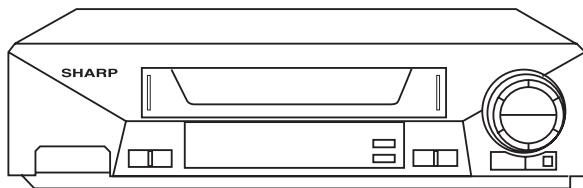


SHARP SERVICE MANUAL

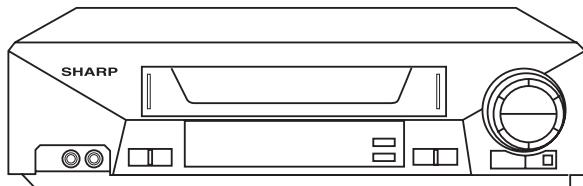
S99N9VC-A230N



(VC-A230NZ/X)



VIDEO CASSETTE RECORDER



(VC-A280NZ/X, A480NZ/X)

VC-A230NZ/X VC-A280NZ/X MODEL VC-A480NZ/X

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

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PRECAUTIONS IN PART REPLACEMENT

When servicing the unit with power on, be careful to the section marked white all over.

This is the primary power circuit which is live.

When checking the soldering side in the tape travel mode, make sure first that the tape has been loaded and then turn over the PWB with due care to the primary power circuit.

Make readjustment, if needed after replacement of part, with the mechanism and its PWB in position in the main frame.

(1) Start and end sensors: Q701 and Q702

Insert the sensor's projection deep into the upper hole of the holder. Referring to the PWB, fix the sensors tight enough.

(2) Photocoupler: IC901

Refer to the symbol on the PWB and the anode marking of the part.

(3) Cam switches A and B: D708 and D705.

Adjust the notch of the part to the white marker of the symbol on the PWB. Do not allow any looseness.

(4) Take-up and supply sensors: D711 and D712.

Be careful not to confuse the setting direction of the parts in reference to the symbols on the PWB. Do not allow any looseness.

1. SPECIFICATIONS

Format: VHS PAL/NTSC standard
Video recording system: Rotary, slant azimuth two heads helical scan system
Video signal: PAL colour or monochrome (CCIR system B/G) signals
Recording/playing time: 240 min max. with SHARP E-240 tape (PAL: SP mode)
480 min max. with SHARP E-240 tape (PAL: LP mode)
160 min max. with SHARP T-160 tape (NTSC: SP mode)
480 min max. with SHARP T-160 tape (NTSC: EP mode)
Tape width: 12.7mm
Tape speed: 23.39 mm/s (PAL: SP mode)
11.70 mm/s (PAL: LP mode)
33.35 mm/s (NTSC: SP mode)
16.67 mm/s (NTSC: LP mode) (Playback only)
11.12 mm/s (NTSC: EP mode)
Antenna: 75 ohm unbalanced
Receiving channel: VHF Channel NZ1 - NZ11, UHF Channel E21 - E69(VC-A230NZ/A280NZ/A480NZ)
VHF Channel AU0 - AU12, UHF Channel AU28 - AU69(VC-A230X/A280X/A480X)
RF converter output signal: UHF Channel E21 - E69 Adjustable preset to E3(VC-A230NZ/A280NZ/A480NZ)
UHF Channel AU28 - AU69 Adjustable preset to AU37(VC-A230X/A280X/A480X)
Power requirement: AC230V ± 15%(NZ) ,AC240V ± 10%(X) , 50Hz
Power consumption: Approx. 16W
Operating temperature: 5°C to 40°C
Storage temperature: -20°C to 55°C
Weight: Approx. 2.9 kg
Dimensions: 360 mm (W) x 256 mm (D) x 92 mm (H)

VIDEO

Input: 1.0 Vp-p, 75 ohm
Output: 1.0 Vp-p, 75 ohm
S/N ratio: 45 dB (PAL-SP)
Horizontal resolution: 250 lines (PAL-SP)
AUDIO 0 dBs = 0.775 Vrms
Input: Line -8 dBs/47k ohm
Output: Line -8 dBs/1k ohm
S/N ratio: 43 dB (SP mode)
Frequency response: 80 Hz ~ 10 kHz (SP mode)
80Hz ~ 5Hz (LP/EP mode)

Accessories included: 75 ohm coaxial cable
Operation manual
Infrared remote control
Guarantee Card
Battery

As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice.

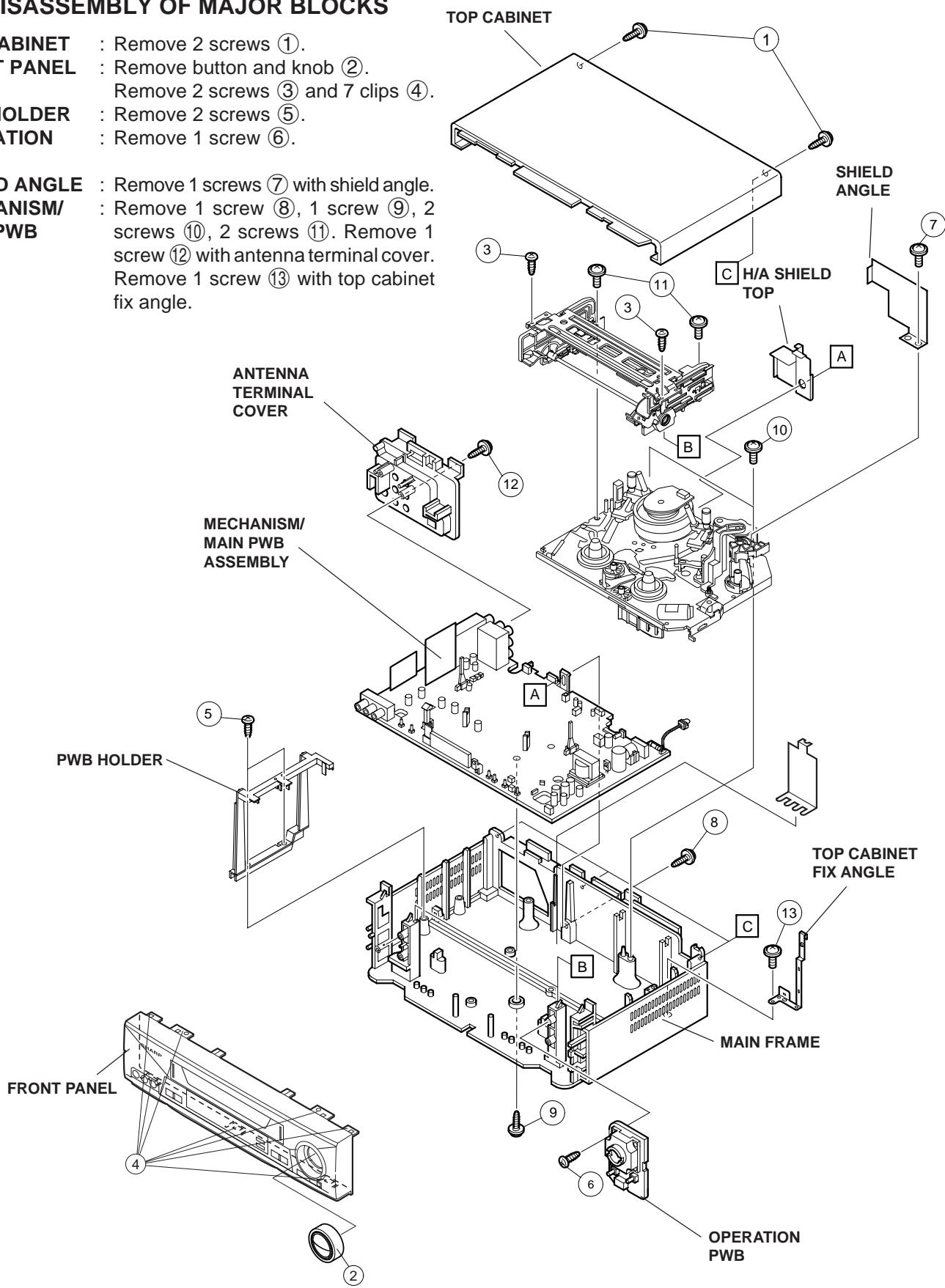
Note: The antenna must correspond to the new standard DIN 45325 (IEC 169 - 2) for combined UHF/VHF antenna with 75 ohm connector.

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

2. DISASSEMBLY AND REASSEMBLY

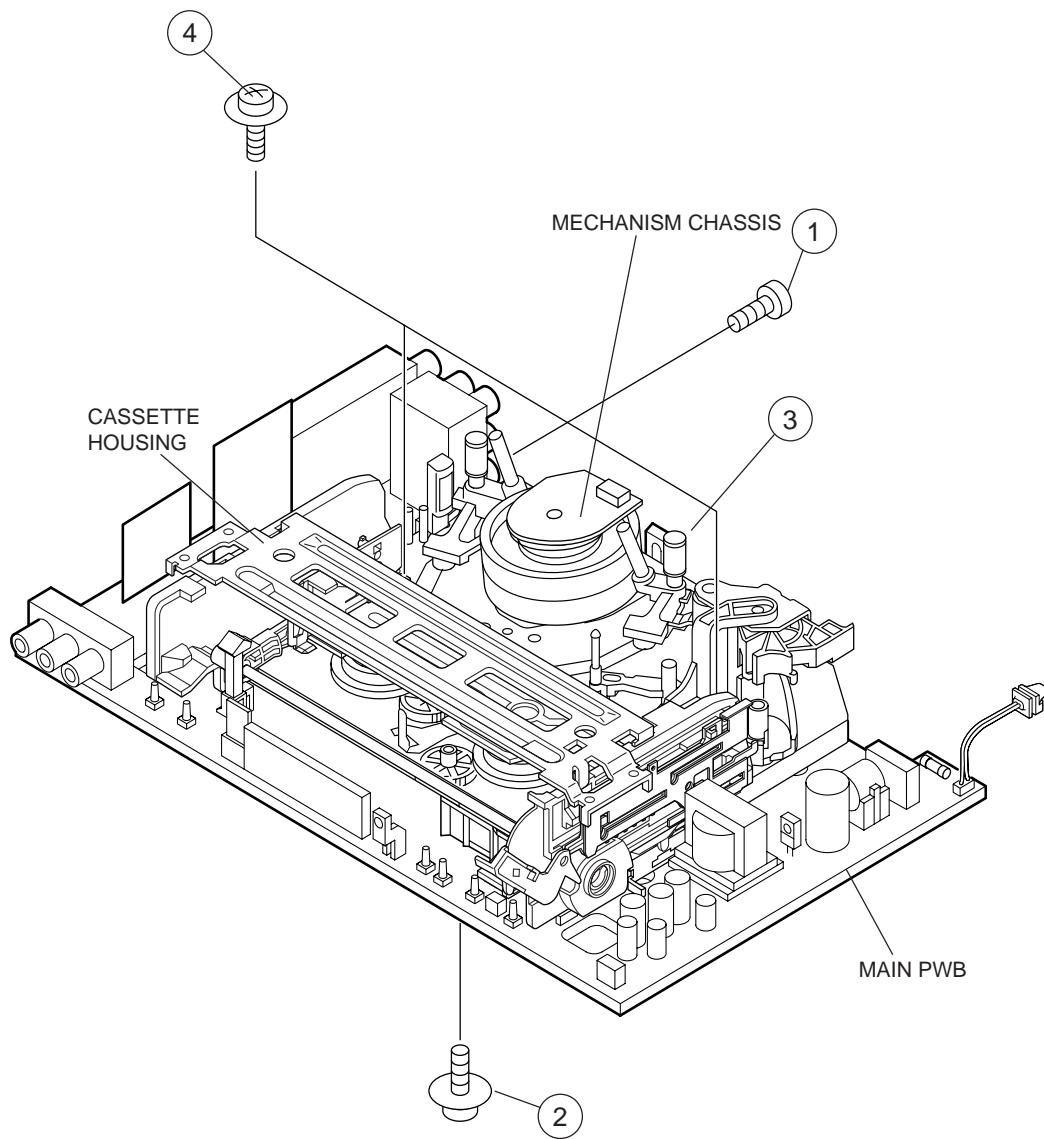
2-1 DISASSEMBLY OF MAJOR BLOCKS

- TOP CABINET** : Remove 2 screws ①.
- FRONT PANEL** : Remove button and knob ②.
Remove 2 screws ③ and 7 clips ④.
- PWB HOLDER** : Remove 2 screws ⑤.
- OPERATION PWB** : Remove 1 screw ⑥.
- PWB SHIELD ANGLE MECHANISM/ MAIN PWB** : Remove 1 screw ⑦ with shield angle.
Remove 1 screw ⑧, 1 screw ⑨, 2 screws ⑩, 2 screws ⑪. Remove 1 screw ⑫ with antenna terminal cover.
Remove 1 screw ⑬ with top cabinet fix angle.



2-2 DISASSEMBLING THE MECHANISM/MAIN PWB ASSEMBLY

1. When removing the mechanism from the main PWB, remove the antenna cover 1 screw ①, and remove the antenna cover.
Remove the PWB bottom plate 1 screw ②.
Remove the FFC cable (AA, AD, AH) ③ which connecting the PWB and the mechanism.
Take out vertically the mechanism so that it does not damage the adjacent parts.
2. Removing the mechanism and cassette housing.
Remove 2 screws ④ fixing the cassette housing to the mechanism, and remove the cassette housing.



2-3 CARES WHEN REASSEMBLING

INSTALLING THE CASSETTE HOUSING

When the cassette housing is installed on the mechanism, the initial setting is essential condition.

There are two initial setting methods, namely electrical and mechanical.

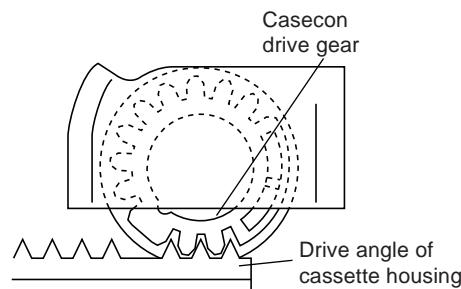
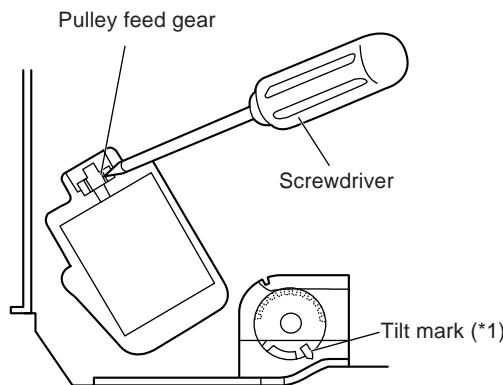
1. Electrical initial setting

So as to perform initial setting of mechanism execute the Step 1 of Installation of cassette housing. After ascertaining the return to the initial setting position (*1) install the

cassette housing. (Conditions: When mechanism and PWB have been installed)

2. Mechanical initial setting

Feed the pulley feed gear of loading motor with screw driver. After ascertaining the return to the initial set position (*1) install the cassette housing in the specified position. (This method is applied only for the mechanism.)

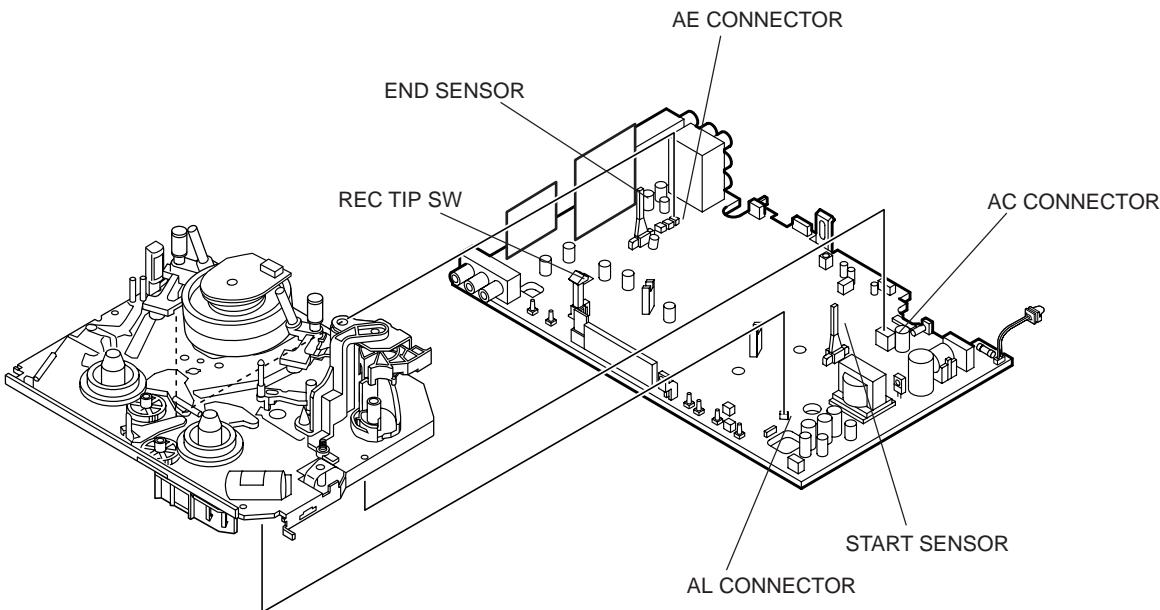


INSTALLING THE MECHANISM ON PWB

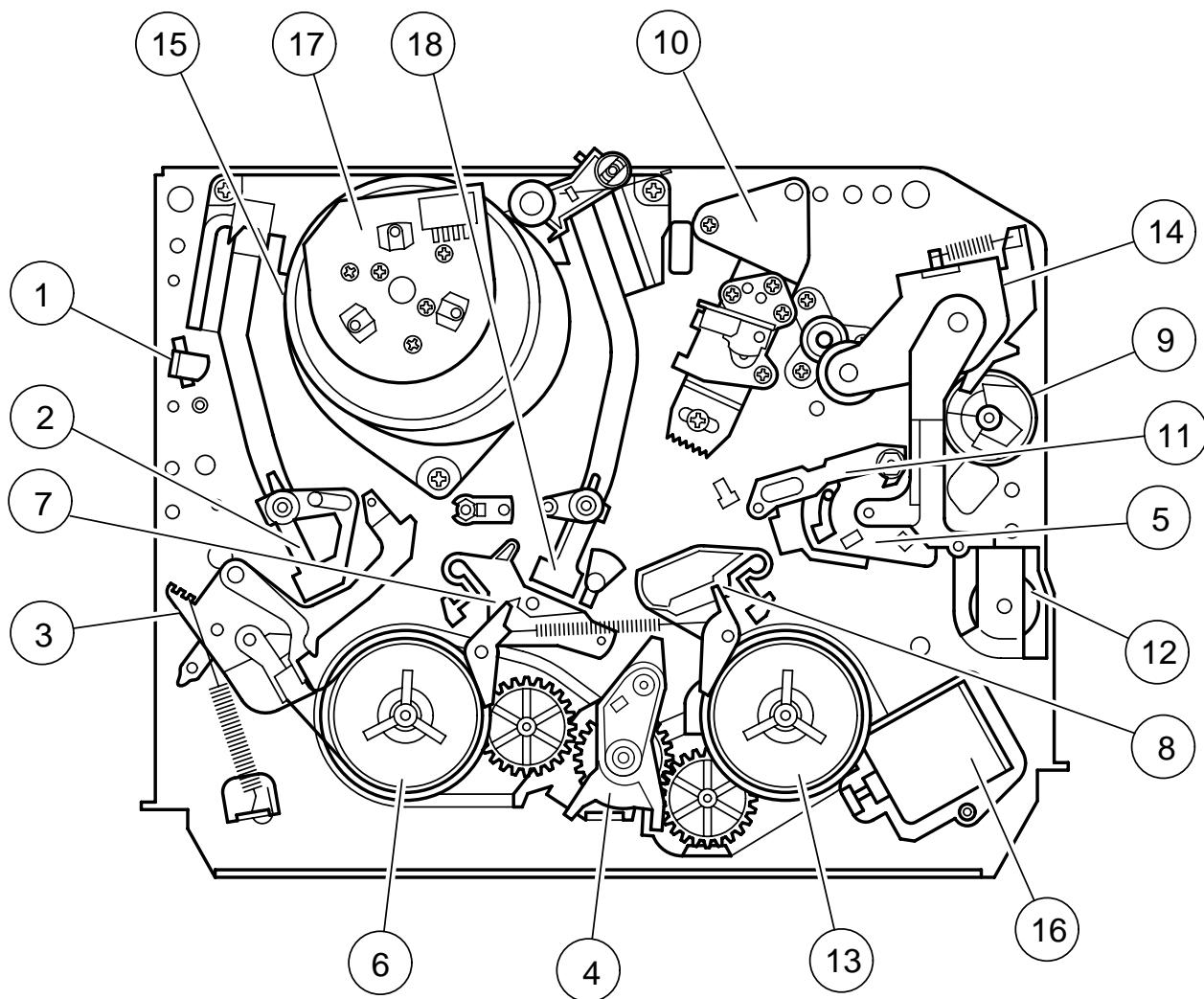
Lower vertically the mechanism, paying attention to the mechanism edge, and install the mechanism with due care so that the parts are not damaged. So as to fix the mechanism to the main PWB install two housings. (Fit the antenna cover to one of them. For other, fix the vicinity of loading motor and solder joint side of main PWB.) Connect again the FFC cable (AA-MH, AD-ME, AH-MH) between the mechanism and the main PWB.

PARTS WHICH NEED PARTICULAR CARE

When installing the mechanism chassis on the PWB unit, take care so as to prevent deformation due to contact of mechanism chassis with REC TIP SW.



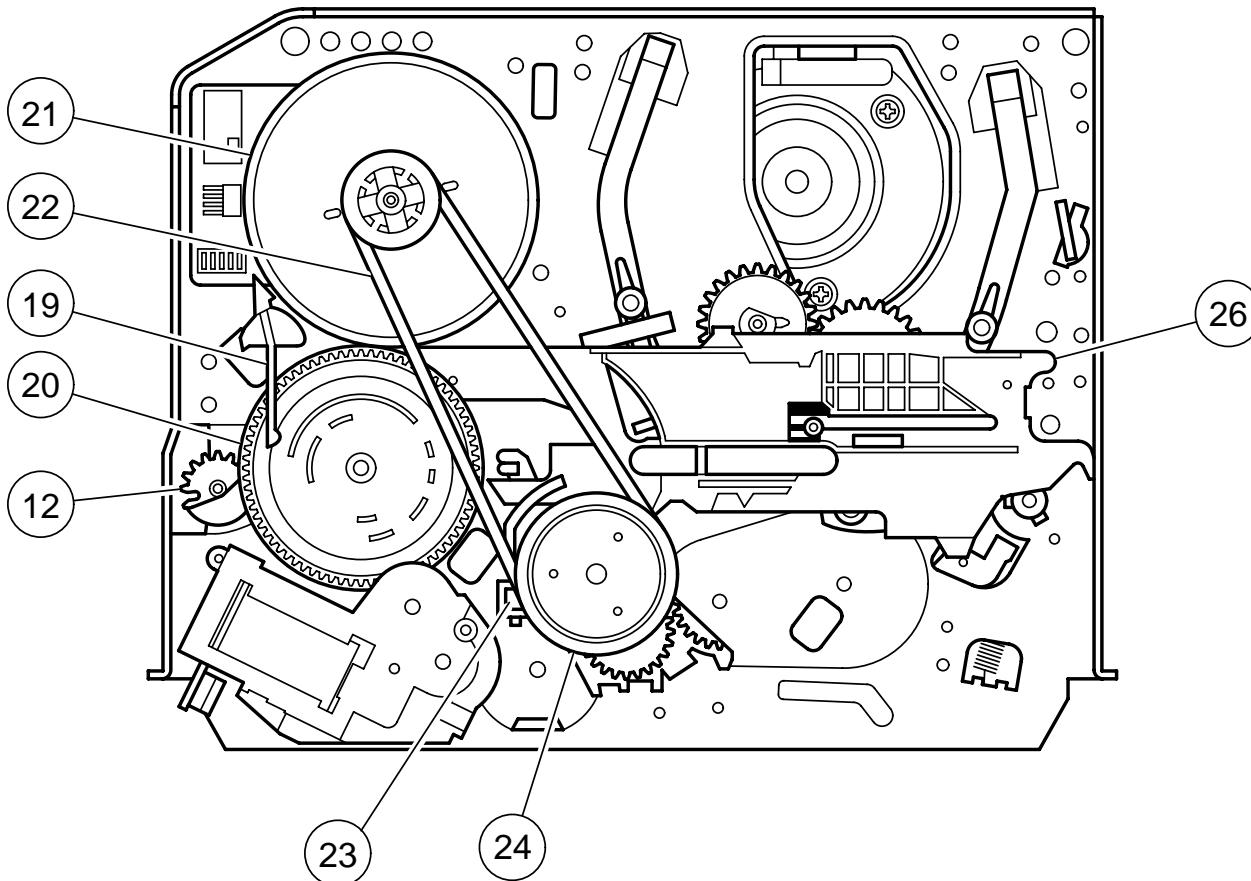
3. FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)



No.	Function	No.	Function
1	Full erase head	11	Reverse guide lever ass'y
2	Supply pole base ass'y	12	Casecon drive gear
3	Tension arm ass'y	13	Take-up reel disk
4	Idler wheel ass'y	14	Pinch roller lever ass'y
5	Pinch drive lever ass'y	15	Drum ass'y
6	Supply reel disk	16	Loading motor
7	Supply main brake ass'y	17	Drum motor
8	Take-up main brake ass'y	18	Take-up pole base ass'y
9	Pinch drive cam		
10	A/C Head ass'y		

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



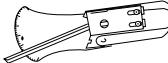
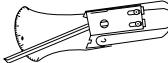
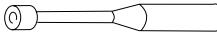
No.	Function	No.	Function
19	Slow brake	23	Clutch lever
20	Master cam	24	Limiter pulley ass'y
21	Capstan D.D. motor	12	Casecon drive gear
22	Reel belt	26	Shifter

4. ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

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

4-1 MECHANISM CONFIRMATION ADJUSTMENT JIG

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

No.	Jig Item	Part No.	Code	Configuration	Remarks
1.	Torque Cassette Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
2.	Torque Gauge	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
		JiGTG1200	CN		
3.	Torque Gauge Head	JiGTH0006	AW		
4.	Torque Driver	JiGTD1200	CB		When fixing any part to the threaded hole using resin with screw, use the jig. (Specified torque 5 kg)
5.	Master Plane Jig and Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height.
		JiGMP0001	BY		
6.	Tension Gauge	JiSGS2000	BS		There are two gauges used for the tension measurements, 300 g and 2.0kg.
		JiSGS0300	BF		
7.	Pinch pressing force measuring jig	JiGADP003	BK		This Jig is used with the tension gauge. Rotary transformer clearance adjusting jig.
9.	Reverse guide height adjusting box driver	JiGDRIVER11055	AR		This Jig is used for height adjustment of the reverse guide (for reverse guide height adjustment).
10.	Alignment Tape	VROCPSV	CK		
		VROUBZFS (VC-A230NZ/X, A280NZ/X)			
11.	Guide roller height adjustment drive	JiGDRIVERH-4	AP		This screwdriver is used for adjusting the guide roller height.
12.	X value adjustment gear type screw driver	JiGDRIVER-6	BM		For X value adjustment
13.	Reverse Guide Height Adjusting Jig	JiGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

Maintained Parts	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Sup guide shaft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Clean tape contact part with the specified cleaning liquid.
Reverse guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Slant pole on pole base	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Full erase head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	color and beating	Clean tape contact area with the specified cleaning liquid.
A/C head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	Small sound or sound distortion	
Upper and lower drum ass'y	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Poor S/N ratio, no color Poor flatness of the envelope with alignment tape	
Capstan D.D. motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No tape running, uneven color	
Pinch roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		<input type="checkbox"/>		<input type="radio"/>	No tape running, tape slack, no fast forward/rewind motion	
Tension band ass'y				<input type="radio"/>	Screen swaying	
Loading motor				<input type="radio"/>	Cassette not loaded or unloaded	
Idler ass'y				<input type="radio"/>	No tape running, tape slack	
Limiter pulley		<input type="checkbox"/> △		<input type="checkbox"/> ○		
Supply/take-up main brake levers				<input type="radio"/>	Tape slack	
AHC (Automatic Head Cleaner)		<input type="radio"/>		<input type="radio"/>		Replace the roller of the cleaner when it wears down. Just change the AHC roller assembly for new one.

NOTE : Part replacement. : Cleaning : Apply grease

<Specified> Cleaning liquid Industrial ethyl alcohol

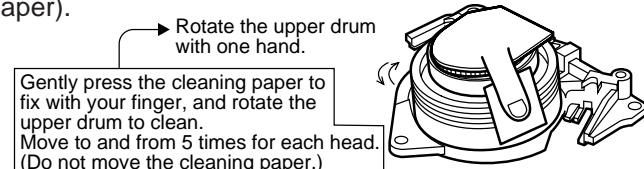
* This mechanism does not need electric adjustment with variable resistor. Check parts. If any deviation is found, clean or replace parts.

Video head cleaning procedure

1. Apply one drop of cleaning liquid to the cleaning paper with the baby oiler.
2. Gently press the cleaning paper against the video head to fix your finger, and move the upper drum so that each head is passed to and from 5 times (do not move the cleaning paper).
3. Wipe with the dry cleaning paper.

Notes :

- Use the commercially available ethanol of Class 1 as cleaning liquid.
- Since the video head may be damaged, do not move up and down the cleaning paper.
- Whenever the video head is cleaned, replace the cleaning paper.
- Do not apply this procedure for the parts other than the video head.



Parts Code	Description	Code
ZPAPRA56-001E	Cleaning Paper	AW
ZOILR-02-24TE	Babe Oiler (Spoit)	AH

REMOVING AND INSTALLING THE CASSETTE HOUSING

• Removal

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

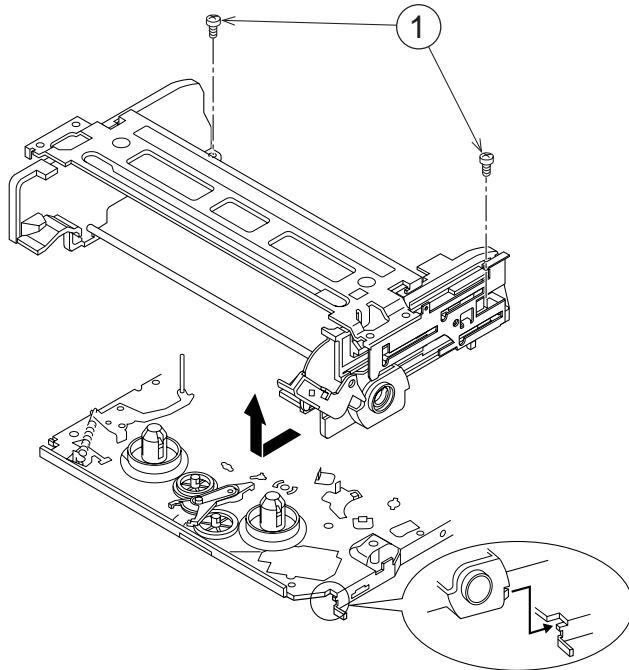


Figure 4-1.

• Reassembly

1. Before installing the cassette housing control, short-circuit TP801 provided at the center (when facing to the main PWB), press the eject button. The casecon drive gear turns and stops when the positioning mark appears. Engage two teeth of casecon drive gear with the three teeth of casecon drive angle gear, and set on the mechanism chassis as shown below.

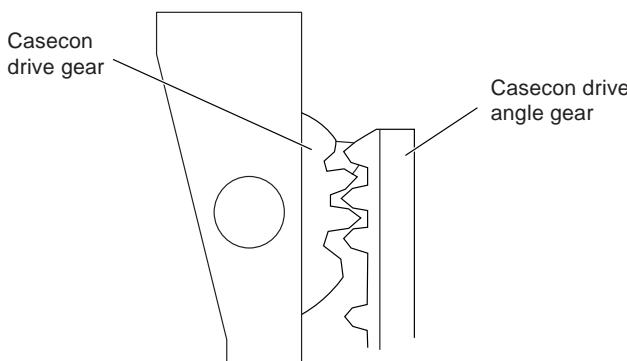


Figure 4-2.

2. Install in the reverse order of removal.

Notes:

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

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Remove the full-surface panel.
2. Short-circuit TP801.
3. Plug in the power cord.
4. Turn off the power switch.
(The pole bases move into U.L.position.)
5. Open the lid of a cassette tape by hand.
6. Hold the lid with two pieces of vinyl tape.
7. Set the cassette tape in the mechanism chassis.
8. Stabilize the cassette tape with a weight (500g) to prevent floating.
9. Turn on the power switch.
10. Perform running test.

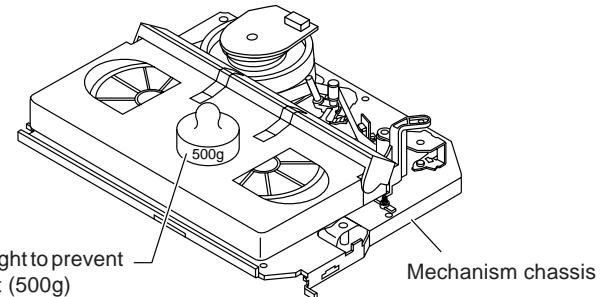


Figure 4-3.

Note:

The weight should not be more than 500g.

To take out the cassette tape.

1. Turn off the power switch.
2. Take out the cassette tape.

REEL DISK REPLACEMENT AND HEIGHT CHECK

• Removal

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

Note:

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

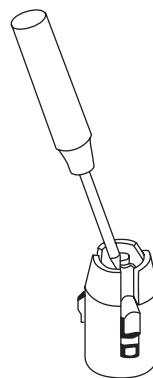
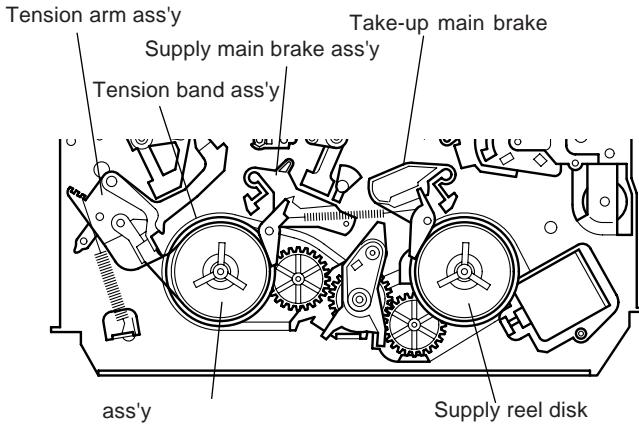


Figure 4-4.

Note:

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

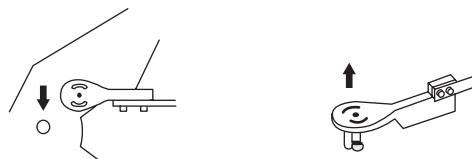


Figure 4-5.

• Reassembly (Supply reel disk)

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

4. Assemble the Supply main brake ass'y.

Notes:

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

• Reassembly (Take-up reel disk)

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

Note:

1. Take care so that the Take-up main brake ass'y is not damaged. Take care so that grease does not adhere the brake surface.
2. After reassembly, check the video search rewind back tension (see page 15), and check the brake torque (see page 17).

• Height checking and adjustment

Note:

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

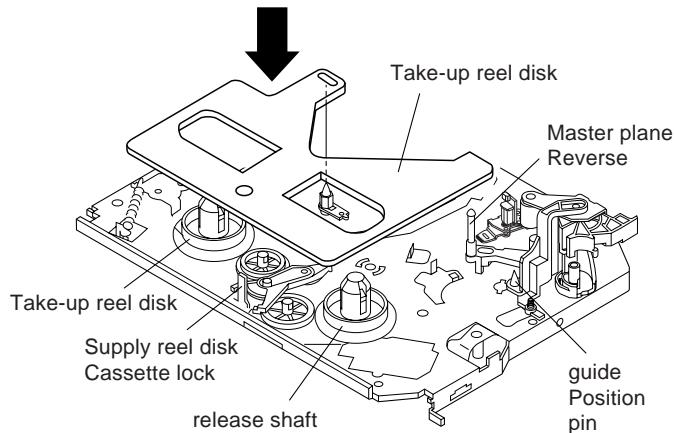


Figure 4-6.

Note:

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

Note:

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

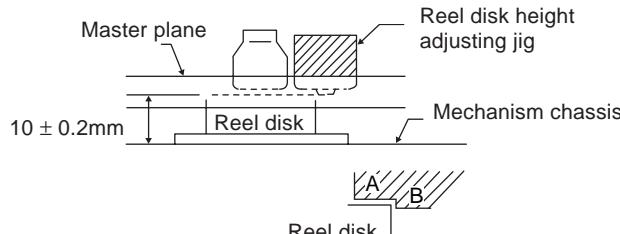


Figure 4-7.

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

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.

• Setting

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

• Checking

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

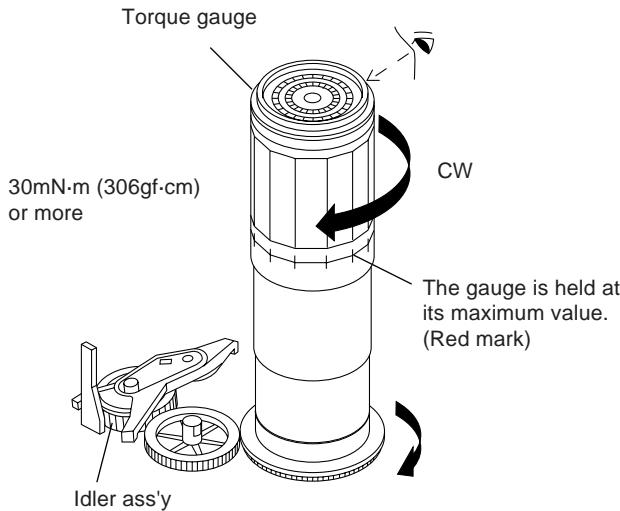


Figure 4-8.

