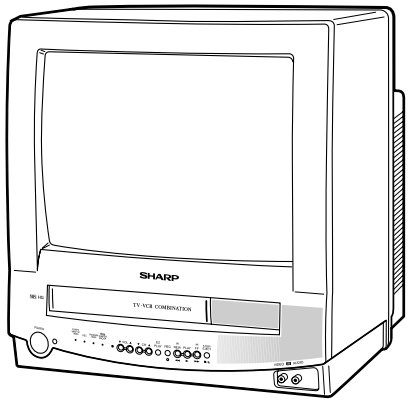
SHARP SERVICE MANUAL

SY9U113VTN100



TV/VCR COMBINATION

Chassis No. B99B

MODELS **13VT-N100**
13VT-N150
13VT-CN10

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

CONTENTS

SHARP CORPORATION

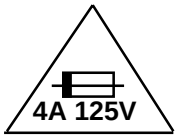
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and servicing guidelines which follow:

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulation material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit.The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISKOF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Note that the picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicepersonel have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value -no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also,under certain conditions, may produce radiation that exceeds specifications.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, thebrightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

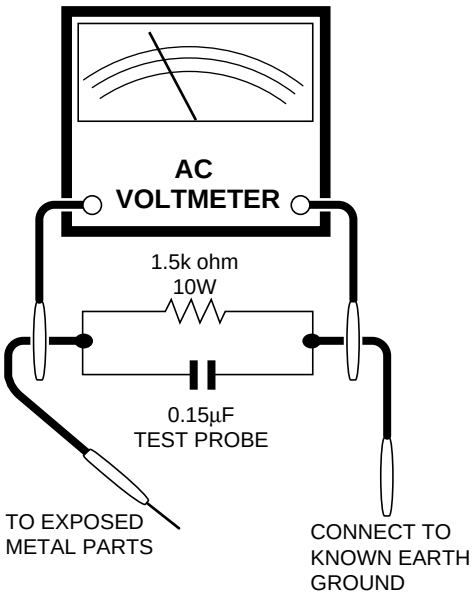
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators and etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using to clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon and etc.) and measure the AC voltage drop across the resistor.
  AII check must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage and etc. Replacement parts which have special safety characteristics are identified in this manual; electrical components having such features are identified by " ⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

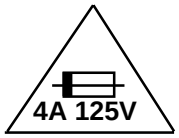
For continued protection, replacement parts must be identical to those used in the original circuit. The use of a substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

PRECAUTIONS A PRENDRE LORS DE LA REPARATION

■ Ne peut effectuer la réparation qu' un technicien spécialisé qui s'est parfaitement accoutumé à toute vérification de sécurité et aux conseils suivants.

AVERTISSEMENT

1. N'entreprendre aucune modification de tout circuit. C'est dangereux.
2. Débrancher le récepteur avant toute réparation.
3. Les déversoirs thermiques à semi-conducteurs peuvent présenter un danger de choc électrique lorsque le réceqteur est en marche.
4. Le châssis de ce récepteur a deux systèmes de mise à la terre qui sont séparés par un matériau isolant. Le système de mise à la terre non-isolée (chaud) est pour le circuit du régulateur de tension B+ et le circuit de sortie horizontale. Le système de mise à la terre isolé est pour les basses tensions C. C. B+ et le circuit secondaire du transformateur de haute tension.



PRECAUTION:POUR LA PROTECTION CONTINUE CONTRE LES RISQUES D'INCENDIE, REMPLACER LE FUSIBLE PAR UN FUSIBLE DE MEME TYPE 4A-125V.

REPARATION DU SYSTEME A HAUTE TENSION ET DU TUBE-IMAGE

Lors de la réparation de ce systéme, supprimer la charge statique en branchant une résistance de 10 k en série avec un fil isolé (comme une sonde d'essai) entre la mise à la terre du tube-image et le fil d'anodel. (Le corden d'alimentation doit être retiré de la prise murale.)

1. Il est à noter que le tube-image de ce récepteur est intégralement protégé contre l'implosion.
2. Par mesure de sécurité, changer le tube-image pour un tube du même numéro de type.
3. Ne pas lever le tube-image par son col.
4. Ne manipuler le tube-image qu'en porant des lunettes incassables et qu'après avoir déchargé totalement la haute tension.

LIMITES DES RADIATIONS X ET DE LA HAUTE TENSION

1. Tout le personnel réparateur doit être instruit des instructions et procédés relatifs aux radiations X.
   Le tube-image, seule source de rayons X dons les téléviseurs transistorisés, n'émet pourtant pas de rayons mesurables si la haute tension est maintenue à un niveau préconisé dans la section "Vérification de la haute tension".
   C'est seulement quand la haute tension est excessive que les rayons X peuvent entrer dans l'enveloppe du tube-image y compris le conducteur de verre. Il est important de maintenir la haute tension en-dessous du niveau spécifié.
2. Il est essentiel que le réparateur ait sous la main un voltmètre à haute tension qui doit être périodiquement étalonné.
3. La haute tension doit toujours être maintenue à la valeur de régime-et pas plus haute. L'opération à des tensions plus élevées peut entraîner une panne du tube-image ou du circuit à haute tension et, dans certaines conditions, peut entraîner une radiation dépassant les niveaux préscrits.
4. Quand le régulateur à haute tension fonctionne correctement, il n'y a aucun problème de radiation X. Chaque fois qu'un châssis couleurs est réparé, la luminosité doit être examinée bout en contrôlant la haute tension à l'aide d'un voltmètre pour s'assurer que la haute tension ne dépasse pas la valeur spécifiée et qu'elle soit correctement réglée.
5. Ne pas utiliser un tube-image autre que celui spécifié et ne pas effectuer de modifications déconseillées du circuit à haute tension.
6. Lors de la recherche des pannes et des mesures d'essai sur un récepteur qui présente une haute tension excessive, éviter de s'approcher inutilement du récepteur.
   Ne pas faire fonctionner le récepteur plus longtemps que nécessaire pour localiser la cause de la tension excessive.

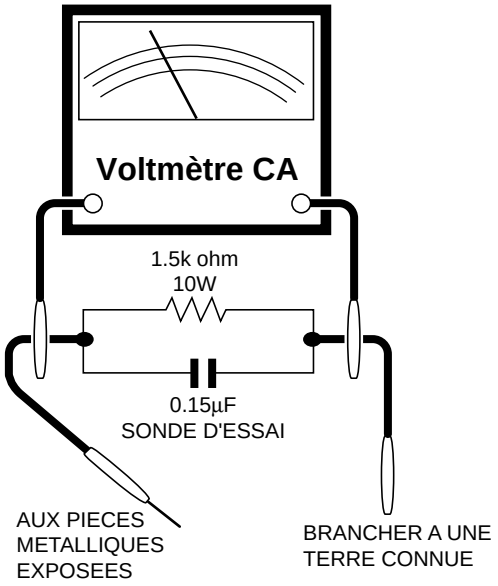
PRECAUTIONS A PRENDRE LORS DE LA REPARATION
(Suite)

VERIFICATIONS CONTRE L'INCEN-DIE ET LE CHOC ELECTRIQUE

Avant de rendre le récepteur à l'utilisateur, effectuer les vérifications suivantes.

1. Inspecter tous les faisceaux de câbles pour s'assurer que les fils ne soient pas pincés ou qu'un outil ne soit pas placé entre le châssis et les autres pièces métalliques du récepteur.
2. Inspecter tous les dispositifs de protection comme les boutons de commande non-métalliques, les isolants, le dos du coffret, les couvercles ou blindages de réglage et de compartiment, les réseaux de résistance-capacité, les isolateurs mécaniques, etc.
3. S'assurer qu'il n'y ait pas de danger d'électrocution en vérifiant la fuite de courant, de la facon suivante:

- Brancher le cordon d'alimentation directem-ent à une prise de courant de 120V. (Ne pas utiliser de transformateur d'isolation pour cet essai).
- A l'aide de deux fils à pinces, brancher une résistance de 1,5 k 10 watts en parallèle avec un condensateur de 0,15µF en série avec toutes les pièces métalliques exposées du coffret et une terre connue comme une conduite électrique ou une prise de terre branchée à la terre.
- Utiliser un voltmètre CA d'une sensibilité d'au moins 5000 /V pour mesurer la chute de tension en travers de la résistance.
- Toucher avec la sonde d'essai les pièces métalliques exposées qui présentent une voie de retour au châssis (antenne, coffret métallique, tête des vis, arbres de commande et des boutons, écusson, etc.) et mesurer la chute de tension CA en-travers de la résistance.
  Toutes les vérifications doivent être refaites après avoir inversé la fiche du cordon d'alimentation. (Si nécessaire, une prise d'adpatation non polarisée peut être utilisée dans le but de terminer ces vérifications.)
  Tous les courants mesurés ne doivent pas dépasser 0,5 mA.
  Dans le cas contraire, il y a une possibilité de choc électrique qui doit être supprimée avant de rendre le récepteur au client.



AVIS POUR LA SECURITE

De nombreuses pièces, électriques et mécaniques, dans les téléviseurs présentent des caractéristiques spéciales relatives à la sécurité, qui ne sont souvent pas évidentes à vue. Le degré de protection ne peut pas être nécessairement augmentée en utilisant des pièces de remplacement étalonnées pour haute tension, puissance, etc.
Les pièces de remplacement qui présentent ces caractéristiques sont identifiées dans ce manuel; les pièces électriques qui présentent ces particularités sont identifiées par la marque " ⚠ " et hachurées dans la liste des pièces de remplacement et les diagrammes schématiques.
Pour assurer la protection, ces pièces doivent être identiques à celles utilisées dans le circuit d'origine. L'utilisation de pièces qui n'ont pas les mêmes caractéristiques que les pièces recommandées par l'usine, indiquées dans ce manuel, peut provoquer des électrocutions, incendies, radiations X ou autres accidents.

ELECTRICAL SPECIFICATIONS

TV SECTION

POWER INPUT:	120 V AC 60 Hz
POWER RATING:	65 W
PICTURE SIZE	
Width:	37.8 cm
Height:	38.7 cm
Depth:	38.2 cm
CONVERGENCE:	Magnetic
SWEEP DEFLECTION:	Magnetic
FOCUS:	Hi-Bi-Potential Electrostatic
INTERMEDIATE FREQUENCIES	
Picture IF Carrier Frequency:	45.75 MHz
Sound IF Carrier Frequency:	41.25 MHz
Color Sub-Carrier Frequency:	42.17 MHz (Nominal)
AUDIO POWER OUTPUT RATING:	0.8 W (at 10% Distortion)
SPEAKER	
Size:	5×9 cm ($2" \times 3^1/_2"$)
Voice Coil Impedance:	16 ohm at 400 Hz
VHF/UHF ANTENNA INPUT IMPEDANCE:	75 ohm unbalanced
TUNING RANGES	
VHF-Channels:	2 thru 13
UHF -Channels:	14 thru 69
CATV Channels:	1,14 thru 125 (EIA, Channel Plan)

VCR SECTION

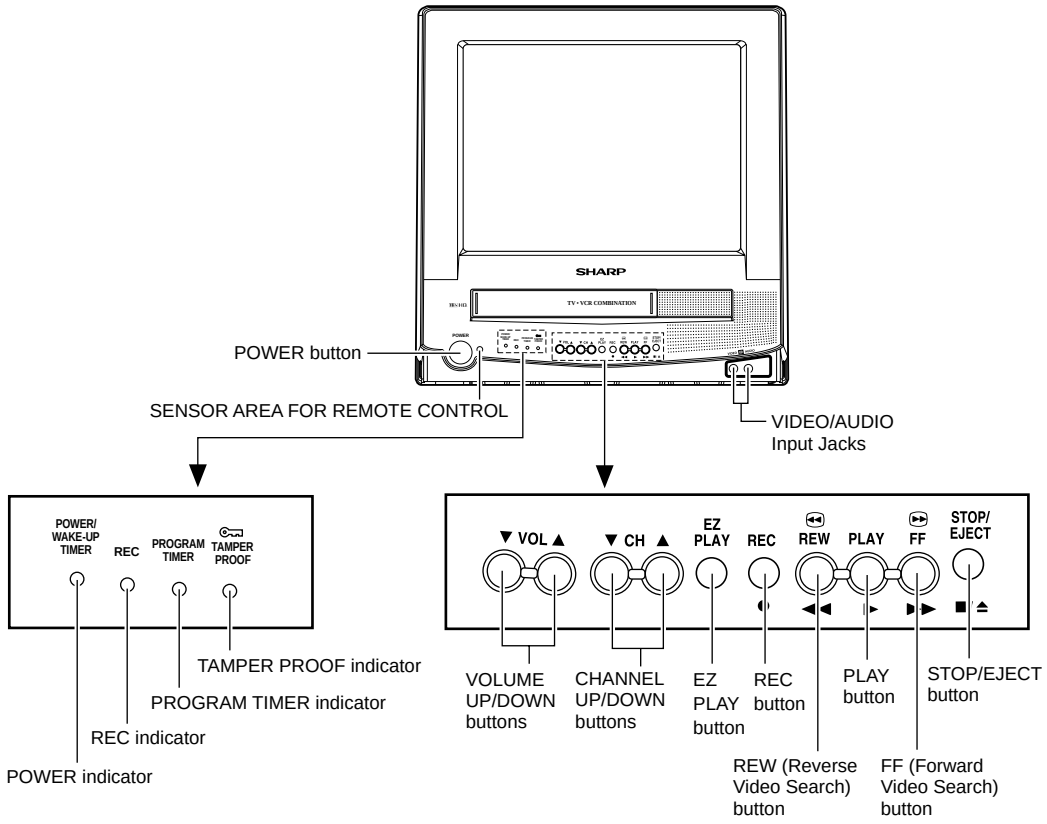
Format:	VHS Standard
Video Recording System:	Rotary Two-Head Helical Scanning
Number of Video Heads:	2 pcs.
Video Signal Standard:	NTSC Color System
Tape Width:	12.7mm (1/2inch)
Tape Speed:	(SP)33.35mm/sec (1.31 i.p.s) (LP)16.67mm/sec (0.66 i.p.s) Play back only (EP)11.12 mm/sec (0.44 i.p.s)
Maximum Recording Time:	(SP)160 min (T-160) (EP)480 min (T-160)
Video Input:	0.5 to 2.0 Vp-p, 75 ohm unbalanced
Audio Input:	-8 dB, 47k ohm unbalanced (0 dB-0.775 Vrms)
Operating Temperature:	5°C to 40°C (41°F to 104°F)
Storage Temperature:	-20°C to 60°C (-4°F to 140°F)

Specifications are subject to change without prior notice.

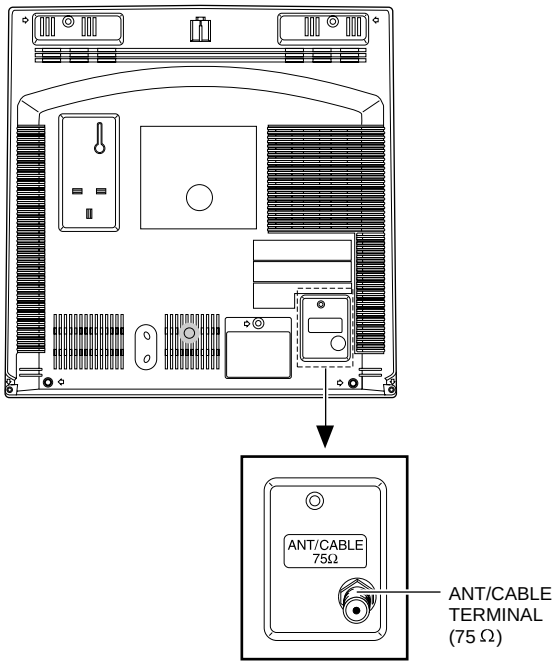
LOCATION OF USER'S CONTROL

Description Of Controls

FRONT

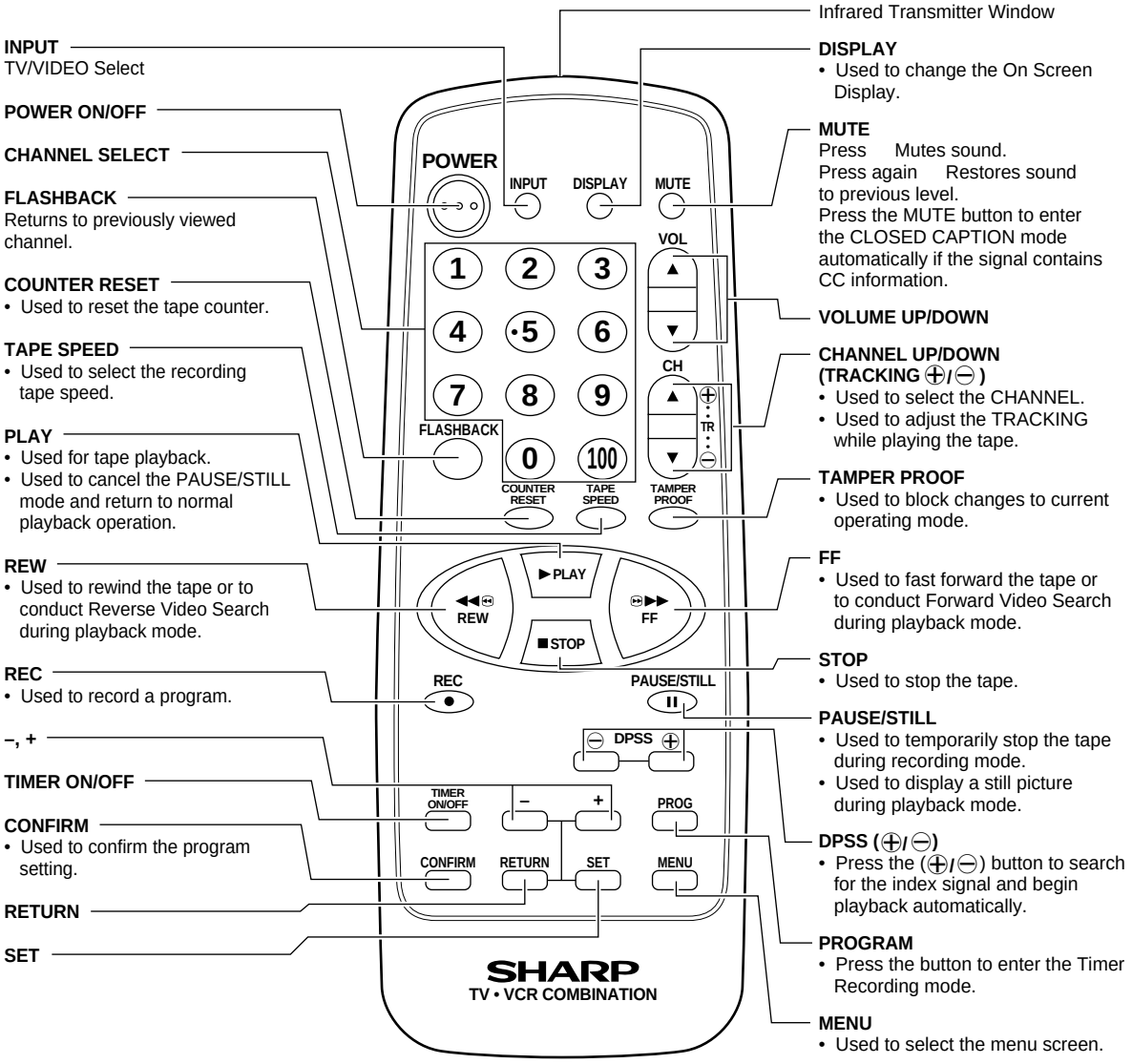


REAR



LOCATION OF USER'S CONTROL (Continued)

Location Of Control's Buttons (Remote Control)

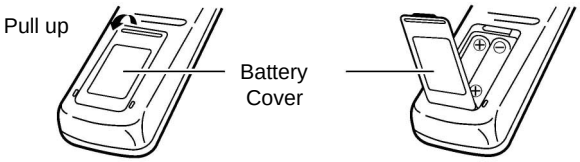


Remote Control Battery Installation

■ **Before using the television, prepare the Remote Control**

To use the remote control, insert batteries first.

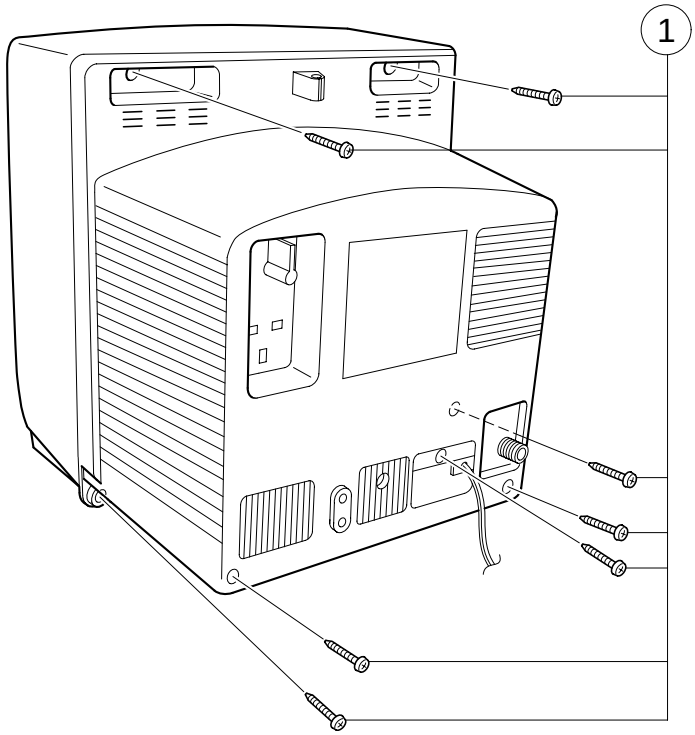
Insert the batteries

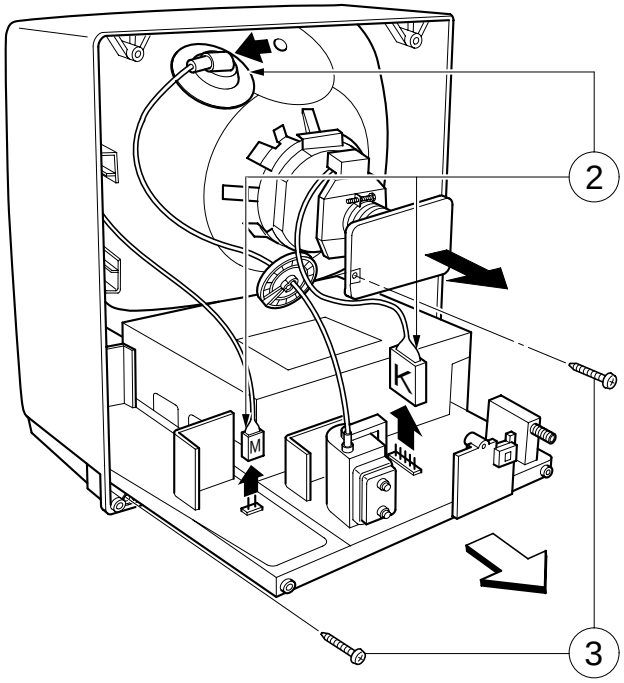


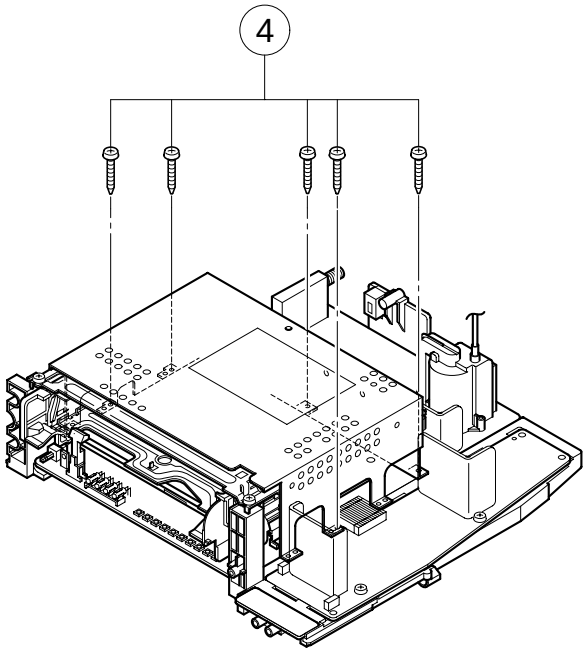
- With your thumb nail, pull up the slit as indicated by the arrow to remove the back cover. Insert two batteries (size "AA"). Be sure to match the battery ⊕/⊖ terminals with the ⊕/⊖ marks inside the compartment.

DISASSEMBLY AND REASSEMBLY

1. Remove the 7 rear cover fixing screws and detach the rear cover.
2. Take out the anode cap, CRT PWB, connectors K and M, coating earth, Speaker chip fixing screws and others.
3. Take out the main PWB unit and the VCR unit.
4. Remove the 5 VCR fixing screws, and detach the shielding case.

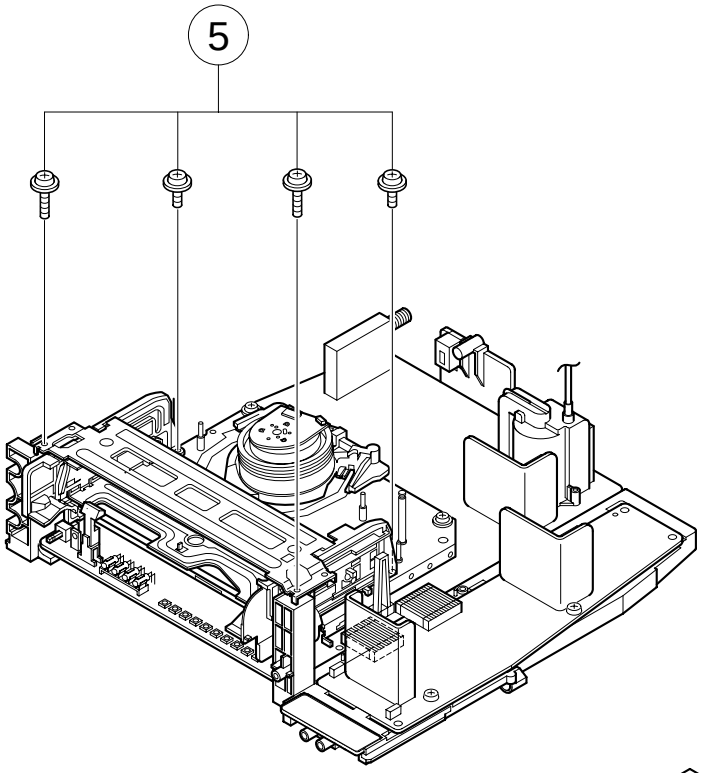


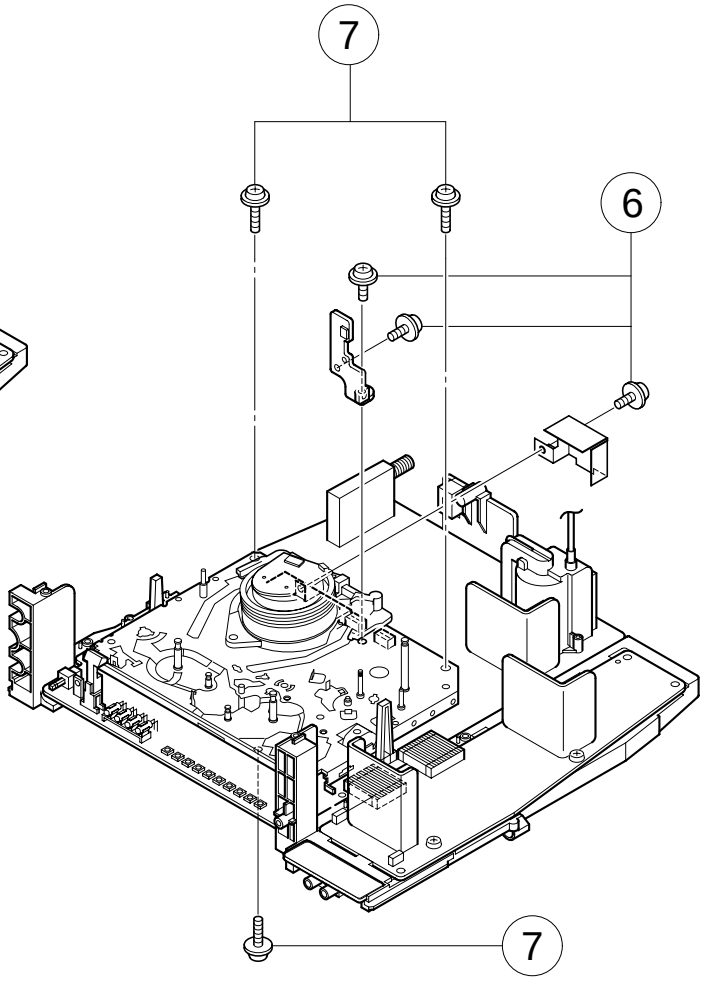


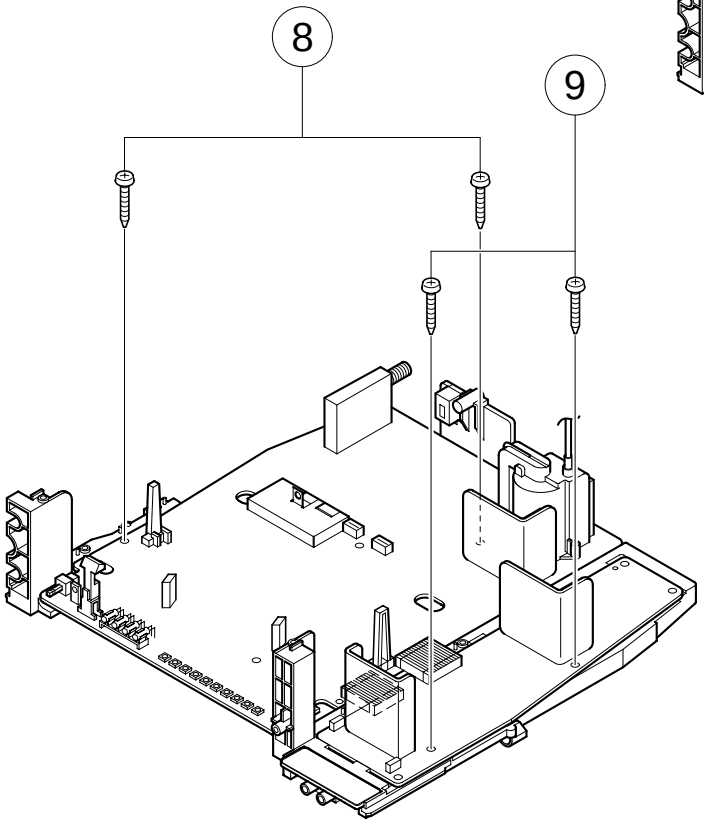


DISASSEMBLY AND REASSEMBLY (Continued)

5. Remove the 4 cassette housing control fixing screws, and detach the cassette housing control.
6. Remove the 2 mechanism chassis angle fixing screws, and remove the 1 head amp shielding case fixing screw.
7. Remove the 3 mechanism chassis fixing screws, and detach the mechanism chassis from the main PWB.
8. Remove the 2 main PWB fixing screws, and detach the main PWB.
9. Remove the 2 power PWB fixing screws, and detach the power PWB

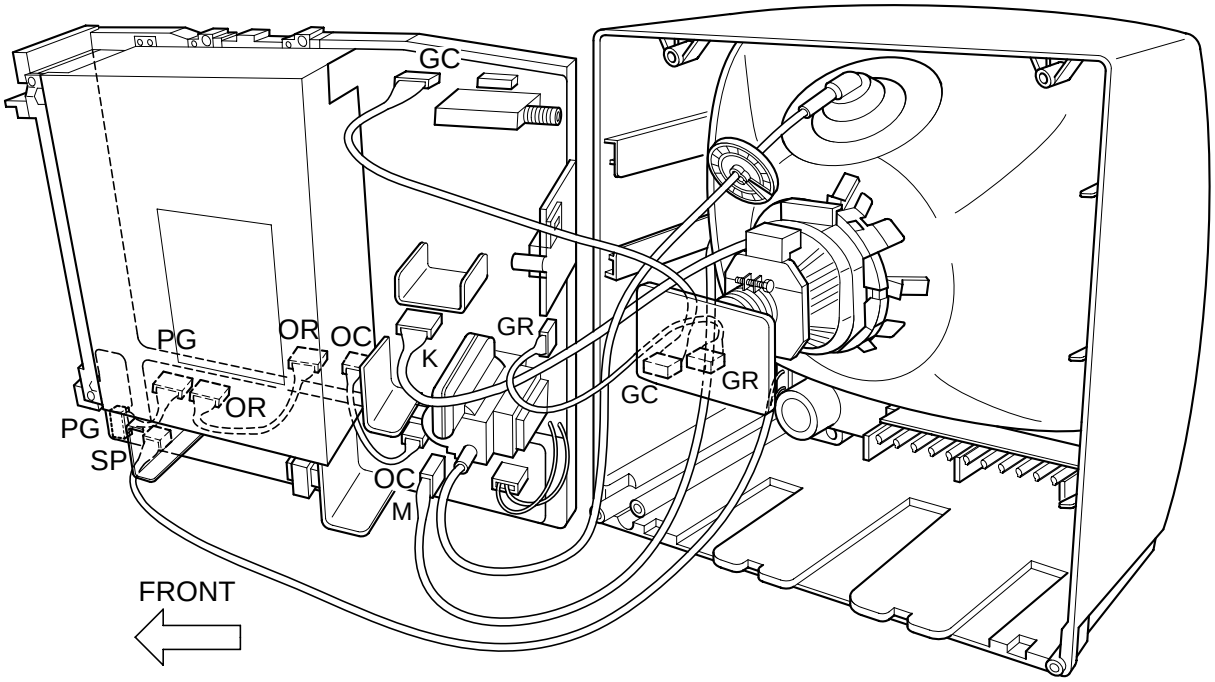






DISASSEMBLY AND REASSEMBLY (Continued)

For servicing any of the components inside, disconnect the lead dressing holder. Position the main PWB unit upright as shown below and connect the leads for starting the services.



INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdriver or TV alignment tools.
(2) Before performing adjustment, TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, or B+ system, test the X-Radiation protector circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and using the remote controller, set the brightness level and contrast level to maximum.
3. Check the voltage of test point TP653. (It's voltage should be about 10.1V DC.)
4. Apply external 13.1V DC at TP653 by using an external DC supply. The increased voltage will cause the horizontal oscillator to stop and the TV to shut off.
5. To re-start the oscillator, remove the external DC power supply and short together TP651 and TP652. Once the TV set operates normally again, remove the short between TP651 and TP652.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of Picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with strong air signal or properly tuned in test signal.
3. Set to Service mode on, "Mute" and bus data 1(Y-mute on).
4. The voltage should be approximately 25.4kV (at zero beam). If a correct reading cannot be obtained, check circuitry for malfunctioning components.
   After the voltage test, "Mute" and bus data "0" (Y-mute off).

The N-series SHARP TV/VCR COMBINATION have most of the analog setup adjustments eliminated. Coil and variable resistor adjustments are now performed digitally by using the remote controller or set's volume and channel change function buttons.

Note: There are still a few analog adjustments in the L-series such as 120V adjust, focus, master screen voltage and coils in the picture I/F detector circuit.
Follow the steps below, whenever service adjustment is required. See "Table-B" to determine, if service adjustments are required.

1. Service mode

Berfore putting unit into the service mode, check that customer adjustments are in the normal mode, use the reset function in the video adjust menu to ensure customer controls are in their proper (reset) position.

To enter the service mode

Plug in a television set, during push S2507 (CH-up). When successfuly entered, the service mode will be displayed as shown in **Figure A**.

To exit service mode

Turn off the power or unplug the set.

2. Adjustment Item selection

Once in the service mode, press the channel up or channel down button on the remote controller or at the set (**Table-A**). Select the item you wish to adjust.

3. Data number selection

Press the volume up or down button to adjust the data number in the upper right hand side of the screen.

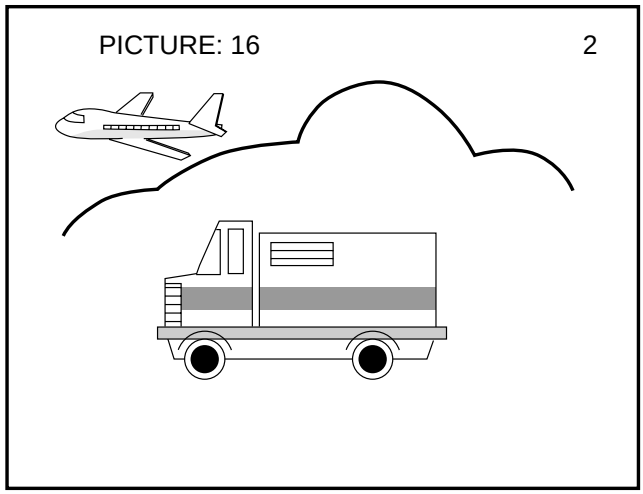


Figure A.

Table - A

ADJUSTMENT ITEM	DATA		ADJUSTMENT COMMENTS
	INTIAL VALUE	RANGE	
PICTURE	16	0~63	
TINT	39	0~77	
COLOR	13	0~63	
BRIGHT	32	0~63	
SHARP	7	0~13	
PHASE	0	0~7	
H-PHASE	20	0~31	
RF-AGC	18	0~63	
V-AMP	32	0~63	
PIF-VCO	40	0~127	
R CUT-OFF	0	0~255	
G CUT -OFF	0	0~255	
B CUT-OFF	0	0~255	
G GAIN	128	0~255	
B GAIN	128	0~255	
MUTE	0	0~2	"0"= Normal raster, "1"= no"Y", "2"= No Vertical
ENERGY SAVE	45	0~45	
BALANCE	32	0~63	
TEXT BOX	15	0~127	
TEXT PICTURE	20	0~80	
CCD LEVEL	7	0~10	
OPTION	39	0~63	13VT-N100/150 Must be set to "39"

*No adjustment is required due to proper setting being made by IC2001 automatically.

Table - B

PART REPLACED	ADJUSTMENT		NOTE
	NECESSARY	UNNECESSARY	
IC2001		X	Data is stored in IC2003.
IC401	X		The adjustment is needed to compensate for characteristics of parts including IC401.
IC2101	X		Initial setting values are written from IC2001. Adjust for best results.
CRT	X		Adjust items related to picture tube only.

■ SERVICE ADJUSTMENT

VCO Adjustment

1. Connect a digital voltmeter between pin (44) of IC401 and ground.
2. Select a good local channel.
3. Enter the service mode and select the service adjustment item "PIF-VCO" and set the data value to "40".
4. Adjust the VCO coil L202 so that the digital voltmeter reads 2.5V.
5. Adjustment is complete, remove the voltmeter and return to "normal" mode.

RF AGC Adjustment

1. Select a good local channel.
2. Enter the service mode and select the service adjustment item "RF-AGC".
3. Set the data value to point where no noise or beat appears.
4. Select another channel to confirm that no noise or beat appears.

   Note 1: You will have to come out of the service mode to select another channel.

   Note 2: Setting the data to "0" will produce a black raster.

Screen Adjustment

1. Select a good local channel.
2. Enter the service mode and select the service adjustment item "COLOR" and set the data value to "0" to set the color level to minimum. You may skip this step, if you selected a B/W picture or monoscope pattern.
3. Select service adjustment item "MUTE" and adjust the data value to "1", this turns off the luminance signal (Y-mute).
4. Select service adjustment item "BRIGHT" and set the value to "32".
5. Adjust the master screen cotrol untill raster darkens to the point where raster is barely seen.
6. Adjust service adjustments item "R-CUT OFF" red "G-CUT OFF" green and "B-CUT OFF" blue to obtain a good grey scale with normal whites at low brightness level.
7. Select the service adjustment item "MUTE" and reset data to "0". Select service adjustment item "COLOR" and reset data to obtain normal color level.

White Balance Adjustment

1. Select a good local channel.
2. Enter the service modeand select the service adjustment item "COLOR" and set to "0" (minimum color). "COLOR" does not have to be adjusted if you selected a B/W picture or monoscope pattern.
3. Alternately adjust the service adjustment data of "G GAIN" and "B GAIN" untill a good grey scale with normal whites is obtained.
4. Select the service adjustment item "COLOR" and adjust data to obtain normal color level.

Picture Adjustment

1. Select a good local channel.
2. Make sure the customer picture control is maximum.
3. Enter the service mode and select the service adjustment item "PICTURE".
4. Adjust the data value to achieve normal contrast range.

Tint Adjustment

1. Select a good local channel.
2. Set customer tint control to center of it's range.
3. Enter the service mode and select the service adjustment item "TINT".
4. Adjust "TINT" data value to obtain normal flesh tones.

Color Adjustment

1. Select a good local channel.
2. Make sure the customer color control is set to center position .
3. Enter the service mode and select the service adjustment item "COLOR".
4. Adjust "COLOR" data value to obtain normal color level.

Brightness Adjustment

1. Select a good local channel.
2. Make sure the customer brightness control is set to center position.
3. Enter the service mode and select the service adjustment item "BRIGHT".
4. Adjust "BRIGHT" data value to obtain normal brightness level.

Vertical-Size Adjustment

1. Select a good local channel.
2. Enter the service mode and select the service adjustment item "V-AMP".
3. While observing the top and bottom of the screen, adjust "V-AMP" data value to proper vertical size and linearity.

Horizontal Position Adjustment

1. Select a good local channel.
2. Enter the service mode and select the service adjustment item "H-PHASE".
3. Adjust "H-PHASE" data value so that picture is centered.

Caption Position Adjustment (Horizontal)

1. Select a good local channel.
2. Enter the service mode and select the service adjustment item "TEXT BOX".
3. A black text box appears on the screen. (See **Figure B.** below.)
4. Adjust "TEXT BOX" data value so that text box is positioned in the center of the screen.

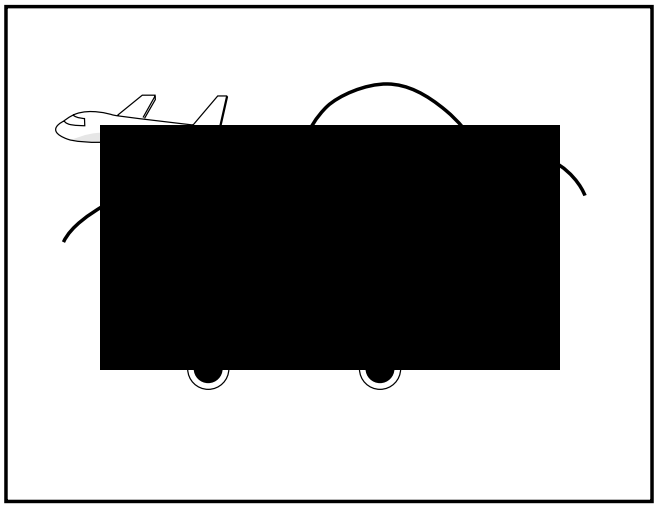


Figure B.

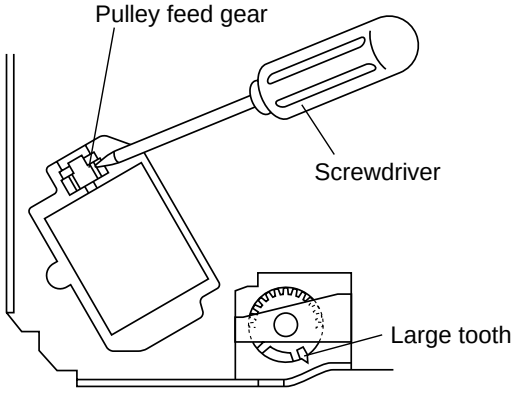
PRECAUTIONS IN REASSEMBLING

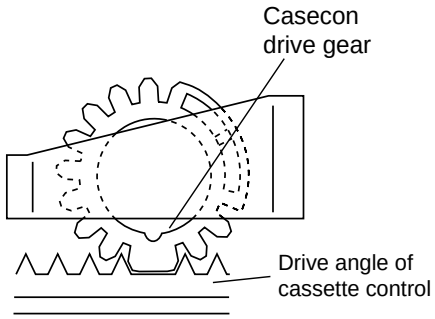
MOUTING THE CASSETTE CONTROLLER

Initial setting is indispensable before placing the cassette controller in the mechanism. The initial setting is made in two ways;electrical and mechanical.

