SAMSUNG Electronics

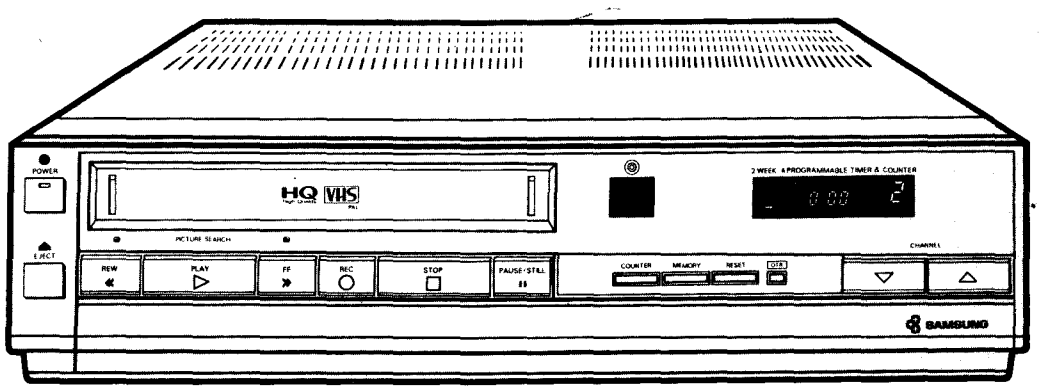
VHS HQ PAL

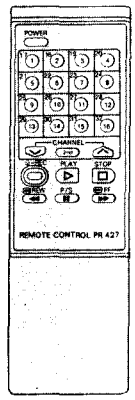
SERVICE MANUAL

SVX-301/VX-710/VB-710

SVM-P7-009-1E

VIDEO CASSETTE RECORDER





SPECIFICATIONS

Format:	VHS PAL standard
Recording System:	Rotary, azimuth two-head helical scanning system
Television System:	PAL color and B/W signal
Tape Width:	12.65 mm (1/2 inch)
Tape Speed:	23.39 mm/sec
Record/Playback Time:	4 hours with E-240 Tape
FF/REW Time:	Less than 6 min. with E-180
Heads:	1) Video: 2 Rotary heads 2) Audio/Control: 1 stationary head (Mono) 3) Full track erase: 1 stationary head
Video	
Input:	0.5 to 2.0 Vp-p 75 ohm unbalanced
Output:	1.0 Vp-p 75 ohm unbalanced
Signal-to-Noise Ratio:	Better than 40dB.
Horizontal Resolution:	More than 240 Lines
Audio	
Input:	−8dBm, 50Kohm unbalanced
Output:	−3dBm 1Kohm unbalanced
Signal-to-Noise Ratio:	Better than 40dB
Frequency Response:	100Hz−8.0 KHz (−3dB)
Receiving channels:	VHF I, VHF III, UHF IV/V
RF Output:	CCIR UHF channel 32 to 40 (adjustable), Preset to 36
Power Requirement:	AC 220V, 50Hz
Operating Temperature:	5 to 40 DEG. C (41°F−104°F)
Operating Humidity:	10%−75%
Power Consumption:	Approx. 28 Watts (When the POWER button is OFF Approx. 7.0 watts)
Dimensions:	420 (W)×93 (H)×345 (D) mm
Weight:	14.55 lbs (6.6 kg)

Printed in Korea

OCTOBER 1987

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10. SCHEMATICS

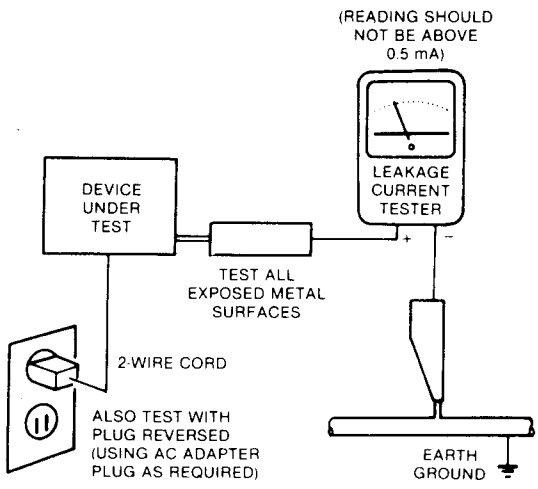
SAFETY PRECAUTIONS

1. **Before returning a Video Cassette Recorder to the customer,** always make a safety check of the entire instrument, including, but not limited to the following items:

   a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reassembling the instrument, be sure to put back in place all protective devices, including, but not limited to nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks.
   Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

   b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) excessively wide cabinet ventilation slots, and (2) improperly fitted and/or incorrectly secured cabinet covers.

   c. **Antenna Cold Check**—With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, to each of the coaxial connectors. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.



AC Leakage Test

   d. **Leakage Current Hot Check**—With the instrument completely reassembled plug the AC line cord directly into a 220V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) *C101. 1 Leakage Current for Appliances* and Underwriters Laboratories (UL) *1410, (50.7).* With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, controls shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat test.

   ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR CONNECTING ANTENNA OR ACCESSORIES.

   e. **AC Leakage Test**

   Avoid shock hazards. The television instrument, accessory, or cable(s) to which this VCR is connected should have the applicable sections of the antenna cold check and the leakage current hot check performed. Do not connect this VCR to a TV antenna, cable or accessory that exhibits excessive leakage currents.

2. Read and comply with all caution and safety-related notes on or inside the VCR cabinet and chassis.

3. **Design Alteration Warning**—Do *not* alter or add to the mechanical or electrical design of this Video Cassette Recorder. Design alterations and additions, including, but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer responsible for personal injury or property damage resulting therefrom.

4. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts—be sure that leads and components do not touch thermally hot parts c. the AC supply, and d. antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between components, and between components and the printed-circuit board. Check AC power cord for damage.

5. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6. PRODUCT SAFETY NOTICE
   Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a (*) or (⚠) on schematics and parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. Products Safety is under review continuously and new instructions are issued whenever appropriate.

Electrostatically Sensitive (ES) devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with Es devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a *grounded-tip* soldering iron to solder or unsolder ES devices.

4. Use only an *anti-static* type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.

5. Do *not* use freon-propelled chemicals. These can generate electrical charges sufficient to damage Es devices.

6. Do *not* remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)

7. Immediately before removing the protective material from the leads of a replacement Es device, touch the protective material to the chassis or circuit assembly into which the device will be installed. **CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

1. GENERAL DESCRIPTION

1-1. GENERAL INFORMATION

•Operation Modes

Play, still, forward search, reverse search, record, record pause, fast forward and rewind operations are possible. 2-Video Head System uses two video heads on the upper cylinder. Two video heads (CH-1/CH-2: $+60\ \mu m/-80\ \mu m$) are used during record and playback

•Unattended (Timer) Recording

The programmable timer can be preset up to two weeks in advance to record up to 4 preselected programs. The Timer turns your VCR on and off and changes channels automatically.

•One Touch Recording (OTR)

Express Recording permits unattended recording with the touch of a button. You can record a program for the time from 1 minute to the desired amount without setting the Programmable Timer.

•Cable TV Tuner

Allows you to tune mid and super-band cable channels without the use of an external device. The tuning system makes cable television channel selection on most systems as easy and convenient as VHF and UHF tuning.

•Memory Stop

When the Multifunction Display is in the "Counter" Position, a tape that is being rewound automatically stops when the Tape Counter reads 9999.

•Automatic Power On

The VCR will automatically turn power on when you insert a cassette without pushing POWER button.

•Automatic Playback

When you insert the cassette with the Record Safety Tab removed, the VCR will turn power on and playback automatically without pushing POWER and PLAY button. If you use the cassette with Record Safety Tab intact, the VCR will turn power on automatically and be in STOP mode but do not playback.

•Automatic Rewind

The VCR automatically rewinds the tape when the end of the tape is reached. To avoid accidental erasure during Timer Recording or Express Recording, it stops at the end of the tape but does not rewind.

•Mode Indication in the Multifunction Display

The VCR modes will be indicated in the Multifunction Display with a sign or a character of white or red color so the operator can see the modes easily.

•Remote Control with Special Effects

Hand-Held unit offers play, stop, record, rewind, fast forward, pause/still, direct position selection (17 keys), channel up/down, power on/off, one touch search (forward or reverse).

•Cable-Ready Frequency Synthesis Tuner

You can select unscrambled Cable TV channels S1 to S20, without using an external converter.

The frequency-synthesis tuner can select a total of 80 channels including 20 cable channels.

2. DISASSEMBLY

2-1. INSTRUMENT DISASSEMBLY

2-1-1. Top Cabinet Removal (Fig. 1)

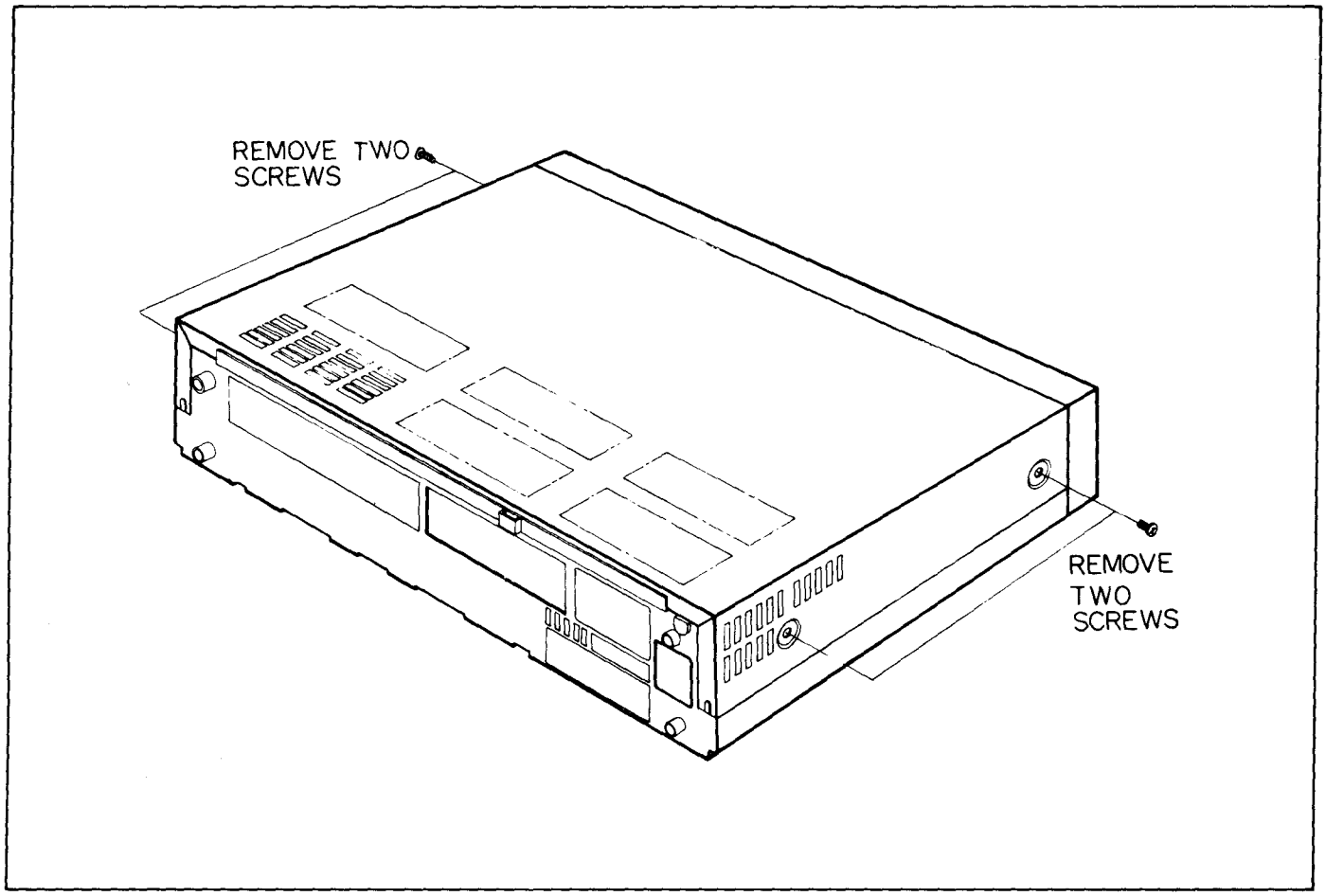


Fig. 1 Top Cabinet Removal

1. Remove four (4) screws located at the sides of the top cabinet.
2. Carefully lift the back of the top cabinet and slide it to the rear to remove.

Note: _____

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

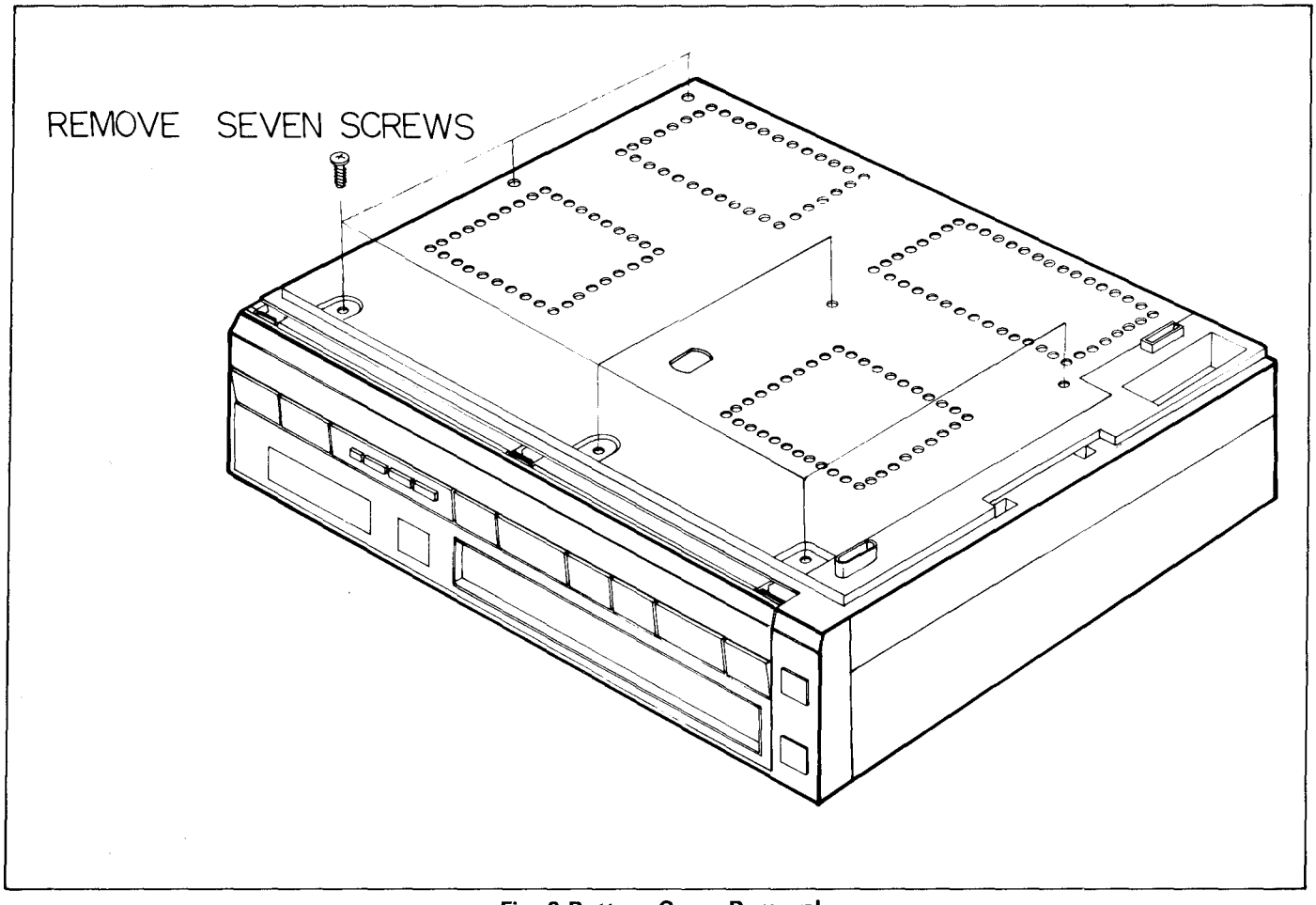


Fig. 2 Bottom Cover Removal

1. Remove seven (7) screws holding the bottom cover.

Note:

2-1-3. Front Panel Removal (Fig. 3)

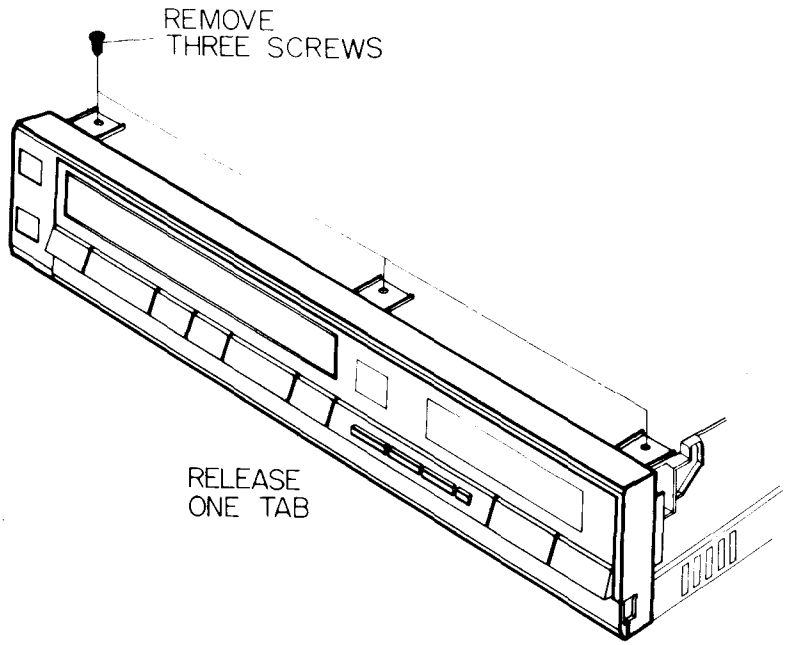


Fig. 3 Front Panel Removal

1. Remove the top cabinet and the bottom cover. (See Figs. 1, 2)
2. Remove three (3) screws from the top of the front panel.
3. Release one (1) tabs from the bottom of the front panel.
4. Tilt the front panel forward to remove.

Note:

2-2-3. Housing Assembly Disassembly (Fig. 14 to 21)

1. Remove front mask. (Fig. 14)

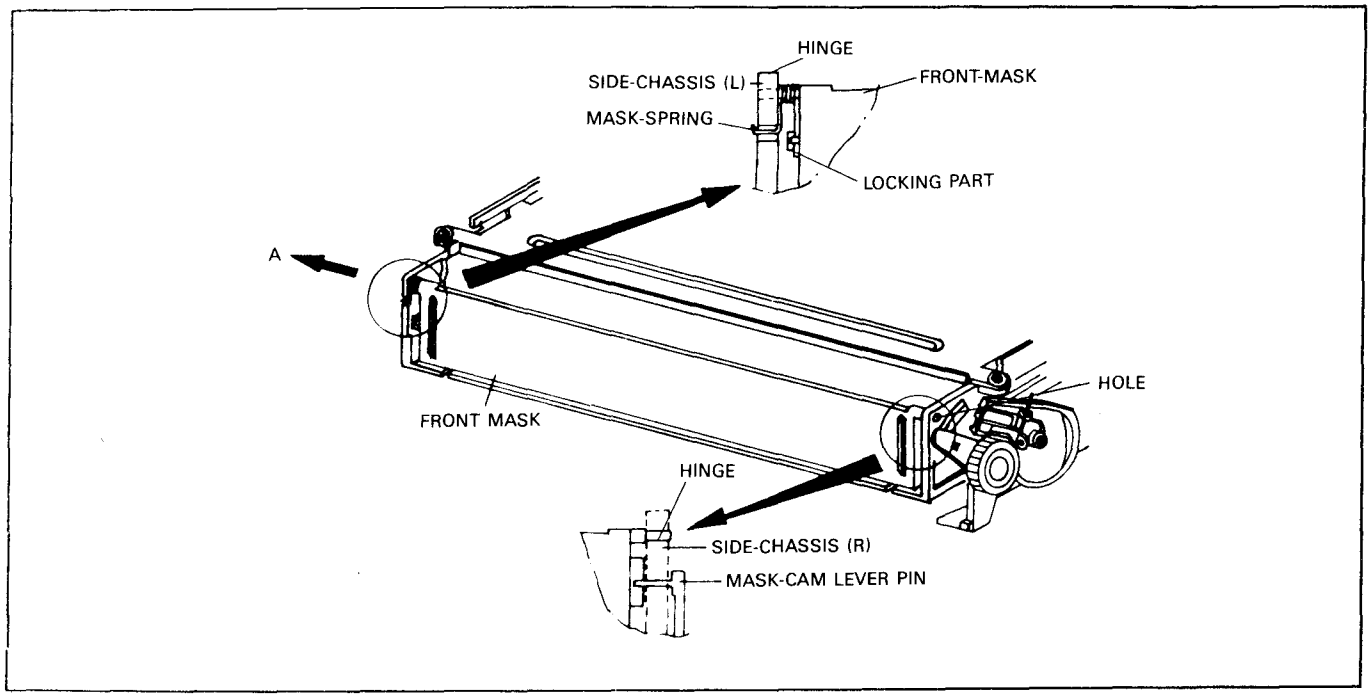


Fig. 14 Front Mask Removal

•Pulling front mask to the direction of arrow A, disintegrate a reinstalled front mask hinge part in the hole of the side-chassis (R) and disintegrate a reinstalled hinge part in the hole of the side-chassis (L) to the reverse direction.

2. Remove REC S/W (Fig. 15)
   Disintegrate REC S/W attaching to the guide cassette.

NOTE:

•One end of the mask spring must be reinstalled at the locking part of the front mask and the other end must be reinstalled the hook part of the side chassis (L).

•Upon reinstallation of front mask slide part of right hand must be reinstalled in front of the mask cam lever pin. (Fig. 14)

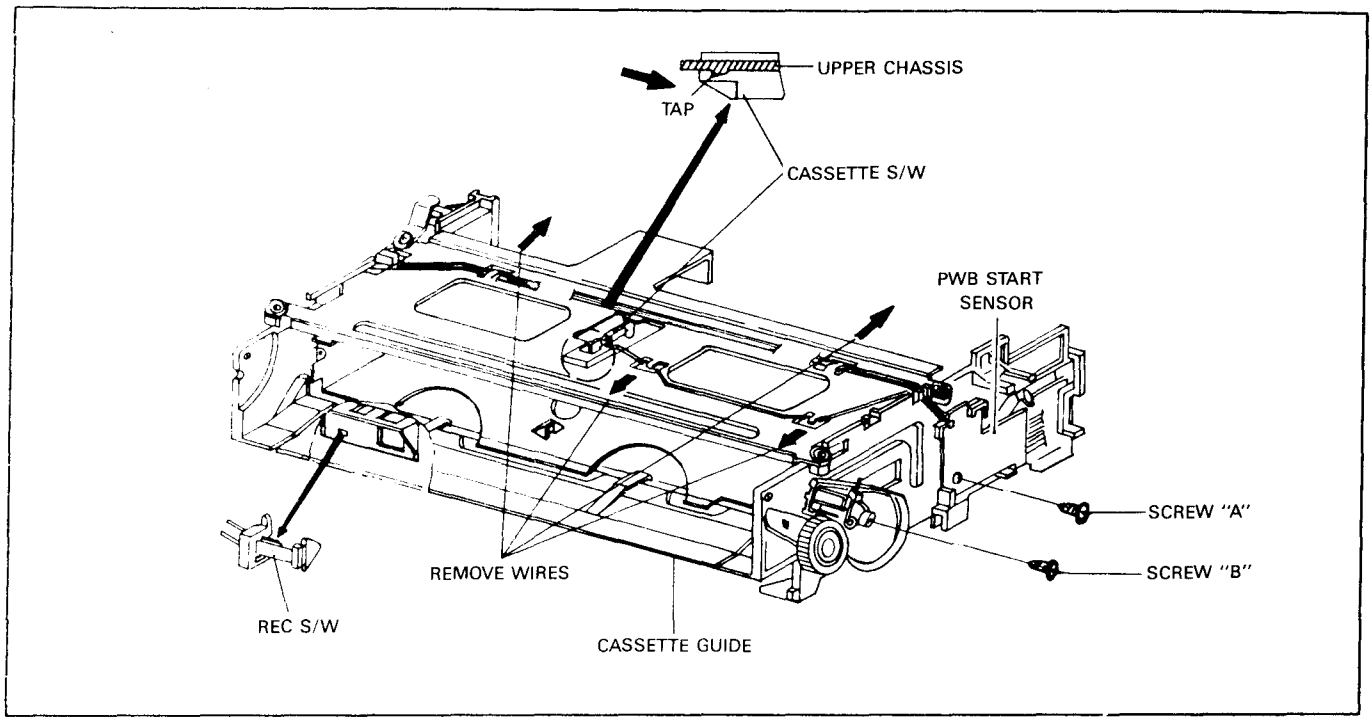


Fig. 15 Rec S/W / Cassette S/W / Pwb Start Sensor / Side Arm (R) Removal

3. Pwb end sensor remove (Fig. 16)
   •After removing the screw at the side chassis (L), disintegrate PWB end sensor.

Note: Pay attention to the TR and Photo TR attached to the Pwb end sensor.

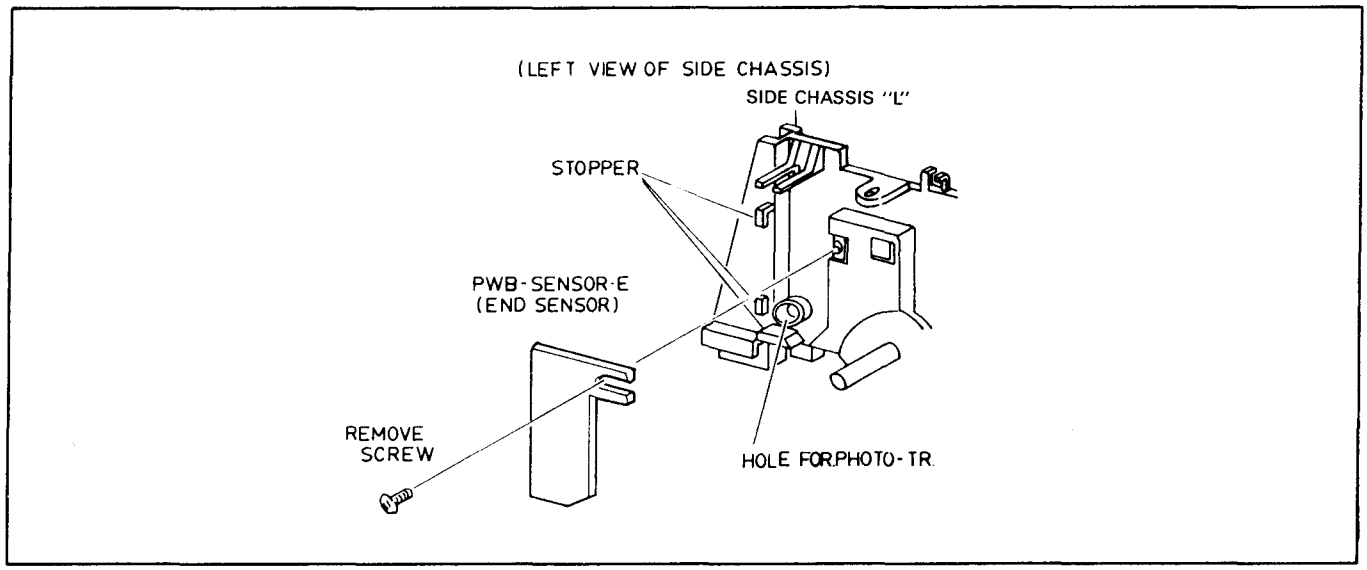


Fig. 16 Pwb End Sensor Removal

4. Release the tab of the cassette S/W and remove the cassette S/W. (Fig. 15)
5. Pwb Start sensor removal (Fig. 15)
   •After removing the screw (A) at the side chassis (R), disintegrate PWB start sensor.
   Note: Pay attention to the TR and Photo TR attached to the Pwb start sensor.
6. Remove the wires. (Fig. 15)
   Note: Each wire is connected to Rec S/W, Pwb end sensor, cassette S/W and Pwb start sensor.

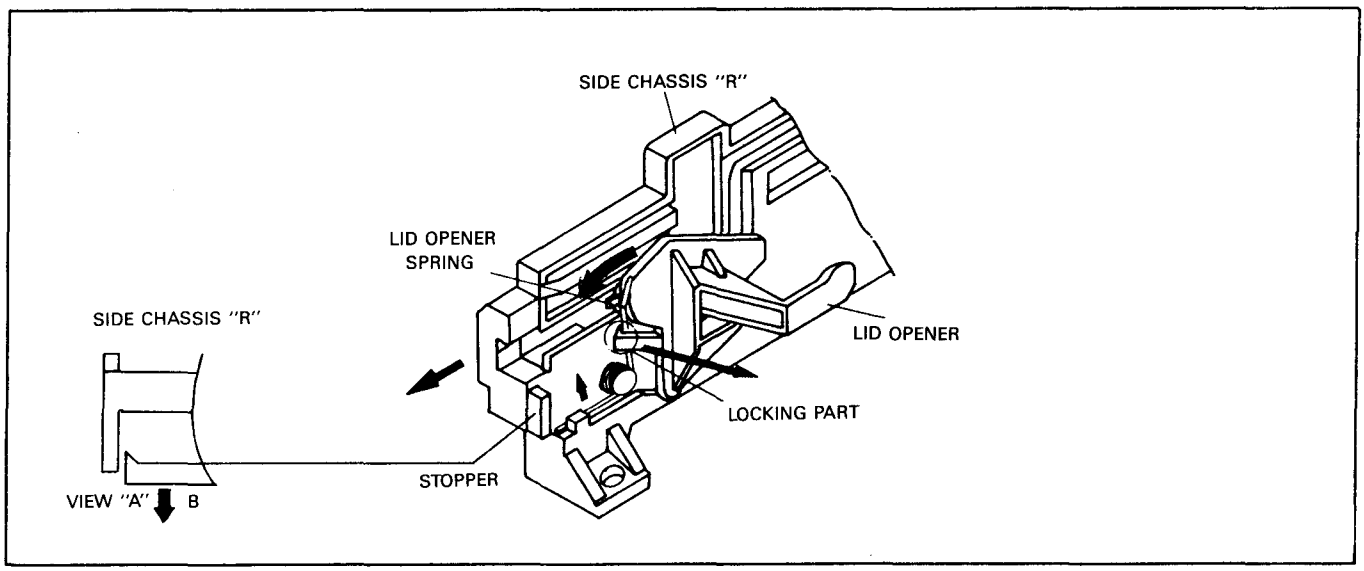


Fig. 17 Lid Opener Removal

7. Lid opener removal (Fig. 17)
   •Remove the lid opener spring from the locking part of the lid opener.
   •Pull the lid opener in the direction of A. and release the locking part pulling it in the direction of B, be fore touching the stopper of the side chassis. (Refer to view A)
8. After removing the screw (B), remove the side arm (R) (Fig. 15)
   Note: Arm tension spring is set up to the side arm (R).

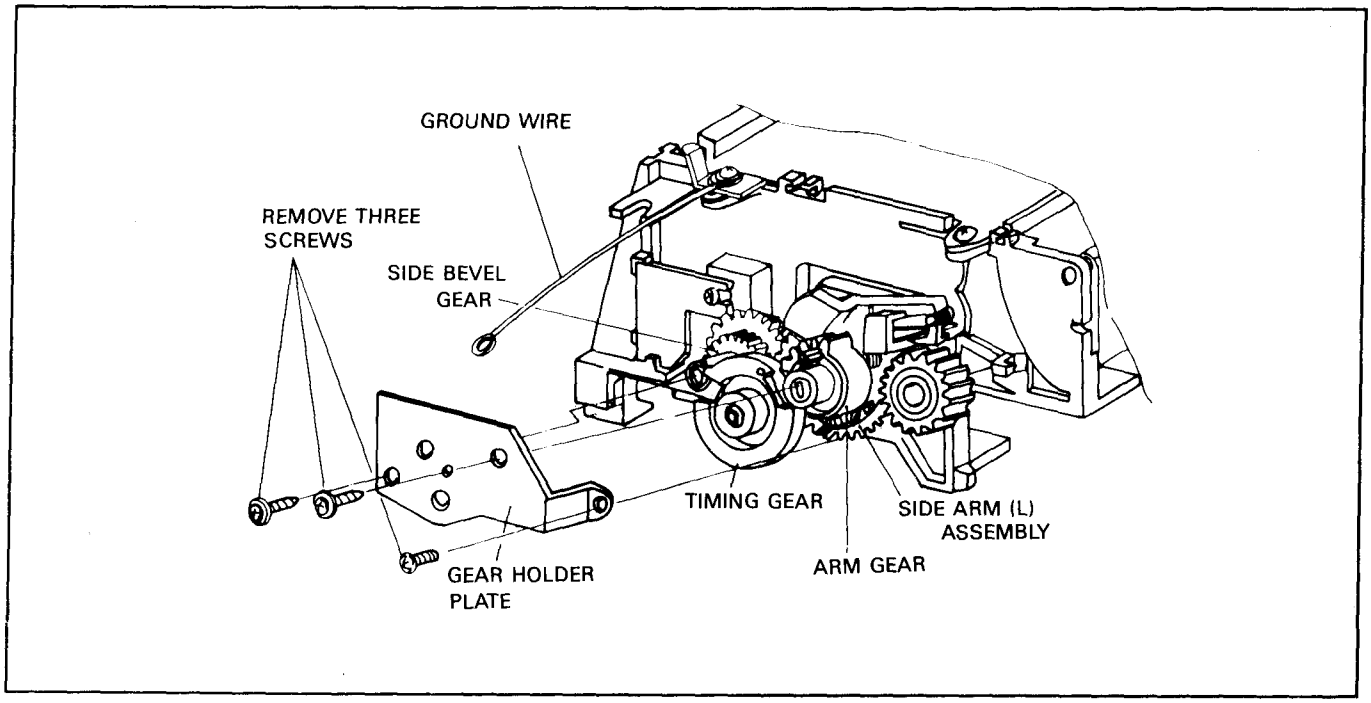


Fig. 18 Timing Gear/Side Arm (L) Assembly/Side Bevel Gear Removal

9. Remove the three screws of the gear holder plate holding each gear. (Fig. 18)
   (Remove the ground wire at the same time)
10. Remove the timing gear. (Fig. 18)
11. Remove the side arm (L) assembly. (Fig. 18)
12. Remove the side bevel gear. (Fig. 18)

Notes: •Side arm (R) reinstalling the side arm (L) assembly.

Fix at the reinstalling point of relay gear (R) and (L), and at this moment cassette holder shaft (R) (L) must **Not** be inserted in the groove of the side arm (R) (L) (Fig. 19)

•When assembling the timing gear, first tooth of the arm gear (C) must be fitted between the full tooth (A) and the half tooth (B) of the timing gear like the "A" part of the Fig. 19.

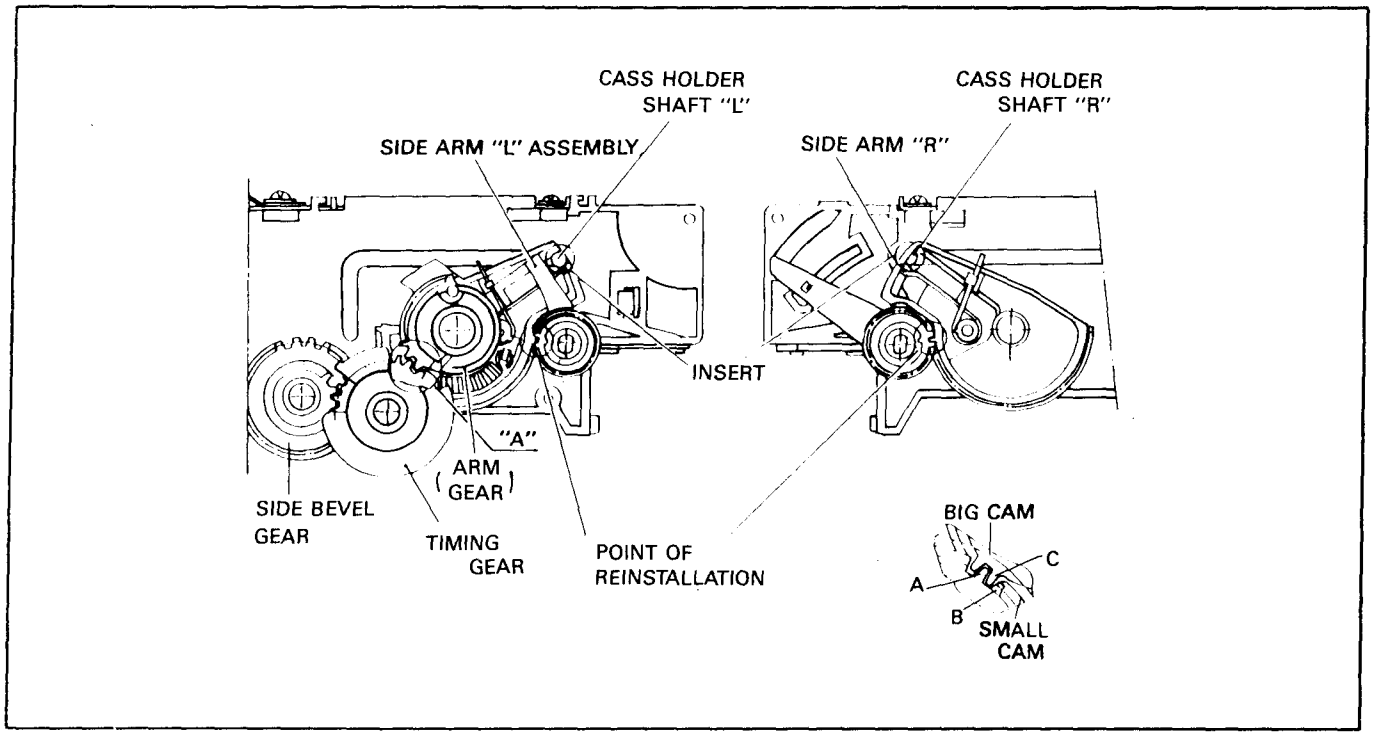


Fig. 19 Side Arm (R) and (L) Reinstallation

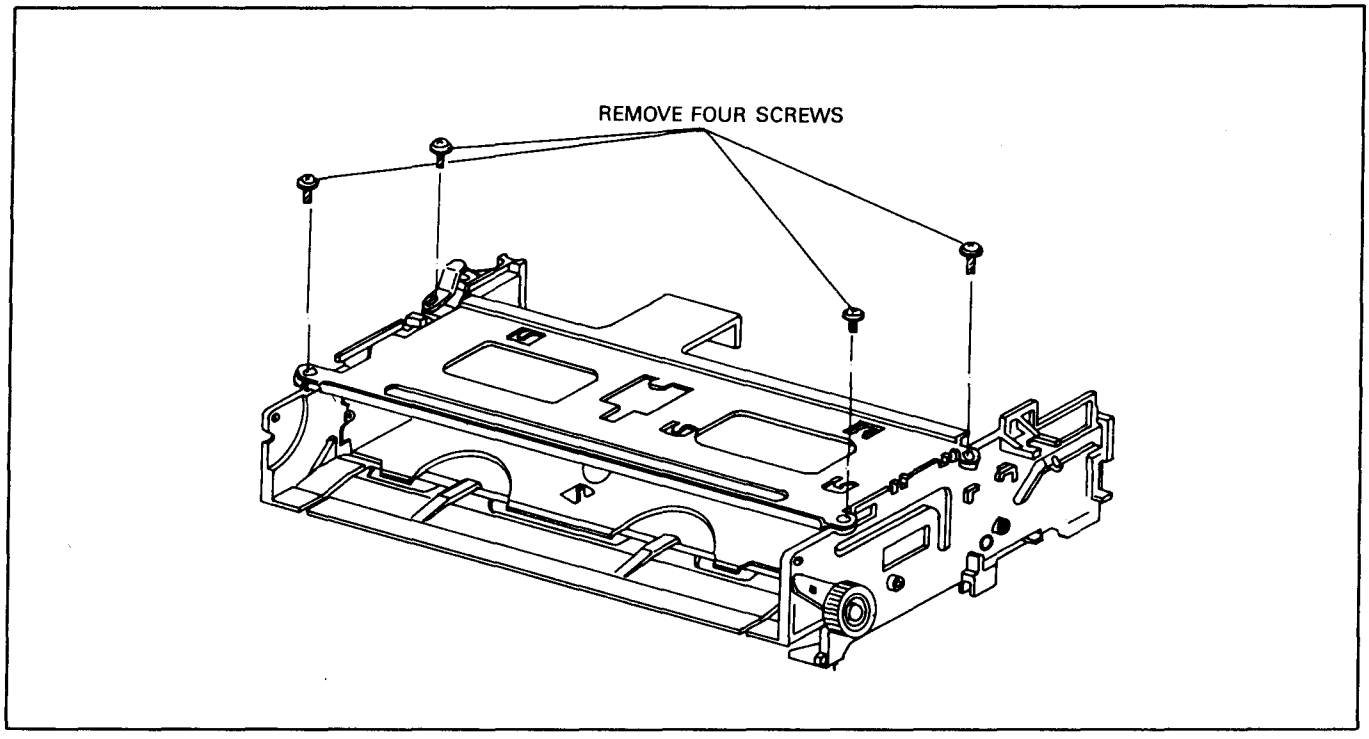


Fig. 20 Upper Chassis Removal

13. After removing four screws, pull the upper chassis upward to remove. (Fig. 20)

14. Side Arm (L) Assembly Remove. (Fig. 21)
    1) Release the eject spring.
    2) Remove the arm gear.
    3) Release the arm tension spring.

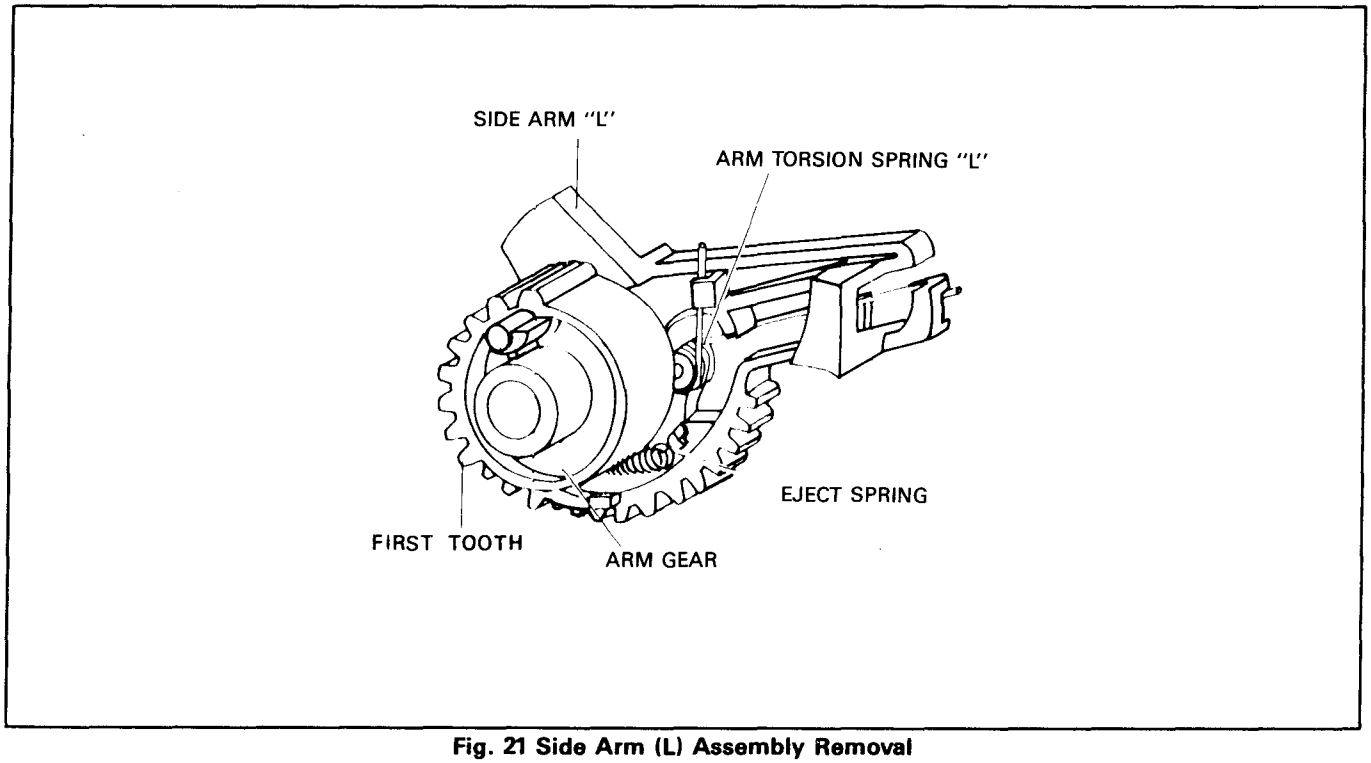


Fig. 21 Side Arm (L) Assembly Removal

2-2-4. Mechanical Chassis Assembly Removal (Fig. 22)

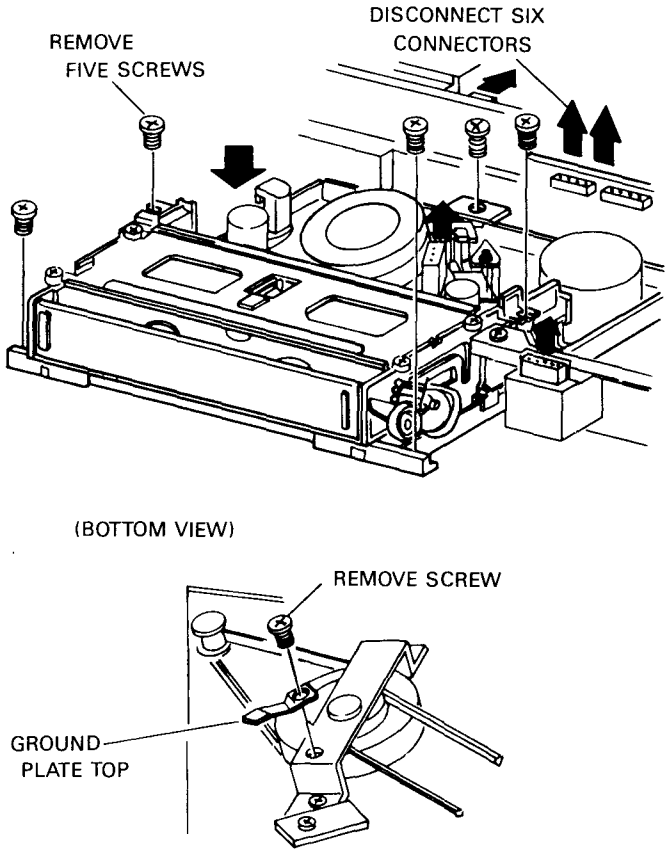


Fig. 22 Mechanical Chassis Assembly Removal

1. Remove the Panels (See Figs. 1 to 3)
2. Remove the screw. (Bottom View)
3. Disconnect six connectors.
4. Remove five screws and pull the mecha chassis assembly upward to remove.

2-2-5. Video Head (Upper Drum) Removal and Drum Motor Assembly Removal. (Fig. 23)

Note: Take extreme care when removing the upper drum. Do not touch the video head tips (located in the upper drum) during servicing.

Follow the procedure for removing

1. Remove the top cabinet (See Fig. 1)
2. Remove the bottom cover (See Fig. 2)
3. Remove two (A) screws holding the cover upper drum.
4. Remove four wires soldered to PWB-Upper drum P-3.

Note: Upon reinstallation, connect four wire colors to wires of the same color which are soldered PWB-Upper drum P-3.

5. Remove two (B) screws on the upper drum.
6. Lift up the upper drum in the direction of the arrow.
7. Remove two (C) screws holding the drum motor.
8. Disconnect connector from the drum motor.
9. Remove three screws (D) holding the drum motor.

When it is necessary to remove lower drum, remove three screws (E) and lift up the lower drum assembly in the direction of the arrow.

Note: Upon reinstallation, alternately tighten two (2) upper drum holding screws and perform the following adjustments.
Tracking Preset Adjustment.
A/C Head Horizontal Position Adjustment.

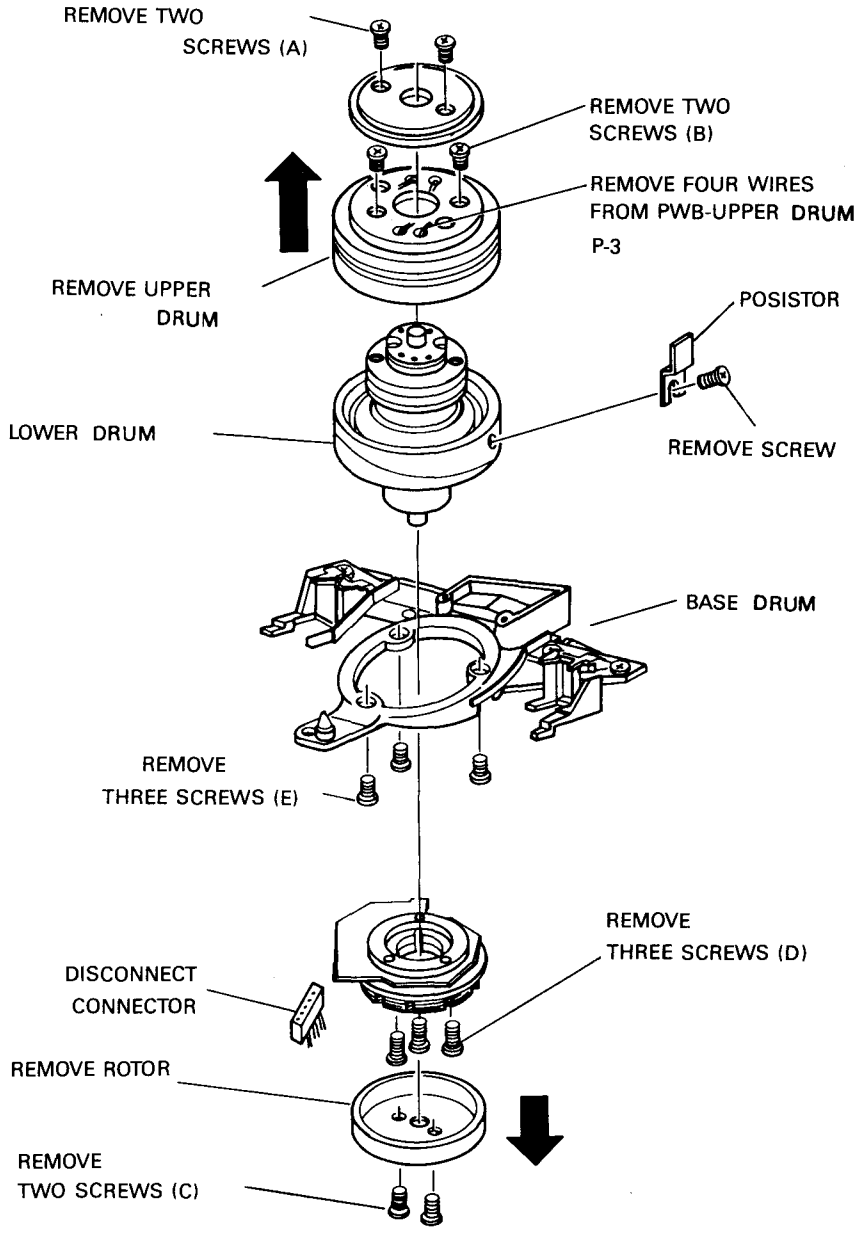


Fig. 23 Video Head Removal and Drum Motor Assembly Removal.

2-2-6. Full Erase (FE) Head/Supply Roller Removal (Fig. 24)

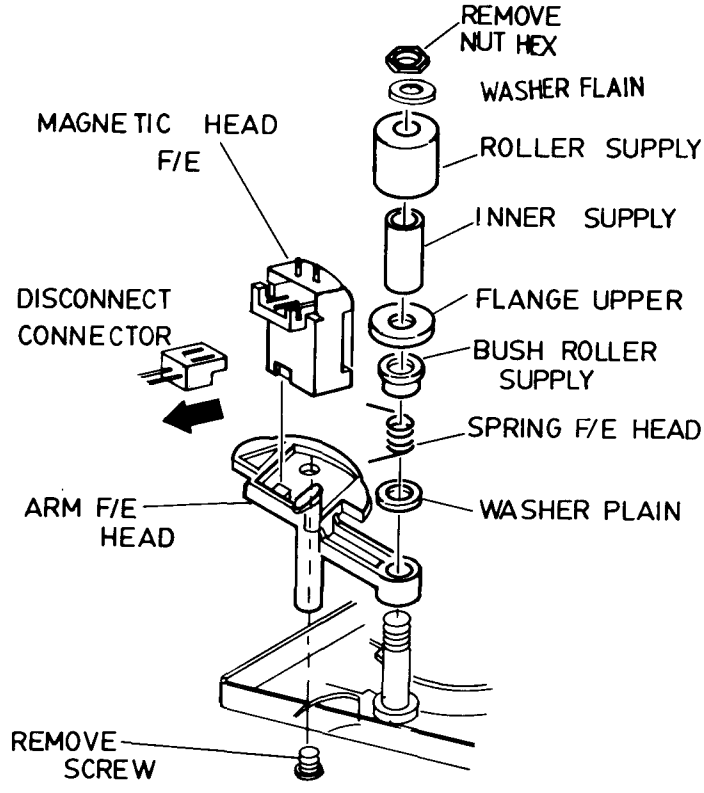


Fig. 24 Full Erase (FE) Head/Supply Roller Romoval

1. Remove the top cabinet (See Fig. 1)
2. Disconnect connector from the F/E Head.
3. Remove the nut at the top of the supply roller and remove the washer plain, supply roller, inner supply, flange upper, bush roller supply.
4. Remove the spring F/E head arm, washer plain.
5. Pull the arm F/E head upward to remove.
6. Remove the screw holding the F/E head at the back of the base.
7. After replacing or reinstalling the FE head, clean each tape contact surface of the F/E head and supply roller.

Note: Upon reinstallation, peform the supply roller height adjustment.

2-2-7. Audio/Control (A/C) Head Removal (Fig. 25)

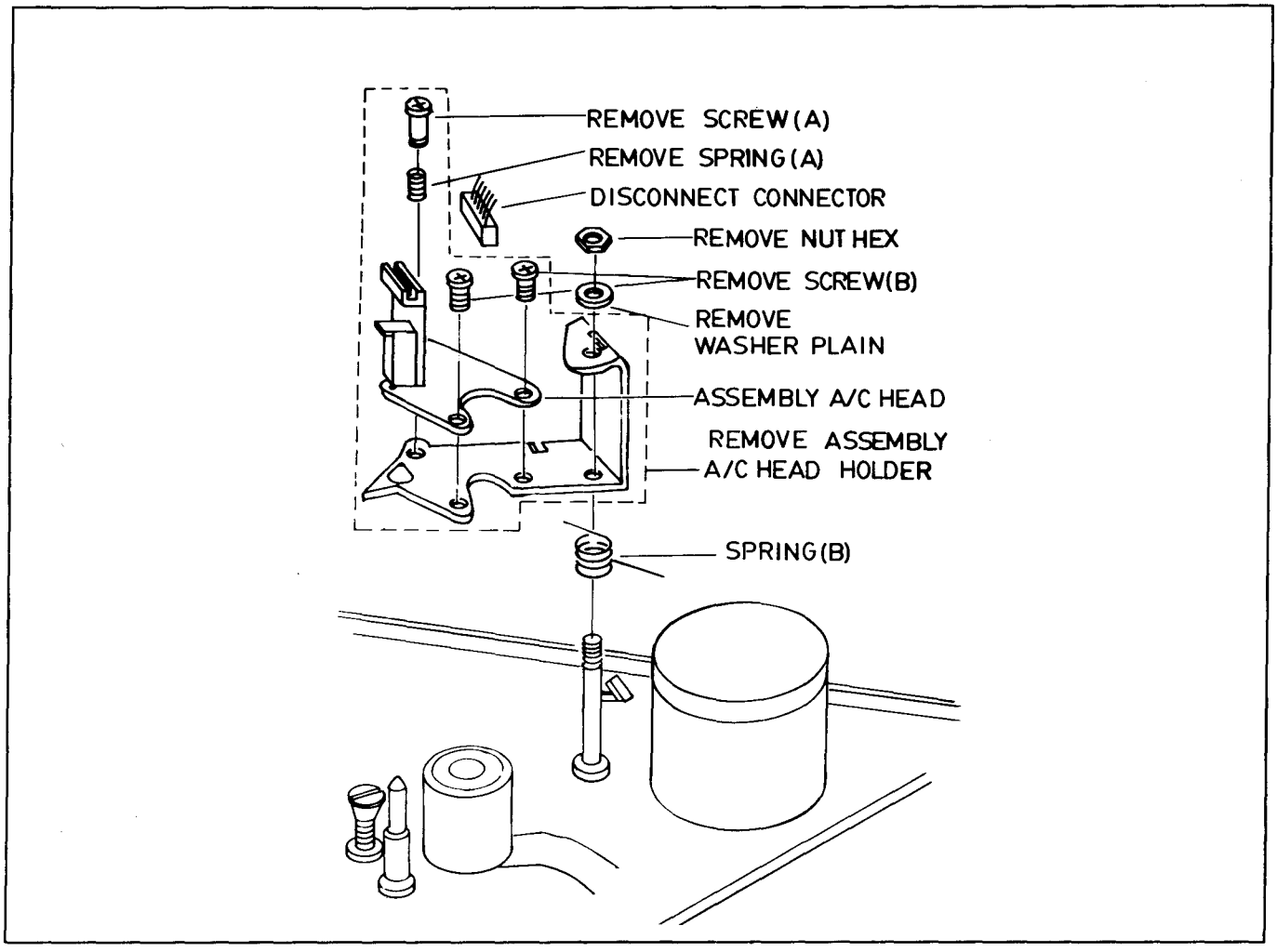


Fig. 25 Audio/Control (A/C) Head Removal

1. Remove the top cabinet. (See Fig. 1)
2. Disconnect connector from the A/C head.
3. Remove the nut holding the A/C Head Holder and remove the washer plain.
4. Pull the A/C head assembly upward to remove.
5. Remove screw (A) and spring (A)
6. Remove screw (B) and remove assembly alchead.
7. After replacing or reinstalling the assembly A/C head holder, clean the tape contact surface of the head.

Note: Upon reinstallation, hook the spring between A/C head base and mecha chassis.
After installing the assembly A/C head and assembly A/C head holder, perform the following adjustment.
1) A/C Head Height, Tilt and Azimuth Adjustments.
2) A/C Head Horizontal Position Adjustment.
3) Audio Playback Gain Adjustment.
4) Audio Bias Level Adjustment.

- Audio head height must be performed before A/C head, horizontal position adjustment is performed.
- If audio head height is adjusted, the A/C head horizontal position must be readjusted.
- After completion, of the A/C head position adjustment, the A/C head base must be positioned at approximately the center of the mat adjust.

