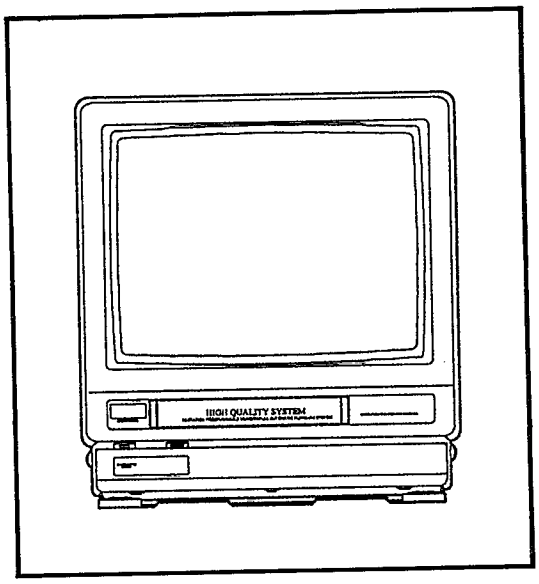


TEAC®

VHS PAL

MV-1480MKII

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

5704054700

Effective;July 1991

CONTENTS

GENERAL SPECIFICATIONS

A) System<TV section>

1) CRT :14", Inline gun, 90° Def.
2) Color system :PAL B/G
3) Receiving channel :[VHF Low] 0–5ch
[VHF High] 5A–11ch
[Australia ch] [UHF] 21–69ch
(16 stations are located in compartment)
4) Tuning system :Voltage synthesizer system
5) Control (The key to oprate * mark features are located in compartment)

Power	:Push
*Channel up	:Push
*Channel down	:Push
*Volume up	:Push
*Volume down	:Push
Stop/Eject	:Push
*Play	:Push
*Still/Pause	:Push
*Record	:Push
*Rewind	:Push
*F.Fwd	:Push
*Qtr start	:Push
*Qtr lenght	:Push
*Monitor	:Push
*Tracking	:Rotary
*Preset	:Push
*Set 10	:Push
*Set 1	:Push
*Search (+/-)	:Push
*Erase	:Push
*Band	:Push
*Contrast	:Rotary (W/center Crick)
*Color	:Rotary (W/center Crick)
*Brightness	:Rotary (W/center Crick)
*Auto repeat	:Slide switch

6) Connector & jack

Antenna	:75 ohm IEC jack
Video In	:Pin jack (for recording)
Audio In	:Pin jack (for recording)
Earphone	:3.5 ϕ jack (switched)

7) Degauss :Automatic degaussing
8) Speaker :3" Round type (Located on side)
9) Audio output power :0.9W

B) System <VCR section>

1) Recording system :Twin head herical scanning
:HQ system
2) Loading system :Front loading System
3) Video signal :PAL 625 line, 50Hz
4) Tape format :Width 1/2", 1 audio track
5) Rec/Play time sp :4hours (E-240)
6) Tape speed sp :23.39mm/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, REW, QTR, Lengh, Tape-in, Start, Channel, Band, Dew)

E) Mechanical

1) Dimension :362(W)X366(D)X399(H)mm
2) Cabinet :All plastic cabinet
3) Weight :13.5Kg
4) Packing Weight :16.0Kg

F) Power supply

1) Rating :AC 240V/50Hz
2) Consumption :85W
3) AC cord :6ft PVC cord

G) Others

1) Head life time :1000H
(Change tape par every 200H)
2) Regulations :SAA Passable

H) Accessories

1) Remote Control unit
2) 2-AA (IEC R02) batteries for remote control unit
3) Instruction book
4) Rabbit ear antenna for VHF
5) Loop antenna for UHF
6) UHF/VHF comviner

PRACTICAL SERVICE FIGURE

* All measurements described under Funai Measurement method and Funai standard test tapes.
* Test input terminal ..... Video input (1Vp-p)
  ..... Audio input (-10dBs)

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal resolution	F6M	Line	230	220
2. Video S/N ratio	F6D	dB	43	38
3. Audio S/N ratio	F6A	dB	41	38
4. Wow & Flutter WRMS/CCIR	F6L	%	0.3	0.5
5. Jitter	F6N	us	0.07	0.25
6. Video S/N ratio	R/P	dB	43	38
7. Audio S/N ratio	R/P	dB	41	37
8. Audio freq.resp. 100Hz	-20dBs in	dB	-3.6	+/-8
6KHz			+2.2	+/-8

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Channel	VHF Low	CH	0–5	
	VHF High	CH	5A–11	
	UHF	CH	21–69	
2. Intermediate freq.	Picture	MHz	36.875	
	Sound	MHz	31.375	
3. Video S/N	(10ch)	dB	44	38
4. Audio S/N (W/LPF)	(10ch)	dB	45	38

<AUDIO>

*** All Item measured across 8ohm speaker output terminal.**

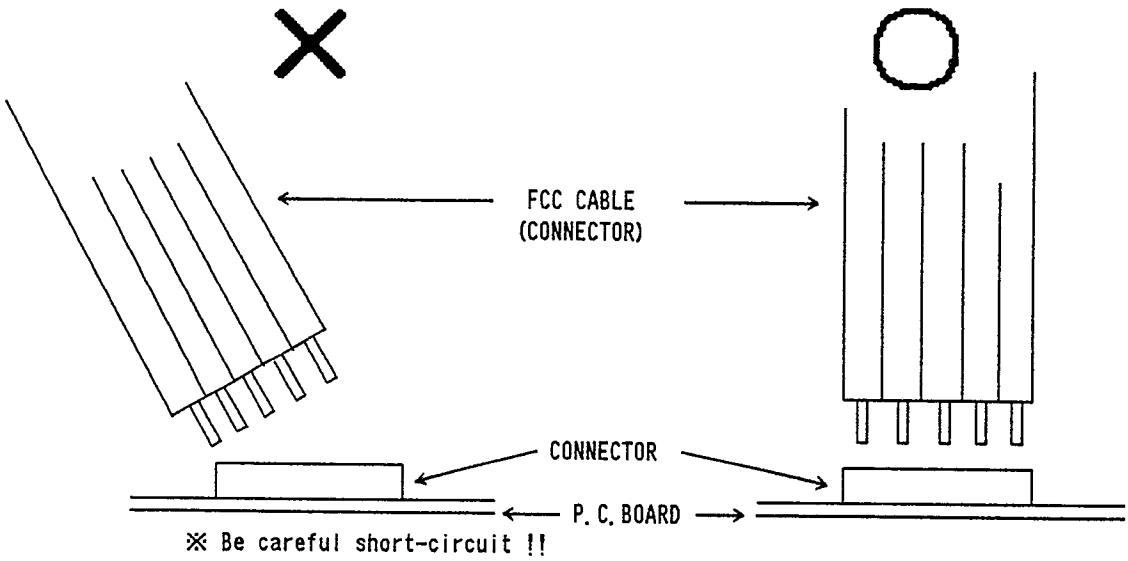
Description	Condition	Unit	Nominal	Limit
1. Audio Max. output		W	0.9	0.7
2. Audio S/N (W/LPF)	500mW	dBs	45	38
3. Audio distortion (W/LPF)	500mW	%	3	5
4. Audio freq.response (W/LPF)	50mW	100Hz dB	-3	-7
		8KHz dB	+2	-5

Description	Condition	Unit	Nominal	Limit
1. Deflection frequency	Horizontal	KHz	15.625	
	Vertical	Hz	50	
2. Over scan	Horizontal	%	90	
3. Linearity	Horizontal	%		10
	Vertical	%		7
4. High voltage		KV	22	

<VIDEO/CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	m/m		0.3
	Corner			1.5
	Side			1.2
2. Contrast control range		dB	6	>4
3. Brightness	APL100%	ft-L	55	40
4. Color temperature		°K	8500	
5. Resolution Horizontal	Horizontal	Line	300	280
	Vertical	Line	300	270

CAUTION



1. When you connect or disconnect FFC 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 palallel into the connector, not aslant.

STANDARD NOTES

Temperature character of mark

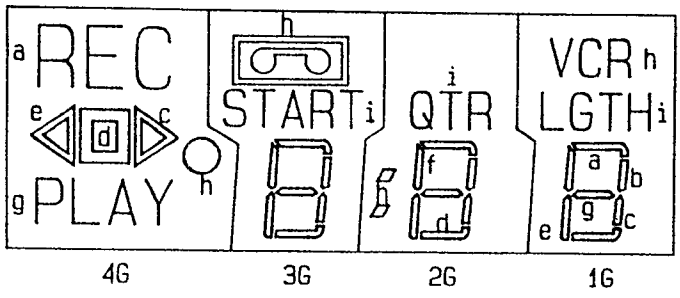
Mark	Capacity change rate	Standard temperature	Use temperature of extent
Ⓑ	± 10 %	20 °C	-25 ~ +85°C
Ⓕ	+30−80%	20 °C	-25 ~ +85°C
(SR)	± 15 %	20 °C	-25 ~ +85°C
(Z)	+30−80%	20 °C	-10 ~ +70°C

WARNING

Replacement parts which special safety characteristics are identified by ⚠ showing on this schematic diagram. Replace these critical components with recommended replacement parts. Don't degrade the safety of this set through improper servicing. Service personnel to make leakage current or resistance measurement to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

NOTES

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



[VCR SECTION]

SAFETY CHECK AFTER SERVICING

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

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

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

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

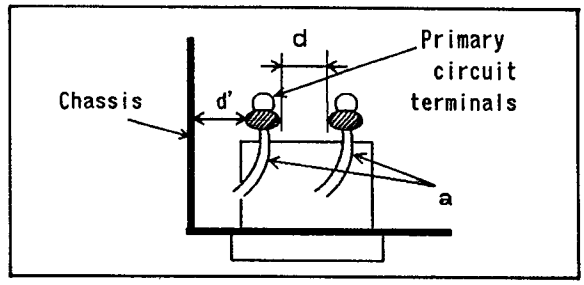


Table 1 : Ratings for selected areas

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

* Class II model only.

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

4. Leakage current test

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

Measuring Method : (Power ON)
Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts.
Use an AC voltmeter to measure across both terminals of load Z.
See figure and following table.

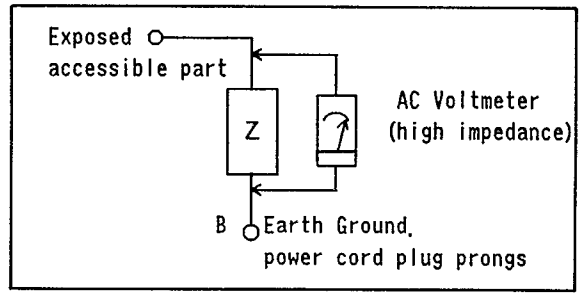


Table 2 : Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	1≦0.5 mA rms	Exposed accessible parts
110 to 130 V 200 to 240 V	Europe Australia	2 kΩ	1≦0.7 mA peak 1≦2 mA dc	Antenna terminals
		50 kΩ	1≦0.7 mA peak 1≦2 mA dc	Other terminals

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

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.

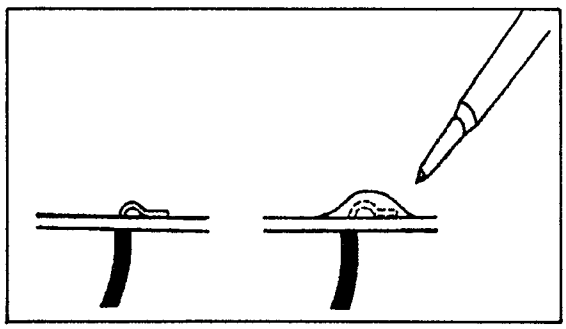
● Precautions during Servicing

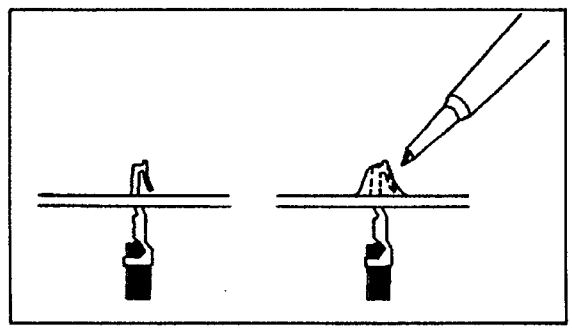
1. Locations requiring special caution are denoted by labels and inscribed on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

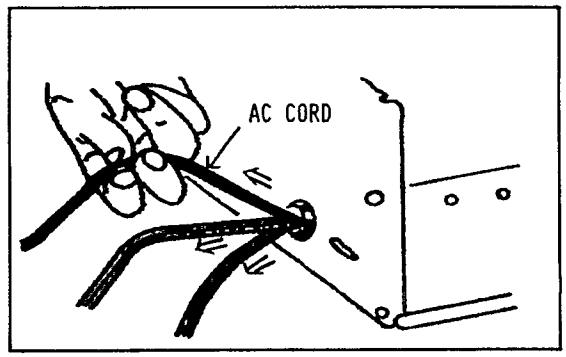
2. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with specified part numbers.

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.

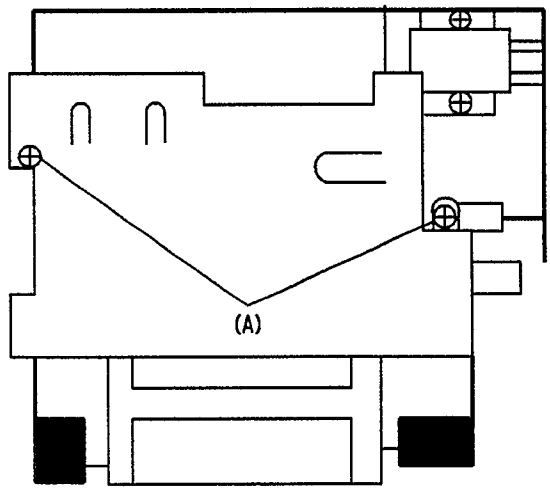
9. Also check areas surrounding repaired locations.

1. DISASSEMBLY INSTRUCTIONS (SET)

Note : TV cabinet removal

1-1. Panel top removal

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



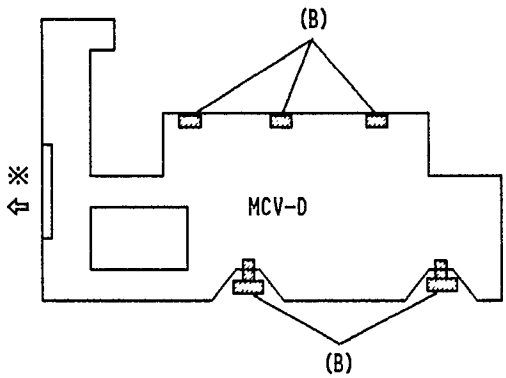
(Fig. 1-1 Top View)

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

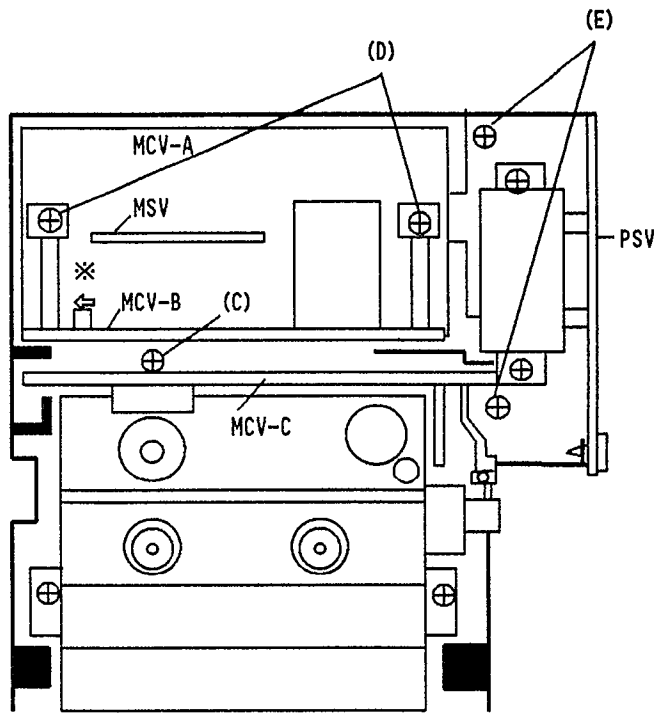
- Unfasten 5 hooks (B). (Fig. 1-2)

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. 1-2 Front)



(Fig. 1-3 Top View)

1-4. PSV P. C. Board

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

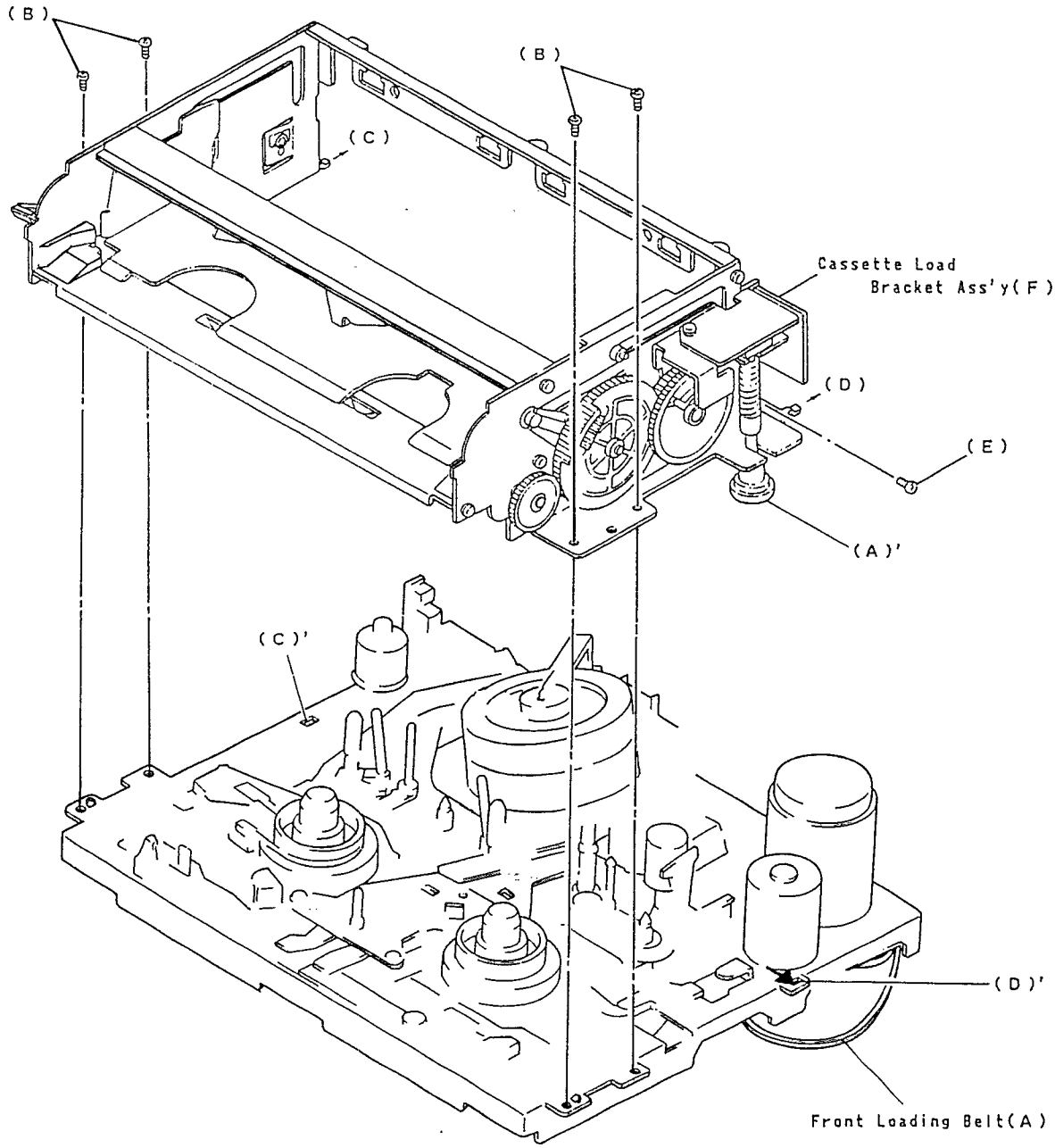
2. DISASSEMBLY INSTRUCTIONS (DECK)

(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.)

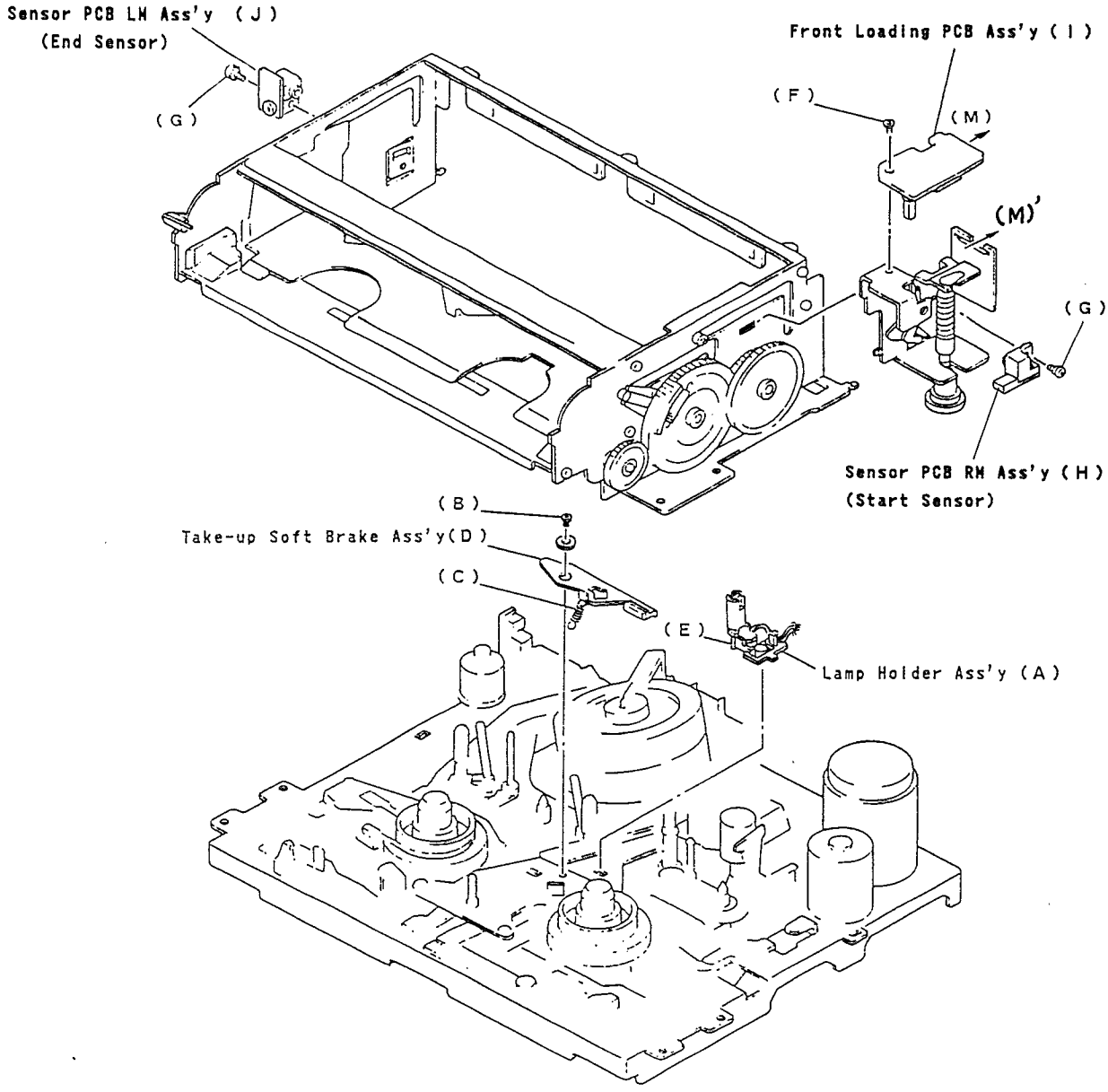
(2) Cassette Load Bracket Ass'y

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



(3) Photo Sensor

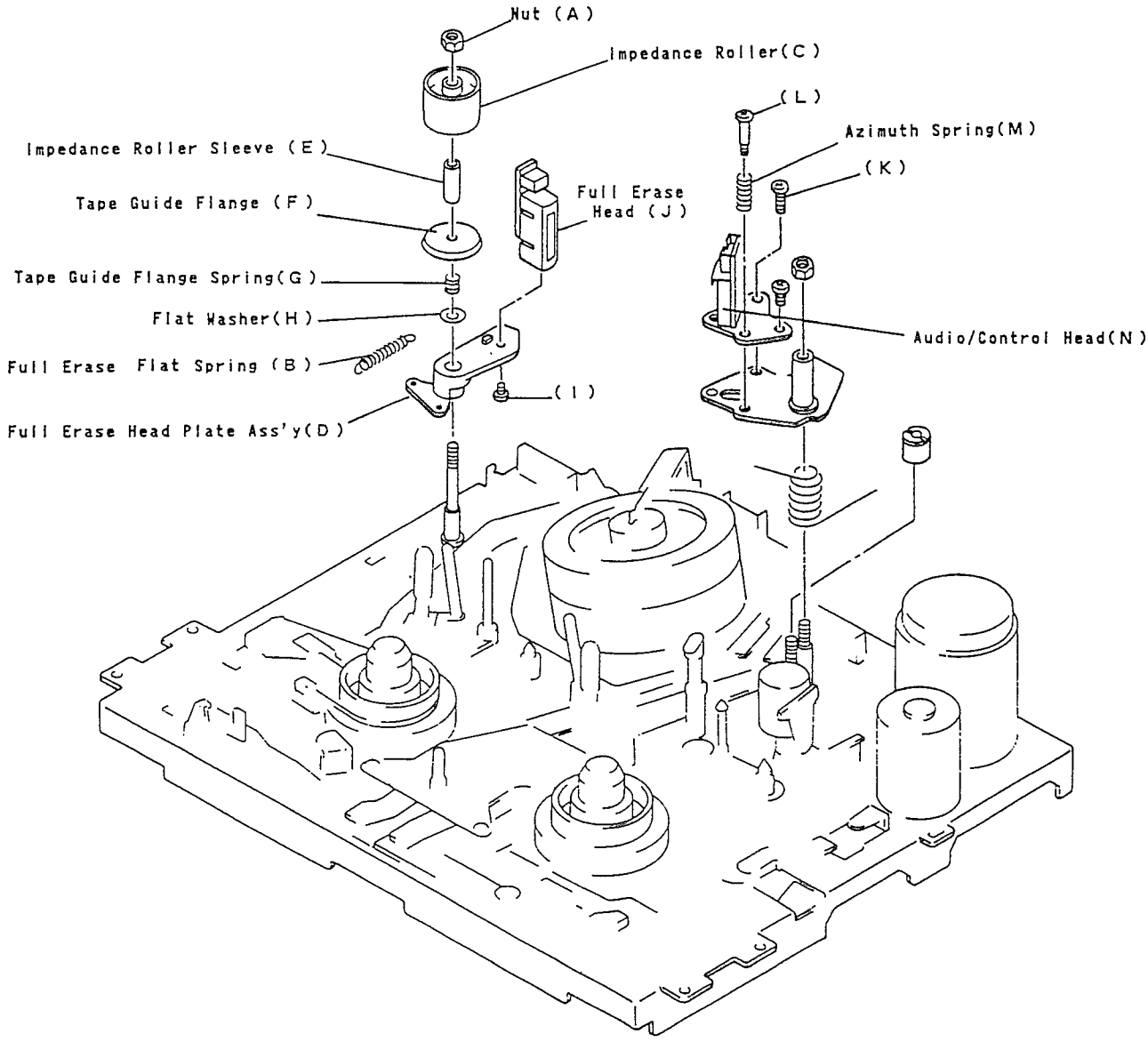
1. Replacement of Lamp Holder Ass'y (A).
   (1) Remove screw (B), move away the Take-up Soft Brake Ass'y (D).
   (At this time, do not take off the spring (C).)
   (2) Hold Lamp Holder Ass'y (A) and pull up to remove the hook (E) from the chassis.
   (3) Turn the Lamp Holder Ass'y (A) counterclockwise 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

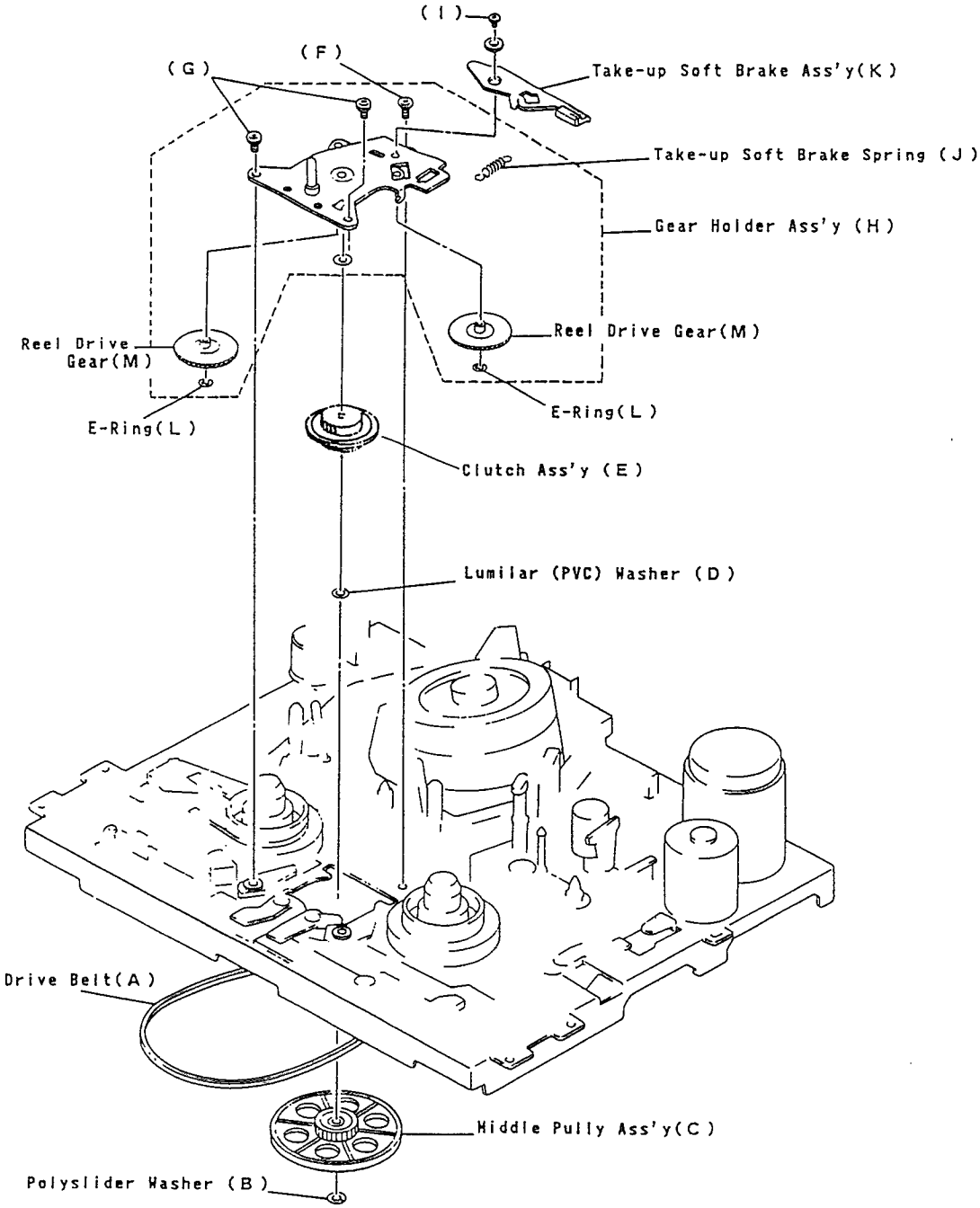
1. Erase Head (except Play Only Model)
   (1) Remove Nut (A).
   (2) Remove Spring (B).
   (3) Take out the Impedance Roller (C), and pull up the Full Erase Head Plate Ass'y (D).
   (Carefully not to lose parts (E) (F) (G) (H) at the time of the Full Erase plate removal.)
   (4) Remove screw (I) and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



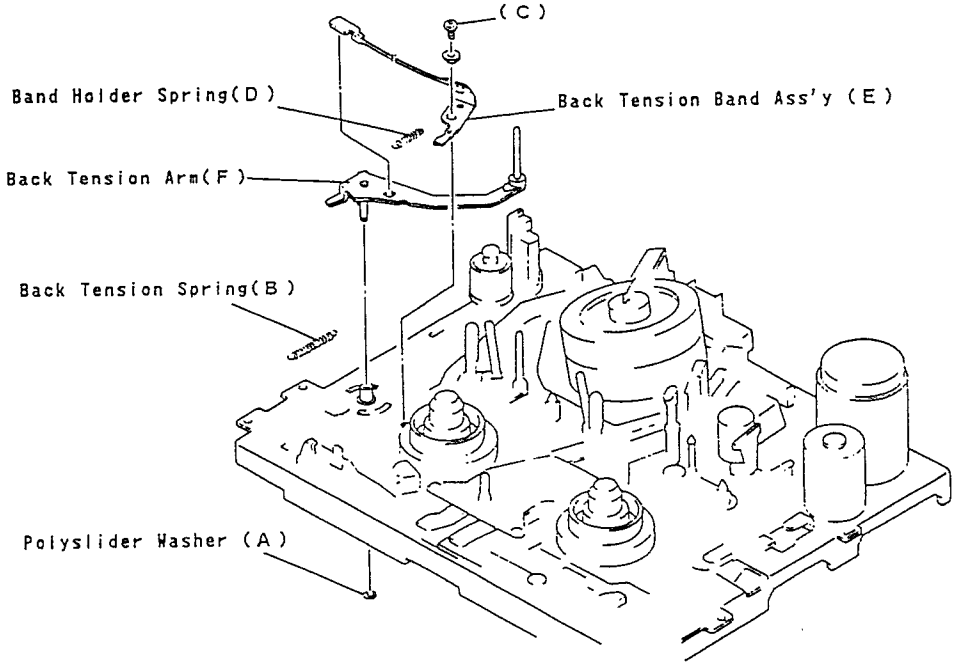
(5) Gear Holder Ass'y

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).



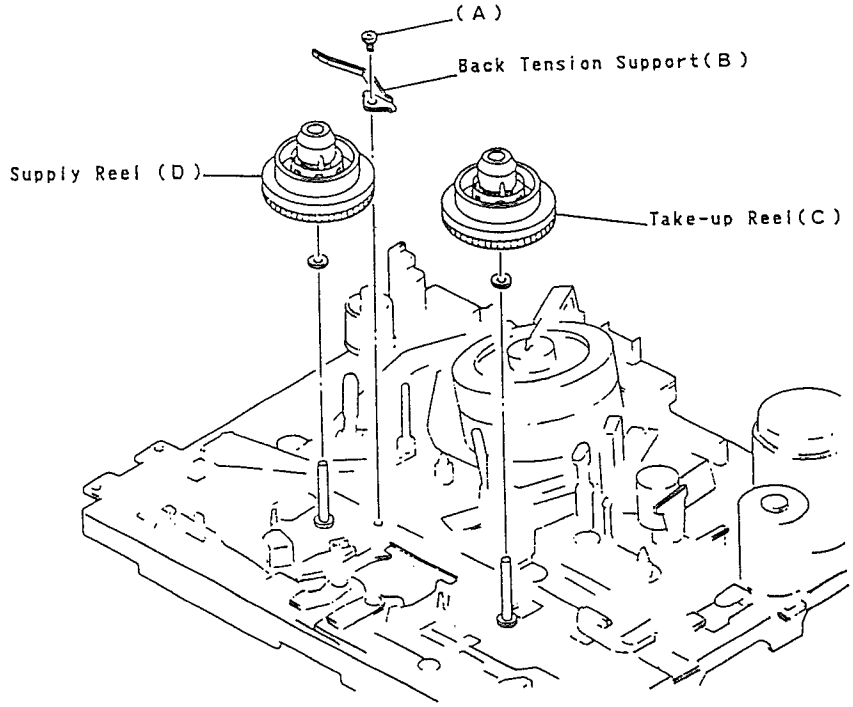
(6) Tension Arm Ass'y

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).

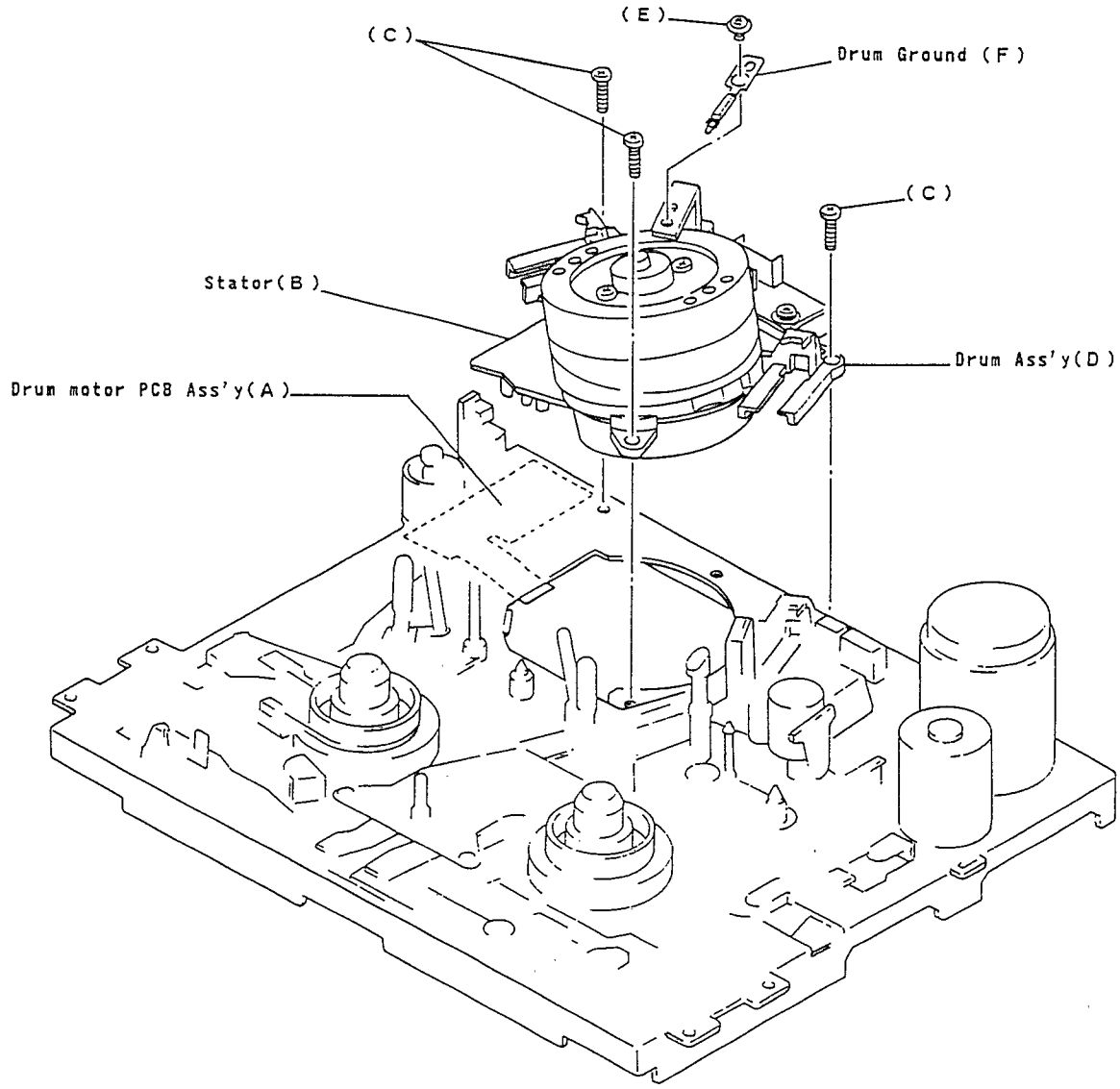


(8) Drum Ass'y

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.

