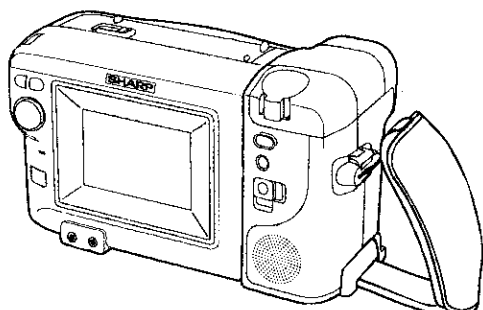


SHARP SERVICE MANUAL

S87D1VL-H770S

LIQUID CRYSTAL CAMCORDER **8** PAL



VL-H770H VL-H770S MODELS VL-H95E

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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1. SPECIFICATIONS

Signal System: PAL standard
Recording System: 2 rotary heads, helical scanning system
Cassette: 8 mm video tape, MP type or Hi8 MP, ME type
Recording/Playback Time: 90 minutes (P5-90)
Tape Speed: 20.051 mm/second
Pickup Device: 1/4" (6.4mm, effective size: 4.5 mm) CCD image sensor (with approx. 470,000 pixels including optical black)
Lens: 12 × power zoom lens (F1.8, f=4.2-50.4 mm), full-range auto focus
Lens Filter Diameter: 37 mm
Monitor: 3" (7.6 cm) —full-colour LCD screen (TFT active matrix)
Microphone: Electret stereo microphone
Colour Temperature Compensation: Auto white balance with white balance lock
Minimum Illumination: 5 lux* (with gain-up)
Video Output Level: 1.0 Vp-p 75-ohm unbalanced
Audio Output Level: -8 dBs, impedance less than 2.2 kohms
Speaker Output: 300 mW
External Microphone Input: 3.5 mm diameter mini-plug, -66 dBs, output impedance 6.8 kohms, DC 4 V, for plug-in-power microphone use
Power Requirement: DC 3.6V
Power Consumption: 6.0 W (during camera recording in full auto mode with zoom motor off, backlight in normal mode, and without A/V pack)
Operating Temperature: 0°C to + 40°C
Operating Humidity: 30% to 80%
Storage Temperature: -20°C to +60°C
Dimensions (approx.): 7" (W) X 4 1/8" (H) X 3 5/16" (D)
[177 mm (W) × 105 mm (H) × 84 mm (D)]
Weight (approx.): 740 g (without battery pack, lithium battery, video cassette, and lens cap)

AC Adapter/Battery Charger

Power Requirement: AC 110-240 V, 50/60 Hz
DC Output: 4.5 V
Power Consumption: 27 W
Dimensions (approx.): 2 31/32" (W) X 2" (H) X 5 5/16" (D)
[75 mm (W) × 51 mm (H) × 135 mm (D)]
Weight (approx.): VL-H770S (UADP-0206TAZZ) : 360 g
VL-H770H (UADP-0207TAZZ) : 425 g
VL-H95E : For Asia/Middle East (UADP-0232TAZZ) : 360 g
For Hong Kong (UADP-0223TAZZ) : 425 g

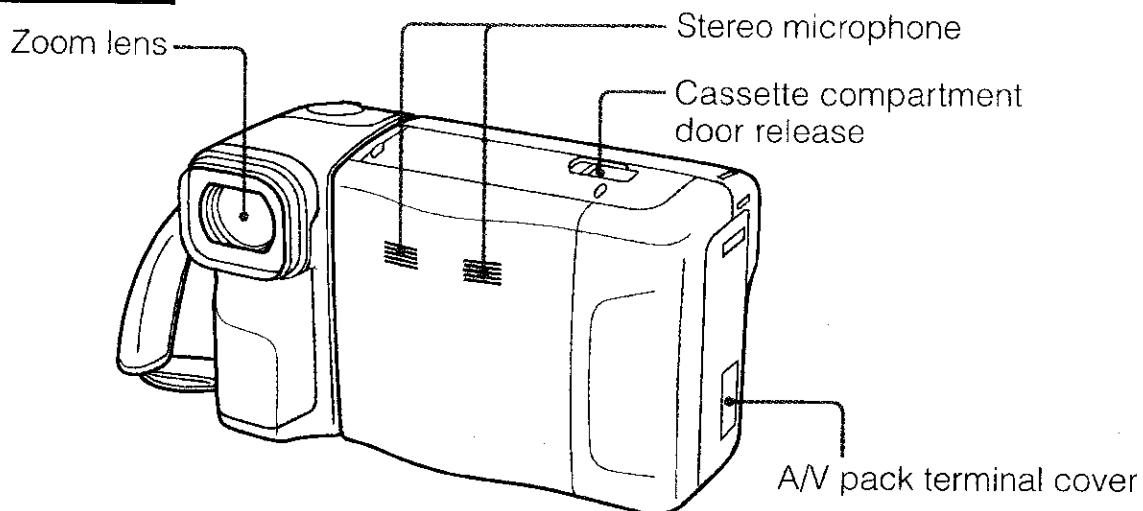
Specifications are subject to change without notice.

*Minimum illumination: Since there is no widely accepted testing procedure for determining minimum illumination capability, lux ratings are comparable only between models from the same manufacturer.

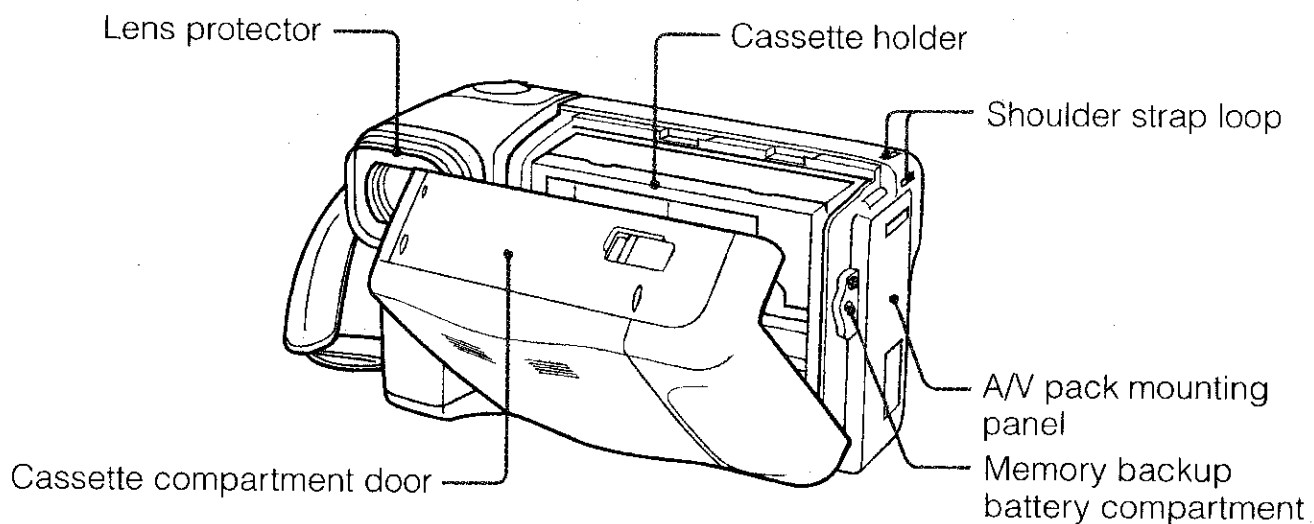
2. PART NAMES AND FUNCTION

For details on the use of each control.

Front view

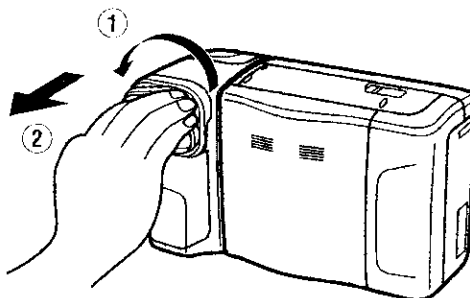


When the cassette compartment door is opened

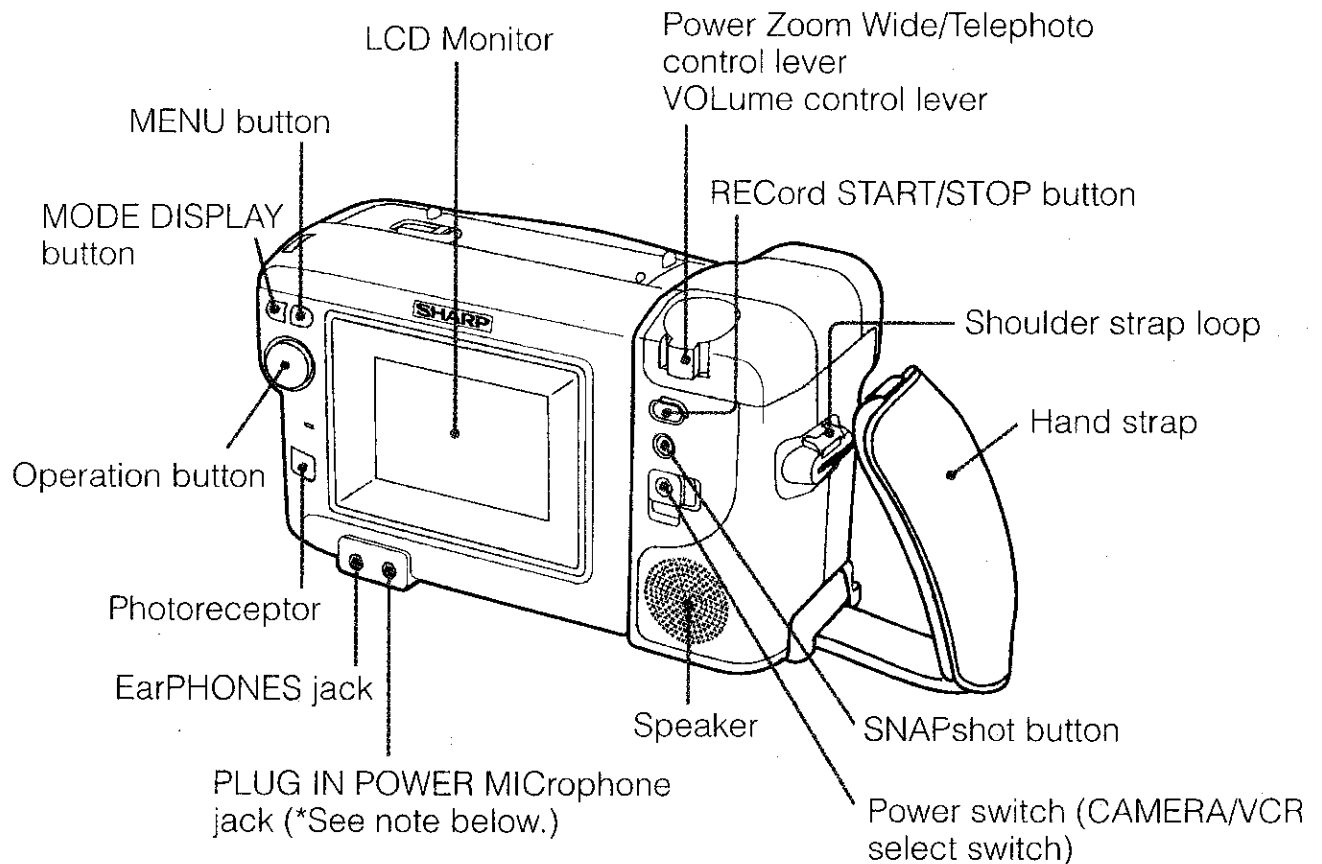


Removing the Lens Protector

Before mounting the optional wide or telephoto conversion lens, remove the lens protector by turning it anticlockwise.



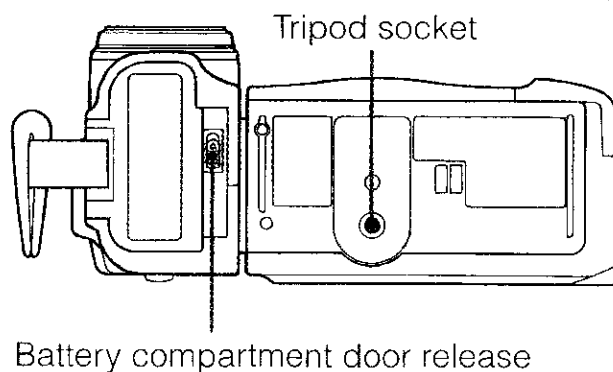
Rear view



*About the PLUG IN POWER MIC Jack

This external microphone jack outputs a DC voltage of 4.0 V. It is for use with any 2.5–4.0 volt DC use condenser-type microphone with a 3.5 mm diameter plug. The use of other types of microphones may result in damage to the microphone or the VIEWCAM.

Bottom view



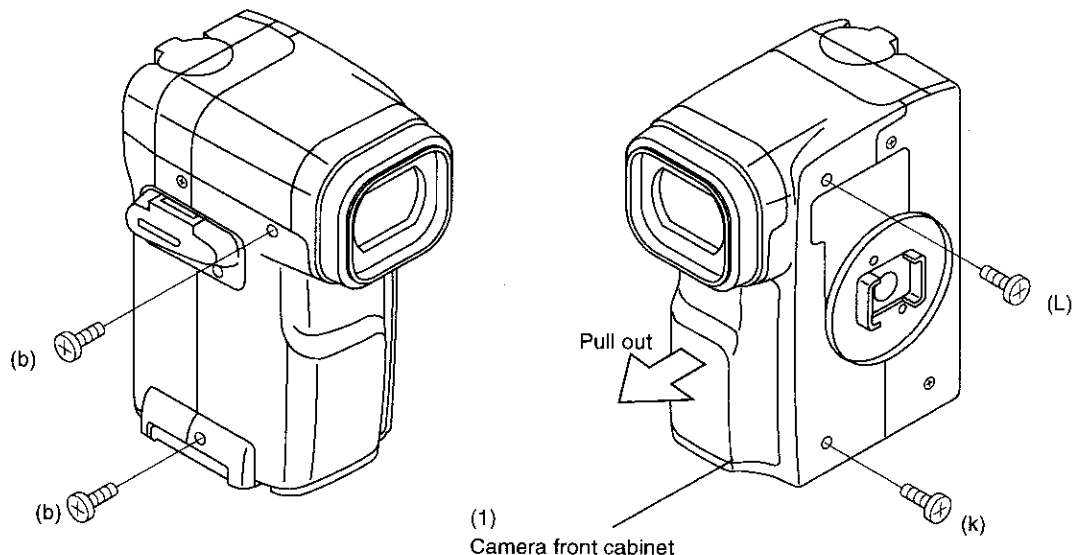
3. DISASSEMBLY OF THE SET

3-1. Removal of the camera section

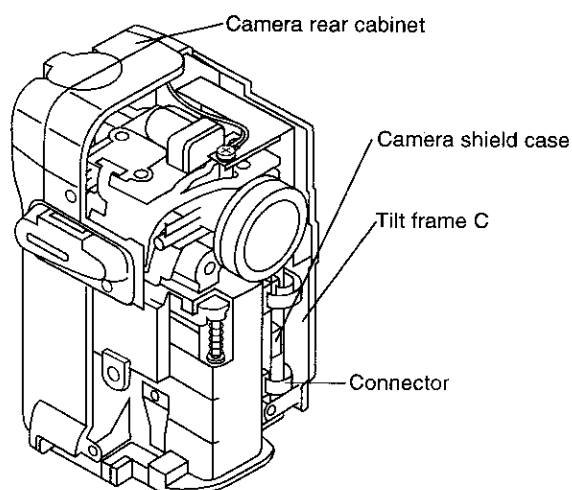
Note:

Before removing the cabinet, turn off the power supply, and ascertain that the battery has been removed.

1. Remove one screw ((L)XiPSN20P04000) and two screws ((b)LX-HZ0018TAFN) and one screw ((k) LX-HZ0018TAFN), and pull out the camera front cabinet (1).



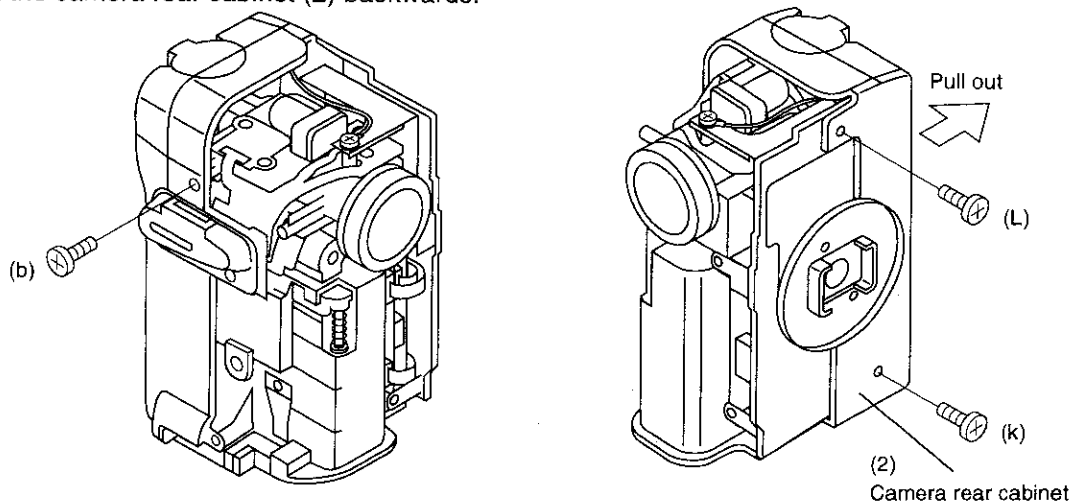
2. Remove the connector (1 pc.).



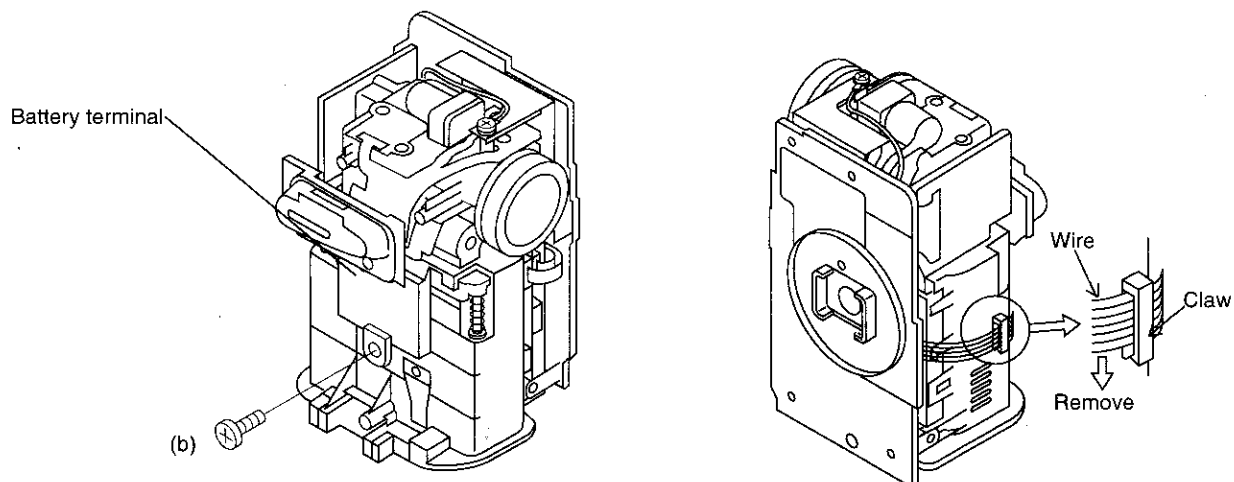
Note:

When assembling the camera rear cabinet, lay the FPC between the camera shield case and the tilt frame C, and insert it into the connector.

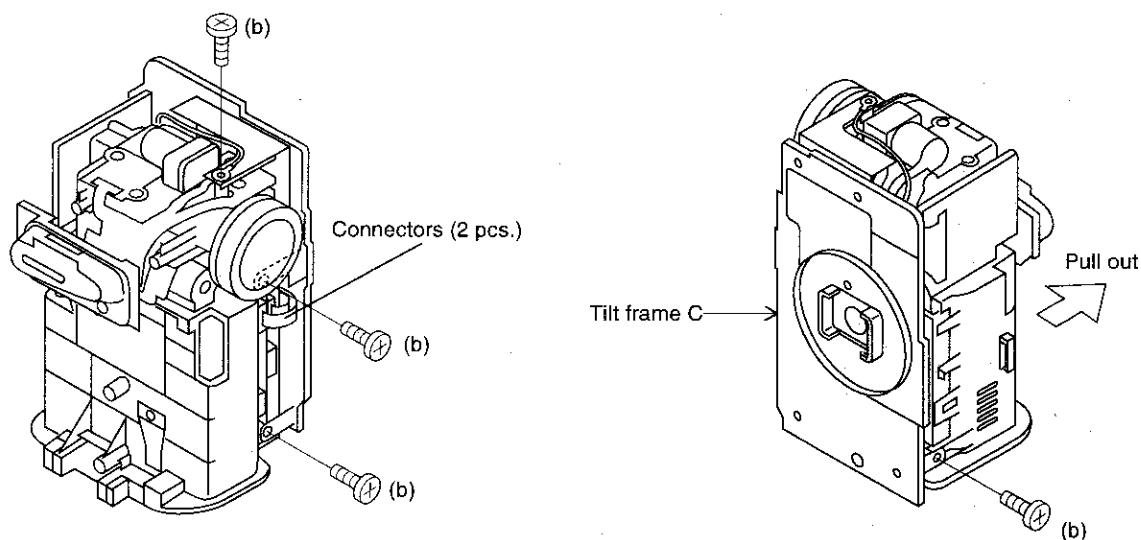
3. Remove one screw ((L)XiPSN20P04000) and one screw ((b)LX-HZ0018TAFN) and one screw ((k) LX-HZ0018TAFN), and pull out the camera rear cabinet (2) backwards.



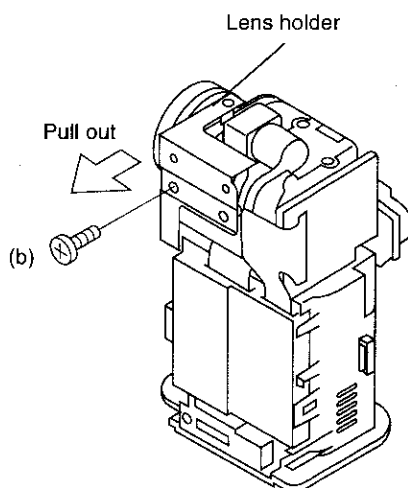
4. Remove one screw ((b)LX-HZ0018TAF), remove the battery terminal, and remove the wire from the claw.



5. Remove two connectors and four screws ((b)LX-HZ0018TAF), and pull out the lens unit from the tilt frame C.



6. Remove one screw ((b)LX-HZ0018TAF), pull out the lens holder.



7. Disengage the claw of the lens section, using the point of a pen as shown in Figure A, and pull out the lens upwards.

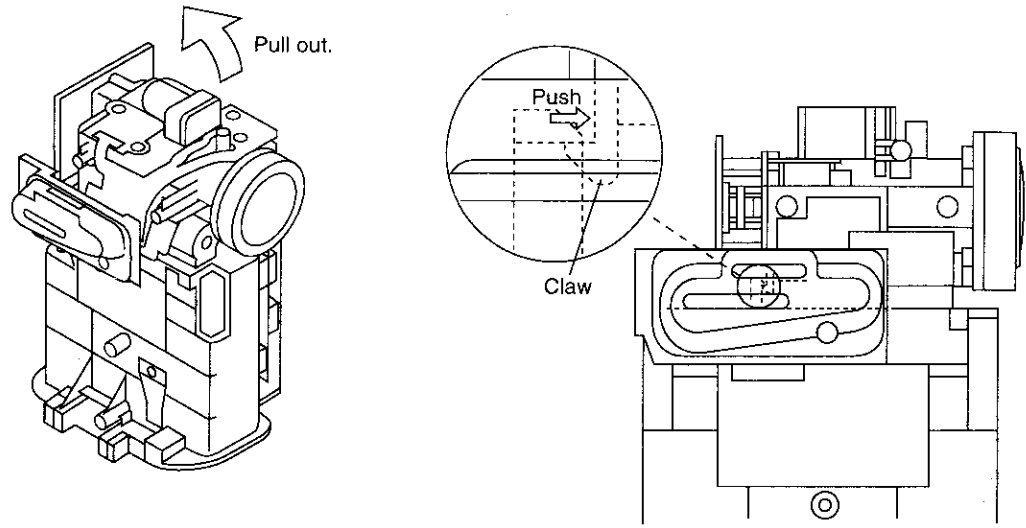
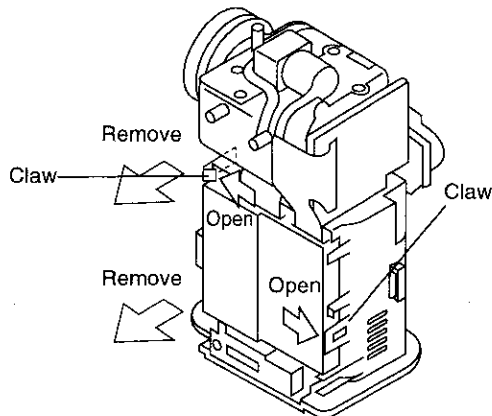


Figure A

Note:

Be careful so as not to damage the FPC since the camera PWB unit is connected to the lens unit with the FPC attached.

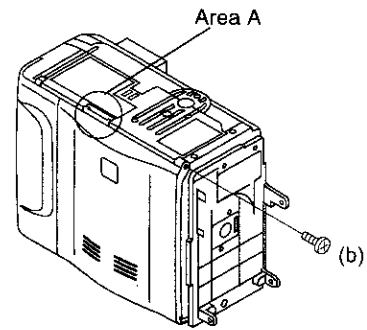
8. Remove the camera PWB unit and the lens unit together, opening two claws of the battery holder outward.



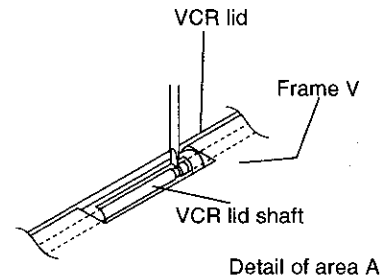
3-2. Disassembly of the VCR main body

1. Removal of the VCR lid shaft

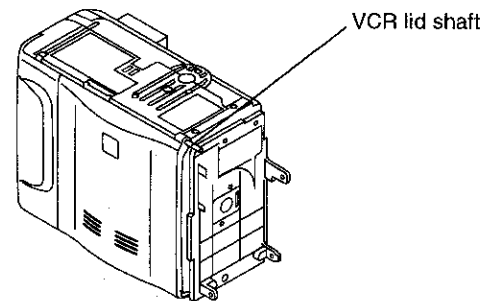
(1) Remove one screw ((b)LX-HZ0018TAFF).



(2) Bring the jig (example: slotted precision screwdriver) into contact with the removal groove of the VCR lid shaft, and slide the screwdriver with care to prevent injuring the VCR lid and frame V.

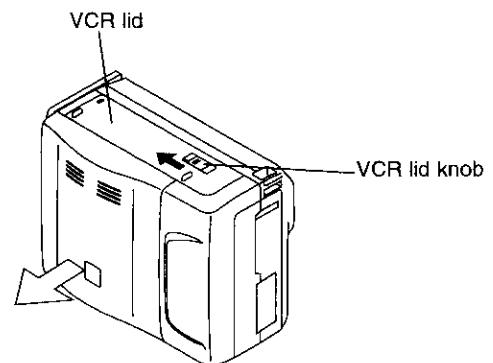
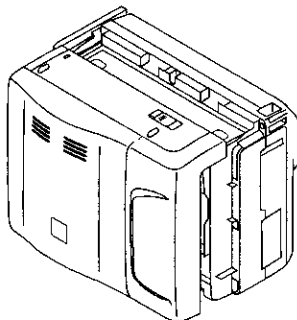


(3) Pull out the VCR lid shaft head which projects beyond the surface of the VCR lid.

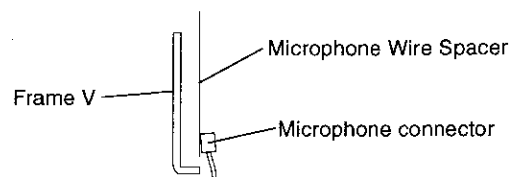


2. Removal of the VCR lid

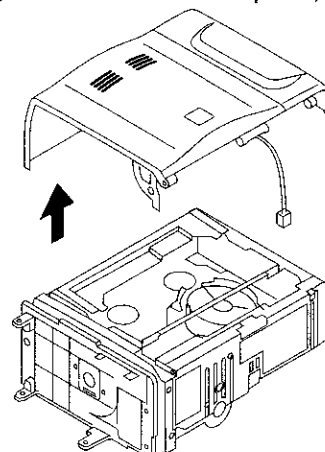
(1) Slide the "VCR lid knob" in the arrow direction, and slide the VCR lid in the arrow direction as far as the cabinet L fastening screw is visible. (Left figure) Since the connector of the microphone is still connected, take care to prevent excessively sliding the VCR lid.



(2) Remove the microphone connector from the microphone PWB.

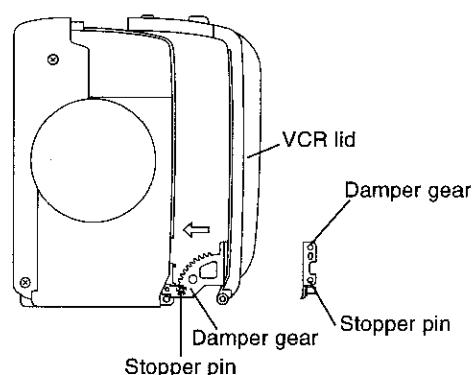
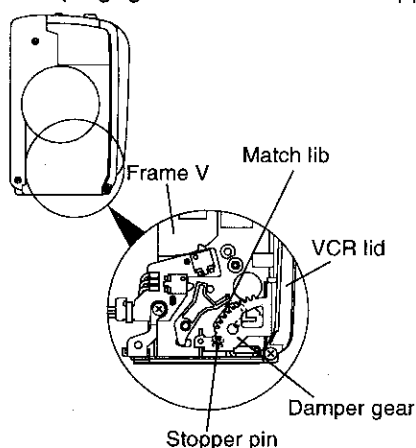


- (3) Pull out the microphone wire cable with care to prevent it from interfering with the mechanical parts, and remove the VCR lid.

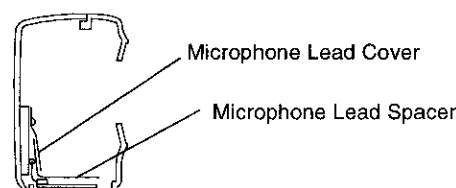
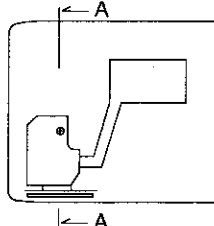


Caution for installation of the VCR lid

- (1) When installing the VCR lid, move the VCR lid in the arrow direction, keeping the VCR lid parallel to the main body as shown below. If it is tried to install it when the VCR lid is not parallel to the main body (when the lid is open), the VCR lid can not be inserted into the specified position since the stopper pin which is staked on the damper gear interferes with the match lib (engagement lib with the stopper pin) which is produced on the frame V.



- (2) Lift the microphone lead cover, and remove the microphone lead wire laid through the microphone lead spacer.



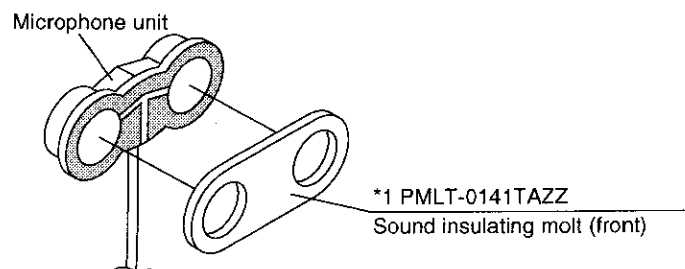
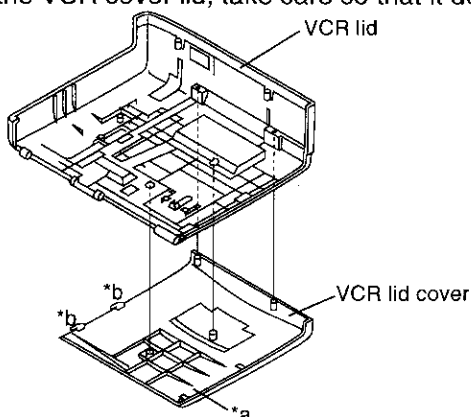
Cares when installing the VCR lid cover

Fit the pawl (marked with *a) of VCR lid cover into the lid, and slide in the arrow direction to engage. After engagement fusion bond the two parts marked with *b.

Note:

When fitting, take care so that the pawl is not broken.

When installing the VCR cover lid, take care so that it does not contact the sound insulating molt (front).



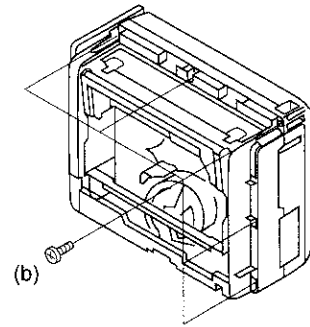
Note:

Apply after mounting the microphone unit sound insulating molt (upper).

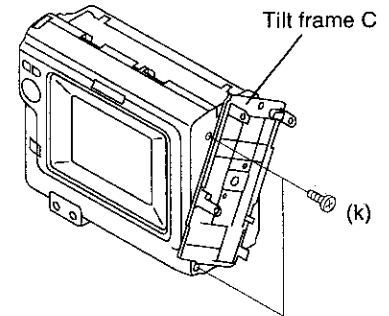
VL-H770S/H
VL-H95E

3. Disassembly of the cabinet L

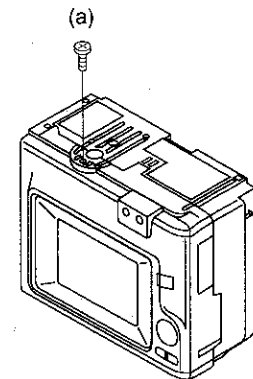
(1) Remove five screws ((b)LX-HZ0018TAFB).



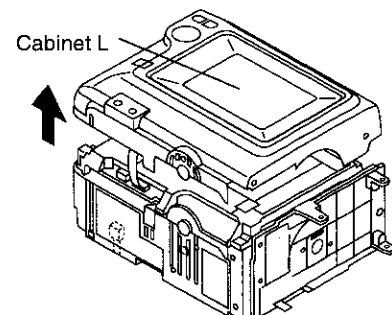
(2) Turn the tilt frame C so that the screwdriver can be easily inserted, and remove two screws ((k) LX-HZ0018TAFN).



(3) Remove one screw ((a)XiPSF20P04000).

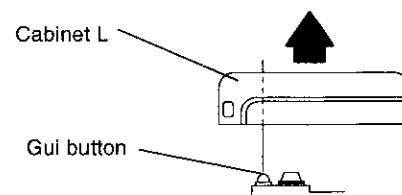


(4) Remove the cabinet L to the midway, and disconnect the FPC connector.



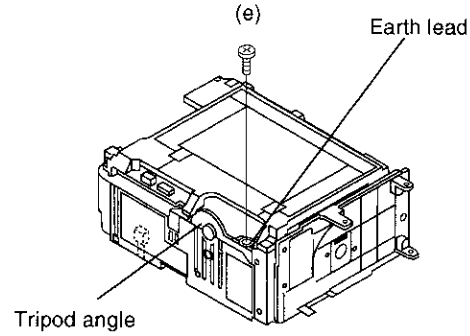
Note:

Remove vertically the cabinet L so that the Gui button is not caught. If it is caught, it may be damaged. When installing the cabinet L, take care so that the button is not broken. The cabinet L must be installed vertically.



4. Removal of the tilt unit

(1) Remove one screw ((e)XiPSD20P03000) fixing the lug of earth lead to the tripod angle (screw ass'y for fixing of tripod).

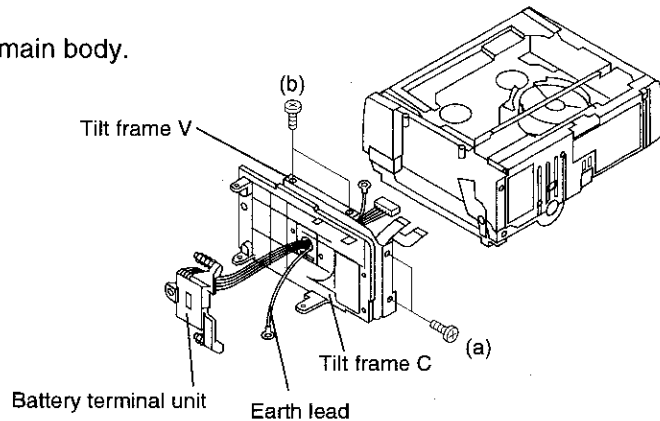


(2) Remove two screws ((b)LX-HZ0018TAFf).

Remove two screws ((a)XiPSF20P04000).

Disconnect three connectors.

Remove the tilt unit from the cabinet of the main body.



5. Disassembly of the LCD holder

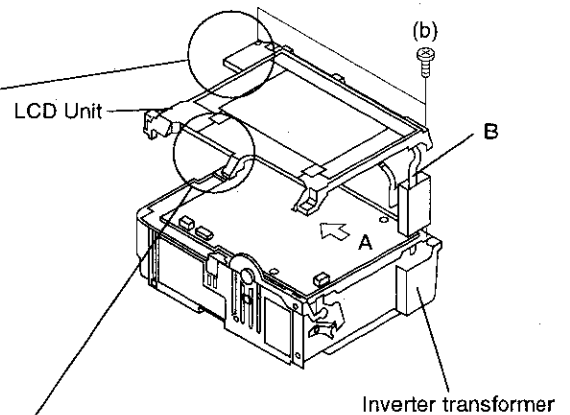
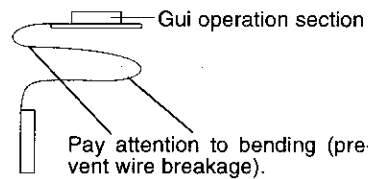
(1) Remove two screws ((b)LX-HZ0018TAFf) and two connectors, and remove the LCD unit (with inverter) from the main body.

Remove the three pawls, and remove the operation section.

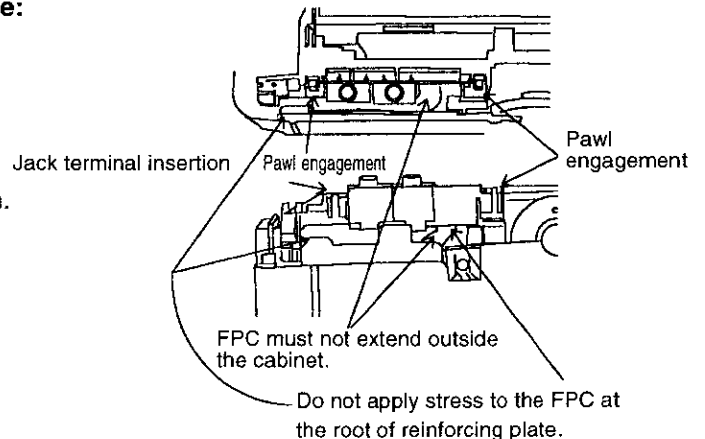
Note:

Take care so that the pawl is not caught.
Do not hold the Gui-SW hitting part.

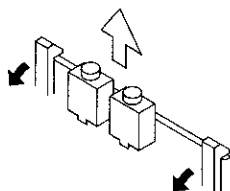
View of terminal unit FPC



Note:

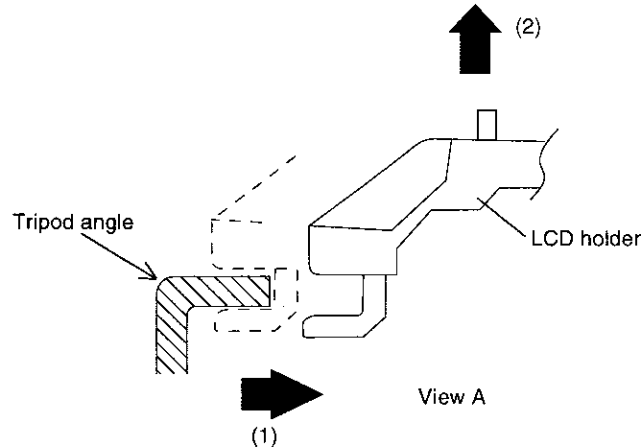


Remove the two pawls, and remove the jack section.



Note:

Slide the lower right fixing part of LCD holder in the direction of (1), and then move the LCD holder in the direction of (2).



Note:

Take care so that the FPC (especially the part B) of inverter transformer is not cut.

6. Removal of the cassette compartment lid

(1) Using the slotted precision screwdriver, push and turn the two claws (C and D) which fasten the cassette compartment lid, and the cassette compartment lid will be removed from the hook area of the cassette component.

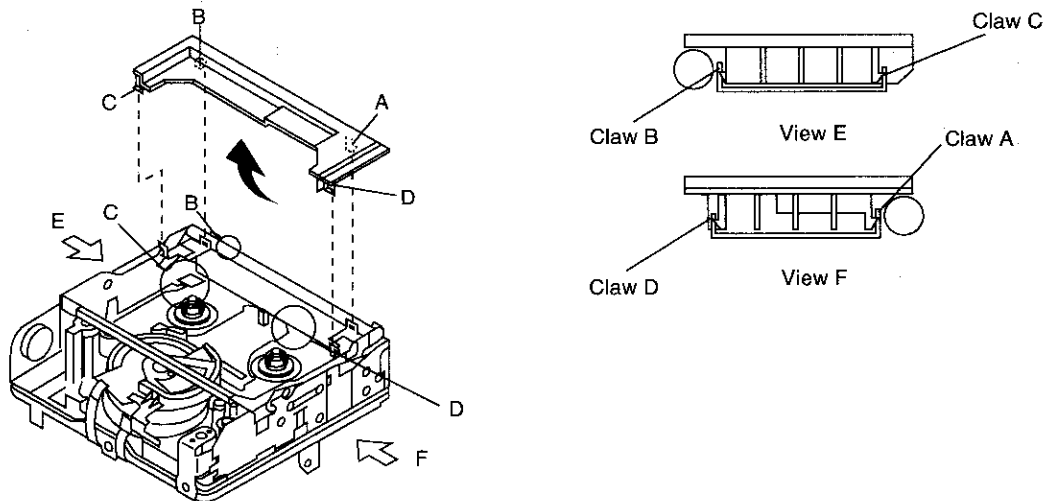
(2) Turning the cassette compartment lid in the arrow direction, lift it, and the claws A and B will be disengaged to remove the cassette compartment lid.

Note:

Take care to prevent breaking the claws of the cassette compartment lid.

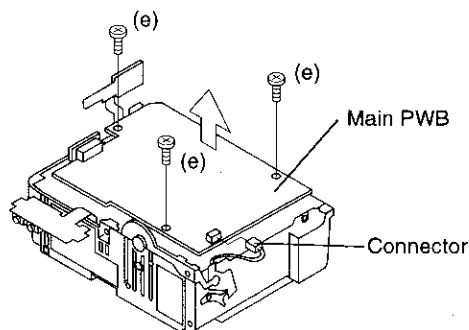
Note:

When fixing the cassette compartment lid, first engage the claws A and B, and then engage the claws C and D, verify that the four claws (A, B, C and D) of the cassette compartment lid are securely engaged as shown in the view below.

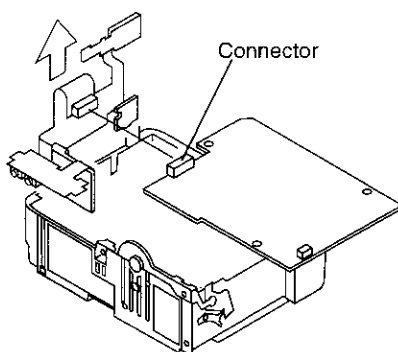


7. Removing the system unit

(1) Remove the three screws ((e)XiPSD20P03000) and one connector, and remove the main PWB from the main unit.

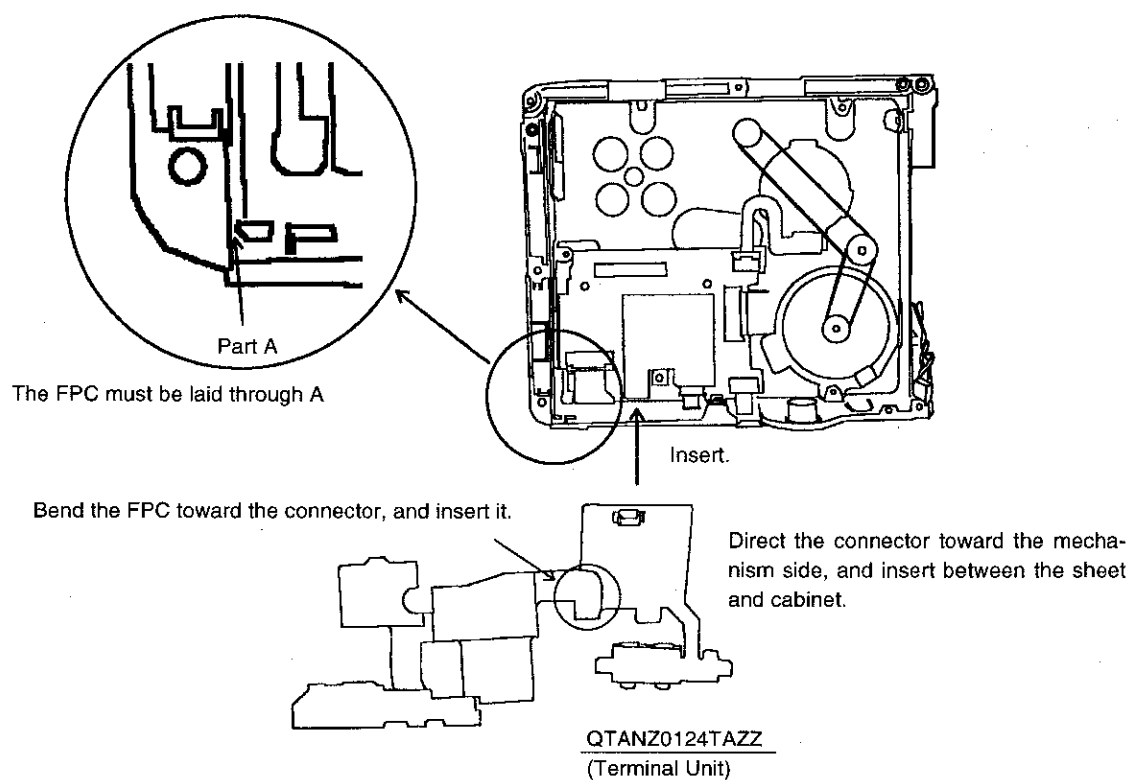


(2) Remove the main PWB connector (1 pc.), and remove it from the main unit.



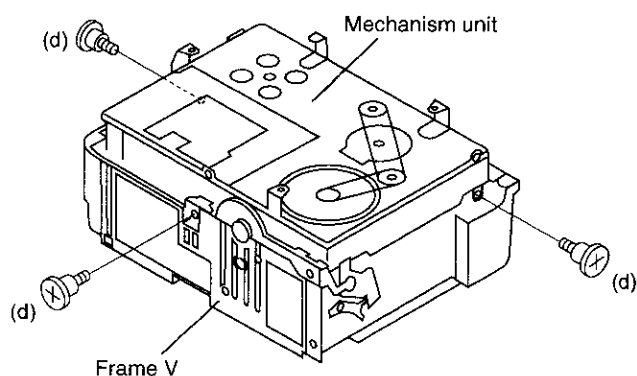
Note:

Pay attention to FPC breakage.

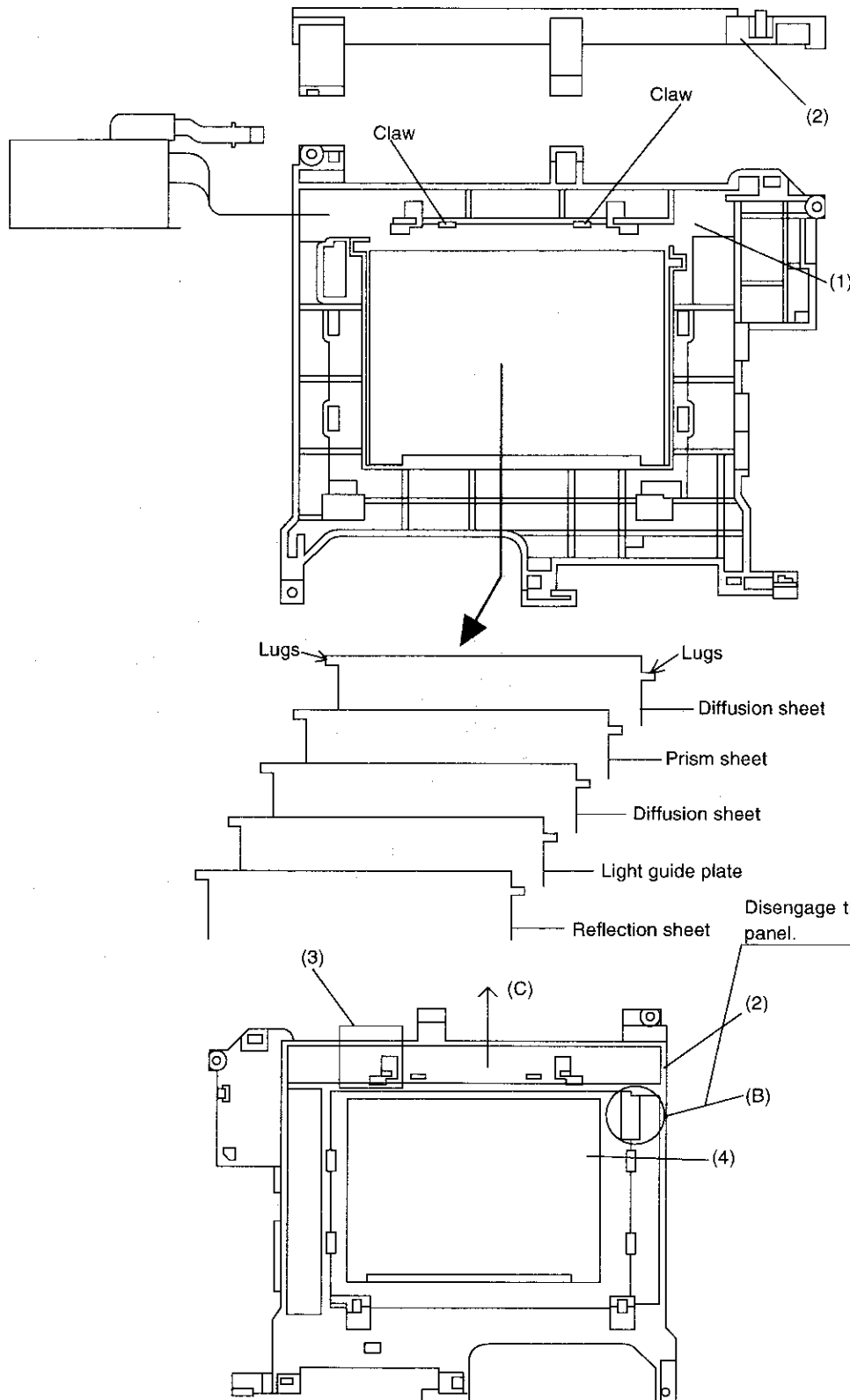


8. Disassembly of the frame V

(1) Remove three screws ((d)LX-HZ0044TAFE) and one connector, and remove the frame V from the main body.



9. Disassembly of the LCD panel



1. Disengage two claws, and remove the lamp unit (1) from the LCD holder (2).
2. Remove the sheets from the LCD holder (2).
3. Pull the LCD holding sheet (3).
4. Disengage the claw (B), and slide the LCD panel (4) in the (C) direction to remove the LCD holder (2).

Note:

When handling the prism sheet, diffusion sheet, light guide plate, and reflection sheet, do not touch any parts other than lugs and sides.

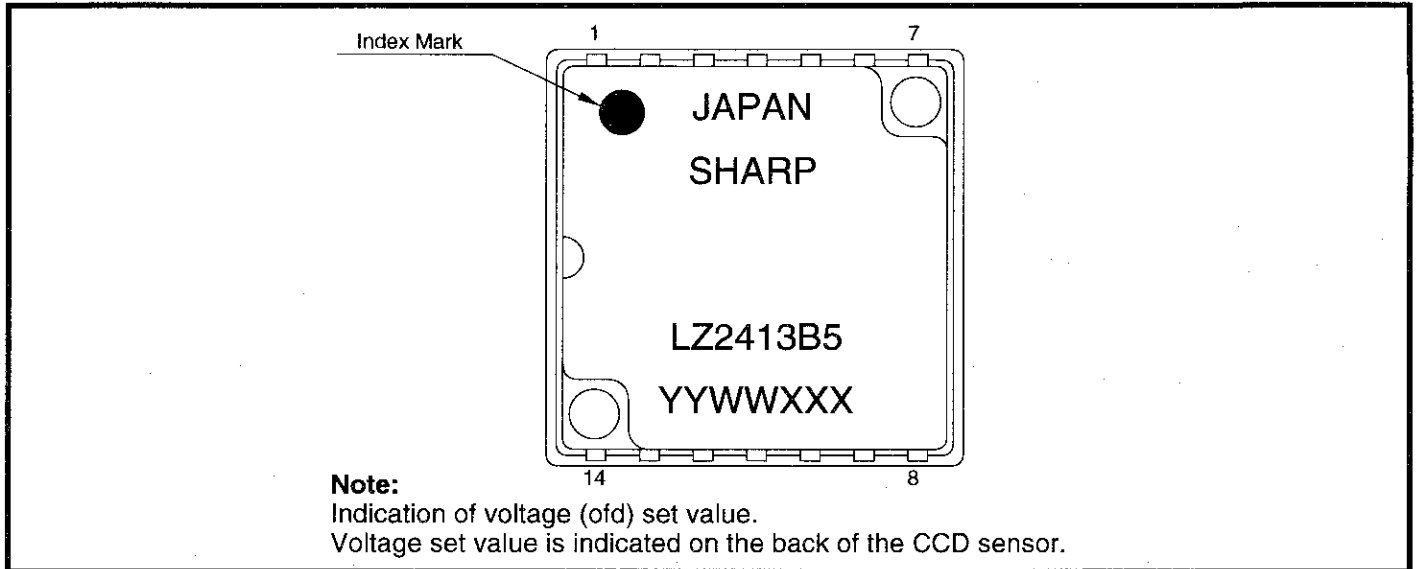
Caution when installing the lamp ass'y:

Put the light guide plate and reflection sheet between reflection films of lamp. Therefore, install them together with the lamp ass'y.

3-3. REPLACEMENT OF CCD SENSOR

3-3-1. BEFORE REPLACEMENT

- 1) The CCD image sensor is more sensitive to electrostatic breakage than C-MOS LSI. Therefore sufficient means to prevent electrostatic damage must be taken when it is replaced.
 - Ground the soldering iron.
 - Ground also the human body, using the wrist strap(through an 1 Mohm resistor).
 - Until the CCDsensor is mounted on the PWB, fit it to the conductive sponge, and short-circuit the foot lead.
- 2) Take utmost care so that the surface glass of CCD sensor and optical filter are not contaminated and damaged. If any contamination is found, for example fingerprint, wipe it off with silicon paper or clean chamois skin.
- 3) When replacing the CCD sensor, use the antistaic grounded soldring iron, and perform quickly soldering.



V-OFD voltage marked on the back of CCD

3-3-2. REMOVAL OF CCD

- 1) Unsolder the CCD sensor leads from the sensor PWB.
- 2) Take out the sensor PWB.
- 3) Remove the two screws ((b)LX-HZ0013TAFF), and remove the sensor holder and CCD sensor.

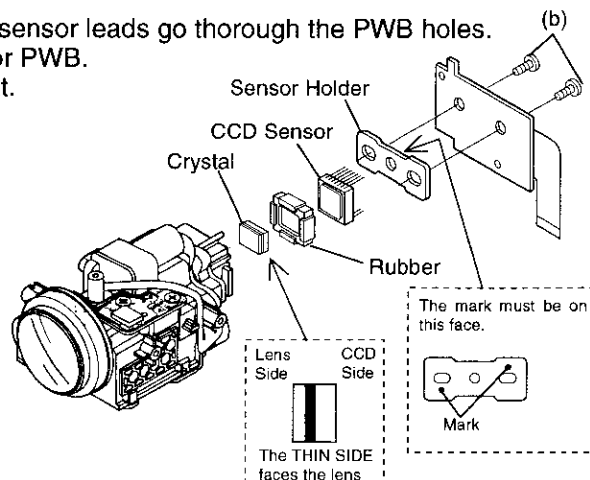
3-3-3. MOUNTING OF CCD

- 1) Place the lens unit upright (since the CCD sensor mount ID faces upward, care must be taken so as not to damage the front lens of unit), put the crystal filter first and then the dust protection rubber into the CCD holder of lens unit. Set the crystal unit with its thin side toward the lens unit.
- 2) Place the CCD sensor so that the its No. 1 pin is at the right lower (Positioning hole to be at right), and put the CCD sensor into the CCD holder. For smooth and tight fitting, press the right lower part of back of CCD sensor, and then press the left upper part.

Note: Pay attention to the direction of CCD sensor.

- 3) Place the sensor holder so that its two round markings be visible, and fix the sensor holder with the two screws ((b)LX-HZ0013TAFF).
- 4) Mount the sensor PWB so that the CCD sensor leads go thorough the PWB holes.
- 5) Solder the CCD sensor lead to the sensor PWB.

Note: Take care not to apply excessive heat.



3-4. INITIAL SETTING OF EEPROM IC

3-4-1. IC502 (EEPROM)

When the IC502 has been replaced, make the following settings and adjustments.

- System code setting

* Set the test mode to the VCR adjustment mode. Take the following steps.

1) Destination code Write the destination data (model numbers) to the addresses 02 (Main) and 0A (Sub).

Destination	02 (Main)	0A (Sub)
S/H	0A	F5
E	0B	F4

For calling the addresses and writing the data, refer to the VCR adjustment mode.

2) Specification switching code

Address	Data
03 (Main)	0A
0B (Sub)	F5

3) Menu selection code

Address	Data
04 (Main)	00
0C (Sub)	FF

4) Software selection code

Address	Data
05 (Main)	00
0D (Sub)	FF

* After setting the above codes, clear the VCR adjustment mode and turn off the power.

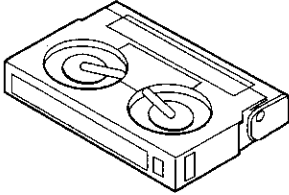
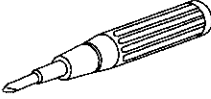
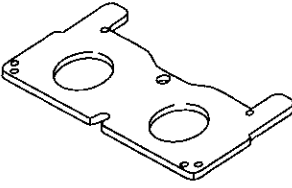
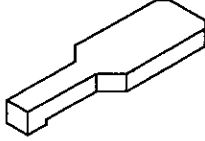
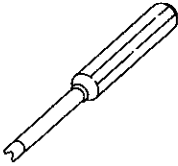
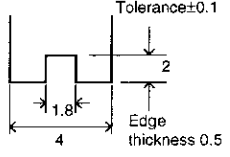
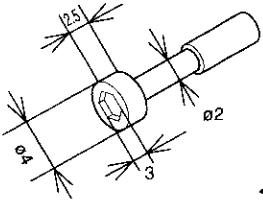
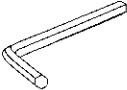
Adjustments to follow

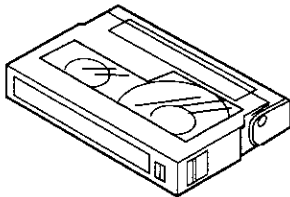
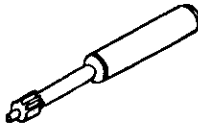
Make the system controller servo, VCR, and LCD adjustments according to their respective instructions.

4. MECHANISM ADJUSTMENT

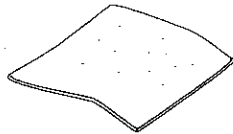
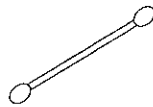
4-1. Mechanism checking/adjusting jigs, tools and parts

4-1-1. Mechanism checking/adjusting jigs and tools

No.	Name	Part No.	Code	Configuration	Model, Uses	Remarks
1	Cassette torque meter for PB	JiG8T-012	CV		• (10 g.cm/25 g.cm)	
2	Cassette torque - meter for VS-REW	JiG8T-032	CV		• (50 g.cm/25 g.cm)	
3	Torque gauge	JiGTG0045	CN		• For measurement of loading bracketorque	
4	Torque gauge head	JiGTH-MX7U	BS		• For torque gauge listed above	
5	Torque driver (1.5 kg.cm)	JiGTD1500RT0H	CB			
6	Master plane	JiGMP-MX7U	CG		• For adjustment of Tu guide height • For adjustment of Si roller height • For checking of reel disk height	
7	Height adjusting jig	9DAGH-E31S	BM		• For adjustment of Tu guide height • For adjustment of Si roller height	
8	Guide roller height adjusting driver	JiGDRIVERHMX7U	BU		Bit shape (See the figure below) 	
	Tu guide height adjusting driver	9EQDRIVER-V712	BL			
9	Hex wrench	0.9mm			• For loosening or tightening of Motor stator	
		1.3mm			• For loosening or tightening of Rotary transformer rotor	

No.	Name	Part No.	Code	Configuration	Model, Uses	Remarks														
10	Travel adjusting tape	VR2DBOPS	BT	<table border="1"><thead><tr><th colspan="3">TAPE CONTENTS</th></tr><tr><th>VIDEO IMAGE</th><th colspan="2">AUDIO</th><th>TIME</th></tr></thead><tbody><tr><td>MONOSCOPE</td><td>L-CH</td><td>400Hz</td><td rowspan="2">30MIN</td></tr><tr><td></td><td>R-CH</td><td>1,000Hz</td></tr></tbody></table>	TAPE CONTENTS			VIDEO IMAGE	AUDIO		TIME	MONOSCOPE	L-CH	400Hz	30MIN		R-CH	1,000Hz		
TAPE CONTENTS																				
VIDEO IMAGE	AUDIO		TIME																	
MONOSCOPE	L-CH	400Hz	30MIN																	
	R-CH	1,000Hz																		
11	Tension Band and Plate Adjusting Jig	JiGDRiVERMX7U2	BN																	
12	Others (1) Slide clippers (2) High-precision screwdrivers (Phillips head, slotted head) (3) Radio pliers (with thin jaws) (4) A pair of tweezers																			

4-1-2. Parts for periodic inspection and maintenance.

No.	Name	Part No.	Code	Configuration	Model, Uses
1	Oil 1) COSMOHYDRO HV100				• Cosmo Oil Co., Ltd.
2	Cleaning paper	JiGDUSPER	AP		• Dusper Σ (Sigma) (Ozu Co., Ltd.)
3	Superfine swab				
4	Grease Morycoat YM-103/X5-6020				• Dow Coating
5	Screw locking agent (1401B)				• Three Bond
6	Cleaning liquid (Industrial-use ethyl alcohol)				

4-2. Items and timings of inspection and maintenance

The mechanism of VCR needs the following periodic inspection and maintenance in order that it maintains its high quality. Also, after the machine is repaired, execute the following maintenance and checks regardless of how long it has been used.

4-2-1. Inspection and maintenance list

	Checking/Maintenance point	Usage time (hrs.)					Possible symptom encountered	Remarks
		500	1,000	1,500	2,000	3,000		
Tape travel system	Tape travelling route (Refer to Section)	□	□	□	□	□	• Lateral noise • Unclean head • Screen shaking	Rollers • If abnormal rotation or deflection (significant) is found, replace the roller. Other than rollers • Clean the tape contacting areas. Be sure to use the specified cleaning agent.
	Drum (Refer to Section)	□	□	□	□	□		
	Video head	□	□○	□	□○	□○	• Improper S/N ratio • No color appears.	
	Earth brush	—	★	★	★	★	• If significant brush rubbing noise is heard, replace.	
Driving system	Timing belt	—	★	—	★	★	• Tape does not run. • Tape slackens. • Screen shakes.	• Replace if failure is found.
	Pinch roller	□	□	□	□○	□		
	Capstan D.D. motor	—	○	—	○	○		
	Relay Pulley shaft Pulley gear shaft	—	△	—	△	△	• Abnormal sound	• Apply oil. (Oil: COSMOHYDRO HV100) Note: After oil is applied to the drive gear shaft, slightly wipe it off with swab.
	Drive gear shaft	—	△	—	△	△		
	Loading motor	—	★○	—	★○	★○	• Not ejectable • The specific mode cannot be set.	• Replace if failure (abnormal sound) is detected.
Performance check	Abnormal sound	★	★	★	★	★		• If conformance to the standard is not ensured, replace part.
	PB/VS-REW take-up torque	—	★	—	★	★		
	PB/VS-REW back tension torque	—	★	—	★	★		
	Tu brake	—	★	—	★	★		
	HC (Head Cleaner)	—	○	—	○	○		

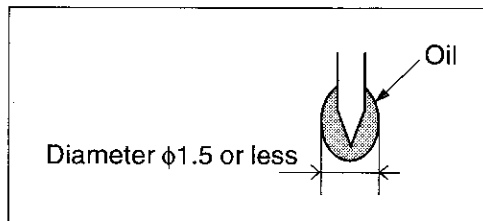
Oil: COSMOHYDRO, HV100
 Grease: MORYCOAT YM-103/X5-6020
 Screw locking agent: THERE BOND 1401B
 Cleaning liquid: Industrial-use ethyl alcohol

○ : Replace.
 □ : Clean.

△ : Apply oil.
 ★ : Check.

4-2-2. Notes and cautions

- (1) Any cut washers, once removed for parts replacement or for other reason, must be replaced with new ones.
- (2) The mechanism of this VCR does not involve any volume adjustment. If the specified range is not satisfied, either cleaning or replacing the parts is required.
- (3) Oils
 - a) Be sure to use the specified oils (different viscosity may cause troubles).
 - b) For the bearings, be sure to use oil that is free from dust and other foreign substances. (Dust or foreign substance contained in the oil may cause wear or seizure of the bearings.)
 - c) A drop of oil represents the amount of oil which is held on the needle top as shown in the figure below.



- (4) The circuit repair must be executed without removing the V frame.
- (5) For operating the mechanism alone, actuate it with the motor. The terminal-to-terminal voltage must be DC4V or less.
- (6) When installing the cassette control, press the part A shown below. Do not press other parts.
- (7) Take care so that the whole mechanism is not deformed.

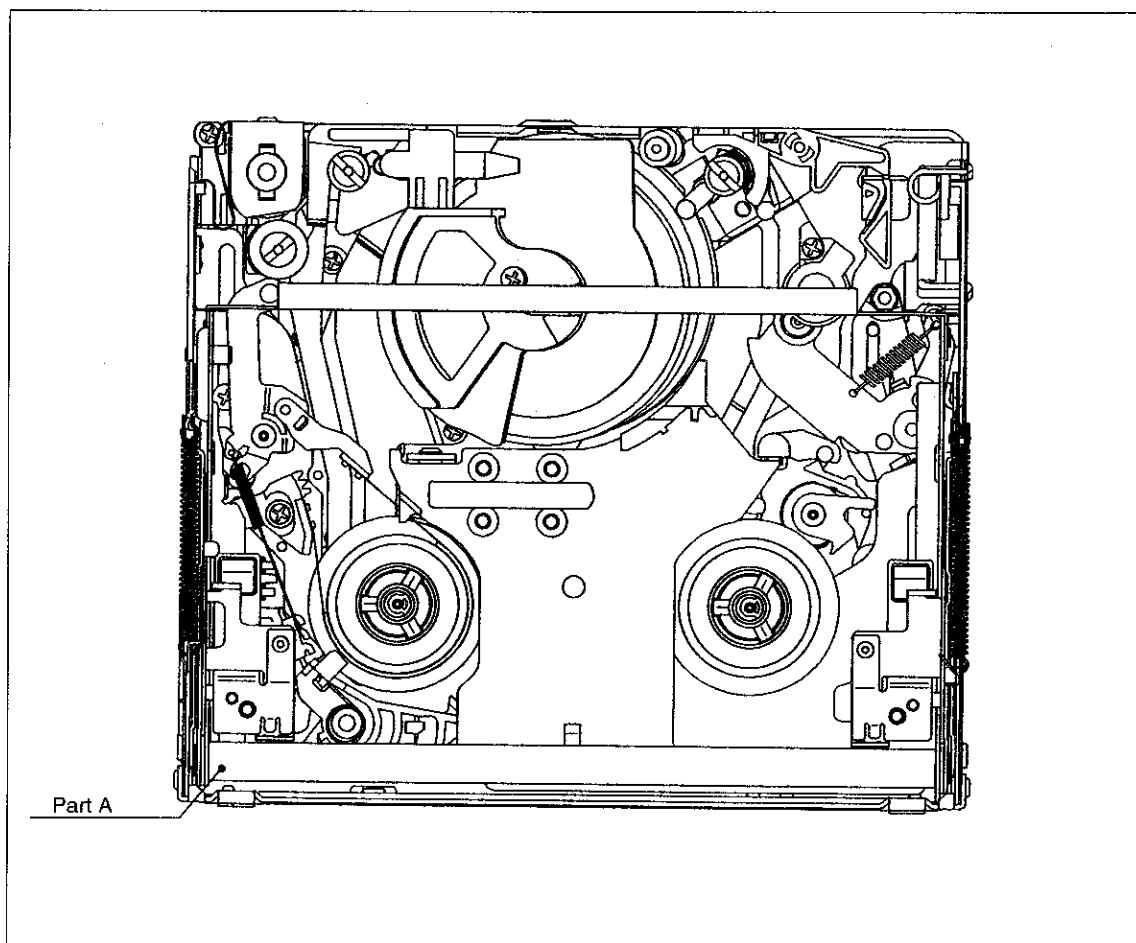


Figure 1

4-3. Mechanism checks and adjustments

The description given below relates to the general field services, but does not relate to the adjustment and replacement that require high level equipments, jigs, and technical skills.

In order to maintain the initial characteristics of the machine, it is necessary to execute the maintenance and check and to prevent damage to tapes and other parts. For adjustments which need jigs, be sure to use the jigs.

Notes and cautions

- (1) For mechanism checks and adjustments, be sure to use the AC adapter as the power supply.
- (2) For running the tape, be sure to install the cassette control ass'y in advance. (If the cassette control ass'y is to be removed subsequently after its installation.)

4-3-1. Checking the reel disk height

- (1) Remove the cassette control ass'y.
- (2) Taking due care not to let the master plane touch the tape running areas such as the drum and the guide rollers, position the master plane so that the two guides (A and B in the figure 1) are set in the holes of master plane, then properly set it in the mechanism.

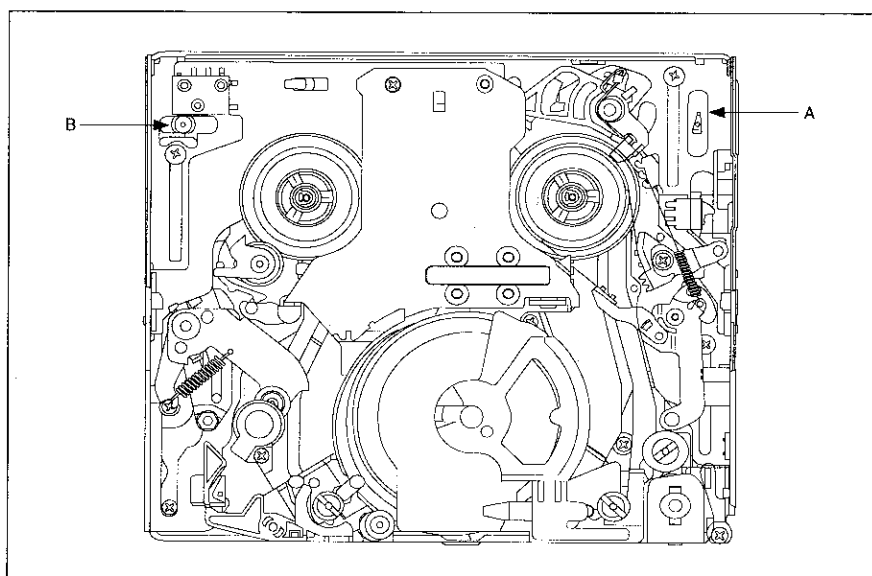


Figure 1

- (3) Using the slide callipers or the like, check that the distance from the upper surface of master plane to the reel support surface of the S/Tu reel disk is within the specified range.

Note:

When measuring, do not apply excessive force to the reel support surface of reel disk.

- (4) If the measurement is not within the specified range, replace the reel disk ass'y.
- (5) Check the items (2) to (4) above in the following two modes.
 - a) Standby mode
 - b) Playback (recording) mode

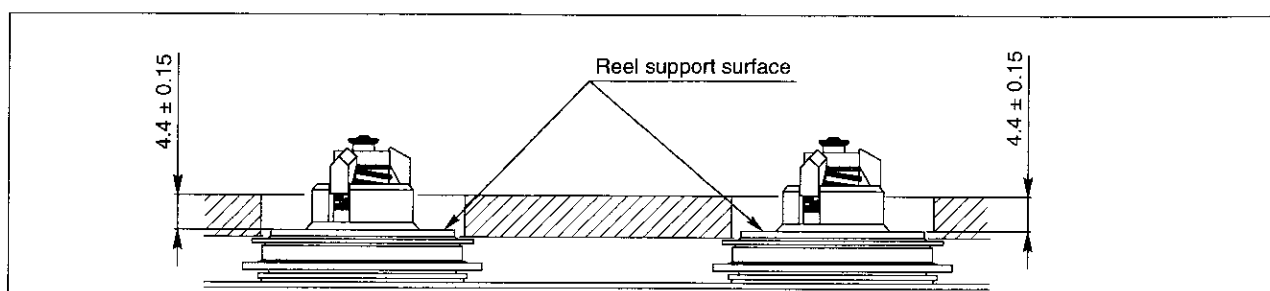


Figure 2

4-3-2. Checking the take-up torque for playback (recording)

- (1) Set the torque cassette (8T-012) in position, and check in the SP-mode recording mode (tape recorded in SP mode) that the torque at the tape taking-up side is within the standard range.

Standard of take-up torque for SP-mode recording (playback)

9 ± 3 g.cm with ripples less than 4 g.cm

(If the torque ripples appear, read the center value of torque between the ripples.)

4-3-3. Checking and adjusting the back tension torque for playback (recording)

(1) Checking

- 1) Set the torque cassette (8T-012) in position, and check in the SP-mode recording mode (tape recorded in SP mode) that the torque at the tape supply side is within the standard range.

Standard of back tension torque for SP-mode recording (playback):

8 ± 2 g.cm with ripples of less than 2 g.cm

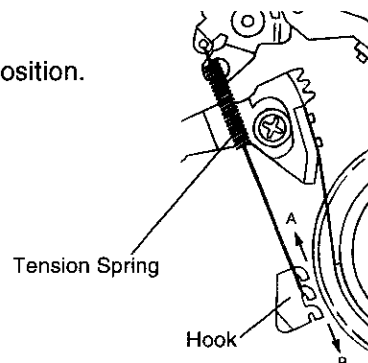
(Torque ripple must be within 8 ± 2 g.cm)

(2) Adjustment

- 1) If the back tension torque is not within the standard range, adjust the tension spring hooking position. If the back tension is too high, hook the spring in the direction A. If the back tension is too low, hook the spring in the direction B.

Note:

1. After back tension torque adjustment be sure to check the tension pole position.



4-3-4. Checking and adjusting the tension pole position

(1) Check

When winding of P5-90 tape is started, check whether the tension pole is in the specified position against Si roller as shown or not.

If it is not in the specified position, remove the cassette and adjust the position in the following procedure.

(2) Adjustment

- (2)-1. Don't set up any tape, and select the PB mode. (Refer to Item 4-5-1-(4).)

2. Slightly loosen the screw (1) (to such a strength as the T band holder B can be moved).

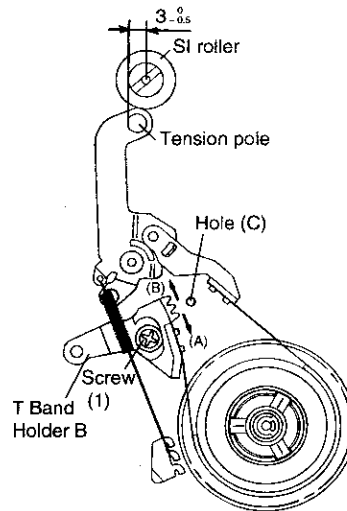
3. If the tension pole is in the inner position than specified, dislocate the T band holder B in the arrow (A) direction and if it is in the outer position, dislocate it in the arrow (B) position. Then, tighten the screw (1). (For reference, dislocate it 0.4 to 0.8 mm outer from the position specified above.) For the position adjustment, it is convenient to use the position adjustment screwdriver (JiGDRiVERMX7U2). (Set it in the hole (C).)

4. Check the position in the "(1) Check" procedure described above.

5. If it is not in the specified position, repeat the adjusting procedure 1 thru 3.

Note:

- Tightening torque of screw (1) 70 mN•m
- To check the position, be sure to run the tape.
- If the cassette compartment assembly is removed, it makes the work easier. (Refer to Item 4-5-3.)



4-3-5. Checking the take-up torque for rewind playback (VS-REW)

- (1) Remove the cassette compartment ass'y and set to the sensor OFF mode.
- (2) Set the torque gauge (TG0045) on the S reel disk, and check in the rewind playback (VS-REW) that the torque at the supply side is within the specified range.

Standard of take-up torque in rewind playback (SP mode)

31 ± 5 g.cm with ripples less than 5 g.cm.

(If the torque ripples appear, read the center value of torque between the ripples.)

4-3-6. Checking the back tension torque for rewind playback (VS-REW)

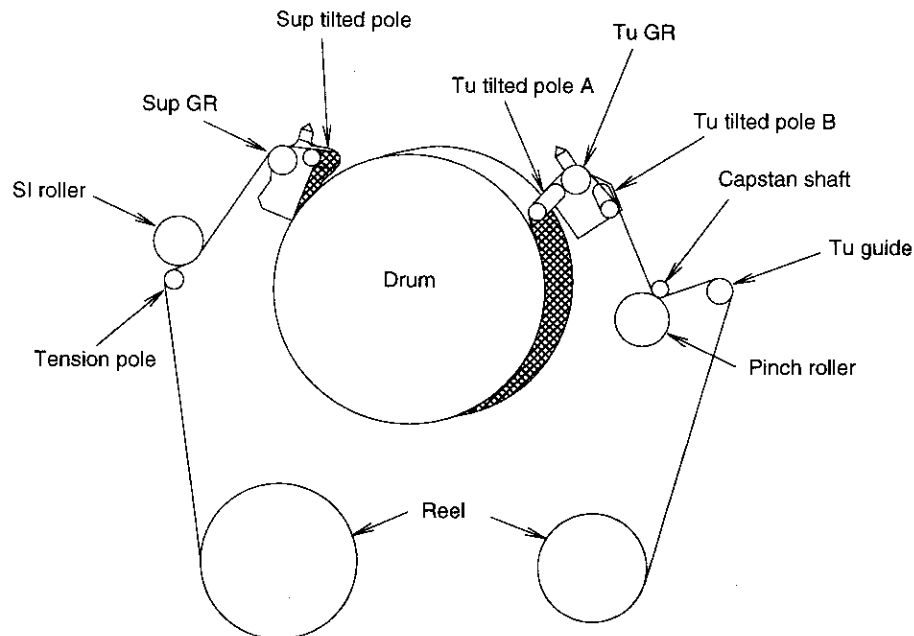
- (1) Set the torque cassette (8T-032) in position, and check in the rewind playback (VS-REW) mode that the torque at the tape take-up side is within the specified range.

Standard of back tension torque in rewind playback (SP mode):

14 ± 5 g.cm with ripples less than 5 g.cm

(If the torque ripples appear, read the center value of torque between the ripples.)

4-4. ADJUSTMENT OF MECHANISM TAPE TRAVEL SYSTEM



Tape travel system (Figure 1)

4-4-1. Preparation for adjustment

- (1) Clean the tape running areas (guide poles, rollers, drum, Capstan shaft, Pinch roller) (Figure 1)
- (2) Connect the oscilloscope to the following TPs.
RF output ... TL3404
H-SW-P TL24
GND TL18
- (3) Play back the alignment tape (VR2DBOPS).
- (4) Ascertain that each guide is free from remarkable curl.
- (5) Ascertain that the RF waveform of inlet and outlet sides is flat on the oscilloscope (Figure 2, (a)). Unless the waveform is flat, (Figure 2, (b), (c)), make an adjustment as follows.

4-4-2. Adjusting the Sup GR and Tu GR

- (1) Turn the Sup and Tu guide rollers to get the flat waveform at the inlet and outlet sides.

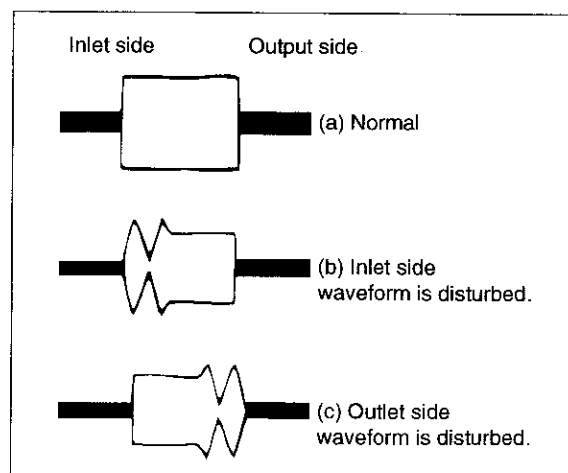


Figure 2

4-4-3. Adjusting the Si roller height

After replacement of Si roller preset and adjust the Si roller height.

(1) Si roller height presetting

Adjust the height from the upper surface of mechanism chassis to the upper surface of lower flange with the aid of jig. Then lower it by 90° (clockwise).

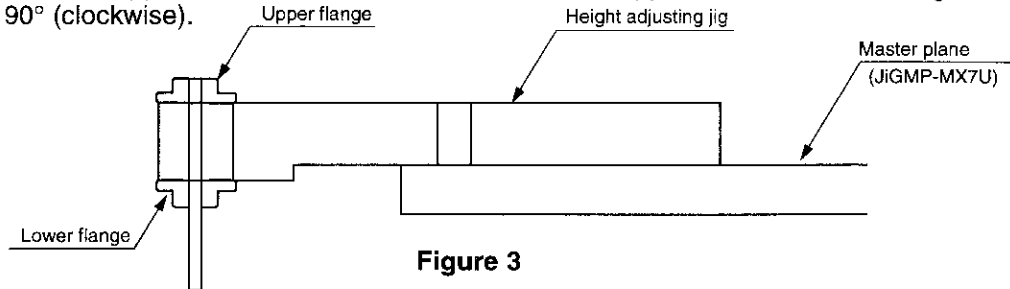


Figure 3

(2) Adjusting the Si roller

1. Play back the tape to set the V/SR mode.
2. Ascertain that the tape is not folded on the lower flange (2) of Si roller (1). (Figure 4)
If tape folding is found, turn the upper flange (3) of Si roller (1) with the driver (clockwise) to eliminate the folding.
3. Play back the alignment tape (VR2DBOPS).
4. Adjust the Sup GR and Tu GR by the procedure described in section 4-2 above.
5. After V/S F,R perform playback so as to ascertain that the waveform rises horizontally within 2 seconds.
6. Unless the normal waveform is obtained (Figure 5), turn counterclockwise the upper flange (3) of Si roller (1), and repeat the step (5) above. Repeat the steps (5) and (6) until the normal waveform is obtained. At this time ascertain that the inlet travel does not change in the normal playback state. If any change is found, adjust the Sup GR, and redo the step (5).

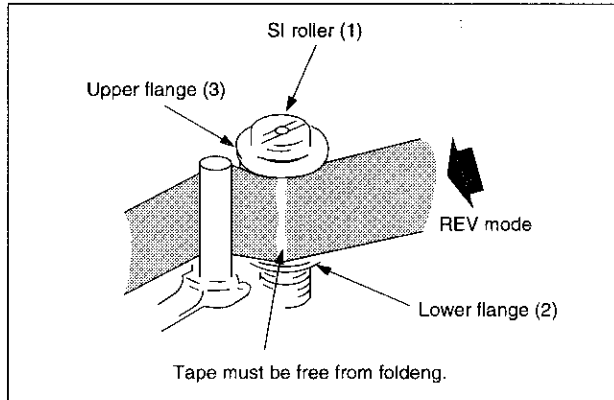


Figure 4

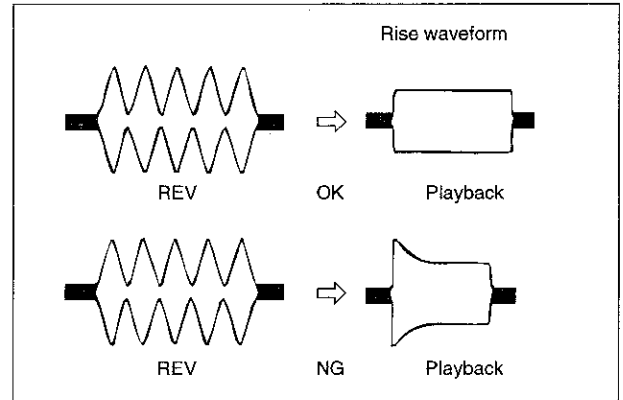


Figure 5

4-4-4. Adjusting the Tu guide

After replacement of Tu guide preset and adjust the height.

(1) Tu guide height presetting

Adjust the height from the upper surface of mechanism chassis to the upper surface of lower flange with the aid of jig.

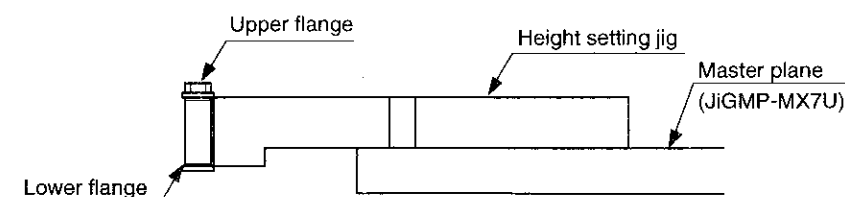


Figure 6

(2) Adjusting the Tu guide

1. Play back the Tu guide adjustment cassette (or the No.7 guide adjustment cassette for E30).
2. Check that the tape runs at the same height near the capstan shaft in case of V/S F and V/S R.
3. If the tape running position in case of V/S R is higher than the tape running position in case of V/S F, turn clockwise the Tu guide nat.
If the tape running position in case of V/S R is lower than the running position in case of V/S F, turn counterclockwise the Tu guide nat.

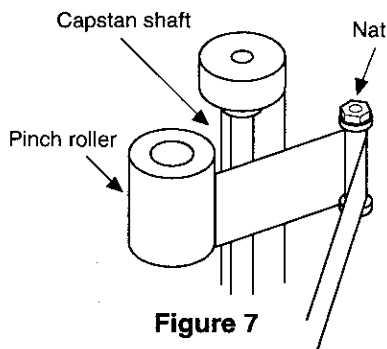


Figure 7

4-4-5. Checking the V/S F and R waveforms

- (1) Play back alignment tape (VR2DBOPS), and set the V/S R mode. At this time ascertain that the waveform crest pitch is kept constant for more than 5 seconds.
- (2) Set the V/S F mode. At this time ascertain that the waveform crest pitch is kept constant for more than 5 seconds. Unless the constant pitch is obtained, execute the checks of Section 4-2, 3, and 4.