2-2-8. Loading Motor Assembly Removal (Fig. 26)

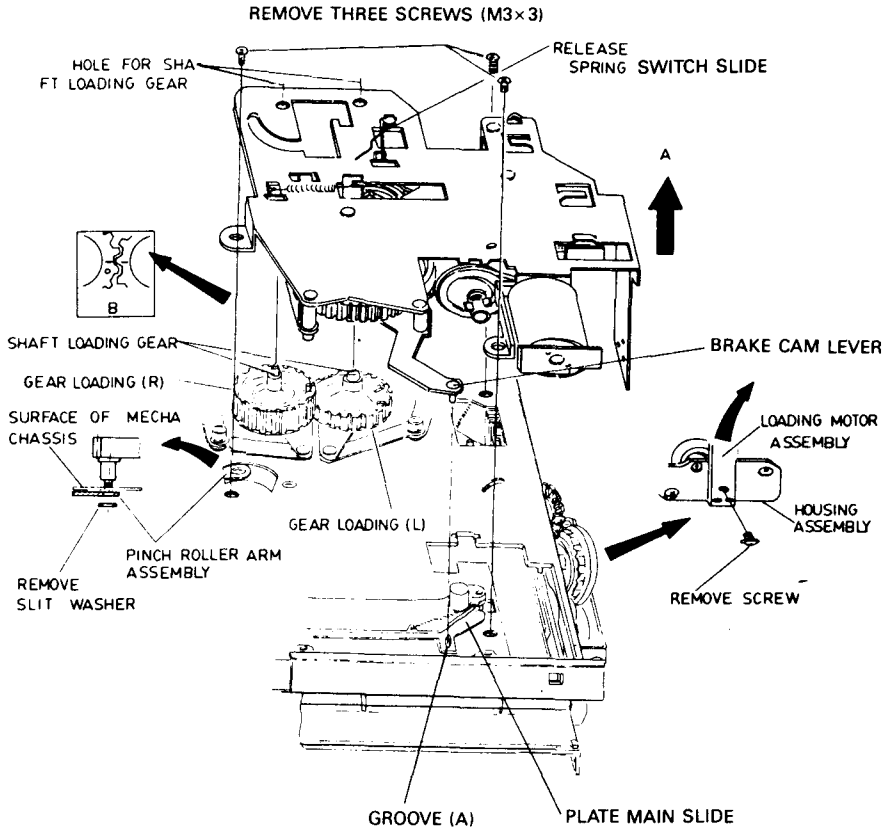


Fig. 26 Loading Motor Assembly Removal

1. Remove the top cabinet (See Fig. 1)
2. Remove the bottom cover (See Fig. 2)
3. Remove the mecha chassis assembly (See Fig. 22)
4. Remove the housing assembly (See Fig. 12)
5. Remove the slit washer
6. Release the spring S/W slide, and the gear loading spring
7. Remove the three screws and pull the loading motor assembly upward in the direction arrow mark (A)

Note: Upon reinstallation, be sure the marks on the gear loading (L), (R) are positioned in the line (See. B) and S/W slide position is at the end of left side.

2-2-9. Arm Tension Assembly, Tension Band Assembly and Holder Tension Spring Removal. (Fig. 27)

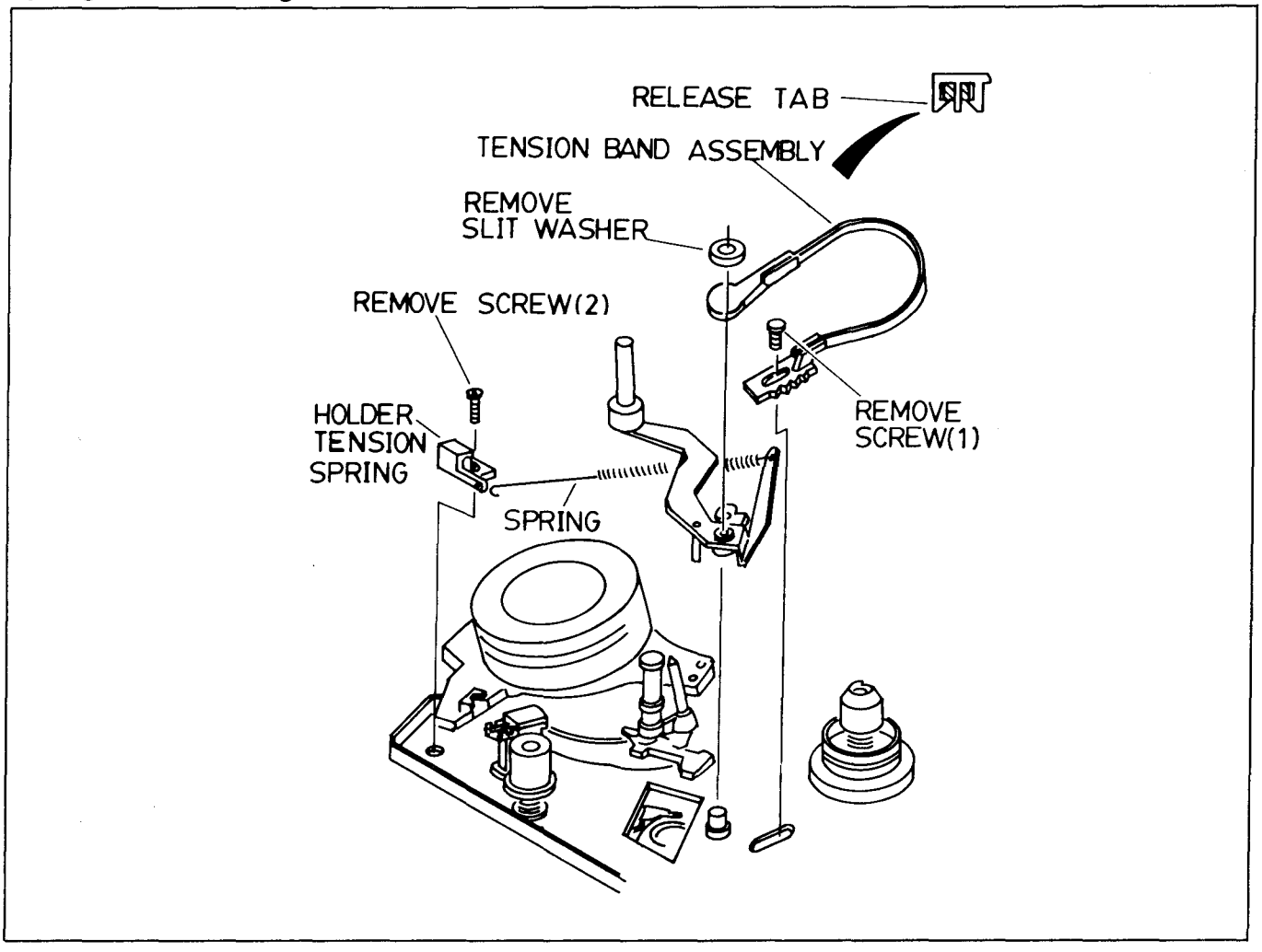


Fig. 27 Arm Tension Assembly, Tension Band Assembly and Holder Tension Spring Removal

1. Remove the screw (1) holding the tension band assembly
2. Release the spring hooked on the holder tension spring.
3. Remove the screw (2) and remove the holder tension spring.
4. Remove the slit washer and Pull the arm tension assembly upward.
5. Release the tab holding the tension band assembly.

Note:

2-2-10. Brake Sub (R) Assembly and Brake Sub (L) Assembly Removal. (Fig. 28)

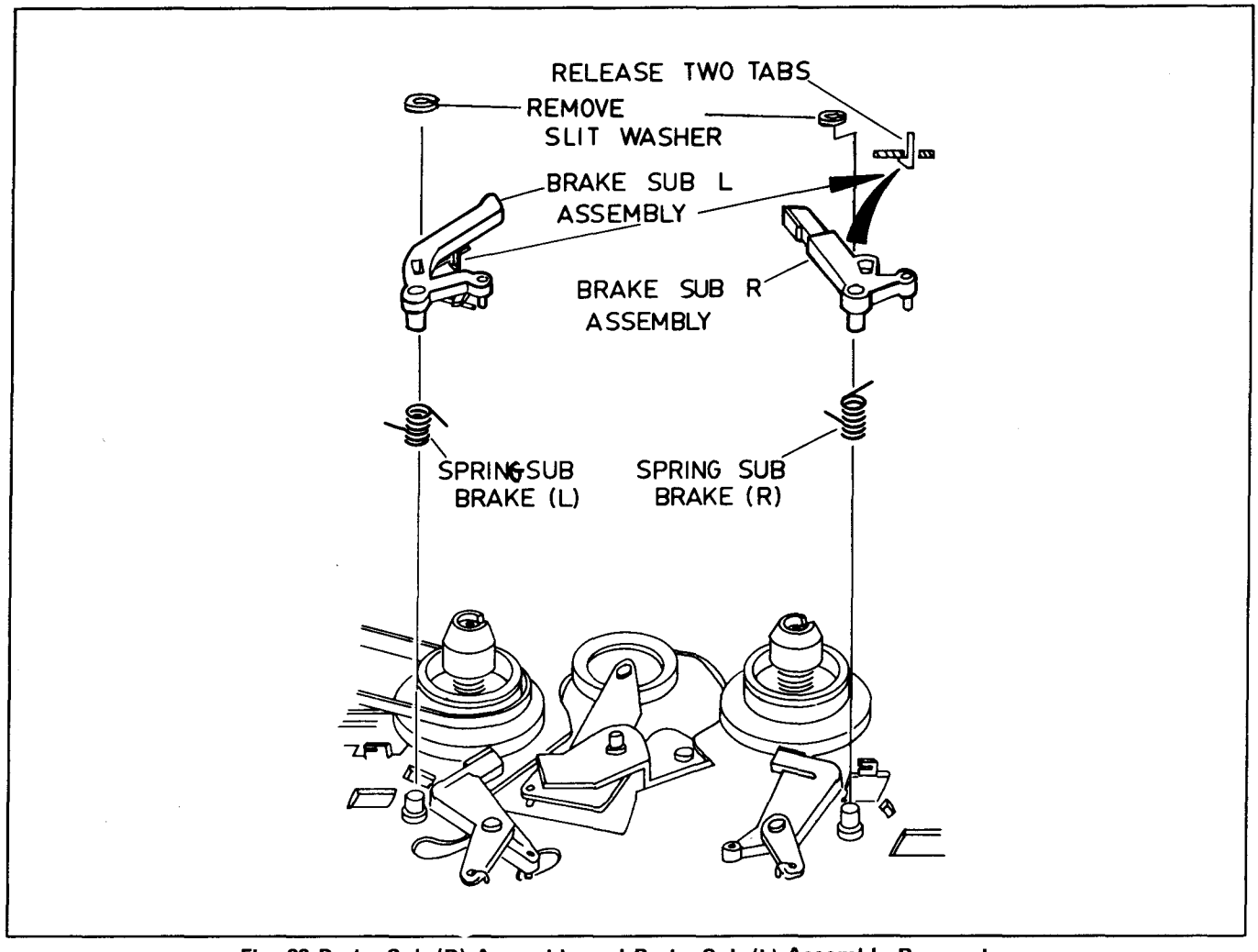


Fig. 28 Brake Sub (R) Assembly and Brake Sub (L) Assembly Removal

1. Follow the procedure for removing the Panels. (See Figs. 1 to 3)
2. Remove the housing assembly (See Fig. 12)
3. Remove the two slit washers and release the sub brake (R) spring.
4. Release the tabs holding the brake Sub (R) assembly and brake sub (L) assembly.

Note: Take care when removing spring.

Note: _____

2-2-11. Brake Main (L) Assembly and Brake Main (R) Assembly Removal (Fig. 29)

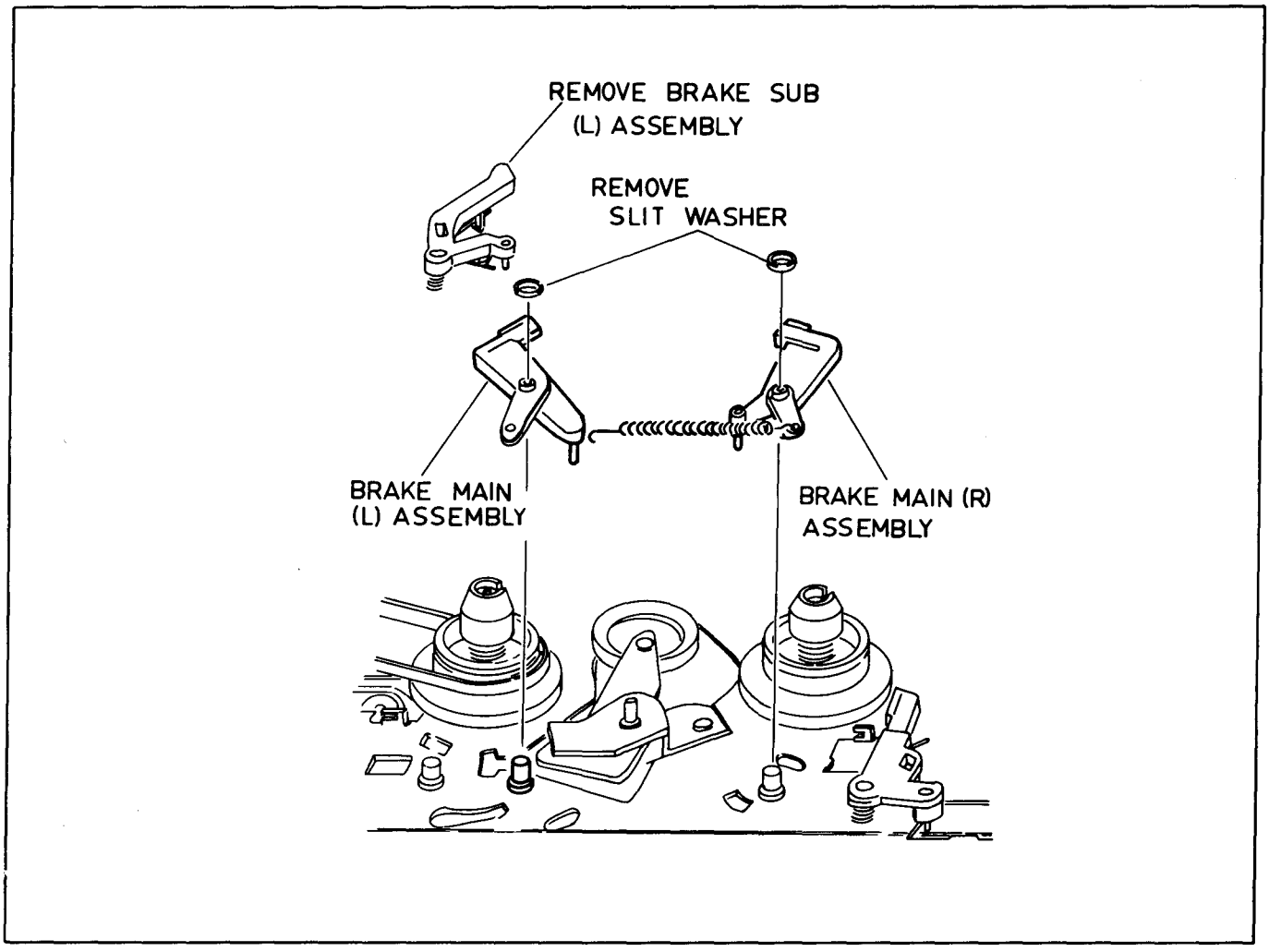


Fig. 29 Brake Main (L) Assembly and Brake Main (R) Assembly Removal

1. Follow the procedure for removing the panels. (See Figs. 1 to 3)
2. Remove the housing assembly. (See Fig. 12)
3. Remove the brake sub (L) assembly. (See Fig. 28)
4. Remove the two slit washers.
5. Release the spring hooks on the brake main assemblies.

Note: _____

2-2-12. Capstan Motor Removal (Fig. 30)

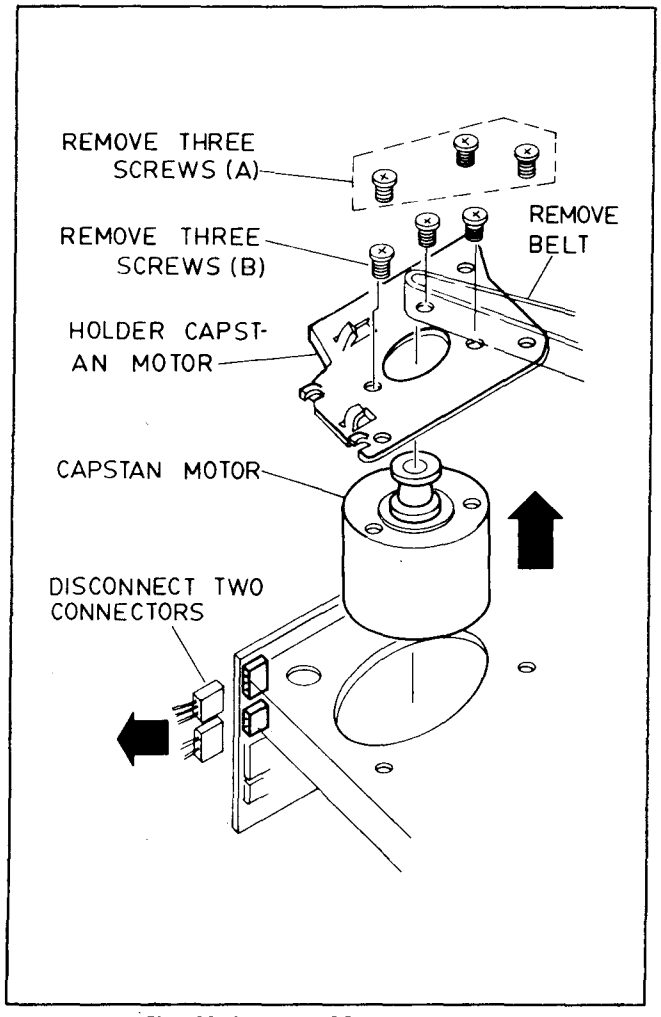


Fig. 30 Capstan Motor Removal

1. Remove the Panels. (See Fig. 1 to 3)
2. Remove the mecha chassis assembly (See Fig. 22)
3. Disconnect two connectors.
4. Release the capstan belt from the pulley capstan.
5. Remove three screws (A) holding the holder capstan motor.
6. Remove three screws (B) attached to capstan motor.

2-2-13. Assembly Gear Loading (L) (R) Removal (Fig. 31)

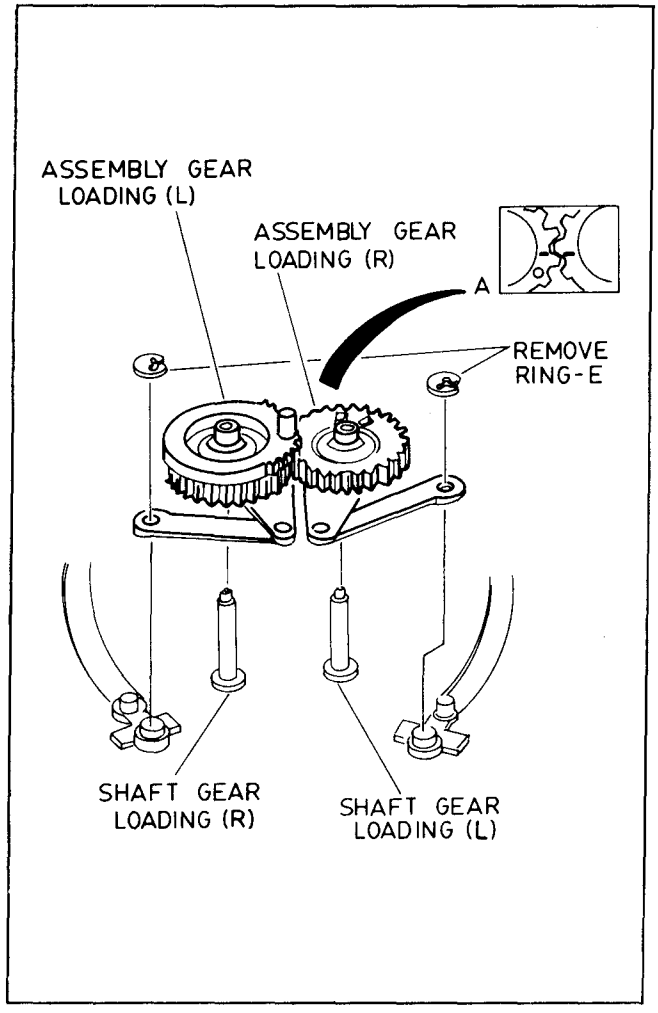


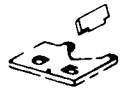
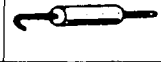
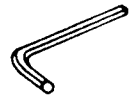
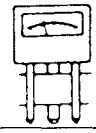
Fig. 31 Assembly Gear Loading (L) (R) Removal

1. Follow the procedure for removing the panels (See Figs. 1 to 3)
2. Remove mecha chassis assembly (See Fig. 22)
3. Remove the housing assembly (See Fig. 12)
4. Remove the loading motor assembly (See Fig. 26)
5. Remove the ring-E holding on the arm loading assembly.

Note: Fully unloaded position upon reinstallation, be sure the marks on the gear loading (L) (R) are positioned in the line (See. A)

3. MECHANICAL ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT TOOLS

No	Jig Item.		Code No.	Configuration	Description	Remarks
1	Head Gauge		SSJ-1001		This jig is used to check and adjust the torque of Takeup/Supply Reel.	
2	Master Plane and Reel Disk Height		SSJ-1002		This jig is used to check the height difference between Reel Disk and Deck Plate	
3	Back Tension Measuring Cassette Tape		SSJ-1004		This tape is used for supply reel torque alignment.	
4	Guide Pole Height Adjusting Jig.		SSJ-1005		Used to adjust tape height to the video head.	
5	Drum Replacement Jig.		SSJ-1007		This jig is used when replacing the VCR's upper drum.	
6	Alignment Tape	(SR1-2)	SSJ-1014C		This tape is used for fine electrical adjustment and tape running system (MECHA) alignment.	
		(SR2-2)	SSJ-1014D			
7	Tension Gauge (5.0kg)		SSJ-1008		The gauges are used for tension measurements.	S.N.A
8	Torque Gauge		SSJ-1009		This jig is used to check and adjust the torque of Takeup/Supply Reel.	S.N.A
9	Hex Wrench (0.9mm)		SSJ-1010A		These wrenches are used for locking or tightening special Hexagon type screws	S.N.A
	Hex Wrench (1.2mm)		SSJ-1010B			
	Hex Wrench (1.5mm)		SSJ-1010C			
10	Tape Tension Gauge (Tentelo Meter)		SSJ-1011		This tape tension gauge is used for measuring the back tension of the running tape.	S.N.A

*S.N.A: Service Not Available

3-2. Reel Disk Heights (Fig. 1)

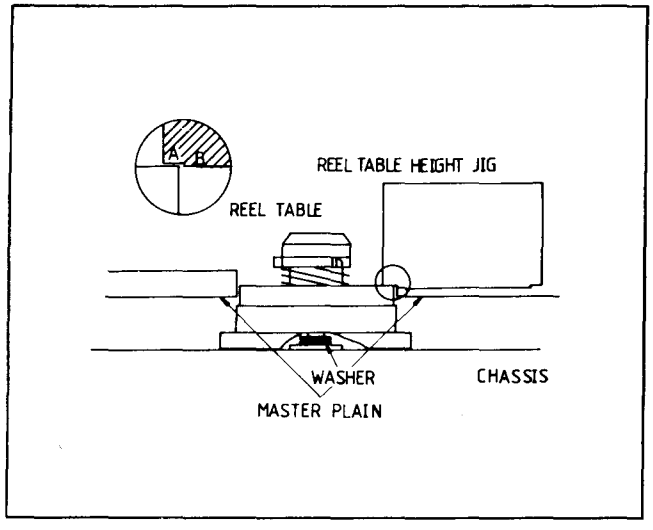


Fig. 1 Reel Disk Height

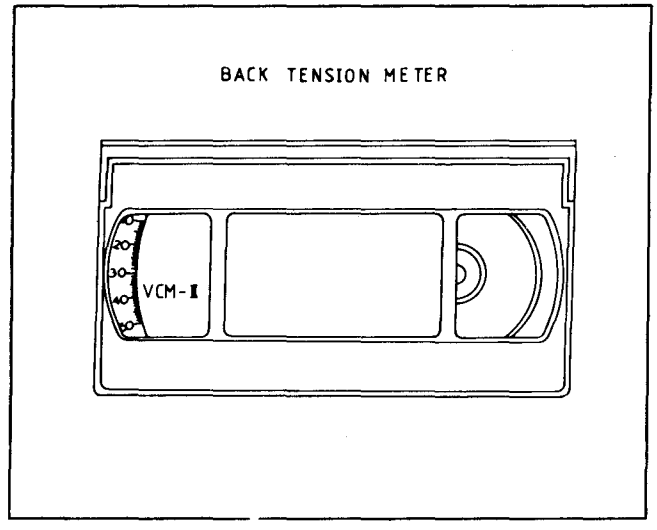


Fig. 2 Back Tension Meter

The height of the supply and take-up turntables should be the same, ±0.2 mm. Turntable heights are adjusted by changing washer plain stack located under each turntable.

Check turntable heights by installing the Master Plain. Set the Reel Disk Height Jig in place and check the height of the supply and take up turntables. (See Fig. 1.)

The size of washer is 0.13 mm (3.2 mm ID). This washer should be used to achieve egual reference heights for both turntables.

Note: For proper height point "A" should slide over the reel disk and point "B" should not. (Fig. 1)

3-3. Back Tension Adjustment (Fig. 2)

When the back tension is properly adjusted, the service test tape recorded under laboratory conditions) will play back with minimum skew error—picture displacement in line following head switching. The tension is set as follows:

1. Load the instrument with the back tension adjustment tape.
2. Place the instrument in the "play" mode.
3. Read the scale on the reel disk (S).
4. This reading should be between 39.5 and 44.5
5. After loosening the screw, move the holder tension spring direction "b" when the tension adjustment tape reads 45 or higher, and to the holder tension spring in direction "a" when it is 39 or lower, and adjust the back tension for a nominal reading of 42 on the scale.
6. Recheck the arm tension position when the back tension is changed greatly (6 or more).

Note: The instrument must be in a horizontal position for this adjustment.

3-4. Arm Tension Position Adjustment (Fig. 3)

1. After removing the housing assembly, the tenth mode of the Deck Joint P.C. Board's wafer CN 205 connect to ground. (Refer to page 3-7).
2. Place the instrument in the "play" mode.
3. After loading is complete, loosen the screw holding the holder tension A and adjust so tht the clearance between the center of roller supply and the pole tension is 1.6 mm $-\ ^{+1.0}_{0.5}$ mm.
4. Tighten screw to secure adjustment.

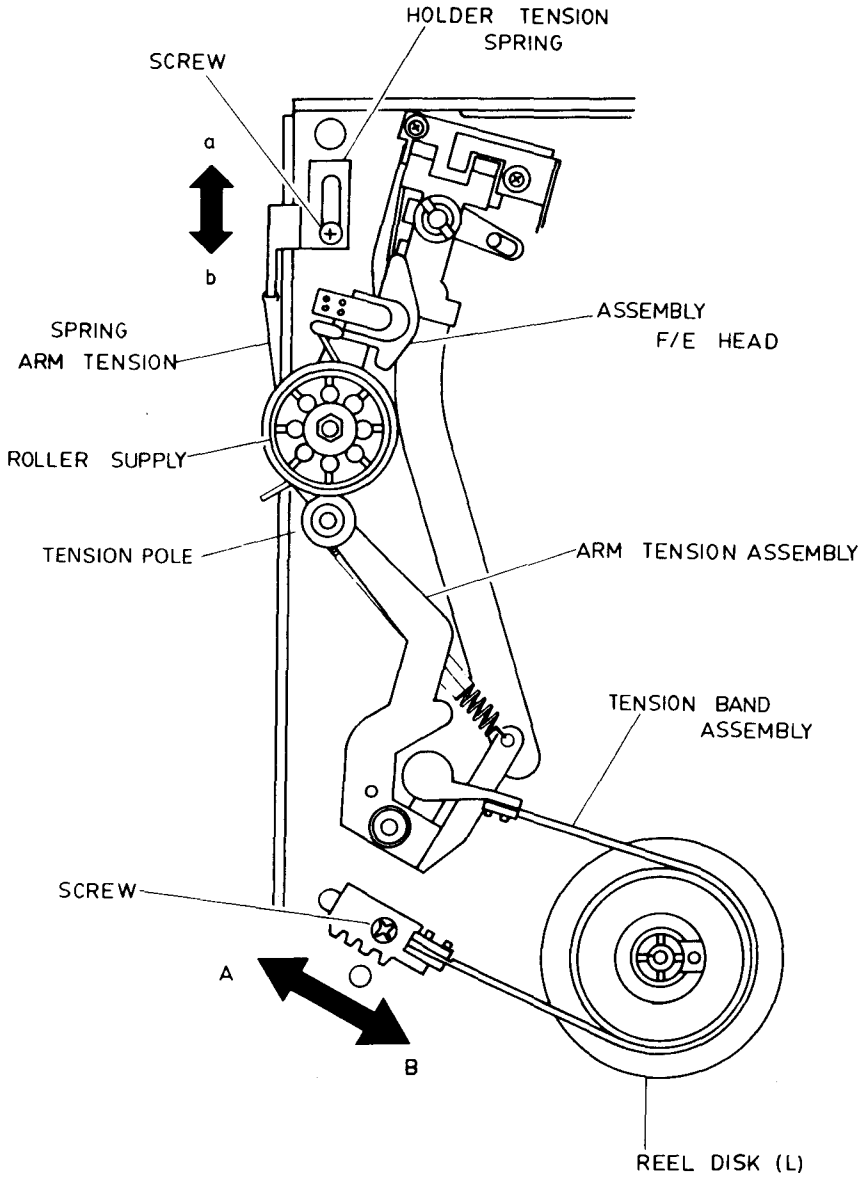


Fig. 3 Arm Tension/Back Tension

3-5. Brake Torque Confirmation (Fig. 4)

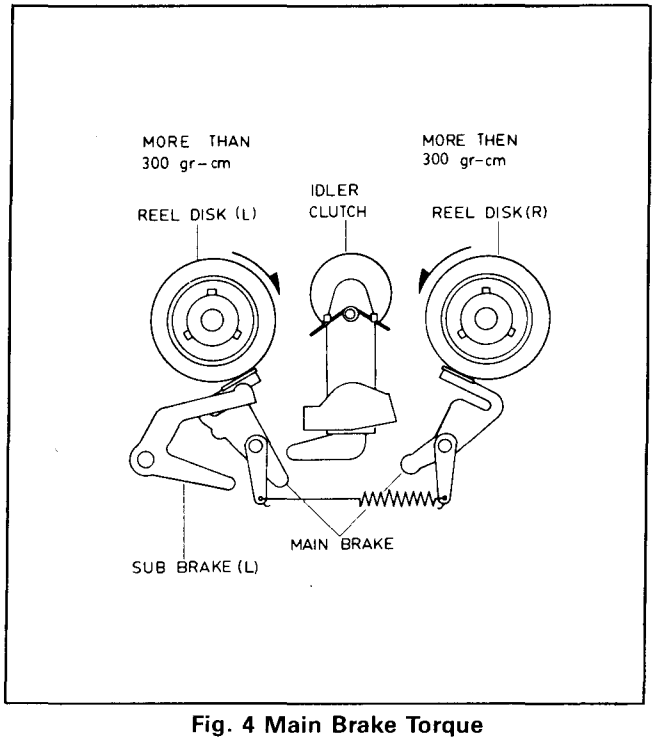


Fig. 4 Main Brake Torque

1. Remove top cover and place instrument in the "stop" mode.
2. Clean the brake surfaces on turntables using "Kim-wipes" and solvent before measuring torque.
3. Attach the torque gauge head to the torque gauge.
4. Place torque gauge on the reel disk (S) turntable.
5. Turn torque gauge in a clockwise direction until the brake begins slipping. Maintain "slipping" rotation and read torque—torque reading should be more than 300 grams—cm.
6. Repeat for the take up side turning the torque gauge counterclockwise—reading should be more than 300 grams-cm.

Note: Brake torque problems can cause tape stretch, broken tape or loose tape wind in cassette.
These symptoms can usually be corrected by properly cleaning. If not replace brakes.

3-6. Play, Fast Forward, Rewind Torque Confirmation

1. Place the cassette holder in the loading state without inserting a cassette tape. (Refer to page 3-7)
2. Attach the torque gauge head to the torque gauge.
3. Place torque gauge on the reel disk (T), operate instrument in the "SP Record" mode—torque should measure 150-30 grams-cm.
4. Press Fast Forward button—torque reading should be 600 grams-cm minimum.
5. Place torque gauge on the reel disk (S) and operate instrument in the "rewind" mode—torque reading should be 600 grams-cm minimum.

3-7. Rough Tape Travel Check

Using a blank tape, place the instrument in "play" and note the following.

1. The tape should be in full contact with all tape guide posts.
2. The tape should be crease-free with all tape guide posts.
3. The supply roller should be moving freely.
4. The tape should be perpendicular to the longitudinal axis of the heads when crossing the erase head and the A/C head.
5. The tape should be centered top to bottom on the head when crossing the full erase head.
6. The tape should follow the lower-edge guide surface on the D-D drum.

3-8. Creasing or Slack Tape (Fig. 5)

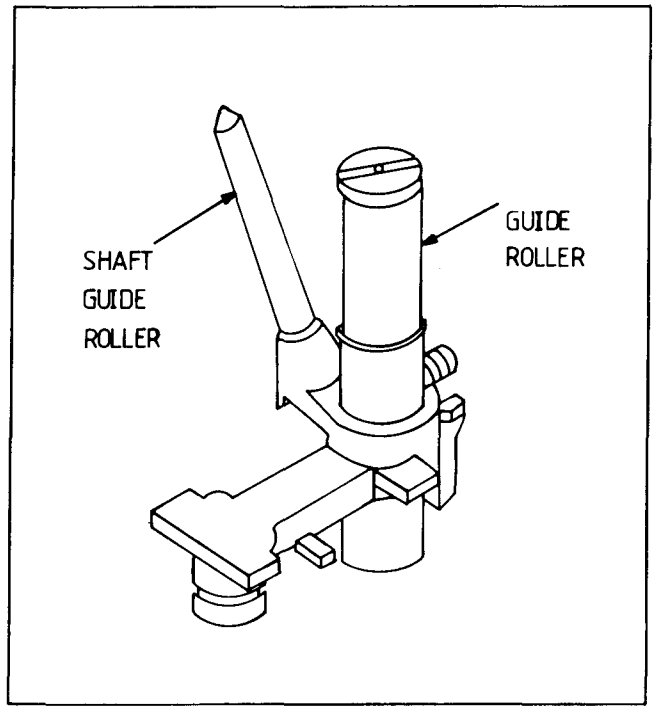


Fig. 5 Creasing or Slack Tape

Load instrument with a blank tape and place in "play" mode. With the tape running, inspect the tape path for creasing or frilling along top or bottom edges of tape. If the tape is creasing or frilling, check the tape as it goes "on" and comes "off" the lower drum.
The tape should follow the lower edge guide surface on the drum. If the tape is high on the guide surface, rough adjust guide rollers to correct this condition (use guide roller adjusting driver)
It will now be necessary to perform guide rollers adjustments and confirm interchangeability.

3-9. Mechanical Interchangeability Considerations

The tape-guide adjustments position the tape so that the prerecorded tracks on the test tape align perfectly with the scan of the video head assembly. The mechanical interchangeability adjustment procedures will insure that a tape recorded on one VHS recorder will play back properly on another mechine.

Usually little or no mechanical adjustment is required after routine (head replacement) servicing. Before making any adjustments, perform the following interchangeability confirmation procedure to determine if adjustment is required. If the video heads are replaced, it will also be necessary to confirm the PG shifter adjustment.

If major mechanical servicing was performed (tape guide replacement, etc.) perform "Rough Tape Travel Adjustment" before using test tape.

3-10. Interchangeability Confirmation (Fig. 6)

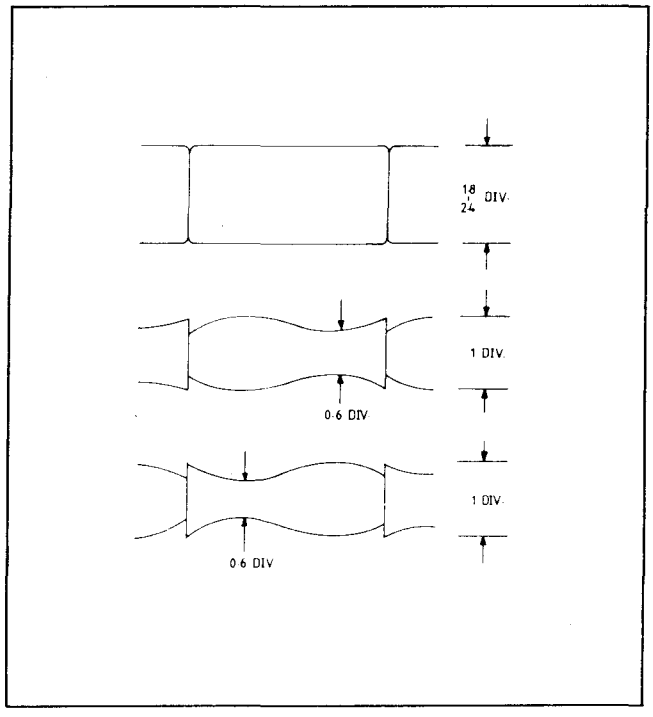


Fig. 6 Interchangeability Confirmation

This confirmation check should be performed after any servicing operation that could adversely affect the tape bath; i.e. D-D drum motor replacement, tape guide replacement, audio/control head replacement, etc.

If unit passes this confirmation check, no tape guide adjustment is required.

Preliminary: This adjustment should be performed after the Tracking Preset adjustment is completed.

1. Connect a channel-1 scope probe (2V/div.; 5ms/div.) to TP201 (MAIN A PCB.) Trigger the scope on channel-1.
2. Connect the channel-2 scope probe (20mV/div.) to 303 (MAIN B PCB; PB FM LEVEL).
3. Play monoscope signal on test tape (Alignment Tape SR1-2, See Jig List).
4. Adjust tracking control (VR701) for maximum FM envelope amplitude (TP 0303 signal) at center of envelope.
5. Adjust scope vertical gain control so that maximum envelope amplitude is 1.8—2.4 graticule divisions.
6. Turn tracking control (VR701) to the left so that maximum envelope amplitude is graticule divisions.
7. Confirm that the minimum envelope amplitude is 0.6 graticule divisions or more at this time.
8. Turn tracking control (VR701) to the right so that maximum envelope amplitude is 1 graticule divisions.
9. Confirm that the minimum envelope amplitude is 0.6 graticule divisions or more at this time.
10. When the confirmation items described above are satisfied, the tape guide adjustment is not necessary. When they are not satisfied, adjust the tape guide.
11. Set tracking control to detent (fixed) position. They adjust Control Track/Audio Head assembly position (X-value) to obtain maximum FM envelope (TP 0303 signal) at the detent position.

Note: If the D-D drum motor assembly has been replaced, perform the following electrical adjustments.
- PG Shifter adjustment
- Record Chroma and Luminance Level adjustments

3-11. Guide Rollers Adjustments (Fig. 7)

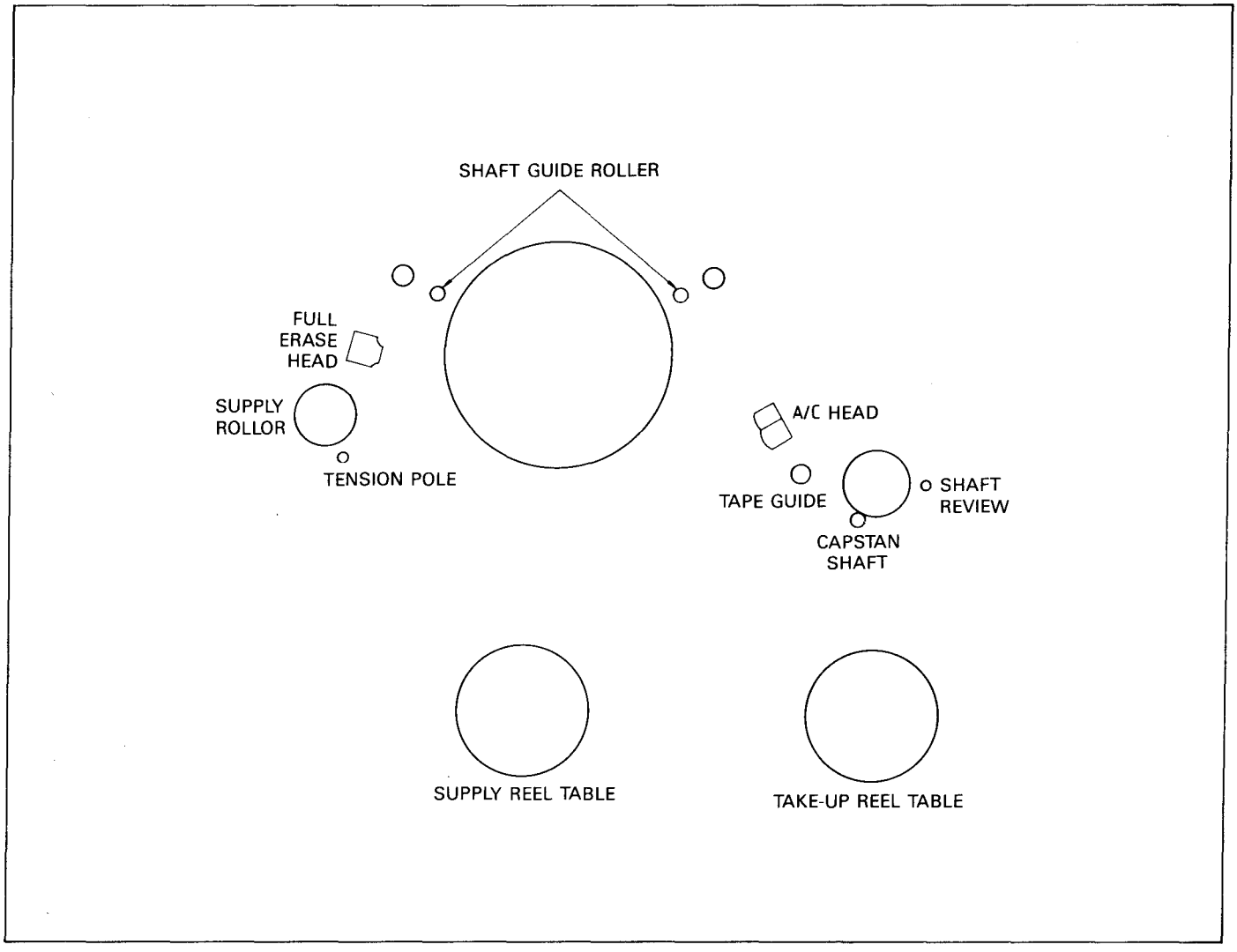


Fig. 7 Tape Guides

1. Connect channel-1 scope probe (2V/div.; 5ms/div.) to TP201. Trigger the scope on channel-1.
2. Connect channel-2 scope probe (10mV/div.) to TP 0303 (Main B PCB; PB FM LEVEL).
3. Set tracking control to detent (fixed) position and play back test tape monoscope signal. (Alignment tape SR1-2. Ref. Jig List). Loosen set screw on pole base of guide rollers.
4. Adjust guide roller down using guide roller adjusting driver (CW) until bottom edge of tape slightly bows the bottom of tape guide.
5. Monitor the head FM envelope at TP 0303
6. Raise (CCW) guide roller (right guide) to obtain maximum amplitude at right side of head envelope.
7. Raise (CCW) guide roller (lift guide) to obtain maximum amplitude at left side of Head envelope.
8. Adjust tracking control (VR701) for best envelope.
9. Touch up guide rollers for maximum amplitude flat envelope. Tighten set screw at pole base of guide rollers.
10. Adjust control head position (if necessary) to move the best envelope condition to the tracking control detent position.

Note: In the event that correct head envelope is not obtainable, check Audio/Control (A/C) head adjustments.

3-12. Audio/Control Head (Height/Tilt/Azimuth) (Fig. 8)

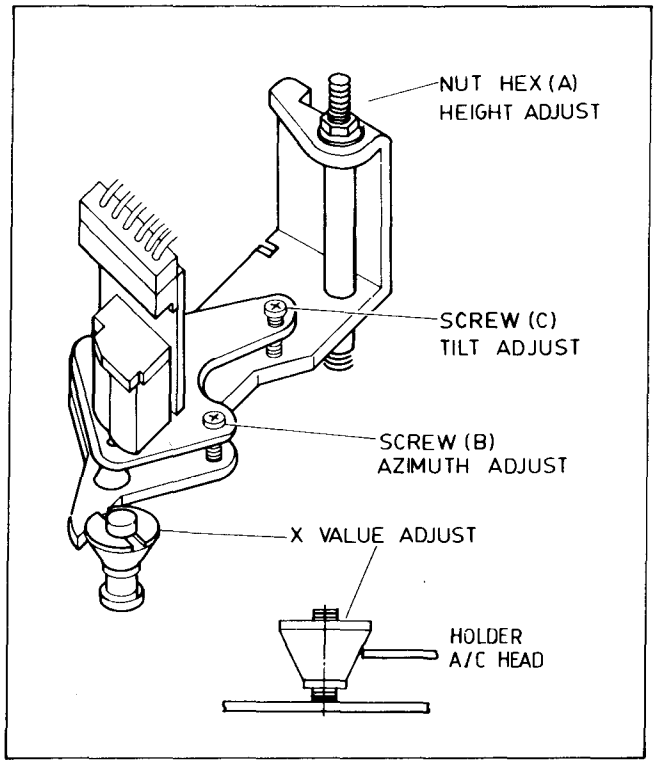


Fig. 8 Audio/Control Head Assembly

1. Connect a scope probe (0.5V/div.; 1ms/div.) to TP0502 (Use audio out jack) located on the main circuit board.
2. Play back a 1-KHz (color bars) audio signal on test tape (Alignment Tape SR 2-2. See Jig List)
3. Alternately adjust height nut (A) and tilt screw (C) for maximum output.
4. Play back a 6-KHz audio signal on test tape. (Alignment Tape SR 1-2. See Jig List)
5. Adjust azimuth screw (B) for maximum output.
6. Repeat steps 3 and 5 for maximum 6-KHz and 1-KHz output.
7. Lock the A/C Head (A) with paint.

3-13 Audio/Control Head (AC Head Horizontal Position) (Fig. 8)

This adjustment establishes proper tape tracking when the tracking control (VR701) is in its detent position.

Note: This adjutment should only be made after the tracking adjustment is completed. (See Electrical Adjustments.)

1. Connect a scope probe (10mV/div.; 5ms/div.) to TP 0303 (MAIN B PCB; PB FM LEVEL).
2. Set tracking control (VR701) to the detent (fixed) position.
3. Play back monoscope signal on test tape. (Alignment tape SR 1-2. See Jig List)
4. Carefully move the A/C head base plate in either direction for maximum head envelope output by adjusting the X-value screw.

3-14. Operating The VCR without Inserting a Cassette Tape (Fig. 9)

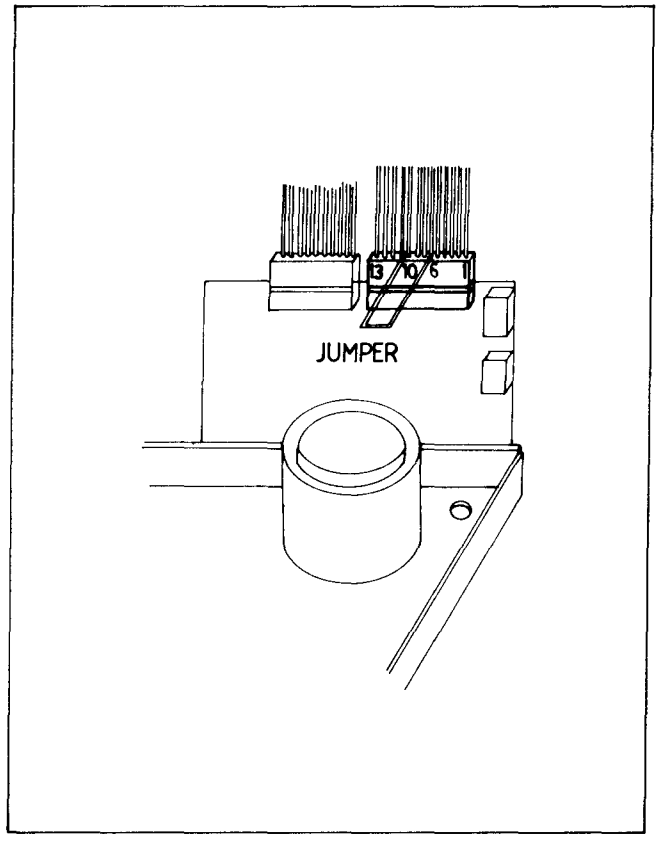


Fig. 9

1. Remove the top cover.
2. Remove the housing assembly (Fig. 12)
3. Plug the power cord of the VCR into the AC outlet.
4. Turn "on" the power switch of the VCR.
5. Connect a jumper between pins 6 and 10 of connector.
6. The above procedure enables the VCR to operate without loading a cassette tape.

Note: Operate the play or record button in order to place the VCR in the record mode or in the play mode.

4. ELECTRICAL ADJUSTMENTS

4-1. Circuit Board Location and Identification (Fig. 1, 2)

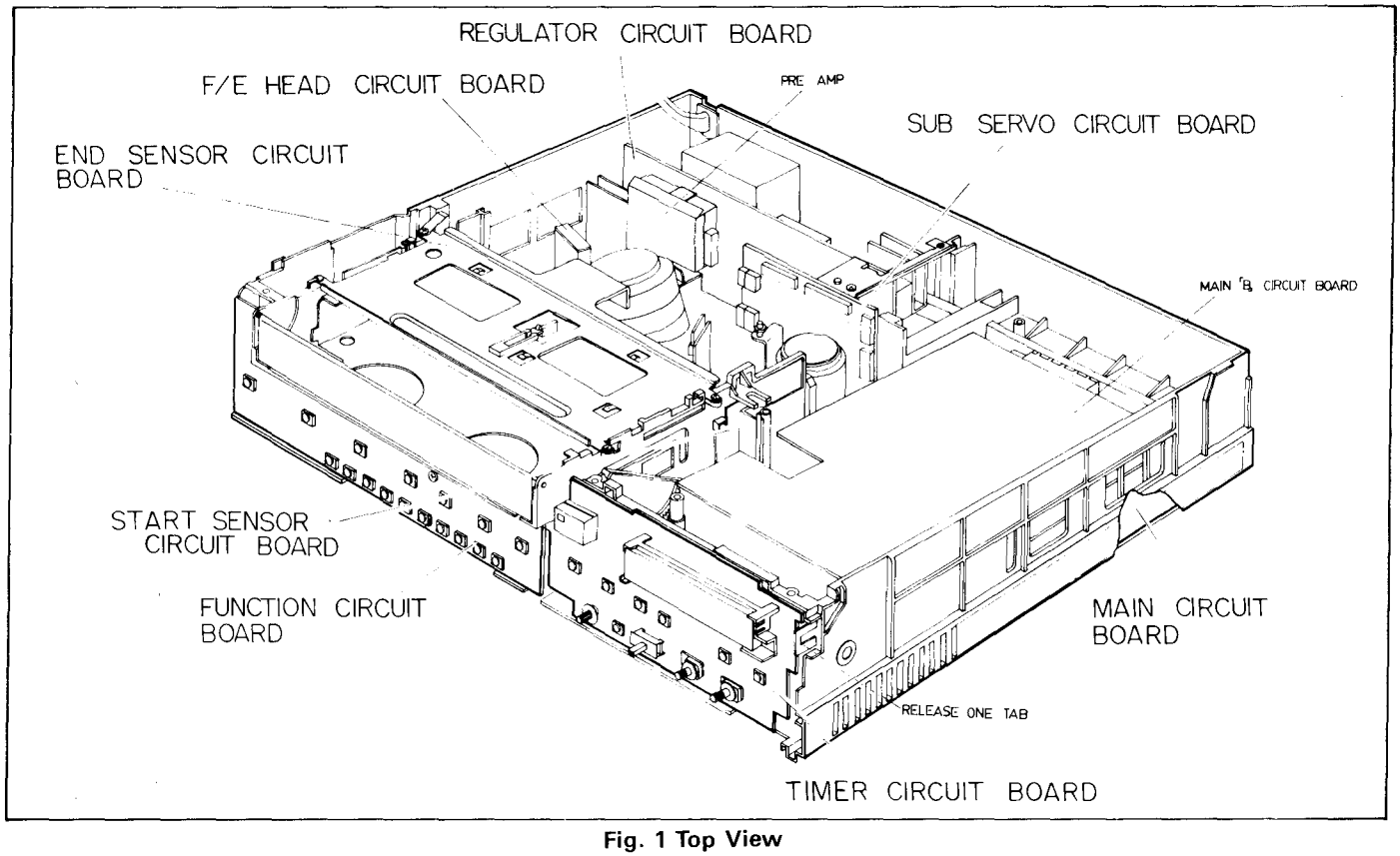


Fig. 1 Top View

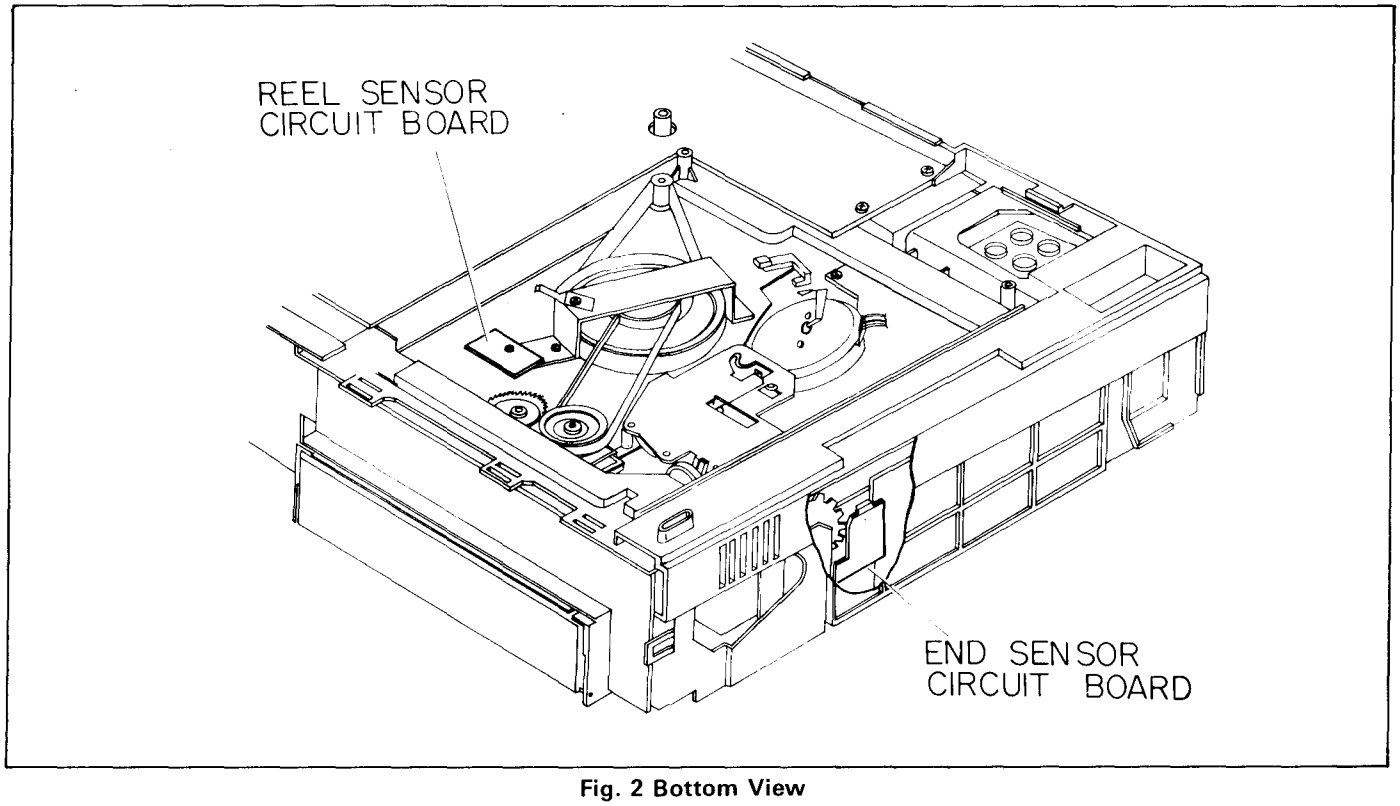


Fig. 2 Bottom View

4-2. SERVO SECTION in Main. A PCB

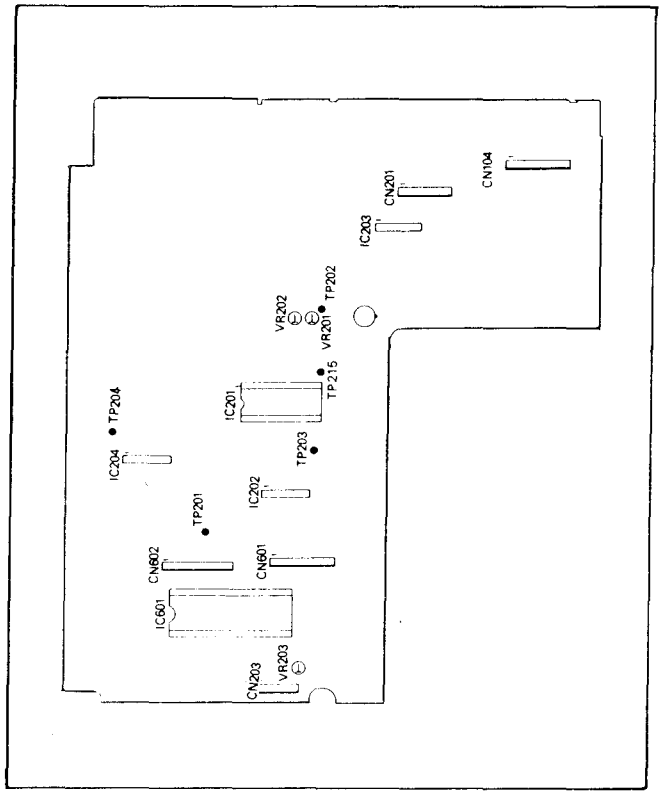


Fig. 3 SERVO SECTION in Main A PCB-Component Side

4-2-1. PG (Pulse Generator) Shifter Adjustment

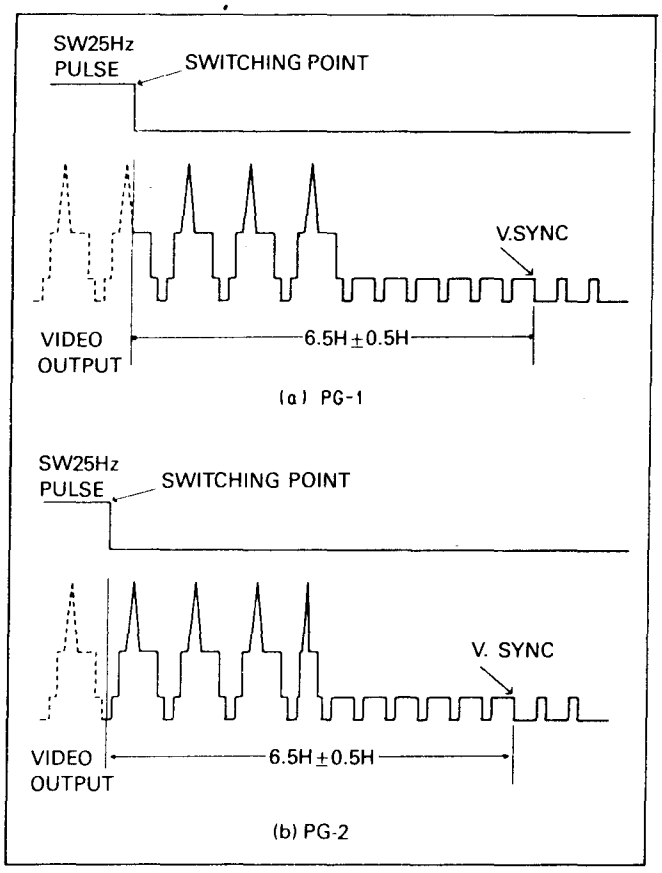


Fig. 4 PG Shifter

Equipment:	Oscilloscope	
Test points:	TP201 (SW 25Hz)	Main. A
	TP0302 (Video Output Signal)	Main. B
Adjust:	VR201 (PG-1)	Main. A
	VR202 (PG-2)	Main. A

The Pulse Generator (PG) Shifter determines the video head switching point during playback. Misadjustment of the PG Shifter may cause head switching noise in the picture and/or vertical jitter.