• Adjustment

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

Notes:

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

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.

• Setting

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

• Checking

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

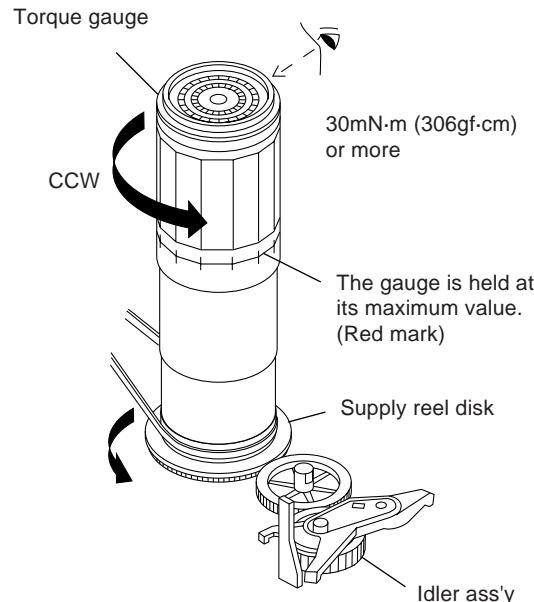


Figure 4-9.

• Adjustment

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

Notes:

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

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

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.
- Turn off the power switch.
- Open the cassette torque meter lid, and fix it with tape.
- Load the cassette torque meter into the unit.
- Put the weight (500g) on the cassette torque meter.
- Turn on the power switch.
- Press the REC button, and set LP picture record mode.

Set value LP6.9 ± 2.5mN·m (70 ± 25gf·cm)

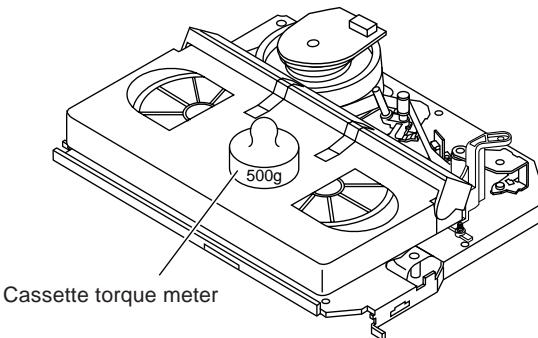


Figure 4-10.

• **Checking**

1. Make sure that value is within the setting $6.9 \pm 2.5\text{mN}\cdot\text{m}$ ($70 \pm 25\text{gf}\cdot\text{cm}$).
2. The winding-up torque fluctuates due to variation of rotation torque of limiter pulley ass'y. Read the center value of fluctuation as setting.
3. Set the LP record mode and make sure that the winding-up torque is within setting.

• **Adjustment**

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

Note:

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

When the cassette torque meter is taken out.

Turn off the power switch.

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

- Remove the cassette housing control assembly.

- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.

• **Setting**

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

• **Checking**

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

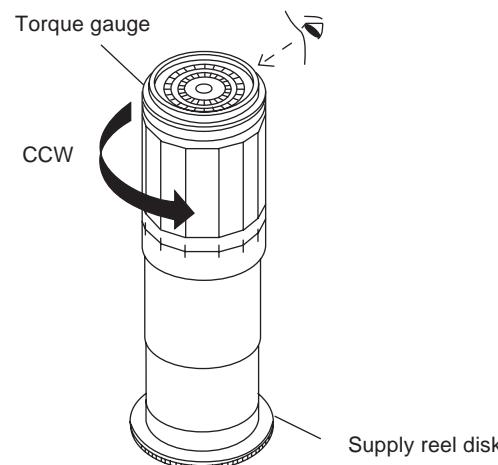


Figure 4-11.

Note:

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

• **Adjustment**

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

Note:

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

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.

• Checking

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

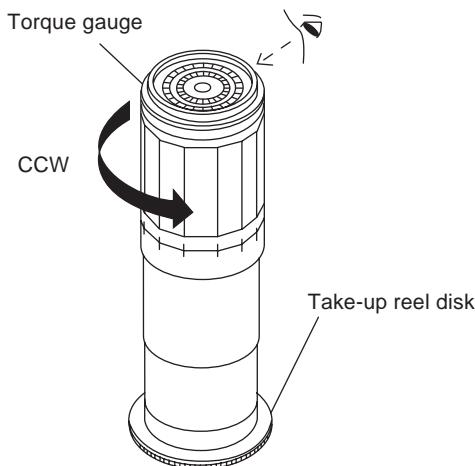


Figure 4-12.

Notes:

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

CHECKING THE PINCH ROLLER PRESSURE

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.

• Checking

Press the play button to set the playback mode.

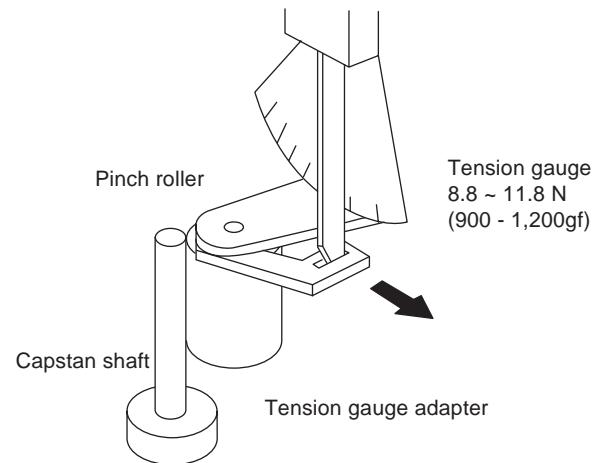


Figure 4-13.

1. Detach the pinch roller from the capstan shaft. Do not separate excessively. Or the pinch lever and pinch double action lever may disengage.
2. Engage the tension gauge adapter with the pinch roller shaft, and pull in the arrow direction.
3. Gradually return the pinch roller, and measure the pulling force when the pinch roller contacts the capstan shaft.
4. Make sure that the measured value is within setting 8.8 to 11.8 N (900 to 1,200gf).

CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- Remove the cassette housing control assembly.
 - After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.
- ### • Setting
1. Turn off the power switch.
 2. Open the cassette tape (E-180), and fix with tape.
 3. Set the cassette tape in loading state.
 4. Put the weight (500g) on the cassette tape.
 5. Turn on the power switch.
 6. Make the adjustment with the beginning of a E-180 tape.

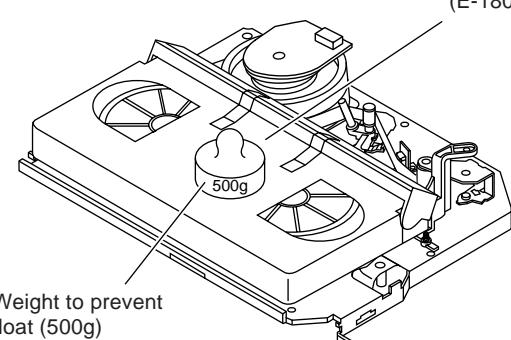


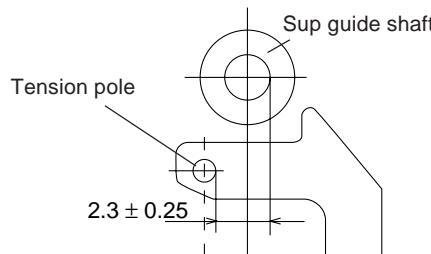
Figure 4-14.

• Checking

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

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

2. Visually check to see if the right edge of the tension pole is within the 2.3 ± 0.25 mm from the right edge of the Sup guide shaft.



Make the adjustment with the beginning of a E-180 tape.

Figure 4-15.

At left side from the center line

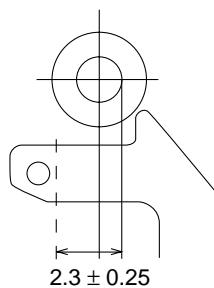


Figure 4-16.

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

At right side from the center line

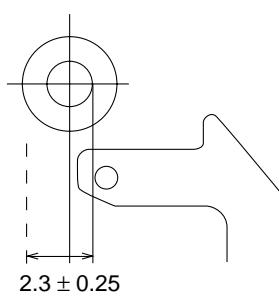


Figure 4-17.

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

Tension pole adjuster adjusting range

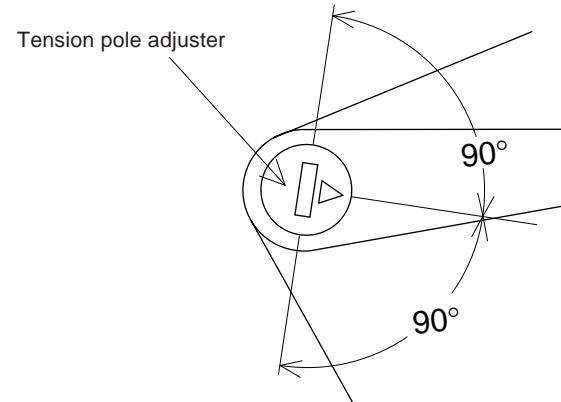


Figure 4-18.

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

CHECKING AND ADJUSTMENT OF RECORD/PLAYBACK BACK TENSION

- Remove the cassette housing control assembly.
- After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.
- Setting
 1. Turn off the power switch.
 2. Open the torque cassette meter and fix with tape.
 3. Set the cassette tape in loading state.
 4. Put the weight (500g) on the cassette torque meter.
 5. Turn on the power switch.

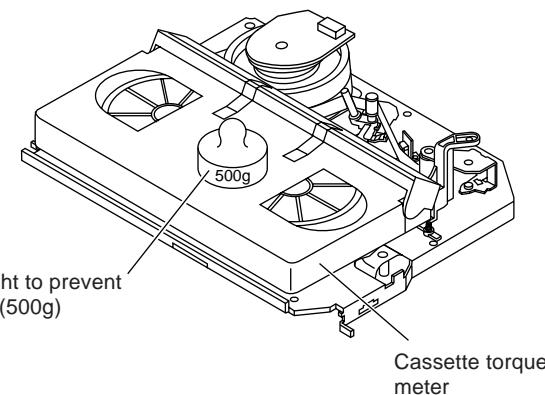


Figure 4-19.

- **Checking**

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

- **Adjustment**

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

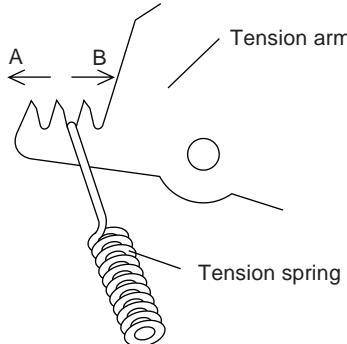
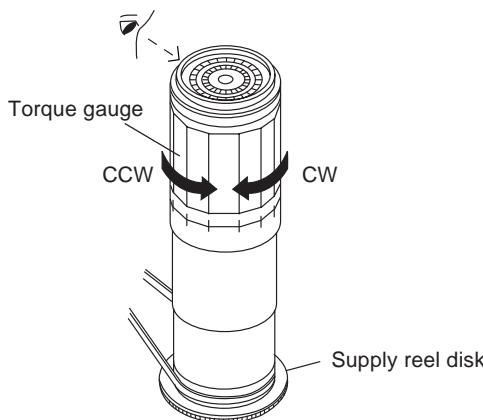


Figure 4-20.

CHECKING THE BRAKE TORQUE

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



CCW: 2.9~9.8mN·m (30~100gf·cm)
CW: 4.9~13.7mN·m (50~140gf·cm)

Figure 4-21.

- **Remove the cassette housing control assembly.**
- **After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.**

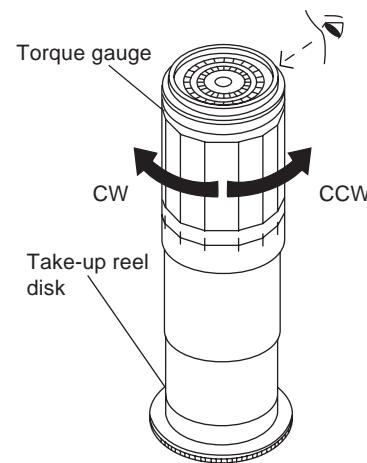
- **Setting**

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

- **Checking**

Turn the torque gauge at a rate of about one turn/2 sec in the CW direction/CCW direction with respect to the supply reel disk so that the reel disk and torque gauge pointer rotate at equal speed, and make sure that the value is within the setting (CW direction: 4.9 to 13.7mN·m (50 to 140gf·cm); CCW direction: 2.9 to 9.8mN·m (30 to 100gf·cm)).

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



CCW: 4.9~13.7mN·m (50~140gf·cm)
CW: 3.9~10.8mN·m (40~110gf·cm)

Figure 4-22.

- **Remove the cassette housing control assembly.**
- **After short-circuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.**
- **Setting**
 1. Switch from the FF mode to the STOP mode.
 2. Disconnect the power cord.
 3. Set a torque gauge to zero on the scale. Place it on the take-up reel disk.
- **Checking**
 1. Turn the torque gauge at a rate of about one turn/2 sec in the CCW direction/CW direction so that the reel disk and torque gauge pointer rotates at equal speed and make sure that the value is within the setting (CCW direction: 4.9 to 13.7mN·m (50 to 140gf·cm), CW direction: 3.9 to 10.8 mN·m (40 to 110gf·cm)).
 2. Adjustment of the brake torque at the supply side and the take-up side
 - Unless the supply side brake torque or take-up side brake torque is within the setting, clean the felt surface of reel disk (supply, take-up) brake lever, check again the brake torque.
 - If value cannot be set within the setting yet, replace the main brake ass'y or main brake spring.

REPLACEMENT OF A/C (Audio/Control) HEAD

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

• Removal

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

Notes:

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

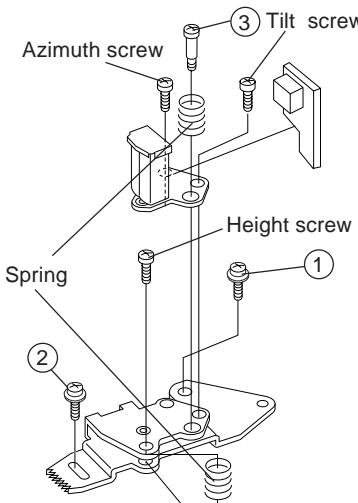


Figure 4-23.

• Replacement

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

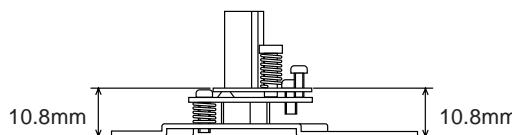
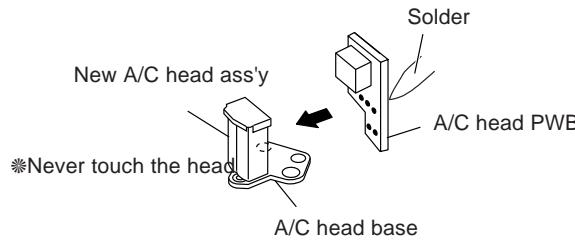


Figure 4-24.

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

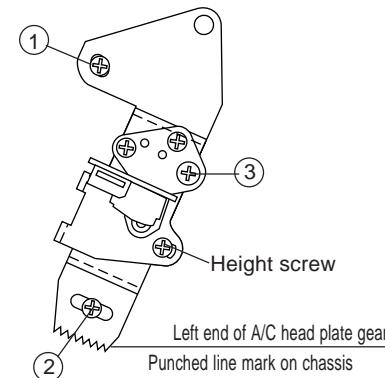


Figure 4-25.

Note:

1. If the screws ① and ② are tighten tentatively too loose, the azimuth and height of A/C head may change when they are finally tightened. Therefore care must be taken.
2. After completion of A/C head be sure to adjust tape running. (Execute the running adjustment by the method described in Page 20, 21.)

A/C HEAD HEIGHT ROUGH ADJUSTMENT

- Setting

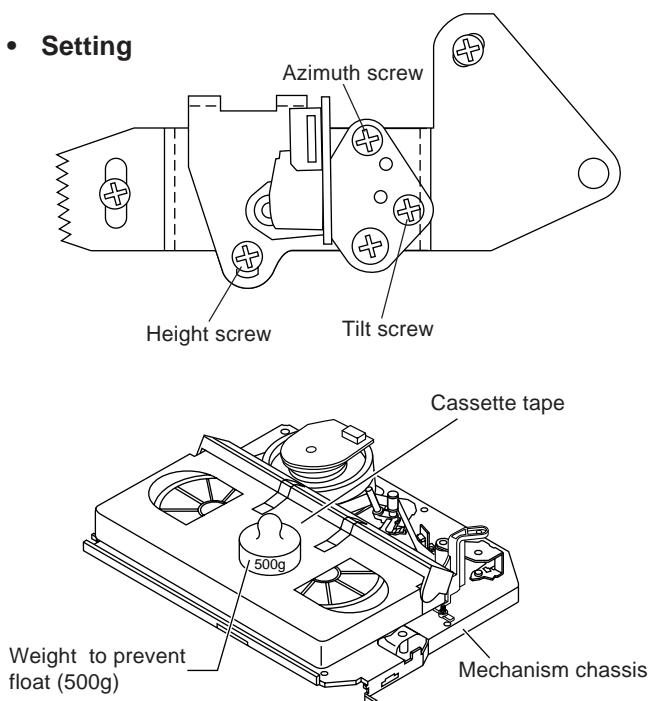


Figure 4-26.

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

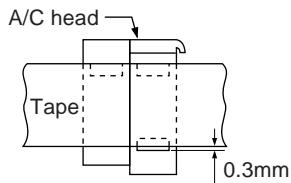


Figure 4-27.

- Adjustment

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

HEIGHT ADJUSTMENT OF REVERSE GUIDE

- Adjust the height from the mechanism chassis to the reverse guide lower flange to 13.38 mm, using the reverse guide height adjustment jig, in tape loading state. (Refer to Figure 4-28 (a) (b).)

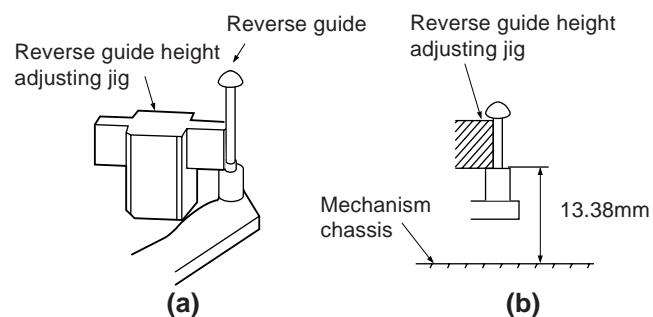


Figure 4-28.

- Rotate counterclockwise the reverse guide height adjustment nut 1/10 turn. (For height adjustment use the reverse guide height adjustment box driver (JiGDRiVER 11055)).

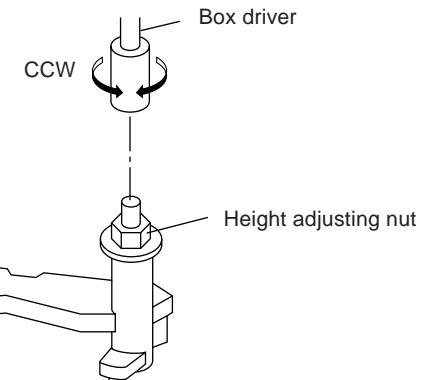
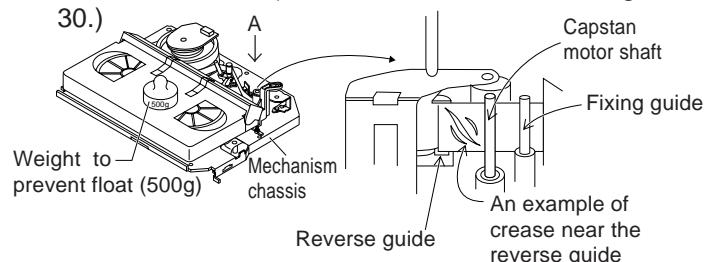


Figure 4-29.

- Set the tape, and check for tape crease near the reverse guide in the playback mode. If crease is found, turn the reverse guide adjustment nut to remove crease. (As for crease check refer to Figure 4-30.)



* Check for crease from the A direction.

Figure 4-30.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Tape run rough adjustment

- ① Remove the cassette housing control assembly.
- ② After shortcircuiting TP801 provided at the center (facing to the main PWB), plug in the power cord.
- ③ Check and adjust the position of the tension pole. (See page 15.)
- ④ Check and adjust the video search rewind back tension. (See page 15.)
- ⑤ Connect the oscilloscope to the test point for PB CHROMA envelope output (TP201). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP202).
- ⑥ Set the alignment tape (VROCPGV) to play. (Put a 500g weight on the cassette tape to prevent lift of cassette tape.)

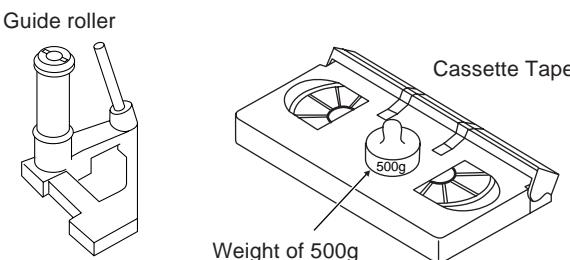


Figure 4-31.

⑦ Press the tracking button (+), (-) and change the envelope waveform from max to min and from min to max. At this time make sure that the envelope waveform changes nearly parallel.

⑧ Unless the envelope waveform changes nearly parallel, adjust the height of supply side and take-up side guide roller so that the envelope waveform changes nearly parallel. (For envelop adjustment procedure refer to Figure 4-35.)

⑨ Turn the tilt screw to remove the tape crease at the fixing guide flange.

Playback the tape and check for tape crease at the fixing guide flange.

(1) If there is no tape crease

Turn the tilt screw clockwise so that tape crease appears once at the flange, and then return the tilt screw so that the crease disappears.

(2) If there is tape crease

Turn counterclockwise the tilt screw so that the tape crease disappears.

(Reference) If the tilt screw is turned clockwise crease appears at the lower flange.

Notes:

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



Figure 4-32.

2. Adjustment of A/C head height and azimuth

- ① Perform the initial setting of A/C head position by the method stated in "Page 18 Replacement 3".
- ② Connect the oscilloscope to the audio output terminal.
- ③ Using the alignment tape in which 1 kHz linear audio signal has been recorded, adjust the height screw so as to get max audio output.
- ④ Using the alignment tape in which 6 kHz linear audio signal has been recorded, adjust the azimuth screw so as to get max audio output.
- ⑤ Repeat the above adjustment steps ③ and ④ a couple of times. Finally take the step ④ again.

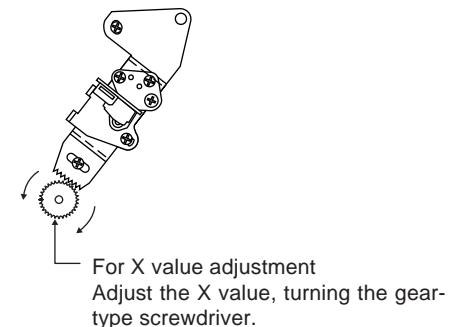


Figure 4-33.

3. Tape run adjustment

- ① Connect the oscilloscope to PB CHROMA envelope output test point, set oscilloscope sync to EXT, trigger-input the PB CHROMA signal (head switching pulse).

② Rough adjustment of X value

Tentatively fix A/C head arm screws ① and ② by the method described in Page 18 "Replacement 3".

Playback the alignment tape (Use VROUBZFS for VC-A230NZ/X,A280NZ/X) and shortcircuit TP802. As a result the auto-tracking is automatically cancelled, so that the X value adjustment mode is set. Move the A/C head with the X value adjustment gear driver (JiGDRiVER-6) by the method shown in Figure 4-33, and adjust the A/C head so as to get the maximum envelope waveform. (Note: When the A/C head is adjusted, adjust so that the maximum envelop waveform is obtained nearest the position of initial setting made in Page 18.)

- ③ Next, press the tracking button (+), (-) and change the envelope waveform from max to min and from min to max. At this time adjust the height of supply and take-up side guide roller with the adjustment driver (JIGDRIVERH-4) so that the envelope waveform changes nearly parallel.
- ④ If the tape is lifted or sunk from the helical lead surface, the PB CHROMA envelope waveform appears as shown in Figure 4-35.
- ⑤ Press the tracking button (+), (-) and make sure that the envelope waveform changes nearly parallel.
- ⑥ Finally check tape crease near the reverse guide. If tape crease is found, remove it as stated in Page 19 "HEIGHT ADJUSTMENT OF REVERSE GUIDE" item 3.

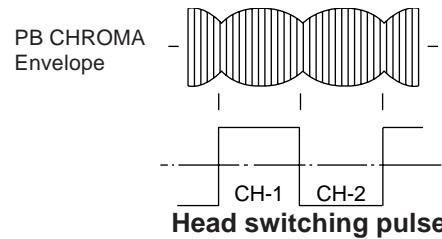


Figure 4-34.

4. A/C head X value adjustment

- ① Tentatively fix A/C head arm screws ① and ② by the method described in Page 18 "Replacement 3".
- ② Playback the alignment tape (Use the VROUBZFS for VC-A230NZ/X,A280NZ/X) and shortcircuit TP802. As a result the auto-tracking is automatically cancelled, so that the X value adjustment mode is set.
- ③ Move the A/C head with the X value adjustment gear

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

Figure 4-35.

driver by the method shown in Figure 4-33, and adjust the A/C head so as to get the maximum envelope waveform. (Note: At this time adjust so as to get the maximum envelope waveform nearest the A/C head position which has been set in case of X value rough adjustment as stated in Page 20, 3- ②.)

- ④ Tighten finally the screws ① and ②. Be sure to tighten at first the screw ① and then the screw ②. Final tightening torque is 0.6N·m (If the screw ② is tightened first, the X value may deviate.)
- ⑤ Adjust the playback switching point (Refer to the electric adjustment method.)
- ⑥ Playback the self-picture-recorded tape, and check the flatness of envelope waveform and sound.

Notes:

When the A/C head X value adjustment is performed, be sure to perform at first X value rough adjustment (refer to Page 20, 3-②).

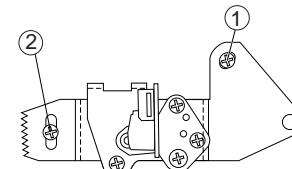


Figure 4-36.

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

- Remove the mechanism from the main PWB (refer to Page 5 item 1. When removing the mechanism from the main PWB").

• Removal (Follow the order of indicated numbers.)

- Remove the reel belt ①.
- Remove the three screws ②.

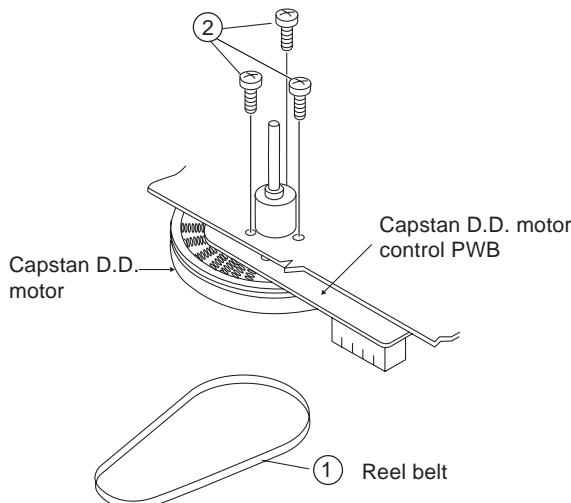


Figure 4-37.

• Reassembly

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

Notes:

- After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
- Set the tape, and check for the tape crease near the reverse guide in the playback mode. Adjust the A/C head and azimuth as stated in Page 20 Replacement 2. If crease is found, adjust as stated in Page 19 "HEIGHT ADJUSTMENT OF REVERSE GUIDE".

REPLACEMENT OF DRUM D.D. MOTOR

- Set the ejection mode.
- Withdraw the main power plug from the socket.

• Removal (Perform in numerical order.)

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

Notes:

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

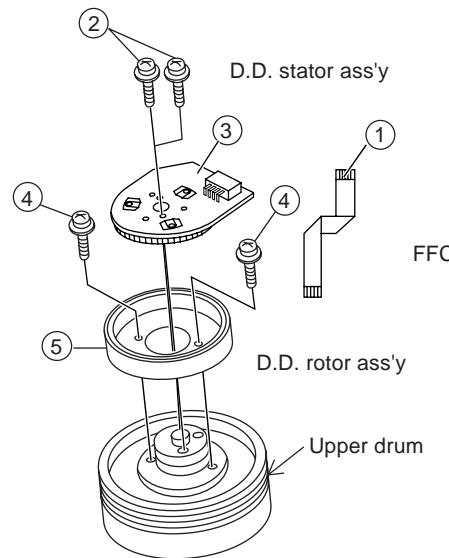


Figure 4-38.

REPLACING THE UPPER AND LOWER DRUM ASSEMBLY

- Replacement (Perform in the numerical order)

- ① Remove the motor as stated in Page 22 D.D. motor replacement.
- ② Remove the drum earth brush ass'y ②.
- ③ Remove the drum base ③ from the upper and lower drum assembly ①.

[Cares when replacing the drum]

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

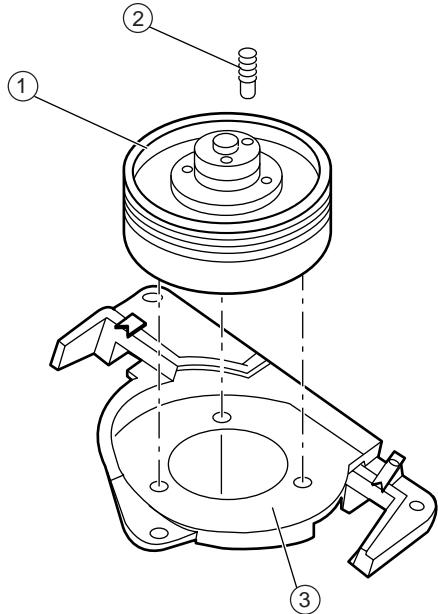


Figure 4-39.

ASSEMBLING OF PHASE MATCHING MECHANISM COMPONENTS

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

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

• Pinch drive cam and pinch roller assembling method.

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

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

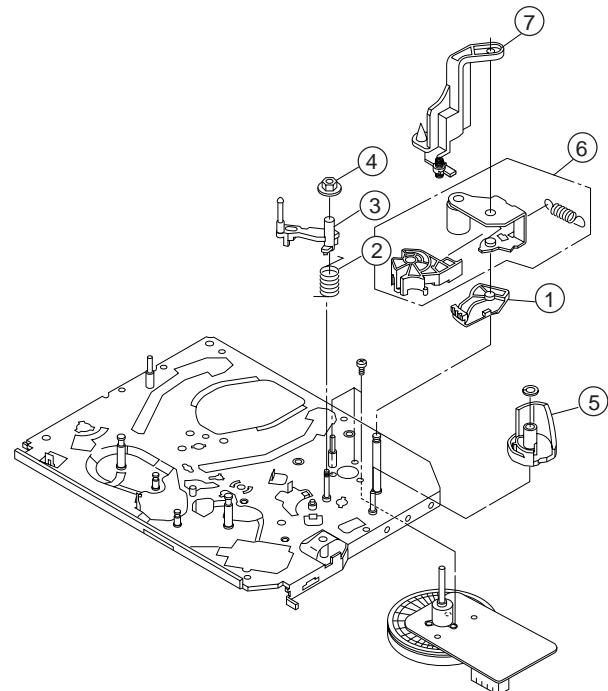
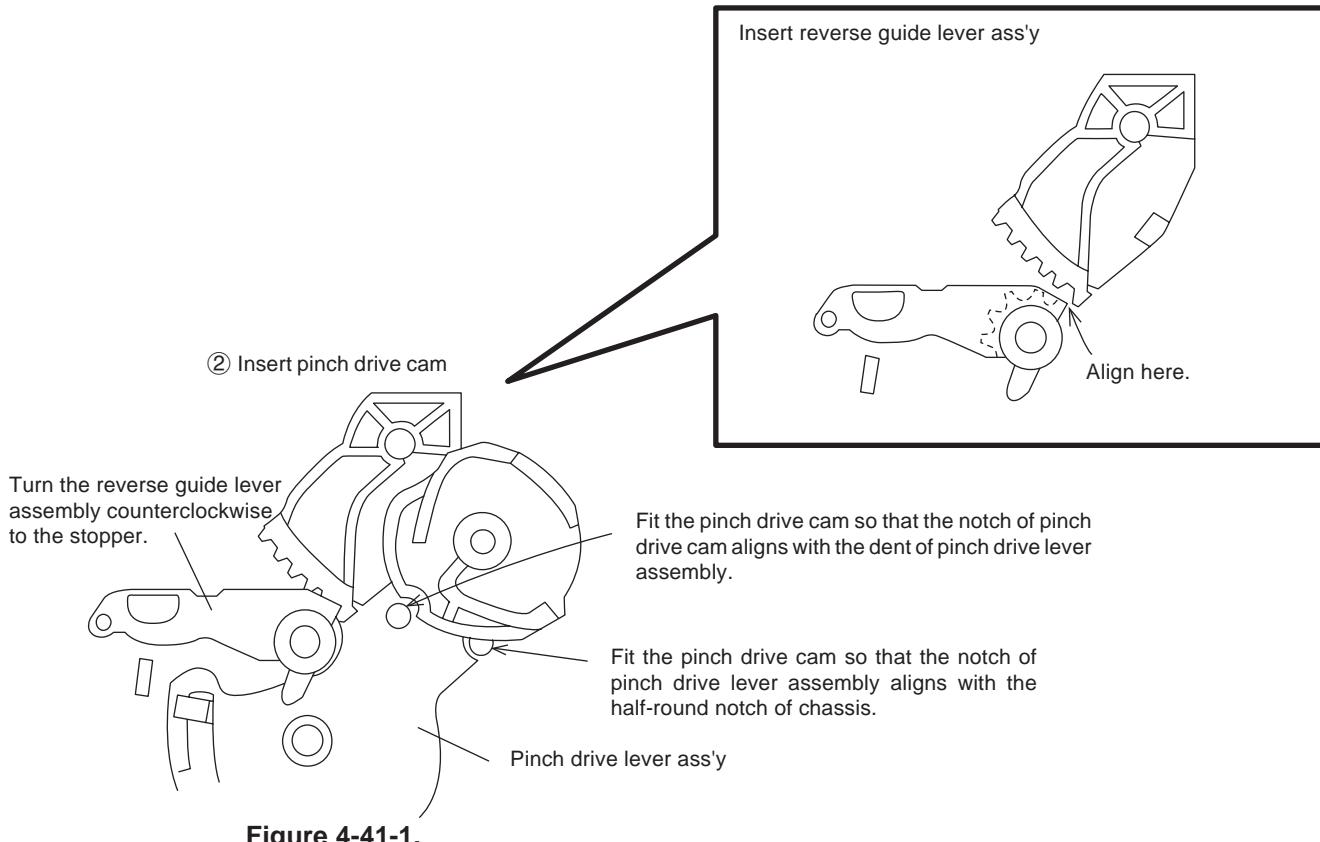


Figure 4-40.

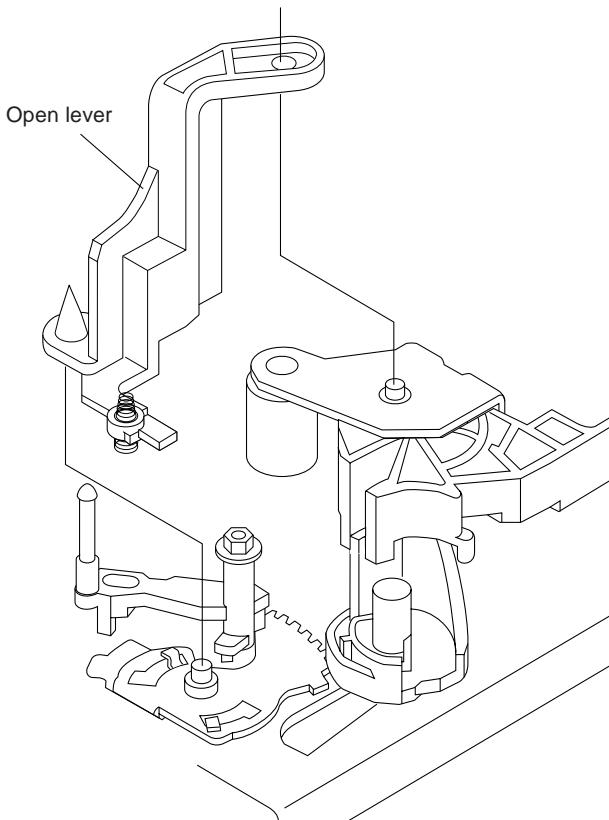
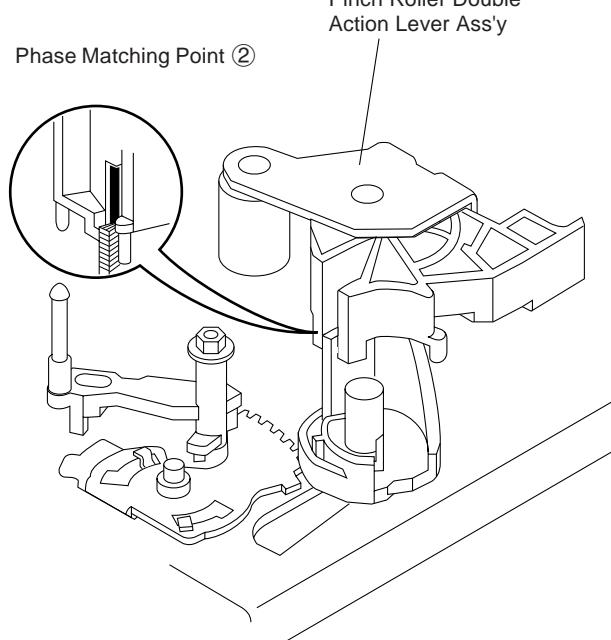
VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

① Insert Reverse Guide Lever Ass'y

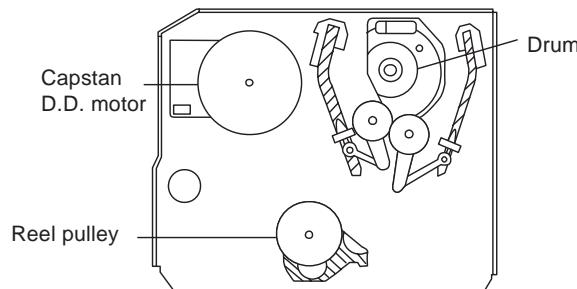


② Insert Pinch Roller/Pinch Double Action Lever Ass'y.