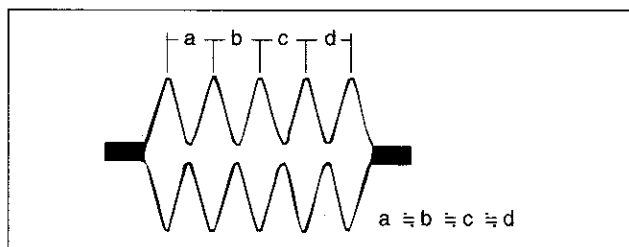


Figure 8

4-4-6. Checking after adjustment

(1) Envelope check

1. Play back the alignment tape (VR2DBOPS).
2. Ascertain that the envelope maximum to minimum ratio is 65% or more. (Figure 9)
3. Ascertain that the waveform does not change remarkably. (Figure 10)

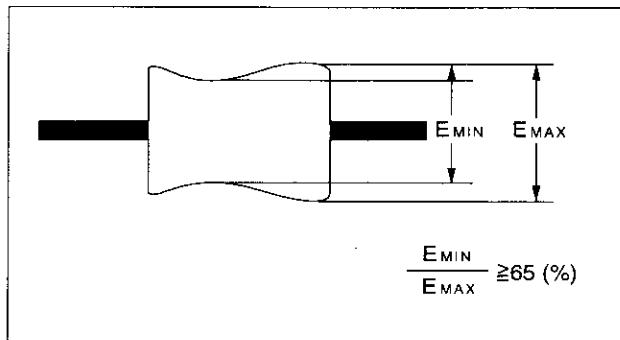


Figure 9

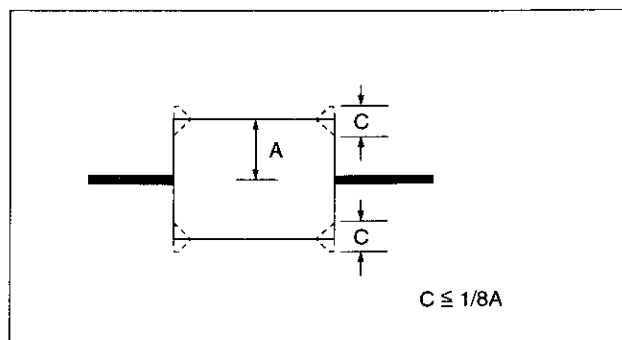


Figure 10

(2) Rise check

1. Play back the alignment tape (VR2DBOPS).
2. Once eject the cassette, and then load it again.
3. Set the playback mode, and ascertain that the RF waveform rises horizontally within 2 seconds. At this time ascertain that there is no tape slackness near the pinch roller.
4. After V/S F, R and FF/REW execute playback, and ascertain that the RF waveform rises horizontally within 2 seconds. At this time ascertain that there is no tape slackness near the pinch roller.

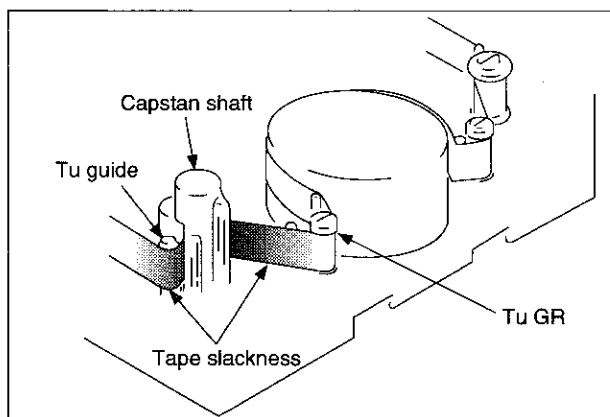


Figure 11

(3) Checking the tape travel

1. When the tape is played back, ascertain that tape lift and tape curl of 0.3 mm or more do not occur at the lower flange of Si roller, upper flange of Sup GR, upper flange of Tu GR, and upper/lower flange of Tu guide.
2. In case of V/S F and R ascertain that no curl is found at each flange.

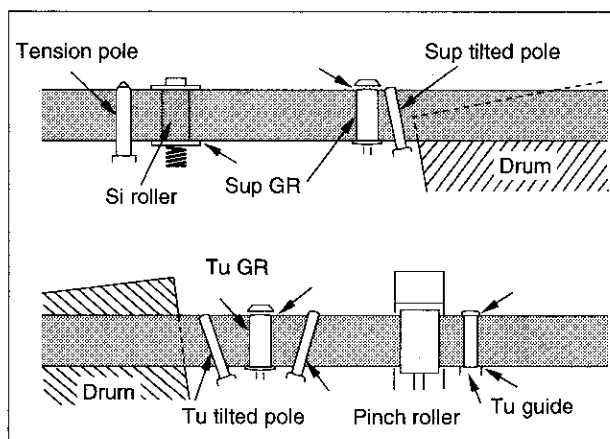


Figure 12

4-4-7. Checking and adjusting the playback switching point

Refer to the description of playback switching point adjustment in section of VCR circuit adjustment.

4-5. Mechanism assembling and parts replacement (disassembling and assembling)

Below is given an explanation of assembling of mechanism and its parts replacement.

The removal of cabinet and Circuit Board is explained in the relevant service manual.

Notes

1. After removal of cut washers be sure to replace them with new ones.
2. Do not place the mechanism upside down on the table. Otherwise, the mechanism part may be deformed or damaged, resulting in malfunction.
3. When assembling, take care so that screw, washer or other foreign substance do not enter. Otherwise mechanism malfunction may occur.
4. Be sure to use the specified cleaning liquid, oil, grease and screw lock as listed below. Otherwise mechanism malfunction may occur.

Oils: 1) Cosumo Oil Co., Ltd.
COSMOHYDRO HV100

Greases: Dow Coaning
MORYCOAT YM-103/X5-6020

Screw lock: THREE BOND
1401B

Cleaning liquid: Industrial-use ethyl alcohol

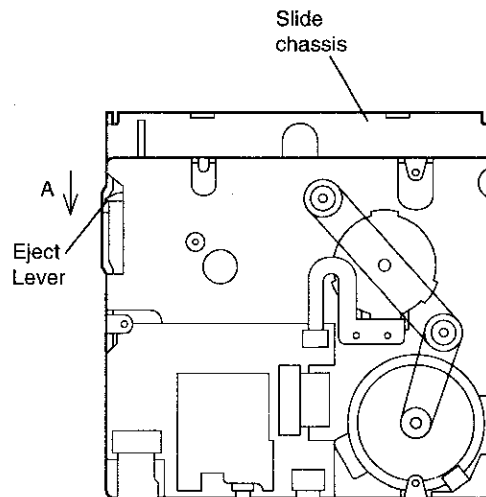
4-5-1. Mechanism modes

To actuate the mechanism, apply DC3 to 4V to the L motor. At this time the L motor connector must have been disconnected in advance.

Below is given an explanation of the mechanism mode necessary for mechanism check, adjustment and replacement.

- (1) **EJ (Eject)** mode (See Figure 1)

In this mode, it is mechanically positioned to eject the cassette. It is the position where the EJECT lever is moved the farthest in the direction A in the S/B mode. (In this mode, the cassette compartment assembly can not be locked.)

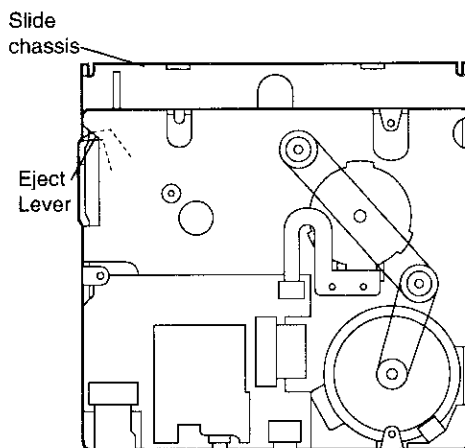


EJ mode

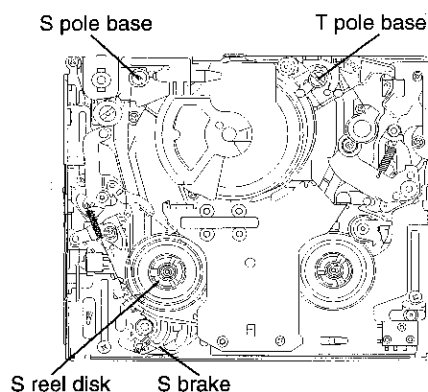
Figure 1

(2). **S/B (Standby)** mode (See Figure 2)

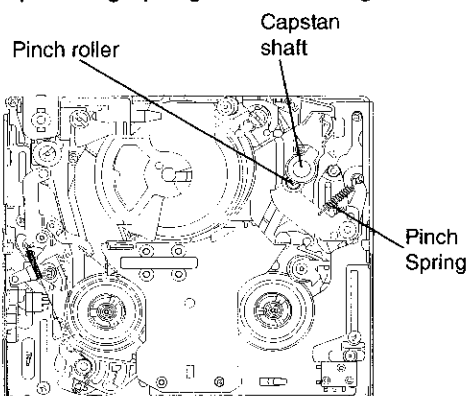
When the cassette is loaded, the mechanism is set to the S/B mode. In this mode the slide chassis is most far from the drum. In this mode the Eject lever is in position shown in Figure 2 (in position where the cassette control ass'y can be locked).

**S/B** mode**Figure 2**(3). **STOP** mode (See Figure 3)

In the STOP mode the S.T pole base is depressed in the STOP position (or Rec Lock position in CAMERA mode), and the S brake is in contact with the S reel disk.

**STOP** mode**Figure 3**(4). **PB** mode (See Figure 4)

In this mode, it is positioned for the replay, record and so on. It is the mechanical position where the pinch roller is pressed against the capstan shaft to make the pinch-pressing spring the most longest.

**PB** mode**Figure 4**

4-5-2. Cassette control ass'y

<Disassembling>

- (1) Set the unit to the EJECT mode, and let the housing stand upright. Or set the unit to the STANDBY mode, press the lock lever in the arrow direction, and let the housing stand upright. (See Fig 5: in the direction (a) or (b)) (When pushing in the direction (a), slightly lift the housing by hand to release the lock lever.)
- (2) Remove the four screws (2) and take out the down guide (3).
- (3) Slide the two link support shafts (c) and the two roller shafts (d) to the round openings (g) on their respective slide chassis slits (two at (e) and two at (f)).
- (4) Deflect the roller shafts (d) a little inward to get them out of the round openings (g) on the slide chassis. (Be careful not to deform the inner links.)

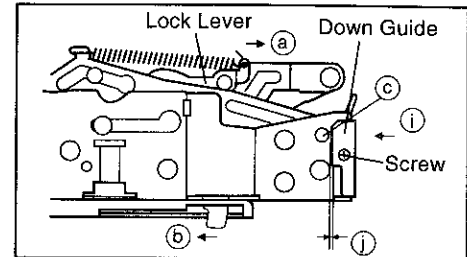


Figure 5. Lock lever section

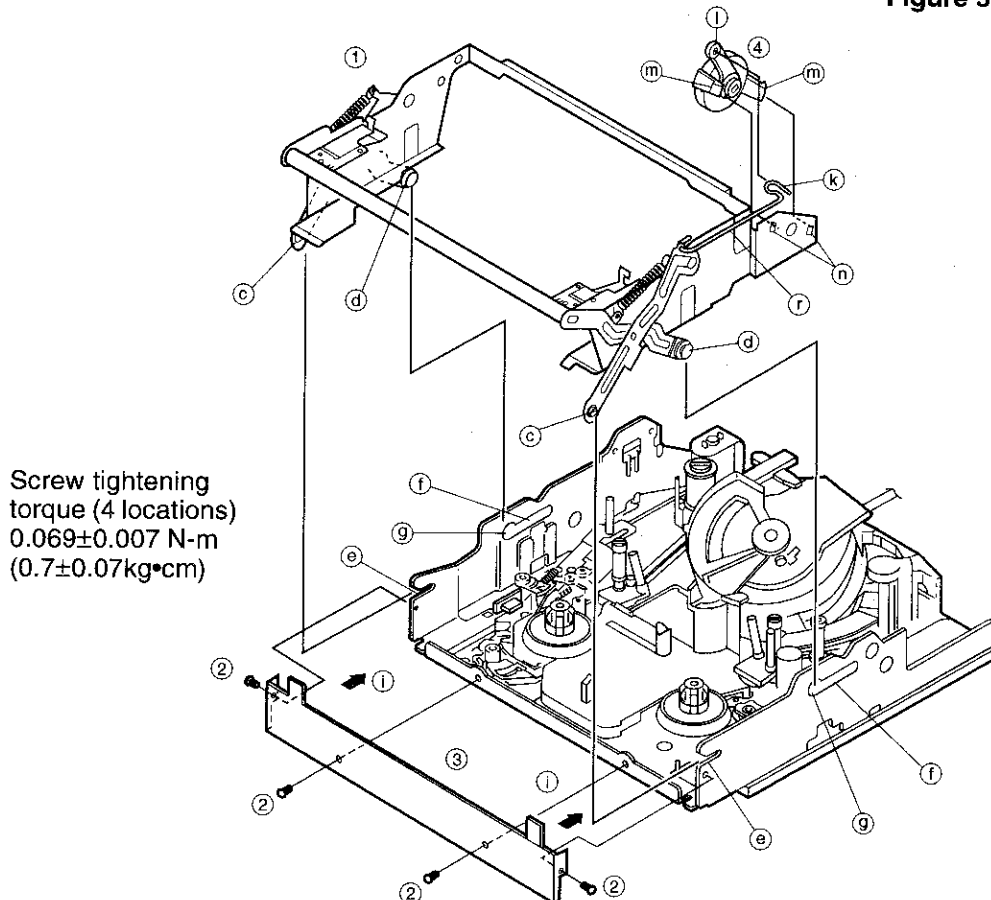


Figure 6.

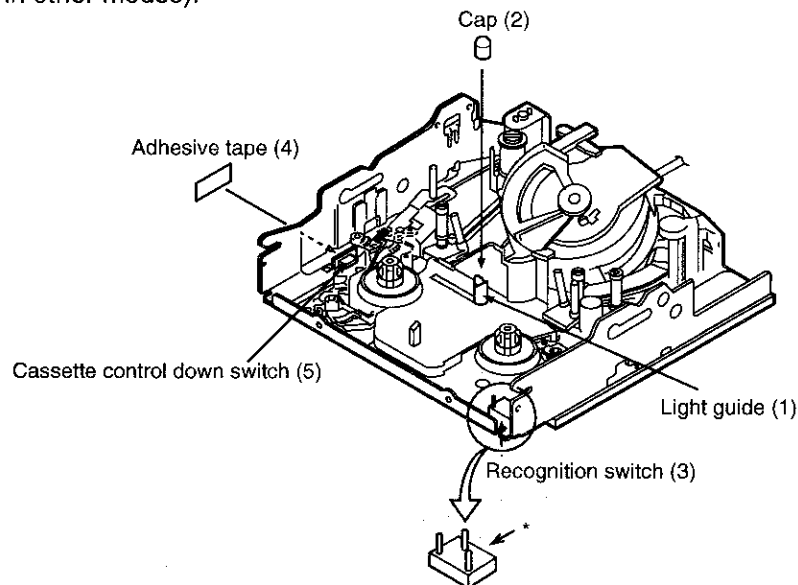
<Reassembling>

- (1) Set the unit to the STANDBY mode.
- (2) Deflect the roller shafts (d) a little inward, and fit them into the round openings (g) on the slide chassis. (Be careful not to deform the inner links.)
- (3) Align the flanges of roller shafts (d) with the slide chassis slits (f). While sliding the flanges, fit the support shafts (c) in the slide chassis slits (e), and slide them until they reach the slits.
- (4) Attach the down guide. (While pressing the guide in the direction (i), tighten the screws until the gap (j) between the down guide (3) and the support shafts (c) becomes zero.)
Tightening torque: 70 ± 7 mN·m (0.7 ± 0.07 kg·cm)

4-5-3. Actuating the mechanism with the cassette control ass'y removed

- (1) Turn on the power supply with the cabinet and camera unit removed, referring to the Service Manual (so as to actuate the mechanism).
- (2) Put the cap (2) on the light guide (1).
- (3) Press the cassette control down switch (5) through the adhesive tape (4) in the arrow direction so as to turn it on. At this time take care to avoid contact with the cassette. Keep the switch pressed (if the switch is turned off, unloading occurs).

Note: To set the Rec mode, press the pin (marked with the asterisk *) of recognition switch (3) (this operation is not necessary in other modes).



4-5-4. Drum and Drum base

Removal

* To replace the upper drum, be sure to put on gloves. Due care is required so that the drum is not damaged.

(1) Drum base

Remove the three mounting screws as shown in Figure 1, and remove the drum base.

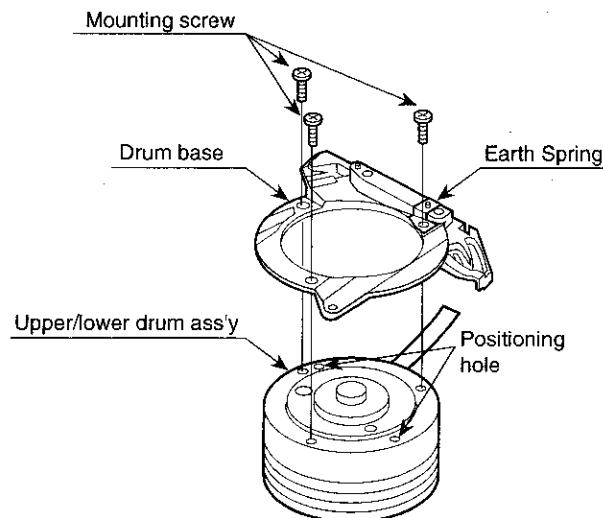
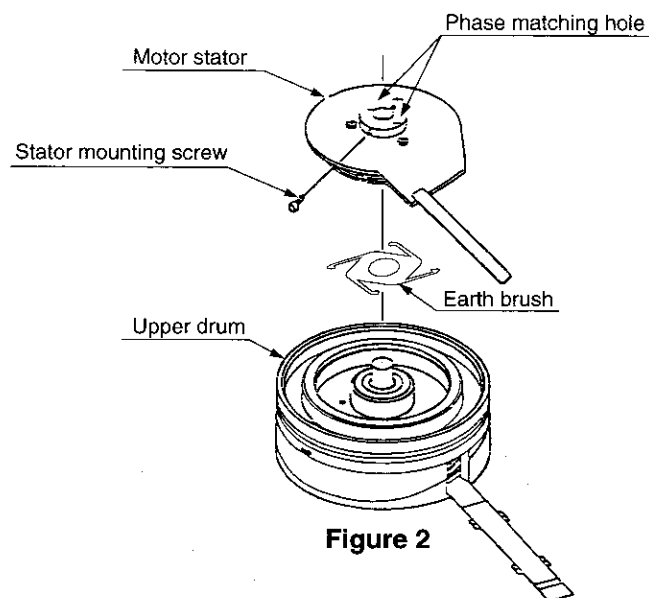


Figure 1

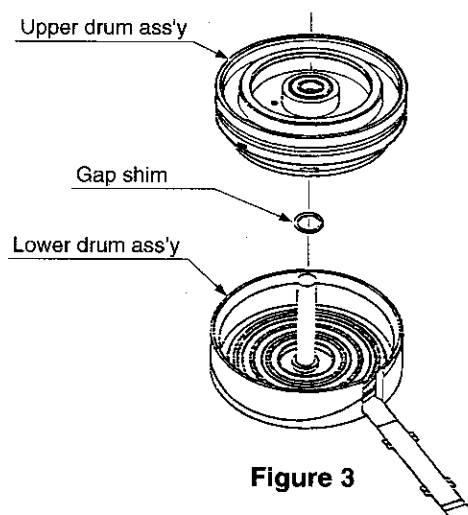
(2) Drum motor stator

Remove the stator mounting screw with the hexagonal wrench as shown in Figure 2, remove the motor stator, and remove the earth brush. At this time take due care so as not to deform the earth brush.



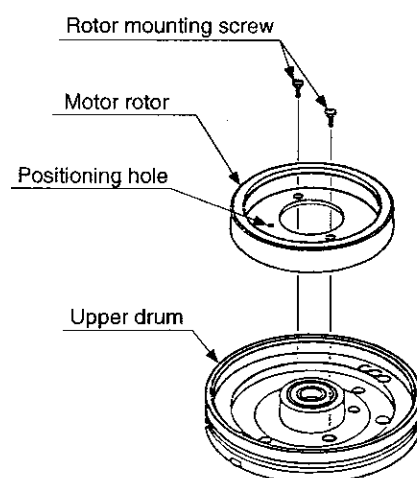
(3) Upper drum ass'y

Remove the upper drum ass'y from the lower drum ass'y as shown in Figure 3. At this time take care so as not to lose the gap shim.



(4) Motor rotor

Remove the two rotor mounting screws as shown in Figure 4, and remove the motor rotor.



(5) Rotary transformer rotor ass'y

Loosen the rotor ass'y mounting screw with hexagonal wrench as shown in Figure 5 (complete removal is not required), and remove the rotor ass'y.

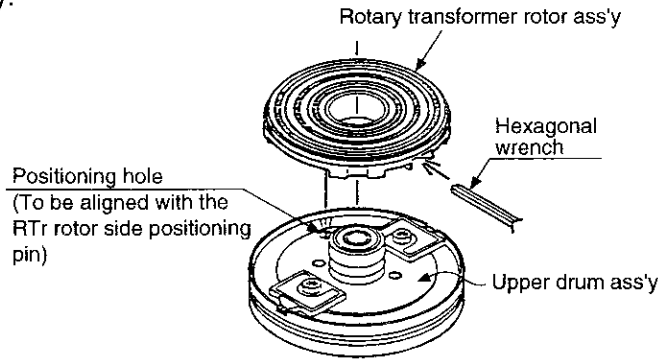


Figure 5

Installation

Install the upper drum in the reverse order of removal.

(1) Rotary transformer rotor ass'y

Clean the contact surfaces of rotor ass'y holder and upper drum ass'y, and ascertain that there are no contamination and flaws. (Figure 6)

Then, make an alignment so that the positioning pin of rotor ass'y can be inserted into the positioning hole of upper drum ass'y. Keeping the rotor ass'y tight fitted to the upper drum ass'y, tighten the rotor ass'y mounting screw with the hexagonal wrench (tightening torque 0.45 kg.cm).

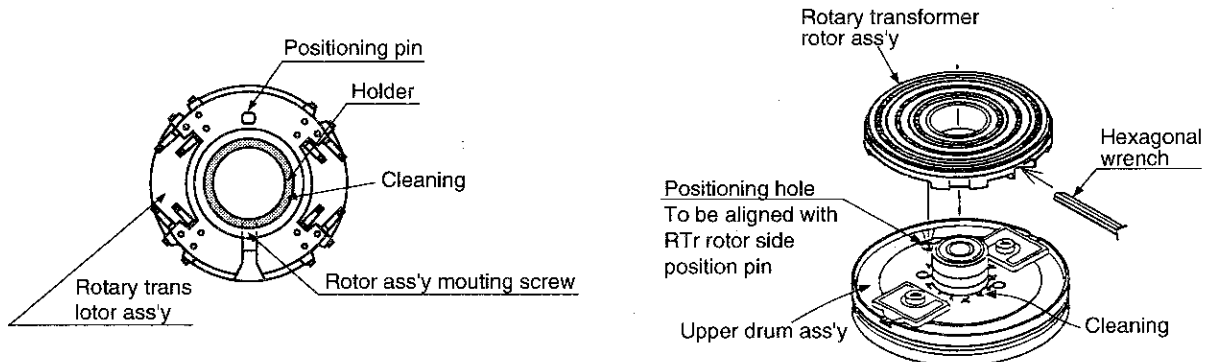


Figure 6

(2) Motor rotor

Align the motor rotor positioning hole with the Comb. head side, and tighten the rotor mounting screw. (Figure 7)

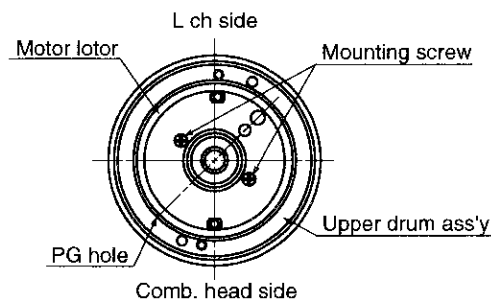


Figure 7

(3) Upper drum ass'y

After fitting the gap shim which was removed when the upper drum ass'y was dismantled to the shaft of lower drum ass'y, fit the upper drum ass'y. (Figure 8)

At this time slightly turn the upper drum ass'y by hand to ascertain that RT_r does not scrape. If scrape is found, replace the gap shim with the gap shim packaged together with the replacement upper drum ass'y.

(4) Drum motor stator

Fit the earth brush, and install the motor stator. At this time discriminate the front and rear sides of brush. The convex part must be downward (must contact B.B).

Apply pressure (0.7 kg) to the motor stator, and tighten the stator mounting screw (tightening torque 1.5 kg.cm).

The stator must be installed so that the chassis line and motor stator straight part are nearly parallel when it is installed on the chassis.

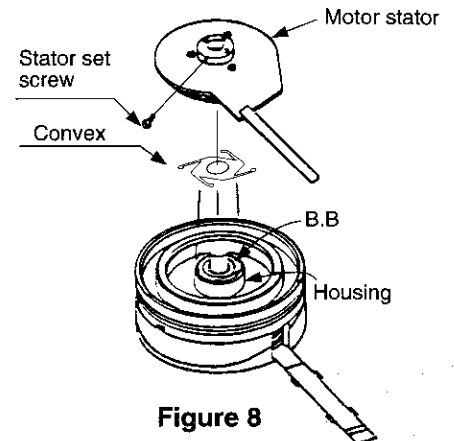
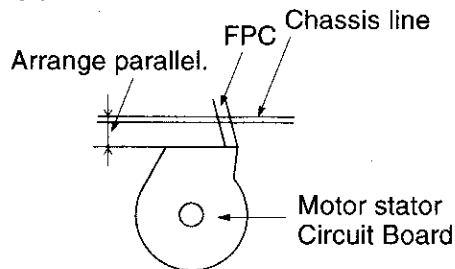


Figure 8

(5) Drum base

Align the positioning pin, and tighten the screws (3 pcs.).

(6) Drum ass'y

Install the drum ass'y on the main chassis, and tighten the screws (3 pcs.).

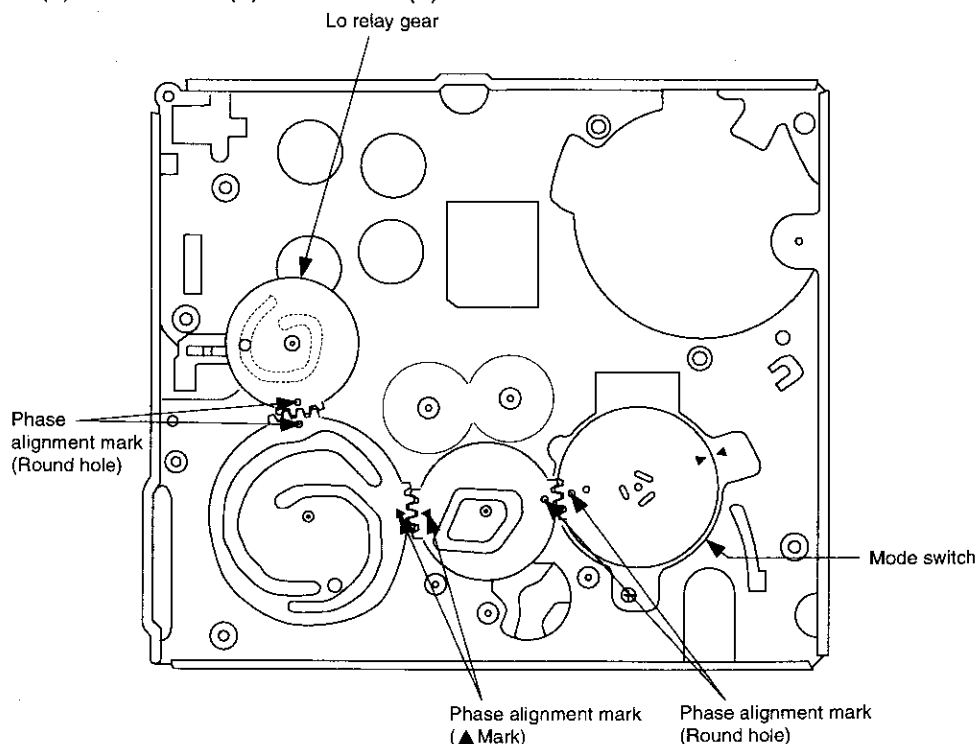
(7) Tape guide

Align the positioning pin, and tighten the screw (one pc.).

4-5-5. Phase matching

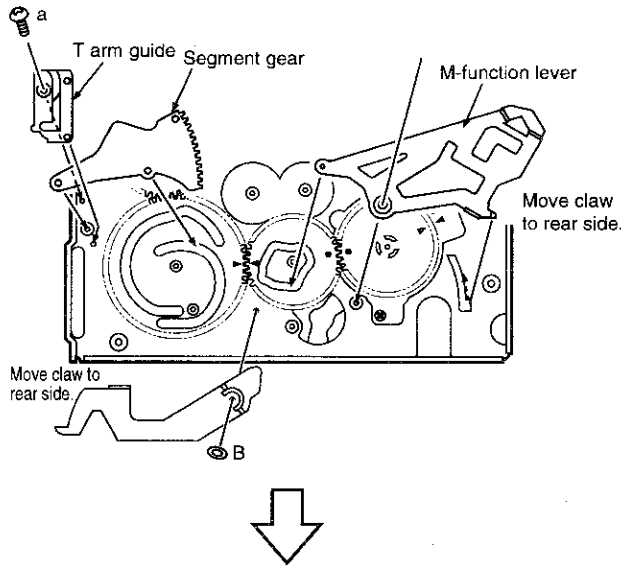
The phase of the following parts must be matched as shown in the figure below.
(Ascertain that the ▲ marks and round holes align.)

- (1) Lo relay gear (2) Main cam (3) Sub-cam (4) Mode switch

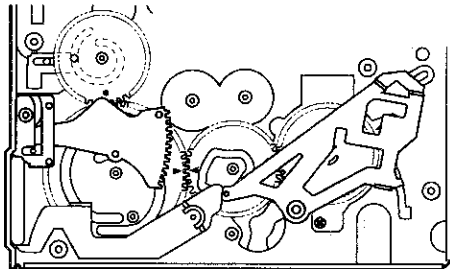


4-6. MECHANISM ASSEMBLING METHOD

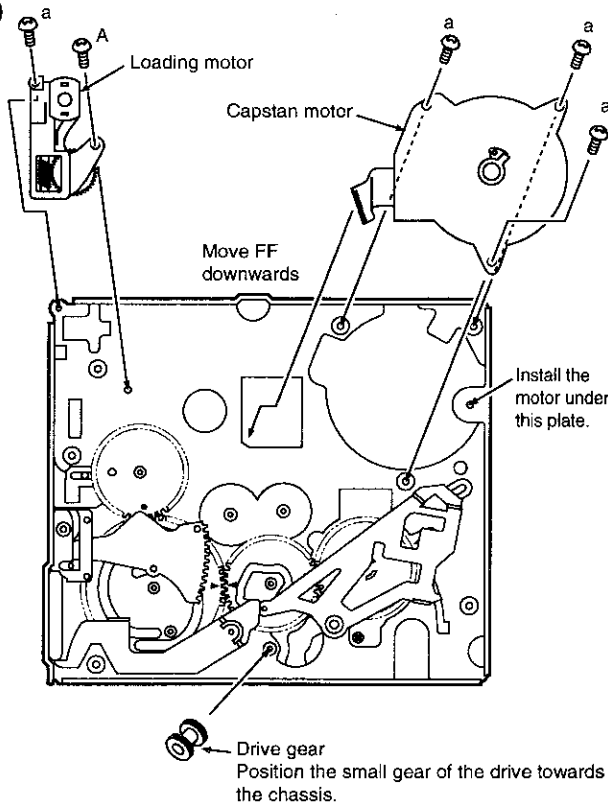
- (1) Adjust the phase of each part.
- (2) Install screws and washers.
- (3) Install the segment gear, T arm guide and the M-function lever. Install the eject lever.



	Item	Tightening torque	Quantity
a	S Tight M1.4 x 3	70mN•m (0.7kgf•cm)	1

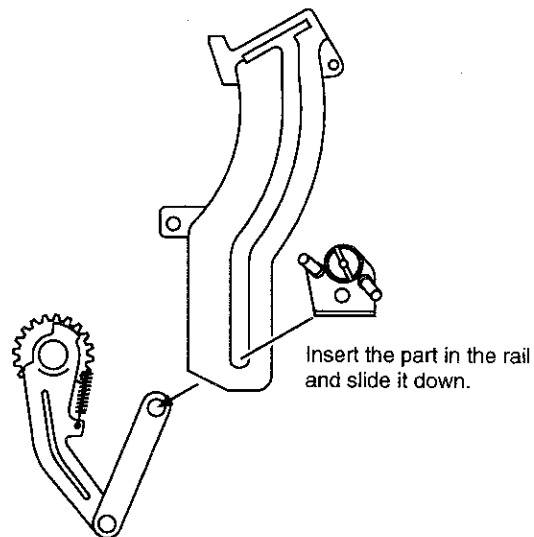
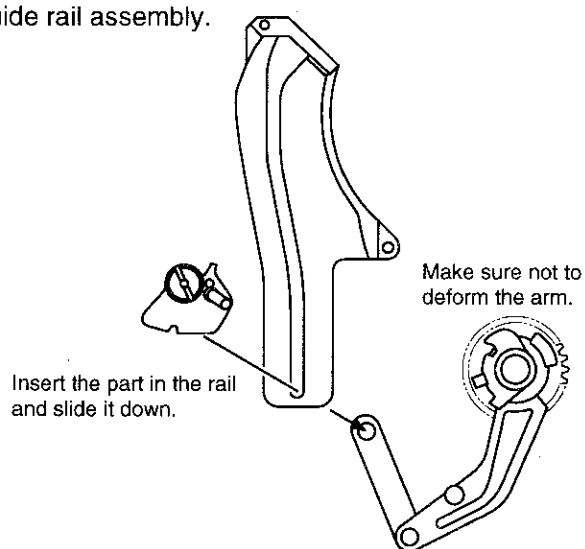


- (4) Install the loading block assembly and the capstan motor.
- (5) Install the drive gear. At this time, pay attention to the direction of gear. (The small gear must be located in the chassis side.)

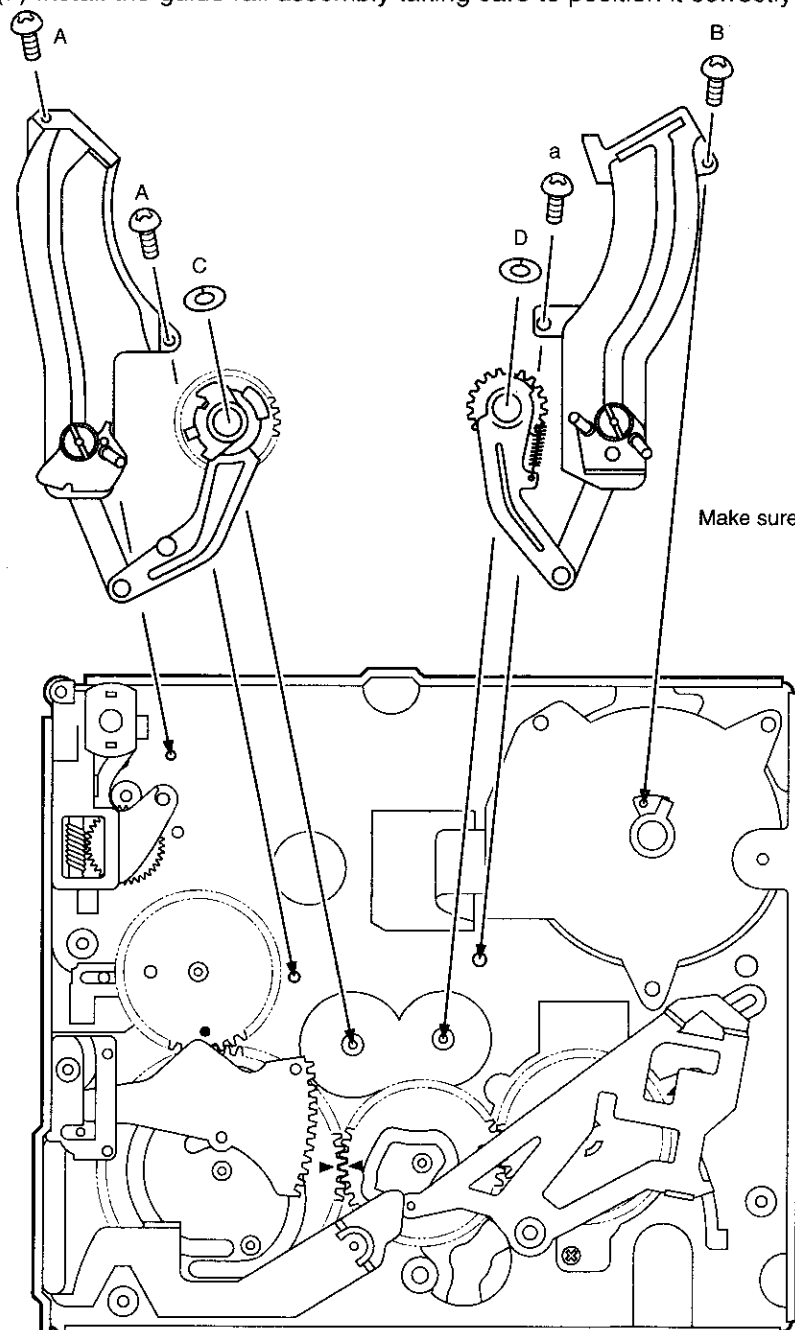


	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN•m	1
a	S Tight M1.4 x 3	70mN•m	4

(6) Install the guide rail assembly.

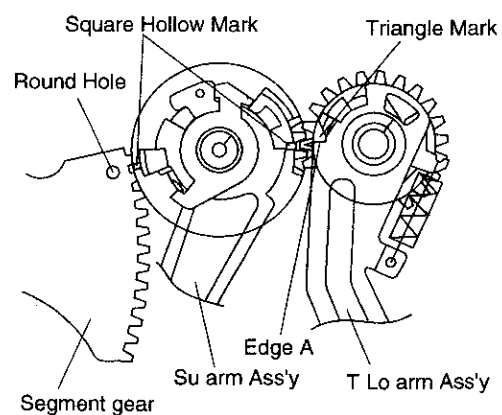


(7) Install the guide rail assembly taking care to position it correctly.



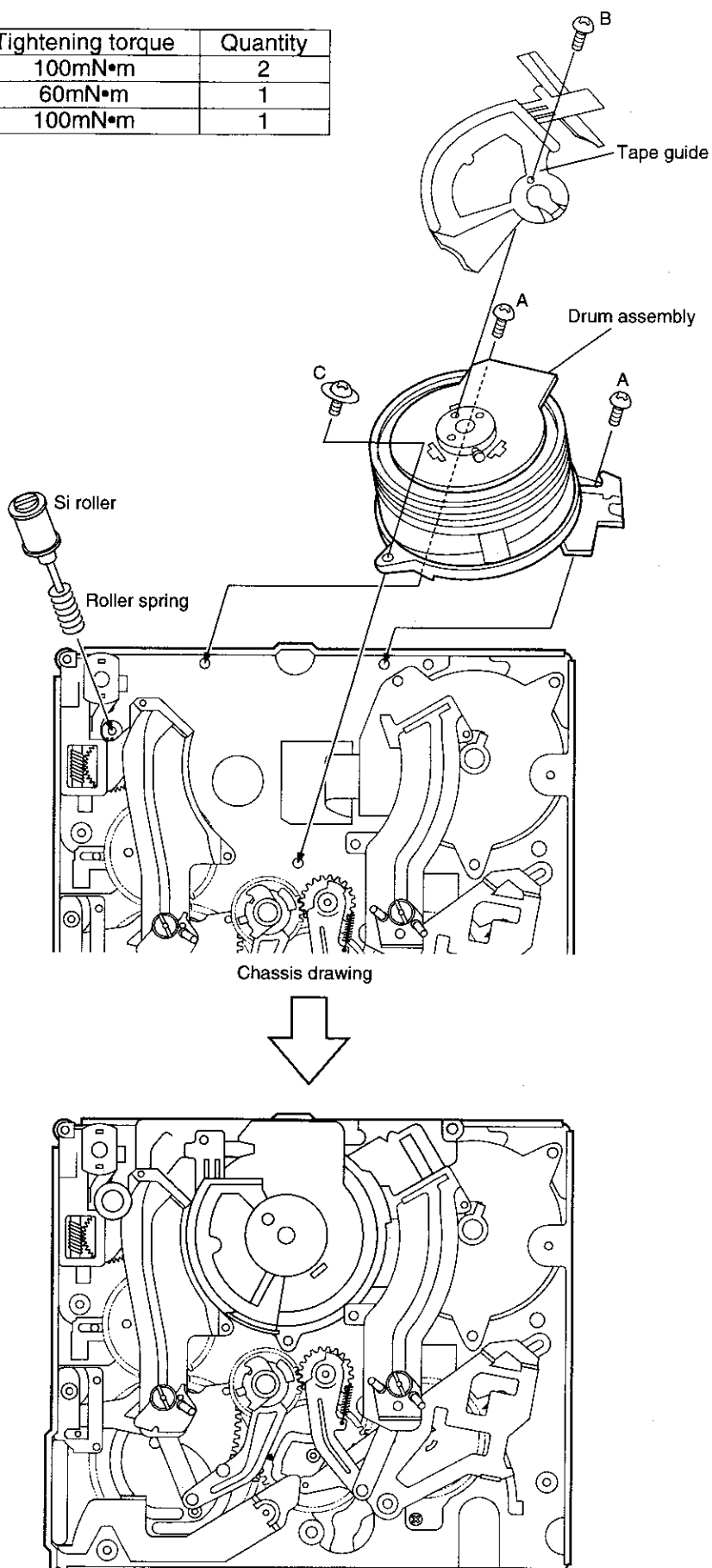
	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN•m	2
B	S Tight M1.4 x 4	40mN•m	1
C	ø0.8-ø3.0-t0.2	—	1
D	ø2.1-ø5.0-t0.25	—	1
a	S Tight M1.4 x 3	70mN•m	1

Align the marks on the parts.



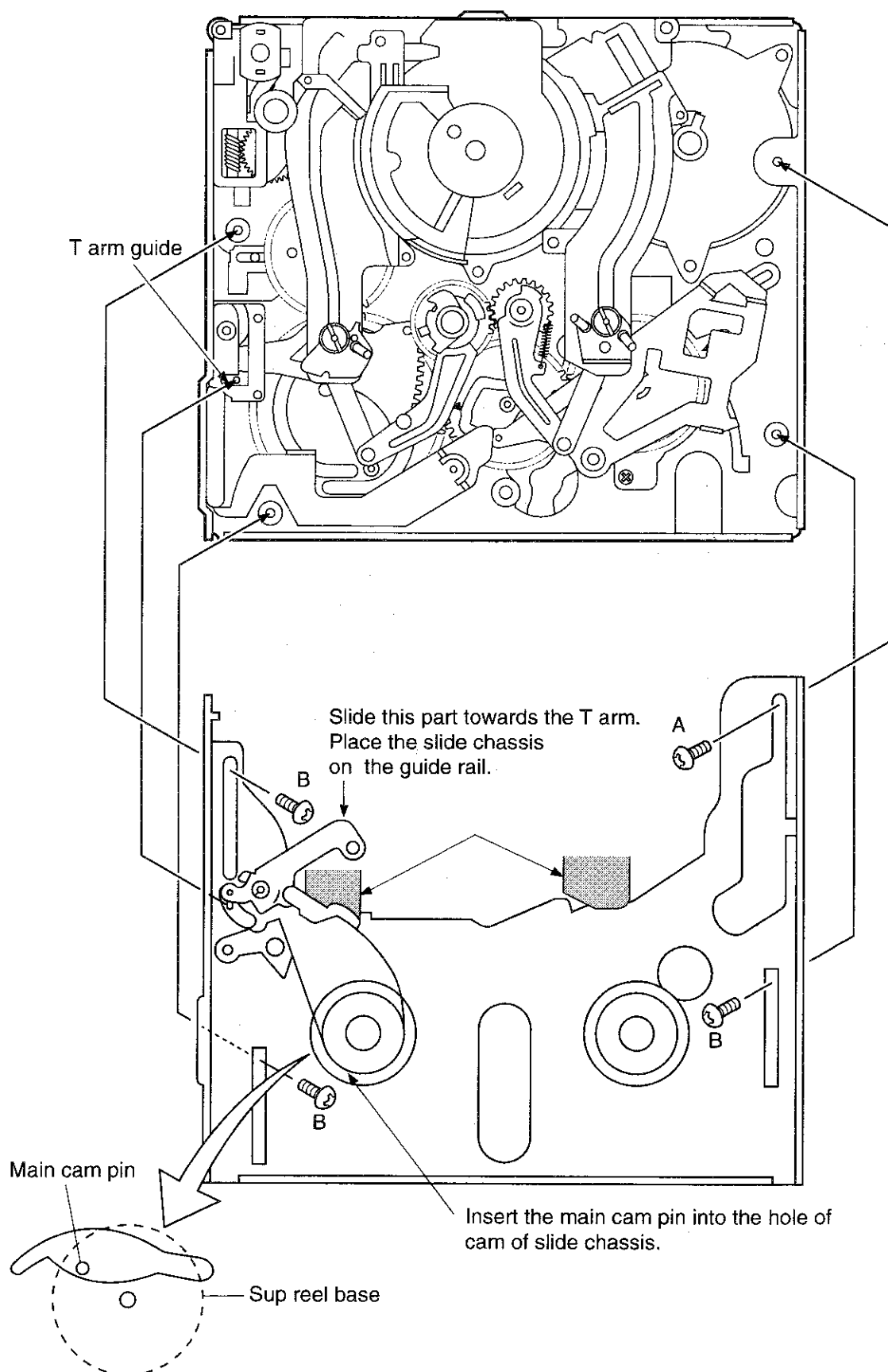
- (8) Install the drum assembly in the chassis.
(9) Install the tape guide in the drum assembly.
(10) Install the SI roller.

	Item	Tightening torque	Quantity
A	S tight M1.7 x L5.3	100mN•m	2
B	S tight M1.7 x L2.5	60mN•m	1
C	Cup Screw M1.7 x L5	100mN•m	1



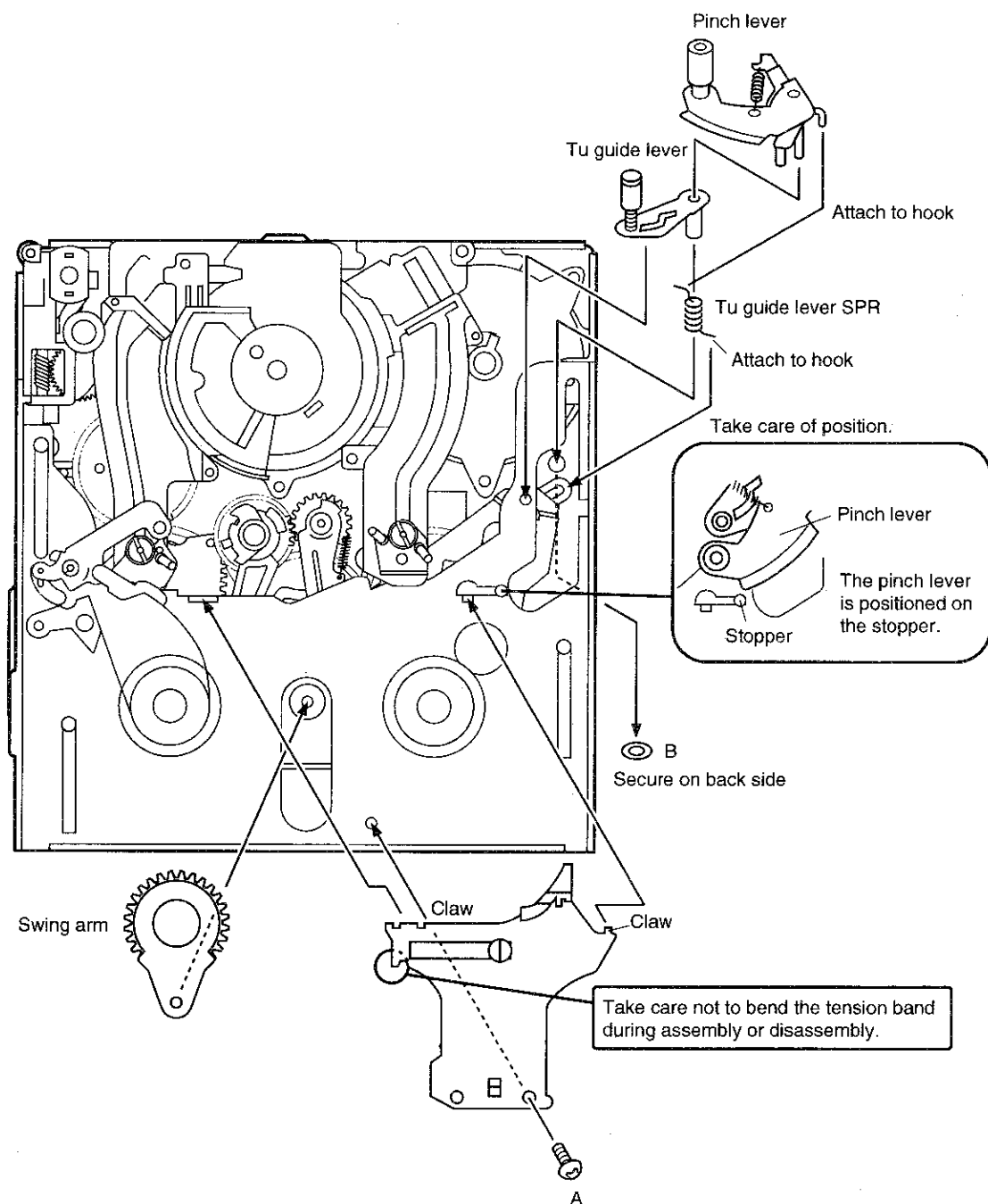
(11) Install the slide chassis.

	Item	Tightening torque	Quantity
A	M1.4 x 1.5 ϕ 4.0	40mN•m	1
B	M1.4 x 1.5 ϕ 3.5	40mN•m	3



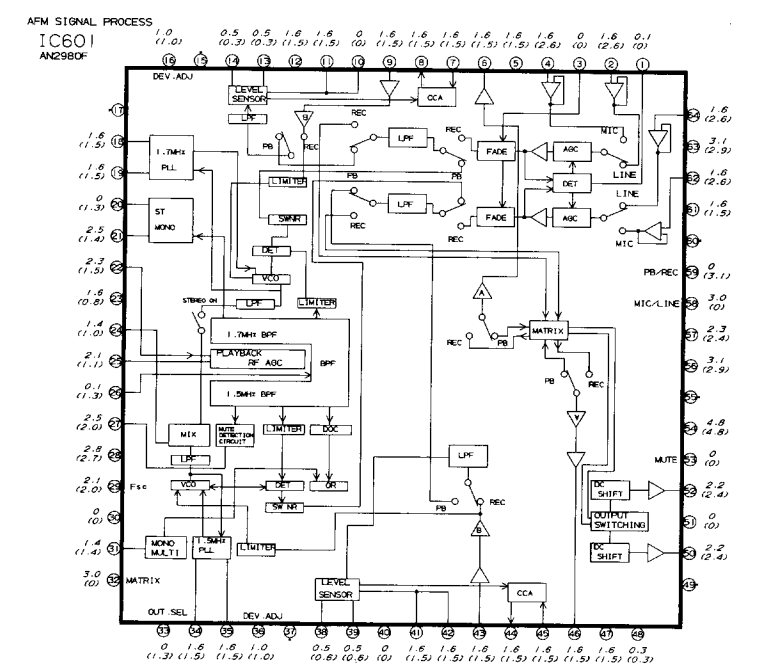
- (12) Install in the following order: T guide lever spring, T guide lever, pinch lever.
 (13) Install the swing arm.
 (14) Install the right guide holder.

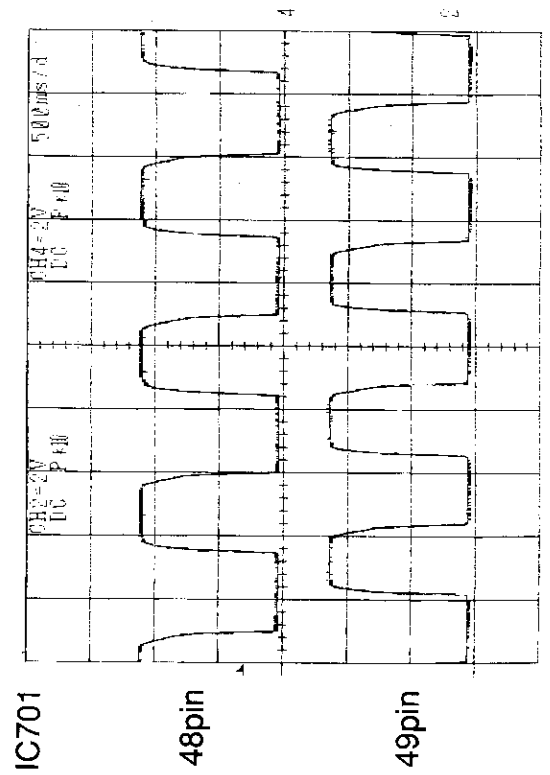
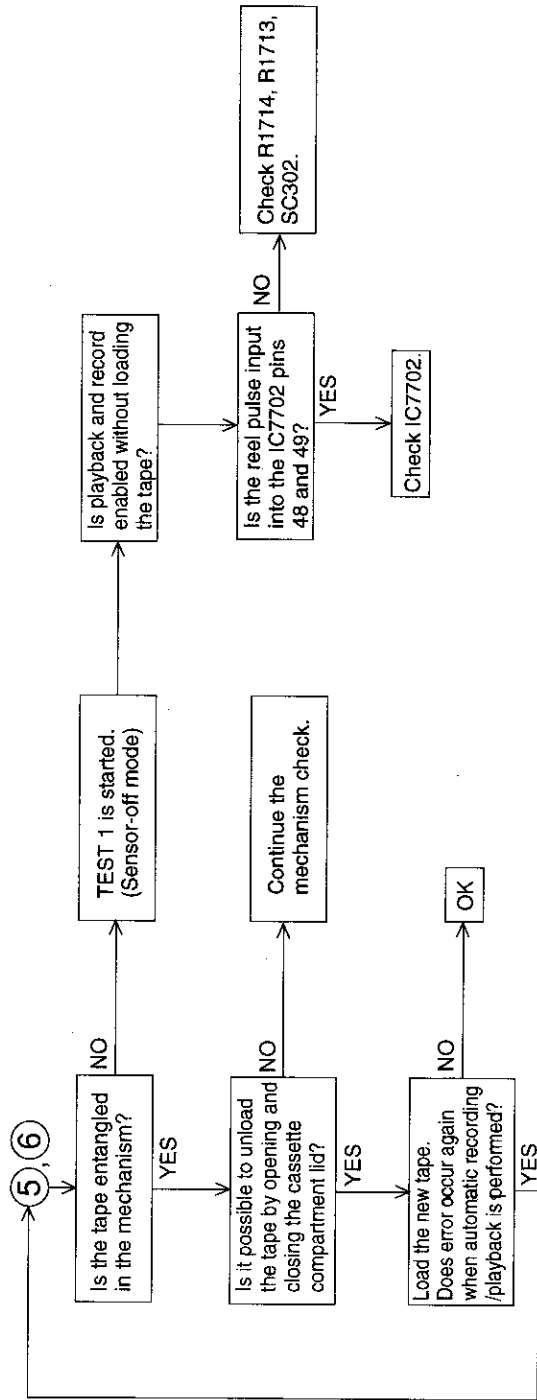
	Item	Tightening torque	Quantity
A	S tight M1.4 x 2.5	70mN•m	1
B	CW $\phi 0.8\text{-}\phi 3.0\text{-}t0.2$	70mN•m	1



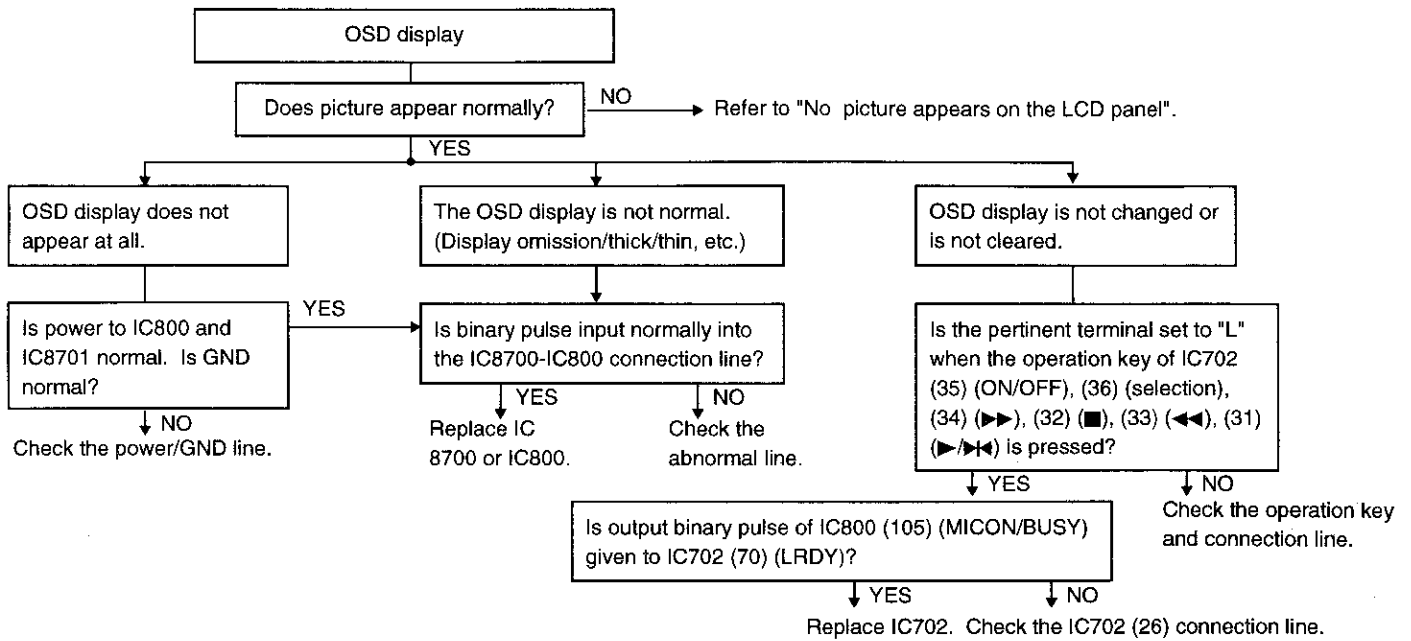
VL-H770S/H
VL-H95E

A

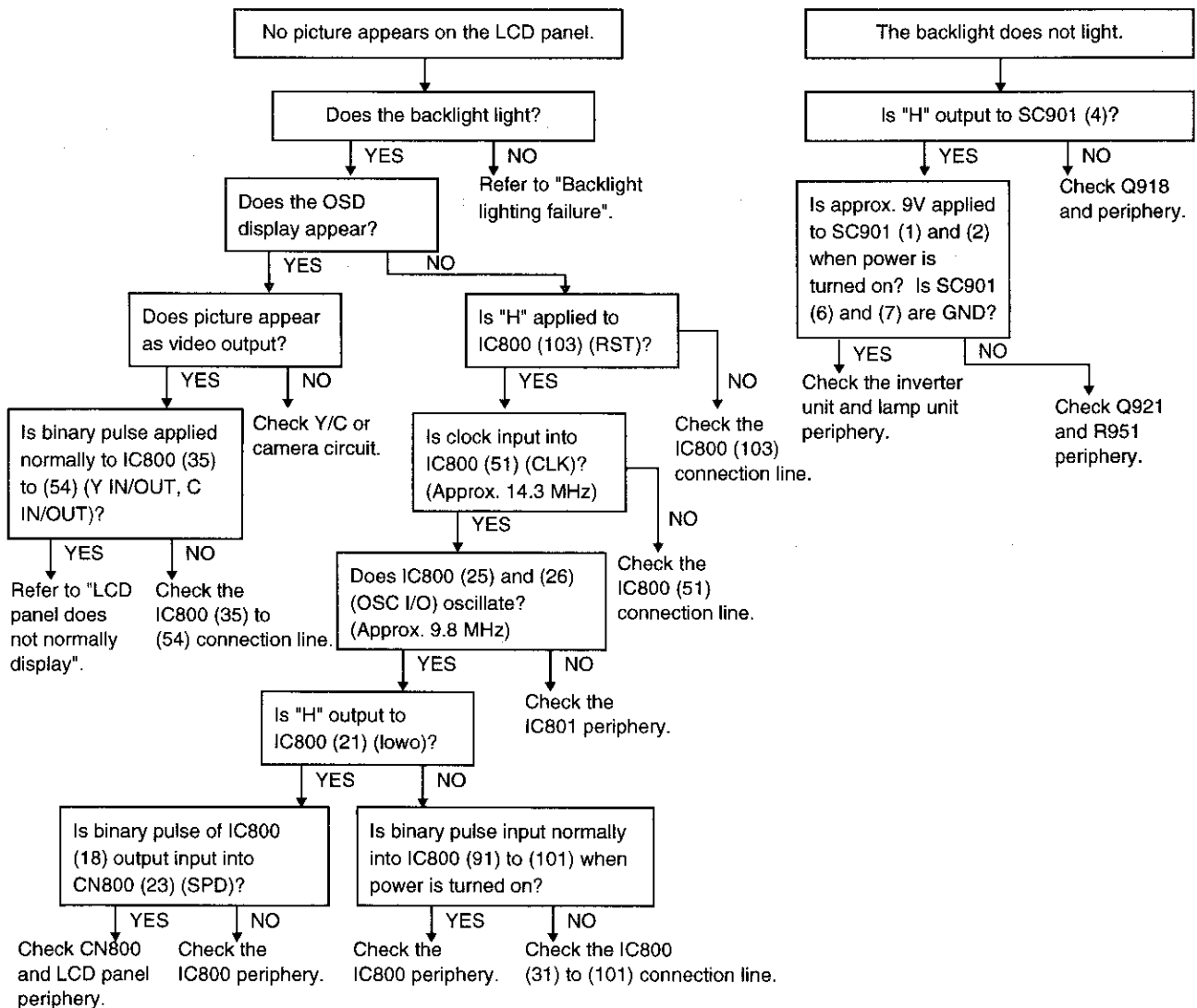


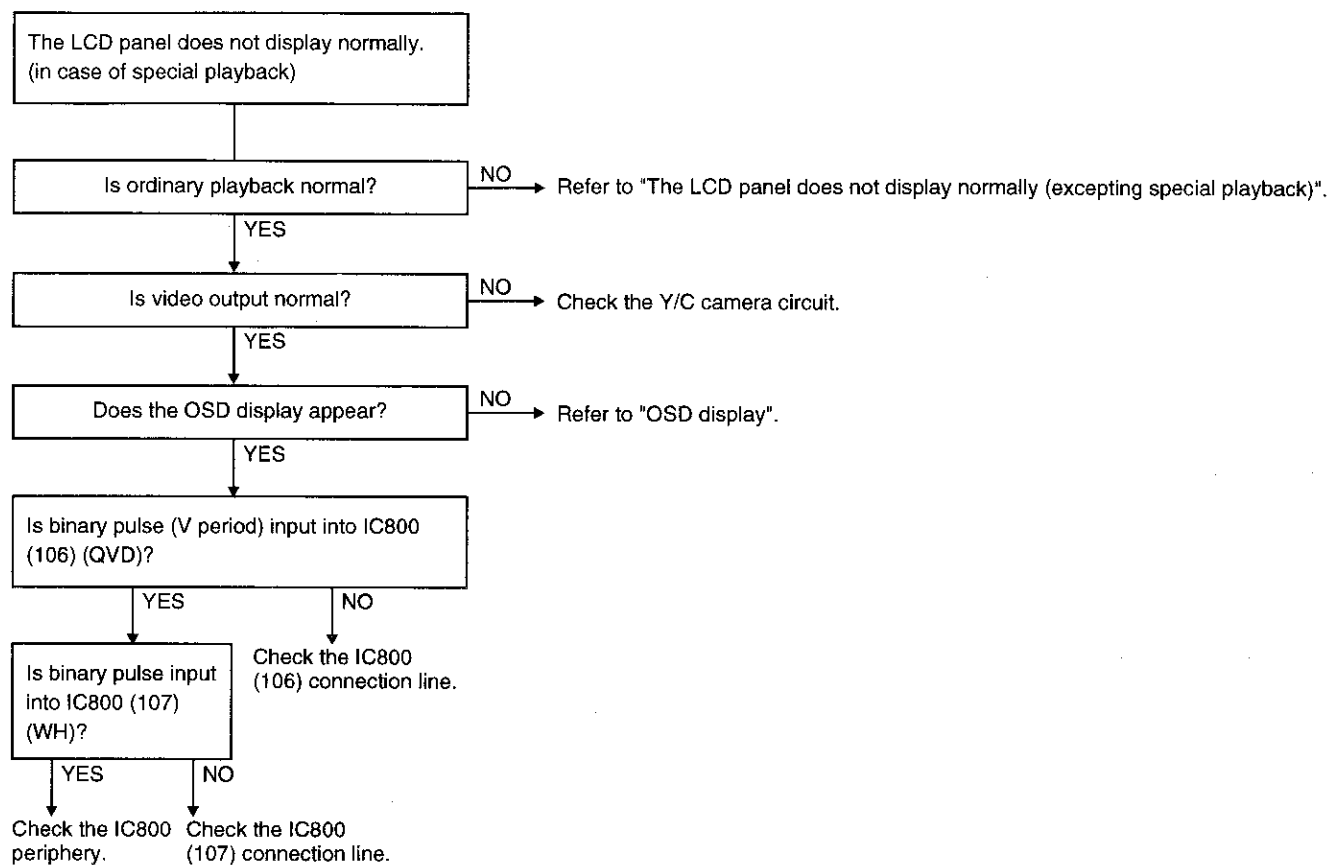


5-8-3. OSD display troubleshooting



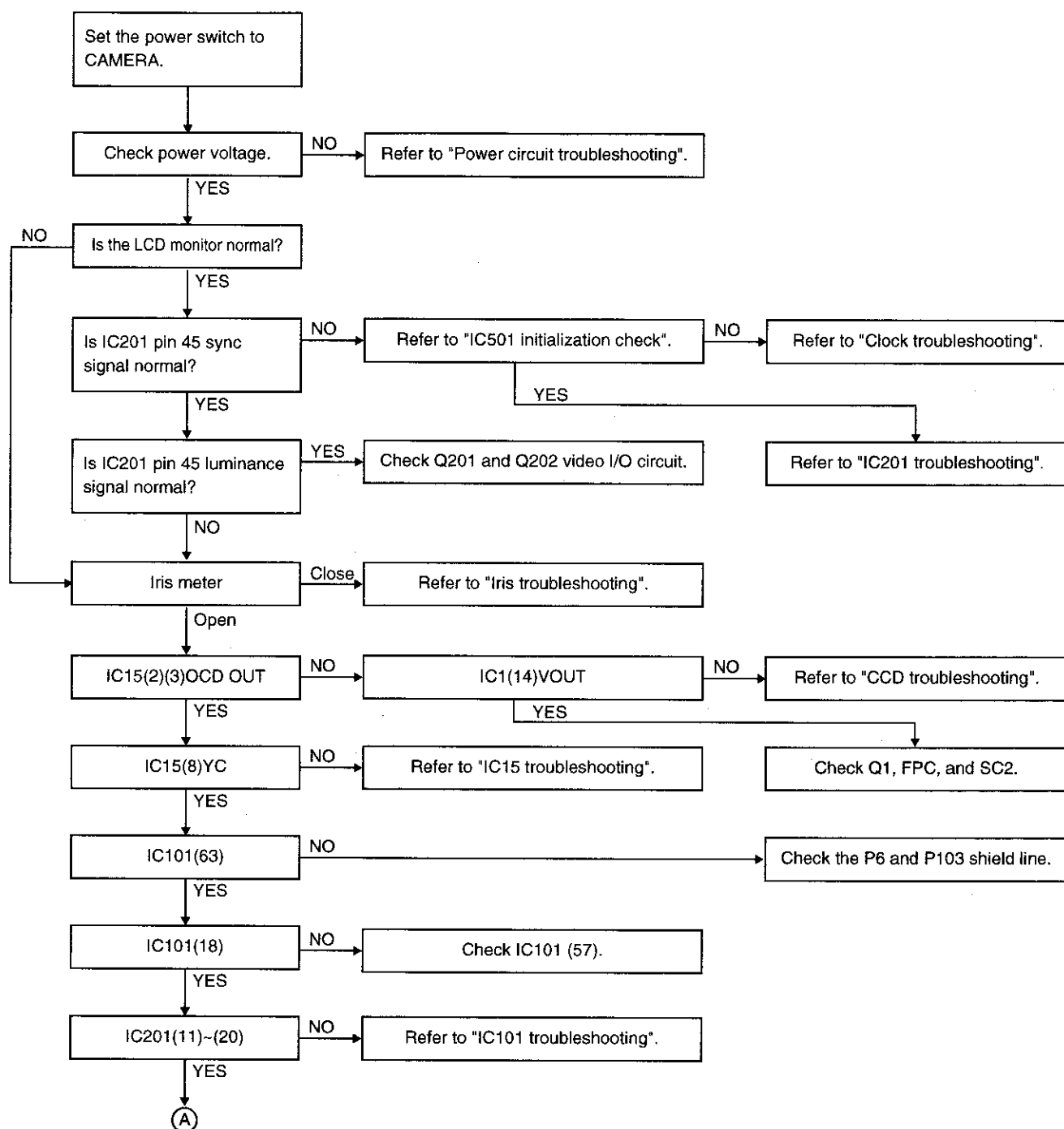
5-8-4. LCD display troubleshooting

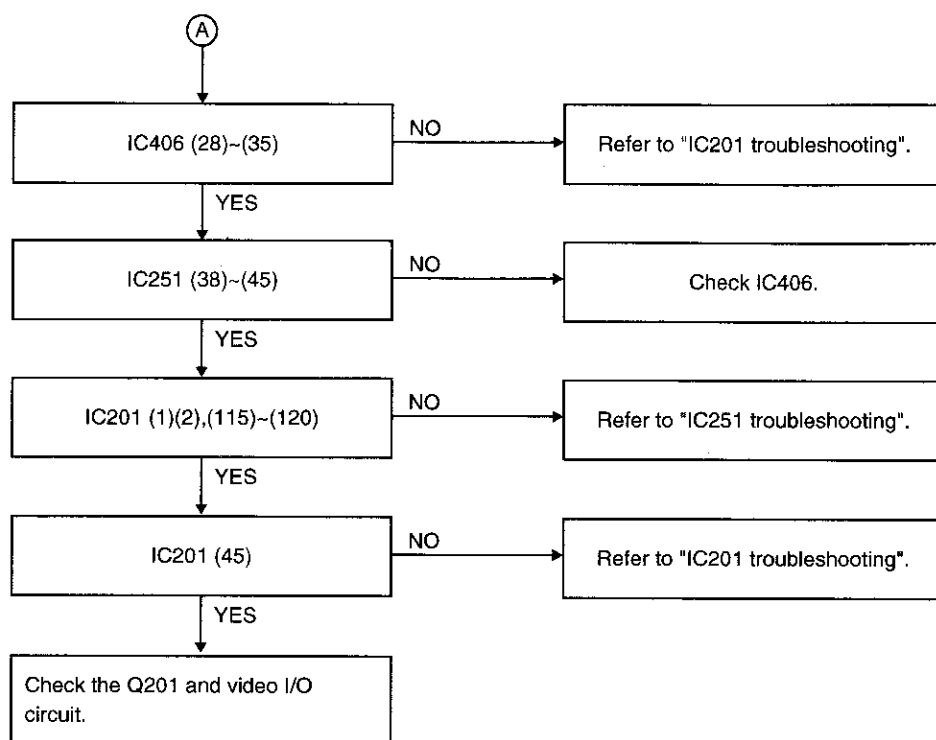




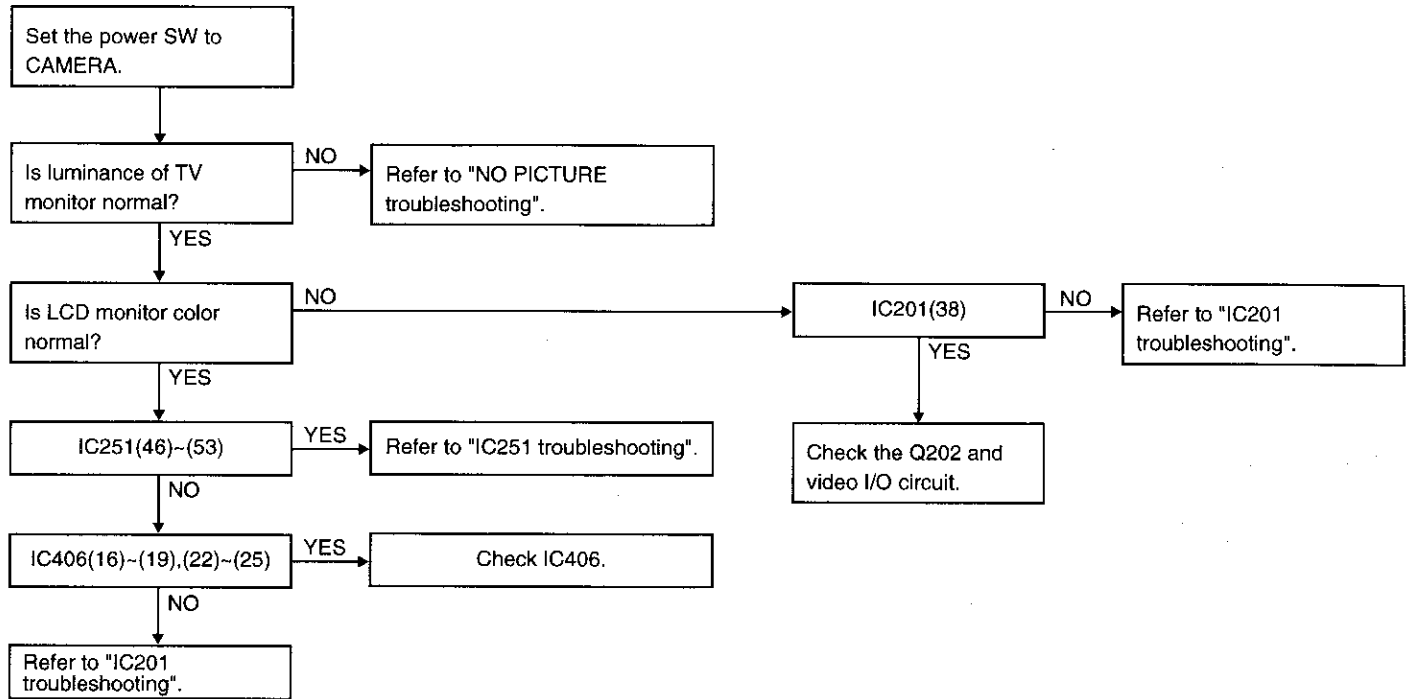
5-8-5. Camera troubleshooting

No Picture (TV Monitor)

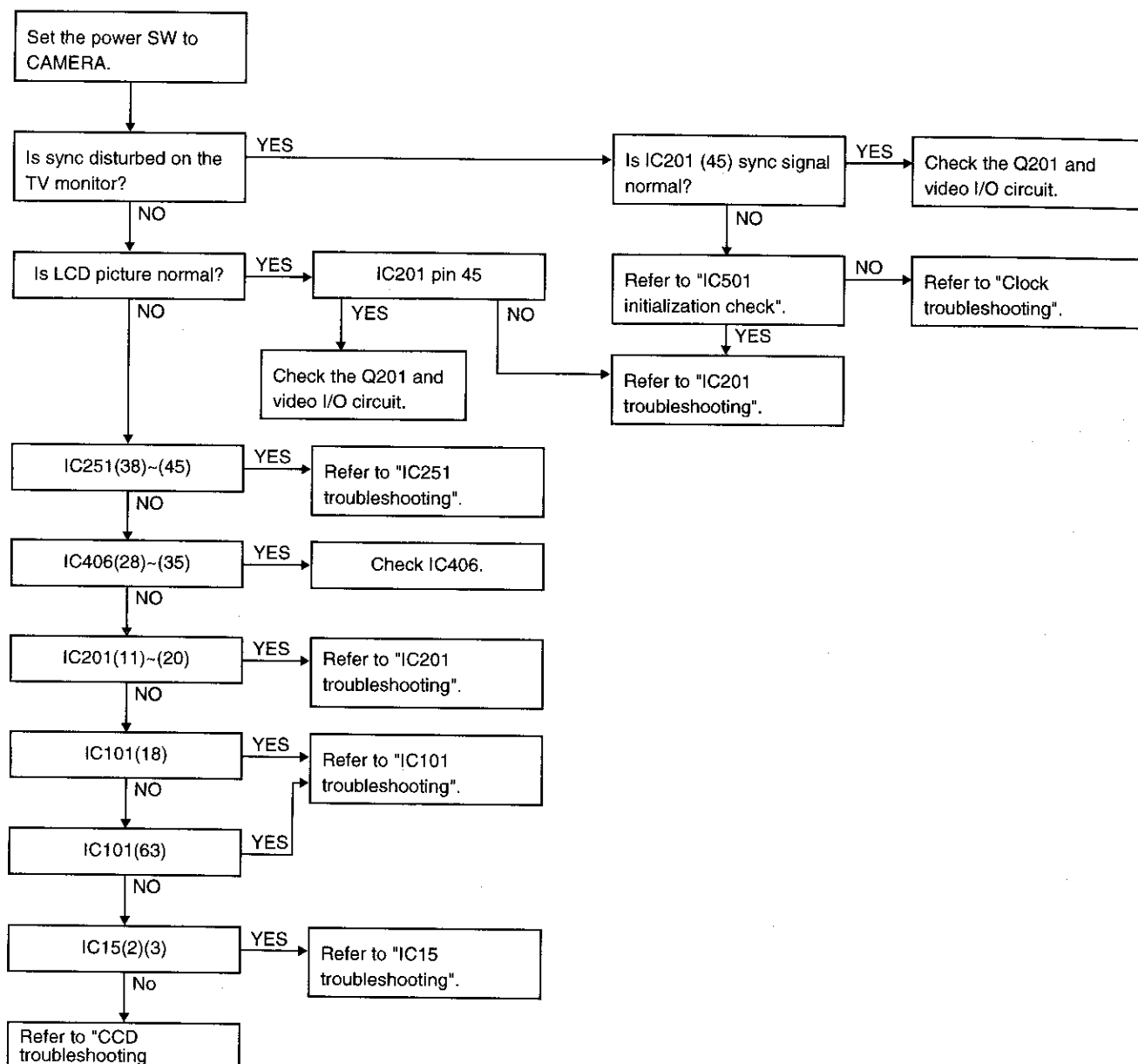




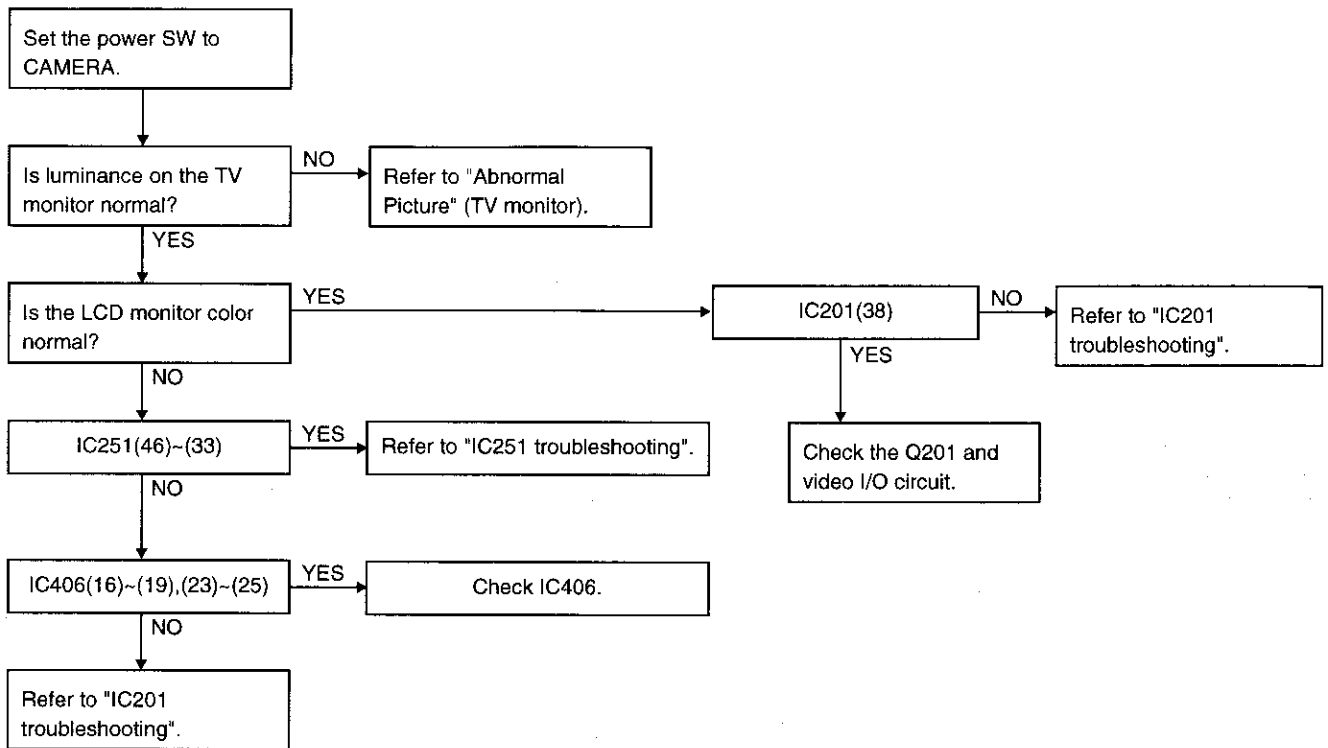
No Chroma (TV Monitor)



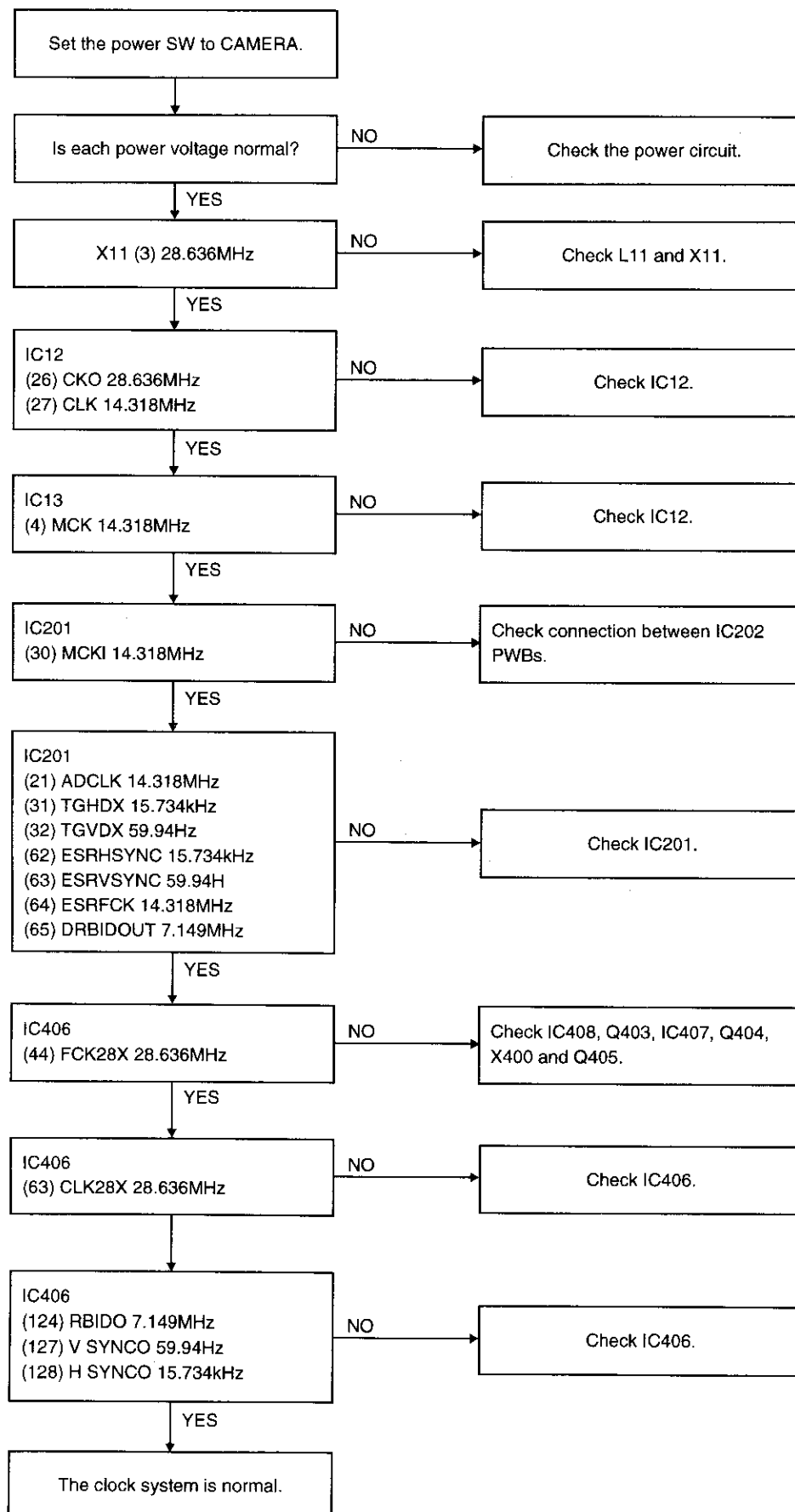
Abnormal Picture (TV Monitor)



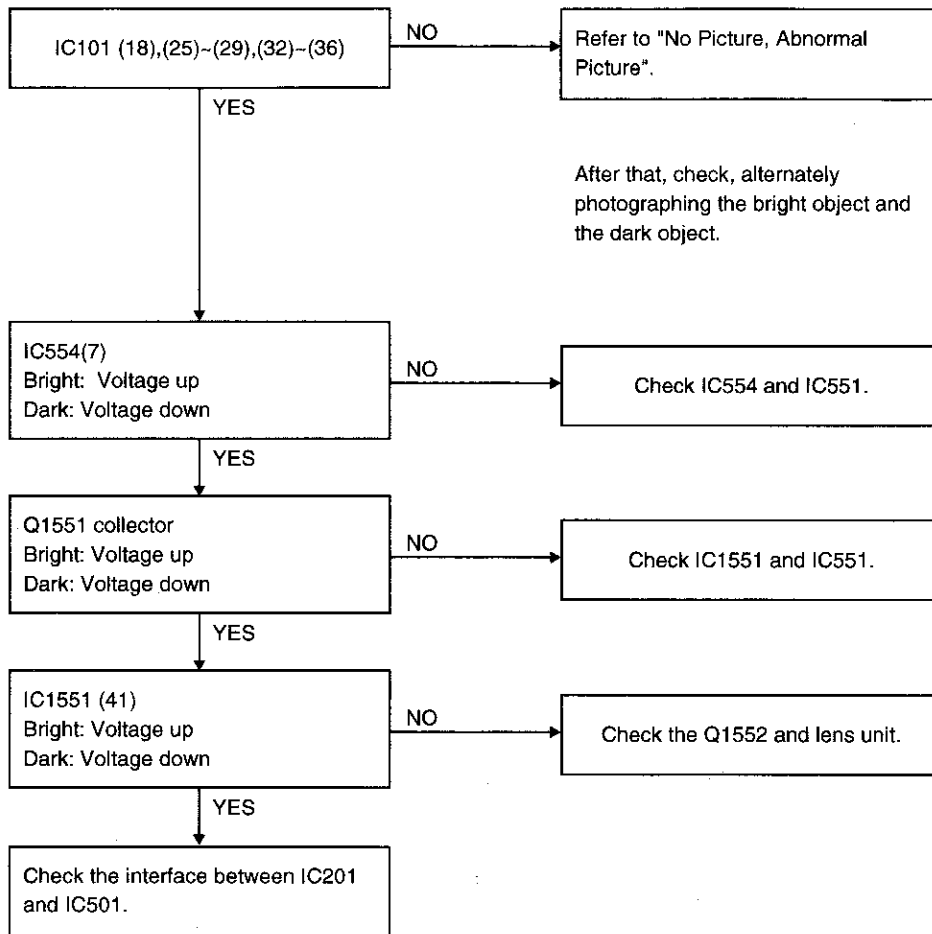
Abnormal Chroma (TV Monitor)