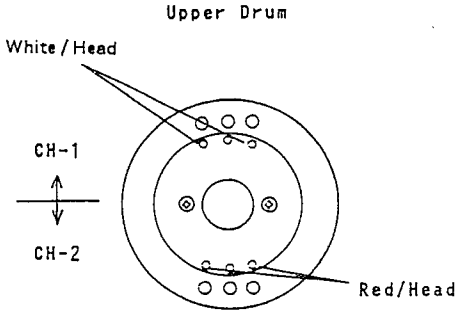


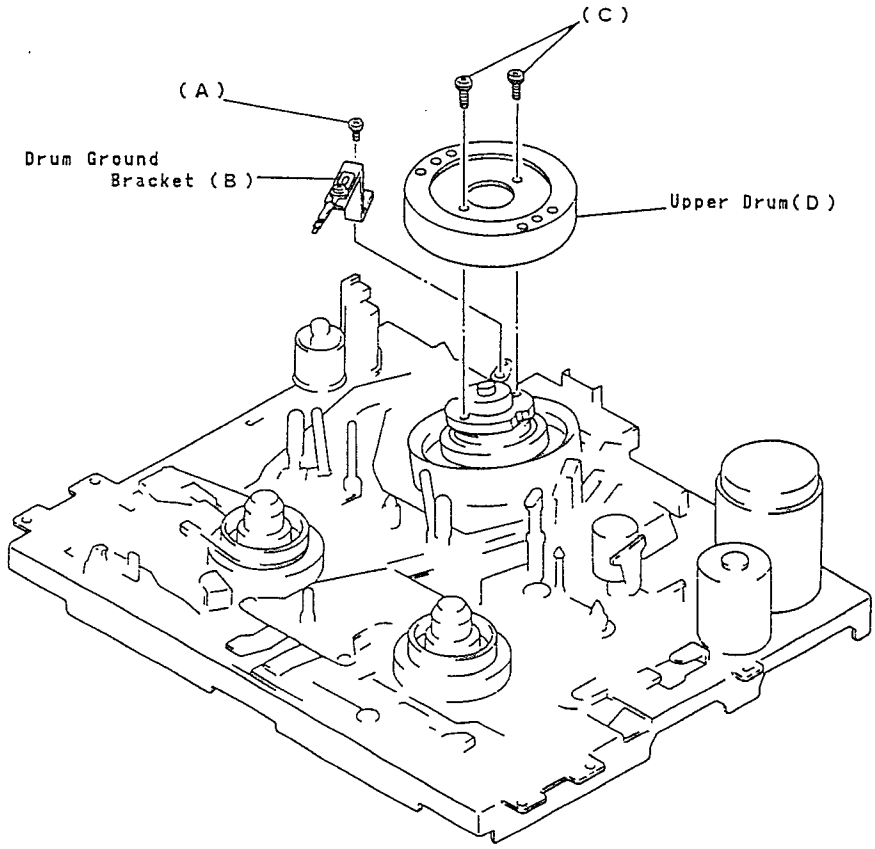
(9) Upper Drum / Reinstallation Upper, Lower Drums and Rotor

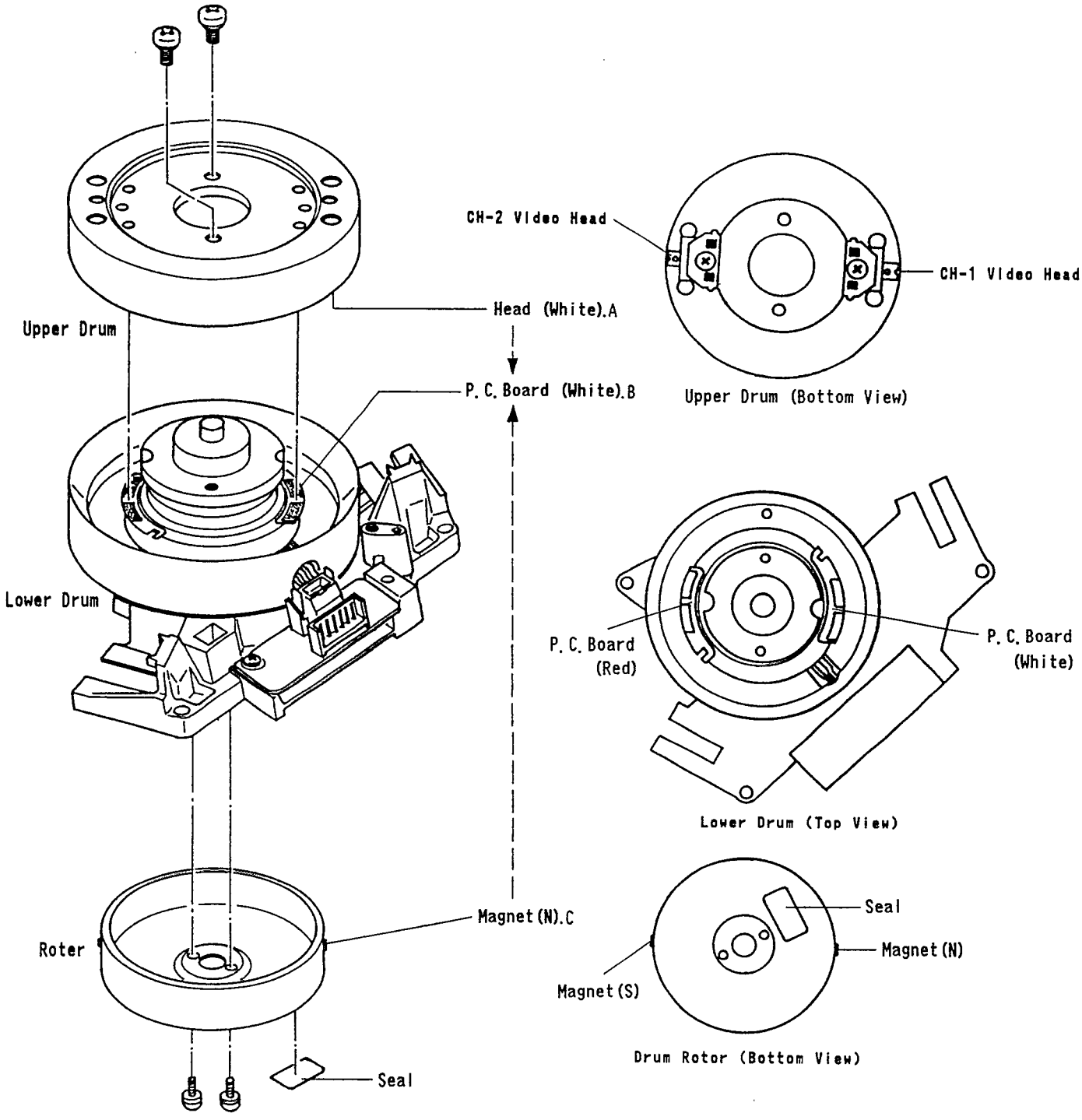
1. Remove the Front Loading Unit (2. (1) on page 2-1).
2. Remove screw (A) and take off the Drum Ground Bracket (B).
3. Remove 2 screws (C) and take off the Upper Drum (D).

≡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≡

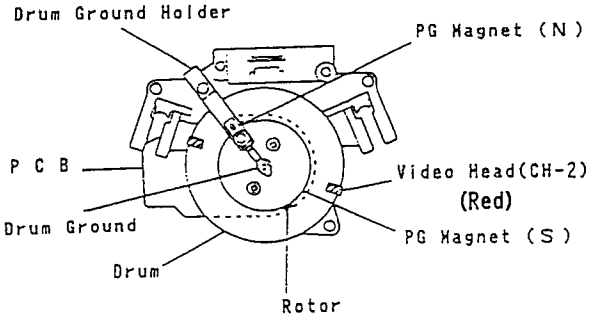
Upper Drum point-A, Lower Drum point-B and Rotor point-C these Points A, B, C, must line-up each other.
Otherwise it will creates problem.

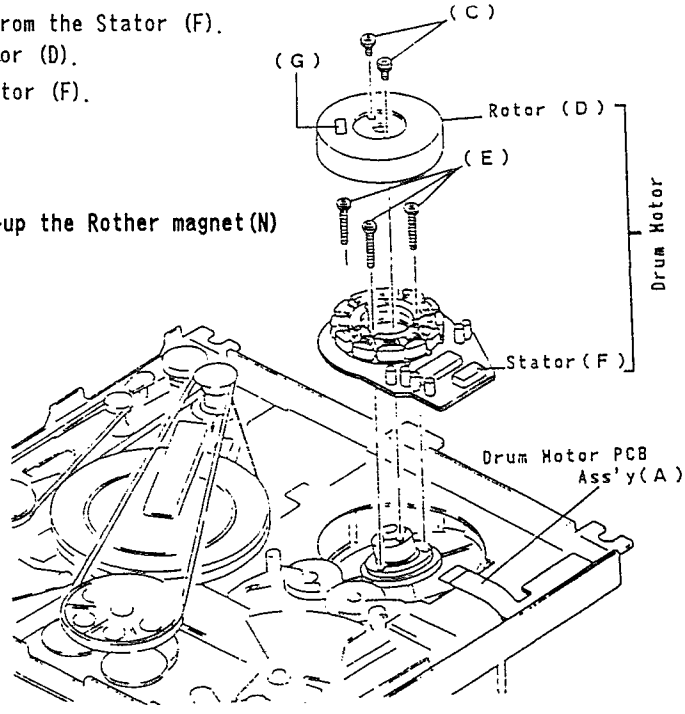
(10) Drum Motor

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≡

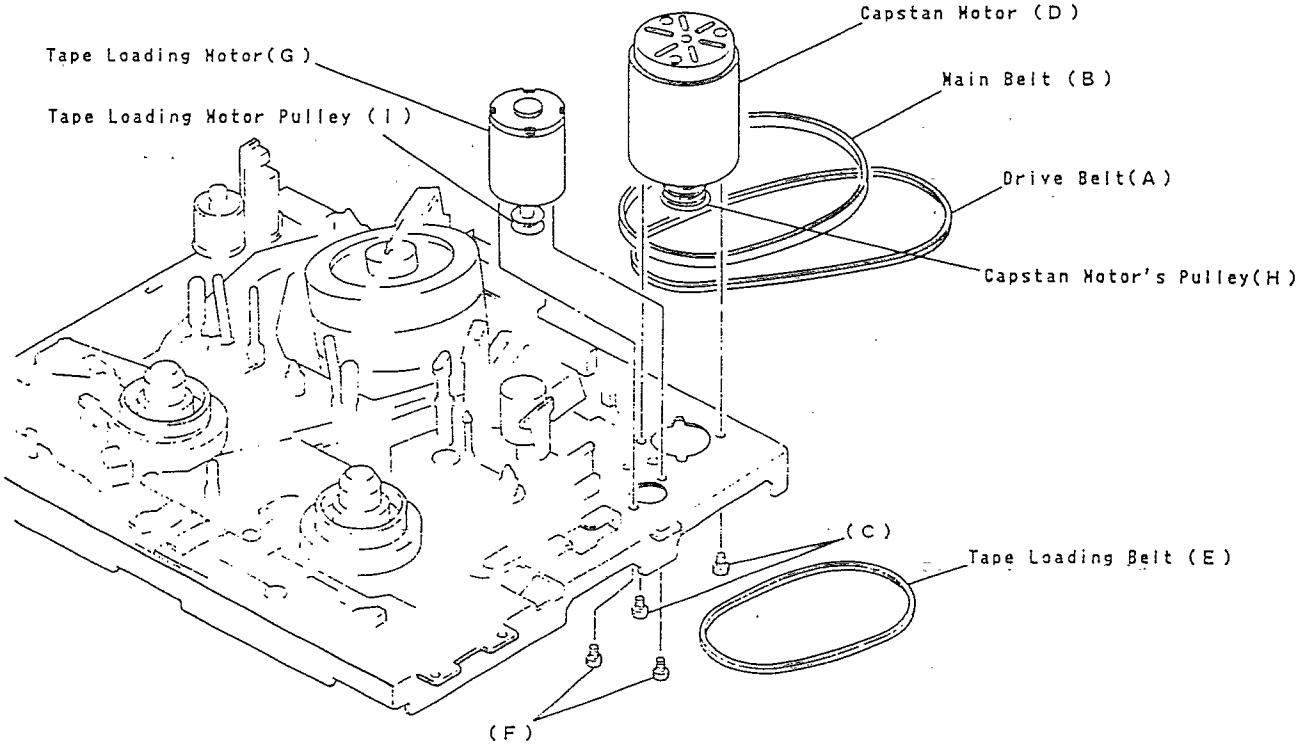
When you reinstoll the Roter, You must align-up the Rother magnet(N) white CH-1 video head. (See Page 2-8.)





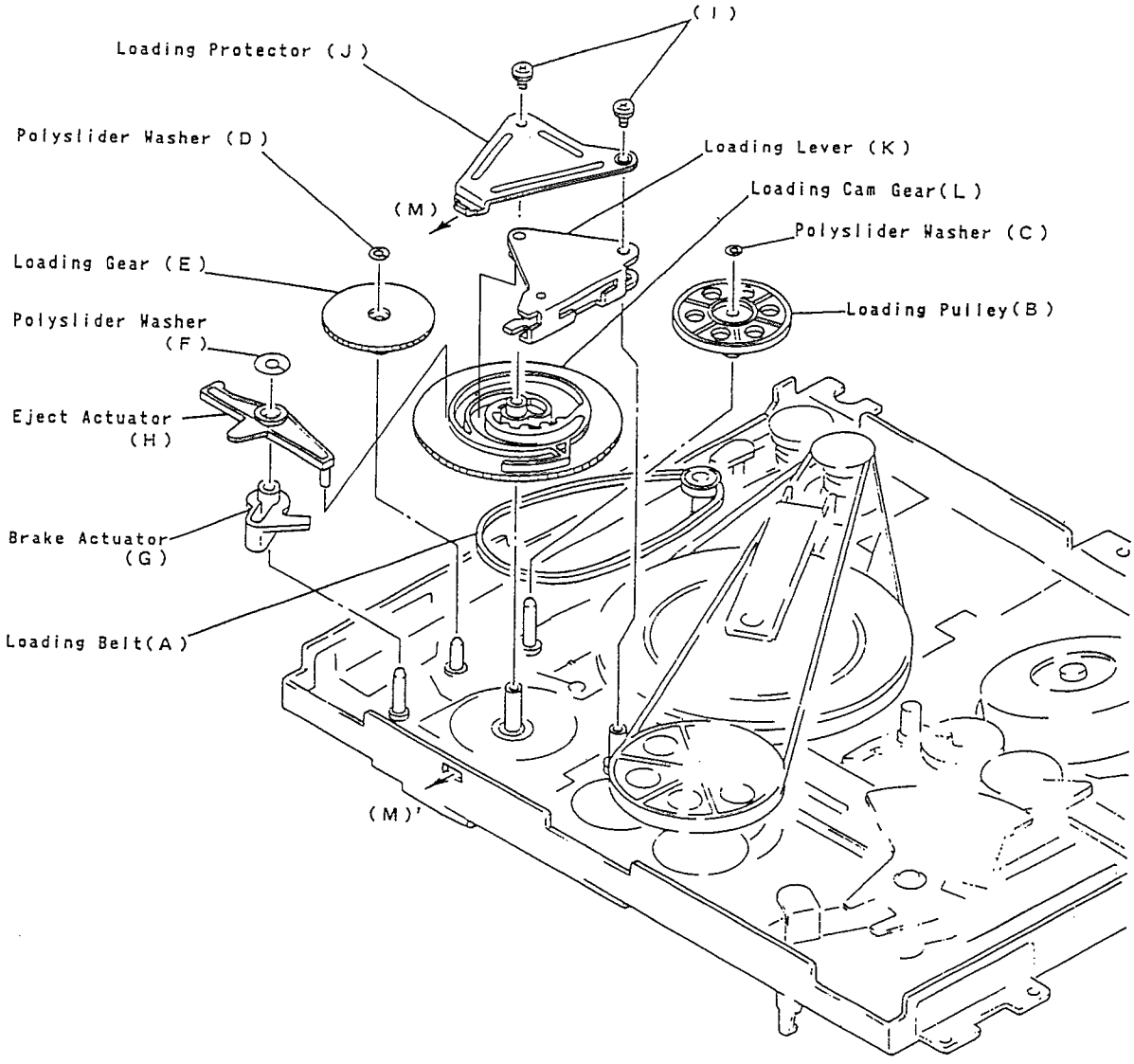
(11) Capstan Motor / Tape Loading Motor

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



(12) Loading Cam Gear

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

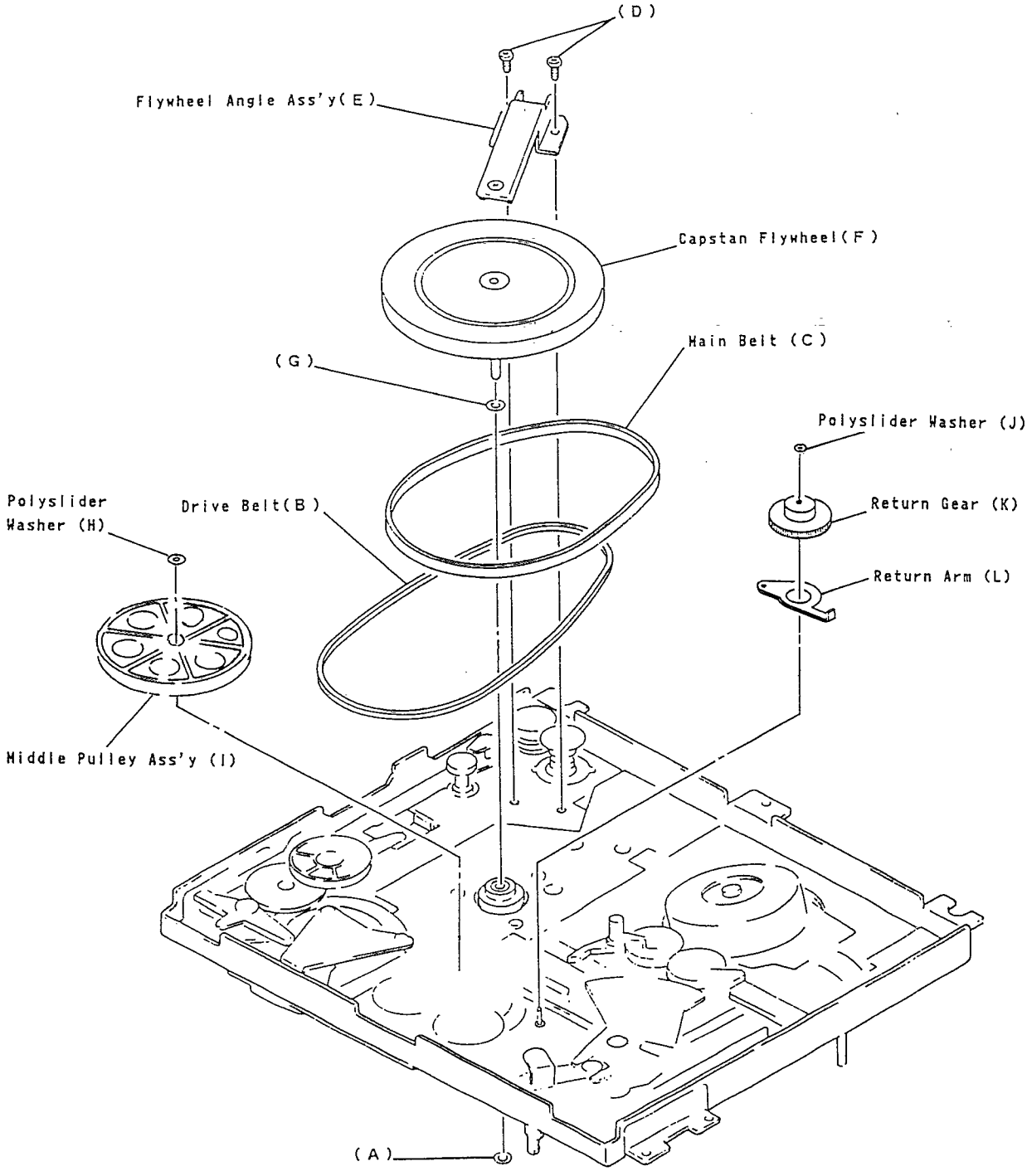


(13) Capstan Flywheel / Return Arm

1. Remove the Washer (A).
2. Take off the Drive Belt (B) and Main Belt (C).
3. Remove 2 screws (D), and Take off the Flywheel Angle Ass'y (E).
4. Take off the Capstan Flywheel (F).
5. Remove Polyslider Washer (H).
6. Take off the Middle Pulley Ass'y (I).
7. Remove Polyslider Washer (J).
8. Take off the Return Gear (K) and Return Arm (L).

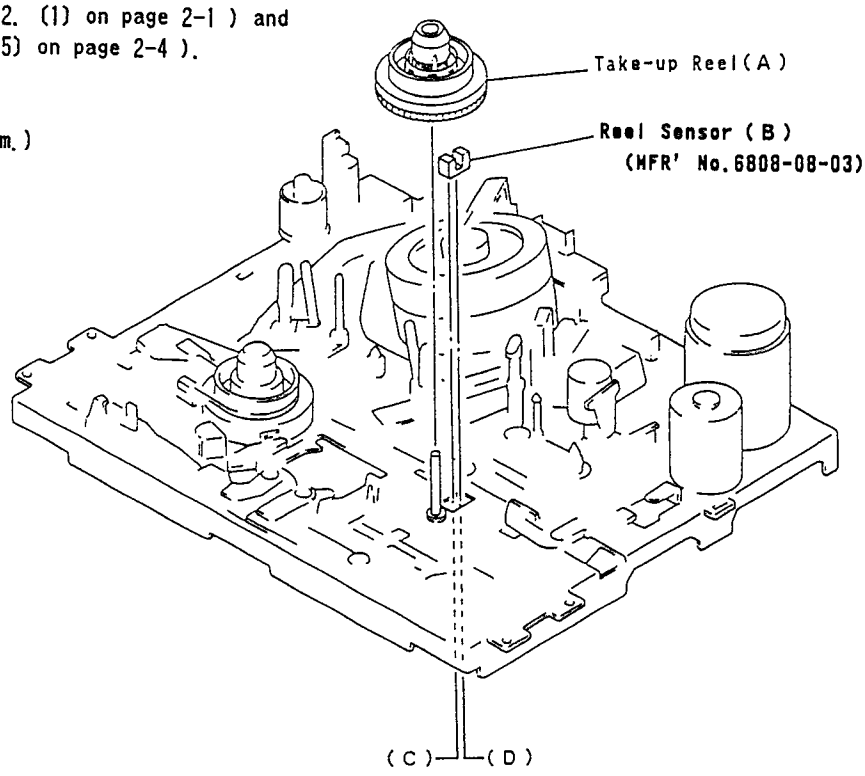
≡Remark≡

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



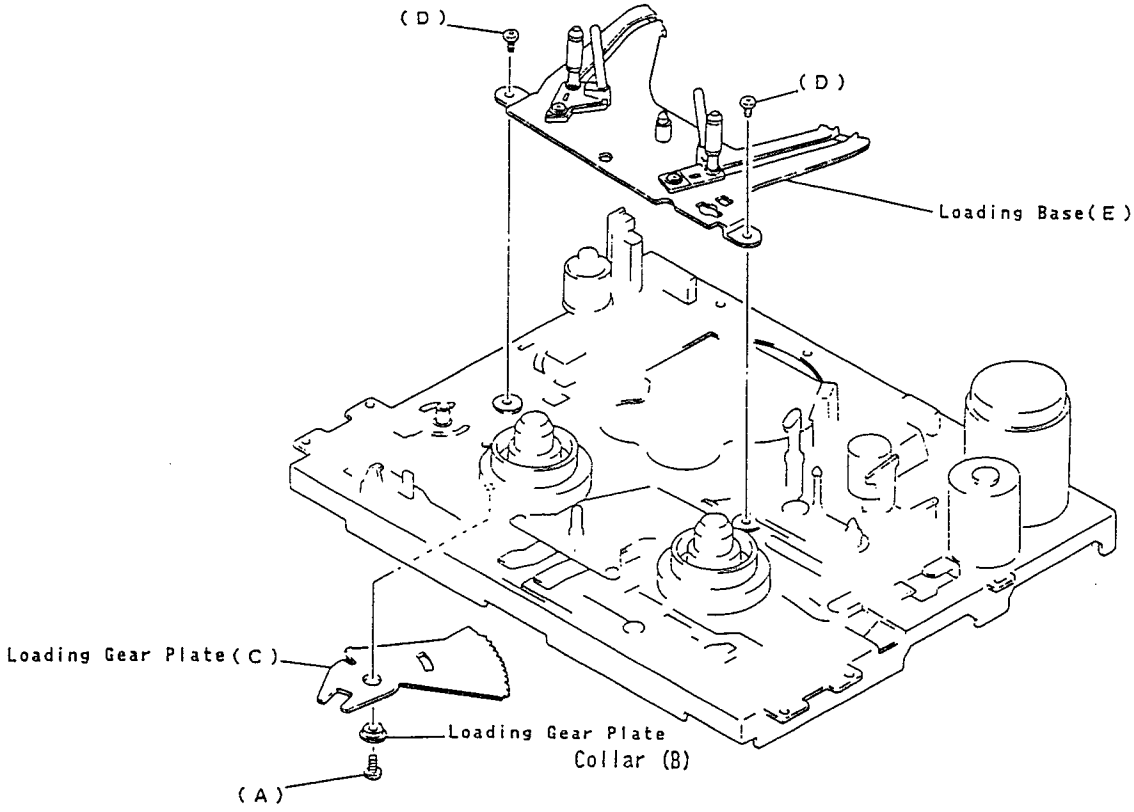
(14) Reel Sensor

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



(15) Loading Base

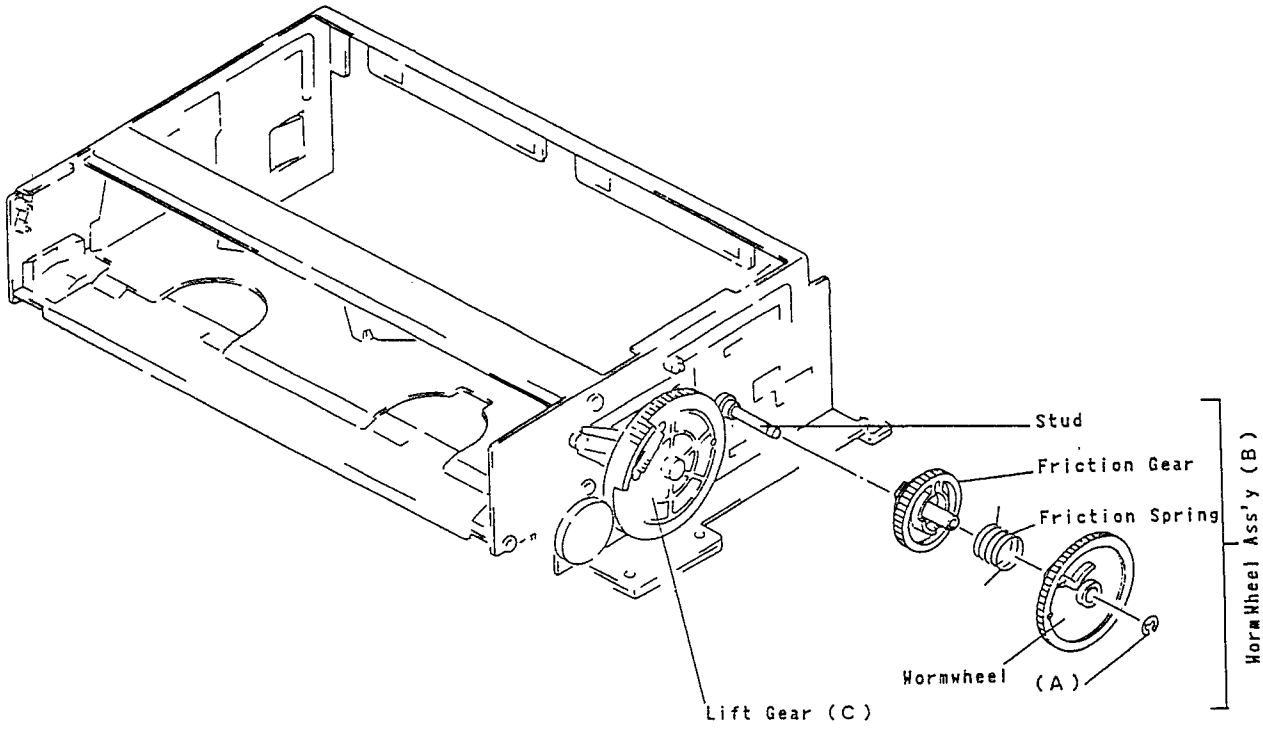
1. Remove Drum Ass'y, Tension Arm Ass'y and Photo Sensor. (Sensor Lamp)
2. Remove screw (A) and Loading Gear Plate Collar (B), Loading Gear Plate (C).
3. Remove 2 screws (D).
4. Take off the Loading Base (E).

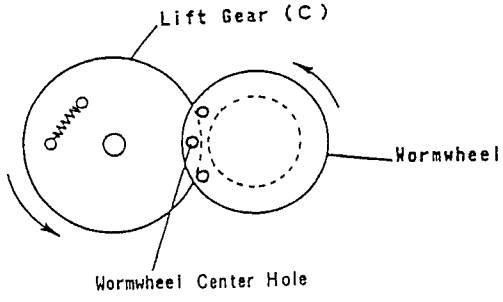


(16) Front Loading Wormwheel Unit

1. Disassembly
   (1) Remove Front Loading Belt and Bracket Ass'y. (See the Page 2-1 (2))
   (2) Remove E-Ring (A).
   (3) Remove Wormwheel Ass'y (B). (Wormwheel, Friction Spring, Friction Gear)
2. Assembly
   (1) Turn the Lift Gear (C) fully counterclockwise.
   (2) Restore Wormwheel Ass'y (B) to the stud.

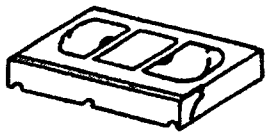
≡Remark≡
Align the Lift Gear (C) Hole with Wormwheel Center Hole as illustrated.



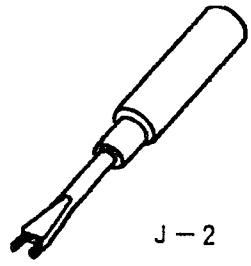


3. SERVICE JIG AND TOOLS

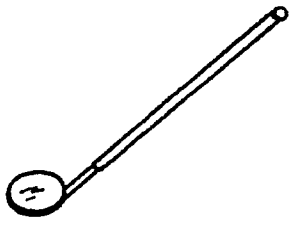
Fig. No.	Jig Item	Part No.	Adjustment
J – 1	Alignment Tape	F6-N or F6-NS	X Value / Envelope Waveform / Audio Control Erase Head Azimuth F6-NS : 2 Head LP Model
	Alignment Tape	F6-A	Audio Control Erase Head Height and Tilt
	Alignment Tape	F6-HI	Audio Output Adjustment (Hi-Fi Stereo Model)
	Alignment Tape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



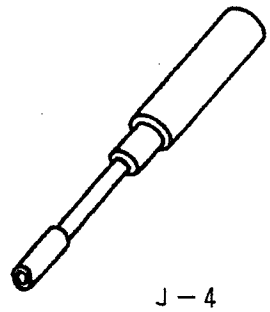
J – 1



J – 2



J – 3



J – 4

4. STANDARD MAINTENANCE

4-1 Service schedule of components

○:Check ●:Change

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

Note:

1. Clean all parts for the tape transport.
   Upper Drum with video head / Pinch Roller
   Audio Control Head / Full Erase Head

2. After cleaning up the parts, perform all DECK ADJUSTMENTS.

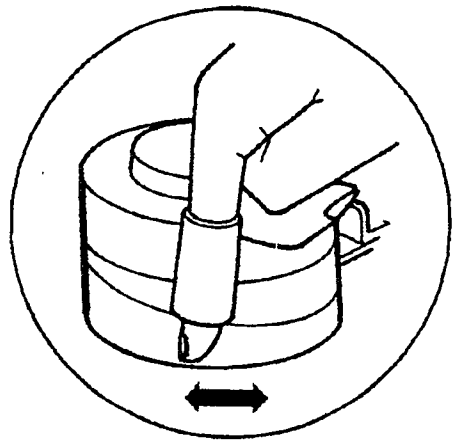
4-2 Cleaning

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 —

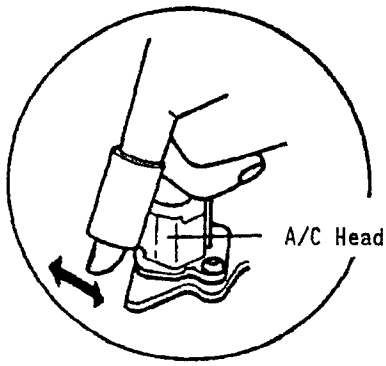
(1) The video head is very hard material, but since it is very thin, avoid cleaning it vertically.
(2) Wait for the cleaned part to dry out before operating the unit.
(3) Do not reuse the stained chamois skin.

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.

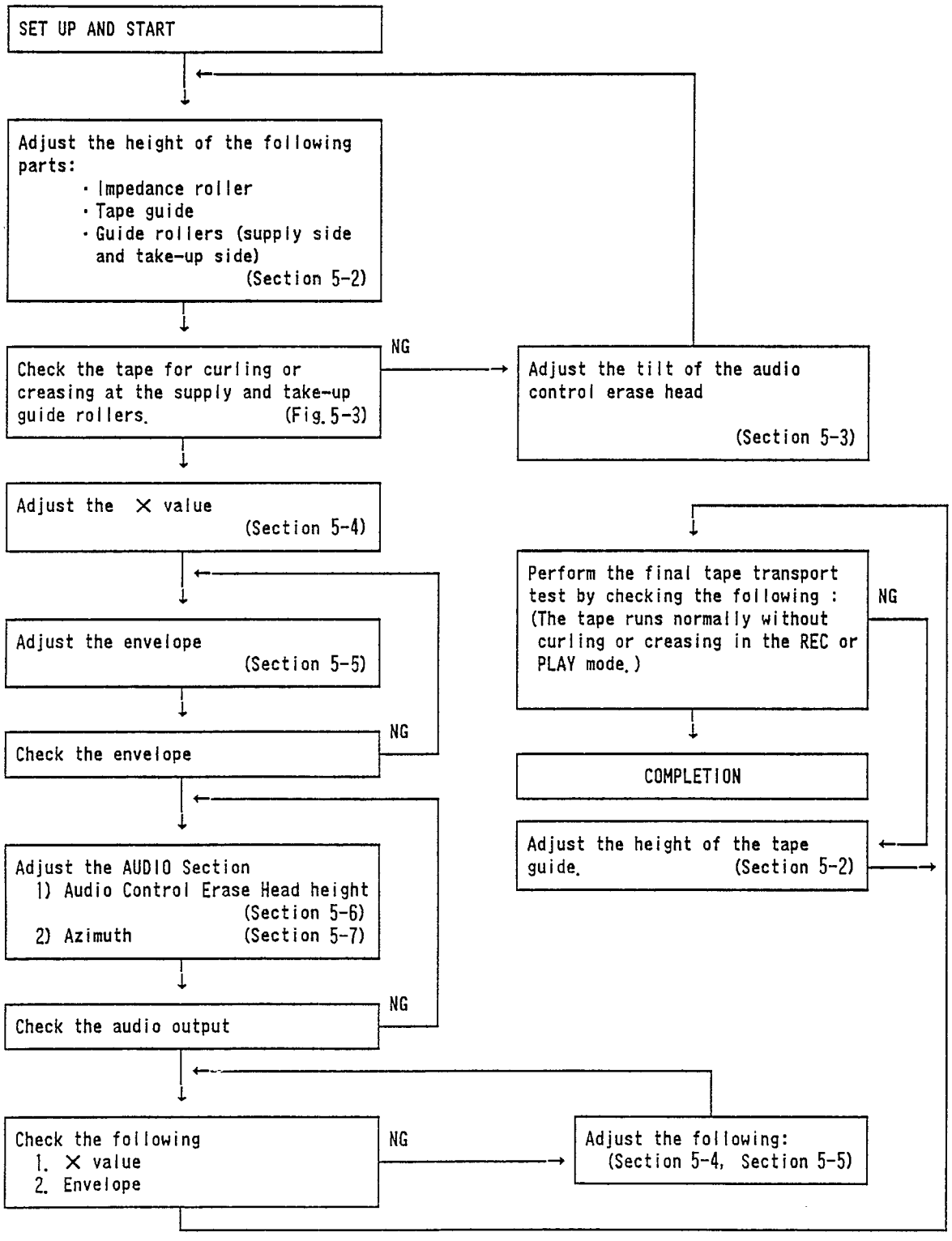


— Remark —

(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

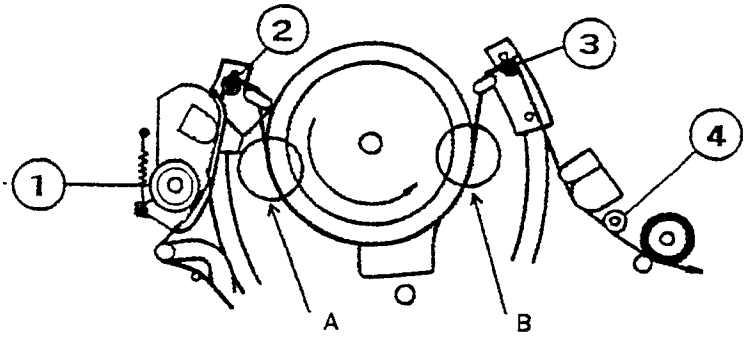


Fig. 5-1

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).

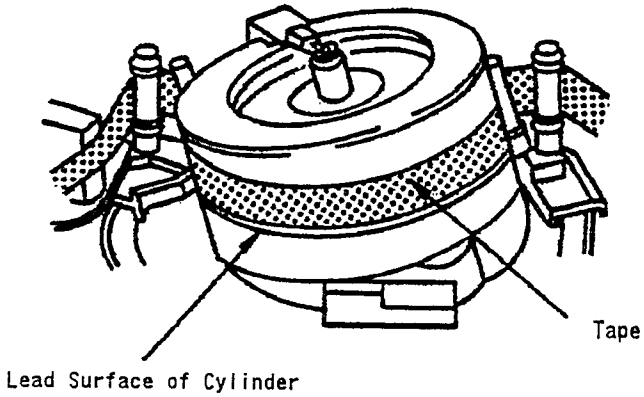


Fig. 5-2

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.

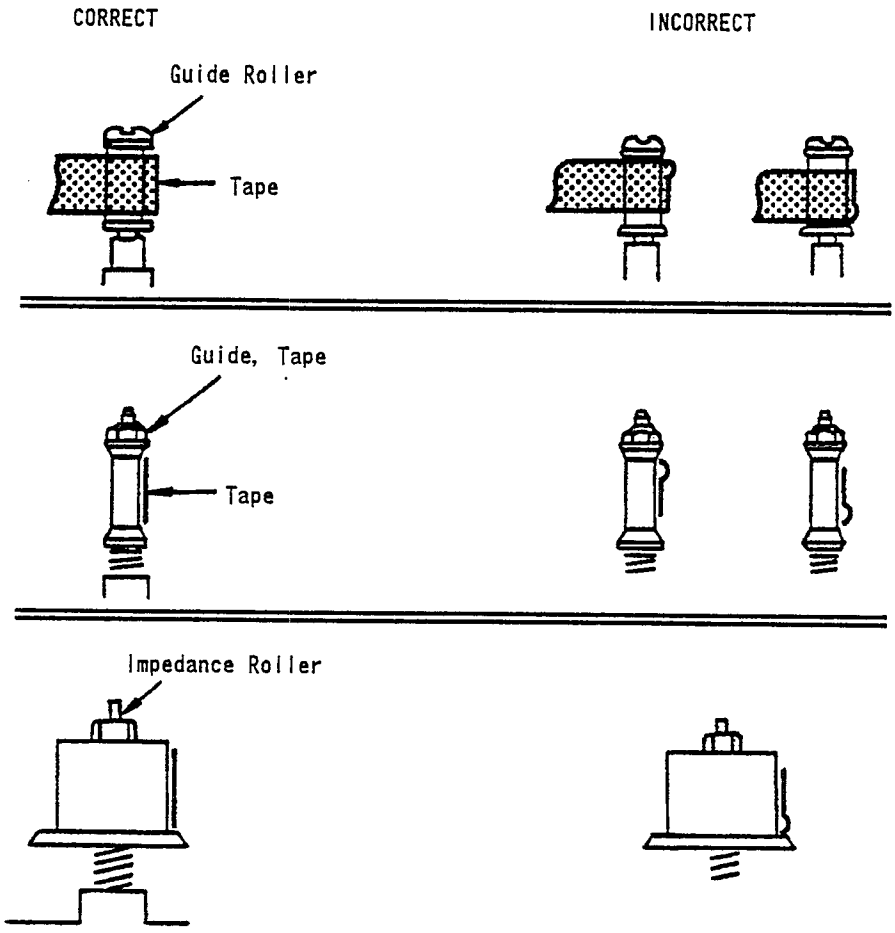


Fig. 5-3

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.

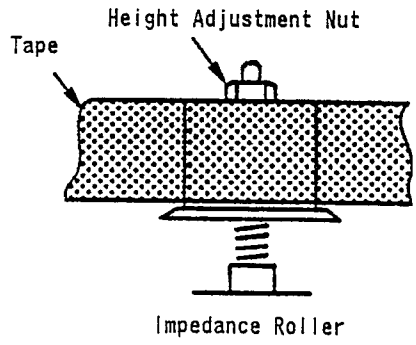


Fig. 5-4.

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.

