

# Service Manual

Panasonic **VHS**  
PAL

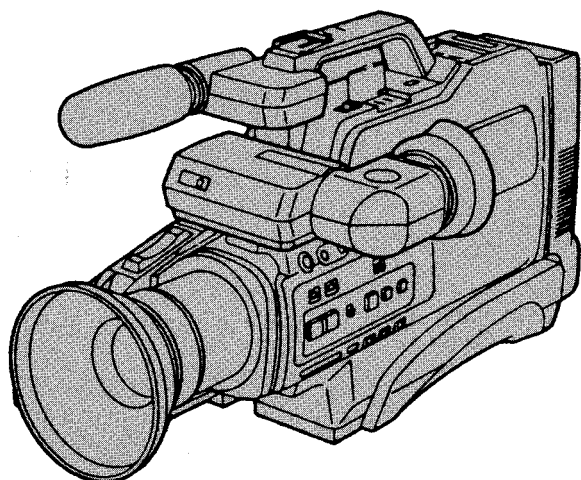
**HQ**

VHS Movie

**NV-M40<sup>E</sup><sub>A</sub>**

**NV-M3000<sup>EN</sup><sub>EM</sub>**

**NV-M3300MC**



## SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

### TECHNICAL INFORMATION/ТЕХНИЧЕСКАЯ ИНФОРМАЦИЯ

### ADJUSTMENT PROCEDURES/ПРОЦЕДУРЫ РЕГУЛИРОВКИ

### BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS/БЛОК-СХЕМЫ И ПРИНЦИПИАЛЬНЫЕ СХЕМЫ

CCD drive block diagram/блок-схема управления ПЗС матрицы

Auto focus block diagram/блок-схема автоматической фокусировки

Process block diagram/блок-схема обработки видеосигнала

Power block diagram/ блок-схема электропитания

System control & servo block diagram/блок - схема системы управления и сервопривода

Luminance/chrominance & head AMP block diagram/блок-схема каналов яркости/цветности и

усилителя видеоголовок

CCD drive schematic diagram/принципиальная схема управления ПЗС матрицы

Process, camera operation & CCD unit schematic diagram/принципиальная схема обработки

видеосигнала, выбора режимов работы и блока ПЗС матрицы

Auto focus schematic diagram/принципиальная схема автоматической фокусировки

EVF schematic diagram/принципиальная схема видоискателя

Power schematic diagram/принципиальная схема электропитания

System control & servo schematic diagram/принципиальная схема системы управления и

сервопривода

Sub servo schematic diagram/принципиальная схема сервопривода

Luminance/chrominance & head AMP schematic diagram/принципиальная схема каналов яркости/

цветности и усилителя видеоголовок

Audio schematic diagram/принципиальная схема аудиоусилителя

AV jack (A) schematic diagram/принципиальная схема аудио/видео разъема (A)

AV jack (B) schematic diagram/принципиальная схема аудио/видео разъема (B)

VTR operation schematic diagram/принципиальная схема блока управления видеомагнитофоном

Circuit board layout/размещение монтажных плат

Interconnection schematic diagram/схема соединений

### EXPLODED VIEWS & PARTS LIST/СБОРОЧНЫЕ ЧЕРТЕЖИ И СПИСКИ ЗАПАСНЫХ ЧАСТЕЙ

VTR mechanism section (1)/механизм видеомагнитофона (секция 1)

VTR mechanism section (2)/механизм видеомагнитофона (секция 2)

Camera lens section/модуль оптики

Frame & casing parts section (1)/корпус и шасси (секция 1)

Frame & casing parts section (2)/корпус и шасси (секция 2)

EVF section/видоискатель

Packing parts & accessories section (NV-M40E/A, NV-M3000EN, NV-M3300MC)/упаковочные

материалы и принадлежности (NV-M40E/A, NV-M3000EN, NV-M3300MC)

Packing parts & accessories section (NV-M3000EM)/упаковочные материалы и принадлежности (NV-

M3000EM)

Mechanical replacement parts list/список механических запасных частей

Electrical replacement parts list/список электрических запасных частей

**Panasonic**

## SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	Source: BATTERY; DC 12V Consumption; Recording mode; 8.7W (Battery operation) 17.8W (with Zoom Auto Light)	VIDEO	HEADS: 4 rotary heads, 1 flging erase head
			OUTPUT: PHONO CONNECTOR; 1.0Vp-p 75Ω unbalanced
VIDEO RECORDING SYSTEM	4 rotary heads, helical scanning system PAL	AUDIO	HEAD: 1 Stationary head (Normal Audio)
TAPE FORMAT	VHS-C Cassette Tape (Tape width 12.7mm)		INPUT: MIC IN (M3); -70dB, 4.7kΩ unbalanced
TAPE SPEED	23.39mm/s Record/Playback Time 240min. with NV-E240 FF/REW Time less than 12min. with NV-E180		OUTPUT: PHONO CONNECTOR; -8dB, 47kΩ loaded EARPHONE JACK (M3); -28dB, 8Ω unbalanced
		WEIGHT	Approx. 2.6kg (without Battery Pack)
		DIMENSIONS	230(W) × 245(H) × 459(D)mm
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)	STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack 1 pc. Shoulder Strap 1 pc. AV Output Cable 1 pc. DC Input Cable 1 pc. RF Adaptor (NV-M40A) 1 pc. Auto Light 1 pc. Battery Pack Charging Connector 1 pc. System Carrying Case (NV-M3000EM)
	STANDARD ILLUMINATION: 1,400 lux		
	MINIMUM REQUIRED ILLUMINATION: 1 lux		
	LENS: Built-in 8 : 1 2-Speed Power Zoom Lens with Digital AI Auto Focus, Auto Iris, Manual/Auto Focus System, F1.4 (5~40mm), Filter Diameter 49mm		
	IMAGE SENSOR: 1/3 inch CCD Image Sensor		
	VIEW FINDER: 0.7" Electric View Finder		

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

# Technical Information

## Service caution

### 1-1. Service Extension Cables

Use the following extension cables when checking or adjusting the individual circuit boards.

	PART NBR	PART NAME	CONNECTION	Q'TY
1	VFK0667	30 PIN EXTENSION CABLE	MAIN C.B.A. B3001~PROCESS C.B.A. B302	1
2	VFK0724	32 PIN EXTENSION CABLE	SENSOR C.B.A. B201~PROCESS C.B.A. B301	1
3	VFK0783	12 PIN EXTENSION CABLE	CCD UNIT~SENSOR C.B.A. B202	1
4	VFK0802	24 PIN FLAT CABLE	LENS UNIT~PROCESS C.B.A. FP701	1
5	VFK0823	6 PIN FLAT CABLE	PROCESS C.B.A. FP301~CAMERA OPERATION C.B.A. FP6701	1

How to use extension cables.

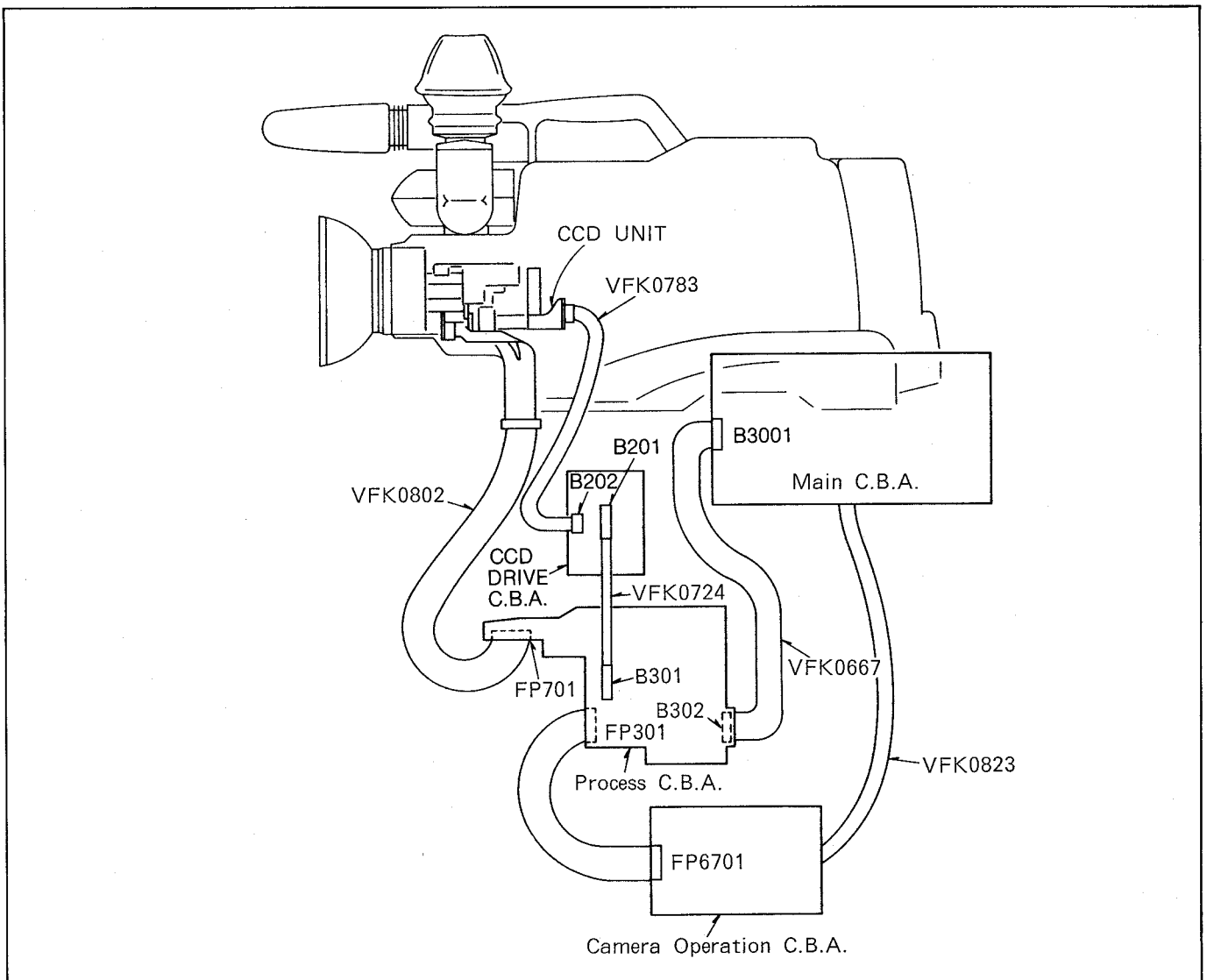


Fig. T1

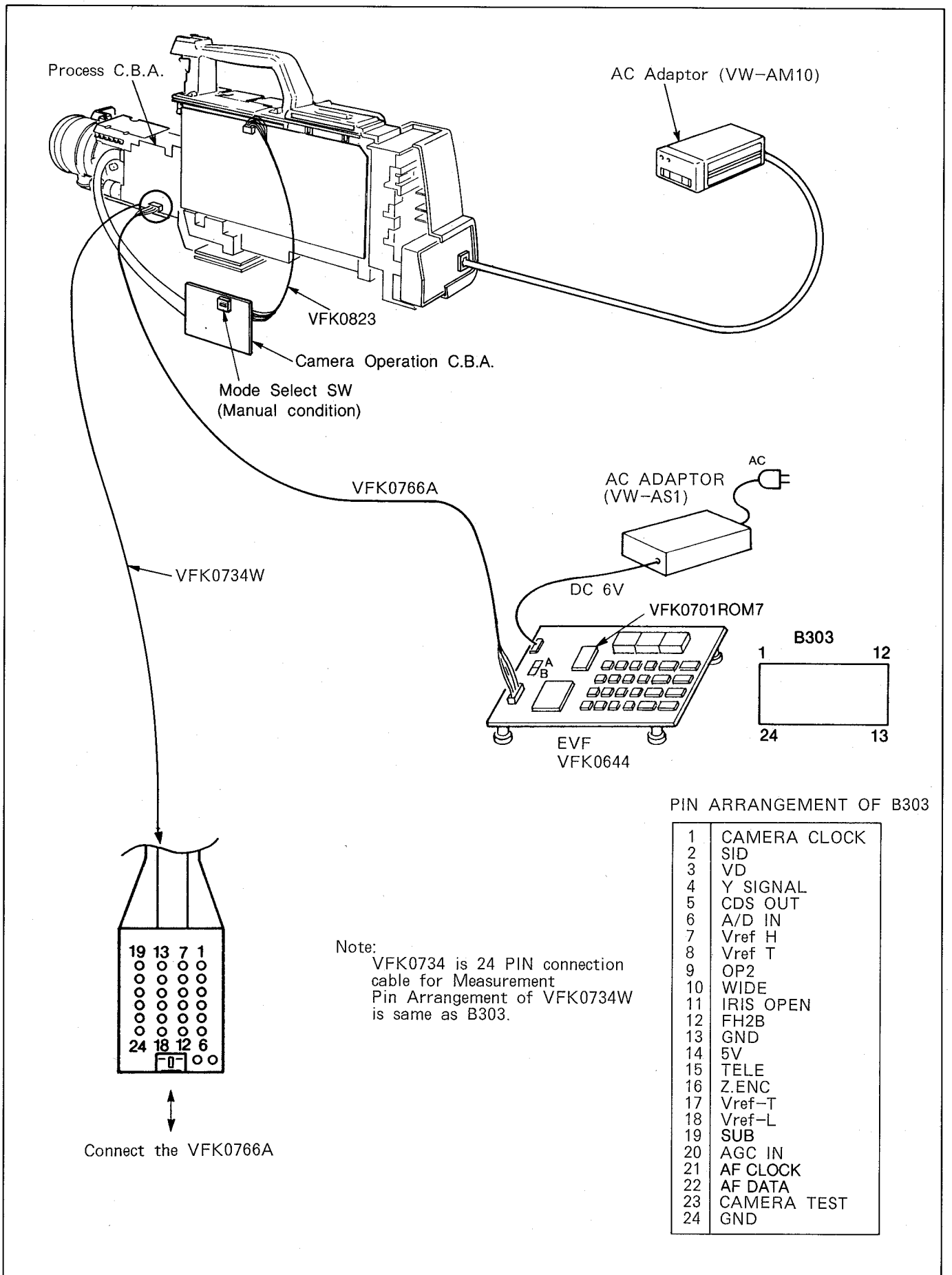


Fig. T2

1-2. New ROM IC for EVR fixture.

We are pleased to introduce the new ROM IC (VFK0701ROM7) for EVR fixture that we developed to adjust this Movie Camera.

This ROM IC will provide you with many superior features as automatic calculation of auto white balance and/or colour reproduction and more.

We are also pleased to introduce the new connecting cables (VFK0766A & VFK0734W) for this Movie Camera and EVR Fixture (VFK0644).

Connections between this Movie Camera and EVR fixture are solderless when using the VFK0766A and VFK0734W.

Please refer to Fig.T3 for how to use the cables.

ROM NUMBER & availability	Applicable models & Function	PART NUMBER OF EVR CONNECTION CABLE
VFK0701ROM1 available	NV-MS70/NV-M810/NV-S1/NV-S100 (PAL & NTSC) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0769
VFK0701ROM2 available	NV-S5/NV-S500 (PAL & NTSC) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0730
VFK0701ROM3 available	NV-G1/G2/G3 (G100/G200/G300) & NV-MS95/MS950 (PAL ONLY) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0699
VFK0701ROM4 available	NV-S7/S9 (NTSC ONLY) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0766A
VFK0701ROM5 available	NV-S7/NV-S700/G220/G202 (PAL ONLY) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0766A & VFK0734W (NV-S7/S700) VFK0699 (NV-G220/G202)
VFK0701ROM6 available	NV-T1 (NTSC ONLY) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0766A & VFK0734W
VFK0701ROM7 available	NV-M40/NV-M3000/NV-M3300/(PAL ONLY) ① General Adjustment for Camera unit ② Automatic Calculation for AWB & Colour Reproduction ③ Average Data Automatic rewriting	VFK0766A & VFK0734W

2. Self-diagnostic system and service mode

2-1. General

This Movie camera has a self-diagnostic system which facilitates quick trouble shooting.

Pressing the START/STOP Switch and Memory switch simultaneously, same time turn on the Power Switch, After that, unit into Service mode.

2-2. Service Mode

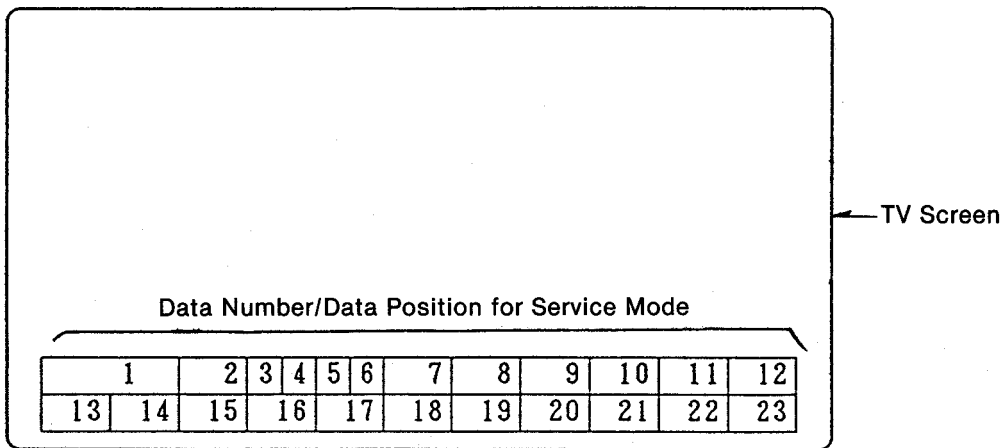
This Movie camera is possible to see RAM data of IC6004 on the TV screen or EVF.

How to read the RAM data is shown in Fig.T3. All data is displayed in the Hexadecimal Number. (letters and number 0 or F)

Note:

Pressing the START/STOP Switch and Memory switch simultaneously, same time turn on the power switch.

After that this Movie camera Shows data 1 to data 23 on TV screen as shown in Fig.T3-T11.



DATA NUMBER	DATA CONTENTS
1	Data Number 1 is position that indicates Motor conditions data
2~4	Not used
5	Data Number 5 is position that indicates Mechanism positions data
6	Data Number 6 is position that indicates tape condition
7	Data Number 7 is position that indicates key operation informations
8	Data Number 8 is position that indicates I/O condition of IC6004 PIN 118~PIN 125
9	Data Number 9 is position that indicates I/O condition of IC6004 PIN 7~PIN 14
10	Data Number 10 is position that indicates I/O condition of IC6004 PIN 29~PIN 37
11~12	Data Number 11~12 are position that indicates Battery Voltage level
13~14	Not used
15	Not used
16~23	Not used

Fig. T3

2-3. Detail of Data for Service Mode

(1) Data Number 1:  
If Data 1 indicate "CYL", There is possibility that cylinder Motor is locked up.

INDICATION AT POSITION 1	CONDITION OF MOTOR
TRL	REEL is locked up
UNLD	Unloading condition
LOAD	Loading condition
CYL	Cylinder Motor is locked up

Fig. T4

(2) Data Number 5:  
If Data 5 indicate "01", Mechanism is Eject position.

INDICATION AT POSITION 5	MECHANISM CONDITION
01	EJECT
02	EJECT
03	STOP
04	---
05	S-LOAD
06	---
07	PRE-PAUSE
08	---
09	PAUSE
0A	---
0B	REVIEW
0C	---
0D	PLAY

Fig. T5

(3) Data Number 6:  
If Data 6 indicate "A", There is possibility that sensor detect the tape end.

INDICATION AT POSITION 6	TAPE CONDITION
0	Normal condition
3	There is no video cassette inside
9	Detect the begining of Tape
A	Detect the Tape end

Fig. T6

(4) Data Number 7:  
When the pushed STOP key, Data 7 indicate

INDICATION AT POSITION 7	KEY OPERATION
00	STOP
01	EJECT
02	REWIND
03	FF
04	REVIEW
05	CUE
06	PAUSE
08	REC
09	A. DUB
0A	PLAY
0C	F. ADV
54	COUNTER CLEAR
55	COUNTER MEMORY
57	OSD ON/OFF
67	DATE ON/OFF
9F	EDIT
B1	TRACKING UP
B2	TRACKING DOWN
B3	INSERT
CC	START/STOP
FF	NOP

Fig. T7

(5) Data Number 8:

INDICATION AT POSITION 8	I/O PORT CONDITION FOR I6004
80	Loading Command is output (PIN 125)
40	Unloading Command is output (PIN 124)
20	Not use
10	Audio Mute "H" is output (PIN 122)
8	Not use
4	Audio EE "H" is output (PIN 120)
2	Video EE "H" is output (PIN 119)
1	PB "L" is output (Pin 118)

Fig. T8

(6) Data Number 9

INDICATION AT POSITION 9	I/O PORT CONDITION FOR IC6004
80	SENSOR LED "L" Command is output (IC6004 PIN 14)
40	REMOCON LED "L" Command is output (IC6004 PIN 13)
20	TALLY LED "L" Command is output (IC6004 PIN 12)
10	POWER LED "L" Command is output (IC6004 PIN 11)
8	CYLINDER ON "L" Command is output (IC6004 PIN 10)
4	FULL ERASE ON Command is output (IC6004 PIN 9)
2	CAMERA P. ON Command is output (IC6004 PIN 8)
1	POWER ON Command is output (IC6004 PIN 7)

Fig. T9

(7) Data Number 10

INDICATION AT POSITION 10	I/O PORT CONDITION FOR IC6004
80	DC LIGHT ON Command is output (IC6004 PIN 37)
40	X. TAL ON Command is output (IC6004 PIN 36)
20	_____
10	_____
8	_____
4	_____
2	_____
1	_____

Fig. T10

(8) Data Number 11 and 12

INDICATION AT POSITION 11	INDICATION AT POSITION 12	BATTERY VOLTAGE LEVEL
00~03	10	Less than 10.5 Volt
04~0A	8	10.5~11.0 Volt
0B~0A	4	11.0~11.5 Volt
11~17	2	11.5~12.0 Volt
18~	1	More than 12.0 Volt

Fig. T11

# SECTION 2 ADJUSTMENT PROCEDURES

## 2-1. DETAILED DISSEMBLY METHOD

### 1. REMOVAL OF SHOULDED PAD/LENS HOOD

- (1) Remove the 4 screws(A).
- (2) Pull the shoulder PAD.
- (3) Remove the Lens Hood.(By roatating counter-clockwise.)

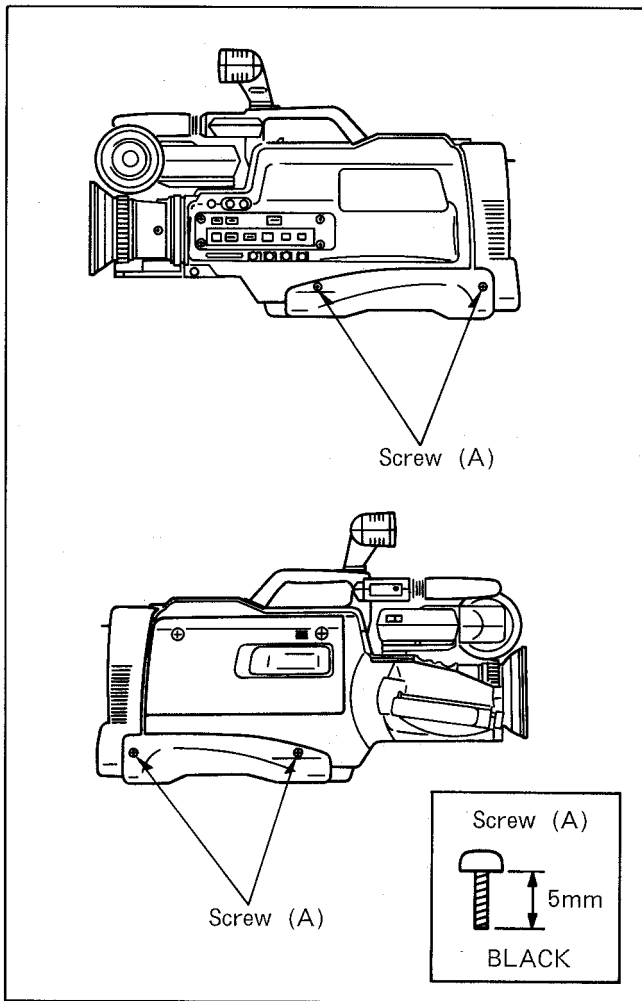


Fig. D1

### 2. REMOVAL OF CASSETTE COVER

- (1) Remove 2 Screws(B).
- (2) Pull the Cassette Cover straight up to remove.

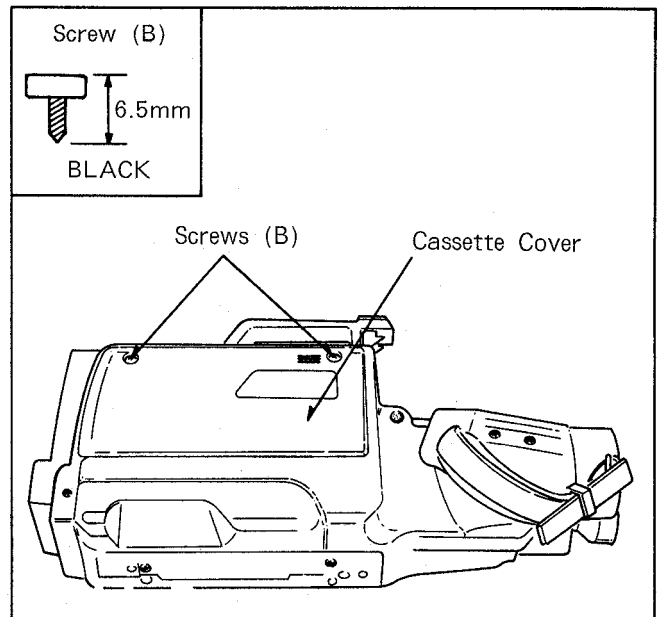


Fig. D2

### 3. REMOVAL OF THE MIC UNIT

- (1) Remove 4 Screws (C), (D) and (E).
- (2) Slide the MIC Unit in the direction shown by the arrow.
- (3) Disconnect the connector on the MIC Unit.

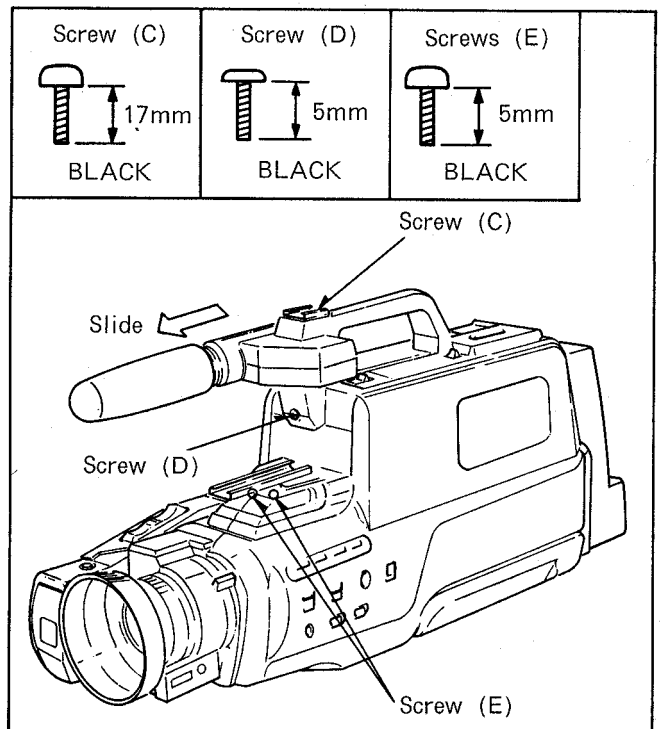


Fig. D3



#### 4. REMOVAL OF SIDE CASE(R) UNIT

- (1) Remove 2 Screws(E) shown in Fig.D3.
- (2) Remove 7 Screws(F), 2 Screws(G).
- (3) Lift the side case(R) unit slightly.

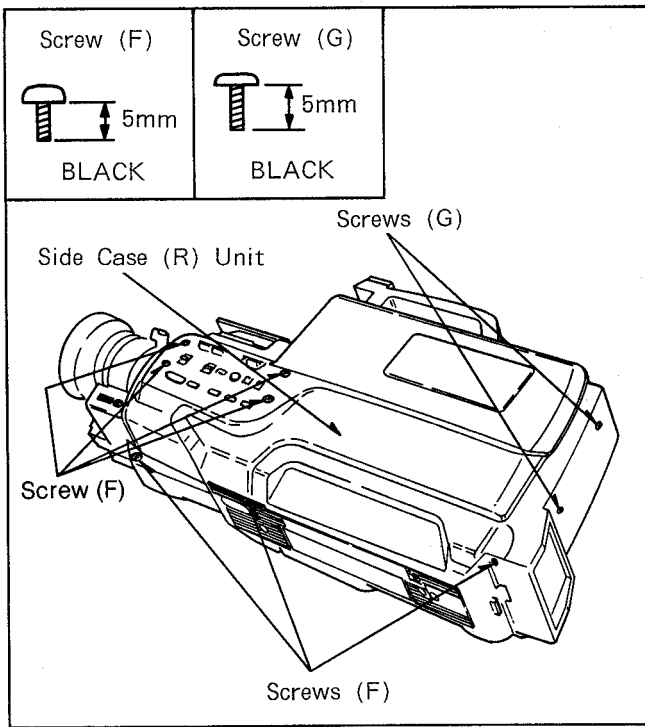


Fig. D4

#### 5. REMOVAL OF SIDE CASE (L) UNIT

- (1) Remove Screw(B), 2 Screws(H), 2 Screws(I) shown in Fig.D5.
- (2) Lift the Side Case(L) Unit slightly. Then Disconnect the connector on Main C.B.A. and Process C.B.A..(EVF, TALLY, ZOOM)

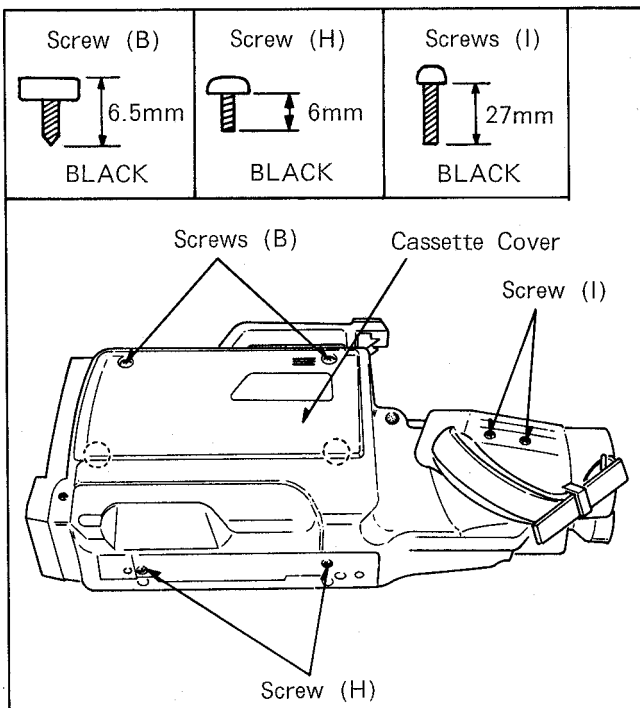


Fig. D5

#### 6. REMOVAL OF OPERATION PANEL UNIT

- (1) Disconnect the connector P6005(Safety tab), and Flexible Connector FP6001(Operation Panel) on Main C.B.A..

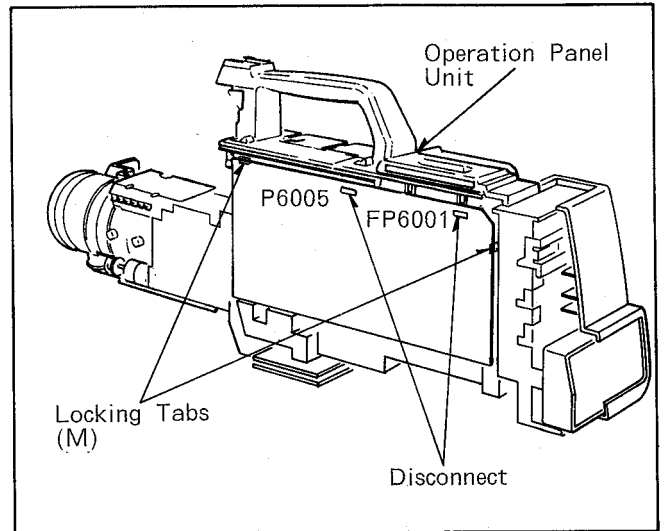


Fig. D6

#### 7. OPENING OF MAIN C.B.A.

- (1) Unsnap 2 Locking Tabs(O).
- (2) Disconnect the Connector P3001(CHRA: GENE), and B3001.
- (3) Open the Main C.B.A..

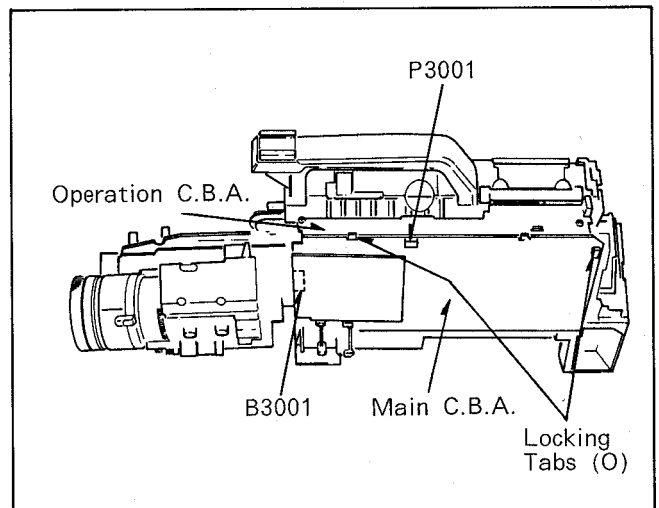


Fig. D7

8. REMOVAL OF CAMERA C.B.A.

- (1) Remove Screw(J).
- (2) Disconnect the Connector B301 and Flexible Connector FP701.
- (3) Lift up the camera C.B.A. slightly and then Remove.

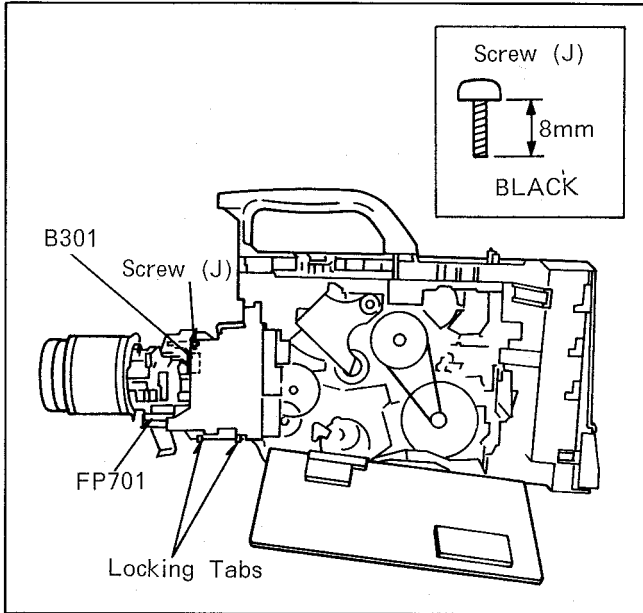


Fig. D8

10. REMOVAL OF SENSOR C.B.A.

- (1) Disconnect the Connector B202.
- (2) Remove 2 Screw(L).

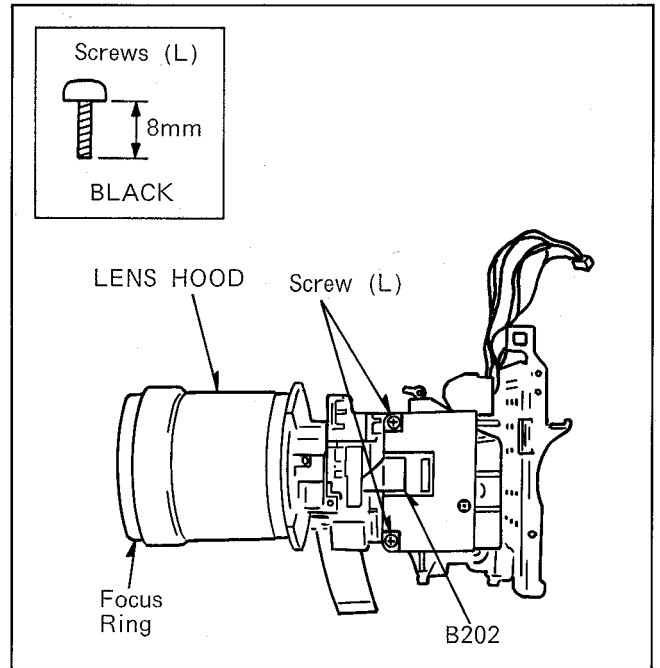


Fig. D10

9. REMOVAL OF LENS UNIT

- (1) Remove 2 Screws(K).

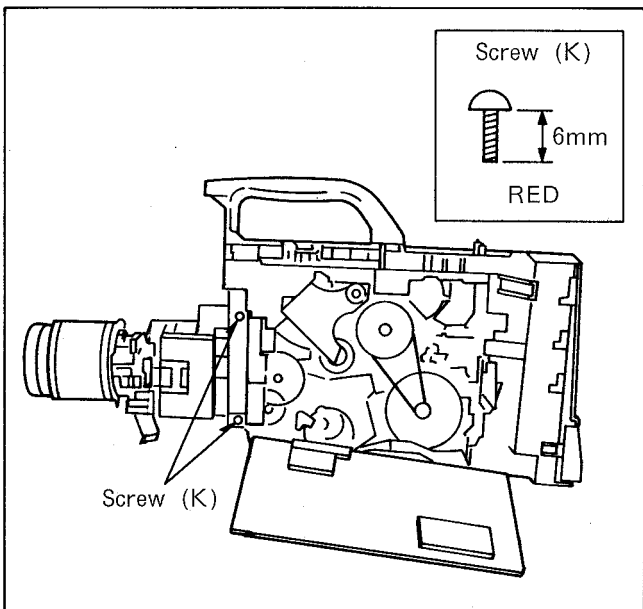


Fig. D9

11. REMOVAL OF THE FOCUS RING

Unlock...3 Locking Portion(B).  
(By Screwdriver(-))

Set the screwdriver(-) to square hole of the Focus Ring, and then release the locking portion one by one by pushing the screwdriver to the inner direction.

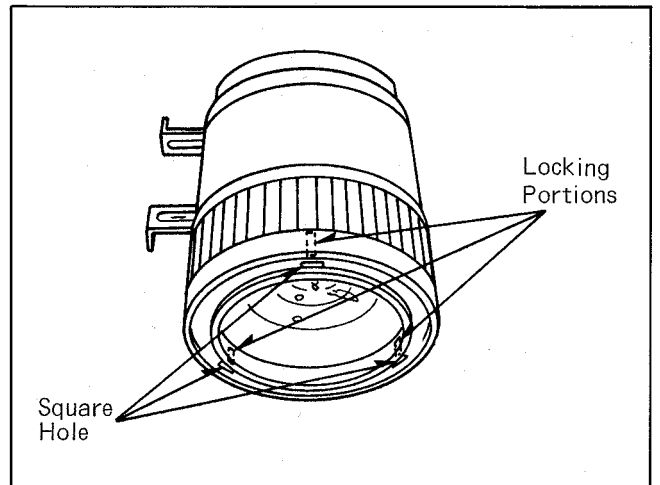


Fig. D11

### 12. REMOVAL OF THE LENS COVER

- (1) Remove 2 Screws(M).

