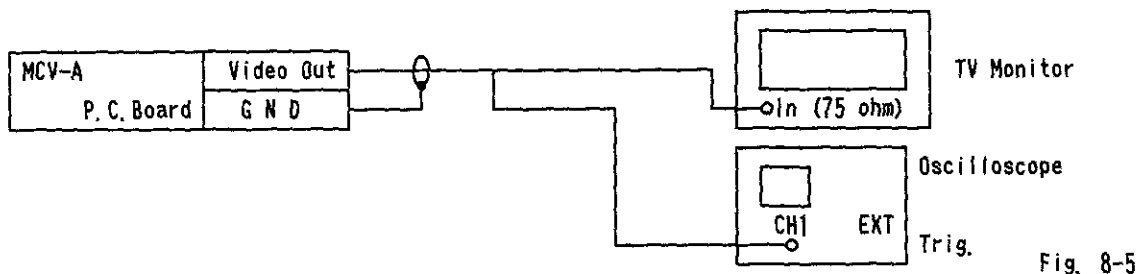
(2)

1. Connect the equipment as shown in Fig. 8-4.
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.



8-5 P. B. OUTPUT LEVEL ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
V-OUT GND	VR 53 (P. B.) (MSV P. C. Board)	PLAY	F6-A	Fig. 8-5

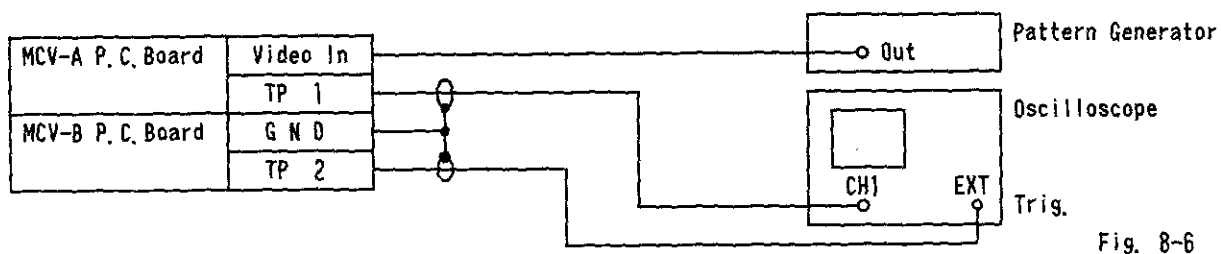


1. Connect the equipment as shown in Fig. 8-5.
2. Adjust VR53 so that the video level becomes $1.0Vp-p \pm 0.05 V$.

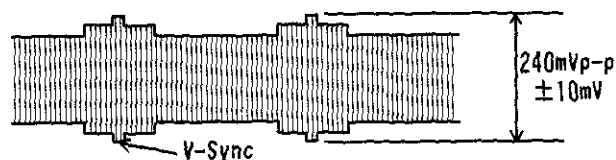
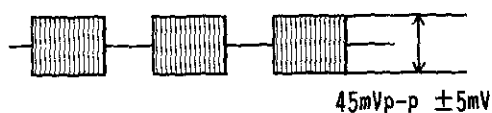


8-6 REC. CURRENT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 1 (REC Level) TP 2 (RF SW) GND	VR 2 (Y-REC) (MCV-C P. C. Board) VR 1 (C-REC) (MCV-C P. C. Board)	REC.	Blank tape	Fig. 8-6



1. Connect CH1 of oscilloscope across TP1 and Ground.
2. Connect EXT. Trigger of oscilloscope across TP 2 and Ground.
3. Turn VR 1 fully clockwise.
4. Input red only signal to VIDEO INPUT.
5. Adjust VR 2 so that chroma level becomes $45mVp-p \pm 5mV$.
6. Input color bar signal with 100% white to VIDEO INPUT.
7. Adjust VR 1 so that V-Sync level becomes $240mVp-p \pm 10mV$.



8-7 REC. BIAS CURRENT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP201 (BIAS $\oplus$) TP202 (BIAS $\ominus$)	VR201 (BIAS) (MCV-C P. C. Board)	REC. (SP)	Blank tape	Fig. 8-7



Fig. 8-7

1. Connect the equipment as shown in Fig. 8-7.
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 becomes 22mV.

8-8 FM CARRIER DEVIATION ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 1 (CRR/DEV) TP 2 (RF-SW) GND	VR51 (CRR) VR52 (DEV) (MSV P. C. Board)	REC. (SP)	Blank tape	Fig. 8-8

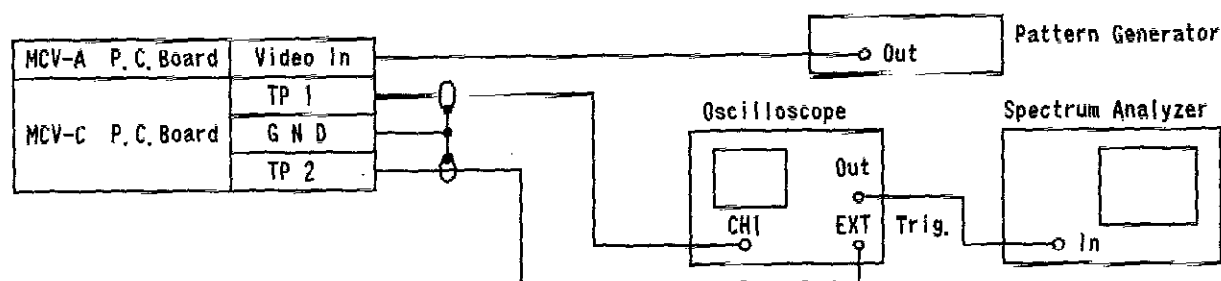
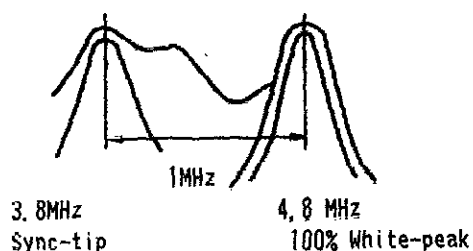


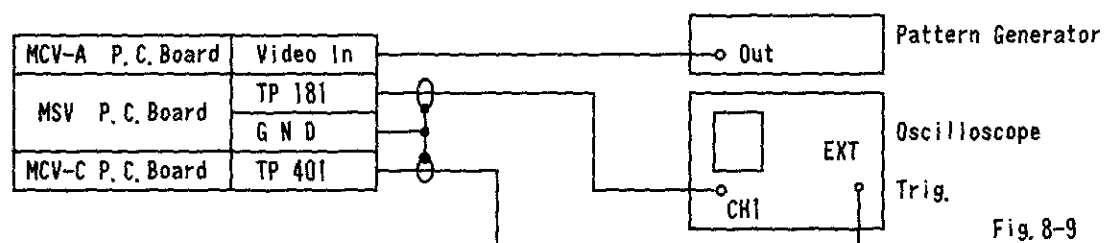
Fig. 8-8

1. Connect the equipment as shown in Fig. 8-8.
2. Input color bar signal with 100% white to Video Input.
3. Adjust Sync-tip to 3.8MHz $\pm$ 20kHz by VR 52, White-peak to 4.8 MHz $\pm$ 20kHz by VR51.

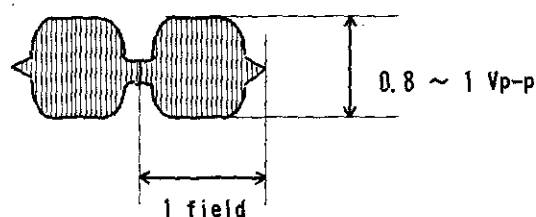


8-9 SECAM 1/2f TUNE ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP181 (SECAM, CH1) TP 2 (RF-SW)	L181 (MESECAM) (MSV P.C. Board)	REC.	Blank Tape	Fig. 8-9



1. Connect CH1 of oscilloscope across TP181 and Ground.
2. Connect EXT. Trigger of oscilloscope across TP401 and Ground.
3. Input SECAM color bar signal VIDEO IN.
4. Adjust by L181 so that output level becomes maximum.



* Note : Require this adjustment for MESECAM model only.

3-System Model Only (NTSC Selector)

8-10 SWITCHING POINT ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
V-OUT TP452 (RF-SW) GND	VR452 (Switching Point) (SVV P. C. Board)	PLAY	F8-N	Fig. 8-10

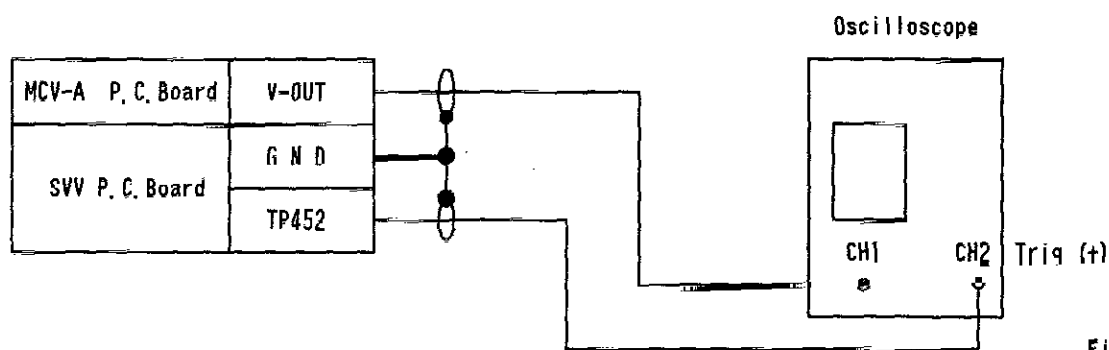
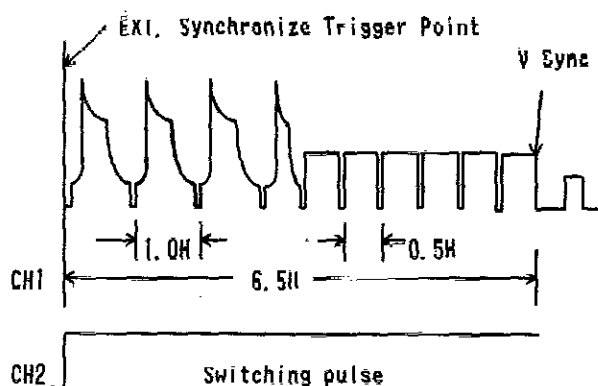


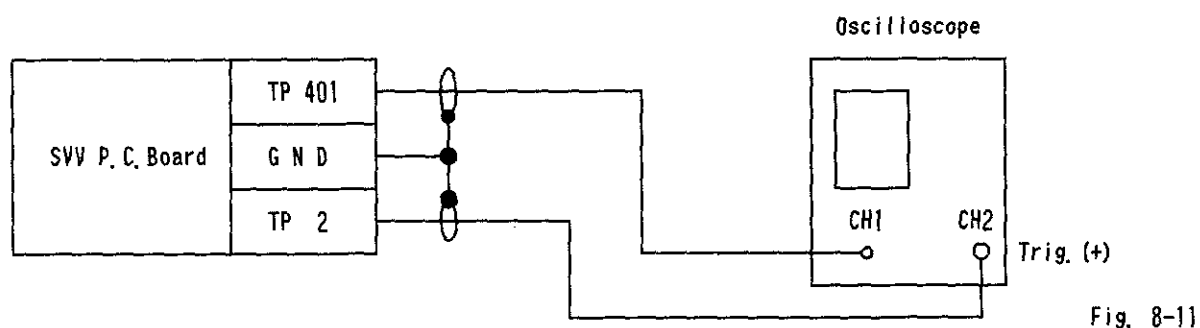
Fig. 8-10

1. Connect the equipment as shown in Fig. 8-10.
2. Set the input trigger mode to CH2 and set trigger slope to (+).
3. Tracking VR is center click position.
4. Playback the tape and adjust VR452 so that the V-sync front edge of CH1 video output waveform is delayed 6.5H (416 μ s) from the rising of CH2 Head Switching pulse waveform.

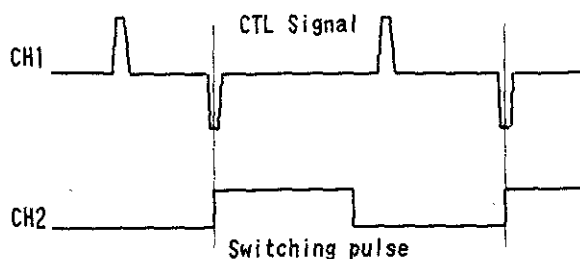


8-11 CTL PRESET ADJUSTMENT

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP 451 (CTL) TP 452 (RF SW) GND	VR452 (CTL) (SVV P. C. Board)	PLAY	F8-N	Fig. 8-11

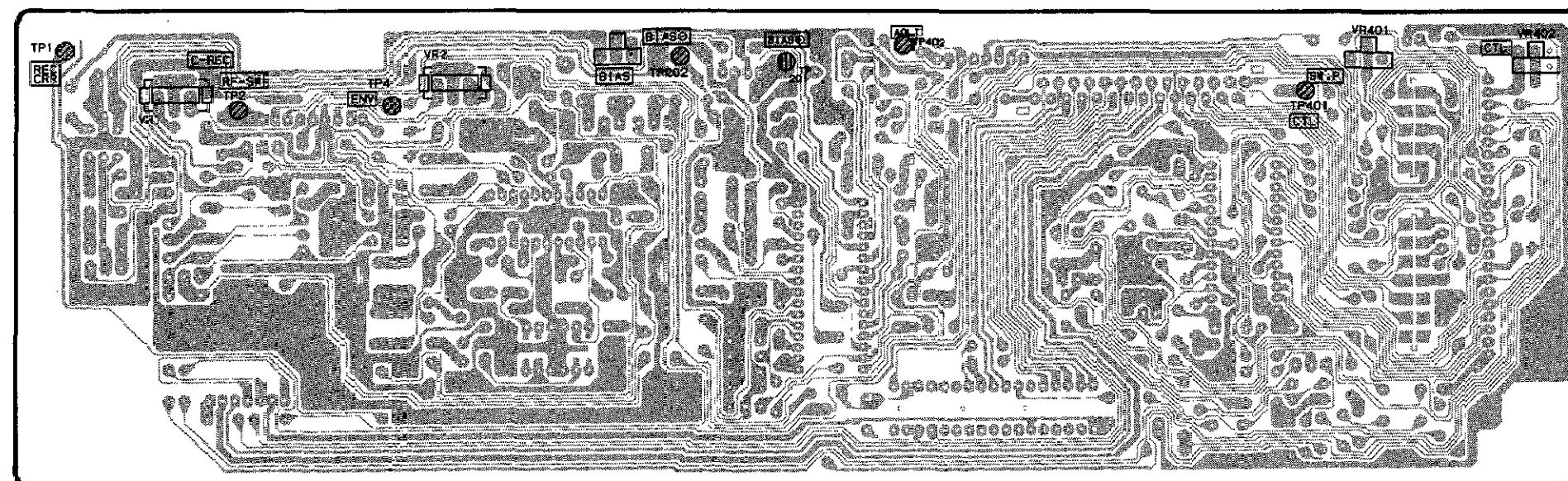


1. Connect the equipment as shown in Fig. 8-11.
2. Set the input trigger mode to CH2 and set trigger slope to (-).
3. Set the tracking volume to the center click position.
4. Playback the tape and adjust VR452 to make the rising point of CH1 CTL signal where delayed 0msec. from the sitting of CH2 RF Switching pulse.



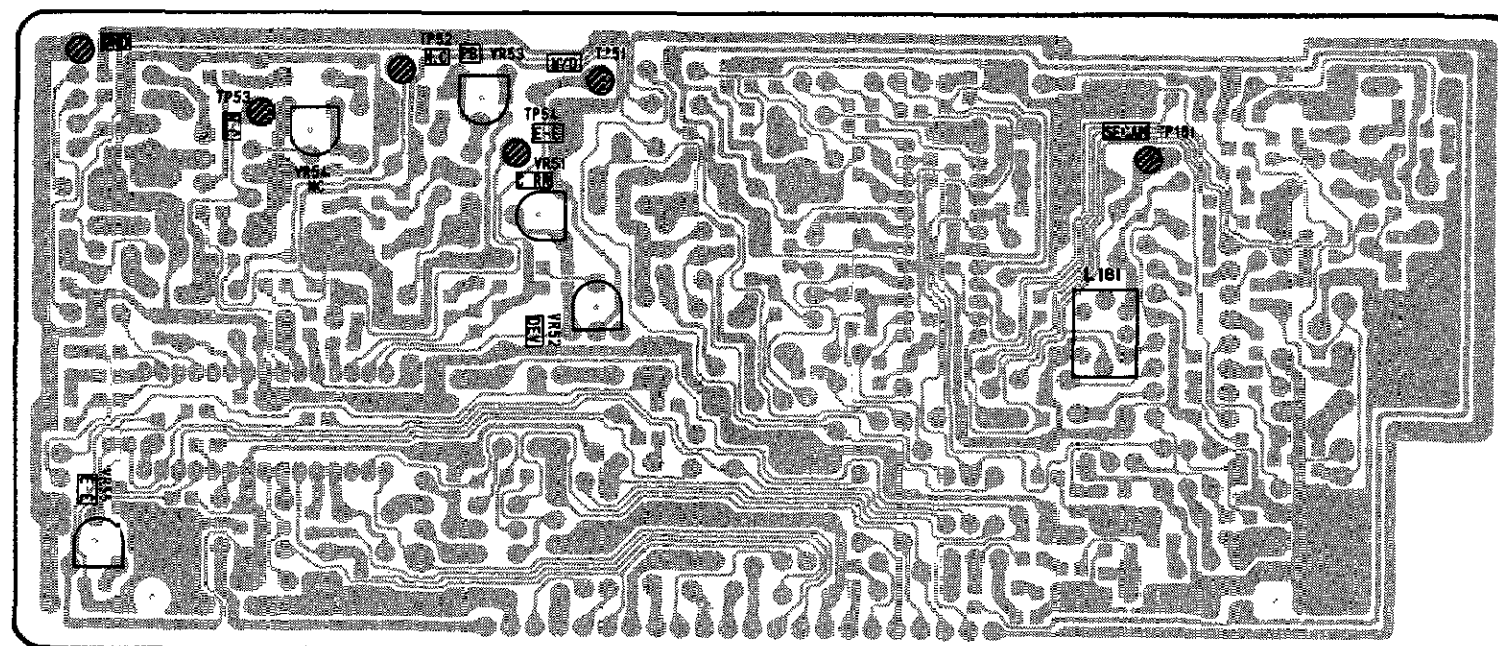
9. TEST POINT

MCV-C PCB



922C

MSV PCB



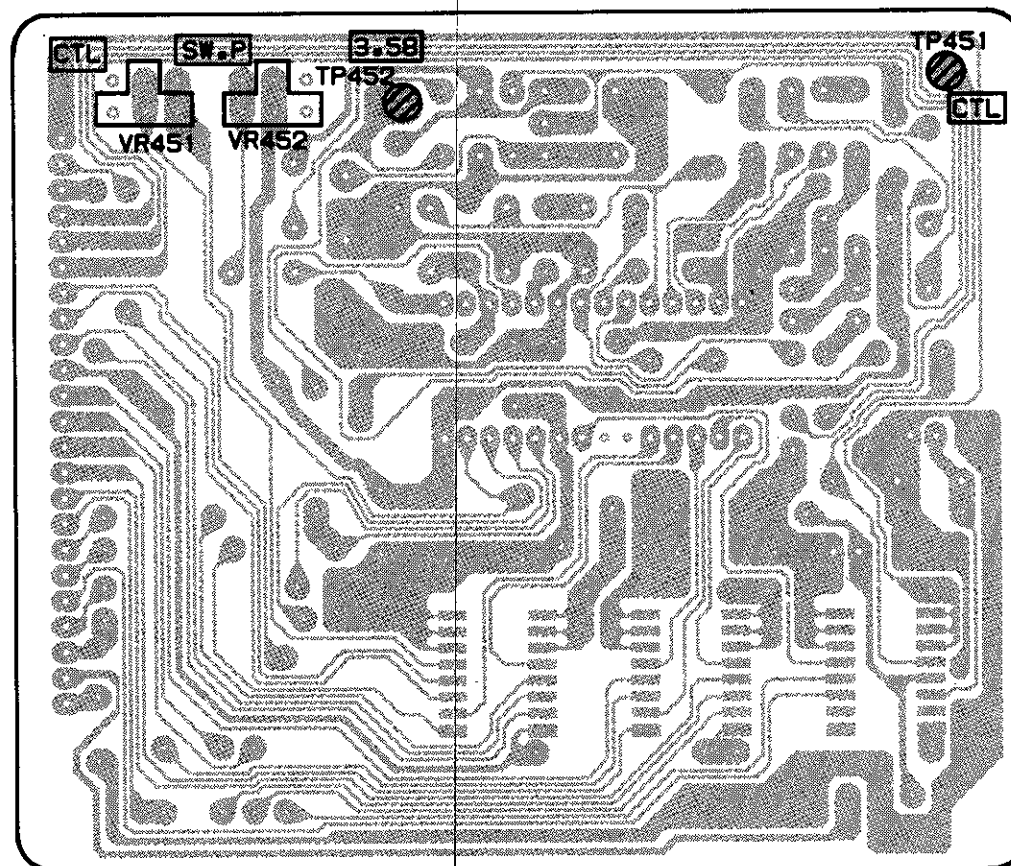
927

A B C D E F G H I J K L M N

1
2
3
4
5
6
7
8
9
10
11
12
13

SVV PCB

(3 SYSTEM Model Only)

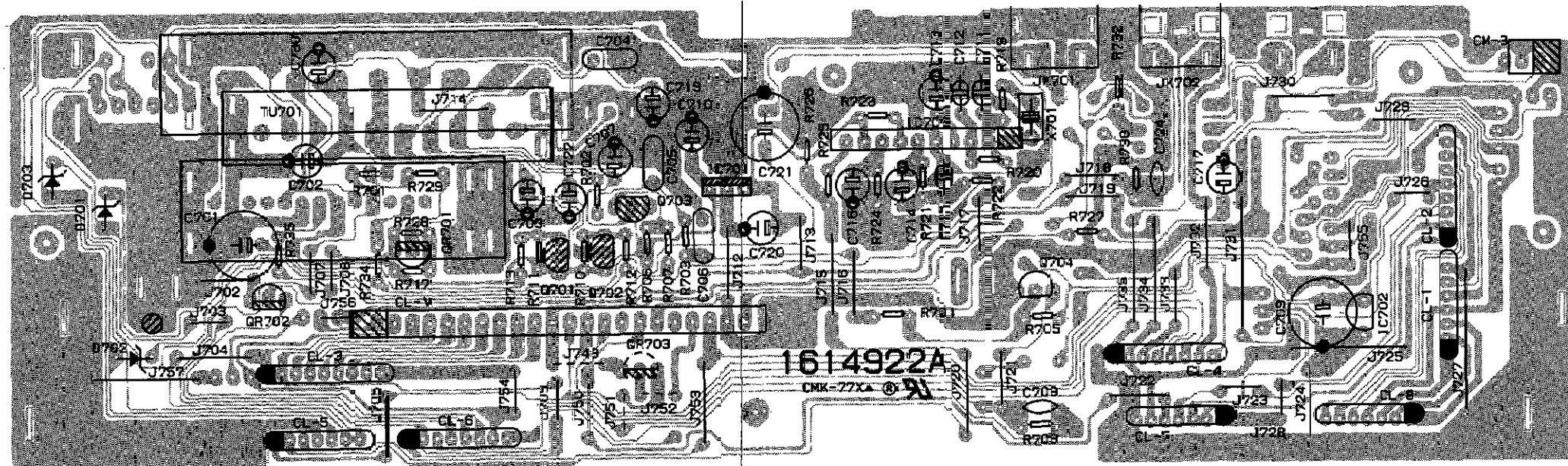


982

10. P.C.BOARD TOP AND BOTTOM VIEWS

MCV-A PCB

TOP VIEW

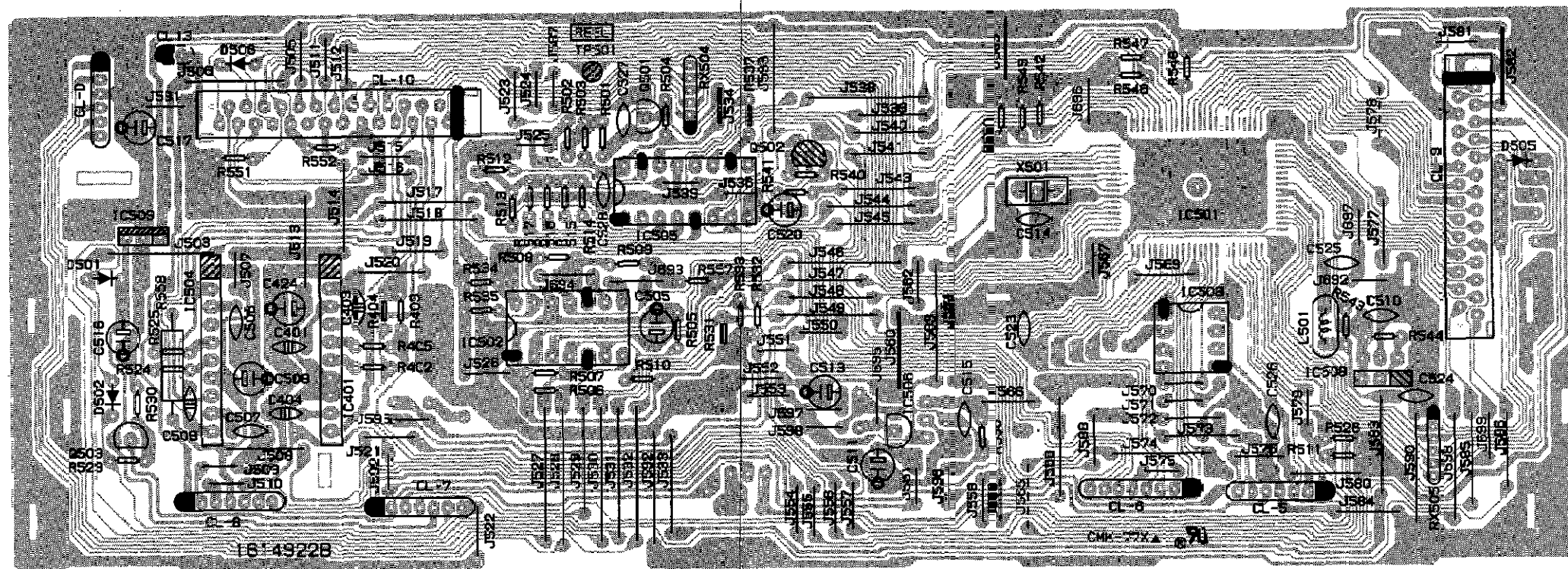


922A

----- 3 System Model Only

MCV-B PCB

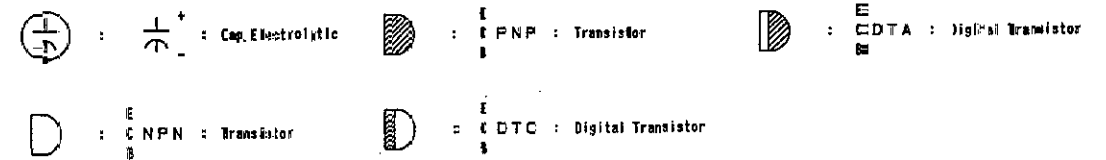
TOP VIEW



922B

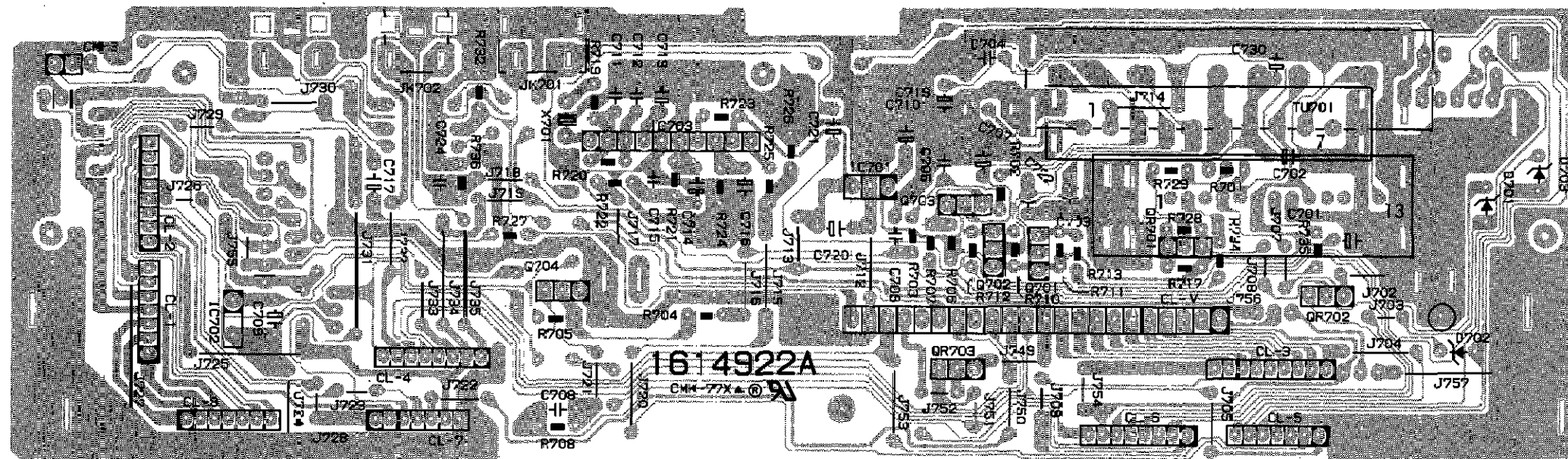
----- 3 System Model Only

☆ Capacitor and transistor are noted with fillow symbols.