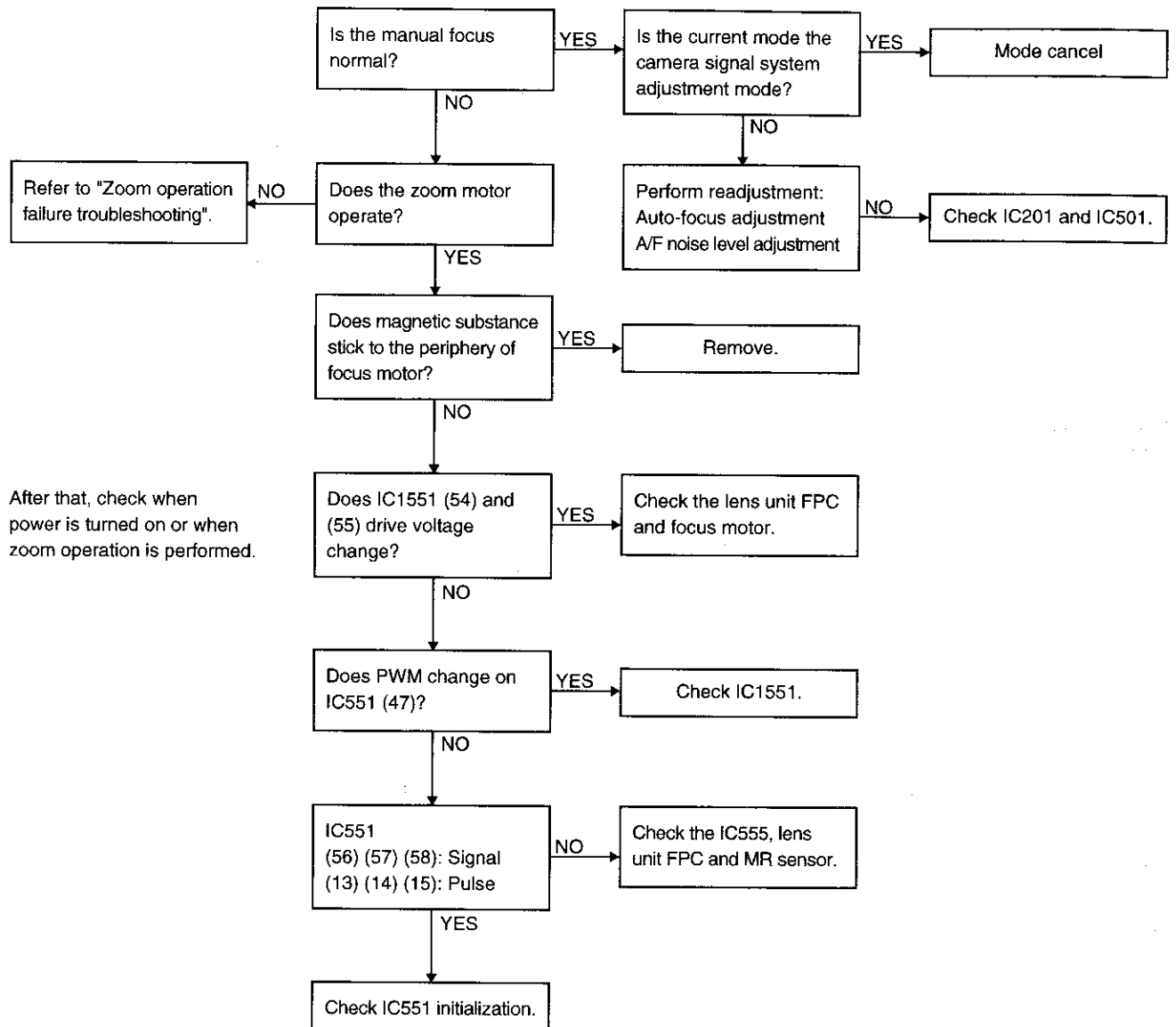
Clock flow troubleshooting



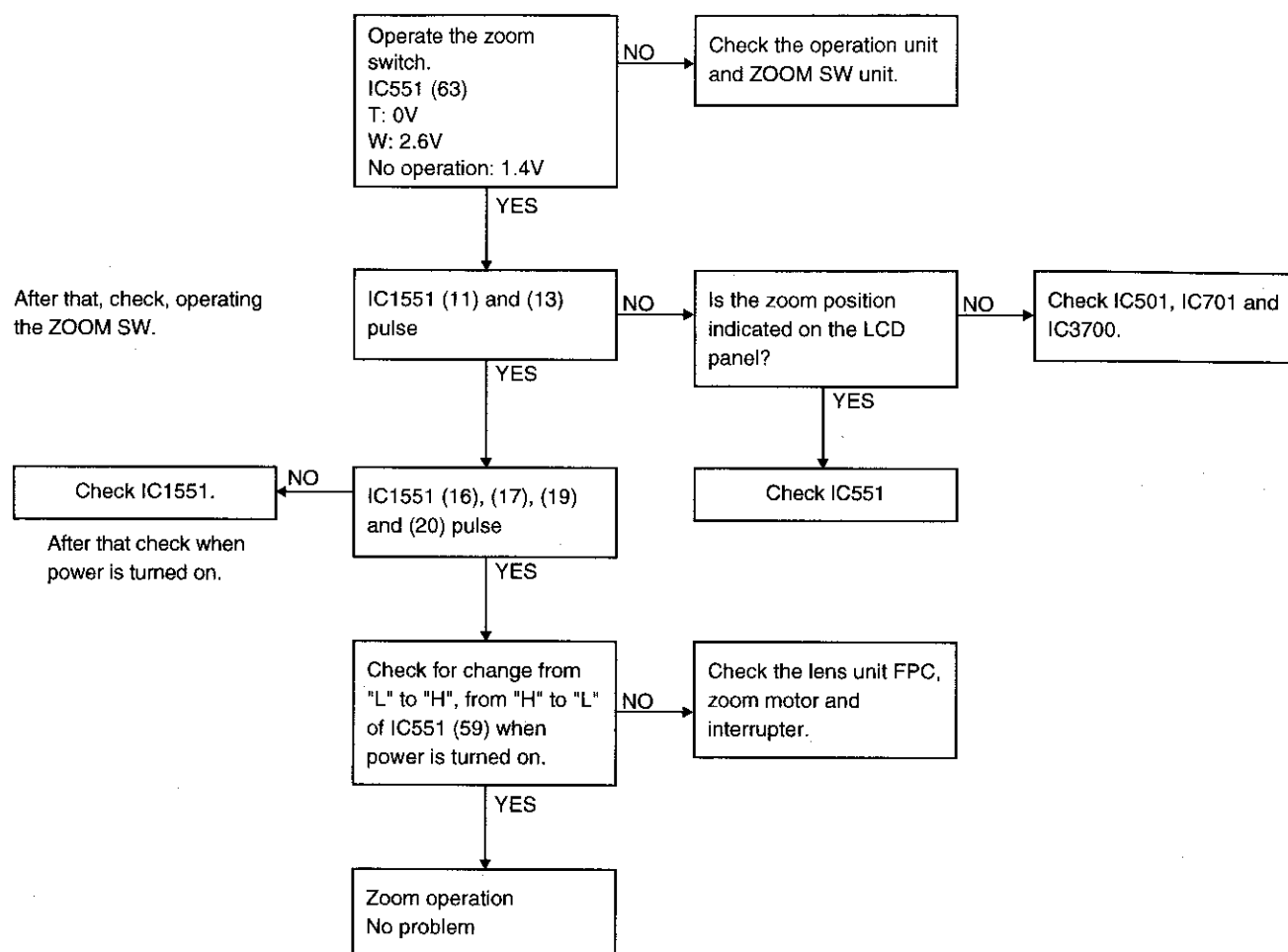
Iris abnormal operation



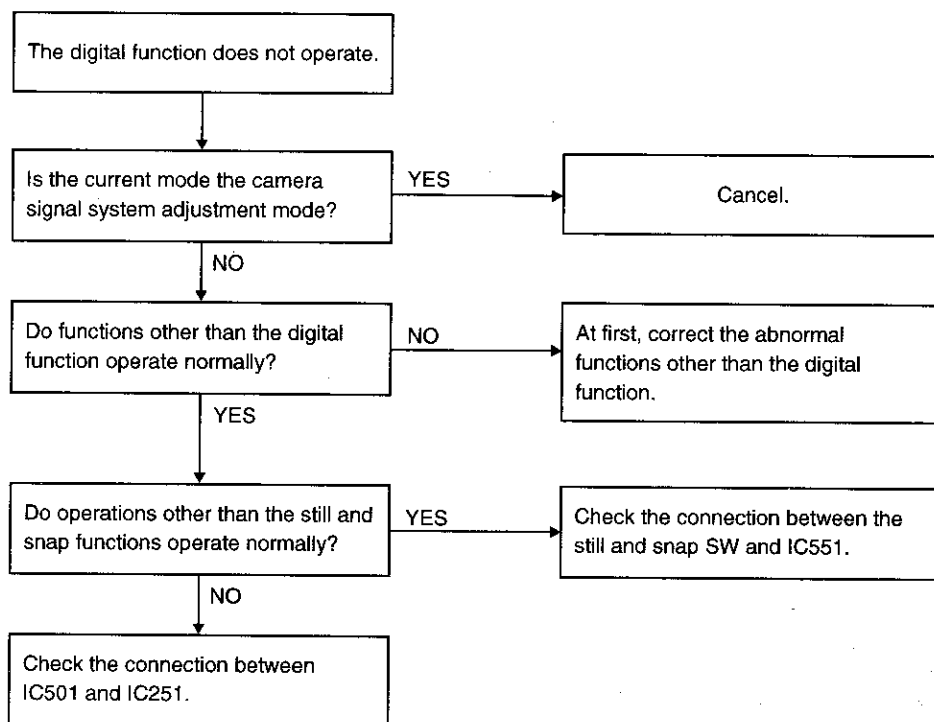
Auto-focus operation trouble



Zoom operation failure

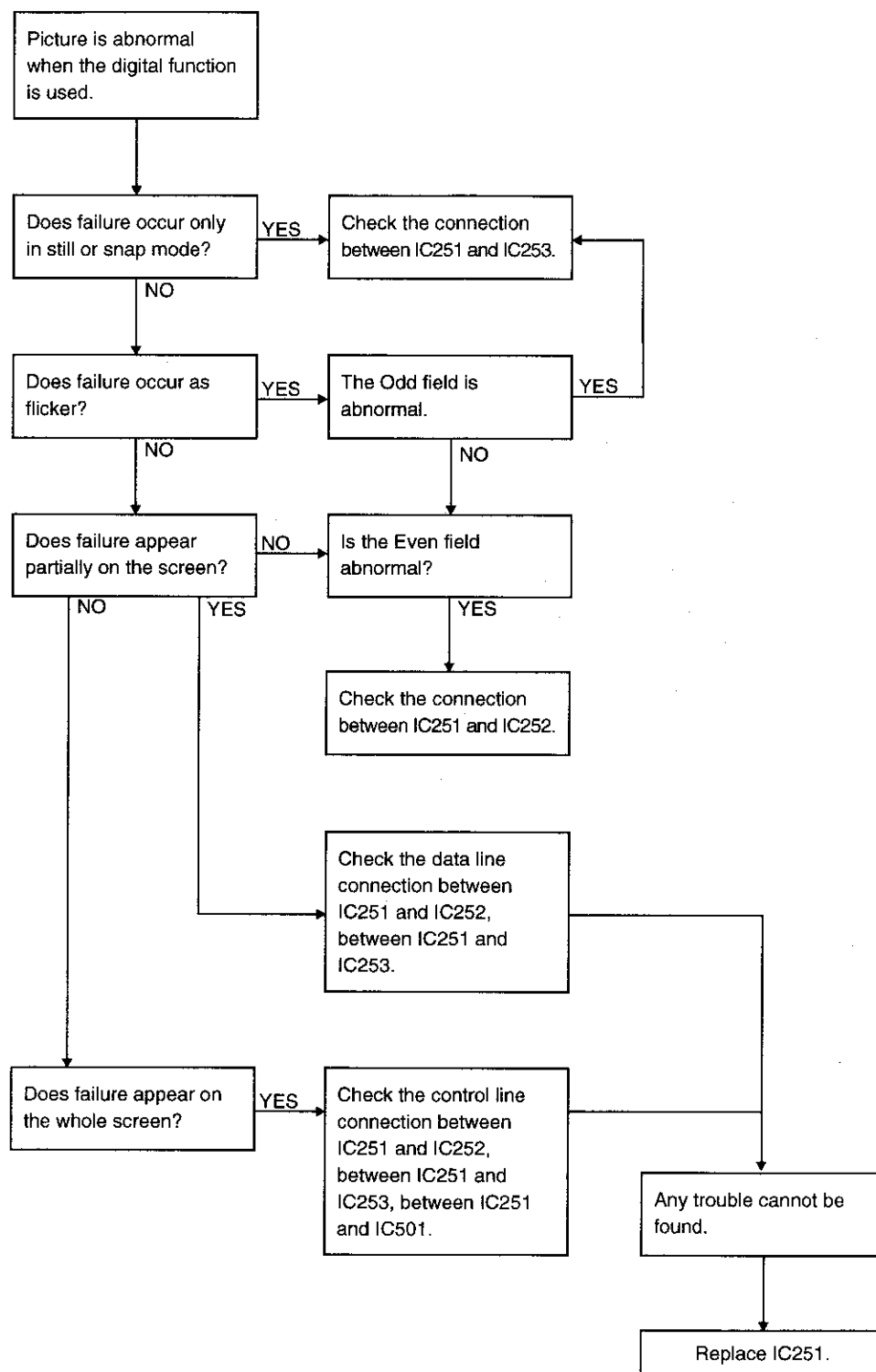


Abnormal digital function (1)

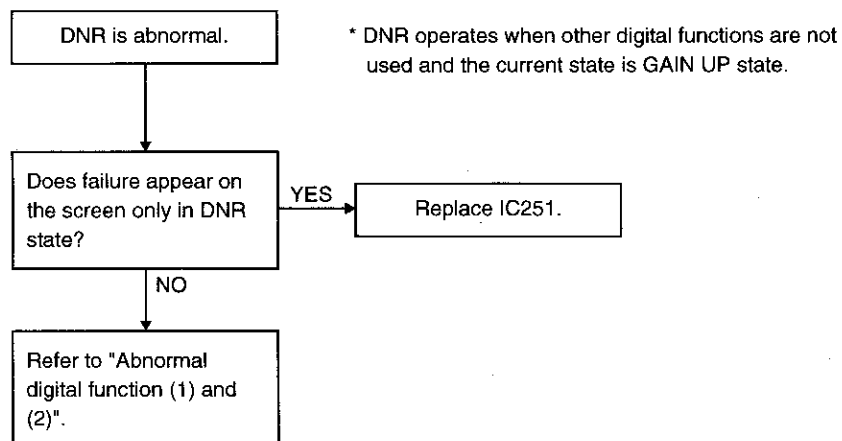
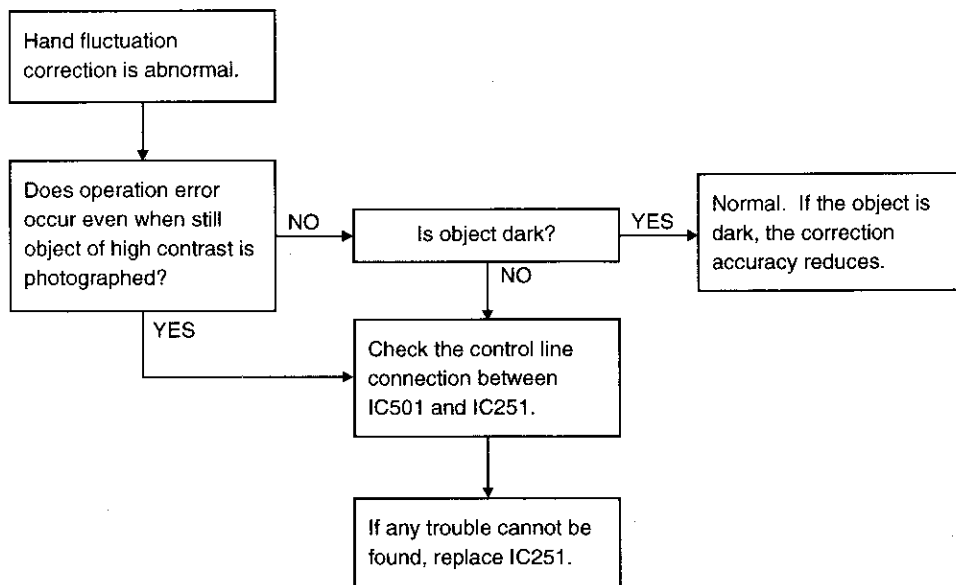


* DNR does not function when the electronic zoom is set to ON.

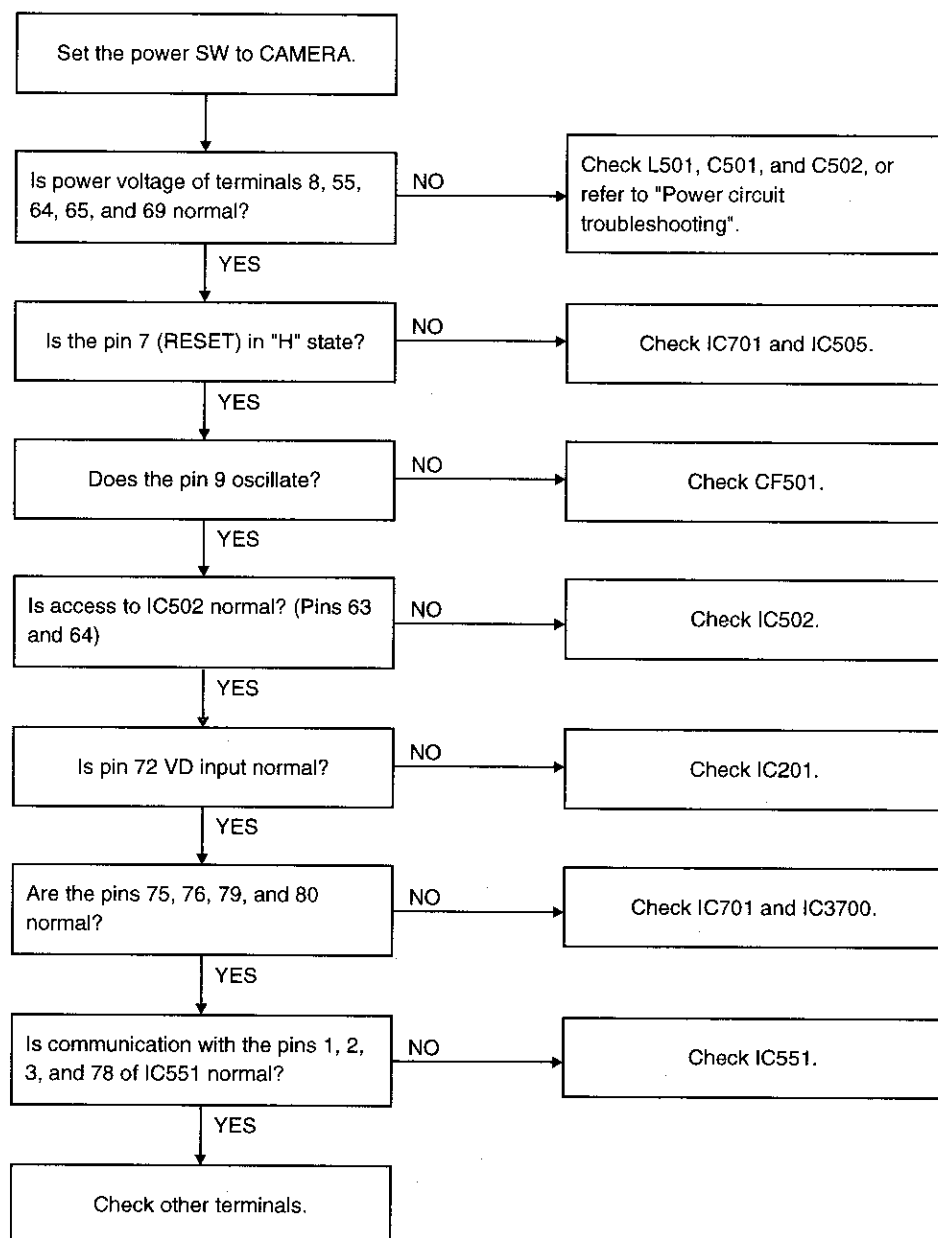
Abnormal digital function (2)



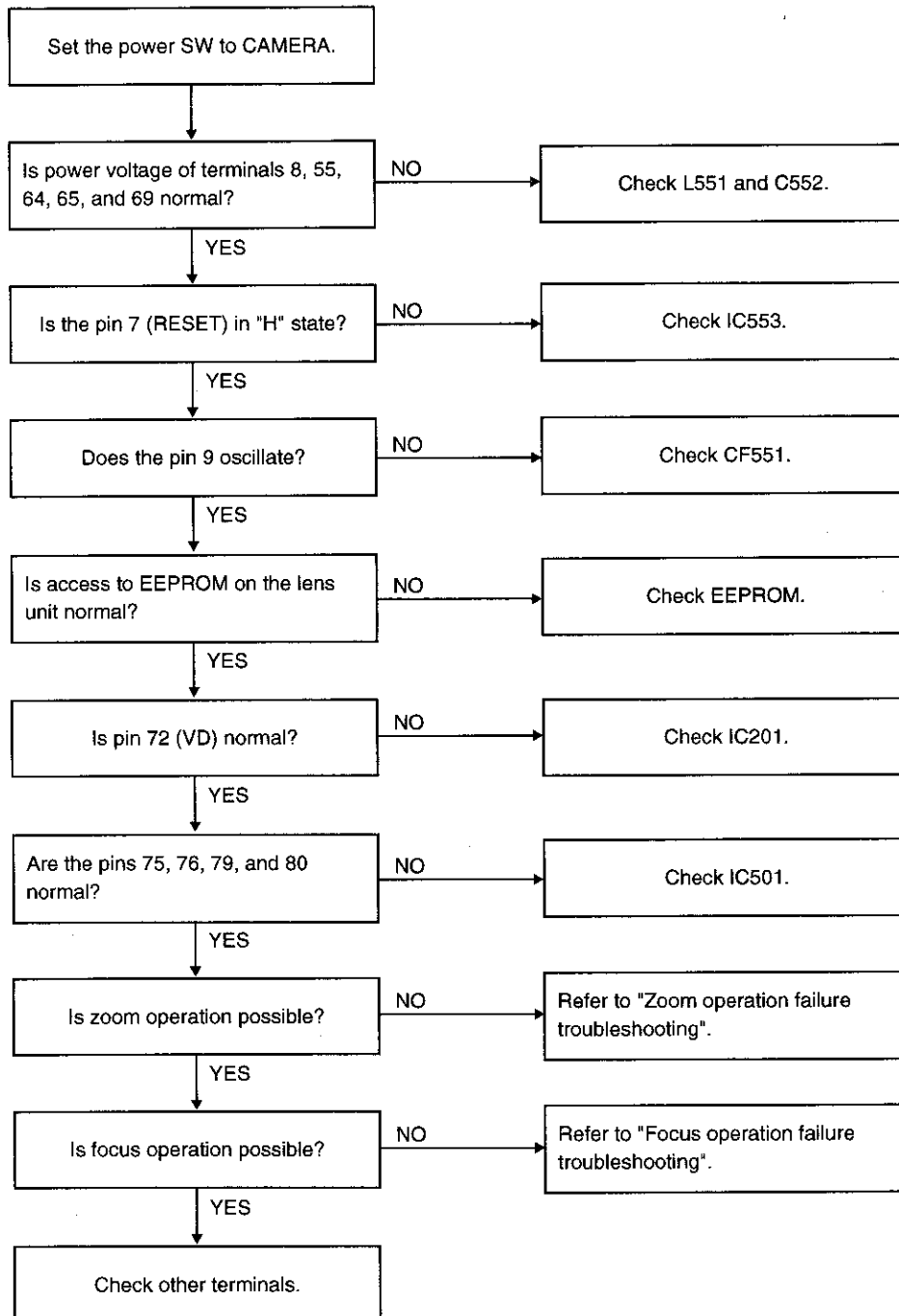
Abnormal digital function (3)



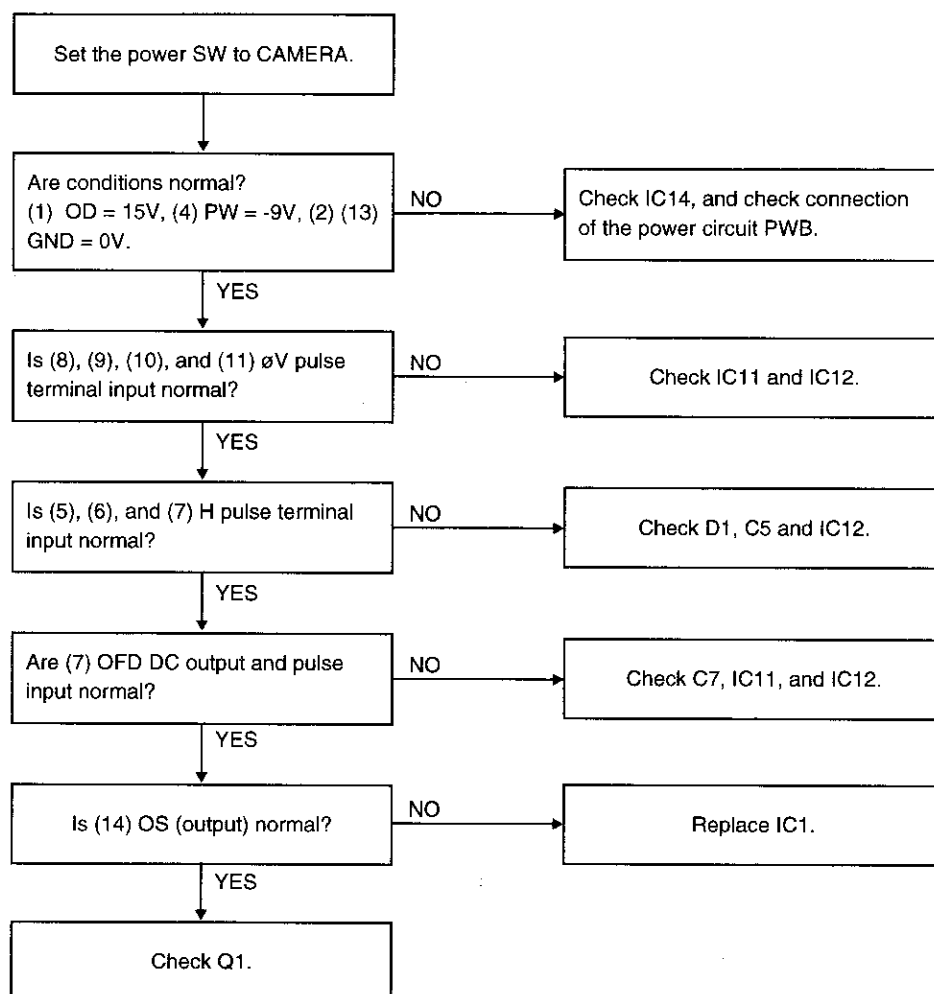
IC501 initialization check (Operation check when CAM is on)



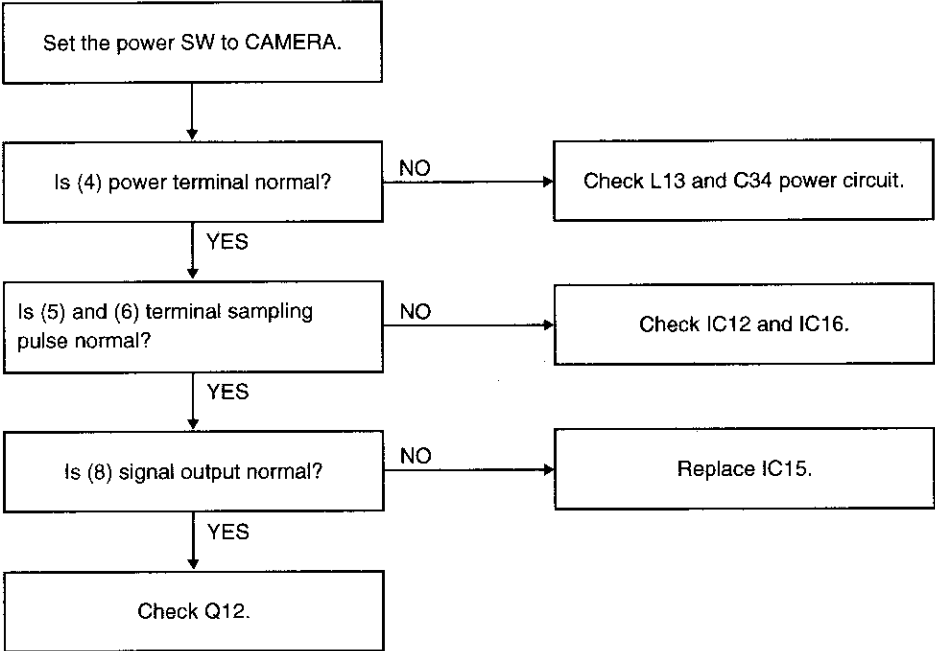
IC551 initialization check (Operation check when CAM is on)



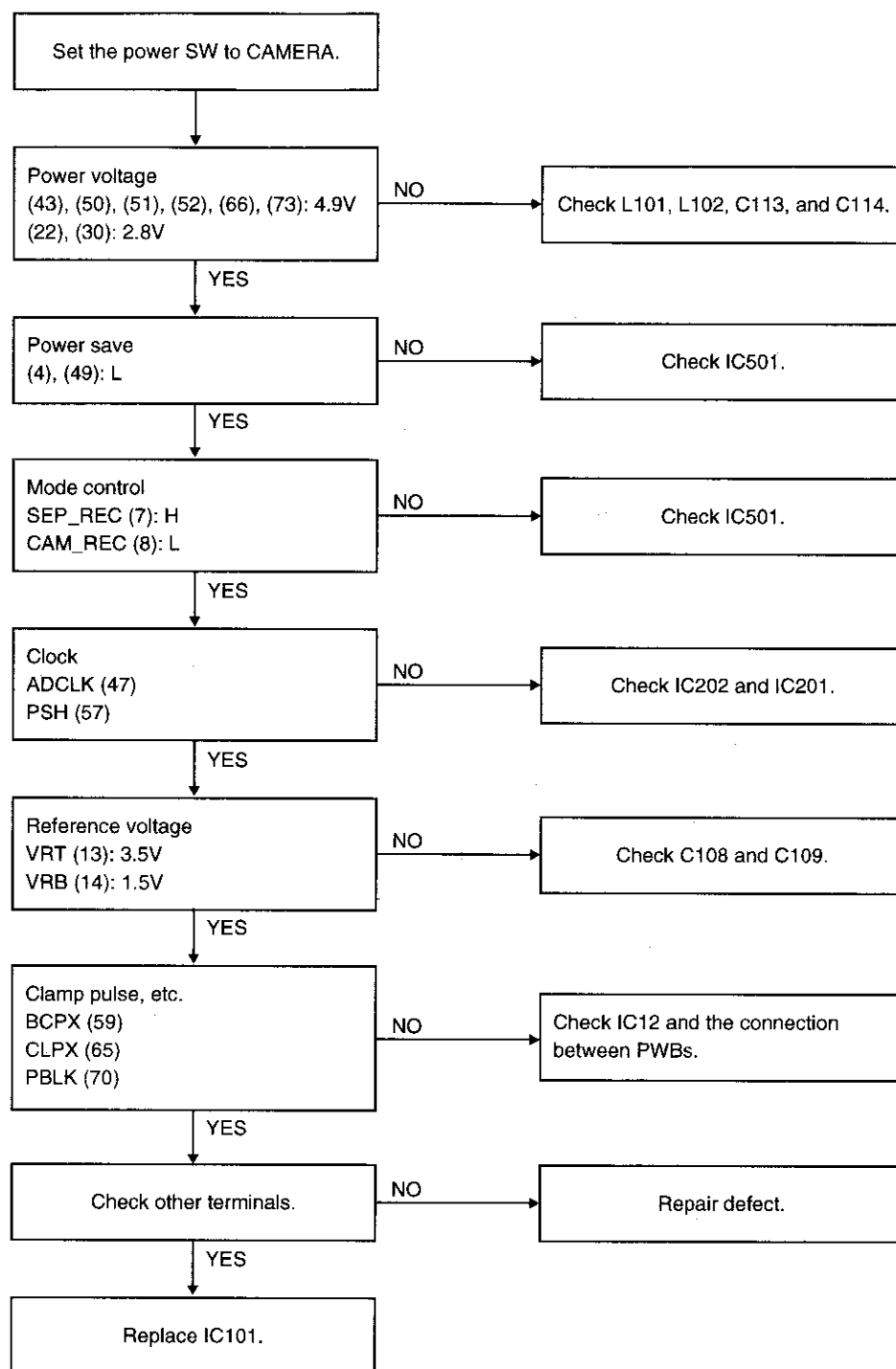
IC1 troubleshooting



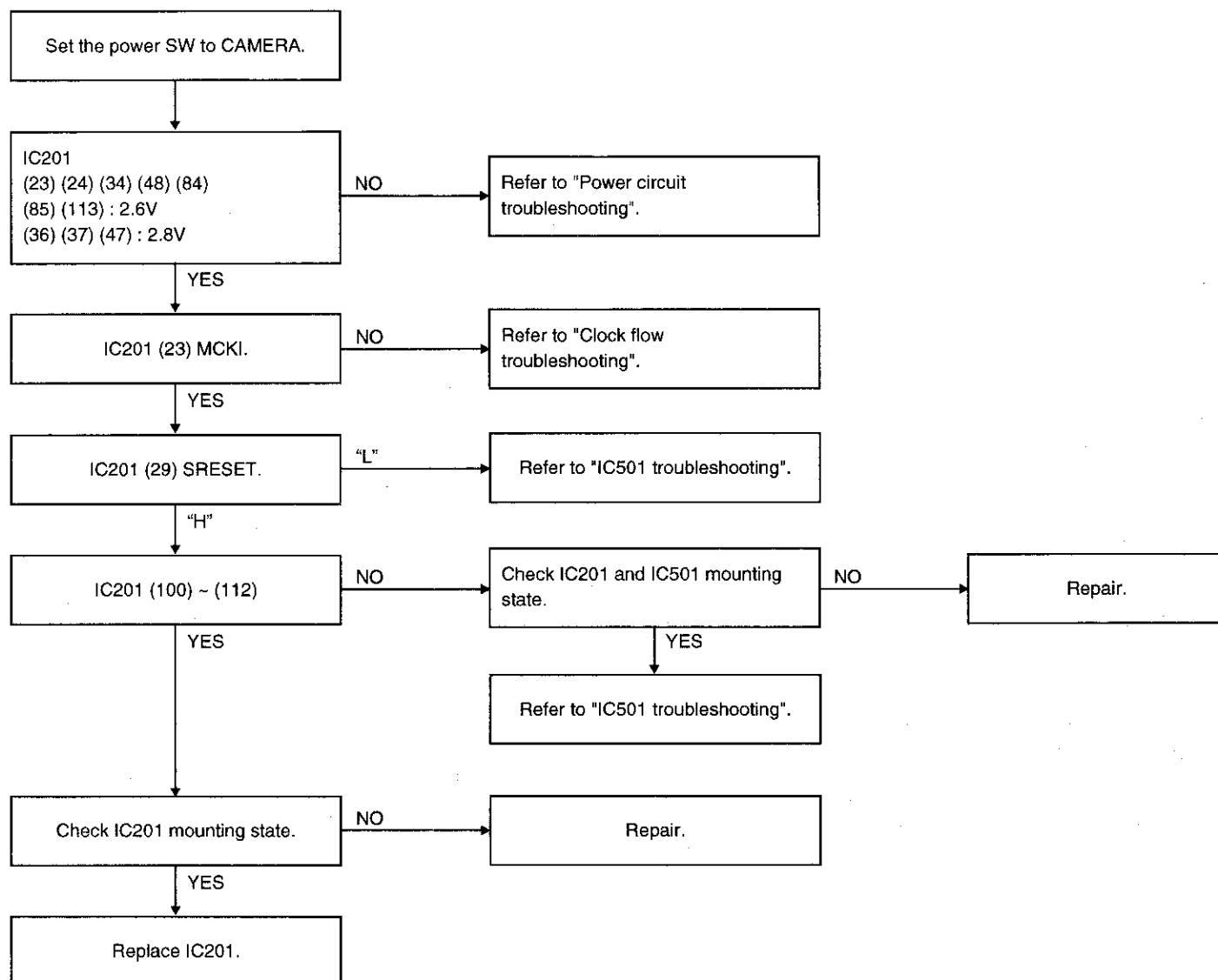
IC15 troubleshooting



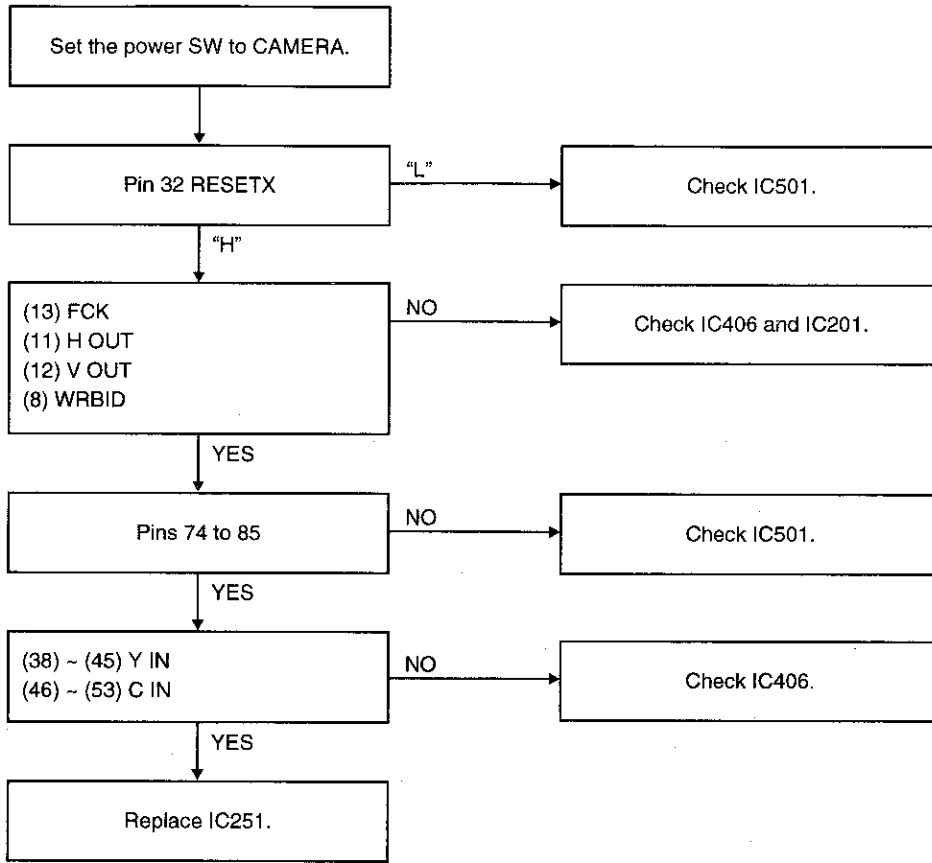
IC101 troubleshooting



IC201 troubleshooting

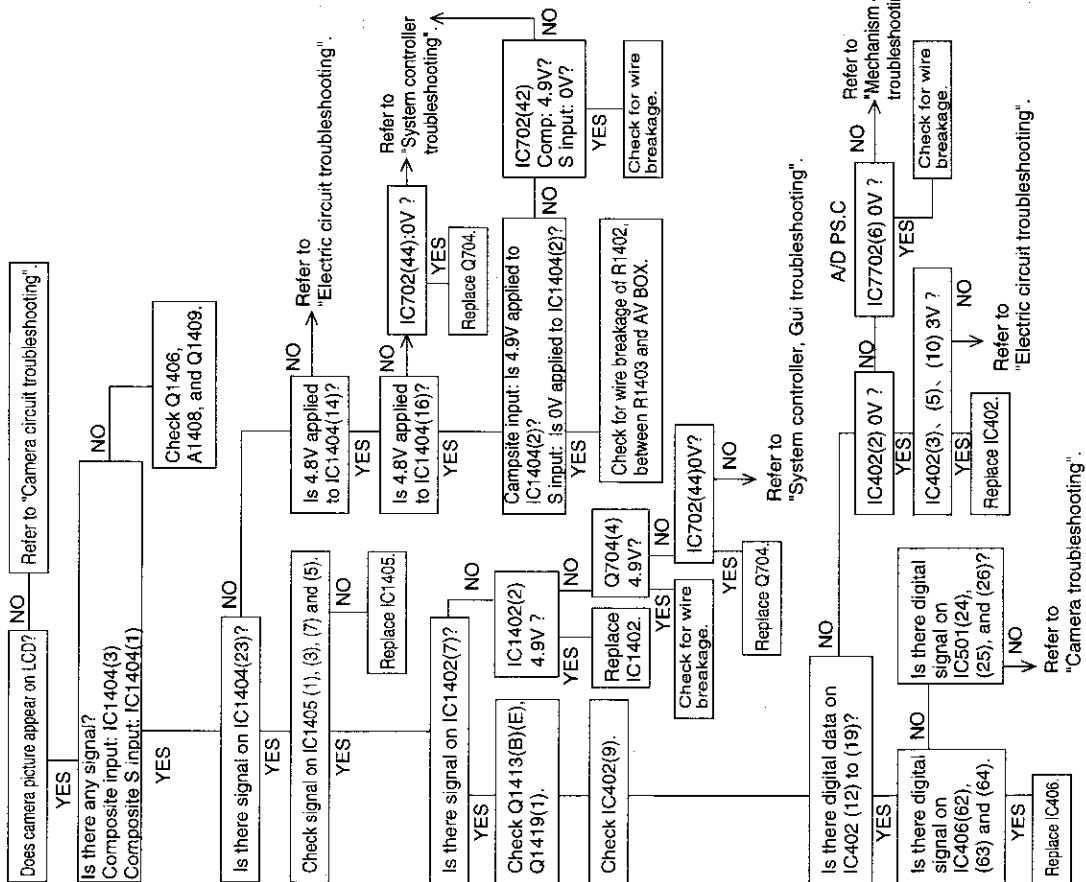


IC251 troubleshooting (when the digital function is not used)

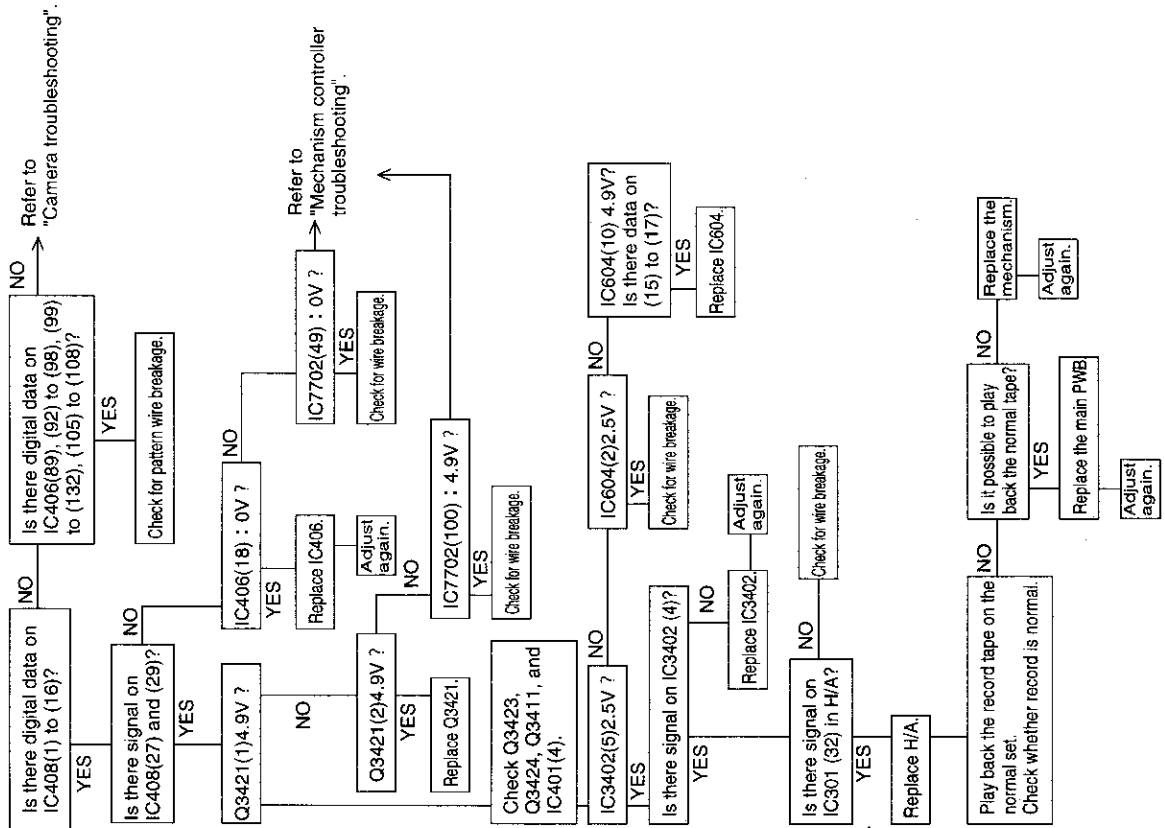


5-8-6. Y/C circuit troubleshooting

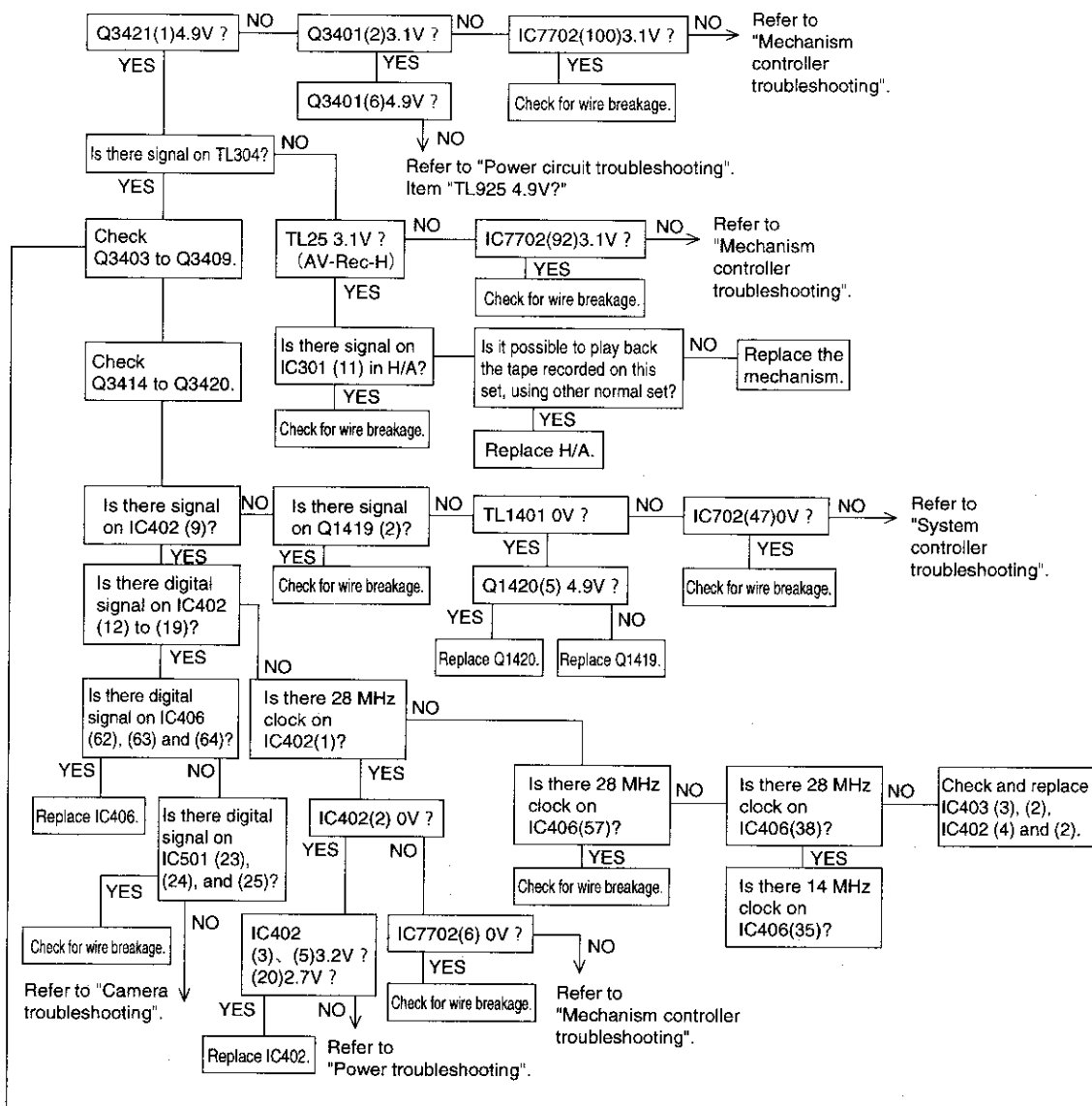
The external input picture does not appear on LCD.



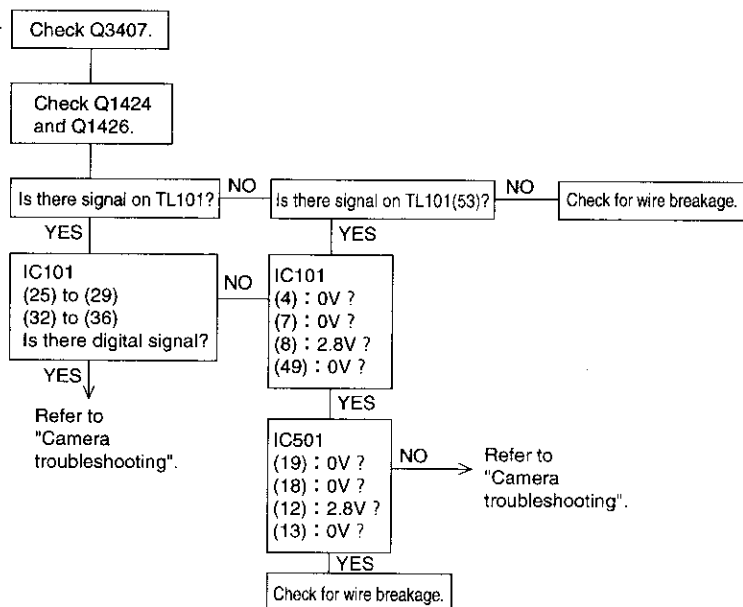
The camera external input signal is not recorded.



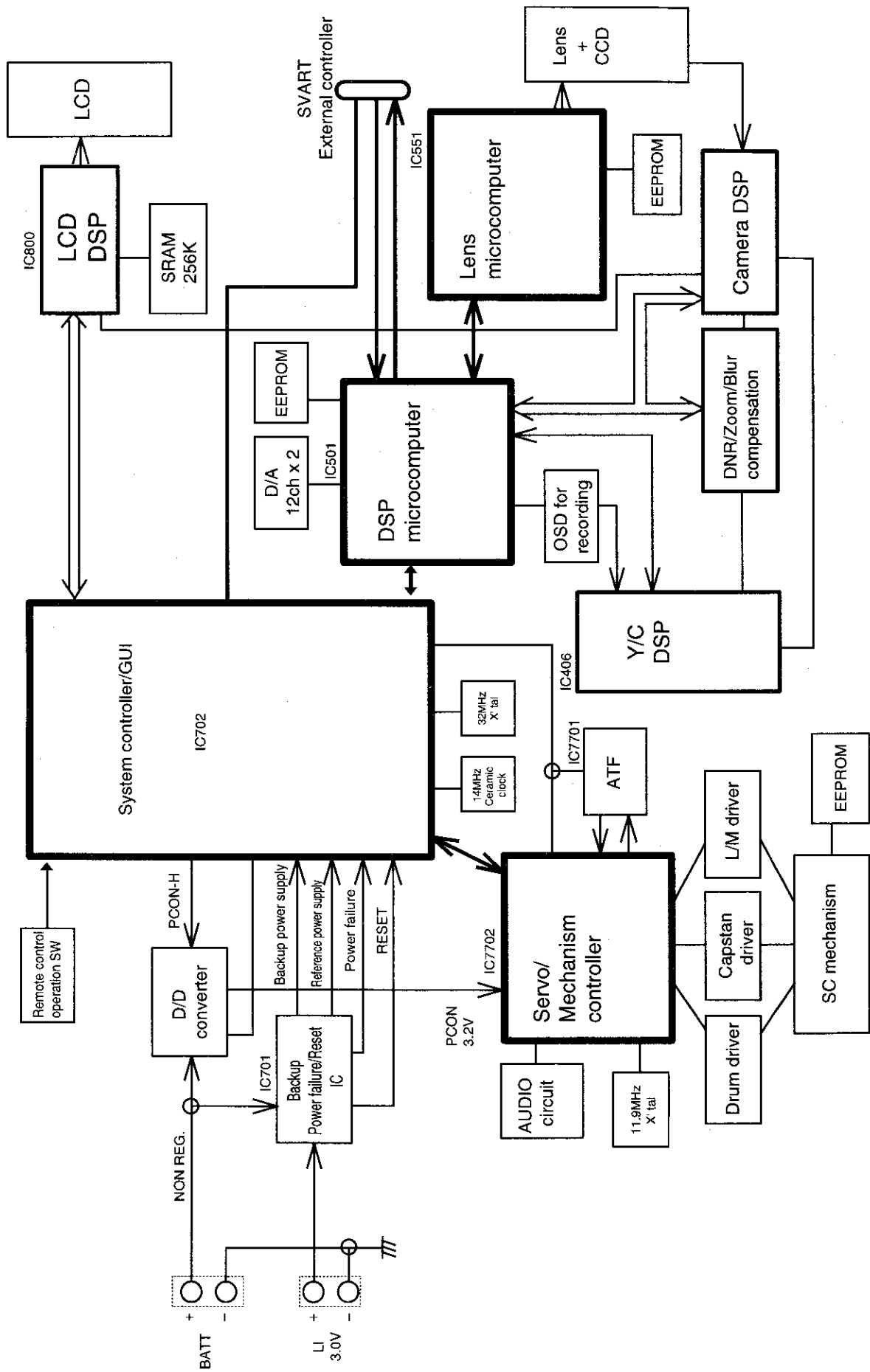
Playback is impossible.



Playback color does not appear.



6. SYSTEM BLOCK DIAGRAM



5. ADJUSTMENT OF VCR

5-1. ADJUSTMENT OF VCR SECTION

5-1-1. Before starting the electric circuit adjustment

- Electric circuit adjustment becomes necessary, in most cases, when any of the wear mechanical parts or the video head has been replaced. Before starting the electric circuit adjustment, be sure to check that the mechanical parts work well (i.e., the mechanical parts have all been perfectly adjusted). In case a trouble or troubles are found in the electric circuitry, be sure to pinpoint the cause(s) by using the measuring instruments described below. After locating the trouble spot(s), then proceed to repair, replacement or adjustment. Do not change the positions of the controls when adequate measuring instruments are not available.
- In order to implement a higher-density, smaller machine, most of the electric circuit parts used on the Circuit Boards are of small-sized, surface-mounted type. For replacing part(s) as after-sales service, work with a soldering iron as speedily as possible. The heat resistance of the surface-mounted components is poor, when compared with the larger-sized discrete parts used for television sets and stationary decks, owing to their small sizes. Therefore, exercise due care to avoid long-time exposure of the pins of these parts to the heat of the soldering iron which may possibly damage them. Such care should be exercised especially for chip-layer capacitor replacement. It is advisable to use a temperature-controlled ceramic soldering iron (temperature at the tip: 250°C, contacting time: less than 5 seconds).

< Adjusting the video/LCD section >

- Measuring instruments:

- *Color monitor TV set

- *Digital voltmeter

- *DC power supply

- *Audio generator (CR oscillator)

- *Alignment tapes (JIGWR5-5CSP)

- *AC adapter

- *AV output cable (accessory)

- *Oscilloscope

- *Vector scope

- *Frequency counter

- *Signal generator (NTSC pattern generator LCG-401/401YC: Leader-made)

- *Video recording tape

- (For Y/C, audio and servo adjustments)

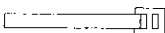
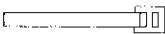
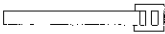
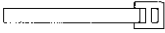
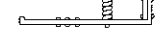
- *DC cable (AC adapter accessory)

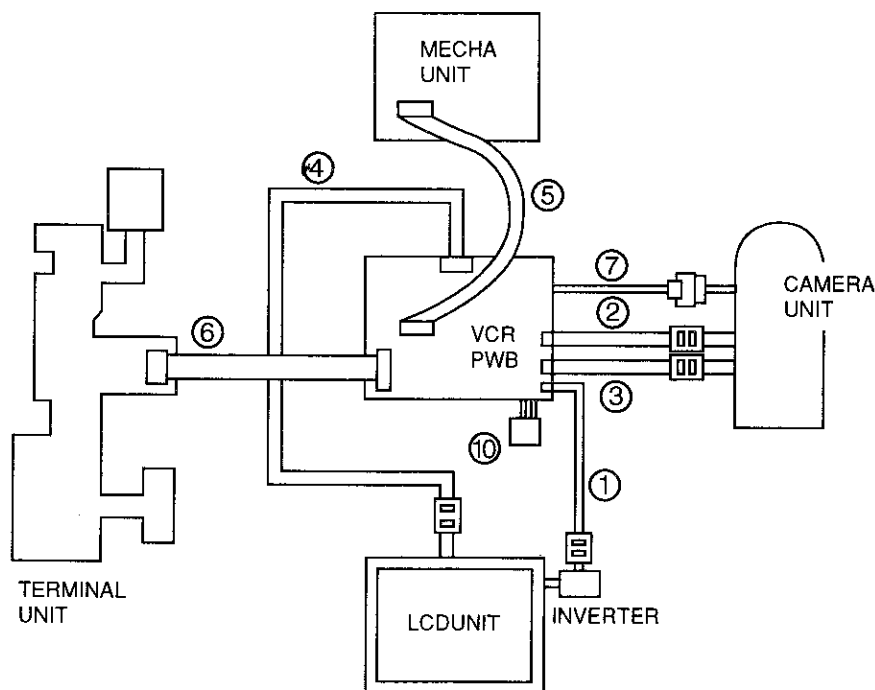
- *Video extension cables

5-1-2. Servicing the VCR section Adjustment

5-1-2-1. Typical connections

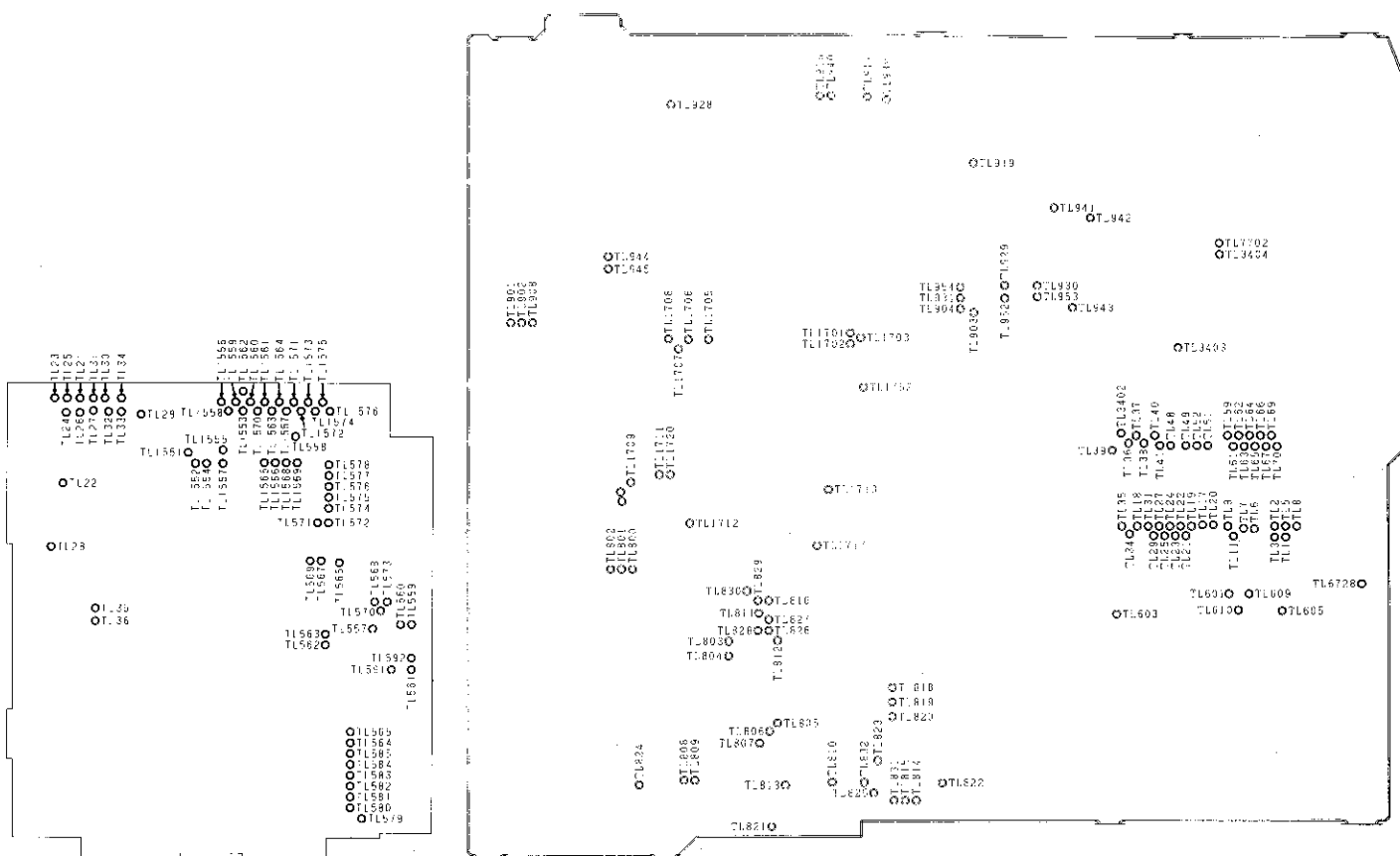
Extension Cable etc.

NO.	NAME	PART NO.	Code	CONFIGURATION	REMARKS
1	Extension Cable Inverter~VCR (7pin)	QCNW-1265TAZZ	AX		
2	Extension Cable Camera~VCR (17pin)	QCNW-1380TAZZ	BD		
3	Extension Cable Camera~VCR (19pin)	QCNW-1381TAZZ	BD		
4	Extension Cable LCD~VCR (24pin)	QCNW-1382TAZZ	BD		
5	Extension Cable MECHA~VCR (70pin)	QCNW-1534TAZZ	BS		
6	Extension Cable VCR OPE~VCR (70pin)	QCNW-1534TAZZ	BA		
7	Extension Cable Camera~VCR (2pin)	QCNW-1750TAZZ	AG		
8	Connector fitting and withdrawing extractor				insulating sleeve
9	Connector fitting and withdrawing tweezers	9EQPINSET06GE	BR		
10	Battery terminal (10pin)	QTANZ0088TAZZ	AM		

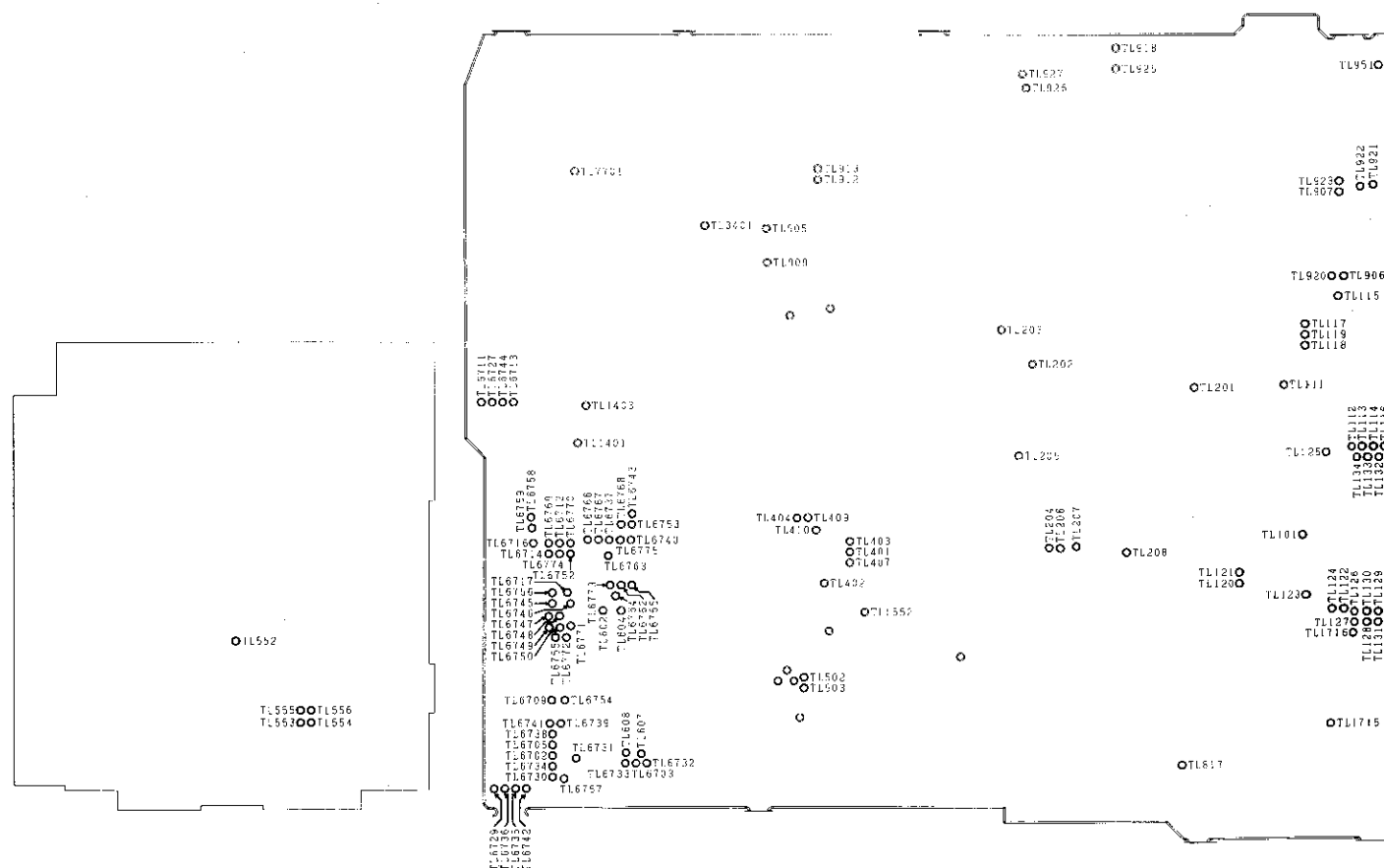


- VIDEO CIRCUIT DIAGRAM TEST POINTS

SIDE A

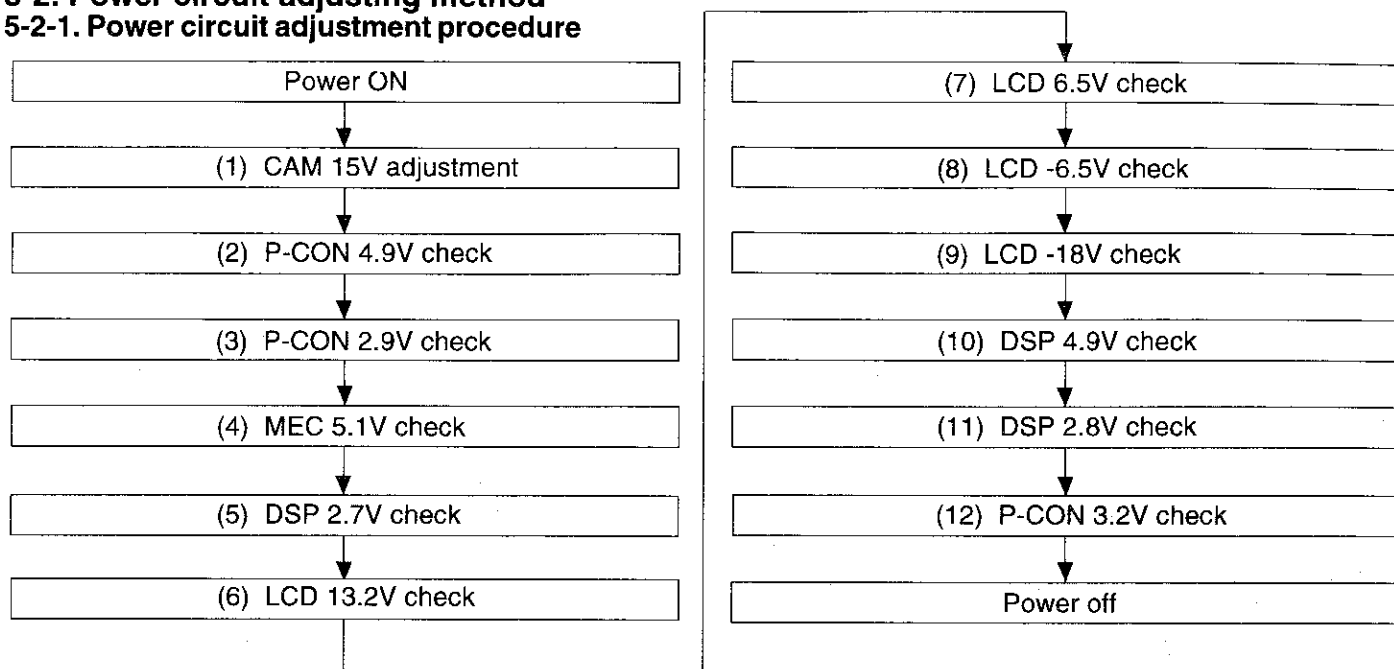


SIDE B



5-2. Power circuit adjusting method

5-2-1. Power circuit adjustment procedure



5-2-2. Power circuit adjusting method

- Input 3.7V from the battery terminal, and set the power switch to CAMERA.

* Be sure to provide the backlight unit when adjusting.

(1) CAM 15V adjustment

Measuring instrument	Digital voltmeter
Measuring terminal	TL905
Adjustment address	CAM ADJ 084
Standard	15.0V±0.1V

- Set the CAM adjustment mode.
- Change the data of address 084 so that the digital voltmeter indicates 15.0V±0.1V.
- After rewriting the data exit from the CAM adjustment mode.

(2) P-CON 4.9V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL925
Adjustment address	—
Standard	4.9V±0.1V

- Make sure that the digital voltmeter indicates 4.9V±0.1V.

(3) P-CON 2.9V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL951
Adjustment address	—
Standard	2.9V±0.1V

- Make sure that the digital voltmeter indicates 2.9V±0.1V.

(4) MEC 5.1V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL943
Adjustment address	—
Standard	5.1V±0.1V

- 1) Make sure that the digital voltmeter indicates 5.1V±0.1V.

(5) DSP 2.7V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL928
Adjustment address	—
Standard	2.70V±0.1V

- 1) Make sure that the digital voltmeter indicates 2.70V±0.1V.

(6) LCD 13.2V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL912
Adjustment address	—
Standard	13.2V±0.5V

- 1) Make sure that the digital voltmeter indicates 13.2V±0.5V.

(7) LCD 6.5V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL952
Adjustment address	—
Standard	6.5V+1.0/-0.5V

- 1) Make sure that the digital voltmeter indicates 6.5V+1.0/-0.5V.

(8) LCD -6.5V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL953
Adjustment address	—
Standard	-6.5V+0.5/-1.0V

- 1) Make sure that the digital voltmeter indicates -6.5V+0.5/-1.0V.

(9) LCD -18V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL954
Adjustment address	—
Standard	-18V±1.0V

- 1) Make sure that the digital voltmeter indicates -18V±1.0V.

(10) DSP 4.9V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL939
Adjustment address	—
Standard	4.9V±0.1V

1) Make sure that the digital voltmeter indicates 4.9V±0.1V.

(11) DSP 2.8V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL917
Adjustment address	—
Standard	2.8V±0.1V

1) Make sure that the digital voltmeter indicates 2.8V±0.1V.

(12) P-CON 3.2V check

Measuring instrument	Digital voltmeter
Measuring terminal	TL916
Adjustment address	—
Standard	3.2V±0.1V

1) Make sure that the digital voltmeter indicates 3.2V±0.1V.

- Turn off power supply.

5-3. System controller and servo circuit adjusting method

5-3-1. Playback switching point adjustment

Measuring instrument	Oscilloscope
Mode	Playback
Adjustment address	84h
Tape	Alignment tape (JiGWR5-5CSP)

- (1) Play back the adjustment tape (JiGWR5-5CSP).
- (2) To enter the TEST mode, press adjustment remote controller "CONTINUOUS PRESS" and "TEST MODE SELECTION". (At this time "01" blinks.)
- (3) Select 08 with the FF or REW key, and press the playback key to enter the SW-P ADJUSTMENT mode.
- (4) After a while the adjustment is completed, and the operation stops automatically. In case of adjustment failure AUTO EJECT is performed.

Only when the adjustment by the procedure described above was disabled, adjust as follows.

- (1) Connect the specific signals to the oscilloscope.
1ch: Video output ... TL6716
2ch: H-SW-P..... TL24
GND:GND..... TL6717
- (2) Play back the adjustment tape (JiGWR5-5CSP).
- (3) Press the adjustment remote controller "CONTINUOUS PRESS" and "VCR ADJUSTMENT" to enter the VCR ADJUSTMENT mode.
- (4) Select the address 84h, set the oscilloscope sync slope to (-), adjust the data with the FF or REW key so that the interval between the trigger point and the V sync signal becomes equal to 6H, and fix the data with the playback key.
(Figure 1)
- (5) Then, set the sync slope to (+), and make sure that the interval between the trigger point and the V sync signal is 6H.
(Figure 2)
- (6) Hold down the STOP key for about 3 seconds to exit from the ADJUSTMENT mode.

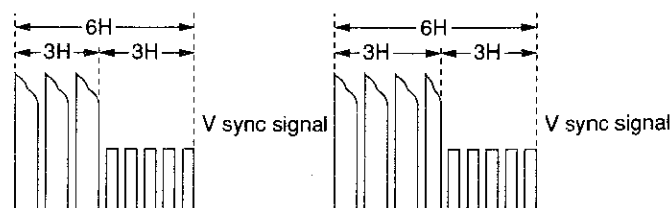


Figure 1

Figure 2

5-3-2. Battery alarm adjustment

Measuring instrument	Digital voltmeter (stabilized power supply)	
Mode	Camera record	
Adjustment address	06h	0Eh
TTape	Record enable tape	
Standard	3.0±0.03V	

("FF - 06h address data" is set at the 0Eh address.)

Power is supplied from P901.

(1) Insert the record-enable tape.

(2) Press the "Continuous Press" + "Test Mode Selection" of remote controller for adjustment to enter the TEST mode. (At this time the lamp blinks at "01".)

(3) When 03 is elected with FF or REW key, camera record is started automatically.

(4) Set the power voltage so that the voltage on TL901 becomes equal to +3.0V (viewed from TL903).

(5) Press the PLAYBACK key to start adjustment.

(6) After completion of adjustment the OSD indicates [V] (red). In case of adjustment failure the [V] indication blinks.

5-3-3. Error message

If the STOP key is held down for 3 seconds upon occurrence of error, the user can know what error occurred.

No.	Description
E007	CAP FG is not input for more than one second.
E011	Although the L/M rotates forward for more than 5 seconds (or 10 seconds), shift to the next mode does not occur.
E012	Although the L/M rotates reversely for more than 5 seconds (or 10 seconds), shift to the next mode does not occur.
E020	DRUM FG is not input for more than 100 msec.
E025	The TU reel sensor was actuated.
E026	The SU reel sensor was actuated.

Note:

E020, 025, and 026 occur more frequently due to tape damage or condensation than due to trouble of set. Therefore, when E020, 025 or 026 occurs, be sure to take out once the cassette, and try playback again to check that the operation is normal.

5-4. Y/C system circuit adjustment method

- Conditions of input signal (adjusting method)

Set-up in case of adjustment

For the electrical adjustment of Y/C circuit the video signal obtained from the pattern generator is used as adjustment signal. Therefore the video signal must conform to the standard. Connect the oscilloscope to the video input/output terminal, and ascertain that the amplitude of video signal sync signal is about 0.3Vp-p, the amplitude of video section is about 0.7 Vp-p and the amplitude of burst signal is about 0.3Vp-p and flat, and that the level ratio of burst signal and RED signal is 0.30:0.66.

Figure 1 shows the video signal (color bar) for electrical adjustment.

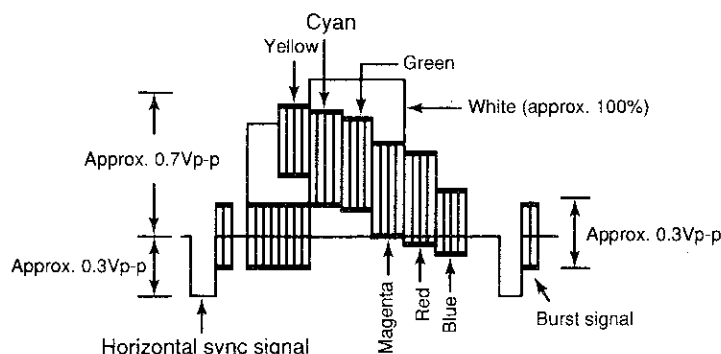
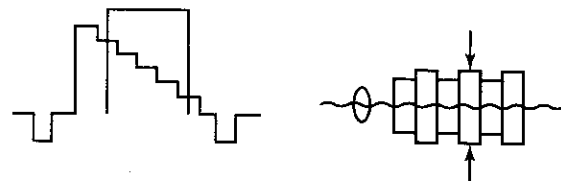


Figure 1 Color bar signal of pattern generator

5-4-1. REC C EQ OUT check

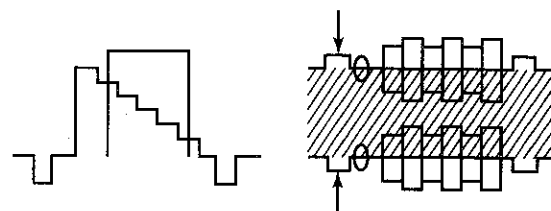
Measuring point	TL3402
Check address	CAM ADJ 0087
Check point	450±50 mVp-p



- (1) Input the color bar signal from the video input/output terminal.
- (2) Set the CAM adjustment mode with the adjusting jig, and set the address.
- (3) Observe the waveform of TL3402, and make sure that the amplitude of red part is within 450±50 mVp-p.

5-4-2. Adjustment of REC Y EQ OUT (Hi8)

Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar (Figure 1)
Measuring point	TL3403
Adjustment address	CAM ADJ 0086
Set point	650±15 mVp-p



- (1) Input the color bar signal from the video input/output terminal.
- (2) Set the CAM adjustment mode with the adjusting jig, and set the address.
- (3) Observe the waveform of TL3403, and set data so that the amplitude of sync tip becomes equal to 650 mVp-p.

5-4-3. REC Y EQ OUT (normal) adjustment

Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar (Figure 1)
Measurement point	TL3403
Adjustment address	VCR ADJ 0077
Set point	650±15 mVp-p

- (1) The setting is made for the normal mode by the same procedure as that specified in item (2) above.

5-4-4. Y record current adjustment

Measuring instrument:	Oscilloscope
Mode	VCR stop
Input signal	Color bar (Figure 1)
Measurement point	HOT: TL35
Adjustment address	VCR ADJ 86
Set point	170±10 mVp-p

- (1) Input the color bar signal from the video input/output terminal.
- (2) Set the CAM adjustment mode with the adjusting jig, and set the address.
- (3) Observe the waveform of TL35, and set the data so that the amplitude of sync tip becomes equal to 170 mVp-p.

5-4-5. C record current adjustment

Measurement point	HOT: TL35
Adjustment address	VCR ADJ 85
Set point	27±3 mVp-p

- (1) The same as shown in item 4 (1) and (2).
- (2) Observe the waveform of TL35, and set the data so that the amplitude of red part becomes equal to 27 mVp-p.

5-4-6. Be sure to perform finally the H-SW-P adjustment (Auto).

(As a result of H-SW-P adjustment part of data in EEPROM IC provided in the H/A unit is copied to EEPROM in the main PWB.)

5-5. Audio circuit adjustment

Note: The data enclosed in the brackets [] are for the sub-channel.

5-5-1. fo adjustment

Measuring instrument	Oscilloscope
Mode	Playback
Input signal	—
Measurement point	TL605
Adjustment address	CAM ADJ 08A
Set value	—

- (1) Connect the oscilloscope to TL605.
- (2) Play back the stereo standard tape (JiGWR5-5CSP), and adjust so that the waveform envelop of TL605 becomes as smooth as possible. Whenever the TELE.WIDE key of adjustment remote controller is pressed, waveform MAIN/SUB is switched. Select the point which gives the flattest possible envelope.

5-5-2. Playback level adjustment

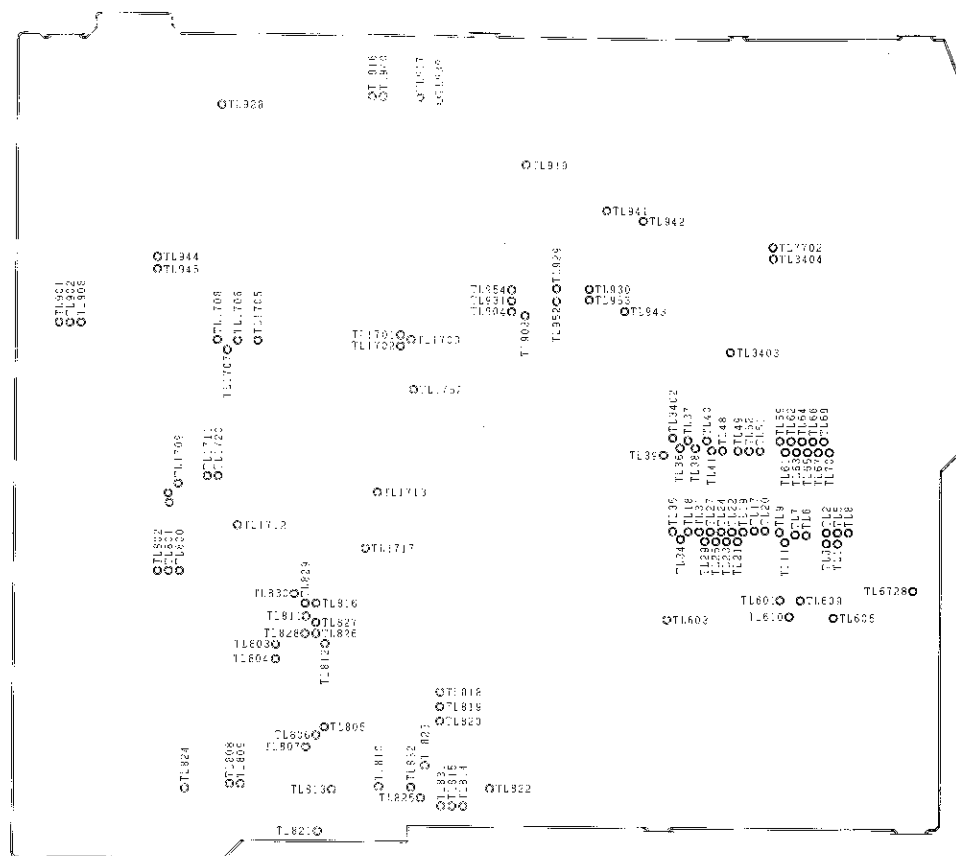
Measuring instrument	Valve voltmeter
Mode	Playback
Input signal	—
Measurement point	TL608 [TL607]
Adjustment address	CAM ADJ 08B [08C]
Set value	-7.5 dBs±0.5 dB

- (1) Before adjustment record the current data of adjustment address 08B and 08C.
- (2) Be sure to connect the valve voltmeter to TL608 [TL607].
- (3) Play back the stereo standard tape (JiGWR5-5CSP), and adjust so as to get an indication -7.5 dBs±0.5 dB.
- (4) Watching alternately TL608 and TL607, repeat adjustment of 08B and 08C.
- (5) If data differs significantly from the first record value, this implies adjustment failure.

5-5-3. Audio circuit troubleshooting

No.	Troubles	Causes
1	The audio signal is not recorded.	(1) Check that the audio signal is input into the pins (4) and (62) of IC601 in the camera EE mode. (2) Check that A-FADE and A-MUTE-H is on the "L" level in the record mode. (3) Check that the Fm signal (approx. 300 mVp-p) is sent to TP603.
2	The playback audio signal is no output.	(1) Check that the envelope (approx. 18 mVp-p) is input into the pin (22) of IC601. (2) Check that A-MUTE-H is on the "L" level. (3) Check that the audio signal is output to TP608 and TP607.
3	The speaker audio signal is not output.	(1) Check that the headphone audio signal is output. If the signal is output: Withdraw the headphone plug from the headphone jack, and check that DC5V is applied to the pin (16) of IC6401. Check that HP $\overline{\text{ON}}$ and SP CTL are on "H" level. If the signal is not output: Check that the audio signal is output to TP607 and TP608. Check that VOL CTL voltage changes within 0 to 4.9V when the VOLUME button is pressed. (Voltage 0 to 1.8V is not output.)
4	Stereo recording is impossible.	(1) Check that the MATRIX signal is on "H" level. If the signal is on "H" level: Check the soldering state of pin (32) of IC601. If the signal is not on "H" level: Check that the MIC $\overline{\text{MONO}}$ signal is on "H" level in the camera mode. Check that the JACK $\overline{\text{MONO}}$ signal is on "L" level during line input recording (the cable is connected to the L/R pin jack) in the VCR mode.
5	Even when the headphone is connected, the audio signal is output from the speaker.	(1) Check that the HP $\overline{\text{ON}}$ signal is on "L" level when the headphone is connected.

5-6. LCD circuit adjustment

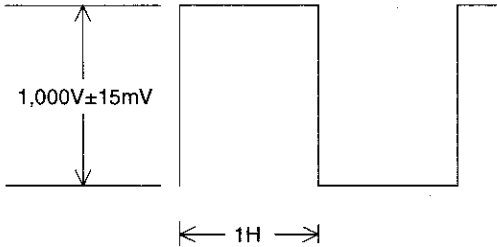


* To adjust, set Backlight selection switch to "Normal".