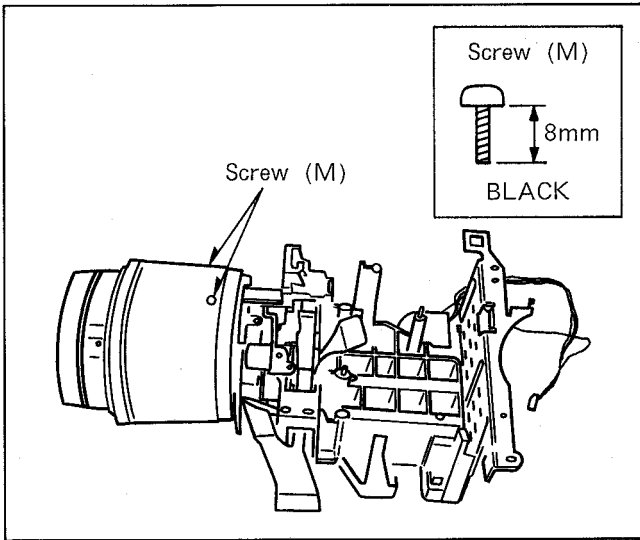


Fig. D12

### 13. REMOVAL OF THE LENS HOLDER

- (1) Unlock...4 Locking Portion(A).  
(By Screwdriver(-))

Set the screwdriver(-) to square hole of the Lens Holder, and then release the locking portion one by one by pushing the screwdriver to the inner direction.

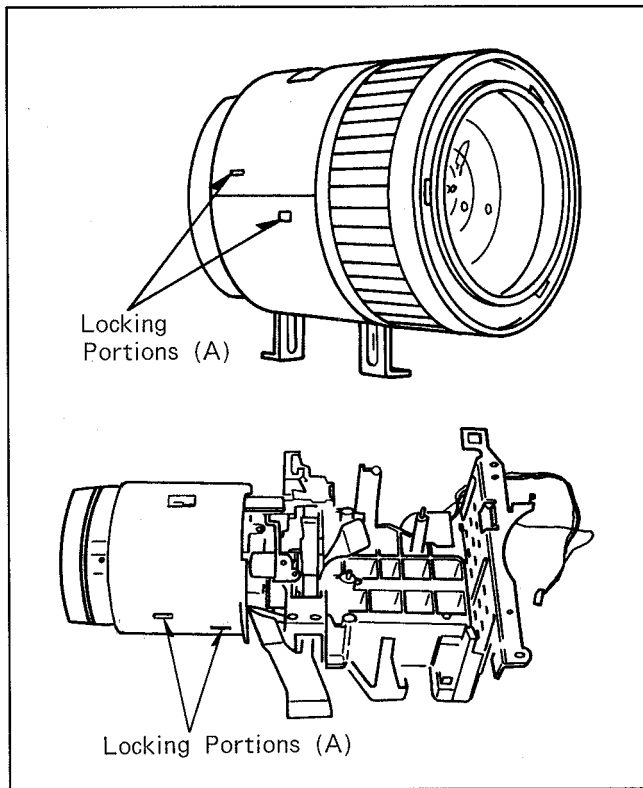


Fig. D13

### 14. REMOVAL OF THE LENS UNIT

- (1) Remove 3 Screws(N).
- (2) Remove 2 Locking Portions.

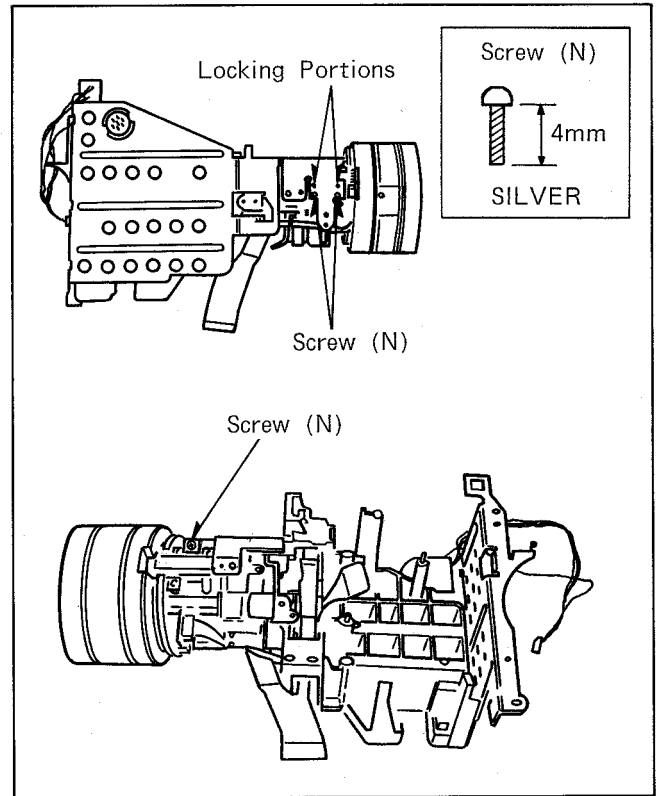


Fig. D14

### 15. REMOVAL OF EVF UNIT

- (1) Remove 2 Screws (O).

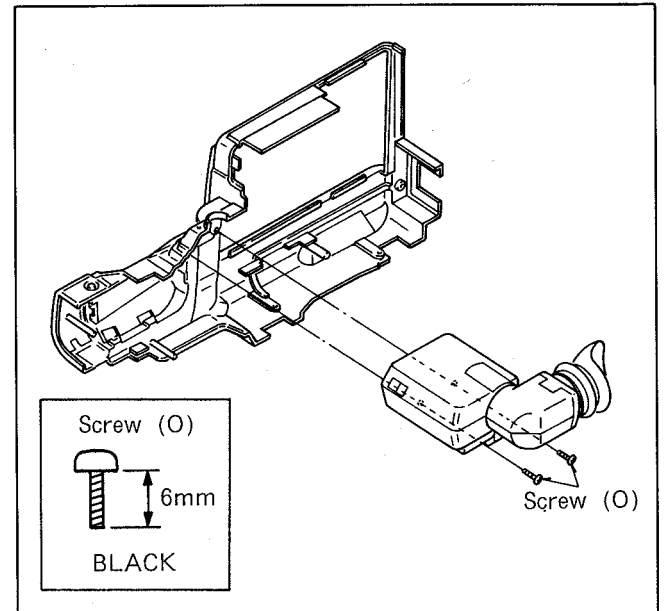


Fig. D15

## 16. DISASSEMBLY OF E.V.F. UNIT

- (1) Remove 3 Screws (P) on the bottom of the E.V.F. Unit and then remove the Bottom Case.

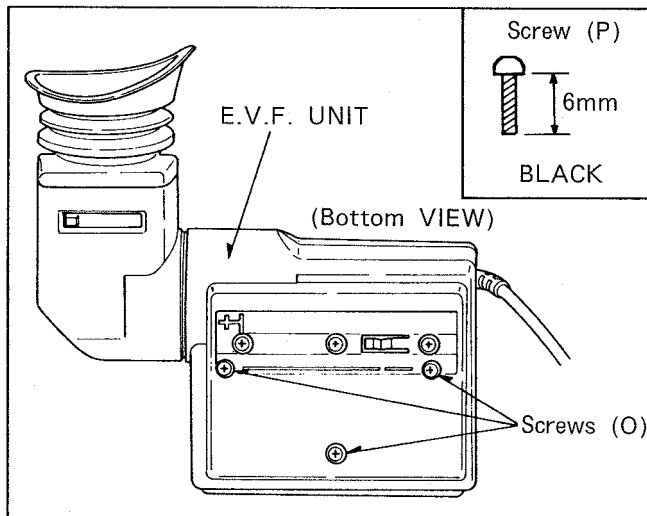


Fig. D16

- (2) Lift the CRT Assembly up shown in Fig.D23.

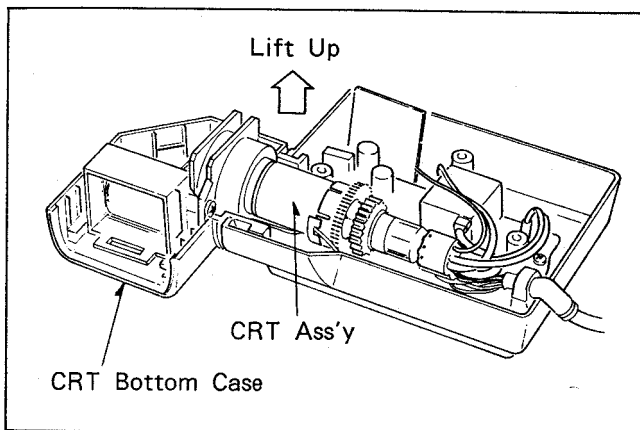


Fig. D17

- (3) Rotate Nut(v) and then pull DY Assembly in the direction shown in Fig.D24 to remove it. Then the CRT can be replaced.
- (4) For re-installation, reverse the above steps.

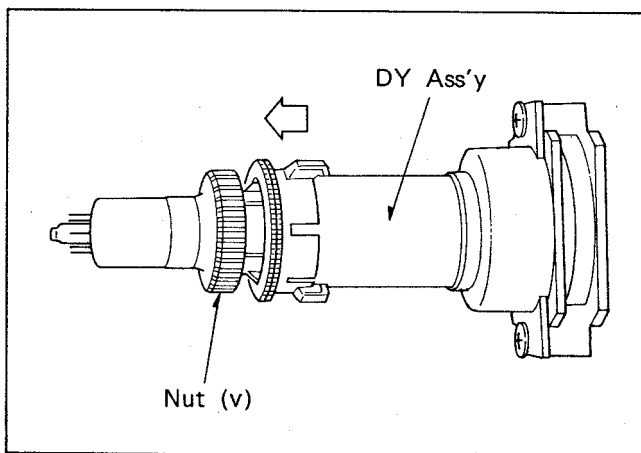


Fig. D18

## 2-2. DISASSEMBLY PROCEDURES OF ZOOM MOTOR AND FOCUS MOTOR

The following flowchart describes order or steps for removing the Lens Units and certain Printed Circuit Boards in order to make access to the items needing service.

To reassemble the unit follow the steps in reverse order.

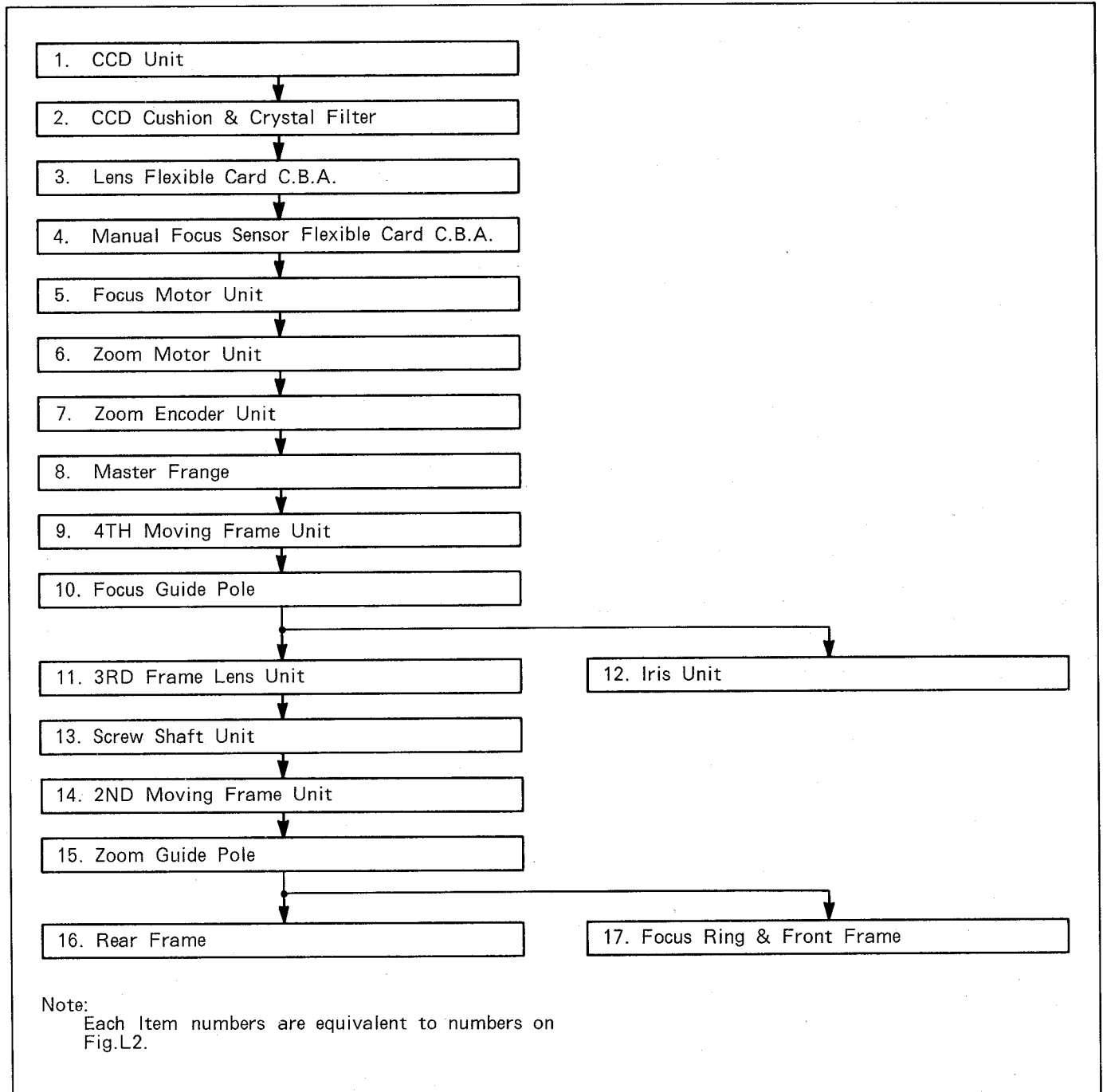


Fig. L1

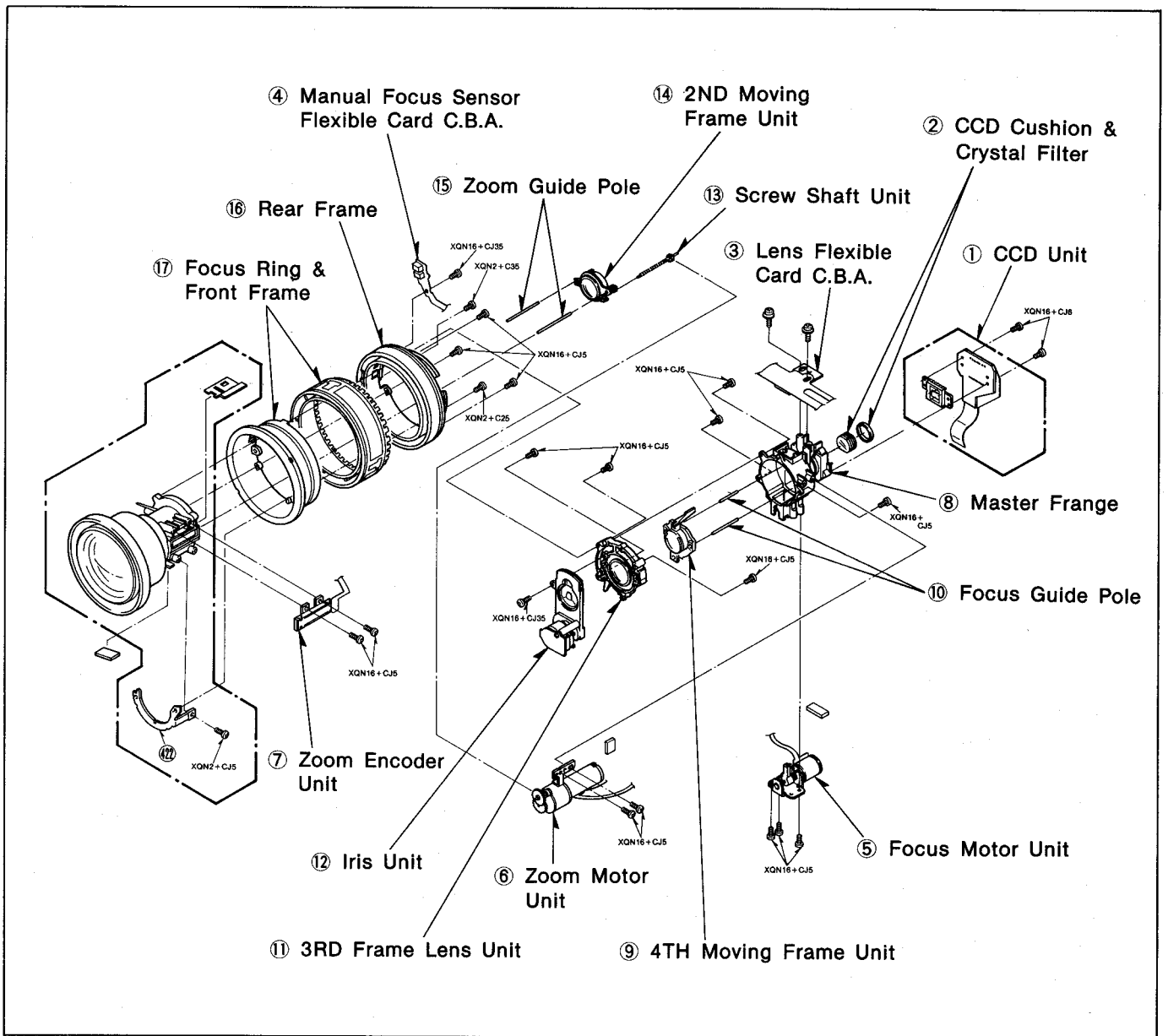


Fig. L2

## 2-3. REPLACEMENT PROCEDURES

### 2-3-1. REPLACEMENT OF THE UPPER CYLINDER UNIT

(1) Preparation.....Removal of Side case.

1. Remove.....4 Screws (Screw (X), (Z)).
2. Remove.....Lift up the cassette frame.

(2) Replacement the upper cylinder.

Work with extremely care when removing or replacing the Upper Cylinder Unit.  
Do not touch the Video Head during servicing.

1. Remove 2 screws as shown below.
2. Unsolder 18 soldered portions indicated by arrows on the Circuit Board.
3. Remove the Upper Cylinder Unit by lifting it upward.

Note:

Soldered portion can be easily removed by using solder sucking wire, etc.

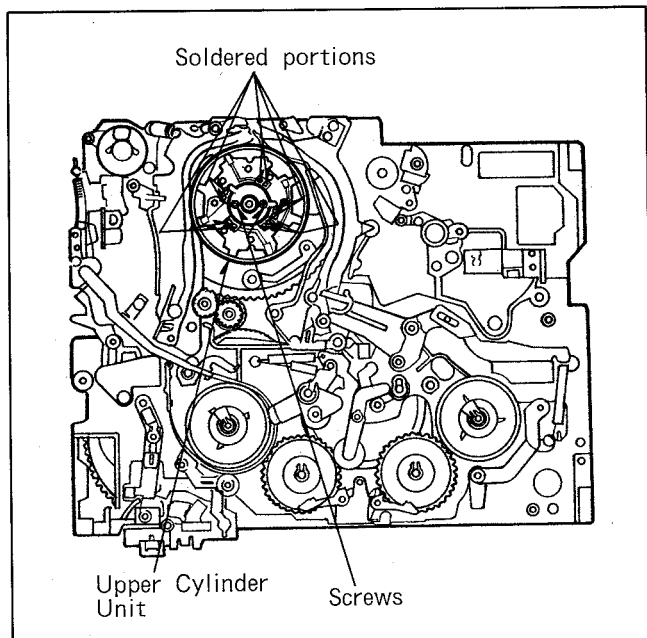


Fig. R1

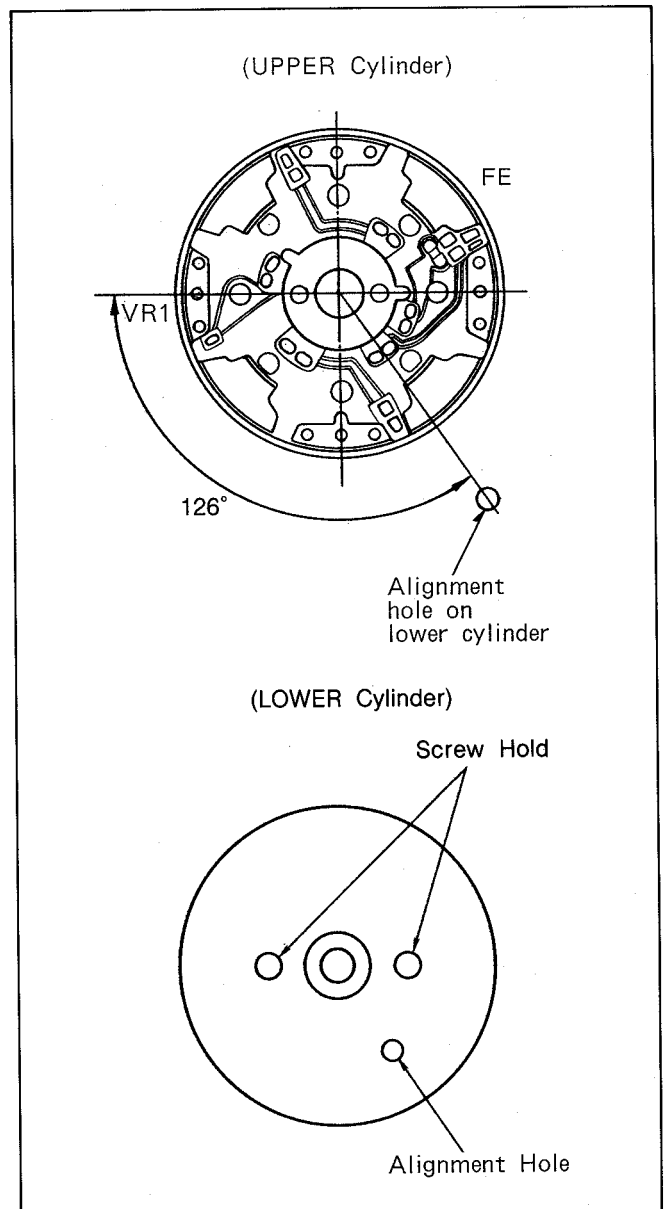


Fig. R2

4. The Upper Cylinder Unit can be reinstalled by reversing the removal procedure, however, when the Upper Cylinder is reinstalled, be extremely carefully so that VR1 of upper cylinder should be align 126' from lower cylinder alignment hole as Fig. R2.

## 2-3-2. REPLACEMENT OF DD CYLINDER UNIT

1. Remove the 3 screws and connector.
2. Take out D.D. Cylinder carefully.

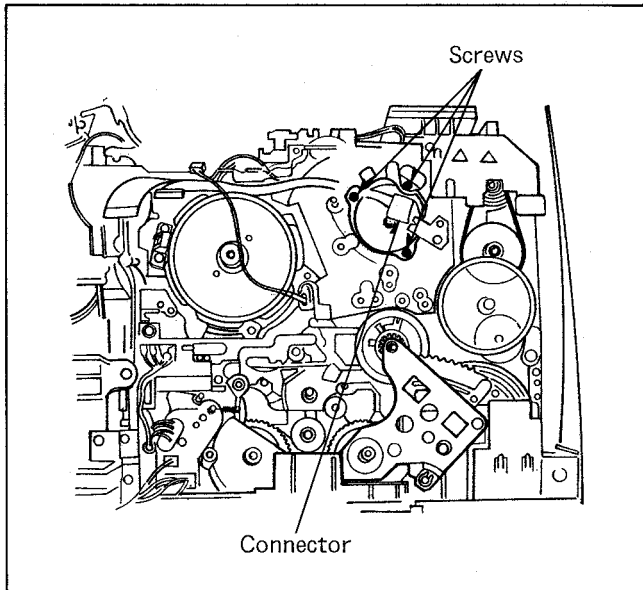


Fig. R3

**Note:**

Since there is very little clearance between the D.D. Cylinder Unit and the chassis, remove the D.D. Cylinder Unit carefully.

3. Reinstall the new D.D. Cylinder Unit, tighten the 3 screws and reconnect the connector.

**Note:**

- (1) Gently rub the video head in direction of tape travel with Head cleaning stick.
- (2) After replacement, confirm the performance. If any further maintenance is required, perform "TAPE INTER-CHANGE ABILITY ADJUSTMENT."

## 2-3-3. REPLACEMENT OF CAPSTAN MOTOR UNIT

- \* Equipment required:  
Reel Table Height Gauge (VFK0190)
- \* Specification...0.5+/-0.05mm

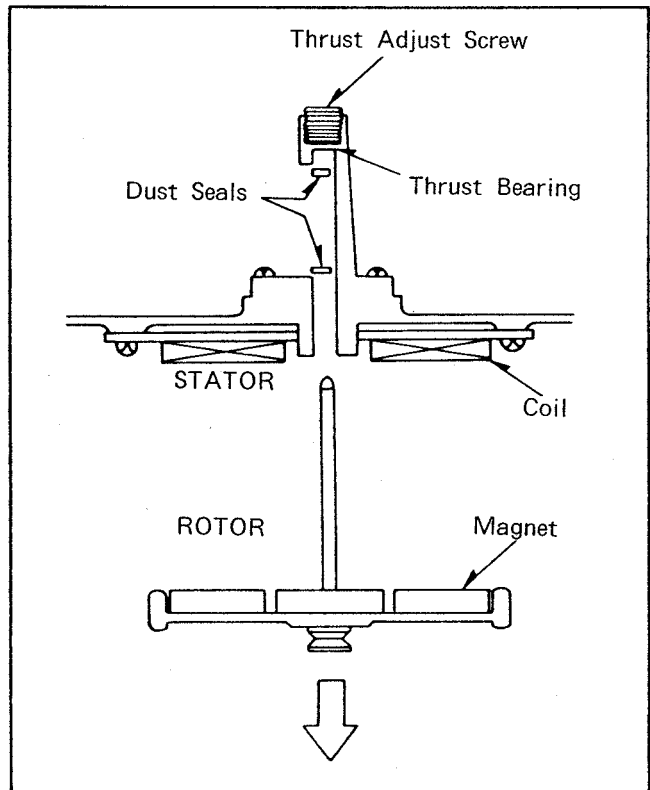


Fig. R4

- (1) Remove the 2 screws and take belt cover off. After that remove the capstan belt.
- (2) Tighten the Thrust Adjust Screw fully and pull the capstan rotor.

**Note :**

In this time pay attention not to lose two pieces of Dust Seal.

- (3) Replace the new rotor with two pieces of Dust Seal.

**Note :**

- (1) Pay attention to the replaced new rotor not to shock because of magnet absorption. So hold the rotor firmly and replace it carefully.
- (2) In this replacement, do not touch the Capstan shaft with any hard material like drivers or tweezers.



- (4) After replacement, wipe off the Capstan shaft to remove oil, grease or dust.
- (5) Unscrew Thrust Adjust Screw till the rotor is just touching to the stator.
- (6) Turn this mechanism upside down and place the Reel Table Height Gauge so that the gauge fits to the chassis correctly, and read the height.
- (7) Adjust the Thrust Adjust Screw so that the height difference just meets in the specification ( $0.5 \pm 0.005\text{mm}$ ) reading the height from the gauge.

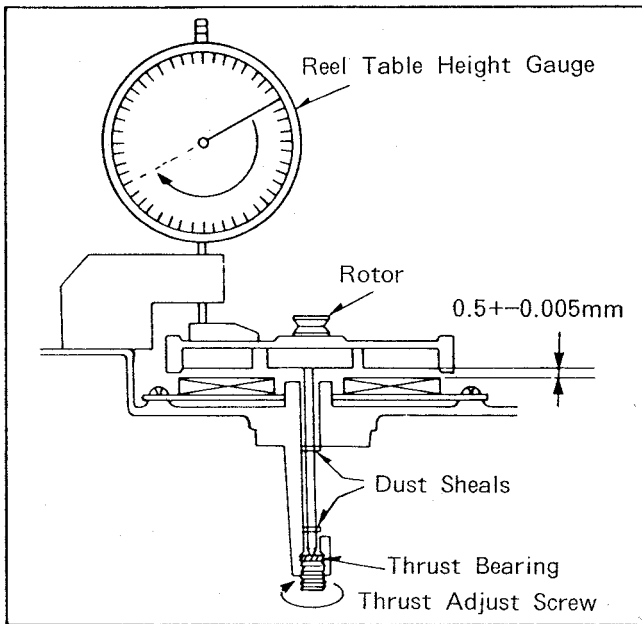


Fig. R5

Note:

If the Thrust Adjust Screw is fully opened, you have to pay attention not to lose Thrust Bearing. When it is fixed, confirm that the direction of Thrust Bearing is correct as shown below.

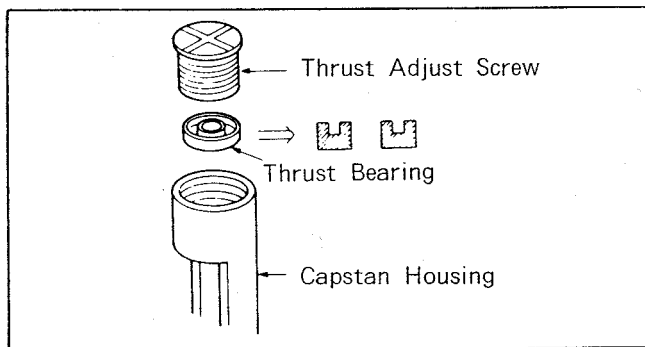


Fig. R6

## 2-3-4. REPLACEMENT OF TENSION BAND

- (1) Remove the cassette compartment.
- (2) Remove a retaining ring and take out a Rew Arm (A) Unit.
- (3) Remove a retaining ring and a snap washer and take out a tension Band Unit.

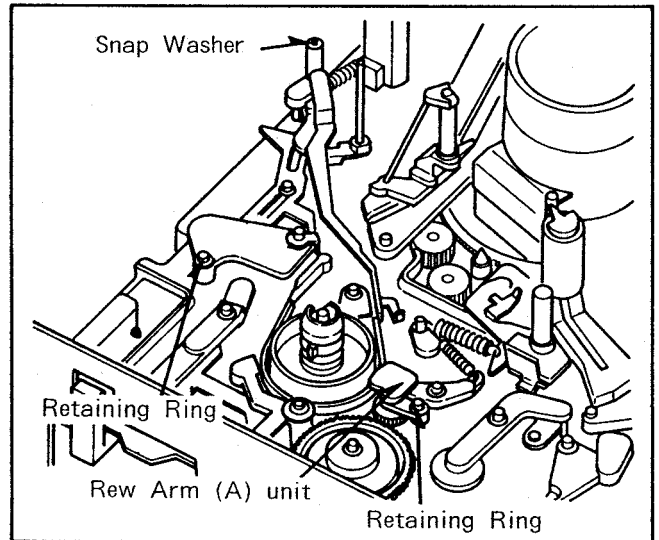


Fig. R7

- (4) Remove a Tension Band from Band Release Arm and Tension Arm Unit.

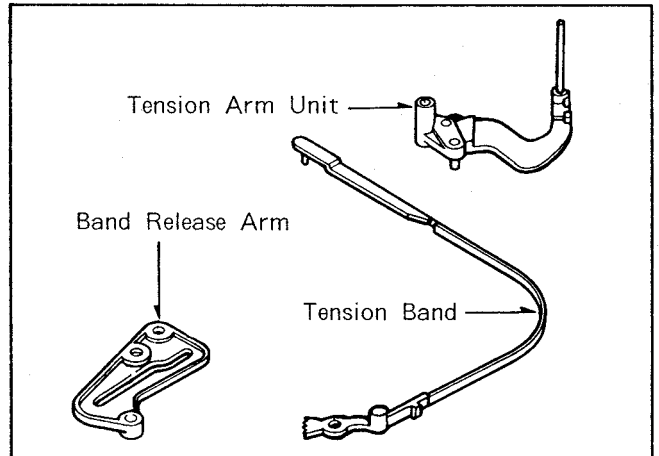
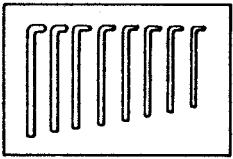
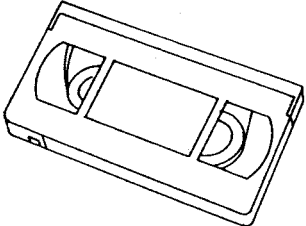

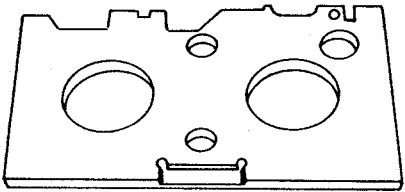
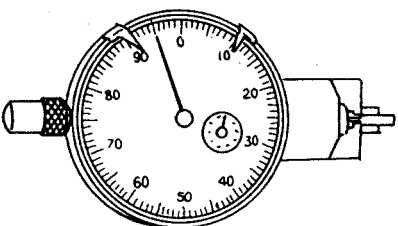
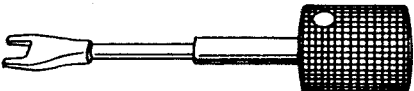
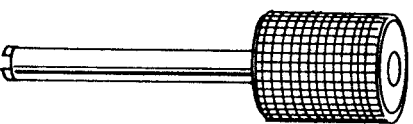
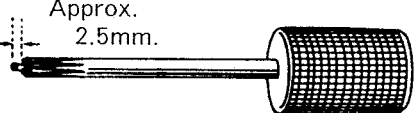
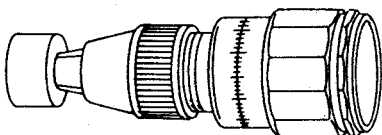

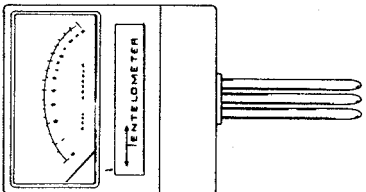
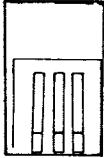
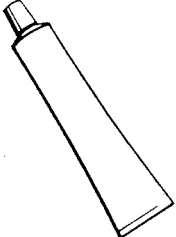


Fig. R8

- (5) Replace a new Tension Band by Proceeding reverse steps shown above.

## 2-4. MECHANICAL ADJUSTMENT PROCEDURES

### 1. SERVICING FIXTURES & TOOLS

<p>VFK0326 Hex Wrench Set (0.7, 0.9, 1.2, 1.5, 1.6, 2, 2.4, 3mm)</p> 	<p>VFJ8125H3F VHS Alignment Tape</p> 	<p>VFK0335 Retaining Ring Remover (3mm/4mm)</p> 
<p>VFK0191 Post Adjustment Plate</p> 	<p>VFK0190 Reel Table Height Gauge</p> 	<p>VFK0328 H-Position Adj. Fixture</p> 
<p>VFK0329 Post Adjustment Screwdriver</p> 	<p>VFK0157 Fine Adjustment Screwdriver</p> <p>Approx. 2.5mm.</p>  <p>Grind the top portion approximately 2.5mm</p>	<p>VFK0133 Dial Torque Gauge VFK0134 Adaptor for VFK0133 VFK0180 (Plastic Clamper Only)</p> 
<p>VFK0343 Check Light</p> 	<p>VFK0132 Back Tension Meter (TZ-H7-UM) (Tentelometer, Made in U.S.A.)</p> 	<p>VKF27 Head Cleaning Stick</p> 
<p>MOR265 Morlytone Grease</p> 	<p>High Quality Machine Oil &lt;Purchase Locally&gt; (Reel Shaft, Capstan Shaft etc.)</p> <p>Cleaning Liquid (Freon, TF, Alcohol) &lt;Purchase Locally&gt; (Tape Transport Rubber Parts etc.)</p>	

## 2. PROCEDURES FOR CLEANING OF UPPER CYLINDER UNIT

- (1) Position the video head to clean and hold the upper cylinder to keep it from turning while cleaning.
- (2) Gently rub the video head in direction of tape travel with Head Cleaning Stick.
- (3) Repeat for the other three video heads.

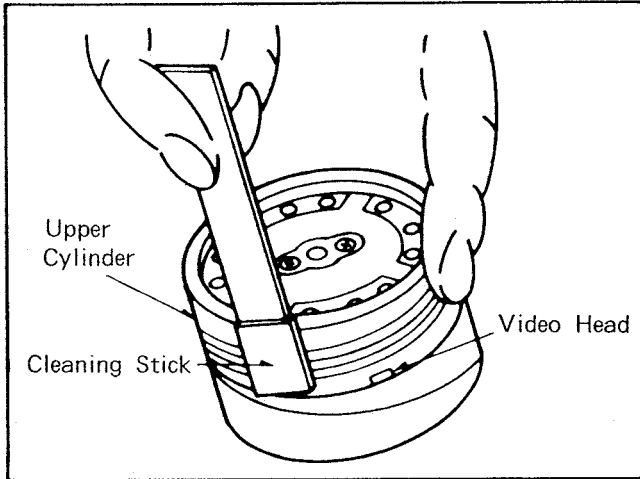


Fig. U1

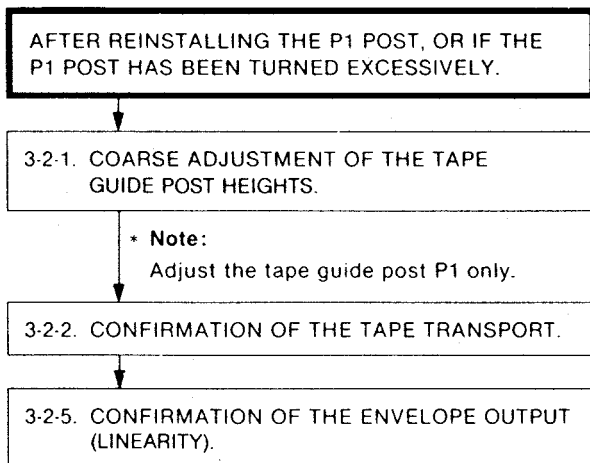
**Note:**

- (1) Do not rub vertically.
- (2) Do not apply any pressure to heads. If contamination is not easily removed, continued gentle wiping will usually remove the substance.

## 3. TAPE INTERCHANGEABILITY ADJUSTMENT PROCEDURES

### 3-1. ADJUSTMENT FLOW CHART

This flow chart describes the order of steps for adjusting the tape guide posts and A/C head in order to gain access to the items needing servicing.



AFTER REINSTALLING THE UPPER CYLINDER OR CYLINDER UNIT.

3-2-5. CONFIRMATION OF THE ENVELOPE OUTPUT.

3-2-9. FINE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION (X-VALUE).

**\* Note:**

Do not change the height of the P1 and P4 posts and position of the A/C head.

AFTER REINSTALLING ALL POSTS OR IF ALL POSTS HAVE BEEN TURNED EXTREMELY.

3-2-1. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHTS.

3-2-2. CONFIRMATION OF THE TAPE TRANSPORT.

3-2-3. ADJUSTMENT OF THE PULL-OUT POST (P5 POST) HEIGHT.

3-2-4. CONFIRMATION OF THE A/C HEAD TILT.

3-2-5. CONFIRMATION OF THE ENVELOPE OUTPUT.

AFTER REINSTALLING THE A/C HEAD.

3-2-4. CONFIRMATION OF THE A/C HEAD TILT.

**\* Note:**

Do not change the height of P4 post.

3-2-6. COARSE ADJUSTMENT OF THE A/C HEAD HEIGHT.

3-2-7. ADJUSTMENT OF THE A/C HEAD HEIGHT AND AZIMUTH.

3-2-8. COARSE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION (X-VALUE).

3-2-9. FINE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION (X-VALUE).

**AFTER REINSTALLING THE P4 POST, OR IF THE P4 POST HAS BEEN TURNED EXCESSIVELY.**

**3-2-1. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHTS.**

\* Note:  
Adjust the P4 post only.

**3-2-2. CONFIRMATION OF THE TAPE TRANSPORT.**

\* Note:  
Adjust the P4 post only.

**3-2-4. CONFIRMATION OF THE A/C HEAD TILT.**

**3-2-5. CONFIRMATION OF THE ENVELOPE OUTPUT (LINEARITY).**

**AFTER REINSTALLING THE PULL-OUT POST (P5 POST).**

**3-2-3. ADJUSTMENT OF THE PULL-OUT POST (P5 POST).**

\* Note:  
Do not readjust any other post.