A B C D E F G H I J K L M

BOTTOM VIEW



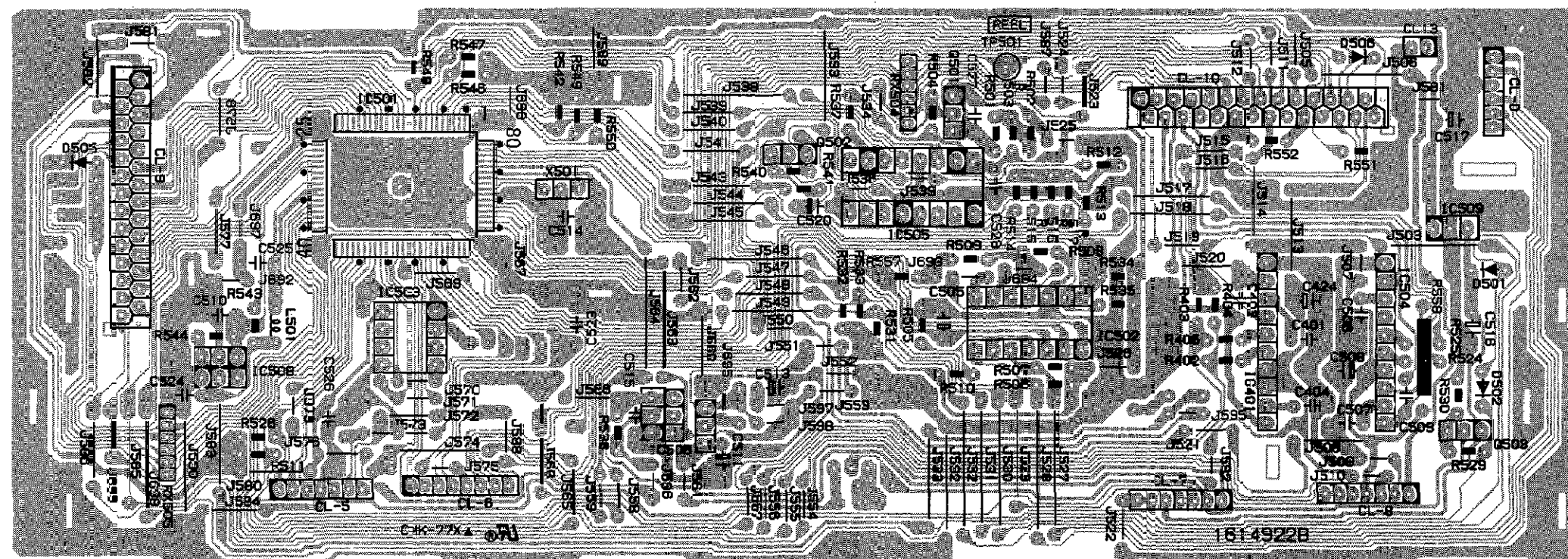
1614922A

CH-77X-8

922A

--- CATV Model Only

BOTTOM VIEW

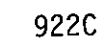


CH-77X-8

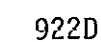
1614922B

922B

TOP VIEW



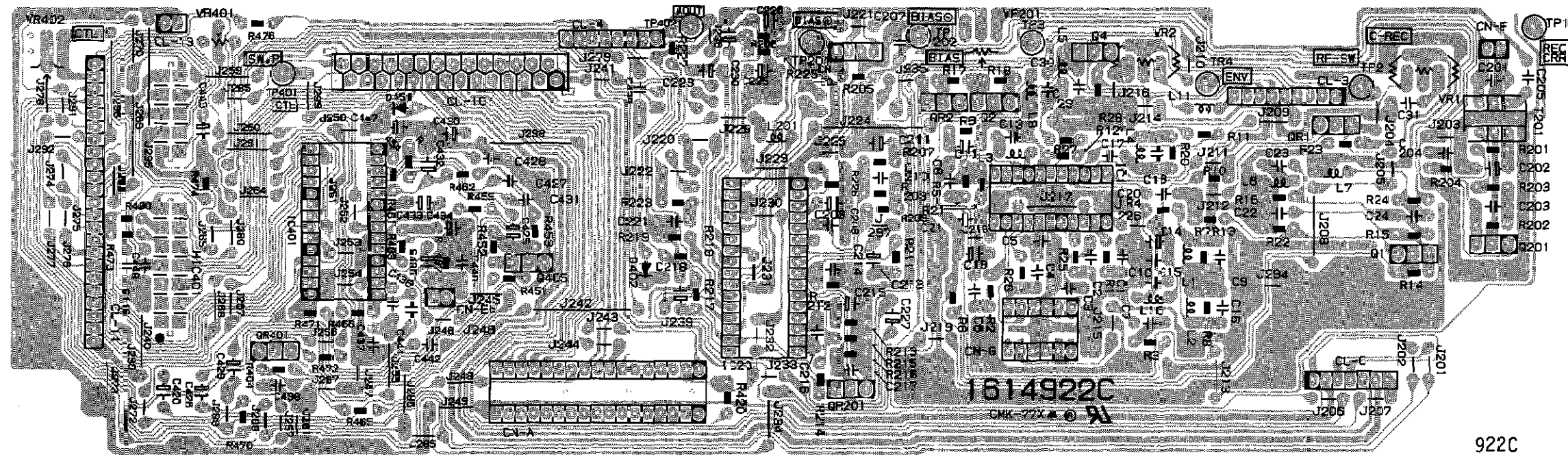
TOP VIEW



10-3

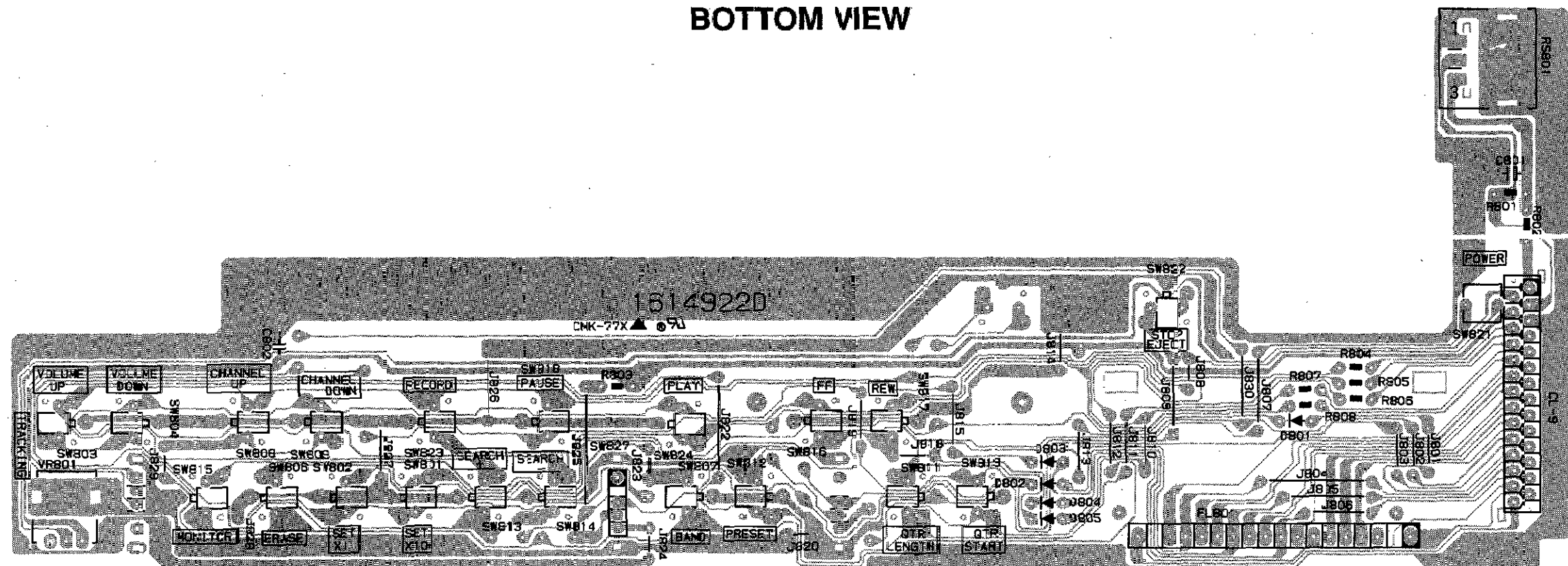
A B C D E F G H I J K L M N

BOTTOM VIEW



922C

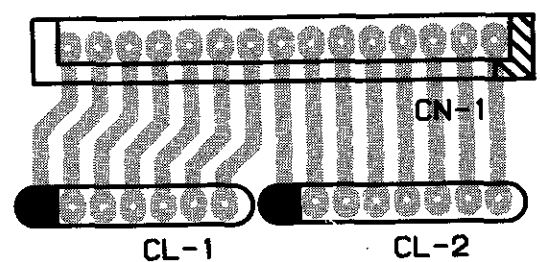
BOTTOM VIEW



922D

MCV-E PCB

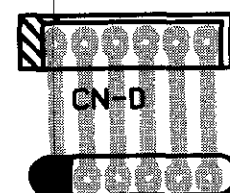
TOP VIEW



1614922E CMK-77X▲@922E

MCV-F PCB

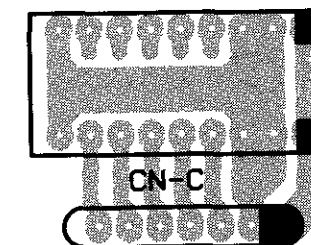
TOP VIEW



1614922F 922F

MCV-G PCB

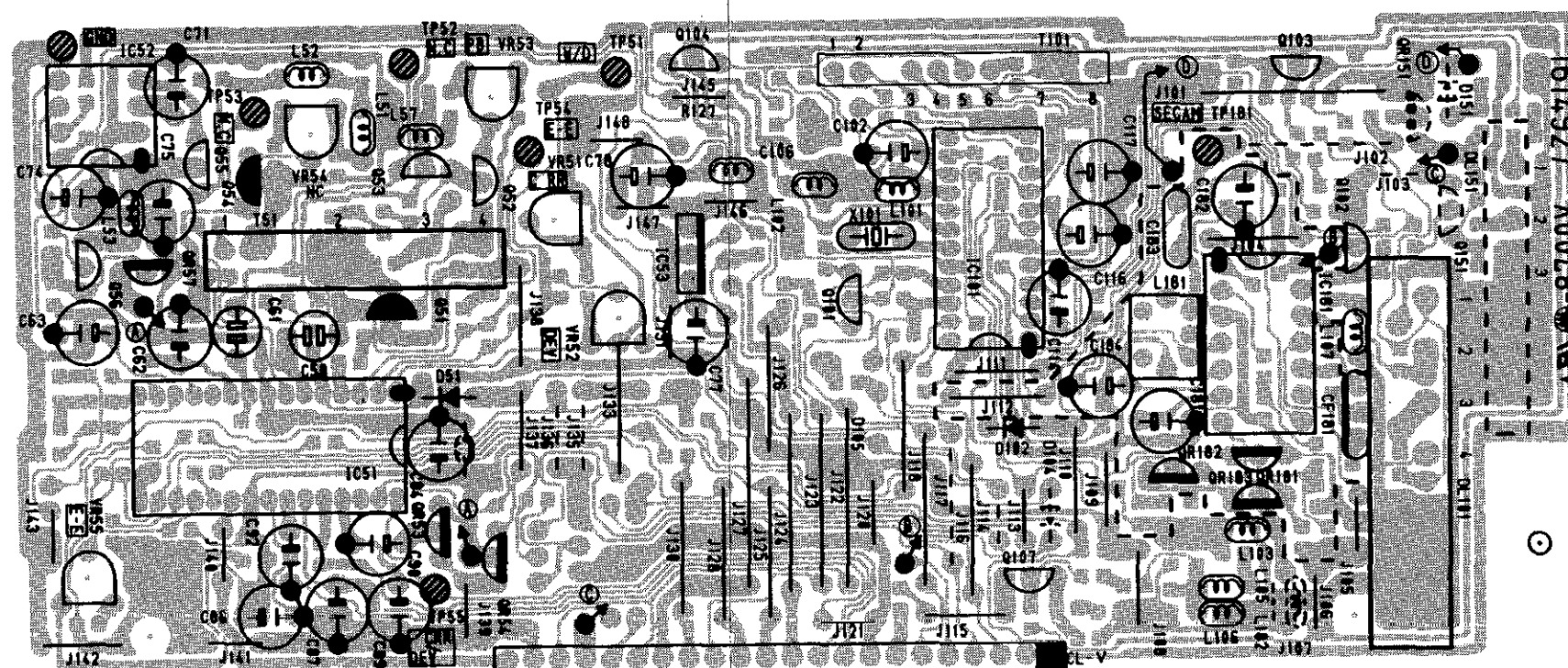
TOP VIEW



1614922G 922G

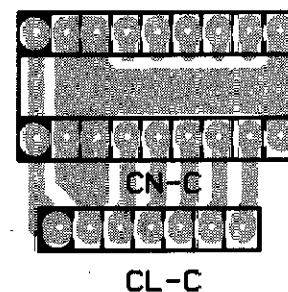
MSV PCB

TOP VIEW



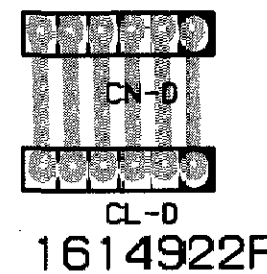
--- 3 System Model Only

BOTTOM VIEW



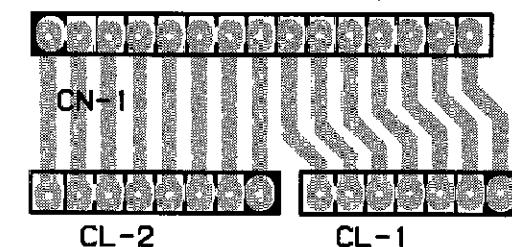
1614922G
922G

BOTTOM VIEW



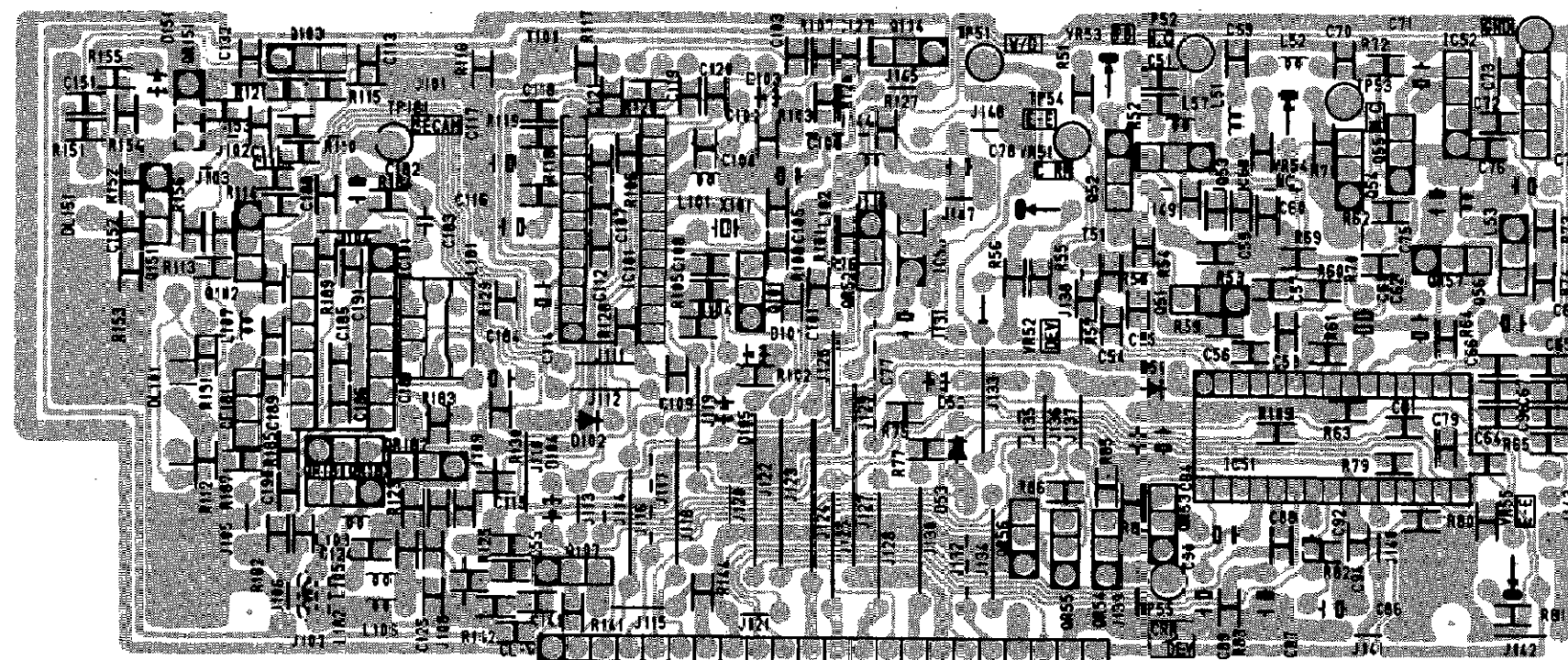
1614922F
922F

BOTTOM VIEW

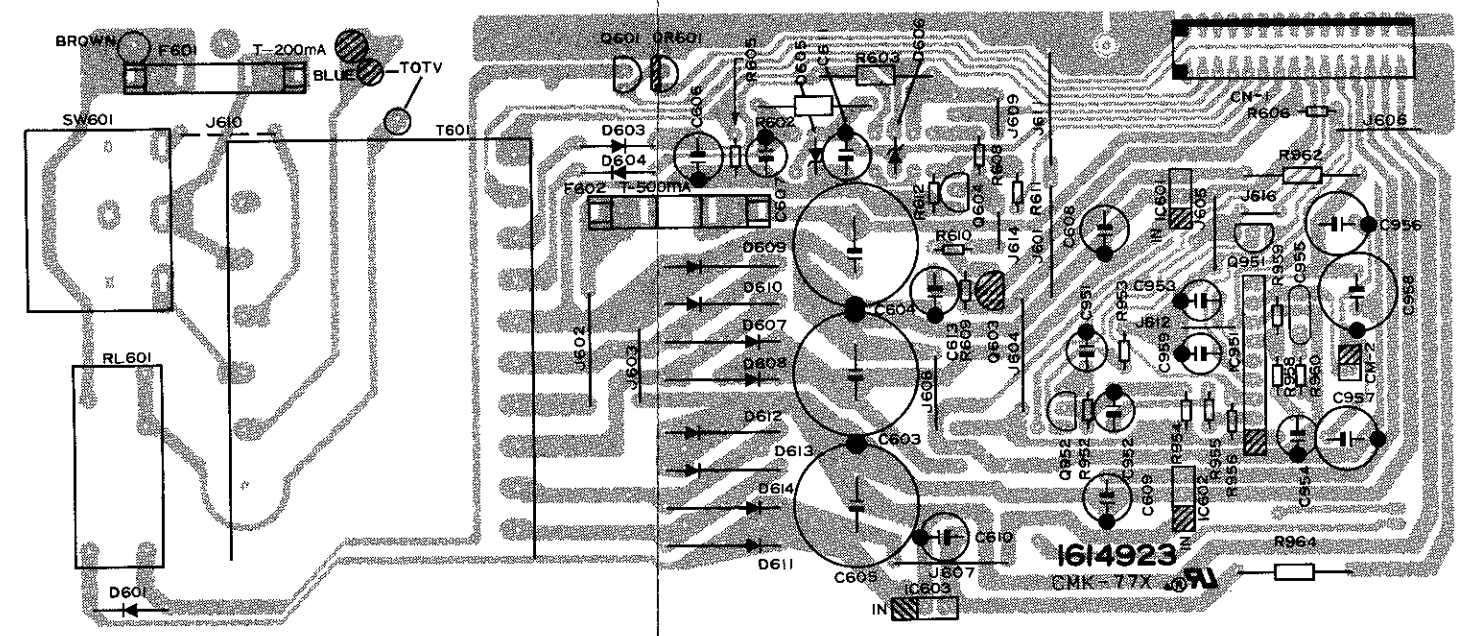


1614922E CMK-77X▲
922E

BOTTOM VIEW



PSV PCB TOP VIEW

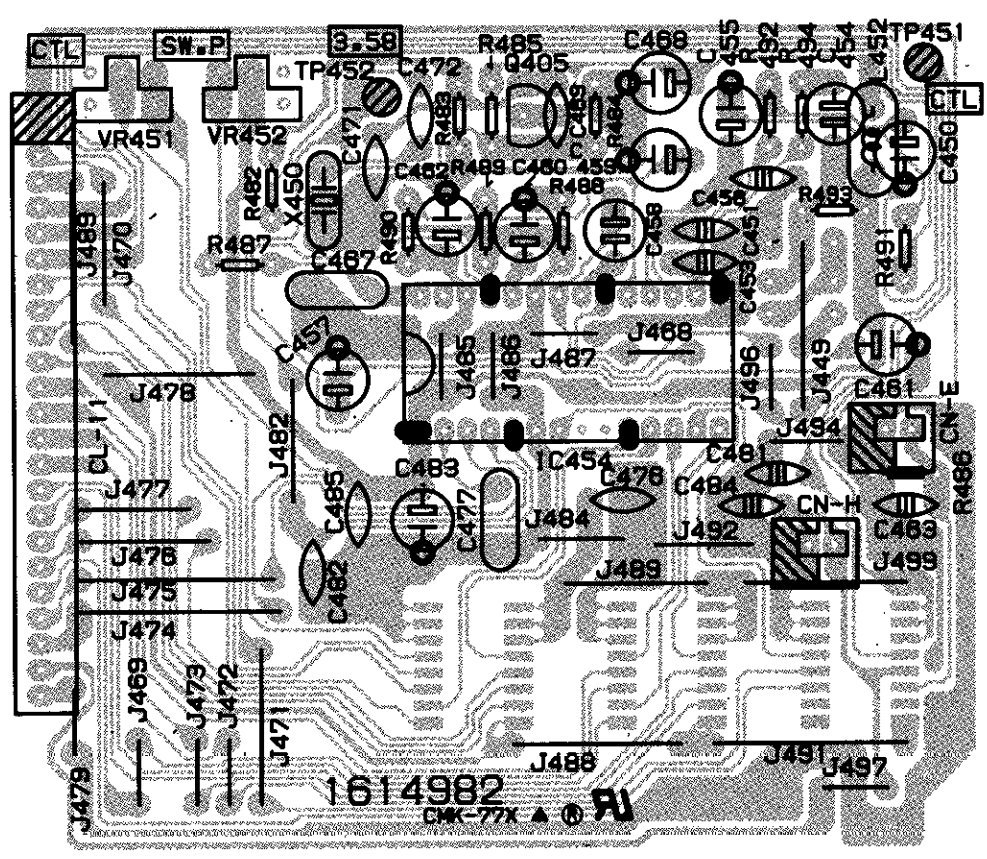


----- 3 System Model Only

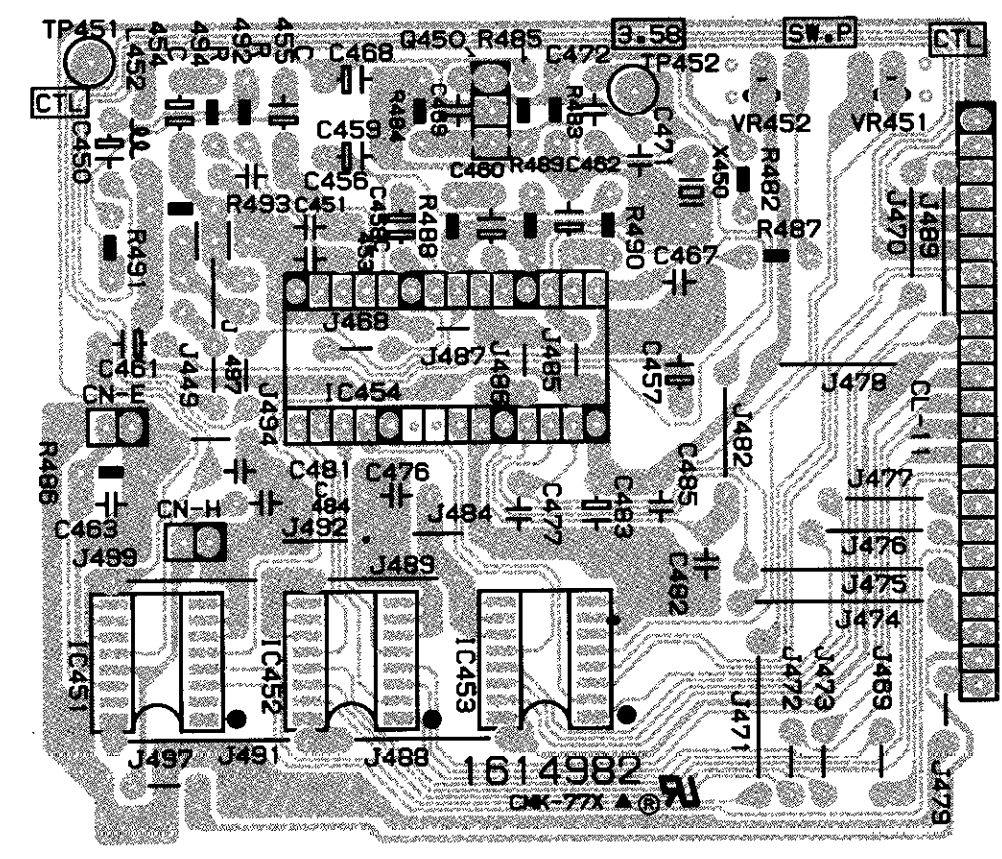
923

SVV PCB (3 SYSTEM Model Only)

TOP VIEW

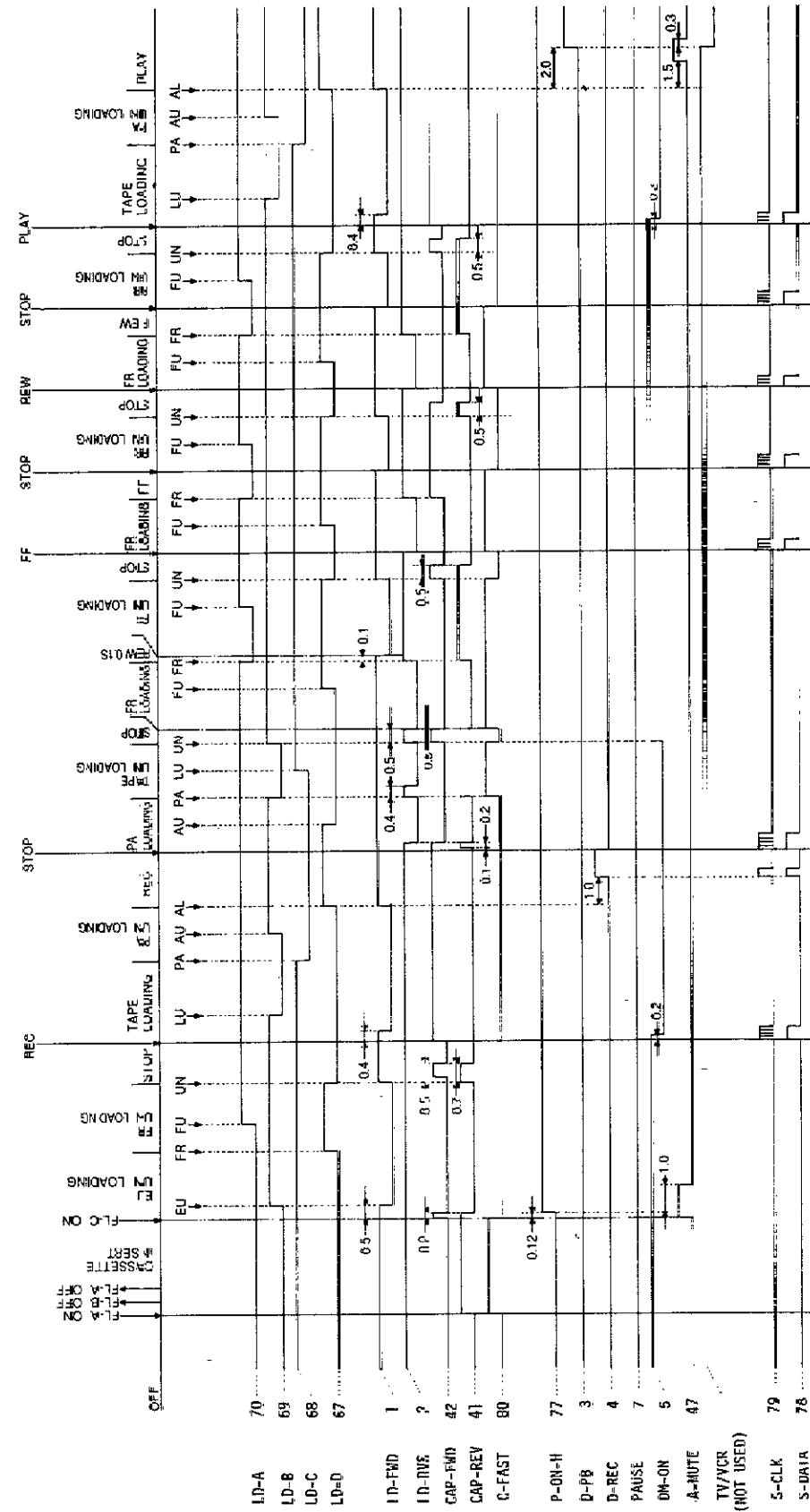


BOTTOM VIEW

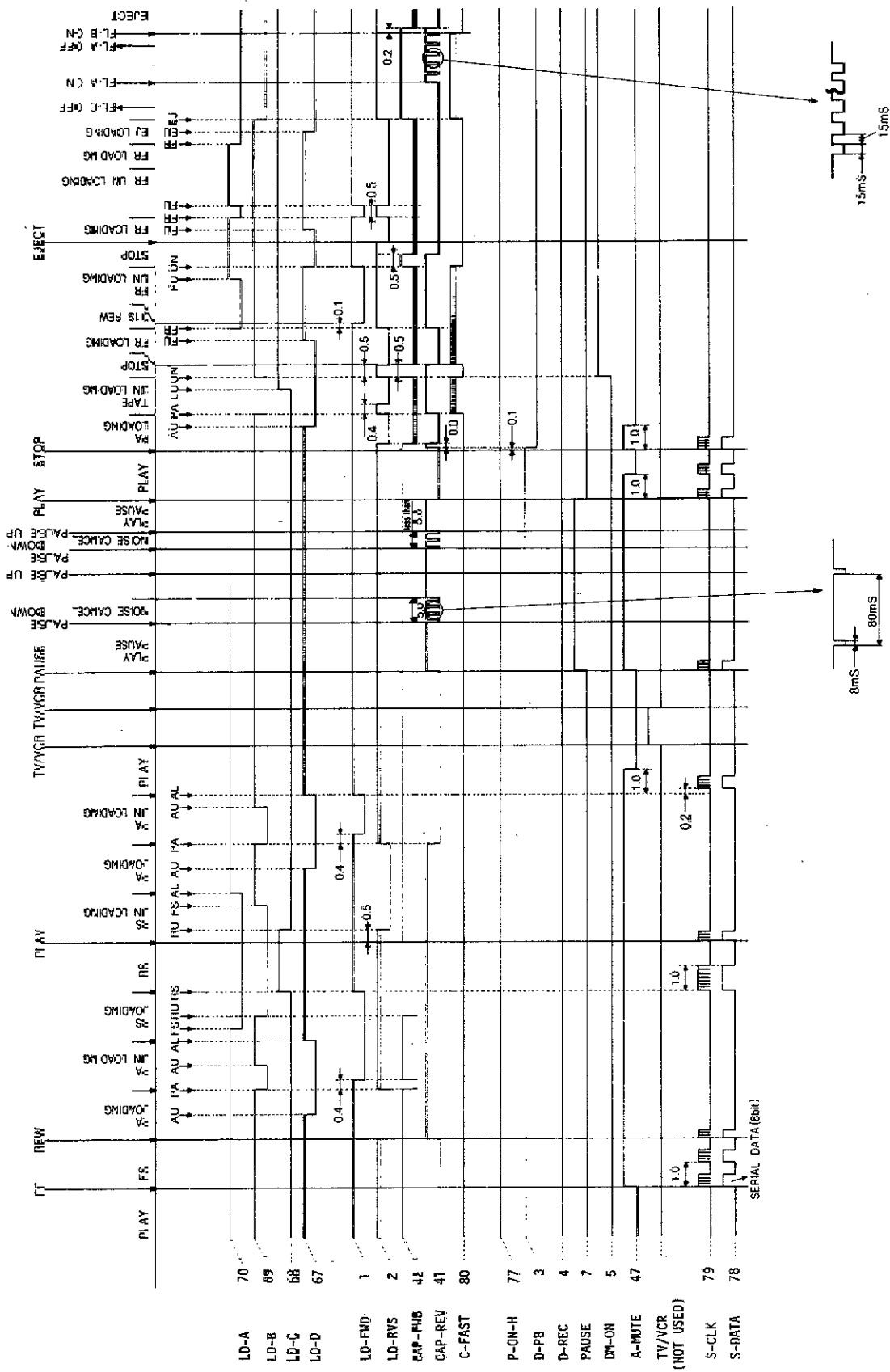


12. SYSTEM CONTROL TIMING CHARTS

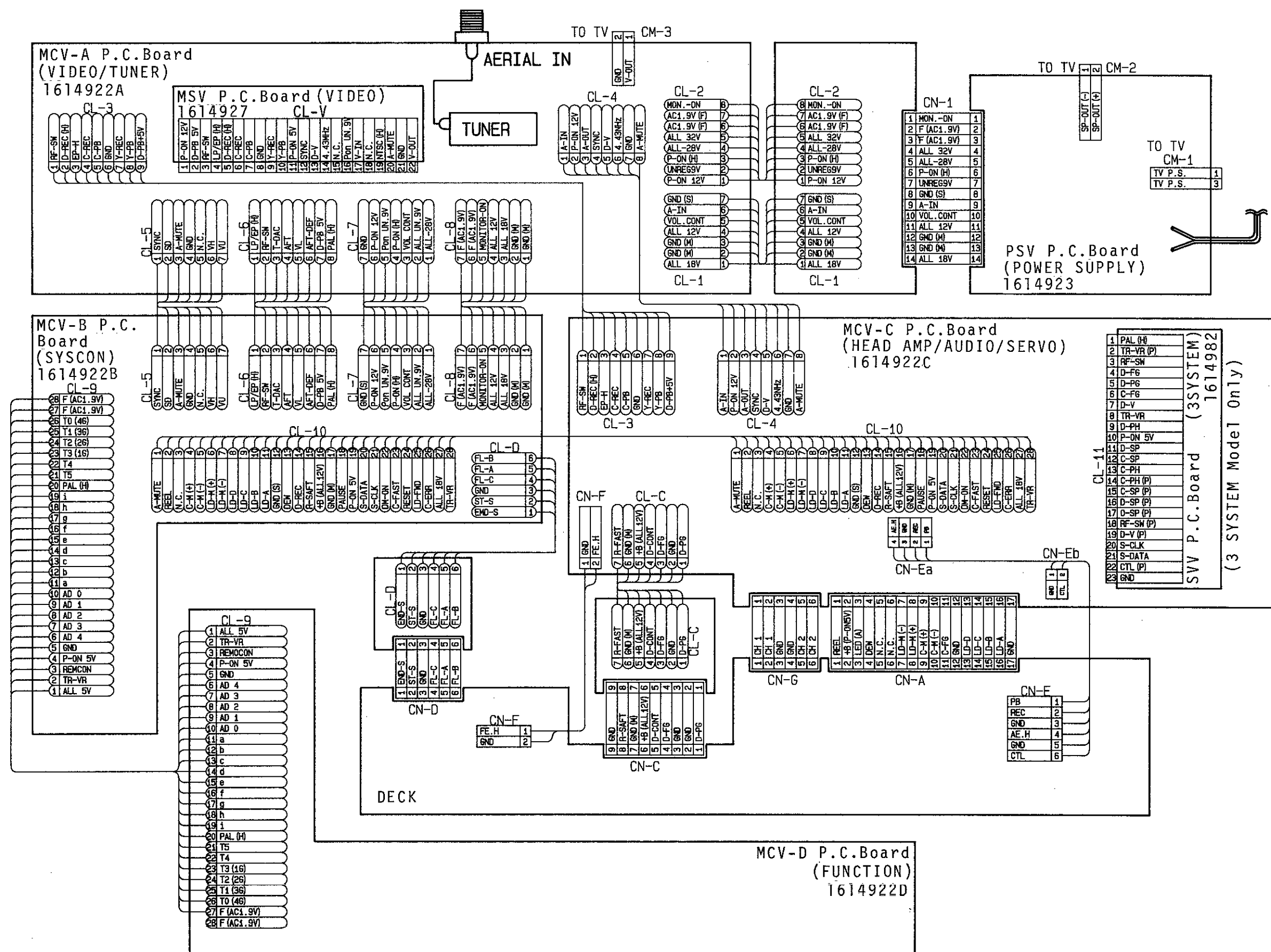
1 OFF → CASSETTE → REC → STOP → FF → STOP → REW → STOP → PLAY