5-6-1. VCO free-run adjustment

Measurement place	TL802 (HSY)
Address	CAM ADJ 08E
Mode	VCR AV input
Adjusting method	(1) Give no signal in the AV input mode. (2) Connect TL802 to the frequency counter, and adjust to the adjustment standard value at CAM ADJ address.
Adjustment standard	15.625kHz±100 Hz
Remarks	—

5-6-2. DAC full-scale adjustment

Measurement place	TL805 (R OUT) TL806 (G OUT) TL807(B OUT) TL808 (C OUT)
Address	CAM ADJ 080(R) CAM ADJ 081(G) CAM ADJ 082(B) CAM ADJ 083(C)
Mode	VCR AV input
Adjusting method	(1)VCR ADJ Address 37 is changed to FE. Address 26 is changed to 7F. Address 49 is changed to 7F. (Record data before change.) (2)Adjust the output voltage of TL805 to the adjustment standard value at CAM ADJ address 080, and adjust the peak voltage to the adjustment standard value with the synchro. (3)Adjust the output voltage of TL806/807/808 to the adjustment standard value at CAM ADJ address 081/082/083, and adjust the peak voltage to the adjustment standard value with the synchro. (The same as stated in item (2).) (4)Restore the initial data of changed VCR ADJ address (37/26/49).
Adjustment standard	1,000 Vp-p±15 mV 
Remarks	

5-6-3. COM-Bias adjustment

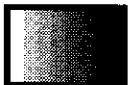
Measurement place	Front side of LCD panel
Address	CAM ADJ 085
Mode	CAM AV input
Adjusting method	(1)Input White 40% signal to the AV input. (2)Set the illuminometer (TOPKON IM-3) on the LCD panel surface (so that the external light does not enter). (3)Minimize the ripple of output waveform of illuminometer.  Response time: 0.6 sec Or set it to the point where Black is lowest, using the gray scale signal.
Adjustment standard	Minimum
Remarks	Adjust after aging for more than 5 minutes.

5-6-4. White balance adjustment

Measurement place	LCD panel surface
Address	CAM ADJ 078 (R) CAM ADJ 079 (B)
Mode	VCR AV input
Adjusting method	(1)Input White 40% signal input to the AV input and standard monitor. (2)Adjust at CAM ADJ address 078/079 so as to get the same color tone that observed on the standard monitor.
Adjustment standard	Standard monitor
Remarks	Adjust after aging for more than 5 minutes.

5-7. Camera section adjustment

Jig list

NO.	Name	Parts Code	Price Code	Configuration	Remarks
1	Gray Scale Chart (390 x 520 mm)	JIGCHART-1	CP		
2	Color Bar Chart (240 x 320 mm)	JIGCHART-4	**		
3	Service Remote Control	RRMCG0033TASA	BT		
4	Color Temperature Conversion Filter	JiGHOYA-LB165	BH		

5-7-1. Preparation before adjustment and checking items

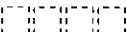
- (1) Adjust the illumination so that the whole pattern surface is illuminated uniformly with illumination intensity approx. 3,000 lx. (It is desirable to use two ore more lamps.)
The color temperature must be set to 3,200°K.
- (2) Use the new clean test pattern whose color is normal.
- (3) If any trouble occurs in the electric circuit, be sure to find the trouble with the measuring instrument, and remove it before adjusting.

5-7-2. Remote controller RRMCG0033TASA for service

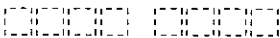
The machine uses the remote controller RRMCG0033TASA for service when the camera section is adjusted. The camera section is adjusted by writing data at the specified address of EEPROM (IC502 and ROM of lens unit) through the microcomputer with the aid of remote controller.

- (1) To adjust the camera,
Press the "CONTINUE" key, and then press the "CAM ADJ" key.

C A M A D J

The display  appears on the LCD screen. Then the adjustment is enabled.

- (2) Explanation of display C A M A D J (indicates that camera adjustment is being executed)

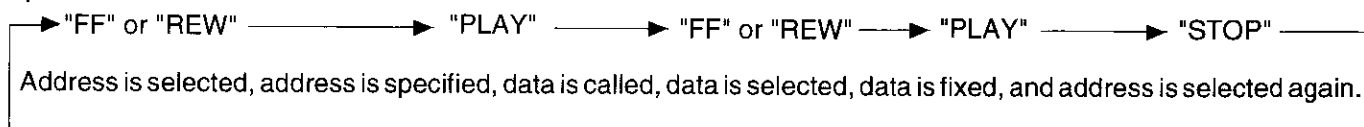

(Address value) (Data value)

- * The machine address is from 0000 to 04FF.
- * The available data are byte data (lower two digits are valid) and 2 byte data (lower 3 digits are valid).

- (3) Explanation of remote control keys

"FF" key : Increases the address value and data value.
 "REW" key : Reduces the address value and data value.
 "PLAY" key : Specifies the address and calls data. It fixes the data value (writes in EEPROM).
 "STOP" key : Erases the data value, allowing address selection.

- (4) Operation flow



- (5) After completion of adjustment
Press the "CONTINUE" key to clear the "CAM ADJ" display.

Note:

Before ending the adjustment make sure that the current mode is not Auto-focus Adjustment mode or Camera Signal System Adjustment mode (explained later).

- Camera section adjustment mode
There are two camera section adjustment modes, namely zoom lens auto-focus adjustment mode and camera signal system adjustment mode.

5-7-3. Auto-focus adjustment mode

- The focus of the lens applied in this machine is an auto-focus using the microcomputer. The auto-focus circuit of this machine adopts the specific video processing method for focusing which applies the effect that the high frequency component in the video signal increases as the focus is set. Moreover, so as to realize the high magnification with the small lens it adopts the inner focus system which is designed so that the master lens (rear lens) is moved forward and backward to move the focus. This inner focus system ensures full-range focus (focus can be moved within approx. 10 mm to infinitely far). If imaging of object located at a distance or less than 1.5 mm is made at the tele-end, focusing is disabled since the closest object distance at the tele-end is 1.5 mm. Therefore the zoom is shifted automatically to the position where focusing is attained.

The important factors of the auto-focusing system of the machine are:

- Master lens position detection
- Iris position detection
- Zoom lens reference position detection

These detection data are stored in EEPROM of microcomputer for each lens. Accordingly, it is necessary to execute auto-focus adjustment in the following cases.

- When the lens was replaced.
- When CCD was replaced.
- When EEPROM (on IC502 or lens unit) was replaced.

(1) Changing to auto-focus adjustment mode

Set the data of address "04FE" to "01".



The screen is white-faded tentatively, and the mode is changed to the auto-focus adjustment mode.

- * After the auto-focus adjustment mode is set, adjust according to 5-7-6. Adjustment procedure.
- * The lens operation is disabled in the auto-focus adjustment mode.

(2) Changing to the normal mode

Set the data of address "04FE" to "FF".



The screen is white-faded tentatively, and the mode is changed to the normal mode.



When the "CONTINUE" key is pressed, the display "CAM ADJ" disappears, and the normal operation is enabled.

5-7-4. Camera signal system adjustment mode

The camera signal system adjustment mode is a mode where the auto-white balance operation is stopped to adjust the camera. The white balance is fixed to the indoor mode. In this case the focus is manual focus.

(1) Changing to the camera signal system adjustment mode

Set the data of address "0070" to "00".



The mode is changed to the camera signal adjustment mode.

- * After the camera signal system adjustment mode is set perform adjustment according to 5-7-6. Adjustment procedure.

(2) Changing to the normal mode

Set the data of address "0070" to "FF".

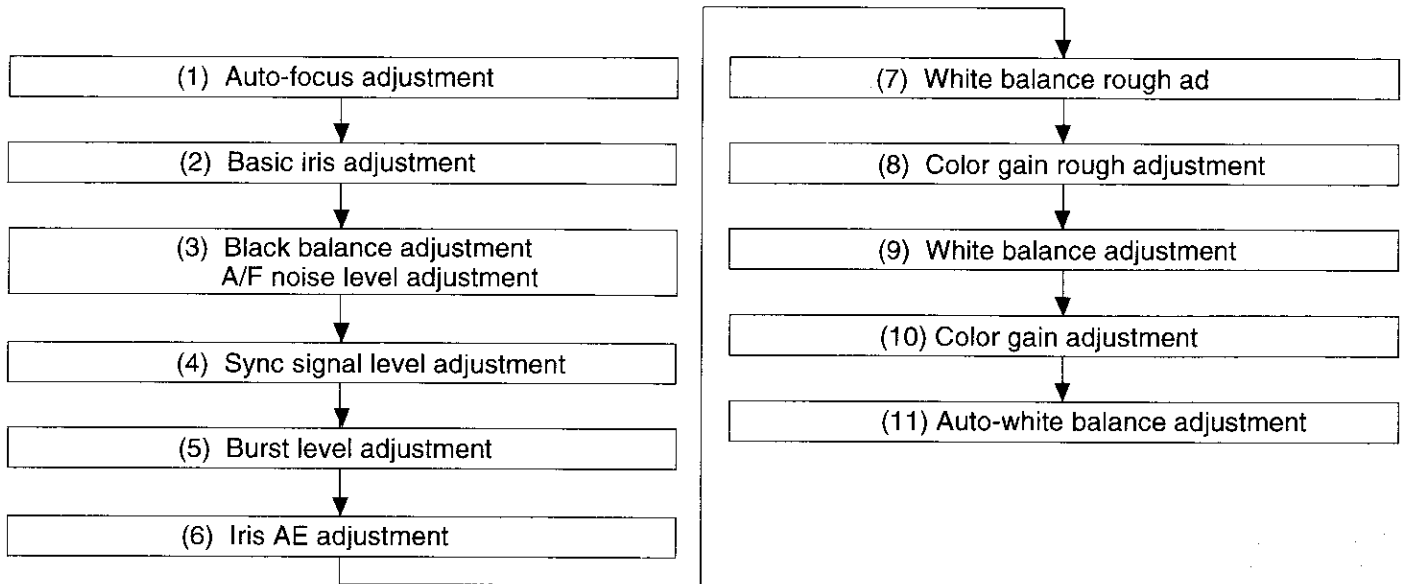


The mode is changed to the normal mode.



When the "CONTINUE" key is pressed, the display "CAM ADJ" disappears, and the normal operation is enabled.

5-7-5. Camera adjustment procedure



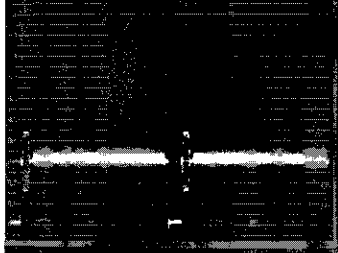
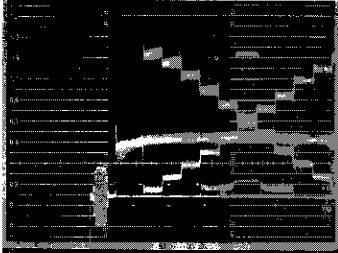
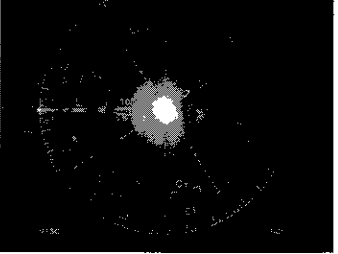
* The auto-focus adjustment (1) and the basic iris adjustment (2) are performed in the auto-focus adjustment mode. Other adjustments are executed in the camera signal system adjustment mode.

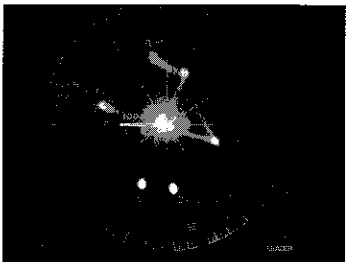
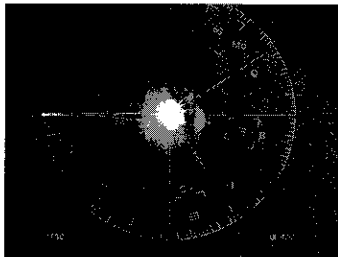
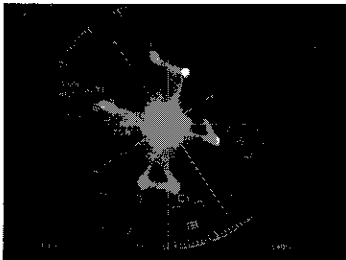
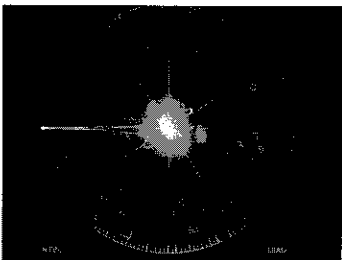
* Do not call the data of the following address. Otherwise the key operation is disabled. If the data is called by mistake and the key operation becomes impossible, once abort adjustment, and then redo adjustment. The adjustment made until now is valid.

Inhibited address: 0001, 0003, 0005, 0007, 0009

5-7-6. Adjustment procedure

Item	Adjusting method														
(1) Auto-focus adjustment	After the auto-focus adjustment mode is set, data is written successively at the address "04FD", so that the adjustment is performed automatically. The adjustment items are as shown in the table below. After normal completion of adjustment the data "FF" is written. After making sure that the adjustment has been completed normally, proceed to the next adjustment. <table><tr><th>Address</th><th>Data</th><th>Adjustment items</th></tr><tr><td rowspan="4">04FD</td><td>0011</td><td>Voltage adjustment</td></tr><tr><td>0012</td><td>Optical wide-end adjustment</td></tr><tr><td>0006</td><td>Wide-end focus ∞ position adjustment</td></tr><tr><td>0008</td><td>Tele-end focus ∞ position adjustment</td></tr></table> Note 1: For the ∞ position adjustment the object is really photographed to adjust. At this time photograph the object having the clear contour to adjust. Especially, in case of tele-end focus ∞ position adjustment you have to photograph really the far object to adjust. Otherwise an adjustment error occurs. Wide-end focus ∞ position adjustment: 3 m or more Tele-end focus ∞ position adjustment: 50 m or more Note 2: In case of ∞ position adjustment the object depth is an important factor to ensure the adjustment accuracy. If the object depth is deep, out-of-focus is suppressed, so that misadjustment of ∞ position may occur. Adjust, using the shallow object depth (open iris). It is possible to open the iris, using the high-speed shutter. 1. Return the mode to the normal operation mode. 2. Operate the shutter until the iris is opened by the normal operation. (Refer to the operation manual.) 3. Display "CAM ADJ", using the remote controller for service. 4. The mode is changed to the auto-focus adjustment mode. 5. Perform ∞ position adjustment. 6. After completion of ∞ position adjustment return the high-speed shutter to "Normal".	Address	Data	Adjustment items	04FD	0011	Voltage adjustment	0012	Optical wide-end adjustment	0006	Wide-end focus ∞ position adjustment	0008	Tele-end focus ∞ position adjustment		
Address	Data	Adjustment items													
04FD	0011	Voltage adjustment													
	0012	Optical wide-end adjustment													
	0006	Wide-end focus ∞ position adjustment													
	0008	Tele-end focus ∞ position adjustment													
(2) Basic iris adjustment	This adjustment is made so as to adjust the operating point of Hall element provided in the iris meter of lens. When the auto-focus adjustment mode is set and data is written successively at the address "04FD", adjustment is performed automatically. The adjustment items are as shown below. After normal completion of adjustment the data "00FF" is written automatically. <table><tr><th>Address</th><th>Data</th><th>Adjustment items</th></tr><tr><td rowspan="3">04FD</td><td>0009</td><td>Hall offset adjustment</td></tr><tr><td>000A</td><td>Iris offset adjustment</td></tr><tr><td>000B</td><td>Iris close adjustment</td></tr></table> After completion of adjustment the data of address "049F" is copied to the address "01A0".	Address	Data	Adjustment items	04FD	0009	Hall offset adjustment	000A	Iris offset adjustment	000B	Iris close adjustment				
Address	Data	Adjustment items													
04FD	0009	Hall offset adjustment													
	000A	Iris offset adjustment													
	000B	Iris close adjustment													
(3) Black balance adjustment A/F noise level adjustment	1) Before adjustment the data of address "01DE" to "01E3" are initialized. "[] [] [] FF" (lower two digits are valid) is written. 2) In the camera signal system adjustment mode (data "[] [] [] 00" is written at the address "0070") the data "[] [] [] 01" is written at the address "0071", so that the adjustment is performed automatically. After normal completion of adjustment the data "00FF" is written automatically. 3) Data calculation is performed. <table><tr><th>Address</th><th>Processing</th></tr><tr><td>01DE</td><td>"-1" for the written data (Subtraction)</td></tr><tr><td>01DF</td><td>"-5" for the written data (Subtraction)</td></tr><tr><td>01E0</td><td>"0" for the written data (Subtraction)</td></tr><tr><td>01E1</td><td>"-2" for the written data (Subtraction)</td></tr><tr><td>01E2</td><td>"-2" for the written data (Subtraction)</td></tr><tr><td>01E3</td><td>"-3" for the written data (Subtraction)</td></tr></table>	Address	Processing	01DE	"-1" for the written data (Subtraction)	01DF	"-5" for the written data (Subtraction)	01E0	"0" for the written data (Subtraction)	01E1	"-2" for the written data (Subtraction)	01E2	"-2" for the written data (Subtraction)	01E3	"-3" for the written data (Subtraction)
Address	Processing														
01DE	"-1" for the written data (Subtraction)														
01DF	"-5" for the written data (Subtraction)														
01E0	"0" for the written data (Subtraction)														
01E1	"-2" for the written data (Subtraction)														
01E2	"-2" for the written data (Subtraction)														
01E3	"-3" for the written data (Subtraction)														

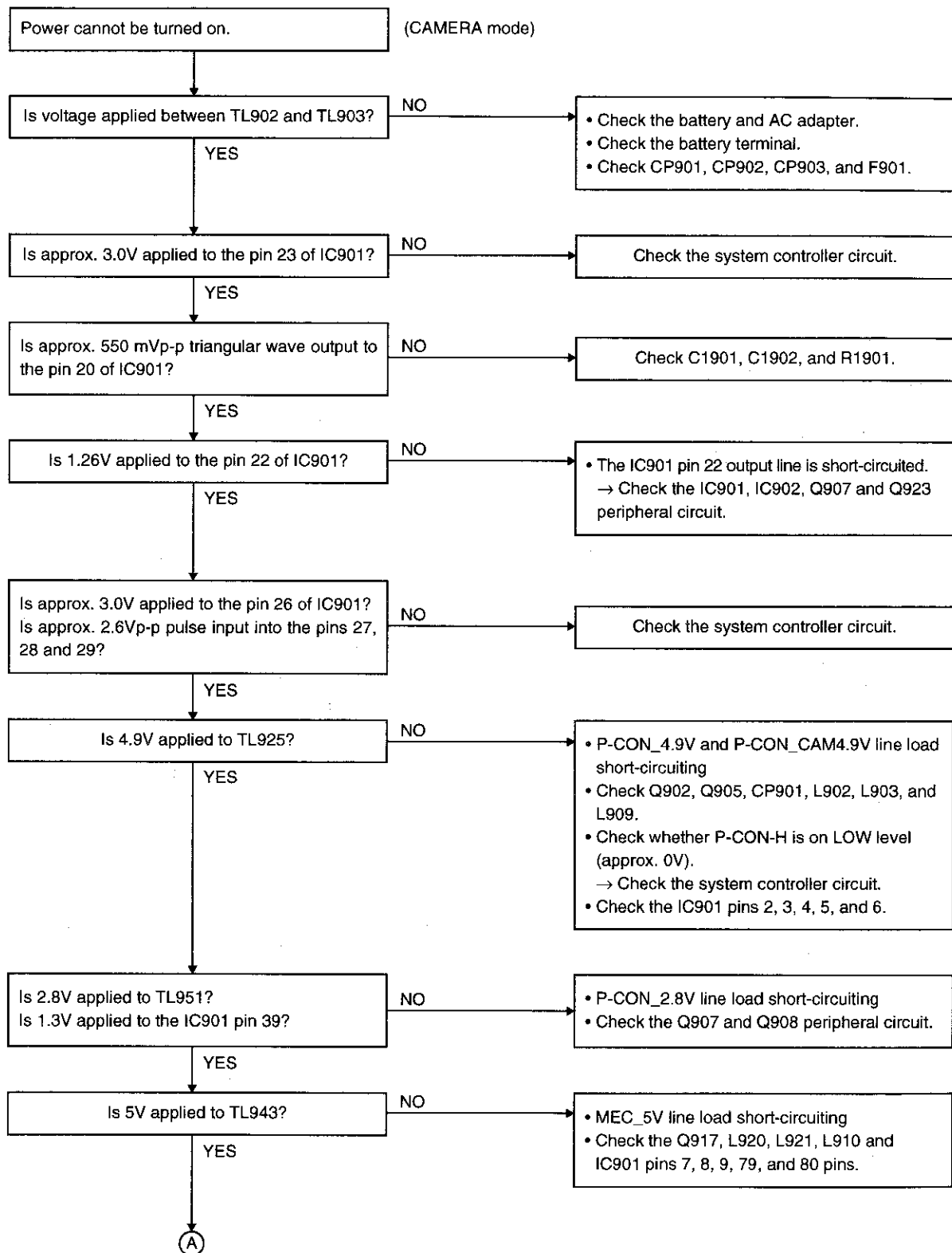
Item	Adjusting method
(4) Sync signal level adjustment Measuring terminal: Video output terminal, 75 ohm termination Address: "007E" YGAIN_CAM Measuring instrument: Oscilloscope (horizontal period) Object : Shield Data variation width: "0000" to "00FE"	With the lens shielded, observe the video output with the oscilloscope, rewrite the data of address "007E", and adjust the SYNC level to 286 ± 10 mVp-p. Note: While the data is changed, the screen may be disturbed. But, this disturbance is not trouble. 
(5) Burst level adjustment Measuring terminal: Video output terminal, 75 ohm termination Address: "007F" CGAIN_CAM Measuring instrument: Oscilloscope (horizontal period) Object : Not specified Data variation width: "0000" to "00FE"	1) Observe the video output with the oscilloscope, rewrite the data of address "007F", and adjust the burst level to 286 ± 20 mVp-p. 
(6) Iris AE adjustment Measuring terminal: Video output terminal, 75 ohm termination Address: "0072" AE_CVT Measuring instrument: Oscilloscope (horizontal period) Object : Gray scale Data variation width: "0000" to "00FE"	1) Observe the video output with the oscilloscope in the gray scale standard image state, rewrite the data of address "0072", and adjust the luminance signal level to 680 ± 20 mVp-p. 
(7) White balance rough adjustment Measuring terminal: EE output Address: "0000" CGAIN_KR_W "0002" CGAIN_KB_W Measuring instrument: Vector scope Object: Gray scale Data variation width: "0000" to "03FF"	1) Observe the vector scope in the gray scale standard image state, rewrite the data of address "0000", "0002" so that the luminous spot is positioned as follows: R-Y $0 \pm 5\%$ (burst ratio) B-Y $0 \pm 5\%$ (burst ratio) 

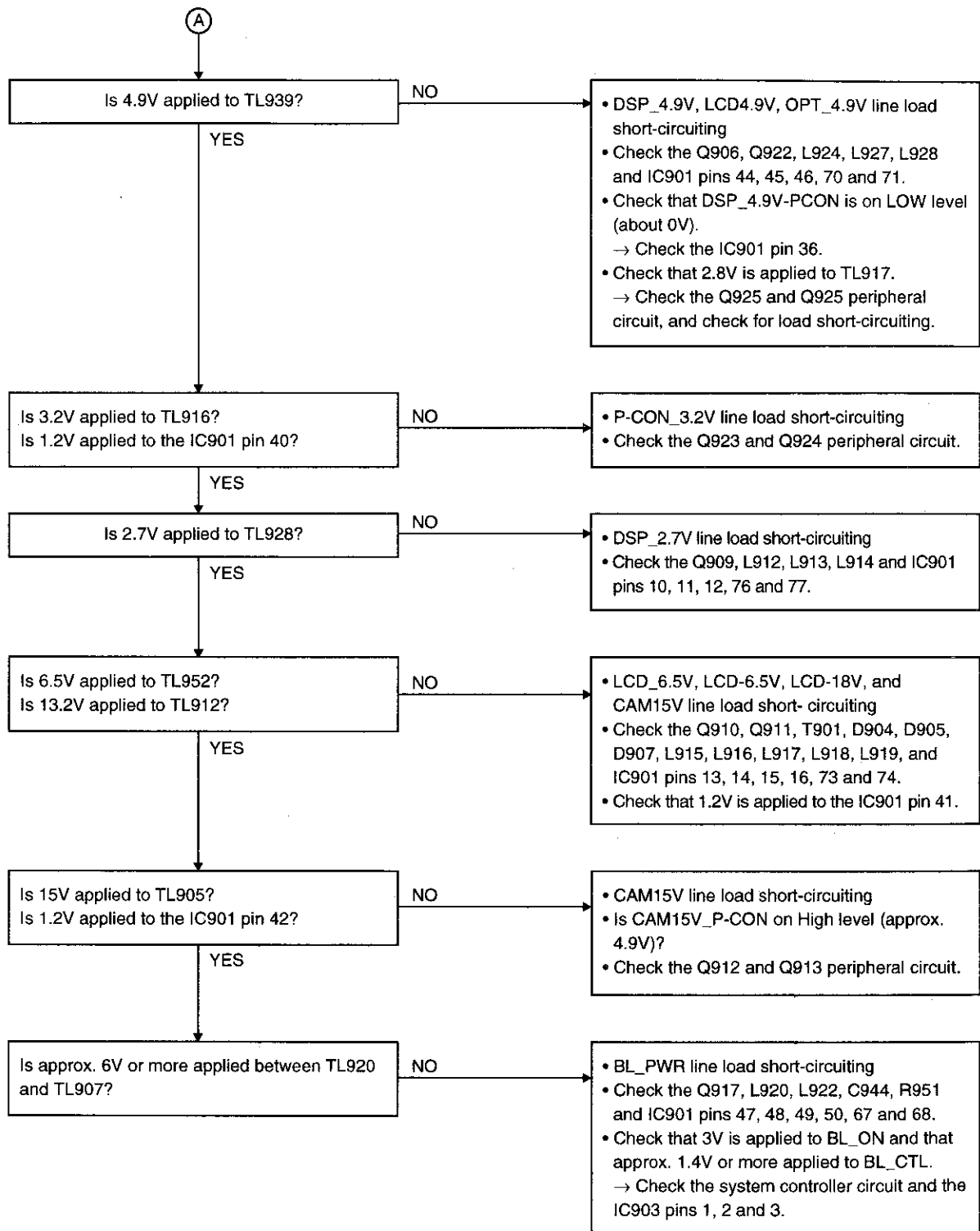
Item	Adjusting method
(8)Color gain rough adjustment Measuring terminal: EE output Address: "0096" CGIN RYG "0094" CGIN BYG "0090" CMAT RYG "0092" CMAT BYG Measuring instrument: Vector scope, wave- form monitor Object : Color bar chart Data variation width: "0000" to "007F"	1) Photograph the color bar chart, adjust the picture angle so as to get the white level 650 mV, observe the vector scope, rewrite the data of address "0096", "0094", "0090", and "0092", and set so that the red and blue luminous spots are located as follows (for the burst gain the gain of vector scope must be set on the 75% amplitude point on the B-Y axis).  Red amplitude: 1.6 ± 0.1 times (burst ratio) Blue amplitude: 1.2 ± 0.1 times (burst ratio) Red phase: $103^\circ \pm 2^\circ$ Blue phase: $344^\circ \pm 2^\circ$
(9)White balance adjustment Measuring terminal: EE output Address: "0000" INDOOR W/B R "0002" INDOOR W/B B Measuring instrument: Vector scope Object: Gray scale Data variation width: "0000" to "03FF"	1) Repeat the white balance rough adjustment (7). 
(10)Color gain adjustment Measuring terminal: EE output Address: "0096" CGIN RYG "0094" CGIN BYG "0090" XGIN RYG "0092" CGIN BYG Measuring instrument: Vector scope, wave- form monitor Object: Color bar chart Data variation width: "0000" to "007F"	1) Repeat the color gain rough adjustment (8).  Red amplitude: 1.6 ± 0.1 times (burst ratio) Blue amplitude: 1.2 ± 0.1 times (burst ratio) Red phase: $103^\circ \pm 2^\circ$ Blue phase: $344^\circ \pm 2^\circ$
(11)Auto-white balance adjust- ment Measuring terminal: EE output Address: "0006" OUTDOOR R "0008" OUTDOOR B Measuring instrument: Vector scope Object: Gray scale Data variation width: "0000" to "03FF"	1) Mount the color temperature conversion filter (LB165) in front of lens. 2) Observe the vector scope in the gray scale standard image state, and set the luminous spot in the following position. R-Y $0 \pm 5\%$ (burst ratio) B-Y $0 \pm 5\%$ (burst ratio) 

* After completion of adjustment set the normal operation mode (write the data " FF" at the address "0010").

5-8. Troubleshooting

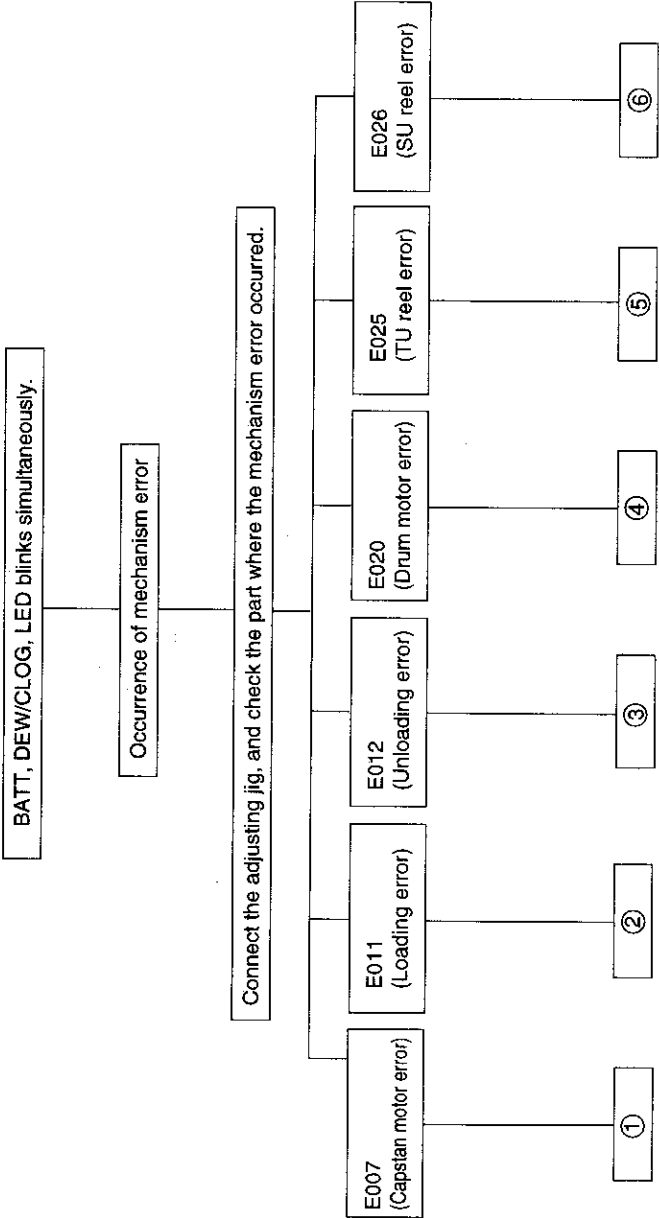
5-8-1. Power circuit troubleshooting

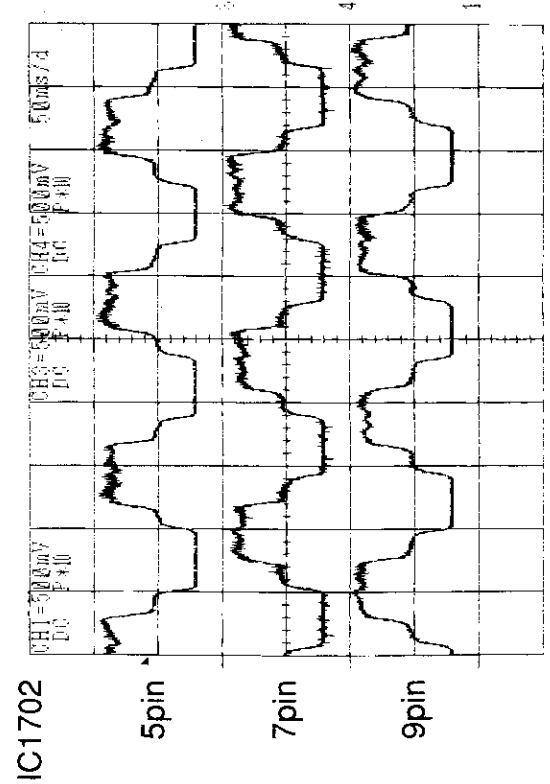
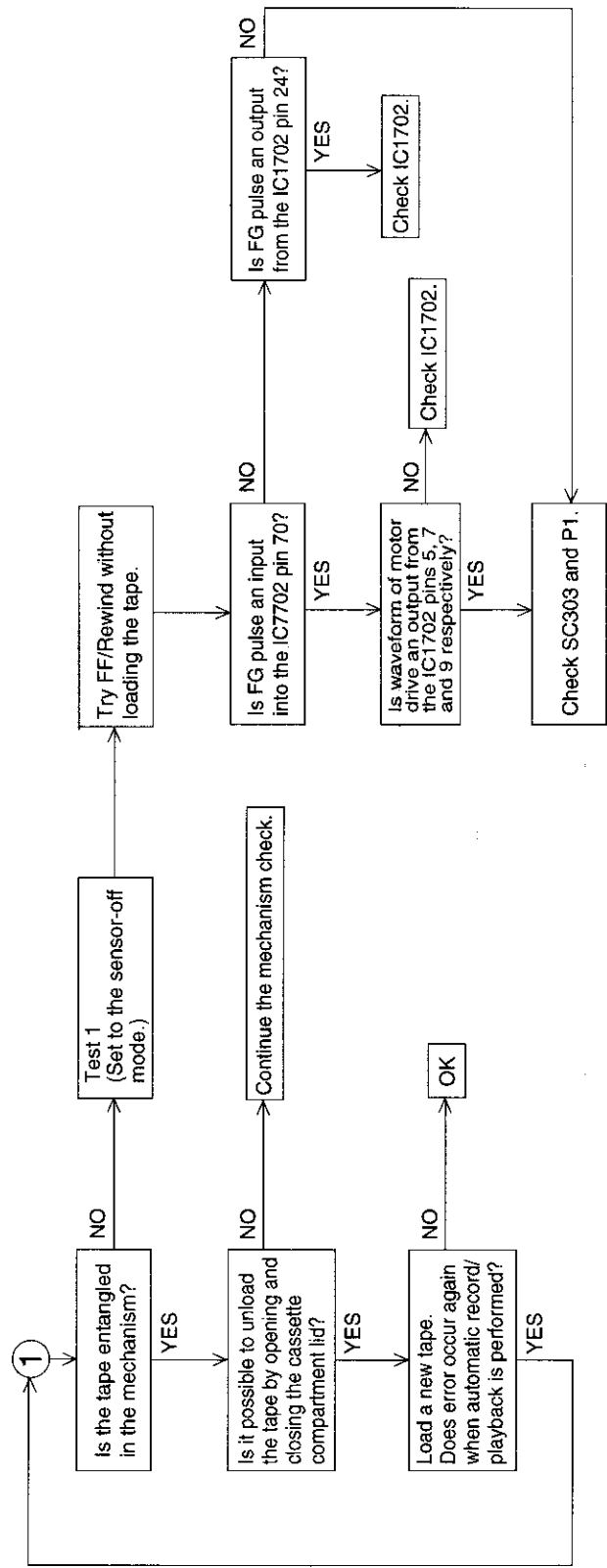


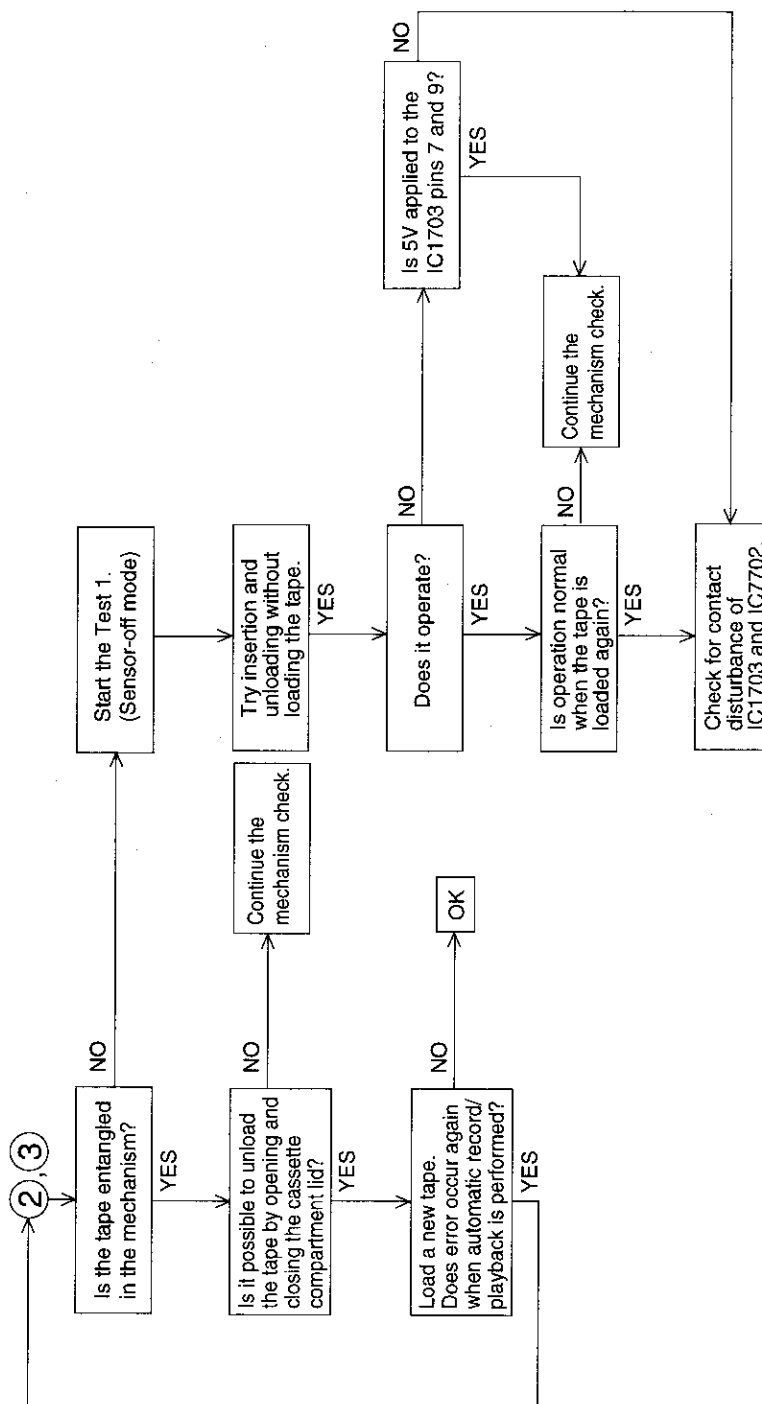


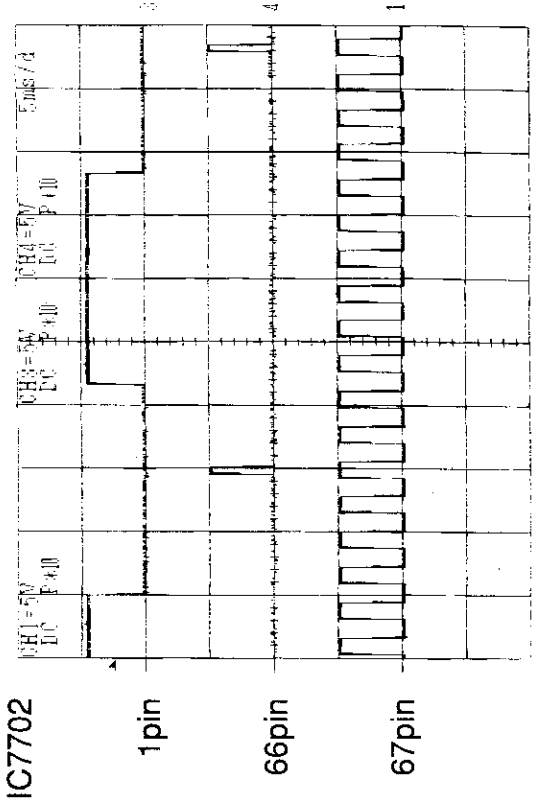
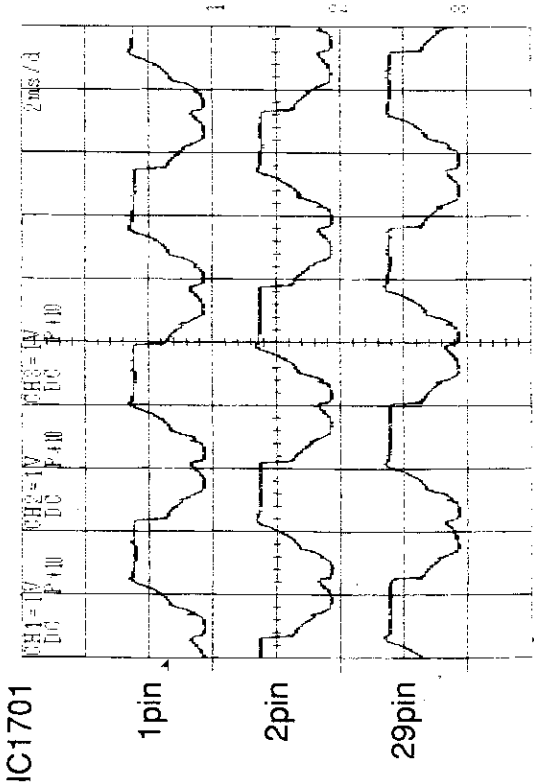
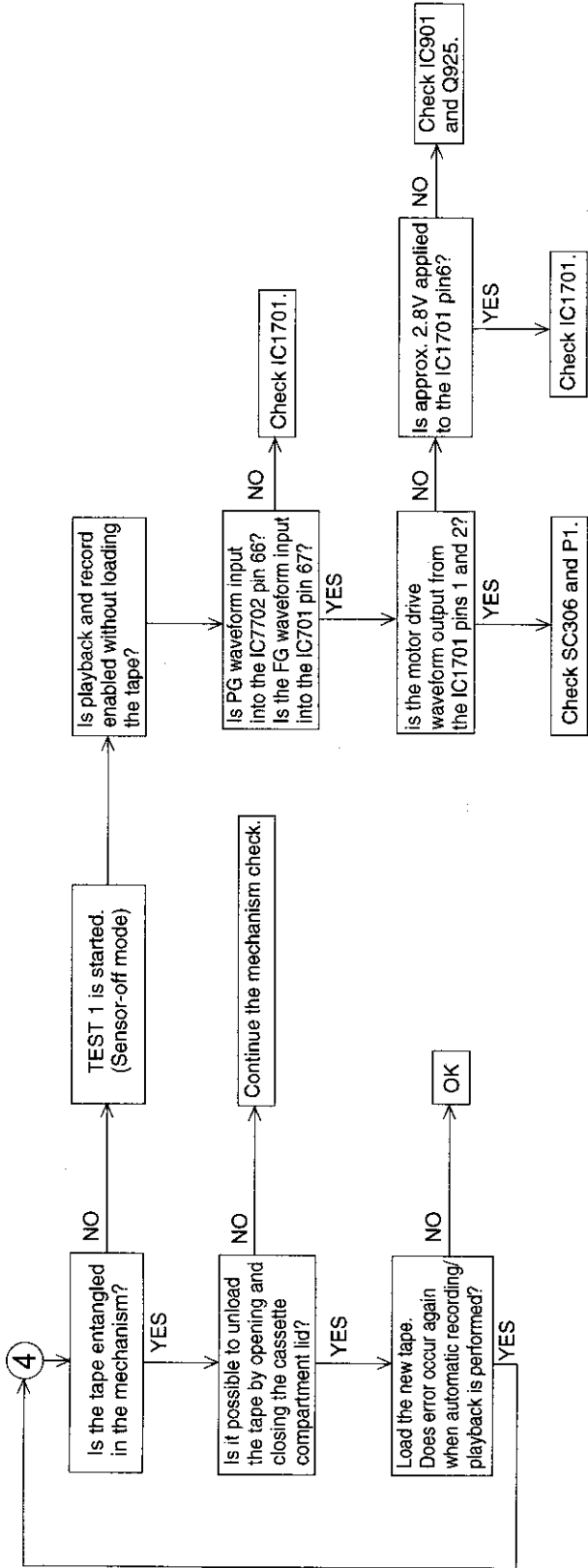
* In case of operation check be sure to mount the backlight unit.

5-8-2. Mechanism troubleshooting

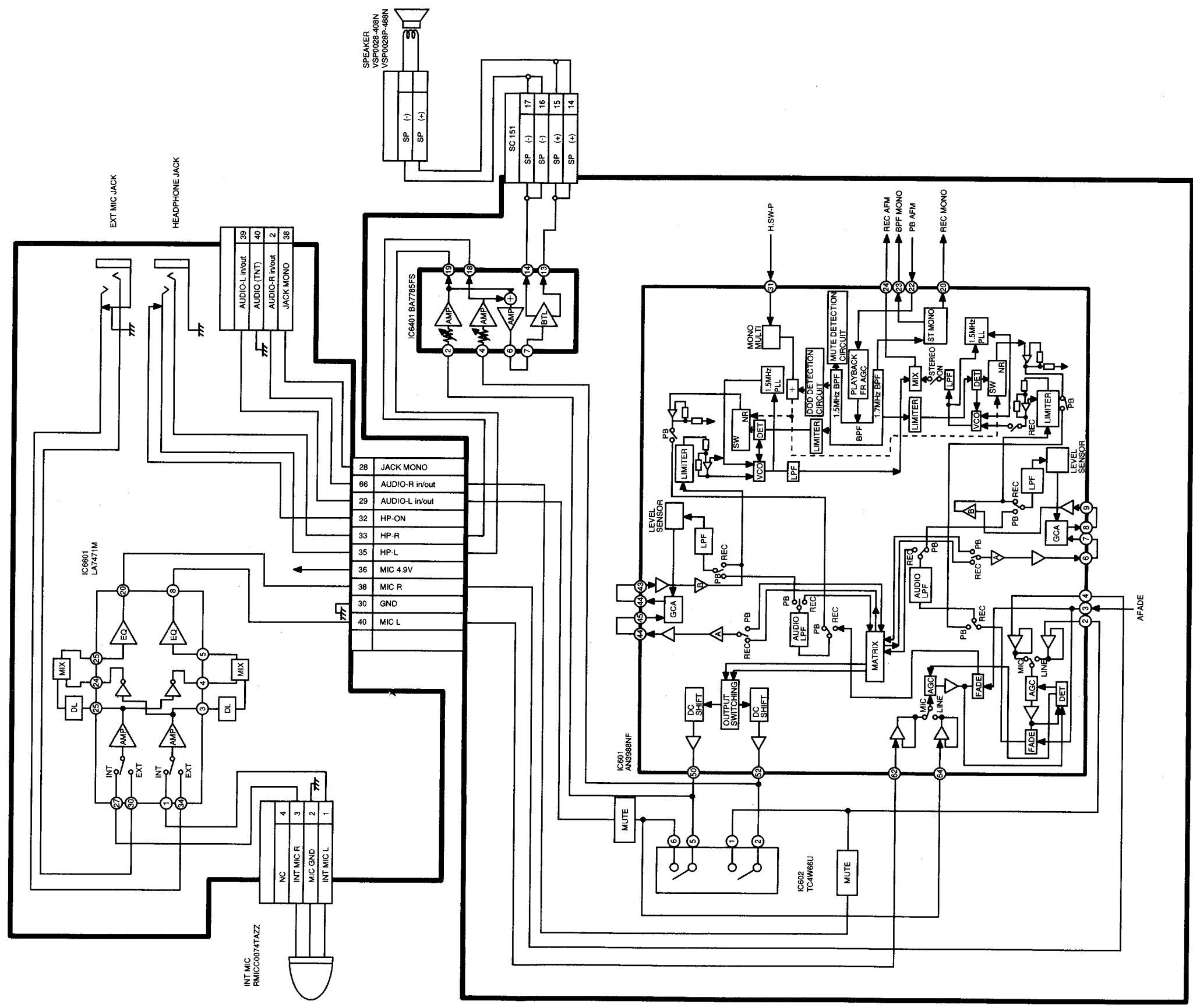




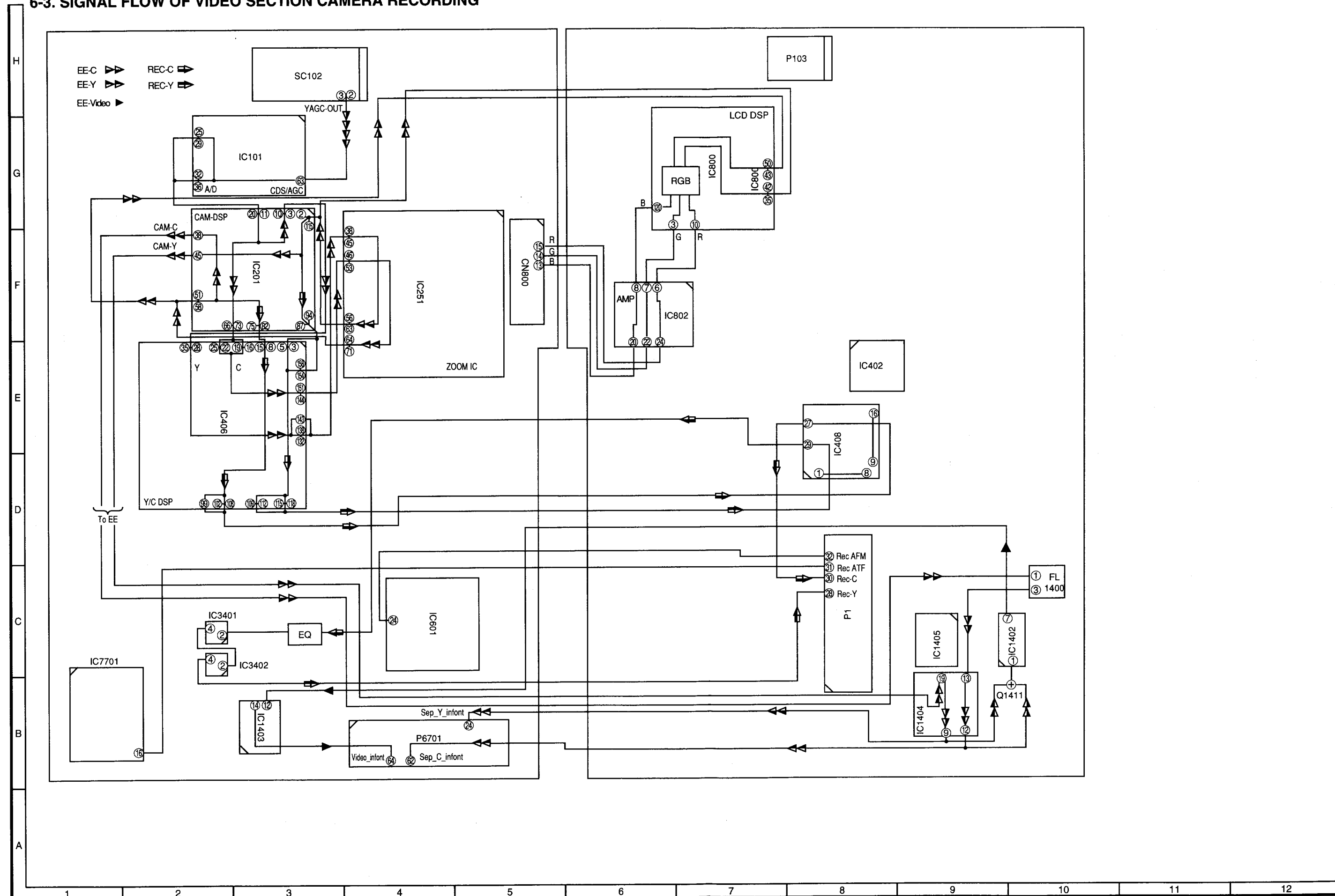




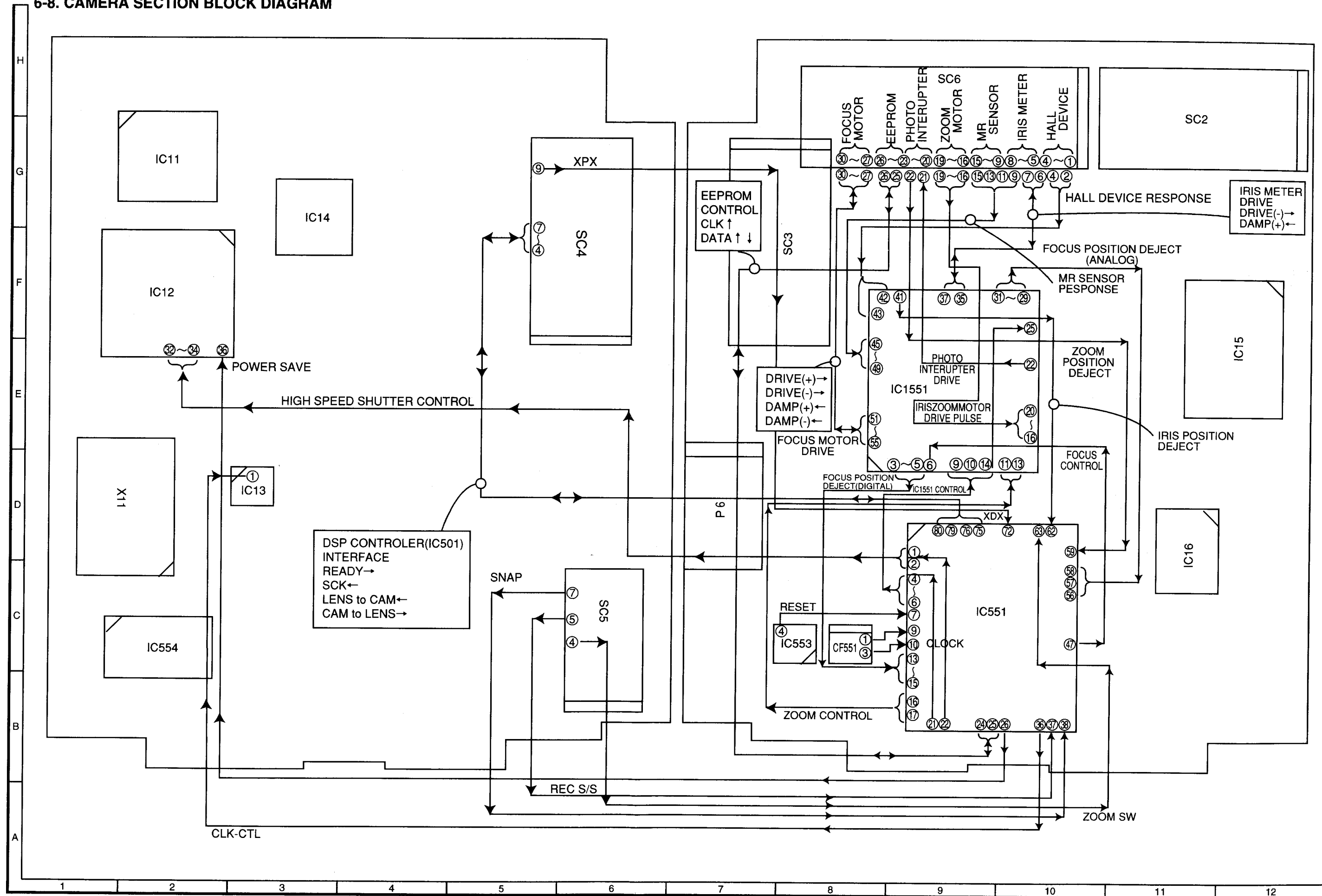
6-6. AUDIO BLOCK DIAGRAM



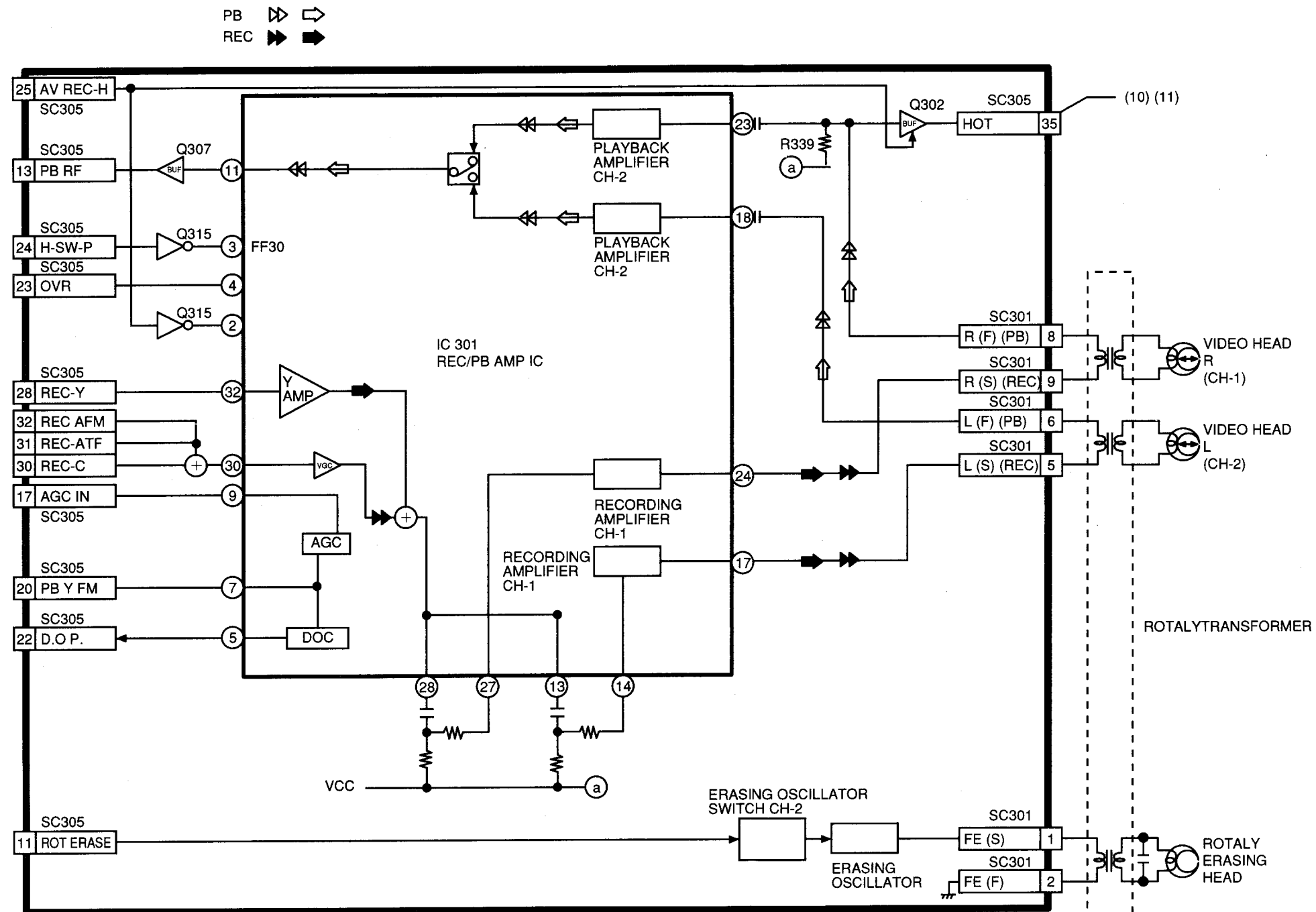
6-3. SIGNAL FLOW OF VIDEO SECTION CAMERA RECORDING



6-8. CAMERA SECTION BLOCK DIAGRAM

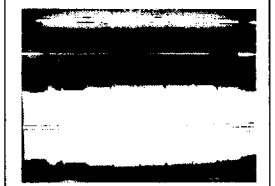


6-7. HEAD AMP BLOCK DIAGRAM



Signal waveform

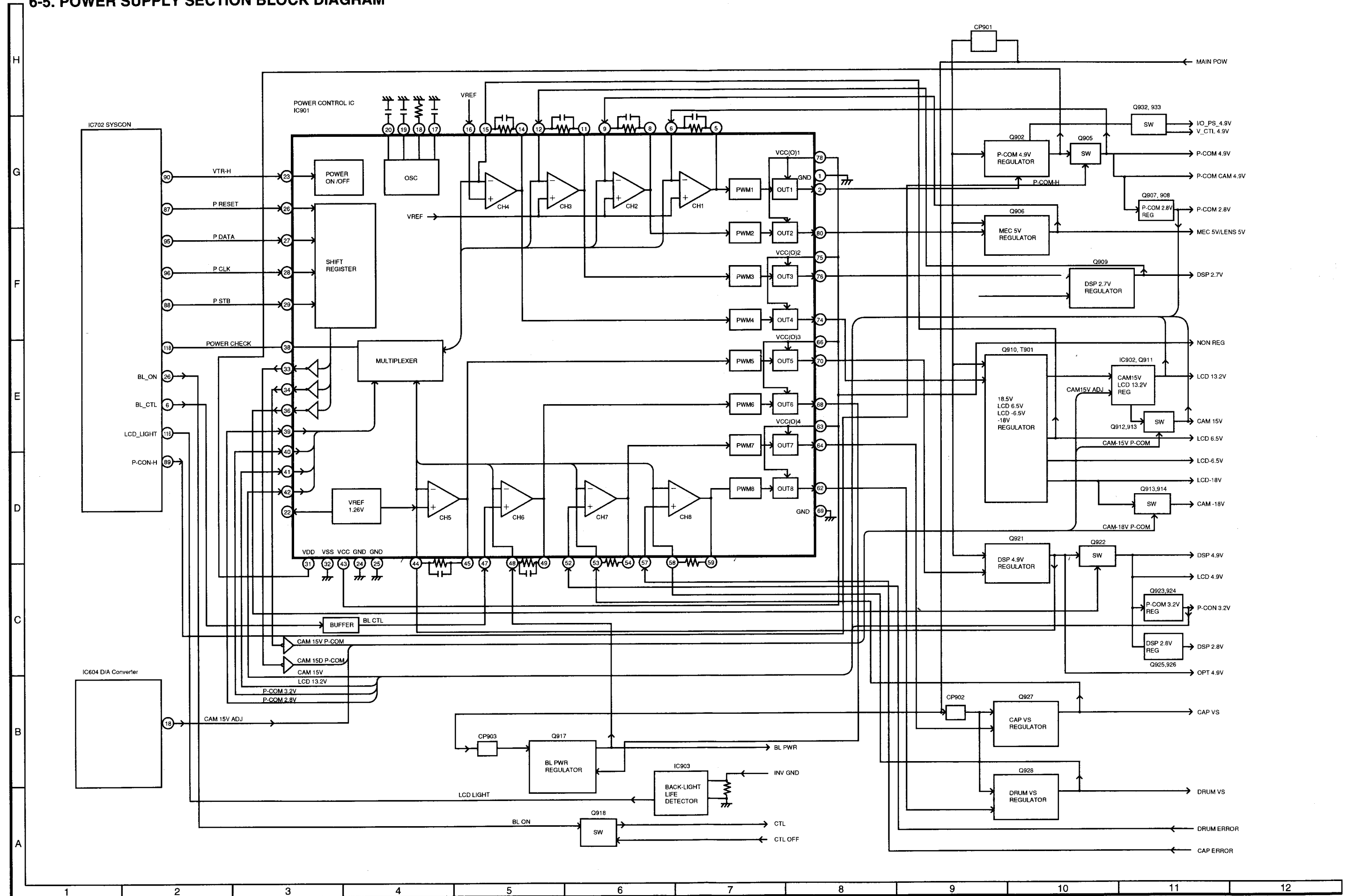
(10) TL35 (Pin (35) of P1)



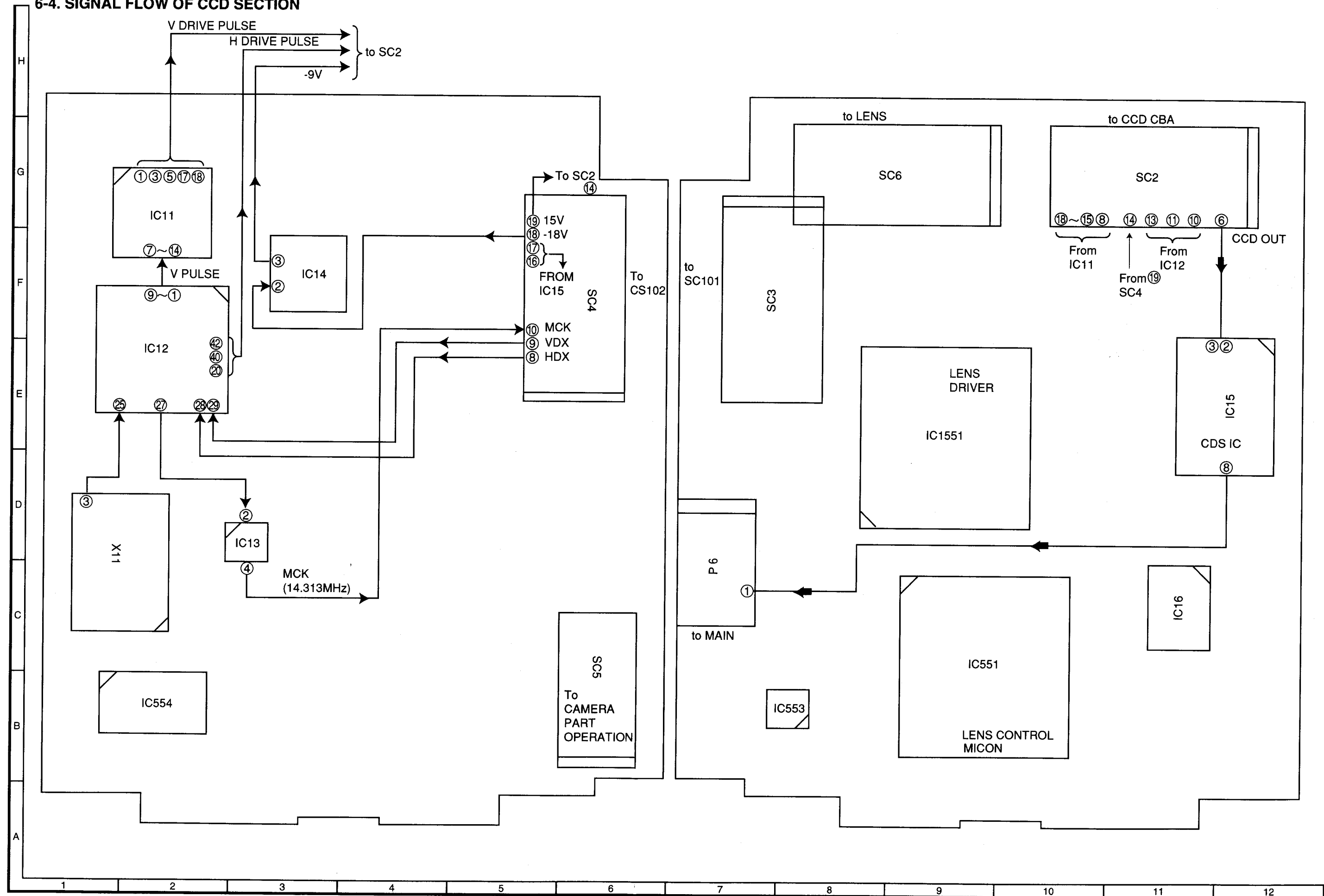
(11) TL35 (Pin (35) of P1)



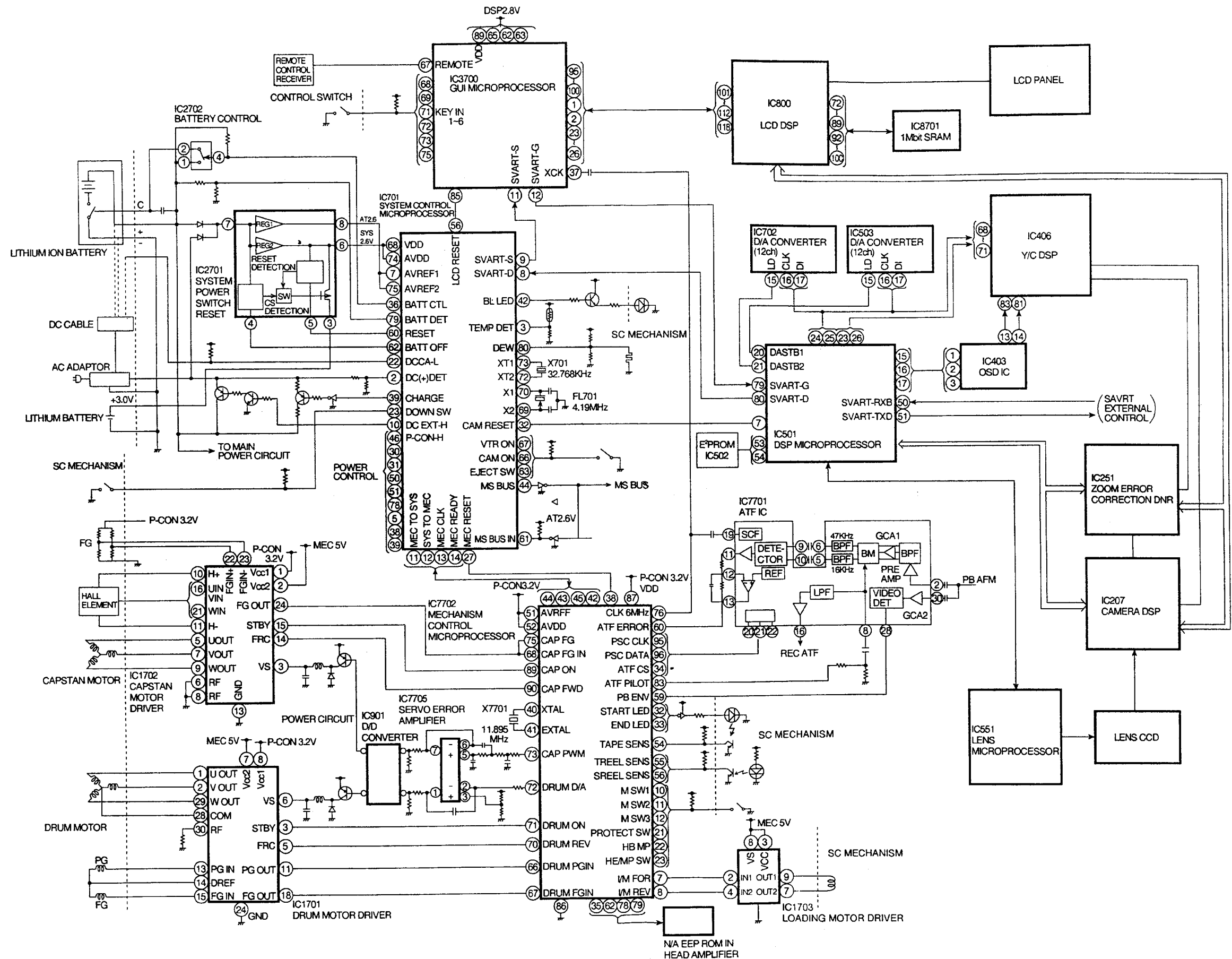
6-5. POWER SUPPLY SECTION BLOCK DIAGRAM



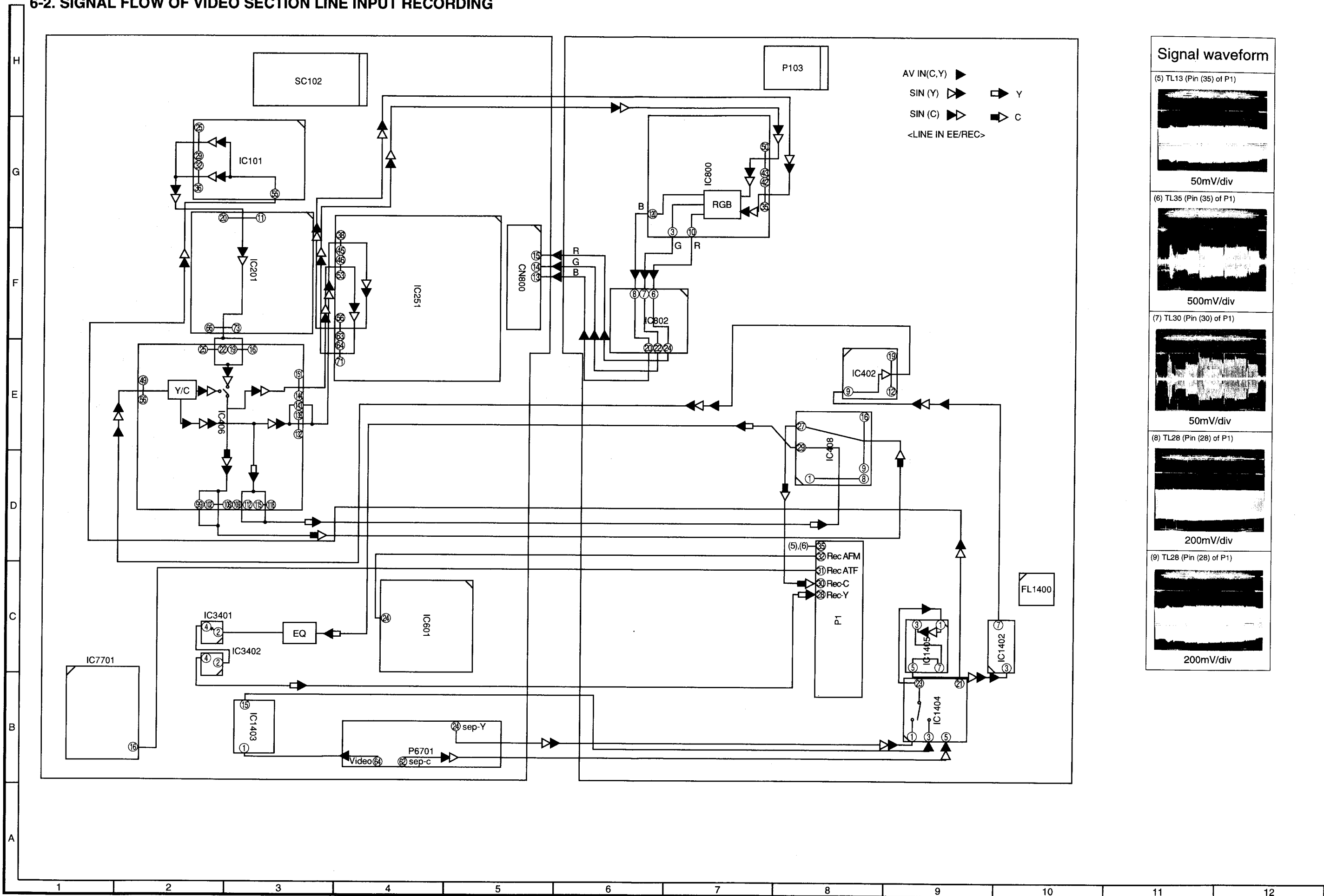
6-4. SIGNAL FLOW OF CCD SECTION



6-9. SYSTEM CONTROL BLOCK DIAGRAM

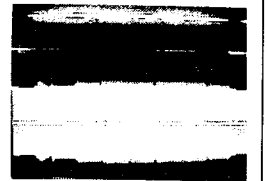


6-2. SIGNAL FLOW OF VIDEO SECTION LINE INPUT RECORDING



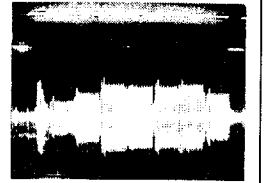
Signal waveform

(5) TL13 (Pin (35) of P1)



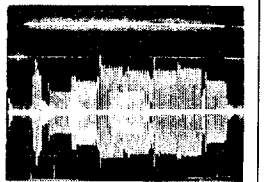
50mV/div

(6) TL35 (Pin (35) of P1)



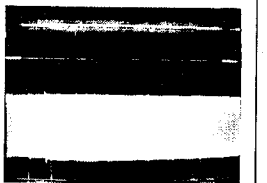
500mV/div

(7) TL30 (Pin (30) of P1)



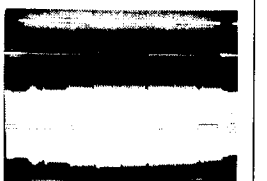
50mV/div

(8) TL28 (Pin (28) of P1)



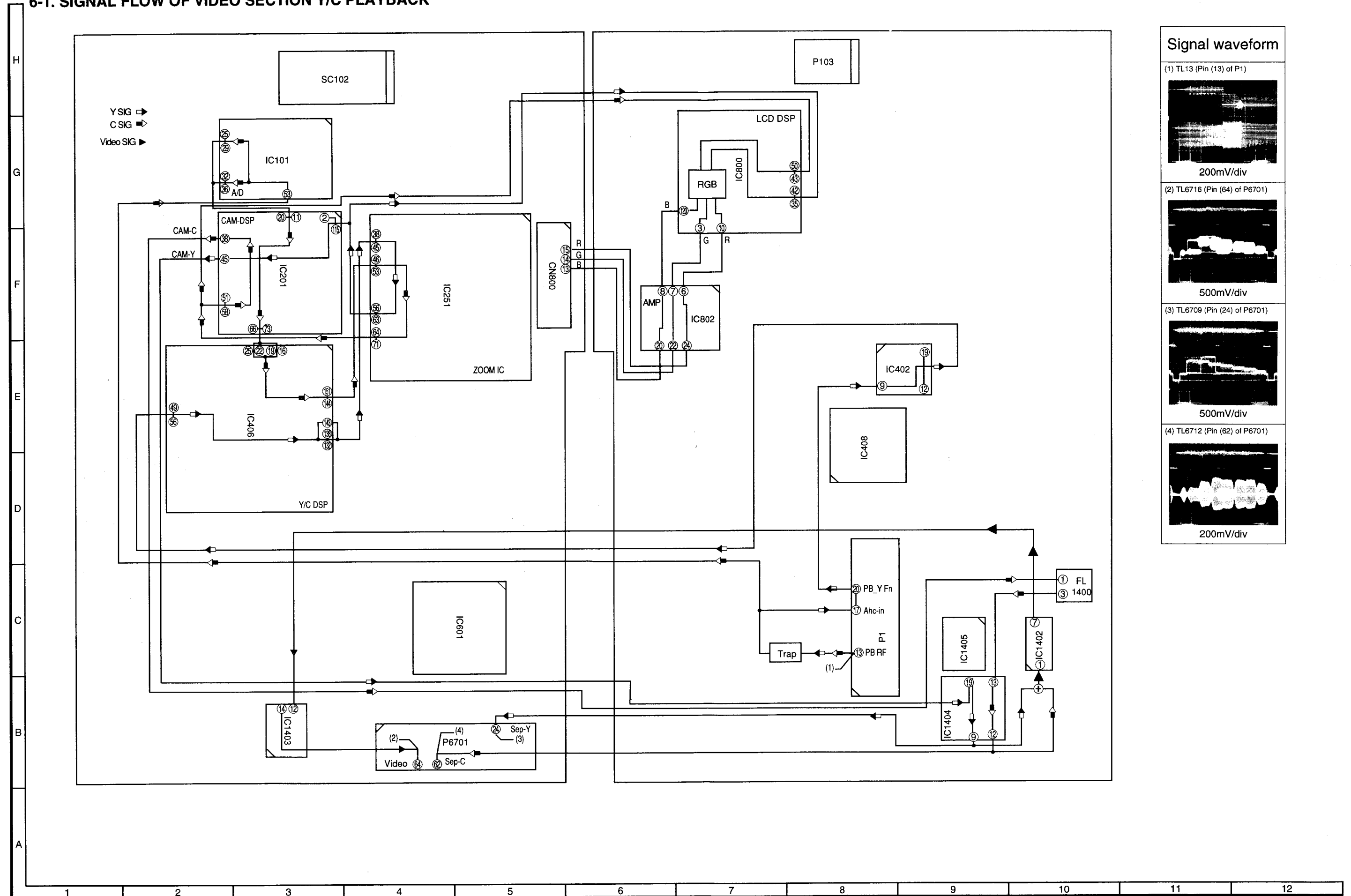
200mV/div

(9) TL28 (Pin (28) of P1)



200mV/div

6-1. SIGNAL FLOW OF VIDEO SECTION Y/C PLAYBACK



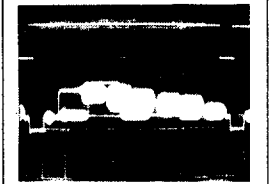
Signal waveform

(1) TL13 (Pin (13) of P1)



200mV/div

(2) TL6716 (Pin (64) of P6701)



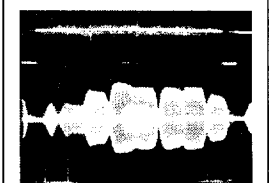
500mV/div

(3) TL6709 (Pin (24) of P6701)



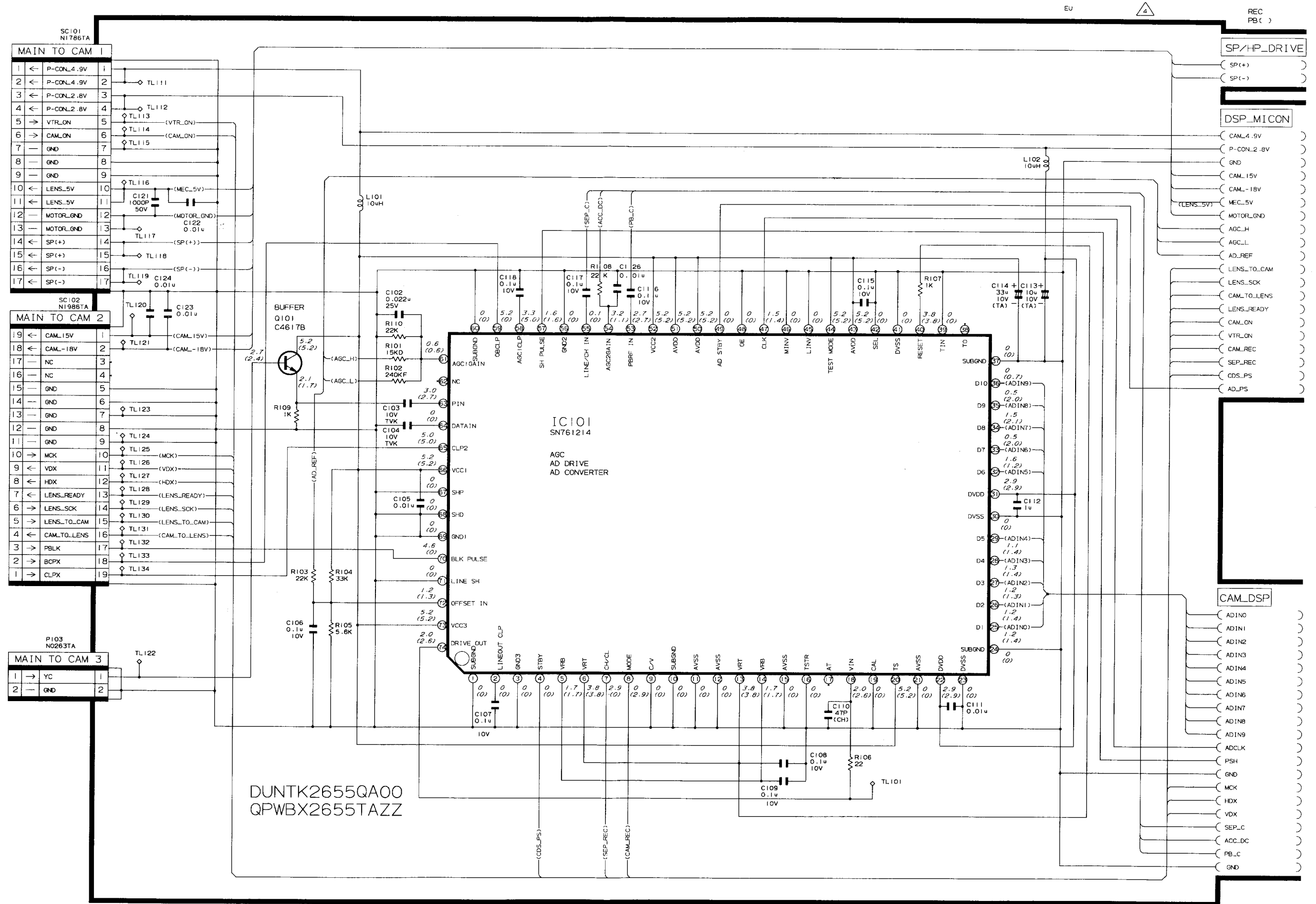
500mV/div

(4) TL6712 (Pin (62) of P6701)