**3-2. ADJUSTMENT PROCEDURES**

**3-2-1. COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHT (P1, P2, P3 AND P4)**

- \* Equipment Required:  
 Post Adjustment Plate.....VFK0191  
 Reel Table Height Gauge.....VFK0190  
 Nut Driver (Purchase locally)  
 Post Adjustment Screwdriver.....VFK0329

1. Remove the cassette compartment from the mechanical chassis.
2. Place the Post Adjustment Plate over the reel tables. (Fig. M1)  
Confirm that the Post Adjustment Plate is firmly seated.

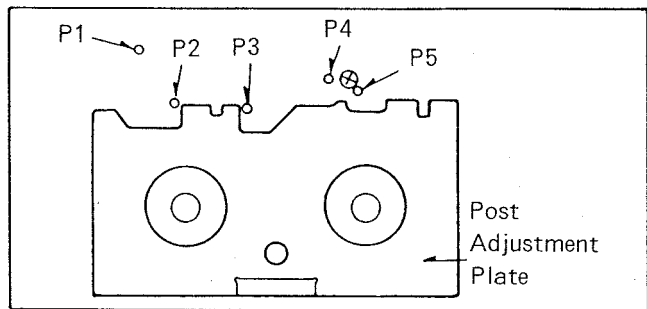


Fig. M1

3. Lower all 4 tape guide posts so that the lower tape guide on each post is below the top surface of the adjustment plate. Use the post Adjustment screwdriver to lower posts P2 and P3, and the Nut Driver to lower Posts P1, P4 and P5.
4. Place the Reel Table Height Gauge on the Post Adjustment Plate and lower the scraper so that it touches the plate (Fig. M2).

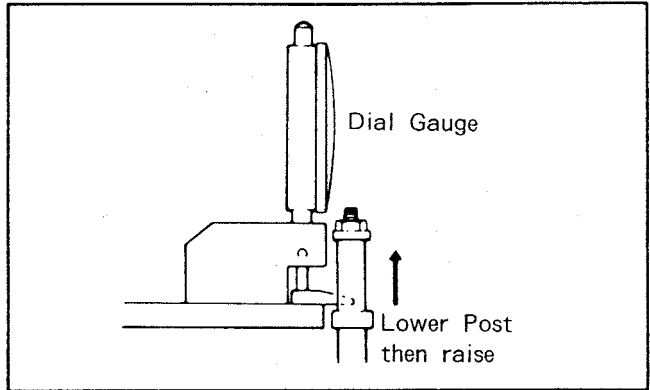


Fig. M2

5. Place the side of the scraper against the each post as shown in Figure M3, set the gauge to zero, then slowly raise the post until the lower tape guide just touches the bottom of the scraper. Use the gauge to determine the exact point at which the lower tape guide touches the scraper. (Fig. M3)

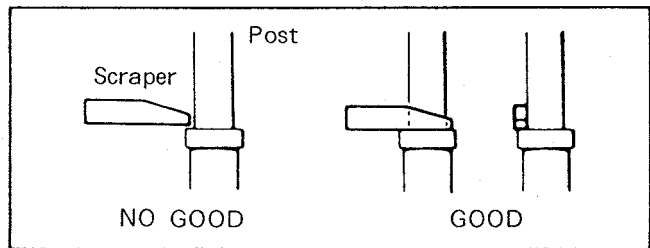


Fig. M3

**3-2-2. CONFIRMATION OF THE TAPE TRANSPORT (TAPE GUIDE POSTS)**

- \* Note:
1. The tape guide posts have been precisely adjusted at the factory. Therefore, normally do not change the height of P1, P4 and P5 posts. The following adjustment is required only when replacing the posts.
  2. If curling is apparent proceed to the P4 post, wipe dirt from the pressure roller and capstan shaft using a soft cloth impregnated with Freon TF or cleaning liquid.
  3. The adjustment of the post height is required only the one which has been replaced.

- \* Equipment Required
- Post Adjustment Screwdriver.....VFK0329
- Check Light.....VFK0343
- Nut Driver (Purchase locally)

1. To prevent the alignment tape from being damaged, use a normal cassette tape for this procedure. Playback the normal cassette tape and confirm that the tape travels without any curling at the edges of all the posts by using the check light. (Fig. M4 and Fig. M5)

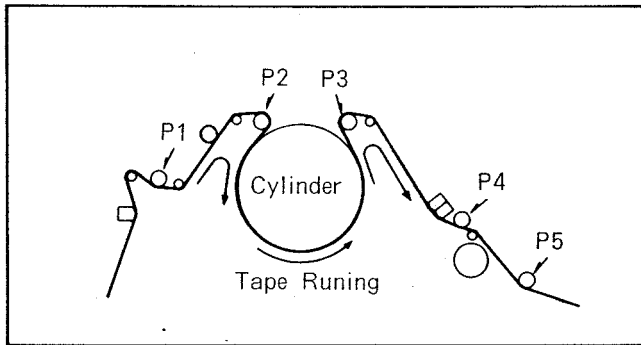


Fig. M4 Tape Transport Posts

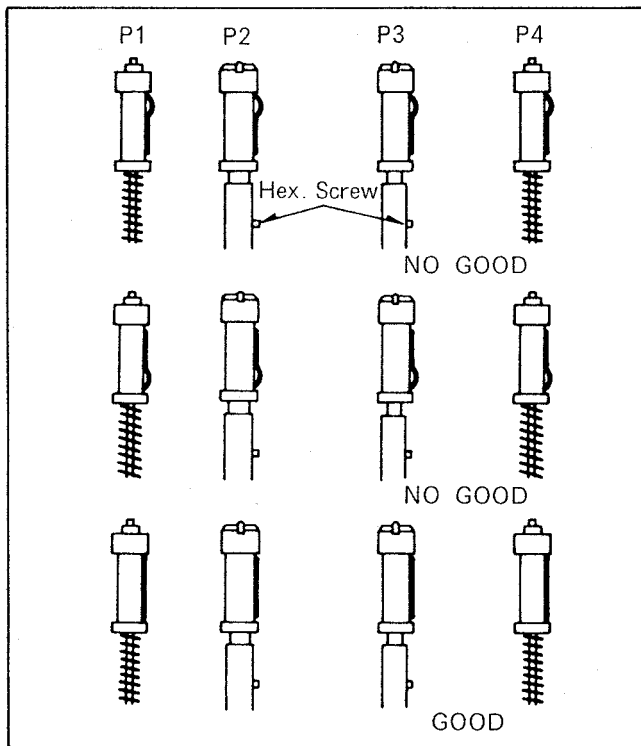


Fig. M5 Tape Guide Posts

2. If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (posts P2 and P3) or the nut-driver (Posts P1 and P4). (Fig. M4 and M5)
3. After adjusting the P4 post, adjustment of the pull-out post (P5) is required. (Refer to "ADJUSTMENT OF THE PULL-OUT POST HEIGHT".)
4. If the tape curling cannot be corrected by adjusting the tape guide posts, then adjustment of the A/C head tilt may be needed.

### 3-2-3. ADJUSTMENT OF THE PULL-OUT POST (P5 POST) HEIGHT

\* Notes:

1. This adjustment should be performed only after adjusting tape guide post P4 as the height of the pull-out post is based on the height of post P4.

- \* Tools and Equipment Required:
- Post Adjustment Plate.....VFK0191
- Reel Table Height Gauge.....VFK0190
- Check Light.....VFK0343
- Nut Driver (Purchase locally)

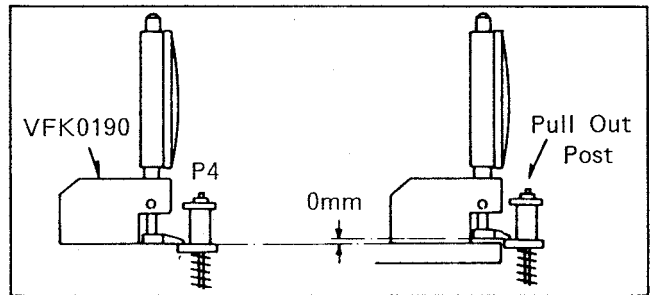


Fig. M6

1. Remove the cassette compartment by unscrewing 4 screws.
2. Place the Post Adjustment plate over the reel tables.
3. Place the Reel Table Height Gauge on the tape guide post P4, lower the scraper so that it touches the lower edges of P4, then set the gauge to zero ("0"). (Fig. M6)
4. Slightly lower the pull-out post by turning the nut on the post clockwise with the nut driver, and set the side of the scraper against the post as shown in Fig. M7.
5. Slowly turn the nut on the post counterclockwise until the gauge reads 0mm. (Fig. M6)
6. Confirm there is no tape curling at P4 post during reverse mode by using the check light. If tape curling occurs, Go back to step 3.

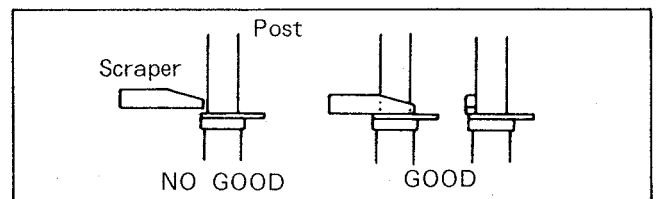


Fig. M7 Post Adjustment

### 3-2-4. CONFIRMATION OF THE A/C HEAD TILT

\* Note:

This procedure should be performed after replacing the A/C head and pressure roller, and adjusting the height of the tape guide post (P4). (Refer to "COARSE ADJUSTMENT OF THE TAPE GUIDE POST HEIGHTS".)

- \* Tools and Equipment Required:
- Hex. Wrench Set.....VFK0326
- Nut Driver (purchase locally)

1. Play back the beginning portion of NV-E240 blank cassette tape and confirm that the tape runs between lower and upper limiters of the P4 post. If there is waving or frilling in the lower edge or top edge of the tape, correct the tilt of the A/C head by turning the screw located behind the A/C head. (Fig. M8)

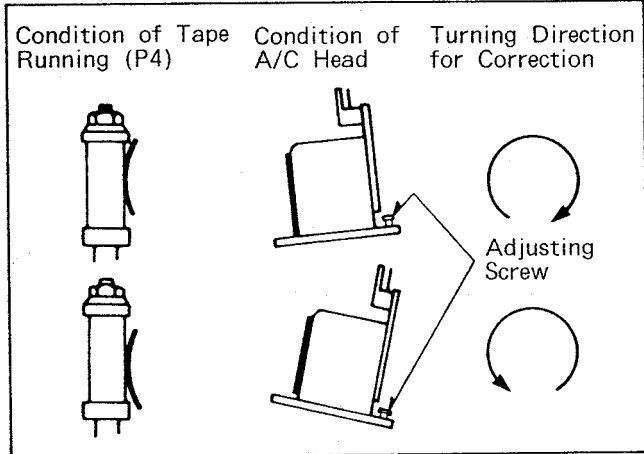


Fig. M8

2. If the tape curling cannot be removed by adjusting the A/C head tilt, then readjustment of the height of the tape guide post (P4) may be needed.

\* Notes:

1. The tape guide post (P4) has been precisely adjusted at the factory. Therefore, normally the tape guide post (P4) readjustment is not required to eliminate the tape curling.
2. After adjusting the A/C head tilt, the A/C head height adjustment is required.

### 3-2-5. CONFIRMATION OF THE ENVELOPE OUTPUT (LINEARITY)

\* Note:

Before playing back the alignment tape, play back a normal cassette tape and confirm correct transport. (Refer to "CONFIRMATION OF THE TAPE TRANSPORT".)

\* Tools and Equipment Required:  
 Post Adjustment Screwdriver.....VFK0329  
 Alignment Tape.....VFJ8125H3F

1. Connect the scope to the output of the Head Amp (CL3003) on the Main C.B.A. and TP6201 on the same C.B.A. to EX  $\pm$  Trigger of the scope.
2. Play back the monoscope portion of the alignment tape VFJ8125H3F.
3. Turn the Tracking Control VR and adjust for maximum RF envelope.
4. If the RF envelope appears like example "A" or "B" in Fig.M9, then adjustment of tape guide post (P2 : Entrance) is necessary.
5. Adjust the tape guide post (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown "C" in Fig.M9. (See Fig.M12 also)

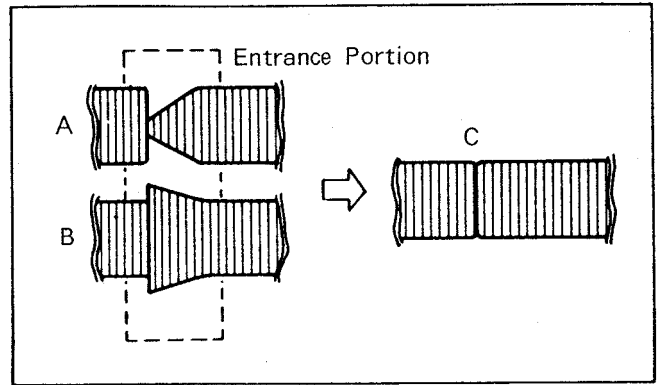


Fig. M9

6. If the RF envelope appears like example "D" or "E" in Fig. M10, then adjustment of the tape guide post (P3 : Exit) is necessary.
7. Adjust the tape guide post (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in "F" in Fig. M10.

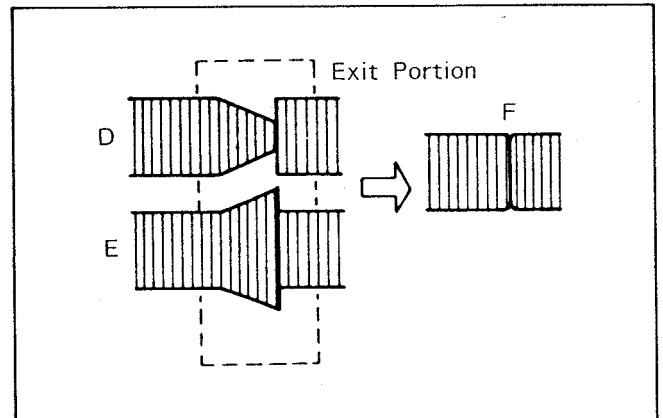


Fig. M10

8. Turn the Tracking VR from end to end. The variation of RF envelope should be nearly parallel as shown in Figure M11.
9. Turn the Tracking VR and adjust for maximum RF envelope. If the RF envelope does not meet these specs,  $V1/V$  0.7,  $V2/V$  0.8, then repeat steps 1-9 of item 3-2-5. again. (Fig. M13)

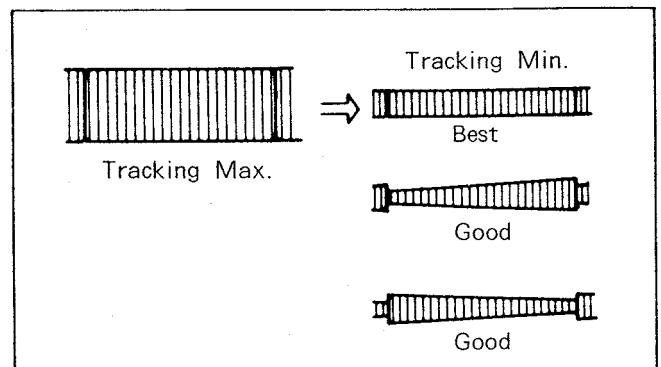


Fig. M11

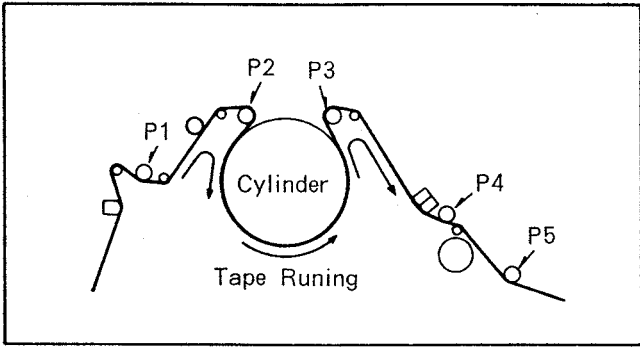


Fig. M12 Loading of post

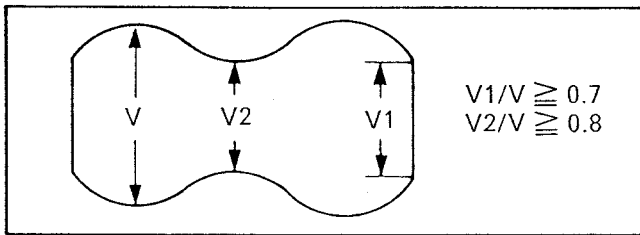


Fig. M13 Spec. of Envelope Figure

### 3-2-7. ADJUSTMENT OF THE A/C HEAD AND AZIMUTH

\* Note:

This procedure should be performed only when the A/C Head is replaced and posts height are readjusted.

\* Tools and Equipment Required:

Nut Driver (Purchase locally)  
Alignment Tape.....VFJ8125H3F

1. Connect the scope to the audio output.
2. Play back the 2nd portion (Normal Audio 6KHz) of the alignment tape, VFJ8125H3F.
3. Adjust the screw (B) so that the audio output level becomes maximum. (Fig.M15)

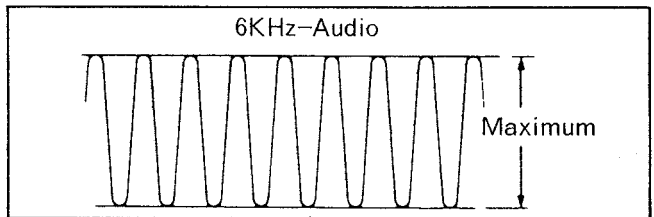


Fig. M15

4. Then adjust the nut (A) so that the audio output level (at TP4001) maximum.

### 3-2-8. ADJUSTMENT OF A/C HEAD HORIZONTAL POSITION

Note:

This procedure should be performed only when the A/C head is replaced and after performing the tape interchangeability adjustment.

\* Tools and Equipment Required:

H. Position Adj. Fixture.....VFK0328  
Alignment Tape.....VFJ8125H3F

1. Set the Tracking Control VR to the center detent (fixed) position.
2. Connect the scope CH1 to TP3001 on the Main C.B.A., and TP4001 on the Audio C.B.A. to Ext-trigger the scope.
3. Play back the Monoscope pattern of the alignment tape (VFM8125H3F).
4. Adjust the adjust screw so that the RF envelope output level becomes is maximum at the detent position (Fig.M16,M17).
5. Turn the Tracking VR from end to end and then back to the detent position. Confirm that the RF envelope output level is maximized at the detent position. (Fig.M11)

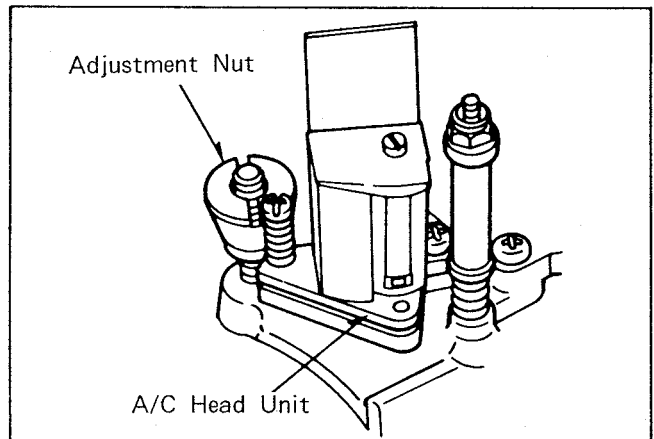


Fig. M16

10. Turn the Tracking VR from end to end again and then back to the detent (Fix) position. At the detent position, the RF envelope waveform should be at maximum. If it is not at maximum then "ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION" is necessary. (Refer to "FINE ADJUSTMENT OF THE A/C HEAD HORIZONTAL POSITION".)

### 3-2-6. COARSE ADJUSTMENT OF THE A/C/ HEAD HEIGHT

\* Note:

This procedure should be performed only when the A/C Head is replaced.

\* Tools and Equipment Required:

Check Light.....VFK0343  
Nut Driver (Purchase locally)

- (1) Looking at the lower edge of the control head within the tape running, ensure that lower edge of the tape runs along 0.25mm far from lower edge of the control head. (litte bit up position from lower edge of control head.) If it doesn't, slightly turn the nut (A) in either direction to correct clockwise to lower the head and counterclockwise to raise it.

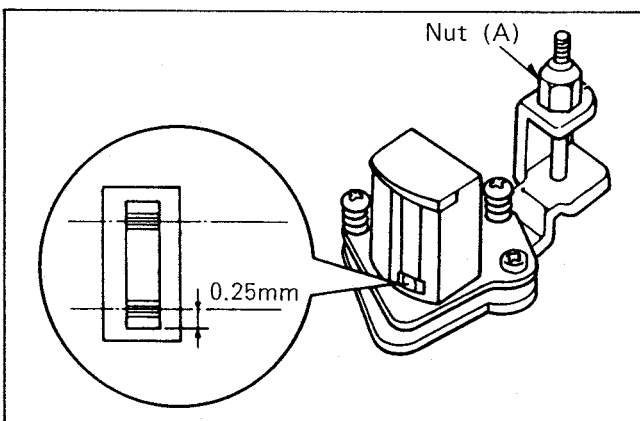


Fig. M14

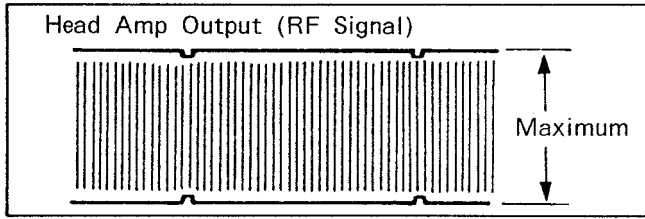


Fig. M17

## 4. OTHER ADJUSTMENT PROCEDURES

### 4-1. CONFIRMATION OF BRAKE TORQUE

- \* Equipment Required:  
Dial Torque Gauge.....VFK0133  
Adaptor for Gauge.....VFK0134
- \* Specification:-----see spec table (Fig. M19).

- (1) Remove the cassette compartment by unscrewing 4 screws.
- (2) Attach the adaptor to the torque gauge and place the unit in STOP mode.
- (3) Place the torque on the reel table. The weight of gauge should not rest on the reel table.

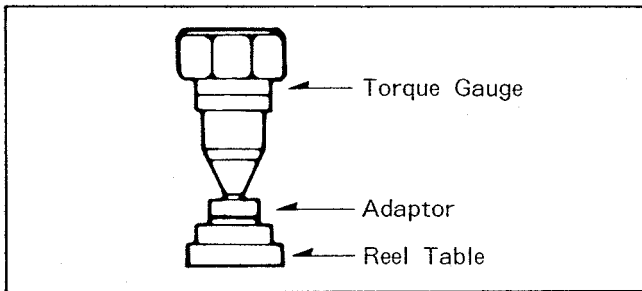
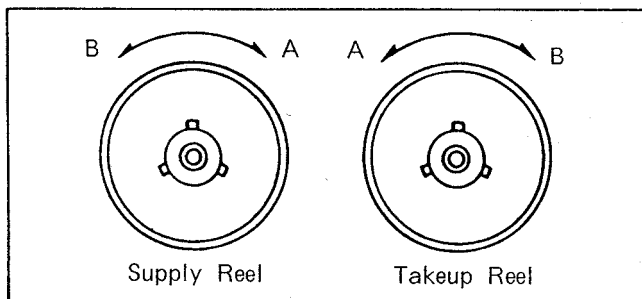


Fig. M18

- (4) Turn torque gauge in either direction indicated in the Fig. M19, and read the gauge when the brake begins slipping.

Note:

If proper brake torque can not be obtained, check the both take-up and supply clutch gear.



	A	B
Takeup	28+-8g-cm	28+-8g-cm
Supply	28+-8g-cm	28+-8g-cm

Fig. M19

### 4-2. TENSION POST POSITION ADJUSTMENT

- \* Specification : -----2.4mm~2.9mm

- (1) Remove the Cassette Up unit by unscrewing 4 screws. (Refer to the disassembly procedures titled in Removal of the Cassette Up Unit). Place the unit in Play mode by rotating Drive Gear (A) in clockwise shown below.

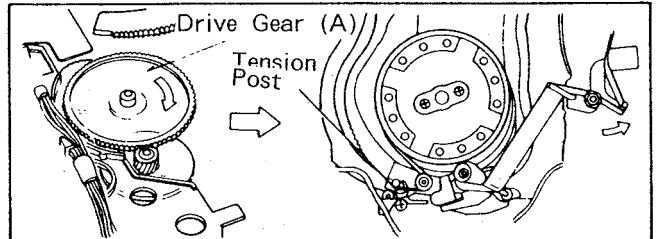


Fig. M20

Note:

In this case, make sure that the power is not applied.

- (2) Loosen the screw (A) a little bit and adjust the Tension Post adjustment plate so that the "Distance (A)" shown below becomes just meet in the specification (2.4m~2.9mm).
- (3) Tighten the screw (A) to fix it.

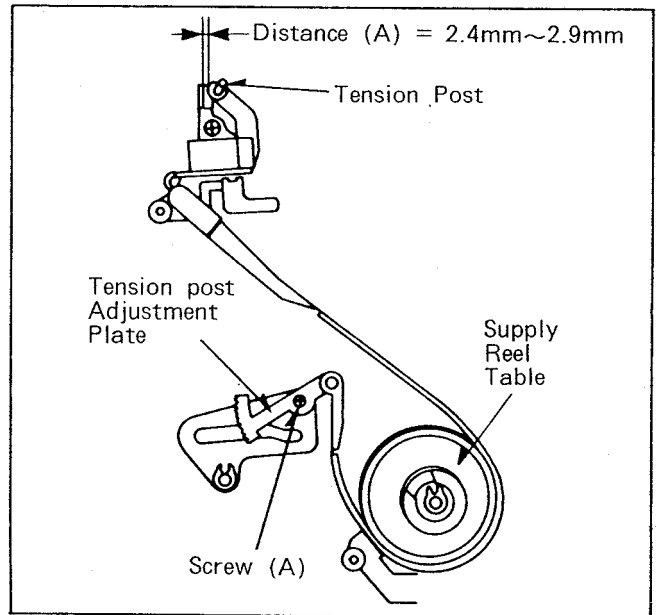


Fig. M21

### 4-3. BACK TENSION ADJUSTMENT

- \* Equipment Required:  
Back Tension Meter.....VFK0132  
VHS Cassette Tape (120min)
- \* Specification:-----19-23g

1. Playback the cassette tape from the beginning and wait until the tape movement get the stabilized. (for approx. 10-20 seconds) is stabilized.



2. Insert the Back Tension Meter into the path of a tape, and measure if the back tension is within specification as shown in Fig.M22.

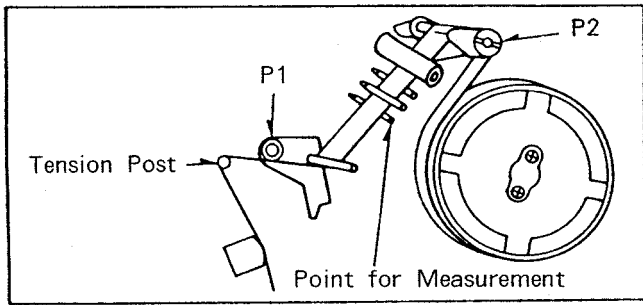


Fig. M22 Measurement of Back Tension

**Note:**

1. While measuring, make sure that the three probes of the meter are all in good contact with the tape.
2. As the tension meter is very sensitive, we recommend taking 3 separate readings.
3. If it is out of specification, change the spring notch as shown in Fig. M23.

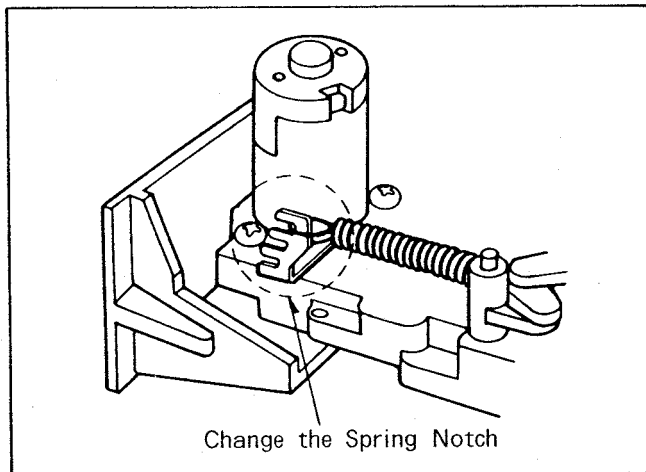


Fig. M23

**4-4. REEL TABLES HEIGHT ADJUSTMENT**

- \* Equipment Required:  
Post Adjustment Plate.....VFK0191  
Reel Table Height Gauge.....VFK0190
- \* Specification-----0~-0.15mm

**Note:**

Cut-out on Post Adjustment Plate is reference of reel table height and their height is measured based on this reference.

1. Place the post adjustment plate on the reels, and put the Gauge on the plate. Set the gauge to zero "0" with the foot scraper of the gauge touching the cut-out portion of the plate.

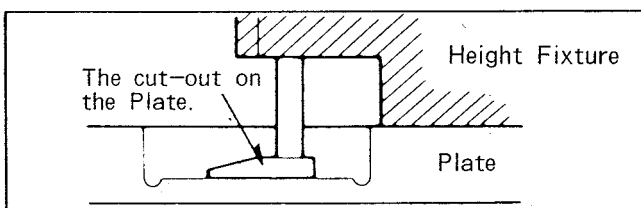


Fig. M24

2. Then measure the height of reel table and confirm the difference performed in step 1 as shown below. Do the same for the other reel table.

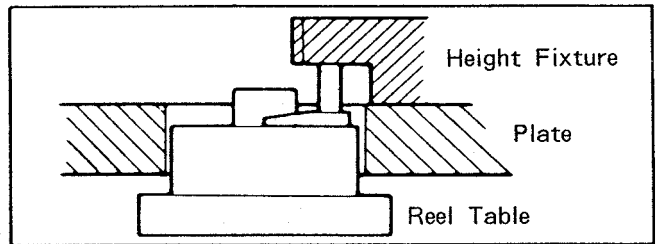


Fig. M25

3. If a height difference in readings between the cut-out portion of plate and reel tables is not 0~-0.15mm (higher or lower), adjust the height of the reel to obtain specified height.
4. For adjustment add or reduce a washer.

**4-5. ADJUSTMENT OF FG HEAD GAP**

\* Specification:-----0.17~0.18mm

- (1). Slightly loosen the 2 screws.
- (2). Put the paper which is used for cover page of this volume into the gap between F.G.Head and Capstan rotor. (The thickness of the cover page is approx 0.17mm)
- (3). After adjustment, tighten 2 screws.

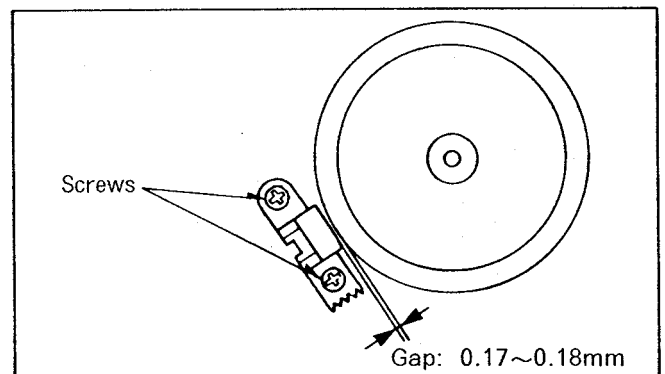


Fig. M26

**Note:**

Do not touch the surface of rotor and keep any magnetizable material away.

**4-6. ASSEMBLY ADJUSTMENT PROCEDURES OF MECHANISM**

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch. Therefore the relation between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If these parts are fixed in properly, the unit will be unloaded or compulsorily stopped. And it will result being damage to any mechanical or electrical parts.

[1] PROCEDURES FOR ASSEMBLING LOADING RING AND LOADING GEARS

- (1) Install a Loading Ring T (1) unit and a Loading Gear (B) so that both triangle marks line on as shown below.

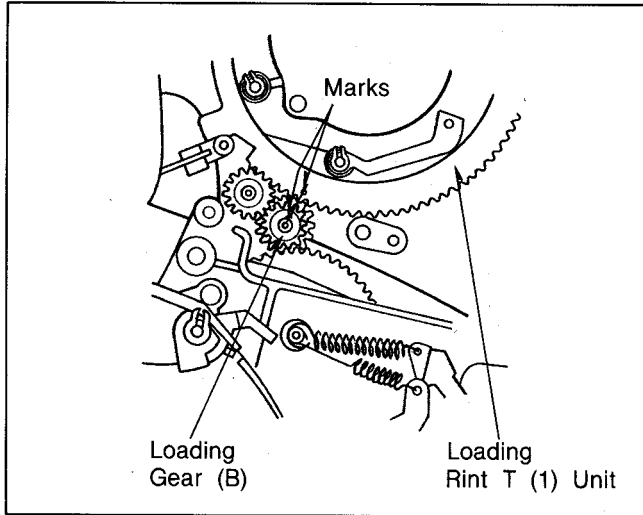


Fig. M27

- (2) Install a Loading Gear (A) and next fix a Loading Ring S (1) Unit so that the holes of Loading Ring S (1) Unit and T (1) Unit line on as shown below.

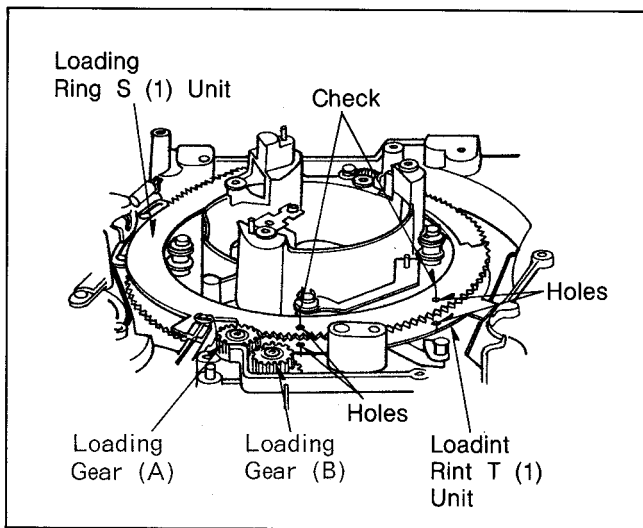


Fig. M28

[2] PROCEDURES FOR ASSEMBLING TAKE-UP LOADING GUIDE AND TAKE-UP LOADING POST UNIT

- (1) Install Loading Guide T unit. The small projection of a Loading Link T unit must be inserted into gap of Loading Guide T unit.

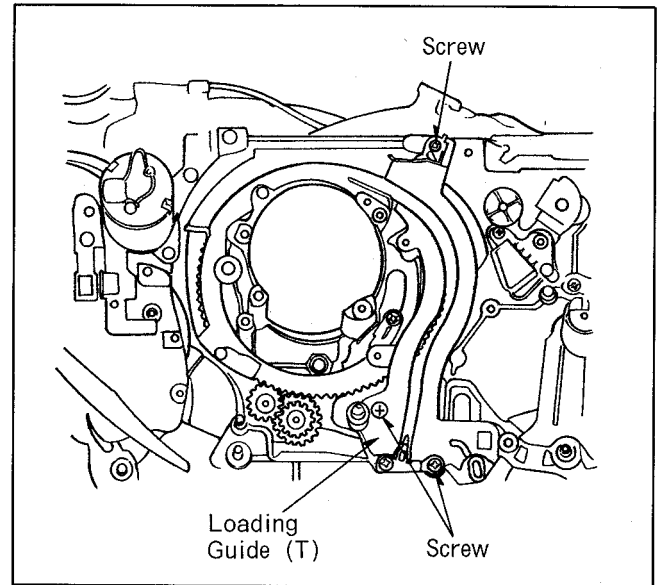


Fig. M29

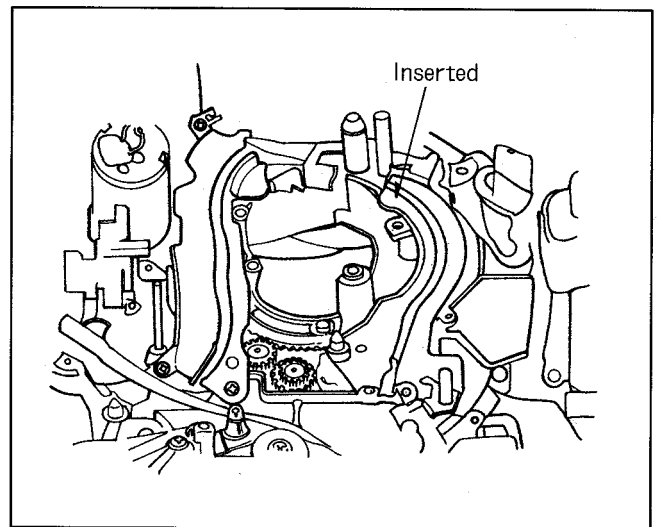


Fig. M30

Note:

Pay attention that the washers are remaining under the loading gears or any other parts.

- (2) Fix a Take-up Side Loading Post unit holding the Small projection of the Loading Link T unit and install at shaft Holder Unit.

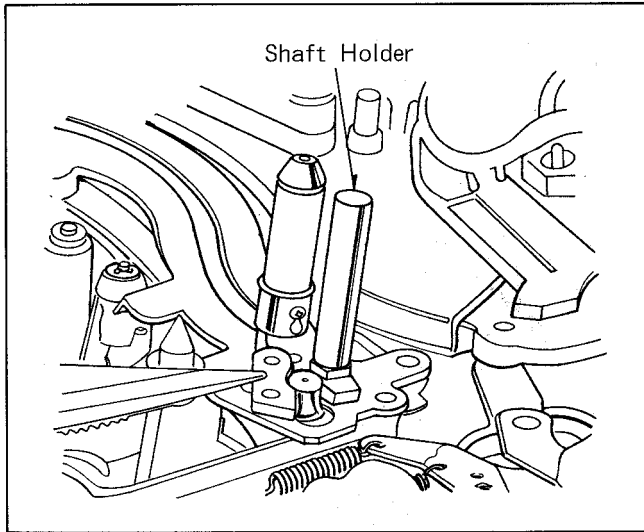


Fig. M31

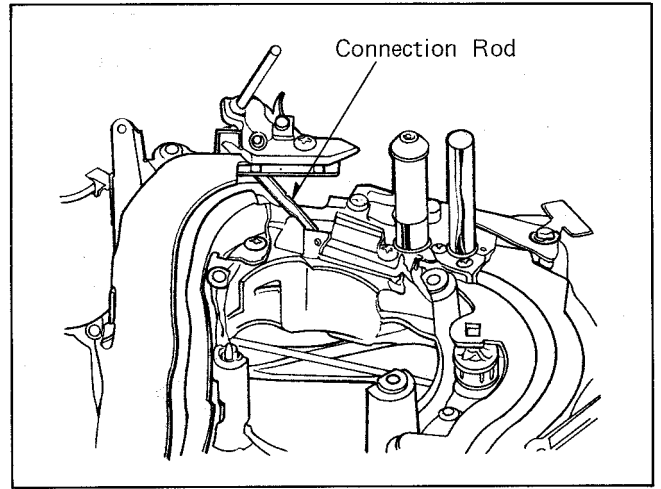


Fig. M33

- (3) Install a V stopper Base and Supply Post Stopper.

[3] PROCEDURES FOR ASSEMBLING SUPPLY LOADING GUIDES AND SUPPLY LOADING POST UNIT

- (1) Install the Loading Guide S-1 and S-2. Then tighten 3 screws.