Electrical setting:

Make a short-circuit between TP7701 and TP7702 and be sure that the mechanism is back to its initial setting position (*1). Now place the cassette controller in position.(This method is used when the mechanism has been already set on its PWB.)





Mechanical setting:

Turn the loading motor's pulley feed gear using a screwdriver and be sure that the mechanism is back to its initial setting position (*1). Now place the cassette controller in position.(This method is applicable for the mechanism alone.)

COUPLING THE MECHANISM TO THE PWB

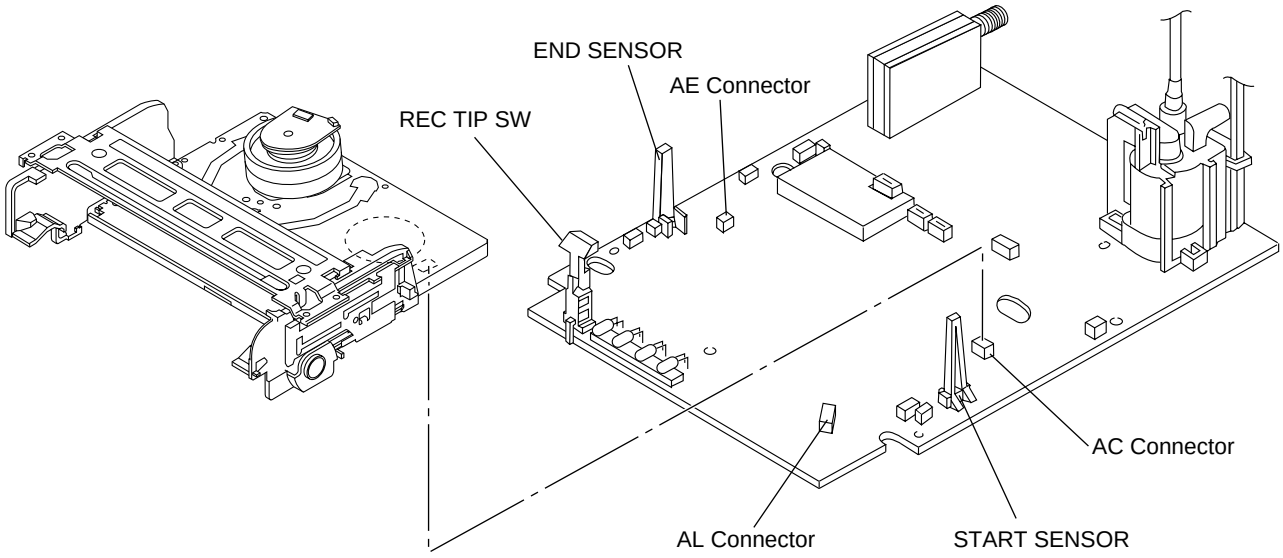
Match the mechanism's projections with the two symbols (round reference and oval sub-reference) on the main PWB. Place the mechanism straight down in position with due care so that the mechanism chassis's outer edges should not damage any parts nearby.

Tighten up the two screws (one for fixing the mechanism and the head amplifier shield, the other on the main PWB's soldering side and located near the loading motor) to fix the mechanism and main PWB. Reconnect the FFC cables (MH and AA, ME and AD, Drum Unit and AH) between the mechanism and main PWB.

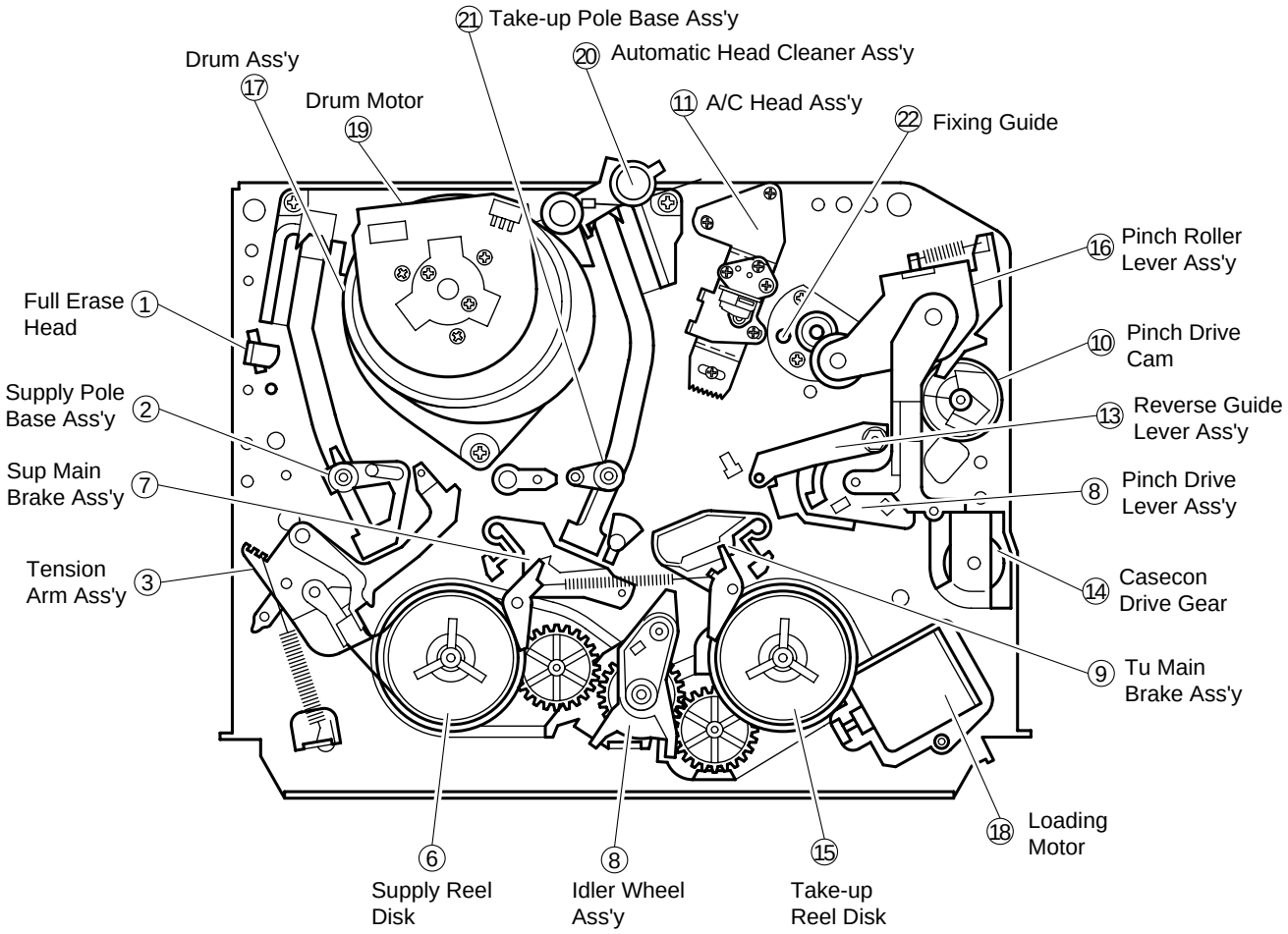
Parts to pay attention to:

Start and end sensors	Q7703, Q7704
Record tip switch	S7701

Take special care of the connectors (board to board; AC, AE, AL) between the mechanism and main PWB.

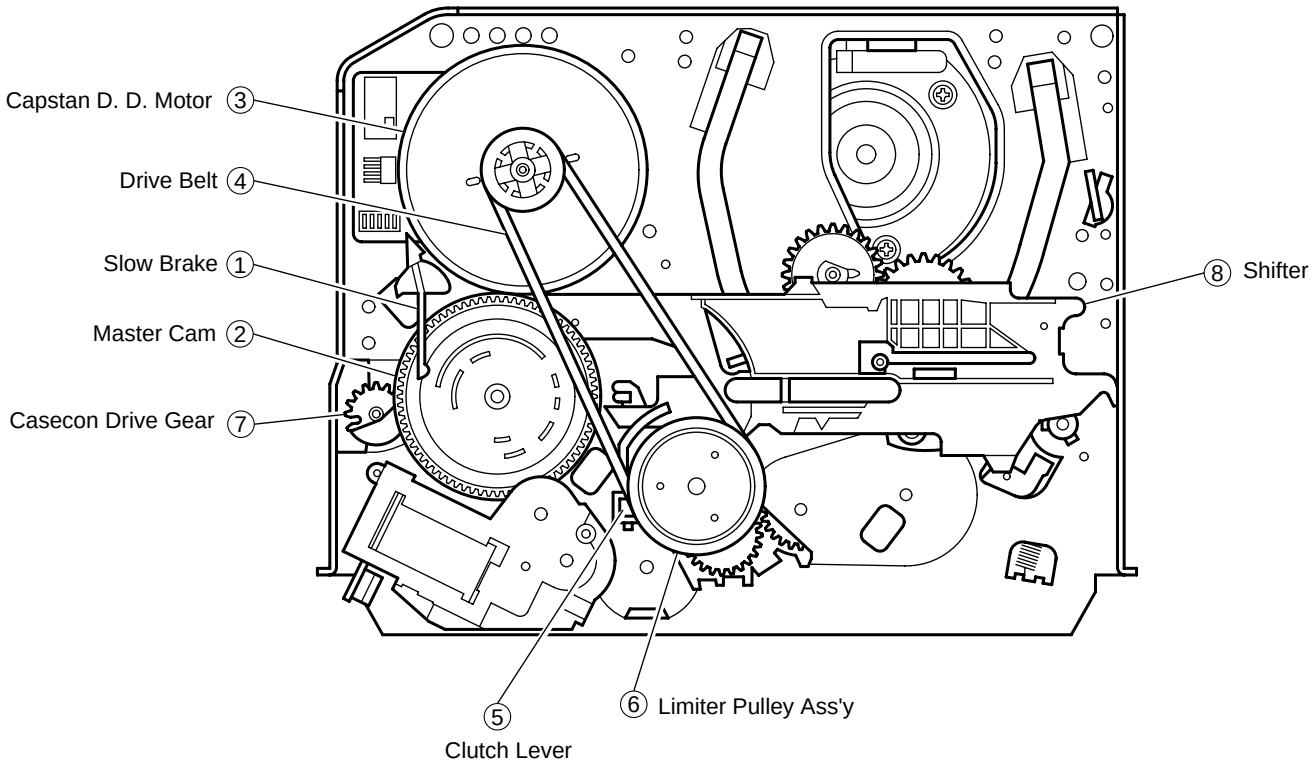


FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)



No.	Function	No.	Function
1.	Full erase head ass'y Erase the old recording on the tape in the record-ing mode.	13.	Reverse guide lever ass'y Pulls out the tape and controls the tape drive train height with the upper and lower guides.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running.
7.	Sup Main brake lever Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast for-ward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cas-sette housing control ass'y.
9.	Main take-up brake lever Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast for-ward or rewind mode.		

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



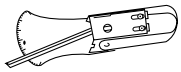
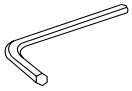
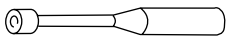
No.	Function	No.	Function
1.	Slow brake Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	6.	Limiter pulley ass'y Transmits the power of the capstan D.D. motor to the reel disk via the drive idler.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the Drive belt.	8.	Shifter Transmits the operation of the master cam to break ass'y, loading gear, tension arm and clutch lever.
4.	Drive belt Transmits the power to run the tape to the Limiter pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading gear T, and applies the tape around the drum assembly, as well as transmits the power to the loading gears.

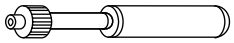
ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

The explanation given below relates to the on-site general service (field service) but it does not relates to the adjustment and replacement which need high-grade equipment, jigs and skill. For example, the drum assembling, replacement and adjustment service must be performed by the person who have finished the technical courses.

MECHANISM CONFIRMATION ADJUSTMENT JIG

So as to perform completely the mechanism adjustment prepare the following special jigs. So as to maintain the initial performance of the machine the maintenance and check are necessary. Utmost care must be taken so that the tape is not damaged. If adjustment needs any jig, be sure to sue the required jig.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1.	Torque Cassette Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
2.	Torque Gauge	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
		JiGTG1200	CN		
3.	Torque Gauge Head	JiGTH0006	AW		
4.	Torque Driver	JiGTD1200	CB		When fixing any part to the threaded hole using resin with screw, use the jig. (Specified torque 5 kg)
5.	Master Plane Jig and Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height.
		JiGMP0001	BY		
6.	Tension Gauge	JiGSG2000	BS		There are two gauges used for the tension measurements, 300 g and 2.0kg.
		JiGSG0300	BF		
7.	Pinch pressing force measuring jig	JiGADP003	BK		This Jig is used with the tension gauge. Rotary transformer clearance adjusting jig.
8.	Hex Wrench (1.2 mm)	JiGHW0012	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.5 mm)	JiGHW0015	AE		
9.	Reverse guide height adjusting box driver	JiGDRiVER11055	AR		This Jig is used for height adjustment of the reverse guide (for reverse guide height adjustment).

<table>
<tr><th>No.</th><th>Jig Item</th><th>Part No.</th><th>Code</th><th>Configuration</th><th>Remarks</th></tr>
<tr><td rowspan="4">10.</td><td rowspan="4">Alignment Tape</td><td></td><td></td><td rowspan="4">  </td><td>These tapes are especially used for electrical fine adjustment.
<table>
<tr><th>Video</th><th>Audio</th><th>Hi-Fi Audio</th><th>Track</th></tr>
<tr><td>525 Monoscope</td><td>7k</td><td>—</td><td>58µm</td></tr>
<tr><td>NTSC Color Bar</td><td>1k</td><td>—</td><td>58µm</td></tr>
<tr><td>525 Monoscope</td><td>7k</td><td>—</td><td>46/58 µm</td></tr>
<tr><td>525 Monoscope</td><td>1k</td><td>—</td><td>19µm</td></tr>
</table></td></tr>
<tr><td>VROATSV</td><td>CD</td></tr>
<tr><td>VRONBZGS</td><td>CB</td></tr>
<tr><td>VROEBZCS</td><td></td></tr>
<tr><td>11.</td><td>Guide roller height adjustment drive</td><td>JiGDRiVERH-4</td><td>AP</td><td>  </td><td>This screwdriver is used for adjusting the guide roller height.</td></tr>
<tr><td>12.</td><td>X value adjustment gear type screw driver</td><td>JiGDRiVER-6</td><td>BM</td><td>  </td><td>For X value adjustment</td></tr>
<tr><td>13.</td><td>Reverse Guide Height Adjusting Jig</td><td>JiGRVGH-F18</td><td>BU</td><td>  </td><td>This Jig is used for height adjustment of the reverse guide.</td></tr>
</table>

MAINTENANCE CHECK ITEMS AND EXECUTION TIME

Perform the maintenance with the regular intervals as follows so as to maintain the quality of machine.

Maintained / Parts	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	□	□	□	□	□	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Sup Guide Shaft	□	□	□	□	□		Clean tape contact part with the specified cleaning liquid.
Retaining guide	□	□	□	□	□		
Slant pole	□	□	□	□	□		
Full-erase head	□	□	□	□	□	Color and beating	Clean tape contact area with the specified cleaning liquid.
A/C head	□	□	□	□	□	Small sound or sound distortion	
Upper and lower drum ass'y	□	○□	□	○□	○□	Poor S/N ratio, no color Poor flatness of the envelope with alignment tape	
Capstan D.D. Motor	□	□	□	□	○	No tape running, uneven color	
Pinch roller	□	□	□	□	○	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		□		○	□	No tape running, tape slack, no fast forward/ rewind motion	
Tension band ass'y					○	Screen swaying	
Loading Motor					○	Cassette not loaded or unloaded	
Idler ass'y				○		No tape running, tape slack	
Limiter pulley		□△		□○	□△		
Supply/take-up Main brake levers				○		Tape slack	

NOTE: ○: Part replacement. □: Cleaning △: Oil refilling
<Specified> Cleaning liquid Industrial ethyl alcohol

* This mechanism does not need electric adjustment with variable resistor. Check parts. If any deviation is found, clean or replace parts.

REMOVING AND INSTALLING THE CASSETTE HOUSING

• Removal

1. In the cassette eject mode, remove the cassette.
2. Unplug the power cord.
3. Remove in the following numerical order.
   a) Remove two screws ①.
   b) Slide and pull up the cassette housing control.

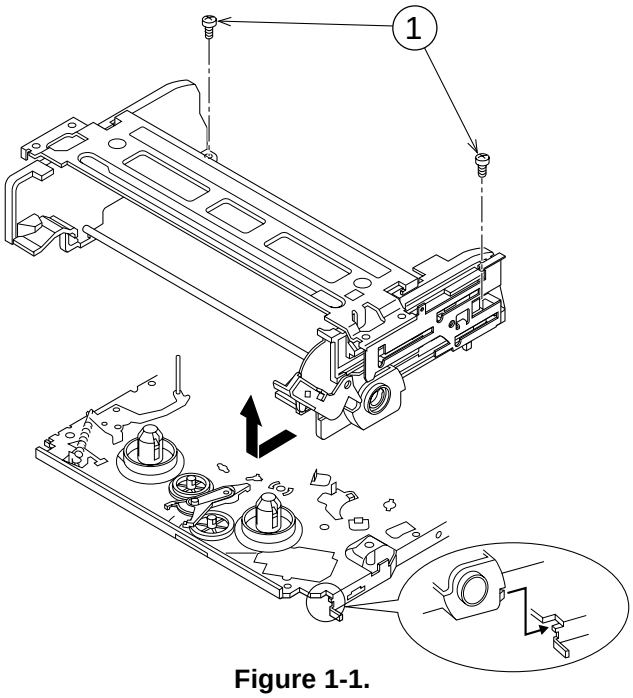


Figure 1-1.

• Reassembly

1. Before installing the cassette housing control, short-circuit TP7701 and TP7702 provided at the left of the main PWB, prug in the power cord. The casecon drive gear turns and stops when the positioning mark appears. Engage two teeth of casecon drive gear with the three teeth of casecon drive angle gear, and set on the mechanism chassis as shown below.

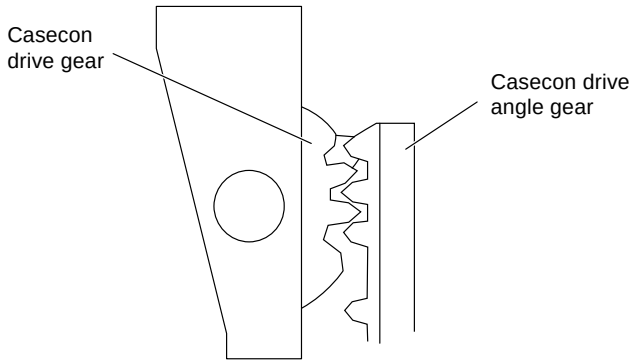


Figure 1-2.

2. Install in the reverse order of removal.

Notes:

1. When fitting the S/E sensor holder to the cassette controller frame L/R, take care.
2. Misengagement of teeth of casecon drive gear and drive angle gear causes malfunction. (The cassette cannot be set, load and ejection are repeated).
3. In the case when you use the magnet screw driver, never approach the magnet driver to the A/C head, FE head, and drum.
4. When installing or removing, take care so that the cassette housing control and tool do not contact the guide pin or drum.
5. After installing the cassette housing control once perform cassette loading operation.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Short-circuit TP7701 and TP7702.
2. Plug in the power cord.
3. Turn on the power.
4. Open the lid of a cassette tape by hand.
5. Hold the lid with two pieces of vinyl tape.
6. Set the cassette tape in the mechanism chassis.
7. Stabilize the cassette tape with a weight (500g) to prevent floating.
8. Perform running test.

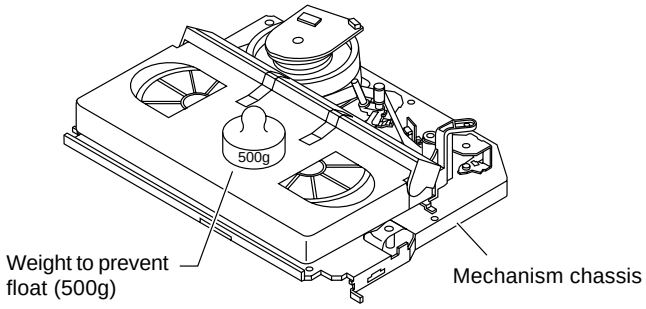


Figure 1-3.

Notes:

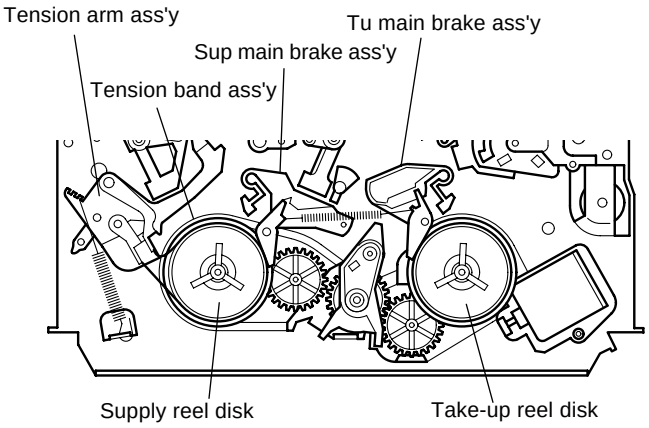
1. The weight should not be more than 500g.
2. Take care not to damage the tape when the Cassette is set in the mechanism shassis or taken out of it because the supply/take-up poles are shifted foward the tape loading direction in the EJECT position.

REEL DISK REPLACEMENT AND HEIGHT CHECK

- **Removal**

1. Remove the cassette housing control assembly.
2. Pull the tension band out of the tension arm ass'y.
3. Remove the Sup/Tu main brake ass'y.
4. Open the hook at the top of the reel disk, and remove the reel disk.

Note:
Take care so that the tension band ass'y and main brake ass'y (especially soft brake) are not deformed.



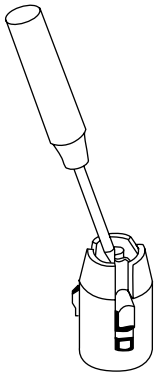


Figure 1-4.

Note:
When the tension band ass'y is pressed in the direction of the arrow for removal, the catch is hard to be deformed.

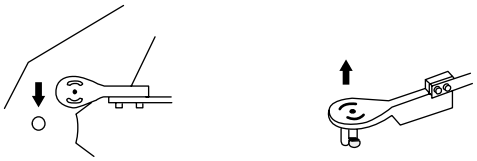


Figure 1-5.

- **Reassembly (Supply reel disk)**

1. Clean the reel disk shaft and apply grease (SC-141) to it.
2. Match the phases of reel disk and reel relay gear, and set the new reel disk.
3. After checking the reel disk height, wind the tension band ass'y around the reel disk, and insert into the hole of tension arm ass'y.
4. Assemble the Sup main brake ass'y.

Notes:
1. When installing the reel disk, take due care so that the tension band ass'y is not deformed and grease does no adhere.
2. Do not damage the Sup main brake ass'y. Be careful so that grease does not adhere to the brake surface.

- **Reassembly (Take-up reel disk)**

1. Clean the reel disk shaft and apply grease (SC-141) to it.
2. Align the phase of the reel disk to that of the reel relay gear and to install a new take-up reel disk onto the shaft.
3. Check the reel disk height and reassemble the take-up main brake ass'y.

Note:
1. Take care so that the Tu main brake ass'y is not damaged. Take care so that grease does not adhere the brake surface.
2. After reassembly, check the video search rewind back tension (see page 27), and check the brake torque (see page 29).

- **Height checking and adjustment**

Note:
1. Set the master plane with due care so that it does not contact the drum.
2. When putting the master plane, shift the reverse guide a little in the loading direction. Care must be taken since excessive shift results in damage.

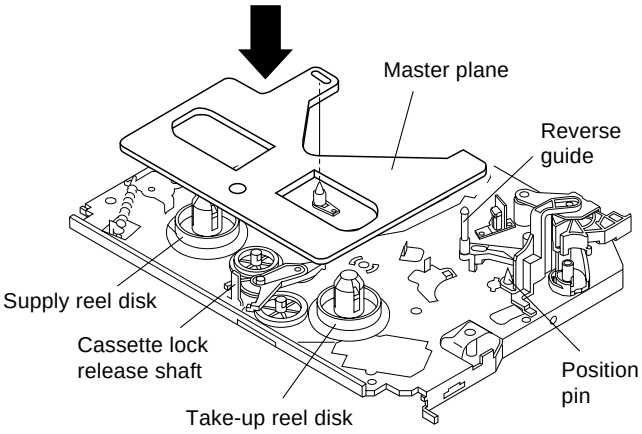


Figure 1-6.

Note:
- Check that the reel disk is lower than part A but higher than part B. If the height is not correct, readjust the reel disk height by changing the poly-slider washer under the reel disk.

Note:
Whenever replacing the reel disk, perform the height checking and adjustment.

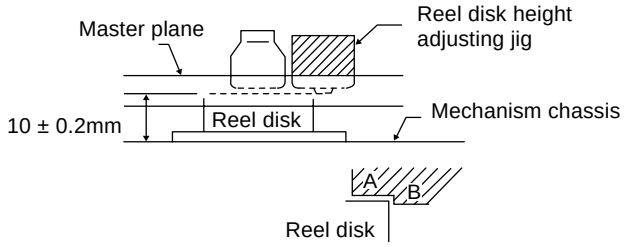


Figure 1-7.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Setting**

1. Set a torque gauge to zero on the scale. Place it on the take-up reel disk.
2. Press the FF button.
3. To calculate the remaining capacity of the play back mode, slowly rotate the supply reel disk, and then shift it into the forward mode.

- **Checking**

1. Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the CW direction.
2. Make sure that the indication of torque gauge is not less than 30mN·m (306gf·cm).

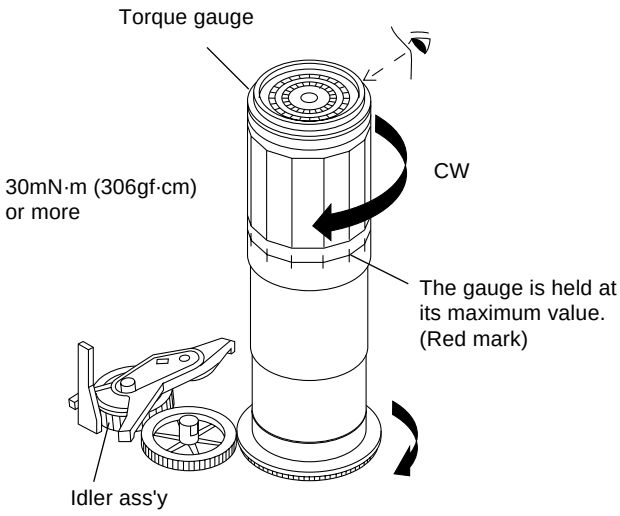


Figure 1-8.

- **Adjustment**

1. If the FF winding-up torque is less than the specified value, clean the capstan D.D. motor pulley, drive belt, and limiter pulley with cleaning liquid, and check again.
2. If the torque is less that the set value, replace the reel belt.

Notes:
1. Hold the torque gauge by hand so that it is not moved.
2. Do not keep the reel disk in lock state. Do not allow long-time measurement.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Setting**

1. Set a torque gauge to zero on the scale. Place it on the supply reel disk.
2. Press the rewind button.
3. To calculate the remaining capacity, slowly rotate the take-up reel disk, and then shift it into the rewind mode.

- **Checking**

1. Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the CCW direction.
2. Make sure that the indication of torque gauge is not less than 30mN·m (306gf·cm).

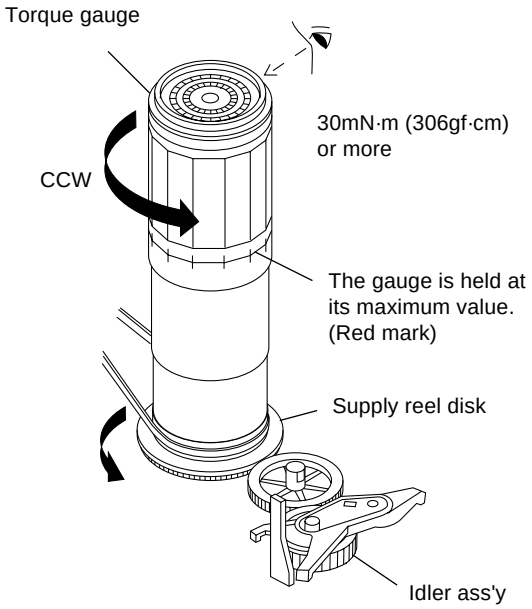


Figure 1-9.

- **Adjustment**

1. If the rewind winding-up torque is less than the specified value, clean the capstan D.D. motor pulley, drive belt, and limiter pulley with cleaning liquid, rewind again, and check the winding-up torque.
2. If the winding-up torque is still out of range, replace the drive belt.

Notes:
1. Hold the torque gauge by hand so that it is not moved.
2. Do not keep the reel disk in lock state. Do not allow long-time measurement.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN RECORD/PLAYBACK MODE

- **Remove the cassette housing control assembly.**
- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord.**
- **Turn on the power.**
- **Open the cassette torque meter lid, and fix it with tape.**
- **Load the cassette torque meter into the unit.**
- **Put the weight (500g) on the cassette torque meter.**
- **Turn on the power switch.**
- **Press the picture record button, and set EP picture record mode (x3).**

Set value EP6.9 ± 2.5mN·m (70 ± 25gf·cm)

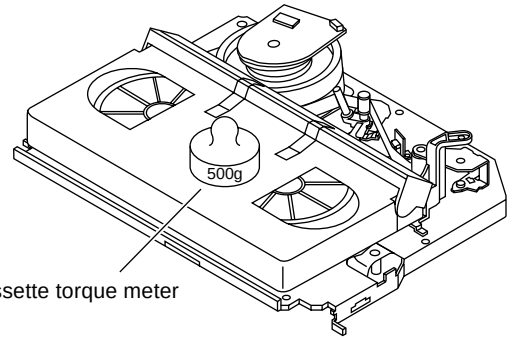


Figure 1-10.

- **Checking**

1. Make sure that value is within the setting 6.9 ± 2.5mN·m (70 ± 25gf·cm).
2. The winding-up torque fluctuates due to variation of rotation torque of limiter pulley ass'y. Read the center value of fluctuation as setting.
3. Set the EP record mode (x3) and make sure that the winding-up torque is within setting.

- **Adjustment**

If the playback winding-up torque is not within the setting, replace the limiter pulley assembly.

Note:
When the torque cassette is set, put a weight (500g) to prevent rise.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- **Remove the cassette housing control assembly.**
- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**
- **Setting**

Press the playback button and rewind button to set the video search rewinding mode.

- **Checking**

1. Place the torque gauge on the supply reel disk, and turn it counterclockwise very slowly (one rotation every 1 to 2 seconds) and check that the torque is within the set value 14.0 ± 3.9mN·m. (144 ± 40gf·cm)

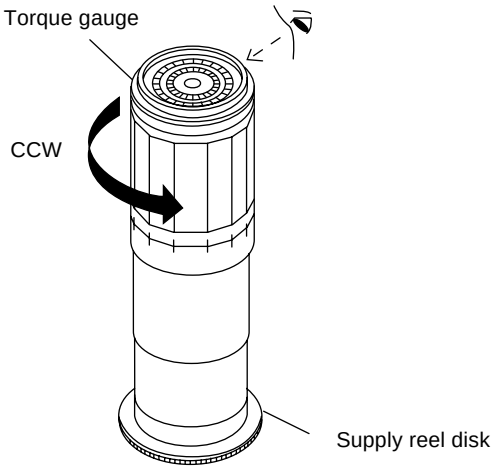


Figure 1-11.

Note:
Surely put the torque gauge on the reel disk to measure. If the torque gauge is raised, accurate measurement is impossible.

- **Adjustment**

1. If the rewinding playback winding-up torque is not within the setting, replace the limiter pulley assembly.

Note:
The winding-up torque fluctuates due to variation of rotation torque of supply reel disk. Read the center value of fluctuation as setting.

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Checking**

1. After pressing the play button, press the rewind button, and set the video search rewind mode.
2. Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 3.4 ± 1.5mN·m (35 ± 15gf·cm).

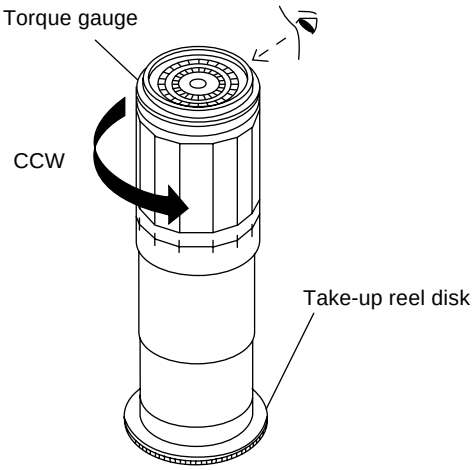


Figure 1-12.

Notes:

Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE PINCH ROLLER PRESSURE

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Checking**

Press the play button to set the playback mode.

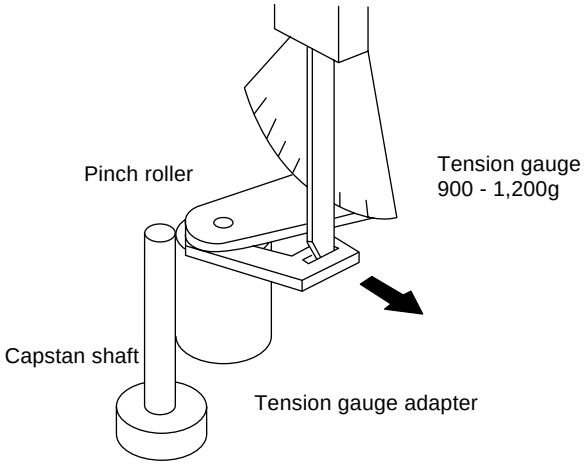


Figure 1-13.

1. Detach the pinch roller from the capstan shaft. Do not separate excessively. Or the pinch lever and pinch double action lever may disengage.
2. Engage the tension gauge adapter with the pinch roller shaft, and pull in the arrow direction.
3. Gradually return the pinch roller, and measure the pulling force when the pinch roller contacts the capstan shaft.
4. Make sure that the measured value is within setting 0.9 to 11.8 N (900 to 1,200g).

CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Setting**

1. Open the cassette tape (T-120), and fix with tape.
2. Set the cassette tape in loading state.
3. Put the weight (500g) on the cassette tape.
4. Make the adjustment with the beginning of a T-120 tape.

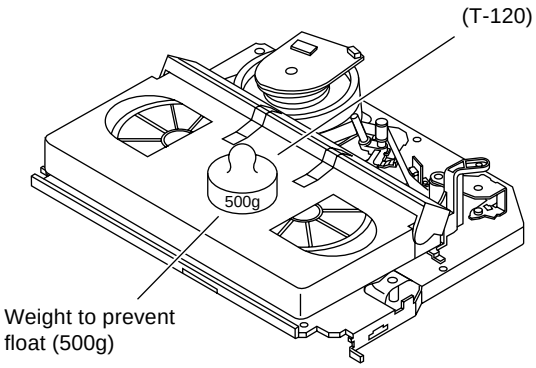
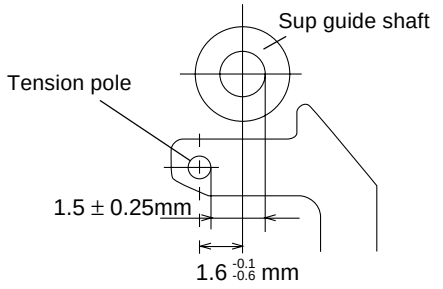


Figure 1-14.

- **Checking**

1. Set a cassette tape, push the REC button to place the unit in the SP record mode. Now check the tension pole position.

2. Visually check to see if the right edge of the tension pole is within the 1.5 ± 0.25mm from the right edge of the Sup guide shaft.



Make the adjustment with the beginning of a T-120 tape.

Figure 1-15.

At left side from the center line

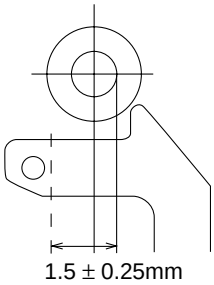


Figure 1-16.

Insert the slotted screwdriver in the tension pole adjuster, and rotate counterclockwise.

At right side from the center line

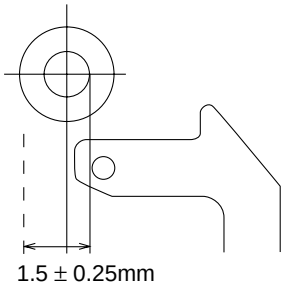


Figure 1-17.

Insert the slotted screwdriver in the tension pole adjuster, and rotate clockwise.

Tension pole adjuster adjusting range

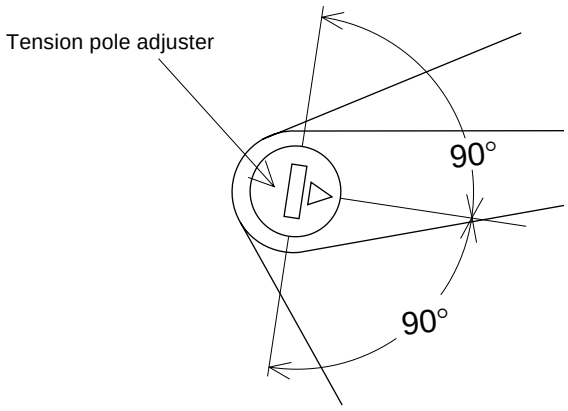


Figure 1-18.

Adjust so that the delta mark of tension pole adjuster is within 90° range (left, right).

CHECKING AND ADJUSTMENT OF RECORD/ PLAYBACK BACK TENSION

- **Remove the cassette housing control assembly.**
- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**
- **Setting**

1. Open the torque cassette meter and fix with tape.
2. Set the cassette tape in loading state.
3. Put the weight (500g) on the cassette torque meter.

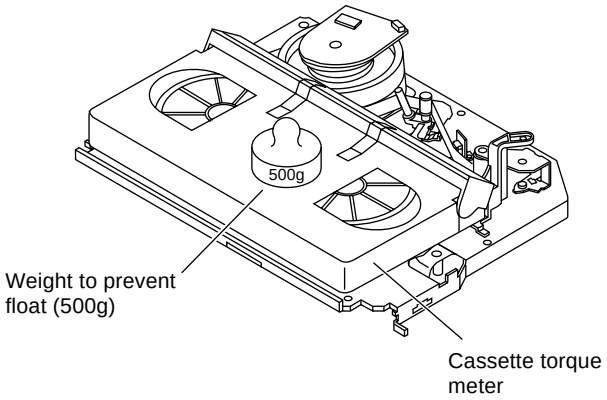


Figure 1-19.

- **Checking**

1. Push the REC button to place the unit in the SP record mode.
2. At this time ascertain that the back tension is within the setting (36.5 to 52g·cm) by seeing the indication of torque cassette meter.

- **Adjustment**

1. If the indication of torque cassette meter is lower than the setting, shift the tension spring engagement to the part A.
2. If the indication of torque cassette meter is higher than the setting, shift the tension spring engagement to the part B.

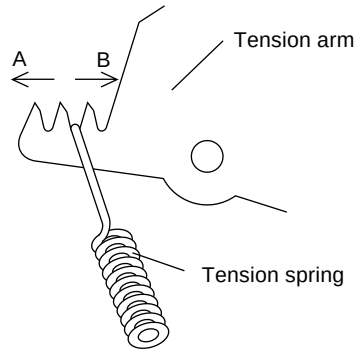
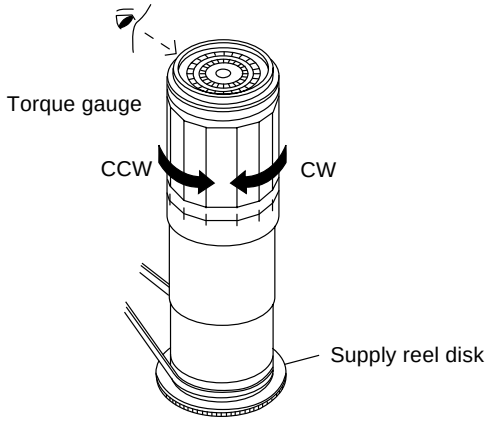


Figure 1-20.

CHECKING THE BRAKE TORQUE

- **Checking the brake torque at the supply side**



CCW:	3.9~9.8mN·m (40~100gf·cm)
CW:	8.8~23.5mN·m (90~240gf·cm)

Figure 1-21.

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

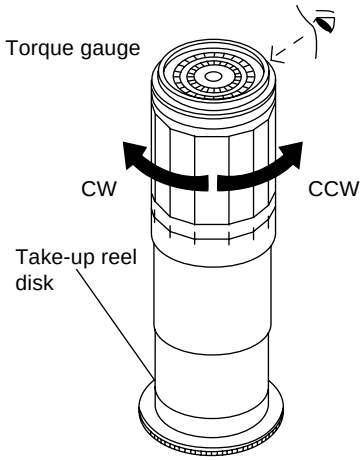
- **Setting**

1. Set a torque gauge to zero on the scale. Place it on the supply reel disk.
2. Switch from the FF mode to the STOP mode.
3. Disconnect the power cord.

- **Checking**

Turn the torque gauge at a rate of about one turn/2 sec in the CW direction/CCW direction with respect to the supply reel disk so that the reel disk and torque gauge pointer rotate at equal speed, and make sure that the value is within the setting (CW direction: 8.8 to 23.5mN·m (90 to 240gf·cm); CCW direction: 3.9 to 9.8mN·m (40 to 100gf·cm).

- **Checking the brake torque at the take-up side**



CCW:	8.8~23.5mN·m (90~240gf·cm)
CW:	4.9~11.8mN·m (50~120gf·cm)

Figure 1-22.

- **Remove the cassette housing control assembly.**

- **After short-circuiting TP7701 and TP7702 provided at the left on the main PWB, plug in the power cord, then turn on the power.**

- **Setting**

1. Switch from the FF mode to the STOP mode.
2. Disconnect the power cord.
3. Set a torque gauge to zero on the scale. Place it on the take-up reel disk.

- **Checking**

1. Turn the torque gauge at a rate of about one turn/2 sec in the CCW direction/CW direction so that the reel disk and torque gauge pointer rotates at equal speed and make sure that the value is within the setting (CCW direction: 8.8 to 23.5mN·m (90 to 240gf·cm), CW direction: 4.9 to 11.8mN·m (50 to 120gf·cm).

2. Adjustment of the brake torque at the supply side and the take-up side

- Unless the supply side brake torque or take-up side brake torque is within the setting, clean the felt surface of reel disk (supply, take-up) brake lever, check again the brake torque.
- If value cannot be set within the setting yet, replace the main brake ass'y or main brake spring.

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. In unloading state, unplug the power cord.

- **Removal**

1. Remove the screws ①②③, Azimuth screw and Tilt screw.
2. Unsolder the PWB fitted to the A/C head

Notes:

1. When replacing, never touch the head. If you touched, clean with the cleaning liquid.
2. When removing the screw ③, take care so that the spring may spring out.

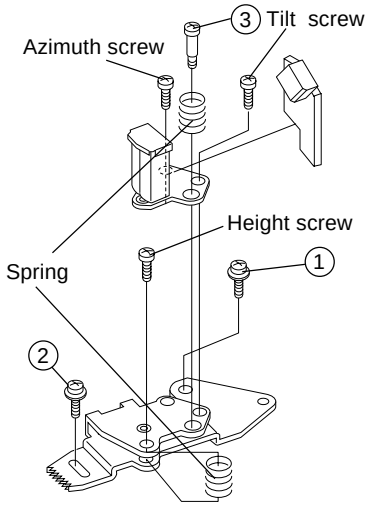
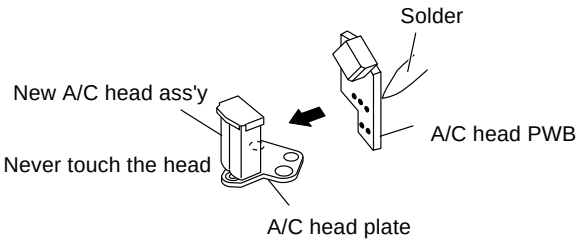


Figure 1-23.

- **Replacement**

1. Solder the removed PWB to the new head assembly.
2. Adjust the height from the A/C head arm (lower surface) to the A/C head plate to 10.8mm with slide calipers. (3 places of azimuth screw section, tilt screw section and A/C head front section) (See the figure below.)