③ Insert Open Lever.



INSTALLING THE SHIFTER



(Bottom side of mechanism chassis)

Figure 4-42.

1. Make sure that the loading gear is at the PHASE-MATCHING point ① as shown below.
2. Install, paying attention to insert point ⑤ and release point ③.
3. For the phase matching at the insert point ①, see the PHASE-MATCHING point ② as shown below.
4. Finally fix the inserts ① and ④.

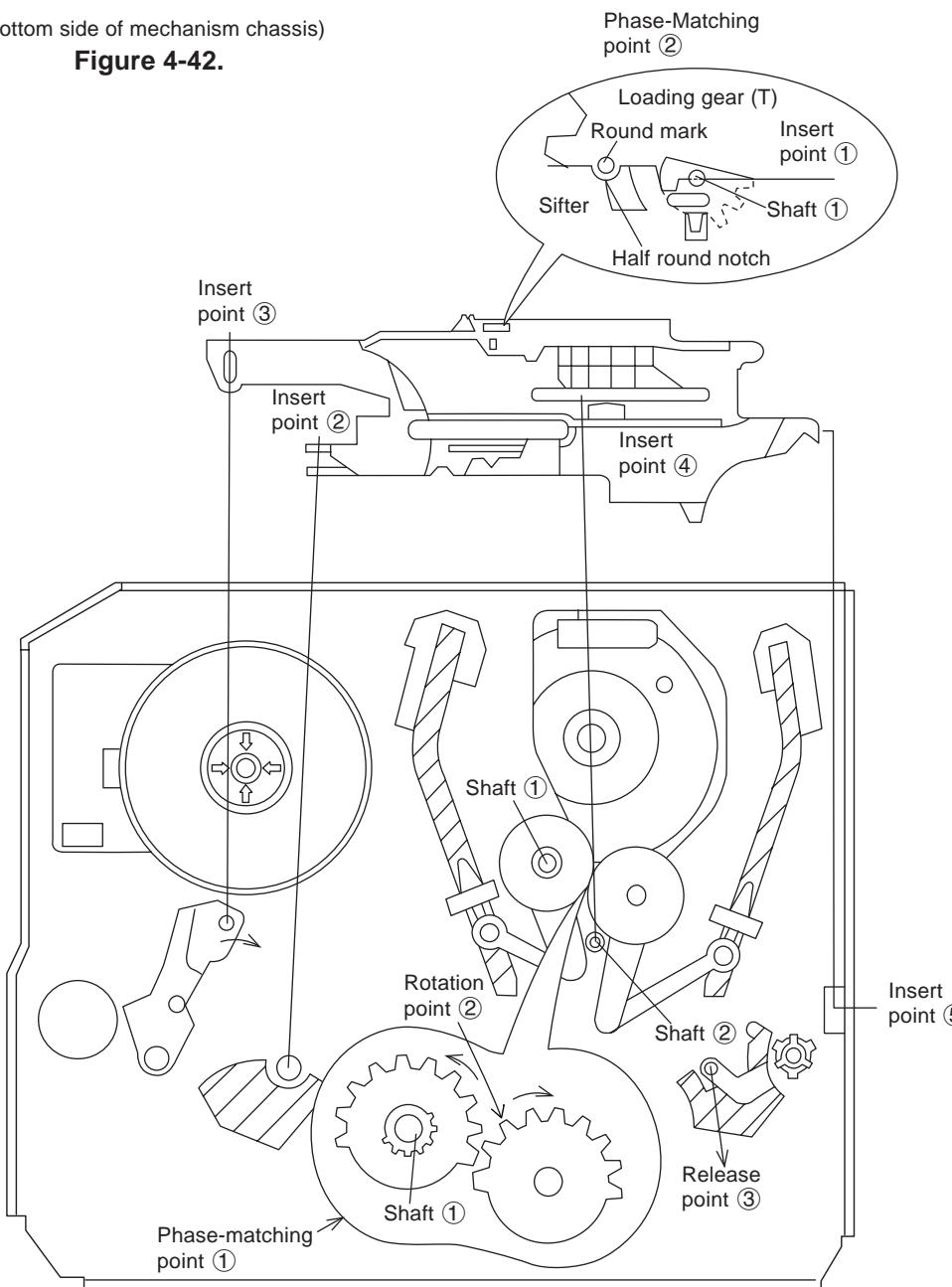


Figure 4-43.

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

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

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

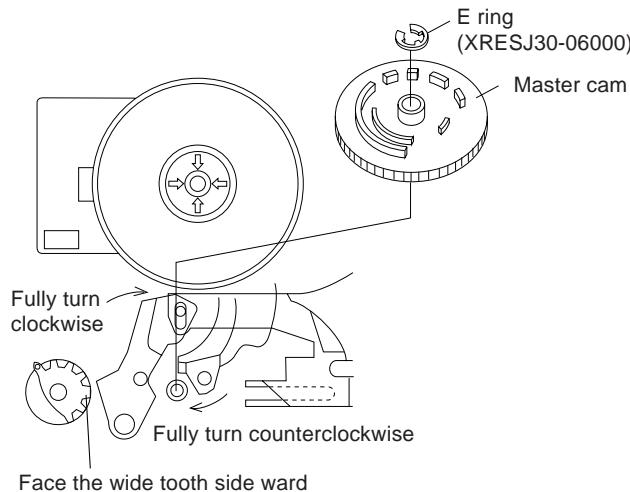


Figure 4-44-1.

Note:

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

3. Finally fix with the E ring.

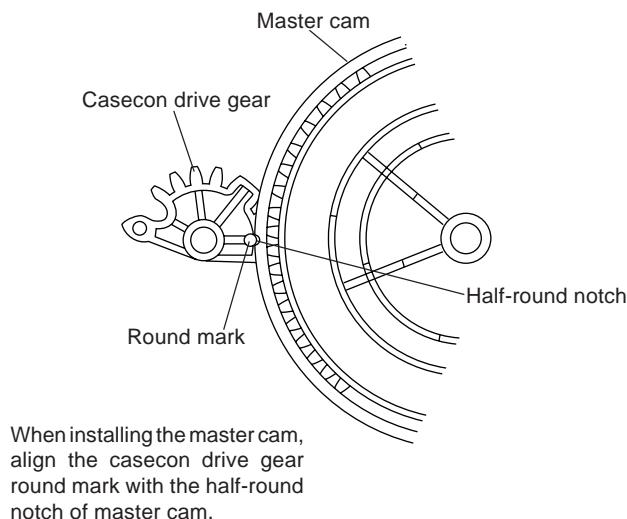


Figure 4-44-2.

REPLACEMENT OF LOADING MOTOR

- Removal

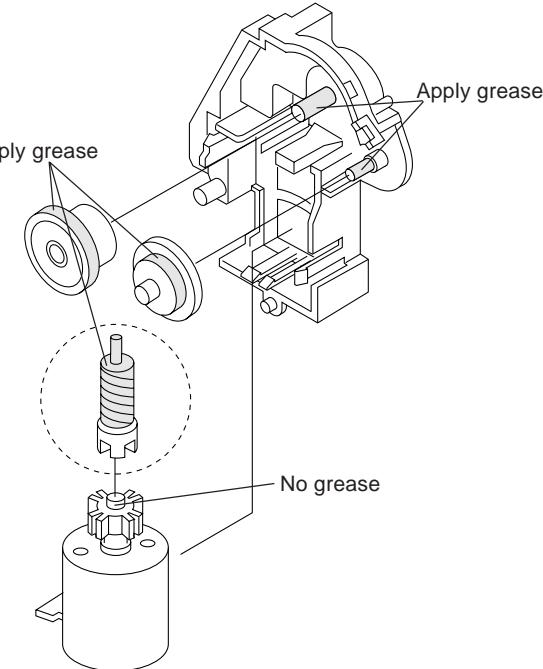


Figure 4-45.

- Replacement

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

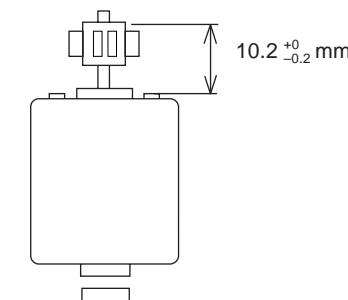


Figure 4-46.

The loading motor pressing-in must be less than 147 N (15 kgf).

Adjust the distance between motor and pulley to $10.2^{+0}_{-0.2}$ mm).

ASSEMBLY OF CASSETTE HOUSING

1. Drive Gear and R Drive angle ass'y

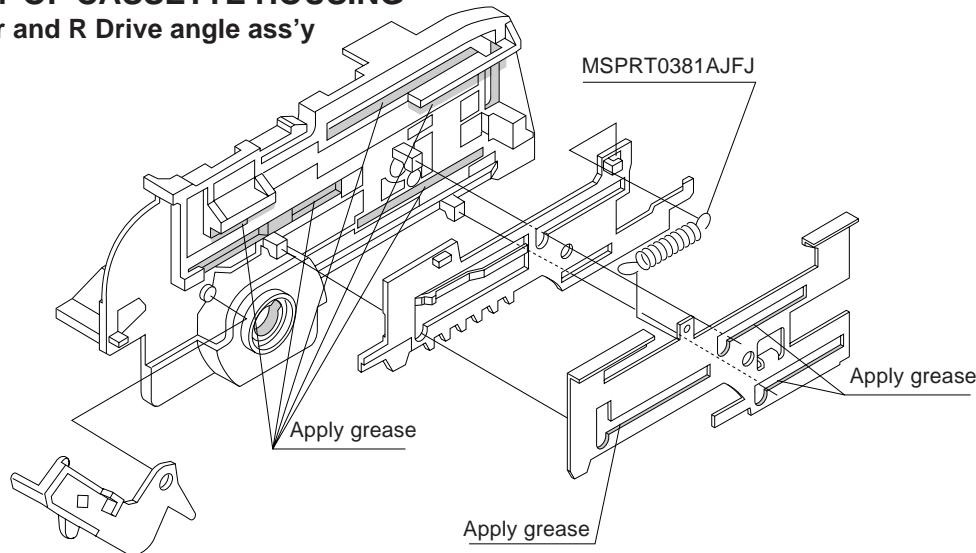


Figure 4-47.

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

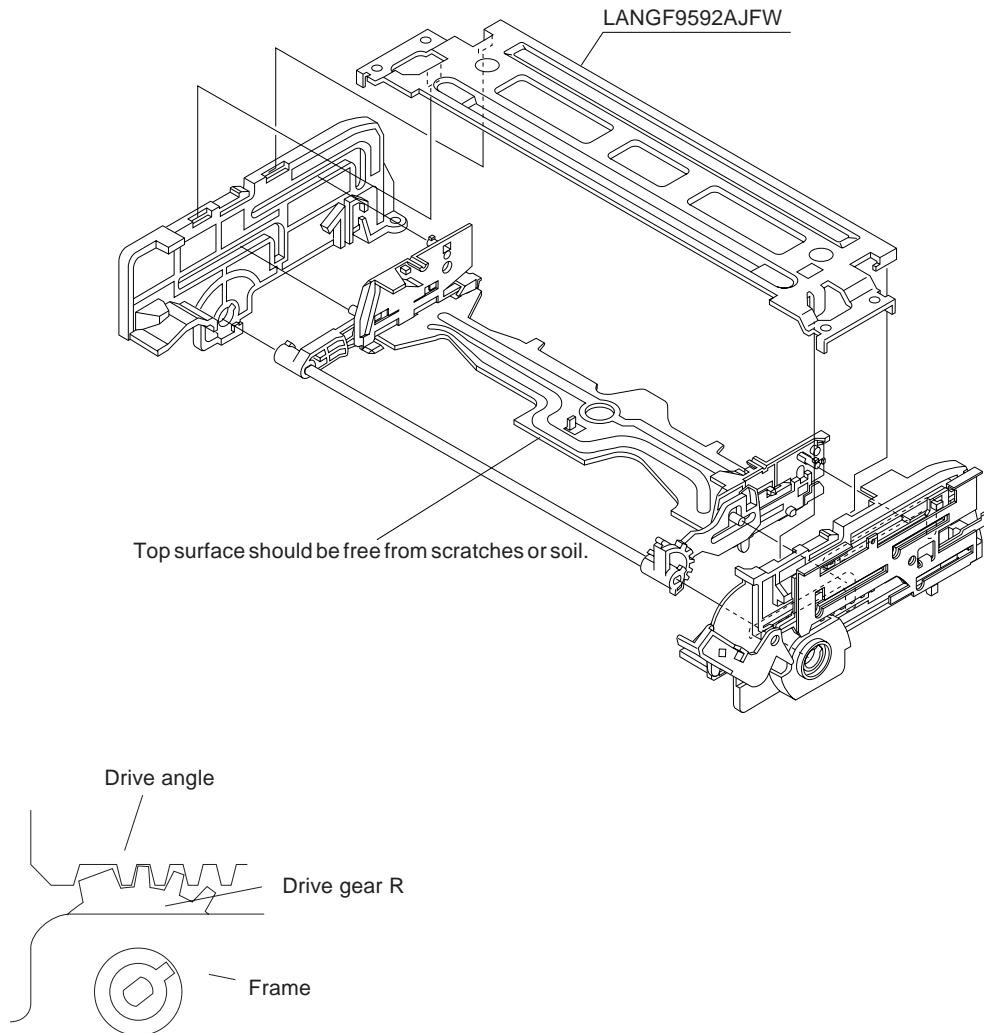


Figure 4-48.

5. ELECTRICAL ADJUSTMENT

Notes:

- Before the adjustment:

Electrical adjustments discussed here are often required after replacement of electronic components and mechanical parts such as video heads.

Check that the mechanism and all electric components are in good working condition prior to the adjustments, otherwise adjustments can not be completed.

- Instruments required:

- Colour TV monitor
- Dual-trace oscilloscope
- Alignment tape (VROCPSV), (VROATSV)
- Blank video cassette tape
- DC voltmeter
- Screwdriver for adjustment

※ Servicing precautions

When the IC710 (E²PROM) has been replaced, make the following reprogramming. Depending on models, the IC710 (E²PROM) has been factory-adjusted for its memory function.

It's therefore necessary to reprogram the memory function for the model in question.

Note that the servo circuit requires readjustments for the head switching point, slow and still modes.

- Location of controls and test points

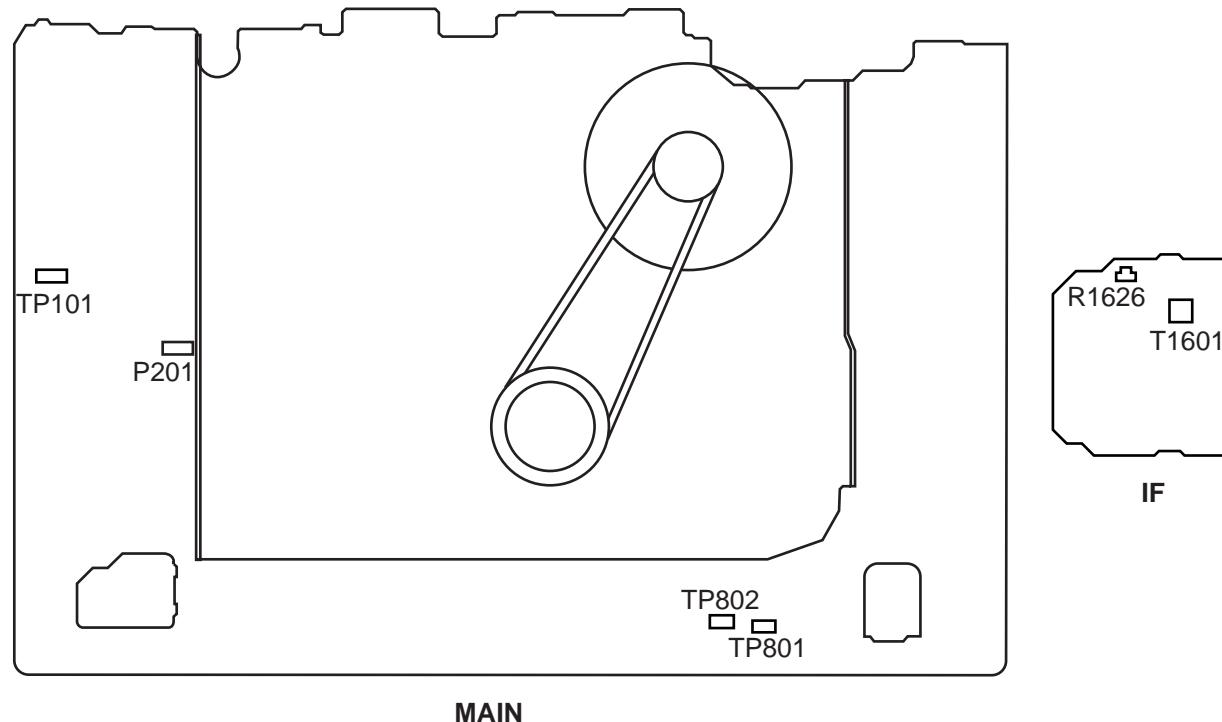


Figure 5-1.

SERVO CIRCUIT ADJUSTMENT

ADJUSTMENT OF HEAD SWITCHING POINT

Measuring instrument	Dual-trace oscilloscope Colour TV monitor
Mode	Playback
Cassette	Alignment tape (VROCPSP)
Test point	Pin(2) of P201 (H.S.W.P.) to CH-1, VIDEO OUT jack to CH-2 (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side.)
Specification	6.5 ± 0.5H (lines)

1. Remove the front panel and play the alignment tape.
(VROCPSP)
2. Press the PLAY button.
(Playback picture on the monitor screen.)
3. Make for a moment short-circuit P802, located at the front side on the main PWB.
Press the PLAY button again.
Be sure that all the fluorescent display tubes light up into the TEST mode.(See Note below)
Be sure the "►" appears in the fluorescent display tubes flashing (about 1Hz) into the auto PG adjustment operating.

Note:

When the manual PG adjustment, observe the waveform with an oscilloscope and make adjustment FF or REW button so that the specification.

4. Stop the "►" appears in the flashing of fluorescent display tubes at adjusted.
5. Press the STOP button in the return to manual mode.
6. Make this checking of waveform on the oscilloscope screen be as shown in Figure 5-2. just after the head switching point have been adjusted.

Note:

- ① Set-up of TEST mode.
When the adjustment of HEAD SWITCHING POINT, AUTO TRACKING function is invalid.
- ② When the cassette housing control ass'y is removed, set-up of mechanism operating mode.
1) Replug the AC power cord it a few minutes later.
2) Make a short-circuit P801 located at the front side on the main PWB, and press both (▼) and (▲) tracking control button at the same time to set the tracking in center.
3) AC power cord is plugged in.
4) Then set-up of mechanism operating mode is completed, replug the AC power cord a few minutes later.

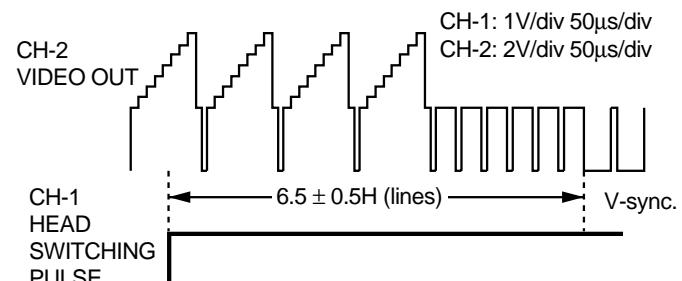


Figure 5-2.

ADJUSTMENT OF PAL SYSTEM SP/LP SLOW TRACKING PRESET

Measuring instrument	Colour TV monitor
Mode	Playback
Cassette	Self-recorded tape (SP/LP mode)(See Note below)
Control	Tracking control buttons (▲) or (▼)
Specification	Minimized noise on monitor screen

1. Have the unit to receive a good TV broadcast or feed a video signal to the VIDEO IN jack. (See note ② below)
2. Set the tape speed in SP mode by using the remote control and record the signal on tape.
3. Rewind and play the tape where signal was recorded in above step.
4. Press the SLOW button on the remote control, and playback the recorded portion in the slow mode.
5. Make for a moment short-circuit P802, located at the front side on the main PWB.
Be sure that all the fluorescent display tubes light up into the TEST mode.
6. Look at the monitor screen and adjust the (▲) or (▼) TRACKING buttons so that the there is noise disappears from the screen.
7. Press the STOP button to return to normal mode.
8. Play the tape a few seconds then press the SLOW button again and make sure there is no noise in the screen.(For the LP mode put adjustment at the same adjustmet way as SP mode.)

Notes:

- ① Self-recorded tape means a cassette whose program was recorded by the unit being adjusted.
- ② The TV program will not be recorded if RCA or 21pin plugs are plugged in the AUDIO/VIDEO input terminals.
- ③ The tracking control is enabled with the (▲)/(▼) button.

ADJUSTMENT OF PAL SYSTEM FV (False Vertical Sync) OF STILL PICTURE

Measuring instrument	Colour TV monitor
Mode	Playback still
Cassette	Self-recorded tape (SP mode) (See Note below ①)
Control	Tracking control buttons (Δ) or (∇)
Specification	No vertical jitter of picture

- Play a cassette which was recorded by the unit in SP mode.
- Press the PAUSE/STILL button to freeze the picture.
- Look at the monitor screen and adjust (Δ) or (∇) TRACKING buttons so that the vertical jitter of the picture to be minimized.
- Play and freeze the self-recorded tape in SP mode and make sure vertical jitter of the picture is not noticeable.(For the LP mode put adjustment at the same adjustment way as SP mode.)

Note:

- Self-recorded tape is a cassette whose program was recorded by the unit being adjusted.
- The tracking control is enabled with the (Δ)/(∇) button.

ADJUSTMENT OF NTSC SYSTEM SP/EP SLOW TRACKING PRESET

Measuring instrument	Colour TV monitor
Mode	Playback
Cassette	Self-recorded tape (SP/EP mode)(See Note below)
Control	Tracking control buttons (Δ) or (∇)
Specification	Minimized noise on monitor screen

- Have the unit to receive a good TV broadcast or feed a video signal to the VIDEO IN jack. (See note ② below)
- Set the tape speed in SP mode by using the remote control and record the signal on tape.
- Rewind and play the tape where signal was recorded in above step.
- Press the SLOW button on the remote control, and playback the recorded portion in the slow mode.
- Make for a moment short-circuit P802, located at the front side on the main PWB.
Be sure that all the fluorescent display tubes light up into the TEST mode.

- Look at the monitor screen and adjust the (Δ) or (∇) TRACKING buttons so that the there is noise disappears from the screen.
- Press the STOP button to return to normal mode.
- Play the tape a few seconds then press the SLOW button again and make sure there is no noise in the screen.(For the EP mode put adjustment at the same adjustmet way as SP mode.)

Notes:

- Self-recorded tape means a cassette whose program was recorded by the unit being adjusted.
- The TV program will not be decoded if RCA or 21pin plugs are plugged in the AUDIO/VIDEO input terminals.
- The tracking control is enabled with the (Δ)/(∇) button.

ADJUSTMENT OF NTSC SYSTEM FV (False Vertical Sync) OF STILL PICTURE

Measuring instrument	Colour TV monitor
Mode	Playback still
Cassette	Self-recorded tape (SP mode) (See Note below ①)
Control	Tracking control buttons (Δ) or (∇)
Specification	No vertical jitter of picture

- Play a cassette which was recorded by the unit in SP mode.
- Press the PAUSE/STILL button to freeze the picture.
- Look at the monitor screen and adjust (Δ) or (∇) TRACKING buttons so that the vertical jitter of the picture to be minimized.
- Play and freeze the self-recorded tape in SP mode and make sure vertical jitter of the picture is not noticeable.(For the EP mode put adjustment at the same adjustment way as SP mode.)

Note:

- Self-recorded tape is a cassette whose program was recorded by the unit being adjusted.
- The tracking control is enabled with the (Δ)/(∇) button.

ADJUSTMENT OF VCO CIRCUIT

Measuring instrument	Colour TV monitor DC voltmeter
Mode	RF signal at E12-CH (by VHF signal generator)
Test point	Pin(1)(AF1) of TP101. Pin(4)(GND.) of TP101.
Control	T1601 VCO control
Specification	2.5±0.5V

1. Set VCR to Power On mode.
2. Press "Test key" mode.
3. Press channel E12 of R/C at 87.5% mod. and 70dB μ of antenna terminal (Caution: Do not press SW button on set. Use R/C.)
4. Connect a DC voltmeter to test point shown in table.
5. Look at the voltmeter and adjust T1601 at voltage specified.

ADJUSTMENT OF RF AGC

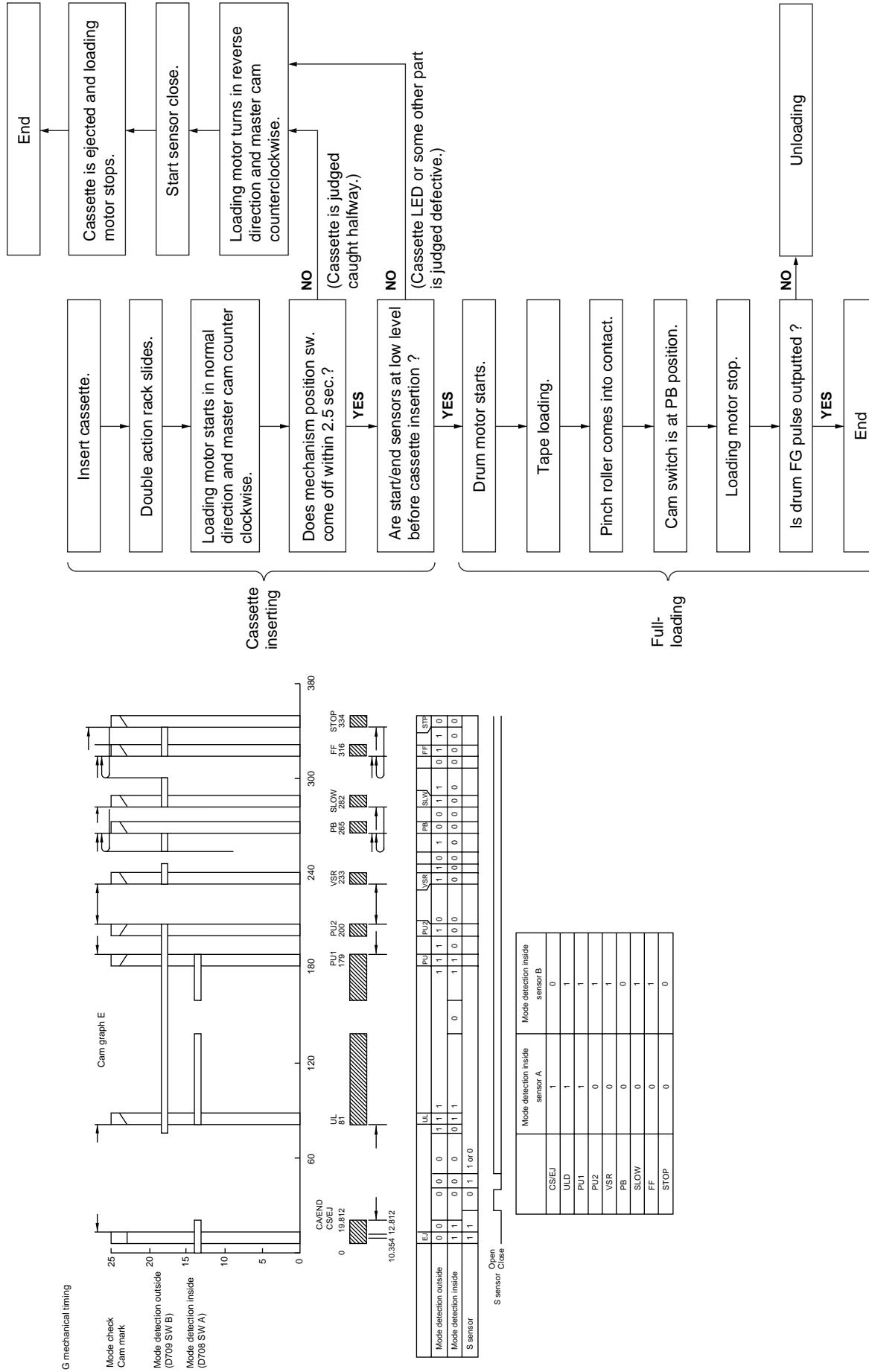
Measuring instrument	Colour TV monitor Oscilloscope
Mode	RF signal at E12-CH (by VHF signal generator)
Test point	Pin(3) Signal of TP101. Pin(4) GND of TP101.
Control	R1626 RF AGC control
Specification	_____

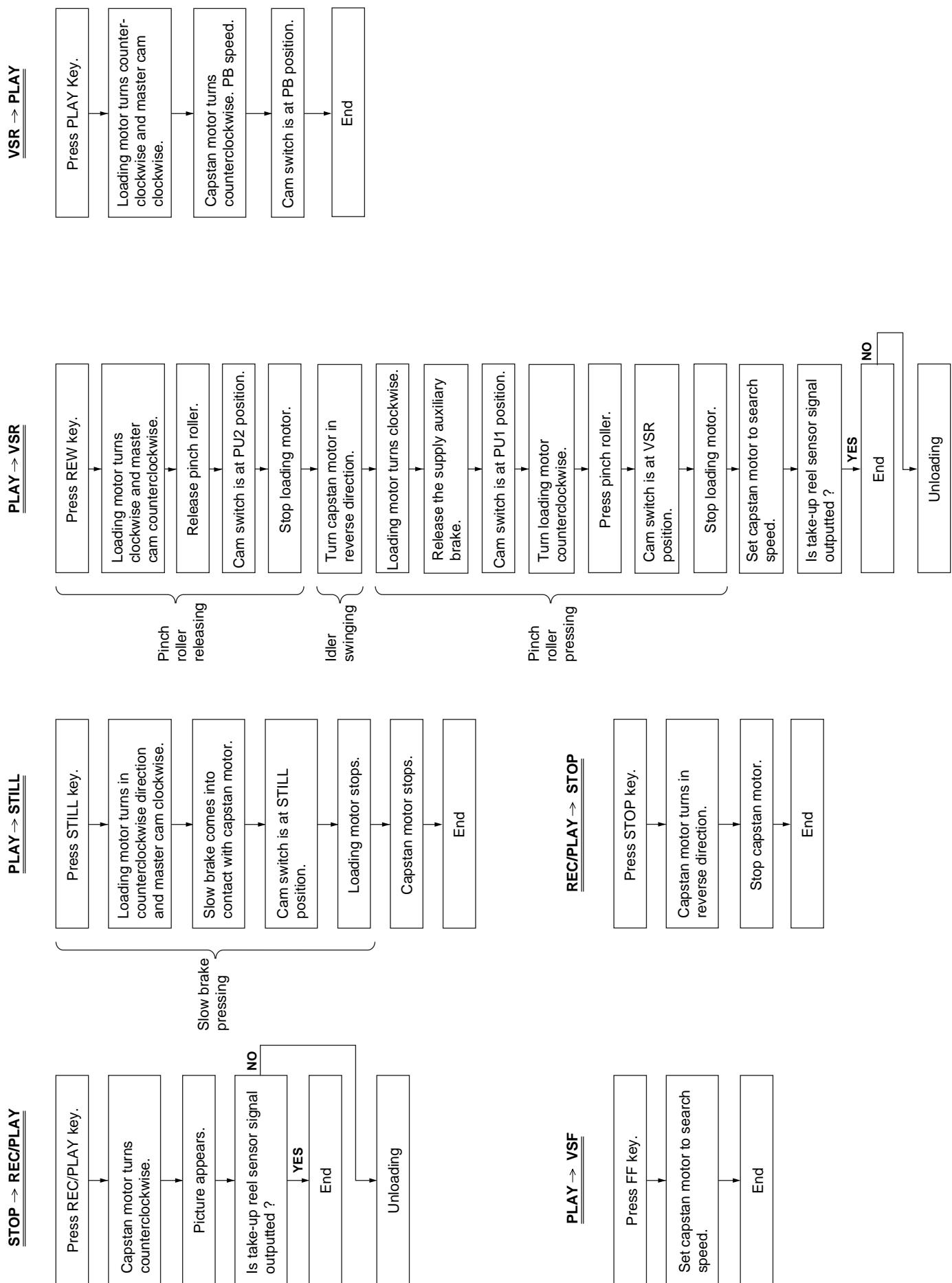
1. Receive E12 channel signal at 87.5% mod. and 70dB μ of antenna signal.
2. Connect an oscilloscope to test point shown in table.
3. Look at the oscilloscope and adjust R1626 counterclockwise until sync-tip becomes from noisy to clear just before shrink position.
4. Press "Test key" mode and auto tune to receive signal.