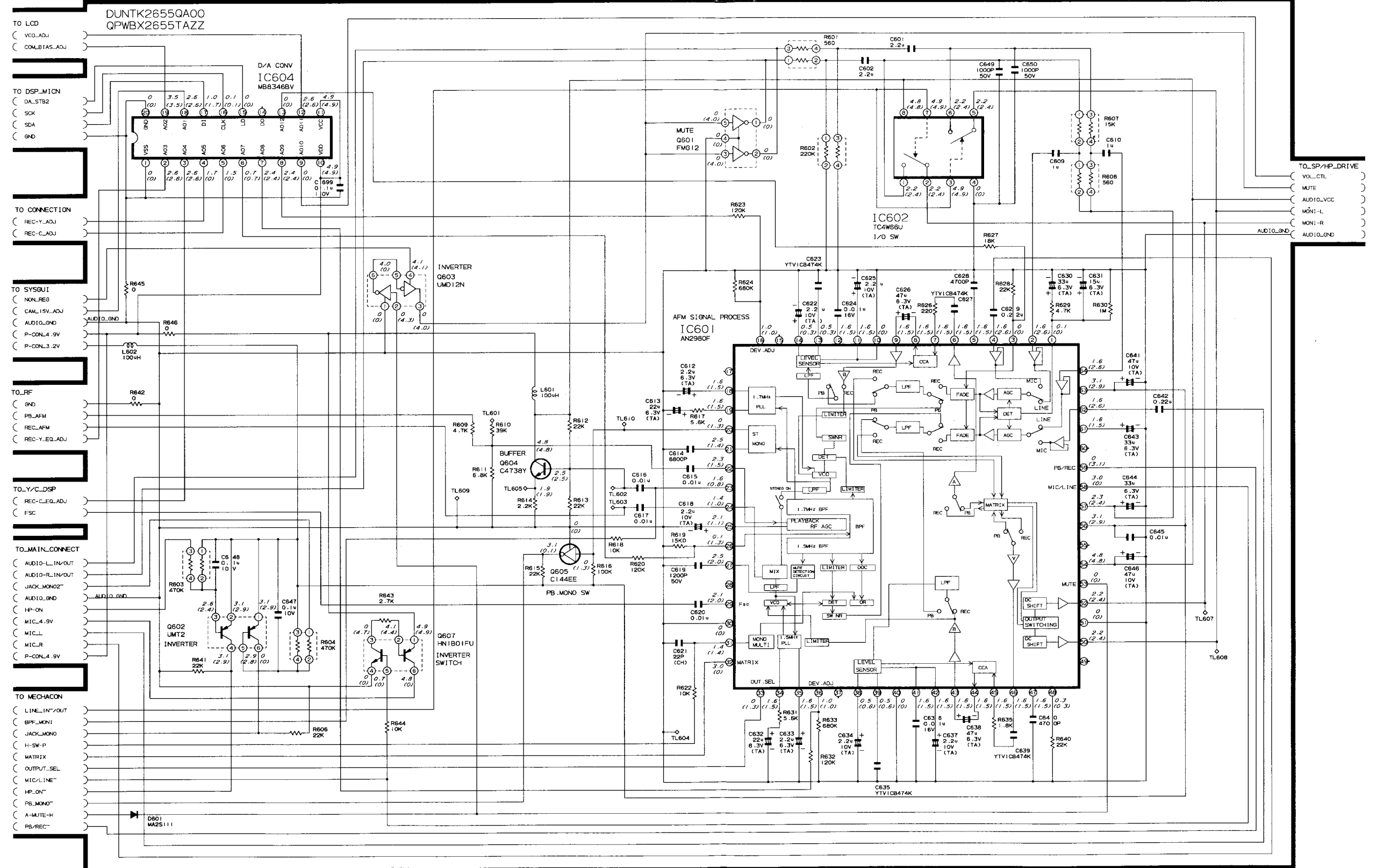
200mV/div

7-10. ADC CIRCUIT SCHEMATIC DIAGRAM

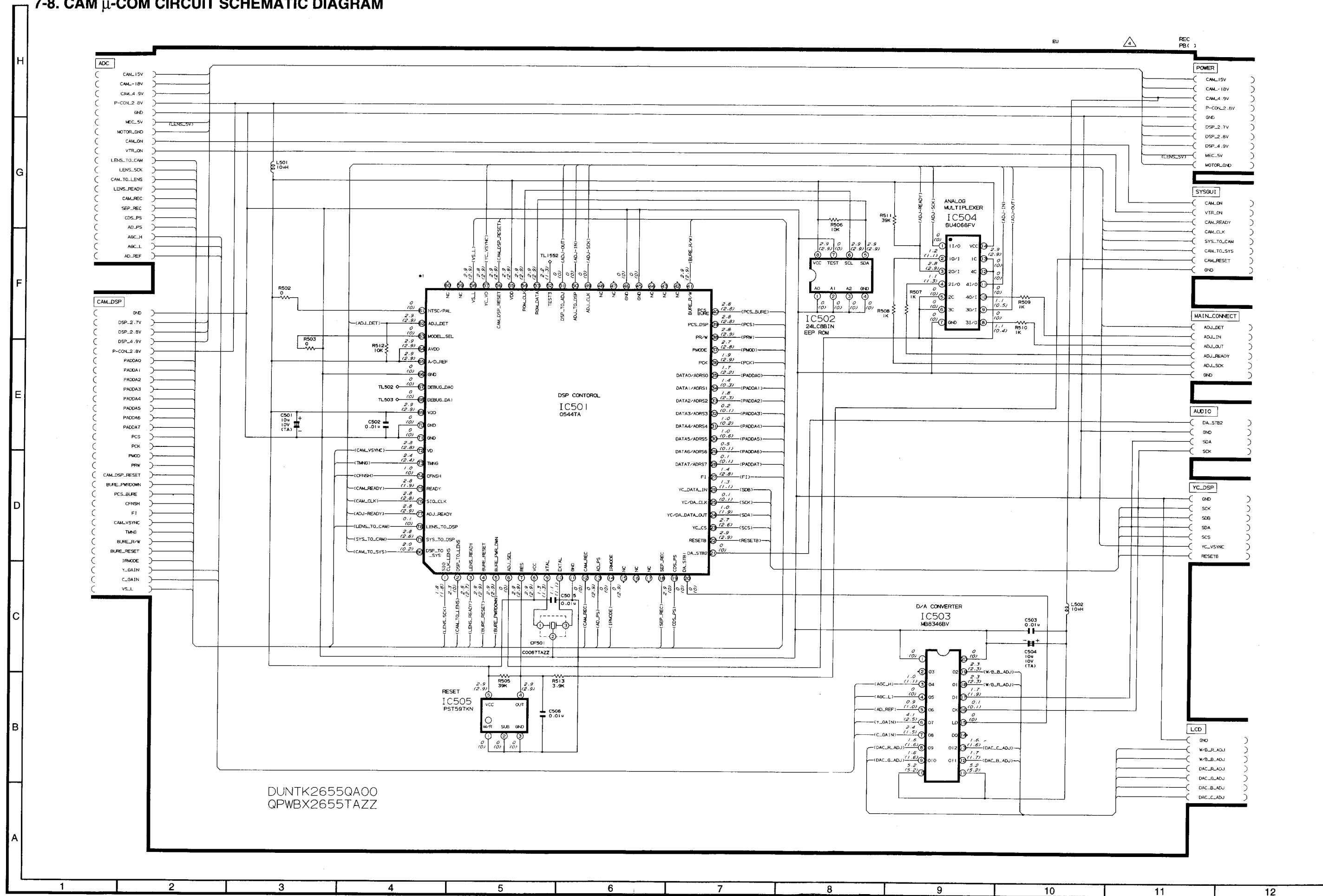


7-19. AUDIO CIRCUIT SCHEMATIC DIAGRAM

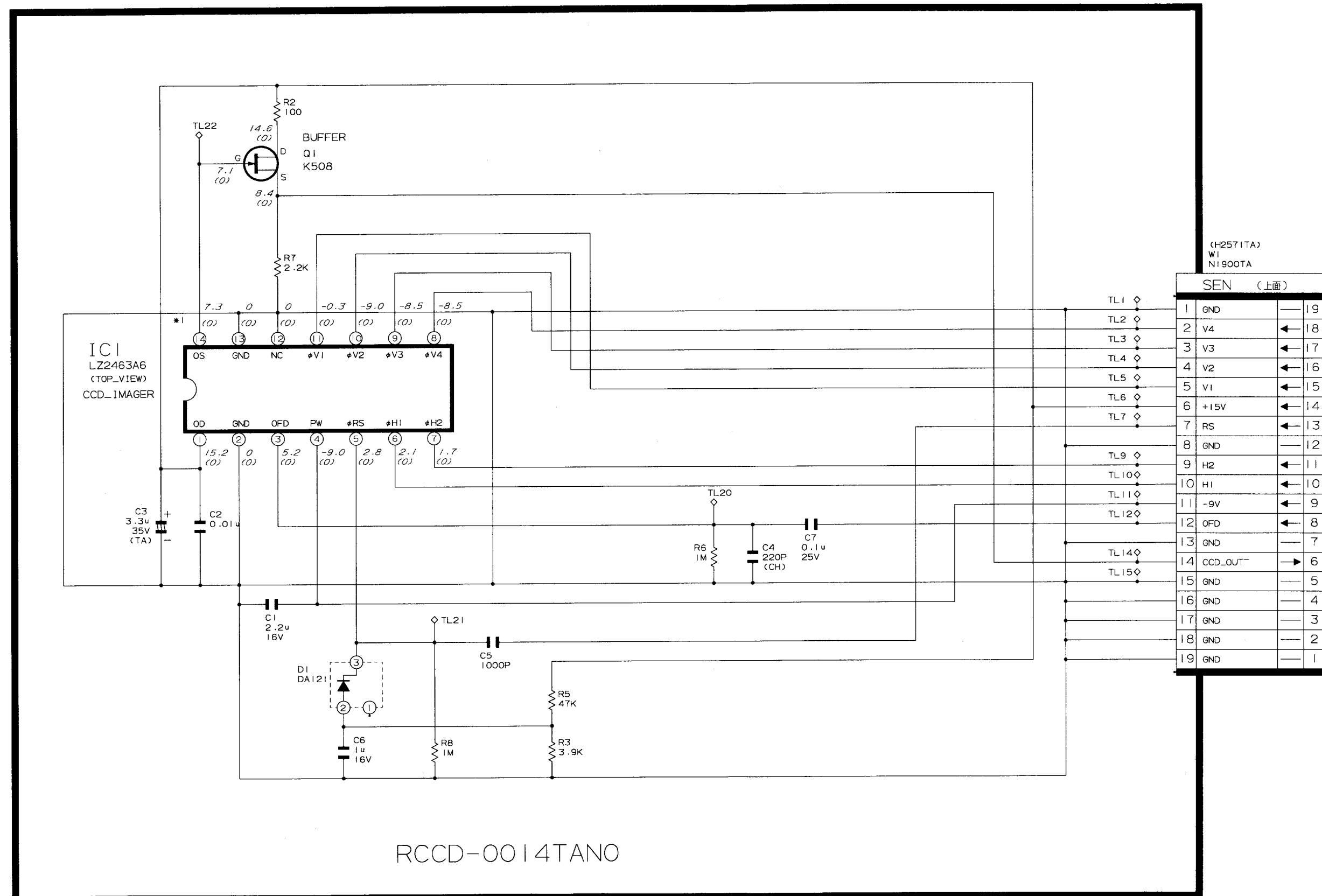
* See Page 7-46 When replacing the IC601



7-8. CAM μ -COM CIRCUIT SCHEMATIC DIAGRAM

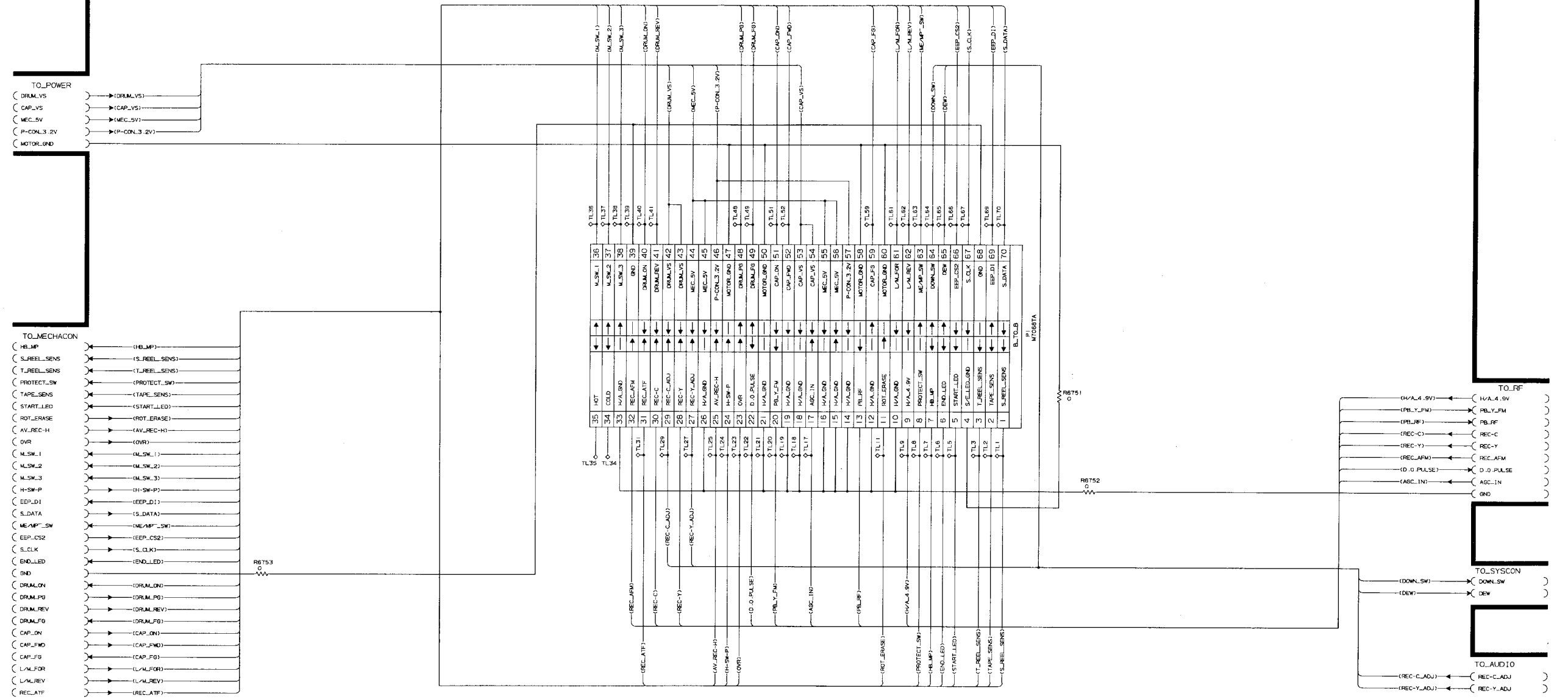


7-3. CCD CIRCUIT SCHEMATIC DIAGRAM



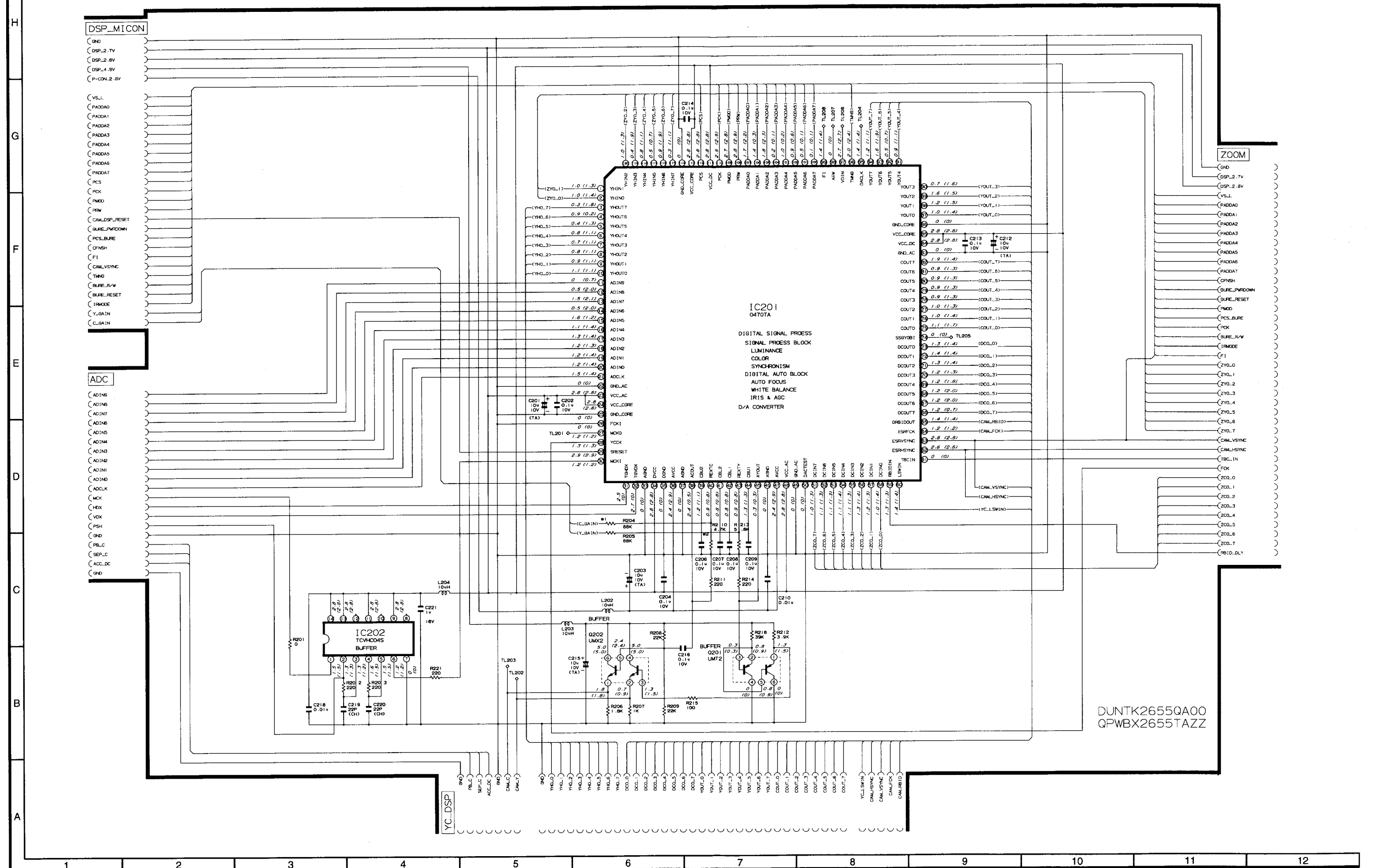
7-14. CONNECTION B-B CIRCUIT SCHEMATIC DIAGRAM

DUNTK2655QA00
QPWBX2655TAZZ



7-7. DSP CIRCUIT SCHEMATIC DIAGRAM

* See Page 7-45 When replacing the IC201

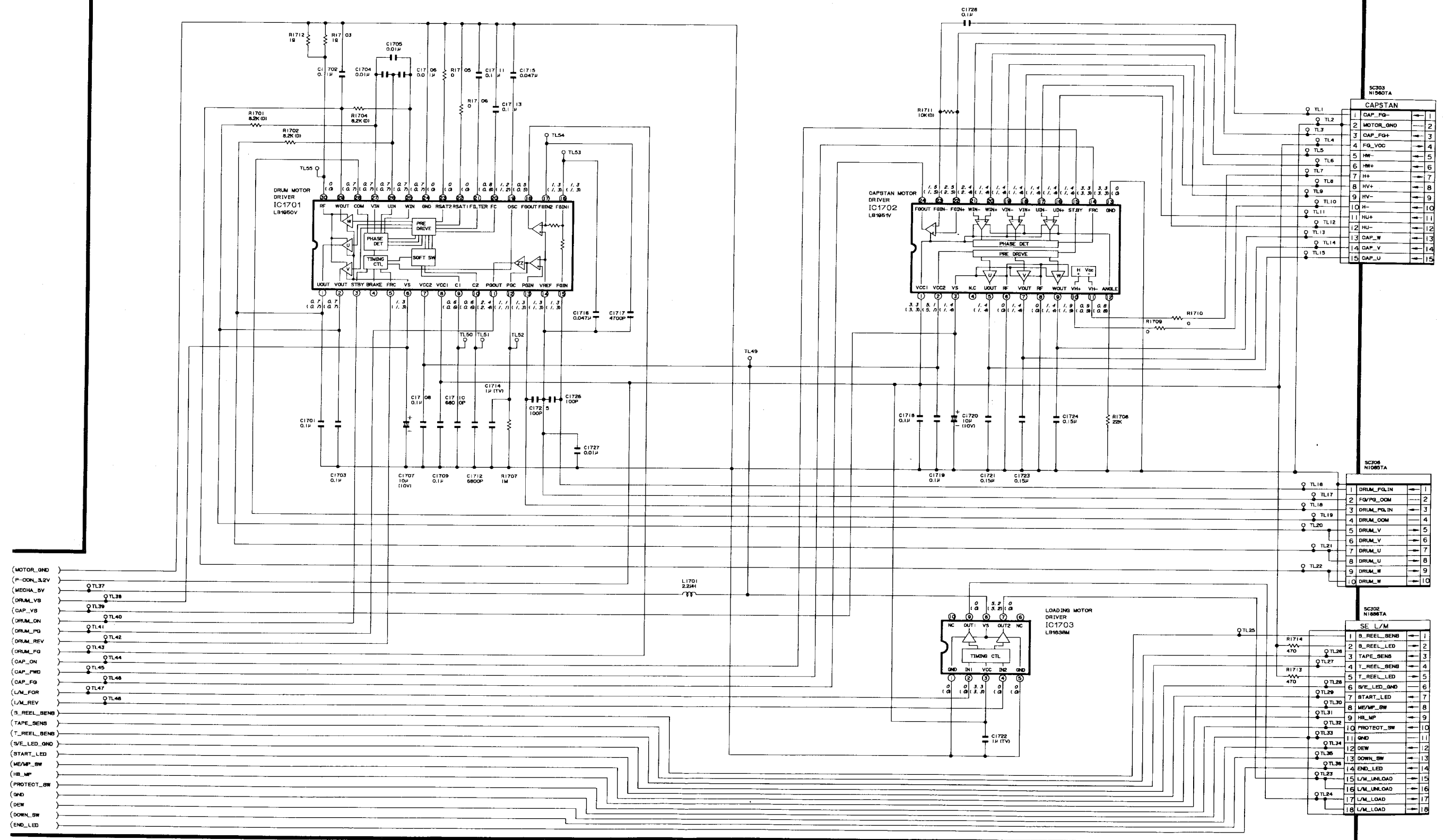


7-2. HEAD AMP CIRCUIT SCHEMATIC DIAGRAM(2)

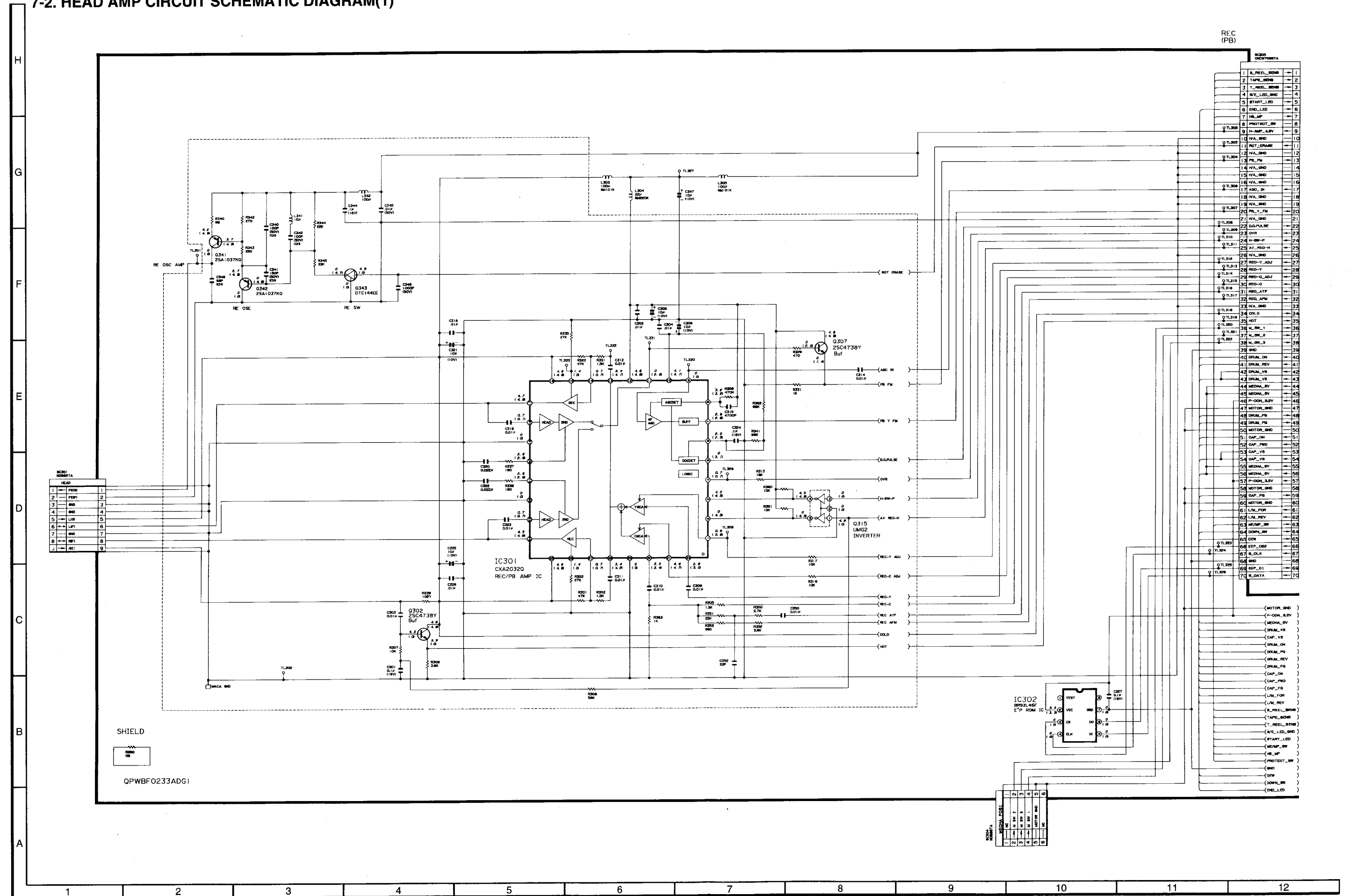
(RAMP-0018TANO)

REC
(PB)

QPWBF0233ADG1

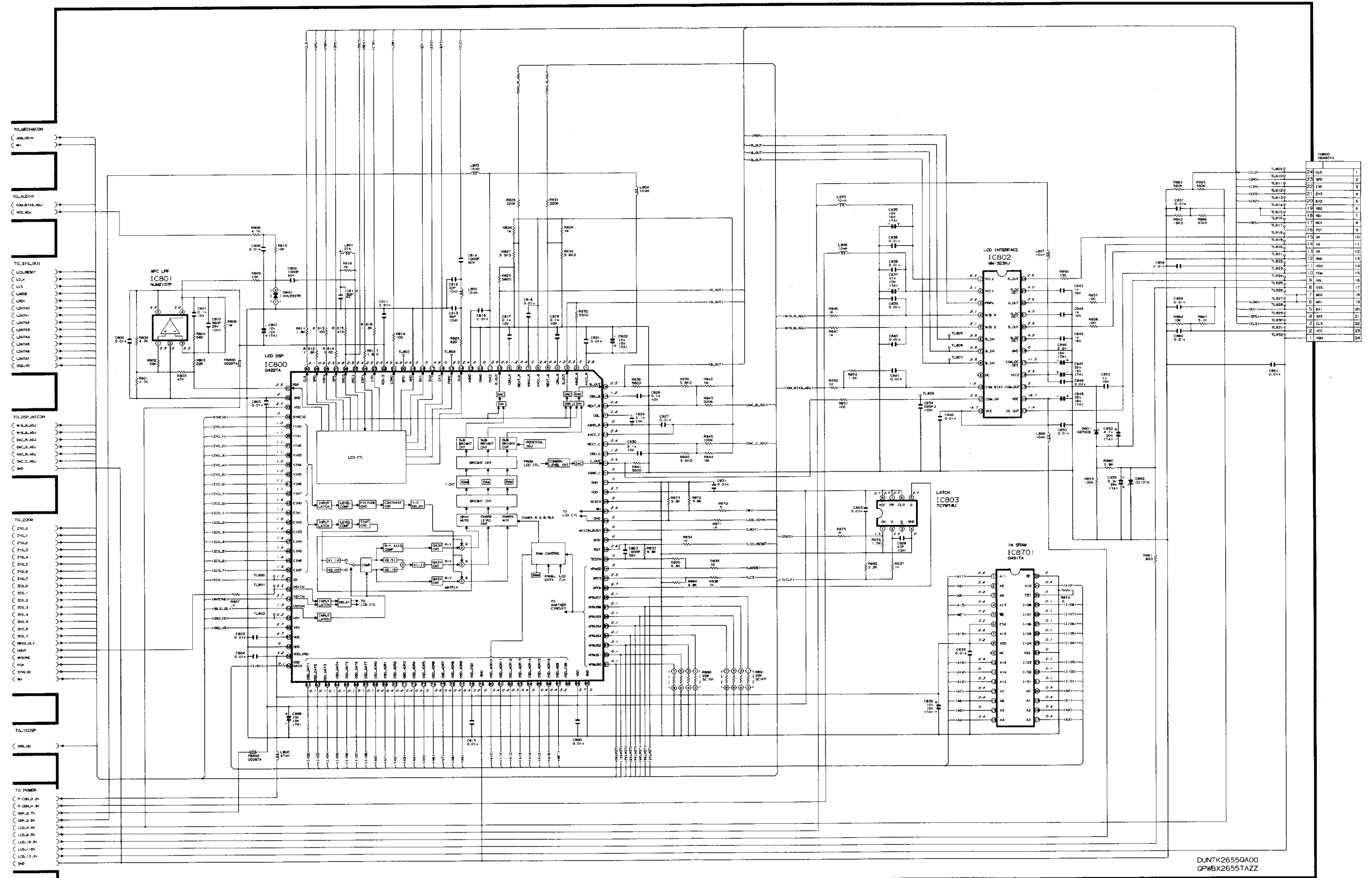


7-2. HEAD AMP CIRCUIT SCHEMATIC DIAGRAM(1)



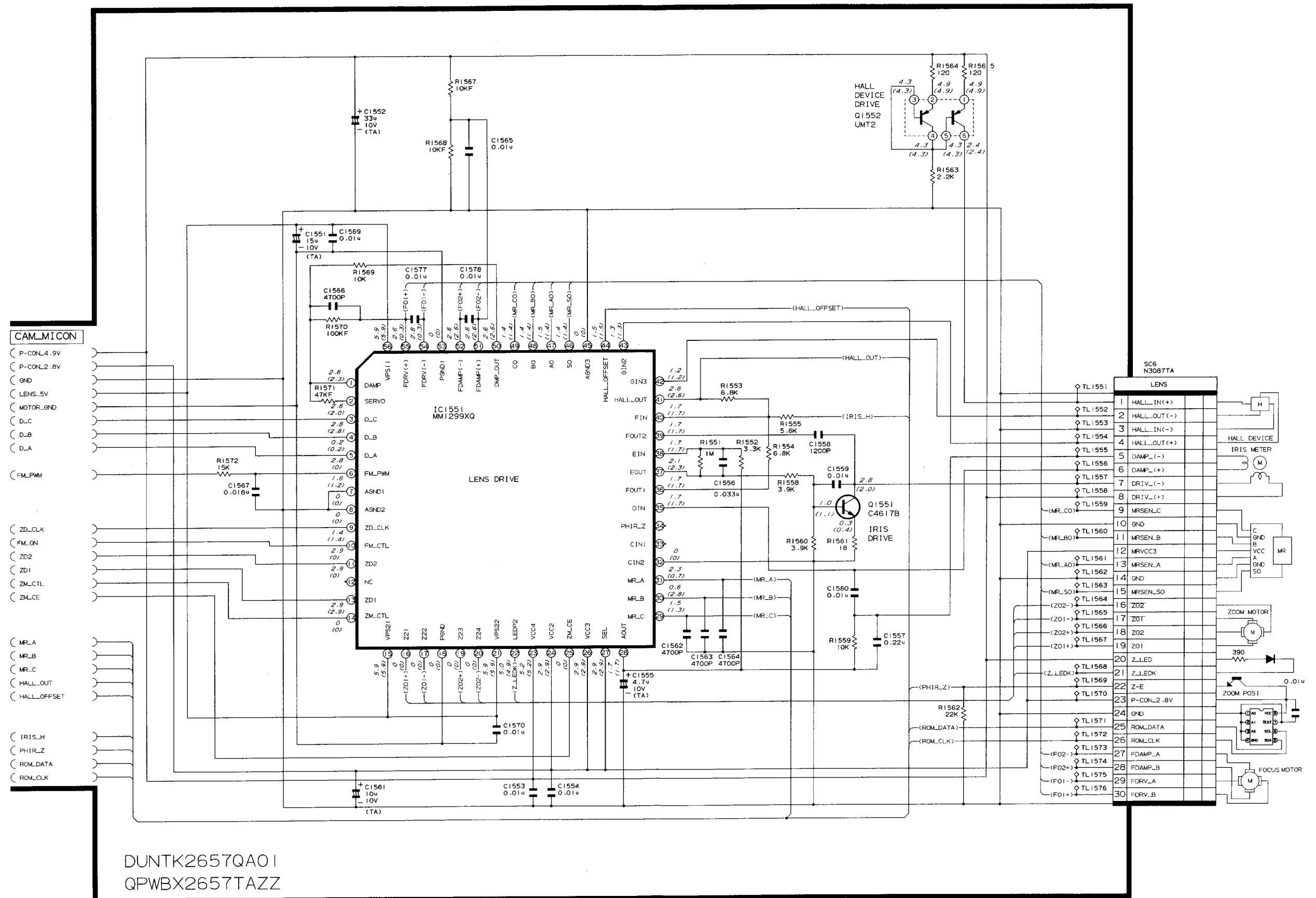
7-15. LCD DISPLAY CIRCUIT SCHEMATIC DIAGRAM

* See Page 7-46 When replacing the IC800



DUNK26550A00
QPWBX2655TAZZ

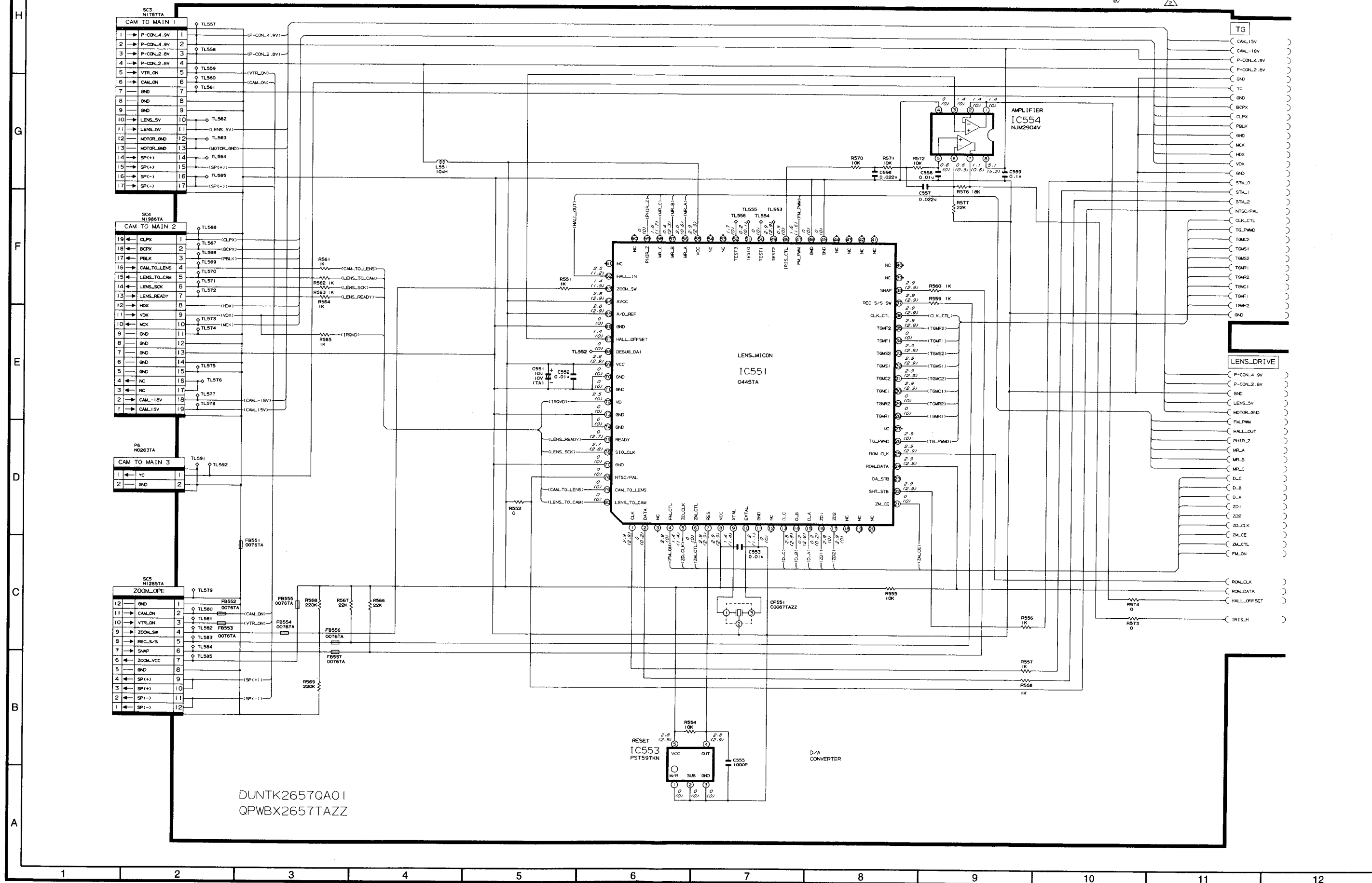
7-5. LENS DRIVE CIRCUIT SCHEMATIC DIAGRAM



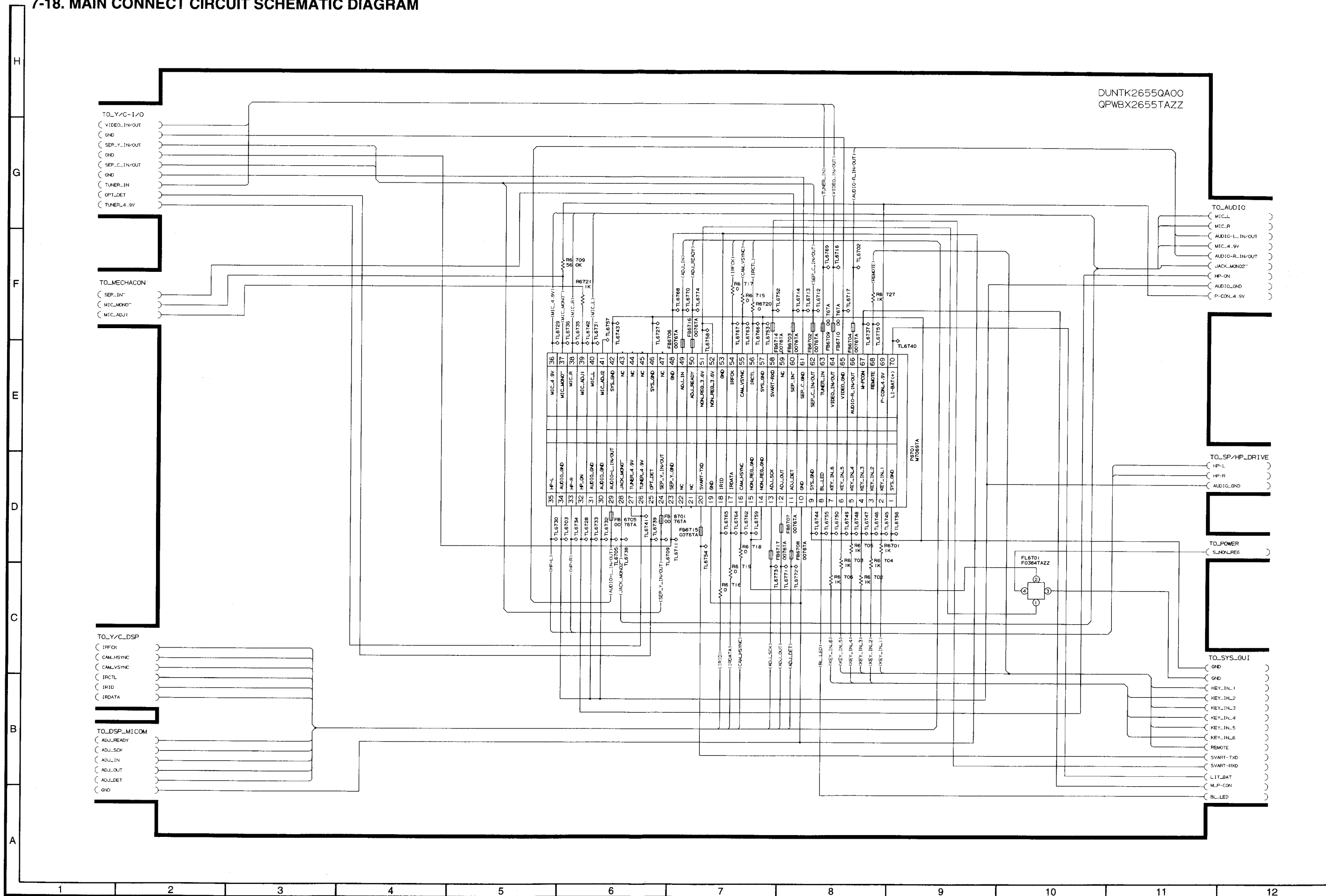
DUNTK2657QA01
QPWBX2657TAZZ

7-6. LENS MICON CIRCUIT SCHEMATIC DIAGRAM

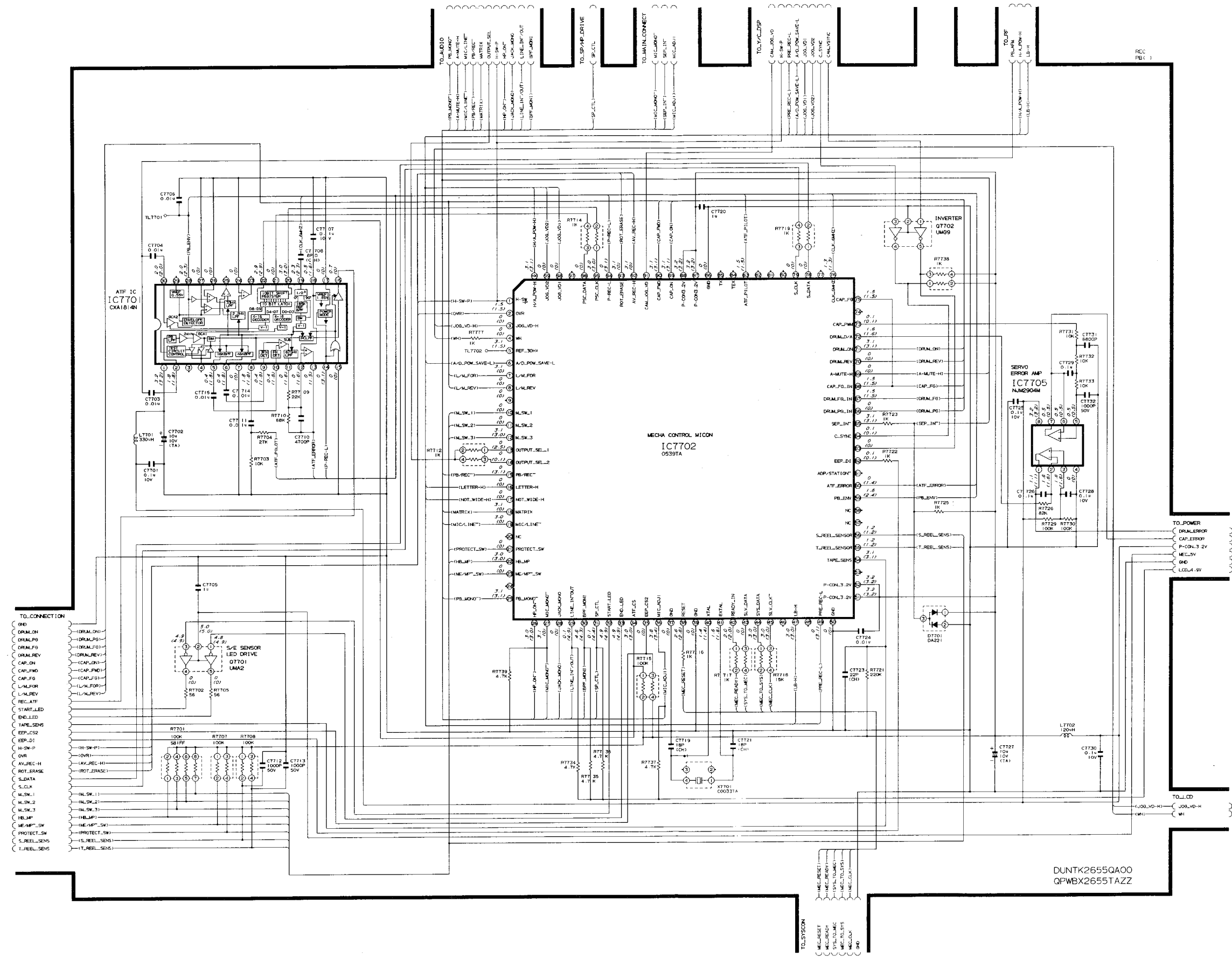
* See Page 7-45 When replacing the IC551



DUNTK2655QA00
QPWBX2655TAZZ



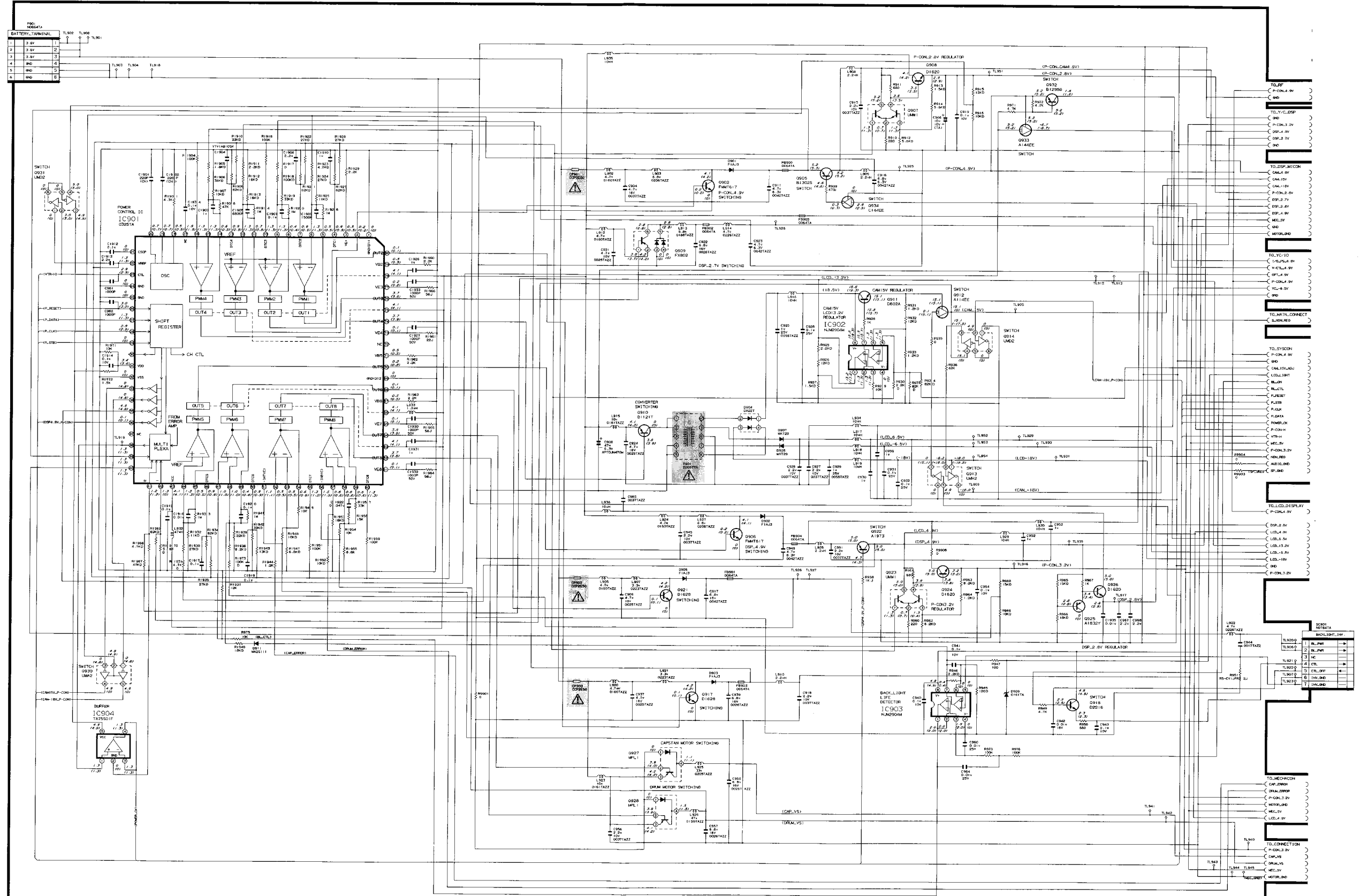
7-13. MECHACON CIRCUIT SCHEMATIC DIAGRAM



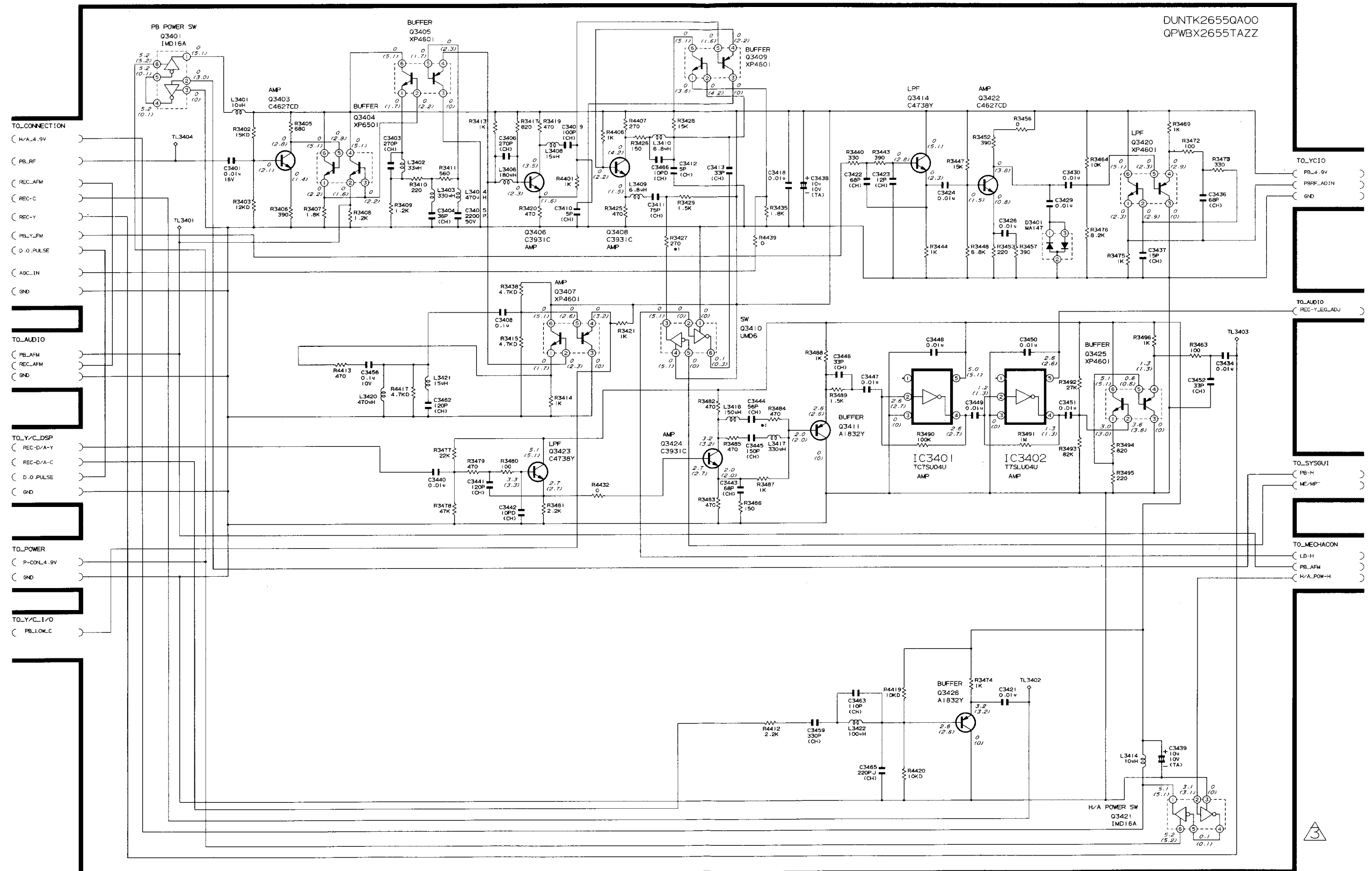
DUNK2655QA00
QPWBX26551AZZ

7-20. POWER CIRCUIT SCHEMATIC DIAGRAM

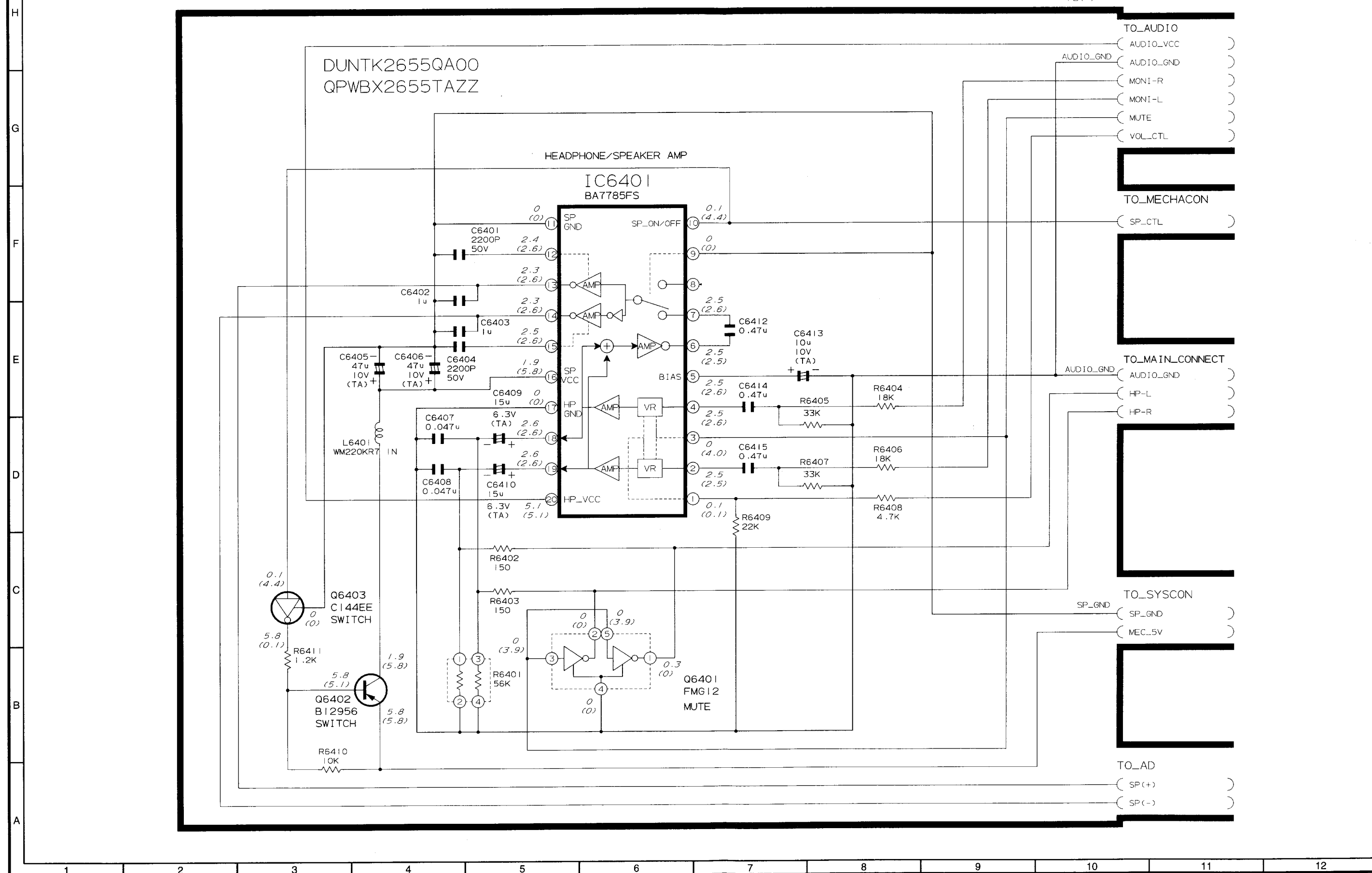
⚠ AND SHADED COMPONENTS=SAFETY RELATED PARTS



7-21. RF CIRCUIT SCHEMATIC DIAGRAM



7-17. SP/HP DRIVE CIRCUIT SCHEMATIC DIAGRAM

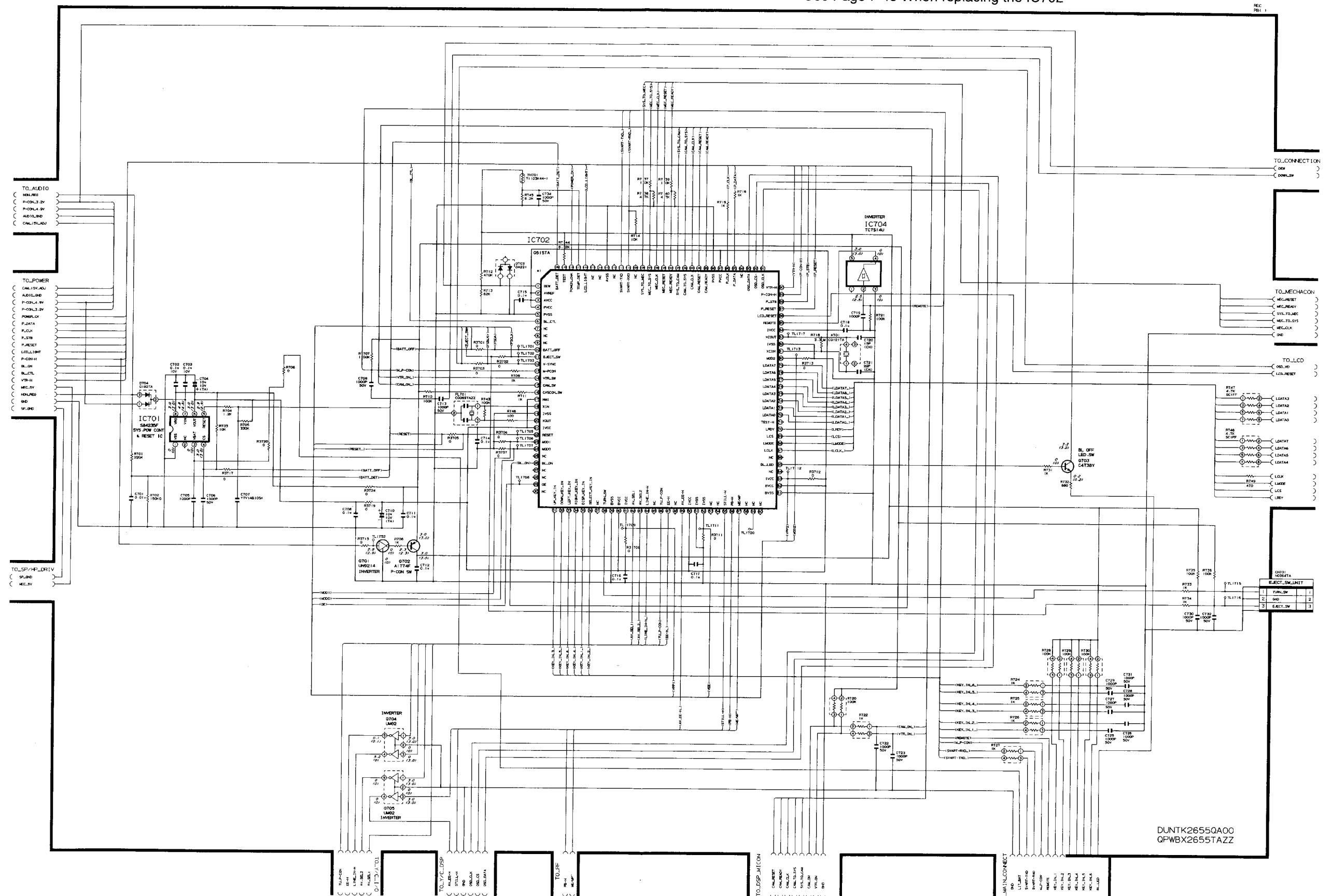


7-16. SYSTEM CONTROL CIRCUIT SCHEMATIC DIAGRAM

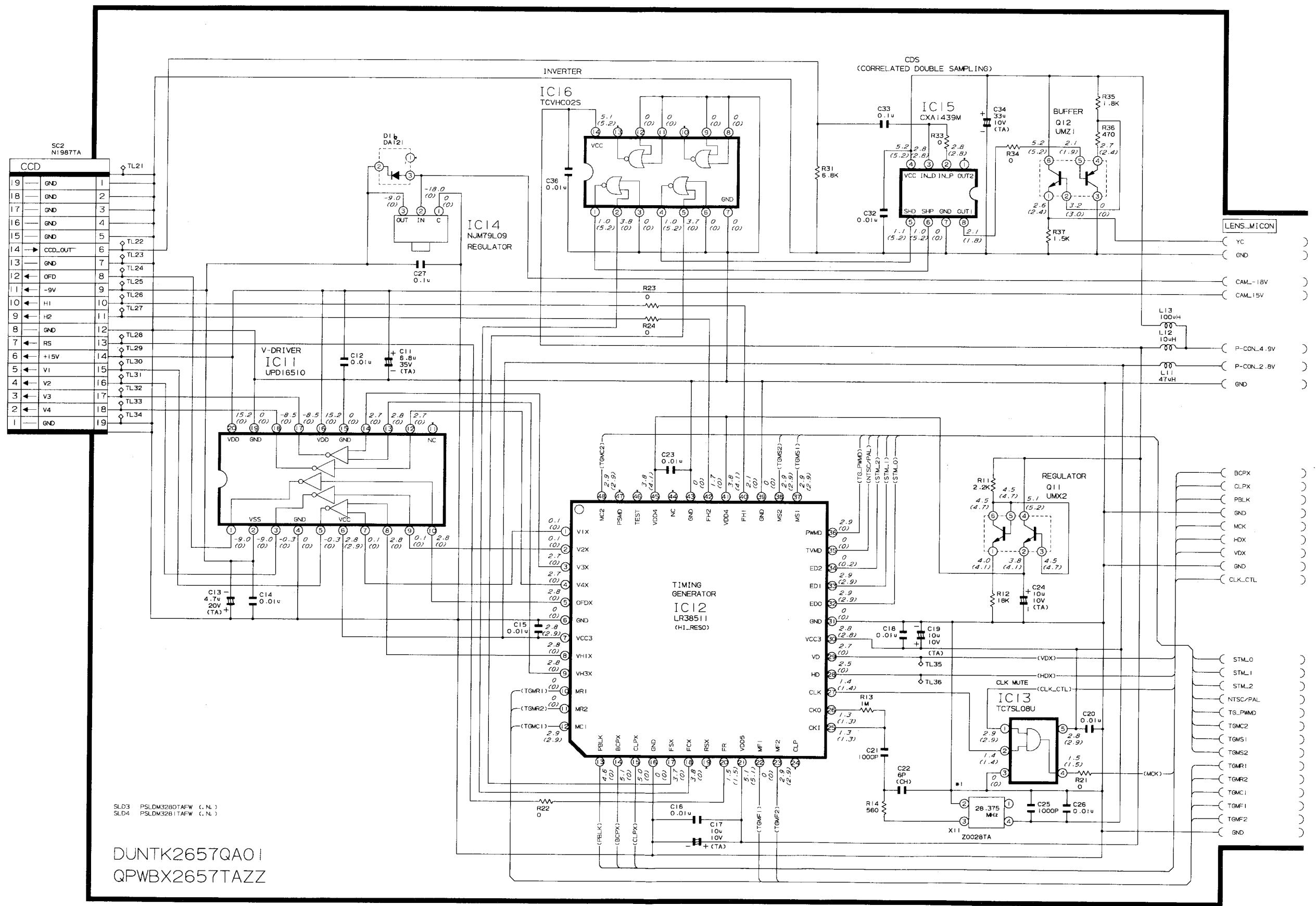
VL-H770S/H
VL-H95E

VL-H770S/H
VL-H95E

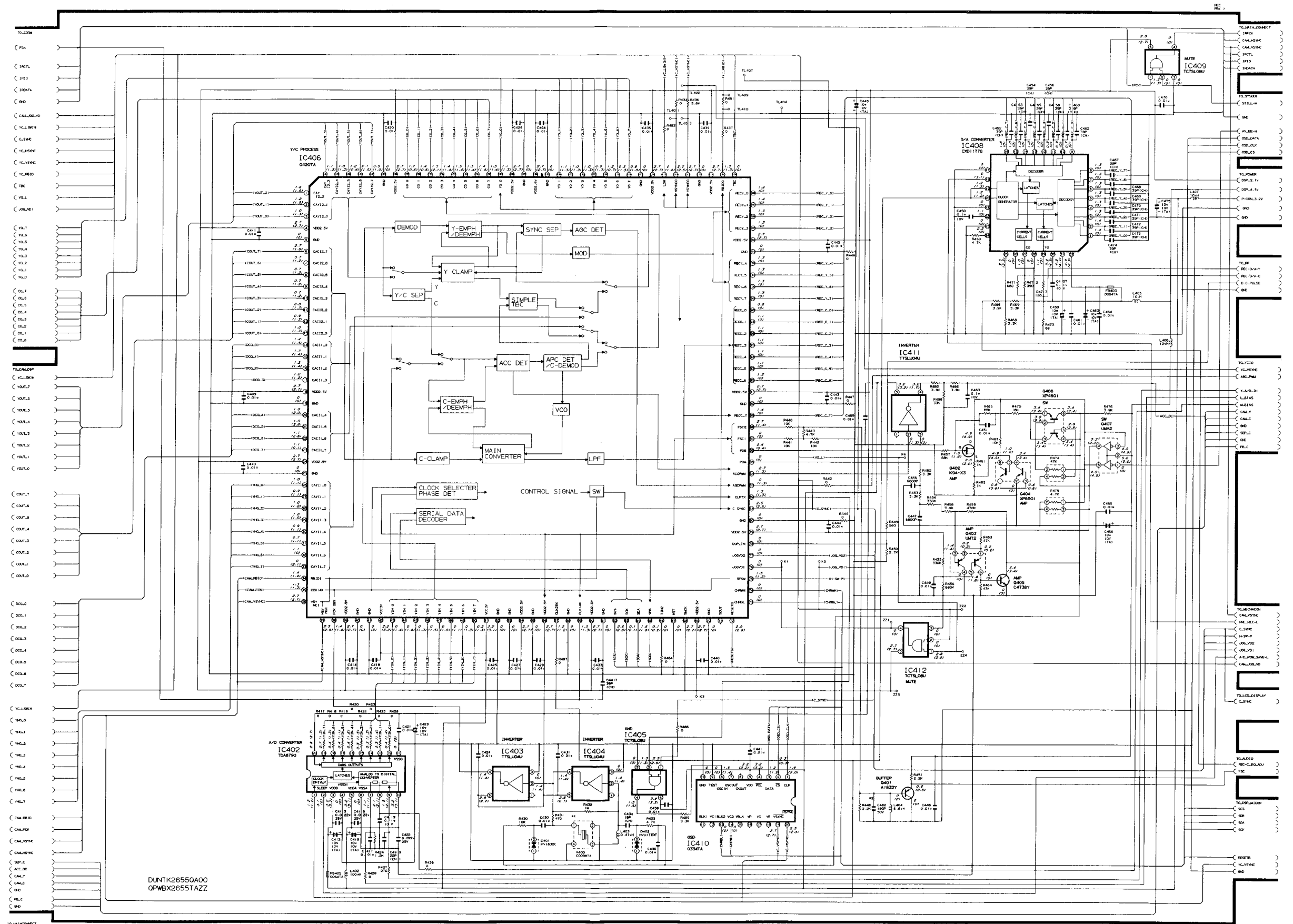
* See Page 7-45 When replacing the IC702



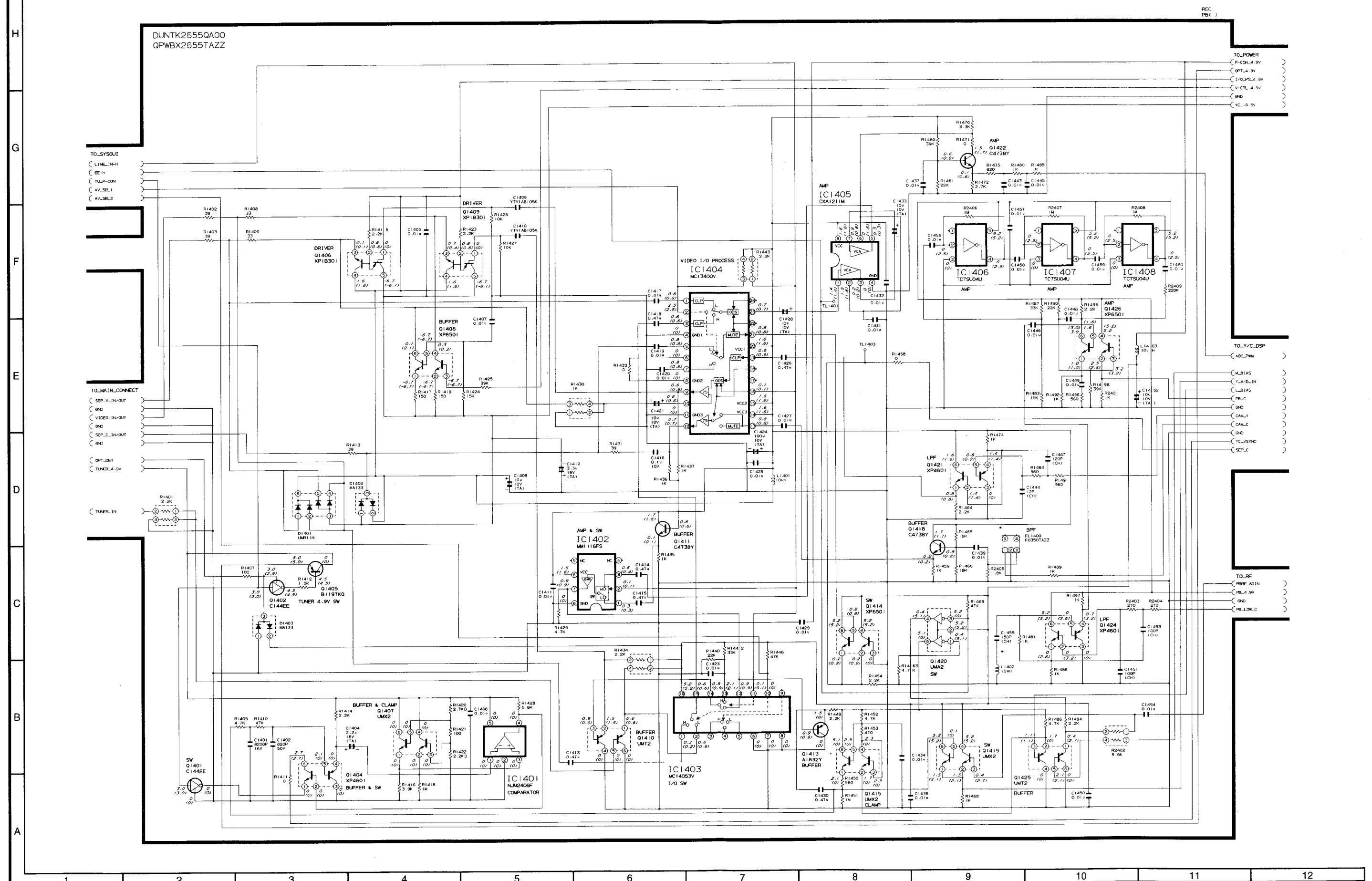
7-4. TG CIRCUIT SCHEMATIC DIAGRAM



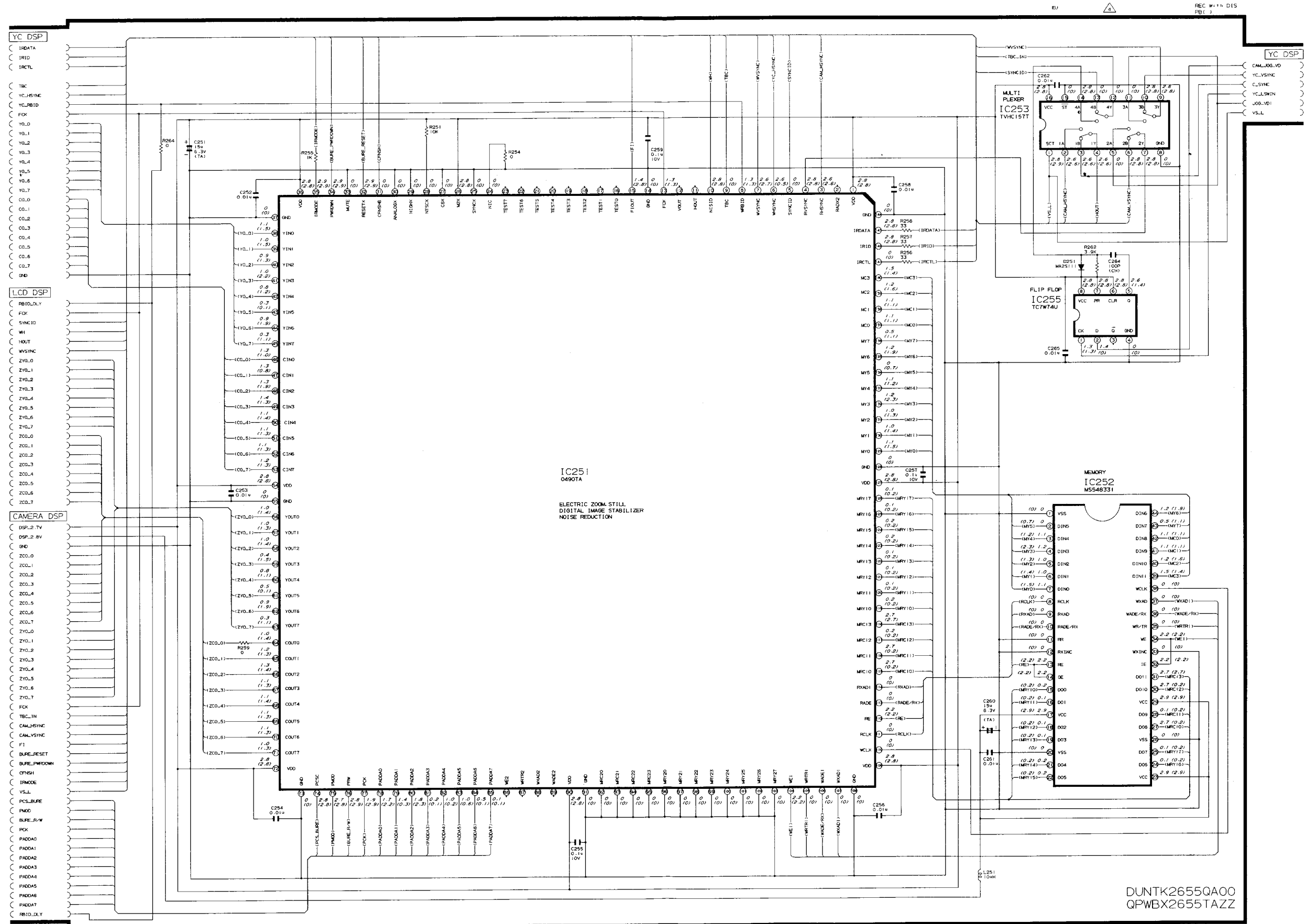
7-12. Y/C DSP CIRCUIT SCHEMATIC DIAGRAM



7-11. Y/C I/O CIRCUIT SCHEMATIC DIAGRAM

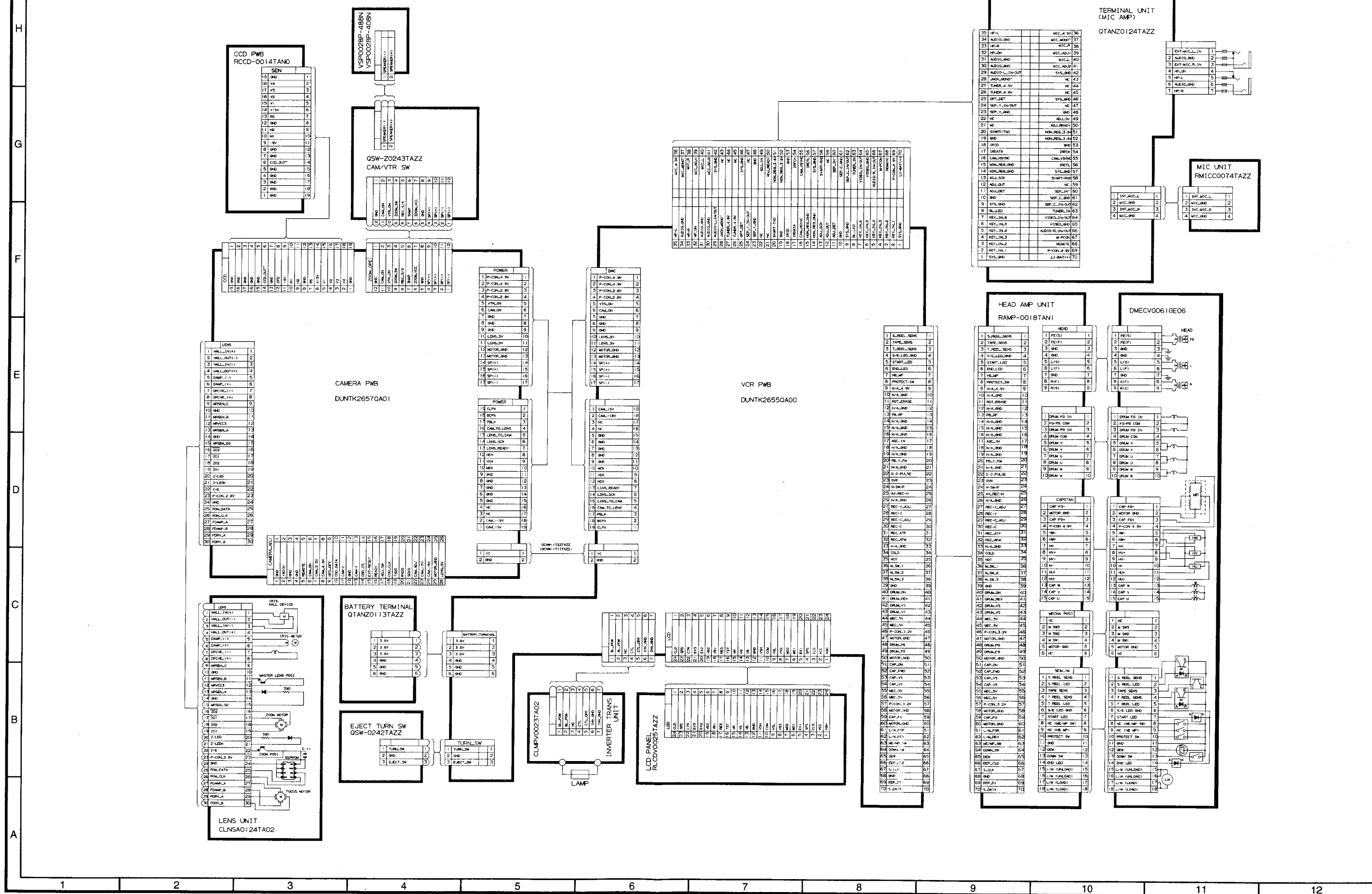


7-9. ZOOM CIRCUIT SCHEMATIC DIAGRAM



7. SCHEMATIC DIAGRAMS

7-1. OVERALL SCHEMATIC DIAGRAM (VL-H770S/H)



10. REPLACEMENT PARTS LIST/ EXPLODED VIEWS

ELECTRICAL PARTS LIST

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	

△ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code
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PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

RCCD-0014TAN0	J	CCD Unit	—
DUNTK2655QA00	J	VCR Unit(VL-H770S/H)	—
DUNTK2655QA02	J	VCR Unit(VL-H95E)	—
DUNTK2657QA01	J	CAMERA Unit	—
RAMP-0018TAN1	J	HEAD AMP Unit	—

RCCD-0014TAN0 CCD UNIT

INTEGRATED CIRCUITS

IC1	VHILZ2463A6-1	J	CCD Sensor	BM
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TRANSISTOR

Q1	VS2SK508///-1	J	Transistor	AE
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DIODE

D1	VHDDA121///-1	J	Diode	AA
----	---------------	---	-------	----

RESISTORS

R2	VRS-CY1JF101J	J	100	1/16W	Metal Oxide	AA
R3	VRS-CY1JF392J	J	3.9k	1/16W	Metal Oxide	AA
R5	VRS-CY1JF473J	J	47k	1/16W	Metal Oxide	AA
R6	VRS-CY1JF105J	J	1M	1/16W	Metal Oxide	AA
R7	VRS-CY1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R8	VRS-CY1JF105J	J	1M	1/16W	Metal Oxide	AA

CAPACITORS

C1	VCKYTQ1CF225Z	J	2.2	16V	Ceramic	AB
C2	VCKYCY1HF103Z	J	0.0	50V	Ceramic	AA
C3	VCSATE1VJ335M	J	3.3	35V	Tantalum	AD
C4	VCCCCY1HH221J	J	220p	50V	CH	AA

Ref. No.	Part No.	★	Description	Code
C5	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C6	VCKYTV1CF105Z	J	1 16V Ceramic	AB
C7	VCKYTV1EB104K	J	0.1 25V Ceramic	AB

DUNTK2655QA00 VCR UNIT(VL-H770S/H) DUNTK2655QA02 VCR UNIT(VL-H95E)

INTEGRATED CIRCUITS

△ CP901	VHiCCP2E50/-1	J	I.C.	AD
△ CP902	VHiCCP2E50/-1	J	I.C.	AD
△ CP903	VHiCCP2E50/-1	J	I.C.	AD
IC101	VHiSN761214-1	J	I.C.	AX
IC201	RH-IX0470TAZZ	J	HG73C002TE	AY
IC202	VHiTCVHC04S-1	J	TC74VHC04FS	AE
IC251	RH-IX0490TAZZ	J	IX0490TA	BB
IC252	VHiMS548331-1	J	MSM548331TS-K	BD
IC253	VHiTVHC157T-1	J	TC74VHC157FT	AG
IC255	VHiTC7W74U/-1	J	TC7W74FU	AD
IC402	VHiTDA8790/-1	J	TDA8790M/C1	AR
IC403	VHiT7SLU04U-1	J	TC7SLU04FU	AF
IC404	VHiT7SLU04U-1	J	TC7SLU04FU	AF
IC405	VHiTC7SL08U-1	J	TC7SL08FU	AF
IC406	RH-IX0420TAZZ	J	I.C.	BG
IC408	VHiCXD1177Q-1	J	CXD1177Q	AS
IC409	VHiTC7SL08U-1	J	TC7SL08FU	AF
IC410	RH-IX0334TAZZ	J	UPD6462GS-615	AP
IC411	VHiT7SLU04U-1	J	TC7SLU04FU	AF
IC412	VHiTC7SL08U-1	J	TC7SL08FU	AF
IC501	RH-IX0544TAZZ	J	I.C.	AX
IC502	VHi24LC8BiN-1	J	24LC08BT-I/SN	AM
IC503	VHiMB8346BV-1	J	MB88346BPFV	AN
IC504	VHiBU4066FV-1	J	BU4066BCFV-E2	AE
IC505	VHiPST597KN-1	J	IC-PST597KNR	AF
IC601	VHiAN2980F/-1	J	AN2980FH	AX
IC602	VHiTC4W66U/-1	J	TC4W66FU	AF
IC604	VHiMB8346BV-1	J	MB88346BPFV	AN
IC701	VHiS84235F/-1	J	S-84235FS-T2	AL
IC702	RH-IX0515TAZZ	J	M31011M8-106VP	AY
IC704	VHiTC7S14U/-1	J	TC7S14FU	AE
IC800	RH-IX0422TAZZ	J	HG51D312TE	AZ
IC801	VHiNJM2107F-1	J	NJM2107F	AE
IC802	VHiMM1323XJ-1	J	MM1323XJFK	AT
IC803	VHiTC7W74U/-1	J	TC7W74FU	AD
IC901	RH-IX0325TAZZ	J	MB4484PFV-G	AY
IC902	VHiNJM2904M-1	J	NJM2904M	AE
IC903	VHiNJM2904M-1	J	NJM2904M	AE
IC904	VHiTA75S01F-1	J	TA75S01F	AD
IC1401	VHiNJM2406F-1	J	NJM2406F	AD