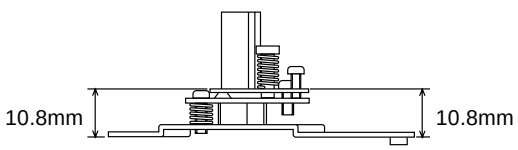


Figure 1-24.

3. Align the left end of gear of A/C head arm with the punched mark of chassis, tentatively tighten the screws ① and ② so as to ensure smooth motion of A/C head arm. Tentative tightening torque must be 0.15 to 0.20 N·m (1.5 to 2.0kgf·cm).

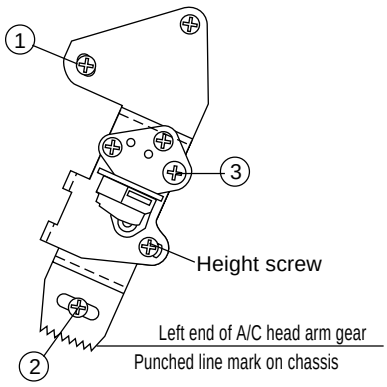


Figure 1-25.

Note:

1. If the screws ① and ② are tighten tentatively too loose, the azimuth and height of A/C head may change when they are finally tightened. Therefore care must be taken.
2. After completion of A/C head be sure to adjust tape running. (Execute the running adjustment by the method described in Page 32, 33.)

A/C HEAD HEIGHT ROUGH ADJUSTMENT

- **Setting**

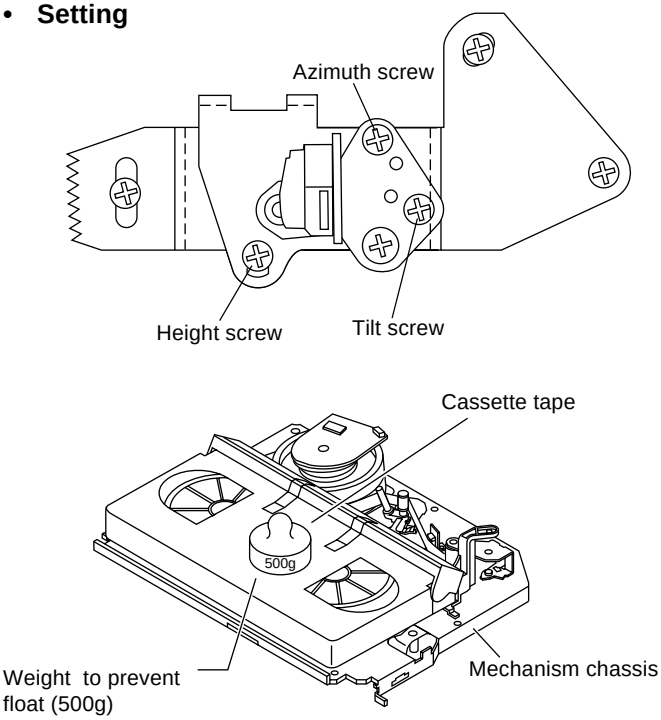


Figure 1-26.

1. Set the cassette tape in the unit.
2. Press the PLAY button to put the unit in the playback mode.
3. Roughly adjust the height of the A/C head by turning the height screw until the tape is in the position shown below.

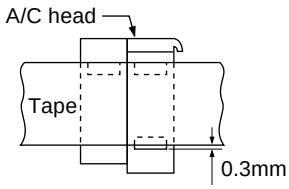


Figure 1-27.

- **Adjustment**

Adjust the height screw visually so that the control head is visible 0.3mm below the bottom of the tape.

HEIGHT ADJUSTMENT OF REVERSE GUIDE

1. Adjust the height from the mechanism chassis to the reverse guide lower flange to 13.38mm, using the reverse guide height adjustment jig, in tape loading state. (Refer to Figure 1-28 (a) (b).)

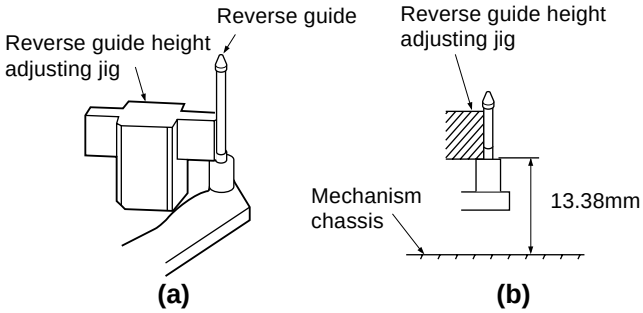


Figure 1-28.

2. Rotate counterclockwise the reverse guide height adjustment nut 1/10 turn. (For height adjustment use the reverse guide height adjustment box driver (JiGDRiVER11055)).

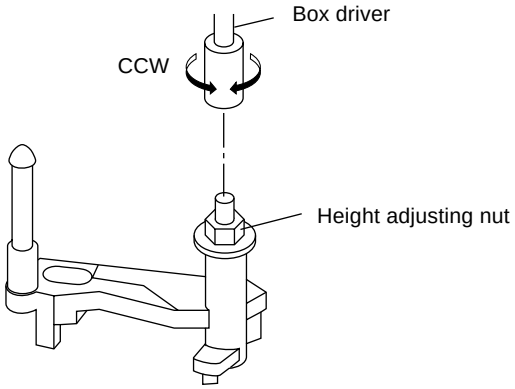
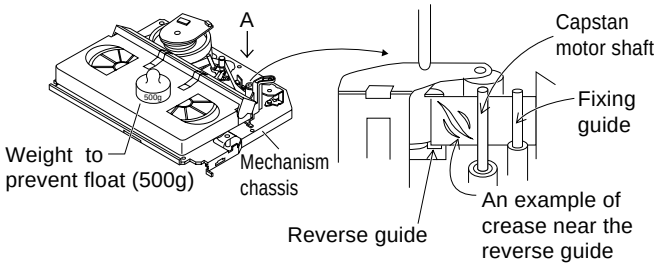


Figure 1-29.

3. Set the tape, and check for tape crease near the reverse guide in the playback mode.
   If crease is found, turn the reverse guide adjustment nut to remove crease. (As for crease check refer to Figure 1-30.)



* Check for crease from the A direction.

Figure 1-30.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Tape run rough adjustment
   ① Remove the cassette housing control assembly.
   ② After shortcircuiting TP7701 and TP7702 provided at the main PWB, plug in the power cord, then turn on the power.
   ③ Check and adjust the position of the tension pole. (See page 28.)
   ④ Check and adjust the video search rewind back tension. (See page 27.)
   ⑤ Connect the oscilloscope to the test point for PB CHROMA envelope output (TP3301). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP3302).
   ⑥ Set the alignment tape (VRONBZGS) to play. (Put a 500g weight on the cassette tape to prevent lift of cassette tape.)

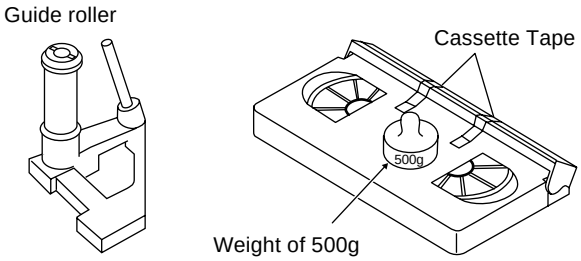


Figure 1-31.

   ⑦ Press the tracking button (+), (–) and change the envelope waveform from max to min and from min to max. At this time make sure that the envelope waveform changes nearly parallel.
   ⑧ Unless the envelope waveform changes nearly parallel, adjust the height of supply side and take-up side guide roller so that the envelope waveform changes nearly parallel. (For envelope adjustment procedure refer to Figure 1-35.)
   ⑨ Turn the tilt screw to remove the tape crease at the fixing guide flange.
   Play back the tape and check for tape crease at the fixing guide flange.
   (1) If there is no tape crease
   Turn the tilt screw clockwise so that tape crease appears once at the flange, and then return the tilt screw so that the crease disappears.
   (2) If there is tape crease
   Turn counterclockwise the tilt screw so that the tape crease disappears.
   (Reference) If the tilt screw is turned clockwise crease appears at the lower flange.

Notes:

1. Previously set the tracking control in the center position, and adjust the envelope waveform to maximum with X value adjustment nut. Thereby the tape run rough adjustment is facilitated.
2. Especially the outlet side envelope waveform must have higher flatness.

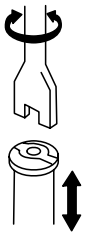


Figure 1-32.

2. Adjustment of A/C head height and azimuth
   ① Perform the initial setting of A/C head position by the method stated in "Page 30 Replacement 3".
   ② Connect the oscilloscope to the audio output (TP6601).
   ③ Using the alignment tape in which 1 kHz linear audio signal has been recorded, adjust the height screw so as to get max audio output.
   ④ Using the alignment tape in which 7 kHz linear audio signal has been recorded, adjust the azimuth screw so as to get max audio output.

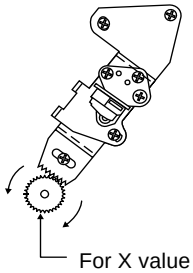
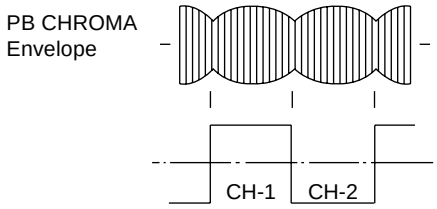


Figure 1-33.

3. Tape run adjustment
   ① Connect the oscilloscope to PB CHROMA envelope output test point, set oscilloscope sync to EXT, trigger-input the PB CHROMA signal (head switching pulse).
   ② Rough adjustment of X value
   Tentatively fix A/C head arm screws ① and ② by the method described in Page 30 "Replacement 3". After shortcircuiting TP7701 and TP7702, plug in the powercord, then turn on the power. And playback the alignment tape (VRONBZGS). As a result the auto-tracking is automatically cancelled, so that the X value adjustment mode is set.
   Move the A/C head with the X value adjustment gear driver (JiGDRiVER-6) by the method shown in Figure 1-33, and adjust the A/C head so as to get the maximum envelope waveform. (Note: When the A/C head is adjusted, adjust so that the maximum envelop waveform is obtained nearest the position of initial setting made in Page 30.)
   ③ Next, change the alignment tape to VROEFZCS to play back. Press the tracking button (+), (–) and change the envelope waveform from max to min and from min to max. At this time adjust the height of supply and take-up side guide roller with the adjustment driver (JiGDRiVERH-4) so that the envelope waveform changes nearly parallel.
   ④ If the tape is lifted or sunk from the helical lead surface, the PB CHROMA envelope waveform appears as shown in Figure 1-35.
   ⑤ Press the tracking button (+), (–) and make sure that the envelope waveform changes nearly parallel.
   ⑥ Finally check tape crease near the reverse guide. If tape crease is found, remove it as stated in Page 31 "HEIGHT ADJUSTMENT OF REVERSE GUIDE" item 3.



Head switching pulse

Figure 1-34.

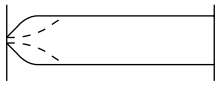
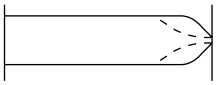
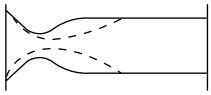
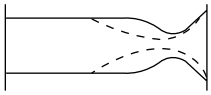
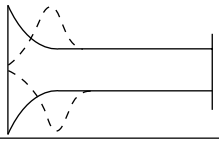
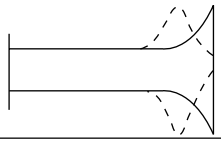
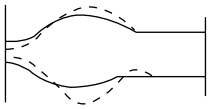
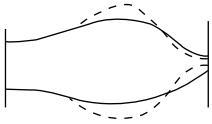
	When the tape is above the helical lead.		When the tape is below the helicallead.	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclock-wise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclock-wise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 1-35.

4. A/C head X value adjustment
   ① Tentatively fix A/C head arm screws ① and ② by the method described in Page 30 "Replacement 3".
   ② After shortcircuiting TP7701 and TP7702, plug in the powercord, then turn on the power. And playback the alignment tape (VROEFZCS). As a result the auto-tracking is automatically cancelled, so that the X value adjustment mode is set.
   ③ Move the A/C head with the X value adjustment gear driver by the method shown in Figure 1-33, and adjust the A/C head so as to get the maximum envelope waveform. (Note: At this time adjust so as to get the maximum envelope waveform nearest the A/C head position which has been set in case of X value rough adjustment as stated in Page 33, 3- ②.)
   ④ Tighten finally the screws ① and ②. Be sure to tighten at first the screw ① and then the screw ②. Final tightening torque is 0.6N·m (If the screw ② is tightened first, the X value may deviate.)
   ⑤ Adjust the playback switching point (Refer to the electric adjustment method.)
   ⑥ Playback the self-picture-recorded tape, and check the flatness of envelope waveform and sound.

Note:
When the A/C head X value adjustment is performed, be sure to perform at first X value rough adjustment (refer to Page 33, 3-②).

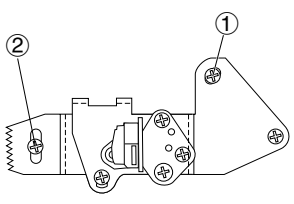


Figure 1-36.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

- Remove the mechanism from the main PWB (refer to Page10 "DISASSEMBLY AND REASSEMBLY" Remove the cassette housing Assembly.

- **Removal (Follow the order of indicated numbers.)**

1. Remove the reel belt ①.

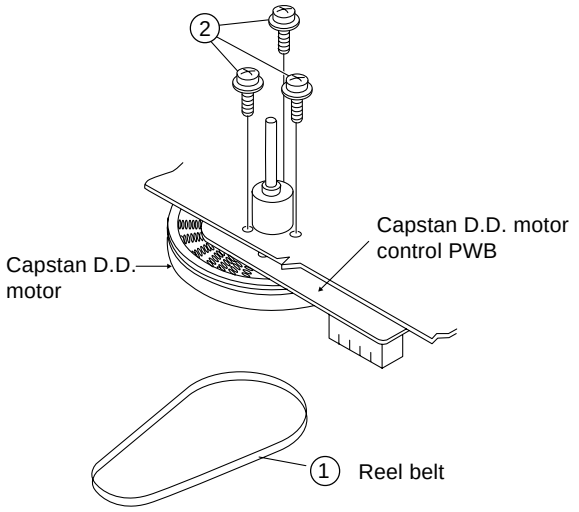


Figure 1-37.

2. Remove the three screws ②.

- **Reassembly**

1. Taking care so that the capstan shaft does not contact the mechanism chassis, set its position on the mechanism chassis, and then install with the three screws.
2. Install the reel belt.

Notes:

1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Set the tape, and check for the tape crease near the reverse guide in the playback mode. Adjust the A/C head and azimuth as stated in Page 32 item 2. If crease is found, adjust as stated in Page 31 "HEIGHT ADJUSTMENT OF REVERSE GUIDE".

REPLACEMENT OF DRUM D.D. MOTOR

1. Set the eject mode.
2. Withdraw the main power plug from the socket.

- **Removal (Perform in numerical order.)**

1. Disconnect the FFC cable ①.
2. Unscrew the D.D. stator assembly fixing screws ②.
3. Take out the D.D. stator assembly ③.
4. Unscrew the D.D. rotor assembly fixing screws ④.
5. Take out the D.D. rotor assembly ⑤.

Notes:

1. In removing the D.D. stator assembly, part of the drum earth spring pops out of the pre-load collar. Be careful not to lose it.
2. Install, so that the D.D. rotor ass'y and upper drum ass'y mounting direction check holes align. (Align the upper drum dent with the rotor hole.)
3. Be careful not to damage the upper drum or the video head.
4. Protect the hole elements from shock due to contact with D.D. stator or D.D. rotor ass'y.
5. After installation adjust the playback switching point for adjustment of servo circuit.

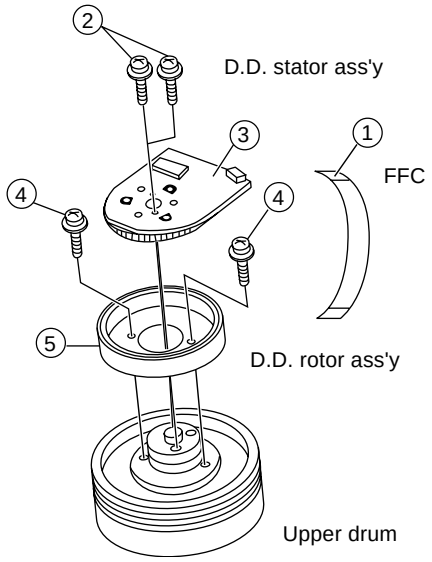


Figure 1-38.

REPLACING THE UPPER AND LOWER DRUM ASSEMBLY

• Replacement (Perform in the numerical order)
① Remove the motor as stated in Page 34 D.D. motor replacement.
② Remove the drum earth brush ②.
③ Remove the drum base ③ from the upper and lower drum assembly ①.

[Cares when replacing the drum]

1. Be careful so that the drum earth brush is not lost.
2. Do not touch directly the drum surface.
3. Fit gently the screwdriver to the screws.
4. Since the drum assembly is an extremely precise assembly, it must be handled with utmost care.
5. Make sure that the drum surface is free from dust, dirt and foreign substances.
6. After replacing the drum be sure to perform the tape running adjustment.
   After that, perform also the electrical adjustment.
   • Playback switching point adjustment
   • X-position adjustment and check
7. After replacing the drum clean the drum.

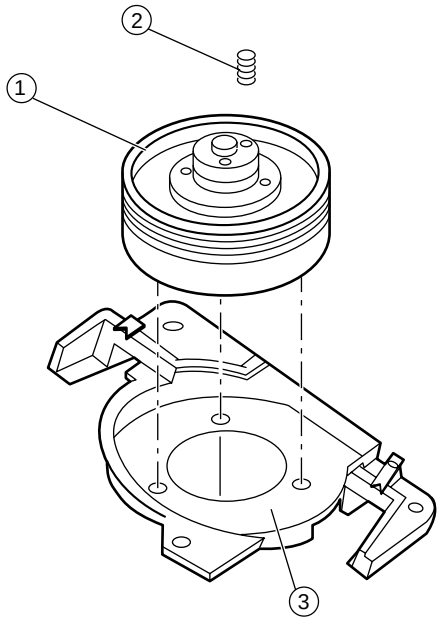


Figure 1-39.

ASSEMBLING OF PHASE MATCHING MECHANISM COMPONENTS

- **Assemble the phase matching mechanism components in the following order.**

1. Assemble the pinch roller assembly and pinch drive cam.
2. Mounting the shifter (on the back of the mechanism chassis).
3. Mounting the master cam (on the back of the mechanism chassis).
4. Assemble the connection gear, slow brake and loading motor parts.

• Pinch drive cam and pinch roller assembling method.

(Place the following parts in position in numerical order.)

(1)Reverse drive lever ①
(2)Reverse guide spring ②
(3)Reverse guide lever ass'y ③
(4)Reverse guide height adjusting nut ④
(5)Pinch drive cam ⑤
(6)Pinch roller ass'y ⑥
(7)Open lever ⑦

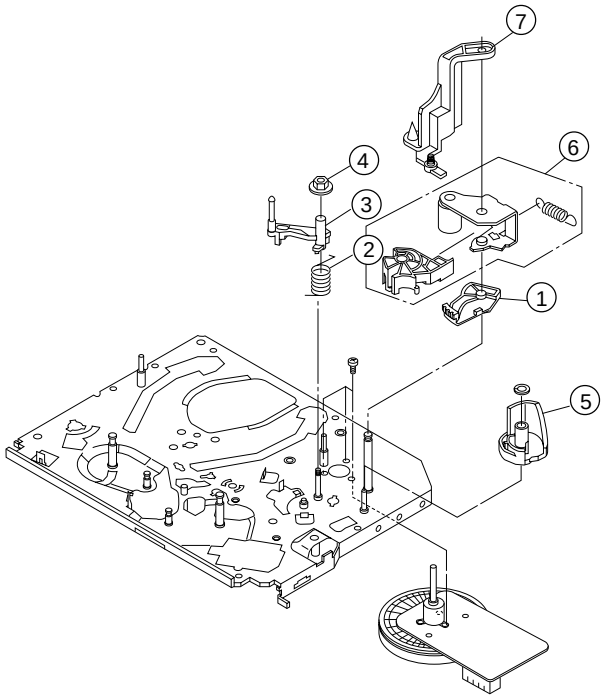


Figure 1-40.

①Insert Reverse Guide Lever Ass'y

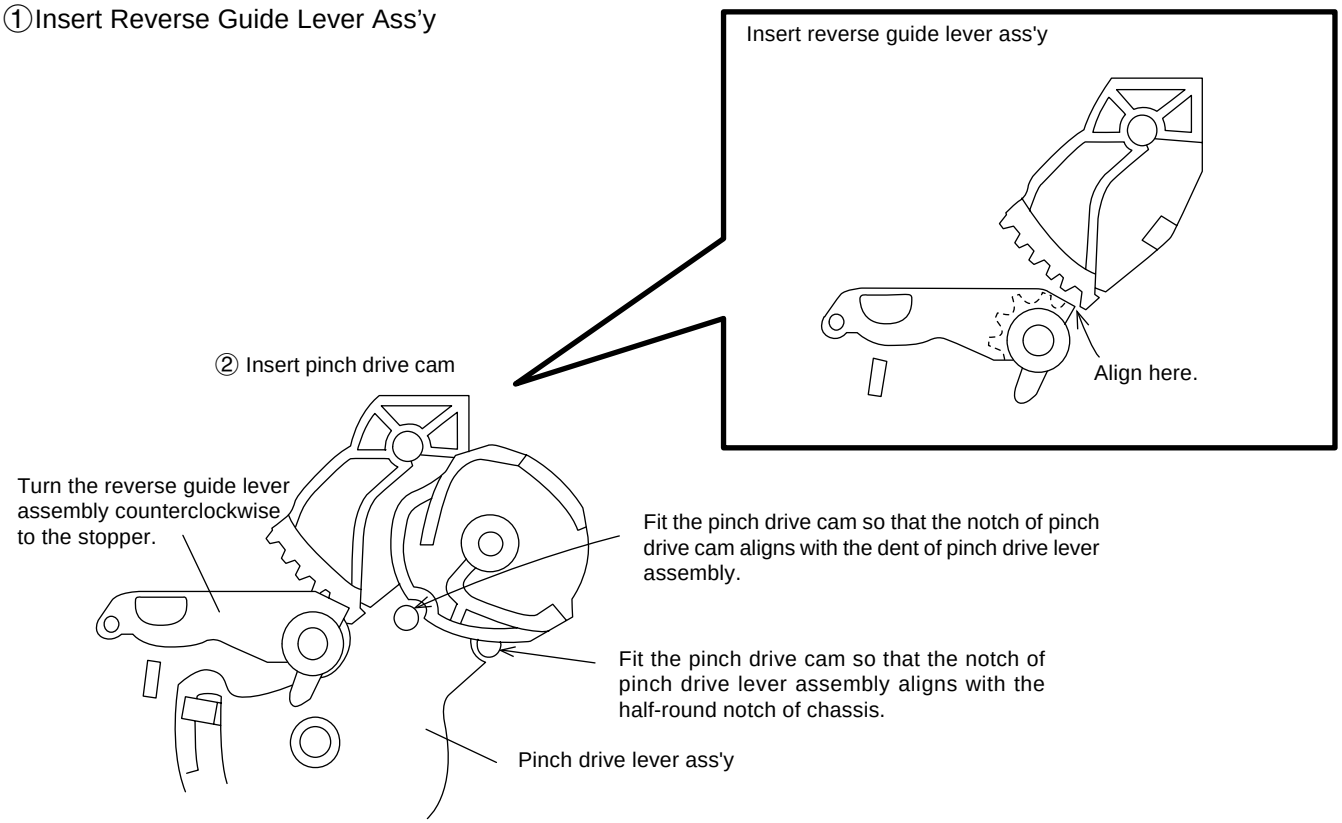


Figure 1-41-1.

②Insert Pinch Roller/Pinch Double Action Lever Ass'y.

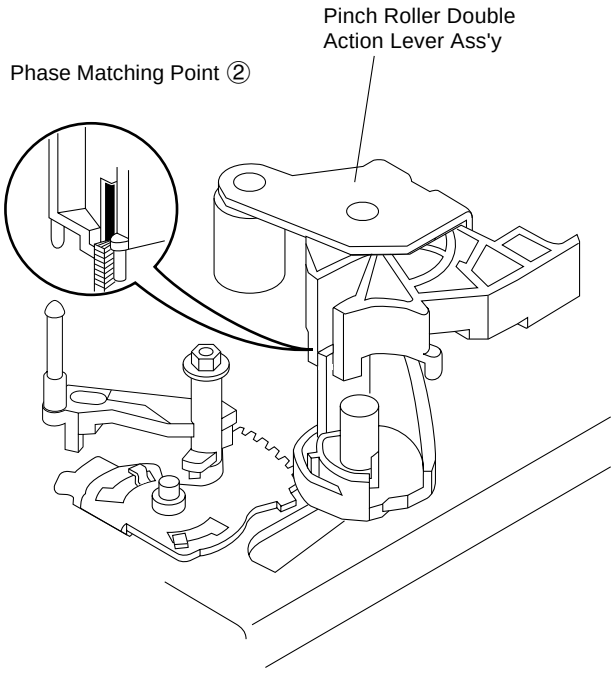


Figure 1-41-2.

③Insert Open Lever.

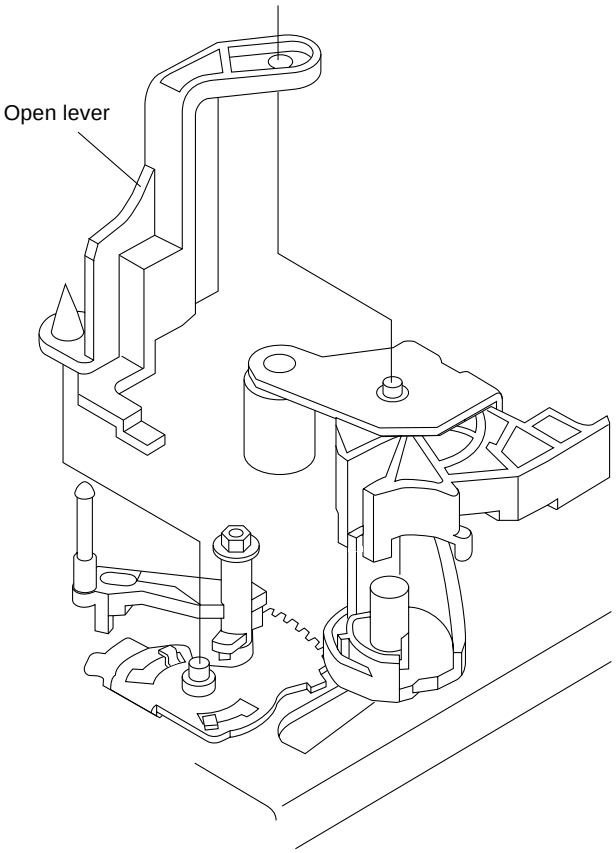
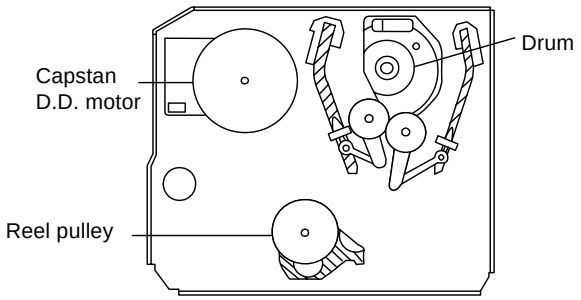


Figure 1-41-3.

INSTALLING THE SHIFTER



(Bottom side of mechanism chassis)

Figure 1-42.

1. Make sure that the loading gear is at the point ① as shown below.
2. Install, paying attention to ⑥ insertion points and ③ release points.
3. For the phase matching at the insertion point ①, see the point ② as shown below.
4. Finally fix the inserts ① and ④.

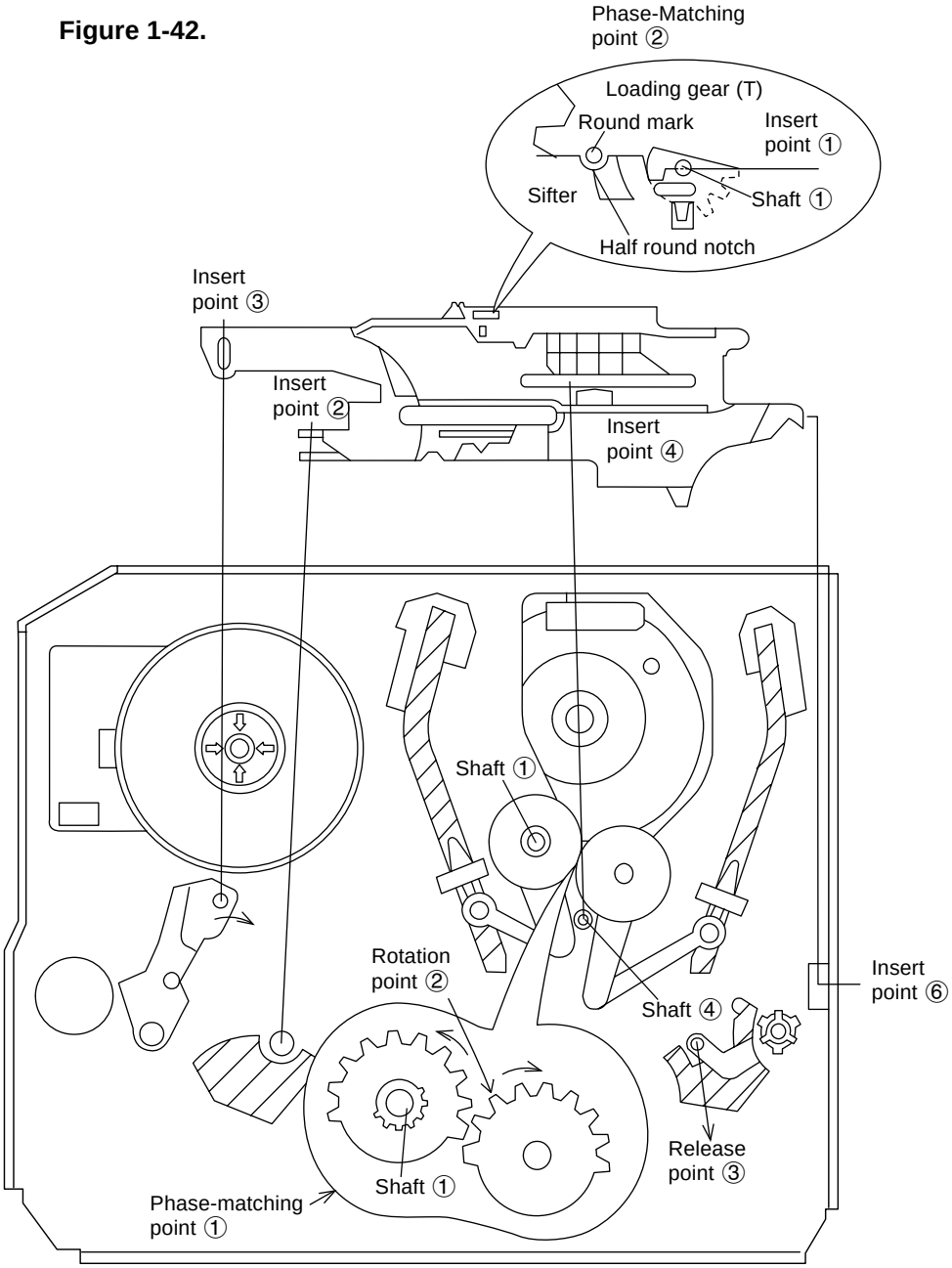


Figure 1-43.

INSTALLING THE MASTER CAM (AT REAR SIDE OF MECHANISM CHASSIS)

1. Make sure beforehand that the shifter is at the point as shown below.
2. Place the master cam in the position as shown below.

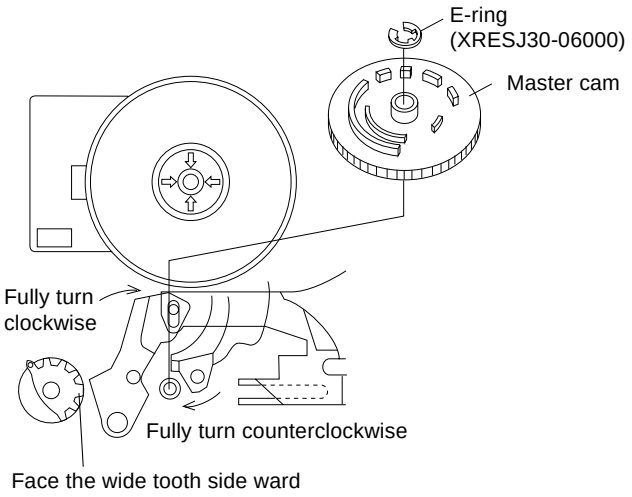
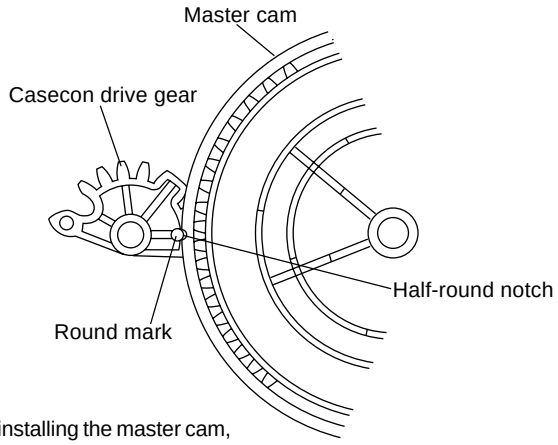


Figure 1-44-1.

Note:
See the figure below for the phase matching between the master cam and the casecon drive gear.

3. Finally fix with the E-ring.



When installing the master cam, align the casecon drive gear round mark with the half-round notch of master cam.

Figure 1-44-2.

REPLACEMENT OF LOADING MOTOR

- **Removal**

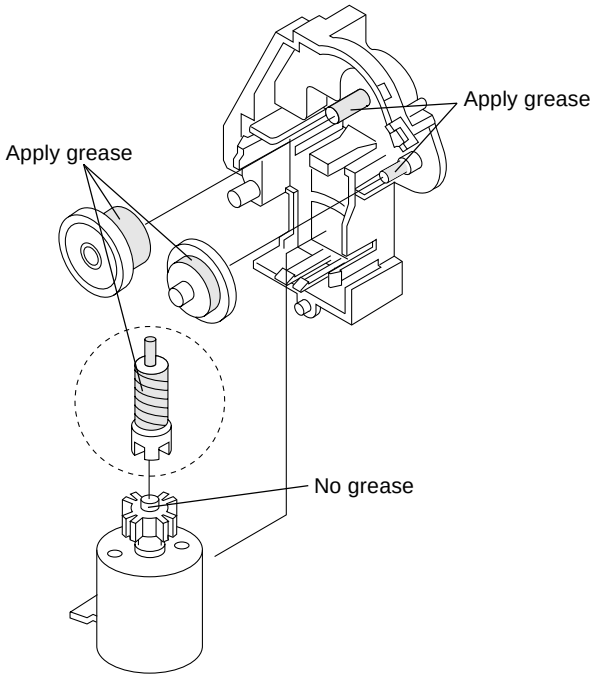


Figure 1-45.

- **Replacement**

1. Remove the loading motor, and install the replacement loading motor as shown below.

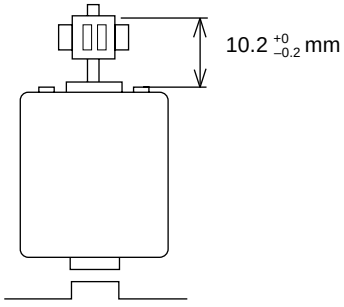


Figure 1-46.

The loading motor pressing-in must be less than 14.7 N (15 gf).
Adjust the distance between motor and pulley to 10.2 $^{+0}_{-0.2}$ mm).

ASSEMBLY OF CASSETTE HOUSING

1. Drive Gear and R Drive angle ass'y

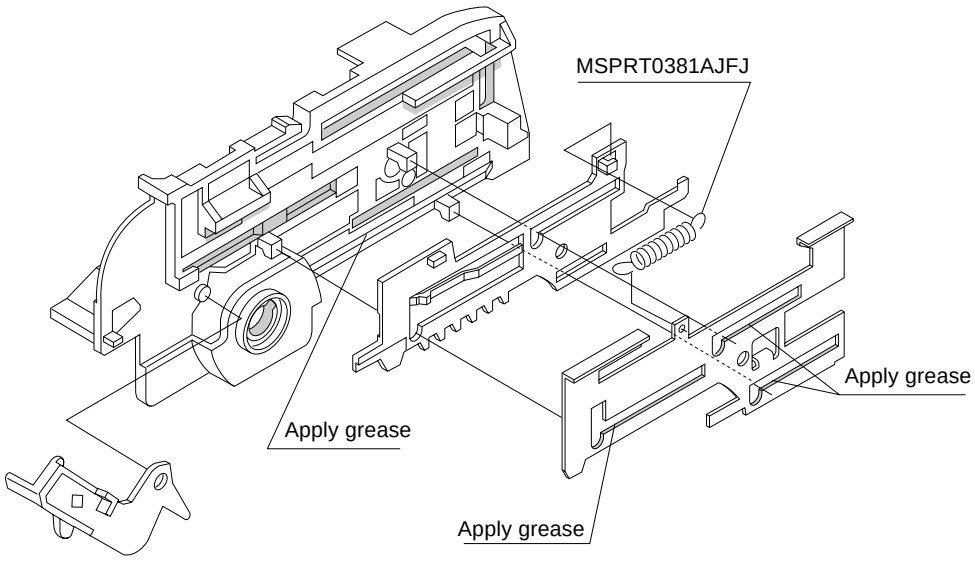


Figure 1-47.

2. Synchro Gear, Drive Gear L and Drive Gear R

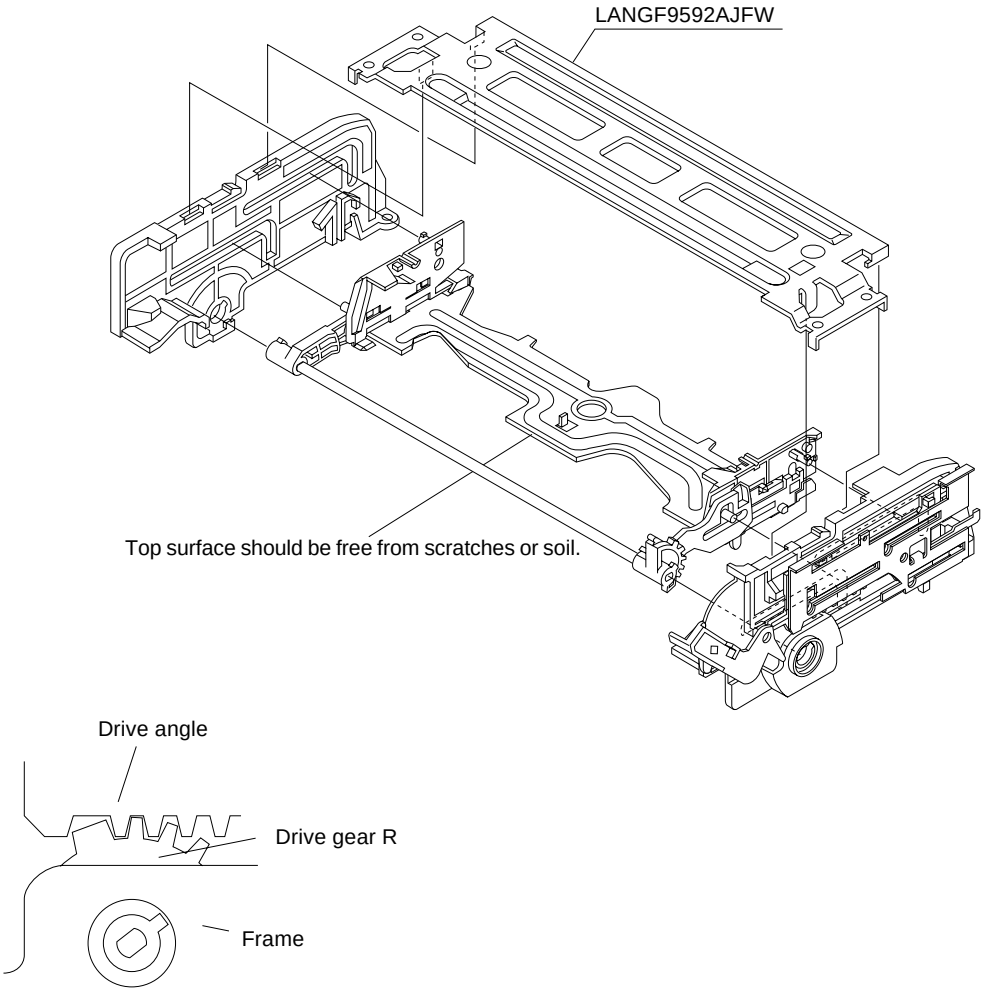


Figure 1-48.

ADJUSTMENT OF THE VCR ELECTRICAL CIRCUITRY

Notes:

- Before the adjustment:
  Electrical adjustments described here are often required after replacement of electronic components and mechanical parts such as video heads.
  Check that the mechanism and all electric components are in good working condition prior to the adjustments, otherwise adjustments can not be completed.

- Instruments required:
  ◎ Dual-trace oscilloscope
  ◎ Blank video cassette tape
  ◎ Screwdriver for adjustment
  ◎ Color bar generator
  ◎ DC voltmeter
  ◎ Alignment tape (VROATSV), (VRONBZGS)

- Adjustment of the VCR should be done in the TV/VCR combinated style. But there is a function to cut off the high voltage of TV. Namely, you can check only VCR part by taking the wire lead RC off . Therefore you can use function on the occasion of checking and adjusting VCR part.

SERVO CIRCUIT ADJUSTMENT
ADJUSTMENT OF HEAD SWITCHING POINT

Measuring instrument	Dual-trace oscilloscope
Mode	Playback
Cassette	Alignment tape (VROATSV)
Test point	TP2201 (Video Out) to CH1 TP3302 (Trigger) to CH2
Control	Remote Control
Specification	5.5 ± 0.5H (lines)

1. Play the alignment tape.(VROATSV.)
2. Press the CH ▼ (TR ⊖) button and the "0" button of remote control at the same time to turn the set into the adjustment mode for head switching point and to set the tracking to center. (See Notes below) "T" is displayed on the TV screen.
3. Press the PLAY button of remote control to make the adjustment of head switching point, then the leading edge of the head switching pulse is automatically set 5.5H (lines) ahead of the vertical sync as shown Figure 2-1 and the adjustment data is memorized in the E^2P-ROM IC.
4. Then press the stop button to stop the tape.

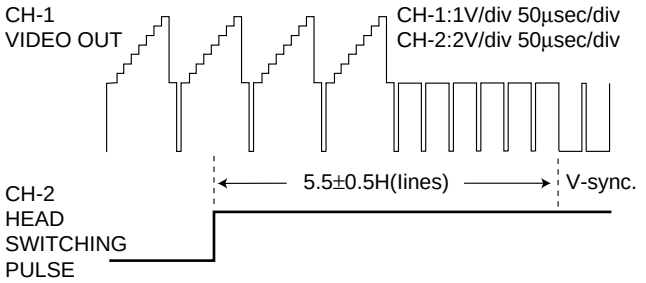


Figure 2-1.

Notes:

① To make this adjustment, disable the AUTO TRACKING function.

- The AUTO TRACKING function is disable in the following cases. (In the playback mode only.)
  ⓐ When the CH ▼ (TR ⊖) button and the "0" button of the remote control are pressed at the same time.
  ⓑ When the AC cord is plugged in with making TP7701 and TP7702 short circuited, after the cassette housing control ass'y is removed.
  (Mechanism operating mode)
- The AUTO TRACKING function becomes available in the following cases.
  ⓐ When the CH ▲ (TR ⊕) button and the CH▼ (TR ⊖) button of the remote control are pressed at the same time.
  ⓑ When the AC cord is plugged in with the cassette housing control ass'y put back.

② Pressing both the CH ▼ (TR ⊖) and the "0" button transmits the test code. When the unit receives this test code in the playback mode, the unit is turned into the adjustment mode for the head switching point and "T" is displayed at the position of CH number on the screen. This function is available to the remote control RRMCG1330PESA and RRMCG1330PESB.