6. MECHANISM OPERATION FLOWCHART AND TROUBLESHOOTING GUIDE

MECHANISM OPERATION FLOWCHART

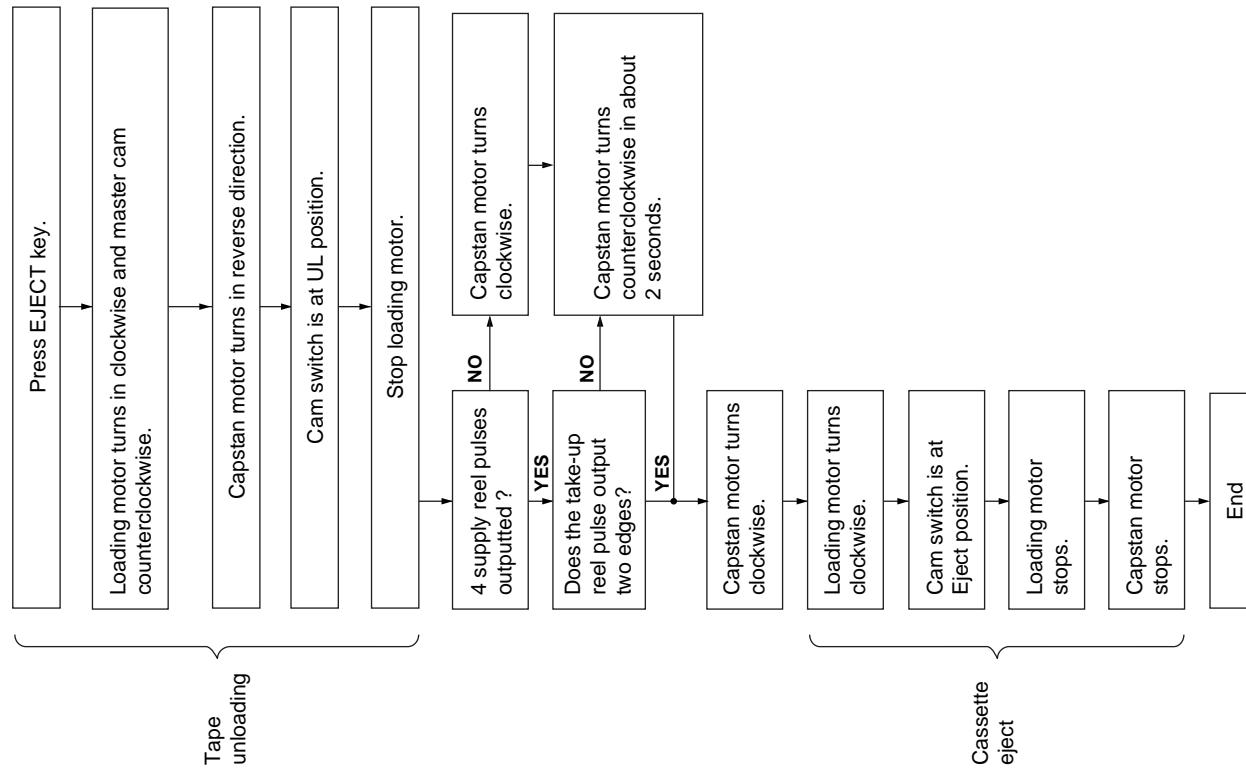
CASSETTE INSERTION → STOP



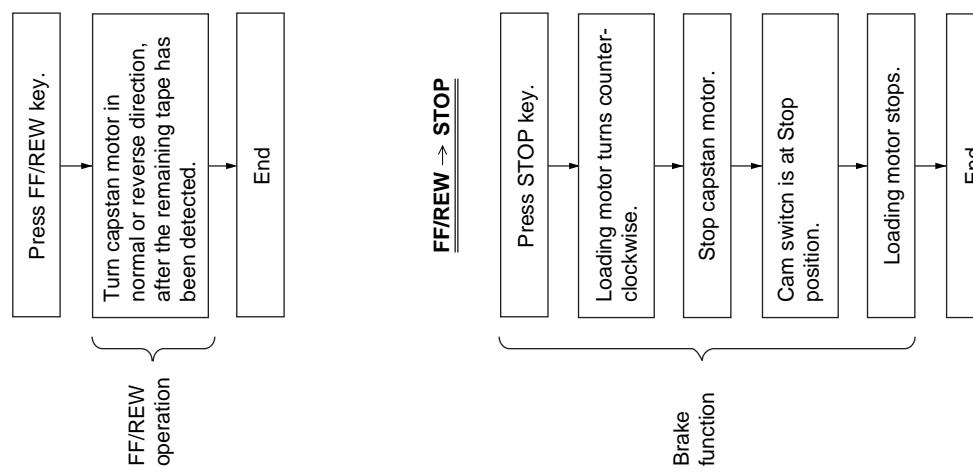


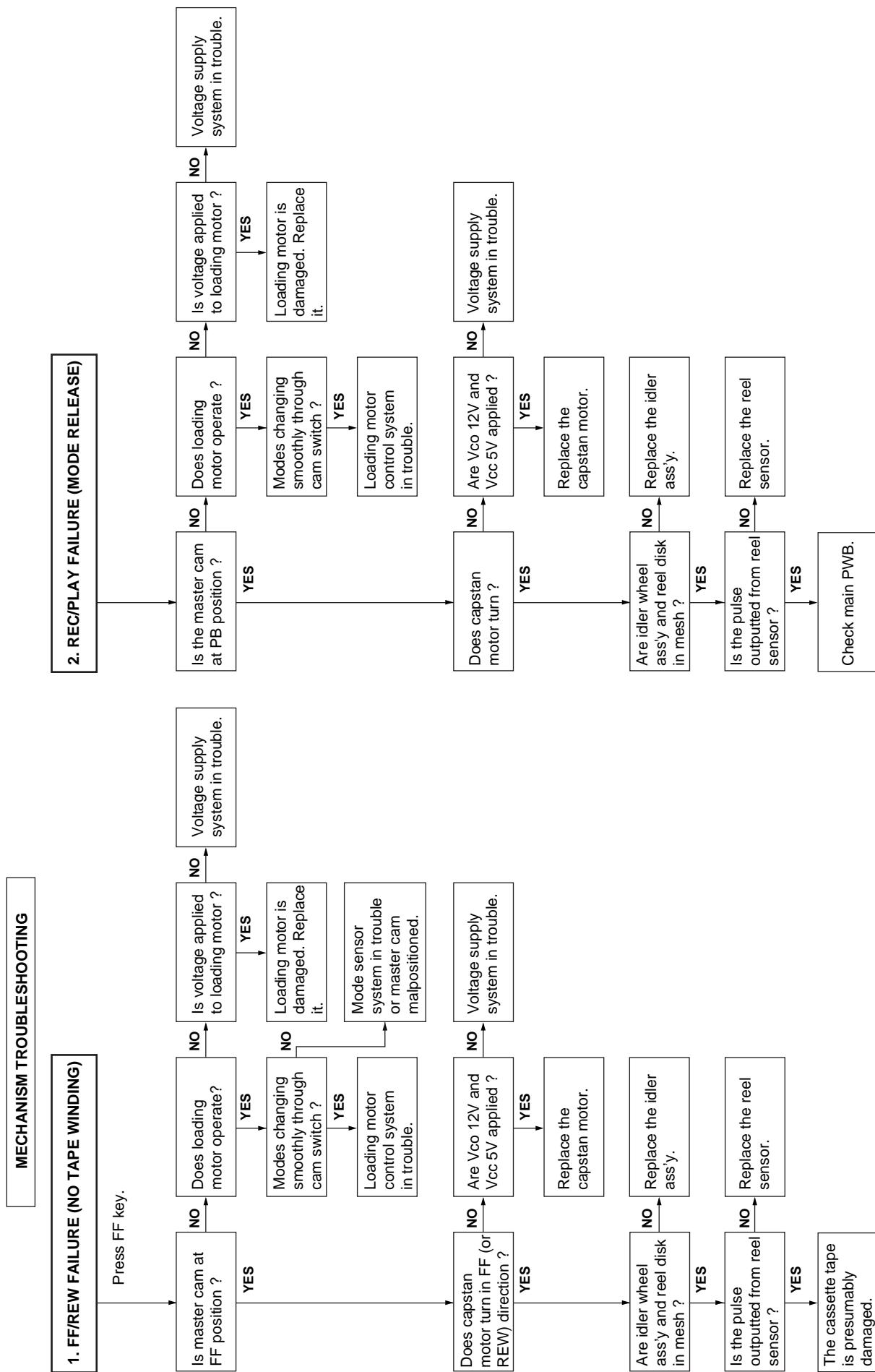
VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

STOP → CASSETTE EJECT



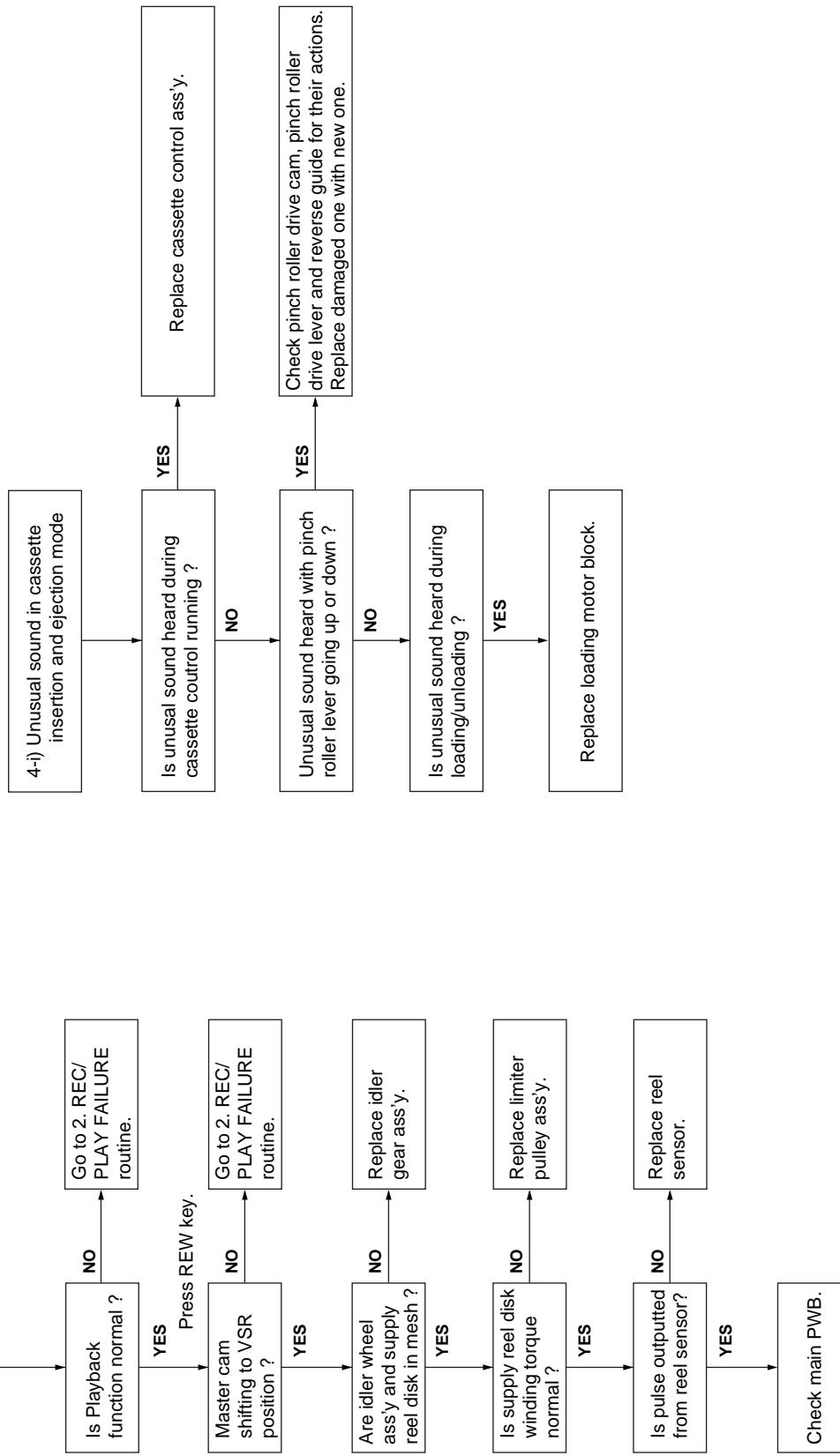
STOP → FF/REW

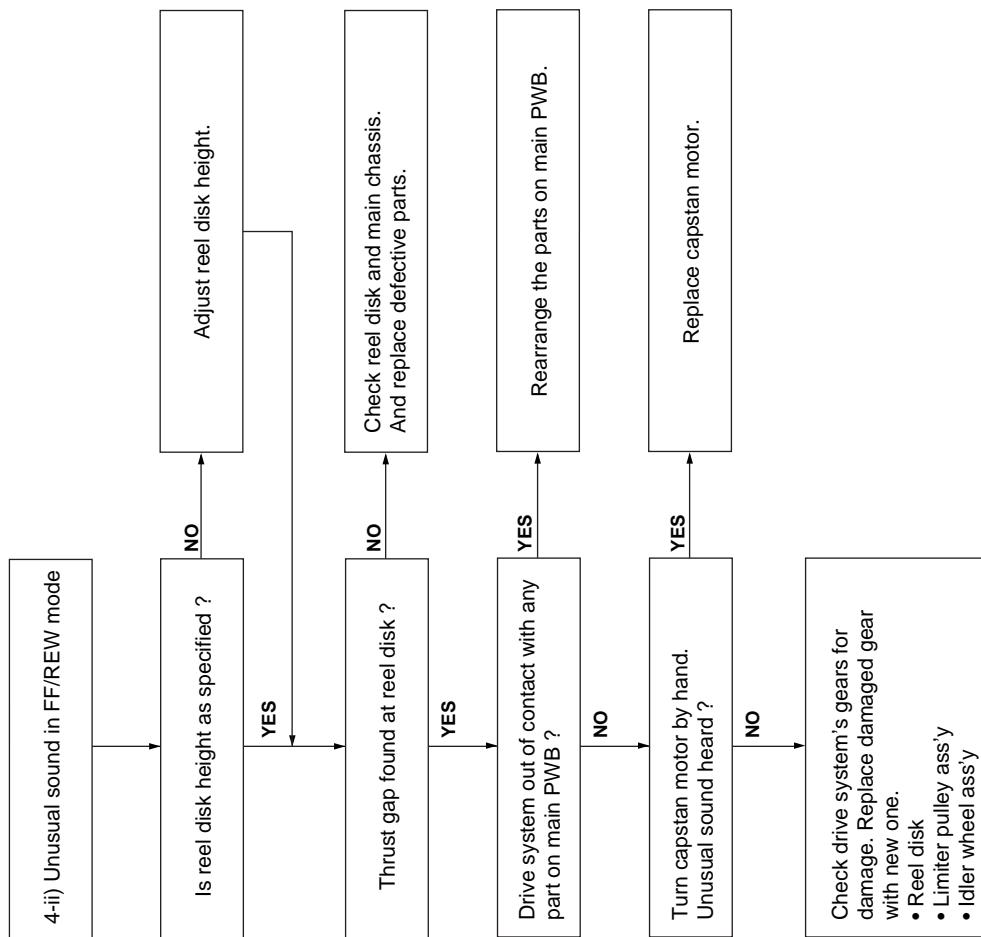




3. WINDING FAILURE AT VSR

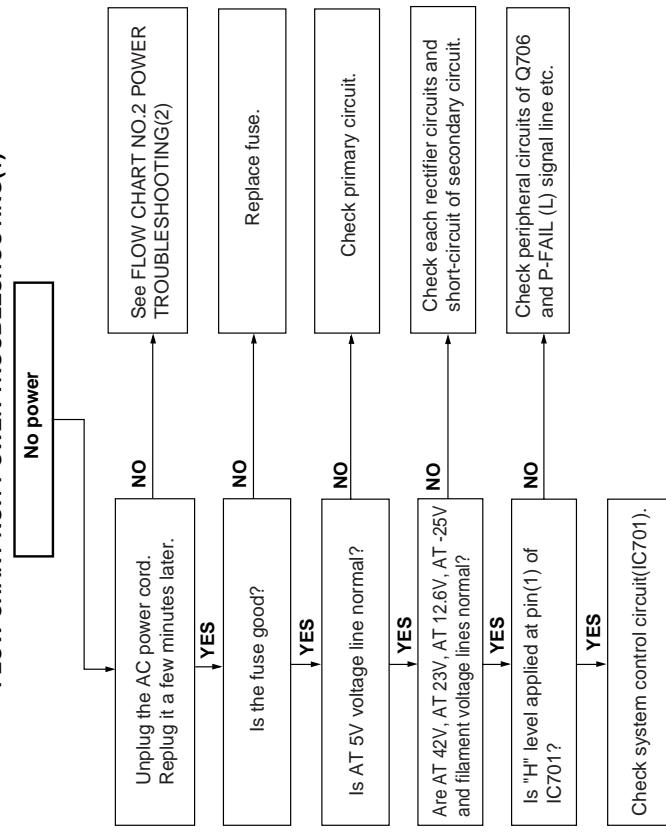
4. UNUSUAL SOUND IN EACH MODE



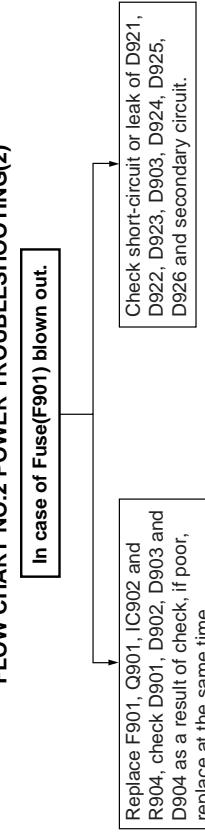


7. TROUBLESHOOTING

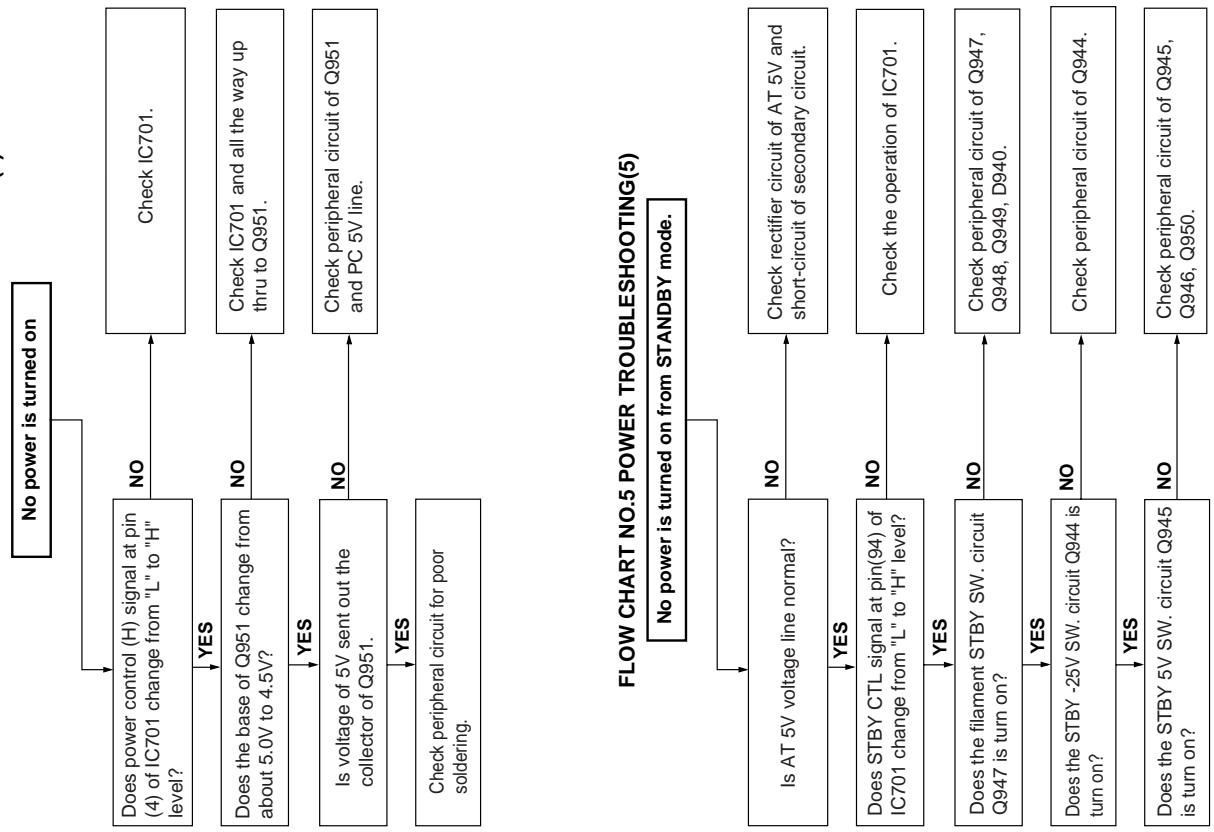
FLOW CHART NO.1 POWER TROUBLESHOOTING(1)



FLOW CHART NO.2 POWER TROUBLESHOOTING(2)

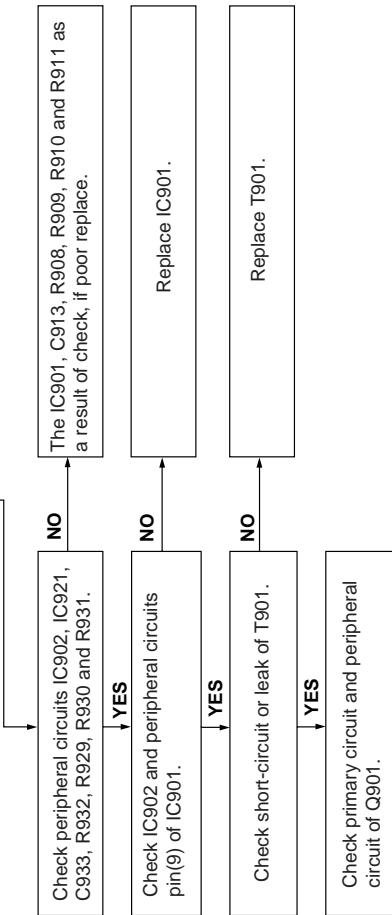


FLOW CHART NO.4 POWER TROUBLESHOOTING(4)



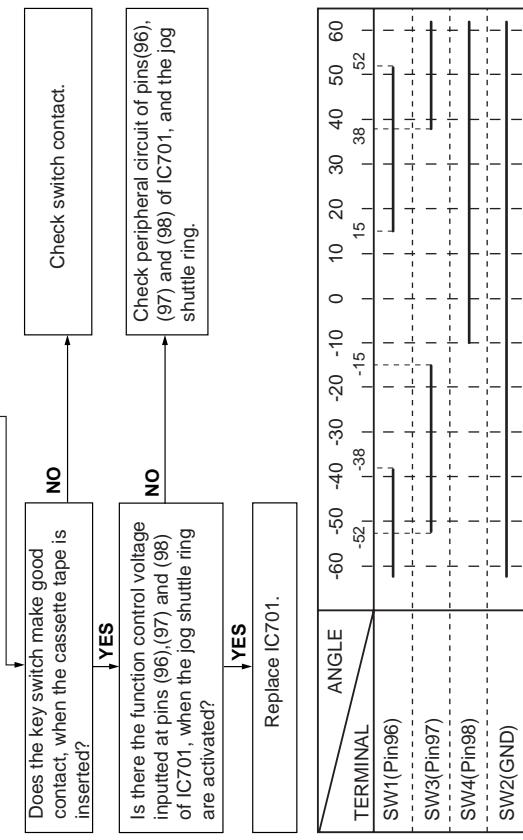
FLOW CHART NO.6 POWER TROUBLESHOOTING(6)

In case of output voltage at low level.



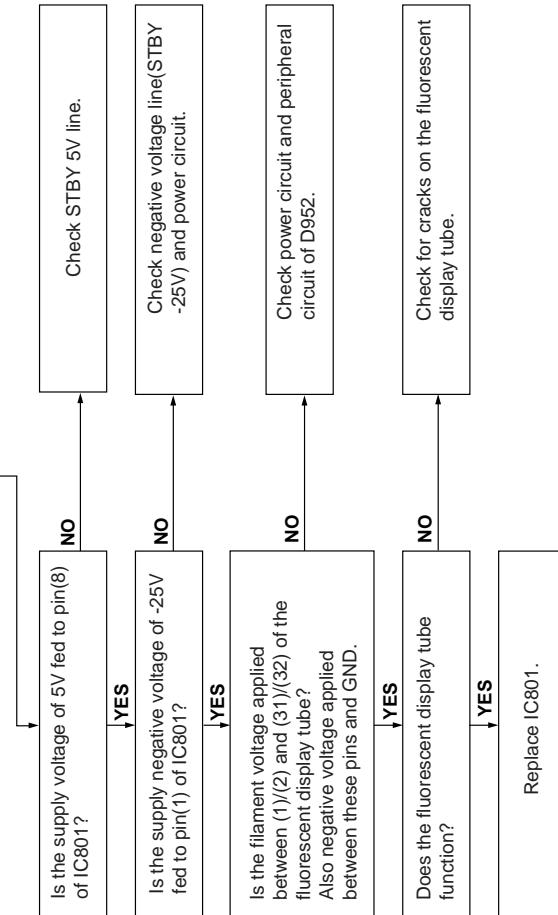
FLOW CHART NO.8 KEY CONTROL TROUBLESHOOTING(1)

Key-in input is not received
<For jog shuttle mode.>



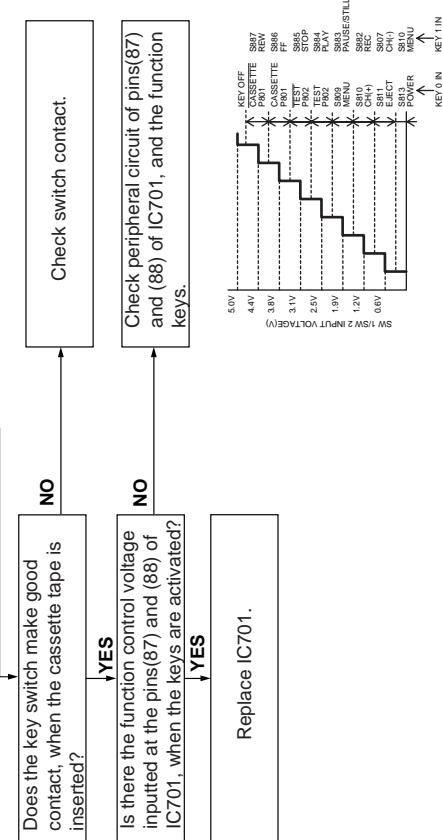
FLOW CHART NO.7 TIMER TROUBLESHOOTING

The fluorescent display tube fails light up.



FLOW CHART NO.9 KEY CONTROL TROUBLESHOOTING(2)

Key-in input is not received
<Except for jog shuttle mode.>

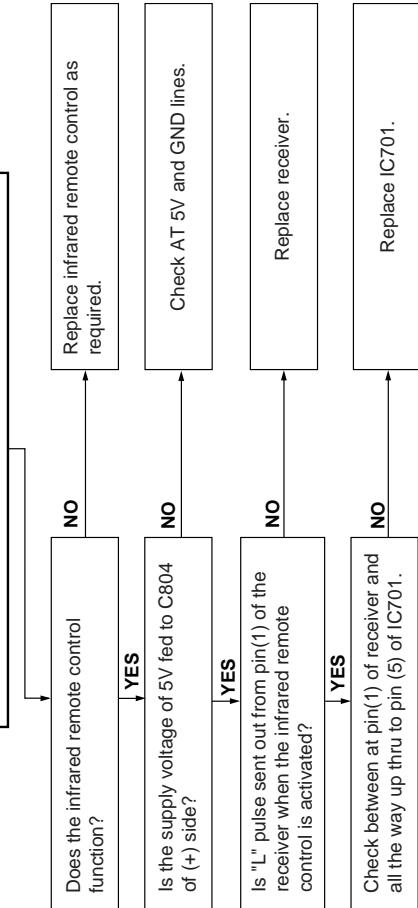


FLOW CHART NO.8 KEY CONTROL TROUBLESHOOTING(2)

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

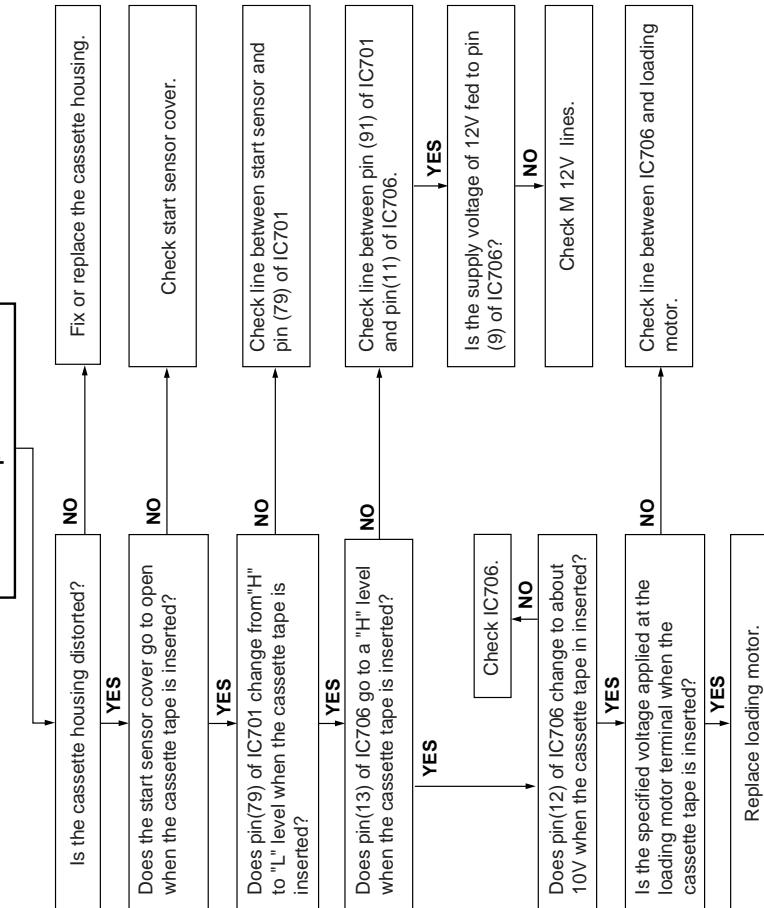
FLOW CHART NO.10 INFRARED R/C TROUBLESHOOTING

No operation is possible from the infrared remote control.



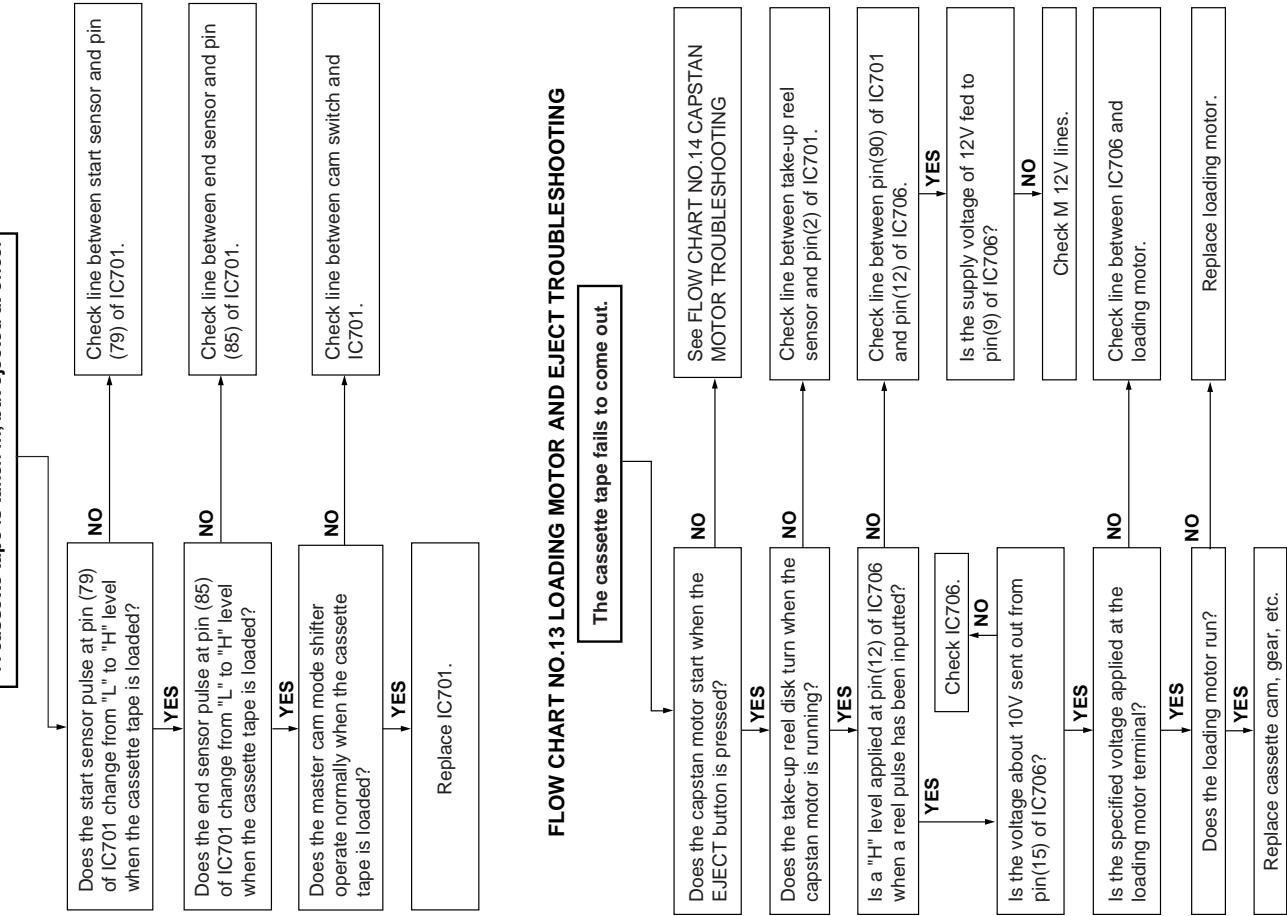
FLOW CHART NO.11 CASSETTE CONTROL TROUBLESHOOTING(1)

A cassette tape is not take in.



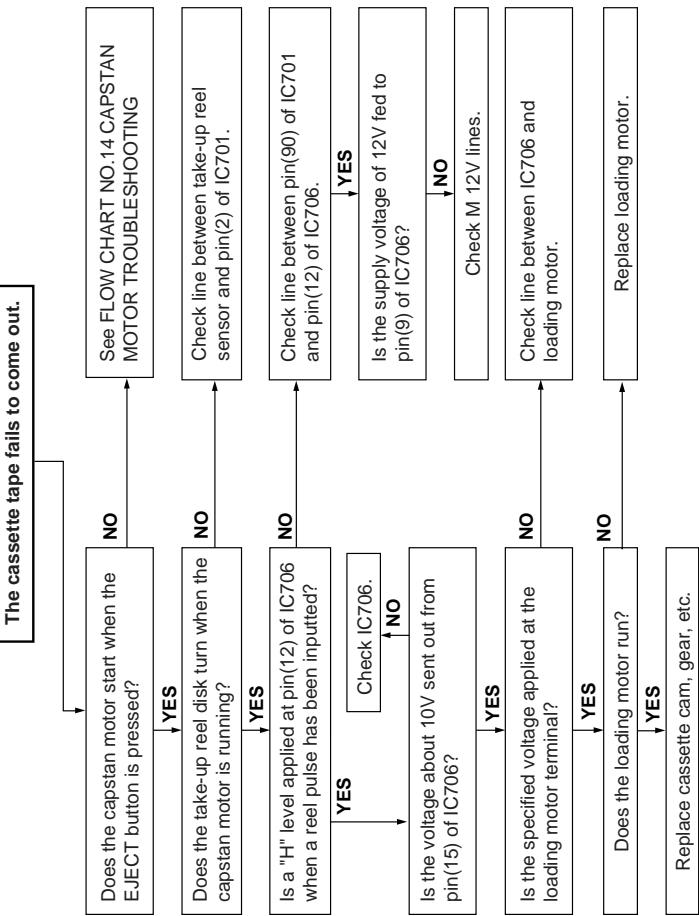
FLOW CHART NO.12 CASSETTE CONTROL TROUBLESHOOTING(2)

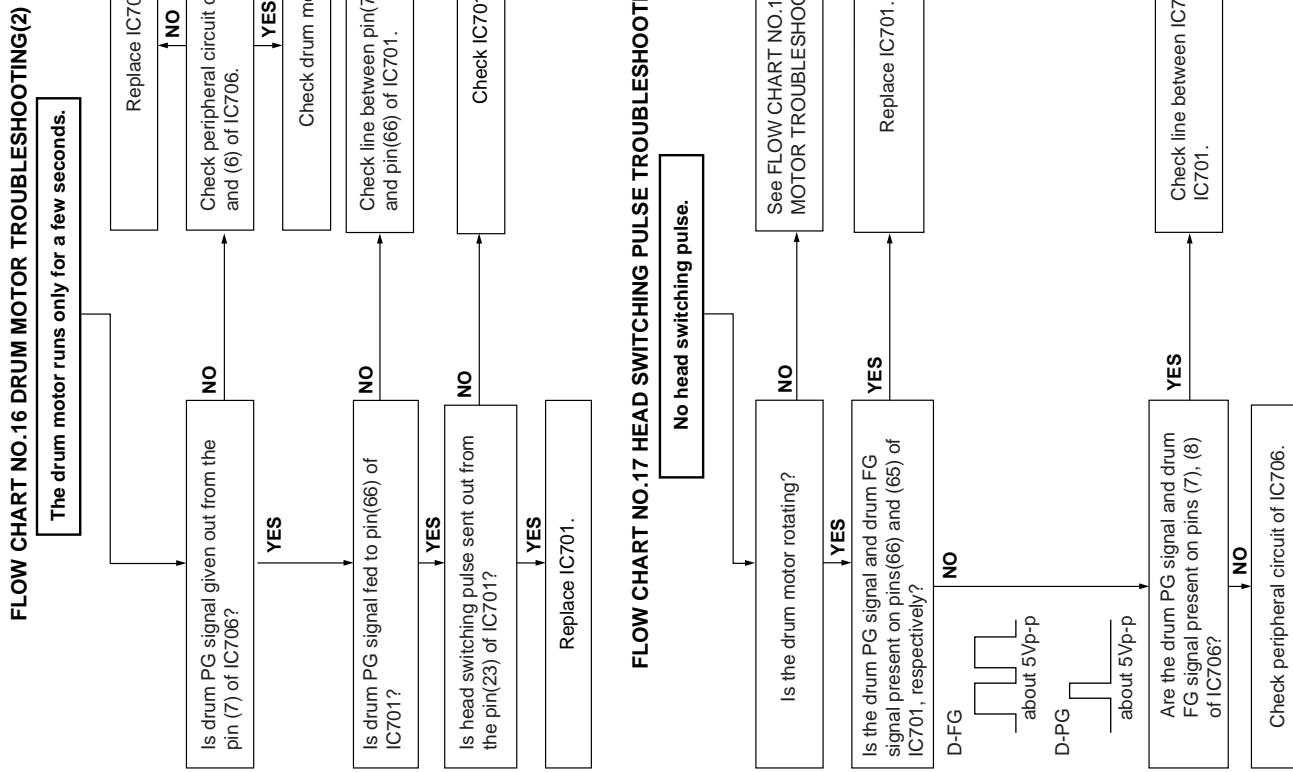
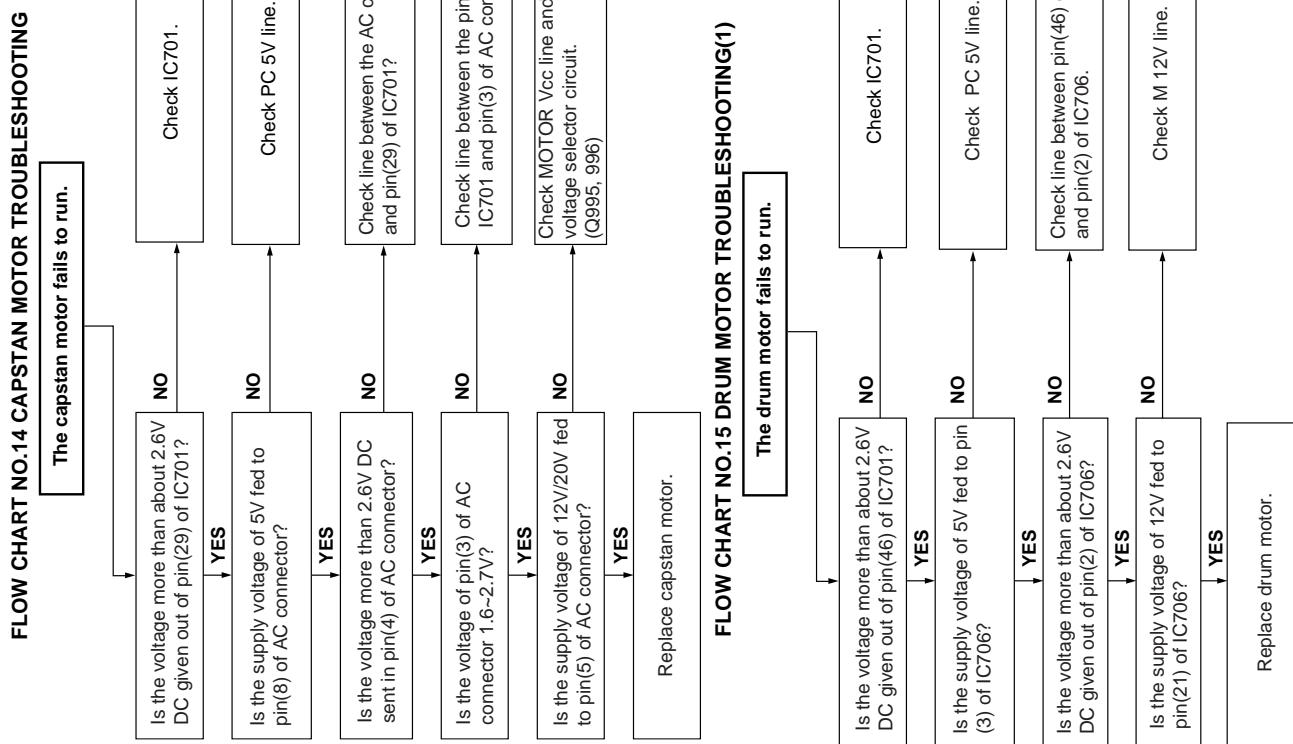
A cassette tape is taken in, but ejected at once.