1) Load the instrument with an alignment tape and playback the color bar signal or monoscope signal. (Alignment Tape SR2-2).
2) Connect a channel-1 scope probe (1V/div.; 50μs/div.) to TP201. Trigger the scope on channel-1.
3) Connect the channel-2 scope probe (1V/div.) to TP0302.
4) Set the scope to (+) slope and adjust the PG-1 shifter control (VR201) so that the trailing edge of the SW 25Hz pulse is placed 6.5H±0.5H (horizontal) lines before the start of vertical sync pulse.
5) And then, set the scope to (−) slope and adjust the PG-2 Shifter control (VR202) as in the PG-1. (Fig. 4)

4-2-2. Tracking Preset Adjustment

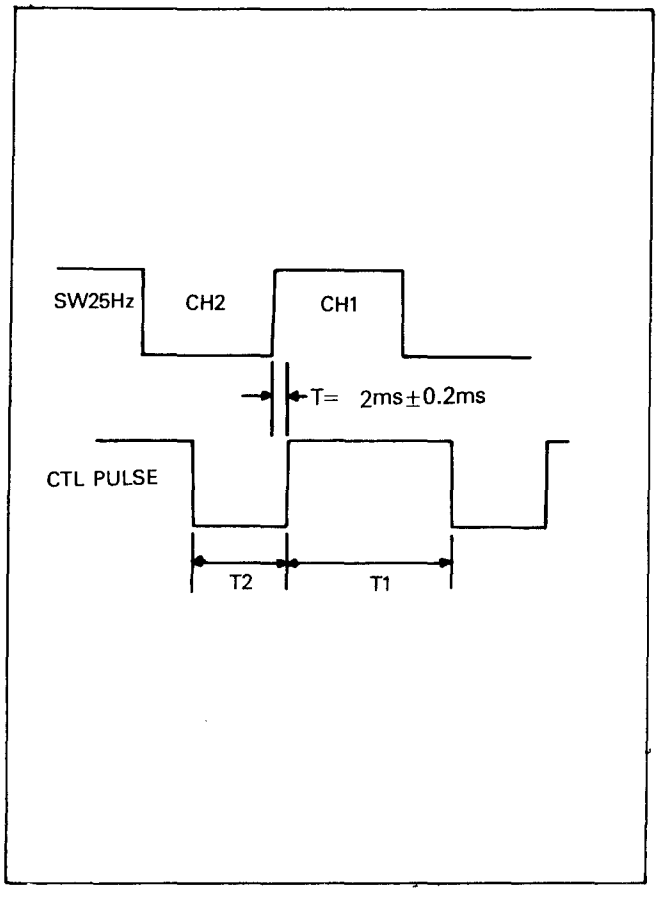


Fig. 5 Tracking Preset

Equipment: Oscillscope
Test Points: TP201 (SW 25Hz) Main. A
TP215 (CTL Pulse) Main, A
Adjust: VR203 (Tracking Preset) Main. A

This adjustment sets the optimum tracking during playback of a tape recorded on this instrument so that it occurs at the detented position of the Tracking control (VR701).

1) Load the instrument with an alignment tape and playback the color bar signal. (Alignment Tape SR1-2).
2) Connect a channel-1 scope probe (2V/div.; 5ms/div.) to TP201. Trigger the scope on channel-1.
3) Connect the channel-2 scope probe (2V/div.) to TP215.
4) Set the Tracking Control (VR701) on the front panel to the detented position and adjust the Tracking Preset Control (VR203) to align the pulse width T=2.0ms+0.2ms. (Fig. 5)

Note: Make sure that T1 > T2. If not, change the order of the CTL head wire for the correct SERVO adjustment.

Equipment: TV monitor
Adjust: VR702 Timer

This adjustment is to prevent vertically unstable picture in Pause mode.

1) Apply a PAL color bar signal to the Video Input jack (BNC) on the rear panel.
2) Rocate the input selected S/W to AUX.
3) Insert a biank tape and make a recording for a few minutes.
4) Playback in PAUSE/STILL mode.
5) Adjust the V-Lock Control VR702 so that the center of picture is most stable. (Fig. 6).

4-2-3. Vertical Lock Pulse Adjustment

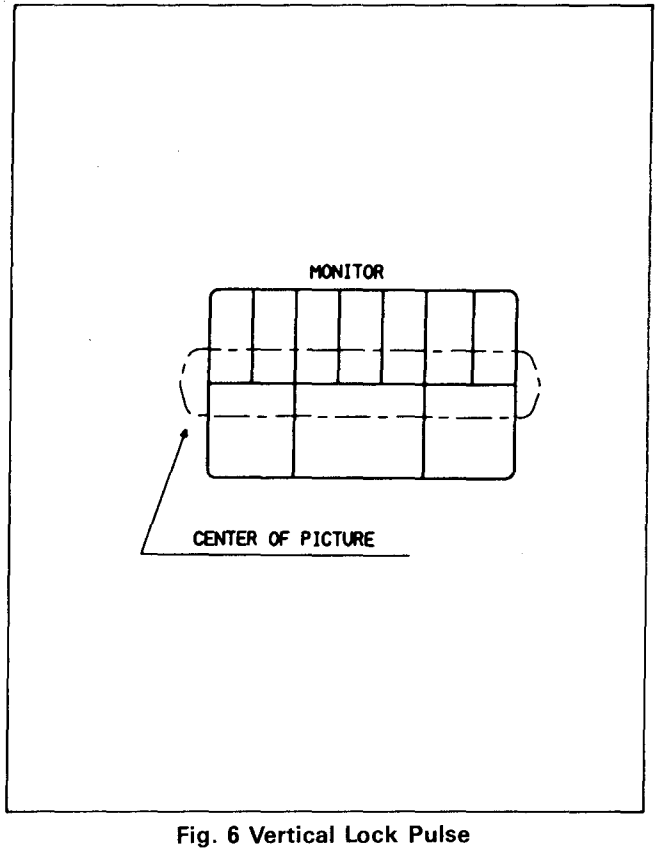


Fig. 6 Vertical Lock Pulse

4-3. AUDIO SECTION in Main. B PCB

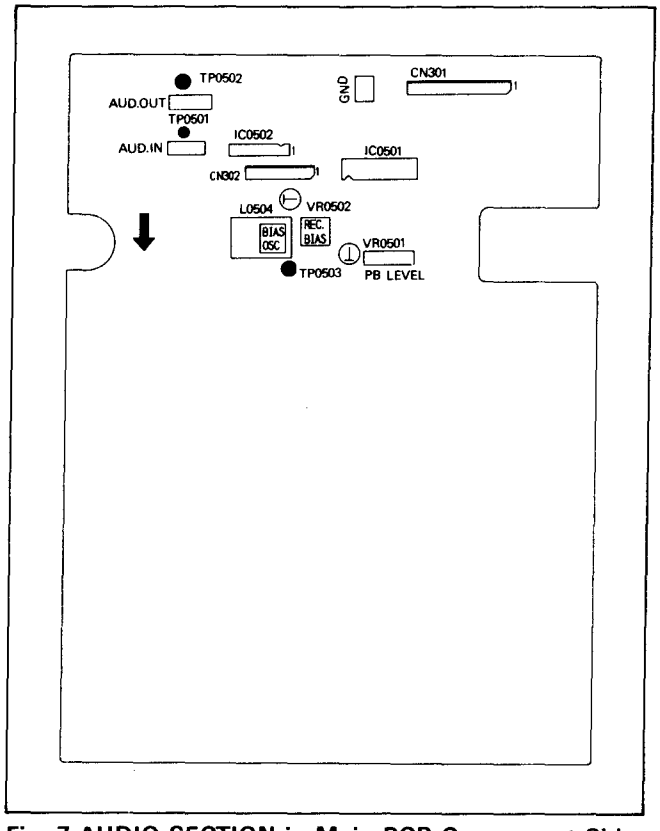


Fig. 7 AUDIO SECTION in Main PCB-Component Side

4-3-1. Audio PB Level Adjustment

Equipment:	AC Voltmeter	
Test Points:	TP0502 (Audio Output)	Main. B
Adjust:	VR0501 (Audio PB Level Control)	Main. B

This adjustment sets the output level of the audio signal to the specified level.

1) Connect a AC Voltmeter (0dB=1 Vrms) to TP0502.
2) Load the instrument with an alignment tape and playback the 1KHz audio signal. (Alignment Tape SR2-2).
3) Adjust the Audio Playback Level Control (VR0501) for 500mVrms.

4-3-2. Audio Bias Level Adjustment

Equipment:	Oscilloscope	
Test Points:	TP0503 (Rec Bias Level)	Main. B
Adjust:	VR0502 (Audio Bias Level Control)	Main. B

This adjustment optimizes the audio record bias. When the audio record bias is too low, high frequencies are increased resulting in distortion. When the level is too high, high frequencies are attenuated.

1) Connect a channel-1 scope probe (10V/div.; 10us/div.) to TP0503.
2) Load the instrument with a blank tape and place in the SP record mode with no signal.
3) Adjust the Audio Bias Level Control (VR0502) for 40 Vp-p±1Vp-p.

4-4. LUMI/CHROMA SECTION in Main B.

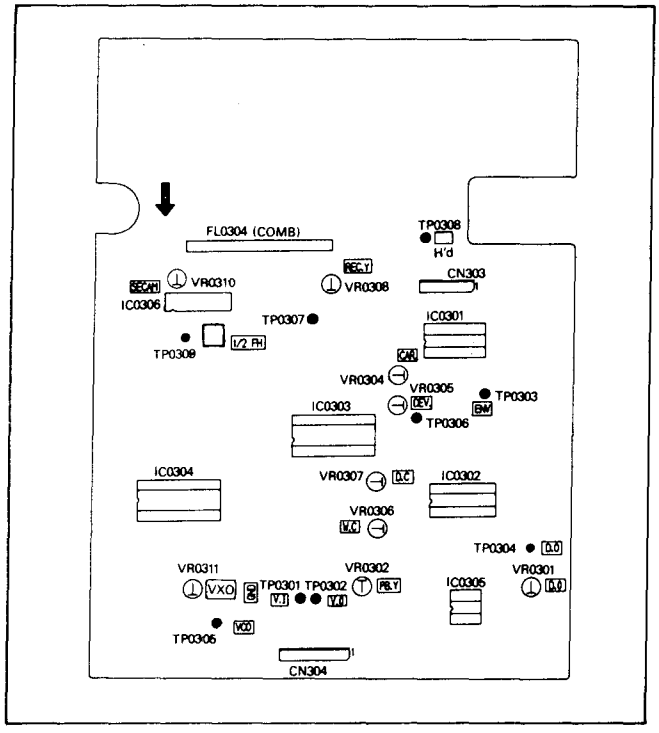


Fig. 8 LUMI CHROMA SECTION in Main. B Component Side

4-4-1. PB Luminance Level Adjustment

Equipment:	Oscilloscope	
Test Point:	TP0302 (Video Output Level)	Main. B
Adjust:	VR0302 (PB Luminance Level Control)	Main. B

This adjustment sets the output level of the video signal to the specified level.

1) Connect a channel-1 scope probe (0.5V.; 10μs/div.) to TP0302.
2) Load the instrument with an alignment tape and playback the color bar signal. (Alignment Tape SR2-2).
3) Adjust the PB Luminance Level Control (VR0302) for 2Vp-p.

4-4-2. CCD IN (Clamp) Adjustment

Equipment:	Oscilloscope	
Test Point:	TP0304 (CCD Video Level)	Main. B
Adjust:	VR0301 (CCD Level Control)	Main. B

This adjustment is for the compensation of the Drop Out. When there is the Drop Out, if the CCD output level is very low, the Black Trigger occurs.
If the level is very high, the White Trigger occurs.

1) Connect a channel-1 scope probe (0.1V/div.) to TP0304.
2) Load the instrument with an alignment tape and playback the color bar signal. (Alignment Tape SR2-2).
3) Adjust the CCD IN Control (VR0301) for 0.6Vp-p.

4-4-3. Sub Carrier Frequency (4.43 MHz) Adjustment

Equipment:	Frequency Counter	
Test Point:	TP0305 (VXO OUT)	Main. B
Adjust:	VR0311 (Sub Carrier Frequency)	Main. B

This adjustment sets the 4.43MHz VXO oscillation frequency accurately.
When this adjustment is incomplete, 1H delay of the video signal is disabled and the S/N deteriorates.

1) Connect a frequency counter to TP0305.
2) Load the instrument with an alignment tape (Alignment Tape SR2-2) and play it back.
3) Adjust the Sub Carrier Frequency Control (VR0311) so that the frequency reads 4.433619MHz±10Hz.

4-4-4. White & Dark Clip Adjustment

Equipment:	PAL TV TEST SIGNAL GENERATOR	
	Oscilloscope	
Test Point:	TP0306 (Video White/Dark Clip Level)	Main. B
Adjust:	VR0306 (White Clip)	Main. B
	VR0307 (Dark Clip)	Main. B

This adjustment is used to prevent Overmodulation. If the adjustment is over the accurate point, the White/Dark Clip occurs in playback and the S/N ratio decreases for the AM elements intermixed.

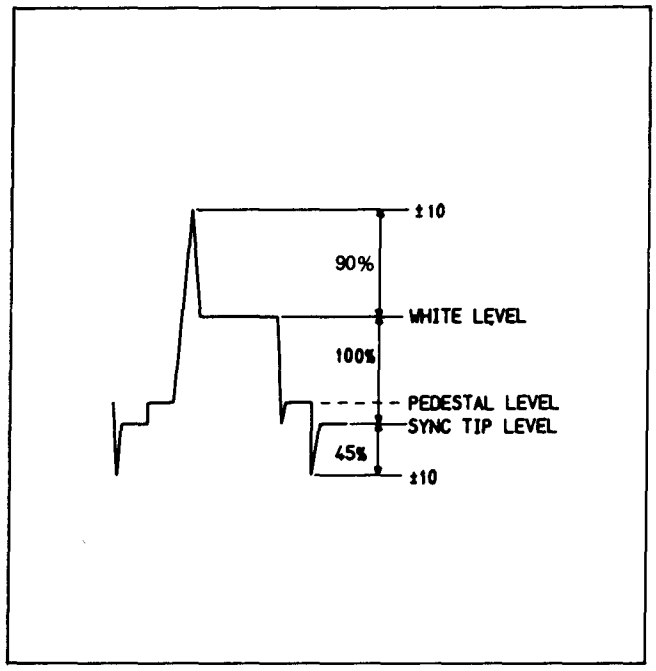


Fig. 9 White and Dark Clip Adjustment

1) Apply a PAL color bar signal to the video input jack on the rear panel.
2) Connect a channel-1 scope probe (0.2V/div.; 20μs/div.) to TP0306.
3) Insert a blank tape and make a recording.
4) Adjust the White Clip Control (VR0306) and Dark Clip Control (VR0307) so that the overshoot and undershoot are as shown in Fig. 9.

4-4-5. FM Carrier & Deviation Adjustment

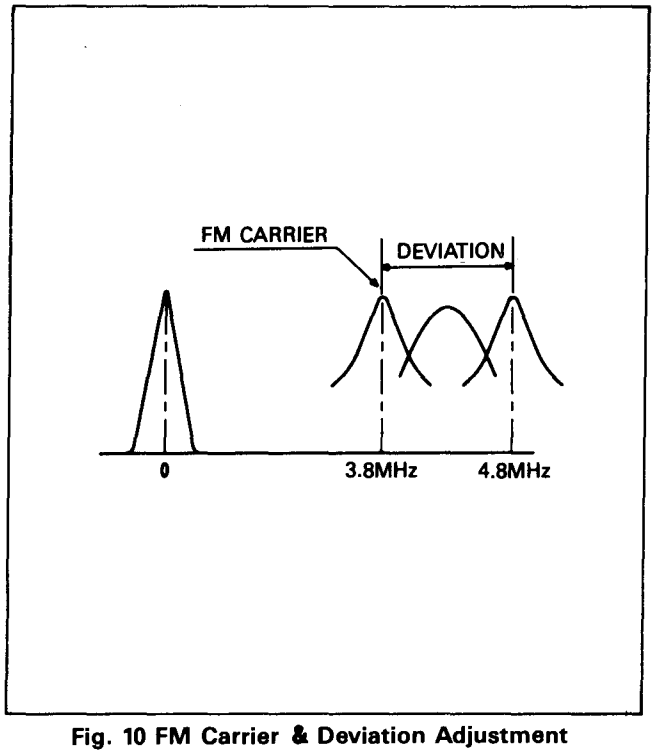


Fig. 10 FM Carrier & Deviation Adjustment

Equipment:	Tracking Scope	
Test Point:	TP0307 (FM Output)	Main. B
Adjust:	VR0304 (FM Carrier)	Main. B
	VR0305 (Deviation)	Main. B

This adjustment sets the frequencies of the FM Carrier and Deviation.
If the Deviation is less than 1MHz, the Video output level is low. When the Deviation is more than 1MHz, the output level is high and there is the Overmodulation, So the screen has the White/Dark Trigger and the S/N ratio is not good.

1) Apply a 100% White signal to the video input jack on the rear panel.
2) Rocate the input selected S/W to AUX.
3) Connect a Tracking Scope to TP0307.
4) Insert a blank tape and make a recording.
5) Adjust the FM Carrier Control (VR0304) so that the frequency is 3.8MHz±0.1MHz.
6) And then adjust the Deviation Control (VR0305) so that the frequency is 4.8MHz±0.1MHz for the 1MHz deviation. (See Fig. 10).

4-4-6. REC FM Current Level Adjustment

Equipment:	Oscilloscope	
Test Point:	TP0310	PRE AMP
Adjustment:	VR0308	Main. B

1) Apply a PAL color bar signal to the video input jack to the rear panel.
2) Rocate the input selected S/W to AUX.
3) Connect a channel-1 scope probe (1V/div. 20ms/Div) to TP0310.
4) Insert a blank tape and make a recording.
5) Adjust the FM current control VR0308 so that the current is 5Vp-p.

4-4-7. SECAM Detector Adjustment (Except VB-710)

Equipment:	Oscilloscope	
Test Point:	TP0309	Main. B
Adjustment:	VR0310	Main. B

1) Apply a SECAM signal to the video input jack to the rear panel
2) Rocate the input selected S/W to AUX.
3) Connect a channel-1 scope probe (1V/Div) to TP0309
4) Insert a blank tape and make a recording.
5) Adjust the output to $5V_{p\text{-}p}$.

4-5. TUNER/DEMODULATOR SECTION in Main A PCB.

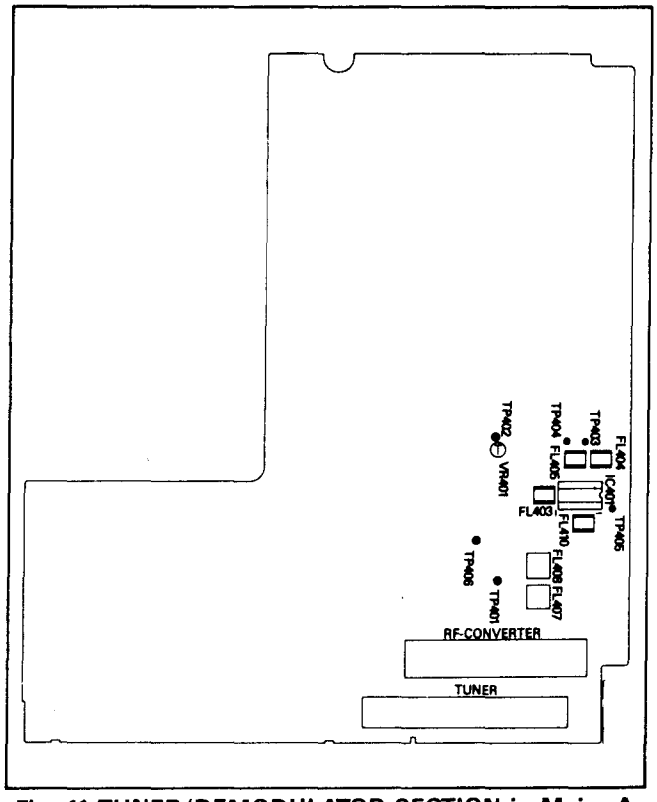


Fig. 11 TUNER/DEMODULATOR SECTION in Main. A PCB-Component Side

4-5-1. TRAP Adjustment

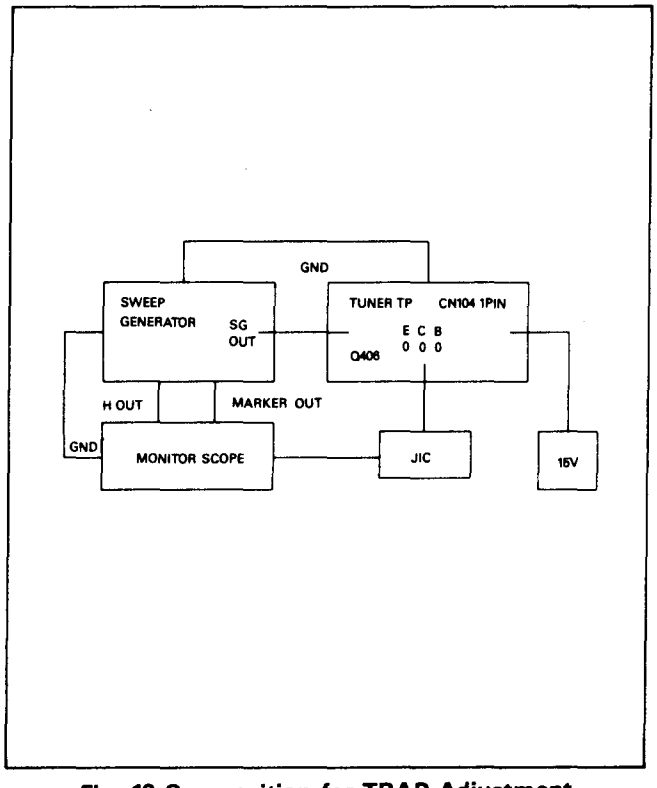


Fig. 12 Composition for TRAP Adjustment.

Equipment: Sweep Generator
Test points: Tuner Q406 collector
Adjustment: FL408, FL407

1) Place the instrument in the E-E Mode.
2) Remove a connector CN101 and connect a DC bias supply of 15V to the pin 1 of a connector CN104 on the Main. A PCB.
3) Connect the Sweep Generator output to tuner TP within the tuner unit. (Fig. 12)
4) Connect a jig input to the collector of Q406
5) Adjust the trap (FL408, FL407) in the Tuner unit shown in Fig 13.

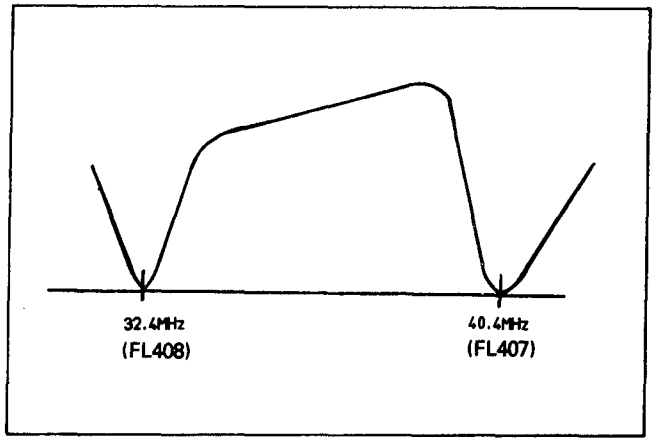


Fig. 13 Trap Adjustment

4-5-2. VIF Adjustment

Equipment:	Sweep Generator Monitorscope	
Test Point:	TP406 (Video output)	Main. A
Adjust:	FL405 (VIF-DET TANK)	Main. A

This adjustment makes the sync detecting reference signal tuning circuit of the picture-IF circuit resonate with 38.9MHz and suppresses mixture of the sound-IF signal.

1) Place the instrument in the E-E mode.
2) Remove a connector CN101 and connect a DC bias supply of 15V, 12V to the pin 1,2 of a connector CN104 on the Main. A PCB.
3) Connect a DC bias supply of 5V to TP405.
4) Connect the Sweep Generator Output to tuner TP within the Tuner unit. (Fig. 14)
5) Connect a Monitor Scope Input to TP406.
6) Connect a 100 Ω damping resistor between TP403 and TP404.
7) Adjust the Core (FL410) in the Tuner section shown in Fig. 15.
8) Remove a 100 Ω damping resistor.
9) Adjust the VIF Control (FL405) for maximum detection of 38.9MHz maker. (Fig. 16)

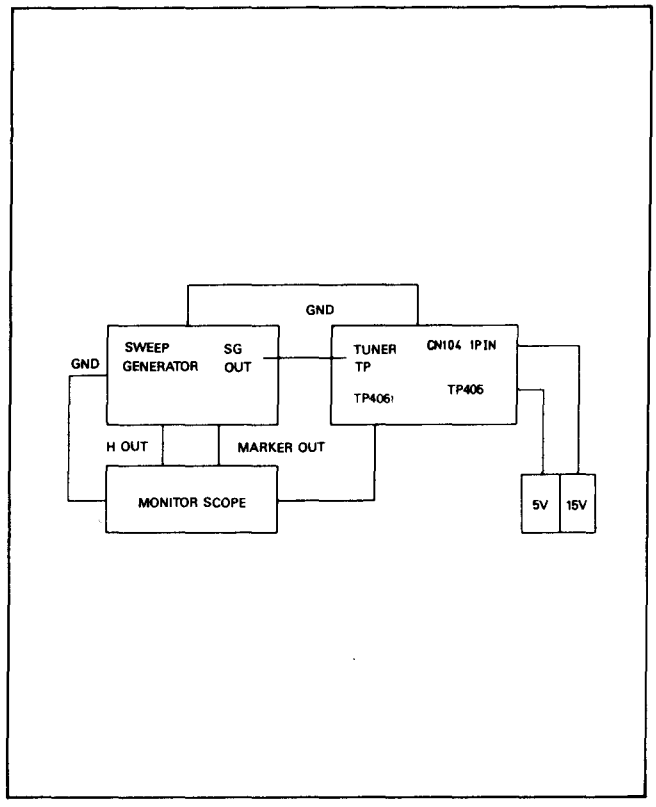


Fig. 14 Composition for VIF Adjustment

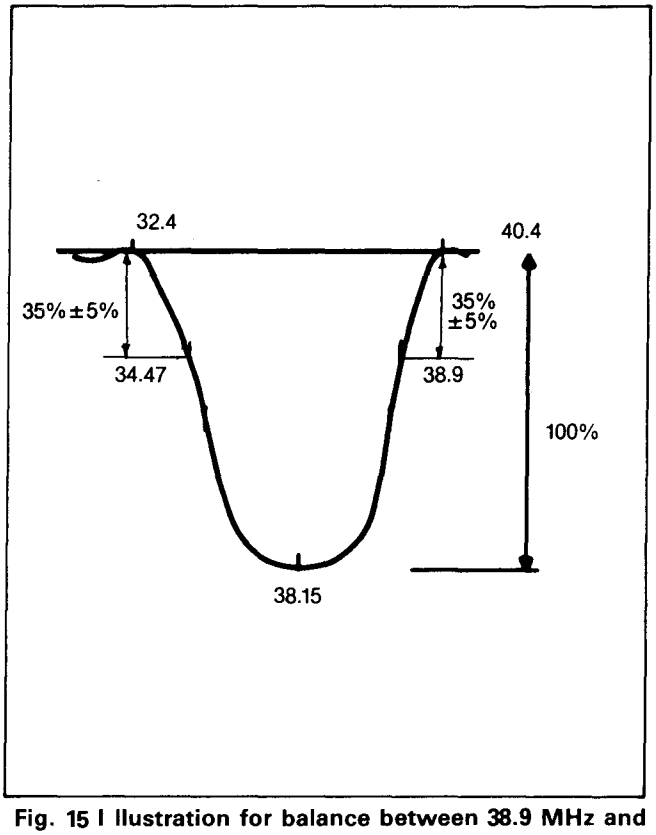


Fig. 15 I llustration for balance between 38.9 MHz and color signal

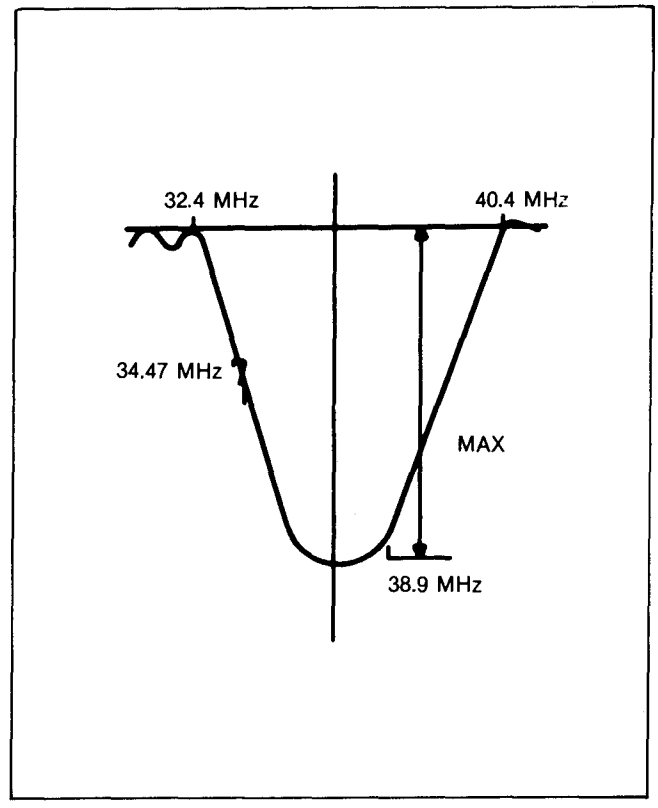


Fig. 16 VIF 38.9MHz Maximum Detection

4-5-3. AFT Adjustment

Equipment: Sweep generator, Monitorscope
Test point: TP402 Main. A
Adjustment: FL404 Main. A

1) After adjustment of VIF, connect the monitorscope input to TP402.
2) Adjust the AFT (FL404) in the Tuner unit shown in Fig. 17

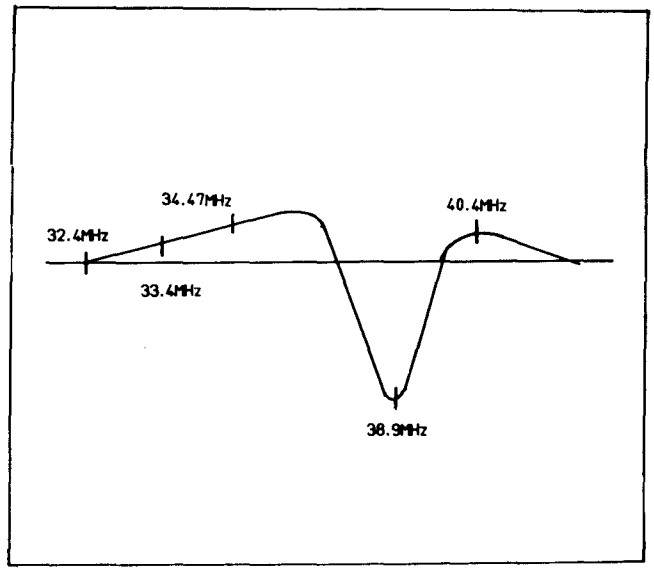


Fig. 17 AFT Adjustment

4-5-4. SIF Adjustment

Equipment:	Oscilloscope	
Test points:	TP0501 (Audio Input)	Main. B
Adjust:	FL403 (5.5MHz Tuning Coil)	Main. A

This adjustment suppresses the audio distortion and optimizes the linearity response of audio. Misadjustment of the SIF may cause the audio buzz by the increasing of the THD (Total Harmonic Distortion).

1) Apply a 1KHz audio signal to the RF Input Terminal on the rear panel.
2) Connect a channel-1 scope probe (0.2V/div.) to TP0501.
3) Adjust the SIF Control (FL403) for 1.0Vp-p.

4-5-5. RF AGC Adjustment

Equipment:	TV CHANNEL SIGNAL GENERATOR	
	Oscilloscope or DC Voltmeter	
Test Point:	TP401 (Tuner RF AGC Input)	Main. A
Adjust:	VR401 (RF AGC Control)	Main. A

This adjustment determines the point where the AGC is activated.

1) Apply a PAL color bar signal to the Video Input Terminal of the TV Channel Signal Generator. (Fig. 18)
2) Set the Channel Selector to CH2 (52.25 MHz)
3) Apply the Output of the Generator to the RF IN Terminal on the rear panel. Using the Attenuator, adjust the input signal level for 70dBμ measured at the RF IN Terminal. (Fig. 18)
4) Connect a channel-1 scope probe (1V/div.) to TP401.
5) Turn the VCR power on and select TV Mode with SW709.
6) Set the channel on the front panel to CH 2.
7) Adjust the RF AGC Control (VR401) for 4.7V±0.1V.
8) After adjusting the input level of the RF IN terminal for 60dBμ, check the condition of screen. If there is some Noise, adjust VR401 so that the Noise disappears.
9) And adjust the input level of the RF IN Terminal for 100dBμ, then check the condition of screen. If there are some Saturations (unstable picture or color, etc), adjust VR401 again so that the Saturation phenomenon disappear.

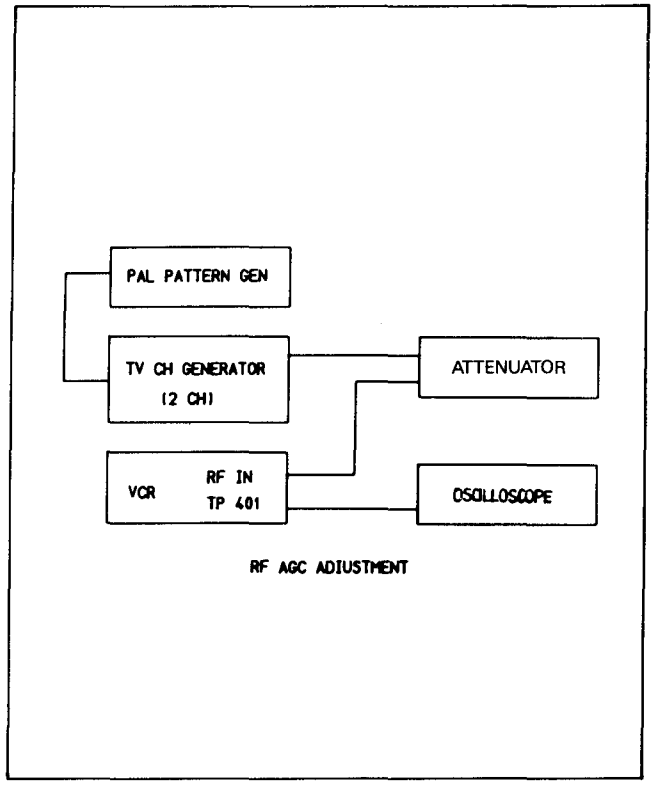
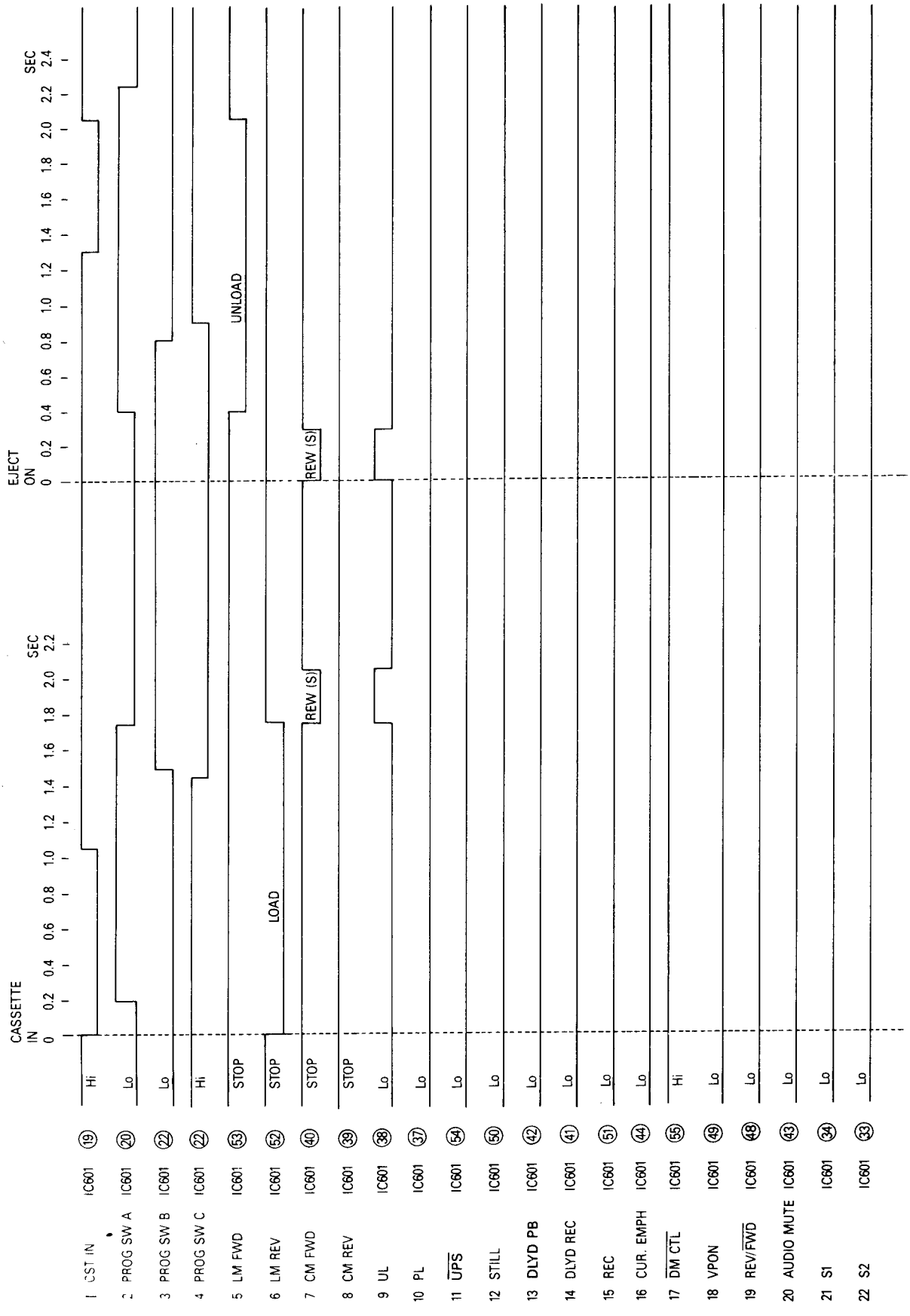


Fig. 18 RF AGC Adjustment

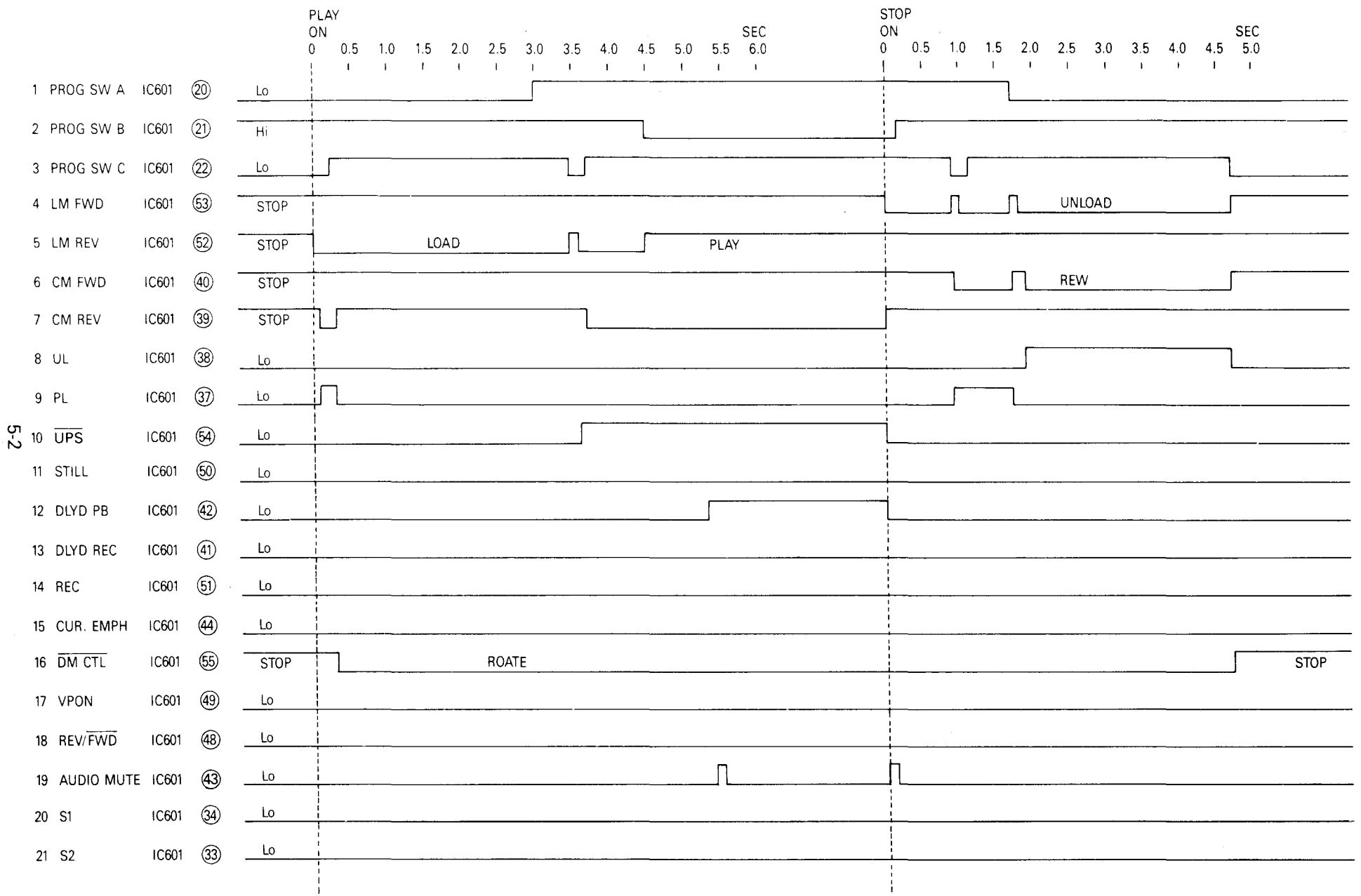
5. TIMING CHART/TROUBLESHOOTING GUIDER

5-1. Timing chart

5-1-1. CASSETTE LOAD/UNLOAD

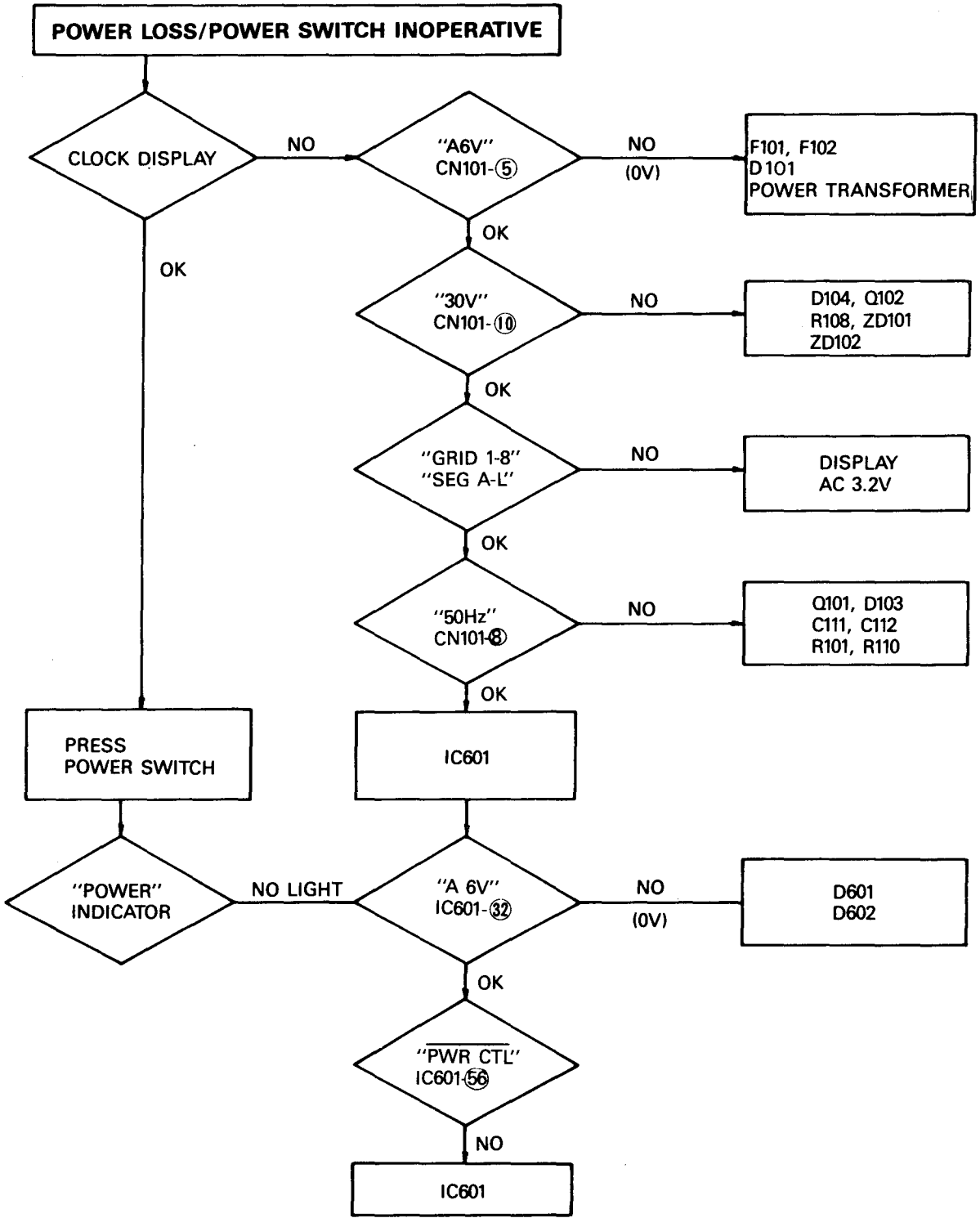


5-1-2. STOP/PLAY/STOP

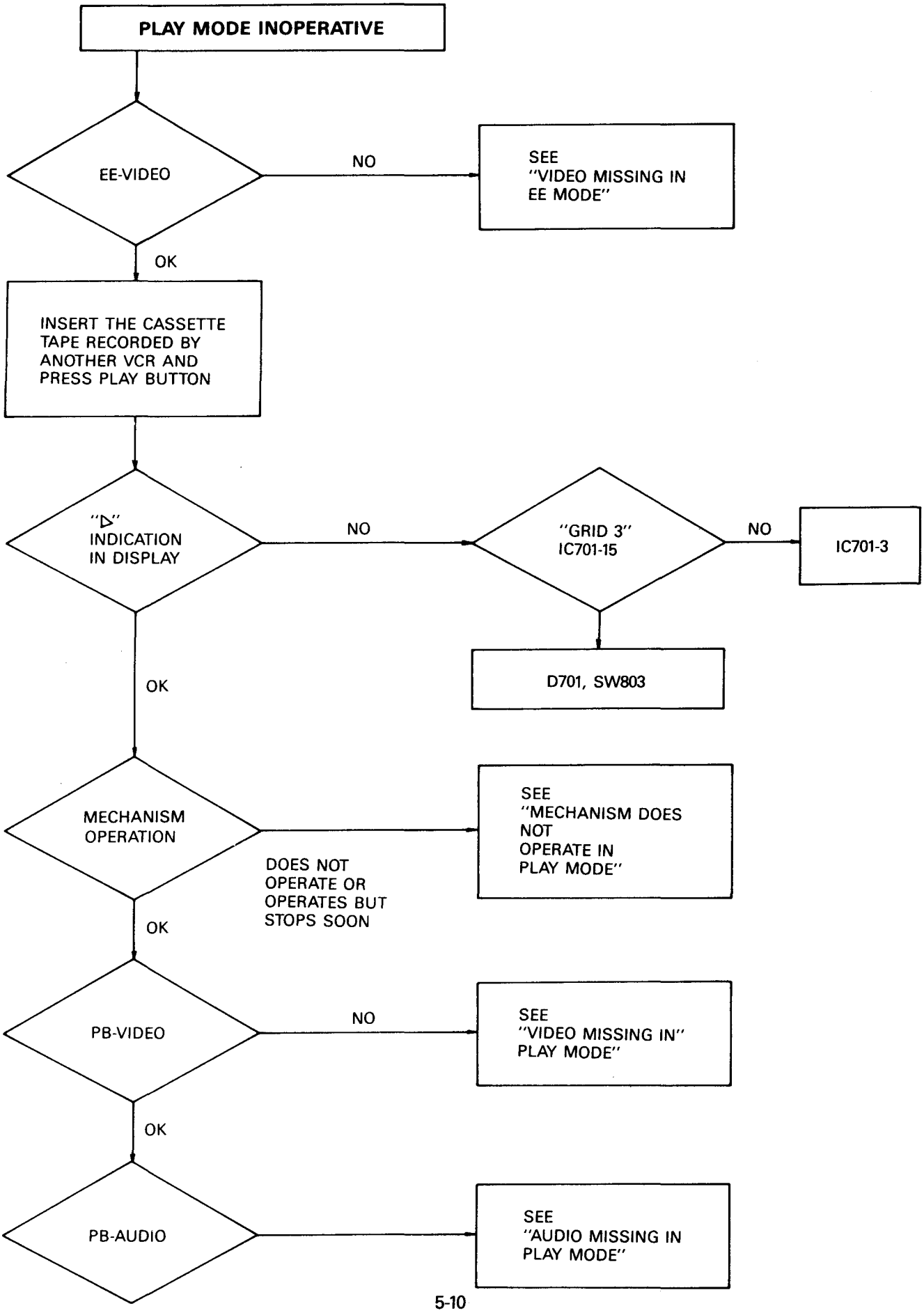


5-2. Troubleshooting Guides

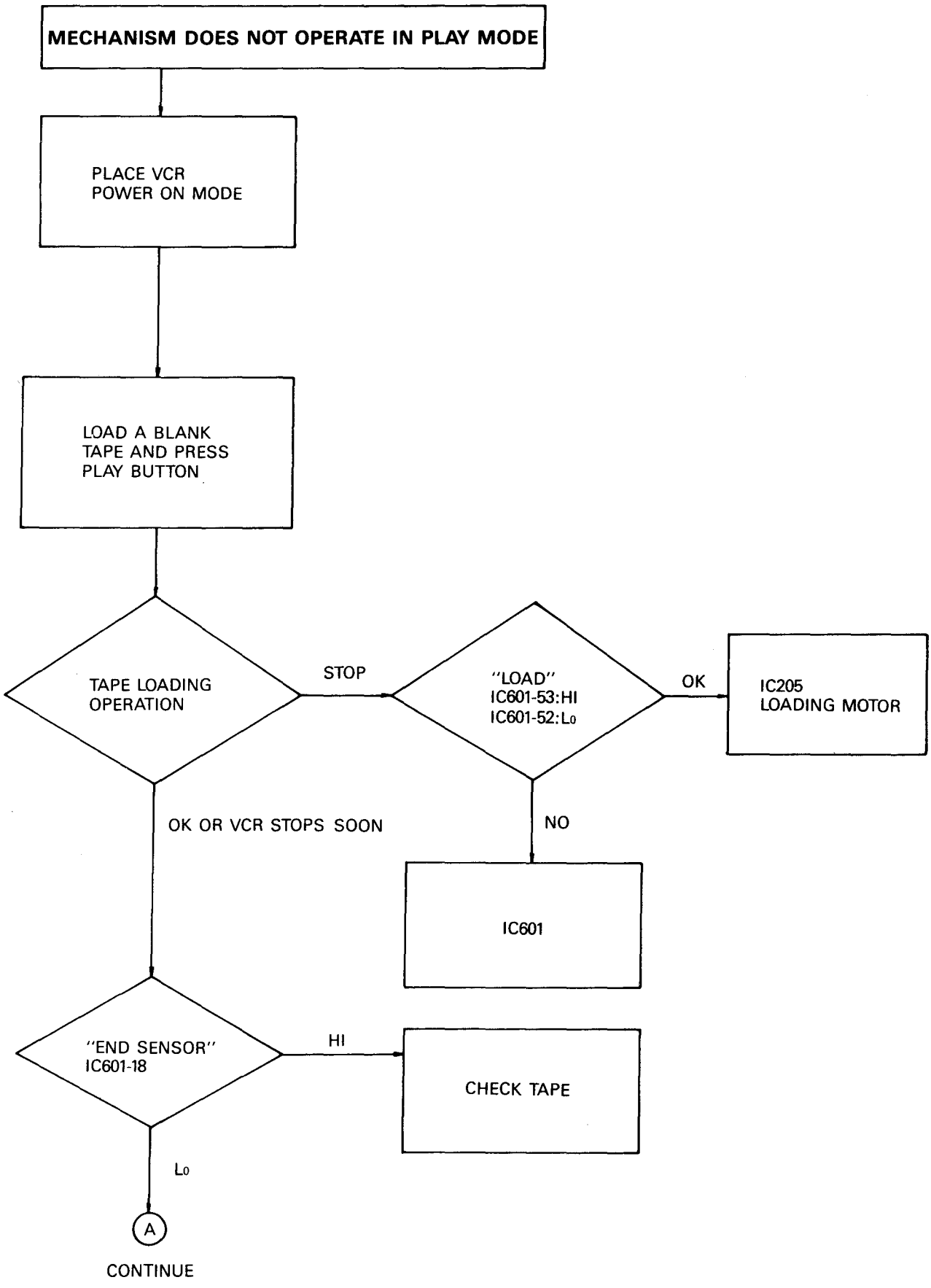
5-2-1.

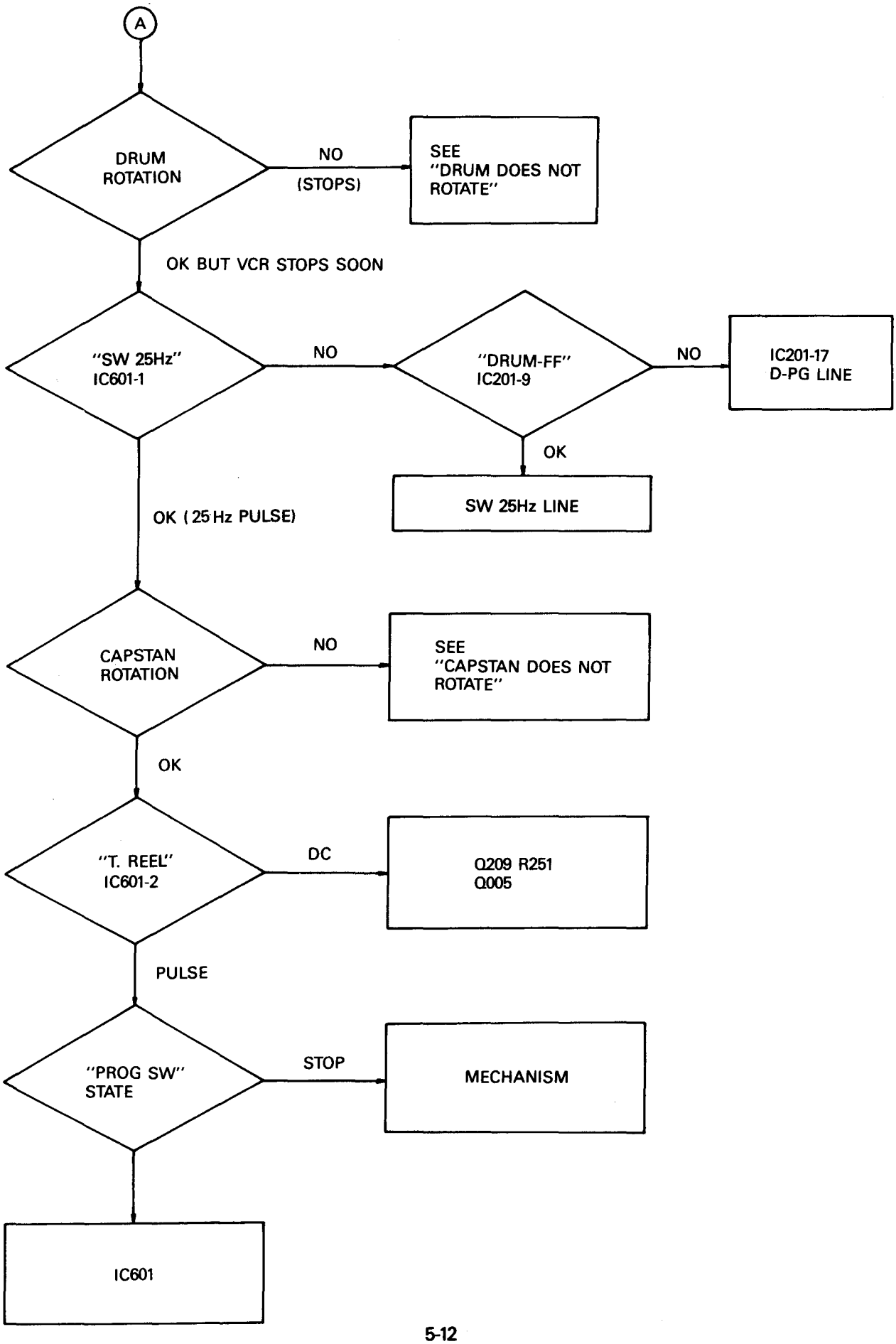


5-2-2.

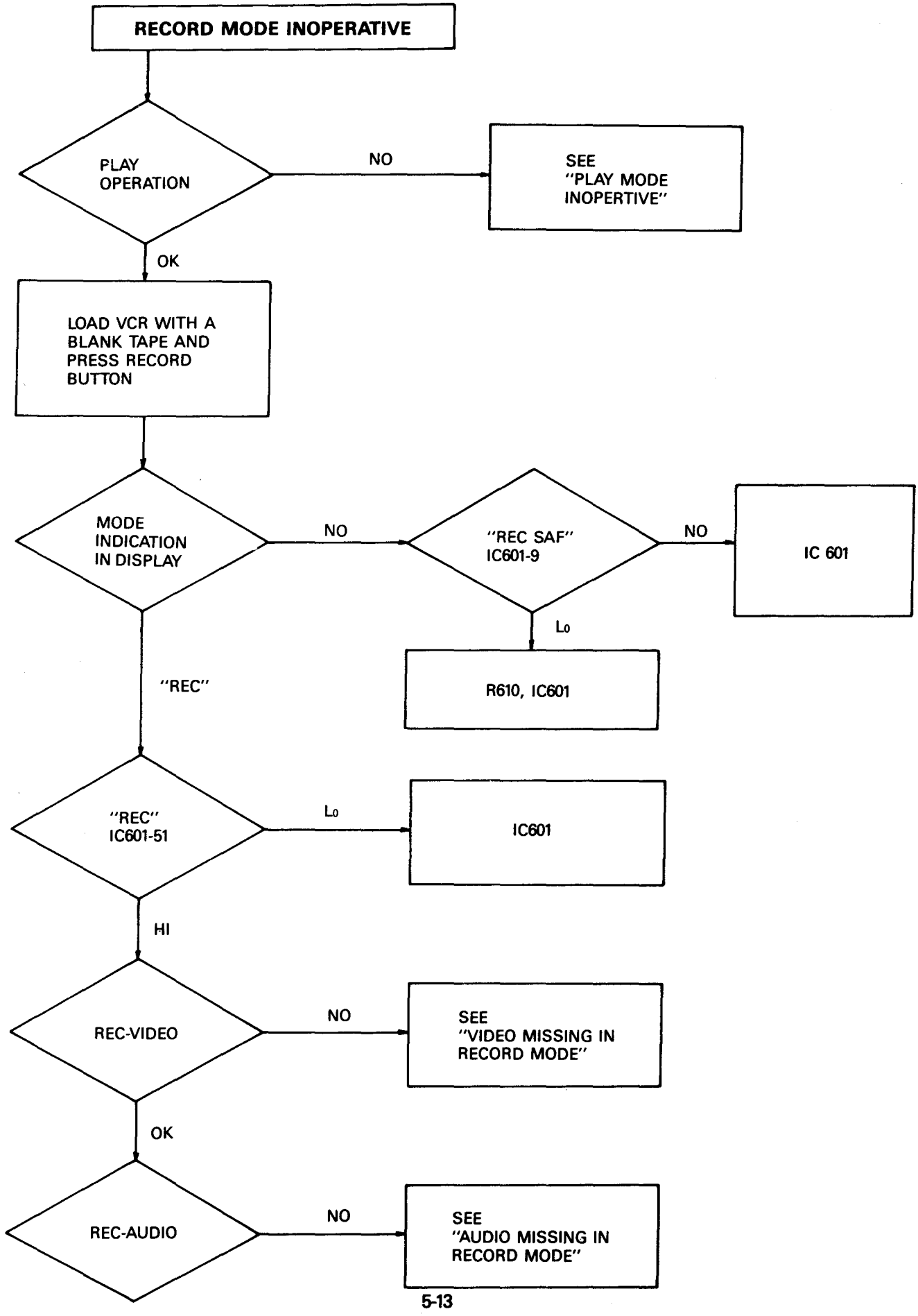

PLAY MODE INOPERATIVE
EE-VIDEO
NO
SEE "VIDEO MISSING IN EE MODE"
OK
INSERT THE CASSETTE TAPE RECORDED BY ANOTHER VCR AND PRESS PLAY BUTTON
"▷" INDICATION IN DISPLAY
NO
"GRID 3" IC701-15
NO
IC701-3
D701, SW803
OK
MECHANISM OPERATION
SEE "MECHANISM DOES NOT OPERATE IN PLAY MODE"
DOES NOT OPERATE OR OPERATES BUT STOPS SOON
OK
PB-VIDEO
NO
SEE "VIDEO MISSING IN" PLAY MODE"
OK
PB-AUDIO
SEE "AUDIO MISSING IN PLAY MODE"

5-2-3.