■ Test points layout of Main Unit.

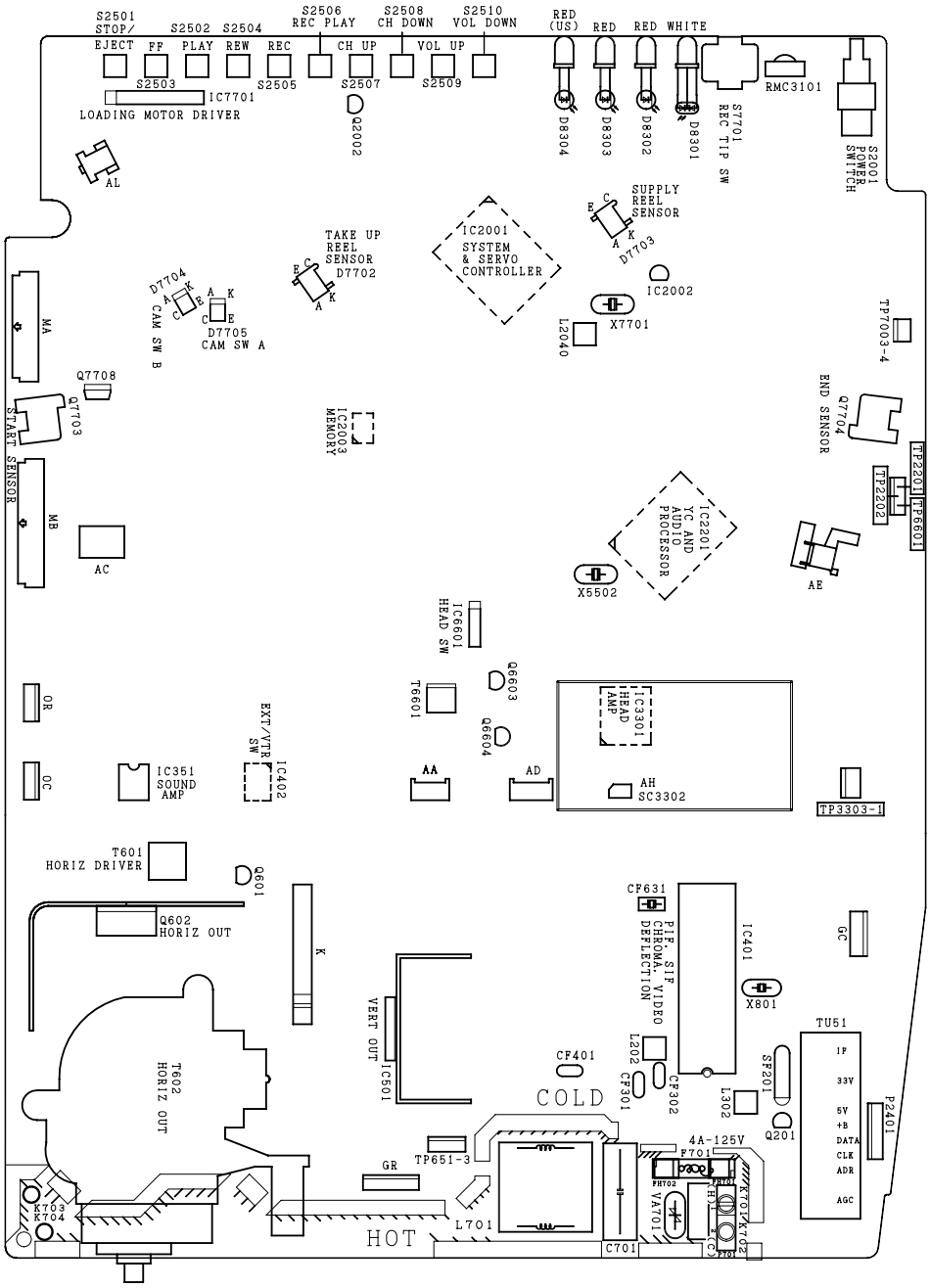


Figure 2-2.

ADJUSTMENT OF STILL PICTURE VERTICAL SYNC

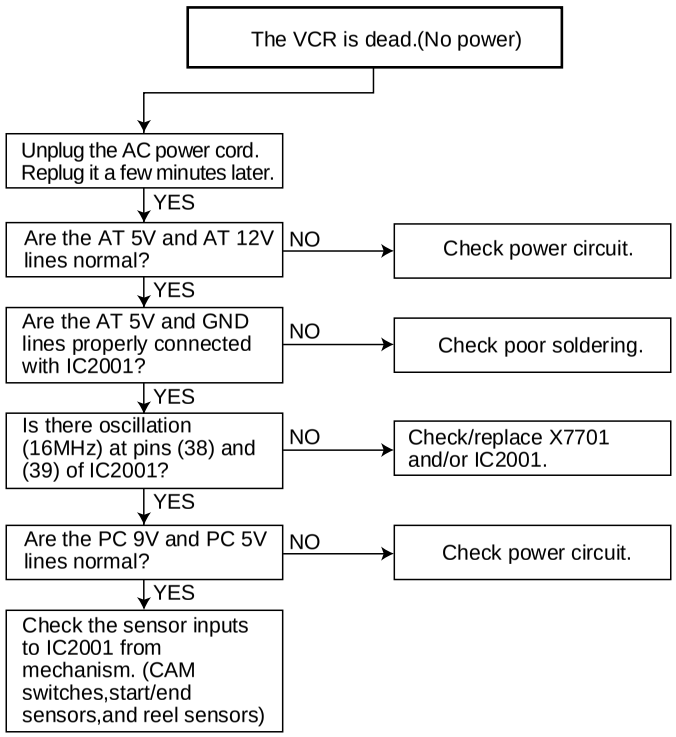
Measuring instrument	Monitor screen
Mode	EP still picture playback
Input signal	Self-recording tape
Test point	Monitor screen
Control	CH ▲/▼ (TR ⊕/ ⊖) buttons
Specification	No Vertical jitter

1. Play back the EP Self-recorded tape in the still mode.
2. Using the CH ▲/▼ (TR ⊕/ ⊖) buttons on the remote control or on the front pannel, make adjustment so that the vertical jitter becomes minimum.
3. Then press the STOP button to stop the tape.

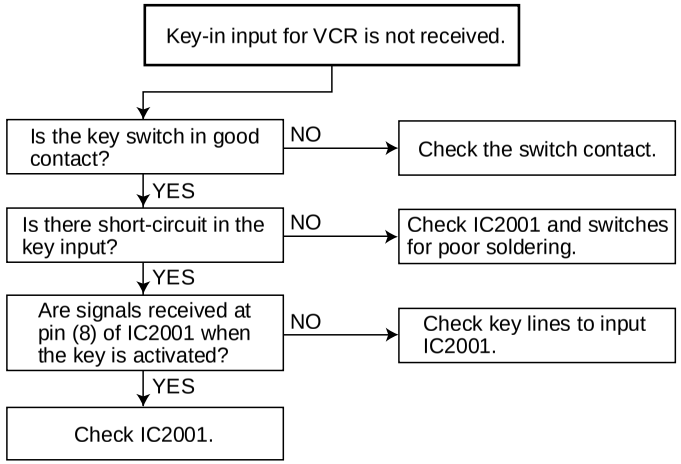
Note:
The data of this adjustment is memorized to the E^2P-ROM IC.

ELECTRICAL TROUBLESHOOTING

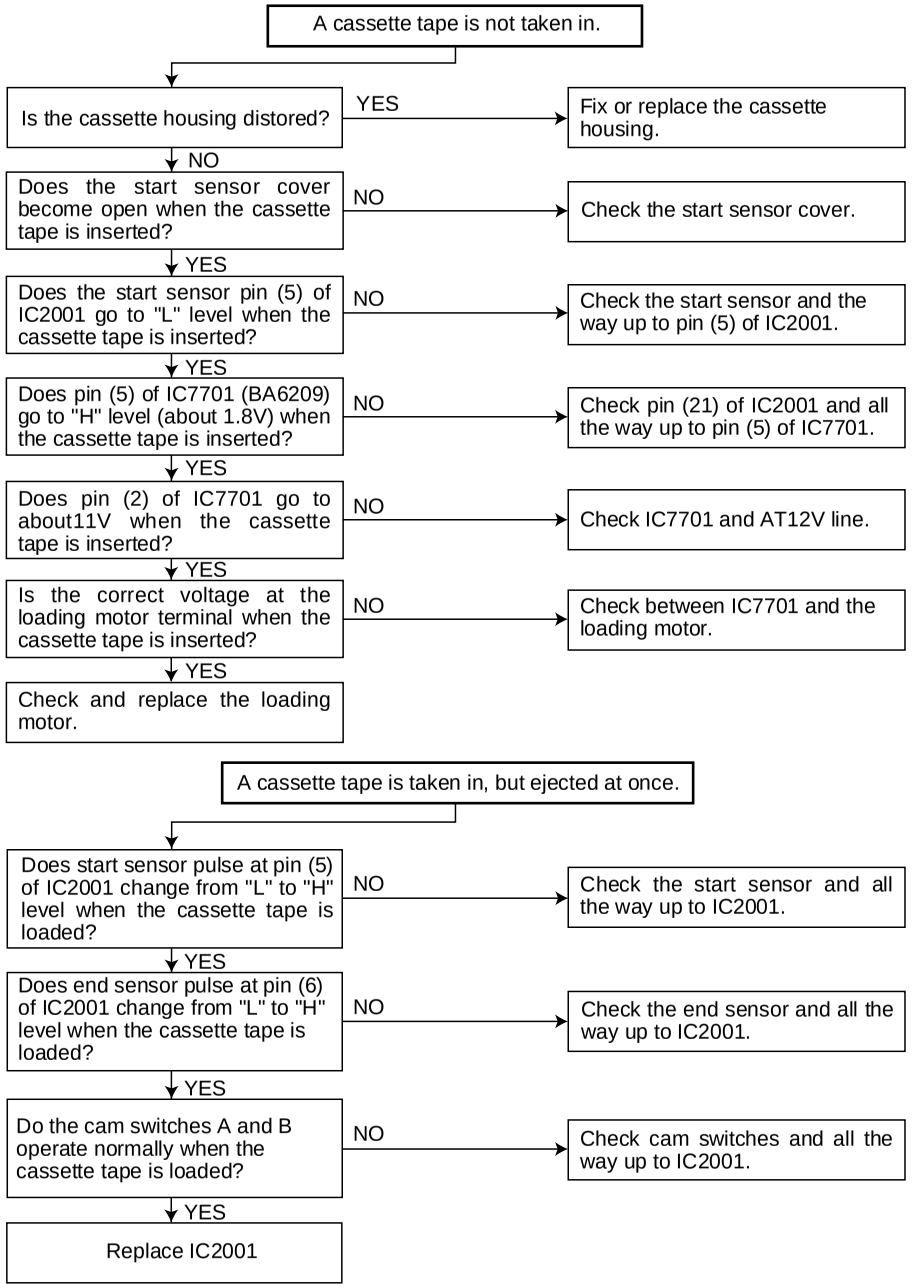
VCR POWER TROUBLESHOOTING — FLOW CHART NO.1-1



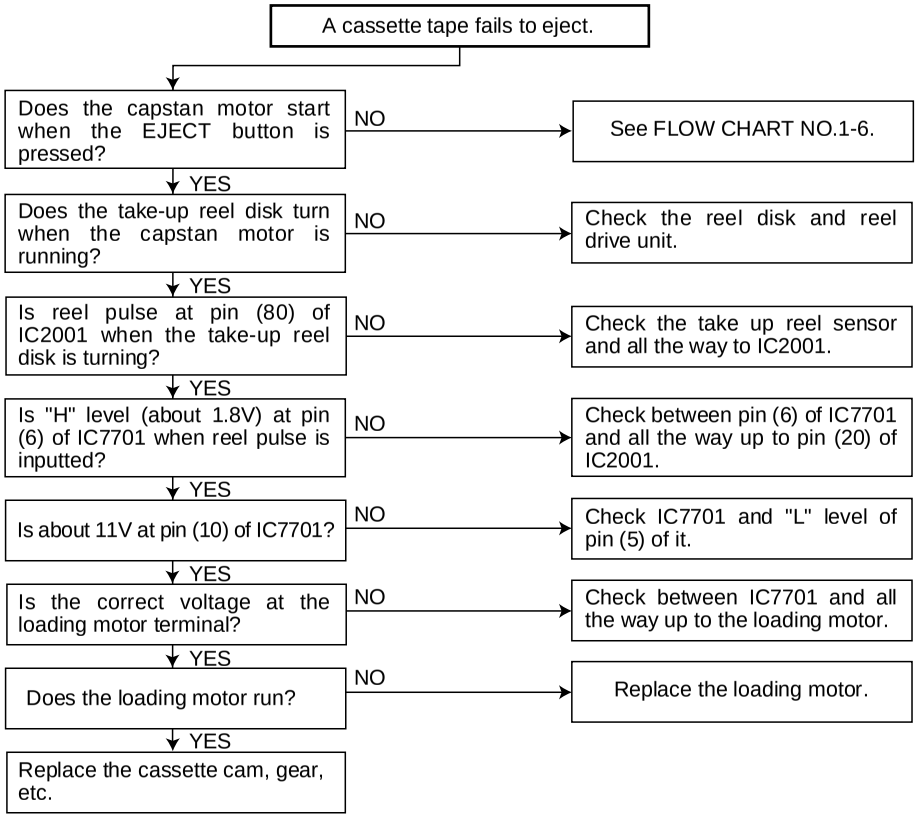
KEY-IN TROUBLESHOOTING — FLOW CHART NO.1-2



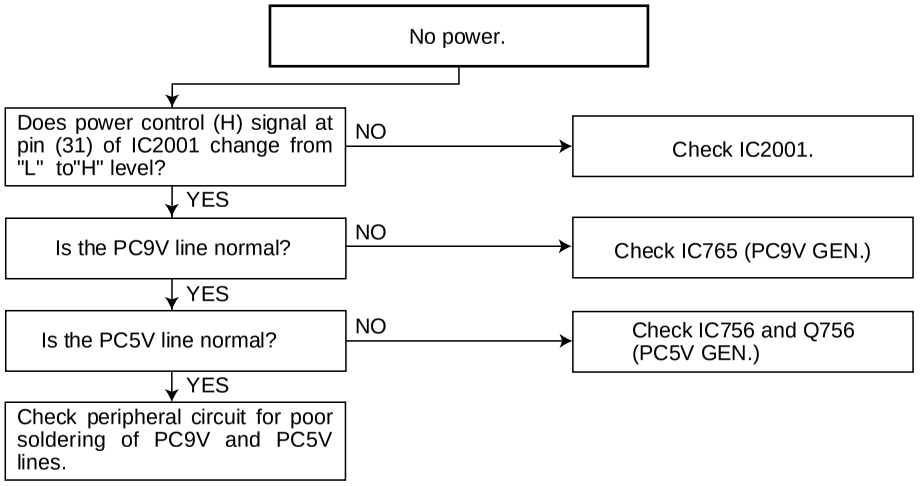
CASSETTE CONTROL TROUBLESHOOTING — FLOW CHART NO.1-3



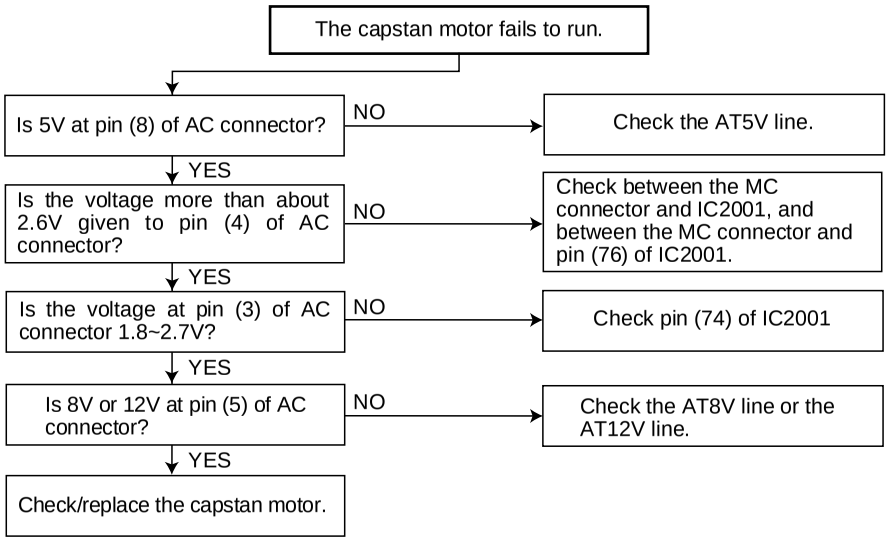
LOADING MOTOR AND EJECT TROUBLESHOOTING FLOW CHART NO.1-4



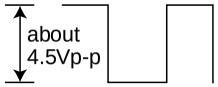
SYSTEM CONTROL TROUBLESHOOTING FLOW CHART NO.1-5



CAPSTAN MOTOR TROUBLESHOOTING FLOW CHART NO.1-6



TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING FLOW CHART NO.1-7



No reel sensor pulse appears.

↓

Insert the cassette, and put the unit in FF or REW mode.

↓ NO

Are there the take up/supply reel pulses at the collectors of D7702/D7703. → YES → Check between D7702 and pin (80) of IC2001, between D7703 and pin (79) of IC2001.

↓ NO

Replace the take up/supply reel sensors D7702/D7703.

DRUM MOTOR TROUBLESHOOTING FLOW CHART NO.1-9

The drum motor fails to run.

↓

Is the voltage more than about 2.6V applied at pin (1) of ME connector. → NO → Check between the ME socket and pin (77) of IC2001, and between the ME socket and pin (84) of IC2001.

↓ YES

Is 5V at pin (7) of ME connector? → NO → Check the AT 5V line.

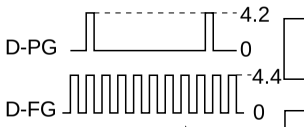
↓ YES

Is 12V at pin (4) of ME connector? → NO → Check the AT12V line.

↓ YES

Check/replace the drum motor.

HEAD SWITCHING PULSE TROUBLESHOOTING FLOW CHART NO.1-8



No head switching pulse.

↓

Is the drum motor rotating? → NO → See FLOW CHART NO. 1-9.

↓ YES

Are the drum PG and drum FG signal inputted to pins (90) and (89) of IC2001, respectively? → YES → Check pin (18) of IC2001 and signal line of head switching pulse.

↓ NO

Are there the drum PG and drum FG Signals at pins (3) and (5) of connector AD? → YES → Check all the way up to pins (89) and (90) of IC2001.

↓ NO

Check the harness AD-ME and the drum motor unit.

The drum motor runs only for a few seconds.

↓

Is drum PG signal at pin (5) of ME connector? → NO → Check the drum motor.

↓ YES

Is drum PG signal at pin (90) of IC2001? → NO → Check between the ME connector and all the way up to pin (90) of IC2001.

↓ YES

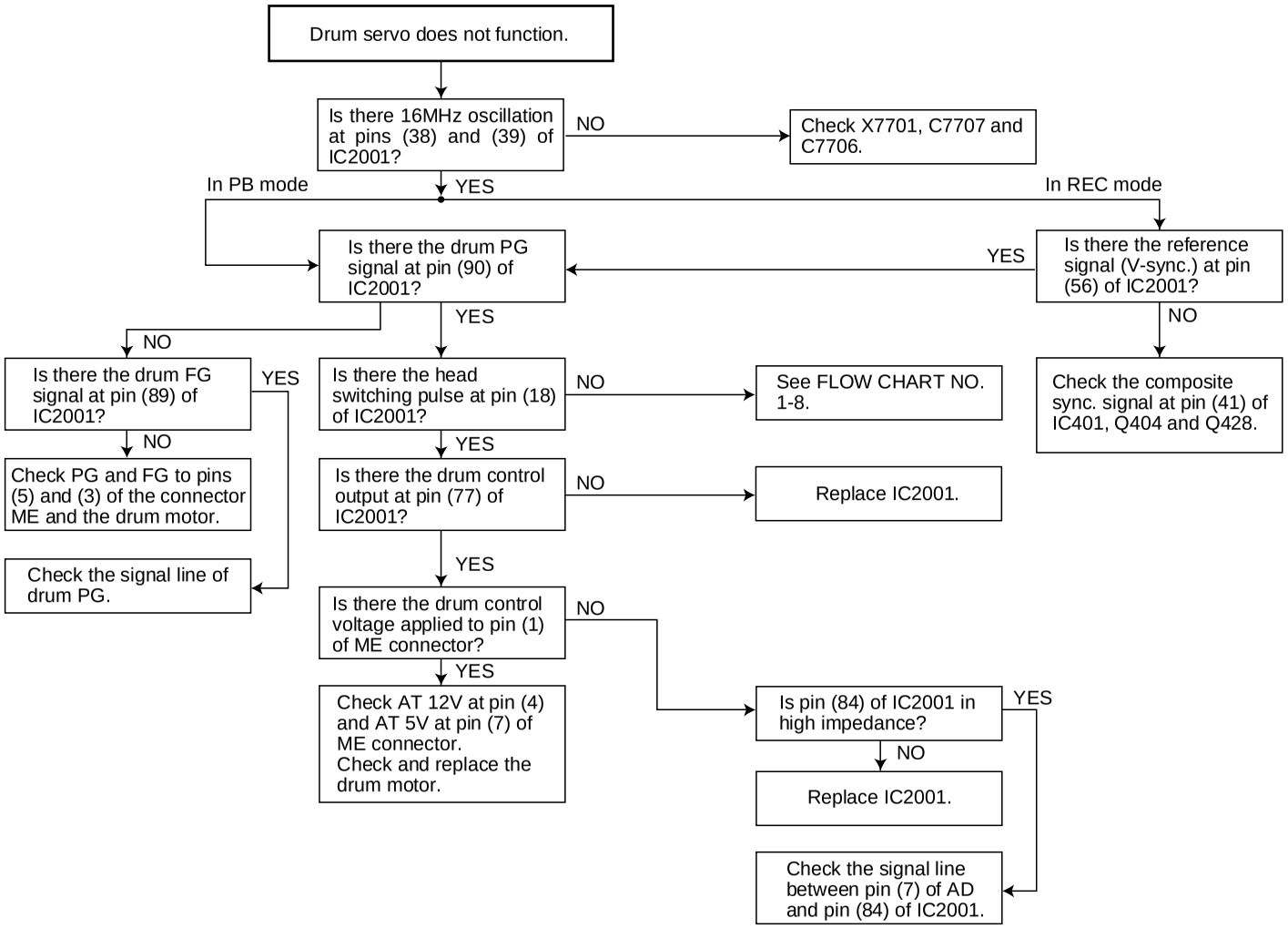
Is H.SW. pulse at pin (18) of IC2001? → NO → Check or replace IC2001.

↓ YES

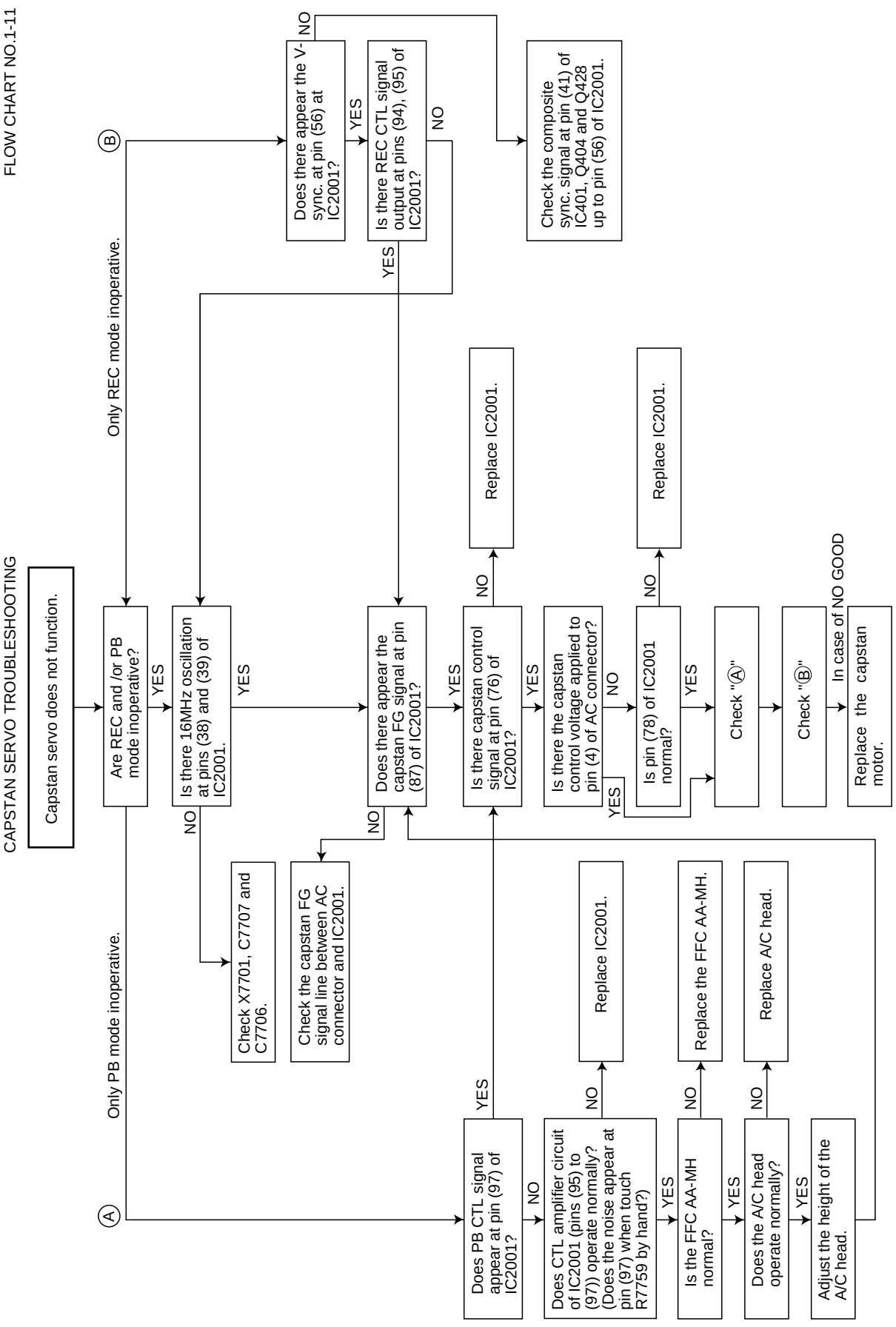
Check pin (84) of IC2001.

DRUM SERVO TROUBLESHOOTING

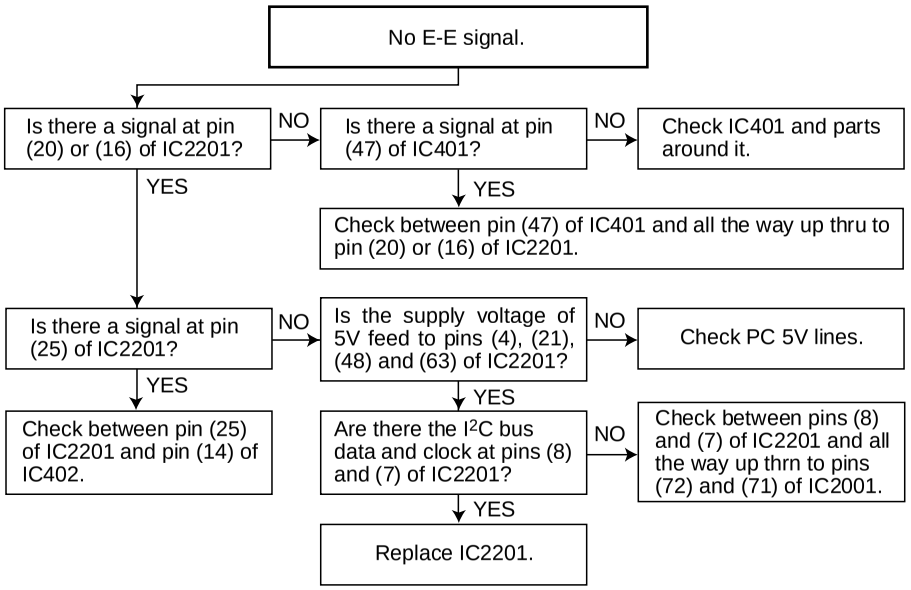
FLOW CHART NO.1-10



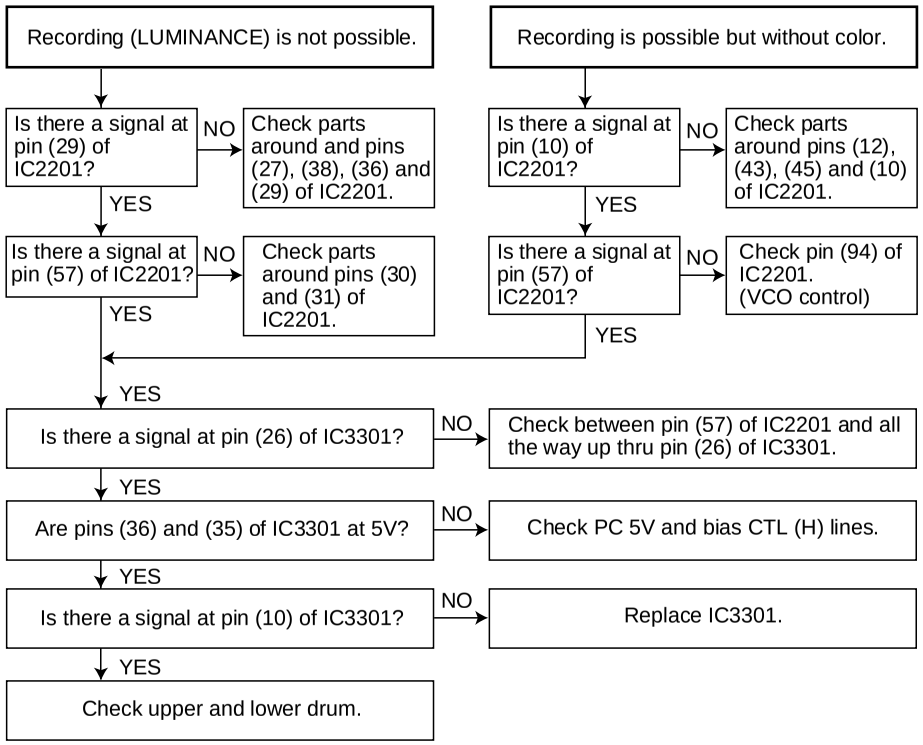
FLOW CHART NO.1-11



E-E MODE TROUBLESHOOTING FLOW CHART NO.1-12

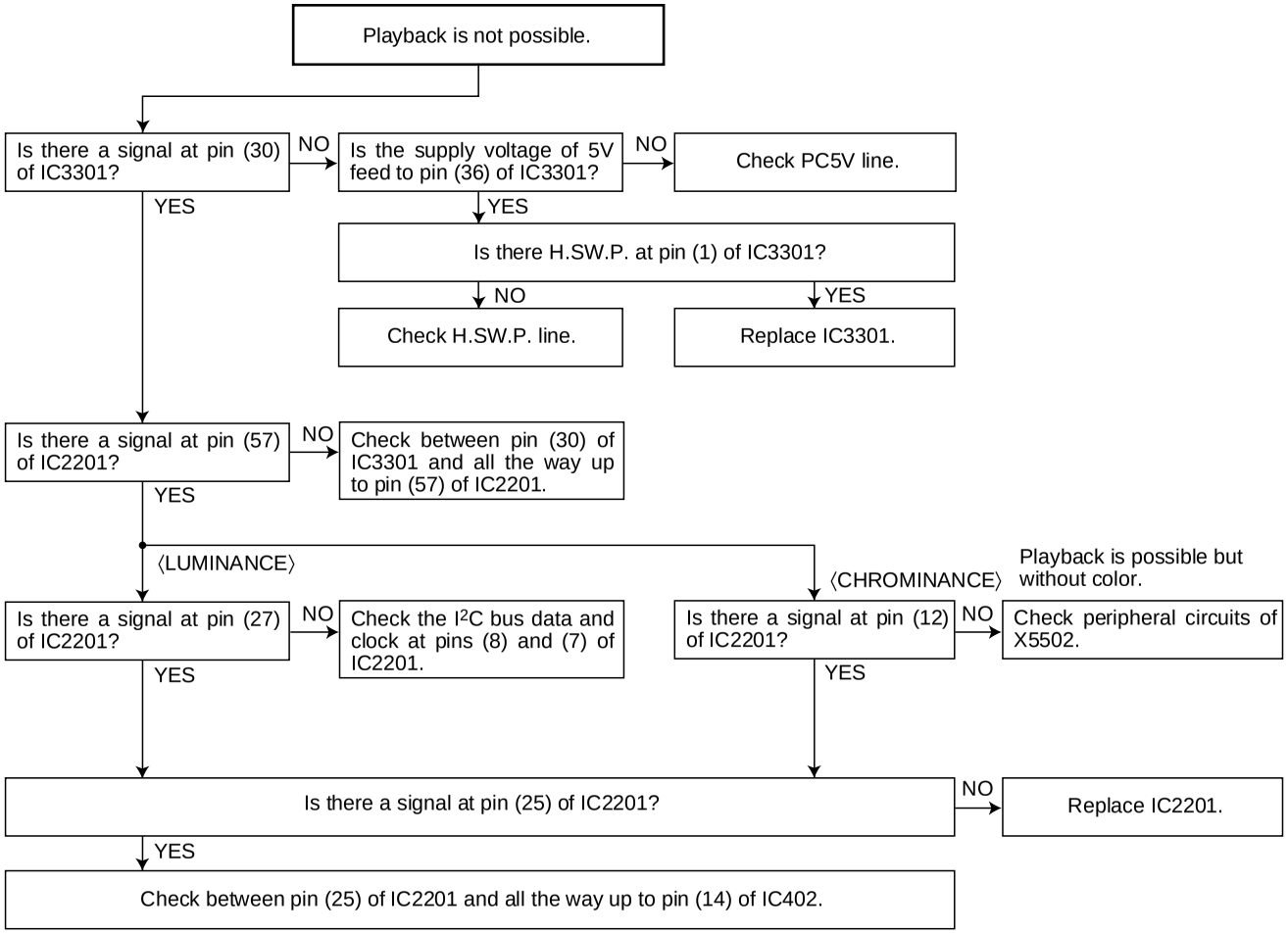


RECORDING MODE TROUBLESHOOTING FLOW CHART NO.1-13

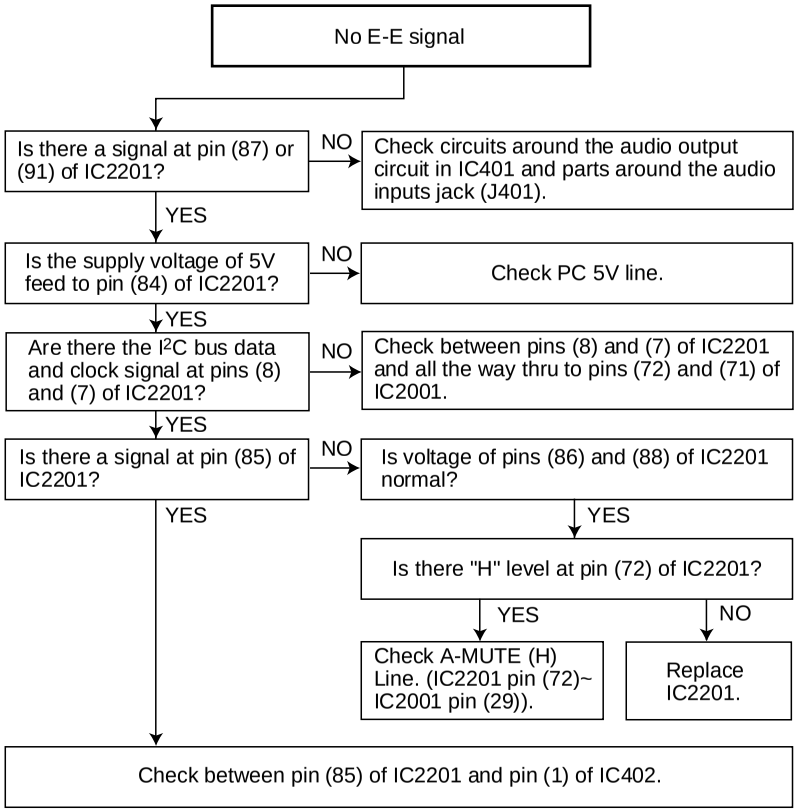


PLAYBACK MODE TROUBLESHOOTING

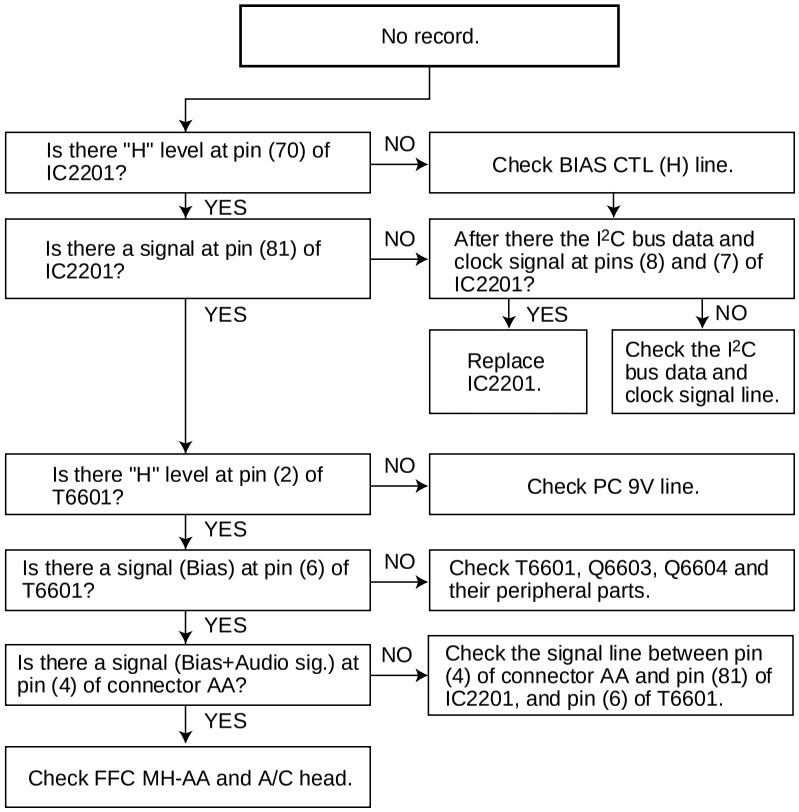
FLOW CHART NO.1-14



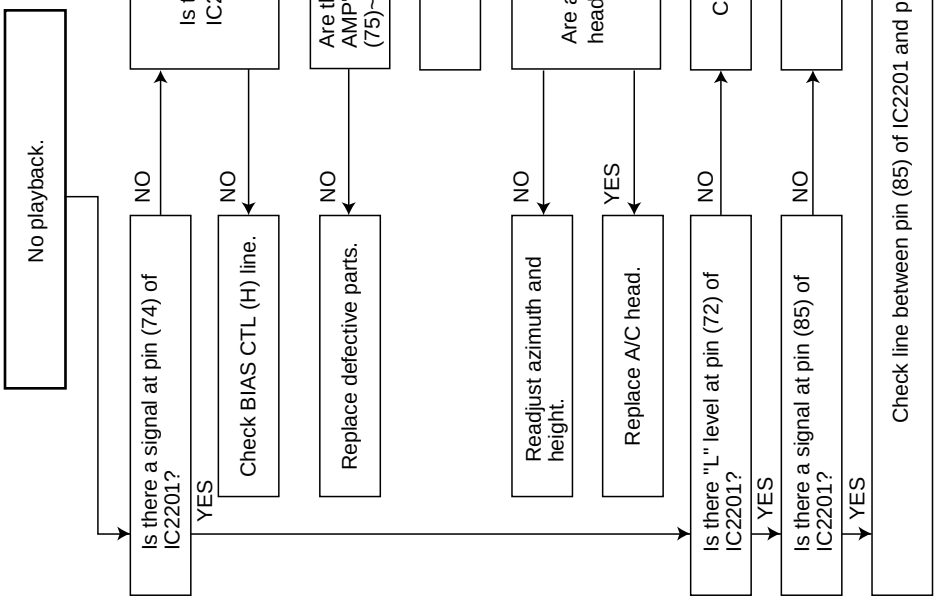
SOUND E-E MODE TROUBLESHOOTING FLOW CHART NO.1-15