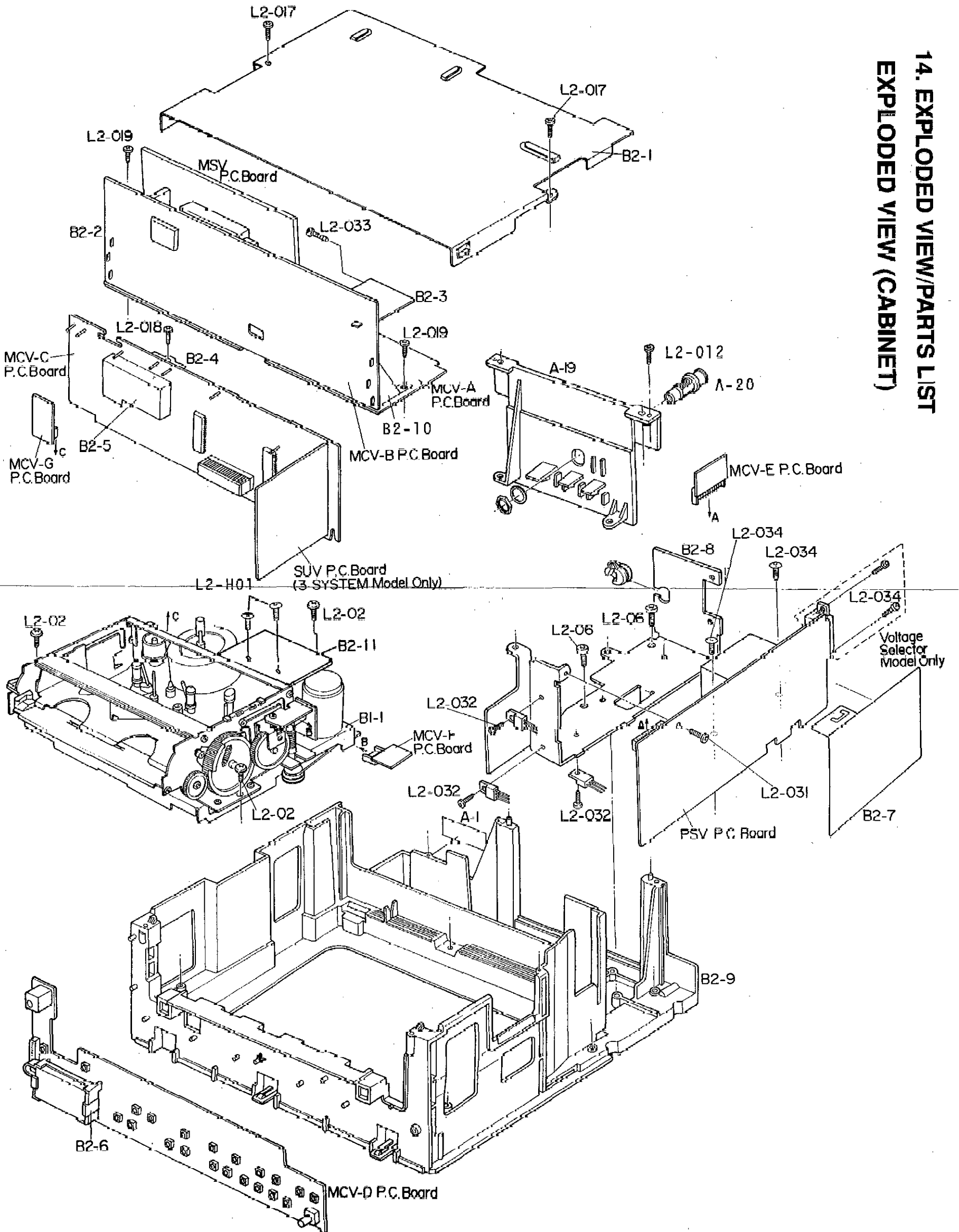
2. PLAY → FF(FS) → REW(RS) → PLAY → TV/VCR → PAUSE → NOISE CANCEL → PLAY → STOP → EJECT



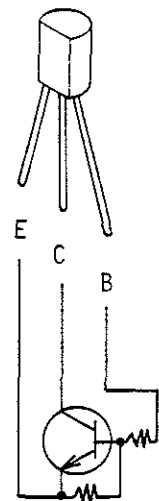
11. WIRING DIAGRAM



14. EXPLODED VIEW/PARTS LIST EXPLODED VIEW (CABINET)



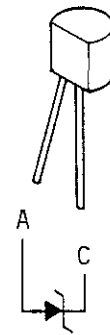
13. LEAD IDENTIFICATIONS



2SA608	2SB892	DTA114
2SA854	2SB1010	DTA124
2SA933	2SC536	DTA143
2SA934	2SC1740	DTA144
2SA1016	2SC1741	DTC114
2SA1038	2SC2058	DTC124
2SA1317	2SC2060	DTC143
2SA1346	2SC2808	DTC144
2SA1585	2SC2839	A1346
2SD1384	2SC3393	2SD400
2SD1468	2SC3400	2SD1012
		2SD1207

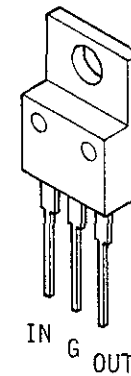


PST529
T529D
T529C



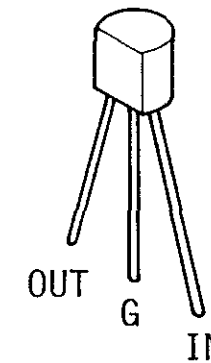
L5631

A: Anode
C: Cathode



AN7812
AN7805
AN7818
AN78M09
AN78M05
NJM7812
NJM7805
NJM7818
NJM78M05
NJM78M09

μ pc7812
 μ pc7805
 μ pc7818
 μ pc78M05

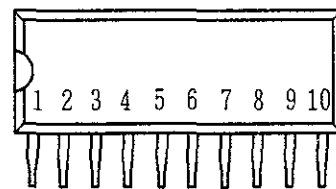


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PST529G-2
PST529C-2

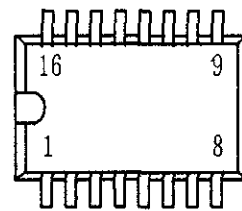
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AN78L06
NJM78L06



MN1280



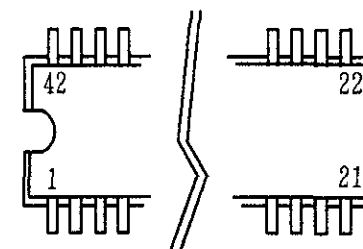
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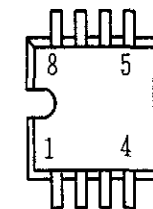
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BU4053
LA7913
LB1408

MN1225
MN1224
MN4053B
MN4051B

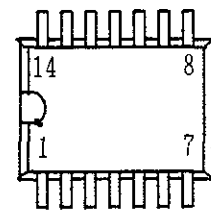
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NJU4053BD
1R2E27
MN12201



FEVSE14DN478
CXA1124AS
FEVSY14DN486



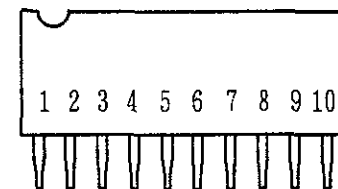
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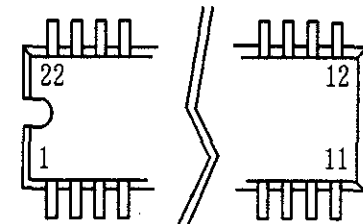
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LA6339
MN4013B
MN4066B

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SDA5640
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TBA120U
BA6405
BA10324



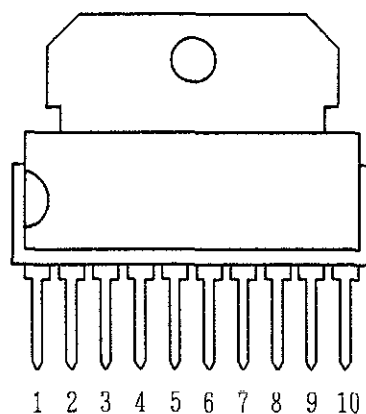
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LA7910



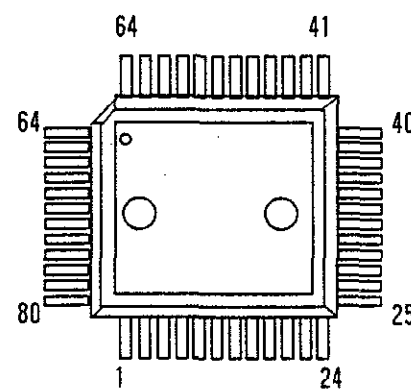
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BA7740S
CXA1138S
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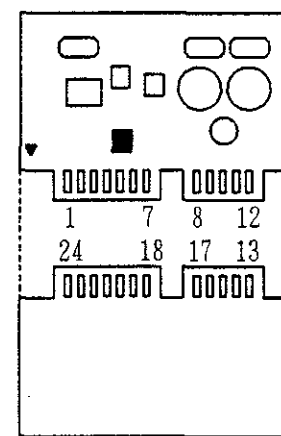
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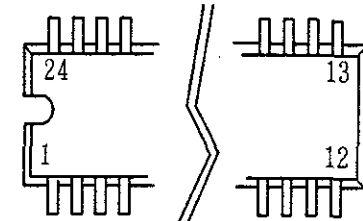
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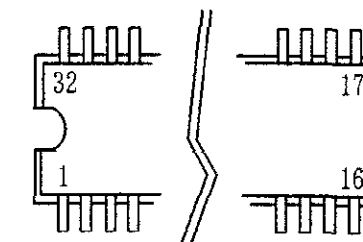
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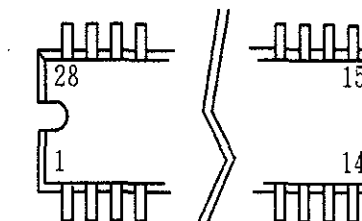
HIC401
HIC400
(SERVO)



LA2746
 μ pc2308
LA7317
LA7331

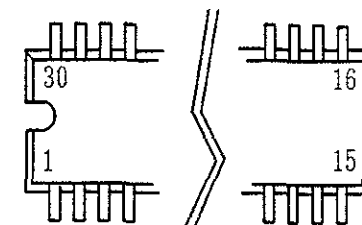


BA7767
AN3932



FEVSE14DN597
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FEVSE14DN363

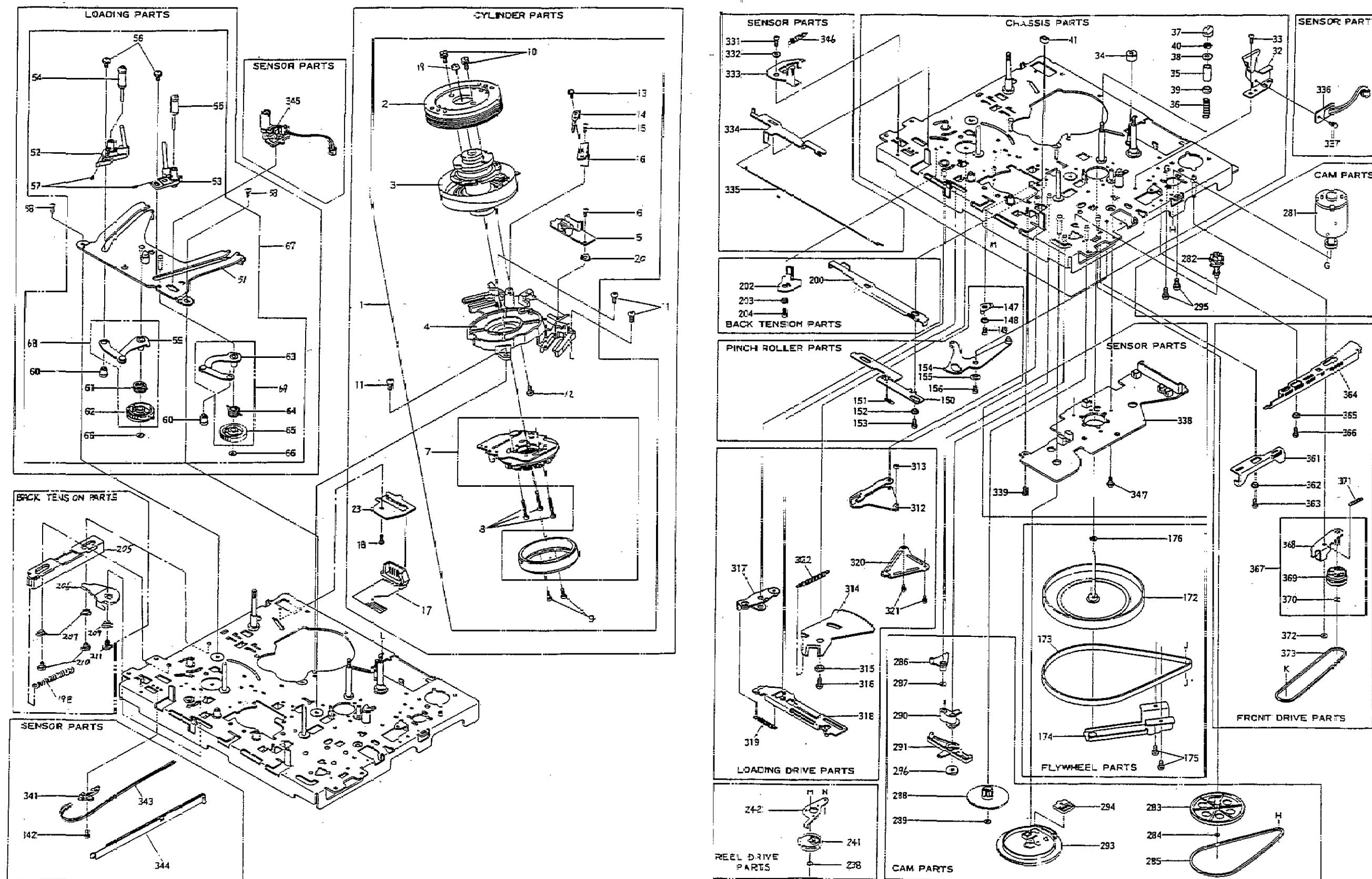
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SDA5232
SDA5233
TDA3803A

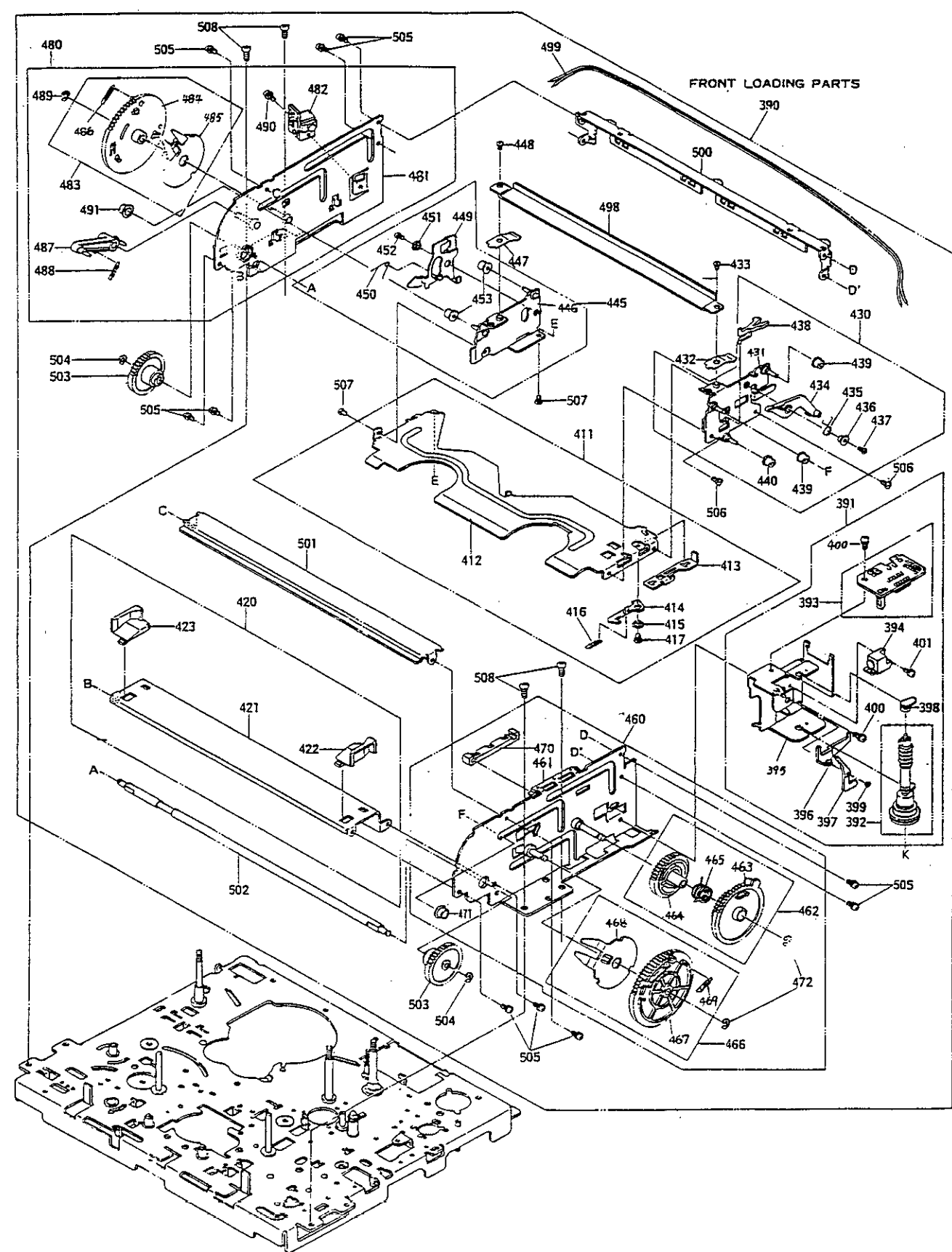
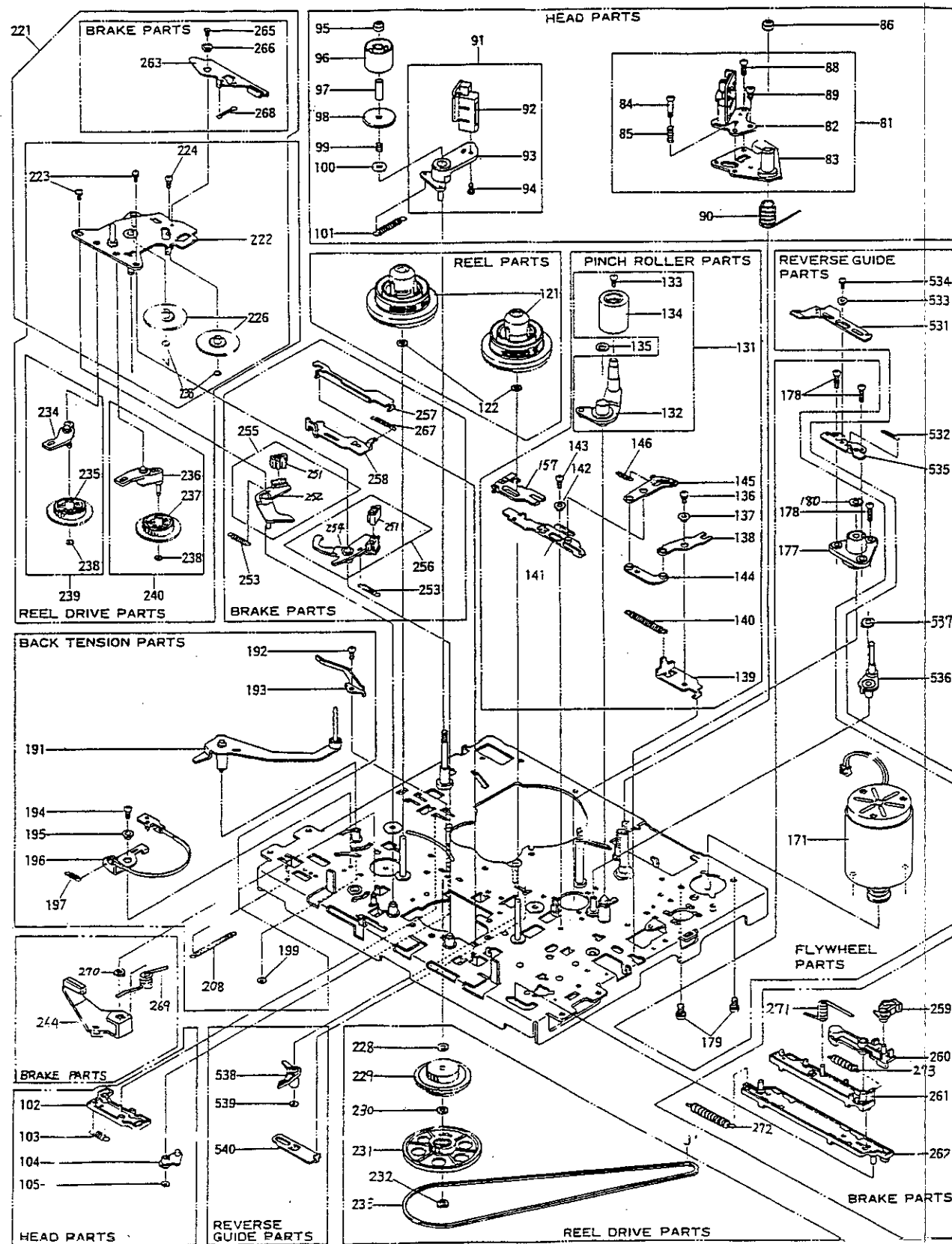


AN3330K
BA6800AS
LA7096
14LN392
LA7326

LA7323
14DN264

EXPLODED VIEW (DECK)





PARTS LIST (DECK)

EXPLODED VIEW CABINET PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
A-1	*9A02758400	LABEL, CHASSIS NO.	
A-19	*9A02757800	JACK BOARD,	
A-20	*9A01454700	IEC ANT JACK,	
A-20	*9A02309200	ANT JACK,	
B1-1	*9A02514400	DECK ASSY, (MV=1480)	
B2-1	*9A02757700	PANEL, TOP	
B2-2	*9A02758000	PCB PLATE,	
B2-3	*9A02757900	HEAT SINK, IC	
B2-4	*9A02758100	PLATE, SHIELD (BOTTOM)	
B2-5	*9A01897700	SHIELD, TOP	
B2-6	*9A02312400	HOLDER, FIP	
B2-7	*9A02758200	SHEET, INSULATOR	
B2-8	*9A02757800	HEAT SINK,	
B2-9	*9A02757500	CHASSIS,	
B2-10	*9A02758500	PCB METAL FITTING, (3 SYSTEM)	
B2-11	*9A02758300	PLATE, SHIELD	
L2-02	*9A02515400	SCREW, P-TIG. BRAZ. FLANGE 3X10	
L2-06	*9A02753700	SCREW, P-TIGHT BIND M4X10	
L2-012	*9A02753600	SCREW, P-TIGHT BIND M3X12	
L2-017	*9A02753600	SCREW, P-TIGHT BIND M3X12	
L2-018	*9A02753600	SCREW, P-TIGHT BIND M3X12	
L2-019	*9A02753600	SCREW, P-TIGHT BIND M3X12	
L2-031	*9A02515700	SCREW, TAPP. BIND HEAD 3X10	
L2-032	*9A02515700	SCREW, TAPP. BIND HEAD 3X10	
L2-033	*9A02515700	SCREW, TAPP. BIND HEAD 3X10	
L2-034	*9A00736100	SCREW, CE-TIGHT M4X8	
L2-034	*9A01107900	SCREW, C-T. M4X8 (TRANS)	
L2-H01	*9A02515500	SCREW, SEMS. PAN HEAD, M3X5	
MCV-A	*9A02755400	MCV-A PCB ASSY,	
MCV-B	*9A02755500	MCV-B PCB ASSY,	
MCV-C	*9A02755600	MCV-C PCB ASSY,	
MCV-D	*9A02755700	MCV-D PCB ASSY,	
MCV-E	*9A02755800	MCV-E PCB ASSY,	
MCV-F	*9A02755900	MCV-F PCB ASSY,	
MCV-G	*9A02756000	MCV-G PCB ASSY,	
MSV	*9A02759000	MSV PCB ASSY,	
PSV	*9A02759300	PSV PCB ASSY,	

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
B1-1	*9A02514400	DECK ASSY,TN5900N2NRM508	
01	*9A02304200	CYLINDER ASSY,	
02	*9A01426100	DRUM, UPPER	
03	*9A01108400	LOWER DRUM ASSY,	
04	*9A01108500	MOUNT, CYLINDER	
05	*9A01108600	VIDEO OUT PCB ASSY,	

Parts marked with *require longer delivery time

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
06	9A01108700	SCREW,W SEMS M2.6X6	
07	*9A02306900	MOTOR,TM84	
08	9A02307000	SCREW,C-T,M2.6X20	
09	9A00442000	SCREW,SEMS, M2.6X6	
10	9A01109000	SCREW,BIND SEMS, M3X8	
11	9A01109600	SCREW,C TAPPING, M3X10	
12	9A01736000	SCREW,B-TIGHT, M2X6	
13	9A01109200	SCREW,CAP, M2.6X3	
14	9A02307100	FLAT SPRING,DR.G.	
15	9A00444900	SCREW,C-TIGHT M2.6X5	
16	*9A01109400	BRACKET,DRUM GROUND	
17	*9A02307200	PCB ASSY,DM	
18	9A00444900	SCREW,C-TIGHT M2.6X5	
19	*9A01109300	GROUND,DURM	
20	9A01109500	WASHER,TOOTHED LOCK M2.6	
23	*9A02304300	CONNECTOR BRACKET,	
32	*9A01112200	OPEN ANGLE ASSY,	
33	9A01112300	SCREW,C-TIGHT M2.6X4	
34	*9A02304700	ADJUSTER,TRACKING	
35	*9A00446800	GUIDE,TAPE	
36	*9A01112400	SPRING,TAPE GUIDE	
37	*9A00459300	CAP,GUIDE	
38	*9A00447700	FLANGE,(C) TAPE GUIDE	
39	*9A00447800	FLANGE,(D) TAPE GUIDE	
40	9A00447200	NUT,M3	
41	*9A01112700	RUBBER,DAMPER	
51	*9A01109800	LOADING BASE,	
52	*9A01109900	BLOCK,(L) LOADING	
53	*9A01110000	BLOCK,(R) LOADING	
54	*9A01110100	ROLLER POST,ST	
55	*9A01110100	ROLLER POST,ST	
56	9A01109200	SCREW,CAP M2.6X3	
57	9A00452800	SCREW,CAMERA M2X3	
58	9A00444900	SCREW,C-TIGHT M2.6X5	
59	*9A01110200	PLATE,(L) LOADING	
60	*9A01110300	BOSS,LOADING	
61	*9A01110400	SPRING,(L) LOADING GEAR	
62	*9A01110500	GEAR,(L) T LOADING	
63	*9A01110600	PLATE,(R) LOADING	
64	*9A01110700	SPRING,(R) LOADING GEAR	
65	*9A01110800	GEAR,(R) T LOADING	
66	9A00458600	WASHER,POLY 2.6X6X0.5	
67	*9A02304400	LOADING BASE ASSY,	
68	*9A02304500	LOADING GEAR(L)ASSY,	
69	*9A02304600	LOADING,GEAR(R)ASSY,	
81	*9A02304800	HEAD BASE ASSY,	
82	*9A01117900	HEAD,ACE	
83	*9A02304900	BASE,HEAD	
84	9A00737200	SCREW,AZIMUTH SP.M2.6X12	
85	*9A00451100	SPRING,AZIMUTH	
88	9A02305000	SCREW,M2.6X7	
89	9A01118100	SCREW,SET, M3X6	
90	*9A01118200	SPRING,HEAD	
91	*9A01118300	FULL ERASE PLATE ASSY,	
92	*9A00452500	HEAD,FULL ERASE	

Parts marked with *require longer delivery time

DFCX ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
93	*9A01118500	PLATE, FULL ERASE	
94	9A01118600	SCREW, FLANGE BIND M2X3	
95	9A00447900	NUT, NYLON M3	
96	*9A01118700	ROLLER, IMPEDANCE	
97	*9A01110800	SLEEVE, IMPEDANCE ROLLER	
98	*9A01110900	FLANGE, (A) TAPE GUIDE	
99	*9A01119000	SPRING, TAPE GUIDE FLANGE	
100	9A01119100	WASHER, PLANE 3X8X0.5	
101	*9A01119200	SPRING, FE PLATE	
102	*9A01119300	PLATE, FE SLIDE	
103	*9A01119400	SPRING, FE ACTUATE	
104	*9A01119500	LEVER, FE ACTUATE	
105	9A00459200	WASHER, POLY 2.1X5X0.5	
121	*9A01119600	REEL ASSY,	
122	9A00456500	WASHER, 3.1X6X0.5	
131	*9A01119700	PINCH ROLLER ARM ASSY,	
132	*9A01119800	ARM, PINCH ROLLER	
133	9A00450200	SCREW, SMALL M2.6X4	
134	*9A00454100	PINCH ROLLER, A	
135	A01119900	WASHER, POLY. 5X8X0.5	
136	9A00472500	SCREW, SEMS M2.6X4	
137	*9A01111300	COLLAR,	
138	*9A01120000	ANGLE, P ACTUATE	
139	*9A01120100	HOLDER, P ANGLE	
140	*9A01120200	SPRING, P ROLLER	
141	*9A01120300	PLATE, (A) P SLIDE	
142	*9A01111300	COLLAR,	
143	9A00444900	SCREW, C-TIGHT M2.6X5	
144	*9A01120400	JOINT PLATE,	
145	*9A01120500	ARM, P ACTUATE	
146	*9A01120600	SPRING, P ACTUATE ARM	
147	*9A01112800	CRANK, P	
148	*9A01112900	COLLAR, P CRANK	
149	9A01113000	SCREW, C-TIGHT FH M2.6X4	
150	*9A01113100	SLIDER, P	
151	*9A01113200	SPRING, P SLIDER	
152	*9A01113300	COLLAR, P SLIDER	
153	9A00444900	SCREW, C-TIGHT M2.6X5	
154	*9A01113400	LEVER, P CAM	
155	*9A01113500	COLLAR, P CAM LEVER	
156	9A00444900	SCREW, C-TIGHT M2.6X5	
157	*9A01120700	PLATE, (B) P SLIDE	
171	*9A01120800	CAPSTAN MOTOR ASSY,	
172	*9A01113600	CAPSTAN, FLYWHEEL	
173	*9A01113700	BELT, MAIN	
174	*9A01113800	FLYWHEEL ANGLE ASSY,	
175	9A00443800	SCREW, C-TIGHT M3X5	
176	9A00456500	WASHER, 3.1X6X0.5	
177	*9A01120900	METAL HOUSING ASSY,	
178	9A01121000	SCREW, C-TIGHT M2.6X8	
179	9A00465900	SCREW, SEMS M3X4	
180	9A02305100	WASHER, NYLON 2.92X5X0.5	
191	*9A01121100	ARM, BACK TENSION	
192	9A01112300	SCREW, C-TIGHT M2.6X4	
193	*9A01121200	SUPPORT, BACK TENSION	

Parts marked with *require longer delivery time

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
194	9A01112300	SCREW,C-TIGHT M2.6X4	
195	*9A01121300	COLLAR,BAND HOLDER	
196	*9A01121400	BAND,BT	
197	*9A01121500	SPRING,BAND HOLDER	
198	*9A01110900	SPRING,BACK TENSION	
199	9A01121600	WASHER,POLY 2.1X4X0.5	
200	*9A01116400	PLATE,BT CHANGE	
202	*9A01116500	LEVER,BT RETURN	
203	*9A01111300	COLLAR,	
204	9A00444900	SCREW,C-TIGHT M2.6X5	
205	*9A01111000	PLATE,BT ACTUATE	
206	*9A01111100	LEVER,BT ACTUATE	
207	*9A01111200	COLLAR,BT ACTUATE PLATE	
208	*9A01121700	SPRING,BT ACTUATE PLATE	
209	*9A01111300	COLLAR,	
210	9A00445300	SCREW,S-TIGHT M2.6X3.5	
211	9A00444900	SCREW,C-TIGHT M2.6X5	
221	*9A02305200	PLATE ASSY,	
222	*9A02305300	PLATE SEMI ASSY,	
223	9A00462400	SCREW,SEMS M2X4	
224	9A00444900	SCREW,C-TIGHT M2.6X5	
226	*9A02305400	GEAR,REEL DRIVE	
228	9A01122500	WASHER,NYLON, 3.1X6X0.3	
229	*9A02305500	CLUTCH ASSY,	
230	9A01122700	WASHER,NYLON, 2.98X6X0.3	
231	*9A01122800	MIDDLE PULLEY ASSY,	
232	9A00458600	WASHER, POLY 2.6X6X0.5	
233	*9A01122900	BELT,DRIVE	
234	*9A01123100	P GEAR ARM ASSY,	
235	*9A02305600	GEAR,PLAY	
236	*9A01123400	RF GEAR ARM ASSY,	
237	*9A02305700	GEAR,FF	
238	9A00452300	WASHER,POLY 1.6X3.8X0.3	
239	*9A02305800	GEAR,ASSY P	
240	*9A02305900	GEAR ASSY,RF	
241	*9A02306000	RETURN GEAR ASSY,	
242	*9A02306100	RETRUN ARM,	
251	*9A01123800	SHOE,BRAKE	
252	*9A01123900	ARM,S BRAKE	
253	*9A01123600	SPRING,BRAKE ARM	
254	*9A01124100	ARM,T BRAKE	
255	*9A01123700	S BRAKE ARM ASSY,	
256	*9A01124000	T BRAKE ARM ASSY,	
257	*9A01124200	LIFTER,BRAKE	
258	*9A01124300	ACTUATOR,L BRAKE	
259	*9A01124400	HOOK,TRIGGER	
260	*9A01124500	LEVER,TRIGGER	
261	*9A01124600	PLATE,BRAKE	
262	*9A01124700	BRAKE ACTUATE,BASE	
263	*9A01122100	BRAKE,TAKE-UP SOFT	
264	*9A01124800	BRAKE,S SOFT	
265	9A01122200	SCREW,SL FH M2X3	
266	*9A01122300	COLLAR,T-U SOFT BRAKE ARM	
267	*9A01124900	SPRING,L BRAKE ACTUATOR	
268	*9A01122400	SPRING,T-U SOFT BRAKE ARM	