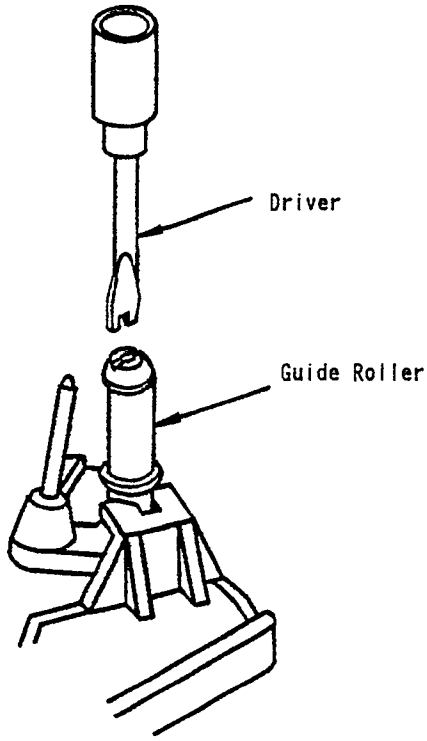
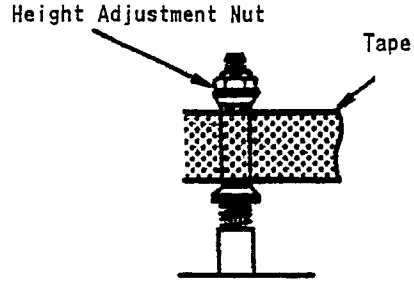


Fig. 5-5



Guide, Tape

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 Ⓐ and the tilt adjustment screw Ⓒ so that the tape transport is smooth at the take-up guide pole. Align the audio control head height. (Refer to Fig. 5-7).

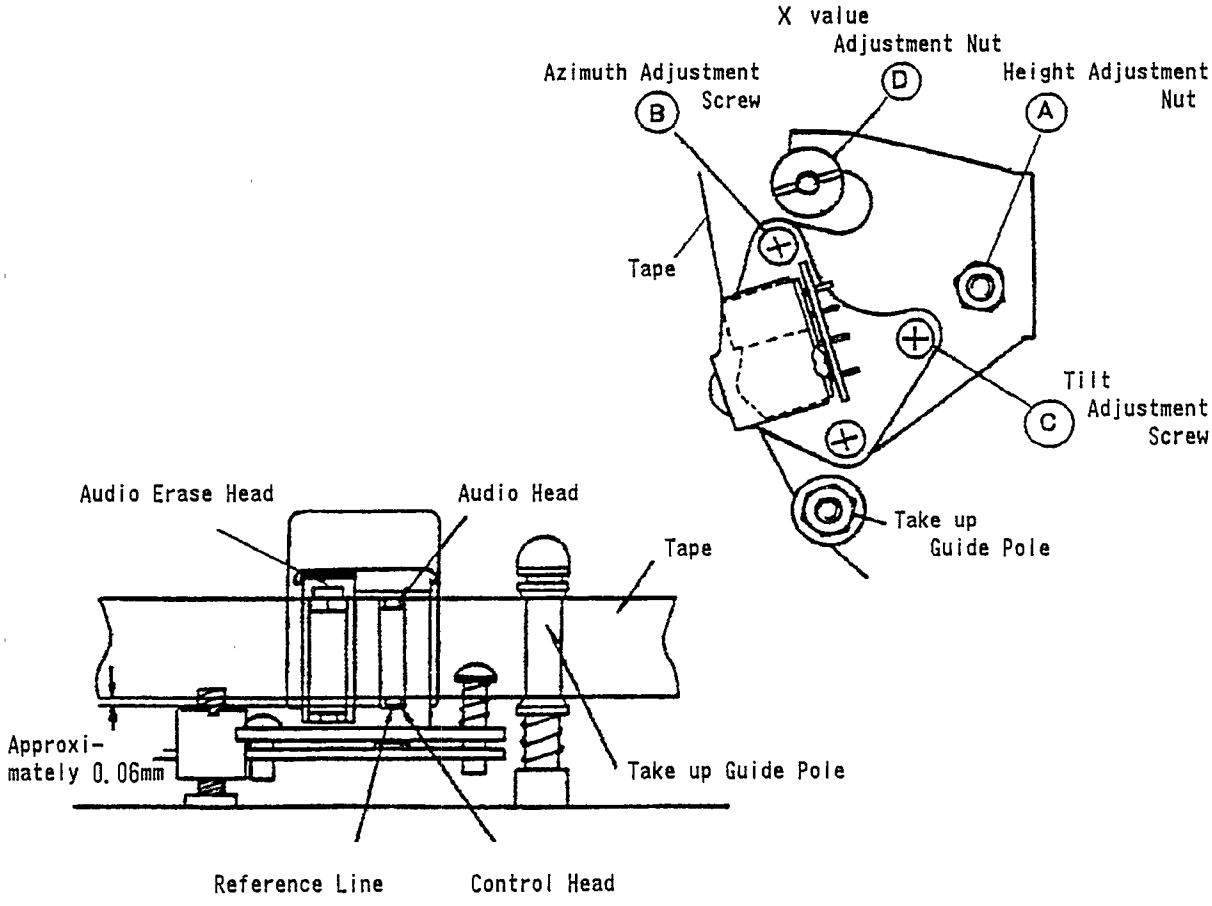


Fig. 5-7

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 × 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
× value adjustment nut	Maximum level (CH1 ENVE Signal)

Test Equipment Connecting Diagrams

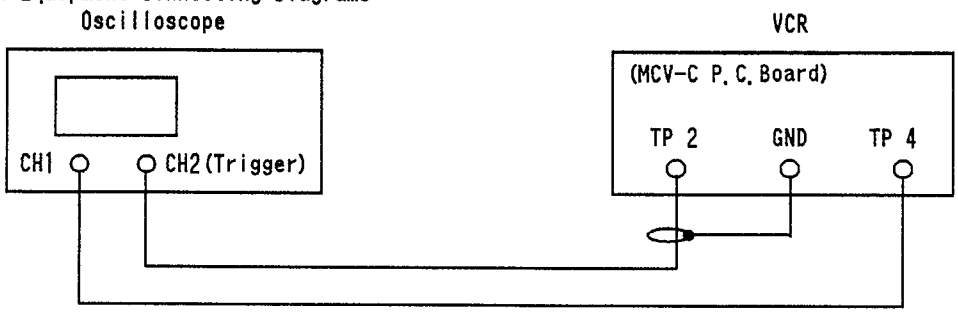


Fig. 5-8

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

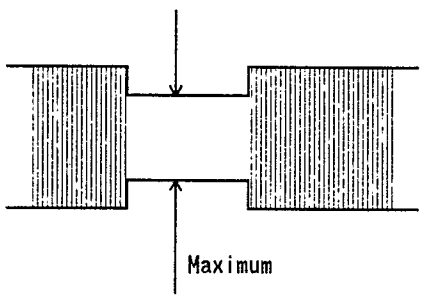


Fig. 5-9

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

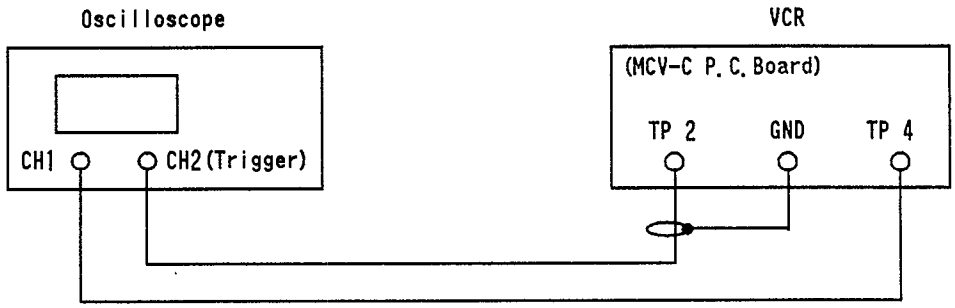


Fig. 5-10

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.
   Finely adjust the height of guide rollers so that the envelope waveform is as flat as possible.
4. Set Tracking Volume to its center position and confirm that a nearly maximum level is obtained. Then rotate the Tracking Volume in both directions while adjusting the height of guide rollers, in order to obtain the envelope waveform which is as flat as possible.
   If the tape is above or lower than helical tape position, the envelope waveforms will take the shape as shown in Fig. 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.)

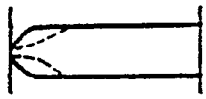
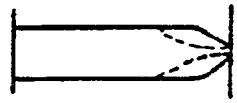
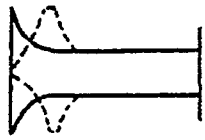
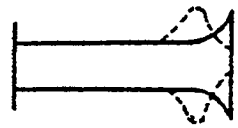
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side guide roller rotated clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated clockwise direction (lowers guide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

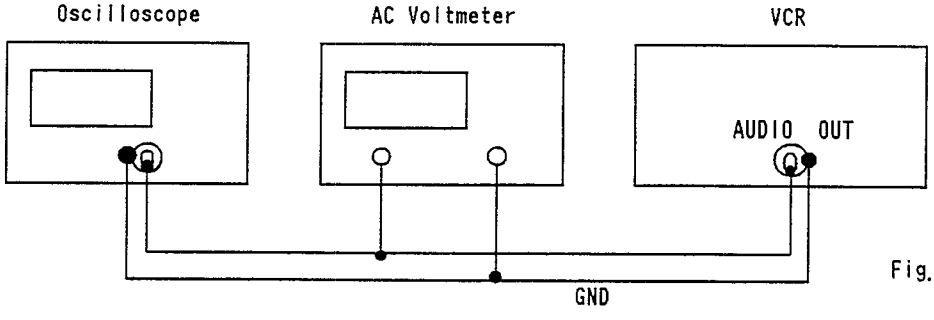
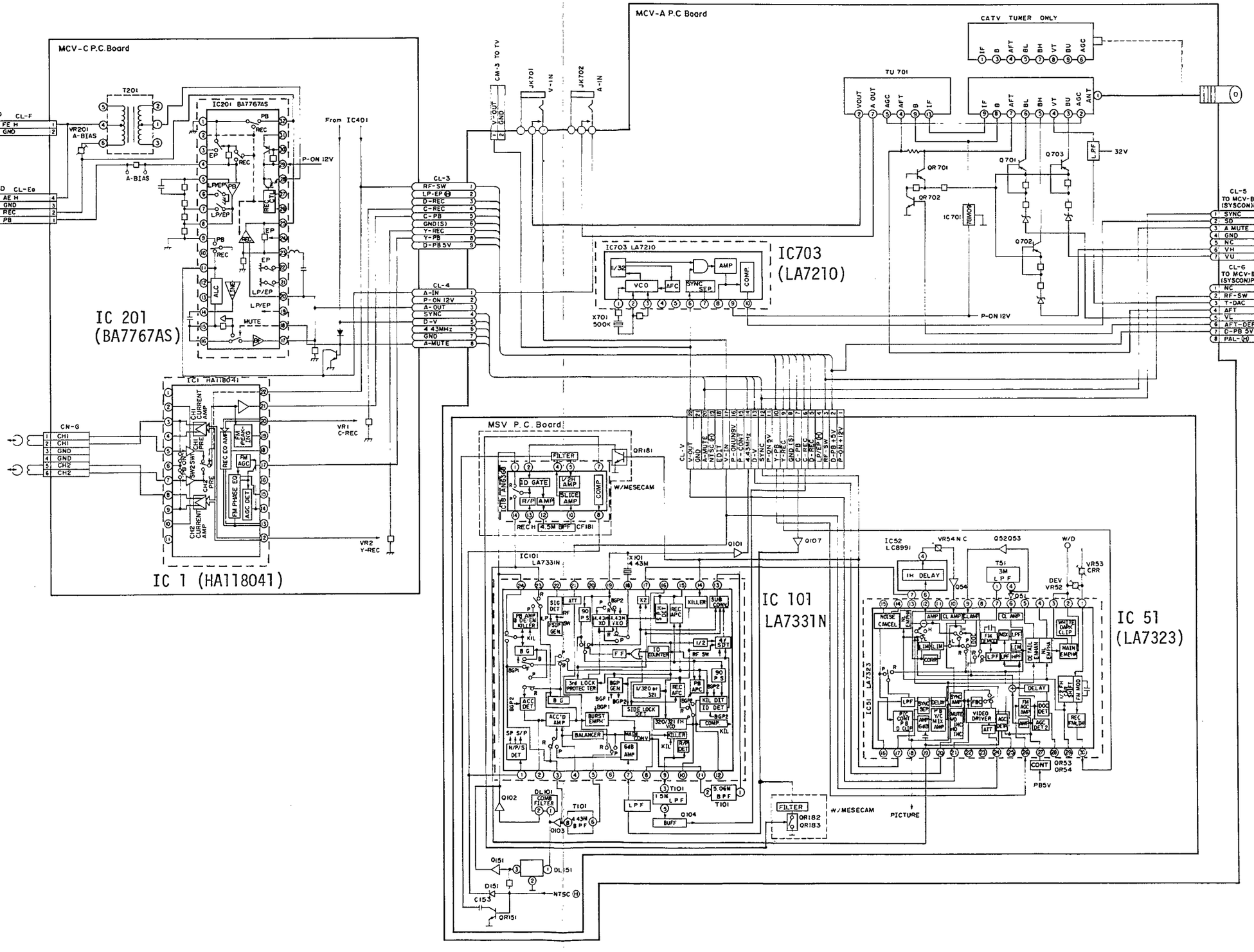


Fig. 5-13

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 × 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.)

6. BLOCK DIAGRAM

VIDEO/HEAD AMP/AUDIO/TUNER



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)

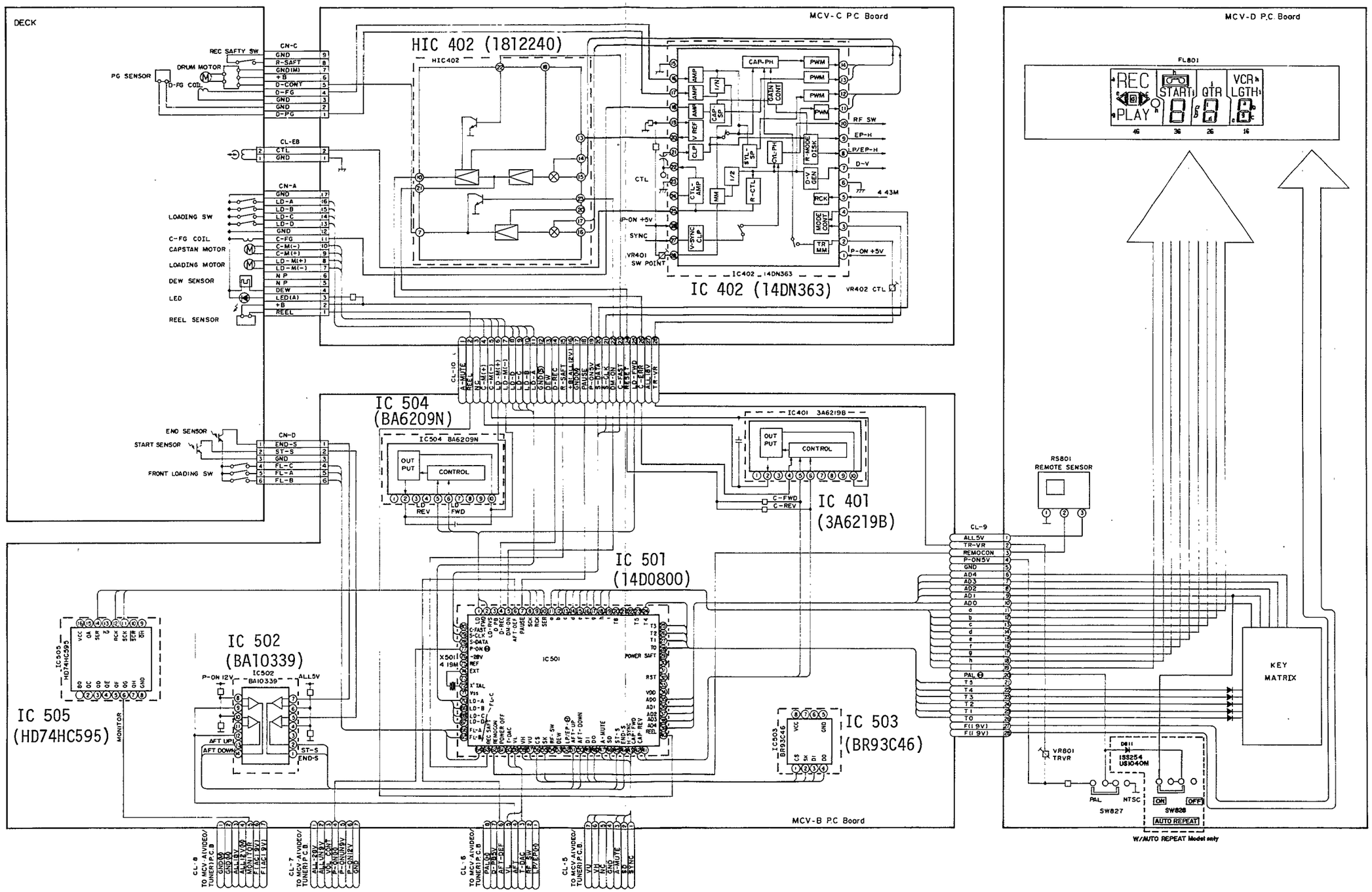
Test Equipment Connecting Diagrams

Refer to Fig. 5-13

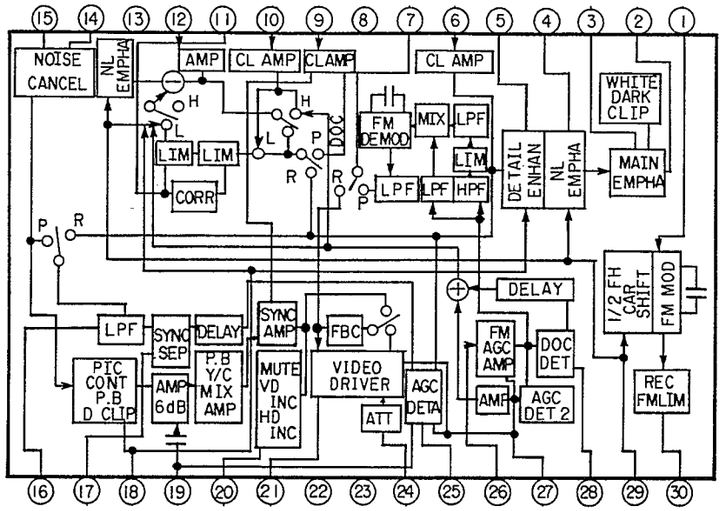
1. After confirming on the oscilloscope that an audio signal is being output by playing back F6-N test tape, adjust the azimuth adjustment screw Ⓑ so that the AC voltmeter's reading or osilloscope waveform is brought to its maximum lebel (Refer to Fig. 5-7).

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

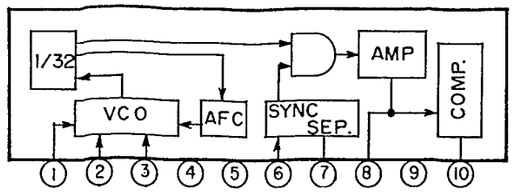
SERVO/SYSTEM CONTROL/FUNCTION



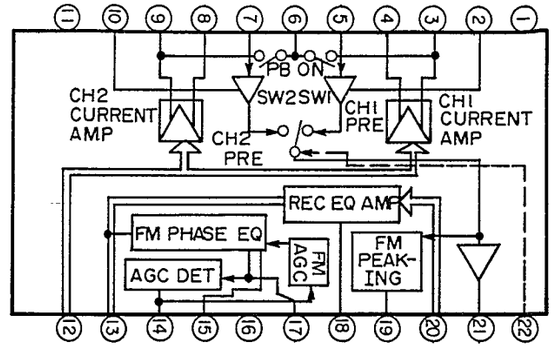
IC 51 (LA7323)



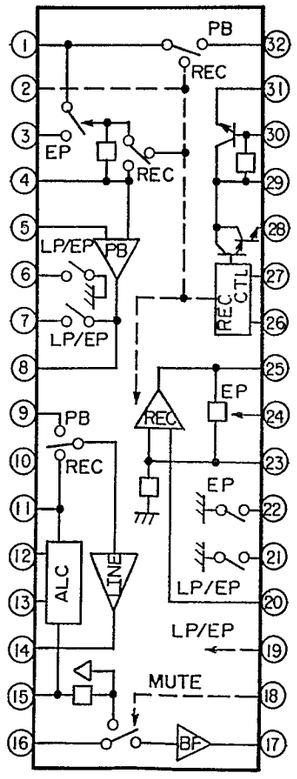
IC 703 (LA7210)



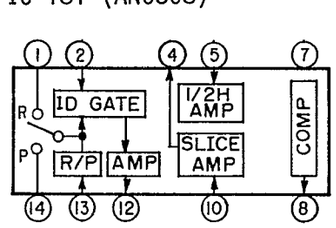
IC 1 (HA118041)



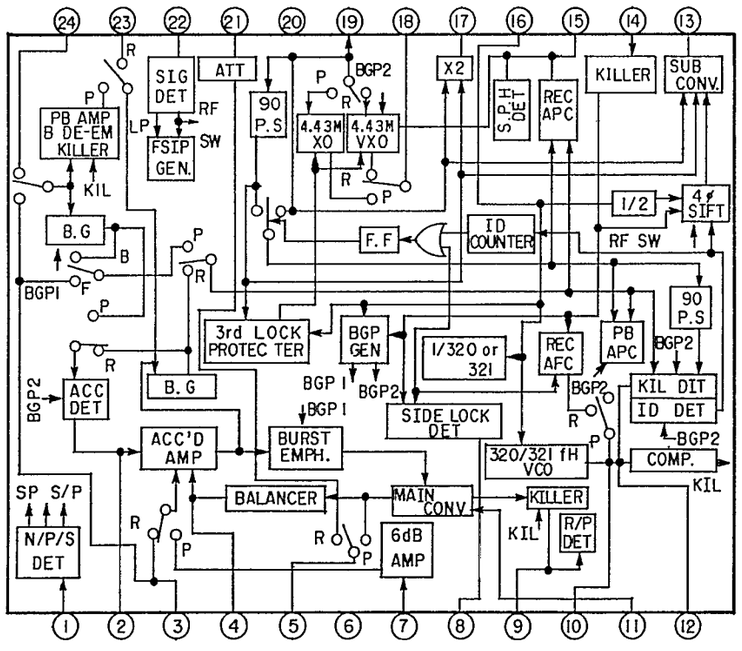
IC 201 (BA7767AS)



IC 181 (AN6368)

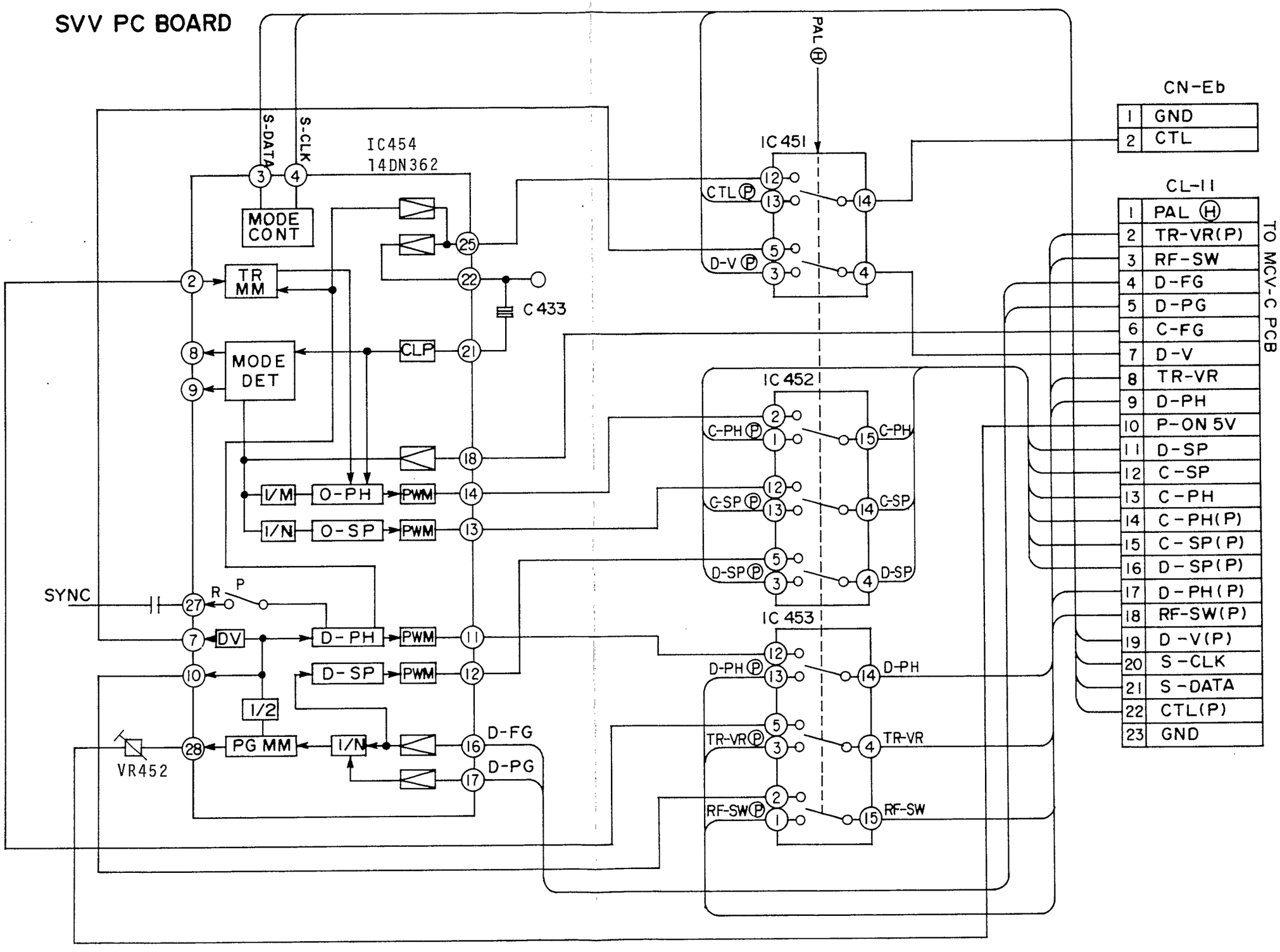


IC 101 (LA7331N)



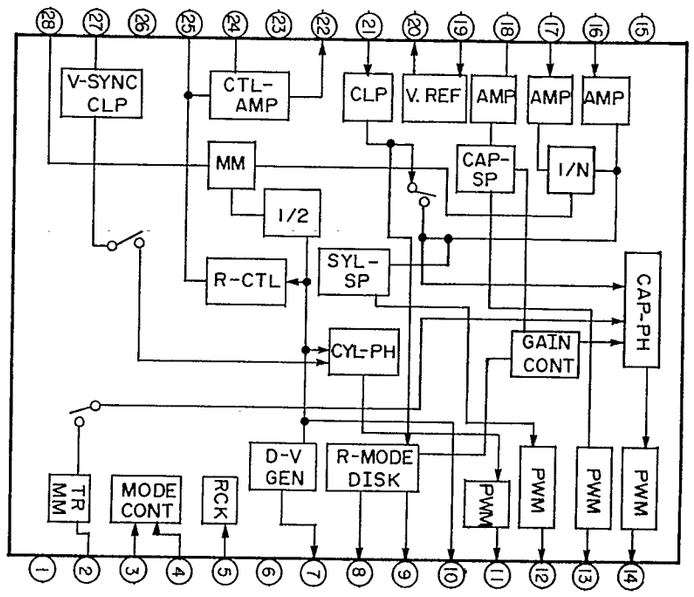
3 SYSTEM (3 SYSTEM Model Only)

SVV PC BOARD

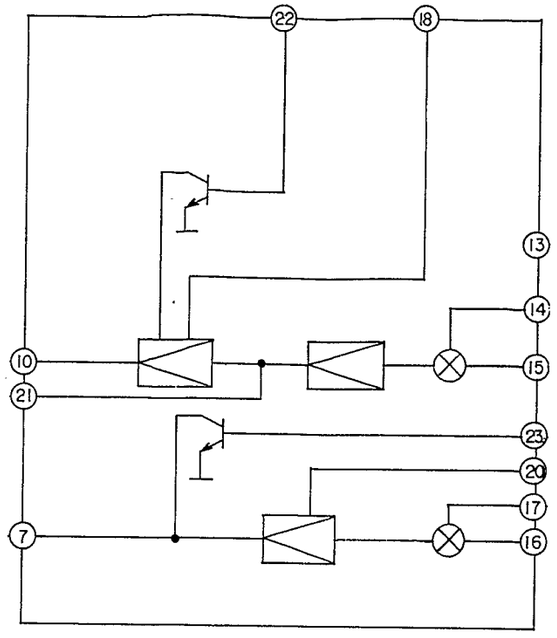


K2800-B3

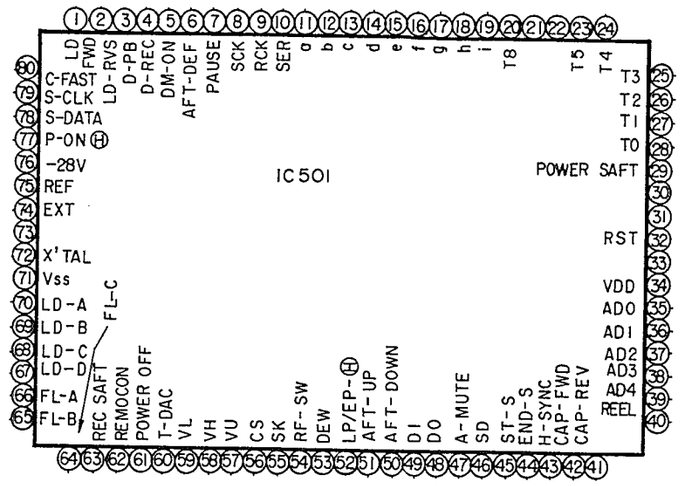
IC 402 (14DN363)



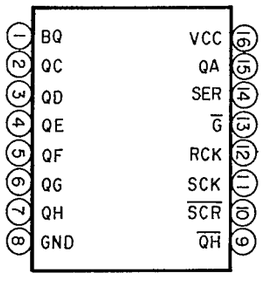
HIC 402 (1812240)



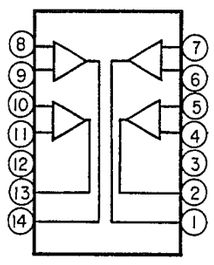
IC 501 (14D0800)



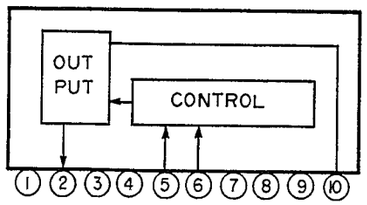
IC 505 (HD74HC595)



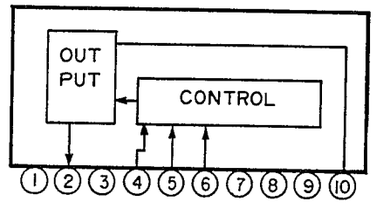
IC 502 (BA10339)



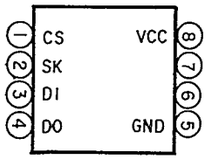
IC 504 (BA6209N)



IC 401 (3A6219B)



IC 503 (BR93C46)



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	Vss	Power Terminal "L" Input (GND) Digital	L
16	IN	D-FG	Cylinder FG Amp (600Hz)	2.5V
17	IN	D-PG	Cylinder PG Amp (25Hz)	2.5V
18	IN	C-FG	Capstan FG Amp (504Hz)	2.5V
19	IN	RI	Reference Amp	2.5V
20	OUT	V-REF	Reference Amp	2.5V
21	IN	C 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	DEW	Dew Sensor	L
54	IN	RF-SW	Switching Pulse	H or L
55	IN	SK	Serial Data Clock	L or H
56	IN	CS	Chep 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	Erasure 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

Pin No	IN/OUT	Signal Name	Function	Active Level
71	IN	VSS	GND	0V
72	OUT	X'tal	Crystal Osillator 4.19MHz	~
73	—	——	——	—
74	IN	EXT	External	~
75	—	VDD	Power 5V	+5V
76	IN	-28V	-28V	-28V
77	OUT	P-ON-H	POWER-ON Control "H"	H
78	OUT	S-DATA	Servo IC Data	H/L
79	OUT	S-CLK	Servo IC Timing Clock	L→H
80	OUT	C-FAST	Capstan Motor High Speed	H

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 EQUIPMEMT REQUIRED

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

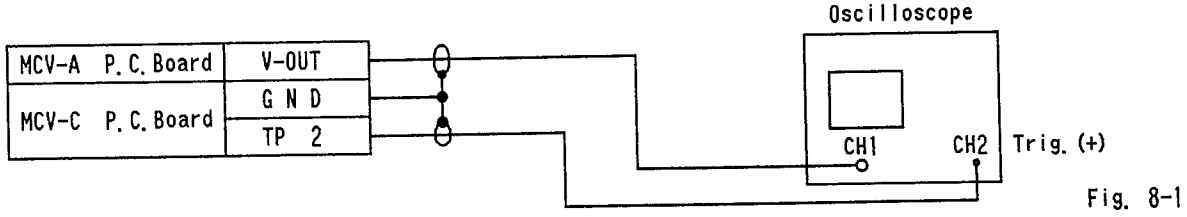
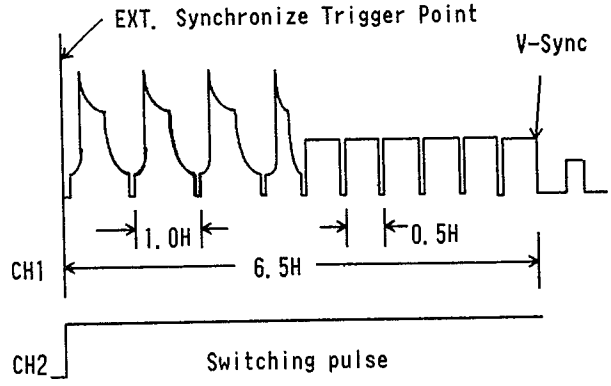


Fig. 8-1

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 click position.
4. Playback the tape and adjust VR401 so that the V-sync front edge of CH1 video output waveform is delayed 6.5H(416μs) from the rising of CH2 Head Switching pulse waveform.



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

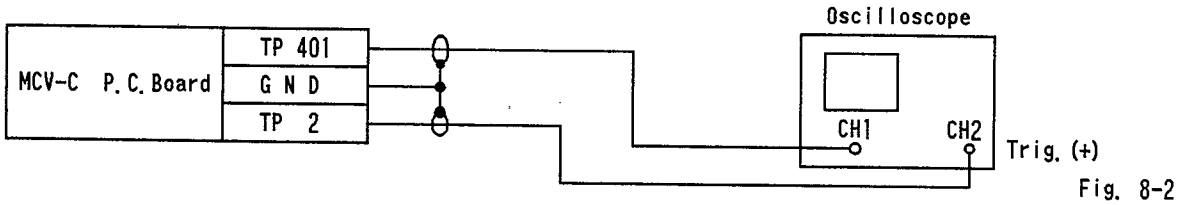
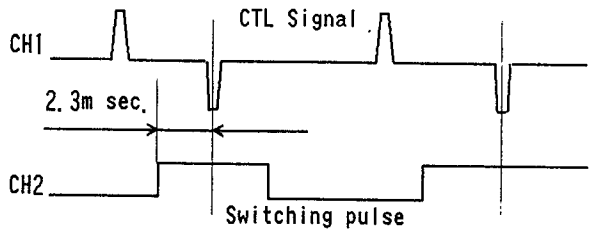


Fig. 8-2

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 delated 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

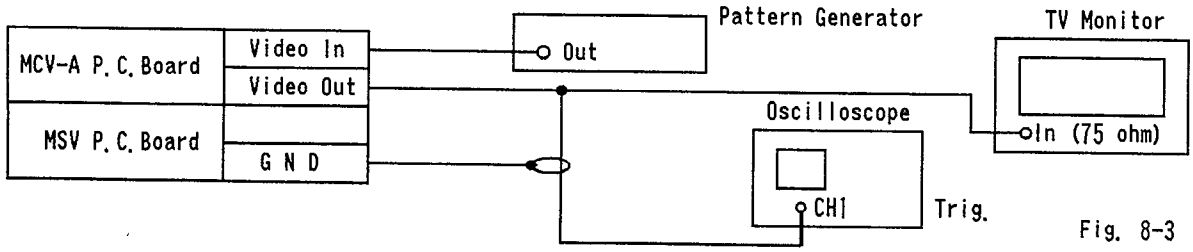
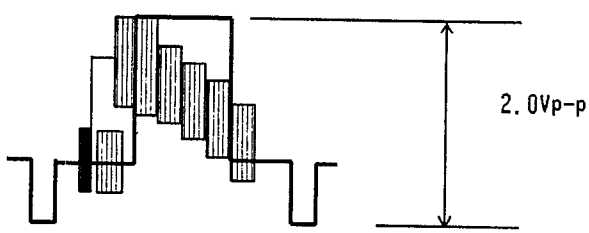


Fig. 8-3

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 2.0Vp-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

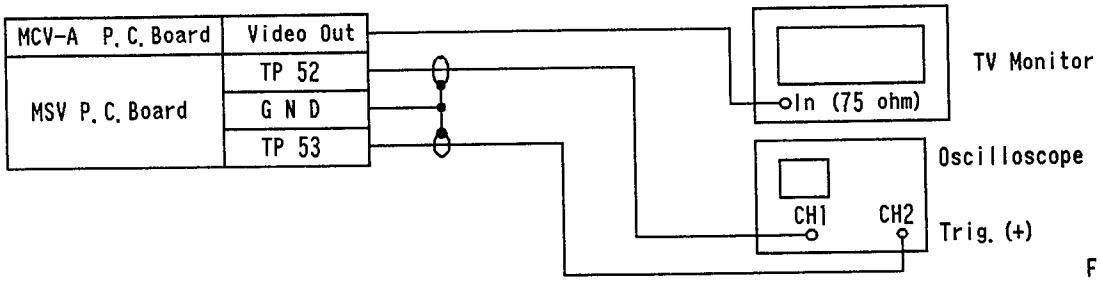


Fig. 8-4

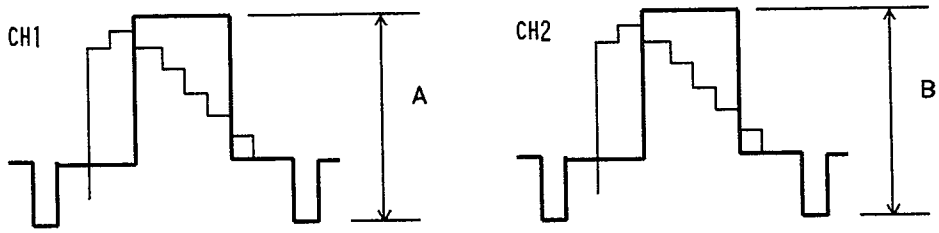
Note : Adjust the Noise Cancel for choise (1) or (2).

(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

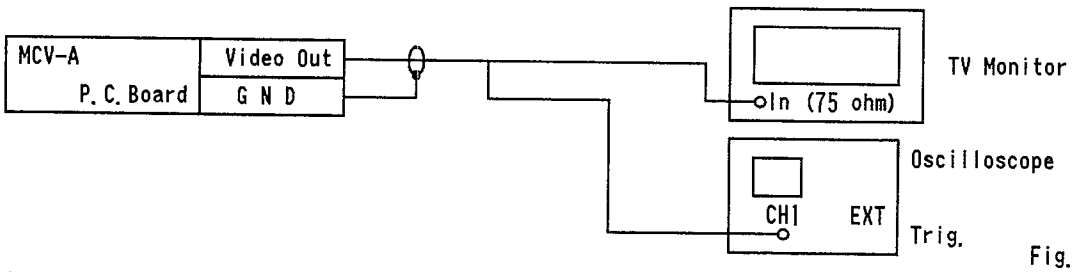
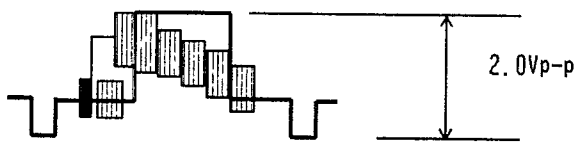


Fig. 8-5

1. Connect the equipment as shown in Fig. 8-5.
2. Adjust VR53 so that the video level becomes 2. 0Vp-p±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

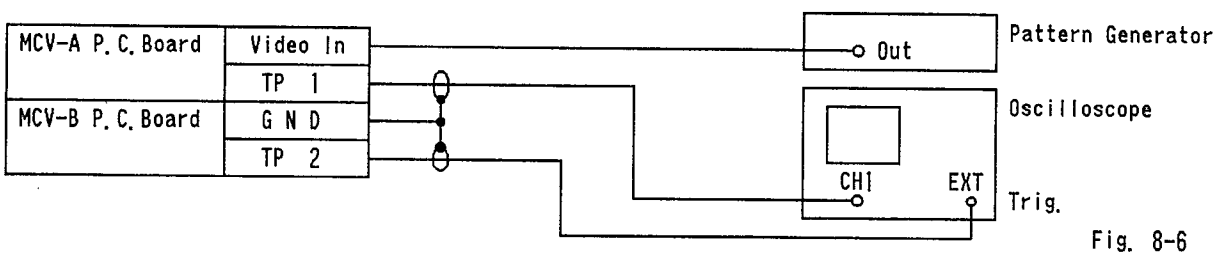
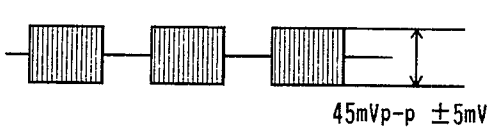
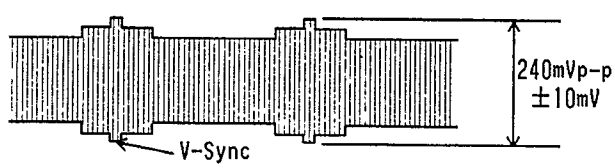


Fig. 8-6

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 ±5mV.
6. Input color bar signal with 100% white to VIDEO INPUT.
7. Adjust VR 1 so that V-Sync level becomes 240mVp-p±10mV.