SOUND RECORDING MODE TROUBLESHOOTING FLOW CHART NO.1-16

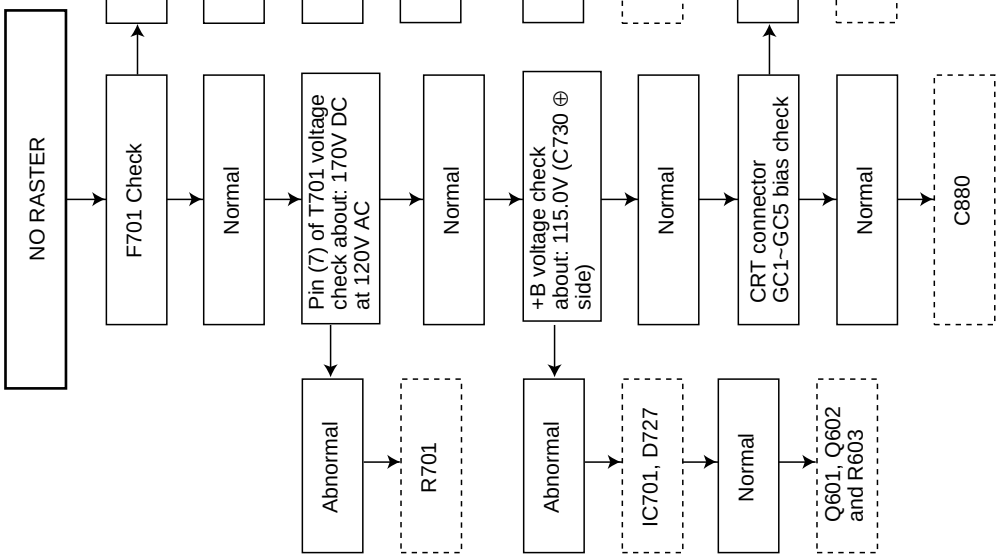


SOUND PLAYBACK MODE TROUBLESHOOTING FLOW CHART NO.1-17

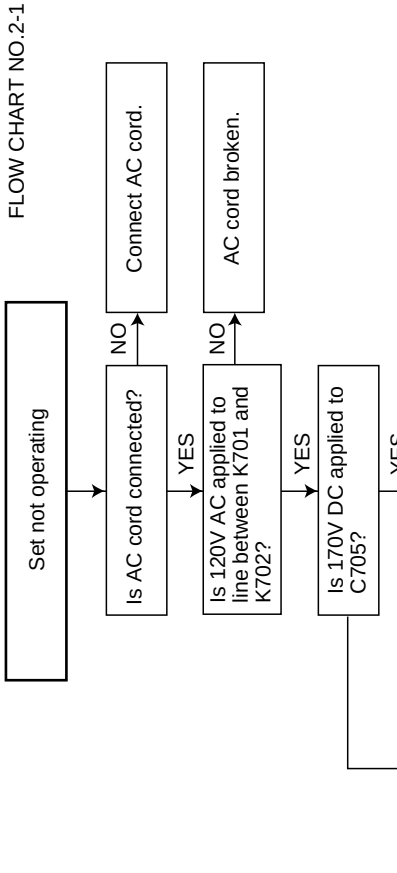


TROUBLESHOOTING OF TV SECTION

FLOW CHART NO.2-2

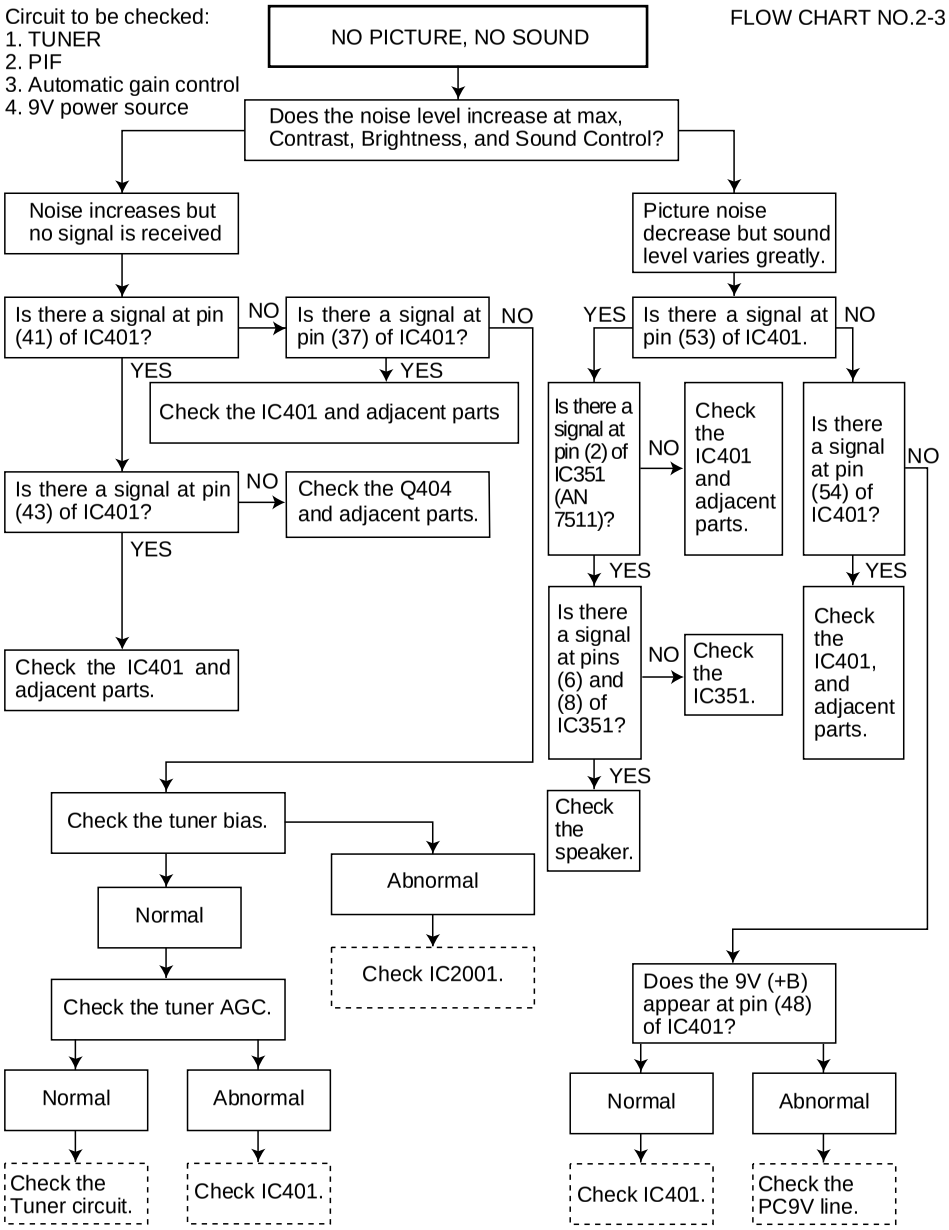


FLOW CHART NO.2-1

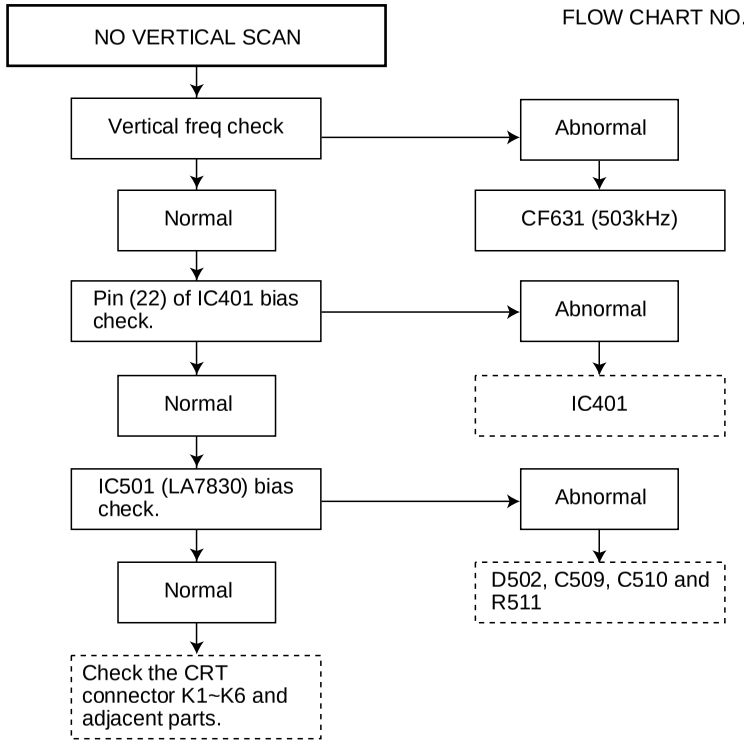


Circuit to be checked:
1. TUNER
2. PIF
3. Automatic gain control
4. 9V power source

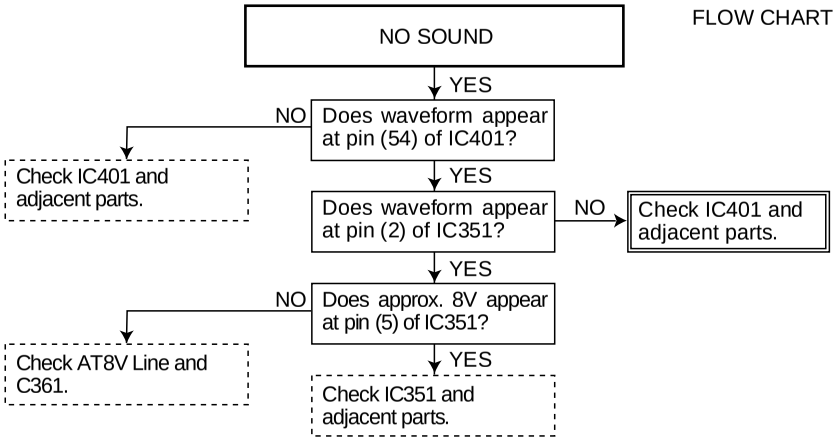
FLOW CHART NO.2-3



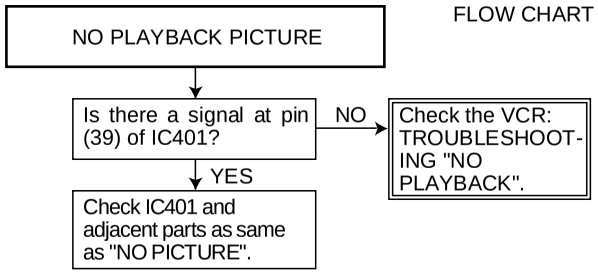
FLOW CHART NO.2-4



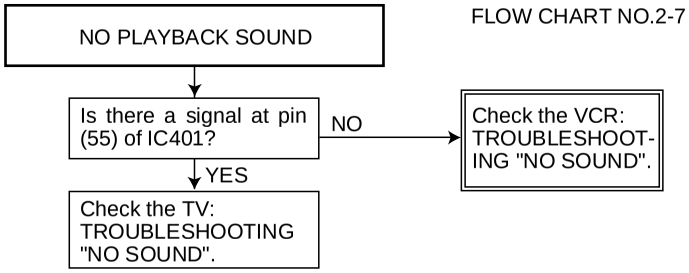
FLOW CHART NO.2-5



FLOW CHART NO.2-6

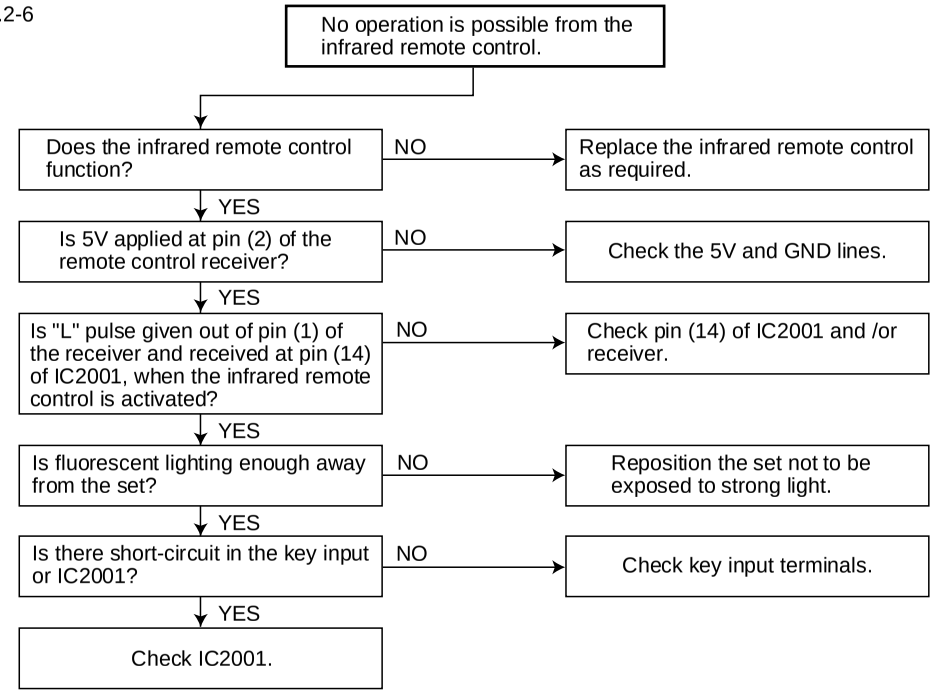


FLOW CHART NO.2-7

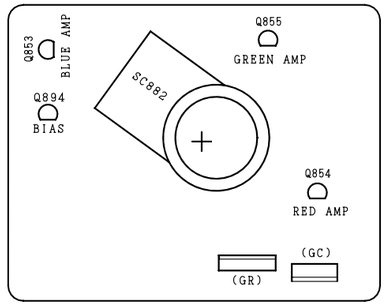


INFRARED R/C TROUBLESHOOTING

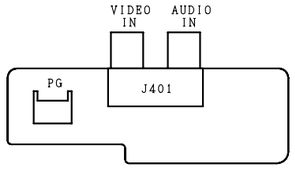
FLOW CHART NO.2-8



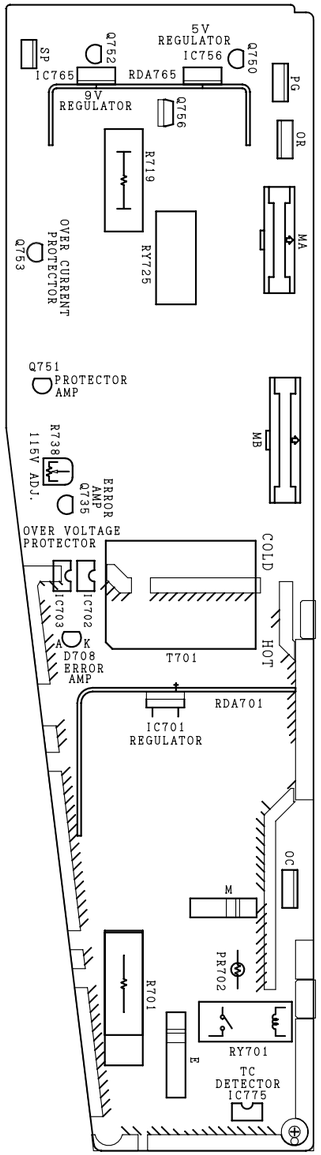
CHASSIS LAYOUT



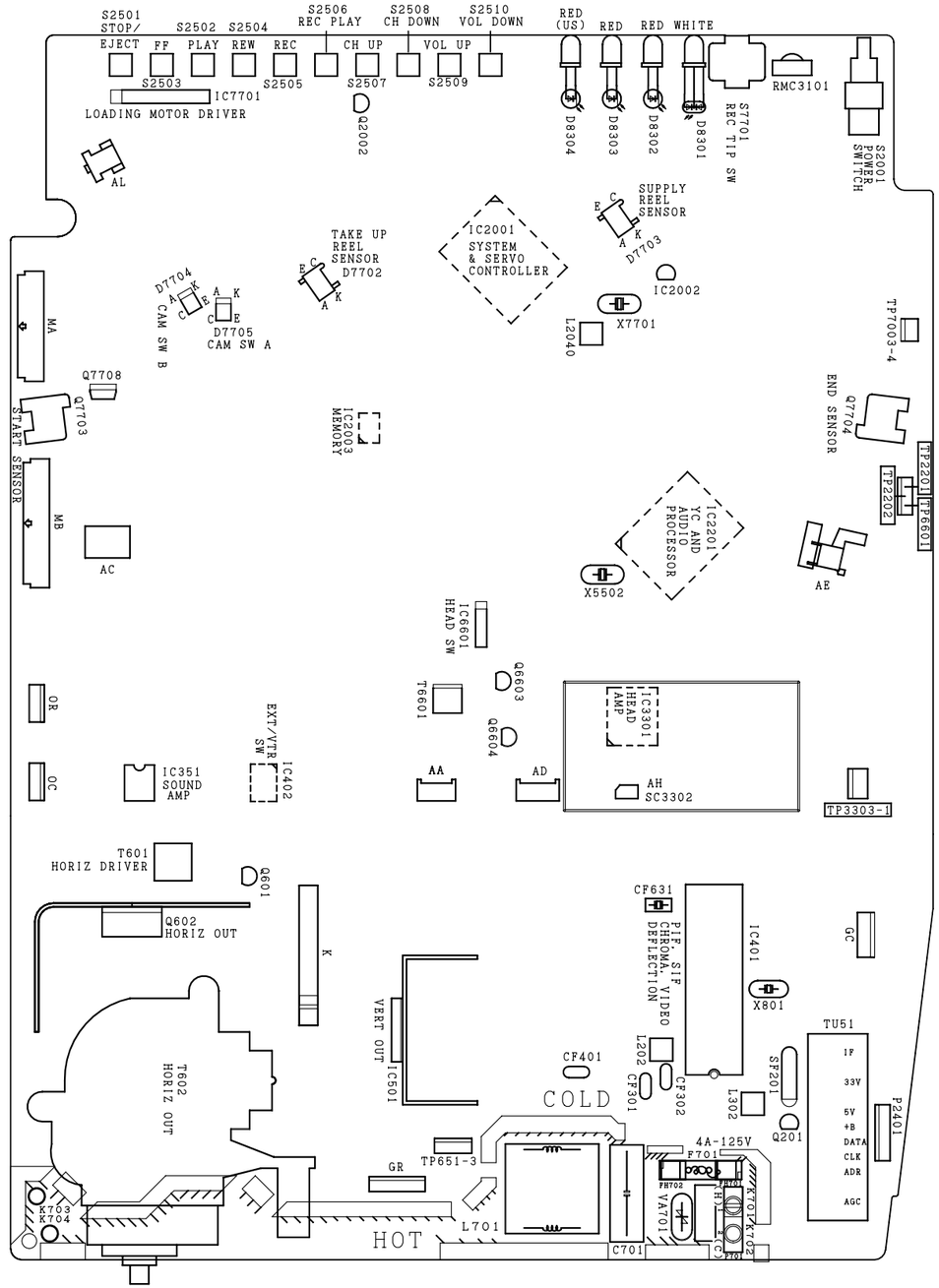
PWB-B



PWB-D

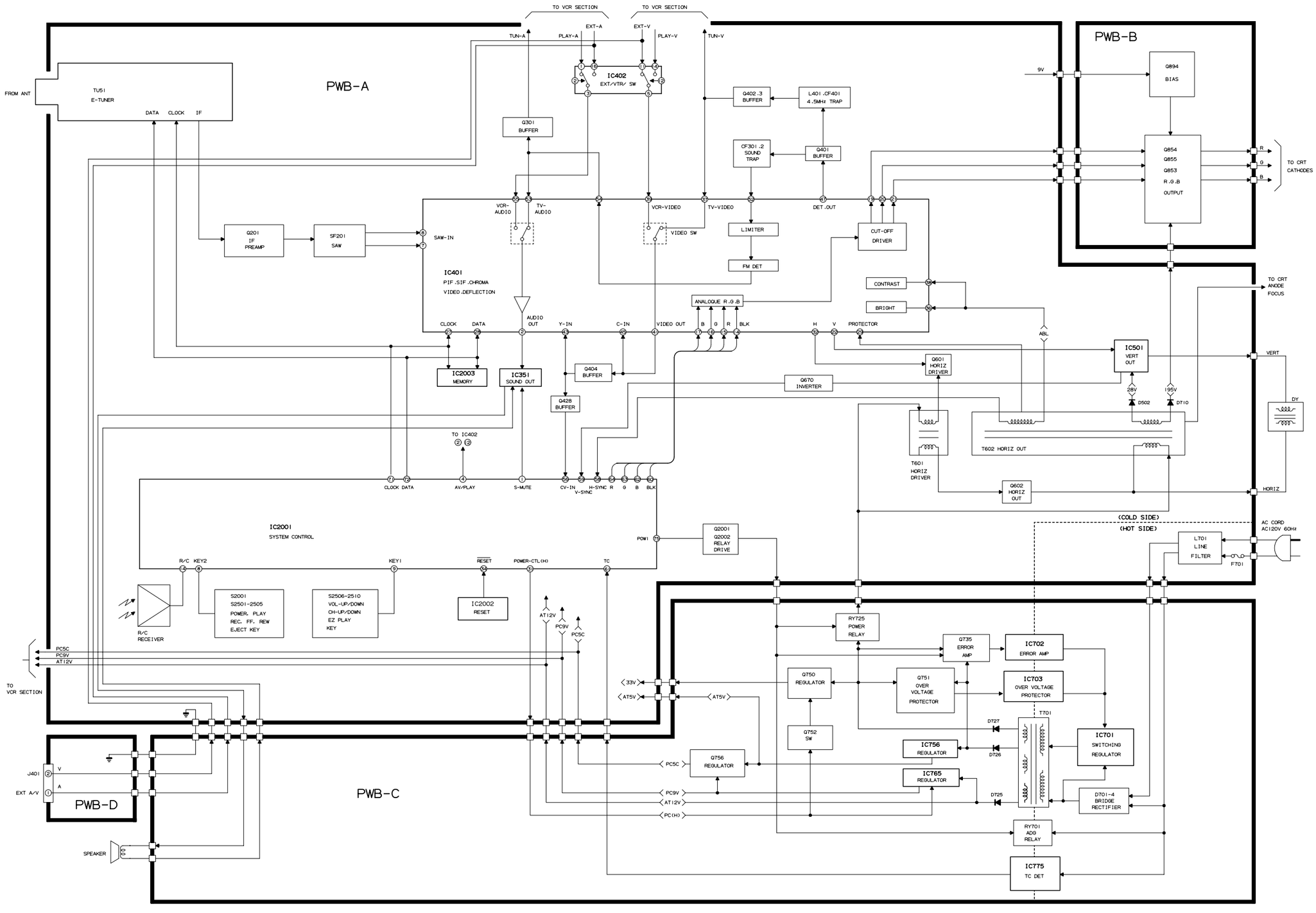


PWB-C



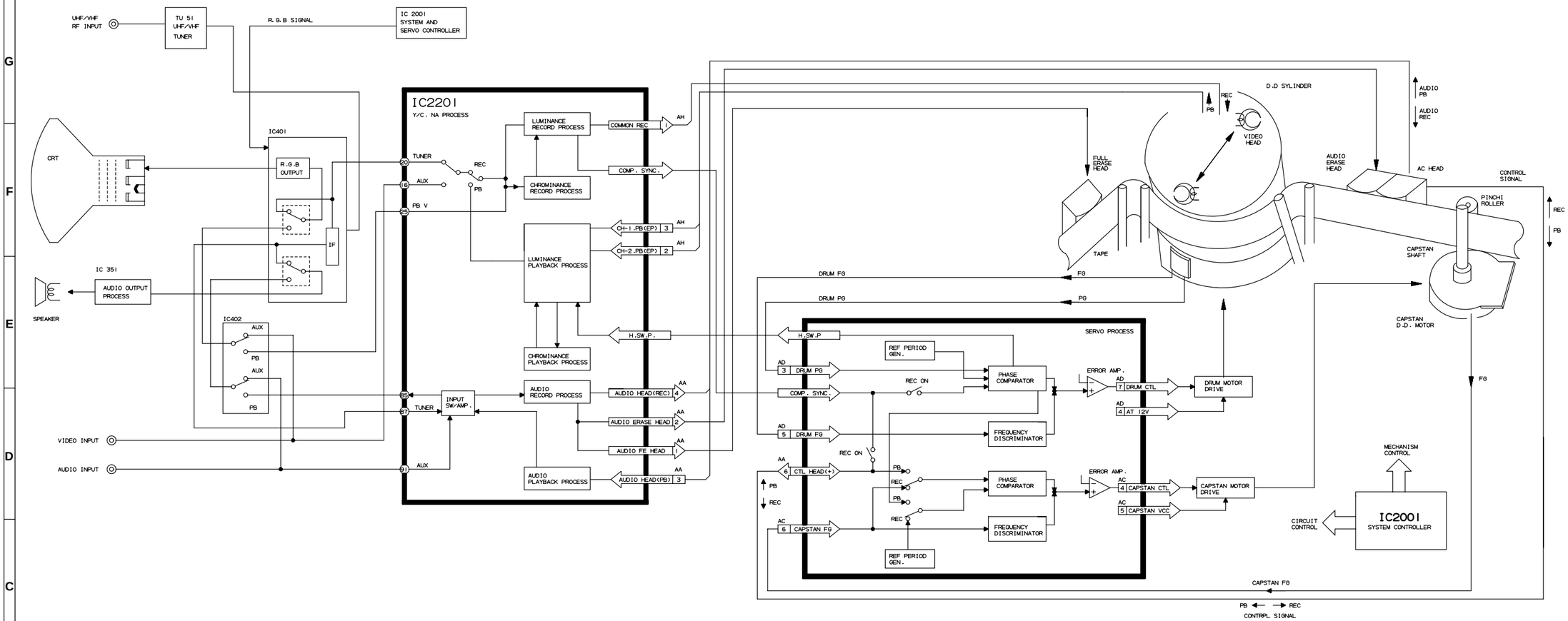
PWB-A

BLOCK DIAGRAM OF TV SECTION



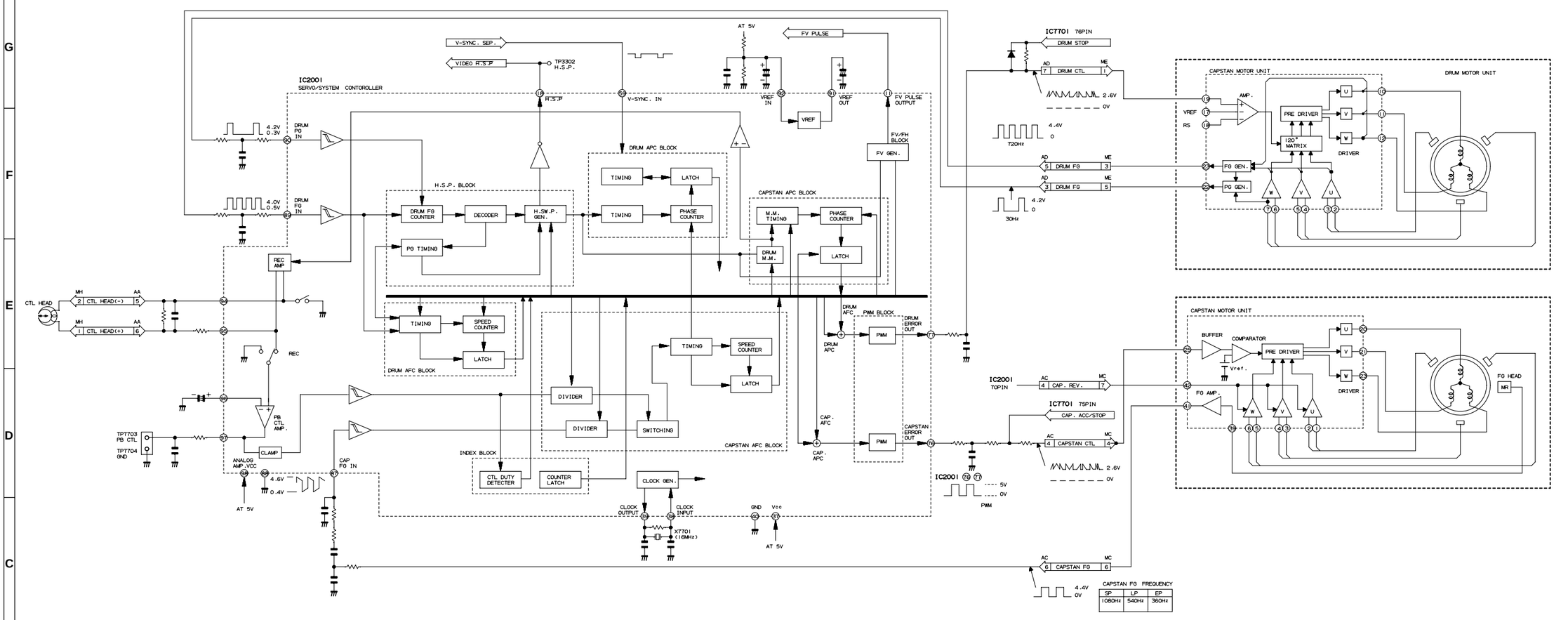
BLOCK DIAGRAM OF VCR SECTION

■ OVERALL BLOCK DIAGRAM



BLOCK DIAGRAM OF VCR SECTION

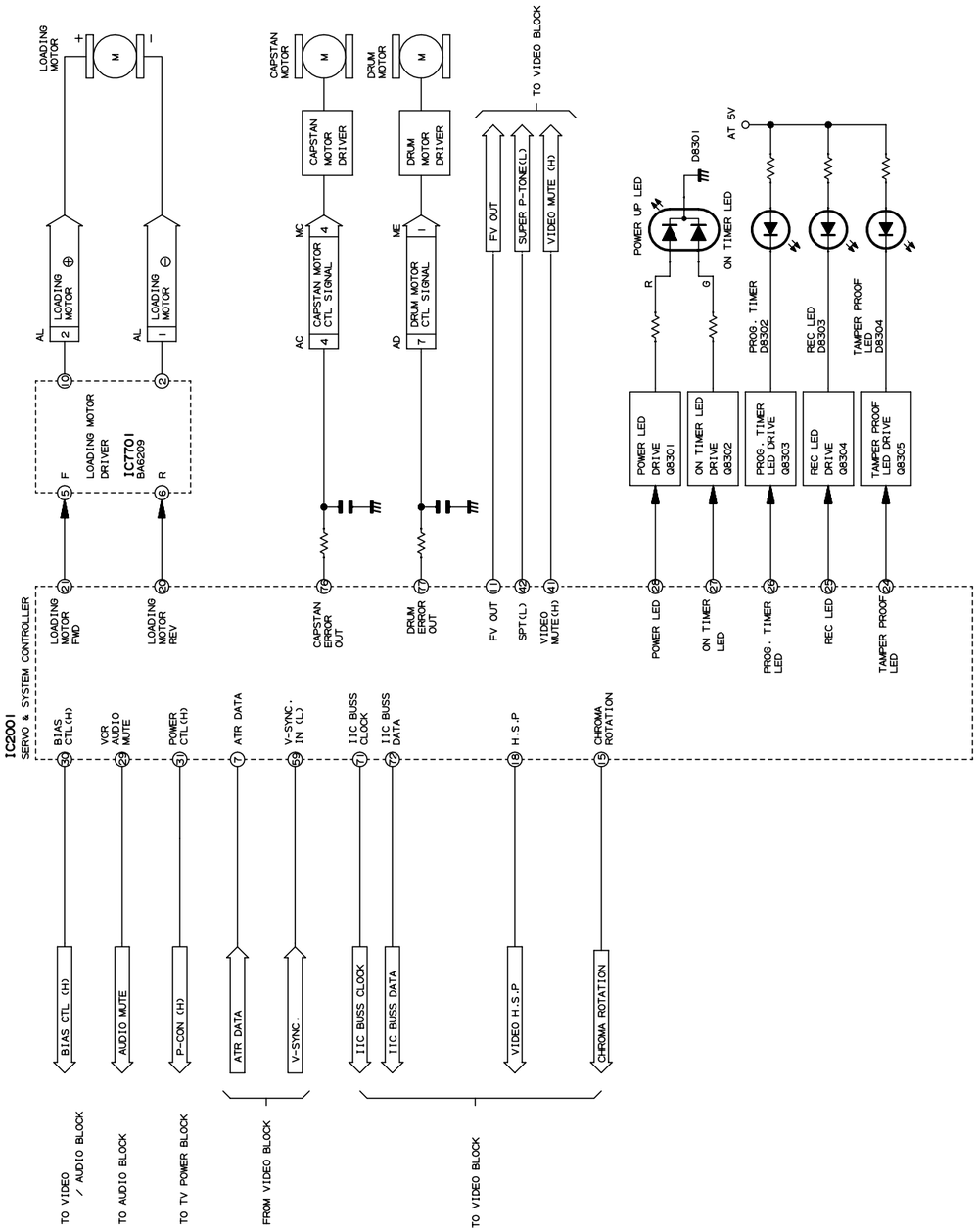
■ SERVO PROCESS BLOCK DIAGRAM



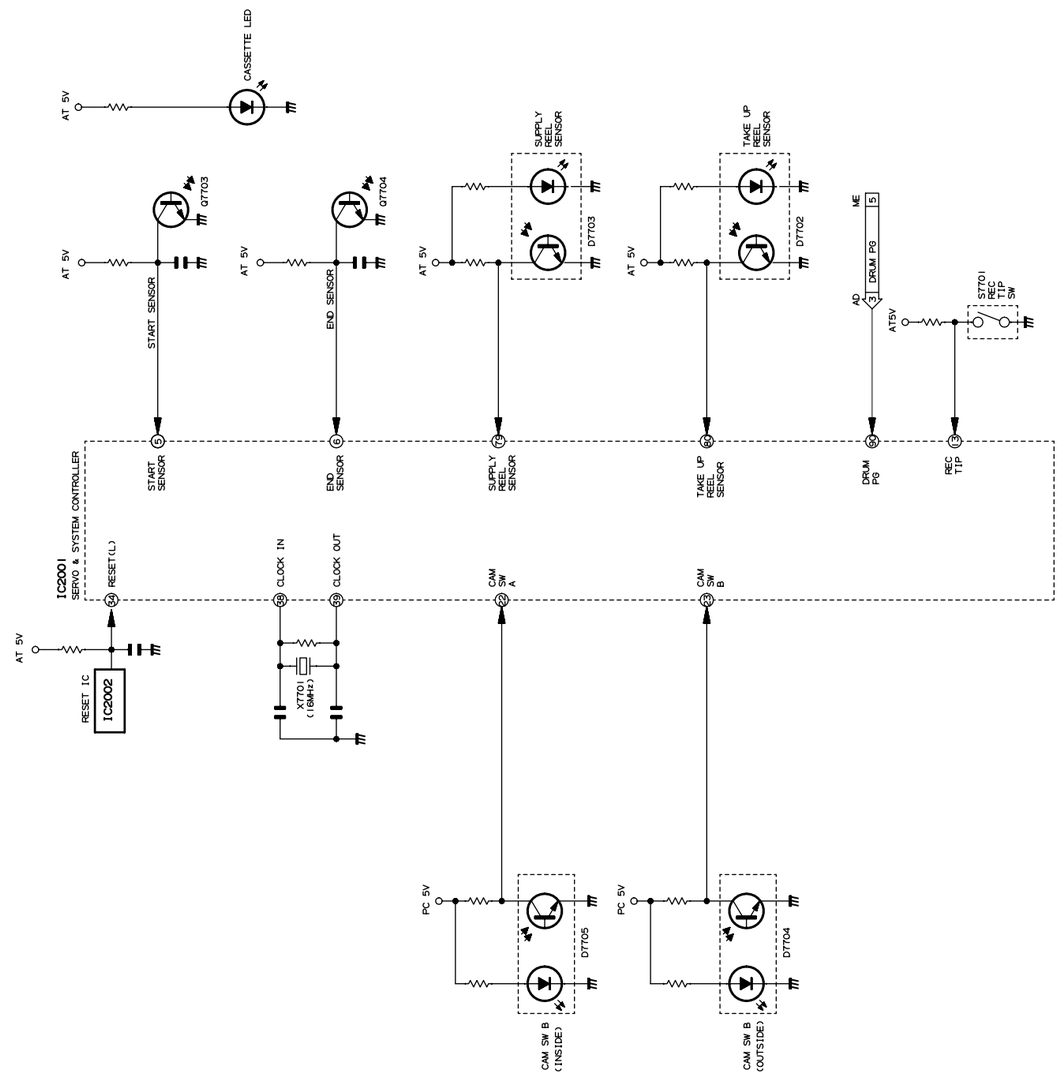
1	2	3	4	5	6	7	8	9	10	11	12

BLOCK DIAGRAM OF VCR SECTION

■ SYSTEM CONTROL BLOCK DIAGRAM

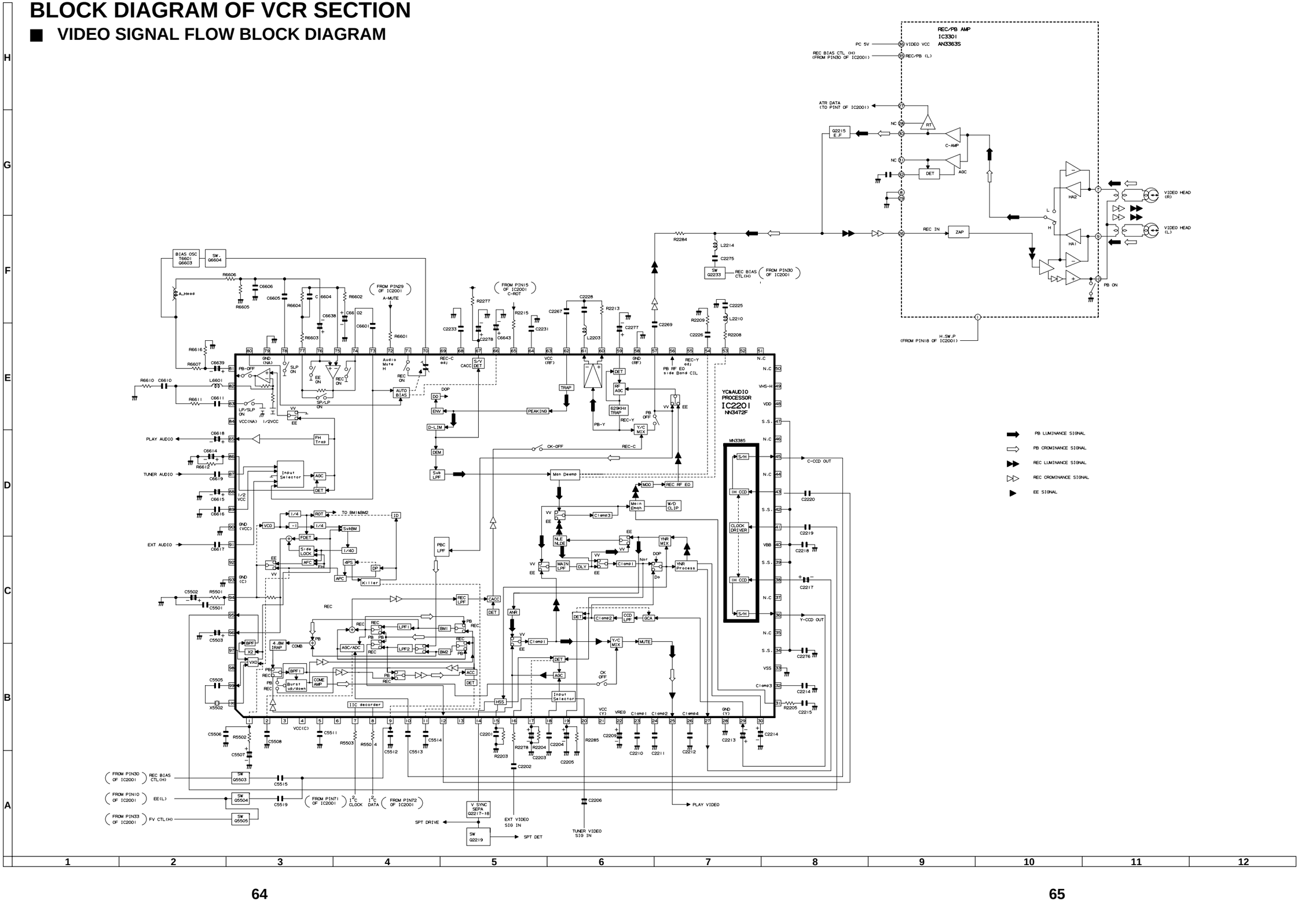


■ SAFETY DEVICE BLOCK DIAGRAM



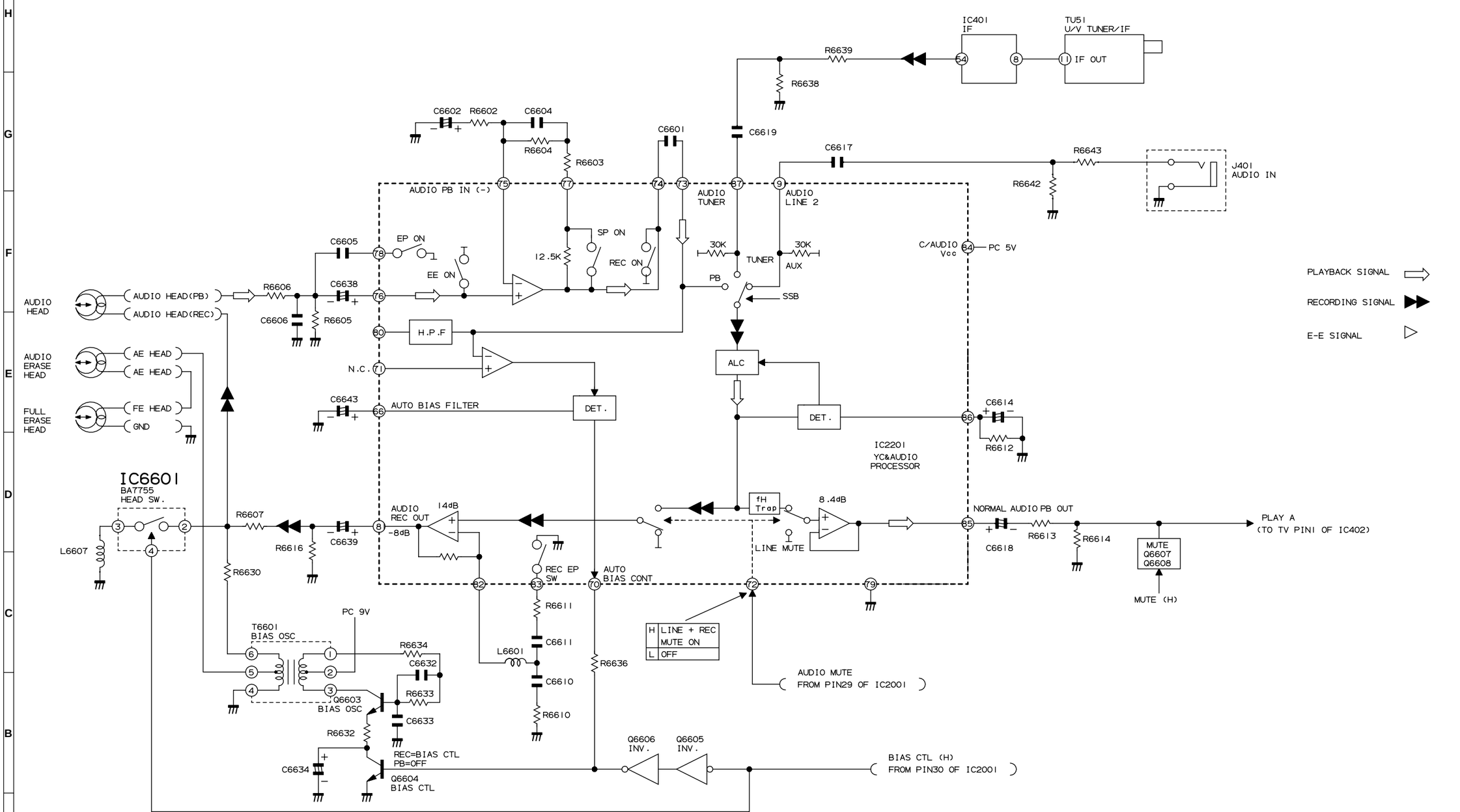
BLOCK DIAGRAM OF VCR SECTION

■ VIDEO SIGNAL FLOW BLOCK DIAGRAM

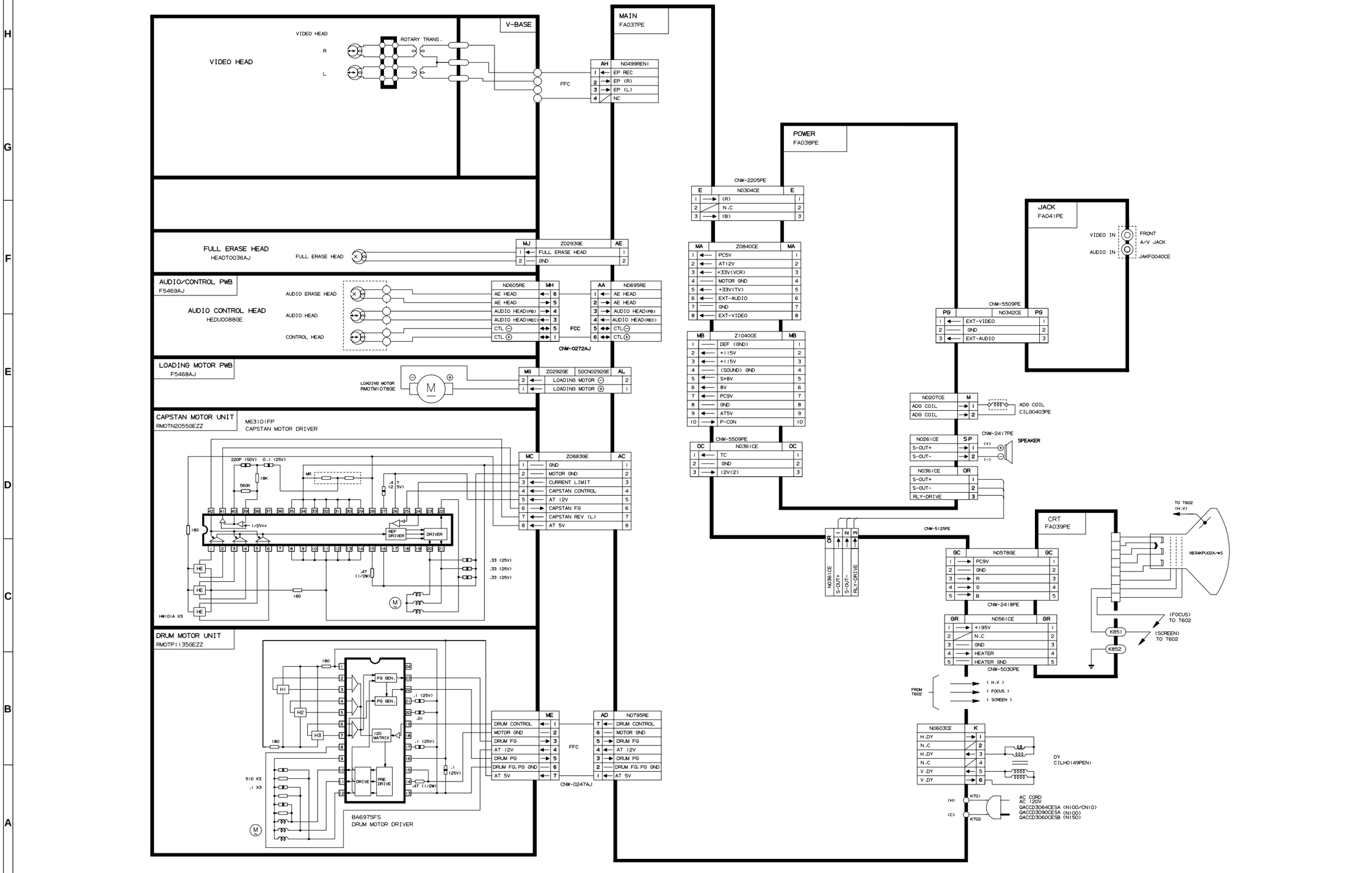


BLOCK DIAGRAM OF VCR SECTION

■ AUDIO BLOCK DIAGRAM



OVERALL SCHEMATIC DIAGRAM



DESCRIPTION OF SECTION SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted (K=1000 ohms, M =1 Meg ohm).*
2. *All resistors are 1/8 watt, unless otherwise noted.*
3. *All capacitors are 50V, unless otherwise noted.*
4. *All capacitors are µF, unless otherwise noted. (P: µµF)*
5. *(G) indicates ±2% tolerance may be used.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000µV B&W or Color signal.*