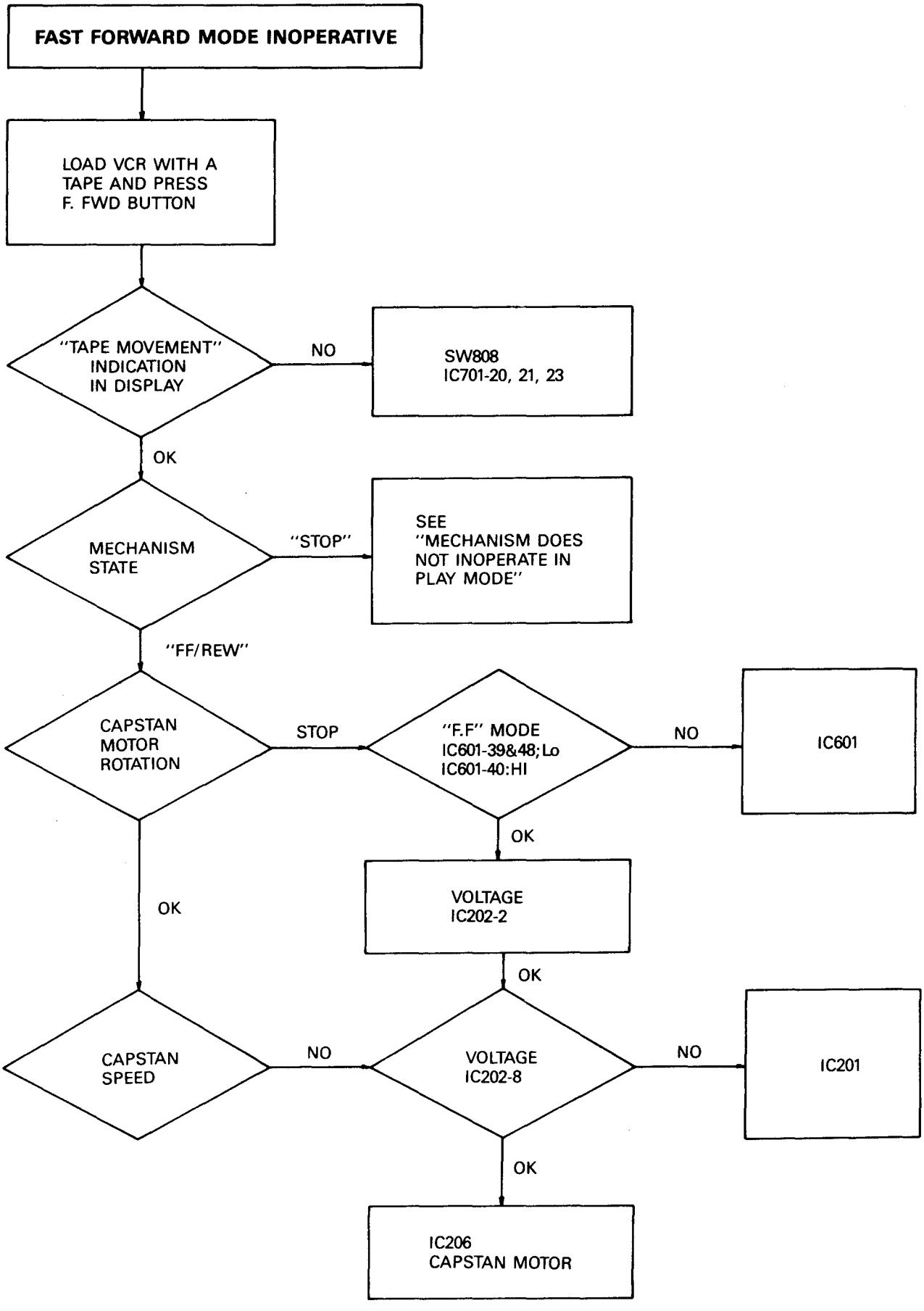

MECHANISM DOES NOT OPERATE IN PLAY MODE
PLACE VCR POWER ON MODE
LOAD A BLANK TAPE AND PRESS PLAY BUTTON
TAPE LOADING OPERATION
STOP
"LOAD" IC601-53:HI IC601-52:Lo
OK
IC205 LOADING MOTOR
OK OR VCR STOPS SOON
NO
IC601
"END SENSOR" IC601-18
HI
CHECK TAPE
Lo
A
CONTINUE


A
DRUM ROTATION
NO
(STOPS)
SEE "DRUM DOES NOT ROTATE"
OK BUT VCR STOPS SOON
"SW 25Hz" IC601-1
NO
"DRUM-FF" IC201-9
NO
IC201-17 D-PG LINE
OK
SW 25Hz LINE
OK (25 Hz PULSE)
CAPSTAN ROTATION
NO
SEE "CAPSTAN DOES NOT ROTATE"
OK
"T. REEL" IC601-2
DC
Q209 R251 Q005
PULSE
"PROG SW" STATE
STOP
MECHANISM
IC601

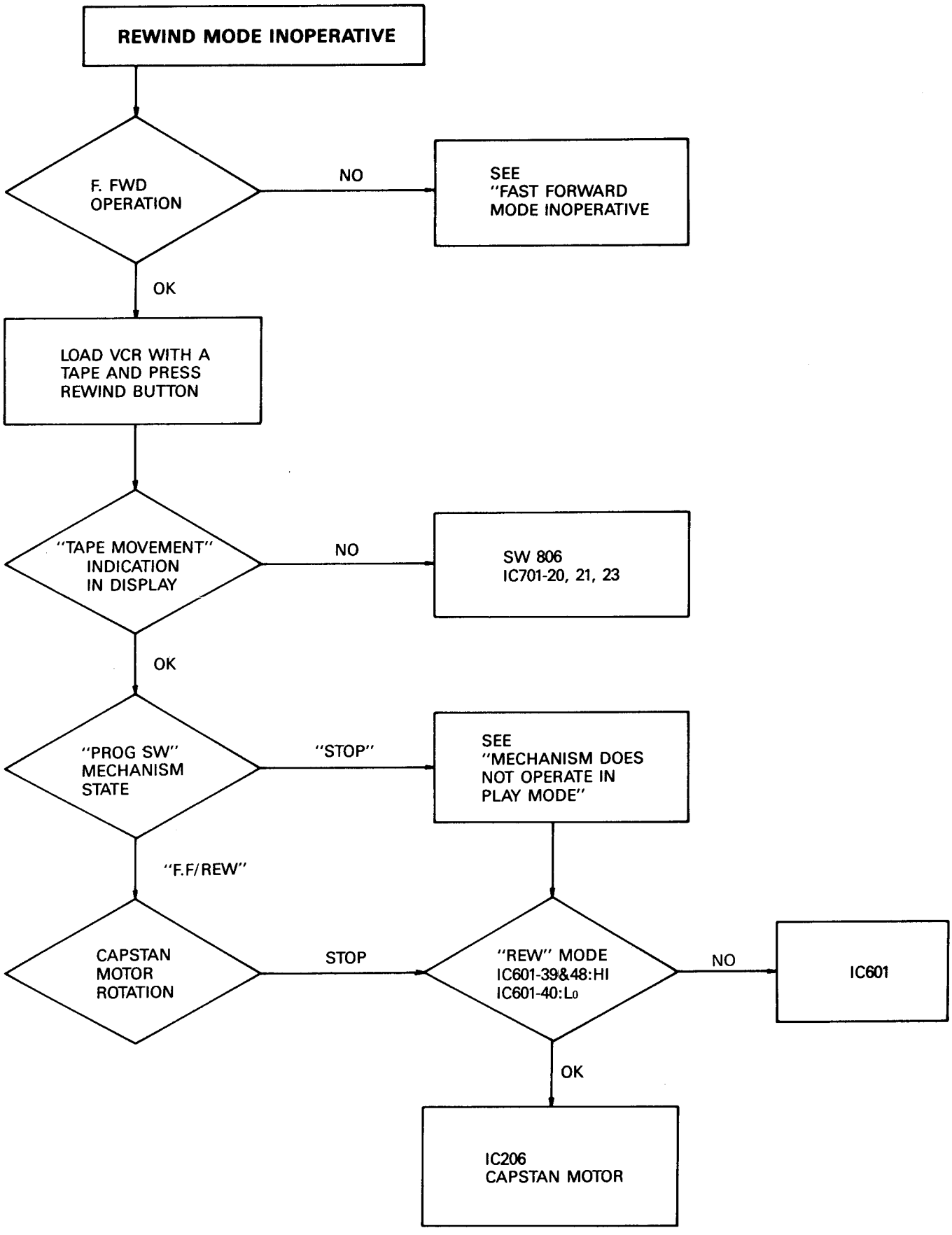
5-2-4.


RECORD MODE INOPERATIVE
PLAY OPERATION
NO
SEE "PLAY MODE INOPERTIVE"
OK
LOAD VCR WITH A BLANK TAPE AND PRESS RECORD BUTTON
MODE INDICATION IN DISPLAY
NO
"REC SAF" IC601-9
NO
IC 601
Lo
R610, IC601
"REC"
"REC" IC601-51
Lo
IC601
HI
REC-VIDEO
NO
SEE "VIDEO MISSING IN RECORD MODE"
OK
REC-AUDIO
NO
SEE "AUDIO MISSING IN RECORD MODE"

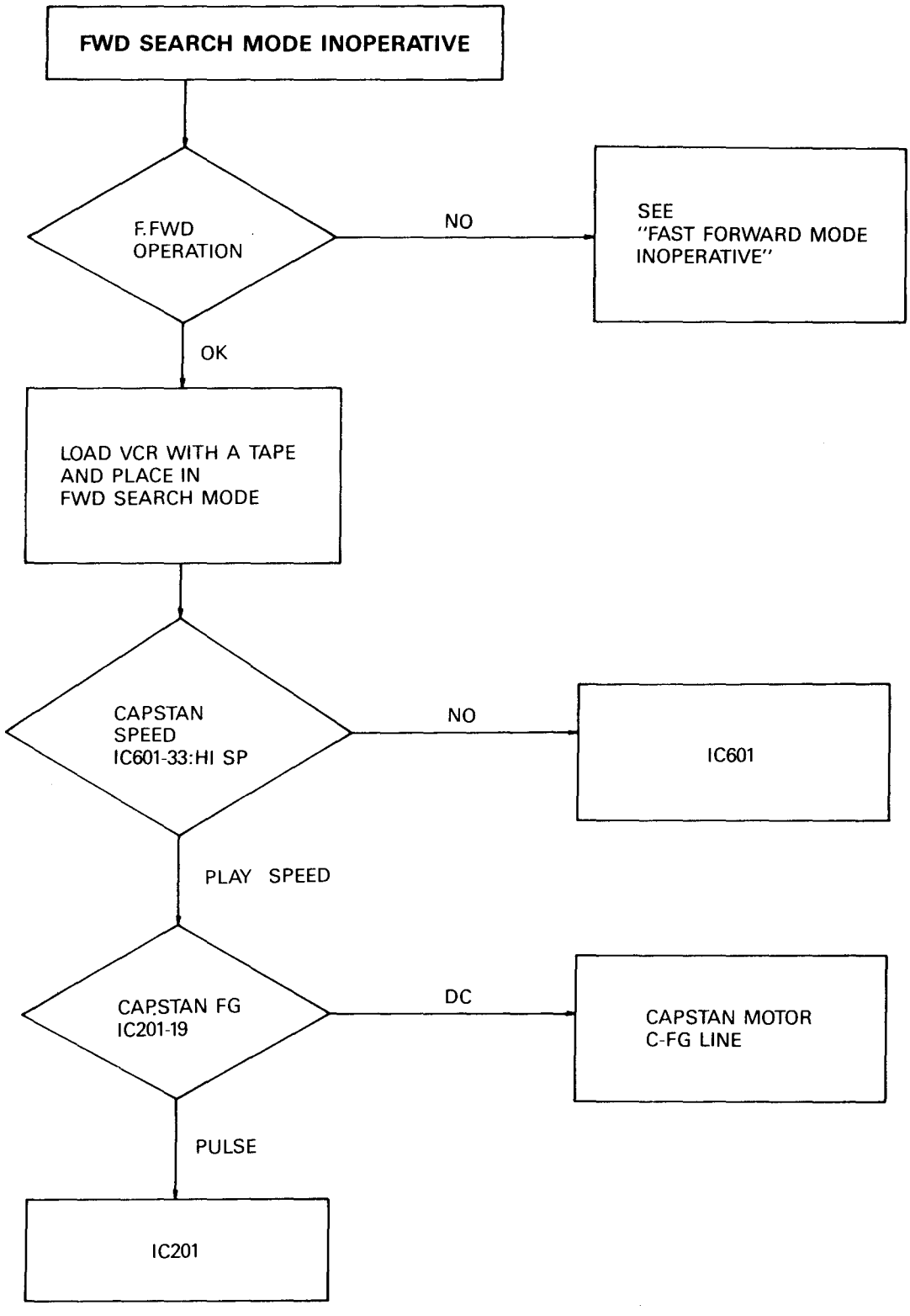
5-2-5.


FAST FORWARD MODE INOPERATIVE
LOAD VCR WITH A TAPE AND PRESS F. FWD BUTTON
"TAPE MOVEMENT" INDICATION IN DISPLAY
NO
SW808 IC701-20, 21, 23
OK
MECHANISM STATE
"STOP"
SEE "MECHANISM DOES NOT INOPERATE IN PLAY MODE"
"FF/REW"
CAPSTAN MOTOR ROTATION
STOP
"F.F" MODE IC601-39&48;Lo IC601-40:HI
NO
IC601
OK
VOLTAGE IC202-2
OK
OK
CAPSTAN SPEED
NO
VOLTAGE IC202-8
NO
IC201
OK
IC206 CAPSTAN MOTOR

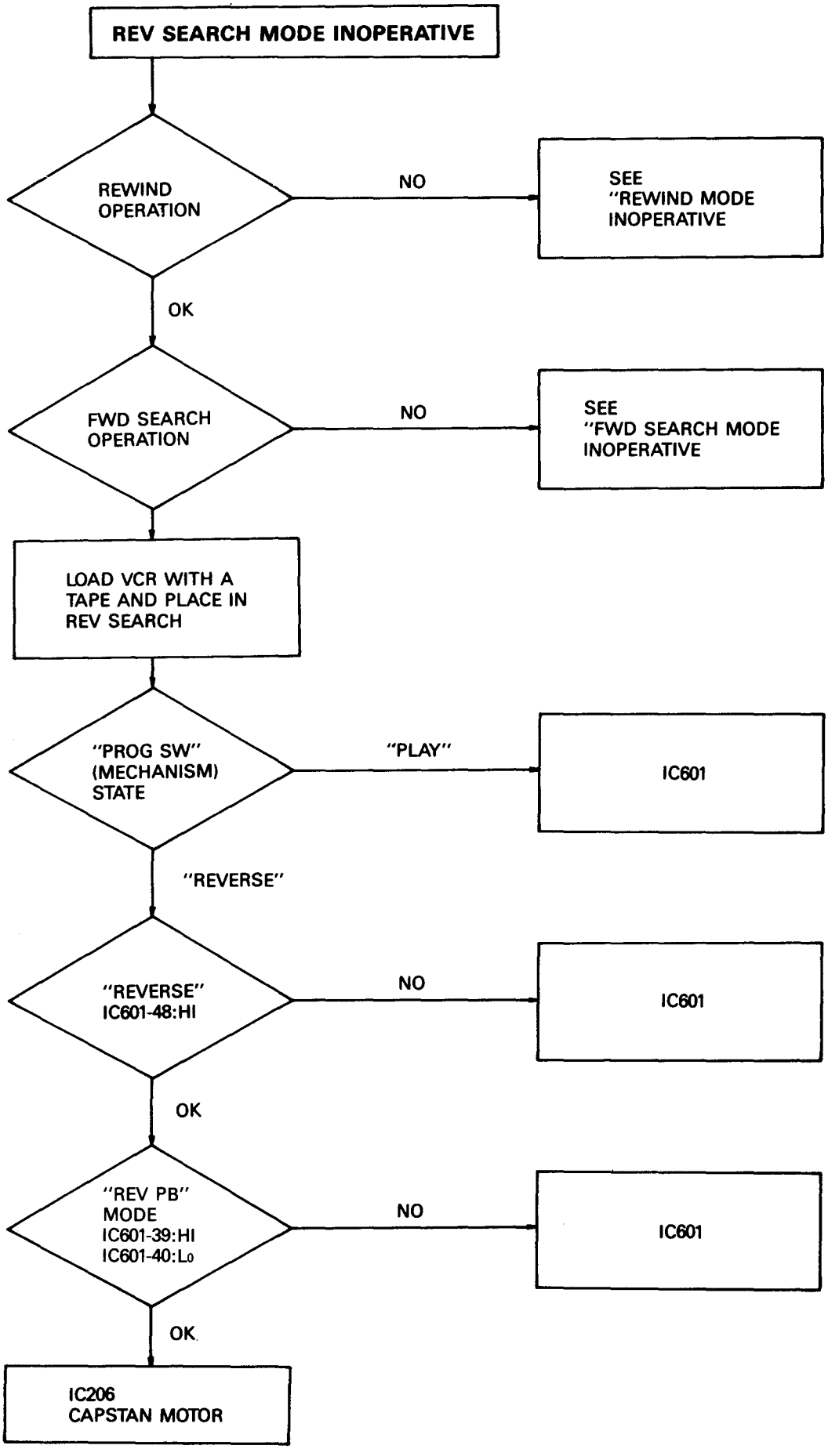
5-2-6.


REWIND MODE INOPERATIVE
F. FWD OPERATION
NO
SEE "FAST FORWARD MODE INOPERATIVE
OK
LOAD VCR WITH A TAPE AND PRESS REWIND BUTTON
"TAPE MOVEMENT" INDICATION IN DISPLAY
NO
SW 806 IC701-20, 21, 23
OK
"PROG SW" MECHANISM STATE
"STOP"
SEE "MECHANISM DOES NOT OPERATE IN PLAY MODE"
"F.F/REW"
CAPSTAN MOTOR ROTATION
STOP
"REW" MODE IC601-39&48:HI IC601-40:Lo
NO
IC601
OK
IC206 CAPSTAN MOTOR

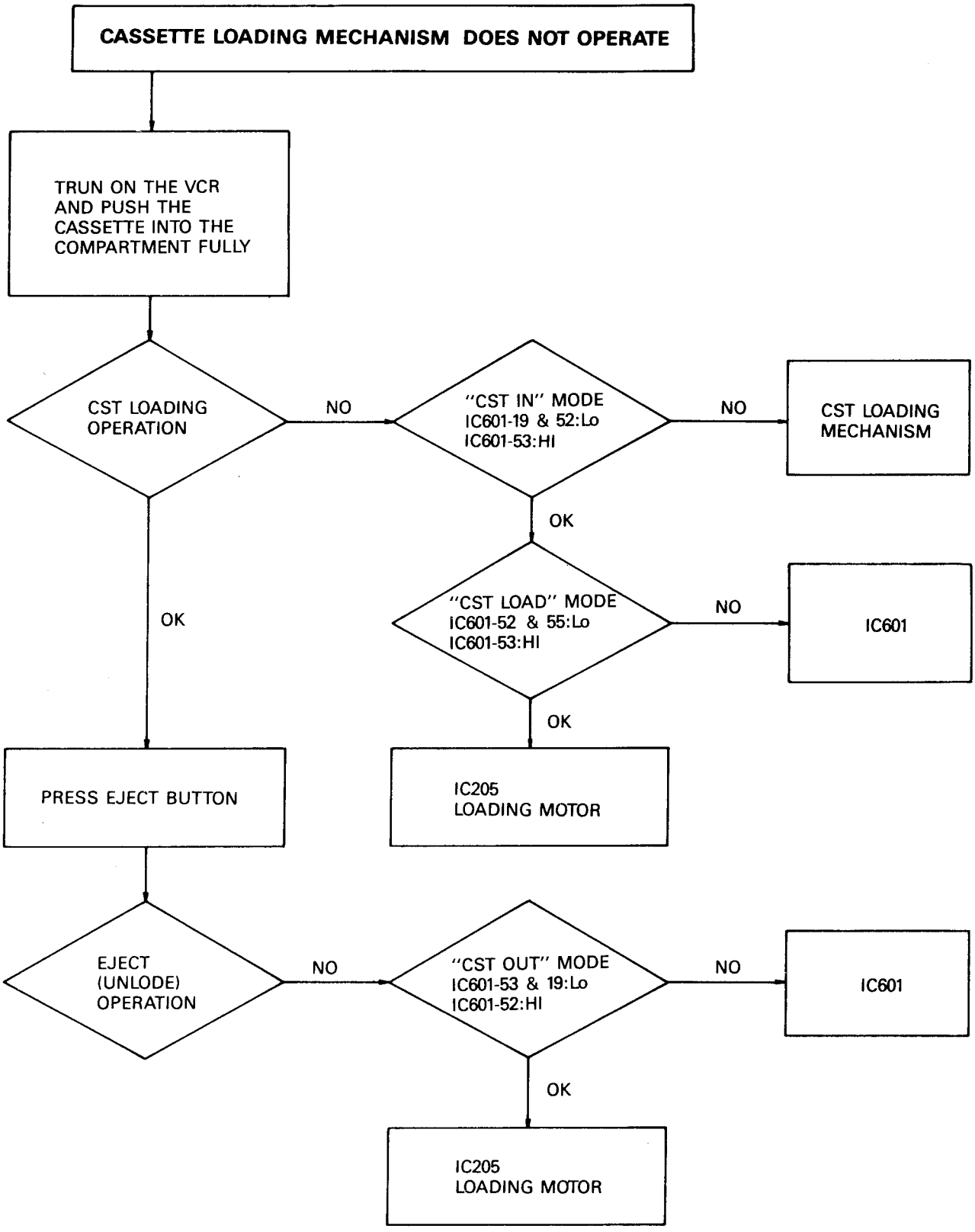
5-2-7.


FWD SEARCH MODE INOPERATIVE
F.FWD OPERATION
NO
SEE "FAST FORWARD MODE INOPERATIVE"
OK
LOAD VCR WITH A TAPE AND PLACE IN FWD SEARCH MODE
CAPSTAN SPEED IC601-33:HI SP
NO
IC601
PLAY SPEED
CAPSTAN FG IC201-19
DC
CAPSTAN MOTOR C-FG LINE
PULSE
IC201

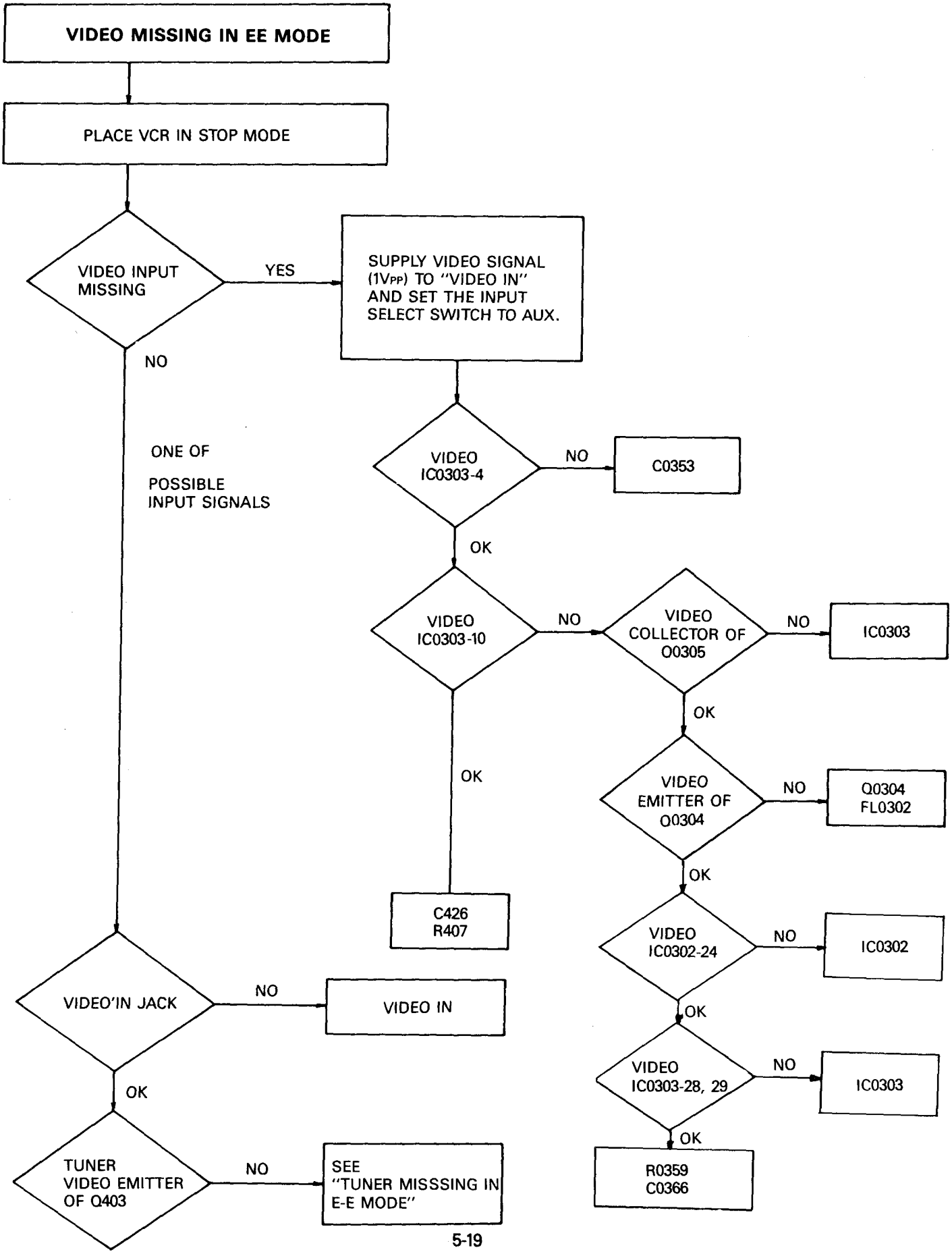
5-2-8.


REV SEARCH MODE INOPERATIVE
REWIND OPERATION
NO
SEE "REWIND MODE INOPERATIVE
OK
FWD SEARCH OPERATION
NO
SEE "FWD SEARCH MODE INOPERATIVE
LOAD VCR WITH A TAPE AND PLACE IN REV SEARCH
"PROG SW" (MECHANISM) STATE
"PLAY"
IC601
"REVERSE"
"REVERSE" IC601-48:HI
NO
IC601
OK
"REV PB" MODE IC601-39:HI IC601-40:Lo
NO
IC601
OK
IC206 CAPSTAN MOTOR

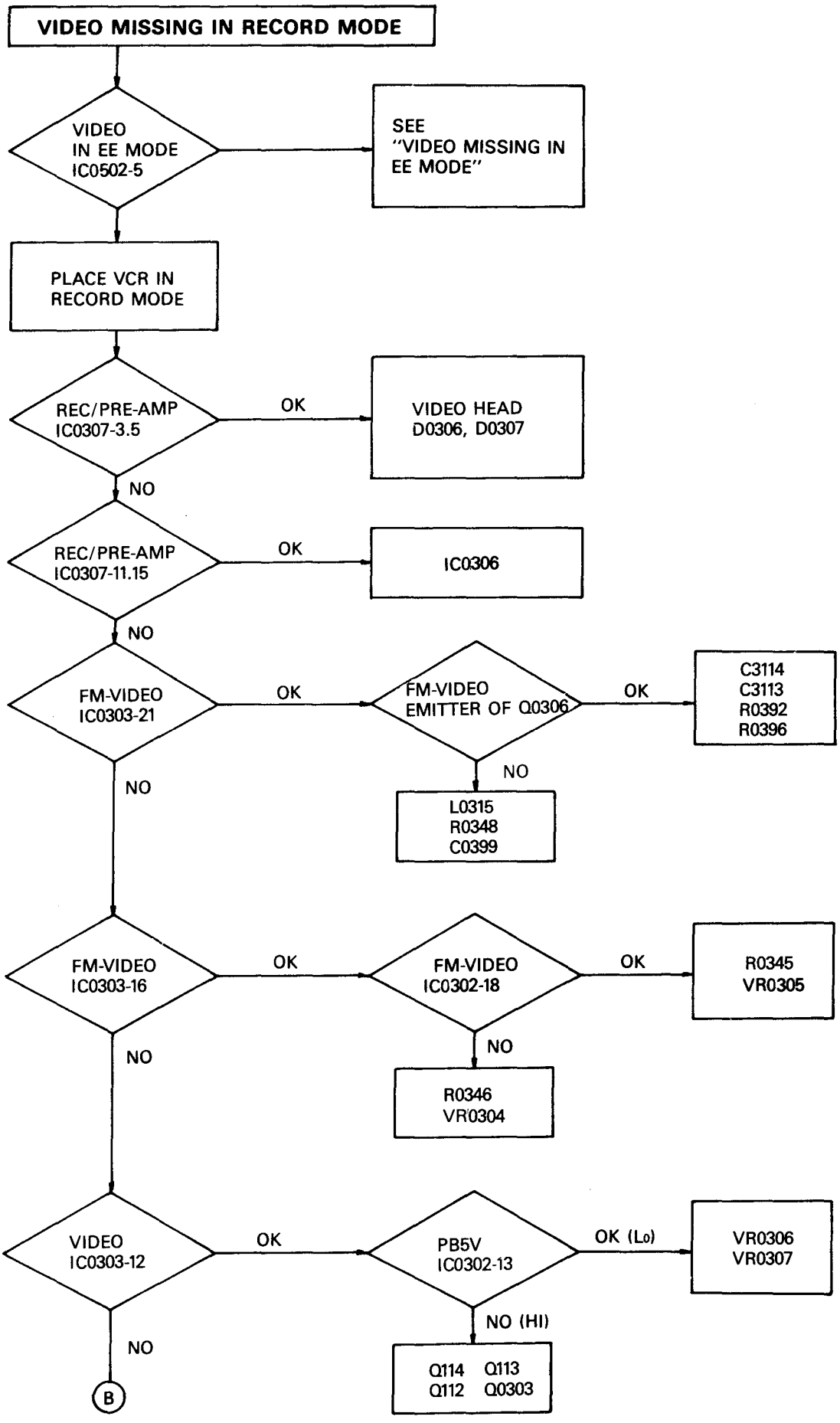
5-2-9.

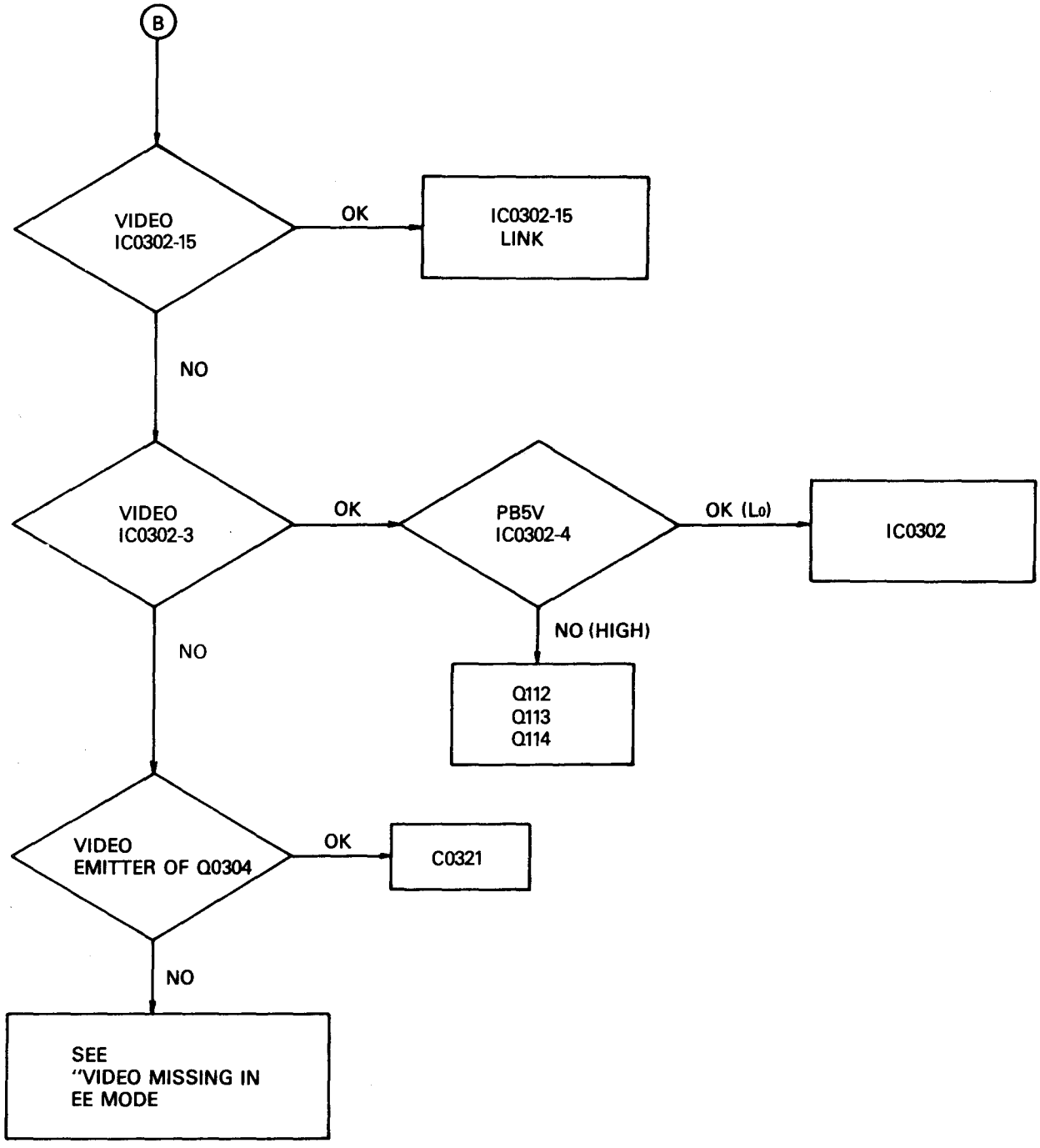

CASSETTE LOADING MECHANISM DOES NOT OPERATE
TRUN ON THE VCR AND PUSH THE CASSETTE INTO THE COMPARTMENT FULLY
CST LOADING OPERATION
NO
"CST IN" MODE IC601-19 & 52:Lo IC601-53:HI
NO
CST LOADING MECHANISM
OK
OK
"CST LOAD" MODE IC601-52 & 55:Lo IC601-53:HI
NO
IC601
OK
PRESS EJECT BUTTON
IC205 LOADING MOTOR
EJECT (UNLODE) OPERATION
NO
"CST OUT" MODE IC601-53 & 19:Lo IC601-52:HI
NO
IC601
OK
IC205 LOADING MOTOR

5-2-10.

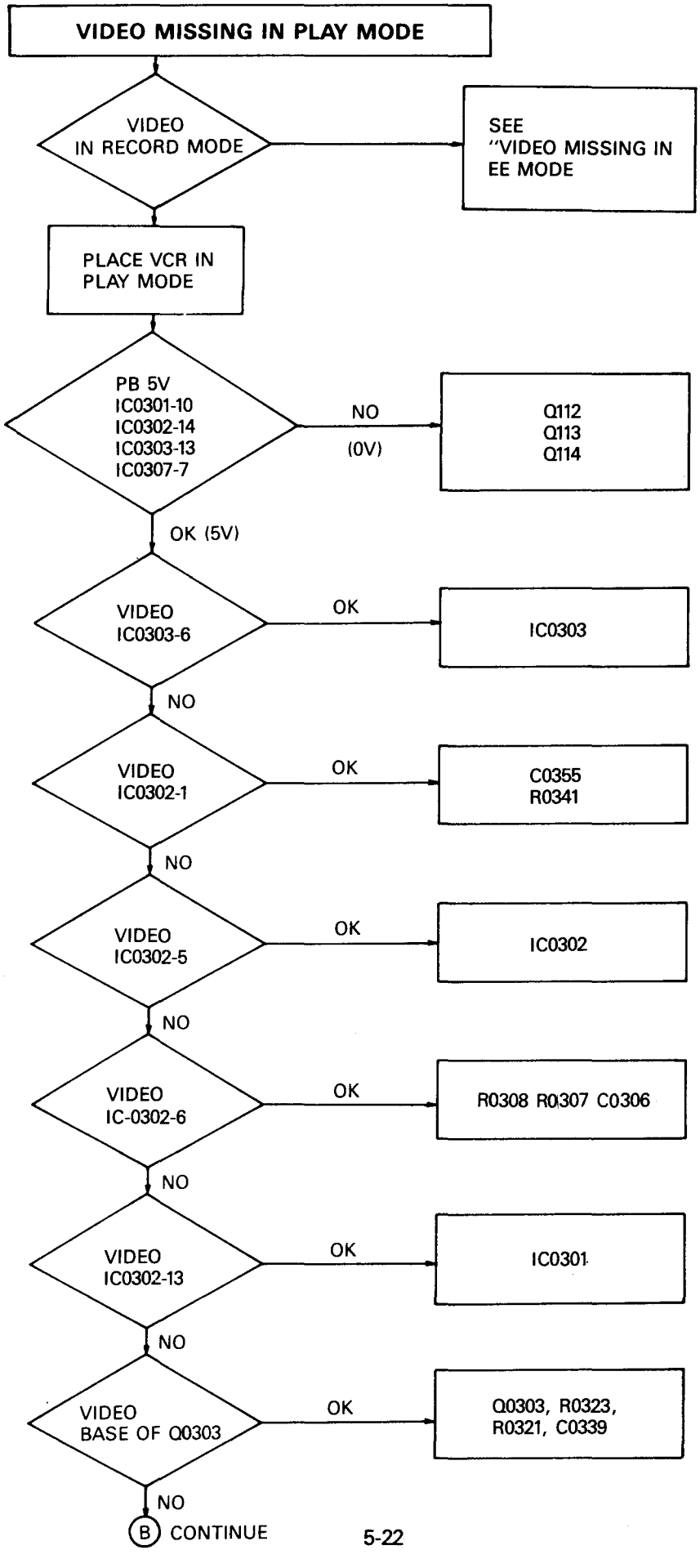

VIDEO MISSING IN EE MODE
PLACE VCR IN STOP MODE
VIDEO INPUT MISSING
YES
SUPPLY VIDEO SIGNAL (1VPP) TO "VIDEO IN" AND SET THE INPUT SELECT SWITCH TO AUX.
NO
ONE OF POSSIBLE INPUT SIGNALS
VIDEO IC0303-4
NO
C0353
OK
VIDEO IC0303-10
NO
VIDEO COLLECTOR OF Q0305
NO
IC0303
OK
OK
VIDEO EMITTER OF Q0304
NO
Q0304 FL0302
OK
C426 R407
VIDEO IC0302-24
NO
IC0302
OK
VIDEO IC0303-28, 29
NO
IC0303
OK
R0359 C0366
VIDEO'IN JACK
NO
VIDEO IN
OK
TUNER VIDEO EMITTER OF Q403
NO
SEE "TUNER MISSSING IN E-E MODE"

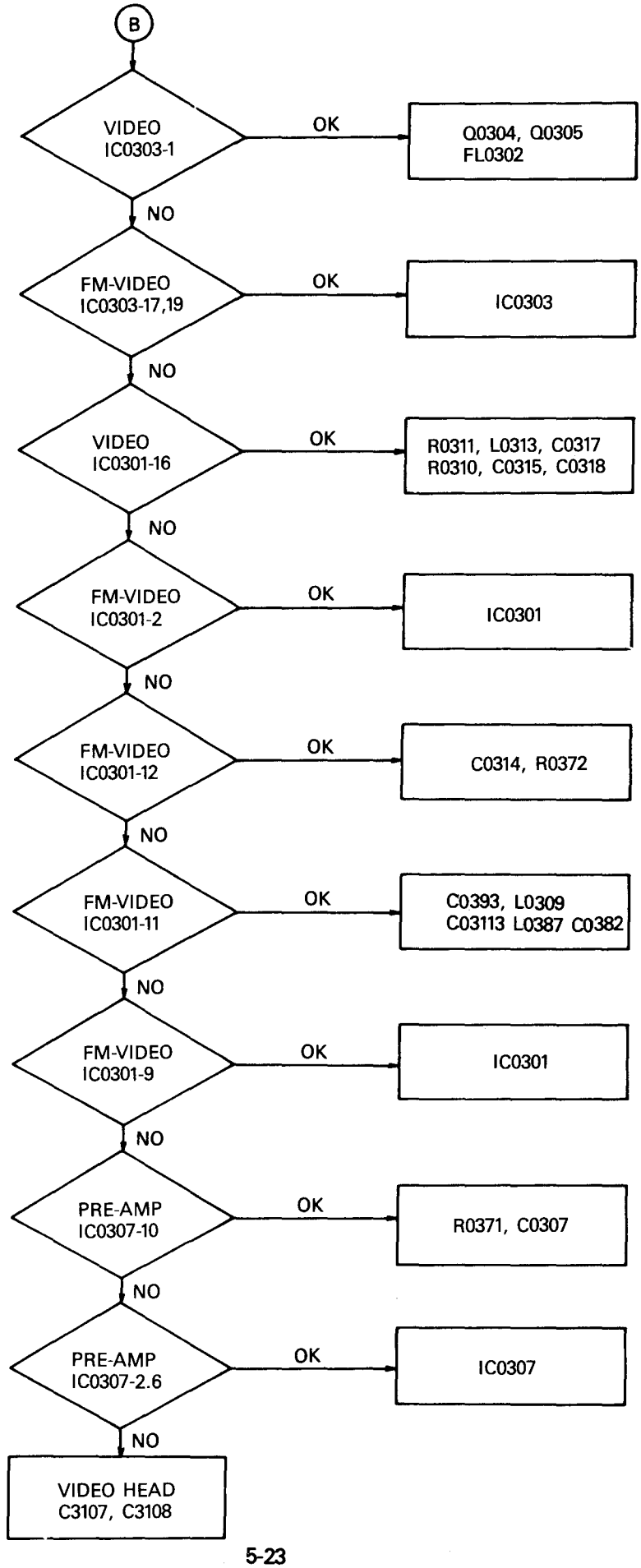
5-2-11.


VIDEO MISSING IN RECORD MODE
VIDEO IN EE MODE IC0502-5
SEE "VIDEO MISSING IN EE MODE"
PLACE VCR IN RECORD MODE
REC/PRE-AMP IC0307-3.5
OK
VIDEO HEAD D0306, D0307
NO
REC/PRE-AMP IC0307-11.15
OK
IC0306
NO
FM-VIDEO IC0303-21
OK
FM-VIDEO EMITTER OF Q0306
OK
C3114 C3113 R0392 R0396
NO
L0315 R0348 C0399
NO
FM-VIDEO IC0303-16
OK
FM-VIDEO IC0302-18
OK
R0345 VR0305
NO
R0346 VR0304
NO
VIDEO IC0303-12
OK
PB5V IC0302-13
OK (Lo)
VR0306 VR0307
NO (HI)
NO
Q114 Q113 Q112 Q0303
B

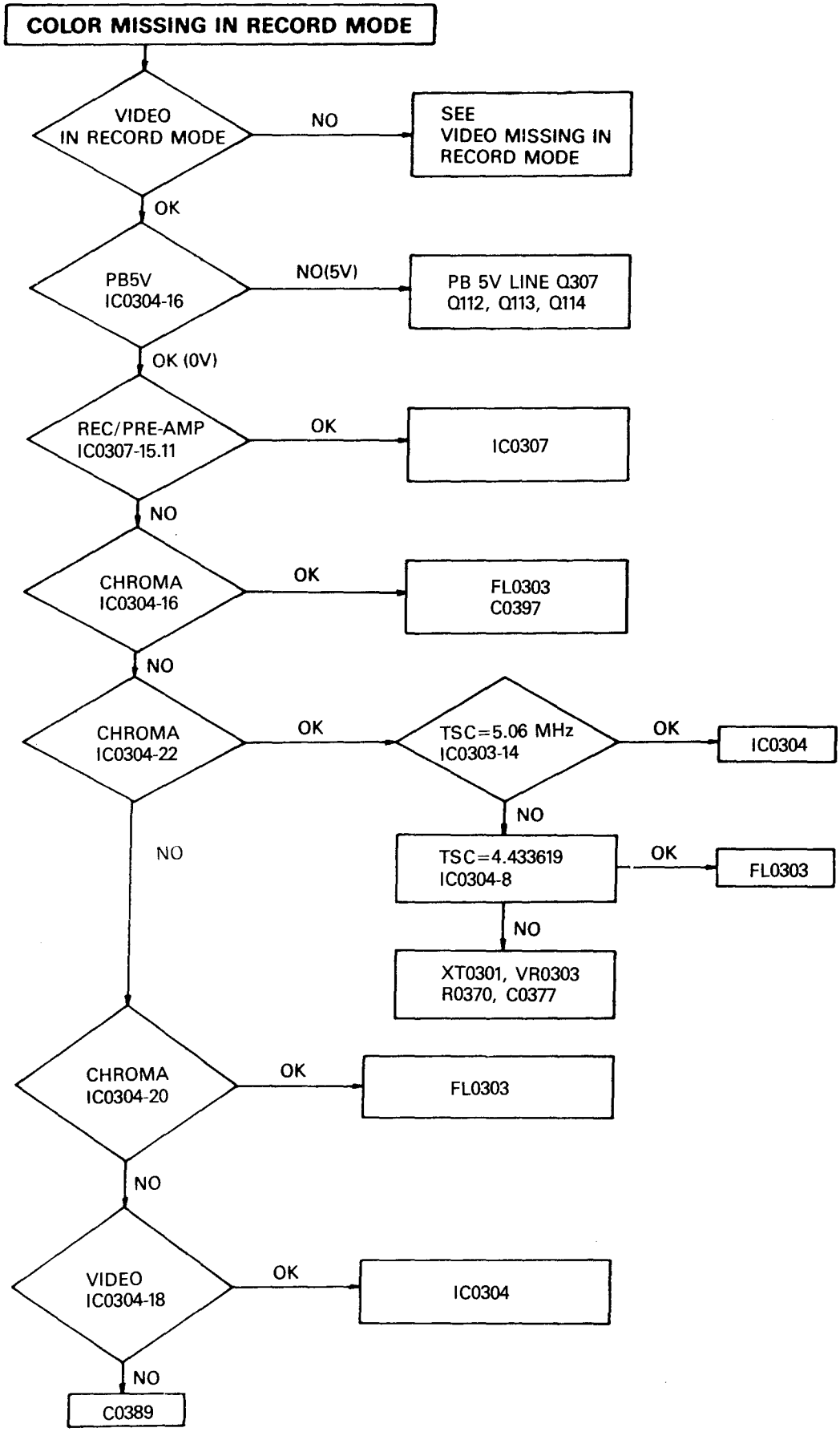

B
VIDEO
IC0302-15
OK
IC0302-15
LINK
NO
VIDEO
IC0302-3
OK
PB5V
IC0302-4
OK (Lo)
IC0302
NO (HIGH)
NO
Q112
Q113
Q114
VIDEO
EMITTER OF Q0304
OK
C0321
NO
SEE
"VIDEO MISSING IN
EE MODE

5-2-12.

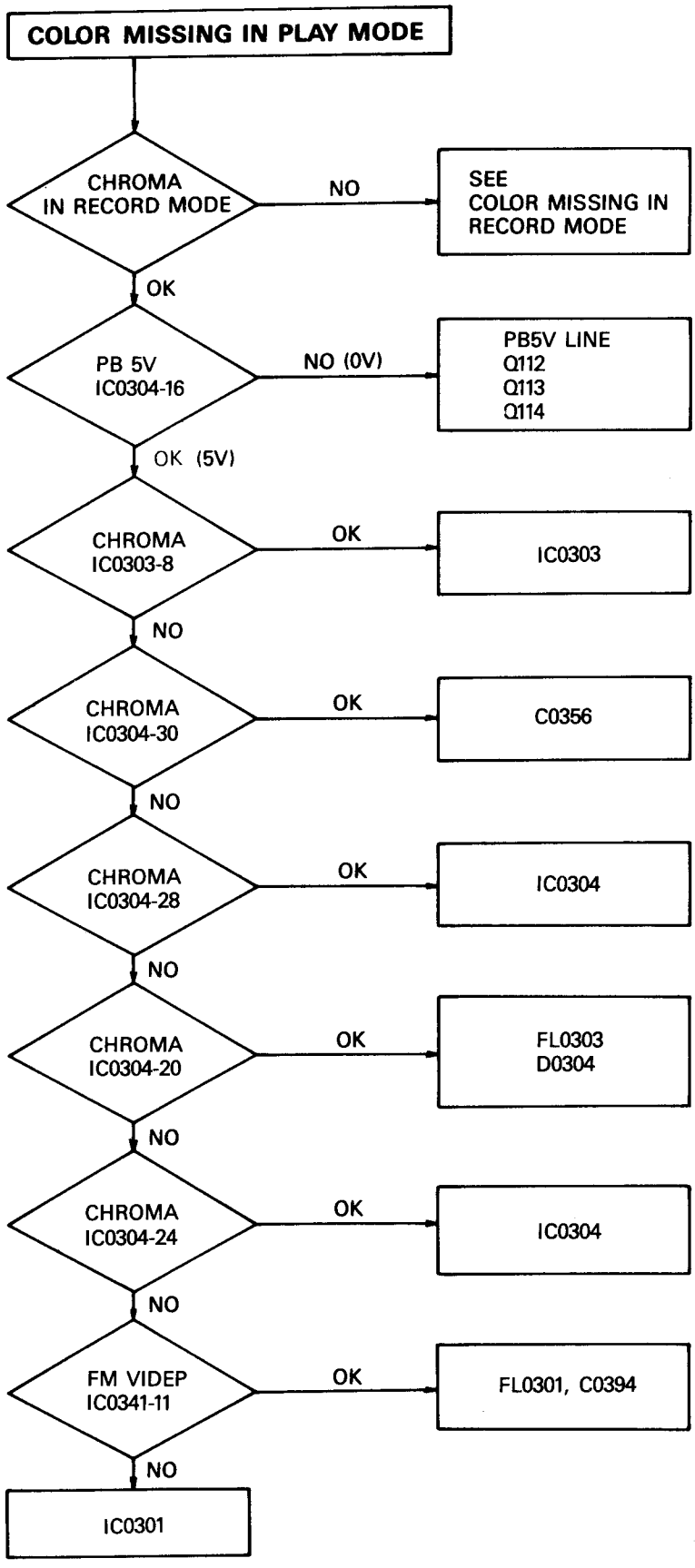

VIDEO MISSING IN PLAY MODE
VIDEO IN RECORD MODE
SEE "VIDEO MISSING IN EE MODE
PLACE VCR IN PLAY MODE
PB 5V IC0301-10 IC0302-14 IC0303-13 IC0307-7
NO
(0V)
Q112 Q113 Q114
OK (5V)
VIDEO IC0303-6
OK
IC0303
NO
VIDEO IC0302-1
OK
C0355 R0341
NO
VIDEO IC0302-5
OK
IC0302
NO
VIDEO IC-0302-6
OK
R0308 R0307 C0306
NO
VIDEO IC0302-13
OK
IC0301
NO
VIDEO BASE OF Q0303
OK
Q0303, R0323, R0321, C0339
NO
B CONTINUE


B
VIDEO
IC0303-1
OK
Q0304, Q0305
FL0302
NO
FM-VIDEO
IC0303-17,19
OK
IC0303
NO
VIDEO
IC0301-16
OK
R0311, L0313, C0317
R0310, C0315, C0318
NO
FM-VIDEO
IC0301-2
OK
IC0301
NO
FM-VIDEO
IC0301-12
OK
C0314, R0372
NO
FM-VIDEO
IC0301-11
OK
C0393, L0309
C03113 L0387 C0382
NO
FM-VIDEO
IC0301-9
OK
IC0301
NO
PRE-AMP
IC0307-10
OK
R0371, C0307
NO
PRE-AMP
IC0307-2.6
OK
IC0307
NO
VIDEO HEAD
C3107, C3108

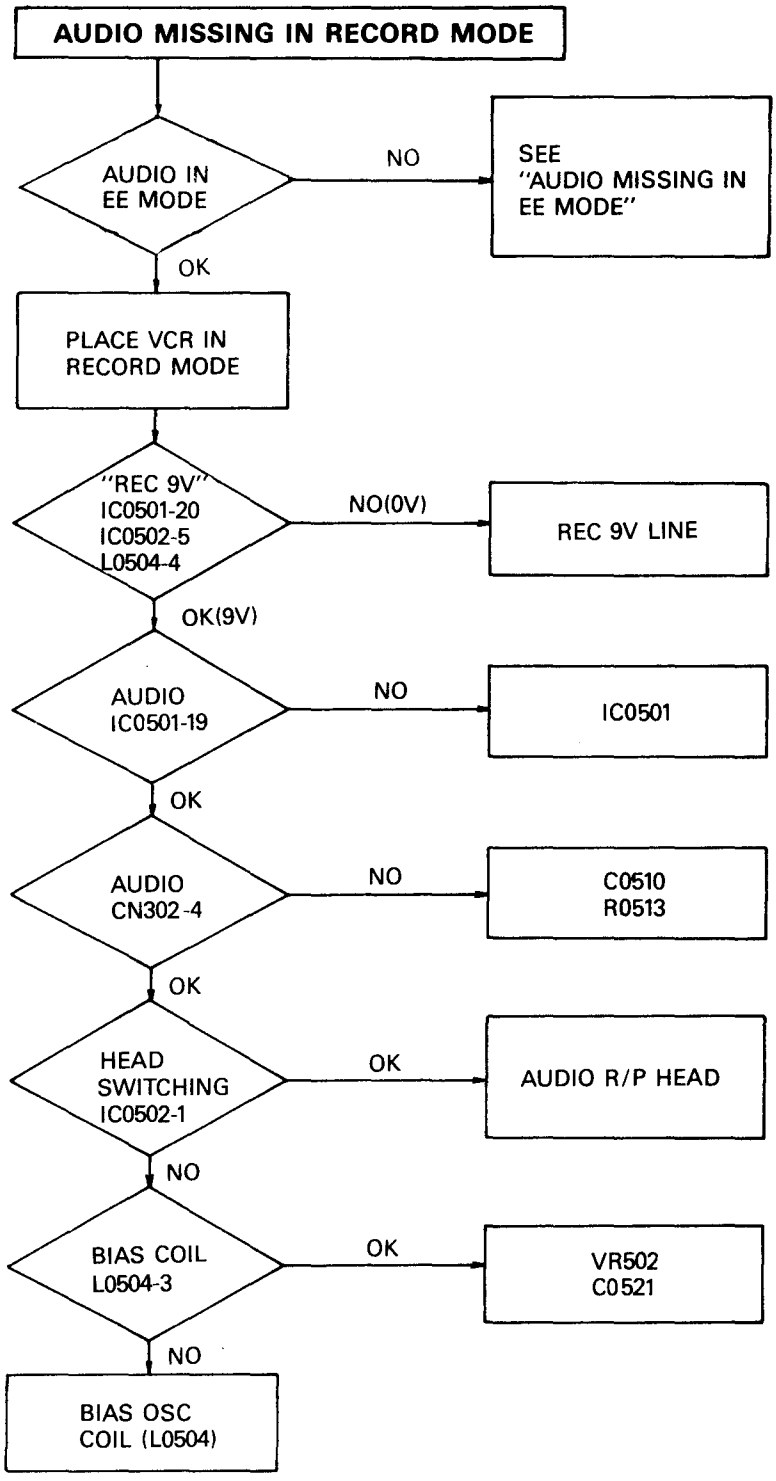
5-2-13.


COLOR MISSING IN RECORD MODE
VIDEO IN RECORD MODE
NO
SEE VIDEO MISSING IN RECORD MODE
OK
PB5V IC0304-16
NO(5V)
PB 5V LINE Q307 Q112, Q113, Q114
OK (0V)
REC/PRE-AMP IC0307-15.11
OK
IC0307
NO
CHROMA IC0304-16
OK
FL0303 C0397
NO
CHROMA IC0304-22
OK
TSC=5.06 MHz IC0303-14
OK
IC0304
NO
NO
TSC=4.433619 IC0304-8
OK
FL0303
NO
XT0301, VR0303 R0370, C0377
CHROMA IC0304-20
OK
FL0303
NO
VIDEO IC0304-18
OK
IC0304
NO
C0389

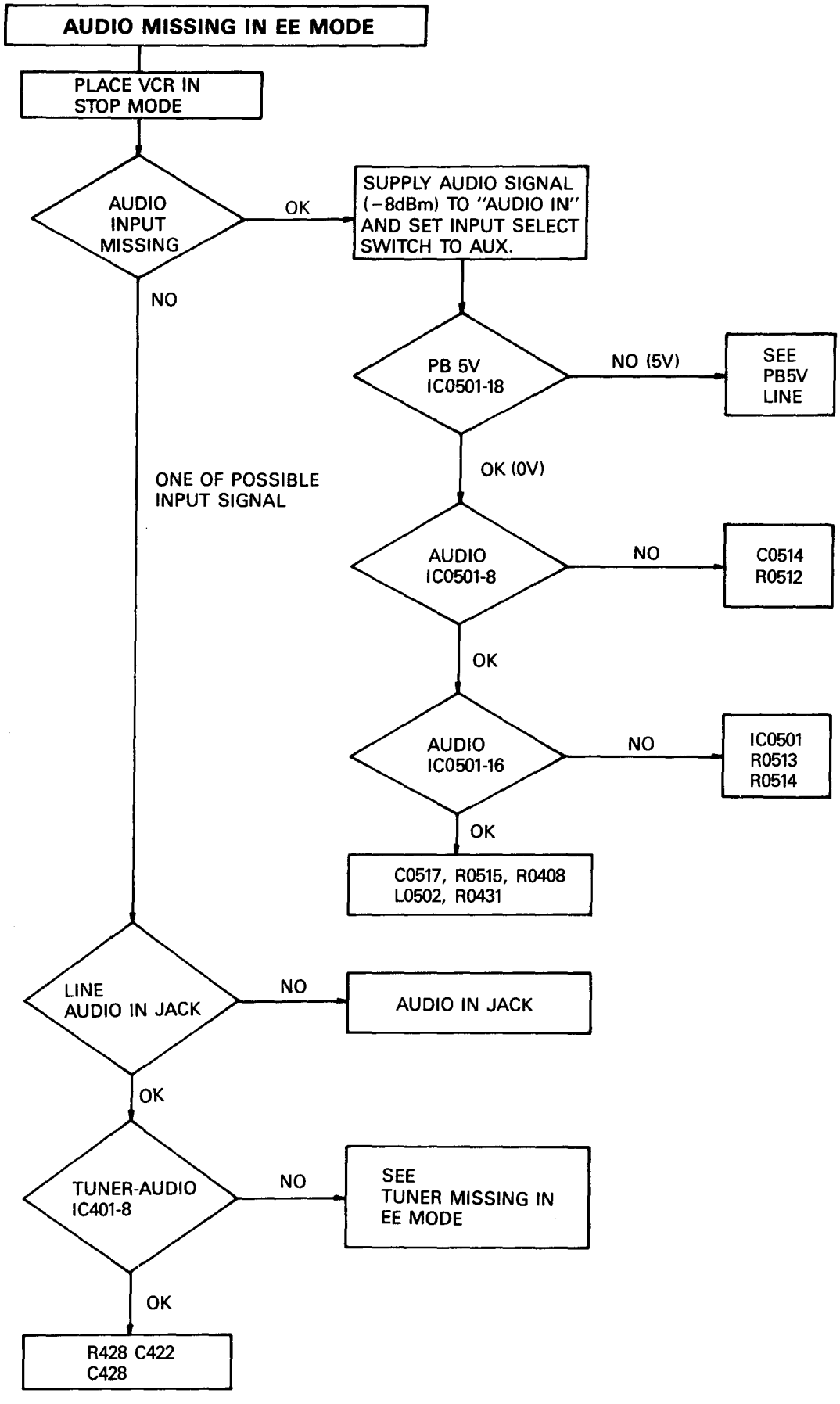
5-2-14.