Parts marked with *require longer delivery time

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
269	*9A01125000	SPRING,S SOFT BRAKE	
270	9A00459200	WASHER,POLY 2.1X5X0.5	
271	*9A01125100	SPRING,TRIGGER LEVER	
272	*9A02306200	BRAKE ACTUATOR,B.S.	
273	*9A02306300	BRAKE PLATE SPRING,	
281	*9A01116600	LM ASSY,	
282	*9A01116700	TRIGGER BEARING ASSY,	
283	*9A01116800	PULLEY,LOADING	
284	9A00452300	WASHER,POLY 1.6X3.8X0.3	
285	*9A01116900	BELT,LOADING	
286	*9A01117000	ARM,(B) SEARCH	
287	9A00458600	WASHER,POLY 2.6X6X0.5	
288	*9A01117100	GEAR,LOADING	
289	9A00459200	WASHER, POLY 2.1X5X0.5	
290	*9A01117200	ARM,BRACKE ACTUATE	
291	*9A01117300	ARM,EJECT ACTUATER	
293	*9A01117500	CAM,LOADING	
294	*9A01117600	BRUSH,S	
295	9A00465900	SCREW,SEMS M3X4	
296	9A01117700	WASHER,POLY. 2.6X8X0.5	
312	*9A01114700	LOADING LEVER SEMI ASSY,	
313	*9A01114800	ROLLER,CAM	
314	*9A01114900	PLATE,LOADING GEAR	
315	*9A01115000	COLLAR,LOADING GEAR PLATE	
316	9A01115100	SCREW,C-TIGHT M3X6	
317	*9A01115200	LEVER SEMI ASSY,	
318	*9A01115300	PLATE SEMI ASSY,	
319	*9A01115400	SPRING,LOADING ACTUATE	
320	*9A01115500	PLATE,LOADING LEVER RELN.	
321	9A00444100	SCREW,SEMS M2X5	
322	*9A01115600	SPRING,L GEAR PLATE	
331	9A00444900	SCREW,C-TIGHT M2.6X5	
332	*9A01111300	COLLAR,	
333	*9A01115700	LEVER,REC	
334	*9A01115800	ACTUATOR,REC	
335	*9A01115900	SPOKE,REC ACTUATE	
336	*9A01116000	SENSOR,DEW	
337	9A00472500	SCREW,SEMS, M2.6X4	
338	*9A02306400	PLATE,BASE	
339	9A01116200	SCREW,S-TIGHT M2.6X5	
341	*9A01111400	SWITCH,LEAF	
342	9A00444900	SCREW,C-TIGHT M2.6X5	
343	*9A01111500	WIRE,	
344	*9A01111600	HOLDER,WIRE	
345	*9A02306500	LAMP HOLDER ASSY,	
346	*9A01736400	SPRING,REC LEVER	
347	*9A02306700	COLLER,SCREW	
361	*9A01113900	ACTUATOR,EJECT	
362	*9A01111300	COLLAR,	
363	9A00444900	SCREW,C-TIGHT M2.6X5	
364	*9A01114000	PLATE,L BRAKE	
365	*9A01111300	COLLAR,	
366	9A00444900	SCREW,C-TIGHT M2.6X5	
367	*9A01114100	E IDLER ARM ASSY,	
368	*9A01114200	E IDLER ARM SEMI ASSY,	

Parts marked with *require longer delivery time

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
369	*9A01114300	PULLEY,EJECT	
370	9A00452300	WASHER,POLY 1.6X3.8X0.3	
371	*9A01114400	SPRING,IDLER ARM	
372	9A00459200	WASHER,POLY 2.1X5X0.5	
373	*9A01114500	BELT,FRONT LOADING	
390	*9A02306600	LOADING ASSY,FRONT	
391	*9A01126000	CASSETTE LOAD BRACKET ASSY,	
392	*9A01126100	FRONT LOADING CLUTCH ASSY,	
393	*9A01126200	FRONT LOADING PCB ASSY,	
394	*9A01126300	SENSOR,PCB (RM)	
395	*9A01126400	C. LOAD BRACKET SEMI ASSY,	
396	*9A01126500	LEVER,IN SW	
397	*9A01126600	LEVER,S SW	
398	*9A01126700	BEARING,(A) F WORM	
399	9A00452300	WASHER,POLY 1.6X3.8X0.3	
400	9A00472500	SCREW,SEMS M2.6X4	
401	9A02688800	SCREW,SEMS M2X5	
411	*9A01126800	CASSETTE HOLDER ASSY,	
412	*9A00467600	HOLDER,CASSETTE	
413	*9A00467700	PLATE,SLIDE	
414	*9A00467800	LOCK PLATE,(R)	
415	*9A01111300	COLLAR,	
416	*9A01126900	SPRING,LOCK	
417	9A00998800	SCREW,CAMERA M2.6X3	
420	*9A01129500	FRONT ANGLE ASSY,	
421	*9A01129600	ANGLE,FRONT	
422	*9A01129700	GUIDE,(R) TAPE	
423	*9A01129800	GUIDE,(L) TAPE	
430	*9A01127000	SIDE PLATE (R) ASSY,	
431	*9A01127100	PLATE,(R) SIDE	
432	*9A01127200	PLATE,CASSETTE PUSH	
433	9A00468800	SCREW,CAMERA M2.3X2	
434	*9A00468900	LEVER,OPEN	
435	*9A00469000	SPRING,OPEN LEVER	
436	*9A00469100	COLLAR,OPEN LEVER	
437	*9A00522100	SCREW,CAMERA M2X4	
438	*9A00469300	LEVER,LOCK RELEA.	
439	*9A01127300	ROLLER,GUIDE	
440	*9A00469400	ROLLER,GUIDE	
445	*9A01127400	SIDE PLATE (L) ASSY,	
446	*9A01127500	PLATE,(L) SIDE	
447	*9A01127200	PLATE,CASSETTE PUSH	
448	9A00468800	SCREW,CAMERA M2.3X2	
449	*9A00738200	LOCK PLATE,(L)	
450	*9A01127600	SPRING,(L) LOCK PLATE	
451	*9A00470000	COLLAR,LOCK PLATE	
452	9A00470100	SCREW,CAMERA M2.6X2.5	
453	*9A01127300	ROLLER,GUIDE	
460	*9A02307300	FRAME (R) ASSY,	
461	*9A02307400	FRAME,(R)	
462	*9A01127900	WORM WHEEL ASSY,	
463	*9A01128000	WHEEL,WORM	
464	*9A01128100	GEAR,FRICTION	
465	*9A01128200	SPRING,FRICTION	
466	*9A01128300	LIFT GEAR (R) ASSY,	

Parts marked with *require longer delivery time

DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
467	*9A00470900	GEAR, (R) LIFT	
468	*9A00471000	ARM, LIFT	
469	*9A00471100	SPRING, LIFT GEAR	
470	*9A00471200	GUIDE, OPEN LEVER	
471	*9A00471300	SLEEVE, GUIDE	
472	9A00450500	E-RING, 2.5	
480	*9A02307500	FRAME (L) ASSY,	
481	*9A02307600	FRAME, (L)	
482	*9A01128700	SENSOR, PCB (LM)	
483	*9A01128800	GEAR (L) ASSY, LIFT	
484	*9A00471800	GEAR, (L) LIFT	
485	*9A00471000	ARM, LIFT	
486	*9A00471100	SPRING, LIFT GEAR	
487	*9A02307700	LEVER, LIFT	
488	*9A02307800	SPRING, LIFT LEVER	
489	9A00450500	E-RING, 2.5	
490	9A01129100	SCREW, SEMS, M2.6X7	
491	*9A00471300	SLEEVE, GUIDE	
498	*9A00469500	STAY, TOP	
499	*9A01129200	WIRE, END SENSOR	
500	*9A01129300	ANGLE, REAR	
501	*9A02307900	PLATE, UPPER	
502	*9A01736600	SHAFT, SYNCHRONIZE	
503	*9A01129400	GEAR, (A) SYNCHRONIZE	
504	9A00450500	E-RING, 2.5	
505	9A00472500	SCREW, SEMS M2.6X4	
506	9A00468000	SCREW, CAMERA M2.6X3	
507	9A00472600	SCREW, CAMERA M2.3X2.5	
508	9A00444900	SCREW, C-TIGHT M2.6X5	
531	*9A01125200	PLATE, RG SLIDE	
532	*9A01125300	SPRING, RG SLIDE	
533	*9A01125400	COLLAR, RG SLIDE PLATE	
534	9A00462400	SCREW, SEMS M2X4	
535	*9A01125500	BASE, RG SLIDE	
536	*9A02306800	ARM SEMI ASSY, RG	
537	9A00458600	WASHER, POLY 2.6X6X0.5	
538	*9A01125700	ARM, RG ACTUATE	
539	9A00459200	WASHER, POLY 2.1X5X0.5	
540	*9A01125800	RG ACTUATOR,	

Parts marked with *require longer delivery time

PARTS LIST (ELECTRICAL)

NOTE:

As regards the resistors and capacitors, refer to the circuit diagrams and the PCB assy drawings contained in this manual.

MCV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
	*9A02758700	MCV PCB ASSY, (MV-1480) (Consists of MCV-A,B,C,D,E, ...F,G,PCB ASSY)
	*9A02308100	MCV PCB, JP180/2804 (Consists of MCV-A,B,C,D,E,F,G,PCB)
	9A02755400	MCV-A PCB ASSY
CL-3	9A02754300	JUMPER WIRE, 9P
CL-4	9A02754400	JUMPER WIRE, 8P
CL-5,7	9A02754500	JUMPER WIRE, 7P
CL-6	9A02754600	JUMPER WIRE, 8P
CL-8	9A02754500	JUMPER WIRE, 7P
CM-3	9A02756900	CONNECTOR ASSY, 2P(V-OUT)
D701,702	9A00874000	ZENER DIODE,MTZ5.6BT
D703	9A00874000	ZENER DIODE,MTZ5.6BT
D703	9A02366100	ZENER DIODE,UZ5.6BSB
IC701	9A02308900	IC,AN78M09F
IC701	9A02761200	IC,NJM78M09FA
IC702	9A00742300	IC,L5631
IC703	9A00519300	IC,LA7210 LINEAR
JK701	9A02308800	JACK,BNC
JK702	9A00489600	JACK,RCA (JACK WITH SW)
Q701-702	9A02751400	TRANSISTOR,2SA933(Q)
Q703	9A02751400	TRANSISTOR,2SA933(Q)
Q703	9A02751500	TRANSISTOR,2SA933(R)
Q703	9A02751200	TRANSISTOR,2SA608SP(E)
Q703	9A02751300	TRANSISTOR,2SA608SP(F)
Q704	9A02752100	TRANSISTOR,2SC1740(Q)
Q704	9A02752200	TRANSISTOR,2SC1740(R)
Q704	9A02752900	TRANSISTOR,2SC536(E)
Q704	9A02753000	TRANSISTOR,2SC536(F)
QR701	9A02750800	D. TRANSISTOR,DTA124ES
QR701	9A02751100	D. TRANSISTOR,2SA1346
QR702	9A02752000	D. TRANSISTOR,DTC124ES
QR702	9A02752800	D. TRANSISTOR,2SC3400
TU701	9A02309300	TUNER UNIT,
WR-1	9A02309100	RCA PLUG CORD,
X701	9A01147700	CERAMIC RESONATOR,500KHZ
MSV	9A02759000	MSV PCB ASSY, (MV-1480)...
		(CONNECT TO MCV-A PCB ASSY)

MCV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
	9A02755500	MCV-B PCB ASSY
B2-2	9A02758000	PCB PLATE,
B2-3	9A02757900	HEAT SINK,IC
B2-10	9A02758500	PCB METAL FITTING,(3 SYS.)
CL-09	9A02754900	FFC CABLE,28P L-300
CL-09	9A02755100	FFC CABLE,28P L-300
CL-10	9A02755000	FFC CABLE,28P L-130
CL-10	9A02755200	FFC CABLE,28P L-130
CL-9,10	9A02310300	FFC CONNECTOR,28P
CL-9,10	9A02310400	FFC CONNECTOR,28P
CL-9,10	9A02310500	FFC CONNECTOR,28P
D501,502	9A02382800	SWITCHING DIODE,1SS254
D505,506	9A02382800	SWITCHING DIODE,1SS254
D505,506	9A02361500	SWITCHING DIODE,GMB01B
D505,506	9A02366000	SWITCHING DIODE,US1040M
IC401	9A00741800	IC,BA6219B
IC501	9A02761100	IC,SYSCON CXP-50112H-146Q
IC502	9A01738200	IC,BA10339
IC502	9A01755200	IC,NJM2901N
IC502	9A01738100	IC,LA6339 (LINEAR)
IC503	9A02310100	IC,BR93C46
IC504	9A02310000	IC,BA6209N
IC505	9A02753800	IC,HD74HC595P
IC506	9A00749100	IC,AN78L05
IC506	9A01142800	IC,NJM78L05A
IC508	9A01137500	IC,MN1280-R
IC509	9A01737800	IC,AN7805F (LINEAR)
IC509	9A01737900	IC,NJM7805FA (LINEAR)
IC509	9A01738000	IC,UPC7805HF (LINEAR)
L2-033	9A02515700	SCREW,TAPP.BIND HEAD 3X10
L501	9A02388800	INDUCTOR,LF5R0 2R2UH-AXT
L590	9A02387800	INDUCTOR,100UH-K-AXT
Q501	9A02752100	TRANSISTOR,2SC1740(Q)
Q501	9A02752200	TRANSISTOR,2SC1740(R)
Q501	9A02752900	TRANSISTOR,2SC536(E)
Q501	9A02753000	TRANSISTOR,2SC536(F)
Q502	9A02751600	TRANSISTOR,2SB1010(Q)
Q502	9A02751700	TRANSISTOR,2SB1010(R)
Q502	9A02751800	TRANSISTOR,2SB892(S)
Q502	9A02751900	TRANSISTOR,2SB892(T)
Q503	9A02753300	TRANSISTOR,2SD1384(Q)
Q503	9A02753400	TRANSISTOR,2SD1384(R)
Q503	9A02753100	TRANSISTOR,2SD1207(S)
Q503	9A02753200	TRANSISTOR,2SD1207(T)
R558	9A00743200	R.,OXIDE FILM 3.3 1W J
R558	9A00495200	R.,OXIDE FILM 3.3 1W J
RX504,505	9A02344700	R. NETWORK,47KX5
TP501	9A01743600	TEST PIN,
X501	9A01895300	RESONATOR,CERAMIC 4.19MHZ

Parts marked with *require longer delivery time

MCV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
9A02755600 MCV-C PCB ASSY		
B2-4	9A02758100	PLATE, SHIELD (BOTTOM)
B2-5	9A01897700	SHIELD, TOP
CL-10	9A02310300	FFC CONNECTOR, 28P
CL-10	9A02310400	FFC CONNECTOR, 28P
CL-10	9A02310500	FFC CONNECTOR, 28P
CN-A	9A02312000	CONNECTOR, SIDE 17P
CN-E	9A02757200	CONNECTOR ASSY, 6P (ACE/HEAD)
CN-F	9A02756800	CONNECTOR ASSY, 2P
CN-G	9A01143900	CONNECTOR, HOUSING 6P
D402, 451	9A02382800	SWITCHING DIODE, 1SS254
D402, 451	9A02361500	SWITCHING DIODE, GMB01B
D402, 451	9A02368000	SWITCHING DIODE, US1040M
HIC40	9A01718800	IC, HYBRID (SERVO)
HIC40	9A02311400	IC, HYBRID (SERVO)
IC01	9A02311300	IC, HA11804 INT
IC201	9A01144500	IC, BA7767AS LINEAR
IC402	9A01428600	IC, MN67480 FVAP
L01	9A02389100	INDUCTOR, 33UH K
L02	9A02388900	INDUCTOR, 27UH
L03	9A02645900	INDUCTOR, LF500 56UH-AXT
L04	9A02521100	INDUCTOR, 15UH K
L05	9A02388100	INDUCTOR, 18UH K
L06	9A02388300	INDUCTOR, 180UH K
L07	9A02390100	INDUCTOR, 82UH-AXT
L08, 11	9A02387800	INDUCTOR, 100UH-K-AXT
L10	9A02521200	INDUCTOR, 150UH K
L201	9A00482700	COIL, MICROINDUCTOR 18MH
L201	9A00755500	COIL, MICROINDUCTOR 18MH
Q01, 04	9A02752100	TRANSISTOR, 2SC1740(Q)
Q02	9A02751000	TRANSISTOR, 2SA1317(T)
Q02	9A02750900	TRANSISTOR, 2SA1317(S)
Q201	9A02752500	TRANSISTOR, 2SC2060(Q)
Q201	9A02753500	TRANSISTOR, 2SD400(F)
Q405	9A02752100	TRANSISTOR, 2SC1740(Q)
Q405	9A02752200	TRANSISTOR, 2SC1740(R)
Q405	9A02752900	TRANSISTOR, 2SC536(E)
Q405	9A02753000	TRANSISTOR, 2SC536(F)
QR01, 02	9A02752000	D. TRANSISTOR, DTC124ES
QR201, 401	9A02752000	D. TRANSISTOR, DTC124ES
QR201, 401	9A02752800	D. TRANSISTOR, 2SC3400
T201	9A01146700	COIL, OSC AUDIO
T201	9A00740900	COIL, OSC AUDIO
T201	9A01897100	COIL, OSC AUDIO
TP01, 02	9A01743600	TEST PIN,
TP04, 201	9A01743600	TEST PIN,
TP202, 401	9A01743600	TEST PIN,
TP402	9A01743600	TEST PIN,
VR01, 02	9A02311700	R. VR, SEMI 2.2K (B)
VR201	9A01144600	R. VR, SEMI 100K (B)
VR401	9A01764300	R. VR, SEMI 200K (B)
VR402	9A02311800	R. VR, SEMI 220K (B)

MCV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
9A02755700 MCV-D PCB ASSY		
B2-6	9A02312400	HOLDER, FIP
CL-09	9A02312500	FFC CONNECTOR, 28P
CL-09	9A02312600	FFC CONNECTOR, 28P
D001-804	9A02421500	DIODE, 1SS252
D801-804	9A02419800	DIODE, GMB01U
D805	9A00493000	DIODE, 1N4002
FL801	9A02312300	FIP,
L801	9A02389700	INDUCTOR, 47UH-K-AXT
RS801	9A01147200	REMOTE SENSOR UNIT,
SW801-804	9A02312200	PUSH SWITCH,
SW806-809	9A02312200	PUSH SWITCH,
SW811, 819	9A01437500	SWITCH, PUSH
SW811, 819	9A01147400	SWITCH, PUSH
SW811, 819	9A01137600	SWITCH, PUSH
SW812-818	9A02312200	PUSH SWITCH,
SW821-824	9A02312200	PUSH SWITCH,
SW824	9A02312200	PUSH SWITCH,
SW824	9A01894700	SWITCH, PUSH
SW824	9A01894800	SWITCH, PUSH
VR801	9A00747200	POTENTIOMETER, 250K (B)
VR801	9A00499300	POTENTIOMETER, 250K (B)
TRACKING POT.		
9A02755800 MCV-E PCB ASSY		
CL-1	9A02755300	JUMPER WIRE, 7P L-270
CL-2	9A02754200	JUMPER WIRE, 8P
CN-1	9A02312900	CONNECTOR, SIDE 15P
9A02755900 MCV-F PCB ASSY		
CL-D	9A02754700	JUMPER WIRE, 6P
CN-D	9A01137000	CONNECTOR, SIDE 6P
9A02756000 MCV-G PCB ASSY		
CL-C	9A02754800	JUMPER WIRE 7P
CN-C	9A01136600	CONNECTOR, (SIDE) 9P

Parts marked with *require longer delivery time

MSV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
MSV	*9A02759000	MSV PCB ASSY,(MV-1480)
	*9A02308300	MSV PCB,S2600
A-19	9A02757600	JACK BOARD,
A-20	9A01454700	IEC ANT JACK,
A-20	9A02309200	ANT JACK,
A-A	9A02643100	WIRE,
CN-V	9A02524400	PIN HEADER ANGLE,22P
D51,102	9A02366000	SWITCHING DIODE,US1040M
D51,102	9A02382800	SWITCHING DIODE,ISS254
D51,102	9A02361500	SWITCHING DIODE,GMB01B
DL101	9A02314300	FILTER,COMB 4.433619MHZ
DL101	9A01890700	FILTER,COMB 4.433619MHZ
IC101	9A02314500	IC,LA7331N
IC51	9A02524500	IC,LA7323
IC52	9A02314600	IC,LC8992
IC53	9A00741500	IC,AN78M05F
IC53	9A02314400	IC,UPC78M05HF
IC53	9A01720600	IC,NJM78M05FA
L101	9A02388100	INDUCTOR,18UH K
L102	9A02524600	INDUCTOR,3.9UH K
L103,106	9A02389300	INDUCTOR,LF5R0 330UH-AXT
L105	9A02524700	INDUCTOR,270UH K
L107	9A02521100	INDUCTOR,15UH K
L51,52	9A02389900	INDUCTOR,68UH K
L53	9A02387800	INDUCTOR,100UH-K-AXT
L57	9A02389700	INDUCTOR,47UH-K-AXT
Q101,103	9A02752100	TRANSISTOR,2SC1740(Q)
Q102,107	9A02752600	TRANSISTOR,2SC2839(E)
Q102,107	9A02752700	TRANSISTOR,2SC2839(F)
Q102,107	9A02752300	TRANSISTOR,2SC2058(Q)
Q102,107	9A02752400	TRANSISTOR,2SC2058(R)
Q104	9A02752100	TRANSISTOR,2SC1740(Q)
Q104	9A02752200	TRANSISTOR,2SC1740(R)
Q104	9A02752900	TRANSISTOR,2SC536(E)
Q104	9A02753000	TRANSISTOR,2SC536(F)
Q51,54	9A02751400	TRANSISTOR,2SA933(Q)
Q51,54	9A02751500	TRANSISTOR,2SA933(R)
Q51,55	9A02751300	TRANSISTOR,2SA608SP(F)
Q51,55	9A02751200	TRANSISTOR,2SA608SP(E)
Q52,53	9A02752100	TRANSISTOR,2SC1740(Q)
Q55,56	9A02752100	TRANSISTOR,2SC1740(Q)
QR53,54	9A02752000	D. TRANSISTOR,DTC124ES
QR57	9A02752000	D. TRANSISTOR,DTC124ES
QR57	9A02752800	D. TRANSISTOR,2SC3400
T101	9A02314200	FILTER,LC
T51	9A01428300	FILTER,LPF 3MHZ
T51	9A00515900	FILTER,LPF 3MHZ
TP51-54	9A01739400	TEST PIN,
VR51 52	9A00522900	R. VR, SEMI 5K (B)
VR53	9A01738700	R. VR, SEMI 2K (B)
VR53	9A01738600	R. VR, SEMI 2K (B)

MSV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
VR54	9A02002000	R. VR, SEMI 500 (B)
VR54	9A01852500	R. VR, SEMI 500 (B)
VR54	9A02761000	P.O.T., 500 OHM B
VR55	9A00522900	R. VR, SEMI 5K (B)
VR55	9A00488200	R. VR, SEMI 5K (B)
X101	9A02315200	X'TAL, 4.433619MHZ
X101	9A02315300	X'TAL, 4.433619MHZ
PSV PCB ASSY...(VIDEO)		
REF. NO.	PARTS NO.	DESCRIPTION
PSV	*9A02759300	PSV PCB ASSY,(MV-1480)
	*9A02308500	PSV PCB, JP180/2804
B2-7	9A02758200	SHEET, INSULATOR
B2-8	9A02757800	HEAT SINK,
CM-1	9A02756700	CONNECTOR ASSY, 2P (PWS)
CM-2	9A02756600	CONNECTOR ASSY, 2P (APA-OUT)
CN-1	9A01764000	ANGLE SOCKET, 15P
D601	△ 9A00493000	DIODE, IN4002
D603, 604	△ 9A00746100	DIODE, IN4003
D605	9A02420100	ZENER DIODE, MTZ30A
D605	9A02420200	ZENER DIODE, MTZ30B
D605	9A02420300	ZENER DIODE, UZ30BSC
D606	9A02754000	ZENER DIODE, MTZ4.7B
D606	9A02754100	ZENER DIODE, UZ4.7BSC
D607-614	△ 9A02315500	RECTIFIER DIODE, 1SR35-200A
D607-614	△ 9A01438900	DIODE, IN4003
F601	△ 9A00520900	FUSE, T-200MA/250V
F602	△ 9A00418800	FUSE, 500M/MA/250V
FH601, 602	9A00521100	FUSE HOLDER,
IC601	△ 9A00746500	IC, AN7812F
IC601	△ 9A01720800	IC, NJM7812FA
IC601	△ 9A01146000	IC, UPC7812HF (LINEAR)
IC602	△ 9A00746500	IC, AN7812F
IC602	△ 9A01720800	IC, NJM7812FA
IC602	△ 9A01146000	IC, UPC7812HF (LINEAR)
IC603	△ 9A00746400	IC, AN7818F
IC603	△ 9A01720700	IC, NJM7818FA
IC603	△ 9A01145800	IC, UPC7818HF (LINEAR)
IC951	9A01817600	IC, AN5265
L2-031	9A02515700	SCREW, TAPP. BIND HEAD 3X10
L2-032	9A02515700	SCREW, TAPP. BIND HEAD 3X10
L2-034	9A00736100	SCREW, CE-TIGHT M4X8
L2-034	9A01107900	SCREW, C-T. M4X8 (TRANS)

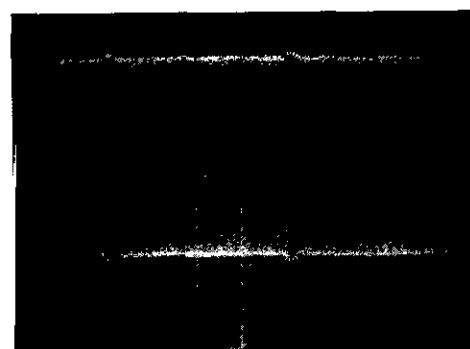
Parts marked with *require longer delivery time

PSV PCB ASSY...(VIDEO)

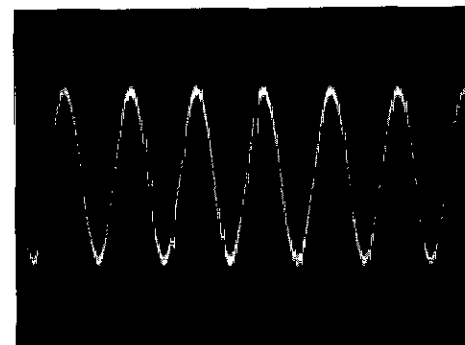
REF. NO.	PARTS NO.	DESCRIPTION
Q601,604	9A02752100	TRANSISTOR,2SC1740(Q)
Q603	9A02751600	TRANSISTOR,2SB1010(Q)
Q603	9A02751700	TRANSISTOR,2SB1010(R)
Q603	9A02751800	TRANSISTOR,2SB892(S)
Q603	9A02751900	TRANSISTOR,2SB892(I)
Q951,952	9A02752100	TRANSISTOR,2SC1740(Q)
Q951,952	9A02752200	TRANSISTOR,2SC1740(R)
Q951,952	9A02752300	TRANSISTOR,2SC536(E)
Q951,952	9A02753000	TRANSISTOR,2SC536(F)
QR601	9A02752000	D. TRANSISTOR,DTC124ES
QR601	9A02752800	D. TRANSISTOR,2SC3400
R602	9A02760800	R.,METAL 1W 1K J
R602	9A02760900	R.,METAL 1W 1K J
R962,964	9A00494400	R.,OXIDE FILM 1.5 1W J
R962,964	9A00742900	R.,OXIDE FILM 1.5 1W J
RL601	9A02316200	RELAY,
T601	△ 9A02316100	TRANS,POWER
W601	△ 9A02316400	COORD STOPPER,
W602	△ 9A00521400	AC CORD,

Parts marked with *require longer delivery time

16. WAVE FORMS



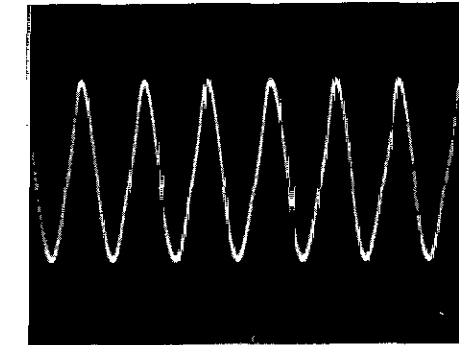
WF1 TP1 (REC CRR)
5mV/div x10
5mS/div
REC.Mode(Blank Tape)



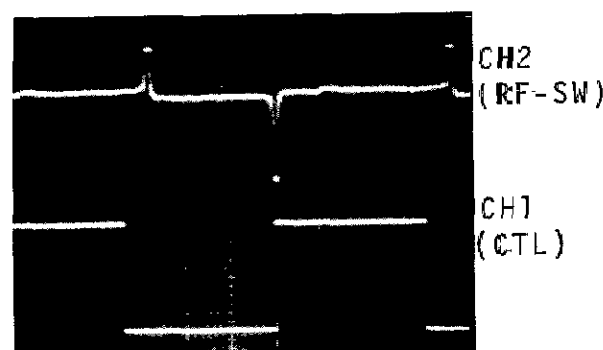
WF4 TP201-TF202
(BIAS+) (BIAS-)
5mV/div x10
10uS/div
REC.Mode(Blank Tape)



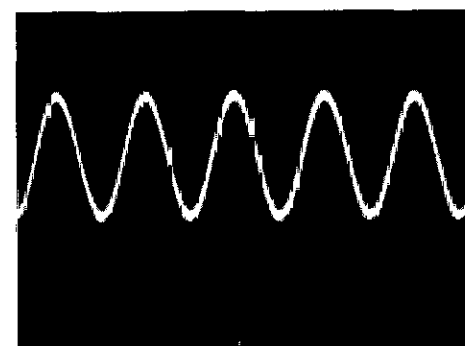
WF7 TP54(E-E)
10mV/div x10
10uS/div
STOP.Mode



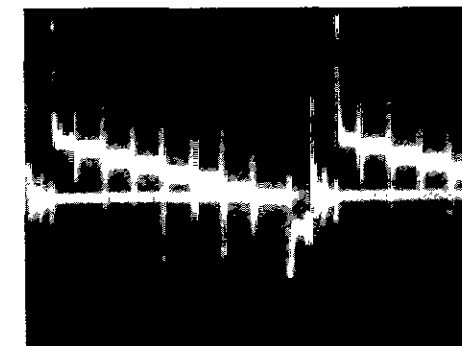
WF10 TP452 (3.58MHz)
50mV/div x10
0.2uS/div
REC.Mode(Blank Tape)



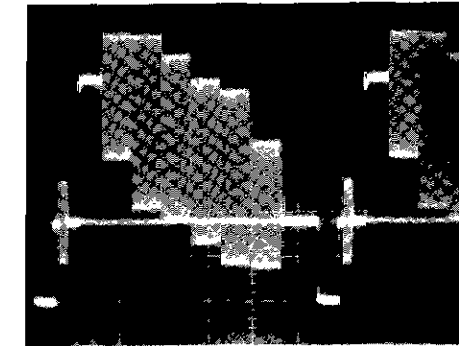
WF2 TP2 (RF-SW) TP451 (CTL)
0.2V/div x10 0.1V/div x10
5mS/div 5mS/div
PLAY.Mode(F8-A)



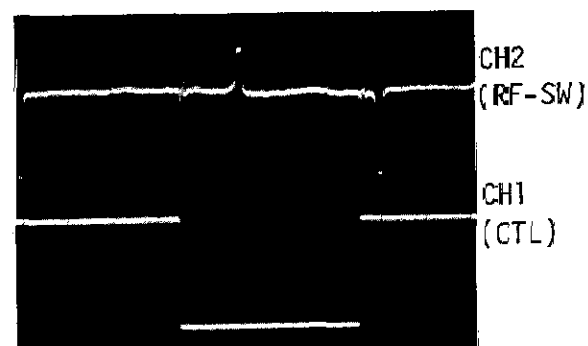
WF5 TP402 (A-OUT)
50mV/div x10
0.5mS/div
PLAY.Mode(F6-A)



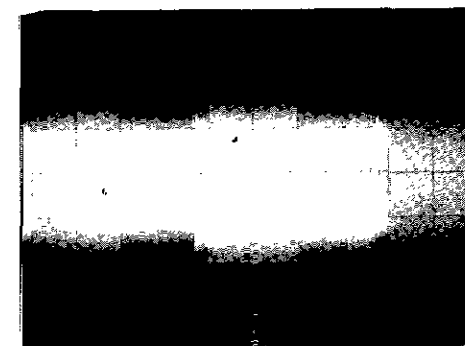
WF8 TP51 (W/D)
0.1V/div x10
10uS/div
REC.Mode(Blank Tape)



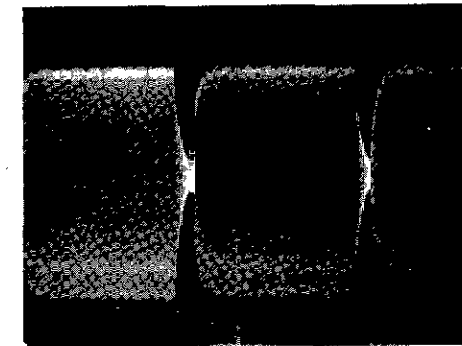
WF11 V-GUT
10mV/div x10
10uS/div
STOP.Mode



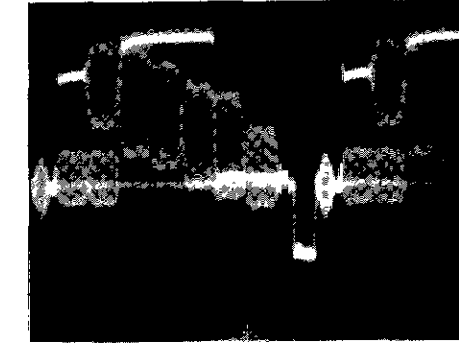
WF3 TP2 (RF-SW) TP401 (CTL)
0.2V/div 0.1V/div
5mS/div 5mS/div
PLAY.Mode(F6-A)