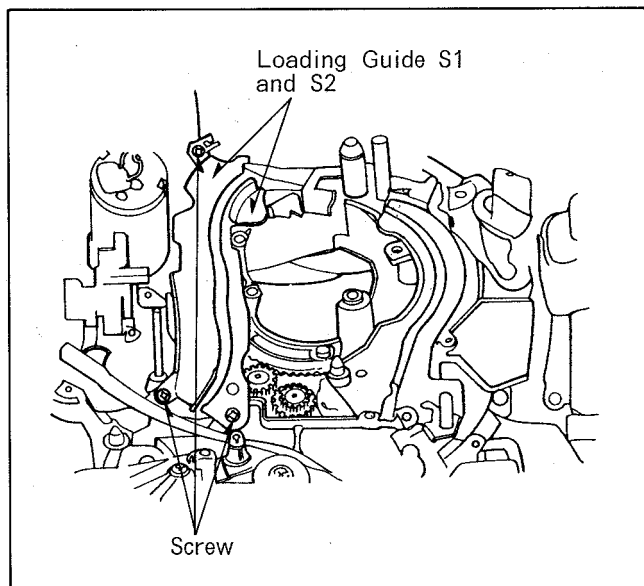


Fig. M32

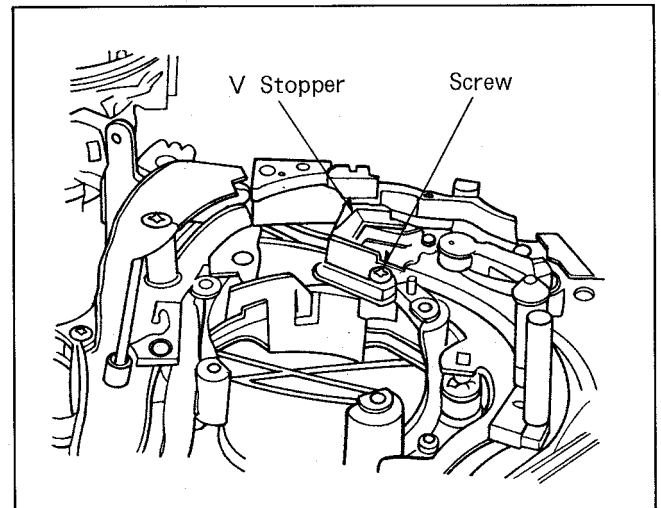


Fig. M34

- (2) Slide a Supply Loading Post Unit into a gap between the Loading Guide S1 and S2 hooking a connection Rod to a connect Tie Unit as shown below.

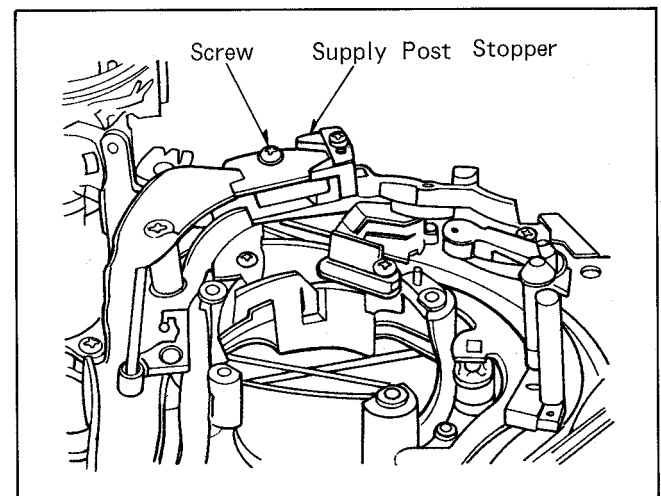


Fig. M35

- (4) Set the Loading Post unit into Stop position, as Shown below.

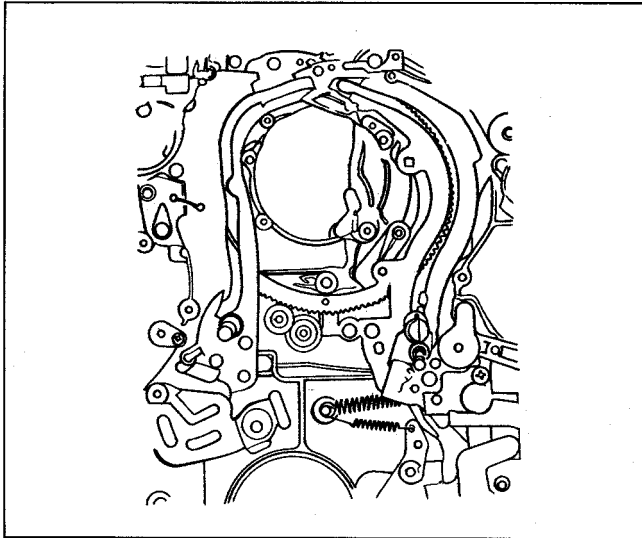


Fig. M36

- (2) Install a Drive Arm kick Lever hooking a Drive Arm Kick Lever Spring and fix it using ring.

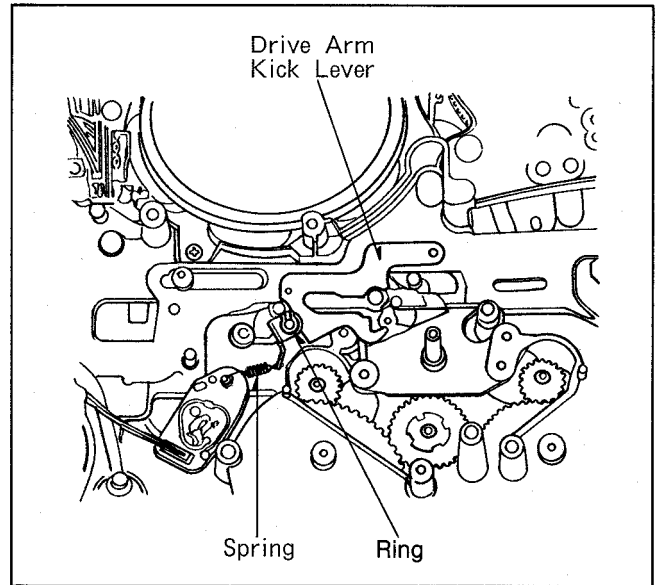


Fig. M38

[4] PROCEDURES FOR ASSEMBLING MAIN ROD

- (1) Place a Main Rod inserting 3 Thrust Washers and then insert 3 washers. After that, fix them using 2 retaining rings as shown below.

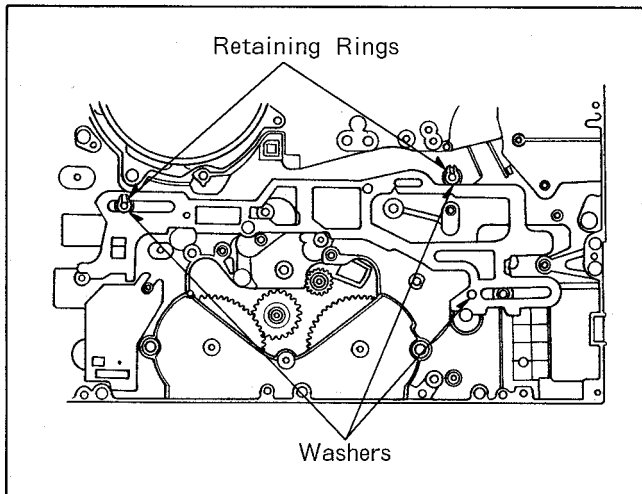


Fig. M37

[5] PROCEDURES FOR ASSEMBLING CAM GEAR AND LOADING GEAR (C)

- (1) Make sure that the hole on a Main Rod Line up exactly with hole on chassis as shown below. Make sure also, the hole on a Cam Gear Line up with hole on chassis.

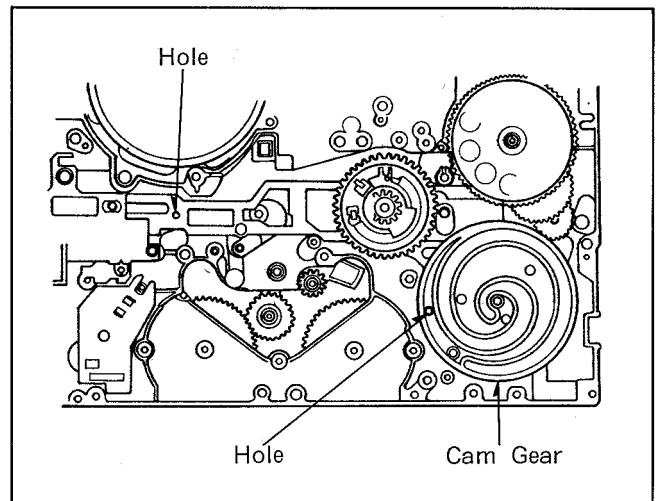


Fig. M39

- (2) Install a Loading Gear (C) keeping the relation as shown below.

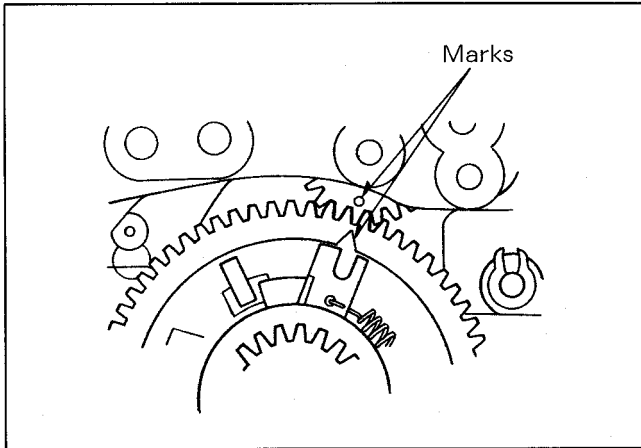


Fig. M40

- (3) Install a Sector Gear as shown below.

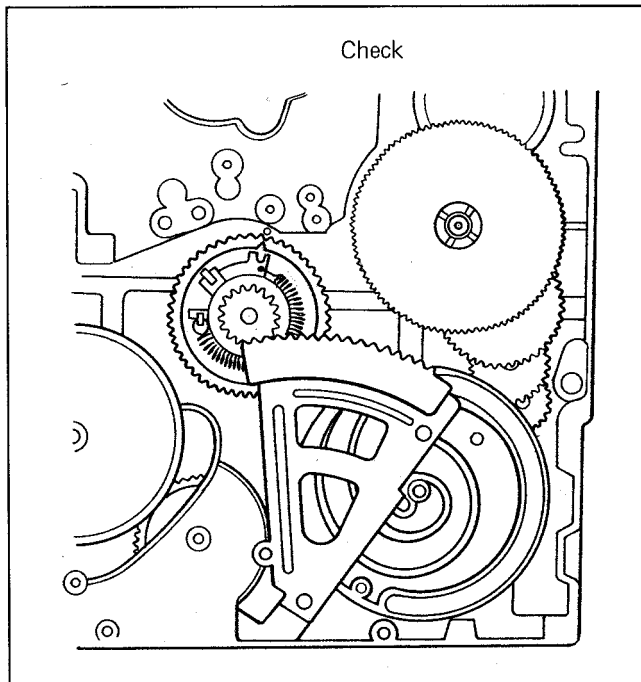


Fig. M41

- (4) Fix a SG Limiter

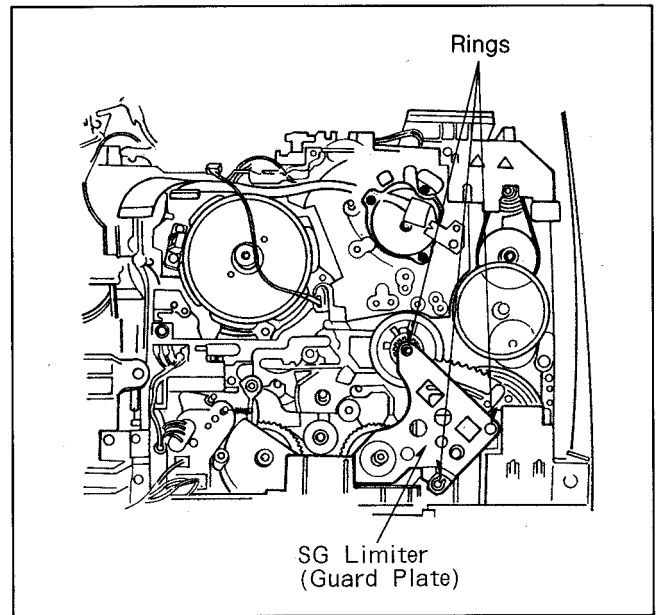


Fig. M42

#### [6] ASSEMBLY PROCEDURES OF MODE SELECT SWITCH

- (1) Perform this procedures after confirming the complete setting of mechanical parts. First of all, confirm that the hole on a Main Rod is meeting with a hole on a chassis.
- (2) Move the moving contact of a Mode Select position as shown below.

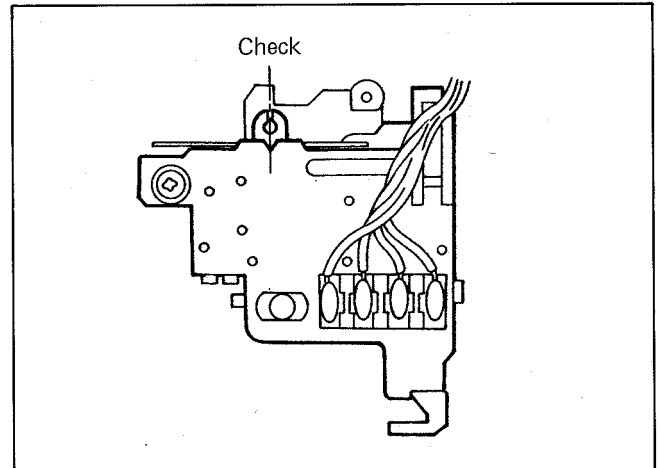


Fig M43

- (3) Install the Mode Select Switch keeping these relation written in item (1) and (2) by screwing 2 screw.

## 2-5. ELECTRICAL ADJUSTMENT PROCEDURES

### 2-5-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

#### TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the CAMERA section.

#### 1) TEST EQUIPMENT

1. Oscilloscope  
Dual Trace, 50MHz, 2mV/DIV  
10:1 Probe  
1:1 Probe
2. Digital Volt Meter of VTVM
3. Frequency Counter
4. Vectorscope
5. Light Meter
6. Tripod
7. Colour Video Monitor
8. Lighting  
140 foot-candles (1400lux) on the chart surface 3200 degrees K.

#### 2) TOOLS

- \* Logarithmic Gray Scale Chart (Part No.:YWV2310RB99)
  - \* Colour Chip Chart (Part No.:YWV2100RB98)
  - \* Hunting Chart (Part No.:VFK0546)
  - \* J Chart & Ball Chart (Part No.:VFK0580)
  - \* Colour Bar Chart (Part No.:VFK0677)
10. Plastic Tip Driver
  11. E.V.R. FIXTURE (Part No.:VFK0644)  
\* ROM 7 (Part No.:VFK0701ROM7)

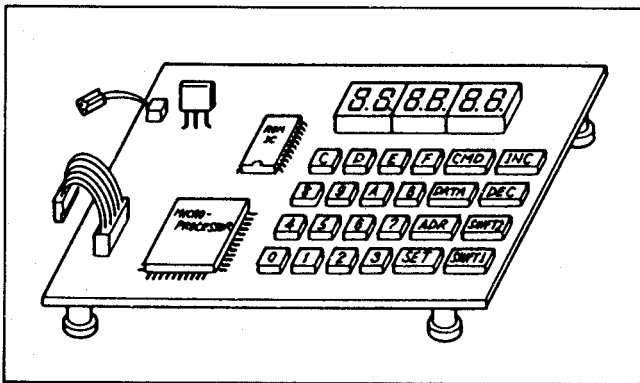


Fig. C1

12. Colour Temperature Conversion Filter  
\* C12 Filter (Part No. VFK0374 or VFK0713)  
\* C2 Filter (Part No. VFK0375 or VFK0716)  
\* Movie Light Box VRD91MLB (including VFK0777 Gray Scale Chart)
13. Extension Cable  
\* CONNECTION Cable for Measurement (24P) (Part No.VFK0766A)  
\* EVR CONNECTION Cable (15P) (Part No.VFK0734W)
14. Camera Extension Cables

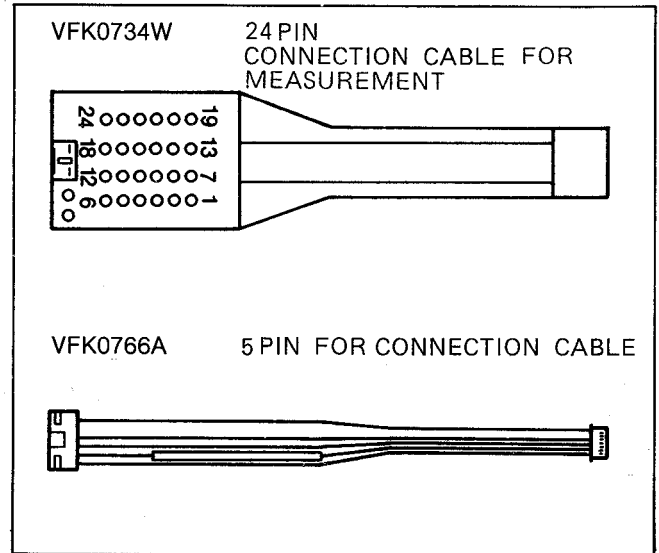


Fig. C2

(Standard Setting for Camera Adjustment)

The camera switches must be set in the following position for camera adjustment unless other wise specified each adjustment procedure.

- 1) White Balance Switch...White set (Refer to How to White Set)  
AF...Auto  
High speed shutter...OFF  
Fade...OFF
- 2) Iris...Center(ALC condition)
- 3) Use 3200 degrees kelvin light source for lighting.
- 4) To trigger the oscilloscope, use Video output.
- 5) Service work for camera unit must be performed in a dust free location to maintain the lens cleanliness.

(How to set White Balance)

- 1) Aim the camera at white chart.
- 2) Push [SHIFT 1 + 8] simultaneously.

(Description of Command)

Selecting the communication for the type of data exchange performed between EVR Fixture and camcorder.

Command	Communication	Contents
02	EVR Fixture → EEPROM	Writing the data to address of EEPROM. (Lower Digit)
12	EVR Fixture → EEPROM	Writing the data to address of EEPROM. (Upper Digit)
04	EEPROM → EVR Fixture	Reading out the data of EEPROM. (Lower Digit)
14	EEPROM → EVR Fixture	Reading out the data of EEPROM. (Upper Digit)
08	EVR Fixture → Micro Computer (RAM)	Data transmission of EVR Fixture to Micro computer (RAM).
18	EVR Fixture → Micro computer (RAM)	Data transmission of EVR Fixture to Micro computer (RAM).
09	Micro computer (RAM) → EVR Fixture	Reading out the data of Micro computer (RAM).
19	Micro computer (RAM) → EVR Fixture	Reading out the data of Micro computer (RAM).

Fig. C3

(Error Indication)

If an error occurs while EVR is operating, EVR will display one of the error messages listed in Fig.C4 for 2 seconds and then return to the previous indication.

Error NO.	Contents of Error	Simple checking method
1	Set the command number	
2	Set the wrong Address number	
3	VD signal from camera is not coming.	TP lead wire may be cut
4~6	Detect the error during communication	TP lead wire may be cut
7	Writing error in the EEPROM of camera.	Command or address cure wrong
8	Communication error in the EEPROM of camera	Same as above

Fig. C4

(Macro Operation)

The following operation is provided to transfer the data by one touch.

NO.	Buttom to be pushed	Operation						
1	SHIFT 1+0	Fully opens the IRIS						
2	SHIFT 1+1	Fully close the IRIS.						
3	SHIFT 1+2	Minimizes AGC Gain.						
4	SHIFT 1+3	Maximizes AGC Gain.						
5	SHIFT 1+4	Turns Fade on.						
6	SHIFT 1+5	Turns Fade off.						
7	SHIFT 1+6	NOT USED						
8	SHIFT 1+7	<p>Switching the Auto/manual Focus.            * Press the SHIFT 1+7 to select the Auto or Manual Focus.            (The focus mode selected is displayed on Address LED only while the keys are depresses)</p> <table border="1"> <thead> <tr> <th>LED INDICATION</th> <th>MODE</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Manual Focus mode.</td> </tr> <tr> <td>1</td> <td>Auto Focus mode.</td> </tr> </tbody> </table>	LED INDICATION	MODE	0	Manual Focus mode.	1	Auto Focus mode.
LED INDICATION	MODE							
0	Manual Focus mode.							
1	Auto Focus mode.							
9	SHIFT 1+8	White set						
10	SHIFT 1+9	Making Iris manual condition.						
11	SHIFT 1+A	Iris is return to Auto Mode.						
12	SHIFT 1+B	AGC Gain is return to Auto Mode.						
13	SHIFT 2+2	Writes the Average data and Fixed data to the EEPROM.						
14	SHIFT 2+3	Automatically Calculates the Colour Reproduction and White Balance.						
15	SHIFT 2+4	NOT USED						
16	SHIFT 2+5	Zooms to "WIDE" position.						
17	SHIFT 2+6	Stop the Zoom.						
18	SHIFT 2+7	Zooms to "TELE" position.						
19	SHIFT 2+8	Stop the Zoom.						
20	SHIFT 2+9	Automatic Calculating for Manual Iris setting.						

Fig. C5



PREPARATION

- 1) Remove both side cases referring to disassembly method.
- 2) Connect the E.V.R. FIXTURE and measuring equipment as shown in Fig.C6.

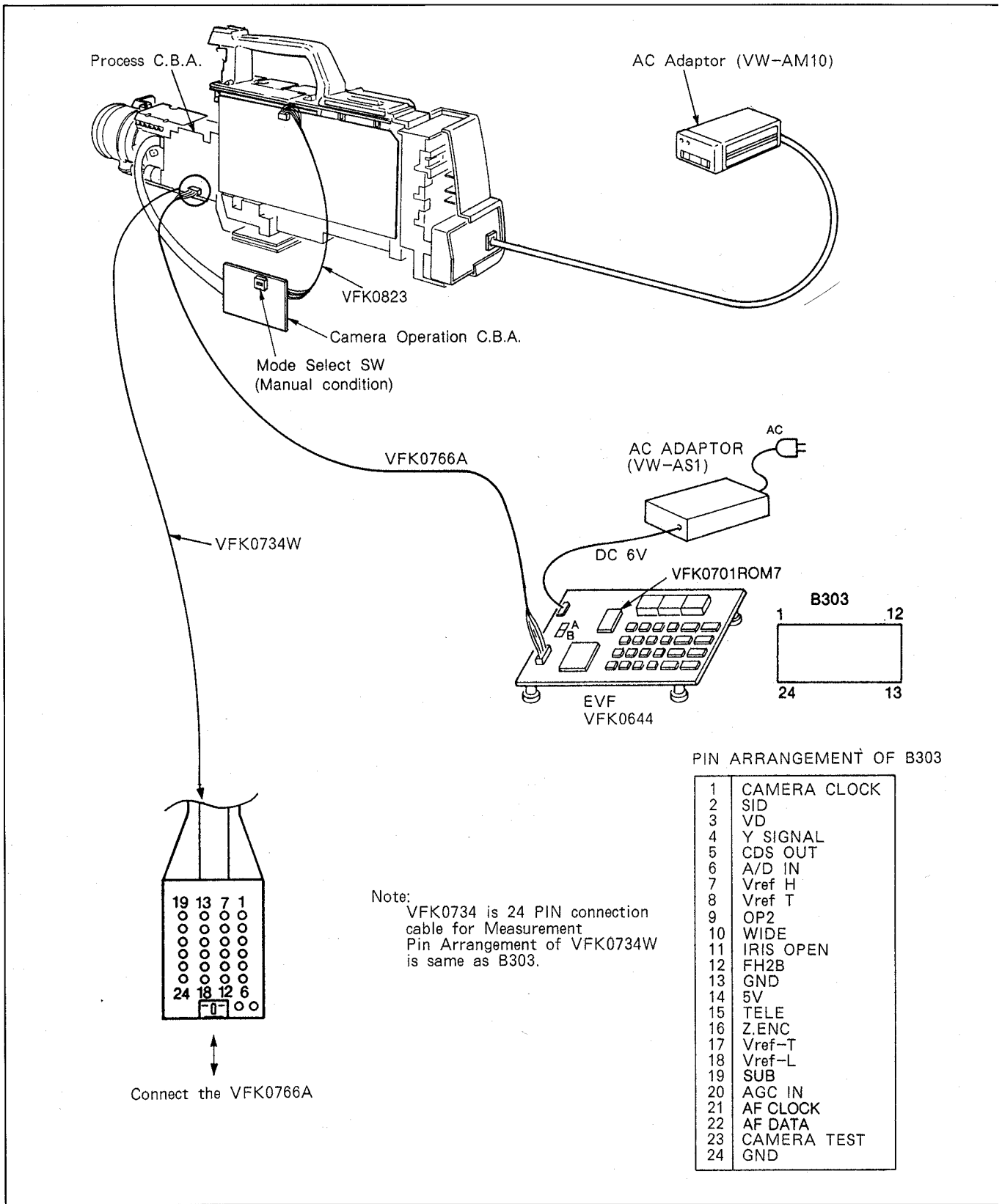


Fig. C6-1

How to connect the EVR Fixture

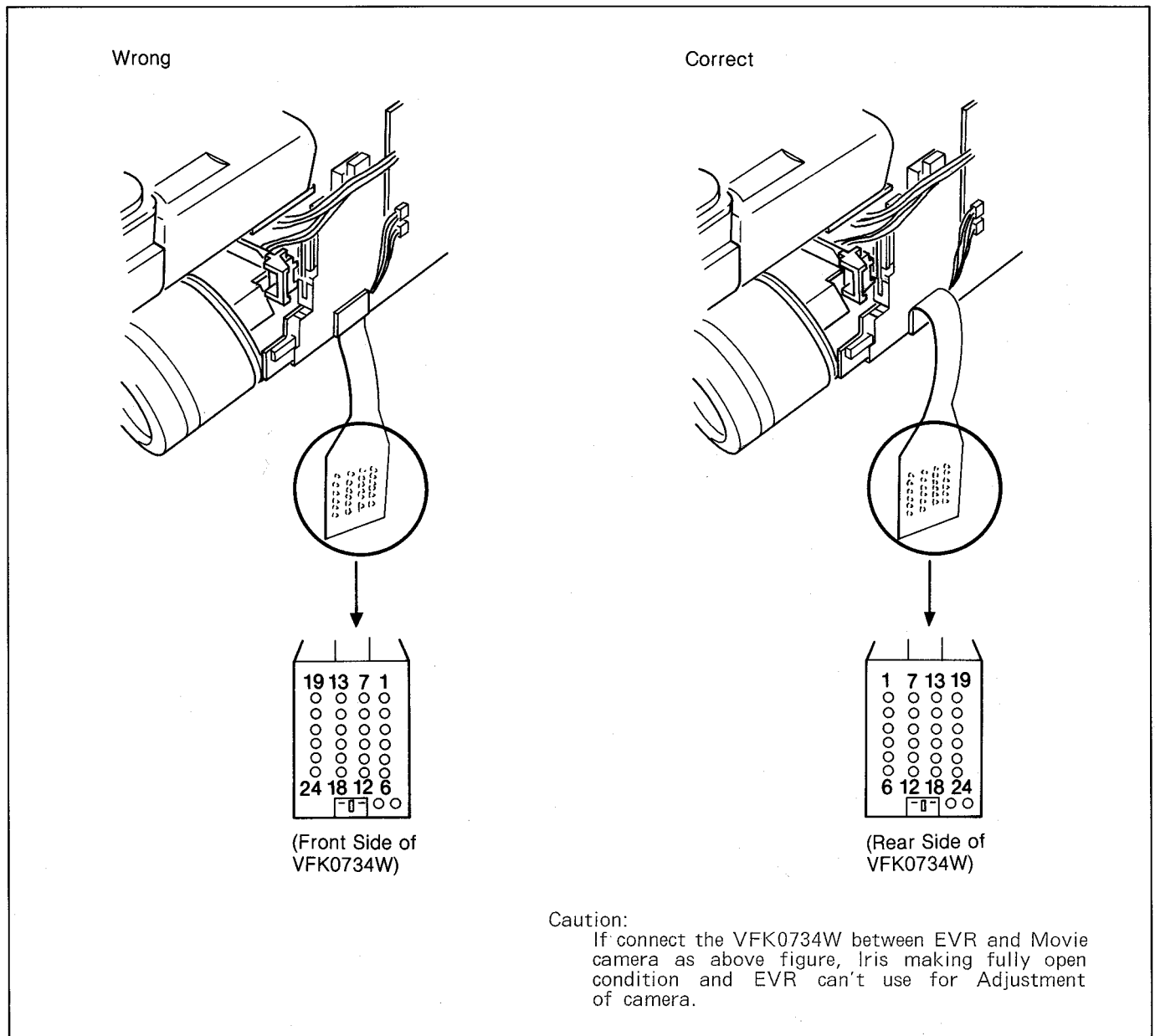


Fig. C6-2

- 1) Set the mode selector on the E.V.R. Fixture to "A" side. (Refer to Fig.C27)
- 2) Turn on the power SW of Movie camera.
- 3) Turn on the power SW of E.V.R. fixture. The LED Display on E.V.R. Fixture will indicate 08,80,00. If it does not indicated, push the Reset button and/or check the cable connections between EVR and CAMERA.
- 4) Mode Select SW on the camera Operation C.B.A., should be "manual" condition. If "AUTO" condition, focus is always "AUTO".

HOW TO READ THE ADJUSTMENT PROCEDURES  
(FOR USE OF CONVENTIONAL VR)

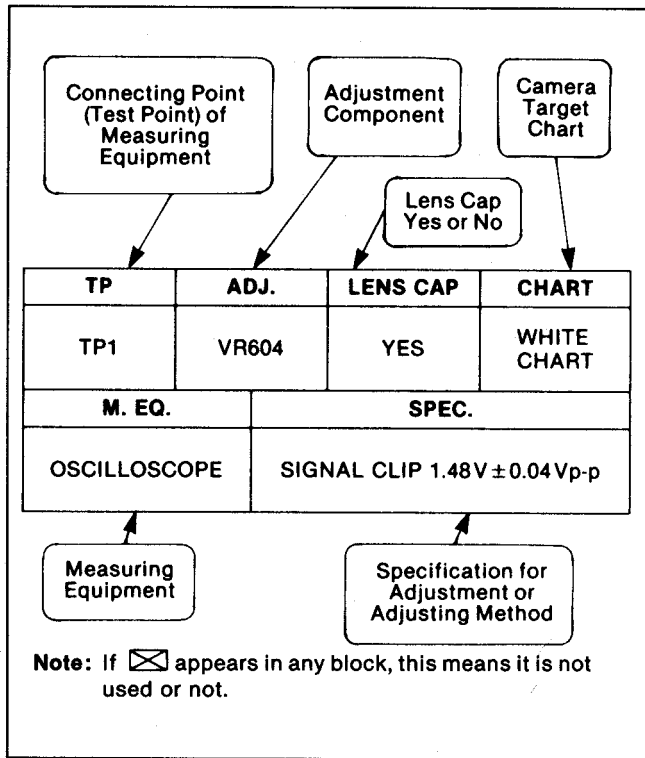


Fig. C7

HOW TO READ THE ADJUSTMENT PROCEDURES  
(FOR USE OF E.V.R.)

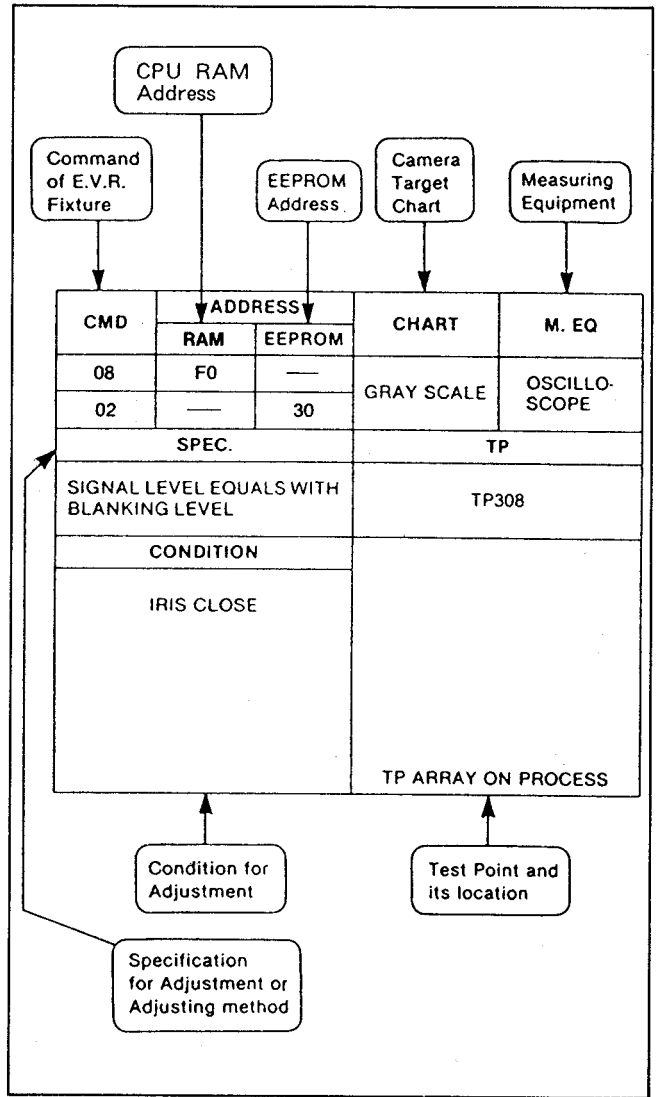


Fig. C8

1. DATA WRITING

When EEPROM is replaced, all item needs re-adjustment.

But If VFK0701ROM7 (New ROM) is installed to the EVR Fixture (VFK0644), when the pushing [SHIFT 2 and "2" keys simultaneously, Average Data is written in to EEPROM Automatically.

		UPPER							
LOWER		0	1	2	3	4	5	6	7
0	H DIGIT	B-Y Gain 6000 1D	B-Y MAT 6000 83	B-Y WB 6000 5C	B-Y limit 6000 49	B-hili 6000 4C	BACKUP 1 6E	vap-c1 D0	cnt lapt 25
	L DIGIT	R-Y Gain 6000 1E	R-Y MAT 6000 49	R-Y WB 6000 3E	R-Y limit 6000 1A	R-hili 6000 44	BACKUP 1 99	vap-core 26	g lap 83
1	H DIGIT	B-Y Gain 5100 1D	B-Y MAT 5100 83	B-Y WB 5100 68	B-Y limit 5100 4C	B-hili 5100 74	BACKUP 2 7A	Hap-cor 82	cnt ck B0
	L DIGIT	R-Y Gain 5100 1A	R-Y MAT 5100 49	R-Y WB 5100 41	R-Y limit 5100 1D	R-hili 5100 5D	BACKUP 2 50	hi-1. ap 10	cnt ct B0
2	H DIGIT	B-Y Gain 4500 1E	B-Y MAT 4500 85	R-Y WB 4500 7B	B-Y limit 4500 74	B-hili 4500 92	BACKUP 3 8A	cnt2-up 06	cnt lapk 25
	L DIGIT	R-Y Gain 4500 19	R-Y MAT 4500 43	R-Y WB 4500 3A	R-Y limit 4500 2F	R-hili 4500 4A	BACKUP 3 55	cnt2-dn 80	g lapk F8
3	H DIGIT	B-Y Gain 3600 24	B-Y MAT 3600 86	B-Y WB 3600 8D	B-Y limit 3600 85	B-hili 3600 AA	BACKUP 4 F0	H+gain 20	NOT USED
	L DIGIT	R-Y Gain 3600 1D	R-Y MAT 3600 45	R-Y WB 3600 5C	R-Y limit 3600 4A	R-hili 3600 67	BACKUP 4 1A	Vap-gain 10	NOT USED
4	H DIGIT	B-Y Gain 3300 33	B-Y MAT 3300 84	B-Y WB 3300 96	C-FLAG TH 67	CSPDm 09	agclim 2 A0	c-g-ap 20	NOT USED
	L DIGIT	R-Y Gain 3300 15	R-Y MAT 3300 46	R-Y WB 3300 69	CHSPD 04	CSPDs 1A	EIS ON/OFF 83	c-g-sw 55	NOT USED
5	H DIGIT	B-Y Gain 3100 33	B-Y MAT 3100 84	B-Y WB 3100 A0	B-limit 3100 86	B-hili 3100 D0	ped-h 36	H-st/p 20	NOT USED
	L DIGIT	R-Y Gain 3100 15	R-Y MAT 3100 46	R-Y WB 3100 76	R-limit 3100 67	R-hili 3100 87	ped-1H-ed/p 27	H-ed F8	NOT USED
6	H DIGIT	B-Y Gain 2800 2B	B-Y MAT 2800 84	B-Y WB 2800 A6	B-limit 2800 86	B-hili 2800 D0	ped-st 30	V-st/b 30	NOT USED
	L DIGIT	R-Y Gain 2800 19	R-Y MAT 2800 46	R-Y WB 2800 8E	R-limit 2800 87	R-hili 2800 B3	ped-end 50	v-ed/p 18	NOT USED
7	H DIGIT	STH FF	00	Bwb Llimit 5C	B-limit SKY 00	B-hili SKY 49	NOT USED 01	H-st/b 20	NOT USED
	L DIGIT	00	00	Rwb Llimit 3E	R-limit SKY 17	R-hili SKY 44	flag 3 FD	sw 0D	NOT USED
8	H DIGIT	Hap gain 20	Hap-core 82	Bwb Hlimit 68	B-limit TREE 74	B-hili TREE AA	flag7 FF	Y-base AC	NOT USED
	L DIGIT	Uap gain 10	00	Rwb Hlimit 41	R-limit TREE 17	R-hili TREE 2F	flag8 0F	Vap-core 05	NOT USED
9	H DIGIT	Houwa-U D0	HAP-NO 3C	B-Y WB 4900 68	BWBZ B 00	BWBZ C 00	Tree BK 03	cntlap 4F	NOT USED
	L DIGIT	Houwa-L B0	PEAKLPF 10	R-Y WB 4900 41	RWBZ B 00	BWBZ C 00	P-WAITE A0	g-lap CD	NOT USED
A	H DIGIT	palflag F4	cls4 31	DSP Ver 20	U puls 18	Baxish Th 74	st-alc 05	D-Aagc 49	NOT USED
	L DIGIT	haloth 17	cls8 71	MODEL-NBR C2	d puls 98	Baxish Th 4A	st-alc 05	cntc BF	NOT USED
B	H DIGIT	B in 10	VSTART 1D	TH 1 55	TH 3 6F	PALBR 00	open g 1 24	Ychk h A0	NOT USED
	L DIGIT	R in 10	ab set 93	TH 2 22	TH 4 10	LOOPH 02	open g 2 24	Ychk 1 A0	NOT USED
C	H DIGIT	Outb1 9F	inal F3	OPS 4 31	KOTEI A 1F	OPEN 1 9B	OPEN 3 CB	Yclpv 1 65	NOT USED
	L DIGIT	Outb2 7B	ina2 E6	ST 81	KOTEI B 20	OPEN 2 B3	OPEN G 3 24	darklv 1 00	NOT USED
D	H DIGIT	Outb3 5C	ina3 CD	Seki A0	KOTEI C 18	CLOSE 1 73	CLOSE 3 53	BACK UP 46	NOT USED
	L DIGIT	Outb4 4F	ina4 B3	AGC lim 8D	KOTEI D 18	CLOSE 2 63	CLOSE G 3 44	BACK UP 00	NOT USED
E	H DIGIT	Outb0 0B	close 00	SW-set 83	keisha 04	ag cnt1 3F	CORE 04	loop gn. 19	NOT USED
	L DIGIT	T-gain 24	open 06	MIX 03	AG-CENTER 9F	f cnd 48	CLOSE G2 64	loop gt 00	NOT USED
F	H DIGIT	A/D IN 7D	AF-ap 90	OR bias 80	R-YKB 4B	LOW CLIP 61	OPS8 71	clpmax F8	NOT USED
	L DIGIT	AF-Vn 58	AF-AMP 1E	PWM-B C8	Y-GAIN 1B	B-YKB 4B	CLOSE G3 84	PAL flkg 41	NOT USED

Fig. C9 Address map of all Average data.