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
IC1402	VHiMM1116FS-1	J	MM1116XWBE	AG	Q917	VS2SD1628//-1	J	Transistor	AE
IC1403	VHiMC14053V-1	J	MC14053BDT	AF	Q918	VS2SD2216//-1	J	Transistor	AA
IC1404	VHiMC13400V-1	J	MC13400AVM	AM	Q921	VS2SD1628//-1	J	Transistor	AE
IC1405	VHiCXA1211M-1	J	CXA1211M	AH	Q922	VS2SA1973//-1	J	Transistor	AD
IC1406	VHiTC7SU04U-1	J	TC7SU04FU	AD	Q923	VSUMW1/////1	J	Transistor	AB
IC1407	VHiTC7SU04U-1	J	TC7SU04FU	AD	Q924	VS2SD1620//-1	J	Transistor	AC
IC1408	VHiTC7SU04U-1	J	TC7SU04FU	AD	Q925	VS2SA1832Y/-1	J	Transistor	AA
IC3401	VHiTC7SU04U-1	J	TC7SU04FU	AD	Q926	VS2SD1620//-1	J	Transistor	AC
IC3402	VHiT7SLU04U-1	J	TC7SLU04FU	AF	Q927	VSMPL1/////1	J	Transistor	AE
IC6401	VHiBA7785FS-1	J	BA7785FS	AN	Q928	VSMPL1/////1	J	Transistor	AE
IC7701	VHiCXA1814N-1	J	CXA1814N-T4	AQ	Q930	VSUMA2/////1	J	Transistor	AB
IC7702	RH-IX0539TAZZ	J	I.C.	AX	Q931	VSUMD2/////1	J	Transistor	AC
IC7705	VHiNJM2904M-1	J	NJM2904M	AE	Q932	VS2SB12956/-1	J	Transistor	AB
IC8701	RH-IX0491TAZZ	J	SRM20V100LLKX7	AX	Q933	VSDTA144EE/-1	J	Transistor	AA
TRANSISTORS					Q934	VSDTC144EE/-1	J	Transistor	AA
Q101	VS2SC4617B/-1	J	Transistor	AA	Q1401	VSDTC144EE/-1	J	Transistor	AA
Q201	VSUMT2/////1	J	Transistor	AB	Q1402	VSDTC144EE/-1	J	Transistor	AA
Q202	VSUMX2/////1	J	Transistor	AB	Q1404	VSXP4601///-1	J	Transistor	AB
Q401	VS2SA1832Y/-1	J	Transistor	AA	Q1405	VS2SB1197KQ-1	J	Transistor	AC
Q402	VS2SK94-X3/-1	J	Transistor	AC	Q1406	VSXP1B301///-1	J	Transistor	AD
Q403	VSUMT2/////1	J	Transistor	AB	Q1407	VSUMX2/////1	J	Transistor	AB
Q404	VSXP6501///-1	J	Transistor	AB	Q1408	VSXP6501///-1	J	Transistor	AB
Q405	VS2SC4738Y/-1	J	Transistor	AA	Q1409	VSXP1B301///-1	J	Transistor	AD
Q406	VSXP4601///-1	J	Transistor	AB	Q1410	VSUMT2/////1	J	Transistor	AB
Q407	VSUMA2/////1	J	Transistor	AB	Q1411	VS2SC4738Y/-1	J	Transistor	AA
Q601	VSFMG12/////1	J	Transistor	AD	Q1413	VS2SA1832Y/-1	J	Transistor	AA
Q602	VSUMT2/////1	J	Transistor	AB	Q1414	VSXP6501///-1	J	Transistor	AB
Q603	VSUMD12N///-1	J	Transistor	AC	Q1415	VSUMX2/////1	J	Transistor	AB
Q604	VS2SC4738Y/-1	J	Transistor	AA	Q1418	VS2SC4738Y/-1	J	Transistor	AA
Q605	VSDTC144EE/-1	J	Transistor	AA	Q1419	VSUMX2/////1	J	Transistor	AB
Q607	VSHN1B01FU/-1	J	Transistor	AC	Q1420	VSUMA2/////1	J	Transistor	AB
Q701	VSUN9214///-1	J	Transistor	AB	Q1421	VSXP4601///-1	J	Transistor	AB
Q702	VS2SA1774F/-1	J	Transistor	AA	Q1422	VS2SC4738Y/-1	J	Transistor	AA
Q703	VS2SC4738Y/-1	J	Transistor	AA	Q1424	VSXP4601///-1	J	Transistor	AB
Q704	VSUMG2/////1	J	Transistor	AC	Q1425	VSUMT2/////1	J	Transistor	AB
Q705	VSUMG2/////1	J	Transistor	AC	Q1426	VSXP6501///-1	J	Transistor	AB
Q902	VSFMMT617///-1	J	Transistor	AE	Q3401	VSiMD16A///-1	J	Transistor	AD
Q905	VS2SB1302S/-1	J	Transistor	AD	Q3403	VS2SC4627CD-1	J	Transistor	AB
Q906	VSFMMT617///-1	J	Transistor	AE	Q3404	VSXP6501///-1	J	Transistor	AB
Q907	VSUMW1/////1	J	Transistor	AB	Q3405	VSXP4601///-1	J	Transistor	AB
Q908	VS2SD1620//-1	J	Transistor	AC	Q3406	VS2SC3931C/-1	J	Transistor	AB
Q909	VAFX802/////1	J	Transistor	AG	Q3407	VSXP4601///-1	J	Transistor	AB
Q910	VS2SB1121T/-1	J	Transistor	AC	Q3408	VS2SC3931C/-1	J	Transistor	AB
Q911	VS2SD602A//-1	J	Transistor	AB	Q3409	VSXP4601///-1	J	Transistor	AB
Q912	VSDTA114EE/-1	J	Transistor	AB	Q3410	VSUMD6/////1	J	Transistor	AC
Q913	VSUMH2/////1	J	Transistor	AC	Q3411	VS2SA1832Y/-1	J	Transistor	AA
Q914	VSUMD2/////1	J	Transistor	AC	Q3414	VS2SC4738Y/-1	J	Transistor	AA
					Q3420	VSXP4601///-1	J	Transistor	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
Q3421	VSiMD16A///-1	J	Transistor	AD	L101	VPAXM100KR42N J	Peaking 10μH 10%	AC	
Q3422	VS2SC4627CD/-1	J	Transistor	AB	L102	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
Q3423	VS2SC4738Y/-1	J	Transistor	AA	L202	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
Q3424	VS2SC3931C/-1	J	Transistor	AB	L203	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
Q3425	VSXP4601///-1	J	Transistor	AB	L204	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
Q3426	VS2SA1832Y/-1	J	Transistor	AA	L251	VPAXM100KR42N J	Peaking 10μH 10%	AC	
Q6401	VSFMG12///-1	J	Transistor	AD	L402	VPABM101J160N J	Peaking 100μH 5%	AC	
Q6402	VS2SB12956/-1	J	Transistor	AB	L403	VPAWMR47KR30NJ	Peaking 0.47μH 10%	AC	
Q6403	VSDTC144EE/-1	J	Transistor	AA	L404	VPABM6R8J2R0N J	Peaking 6.8μH 5%	AC	
Q7701	VSUMA2/////1	J	Transistor	AB	L405	VPAXM100KR42N J	Peaking 10μH 10%	AC	
Q7702	VSUMG9/////1	J	Transistor	AC	L406	VPAXM100KR42N J	Peaking 10μH 10%	AC	
DIODES AND LED'S					L407	VPAXM100KR42N J	Peaking 10μH 10%	AC	
D251	VHDMA2S111/-1	J	Diode	AC	L501	VPAXM100KR42N J	Peaking 10μH 10%	AC	
D401	VHDKV1832C/-1	J	Diode	AE	L502	VPAXM100KR42N J	Peaking 10μH 10%	AC	
D402	VHDHVU17TRF-1	J	Diode	AE	L601	VP-NM101K4R2N J	Peaking 100μH 10%	AC	
D601	VHDMA2S111/-1	J	Diode	AC	L602	VP-NM101K4R2N J	Peaking 100μH 10%	AC	
D703	VHDDA221///-1	J	Diode	AB	L800	VPAWM470J6R4N J	Peaking 47μH 5%	AC	
D704	RH-DX0182TAZZ	J	Diode	AD	L801	VPAWM270J3R9N J	Peaking 27μH 5%	AC	
D800	VHDHVU359TR-1	J	Diode	AE	L802	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D801	RH-EX0870CEZZ	J	Zener Diode	AD	L803	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D802	RH-EX0210TAZZ	J	Zener Diode	AD	L804	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D901	VHDF1AJ3///-1	J	Diode	AE	L805	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D902	VHDF1AJ3///-1	J	Diode	AE	L806	VPAXM100KR42N J	Peaking 10μH 10%	AC	
D903	VHDF1AJ3///-1	J	Diode	AE	L807	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D904	VHDDA227///-1	J	Diode	AB	L808	VPAWM100J2R6N J	Peaking 10μH 5%	AC	
D905	VHDMA729///-1	J	Diode	AD	L902	RCiLP0160TAZZ J	Coil	AE	
D906	VHDF1AJ3///-1	J	Diode	AE	L903	RCiLP0206TAZZ J	Coil	AE	
D907	VHDMA729///-1	J	Diode	AD	L905	RCiLP0160TAZZ J	Coil	AE	
D909	RH-EX0161TAZZ	J	Zener Diode	AD	L907	RCiLP0223TAZZ J	Coil	AE	
D911	VHDMA2S111/-1	J	Diode	AC	L908	VPAXM2R2MR16NJ	Peaking 2.2μH 20%	AC	
D1401	VHDUMR11N//1	J	Diode	AC	L909	VPAXM2R2MR16NJ	Peaking 2.2μH 20%	AC	
D1402	VHDMA133///-1	J	Diode	AB	L910	VPAXM2R2MR16NJ	Peaking 2.2μH 20%	AC	
D1403	VHDMA133///-1	J	Diode(VL-H770S/H)	AB	L912	RCiLP0160TAZZ J	Coil	AE	
D3401	VHDMA147///-1	J	Diode	AB	L913	RCiLP0188TAZZ J	Coil	AD	
D7701	VHDDA221///-1	J	Diode	AB	L914	RCiLP0226TAZZ J	Coil	AE	
PACKAGED CIRCUITS					L915	RCiLP0161TAZZ J	Coil	AE	
TH701	VHHT1103K44-1	J	Thermistor	AD	L916	VPAXM100KR42N J	Peaking 10μH 10%	AC	
X400	RCRSC0098TAZZ	J	Crystal	AR	L917	VPAXM100KR42N J	Peaking 10μH 10%	AC	
X701	RCRSC0121TAZZ	J	Crystal	AH	L918	VPAXM100KR42N J	Peaking 10μH 10%	AC	
X7701	RCRSC0033TAZZ	J	Crystal	AG	L919	VPAXM100KR42N J	Peaking 10μH 10%	AC	
COIL AND TRANSFORMERS					L920	RCiLP0160TAZZ J	Coil	AE	
CF501	RFiLC0067TAZZ	J	Filter	AE	L921	RCiLP0223TAZZ J	Coil	AE	
FL701	RFiLC0069TAZZ	J	Filter	AF	L922	RCiLP0226TAZZ J	Coil	AE	
FL1400	RCiLF0350TAZZ	J	Coil	AG	L923	RCiLP0161TAZZ J	Coil	AE	
FL6701	RCiLF0364TAZZ	J	Coil	AG	L924	RCiLP0160TAZZ J	Coil	AE	
					L925	RCiLP0205TAZZ J	Coil	AE	
					L926	RCiLP0159TAZZ J	Coil	AF	
					L927	RCiLP0206TAZZ J	Coil	AE	

VL-H770S/H
VL-H95E

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
L928	VPAXM2R2MR16NJ		Peaking 2.2μH 20%	AC	C121	VCKYCZ1HB102K J	1000p	50V Ceramic	AB
L929	VPAXM100KR42N J		Peaking 10μH 10%	AC	C122	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L930	VPAXM100KR42N J		Peaking 10μH 10%	AC	C123	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L932	VPAXM470K1R7N J		Peaking 47μH 10%	AC	C124	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L933	VPABM1R2JR90N J		Peaking 1.2μH 5%	AC	C126	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L934	VPAXM100KR42N J		Peaking 10μH 10%	AC	C201	VCSATA1AJ106M J	10	10V Tantalum	AC
L935	VPAXM100KR42N J		Peaking 10μH 10%	AC	C202	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L936	VPAXM100KR42N J		Peaking 10μH 10%	AC	C203	VCSATA1AJ106M J	10	10V Tantalum	AC
L1401	VPAXM100KR42N J		Peaking 10μH 10%	AC	C204	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L1402	VPAXM100KR42N J		Peaking 10μH 10%	AC	C206	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L1403	VPAXM100KR42N J		Peaking 10μH 10%	AC	C207	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3401	VPAXM100KR42N J		Peaking 10μH 10%	AC	C208	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3402	VPABM330J5R3N J		Peaking 33μH 5%	AC	C209	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3403	VPAEM331J210N J		Peaking 330μH 5%	AC	C210	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L3404	VPAEM471J250N J		Peaking 470μH 5%	AC	C212	VCSATA1AJ106M J	10	10V Tantalum	AC
L3406	VPAEM181J130N J		Peaking 180μH 5%	AC	C213	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3408	VPABM150J3R3N J		Peaking 15μH 5%	AC	C214	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3409	VPABM6R8J2R0N J		Peaking 6.8μH 5%	AC	C215	VCSATA1AJ106M J	10	10V Tantalum	AC
L3410	VPABM6R8J2R0N J		Peaking 6.8μH 5%	AC	C216	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
L3414	VPAXM100KR42N J		Peaking 10μH 10%	AC	C218	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L3416	VPAEM151J110N J		Peaking 150μH 5%	AC	C219	VCCCCZ1HH220J J	22p	50V Ceramic	AB
L3417	VPAEM331J210N J		Peaking 330μH 5%	AC	C220	VCCCCZ1HH220J J	22p	50V Ceramic	AB
L3420	VPAEM471J250N J		Peaking 470μH 5%	AC	C221	VCKYTV1CF105Z J	1.0	16V Ceramic	AB
L3421	VPABM150J3R3N J		Peaking 15μH 5%	AC	C251	VCSATA0JJ156M J	15	6.3V Tantalum	AC
L3422	VPABM101J160N J		Peaking 100μH 5%	AC	C252	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L6401	VP-WM220KR71N J		Peaking 22μH 10%	AB	C253	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L7701	VPAEM331J210N J		Peaking 330μH 5%	AC	C254	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
L7702	VPAEM121J9R0N J		Peaking 120μH 5%	AC	C255	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
△ T901	RTRNZ0097TAZZ J		Transformer	AK	C256	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
CAPACITORS					C257	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
C102	VCKYCZ1EF223Z J	0.022	25V Ceramic	AB	C258	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C103	VCKYTV1AB105K J	1.0	10V Ceramic	AD	C259	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB
C104	VCKYTV1AB105K J	1.0	10V Ceramic	AD	C260	VCSATA0JJ156M J	15	6.3V Tantalum	AC
C105	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB	C261	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C106	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C262	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C107	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C264	VCCCCZ1HH101J J	100p	50V Ceramic	AB
C108	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C265	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C109	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C409	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C110	VCCCCZ1HH470J J	47p	50V Ceramic	AB	C410	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C111	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB	C411	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C112	VCKYCY1AF105Z J	1.0	10V Ceramic	AC	C412	VCSATA1AJ106M J	10	10V Tantalum	AC
C113	VCSATA1AJ106M J	10	10V Tantalum	AC	C413	VCKYCZ1EF223Z J	0.022	25V Ceramic	AB
C114	VCSATE1AJ336M J	33	10V Tantalum	AG	C414	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C115	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C415	VCSATA1AJ106M J	10	10V Tantalum	AC
C116	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C416	VCKYCZ1EF223Z J	0.022	25V Ceramic	AB
C117	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C417	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
C118	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB	C418	VCKYCZ1HF103Z J	0.01	50V Ceramic	AB
					C419	VCKYCZ1AF104Z J	0.1	10V Ceramic	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C420	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C468	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C421	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C469	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C422	VCKYCZ1EF223Z	J 0.022	25V Ceramic	AB	C470	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C423	VCSATA1AJ106M	J 10	10V Tantalum	AC	C471	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C424	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C472	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C425	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C473	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C426	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C474	VCCCCZ1HH390J	J 39p	50V Ceramic	AB
C427	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C475	VCSATA1AJ106M	J 10	10V Tantalum	AC
C428	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C476	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C429	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C482	VCCCCZ1HH181J	J 180p	50V Ceramic	AB
C430	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C483	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C431	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C485	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C433	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C499	VCCCCZ1HH220J	J 22p	50V Ceramic	AB
C434	VCCCCZ1HH180J	J 18p	50V Ceramic	AB	C501	VCSATA1AJ106M	J 10	10V Tantalum	AC
C435	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C502	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C436	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C503	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C437	VCKYCZ1HB681K	J 680p	50V Ceramic	AB	C504	VCSATA1AJ106M	J 10	10V Tantalum	AC
			(VL-H95E)		C505	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C438	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C506	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C439	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C601	VCKYTV1CF225Z	J 2.2	16V Ceramic	AC
C440	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C602	VCKYTV1CF225Z	J 2.2	16V Ceramic	AC
C441	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C609	VCKYCY1AF105Z	J 1.0	10V Ceramic	AC
C442	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C610	VCKYCY1AF105Z	J 1.0	10V Ceramic	AC
C443	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C612	VCSAPD0JJ225M	J 2.2	6.3V Tantalum	AD
C444	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C613	VCSATE0JJ226M	J 22	6.3V Tantalum	AD
C445	VCSATA1AJ106M	J 10	10V Tantalum	AC	C614	VCKYCZ1EB682K	J 6800p	25V Ceramic	AB
C446	VCKYCZ1EB682K	J 6800p	25V Ceramic	AB	C615	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C447	VCKYCZ1EB682K	J 6800p	25V Ceramic	AB	C616	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C448	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C617	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C449	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C618	VCSAPD1AJ225M	J 2.2	10V Tantalum	AC
C450	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C619	VCKYCZ1HB122K	J 1200p	50V Ceramic	AB
C451	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C620	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C452	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C621	VCCCCZ1HH220J	J 22p	50V Ceramic	AB
C453	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C622	VCSAPD1AJ225M	J 2.2	10V Tantalum	AC
C454	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C623	VCKYTV1CB474K	J 0.47	16V Ceramic	AC
C455	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C624	VCKYCZ1CB103K	J 0.01	16V Ceramic	AB
C456	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C625	VCSAPD1AJ225M	J 2.2	10V Tantalum	AC
C457	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C626	VCSATE0JJ476M	J 47	6.3V Tantalum	AF
C458	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C627	VCKYTV1CB474K	J 0.47	16V Ceramic	AC
C459	VCSATA1AJ106M	J 10	10V Tantalum	AC	C628	VCKYCZ1EB472K	J 4700p	25V Ceramic	AB
C460	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C629	VCKYTV1CB224K	J 0.22	16V Ceramic	AB
C461	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C630	VCSATE0JJ336M	J 33	6.3V Tantalum	AD
C462	VCCCCY1HH390J	J 39p	50V Ceramic	AA	C631	VCSATA0JJ156M	J 15	6.3V Tantalum	AC
C463	VCSATA1AJ106M	J 10	10V Tantalum	AC	C632	VCSATE0JJ226M	J 22	6.3V Tantalum	AD
C464	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C633	VCSAPD0JJ225M	J 2.2	6.3V Tantalum	AD
C465	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C634	VCSAPD1AJ225M	J 2.2	10V Tantalum	AC
C466	VCSATA1AJ106M	J 10	10V Tantalum	AC	C635	VCKYTV1CB474K	J 0.47	16V Ceramic	AC
C467	VCCCCZ1HH390J	J 39p	50V Ceramic	AB	C636	VCKYCZ1CB103K	J 0.01	16V Ceramic	AB

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Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C637	VCSAPD1AJ225M	J 2.2	10V Tantalum	AC	C801	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C638	VCSATE0JJ476M	J 47	6.3V Tantalum	AF	C802	VCCCCY1EH561J	J 560p	25V Ceramic	AA
C639	VCKYTV1CB474K	J 0.47	16V Ceramic	AC	C803	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C640	VCKYCZ1EB472K	J 4700p	25V Ceramic	AB	C804	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C641	VCSATC1AJ476M	J 47	10V Tantalum	AE	C805	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C642	VCKYTV1CB224K	J 0.22	16V Ceramic	AB	C806	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C643	VCSATE0JJ336M	J 33	6.3V Tantalum	AD	C807	VCSATA1AJ106M	J 10	10V Tantalum	AC
C644	VCSATE0JJ336M	J 33	6.3V Tantalum	AD	C808	VCSATA1AJ106M	J 10	10V Tantalum	AC
C645	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C809	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB
C646	VCSATC1AJ476M	J 47	10V Tantalum	AE	C810	VCCCCZ1HH820J	J 82p	50V Ceramic	AB
C647	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C811	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C648	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C812	VCCCCZ1HH220J	J 22p	50V Ceramic	AB
C649	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C813	VCCCCZ1HH560J	J 56p	50V Ceramic	AB
C650	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C814	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB
C699	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C815	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C701	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C816	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C702	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C817	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C703	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB	C818	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C704	VCSATA1AJ106M	J 10	10V Tantalum	AC	C819	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C705	VCKYCY1HB102K	J 1000p	50V Ceramic	AA	C820	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C706	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C821	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C707	VCKYTV1AB105K	J 1.0	10V Ceramic	AD	C822	VCSATA1AJ106M	J 10	10V Tantalum	AC
C708	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C823	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB
C709	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C826	VCCCCZ1HH470J	J 47p	50V Ceramic	AB
C710	VCSATA1AJ106M	J 10	10V Tantalum	AC	C827	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C711	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C828	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C712	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C829	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C713	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C830	VCKYCZ1AF104Z	J 0.1	10V Ceramic	AB
C714	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C831	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C715	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C832	VCSATA1AJ106M	J 10	10V Tantalum	AC
C716	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C833	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C717	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C834	VCCCCZ1HH221J	J 220p	50V Ceramic	AB
C718	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	C835	VCSATE1CJ106M	J 10	16V Tantalum	AD
C719	VCKYCZ1HF102Z	J 1000p	50V Ceramic	AC	C836	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C720	VCCCCZ1HH150J	J 15p	50V Ceramic	AB	C837	VCSATC1AJ476M	J 47	10V Tantalum	AE
C721	VCCCCZ1HH220J	J 22p	50V Ceramic	AB	C838	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C722	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C839	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C723	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C840	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C725	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C841	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C726	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C842	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C727	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C843	VCKYTQ1CB105K	J 1.0	16V Ceramic	AC
C728	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C844	VCKYTQ1CB105K	J 1.0	16V Ceramic	AC
C729	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C845	VCKYTQ1CB105K	J 1.0	16V Ceramic	AC
C730	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C846	VCSATA1CJ225M	J 2.2	16V Tantalum	AC
C731	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C847	VCSATC1CJ226M	J 22	16V Tantalum	AF
C732	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C848	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB
C734	VCKYCZ1HB102K	J 1000p	50V Ceramic	AB	C849	VCSATC1CJ226M	J 22	16V Tantalum	AF
C800	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB	C850	VCKYCZ1HF103Z	J 0.01	50V Ceramic	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C852	VCSATE1DJ475M	J	4.7 20V Tantalum	AD	C960	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C853	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC	C961	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C855	VCSATA1VJ105M	J	1.0 35V Tantalum	AC	C962	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C857	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C964	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C858	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C965	RC-KZ0037TAZZ	J	Capacitor	AD
C859	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C966	VCSATA1AJ106M	J	10 10V Tantalum	AC
C860	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C967	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC
C861	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C968	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC
C863	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C1401	VCKYCZ1CB822K	J	8200p 16V Ceramic	AB
C864	VCKYTV1EB104K	J	0.1 25V Ceramic	AB	C1402	VCKYCZ1HB821K	J	820p 50V Ceramic	AC
C904	RC-KZ0037TAZZ	J	Capacitor	AD	C1404	VCSATA1CJ225M	J	2.2 16V Tantalum	AC
C908	VCEAPT0JN476M	J	47 6.3V Electrolytic	AC	C1405	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C909	RC-KZ0025TAZZ	J	Capacitor	AD	C1406	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C911	RC-KZ0042TAZZ	J	Capacitor	AE	C1407	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C915	RC-KZ0037TAZZ	J	Capacitor	AD	C1408	VCSATA1AJ106M	J	10 10V Tantalum	AC
C916	RC-KZ0042TAZZ	J	Capacitor	AE	C1409	VCKYTV1AB105K	J	1.0 10V Ceramic	AD
C917	RC-KZ0042TAZZ	J	Capacitor	AE	C1410	VCKYTV1AB105K	J	1.0 10V Ceramic	AD
C918	RC-KZ0037TAZZ	J	Capacitor	AD	C1411	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C919	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C1412	VCSATA1CJ335M	J	3.3 16V Tantalum	AC
C921	RC-KZ0025TAZZ	J	Capacitor	AD	C1413	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C922	RC-KZ0026TAZZ	J	Capacitor	AF	C1414	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C923	RC-KZ0042TAZZ	J	Capacitor	AE	C1415	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C924	RC-KZ0025TAZZ	J	Capacitor	AD	C1416	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB
C925	RC-KZ0058TAZZ	J	Capacitor	AC	C1417	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C926	RC-KZ0037TAZZ	J	Capacitor	AD	C1418	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C927	RC-KZ0037TAZZ	J	Capacitor	AD	C1419	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C928	VCKYTV1EF104Z	J	0.1 25V Ceramic	AB	C1420	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C929	RC-KZ0058TAZZ	J	Capacitor	AC	C1421	VCSATA1AJ106M	J	10 10V Tantalum	AC
C930	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C1423	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C931	VCKYTV1EF104Z	J	0.1 25V Ceramic	AB	C1424	VCSATD1AJ107M	J	100 10V Tantalum	AF
C932	VCKYTV1EF104Z	J	0.1 25V Ceramic	AB	C1425	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C937	RC-KZ0025TAZZ	J	Capacitor	AD	C1426	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C939	RC-KZ0026TAZZ	J	Capacitor	AF	C1427	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C940	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C1428	VCSATA1AJ106M	J	10 10V Tantalum	AC
C941	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C1429	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C942	VCKYCZ1CB103K	J	0.01 16V Ceramic	AB	C1430	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C943	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C1431	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C944	RC-CZ0017TAZZ	J	Capacitor	AE	C1432	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C945	RC-KZ0037TAZZ	J	Capacitor	AD	C1433	VCSATA1AJ106M	J	10 10V Tantalum	AC
C949	RC-KZ0042TAZZ	J	Capacitor	AE	C1434	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C951	RC-KZ0037TAZZ	J	Capacitor	AD	C1436	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C952	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C1437	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C953	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C1439	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C954	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C1443	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C956	RC-KZ0037TAZZ	J	Capacitor	AD	C1444	VCCCCZ1HH120J	J	12p 50V Ceramic	AB
C957	RC-KZ0026TAZZ	J	Capacitor	AF	C1445	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C958	RC-KZ0026TAZZ	J	Capacitor	AF	C1446	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C959	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C1447	VCCCCZ1HH121J	J	120p 50V Ceramic	AB

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Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C1448	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3412	VCCCCZ1HH5R0CJ	5.0p	50V Ceramic	AC
C1449	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3413	VCCCCZ1HH330J	J	33p 50V Ceramic	AB
C1450	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3418	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1451	VCCCCZ1HH101J	J	100p 50V Ceramic	AB	C3421	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1452	VCSATA1AJ106M	J	10 10V Tantalum	AC	C3422	VCCCCZ1HH680J	J	68p 50V Ceramic	AB
C1453	VCCCCZ1HH101J	J	100p 50V Ceramic	AB	C3423	VCCCCZ1HH120J	J	12p 50V Ceramic	AB
C1454	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3424	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1455	VCCCCZ1HH151J	J	150p 50V Ceramic	AB	C3426	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1456	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3429	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1457	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3430	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1458	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3434	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1459	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3436	VCCCCZ1HH680J	J	68p 50V Ceramic	AB
C1460	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C3437	VCCCCZ1HH150J	J	15p 50V Ceramic	AB
C1901	VCCCCY1HH221J	J	220p 50V Ceramic	AA	C3438	VCSATA1AJ106M	J	10 10V Tantalum	AC
C1902	VCCCCY1HH221J	J	220p 50V Ceramic	AA	C3439	VCSATA1AJ106M	J	10 10V Tantalum	AC
C1903	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC	C3440	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1904	VCKYTV1AB105K	J	1.0 10V Ceramic	AD	C3441	VCCCCZ1HH121J	J	120p 50V Ceramic	AB
C1905	VCKYCY1HB682K	J	6800p 50V Ceramic	AA	C3442	VCCCCZ1HH100D	J	10p 50V Ceramic	AB
C1907	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	C3443	VCCCCZ1HH680J	J	68p 50V Ceramic	AB
C1908	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC	C3444	VCCCCZ1HH560J	J	56p 50V Ceramic	AB
C1909	VCKYCY1HB152K	J	1500p 50V Ceramic	AA	C3445	VCCCCZ1HH151J	J	150p 50V Ceramic	AB
C1910	VCKYTV1AB105K	J	1.0 10V Ceramic	AD	C3446	VCCCCZ1HH330J	J	33p 50V Ceramic	AB
C1912	VCKYTV1EB104K	J	0.1 25V Ceramic	AB	C3447	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1913	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC	C3448	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1914	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C3449	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1915	VCKYTV1EB104K	J	0.1 25V Ceramic	AB	C3450	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1916	VCKYCY1HB103K	J	0.01 50V Ceramic	AA	C3451	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB
C1917	VCKYTV1EB104K	J	0.1 25V Ceramic	AB	C3452	VCCCCZ1HH330J	J	33p 50V Ceramic	AB
C1919	VCKYTV1EB104K	J	0.1 25V Ceramic	AB	C3456	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB
C1920	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	C3459	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C1922	VCKYCY1CB473K	J	0.047 16V Ceramic	AA	C3462	VCCCCZ1HH121J	J	120p 50V Ceramic	AB
C1926	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C3463	VCCCCZ1HH111J	J	110p 50V Ceramic	AA
C1927	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	C3465	VCCCCZ1HH221J	J	220p 50V Ceramic	AB
C1930	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	C3466	VCCCCZ1HH100D	J	10p 50V Ceramic	AB
C1931	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB	C4417	VCCCCZ1HH390J	J	39p 50V Ceramic	AB
C1932	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	C6401	VCKYCZ1HB222K	J	2200p 50V Ceramic	AB
C1933	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	C6402	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC
C1934	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	C6403	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC
C1935	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	C6404	VCKYCZ1HB222K	J	2200p 50V Ceramic	AB
C3401	VCKYCZ1CB103K	J	0.01 16V Ceramic	AB	C6405	VCSATC1AJ476M	J	47 10V Tantalum	AE
C3403	VCCCCY1HH271J	J	270p 50V Ceramic	AA	C6406	VCSATC1AJ476M	J	47 10V Tantalum	AE
C3404	VCCCCZ1HH360J	J	36p 50V Ceramic	AA	C6407	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C3405	VCKYCZ1HB222K	J	2200p 50V Ceramic	AB	C6408	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C3406	VCCCCY1HH271J	J	270p 50V Ceramic	AA	C6409	VCSATA0JJ156M	J	15 6.3V Tantalum	AC
C3408	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	C6410	VCSATA0JJ156M	J	15 6.3V Tantalum	AC
C3409	VCCCCZ1HH101J	J	100p 50V Ceramic	AB	C6412	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB
C3410	VCCCCZ1HH5R0CJ	J	5.0p 50V Ceramic	AC	C6413	VCSATA1AJ106M	J	10 10V Tantalum	AC
C3411	VCCCCZ1HH750J	J	75p 50V Ceramic	AB	C6414	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C6415	VCKYCY1CF474Z	J	0.47 16V Ceramic	AB	R209	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
C7701	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	R210	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide	AA
C7702	VCSATA1AJ106M	J	10 10V Tantalum	AC	R211	VRS-CZ1JF221J	J	220 1/16W Metal Oxide	AA
C7703	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R212	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide	AA
C7704	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R213	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide	AA
C7705	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC	R214	VRS-CZ1JF221J	J	220 1/16W Metal Oxide	AA
C7706	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R215	VRS-CZ1JF101J	J	100 1/16W Metal Oxide	AA
C7707	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	R216	VRS-CZ1JF393J	J	39k 1/16W Metal Oxide	AA
C7708	VCCCCZ1HH8R0DJ	J	8.0p 50V Ceramic	AB	R221	VRS-CZ1JF221J	J	220 1/16W Metal Oxide	AA
C7710	VCKYCZ1EB472K	J	4700p 25V Ceramic	AB	R251	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
C7711	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R254	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7712	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	R255	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
C7713	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	R256	VRS-CZ1JF330J	J	33 1/16W Metal Oxide	AA
C7714	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R257	VRS-CZ1JF330J	J	33 1/16W Metal Oxide	AA
C7715	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R258	VRS-CZ1JF330J	J	33 1/16W Metal Oxide	AA
C7719	VCCCCZ1HH180J	J	18p 50V Ceramic	AB	R259	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7720	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC	R262	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide	AA
C7721	VCCCCZ1HH180J	J	18p 50V Ceramic	AB	R264	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7723	VCCCCZ1HH221J	J	220p 50V Ceramic	AB	R417	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7724	VCKYCZ1HF103Z	J	0.01 50V Ceramic	AB	R418	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7725	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	R419	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7726	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	R420	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7727	VCSATA1AJ106M	J	10 10V Tantalum	AC	R421	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7728	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	R423	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7729	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	R424	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide	AA
C7730	VCKYCZ1AF104Z	J	0.1 10V Ceramic	AB	R425	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7731	VCKYCZ1EB682K	J	6800p 25V Ceramic	AB	R426	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
C7732	VCKYCZ1HB102K	J	1000p 50V Ceramic	AB	R427	VRS-CZ1JF271J	J	270 1/16W Metal Oxide	AA
RESISTORS					R428	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R101	VRS-CZ1JF153D	J	15k 1/16W Metal Oxide	AB	R429	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R102	VRS-CZ1JF244F	J	240k 1/16W Metal Oxide	AA	R430	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R103	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA	R431	VRS-CZ1JF471J	J	470 1/16W Metal Oxide	AA
R104	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide	AA	R432	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R105	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide	AA	R433	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide	AA
R106	VRS-CZ1JF220J	J	22 1/16W Metal Oxide	AA	R434	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R107	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA	R435	VRS-CZ1JF272D	J	2.7k 1/16W Metal Oxide	AB
R108	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA	(VL-H95E)				
R109	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA	R436	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide	AA
R110	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA	R437	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R201	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA	R440	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R202	VRS-CZ1JF221J	J	220 1/16W Metal Oxide	AA	R441	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R203	VRS-CZ1JF221J	J	220 1/16W Metal Oxide	AA	R442	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R204	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA	R443	VRS-CY1JF472J	J	4.7k 1/16W Metal Oxide	AA
R205	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA	R444	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R206	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide	AA	R445	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA
R207	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA	R446	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R208	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA	R447	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
					R448	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide	AA

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VL-H95E

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R449	VRS-CZ1JF561J	J	560 1/16W Metal Oxide AA		R505	VRS-CZ1JF393J	J	39k 1/16W Metal Oxide AA	
R450	VRS-CZ1JF272J	J	2.7k 1/16W Metal Oxide AA		R506	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R451	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide AA		R507	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R452	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide AA		R508	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R453	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide AA		R509	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R454	VRS-CZ1JF334J	J	330k 1/16W Metal Oxide AA		R510	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R455	VRS-CZ1JF334J	J	330k 1/16W Metal Oxide AA		R511	VRS-CZ1JF393J	J	39k 1/16W Metal Oxide AA	
R456	VRS-CZ1JF684J	J	680k 1/16W Metal Oxide AA		R512	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R457	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide AA		R513	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA	
R458	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R601	VRK-SA1JF561J	J	560 1/16W	AC
R459	VRS-CZ1JF474J	J	470k 1/16W Metal Oxide AA					Metal Composition	
R460	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		R602	VRK-SA1JF224J	J	220k 1/16W	AC
R461	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA					Metal Composition	
R462	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R603	VRK-SA1JF474J	J	470k 1/16W	AC
R463	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA					Metal Composition	
R464	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA		R604	VRK-SA1JF474J	J	470k 1/16W	AC
R465	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide AA					Metal Composition	
R466	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R606	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R467	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R607	VRK-SA1JF153J	J	15k 1/16W	AD
R468	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide AA					Metal Composition	
R469	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide AA		R608	VRK-SA1JF561J	J	560 1/16W	AC
R470	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide AA					Metal Composition	
R471	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA		R609	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R472	VRS-CZ1JF391J	J	390 1/16W Metal Oxide AA		R610	VRS-CZ1JF393J	J	39k 1/16W Metal Oxide AA	
R473	VRS-CZ1JF680J	J	68 1/16W Metal Oxide AB		R611	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA	
R474	VRK-SA1JF473J	J	47k 1/16W	AC	R612	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
			Metal Composition		R613	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R475	VRK-SA1JF472J	J	4.7k 1/16W	AD	R614	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide AA	
			Metal Composition		R615	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R476	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R616	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R477	VRS-CZ1JF181J	J	180 1/16W Metal Oxide AA		R617	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide AA	
R481	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R618	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R483	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R619	VRS-CZ1JF153D	J	15k 1/16W Metal Oxide AB	
R484	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R620	VRS-CZ1JF124J	J	120k 1/16W Metal Oxide AA	
R485	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R622	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R486	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R623	VRS-CZ1JF124J	J	120k 1/16W Metal Oxide AA	
R487	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R624	VRS-CZ1JF684J	J	680k 1/16W Metal Oxide AA	
R488	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R626	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA	
			(VL-H770S/H)		R627	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide AA	
R489	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide AA		R628	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
			(VL-H770S/H)		R629	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R498	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide AA		R630	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA	
R502	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R631	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide AA	
R503	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R632	VRS-CZ1JF124J	J	120k 1/16W Metal Oxide AA	
			(VL-H770S/H)		R633	VRS-CZ1JF684J	J	680k 1/16W Metal Oxide AA	
R504	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R635	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
			(VL-H95E)		R640	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
					R641	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R642	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R735	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R643	VRS-CZ1JF272J	J	2.7k 1/16W Metal Oxide AA		R736	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R644	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R737	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R645	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R738	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA	
R646	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R739	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R701	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA		R740	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA	
R702	VRS-CZ1JF154D	J	150k 1/16W Metal Oxide AB		R743	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R703	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R744	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide AA	
R704	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide AA		R745	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide AA	
R705	VRS-CZ1JF334J	J	330k 1/16W Metal Oxide AA		R746	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R706	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R747	VRK-SC1FF472J	J	4.7k 0.0315W Metal Composition	AC
R707	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R748	VRK-SC1FF472J	J	4.7k 0.0315W Metal Composition	AC
R708	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R749	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R709	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R800	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R710	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R801	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R711	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R802	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide AA	
R712	VRS-CZ1JF474F	J	470k 1/16W Metal Oxide AB		R803	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA	
R713	VRS-CZ1JF823F	J	82k 1/16W Metal Oxide AB		R804	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide AA	
R714	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R805	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R715	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R806	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA	
R716	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R807	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R718	VRS-CZ1JF335J	J	3.3M 1/16W Metal Oxide AA (VL-H770S/H)		R808	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R718	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA (VL-H95E)		R809	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R720	VRK-SA1JF104J	J	100k 1/16W Metal Composition	AB	R810	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R721	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R811	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R722	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	R812	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R724	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	R813	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R725	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	R814	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R726	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	R815	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R727	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	R816	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA	
R728	VRK-SA1JF104J	J	100k 1/16W Metal Composition	AB	R817	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R729	VRK-SA1JF104J	J	100k 1/16W Metal Composition	AB	R818	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R730	VRK-SA1JF104J	J	100k 1/16W Metal Composition	AB	R819	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R731	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R823	VRS-CZ1JF821J	J	820 1/16W Metal Oxide AA	
R732	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA		R825	VRS-CZ1JF561D	J	560 1/16W Metal Oxide AA	
R733	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R826	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA	
R734	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R827	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB	
					R828	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA	
					R829	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA	
					R830	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB	
					R831	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA	
					R832	VRS-CZ1JF561D	J	560 1/16W Metal Oxide AA	
					R833	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA	
					R834	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
					R835	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
					R836	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	

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Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R837	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R916	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB	
R838	VRS-CZ1JF561D	J	560 1/16W Metal Oxide AA		R925	VRS-CZ1JF222D	J	2.2k 1/16W Metal Oxide AA	
R839	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB		R926	VRS-CZ1JF123D	J	12k 1/16W Metal Oxide AA	
R840	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB		R927	VRS-CZ1JF152D	J	1.5k 1/16W Metal Oxide AB	
R841	VRS-CZ1JF561D	J	560 1/16W Metal Oxide AA		R928	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R842	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R929	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R843	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA		R930	VRS-CZ1JF222D	J	2.2k 1/16W Metal Oxide AA	
R844	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R931	VRS-CZ1JF122D	J	1.2k 1/16W Metal Oxide AB	
R845	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA		R932	VRS-CZ1JF123D	J	12k 1/16W Metal Oxide AA	
R846	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R933	VRS-CZ1JF122D	J	1.2k 1/16W Metal Oxide AB	
R847	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R934	VRS-CZ1JF823D	J	82k 1/16W Metal Oxide AB	
R850	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R935	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R851	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA		R936	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide AA	
R854	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA		R937	VRS-CZ1JF823D	J	82k 1/16W Metal Oxide AB	
R856	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA		R945	VRS-CZ1JF121D	J	120 1/16W Metal Oxide AB	
R857	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA		R946	VRS-CZ1JF222D	J	2.2k 1/16W Metal Oxide AA	
R858	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA		R947	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R859	VRS-CZ1JF124J	J	120k 1/16W Metal Oxide AA		R949	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R860	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R950	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA	
R861	VRS-CZ1JF821J	J	820 1/16W Metal Oxide AA		R951	VRS-CY1JFR22J	J	0.22 1/16W Metal Oxide AA	
R862	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide AA		R958	VRS-TV1JD102J	J	1.0k 1/16W Metal Oxide AA	
R863	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide AB		R960	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA	
R864	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R961	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA	
R865	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide AA		R962	VRS-CZ1JF622D	J	6.2k 1/16W Metal Oxide AA	
R866	VRS-CZ1JF273D	J	27k 1/16W Metal Oxide AA		R963	VRS-CZ1JF822D	J	8.2k 1/16W Metal Oxide AA	
R867	VRS-CZ1JF512J	J	5.1k 1/16W Metal Oxide AB		R964	VRS-CZ1JF122D	J	1.2k 1/16W Metal Oxide AB	
R870	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R965	VRS-CZ1JF153D	J	15k 1/16W Metal Oxide AB	
R871	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R966	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide AB	
R872	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R967	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R873	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide AA		R968	VRS-CZ1JF153D	J	15k 1/16W Metal Oxide AB	
R874	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R969	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB	
R875	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R970	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R876	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA		R971	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R890	VRK-SC1FF223J	J	22k 0.0315W Metal Composition	AC	R972	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R891	VRK-SC1FF223J	J	22k 0.0315W Metal Composition	AC	R975	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R892	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide AA		R976	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA	
R894	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA		R1401	VRK-SA1JF222J	J	2.2k 1/16W Metal Composition	AB
R895	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA		R1402	VRS-CZ1JF390J	J	39 1/16W Metal Oxide AA	
R896	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA		R1403	VRS-CZ1JF390J	J	39 1/16W Metal Oxide AA	
R909	VRS-TV1JD471J	J	470 1/16W Metal Oxide AA		R1405	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA	
R910	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA		R1407	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R911	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA		R1408	VRS-CZ1JF330J	J	33 1/16W Metal Oxide AA	
R912	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB		R1409	VRS-CZ1JF330J	J	33 1/16W Metal Oxide AA	
R913	VRS-CZ1JF152D	J	1.5k 1/16W Metal Oxide AB		R1410	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA	
R914	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB		R1411	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R915	VRS-CZ1JF123D	J	12k 1/16W Metal Oxide AA		R1412	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA	
					R1413	VRS-CZ1JF390J	J	39 1/16W Metal Oxide AA	

Ref. No.	Part No.	★	Description			Code	Ref. No.	Part No.	★	Description			Code
R1414	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1472	VRS-CZ1JF272J	J	2.7k	1/16W	Metal Oxide	AA
R1415	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1474	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1416	VRS-CZ1JF392J	J	3.9k	1/16W	Metal Oxide	AA	R1475	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R1417	VRS-CZ1JF151J	J	150	1/16W	Metal Oxide	AA	R1480	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1418	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA	R1481	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1419	VRS-CZ1JF151J	J	150	1/16W	Metal Oxide	AA	R1483	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R1420	VRS-CZ1JF272D	J	2.7k	1/16W	Metal Oxide	AB	R1484	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R1421	VRS-CZ1JF101J	J	100	1/16W	Metal Oxide	AA	R1485	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1422	VRS-CZ1JF222D	J	2.2k	1/16W	Metal Oxide	AA	R1486	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R1423	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1487	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R1424	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA	R1488	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1425	VRS-CZ1JF393J	J	39k	1/16W	Metal Oxide	AA	R1489	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1426	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA	R1490	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R1427	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA	R1491	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R1428	VRS-CZ1JF562J	J	5.6k	1/16W	Metal Oxide	AA	R1492	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1429	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA	R1494	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R1430	VRK-SA1JF102J	J	1.0k	1/16W		AB	R1495	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
					Metal Composition		R1496	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R1431	VRS-CZ1JF390J	J	39	1/16W	Metal Oxide	AA	R1497	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1433	VRS-CY1JF000J	J	00	1/16W	Metal Oxide	AA	R1498	VRS-CZ1JF393J	J	39k	1/16W	Metal Oxide	AA
R1434	VRK-SA1JF222J	J	2.2k	1/16W		AB	R1901	VRN-CZ1JF432D	J	4.3k	1/16W	Metal Film	AA
					Metal Composition		R1904	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R1435	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA	R1905	VRS-CZ1JF182D	J	1.8k	1/16W	Metal Oxide	AB
R1436	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA	R1906	VRS-CZ1JF363D	J	36k	1/16W	Metal Oxide	AA
R1437	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA	R1907	VRS-CZ1JF103D	J	10k	1/16W	Metal Oxide	AB
R1440	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA	R1908	VRS-CZ1JF473J	J	47k	1/16W	Metal Oxide	AA
R1442	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA	R1909	VRS-CZ1JF823D	J	82k	1/16W	Metal Oxide	AB
R1443	VRK-SA1JF222J	J	2.2k	1/16W		AB	R1910	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
					Metal Composition		R1911	VRS-CZ1JF222D	J	2.2k	1/16W	Metal Oxide	AA
R1446	VRS-CZ1JF473J	J	47k	1/16W	Metal Oxide	AA	R1912	VRS-CZ1JF163D	J	16k	1/16W	Metal Oxide	AA
R1449	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1913	VRS-CZ1JF163D	J	16k	1/16W	Metal Oxide	AA
R1450	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA	R1914	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1451	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA	R1916	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R1452	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA	R1917	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R1453	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA	R1918	VRS-CZ1JF104D	J	100k	1/16W	Metal Oxide	AB
R1454	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1919	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
R1458	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA	R1920	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1459	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA	R1921	VRS-CZ1JF623D	J	62k	1/16W	Metal Oxide	AA
R1460	VRS-CZ1JF393J	J	39k	1/16W	Metal Oxide	AA	R1922	VRS-CZ1JF273D	J	27k	1/16W	Metal Oxide	AA
R1461	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA	R1923	VRS-CZ1JF472D	J	4.7k	1/16W	Metal Oxide	AB
R1463	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA	R1924	VRS-CZ1JF273D	J	27k	1/16W	Metal Oxide	AA
R1464	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA	R1925	VRS-CZ1JF113D	J	11k	1/16W	Metal Oxide	AA
R1465	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA	R1926	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1466	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA	R1927	VRS-CZ1JF623D	J	62k	1/16W	Metal Oxide	AA
R1468	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA	R1928	VRS-CZ1JF273D	J	27k	1/16W	Metal Oxide	AA
R1469	VRS-CZ1JF473J	J	47k	1/16W	Metal Oxide	AA	R1929	VRS-CY1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R1470	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA	R1930	VRS-CZ1JF273D	J	27k	1/16W	Metal Oxide	AA
R1471	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA	R1931	VRS-CZ1JF472D	J	4.7k	1/16W	Metal Oxide	AB

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Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R1932	VRS-CZ1JF113D	J	11k 1/16W Metal Oxide AA		R3403	VRS-CZ1JF123D	J	12k 1/16W Metal Oxide AA	
R1933	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R3405	VRS-CZ1JF681J	J	680 1/16W Metal Oxide AA	
R1934	VRS-CZ1JF623D	J	62k 1/16W Metal Oxide AA		R3406	VRS-CZ1JF391J	J	390 1/16W Metal Oxide AA	
R1935	VRS-CZ1JF273D	J	27k 1/16W Metal Oxide AA		R3407	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R1937	VRS-CZ1JF123J	J	12k 1/16W Metal Oxide AA		R3408	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide AA	
R1938	VRS-CZ1JF822D	J	8.2k 1/16W Metal Oxide AA		R3409	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide AA	
R1939	VRS-CZ1JF223D	J	22k 1/16W Metal Oxide AB		R3410	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA	
R1940	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide AB		R3411	VRS-CZ1JF561J	J	560 1/16W Metal Oxide AA	
R1941	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R3413	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R1942	VRS-CZ1JF303D	J	30k 1/16W Metal Oxide AA		R3414	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R1943	VRS-CZ1JF133D	J	13k 1/16W Metal Oxide AA		R3415	VRS-CZ1JF472D	J	4.7k 1/16W Metal Oxide AB	
R1944	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide AA		R3417	VRS-CZ1JF821J	J	820 1/16W Metal Oxide AA	
R1946	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB		R3419	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R1947	VRS-CZ1JF682D	J	6.8k 1/16W Metal Oxide AB		R3420	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R1949	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R3421	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R1951	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R3425	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R1952	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB		R3426	VRS-CZ1JF151J	J	150 1/16W Metal Oxide AA	
R1953	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide AB		R3427	VRS-CZ1JF271J	J	270 1/16W Metal Oxide AA	
R1954	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R3428	VRS-CZ1JF153J	J	15k 1/16W Metal Oxide AA	
R1955	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA		R3429	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA	
R1956	VRS-CZ1JF153J	J	15k 1/16W Metal Oxide AA		R3435	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA	
R1957	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide AA		R3438	VRS-CZ1JF472D	J	4.7k 1/16W Metal Oxide AB	
R1959	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R3440	VRS-CZ1JF331J	J	330 1/16W Metal Oxide AA	
R1960	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide AA		R3443	VRS-CZ1JF391J	J	390 1/16W Metal Oxide AA	
R1961	VRS-TV1JD220J	J	22 1/16W Metal Oxide AA		R3444	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R1962	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide AA		R3447	VRS-CZ1JF153J	J	15k 1/16W Metal Oxide AA	
R1963	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide AA		R3448	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide AA	
R1964	VRS-TV1JD560J	J	56 1/16W Metal Oxide AA		R3452	VRS-CZ1JF391J	J	390 1/16W Metal Oxide AA	
R1965	VRS-TV1JD560J	J	56 1/16W Metal Oxide AA		R3453	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA	
R1966	VRS-TV1JD560J	J	56 1/16W Metal Oxide AA		R3456	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R1967	VRS-CZ1JF473D	J	47k 1/16W Metal Oxide AB		R3457	VRS-CZ1JF391J	J	390 1/16W Metal Oxide AA	
R1968	VRS-CZ1JF472D	J	4.7k 1/16W Metal Oxide AB		R3463	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R1969	VRS-CZ1JF623D	J	62k 1/16W Metal Oxide AA		R3464	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R1970	VRS-CZ1JF562D	J	5.6k 1/16W Metal Oxide AB		R3469	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R1971	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R3472	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R1972	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA		R3473	VRS-CZ1JF331J	J	330 1/16W Metal Oxide AA	
R1973	VRS-CZ1JF104D	J	100k 1/16W Metal Oxide AB		R3474	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R2401	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R3475	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R2402	VRK-SA1JF562J	J	5.6k 1/16W Metal Composition	AD	R3476	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide AA	
R2403	VRS-CZ1JF271J	J	270 1/16W Metal Oxide AA		R3477	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R2404	VRS-CZ1JF271J	J	270 1/16W Metal Oxide AA		R3478	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide AA	
R2405	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide AA		R3479	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R2406	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R3480	VRS-CZ1JF101J	J	100 1/16W Metal Oxide AA	
R2407	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R3481	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide AA	
R2408	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R3482	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R2409	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA		R3483	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
R3402	VRS-CZ1JF153D	J	15k 1/16W Metal Oxide AB		R3484	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	
					R3485	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA	

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R3486	VRS-CZ1JF151J	J	150 1/16W Metal Oxide AA		R6701	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3487	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R6702	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3488	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R6703	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3489	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide AA		R6704	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3490	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		R6705	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3491	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide AA		R6706	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3492	VRS-CZ1JF273J	J	27k 1/16W Metal Oxide AA		R6709	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide AA	
R3493	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide AA		R6715	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3494	VRS-CZ1JF821J	J	820 1/16W Metal Oxide AA		R6716	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3495	VRS-CZ1JF221J	J	220 1/16W Metal Oxide AA		R6717	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3496	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R6718	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3701	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6719	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3702	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6720	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3703	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6721	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3705	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6727	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R3706	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6751	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3707	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6752	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3709	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R6753	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA	
R3711	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7701	VRK-SB1FF104J	J	100k 0.0315W AD	
R3712	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA					Metal Composition	
R3713	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7702	VRS-CZ1JF560J	J	56 1/16W Metal Oxide AA	
R3715	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7703	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA	
R3717	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7704	VRS-CZ1JF273J	J	27k 1/16W Metal Oxide AA	
R3719	VRS-CY1JF000J	J	00 1/16W Metal Oxide AA		R7705	VRS-CZ1JF560J	J	56 1/16W Metal Oxide AA	
R3720	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7707	VRK-SA1JF104J	J	100k 1/16W AB	
R3724	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA					Metal Composition	
R4401	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		R7708	VRK-SA1JF104J	J	100k 1/16W AB	
R4406	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA					Metal Composition	
R4407	VRS-CZ1JF271J	J	270 1/16W Metal Oxide AA		R7709	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA	
R4412	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide AA		R7710	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide AA	
R4413	VRS-CZ1JF471J	J	470 1/16W Metal Oxide AA		R7712	VRK-SA1JF102J	J	1.0k 1/16W AB	
R4417	VRS-CZ1JF472D	J	4.7k 1/16W Metal Oxide AB					Metal Composition	
R4419	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB		R7714	VRK-SA1JF102J	J	1.0k 1/16W AB	
R4420	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide AB					Metal Composition	
R4432	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		R7715	VRK-SA1JF104J	J	100k 1/16W AB	
R4439	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA					Metal Composition	
R6401	VRK-SA1JF563J	J	56k 1/16W AC		R7716	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
			Metal Composition		R7717	VRK-SA1JF102J	J	1.0k 1/16W AB	
R6402	VRS-CZ1JF151J	J	150 1/16W Metal Oxide AA					Metal Composition	
R6403	VRS-CZ1JF151J	J	150 1/16W Metal Oxide AA		R7718	VRK-SA1JF153J	J	15k 1/16W AD	
R6404	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide AA					Metal Composition	
R6405	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide AA		R7719	VRK-SA1JF102J	J	1.0k 1/16W AB	
R6406	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide AA					Metal Composition	
R6407	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide AA		R7721	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide AA	
R6408	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		R7722	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R6409	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide AA		R7723	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R6410	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		R7725	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA	
R6411	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide AA		R7726	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide AA	

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R7729	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		SC102	QSO CN1986TAZZ	J	Socket	AF
R7730	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide AA		SC901	QSO CN0784TAZZ	J	Socket	AE
R7731	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		SLD	PSLDM3232TAMS	J	Shield	AE
R7732	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		SLD	PSLDM3255TAMS	J	Shield	AE
R7733	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide AA		SLD	PSLDM3282TAMS	J	Shield	AF
R7734	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		SLD	PSLDM3283TAMS	J	Shield	AE
R7735	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		CABINET PARTS				
R7736	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		PWB	QPWBX2655TAZZ	J	Printed Wiring Board	BA
R7737	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		P1	QCNCM7068TAZZ	J	Connector	AG
R7738	VRK-SA1JF102J	J	1.0k 1/16W Metal Composition	AB	P6701	QCNCM7069TAZZ	J	Connector	AH
R7739	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide AA		DUNTK2657QA01 CAMERA UNIT				
R7777	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide AA		INTEGRATED CIRCUITS				
R9901	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		IC11	VHiUPD16510-1	J	UPD16510GR-8JG	AR
R9903	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		IC12	VHiLR38511/-1	J	LR38511	AQ
R9904	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		IC13	VHiTC7SL08U-1	J	TC7SL08FU	AF
R9906	VRS-CZ1JF000J	J	00 1/16W Metal Oxide AA		IC14	VHiNJM79L091E	J	NJM79L09UD	AE
MISCELLANEOUS PARTS					IC15	VHiCXA1439M-1	J	I.C.	AK
CN701	QPLGN0364TAZZ	J	Plug	AC	IC16	VHiTCVHC02S-1	J	TC74VHC02FS	AE
CN800	QSO CN2490TAZZ	J	Socket	AE	IC551	RH-IX0445TAZZ	J	UPD784035GK505	AY
FB402	RBLN-0064TAZZ	J	Balun	AC	IC553	VHiPST597KN-1	J	IC-PST597KNR	AF
FB403	RBLN-0064TAZZ	J	Balun	AC	IC554	VHiNJM2904V-1	J	NJM2904V	AF
FB800	RBLN-0028TAZZ	J	Balun	AB	IC1551	VHiMM1299XQ-1	J	MM1299XQ	AV
FB802	RBLN-0028TAZZ	J	Balun	AB	TRANSISTORS				
FB900	RBLN-0064TAZZ	J	Balun	AC	Q11	VSUMX2/////1	J	Transistor	AB
FB901	RBLN-0064TAZZ	J	Balun	AC	Q12	VSUMZ1/////1	J	Transistor	AB
FB902	RBLN-0064TAZZ	J	Balun	AC	Q1551	VS2SC4617B/-1	J	Transistor	AA
FB903	RBLN-0064TAZZ	J	Balun	AC	Q1552	VSUMT2/////1	J	Transistor	AB
FB904	RBLN-0064TAZZ	J	Balun	AC	DIODES AND LED'S				
FB905	RBLN-0064TAZZ	J	Balun	AC	D11	VHDDA121///-1	J	Diode	AA
FB6701	RBLN-0076TAZZ	J	Balun	AC	PACKAGED CIRCUITS				
FB6702	RBLN-0076TAZZ	J	Balun	AC	X11	RCRSZ0028TAZZ	J	Crystal	AQ
FB6703	RBLN-0076TAZZ	J	Balun	AC	COIL AND TRANSFORMERS				
FB6704	RBLN-0076TAZZ	J	Balun	AC	CF551	RFILC0067TAZZ	J	Filter	AE
FB6705	RBLN-0076TAZZ	J	Balun	AC	L11	VPAEM470J5R4N	J	Peaking 47μH 5%	AC
FB6706	RBLN-0076TAZZ	J	Balun	AC	L12	VPAEM100J1R3N	J	Peaking 10μH 5%	AC
FB6707	RBLN-0076TAZZ	J	Balun	AC	L13	VPAXM101K4R0N	J	Peaking 100μH 10%	AC
FB6708	RBLN-0076TAZZ	J	Balun	AC	L551	VPAXM100KR42N	J	Peaking 10μH 10%	AC
FB6709	RBLN-0076TAZZ	J	Balun	AC	CAPACITORS				
FB6710	RBLN-0076TAZZ	J	Balun	AC	C11	VCSATC1VJ685M	J	6.8 35V Tantalum	AF
FB6714	RBLN-0076TAZZ	J	Balun	AC	C12	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
FB6715	RBLN-0076TAZZ	J	Balun	AC					
FB6716	RBLN-0076TAZZ	J	Balun	AC					
FB6717	RBLN-0076TAZZ	J	Balun	AC					
P103	QPLGN0263TAZZ	J	Plug	AB					
P901	QPLGN0664TAZZ	J	Plug	AD					
SC101	QSO CN1786TAZZ	J	Socket	AE					

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
C13	VCSATE1DJ475M	J 4.7	20V Tantalum	AD	RESISTORS				
C14	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R11	VRS-CY1JF222J	J 2.2k	1/16W Metal Oxide	AA
C15	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R12	VRS-CY1JF183J	J 18k	1/16W Metal Oxide	AA
C16	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R13	VRS-CY1JF105J	J 1.0M	1/16W Metal Oxide	AA
C17	VCSATA1AJ106M	J 10	10V Tantalum	AC	R14	VRS-CY1JF561J	J 560	1/16W Metal Oxide	AA
C18	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R21	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C19	VCSATA1AJ106M	J 10	10V Tantalum	AC	R22	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C20	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R23	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C21	VCKYCY1HB102K	J 1000p	50V Ceramic	AA	R24	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C22	VCCCCY1HH6R0DJ	J 6.0p	50V Ceramic	AA	R31	VRS-CY1JF682J	J 6.8k	1/16W Metal Oxide	AA
C23	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R33	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C24	VCSATA1AJ106M	J 10	10V Tantalum	AC	R34	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C25	VCKYCY1HB102K	J 1000p	50V Ceramic	AA	R35	VRS-CY1JF182J	J 1.8k	1/16W Metal Oxide	AA
C26	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R36	VRS-CY1JF471J	J 470	1/16W Metal Oxide	AA
C27	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	R37	VRS-CY1JF152J	J 1.5k	1/16W Metal Oxide	AA
C32	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R551	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C33	VCKYTV1EB104K	J 0.1	25V Ceramic	AB	R552	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C34	VCSATE1AJ336M	J 33	10V Tantalum	AG	R554	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C36	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R555	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C551	VCSATA1AJ106M	J 10	10V Tantalum	AC	R556	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C552	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R557	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C553	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R558	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C555	VCKYCY1HB102K	J 1000p	50V Ceramic	AA	R559	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C556	VCKYCY1EB223K	J 0.022	25V Ceramic	AA	R560	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C557	VCKYCY1EB223K	J 0.022	25V Ceramic	AA	R561	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C558	VCKYCY1HB103K	J 0.01	50V Ceramic	AA	R562	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C559	VCKYCY1CF104Z	J 0.1	16V Ceramic	AA	R563	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C1551	VCSATE1AJ156M	J 15	10V Tantalum	AD	R564	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C1552	VCSATE1AJ336M	J 33	10V Tantalum	AG	R565	VRS-CY1JF102J	J 1.0k	1/16W Metal Oxide	AA
C1553	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R566	VRS-CY1JF223J	J 22k	1/16W Metal Oxide	AA
C1554	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R567	VRS-CY1JF223J	J 22k	1/16W Metal Oxide	AA
C1555	VCSATA1AJ475M	J 4.7	10V Tantalum	AC	R568	VRS-CY1JF224J	J 220k	1/16W Metal Oxide	AA
C1556	VCKYCY1CB333K	J 0.033	16V Ceramic	AA	R569	VRS-CY1JF224J	J 220k	1/16W Metal Oxide	AA
C1557	VCKYCY1CF224Z	J 0.22	16V Ceramic	AA	R570	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C1558	VCKYCY1HB122K	J 1200p	50V Ceramic	AA	R571	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C1559	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R572	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C1560	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R573	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C1561	VCSATA1AJ106M	J 10	10V Tantalum	AC	R574	VRS-CY1JF000J	J 00	1/16W Metal Oxide	AA
C1562	VCKYCY1HB472K	J 4700p	50V Ceramic	AA	R576	VRS-CY1JF183J	J 18k	1/16W Metal Oxide	AA
C1563	VCKYCY1HB472K	J 4700p	50V Ceramic	AA	R577	VRS-CY1JF223J	J 22k	1/16W Metal Oxide	AA
C1564	VCKYCY1HB472K	J 4700p	50V Ceramic	AA	R1551	VRS-CY1JF105J	J 1.0M	1/16W Metal Oxide	AA
C1565	VCKYCY1HB103K	J 0.01	50V Ceramic	AA	R1552	VRS-CY1JF332J	J 3.3k	1/16W Metal Oxide	AA
C1566	VCKYCY1HB472K	J 4700p	50V Ceramic	AA	R1553	VRS-CY1JF682J	J 6.8k	1/16W Metal Oxide	AA
C1567	VCKYCY1EB183K	J 0.018	25V Ceramic	AA	R1554	VRS-CY1JF682J	J 6.8k	1/16W Metal Oxide	AA
C1569	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R1555	VRS-CY1JF562J	J 5.6k	1/16W Metal Oxide	AA
C1570	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R1558	VRS-CY1JF392J	J 3.9k	1/16W Metal Oxide	AA
C1577	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R1559	VRS-CY1JF103J	J 10k	1/16W Metal Oxide	AA
C1578	VCKYCY1HF103Z	J 0.01	50V Ceramic	AA	R1560	VRS-CY1JF392J	J 3.9k	1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R1561	VRS-CY1JF180J	J	18 1/16W Metal Oxide	AA	COILS				
R1562	VRS-CY1JF223J	J	22k 1/16W Metal Oxide	AA	L303	VP-NM101K4R2N	J	Peaking 100μH 10%	AC
R1563	VRS-CY1JF222J	J	2.2k 1/16W Metal Oxide	AA	L304	VP-NM220K1R0N	J	Peaking 22μH 10%	AB
R1564	VRS-CY1JF121J	J	120 1/16W Metal Oxide	AA	L304	VPAXM220KR88N	J	Peaking 22μH 10%	AC
R1565	VRS-CY1JF121J	J	120 1/16W Metal Oxide	AA	L305	VP-NM101K4R2N	J	Peaking 100μH 10%	AC
R1567	VRS-CY1JF103F	J	10k 1/16W Metal Oxide	AA	L341	VPABM100J2R6N	J	Peaking 10μH 5%	AC
R1568	VRS-CY1JF103F	J	10k 1/16W Metal Oxide	AA	L341	VPAWM100J2R6N	J	Peaking 10μH 5%	AC
R1569	VRS-CY1JF103J	J	10k 1/16W Metal Oxide	AA	L342	VPABM101J160N	J	Peaking 100μH 5%	AC
R1570	VRS-CY1JF104F	J	100k 1/16W Metal Oxide	AA	L342	VPAWM101J140N	J	Peaking 100μH 5%	AC
R1571	VRS-CY1JF473F	J	47k 1/16W Metal Oxide	AA	L1701	VPAXM2R2MR16NJ		Peaking 2.2μH 10%	AC
R1572	VRS-CY1JF153J	J	15k 1/16W Metal Oxide	AA	CAPACITORS				
MISCELLANEOUS PARTS					C301	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
FB551	RBLN-0076TAZZ	J	Balun	AC	C302	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
FB552	RBLN-0076TAZZ	J	Balun	AC	C303	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
FB553	RBLN-0076TAZZ	J	Balun	AC	C304	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
FB554	RBLN-0076TAZZ	J	Balun	AC	C305	VCSATA1AJ106M	J	10 10V Tantalum	AC
FB555	RBLN-0076TAZZ	J	Balun	AC	C306	VCSATA1AJ106M	J	10 10V Tantalum	AC
FB556	RBLN-0076TAZZ	J	Balun	AC	C309	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
FB557	RBLN-0076TAZZ	J	Balun	AC	C310	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
P6	QPLGN0263TAZZ	J	Plug	AB	C310	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
SC2	QSOCN1987TAZZ	J	Socket	AE	C311	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
SC3	QSOCN1787TAZZ	J	Socket	AE	C313	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
SC4	QSOCN1986TAZZ	J	Socket	AF	C314	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
SC5	QSOCN1285TAZZ	J	Socket	AE	C315	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
SC6	QSOCN3087TAZZ	J	Socket	AF	C318	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
SLD	PSLDM3280TAFW	J	Shield	AC	C319	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
SLD	PSLDM3281TAFW	J	Shield	AC	C320	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
RAMP-0018TAN1 HEAD AMP UNIT					C321	VCSATA1AJ106M	J	10 10V Tantalum	AC
INTEGRATED CIRCUITS					C322	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
IC301	VHICXA2032Q-1	J	H/A IC	AN	C323	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
IC302	VHIBR93L46F-1	J	EEP ROM IC	AG	C324	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
IC1701	VHILB1950V/-1	J	Drum Driver IC	AQ	C325	VCSATA1AJ106M	J	10 10V Tantalum	AC
IC1702	VHILB1951V/-1	J	Capstan Driver IC	AN	C326	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
IC1703	VHILB1638M/-1	J	Roading Driver IC	AK	C327	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
TRANSISTORS					C340	VCCCCY1HH101J	J	100p 50V Ceramic	AA
Q302	VS2SC4738Y/-1	J	Transistor	AA	C341	VCCCCY1HH151J	J	150p 50V Ceramic	AA
Q302	VS2SC4617B/-1	J	Transistor	AA	C342	VCCCCY1HH101J	J	100p 50V Ceramic	AA
Q307	VS2SC4738Y/-1	J	Transistor	AA	C344	VCCCCY1CF104Z	J	0.1 50V Ceramic	AC
Q307	VS2SC4617B/-1	J	Transistor	AA	C345	VCCCCY1HF103Z	J	0.01 50V Ceramic	AA
Q315	VSUMG2/////1	J	Transistor	AC	C346	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
Q341	VS2SA1037KQ-1	J	Transistor	AA	C347	VCSATA1AJ106M	J	10 10V Tantalum	AC
Q342	VS2SA1037KQ-1	J	Transistor	AA	C349	VCCCCY1HH680J	J	68p 50V Ceramic	AA
Q343	VSDTC144EE/-1	J	Transistor	AA	C350	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
Q343	VSUN9213///-1	J	Transistor	AA	C352	VCCCCY1HH330J	J	33p 50V Ceramic	AA
					C1701	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
					C1702	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
					C1703	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA

R301	VRS-CY1JF473J	J	47k	1/16W	Metal Oxide AA
R302	VRS-CY1JF273J	J	27k	1/16W	Metal Oxide AA
R303	VRS-CY1JF152J	J	1.5k	1/16W	Metal Oxide AA
R305	VRS-CY1JF152J	J	1.5k	1/16W	Metal Oxide AA
R306	VRS-CY1JF563J	J	56k	1/16W	Metal Oxide AA
R307	VRS-CY1JF103J	J	10k	1/16W	Metal Oxide AA
R308	VRS-CY1JF392J	J	3.9k	1/16W	Metal Oxide AA
R313	VRS-CY1JF183J	J	18k	1/16W	Metal Oxide AA
R316	VRS-CY1JF103J	J	10k	1/16W	Metal Oxide AA
R317	VRS-CY1JF103J	J	10k	1/16W	Metal Oxide AA
R321	VRS-CY1JF152J	J	1.5k	1/16W	Metal Oxide AA
R323	VRS-CY1JF473J	J	47k	1/16W	Metal Oxide AA
R329	VRS-CY1JF471J	J	470	1/16W	Metal Oxide AA
R331	VRS-CY1JF102J	J	1k	1/16W	Metal Oxide AA
R335	VRS-CY1JF273J	J	27k	1/16W	Metal Oxide AA
R337	VRS-CY1JF181J	J	180	1/16W	Metal Oxide AA
R338	VRS-CY1JF181J	J	180	1/16W	Metal Oxide AA
R339	VRS-CY1JF000J	J	0	1/16W	Metal Oxide AA
R340	VRS-CY1JF680J	J	68	1/16W	Metal Oxide AA
R342	VRS-CY1JF271J	J	270	1/16W	Metal Oxide AA
R343	VRS-CY1JF221J	J	220	1/16W	Metal Oxide AA

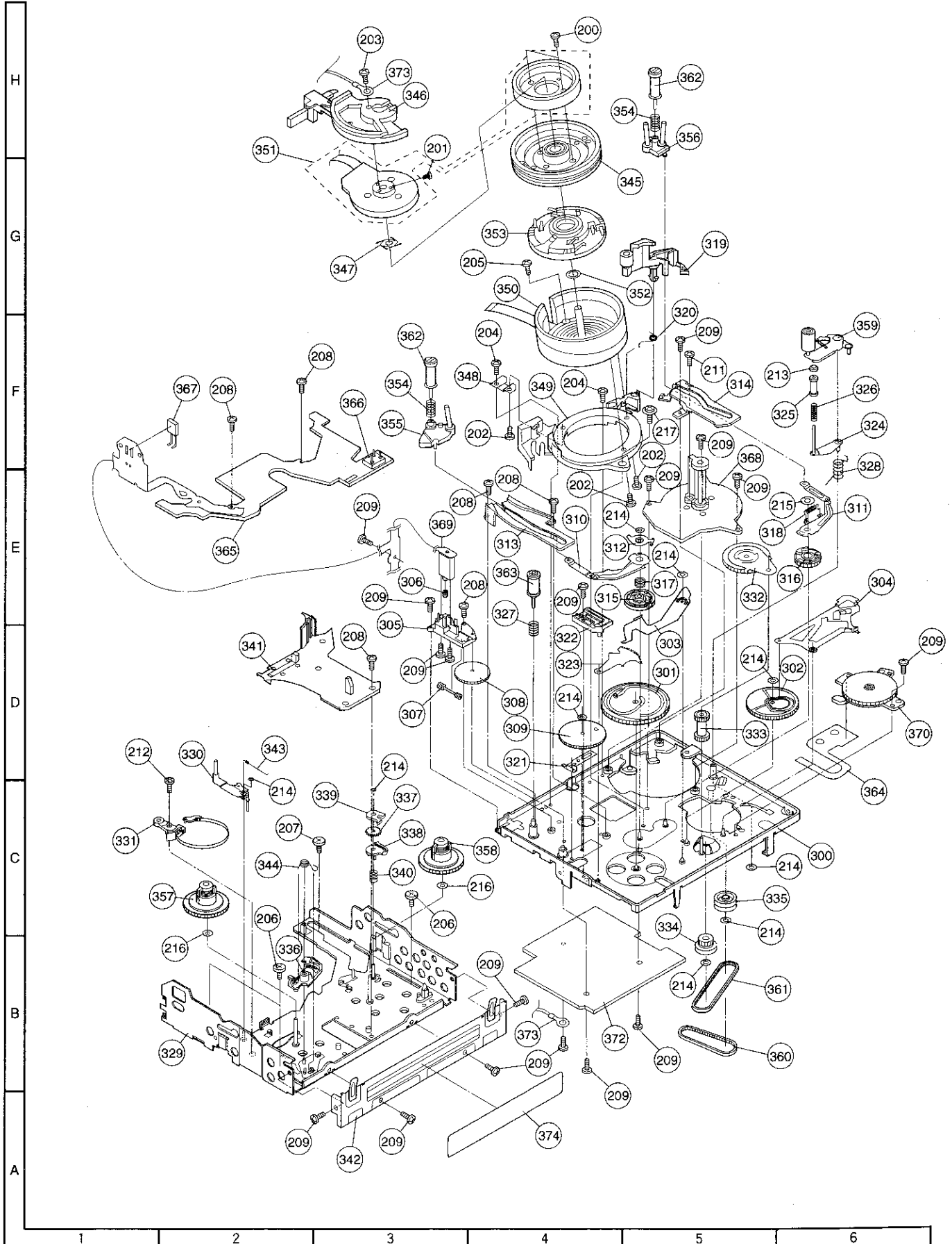
SC301	QSOCN0985TAZZ J	Socket	AE
SC302	QSOCN1886TAZZ J	Socket	AD
SC302	QSOCN1886TAZZ J	Socket	AD
SC303	QSOCN1560TAZZ J	Socket	AE
SC304	QSOCN0686TAZZ J	Socket	AC
SC305	QCNCW7068TAZZ J	Connector	AG
SC306	QSOCN1085TAZZ J	Socket	AE

GCOVH1192TASA J	Lens Cap	AG
GCOVH1213TAZZ J	Sun Hood (VL-H770S/H only)	AT
QCNW-1170TAZZ J	Connecting Cord	AP
QCNW-1335TAZZ J	Connecting Cord	AM
QCNW-1338TA00 J	DC Cable	AR
QCNW-1683TAZZ J	Connecting Cord	AC
QCNW-1295TAZZ J	A/V Cable	AK
or		
QCNW-1448TAZZ J	A/V Cable	AH

VL-H770S/H
VL-H95E

Ref. No.	Part No.	★	Description	Code
	RRMCG0023TASA	J	Infrared R-C(VL-H95E)	AS
	RRMCG0040TASA	J	Infrared R-C(VL-H770S/H)	AQ
	SPAKC6688TAZZ	J	Packing Case(VL-H770S)	AE
	SPAKC6689TAZZ	J	Packing Case(VL-H770H)	AF
	SPAKC6690TAZZ	J	Packing Case(VL-H95E)	AF
	SPAKP6049TAZZ	J	Wrapping Paper	AC
	SPAKA6196TAZZ	J	Packing Top ADD.	AD
	SPAKA6176TAZZ	J	Packing Case	—
	SPAKA6200TAZZ	J	Packing Bottom ADD.	—
	SSAKA0087TAZZ	J	Polyethylene Bag (VL-H770H/95E)	AD
	SSAKA0088TAZZ	J	Polyethylene Bag (VL-H770S)	AC
	TGANL0004TAZZ	J	Guarantee Card (VL-H770S/H)	AC
	TiNSE0251TAZZ	J	Operation Manual (VL-H770H)	AL
	TiNSL0072TAZZ	J	Operation Manual (VL-H770S)	AT
	TiNSL0086TAZZ	J	Operation Manual (VL-H95E)	AZ
	UADP-0206TAZZ	J	AC Adapter(VL-H770S)	BK
	UADP-0207TAZZ	J	AC Adapter(VL-H770H)	BM
	UADP-0232TAZZ	J	AC Adapter(VL-H95E)	BM
	UBATL0004TAZZ	J	Battery	AF
	UBATM0007TAZZ	J	Battery Pack	BC
	UBNDS0015TAZZ	J	Shoulder Strap	AH

MECHANISM CHASSIS EXPLODED VIEW



Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
MECHANISM PARTS									
200	LX-BZ3158GEFF	J	Screw M1.7x1.8	AA	330	MLEVF0495GEZZ	J	Ten Arm Assy	AC
201	LX-XZ3036GEFP	J	Screw M2.0x6.0	AD	331	LBNDK3021GEZZ	J	Ten Band Assy	AF
202	LX-BZ3175GEFN	J	Screw M1.7x4.0	AC	332	NiDR-0016GEZZ	J	Swing Gear Assy	AF
203	LX-BZ3163GEFN	J	Screw M1.7x2.5	AC	333	NGERH1286GEZZ	J	Driving Gear	AC
204	LX-HZ3074GEFN	J	Screw M1.7x5.3 S Tight	AA	334	NGERH1287GEZZ	J	Pulley Gear	AD
205	LX-BZ3177GEFF	J	Screw M1.4x1.5	AB	335	NPLYV0157GEZZ	J	Relay Pulley	AD
206	LX-BZ3132GEFF	J	Screw M1.4x1.5xD3.5	AA	336	MLEVP0284GEZZ	J	S Brake	AC
207	LX-BZ3178GEZZ	J	Screw M1.4x1.5xD4.0	AD	337	NGERH1288GEZZ	J	Tu Brake Gear	AC
208	LX-HZ3083GEFF	J	Screw M1.4x2.5 S Tight	AB	338	MLEVP0285GEZZ	J	Tu Main Brake	AC
209	LX-HZ3077GEFN	J	Screw M1.4x3.0 S Tight	AA	339	MLEVP0286GEZZ	J	Tu Sub-Brake	AC
211	LX-HZ3084GEFF	J	Screw M1.4x4.0 S Tight	AC	340	MSPRD0169GEZZ	J	Tu Brake Spring	AD
212	LX-HZ3085GEFD	J	Screw M1.4x4.0 SW S Tight	AD	341	LHLDZ1967GEZZ	J	Light Guide Holder Assy	AF
213	LX-NZ3053GEZZ	J	Screw M1.4 Nut	AC	342	LANGG9102GEFWJ	J	Down Guide	AF
214	LX-WZ1076GE02	J	Washer D0.8xD3.0x0.2t Plastics	AA	343	MSPRT0408GEZZ	J	Tension Spring	AD
215	LX-WZ1075GE02	J	Washer D2.1xD5.0x0.25t Plastics	AA	344	MSPRD0170GEZZ	J	S Brake Spring	AD
216	XWHJZ12-02040	J	Washer D1.2xD4.0x0.25t Plastics	AC	345	DDRMU0027HE02	J	Upper Drum Assy	BE
217	LX-HZ3086GEFN	J	Screw M1.7x5 S Tight Cup	AC	346	PGiDM0154GEZZ	J	Tape Guide	AB
300	LCHSM0163GEZZ	J	Main Chassis Assy	AW	347	QBRSK0038GEZZ	J	Earth Brush	AE
301	NGERH1280GEZZ	J	Main Cam	AD	348	QBRSK0039GEZZ	J	Earth Spring	AD
302	NGERH1281GEZZ	J	Sub-Cam	AD	349	PGiDM0143GEZZ	J	Drum Base	AG
303	MLEVF0470GEFW	J	Ejec Lever	AD	350	DDRML0020HE01	J	Lower Drum Assy	AY
304	MLEVF0492GEFW	J	M Function Lever	AF	351	RMOTP1131GEZZ	J	Drum Motor	AV
305	LHLDZ1966GEZZ	J	L Block Holder	AD	352	PSPAQ0010GEZZ	J	Gap Adjusting Shim	AC
306	NGERW1064GEZZJ	J	Worm Pulley	AC	353	NRTR-0094GEZZ	J	R Tr Rotor Assy	AQ
307	NGERW1065GEZZJ	J	Worm	AD	354	MSPRC0209GEZZ	J	Gr Adjusting Spring	AC
308	NGERH1282GEZZ	J	Worm Wheel	AC	355	LPOLM0058GEZZ	J	S Pole Base	AK
309	NGERH1283GEZZ	J	Lo Relay Gear	AC	356	LPOLM0059GEZZ	J	T Pole Base	AK
310	MARMM0126GEZZJ	J	S Lo Arm Assy	AF	357	NDAIV1071GEZZ	J	Sup Reel Support	AG
311	MARMM0128GEZZJ	J	T Lo Arm Assy	AG	358	NDAIV1072GEZZ	J	Tu Reel Support	AG
312	LANGA0069GEFW	J	S Lo Arm Retainer	AD	359	MLEVF0491GEZZ	J	Pinch Lever Assy	AY
313	PGiDM0146GEZZ	J	Sup Rail	AD	360	NBLTT0012GEZZ	J	Timing Belt S	AE
314	PGiDM0147GEZZ	J	Tu Rail	AD	361	NBLTT0013GEZZ	J	Timing Belt L	AE
315	NGERH1284GEZZ	J	Sup Lo Gear	AC	362	NROLP0108GEZZ	J	Guide Roller Assy	AG
316	NGERH1285GEZZ	J	Tu Lo Gear	AC	363	NROLP0109GEZZ	J	Si Roller Assy	AH
317	MSPRD0167GEZZ	J	S Lo Arm Double-Acting Spring	AE	364	QPWBH5428GEZZJ	J	Mode FPC	AK
318	MSPRT0407GEZZ	J	T Lo Arm Double-Acting Spring	AC	365	CPWBN5402GE01	J	Sensor Assy	BC
319	MLEVP0283GEZZ	J	HC Lever Assy	AF	366	QSW-M0042GEZZ	J	Recognition SW	AH
320	MSPRD0168GEZZ	J	HC Double-Acting Spring	AC	367	RDTCH0037GEZZ	J	Dew Sensor	AF
321	MSLiF0074GEFW	J	Ten Arm Operation Lever	AD	368	RMOTV1019GEZZ	J	Cap. Motor	AZ
322	PGiDM0148GEZZ	J	Ten Arm Guide	AC	369	RMOTM1075GEZZ	J	Load. Motor	AL
323	NGERH3045GEFWJ	J	Segment Gear	AD	370	QSW-R0038GEZZ	J	Mode SW	AG
324	MLEVF0472GEZZ	J	Tu Guide Assy	AC	372	RAMP-0018TAN1	J	H/A PWB	—
325	PGiDP0027GEZZ	J	Tu Guide	AE	373	QCNW-1714TAZZ	J	Ground Read Wire	AC
326	MSPRC0183GEZZ	J	Tu Guide Spring	AA	374	TLABH0196TAZZ	J	Caution Label	AB
327	MSPRC0184GEZZ	J	Si Roller Spring	AA					
328	MSPRC0208GEZZ	J	Tu Guide Lever Spring	AC					
329	CCHSS0045GE01	J	Slide Chassis Assy	AX					

— End of Mechanism Parts —

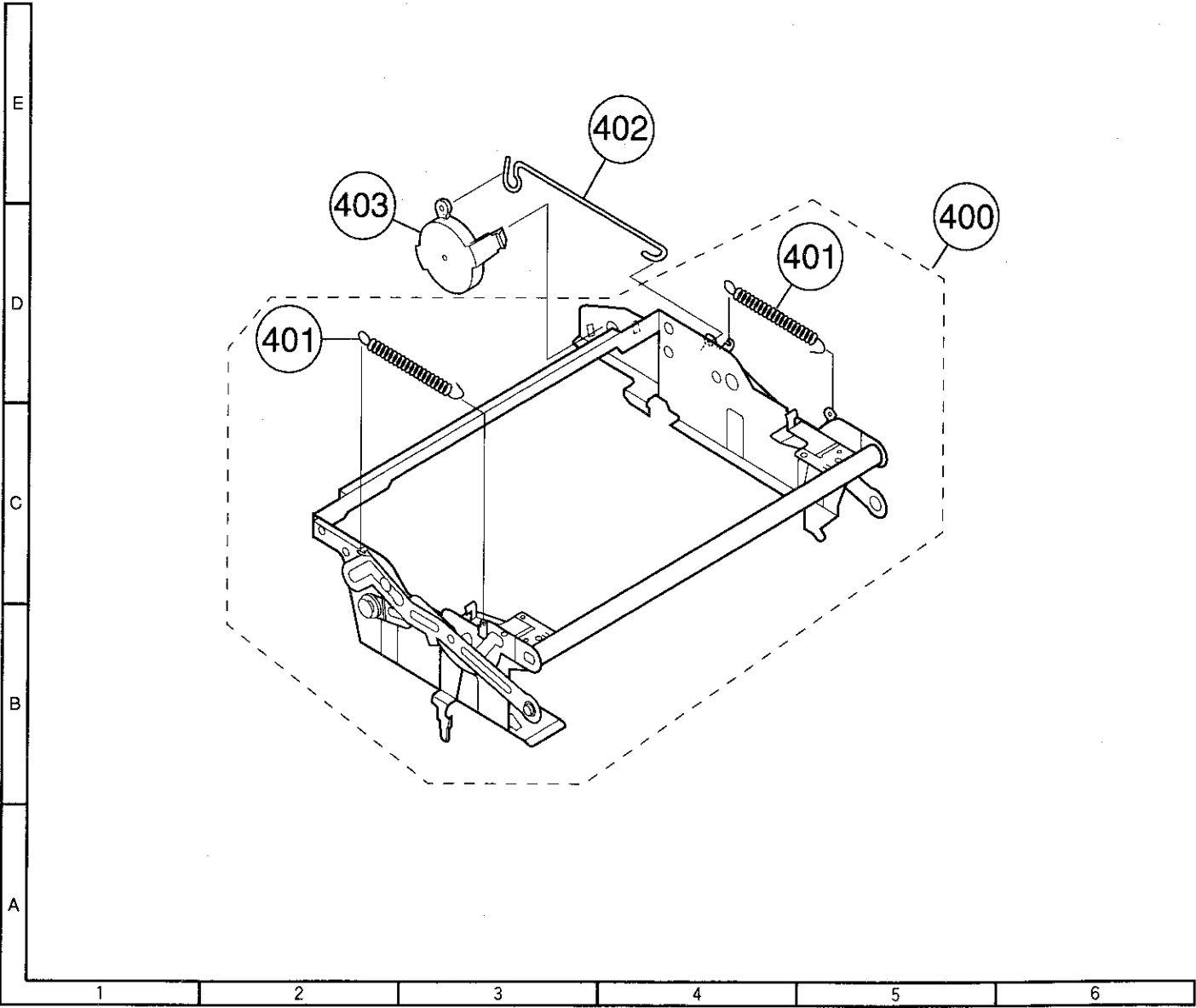
Ref. No.	Part No.	★	Description	Code
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CASSETTE HOUSING PARTS

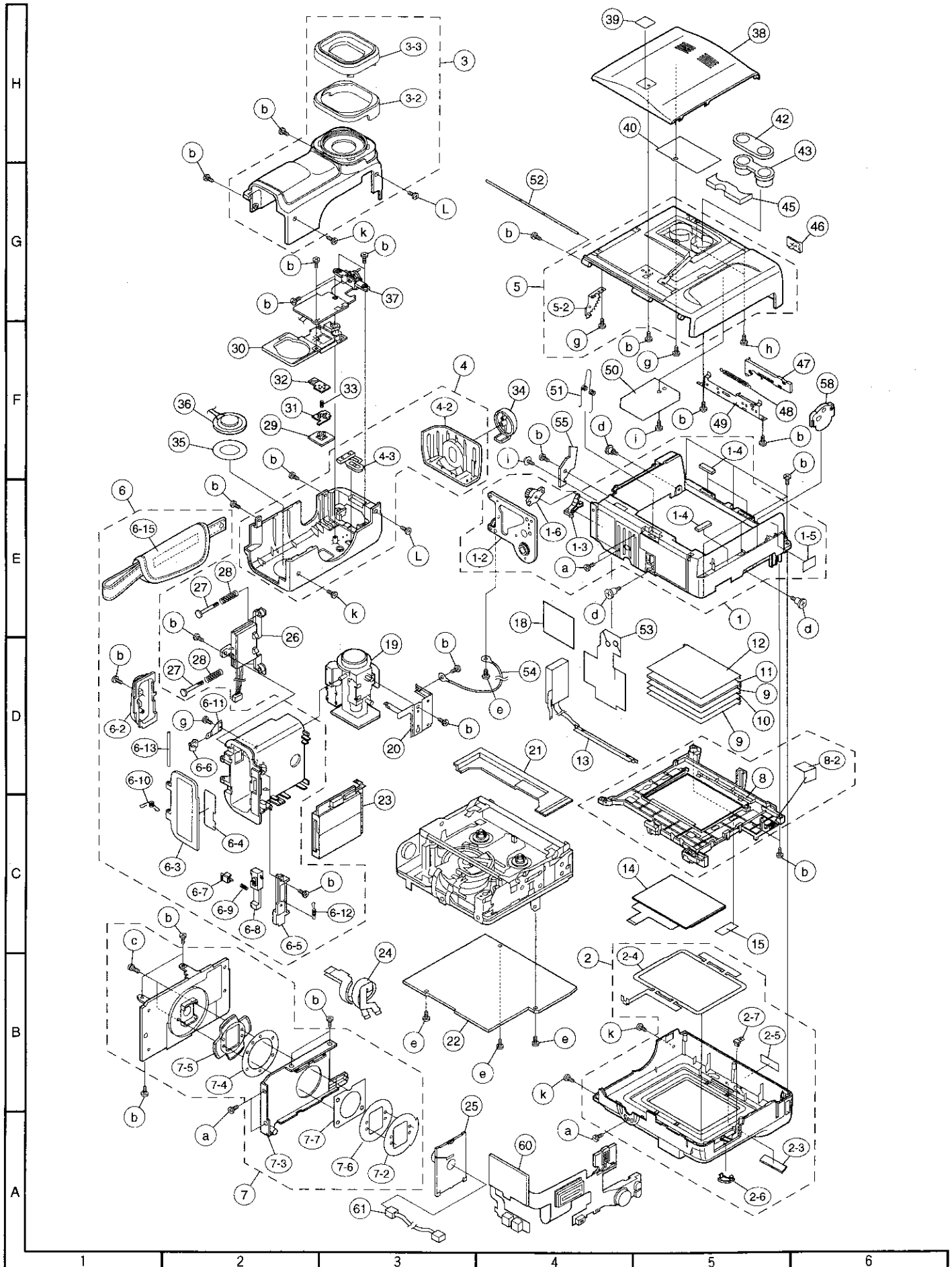
400	CHLDX3077GE01	J	Cassette Compartment Assy	AY
401	MSPRT0414GEZZ	J	Up Main Spring	AD
402	MROD-0014GEFJ	J	Damper rod	AG
403	PDMP-0013GEZZ	J	Cassette Compartment Damper	AG