COLOR MISSING IN PLAY MODE
CHROMA IN RECORD MODE
NO
SEE COLOR MISSING IN RECORD MODE
OK
PB 5V IC0304-16
NO (0V)
PB5V LINE Q112 Q113 Q114
OK (5V)
CHROMA IC0303-8
OK
IC0303
NO
CHROMA IC0304-30
OK
C0356
NO
CHROMA IC0304-28
OK
IC0304
NO
CHROMA IC0304-20
OK
FL0303 D0304
NO
CHROMA IC0304-24
OK
IC0304
NO
FM VIDEP IC0341-11
OK
FL0301, C0394
NO
IC0301

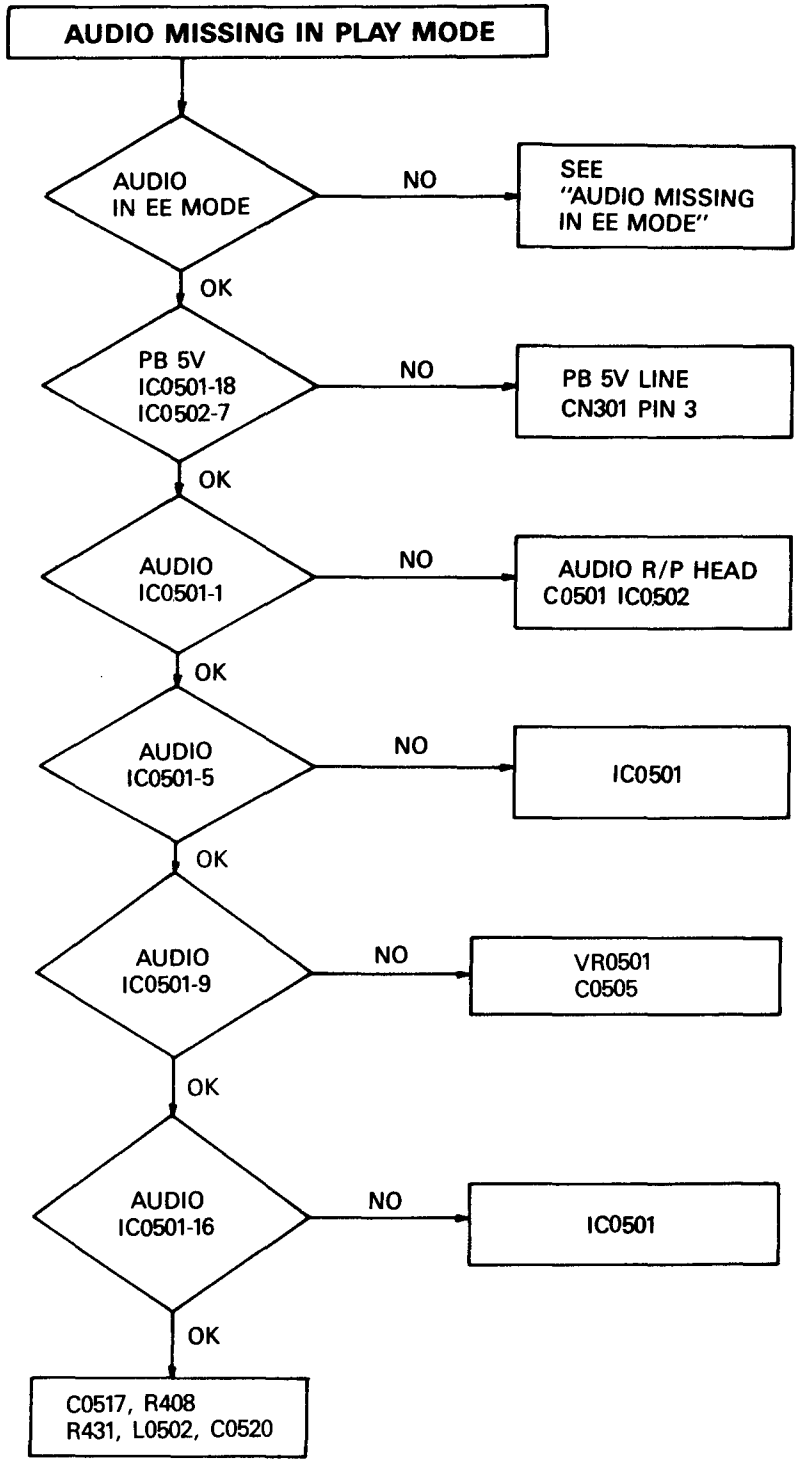
5-2-15.


AUDIO MISSING IN RECORD MODE
AUDIO IN EE MODE
NO
SEE "AUDIO MISSING IN EE MODE"
OK
PLACE VCR IN RECORD MODE
"REC 9V" IC0501-20 IC0502-5 L0504-4
NO(0V)
REC 9V LINE
OK(9V)
AUDIO IC0501-19
NO
IC0501
OK
AUDIO CN302-4
NO
C0510 R0513
OK
HEAD SWITCHING IC0502-1
OK
AUDIO R/P HEAD
NO
BIAS COIL L0504-3
OK
VR502 C0521
NO
BIAS OSC COIL (L0504)

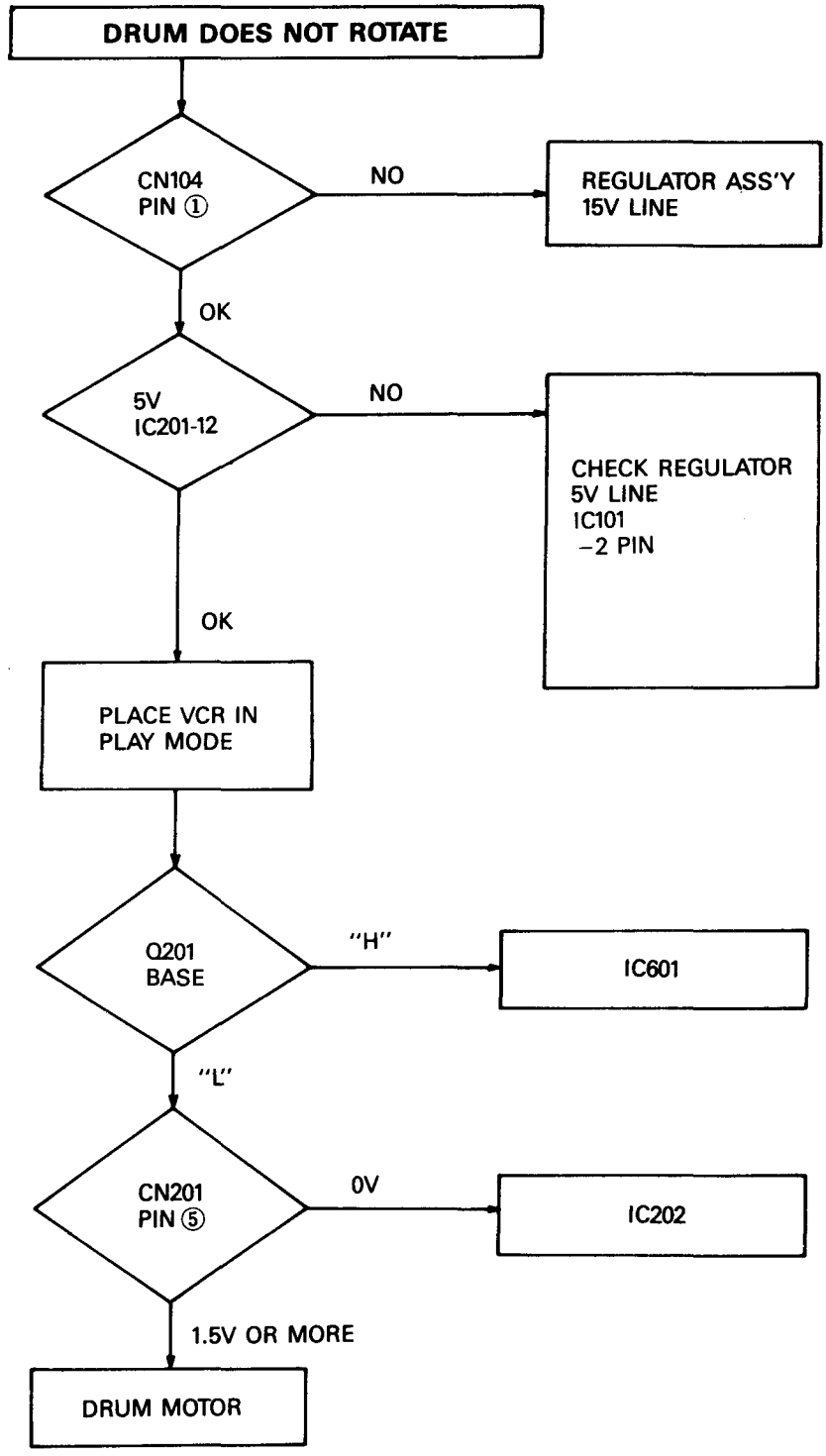
5-2-16.


AUDIO MISSING IN EE MODE
PLACE VCR IN STOP MODE
AUDIO INPUT MISSING
OK
SUPPLY AUDIO SIGNAL (−8dBm) TO "AUDIO IN" AND SET INPUT SELECT SWITCH TO AUX.
NO
PB 5V IC0501-18
NO (5V)
SEE PB5V LINE
OK (0V)
ONE OF POSSIBLE INPUT SIGNAL
AUDIO IC0501-8
NO
C0514 R0512
OK
AUDIO IC0501-16
NO
IC0501 R0513 R0514
OK
C0517, R0515, R0408 L0502, R0431
LINE AUDIO IN JACK
NO
AUDIO IN JACK
OK
TUNER-AUDIO IC401-8
NO
SEE TUNER MISSING IN EE MODE
OK
R428 C422 C428

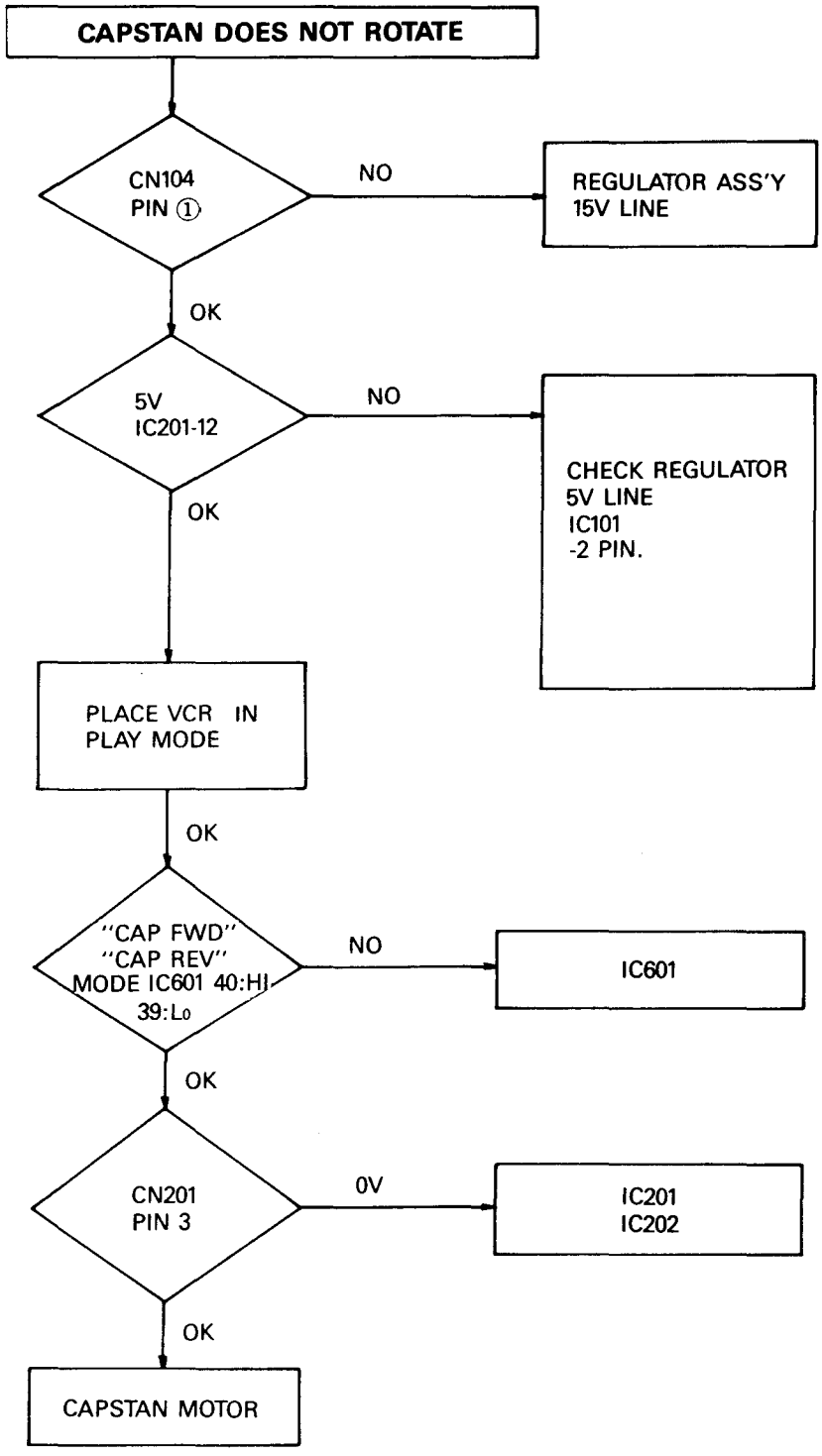
5-2-17.


AUDIO MISSING IN PLAY MODE
AUDIO IN EE MODE
NO
SEE "AUDIO MISSING IN EE MODE"
OK
PB 5V IC0501-18 IC0502-7
NO
PB 5V LINE CN301 PIN 3
OK
AUDIO IC0501-1
NO
AUDIO R/P HEAD C0501 IC0502
OK
AUDIO IC0501-5
NO
IC0501
OK
AUDIO IC0501-9
NO
VR0501 C0505
OK
AUDIO IC0501-16
NO
IC0501
OK
C0517, R408 R431, L0502, C0520

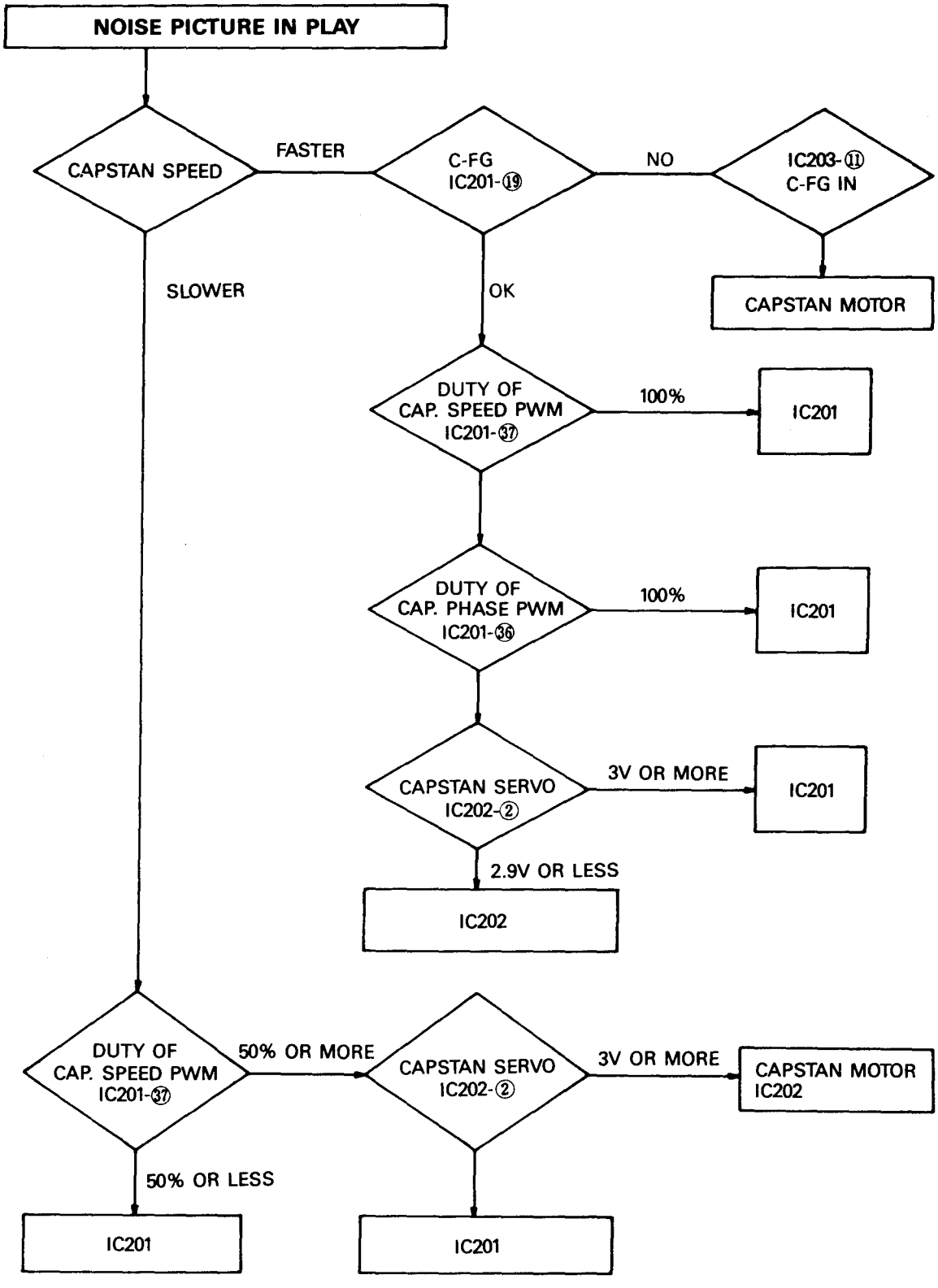
5-2-18.


DRUM DOES NOT ROTATE
CN104
PIN ①
NO
REGULATOR ASS'Y
15V LINE
OK
5V
IC201-12
NO
CHECK REGULATOR
5V LINE
IC101
-2 PIN
OK
PLACE VCR IN
PLAY MODE
Q201
BASE
"H"
IC601
"L"
CN201
PIN ⑤
0V
IC202
1.5V OR MORE
DRUM MOTOR

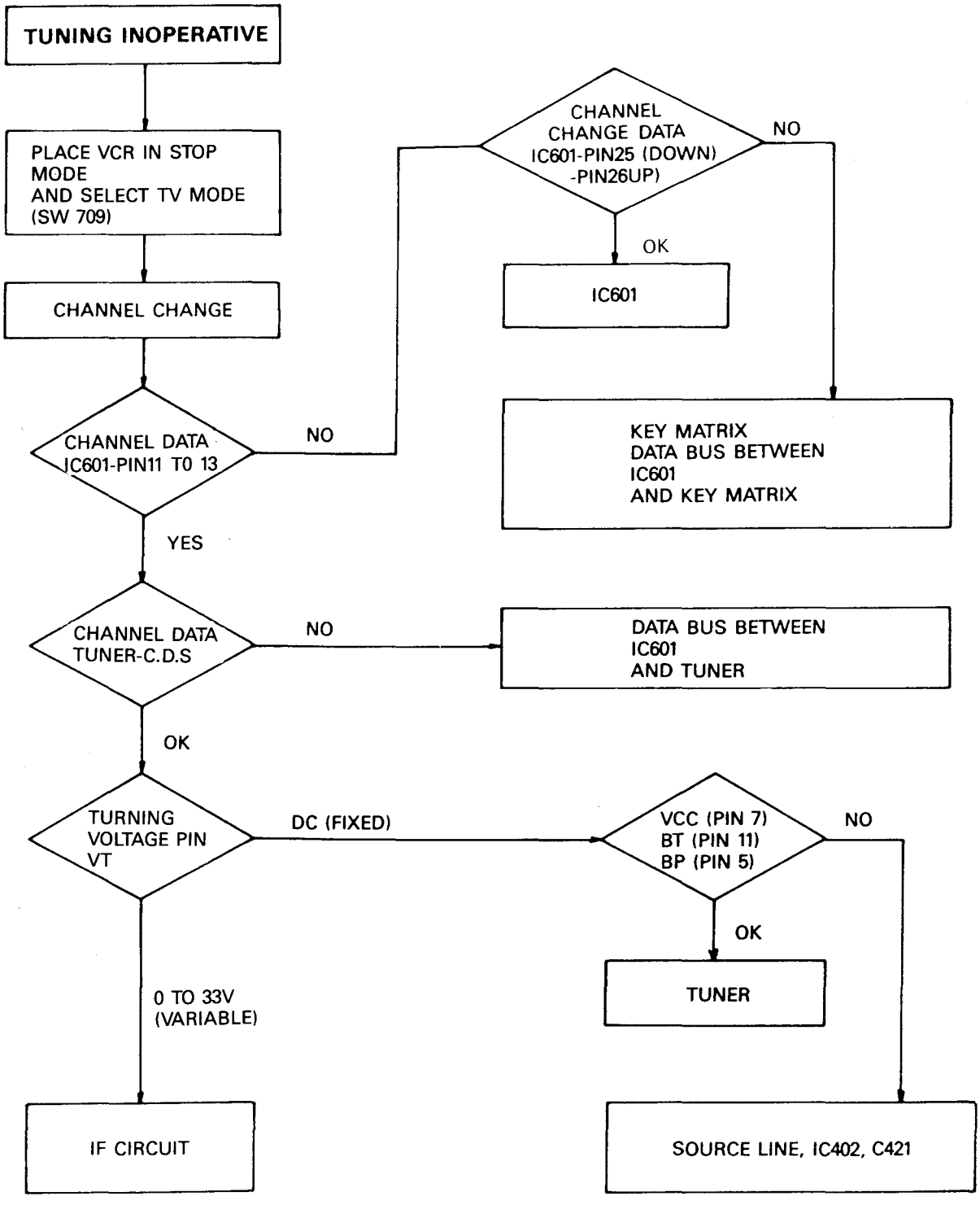
5-2-19.


CAPSTAN DOES NOT ROTATE
CN104
PIN ①
NO
REGULATOR ASS'Y
15V LINE
OK
5V
IC201-12
NO
CHECK REGULATOR
5V LINE
IC101
-2 PIN.
OK
PLACE VCR IN
PLAY MODE
OK
"CAP FWD"
"CAP REV"
MODE IC601 40:HI
39:Lo
NO
IC601
OK
CN201
PIN 3
0V
IC201
IC202
OK
CAPSTAN MOTOR

5-2-20.

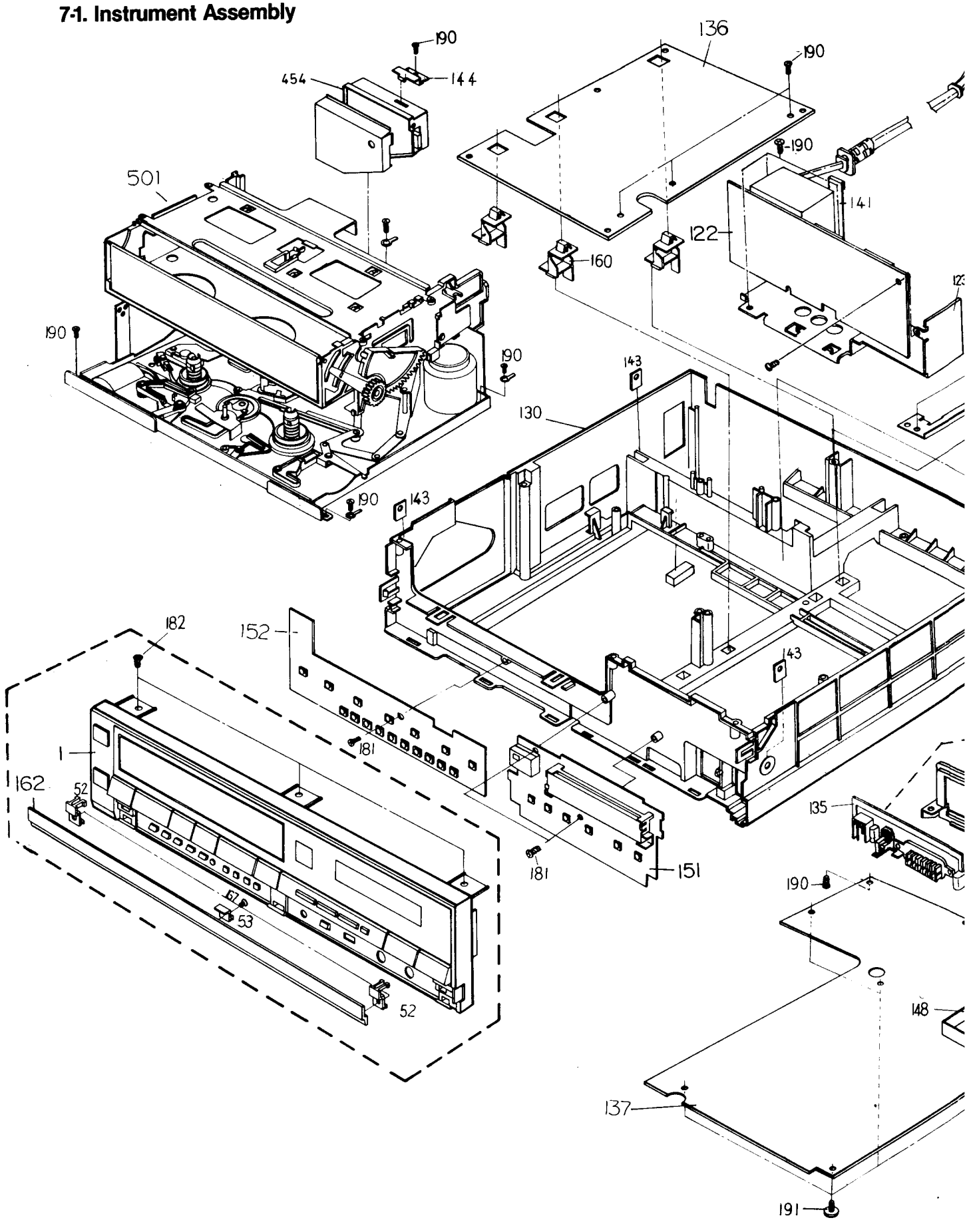

NOISE PICTURE IN PLAY
CAPSTAN SPEED
FASTER
C-FG
IC201-⑲
NO
IC203-⑪
C-FG IN
CAPSTAN MOTOR
SLOWER
OK
DUTY OF
CAP. SPEED PWM
IC201-㊲
100%
IC201
DUTY OF
CAP. PHASE PWM
IC201-㊱
100%
IC201
CAPSTAN SERVO
IC202-②
3V OR MORE
IC201
2.9V OR LESS
IC202
DUTY OF
CAP. SPEED PWM
IC201-㊲
50% OR MORE
CAPSTAN SERVO
IC202-②
3V OR MORE
CAPSTAN MOTOR
IC202
50% OR LESS
IC201
IC201

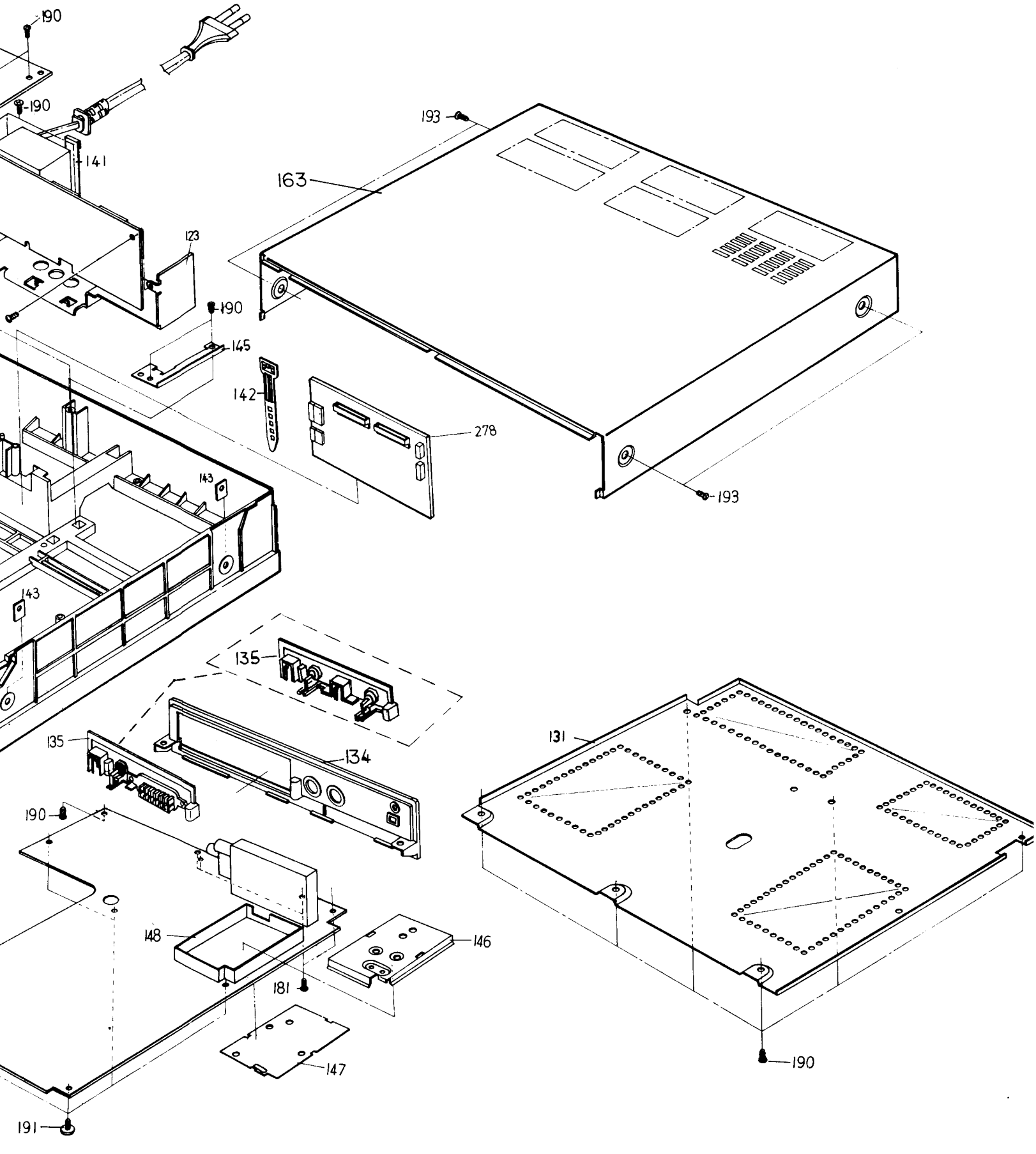
5-2-21.


TUNING INOPERATIVE
PLACE VCR IN STOP MODE AND SELECT TV MODE (SW 709)
CHANNEL CHANGE
CHANNEL DATA IC601-PIN11 T0 13
NO
YES
CHANNEL CHANGE DATA IC601-PIN25 (DOWN) -PIN26UP)
NO
OK
IC601
KEY MATRIX DATA BUS BETWEEN IC601 AND KEY MATRIX
CHANNEL DATA TUNER-C.D.S
NO
DATA BUS BETWEEN IC601 AND TUNER
OK
TURNING VOLTAGE PIN VT
DC (FIXED)
VCC (PIN 7) BT (PIN 11) BP (PIN 5)
NO
OK
TUNER
0 TO 33V (VARIABLE)
IF CIRCUIT
SOURCE LINE, IC402, C421

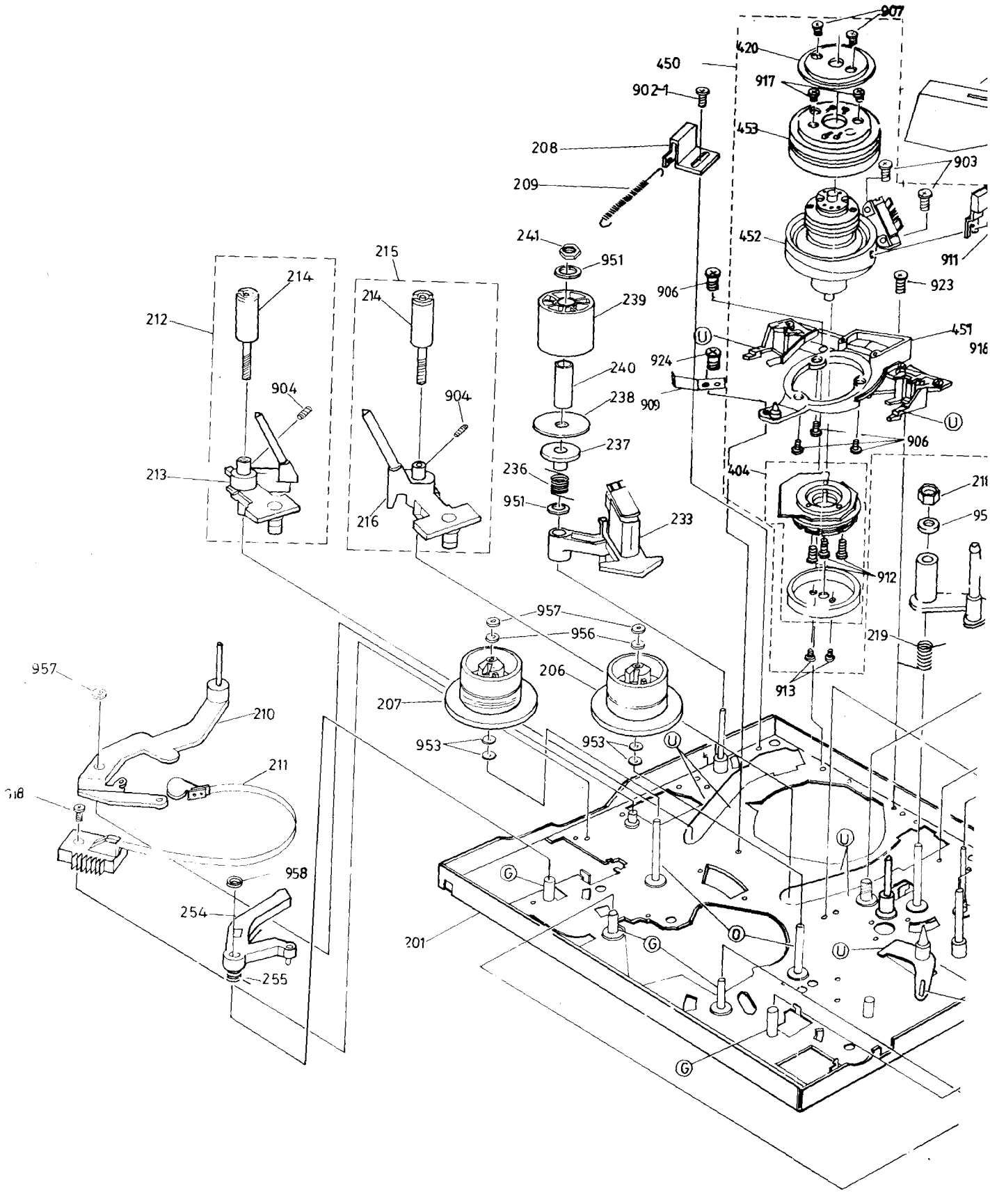
7. MECHANICAL EXPLODED VIEWS

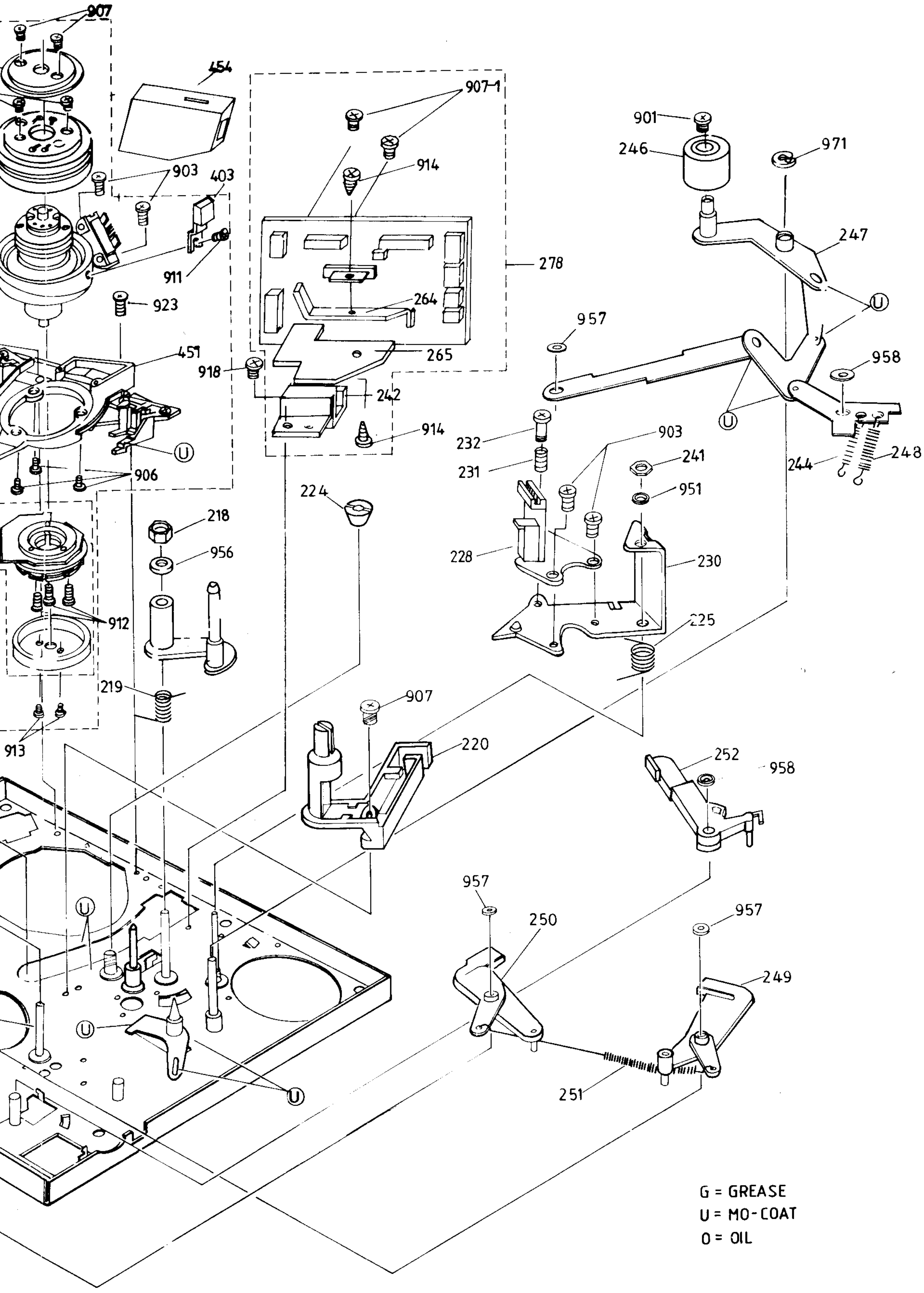
7-1. Instrument Assembly




190
190
141
123
190
145
142
193
163
193
278
143
143
135
135
134
131
190
148
146
181
147
191
190

7-2. Transport Mechanical Assembly

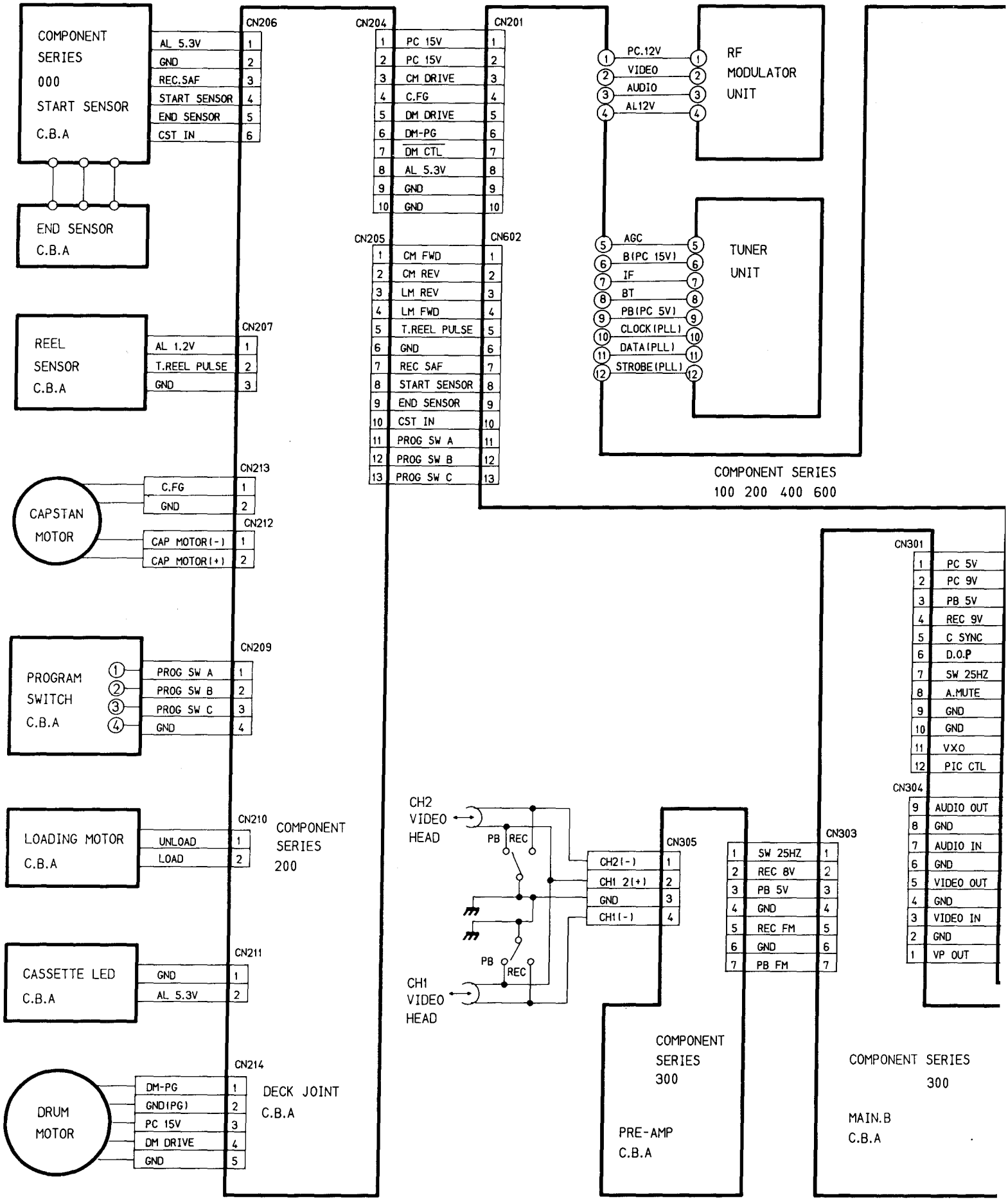


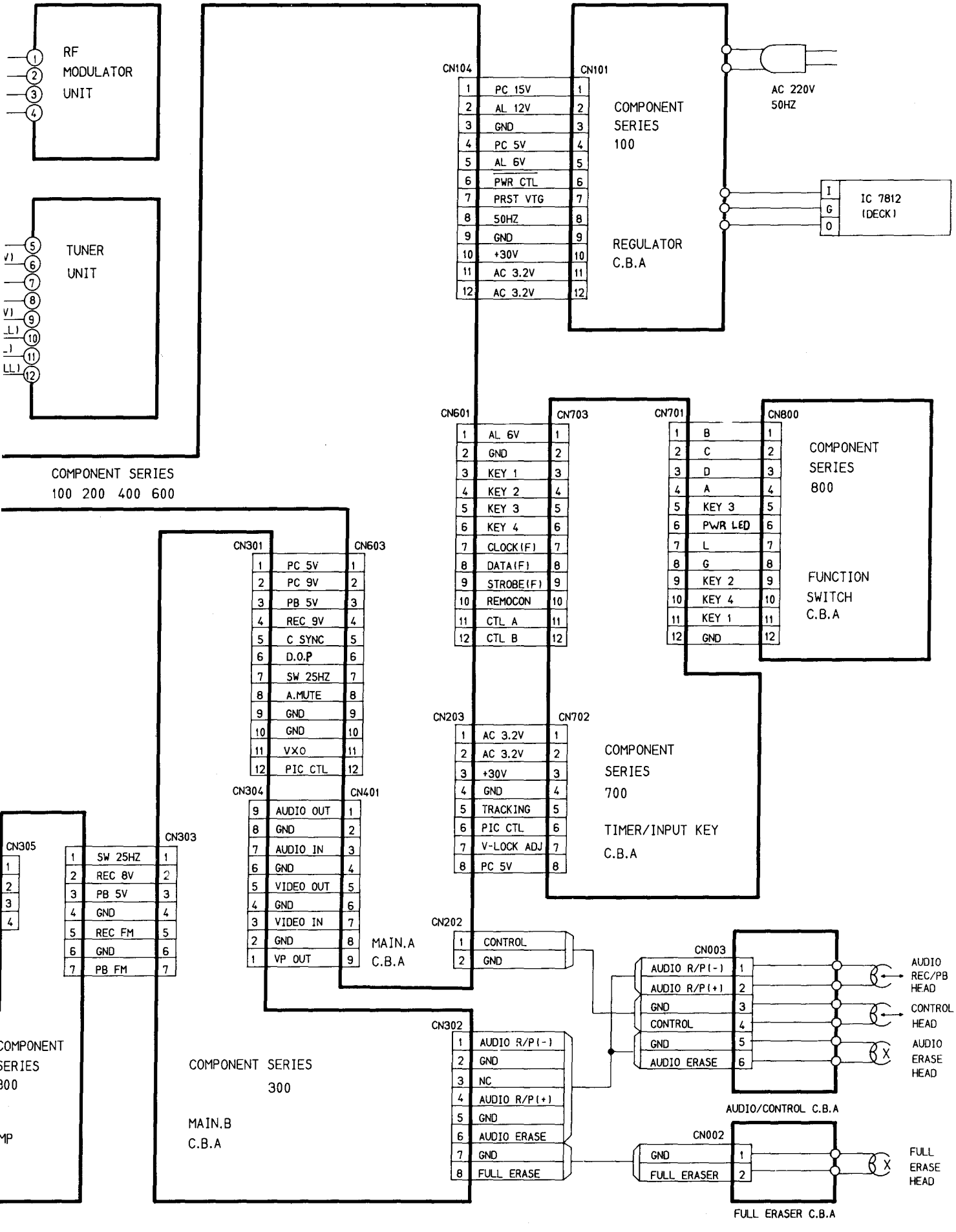


G = GREASE
U = MO-COAT
O = OIL

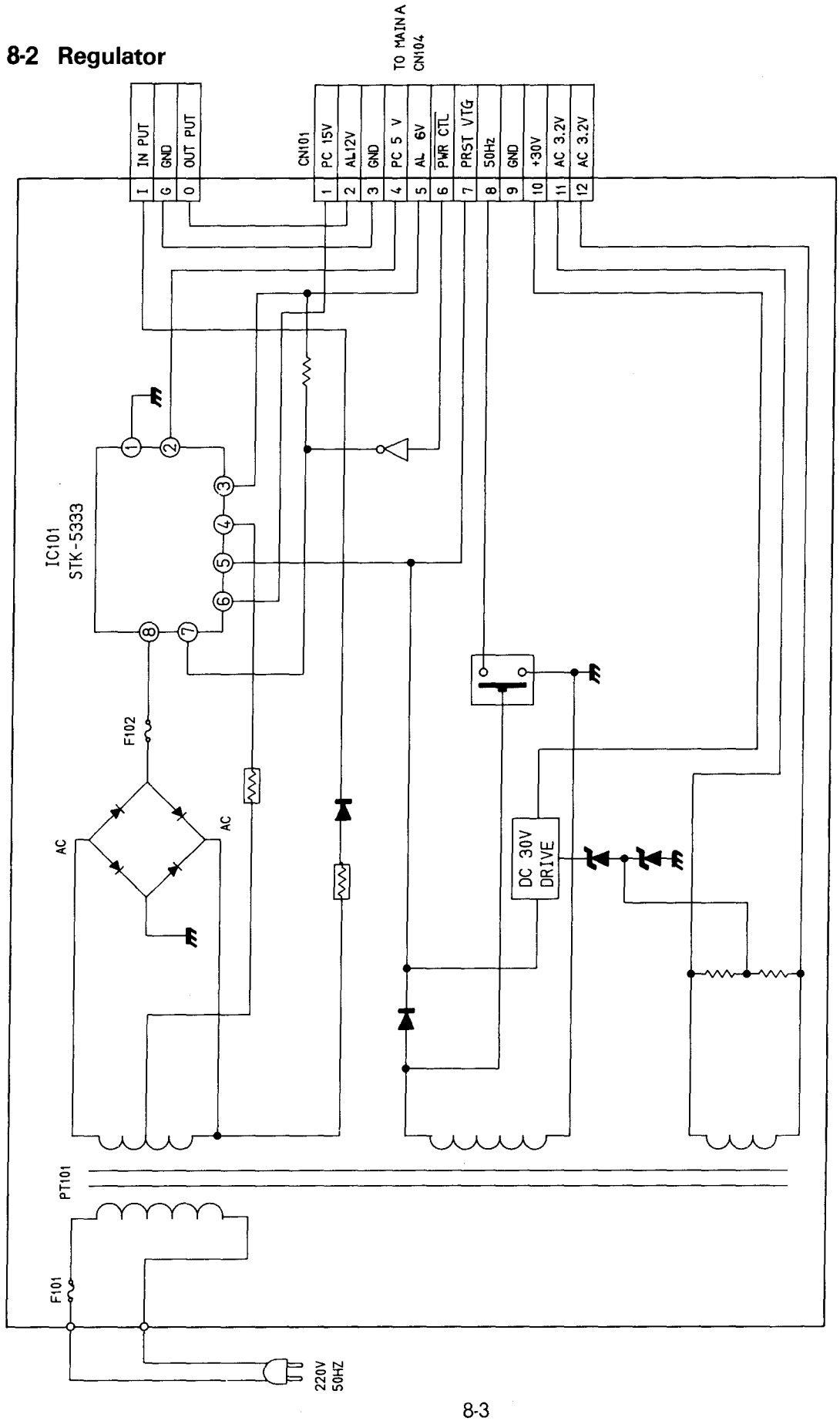
8. BLOCK DIAGRAM

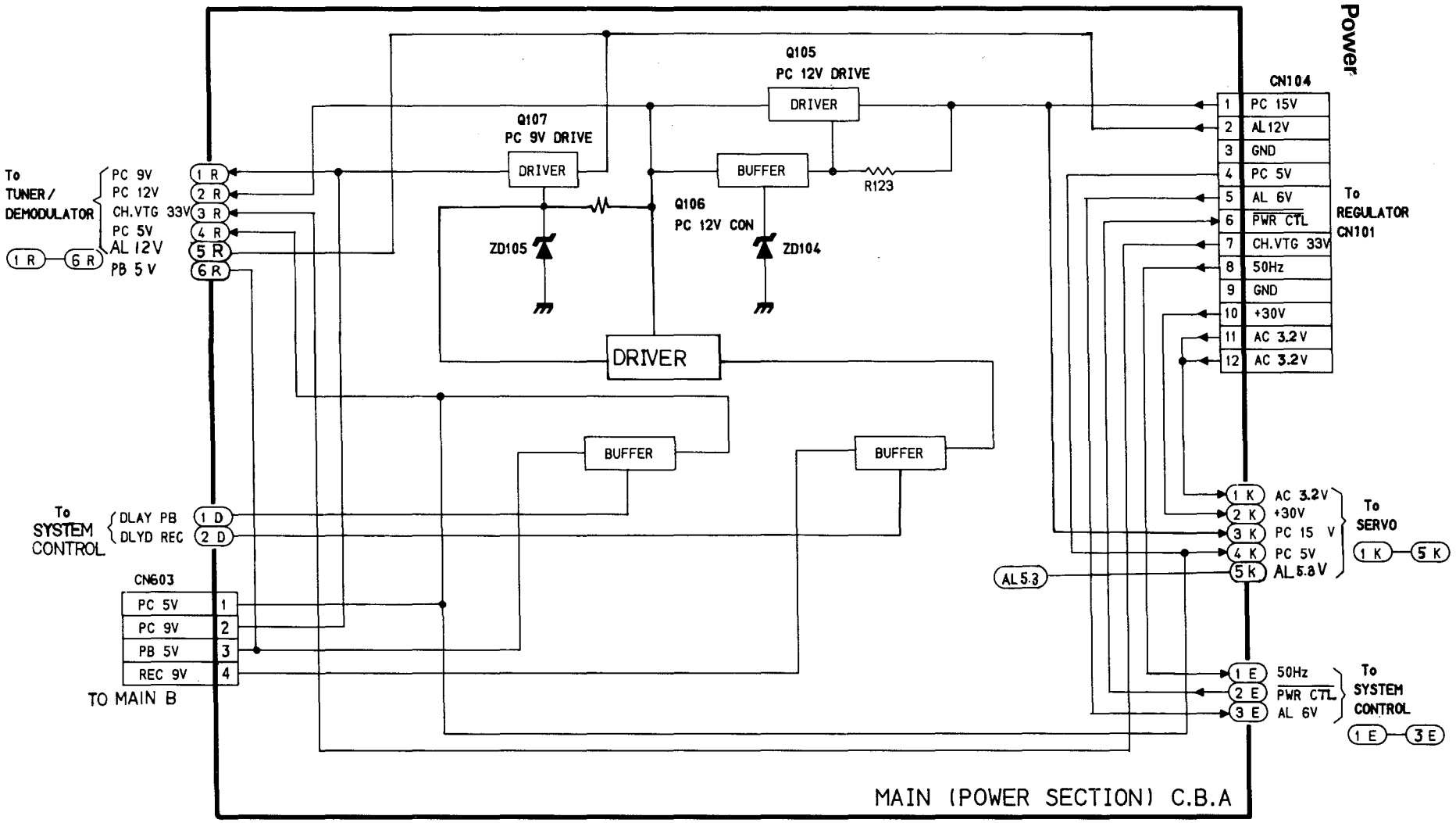
8-1. Total Wiring Diagram



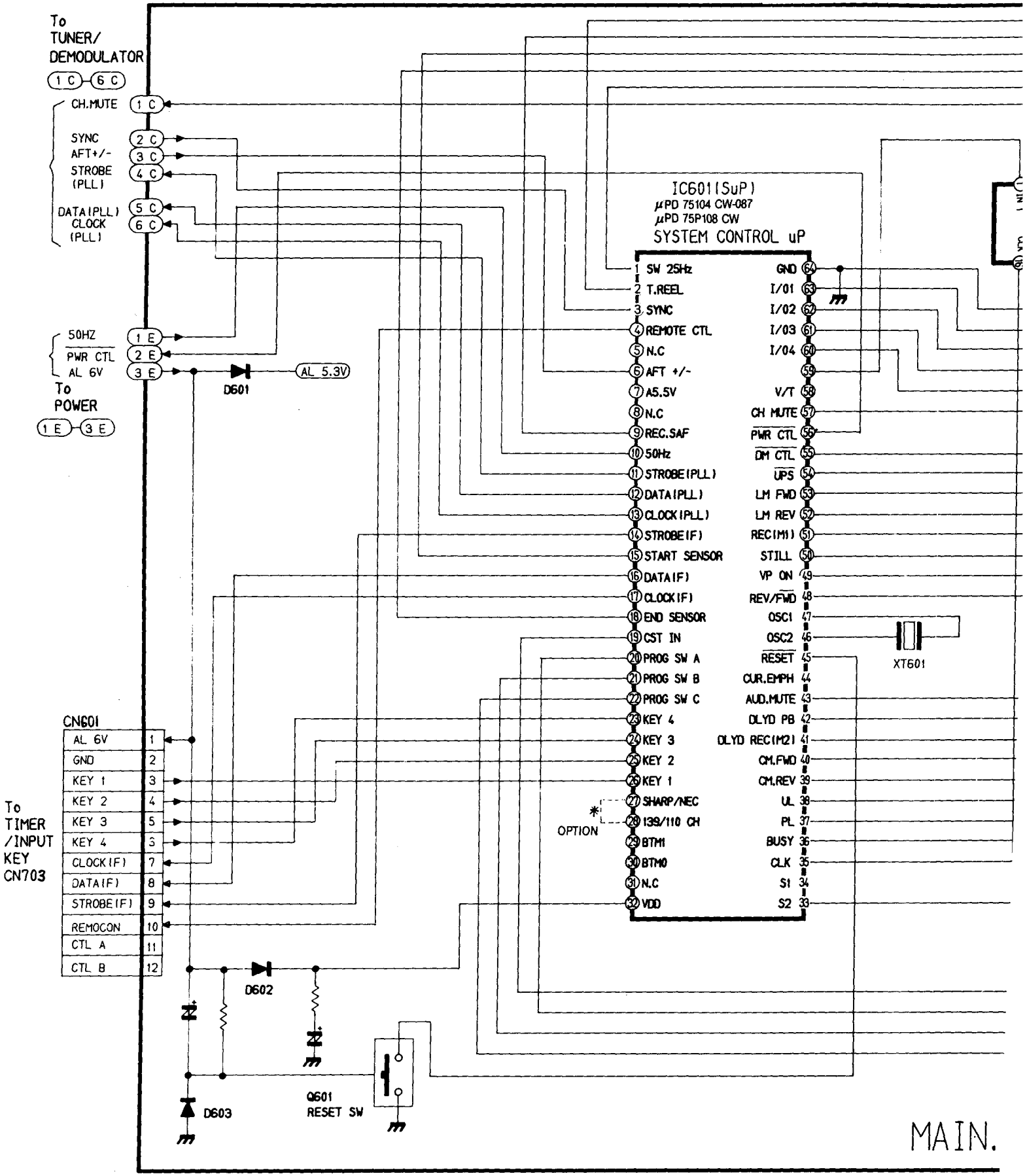

RF
MODULATOR
UNIT
TUNER
UNIT
COMPONENT SERIES
100 200 400 600
CN104
CN101
1 PC 15V 1
2 AL 12V 2
3 GND 3
4 PC 5V 4
5 AL 6V 5
6 PWR CTL 6
7 PRST VTG 7
8 50HZ 8
9 GND 9
10 +30V 10
11 AC 3.2V 11
12 AC 3.2V 12
COMPONENT
SERIES
100
REGULATOR
C.B.A
AC 220V
50HZ
I
G
O
IC 7812
(DECK)
CN601
CN703
CN701
CN800
1 AL 6V 1
2 GND 2
3 KEY 1 3
4 KEY 2 4
5 KEY 3 5
6 KEY 4 6
7 CLOCK(F) 7
8 DATA(F) 8
9 STROBE(F) 9
10 REMOCON 10
11 CTL A 11
12 CTL B 12
1 B 1
2 C 2
3 D 3
4 A 4
5 KEY 3 5
6 PWR LED 6
7 L 7
8 G 8
9 KEY 2 9
10 KEY 4 10
11 KEY 1 11
12 GND 12
COMPONENT
SERIES
800
FUNCTION
SWITCH
C.B.A
CN301
CN603
1 PC 5V 1
2 PC 9V 2
3 PB 5V 3
4 REC 9V 4
5 C SYNC 5
6 D.O.P 6
7 SW 25HZ 7
8 A.MUTE 8
9 GND 9
10 GND 10
11 VXO 11
12 PIC CTL 12
CN203
CN702
1 AC 3.2V 1
2 AC 3.2V 2
3 +30V 3
4 GND 4
5 TRACKING 5
6 PIC CTL 6
7 V-LOCK ADJ 7
8 PC 5V 8
COMPONENT
SERIES
700
TIMER/INPUT KEY
C.B.A
CN304
CN401
9 AUDIO OUT 1
8 GND 2
7 AUDIO IN 3
6 GND 4
5 VIDEO OUT 5
4 GND 6
3 VIDEO IN 7
2 GND 8
1 VP OUT 9
MAIN.A
C.B.A
CN305
CN303
1 SW 25HZ 1
2 REC 8V 2
3 PB 5V 3
4 GND 4
5 REC FM 5
6 GND 6
7 PB FM 7
CN202
1 CONTROL
2 GND
CN003
AUDIO R/P(-) 1
AUDIO R/P(+) 2
GND 3
CONTROL 4
GND 5
AUDIO ERASE 6
AUDIO
REC/PB
HEAD
CONTROL
HEAD
AUDIO
ERASE
HEAD
AUDIO/CONTROL C.B.A
CN302
1 AUDIO R/P(-)
2 GND
3 NC
4 AUDIO R/P(+)
5 GND
6 AUDIO ERASE
7 GND
8 FULL ERASE
COMPONENT SERIES
300
MAIN.B
C.B.A
CN002
GND 1
FULL ERASER 2
FULL
ERASE
HEAD
FULL ERASER C.B.A