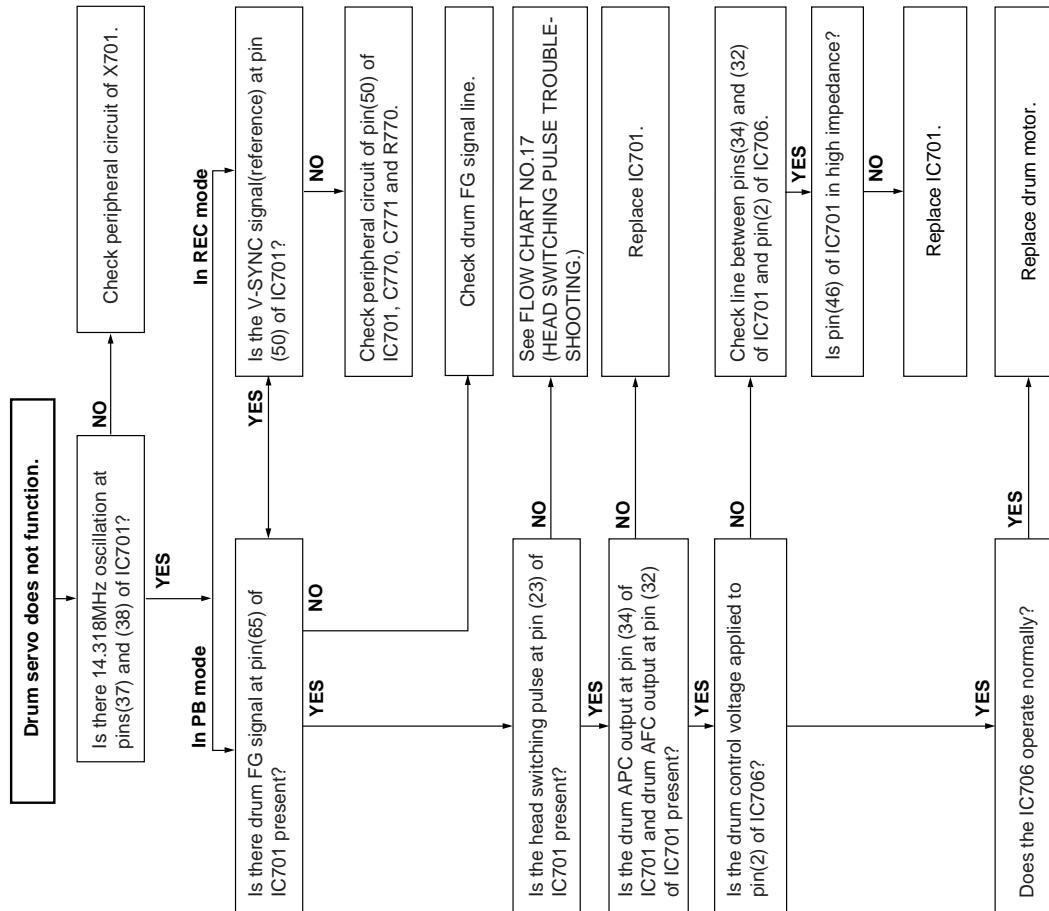
FLOW CHART NO.13 LOADING MOTOR AND EJECT TROUBLESHOOTING

The cassette tape fails to come out.

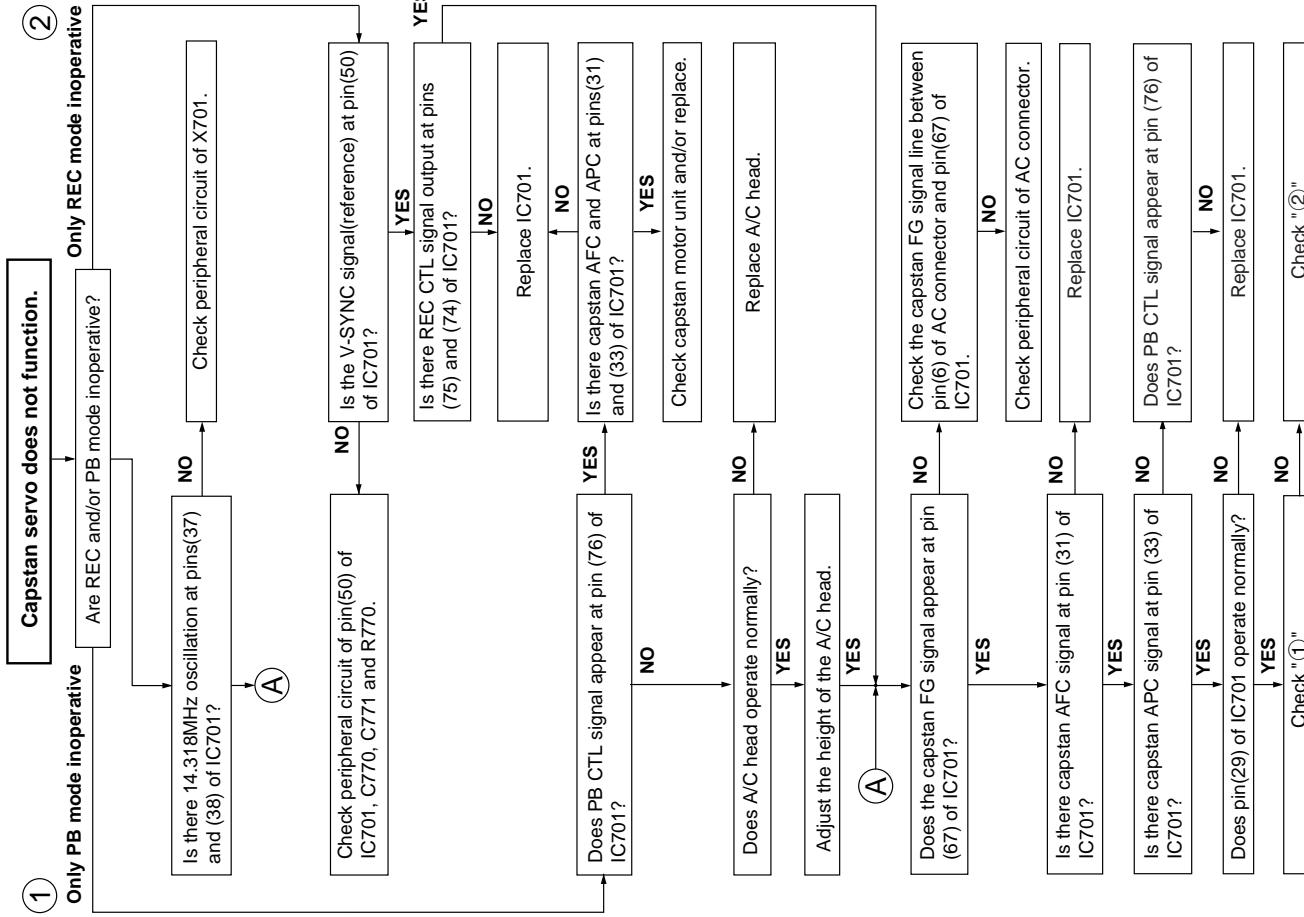




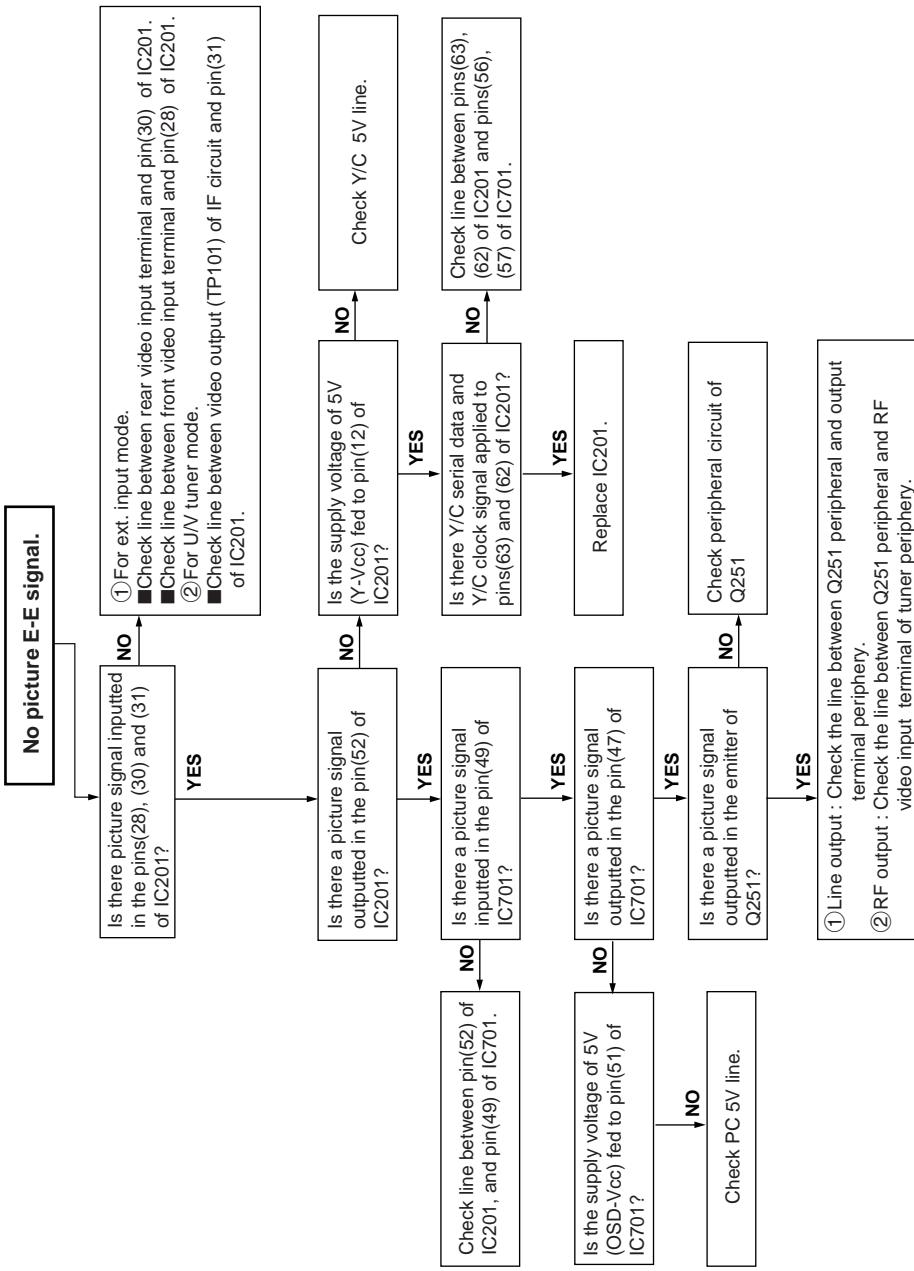
FLOW CHART NO.18 DRUM SERVO TROUBLESHOOTING



FLOW CHART NO.19 CAPSTAN SERVO TROUBLESHOOTING

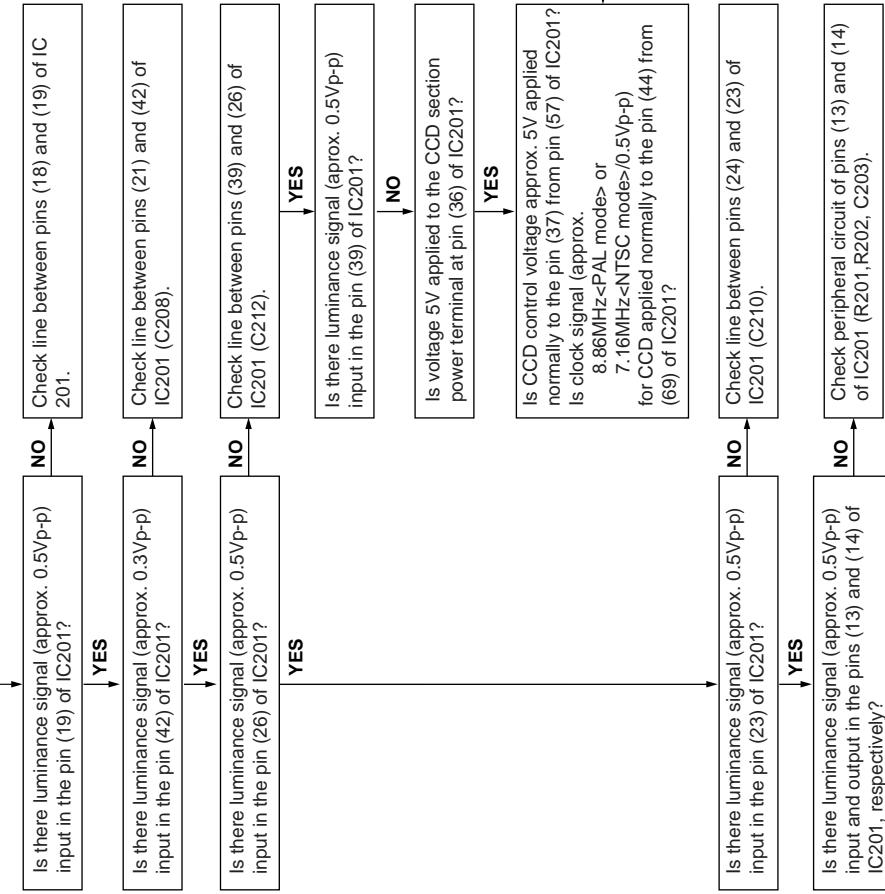


FLOW CHART NO.20 E-E MODE TROUBLESHOOTING

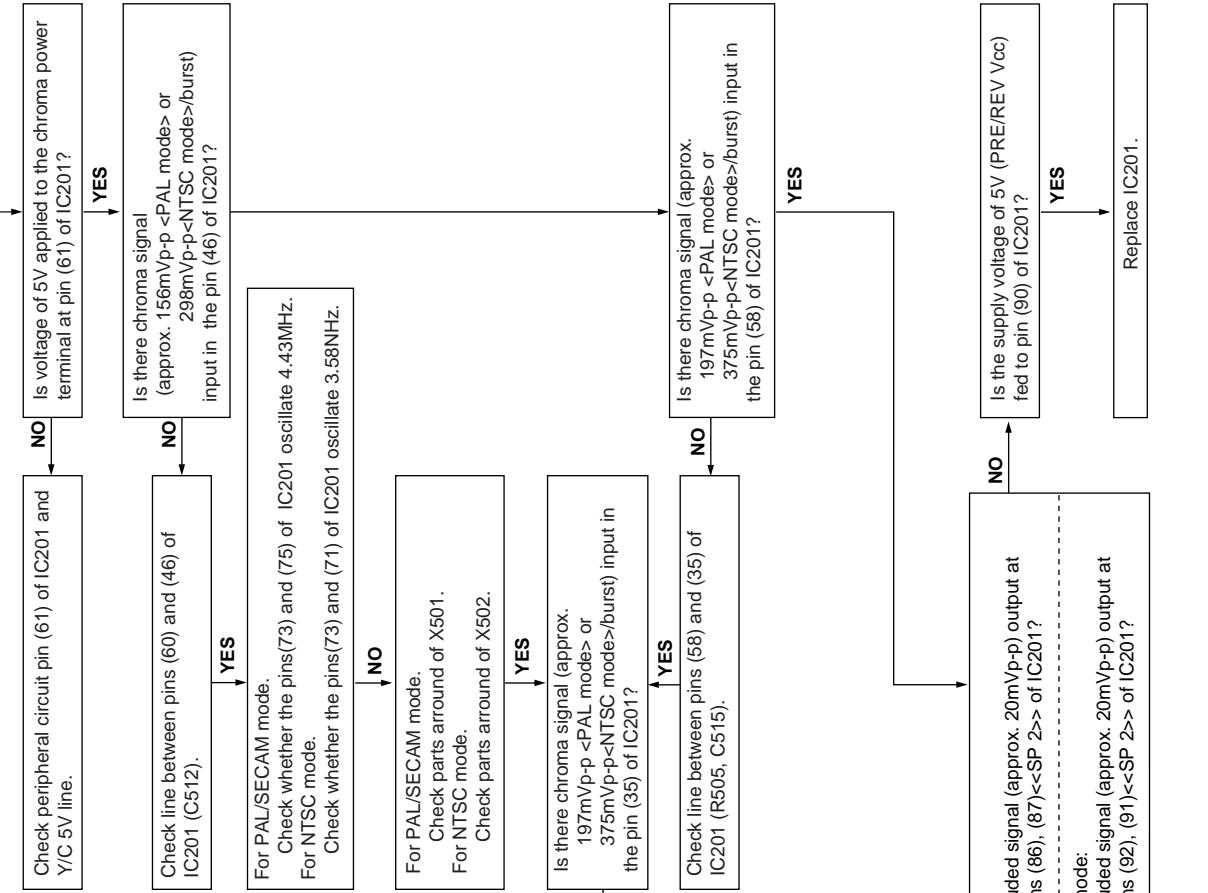


FLOW CHART NO.21 RECORDING MODE TROUBLESHOOTING

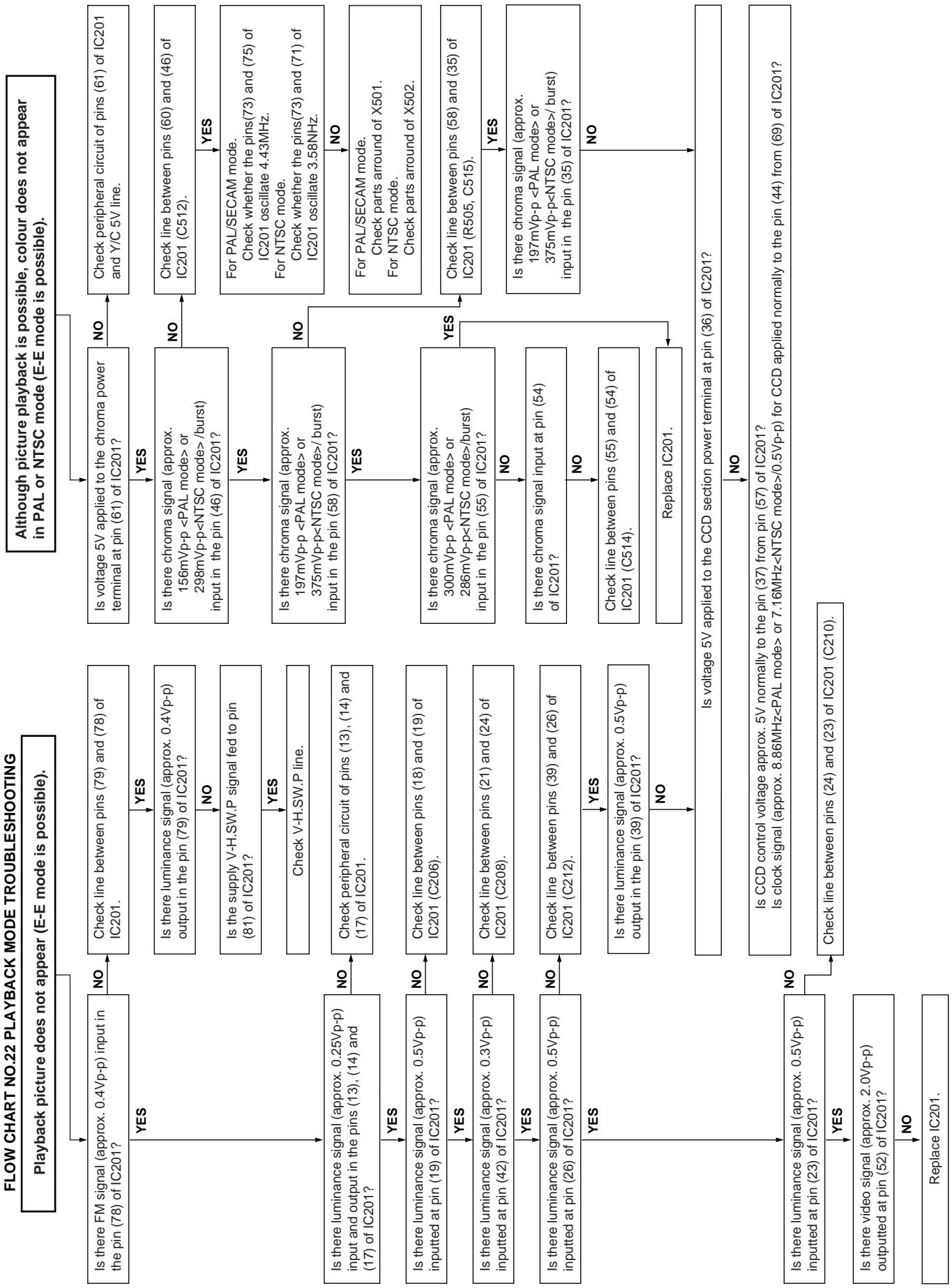
Picture (luminance) record is impossible (E-E mode is possible).



Although picture record is possible, colour does not appear in PAL or NTSC mode (E-E mode is possible).

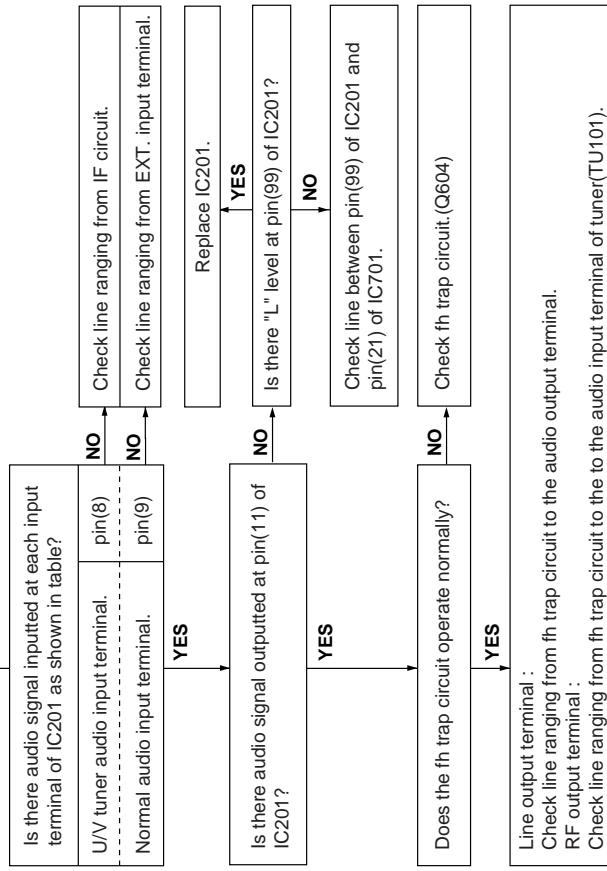


FLOW CHART NO.22 PLAYBACK MODE TROUBLESHOOTING



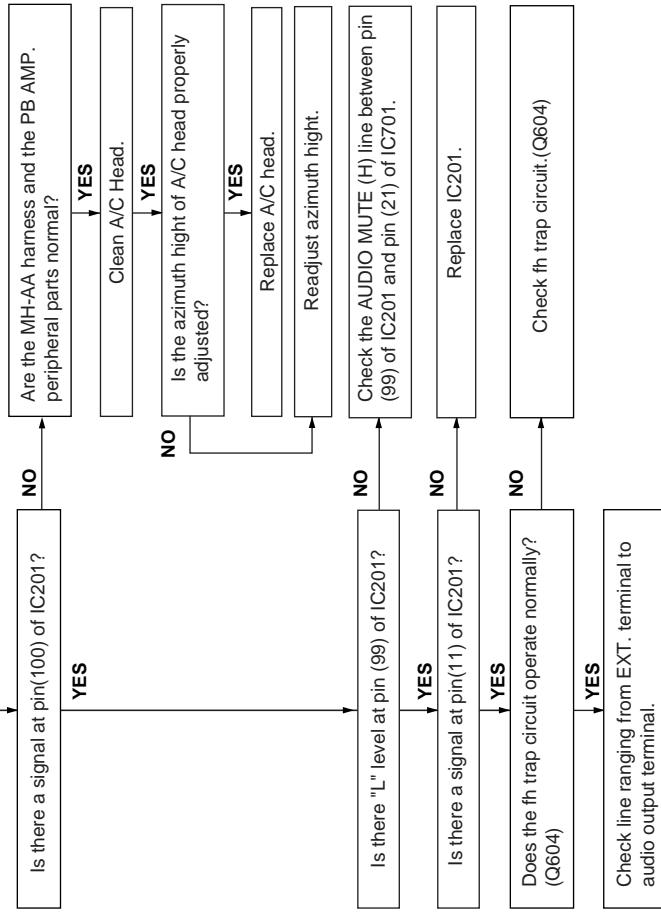
FLOW CHART NO.23 LINEAR SOUND MODE TROUBLESHOOTING(1)

No E-E sound heard.



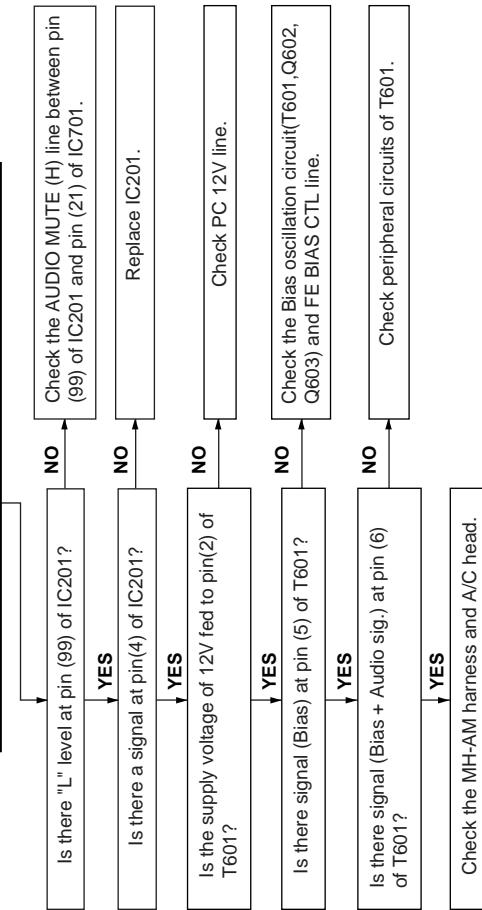
FLOW CHART NO.25 LINEAR SOUND MODE TROUBLESHOOTING (2)

No linear sound playback



FLOW CHART NO.24 LINEAR SOUND MODE TROUBLESHOOTING (1)

No linear sound recording



REPLACEMENT OF IC710(E²PROM)

«Servicing precautions»

When the IC710(E2PROM) has been replaced, make the following reprogramming.

Depending on models, the IC710(E2PROM) has been factory adjusted for it's memory function.

It's therefor necessary to reprogram the memory function for the model in question.

Note that the servo circuit requires readjustments for the slow and still modes.

1. Memory function reprogramming.

1. Check the power off.(Power is standby mode)
2. Make for moment short-circuit test point(P802), located at the front side on the main PWB." Be sure that all the fluorescent display tube light up into the TEST mode.
3. Using the CHANNEL(+) AND (-) buttons, select the right function numbers from JP0ü`J39, which appear in the fluorescent display tube, referring to the E2PROM map.
Press the DISPLAY button to pickup the functions (ON) and the CLEAR button to discard the functions(OFF).
DISPLAY and CLEAR buttons, are located on the remote control unit.
 - * when the DISPLAY button has been pressed (ON), the memory function number starts flashing.
 - * when the CLEAR button has been pressed (OFF), the memory function number lights up.
4. Press the FF button on the remote control unit.
By doing, lower 5 of the 10 digits are displayed in hexadecimal notation.
Example : "ON" and "OFF" are taken as "1" and "0" respectively.

JP19	JP18	JP17	JP16	JP15	JP14	JP13	JP12	JP11	JP10	JP9	JP8	JP7	JP6	JP5	JP4	JP3	JP2	JP1	JP0
0	1	1	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	1	1
↓				↓				↓				↓				↓			
6				6				2				1				3			

5. Press the STOP button on the remote control unit.

By doing, upper 5 in the 10 digits are displayed in hexadecimal notation from the feature function."

Example : "ON" and "OFF" are taken as "1" and "0" respectively.

JP39	JP38	JP37	JP36	JP35	JP34	JP33	JP32	JP31	JP30	JP29	JP28	JP27	JP26	JP25	JP24	JP23	JP22	JP21	JP20
0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
↓				↓				↓				↓				↓			
3				6				0				0				8			

2. Memory recording preset level reprogramming.

1. Similarly to the above step 1-1 and 2 the same operate.
2. Using the CHANNEL (+) AND (-) buttons, select the right function numbers continued from recording preset number as has been <LP p * * to SP p * *>, which appear in the fluorescent display tube, referring to the E2PROM map.
3. Recording level preset number selected from the ten keys on the remote control unit, which appear in the fluorescent display tube, referring to the E²PROM map.
4. Example : SP or LP p * *
 ↑ ↑ ↑ ↑
 Tape speed Chrominance preset number. (from "0" to "7")
 ↓ Luminance preset number. (from "0" to "7")
 System (p : PAL)

5. When the press the REW button on the remote control unit.

By doing, PAL system recording level preset number selected from the ten keys on the remote control unit which appear in the fluorescent display tube, referring to the E2PROM map.

LP	p	*	*	LP	p	*	*	SP	p	*	*	SP	p	*	*
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑

selection from the ten keys.
(from "0" to "7")

selection from the ten keys.
(from "0" to "7")

selection from the ten keys.
(from "0" to "7")

selection from the ten keys.
(from "0" to "7")

3. Finally make for a moment short-circuit test point(P802), located at the front side on the main PWB to clear the TEST mode.

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

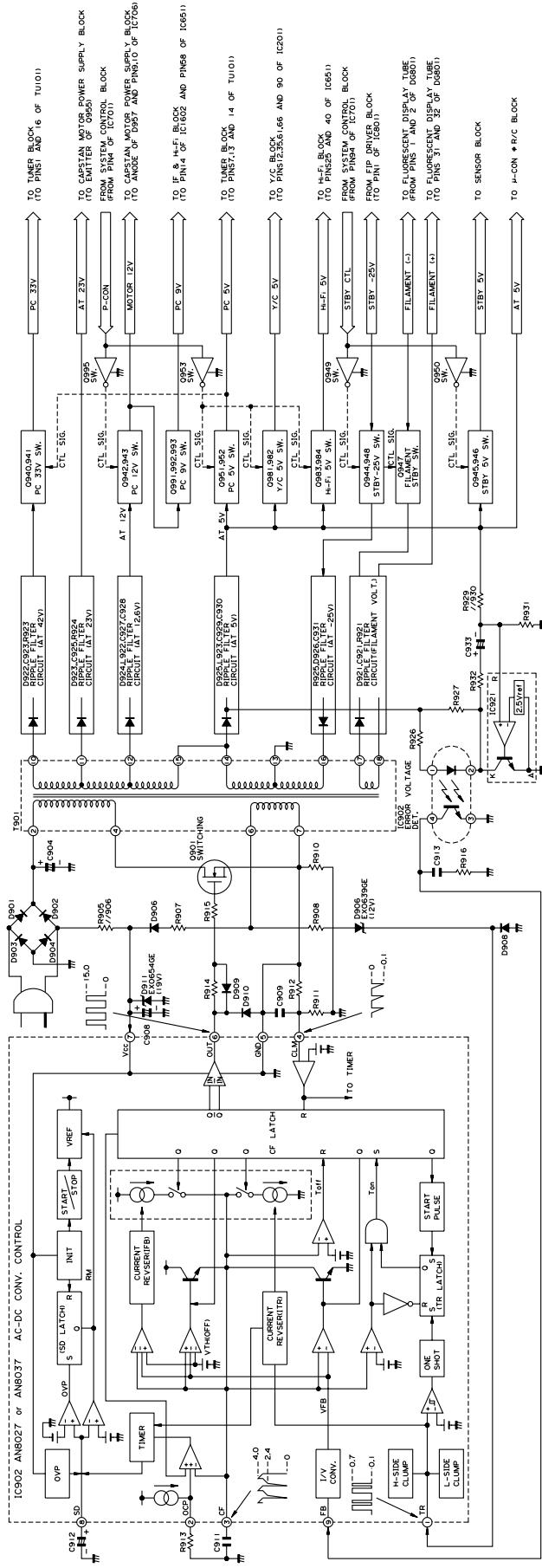
ROM MAP

	MODEL	VC-A230NZ	VC-A230X	VC-A280NZ	VC-A280X	VC-A480NZ	VC-A480X
EP n **	NTSC Luminance level	0	0	0	0	0	0
EP n **	NTSC Chrominance level	7	7	7	7	7	7
SP n **	NTSC Luminance level	0	0	0	0	0	0
SP n **	NTSC Chrominance level	7	7	7	7	7	7
LP p **	PAL Luminance level	3	3	3	3	3	3
LP p **	PAL Chrominance level	3	3	3	3	4	4
SP p **	PAL Luminance level	3	3	3	3	4	4
SP p **	PAL Chrominance level	3	3	3	3	4	4
JP39	A.DUB	0	0	0	0	0	0
JP38	NOT SLOW ATTR	1	1	1	1	0	0
JP37	INSTANT REPLAY	0	0	1	1	1	1
JP36	NTPB	1	1	1	1	1	1
JP35	NTSC SKEW	0	0	0	0	0	0
JP34	HEAD2	0	0	0	0	0	0
JP33	HEAD1	0	0	0	0	1	1
JP32	HEAD0	1	1	1	1	0	0
JP31	GAMMA	0	0	0	0	0	0
JP30	L.P 5MIN.	0	0	0	0	0	0
JP29	POSI89	0	0	0	0	0	0
JP28	R/C CODE 1/2	0	0	0	0	0	0
JP27	DNR	0	0	0	0	0	0
JP26	POST CODE	0	0	0	0	0	0
JP25	SAT CTL	0	0	0	0	0	0
JP24	AV LINK	0	0	0	0	0	0
JP23	Hi-Fi	0	0	0	0	0	0
JP22	SORT/AUTO CLOCK	0	0	0	0	0	0
JP21	DECODER	0	0	0	0	0	0
JP20	DOLBY SURROUND	0	0	0	0	0	0
JP19	NICAM 1	0	0	0	0	0	0
JP18	NICAM 0	0	0	0	0	0	0
JP17	G-CODE 1	0	0	1	1	1	1
JP16	G-CODE 0	0	0	0	0	0	0
JP15	OEM	0	0	0	0	0	0
JP14	LP	1	1	1	1	1	1
JP13	FRONT AV	0	0	1	1	1	1
JP12	DUBLE SCART	0	0	0	0	0	0
JP11	RF OUT	0	0	0	0	0	0
JP10	TUNER 2	0	0	0	0	0	0
JP 9	TUNER 1	1	0	1	0	1	0
JP 8	TUNER 0	0	1	0	1	0	1
JP 7	SYSTEM 1	0	0	0	0	0	0
JP 6	SYSTEM 0	0	0	0	0	0	0
JP 5	SAT CH VPS OFF	0	0	0	0	0	0
JP 4	LOW POWER	1	1	1	1	1	1
JP 3	SPATIALIZER	0	0	0	0	0	0
JP 2	VPS/PDC	0	0	0	0	0	0
JP 1	COLOR 1	1	1	1	1	1	1
JP 0	COLOR 0	0	0	0	0	0	0
DISPLAY IN HEXADECIMAL NOTATION		5100004212	5100004112	7100026212	7100026112	3200026212	3200026112