WF6 TP4 (EMV)
5mV/div x10
5mS/div
PLAY.Mode(F6-A)



WF9 TP1E1 (SECAM)
20mV/div x10
5mS/div
REC.Mode(Blank Tape)



WF12 V-OUT
20mV/div x10
10uS/div
PLAY.Mode(F6-A)

SVV P. C. Board (NTSC MODEL)

IC451

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0.9	0.9	0.1	0.1	0.1	0	0	0	0	0
PLAY	0.8	0.8	0.1	0.1	0.1	0	0	0	0	0
E-E	0.7	0.7	0	0	0	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	0.9	1.9-2.3	0.8	0.9	5.0
PLAY	0	0	1.6	0	1.0	5.0
E-E	0	0	1.6	0	1.0	5.0

IC452

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.5	2.6	1.1	2.6	2.5	0	0	0	0	0
PLAY	2.5	0-2.0	1.0	2.5	2.5	0	0	0	0	0
E-E	2.5	2.5	5.0	5.0	5.0	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	2.5	0	2.5	0	0
PLAY	0	2.5-3.5	0	2.5-3.5	0-2.5	5.0
E-E	0	5.0	5.0	5.0	2.5	5.0

IC453

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.5	0	0	1.5	1.5	0	0	0	0	0
PLAY	2.5	2.5	0	1.5	1.5	0	0	0	0	0
E-E	0	0	0	1.5	1.5	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	2.5	2.5	2.5	2.5	5.0
PLAY	0	2.6	0-3.5	2.6	2.5	5.0
E-E	0	2.5	2.5	2.5	0	5.0

IC454

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	0.8	5.0	5.0	2.2	0	0.1	0	0	2.5
PLAY	5.0	0.8	5.0	5.0	2.2	0	0.1	0	0	2.5
E-E	5.0	0.8	5.0	5.0	2.2	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	2.5	2.5	2.5	2.6	0	2.5	2.5	2.5	2.5	2.5
PLAY	2.6	2.5	2.4	2.8	0	2.5	2.5	2.5	2.5	2.5
E-E	2.5	5.0	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5

Mode \ Pin No.	21	22	23	24	25	26	27	28
REC	2.6	1.50	0	3.0	3.0	5.0	2.4	1.8
PLAY	2.0	2.5	0	2.5	2.5	5.0	2.4	1.8
E-E	1.5	2.5	0	2.5	2.5	5.0	2.4	4.9

Q450

Mode \ Pin No.	E	C	B
REC	2.2	5.0	2.5
PLAY	2.2	5.0	2.5
E-E	2.2	5.0	2.5

SVV P. C. Board (PAL MODEL)

IC451

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0.5	0.5	0.1	0.1	0.1	0	0	0	4.5	4.5
PLAY	0.8	0.8	0.1	0.1	0.1	0	0	0	5.0	5.0
E-E	0.8	0.8	0	0	0	0	0	0	4.5	4.5

Mode \ Pin No.	11	12	13	14	15	16
REC	4.5	2.1	0	0	0	5.0
PLAY	5.0	1.6	0	0	1.0	5.0
E-E	4.5	1.7	0	0	0.8	5.0

IC452

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.6	2.5	2.5	2.5	3.7	0	0	0	4.5	4.5
PLAY	2.6	2.5	2.5	2.5	3.7	0	0	0	5.0	5.0
E-E	2.6	2.5	5.0	5.0	5.0	0	0	0	4.5	4.5

Mode \ Pin No.	11	12	13	14	15	16
REC	4.5	5.0	2.5	0	2.6	5.0
PLAY	5.0	5.0	2.3	2.4	2.6	5.0
E-E	4.5	5.0	5.0	5.0	2.6	5.0

IC453

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2-2.8	0	2.4	2.4	0	0	0	0	4.5	4.5
PLAY	2-2.8	2-2.8	0	2.4	0	0	0	0	5.0	5.0
E-E	0	0	0	2.4	0	0	0	0	4.5	4.5

Mode \ Pin No.	11	12	13	14	15	16
REC	4.5	0-4.0	2.5	2.5	2.5	5.0
PLAY	5.0	0-2.5	2.5	2.5	2.5	5.0
E-E	4.5	2.5	2.5	2.5	0	5.0

IC454

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	0	5.0	5.0	2.2	0	0.1	0	0	2.5
PLAY	5.0	0	5.0	5.0	2.2	0	0.1	0	0	2.5
E-E	5.0	0	5.0	5.0	2.2	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	1.0-4.0	3.7	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5
PLAY	1.0-4.0	3.7	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5
E-E	2.5	5.0	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5

Mode \ Pin No.	21	22	23	24	25	26	27	28
REC	2.6	1.5	0	3.0	3.0	5.0	2.4	1.9
PLAY	1.5	2.5	0	2.5	2.5	5.0	2.4	1.9
E-E	1.5	2.5	0	2.5	2.5	5.0	2.4	0

Q450

Mode \ Pin No.	E	C	B
REC	2.2	5.0	2.5
PLAY	2.2	5.0	2.5
E-E	2.2	5.0	2.5

PSV P. C. Board

IC601

Mode \ Pin No.	G	IN	OUT
REC	0	12.0	20.0
PLAY	0	12.0	20.0
E-E	0	12.0	20.0

IC602

G	IN	OUT
0	12.0	25.3
0	12.0	25.3
0	12.0	25.3

IC603

G	IN	OUT
0	18.0	25.3
0	18.0	25.3
0	18.0	25.3

IC951

Mode \ Pin No.	1	2	3	4	5	6	7	8	9
REC	12.0	5.3	0	1.9	5.4	5.4	0	5.5	12.0
PLAY	12.0	5.3	0	1.9	5.4	5.4	0	5.5	12.0
E-E	12.0	5.3	0	1.9	5.4	5.4	0	5.5	12.0

Q601

Mode \ Pin No.	E	C	B
REC	0	5.6	0.7
PLAY	0	5.6	0.7
E-E	0	5.6	0.7

Q603

E	C	B
12.0	11.9	11.2
12.0	11.9	11.2
12.0	11.9	11.2

Q604

E	C	B
0	0	0.7
0	0	0.7
0	0	0.7

Q951

Mode \ Pin No.	E	C	B
REC	0	0	0.7
PLAY	0	0	0.7
E-E	0	0	0.7

Q952

E	C	B
1.8	6.6	2.4
1.8	6.6	2.4
1.8	6.6	2.4

QR601

E	C	B
0	0.7	0
0	0.7	0
0	0.7	0

SVV P. C. Board (NTSC MODEL)

IC451

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0.9	0.9	0.1	0.1	0.1	0	0	0	0	0
PLAY	0.8	0.8	0.1	0.1	0.1	0	0	0	0	0
E-E	0.7	0.7	0	0	0	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	0.9	1.9-2.3	0.8	0.9	5.0
PLAY	0	0	1.6	0	1.0	5.0
E-E	0	0	1.6	0	1.0	5.0

IC452

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.5	2.6	1.1	2.6	2.5	0	0	0	0	0
PLAY	2.5	0-2.0	1.0	2.5	2.5	0	0	0	0	0
E-E	2.5	2.5	5.0	5.0	5.0	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	2.5	0	2.5	0	0
PLAY	0	2.5-3.5	0	2.5-3.5	0-2.5	5.0
E-E	0	5.0	5.0	5.0	2.5	5.0

IC453

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.5	0	0	1.5	1.5	0	0	0	0	0
PLAY	2.5	2.5	0	1.5	1.5	0	0	0	0	0
E-E	0	0	0	1.5	1.5	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	2.5	2.5	2.5	2.5	5.0
PLAY	0	2.6	0-3.5	2.6	2.5	5.0
E-E	0	2.5	2.5	2.5	0	5.0

IC454

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	0.8	5.0	5.0	2.2	0	0.1	0	0	2.5
PLAY	5.0	0.8	5.0	5.0	2.2	0	0.1	0	0	2.5
E-E	5.0	0.8	5.0	5.0	2.2	0	0	0	0	0

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	2.5	2.5	2.5	2.6	0	2.5	2.5	2.5	2.5	2.5
PLAY	2.6	2.5	2.4	2.8	0	2.5	2.5	2.5	2.5	2.5
E-E	2.5	5.0	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5

Mode \ Pin No.	21	22	23	24	25	26	27	28
REC	2.6	1.50	0	3.0	3.0	5.0	2.4	1.8
PLAY	2.0	2.5	0	2.5	2.5	5.0	2.4	1.8
E-E	1.5	2.5	0	2.5	2.5	5.0	2.4	4.9

Q450

Mode \ Pin No.	E	C	B
REC	2.2	5.0	2.5
PLAY	2.2	5.0	2.5
E-E	2.2	5.0	2.5

SVV P. C. Board (PAL MODEL)

IC451

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0.5	0.5	0.1	0.1	0.1	0	0	0	4.5	4.5
PLAY	0.8	0.8	0.1	0.1	0.1	0	0	0	5.0	5.0
E-E	0.8	0.8	0	0	0	0	0	0	4.5	4.5

Mode \ Pin No.	11	12	13	14	15	16
REC	4.5	2.1	0	0	0	5.0
PLAY	5.0	1.6	0	0	1.0	5.0
E-E	4.5	1.7	0	0	0.8	5.0

IC452

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.6	2.5	2.5	2.5	3.7	0	0	0	4.5	4.5
PLAY	2.6	2.5	2.5	2.5	3.7	0	0	0	5.0	5.0
E-E	2.6	2.5	5.0	5.0	5.0	0	0	0	4.5	4.5

Mode \ Pin No.	11	12	13	14	15	16
REC	4.5	5.0	2.5	0	2.6	5.0
PLAY	5.0	5.0	2.3	2.4	2.6	5.0
E-E	4.5	5.0	5.0	5.0	2.6	5.0

IC453

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2-2.8	0	2.4	2.4	0	0	0	0	4.5	4.5
PLAY	2-2.8	2-2.8	0	2.4	0	0	0	0	5.0	5.0
E-E	0	0	0	2.4	0	0	0	0	4.5	4.5

IC52

Mode \ Pin No.	1	2	3	4	5	6	7	8
REC	4.8	0	3.50	1.3	0	1.7	1.3	0.5
PLAY	4.77	0	3.5	1.3	0	1.6	1.3	0.5
E-E	8.44	0	12.0	2.9	5.72	1.7	1.9	2.7

IC53

Mode \ Pin No.	1	2	3
REC	8.31	0	5.04
PLAY	7.7	0	5.04
E-E	7.94	0	5.04

IC101

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0	1.4	3.24	2.51	1.7	0	3.24	2.58	2.06	2.58
PLAY	0	1.4	3.2	2.5	1.7	0	3.2	2.6	2.1	2.6
E-E	0	1.4	3.24	2.5	2.7	0	3.24	2.57	4.43	2.58

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	2.60	2.0	4.68	0.6	2.24	5.03	5.03	3.12	3.98	5.03
PLAY	2.60	2.0	4.7	0.6	2.2	5.0	5.0	3.1	4.0	5.0
E-E	2.60	2.0	4.68	0.6	2.25	5.0	5.03	2.42	3.98	5.03

Mode \ Pin No.	21	22	23	24
REC	1.6	0.6	2.43	3.28
PLAY	1.6	2.5	2.5	3.3
E-E	1.6	1.8	2.0	3.4

IC181

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	3.2	2.94	0	1.3	2.01	2.24	3.58	0	1.7	2.36
PLAY	3.2	2.9	0	1.3	2.0	2.2	3.6	0	1.7	2.4
E-E	3.19	2.94	1.4	1.3	2.0	2.4	3.6	0	1.7	2.4

Mode \ Pin No.	11	12	13	14
REC	5.03	2.43	0.3	3.2
PLAY	5.0	2.4	0.3	3.2
E-E	5.0	2.43	4.98	3.2

Q51

Mode \ Pin No.	E	C	B
REC	2.0	0	1.4
PLAY	2.0	0	1.4
E-E	1.8	0	1.1

Q52

E	C	B
0.8	3.0	1.4
0.8	3.6	1.4
0.6	3.53	1.1

Q53

E	C	B
2.4	5.0	3.0
2.4	5.0	3.0
2.9	5.0	3.5

Q54

Mode \ Pin No.	E	C	B
REC	0.8	0	0.2
PLAY	1.2	0	0.2
E-E	1.5	0	0.8

Q55

E	C	B
0.7	4.3	1.3
0.7	4.3	1.2
2.3	8.44	2.9

Q56

E	C	B
4.83	11.48	5.5
4.9	11.4	5.6
8.67	11.4	9.26

Q101

Mode \ Pin No.	E	C	B
REC	3.39	5.03	3.98
PLAY	3.4	5.0	4.0
E-E	3.35	5.0	3.95

Q102

E	C	B
0.5	3.1	1.2
0.5	3.1	1.2
0.5	3.1	1.2

Q103

E	C	B
1.4	5.03	2.04
1.4	5.0	2.0
1.4	5.0	2.0

Q104

Mode \ Pin No.	E	C	B
REC	1.5	5.03	2.05
PLAY	1.4	5.0	2.0
E-E	3.8	5.0	4.43

Q151

E	C	B
0	5.1	0
0	4.2	0
0	5.1	0

QR53

Mode \ Pin No.	E	C	B
REC	0	0	1.5
PLAY	0	0	1.5
E-E	0	1.3	0

QR54

E	C	B
0	1.5	0.3
0	1.5	0
0	0	0.5

QR55

E	C	B
4.5	4.1	0
4.0	4.5	0
4.0	4.5	0

QR56

Mode \ Pin No.	E	C	B
REC	0	4.5	0
PLAY	0	4.0	0
E-E	0	4.0	0

QR57

E	C	B
0	5.5	1.5
0	5.6	1.5
0	9.26	0

QR102

E	C	B
0	0	3.57
0	0	3.6
0	0	3.58

QR103

Mode \ Pin No.	E	C	B
REC	0	0	3.57
PLAY	0	0	3.6
E-E	0	0	3.58

QR151

E	C	B
0	0	0
0	0	0
0	0	0

QR181

E	C	B
0	4.29	0.4
0	4.3	0.4
0	4.3	0.4

Mode \ Pin No.	21	22	23	24	25	26	27	28	29	30
REC	0.5	0.5	0.6	0.7	5.6	4.9	11.8	10.3	11.9	11.8
PLAY	0.5	0.5	0.6	0.6	5.6	0	0	0.3	11.9	11.8
E-E	0.5	0.5	0.6	0.5	5.6	0	0	0.3	11.9	11.8

Mode \ Pin No.	31	32
REC	11.0	0
PLAY	11.0	0
E-E	11.0	0

IC401

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	0.8	5.0	5.0	2.5	0	0.1	0	0	2.5
PLAY	5.0	0.8	5.0	5.0	2.5	0	0.1	0	0	2.5
E-E	5.0	0.8	5.0	5.0	2.5	0	0.1	0	0	0

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	2.5	2.5	2.5	2.6	0	2.5	2.5	2.5	2.5	2.5
PLAY	2.5	2.5	2.3	2.8	0	2.5	2.5	2.5	2.5	2.5
E-E	2.5	5.0	5.0	2.5	0	2.5	2.5	2.5	2.5	2.5

Mode \ Pin No.	21	22	23	24	25	26	27	28
REC	2.5	1.5	0	2.8	3.0	5.0	2.6	1.8
PLAY	2.0	2.5	0	2.5	2.5	5.0	2.6	1.8
E-E	1.5	2.5	0	2.5	2.5	5.0	2.6	0

IC402

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC				18.0	2.5	2.5	2.0	2.5	0	2.8
PLAY				18.0	2.5	2.5	2.0	2.5	0	2.8
E-E				18.0	2.8	2.7	0	4.1	0	3.2

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	0	5.0	2.5	2.6	2.5	2.5	2.5	0		4.5
PLAY	0	5.0	2.5	2.8	2.3	2.5	2.5	0		4.5
E-E	0	5.0	2.5	2.5	5.0	5.0	2.5	0		4.5

Mode \ Pin No.	21	22	23
REC	2.5	0	0
PLAY	2.5	0	0
E-E	3.2	0	5.0

Q1				Q2			Q4		
Mode \ Pin No.	E	C	B	E	C	B	E	C	B
REC	1.6	4.6	2.3	5.0	4.9	4.2	0	0.5	0.2
PLAY	0.4	0	0	5.0	0	5.0	1.9	5.0	2.5
E-E	0	0	0	5.0	0	5.0	0	0.5	0.2

Q201				Q405		
Mode \ Pin No.	E	C	B	E	C	B
REC	0.2	9.3	0	0	3.3	0.7
PLAY	0	0.2	0.2	0	3.3	0.7
E-E	0	0.2	0.2	0	3.3	0.7

QR1				QR2			QR201		
Mode \ Pin No.	E	C	B	E	C	B	E	C	B
REC	0	0.2	2.5	0	0	0.5	0	0	5.0
PLAY	0	1.9	2.5	0	5.0	0	0	0	0
E-E	0	0.5	0	0	5.0	0	0	0	5.0

QR401			
Mode \ Pin No.	E	C	B
REC	2.5	5.0	2.5
PLAY	2.5	5.0	2.5
E-E	0	5.0	0

MSV P. C. Board

IC51

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	2.35	2.60	2.60	3.42	2.85	3.55	2.78	0	0.83	3.31
PLAY	2.35	2.60	2.60	3.40	2.85	3.55	2.80	0	0.8	3.30
E-E	3.59	2.66	2.25	3.92	4.59	1.1	2.45	0	3.55	3.55

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	3.53	3.07	4.94	4.94	4.94	3.57	0.43	2.53	4.39	0
PLAY	3.5	3.1	4.9	4.9	4.9	3.6	0.4	2.5	4.4	0
E-E	0	3.08	3.34	3.34	4.16	3.52	0.4	2.53	4.39	0

Mode \ Pin No.	21	22	23	24	25	26	27	28	29	30
REC	2.62	5.03	3.64	3.23	3.01	3.78	1.4	0	4.10	3.45
PLAY	2.6	5.0	3.6	3.2	3.0	3.7	1.4	0	4.5	3.45
E-E	2.52	5.03	3.15	3.25	3.93	3.66	1.4	0	4.5	4.16

IC502

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	5.0	12.0	2.6	4.7	2.6	4.7	5.7	4.6	2.6
PLAY	5.0	5.0	12.0	2.6	4.7	2.6	4.7	5.7	4.6	2.6
E-E	5.0	5.0	12.0	2.6	4.7	2.6	4.7	5.7	4.6	2.6

Mode \ Pin No.	11	12	13	14
REC	4.6	0	5.1	0
PLAY	4.6	0	5.1	0
E-E	4.6	0	5.1	0

IC503

Mode \ Pin No.	1	2	3	4	5	6	7	8
REC	0	0	0	0.3	0	0	0	5.1
PLAY	0	0	0	0.2	0	0	0	5.1
E-E	0	0	0	0.2	0	0	0	5.1

IC504

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0	0.5	0.9	3.2	1.9	1.9	12.0	12.0	0.9	0.5
PLAY	0	0.5	0.9	0.9	1.9	1.9	12.0	12.0	0.9	0.5
E-E	0	0.5	0.9	3.2	1.9	1.9	12.0	12.0	0.9	0.5

IC505

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.1	0	5.1	5.1	5.1	0	0	0	0	5.0
PLAY	5.1	0	5.1	5.1	5.1	0	0	0	0	5.0
E-E	5.1	0	5.1	5.1	5.1	0	0	0	0	5.0

Mode \ Pin No.	11	12	13	14	15	16
REC	0	5.0	0	0	0	5.1
PLAY	0	5.0	0	0	0	5.1
E-E	0	5.0	0	0	0	5.1

IC506

Mode \ Pin No.	IN	GND	OUT
REC	5.1	0	18.0
PLAY	5.1	0	18.0
E-E	5.1	0	18.0

IC508

Mode \ Pin No.	OUT	IN	GND
REC	5.0	5.0	0
PLAY	5.0	5.0	0
E-E	5.0	5.0	0

IC509

Mode \ Pin No.	IN	GND	CUT
REC	8.6	0	5.0
PLAY	8.5	0	5.0
E-E	9.0	0	5.0

Q501

Mode \ Pin No.	E	C	B
REC	0	5.0	0
PLAY	0	5.0	0
E-E	0	5.1	0

Q502

E	C	B
5.0	0.5	5.0
5.0	5.0	4.3
5.0	0.6	4.9

Q503

E	C	B
8.6	9.0	9.3
8.5	9.1	9.3
9.0	9.5	9.7

MCV-C P. C. Board

IC1

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0.5	0	3.7	3.8	0	0	0	3.8	3.7	0
PLAY	5.0	2.2	0	0	0.7	0	0.7	0	0	2.2
E-E	0.5	0.1	0	0	0	0	0	0	0	0.1

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	4.6	1.5	2.3	0	2.3	0	0.2	3.7	0.5	1.1
PLAY	0	0	2.0	1.5	2.0	0	2.5	0	4.6	0
E-E	0	0	0	0	0	0	0.2	0	0.5	0

Mode \ Pin No.	21	22
REC	0.2	0.2
PLAY	3.1	1.7
E-E	0.3	0.5

IC201

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0	11.0	0	2.0	2.5	0.5	2.0	2.0	0	0.5
PLAY	0	8.3	0	2.0	2.0	0.5	2.0	2.0	0	5.0
E-E	0	8.3	0	2.0	2.0	0.5	2.0	2.0	0	0.5

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	0	0	9.7	5.9	5.7	5.7	5.3	5.0	0.5	0
PLAY	0	0	9.7	5.9	5.7	5.7	5.3	0	0.5	0
E-E	0	0	9.7	5.9	5.7	5.7	5.3	5.0	0.5	0

VOLTAGE CHARTS

* All voltages are DC mesured and indicated in volt.

MCV-A P. C. Board

IC701

Mode \ Pin No.	GND	IN	OUT
REC	0	11.9	9.1
PLAY	0	11.9	9.1
E-E	0	11.9	9.1

IC703

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	9.6	9.1	9.1	5.6	0	9.3	0.3	1.2	11.9	10.9
PLAY	9.7	9.2	9.2	5.6	0	9.4	0.3	1.5	11.9	11.0
E-E	9.7	9.2	9.2	5.6	0	9.4	0.3	1.2	11.9	11.0

Q701

Mode \ Pin No.	E	C	B
REC	9.1	8.9	8.4
PLAY	9.1	8.9	8.4
E-E	9.1	8.9	8.4

Q702

Mode \ Pin No.	E	C	B
REC	9.1	0	8.9
PLAY	9.1	0	8.8
E-E	9.1	0	8.9

Q703

Mode \ Pin No.	E	C	B
REC	9.1	0	8.9
PLAY	9.1	0	8.9
E-E	9.1	0	8.9

Q704

Mode \ Pin No.	E	C	B
REC	0	3.8	0.5
PLAY	0	3.8	0.5
E-E	0	3.8	0.5

QR701

Mode \ Pin No.	E	C	B
REC	9.1	4.7	9.1
PLAY	9.1	4.5	9.1
E-E	9.1	4.5	9.1

QR702

Mode \ Pin No.	E	C	B
REC	0	9.1	0
PLAY	0	9.1	0
E-E	0	9.1	0

MCV-B P. C. Board

IC401

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	0	3.2	4.8	2.8	3.8	0	18.0	18.0	0.1	0
PLAY	0	3.2	4.8	2.8	3.8	0	18.0	18.0	0.1	0.1
E-E	0	0	0	3.2	0	0	18.0	18.0	0	0

IC501

Mode \ Pin No.	1	2	3	4	5	6	7	8	9	10
REC	5.0	5.0	5.0	5.0	0	0	2.0	0	5.0	0
PLAY	5.0	5.0	4.2	0	0	0	2.5	0	5.0	0
E-E	0	0	0	0	0	0	0	0	5.0	0

Mode \ Pin No.	11	12	13	14	15	16	17	18	19	20
REC	-23.0	-23.0	-23.0	-26.8	-26.8	-26.8	-26.8	-23.0	-26.8	-24.0
PLAY	-26.9	-23.0	-23.0	-26.9	-26.9	-26.9	-23.2	-23.0	-26.8	-24.0
E-E	-26.9	-23.0	-23.0	-23.0	-26.9	-26.9	-26.9	-23.2	-26.9	-24.0

Mode \ Pin No.	21	22	23	24	25	26	27	28	29	30
REC	-24.0	-24.0	-24.0	-24.0	-24.0	-24.0	-24.0	-24.0	4.9	2.5
PLAY	-24.0	-24.0	-24.0	-24.0	-24.2	-24.2	-24.2	-24.2	5.0	2.5
E-E	-24.0	-24.2	-24.1	-24.1	-24.2	-24.2	-24.2	-24.2	5.0	2.5

Mode \ Pin No.	31	32	33	34	35	36	37	38	39	40
REC	0.9	5.0	5.0	5.0	0	0	0	0.4	0	0.5
PLAY	0.9	5.0	5.0	5.0	0	0	0	0.4	0	0.5
E-E	0.9	0	5.0	5.0	0	0	0	0.4	0	0.5

Mode \ Pin No.	41	42	43	44	45	46	47	48	49	50
REC	0	4.9	0.9	0	5.0	4.5	5.0	2.0	0	5.1
PLAY	0	4.9	0.9	5.0	5.0	4.5	0	0.5	0	5.1
E-E	0	0	0	5.0	5.0	4.5	5.0	0.6	0	5.1

Mode \ Pin No.	51	52	53	54	55	56	57	58	59	60
REC	0	1.7	0	2.9	0	0	5.0	5.0	0	4.1
PLAY	0	0.8	5.0	2.5	0	0	5.0	5.0	0	4.1
E-E	0	0.5	5.0	0	0	0	5.0	5.0	0	4.1

Mode \ Pin No.	61	62	63	64	65	66	67	68	69	70
REC	5.0	4.9	0	0	5.0	5.0	0	0	5.0	5.0
PLAY	5.0	4.9	0	0	5.0	5.0	5.0	0	5.0	5.0
E-E	5.0	4.9	0	0	5.0	5.0	0	5.0	5.0	5.0

Mode \ Pin No.	71	72	73	74	75	76	77	78	79	80
REC	0	2.5	5.0	2.4	5.1	-28.0	5.0	5.0	5.0	0
PLAY	0	2.4	5.0	2.2	5.0	-28.0	5.0	5.0	5.0	0
E-E	0	2.4	5.0	2.2	5.0	-28.0	5.0	5.0	5.0	0

[TV SECTION]

PRACTICAL SERVICE FIGURE

System <TV section>

- 1) CRT : 14" Inline gun, 90° Def.
- 2) Color system : PAL D/G MESECAM
NTSC 4.43MHz
- 3) Receiving channel : [VHF Low] 2-4ch
[VHF High] 5-12ch
[UHF] 21-69ch
(Can be memory 16 stations)
- [QQIR ch]
- 4) Tuning system : Voltage synthesizer system
- 5) Control (*Mark features are located in compartment)
 - Power : Push
 - *Channel : 2-Push (up/down)
 - *Volume : 2-Push (up/down)
 - Stop/Eject : Push
 - *Play : Push
 - *Still/Pause : Push
 - *Record : Push
 - *Rewind : Push
 - *F.Fwd : Push
 - *Qtr start : Push
 - *Monitor : Push
 - *Tracking : Rotary
 - *Preset : Push
 - *Set 10 : Push
 - *Set 1 : Push
 - *Search : 2-Push
 - *Erase : Push
 - *Band : Push
 - *Contrast : Rotary (W/Center Click)
 - *Color : Rotary (W/Center Click)
 - *Brightness : Rotary (W/Center Click)
 - *NTSC/PAL/MESECAM : Slide Switch
 - *Auto repeat : Slide Switch (option)
- 6) Connector & Jack
 - Antenna : 75 ohm IEC jack
 - Video In : BNC jack (for recording)
 - Audio In : RCA jack (for recording)
 - Earphone : 3.5 ϕ jack
- 7) Degauss : Automatic degaussing
- 8) Speaker : 3" Round type (Located on side)
- 9) Audio output : 0.8W

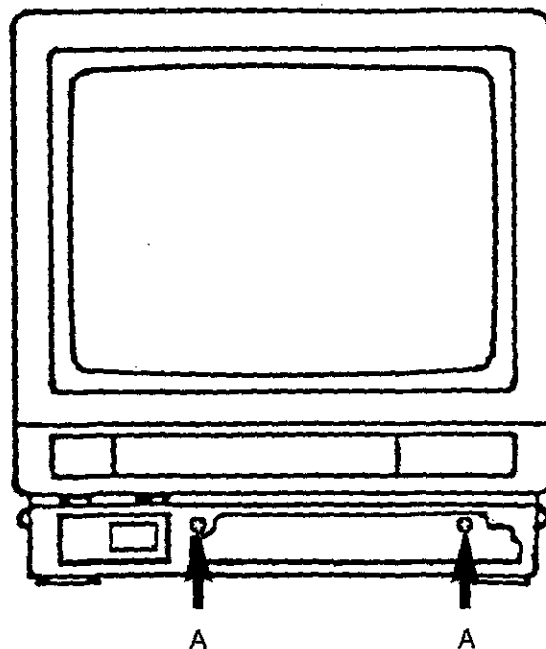
System <VCR section>

- 1) Recording system : Twin head helical scanning
: HQ system
- 2) Loading system : Front Loading
- 3) Video signal : PAL/MESECAM/NTSC 4.43MHz (PLAY)
- 4) Tape format : Width 1/2", 1 audio track
- 5) Rec/Play time : 4 hours (E-240)
- 6) Tape speed : 23.30mm/sec
- C) IR Remote control : 12 Push handset
: (Power, Ch.up/down, Vol.up/down, Play, 2 Rec, FF, Rew, Stop, Still/Pause)
- D) Indicators : Fluorescent tube
: (Rec, Play, FF, F.F.W, QTR, Length, Tape-in, Start, Channel, Band, Dew)
- E) Mechanical
 - 1) Dimension : (W)362 x (D)366 x (H)399
 - 2) Cabinet : All plastic cabinet with front glass
 - 3) Weight : 13.5Kg
 - 4) Packing Weight : 16.0Kg
- F) Power supply
 - 1) Rating : AC 127V/220V/50Hz/60Hz Switchable
 - 2) Consumption : 85W
 - 3) AC Cord : 6ft PVC cord with IEC Type A Plug & IEC Type C conresion Plug
- G) Others
 - 1) Head life time : 1000H (Change tape per 200H)
 - 2) Regulations : IEC 65 Passable
- H) Accessories
 - 1) Remote control handset
 - 2) 2-AA (IEC R02) batteries for remote
 - 3) Instruction booklet
 - 4) Siemens Plug
 - 5) Rabbit ear antenna for VHF
 - 6) Matching Pad

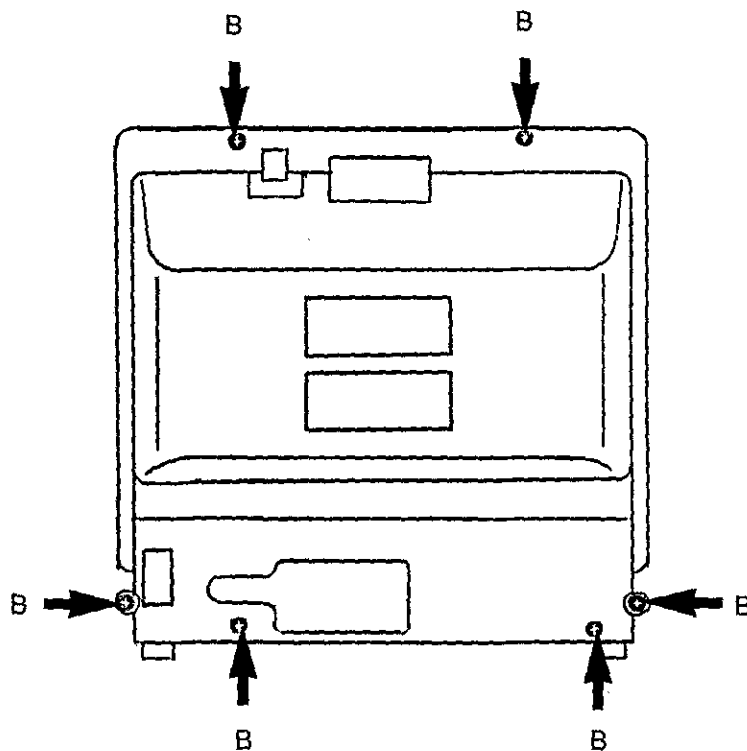
1. DISASSEMBLY INSTRUCTIONS (SET)

TV Cabinet removal

- Remove 2 screws (A) from front cabinet.

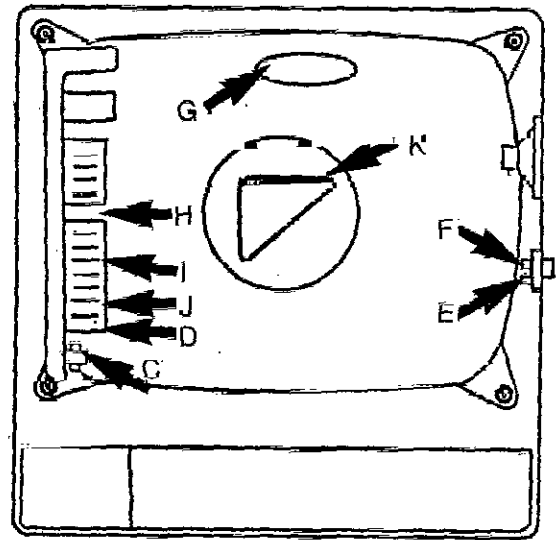


- Remove 6 screws (B) from rear cabinet.