WAVEFORM MEASUREMENT CONDITIONS:

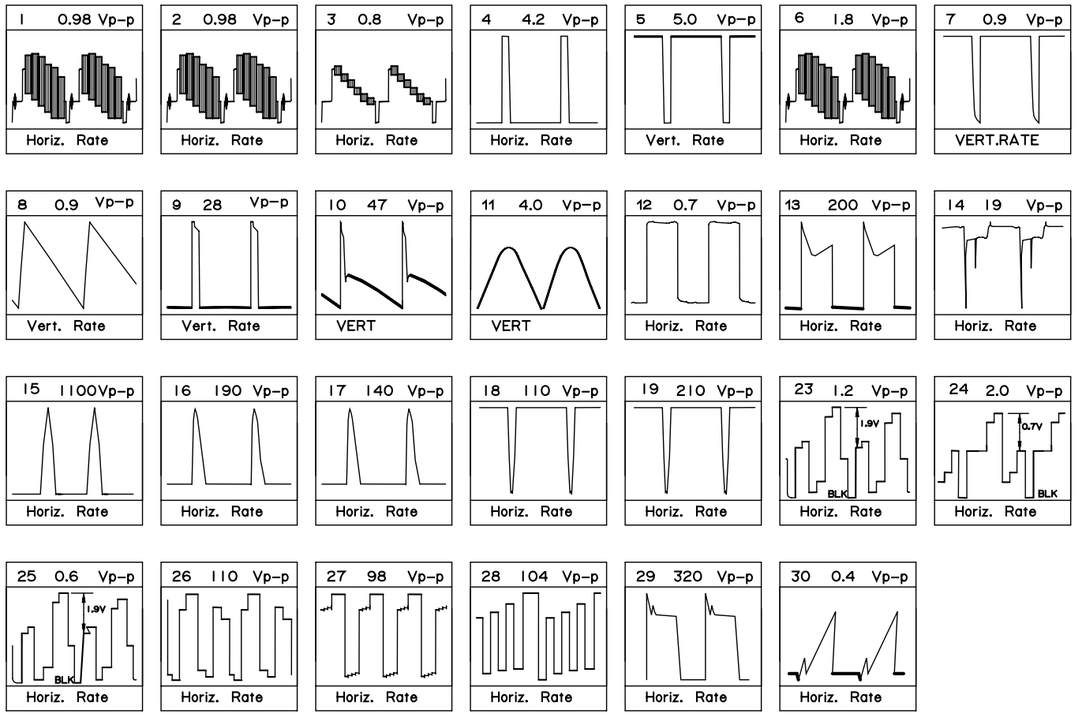
1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. *indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

⚠ *AND SHADED ( ) COMPONENTS = SAFETY RELATED PARTS.*
▲ *MARK= X-RAY RELATED PARTS.*

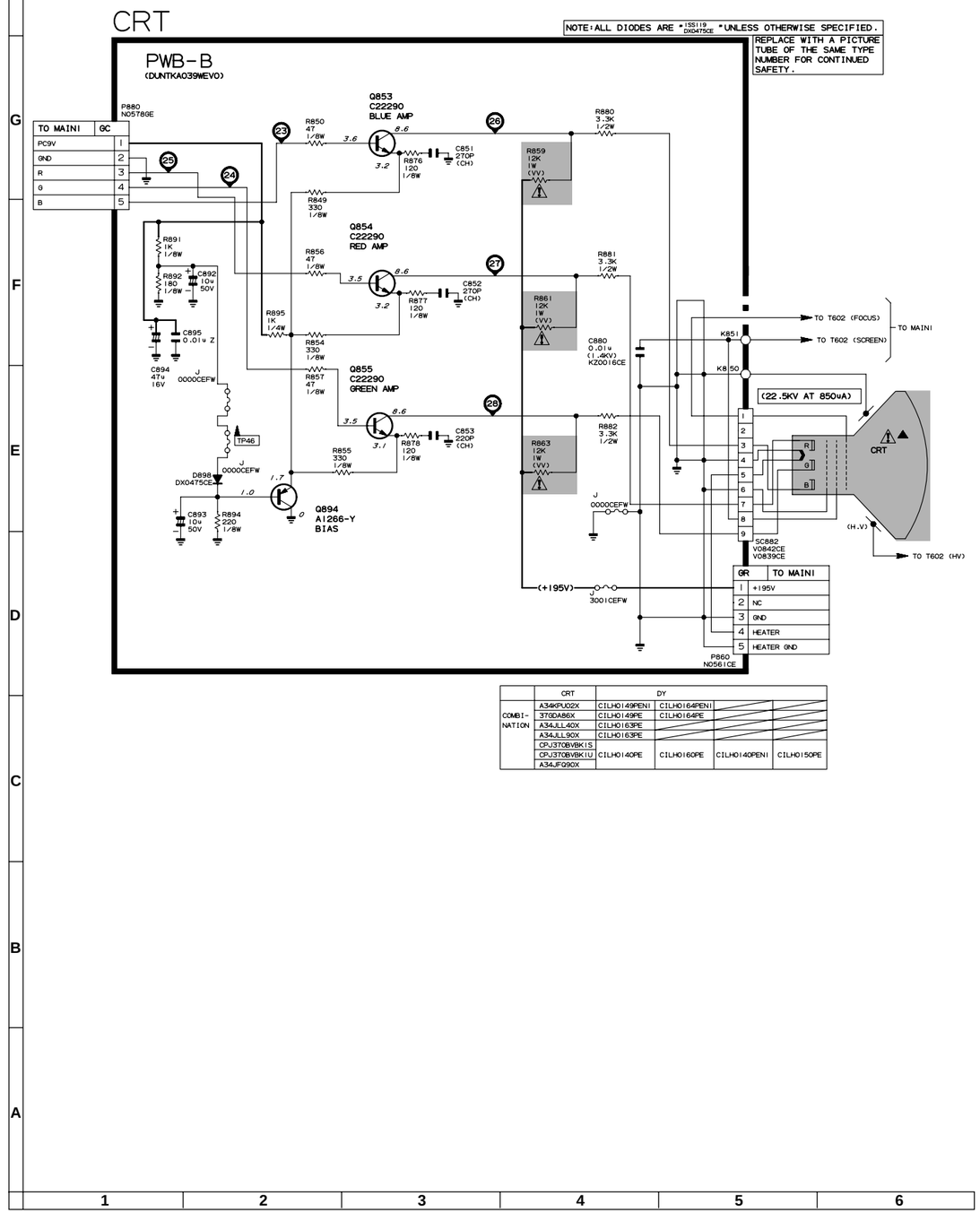
DRGANNES MARQUES⚠ET HACHRES ( ): PIECES RELATIVES A LA SECURITE.
MARQUE ▲ : PIECS RELATIVE AUX RAYONS X.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

WAVEFORMS

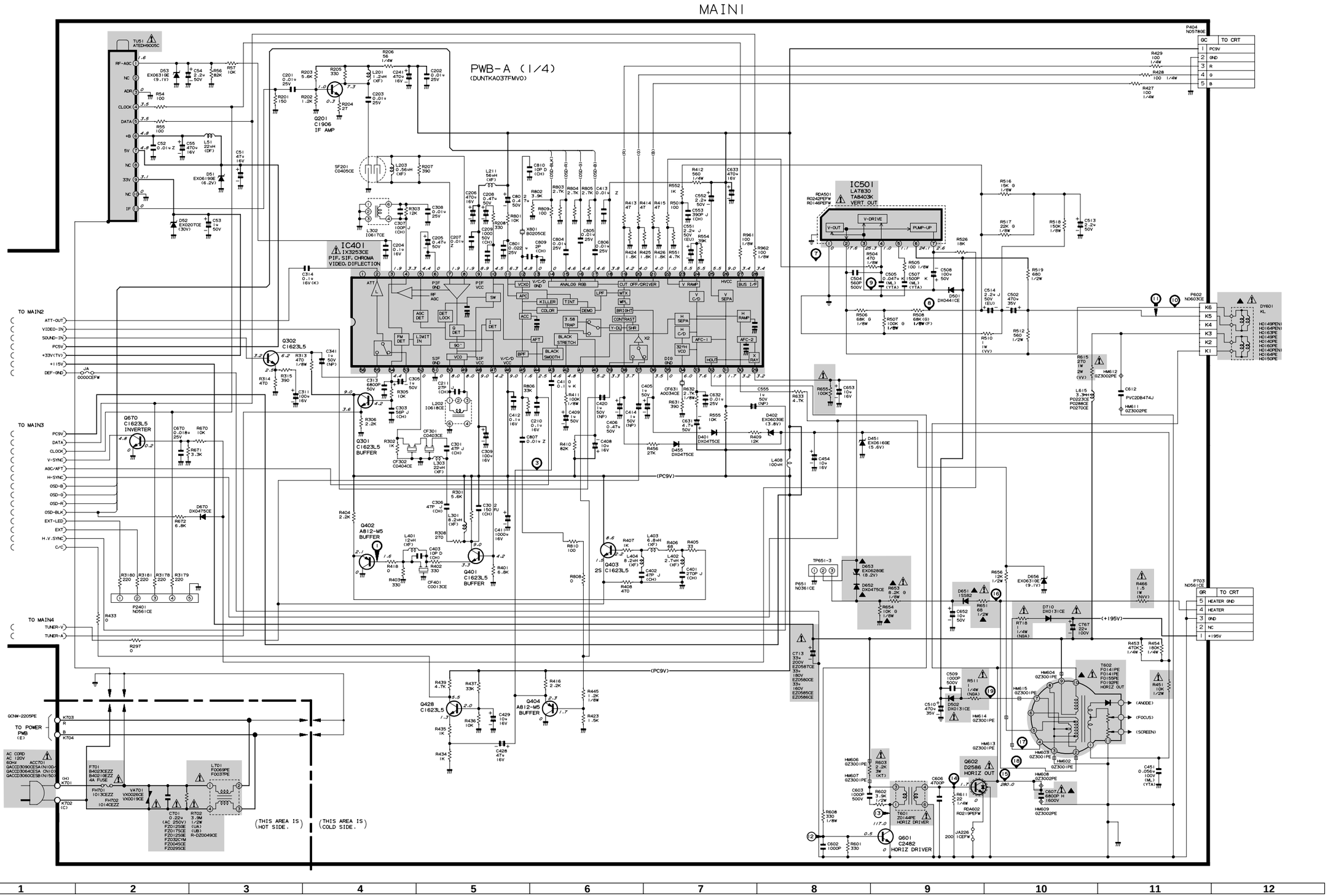


SCHEMATIC DIAGRAM : CRT Unit

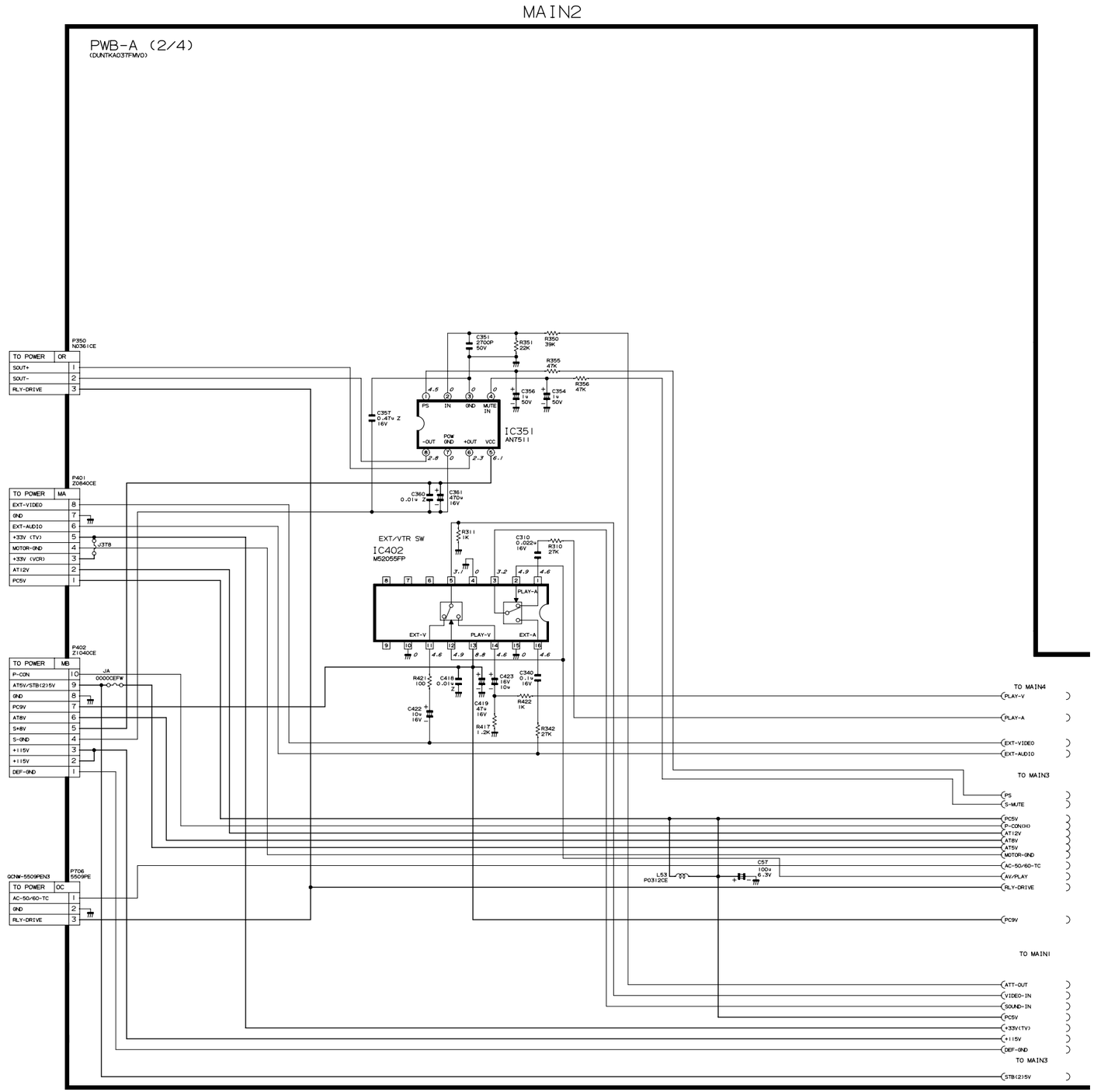


	CRT	DY			
COMBI-NATION	A34KPL02X	CILH0149PEN1	CILH0164PEN1		
	370DAB6X	CILH0149PE	CILH0164PE		
	A34JLL40X	CILH0163PE			
	A34JLL90X	CILH0163PE			
	CPJ370BVBK1S				
	CPJ370BVBK1U	CILH0140PE	CILH0160PE	CILH0140PEN1	CILH0150PE
	A34JFQ90X				

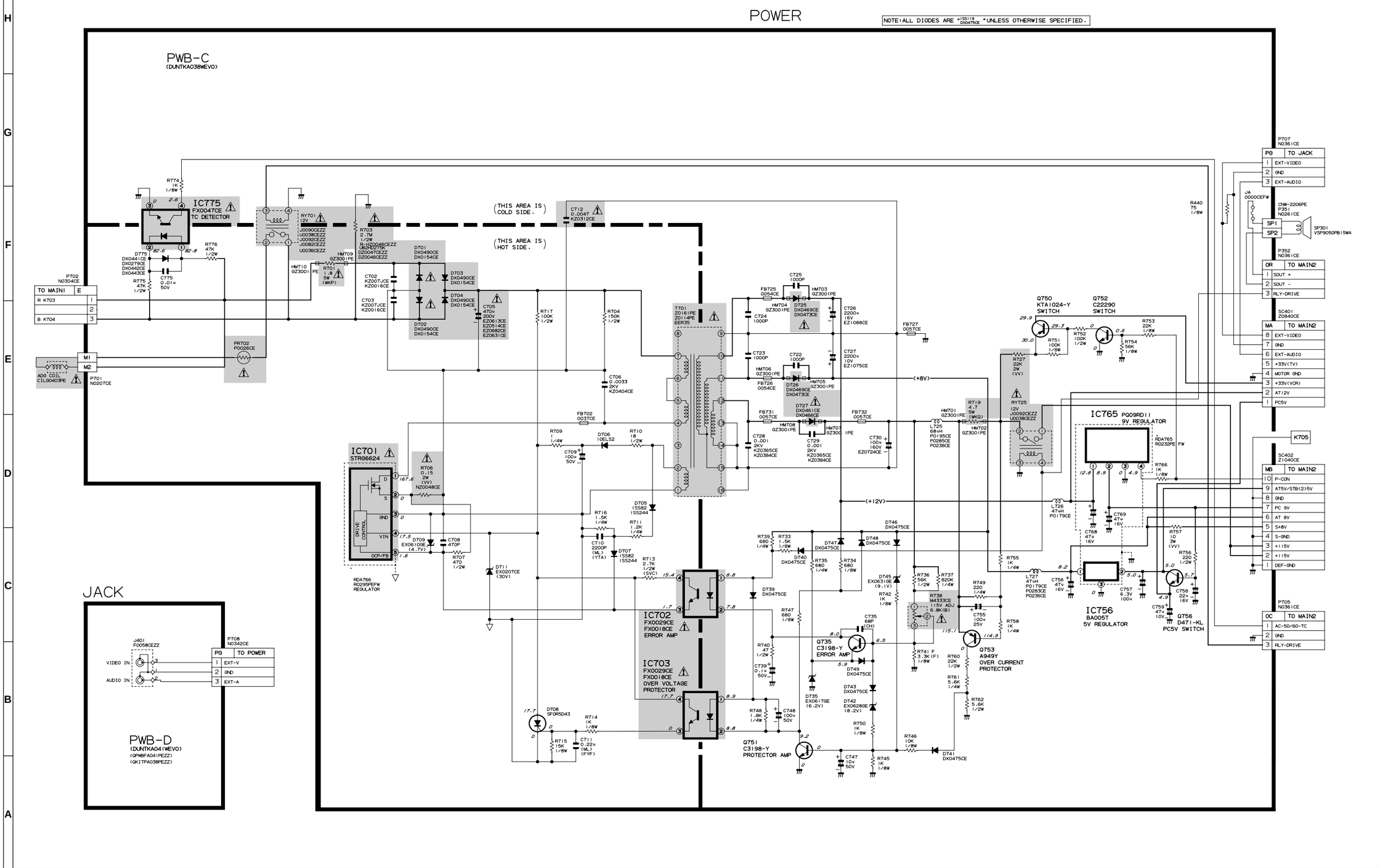
SCHEMATIC DIAGRAM : MAIN-1 Unit (TV Section)



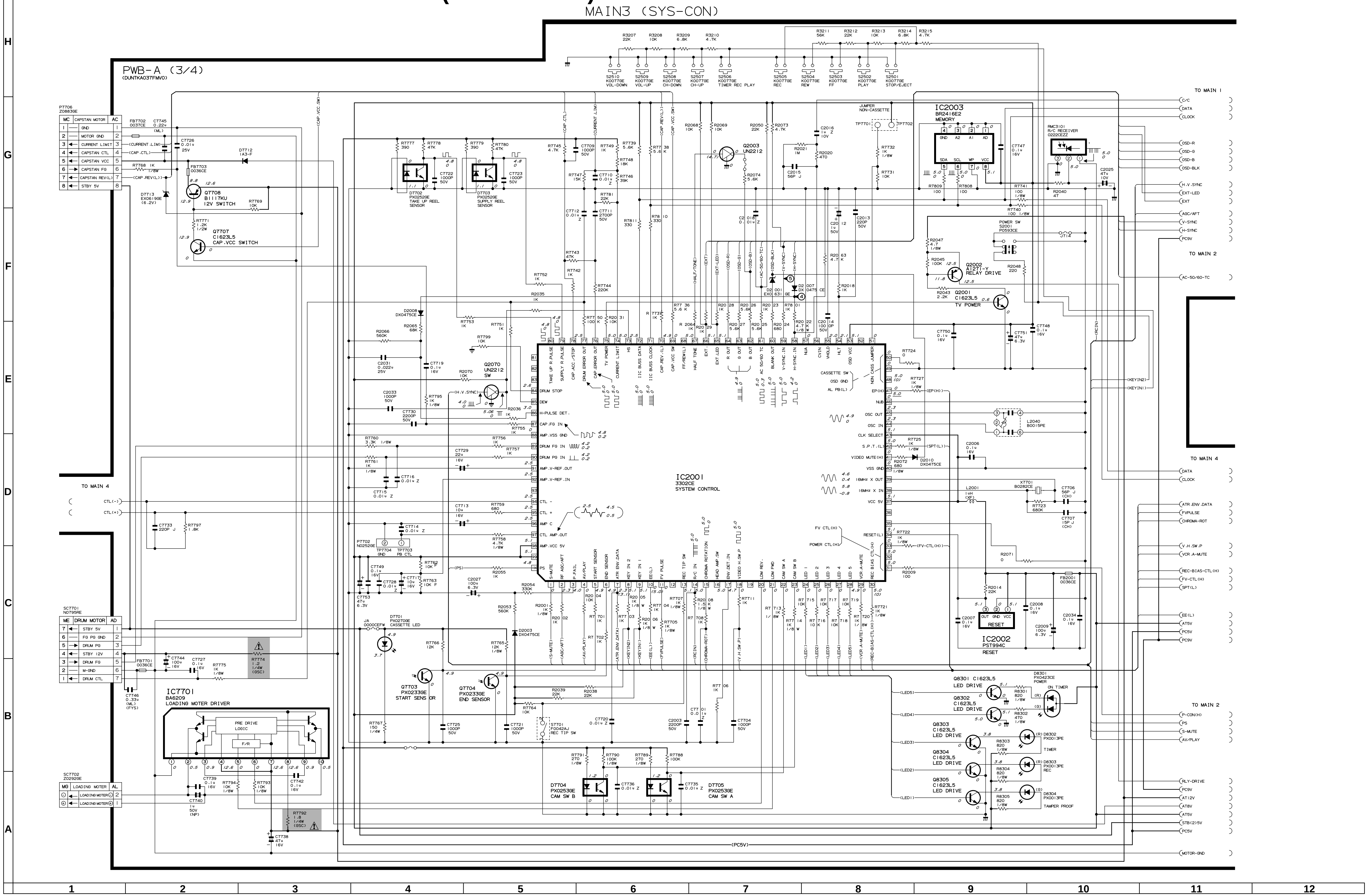
SCHEMATIC DIAGRAM : MAIN-2 Unit (TV Section)



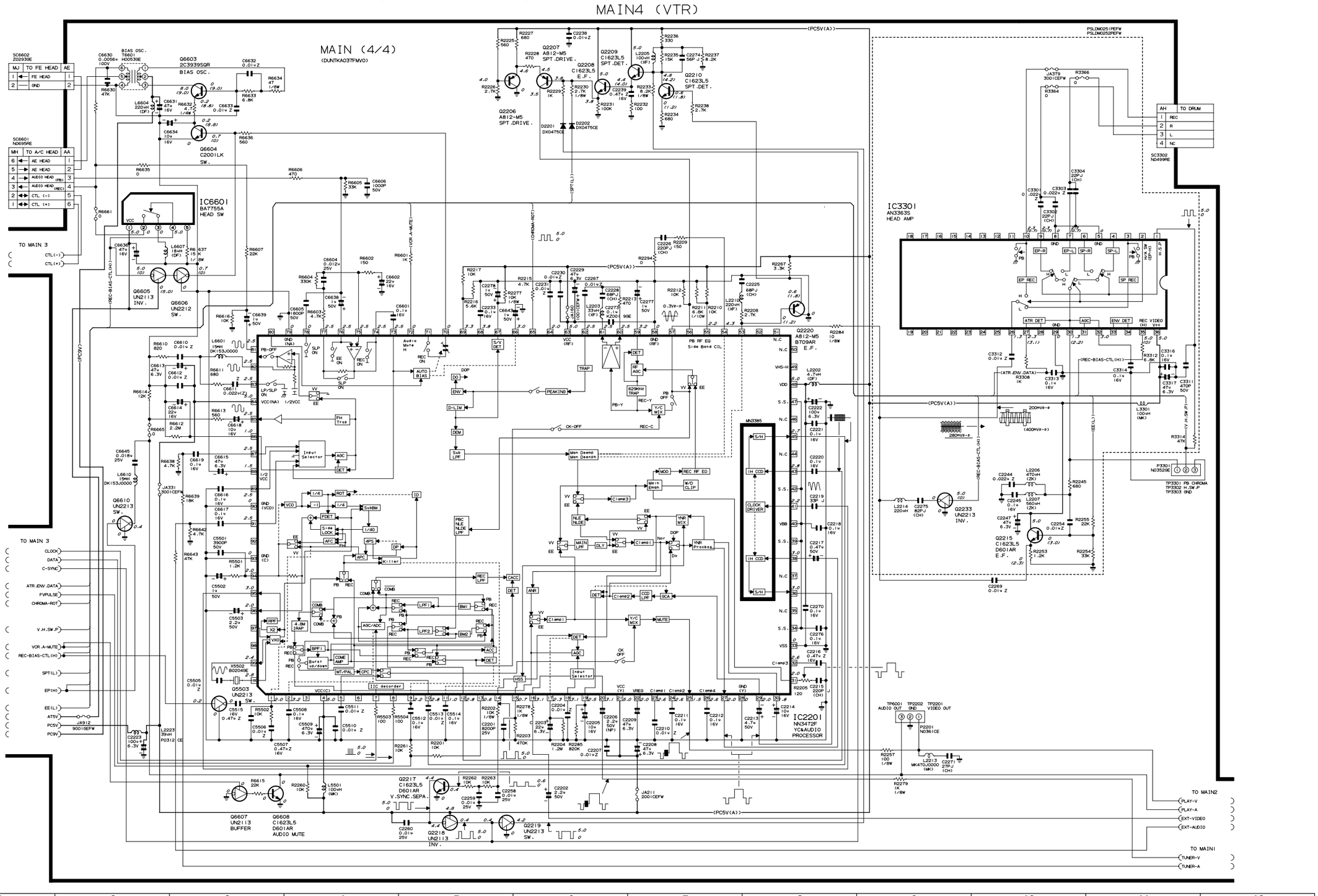
SCHEMATIC DIAGRAM : FRONT AV and POWER Unit (TV Section)



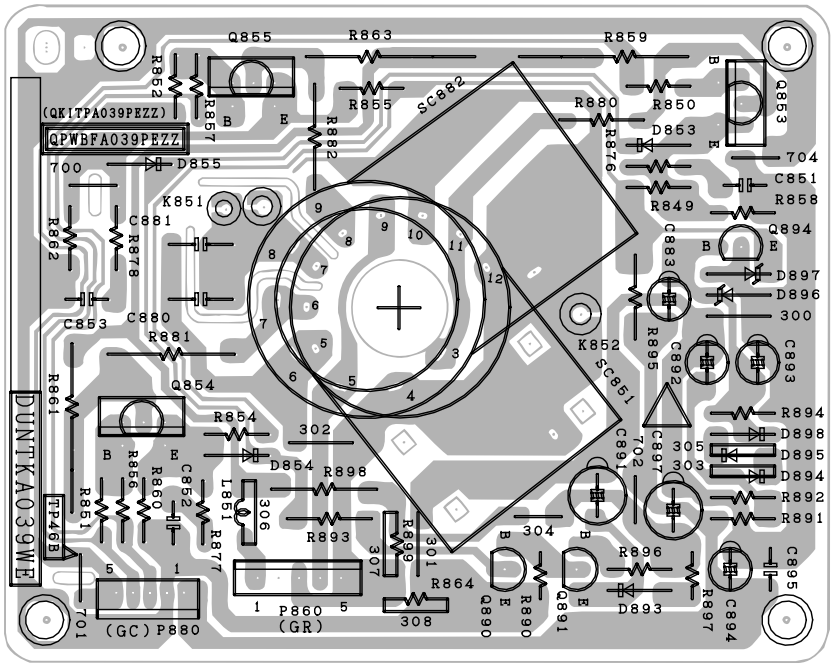
SCHEMATIC DIAGRAM : MAIN-3 Unit (VCR Section)



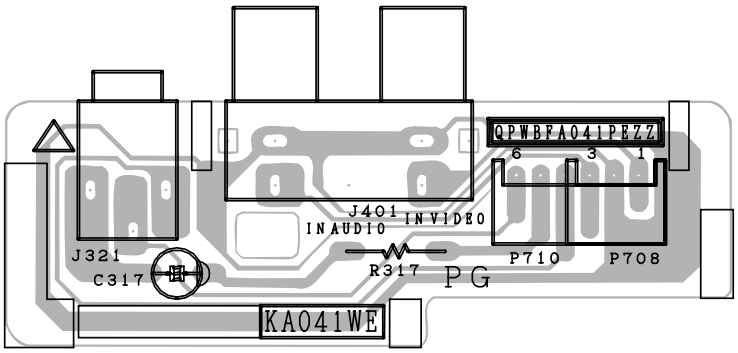
SCHEMATIC DIAGRAM : MAIN-4 Unit (VCR Section)



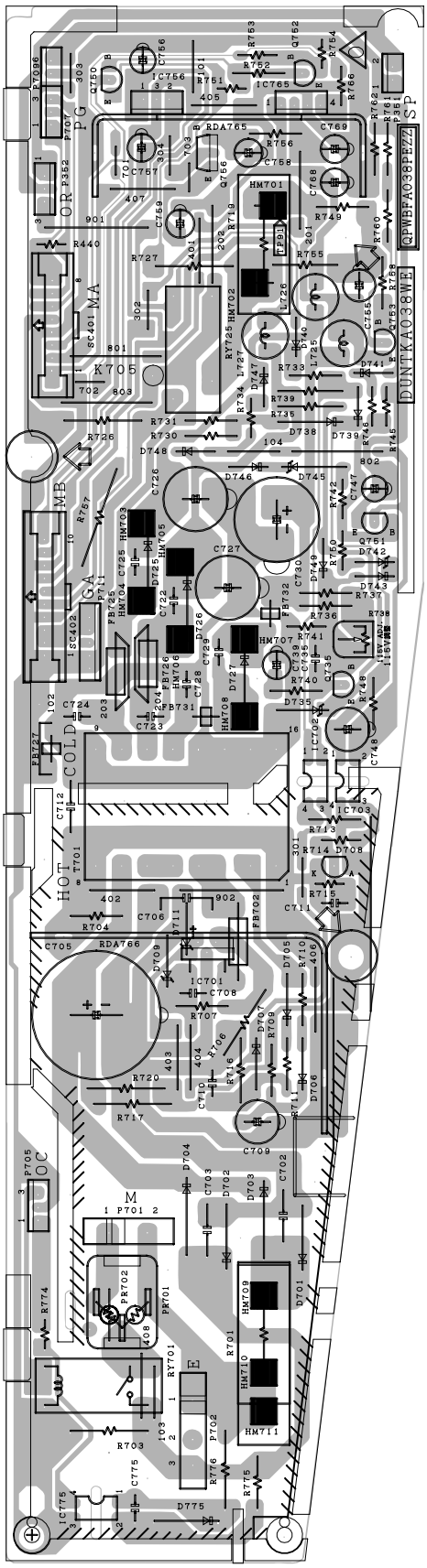
PRINTED WIRING BOARD ASSEMBLIES



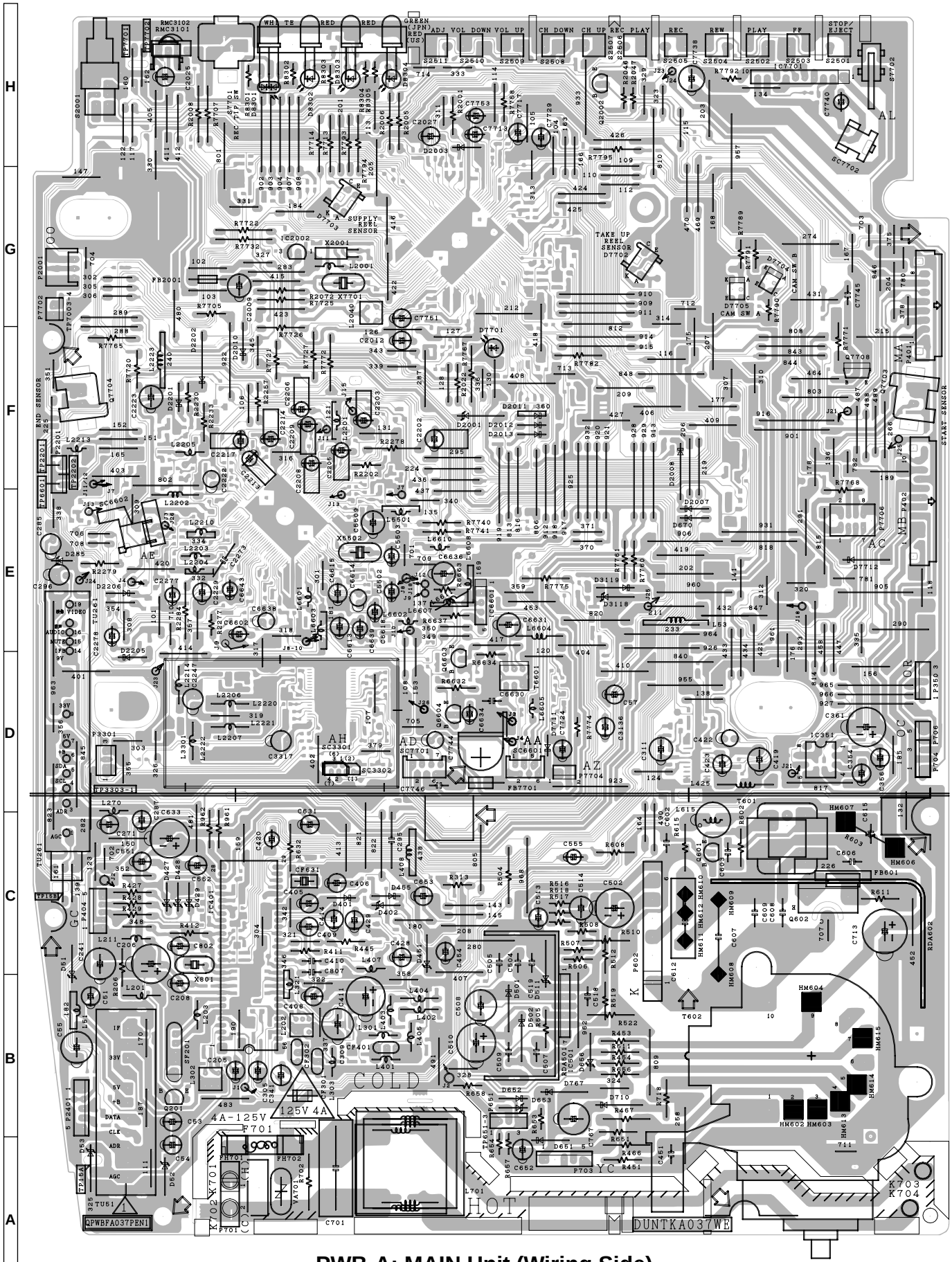
PWB-B: CRT Unit (Wiring Side)



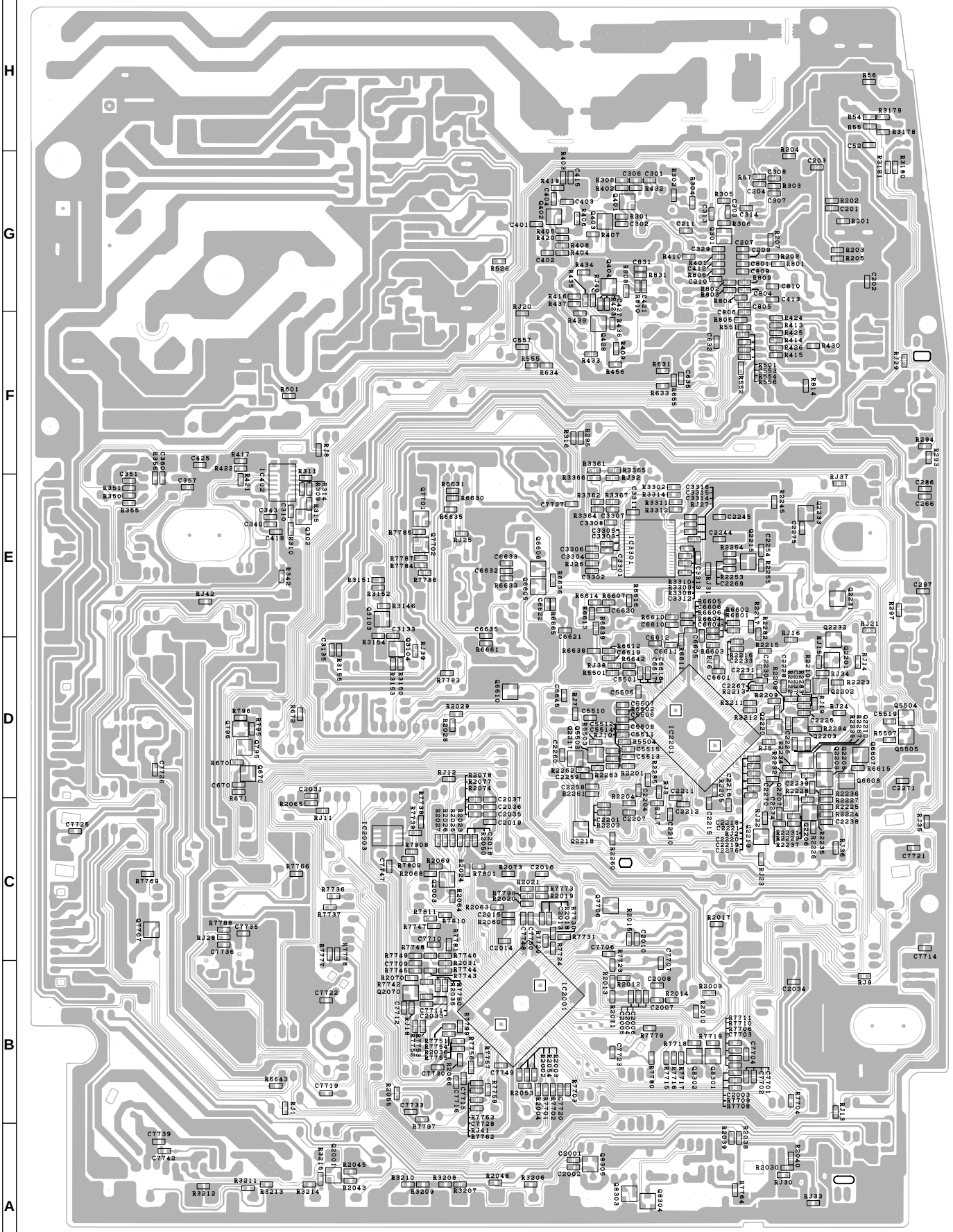
PWB-D: FRONT AV Unit (Wiring Side)



PWB-C: POWER Unit (Wiring Side)



PWB-A: MAIN Unit (Wiring Side)



PWB-A: MAIN Unit (Chip Parts Side)

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual ; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which dose no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER 2. REF. NO.
3. PART NO. 4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

★ MARK: SPARE PARTS-DELIVERY SECTION

▲ MARK: X-RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

▲⚠	VB34KPU02X/*S	R	CRT(DY601:H0149PEN1 or H0164PEN1)	BZ
	or			
	VB37GDA86X/1E		CRT(DY601:H0149PE or H0164PE)	
	or			
	VB34JLL40X/*S		CRT(DY601:H0163PE)	
	or			
	VB34JLL90X/*S		CRT(DY601:H0163PE)	
	or			
	VB370BVBK1S-S		CRT(DY601:H0140PE or H0160PE or H0140PEN1 or H0150PE)	
	or			
	VB370BVBK1U-S		CRT(DY601:H0140PE or H0160PE or H0140PEN1 or H0150PE)	
	or			
	VB34JFQ90X/*S		CRT(DY601:H0140PE or H0160PE or H0140PEN1 or H0150PE)	
▲⚠ DY601	RCiLH0149PEN1	R	DY(CRT:A34KPU02X)	BA
	or			
	RCiLH0164PEN1		DY(CRT:A34KPU02X)	
	or			
	RCiLH0149PEZZ		DY(CRT:37GDA86X)	
	or			
	RCiLH0164PEZZ		DY(CRT:37GDA86X)	
	or			
	RCiLH0163PEZZ		DY(CRT:A34JLL40X or A34JLL90X)	
	or			
	RCiLH0140PEZZ		DY(CRT:CPJ370BVBK1S or CPJ370BVBK1U or A34JFQ90X)	
	or			
	RCiLH0160PEZZ		DY(CRT:CPJ370BVBK1S or CPJ370BVBK1U or A34JFQ90X)	

LISTE DES PIECES

CHANGE DES PIECES

Les pi`eces de rechange qui pr élelesentent ces caract éleristiques sp éleciales de s élecurit éle, sont identifi élees dans ce manuel : les pi`eces élelectriques qui pr élesentent ces particularit éles, sont rep éler élee par la marque ⚠ et sont hachur élees dans les listes de pi`eces et dans les diagrammes sch élematiques.
La substitution d'une pi`ece de rechange par une autre qui ne pr éLesente pas les m éoemes caract éLeristiques de s élecurit éle que la pi`ece recommand élee parl'usine et dans ce manuel de service, peut provoquer une éLelectrocution, un incendie ou toutautre sinistre.

"COMMENT COMMANDER LES PIECES DE RECHANGE"

Pour que votre commande soit rapidement et correctement remplie, veuillez fournir les renseignements suivants.

1. NUMERO DU MODELE 2. NO. DE REF
3. NO. DE PIECE 4. DESCRIPTION

in **CANADA**: Contact SHARP Electronics of Canada Limited Phone (416) 890-2100

★ MARQUE: SECTION LIVRAISON DES PIECES DERECHANGE

▲ MARQUE: PIECES RELATIVE AUX RAYONS X

Ref. No.	Part No.	★	Description	Code
	or			
	RCiLH0140PEN1		DY(CRT:CPJ370BVBK1S or CPJ370BVBK1U or A34JFQ90X)	
	or			
	RCiLH0150PEZZ		DY(CRT:CPJ370BVBK1S or CPJ370BVBK1U or A34JFQ90X)	
⚠	RCiLG0403PEZZ	R	Degaussing Coil	AK

	CRT	DY			
COMBI-NATION	A34KPU02X	CILH0149PEN1	CILH0164PEN1		
	37GDA86X	CILH0149PE	CILH0164PE		
	A34JLL40X	CILH0163PE			
	A34JLL90X	CILH0163PE			
	CPJ370BVBK1S	CILH0140PE	CILH0160PE	CILH0140PEN1	CILH0150PE
	CPJ370BVBK1U				
	A34JFQ90X				

PRINTED WIRING BOARD ASSEMBLYS (NOT REPLACEMENT ITEM)

PWB-A	DUNTKA037FMV0 –	Main Unit	—
PWB-B	DUNTKA039WEV0 –	CRT Unit	—
PWB-C	DUNTKA038WEV0 –	Power Unit	—
PWB-D	DUNTKA041WEV0 –	Front AV Unit	—

PWB-A: DUNTKA037FMV0

MAIN Unit

TUNER

NOTE: THE PARTS HERES SHOWN ARE SUPPLIED AS AN ASSEMBLY NOT INDEPENEDENTLY.