8-7 REC. BIAS CURRENT ADJUSTMENT

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

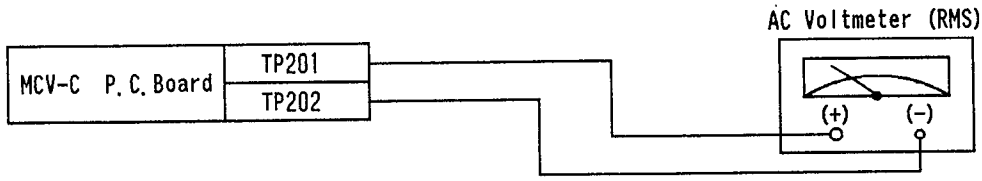


Fig. 8-7

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

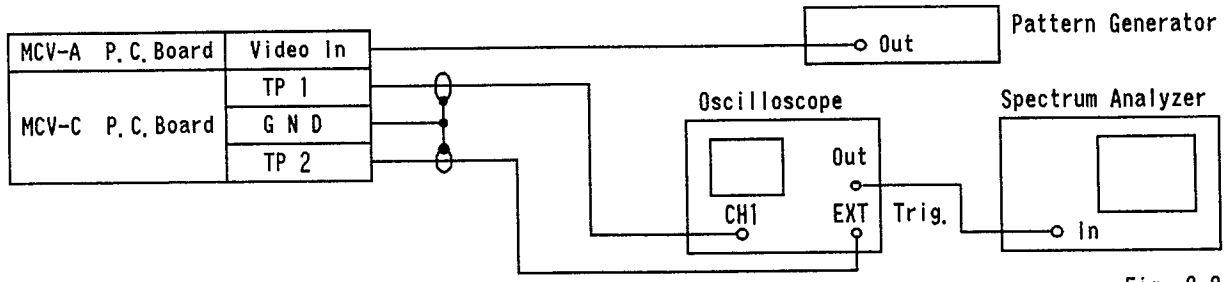
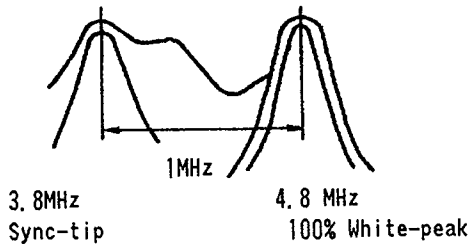


Fig. 8-8

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±20kHz by VR 52, White-peak to 4.8 MHz ±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 (MESESCAM) (MSV P. C. Board)	REC.	Blank Tape	Fig. 8-9

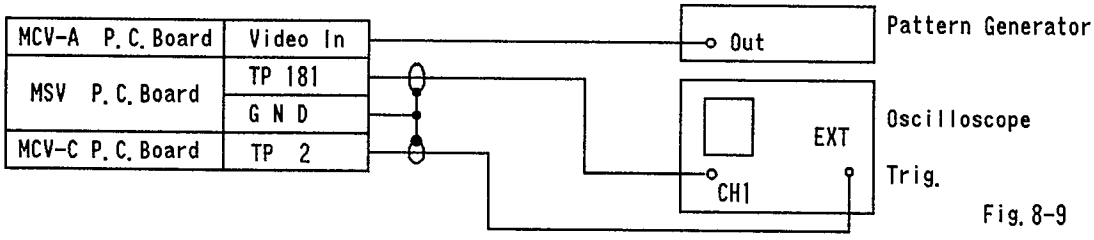
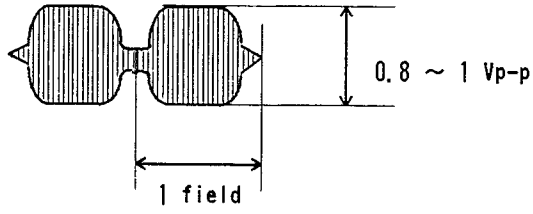


Fig. 8-9

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 ouput level becames 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 TP 2 (RF-SW) GND	VR452 (Switching Point) (SVV P.C.Board)	PLAY	F8-N	Fig. 8-10

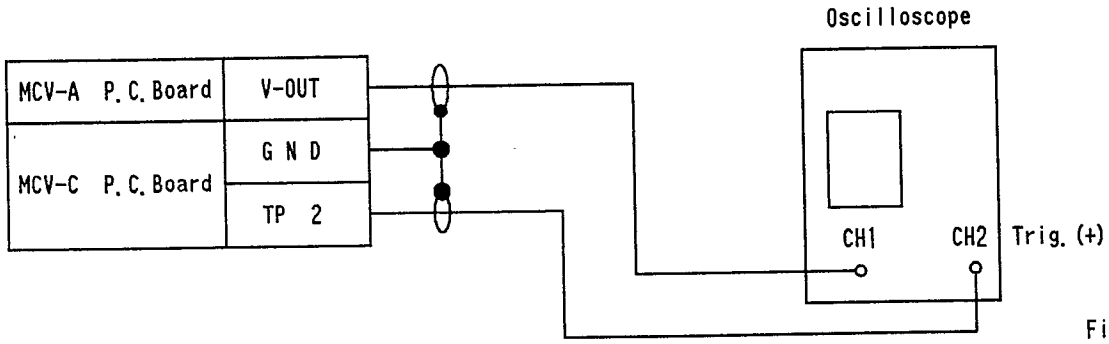
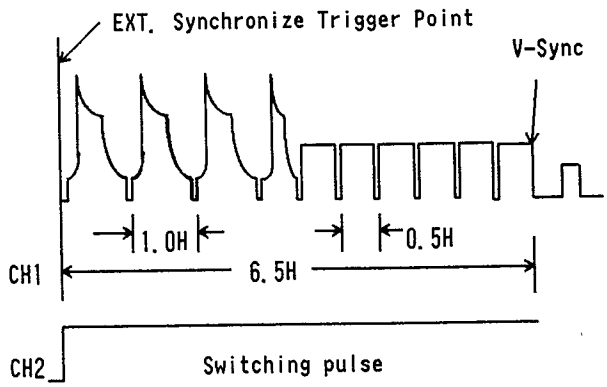


Fig. 8-10

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(416μs) 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 2 (RF SW) GND	VR451 (CTL) (SVV P. C. Board)	PLAY	F8-N	Fig. 8-11

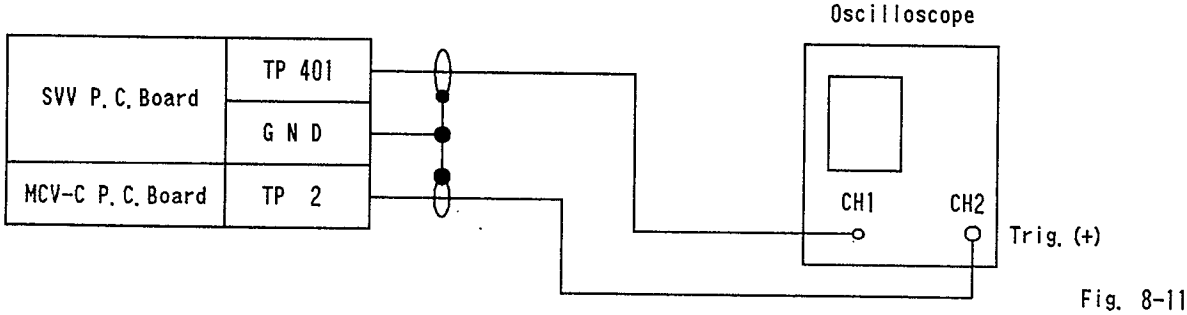
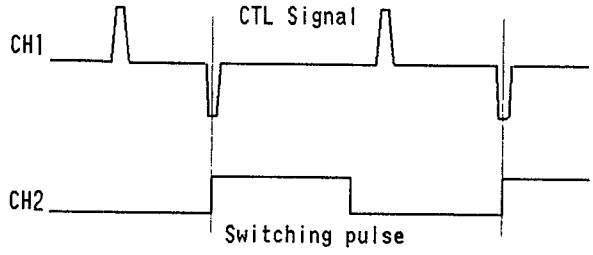


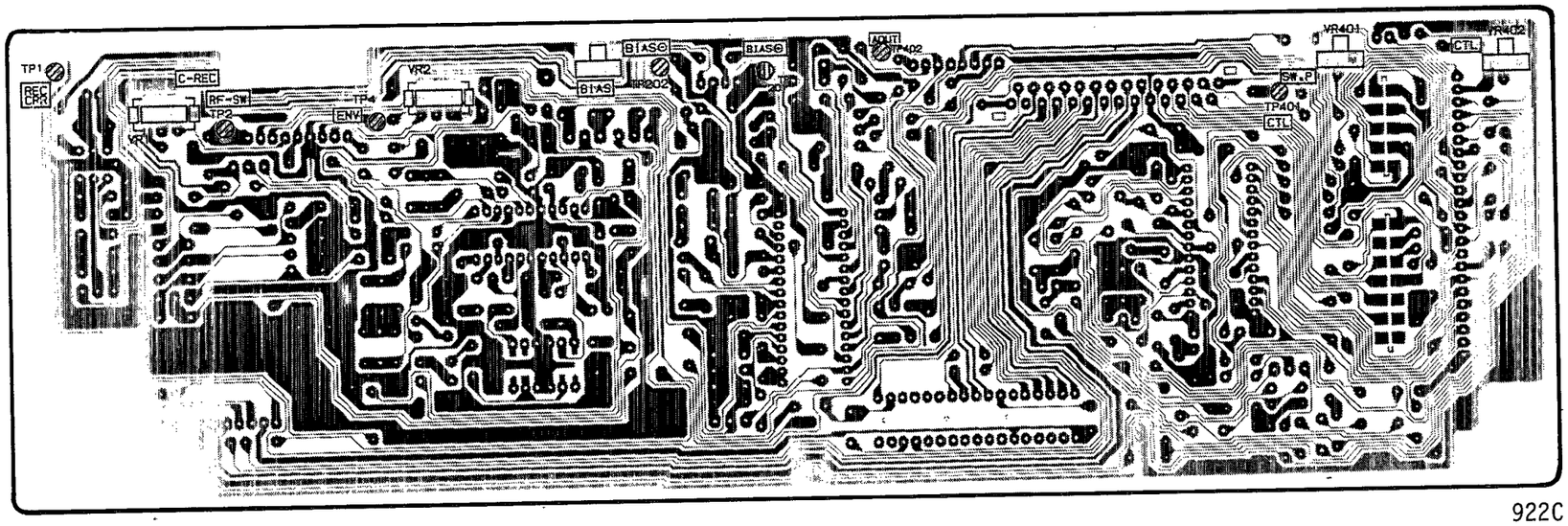
Fig. 8-11

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 delated 0msec. from the sitting of CH2 RF Switching pulse.



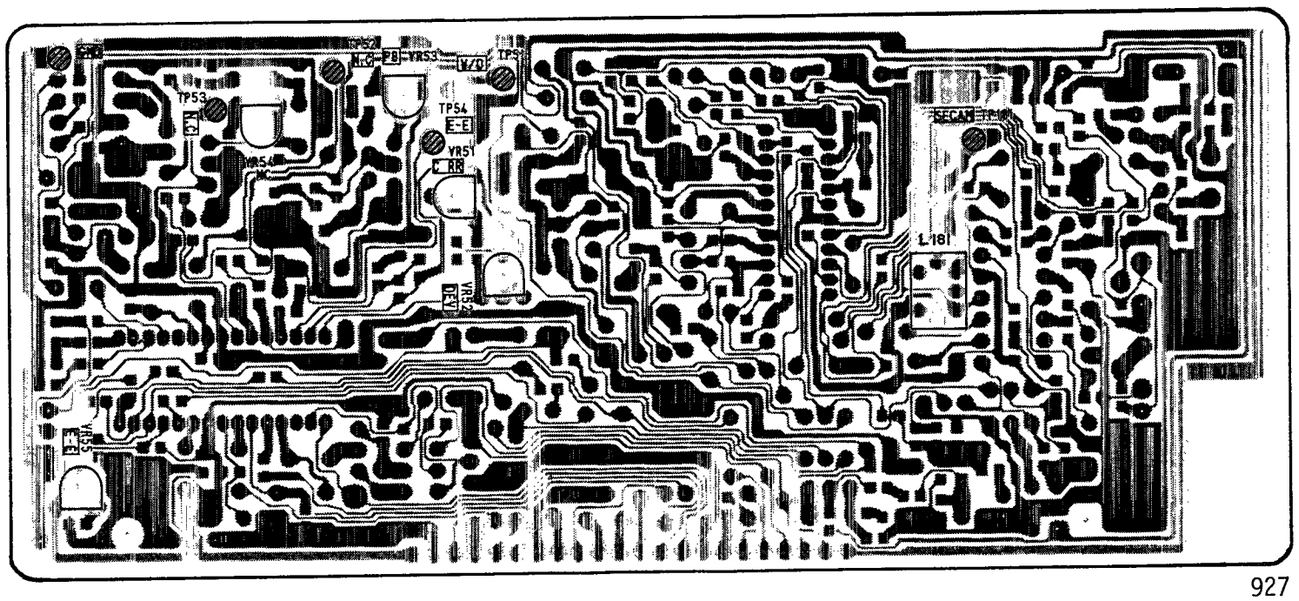
9. TEST POINT

MCV-C PCB



922C

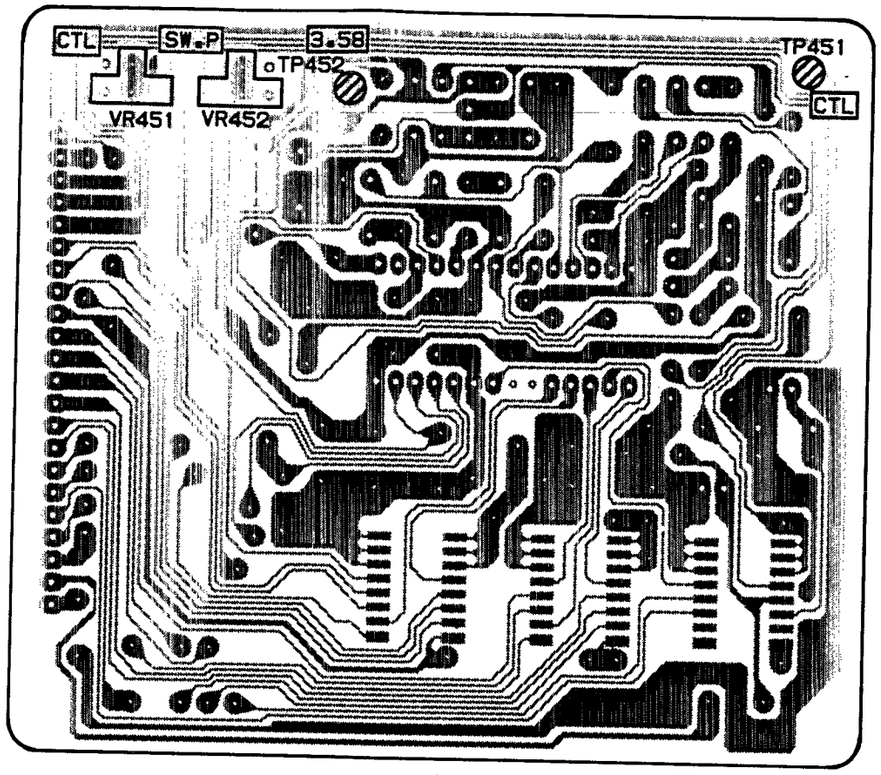
MSV PCB



927

SVV PCB

(3 SYSTEM Model Only)



982

10. P.C.BOARD TOP AND BOTTOM VIEWS

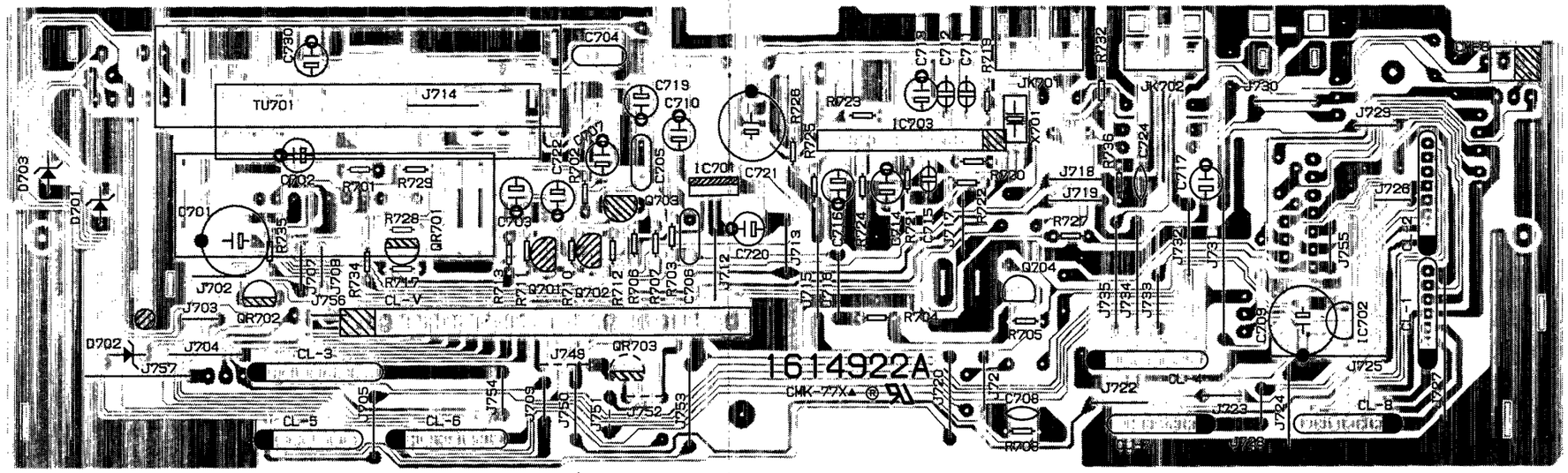
☆ Capacitor and transistor are noted with follow symbolos.