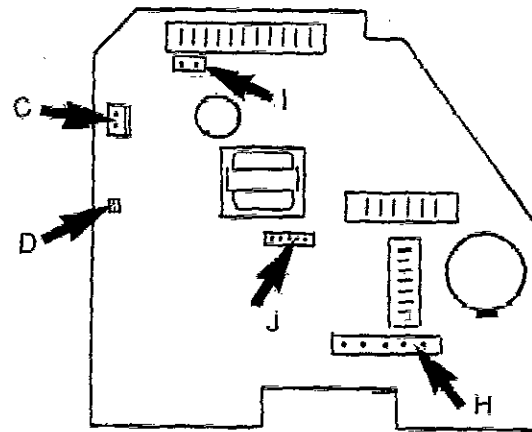
VIDEO Deck removal

- Remove connectors (C,D,E and F).



CRT PCB and Main PCB removal

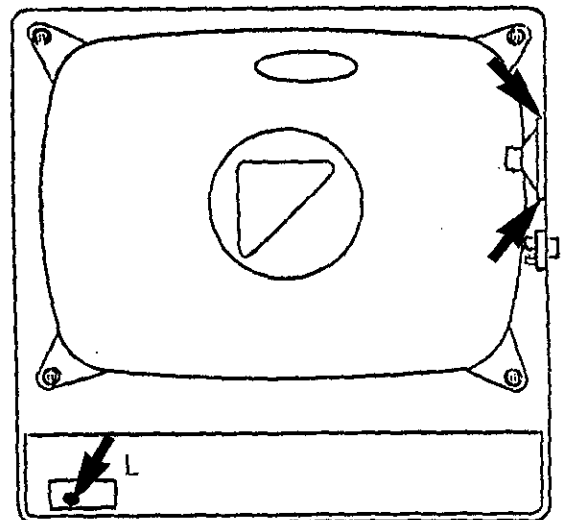
- Remove connectors (G,H,I,J and K) with Holder.



MAIN PCB

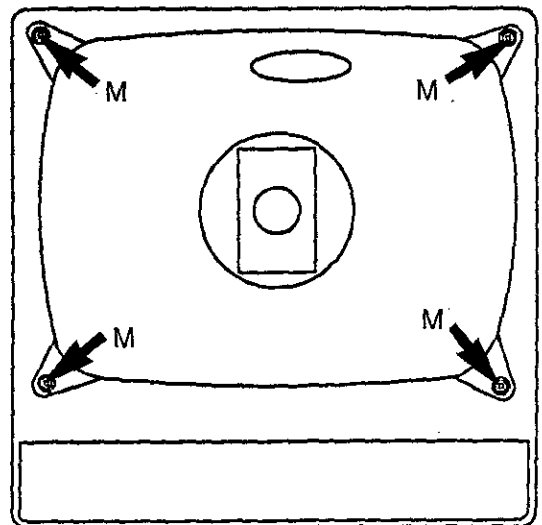
Earphone jack and Speaker removal

- Remove a screw (L) of Cotrol PCB.

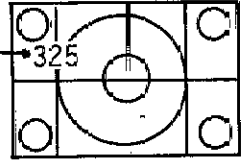
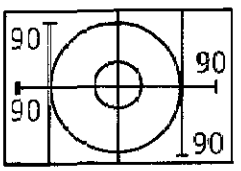
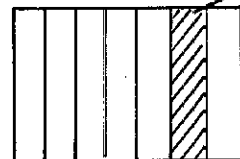


CRT removal

- Remove 4 screws (M).

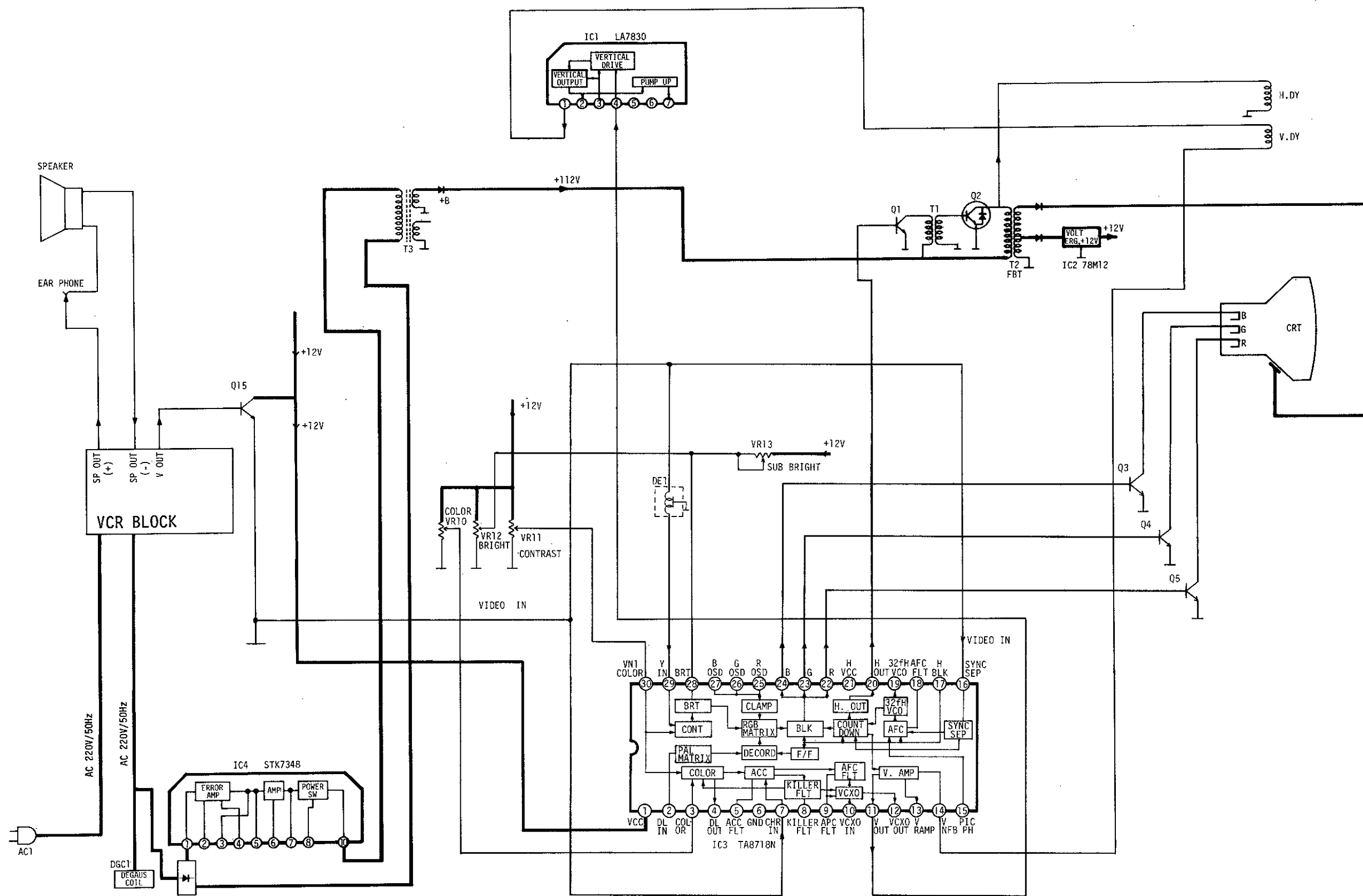


3. ELECTRICAL ADJUSTMENT

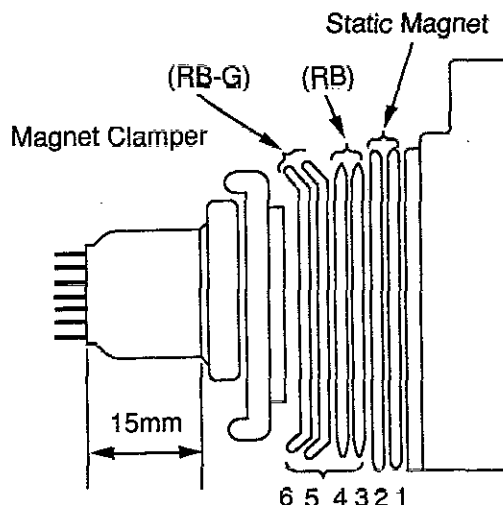
Alignment Item	Alignment Points	Alignment Method
1. Focus	FOCUS VR.	1. Input monoscope pattern. 2. Align the focus while using the figure 325 (indicating number of the resolution) at the upper left of the monoscope pattern as reference, and check to ensure that no fading is detected in the center and all four corners. (Set the CONTRAST/BRIGHT CONTROL to center.) Align the focus with this figure serving as a standard. 
2. Cut Off	VR1, VR5 SCREEN VR.	1. Input AFL 100% white. 2. Set the SCREEN (counterclockwise), VR1, and VR5 (clockwise) to min. 3. Turn the Service switch ON. 4. Adjust the SCREEN to a point where the horizontal GREEN line starts flashing. 5. Adjust VR1 (blue) and VR5 (red) till the horizontal line turn white. 6. Turn the service switch OFF. Note: At this time, each VOL. of R.DRIVE (VR2) and E.DRIVE (VR4) should be in center.
3. V.size	VR8	1. Input monoscope pattern. 2. Adjust VR8 so that the monoscope V.SIZE display becomes 92%. Align horizontal/vertical balance, and then adjust so that the circle in the monoscope pattern center becomes truly round. 
4. Sub Bright	VR13	1. Input the gray scale. 2. Set CONT.BRIGHT to center. 3. Adjust VR13 to a point where the level one step higher than the black level starts flashing. 

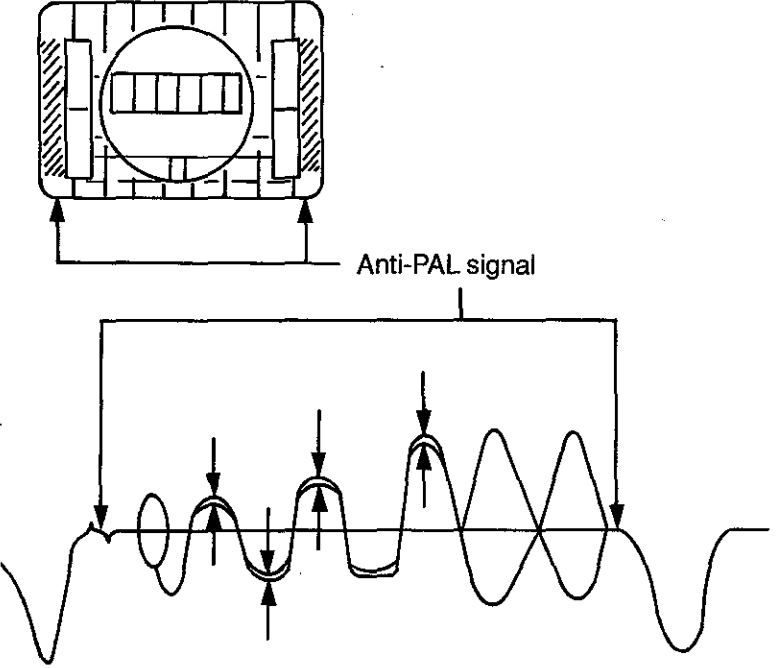
Note: The COLOR/CONTRAST/BRIGHT VR, unless otherwise specified, should all be set to center (center click).

2. BLOCK DIAGRAM

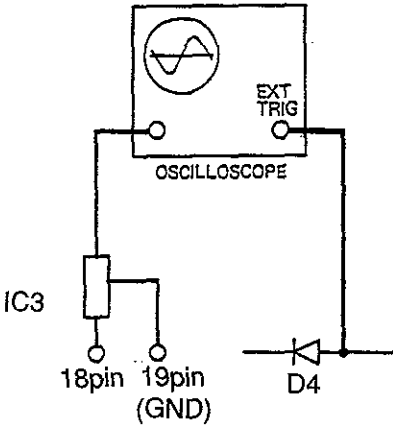
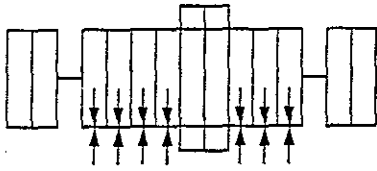
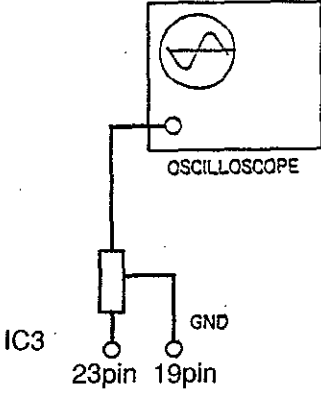


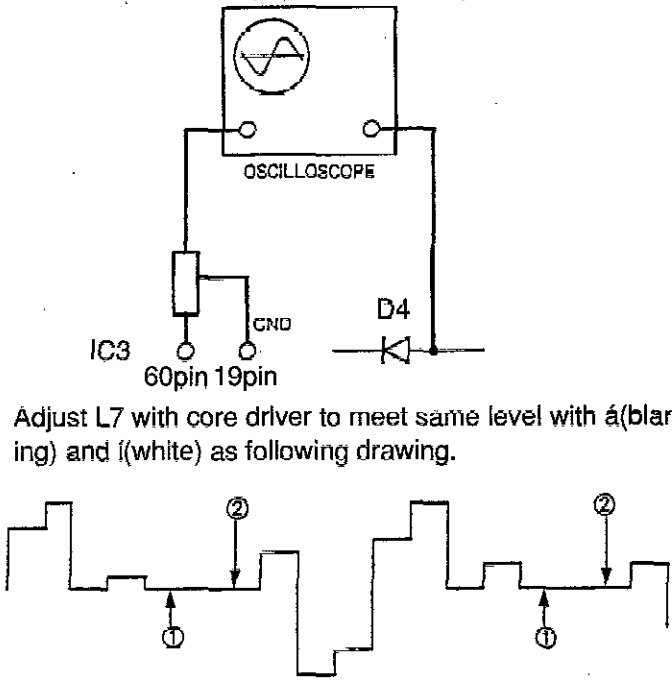
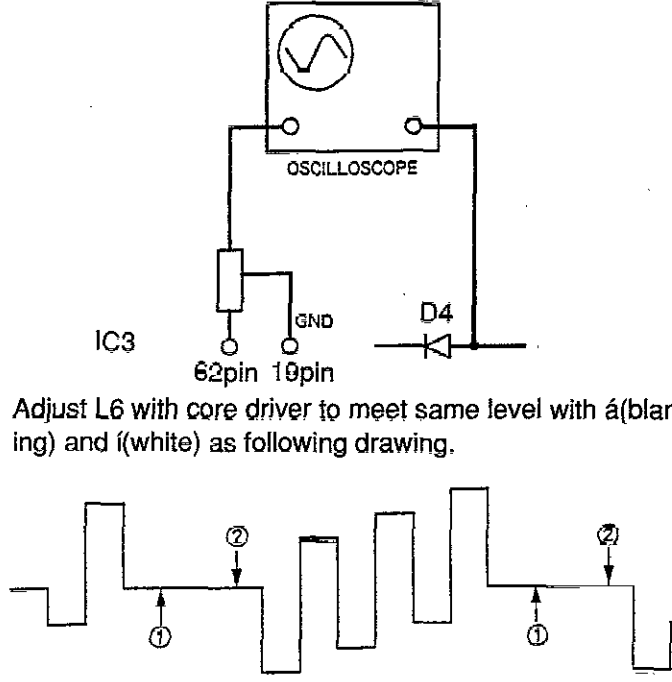
Alignment item	Alignment Points	Alignment Method
5. Color Purity	Deflection Yoke Purity Magnet	1. Set the unit facing west. 2. Operate the unit over 30 minutes before adjustment. 3. Fully degauss the unit using an external degaussing coil. 4. Inject a crosshatch signal and adjust the convergence control. 5. Inject a red color signal. 6. Loosen a screw of the Deflection Yoke Clumper and pull the Deflection back away from the screen. 7. Adjust the Purity Magnets so that a red field is obtained at the center of the screen. 8. Slowly push the Deflection Yoke toward bell of CRT and set it where a uniform red field is obtained. 9. Tighten the clamp screw of the Deflection Yoke.
6. Convergence	(R,B) Static Convergence (RB-G) Static Convergence, Deflection Yoke	1. Loosen the Convergence Magnet Clamper and align red with blue dots at the center of the screen by rotating (R,B) Static Convergence Magnets. 2. Align red/blue with green dots at the center of the screen by rotating (RB-G) Static Convergence Magnet. 3. Fix the Convergence magnets by tightening the clamper. 4. Remove the DY wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence. 5. Fix the Deflection Yoke fitting by wedges.



Alignment Item	Alignment Points	Alignment Method
7. 1H delay line	VR6, L8	1. Input the Philips pattern. 2. Connect the oscilloscope to IC3 pin 24. (Synchronize the oscilloscope externally through the D 4 anode.) 3. Adjust VR6, L8 so that the amplitude at Anmti-PAL signal part becomes minimal (no color) and the waveform at the color bar part is not seen in double ("Venetian Blind" does not appear at the color bar signal part). Philips pattern  Anti-PAL signal

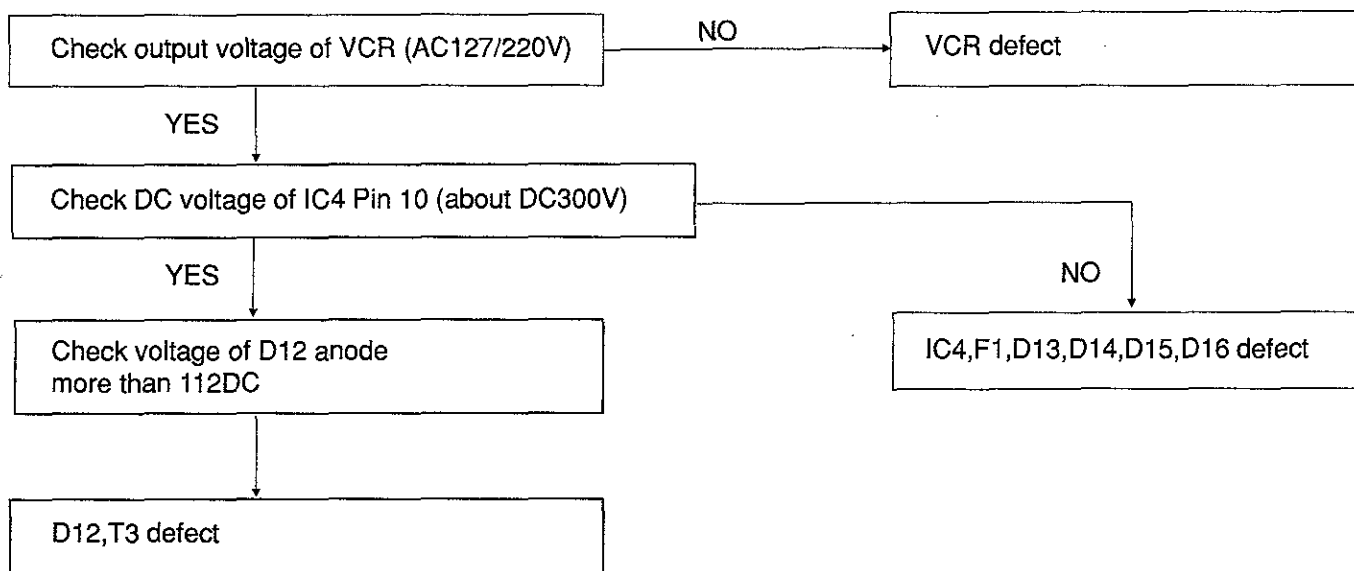
Alignment Item	Alignment Points	Alignment Method
8. White Balance	VR2(R227), VR4(R230), VR1,VR5	1. Input APL 100% white. 2. After aging for 20-30 minutes, demagnetize the tube (CRT) surface with a demagnetizer. 3. Set the color analyzer to the CHROMA mode, and after zero point calibration, bring the optical receptor into close contact with the center on the tube surface (CRT), and adjust R.DRIVE (VR2) and B.DRIVE (VR4) so that the respective chroma temperatures become 8,500°K (X:0.290/Y:0.300). 4. Turn the service switch ON. 5. At this time, check that the horizontal line is white. If the horizontal line is not white, adjust the CUT-OFF VR, VR1 (blue), VR5 (red) until proper alignment is reached. 6. Turn the service switch OFF, and using the color analyzer, check that the chroma temperatures read the preset values. 7. Repeat steps 3, 4, 5, 6 above, and adjust so that the settings of chroma temperature and horizontal line are at their best. Note 1: Be sure the tube surface faces east. Note 2: Make this adjustment under European magnetic field. (Vertical : 0.44G/Horizontal : 0.18G) Make this adjustment under Australia magnetic field. (Vertical : 0.50G/Horizontal : 0.30G) Note 3: Always adjust SUB-BRIGHT, V-SIZE, OUT-OFF, and PAL. Note 4: The allowable range during chroma temperature adjustment should be $\pm 5\%$ Max. x: 0.275 to 0.305. y: 0.285 to 0.315

Alignment Item	Alignment Points	Alignment Method
9. SECAM Chroma Bell Filter		1. Input the SECAM color bar signal. 2. Turn the CONTRAST, BRIGHT, COLOR control to max. 3. Connect the oscilloscope as following drawing.  4. Adjust L10 with core driver to flat wave form at arrow marked on following drawing. 
10. IDENT Coil		1. Input the SECAM color bar signal. 2. Turn the CONTRAST, BRIGHT, COLOR control to max. 3. Connect the oscilloscope as following drawing.  4. Adjust L12 with core driver to peak DC voltage.

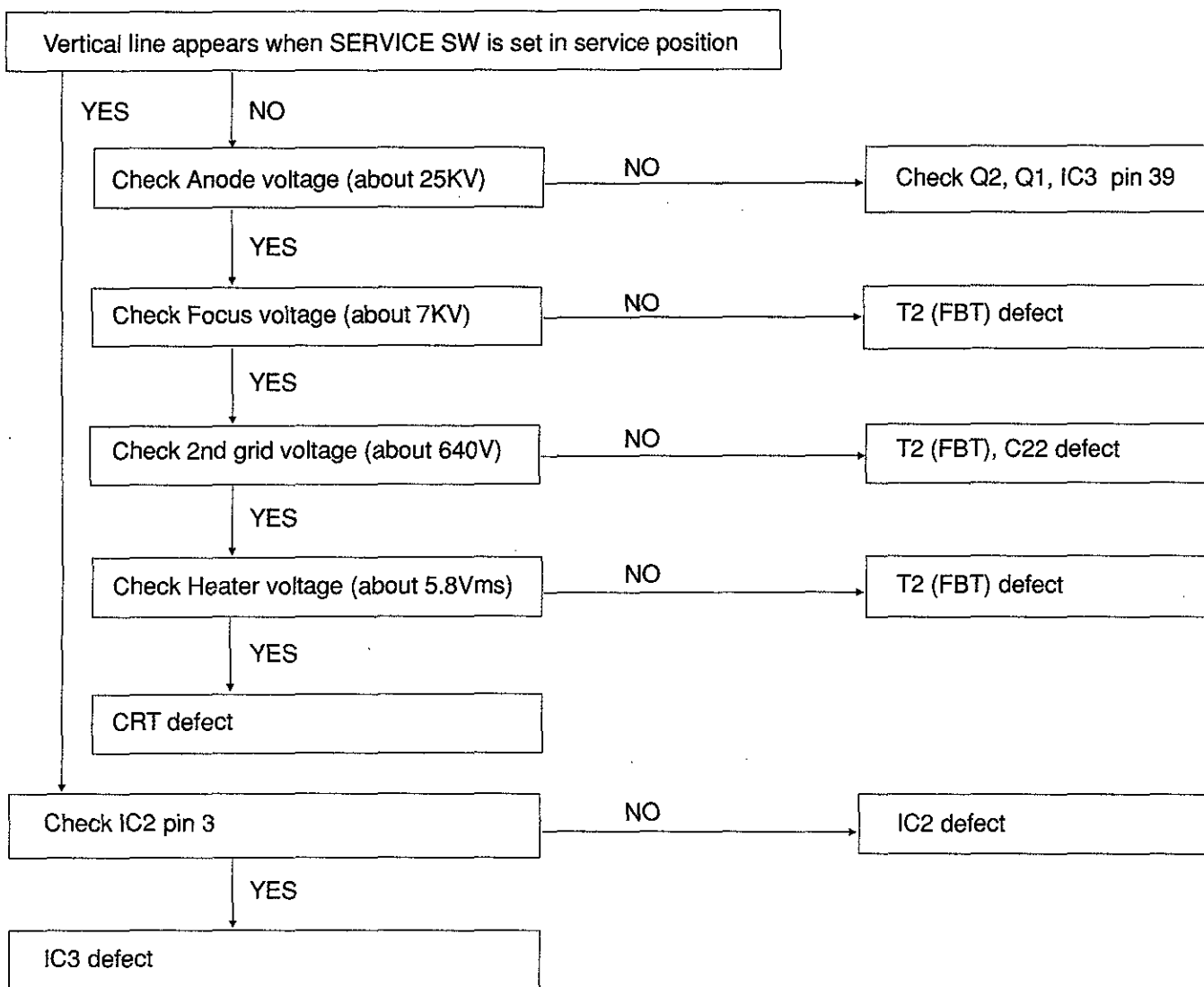
Alignment Item	Alignment Points	Alignment Method
11. R-Y Demodulate Coil		1. Input the SECAM color bar signal. 2. Turn the CONTRAST, BRIGHT, COLOR control to max. 3. Connect the oscilloscope as following drawing.  4. Adjust L7 with core driver to meet same level with á(blank-ing) and í(white) as following drawing.
12. B-Y Demodulate Coil		1. Input the SECAM color bar signal. 2. Turn the CONTRAST, BRIGHT, COLOR control to max. 3. Connect the oscilloscope as following drawing.  4. Adjust L6 with core driver to meet same level with á(blank-ing) and í(white) as following drawing.

4. TROUBLE SHOOTING GUIDES

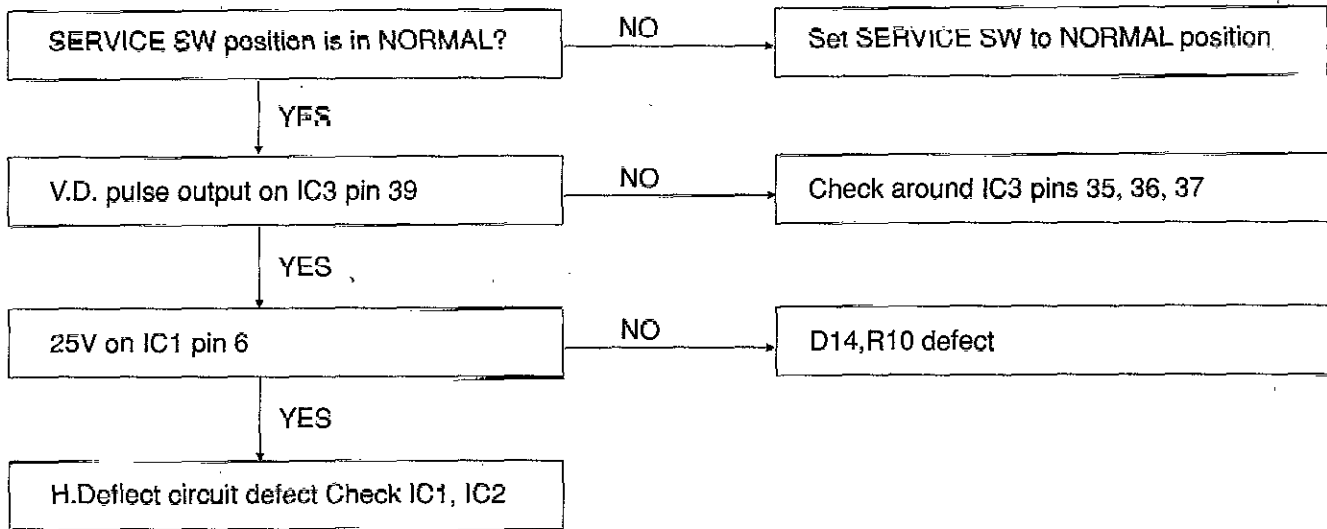
(1) NO POWER OUTPUT



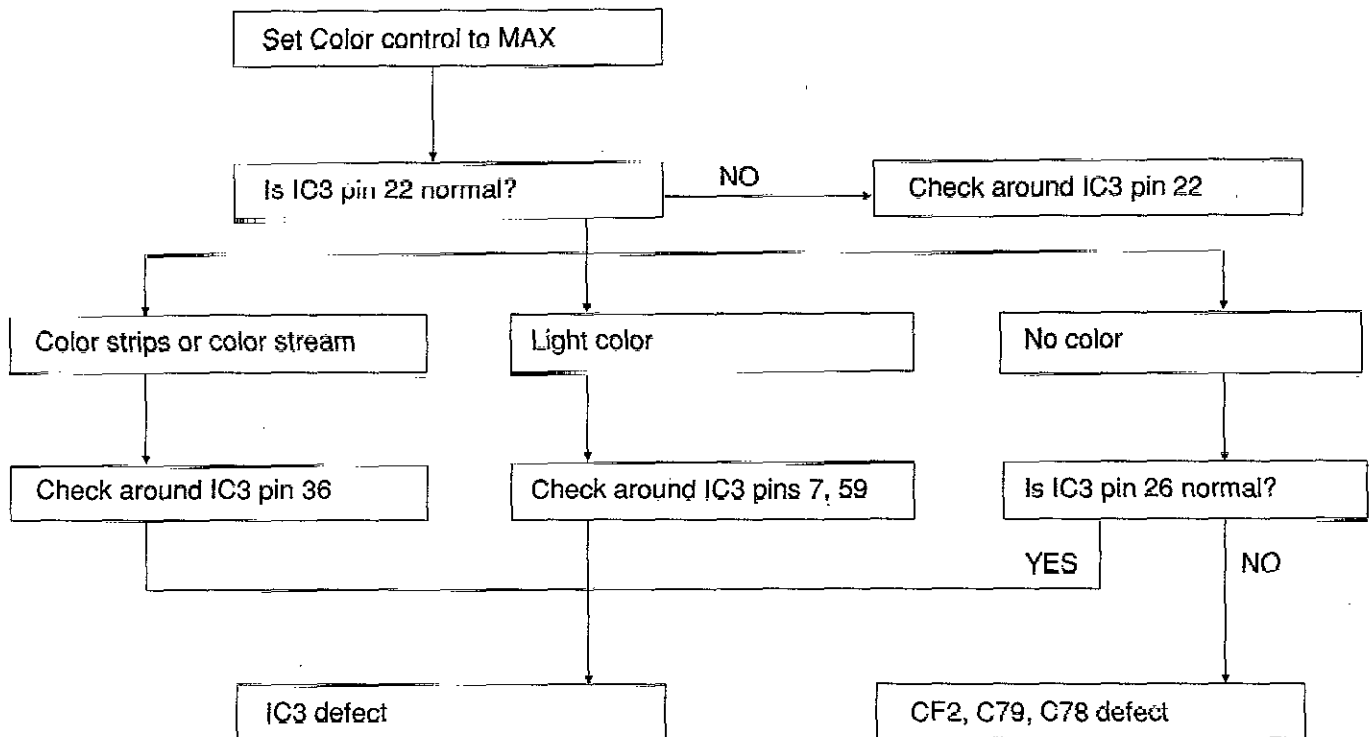
(2) NO RASTER WITH SOUND



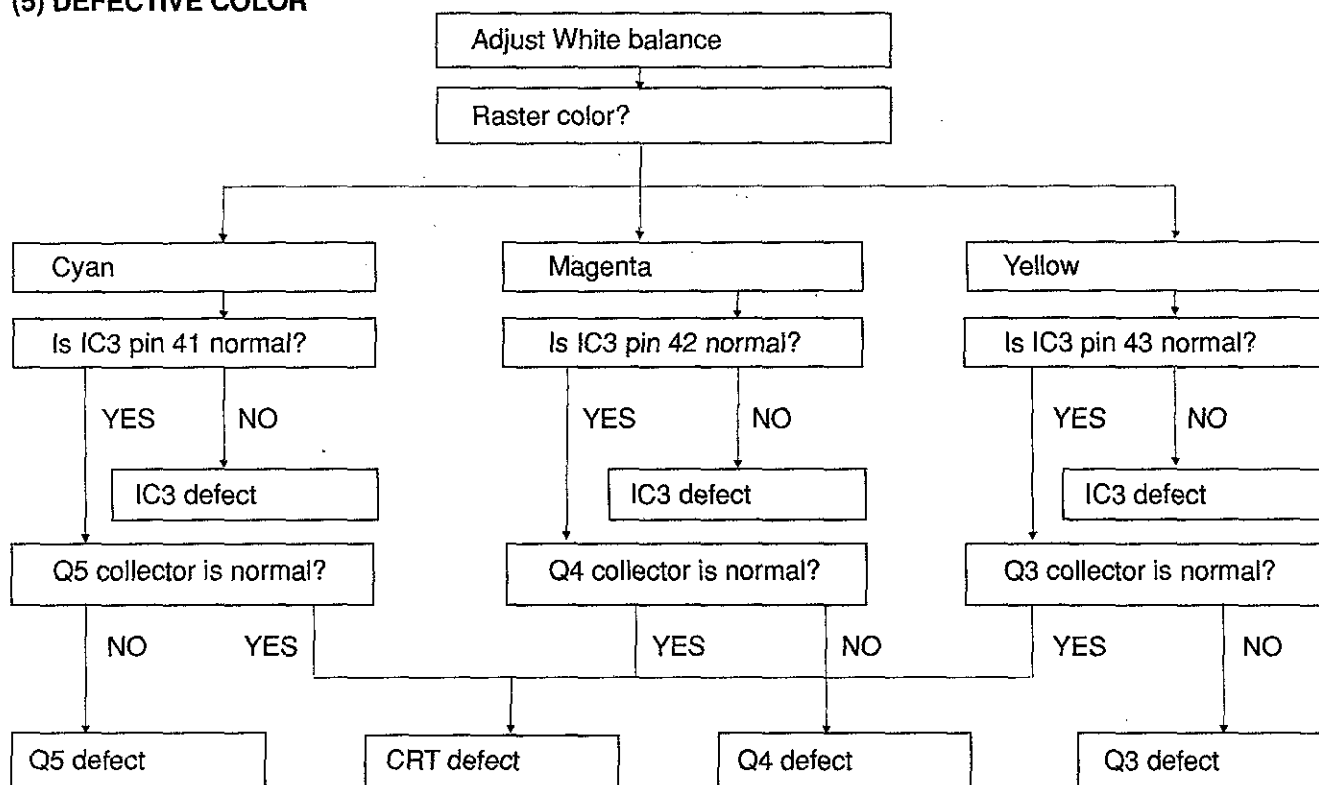
(3) NO HORIZ DEFLECT (ONLY V LINE)