Ref. No.	Part No.	★	Description	Code
⚠ TU51	VTUATEDH9005C	J	Tuner	BB

INTEGRATAD CIRCUITS

Ref. No.	Part No.	★	Description	Code
IC351	VHiAN7511//-1	J	AN7511	AK
▲⚠ IC401	RH-iX3253CEZZ	J	TA1268AN	AV
IC402	VHiM52055FP-1	J	M52055FP	AH
⚠ IC501	VHiLA7830//-1 or VHiTA8403K/-1	J	LA7830	AH
IC2001	RH-iX3302CEZZ	J	I.C.	AV
IC2002	VHiPST994C/-1	J	PST994C	AD
IC2003	VHiBR2416E2-1	J	BR24C16F	AK
IC2201	VHiNN3472F/-1	J	NN3472FAS	AX
IC3301	VHiAN3363S/-1	J	AN3363SB	AH
IC6601	VHiBA7755A/-1	J	BA7755A	AE
IC7701	VHiBA6209//1E	J	BA6209-V3	AG

TRANSISTORS

Ref. No.	Part No.	★	Description	Code
Q201	VS2SC1906//1E	J	2SC1906	AC
Q301	VS2SC1623L51E	J	2SC1623	AB
Q302	VS2SC1623L51E	J	2SC1623	AB
Q401	VS2SC1623L51E	J	2SC1623	AB
Q402	VS2SA812-M51E	J	2SA812	AC
Q403	VS2SC1623L51E	J	2SC1623	AB
Q404	VS2SA812-M51E	J	2SA812	AC
Q428	VS2SC1623L51E	J	2SC1623	AB
Q601	VS2SC2482//-1	J	2SC2482	AD
⚠ Q602	VS2SD2586//1E	J	2SD2586	AM
Q670	VS2SC1623L51E	J	2SC1623	AB
Q2001	VS2SC1623L51E	J	2SC1623	AB
Q2002	VS2SA1271-Y-1	J	2SA1271	AB
Q2003	VSUN2212///-1	J	UN2212	AA
Q2070	VSUN2212///-1	J	UN2212	AA
Q2206	VS2SA812-M51E	J	2SA812	AC
Q2207	VS2SA812-M51E	J	2SA812	AC
Q2208	VS2SC1623L51E	J	2SC1623	AB
Q2209	VS2SC1623L51E	J	2SC1623	AB
Q2210	VS2SC1623L51E	J	2SC1623	AB
Q2215	VS2SC1623L51E	J	2SC1623	AB
Q2217	VS2SC1623L51E	J	2SC1623	AB
Q2218	VSUN2113///-1	J	UN2113	AA
Q2219	VSUN2213///-1	J	UN2213	AA
Q2220	VS2SA812-M51E	J	2SA812	AC
Q2233	VSUN2213///-1	J	UN2213	AA
Q5503	VSUN2213///-1	J	UN2213	AA
Q5504	VSUN2213///-1	J	UN2213	AA
Q5505	VSUN2213///-1	J	UN2213	AA
Q6603	VS2C3939SQR-1	J	2C3939	AC
Q6604	VS2SC2001LK-1	J	2SC2001	AA
Q6605	VSUN2113///-1	J	UN2213	AA
Q6606	VSUN2212///-1	J	UN2212	AA
Q6607	VSUN2113///-1	J	UN2213	AA
Q6608	VS2SC1623L51E	J	2SC1623	AB
Q6610	VSUN2213///-1	J	UN2213	AA
Q7703	RH-PX0233GEZZ	J	PT493Fl2	AD
Q7704	RH-PX0233GEZZ	J	PT493Fl2	AD
Q7707	VS2SC1623L51E	J	2SC1623	AB
Q7708	VS2SB1117KU1E	J	2SB1117	AE
Q8301	VS2SC1623L51E	J	2SC1623	AB
Q8302	VS2SC1623L51E	J	2SC1623	AB
Q8303	VS2SC1623L51E	J	2SC1623	AB
Q8304	VS2SC1623L51E	J	2SC1623	AB
Q8305	VS2SC1623L51E	J	2SC1623	AB

DIODES

Ref. No.	Part No.	★	Description	Code
D51	RH-EX0619GEZZ	J	Zener Diode, 6.2V	AA
D52	RH-EX0207CEZZ	J	Zener Diode, 30V	AA
D401	RH-DX0475CEZZ	J	Diode	AB
D402	RH-EX0603GEZZ	J	Zener Diode, 3.8V	AA
D451	RH-EX0616GEZZ	J	Zener Diode, 5.6V	AA
D455	RH-DX0475CEZZ	J	Diode	AB
D501	RH-DX0441CEZZ	J	Diode	AC
⚠ D502	RH-DX0131CEZZ	J	Diode	AC
▲⚠ D651	VHD1SS82///1A	J	Diode	AC
▲⚠ D652	RH-DX0475CEZZ	J	Diode	AB
▲⚠ D653	RH-EX0628GEZZ	J	Zener Diode, 8.2V	AC
D656	RH-EX0631GEZZ	J	Zener Diode, 9.1V	AA
D670	RH-DX0475CEZZ	J	Diode	AB
⚠ D710	RH-DX0131CEZZ	J	Diode	AC
D2001	RH-EX0631GEZZ	J	Zener Diode	AA
D2003	RH-DX0475CEZZ	J	Diode	AB
D2007	RH-DX0475CEZZ	J	Diode	AB
D2008	RH-DX0475CEZZ	J	Diode	AB
D2010	RH-DX0475CEZZ	J	Diode	AB
D2201	RH-DX0475CEZZ	J	Diode	AB
D2202	RH-DX0475CEZZ	J	Diode	AB
D7701	RH-PX0270GEZZ	J	Photodiode	AC
D7702	RH-PX0252GEZZ	J	GP1S563	AF
D7703	RH-PX0252GEZZ	J	GP1S563	AF
D7704	RH-PX0253GEZZ	J	GP1S94	AF
D7705	RH-PX0253GEZZ	J	GP1S94	AF
D7712	VHD1A3-F///-1	J	Diode	AA
D8301	RH-PX0423CEZZ	J	Photodiode	AD
D8302	RH-PX0013PEZZ	R	Photodiode	AC
D8303	RH-PX0013PEZZ	R	Photodiode	AC
D8304	RH-PX0013PEZZ	R	Photodiode	AC
⚠ VA701	RH-VX0026CEZZ or RH-VX0019CEZZ or RH-VA0014CEZZ	J	Varistor	AC

PACKAGED CIRCUITS

Ref. No.	Part No.	★	Description	Code
X801	RCRSB0205CEZZ	J	Crystal	AF
X5502	RCRSB0204GEZZ	J	Crystal	AG
X7701	RCRSB0282CEZZ	J	Crystal	AG

FILTERS AND COILS

Ref. No.	Part No.	★	Description	Code
CF301	RFiLC0403CEZZ	J	Filter	AE
CF302	RFiLC0404CEZZ	J	Filter	AF
CF401	RFiLC0013CEZZ	J	Filter	AE
CF631	RFiLA0034CEZZ	J	Filter	AD
L51	VP-DF220K0000	J	Peaking 22µH	AB
L53	RCiLP0312CEZZ	J	Coil	AE
L201	VP-XF1R2K0000	J	Peaking 1.2µH	AB
L202	RCiLi0618CEZZ	J	Coil	AE
L203	VP-XFR56K0000	J	Peaking 0.56µH	AB
L211	VP-XF560K0000	J	Peaking 56µH	AB
L301	VP-XF8R2K0000	J	Peaking 8.2µH	AB
L302	RCiLi0617CEZZ	J	Coil	AD
L303	VP-XF220K0000	J	Peaking 22µH	AB
L401	VP-XF120K0000	J	Peaking 12µH	AB
L402	VP-XF2R7K0000	J	Peaking 2.7µH	AB
L403	VP-XF6R8K0000	J	Peaking 6.8µH	AB
L404	VP-XF8R2K0000	J	Peaking 8.2µH	AB
L408	VP-CF101K0000	J	Peaking 100µH	AB
L615	RCiLP0223CEZZ or RCiLP0270CEZZ or RCiLP0288CEZZ	J	Coil	AE
⚠ L701	RCiLF0069PEZZ or RCiLF0037PEZZ or RCiLF0070PEZZ	R	Coil	AG
L2001	VP-XF1R0K0000	J	Peaking 1µH	AB
L2040	RCiLB0015PEZZ	R	Oscillation Coil	AF
L2202	VP-DF4R7K0000	J	Peaking 4.7µH	AB
L2203	VP-XF330K0000	J	Peaking 33µH	AB
L2205	VP-XF101K0000	J	Peaking 100µH	AB
L2206	VP-ZK471K0000	J	Peaking 470µH	AB
L2207	VP-ZK561K0000	J	Peaking 560µH	AB

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MAIN Unit (Continued)

Ref. No.	Part No.	★	Description	Code
L2210	VP-XF221K0000	J	Peaking 220µH	AB
L2213	VP-MK470J0000	J	Peaking 47µH	AB
L2214	VP-XF221K0000	J	Peaking 220µH	AB
L2223	RCiLP0312CEZZ	J	Coil	AE
L3301	VP-MK101K0000	J	Peaking 100µH	AB
L5501	VP-MK101K0000	J	Peaking 100µH	AB
L6601	VPADK153J0000	J	Peaking 15mH	AC
L6604	VP-DF221K0000	J	Peaking 220µH	AB
L6607	VP-DF150K0000	J	Peaking 15µH	AB
L6610	VPADK153J0000	J	Peaking 15mH	AC
SF201	RFiLC0405CEZZ	J	Filter	AH

TRANSFORMERS

Ref. No.	Part No.	★	Description	Code
⚠ T601	RTRNZ0144PEZZ	R	Transformer	AE
▲⚠ T602	RTRNF0141PEZZ	R	H-Volt Transformer	BC
	or			
	RTRNF0155PEZZ			
	or			
	RTRNF0192PEZZ			
T6601	RTRNH0053GEZZ	J	Osc. Transformer	AE

CAPACITORS

[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

Ref. No.	Part No.	★				Code
C51	VCEA0A1CW476M	J	47	16V	EL.	AB
C52	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C53	VCEA0A1HW105M	J	1	50V	EL.	AB
C54	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C55	VCEA0A1CW477M	J	470	16V	EL.	AC
C57	VCEA0A0JW107M	J	100	6.3V	EL.	AB
C201	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C202	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C203	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C204	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C205	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C206	VCEA0A1CW477M	J	470	16V	EL.	AC
C207	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C208	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C209	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C210	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C211	VCCCCY1HH270J	J	27p	50V	Ceramic	AA
C241	VCEA0A1CW477M	J	470	16V	EL.	AC
C301	VCCCCY1HH470J	J	47p	50V	Ceramic	AA
C302	VCCCCY1HH151J	J	150p	50V	Ceramic	AA
C303	VCCCCY1HH560J	J	56p	50V	Ceramic	AA
C305	VCEA0A1HW105M	J	1	50V	EL.	AB
C306	VCCCCY1HH470J	J	47p	50V	Ceramic	AA
C307	VCCCCY1HH101J	J	100p	50V	Ceramic	AA
C308	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C309	VCEA0A1CW107M	J	100	16V	EL.	AC
C310	VCKYCY1CB223K	J	0.022	16V	Ceramic	AB
C311	VCEA0A1CW107M	J	100	16V	EL.	AC
C313	VCKYCY1HB682K	J	6800p	50V	Ceramic	AA
C314	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C340	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C341	VCE9GA1HW105M	J	1	50V	EL. (N.P)	AB
C351	VCKYCY1HB272K	J	2700p	50V	Ceramic	AA
C354	VCEA0A1HW105M	J	1	50V	EL.	AB
C356	VCEA0A1HW105M	J	1	50V	EL.	AB
C357	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C360	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C361	VCEA0A1CW477M	J	470	16V	EL.	AC
C401	VCCCCY1HH271J	J	270p	50V	Ceramic	AA
C402	VCCCCY1HH470J	J	47p	50V	Ceramic	AA
C403	VCCCCY1HH100D	J	10p	50V	Ceramic	AA
C405	VCEA0A1HW105M	J	1	50V	EL.	AB
C406	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C408	VCEA0A1CW106M	J	10	16V	EL.	AB
C409	VCEA0A1HW105M	J	1	50V	EL.	AB
C410	VCQYTA1HM104K	J	0.1	50V	Mylar	AC
C411	VCEA0A1CW108M	J	1000	16V	EL.	AD
C412	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C413	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C414	VCE9GA1HW105M	J	1	50V	EL. (N.P)	AB
C418	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C419	VCEA0A1CW476M	J	47	16V	EL.	AB
C420	VCE9GA1HW105M	J	1	50V	EL. (N.P)	AB
C422	VCEAKM1CW106MJ		10	16V	EL.	AB
C423	VCEA0A1CW106M	J	10	16V	EL.	AB
C428	VCEA9A1CW476M	J	47	16V	EL.	AB
C429	VCEA9A1CW106M	J	10	16V	EL.	AB
C451	VCQYTA2AA563K	J	0.056	100V	Mylar	AB
C454	VCEA0A1CW106M	J	10	16V	EL.	AB
C502	VCEA0A1VW477M	J	470	35V	EL.	AB
C504	VCKYPA2HB561K	J	560p	500V	Ceramic	AA
C505	VCQYTA1HM473K	J	0.047	50V	Mylar	AB
C507	VCQYTA1HM152K	J	1500p	50V	Mylar	AB
C508	VCEA0A1HW107M	J	100	50V	EL.	AB
C509	VCKYPA2HB102K	J	1000p	500V	Ceramic	AA
C510	VCEA0A1VW477M	J	470	35V	EL.	AB
C513	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C514	VCEACA1HC335J	J	3.3	50V	EL.	AC
C551	VCEACA1HC225J	J	2.2	50V	EL.	AC
C552	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C553	VCCCCY1HH391J	J	390p	50V	Ceramic	AA
C555	VCE9GA1HW105M	J	1	50V	EL. (N.P)	AB
C602	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C603	VCKYPA2HB102K	J	1000p	500V	Ceramic	AA
C606	VCKYPA1HB472K	J	4700p	50V	Ceramic	AA
▲⚠ C607	VCFPPD3CA682H	J	6800p	1600V	M-Poly	AE
C612	VCFPVC2DB474J	J	0.47	200V	M-Poly	AE
C631	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C632	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C633	VCEA0A1CW477M	J	470	16V	EL.	AC
C652	VCEA0A1HW106M	J	10	50V	EL.	AB
C653	VCEA0A1CW106M	J	10	16V	EL.	AB
C670	VCKYCY1EB183K	J	0.018	25V	Ceramic	AA
⚠ C701	RC-FZ012SGEZZ	J	0.22	AC250V	Special	AE
⚠ C713	RC-EZ0587CEZZ	J	33	200V	EL.	AF
	or					
	RC-EZ0580CEZZ		33	180V	EL.	
	or					
	RC-EZ0585CEZZ		33	160V	EL.	
	or					
	RC-EZ0586CEZZ		33	160V	EL.	
⚠ C767	VCEA0A2AW226M	J	22	100V	EL.	AC
C801	VCKYCY1EB223K	J	0.022	25V	Ceramic	AA
C802	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C804	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C805	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C806	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C807	VCKYPA1HF103Z	J	0.01	50V	Ceramic	AA
C809	VCCCCY1HH2R0C	J	2.0p	50V	Ceramic	AA
C810	VCCCCY1HH100D	J	10p	50V	Ceramic	AA
C2003	VCKYCY1HB222K	J	2200p	50V	Ceramic	AA
C2006	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2007	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2008	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2009	VCEAKA0JW107M	J	100	6.3V	EL.	AB
C2012	VCEAKA1HW105M	J	1	50V	EL.	AB
C2013	VCKYCY1HB221K	J	220p	50V	Ceramic	AA
C2014	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C2015	VCCCCY1HH560J	J	56p	50V	Ceramic	AA
C2016	VCKYCY1AF105Z	J	1	10V	Ceramic	AC
C2018	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2025	VCEA9A1AW476M	J	47	10V	EL.	AB
C2027	VCEA9A0JW107M	J	100	6.3V	EL.	AB
C2031	VCKYCY1EB223K	J	0.022	25V	Ceramic	AA
C2033	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C2034	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2201	VCKYCY1EB822K	J	8200p	25V	Ceramic	AA
C2202	VCEAKM1HW225MJ		2.2	50V	EL.	AB
C2203	VCEAKM0JW226M	J	22	6.3V	EL.	AB
C2204	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2205	VCEA9A1CW106M	J	10	16V	EL.	AB
C2206	VCE9EA1HW225M	J	2.2	50V	EL. (N.P)	AB
C2207	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2208	VCEAKM0JW476M	J	47	6.3V	EL.	AB
C2209	VCEA9A0JW476M	J	47	6.3V	EL.	AB

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MAIN Unit (Continued)

Ref. No.	Part No.	★			Description	Code
C2210	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2211	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2212	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2213	VCEA9A1HW475M	J	4.7	50V	EL.	AB
C2214	VCEA9A1CW106M	J	10	16V	EL.	AB
C2215	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C2216	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C2217	VCEA9A1HW474M	J	0.47	50V	EL.	AB
C2218	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2219	VCCCCY1HH330J	J	33p	50V	Ceramic	AA
C2220	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2221	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2222	VCEA9M0JW107M	J	100	6.3V	EL.	AB
C2223	VCEAKA0JW107M	J	100	6.3V	EL.	AB
C2225	VCCCCY1HH680J	J	68p	50V	Ceramic	AA
C2226	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C2228	VCCCCY1HH680J	J	68p	50V	Ceramic	AA
C2229	VCEA9A0JW476M	J	47	6.3V	EL.	AB
C2230	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2231	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2233	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2238	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2239	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C2244	VCKYCY1HF223Z	J	0.022	50V	Ceramic	AB
C2245	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2247	VCEAKM0JW476M	J	47	6.3V	EL.	AB
C2254	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2258	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C2259	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C2260	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C2267	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2269	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C2270	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2271	VCCCCY1HH270J	J	27p	50V	Ceramic	AA
C2273	RC-KZ0019GEZZ	J	0.1	25V	Ceramic	AA
C2274	VCCCCY1HH560J	J	56p	50V	Ceramic	AA
C2275	VCCCCY1HH820J	J	82p	50V	Ceramic	AA
C2276	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C2277	VCEA9A1HW105M	J	1	50V	EL.	AB
C2278	VCEA9A1HW105M	J	1	50V	EL.	AB
C3301	VCKYCY1HF223Z	J	0.022	50V	Ceramic	AB
C3302	VCCCCY1HH220J	J	22p	50V	Ceramic	AA
C3303	VCKYCY1HF223Z	J	0.022	50V	Ceramic	AB
C3304	VCCCCY1HH220J	J	22p	50V	Ceramic	AA
C3311	VCKYCY1HB471K	J	470p	50V	Ceramic	AA
C3312	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C3313	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C3314	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C3316	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C3317	VCEAKM0JW476M	J	47	6.3V	EL.	AB
C5501	VCKYCY1HB392K	J	3900p	50V	Ceramic	AA
C5502	VCEA9A1HW105M	J	1	50V	EL.	AB
C5503	VCEA9A1HW225M	J	2.2	50V	EL.	AB
C5505	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C5506	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C5507	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C5508	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C5509	VCEA0A0JW477M	J	470	6.3V	EL.	AC
C5510	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C5511	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C5512	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C5513	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C5514	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C5515	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C6601	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C6602	VCEA9A1CW226M	J	22	16V	EL.	AB
C6604	VCKYCY1EB123K	J	0.012	25V	Ceramic	AA
C6605	VCKYCY1HB182K	J	1800p	50V	Ceramic	AA
C6606	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C6610	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C6611	VCKYCY1HF223Z	J	0.022	50V	Ceramic	AB
C6612	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C6613	VCEAKA0JW476M	J	47	6.3V	EL.	AB
C6614	VCEAKM1CW226MJ		22	16V	EL.	AB
C6615	VCEA9A0JW476M	J	47	6.3V	EL.	AB
C6616	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C6617	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C6618	VCEA9A1CW106M	J	10	16V	EL.	AB
C6619	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C6630	VCQPSA2AA562J	J	5600p	100V	Polypro Film	AC
C6631	VCEA9A1CW476M	J	47	16V	EL.	AB
C6632	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C6633	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C6634	VCEA9A1CW106M	J	10	16V	EL.	AB
C6636	VCEA9A1CW476M	J	47	16V	EL.	AB
C6638	VCEA9M1HW105M	J	1	50V	EL.	AB
C6639	VCEA9A1HW105M	J	1	50V	EL.	AB
C6643	VCEA9A1HW105M	J	1	50V	EL.	AB
C6645	VCKYCY1EB183K	J	0.018	25V	Ceramic	AA
C7701	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7704	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7706	VCCCCY1HH560J	J	56p	50V	Ceramic	AA
C7707	VCCCCY1HH150J	J	15p	50V	Ceramic	AA
C7709	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7710	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7711	VCKYCY1HB272K	J	2700p	50V	Ceramic	AA
C7712	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7713	VCEA9A1CW106M	J	10	16V	EL.	AB
C7714	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7715	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7716	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7717	VCEA9A1CW106M	J	10	16V	EL.	AB
C7719	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7720	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7721	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7722	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7723	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7725	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C7726	VCKYCY1EB103K	J	0.01	25V	Ceramic	AA
C7727	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7728	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7729	VCEA9A1CW226M	J	22	16V	EL.	AB
C7730	VCKYCY1HB222K	J	2200p	50V	Ceramic	AA
C7733	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C7735	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7736	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C7738	VCEA9A1CW476M	J	47	16V	EL.	AB
C7739	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7740	VCE9EA1HW105M	J	1	50V	EL. (N.P)	AC
C7742	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7744	VCEA9M1CW107M	J	100	16V	EL.	AB
C7745	VCFYFA1HA224J	J	0.22	50V	Mylar	AB
C7746	VCFYFA1HA334J	J	0.33	50V	Mylar	AB
C7747	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7748	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7749	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7750	VCKYCY1CB104K	J	0.1	16V	Ceramic	AB
C7751	VCEAKA0JW476M	J	47	6.3V	EL.	AB
C7753	VCEA9A0JW476M	J	47	6.3V	EL.	AB

RESISTORS

[M-Ox.··· Metal Oxide, M-Film··· Metal Film]

RJ1	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ2	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ3	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ6	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ7	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ8	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ9	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ10	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ11	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ12	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ13	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ14	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ15	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ16	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ17	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
RJ18	VRN-MD2AL000J	J	0	1/10W	M-Film	AA

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MAIN Unit (Continued)

Ref. No.	Part No.	★			Description		Code
RJ19	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ22	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ23	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ25	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ26	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ27	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ28	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ29	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ30	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ31	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ36	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ38	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ39	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ40	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
RJ41	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
(Note: RJ1 to RJ41 are not listed in the schematic diagram but they are on the PWB as jumper.)							
R54	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R55	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R56	VRN-MD2AL823J	J	82k	1/10W	M-Film		AA
R57	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R201	VRN-MD2AL151J	J	150	1/10W	M-Film		AA
R202	VRN-MD2AL122J	J	1.2k	1/10W	M-Film		AA
R203	VRN-MD2AL562J	J	5.6k	1/10W	M-Film		AA
R204	VRN-MD2AL270J	J	27	1/10W	M-Film		AA
R205	VRN-MD2AL331J	J	330	1/10W	M-Film		AA
R206	VRD-RA2EE560J	J	56	1/4W	Carbon		AA
R207	VRN-MD2AL391J	J	390	1/10W	M-Film		AA
R208	VRN-MD2AL331J	J	330	1/10W	M-Film		AA
R297	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
R301	VRN-MD2AL562J	J	5.6k	1/10W	M-Film		AA
R302	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R303	VRN-MD2AL123J	J	12k	1/10W	M-Film		AA
R305	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R306	VRN-MD2AL222J	J	2.2k	1/10W	M-Film		AA
R308	VRN-MD2AL271J	J	270	1/10W	M-Film		AA
R310	VRN-MD2AL273J	J	27k	1/10W	M-Film		AA
R311	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R313	VRD-RA2BE471J	J	470	1/8W	Carbon		AA
R314	VRN-MD2AL471J	J	470	1/10W	M-Film		AA
R315	VRN-MD2AL391J	J	390	1/10W	M-Film		AA
R342	VRN-MD2AL273J	J	27k	1/10W	M-Film		AA
R350	VRN-MD2AL393J	J	39k	1/10W	M-Film		AA
R351	VRN-MD2AL223J	J	22k	1/10W	M-Film		AA
R355	VRN-MD2AL473J	J	47k	1/10W	M-Film		AA
R356	VRN-MD2AL473J	J	47k	1/10W	M-Film		AA
R401	VRN-MD2AL682J	J	6.8k	1/10W	M-Film		AA
R402	VRN-MD2AL331J	J	330	1/10W	M-Film		AA
R403	VRN-MD2AL331J	J	330	1/10W	M-Film		AA
R404	VRN-MD2AL222J	J	2.2k	1/10W	M-Film		AA
R405	VRN-MD2AL330J	J	33	1/10W	M-Film		AB
R406	VRN-MD2AL680J	J	68	1/10W	M-Film		AA
R407	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R408	VRN-MD2AL471J	J	470	1/10W	M-Film		AA
R409	VRN-MD2AL123J	J	12k	1/10W	M-Film		AA
R410	VRN-MD2AL823J	J	82k	1/10W	M-Film		AA
R411	VRD-RA2BE104J	J	100k	1/8W	Carbon		AA
R412	VRD-RA2EE561J	J	560	1/4W	Carbon		AA
R413	VRN-MD2AL470J	J	47	1/10W	M-Film		AA
R414	VRN-MD2AL470J	J	47	1/10W	M-Film		AA
R415	VRN-MD2AL470J	J	47	1/10W	M-Film		AA
R416	VRN-MD2AL222J	J	2.2k	1/10W	M-Film		AA
R417	VRN-MD2AL122J	J	1.2k	1/10W	M-Film		AA
R418	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
R421	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R422	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R423	VRN-MD2AL152J	J	1.5k	1/10W	M-Film		AA
R424	VRN-MD2AL182J	J	1.8k	1/10W	M-Film		AA
R425	VRN-MD2AL182J	J	1.8k	1/10W	M-Film		AA
R426	VRN-MD2AL182J	J	1.8k	1/10W	M-Film		AA
R427	VRD-RA2EE101J	J	100	1/4W	Carbon		AA
R428	VRD-RA2EE101J	J	100	1/4W	Carbon		AA
R429	VRD-RA2EE101J	J	100	1/4W	Carbon		AA
R433	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
R434	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R435	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R436	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R437	VRN-MD2AL333J	J	33k	1/10W	M-Film		AA
R439	VRN-MD2AL472J	J	4.7k	1/10W	M-Film		AA
R445	VRD-RA2BE122J	J	1.2k	1/8W	Carbon		AA
⚠ R451	VRS-SV2HC103J	J	10k	1/2W	M-Ox.		AA
R453	VRD-RA2EE474J	J	470k	1/4W	Carbon		AA
R454	VRD-RA2EE184J	J	180k	1/4W	Carbon		AA
R456	VRN-MD2AL273J	J	27k	1/10W	M-Film		AA
⚠ R466	VRN-VV3AB1R5J	J	1.5	1W	M-Film		AA
R501	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R504	VRD-RA2BE471J	J	470	1/8W	Carbon		AA
R505	VRD-RA2BE101J	J	100	1/8W	Carbon		AB
R506	VRD-RA2BE683G	J	68k	1/8W	Carbon		AA
R507	VRD-RA2BE104G	J	100k	1/8W	Carbon		AA
R508	VRD-RA2BE683J	J	68k	1/8W	Carbon		AA
R510	VRN-VV3AB1R0J	J	1	1W	M-Film		AA
⚠ R511	VRN-GA2EB1R0J	J	1	1/4W	M-Film		AA
R512	VRD-RM2HD561J	J	560	1/2W	Carbon		AA
R516	VRD-RA2BE153G	J	15k	1/8W	Carbon		AA
R517	VRD-RA2BE223G	J	22k	1/8W	Carbon		AA
R518	VRD-RA2BE154J	J	150k	1/8W	Carbon		AA
R519	VRD-RM2HD681J	J	680	1/2W	Carbon		AA
R526	VRN-MD2AL183J	J	18k	1/10W	M-Film		AA
R551	VRN-MD2AL472J	J	4.7k	1/10W	M-Film		AA
R552	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R554	VRN-MD2AL393J	J	39k	1/10W	M-Film		AA
R555	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R601	VRN-MD2AL331J	J	330	1/10W	M-Film		AA
R602	VRD-RM2HD392J	J	3.9k	1/2W	Carbon		AA
⚠ R603	VRS-KT3LB222J	J	2.2k	3W	M-Ox.		AC
R608	VRD-RA2BE331J	J	330	1/8W	Carbon		AA
R611	VRD-RA2EE220J	J	22	1/4W	Carbon		AA
⚠ R615	VRS-VV3AB271J	J	270	1W	M-Ox.		AA
R631	VRN-MD2AL391J	J	390	1/10W	M-Film		AA
R632	VRD-RA2BE272J	J	2.7k	1/8W	Carbon		AA
R633	VRN-MD2AL472J	J	4.7k	1/10W	M-Film		AA
▲⚠ R651	VRD-RM2HD680J	J	68	1/2W	Carbon		AA
▲⚠ R653	VRD-RA2BE822G	J	8.2k	1/8W	Carbon		AA
▲⚠ R654	VRD-RA2BE103G	J	10k	1/8W	Carbon		AA
▲⚠ R655	VRN-MD2AL104J	J	100k	1/10W	M-Film		AA
R656	VRD-RM2HD123J	J	12k	1/2W	Carbon		AA
R670	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R671	VRN-MD2AL332J	J	3.3k	1/10W	M-Film		AA
R672	VRN-MD2AL682J	J	6.8k	1/10W	M-Film		AA
⚠ R702	RR-DZ0049CEZZ	J	3.9M	1/2W	Solid		AB
⚠ R718	VRN-GA2EB1R0J	J	1	1/4W	M-Film		AA
R801	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R802	VRN-MD2AL392J	J	3.9k	1/10W	M-Film		AA
R803	VRN-MD2AL272J	J	2.7k	1/10W	M-Film		AA
R804	VRN-MD2AL272J	J	2.7k	1/10W	M-Film		AA
R805	VRN-MD2AL272J	J	2.7k	1/10W	M-Film		AA
R806	VRN-MD2AL333J	J	33k	1/10W	M-Film		AA
R808	VRN-MD2AL000J	J	0	1/10W	M-Film		AA
R809	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R810	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R961	VRD-RA2BE101J	J	100	1/8W	Carbon		AB
R962	VRD-RA2BE101J	J	100	1/8W	Carbon		AB
R2001	VRD-RA2BE102J	J	1k	1/8W	Carbon		AA
R2002	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R2004	VRN-MD2AL103J	J	10k	1/10W	M-Film		AA
R2005	VRD-RA2BE102J	J	1k	1/8W	Carbon		AA
R2006	VRD-RA2BE102J	J	1k	1/8W	Carbon		AA
R2008	VRD-RA2BE152J	J	1.5k	1/8W	Carbon		AA
R2009	VRN-MD2AL101J	J	100	1/10W	M-Film		AA
R2014	VRN-MD2AL223J	J	22k	1/10W	M-Film		AA
R2018	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R2020	VRN-MD2AL471J	J	470	1/10W	M-Film		AA
R2021	VRN-MD2AL105J	J	1M	1/10W	M-Film		AA
R2022	VRD-RA2BE472J	J	4.7k	1/8W	Carbon		AA
R2023	VRN-MD2AL102J	J	1k	1/10W	M-Film		AA
R2024	VRN-MD2AL681J	J	680	1/10W	M-Film		AA
R2025	VRN-MD2AL562J	J	5.6k	1/10W	M-Film		AA

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MAIN Unit (Continued)

Ref. No.	Part No.	★				Code
R2026	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R2027	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R2028	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2029	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2031	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2035	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2036	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2038	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R2039	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R2040	VRN-MD2AL470J	J	47	1/10W	M-Film	AA
R2043	VRN-MD2AL222J	J	2.2k	1/10W	M-Film	AA
R2045	VRN-MD2AL104J	J	100k	1/10W	M-Film	AA
R2047	VRD-RA2BE4R7J	J	4.7	1/8W	Carbon	AA
R2048	VRN-MD2AL221J	J	220	1/10W	M-Film	AA
R2050	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R2053	VRN-MD2AL564J	J	560k	1/10W	M-Film	AA
R2054	VRN-MD2AL334J	J	330k	1/10W	M-Film	AC
R2055	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2063	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R2064	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2065	VRN-MD2AL683J	J	68k	1/10W	M-Film	AA
R2066	VRN-MD2AL564J	J	560k	1/10W	M-Film	AA
R2068	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2069	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2070	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2071	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R2072	VRD-RA2BE681J	J	680	1/8W	Carbon	AA
R2073	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R2074	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R2201	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2202	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R2203	VRN-MD2AL474J	J	470k	1/10W	M-Film	AA
R2204	VRS-CY1JF125J	J	1.2M	1/16W	M-Ox.	AA
R2205	VRN-MD2AL121J	J	120	1/10W	M-Film	AA
R2208	VRN-MD2AL272J	J	2.7k	1/10W	M-Film	AA
R2209	VRN-MD2AL151J	J	150	1/10W	M-Film	AA
R2210	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2211	VRN-MD2AL682J	J	6.8k	1/10W	M-Film	AA
R2212	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2213	VRN-MD2AL471J	J	470	1/10W	M-Film	AA
R2215	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R2216	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R2217	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2225	VRN-MD2AL561J	J	560	1/10W	M-Film	AA
R2226	VRN-MD2AL272J	J	2.7k	1/10W	M-Film	AA
R2227	VRN-MD2AL681J	J	680	1/10W	M-Film	AA
R2228	VRN-MD2AL471J	J	470	1/10W	M-Film	AA
R2229	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R2230	VRD-RA2BE272J	J	2.7k	1/8W	Carbon	AA
R2231	VRN-MD2AL104J	J	100k	1/10W	M-Film	AA
R2232	VRN-MD2AL101J	J	100	1/10W	M-Film	AA
R2233	VRD-RA2BE822J	J	8.2k	1/8W	Carbon	AA
R2234	VRN-MD2AL681J	J	680	1/10W	M-Film	AA
R2235	VRN-MD2AL153J	J	15k	1/10W	M-Film	AA
R2236	VRN-MD2AL331J	J	330	1/10W	M-Film	AA
R2237	VRN-MD2AL822J	J	8.2k	1/10W	M-Film	AA
R2238	VRN-MD2AL272J	J	2.7k	1/10W	M-Film	AA
R2245	VRN-MD2AL681J	J	680	1/10W	M-Film	AA
R2253	VRN-MD2AL122J	J	1.2k	1/10W	M-Film	AA
R2254	VRN-MD2AL333J	J	33k	1/10W	M-Film	AA
R2255	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R2257	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R2260	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2261	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2262	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2263	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R2267	VRN-MD2AL332J	J	3.3k	1/10W	M-Film	AA
R2277	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R2278	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R2279	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R2284	VRD-RA2BE100J	J	10	1/8W	Carbon	AA
R2285	VRN-MD2AL824J	J	820k	1/10W	M-Film	AA
R2294	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R3178	VRN-MD2AL221J	J	220	1/10W	M-Film	AA
R3179	VRN-MD2AL221J	J	220	1/10W	M-Film	AA
R3180	VRN-MD2AL221J	J	220	1/10W	M-Film	AA
R3181	VRN-MD2AL221J	J	220	1/10W	M-Film	AA
R3207	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R3208	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R3209	VRN-MD2AL682J	J	6.8k	1/10W	M-Film	AA
R3210	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R3211	VRN-MD2AL563J	J	56k	1/10W	M-Film	AA
R3212	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R3213	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R3214	VRN-MD2AL682J	J	6.8k	1/10W	M-Film	AA
R3215	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R3308	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R3312	VRN-MD2AL682J	J	6.8k	1/10W	M-Film	AA
R3314	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R3364	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R3366	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R5501	VRN-MD2AL122J	J	1.2k	1/10W	M-Film	AA
R5502	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R5503	VRN-MD2AL101J	J	100	1/10W	M-Film	AA
R5504	VRN-MD2AL101J	J	100	1/10W	M-Film	AA
R6601	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R6602	VRN-MD2AL151J	J	150	1/10W	M-Film	AA
R6603	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R6604	VRN-MD2AL334J	J	330k	1/10W	M-Film	AC
R6605	VRN-MD2AL333J	J	33k	1/10W	M-Film	AA
R6606	VRN-MD2AL471J	J	470	1/10W	M-Film	AA
R6607	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R6610	VRN-MD2AL821J	J	820	1/10W	M-Film	AA
R6611	VRN-MD2AL681J	J	680	1/10W	M-Film	AA
R6612	VRS-CY1JF225J	J	2.2M	1/16W	M-Ox.	AA
R6613	VRN-MD2AL561J	J	560	1/10W	M-Film	AA
R6614	VRN-MD2AL123J	J	12k	1/10W	M-Film	AA
R6615	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R6616	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R6630	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R6632	VRD-RA2EE4R7J	J	4.7	1/4W	Carbon	AA
R6633	VRN-MD2AL682J	J	6.8k	1/10W	M-Film	AA
R6634	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
R6635	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R6636	VRN-MD2AL561J	J	560	1/10W	M-Film	AA
R6637	VRD-RA2BE153J	J	15k	1/8W	Carbon	AA
R6638	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R6639	VRN-MD2AL183J	J	18k	1/10W	M-Film	AA
R6642	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R6643	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R6661	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R6665	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R7701	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7702	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7703	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7704	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7705	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7706	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7707	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7708	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7711	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7713	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7714	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7715	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7716	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7717	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7718	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7719	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7720	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7721	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7722	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7723	VRN-MD2AL684J	J	680k	1/10W	M-Film	AA
R7724	VRN-MD2AL000J	J	0	1/10W	M-Film	AA
R7725	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7727	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7731	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7732	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7736	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA

PWB-A: DUNTKA037FMV0

MAIN Unit (Continued)

Ref. No.	Part No.	★	Description			Code
R7737	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7738	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R7739	VRN-MD2AL562J	J	5.6k	1/10W	M-Film	AA
R7740	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R7741	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R7742	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7743	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R7744	VRN-MD2AL224J	J	220k	1/10W	M-Film	AA
R7745	VRN-MD2AL472J	J	4.7k	1/10W	M-Film	AA
R7746	VRN-MD2AL393J	J	39k	1/10W	M-Film	AA
R7747	VRN-MD2AL153J	J	15k	1/10W	M-Film	AA
R7748	VRN-MD2AL183J	J	18k	1/10W	M-Film	AA
R7749	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7750	VRN-MD2AL104J	J	100k	1/10W	M-Film	AA
R7751	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7752	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7753	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7755	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7756	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7757	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7758	VRD-RA2BE472J	J	4.7k	1/8W	Carbon	AA
R7759	VRN-MD2AL681J	J	680	1/10W	M-Film	AA
R7760	VRD-RA2BE332J	J	3.3k	1/8W	Carbon	AA
R7761	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7762	VRN-MD2AL103F	J	10k	1/10W	M-Film	AA
R7763	VRN-MD2AL103F	J	10k	1/10W	M-Film	AA
R7764	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7765	VRD-RA2BE123J	J	12k	1/8W	Carbon	AA
R7766	VRN-MD2AL123J	J	12k	1/10W	M-Film	AA
R7767	VRD-RA2EE151J	J	150	1/4W	Carbon	AA
R7768	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7769	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7771	VRD-RM2HD122J	J	1.2k	1/2W	Carbon	AA
⚠ R7774	VRG-SC2EB1R2J	J	1.2	1/4W	Fuse Resistor	AB
R7775	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7777	VRN-MD2AL391J	J	390	1/10W	M-Film	AA
R7778	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R7779	VRN-MD2AL391J	J	390	1/10W	M-Film	AA
R7780	VRN-MD2AL473J	J	47k	1/10W	M-Film	AA
R7781	VRN-MD2AL223J	J	22k	1/10W	M-Film	AA
R7788	VRN-MD2AL104J	J	100k	1/10W	M-Film	AA
R7789	VRD-RA2BE271J	J	270	1/8W	Carbon	AA
R7790	VRD-RA2BE104J	J	100k	1/8W	Carbon	AA
R7791	VRD-RA2BE271J	J	270	1/8W	Carbon	AA
⚠ R7792	VRG-SC2EB1R8J	J	1.8	1/4W	Fuse Resistor	AE
R7793	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R7794	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R7795	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R7797	VRN-MD2AL182J	J	1.8k	1/10W	M-Film	AA
R7799	VRN-MD2AL103J	J	10k	1/10W	M-Film	AA
R7801	VRN-MD2AL102J	J	1k	1/10W	M-Film	AA
R7808	VRN-MD2AL101J	J	100	1/10W	M-Film	AA
R7809	VRN-MD2AL101J	J	100	1/10W	M-Film	AA
R7810	VRN-MD2AL331J	J	330	1/10W	M-Film	AA
R7811	VRN-MD2AL331J	J	330	1/10W	M-Film	AA
R8301	VRD-RA2BE821J	J	820	1/8W	Carbon	AA
R8302	VRD-RA2BE471J	J	470	1/8W	Carbon	AA
R8303	VRD-RA2BE821J	J	820	1/8W	Carbon	AA
R8304	VRD-RA2BE821J	J	820	1/8W	Carbon	AA
R8305	VRD-RA2BE821J	J	820	1/8W	Carbon	AA

SWITCHES

S2001	QSW-P0593CEZZ	J	Power	AE
S2501	QSW-K0077GEZZ	J	Stop/Eject	AB
S2502	QSW-K0077GEZZ	J	Play	AB
S2503	QSW-K0077GEZZ	J	FF	AB
S2504	QSW-K0077GEZZ	J	REW	AB
S2505	QSW-K0077GEZZ	J	REC	AB
S2506	QSW-K0077GEZZ	J	Timer Rec Play	AB
S2507	QSW-K0077GEZZ	J	CH-Up	AB
S2508	QSW-K0077GEZZ	J	CH-Down	AB
S2509	QSW-K0077GEZZ	J	Vol-Up	AB
S2510	QSW-K0077GEZZ	J	Vol-Down	AB

MISCELLANEOUS PARTS

⚠ F701	QFS-B4023CEZZ or QFS-A4021GEZZ	J	Fuse 4A	AC
FB2001	RBLN-0036CEZZ	J	Ferrite Bead	AB
FB7701	RBLN-0036CEZZ	J	Ferrite Bead	AB
FH701	QFSHD1013CEZZ	J	Fuse Holder	AC
FH702	QFSHD1014CEZZ	J	Fuse Holder	AC
P350	QPLGN0361CEZZ	J	Plug, 3-pin (OR)	AB
P401	QPLGZ0840CEZZ	J	Plug, 8-pin (MA)	AF
P402	QPLGZ1040CEZZ	J	Plug, 10-pin (MB)	AE
P404	QPLGN0578GEZZ	J	Plug, 5-pin (GC)	AB
P602	QPLGN0603CEZZ	J	Plug, 6-pin (K)	AB
P651	QPLGN0361CEZZ	J	Plug, 3-pin (TP651-3)	AB
P703	QPLGN0561CEZZ	J	Plug, 5-pin (GR)	AB
P2201	QPLGN0361CEZZ	J	Plug, 3-pin (TP2201-2, TP6001)	AB
P2401	QPLGN0561CEZZ	J	Plug, 5-pin	AB
P3301	QPLGN0352GEZZ	J	Plug, 3-pin (TP3302-4)	AA
P7702	QPLGN0252GEZZ	J	Plug, 2-pin (TP7703-4)	AA
P7706	QPLGZ0883GEZZ	J	Plug, 8-pin (AC)	AD
SC3302	QSOCN0499REZZ	J	Socket, 4-pin (AH)	AC
SC6601	QSOCN0695REZZ	J	Socket, 6-pin (AA)	AB
SC6602	QSOCZ0293GEZZ	J	Socket, 2-pin (AE)	AC
SC7701	QSOCN0795REZZ	J	Socket, 7-pin (AD)	AC
SC7702	QSOCZ0292GEZZ	J	Socket, 2-pin (AL)	AC
RMC3101	RRMCU0222CEZZ	J	R/C Receiver	AL
RDA602	PRDAR0219PEFW	R	Heat Sink, for Q602	AE
RDA501	PRDAR0242PEFW or PRDAR0146PEFW	R	Heat Sink, for IC501	AE
	PSLDM0251PEFW	R	Shield	AD
	PSLDM0252PEFW	R	Shield	AD
	QCNW-2205PEZZ	R	Connecting Cord (E)	AE
	QCNW-5509PEN3	R	Connecting Cord (OC)	AD
	LHLDP1057PEZZ	R	Holder	AD
	LHLDZ1962AJ00	J	Holder	AD
	LX-BZ3100CEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA
	LX-TZ3004CEFD	J	Screw	AA