: Cap. Electrolytic : E C PNP : Transistor B : E C DTA : Digital Transistor B

: E C NPN : Transistor B : E C DTC : Digital Transistor B

MCV-A PCB

TOP VIEW

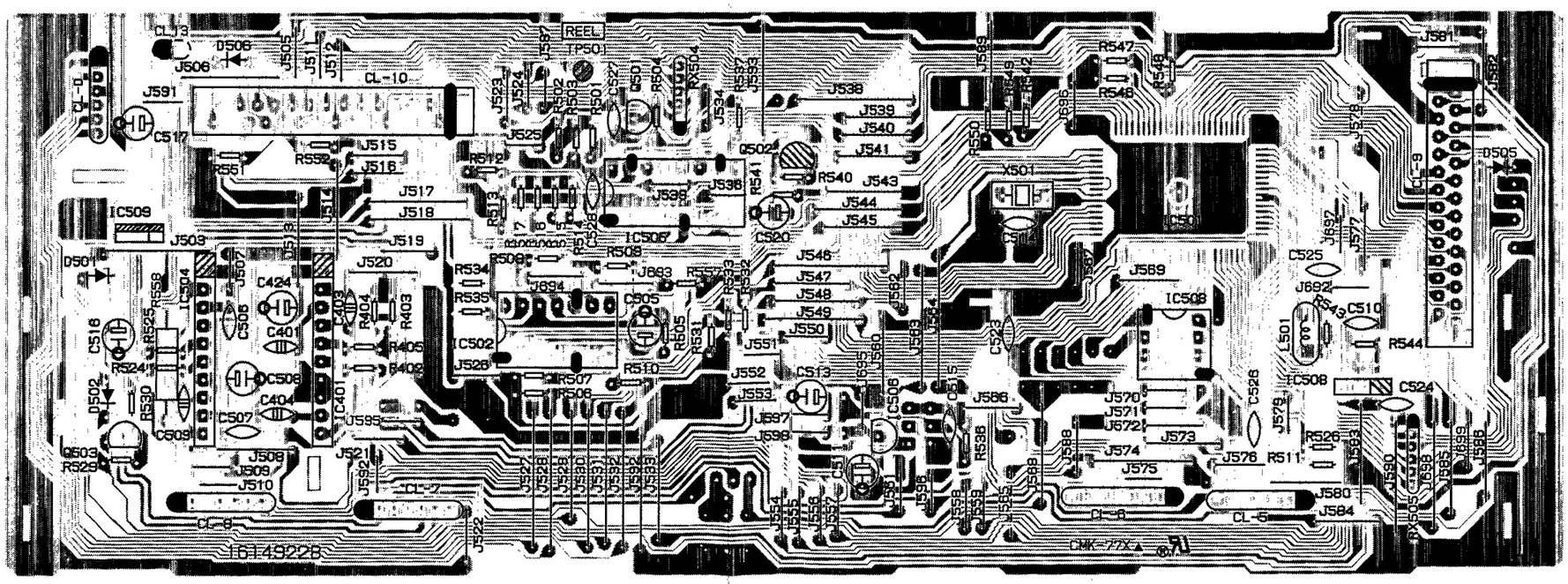


922A

— — — — 3 System Model Only

MCV-B PCB

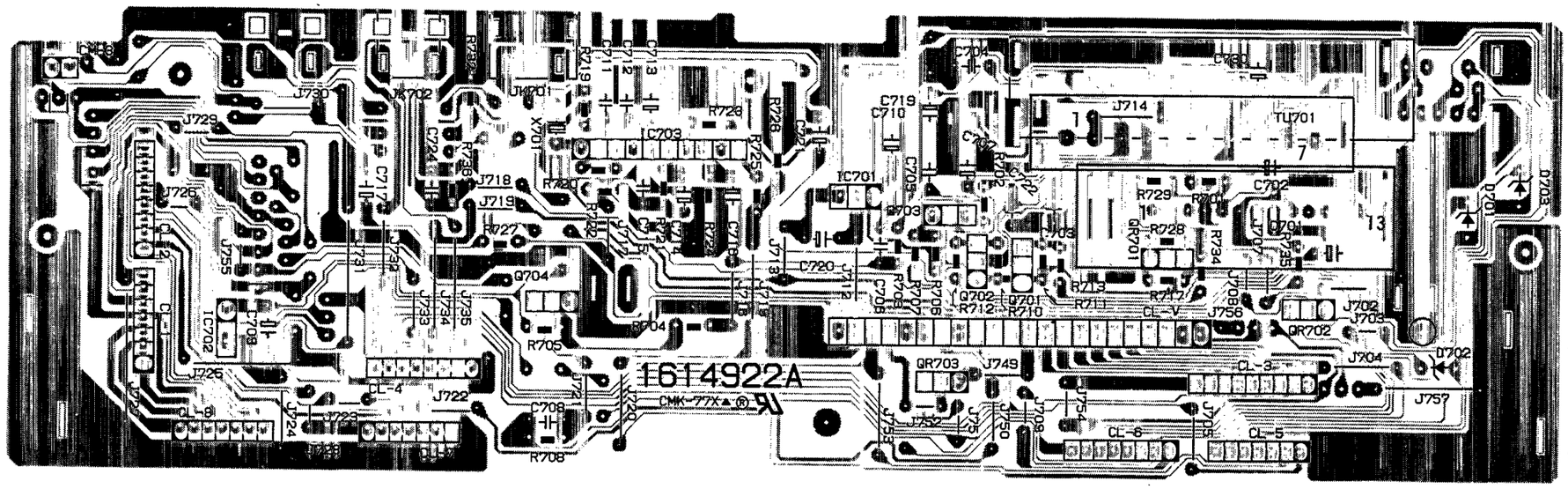
TOP VIEW



922B

— — — — 3 System Model Only

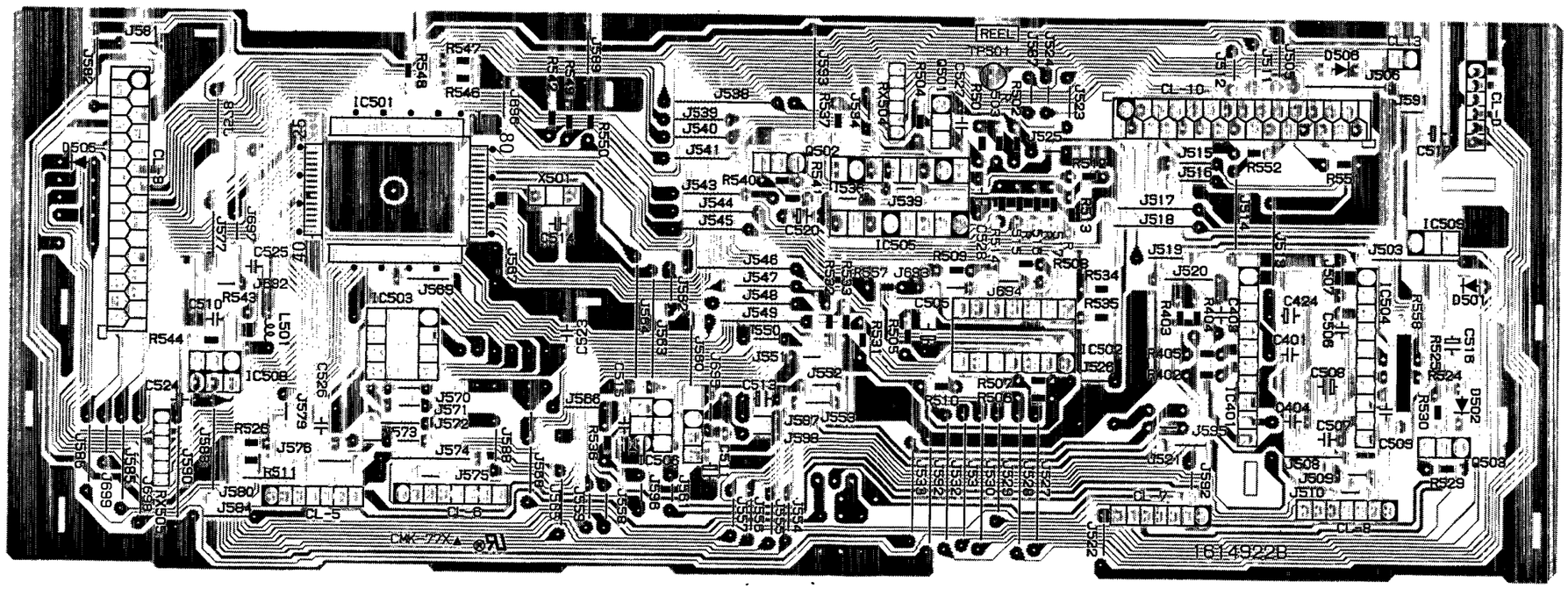
BOTTOM VIEW



922A

– – – – CATV Model Only

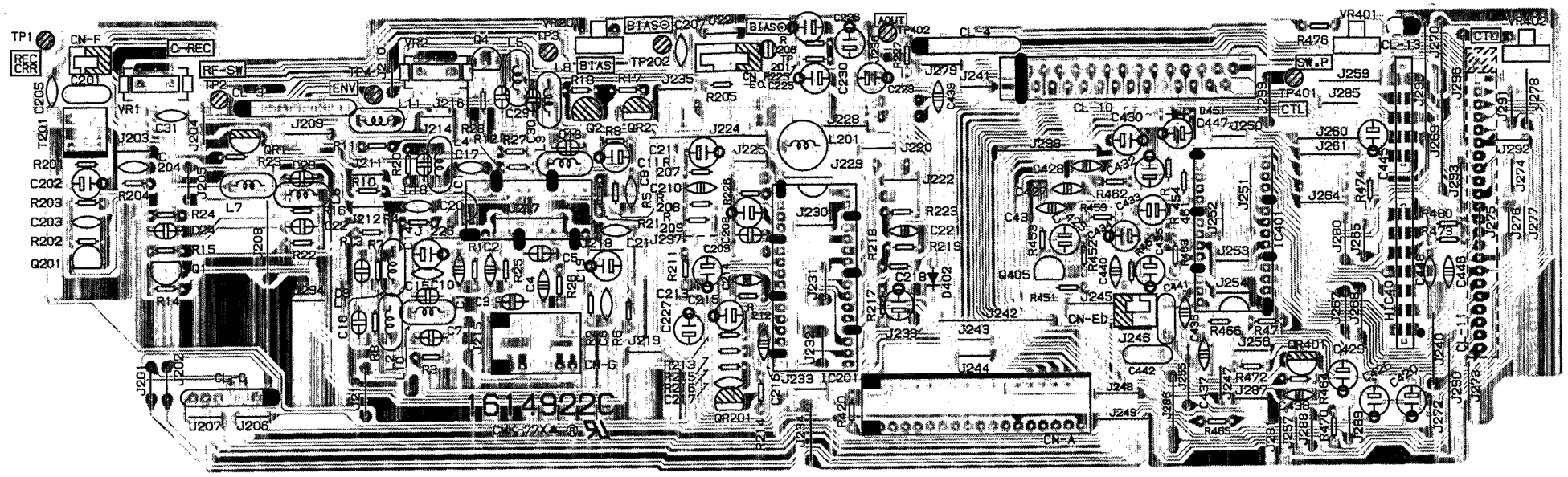
BOTTOM VIEW



922B

MCV-C PCB

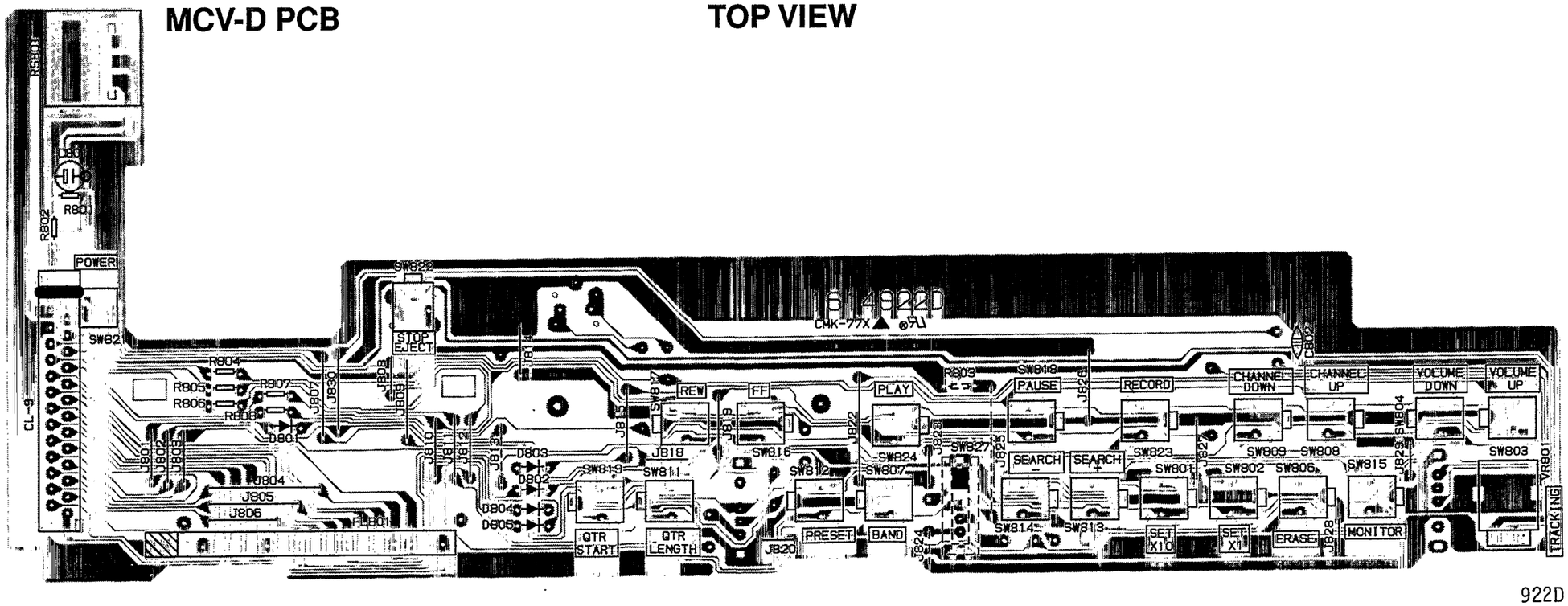
TOP VIEW



— — — — 3 System Model Only

MCV-D PCB

TOP VIEW

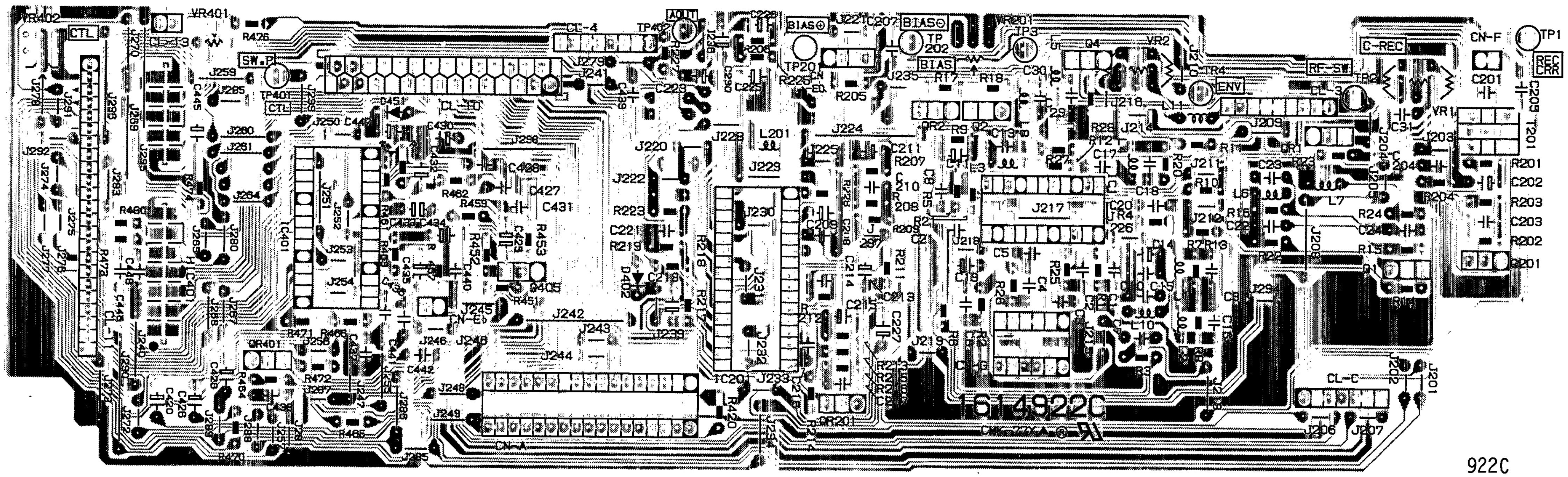


— — — — 3 System Model Only

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

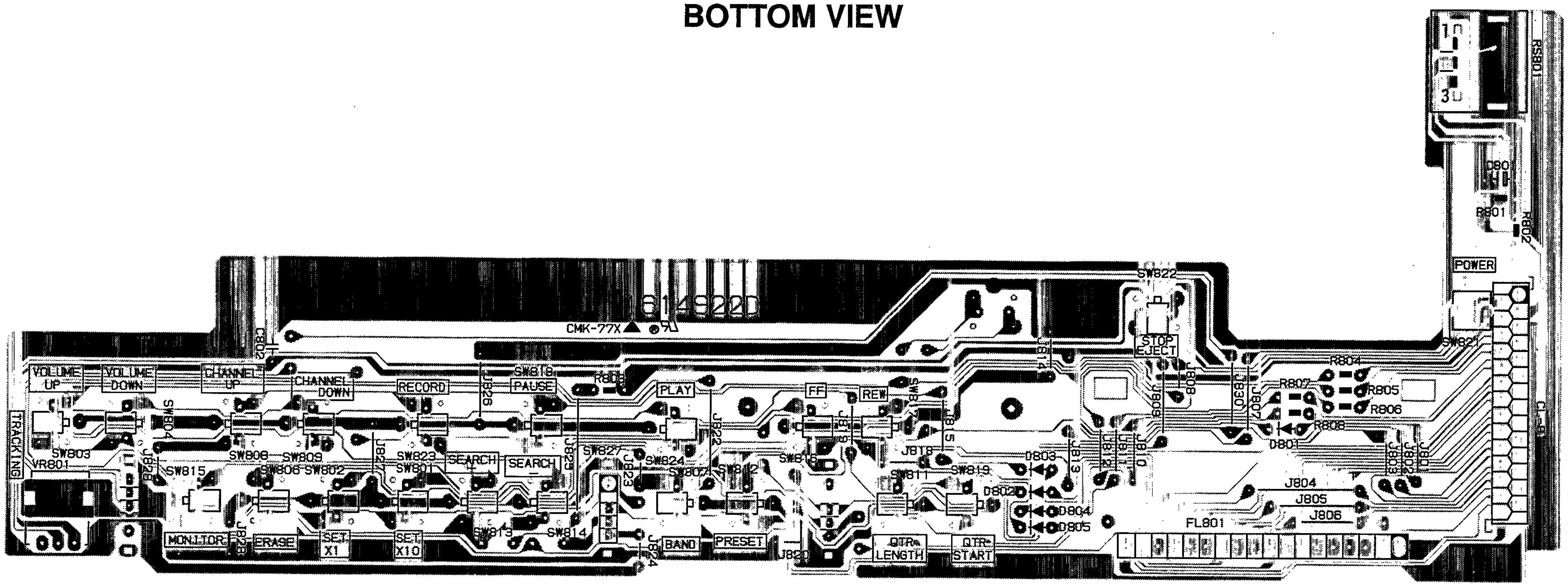
1 2 3 4 5 6 7 8 9 10 11 12 13

BOTTOM VIEW



922C

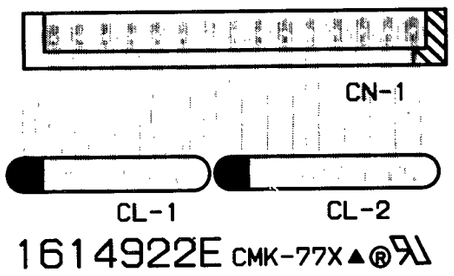
BOTTOM VIEW



922D

MCV-E PCB

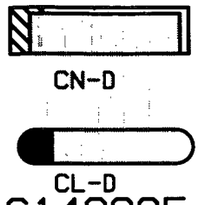
TOP VIEW



922E

MCV-F PCB

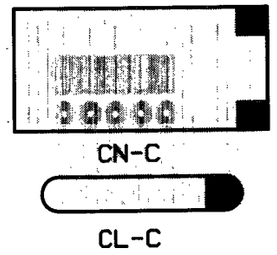
TOP VIEW



922F

MCV-G PCB

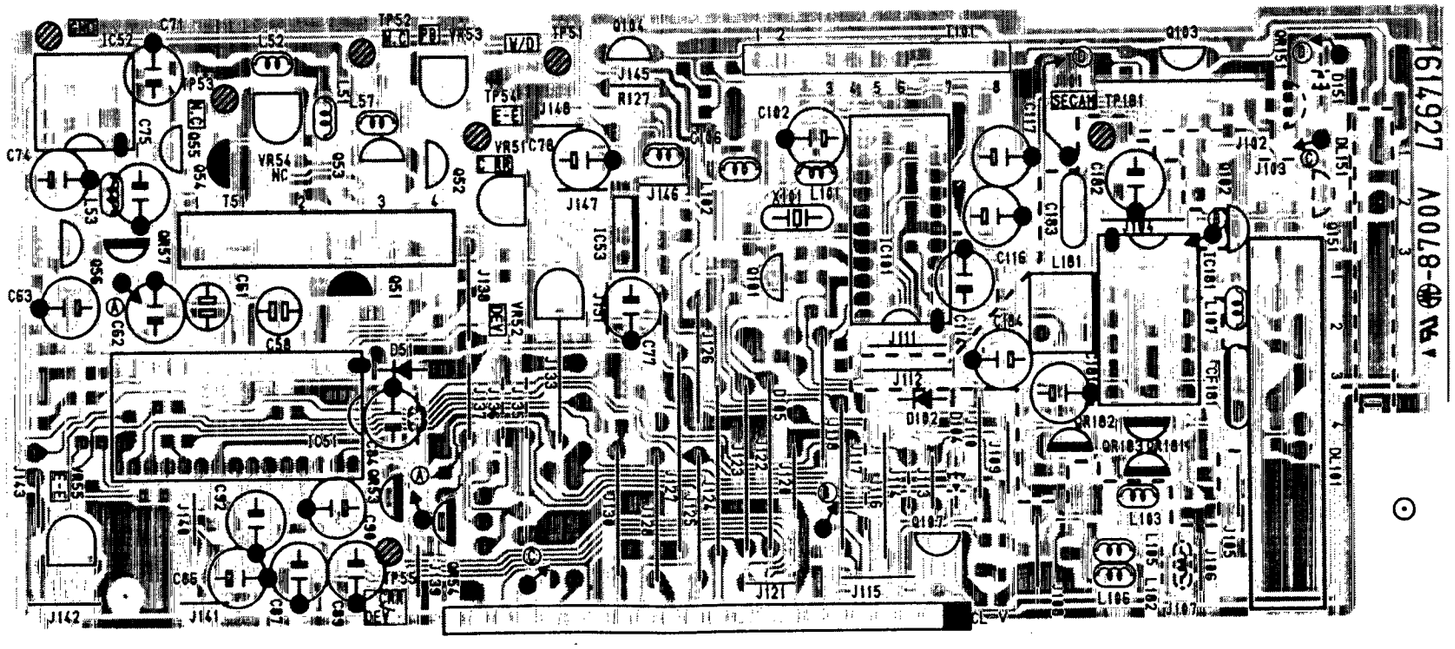
TOP VIEW



922G

MSV PCB

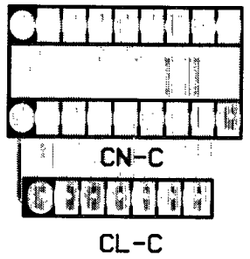
TOP VIEW



927

— — — — 3 System Model Only

BOTTOM VIEW



1614922G

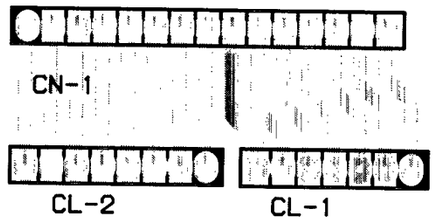
922G

BOTTOM VIEW

1614922F

922F

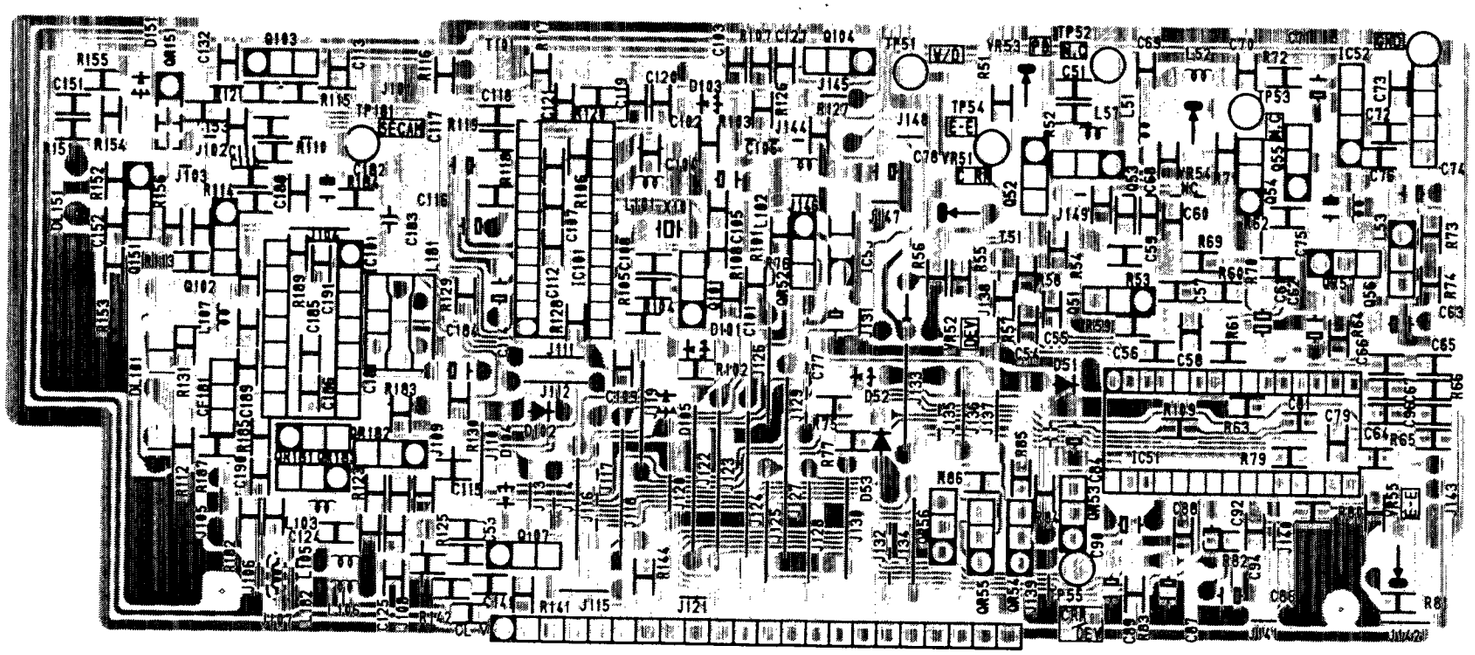
BOTTOM VIEW



1614922E CMK-77X▲

922E

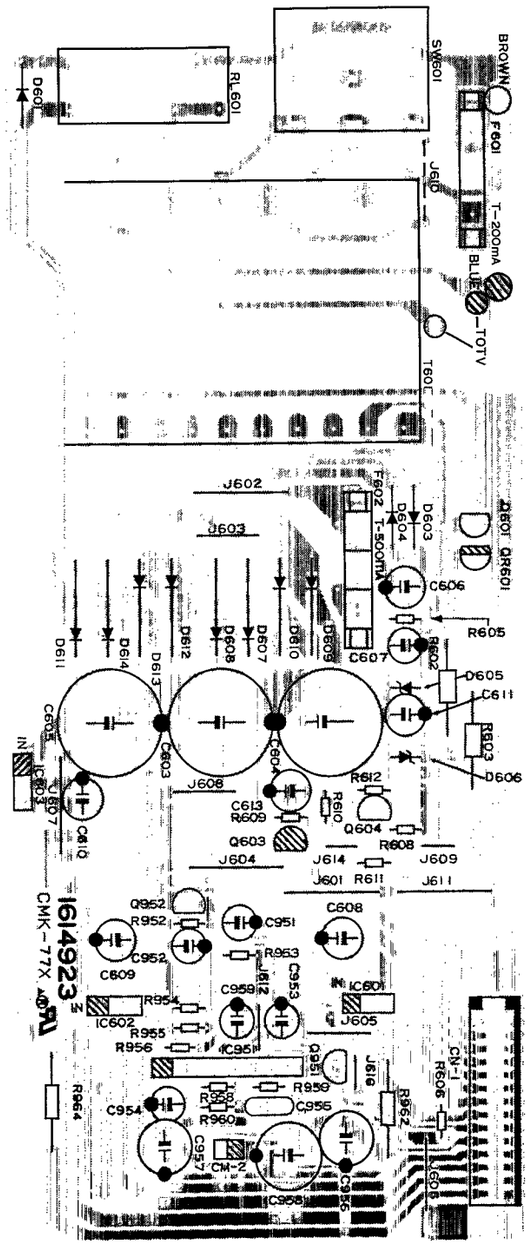
BOTTOM VIEW



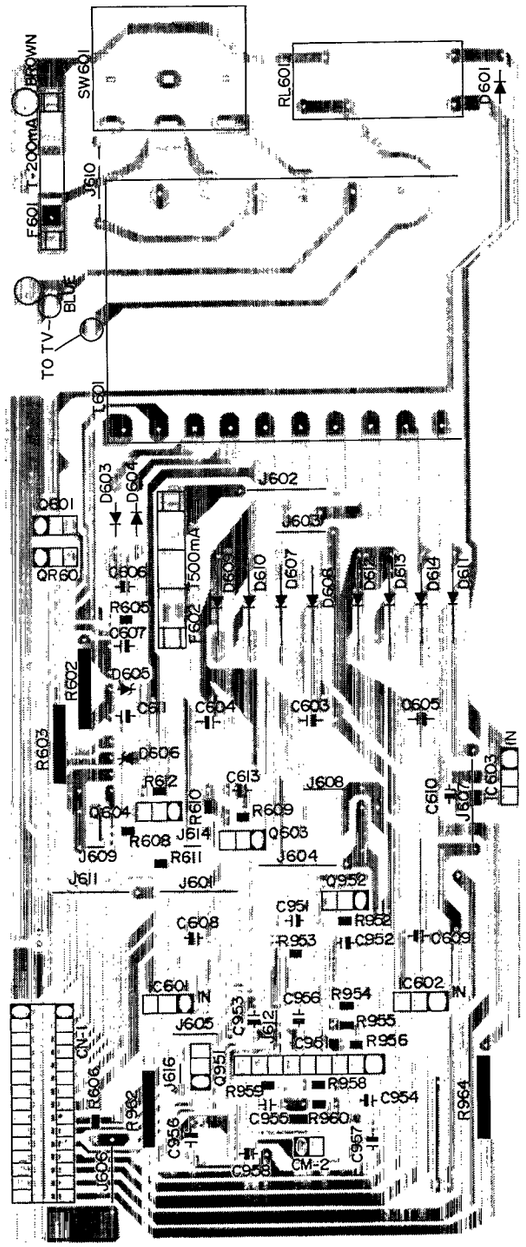
927

PSV PCB ----- 3 System Model Only

TOP VIEW

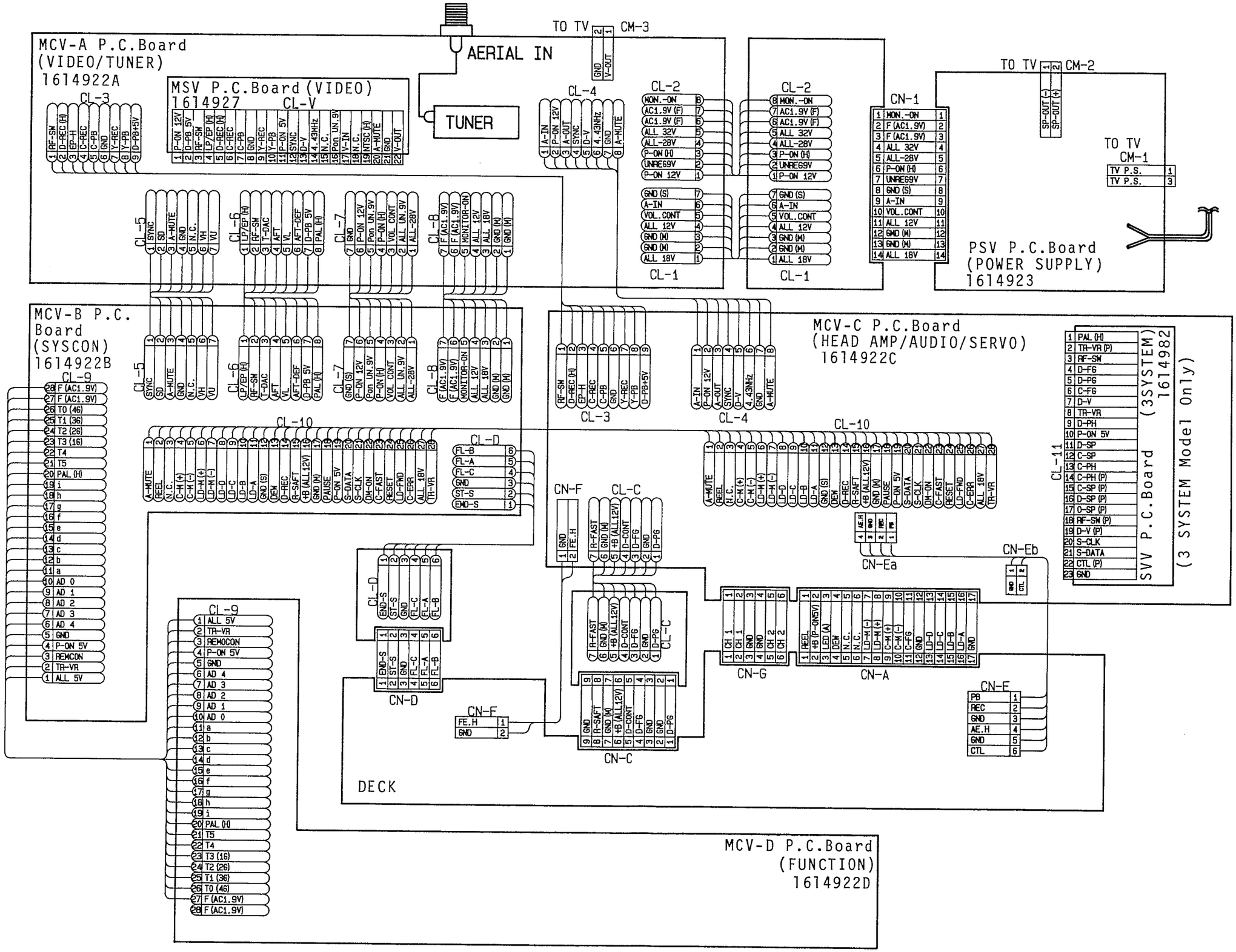


BOTTOM VIEW



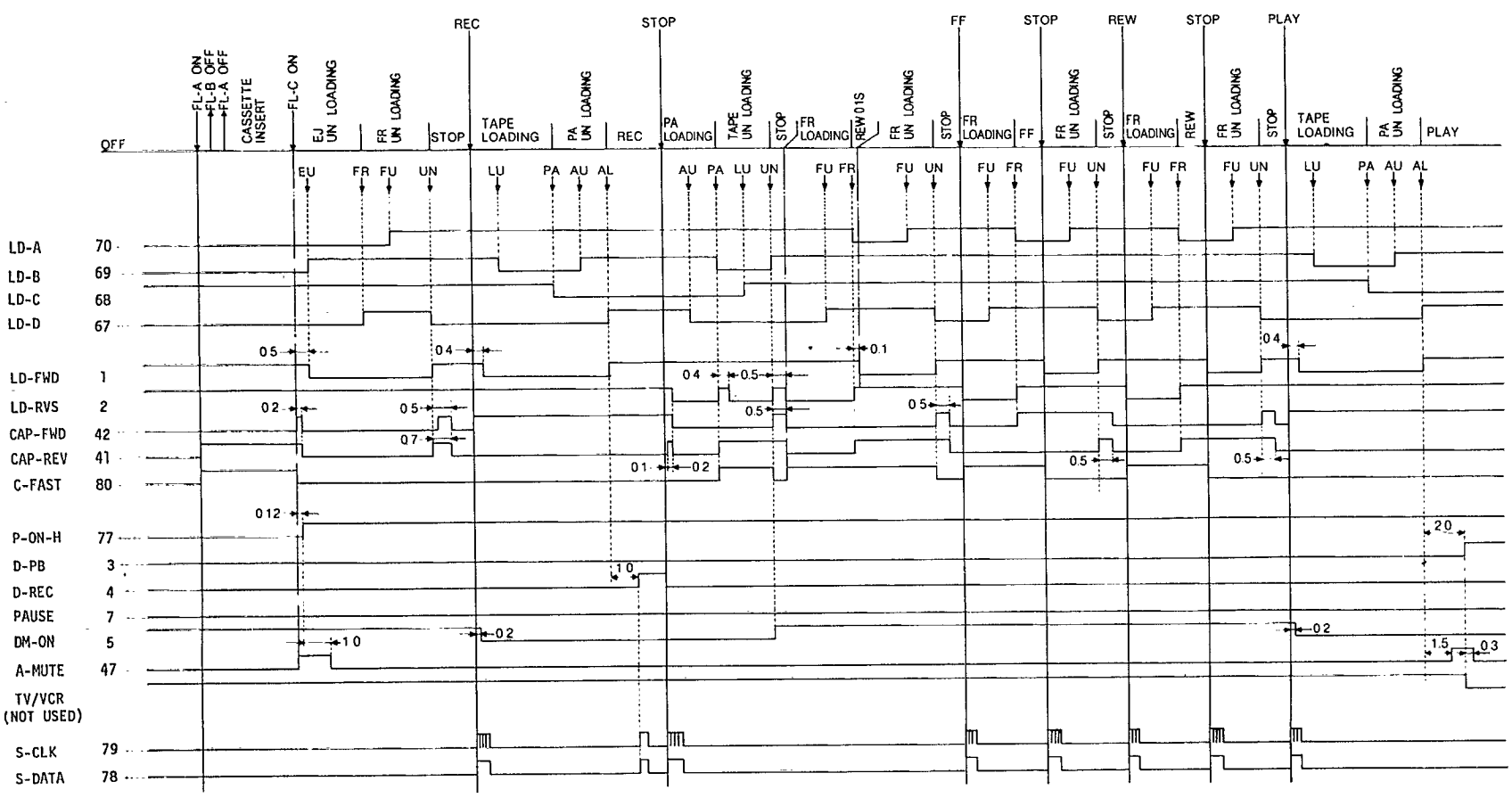
923

11. WIRING DIAGRAM

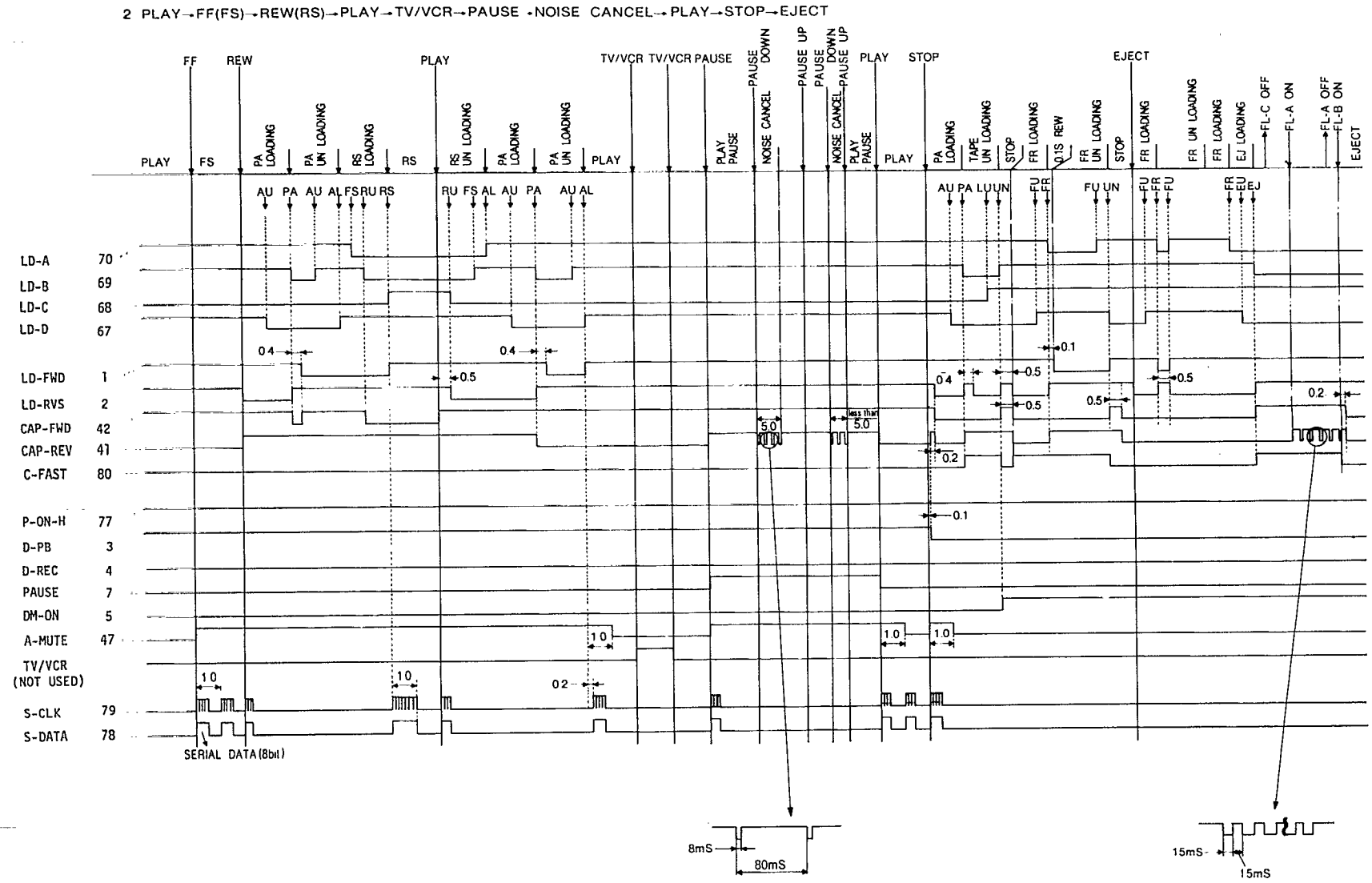


12. SYSTEM CONTROL TIMING CHARTS

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

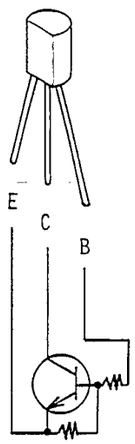


2 PLAY → FF(FS) → REW(RS) → PLAY → TV/VCR → PAUSE → NOISE CANCEL → PLAY → STOP → EJECT



Symbol	Position
EJ	Front loading, Eject
EU	Intermediate
FR	FF, REW
FU	Intermediate
UN	Stop
LU	Tape Loading
PA	Gear Change
AU	Intermediate
AL	Play (Pause)
FS	Intermediate
RU	Intermediate
RS	Review

13. LEAD IDENTIFICATIONS

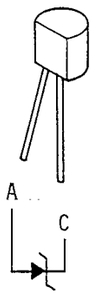


2SA608 2SA854 2SA933 2SA934 2SA1016 2SA1038 2SA1317 2SA1346 2SA1585 2SD1384 2SD1468

2SB892 2SB1010 2SC536 2SC1740 2SC1741 2SC2058 2SC2060 2SC2808 2SC2839 2SC3393 2SC3400

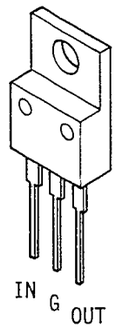
DTA114 DTA124 DTA143 DTA144 DTC114 DTC124 DTC143 DTC144 A1346 2SD400 2SD1012 2SD1207

PST529
T529D
T529C



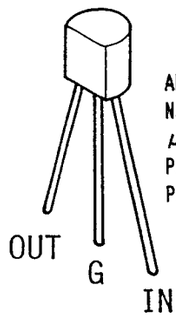
L5631

A:Anode
C:Cathode



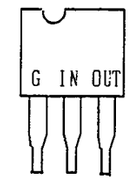
AN7812 AN7805 AN7818 AN78M09 AN78M05 NJM7812 NJM7805 NJM7818 NJM78M05 NJM78M09

μpc7812 μpc7805 μpc7818 μpc78M05

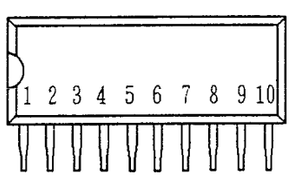


AN78L05 NJM78L05A μpc78L05J PST529G-2 PST529C-2

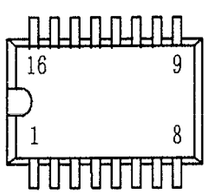
AN78L18 NJM78L18 AN78L06 NJM78L06



MN1280



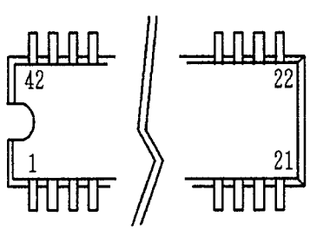
LA7210
BA6209N



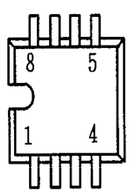
AN78N05 BU4052 BU4053 LA7913 LB1408

MN1225 MN1224 MN4053B MN4051B

NJM4053 NJU4053BD IR2E27 MN12201

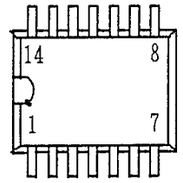


FEVSE14DN478
CXA1124AS
FEVSY14DN486



BA728 LC8991 MSM7400 LC8992 BA728 BR93C46

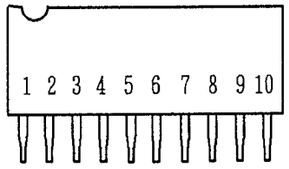
X24C01



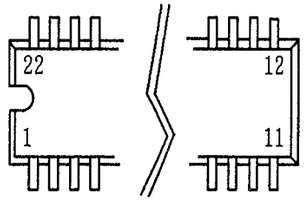
AN6912 BA10339 BU4013B BU4066B LA6339 MN4013B MN4066B

NJM2901N NJU4013BD SAF1135P SDA5640 MN4011BD BU4011BD NJU4011BD

SN76670N NJM2901N AN6368 SDA5642 TBA120U BA6405 BA10324

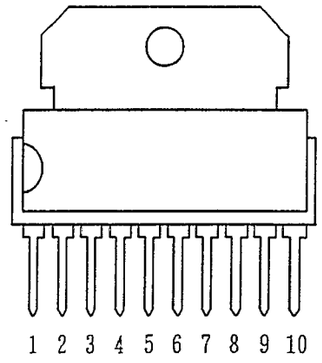


BA6209N
LA7910



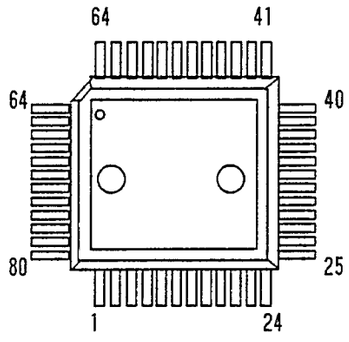
FEVON14DN264
LA7320
HA118041
BA7740S
CXA1138S
HA118041NT

AN78N05

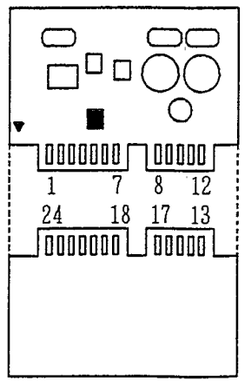


BA6209 BA6219B

BA6238A TA7288P

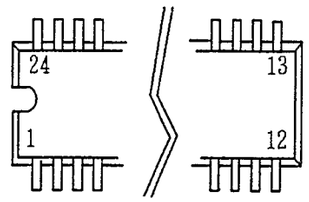


BA7703K
CXP50116
BA7703K1

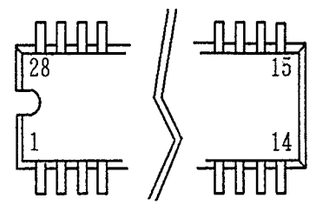


HIC401 (SERVO)

HIC400

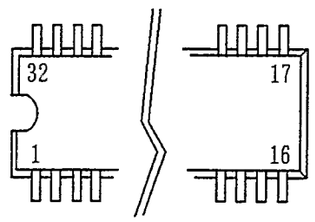


LA2746
μpc2308
LA7317
LA7331

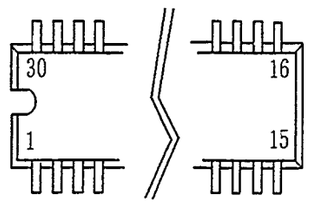


FEVSE14DN597
FEVSE14DN362
FEVSE14DN363

SAA5235
SAA5236
SDA5232
SDA5233
TDA3803A



BA7767
AN3932

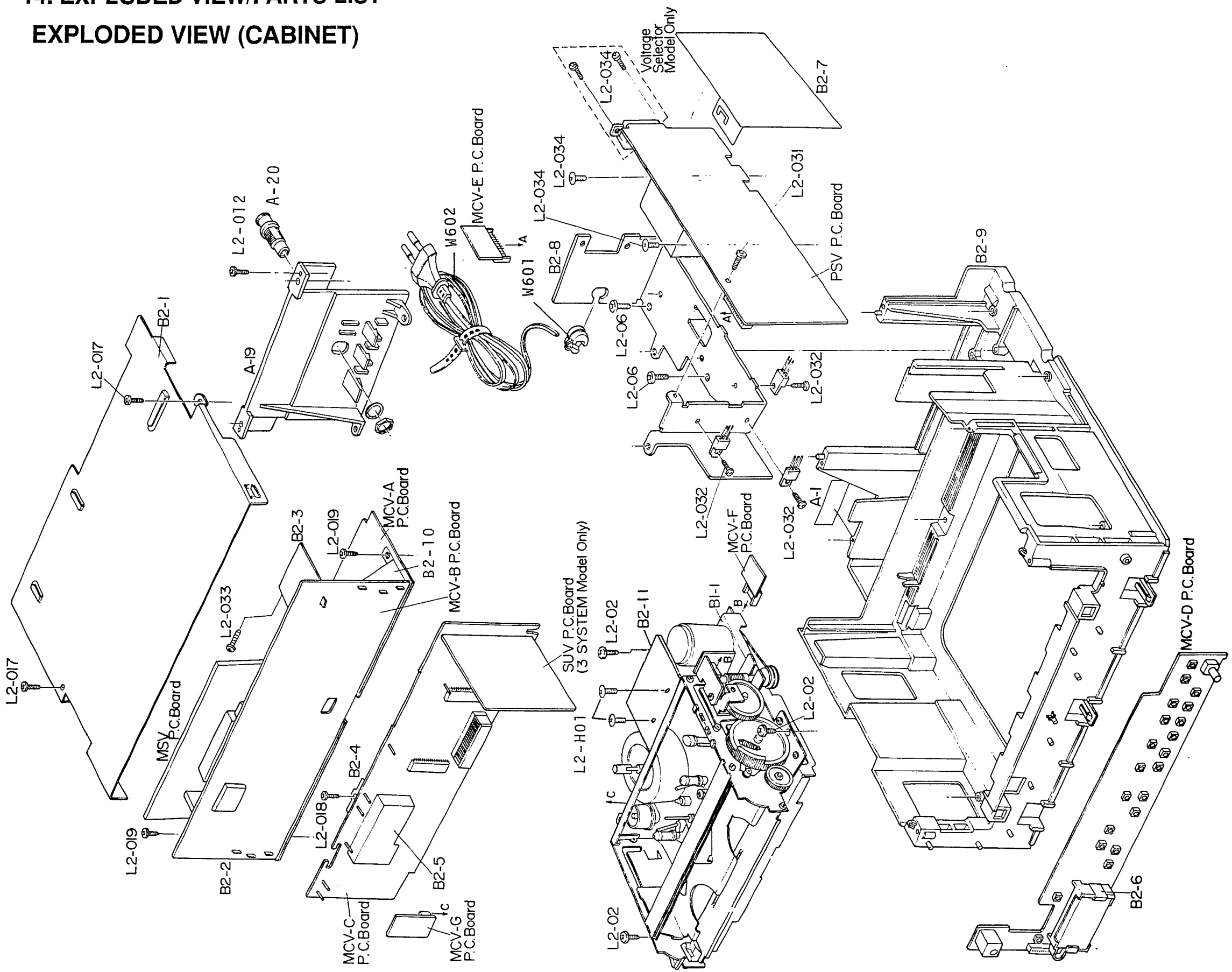


AN3330K
BA6800AS
LA7096
14LN392
LA7326

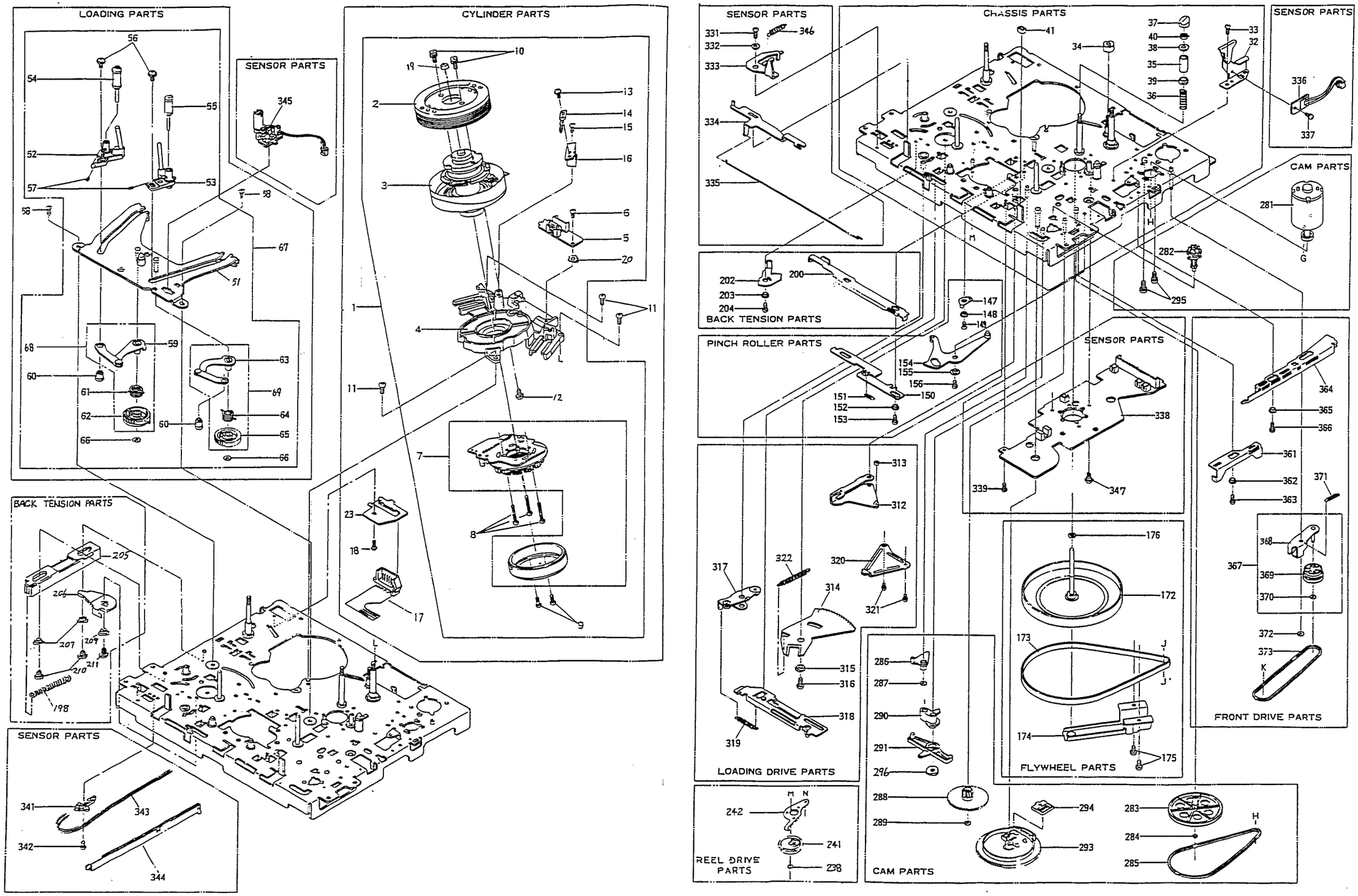
LA7323
14DN264

14. EXPLODED VIEW/PARTS LIST

EXPLODED VIEW (CABINET)



EXPLODED VIEW (DECK)

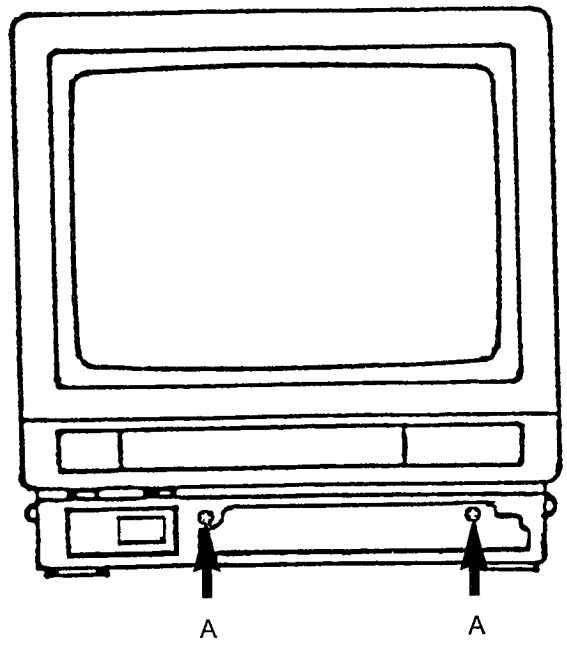


[TV SECTION]

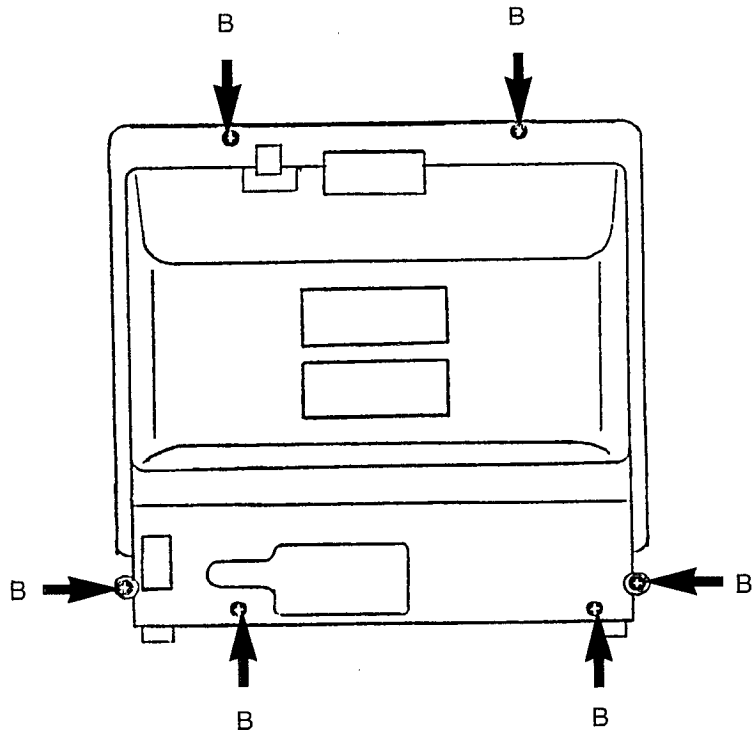
1. DISASSEMBLY INSTRUCTIONS (SET)

TV Cabinet removal

• Remove 2 screws (A) from front cabinet.

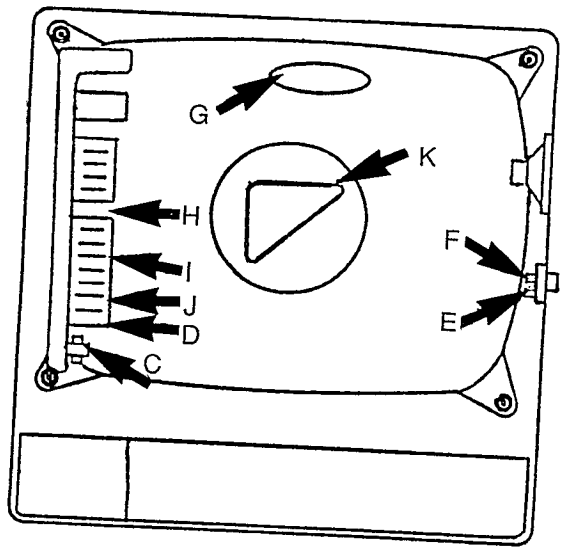


• Remove 6 screws (B) from rear cabinet.



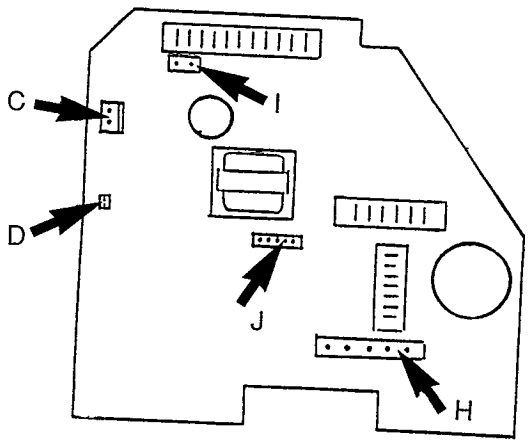
VIDEO Deck removal

• Remove connectors (C,D,E and F).



CRT PCB and Main PCB removal

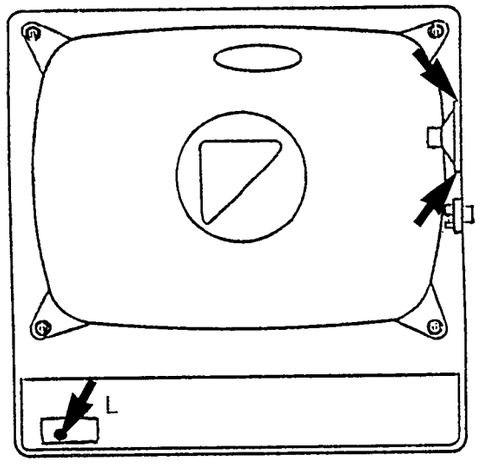
• Remove connectors (G,H,I,J and K) with Holder.



MAIN PCB

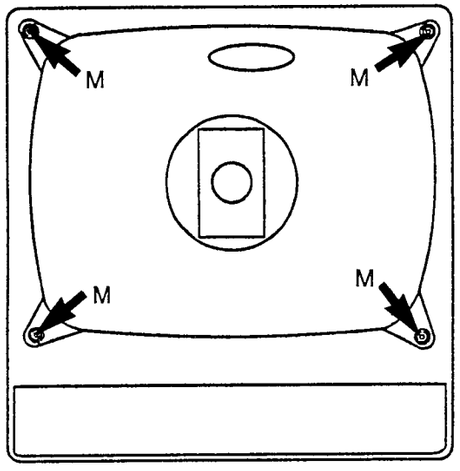
Earphone jack and Speaker removal

• Remove a screw (L) of Cotrol PCB.