## 2. VTR CARRIER BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	R:BB B:BB	—	X	VECTOR-SCOPE
12, 02	—	R-Y:3F(H) B-Y:4F(L)		
SPEC.			TP	
CENTRE OF VECTORSCOPE			VIDEO OUT	

Purpose:

Set chroma signal black and white level.

Symptom of Misadjustment:

With a large shift, colour is added to Black and white areas in the picture.

Note:

Refer to preparation for connection of EVR.

<Preparation>

1. Connect the vectorscope to Video out.
2. Aim the camera at white chart.
3. Push [SHIFT 1 + 8] keys simultaneously for white set.
4. Place the unit to "IRIS CLOSE" by pushing [SHIFT 1 + 1] keys simultaneously.

<Adjustment for R-Y>

Push following keys in order.

5. \* [CMD], [1], [8].
- \* [ADR], [B], [B].
6. Push [INC] or [DEC] keys until the vectors are in or close as possible to the centre, See Fig.C10.

<Data writing for R-Y>

Push following keys in order.

7. \* [CMD], [1], [2].
- \* [ADR], [3], [F]. (Does not change the data).
- \* [SET].

<Adjustment for B-Y>

Push following keys in order.

8. \* [CMD], [1], [8].
- \* [ADR], [B], [8].
9. \* Push [INC] or [DEC] keys until the vectors are in or as close as possible to the centre, See Fig.C10.

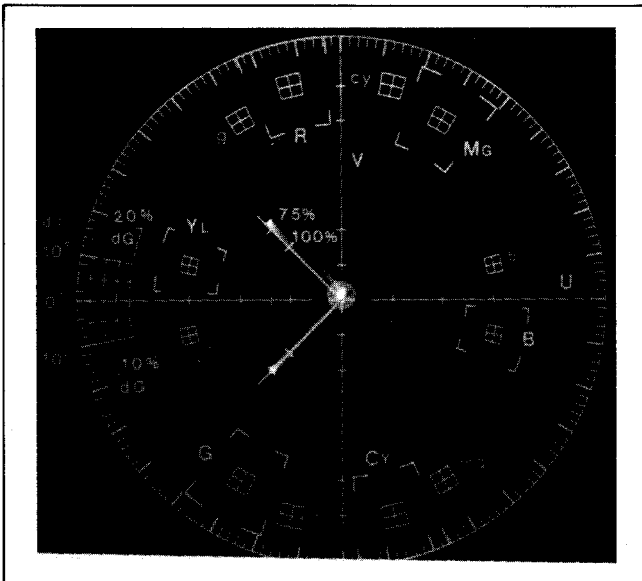


Fig. C10

<Data writing for B-Y>

Push following keys in order.

10. \* [CMD], [0], [2].
- \* [ADR], [4], [F]. (Does not change the data).
- \* [SET].
- \* [SHIFT 1 + A] (Iris is return to Auto Mode).

## 3. HALL AMP ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.																																
	RAM	EEPROM																																		
18	B5	—	X	D.V.M																																
	VR701	—																																		
02	—	IF																																		
SPEC.			TP																																	
VOLTAGE B303-9 (VFK0734W-PIN 9)= VOLTAGE B303-18 (VFK0734W-PIN 18)			B303-9 (PIN Number 9 of VFK0734W) VFK0734W-REAR																																	
VOLTAGE B303-9 (VFK0734W-PIN 9)= VOLTAGE B303-7 (VFK0734W-PIN 7)			<table border="1" style="text-align: center;"> <tr><td>1</td><td>7</td><td>13</td><td>19</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>6</td><td>12</td><td>18</td><td>24</td></tr> <tr><td>□</td><td>○</td><td>○</td><td>○</td></tr> </table>		1	7	13	19	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	6	12	18	24	□	○	○	○
1	7	13	19																																	
○	○	○	○																																	
○	○	○	○																																	
○	○	○	○																																	
○	○	○	○																																	
○	○	○	○																																	
6	12	18	24																																	
□	○	○	○																																	

Purpose:

Hall Amp Adjustment

Symptom of Misadjustment:

Hunting occurs or focus stops.

<Preparation>

1. Connect the jumper wire between B303-11 (VFK0734W-PIN11) and GND for Making Iris close. (Do not use EVR for IRIS close)

<Adjustment 1>

Push the following keys in order.

2. \* [CMD], [1], [8].
- \* [ADR], [B], [5].
3. \* Push [INC] or [DEC] keys until the voltage level at B303-9 (VFK0734W-PIN9) become Vref 1 +/- 10mV. (Vref 1 = B303-18 (VFK0734W-PIN18)).

<Data Writing for Adjustment 1>

Push the following keys in order.

4. \* [CMD], [0], [2].
- \* [ADR], [1], [F].
- \* [SET].
- \* Remove the jumper wire.

<Adjustment 2>

5. Connect the jumper wire between B303-11 (VFK0734W-PIN11) and B303-14 (VFK0734W -PIN14) for fully open the Iris.
6. Adjust the VR701 so that Voltage at B303-9 (VFK0734W-PIN9) become Vref 3 +/- 30mV. (Vref 3 = B303-7 (VFK0734W-PIN7))
7. Remove the jumper wire.

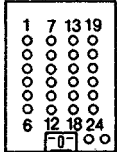
4. PLL FREQUENCY ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
CL203	C223	X	X
<b>M. EQ.</b>		<b>SPEC.</b>	
FREQUENCY COUNTER		9.656250MHz±15Hz	

Purpose:  
CCD Drive pulse adjustment

Symptom of Misadjustment:  
Picture sync misoperation.

5. P WM ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B7	—	X	D.V.M
02	—	2F (L)	X	
<b>SPEC.</b>			<b>TP</b>	
X			B303-9 (VFK0734W-PIN 9) VFK0734W-REAR 	

<Preparation>

- Set the Iris to "open". (Push [SHIFT 1 + 0]).
- Connect the D.V.M. to B303-9 (VFK0734W-PIN9).

<Pre-Adjustment>

Push the following keys in order.

- \* [CMD], [1], [8].  
\* [ADR], [B], [7].
- Push [INC] or [DEC] keys until the Voltage level at B303-9 (VFK0734W-PIN9) become Vref 1±50mV. (Vref 1 = Voltage at B303-7-500mV)
- \* [SHIFT 1 + 1] (fully close the Iris).
- \* [SHIFT 1 + 0] (fully open the Iris).

<Fine-Adjustment>

Push the following keys in order.

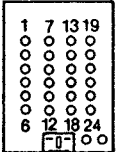
- \* [CMD], [1], [8].  
\* [ADR], [B], [7].
- Push [INC] or [DEC] keys until the Voltage level at B303-9 (VFK0734W-PIN9) become Vref2±20mV. (Vref 2 = Voltage at B303-7-140mV).

<Data Writing>

Push the following keys in order.

- \* [CMD], [0], [2].  
\* [ADR], [2], [F]. (Does not change the data).  
\* [SET].  
\* [SHIFT 1 + A] (Iris is return to Auto Mode).

6. ZOOM ENCODER AND FOCUS ENCODER ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	T: B4 W: B3	—	object: 1m (Hunting chart)	DIGITAL VOLTMETER
12	—	T: 1F (H)		
02	—	W: 0F (L)		
<b>SPEC.</b>			<b>TP</b>	
To be calculated			B303-8 (VF0734W-8) B303-17 (VFK0734W-17) VFK0734W-REAR 	
<b>CONDITION</b>				
• Focus Manual (SHIFT 1+7)				

Note:

- Unless you replaced Zoom Encoder, 3rd lens (1) unit or 4th moving frame (1) unit, do not perform this adjustment. (Because this adjustment is critical).
- Regarding the connection of EVR, refer to preparation. (Fig.C6)

<Initial Measurement and Preparation>

- Check the voltage at B303-8(VFK0734W-PIN8) and B303-17(VFK0734W-PIN17) before changing the defective lens unit.  
For example:  
B303-8(VFK0734W-PIN8) : 3.652V  
B303-17(VFK0734W-PIN17) : 1.456V
- Make note the potential difference between B303-8(VFK0734W-PIN8) and B303-17(VFK0734W-PIN17).  
For example:  
3.652-1.456 = 2.196V
- Turn off the power SW.
- Replace lens unit.
- Loosen 2 screws of Focus encoder C.B.A. and move C.B.A. to center position as shown in Fig.C11-1.

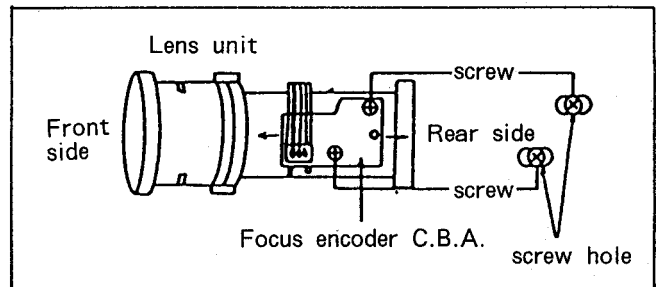


Fig. C11-1

6. Turn on the power SW.
7. Set the Focus system to Manual Focus.  
(Pushing [SHIFT 1 + 7] keys simultaneously switches the Focus system between Manual and Auto Focus, "0" displayed at address LED while [SHIFT 1 + 7] keys depressed indicates Manual Focus, "1" indicates Auto Focus.
8. Zoom the lens to full tele position.  
Push [SHIFT 2 + 7] keys simultaneously.
9. Aim the unit at Hunting chart from a distance 1 meter.
10. Set the focus to full (-) position.  
\* Turn the focus ring counterclockwise until the picture focus does not change.

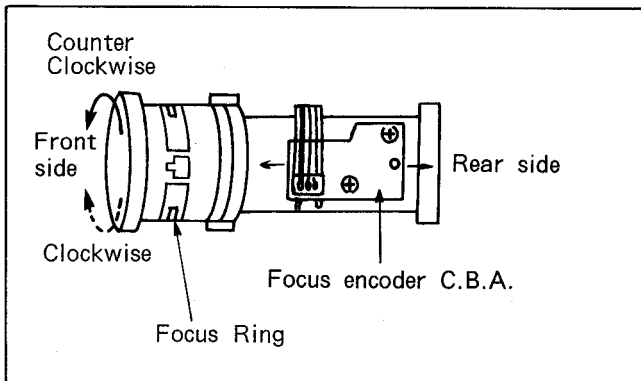


Fig. C11-2

<Adjustment for Tele Side>

Push the following keys in order.

11. \* [CMD], [1], [8].  
\* [ADR], [B], [4].
12. \* Push [INC] or [DEC] keys until the lens focus is in correct position.

[Note 1]

The focus does not change while focus voltage is being adjusted on the EVR.  
To see the focus adjustment the lens unit must be zoomed from TELE to WIDE and back to TELE to activate the focus.

[Note 2]

Using the zoom controls on the EVR disables the Zoom controls of TELE/WIDE button on the camera.  
Therefore, use EVR([SHIFT 2 + 7] or [SHIFT 2 + 5]) to move zoom for the TELE or WIDE position.

13. When lens focus comes to the correct position (at fully TELE Side), Push the following keys in order for store the data to EEPROM directly.  
\* [CMD], [1], [2].  
\* [ADR], [1], [F].  
\* [SET].

If the lens assembly cannot be focused, the Focus Encoder C.B.A. must be repositioned.  
Turn the focus ring clockwise.

- \* If the focus improves more, the Focus Encoder C.B.A. to the rear.
- \* If the focus deteriorates more, the Focus Encoder C.B.A. to the front.

Return to Step(6) to reposition the Focus Encoder C.B.A..

<Adjustment for Wide Side>

14. Check the Voltage at B303-8 (VFK0734W-PIN 8).
15. Subtract the voltage that was noted at step(2) from the voltage at step(14).  
For example:  
If the voltage at B303-8(VFK0734W-PIN8) is 3.662V.  
 $3.662 - 2.196 = 1.466$
16. Set the voltage at B303-17(VFK0734W-PIN17) to 1.466V with EVR as follows.  
Push the following keys in order.  
\* [CMD], [1], [8].  
\* [ADR], [B], [3].  
\* Push [INC] or [DEC] until the voltage at B303-17(VFK0734W-PIN17) is 1.466V.
17. Push the following keys in order for store the data to EEPROM Directly.  
\* [CMD], [0], [2]. (Does not change the data).  
\* [ADR], [0], [F].  
\* [SET].

<Confirm the focus when zooming to Wide Side>

18. Turn OFF and ON the Power SW.
19. Set the focus system to Manual focus as step(7).
20. Check the back focus while Zooming.  
(If back focus is not good refer to following table)

- 1) Focus is not good at full wide side.

Adjust the data of ADR "B3" at the full Wide Side keeping the voltage at B303-(18) within  $\pm 0.05V$  of the voltage in Step(16).

Check back focus While Zooming.

- \* If back focus is good, go to Step(19).
- \* If back focus is not good, stop the zoom at the position of bad focus.  
Turn the focus ring clockwise and/or counter-clockwise.

If focus improves when the focus ring is turned counter-clockwise reposition the Focus Encoder C.B.A. to the front.

If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.

Return to Step(5) to reposition the Focus Encoder C.B.A.

- 2) Focus is not good-between TELE and WIDE.  
Stop the zoom at the position of bad focus.  
Turn the focus ring clockwise and/or counter-clockwise.  
\* If focus improves when the focus ring is turned counter-clockwise, reposition the Focus Encoder C.B.A. to the front.  
\* If focus improves when the focus ring is turned clockwise, reposition the Focus Encoder C.B.A. to the rear.  
Return to Step(5) to reposition the Focus Encoder C.B.A..

## 7. V-SUB ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B6	—	HALOGEN LAMP	MONITOR TV
12	—	2F		
SPEC.			TP	
NO BLOOMING				

- Zoom all the way in (full tele position or full wide position) and aim the camera at the Halogen Lamp as shown in Fig.C12.
- Set the High Speed Shutter SW to "OFF" position.
- Diffuse the incoming light using frosted glass or acryl plate. Place the cardboard which has been cut to "U" shape as shown in Fig.C12. between the diffusion plate and the camera.
- Set the Iris to "Open" [SHIFT 1 + 0].

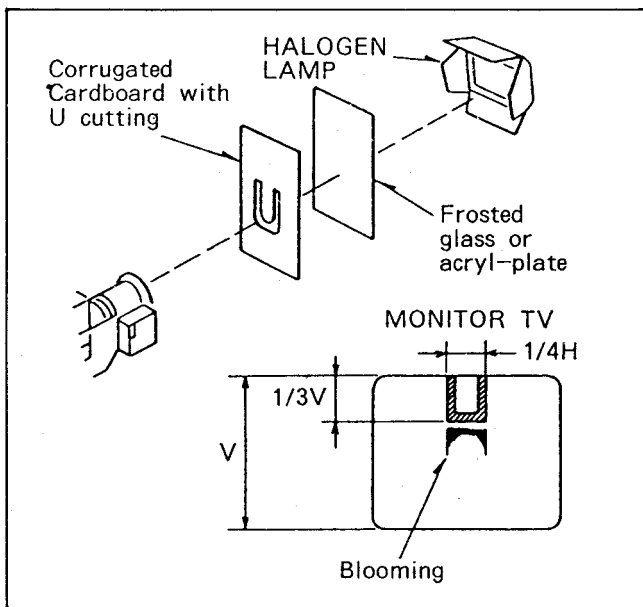


Fig. C12

### <Adjustment>

Push the following keys in order.

- \* [CMD], [1], [8].
- \* [ADR], [B], [6].
- \* Push [INC], or [DEC] keys until the blooming disappears (If blooming does not disappear completely, adjust until the blooming minimize).

### <Data Writing>

Push the following keys in order.

- \* [CMD], [1], [2].
- \* [ADR], [2], [F].
- \* [SET].
- \* [SHIFT 1 + A].
- Confirm that the monitored picture does not contain Blooming in both High Speed Shutter "ON" and "OFF" modes even if the camera moves as shown in Fig.C13.

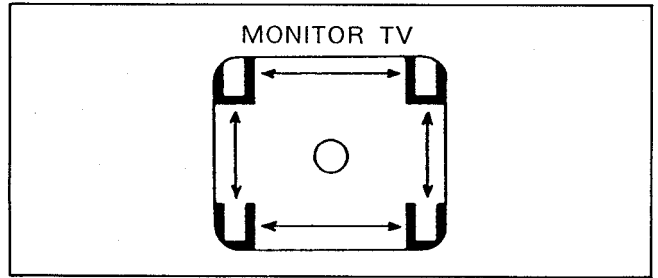


Fig. C13

## 8. PEDESTAL LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	BA	—	X	OSCILLOSCOPE
12	—	4F		
SPEC.			TP	
A=0mV ± 10mV			B303-6 (VFK0734W-6) VFK0734W-REAR	

### <Preparation>

- Cover the lens.  
Push [SHIFT 1 + 3] keys (Maximizes AGC Gain).  
Push [SHIFT 1 + 9] keys (Making Iris manual condition).
- Connect the oscilloscope to B303-6(VFK0734W-PIN6).

### <Adjustment>

- Push the following keys in order.
- \* [CMD], [1], [8].
  - \* [ADR], [B], [A].
  - \* Push [INC] or [DEC] keys until the "A" level is minimized, as shown in Fig.C14.

### <Data writing>

Push the following keys in order.

- \* [CMD], [1], [2].
- \* [ADR], [A], [F].
- \* [SET].
- \* [SHIFT 1 + A].

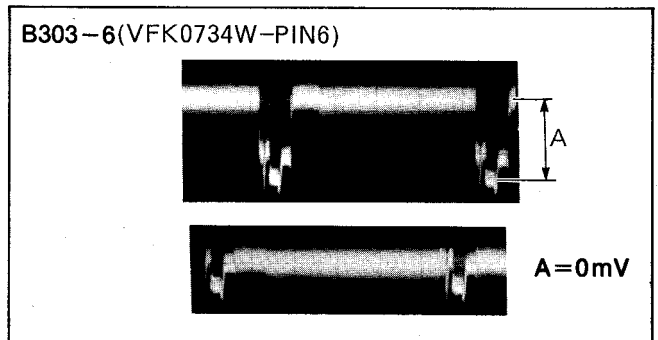


Fig. C14



9. AGC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	BC	—	GRAY SCALE CHART	OSCILLOSCOPE
12	—	6A		
SPEC.			TP	
230mV±20mV			B303-5 (VFK0734W-PIN 5) B303-20 (VFK0734W-PIN 20) VFK0734W-REAR	

Purpose:

Set standard signal gain.

Symptom of Misadjustment:

The picture is sometimes too dark or too bright.

< Preset for AGC Adjustment >

1. Making Iris manual condition [SHIFT 1+9].
2. Aim the camera at Gray Scale Chart.
3. Connect the Oscilloscope to B302-5. (VFK0734W-PIN5)

< Preset 1-Rough >

Push the following keys in order.

4. \* [CMD], [1], [8].
- \* [ADR], [D], [F].
5. \* Push [INC] or [DEC] keys until signal level at B303-5 (VFK0734W-PIN5) is 250mV±10mV.

< Preset 2-Fine >

Push the following keys in order.

6. \* [CMD], [1], [8].
- \* [ADR], [D], [E].
7. \* Push [INC] or [DEC] keys until signal level at B303-5 (VFK0734W-PIN5) is 250mV±10mV.

< AGC Adjustment >

Push the following keys in order.

8. \* [CMD], [1], [8].
- \* [ADR], [B], [C].
9. \* Push [INC] or [DEC] keys until the signal level at B303-20 (VFK0734W-PIN20) is 230mV±20mV.

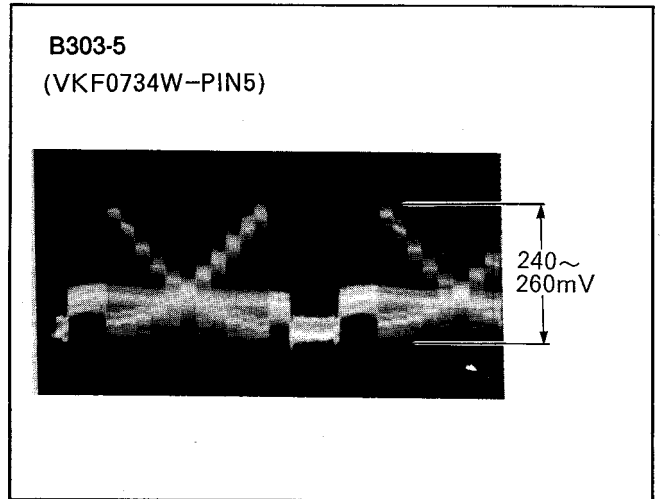


Fig. C15-1

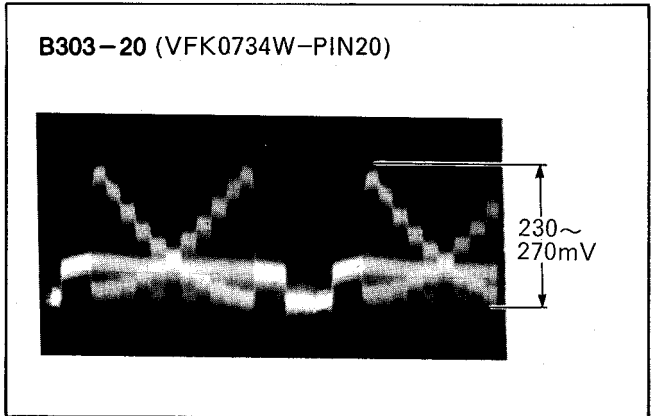


Fig. C15-2

< Data Writing >

Push the following keys in order.

10. \* [CMD], [1], [2]. (Does not change the Data).
- \* [ADR], [6], [A].
- \* [SET].
11. \* Push [SHIFT 1+A] keys (Iris return to Auto mode)

10. A/D INPUT LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B1	—	GRAY SCALE CHART	OSCILLOSCOPE
12	—	0F		
SPEC.			TP	
1.2V±40mV			B303-5 (VFK0734W-PIN 5) B303-6 (VFK0734W-PIN 6)	

Purpose:

A/D converter input Level adjustment.

Symptom of Misadjustment:

The picture becomes too dark or too bright.

< Preset for AGC Adjustment >

1. Making Iris manual condition [SHIFT 1+9].
2. Aim the camera at Gray Scale Chart.
3. Connect the Oscilloscope to B302-5. (VFK0734W-PIN5)

< Preset 1-Rough >

Push the following keys in order.

4. \* [CMD], [1], [8].
- \* [ADR], [D], [F].
5. \* Push [INC] or [DEC] keys until signal level at B303-5 (VFK0734W-PIN5) is 250mV±10mV.

< Preset 2-Fine >

Push the following keys in order.

6. \* [CMD], [1], [8].
- \* [ADR], [D], [E].
7. \* Push [INC] or [DEC] keys until signal level at B303-5 (VFK0734W-PIN5) is 250mV±10mV.

< A/D Input level Adjustment >

8. \* [CMD], [1], [8].
- \* [ADR], [B], [1].
9. \* Push [INC] or [DEC] keys until the signal level at B303-6 (VFK0734W-PIN6) is 1.2V±40mV.

< Data Writing >

Push the following keys in order.

10. \* [CMD], [1], [2]. (Does not change the Data)
  - \* [ADR], [0], [F].
  - \* [SET].
- Push [SHIFT 1+A] keys. (Iris return to Auto mode)

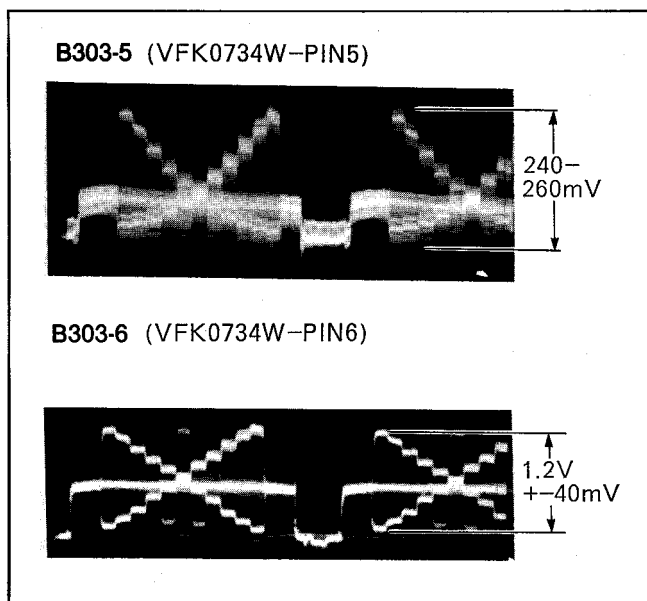


Fig. C16

## 11. ALC ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	D4	—	GRAY SCALE CHART	OSCILLOSCOPE
02	—	2C		
SPEC.			TP	
1.20V±40mV			B303-6 (VFK0734W-PIN 6)	

Note:

Perform this adjustment after finishing the AGC and A/D INPUT LEVEL ADJUSTMENT.

Purpose:

ALC level adjustment.

Symptom of Misadjustment:

The picture is too white or too dark.

<Preparation>

1. Set the IRIS to Auto [SHIFT 1 + A].
2. Aim the camera at Gray Scale Chart.
3. Connect the oscilloscope to B303-6(VFK0734W-PIN6).

<Adjustment>

Push the following keys in order.

4. \* [CMD], [1], [8].
- \* [ADR], [D], [4].
5. \* Push [INC] or [DEC] keys until the signal level at B303-6(VFK0734W-PIN6) is 1.20V ±40mV.

<Data Writing>

Push the following keys in order.

6. \* [CMD], [0], [2]. (Does not change the Data)
- \* [ADR], [2], [C].
- \* [SET].

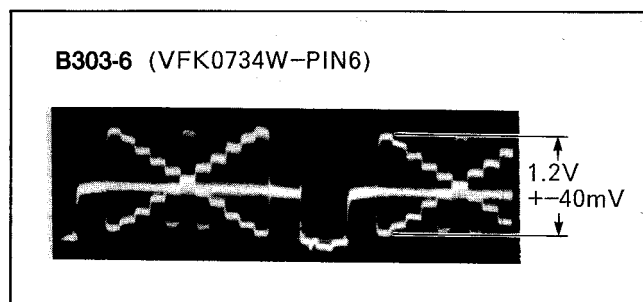


Fig. C17

## 12. MANUAL IRIS ADJUSTMENT

NO.	ITEM	EEPROM ADDRESS	FORMULA	CMD	RESULT OF CALCULATION
1	OPEN1	4C (High digit)	ADR (2C)+24	READ: 04 WRITE: 12	
2	OPEN2	4C (Low digit)	ADR (4C)+24	READ: 14 WRITE: 02	
3	OPEN3	5C (High digit)	ADR (4C)+24	READ: 04 WRITE: 12	
4	CLOSE1	4D (High digit)	ADR (2C)-16	READ: 04 WRITE: 12	
5	CLOSE2	4D (Low digit)	ADR (4D)-16	READ: 14 WRITE: 02	
6	CLOSE3	5D (High digit)	ADR (4D)-16	READ: 04 WRITE: 12	

Calculation for Manual IRIS.

Note 1:

ADR(2C) = ALC Data

Note 2:

Push [SHIFT 2 + 9] keys simultaneously.  
(All formulas for Manual Iris are performed and results are stored into EEPROM Automatically)

Note 3:

If the ALC Adjustment is incorrect the Manual Iris SET UP will also be incorrect.  
Be sure to carry out the ALC Adjustment procedure correctly before doing the Manual Iris Adjustment.

\* Example

Item 1 : OPEN 1

Formula : ADR(2C)+24

Read out the data From Address(2C) of EEPROM as follows.

- \* Select read command(04) => Push [CMD],[0],[4].
- \* Select Address(2C) => Push [ADR],[2],[C].
- \* Push (SET) to Read the data => Push [SET].

When the (SET) key is pushed, the data LED will indicate the data of Address(2C).  
Convert this data to decimal.  
If data LED indicate(6D).  
HEX(6D) = 109(Decimal Value)

Now using the formula (2C)+24 Calculate the Reset.  
(Substitute the Decimal Value for the HEX data in (2C)109+24=133.

Convert the Result to a HEX Value using the table (Fig.C18)  
133(decimal)=85(in HEX CODE)

Store the above HEX Value in the EEPROM.  
Address(4C) High digit as follows.

- \* Select command(12) => Push [CMD],[1],[2].

- \* Select Address(4C) => Push [ADR],[4],[C].
- \* Set the data(85) => Push [DATA],[8],[5].
- \* Push (SET) to write the data => Push [SET].

Note 4:

Priority of Formula.

ADR "2C"(Low digit) = ALC Adjustment

1. OPEN 1 : "4C"(High digit) =

ADR "2C"(Low digit)+24

2. OPEN 2 : "4C"(Low digit) =

ADR "4C"(High digit)+24

3. OPEN 3 : "5C"(High digit) =

ADR "4C"(Low digit)+24

ADR "2C"(Low digit) = ALC Adjustment

4. CLOSE 1 : "4D"(High digit) =

ADR "2C"(Low digit)-16

5. CLOSE 2 : "4D"(Low digit) =

ADR "4D"(High digit)-16

6. CLOSE 3 : "5D"(High digit) =

ADR "4D"(Low digit)-16

		②															
Hexadecimal upper digit	Hexadecimal lower digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
① 6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	

For example: If indication of EVR is "6D" (as upper digit is "6" and lower digit is "D"), a decimal value of "109" is obtained from the intersection of ① and ② in the above table.

Fig. C18 Hexadecimal-Decimal Conversion Table

(Hexadecimal-Decimal Conversion Table)

For some of adjustment items, calculation of hexadecimal data (indicated on LED of EVR Fixture) is needed to obtain the adjustment data. In these cases, convert the hexadecimal value to decimal value before calculation and after calculation is finished reconvert the result to hexadecimal to obtain the adjustment data. Write the new hexadecimal adjustment data into EEPROM. A hexadecimal-decimal conversion table is shown in Fig.C18.

13. Y CLIP LEVEL ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
18	B9	—	WHITE CHART	OSCILLOSCOPE
02	—	3F		
SPEC.			TP	
V/S=7.7:3			B303-4 (VFK0734W-PIN 4) VFK0734W-REAR	

<Preparation>

1. Set the IRIS to "OPEN". [SHIFT1 + 0].
2. Aim the camera at white chart.
3. Connect the Oscilloscope to B303-4. (VFK0734W-PIN4)

<Adjustment>

Push the following keys in order.

4. \* [CMD], [1], [8].
- \* [ADR], [B], [9].
5. \* Push [INC] or [DEC] keys until ratio of V and S is 7.7:3.

<Data Writing>

Push the following keys in order.

6. \* [CMD], [0], [2]. (Does not change the data)
- \* [ADR], [3], [F].
- \* [SET].
7. \* [SHIFT 1 + A] (IRIS return to Auto Mode)

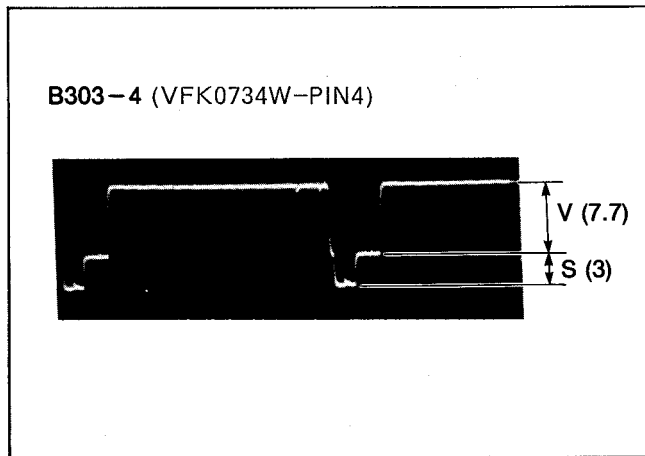


Fig. C19

14. INDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	RAM	EEPROM		
09	BB (R-Y) AB (B-Y)	—	WHITE CHART	VECTOR- SCOPE OR OSCILLO- SCOPE
02	—	25 (R-Y)		
12	—	25 (R-Y)		
SPEC.			TP	
VECTOR COMES CENTRE OR WAVEFORM IS MINIMIZED			VIDEO OUT	
CONDITION			X	
IRIS: ALC				

<Preparation>

1. Connect the Video out to Vectorscope.
2. Aim the camera at white chart. And Push [SHIFT 1 + 8] for white set. (Please confirm, vector came to center)

<Read Out the data for R-Y>

Push the following keys in order.

3. \* [CMD], [0], [9].
  - \* [ADR], [B], [B].
  - \* [SET].
- (When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

<Data Writing for R-Y>

Push the following keys in order.

4. \* [CMD], [0], [2]. (Do not change the data)
- \* [ADR], [2], [5].
- \* [SET].

<Read Out the data for B-Y>

Push the following keys in order.

5. \* [CMD], [0], [9].
- \* [ADR], [A], [B].
- \* [SET].

(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for B-Y)

<Data writing for B-Y>

Push the following keys in order.

6. \* [CMD], [1], [2]. (Do not change the data)
- \* [ADR], [2], [5].
- \* [SET].

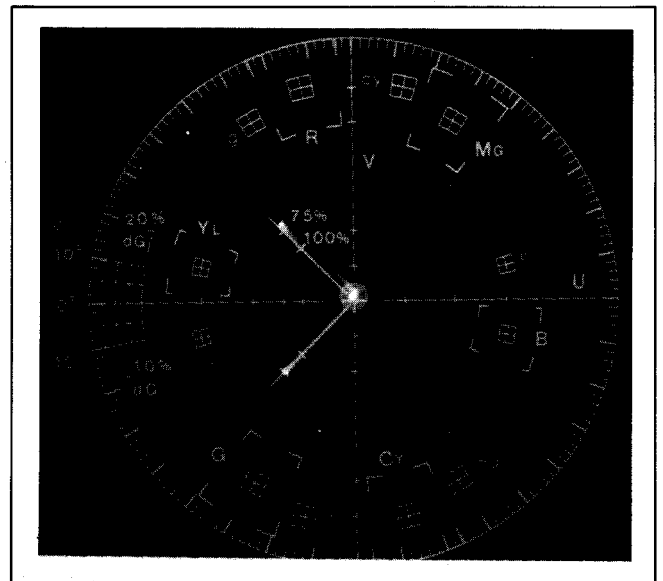


Fig. C20

15. COLOUR PHASE AND GAIN ADJUSTMENT (INDOOR)

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
08	95 (R-Y G) 97 (R-Y P) 94 (B-Y G) 96 (B-Y P)	—	COLOUR BAR CHART	VECTOR SCOPE
02	—	05 (R-Y G) 15 (R-Y P)		
12	—	05 (B-Y G) 15 (B-Y P)		
SPEC.			TP	
RED: 104+ -3 degree/PHASE 190%+ -10%/GAIN (RED/BURST) 168+ -3 degree/PHASE 140%+ -10%/GAIN (Yellow/BURST)			VIDEO OUT	

Note:

Be sure to carry out the Indoor White Balance Adjustment before doing this Adjustment.

1. Aim the camera at Colour Bar Chart.
2. Connect the Video out to vectorscope.

<R-Y GAIN>

(Step3 to 5 are R-Y Gain Adjustment)

Push the following keys in order.

3. \* [CMD], [0], [8].  
\* [ADR], [9], [5].
4. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for R-Y Gain>

Push the following keys in order.

5. \* [CMD], [0], [2]. (Does not change the data)  
\* [ADR], [0], [5].  
\* [SET].

<R-Y PHASE>

(Step6 to 8 are R-Y Phase Adjustment)

Push the following keys in order.

6. \* [CMD], [0], [8].  
\* [ADR], [9], [7].
7. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for R-Y Phase>

Push the following keys in order.

8. \* [CMD], [0], [2]. (Does not change the data)  
\* [ADR], [1], [5].  
\* [SET].

<B-Y Gain>

(Step9 to 11 are B-Y Gain Adjustment)

Push the following keys in order.

9. \* [CMD], [0], [8].  
\* [ADR], [9], [4].
10. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for B-Y GAIN>

Push the following keys in order.

11. \* [CMD], [1], [2].  
\* [ADR], [0], [5].  
\* [SET].

<B-Y PHASE>

(Step12 to 14 are B-Y PHASE Adjustment)

Push the following keys in order.

12. \* [CMD], [0], [8].  
\* [ADR], [9], [6].
13. \* Push [INC] or [DEC] keys until phase of red and Yellow Vectors are as close as possible to Spec. See Fig.C21.

<Data Writing for B-Y PHASE>

Push the following keys in order.

14. \* [CMD], [1], [2].  
\* [ADR], [1], [5].  
\* [SET].

15. Repeat the Step(3) to Step(14) unit vectors becomes within Spec.

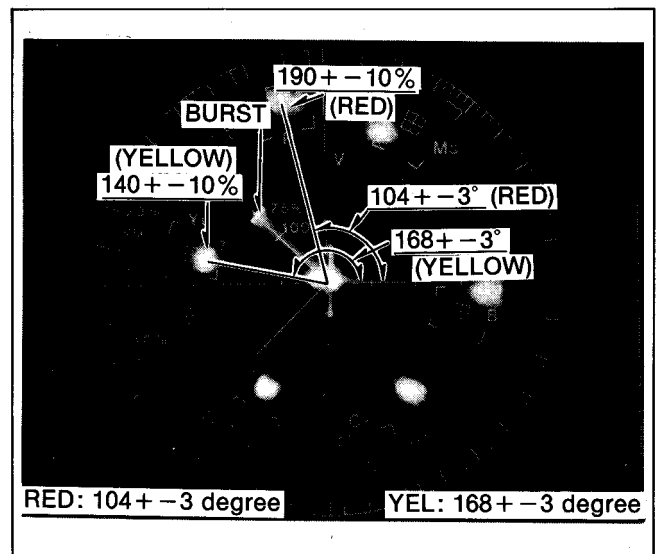


Fig. C21

16. OUTDOOR WHITE BALANCE ADJUSTMENT

CMD	ADDRESS		CHART	M. EQ
	RAM	EEPROM		
09	BB (R-Y) AB (B-Y)	—	WHITE CHART	VECTOR-SCOPE OR OSCILLOSCOPE
02	—	21 (R-Y)		
12	—	21 (B-Y)		
SPEC.			TP	
VECTOR COMES CENTRE OR WAVEFORM IS MINIMIZED			VIDEO OUT	
CONDITION			X	
TEMPERATURE CONVERSION FILTER: VFK0713 (C12) VFK0716 (C2) IRIS: ALC				

**Purpose:**

Set standard white level for each colour temperature.

**Symptom of Misadjustment:**

White becomes bluish or reddish.

**<Preparation>**

1. Connect the Video Out to Vectorscope.
2. Cover the lens with colour temperature conversion filter VFK0713 and VFK0716 to imitate the Outdoor lighting.
3. Aim the camera at white chart, and push [SHIFT 1 + 8] keys for white set.  
(Please confirm, vectors came to center)

**<Read Out the data for R-Y>**

Push the following keys in order.

4. \* [CMD], [0], [9].  
\* [ADR], [B], [B].  
\* [SET].  
(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

**<Data Writing for R-Y>**

Push the following keys in order.

5. \* [CMD], [0], [2]. (Does not change the data)  
\* [ADR], [2], [1].  
\* [SET].

**<Read Out the data for B-Y>**

Push the following keys in order.

6. \* [CMD], [0], [9].  
\* [ADR], [A], [B].  
\* [SET].  
(When the pushed [SET] key, data LED of EVR indicate the data of white balance for B-Y)

**<Data Writing for B-Y>**

Push the following keys in order.

7. \* [CMD], [1], [2]. (Does not change the data)  
\* [ADR], [2], [1].  
\* [SET].