— End of Cassette Housing Parts —

CASSETTE HOUSING CONTROL UNIT



CABINET EXPLODED VIEW



Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
CABINET PARTS LIST									
1	DCABA6161TAK2	J	V Frame Service	AS	13	CLMPV0023TA01	J	Lamp Unit	BA
1-2	LANGK0332TAZZ	J	Tripod Angle Ass'y	AK	14	CPNLC0026RM01	J	LCD Panel	BZ
1-3	MLEVP0025TAZZ	J	Eject Lever	AC	15	PZETV0343TAZZ	J	LCD Glass Retaining	AA
1-4	PSPAG0081TAZZ	J	VCR Lid Cushion	AB	18	TLABM1718TAZZ	J	Model Label(VL-H95E)	AD
1-5	TLABH0262TAZZ	J	Lithium Exchange Label	AB	18	TLABM1717TAZZ	J	Model Label(VL-H770S)	AC
1-6	PDMPF1006TAZZ	J	Damper	AF	18	TLABM1698TAZZ	J	Model Label(VL-H770H)	AC
2	CCABB6163TAK1	J	L Cabinet Service	AU	19	CLNSA0124TA02	J	Lens Unit	BR
2-3	HBDGB0048TASC	J	SHARP Badge	AF	20	LANGF0326TAFW	J	Lens Fitting	AE
2-4	QEARP0203TAZZ	J	LCD Earth Sheet	AE	21	GFTAC1241TASA	J	Cassette Compartment Cover	AD
2-5	TLABH0286TAZZ	J	Facing Recording Caution Label	AC	22	DUNTK2655QA00	J	VCR PWB Unit(VL-H770S/H)	—
2-6	GCOVA1440TAZZ	J	Remote Control Receptor Cover	AC	22	DUNTK2655QA02	J	VCR PWB Unit(VL-H95E)	—
2-7	GCOVA1441TAZZ	J	LED Cover	AC	23	DUNTK2657QA01	J	Camera PWB Unit	—
3	CCABC6071TAK1	J	Camera Front Cabinet Ass'y	AZ	24	OPWBH2568TAZZ	J	Tilt FPC	AS
3-2	GCOVA1412TASC	J	Lens Decoration Cover	AG	25	LHLDW1036TA00	J	FPC Holder	AD
3-3	GCOVH1205TASC	J	Lens Hood	AS	26	QTANZ0113TAZZ	J	Battery Terminal Unit	AH
4	DCABD6081TAK1	J	Camera Back Cabinet Service	AX	27	NSFTZ0060TAZZ	J	Battery Push-out Shaft	AD
4-2	GCOVA1410TAKC	J	Zoom Cover	AK	28	MSPRC0085TAFJ	J	Battery Push-out Spring	AB
4-3	JBTN-0257TASC	J	S/S Button	AH	29	JKNBP0108TASI	J	Power Knob	AC
5	DFTAC1237TAK1	J	VCR Lid Service	AN	30	LHLDZ1365TASC	J	Power Holder	AD
5-2	NGERH3004TAZZ	J	Damper Gear	AE	31	JBTN-0247TASA	J	Power Rock Button	AF
6	CHLDZ1363TAK9	J	Battery Holder Ass'y	AX	32	LHLDZ1366TAZZ	J	Power Rock Button Holder	AC
6-2	GCOVA1411TAKA	J	Hand Strap Upper Cover	AD	33	MSPRC0083TAFJ	J	Power Spring	AA
6-3	GFTAB1055TAKA	J	Battery Lid	AD	34	JKNBP0120TASC	J	Zoom Knob	AF
6-4	HDECP0041TASA	J	Battery Decoration Plate	AC	35	PSPAZ0162TAZZ	J	Speaker Mesh	AC
6-5	LHLDZ1362TAZZ	J	Battery Lid Lever Holder	AD	36	VSP0028P-488N	J	Speaker	AL
6-6	LHLDZ1364TA00	J	Battery Intermediate Lock	AC	37	QSW-Z0243TAZZ	J	Power Unit	AQ
6-7	MLEVP0026TASA	J	Battery Lock Lever	AC	38	GCOVA1479TAKC	J	VCR Lid Cover(VL-H770S/H)	AN
6-8	MLEVP0027TASA	J	Battery Lid Lever	AD	38	GCOVA1481TAKC	J	VCR Lid Cover(VL-H95E)	AP
6-9	MSPRC0084TAFJ	J	Battery Lock Spring	AA	39	HBDGS0056TASA	J	LCD Badge	AD
6-10	MSPRD0046TAFJ	J	Battery Lid Spring	AB	40	PSPAH0023TAZZ	J	Microphone Spacer	AD
6-11	MSPRP0154TAFJ	J	Battery Intermediate Lock Spring	AB	42	PMLT-0141TAZZ	J	Microphone Molt(Front)	AC
6-12	MSPRT0035TAFJ	J	Battery Lid Lock Spring	AA	43	RMICC0074TAZZ	J	Microphone	AS
6-13	NSFTZ0058TAFJ	J	Battery Lid Axle	AB	45	PMLT-0138TAZZ	J	Sound Insulation Molt (Upper)	AB
6-15	UBNDT0084TASC	J	Hand Strap	AS	46	JKNBP0119TASA	J	Open Knob	AC
7	DHLDZ1370TAK3	J	Tilt Ass'y	AU	47	LHLDZ1361TAZZ	J	VCR Lid Rock	AD
7-2	LANGH0064TAFW	J	Stopper Fitting	AD	48	MSPRT0034TAFJ	J	Lid Rock Spring	AC
7-3	LHLDZ1369TAKC	J	Tilt Frame V	AL	49	LANGK0330TAZZ	J	Lid Rock Angle Ass'y	AF
7-4	PSPAA0004TAFW	J	Aluminium Spacer	AC	50	PCOVP9059TAZZ	J	Microphone Lead Cover	AC
7-5	PSPAZ0135TAZZ	J	Tilt Spacer	AF	51	MSPRD0048TAFJ	J	VCR Lid Spring	AD
7-6	PSPAZ0136TAZZ	J	Rotation Spacer	AD	52	NSFTZ0059TAFW	J	VCR Lid Shaft	AD
7-7	PSPAZ0151TAFW	J	Spacer	AC	53	PSPAZ0164TAZZ	J	Microphone Lead Spacer	AD
8	CHLDZ1395TAKI	J	LCD Holder Ass'y	AH	54	QCNW-1678TAZZ	J	Earth Lead	AC
8-2	PSHEP0058TAZZ	J	Shield Sheet	AB	55	QSW-Z0242TAZZ	J	Turn/Eject SW	AH
9	PSHEP0045TAZZ	J	Diffusion Sheet	AD	58	LHLDB1019TAZZ	J	Lithium Holder	AC
10	PSHEP0044TAZZ	J	Prism Sheet	AG	60	QTANZ0124TAZZ	J	Terminal Unit	BK
11	PGIDM0025TAZZ	J	Light Guide Plate	AG				Light Reception Unit	
12	PMIR-0021TAZZ	J	Reflection Sheet	AC	61	QCNW-1723TAZZ	J	Shield Wire	AG
					a	XIPSF20P04000	J	M2x4 Small Screw, Black Zinc Plating	AA
					b	LX-HZ0018TAFJ	J	M2x6 Tapping	AA
					c	XBPSD26P08J00	J	M2.6x8 With Spring Washer	AA
					d	LX-HZ0044TAFE	J	M2 Special Screw	AB
					e	XIPSD20P03000	J	M2x3 Small Screw	AA
					g	LX-HZ0045TAFN	J	M2x4 Tapping	AA

VL-H770S/H
VL-H95E

Ref. No.	Part No.	★	Description	Code
h	LX-HZ0046TAF	J	M1.4x5 Tapping	AA
i	LX-HZ0052TAF	J	M2x3.3 Tapping(Black)	AA
k	LX-HZ0018TAFN	J	M2x6 Tapping(Silver)	AA
L	XIPSN20P04000	J	M2x4 Small Screw(Silver)	AA

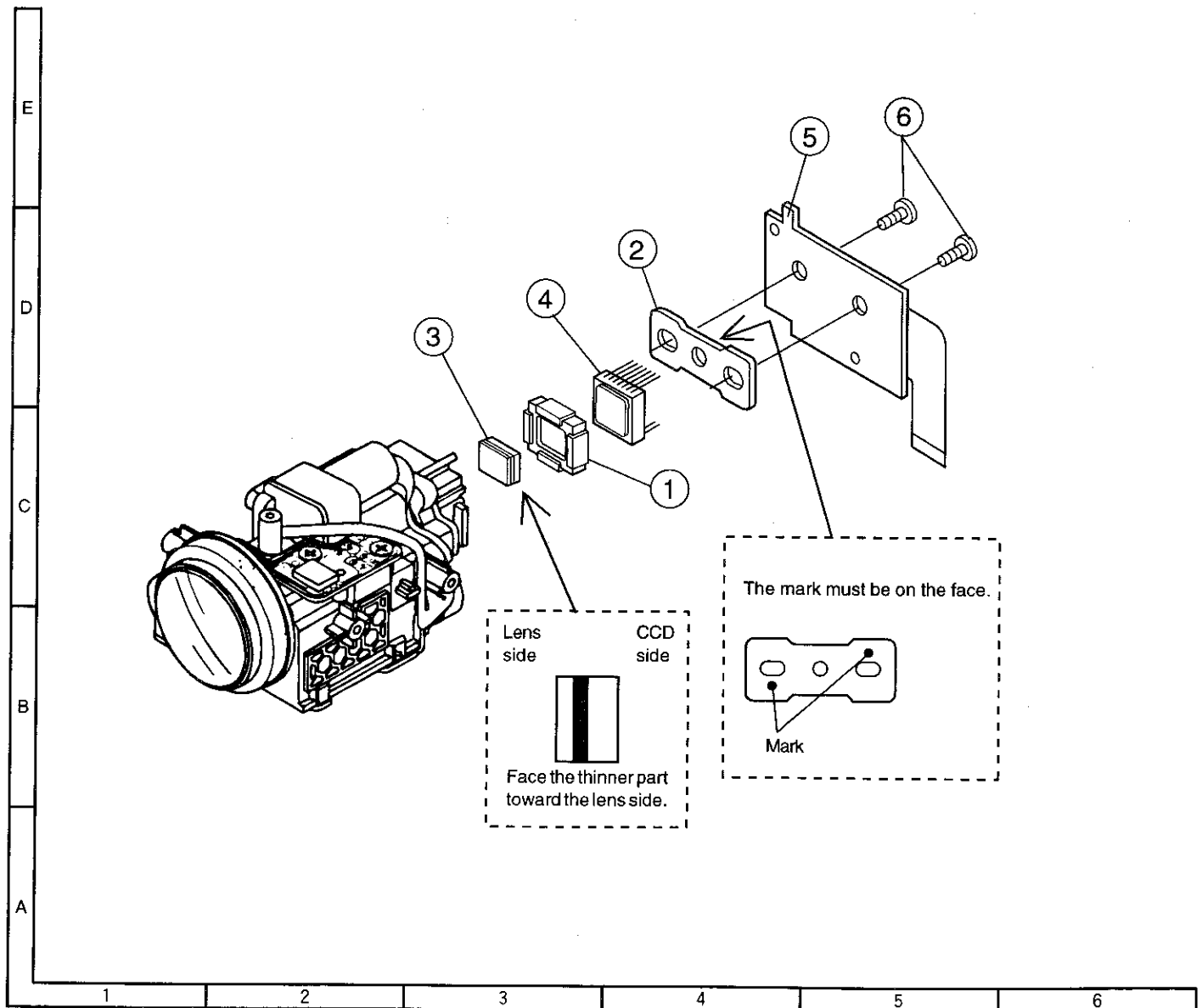
—— End of Cabinet Parts ——

Ref. No.	Part No.	★	Description	Code
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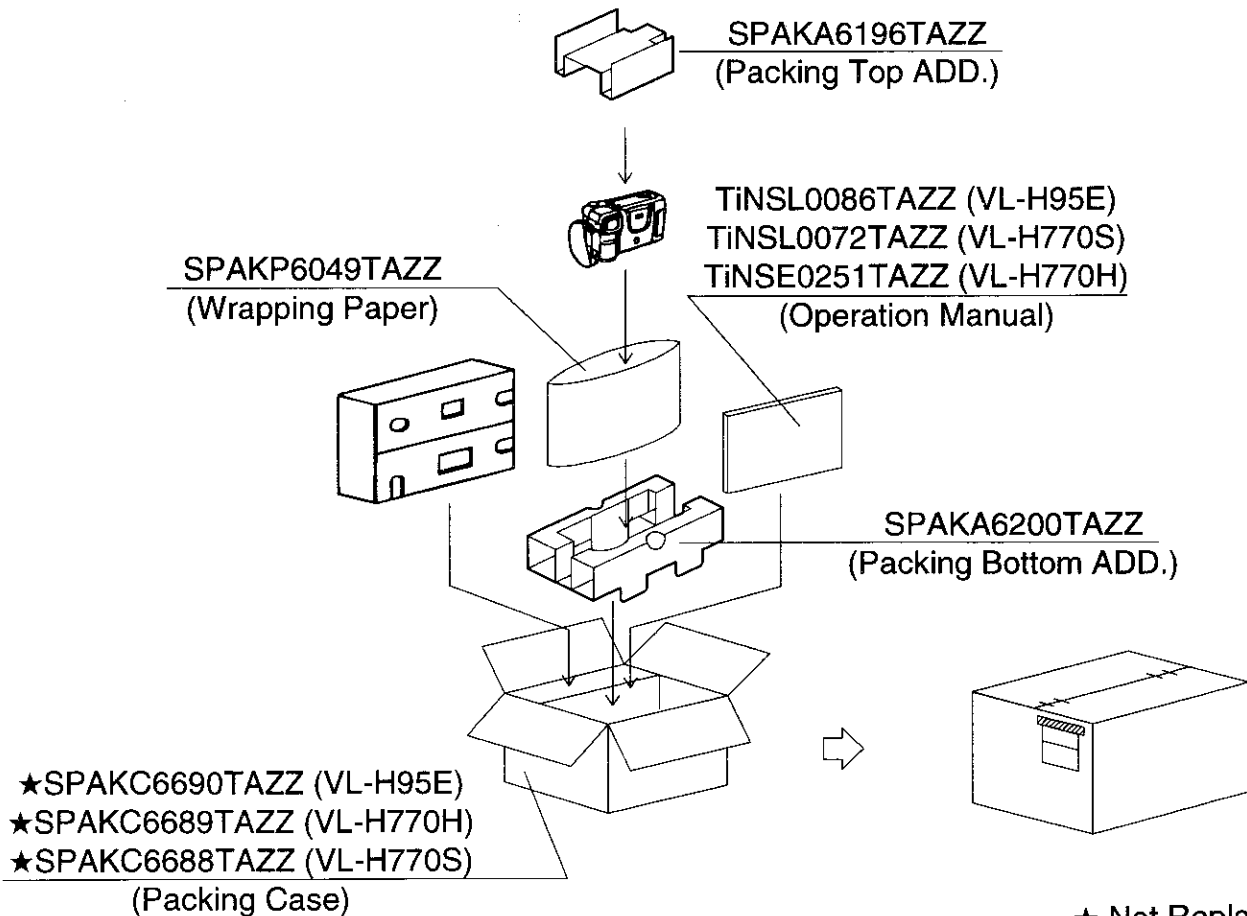
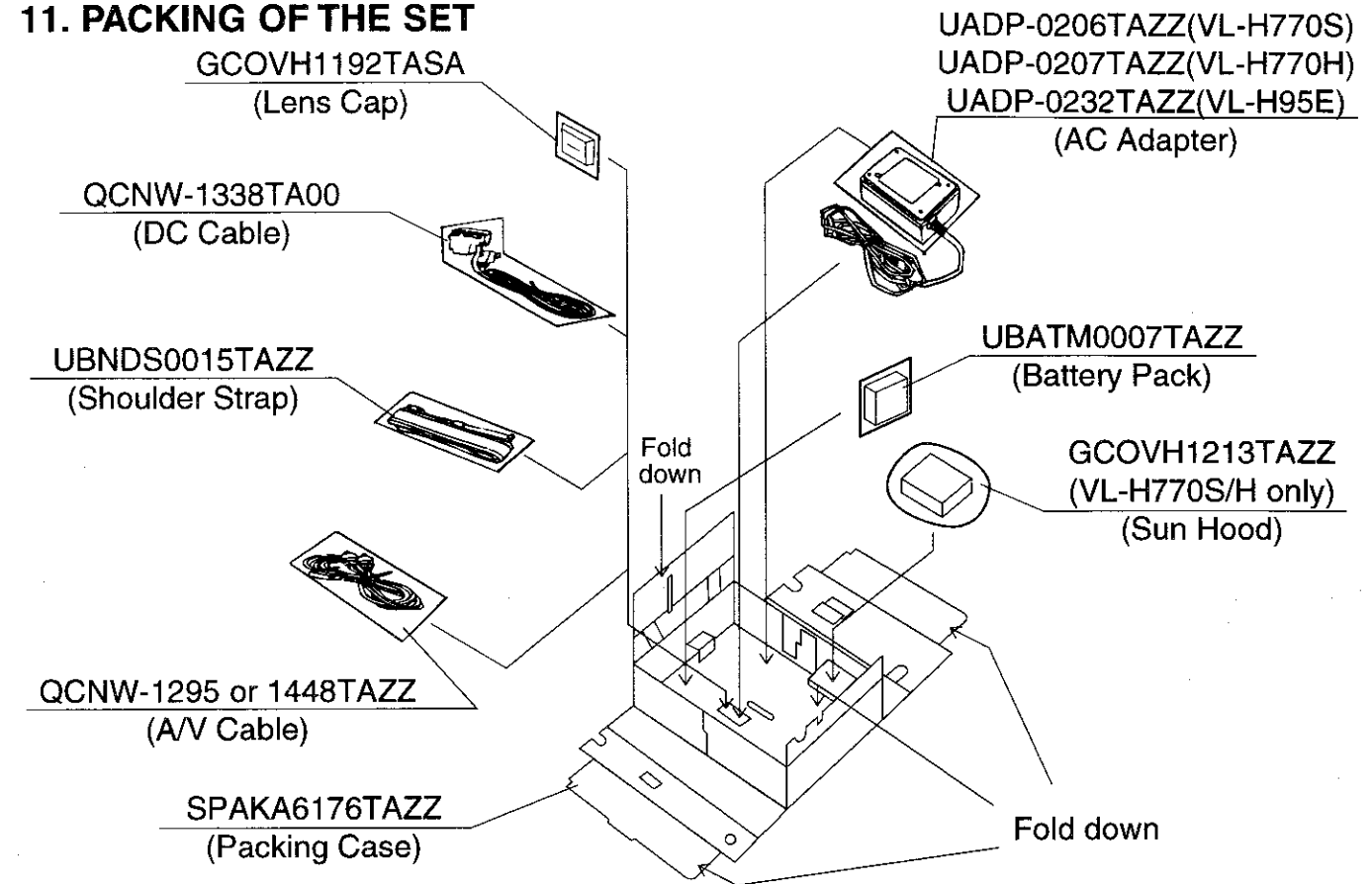
CAMERA UNIT PARTS LIST

1	PCOVM8019TA00 J		Dustproof Rubber	AC
2	LANGK0314TAFW J		CCD Retaining Plate	AC
3	PFILW0060TAZZ J		Optical Filter	AS
4	VHiLZ2463A6-1 J		CCD Sensor	BM
5	RCCD-0014TAN0 J		CCD PWB Unit	—
6	LX-HZ0013TAFF J		Screw (1.7 X 6)	AA

— End of Camera Unit Parts —



11. PACKING OF THE SET



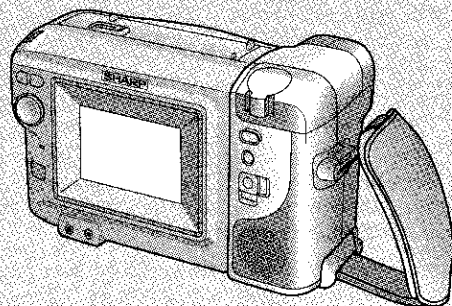
★ Not Replacement Item

SHARP®

MODEL
VL-H770H

LIQUID CRYSTAL DISPLAY CAMCORDER **OPERATION MANUAL**

Please read this operation manual carefully
before using the VIEWCAM.



Hi8 PAL

SHARP
VIEW•CAM

Important
Information

Preparation

Basic Operations
Camera Recording

Basic Operations
Playback

Useful Features for
Camera Recording

Connections and
Editing

Others

This equipment complies with the requirements of Directives 89/336/EEC and 73/23/EEC as amended by 93/68/EEC.

Dieses Gerät entspricht den Anforderungen der EG-Richtlinien 89/336/EEG und 73/23/EEG mit Änderung 93/68/EEG.

Ce matériel répond aux exigences contenues dans les directives 89/336/CEE et 73/23/CEE modifiées par la directive 93/68/CEE.

Dit apparaat voldoet aan de eisen van de richtlijnen 89/336/EEG en 73/23/EEG, gewijzigd door 93/68/EEG.

Dette udstyr overholder kravene i direktiv nr. 89/336/EEC og 73/23/EEC med tillæg nr. 93/68/EEC.

Quest' apparecchio è conforme ai requisiti delle direttive 89/336/EEC e 73/23/EEC, come emendata dalla direttiva 93/68/EEC.

Η εγκατάσταση αυτή ανταποκρίνεται στις απαιτήσεις των οδηγιών της Ευρωπαϊκής Ένωσης 89/336/ΕΟΚ και 73/23/ΕΟΚ, όπως οι κανονισμοί αυτοί συμπληρώθηκαν από την οδηγία 93/68/ΕΟΚ.

Este equipamento obedece às exigências das directivas 89/336/CEE e 73/23/CEE, na sua versão corrigida pela directiva 93/68/CEE.

Este aparato satisface las exigencias de las Directivas 89/336/CEE y 73/23/CEE, modificadas por medio de la 93/68/CEE.

Denna utrustning uppfyller kraven enligt riktlinjerna 89/336/EEC och 73/23/EEC så som kompletteras av 93/68/EEC.

Dette produktet oppfyller betingelsene i direktivene 89/336/EEC og 73/23/EEC i endringen 93/68/EEC.

Tämä laite täyttää direktiivien 89/336/EEC ja 73/23/EEC vaatimukset, joita on muutettu direktiivillä 93/68/EEC.

WARNING

TO PREVENT SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This equipment should be used with approved DC 3.6 V --- only or recommended AC adapter.

CAUTION

To prevent electric shocks and fire hazards, do NOT use any other power source.

Important:

Recording and playback of any material may require consent. Please refer particularly to the provisions of the Copyright Act 1956, the Dramatic and Musical Performers Protection Act 1958, the Performers Protection Acts 1963 and 1972 and to any subsequent statutory enactments and orders.

CAUTION

To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to a qualified dealer or service centre.

Power supply:

WARNING: THIS AC ADAPTER IS NOT FOR USE WITH TOYS. THIS AC ADAPTER IS FOR USE WITH SHARP VIEWCAM MODEL VL-H770H ONLY.

This unit can be operated by connecting it to either the AC adapter, battery pack, or optional car battery adapter/battery charger. The AC adapter incorporates the AUTO VOLTAGE (AC 110-240 V, 50/60 Hz) function.

SPECIAL NOTE FOR USERS IN THE U.K.

The mains lead of this product is fitted with a non-rewireable (moulded) plug incorporating a 3A fuse. Should the fuse need to be replaced, a BSI or ASTA approved BS 1362 fuse marked  and of the same rating as above, which is also indicated on the pin face of the plug, must be used.

Always refit the fuse cover after replacing the fuse. Never use the plug without the fuse cover fitted.

In the unlikely event of the socket outlet in your home not being compatible with the plug supplied, cut-off the mains plug and fit an appropriate type.

DANGER: The fuse from the cut-off plug should be removed and the cut-off plug destroyed immediately and disposed of in a safe manner.

Under no circumstances should the cut-off plug be inserted elsewhere into a 13A socket outlet, as a serious electric shock may occur.

To fit an appropriate plug to the mains lead, follow the instructions below:

IMPORTANT: The wires in the mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this product may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The wire which is coloured blue must be connected to the plug terminal which is marked N or coloured black.
- The wire which is coloured brown must be connected to the plug terminal which is marked L or coloured red.

Ensure that neither the brown nor the blue wire is connected to the earth terminal in your three-pin plug.

Before replacing the plug cover make sure that:

- If the new fitted plug contains a fuse, its value is the same as that removed from the cut-off plug.
- The cord grip is clamped over the sheath of the mains lead and not simply over the lead wires.

IF YOU HAVE ANY DOUBT, CONSULT A QUALIFIED ELECTRICIAN.

Your VIEWCAM is designed to record in SP mode only. It will not perform normal playback for programmes prerecorded in LP mode.

This VIEWCAM does not have a PCM recording or playback function. PCM recordings made using other VCRs or audio dubbing cannot be played back on this unit.

If you record on a tape on which PCM sound has already been recorded, the audio track of the new VIEWCAM recording may not come out if the tape is played back on a PCM-capable VCR. If this occurs, set the VCR's audio monitor select switch to the "Standard" position.

NOTE:

The VIEWCAM's LCD panel is a very high technology product with close to 90,000 thin-film transistors*, giving you fine picture detail. Occasionally, a pixel may appear on the screen as a fixed point of blue, green, red, or black. Please note that this does not affect your VIEWCAM's performance.

*Specifications are subject to change without notice.

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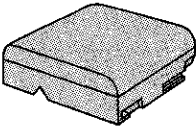
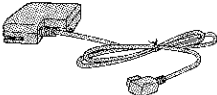
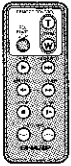
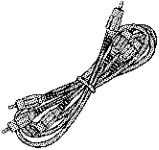
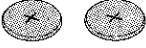
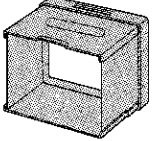
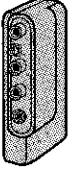
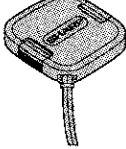
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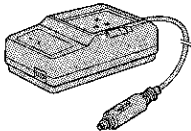
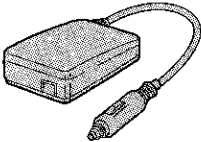
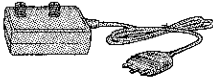
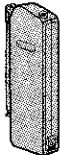
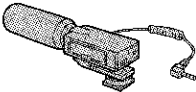
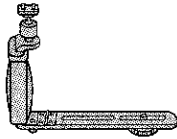
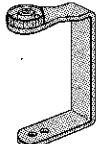
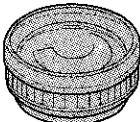
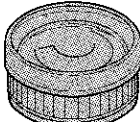
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Supplied Accessories

 Battery pack BT-H21	 AC adapter/battery charger	 DC output cable (2.0 m)	 Infrared remote control
 Audio/video cable (RCA type) (1.5 m)	 S-video cable (1.5 m)	 Lithium battery × 2	 Shoulder strap
 Sun hood	 A/V pack	 Lens cap	

Optional Accessories

 Battery pack BT-H21	 Car battery adapter/ battery charger VR-33CH	 Car battery adapter VR-410CA	 RF converter VR-H30RF
 TV tuner pack VR-HT30P	 Stereo microphone VR-1MC	 Soft case	 Accessory shoe adapter VR-30AD
 Tripod adapter for 180° recording VR-33FA	 Telephoto conversion lens VR-TC37	 Wide conversion lens VR-WC37	

Precautions

Use & Care

- **After operation, remove the battery pack from the unit.**

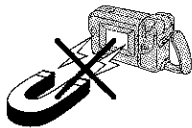
- **Do not aim the lens at the sun.**

Do not allow direct sunlight to strike the VIEWCAM lens or LCD panel, whether recording is in progress or not, as it may damage the CCD sensor or LCD panel surface. Be particularly careful when recording outside.

- When shooting in dark places, avoid sudden brightly lit objects or light sources, such as the sun. Otherwise, the image may white out. Should this happen, point the camera in a different direction until the picture returns to normal.

- **Avoid magnetic sources.**

Using the VIEWCAM near strong fluorescent lights, motors, televisions, or other magnetic sources may adversely affect recorded images.

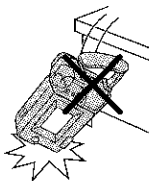


- **Remember to remove the cassette tape, turn off the power, and remove the battery pack when the VIEWCAM is not in use.**

- **Using the VIEWCAM near a broadcasting station or other powerful transmission source may cause buzzing or picture deterioration.**

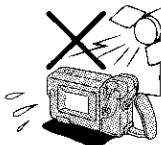
- **Avoid shocks and dropping.**

Do not drop or otherwise subject the VIEWCAM to hard shocks or strong vibrations. Bumping or striking the unit during recording will generate noise in the recorded image.



- **Avoid placing the VIEWCAM in close proximity to lighting equipment.**

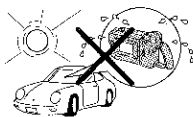
The heat from incandescent lights may deform the VIEWCAM, or cause it to malfunction.



- **Always respect prohibitions or restrictions on the use of electronic equipment on commercial flights or in other sensitive areas.**

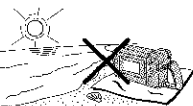
- **Be aware of the temperature and humidity.**

You can use your VIEWCAM at 0°C to +40°C, and at 30% to 80% relative humidity. Do not store the unit in an unventilated car in the summer, in direct sunlight, or near strong heat sources; this can result in severe damage to the unit's casing and circuitry.



- **Avoid situations where water, sand, dust or other foreign matter could get on or inside the VIEWCAM, and do not use or leave your VIEWCAM in areas with excessive smoke, steam or moisture.**

Such environments can cause malfunctions or cause mildew to form on the lenses. Be sure to keep the unit in a well-ventilated location.



- **Some small, portable tripods may be difficult to attach and may not be sturdy enough to support your VIEWCAM. Be sure to use only a strong, stable tripod.**



- **When using your VIEWCAM in a cold environment, the colour LCD view screen often appears less bright immediately after the power is turned on. This is not a malfunction. To prevent the VIEWCAM from becoming too cold, wrap it in a thick cloth (a blanket, etc.).**

Dew Formation

• What is "dew formation"?

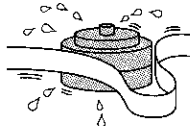
When cold water is poured into a glass, dew drops form on the glass. This clinging of water drops is called dew formation.

• When dew forms in your VIEWCAM.

Dew will gradually form on the head drum of your VIEWCAM and make the video tape stick to the head. This causes damage both to the head and the tape. When dew formation occurs, recording and playback may not function properly.

Dew is likely to form in the following circumstances:

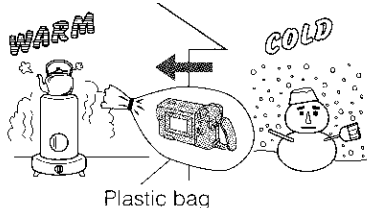
- when moving the VIEWCAM from a cold place to a warm place,
- when placing the VIEWCAM in a cold room which is then heated rapidly,
- when moving the VIEWCAM outdoors from an air conditioned room,
- when placing the VIEWCAM in the direct path of air blowing from an air conditioner,
- when placing the VIEWCAM in a humid room.



• How to prevent trouble due to dew formation.

When using the VIEWCAM in a place where dew formation is likely to occur, allow the VIEWCAM and the video tape to acclimatise to the surroundings for about one hour.

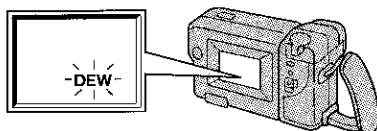
For example, when bringing the VIEWCAM indoors after skiing, place it in a plastic bag and allow it to adapt to room conditions for some period of time.



- ① Be sure to tightly seal the plastic bag containing the VIEWCAM.
- ② Remove the bag when the air temperature inside it reaches the temperature of the surroundings.

• "Dew" warning feature

If dew forms, the word "DEW" flashes on the LCD monitor, and the power will automatically turn off in approximately 10 seconds.



- ① If the word "DEW" flashes on the LCD monitor, remove the cassette, leave the cassette compartment open, and wait several hours to allow the VIEWCAM to acclimatise to the surrounding temperature.
- ② To use the VIEWCAM again, turn on the power after waiting for several hours. Be sure that the word "DEW" has disappeared from the monitor screen.
- ③ Do not insert a cassette while the word "DEW" is flashing; this may result in damage to the tape.
- ④ Since dew forms gradually, it may take 10 to 15 minutes before the dew warning feature engages.

• How to maintain high recording quality.

If used in a variety of places, eventually your VIEWCAM may not function properly due to accumulation of dirt on the head drum. Avoid the following as much as possible when using your VIEWCAM.

- 1) Dew formation on the head drum.
- 2) Using a damaged or soiled video tape.
- 3) Use in a humid or dusty place.

• When the video heads become clogged.

Using the VIEWCAM when the video tape is dirty may cause the head to clog, producing noise on the recorded image or preventing the image from being recorded at all. Under such circumstances, contact the nearest SHARP service centre or your dealer for further advice.

Note: Video head cleaning can be done by using a commercially available cleaning tape. However, excessive use of the cleaning tape may also cause damage to the video heads. Please read the instructions accompanying the cleaning tape carefully, before using it.

Precautions

AC Adapter/Battery Charger

- The AC adapter/battery charger may interfere with reception if used near a radio.
- Prevent flammables, liquids, and metal objects from entering the adapter/charger.
- The adapter/charger is a sealed unit. Do not attempt to open or modify it.
- Do not damage, drop, or subject the adapter/charger to vibration.
- Do not leave the adapter/charger in direct sunlight.
- Avoid using the adapter/charger in humid or extremely hot places.

Battery Pack

Battery pack consumption

- Recording with many starts and stops, frequent zooming, and recording in low temperatures will somewhat shorten actual recording times. Accordingly, be sure to turn off the power when not recording. Use of an auxiliary battery pack is recommended to prevent undesirable interruptions in your recording.
- Do not use an insufficiently charged or weak battery pack. Such battery packs may cause the power to automatically stop during VIEWCAM operation to protect both the battery pack and the unit.

Note:

- This VIEWCAM uses a Ni-MH (nickel-metal hydride) type battery pack. Use only the SHARP BT-H21 battery pack. It is designed specifically for use with this VIEWCAM.

Battery pack life

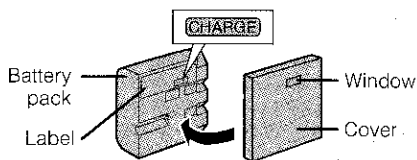
The battery pack has a limited service life. If the period of use becomes noticeably shorter with a normal charge, the battery pack is at the end of its service life. Replace it with a new battery pack.

Extending battery pack life

- We recommend that you use the battery pack until its charge is fully drained and the VIEWCAM is inoperable before recharging the pack.
- Charge the battery pack immediately before recording. A battery pack stored for an extended time will naturally wear down, resulting in decreased recording time.
- Do not try to recharge a fully charged battery pack before it has been discharged, as this will cause deterioration of the battery's capacity.
- Store the battery pack in a dry, cool place.

How to use the battery pack cover

- After the battery pack is charged, put the cover on it so that the "CHARGE" mark printed on the label is seen through the window, as shown.



- Before the battery pack is charged, put the cover upside down so that only the battery pack casing is seen through the window.

Battery power is consumed even when the VIEWCAM's power is turned off. If you are not going to use your VIEWCAM immediately, remove the battery pack. (See page 12.)

Temperature during charging

- The Ni-MH (nickel-metal hydride) type BT-H21 battery pack can be charged at temperatures of 15°C to 30°C.

Caution:

- For safety, keep the battery pack in its protective cover when it is not being used. If the metal parts of the battery pack come in contact with other metal items, there is a danger that a short circuit may occur.

Replacing the Fluorescent Lamp

This VIEWCAM uses a fluorescent lamp backlight which has a limited service life. If the monitor becomes dark or difficult to view, the fluorescent lamp may need to be replaced. Contact the nearest SHARP service centre or your dealer for further advice.

Video Cassette Tapes

To protect recordings against erasure

When a previously recorded cassette is used again for recording, the previously recorded material is erased. To protect a recording against accidental erasure, slide the tab on the cassette to cover the hole. (A red mark will be exposed.) To record, slide the tab to open the hole.



Notes:

- Do not insert anything into the erasure-protection hole in the cassette.
- Only use those tapes with the **Hi8** or the **8** mark.
- Do not put anything into the holes on the bottom of the cassette.
- Do not store or place your video tapes in direct sunlight, near heaters, or in places with excessive moisture or dust.
- Do not keep video tapes near magnetic objects as they may erase the recording.
- Do not drop or subject the tapes to excessive shocks.
- Uneven tape winding will damage the tape. If the tape is not properly wound, reinsert it in the VIEWCAM and rewind the tape.
- Store the cassettes in their cases and stand them on edge.

What is Hi8?

Hi8 is a high-performance extension of the ordinary 8 mm format. It uses advanced technology to achieve even higher resolution and picture quality. Hi8 recording on special Hi8 tape results in a revolutionary improvement in picture quality, realizing vivid, realistic, high-quality pictures. Use a video cassette with the **Hi8** mark on it for high-quality recording and playback, or use one with the **8** mark to enjoy ordinary 8 mm recording and playback.

- When you load a Hi8 tape, recording is in Hi8 format. (The Hi8 indicator on the view screen lights up.) When you load a normal 8 mm tape, recording is in ordinary 8 mm format. (The Hi8 indicator on the view screen is off.)
- During playback, the format recorded is automatically detected.
- Video equipment not for use with Hi8 is unable to playback a tape recorded in Hi8 format.

- If you want to record with a Hi8 tape in normal 8 mm format, set the menu item "**Hi8**" to "OFF" on the MENU-PAGE **1** (Camera mode **43**) screen before recording. (See page 20 for menu screen operation.)

Care

Cleaning and maintenance

- Many plastic parts are used in the VIEWCAM casing. Do not use thinners, benzenes or other strong chemical cleaners. These may cause discoloration and damage to the casing.
- Clean the casing with a soft, dry cloth. If the casing is particularly dirty, wipe the casing with a tightly wrung cloth dampened with a diluted, neutral detergent. Then wipe it again with a soft, dry cloth.
- Use a soft cloth to wipe finger marks and other soiling off the LCD monitor and lens protector.
- If the lens needs cleaning, first remove the lens protector by turning it anticlockwise. Then clean the lens with a soft cloth, or compressed air and lens papers designed for photographic lenses.

Using Your VIEWCAM Abroad

Television system signals and electrical system voltages and frequencies vary substantially from country to country. When you are abroad, please check the sections below before using the AC adapter or connecting the VIEWCAM to a TV.

AC Power Sources

The AC adapter is compatible with 50 Hz and 60 Hz electrical systems in the range of 110 V to 240 V AC.

Car Cigarette Lighter Power Adapter (Optional Accessory VR-33CH or VR-410CA)

This can be used with 12 V and 24 V negative-ground cars only. Do not use it with positive-ground electrical systems.

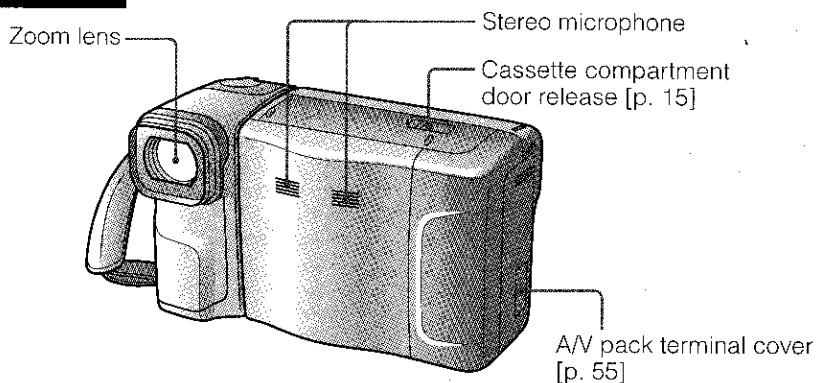
Television Signal Systems

In any country, you can always watch the video picture by using the LCD monitor screen. However, if you want to watch the picture on a TV screen, the TV must be PAL system compatible. PAL is used in the following countries: Germany, Great Britain, Sweden, Denmark, Austria, Belgium, Switzerland, Italy, Spain, Holland, Finland, Portugal, Norway, Hong Kong, Thailand, Australia, New Zealand, Singapore, Kuwait, China, etc.

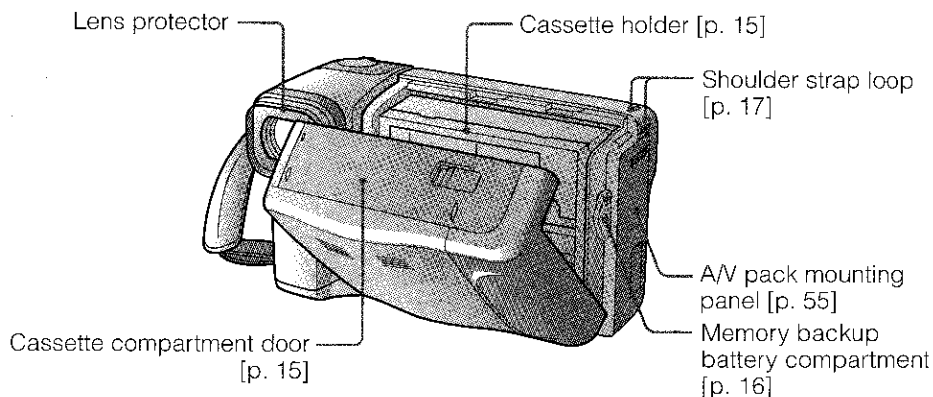
Part Names

For details on the use of each control, refer to the page number indicated in the brackets.

Front view

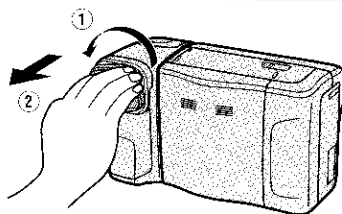


When the cassette compartment door is opened

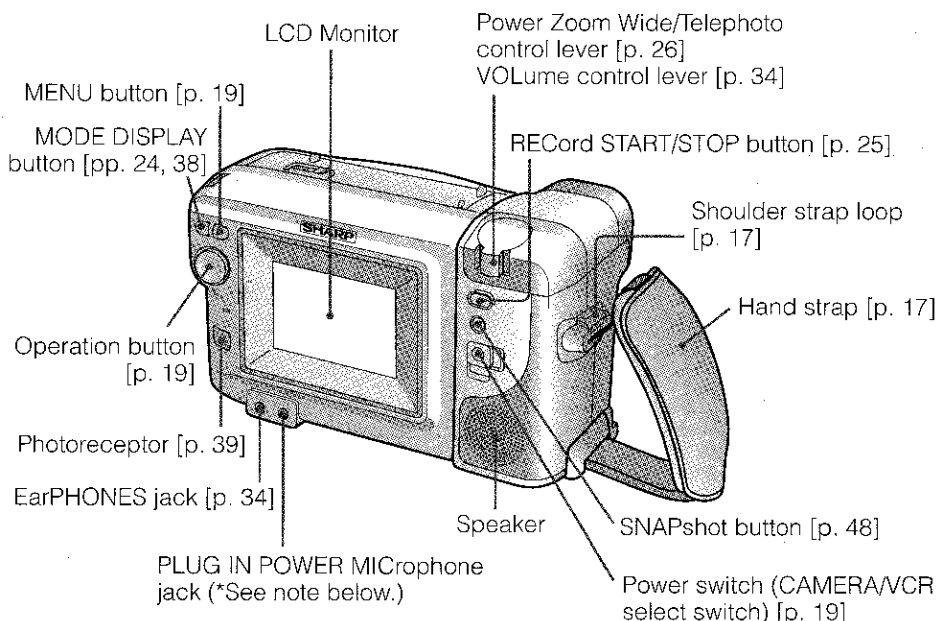


Removing the Lens Protector

Before mounting the optional wide or telephoto conversion lens, remove the lens protector by turning it anticlockwise.



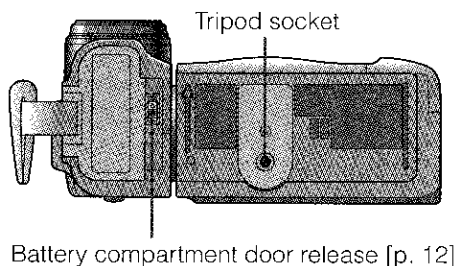
Rear view



*About the PLUG IN POWER MIC Jack

This external microphone jack outputs a DC voltage of 4.0 V. It is for use with any 2.5–4.0 volt DC use condenser-type microphone with a 3.5 mm diameter plug. The use of other types of microphones may result in damage to the microphone or the VIEWCAM.

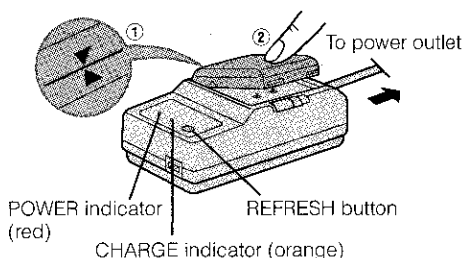
Bottom view



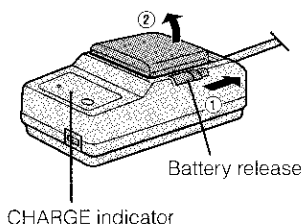
Preparation

Charging the Battery Pack

- 1 Disconnect the DC output cable from the AC adapter/battery charger if it is connected. Insert the AC plug into a power outlet. The POWER indicator will light up.
- 2 Align the ▼ mark on the battery pack with the ▲ mark on the charger (①). Next, press the other side of the battery pack down (②) until it clicks into place. The CHARGE indicator will light up.



- 3 When the battery pack is charged, the CHARGE indicator will go off. Slide the battery release in the direction of the arrow (①) and remove the battery (②). Then, unplug the charger's AC plug from the power outlet.



Caution:

- Charge only SHARP model BT-H21 battery pack. Other types of battery packs may burst, causing personal injury and damage.

Battery Pack Refreshing

This VIEWCAM uses a Ni-MH (nickel-metal hydride) type battery which requires "refreshing" from time to time; otherwise the operating time of the battery pack may be shortened. Please refresh your battery pack(s) once for every ten rechargings.

How to Refresh the Battery Pack

- 1 Connect the AC adapter/battery charger to a power outlet and mount the depleted battery pack on it. The POWER and CHARGE indicators will light up.
- 2 Press the REFRESH button.
 - The CHARGE indicator blinks while the battery is being refreshed. When refreshing is completed, charging starts automatically, and the indicator is continuously lit.

Note:

- Do not refresh a fully-charged battery pack.

Charging time, refresh time, and maximum continuous camera recording and playback times

Battery pack	Charging time *	Refresh time **	Max. continuous recording time	Max. continuous playback time
BT-H21	approx. 3 hr.	approx. 1 hr.	approx. 1 hr. 15 min.	approx. 1 hr. 15 min.

* When using the AC adapter/battery charger

**Time required to refresh a depleted battery

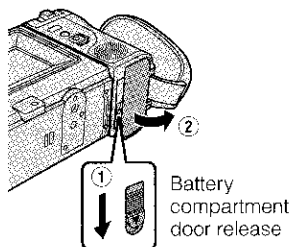
Notes:

- Using the zoom (see page 26) and other functions or turning the power on and off frequently will increase power consumption. This may result in a decrease of more than 50% in the actual recording time per battery pack compared to the maximum continuous recording time listed above.
- The battery pack and charger become warm during charging. This is not a malfunction.
- The charging time and recording time may vary depending on the ambient temperature and the condition of the battery pack.
- See page 7 for more information on using the battery pack.

Inserting and Removing the Battery Pack

Inserting the Battery Pack

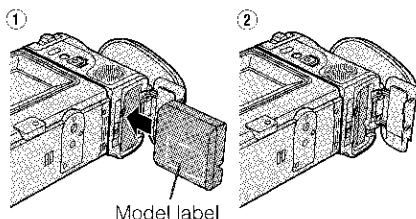
- 1 Slide the battery compartment door release on the bottom of the VIEWCAM in the direction of the arrow (①), to open the battery compartment door (②).



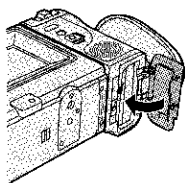
- 2 Insert the battery pack into the compartment with its bottom facing the battery compartment door (①), and push it in completely until it locks into place (②).

Caution:

- Do not force the battery pack into the battery compartment if it does not go in easily.

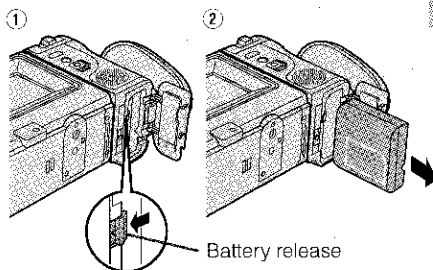


- 3 Close the door, pressing it firmly in the centre until it clicks.



Removing the Battery Pack

- 1 Perform step 1 in the above procedure.
- 2 With the VIEWCAM facing down, press the battery release as shown (①), and remove the battery pack (②).



Cautions:

- BEFORE REMOVING THE BATTERY PACK, ALWAYS STOP THE TAPE AND TURN THE POWER OFF. If you remove the battery pack during recording or playback, the tape will remain wound around the video head drum and may be damaged. Should the power source (battery or adapter) become disconnected during operation, reconnect it again immediately.
- Do not expose the battery compartment door to strong force, as it may come off.
- Make sure the battery compartment door is closed firmly during operations. If it is not, the battery pack may come off or VIEWCAM operation may fail because of the poor contact pressure.
- Remove the battery pack from the VIEWCAM or disconnect the VIEWCAM from the AC adapter if the VIEWCAM will not be used for a long time.
- When removing the battery pack, do not tilt the VIEWCAM so that the battery compartment faces down. The battery pack may fall out.

Battery Pack Handling

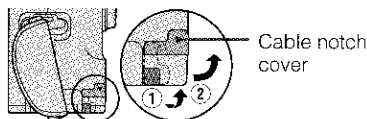
- Make sure that you take enough battery packs with you to provide two to three times your estimated recording time. See page 11.
- Recording time will be reduced in cold weather.
- The battery will drain in Recording Standby mode. Turn off the power if you will not be recording again soon.

Powering the VIEWCAM from an AC Outlet

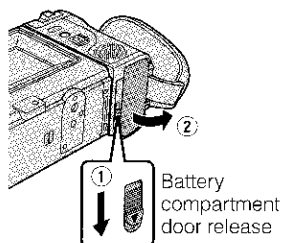
Precaution:

- The supplied AC adapter/battery charger is specially designed for use with the VIEWCAM, and should not be used as a power supply for other camcorders.

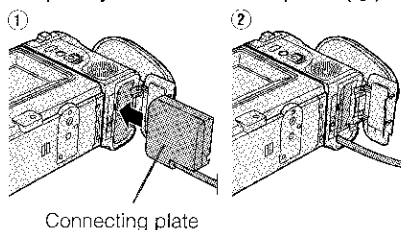
- Open the cable notch cover turning it in the direction of the arrow, as shown.



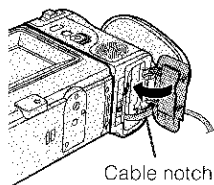
- Slide the battery compartment door release on the bottom of the VIEWCAM in the direction of the arrow (1), to open the battery compartment door (2).



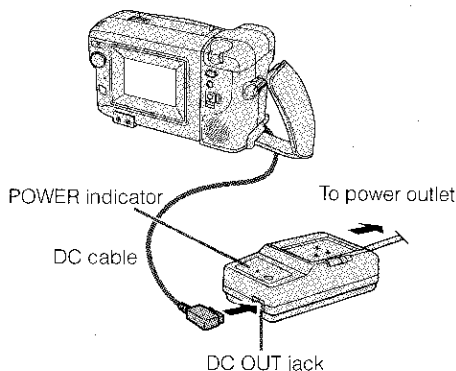
- Insert the DC cable connecting plate into the compartment (1), and push it in completely until it locks into place (2).



- Pass the DC cable through the cable notch, and then close the door pressing it firmly in the centre until it clicks.



- Insert the DC cable plug into the DC OUT jack on the supplied AC adapter. Plug the adapter power cord into a power outlet. The POWER indicator on the AC adapter will light up.

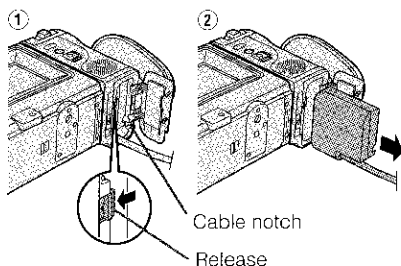


Note:

- When the AC adapter is used to power the VIEWCAM, it cannot be used to charge the battery pack.

Removing the DC Cable from the VIEWCAM

- Slide the battery compartment door release and open the door.
- Remove the cable from the cable notch, press the release as shown (1), and then remove the DC cable (2).



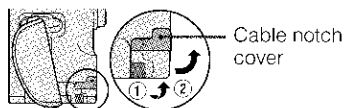
Cautions:

- Turn the Power switch off before removing the DC cable.
- When removing the DC cable, grasp the connecting plate, not the cable itself, and pull it out of the compartment.
- If you remove the DC cable during recording or playback, the tape will remain wrapped around the drum, potentially causing damage to the tape. Reconnect the power source to the main unit immediately.

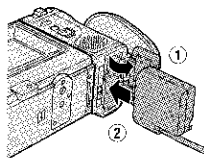
Powering the VIEWCAM from Your Car Battery

Use the optional VR-33CH car battery adapter/battery charger (or the VR-410CA car battery adapter) when you want to power the VIEWCAM from the battery of your car.

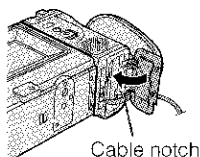
- 1 Open the cable notch cover turning it in the direction of the arrow, as shown.



- 2 Open the battery compartment door (1) and insert the DC cable connecting plate into the VIEWCAM (2).



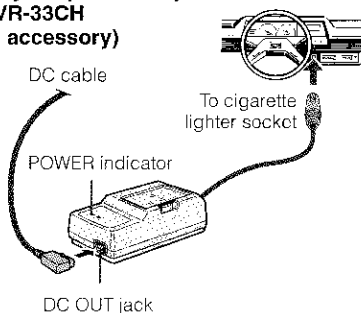
- 3 Pass the DC cable through the cable notch, then close the battery compartment door pressing it firmly in the centre until it clicks.



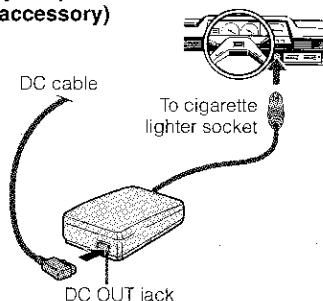
- 4 Insert the DC cable plug into the DC OUT jack on the VR-33CH (or VR-410CA).

- 5 Start the car engine and leave it idling, then insert the power cord plug of the car battery adapter into the cigarette lighter socket. (The POWER indicator on the VR-33CH will light up.)

Car battery adapter/battery charger VR-33CH (optional accessory)



Car battery adapter VR-410CA (optional accessory)



Notes:

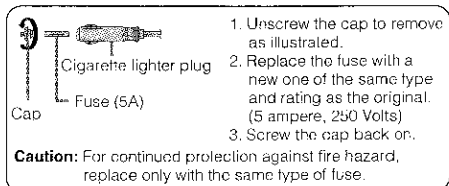
- See the VR-33CH (or VR-410CA) operation manual for details.
- You can recharge the battery pack with the VR-33CH, but not with the VR-410CA. See the VR-33CH operation manual for detailed instructions on charging a battery pack.

Cautions:

- Use in only DC 12 V or 24 V negative-ground system cars. Positive-ground car batteries CANNOT BE USED. Check your car operation manual or consult a local car dealer.
- Use the VR-33CH (or VR-410CA) only when the car engine is running. Otherwise, the car's battery will be drained.
- Charge only SHARP model BT-H21 battery pack. Other types of batteries may burst, causing personal injury and damage.
- Before starting the car engine, the VR-33CH (or VR-410CA) must be unplugged from the cigarette lighter socket.
- Before removing either the DC plug or the cigarette lighter plug, the VIEWCAM's Power switch should be set to OFF.

Replacing the Cigarette Lighter Plug's Fuse

The fuse may blow if the car battery adapter/battery charger is improperly connected. If this happens, replace the fuse.



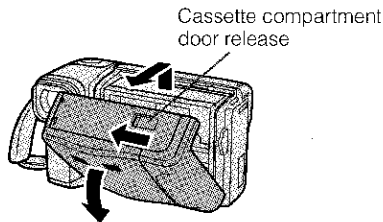
Note:

- If the car battery adapter/battery charger still does not operate properly after the fuse is replaced, take it to Sharp-authorized service centre.

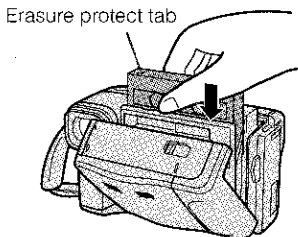
Inserting and Removing a Cassette

Inserting a Cassette

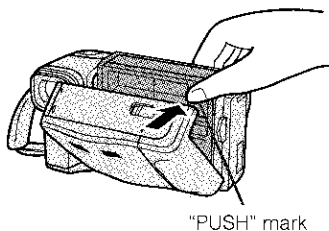
- 1 Supply power to the VIEWCAM, then slide the release and open the cassette compartment door.
 - The cassette holder extends and opens automatically.



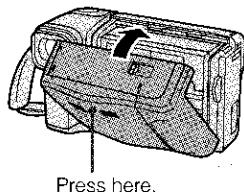
- 2 Insert the cassette fully with the window facing outwards, and with the erasure protect tab facing upwards.



- 3 Press the "PUSH" mark gently until the cassette holder clicks into place.
 - The cassette holder retracts automatically.



- 4 Wait for the cassette holder to fully retract. Close the compartment door pressing its centre until it clicks into place.



Removing a Cassette

Perform step 1 in the above procedure, then take out the cassette.

Cautions:

- Do not try to close the door while the cassette holder is extending or retracting.
- Be careful not to get your fingers caught in the cassette compartment.
- Do not apply force to the cassette compartment except for pressing the "PUSH" mark to close it.
- Do not tilt the VIEWCAM or hold it upside down when you are inserting or removing a cassette. It may damage the tape.
- Remove the cassette if you will not use the VIEWCAM for a long time.
- If you do not press the cassette holder closed correctly in step 3 above, the VIEWCAM's cassette protection mechanism might eject the cassette. If this happens, repeat the insertion procedure.
- Do not attempt to pick up the VIEWCAM by the cassette compartment door.

To protect recordings from accidental erasure

Slide the red projection on the video cassette in the direction of the arrow until the red indicator is visible. When you want to record on the tape again, slide the red projection in the reverse direction.

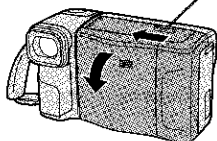


Installing the Memory Backup Battery

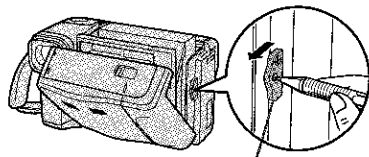
- 1 Supply power to the VIEWCAM, then slide the release and open the cassette compartment door.

- The cassette holder extends and opens automatically.

Cassette compartment door release

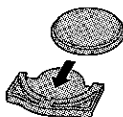


- 2 Pull out the battery holder using a pointed object such as the tip of a ballpoint pen.



Battery holder

- 3 Insert the supplied lithium battery into the holder with the + side facing down.



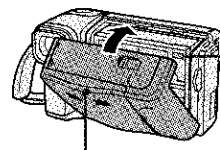
- 4 Insert the battery holder back into its compartment and push it in completely.



- 5 Close the cassette holder gently pressing the "PUSH" mark.

- The cassette holder retracts automatically.

Wait for the cassette holder to fully retract, and then close the cassette compartment door pressing its centre until it clicks into place.



"PUSH" mark

Press here.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type CR2025 recommended by the equipment manufacturer.

WARNING: KEEP THIS BATTERY AWAY FROM CHILDREN. IF SWALLOWED, CONSULT A PHYSICIAN IMMEDIATELY FOR EMERGENCY TREATMENT.

CAUTION: BATTERY MAY EXPLODE IF MISUSED OR INSTALLED WITH POLARITY REVERSED. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.

Cautions:

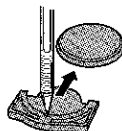
- If the lithium battery is installed with polarity reversed, the backup function will fail.
- Do not short-circuit, recharge, disassemble, or heat the battery.
- Should the battery leak, wipe the battery compartment clean, and then insert a new battery.

Notes:

- The lithium battery is used to back up the calendar and other memory functions.
- The battery will last about one year of normal usage.
- Replace the battery with a new CR2025 cell when the VIEWCAM's time indicator starts to fall behind the correct time.

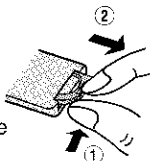
Removing the Lithium Battery from the Battery Holder

Place a pointed object such as the tip of a ballpoint pen into the small opening on the battery holder and lift out the battery.



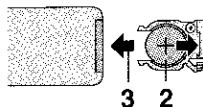
Installing the Battery in the Remote Control

- 1 Hold the remote control facing down, then pull out the battery holder while pressing the tab toward the centre.



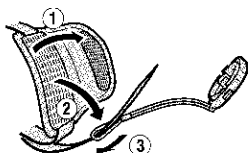
- 2 Install the supplied CR2025 lithium battery with its + side matching the ⊕ marked side of the battery holder.

- 3 Insert the holder in the direction of the arrow. Make sure that the ⊕ side faces the back of the remote control.

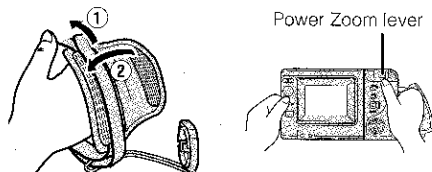


Using the Hand Strap and the Lens Cap

- 1 Open the hand strap flap (①) and grip strap (②), and pass the grip strap through the loop at the end of the lens cap cord (③).



- 2 Hold the VIEWCAM against your chest. Then put your thumb close to the Power Zoom lever, pull the grip strap tight until it fits snugly, seal the velcro closures (①), and close the hand strap flap (②).

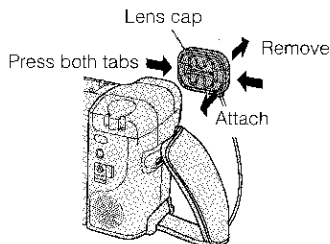


Caution:

- Do not swing the VIEWCAM by its hand strap.

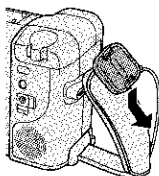
Attaching and Removing the Lens Cap

When attaching or removing the lens cap, press both tabs on the sides of the cap.



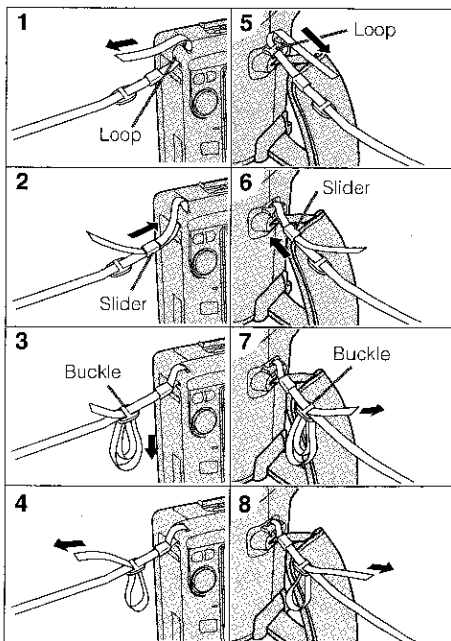
Notes:

- Always replace the lens cap on the lens when the VIEWCAM is not in use.
- Attach the lens cap to the hand strap so it will not get in the way during recording.



Attaching the Shoulder Strap

- 1 Hold one end of the strap and thread it through the loop on the left side of the monitor.
- 2 Thread the end of the strap through the slider and move the slider in the direction of the arrow to secure.
- 3 Loosen the strap in the buckle, then feed through the end of the strap, as shown.
- 4 Draw the strap in the direction of the arrow.
- 5-8 Use the same procedure to attach the other end of the strap.



Handling the LCD Monitor

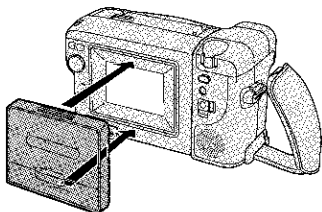
- Do not let anything press against the monitor screen, and do not expose it to shock, as it may break.
- Do not put the VIEWCAM on a table, or any other surface, with the monitor screen facing down.
- Use a soft cloth to clean the screen.

Using the Sun Hood

We recommend that you use the supplied sun hood when recording on a sunny day.

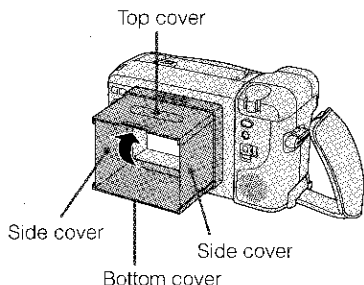
Attaching the Sun Hood

Align the two tabs on the sun hood with the VIEWCAM monitor, and press in the direction of the arrows until the sun hood clicks into place.



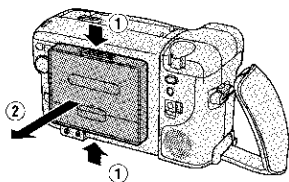
Opening the Sun Hood

Open the sun hood by lifting the top cover in the direction of the arrow. (The side and bottom covers will open automatically.)



Removing the Sun Hood

Press the top and bottom tabs of the sun hood as indicated by the arrows, then pull off the sun hood in the direction of the arrow.



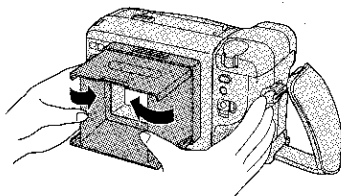
Caution:

- Do not leave the sun hood or VIEWCAM in an unventilated car in direct sunlight. The high temperature may cause a deformation of the casing.

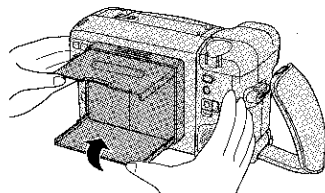
Closing the Sun Hood

- 1 Fold in both side covers while holding the top cover open.

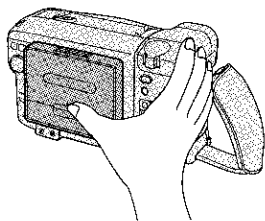
Caution: Do not forcibly press in the side covers. This may deform the side covers and damage the LCD screen.



- 2 Fold in the bottom cover while holding the top cover open and the side covers closed.



- 3 Close the top cover by gently pressing it down until it clicks into place.



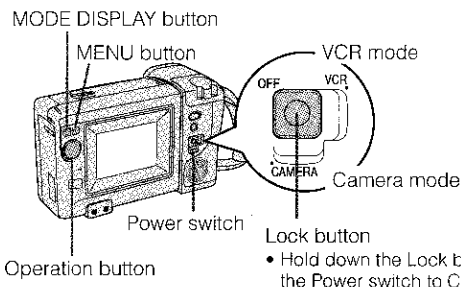
Note:

- Be sure to close the sun hood before transporting the VIEWCAM. (If the VIEWCAM is transported with the sun hood open, the sun hood may fall off or become damaged.)

Controlling the Monitor Display

You can use various functions and make mode settings while viewing the monitor display.

Preparation

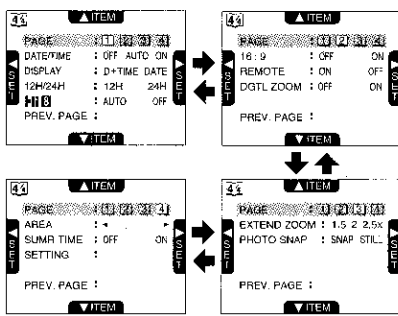
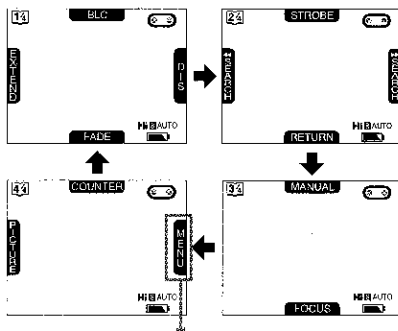


Note:

- The monitor illustrations in this operation manual are for the purpose of explaining the functions of the VIEWCAM, and may differ from the actual monitor displays.

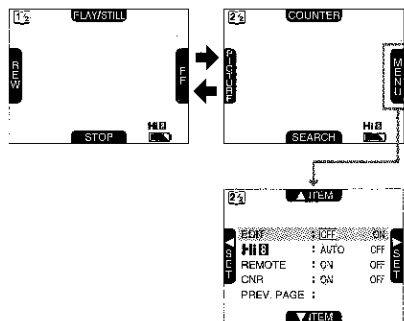
Camera mode (when the Power switch is set to CAMERA)

- Each time you press the MENU button, the screen changes from 14 to 44.
- With the 44 screen displayed, press ► on the Operation button (⊕) to select "MENU". Each time you press ◀ or ▶ on the ⊕ button, the screen changes from MENU-PAGE 1 to 4.



VCR mode (when the Power switch is set to VCR)

- Each time you press the MENU button, the screen switches between 14 and 24.
- With the 24 screen displayed, press ► on the ⊕ button to select "MENU". The menu screen will appear.

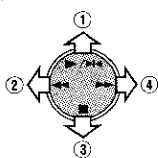


Note:

- The above displays are those when a cassette is loaded in the VIEWCAM and the power is supplied from a battery pack.

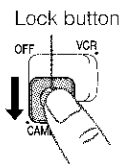
About the Operation button

Use this button to select and set the various functions on the monitor by pressing ① ►/►, ② ◀, ③ ◀, or ④ ► as shown.

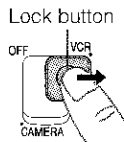


Using the On-screen Menu

- 1 To display the Camera mode menu screen:**
Hold down the Lock button and slide the Power switch to CAMERA.
Then perform steps 2–4.



- To display the VCR mode menu screen:**
Hold down the Lock button and slide the Power switch to VCR.
Then perform steps 2 and 3.

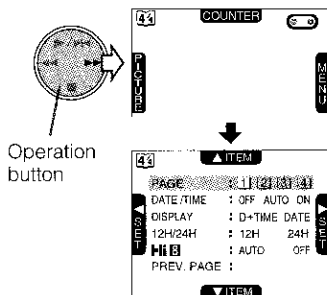


- 2 Press the MENU button until MENU-PAGE 4 appears. (Select 2 in VCR mode.)**

Ex. Camera mode



- 3 Press ► on the Operation button (⊕) to select "MENU". MENU-PAGE 1 will appear on the monitor.**
- There is only one menu page in VCR mode. Skip step 4.

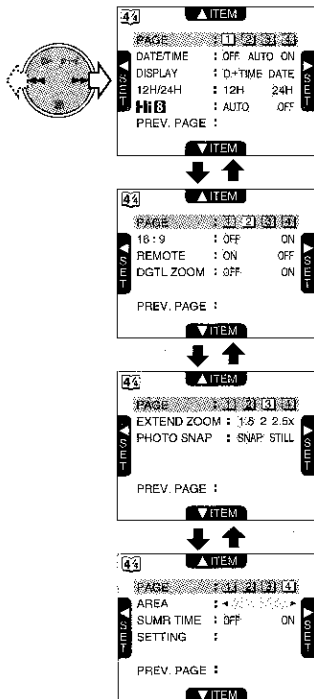


Note:

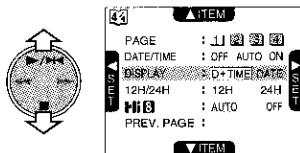
- If the area, date and time have not been set, MENU-PAGE 4 appears.

- 4 Press ◀ or ▶ on the ⊕ button to change from MENU-PAGE 1 to 4.**

Ex. Camera mode



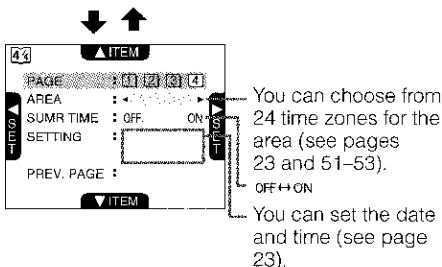
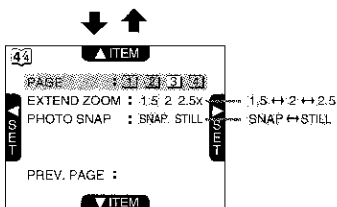
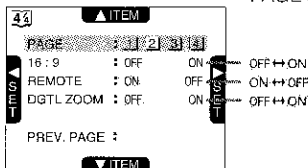
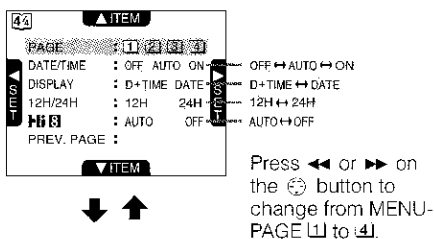
- 5 Press ►/◀ or ■ on the ⊕ button to select the menu item you wish to set.**



- 6 Press ◀ or ▶ on the ⊕ button to set the desired mode.**

- Each time you press the button, the item setting changes as shown on the next page.

1) Camera mode



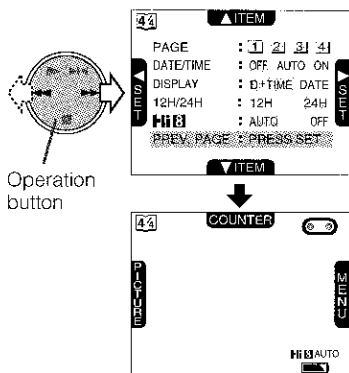
- 7 After completing the setting, press the MENU button. The menu screen will disappear.

Note:

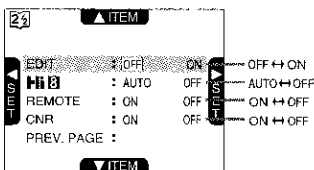
- Certain menu items are common to both the Camera and VCR modes. If the "REMOTE" menu item, for example, is set to "OFF" in the Camera mode, it will automatically be set to "OFF" in the VCR mode.

Returning to the Previous Screen

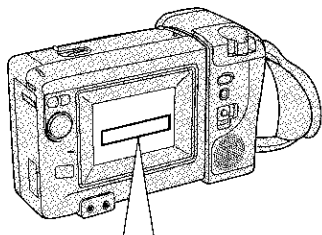
Press ■ on the Operation button to select "PREV. PAGE" and then press ◀ or ▶ to select "SET" to return to the previous screen.



2) VCR mode



Warning Indicators



Display for the first 3 seconds	Display after the first 3 seconds	Description of warning
EJECT THE CASSETTE.	EJECT THE CASSETTE.	The video cassette is defective and should be removed.
DEW	DEW	Dew has formed inside the VIEWCAM. Wait for a few hours until the dew disappears (see page 6). About 10 seconds after this warning appears, the VIEWCAM turns off, and the display goes off too.
BATTERY IS TOO LOW.		The battery is almost depleted. Note: Operation of the zoom may interrupt the VIEWCAM power. Replace the battery pack.
		The video heads are clogged and should be cleaned (see page 6).
INSERT A CASSETTE.	CASSETTE	There is no tape cassette in the VIEWCAM. Load a cassette.
CASSETTE NOT RECORDABLE.	PROTECT. TAB	The red erasure protect tab in the video cassette has been slid to the record-protect position, preventing recording.
THE TAPE ENDS SOON.		The tape is about to end. Get ready to load a new cassette.
CHANGE THE CASSETTE.	TAPE END	The tape has reached its end. Load a new cassette.
		During Self Recording mode, every warning indicator is replaced by a "⬠" indicator displayed in the centre of the monitor. To check the meaning of the warning, rotate the monitor back to the normal position.

Note:

- indicates a blinking display.

Setting the Area, Date and Time

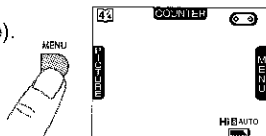
Example:

Setting the date to 2 June 1998 (2. 6 '98) and the time to 10:30 am (10:30) in London.

Note:

- Check that the memory backup lithium battery has been installed before setting the date and time.

- Set the Power switch to CAMERA, then press the MENU button until **4** appears on the monitor (Camera mode).



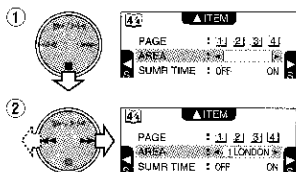
- Press **▶▶** on the Operation button (⊙) to select "MENU". The MENU-PAGE **4** appears.

Operation button



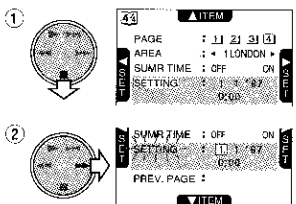
- If the date and time have been set, the MENU-PAGE **1** appears. Press **▶▶** on the ⊙ button to select PAGE **4**.

- Press **■** on the ⊙ button to select "AREA" (①), then press **◀◀** or **▶▶** until "1 LONDON" appears (②).



- See the time zone chart on page 52 and the area table on page 53 for area numbers and representative cities for each time zone.

- Press **■** on the ⊙ button to select "SETTING" (①), then press **▶▶** to select "SET" (②).



- Press **▶▶** or **■** on the ⊙ button to select "2." (day), and press **▶▶**.



- Press **▶▶** or **■** on the ⊙ button to select "6" (month), and press **▶▶**.



- Press **▶▶** or **■** on the ⊙ button to select "98" (year), and press **▶▶**.



- Press **▶▶** or **■** on the ⊙ button to select "10" (hour), and press **▶▶**.



- Press **▶▶** or **■** on the ⊙ button to select "30" (minutes), and press **▶▶**.



The date and time settings are now complete.

Changing to the 12 hour-time mode

Select MENU-PAGE **1** in step 2, press **■** on the ⊙ button to select "12H/24H", and then press **◀◀** to select "12H".



To Turn Off the Menu Display

Press the MENU button.

Notes:

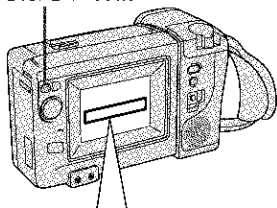
- The internal clock starts operating when **▶▶** on the ⊙ button is pressed in step 9 above.
- When the tape cassette is inside, if no settings are made within 5 minutes after the menu display appears, the display is automatically cancelled.
- If you set the area to the blank setting in step 3, and then reset the area after setting the date and time, the date and time will not appear on the screen even if you turn off the menu display. If you want to reset the area, perform steps 3-9 again.

Remaining Recording Time Display

When the VIEWCAM is recording in Camera mode, about 10 minutes before the tape reaches its end, an on-screen indicator will begin to show how much time you have left. You might want to get a new tape ready at this time.

To turn off the remaining recording time display, press the MODE DISPLAY button.

MODE DISPLAY button



Approx. remaining recording time	Monitor display
Less than half of the tape remaining	
10 min.–8 min.	
8 min.–6 min.	
6 min.–4 min.	
4 min.–2 min.	
2 min.–1 min.	
1 min.–0 min.	THE TAPE ENDS SOON. (after 3 sec.)
0 min. (The tape has reached its end.)	CHANGE THE CASSETTE. (after 3 sec.) TAPE END

Notes:

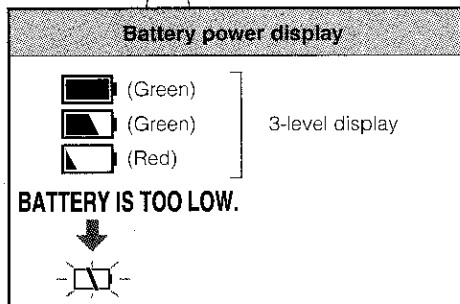
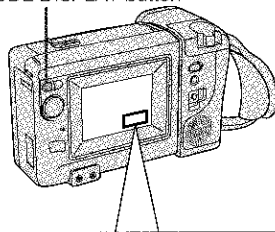
- The time-remaining indicators only show approximate time left. Also, they vary slightly depending on the length of tape used. (This function's design is based on the P5-90 tape standard.)
- If you press the MODE DISPLAY button to turn off the remaining recording time display, this display will reappear after a short interval to indicate the new time remaining.
- The time-remaining indicator appears after 5 seconds from the time you press the REC START/STOP button to start recording.**

Remaining Battery Power Display

When you turn on the VIEWCAM, the remaining battery power display automatically appears on the monitor. By pressing the MODE DISPLAY button, you can turn the display on and off. The remaining power is displayed in three levels, as shown.

If the battery power is very low, a warning message will appear. Replace the battery pack.

MODE DISPLAY button



Notes:

- Use the remaining battery power display only as an indication.
- Battery consumption may vary depending on the condition of use.
- The battery power display may change to either a higher or lower level if you set the Power switch to OFF and then back to CAMERA or VCR again.

Basic Operations Camera Recording

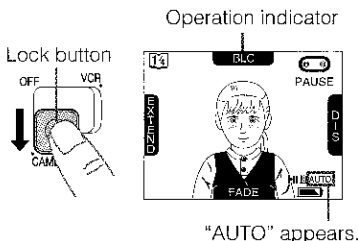
- Refer to pages 19–21 on how to operate the monitor display.

Unlike conventional camcorders, this model frees you from having to peer into a small viewfinder. You can watch the subject on the large LCD monitor screen for easier, more enjoyable video-shooting.

Easy Camera Recording with Full Auto

Before you start recording, perform the operations described on pages 11 through 24 to prepare your VIEWCAM for recording.

- 1 Hold down the lock button and slide the Power switch to CAMERA.
 - The picture from the lens is now displayed on the LCD monitor.



- 2 Press the REC START/STOP button to start recording.



Note:

- When you set the Power switch to CAMERA, it may take some time before the screen appears. Wait until the screen appears, then start operation.

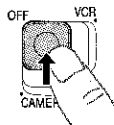
To Pause Recording

Press the REC START/STOP button again. Recording pauses, and the VIEWCAM enters Recording Standby mode.



To Turn the Power Off

Slide the Power switch to OFF without pressing the Lock button.



Notes:

- To leave Camera Recording mode, set the Power switch to OFF.
- During Camera Recording mode, the speaker is off, and the PHONES (earphones) jack below the monitor cannot be used.
- If the VIEWCAM is kept in Recording Standby mode for more than approximately 5 minutes, the power will automatically turn off to save battery power and to protect the tape from being damaged. To continue recording after this, set the Power switch to OFF, and then back to CAMERA again.
- If you will not be recording again for a while, turn the power off. This will make the battery last longer.
- The operation indicators can be turned off or back on again with the MODE DISPLAY button.

Maximum Time for Continuous Camera Recording and Actual Recording Time

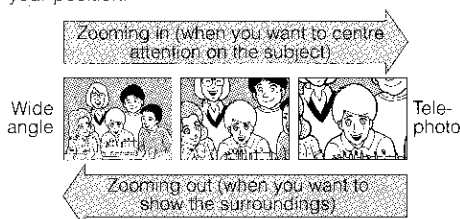
Battery pack	Max. continuous recording time	Actual recording time
BT-H21	approx. 1 hr. 15 min.	approx. 40 min.

Notes:

- Using the zoom (see page 26) and other functions or turning the power on and off frequently will increase power consumption which may result in a decrease of more than 50% in the actual recording time per battery pack compared to the maximum continuous recording time listed above.
- The recording times listed above are approximations.

Zooming

Zooming allows you to move visually closer to or farther from a subject without physically changing your position.

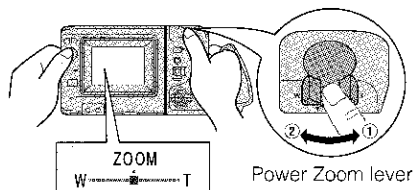


To Zoom In

Push the Power Zoom lever to the T (telephoto) side to get a close-up view (①).

To Zoom Out

Push the Power Zoom lever to the W (wide angle) side to get a wide field of view (②).



- The on-screen display shows you the current zoom setting.

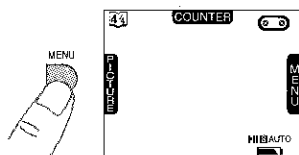
Notes:

- The VIEWCAM is unable to focus when zooming in on subjects within 1.5 m. The VIEWCAM will automatically zoom out until it focuses on the subject.
- Frequent zooming produces unattractive pictures. It also increases battery power consumption.

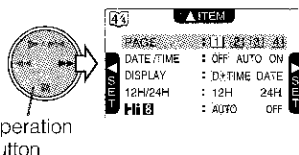
Setting the Digital Zoom

You can select between two different zoom ranges by setting the "DGTL ZOOM" menu item to "ON" or "OFF": 1-12 $\times$ optical zoom ("OFF") or 12-30 $\times$ digital zoom ("ON"). The 12-30 $\times$ digital zoom allows you to record powerful close-up pictures with the same operation as normal zooming. The zoom range is factory preset to 1-12 $\times$ optical zoom. In the 12-30 $\times$ zoom range, the picture quality may suffer slightly.

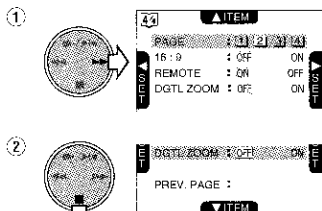
- Press the MENU button until 44 appears on the monitor (Camera mode).



- Press $\blacktriangleright$ on the Operation button (⊕) to select "MENU".



- Press $\blacktriangleright$ on the ⊕ button to select MENU-PAGE 2 (①), then press ■ to select "DGTL ZOOM" (②).



- Press $\blacktriangleright$ to select "ON".



- The digital zoom is now on. Press the MENU button to turn off the menu.

To return to normal zoom, set "DGTL ZOOM" to "OFF" in step 4 above.

Note:

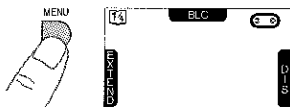
- When the digital zoom is used, the picture quality may suffer. At maximum zoom, the horizontal resolution decreases by a maximum of 60% of the optical zoom.

Digital Quick Zoom (Extend Zoom)

Use the digital quick zoom function (extend zoom) to instantly zoom in on a subject. This is useful when you want to instantly capture a particular subject.

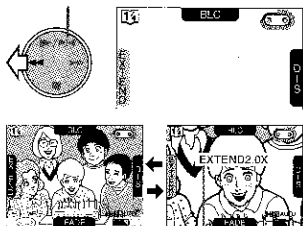
Using Digital Quick Zoom (Extend Zoom)

- 1 Press the MENU button until **T4** appears on the monitor (Camera mode).



- 2 During recording, press **◀** on the Operation button (⊙) to select "EXTEND" when you want to instantly zoom in on a subject.

Operation button



"EXTEND 1.5x", "EXTEND 2.0x" or "EXTEND 2.5x" is displayed.

To return to the previous magnification, press **▶** on the **⊙** button to select "EXTEND" again.

Notes:

- When the digital quick zoom is used, the picture quality decreases by a maximum of 60% of the optical zoom.
- The digital quick zoom (extend zoom) function does not work in the digital zoom (12-30x) range. ("EXTEND" is faintly displayed.)
- When the extend zoom is on with the optical zoom at 12x, 1.5x becomes 18x, 2.0x becomes 24x, and 2.5x becomes 30x.

Setting the Digital Quick Zoom Ranges

Refer to page 20 to display MENU-PAGE **3**, and then press **■** on the Operation button (⊙) to select "EXTEND ZOOM". Press **◀** or **▶** on the **⊙** button to select "1.5", "2" or "2.5" x.



Auto Focus

The auto focus feature is designed to focus on most types of subjects. In Auto Focus mode, the VIEWCAM automatically focuses on whatever is in the centre of the scene. Always keep the subject in the centre of the screen. The auto focus may not be able to focus on the subject in the situations shown in the chart. In such situations, set the VIEWCAM to Manual Focus mode and focus manually (see page 43).