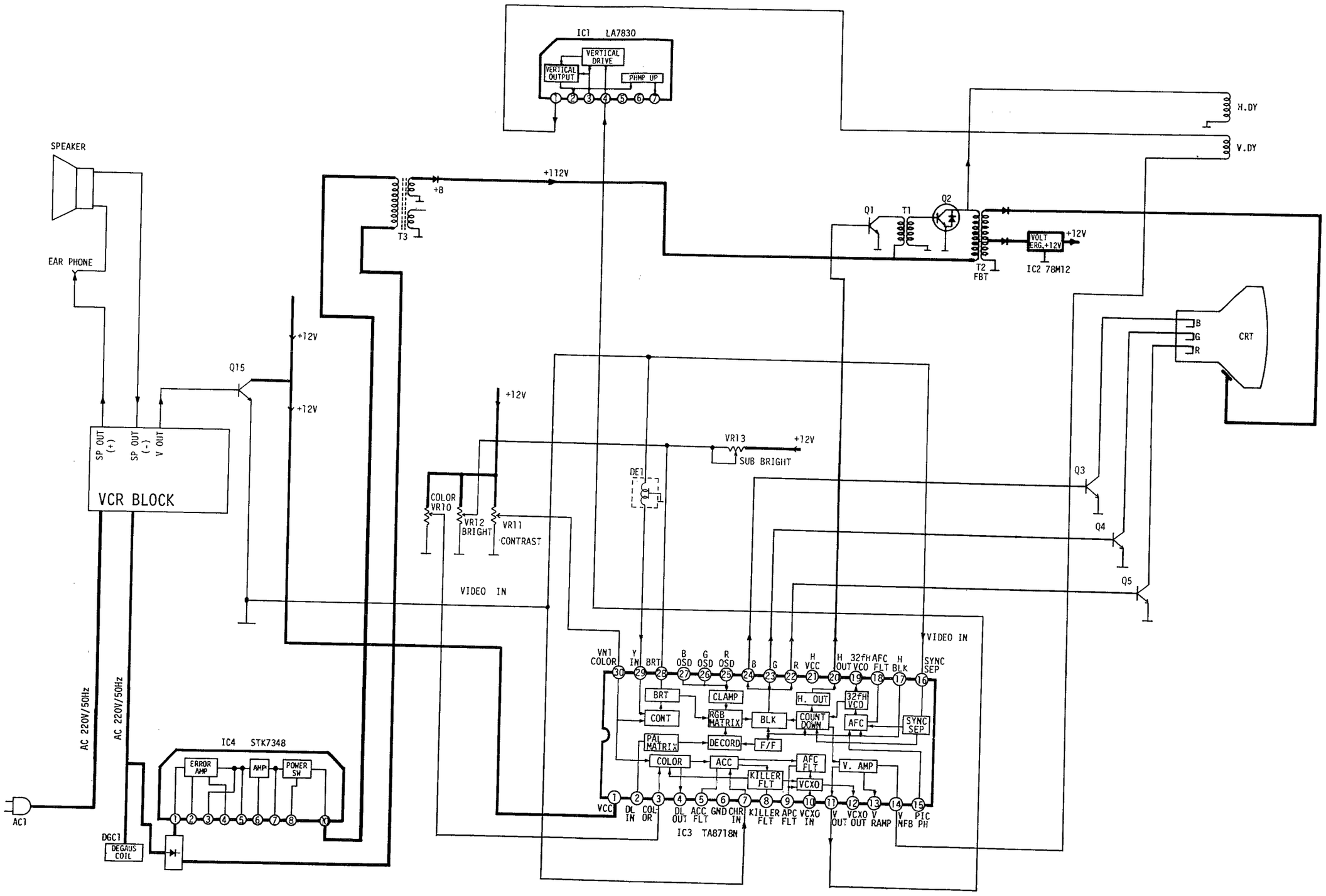


CRT removal

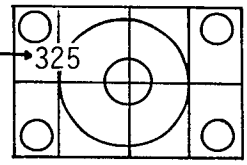
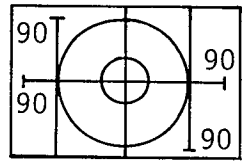
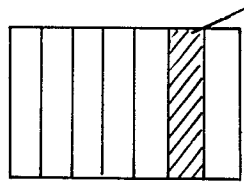
• Remove 4 screws (M).



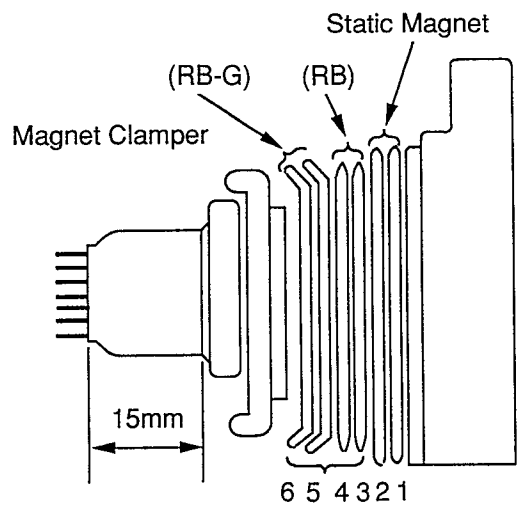
2. BLOCK DIAGRAM

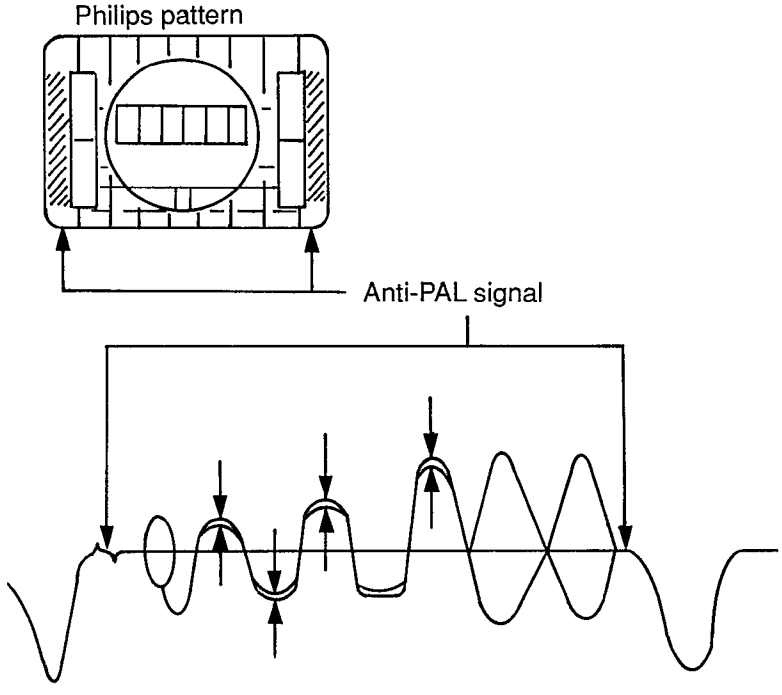


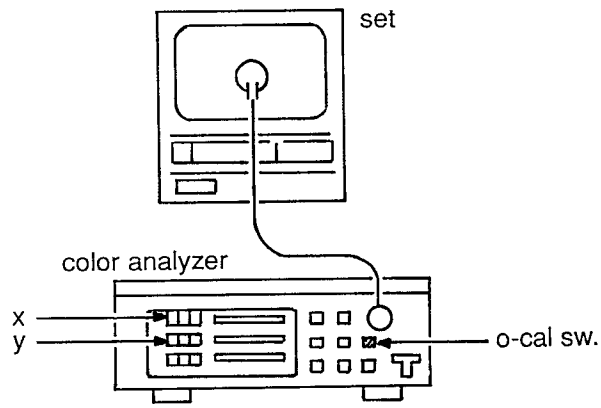
3. ELECTRICAL ADJUSTMENT

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. → 325 
2. Cut Off	VR1, VR3, VR5 SCREEN VR.	1. Input APL 100% white. 2. See the SCREEN (counter clockwise) min, and set VR1, VR3, VR5 to center. 3. Turn the Service switch ON. 4. Adjust the SCREEN to a point where the horizontal GREEN line starts flashing. 5. Adjust VR1 (blue) VR3 (green) 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 B.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 90%. 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. This level starts flashing. 

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

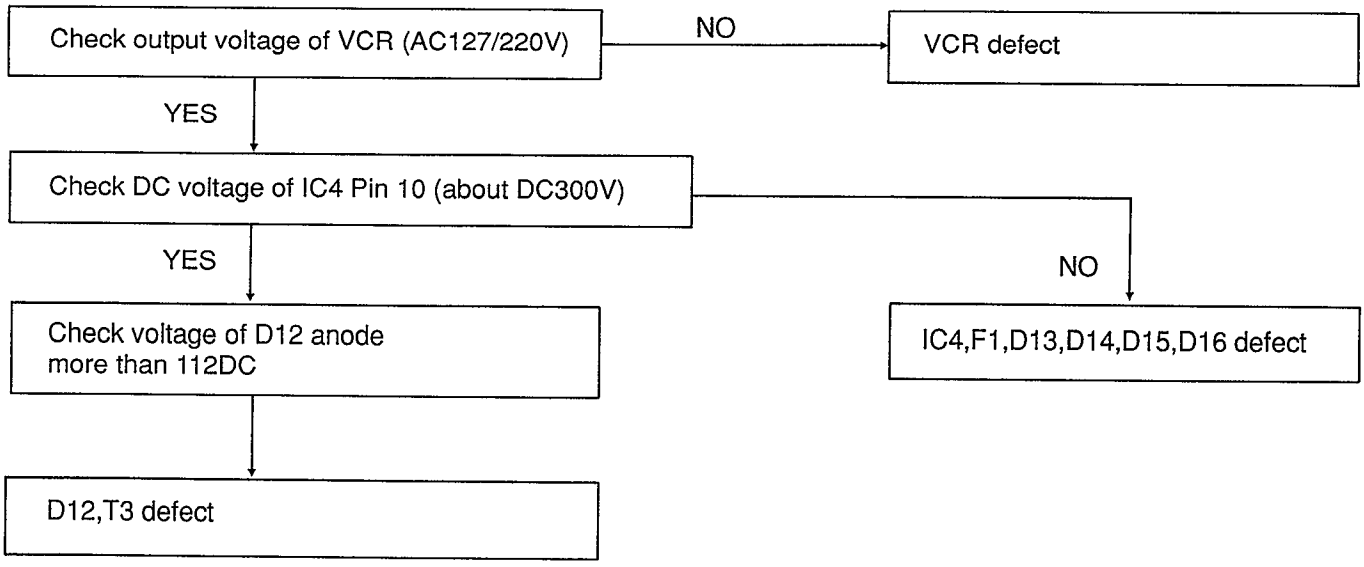
Alignment item	Alignment Points	Alignment Method
5. Color Purity	Defrection Yoke Purity Magnet	1. Set the unit facing west. 2. Operate the unit over 30 minutes before adjustment. 3. Fully degauss the unit using an external degaussing coil. 4. Inject a crosshatch signal and adjust the convergence control. 5. Inject a red color signal. 6. Loosen a screw of the Defrection Toke 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, Defrection 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 Defrection Yoke horizontally and vertically to obtain the best overall convergence. 5. Fix the Defrection Yoke fitting by wedges. 

Alignment Item	Alignment Points	Alignment Method
7. 1H delay line	VR9, L8	1. Input the Philips pattern. 2. Connect the oscilloscope to IC3 pin 24 (or Synchronize the oscillocope externally through the D13 anode.) 3. Adjust VR9, 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). 

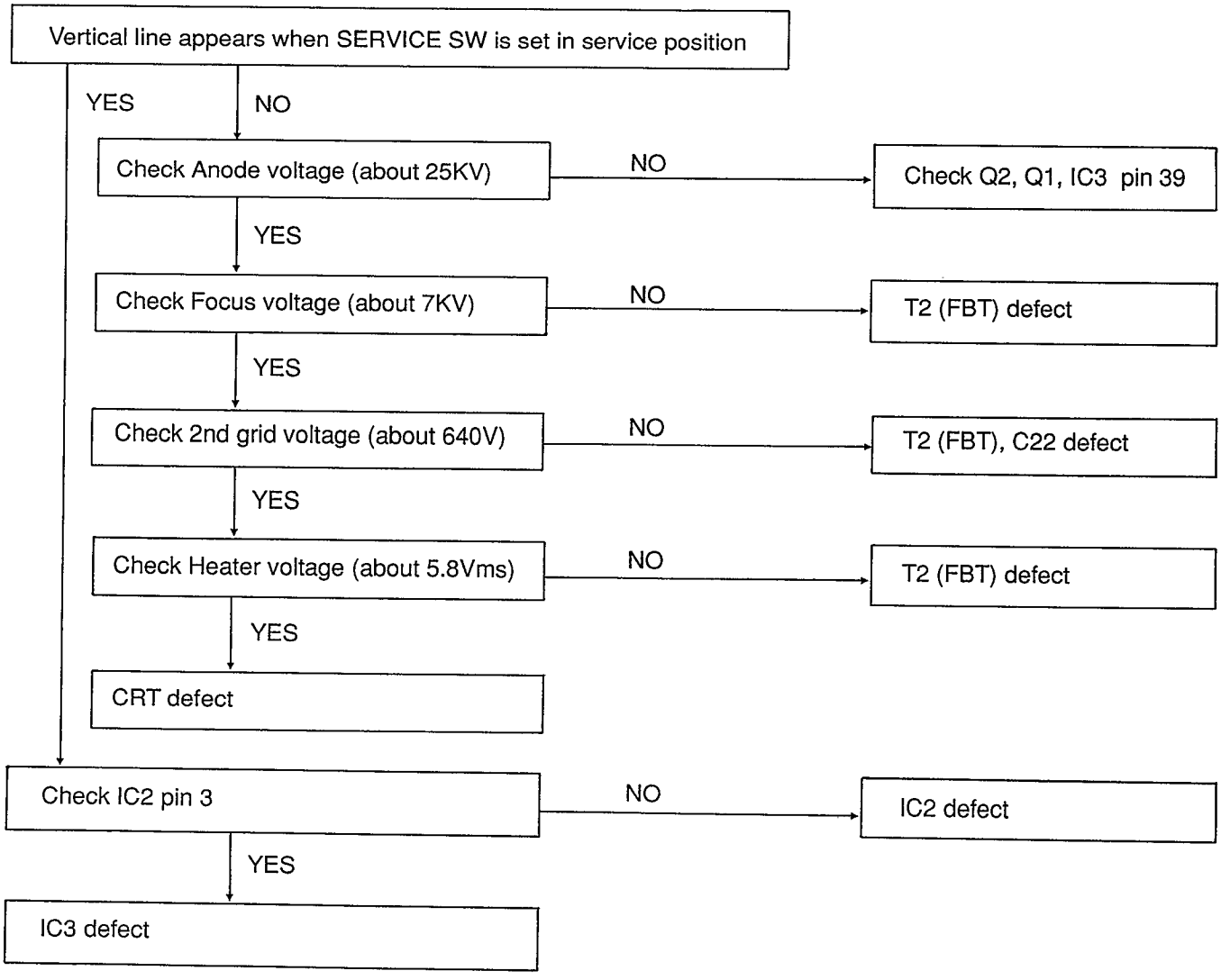
Alignment Item	Alignment Points	Alignment Method
8. White Balance	VR5 VR2 VR1,VR3,VR4	1. Input APL 100% white. 2. After aging for 20-30 minutes, demagnetize the tube (CRT) surface with a demagnetizer. 3. Set the color analyzer to the CHROMA mode, and after zero point calibration, bring the optical receptor into close contact with the center on the tube surface (CRT), and adjust R.DRIVE (VR5) and B.DRIVE (VR3) 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), VR4 (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 ±5% Max. x: 0.275 to 0.305 y: 0.285 to 0.315

4. TROUBLE SHOOTING GUIDES

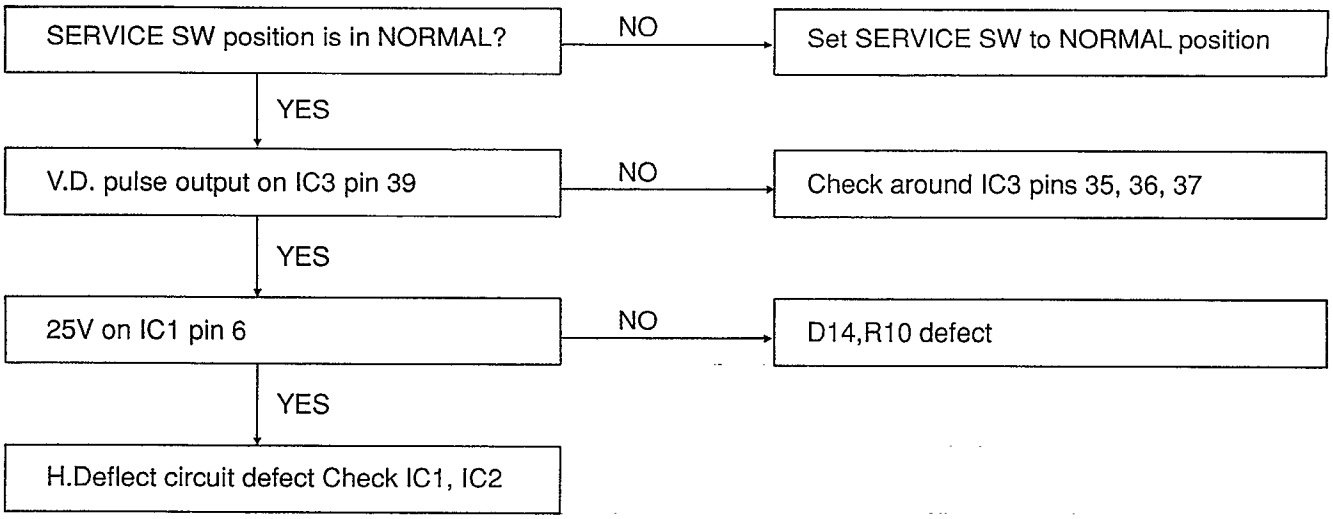
(1) NO POWER OUTPUT



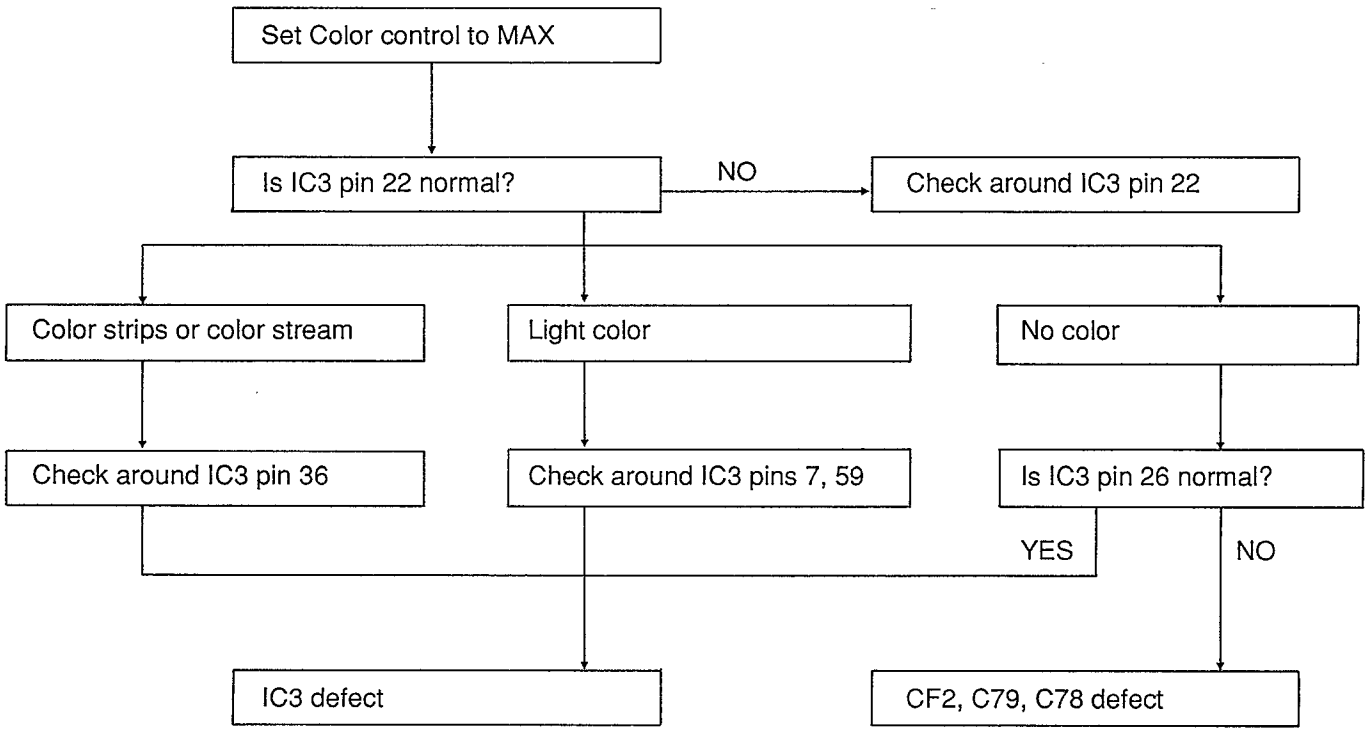
(2) NO RASTER WITH SOUND



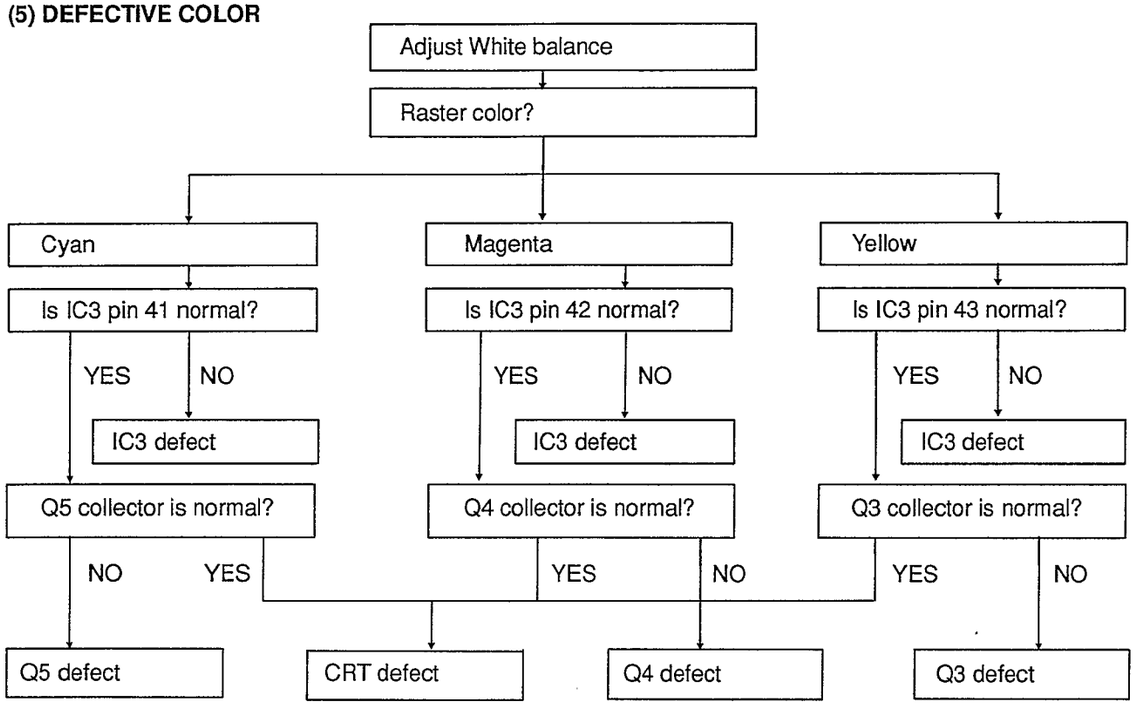
(3) NO HORIZ DEFLECT (ONLY V LINE)



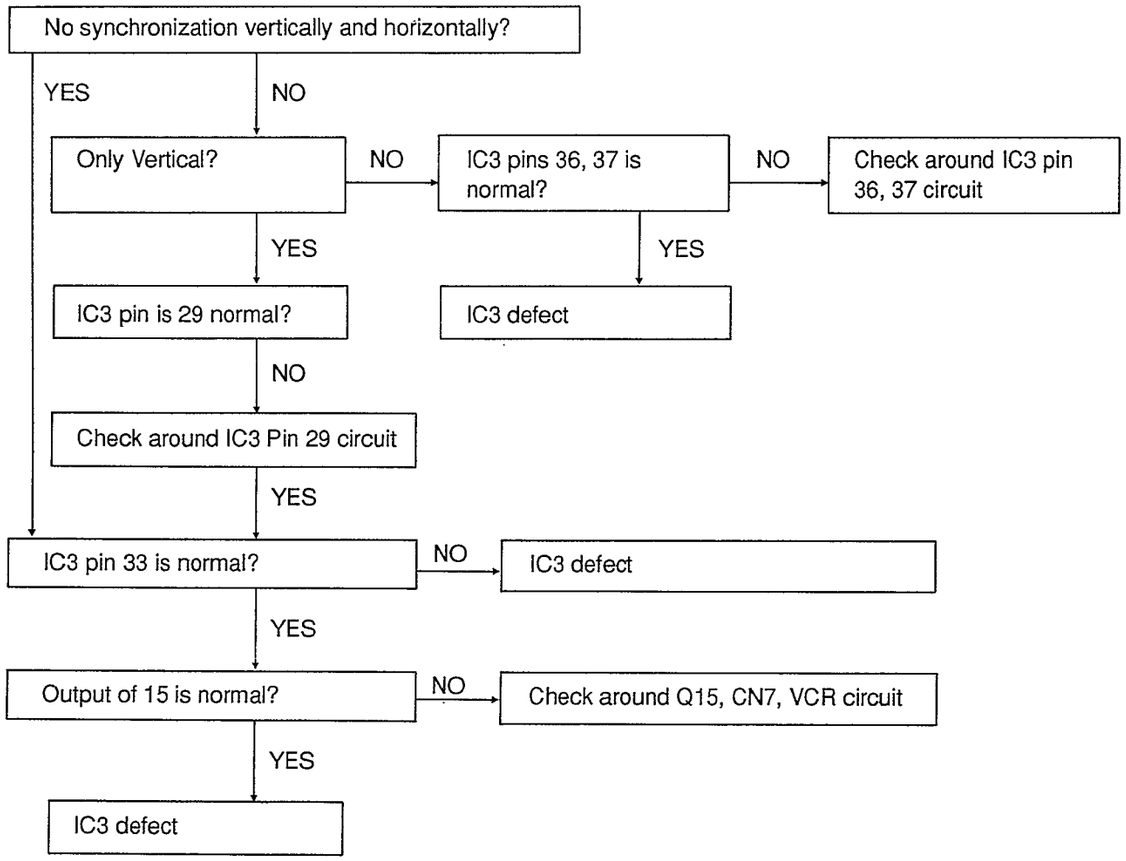
(4) NO COLOR



(5) DEFECTIVE COLOR



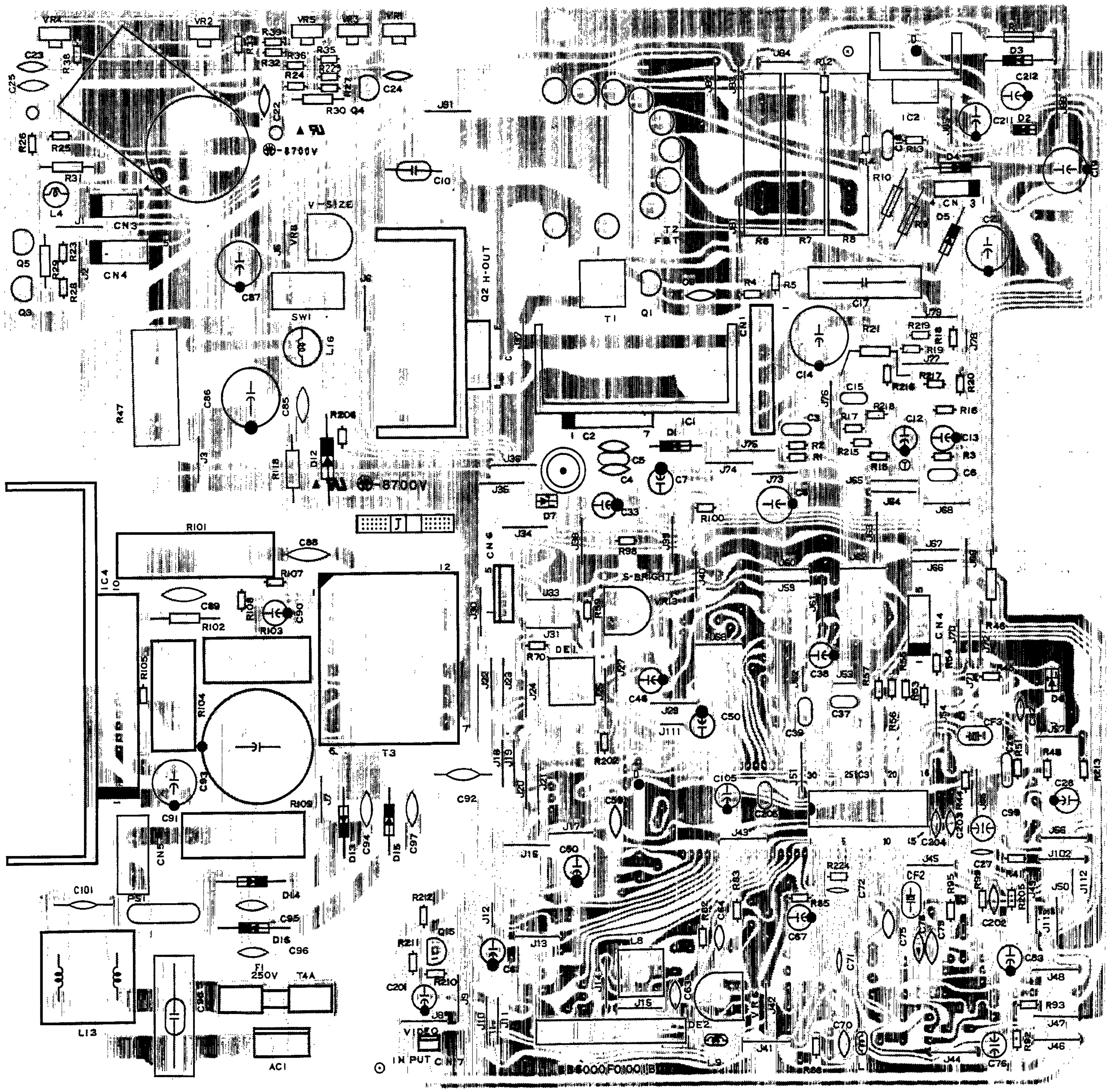
(6) NO SYNCHRONIZATION



5. P.C.BOARD TOP AND BOTTOM VIEWS

MAIN PCB TOP VIEW

Symbol	Meaning
	Resistor
	Ceramic Cap
	Ceramic Cap(NPO)
	Electrolytic Cap
	Electrolytic Cap(NP)
	Transistor
	Micro Inductor
	Diode
	Mylar Cap



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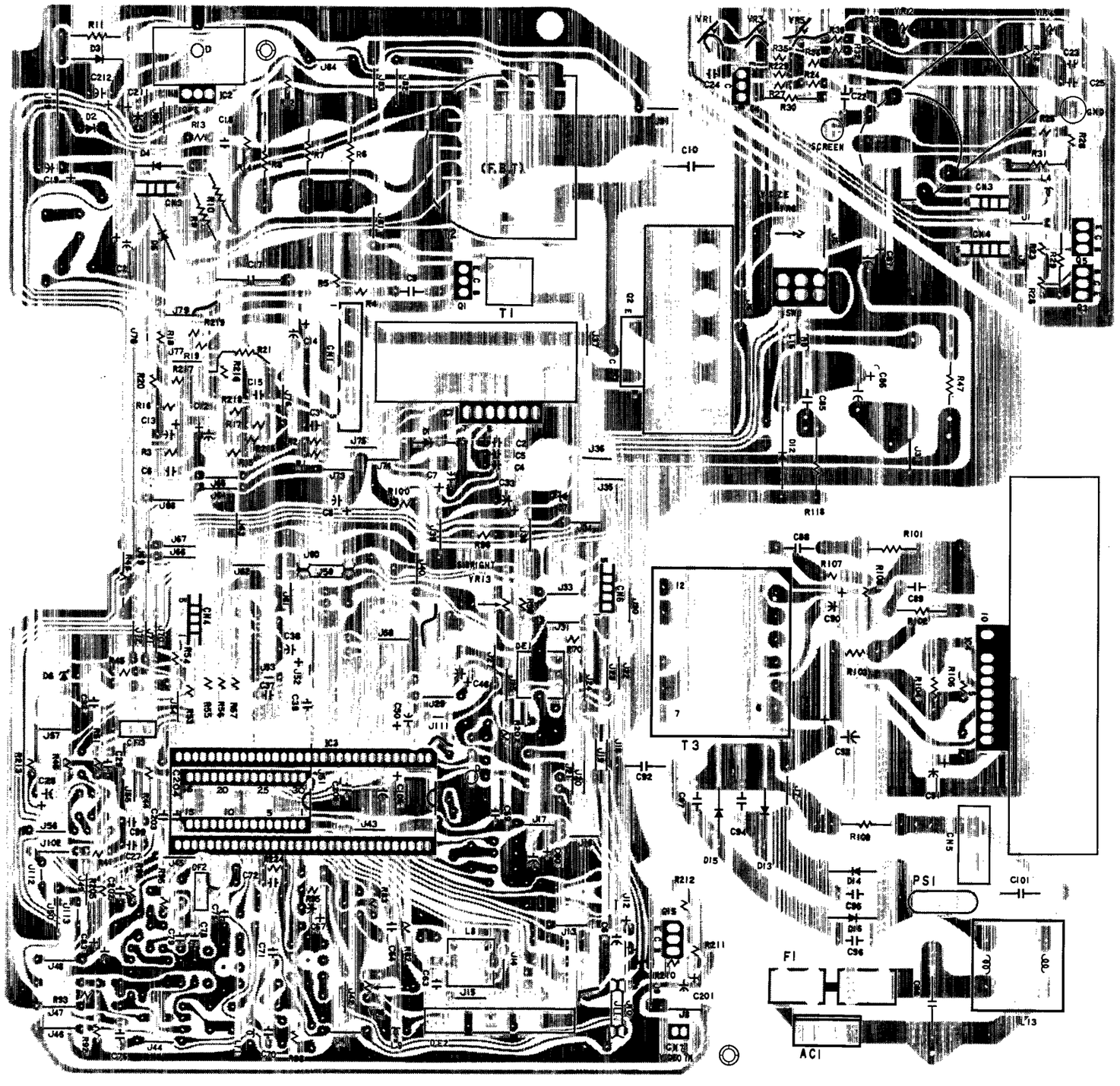
MAIN PCB BOTTOM VIEW

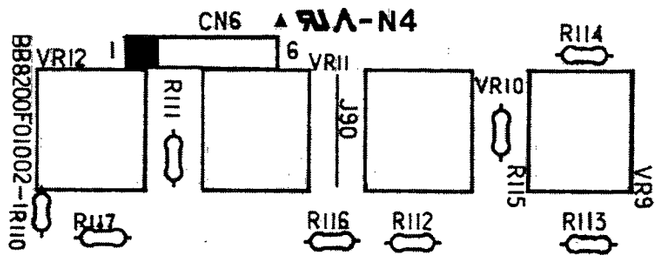
MAIN PCB (PCB 1)

CRT PCB (PCB 2)

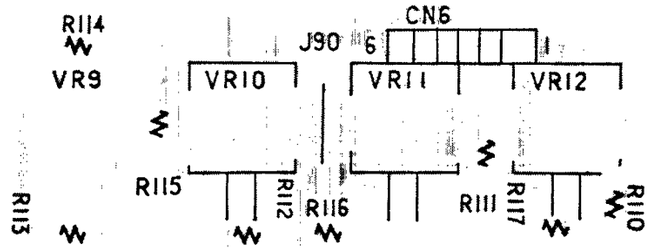


CONTROL PCB (PCB 3)

TOP VIEW

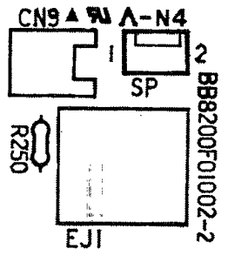


BOTTOM VIEW

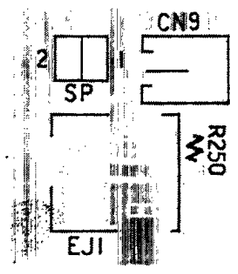


EARPHONE PCB (PCB 4)

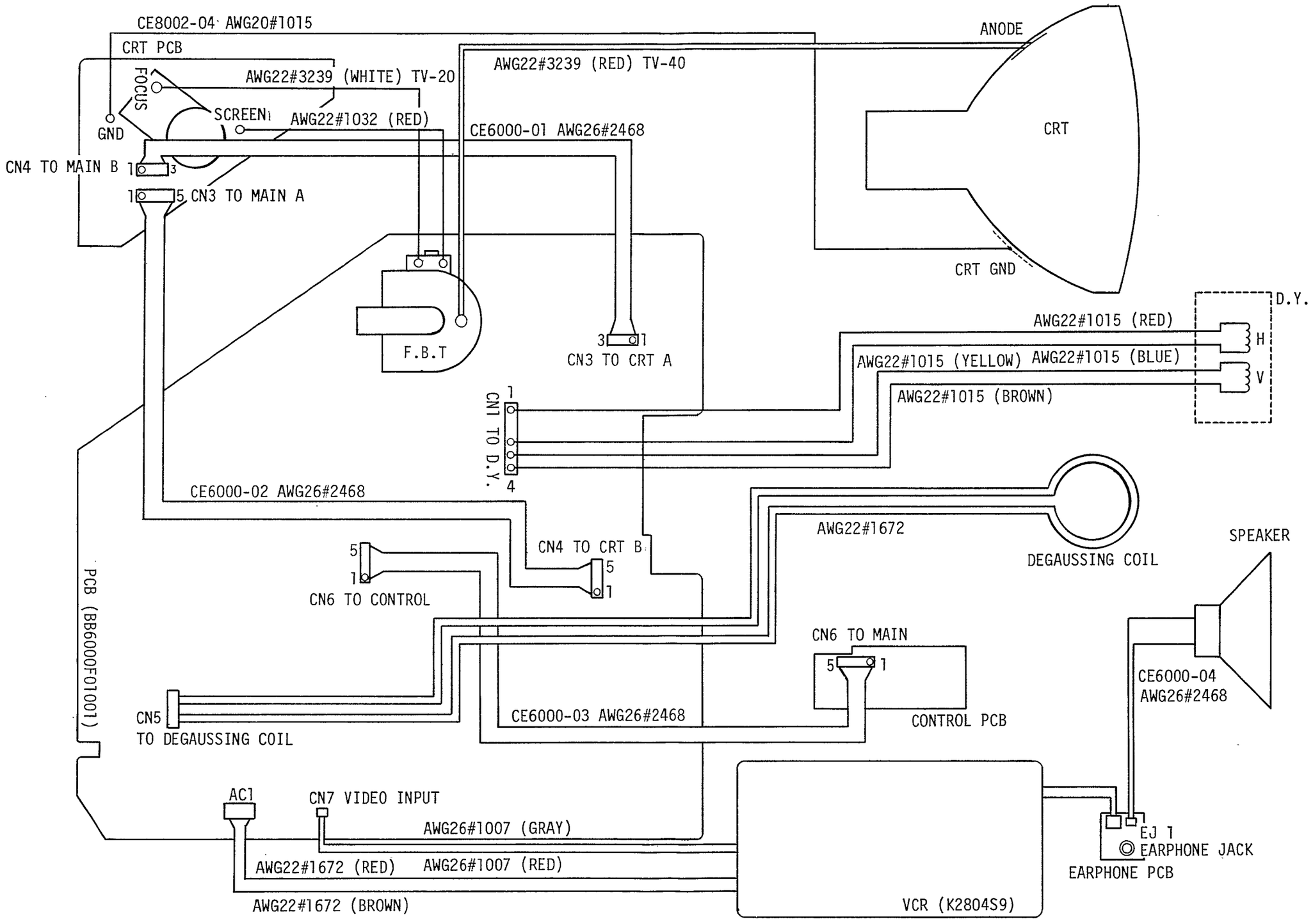
TOP VIEW



BOTTOM VIEW



6. WIRING DIAGRAM



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7. VOLTAGE CHARTS

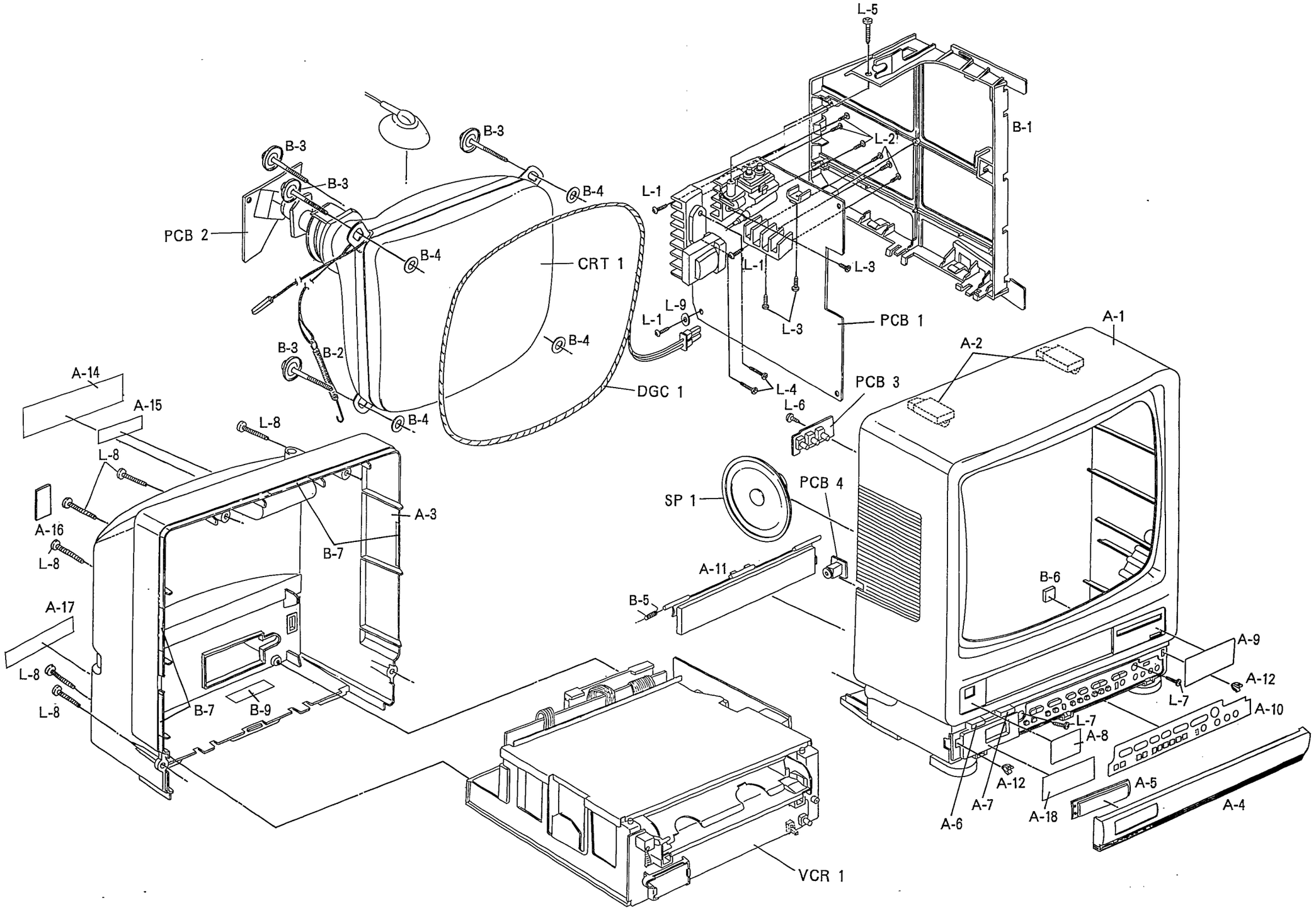
	IC1	IC2	IC3	IC4
	LA7830	L78M12	TA8718N	STK7348
1	0	16.0	11.9	40.0
2	11.4	0	11.2	0
3	23.8	11.8	3.2	NC
4	0.9		6.3	33.0
5	0.7		10.3	-1.1
6	23.6		0	0
7	1.3		3.7	-0.3
8			11.1	0.3
9			6.0	NC
10			3.2	300
11			0.9	
12			9.0	
13			6.4	
14			6.3	
15			7.5	
16			3.3	
17			0.7	
18			7.4	
19			5.6	
20			2.20	
21			8.8	
22			4.1	
23			.40	
24			3.7	
25			0	
26			10.4	
27			6.4	
28			3.2	
29			11.2	
30			11.9	