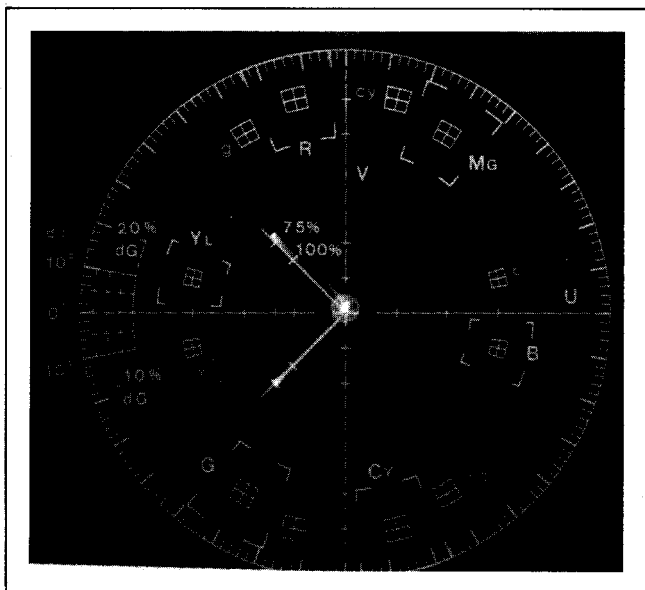


Fig. C22

**17. COLOUR PHASE AND GAIN ADJUSTMENT (OUTDOOR)**

CMD	ADDRESS		CHART	M. EQ.
	RAM	EEPROM		
08	95 (R-Y G) 97 (R-Y P) 94 (B-Y G) 96 (B-Y P)	—	COLOUR BAR CHART	VECTOR SCOPE
02	—	01 (R-Y G) 11 (R-Y P)		
12	—	01 (B-Y G) 11 (B-Y P)		
SPEC.			TP	
RED: 104 + -3 degree/ PHASE, 190% + -10% GAIN (Red/BURST) YEL: 168 + -3 degree/ PHASE, 140% + -10% GAIN Yellow/BURST)			VIDEO OUT	

**Note:**

Be sure to carry out the Outdoor white balance Adjustment before doing this Adjustment.

**<Preparation>**

1. Connect the Video output to vectorscope.
2. Aim the camera at colour bar chart and cover the lens with colour temperature conversion filter VFK0713 and VFK0716 to imitate the outdoor lighting.

**<R-Y Gain>**

(Step3 to 5 are R-Y Gain Adjustment)

Push the following keys in order.

3. \* [CMD], [0], [8].  
\* [ADR], [9], [5].
4. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C22.

**<Data Writing for R-Y Gain>**

Push the following keys in order.

5. \* [CMD], [0], [2]. (Do not change the data)  
\* [ADR], [0], [1].  
\* [SET].

**<R-Y PHASE>**

(Step6 to 8 are R-Y Phase Adjustment)

Push the following keys in order.

6. \* [CMD], [0], [8].  
\* [ADR], [9], [7].
7. \* Push the [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

**<Data Writing for R-Y Phase>**

Push the following keys in order.

8. \* [CMD], [0], [2]. (Do not change the data)  
\* [ADR], [1], [1].  
\* [SET].

<B-Y Gain>  
(Step9 to 11 are B-Y Gain Adjustment)

Push the following keys in order.

9. \* [CMD], [0], [8].  
\* [ADR], [9], [4].
10. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

<Data Writing for B-Y Gain>

Push the following keys in order.

11. \* [CMD], [1], [2]. (Do not change the data)  
\* [ADR], [0], [1].  
\* [SET].

<B-Y PHASE>  
(Step12 to 14 are B-Y Phase Adjustment)

Push the following keys in order.

12. \* [CMD], [0], [8].  
\* [ADR], [9], [6].
13. \* Push [INC] or [DEC] keys until phase of red and yellow vectors are as close as possible to Spec. See Fig.C23.

<Data Writing for B-Y Phase>

Push the following keys in order.

14. \* [CMD], [1], [2]. (Do not change the data)  
\* [ADR], [1], [1].  
\* [SET]
15. Repeat the Step(3) to Step(14) until vectors becomes within Spec. as shown in Fig.C23.

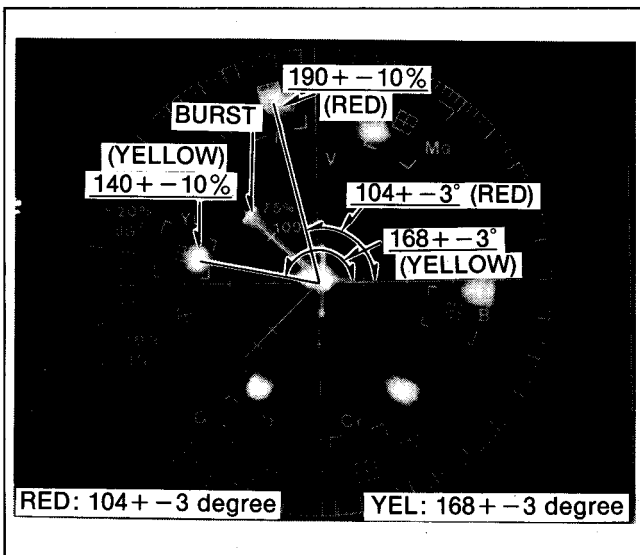


Fig. C23

## 18. DATA WRITING FOR COLOUR REPRODUCTION AND WHITE BALANCE

Purpose:

Each adjustment voltage is recorded in EEPROM as digital data. For colour reproduction adjustments such as white balance, phase and gain adjustments, the adjustments have only been performed for indoor lighting (3200 degree kelvin) and outdoor lighting (5600 degree kelvin). The EEPROM requires the data for other lighting conditions such as 3600 degree kelvin, 4500 degree kelvin and 6000 degree kelvin. In order to supply the rest of the data the following calculation has to be done and the results entered in the proper address of EEPROM.

Misentering:

White balance and colour reproduction in lighting conditions between indoor and outdoor are poor.

Note 1:

VFK0701ROM7 (New ROM) for EVR must be installed in EVR fixture.  
Mode selector should be "A" side.

1. Push [SHIFT 2 + 3] key simultaneously. (All formulas in Fig.C24, are performed and results stored in EEPROM automatically)

Note 2:

How to calculate and enter the data manually. You can do calculation and entering the data to EEPROM manually as follows;

(For example)

ITEM : R-Y GC 36

FORMULA :  $ADR05 + 0.882 \times (ADR01 - ADR05)$

EEPROM ADDRESS : 03

- 1) Read Out the data.  
ADR05 : Set the command to "04".  
Set the address to "05".  
Push the "SET" button.  
The number which is indicated in "DATA" LED is a data of ADR05 (Address "05") for example, if indicated data is "56", substitute "56" to ADR05. (This is hexadecimal number)  
The same as above, read out the data from address "01".  
For example if data which is read out is ADR01="6C", ADR05="56" above formula becomes;  
 $R-Y GC 36 = 56 + -1.00 \times (6C - 56)$ .
- 2) Convert the hexadecimal data into decimal number using conversion table. (Shown in Fig.C18) For example, "56" in hexadecimal is "86" in decimal from intersection of 5 and 6. Substitute it into the formula.  
Therefore,  
 $R-Y GC 36 = 86 + 0.882 \times (108 - 86)$   
 $= 86 + 0.882 \times (22)$   
 $= 105$
- 3) Convert the result "105" to hexadecimal using conversion table (Fig.C18).  
"105" decimal is "69" in hexadecimal.  
Write the "69" into EEPROM address "03".  
\* Set the command to [02].  
\* Set the address to [03].  
\* Set the data [69].  
\* Push the [SET] key.



Calculation for Colour Reproduction

NBR	ITEM	EEPROM ADDRESS	CMD	RESULT OF CALCULATION	FORMULA
(1)	R-Y GC 36	03 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*05''} + 0.882 \times (ADR^{*01''} - ADR^{*05''})$
(2)	R-Y GC 45	02 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*05''} + 0.471 \times (ADR^{*01''} - ADR^{*05''})$
(3)	R-Y GC 28	06 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*05''} + 0.412 \times (ADR^{*01''} - ADR^{*05''})$
(4)	R-Y GC 60	00 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*05''} + 1.000 \times (ADR^{*01''} - ADR^{*05''})$
(5)	R-Y GC 33	04 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*05''} + 0.000 \times (ADR^{*01''} - ADR^{*05''})$
(6)	R-Y MAT 28	16 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*15''} + 0.000 \times (ADR^{*11''} - ADR^{*15''})$
(7)	R-Y MAT 36	13 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*15''} - 0.091 \times (ADR^{*11''} - ADR^{*15''})$
(8)	R-Y MAT 45	12 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*15''} - 0.750 \times (ADR^{*11''} - ADR^{*15''})$
(9)	R-Y MAT 60	10 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*15''} + 1.000 \times (ADR^{*11''} - ADR^{*15''})$
(10)	R-Y MAT 33	14 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*15''}$
(11)	B-Y GC 28	06 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*05''} + 0.333 \times (ADR^{*01''} - ADR^{*05''})$
(12)	B-Y GC 36	03 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*05''} + 0.667 \times (ADR^{*01''} - ADR^{*05''})$
(13)	B-Y GC 45	02 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*05''} + 0.939 \times (ADR^{*01''} - ADR^{*05''})$
(14)	B-Y GC 60	00 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*05''} + 1.000 \times (ADR^{*01''} - ADR^{*05''})$
(15)	B-Y GC 33	04 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*05''} - 0.000 \times (ADR^{*01''} - ADR^{*05''})$
(16)	B-Y MAT 28	16 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*15''} + 0.000 \times (ADR^{*11''} - ADR^{*15''})$
(17)	B-Y MAT 36	13 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*15''} - 1.750 \times (ADR^{*11''} - ADR^{*15''})$
(18)	B-Y MAT 45	12 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*15''} - 1.125 \times (ADR^{*11''} - ADR^{*15''})$
(19)	B-Y MAT 60	10 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*15''} + 1.000 \times (ADR^{*11''} - ADR^{*15''})$
(20)	B-Y MAT 33	14 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*15''}$
(21)	R-Y WB 28	26 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} + 0.455 \times (ADR^{*25''} - ADR^{*21''})$
(22)	R-Y WB 33	24 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 0.242 \times (ADR^{*25''} - ADR^{*21''})$
(23)	R-Y WB 36	23 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 0.485 \times (ADR^{*25''} - ADR^{*21''})$
(24)	R-Y WB 45	22 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 1.136 \times (ADR^{*25''} - ADR^{*21''})$
(25)	R-Y WB 49	29 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 1.000 \times (ADR^{*25''} - ADR^{*21''})$
(26)	R-Y-WB 60	20 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 1.061 \times (ADR^{*25''} - ADR^{*21''})$
(27)	R-Y WB L-LIM	27 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 1.061 \times (ADR^{*25''} - ADR^{*21''})$
(28)	R-Y WB H-LIM	28 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25''} - 1.000 \times (ADR^{*25''} - ADR^{*21''})$
(29)	B-Y WB 28	26 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} + 0.121 \times (ADR^{*25''} - ADR^{*21''})$
(30)	B-Y WB 33	24 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 0.167 \times (ADR^{*25''} - ADR^{*21''})$
(31)	B-Y WB 36	23 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 0.333 \times (ADR^{*25''} - ADR^{*21''})$
(32)	B-Y WB 45	22 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 0.667 \times (ADR^{*25''} - ADR^{*21''})$
(33)	B-Y WB 49	29 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 1.000 \times (ADR^{*25''} - ADR^{*21''})$
(34)	B-Y WB 60	20 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 1.212 \times (ADR^{*25''} - ADR^{*21''})$
(35)	B-Y WB L-LIM	27 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 1.212 \times (ADR^{*25''} - ADR^{*21''})$
(36)	B-Y WB H-LIM	28 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25''} - 1.000 \times (ADR^{*25''} - ADR^{*21''})$

Fig. C24-1

Calculation for Auto White Balance

NBR	ITEM	EEPROM ADDRESS	CMD	RESULT OF CALCULATION	FORMULA
(1)	BH 28	46 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} + 0.864 \times (ADR^{*25} - ADR^{*21})$
(2)	BH 30	45 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} + 0.864 \times (ADR^{*25} - ADR^{*21})$
(3)	BH 36	43 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} + 0.182 \times (ADR^{*25} - ADR^{*21})$
(4)	BH 45	42 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.242 \times (ADR^{*25} - ADR^{*21})$
(5)	BH 51	41 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.788 \times (ADR^{*25} - ADR^{*21})$
(6)	BH 60	40 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 1.500 \times (ADR^{*25} - ADR^{*21})$
(7)	BH TR	48 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} + 0.182 \times (ADR^{*25} - ADR^{*21})$
(8)	BH SKY	47 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 1.561 \times (ADR^{*25} - ADR^{*21})$
(9)	Baxisth	4A (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.788 \times (ADR^{*25} - ADR^{*21})$
(10)	BL 28	36 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.455 \times (ADR^{*25} - ADR^{*21})$
(11)	BL 30	35 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.455 \times (ADR^{*25} - ADR^{*21})$
(12)	BL 36	33 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.485 \times (ADR^{*25} - ADR^{*21})$
(13)	BL 45	32 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.788 \times (ADR^{*25} - ADR^{*21})$
(14)	BL 51	31 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 1.500 \times (ADR^{*25} - ADR^{*21})$
(15)	BL 60	30 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 1.561 \times (ADR^{*25} - ADR^{*21})$
(16)	BL TR	38 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*25} - 0.788 \times (ADR^{*25} - ADR^{*21})$
(17)	BL SK	37 (HIGH DIGIT)	READ : 14 WRITE: 12		$ADR^{*00}$
(18)	RH 28	46 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} + 1.152 \times (ADR^{*25} - ADR^{*21})$
(19)	RH 30	45 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} + 0.333 \times (ADR^{*25} - ADR^{*21})$
(20)	RH 36	43 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.833 \times (ADR^{*25} - ADR^{*21})$
(21)	RH 45	42 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.833 \times (ADR^{*25} - ADR^{*21})$
(22)	RH 51	41 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.470 \times (ADR^{*25} - ADR^{*21})$
(23)	RH 60	40 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.939 \times (ADR^{*25} - ADR^{*21})$
(24)	RH TR	48 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.348 \times (ADR^{*25} - ADR^{*21})$
(25)	RH SK	47 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.939 \times (ADR^{*25} - ADR^{*21})$
(26)	Rxisth	4A (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.833 \times (ADR^{*25} - ADR^{*21})$
(27)	RL 28	36 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} + 0.333 \times (ADR^{*25} - ADR^{*21})$
(28)	RL 30	35 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.288 \times (ADR^{*25} - ADR^{*21})$
(29)	RL 36	33 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 0.833 \times (ADR^{*25} - ADR^{*21})$
(30)	RL 45	32 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.348 \times (ADR^{*25} - ADR^{*21})$
(31)	RL 51	31 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.682 \times (ADR^{*25} - ADR^{*21})$
(32)	RL 60	30 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.742 \times (ADR^{*25} - ADR^{*21})$
(33)	RL TR	38 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.803 \times (ADR^{*25} - ADR^{*21})$
(34)	RL SK	37 (LOW DIGIT)	READ : 04 WRITE: 02		$ADR^{*25} - 1.803 \times (ADR^{*25} - ADR^{*21})$

Fig. C24-2

19. ADDITIONAL FOR  
HOW TO USE E.V.R.

E.V.R. FIXTURE

Camera Process section uses a memory IC called a E.E.P.R.O.M.(Electrical Erasable Programmable Read Only Memory) that replaces the variable resistor in conventional camera process. In the conventional camera process, each adjustment point was adjusted by turning variable resistors as shown in Fig.C25. In the Movie Camera adjustment voltage is recorded in the EEPROM as 8 bit digital data. The EEPROM supplies the recorded adjustment voltage to the adjustment point as shown in Fig.C26.

The data in the EEPROM can be changed electrically. The E.V.R.(Electric Variable Resistor) has been designed to change the 8 bit data of EEPROM in process circuit. The E.V.R. can also communicate directly with the RAM of the micro processor to change each control voltage. In normal operation the EEPROM would send the voltage data to RAM where the digital data is used to changed the adjustment values in the various circuits. Using the E.V.R. you can change the data stored in the EEPROM easily there by adjusting the camera process section. And the E.V.R. can also send the data to the RAM directly to confirm the adjustment.

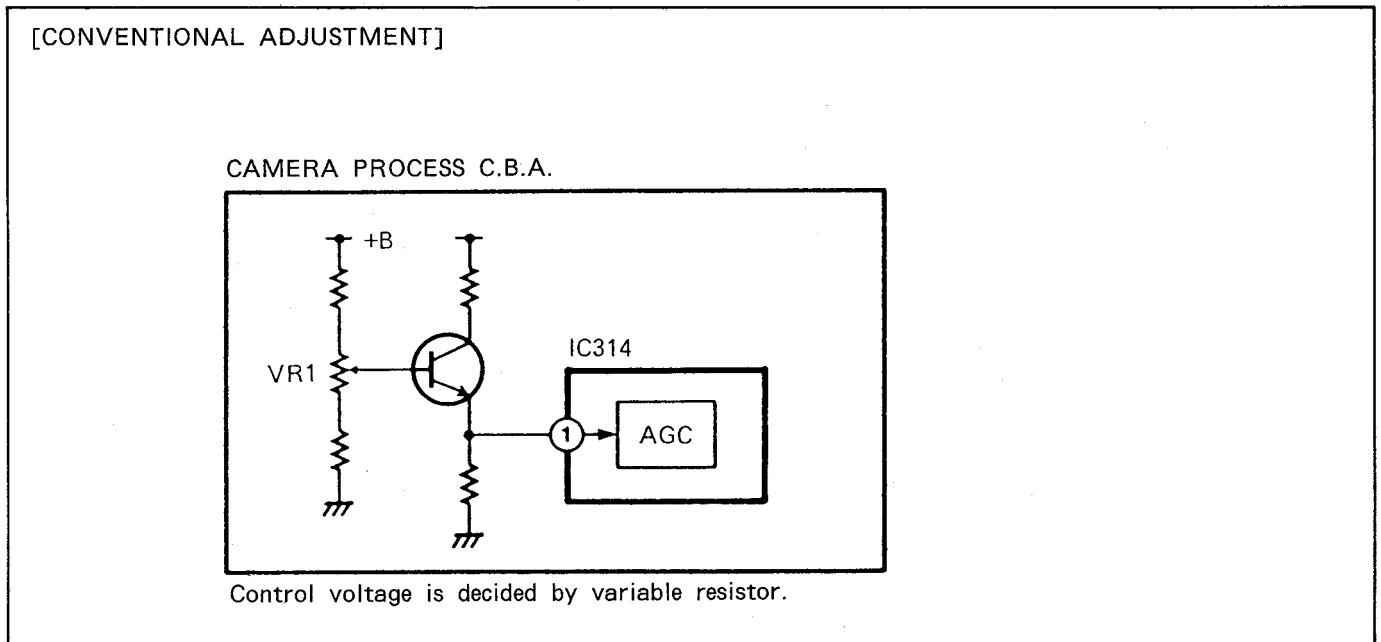


Fig. C25

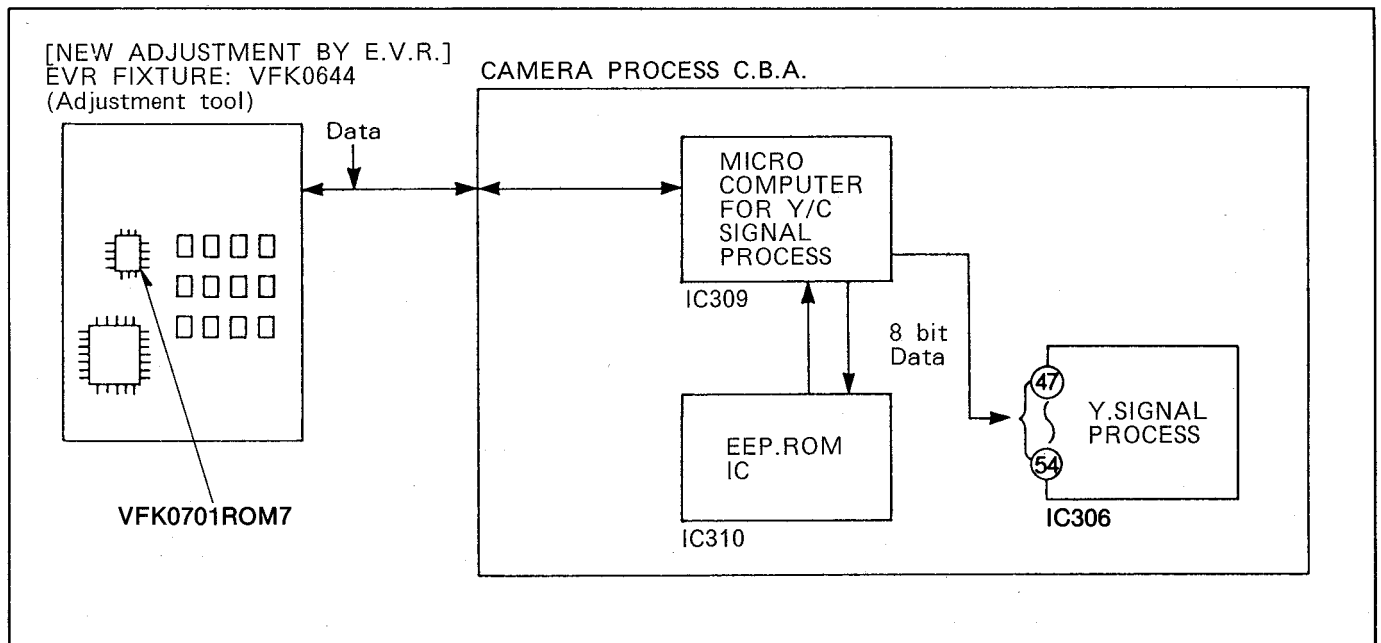
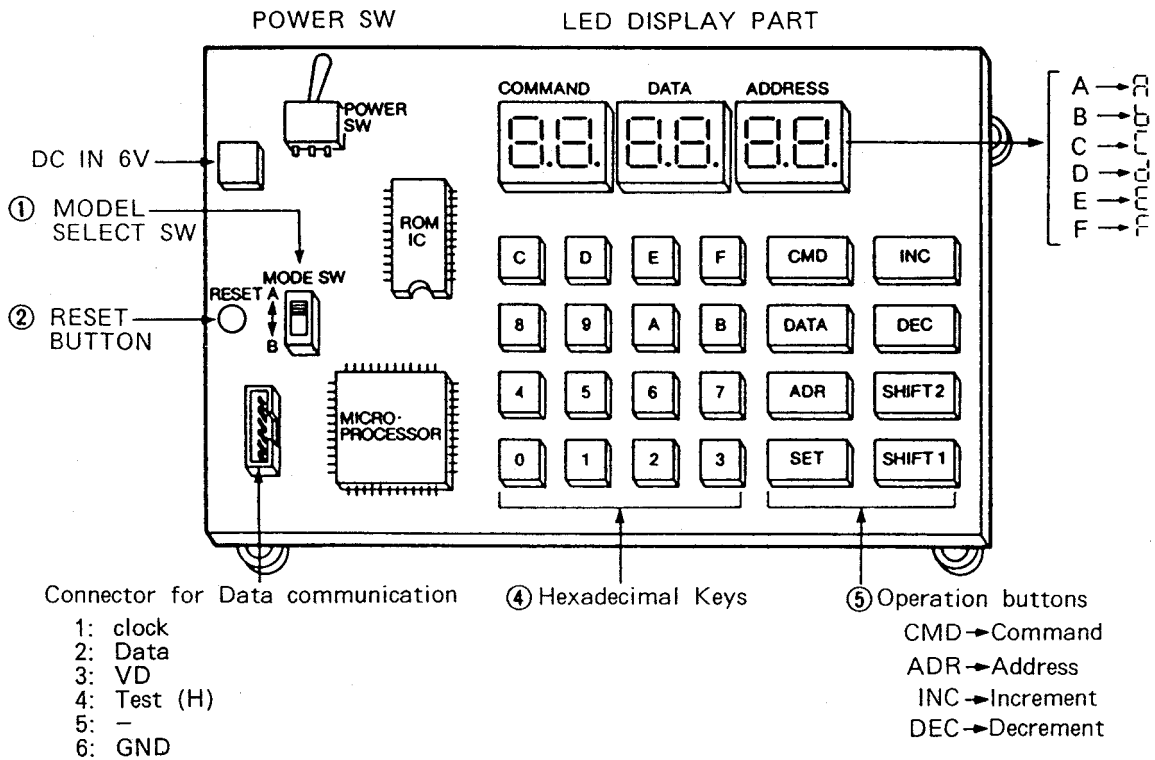


Fig. C26

Name of key



NO.	NAME	DESCRIPTION
①	MODE SW	MODEL selection switch. In case of this model turn it to A side
②	RESET BUTTON	After Power is on, if operation is not stable, push this SW.
③	ROM IC	ROM IC of which Programing (to operate E.V.R) is memorized in. In the future, to cope with new camcorder servicing, this ROM IC could be replaced to new version.
④	HEXADECIMAL KEYS	Key buttons of 16 pieces (from "0" to "F"). These are used when "COMMAND", "DATA" or "ADDRESS" is set.
⑤	OPERATION BUTTONS	The buttons to operate writing, reading or setting the data.
	CMD: Command button	This is used to decide the which mode (command) between E.V.R and camcorder (for example, data writing or reading) to perform.
	DATA: Data button	For changing Data.
	ADR: Address button	To appoint the EEPROM address or RAM address.
	SET: Set button	To perform the appointed command (for example reading or writing).
	INC: Incliment DEC: Decliment	Increase or decrease the data one by one (+1, -1)
	SHIFT 1 button	To carry out macro operation (while pushing with hexadecimal keys) SHIFT 1 button is used. (Macro operations will be described later)
	SHIFT 2 button	To carry out macro operation(while pushing with hexadecimal keys) SHIFT 2 button is used (Macro operations will be described later.)

Fig. C27

(Before Adjusting How to use the E.V.R. Fixture)

- 1) How to read out the data which is being stored in EEPROM.  
Connect the E.V.R. Fixture as shown in Fig.C3.

Result:

Adjustment value of AGC has been set for "6A". It is advisable to read out the data like this and make a note of it before writing the new data so that if an error should occur you can rewrite original data.




Item	Proceduring Order	Buttons to be Pushed	LED Indication
For Example, Reading out the data of AGC Adjustment communication from camcorder to E.V.R. EEPROM → E.V.R.	1	Set the Command mode to "14", "14" is read out command. (Refer to command description)	 LED lights up Command setting
	2	Set the Address of EEPROM	 Address setting LED lights up of EEPROM
	3	Read out the data	 data for AGC LED lights up for example

Fig. C28

2) Writing the New Data.

- (1) Search and Write Procedure  
(For example : AGC Adjustment).

Procedure:

1. Set the Command to [04].
2. Set the Address to [41].
3. Push the [SET] button.
4. The number which is indicated on DATA LED is a data which has been written.

Confirmation:

Confirm whether data is written correctly or not.



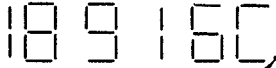
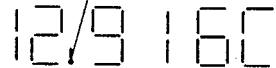
Item	Proceduring Order	Buttons to be Pushed	LED Indication
For Example, writing the AGC adjustment data. E.V.R. → EEPROM	1	Set the command to "18".	 Command for search mode.
	2	Set the Address of RAM to "BC" E.V.R. → RAM (communication from E.V.R. to RAM)	 LED lights up.
	3	Adjustment Push "DEC" or "INC" button so that AGC at B302-20 becomes 240	 LED lights up
	4	Change the command to "12"	 LED lights up Command for Direct Writing

Fig. C29

Item	Proceduring Order	Buttons to be Pushed	LED Indication
	5	Set the address of EEPROM to "6A"  <b>ADR</b> <b>4</b> <b>F</b>	address of EEPROM 02 9 16 A LED lights up
	6	Do not change the data after adjustment  <b>DATA</b> <b>9</b> <b>1</b>	02 9 16 A LED lights up
	7	Write the data  <b>SET</b> Push this for 2sec.	LED disappear 02 9 16 A

Fig. C30

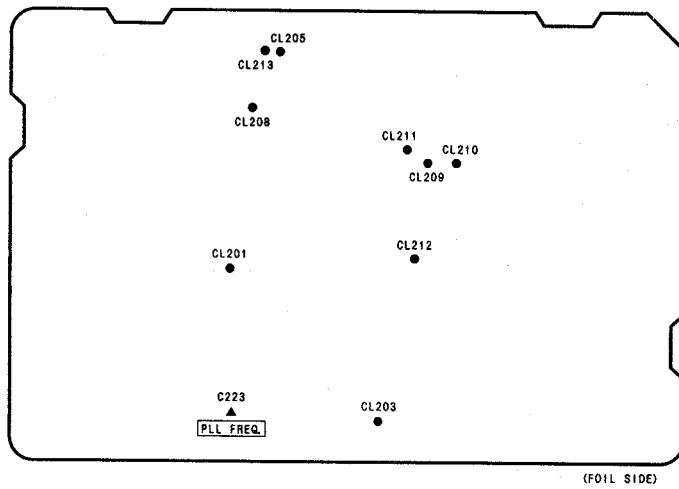
3) Direct Writing Procedure

Item	Proceduring Order	Buttons to be Pushed	LED Indication
For Example, writing the AGC adjustment data	1 2 3	<b>Searching the best Point.</b> same as (1)	same as (2)
	4	Change the command to "01"  <b>CMD</b> <b>1</b> <b>2</b>	LED lights up 12/0021 Command for Direct writing
	5	Set the address of EEPROM to "6A"  <b>ADR</b> <b>6</b> <b>A</b>	address of EEPROM 12 006 A LED lights up
	6	Set the data of best point "91"  <b>DATA</b> <b>9</b> <b>1</b>	12 9 16 A LED lights up
	7	Write the data  <b>SET</b> Push this for 2sec.	LED disappear. 12 9 16 A

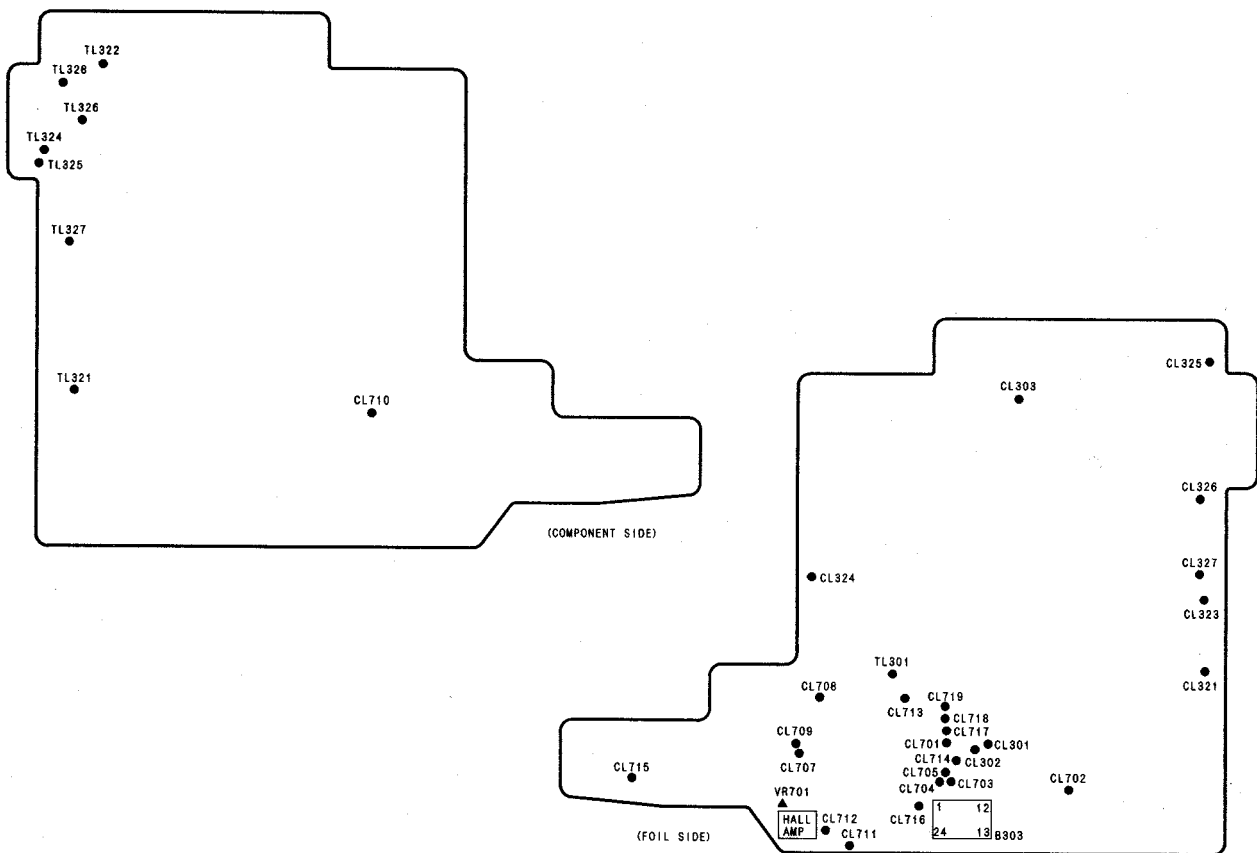
Fig. C31

# LOCATION OF TEST POINTS AND CONTROLS (1)

CCD DRIVE C.B.A.

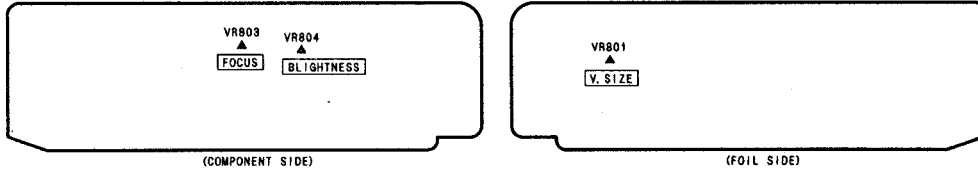


PROCESS & AF C.B.A.

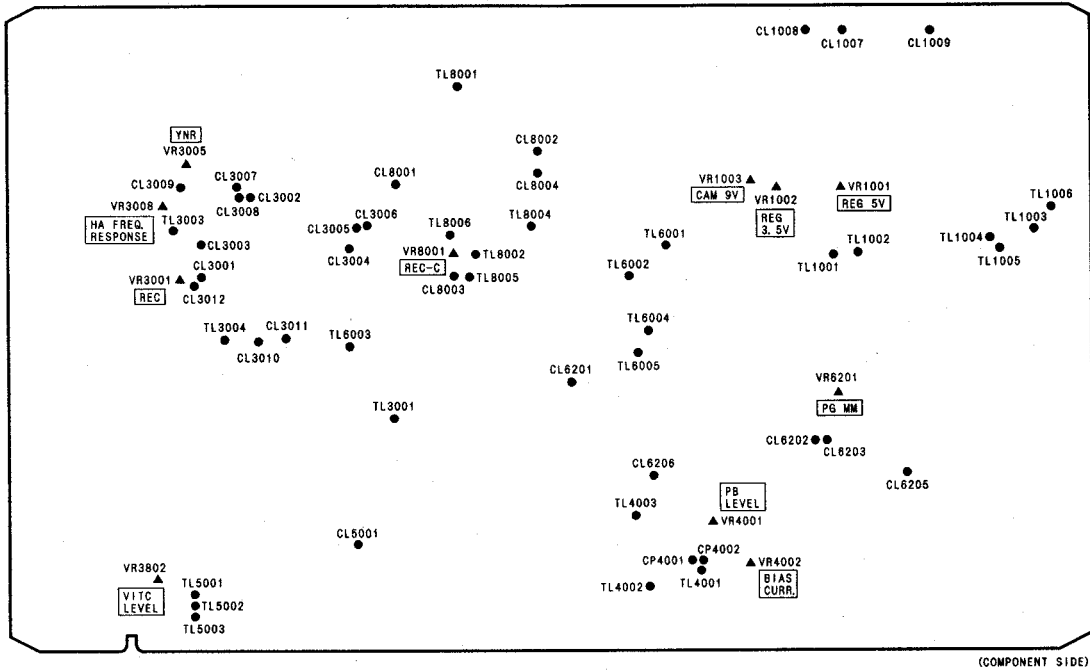


# LOCATION OF TEST POINTS AND CONTROLS (2)

## E.V.F. C.B.A.



## MAIN C.B.A.





## 2-5-2. ELECTRICAL ADJUSTMENT FOR E.V.F. SECTION

The following adjustment are for Electric Viewfinder.

- (1) Connect the Viewfinder plug to the E.V.F. connector on the unit.
- (2) The camera circuit must be completely aligned before viewfinder adjustments are made.

### 1. CENTERING ADJUSTMENT

- (1) Aim the camera at the registration chart.
- (2) Adjust the deflection Yoke centering magnets turning them so that the picture on monitor TV is centered.

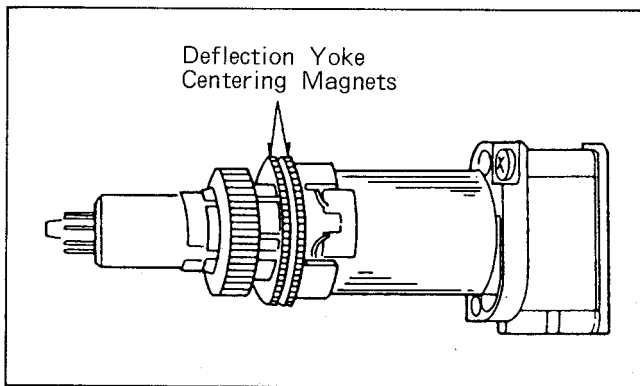


Fig. E1

### 2. FOCUS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
X	VR803	NO	BALL CHART
M. EQ.		SPEC.	
VIEWFINDER		BEST RESOLUTION	

NOTE VR803: E.V.F. C.B.A.

- 1) Aim the camera at Ball chart.
- 2) Adjust the VR803 for best resolution in viewfinder.

### 3. V.SIZE ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
X	VR801	NO	GRAY SCALE CHART
M. EQ.		SPEC.	
VIEWFINDER		VERTICAL SIZE IS FIXED	

NOTE:

VR801 : E.V.F. C.B.A.

- (1) Aim the camera at the gray scale chart.
- (2) Adjust the vertical size(VR801) so that the vertical size is correct and the picture does not roll as shown in Fig.E2.

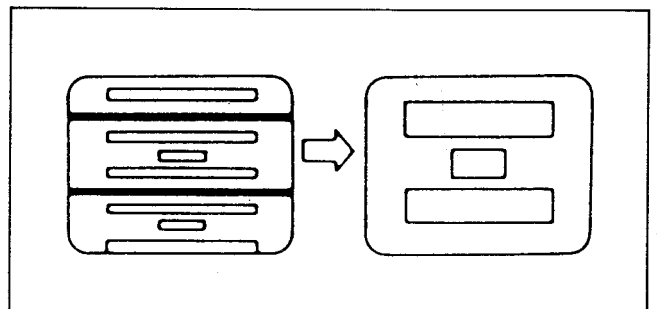


Fig. E2

### 4. BRIGHTNESS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
X	VR804	NO	GRAY SCALE CHART
M. EQ.		SPEC.	
VIEWFINDER		NATURAL GRADATION	

NOTE:

VR804 : E.V.F. C.B.A.

- (1) Aim the camera at gray scale chart.
- (2) Adjust the brightness control(VR804) so that the black and white bars in the E.V.F. screen are the same as they are in the monitor TV screen.