 Subject is too dark.	 Lack of contrast, e.g. snow scene.
 Fast-moving subject.	 Background is too bright.
 Subject has vertical or horizontal stripes.	 Subject is being shot through a dirty or wet window.
 Light reflects off the subject.	 Two subjects at different distances overlap in the same scene.
 Subject has fine, repeated patterns.	 Subjects at different distances appear in the centre of the scene at the same time.
 High-speed shutter being used under fluorescent lighting.	

Notes:

- If no subject is in the centre of the monitor, the focus area will expand and the subject nearest the centre will be focused on.
- If no subject is displayed on the monitor, the VIEWCAM will automatically zoom out until some subject comes into the frame.
- If the image being recorded is not sharp, the auto focus may not function and the image will be blurred. If this occurs, push the Power Zoom lever to the W side to zoom out, or pan the VIEWCAM to shoot some other subject. The auto focus will resume operation.

Tips on Recording Positions

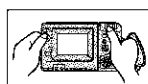
The rotating LCD monitor screen lets you enjoy easy video recording in relaxed postures.

- You can record using more natural body postures since you can see the subject on-screen, without having to hold the VIEWCAM against your eye.
- The LCD monitor also makes high-angle and low-angle shots easy.
- In hand-held recording, the VIEWCAM has to be steadied to prevent image shake.
- Use a tripod for very stable recording.

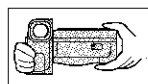
Basic Recording Positions

Put the fingers of your right hand through the hand strap, and place your right thumb close to the REC START/STOP button and Power Zoom lever. Place your left thumb below the Operation button on the left side of the LCD monitor.

Basic Posture



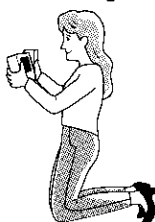
Look at the monitor with both eyes.



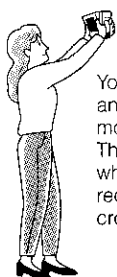
Press your elbows against your sides.

Place your feet at a 45° angle and take a firm stance.

Kneeling



High Angle



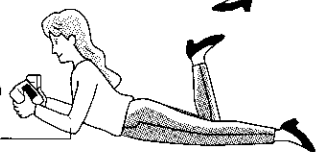
You can record and still see the monitor screen. This is convenient when you want to record over a crowd.

Low Angle



When kneeling, put one knee on the ground for the best stability.

Prone



Rest on both elbows to stabilize the VIEWCAM.

Notes:

- Take care not to touch the monitor screen with your fingers, as perspiration and dirt will smudge it.
- Unless you intend to create a special effect, keep the VIEWCAM level with the horizontal plane.
- Take care not to touch the microphone with your fingers when the VIEWCAM is recording. It will cause noise on the audio track.

Hints for Better Shooting

- Position the subject in the centre of the screen. When you are using auto focus, whatever is in the centre of the screen is kept in focus.



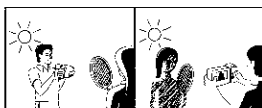
Position the subject in the centre.



Focus manually when you need to position the subject off centre (see page 43).

- Avoid backlit subjects. For the best picture, have the light source behind you. When the background is brighter than the subject, the subject often becomes too dark. If you need to record with this lighting, correct the gain or iris to improve the picture (see pages 29 and 47).

Light from behind



Back-lighting

- Before zooming, think about how to best frame the shot. Stop zooming when the shot is well framed.
- When image shake is noticeable during zoomed-in telephoto shooting, use a tripod, or push the Power Zoom lever to the W (wide angle) side to zoom out. Screw the tripod into the tripod socket on the bottom of the VIEWCAM.
- Horizontal panning (lateral movement) and tilting (vertical movement) should be done slowly to emphasize the wide expanse of a scene or the height of a building, and to make them easy to watch on playback.
- Use wide-angle settings for fast-moving subjects.

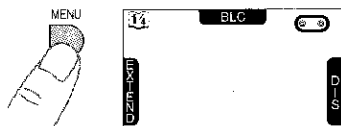
Note:

- It may take longer to focus when zooming and panning are used frequently.

Backlight Compensation (BLC)

When the subject is backlit, the image will be darkened if it is recorded normally. Use the backlight compensation (BLC) feature to improve the picture.

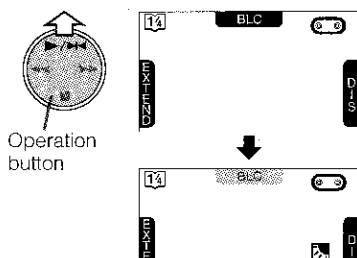
- 1 Press the MENU button until **14** appears on the monitor (Camera mode).



Note:

- At locations where lighting is insufficient, "LIGHT" appears on the monitor. "GAIN-UP" instead of "BLC" appears indicating the BLC function cannot be used.

- 2 Press $\blacktriangleright/\blacktriangleleft$ on the Operation button (⊙) to select "BLC". The backlight compensation indicator "**2**" appears on the monitor, indicating that the BLC function is now working.

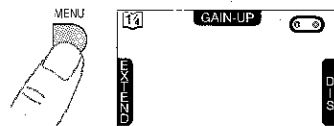


To turn off the BLC function, press $\blacktriangleright/\blacktriangleleft$ on the ⊙ button to select "BLC" again. The "**2**" indicator goes off.

Gain-up (Cat's Eye)

When you are recording in a dark or poorly illuminated location, "LIGHT" (warning of too little ambient illumination) is displayed on the monitor. Use the gain-up feature to record a brighter picture.

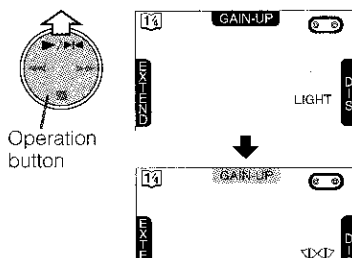
- 1 Press the MENU button until **14** appears on the monitor (Camera mode).



Note:

- At locations where lighting is adequate, the "LIGHT" indicator will not appear. "BLC" instead of "GAIN-UP" appears indicating the gain-up function cannot be used.

- 2 Press $\blacktriangleright/\blacktriangleleft$ on the Operation button (⊙) to select "GAIN-UP". The "LIGHT" display changes to the gain-up (cat's eye) display "**2**", indicating that the gain-up function is now working.



To turn off the gain-up function, press $\blacktriangleright/\blacktriangleleft$ on the ⊙ button to select "GAIN-UP" again. The "**2**" display changes to the "LIGHT" display.

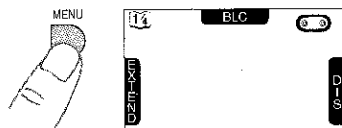
Notes:

- If the VIEWCAM is moved to a bright location after it is engaged in Gain-up mode, the Gain-up mode will disengage automatically.
- There is more picture noise in Gain-up mode.

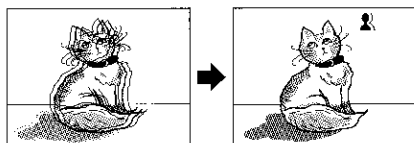
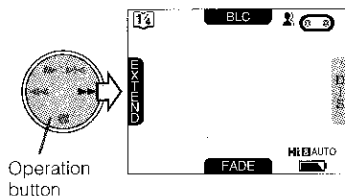
Digital Image Stabilization (DIS)

The DIS function lets you stabilize the image by electronically cancelling relatively small image shakes that are often annoying in close-up shots.

- 1 Press the MENU button until **14** appears on the monitor (Camera mode).



- 2 Press **▶▶** on the Operation button (⊕) to select "DIS". The "Ⓜ" indicator appears on the monitor, and the VIEWCAM enters DIS mode.



To return to normal recording mode, press **▶▶** on the ⊕ button to select "DIS" again. The "Ⓜ" indicator will disappear.

Notes:

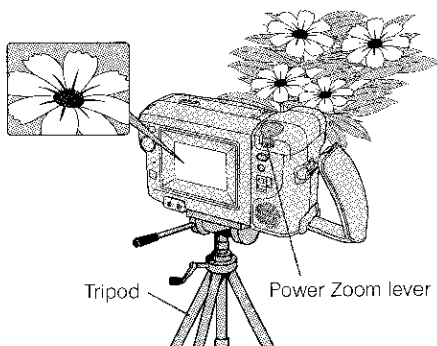
- While this function is in progress, the image on the monitor is slightly magnified, and the shutter speed is automatically switched from the standard speed (1/50 sec.) to 1/120 sec.
- Image resolution slightly decreases in DIS mode.
- Under the light of fluorescent lamps, the picture may brighten and dim.
- The DIS feature does not work during Still Recording mode.
- Battery consumption is larger in DIS mode. We recommend that you not use the DIS feature when using the VIEWCAM on a tripod.

Caution:

- The DIS function cannot compensate for excessive image shake, or for the subjects or situations described below.
 - Subject with low contrast*
 - Subject with a plain background*
 - Dark or dimly lit subject*
 - Subject with vertical or horizontal stripes
 - Many moving subjects in a single frame (*The "Ⓜ" indicator blinks during these conditions.)

Macro Shots

This VIEWCAM lets you shoot close-up images of small objects such as flowers and insects, or make title frames for your videos. When you want to record a magnified image of a subject which is within approximately 1.5 m of the VIEWCAM, do not zoom in on the subject. Instead, zoom out all the way by pushing the Power Zoom lever to the W side, and then move the VIEWCAM closer to the subject until you obtain the desired angle of view. The VIEWCAM will automatically focus on the subject when the lens is set for the widest angle.

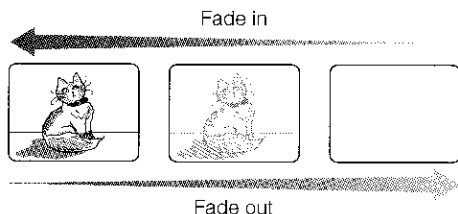


Notes:

- When you are recording a macro shot, be sure that the subject receives sufficient illumination.
- It is recommended that you use a tripod for recording macro shots, to prevent image shake.

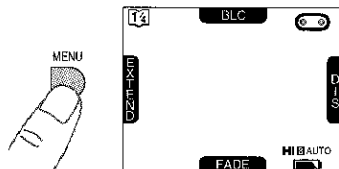
Fade In and Fade Out

With the fade function, it is possible to fade in or fade out scenes smoothly. It is effective especially for indicating a dramatic change in scenery.

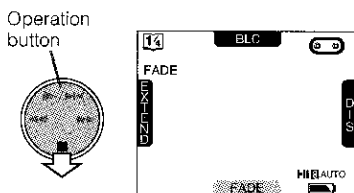


Fade In

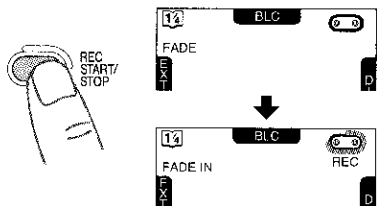
- 1 Press the MENU button until **14** appears on the monitor (Camera mode).



- 2 Press **■** on the Operation button (⊕) to select "FADE".
• "FADE" appears on the monitor.

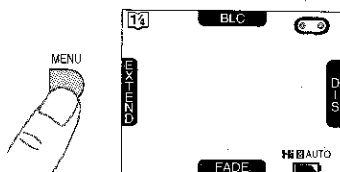


- 3 Press the REC START/STOP button. "FADE" changes to "FADE IN", and after the screen turns white, recording begins and the picture and sound fade into the monitor screen.

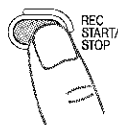


Fade Out

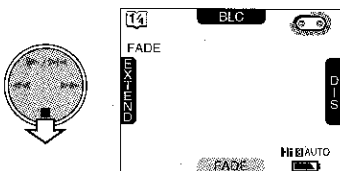
- 1 Press the MENU button until **14** appears on the monitor (Camera mode).



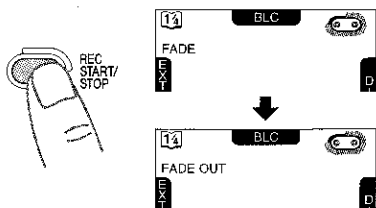
- 2 Press the REC START/STOP button to start recording.



- 3 Press **■** on the operation button (⊕) to select "FADE".
• "FADE" appears on the monitor.



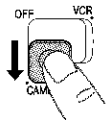
- 4 Press the REC START/STOP button at the point where you wish to stop recording. "FADE" changes to "FADE OUT", and the picture and sound fade out as the screen gradually turns white. The VIEWCAM then returns to Recording Standby mode.



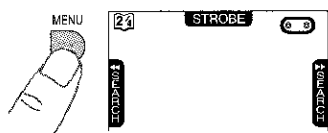
Quick Return

When you have been playing back what you have recorded, and wish to quickly return to recording again from the end of the last recorded scene, use the quick return function.

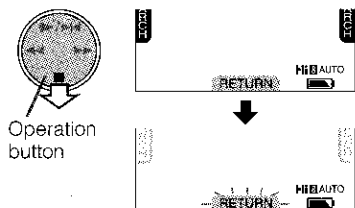
- 1 Set the Power switch to CAMERA.



- 2 Press the MENU button until 24 appears on the monitor.

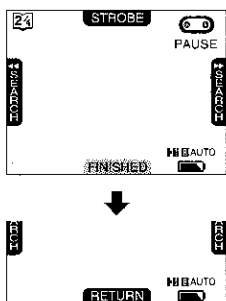


- 3 Press $\blacksquare$ on the Operation button ($\odot$) to select "RETURN". The tape will begin winding or rewinding to the end of the last recorded scene.



- To cancel, press $\blacksquare$ on the $\odot$ button to select "RETURN" again.

- 4 When the tape reaches the end of the last recorded scene, the VIEWCAM enters the Recording Standby mode.



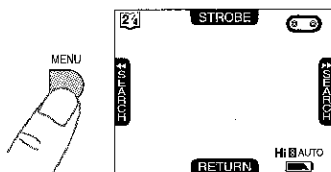
Note:

- If the cassette has been removed since the last recording, or if no recording has been made since the cassette was loaded, "RETURN" indicator will be faintly displayed and the quick return function will not operate.

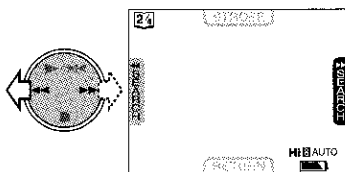
Edit Search

The edit search feature lets you search, without switching from Camera Recording mode to VCR mode, for the point on the tape where you wish to start recording next.

- 1 In Recording Standby mode, press the MENU button until 24 appears on the monitor.



- 2 Hold down $\ll$ for reverse edit search or $\gg$ for forward edit search on the $\odot$ button.



- 3 When you find the point where you want to begin recording, release the button.

Notes:

- Some picture noise appears during reverse edit search.
- Forward edit search is performed at the same speed as normal playback, and reverse edit search at three times the normal playback speed.
- The sound is off during edit search.

Recording the Date and Time

Follow the procedure shown below to record the date and time, or the date only, along with the subject.

- 1 Refer to page 20 to display MENU-PAGE 11. Press on the Operation button (⊙) to select "DATE/TIME".



- 2 Press or on the ⊙ button to select "AUTO", "ON" or "OFF".



When "ON" is selected, the date/time is continuously displayed and recorded along with the subject.

When "AUTO" is selected, the date/time is displayed and recorded for 10 seconds at the beginning of the first recording of each day.

When "OFF" is selected, the date/time is neither displayed nor recorded.

Note:

- Select "AUTO" if continuous date/time display annoys you during recording or playback.

- 3 Press on the ⊙ button to select "DISPLAY".



- 4 Press or on the ⊙ button to select "D+TIME" or "DATE".



When "D+TIME" is selected, both the date and the time are displayed and recorded.

When "DATE" is selected, only the date is displayed and recorded.

- 5 Press the MENU button to turn off the menu display.

Note:

- When "AUTO" is selected in step 2, the date/time is not displayed or recorded even if the date changes during recording.

Setting the VIEWCAM to Full Auto Mode

This VIEWCAM is equipped with auto focus, auto white balance, auto exposure, and auto shutter speed functions. Set the VIEWCAM to the Full Auto mode and you can record high-quality pictures easily.

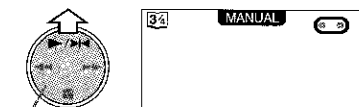
When "AUTO" is not displayed on the monitor, the VIEWCAM is not in Full Auto mode. Perform the procedure below to set the VIEWCAM to the Full Auto mode.

- 1 While the VIEWCAM is in Camera mode, press the MENU button until 34 appears.

Note:

- If the VIEWCAM is in Manual Focus mode ("FOCUS" selected on 34 screen), press on the ⊙ button to return to Auto Focus mode (see page 43).

- 2 Press on the Operation button (⊙) to select "MANUAL".

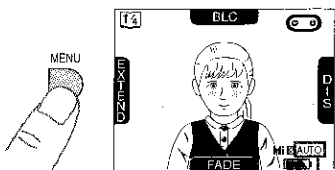


Operation button

- 3 Select "CAM. MODE" and then press on the ⊙ button to select "AUTO".



- 4 Press the MENU button until 14 appears. "AUTO" is displayed on the monitor. During normal recording, use the 14 screen for the Full Auto mode.



"AUTO" indicator

Basic Operations

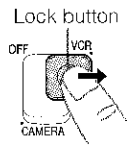
Playback

- Refer to pages 19–21 on how to operate the monitor display.

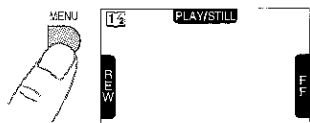
Playback

The LCD monitor makes it possible to play back and see what you have just recorded. Nothing needs to be connected, allowing instant on-screen playback. You can hear the sound through the built-in speaker or via your own stereo earphones. You can also watch prerecorded 8 mm video tapes on this VIEWCAM.

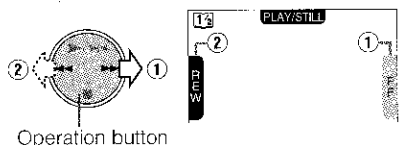
- 1 Hold down the Lock button and slide the Power switch to VCR.
 - It may take some time before the screen appears. Wait until the screen appears, then start operation.



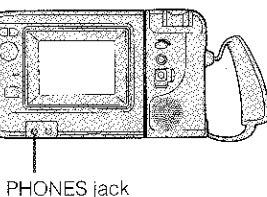
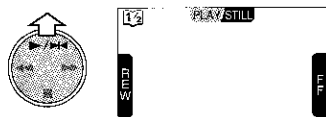
- 2 Press the MENU button until 1/2 appears on the monitor.



- 3 If the tape is not at the desired point, press ►► or ◀◀ on the Operation button (⊕) to select "FF" (1) or "REW" (2).



- 4 Press ►► to select "PLAY".



Notes:

- If you wish to turn off the operation indicators on the monitor (e.g. because they interfere with your view of the picture), press the MODE DISPLAY button. The buttons will still function as indicated even after their indicators are turned off.
- Stereo earphones with a 3.5 mm diameter plug can be plugged directly into the PHONES jack below the monitor. When you use this jack, the speaker automatically turns off.

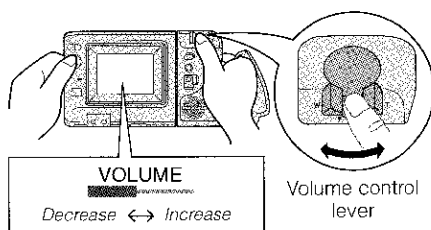
Caution:

- To use the remote control, make sure that the remote control menu item ("REMOTE") is set to "ON". The remote control cannot be used to operate the VIEWCAM when this is set to "OFF". See page 39.

Volume Control

While the VIEWCAM is in the VCR mode, push the Volume control lever to the right or left to increase or decrease the volume to your preference.

The volume control indicator will appear on the monitor. After adjusting the volume, if the Volume control lever is not operated, the indicator will disappear by itself shortly.



To Stop Playback

Press ■ on the ⊕ button to select "STOP".

Auto Tape Rewind

The tape is automatically rewound when playback reaches the end of the tape.

Note:

- The volume can also be adjusted with the remote control.

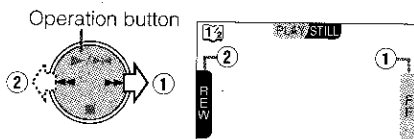
Fast Forward and Rewind

During a stop mode, press ►► or ◀◀ on the ⊕ button to select "FF" (Fast Forward) or "REW" (Rewind) on the 1/2 screen (VCR mode).

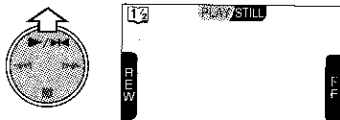
Video Search

This function makes it easy for you to search for a scene near the current tape position.

- 1 During playback, press **▶▶** on the Operation button (⊕) to select "FF" (①) (or **◀◀** to select "REW" [②]) on the **12** screen (VCR mode). The fast forward (or reverse) playback picture is displayed on-screen.



- 2 When you find the desired scene, press **▶◀** on the ⊕ button to select "PLAY" to return to normal playback.



Notes:

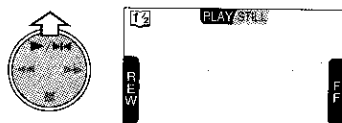
- The sound is off during search.
- Some picture noise appears during search. This is not a malfunction.

Searching for and Playing Back a Scene Far from the Current Tape Position

When fast forwarding (or rewinding) a tape, press **▶▶** on the ⊕ button to select "FF" (or **◀◀** to select "REW") on the **12** screen (VCR mode). The fast forward (or reverse) playback picture is displayed on-screen. Release the button to return to normal fast forward (or reverse) mode.

Still

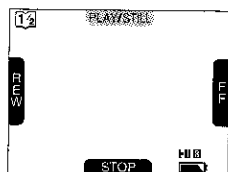
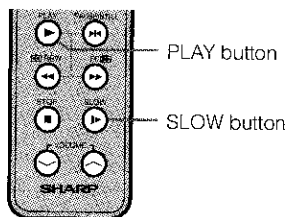
This function makes it possible to freeze the picture. During playback, press **▶◀** on the ⊕ button to select "STILL" on the **12** screen (VCR mode). To return to normal playback, press **▶▶** to select "STILL" once again.



- Still image playback can also be operated with the remote control. (See page 39.)

Slow

This function makes it possible to play back in slow motion. During playback, press the SLOW button (▶) on the remote control. To return to normal playback, press the PLAY button on the remote control to select "PLAY".



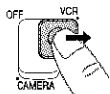
Notes:

- The sound is off during Still and Slow modes.
- To protect the tape, the VIEWCAM automatically returns to ordinary playback if it is left in Still mode for more than 5 minutes or in Slow mode for more than about 40 seconds.
- If still or slow functions are used when connected to a TV, noise will appear and distort the image.
- Slow function cannot be operated from the VIEWCAM.

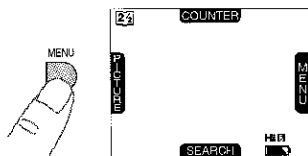
Programme Search

The programme search feature automatically finds the beginning of a number of previously recorded scenes. Up to 10 different scenes can be found on one tape.

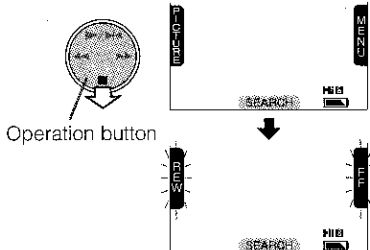
- 1 Set the Power switch to VCR.



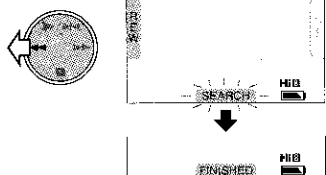
- 2 Press the MENU button until 23 screen appears on the monitor.



- 3 Press ■ on the Operation button (⊕) to select "SEARCH". The VIEWCAM enters the Programme Search mode. Both the "REW" and "FF" indicators, or one of them will start flashing.



- 4 Press ◀ on the ⊕ button to select "REW" (or ▶ to select "FF"). "SEARCH" will start flashing. The tape rewinds (or fast forwards) to the beginning of a scene immediately before (or after) the current tape position; playback then starts automatically. The "REW" and "FF" indicators automatically disappear after about 10 seconds.

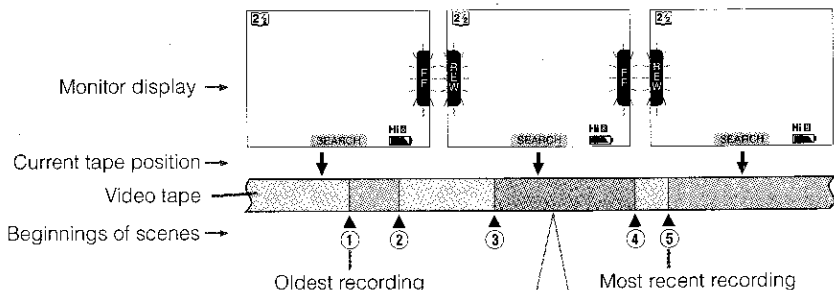


- 5 To continue searching, press ◀ to select "REW" (or ▶ to select "FF") while "SEARCH" indicator is displayed.

Notes:

- This feature does not function if no recording has been made since the cassette was loaded, or if the cassette has been removed after the recordings were made. "SEARCH" is faintly displayed in this case.
- Use this feature when the tape is stopped or being played back.
- This function finds the beginning of the scene immediately before or after the current tape position, stopping at every scene. It is not possible to skip a scene.
- This function cannot spot recordings that are shorter than 10 seconds in length.
- In steps 3 and 5, if the tape is at a point ahead of the most recent recording, only the "REW" indicator will flash, and the "FF" indicator will not appear.
- In steps 3 and 5, if the tape is at a point before the oldest recording, only the "FF" indicator will flash, and the "REW" indicator will not appear.

Example: To find the beginning of five different scenes.

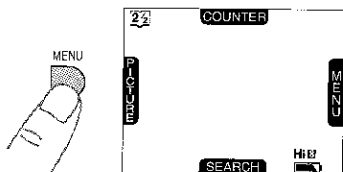


When you are at this position,
Press ◀ on the ⊕ button to select "REW" to rewind the tape to ③ and begin playback.
Press ▶ on the ⊕ button to select "FF" to forward the tape to ④ and begin playback.

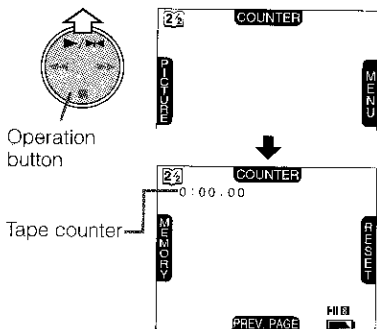
Using the Tape Counter

Use the tape counter feature when you want to know the recording or playback time.

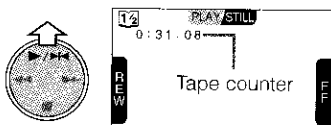
- 1 Press the MENU button until **23** (VCR mode) or **44** (Camera mode) appears on the monitor.



- 2 Press **▶/◀** on the Operation button (⊕) to select "COUNTER". The counter display will appear.



- 3 Begin playback or recording. You can check the recording or playback time on the monitor.

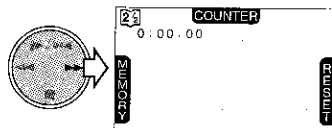


To Turn Off the Counter Display

Press **▶/◀** on the ⊕ button again to select "COUNTER" in step 2.

To Reset the Counter to Zero

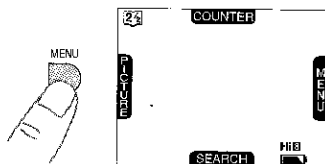
During playback or recording, perform steps 1 and 2 above, and then press **▶▶** on the ⊕ button to select "RESET".



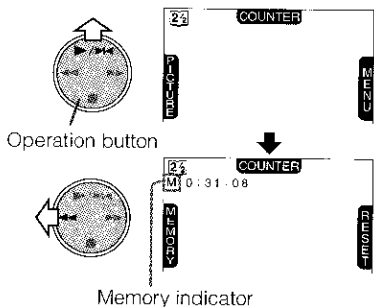
Counter Memory

Use the counter memory when you want to return to the beginning of a particular scene. The position where the counter memory is reset (0:00.00) is stored in memory to make it easier to return the tape to that point.

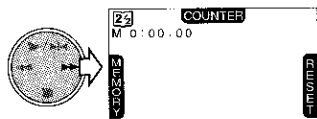
- 1 During playback or recording, press the MENU button until **23** (VCR mode) or **44** (Camera mode) appears on the monitor.



- 2 Press **▶/◀** on the Operation button (⊕) to select "COUNTER", and then press **◀◀** to select "MEMORY". "M" will appear to the left of the counter display.

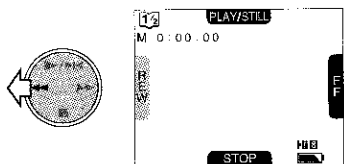


- 3 Press ►► on the  button to select "RESET" at the beginning of a scene you want to return to later.



- 4 After playback, press ■ on the  button to select "STOP" on the  screen. If you have been recording, stop the tape and set the Power switch to VCR.

- 5 Press ◀◀ on the  button to select "REW" on the  screen. The tape will automatically stop when the counter reaches 0:00.00.



- 6 Press ►► on the  button to select "PLAY" on the  screen to view the desired scene.

To Cancel the Counter Memory Mode

Perform step 1 above. Then press ►► on the  button to select "COUNT" and then press ◀◀ on the  button to select "MEMORY". "M" will disappear. The Counter Memory mode is now cancelled.

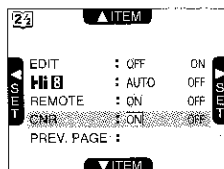
Notes:

- In Step 5, ►► on the  button can be used to select "FF" in the same way.
- This function does not work during video searches.
- In step 5 above, the tape may stop slightly ahead or behind the point where you reset the counter to "M 0:00.00".

CNR (Colour Noise Reduction)

The CNR function reduces colour noise and irregularities during playback.

To turn this function on or off, display the VCR mode menu screen (), and set the "CNR" menu item to "ON" or "OFF".



Notes:

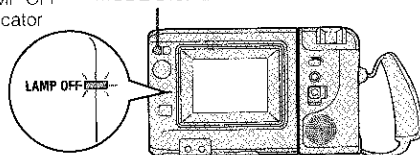
- This function only works during playback.
- When the function is on, residual colour images may be produced. If they annoy you, turn off the function.
- When playing back a worn, damaged, or poorly recorded tape, the use of the CNR function may increase colour reproduction irregularities or colour noise. If this occurs, turn off the function.

Turning Off the LCD Monitor Backlight

This VIEWCAM's LCD monitor uses a fluorescent lamp for backlighting (see page 7). In order to reduce battery consumption, you can turn off the lamp when backlighting is not necessary (e.g. when you are watching a playback on a connected TV's screen).

While the VIEWCAM is in Camera or VCR mode, hold down the MODE DISPLAY button for more than 5 seconds. The backlight will turn off and the LAMP OFF indicator will light up. To turn it on again, press the MODE DISPLAY button, or set the Power switch to OFF and then back to CAMERA or VCR.

LAMP OFF MODE DISPLAY button
indicator



Notes:

- The LAMP OFF indicator will blink when the monitor is off to indicate that there is a warning message. Press the MODE DISPLAY button and check the message on the monitor.
- Turning the LCD monitor on and off repeatedly may deplete battery power.

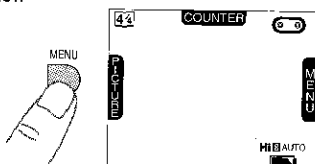
Using the Infrared Remote Control

Use the remote control to operate the VIEWCAM from a distance, such as when you want to record yourself in a scene, or when the VIEWCAM is connected to a TV for use as a VCR.

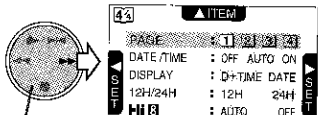
- 1 Set the Power switch to CAMERA or VCR.



- 2 Press the MENU button until **44** (Camera mode) or **24** (VCR mode) appears on the monitor.

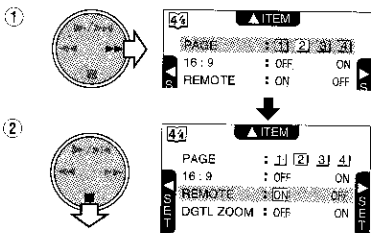


- 3 Press **▶▶** on the Operation button (⊕) to select "MENU".



Operation button

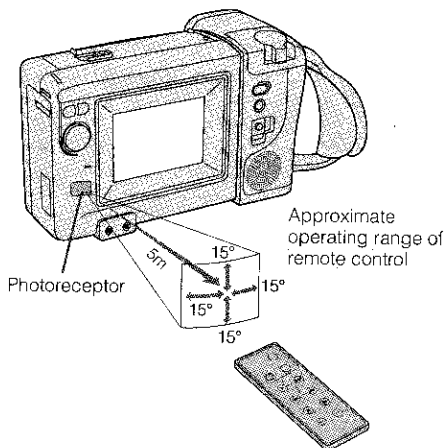
- 4 Press **▶▶** on the ⊕ button to select MENU-PAGE **21** (①) and then press **■** to select "REMOTE" (②). Make sure that "REMOTE" is set to "ON".



If "REMOTE" is set to "OFF", press **◀◀** to select "ON".

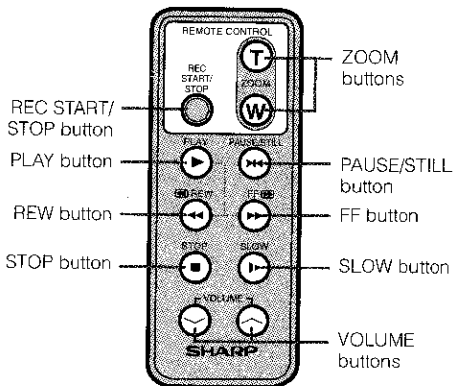


- 5 Aim the remote control at the photoreceptor of the VIEWCAM, and press the control buttons for operation.



Notes:

- Be careful not to allow direct sunlight or bright light from interior illumination to fall onto the VIEWCAM's photoreceptor, as this may prevent the remote control from operating properly.
- Be sure that there are no obstacles between the remote control and the VIEWCAM's photoreceptor.
- When the "REMOTE" setting is changed in either Camera or VCR mode, the setting for the other mode is automatically set to the same.
- The lithium battery normally lasts about one year. It can be shorter under some operating conditions. When the lithium battery is dead and the remote control does not operate, replace the battery with a new one following the instructions on page 16.



Useful Features for Camera Recording

Self Recording

The LCD monitor can be rotated 180° vertically so that the monitor screen faces the subject. This lets you record yourself while watching yourself on the screen.

Enjoy recording your own portrait by yourself, or recording yourself and your friends together at a party.

Example of Recording in Self Recording Mode

Tripod adapter for 180° recording VR-33FA (optional accessory)



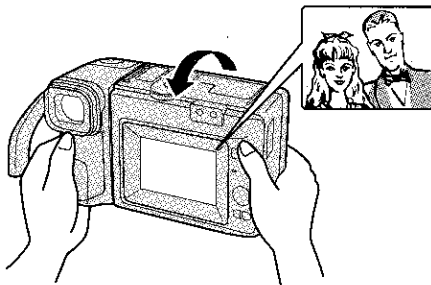
Recording yourself and your friends together at a party, using the remote control, while monitoring yourselves on the VIEWCAM's screen.

Cautions:

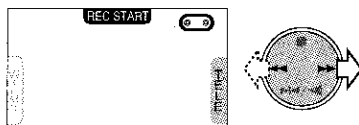
- Do not rotate the monitor to the self recording position while the VIEWCAM is recording or playing back.
- For recording in Self Recording mode, be sure to rotate the monitor, NOT the lens. If you hold the VIEWCAM upside down with its lens at the bottom, the subject will be recorded upside down.

Normal Self Recording

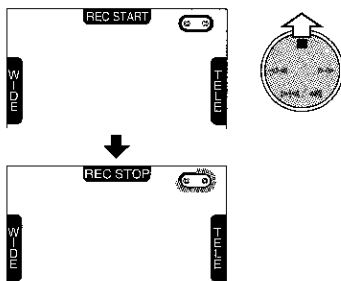
- 1 Rotate the VIEWCAM's monitor section 180° vertically. The VIEWCAM will show a mirror image of the subject. Playback image will not be reversed even though the monitor shows the mirror image during self recording.



- 2 Press ◀ or ▶ to select "WIDE" or "TELE".



- 3 Press ■ to select "REC START".



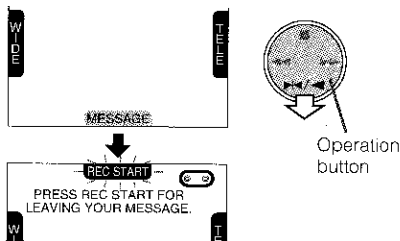
To pause recording, press ■ on the ⏸ button.

Self-Recording Message OSD

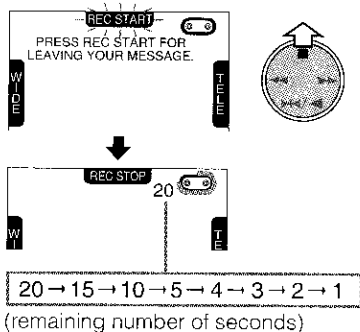
In Self Recording mode, by following some simple instructions that appear on the monitor screen, you can easily record a short video message for somebody. This feature is especially convenient for editing video letters.

- Perform step 1 of "Normal Self Recording" on page 40, then perform the procedure below.

- 1 Press $\blacktriangle/\blacktriangleleft$ on the Operation button (⊙) to select "MESSAGE". The instruction "PRESS REC START FOR LEAVING YOUR MESSAGE." appears on the monitor, and the "REC START" indicator starts flashing.

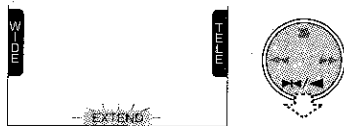


- 2 Press $\blacksquare$ on the ⊙ button to select "REC STOP". Say your message while facing the lens of the VIEWCAM.
 - The recording time is preset for 20 seconds.
 - The remaining number of seconds is displayed in the upper right hand corner of the monitor screen.

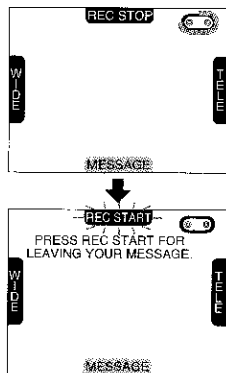


- 3 When the remaining recording time reaches 5 seconds, "EXTEND" will flash.

- When you want to extend the recording time, press $\blacktriangle/\blacktriangleleft$ on the ⊙ button to select "EXTEND" within 5 seconds. After pressing the button, you may record continuously for 10 more seconds.



- 4 At the end of recording, the screen fades out, and recording stops automatically. The VIEWCAM returns to Recording Standby mode, and "PRESS REC START FOR LEAVING YOUR MESSAGE." appears again on the monitor screen.



To turn off the self-recording message OSD

Press $\blacktriangle/\blacktriangleleft$ on the ⊙ button to select "MESSAGE".

Note:

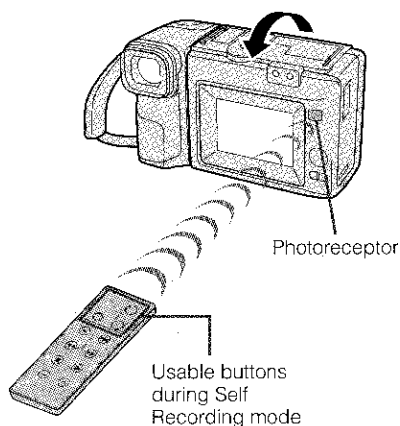
- When you want to stop recording before message recording stops automatically, press $\blacksquare$ on the ⊙ button to select "REC STOP". The screen fades out immediately and the VIEWCAM returns to Recording Standby mode.

More Information on Self Recording

- The screen image is automatically inverted when the monitor rotation is between 140° and 200°.

When the monitor is turned back to the normal position, the image returns to normal.

- During Self Recording mode, only the REC START/STOP, Zoom Wide and Telephoto buttons function on the remote control (see page 39).



- In Self Recording mode, all standard warning indicators on the monitor are replaced by a flashing "◊" indicator. To check the meaning of the warning, turn the monitor back to the normal position.

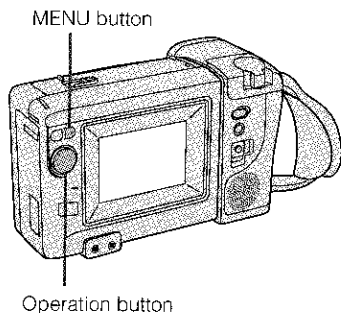
- In Self Recording mode, it is not possible to record using manual recording modes, change picture adjustments, display menus, record the date and time, or use the quick return and some of the other features.

- You can begin playback by setting the Power switch to VCR, even while the monitor is rotated 180°. The functions displayed on the monitor during normal playback still operate even though not displayed. (For example, ⏮/⏭ on the Operation button [⊙] works as the Play button.)

After recording in Self Recording mode, you can enjoy instant playback without having to re-rotate the monitor. In this case, the indicators will not be displayed on the monitor.

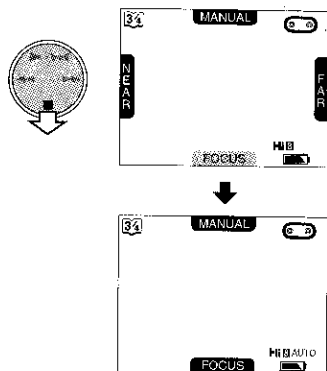
Manual Focus

The auto focus may not be able to focus on the subject in the situations shown in the chart on page 27. In such situations, set the VIEWCAM to Manual Focus mode and focus manually.



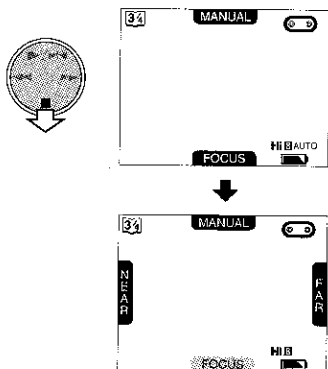
To Return to Auto Focus Mode

Press ■ on the  button to select "FOCUS" in step 1.

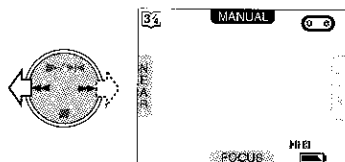


Setting the Manual Focus

- 1 Press the MENU button until **84** appears on the monitor (Camera mode). Press ■ on the Operation button () to select "FOCUS".



- 2 Press ◀ or ▶ on the  button to select "NEAR" or "FAR".

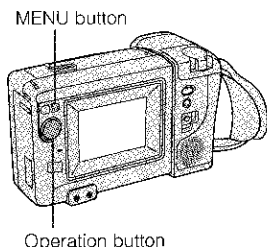


Notes:

- When recording in the Manual Focus mode, you may not be able to focus correctly if the subject is within approximately 1.5 m of the VIEWCAM. In such a case, shift the zoom control toward wide angle, and then try focusing again.
- If you focus on a subject in wide angle and then set the zoom to maximum, the subject may go out of focus. First focus on the subject at maximum zoom setting and then shoot at the desired zoom setting.
- If the lens is dirty or fogged, you may not be able to obtain correct focus.

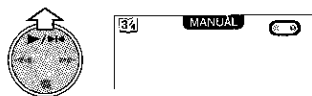
Scene Menu (Programme AE)

You can set the VIEWCAM to the shooting mode that will bring the best results for a specific type of shooting situation. Just select one of the four scene settings shown below. The VIEWCAM will automatically set the exposure, white balance, and shutter speed to produce the optimum picture quality for the selected situation.



Scene	Situation	VIEWCAM Adjustment
Sport 	To record a fast-moving subject.	The shutter speed is set to 1/500 sec. for a clear, unblurred picture of fast-moving objects. The white balance is set for outdoor sunlight.
Ski or Sand 	When the background is too bright.	The aperture is adjusted to maintain the appropriate brightness. The white balance is set for outdoor sunlight.
Twilight 	When you want to faithfully record the red of the setting sun, and the surrounding twilight.	The white balance is fixed to optimize the red of the sunset. Light sensitivity and contrast are reduced to reproduce the surrounding twilight.
Party 	When the illumination is from a spotlight or candles.	Brightness is adjusted to reduce white flaring (overexposure) from faces when the spotlight or candles are too bright.

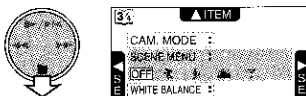
- Press the MENU button until appears on the monitor (Camera mode). Press on the Operation button () to select "MANUAL".



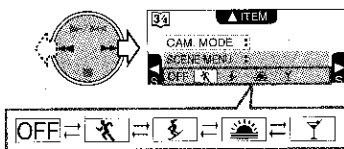
- Select "CAM. MODE" and then press on the button to select "MANUAL".



- Press on the button to select "SCENE MENU".



- Press or on the button to select the scene setting that best fits the recording situation. Each time you press or on the button, the scene indicator changes as shown.



To Go Back to Auto Mode

Select "SCENE MENU" in step 3 above, and then press on the operation button () to select "OFF".

To reset the VIEWCAM to Full Auto mode, press on the button to select "CAM. MODE" and then press on the button to select "AUTO" in step 2.

Notes:

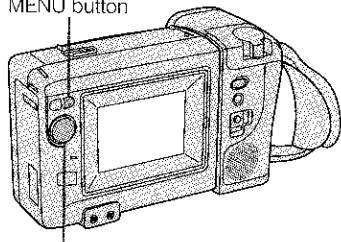
- When "" is selected, recording under the light of fluorescent lamps, mercury lamps, or sodium lamps may cause colour shifts or fluctuations in picture brightness.
- When "" is selected, the picture may not be satisfactory if the lighting is very dim.
- We recommend that you use Auto mode ("SCENE MENU: OFF") to record outdoor parties.
- If other manual items are adjusted after setting the Scene Menu, the Scene Menu will automatically return to "OFF".

Note:

- Pressing on the button once again will select "SHUT. SPEED", not "WHITE BALANCE".

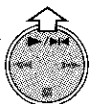
Setting the Shutter Speed

MENU button

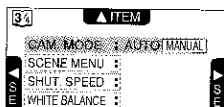


Operation button

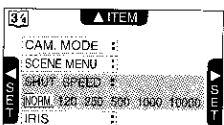
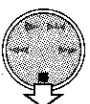
- 1 Press the MENU button until **34** appears on the monitor (Camera mode). Press **▶/◀** on the Operation button (**34**) to select "MANUAL".



- 2 Select "CAM. MODE" and then press **▶▶** to select "MANUAL".



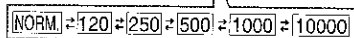
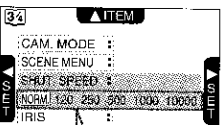
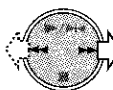
- 3 Press **■** to select "SHUT. SPEED".



Note:

- Pressing **■** once again will select "WHITE BALANCE", not "IRIS".

- 4 Press **▶▶** or **◀◀** to select the desired shutter speed.
 - You can select from 6 shutter speed settings from 1/50 (NORM.) to 1/10000.



To Return to the Standard Shutter Speed

In step 4, press **◀◀** on the **34** button to select "NORM.".

To reset the VIEWCAM to Full Auto mode, press **▶/◀** to select "CAM. MODE" and then press **◀◀** to select "AUTO" in step 2.

Recommended Shutter Speeds

The faster the shutter speed, the darker the picture becomes. Select the most appropriate shutter speed for the ambient light.

Situation	Recommended shutter speed
- Recording sports action in bright daylight - Recording in bright daylight at a ski resort	1/10000 sec. 1/1000 sec.
- Recording outdoor sports on a somewhat cloudy day - Recording an outside scene through a car window (when you want to minimize blurs caused by camera shake)	1/1000 sec. 1/250 sec.
When you want to reduce the light by half. Use as a substitute for an ND2 filter.	1/120 sec.

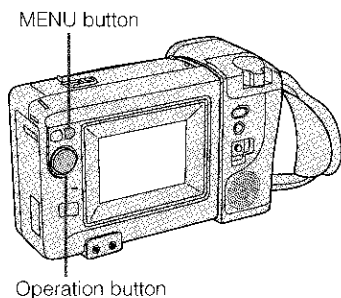
Note on Recording under Fluorescent Lighting

If the picture on the monitor flickers when recording under fluorescent lighting, you may be able to compensate by changing the shutter speed to 1/120 sec.

Notes:

- Using a fast shutter speed under fluorescent lighting will cause flickering in the picture and possibly periodic colour shifts.
- Recording with a shutter speed higher than 1/50 sec. (standard) tends to darken the picture. Record in bright locations when you use a high shutter speed.
- If the Scene Menu is set after setting the shutter speed, the shutter speed will automatically return to "NORM." (1/50).

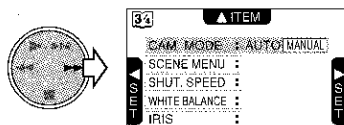
White Balance Lock



- 1 Press the MENU button until **34** appears on the monitor (Camera mode). Press **▶/▶** on the Operation button (⊙) to select "MANUAL".



- 2 Select "CAM. MODE" and then press **▶▶** to select "MANUAL".



- 3 Press **■** to select "WHITE BALANCE".



- 4 Aim the VIEWCAM at a solid white subject in the light.

- 5 Press **▶▶** to select "LOCK". The "LOCK" display flashes and the white balance is automatically locked. The "LOCK" display stops flashing when the locking procedure is completed.



To Return to the Auto Mode

Perform steps 1 to 3, and press **◀◀** on the ⊙ button to select "AUTO".

To reset the VIEWCAM to Full Auto mode, press **▶/▶** to select "CAM. MODE" and then press **◀◀** to select "AUTO" in step 2.

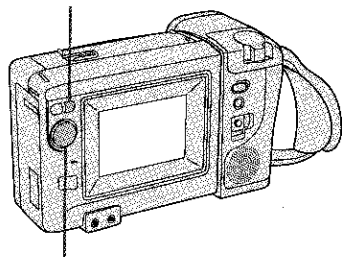
Notes:

- When recording with the white balance locked, if the light source changes or if you move from indoor to outdoor, or vice versa, the white balance may shift. Reset the white balance.
- Even after the white balance has been locked, white balance shifts may occur due to slight changes in illumination or depending on the subject.
- Do not move the VIEWCAM while "LOCK" is flashing in step 5.
- If the "LOCK" indicator does not stop flashing, set the white balance to "AUTO" and reset to "LOCK".
- If the Scene Menu is set after setting the white balance to "LOCK", the white balance will automatically return to "AUTO".

Manual Iris

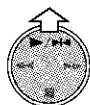
The VIEWCAM is normally set to Auto Iris mode, which automatically chooses the optimal aperture. When there is too much contrast in brightness between the subject and background, however, you may not be able to record a clear image. Correct iris to adjust the aperture.

MENU button

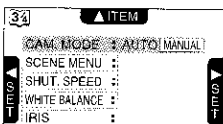
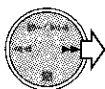


Operation button

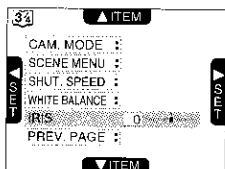
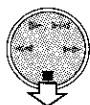
- 1 Press the MENU button until 34 appears on the monitor (Camera mode). Press $\blacktriangleright/\blacktriangleleft$ on the Operation button ($\odot$) to select "MANUAL".



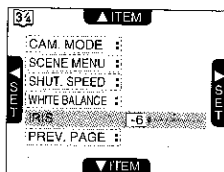
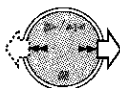
- 2 Select "CAM. MODE" and then press $\blacktriangleright$ to select "MANUAL".



- 3 Press $\blacksquare$ to select "IRIS".



- 4 Press $\blacktriangleleft$ or $\blacktriangleright$ to select the desired value setting.
 - The number shows the selected aperture value. The adjustable range is from -6 (least light) to $+6$ (most light).



To Return to the Auto Mode

In step 4, press $\blacktriangleleft$ or $\blacktriangleright$ on the $\odot$ button to select "0".

To reset the VIEWCAM to Full Auto mode, press $\blacktriangleright/\blacktriangleleft$ to select "CAM. MODE" and then press $\blacktriangleleft$ to select "AUTO" in step 2.

Note:

- If the Scene Menu is set after setting the manual iris, the aperture setting will automatically return to "0" (normal).

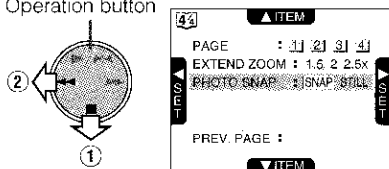
Recording a Five-second Still Image (Snapshot)

You can record a still picture (snapshot) for about 5 seconds with normal sound simply by pressing the SNAP button.

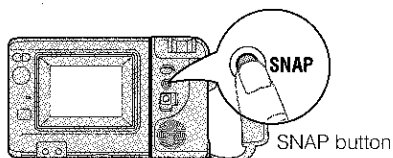
This is useful when you want to record a scene like a photograph.

- 1 Refer to page 20 to display MENU-PAGE 3 (Camera mode). Press $\blacksquare$ on the Operation button (1) to select "PHOTO SNAP" (2) and then press $\blacktriangleleft$ to select "SNAP" (2). Press the MENU button to turn off the menu.

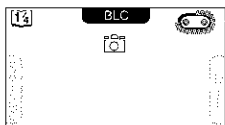
Operation button



- 2 Press the SNAP button while the VIEWCAM is in Recording Standby mode.



- 3 Press the REC START/STOP button.
 - The [] indicator is displayed during snapshot recording.



A still image of the subject will be recorded for about 5 seconds, then the VIEWCAM automatically returns to Recording Standby mode.

Notes:

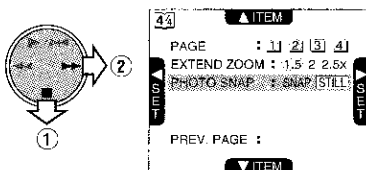
- The image on the monitor will be frozen during snapshot recording.
- If the electronic high-speed shutter is used with the snapshot function, you can record a complete still image without any blurring.
- The picture quality of the snapshot is slightly lower than normal picture quality.

Still Recording

You can record still images of subjects with normal sound.

You will find it useful when you want to record a shot of a tourist information board during sightseeing.

- 1 Refer to page 20 to display MENU-PAGE 3 (Camera mode). Press $\blacksquare$ on the Operation button (1) to select "PHOTO SNAP" (2) and then press $\blacktriangleright$ to select "STILL" (2). Press the MENU button to turn off the menu.



- 2 Press the SNAP button while the VIEWCAM is in Recording Standby mode.
- 3 Press the REC START/STOP button. A still image of the subject will be recorded.

Notes:

- Once the Still Recording mode is set, the VIEWCAM will remain in that mode until it is cancelled, even when switched between Recording mode and Recording Standby mode.
- The picture quality in this mode will be slightly lower than normal pictures.

Caution:

- Do not keep the VIEWCAM in Still Recording mode too long. The monitor may hold an after-image. Turn off the power and wait for a while. The monitor will return to normal.

To Pause Snapshot or Still Recording

Press the REC START/STOP button.

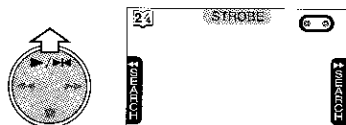
To Return to Normal Recording

Press the SNAP button to disengage the Snap/Still mode.

Strobe Recording

You can record strobe images (still pictures that capture continuous motion at 1/4 sec. intervals) of subjects with normal sound. You will find it useful when you want to produce a special effect while recording moving subjects such as your friends waving at you.

- 1 While the VIEWCAM is in Recording Standby mode, display the **[2/4]** screen (Camera mode) and press **▶/▶** on the Operation button (⊙) to select "STROBE".



- Each time you press **▶/▶**, the recording mode switches between Normal and Strobe.

- 2 Press the REC START/STOP button to begin strobe recording.

- 3 To return to normal recording, press **▶/▶** on the ⊙ button to select "STROBE" again.

Note:

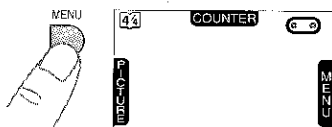
- The picture quality in this mode will be slightly lower than normal pictures.

Recording with the Wide Screen (16:9)

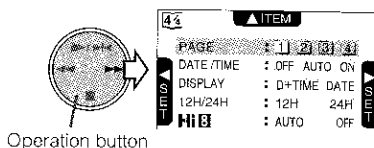
This feature lets you record scenes with the wide-screen feel of a movie shown in a theatre. The top and the bottom of the picture are masked with black bands to produce an effective screen aspect ratio of 16:9.

Setting the Wide Screen Mode

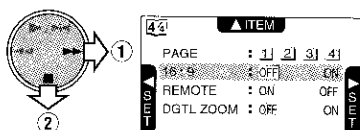
- 1 Press the MENU button until **[4/4]** appears on the monitor (Camera mode).



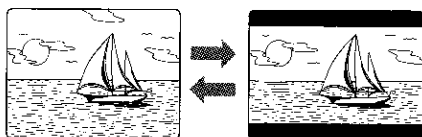
- 2 Press **▶/▶** on the Operation button (⊙) to select "MENU".



- 3 Press **▶/▶** on the ⊙ button to select MENU-PAGE **[2/4]** (①) and then press **■** to select "16:9" (②).



- 4 Press **▶/▶** to select "ON". Then, press the MENU button to turn off the menu.



Normal Screen mode

Wide Screen mode

- 5 To return to the normal picture, press **◀◀** to select "OFF" in step 4 above.

Notes:

- When using the fade function (see page 31) in the Wide Screen mode, only the unmasked portion of the screen will fade in or out.
- You can only use the Wide Screen mode when the VIEWCAM is in Camera mode.

Lighting

For clear, good-quality recording, 500 to 100,000 lux is needed. Recording is also possible with less light, but the picture quality may suffer. Adequate lighting is also essential for correct white balance.

Brightness (Lux)	Situation (Lux)
100,000	Blue sky Clear day at noon (100,000)
10,000	Clear day at 10 am (65,000) Clear day at 3 pm (35,000) Cloudy day at noon (32,000) Cloudy day at 10 am (25,000)
1,000	Cloudy day, one hour after sunrise (2,000) Clear day, one hour before sunset (1,000) Fluorescent light near window (1,000)
100	Factory floor (700–800) Sales counter in department store (500–700) Bowling alley (500) Library (400–500) Office with fluorescent lighting (400–500) Fluorescent desk lamp (400) Flashlight at 1 m (250) Shop stairway (100)
10	During intermission at movie theatre (15–35) Cigarette lighter at 30 cm (15–20) Candles on birthday cake at 20 cm (10–15) Candlelight

Reference

Lighting is not only one of the most important areas in producing home videos, but also one of the most overlooked. Good lighting can often mean the difference between a great picture and a poor one. Lighting is also essential for correct white balance.

In most outdoor, daytime scenes, natural lighting is adequate for home videos. Indoors, the situation becomes more complicated. Artificial lighting is required, and halogen lamps provide the most natural artificial light while maintaining a constant colour temperature over a long operating life. Good lighting is difficult to achieve. There are many problems waiting to catch the unwary. Simply mounting one light or several lights on either side of the VIEWCAM will only make your subject look flat and two-dimensional. To make a subject more interesting, use the lighting to model your subject and to add or create emphasis in a scene.

Colour Temperature (degrees Kelvin)	Situation	Colour	White Balance Range
10,000	Clear day	Blue	A U T O
9,000			
8,000	Cloudy day		
7,000	Rainy day		
6,500	Daylight fluorescent light		
6,000	Camera flashbulb		
5,500			
5,000	Blue photolamp	White	
4,500	White fluorescent light		
3,500	Off-white fluorescent light Tungsten photolamp		
3,200	Halogen lamp		Yellow
2,800	Tungsten lamp Iodine lamp		
2,500	Acetylene lamp Kerosene lamp		
2,000	Candlelight	Red	

Notes:

- The figures in the charts are approximations.
- The auto white balance operates automatically within the range of "AUTO" shown in the chart. However, it will satisfactorily operate from 2,500 K up to 8,000 K, although the picture may take on a red or blue tint.

Lighting indicator ("LIGHT")

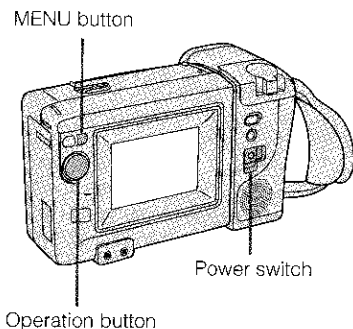
When the "LIGHT" indicator appears on the monitor, it means that there is not enough illumination for recording. Either move to a brighter location or increase the light. You can also correct the problem by manually setting the gain (see page 29).



World Clock

This VIEWCAM is equipped with a world clock feature. It allows you to easily adjust the time when you use the VIEWCAM while travelling anywhere in the world outside your home time zone.

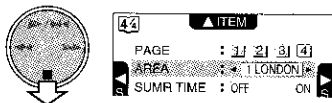
Set the area, date and time if they are not already set. (See page 23.)



- Press **▶▶** on the button to select PAGE **41**.



- Press **■** to select "AREA".



- Press **◀◀** or **▶▶** until "2 PARIS" appears. The VIEWCAM is now set to the Paris time.
Press the MENU button to turn off the menu.

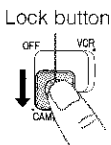


Changing the Area of the Time Zone

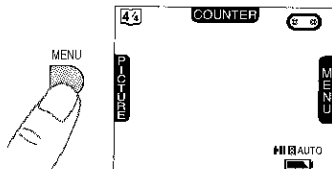
Example:

Changing the area from London to Paris.

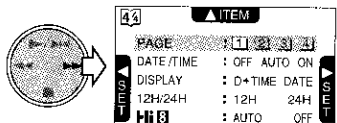
- Hold down the Lock button and slide the Power switch to CAMERA.



- Press the MENU button until **44** appears on the monitor.



- Press **▶▶** on the Operation button () to select "MENU".



Blank Area Setting

If you do not want to set the area (time zone), you can leave the setting blank. In step 6 above, press **◀◀** or **▶▶** on the button until the area setting is blank (after "24").

To Turn Off the Menu Display

Press the MENU button.

To Display Area, Date and Time on the Monitor

- 1 Press the MENU button until **44** appears and then press **▶▶** on the Operation button (⊙) to select MENU-PAGE **11**.

- 2 Press **■** on the Operation button (⊙) to select "DATE/TIME".

Operation button



- 3 Press **◀◀** or **▶▶** on the ⊙ button to select "AUTO" or "ON".



- 4 Press the MENU button to turn off the menu display. The area, date and time will be displayed on the monitor.



Notes:

- When "AUTO" is selected, the date/time is displayed for 10 seconds at the beginning of the first recording of each day. When "ON" is selected, the date/time is continuously displayed along with the subject.
- During recording and playback, the position of the date/time displayed on the LCD may differ, however, this does not indicate a malfunction.



Setting Summer Time (Daylight Saving Time)

- 1 Press the MENU button until **44** appears. Press **▶▶** on the Operation button (⊙) to select MENU-PAGE **41**.

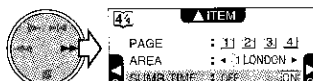
Operation button



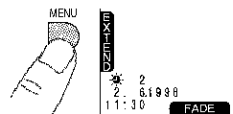
- 2 Press **■** on the ⊙ button to select "SUMR TIME".



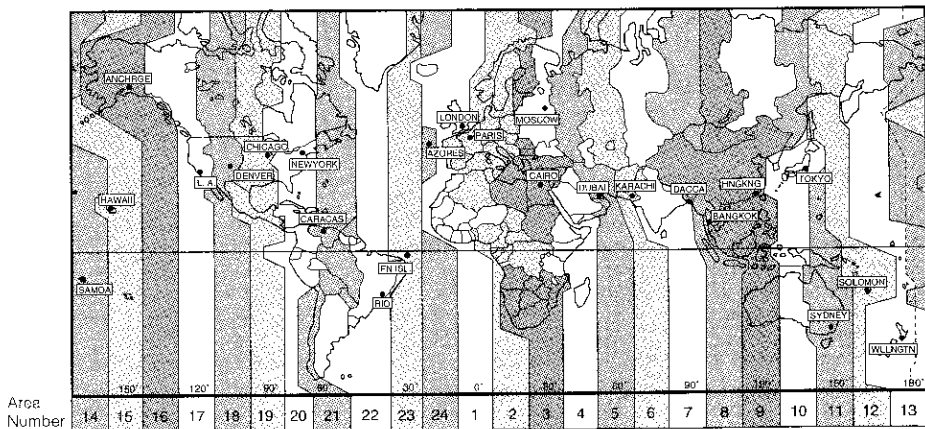
- 3 Press **▶▶** on the ⊙ button to select "ON". The time automatically changes to summer time.



- 4 Press the MENU button to turn off the menu display. The "⚙" mark will be displayed to the left of the area indicator. To reset to standard time, set the "SUMR TIME" menu item to "OFF".



Time Zone Chart



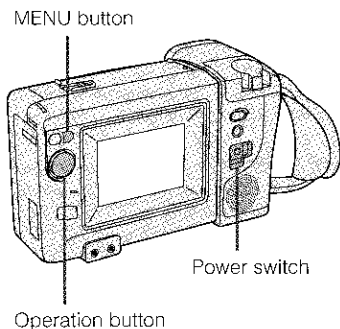
Useful Features for Camera Recording

Area Table

Area number	Area name	Countries or areas*
1	LONDON	England, Morocco, GMT (Greenwich mean time)
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, Portugal, CST (Continental Standard Time), Tunisia
3	CAIRO	Egypt, Finland, Greece, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychelles, Russia (Moscow)
5	DUBAI	United Arab Emirates
6	KARACHI	Maldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (Perth), China, Hong Kong, Indonesia (Borneo, Bali), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (Sydney)
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	Hawaii Is., Tahiti, HST (Hawaii Standard Time)
16	ANCHRGE	U.S.A. (Alaska), AST (Alaska Standard Time)
17	L.A.	U.S.A. (Los Angeles, San Francisco), PST (Pacific Standard Time)
18	DENVER	U.S.A. (Denver), MST (Mountain Standard Time)
19	CHICAGO	Mexico, U.S.A. (Chicago), CST (Central Standard Time)
20	NEWYORK	Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (Eastern Standard Time)
21	CARACAS	Chile, Dominica, Venezuela
22	RIO	Argentina, Brazil, Uruguay
23	FN ISL	Fernando de Noronha
24	AZORES	Azores Islands

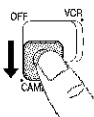
* These are common names. The formal may be different.

Picture/Backlight Adjustments

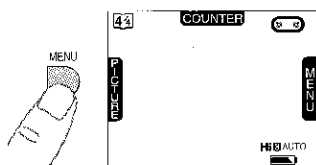


If the picture is difficult to see due to ambient lighting, etc., adjust the monitor picture.

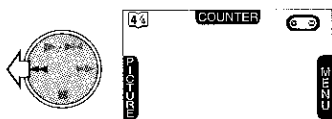
- 1 Set the Power switch to CAMERA.



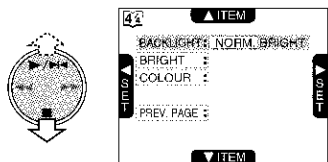
- 2 Press the MENU button until 44 appears on the monitor.



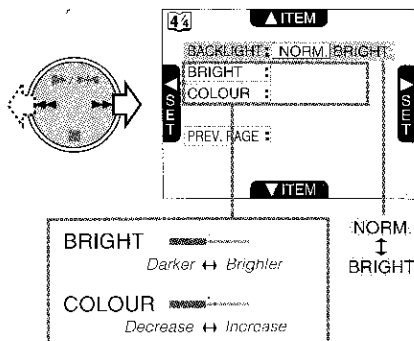
- 3 Press ◀ on the Operation button (⊕) to select "PICTURE".



- 4 Press ■ or ▶ on the ⊕ button to select the menu item you wish to adjust.



- 5 Press ◀ or ▶ to adjust the picture or backlight to your preference.



- 6 When you are finished, press the MENU button to turn off the adjustment display.

When the VIEWCAM is in VCR Mode

Press the MENU button until 22 appears on the monitor. Then perform steps 3 through 6 shown above.

Notes:

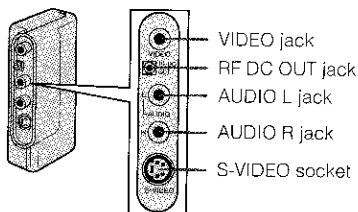
- In bright daylight, the monitor picture will be easier to see if you set the backlight ("BACKLIGHT") to "BRIGHT".
- The picture adjustments have been factory preset to neutral settings, and the backlight mode ("BACKLIGHT") has been factory preset to normal ("NORM.").
- When the colour is adjusted, the picture on the screen may differ from the picture actually recorded. Do not change the colour settings unless it is necessary.

Connections and Editing

Using the A/V Pack

The supplied A/V pack lets you connect the VIEW-CAM to other audiovisual equipment. Small and lightweight, it comes in handy when travelling or any time you are away from home.

A/V pack



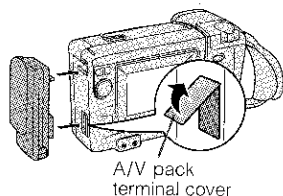
Attaching the A/V Pack

- 1 Remove the A/V pack terminal cover of the VIEWCAM as shown below.

Note:

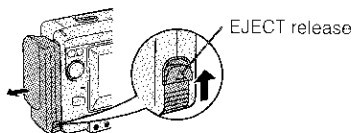
- Be careful not to lose the cover once it is removed.

- 2 Align the projections on the A/V pack with the openings on the VIEWCAM's mounting panel, insert the A/V pack as shown, then push the A/V pack firmly against the mounting panel until it clicks into place.



Detaching the A/V Pack

Slide the EJECT release on the A/V pack in the direction of the arrow, and then pull the A/V pack straight out.



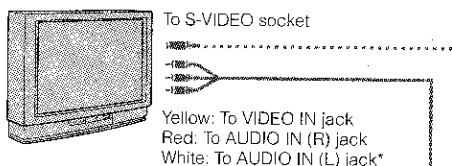
Caution:

- Do not use the A/V pack as a handle; it will cause malfunctions.

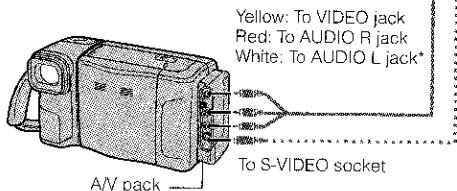
Connections for Playback on a TV with Audio/Video Jacks

Although you can enjoy playback on the VIEW-CAM's LCD monitor, you can also watch played-back tapes on your TV screen.

- Connect the VIEWCAM to your TV with the supplied audio/video cable, as shown.



*If your TV has only one audio input jack, use the white plugs for the audio connection on the TV and VIEWCAM.



Caution:

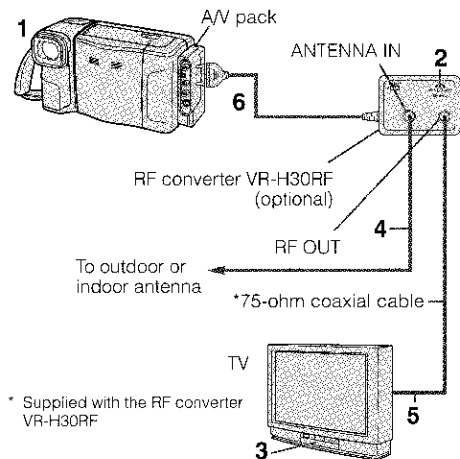
- Make sure that the VIEWCAM, TV and other equipment to be connected have been turned off before you make connections. Making connections with any of the components left turned on may cause picture noise or malfunction.

Notes:

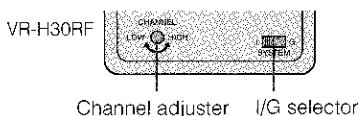
- If your TV has an S-video input socket, connect it to the S-VIDEO socket on the A/V pack with the supplied S-video cable.
- When both the normal A/V cable and the S-video cable are connected to the A/V pack, video signals are output only through the S-video cable. Do not connect the S-video cable to the A/V pack if the video equipment to be connected does not have an S-video socket.
- When the VIEWCAM is connected to a TV for playback, the picture on the TV screen may flicker if the volume on the VIEWCAM is set to maximum. Should this occur, turn the volume down (see page 34).

Connection to a TV without Audio/Video Jacks

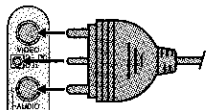
To connect the VIEWCAM to a TV which does not have audio/video jacks, use the supplied A/V pack and the optional VR-H30RF RF converter.



- 1 Attach the A/V pack to the VIEWCAM (see page 55).
- 2 Set the I/G selector on the RF converter according to the TV system in your area ("I" in the U.K.). The channel adjuster on the RF converter is set to CH36. If CH36 is used in your area, set it to a different channel.

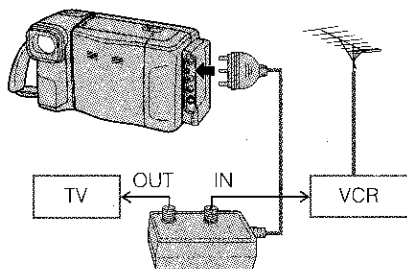


- 3 Set the TV tuner to the same channel as that selected on the RF converter.
- 4 Unplug the antenna cable from the TV and plug it into the ANTENNA IN terminal on the RF converter.
- 5 Plug the 75-ohm coaxial cable into RF OUT terminal on the RF converter and the 75-ohm coaxial antenna terminal on the TV.
- 6 Plug the RF converter cable into the AUDIO, VIDEO, and RF DC OUT jacks on the A/V pack.



If your TV's antenna input is connected to a VCR

Disconnect the cable between the TV and VCR, and insert the RF converter between them.



Cautions:

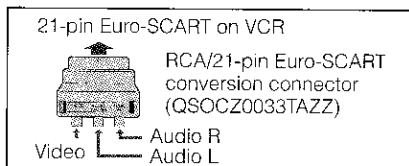
- Use only the VR-H30RF RF converter (optional accessory) with this VIEWCAM.
- The RF converter is a sealed unit. Do not attempt to open or modify it. Do not damage, drop or subject the unit to vibration.
- Unplug the RF converter during lightning storms.

Notes:

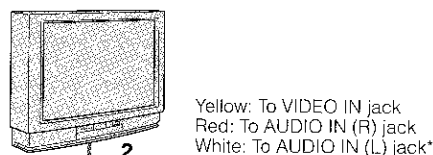
- To resume normal TV operation, set the VIEWCAM's Power switch to OFF, or unplug the RF converter cable from the A/V pack if it is still attached to the VIEWCAM.
- The picture may be disturbed during video search or still picture playback. This does not imply a defect in the VIEWCAM.
- I refers to system PAL I and the I/G selector should be in this position for use in U.K., South Africa, and Hong Kong. G refers to system PAL G for use with European PAL systems.
- If UHF channel 36 is an active broadcast channel in your area, any non-broadcast channel from UHF channel 30 to 39 can be selected for viewing the VIEWCAM's output on TV. Adjust the RF converter's output channel adjuster to any of those channels (UHF30-39), and tune your TV to the same channel.

Connection to TV via VCR

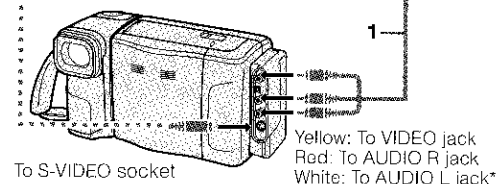
- 1 Connect the VIEWCAM to your VCR via the A/V pack with the supplied audio/video cable.
 - If your VCR has a 21-pin Euro-SCART connector, use the RCA/21-pin Euro-SCART conversion connector (QSOCZ0033TAZZ).



- 2 Set the VCR to its "AV" or "LINE" input channel. Operate the TV as you normally do to see the signal from the VCR. (See the operation manuals for your TV and VCR.)
 - If your VCR has an S-video input socket, connect it to the A/V pack's S-VIDEO socket with the supplied S-video cable.



* If your VCR has only one audio input jack, use the white plugs for the audio connection on the VCR and VIEWCAM.

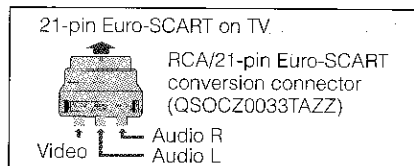


About the S-video socket

S-video sockets are used to pass the chroma (colour) and luminance (brightness) components of video signals separately. They serve to improve the picture quality in both recording and playback.

Watching Played-back Tapes on a TV

- 1 Turn on your TV and set it to its "AV" or "VIDEO" channel. (See the operation manual for your TV.)
 - If your TV has a 21-pin Euro-SCART connector, use the RCA/21-pin Euro-SCART conversion connector (QSOCZ0033TAZZ).



- 2 Turn on the VIEWCAM in the VCR mode, and begin tape playback as you normally do (see page 34).

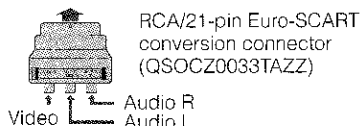
Editing

Video editing lets you refine your videos by removing unwanted sequences from your tape, or transposing one sequence with another. This VIEWCAM lets you monitor the source programme on the built-in LCD monitor without having to connect it to an external TV or video monitor.

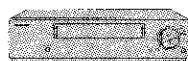
Connect the VIEWCAM to a VCR with the supplied A/V pack and audio/video cable, as shown.

- If your VCR has a 21-pin Euro-SCART connector, use the RCA/21-pin Euro-SCART conversion connector (QSOCZ0033TAZZ).

21-pin Euro-SCART on VCR



Recording

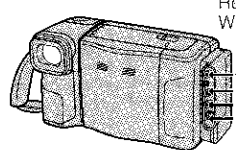


To S-VIDEO input socket

Yellow: To VIDEO IN jack
Red: To AUDIO IN (R) jack
White: To AUDIO IN (L) jack*

*If your VCR has only one audio input jack, use the white plugs for the audio connection on the VCR and VIEWCAM.

Playback



Yellow: To VIDEO jack
Red: To AUDIO R jack
White: To AUDIO L jack*

To S-VIDEO socket

Notes:

- If your VCR has an S-video input socket, connect it to the S-VIDEO socket on the A/V pack with the supplied S-video cable.
- When both the normal A/V cable and the S-video cable are connected to the A/V pack, video signals are output only through the S-video cable. Do not connect the S-video cable to the A/V pack if the video equipment to be connected does not have an S-video socket.

Cutting Unwanted Sequences

- 1 Play back the tape to be edited, and locate the beginning and end of the sequence you wish to cut. Write down the tape counter readings at the beginning and end of that sequence (see page 37). Then rewind the tape to the beginning of the portion that you wish to keep.
- 2 Load a blank video cassette into the recording VCR.
- 3 Set the Power switch to VCR. Press ►/◄ on the Operation button (⊙) to select "PLAY" and press the VCR's REC (Record) button at the same time.
- 4 Press the VCR's Pause/Still button to pause recording when the source tape reaches the beginning of the sequence to be cut.
- 5 Press the VCR's Pause/Still (or Record) button to resume recording when the source tape reaches the end of the sequence to be cut.

To Stop Editing

Press ■ on the ⊙ button to select "STOP" on the VCR 12 screen and press the STOP button on the VCR.

Notes:

- Some of the transitions between edited sequences may be slightly off.
- The picture may be disturbed during video search or still picture playback. This does not imply a defect in the VIEWCAM.

Setting the Edit Mode

Picture quality inevitably declines during dubbing from the VIEWCAM to a VCR. To minimize the quality reduction, set the VIEWCAM to Edit mode.

- 1 Set the VIEWCAM to VCR mode, and press the MENU button until 22 appears.
- 2 Press ►► on the ⊙ button to select "MENU", then make sure the "EDIT" menu item is selected.
- 3 Press ►► on the ⊙ button to select "ON".

Notes:

- The "EDIT" setting is ineffective when the VIEWCAM is recording.
- After you finish dubbing, set the "EDIT" menu item back to "OFF".

Before Requesting Service

The following conditions do not always denote trouble. Therefore, perform the checks described below before calling for service. If the problem cannot be corrected by the use of this guide, remove the mains plugs from the wall socket, and contact the dealer or supplier from whom the unit was purchased in order to obtain service. Where this is not possible please contact the telephone number listed below. You will then be given details of how to obtain service.

0345-125387

Please note: All calls will be charged at local rate.

Certain replacement parts and accessories may be obtained from our main parts distributor, who can be contacted on the following numbers:

WILLOW VALE ELECTRONICS LTD.

MANCHESTER 0161-682-1415 READING 01734-876444

In the unlikely event of this equipment requiring repair during the guarantee period, you will need to provide proof of the date of purchase to the repairing company. Please keep your invoice or receipt, which is supplied at the time of purchase.

	Symptom	Possible cause	Suggested solution
Power	No power.	• Power source is not properly connected.	• Connect power source properly. (pp. 12-14)
		• Battery pack is not charged.	• Charge battery pack sufficiently. (p. 11)
		• Dew in VIEWCAM.	• Wait until dew dries. (p. 6)
		• Safety function is in effect.	• Set Power switch to OFF and remove battery pack; wait for two seconds, then re-install battery pack and turn on power.
Recording	REC START/STOP button does not work.	• Erasure protect tab on video cassette is closed.	• Open tab or use a new cassette. (p. 8)
	Power suddenly turns off.	• VIEWCAM left in Recording Standby mode for five minutes.	• Set Power switch to OFF and then back to CAMERA.
	Monitor picture is hard to see.	• Inappropriate picture adjustments.	• Adjust picture. (p. 54)
	Auto focus does not work.	• Manual Focus mode is engaged.	• Set to Auto Focus mode. (p. 33)
		• Zoom used on close subject.	• Zoom out on subject. (p. 26)
		• Subject has little contrast in brightness, or is full of horizontal or vertical stripes.	• Focus manually. (p. 43)
	Bright subject produces wide vertical lines.	• Occurs when shooting subject with strong contrast to the background. Does not indicate a malfunction.	—
	No audio from speaker when recording.	• Speaker does not work during Camera mode. (Volume control in Camera mode only affects earphone volume.)	—
Playback	Automatically zooms out without operating Zoom buttons.	• VIEWCAM is unable to focus when zooming in on subject within 1.5 m, and automatically zooms out until it focuses on subject.	• Zoom out. (p. 26)
		• No subject in the field of view.	• Direct lens to some subject, or set zoom to widest angle before shooting. (p. 26)
	Tape stops midway through rewind or fast forward.	• Counter is in memory mode.	• Disengage the memory mode. (p. 38)
	No image appears on connected TV screen.	• Video input channel on TV or TV channel is not selected properly.	• Select video input channel or TV channel properly. (pp. 55-57)
		• A/V cable is not properly connected.	• Connect A/V cable properly. (p. 55)
		• A/V pack is not properly connected.	• Connect A/V pack properly. (p. 55)

Others

	Symptom	Possible cause	Suggested solution
Playback	Cannot play back, rewind or fast forward tape.	• Tape already wound or rewound completely.	• Rewind or fast forward tape to desired point. (p. 34)
	Video noise in image.	• Dirty video heads. • Old or worn tape.	• Call for service. • Use a new video cassette.
Recording & Playback	No power in VCR or Camera mode.	• Depleted battery pack. • AC adapter cord removed from power outlet.	• Use fully charged battery pack. (p. 11) • Plug AC adapter cord into power outlet. (p. 13)
	Cassette will not eject.	• Power source is not properly connected. • Battery pack is not charged. • VIEWCAM is recording.	• Connect power source properly. (pp. 12–14) • Charge battery pack sufficiently. (p. 11) • Stop tape and try again.
	No buttons operate.	• Dew in VIEWCAM.	• Wait until dew dries. (p. 6)
	No image on monitor.	• Backlight has been turned off. • Fluorescent lamp is burned out.	• Press MODE DISPLAY button, or set Power switch to OFF and then back to CAMERA or VCR. (p. 38) • Call for service.
	Cannot edit to connected VCR.	• A/V or S-video cable is not properly connected. • A/V pack is not properly connected.	• Connect A/V or S-video cable properly. (p. 58) • Connect A/V pack properly. (p. 55)
	Lens makes rattling sound when VIEWCAM is moved in VCR mode or with power off.	• Does not indicate a malfunction.	—
	Remote control does not function.	• "REMOTE" menu item is set to "OFF". • Remote control lithium battery has run down. • Remote control used beyond operating range. • Intense daylight falling on VIEWCAM's photoreceptor. • Obstacle between remote control and VIEWCAM's photoreceptor.	• Set "REMOTE" menu item to "ON". (p. 39) • Replace remote control lithium battery with a new one. (p. 16) • Use remote control within operating range. (p. 39) • Protect photoreceptor from exposure to intense daylight. (p. 39) • Remove obstacle or use remote control from different angle. (p. 39)

Notes:

- This unit is equipped with a microprocessor. Its performance could be adversely affected by external electrical noise or interference. If this should happen, turn off the power and disconnect the unit from any power sources, including lithium batteries, etc. Then reconnect the power sources (to resume operation).
- If the characters displayed on the monitor screen appear to malfunction, disconnect the power source and remove the lithium battery, then reconnect the power source, insert the lithium battery, and turn the power on again. The characters on the monitor should be normal. Set the date and time, then resume operation.

Specifications

Signal System: PAL standard
Recording System: 2 rotary heads, helical scanning system
Cassette: 8 mm video tape, MP type or Hi8 MP, ME type
Recording/Playback Time: 90 minutes (P5-90)
Tape Speed: 20.051 mm/second
Pickup Device: $\frac{1}{4}$ " (6.4 mm, effective size: 4.5 mm) CCD image sensor (with approx. 470,000 pixels including optical black)
Lens: 12 $\times$ power zoom lens (F1.8, $f=4.2$ -50.4 mm), full-range auto focus
Lens Filter Diameter: 37 mm
Monitor: 3" (7.6 cm)—full-colour LCD screen (TFT active matrix)
Microphone: Electret stereo microphone
Colour Temperature Compensation: Auto white balance with white balance lock
Minimum Illumination: 5 lux* (with gain-up)
Video Output Level: 1.0 Vp-p 75-ohm unbalanced
Audio Output Level: -8 dBs, impedance less than 2.2 kohms
Speaker Output: 300 mW
External Microphone Input: 3.5 mm diameter mini-plug, -66 dBs, output impedance 6.8 kohms, DC 4 V, for plug-in-power microphone use
Power Requirement: DC 3.6 V
Power Consumption: 6.0 W (during camera recording in full auto mode with zoom motor off, backlight in normal mode, and without A/V pack)
Operating Temperature: 0°C to +40°C
Operating Humidity: 30% to 80%
Storage Temperature: -20°C to +60°C
Dimensions (approx.): 177 mm (W) $\times$ 105 mm (H) $\times$ 84 mm (D)
Weight (approx.): 740 g (without battery pack, lithium battery, video cassette, and lens cap)

AC Adapter/Battery Charger (UADP-0207TAZZ)

Power Requirement: AC 110-240 V, 50/60 Hz
DC Output: 4.5 V
Power Consumption: 27 W
Dimensions (approx.): 75 mm (W) $\times$ 51 mm (H) $\times$ 135 mm (D)
Weight (approx.): 425 g

Specifications are subject to change without notice.

*Minimum illumination: Since there is no widely accepted testing procedure for determining minimum illumination capability, lux ratings are comparable only between models from the same manufacturer.

Notes

SHARP CORPORATION

Osaka, Japan

SHARP ELECTRONICS (U.K.) LTD.

Sharp House, Thorp Road, Newton Heath
Manchester M40 5BE

VIEWCAM TECHNICAL BULLETIN

MODELS VLH770H

REASON AV Pack not listed

ACTION Please use the part number below when ordering the AV pack.

<u>REF NO</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>PRICE CODE</u>
-	AV pack	QJAKZ0041TAZZ	AX

Sharp Electronics (UK) Limited

Reference EEV-978

Revision 1

White – Carry out as required

Yellow – Carry out as required and whenever the unit comes in for service

Red – Carry out on all units