0:LIGHT UP 1:FLASHING

8. BLOCK DIAGRAM

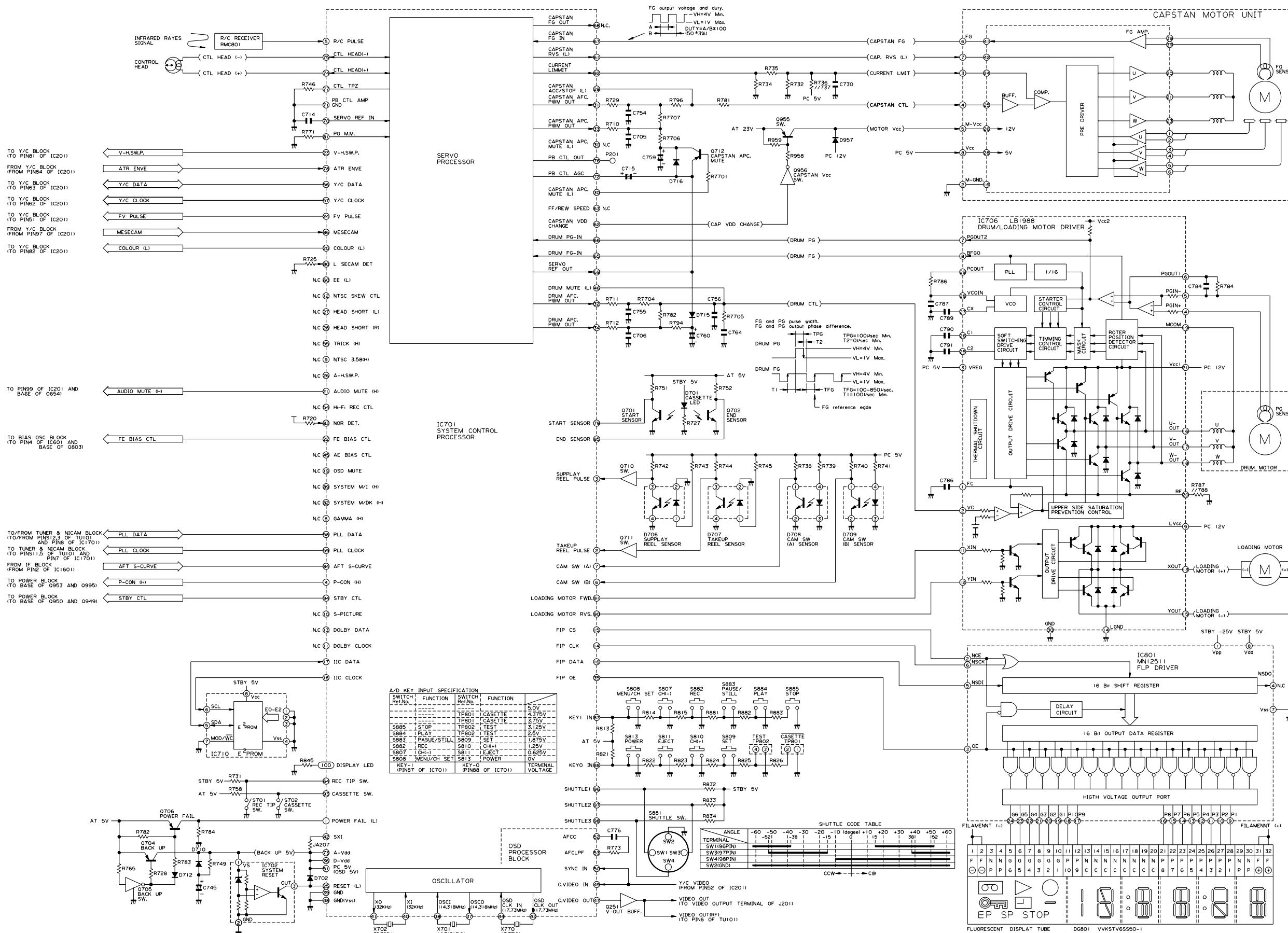
POWER CIRCUIT BLOCK DIAGRAM





VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

SYSTEM SERVO BLOCK DIAGRAM





VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

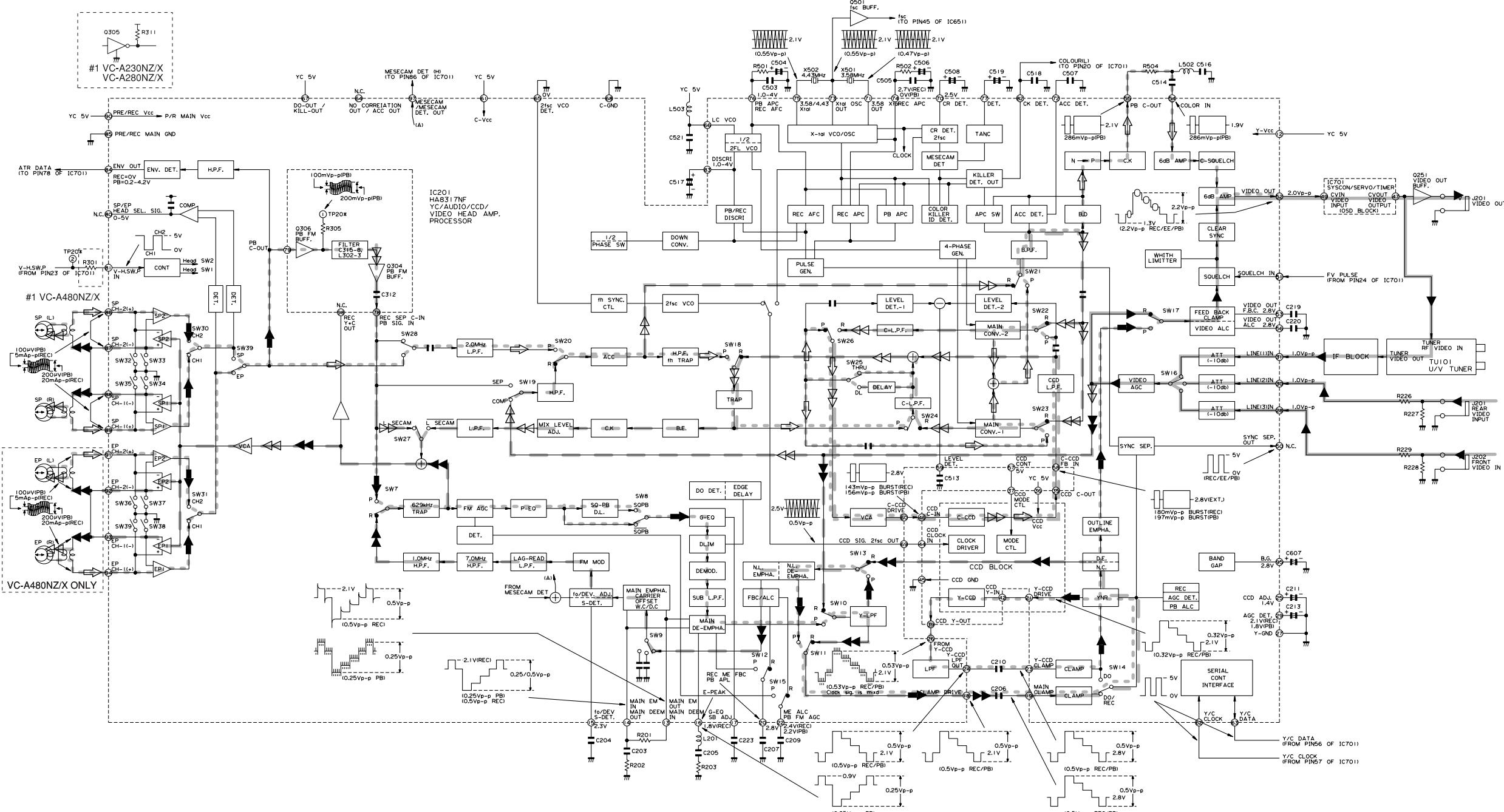
SIGNAL FLOW BLOCK DIAGRAM

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

→ PB Chrominance Signal
→ PB Luminance Signal

→ E-E Signal

→ REC Chrominance Signal
→ REC Luminance Signal

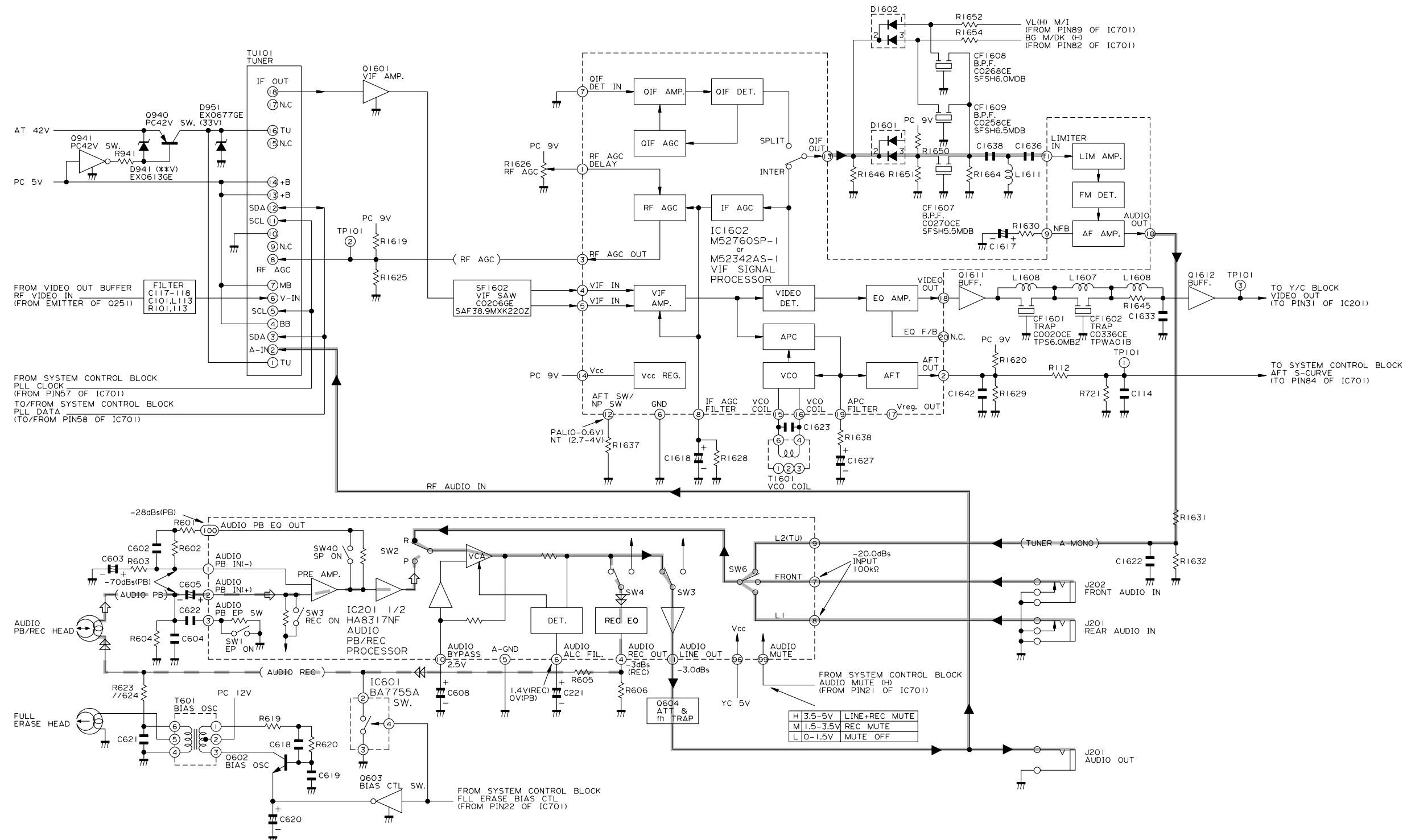




AUDIO BLOCK DIAGRAM

► EE Signal

- PB Audio Signal
- REC Audio Signal



SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET.

PARTS MARKED WITH "⚠" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.

BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:

- 1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.**
- 2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.**

NOTES:

- 1. The unit of resistance "ohm" is omitted ($k=1000$ ohm, $M=1$ Meg ohm).*
- 2. All resistors are 1/8 watt, unless otherwise noted.*
- 3. The unit of capacitance "F" is omitted ($\mu=\mu F$, $p=\mu\mu F$).*
- 4. The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.*

VOLTAGE MEASUREMENT CONDITIONS:

- 1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC110~240V, 50/60Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.*
- 2. Voltages are measured with 10000 μ V B & W or colour noted.*

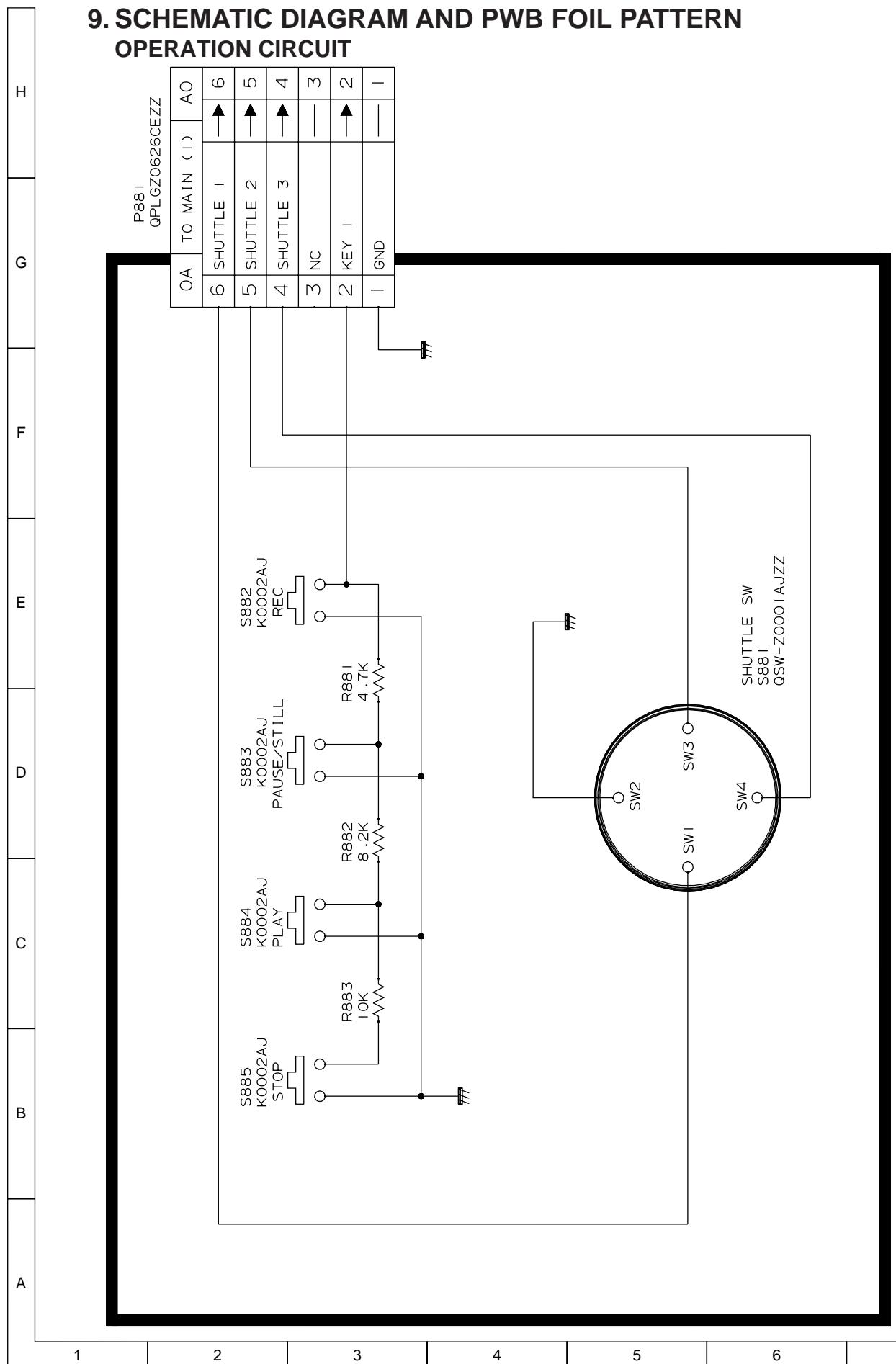
WAVEFORM MEASUREMENT CONDITIONS:

10000 μ V 87.5 percent modulated colour bar signal is fed into tuner.

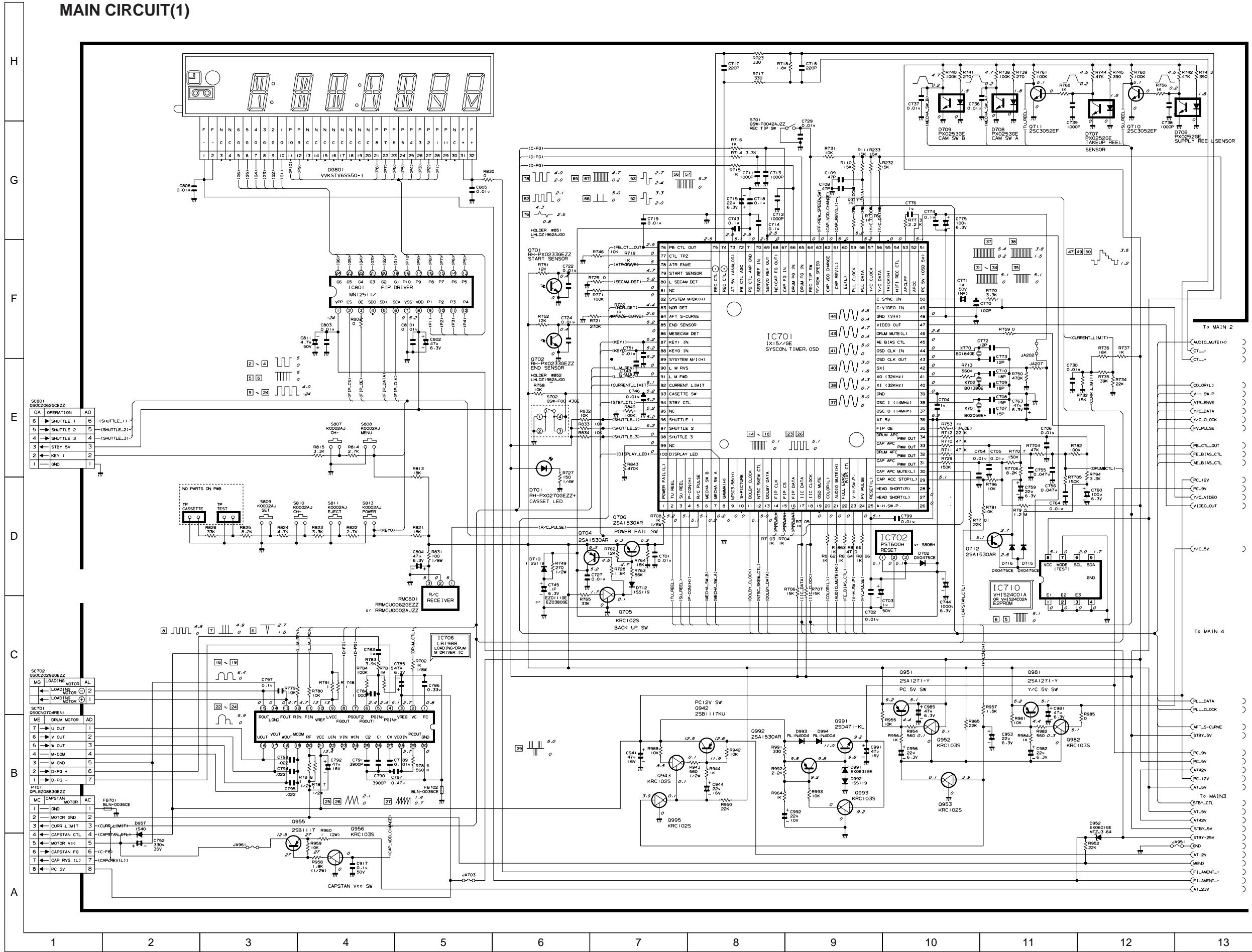
CAUTION:

This circuit diagram is original one. Therefore there may be a slight difference from yours.

9. SCHEMATIC DIAGRAM AND PWB FOIL PATTERN OPERATION CIRCUIT



MAIN CIRCUIT(1)

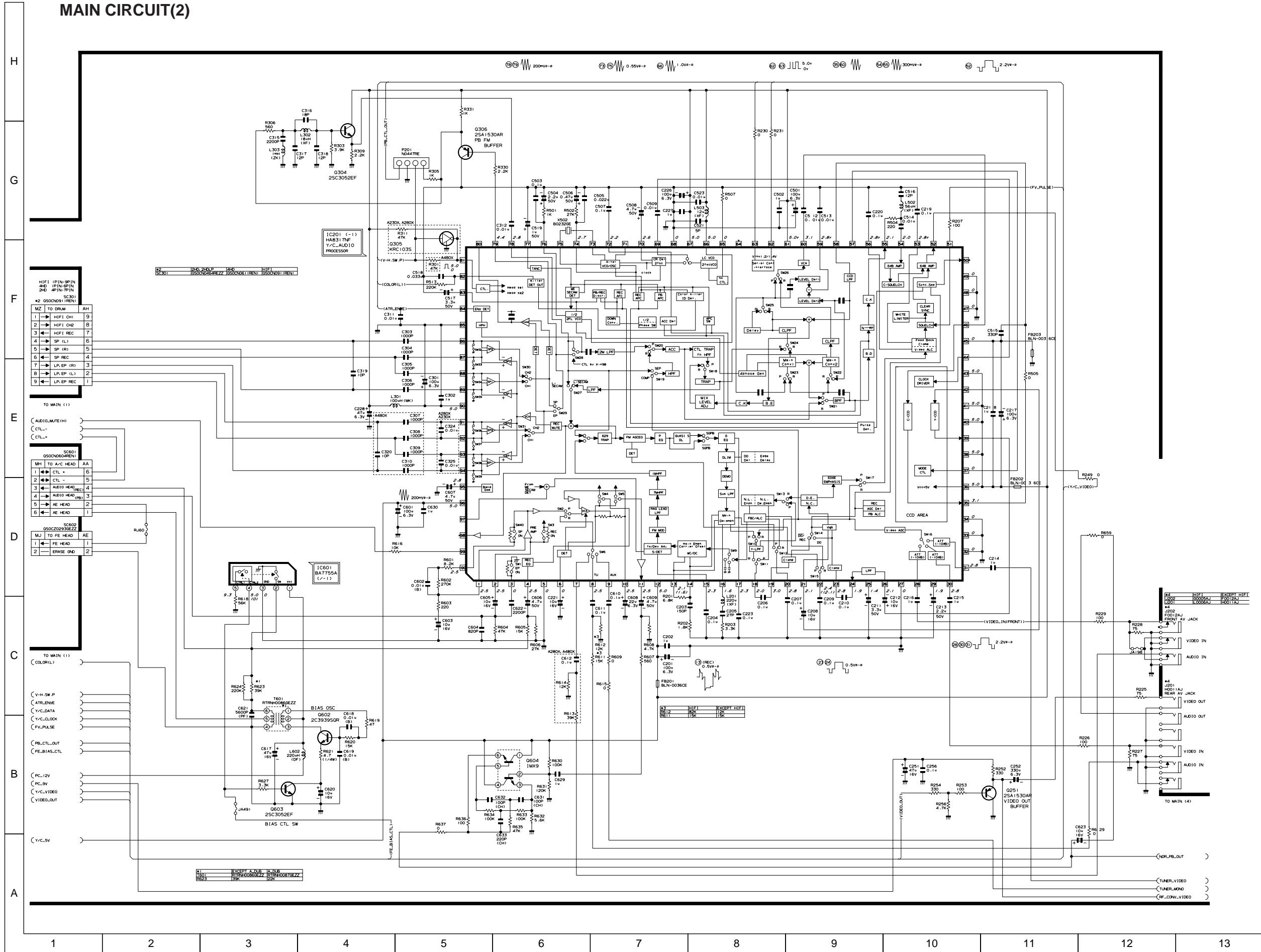




VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

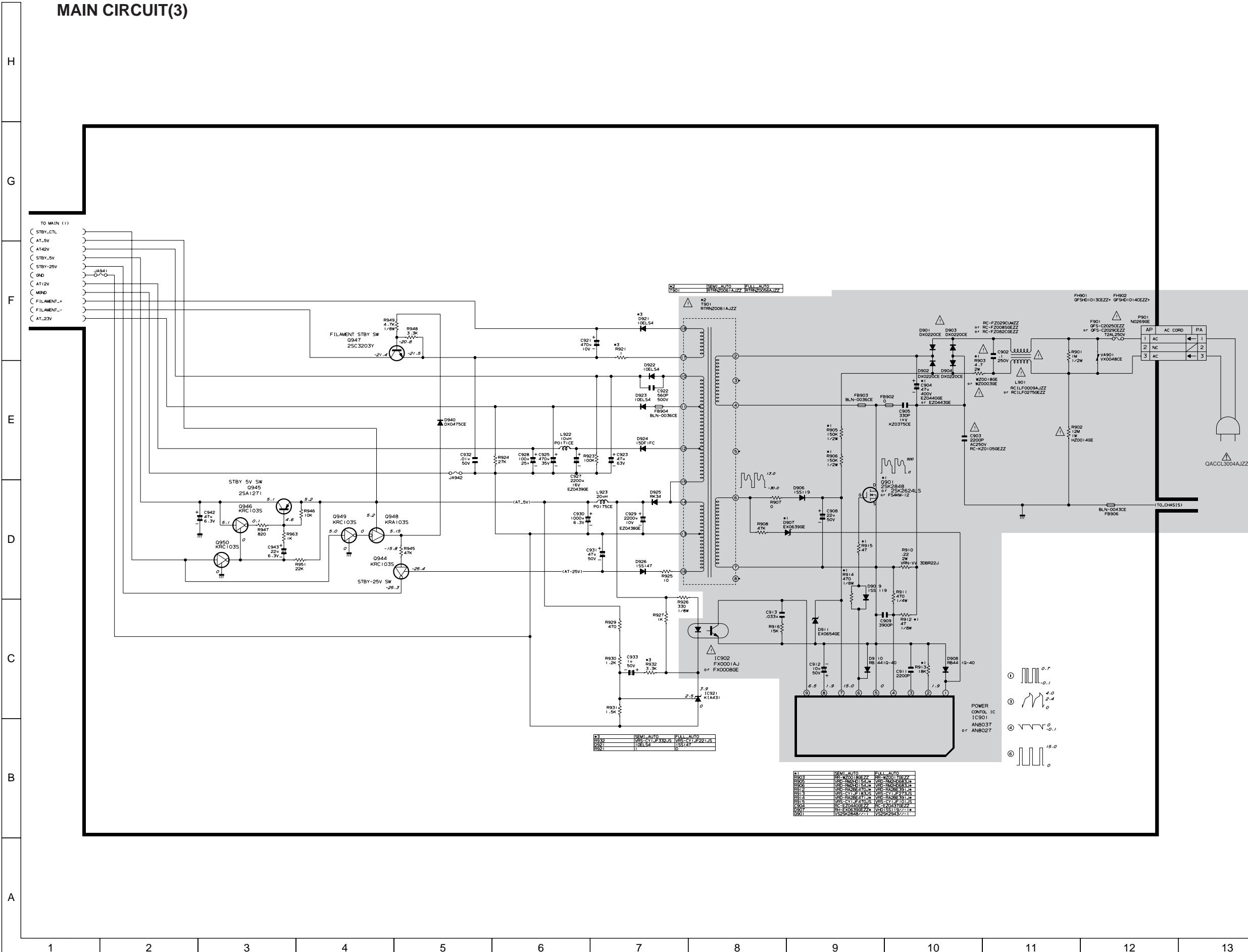
MAIN CIRCUIT(2)



* VOLTAGE MEASUREMENT MODE
PB Parentheses ()
REC ... Without Parentheses



MAIN CIRCUIT(3)



* VOLTAGE MEASUREMENT MODE

PB Parentheses ()

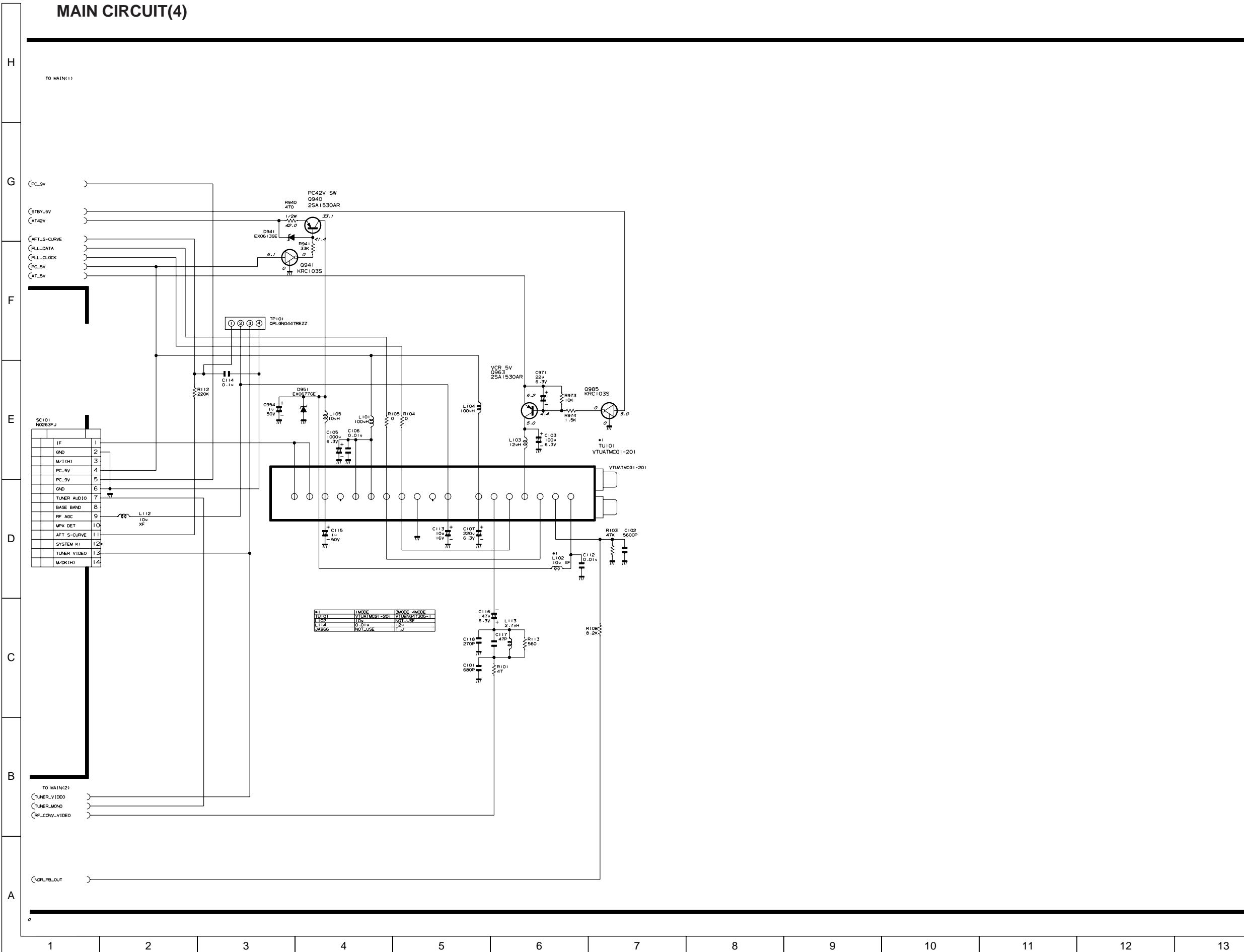
PB Parentheses ()
REC ... Without Parentheses



VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

MAIN CIRCUIT(4)



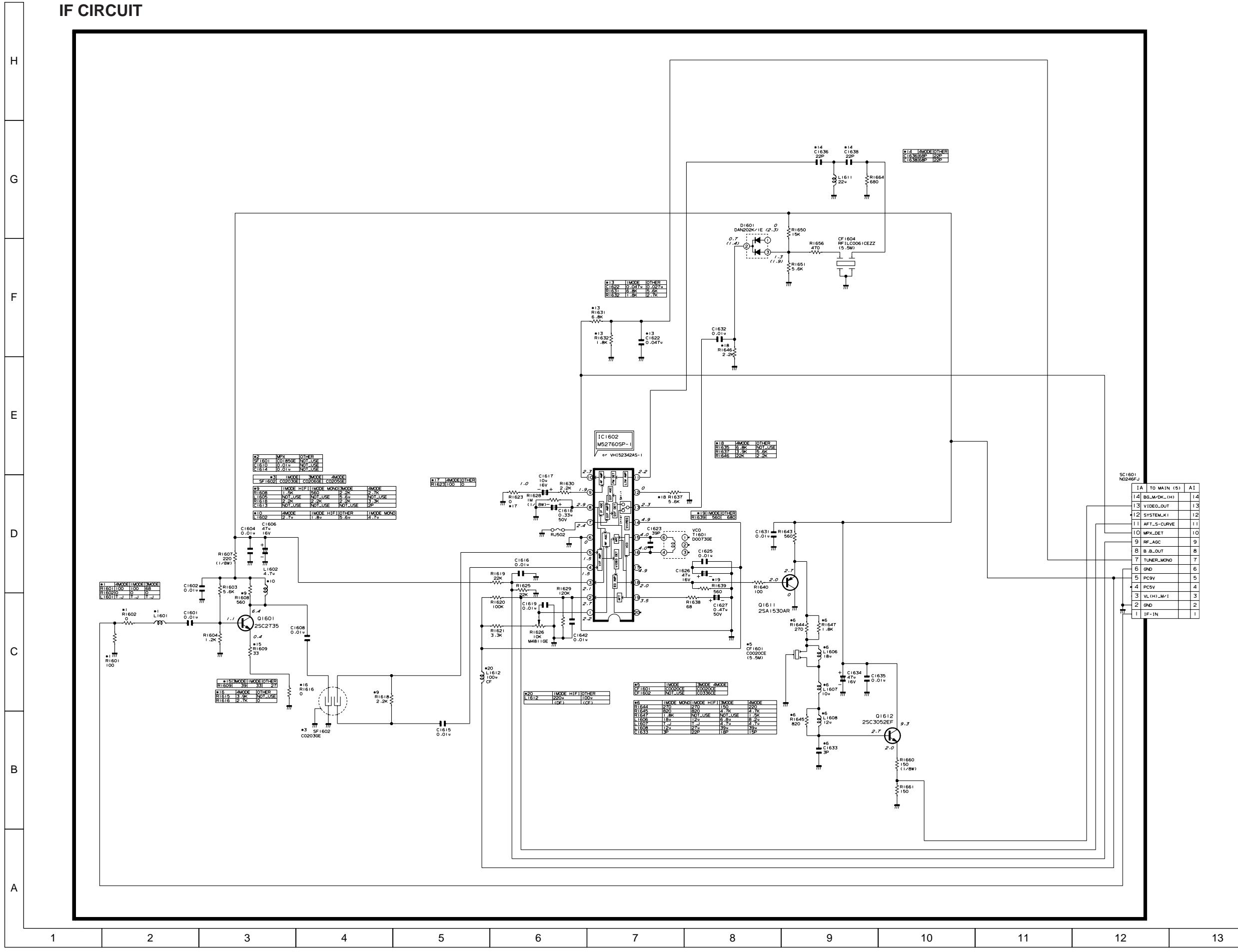
* VOLTAGE MEASUREMENT MODE
PB Parentheses ()
REC ... Without Parentheses



VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

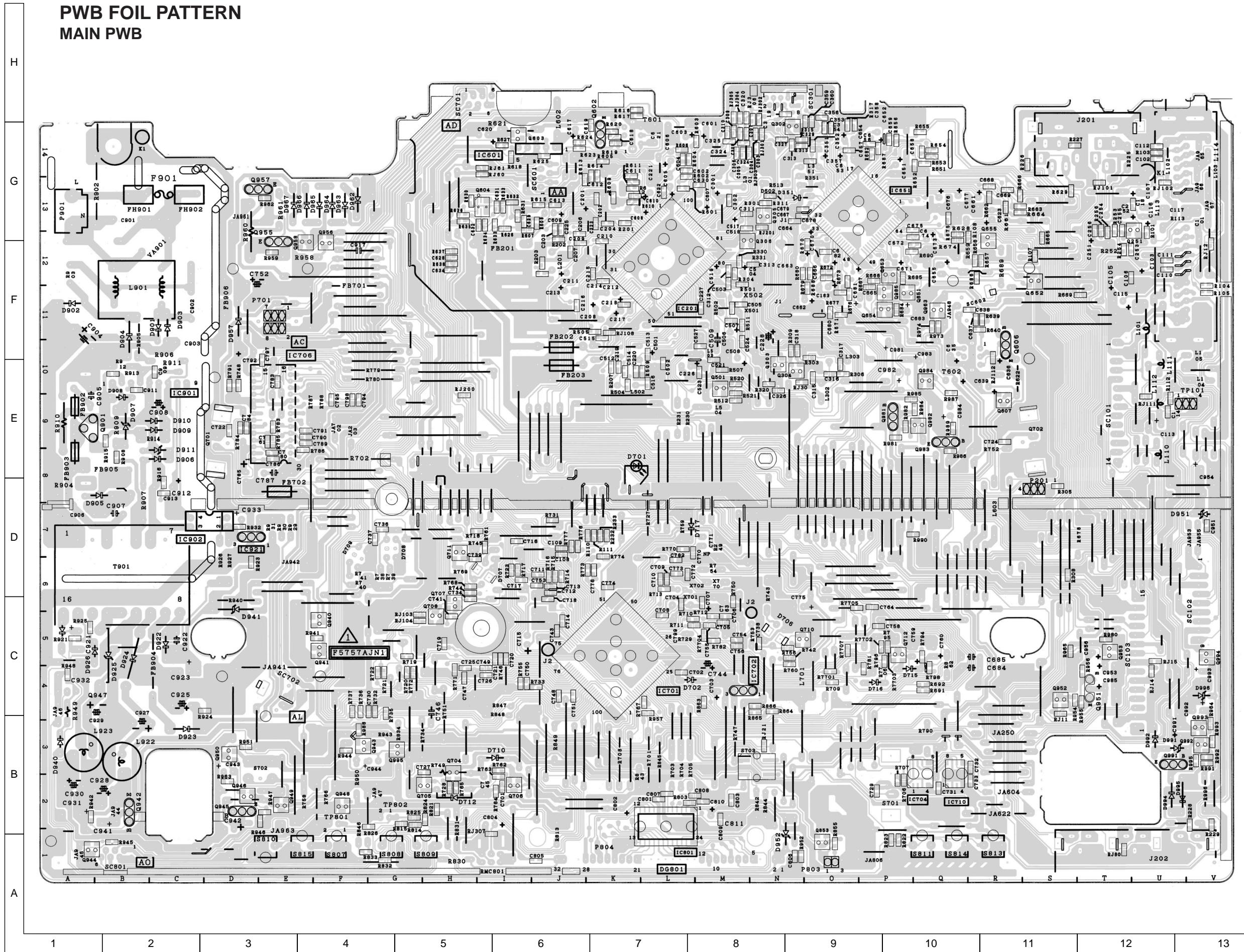
IF CIRCUIT



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

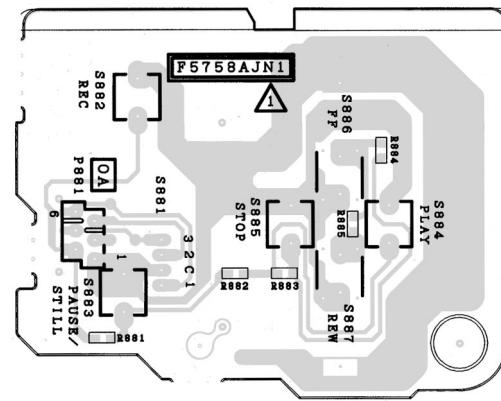
PWB FOIL PATTERN

MAIN PWB

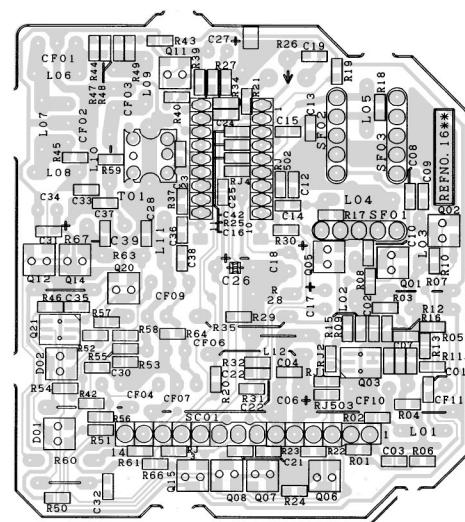


**VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X**

OPERATION PWB



IF PWB



10. REPLACEMENT PARTS LIST

PARTS REPLACEMENT

Parts marked with "  " are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

"HOW TO ORDER REPLACEMENT PARTS"