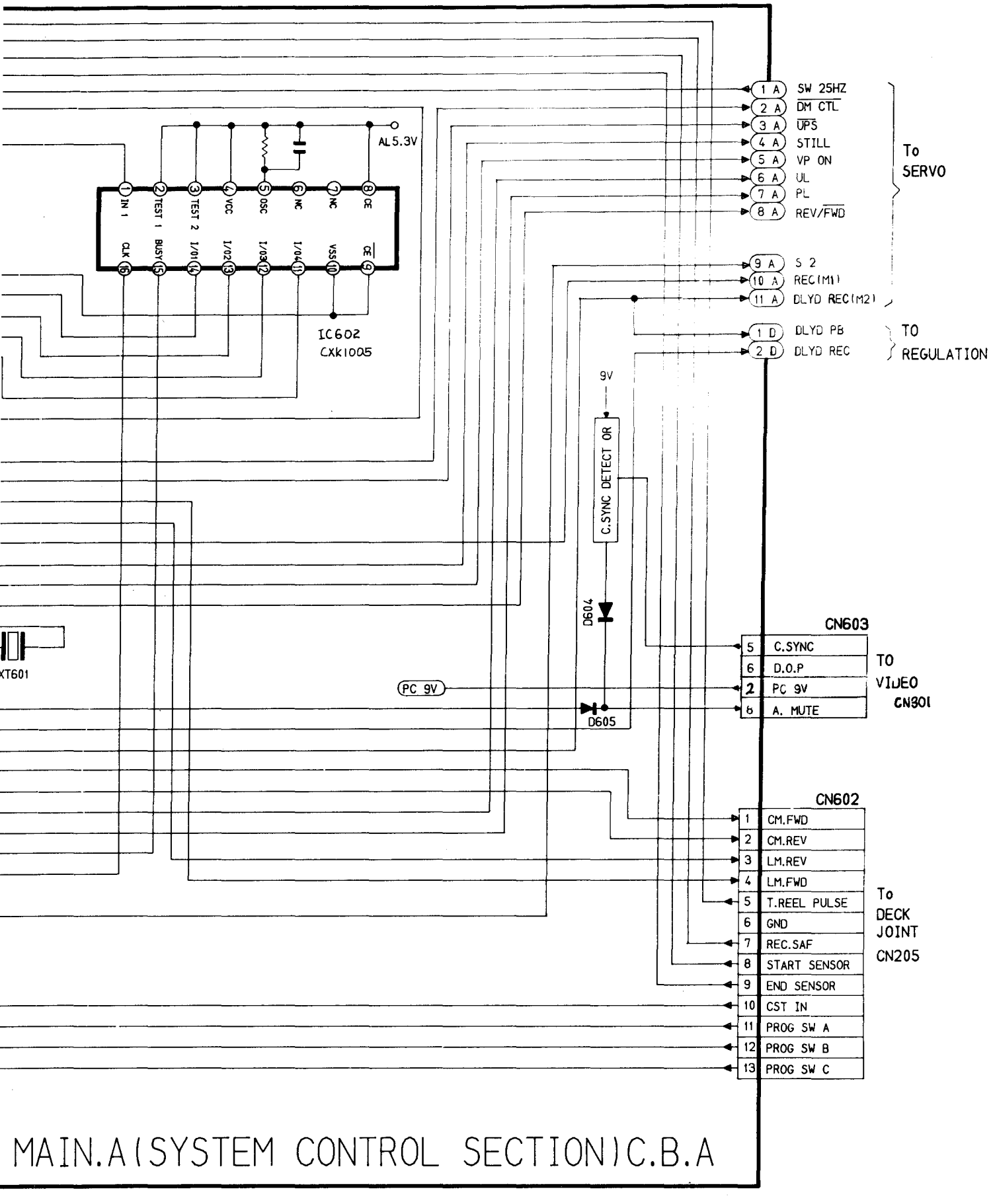
8-2 Regulator




Q105
PC 12V DRIVE
DRIVER
Q107
PC 9V DRIVE
DRIVER
BUFFER
R123
Q106
PC 12V CON
ZD105
ZD104
DRIVER
BUFFER
BUFFER
CN104
1 PC 15V
2 AL 12V
3 GND
4 PC 5V
5 AL 6V
6 PWR CTL
7 CH.VTG 33V
8 50Hz
9 GND
10 +30V
11 AC 3.2V
12 AC 3.2V
To REGULATOR CN101
To TUNER / DEMODULATOR
PC 9V
PC 12V
CH.VTG 33V
PC 5V
AL 12V
PB 5V
1 R
2 R
3 R
4 R
5 R
6 R
1 R — 6 R
To SYSTEM CONTROL
DLAY PB
DLYD REC
1 D
2 D
CN603
PC 5V 1
PC 9V 2
PB 5V 3
REC 9V 4
TO MAIN B
1 K AC 3.2V
2 K +30V
3 K PC 15 V
4 K PC 5V
5 k AL 5.8V
AL 5.3
To SERVO
1 K — 5 K
1 E 50Hz
2 E PWR CTL
3 E AL 6V
To SYSTEM CONTROL
1 E — 3 E
MAIN (POWER SECTION) C.B.A

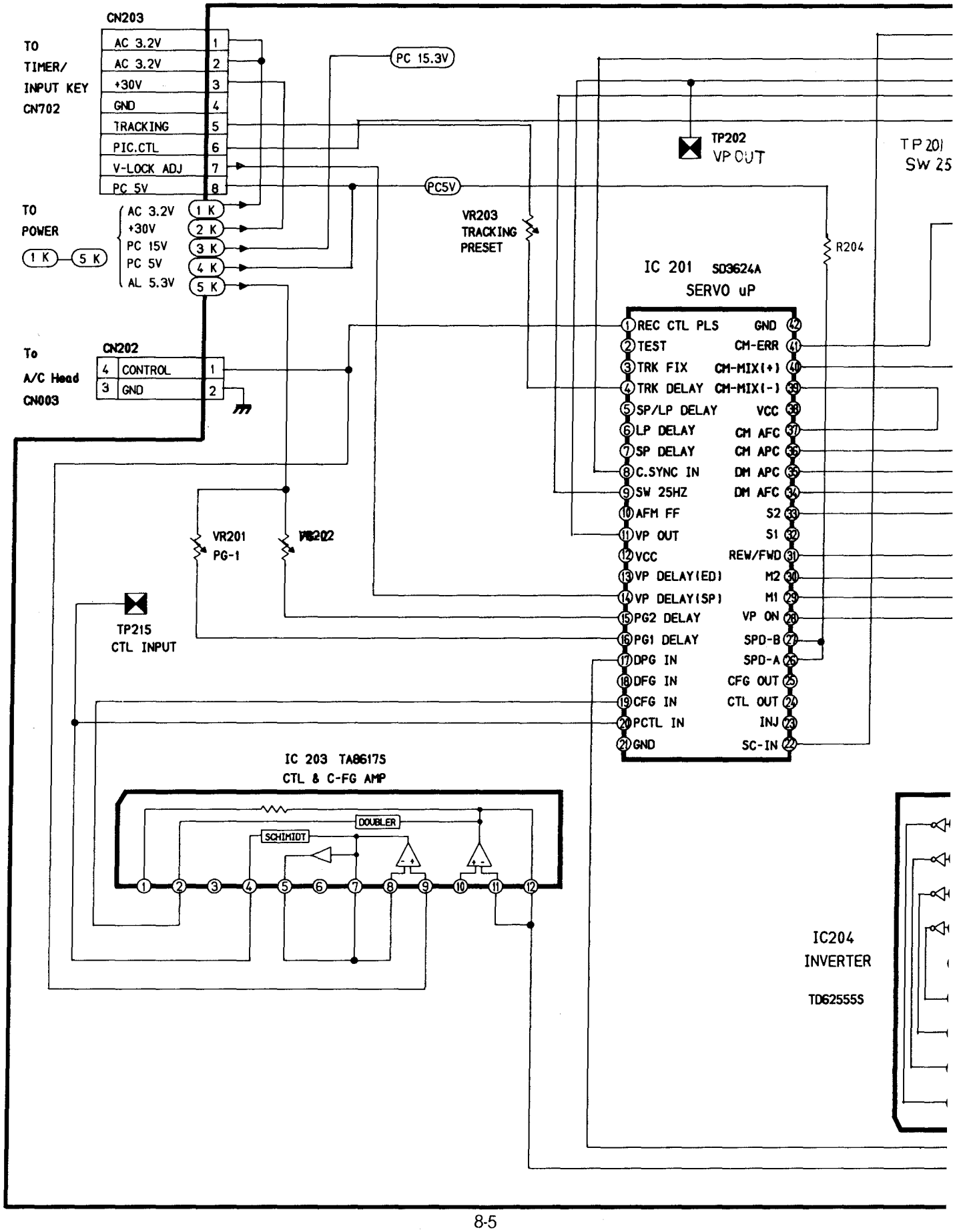
8-4. System Control

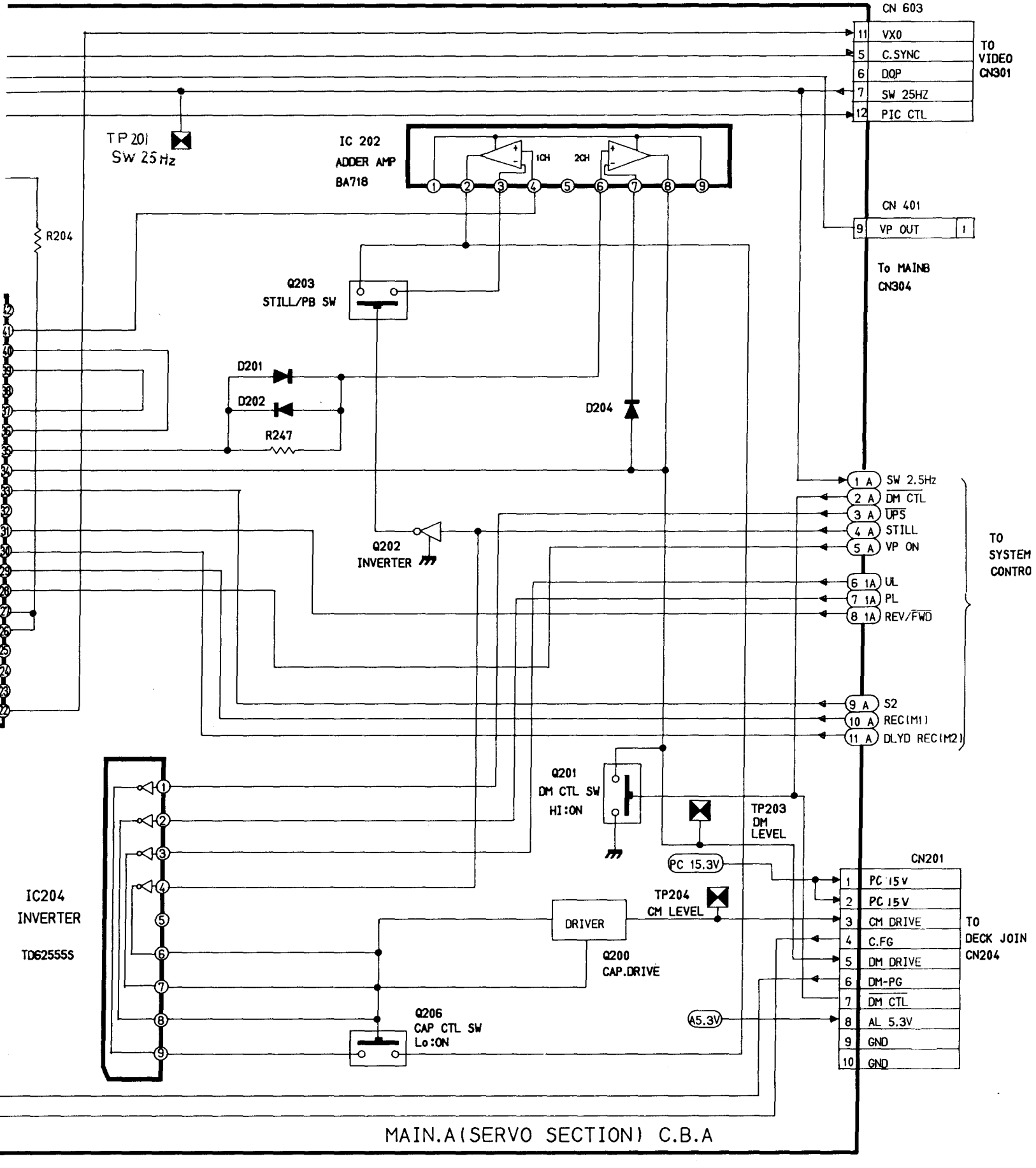




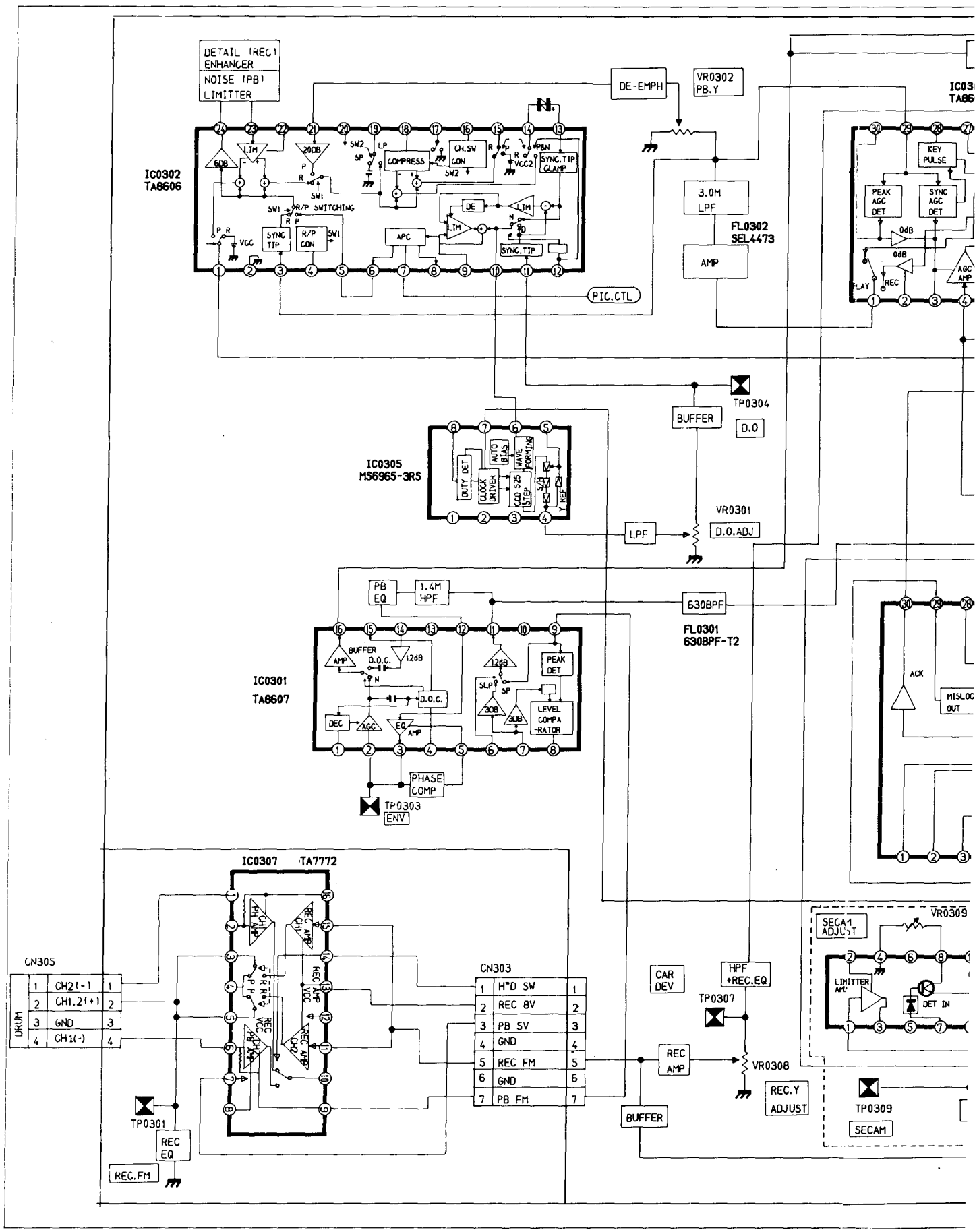
MAIN.A(SYSTEM CONTROL SECTION)C.B.A

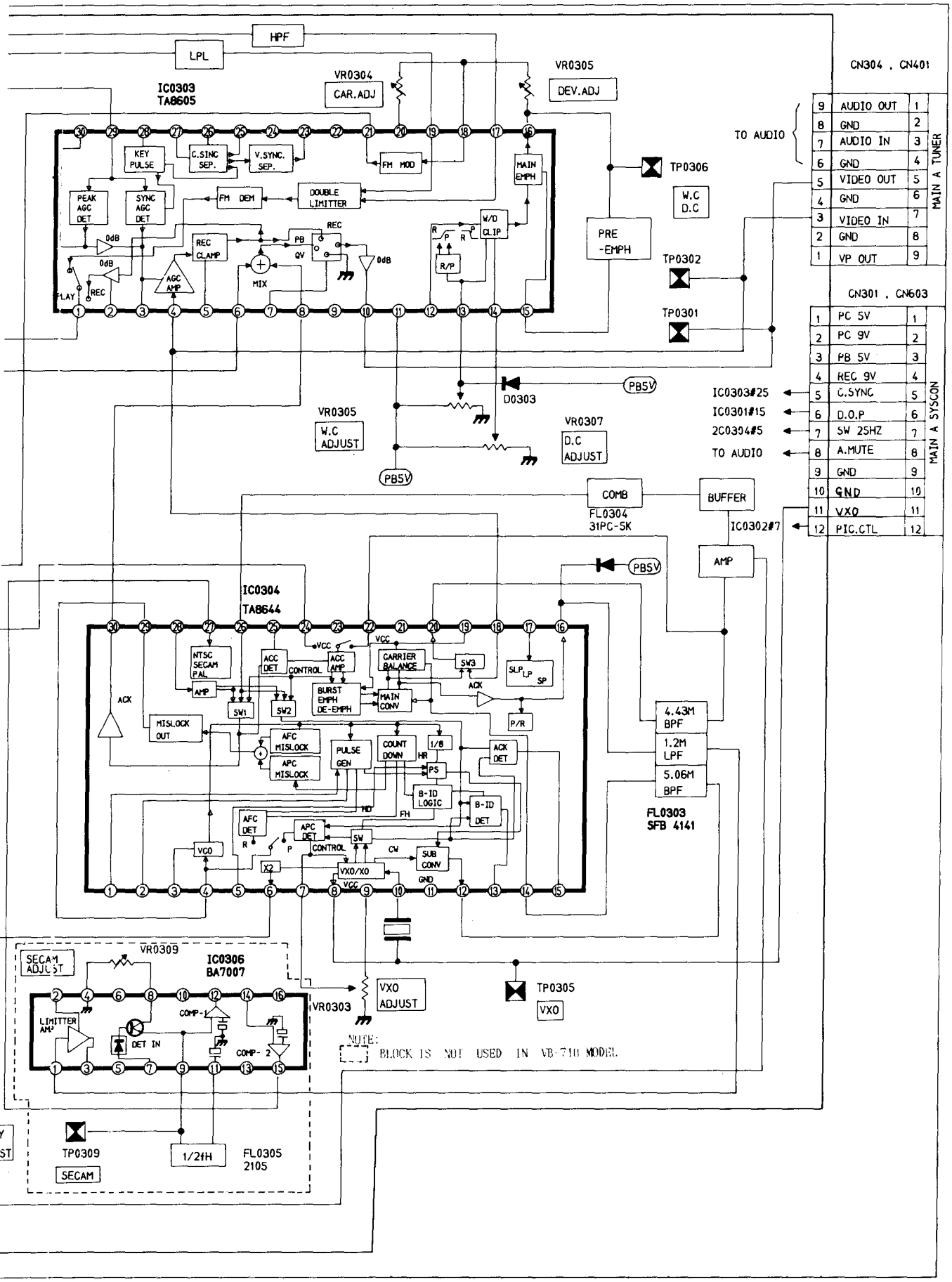
8-5. Servo

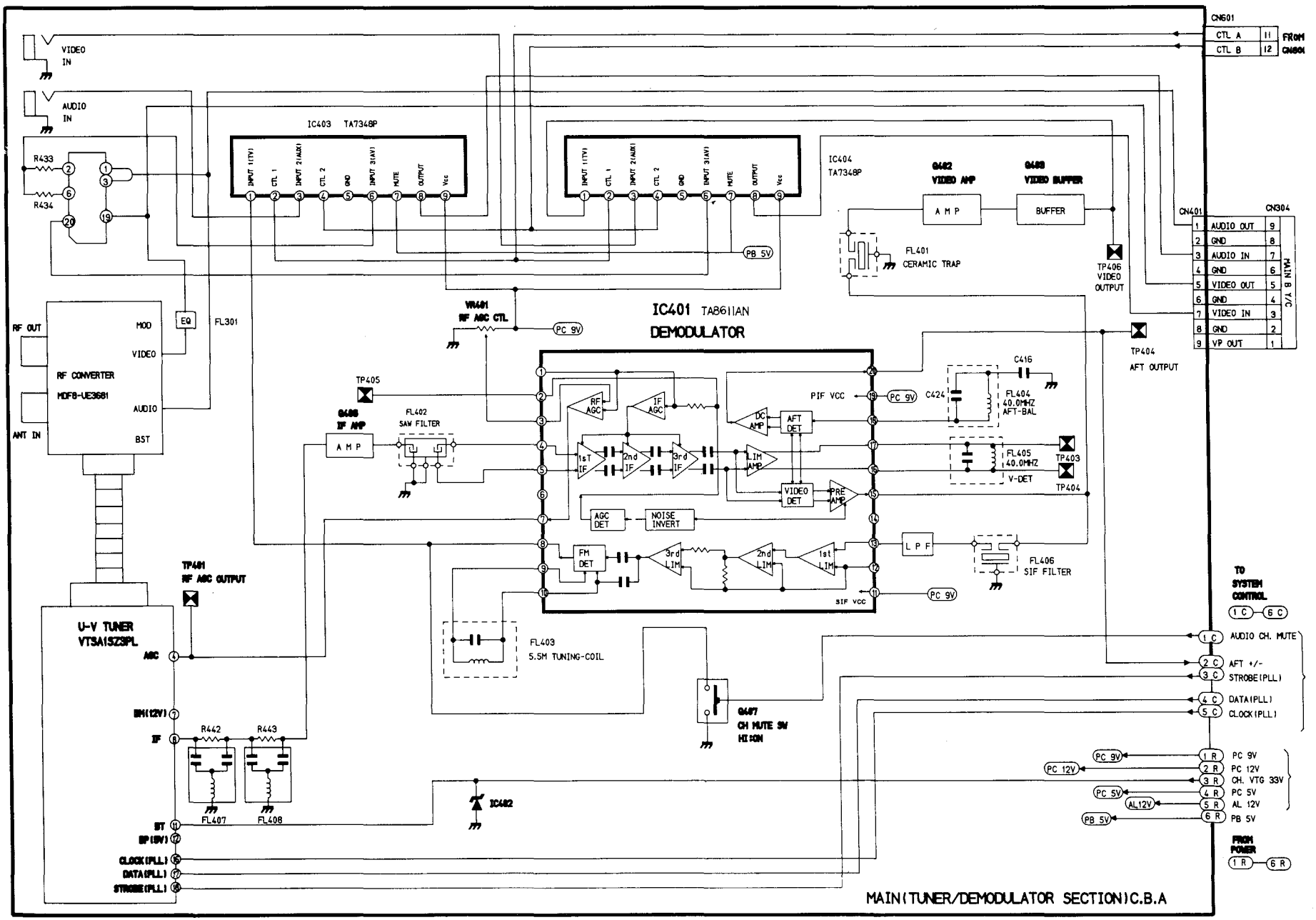

CN203
TO TIMER/ INPUT KEY CN702
AC 3.2V 1
AC 3.2V 2
+30V 3
GND 4
TRACKING 5
PIC.CTL 6
V-LOCK ADJ 7
PC 5V 8
TO POWER
1 K 5 K
AC 3.2V 1 K
+30V 2 K
PC 15V 3 K
PC 5V 4 K
AL 5.3V 5 K
PC 15.3V
PC5V
TP202
VP OUT
VR203
TRACKING
PRESET
R204
IC 201 SD3624A
SERVO uP
1 REC CTL PLS
2 TEST
3 TRK FIX
4 TRK DELAY
5 SP/LP DELAY
6 LP DELAY
7 SP DELAY
8 C.SYNC IN
9 SW 25HZ
10 AFM FF
11 VP OUT
12 VCC
13 VP DELAY(ED)
14 VP DELAY(SP)
15 PG2 DELAY
16 PG1 DELAY
17 DPG IN
18 DFG IN
19 CFG IN
20 PCTL IN
21 GND
42 GND
41 CM-ERR
40 CM-MIX(+)
39 CM-MIX(-)
38 VCC
37 CM AFC
36 CM APC
35 DM APC
34 DM AFC
33 S2
32 S1
31 REW/FWD
30 M2
29 M1
28 VP ON
27 SPD-B
26 SPD-A
25 CFG OUT
24 CTL OUT
23 INJ
22 SC-IN
To A/C Head CN003
CN202
4 CONTROL 1
3 GND 2
VR201
PG-1
VR202
TP215
CTL INPUT
IC 203 TA8617S
CTL & C-FG AMP
DOUBLER
SCHMIDT
1 2 3 4 5 6 7 8 9 10 11 12
IC204
INVERTER
TD62555S
TP 201
SW 25


CN 603
11 VXO
5 C.SYNC
6 DOP
7 SW 25HZ
12 PIC CTL
TO VIDEO CN301
TP 201
SW 25Hz
IC 202
ADDER AMP
BA718
1CH
2CH
CN 401
9 VP OUT
To MAINB CN304
R204
Q203
STILL/PB SW
D201
D202
R247
D204
Q202
INVERTER
1 A SW 2.5Hz
2 A DM CTL
3 A UPS
4 A STILL
5 A VP ON
6 1A UL
7 1A PL
8 1A REV/FWD
TO SYSTEM CONTRO
9 A S2
10 A REC(M1)
11 A DLYD REC(M2)
Q201
DM CTL SW
HI:ON
TP203
DM LEVEL
PC 15.3V
CN201
1 PC 15V
2 PC 15V
3 CM DRIVE
4 C.FG
5 DM DRIVE
6 DM-PG
7 DM CTL
8 AL 5.3V
9 GND
10 GND
TO DECK JOIN CN204
IC204
INVERTER
TD62555S
DRIVER
TP204
CM LEVEL
Q200
CAP.DRIVE
Q206
CAP CTL SW
Lo:ON
A5.3V
MAIN.A(SERVO SECTION) C.B.A

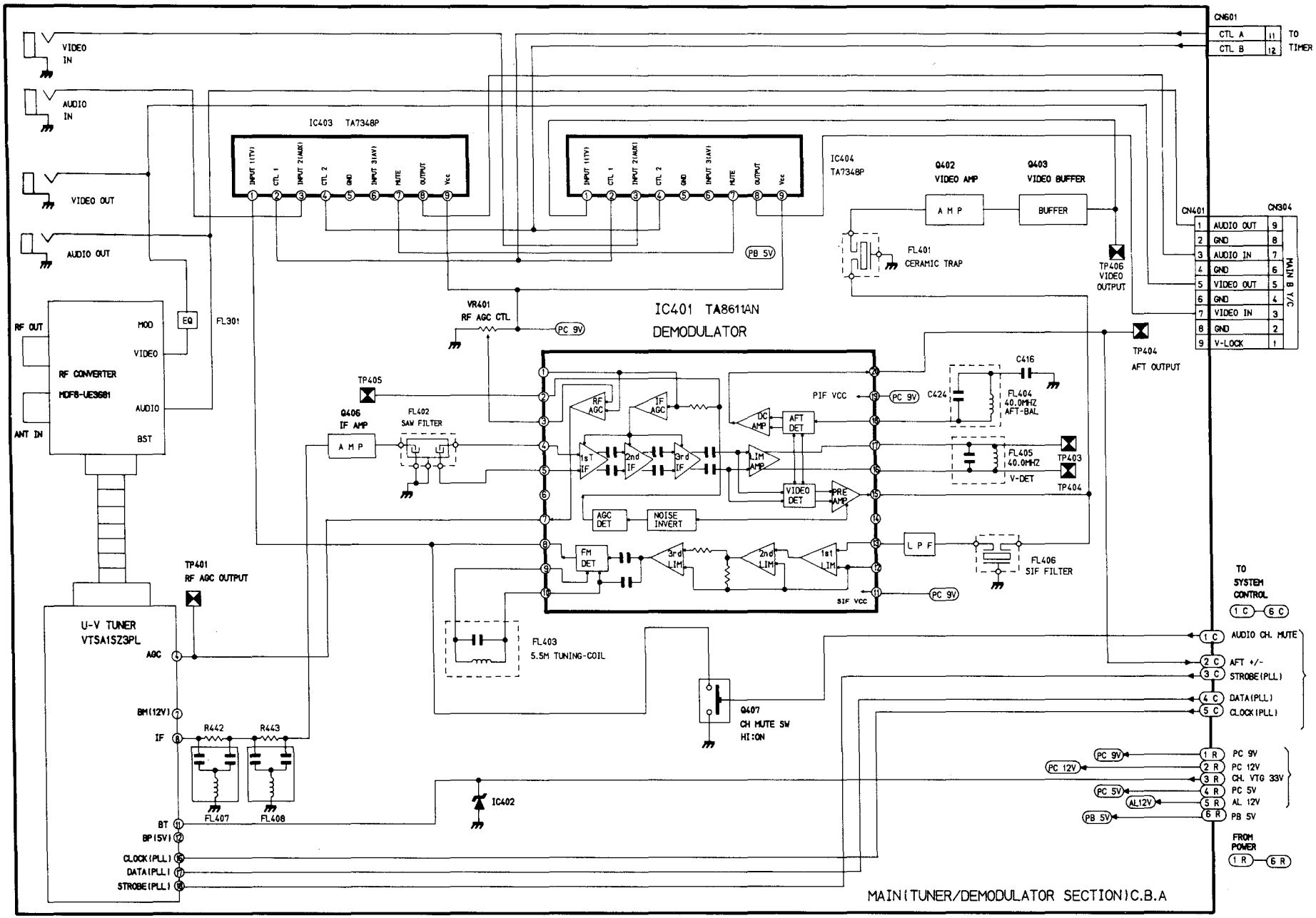
8-6 Luminance/Chrominance

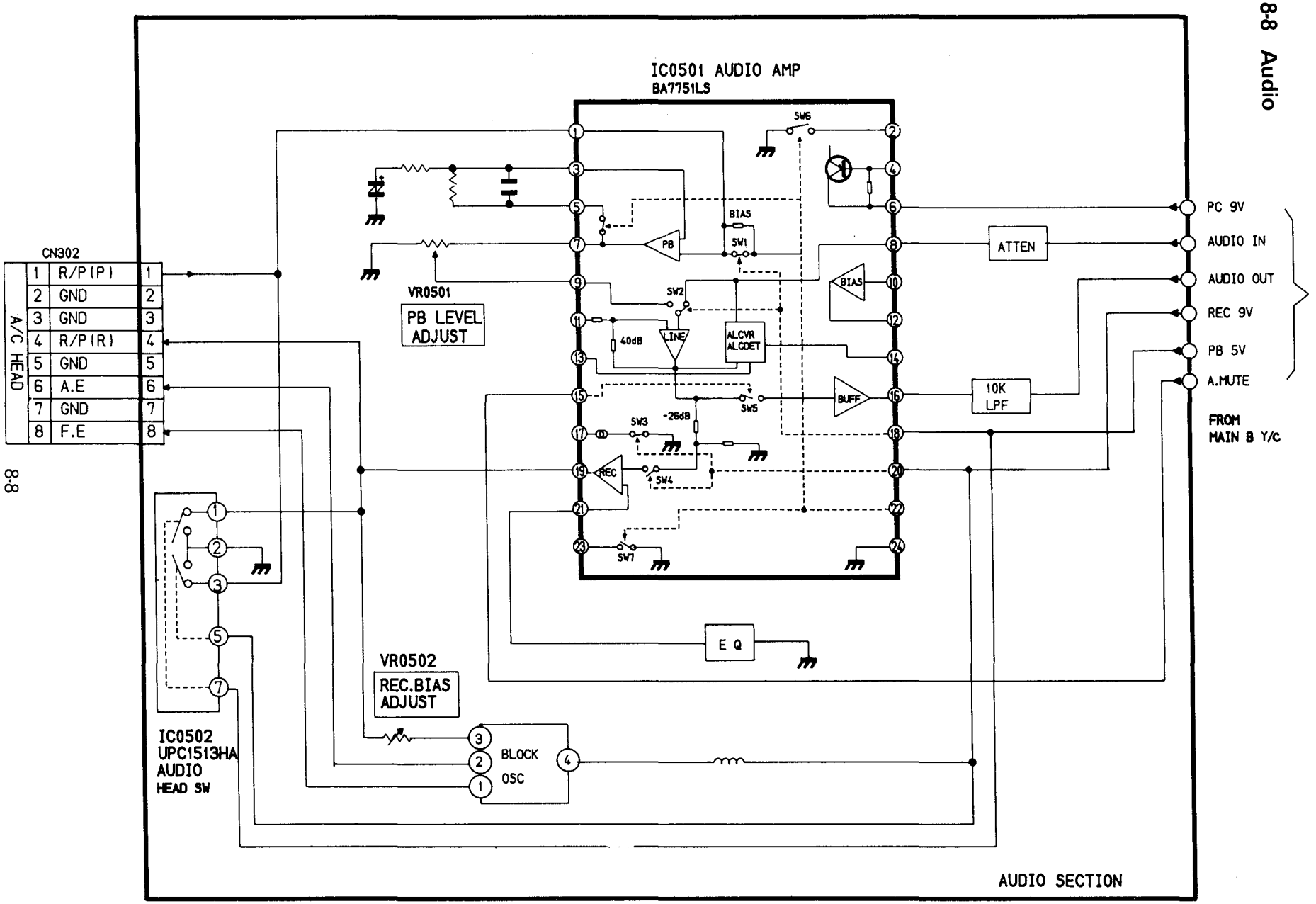



HPF
LPL
IC0303
TA8605
VR0304
CAR.ADJ
VR0305
DEV.ADJ
KEY PULSE
C.SINC SEP.
V.SYNC. SEP.
FM MOD
MAIN EMPH
PEAK AGC DET
SYNC AGC DET
FM DEM
DOUBLE LIMITTER
REC CLAMP
REC
PB
0dB
AGC AMP
MIX
W/D CLIP
R/P
PRE -EMPH
TP0306
W.C D.C
TP0302
TP0301
TO AUDIO
CN304 , CN401
9 AUDIO OUT 1
8 GND 2
7 AUDIO IN 3
6 GND 4
5 VIDEO OUT 5
4 GND 6
3 VIDEO IN 7
2 GND 8
1 VP OUT 9
MAIN A TUNER
CN301 , CN603
1 PC 5V 1
2 PC 9V 2
3 PB 5V 3
4 REC 9V 4
5 C.SYNC 5
6 D.O.P 6
7 SW 25HZ 7
8 A.MUTE 8
9 GND 9
10 GND 10
11 VXO 11
12 PIC.CTL 12
MAIN A SYSCON
IC0303#25
IC0301#15
2C0304#5
TO AUDIO
IC0302#7
D0303
PB5V
VR0305
W.C ADJUST
VR0307
D.C ADJUST
COMB
FL0304
31PC-5K
BUFFER
AMP
IC0304
TA8644
NTSC SECAM PAL
ACC DET
ACC AMP
CONTROL
CARRIER BALANCE
SW3
SLP LP SP
ACK
BURST EMPH DE-EMPH
MAIN CONV
SW1
SW2
P/R
MISLOCK OUT
AFC MISLOCK
APC MISLOCK
PULSE GEN
COUNT DOWN
1/8
HR
PS
ACK DET
B-ID LOGIC
B-ID DET
MD
FH
AFC DET
APC DET
SW
CONTROL
CW
SUB CONV
VCO
X2
VXO/XO
VCC
GND
4.43M BPF
1.2M LPF
5.06M BPF
FL0303
SFB 4141
SECAM ADJUST
VR0309
IC0306
BA7007
LIMITTER AM
DET IN
COMP-1
COMP-2
VR0303
VXO ADJUST
TP0305
VXO
NOTE:
BLOCK IS NOT USED IN VB-710 MODEL
TP0309
SECAM
1/2fH
FL0305
2105

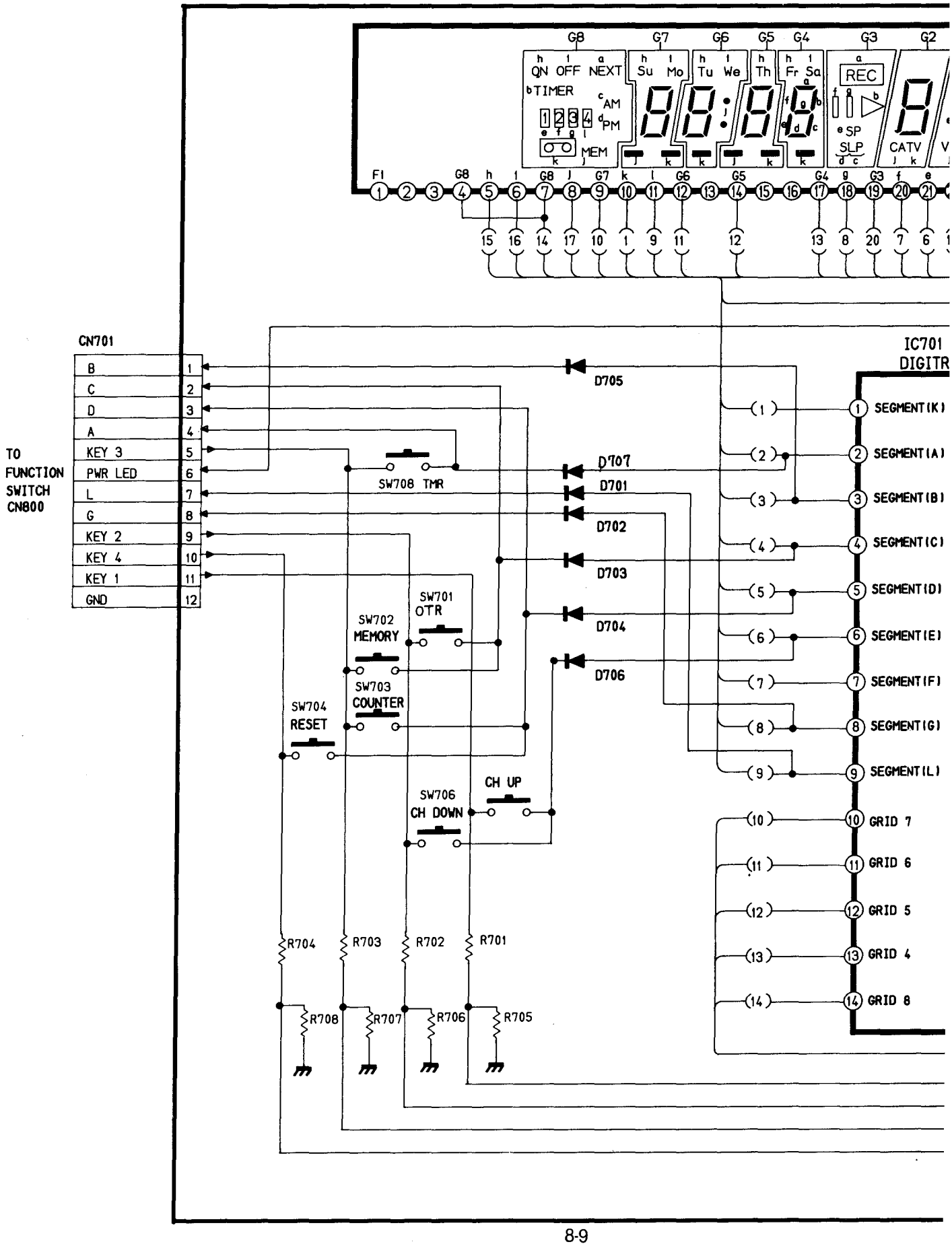

VIDEO IN
AUDIO IN
IC403 TA7348P
IC404 TA7348P
Q402 VIDEO AMP
Q403 VIDEO BUFFER
A M P
BUFFER
FL401 CERAMIC TRAP
TP406 VIDEO OUTPUT
CN601
CTL A 11
CTL B 12
FROM CN601
CN401
CN304
AUDIO OUT
GND
AUDIO IN
VIDEO OUT
VIDEO IN
VP OUT
MAIN B Y/C
R433
R434
EQ
FL301
RF OUT
ANT IN
RF CONVERTER
MDF8-UE3681
MOD
VIDEO
AUDIO
BST
VR401 RF AGC CTL
PC 9V
PB 5V
IC401 TA8611AN
DEMODULATOR
TP405
TP404 AFT OUTPUT
TP403
Q408 IF AMP
FL402 SAW FILTER
RF AGC
IF AGC
DC AMP
AFT DET
PIF VCC
C424
C416
FL404 40.0MHZ AFT-BAL
FL405 40.0MHZ V-DET
1st IF
2nd IF
3rd IF
LIM AMP
VIDEO DET
PRE AMP
AGC DET
NOISE INVERT
FM DET
3rd LIM
2nd LIM
1st LIM
L P F
FL406 SIF FILTER
SIF VCC
TP401 RF AGC OUTPUT
U-V TUNER VTSA1SZ3PL
AGC
BM(12V)
IF
BT
BP(5V)
CLOCK(PLL)
DATA(PLL)
STROBE(PLL)
R442
R443
FL407
FL408
IC402
FL403 5.5M TUNING-COIL
Q407 CH MUTE SW HI:ON
TO SYSTEM CONTROL
AUDIO CH. MUTE
AFT +/-
STROBE(PLL)
DATA(PLL)
CLOCK(PLL)
PC 9V
PC 12V
CH. VTG 33V
PC 5V
AL 12V
PB 5V
FROM POWER
MAIN(TUNER/DEMODULATOR SECTION)C.B.A

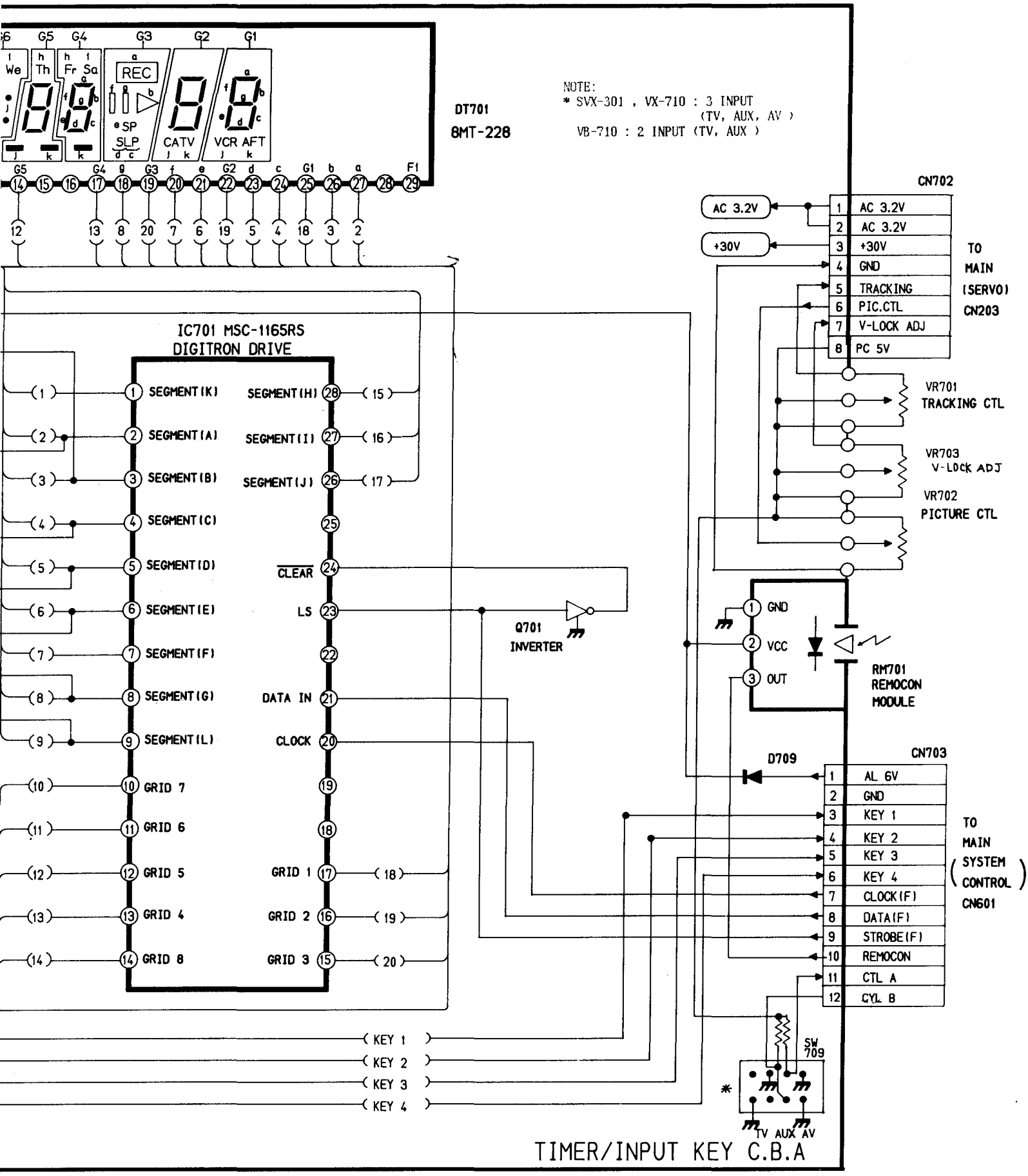
8-7-2. Tuner/Demodulator (VB-710)




IC0501 AUDIO AMP
BA7751LS
CN302
A/C HEAD
1 R/P(P) 1
2 GND 2
3 GND 3
4 R/P(R) 4
5 GND 5
6 A.E 6
7 GND 7
8 F.E 8
VR0501
PB LEVEL ADJUST
VR0502
REC.BIAS ADJUST
IC0502
UPC1513HA
AUDIO
HEAD SW
BLOCK
OSC
SW1
SW2
SW3
SW4
SW5
SW6
SW7
PB
REC
LINE
BIAS
ATTEN
BUFF
10K LPF
40dB
-26dB
ALCVR
ALCDET
E Q
PC 9V
AUDIO IN
AUDIO OUT
REC 9V
PB 5V
A.MUTE
FROM MAIN B Y/C
AUDIO SECTION

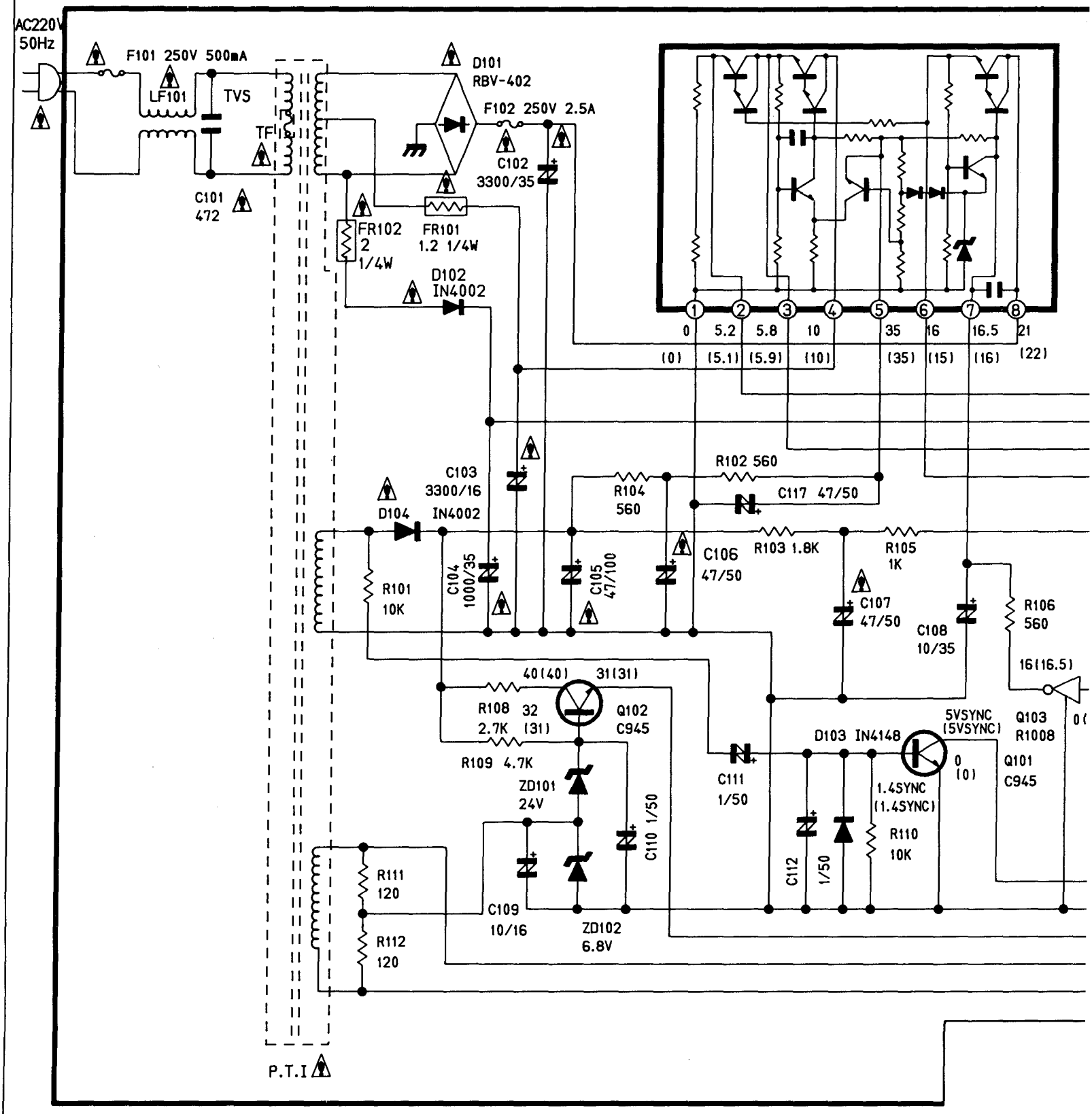
8-9 Timer/Input Key

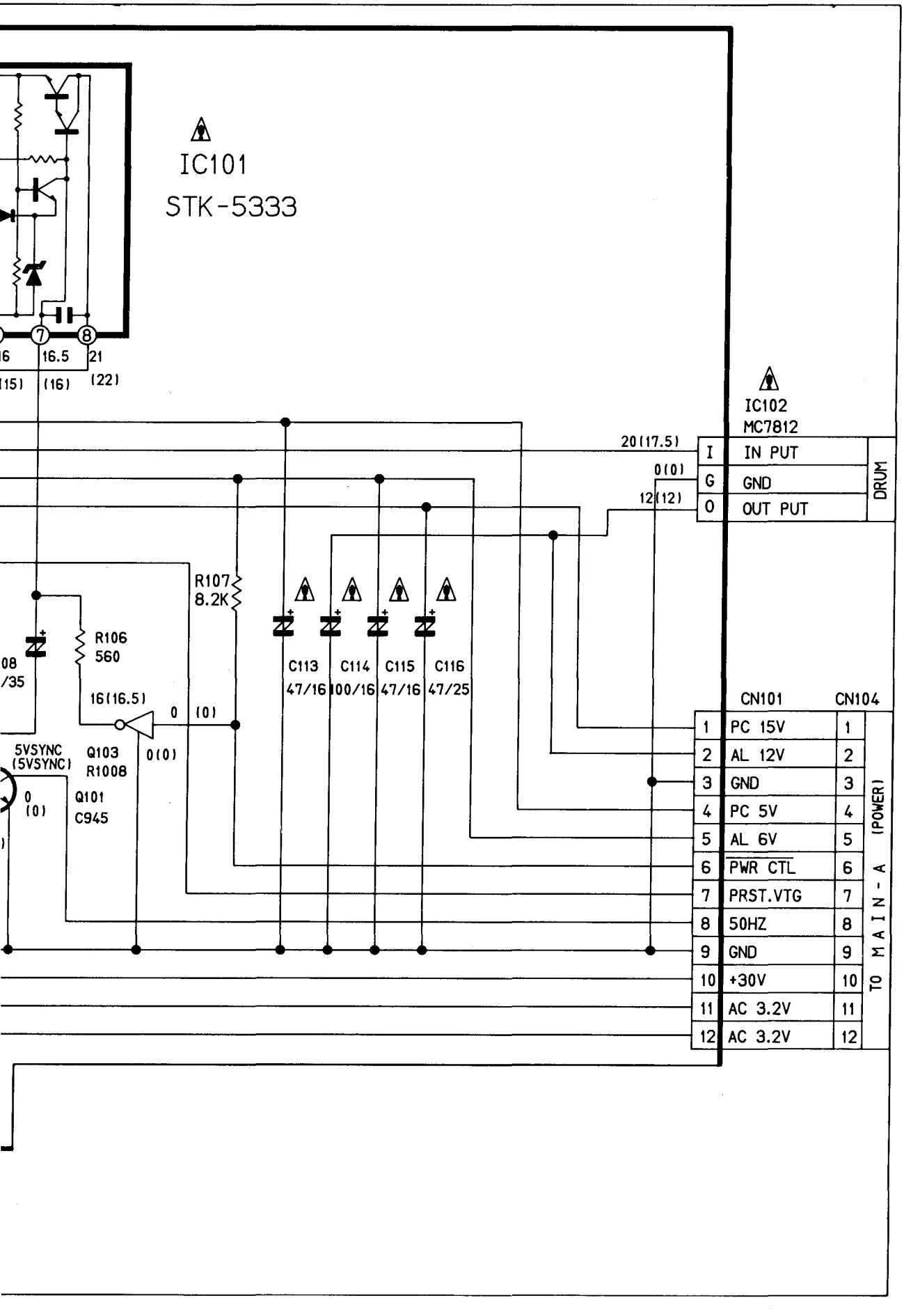



DT701
8MT-228
NOTE:
* SVX-301 , VX-710 : 3 INPUT (TV, AUX, AV)
VB-710 : 2 INPUT (TV, AUX)
REC
SP
SLP
CATV
VCR AFT
IC701 MSC-1165RS
DIGITRON DRIVE
SEGMENT(K)
SEGMENT(A)
SEGMENT(B)
SEGMENT(C)
SEGMENT(D)
SEGMENT(E)
SEGMENT(F)
SEGMENT(G)
SEGMENT(L)
SEGMENT(H)
SEGMENT(I)
SEGMENT(J)
CLEAR
LS
DATA IN
CLOCK
GRID 7
GRID 6
GRID 5
GRID 4
GRID 8
GRID 1
GRID 2
GRID 3
Q701
INVERTER
CN702
AC 3.2V
AC 3.2V
+30V
GND
TRACKING
PIC.CTL
V-LOCK ADJ
PC 5V
TO MAIN (SERVO) CN203
VR701
TRACKING CTL
VR703
V-LOCK ADJ
VR702
PICTURE CTL
GND
VCC
OUT
RM701
REMOCON
MODULE
D709
CN703
AL 6V
GND
KEY 1
KEY 2
KEY 3
KEY 4
CLOCK(F)
DATA(F)
STROBE(F)
REMOCON
CTL A
CYL B
TO MAIN SYSTEM CONTROL CN601
SW 709
TV AUX AV
KEY 1
KEY 2
KEY 3
KEY 4
TIMER/INPUT KEY C.B.A

10. SCHEMATICS

10-1. Regulator




IC101
STK-5333
16
16.5
21
(15)
(16)
(22)
IC102
MC7812
20(17.5)
0(0)
12(12)
I
G
O
IN PUT
GND
OUT PUT
DRUM
R107
8.2K
R106
560
C113
47/16
C114
100/16
C115
47/16
C116
47/25
16(16.5)
0
(0)
5VSYNC
(5VSYNC)
Q103
R1008
Q101
C945
CN101
CN104
1 PC 15V 1
2 AL 12V 2
3 GND 3
4 PC 5V 4
5 AL 6V 5
6 PWR CTL 6
7 PRST.VTG 7
8 50HZ 8
9 GND 9
10 +30V 10
11 AC 3.2V 11
12 AC 3.2V 12
TO MAIN-A (POWER)

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 101						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	5	5	5	5	5	5	5
PIN 3	6	6	6	6	6	6	6
PIN 4	10	9	9	9	9	9	9
PIN 5	21	21	21	21	21	21	21
PIN 6	15	15	15	15	15	15.5	15.5
PIN 7	17	16.5	16.5	16.5	16.5	16.5	16.5
PIN 8	22	21	22	21	21	21	21

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 102						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
I	19	19	19	19	19	19	19
G	0	0	0	0	0	0	0
O	13	12.5	12.5	12.5	12.5	13	13

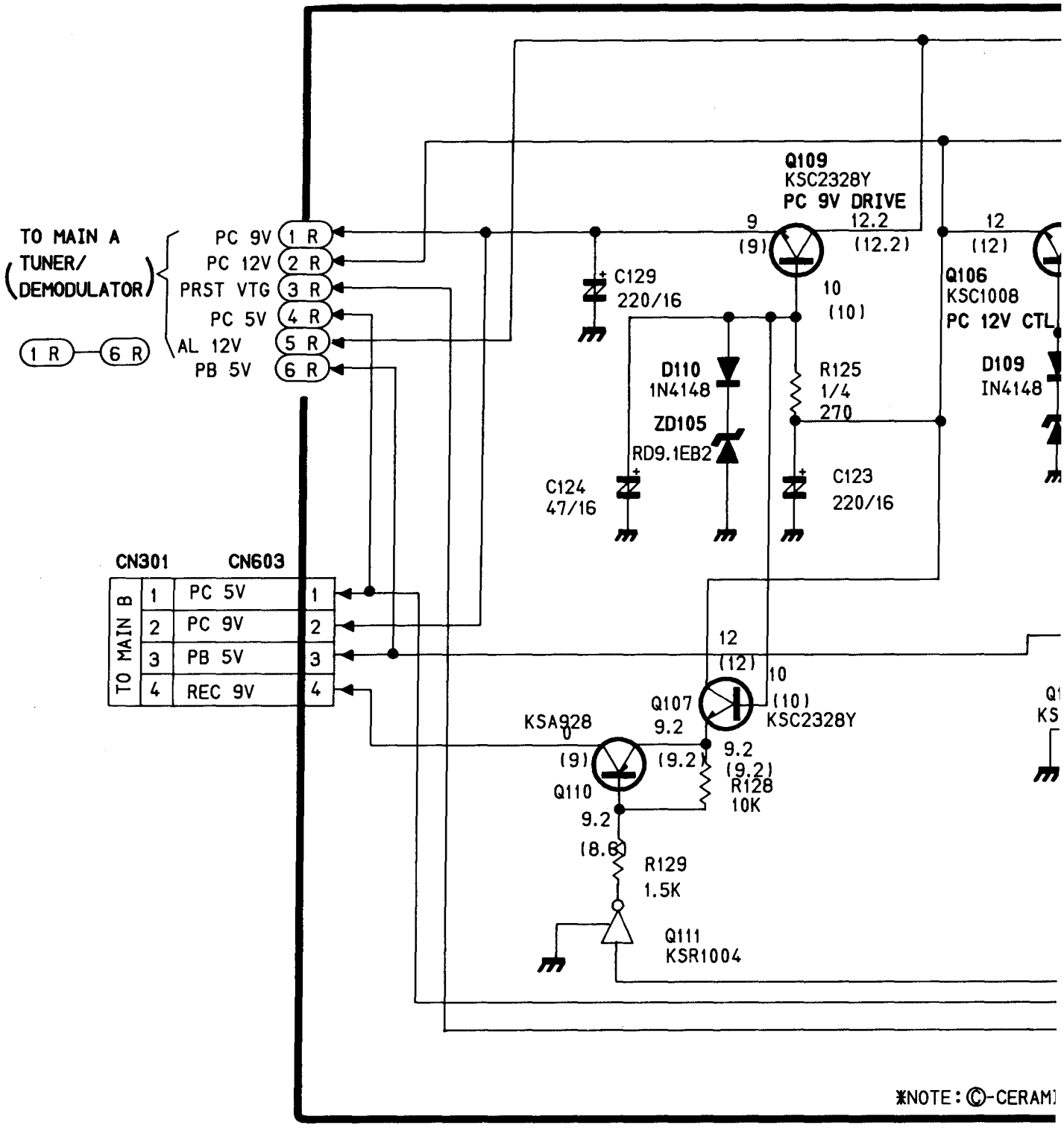
REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