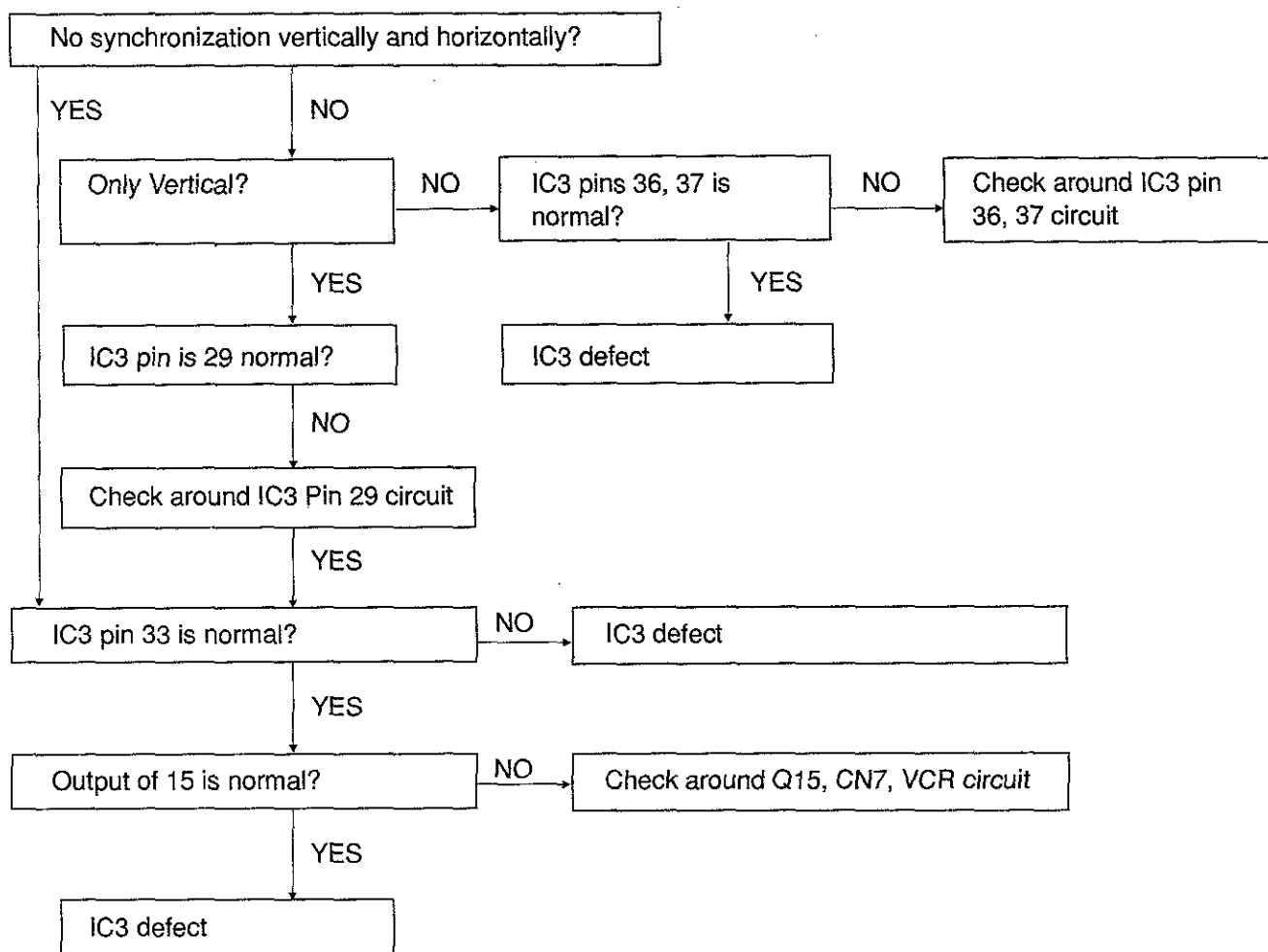
(4) NO COLOR



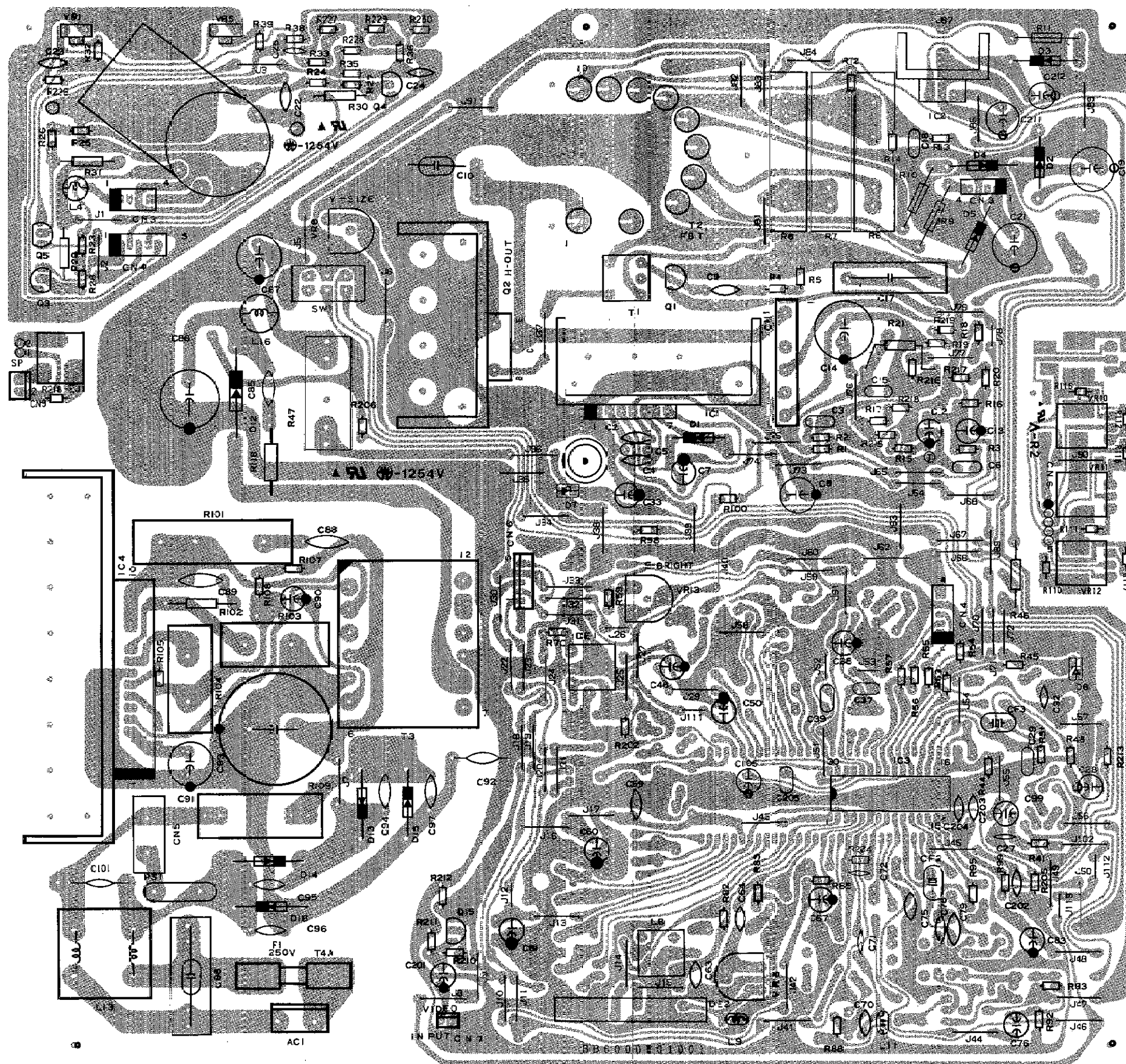
(5) DEFECTIVE COLOR



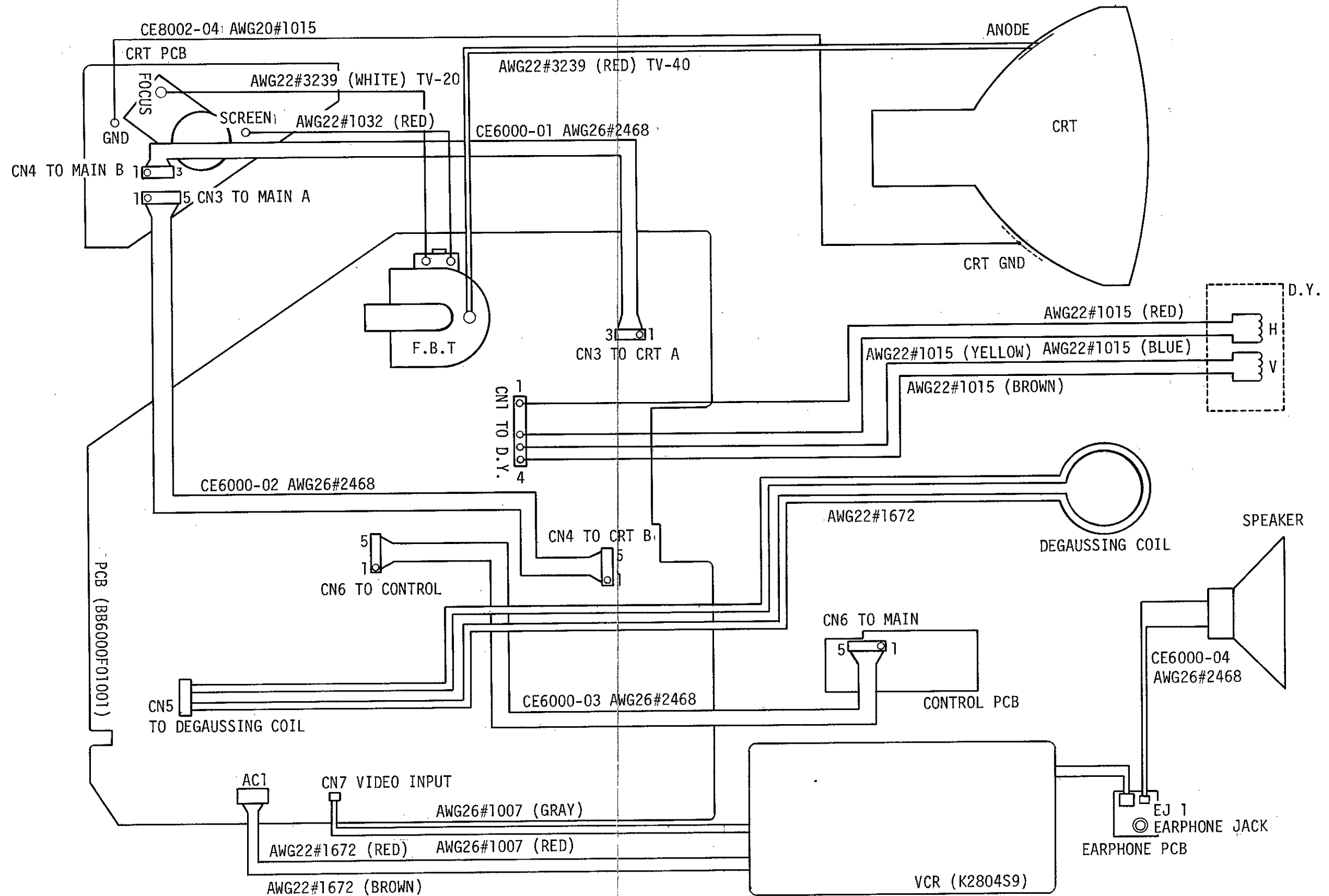
(6) NO SYNCHRONIZATION



5. P.C. BOARD TOP VIEW



6. WIRING DIAGRAM



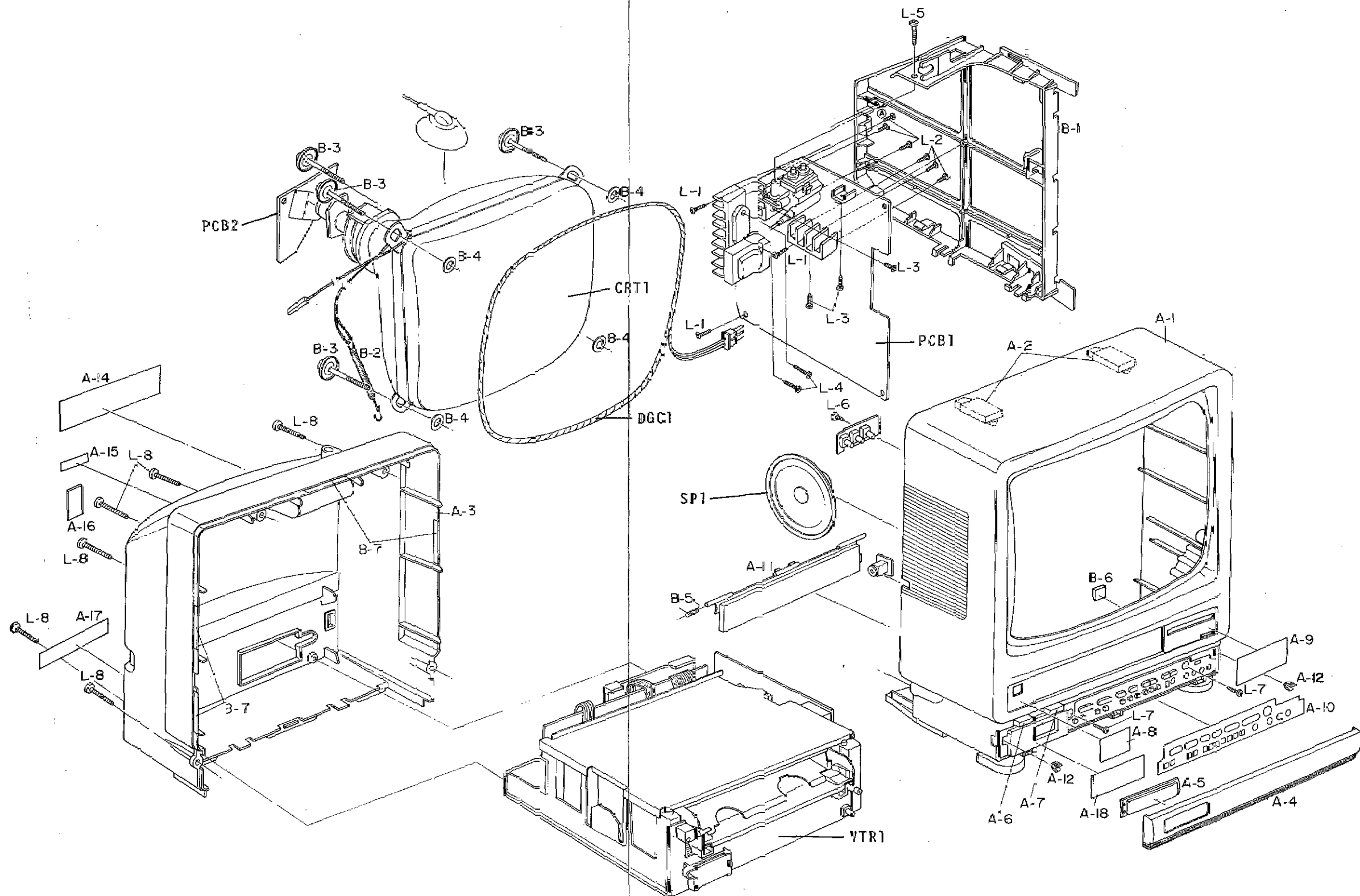
7. VOLTAGE CHARTS

	IC1	IC2	IC3						IC4
	LA7830	L78M12	TA8659AN						STK7348
1	0	18.0	1	8.5	31	6.4	61	11.8	40.1
2	11.3	0	2	7.7	32	6.4	62	6.1	0
3	22.7	11.8	3	8.5	33	6.9	63	11.8	NC
4	0.9		4	6.5	34	3.2	64	7.8	33.2
5	0.7		5	6.5	35	0.7			-1.1
6	22.4		6	11.8	36	7.3			0
7	1.3		7	3.3	37	3.1			-0.3
8			8	6.5	38	6.6			0.3
9			9	6.5	39	2.7			NC
10			10	5.9	40	8.8			301.0
11			11	0.8	41	3.6			
12	12	5.2	42	3.6					
13	13	5.2	43	3.6					
14	14	8.0	44	3.0					
15	15	5.9	45	3.1					
16	16	10.3	46	3.0					
17	17	3.4	47	6.7					
18	18	4.5	48	2.9					
19	19	0	49	6.9					
20	20	5.7	50	0					
21	21	0	51	6.8					
22	22	11.2	52	0					
23	23	7.8	53	0					
24	24	5.7	54	0					
25	25	5.9	55	6.1					
26	26	3.2	56	3.2					
27	27	10.8	57	5.5					
28	28	3.2	58	4.7					
29	29	0.9	59	3.2					
30	30	9.0	60	6.1					

INPUT Signal	Full color bar
Brightness	Center
Contrast	Center
Volume	Center

TR No.	TR TYPE	E	C	B	REMARK
Q1	2SC2271	0	62.6	0.4	
Q2	2SD1397	0	82.4	-0.1	
Q3	2SC2228	3.0	117.9	3.6	
Q4	2SC2228	2.96	128.0	3.5	
Q5	2SC2228	3.0	111.1	3.5	
Q6	2SC1815	0.01	0.04	0.8	
Q8	2SC1815	0.5	11.8	1.1	
Q10	2SC1815	0	0.04	0.8	
Q11	2SA933	5.9	0	4.5	
Q12	2SA933	5.0	0	5.9	
Q13	2SC1815	0	6.2	0	
Q14	2SC3331	0	6.8	0	
Q15	2SC1815	5.1	11.8	5.6	

8. EXPLODED VIEW (CABINET)



IC No.	T2	T3
PIN		115E475
1	83.3	AC 42.7
2	NC	301.2
3	107.6	NC
4	AC 6.1	2.6
5	107.8	0
6	3.5	AC 8.2
7	0	NC
8	7.4	AC 132.1
9	AC 35.5	0
10	AC 25.9	NC
11		NC
12		NC

9. MECHANICAL PARTS LIST

EXPLODED VIEW CABINET PARTS LIST...(TV)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
A- 1	*9A02768700	FRONT CABINET, <i>9A02766000</i>	
A- 2	*9A02768800	BOSS, (A)	
A- 3	*9A02769100	REAR CABINET,	
A- 4	*9A02767700	CONTROL DOOR,	
A- 5	*9A02769000	WINDOW, TIMER	
A- 6	*9A02768200	POWER KNOB,	
A- 7	*9A02768300	S/E KNOB,	
A- 8	*9A02768400	PLATE, (A)	
A- 9	*9A02768500	PLATE, (B)	
A-10	*9A02767800	CONTROL PLATE,	
A-11	*9A02767900	CASSETTE DOOR,	
A-12	*9A01106200	LATCH,	
A-14	*9A02766200	REFERENCE LABEL,	
A-15	*9A02765400	SERIAL NO., VD40397	
A-16	*9A02769200	COVER PLATE,	
A-17	*9A01442000	USER CAUTION LABEL,	
A-18	*9A02768600	TIMER PLATE,	
B- 1	*9A02766700	PCB HOLDER,	
B- 2	*9A01805800	TENSION SPRING,	
B- 3	*9A01443100	CRT MOUNTING SCREW,	
B- 4	*9A02766400	CRT SPACER, (C)	
B- 5	*9A02768000	DOOR SPRING,	
B- 6	*9A02768100	DOOR CUSHION,	
B- 7	*9A01443800	CLOTH, 0.5TX16X65	
CRT1	△ *9A01454900	CRT,	
DGC1	△ *9A02765900	DEMAGNETER COIL,	
DGC1	△ *9A01454500	DEMAGNETER COIL,	
L- 1	9A01443000	SCREW, TAP TIGHT M3X8	
L- 2	9A00040900	SCREW, S-T, P. HEAD M3X6	
L- 3	9A00869300	SCREW, B-T BIND HEAD M3X8	
L- 5	9A01444400	SCREW, TAPPING M5, 5X14	
L- 5	9A01807200	SCREW, TAP B HEAD M4X14	
L- 6	9A02333000	SCREW, T-TIG M3X8	
L- 7	9A02333100	SCREW, T-TI M3X12	
L- 8	9A02333200	SCREW, T-TI M4X18	
PCB1	*9A02766500	MMA-54 PCB ASSY, (MAIN)	
PCB2	*9A02766800	MCT-33 PCB ASSY, (CRT)	
SP-1	9A02767100	SPEAKER,	
SP-1	9A02767200	SPEAKER,	
SP-1	9A02767300	SPEAKER,	
SP-1	9A02767400	SPEAKER,	
VTR1	*9A02753900	VIDEO RECORDER K2803A6	

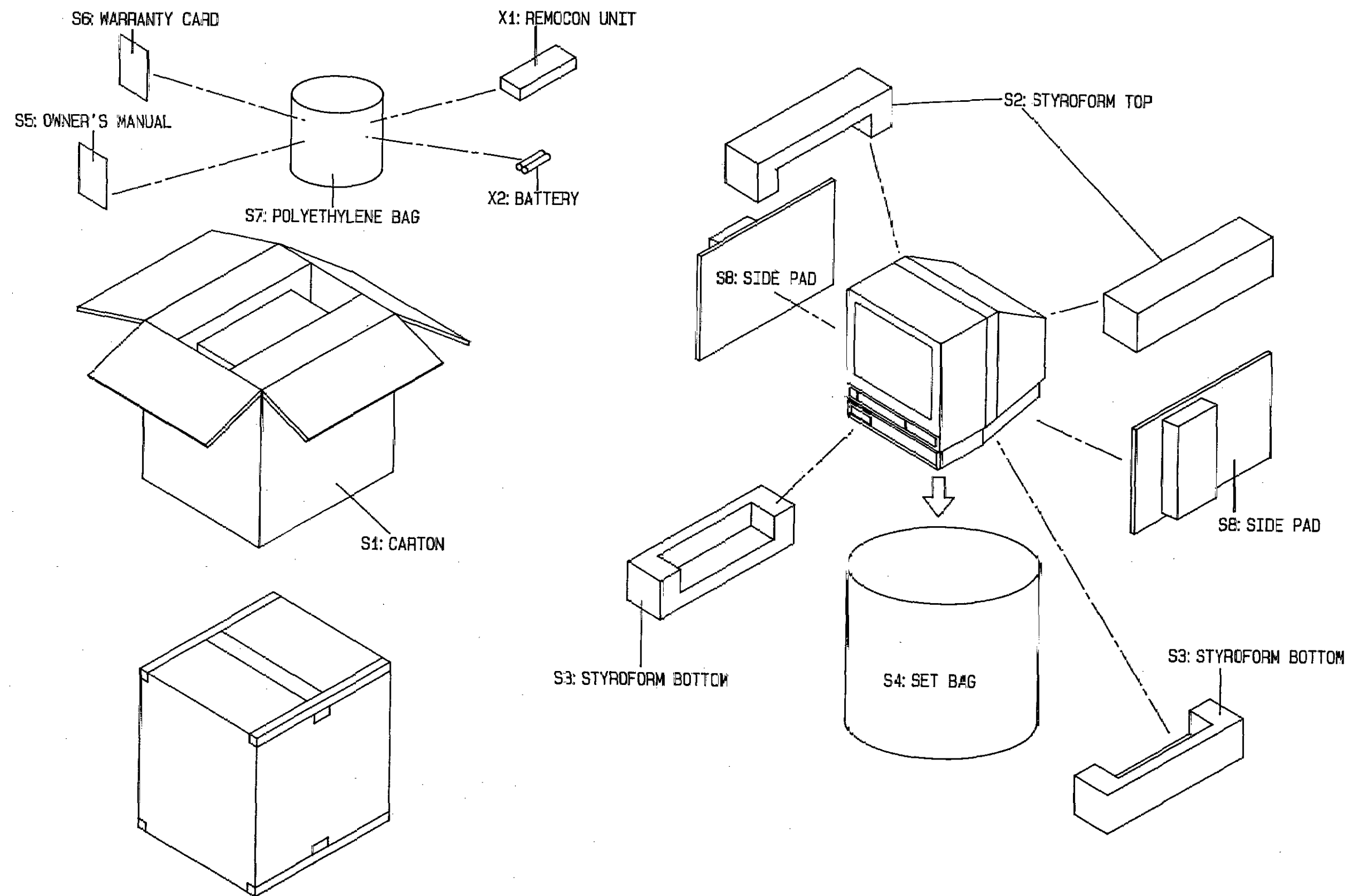
Parts marked with *require longer delivery time

INCLUDED ACCESSORIES PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
S- 5	*9A02333600	OWNER'S MANUAL,	
S- 8	9A02333800	VHF ANTENNA,	
S- 8	9A02333900	VHF ANTENNA,	
S- 9	9A02334000	UHF ANTENNA,	
S- 9	9A02334100	UHF ANTENNA,	
X- 1	*9A02765200	REMOCON UNIT, (MV-1480TV)	
X- 2	9A01027100	DRY BATTERY,	
X- 2	9A02395000	BATTERY,	

Parts marked with *require longer delivery time

10. EXPLODED VIEW (ACESSORY AND PACKING)



11. ELECTRICAL PARTS LIST

NOTE:

As regards the resistors and capacitors, refer to the circuit diagrams and the PCB assy drawings contained in this manual.

MMA-54 MAIN PCB ASSY...(TV)

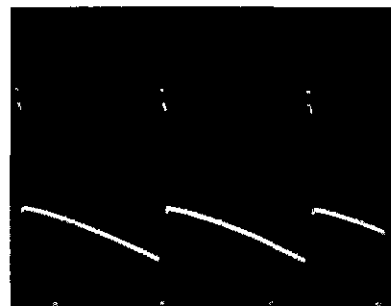
REF. NO.	PARTS NO.	DESCRIPTION
PCB1	*9A02766500	MMA-54 PCB ASSY, (MAIN)
	*9A02773500	PCB, MAIN
AC01	9A02771300	CONNECTOR, BASE 2P
CO10	9A02772300	C., FILM 6800PF/1.6KV
CO10	9A02772400	C., FILM 6800PF/1.6KV
CO12	9A02770400	C., TANT 2.2UF/25V K
CO14	9A01466600	C., ELEC 1000UF/25V M W/F
CO17	9A02772500	C., FILM 0.39UF/200V
CO17	9A01467400	C., FILM 0.39UF/200V
CO21	9A01467500	C., ELEC 4.7UF/250V M W/F
CO21	9A02405000	C., ELEC 4.7UF/250V M W/F
CO22	9A02408600	C., CERAMIC 0.01UF/2KV
CO60	9A00491100	C., ELEC 1000UF/16V M W/F
CO85,009	9A01468700	C., CERAMIC 0.001UF/1KV
CO86	9A02771500	C., ELEC 100UF/160V
CO87	9A02410800	C., ELEC 22UF/160V
CO87	9A02772600	C., ELEC 22UF/160V
CO87	9A01468900	C., ELEC 22UF/160V
CO88	9A01468600	C., CERAMIC 3300PF/1KV
CO89	9A01469000	C., CERAMIC 470PF/1KV
CO91	9A02770600	C., ELEC 10UF/160V
CO92	9A02411100	C., CERAMIC 0.0047UF/4KV
CO93	9A01808800	C., ELEC 150UF/400V
CO93	9A01468500	C., ELEC 150UF/400V
CO93	9A02410500	C., ELEC 150UF/400V
CO94-097	9A01468300	C., CERAMIC 0.0047UF/AC125V
CO98	△ 9A02411200	C., LINE ACROSS 0.1UF/250V
CO98	△ 9A02771600	C., LINE ACROSS LFX-0.1UF
CO98	△ 9A02771800	C., LINE ACROSS 0.1UF/250V
CI01	9A02770500	C., CERAMIC 3300PF/4KV
CASE1	9A02769700	SHIELD CASE,
CF02	9A02417500	X-TAL, 4.43MHZ
CF03	9A02403300	RESONATOR, CERAMIC CSB503F30
CN01	9A01455800	CONNECTOR, BASE 5P
CN01	9A01856300	CONNECTOR, BASE 5P
CN01	9A01815500	CONNECTOR, BASE 5P
CN05	9A01848900	CONNECTOR, BASE 2P
CN06	9A01451000	CONNECTOR, BASE 5P
CN07	9A02771200	CONNECTOR, BASE 2P
CN11	9A02773200	CRT SOCKET,
CN11	9A01459600	CRT SOCKET,
DO01	9A01438600	DIODE, GP10-4003
DO02	9A02773700	DIODE, 1SS130
DO03-005	9A02399900	DIODE, RGP15KL5001
DO06	9A02773600	ZENER DIODE, MTZ20B
DO07	9A01849600	ZENER DIODE, MTZ9.1B

MMA-54 MAIN PCB ASSY...(TV)

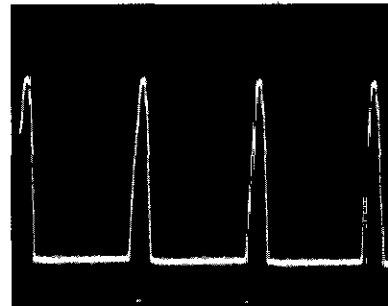
REF. NO.	PARTS NO.	DESCRIPTION
DO12	9A02408900	DIODE, RGP30G5001L
DO13-016	9A02409000	DIODE, GP15ML5014
DE01	9A02404400	DELAY LINE,
DE02	9A02772000	GLASS DELAY,
DE02	9A01455000	GLASS DELAY,
F001	△ 9A02410200	FUSE, 250V 4A
F001	△ 9A01455300	FUSE, 250V 4A
FH01,02	9A00521100	FUSE HOLDER,
HS-B	9A01442800	HEAT SINK, (B)
HS-J	9A02780100	HEAT SINK, (J)
HS-JS	9A02402700	HEAT SINK SHEET,
HS-K	9A02780200	HEAT SINK, (K)
HS-L	9A02780300	HEAT SINK, (L)
IC01	9A01817800	IC, LA7830
IC02	9A02779800	IC, NJM78M12FA
IC02	9A02779900	IC, AN78M12F
IC03	9A02401300	IC, TA8718N
IC04	9A01809700	IC, STK7348
JW-D	9A02769600	REED WIRE,
L-3	9A00869300	SCREW, B-T BIND HEAD M3X8
L-4	9A02334800	SCREW, T-TI M3X16
LO04	9A02387800	INDUCTOR, 100UH-K-AXT
LO04	9A02775600	INDUCTOR, 100UH
LO08	9A02402300	CASING COIL,
LO09	9A02775400	COIL, MICRO 10UH-K-AXT
LO09	9A02775300	COIL, MICRO 10UH
LO11	9A02389100	INDUCTOR, 33UH K
LO11	9A02775500	INDUCTOR, 33UH
LO13	△ 9A01809300	LINE FILTER,
LO16	9A01809400	POT TYPE COIL, 47UH
PS01	△ 9A02410400	POSISTOR,
Q001	9A02774300	TR., 2SC2271(D)-AE-MP
Q001	9A02774400	TR., 2SC2271(E)-AE-MP
Q002	9A02780000	TR., 2SD1397-CA
Q003-005	9A02775100	TR., 2SC2228(D)-AE-MP
Q003-005	9A02775200	TR., 2SC2228(E)-AE-MP
Q015	9A02774500	TR., 2SC1815(GR)
Q015	9A02774600	TR., 2SC1815(BL)
Q015	9A02774700	TR., 2SC3331(T)-AA-NP
Q015	9A02774800	TR., 2SC3331(U)-AA-NP
Q015	9A02774900	TR., 2SC1740S(Q)-TP
Q015	9A02775000	TR., 2SC1740S(R)-TP
R006	9A02770900	R., CEMENT 3.3K 5W
R007	9A02771000	R., CEMENT 3.3K 5W
R008	9A01812200	R., CEMENT 3.9 3W
R009	△ 9A02772100	R., FUSE 1 1W
R009	△ 9A01812300	R., FUSE 1 1W J
RO10,011	△ 9A02772200	R., FUSE 2.2 1W J
RO10,011	△ 9A01463800	R., FUSE 2.2 1W J
RO21	9A02771400	R., METAL 1W 560 J
RO29-031	9A01458500	R., METAL 15K 1W J
RO47	9A02771100	R., CEMENT 4.7K 7W