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

- | | |
|------------------------|-----------------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |
| 5. PRICE CODE | |

HOW TO IDENTIFY CHIP TRANSISTORS AND DIODES BY ITS MARKING

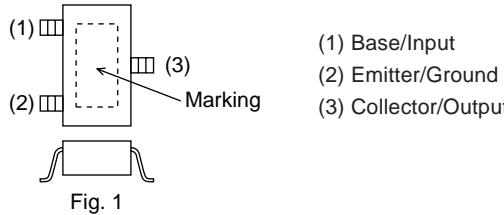


Fig. 1

Package	Marking	Parts No.
Fig. 1	FQ	VS2SA1037KQ-1
Fig. 1	BQ	VS2SC2412KQ-1

MARK ★: SPARE PARTS-DELIVERY SECTION

Ref. No.	Part No.	★	Description	Code
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PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)

DUNTK5757TEV4	- Main Unit (VC-A230NZ)	—
DUNTK5757TEV3	- Main Unit (VC-A230X)	—
DUNTK5757TEVA	- Main Unit (VC-A280NZ)	—
DUNTK5757TEV8	- Main Unit (VC-A280X)	—
DUNTK5757TEV6	- Main Unit (VC-A480NZ)	—
DUNTK5757TEV5	- Main Unit (VC-A480X)	—
DUNTK5758TEV1	- Operation Unit	—
DUNTK5767TEV1	- IF Unit	—

**DUNTK5757TEV4 (VC-A230NZ)
DUNTK5757TEV3 (VC-A230X)
DUNTK5757TEVA (VC-A280NZ)
DUNTK5757TEV8 (VC-A280X)
DUNTK5757TEV6 (VC-A480NZ)
DUNTK5757TEV5 (VC-A480X)**

Main Unit

TUNER

NOTE: THE PARTSHERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

TU101 VTUATMCG1-201 V Tuner BH

Ref. No.	Part No.	★	Description	Code
INTEGRATED CIRCUITS				
IC201	VHiHA8317F/-1	V	HA118317F	BA
IC601	VHiBA7755A/-1	V	BA7755A	AE
IC701	RH-iX1583GEZZ	J	I.C.	AZ
IC702	VHiPST600H/-1	V	IC-PST600H-2	AE
IC706	VHiLB1988//1	V	LB1988	AQ
IC710	VHiS24C01A/-1	V	S-24C02AFJ-TB (VC-A230NZ/X)	AF
IC710	VHiS24C02A/-1	V	S-24C02AFJ-TB (VC-A280NZ/X,A480NZ/X)	AK
IC801	VHiMN12511/-1	V	MN12511	AQ
IC901	VHiAN8037//1	V	I.C.	AP
IC921	VHiKIA431//1	V	KIA431	AE
TRANSISTORS				
Q251	VS2SA1530ARS1	V	2SA1530AR	AC
Q304	VS2SC3052EF-1	V	2SC3052EF	AC
Q305	VSKRC103S//1	V	KRC103S (VC-A230NZ/X,A280NZ/X)	AA
Q306	VS2SA1530ARS1	V	2SA1530AR	AC
Q602	VS2C3939SQR-1	V	2SC3939SQR	AC
Q603	VS2SC3052EF-1	V	2SC3052EF	AC
Q604	VSiMX9///-1	V	IMX9	AC
Q704	VS2SA1530ARS1	V	2SA1530AR	AC
Q705	VSKRC102S//1	V	KRC102S	AA
Q706	VS2SA1530ARS1	V	2SA1530AR	AC
Q710	VS2SC3052EF-1	V	2SC3052EF	AC
Q711	VS2SC3052EF-1	V	2SC3052EF	AC
Q712	VS2SA1530ARS1	V	2SA1530AR	AC
Q901	VS2SK2848/-1	V	2SK2848	AH
Q940	VS2SA1530ARS1	V	2SA1530AR	AC
Q941	VSKRC103S//1	V	KRC103S	AA
Q942	VS2SB1117KU1E	V	2SB1117KU	AE
Q943	VSKRC102S//1	V	KRC102S	AA
Q944	VSKRC102S//1	V	KRC102S	AA
Q945	VS2SA1271-Y-1	V	2SA1271-Y	AB
Q946	VSKRC103S//1	V	KRC103S	AA
Q947	VS2SC3203Y/-1	V	2SC3203Y	AB
Q948	VSKRA103S//1	V	KRA103S	AA
Q949	VSKRC103S//1	V	KRC103S	AA
Q950	VSKRC103S//1	V	KRC103S	AA
Q951	VS2SA1271-Y-1	V	2SA1271-Y	AB
Q952	VSKRC103S//1	V	KRC103S	AA
Q953	VSKRC102S//1	V	KRC102S	AA
Q955	VS2SB1117KU1E	V	2SB1117KU	AE
Q956	VSKRC103S//1	V	KRC103S	AA
Q963	VS2SA1530ARS1	V	2SA1530AR	AC
Q981	VS2SA1271-Y-1	V	2SA1271-Y	AB
Q982	VSKRC103S//1	V	KRC103S	AA
Q985	VSKRC103S//1	V	KRC103S	AA
Q991	VS2SD471-KL1E	V	2SD471-KL	AC
Q992	VS2SA1530ARS1	V	2SA1530AR	AC
Q993	VSKRC103S//1	V	KRC103S	AA
Q995	VSKRC102S//1	V	KRC102S	AA
DIODES				
D701	RH-PX0270GEZZ	J	Photodiode	AC
D702	VHD1SS119//1	V	1SS119	AB
D706	RH-PX0252GEZZ	J	GP1S563	AF
D707	RH-PX0252GEZZ	J	GP1S563	AF
D708	RH-PX0253GEZZ	J	GP1S94	AF
D709	RH-PX0253GEZZ	J	GP1S94	AF
D710	VHD1SS119//1	V	1SS119	AB
D712	VHD1SS119//1	V	1SS119	AB
D715	VHD1SS119//1	V	1SS119	AB
D716	VHD1SS119//1	V	1SS119	AB
D901	RH-DX0220CEZZ	V	Diode	AB
D902	RH-DX0220CEZZ	V	Diode	AB
D903	RH-DX0220CEZZ	V	Diode	AB
D904	RH-DX0220CEZZ	V	Diode	AB
D906	VHD1SS119//1	V	1SS119	AB
D907	RH-EX0639GEZZ	J	Zener Diode	AA
D908	VHDRB441Q40-1	V	Diode	AC
D909	VHD1SS119//1	V	Diode	AB
D910	VHDRB441Q40-1	V	Diode	AC

VC-A230NZ/X

VC-A280NZ/X

VC-A480NZ/X

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
⚠ D911	RH-EX0654GEZZ	J	Zener Diode	AB	C209	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
D921	VHD10ELS4//1	V	10ELS4	AD	C210	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
D922	VHD10ELS4//1	V	10ELS4	AD	C211	VCEA9M1HW335M	V	3.3	50V Electrolytic AB
D923	VHD10ELS4//1	V	10ELS4	AD	C212	VCEA9M1CW106M	V	10	16V Electrolytic AB
D924	VHD15DF1FC/1E	V	15DF1FC	AD	C213	VCEA9M1HW225M	V	2.2	50V Electrolytic AB
D925	VHDRK34///1	V	RK34	AE	C214	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
D926	VHD1SS147//1	V	1SS147	AA	C215	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
D940	VHD1SS119//1	V	1SS119	AB	C216	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
D941	RH-EX0613GEZZ	J	Zener Diode	AA					(VC-A280NZ/X,A480NZ/X)
D951	RH-EX0677GEZZ	J	Zener Diode	AB	C217	VCEA9M0JW107M	V	100	6.3V Electrolytic AB
D952	RH-EX0601GEZZ	J	Zener Diode	AA	C218	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
D957	VHD1S40///1	V	1S40	AF	C219	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
D991	RH-EX0631GEZZ	J	Zener Diode	AA	C220	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
D992	VHD1SS119//1	V	1SS119	AB	C221	VCEA9M1CW106M	V	10	16V Electrolytic AB
D993	VHDLR1N4004-1	V	RL1N4004	AD	C223	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
D994	VHDLR1N4004-1	V	RL1N4004	AD	C226	VCEA9M0JW107M	V	100	6.3V Electrolytic AB
DG801	VVKSTV6SS50-1	V	Display		C227	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
⚠ IC902	RH-FX0001AJZZ	V	TCET1103G	AE	C228	VCEA9A0JW476M	V	47	6.3V Electrolytic AB
Q701	RH-PX0233GEZZ	J	PT493FL2	AD	C251	VCEA9M1CW476M	V	47	16V Electrolytic AB
Q702	RH-PX0233GEZZ	J	PT493FL2	AD	C252	VCEA0A0JW337M	V	330	6.3V Electrolytic AC
	PACKAGED CIRCUITS				C256	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
⚠ VA901	RH-VX0048CEZZ	V	Varistor	AE	C301	VCEA9M0JW107M	V	100	6.3V Electrolytic AB
X502	RCRSB0232GEZZ	J	Crystal	AG	C302	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
X701	RCRSB0205GEZZ	J	Crystal	AM	C303	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
X702	RCRSB0138GEZZ	J	Crystal	AD	C304	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
X770	RCRSB0184GEZZ	J	Crystal	AM	C305	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
	COILS				C306	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
L101	VP-CF101K0000	V	Peaking 100μH	AB	C307	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
L102	VP-XF100K0000	V	Peaking 10μH	AB		(VC-A480NZ/X)			
L103	VP-XF120K0000	V	Peaking 12μH	AB	C308	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
L104	VP-MK101K0000	V	Peaking 100μH	AB	C309	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
L105	VP-XF100K0000	V	Peaking 10μH	AB	C310	VCKYCY1HB102K	V	1000p 50V Ceramic AA	
L112	VP-XF100K0000	V	Peaking 10μH	AB		(VC-A480NZ/X)			
L113	VP-XF2R7K0000	V	Peaking 2.7μH	AB	C311	VCKYCY1HF103Z	V	0.01	50V Ceramic AA
L201	VP-XF221J0000	V	Peaking 220μH	AB	C312	VCKYCY1HF103Z	V	0.01	50V Ceramic AA
L301	VP-MK101K0000	V	Peaking 100μH	AB	C315	VCKYCY1HB222K	V	2200p 50V Ceramic AA	
L302	VP-XF180K0000	V	Peaking 18μH	AB	C316	VCCCCY1HH180J	V	18p	50V Ceramic AA
L303	VP-MK102K0000	V	Peaking 1000μH	AB	C317	VCCCCY1HH120J	V	12p	50V Ceramic AA
L502	VP-XF560K0000	V	Peaking 56μH	AB	C318	VCCCCY1HH120J	V	12p	50V Ceramic AA
L503	VP-XF120K0000	V	Peaking 12μH	AB	C319	VCCCCY1HH100D	V	10p	50V Ceramic AA
L602	VP-DF221K0000	V	Peaking 220μH	AB	C320	VCCCCY1HH100D	V	10p	50V Ceramic AA
⚠ L901	RCILF0009AJZZ	V	Coil	AK		(VC-A480NZ/X)			
L922	RCILP0171CEZZ	V	Coil	AD	C324	VCKYCY1EB103K	V	0.01	25V Ceramic AA
L923	RCILP0175CEZZ	V	Coil	AD	C325	VCKYCY1EB103K	V	0.01	25V Ceramic AA
	TRANSFORMERS					(VC-A230NZ/X,A280NZ/X)			
T601	RTRNH0086GEZZ	J	OSC. Transformer	AD	C501	VCEA9M0JW107M	V	100	6.3V Electrolytic AB
T901	RTRNZ0061AJZZ	V	Transformer	AS	C502	VCKYCY0JF105Z	V	1	6.3V Ceramic AB
	CAPACITORS				C503	VCKYCY1CB104K	V	0.1	16V Ceramic AB
C101	VCKYD41HB681K	V	680p 50V Ceramic	AA	C504	VCEA9A1HW225M	V	2.2	50V Electrolytic AB
C102	VCKYCY1HB562K	V	5600p 50V Ceramic	AA	C505	VCKYCY1EB223K	V	0.022	25V Ceramic AA
C103	VCEA9M0JW107M	V	100 6.3V Electrolytic	AB	C506	VCEA9M1HW474M	V	0.47	50V Electrolytic AB
C105	VCEA0A0JW108M	V	1000 6.3V Electrolytic	AC	C507	VCKYCY1CF104Z	V	0.1	16V Ceramic AA
C106	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA	C508	VCEA9M1HW475M	V	4.7	50V Electrolytic AB
C107	VCEA9M0JW227M	V	220 6.3V Electrolytic	AB	C509	VCKYD41CY103N	V	0.01	16V Ceramic AA
C108	VCCCCY1HH470J	V	47p 50V Ceramic	AA	C512	VCKYD41CY103N	V	0.01	16V Ceramic AA
C109	VCCCCY1HH470J	V	47p 50V Ceramic	AA	C513	VCKYCY1HF103Z	V	0.01	50V Ceramic AA
C112	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA	C514	VCKYCY1HF103Z	V	0.01	50V Ceramic AA
C113	VCEA9M1CW106M	V	10 16V Electrolytic	AB	C515	VCKYCY1HB331K	V	330p	50V Ceramic AA
C114	VCKYCY1CF104Z	V	0.1 16V Ceramic	AA	C516	VCCCCY1HH120J	V	12p	50V Ceramic AA
C115	VCEA9M1HW105M	V	1 50V Electrolytic	AB	C517	VCEA9M1HW335M	V	3.3	50V Electrolytic AB
C116	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB	C518	VCKYCY1HF333Z	V	0.033	50V Ceramic AA
C117	VCCSD41HL470J	V	47p 50V Ceramic	AA	C519	VCEA9M1HW105M	V	1	50V Electrolytic AB
C118	VCCCCY1HH271J	V	270p 50V Ceramic	AA	C521	VCCCCY1HH5R0C	V	5p	50V Ceramic AA
C201	VCEA9M0JW107M	V	100 6.3V Electrolytic	AB	C523	VCKYCY1HF103Z	V	0.01	50V Ceramic AA
C202	VCKYCY0JF105Z	V	1 6.3V Ceramic	AB	C601	VCEA9M0JW107M	V	100	6.3V Electrolytic AB
C203	VCCCCY1HH151J	V	150p 50V Ceramic	AA	C602	VCKYCY1EB103K	V	0.01	25V Ceramic AA
C204	VCKYCY1CB104K	V	0.1 16V Ceramic	AB	C603	VCEA9M1CW106M	V	10	16V Electrolytic AB
C205	VCCCCY1HH270J	V	27p 50V Ceramic	AA	C604	VCKYCY1HB821K	V	820p	50V Ceramic AA
C206	VCKYCY1CF104Z	V	0.1 16V Ceramic	AA	C605	VCEA9M1CW106M	V	10	16V Electrolytic AB
C207	VCKYCY1CF104Z	V	0.1 16V Ceramic	AA	C606	VCEA9M1HW475M	V	4.7	50V Electrolytic AB
C208	VCEA9M1CW106M	V	10 16V Electrolytic	AB	C607	VCEA9M1HW475M	V	4.7	50V Electrolytic AB
					C608	VCEA9M0JW226M	V	22	6.3V Electrolytic AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code	
C609	VCEA9M1HW475M	V	4.7	50V Electrolytic	AB	C794	VCKYCY1EF223K	V	0.022 25V Ceramic	AA
C610	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	C795	VCKYCY1EF223K	V	0.022 25V Ceramic	AA
C611	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	C797	VCKYCY1CF104Z	V	0.1 16V Ceramic	AA
C612	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	C798	VCKYCY1EF223K	V	0.022 25V Ceramic	AA
				(VC-A280NZ/X,A480NZ/X)		C799	VCKYD41CY103N	V	0.01 16V Ceramic	AA
C617	VCEA9M0JW476M	V	47	6.3V Electrolytic	AB	C801	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C618	VCKYCY1EB103K	V	0.01	25V Ceramic	AA	C802	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB
C619	VCKYCY1EB103K	V	0.01	25V Ceramic	AA	C803	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C620	VCEA9M1CW106M	V	10	16V Electrolytic	AB	C804	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB
C621	VCQPSA2AA562J	V	5600p	100V Mylar	AC	C805	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C622	VCKYCY1HB222K	V	2200p	50V Ceramic	AA	C806	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C623	VCEA9M1CW106M	V	10	16V Electrolytic	AB	C811	VCEA9A1HW475M	V	4.7 50V Electrolytic	AB
C629	VCKYCY0JF105Z	V	1	6.3V Ceramic	AB	⚠ C902	RC-FZ029CUMZZ	V	0.1 250V M.Polypro	AD
C630	VCKYCY0JF105Z	V	1	6.3V Ceramic	AB	⚠ C903	RC-KZ0105GEZZ	J	2200 250V Ceramic	AD
C631	VCCCCY1HH101J	V	100p	50V Ceramic	AA	⚠ C904	RC-EZ0440GEZZ	J	47 400V Electrolytic	AH
C632	VCCCCY1HH101J	V	100p	50V Ceramic	AA	⚠ C905	RC-KZ0375CEZZ	V	330 1kV Ceramic	AC
C633	VCCCCY1HH221J	V	220p	50V Ceramic	AA	⚠ C908	VCEA9A1HW226M	V	22 50V Electrolytic	AB
C701	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	⚠ C909	VCKYCY1HB392K	V	3900p 50V Ceramic	AA
C702	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	⚠ C911	VCKYCY1HB222K	V	2200p 50V Ceramic	AA
C703	VCEA9M1HW105M	V	1	50V Electrolytic	AB	⚠ C912	VCEA9A1HW106M	V	10 50V Electrolytic	AB
C704	VCKYCY0JF105Z	V	1	6.3V Ceramic	AB	⚠ C913	VCKYCY1EF333Z	V	0.033 25V Ceramic	AB
C705	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C917	VCKYD41HF104Z	V	0.1 50V Ceramic	AA
C706	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C921	VCEA0A1AW477M	V	470 10V Electrolytic	AC
C707	VCCCCY1HH150J	V	15p	50V Ceramic	AA	C923	VCEA0A1JW476M	V	47 63V Electrolytic	AB
C708	VCCCCY1HH150J	V	15p	50V Ceramic	AA	C925	VCEA0A1VW477M	V	470 35V Electrolytic	AB
C709	VCCCCY1HH180J	V	18p	50V Ceramic	AA	C927	RC-EZ0439GEZZ	J	2200 16V Electrolytic	AF
C710	VCCCCY1HH180J	V	18p	50V Ceramic	AA	C928	VCEA0A1EW107M	V	100 25V Electrolytic	AC
C711	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	C929	RC-EZ0438GEZZ	J	2200 10V Electrolytic	AF
C712	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	C930	VCEA0A0JW108M	V	1000 6.3V Electrolytic	AC
C713	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	C931	VCEA0A1HW476M	V	47 50V Electrolytic	AB
C714	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	C932	VCQYTA1HM103J	V	0.01 50V Mylar	AA
C715	VCEA9M0JW226M	V	22	6.3V Electrolytic	AB	C933	VCEA9A1HW105M	V	1 50V Electrolytic	AB
C716	VCCCCY1HH221J	V	220p	50V Ceramic	AA	C941	VCEA9A1CW476M	V	47 16V Electrolytic	AB
C717	VCCCCY1HH221J	V	220p	50V Ceramic	AA	C942	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB
C718	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	C943	VCEA9M0JW226M	V	22 6.3V Electrolytic	AB
C719	VCKYCY1EB103K	V	0.01	25V Ceramic	AA	C944	VCEA9M1CW476M	V	47 16V Electrolytic	AB
C722	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C953	VCEA9M0JW226M	V	22 6.3V Electrolytic	AB
C724	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C954	VCEA9M1HW105M	V	1 50V Electrolytic	AB
C727	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C956	VCEA9M0JW226M	V	22 6.3V Electrolytic	AB
C729	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C971	VCEA9M0JW226M	V	22 6.3V Electrolytic	AB
C730	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C981	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB
C736	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C982	VCEA9M0JW226M	V	22 6.3V Electrolytic	AB
C737	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	C985	VCEA9M0JW476M	V	47 6.3V Electrolytic	AB
C738	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	C991	VCEA9M1CW476M	V	47 16V Electrolytic	AB
C739	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	C992	VCEA9M1CW226M	V	22 16V Electrolytic	AB
C743	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA					
C744	VCEA2A0JW108M	V	1000	6.3V Electrolytic	AB					
C745	RC-EZ0111GEZZ	J	0.1F	6.2V Electrolytic	AH	R101	VRS-CY1JF470J	V	47 1/16W Metal Oxide	AA
C746	VCKYD41CY103N	V	0.01	16V Ceramic	AA	R103	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
C748	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	R107	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA
C751	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	R110	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA
C752	VCEA2A1VW337M	V	330	35V Electrolytic	AD	R111	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA
C754	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	R112	VRS-CY1JF224J	V	220k 1/16W Metal Oxide	AA
C755	VCKYCY1HF473K	V	0.047	50V Ceramic	AA	R113	VRD-RA2BE561J	V	560 1/8W Carbon	AA
C756	VCKYCY1HF473K	V	0.047	50V Ceramic	AA	R201	VRS-CY1JF682J	V	6.8k 1/16W Metal Oxide	AA
C759	VCEA9M0JW226M	V	22	6.3V Electrolytic	AB	R202	VRS-CY1JF182J	V	1.8k 1/16W Metal Oxide	AA
C760	VCEA9M0JW107M	V	100	6.3V Electrolytic	AB	R203	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
C763	VCEA9M0JW476M	V	47	6.3V Electrolytic	AB	R207	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA
C764	VCKYCY1HF103Z	V	0.01	50V Ceramic	AA	R225	VRD-RA2BE750J	V	75 1/8W Carbon	AA
C770	VCCCCY1HH101J	V	100p	50V Ceramic	AA	R226	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA
C771	VCE9EM1HW105M	V	1	50V Elect.(N.P.)	AB	R227	VRS-CY1JF750J	V	75 1/16W Metal Oxide	AA
C772	VCCCCY1HH120J	V	12p	50V Ceramic	AA	R228	VRS-CY1JF750J	V	75 1/16W Metal Oxide	AA
C773	VCCCCY1HH120J	V	12p	50V Ceramic	AA					
C774	VCKYCY1CF104Z	V	0.1	16V Ceramic	AA	R229	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA
C775	VCEA9M0JW107M	V	100	6.3V Electrolytic	AB					
C776	VCKYCY0JF105Z	V	1	6.3V Ceramic	AB	R232	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA
C783	VCKYCY0JF105Z	V	1	6.3V Ceramic	AB	R233	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA
C784	VCKYCY1HB102K	V	1000p	50V Ceramic	AA	R252	VRD-RA2EE331J	V	330 1/4W Carbon	AA
C785	VCEA9M0JW476M	V	47	6.3V Electrolytic	AB	R253	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA
C786	VCKYCY1CF334Z	V	0.33	16V Ceramic	AA	R254	VRS-CY1JF331J	V	330 1/16W Metal Oxide	AA
C787	VCFYHA1HA474J	V	0.47	50V M.Polypro	AD	R256	VRS-CY1JF472J	V	4.7k 1/16W Metal Oxide	AA
C789	VCKYCY1EB103K	V	0.01	25V Ceramic	AA	R301	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
C790	VCKYCY1HB392K	V	3900p	50V Ceramic	AA					
C791	VCKYCY1HB392K	V	3900p	50V Ceramic	AA	R303	VRS-CY1JF392J	V	3.9k 1/16W Metal Oxide	AA
C792	VCEA9M1CW476M	V	47	16V Electrolytic	AB	R305	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA

RESISTORS

VC-A230NZ/X

VC-A280NZ/X

VC-A480NZ/X

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R306	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA	R742	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
R309	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	R743	VRD-RA2BE391J	V	390 1/8W Carbon	AA
R311	VRS-CY1JF473J	V	47k 1/16W Metal Oxide (VC-A230NZ/X,A280NZ/X)	AA	R744	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
R330	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	R745	VRD-RA2BE391J	V	390 1/8W Carbon	AA
R331	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R746	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R501	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	R748	VRS-CY1JF1R0J	V	1 1/16W Metal Oxide	AA
R502	VRS-CY1JF273J	V	27k 1/16W Metal Oxide	AA	R749	VRD-RM2HD271J	V	270 1/2W Carbon	AA
R504	VRS-CY1JF221J	V	220 1/16W Metal Oxide	AA	R751	VRD-RA2BE123J	V	12k 1/8W Carbon	AA
R513	VRD-RA2BE224J	V	220k 1/8W Carbon	AA	R752	VRD-RA2BE123J	V	12k 1/8W Carbon	AA
R601	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA	R753	VRD-RA2BE102J	V	1k 1/8W Carbon	AA
R602	VRS-CY1JF274J	V	270k 1/16W Metal Oxide	AA	R756	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R603	VRS-CY1JF221J	V	220 1/16W Metal Oxide	AA	R758	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R604	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA	R760	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
R605	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	R761	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
R606	VRS-CY1JF273J	V	27k 1/16W Metal Oxide	AA	R762	VRS-CY1JF123J	V	12k 1/16W Metal Oxide	AA
R607	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA	R763	VRS-CY1JF563J	V	56k 1/16W Metal Oxide	AA
R608	VRS-CY1JF472J	V	4.7k 1/16W Metal Oxide	AA	R764	VRS-CY1JF183J	V	18k 1/16W Metal Oxide	AA
R611	VRS-CY1JF393J	V	39k 1/16W Metal Oxide	AA	R765	VRS-CY1JF333J	V	33k 1/16W Metal Oxide	AA
R612	VRS-CY1JF123J	V	12k 1/16W Metal Oxide	AA	R768	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R613	VRS-CY1JF393J	V	39k 1/16W Metal Oxide	AA	R770	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
			(VC-A280NZ/X,A480NZ/X)		R771	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
R614	VRS-CY1JF123J	V	12k 1/16W Metal Oxide (VC-A280NZ/X,A480NZ/X)	AA	R773	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA
R616	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA	R776	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R618	VRS-CY1JF563J	V	56k 1/16W Metal Oxide	AA	R777	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R619	VRS-CY1JF470J	V	47 1/16W Metal Oxide	AA	R779	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R620	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	R780	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R621	VRD-RA2EE4R7J	V	4.7 1/4W Carbon	AA	R781	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R623	VRS-CY1JF393J	V	39k 1/16W Metal Oxide	AA	R782	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
R624	VRS-CY1JF224J	V	220k 1/16W Metal Oxide	AA	R783	VRS-CY1JF392J	V	3.9k 1/16W Metal Oxide	AA
R627	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA	R784	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
R630	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA	R785	VRS-CY1JF105J	V	1M 1/16W Metal Oxide	AA
R631	VRS-CY1JF124J	V	120k 1/16W Metal Oxide	AA	R786	VRS-CY1JF564J	V	560k 1/16W Metal Oxide	AA
R632	VRS-CY1JF562J	V	5.6k 1/16W Metal Oxide	AA	R787	VRD-RM2HD1R0J	V	1 1/2W Carbon	AA
R633	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA	R788	VRD-RM2HD1R0J	V	1 1/2W Carbon	AA
R634	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA	R791	VRS-CY1JF1R0J	V	1 1/16W Metal Oxide	AA
R635	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA	R794	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
R636	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA	R795	VRD-RA2BE125J	V	1.2M 1/8W Carbon	AA
R674	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA	R796	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R675	VRS-CY1JF183J	V	18k 1/16W Metal Oxide	AA	R798	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R702	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R813	VRD-RA2BE183J	V	18k 1/8W Carbon	AA
R703	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R814	VRS-CY1JF272J	V	2.7k 1/16W Metal Oxide	AA
R704	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R815	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
R705	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R821	VRS-CY1JF183J	V	18k 1/16W Metal Oxide	AA
R706	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	R822	VRS-CY1JF272J	V	2.7k 1/16W Metal Oxide	AA
R707	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	R823	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
R708	VRD-RA2BE102J	V	1k 1/8W Carbon	AA	R824	VRS-CY1JF472J	V	4.7k 1/16W Metal Oxide	AA
R710	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA	R825	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA
R711	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA	R826	VRS-CY1JF333J	V	33k 1/16W Metal Oxide	AA
R712	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA	R831	VRD-RA2BE101J	V	100 1/8W Carbon	AB
R713	VRS-CY1JF564J	V	560k 1/16W Metal Oxide	AA	R832	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R714	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA	R833	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R715	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	R834	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R716	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	R843	VRD-RA2BE103J	V	10k 1/8W Carbon	AA
R717	VRS-CY1JF331J	V	330 1/16W Metal Oxide	AA	R849	VRD-RA2BE104J	V	100k 1/8W Carbon	AA
R718	VRS-CY1JF182J	V	1.8k 1/16W Metal Oxide	AA	R862	VRD-RA2BE102J	V	1k 1/8W Carbon	AA
R719	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	R863	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R720	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA	R864	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R721	VRS-CY1JF274J	V	270k 1/16W Metal Oxide	AA	R865	VRS-CY1JF471J	V	470 1/16W Metal Oxide	AA
R722	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	R866	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R723	VRS-CY1JF331J	V	330 1/16W Metal Oxide	AA	▲ R901	VRD-RM2HD105J	V	1M 1/2W Carbon	AA
R727	VRD-RA2EE151J	V	150 1/4W Carbon	AA	▲ R902	RR-HZ0014GEZZ	J	1.2M 1W	AE
R728	VRS-CY1JF182J	V	1.8k 1/16W Metal Oxide	AA	▲ R903	RR-WZ0018GEZZ	J	4.7 2W	AD
R729	VRD-RA2BE154J	V	150k 1/8W Carbon	AA	▲ R905	VRD-RM2HD154J	V	150k 1/2W Carbon	AA
R731	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA	▲ R906	VRD-RM2HD154J	V	150k 1/2W Carbon	AA
R732	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	▲ R908	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
R734	VRD-RA2BE223J	V	22k 1/8W Carbon	AA	▲ R910	VRN-VV3DBR22J	V	0.22 2W Metal Film	AB
R735	VRS-CY1JF393J	V	39k 1/16W Metal Oxide	AA	▲ R911	VRD-RA2EE471J	V	470 1/4W Carbon	AA
R736	VRS-CY1JF183J	V	18k 1/16W Metal Oxide	AA	▲ R912	VRD-RA2BE470J	V	47 1/8W Carbon	AA
R737	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA	▲ R913	VRS-CY1JF183J	V	18k 1/16W Metal Oxide	AA
R738	VRD-RA2BE104J	V	100k 1/8W Carbon	AA	▲ R914	VRD-RA2BE471J	V	470 1/8W Carbon	AA
R739	VRD-RA2BE271J	V	270 1/8W Carbon	AA	▲ R915	VRS-CY1JF470J	V	47 1/16W Metal Oxide	AA
R740	VRD-RA2BE104J	V	100k 1/8W Carbon	AA	▲ R916	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA
R741	VRD-RA2BE271J	V	270 1/8W Carbon	AA	R921	VRS-CY1JF1R0J	V	1 1/16W Metal Oxide	AA
					R923	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA
					R924	VRS-CY1JF273J	V	27k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R925	VRS-CY1JF100J	V	10 1/16W Metal Oxide	AA
R926	VRD-RA2BE331J	V	330 1/8W Carbon	AA
R927	VRD-RA2BE102J	V	1k 1/8W Carbon	AA
R929	VRD-RA2BE471J	V	470 1/8W Carbon	AA
R930	VRD-RA2BE122J	V	1.2k 1/8W Carbon	AA
R931	VRD-RA2BE152J	V	1.5k 1/8W Carbon	AA
R932	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
R940	VRD-RM2HD471J	V	470 1/2W Carbon	AA
R941	VRS-CY1JF333J	V	33k 1/16W Metal Oxide	AA
R942	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R943	VRD-RM2HD561J	V	560 1/2W Carbon	AA
R944	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R945	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
R946	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R947	VRS-CY1JF821J	V	820 1/16W Metal Oxide	AA
R948	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA
R949	VRD-RA2BE472J	V	4.7k 1/8W Carbon	AA
R950	VRD-RA2BE223J	V	22k 1/8W Carbon	AA
R951	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA
R952	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA
R954	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA
R955	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R956	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R957	VRS-CY1JF152J	V	1.5k 1/16W Metal Oxide	AA
R958	VRD-RM2HD182J	V	1.8k 1/2W Carbon	AA
R959	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R960	VRN-VV3DB1R0J	V	1 2W Metal Film	AB
R963	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R964	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R965	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA
R973	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R974	VRS-CY1JF152J	V	1.5k 1/16W Metal Oxide	AA
R981	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R982	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA
R984	VRS-CY1JF102J	V	1k 1/16W Metal Oxide	AA
R988	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R991	VRS-CY1JF331J	V	330 1/16W Metal Oxide	AA
R992	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA
R993	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA
R7701	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA
R7704	VRS-CY1JF473J	V	47k 1/16W Metal Oxide	AA
R7705	VRS-CY1JF154J	V	150k 1/16W Metal Oxide	AA
R7706	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA
R7707	VRS-CY1JF154J	V	150k 1/16W Metal Oxide	AA

MISCELLANEOUS PARTS

⚠ ACC901	QACCL3004AJZZ	V	AC Cord	AT
⚠ F901	QFS-C2025CEZZ	V	Fuse, 2A/250V	AD
FB201	RBLN-0036CEZZ	V	Ferrite Bead	AB
FB202	RBLN-0036CEZZ	V	Ferrite Bead	AB
FB203	RBLN-0036CEZZ	V	Ferrite Bead	AB
FB701	RBLN-0036CEZZ	V	Ferrite Bead	AB
FB702	RBLN-0036CEZZ	V	Ferrite Bead	AB
⚠ FB903	RBLN-0036CEZZ	V	Ferrite Bead	AB
FB904	RBLN-0036CEZZ	V	Ferrite Bead	AB
⚠ FB906	RBLN-0043CEZZ	V	Ferrite Bead	AB
⚠ FH901	QFSHD1013CEZZ	V	Fuse Holder	AC
⚠ FH902	QFSHD1014CEZZ	V	Fuse Holder	AC
J201	QJAKH0011AJZZ	V	Jack	AK
J202	QJAKF0012AJZZ	V	Jack	AL
			(VC-A280NZ/X,A480NZ/X)	
P201	QPLGN0447REZZ	V	Plug	AA
P701	QPLGZ0883GEZZ	J	Plug, 8pin(AC)	AD
⚠ P901	QPLGN0269GEZZ	J	Plug, 2pin(AP)	AB
⚠ RMC801	RRMUCU0002AJZZ	V	Remote Receiver	AH
S701	QSW-F0042AJZZ	V	Rec Tip Switch	AG
S702	QSW-F0043GEZZ	J	Switch	AD
S807	QSW-K0002AJZZ	V	Switch, CH-	AD
S808	QSW-K0002AJZZ	V	Switch, MENU	AD
S809	QSW-K0002AJZZ	V	Switch, SET	AD
S810	QSW-K0002AJZZ	V	Switch, CH+	AD
S811	QSW-K0002AJZZ	V	Switch, EJECT	AD
S813	QSW-K0002AJZZ	V	Switch, POWER	AD
SC101	QSOCN0263FJ00	V	Socket, 14pin	AE
SC301	QSOCN0464REZZ	V	Socket, 4pin(AH)	AC

Ref. No.	Part No.	★	Description	Code
SC301	QSOCN0611REN1	V	(VC-A230NZ/X,A280NZ/X)	
SC601	QSOCN0604REN1	V	Socket, 6pin(AH)	AC
SC602	QSOCZ0293GEZZ	J	(VC-A480NZ/X)	
SC701	QSOCN0704REN1	V	Socket, 7pin(AD)	AB
SC702	QSOCZ0292GEZZ	J	Socket, 2pin(AL)	AC
SC801	QSOCZ0625CEZZ	V	Socket, 6pin(AO)	AC
TP101	QPLGN0447REZZ	V	Plug, 4pin	AA
W851	LHLDZ1962AJ00	V	Holder	AD
W852	LHLDZ1962AJ00	V	Holder	AD