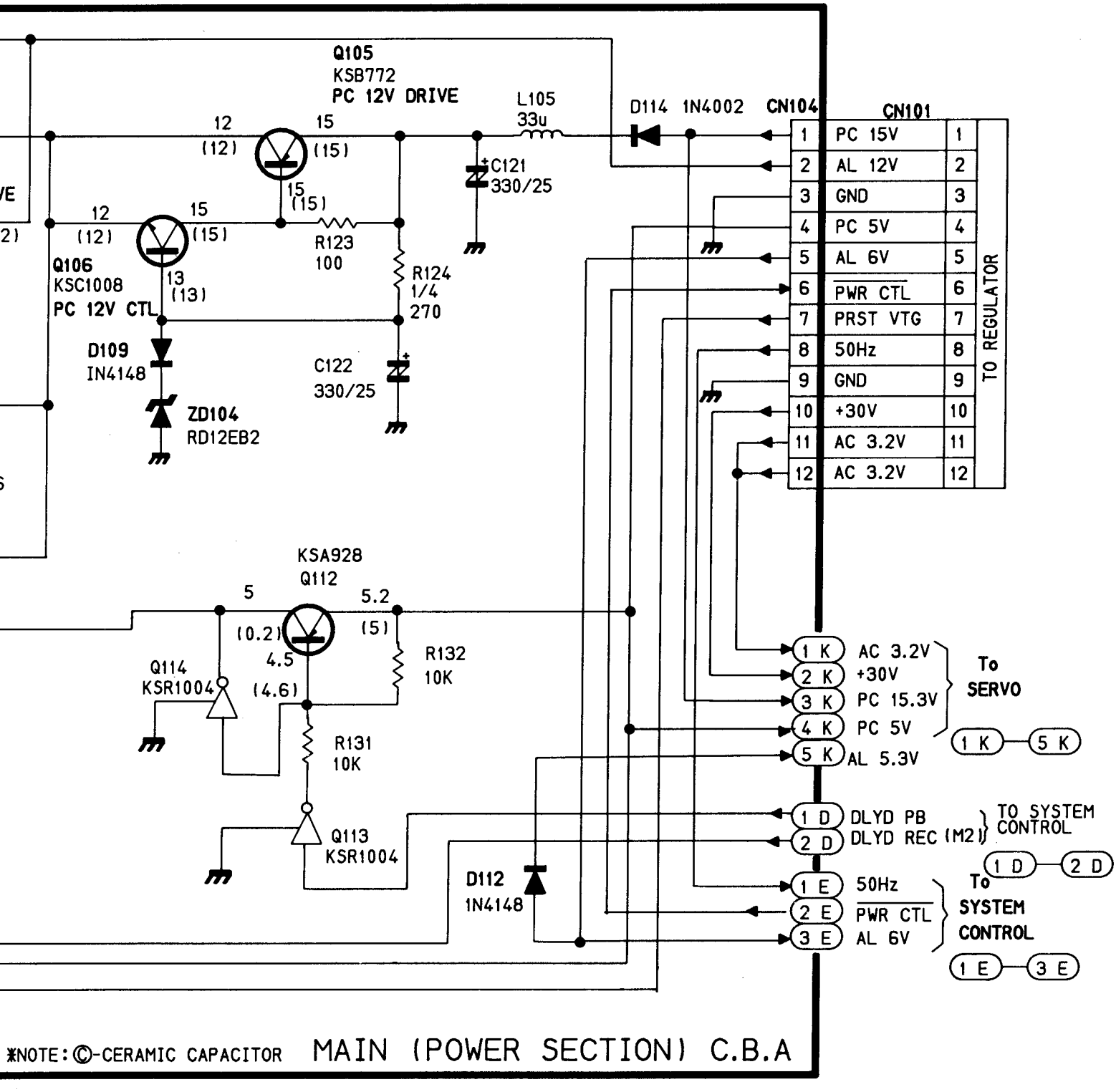
MODE	STOP			REC			PLAY			REW			F. FWD			REV. S			FWD. S		
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 101	0	5	1.2	0	5	1.2	0	5	1.2	0	5	1.2	0	5	1.2	0	5	2	0	5	2
Q 102	32	32	32.5	31	31	32	32	32	32.5	31	31.5	32	31.5	32	32.5	31.5	32	32.5	31.5	32	32.5
Q 103	0	16	0	0	16	0	0	16	0	0	16	0	0	16.5	0	0	16.5	0	0	16.5	0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

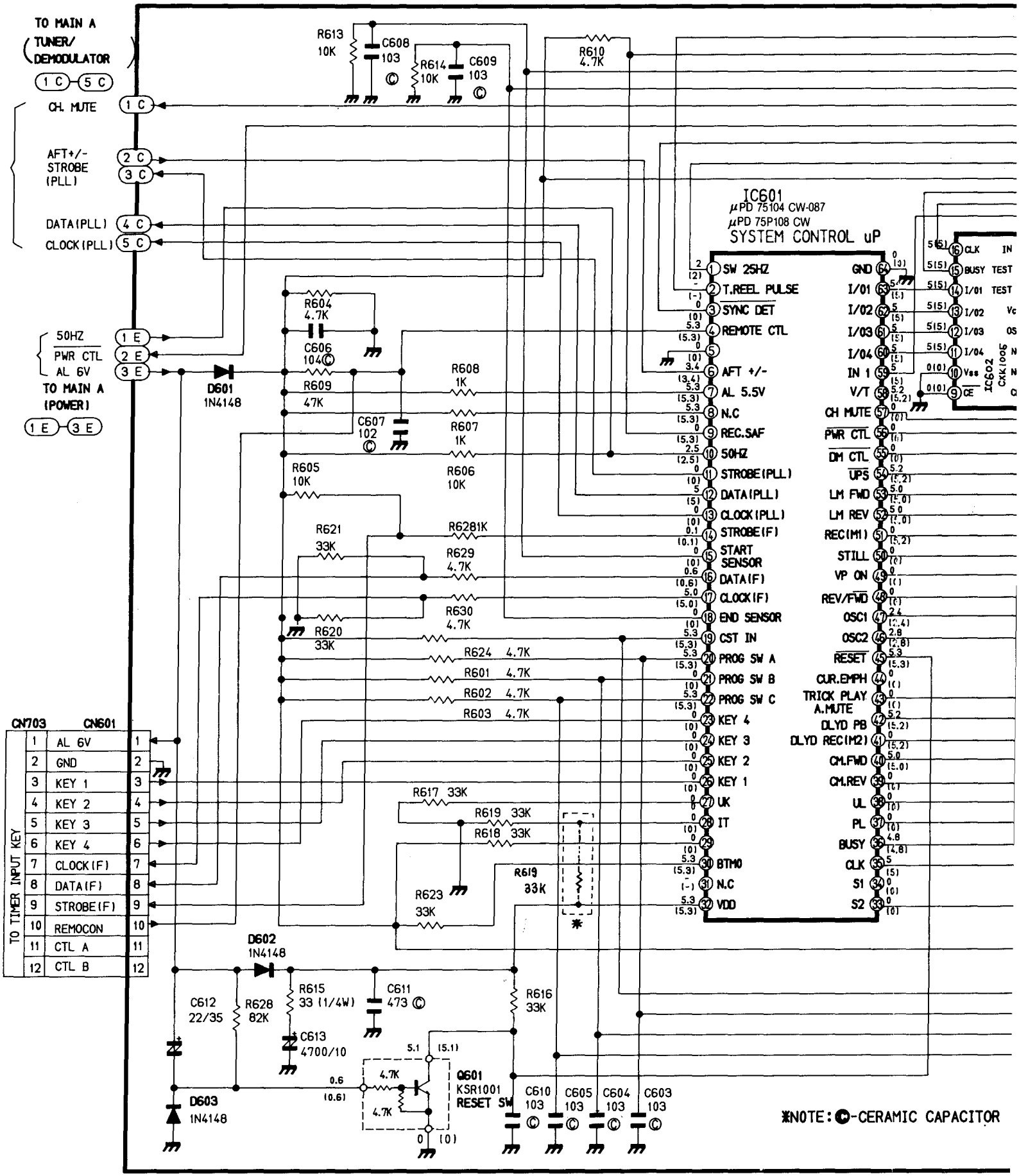
MODE	STOP			REC			PLAY			REW			F. FWD			REV. S			FWD. S		
TR NO.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 105	15	12	15	15	12	15	15	12	15	15	12	15	15	12	15	15	12	15	15	12	15
Q 106	12	15	13	12	15	13	12	15	13	12	15	13	12	15	13	12	15	13	12	15	13
Q 107	9.2	12	10	4.2	12	10	4.2	12	10	4.2	12	10	9.2	12	10	9.2	12	10	9.2	12	10
Q 109	9	12.2	10	9	12.2	10	9	12.2	10	9	12.2	10	9	12.2	10	9	12.2	10	9	12.2	10
Q 110	9.2	0	9.2	9.2	9	8.6	9.2	0	9.2	9.2	0	9.2	9.2	0	9.2	9.2	0	9.2	9.2	0	9.2
Q 111	0	9.2	0	0	0	5	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0
Q 112	5	0.2	4.6	5.	0.2	4.6	5.2	5	4.5	5	0.2	4.6	5	0.2	4.6	5	0.2	4.6	5	0.2	4.6
Q 113	0	4	0	0	4	0	0	0	5	0	4	0	0	4	0	0	0	5	0	0	5
Q 114	0	0.2	4	0	0.2	4	0	5	0	0	0.2	4	0	0.2	4	0	5	0	0	5	0

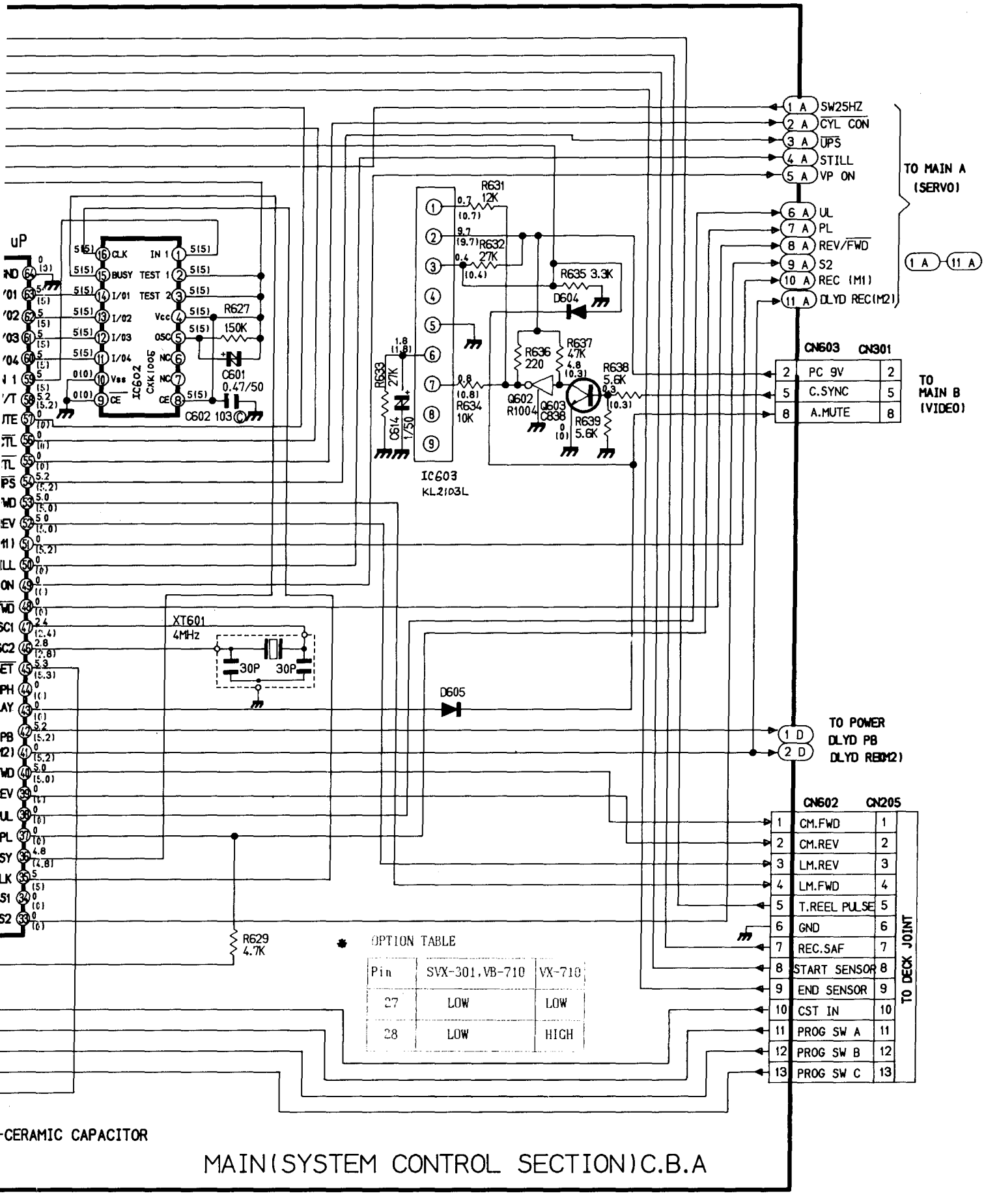
10-2. Power


TO MAIN A
TUNER/
DEMODULATOR
1 R
6 R
PC 9V 1 R
PC 12V 2 R
PRST VTG 3 R
PC 5V 4 R
AL 12V 5 R
PB 5V 6 R
CN301
CN603
TO MAIN B
1 PC 5V 1
2 PC 9V 2
3 PB 5V 3
4 REC 9V 4
Q109
KSC2328Y
PC 9V DRIVE
9
(9)
12.2
(12.2)
10
(10)
C129
220/16
D110
1N4148
ZD105
RD9.1EB2
R125
1/4
270
C124
47/16
C123
220/16
12
(12)
Q106
KSC1008
PC 12V CTL
D109
IN4148
12
(12)
10
(10)
Q107
KSC2328Y
9.2
KSA928
0
(9)
(9.2)
9.2
(9.2)
Q110
R128
10K
9.2
(8.6)
R129
1.5K
Q111
KSR1004
*NOTE : ©-CERAM


Q105
KSB772
PC 12V DRIVE
L105
33u
D114 1N4002
CN104
CN101
12
(12)
15
(15)
C121
330/25
R123
100
R124
1/4
270
Q106
KSC1008
PC 12V CTL
13
(13)
D109
IN4148
ZD104
RD12EB2
C122
330/25
1 PC 15V 1
2 AL 12V 2
3 GND 3
4 PC 5V 4
5 AL 6V 5
6 PWR CTL 6
7 PRST VTG 7
8 50Hz 8
9 GND 9
10 +30V 10
11 AC 3.2V 11
12 AC 3.2V 12
TO REGULATOR
KSA928
Q112
5
(0.2)
4.5
(4.6)
5.2
(5)
R132
10K
Q114
KSR1004
R131
10K
Q113
KSR1004
D112
1N4148
1K AC 3.2V
2K +30V
3K PC 15.3V
4K PC 5V
5K AL 5.3V
To SERVO
1K 5K
1D DLYD PB
2D DLYD REC (M2)
TO SYSTEM CONTROL
1D 2D
1E 50Hz
2E PWR CTL
3E AL 6V
To SYSTEM CONTROL
1E 3E
*NOTE: ©-CERAMIC CAPACITOR
MAIN (POWER SECTION) C.B.A

10-3 System Control





* OPTION TABLE

Pin	SVX-301,VB-710	VX-710
27	LOW	LOW
28	LOW	HIGH

-CERAMIC CAPACITOR

MAIN(SYSTEM CONTROL SECTION)C.B.A

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 601						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	4.5	2.0	2.0	2.1	2.1	2.1	2.1
PIN 2	0	—	—	—	—	—	—
PIN 3	0	0	0	0	0	0	0
PIN 4	5	5	5	5	5	5	5
PIN 5	0	0	0	0	0	0	0
PIN 6	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PIN 7	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 8	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 9	0	5	0	5	5	5	5
PIN 10	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 11	0	0	0	0	0	0	0
PIN 12	5	5	5	5	5	5	5
PIN 13	0	0	0	0	0	0	0
PIN 14	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PIN 15	0	0	0	0	0	0	0
PIN 16	0.6	0.6	0.6	0.6	0.6	0.6	0.6
PIN 17	5	5	5	5	5	5	5
PIN 18	0	0	0	0	0	0	0
PIN 19	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 20	0	5.1	5.1	5.1	5.1	0	5.1
PIN 21	4.6	0	0	0	0	4.8	0
PIN 22	0	5.1	5.1	0	0	5	5
PIN 23	0	0	0	0	0	0	0
PIN 24	0	0	0	0	0	0	0
PIN 25	0	0	0	0	0	0	0
PIN 26	0	0	0	0	0	0	0
PIN 27	0	0	0	0	0	0	0
PIN 28	0	0	0	0	0	0	0
PIN 29	5.1	5	5	5	5	5	5
PIN 30	5.1	5	5	5	5	5	5
PIN 31	0	0	0	0	0	0	0
PIN 32	5.1	5	5	5	5	5	5
PIN 33	0	0	0	5	5	5	5
PIN 34	0	0	0	0	0	0	0
PIN 35	5.1	5	5	5	5	5	5
PIN 36	4.8	4.8	4.8	4.8	4.8	4.8	4.8
PIN 37	0	0	0	0	0	0	0
PIN 38	0	0	0	0	0	0	0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 601						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 39	4.8	0	0	4.8	0	4.8	0
PIN 40	4.8	4.8	4.8	0	4.8	0	5
PIN 41	0	5	0	0	0	0	0
PIN 42	0	0	5	0	0	5	5
PIN 43	0	0	0	0	0	5	5
PIN 44	0	0	0	0	0	0	0
PIN 45	5	5	5	5	5	5	5
PIN 46	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 47	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 48	0	0	0	5	0	5	0
PIN 49	0	0	0	5	5	5	5
PIN 50	0	0	0	0	0	0	0
PIN 51	0	5	0	0	0	0	0
PIN 52	4.8	4.8	4.8	4.8	4.8	4.8	4.8
PIN 53	4.8	4.8	4.8	4.8	4.8	4.8	4.8
PIN 54	0	5	5	5	5	5	5
PIN 55	5	0	0	5	5	0	0
PIN 56	0	0	0	0	0	0	0
PIN 57	0	0	0	0	0	0	0
PIN 58	5	5	5	5	5	5	5
PIN 59	5	5	5	5	5	5	5
PIN 60	5	5	5	5	5	5	5
PIN 61	5	5	5	5	5	5	5
PIN 62	5	5	5	5	5	5	5
PIN 63	5	5	5	5	5	5	5
PIN 64	0	0	0	0	0	0	0

REVERSE SEARCH
FORWARD SEARCH

REV S.	FWD S.
4.8	0
0	5
0	0
5	5
5	5
0	0
5	5
2.8	2.8
2.4	2.4
5	0
5	5
0	0
0	0
4.8	4.8
4.8	4.8
5	5
0	0
0	0
0	0
5	5
5	5
5	5
5	5
5	5
5	5
0	0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 802						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	5	5	5	5	5	5	5
PIN 2	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 3	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 4	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 5	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 6	0	0	0	0	0	0	0
PIN 7	0	0	0	0	0	0	0
PIN 8	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 9	0	0	0	0	0	0	0
PIN 10	0	0	0	0	0	0	0
PIN 11	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 12	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 13	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 14	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 15	5	5	5	5	5	5	5
PIN 16	5.1	5.1	5.1	5.1	5.1	5.1	5.1

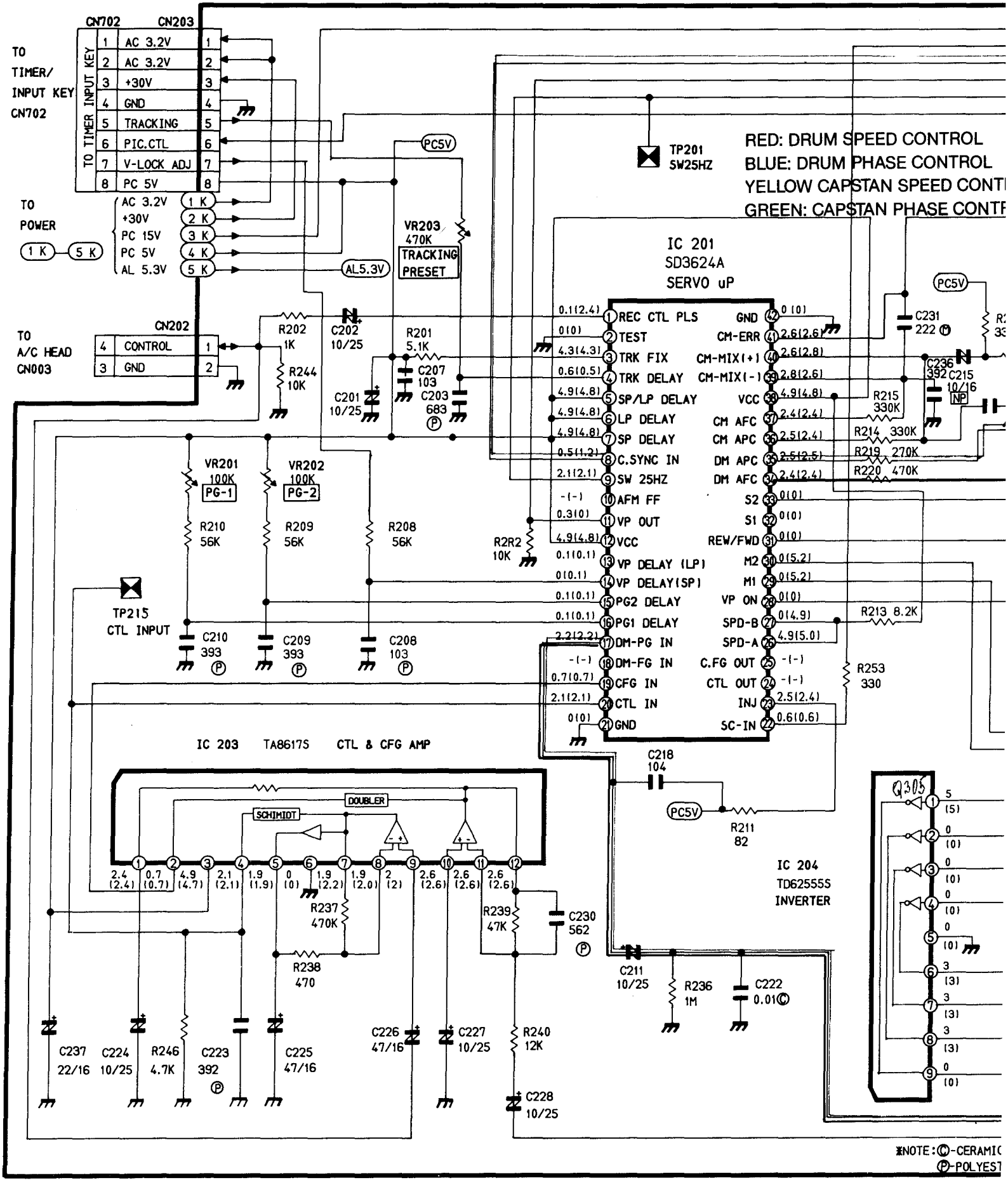
REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARC

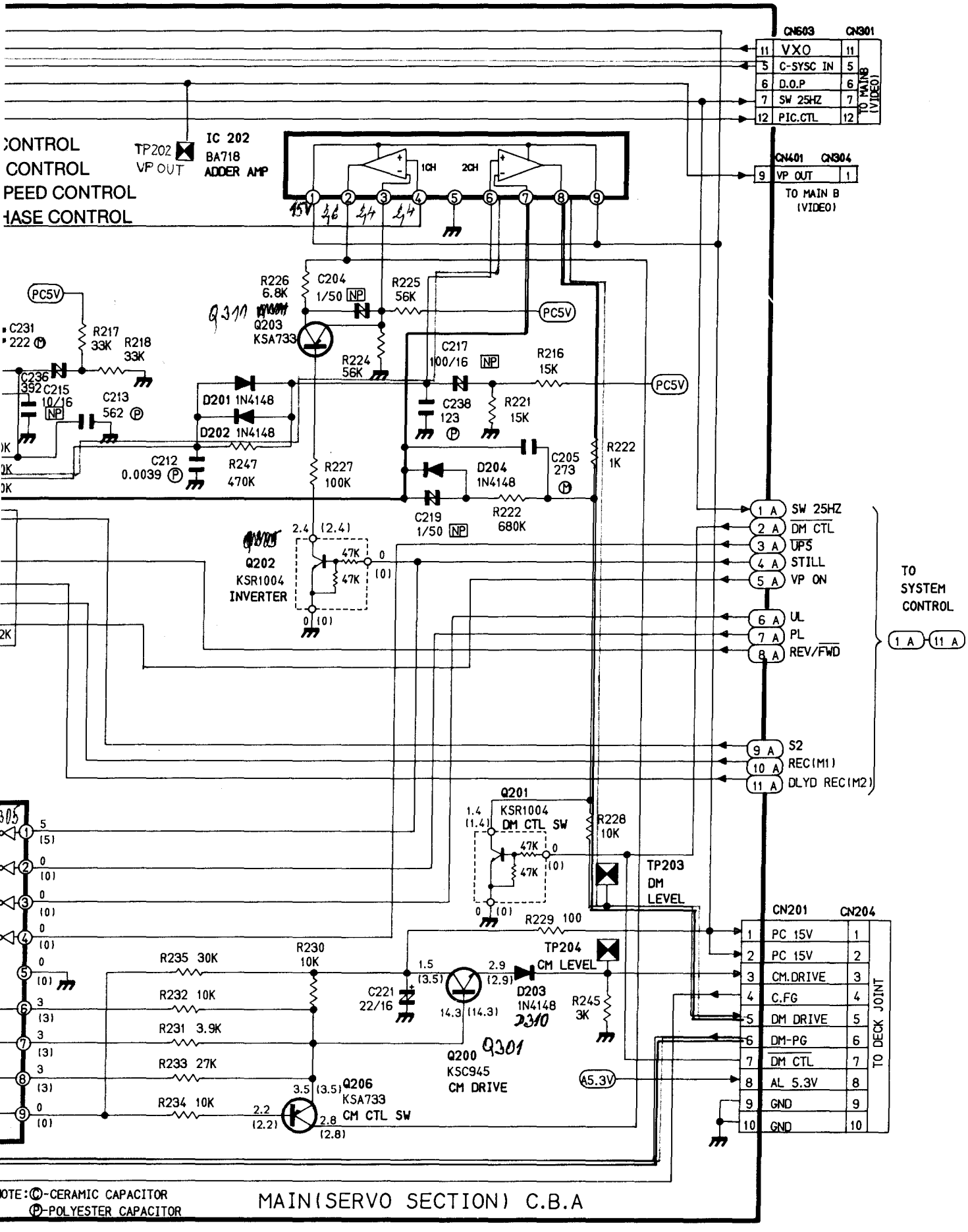
MODE / PIN NO.	IC 803						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PIN 2	9.7	9.7	9.7	9.7	9.7	9.7	9.7
PIN 3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PIN 4	2.2	2.2	2.2	2.2	2.2	2.2	2.2
PIN 5	0	0	0	0	0	0	0
PIN 6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
PIN 7	0.9	0.9	0.9	0.9	0.9	0.9	0.9
PIN 8	6	6	6	6	6	6	6

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE	STOP			REC			PLAY			REW			F. FWD			REV. S			FWD. S		
Tr NO.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 601	0	5	0.8	0	5	0.8	0	5	0.8	0	5	0.8	0	5	0.8	0	5	0.8	0	5	0.8
Q 602	0	1.5	4.5	0	1.5	4.5	0	1.5	4.5	0	1.5	4.5	0	1.5	4.5	0	1.5	4.5	0	1.5	4.5
Q 603	0	4.8	0.3	0	4.8	0.3	0	4.8	0.3	0	4.8	0.3	0	4.8	0.3	0	4.8	0.3	0	4.8	0.3

10-4. Servo


CN702
CN203
TO TIMER/ INPUT KEY CN702
TO TIMER INPUT KEY
1 AC 3.2V
2 AC 3.2V
3 +30V
4 GND
5 TRACKING
6 PIC.CTL
7 V-LOCK ADJ
8 PC 5V
TO POWER
AC 3.2V
+30V
PC 15V
PC 5V
AL 5.3V
PC5V
AL5.3V
TP201
SW25HZ
RED: DRUM SPEED CONTROL
BLUE: DRUM PHASE CONTROL
YELLOW CAPSTAN SPEED CONTI
GREEN: CAPSTAN PHASE CONTF
VR203
470K
TRACKING
PRESET
IC 201
SD3624A
SERVO uP
REC CTL PLS
TEST
TRK FIX
TRK DELAY
SP/LP DELAY
LP DELAY
SP DELAY
C.SYNC IN
SW 25HZ
AFM FF
VP OUT
VCC
VP DELAY (LP)
VP DELAY(SP)
PG2 DELAY
PG1 DELAY
DM-PG IN
DM-FG IN
CFG IN
CTL IN
GND
CM-ERR
CM-MIX(+)
CM-MIX(-)
VCC
CM AFC
CM APC
DM APC
DM AFC
S2
S1
REW/FWD
M2
M1
VP ON
SPD-B
SPD-A
C.FG OUT
CTL OUT
INJ
SC-IN
CN202
TO A/C HEAD CN003
CONTROL
GND
R202 1K
R244 10K
C202 10/25
C201 10/25
R201 5.1K
C207 103
C203 683 Ⓟ
C231 222 Ⓟ
C236 392
C215 10/16 NP
R215 330K
R214 330K
R219 270K
R220 470K
VR201 100K PG-1
VR202 100K PG-2
R210 56K
R209 56K
R208 56K
R2R2 10K
TP215
CTL INPUT
C210 393 Ⓟ
C209 393 Ⓟ
C208 103 Ⓟ
R213 8.2K
R253 330
IC 203 TA86175 CTL & CFG AMP
DOUBLER
SCHIMIDT
C218 104
R211 82
IC 204
TD62555S
INVERTER
Q305
R237 470K
R238 470
R239 47K
C230 562 Ⓟ
C211 10/25
R236 1M
C222 0.01Ⓒ
C237 22/16
C224 10/25
R246 4.7K
C223 392 Ⓟ
C225 47/16
C226 47/16
C227 10/25
R240 12K
C228 10/25
※NOTE: Ⓒ-CERAMIC
Ⓟ-POLYEST


CN503 CN301
11 VXO 11
5 C-SYSC IN 5
6 D.O.P 6
7 SW 25HZ 7
12 PIC.CTL 12
TO MAIN B (VIDEO)
CN401 CN304
9 VP OUT 1
TO MAIN B (VIDEO)
CONTROL
CONTROL
PEED CONTROL
HASE CONTROL
TP202 VP OUT
IC 202 BA718 ADDER AMP
1CH 2CH
PC5V
R226 6.8K
C204 1/50 NP
R225 56K
Q203 KSA733
R224 56K
C217 100/16 NP
R216 15K
C238 123
R221 15K
D201 1N4148
D202 1N4148
C212 0.0039
R247 470K
R227 100K
D204 1N4148
C205 273
R222 1K
C219 1/50 NP
R222 680K
Q202 KSR1004 INVERTER
47K
47K
TO SYSTEM CONTROL
1 A SW 25HZ
2 A DM CTL
3 A UPS
4 A STILL
5 A VP ON
6 A UL
7 A PL
8 A REV/FWD
1 A 11 A
9 A S2
10 A REC(M1)
11 A DLYD REC(M2)
Q201 KSR1004 DM CTL SW
R228 10K
TP203 DM LEVEL
R229 100
CN201 CN204
1 PC 15V 1
2 PC 15V 2
3 CM.DRIVE 3
4 C.FG 4
5 DM DRIVE 5
6 DM-PG 6
7 DM CTL 7
8 AL 5.3V 8
9 GND 9
10 GND 10
TO DECK JOINT
R235 30K
R232 10K
R231 3.9K
R233 27K
R234 10K
R230 10K
C221 22/16
TP204 CM LEVEL
D203 1N4148
R245 3K
Q200 KSC945 CM DRIVE
A5.3V
Q206 KSA733 CM CTL SW
NOTE: C-CERAMIC CAPACITOR
P-POLYESTER CAPACITOR
MAIN(SERVO SECTION) C.B.A

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 201						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0.3	2.4	2.2	0.7	3.6	2.8	2.6
PIN 2	0	0	0	0	0	0	0
PIN 3	4.6	4.6	4.5	4.3	3.6	4.3	4.3
PIN 4	2.6	1.4	1	0.7	0.7	0.7	0.7
PIN 5	5.1	5.2	5.2	4.9	5.2	4.9	5
PIN 6	5.1	5.2	5.2	4.9	5.2	4.9	5
PIN 7	5.1	5.2	5.2	4.9	5.2	4.9	5
PIN 8	0.7	0.7	0.7	0.7	0.7	0.7	0.7
PIN 9	4.1	2.1	2.1	4.1	4.0	2.1	2.1
PIN 10	—	—	—	—	—	—	—
PIN 11	0	0	0	0	0	0.4	0.3
PIN 12	5.1	5.2	5.2	4.4	5.2	5	5
PIN 13	0	0	0	0	0	0	0
PIN 14	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PIN 15	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0
PIN 17	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 18	—	—	—	—	—	—	—
PIN 19	4.6	0.7	0.7	0.4	0.3	0.3	0.3
PIN 20	0	2.1	2.1	0	0	2.4	2.4
PIN 21	0	0	0	0	0	0	0
PIN 22	0.7	0.6	0.6	0.7	0.7	0.7	0.7
PIN 23	2.5	2.7	2.5	2.4	2.4	2.4	2.4
PIN 24	—	—	—	—	—	—	—
PIN 25	—	—	—	—	—	—	—
PIN 26	5	4	5	5	5	5	5
PIN 27	5	4	5	5	5	5	5
PIN 28	0	0	0	5.2	5	5.2	5
PIN 29	0	5	0	0	0	0	0
PIN 30	0	5	0	0	0	0	0
PIN 31	0	0	0	5	0	5.2	0
PIN 32	0	0	0	0	0	0	0
PIN 33	0	0	0	5	5	5	5
PIN 34	0.1	2.4	2.4	0.1	0.1	2.4	2.5
PIN 35	2.4	2.5	2.5	2.4	2.4	2.5	2.5
PIN 36	2.4	2.4	2.5	2.4	2.4	2.5	2.5
PIN 37	0	2.4	2.4	2.4	2.4	2.5	2.5
PIN 38	5.1	5.2	5.2	5	5	5	5

REV S. : REVERSE SEARC
FWD S.: FORWARD SEAR

MODE / PIN NO.	IC 201						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S
PIN 39	1	2.6	2.8	2	3	2.4	2.5
PIN 40	2.6	2.6	2.8	2	3	2.4	2.4
PIN 41	4.4	2.6	2.4	2.5	2.5	2.5	2.4
PIN 42	0	0	0	0	0	0	0

REV S. : REVERSE SEARC
FWD S.: FORWARD SEAR

MODE / PIN NO.	IC 202						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	14.2	14.7	15	14.1	14.0	14.1	14.1
PIN 2	12.9	2.8	2.6	9.2	10.2	10.0	9.5
PIN 3	2.6	2.6	2.4	2.5	2.5	2.4	2.5
PIN 4	4.2	2.4	2.4	2.5	2.5	2.5	2.5
PIN 5	0	0	0	0	0	0	0
PIN 6	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 7	0.1	2.5	2.5	0.1	0.1	2.4	2.4
PIN 8	12.8	1.6	1.6	12.7	12.6	1.6	1.4
PIN 9	14.2	14.4	15	14.1	14.0	14.1	14.1

REV S. : REVERSE SEARC
FWD S.: FORWARD SEAR

MODE / PIN NO.	IC 203						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	2.5	2.4	2.4	2.4	2.4	2.4	2.4
PIN 2	4.5	0.7	0.7	0.4	0.4	0.4	0.4
PIN 3	5.1	5.2	5.2	5	5	5	5
PIN 4	4.2	2.1	2.1	0	0	2.4	2.3
PIN 5	2	2.2	2	2	2	2	2
PIN 6	0	0	0	0	0	0	0
PIN 7	2	2.2	2	2	2	2	2
PIN 8	2	2.2	2	2	2	2	2
PIN 9	2	2	2	2	2	2	2
PIN 10	2.5	2.6	2.6	2.6	2.6	2.6	2.6
PIN 11	2.5	2.6	2.6	2.6	2.6	2.6	2.6
PIN 12	2.5	2.6	2.6	2.6	2.6	2.6	2.6

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 204						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	5	5	5	5	5	5
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	13.9	3	3	10.5	9	9.7	9.5
PIN 7	13.9	3	3	10.5	9	9.7	9.5
PIN 8	13.9	3	3	10.5	9	9.7	9.5
PIN 9	13.9	0	0	0	0	0	0

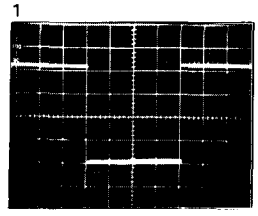
REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

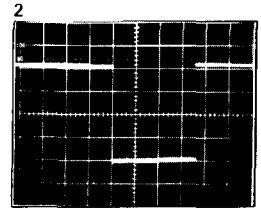
MODE / TR NO.	STOP			REC			PLAY			REW			F. FWD			REV. S			FWD. S		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 201	0	0	5.2	0	1.4	0	0	1.4	0	0	0	5.2	0	0	5	0	1.4	0	0	1.4	0
Q 202	0	12.1	0	0	2.4	0	0	2.4	0	0	9	0	0	9	0	0	9	0	0	9	0
Q 203	2.4	12.4	12.0	2.5	2.8	2.4	2.6	2.8	2.4	2.4	9.3	9	2.4	9.8	9.2	2.4	9.5	8.7	2.4	9.4	3
Q 206	13.5	12.5	13.9	2.8	2.8	2.2	2.8	2.8	2.2	9.8	9.3	9.8	9.2	9.2	8	9.8	9.7	9.1	9.8	9.6	9.4
Q 200	12.8	14.0	13.5	2.2	15	2.8	2.4	15	2.8	9.5	13.8	9.9	9	13.8	9.5	9.1	14.1	9.8	8.8	15	9.4

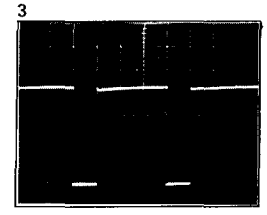
V S. : REVERSE SEARCH
/D S.: FORWARD SEARCH

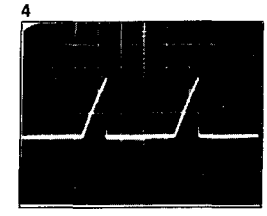
. S		FWD. S		
	B	E	C	B
4	0	0	1.4	0
	0	0	9	0
5	8.7	2.4	9.4	3
7	9.1	9.8	9.6	9.4
1	9.8	8.8	15	9.4

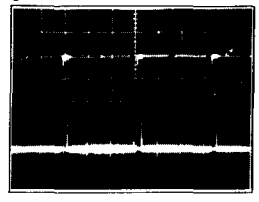
SERVO

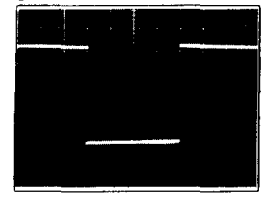
1

TP201
1V/5msec/cm
REC/PLAY

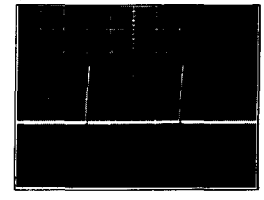
2

TP215
1V/5msec/cm
REC/PLAY

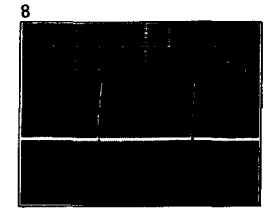
3

IC201-1
1V/10msec/cm
REC/PLAY

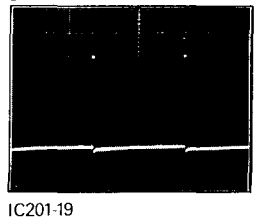
4

IC201-4
0.5V/10msec/cm
REC/PLAY

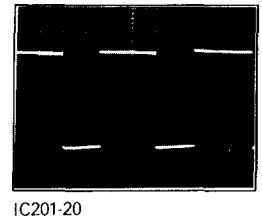
5

IC201-8
1V/5msec/cm
REC/PLAY

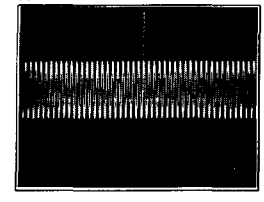
6

IC201-9
1V/5msec/cm
REC/PLAY

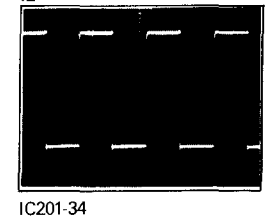
7

IC201-15
1V/10msec/cm
REC/PLAY

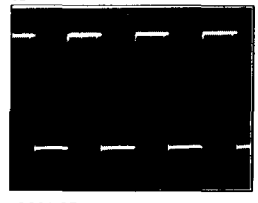
8

IC201-16
1V/10msec/cm
REC/PLAY

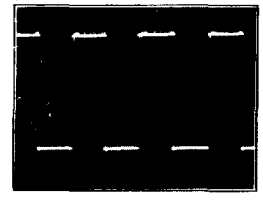
9

IC201-19
1V/2msec/cm
REC/PLAY

10

IC201-20
1V/10msec/cm
PLAY

11

IC201-22
0.1V/1μsec/cm
REC/PLAY

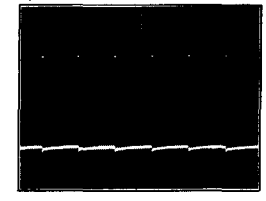
12

IC201-34
1V/10μsec/cm
REC/PLAY

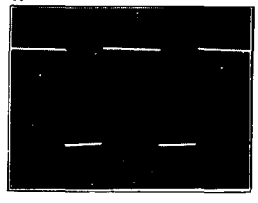
13

IC201-35
1V/10μsec/cm
REC/PLAY

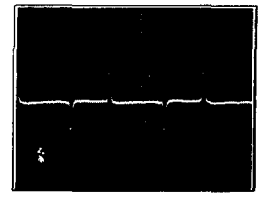
14

IC201-36
1V/10μsec/cm
REC/PLAY

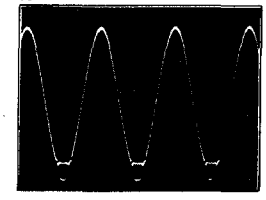
15

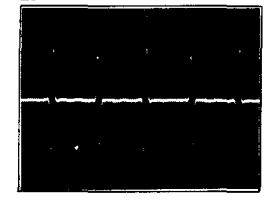
IC201-37
1V/10μsec/cm
REC/PLAY

16

IC203-2
1V/0.5msec/cm
REC/PLAY

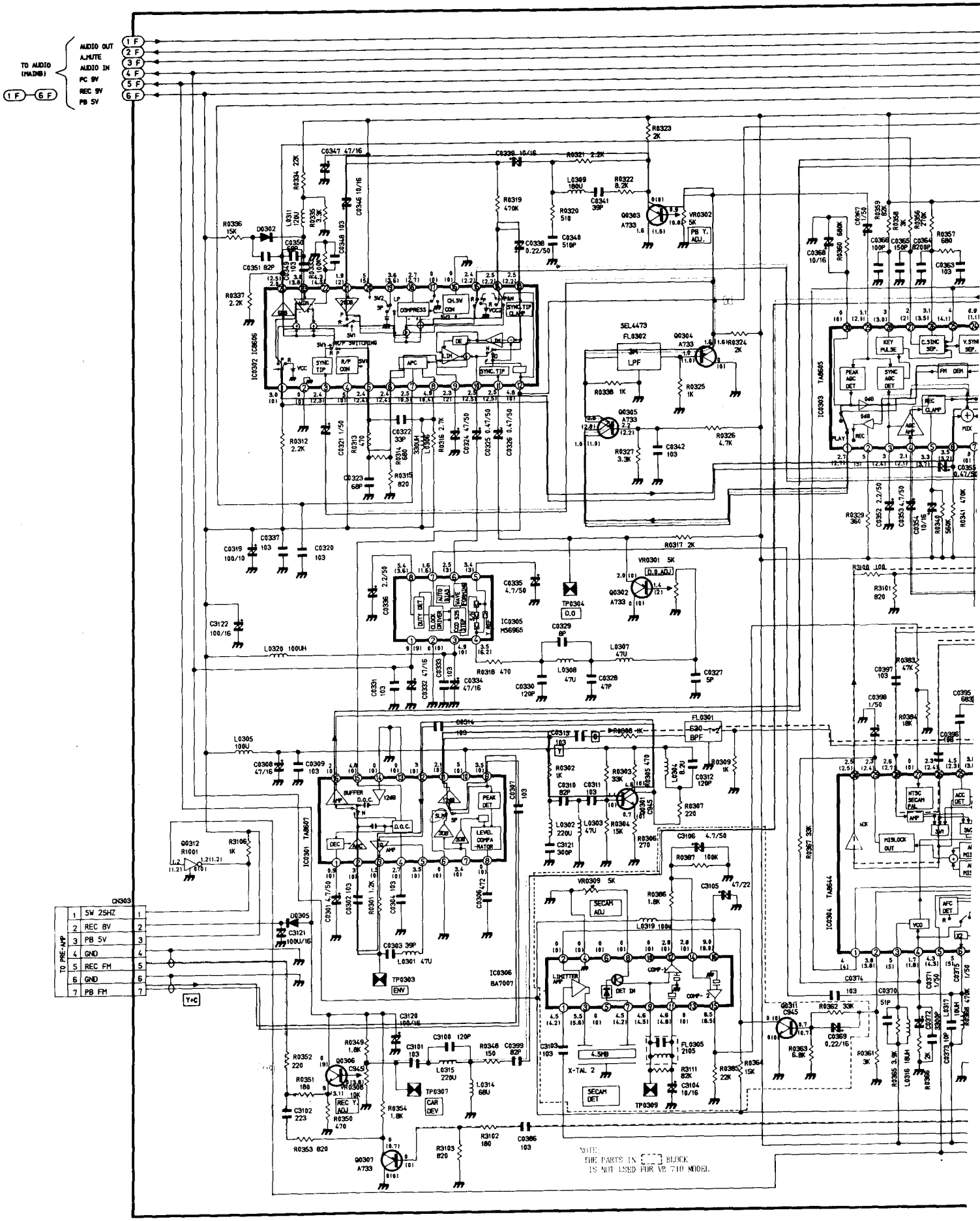
17

IC203-4
1V/10msec/cm
PLAY

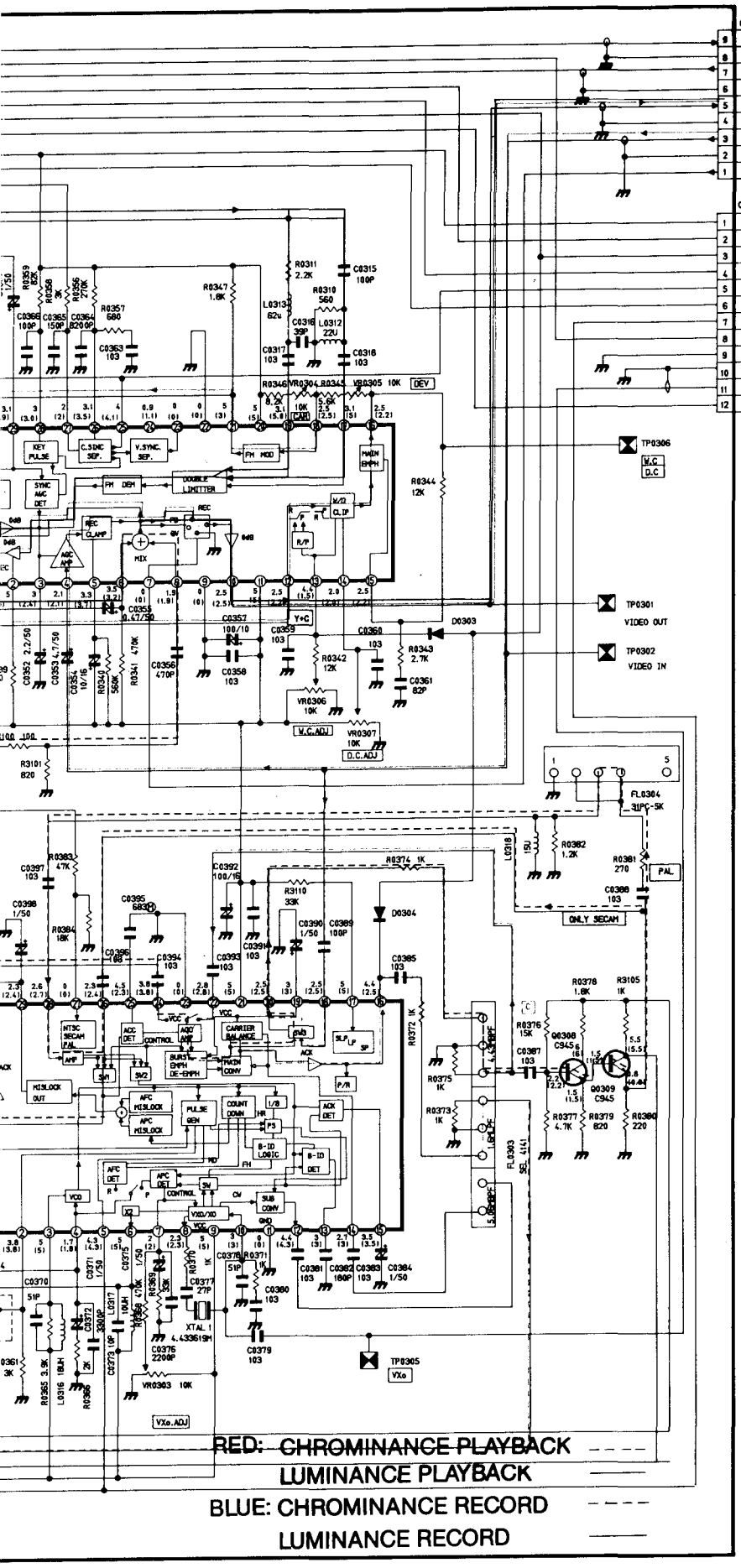
18

IC203-7
0.5V/10msec/cm
PLAY

19

IC203-12
0.5V/0.5msec/cm
REC/PLAY

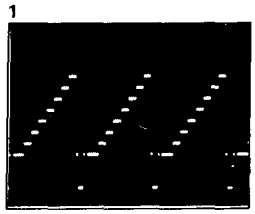
20

IC201-17
0.2V/10msec/cm
REC/PLAY

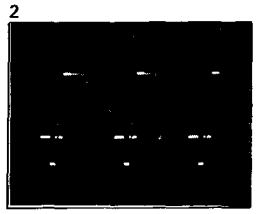
10-5. Luminance/Chrominance

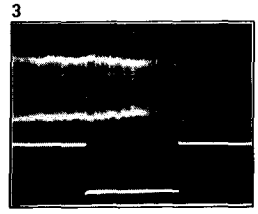


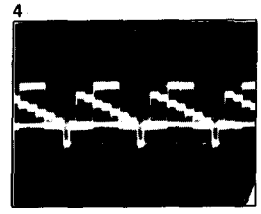

CN304
9 AUDIO OUT 1
8 GND 2
7 AUDIO IN 3
6 GND 4
5 VIDEO OUT 5
4 GND 6
3 VIDEO IN 7
2 GND 8
1 VP OUT 9
TO MAIN A(TUNER) CN401
CN301
1 PC 5V 1
2 PC 9V 2
3 PB 5V 3
4 REC 9V 4
5 C.SYNC 5
6 D.O.P 6
7 SW 25HZ 7
8 A.MUTE 8
9 GND 9
10 GND 10
11 VXO 11
12 PIC.CTL 12
TO MAIN A (SYSCON/SERVO) CN603
TP0306 V.C D.C
TP0301 VIDEO OUT
TP0302 VIDEO IN
TP0305 VXo
FL0304 31PC-5K
PAL
ONLY SECAM
VR0306 10K V.C.ADJ
VR0307 10K D.C.ADJ
VR0303 10K VXo.ADJ
XTAL 1 4.433619M
RED: CHROMINANCE PLAYBACK
LUMINANCE PLAYBACK
BLUE: CHROMINANCE RECORD
LUMINANCE RECORD

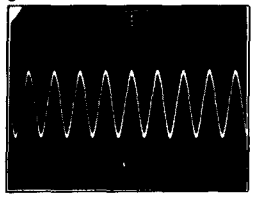
LUMINANCE/CHROMINANCE

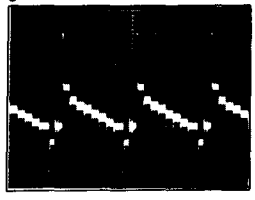
1

TP301
0.5V/20μsec/cm
REC/PLAY

2

TP302
0.5V/20μsec/cm
REC/PLAY

3

TP303
0.1V/5msec/cm
PLAY

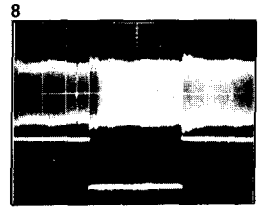
4

TP304
0.2V/20μsec/cm
PLAY

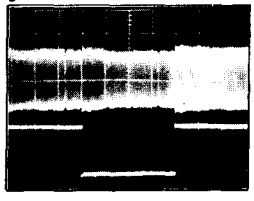
5

TP305
10mV/0.2μsec/cm
REC/PLAY

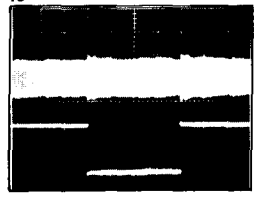
6

TP306
0.2V/20μsec/cm
REC

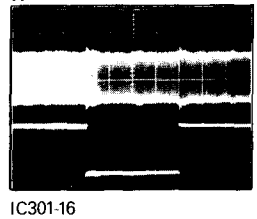
7

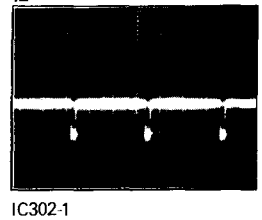
TP310
1V/0.1μsec/cm
REC

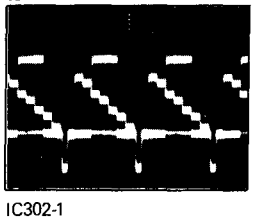
8

IC301-2
10mV/5msec/cm
PLAY

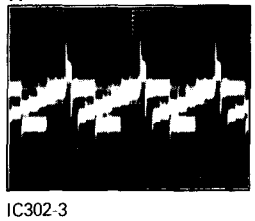
9

IC301-3
20mV/5msec/cm
PLAY

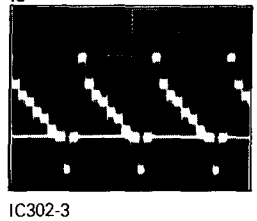
10

IC301-5
20mV/5msec/cm
PLAY

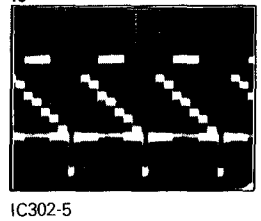
11

IC301-16
0.5V/5msec/cm
PLAY

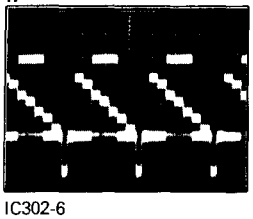
12

IC302-1
0.1V/20μsec/cm
REC

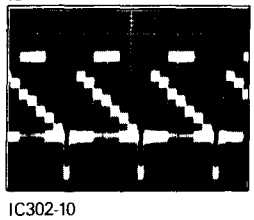
13

IC302-1
0.1V/20μsec/cm
PLAY

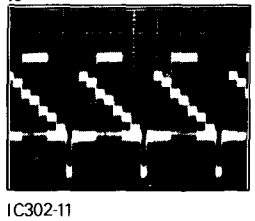
14

IC302-3
50mV/20μsec/cm
PLAY

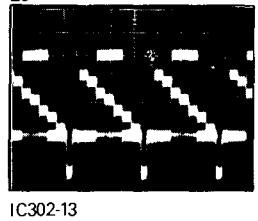
15

IC302-3
0.1V/20μsec/cm
REC

16

IC302-5
0.1V/20μsec/cm
PLAY

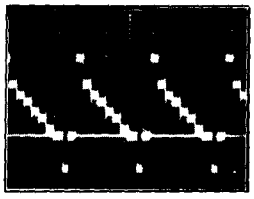
17

IC302-6
0.1V/20μsec/cm
PLAY

18

IC302-10
0.1V/20μsec/cm
PLAY

19

IC302-11
0.1V/20μsec/cm
PLAY

20

IC302-13
0.2V/20μsec/cm
PLAY

21

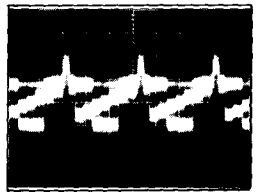


IC302-15
0.1V/20μsec/cm
REC

22

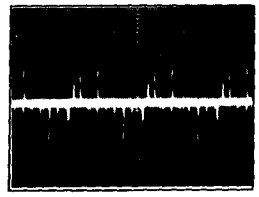
IC302-21
50mV/20μsec/cm
REC

23



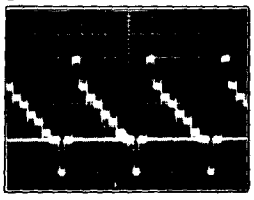
IC302-21
20mV/20μsec/cm
PLAY

24



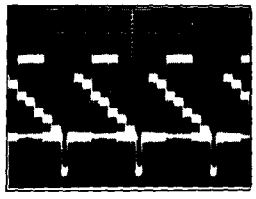
IC302-23
0.2V/20μsec/cm
PLAY

25



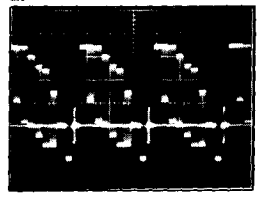
IC302-24
0.2V/20μsec/cm
REC

26



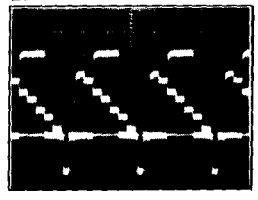
IC302-24
0.2V/20μsec/cm
PLAY

27



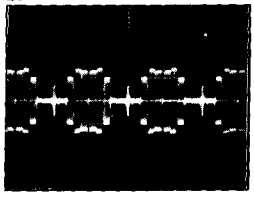
IC303-4
0.2V/20μsec/cm
REC/PLAY

28



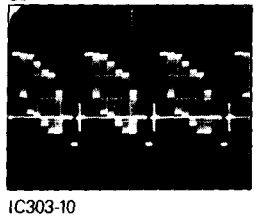
IC303-6
0.1V/20μsec/cm

29



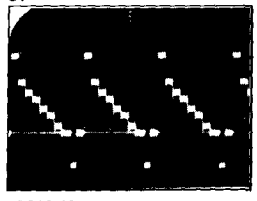
IC303-8
0.2V/20μsec/cm
REC/PLAY

30



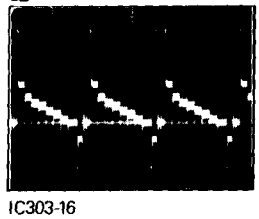
IC303-10
0.5V/20μsec/cm
REC/PLAY

31



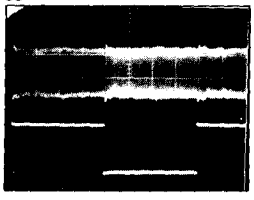
IC303-12
0.5V/20μsec/cm
REC

32



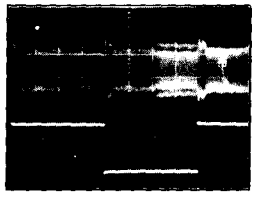
IC303-16
0.2V/5msec/cm
REC

33



IC303-17
0.5V/5msec/cm
PLAY

34

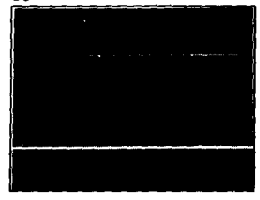


IC302-19
0.1V/5msec/cm
PLAY

35

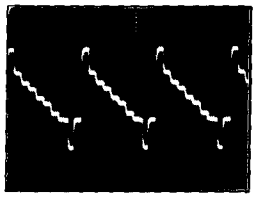
IC303-21
0.5V/0.2μsec/cm
REC

36



IC303-25
1V/5msec/cm
REC/PLAY

37

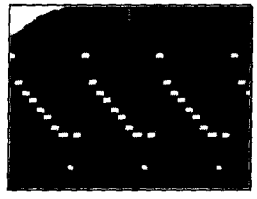


IC303-27
0.2V/20μsec/cm
REC/PLAY

38

IC303-28
1V/20μsec/cm
REC/PLAY

39

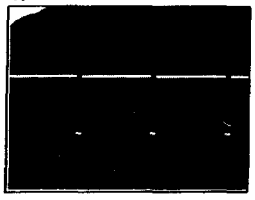


IC303-29
0.1V/20μsec/cm
REC

40

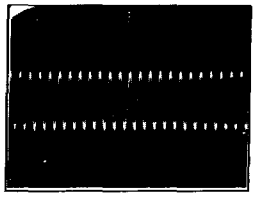
IC304-1
1V/20μsec/cm
REC/PLAY

41



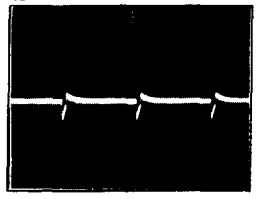
IC304-2
1V/20μsec/cm
REC/PLAY

42



IC304-3
0.1V/0.5μsec/cm
REC/PLAY

43

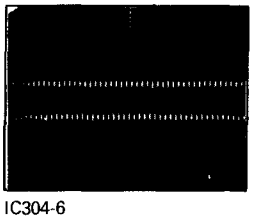


IC304-4
0.1V/20μsec/cm
REC

44

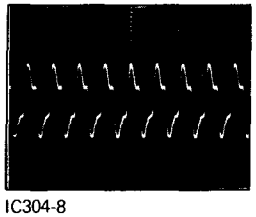
IC304-5
1V/5msec/cm
REC/PLAY

45



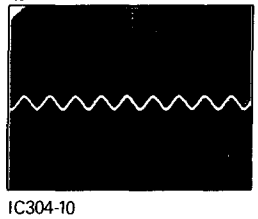
IC304-6
0.1V/0.5μsec/cm
REC/PLAY

46



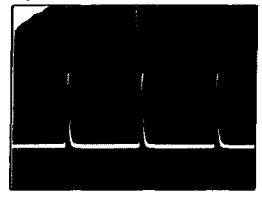
IC304-8
0.5V/0.2μsec/cm
REC/PLAY

47



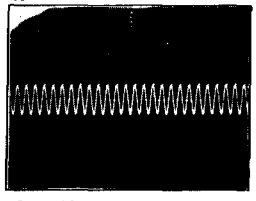
IC304-10
0.5V/0.2μsec/cm
REC/PLAY

48



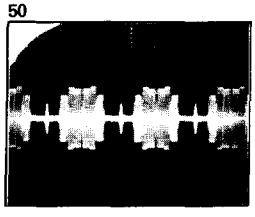
IC304-13
0.5V/20μsec/cm
REC/PLAY

49



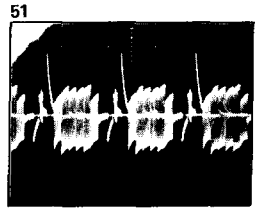
IC304-14
0.2V/0.5μsec/cm
REC/PLAY

50



IC304-16
0.5V/20μsec/cm
REC

51

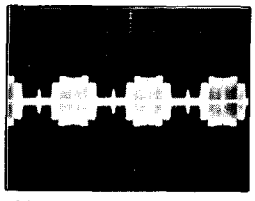


IC304-18
0.2V/20μsec/cm
REC/PLAY

52

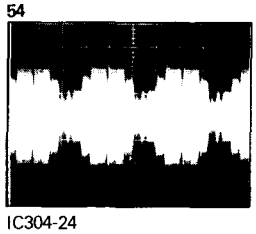
IC304-20
0.2V/20μsec/cm
REC

53



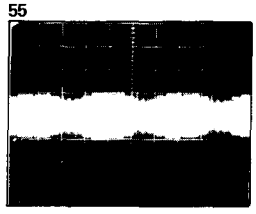
IC304-22
0.1V/20μsec/cm
REC/PLAY

54



IC304-24
50mV/20μsec/cm
PLAY

55



IC304-28
50mV/20μsec/cm
REC/PLAY

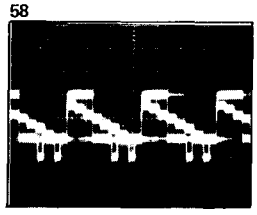
56

IC304-30
0.2V/20μsec/cm
REC/PLAY

57

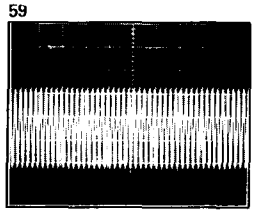
IC305-4
0.5V/20μsec/cm
PLAY

58



IC305-6
0.2V/20μsec/cm
PLAY

59



IC305-7
50mV/0.5μsec/cm
REC/PLAY

MODE / PIN NO.	ST
PIN 1	0
PIN 2	0
PIN 3	0
PIN 4	0
PIN 5	0
PIN 6	0
PIN 7	0
PIN 8	0
PIN 9	0
PIN 10	0
PIN 11	0
PIN 12	0
PIN 13	0
PIN 14	0
PIN 15	0
PIN 16	0