Parts marked with *require longer delivery time

12. WAVE FORMS



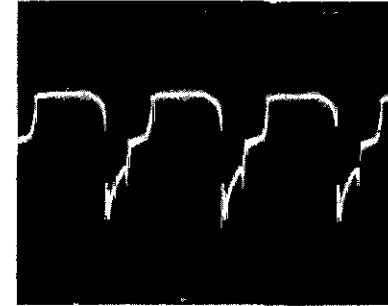
POINT=A
1DIV=20ms,2V



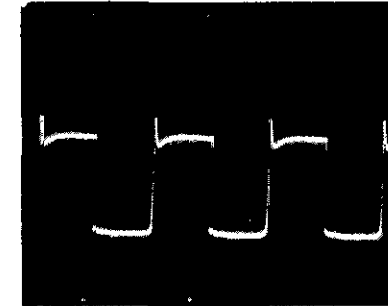
POINT=B
1DIV=20μs,5V



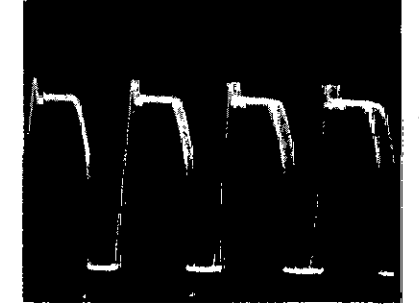
POINT=C
1DIV=20μs,250V



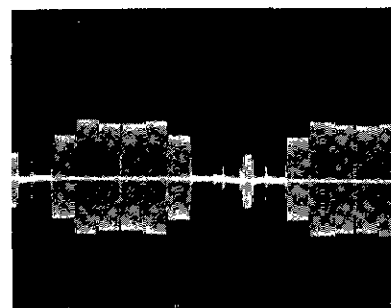
POINT=D
1DIV=20μs,1V



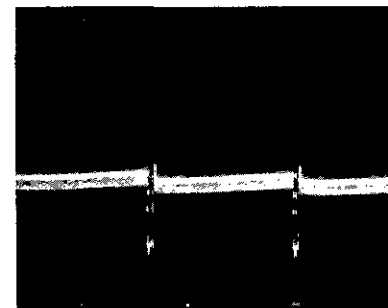
POINT=E
1DIV=20μs,50V



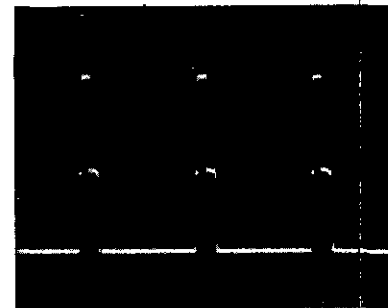
POINT=F
1DIV=10μs,100V



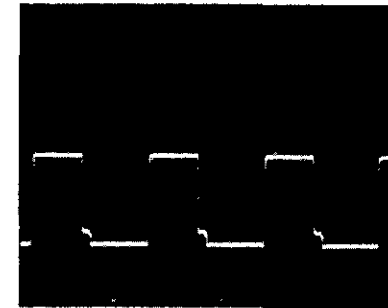
POINT=G
1DIV=10μs,100mV



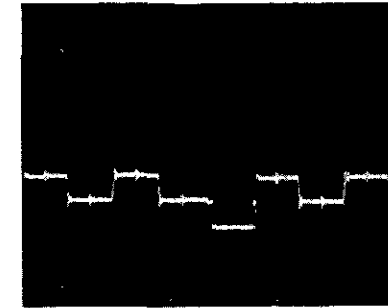
POINT=H
1DIV=5ms,0.5V



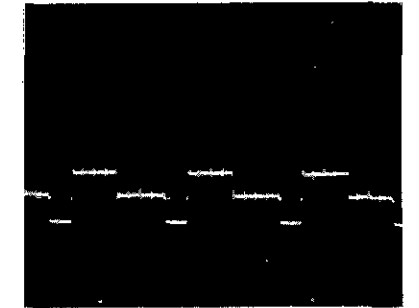
POINT=I
1DIV=20μs,2V



POINT=J
1DIV=20μs,2V



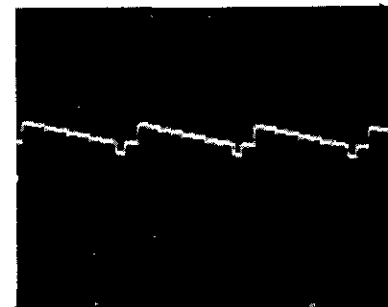
POINT=K
1DIV=10μs,2V



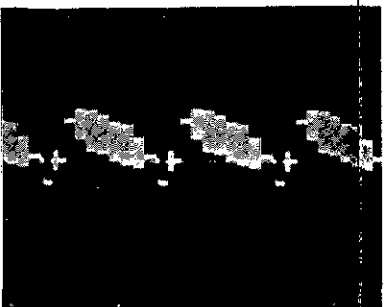
POINT=L
1DIV=20μs,2V



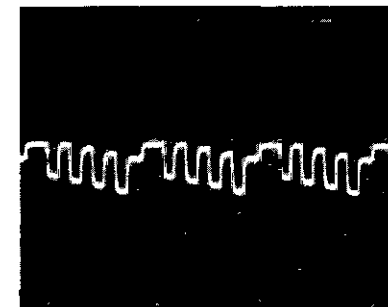
POINT=M
1DIV=20μs,2V



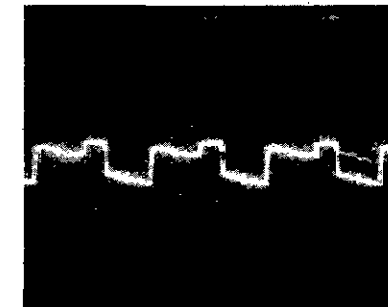
POINT=N
1DIV=20μs,50V



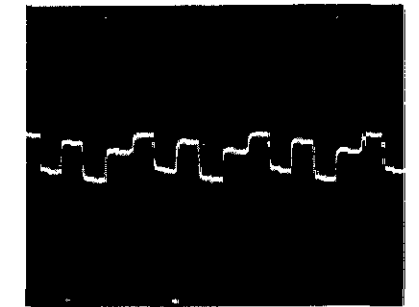
POINT=O
1DIV=20μs,1V



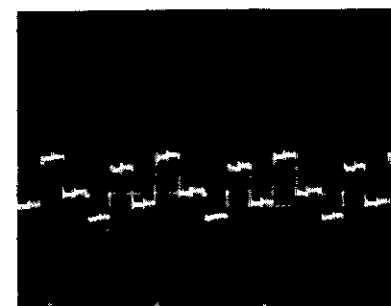
POINT=P
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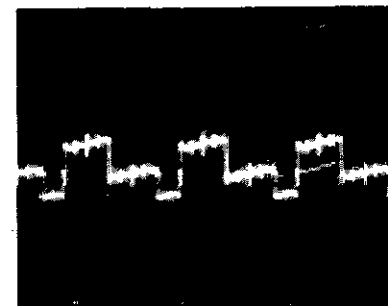
POINT=Q
1DIV=20μs,2V



POINT=R
1DIV=20μs,50V



POINT=S
1DIV=20μs,2V



POINT=T
1DIV=20μs,2V

MMA-54 MAIN PCB ASSY...(TV)

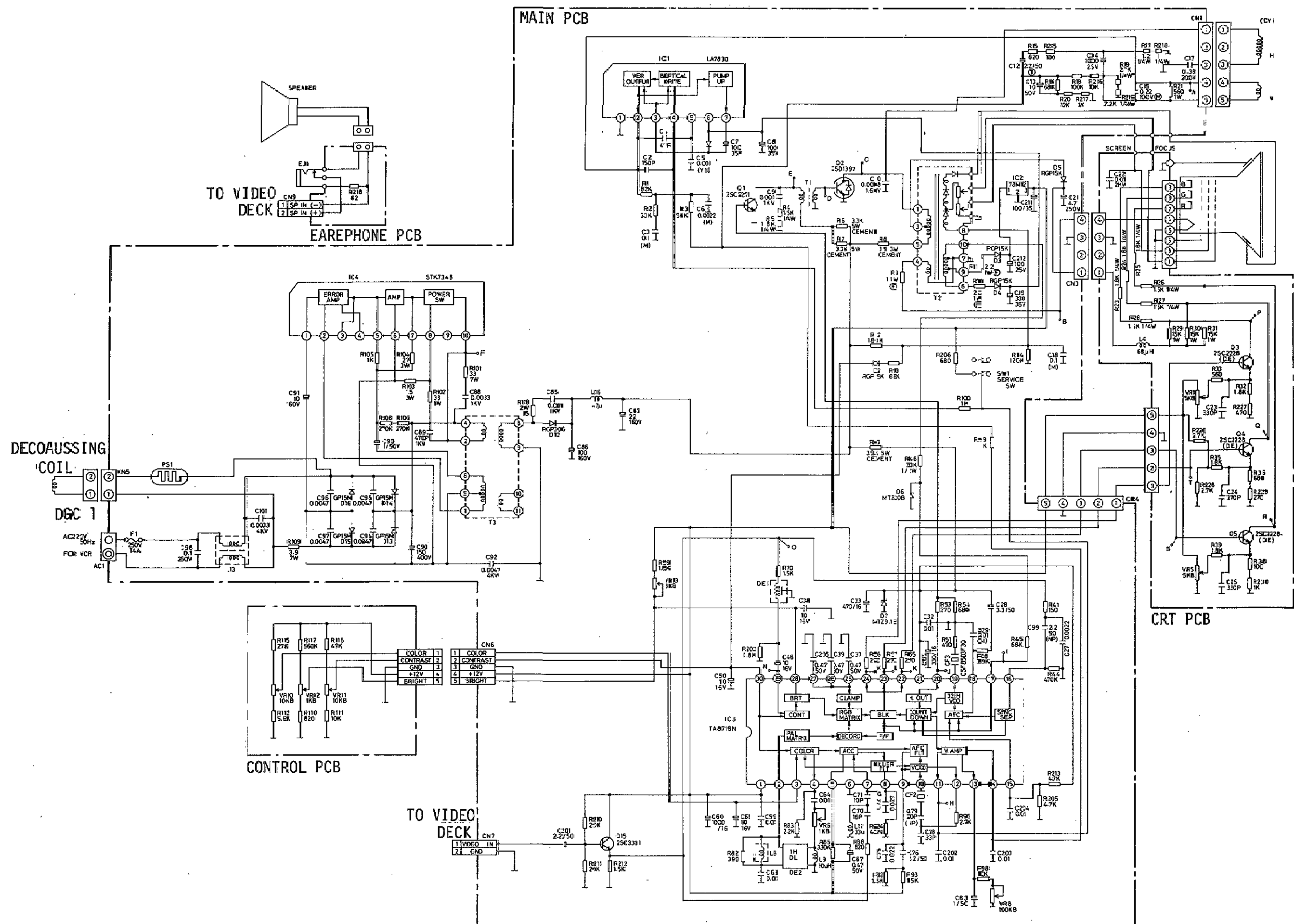
REF. NO.	PARTS NO.	DESCRIPTION
R101	9A01808400	R.,CEMENT 33 7W
R102	9A01464600	R.,METAL 1W 33 J
R103	9A01464200	R.,CEMENT 1.5 3W
R104	9A01808300	R.,CEMENT 27 3W
R109	9A02411300	R.,CEMENT 3.9 7W
R118	9A01464400	R.,METAL 2W 15 J
SW01	9A01818100	SLIDE SWITCH,
SW01	9A01456900	SLIDE SWITCH,
T001	9A01457400	H. DRIVE TRANS,
T002	△ 9A02771900	F.B.TRANS,
T002	△ 9A01457500	F.B.TRANS,
T003	△ 9A01457600	SWITCHING POWER TRANS,
TB01	9A01459700	CONNECTOR PIN 1P
VR01,03	9A02773300	R.,VR SEMI 5KB (VR)
VR01,03	9A01763100	R.,VR SEMI 4.7K B (VR)
VR02,04	9A02773400	R.,VR SEMI 1KB (VR)
VR02,04	9A02311600	R.,VR SEMI 1K B (VR)
VR05	9A02773300	R.,VR SEMI 5KB (VR)
VR05	9A01763100	R.,VR SEMI 4.7K B (VR)
VR06	9A02772700	R.,VR SEMI (FR)
VR06	9A01429700	R.,VR SEMI 1K B (FR)
VR06	9A02403800	R.,VR SEMI 1K (FR)
VR08	9A02773100	R.,VR SEMI (FR)
VR08	9A01729500	R.,VR SEMI 100K B (FR)
VR08	9A02403900	R.,VR SEMI 100K B (FR)
VR13	9A02772800	R.,VR SEMI
VR13	9A02772900	R.,VR SEMI 3KB (FR)
VR13	9A02773000	R.,VR SEMI 3.3KB (FR)
WA-5	9A02769300	WIRE ASSY,
WA01	9A02769400	WIRE ASSY,
WA02	9A02769500	WIRE ASSY,

MCT-33 CRT PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
PCB2	*9A02766800	MCT-33 PCB ASSY, (CRT)
	*9A02766800	PCB, B8200UA (CRT)
CN09	9A02781000	CONNECTOR, BASE 2P (PH)
CN10	9A02781100	CONNECTOR, BASE 2P
EJ01	9A02780900	JACK, PHON
VR10,11	9A02780700	VARIABLE RESISTOR, 10K B
VR10,11	9A02780800	VARIABLE RESISTOR, 10K B
VR12	9A02780500	VARIABLE RESISTOR, 1K B
VR12	9A02780600	VARIABLE RESISTOR, 1K B
WA03	9A02780400	WIRE ASSY,

Parts marked with *require longer delivery time

13. SCHEMATIC DIAGRAM



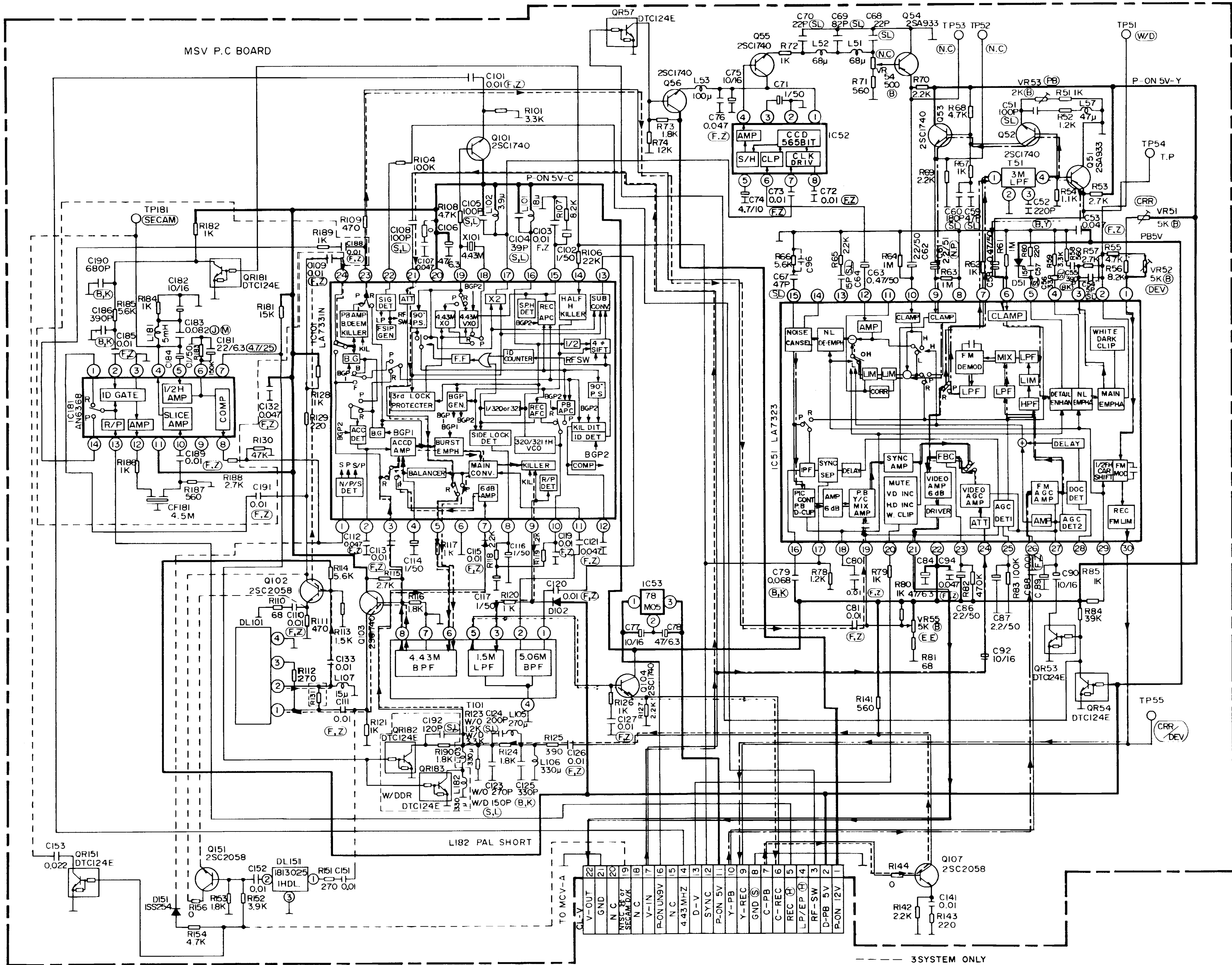
15. SCHEMATIC DIAGRAM

VIDEO

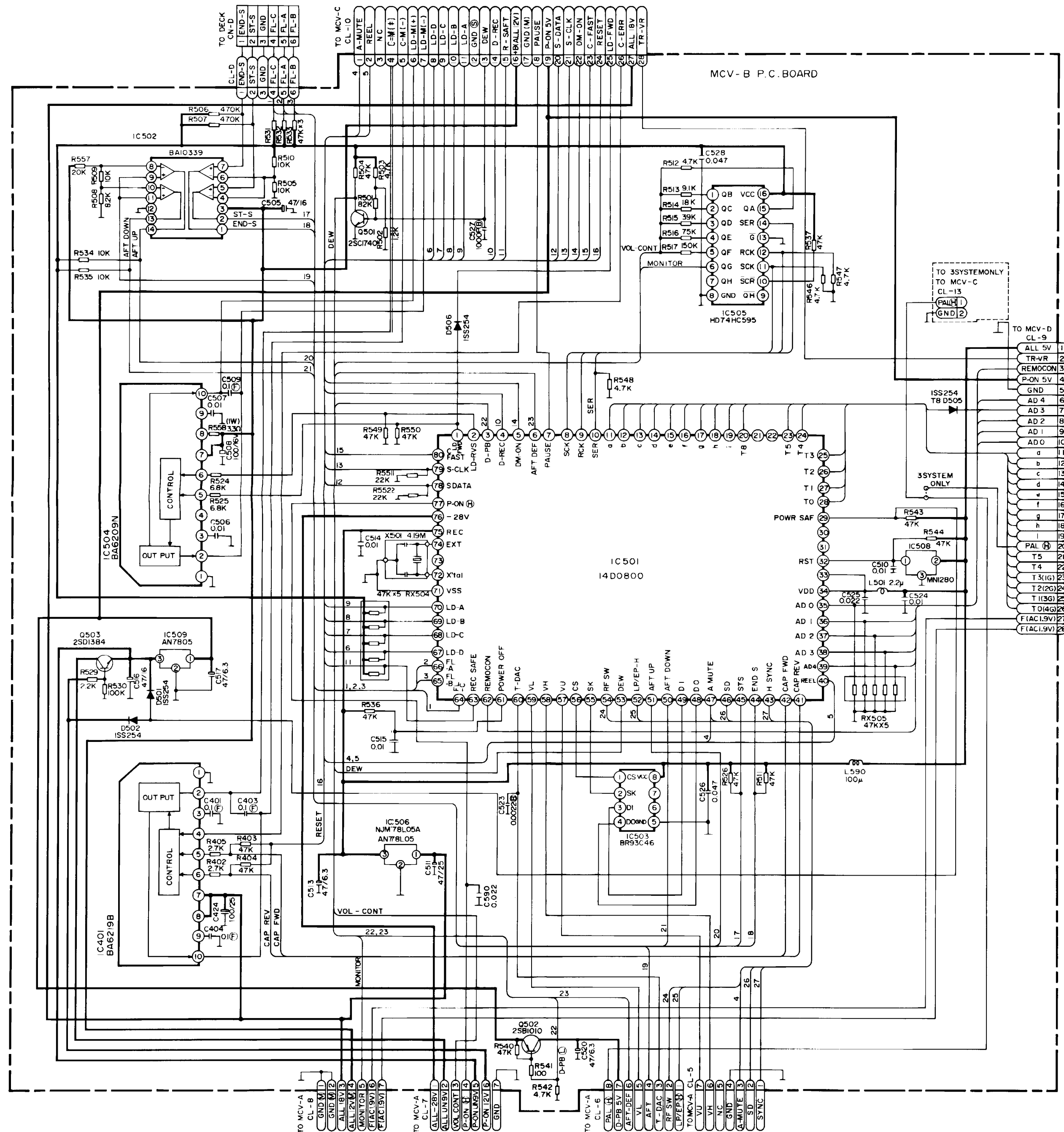
- NOTES:
- 1. ALL RESISTANCE VALUES ARE INDICATED IN OHM (K=10³, M=10⁶).
 - 2. ALL CAPACITANCE VALUES ARE INDICATED IN μF (P=10⁻⁶ μF).
 - 3. VOLTAGES ARE MEASURED WITH SSM (Z > 10K OHM) FRONT POINT INDICATED TO CHASSIS GROUND AT NO SIGNAL CONDITION UNLESS OTHERWISE NOTED. (SEE VOLTAGE CHART.)
 - 4. CAPACITOR TYPES ARE (PL) = POLYPROPYLENE, (SC) = SEMI CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

WARNING:

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



SYSTEM CONTROL/SERVO



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

WARNING:

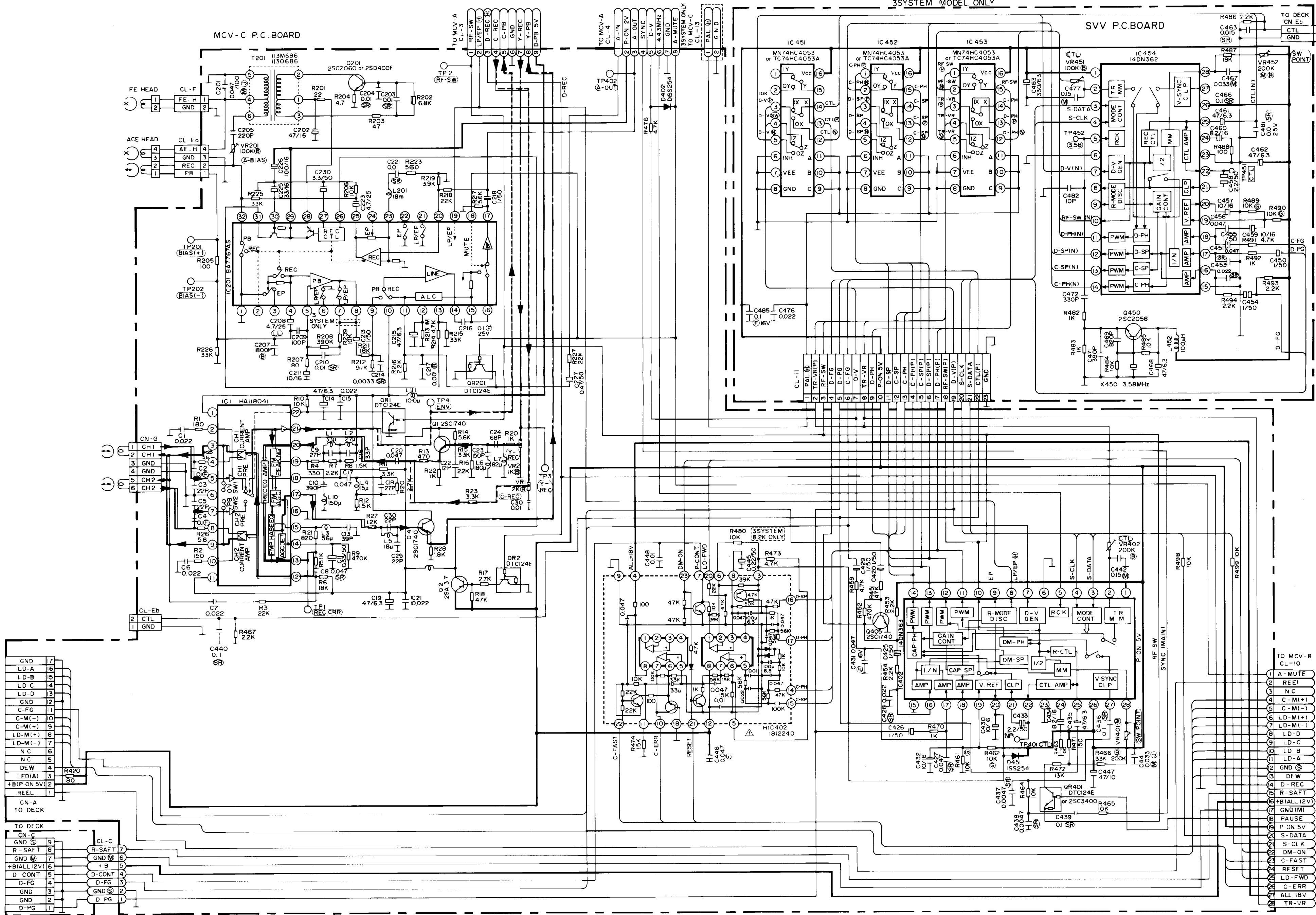
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY Δ SHOWING ON THIS SCHEMATIC DIAGRAM. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS. DON'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING. SERVICE PERSONNEL SHOULD MAKE LEAKAGE CURRENT OR RESISTANCE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

HEAD AMP/AUDIO/SERVO/3 SYSTEM

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

WARNING:

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



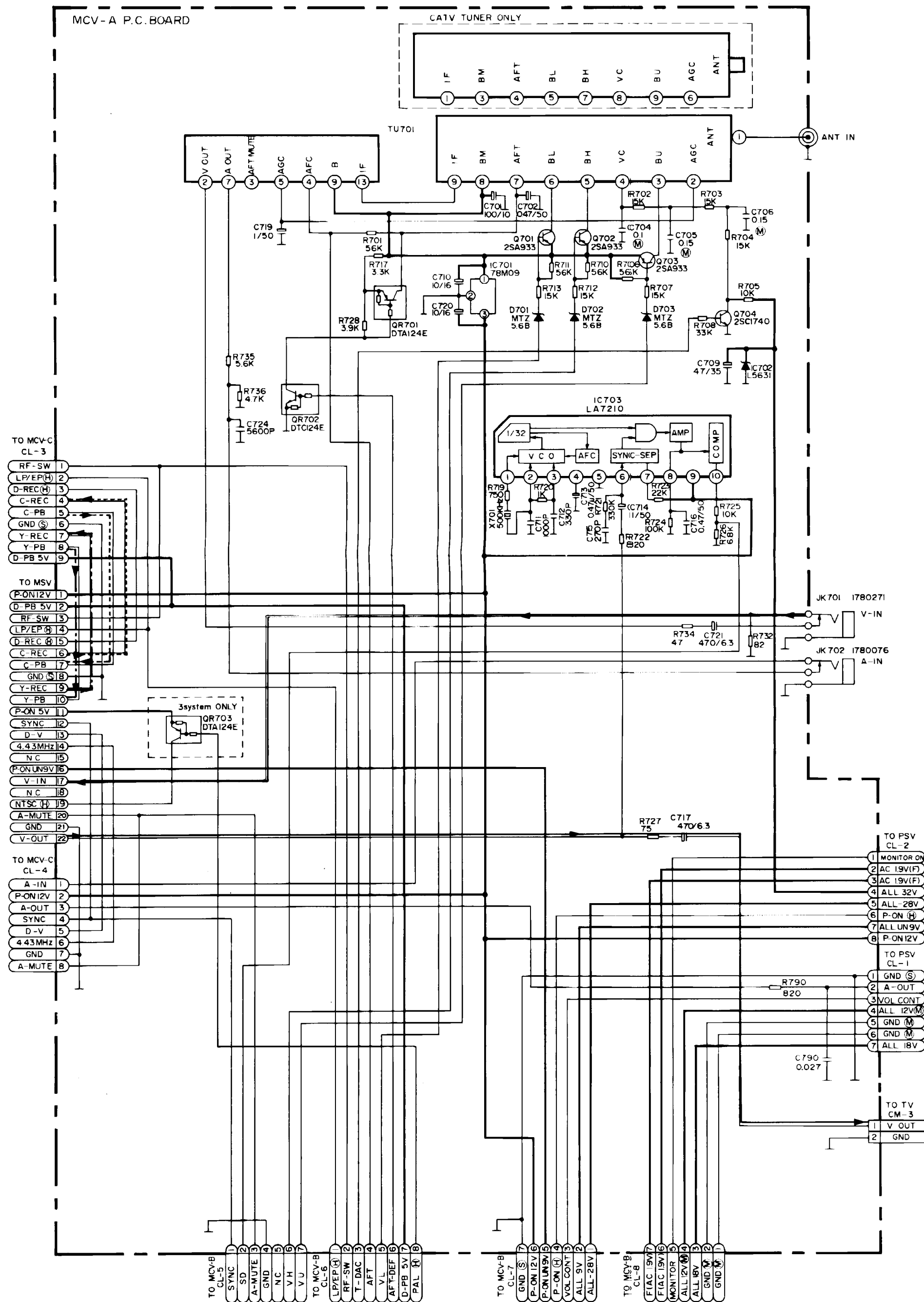
Play Mode

Rec. Mode

- Luminance + Chrominance
- Luminance
- Chrominance

- Luminance + Chrominance
- Luminance
- Chrominance

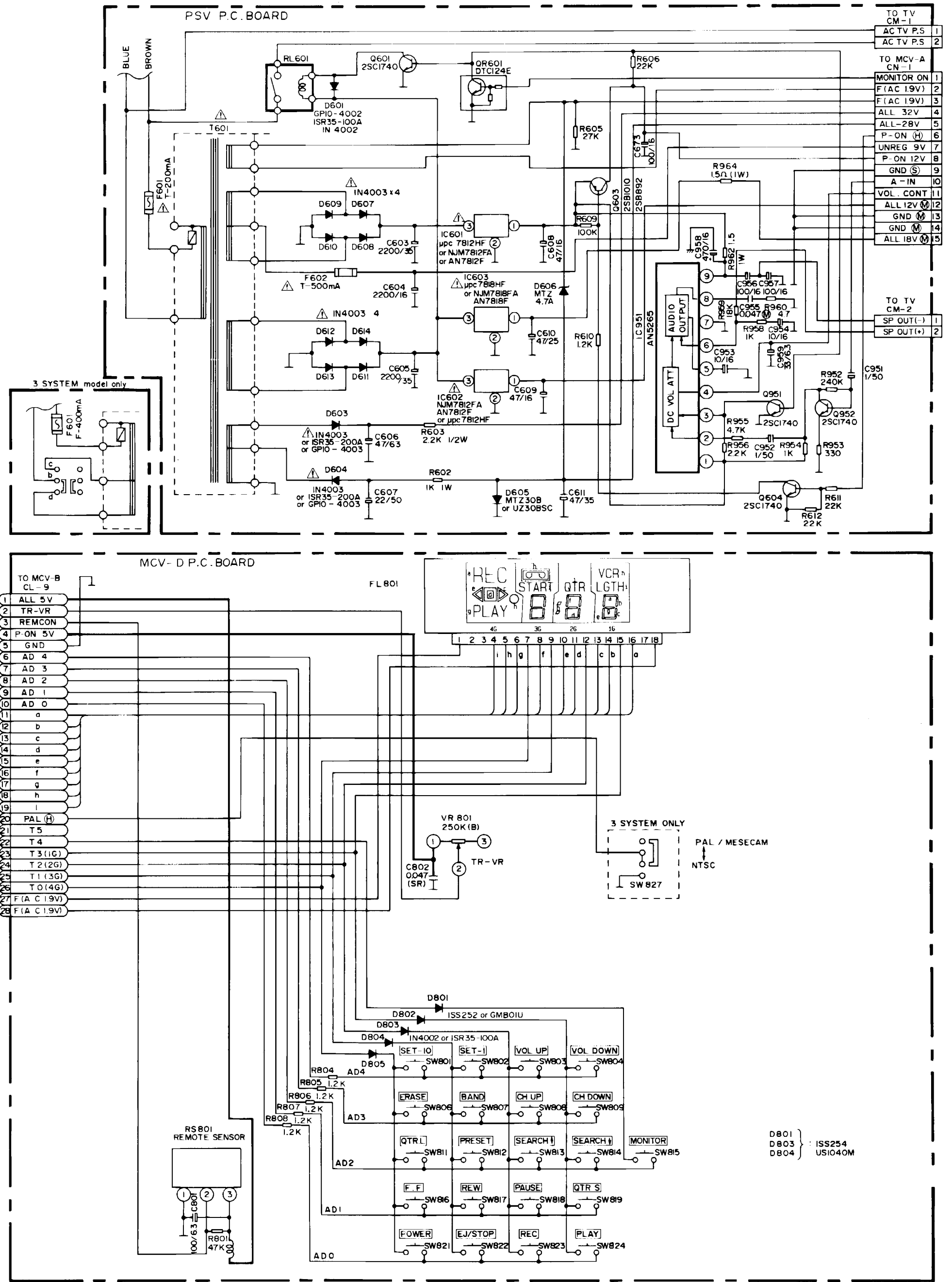
TUNER/POWER SUPPLY/CONTROL



WARNING:
REPLACE PARTS WHICH HAVE 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 SHOULD MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

NOTES:

1. ALL RESISTANCE VALUES ARE INDICATED IN OHM ($K=10^3$, $M=10^6$).
2. ALL CAPACITANCE VALUES ARE INDICATED IN μF ($P=10^{-8}$ μF).
3. VOLTAGES ARE MEASURED WITH SSVM ($Z: > 10K$ OHM) FRONT POINT INDICATED TO CHASSIS GROUND AT NO SIGNAL CONDITION UNLESS OTHERWISE NOTED. (SEE VOLTAGE CHART.)
4. CAPACITOR TYPES ARE (PL) = POLYPROPYLENE, (SC) = SEMI-CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

**Rec. Mode**

- Luminance + Chrominance

- Luminance

Chrominance

Play Mode

Luminance + Chrominance

Luminance

Chrominance