DUNTK5758TEV1 Operation Unit

RESISTORS				
R881	VRS-CY1JF472J	V	4.7k 1/16W Metal Oxide	AA
R882	VRS-CY1JF822J	V	8.2k 1/16W Metal Oxide	AA
R883	VRS-CY1JF103J	V	10k 1/16W Metal Oxide	AA

MISCELLANEOUS PARTS				
P881	QPLGZ0626CEZZ	V	Plug, 6pin(OA)	AF
S881	QSW-Z0001AJZZ	V	Shuttle Switch	AQ
S882	QSW-K0002AJZZ	V	Switch, REC	AD
S883	QSW-K0002AJZZ	V	Switch, PAUSE/STILL	AD
S884	QSW-K0002AJZZ	V	Switch, PLAY	AD
S885	QSW-K0002AJZZ	V	Switch, STOP	AD

DUNTK5767TEV1 IF Unit

INTEGRATED CIRCUITS				
IC1602	VHiM52760SP-1	V	M52760SP	AK

TRANSISTORS				
Q1601	VS2SC2735//1E	V	2SC2735	AC
Q1611	VS2SA1530ARS1	V	2SA1530AR	AA
Q1612	VS2SC3052EF-1	V	2SC3052EF	AA

DIODE				
D1601	VHDDAN202K/1E	V	DAN202K	AB

COILS				
CF1601	RFILC0020CEZZ	V	Filter	AE
CF1607	RFILC0270CEZZ	V	Filter	AD
L1602	VP-XF4R7K0000	V	Peaking 4.7μH	AB
L1606	VP-XF150J0000	V	Peaking 15μH	AB
L1608	VP-XF390J0000	V	Peaking 39μH	AB
L1611	VP-XF220J0000	V	Peaking 22μH	AB
L1612	VP-DF221K0000	V	Peaking 220μH	AB
SF1602	RFILC0203GEZZ	J	Filter	AK

TRANSFORMERS				
T1601	RCILD0073GEZZ	J	Detection Coil	AE

CONTROLS				
R1626	RVR-M4811GEZZ	J	Variable Resistor	AC
CAPACITORS				
C1601	VCKYCY1EB103K	V	0.01 25V Ceramic	AA
C1602	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C1604	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C1606	VCEAEM1CW476M	V	47 16V Electrolytic	AB
C1608	VCKYCY1EB103K	V	0.01 25V Ceramic	AA
C1613	VCCCCY1HH2R0K	V	2p 50V Ceramic	AA
C1615	VCKYCY1EB103K	V	0.01 25V Ceramic	AA
C1616	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C1617	VCEAEM1CW106M	V	10 16V Electrolytic	AB
C1618	VCEAEM1HW334M	V	0.33 50V Electrolytic	AB
C1619	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA
C1622	VCKYCY1CB473K	V	0.047 16V Ceramic	AA
C1623	VCCCCY1HH390J	V	39p 50V Ceramic	AA
C1625	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C1626	VCEAEA1CW476M	V	47 16V Electrolytic	AB	24	MLEVP0324AJZZ	V	Sup Main Brake Ass'y	AF
C1627	VCEAEM1HW474M	V	0.47 50V Electrolytic	AB	25	MLEVP0325AJZZ	V	Take-Up Main Brake Ass'y	AF
C1631	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA	26	CLEVP0287GEZZ	J	Auto Head Cleaner Ass'y	AG
C1632	VCKYCY1EB103K	V	0.01 25V Ceramic	AA	27	MSLiP0010AJZZ	V	Sifter	AH
C1633	VCCCCY1HH3R0J	V	3 50V Ceramic	AA	29	MSPRD0175AJFJ	V	Reverse Guide Spring 2	AE
C1634	VCEAEM1CW476M	V	47 16V Electrolytic	AB	30	MSPRT0402AJFJ	V	Loading Double Action Spring	AE
C1635	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA	31	MSPRT0403AJFJ	V	Pinch Double Action Spring	AD
C1636	VCCCCY1HH330J	V	33p 50V Ceramic	AA	32	MSPRC0213AJFJ	V	Earth Spring	AC
C1638	VCCCCY1HH330J	V	33p 50V Ceramic	AA	33	MSPRT0416AJFJ	V	Tension Spring	AD
C1642	VCKYCY1HF103Z	V	0.01 50V Ceramic	AA	34	NBLTK0067AJ00	V	Reel Belt	AE
RESISTORS									
R1601	VRS-CY1JF680J	V	68 1/16W Metal Oxide	AA	35	NDAiV1078AJ00	V	Reel Disk	AE
R1603	VRS-CY1JF562J	V	5.6k 1/16W Metal Oxide	AA	36	NGERH1293AJZZ	V	Loading Connect Gear	AD
R1604	VRS-CY1JF122J	V	1.2k 1/16W Metal Oxide	AA	37	NGERH1295AJ00	V	Master Cam	AE
R1607	VRD-RA2BE221J	V	220 1/8W Carbon	AA	38	NGERH1294AJZZ	V	Casecon Drive Gear	AD
R1608	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	39	NGERH1270AJZZ	V	Take-Up Loading Gear	AF
R1609	VRS-CY1JF330J	V	33 1/16W Metal Oxide	AA	40	NGERH1271AJZZ	V	Supply Loading Gear	AD
R1618	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	41	NGERH1272AJZZ	V	Pinch Drive Cam	AE
R1619	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA	43	NGERH1299AJZZ	V	Reel Relay Gear	AE
R1620	VRS-CY1JF104J	V	100k 1/16W Metal Oxide	AA	44	NGERW1070AJZZ	V	Worm Gear	AD
R1621	VRS-CY1JF332J	V	3.3k 1/16W Metal Oxide	AA	45	NGERW1066AJZZ	V	Worm Wheel Gear	AD
R1625	VRS-CY1JF223J	V	22k 1/16W Metal Oxide	AA	46	NiDR-0018AJZZ	V	Idler Wheel Ass'y	AK
R1628	VRD-RA2BE105J	V	1M 1/8W Carbon	AA	47	NPLYV0162AJZZ	V	Motor Pully	AD
R1629	VRS-CY1JF124J	V	120k 1/16W Metal Oxide	AA	48	NPLYV0163AJZZ	V	Limitter Pulley Ass'y	AM
R1630	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	49	NROLP0131GEZZ	J	Guide Roller	AL
R1631	VRS-CY1JF682J	V	6.8k 1/16W Metal Oxide	AA	50	NSFTP0032AJZZ	V	Tension Pole Adjuster	AB
R1632	VRS-CY1JF182J	V	1.8k 1/16W Metal Oxide	AA	51	MSPRC0217AJFJ	V	Guide Roller Spring	AC
R1637	VRS-CY1JF562J	V	5.6k 1/16W Metal Oxide	AA	52	PREFL0111AJZZ	V	Light Guide	AE
R1638	VRS-CY1JF680J	V	68 1/16W Metal Oxide	AA	53	QCNW-8022AJZZ	V	FFC for Drum Motor	AF
R1639	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA	55	QCNW-8021AJZZ	V	FFC for A/C Head	AF
R1640	VRS-CY1JF101J	V	100 1/16W Metal Oxide	AA	56	QPWBF5243AJZZ	V	A/C Head PWB	AE
R1643	VRS-CY1JF561J	V	560 1/16W Metal Oxide	AA	57	QSOCN0605REN1	V	Socket, 6 pin	AB
R1644	VRS-CY1JF271J	V	270 1/16W Metal Oxide	AA	58	RHEDT0036AJZZ	V	Full Erase Head	AM
R1645	VRS-CY1JF471J	V	470 1/16W Metal Oxide	AA	59	RHEDU0088GEZZ	J	A/C Head Ass'y	AV
R1646	VRS-CY1JF222J	V	2.2k 1/16W Metal Oxide	AA	60	RMOTM1078GEZZ	J	Loading Motor	AP
R1647	VRS-CY1JF182J	V	1.8k 1/16W Metal Oxide	AA	61	RMOTN2055GEZZ	J	Capstan Motor	BA
R1650	VRS-CY1JF153J	V	15k 1/16W Metal Oxide	AA	62	RMOTP1141GEZZ	J	Drum Drive Motor	AV
R1651	VRS-CY1JF562J	V	5.6k 1/16W Metal Oxide	AA	63	DDRMW0028TEX3	V	Upper and lower drum Ass'y	BP
R1656	VRS-CY1JF471J	V	470 1/16W Metal Oxide	AA	(VC-A230NZ/X,A280NZ/X)				
R1660	VRD-RA2BE151J	V	150 1/8W Carbon	AA	63	DDRMW0029TEX2	V	Upper and lower drum Ass'y (VC-A480NZ/X)	BP
R1661	VRS-CY1JF151J	V	150 1/16W Metal Oxide	AA	65	QBRSK0041GEZZ	J	Drum Earth Brush	AD
R1664	VRS-CY1JF681J	V	680 1/16W Metal Oxide	AA	66	XBSD26P05J00	V	Drum Drive Motor Mounting Screw (SW2.6P+5S)	AA
MISCELLANEOUS PARTS									
SC1601	QPLGN0246FJ00	V	Plug, 14pin(IA)	AD	67	PGIDC0056GEFW	J	Drum Base	AL
MECHANISM CHASSIS PARTS									
1	LBNDK1011AJZZ	V	Tension Band Ass'y	AH	68	QPWBF5468AJZZ	V	PWB(LDG Motor)	AE
2	LBOSZ1007AJZZ	V	Tension Arm boss	AD	69	QPLGZ0292GEZZ	J	Socket(LDG Motor)	AE
3	LBOSZ1006AJZZ	V	Cassette Stay L	AD	70	MSPRC0223AJFJ	V	Azimuth Spring	AC
5	LCHSM0174AJZZ	V	Main Chassis Ass'y	AV	71	MSPRC0224AJFJ	V	Height Adjusting spring	AC
6	LHLDZ2016AJZZ	V	Loading Motor Block	AG	(VC-A480NZ/X)				
7	LPOLM0070GEZZ	J	Supply Pole Base Ass'y	AK	(VC-A230NZ/X,A280NZ/X)				
8	LPOLM0064GEZZ	J	Take-Up Pole Base Ass'y	AM	(VC-A480NZ/X)				
9	MLEVF0518AJZZ	V	Take-Up Loading Arm Ass'y	AF	(VC-A230NZ/X,A280NZ/X)				
10	MLEVF0519AJZZ	V	Supply Loading Arm Ass'y	AF	(VC-A480NZ/X)				
11	MLEVF0499AJZZ	V	Pinch Drive Lever Ass'y	AG	(VC-A230NZ/X,A280NZ/X)				
12	MLEVF0500GEZZ	J	Pinch Roller Lever Ass'y	AW	(VC-A480NZ/X)				
15	MLEVF0523AJZZ	V	Tension Arm Ass'y	AH	(VC-A230NZ/X,A280NZ/X)				
16	LANGF9620AJFW	V	A/C Head Plate	AG	(VC-A480NZ/X)				
17	MLEVP0271AJZZ	V	Sifter Drive Lever	AE	(VC-A230NZ/X,A280NZ/X)				
18	MLEVP0272AJZZ	V	Pinch Double Action Lever	AD	(VC-A480NZ/X)				
19	MLEVP0301AJZZ	V	Reverse Guide Lever Ass'y	AL	(VC-A230NZ/X,A280NZ/X)				
20	MLEVP0275AJZZ	V	Reverse Drive Lever	AD	(VC-A480NZ/X)				
21	MLEVP0292AJZZ	V	Slow Brake Lever	AE	(VC-A230NZ/X,A280NZ/X)				
22	MLEVP0290AJZZ	V	Open Lever	AD	(VC-A480NZ/X)				
23	MLEVP0293AJZZ	V	Clutch Lever	AE	(VC-A230NZ/X,A280NZ/X)				
SCREW, NUTS AND WASHERS									
201	XBSD26P08000	V	Screw 2.6P+8S A/C Head	AA	(VC-A230NZ/X,A280NZ/X)				
202	LX-HZ3082GEZZ	J	WSW2.6+6 (AC)	AD	(VC-A480NZ/X)				
203	XHPSD26P06000	V	Screw, C2.6P+6S" (For Capstan Motor)	AA	(VC-A230NZ/X,A280NZ/X)				
207	XHPSD30P08WS0	V	Screw, C3.0P+8S" (For Drum Base)	AA	(VC-A480NZ/X)				
208	XRESJ30-06000	V	E-Ring, E-3"	AA	(VC-A230NZ/X,A280NZ/X)				
209	XWHJZ31-03052	V	Washer, W3.1-5.2-0.3"	AC	(VC-A480NZ/X)				
210	XWHJZ31-04052	V	Washer, W3.1-5.2-0.4"	AC	(VC-A230NZ/X,A280NZ/X)				
211	XWHJZ31-05052	V	Washer, W3.1-5.2-0.5"	AC	(VC-A480NZ/X)				
212	XWHJZ31-06052	V	Washer, W3.1-5.2-0.6"	AC	(VC-A230NZ/X,A280NZ/X)				
213	XWHJZ31-07052	V	Washer, W3.1-5.2-0.7"	AC	(VC-A480NZ/X)				
214	PSPAP0009AJZZ	V	Reverse Guide Adjusting Nut	AB	(VC-A230NZ/X,A280NZ/X)				
216	LX-WZ1041GE00	J	CW 2.6-6-0.5 CAM	AA	(VC-A230NZ/X,A280NZ/X)				
218	XBSD30P08J00	V	Drum Base Mounting Screw (SW 3P+8S)	AA	(VC-A230NZ/X,A280NZ/X)				

Ref. No.	Part No.	★	Description	Code
219	LX-WZ1098GE00	J	CW 2.6-4.7-0.5 RED	AB
220	LX-BZ3096GEFD	J	Tilt Adjusting Screw	AA
221	XBSD26P06000	V	Azimuth Adjusting Screw	AA
			2.6+6S	
222	LX-BZ3197GEFD	J	Screw (A/C Head)	AD
223	XWHJZ31-08052	V	Washer, W3.1-5.2-0.8"	AC
224	LX-RZ3015GEFJ	J	CS Washer	

CASSETTE HOUSING CONTROL PARTS

300	CHLDX3081TEV2	V	Cassette Housing Control Ass'y	AX
301	LANGF9592AJFW	V	Upper Plate	AL
302	LHLDX1028AJ00	V	Frame (L)	AH
303	LHLDX1032AJ00	V	Frame (R)	AH
304	LHLDX1030AJZZ	V	Holder (L)	AE
305	LHLDX1031AJZZ	V	Holder (R)	AE
306	MLEVF0469AJFW	V	Proof Lever (R)	AE
307	MLEVP0281AJ00	V	Door Open Lever	AD
308	MSLIF0076AJFW	V	Slider	AK
309	MSPRD0151AJFJ	V	Proof Lever (R) Spring	AB
310	MSPRD0166AJFJ	V	Drive Gear (R) Spring	AE
311	MSPRP0175AJFJ	V	Cassette Spring	AE
312	MSPRT0381AJFJ	V	Double Action Spring	AC
313	NGERH1278AJZZ	V	Drive Gear L	AE
314	NGERH1309AJZZ	V	Drive Gear R	AE
315	NGERR1008AJ00	V	Double Action Rack Gear	AE
316	NGERR3005AJFW	V	Drive Angle Gear	AG
317	NSFTD0041AJFD	V	Main Shaft	AH

CABINT PARTS

600	GCABA3131AJSA	V	Top Cabinet	AR
601	GCABB1207AJKH	V	Main Frame	AN
602	GCOVA2143AJZZ	V	Antenna Terminal Cover	
603	PSLDM4566AJFW	V	Shield Angle	AD
604	XHPSD26P06WS0	V	Screw	AA
605	XHPSD30P06WS0	V	Screw	AA
606	LANGK0197AJFW	V	Top Cabinet Fixing Angle	AG
607	XEPSD30P14XS0	V	Screw	AB
608	LX-HZ3047GEFF	J	Screw	AA
609	XEBSD30P12000	V	Screw	AA
610	LX-HZ3087GEFN	J	Screw	AB
611	PSLDM4562AJFW	V	H/A Shield Top	AF
612	LHLDZ1962AJ00	V	Sensor LED Cover	AD
613	PGUMS0026AJZZ	V	Foot Cushion	AB
614	TLABM4067AJZZ	V	Model Label	
614	TLABM4066AJZZ	V	Model Label	
614	TLABM4069AJZZ	V	Model Label	
614	TLABM4068AJZZ	V	Model Label	
614	TLABM4070AJZZ	V	Model Label	
614	TLABM4064AJZZ	V	Model Label	
615	XJPSD30P10WS0	V	Screw	AA
616	LHLDZ2074AJZZ	V	PWB Holder	AD
618	QEARP0451AJFW	V	Earth Plate	AG

FRONT PANEL PARTS

500	CPNLC2647TEV1	V	Front Panel Ass'y (VC-A230NZ/X)	
500	CPNLC2648TEV1	V	Front Panel Ass'y (VC-A280NZ/X)	
500	CPNLC2649TEV1	V	Front Panel Ass'y (VC-A480NZ/X)	
500-2	HBDGB1010AJSA	V	SHARP Badge	AG
500-3	HDECQ2100AJSA	V	Cassette Flap (VC-A230NZ/X,A280NZ/X)	AK
500-3	HDECQ2101AJSA	V	Cassette Flap (VC-A480NZ/X)	AK

Ref. No.	Part No.	★	Description	Code
500-4	HDECQ2063AJSA	V	Window Dec.	AK
500-5	JBTN-2979AJSA	V	Button, REC	AC
500-6	JBTN-2939AJSA	V	Button, SET-UP	AF
500-7	MSPRD0103AJFJ	V	Cassette Spring	AB
502	CBTN-2869TEV2	V	PLAY Button Ass'y	AL
502-1	JBTN-2869AJSA	V	Button, PLAY	AK
502-2	LHLDZ2021AJZZ	V	Button Holder	AE
502-3	JKNBK1106AJSA	V	Knob	AG
503	TLABZ1610AJZZ	V	Feature Label	

SUPPLIED ACCESSORIES

ACCESSORIES		
QCNW-0323AJZZ	V	75 ohm Coaxial Cable
TINS-3627AJZZ	V	Operation Manual (VC-A230NZ)
TiNS-3626AJZZ	V	Operation Manual (VC-A230X)
TiNS-3631AJZZ	V	Operation Manual (VC-A280NZ,A480NZ)
TiNS-3632AJZZ	V	Operation Manual (VC-A280X,A480X)
RRMCG1206AJSA	V	Infrared Remote Control Unit (VC-A230NZ/X)
RRMCG1196AJSA	V	Infrared Remote Control Unit (VC-A280NZ/X,A480 NZ/X)

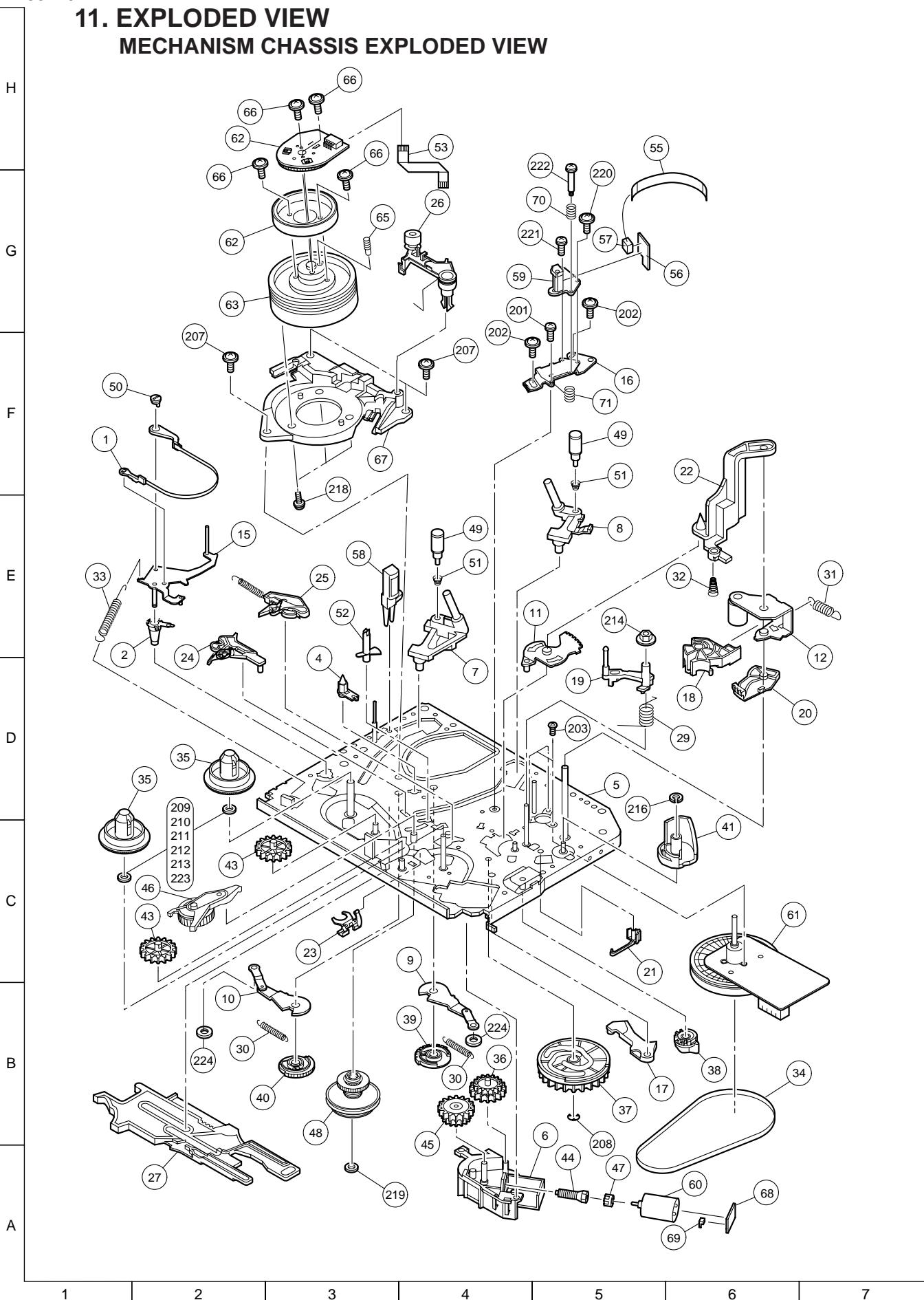
ACCESSORIES
(Not Replacement Item)
TGAN-0068PEZZ - Guarantee Card

PACKING PARTS (NOT REPLACEMENT ITEM)

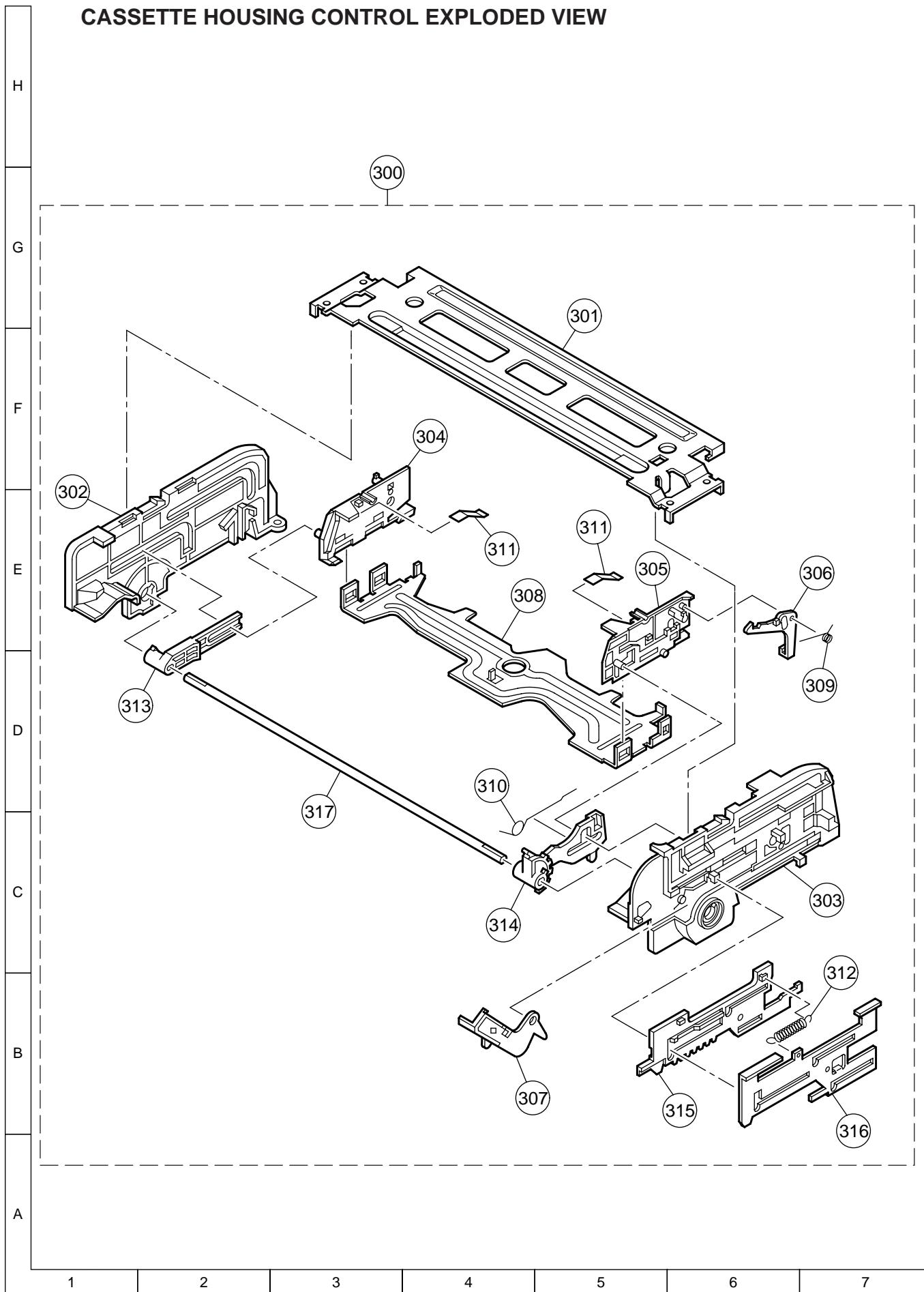
SPAkc4136AJZZ	-	Packing Case (VC-A230NZ) —
SPAkc4135AJZZ	-	Packing Case (VC-A230X) —
SPAkc4138AJZZ	-	Packing Case (VC-A280NZ) —
SPAkc4137AJZZ	-	Packing Case (VC-A280X) —
SPAkc4139AJZZ	-	Packing Case (VC-A480NZ) —
SPAkc4133AJZZ	-	Packing Case (VC-A480X) —
SPAkx1057AJZZ	-	Packing Foam
SSAKA0001AJZZ	-	Polyethylene Bag
SPAkp0114AJZZ	-	Foam Bag
TLABK0005AJZZ	-	No. Label

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

11. EXPLODED VIEW MECHANISM CHASSIS EXPLODED VIEW

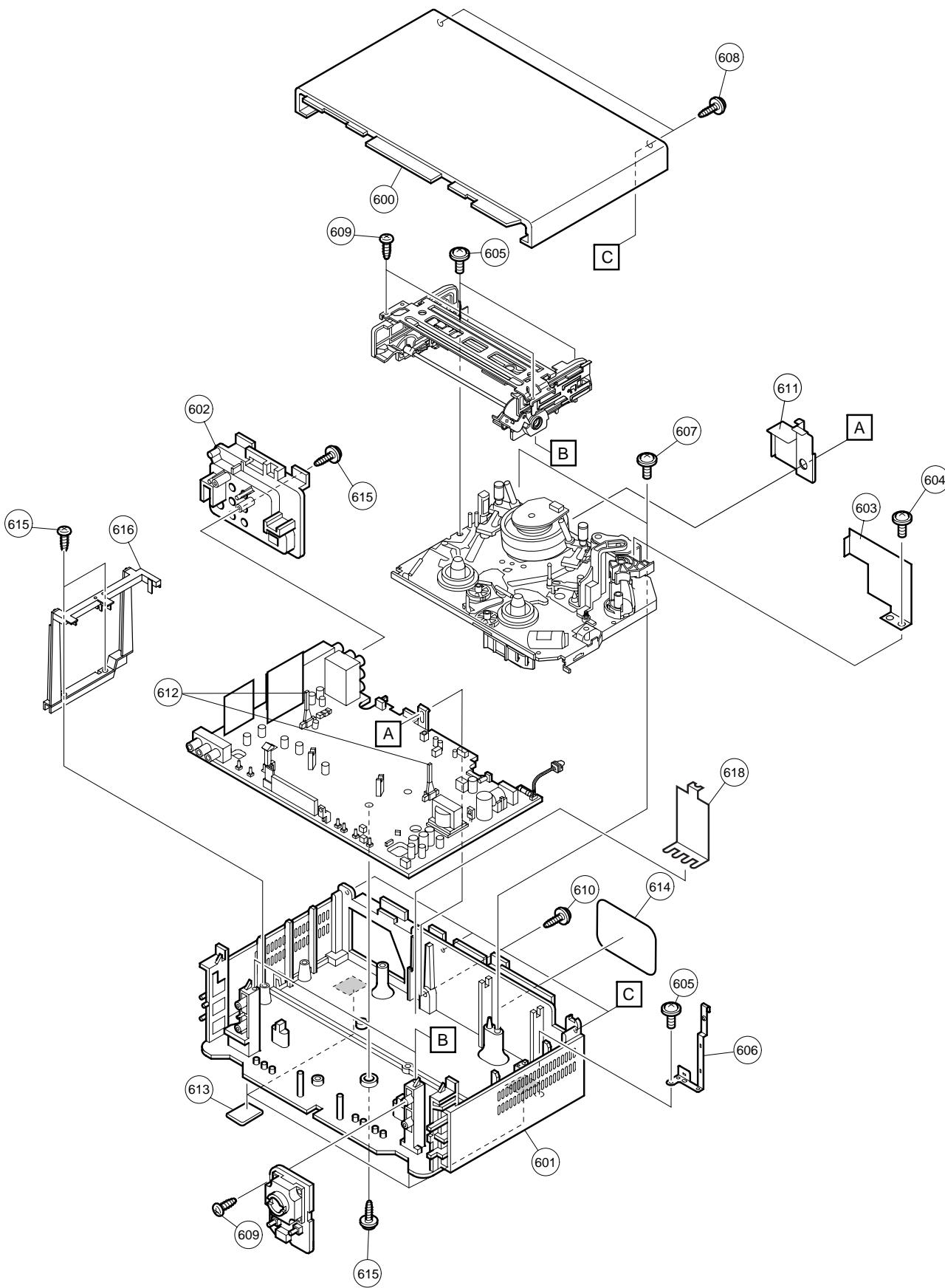


CASSETTE HOUSING CONTROL EXPLODED VIEW

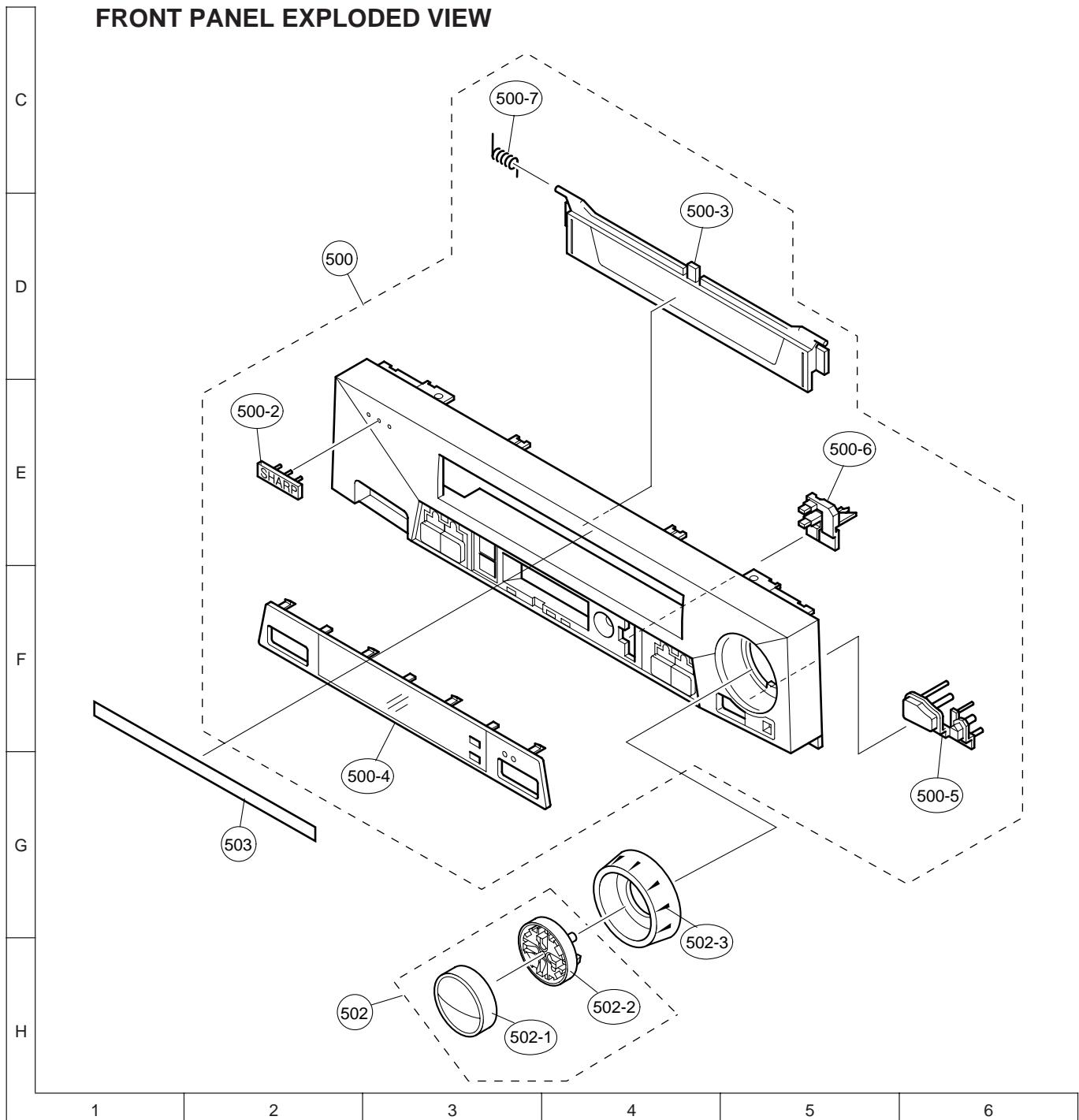


VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

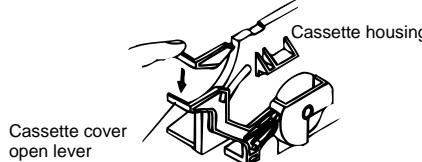
MECHANICAL EXPLODED VIEW



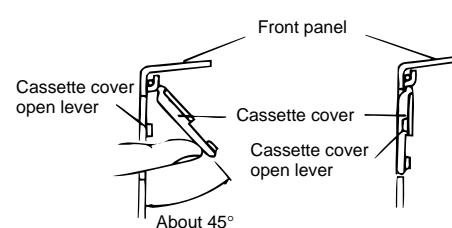
FRONT PANEL EXPLODED VIEW



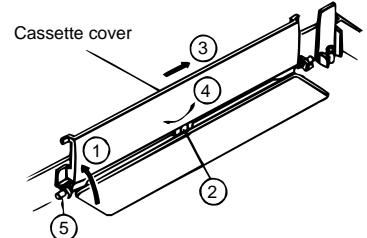
PRECAUTION ON FRONT PANEL SET-UP



Before attaching the front panel in position, make sure that the cassette cover open lever is in its right place (lower-most). If it is out of position, push it down with a finger.



Keep the cassette over about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.



Removing the cassette compartment cover.
 1 Open the cassette compartment cover fully.
 2 Remove the center positioner.
 3 Slide the cover to the right.
 4 Slightly bend the cover.
 5 Draw out the left-side rod.

VC-A230NZ/X
VC-A280NZ/X
VC-A480NZ/X

12. PACKING OF THE SET

Accessories

TINS-3627AJZZ	Operation Manual (VC-A230NZ)
TINS-3626AJZZ	Operation Manual (VC-A230X)
TINS-3631AJZZ	Operation Manual (VC-A280NZ,A480NZ)
TINS-3632AJZZ	Operation Manual (VC-A280X,A480X)
★ TGAN-0068PEZZ	Guarantee Card

RRMCG1206AJSA (VC-A230NZ/X)
RRMCG1196AJSA(VC-A280NZ/X,A480NZ/X)
Infrared Remote Control Unit

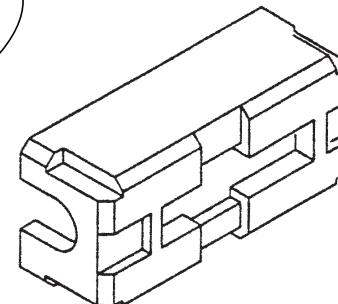
QCNW-0323AJZZ
75 ohm Coaxial Cable

★ SPAKX1057AJZZ
Packing Foam

★ TLABK0005AJZZ No. Label

SSAKA0001AJZZ
Polyethylene Bag

★ SPAKP0114AJZZ
Form Bag



★ SPAKC4136AJZZ (VC-A230NZ)
★ SPAKC4135AJZZ (VC-A230X)
★ SPAKC4138AJZZ (VC-A280NZ)
★ SPAKC4137AJZZ (VC-A280X)
★ SPAKC4139AJZZ (VC-A480NZ)
★ SPAKC4133AJZZ (VC-A480X)
Packing Case

MARK ★Not Replacement Item