MODE / PIN NO.	STO
PIN 1	0.2
PIN 2	0
PIN 3	2.4
PIN 4	0.2
PIN 5	0.6
PIN 6	0.6
PIN 7	2.5
PIN 8	0.3
PIN 9	2.0
PIN 10	2.2
PIN 11	2.5
PIN 12	0.2
PIN 13	2.4
PIN 14	2.0
PIN 15	2.3
PIN 16	0
PIN 17	0
PIN 18	2.7
PIN 19	3.6
PIN 20	5.0
PIN 21	1.8
PIN 22	4.3
PIN 23	2.8
PIN 24	2.1

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 301						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	0	0.9	0	0	0.9	0.9
PIN 2	0	0	3.0	0	0	3.0	3.0
PIN 3	0	0	1.5	0	0	1.5	1.5
PIN 4	0	0	2.7	0	0	2.6	2.7
PIN 5	0.5	0	3.5	0	0	3.4	3.5
PIN 6	0	0	0	0	0	0	0
PIN 7	0	0	3.4	0	0	3.4	3.5
PIN 8	0	0	0	0	0	0	0.1
PIN 9	0	0	3.5	0	0	3.4	3.5
PIN 10	0	0	4.9	0	0	4.9	4.9
PIN 11	0	0	2.1	0	0	2.1	2.1
PIN 12	0	0	3.0	0	0	3.0	3.0
PIN 13	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0
PIN 15	0	0	4.8	0	0	4.8	4.8
PIN 16	0	0	2.0	0	0	2.0	2.0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 302						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0.2	3.1	3.1	0.2	0.2	3.1	3.1
PIN 2	0	0	0	0	0	0	0
PIN 3	2.4	2.3	2.4	2.4	2.4	2.4	2.4
PIN 4	0.2	5	4.9	0.2	0	5	5.0
PIN 5	0.6	2.4	2.4	0.6	0.6	2.4	2.4
PIN 6	0.6	2.4	2.4	0.6	0.6	2.4	2.4
PIN 7	2.5	2.5	2.4	2.5	2.5	2.5	2.4
PIN 8	0.3	5.0	4.9	0.3	0.3	4.9	4.9
PIN 9	2.0	2.0	2.3	1.9	1.9	2.3	2.3
PIN 10	2.2	2.2	2.5	2.2	2.2	2.5	2.5
PIN 11	2.5	2.5	2.5	2.5	2.5	2.6	2.5
PIN 12	0.2	0	4.8	2.0	0.2	4.8	4.8
PIN 13	2.4	2.5	2.5	2.4	2.4	2.5	2.5
PIN 14	2.0	2.2	2.5	1.9	2.0	2.5	2.5
PIN 15	2.3	2.2	2.4	2.3	2.3	2.4	2.4
PIN 16	0	0	0	0	0	0	0
PIN 17	0	0	0	0	0	0	0
PIN 18	2.7	2.7	2.7	2.7	2.6	2.7	2.7
PIN 19	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 21	1.8	2.0	1.9	1.9	1.8	1.9	1.9
PIN 22	4.3	4.3	4.3	4.3	4.3	4.3	4.3
PIN 23	2.8	3.8	3.8	3.9	3.9	3.8	3.8
PIN 24	2.1	2.0	2.0	2.1	2.1	2.0	2.0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 303						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PIN 2	4.5	5.0	5.0	4.5	4.5	5.0	5.0
PIN 3	2.5	2.4	3.0	2.5	2.5	3.0	3.0
PIN 4	2.1	2.1	2.1	2.1	2.1	2.1	2.1
PIN 5	3.6	3.7	3.3	3.6	3.6	3.3	3.0
PIN 6	3.3	3.2	3.5	3.3	3.3	3.7	3.6
PIN 7	0	0	0	0	0	0	0
PIN 8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
PIN 9	0	0	0	0	0	0	0
PIN 10	1.9	1.5	2.5	1.9	1.9	2.7	2.9
PIN 11	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 12	2.3	2.2	2.5	2.3	2.3	2.5	2.5
PIN 13	1.5	1.5	5.0	1.5	1.5	4.4	4.4
PIN 14	2.0	2.0	2.0	2.0	2.3	2.0	2.0
PIN 15	2.3	2.2	2.5	2.3	2.3	2.5	2.5
PIN 16	2.3	2.2	2.5	2.3	2.3	2.5	2.5
PIN 17	5.0	5.0	3.1	5.0	5.0	3.1	3.1
PIN 18	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 19	5.0	5.0	3.1	5.0	5.0	3.1	3.1
PIN 20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 21	3.0	3.0	5.0	3.0	3.0	5.0	5.0
PIN 22	0	0	0	0	0	0	0
PIN 23	0	0	0	0	0	0	0
PIN 24	0.9	1.1	0.9	0.9	0.9	0.9	0.9
PIN 25	2.0	4.1	0.4	2.0	2	0.4	0.4
PIN 26	3.6	3.5	3.1	3.6	3.6	3.2	3.4
PIN 27	2.1	2.0	2.0	2.2	2.1	2.2	2.5
PIN 28	1.4	3.7	0.4	1.4	1.4	0.4	0.4
PIN 29	3.0	2.9	3.1	3.0	3.0	3.1	3.4
PIN 30	0	0	0	0	0	0	0

:SE SEARCH
ARD SEARCH

	FWD S.
	2.7
	5.0
	3.0
	2.1
	3.0
	3.6
	0
	1.9
	0
	2.9
	5.0
	2.5
	4.4
	2.0
	2.5
	2.5
	3.1
	2.5
	3.1
	5.0
	5.0
	0
	0
	0.9
	0.4
	3.4
	2.5
	0.4
	3.4
	0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
	IC 304						
PIN 1	0.8	4	0.4	0.9	0.8	0.9	4.0
PIN 2	3.7	3.8	3.8	3.7	3.7	3.8	3.8
PIN 3	5.0	5	5.0	5.0	5.0	5.0	5.0
PIN 4	1.7	1.8	1.7	1.7	1.7	2.3	1.8
PIN 5	4.3	4.3	4.3	4.3	4.3	4.3	4.3
PIN 6	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 7	2.2	2.0	2.0	2.2	2.2	2.0	2.0
PIN 8	2.5	2.3	2.3	2.5	2.5	2.3	2.3
PIN 9	5.0	50	5.0	5.0	5.0	5.0	5.0
PIN 10	3.2	3.0	3.0	3.1	3.1	3.0	3.0
PIN 11	0	0	0	0	0	0	0
PIN 12	4.3	4.3	4.4	4.3	4.3	4.3	4.3
PIN 13	3.0	3	3.0	3.0	3.0	3.0	3.0
PIN 14	2.7	3	2.7	2.7	2.7	2.7	3.0
PIN 15	2.4	2.4	2.3	2.3	2.3	2.4	2.4
PIN 16	0	0	4.4	0	0	4.4	0
PIN 17	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 18	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 19	2.9	3.0	3.0	2.9	3.0	3.0	3
PIN 20	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 21	5.0	5	5.0	5.0	5.0	5.0	5.0
PIN 22	2.7	2.8	2.8	2.7	2.7	2.8	2.8
PIN 23	0	0	0.0	0	0	0	0.0
PIN 24	1.7	1.7	2.8	1.7	1.7	2.8	1.7
PIN 25	3.6	2.3	4.5	3.6	3.6	4.0	2.3
PIN 26	2.4	2.4	2.3	2.4	2.4	2.3	2.4
PIN 27	0	0	0.0	0	0	0	0.0
PIN 28	2.7	2.7	2.6	2.7	2.7	2.6	2.7
PIN 29	1.7	2.4	2.3	1.6	1.6	2.3	2.4
PIN 30	2.8	2.8	0	2.8	2.8	0	2.8

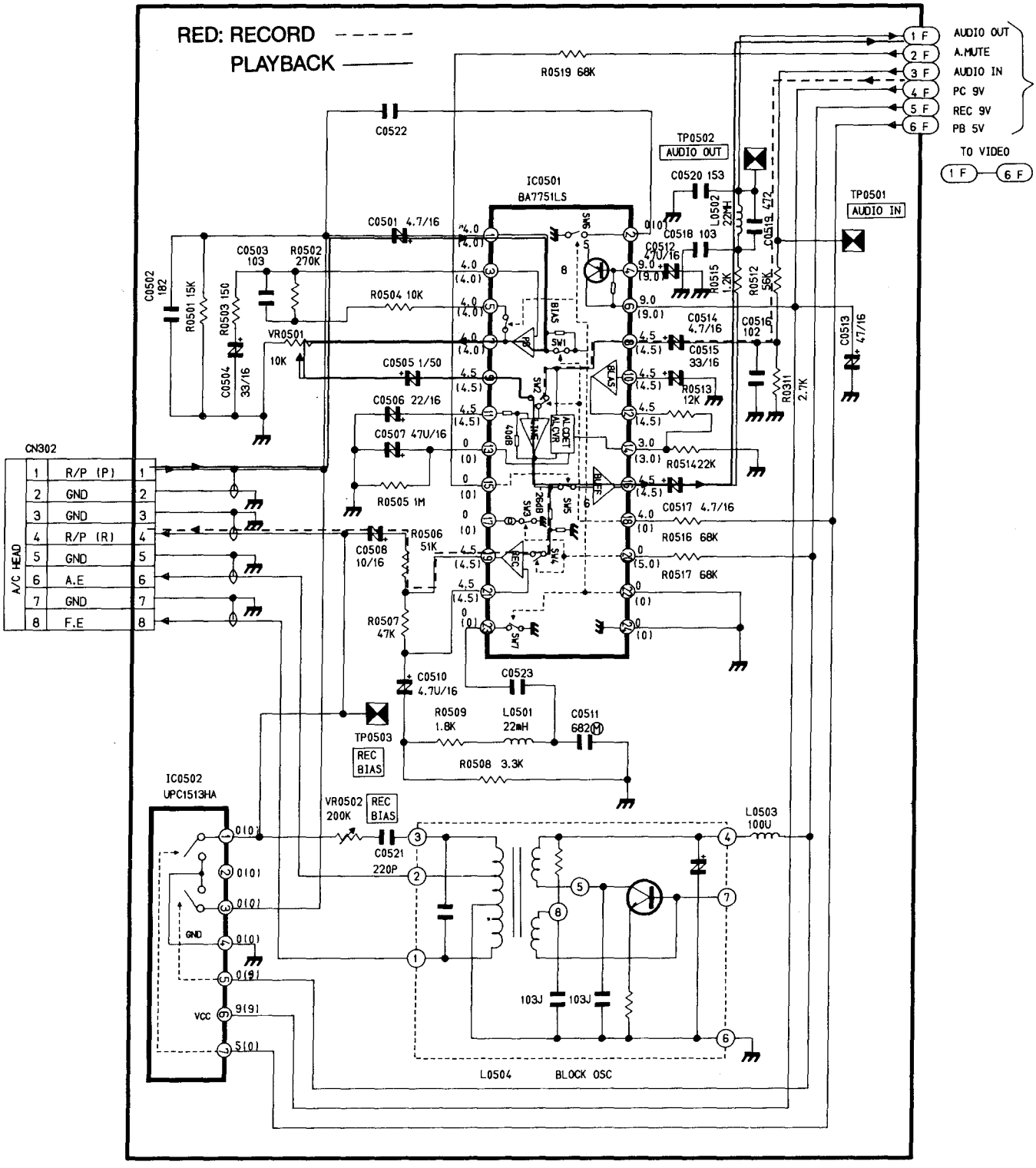
REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
	IC 305						
PIN 1	9	5	9	9	9	9	9
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	4.9	0	0	4.9	4.9
PIN 4	5.2	0	3.3	5.2	5.2	3.3	3.3
PIN 5	3.0	3.0	3.1	2	3	3.1	3.1
PIN 6	4.4	0	2.4	3.6	3	2.4	2.4
PIN 7	1.6	1.0	1.8	1.6	1.7	1.8	1.8
PIN 8	3.4	2.4	5.1	3.5	3.3	5.1	5.1

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

PIN NO.		STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
Q301	E	0	0	0.7	0	0	0.7	0.7
	B	0	0	1.4	0	0	1.4	1.4
	C	0	0.2	4.6	0	0	4.6	4.6
Q302	E	0	0	0	0	0	0	0
	B	2	2	1.3	2	2	1.3	1.3
	C	0	0	2	0	0	2	2
Q303	E	0	0	0	0	0	0	0
	B	0.8	0.8	0.9	0.8	0.8	0.9	0.9
	C	1.5	1.5	1.6	1.5	1.5	1.6	1.6
Q304	E	0	0	0	0	0	0	0
	B	0.7	0.7	0.7	0.7	0.7	0.9	0.9
	C	1.3	1.3	1.4	1.3	1.3	1.5	1.5
Q305	E	0.7	0.7	0.8	0.7	0.7	0.8	0.8
	B	2.0	2	2	2	2	2	2
	C	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Q306	E	0	3.1	0	0	0	0	0
	B	0	3.8	0	0	0	0	0
	C	0	9	2	0	0	2	2
Q307	E	0	0	0	0	0	0	0
	B	0	0	0	0	0	0	0
	C	0	0.4	0	0	0	0	0
Q308	E	3	3	3	3	3	3	3
	B	1	1	1	1	1	1	1
	C	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Q309	E	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	B	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	C	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Q311	E	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	B	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	C	0	0	0	0	0	0	0
Q312	E	0	0	0	0	0	0	0
	C	2.2	1.2	1.2	2.2	2.2	1.2	1.2
	B	0	1.2	1.2	0	0	1.2	1.2

10-6. Audio



AUDIO

MOD PIN NO.
PIN 1
PIN 2
PIN 3
PIN 4
PIN 5
PIN 6
PIN 7
PIN 8
PIN 9
PIN 10
PIN 11
PIN 12
PIN 13
PIN 14
PIN 15
PIN 16
PIN 17
PIN 18
PIN 19
PIN 20
PIN 21
PIN 22
PIN 23
PIN 24

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 501						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	3.8	4.0	4.0	4.0	4.0	4.0	4.0
PIN 2	0	0	0	0	0	0	0
PIN 3	3.8	4.0	4.0	4.0	4.0	4.0	4.0
PIN 4	9.0	9.0	9.0	9.0	9.0	9.0	9.0
PIN 5	4.0	4.0	4.2	4.0	4.0	4.0	4.0
PIN 6	9.0	9.0	9.0	9.0	0	9.0	9.0
PIN 7	4.0	4.0	4.0	4.0	4.0	4.0	4.0
PIN 8	4.6	4.7	4.6	4.6	4.6	4.7	4.6
PIN 9	4.6	4.4	4.3	4.3	4.6	4.4	4.3
PIN 10	4.6	4.7	4.5	4.7	4.6	4.7	4.6
PIN 11	4.6	4.4	4.3	4.7	4.6	4.4	4.4
PIN 12	4.6	4.7	4.6	4.7	4.6	4.7	4.7
PIN 13	0	0.7	0	0.6	0	0	0
PIN 14	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PIN 15	4.1	4.2	4.0	4.0	4.2	4.2	4.2
PIN 16	4.6	4.7	4.6	4.7	4.6	4.7	4.7
PIN 17	0	0	0	0	0	0	0
PIN 18	0.4	0	4	0.2	0.4	4.2	4.3
PIN 19	4.6	4.6	4.6	4.7	4.6	4.7	4.7
PIN 20	0	5.0	0	0	0	0	0
PIN 21	4.6	4.7	4.6	4.7	4.6	4.7	4.7
PIN 22	0	0	0	0	0	0	0
PIN 23	0	0	0	0	0	0	0
PIN 24	0	0	0	0	0	0	0

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

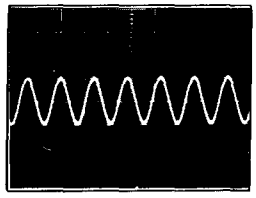
MODE / PIN NO.	IC 502						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0
PIN 5	0	9	0	0	0	0	0
PIN 6	9	9	9	9	9	9	9
PIN 7	0	0	5	0	0	5	5

:ARCH
SEARCH

WD S.
0
0
0
0
0
9
5

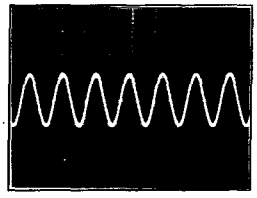
AUDIO

1



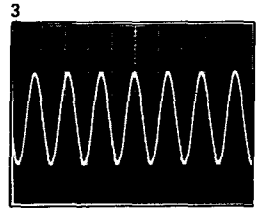
TP501
0.5V/1msec/cm
REC

2

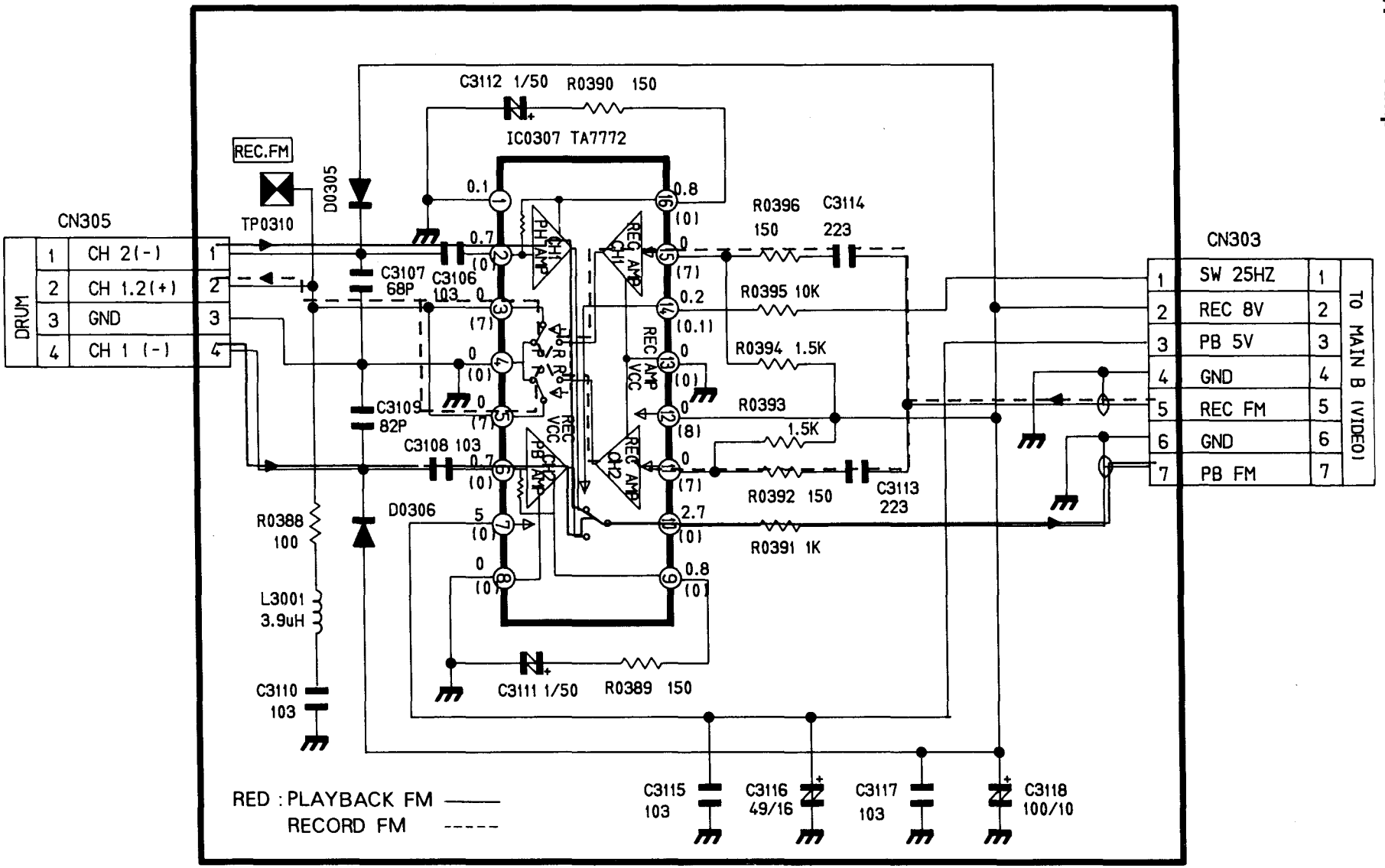


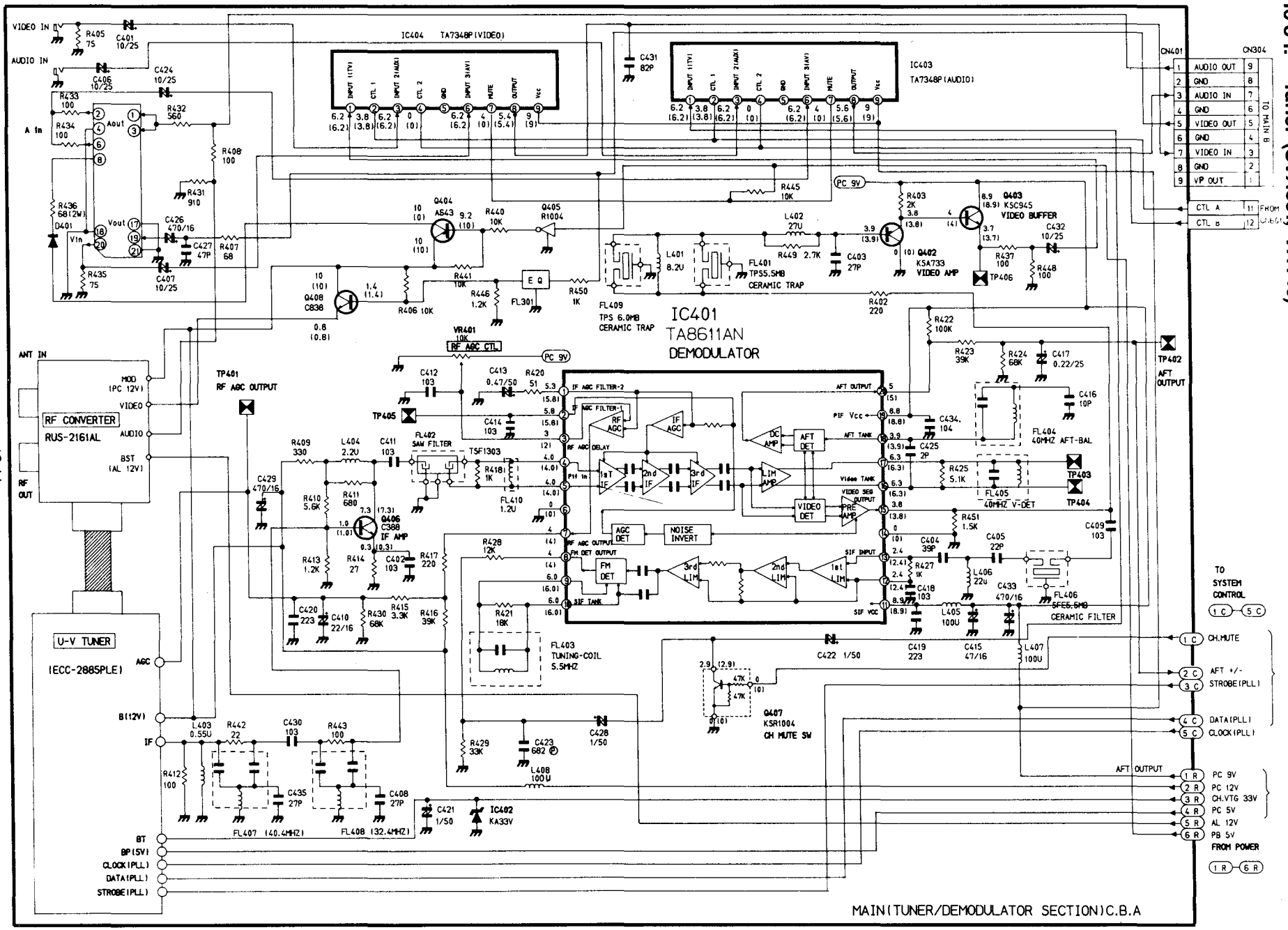
TP502
1V/1msec/cm
REC/PLAY

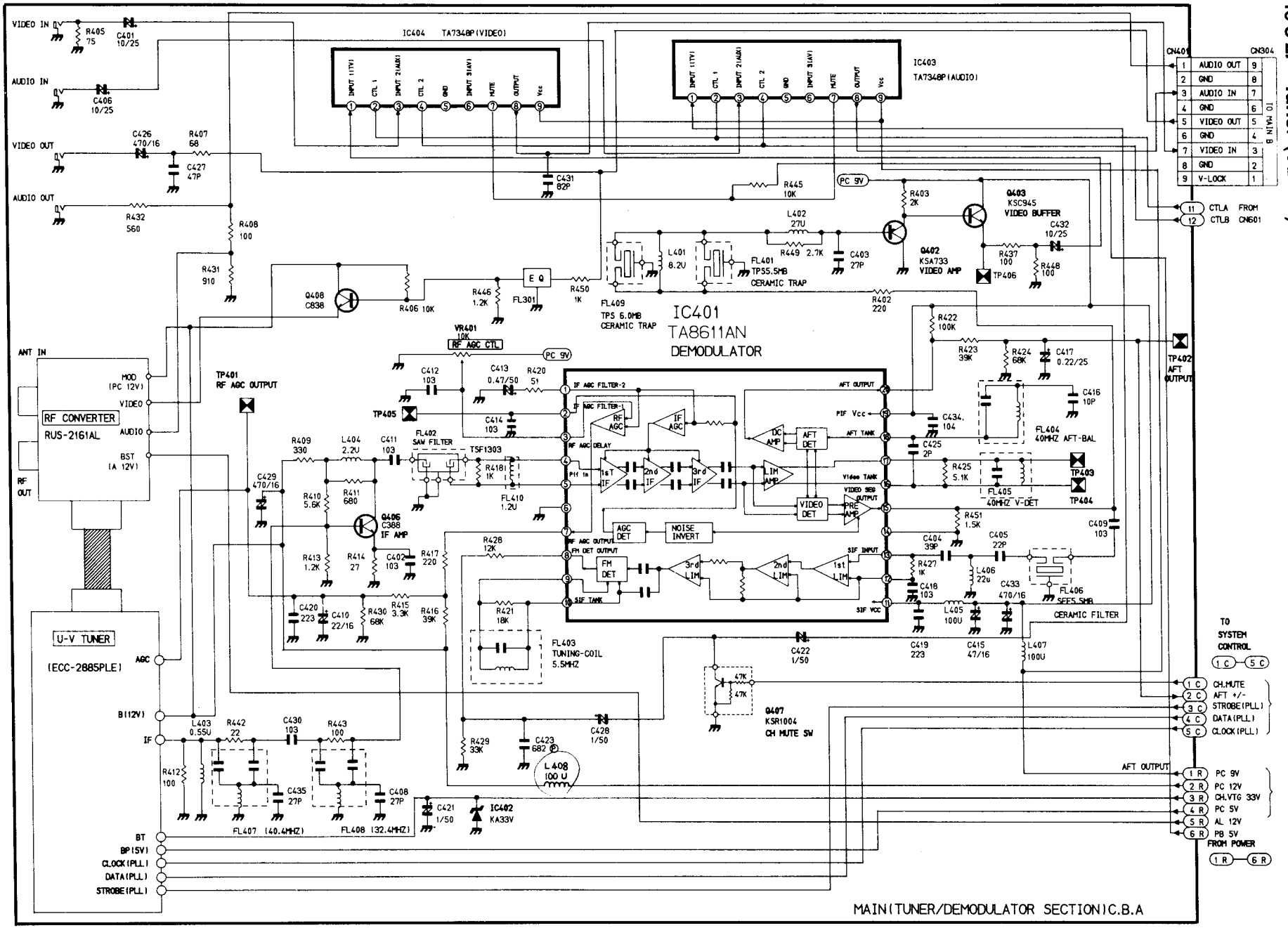
3



TP503
10V/10μsec/cm
REC


C3112 1/50
R0390 150
IC0307 TA7772
REC.FM
D0305
TP0310
CN305
DRUM
1 CH 2(-) 1
2 CH 1.2(+) 2
3 GND 3
4 CH 1 (-) 4
C3107 68P
C3106 103
C3109 82P
C3108 103
D0306
R0388 100
L3001 3.9uH
C3110 103
C3111 1/50
R0389 150
PH AMP CH1
PB AMP CH2
REC AMP CH1
REC AMP CH2
REC AMP VCC
R0396 150
C3114 223
R0395 10K
R0394 1.5K
R0393 1.5K
R0392 150
C3113 223
R0391 1K
CN303
1 SW 25HZ 1
2 REC 8V 2
3 PB 5V 3
4 GND 4
5 REC FM 5
6 GND 6
7 PB FM 7
TO MAIN B (VIDEO)
C3115 103
C3116 49/16
C3117 103
C3118 100/10
RED : PLAYBACK FM
RECORD FM


IC401
TA8611AN
DEMODULATOR
IC404 TA7348P(VIDEO)
IC403
TA7348P(AUDIO)
RF CONVERTER
RUS-2161AL
U-V TUNER
(ECC-2885PLE)
MAIN(TUNER/DEMODULATOR SECTION)C.B.A
TO SYSTEM CONTROL
FROM MAIN B
FROM POWER
CERAMIC TRAP
CERAMIC FILTER
VIDEO BUFFER
VIDEO AMP
IF AMP
CH MUTE SW
RF AGC CTL
RF AGC OUTPUT
AFT OUTPUT
FL404 40MHZ AFT-BAL
FL405 40MHZ V-DET
FL406 5FE5.5MB
FL407 (40.4MHZ)
FL408 (32.4MHZ)
FL403 TUNING-COIL 5.5MHZ



MODE / PIN NO.	STOP
PIN 1	5.8
PIN 2	5.8
PIN 3	3
PIN 4	4
PIN 5	4
PIN 6	0
PIN 7	4
PIN 8	4
PIN 9	6
PIN 10	6
PIN 11	9
PIN 12	2.4
PIN 13	2.4
PIN 14	0
PIN 15	3.8
PIN 16	6.2
PIN 17	6.2
PIN 18	4
PIN 19	9.0
PIN 20	5

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 401 STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	5.8	5.8	5.8	5.8	5.8	5.8	5.8
PIN 2	5.8	5.8	5.8	5.8	5.8	5.8	5.8
PIN 3	3	3	3	3	3	3	3
PIN 4	4	4	4	4	4	4	4
PIN 5	4	4	4	4	4	4	4
PIN 6	0	0	0	0	0	0	0
PIN 7	4	4	4	4	4	4	4
PIN 8	4	4	4	4	4	4	4
PIN 9	6	6	6	6	6	6	6
PIN 10	6	6	6	6	6	6	6
PIN 11	9	9	9	9	9	9	9
PIN 12	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 13	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 14	0	0	0	0	0	0	0
PIN 15	3.8	3.8	3.8	3.8	3.8	3.8	3.8
PIN 16	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 17	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 18	4	4	4	4	4	4	4
PIN 19	9.0	9	9	9	9	9	9
PIN 20	5	5	5	5	5	5	5

REV S. : REVERSE SEARC
FWD S.: FORWARD SEAR

MODE / PIN NO.	IC 403 STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S
PIN 1	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 2	3.8	3.8	3.8	3.8	3.8	3.8	3.8
PIN 3	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 7	0.2	0	4	0.2	0.2	4	4
PIN 8	5.4	5.4	5.4	5.4	5.4	5.4	5.4
PIN 9	9.0	9	9	9	9	9	9

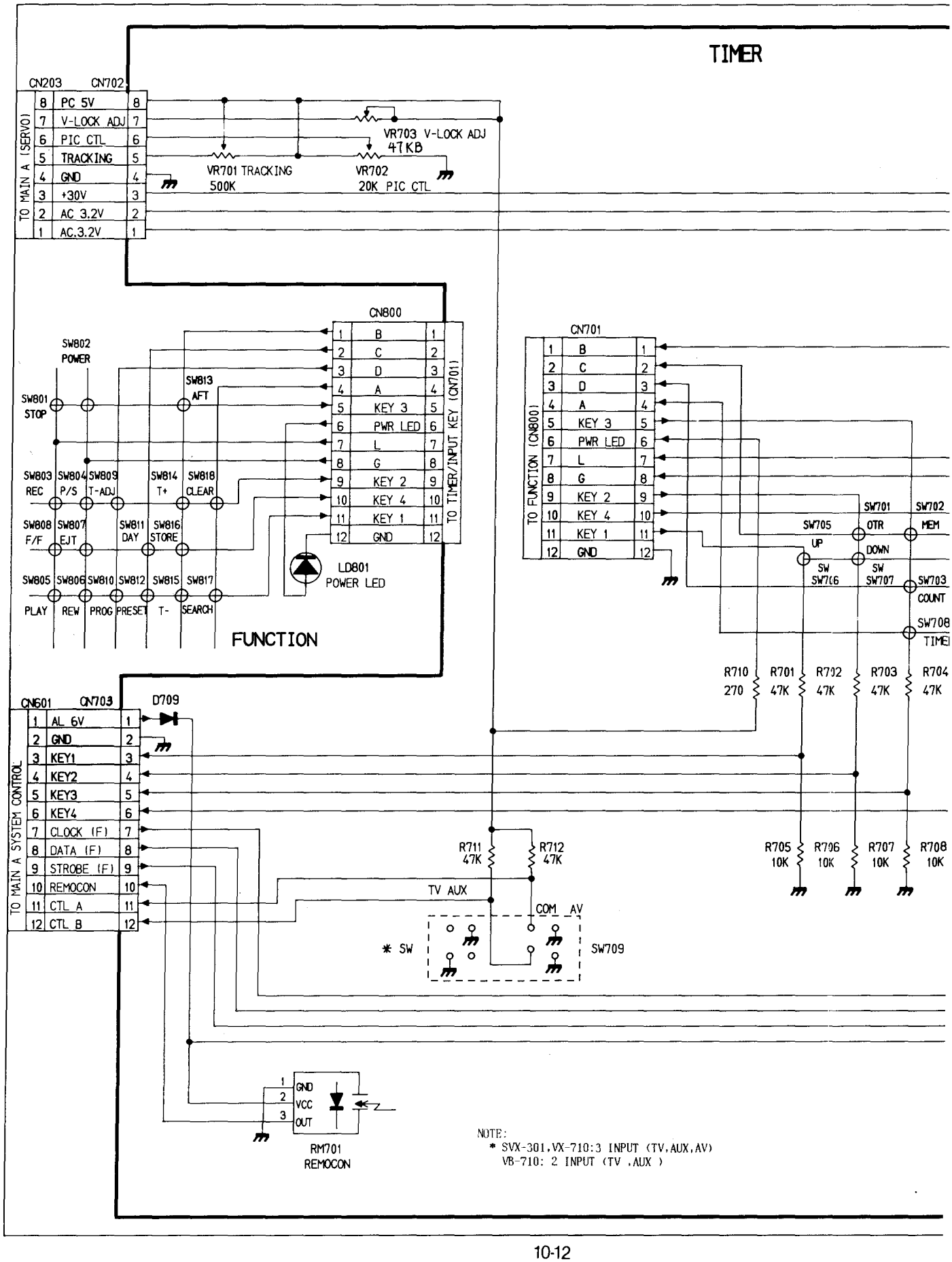
REV S. : REVERSE SEARC
FWD S.: FORWARD SEAR

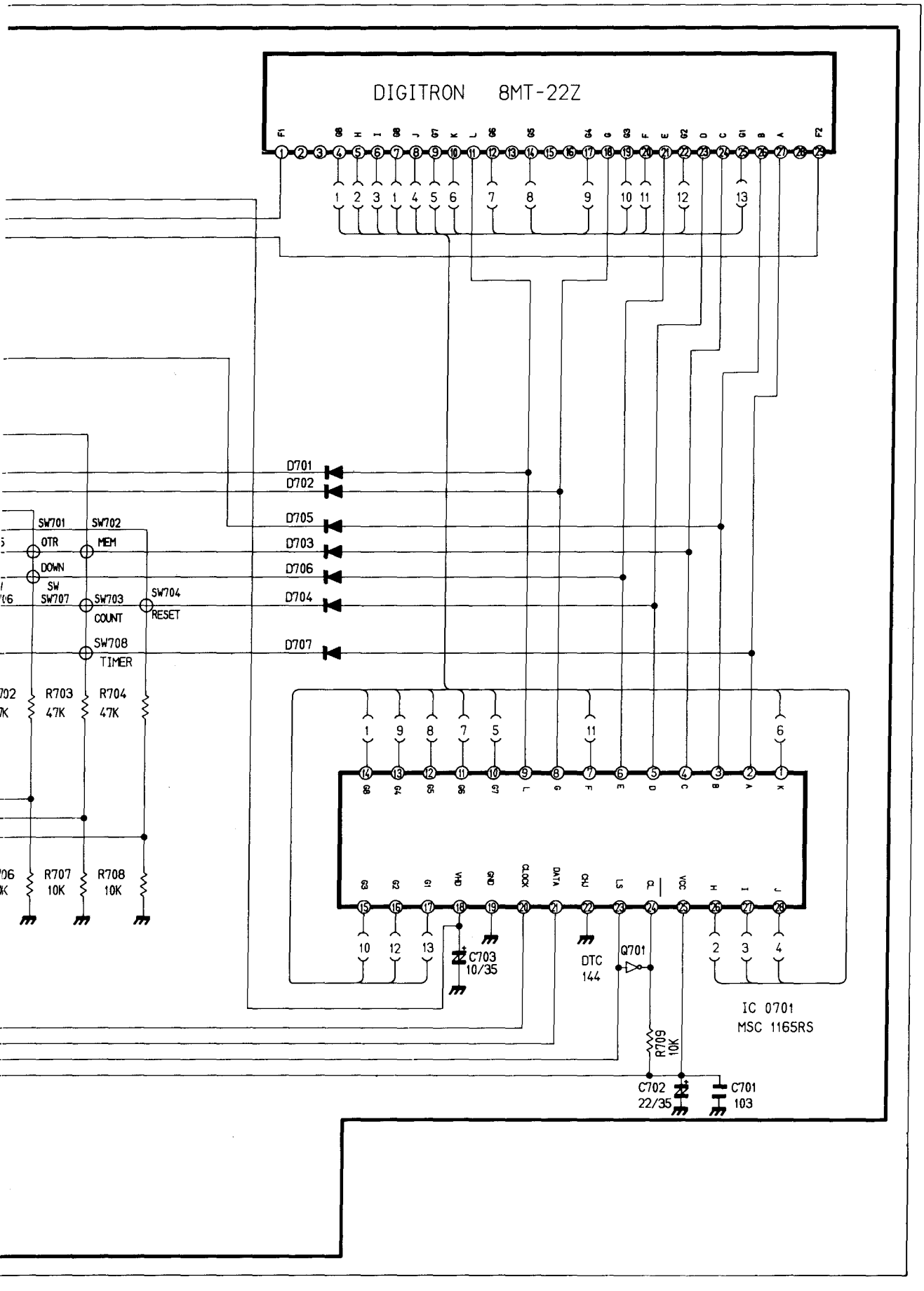
MODE / PIN NO.	IC 404 STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 2	3.8	3.8	3.8	3.8	3.8	3.8	3.8
PIN 3	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	6.2	6.2	6.2	6.2	6.2	6.2	6.2
PIN 7	0.2	0	4	0.2	0.2	4	4
PIN 8	5.6	5.6	5.6	5.6	5.6	5.6	5.6
PIN 9	9.2	9.2	9.2	9.2	9.2	9.2	9.2

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE	STOP			REC			PLAY			REW			F. FWD			REV. S			FWD. S		
TR NO.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 402	3.8	0	3.2	3.8	0	3.2	3.8	0	3.2	3.8	0	3.2	3.8	0	3.2	3.8	0	3.2	3.8	0	3.2
Q 403	3.3	9	4	3.3	9	4	3.3	9	4	3.3	9	4	3.3	9	4	3.3	9	4	3.3	9	4
Q 404	10	0	10	10	0	10	10	10	9.2	10	0	10	10	0	10	10	10	9.2	10	10	9.2
Q 405	0	10	0.2	0	10	0.2	0	0	5	0	10	0.2	0	10	0.2	0	0	5	0	0	5
Q 406	0.9	7.2	0.2	0.9	7.2	0.2	0.9	7.2	0.2	0.9	7.2	0.2	0.9	7.2	0.2	0.9	7.2	0.2	0.9	7.2	0.2
Q 407	0	2.9	0	0	2.9	0	0	2.9	0	0	2.9	0	0	2.9	0	0	2.9	0	0	2.9	0
Q 408	0.8	10	1.4	0.8	10	1.4	0.8	10	1.4	0.8	10	1.4	0.8	10	1.4	0.8	10	1.4	0.8	10	1.4

10-9 Timer/Input Key




DIGITRON 8MT-22Z
D701
D702
D705
D703
D706
D704
D707
SW701
OTR
SW702
MEM
DOWN
SW
SW707
SW703
COUNT
SW704
RESET
SW708
TIMER
R703
47K
R704
47K
R707
10K
R708
10K
R709
10K
C703
10/35
C702
22/35
C701
103
DTC
144
Q701
IC 0701
MSC 1165RS

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 701						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	30	30	30	30	30	30	30
PIN 2	30	30	30	30	30	30	30
PIN 3	30	30	30	30	30	30	30
PIN 4	30	30	30	30	30	30	30
PIN 5	30	30	30	30	30	30	30
PIN 6	30	30	30	30	30	30	30
PIN 7	30	30	30	30	30	30	30
PIN 8	30	30	30	30	30	30	30
PIN 9	30	30	30	30	30	30	30
PIN 10	30	30	30	30	30	30	30
PIN 11	30	30	30	30	30	30	30
PIN 12	30	30	30	30	30	30	30
PIN 13	30	30	30	30	30	30	30
PIN 14	30	30	30	30	30	30	30
PIN 15	30	30	30	30	30	30	30
PIN 16	30	30	30	30	30	30	30
PIN 17	30	30	30	30	30	30	30
PIN 18	31.2	31.2	31.2	31.2	31.2	31.2	31.2
PIN 19	0	0	0	0	0	0	0
PIN 20	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 21	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 22	0	0	0	0	0	0	0
PIN 23	0.5	0.5	5.0	0.5	0.5	0.5	0.5
PIN 24	5.0	5.3	5.3	5.3	5.3	5.3	5.3
PIN 25	5.3	5.3	5.3	5.3	5.3	5.3	5.3
PIN 26	30	30	30	30	30	30	30
PIN 27	30	30	30	30	30	30	30
PIN 28	30	30	30	30	30	30	30

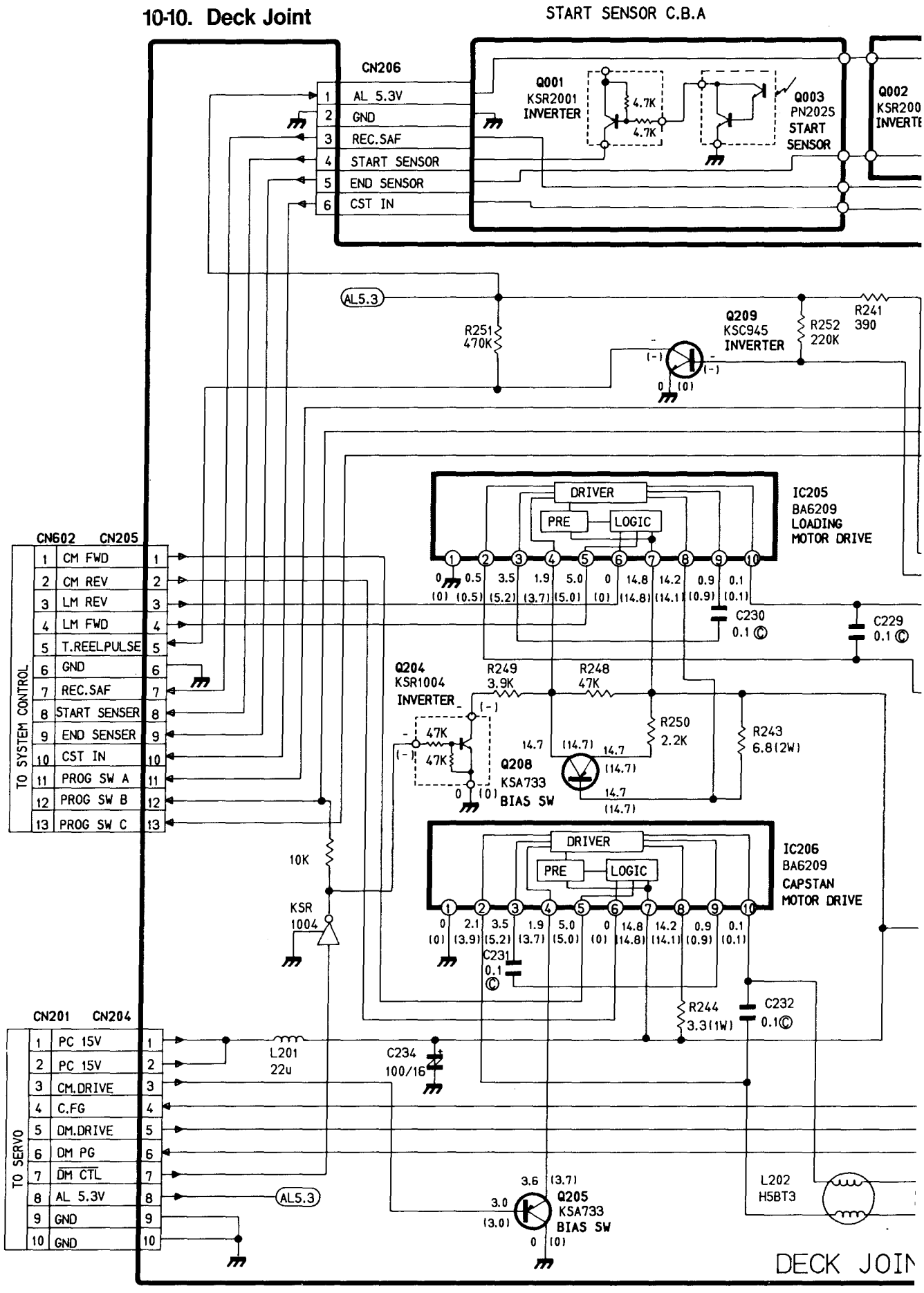
Timer/Input Key C.B.A

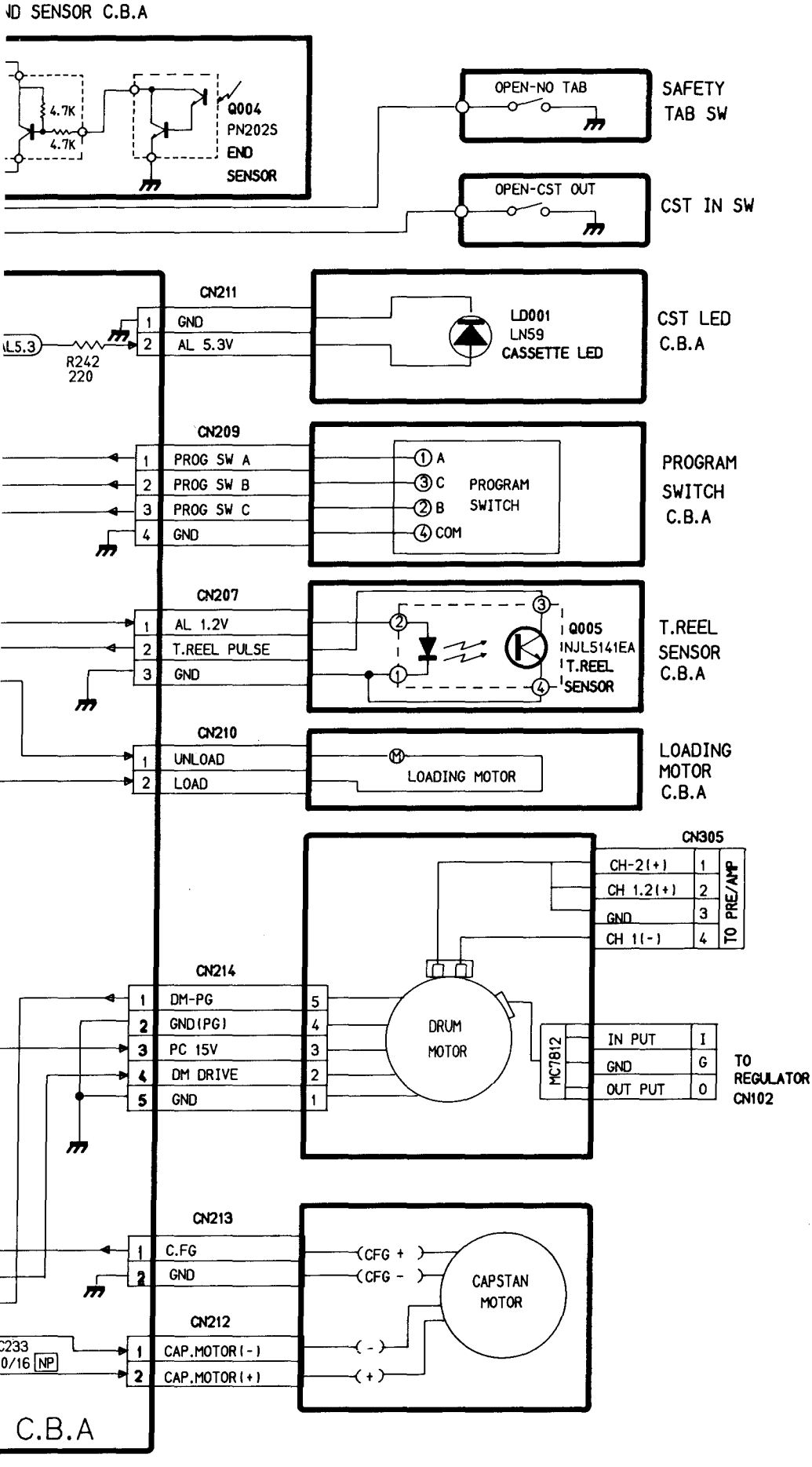
REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE	STOP			REC			PLAY			REW			F.FWD			REV S.			FWD S.		
Tr No.	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 701	0	5.0	0.5	0	5.0	0.5	0	5.0	0.5	0	5.0	0.5	0	5.0	0	0	5.0	0.5	0	5.0	0.5

Timer/Input Key C.B.A

10-10. Deck Joint





MODE
Tr No.
Q 204
Q 205
Q 208
Q 209

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 205						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PIN 3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
PIN 4	2.3	14.8	14.7	14.7	14.7	2.2	14.7
PIN 5	5.0	14.7	5.0	5.0	5.0	5.0	5.0
PIN 6	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 7	15.0	14.8	14.8	14.7	14.7	14.7	14.7
PIN 8	15.0	14.8	14.8	14.7	14.7	14.7	14.7
PIN 9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
PIN 10	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Sub Servo C.B.A

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / PIN NO.	IC 206						
	STOP	REC	PLAY	REW	F.FWD	REV S.	FWD S.
PIN 1	0	0	0	0	0	0	0
PIN 2	0.5	3.9	2.1	0.1	10.1	0.1	9.5
PIN 3	0.9	5.2	3.5	0.9	11.7	0.9	10.9
PIN 4	1.2	3.7	1.9	10.3	10.2	10.0	9.0
PIN 5	5.0	5.0	5.0	0	5.0	0	5.0
PIN 6	5.0	0	0	5.0	0	5.0	0
PIN 7	14.9	14.8	1.48	14.7	14.7	14.7	14.7
PIN 8	14.9	14.1	14.2	13.8	13.8	13.8	13.8
PIN 9	0.9	0.9	0.9	11.8	0.9	11.0	0.9
PIN 10	0.5	0.1	0.1	9.9	0.1	9.3	0.1

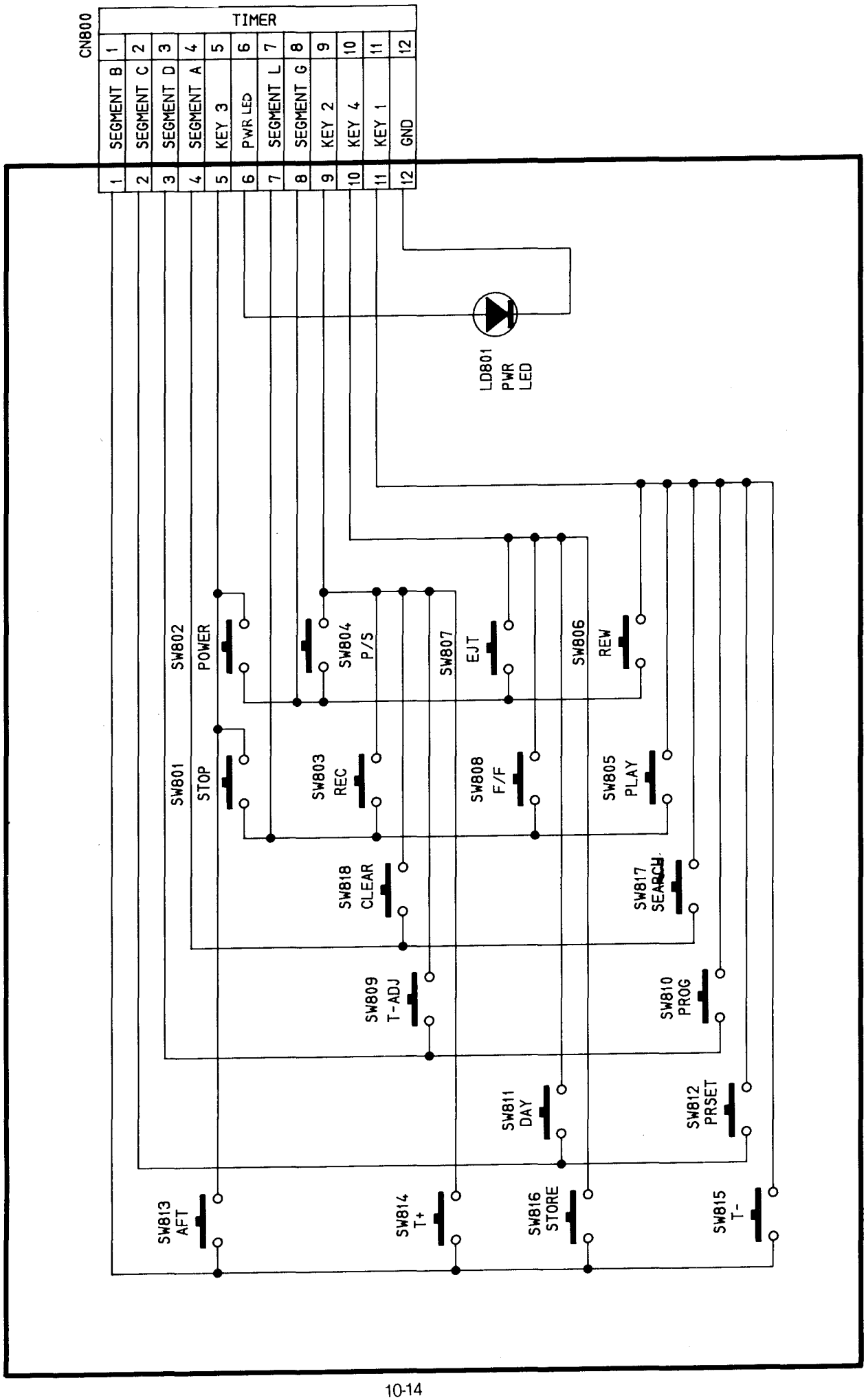
Sub Servo C.B.A

REV S. : REVERSE SEARCH
FWD S.: FORWARD SEARCH

MODE / Tr No.	STOP			REC			PLAY			REW			F.FWD			REV S.			FWD S.		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q 204	0	0	4.9	0	14.7	0	0	14.7	0	0	14.7	0	0	14.7	0	0	0	4.9	0	14.7	0
Q 205	1.0	0	12.6	3.7	0	3.0	3.6	0	3.0	8.9	0	8.3	8.8	0	8.2	9.5	0	8.7	9.3	0	8.6
Q 208	14.9	2.2	14.9	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	2.2	14.7	14.7	14.7	14.7
Q 209	0	5.1	0.1	0	–	–	0	–	–	0	–	–	0	–	–	0	–	–	0	–	–

Sub Servo C.B.A

10-11. Function Switch



10-12. Remote Control