PWB-B: DUNTKA039WEV0
CRT Unit

TRANSISTORS

Ref. No.	Part No.	★	Description	Code
Q853	VS2SC2229O/1E	J	2SC2229O	AD
Q854	VS2SC2229O/1E	J	2SC2229O	AD
Q855	VS2SC2229O/1E	J	2SC2229O	AD
Q894	VS2SA1266-Y-1	J	VS2SA1266	AA

DIODE

Ref. No.	Part No.	★	Description	Code
D898	RH-DX0475CEZZ	J	Diode	AB

CAPACITORS
[EL.··· Electrolytic]

Ref. No.	Part No.	★				Code
C851	VCCCPA1HH271J	J	270p	50V	Ceramic	AB
C852	VCCCPA1HH271J	J	270p	50V	Ceramic	AB
C853	VCCCPA1HH221J	J	220p	50V	Ceramic	AB
C880	RC-KZ0016CEZZ	J	0.01	1.4kV	Ceramic	AC
C892	VCEA0A1HW106M	J	10	50V	EL.	AB
C893	VCEA0A1HW106M	J	10	50V	EL.	AB
C894	VCEA0A1CW476M	J	47	16V	EL.	AB
C895	VCKYPA1HF103Z	J	0.01	50V	Ceramic	AA

RESISTORS
[M-Ox.··· Metal Oxide]

Ref. No.	Part No.	★				Code
R849	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R850	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
R854	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R855	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R856	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
R857	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
⚠ R859	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
⚠ R861	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
⚠ R863	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
R876	VRD-RA2BE121J	J	120	1/8W	Carbon	AA
R877	VRD-RA2BE121J	J	120	1/8W	Carbon	AA
R878	VRD-RA2BE121J	J	120	1/8W	Carbon	AA
R880	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
R881	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
R882	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
R891	VRD-RA2BE102J	J	1.0k	1/8W	Carbon	AA
R892	VRD-RA2BE181J	J	180	1/8W	Carbon	AA
R894	VRD-RA2BE221J	J	220	1/8W	Carbon	AA
R895	VRD-RA2EE102J	J	1.0k	1/4W	Carbon	AA

MISCELLANEOUS PARTS

Ref. No.	Part No.	★	Description	Code
P860	QPLGN0561CEZZ	J	Plug, 5-pin (GR)	AB
P880	QPLGN0578GEZZ	J	Plug, 5-pin (GC)	AB
SC882	QSOCV0842CEZZ	J	CRT Socket, 8-pin	AH
	or			
	QSOCV0839CEZZ			
	QCNW-2418PEZZ	R	Connecting Cord (GC)	AE
	QCNW-5030PEN5	R	Connecting Cord (GR)	AE

PWB-C: DUNTKA038WEV0
POWER Unit

INTEGRATED CIRCUIT

Ref. No.	Part No.	★	Description	Code
⚠ IC701	VHiSTRG6624-1	J	STRG6624	AR
⚠ IC702	RH-FX0029CEZZ	J	FX0029CE	AE
	or			
	RH-FX0018CEZZ			
⚠ IC703	RH-FX0029CEZZ	J	FX0029CE	AE
	or			
	RH-FX0018CEZZ			
IC756	VHiBA005T//-1	J	BA005T	AF
IC765	VHiPQ09RD11-1	J	PQ09RD11	AG
⚠ IC775	RH-FX0047CEZZ	J	PC817	AD

TRANSISTORS

Ref. No.	Part No.	★	Description	Code
Q735	VS2SC3198-Y-1	J	2SC3198YY	AA
Q750	VSKTA1024-Y-1	J	KTA1024-Y	AD
Q751	VS2SC3198-Y-1	J	2SC3198-Y	AA
Q752	VS2SC2229O/1E	J	2SC2229O	AD
Q753	VS2SA949Y//2E	J	2SA949Y	AC
Q756	VS2SD471-KL1E	J	2SD471-KL	AC

DIODES

Ref. No.	Part No.	★	Description	Code
⚠ D701	RH-DX0490CEZZ	J	Diode	AC
	or			
	RH-DX0154CEZZ			
⚠ D702	RH-DX0490CEZZ	J	Diode	AC
	or			
	RH-DX0154CEZZ			
⚠ D703	RH-DX0490CEZZ	J	Diode	AC
	or			
	RH-DX0154CEZZ			
⚠ D704	RH-DX0490CEZZ	J	Diode	AC
	or			
	RH-DX0154CEZZ			
D705	VHD1SS82///1A	J	Diode	AC
D706	VHD10ELS2//-1	J	Diode	AC
D707	VHD1SS82///1A	J	Diode	AC
D708	VHSSFOR5D43-1	J	SFORD43	AC
D709	RH-EX0610GEZZ	J	Zener Diode, 4.7V	AA
D711	RH-EX0207CEZZ	J	Zener Diode, 3.0V	AA
⚠ D725	RH-DX0469CEZZ	J	Diode	AF
	or			
	RH-DX0473CEZZ			
⚠ D726	RH-DX0469CEZZ	J	Diode	AF
	or			
	RH-DX0473CEZZ			
⚠ D727	RH-DX0461CEZZ	J	Diode	AG
	or			
	RH-DX0466CEZZ			
D735	RH-EX0617GEZZ	J	Zener Diode, 6.2V	AA
D738	RH-DX0475CEZZ	J	Diode	AB
D739	RH-DX0475CEZZ	J	Diode	AB
D740	RH-DX0475CEZZ	J	Diode	AB
D741	RH-DX0475CEZZ	J	Diode	AB
D742	RH-EX0628GEZZ	J	Zener Diode, 8.2V	AC
D743	RH-DX0475CEZZ	J	Diode	AB
D745	RH-EX0631GEZZ	J	Zener Diode, 9.1V	AA
D746	RH-DX0475CEZZ	J	Diode	AB
D747	RH-DX0475CEZZ	J	Diode	AB
D748	RH-DX0475CEZZ	J	Diode	AB
D749	RH-DX0475CEZZ	J	Diode	AB
D775	RH-DX0441CEZZ	J	Diode	AC
	or			
	RH-DX0279CEZZ			
	or			
	RH-DX0442CEZZ			
	or			
	RH-DX0443CEZZ			
⚠ PR702	RMPTP0026CEZZ	J	Packaged Circuit	AF

PWB-C: DUNTKA038WEV0
POWER Unit (Continued)

Ref. No.	Part No.	★	Description			Code
COILS						
L725	RCiLP0195CEZZ or RCiLP0238CEZZ or RCiLP0285CEZZ	J	Coil 68µH			AD
L726	RCiLP0179CEZZ or RCiLP0236CEZZ or RCiLP0283CEZZ	J	Coil 47µH			AD
L727	RCiLP0179CEZZ	J	Coil 47µH			AD
TRANSFORMER						
⚠ T701	RTRNZ0161PEZZ or RTRNZ0114PEZZ	R	Transformer			AP
CONTROL						
⚠ R738	RVR-M4333CEZZ	J	6.8k (B)			AC
CAPACITORS	*[EL.··· Electrolytic]*					
C702	VCKYPB2HE103P or RC-KZ007JCEZZ or RC-KZ0016CEZZ	J	0.01	500V	Ceramic	AB
C703	VCKYPB2HE103P or RC-KZ007JCEZZ or RC-KZ0016CEZZ	J	0.01	500V	Ceramic	AB
C705	RC-EZ0613CEZZ or RC-EZ0514CEZZ or RC-EZ0631CEZZ or RC-EZ0682CEZZ	J	470	200V	EL.	AL
C706	RC-KZ0404CEZZ	J	3300p	2KV	Ceramic	AE
C708	VCCSPA1HL471J	J	470p	50V	Ceramic	AA
C709	VCEA0A1HW107M	J	100	50V	EL.	AB
C710	VCQYTA1HM222J	J	2200p	50V	Mylar	AA
C711	VCFYFA1HA224J	J	0.22	50V	Mylar	AB
⚠ C712	RC-KZ0312CEZZ	J	4700p	125V	Ceramic	AD
C722	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C723	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C724	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C725	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C726	RC-EZ1088CEZZ	J	2200	16V	EL.	AF
C727	RC-EZ1075CEZZ	J	2200	10V	EL.	AF
C728	RC-KZ0365CEZZ or RC-KZ0384CEZZ	J	1000p	1kV	Ceramic	AD
C729	RC-KZ0365CEZZ or RC-KZ0384CEZZ	J	1000p	1kV	Ceramic	AD
C730	RC-EZ0724CEZZ	J	100	160V	EL.	AG
C735	VCCCPA1HH680J	J	68p	50V	Ceramic	AA
C739	VCEA0A1HW104M	J	0.1	50V	EL.	AB
C747	VCEA0A1HW106M	J	10	50V	EL.	AB
C748	VCEA0A1HW107M	J	100	50V	EL.	AB
C755	VCEA0A1EW107M	J	100	25V	EL.	AC
C756	VCEA0A1CW476M	J	47	16V	EL.	AB
C757	VCEA0A0JW107M	J	100	6.3V	EL.	AB
C758	VCEA0A1CW226M	J	22	16V	EL.	AB
C759	VCEA0A1AW476M	J	47	10V	EL.	AB
C768	VCEA0A1CW476M	J	47	16V	EL.	AB
C769	VCEA0A1CW476M	J	47	16V	EL.	AB
C775	VCKYPA1HB103K	J	0.01	50V	Ceramic	AA

Ref. No.	Part No.	★	Description			Code
RESISTORS	*[M-Ox.··· Metal Oxide, M-Film··· Metal Film]*					
R440	VRD-RA2BE750J	J	75	1/8W	Carbon	AA
⚠ R701	VRW-KP3HC1R8K	J	1.8	5W	Cement	AC
⚠ R703	RR-HZ0046CEZZ or RR-DZ0046CEZZ or RR-DZ0047CEZZ	J	2.7M	1/2W	Solid	AD
R704	VRD-RM2HD154J	J	150k	1/2W	Carbon	AA
⚠ R706	VRN-VV3DBR15J	J	0.15	2W	M-Film	AB
R707	VRS-SV2HC471J	J	470	1/2W	M-Ox.	AA
R709	VRN-GA2EB1R0J	J	1	1/4W	M-Film	AA
R710	VRD-RM2HD180J	J	18	1/2W	Carbon	AA
R711	VRD-RA2EE122J	J	1.2k	1/4W	Carbon	AA
R713	VRS-SV2HC272J	J	2.7k	1/2W	M-Ox.	AA
R714	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R715	VRD-RA2BE153J	J	15k	1/8W	Carbon	AA
R716	VRD-RA2EE152J	J	1.5k	1/4W	Carbon	AA
R717	VRD-RM2HD104J	J	100k	1/2W	Carbon	AA
⚠ R719	VRW-KQ3HC4R7K	J	4.7	5W	Cement	AE
⚠ R727	VRS-VV3DB223J	J	22k	2W	M-Ox.	AA
R730	VRD-RA2BE272J	J	2.7k	1/8W	Carbon	AA
R731	VRD-RA2BE332J	J	3.3k	1/8W	Carbon	AA
R733	VRD-RA2BE152J	J	1.5k	1/8W	Carbon	AA
R734	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R735	VRD-RA2EE681J	J	680	1/4W	Carbon	AA
R736	VRD-RM2HD563J	J	56k	1/2W	Carbon	AA
R737	VRD-RA2EE824J	J	820k	1/4W	Carbon	AA
R739	VRD-RA2EE681J	J	680	1/4W	Carbon	AA
R740	VRD-RM2HD470J	J	47	1/2W	Carbon	AA
R741	VRN-RA2BK332F	J	3.3k	1/8W	M-Film	AA
R742	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R745	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R746	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R748	VRD-RA2EE182J	J	1.8k	1/4W	Carbon	AA
R749	VRD-RA2EE221J	J	220	1/4W	Carbon	AA
R750	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R751	VRD-RA2BE104J	J	100k	1/8W	Carbon	AA
R752	VRD-RM2HD104J	J	100k	1/2W	Carbon	AA
R753	VRD-RA2BE223J	J	22k	1/8W	Carbon	AA
R754	VRD-RA2BE563J	J	56k	1/8W	Carbon	AA
R755	VRD-RA2EE102J	J	1k	1/4W	Carbon	AA
R756	VRD-RM2HD221J	J	220	1/2W	Carbon	AA
R757	VRS-VV3LB100J	J	10	3W	M-Ox.	AB
R758	VRD-RA2EE102J	J	1k	1/4W	Carbon	AA
R760	VRD-RM2HD223J	J	22k	1/2W	Carbon	AA
R761	VRD-RA2EE562J	J	5.6k	1/4W	Carbon	AA
R762	VRD-RM2HD562J	J	5.6k	1/2W	Carbon	AA
R766	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R774	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R775	VRD-RM2HD473J	J	47k	1/2W	Carbon	AA
R776	VRD-RM2HD473J	J	47k	1/2W	Carbon	AA
MISCELLANEOUS PARTS						
⚠ RY701	RRLYJ0090CEZZ or RYLYJ0082CEZZ or RYLYJ0092CEZZ or RYLYU0036CEZZ or RYLYU0038CEZZ	J	Relay, 12V			AH
⚠ RY725	RRLYJ0092CEZZ or RRLYU0038CEZZ	J	Relay, 12V			AH
FB702	RBLN-0037CEZZ	J	Ferrite Bead			AB
FB725	RBLN-0054CEZZ	J	Ferrite Bead			AB
FB726	RBLN-0054CEZZ	J	Ferrite Bead			AB
FB727	RBLN-0057CEZZ	J	Ferrite Bead			AC
FB731	RBLN-0057CEZZ	J	Ferrite Bead			AC
FB732	RBLN-0057CEZZ	J	Ferrite Bead			AC
P351	QPLGN0261CEZZ	J	Plug, 2-Pin (SP)			AB
P352	QPLGN0361CEZZ	J	Plug, 3-Pin (OR)			AB

Ref. No.	Part No.	★	Description	Code

PWB-C: DUNTKA038WEV0
POWER Unit (Continued)

P701	QPLGN0207CEZZ	J	Plug, 2-Pin (M)	AA
P702	QPLGN0304CEZZ	J	Plug, 3-Pin (E)	AB
P705	QPLGN0361CEZZ	J	Plug, 3-Pin (OC)	AB
P707	QPLGN0361CEZZ	J	Plug, 3-Pin (PG)	AB
SC401	QSOCZ0840CEZZ	J	Socket, 8-Pin (MA)	AD
SC402	QSOCZ1040CEZZ	J	Socket, 10-Pin (MB)	AD
RDA765	PRDAR0232PEFW	R	Heat Sink, for IC765	AF
RDA701	PRDAR0295PEFW	R	Heat Sink, for IC701	AE
	QCNW-2211PEZZ	R	Connecting Cord	AD
	QCNW-5509PEN3	R	Connecting Cord	AD
	LX-BZ3049GEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA

PWB-D: DUNTKA041WEV0
FRONT AV Unit

MISCELLANEOUS PARTS

J401	QJAKF0058CEZZ	J	Jack, Vido in/Audio in	AE
P708	QPLGN0342CEZZ	J	Plug, 3-pin (PG)	AA

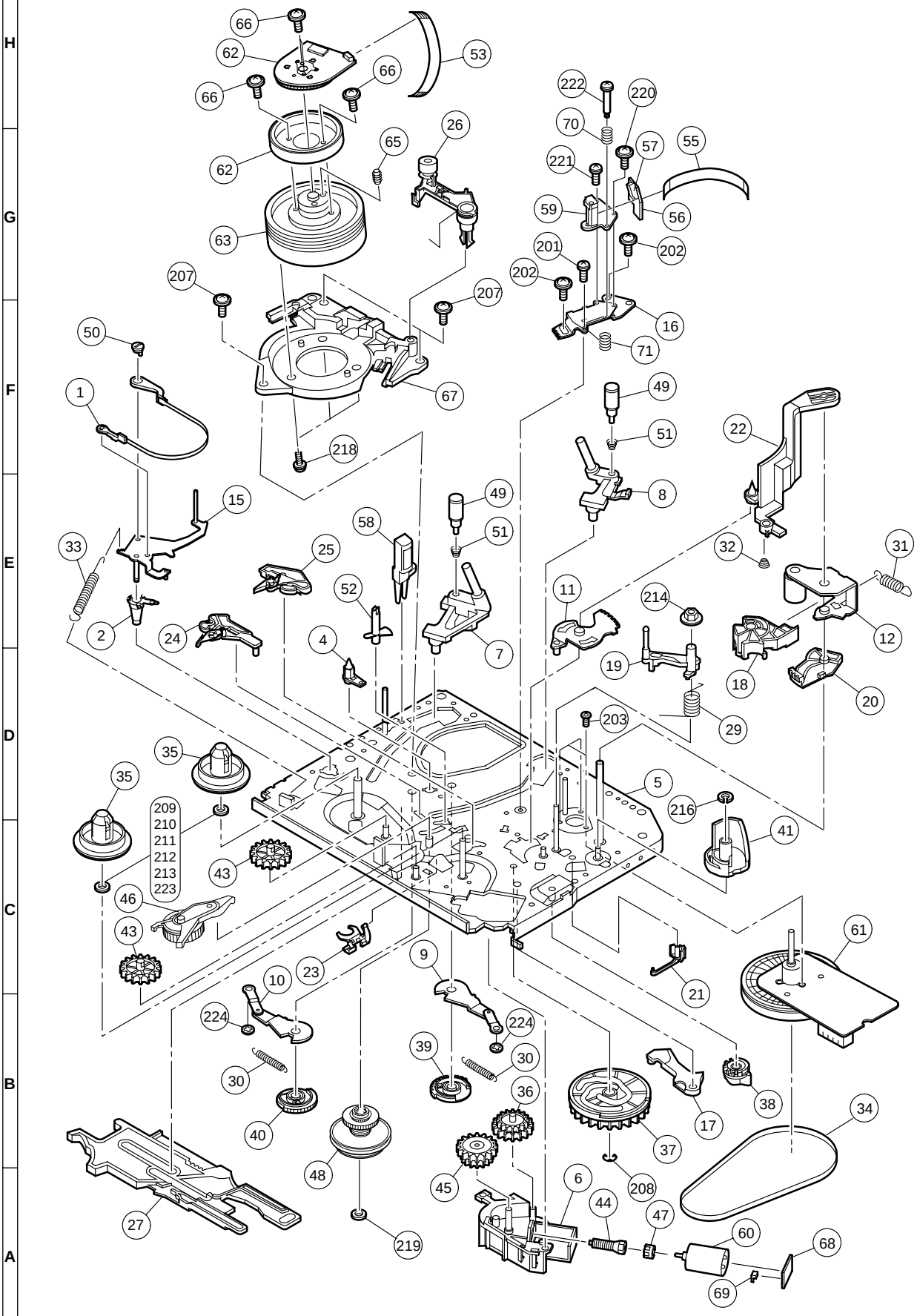
MECHANISM CHASSIS

Ref. No.	Part No.	★	Description	Code
1	LBNDK1011AJZZ	V	Tension Band Ass'y	AH
2	LBOSZ1007AJZZ	V	Tension Arm boss	AD
4	LBOSZ1006AJZZ	V	Cassette Stay L	AD
5	LCHSM0166AJZZ	V	Main Chassis Ass'y	BA
6	LHLDZ2016AJZZ	V	Loading Motor Block	AG
7	LPOLM0063GEZZ	J	Supply Pole Base Ass'y	AM
8	LPOLM0064GEZZ	J	Take-Up Pole Base Ass'y	AM
9	MLEVF0518AJZZ	V	Take-Up Loading Arm Ass'y	AF
10	MLEVF0519AJZZ	V	Supply Loading Arm Ass'y	AF
11	MLEVF0499AJZZ	V	Pinch Drive Lever Ass'y	AG
12	MLEVF0500GEZZ	J	Pinch Roller Lever Ass'y	AW
15	MLEVF0523AJZZ	V	Tension Arm Ass'y	AH
16	LANGF9620AJFW	V	A/C Head Plate	AG
17	MLEVP0271AJZZ	V	Sifter Drive Lever	AE
18	MLEVP0272AJZZ	V	Pinch Double Action Lever	AD
19	MLEVP0301AJZZ	V	Reverse Guide Lever Ass'y	AL
20	MLEVP0275AJZZ	V	Reverse Drive Lever	AD
21	MLEVP0292AJZZ	V	Slow Brake Lever	AE
22	MLEVP0290AJZZ	V	Open Lever	AD
23	MLEVP0293AJZZ	V	Clutch Lever	AE
24	MLEVP0294AJZZ	V	Sup Main Brake Ass'y	AF
25	MLEVP0295AJZZ	V	Take-Up Main Brake Ass'y	AF
26	CLEVP0287AJZZ	V	Auto Head Cleaner Ass'y	AG
27	MSLiP0010AJZZ	V	Sifter	AH
29	MSPRD0175AJFJ	V	Reverse Guide Spring 2	AE
30	MSPRT0402AJFJ	V	Loading Double Action Spring	AE
31	MSPRT0403AJFJ	V	Pinch Double Action Spring	AD
32	MSPRC0213AJFJ	V	Earth Spring	AC
33	MSPRT0416AJFJ	V	Tension Spring	AD
34	NBLTK0067AJ00	V	Reel Belt	AE
35	NDAiV1078AJ00	V	Reel Disk	AE
36	NGERH1293AJZZ	V	Loading Connect Gear	AD
37	NGERH1295AJ00	V	Master Cam	AE
38	NGERH1294AJZZ	V	Casecon Drive Gear	AD
39	NGERH1270AJZZ	V	Take-Up Loading Gear	AF
40	NGERH1271AJZZ	V	Supply Loading Gear	AD
41	NGERH1272AJZZ	V	Pinch Drive Cam	AE
43	NGERH1299AJZZ	V	Reel Relay Gear	AE
44	NGERW1070AJZZ	V	Worm Gear	AD
45	NGERW1066AJZZ	V	Worm Wheel Gear	AD
46	NiDR-0018AJZZ	V	Idler Wheel Ass'y	AK
47	NPLYV0162AJZZ	V	Motor Pully	AD
48	NPLYV0163AJZZ	V	Limitter Pulley Ass'y	AM
49	NROLP0131GEZZ	J	Guide Roller	AL
50	NSFTP0032AJZZ	V	Tension Pole Adjuster	AB
51	MSPRC0217AJFJ	V	Guide Roller Spring	AC
52	PREFL1011AJZZ	V	Light Guide	AE
53	QCNW-0247AJZZ	V	FFC for Drum Motor	AG
55	QCNW-0272AJZZ	V	FFC for A/C Head	AF
56	QPWBF5469AJZZ	V	A/C Head PWB	AE
57	QSOCN0605REN1	V	Socket, 6 pin	AB
58	RHEDT0036AJZZ	V	Full Erase Head	AM
59	RHEDU0088GEZZ	J	A/C Head Ass'y	AV
60	RMOTM1078GEZZ	J	Loading Motor	AK
61	RMOTN2055GEZZ	J	Capstan Motor	BA
62	RMOTP1135GEZZ	J	Drum Drive Motor	AX
63	DDRMW0028TEX1	V	Upper and lower drum Ass'y	BP
65	QBRSK0041GEZZ	J	Drum Earth Brush	AD
66	XBPSD26P05J00	V	Drum Drive Motor Mounting Screw (SW2.6P+5S)	AA
67	PGiDC0056GEFW	J	Drum Base	AL
68	QPWBF5468AJZZ	V	PWB(LDG Motor)	AE
69	QPLGZ0292GEZZ	J	Socket(LDG Motor)	AE
70	MSPRC0223AJFJ	V	Azimuth Spring	AC
71	MSPRC0224AJFJ	V	Height Adjusting spring	AC

SCREW, NUTS AND WASHERS

Ref. No.	Part No.	★	Description	Code
201	XBPSD26P08000	V	Screw 2.6P+8S A/C Head	AA
202	LX-HZ3082GEZZ	J	A/C Head Screw	AD
203	XHPSD26P06000	V	Screw, C2.6P+6S (For Capstan Motor)	AA
207	XHPSD30P08WS0	V	Screw, C3.0P+8S (For Drum Base)	AA
208	XRESJ30-06000	V	E-Ring, E-3	AA
209	XWHJZ31-05052	V	Washer, W3.1-5.2-0.5	AC
210	XWHJZ31-03052	V	Washer, W3.1-5.2-0.3	AC
211	XWHJZ31-04052	V	Washer, W3.1-5.2-0.4	AC
212	XWHJZ31-06052	V	Washer, W3.1-5.2-0.6	AC
213	XWHJZ31-07052	V	Washer, W3.1-5.2-0.7	AC
214	PSPAP0009AJZZ	V	Reverse Guide Adjusting Nut	AB
216	LX-WZ1041GE00	J	CW 2.5-6-0.5 CAM	AA
218	XBPSD30P08J00	V	Drum Base Mounting Screw (SW 3P+8S)	AA
219	LX-WZ1098GE00	J	CW 2.6-4.7-10.5 RED	AB
220	LX-BZ3096GEFD	J	Tilt Adjusting Screw	AA
221	XBPSD26P06000	V	Azimuth Adjusting Screw	AA
222	LX-BZ3197GEFD	J	Screw (A/C Head)	AD
223	XWHJZ31-08052	V	Washer, W3.1-5.2-0.8	AC
224	LX-RZ3015GEFJ	J	CS Washer	AB

MECHANISM CHASSIS PARTS



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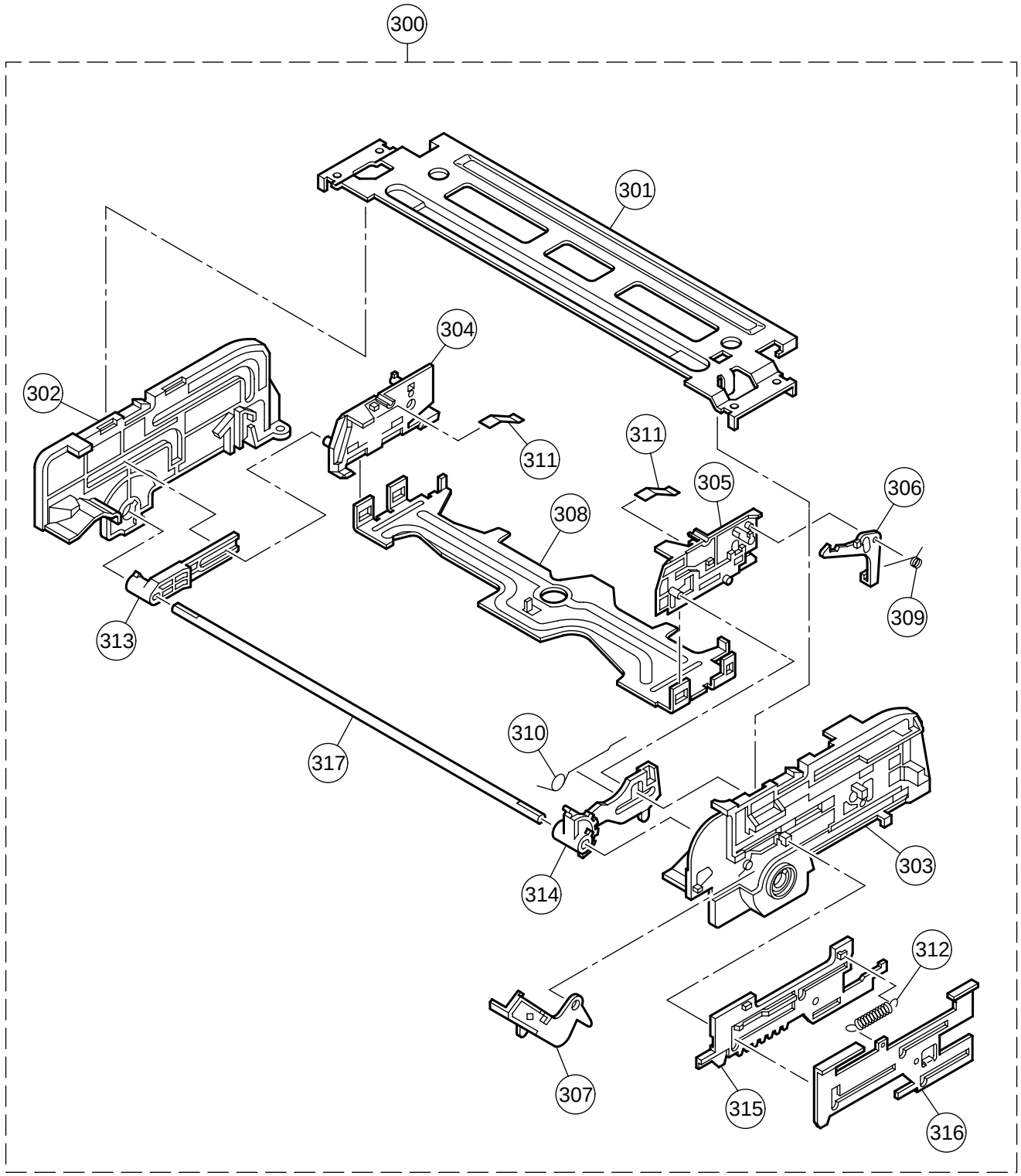
CASSETTE HOUSING CONTROL

Ref. No.	Part No.	★	Description	Code
300	CHLDX3081TEV2	V	Cassette Housing	AX
301	LANGF9592AJFW	V	Upper Plate	AL
302	LHLDX1028AJ00	V	Frame (L)	AH
303	LHLDX1032AJ00	V	Frame (R)	AH
304	LHLDX1030AJZZ	V	Holder (L)	AE
305	LHLDX1031AJZZ	V	Holder (R)	AE
306	MLEVF0469AJFW	V	Proof Lever (R)	AE
307	MLEVP0281AJ00	V	Door Open Lever	AD
308	MSLiF0076AJFW	V	Slider	AK
309	MSPRD0151AJFJ	V	Proof Lever (R) Spring	AB
310	MSPRD0166AJFJ	V	Drive Gear (R) Spring	AE
311	MSPRP0175AJFJ	V	Cassette Spring	AE
312	MSPRT0381AJFJ	V	Double Action Spring	AC
313	NGERH1278AJZZ	V	Drive Gear L	AE
314	NGERH1309AJZZ	V	Drive Gear R	AE
315	NGERR1008AJ00	V	Double Action Rack Gear	AE
316	NGERR3005AJFW	V	Drive Angle Gear	AG
317	NSFTD0041AJFD	V	Main Shaft	AH

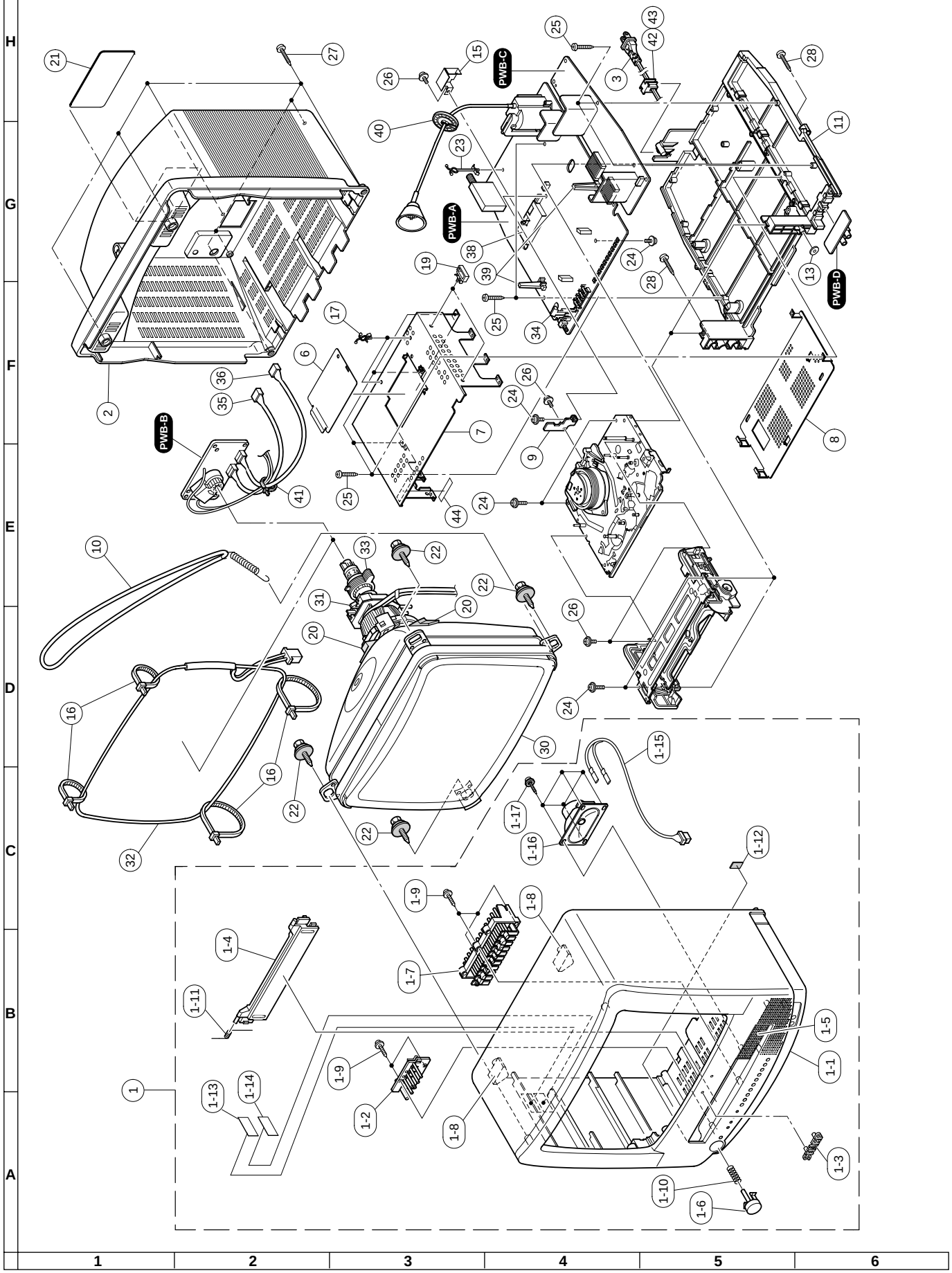
CASSETTE HOUSING CONTROL PARTS



CABINET AND MECHANICAL PARTS

Ref. No.	Part No.	★	Description	Code
1	CCABA2514WEV0	R	Front Cabinet Ass'y (13VT-N100)	BD
1	CCABA2514WEV2	R	Front Cabinet Ass'y (13VT-N150)	BD
1	CCABA2514WEV6	R	Front Cabinet Ass'y (13VT-CN10)	
1-1	*Not Available*	–	Front Cabinet	—
1-2	GCOVA0096PESA	R	LED Decoration	
1-3	HBDGB0018PESA	R	"SHARP" Badge	AE
1-4	HDECQ0139PESA	R	Cassette Flap-Door (13VT-N100/CN10)	AF
1-4	HDECQ0139PESB	R	Cassette Flap-Door (13VT-N150)	AF
1-5	HDECQ0143PEKA	R	Punching Plate (13VT-N100/CN10)	AD
1-5	HDECQ0143PEKB	R	Punching Plate (13VT-N150)	AD
1-6	JBTN-0317PEKA	R	Button, Power (13VT-N100/CN10)	AC
1-6	JBTN-0317PEKB	R	Button, Power (13VT-N150)	AC
1-7	JBTN-0316PESA	R	Button Ass'y, TV/VCR Control (13VT-N100/CN10)	AG
1-7	JBTN-0316PESB	R	Button Ass'y, TV/VCR Control (13VT-N150)	AG
1-8	LHLDZ0040PEZZ	R	Holder, x2	AC
1-9	LX-TZ3004CEFD	J	Screw, x5	AA
1-10	MSPRC0005PEFW	R	Spring, for Power Button	AB
1-11	MSPRD0123AJFJ	J	Spring, for VCR Flap-Door	AC
1-12	PSPAH0012PE00	R	Spacer, x1	AA
1-13	TCAUS0010PEZZ	R	Caution Card (13VT-N100/150)	AB
1-13	TCAUS0004PEZZ	R	Caution Card (13VT-CN10)	AD
1-14	TCAUS0013PEZZ	R	Caution Card (13VT-CN10)	AB
1-15	QCNW-2206PEZZ	R	Connecting Wire	AD
1-16	VSP9050PB15WA	J	Speaker, x1	AN
1-17	LX-TZ0012PEFD	R	Screw, x4	AC
2	GCABB2349PEKA	R	Rear Cabinet (13VT-N100)	BB
2	GCABB2349PEKB	R	Rear Cabinet (13VT-N150)	BB
2	GCABB2351PEKA	R	Rear Cabinet (13VT-CN10)	BB
⚠ 3	QACCD3064CESA	J	AC Cord (13VT-N100/CN10)	AM
⚠ 3	QACCD3060CESB	J	AC Cord (13VT-N150)	AR
6	PSLDM0250PEFW	R	Shield Cover (Top)	AD
7	PSLDM0248PEFW	R	Shield (Top)	AN
8	PSLDM0249PEFW	R	Shield (Bottom)	AG
9	LANGT0038PEFW	R	Angle	AC
10	QEARC1423PEZZ	R	Wire, Grounding Strap	AG
11	LCHSM0080PEKZ	R	Main Chassis Frame	AP
13	PSPAG0022PE00	R	Wedge	AC
15	PSLDM0253PEFW	R	Shield Angle	AC
16	LHLDW0003PEKZ	R	Degaussing Coil Holder, x4	AB
17	LHLDW1047PEZZ	R	Wire Holder, x2	AB
19	LHLDW1065PEKZ	R	Wire Holder, x2	AD
20	PSPAG0004PEZZ	R	Wedge (Gum), x3	AB
21	TLABM1536PEZZ	R	Model Label (13VT-N100/150)	AB
21	TLABM1268PEZZ	R	Model Label (13VT-CN10)	AD
22	LX-TZ0013PEFD	R	Screw, for CRT, x4	AD
23	LHLDW1067PEKZ	R	Wire Holder	AC
24	LX-HZ3001PEFD	R	Screw, x6	AA
25	XEBSD30P12000	J	Screw, x9	AA
26	XHPSD30P06WS0	J	Screw, x4	AA
27	XTASD40P20000	J	Screw, x7	AA
28	XTASD40P20000	J	Screw, x2	AA
▲⚠ 30	VB34KPU02X/*S	R	Picture Tube	BZ
▲⚠ 31	RCiLH0149PEN1	R	Deflection Yoke (DY601)	BA
⚠ 32	RCiLG0403PEZZ	R	Degaussing Coil	AK
33	PMAGF3041CEZZ	J	Purity Magnet	AG
34	QSW-F0042AJZZ	J	Rec Tip Switch (S7701)	AG
35	QCNW-5025PEN4	R	Connecting Wire (GR)	AE
36	QCNW-5030PEN5	R	Connecting Wire (GC)	AE
38	PSLDM0251PEFW	R	Shield	AD
39	LHLDZ1962AJ00	J	Start, End Sensor Holder	AD
40	LHLDZ0063PEZZ	R	H.V.Wire Holder	AD
41	LHLDW1075PEKZ	R	Wire Holder, x1	AC
42	LHLDK0016PEZZ	R	AC Cord Holder	AC
43	LHLDK0011PEZZ	R	AC Cord Holder	AE
44	PSPAH0004PE00	R	Spacer	AA

CABINET AND MECHANICAL PARTS



Ref. No.	Part No.	★	Description	Code

SUPPLIED ACCESORIES

TGAN-0018PEZZ	R	Guarantee Card (13VT-N100/150)	AD
TCAUH0011PEZZ	R	Caution Card (13VT-N100/150)	AB
TiNS-6763PEZZ	R	Operation Manual (13VT-N100/150)	AF
TiNS-7005PEZZ	R	Operation Manual (13VT-CN10)	
RRMCG1330PESA	R	Infrared R/C Unit (13VT-N100/CN10)	AV
RRMCG1330PESB	R	Infrared R/C Unit (13VT-N150)	AV

Ref. No.	Part No.	★	Description	Code

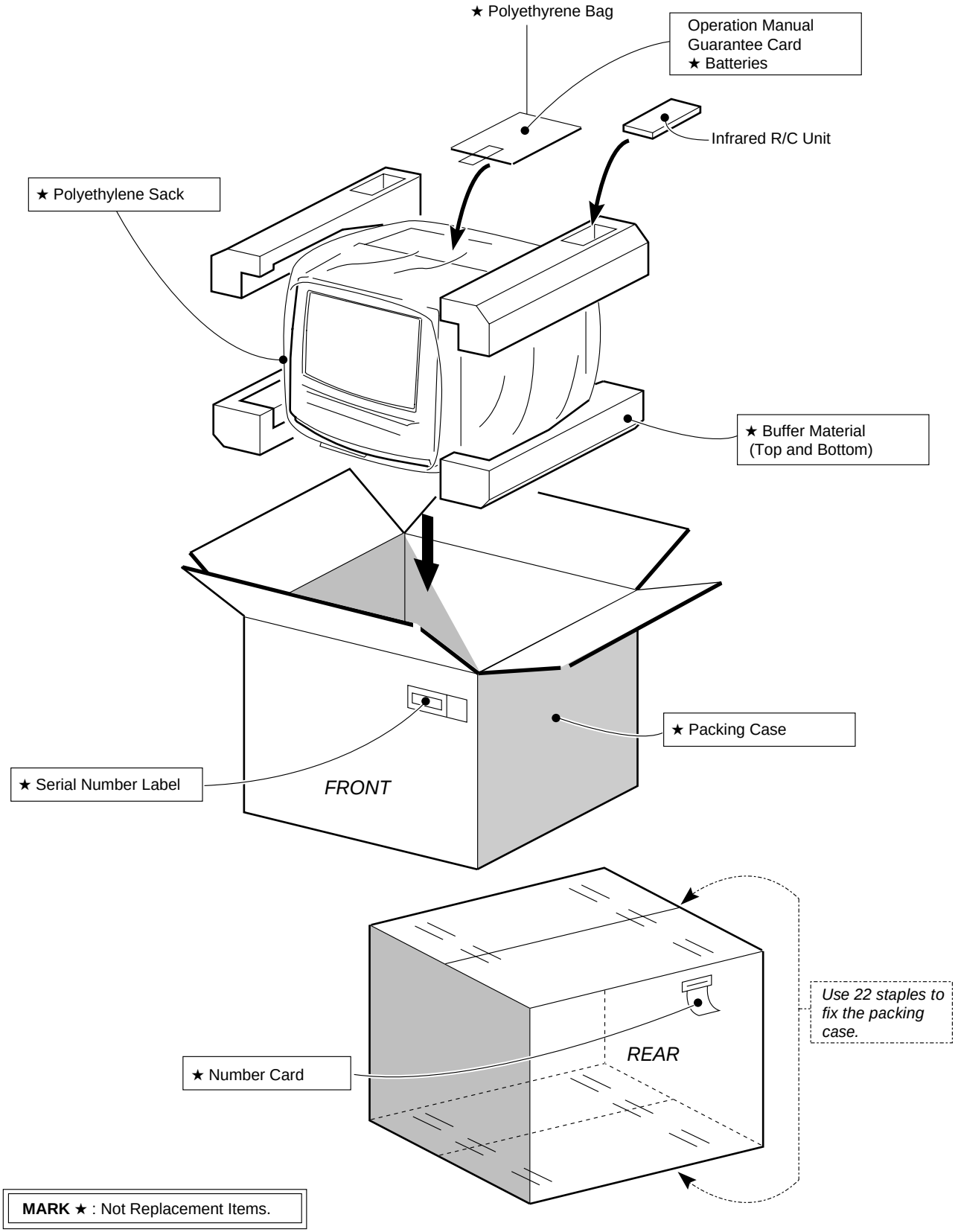
PACKING PARTS
(NOT REPLACEMENT ITEM)

SPAKC6405PEZZ	–	Packing Case (13VT-N100)	—
SPAKC6406PEZZ	–	Packing Case (13VT-N150)	—
SPAKC6426PEZZ	–	Packing Case (13VT-CN10)	—
SSAKA0031PEZZ	–	Polyethylene Bag	—
SPAKP0095PEZZ	–	Polyethylene Sack	—
SPAKP0110PEZZ	–	Polyethylene Sack	—
SPAKX2691PEZZ	–	Buffer Material	—
TLABR7007PEZZ	–	Label (13VT-CN10)	—
TLABN0001PEZZ	–	Serial Number Label	—
TLABK0002PEZZ	–	Number Card	—
TLABZ0125PEZZ	–	Label	—

PACKING OF THE SET

• SETTING POSITIONS OF THE KNOBS

Power SW	**OFF**



MARK ★ : Not Replacement Items.

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