INPUT Signal	Full color bar
Brightness	Center
Contrast	Center
Volume	Center

TR No.	TR TYPE	E	C	B	REMARK
Q1	2SC2271	0	55.3	0.4	
Q2	2SD1397	0	75.4	1.0	
Q3	2SC2228	3.3	137.0	4.0	
Q4	2SC2228	3.5	148.0	4.0	
Q5	2SC2228	3.4	130.2	4.0	
Q15	2SC3331	5.2	11.9	5.8	

IC No.	T2	T3
PIN	1810951	115E475
1	75.4	AC 44.0
2	NC	301.2
3	112.8	NC
4	AC 6.4	2.9
5	112.8	0
6	4.2	AC 8.4
7	0	NC
8	8.3	AC 135.5
9	AC 38.2	0
10	AC 29.4	NC
11		NC
12		NC

8. EXPLODED VIEW (CABINET)



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9. MECHANICAL PARTS LIST

EXPLODED VIEW..CABINET PARTS LIST...(TV)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
A- 1	9A02768700	FRONT CABINET,	
A- 2	9A02768800	BOSS,(A)	
A- 3	9A02769100	REAR CABINET,	
A- 4	9A03264400	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	9A03264500	CONTROL PLATE,	
A-11	9A02767900	CASSETTE DOOR,	
A-12	9A01106200	LATCH,	
A-14	⚠ 9A03264600	RATING LABLE,	
A-15	⚠ 9A01442100	SERIAL NO. LABEL,	
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	9A03264700	CRT SPACER,(B)	
B- 5	9A02768000	DOOR SPRING,	
B- 6	9A02768100	DOOR CUSHION,	
B- 7	9A01443800	CLOTH,0.5TX16X65	
B- 9	⚠ 9A03264800	MODEL NO. LABEL,	
CRT1	⚠ 9A03265800	CRT	
CRT1	⚠ 9A03265900	CRT	
CRT1	⚠ 9A01454900	CRT	
DGC1	⚠ 9A02765900	DEMAGNETER COIL,	
DGC1	⚠ 9A01454500	DEMAGNETER COIL,	
L- 1	9A03264900	SCREW, TAP TIGHT M3X8	
L- 2	9A03265000	SCREW, TAP TIGHT M3X8	
L- 3	9A02791400	SCREW, B-TIGHT, BIND M3X8	
L- 4	9A03265100	SCREW, TAP TIGHT M3X16	
L- 5	9A03265200	SCREW, TAPPING M3.5X14	
L- 5	9A03265300	SCREW, TAP TIGHT M4X14	
L- 6	9A03265400	SCREW, TAP TIGHT M3X8	
L- 7	9A03265500	SCREW, TAP TIGHT M3.5X12	
L- 8	9A03265600	SCREW, TAP TIGHT M4X18	
L- 9	9A03265700	WASHER, PLAIN 3.2X12XT0.8	
PCB1	- - - - -	MMA-60 PCB ASSY,(MAIN)	
PCB2	- - - - -	MMA-60 PCB ASSY,(CRT)	
PCB3	- - - - -	MCT-35 PCB ASSY,(CONTROL)	
PCB4	- - - - -	MCT-35 PCB ASSY,(EARPHONE)	
SP-1	9A02767100	SPEAKER	
SP-1	9A02767400	SPEAKER	
SP-1	9A02767200	SPEAKER	
SP-1	9A02767300	SPEAKER	
VCR	*9A03204600	VIDEO RECORDER,K2812AA	See to VIDEO SECTION

Parts marked with *regulre longer dellvery tlme

EXPLODED VIEW..CABINET PARTS LIST...(TV)

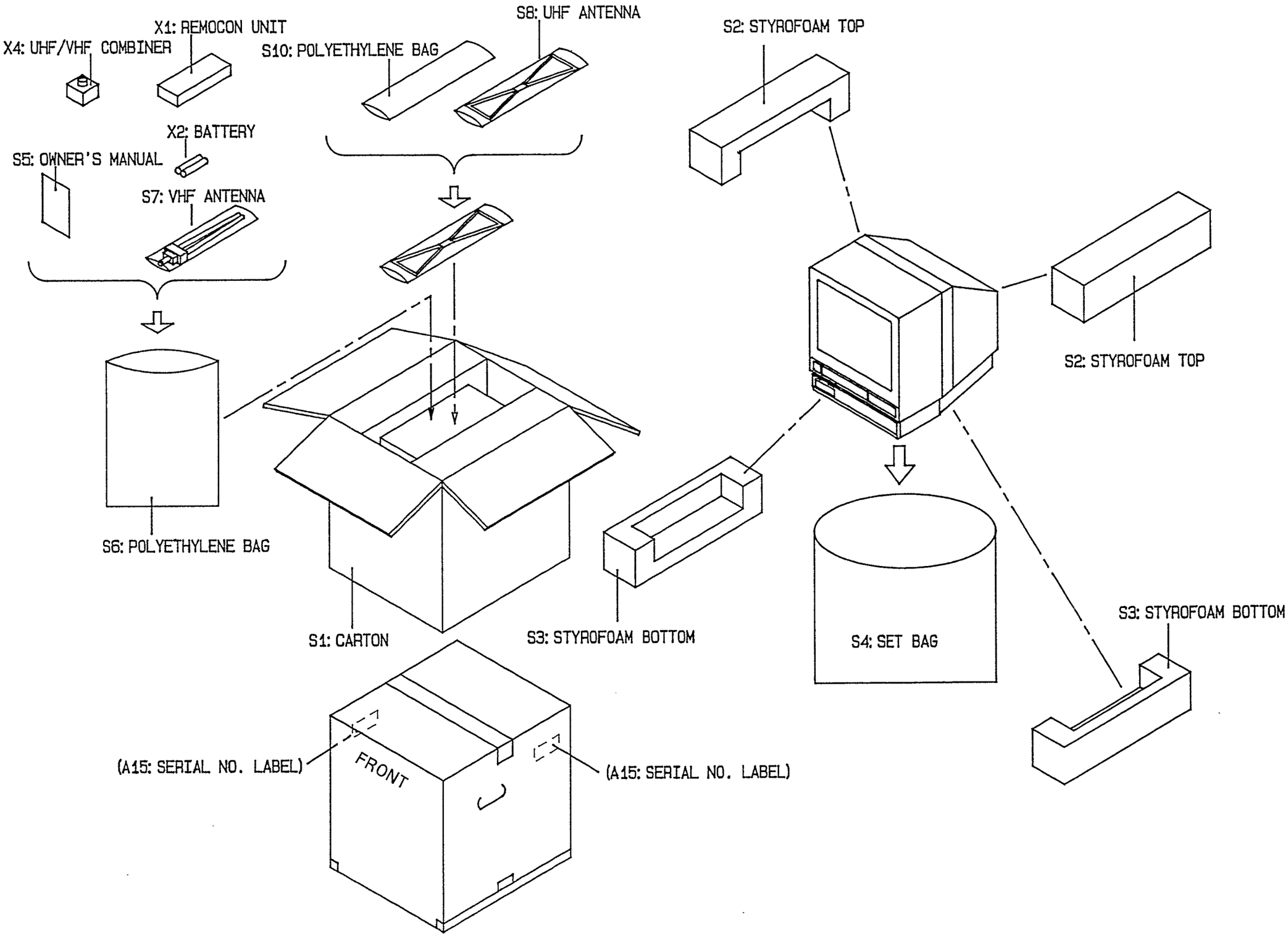
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
WA01	9A03266000	WIRE ASSY, 4P	
WA01	9A02769400	WIRE ASSY, 4P	
WA02	9A03266100	WIRE ASSY, 5P	
WA02	9A02769500	WIRE ASSY, 5P	
WA03	9A02780400	WIRE ASSY, 5P	
WA04	9A02767000	WIRE ASSY, 2P	
WA05	9A02769300	WIRE ASSY, IP	

INCLDED ACCESSORIES PACKING PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
S- 1	9A03266200	CARTON	
S- 2	9A02765500	CASE, PACKING (H)	
S- 3	9A02765600	CASE, PACKING (R)	
S- 4	9A02334700	SET BAG	
S- 5	9A03266300	OWNER'S MANUAL,MV-1480MK2	
S- 6	9A03266400	POLY BAG	
S- 7	9A03266500	VHF ANTENNA	
S- 7	9A03266600	VHF ANTENNA	
S- 8	9A03266700	UHF ANTENNA	
S-10	9A03266800	POLY BAG	
X- 1	9A02765200	REMOCON UNIT,MV-1480TV	
X- 2	9A02395000	BATTERY	
X- 2	9A01027100	DRY BATTERY	
X- 4	9A02333500	UHF/VHF COMBINER	

Parts marked with *regulre longer dellvery tlme

10. EXPLODED VIEW (ACCESSORY AND PACKING)



11. ELECTRICAL PARTS LIST

NOTE:

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

MMA PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
MMA	*9A03270240	MMA-60 PCB ASSY,(M/C) (Consists of MAIN,CRT,PCB ASSY)
	⚠ *9A03266900	PCB,MAIN & CRT (Consists of MAIN,CRT,PCB)
PCB1		MMA-60 PCB (MAIN) SECTION
AC01	9A02771300	CONNECTOR BASE, 2P
C009	9A01468700	C., CERAMIC 0.001UF/1KV
C010	9A02772300	C., FILM 6800PF/1.6KV
C010	9A02772400	C., FILM 6800PF/1.6KV
C017	9A02772500	C., FILM 0.39UF/200V
C017	9A01467400	C., METAL P.P 0.39UF/200V
C017	9A03268000	C., P.P. 0.33UF/200V
C017	9A03268100	C., P.P. 0.33UF/200V
C021	9A01467500	C., ELEC 4.7UF/250V M W/F
C021	9A02405000	C., ELEC 4.7UF/250V M W/F
C022	9A02408600	C., CERAMIC 0.01UF/2KV
C085	9A01468700	C., CERAMIC 0.001UF/1KV
C086	9A02771500	C., ELEC 100UF/160V
C087	9A02410800	C., ELEC 22UF/160V
C087	9A02772600	C., ELEC 22UF/160V
C087	9A01468900	C., ELEC 22UF/160V
C088	9A01468600	C., CERAMIC 3300PF/1KV
C089	9A01469000	C., CERAMIC 470PF/1KV
C091	9A03268800	C., ELEC 10UF/160V 105
C093	9A01808800	C., ELEC 150UF/400V
C093	9A01468500	C., ELEC 150UF/400V
C093	9A02410500	C., ELEC 150UF/400V
C094-097	⚠ 9A01468300	C., CERAMIC 0.0047UF/400V
C098	⚠ 9A02411200	LINE ACROSS 0.1UF/250V
C098	⚠ 9A02771600	LINE ACROSS 0.1UF/250V
C098	⚠ 9A03268900	LINE ACROSS 0.1UF/250V
C101	⚠ 9A02770500	C., CERAMIC 3300PF/4KV
C401-402	⚠ 9A02411100	C., CERAMIC 0.0047UF/4KV
CF02	9A02417500	X-TAL 4.43MHZ
CF03	9A02403300	CERAMIC RESONATOR,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

MMA PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
CN07	9A02771200	CONNECTOR BASE, 2P
CN11	9A02773200	CRT SOCKET,
CN11	9A01459600	CRT SOCKET,
D001	9A03269200	DIODE, IN4003
D001	9A01438600	DIODE, GP10-4003
D002	9A02773700	DIODE, ISS130
D003-005	9A03269300	DIODE, RGP15K
D003-005	9A03269400	DIODE, RGP15K
D006	9A02773600	ZENER DIODE, MTZ20B
D007	9A01849600	ZENER DIODE, MTZ9.1B
D012	9A03269500	DIODE, RGP30G
D012	9A03269600	DIODE, RGP30G
D013-016	9A03269700	DIODE, GP15M
D013-016	9A02409000	DIODE, GP15ML5014
DE01	9A02404400	DELAY LINE,
DE02	9A02772000	GLASS DELAY,
DE02	9A01455000	GLASS DELAY,,
F001	⚠ 9A02410200	FUSE, 250V T4A
F001	⚠ 9A01455300	FUSE, 250V T4A
FH01,02	9A03274100	FUSE HOLDER
FH01,02	9A00521100	FUSE HOLDER
IC01	9A01817800	IC, LA7830
IC01	9A01461900	IC, NJM78M12A
IC02	9A02401000	IC, 78M12
IC02	9A01817900	IC, UPC78M12HF
IC03	9A02401300	IC.,TA8718N
IC04	9A01809700	IC, STK7348
IC04	9A01516100	IC, STK7348
ICP1	9A03274200	IC PROTECTOR, ICP-N15
L004	9A02387800	INDUCTOR 100UH-K-AXT
L004	9A02387700	INDUCTOR 100UH K
L008	9A02402300	CASING COIL,
L009	9A02775400	COIL, MICRO 10UH-K-AXT
L009	9A03269800	MICRO INDUCTOR 10UH
L011	9A01143800	COIL, MICROINDUCTOR 33UH
L011	9A00738800	COIL, MICROINDUCTOR 33UH
L013	9A01809300	LINE FILTER,
L016	9A01809400	POT TYPE COIL 47UH
PS01	9A02410400	POSISTOR,
Q001	9A02774300	TR., 2SC2271(D)-AE-MP
Q001	9A02774400	TR., 2SC2271(E)-AE-MP
Q002	9A03269900	TR., 2SD 1397
Q002	9A03270000	TR., 2SD 1397
Q015	9A02774500	TR., 2SC1815(GR)
Q015	9A02774600	TR., 2SC1815(BL)
Q015	9A02774700	TR., 2SC3331(T)-AA-MP
Q015	9A02774800	TR., 2SC3331(U)-AA-MP
Q015	9A03270100	TR., 2SC1740(Q,R)
Q015	9A02775000	TR., 2SC1740S(R)-TP
R006	9A02770900	R., CEMENT 5W 3.3K

MMA PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
R007	9A02771000	R., CEMENT 5W 3.3K
R008	9A01812200	R., CEMENT 3W 3.9
R009	⚠ 9A02772100	R., FUSE 1W 1
R009	⚠ 9A01812300	R., FUSE 1W 1 J
R010,011	⚠ 9A02772200	R., FUSE 1W 2.2 J
R010,011	⚠ 9A01463800	R., FUSE 1W 2.2 J
R021	9A02771400	R., METAL 1W 560 J
R047	9A02771100	R., CEMENT 7W 4.7K
R101	9A01808400	R., CEMENT 7W 33
R102	9A01464600	R., METAL OXIDE 1W 33
R103	9A01464200	R., CEMENT 3W 1.5
R104	9A01808300	R., CEMENT 3W 27
R109	9A03273800	R., CEMENT 7W 3.9
R109	9A02411300	R., CEMENT 7W 3.9
R118	9A01464400	R., METAL FILM 2W 15
SW01	9A01456900	SLIDE SWITCH,
SW01	9A03274300	SLIDE SWITCH,
SW01	9A03274400	SLIDE SWITCH,
T001	9A01457400	H. DRIVE TRANS,
T002	⚠ 9A02771900	F. B. TRANS,
T002	⚠ 9A01457500	FLYBACK TRANSFORMER,
T003	⚠ 9A01457600	SWITCHING POWER TRANS,
TP01	9A01459700	CONNECTOR PIN, 1P
VR06	9A02772700	R. VR,SEMI-FIXED 1KB(FR)
VR06	9A01429700	R. VR,SEMI-FIXED 1KB(FR)
VR06	9A02403800	R. VR,SEMI-FIXED 1KB(FR)
VR08	9A02773100	R. VR,SEMI-FIXED 100KB(FR)
VR08	9A01729500	R. VR,SEMI-FIXED 100KB(FR)
VR08	9A02403900	R. VR,SEMI-FIXED 100KB(FR)
VR13	9A02772800	R. VR,SEMI-FIXED 3KB(FR)
VR13	9A02773000	R. VR,SEMI-FIXED 3.3KB(FR)
VR13	9A02772900	R. VR,SEMI-FIXED 3KB(FR)
	9A03274500	HEAT SING,(B)
	9A02780200	HEAT SINK,(K)
	9A02780300	HEAT SINK,(L)
	9A02780100	HEAT SINK,(J)
PCB2		MMA-60 PCB (CRT) SECTION
Q000-005	9A03298300	TR., 2SC2228(D,E)
Q003-005	9A03298400	TR., 2SC2228(D,E)
R029-031	9A01458500	R., METAL 15K 1W J
VR01	9A02773300	R. VR,SEMI-FIXED 5KB(VR)
VR01	9A01763100	R. VR,SEMI-FIXED 4.7KB VR
VR02	9A02773400	R. VR,SEMI-FIXED 1KB(VR)
VR02	9A02311600	R. VR,SEMI-FIXED 1KB(VR)
VR03	9A02773300	R. VR,SEMI-FIXED 5KB(VR)
VR03	9A01763100	R. VR,SEMI-FIXED 4.7KB(VR)
VR04	9A02773400	R. VR,SEMI-FIXED 1KB(VR)

MMA PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
VR04	9A01763100	R. VR,SEMI-FIXED 4.7KB(VR)
VR05	9A02773300	R. VR,SEMI-FIXED 5KB(VR)
VR05	9A01763100	R. VR,SEMI-FIXED 4.7KB(VR)

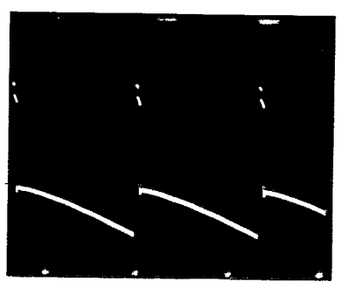
MCT PCB ASSY...(TV)

REF. NO.	PARTS NO.	DESCRIPTION
MCT	*9A03270340	MCT-35 PCB ASSY (C/E) (Consists of CONTROL,EARPHONE,PCB ASSY)
	⚠ *9A02781200	PCB, CONSISTS (C/E) (Consists of CONTROL,EARPHONE,PCB)
PCB3		MCT-35 PCB (CONTROL) SECTION
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)
PCB4		MCT-35 PCB (EARPHONE) SECTION
CN 9	9A02781000	CONNECTOR BASE, 2P (PH)
CN10	9A02781100	CONNECTOR BASE, 2P
EJ 1	9A02780900	JACK, PHONE

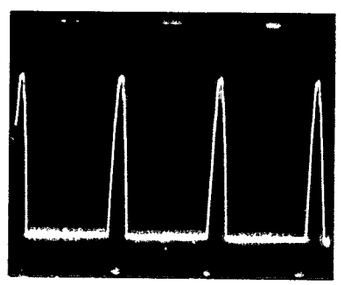
Parts marked with *require longer delivery time

Parts marked with *require longer delivery time

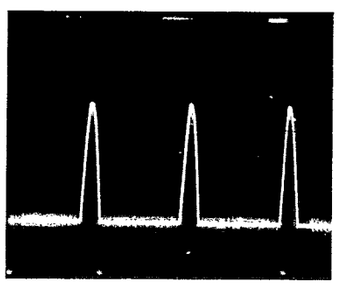
12. WAVE FORMS



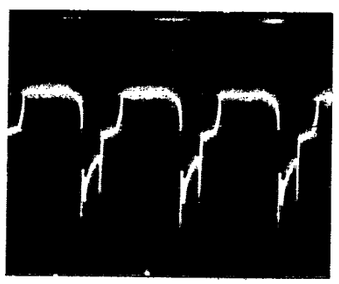
POINT=A
1DIV=20ms,2V



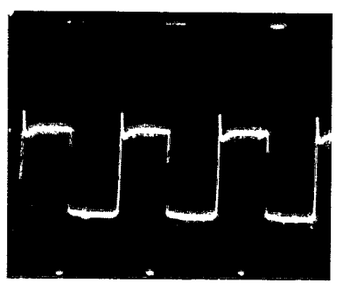
POINT=B
1DIV=20µs,5V



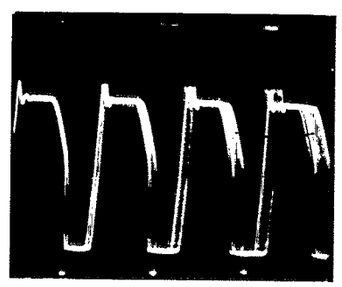
POINT=C
1DIV=20µs,250V



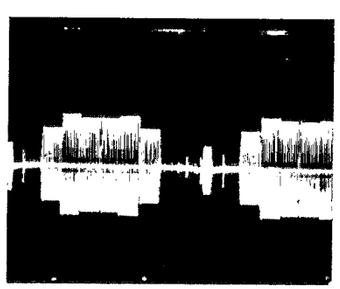
POINT=D
1DIV=20µs,1V



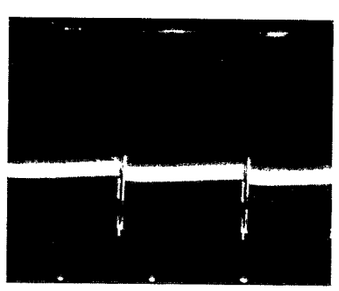
POINT=E
1DIV=20µs,50V



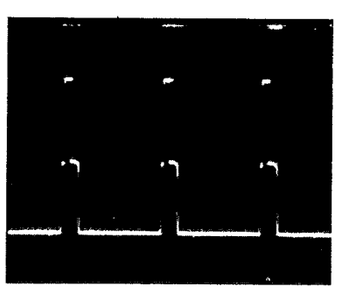
POINT=F
1DIV=10µs,100V



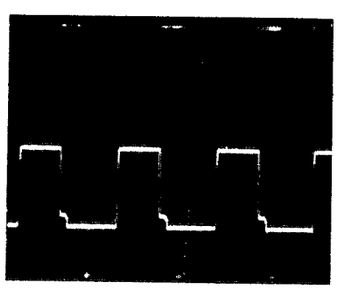
POINT=G
1DIV=10µs,100mV



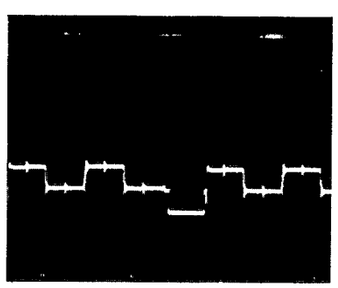
POINT=H
1DIV=5ms,0.5V



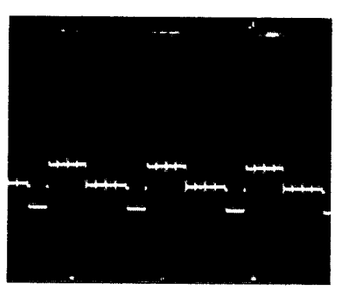
POINT=I
1DIV=20µs,2V



POINT=J
1DIV=20µs,2V

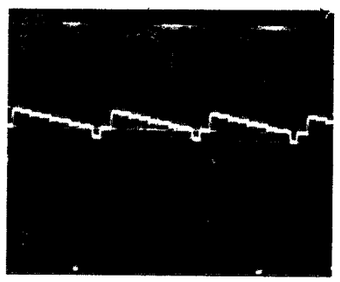


POINT=K
1DIV=10µs,2V

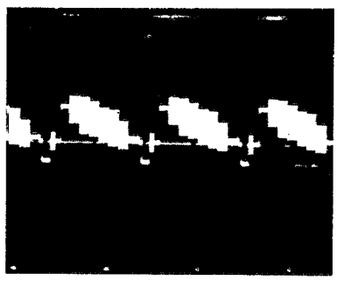


POINT=L
1DIV=20µs,2V

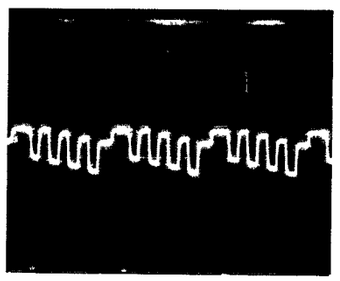
POINT=M
1DIV=20µs,2V



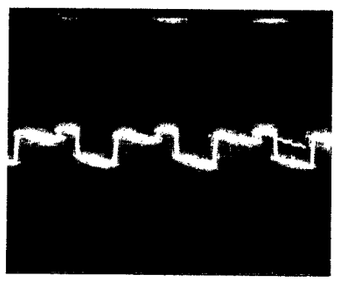
POINT=N
1DIV=20µs,50V



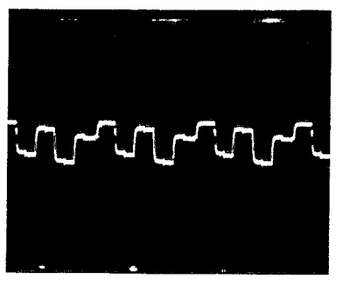
POINT=O
1DIV=20µs,1V



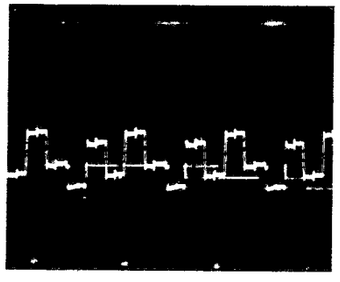
POINT=P
1DIV=20µs,50V



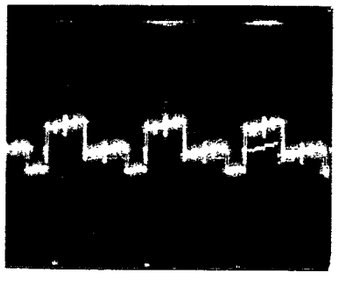
POINT=Q
1DIV=20µs,2V



POINT=R
1DIV=20µs,50V

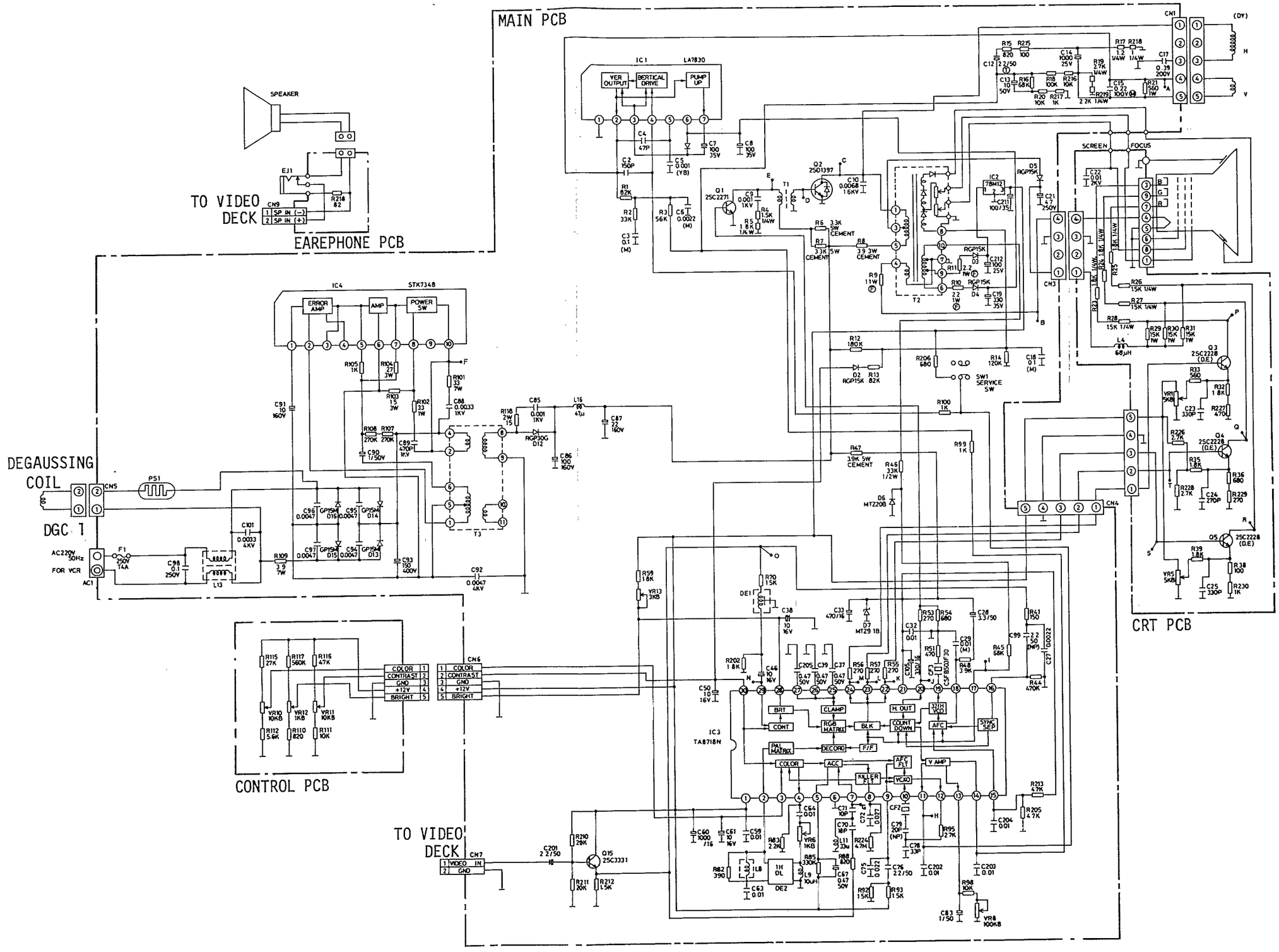


POINT=S
1DIV=20µs,2V



POINT=T
1DIV=20µs,2V

13. SCHEMATIC DIAGRAM



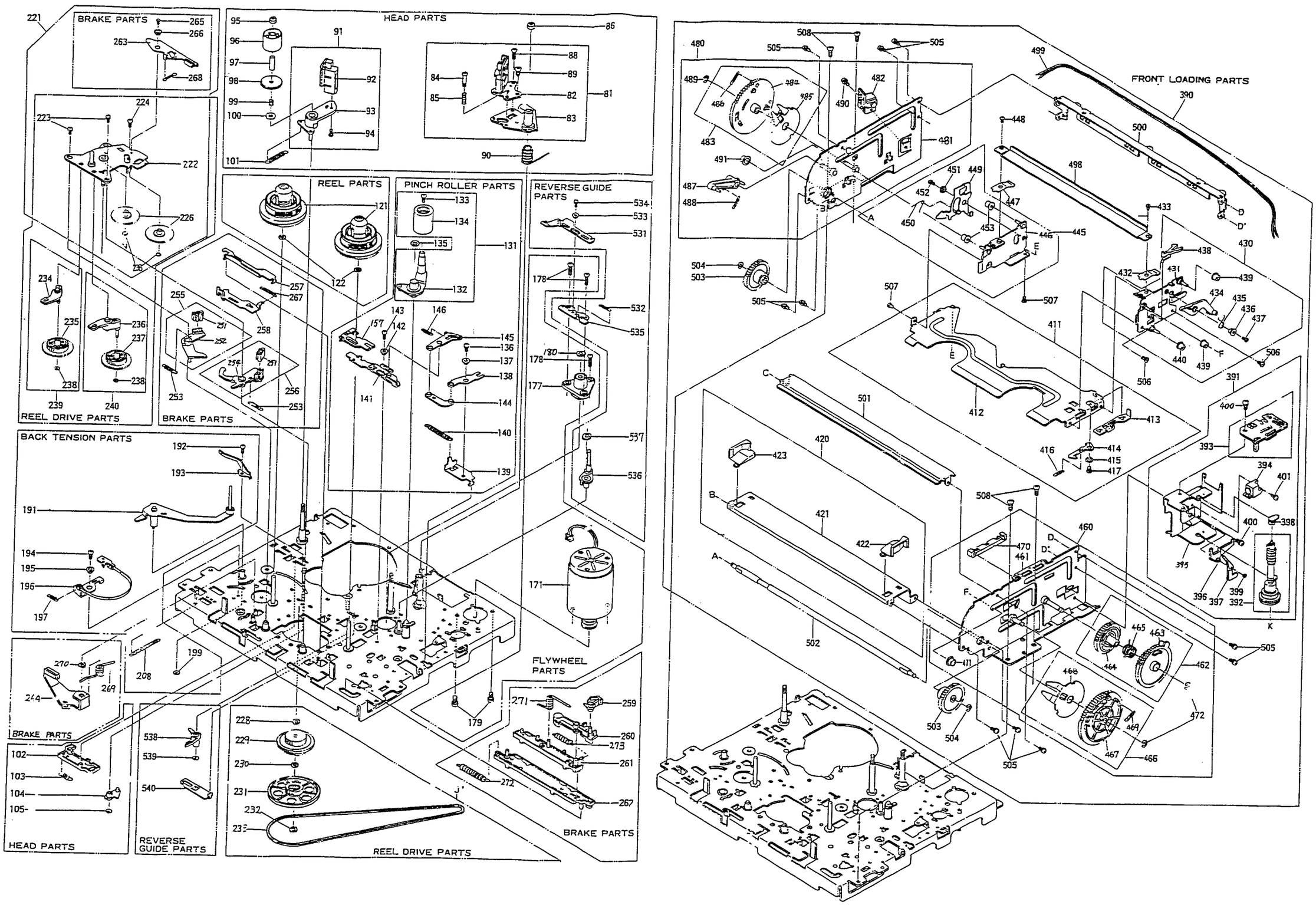
B6206

PARTS LIST (DECK)

EXPLODED VIEW..CABINET PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
A- 1	*9A03205400	LABEL, CHASSIS NO.	
A-19	*9A02757600	JACK BOARD	
A-20	*9A01454700	IEC ANT JACK	
A-20	*9A02309200	ANT JACK	
B1-1	*9A02514400	DECK ASSY...TN5900PINRM554.....	See to DECK ASSY
B2-1	*9A02757700	PANEL, TOP	
B2-2	*9A02758000	SPACER, PCB	
B2-3	*9A02757900	HEATSINK, IC	
B2-4	*9A02758100	PLATE, SHIELD BOTTOM	
B2-5	*9A01897700	PLATE, SHIELD TOP	
B2-6	*9A02312400	HOLDER, FIP	
B2-7	*9A02758200	SHEET, INSULATOR	
B2-8	*9A02757800	HEATSINK	
B2-9	*9A02757500	CHASSIS	
B2-10	*9A02758500	SPACER PLATE, PCB	
B2-11	*9A02758300	PLATE,SHIELD DECK	
L2-012	9A02753600	SCREW, P-TIGHT M3X12	
L2-017	9A02753600	SCREW, P-TIGHT M3X12	
L2-018	9A02753600	SCREW, P-TIGHT M3X12	
L2-019	9A02753600	SCREW, P-TIGHT M3X12	
L2-02	9A02515400	SCREW, P-TIGHT FLANGE 3X10	
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)	
L2-06	9A02753700	SCREW, P-TIGHT M4X10	
L2-H01	9A02515500	SCREW, SEMS PAN M3X5	
MCV-A	- - - - -	MCV-A PCB ASSY	
MCV-B	- - - - -	MCV-B PCB ASSY	
MCV-C	- - - - -	MCV-C PCB ASSY	
MCV-D	- - - - -	MCV-D PCB ASSY	
MCV-E	- - - - -	MCV-E PCB ASSY	
MCV-F	- - - - -	MCV-F PCB ASSY	
MCV-G	- - - - -	MCV-G PCB ASSY	
MSV	*9A02759000	MSV PCB ASSY	
PSV	*9A03205900	PSV PCB ASSY	
W601	⚠ 9A02316400	COARD STOPPER	
W602	⚠ 9A00521400	AC CORD	

Parts marked with *reguire longer dellvery time


BRAKE PARTS
HEAD PARTS
REEL PARTS
PINCH ROLLER PARTS
REVERSE GUIDE PARTS
FRONT LOADING PARTS
REEL DRIVE PARTS
BRAKE PARTS
BACK TENSION PARTS
FLYWHEEL PARTS
HEAD PARTS
REVERSE GUIDE PARTS
REEL DRIVE PARTS
BRAKE PARTS

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
B1-1	*9A02514400	DECK ASSY...TN5900P1NRM554	
01	*9A02304200	CYLINDER ASSY	
02	*9A01426100	DRUM, UPPER	
03	*9A01108400	LOWER DRUM ASSY	
04	*9A01108500	MOUNT, CYLINDER	
05	*9A01108600	VIDEO OUT PCB ASSY	
06	9A01108700	SCREW, W SEMS M2.6X6	
07	*9A02306900	MOTOR, DC 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, TRACKIN.	
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 ASY	
68	*9A02304500	LOADING GEAR L ASSY,	
69	*9A02304600	LOADING GEAR R ASSY,	

Parts marked with *reguire longer dellvery time

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
69	*9A02304600	LOAD.GEAR R.ASY,	
81	*9A02304800	HEAD BASE ASSY	
82	*9A0111 7900	HEAD, ACE	
83	*9A02304900	BASE, HEAD	
84	9A00737200	SCREW, AZIMUTH SP. M2.6X12	
85	9A00451100	SPRING, AZIMUTH	
88	9A02305000	SCREW, M2.6X7	
89	9A0111 8100	SCREW, SET, M3X6	
90	*9A0111 8200	SPRING, HEAD	
91	*9A0111 8300	FULL ERASE PLATE ASSY	
92	*9A00452500	HEAD,FULL ERASE	
93	*9A0111 8500	PLATE, FULL ERASE	
94	9A0111 8600	SCREW, FLANGE BIND, M2X3	
95	9A00447900	NUT, NYLON, M3	
96	*9A0111 8700	ROLLER, IMPEDANCE	
97	*9A0111 8800	SLEEVE, IMPEDANCE ROLLER	
98	*9A0111 8900	FLANGE (A), TAPE GUIDE	
99	*9A0111 9000	SPRING, TAPE GUIDE FLANGE	
100	9A0111 9100	WASHER, PLANE 3X8X0.5	
101	*9A0111 9200	SPRING, FE PLATE	
102	*9A0111 9300	PLATE, FE SLIDE	
103	*9A0111 9400	SPRING, FE ACTUATE	
104	*9A0111 9500	LEVER, FE ACTUATE	
105	9A00459200	WASHER, POLY 2.1X5X0.5	
121	*9A0111 9600	REEL ASSY,	
122	9A00456500	WASHER, 3.1X6X0.5	
131	*9A0111 9700	PINCH ROLLER ARM ASSY,	
132	*9A0111 9800	ARM PINCH ROLLER	
133	9A00450200	SCREW, SMALL M2.6X4	
134	*9A00454100	PINCH ROLLER, A	
135	9A0111 9900	WASHER, POLY. 5X8X0.5	
136	9A00472500	SCREW, SEMS M2.6X4	
137	*9A0111 1300	COLLAR	
138	*9A0112 0000	ANGLE, P ACTUATE	
139	*9A0112 0100	HOLDER, P ANGLE	
140	*9A0112 0200	SPRING, P ROLLER	
141	*9A0112 0300	PLATE (A), P SLIDE	
142	*9A0111 1300	COLLAR	
143	9A00444900	SCREW, C-TIGHT M2.6X5	
144	*9A0112 0400	JOINT PLATE	
145	*9A0112 0500	ARM, P ACTUATE	
146	*9A0112 0600	SPRING, P ACTUATE ARM	
147	*9A0111 2800	CRANK, P	
148	*9A0111 2900	COLLAR, P CRANK	
149	9A0111 3000	SCREW, C-TIGHT FH M2.6X4	
150	*9A0111 3100	SLIDER, P	
151	*9A0111 3200	SPRING, P SLIDER	
152	*9A0111 3300	COLLAR, P SLIDER	
153	9A00444900	SCREW, C-TIGHT M2.6X5	
154	*9A0111 3400	LEVER, P CAM	