## 2-5-3. ELECTRICAL ADJUSTMENT FOR VTR SECTION

### TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the VTR section of VHS-Movie.

1. VTVM (Vacuum Tube Volt Meter)  
DVM (Digital Volt Meter)  
Voltage Range: 0.01-50V
2. Dual Trace Oscilloscope  
Voltage Range: 0.06-50V/div  
Frequency Range: 0-50MHz  
Probe: 10:1 or 1:1
3. Frequency counter  
Frequency Range: 0-10MHz
4. Signal Generator (Sinewave)  
Frequency Range: 0-10MHz
5. Video Sweep Generator  
Frequency Range: 0-10MHz
6. Colour Monitor TV
7. Plastic Tip Driver
8. VHS-Movie. Alignment Tape (VFJ8125H3F)
9. VHS-Movie. Blank Tape
10. Pattern Generator
11. Vectorscope
12. DC Power Supply

### PREPARATION

1. Remove the casing panels.  
(Refer to the disassembly method)
2. Connect the extension cable if necessary.  
VFK0823

### HOW TO READ THE ADJUSTMENT PROCEDURES

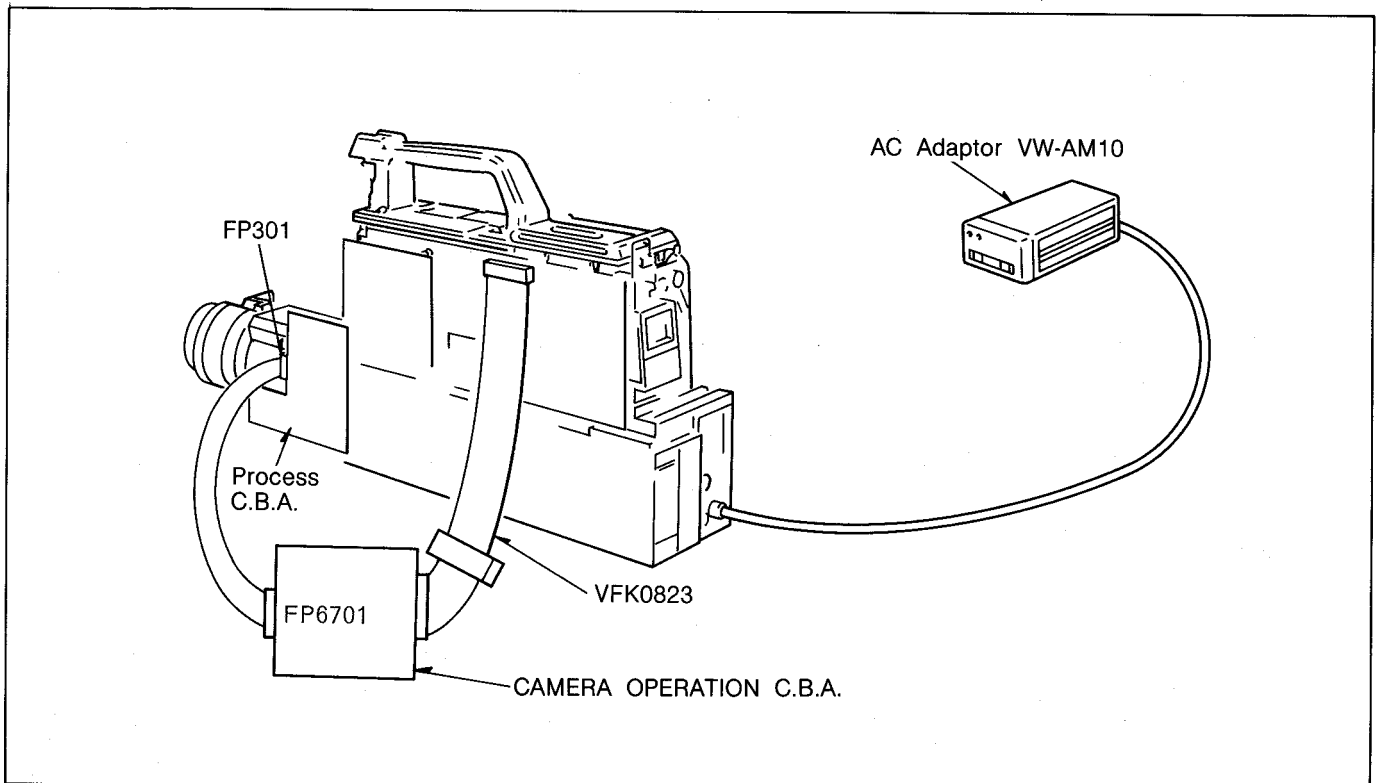
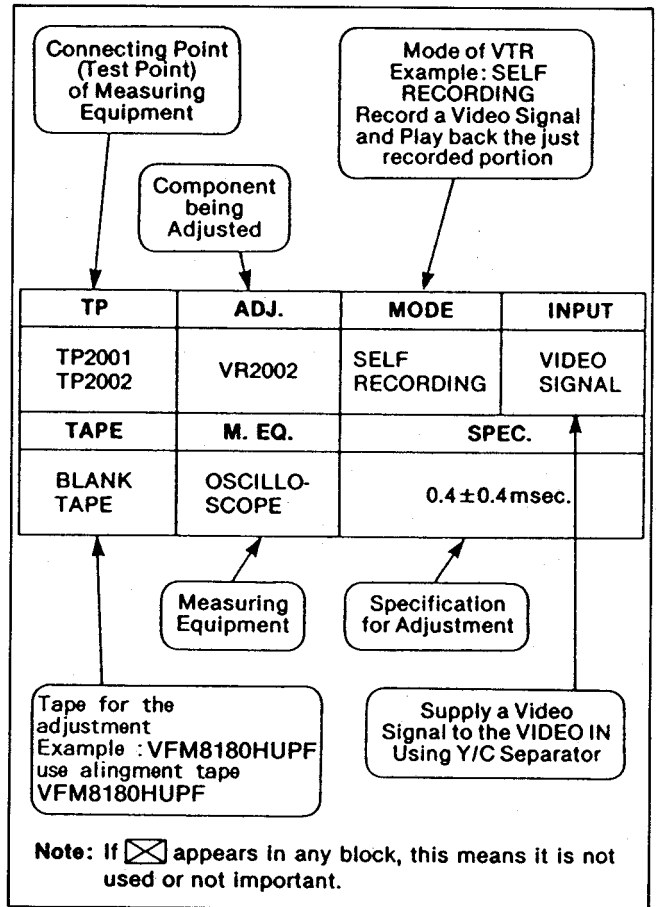


Fig. V1

## TRIGGERING THE OSCILLOSCOPE

To trigger the Oscilloscope, the following test point is used.

H. rate : TP (video output)  
V. rate : TP6201 (Head Switching signal)

## POWER SECTION

### 1. REG. 5V ADJUSTMENT

Purpose:

To properly calibrate the 5V voltage to 4.87 DC $\pm$ 0.025V.

Symptom of Misadjustment:

All circuits in the unit will not operate properly.

TP	ADJ.	MODE	INPUT
TL1001 (HOT) TL1006 (GND)	VR1001	VHS CAMERA RECORDING (EIS ON)	X
TAPE	M. EQ.	SPEC.	
VHS BLANK TAPE	D.V.M.	4.87 $\pm$ 0.025V	

Note:

Sensor, process, and camera operation C.B.A. are connect to the main C.B.A.

- (1) Connect the D.V.M. To TL1001(HOT) and TL1006 (GND) Adjust the VR1001 so that D.V.M. is 4.87 $\pm$ 0.025V.

### 2. CAMERA 3.5V ADJUSTMENT

Purpose:

To properly calibrate the voltage to 3.51V DC  $\pm$ 0.025V.

Symptom of Misadjustment:

All circuits in N Unit will not operate properly.

TP	ADJ.	MODE	INPUT
TL1002 (HOT) TL1006 (GND)	VR1002	VHS CAMERA RECORDING (EIS ON)	X
TAPE	M. EQ.	SPEC.	
VHS BLANK TAPE	D.V.M.	3.51 $\pm$ 0.025V	

Note:

Sensor, process, and camera operation C.B.A. are connect to the main C.B.A.  
Turn the power sw on and then set EIS system to the ON position.

- (1) Connect the D.V.M. to the TL1002(HOT) and TL1006(GND) Adjust the VR1002 so that D.V.M. is 3.51 $\pm$ 0.025V.

### 3. CAMERA 9V REGULATOR

TP	ADJ.	MODE	INPUT
TL1003 (HOT) TL1006 (GND)	VR1003	VHS CAMERA RECORDING (EIS ON)	X
TAPE	M. EQ.	SPEC.	
BLANK TAPE	D.V.M.	8.70 $\pm$ 0.05V -0.05V	

Note:

Eis system must be set to the ON position.

- (1) Connect the D.V.M. To TL1003(HOT) and TL1006 (GND) Adjust the VR1003 so that D.V.M. is 8.70 $\pm$ 0.05V, -0.05V.

## SERVO SECTION

### 4. PG SHIFTER ADJUSTMENT

Purpose:

Determine the Head Switching point during play-back.

Symptom of Misadjustment:

May cause Head Switching Noise and/or Vertical jitter in the picture.

TP	ADJ.	MODE	INPUT
B6001 ⑥ (CKJ6) VIDEO OUT	VR6201	PLAY	X
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE (VFJ8125H3F)	OSCILLO- SCOPE	6.5H $\pm$ 0.5H	

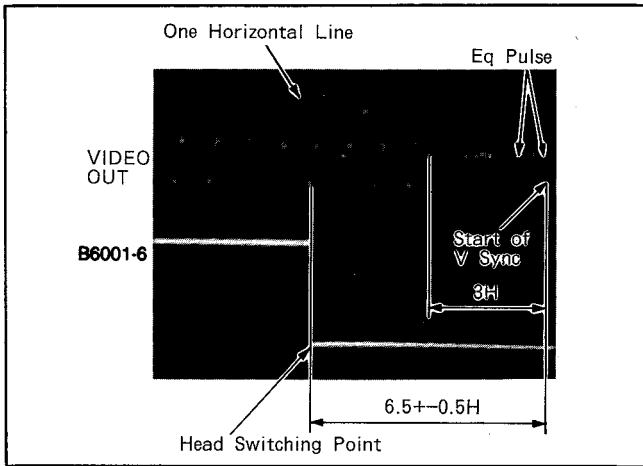


Fig. V2

**LUMINANCE & CHROMINANCE SECTION**

**5. RECORDING CURRENT ADJUSTMENT  
REC CHROMA LEVEL ADJUSTMENT**

Purpose:  
Set the optimum Record Chroma Level.

Symptom of Misadjustment:  
If the Record Chroma Level is too high, Beats may be seen in the picture. If the Level is too low, Picture will be Black and White.

TP	ADJ.	MODE	INPUT
TL5001 (HOT) TL5002 (GND)	VR8001	VHS REC/PLAY	COLOUR BAR
TAPE	M. EQ.	SPEC.	
VHS BLANK TAPE	OSCILLO- SCOPE	14+ -2mVp-p	

Note 1: Cover the Lens with cap.

- Note 2:  
Minimize the luminance recording current by turning VR3001 before this adjustment.
1. Connect the oscilloscope to TL5001(HOT) and TL5002(GND).
  2. Aim the camera at colour bar.
  3. Make recording with SP mode.
  4. Eliminate luminance signal by turning off.
  5. Adjust the VR8001 so that chroma level is 14+ -2mVp-p.

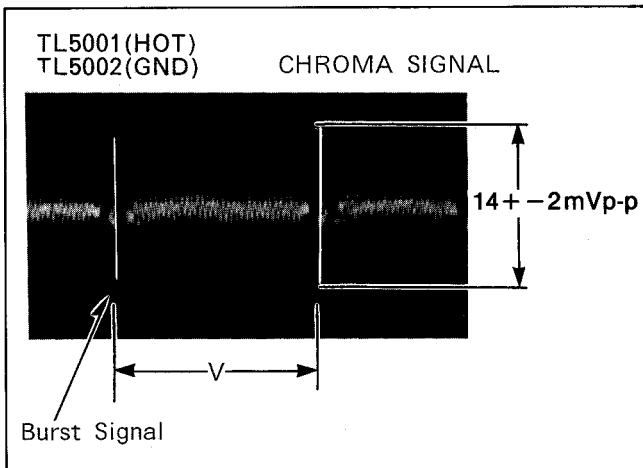


Fig. V3

**6. LUMINANCE RECORDING CURRENT ADJUSTMENT**

Purpose:  
Set the optimum Recording Luminance Level.

Symptom of Misadjustment:  
If the Record Luminance Level is too high, video may overload.  
If the Level is too low, the S/N Ratio deteriorates.

TP	ADJ.	MODE	INPUT
TL5001 (HOT) TL5002 (GND)	VR3001	VHS REC/PLAY	DARK PICTURE
TAPE	M. EQ.	SPEC.	
VHS BLANK TAPE	OSCILLO- SCOPE	120+ -5mVp-p	

Note: Cover the Lens with cap.

1. Connect the oscilloscope to TL5001(HOT) and TL5002(GND).
2. Aim the camera at colour bar.
3. Make recording with SP mode.
4. Adjust the VR3001 so that luminance level is 120+ -5mVp-p.

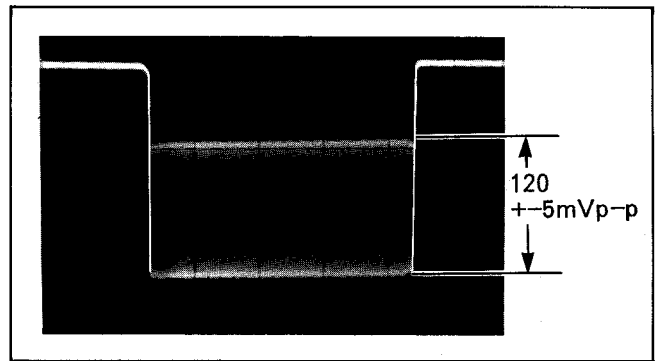


Fig. V4

**7. YNR ADJUSTMENT**

Purpose:  
Improve the overall S/N Ratio especially in the Low Frequency component.

Symptom of Misadjustment:  
The S/N Ratio is low.

TP	ADJ.	MODE	CHART
TL3004	VR3005	PLAY	COLOUR BAR
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE VFJ8125H3F	OSCILLO- SCOPE	SIGNAL IS MINIMIZED (LESS THAN 50mV)	

1. Play Back the Alignment tape.
2. Connect the Video output to oscilloscope.
3. Adjust VR3005 so that signal is minimized.

### 8. HEAD AMP FREQUENCY RESPONSE ADJUSTMENT

Purpose:

To improve Video Frequency Response Level.

Symptom of Misadjustment:

Video Frequency Response deteriorates.  
Picture is noisy.

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3008	SELF RECORDING	VIDEO SWEEP SIGNAL
TAPE	M. EQ.	SPEC.	
BLANK TAPE	VIDEO SWEEP/ OSCILLOSCOPE	A=0dB±1dB (89~112%)	

Note:

Process C.B.A. must be remove.

1. Set the sweep generator output as shown below.

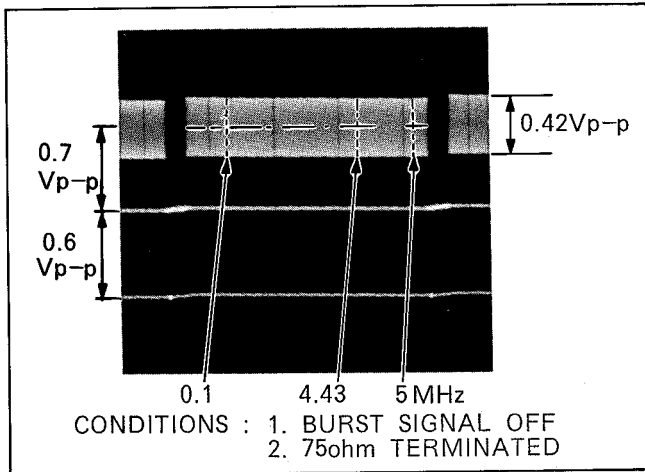


Fig. V5

2. Supply sweep signal to C3060.
3. Record the signal for ten minutes.
4. Play back the recorded signal.
5. Adjust VR3008 so that the level is within the 2MHz spec. as shown below.

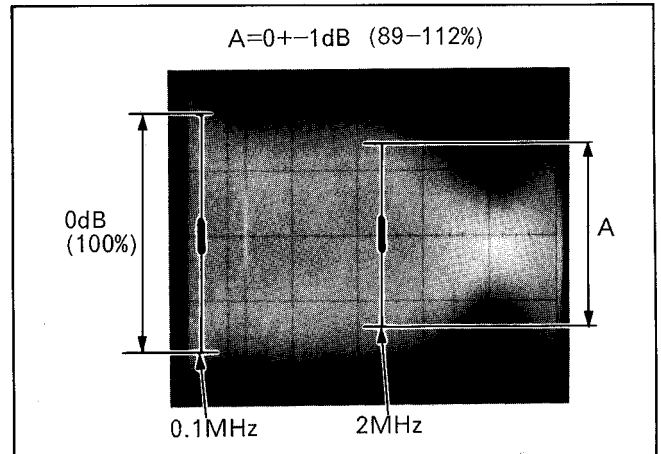


Fig. V6

### AUDIO SECTION

#### 9. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TL4001 (HOT) TL4002 (GND)	VR4002	REC	disconnect P4001
TAPE	M. EQ.	SPEC.	
BLANK TAPE	oscilloscope (V.T.V.M.)	7.6±0.3mVp-p (2.7mVrms±0.1mVrms)	

Note:

Connector(P4001) must be disconnected.

## 10. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR4001	VHS REC/PB	1 kHz Audio 56.5±33mVp-p (-34±0.5dB) CKR1 (P4001 ③) IN CKR2 (P4001 ②) GND
TAPE	M. EQ.	SPEC.	
BLANK TAPE	SIGNAL GENERATOR/ OSCILLO- SCOPE (V.T.V.M)	1.1±0.1Vp-p (-8±0.5dB)	

**Note:**

Audio bias current adjustment must be completed before this adjustment.

1. Supply the audio signal (1KHz/-34dB sine-wave) to audio circuit through the test point. (CKR1,CKR2)
2. Audio VR4001 so that the level is PB Level 1.1±0.1Vp-p (-8dB±0.5dB).

## 11. VITC SIGNAL LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3802	VHS SELF RECORDING	GRAY SCALE CHART
TAPE	M. EQ.	SPEC.	
X	VITC GENERATOR/ OSCILLO- SCOPE	V/S 1.8±0.07 (540±20mVp-p)	

1. Aim the Camera at Gray Scale Chart.
2. Set the unit to VHS-Movie. Mode and set to recording mode.
3. Adjust the VR3802 so that ratio of V and S is 1.8±0.07 as shown below.

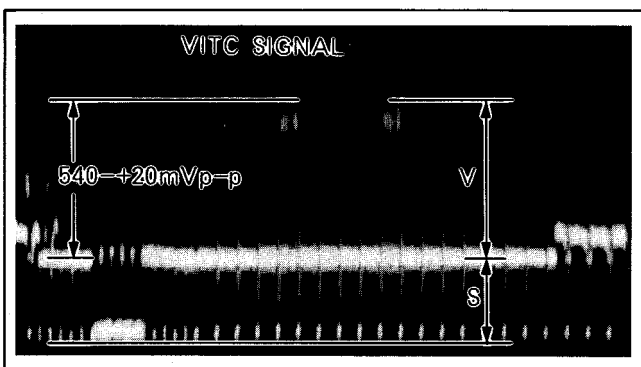
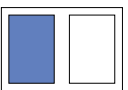
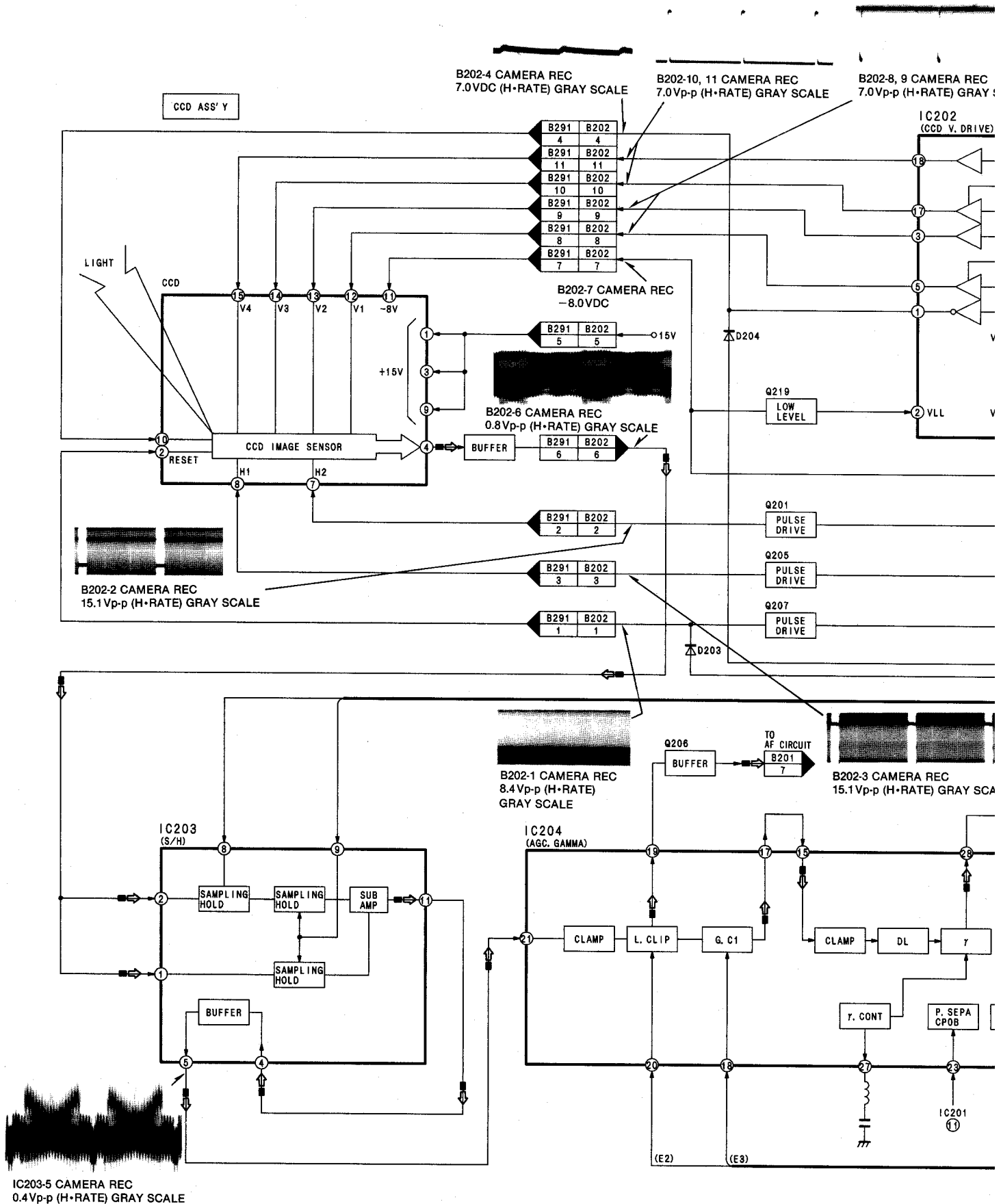


Fig. V7

# SECTION 3

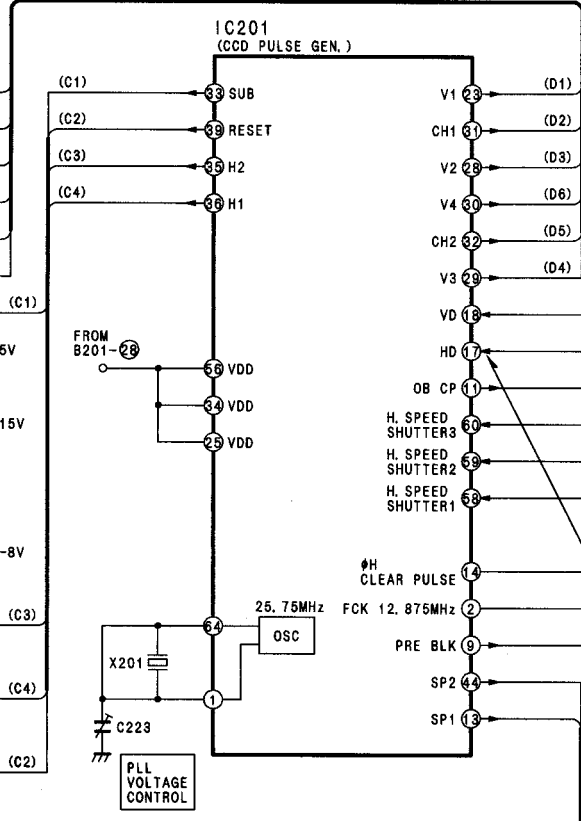
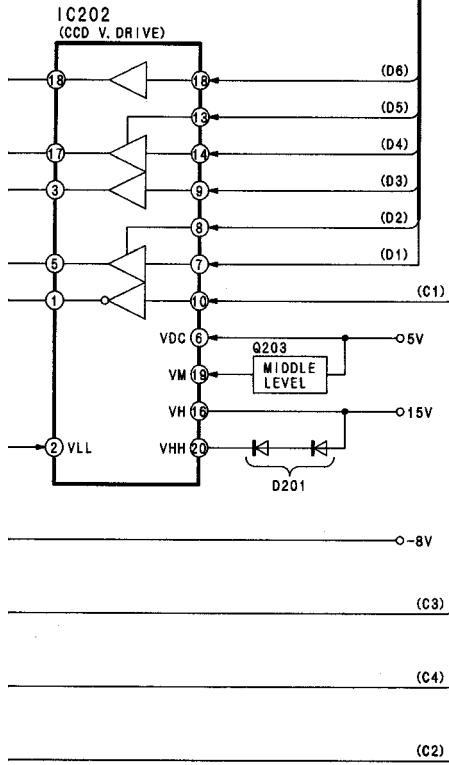
## BLOCK DIAGRAM & SCHEMATIC DIAGRAMS

### 3-1. CCD DRIVE BLOCK DIAGRAM



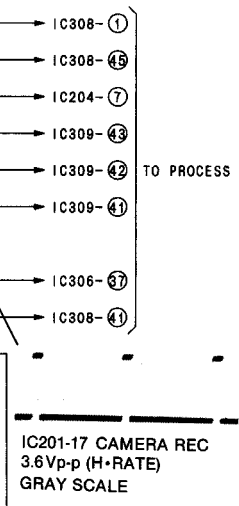
← PRE VIDEO SIGNAL

1.8, 9 CAMERA REC  
p-p (H-RATE) GRAY SCALE

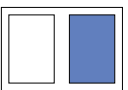
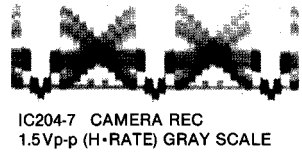
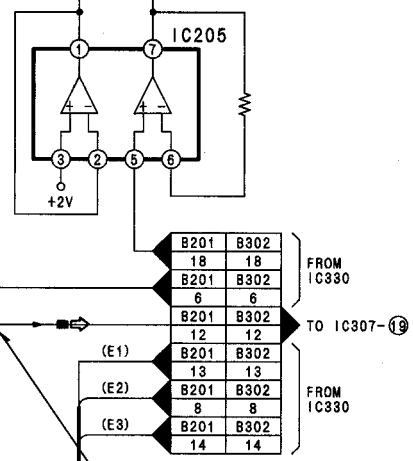
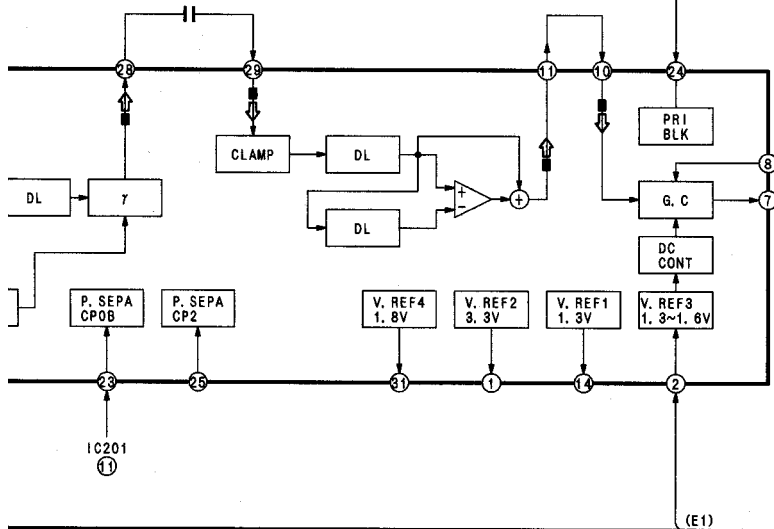


HIGH SPEED SHUTTER MODE

68	69	60	
H	H	H	1/50
H	L	L	1/120
L	H	L	1/250
H	H	L	1/500
L	L	H	1/1000
H	L	H	1/2000
L	H	H	1/4000

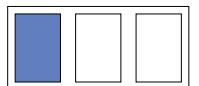
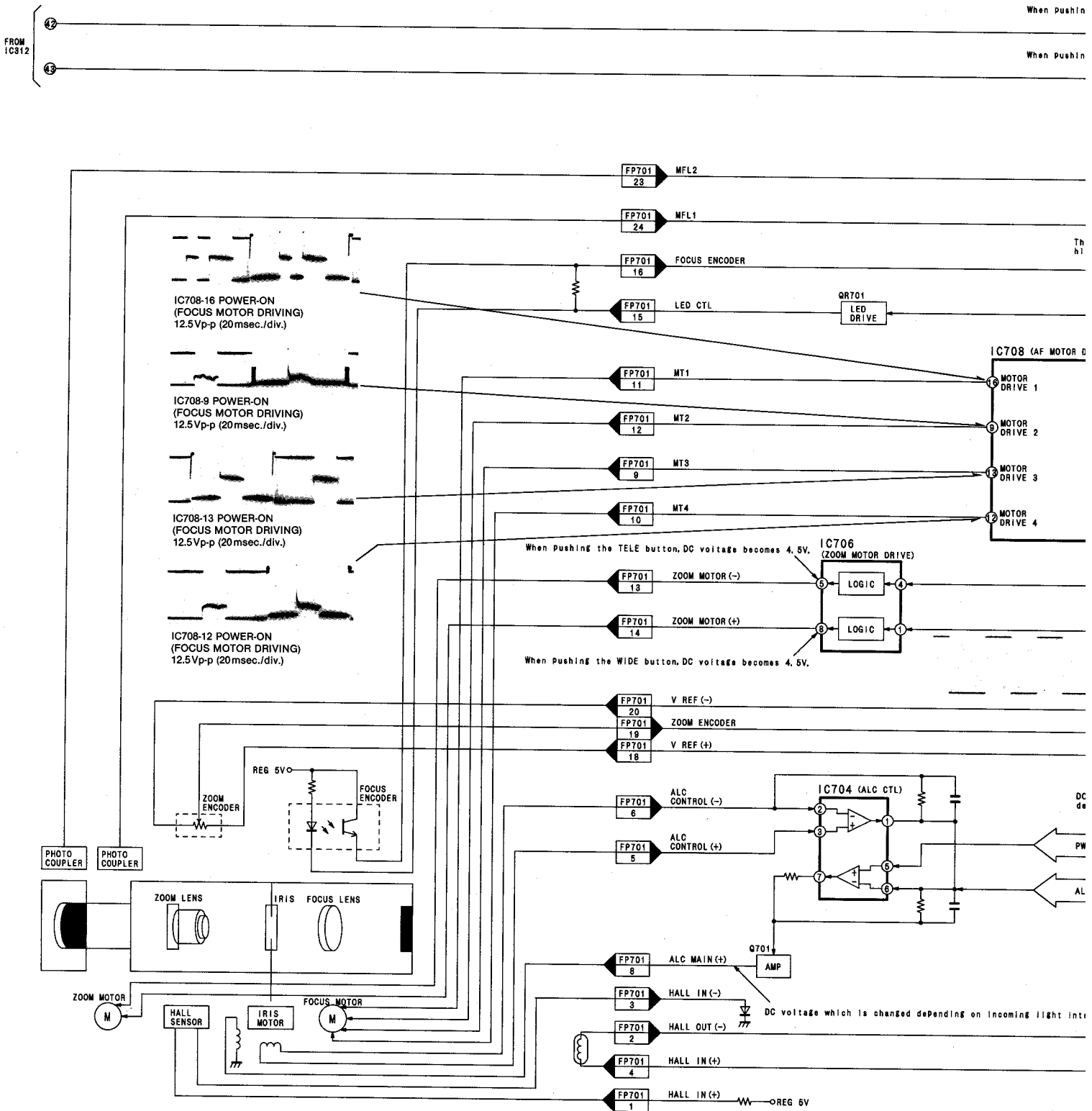


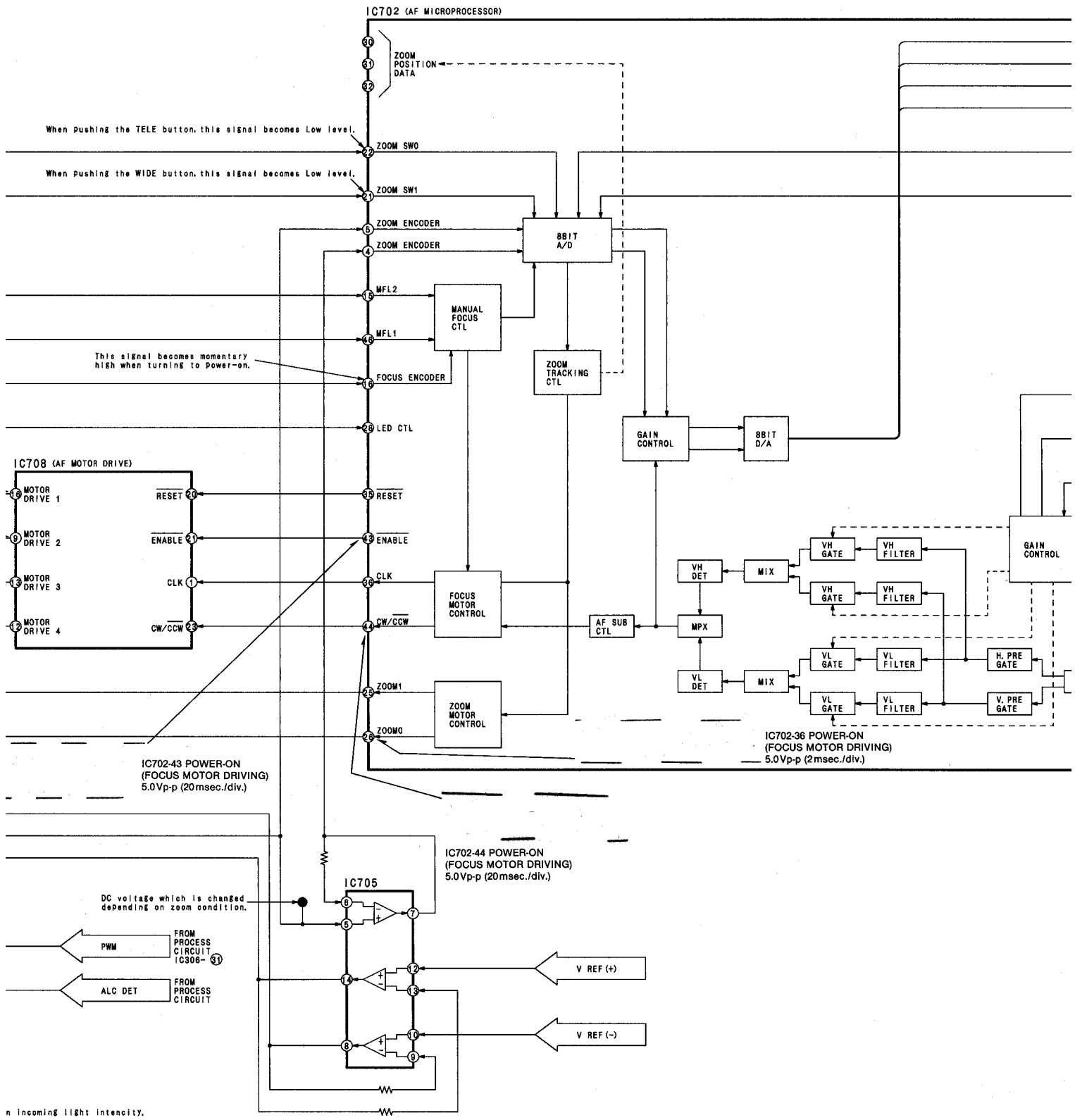
1.8, 9 CAMERA REC  
(H-RATE) GRAY SCALE



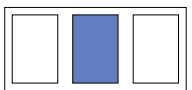


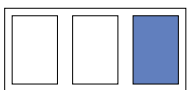
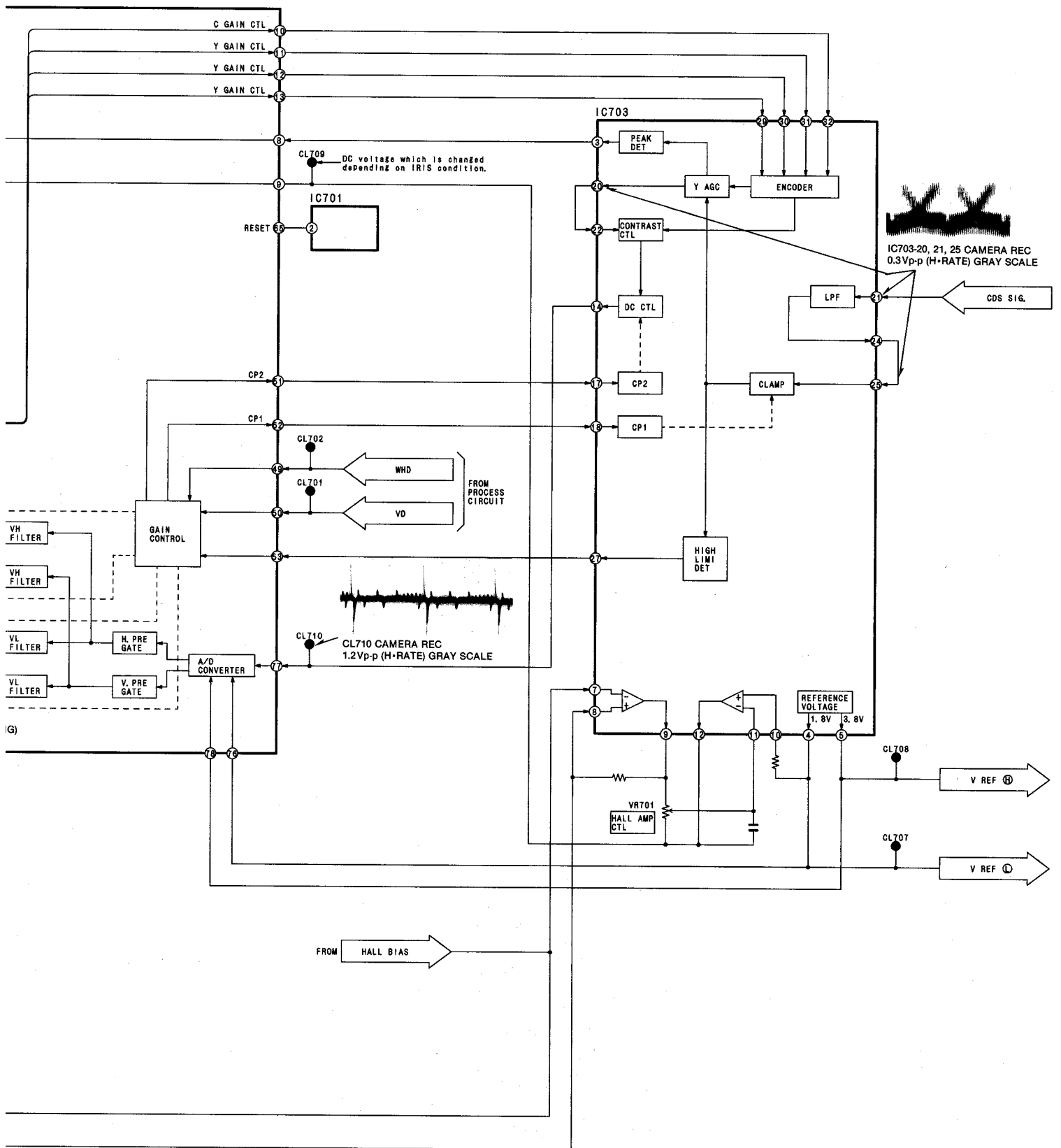
# 3-2. AUTO FOCUS BLOCK DIAGRAM



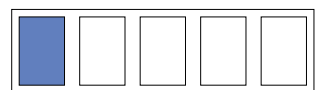
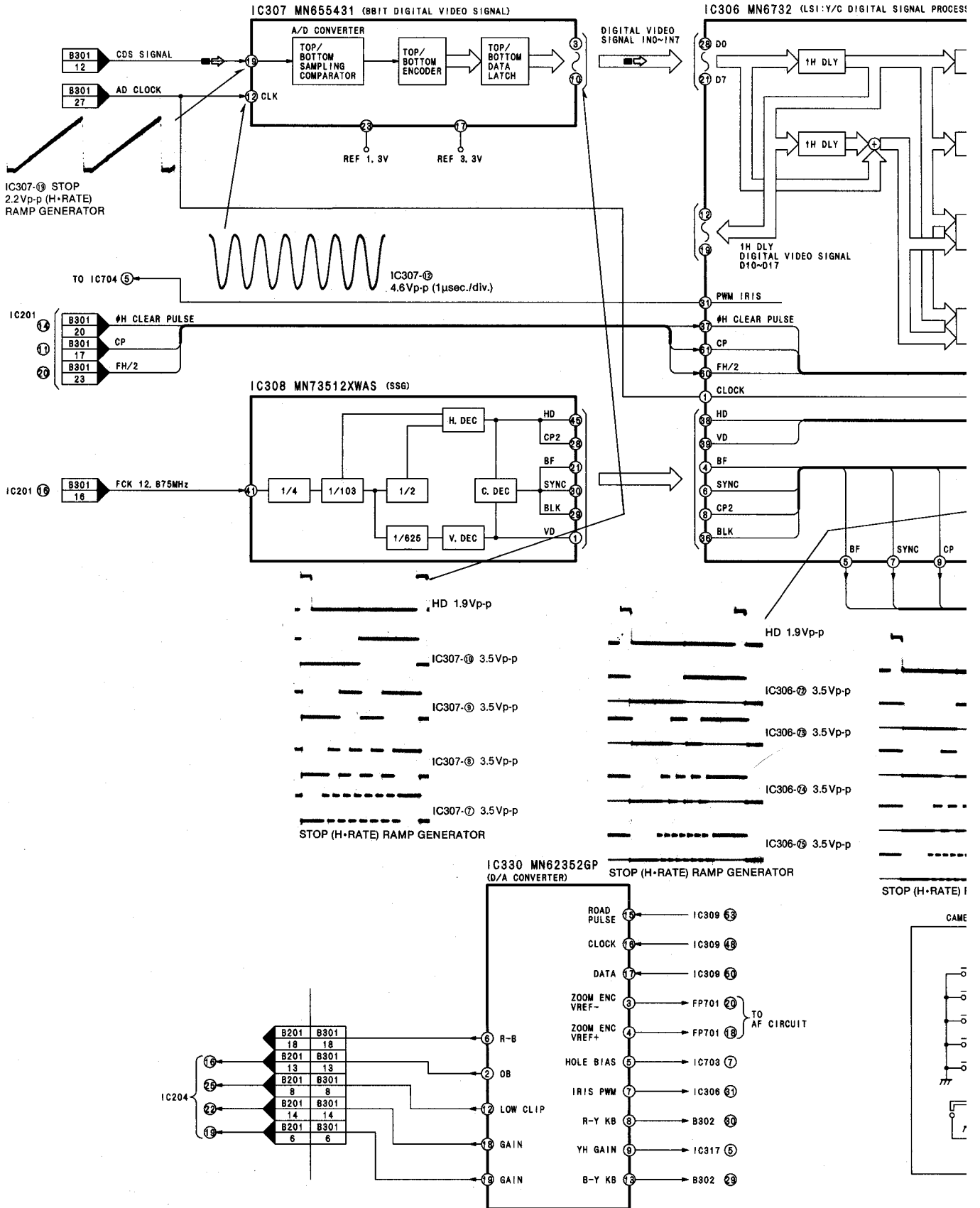


n incoming light intensity.