Parts marked with *regulre longer delivery time

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
155	*9A0111 3500	COLLAR, P CAM LEVER	
156	9A00444900	SCREW, C-TIGHT M2.6X5	
157	*9A01120700	PLATE (B), P SLIDE	
171	*9A01120800	CAPSTAN MOTOR ASSY,	
172	*9A0111 3600	CAPSTAN, FLYWHEEL	
173	*9A0111 3700	BELT, MAIN 8059-07-10	
174	*9A0111 3800	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	9A0111 2300	SCREW, C-TIGHT M2.6X4	
193	*9A01121200	SUPPORT, BACK TENSION	
194	9A0111 2300	SCREW, C-TIGHT M2.6X4	
195	*9A01121300	COLLAR, BAND HOLDER	
196	*9A01121400	BAND, BT	
197	*9A01121500	SPRING, BAND HOLDER	
198	*9A0111 0900	SPRING, BACK TENSION	
199	*9A01121600	WASHER, POLY. 2.1X4X0.5	
200	*9A0111 6400	PLATE, BT CHANGE	
202	*9A0111 6500	LEVER, BT RETURN	
203	*9A0111 1300	COLLAR	
204	9A00444900	SCREW, C-TIGHT M2.6X5	
205	*9A0111 1000	PLATE, BT ACTUATE	
206	*9A0111 1100	LEVER, BT ACTUATE	
207	*9A0111 1200	COLLAR, BT ACTUATE PLATE	
208	*9A01121700	SPRING, BT ACTUATE PLATE	
209	*9A0111 1300	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	
238	9A00452300	WASHER, POLY 1.6X3.8X0.3	

Parts marked with *require longer delivery time

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
239	*9A02305800	GEAR ASSY, P.	
240	*9A02305900	GEAR ASSY, RF	
241	*9A02306000	RETURN GEAR ASSY	
242	*9A02306100	RETRUN ARM	
251	*9A01123800	SHOE, BRAKE 8059-10-19	
252	*9A01123900	ARM, S BRAKE	
253	*9A01123600	SPRING, BRAKE ARM	
254	*9A01124100	ARM, T BRAKE	
255	*9A01123700	S.BRK ARM ASSY, 8059-10-301	
256	*9A01124000	T.BRK ARM ASSY, 8059-10-302	
257	*9A01124200	LIFTER, BRAKE	
258	*9A01124300	ACTUATOR, L BRAKE	
259	*9A01124400	HOOK, TRIGGER 8059-10-14	
260	*9A01124500	LEVER, TRIGGER 8059-10-13	
261	*9A01124600	PLATE, BRAKE 8059-10-11	
262	*9A01124700	BRK ACTU. BASE, 8059-10-09	
263	*9A01122100	BRAKE, TAKE-UP SOFT	
263	*9A01122100	BRAKE, TAKE-UP SOFT	
264	*9A01124800	BRAKE, S SOFT	
265	9A01122200	SCREW, SL FH M2X3	
265	9A01122200	SCREW, SL FH M2X3	
266	*9A01122300	COLLAR, T-U SOFT BRAKE ARM	
266	*9A01122300	COLLAR,T-U SOFT BRAKE ARM	
267	*9A01124900	SPRING, L BRAKE ACTUATOR	
268	*9A01122400	SPRING, T-U SOFT BRAKE ARM	
268	*9A01122400	SPRING, T-U SOFT BRAKE ARM	
269	*9A01125000	SPRING, S SOFT BRAKE	
270	9A00459200	WASHER, POLY 2.1X5X0.5	
271	*9A01125100	SPRING, TRIG. LVR 8059-10-23	
272	*9A02306200	BRAKE ACTUAT.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	

Parts marked with *regulre longer dellvery tlme

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
316	9A0111 5100	SCREW, C-TIGHT M3X6	
317	*9A0111 5200	LEVER SEMI ASSY	
318	*9A0111 5300	PLATE, SEMI ASSY	
319	*9A0111 5400	SPRING, LOADING ACTUATE	
320	*9A0111 5500	PLATE, LOADING LEVER RELN.	
321	9A0044 4100	SCREW, SEMS M2X5	
322	*9A0111 5600	SPRING, L GEAR PLATE	
331	9A0044 4900	SCREW, C-TIGHT M2.6X5	
332	*9A0111 1300	COLLAR	
333	*9A0111 5700	LEVER, REC	
334	*9A0111 5800	ACTUATOR, REC	
335	*9A0111 5900	SPOKE, REC ACTUATE	
336	*9A0111 6000	SENSOR, DEW	
337	9A0047 2500	SCREW, SEMS M2.6X4	
338	*9A0230 6400	PLATE, BASE	
339	9A0111 6200	SCREW, S-TIGHT M2.6X5	
341	*9A0111 1400	SWITCH, LEAF	
342	9A0044 4900	SCREW, C-TIGHT M2.6X5	
343	*9A0111 1500	WIRE	
344	*9A0111 1600	HOLDER, WIRE	
345	*9A0230 6500	LAMP HOLDER ASSY	
346	*9A0173 6400	SPRING, REC LEVER	
347	*9A0230 6700	COLLER, SCREW	
361	*9A0111 3900	ACTUATOR, EJECT	
362	*9A0111 1300	COLLAR	
363	9A0044 4900	SCREW, C-TIGHT M2.6X5	
364	*9A0111 4000	PLATE, L BRAKE	
365	*9A0111 1300	COLLAR	
366	9A0044 4900	SCREW, C-TIGHT M2.6X5	
367	*9A0111 4100	E.IDLER ARM ASSY	
368	*9A0111 4200	E IDLER ARM SEMI ASSY	
369	*9A0111 4300	PULLEY, EJECT	
370	9A0045 2300	WASHER, POLY 1.6X3.8X0.3	
371	*9A0111 4400	SPRING, IDLER ARM	
372	9A0045 9200	WASHER, POLY 2.1X5X0.5	
373	*9A0111 4500	BELT, FRONT LOADING	
390	*9A0230 6600	LOADIIG ASSY, FRONT	
391	*9A0112 6000	CASSET. LOAD BRACKET ASSY	
392	*9A0112 6100	CLUTCH ASSY, 8059-16-319	
393	*9A0112 6200	FRONT LOADING PCB ASSY	
394	*9A0112 6300	SENSOR, PCB (RM)	
395	*9A0112 6400	C. LOAD BRACKET SEMI ASSY	
396	*9A0112 6500	LEVER IN SW. 8059-16-34	
397	*9A0112 6600	LEVER, S SW. 8059-16-33	
398	*9A0112 6700	BEARING (A), F WORM	
399	9A0045 2300	WASHER, POLY 1.6X3.8X0.3	
400	9A0047 2500	SCREW, SEMS M2.6X4	
401	9A0268 8800	SCREW, SEMS M2X5	
411	*9A0112 6800	CASSETTE HOLDER ASSY	
412	*9A0046 7600	HOLDER, CASSETTE	

Parts marked with *reqiire longer dellvery time

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
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	GUIDE ROLLER, 8000-22-75	
440	*9A00469400	GUIDE ROLLER,	
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	GUIDE ROLLER, 8000-22-75	
460	*9A02307300	FRAME (R) ASSY	
461	*9A02307400	FRAME (R)	
462	*9A01127900	WORM WHEEL ASSY, 8059-16-321	
463	*9A01128000	WORM WHEEL, 8059-16-36	
464	*9A01128100	GEAR, FRICTION 8059-16-45	
465	*9A01128200	SPRING, FRICTION	
466	*9A01128300	LT.GEAR R ASSY, 8059-16-312	
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	LT.GEAR L ASSY, 8059-16-314	
484	*9A00471800	GEAR (L), LIFT	
485	*9A00471000	ARM, LIFT	
486	*9A00471100	SPRING, LIFT GEAR MV-350	
487	*9A02307700	LEVER, LIFT	

Parts marked with *require longer delivery time

EXPLODED VIEW..DECK ASSY PARTS LIST...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
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, SYNCHRO.	
503	*9A01129400	GEAR (A), SYNC. 8059-16-17	
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 *regulre longer dellvery time

PARTS LIST (ELECTRICAL)

NOTE:

As regards the resisters 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
MCV	*9A03205700	MCV PCB ASSY, (MV-1480MK2)
		(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)
MCV-A		MCV-A PCB ASSY SECTION
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...(VIDEO)....
		.....(Connect to MCV-A PCB ASSY)

MCV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
MCV-B		MCV-B PCB ASSY SECTION
CL- 9	9A02754900	FFC CABLE, 28P L=300
CL- 9	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, TOP 28P
CL-9,10	9A02310400	FFC CONNECTOR, TOP 28P
CL-9,10	9A02310500	FFC CONNECTOR, TOP 28P
D501,502	9A02382800	DIODE, SWITCHING 1SS254
D505,506	9A02382800	DIODE, SWITCHING 1SS254
D505,506	9A02361500	DIODE, SWITCHING GMB01B
D505,506	9A02366000	DIODE, SWITCHING 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 LINEAR
IC506	9A01142800	IC, NJM78L05A
IC508	9A01137500	IC, MN1280R
IC509	9A01737800	IC, AN7805F (LINEAR)
IC509	9A01737900	IC, NJM7805FA (LINEAR)
IC509	9A01738000	IC, UPC7805HF (LINEAR)
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, 4.19MHZ CERAMIC

Parts marked with *require longer delivery time

REF. NO.	PARTS NO.	DESCRIPTION
MCV-C	MCV-C PCB ASSY SECTION	
CL-10	9A02310300	FFC CONNECTOR, TOP 28P
CL-10	9A02310400	FFC CONNECTOR, TOP 28P
CL-10	9A02310500	FFC CONNECTOR, TOP 28P
CN-A	9A02312000	CONNECT, SIDE 17P
CN-E	9A02757200	CONNECTOR ASSY, 6P(A.HEAD)
CN-F	9A02756800	CONNECTOR ASSY, 2P
CN-G	9A01143900	CONNECTOR HOUSING, 6P
D402,451	9A02382800	DIODE, SWITCHING ISS254
D402,451	9A02361500	DIODE, SWITCHING GMB01B
D402,451	9A02366000	DIODE, SWITCHING US1040M
HIC402	9A01718800	IC, HYBRID (SERVO)
HIC402	9A02311400	IC, HYBRID (SERVO)
IC01	9A02311300	IC, HA11804INT
IC201	9A01144500	IC, BA7767AS LINEAR
IC402	9A01428600	IC, MN6748 FVAP
L01	9A02389100	INDUCTOR, 33UH K
L02	9A02388900	INDUCTOR, 27UH
L03	9A02645900	INDUCTOR, LF5R0 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)
QR1, 2	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
TP01,201	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
MCV-D	MCV-D PCB ASSY SECTION	
CL-09	9A02312500	FFC CONNECTOR, SIDE 28P
CL-09	9A02312600	FFC CONNECTOR, SIDE 28P
D801-804	9A02421500	DIODE, ISS252
D801-804	9A02419800	DIODE, GMB01U
D805	9A00493000	DIODE, IN4002
D811	9A02366000	DIODE, SWITCHING US1040M
D811	9A02382800	DIODE, SWITCHING ISS254
D811	9A02361500	SWITCHING DIODE, GMB01B
FL801	9A02312300	FIP
L801	9A02389700	INDUCTOR, 47UH-K-AXT
RS801	9A01147200	REMOTE SENSOR UNIT
SW801-809	9A02312200	PUSH SWITCH
SW801-809	9A01894700	SWITCH, PUSH
SW801-809	9A01894800	SWITCH, PUSH
SW811,819	9A01437500	SWITCH, PUSH
SW811,819	9A01147400	SWITCH, PUSH
SW811,819	9A01137600	SWITCH, PUSH
SW812-818	9A02312200	PUSH SWITCH
SW812-818	9A01894700	SWITCH, PUSH
SW812-818	9A01894800	SWITCH, PUSH
SW821-824	9A02312200	PUSH SWITCH
SW821-824	9A01894700	SWITCH, PUSH
SW821-824	9A01894800	SWITCH, PUSH
SW828	9A03206200	SWITCH, SLIDE SLD-12-497C
VR801	9A00747200	VR., 250K (B)
VR801	9A00499300	VR., 250K (B)
MCV-E	MCV-E PCB ASSY SECTION	
CL-1	9A02755300	JUMPER WIRE, 7P L=270
CL-2	9A02754200	JUMPER WIRE, 8P
CN-1	9A02312900	CONNECTOR, SIDE 15P
MCV-F	MCV-F PCB ASSY SECTION	
CL-D	9A02754700	JUMPER WIRE, 6P
CN-D	9A01137000	CONNECTOR, SIDE 6P
MCV-G	MCV-G PCB ASSY SECTION	
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...(VIDEO)
	*9A02308300	MSV PCB, S2600
A-A	9A02643100	WIRE
CN-V	9A02524400	PIN HEADER ANGLE, 22P
D51,102	9A02366000	DIODE, SWITCHING USI040M
D51,102	9A02382800	DIODE, SWITCHING ISS254
D51,102	9A02361500	DIODE, SWITCHING 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)
Q51,54	9A02751300	TRANSISTOR, 2SA608SP(F)
Q51,54	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)

MSV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
VR53	9A01738600	R.VR, SEMI 2K (B)
VR54	9A02002000	R.VR, SEMI 500 (B)
VR54	9A01852500	R.VR, SEMI 500 (B)
VR54	9A02761000	P.O.T., 500 (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	*9A03205900	PSV PCB ASSY...(VIDEO)
	*9A02308500	PSV PCB
R	9A03204800	CAP. COVER, SB-0639-H
C603-605	9A00749400	C., ELEC 2200UF/35V M W/F
C604	9A00499600	C., ELEC 2200UF/16V
C665-667	9A02411100	C., CERAMIC 0.0047UF/4KV
C665-667	9A03204200	C., CERAMIC 4700PF/4KV
C665-667	9A03204100	C., CERAMIC 4700PF/4KV
CM-1	9A02756700	CONNECTOR ASSY, 2P (PWS)
CM-2	9A02756600	CONNECTOR ASY,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	RECTIFIR.DIODE, ISR35-200A
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

Parts marked with *require longer delivery time

PSV PCB ASSY...(VIDEO)

REF. NO.	PARTS NO.	DESCRIPTION
Q601,604	9A0275210O	TRANSISTOR, 2SC1740(Q)
Q603	9A0275160O	TRANSISTOR, 2SB1010(Q)
Q603	9A0275170O	TRANSISTOR, 2SB1010(R)
Q603	9A0275180O	TRANSISTOR, 2SB892(S)
Q603	9A0275190O	TRANSISTOR, 2SB892(T)
Q951,952	9A0275210O	TRANSISTOR, 2SC1740(Q)
Q951,952	9A0275220O	TRANSISTOR, 2SC1740(R)
Q951,952	9A0275290O	TRANSISTOR, 2SC536(E)
Q951,952	9A0275300O	TRANSISTOR, 2SC536(F)
QR601	9A0275200O	D.TRANSISTOR, DTC124ES
QR601	9A0275280O	D.TRANSISTOR, 2SC3400
R602	9A0276080O	R., METAL 1W 1K J
R602	9A0276090O	R., METAL 1W 1K J
R603	9A0231580O	R., CARBON 1/2W 2.2K
R962,964	9A0049440O	R., OXIDE FILM 1.5 1W J
R962,964	9A0074290O	R., OXIDE FILM 1.5 1W J
RL601	9A0231620O	RELAY
T601	⚠ 9A0231610O	TRANS, POWER

Parts marked with *require longer delivery time

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

E	C	B
9.1	0	8.9
9.1	0	8.8
9.1	0	8.9

Q703

E	C	B
9.1	0	8.9
9.1	0	8.9
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

E	C	B
0	9.1	0
0	9.1	0
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

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	OUT
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	5.8	5.0	0.5	0
PLAY	0	0	9.7	5.9	5.7	5.7	5.8	0	0.5	0
E-E	0	0	9.7	5.9	5.7	5.7	5.8	5.0	0.5	0

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

HIC402

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

Mode \ Pin No.	E	C	B
REC	1.6	4.6	2.3
PLAY	0.4	0	0
E-E	0	0	0

Q2

E	C	B
5.0	4.9	4.2
5.0	0	5.0
5.0	0	5.0

Q4

E	C	B
0	0.5	0.2
1.9	5.0	2.5
0	0.5	0.2

Q201

Mode \ Pin No.	E	C	B
REC	0.2	9.3	0
PLAY	0	0.2	0.2
E-E	0	0.2	0.2

Q405

E	C	B
0	3.3	0.7
0	3.3	0.7
0	3.3	0.7

QR1

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

QR2

E	C	B
0	0	0.5
0	5.0	0
0	5.0	0

QR201

E	C	B
0	0	5.0
0	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

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	3.96	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	4.8	1.3
0.7	4.8	1.2
2.3	8.44	2.9

Q56

E	C	B
4.86	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

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

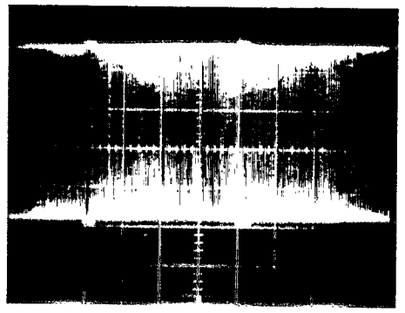
Q952

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

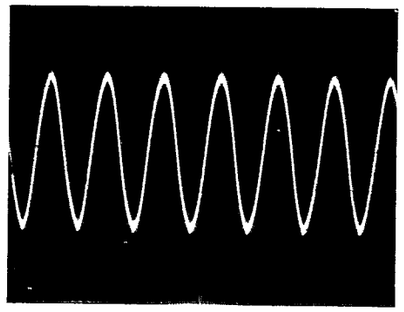
QR601

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

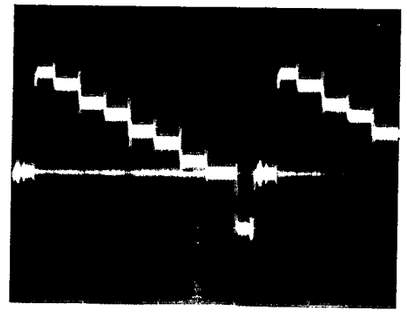
16. WAVE FORMS



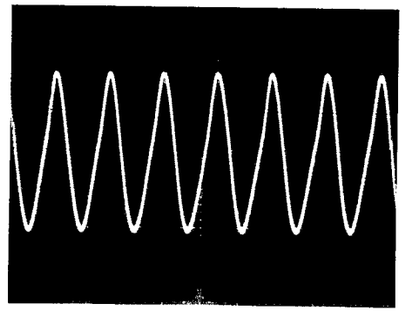
WF1 TP1 (REC CRR)
5mV/div x10
5mS/div
REC.Mode(Blank Tape)



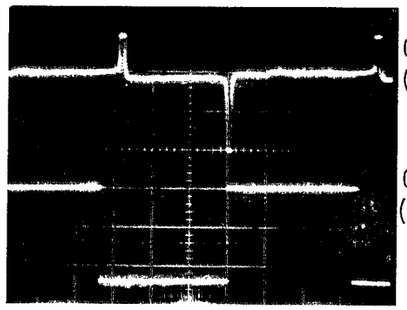
WF4 TP201-TP202
(BIAS+) (BIAS-)
5mV/div x10
10uS/div
REC.Mode(Blank Tape)



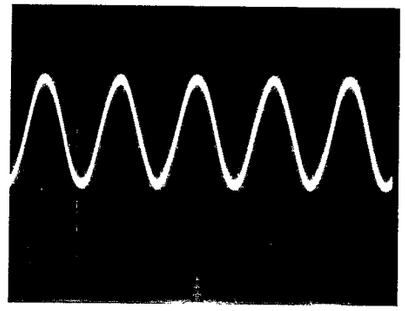
WF7 TP54(E-E)
10mV/div x10
10uS/div
STOP.Mode



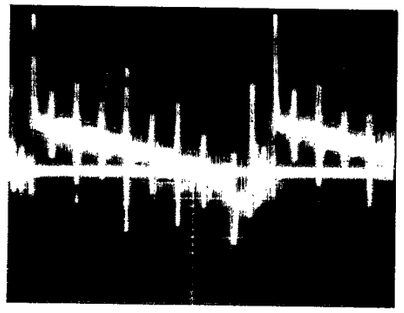
WF10 TP452 (3.58MHz)
50mV/div x10
0.2uS/div
REC.Mode(Blank Tape)



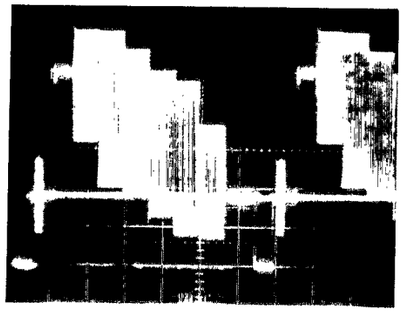
WF2 TP2 (RF-SW) TP451 (CTL)
0.2V/div x10 0.1V/div x10
5mS/div 5mS/div
PLAY.Mode(F8-A)



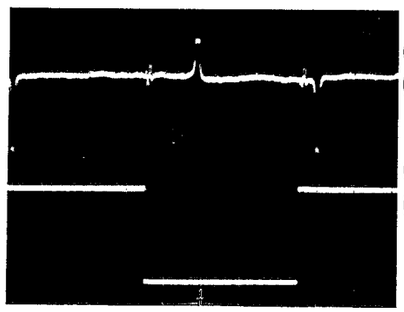
WF5 TP402 (A-OUT)
50mV/div x10
0.5mS/div
PLAY.Mode(F6-A)



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

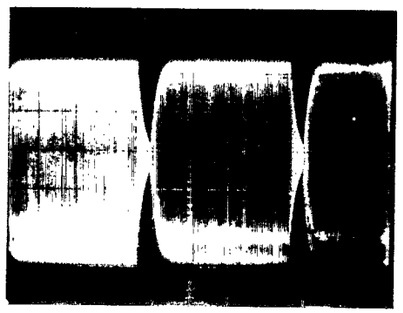


WF11 V-OUT
10mV/div x10
10uS/div
STOP.Mode

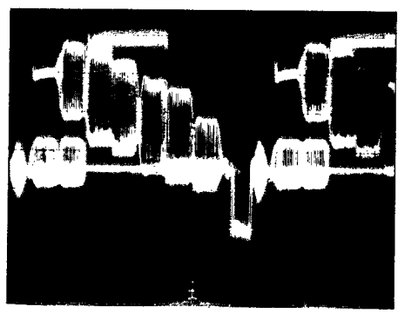


WF3 TP2 (RF-SW) TP401 (CTL)
0.2V/div 0.1V/div
5mS/div 5mS/div
PLAY.Mode(F6-A)

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

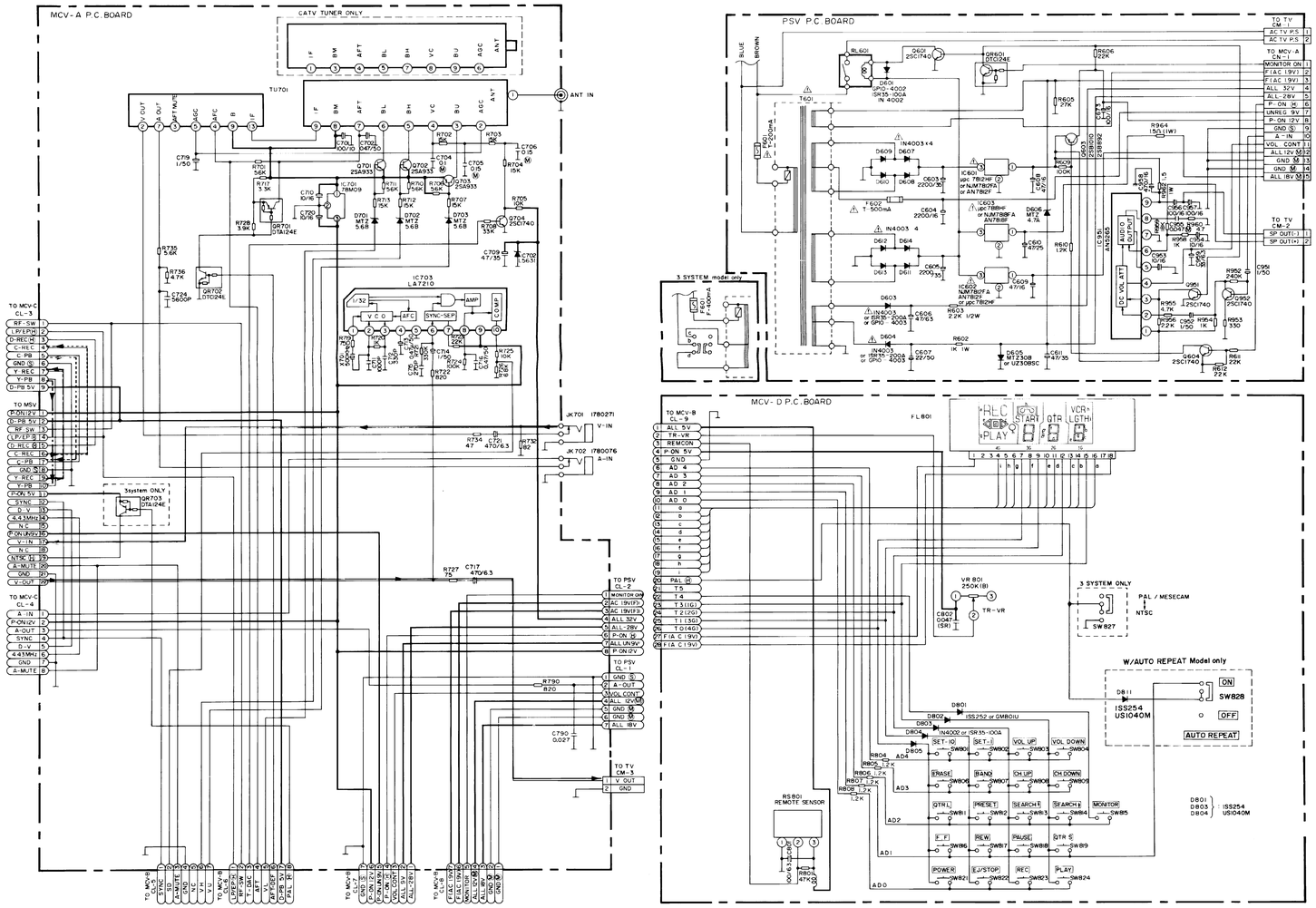


WF9 TP181 (SECAM)
20mV/div x10
5mS/div
REC.Mode(Blank Tape)



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

TUNER/POWER SUPPLY/CONTROL



WARNING:
REPLACEMENT 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 MESUREMENTS TO DETERMINE THAT EXPOSES PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

NOTES:
1. ALL RESISTANCE VALUES ARE INDICATED IN OHM (K=10^3, m=10^6).
2. ALL CAPACITANCE VALUES ARE INDICATED IN μF (P=10^6 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) = POLYPROPYLANE, (SC) = SEMI-CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

Rec. Mode
——— Luminance + Chrominance
— — — — Luminance
····· Chrominance

Play Mode
——— Luminance + Chrominance
— — — — Luminance
····· Chrominance

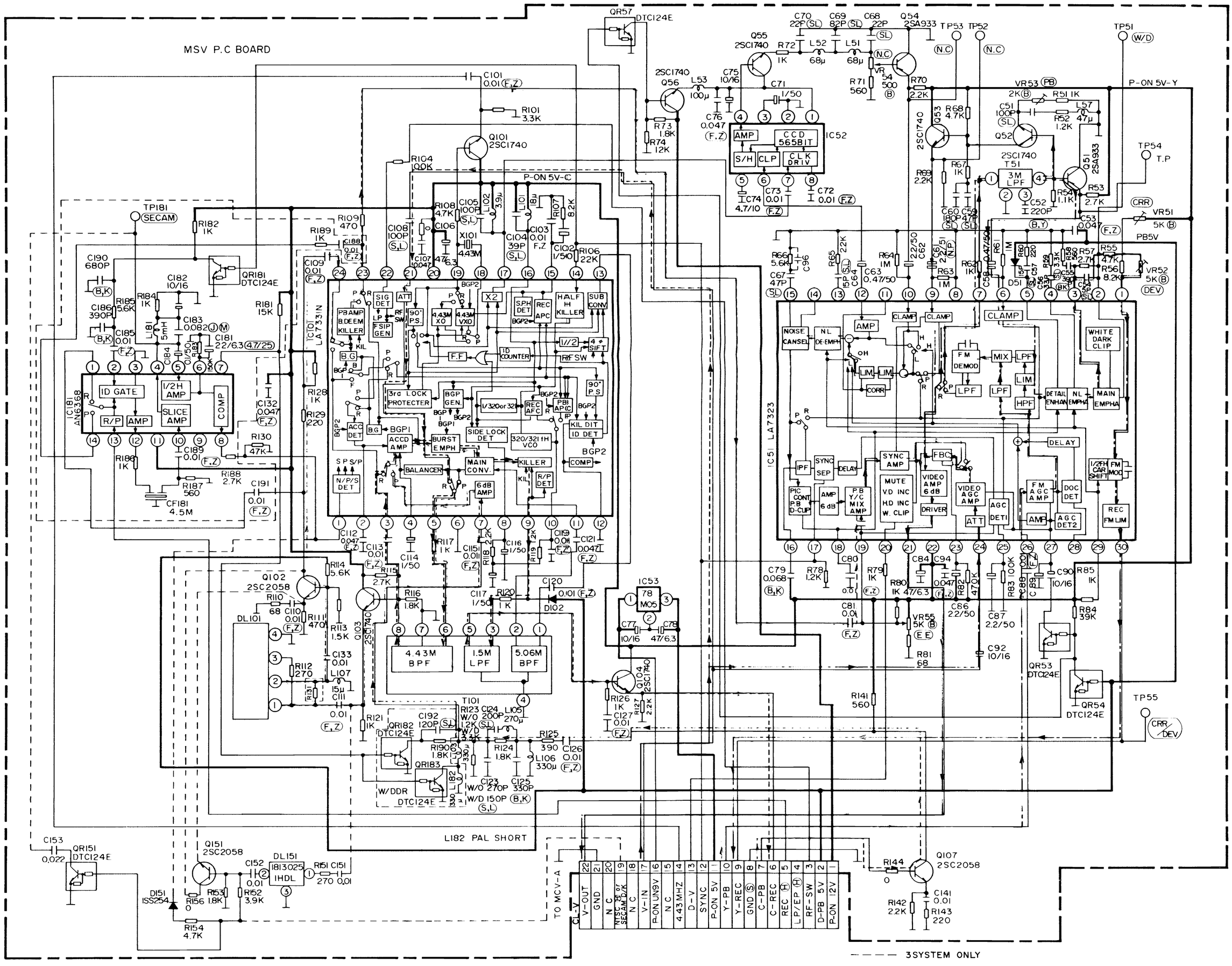
K2800-T

15. SCHEMATIC DIAGRAM

VIDEO

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} 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) = POLYPROPYLANE, (SC) = SEMI-CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

WARNING:
REPLACEMENT 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 MESUREMENTS TO DETERMINE THAT EXPOSES PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPALIANCE TO THE CUSTOMER.



Play Mode
- Luminance + Chrominance
- Luminance
- Chrominance

Rec. Mode
- Luminance + Chrominance
- Luminance
- Chrominance

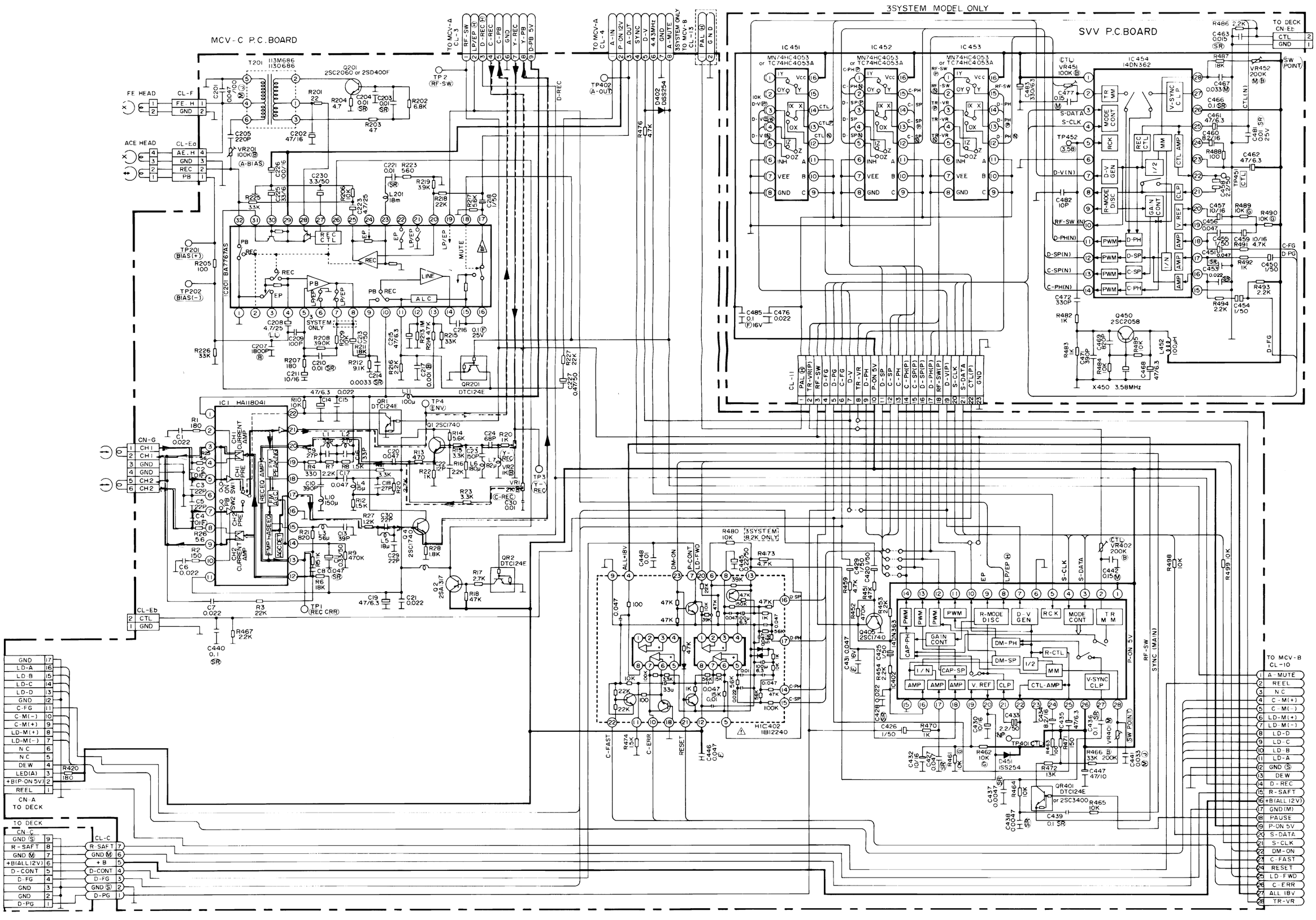
NTSC-H: NTSC-H Model Only
SECAM D/K: SECAM D/K Model Only
EDIT: EDIT Model Only
LP: LP Model Only
DDR: ME SECAM Model Only

K2800-V

HEAD AMP/AUDIO/SERVO/3 SYSTEM

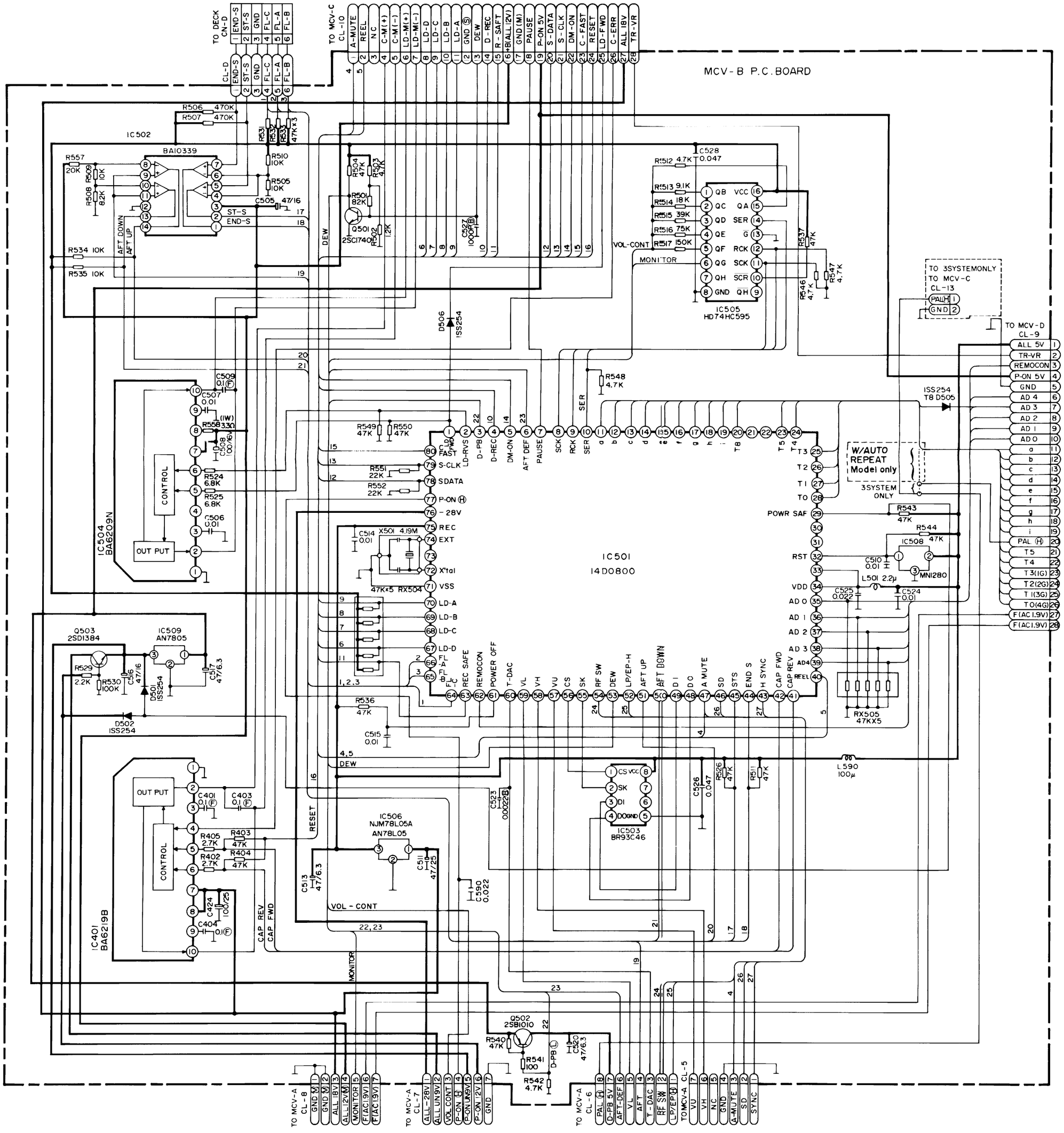
NOTES.
1. ALL RESISTANCE VALUES ARE INDICATED IN OHM (K=10^3, m=10^6).
2. ALL CAPACITANCE VALUES ARE INDICATED IN μF (P=10^6 μF).
3. VOLTAGES ARE MEASURED WITH SSVM (Z: > 10K OHM)) FRONT POINT INDICATED TO CHASSIS GROUND AT NO SIGNAL CONDITION UNLESS OTHERWISE NOTED. (SEE VOLTAGE CHART)
4. CAPACITOR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

WARNING.
REPLACEMENT 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 MESUREMENTS TO DETERMINE THAT EXPOSES PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.



K2800-H

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=10^6 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) = POLYPROPYLANE, (SC) = SEMI CONDUCTIVE, (M) = MYLAR, OTHERS ARE CERAMIC.

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