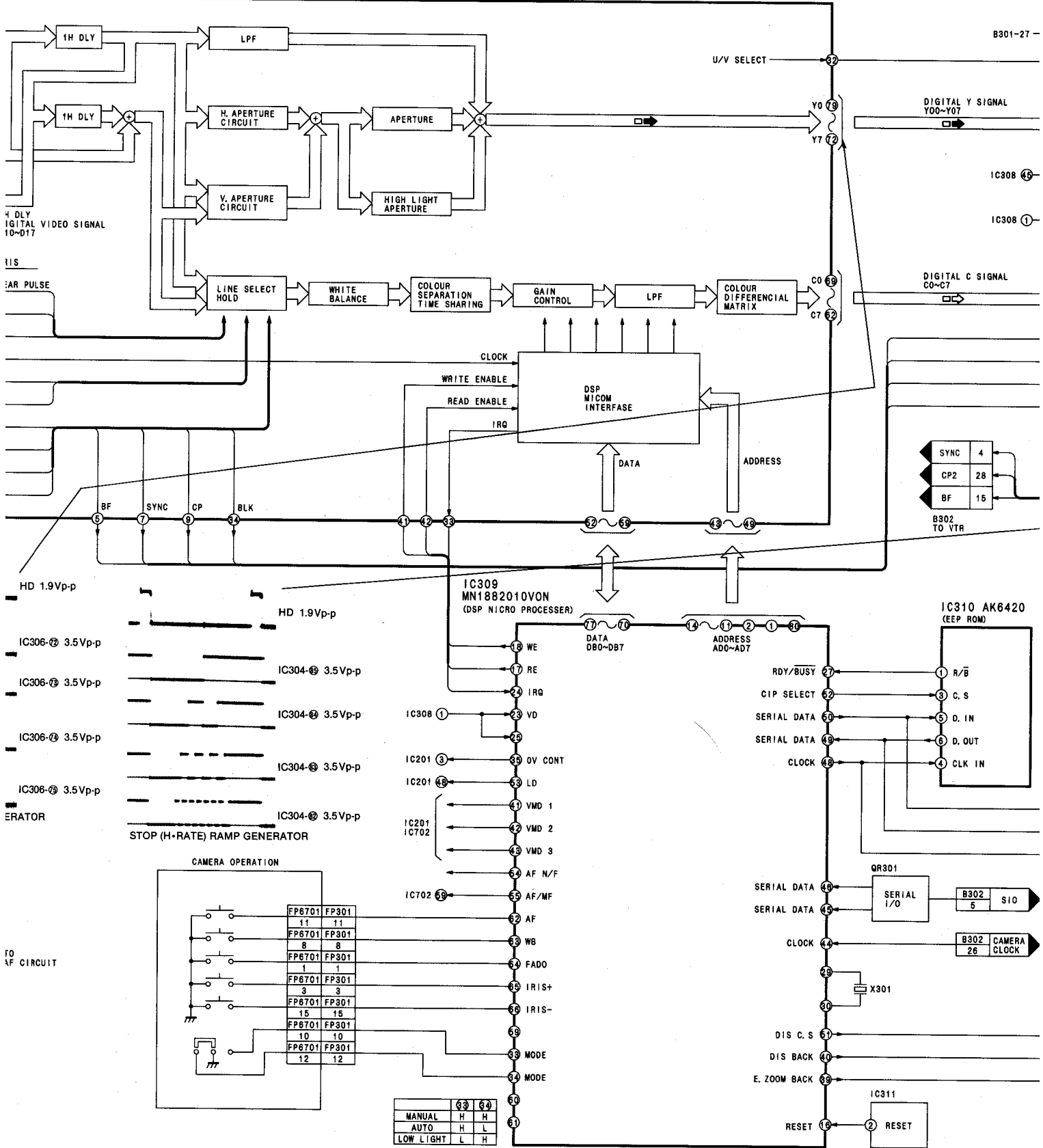
### 3-3. PROCESS BLOCK DIAGRAM



# PROCESS Section



MN6732 (LSI:Y/C DIGITAL SIGNAL PROCESS)



B301-27

DIGITAL Y SIGNAL  
Y0-Y7

IC308

IC308

DIGITAL C SIGNAL  
C0-C7

SYNC 4

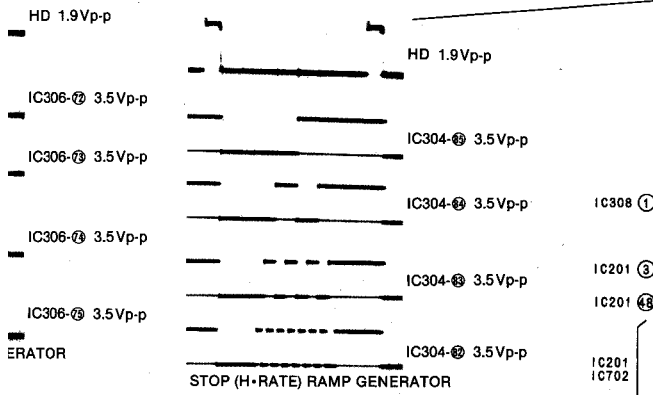
CP2 28

BF 15

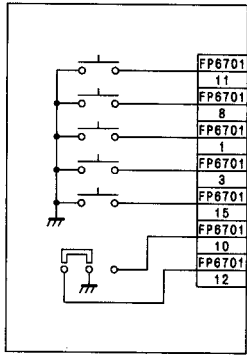
B302 TO VTR

IC309  
MN1882010VON  
(DSP MICRO PROCESSOR)

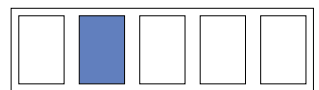
IC310 AK6420  
(EEP ROM)



CAMERA OPERATION

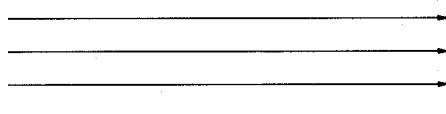
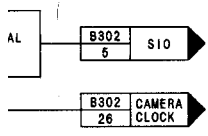
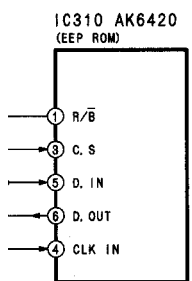
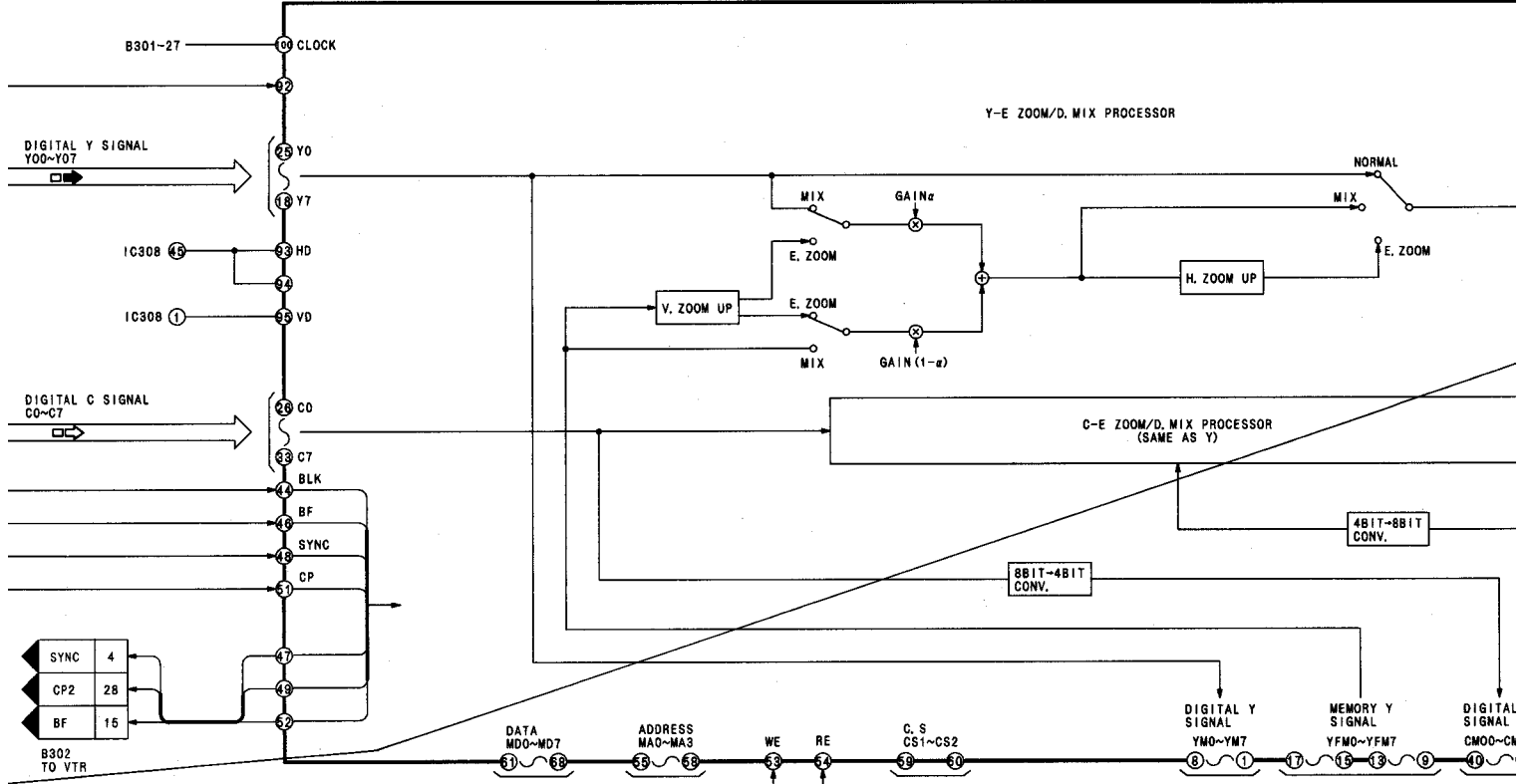


	③	④
MANUAL	H	H
AUTO	H	L
LOW LIGHT	L	H



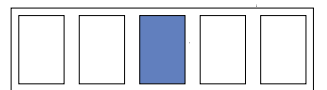
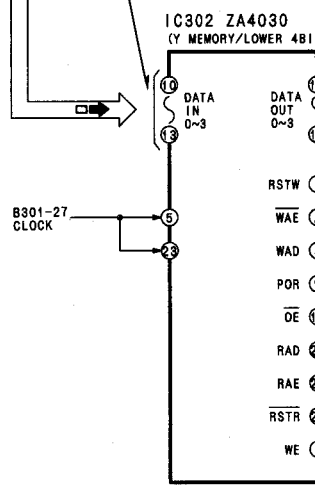
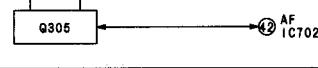
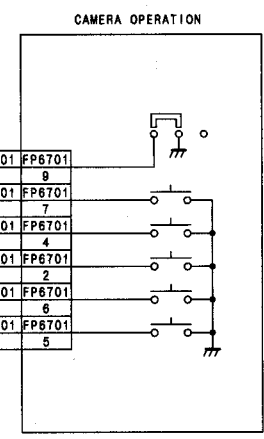
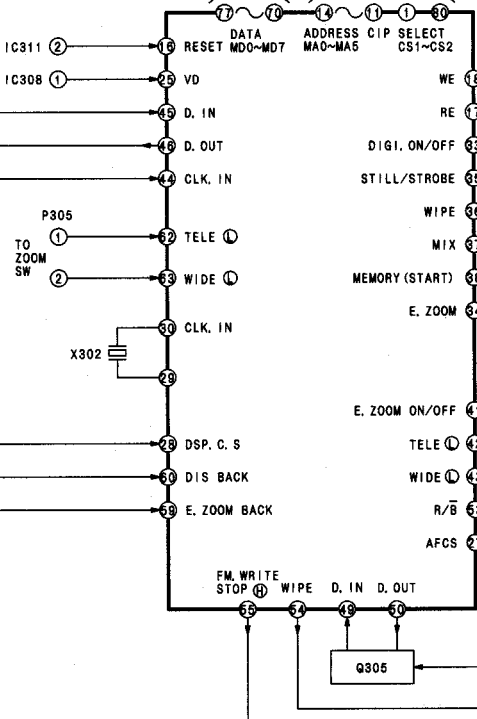
← PRE VIDEO SIGNAL   ← DIGITAL Y SIGNAL   ← DIGITAL C SIGNAL   ←

IC304 MN6733 (LSI: ELECTRIC ZOOM)

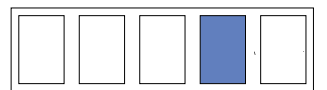
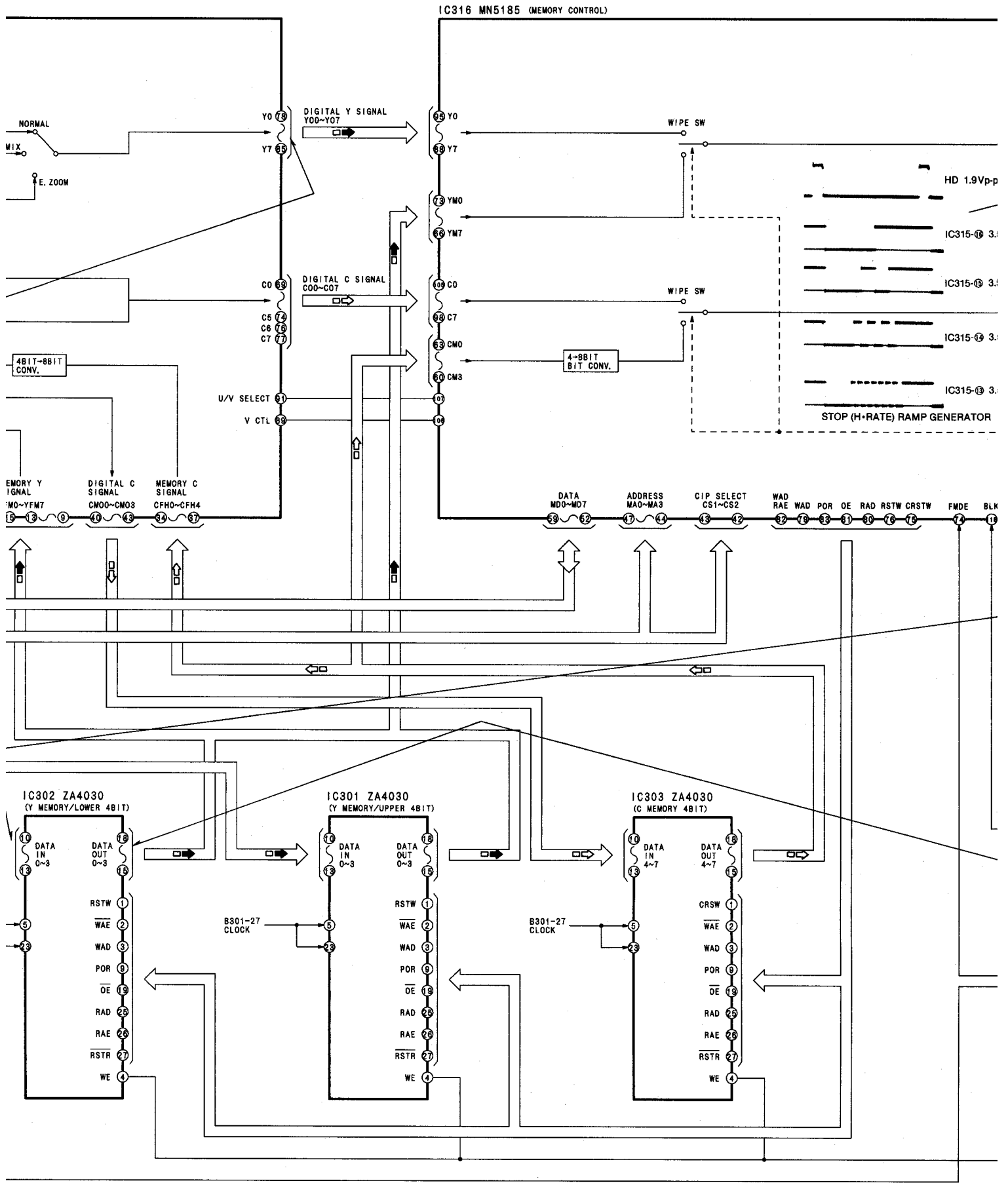


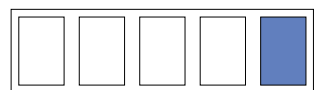
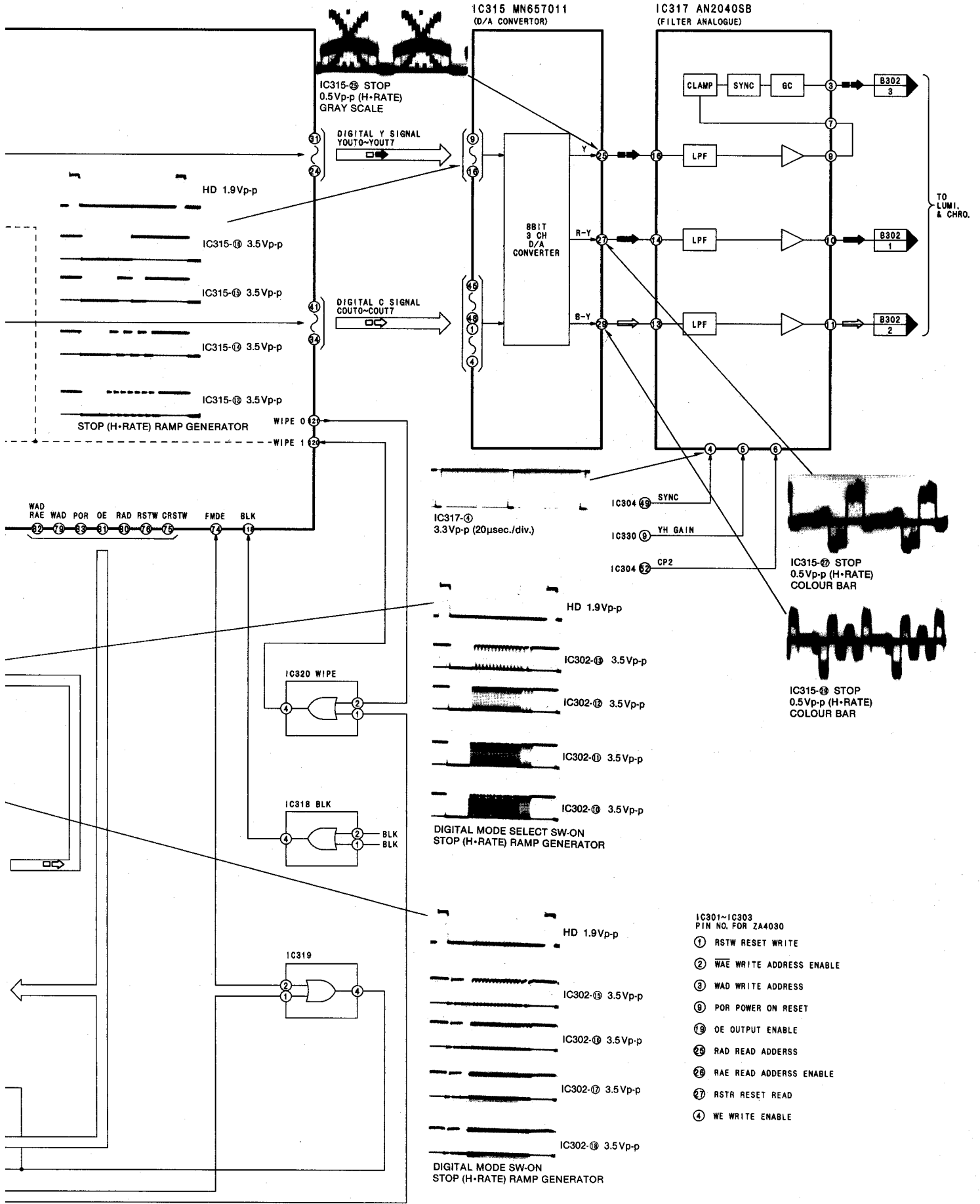
ET

IC312 MN1882010VOM (DIS MICRO PROCESSOR)



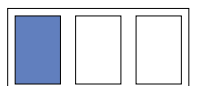
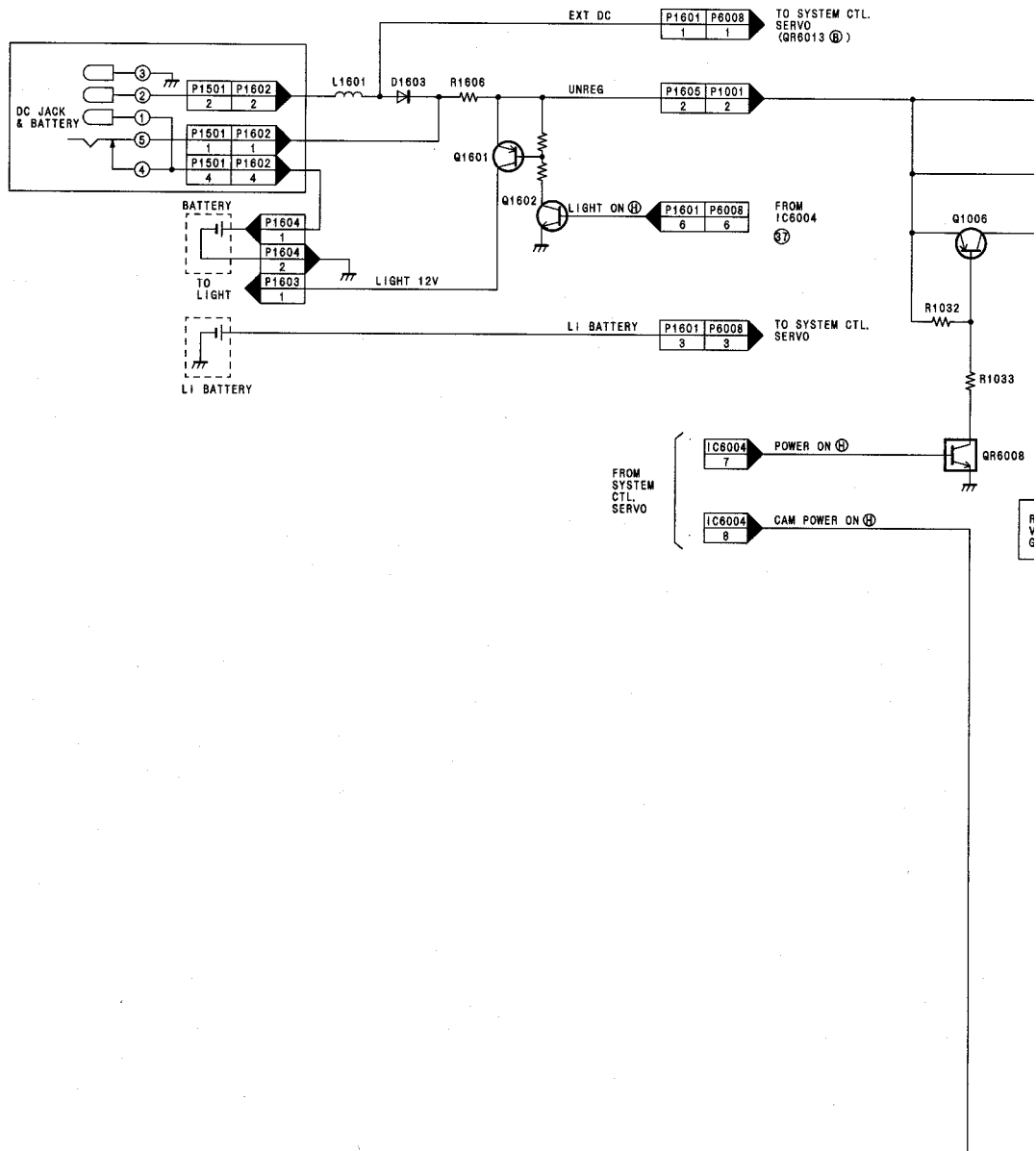
NAL ← Y SIGNAL ← R-Y SIGNAL ← B-Y SIGNAL

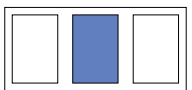
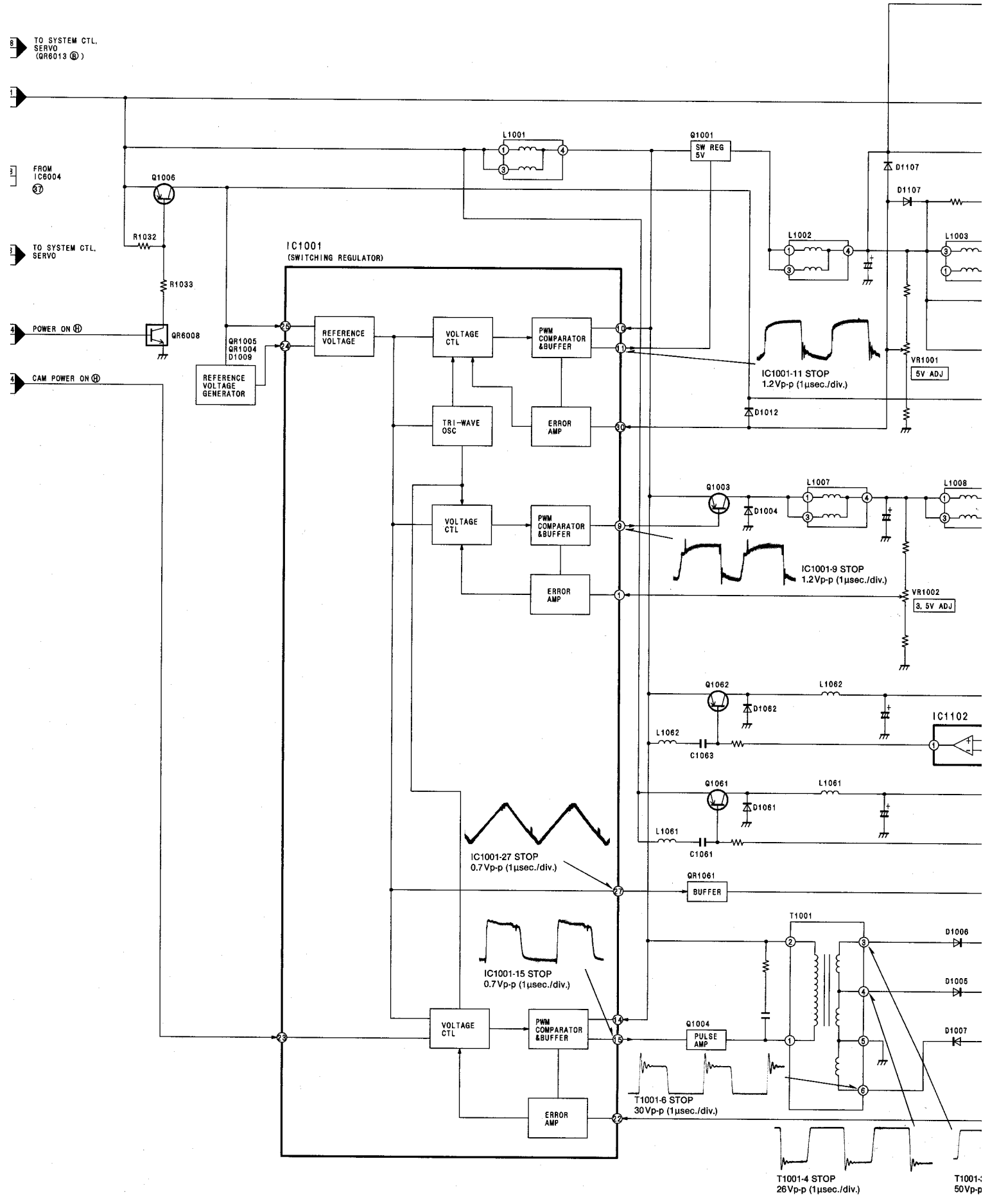


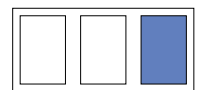
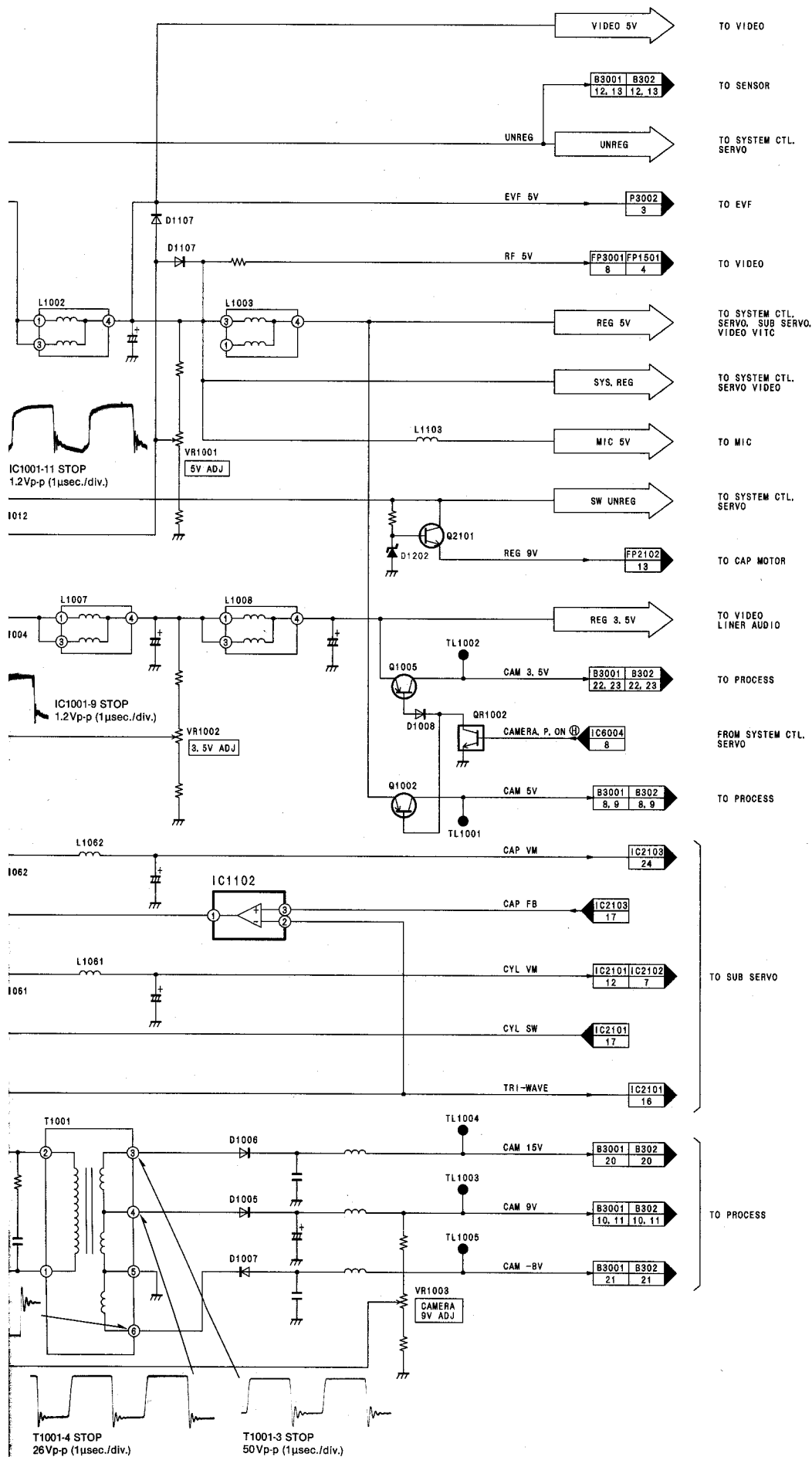




### 3-4. POWER BLOCK DIAGRAM



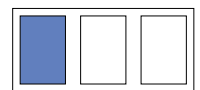
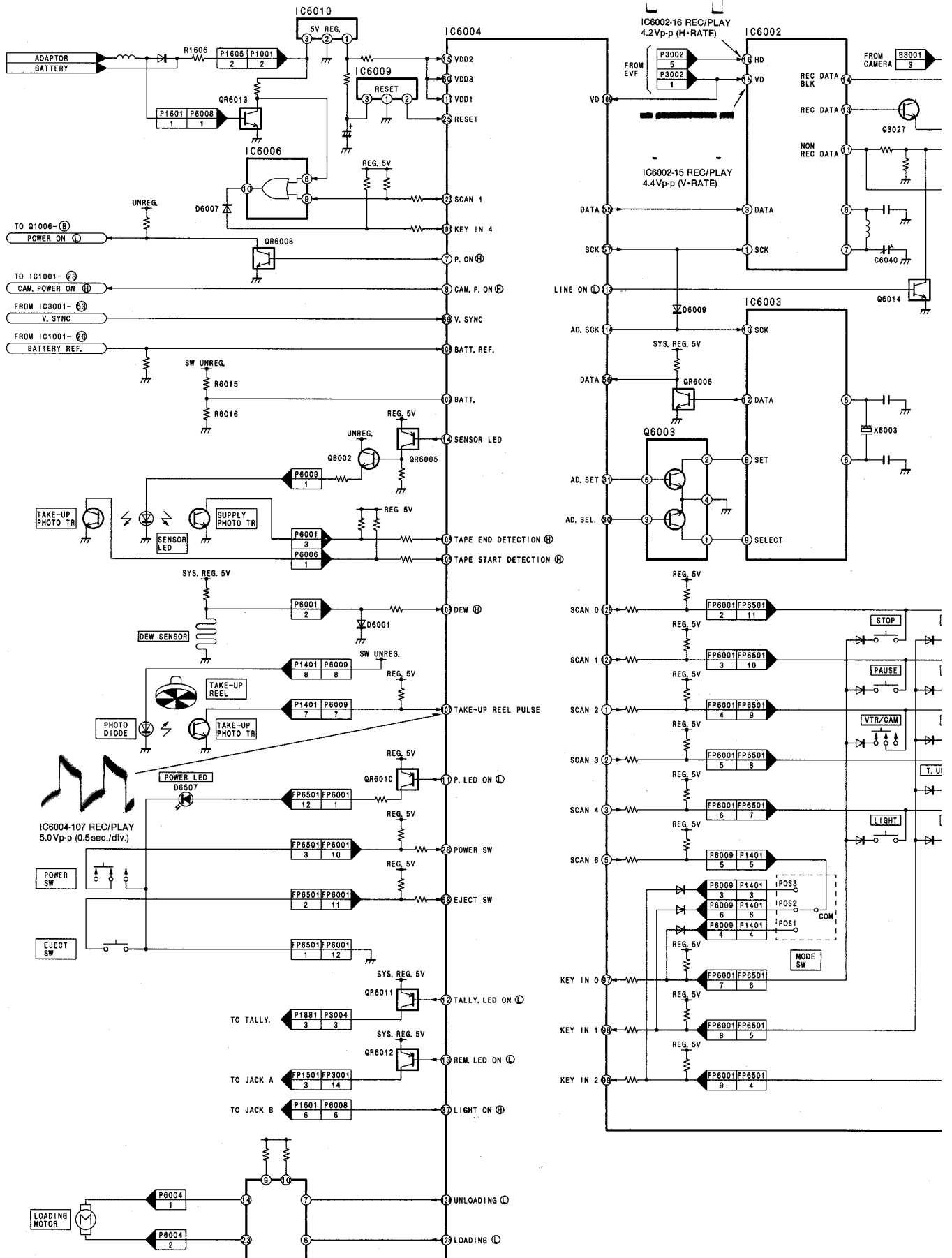




### 3-5. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

← CAPSTAN

← CAPSTAN

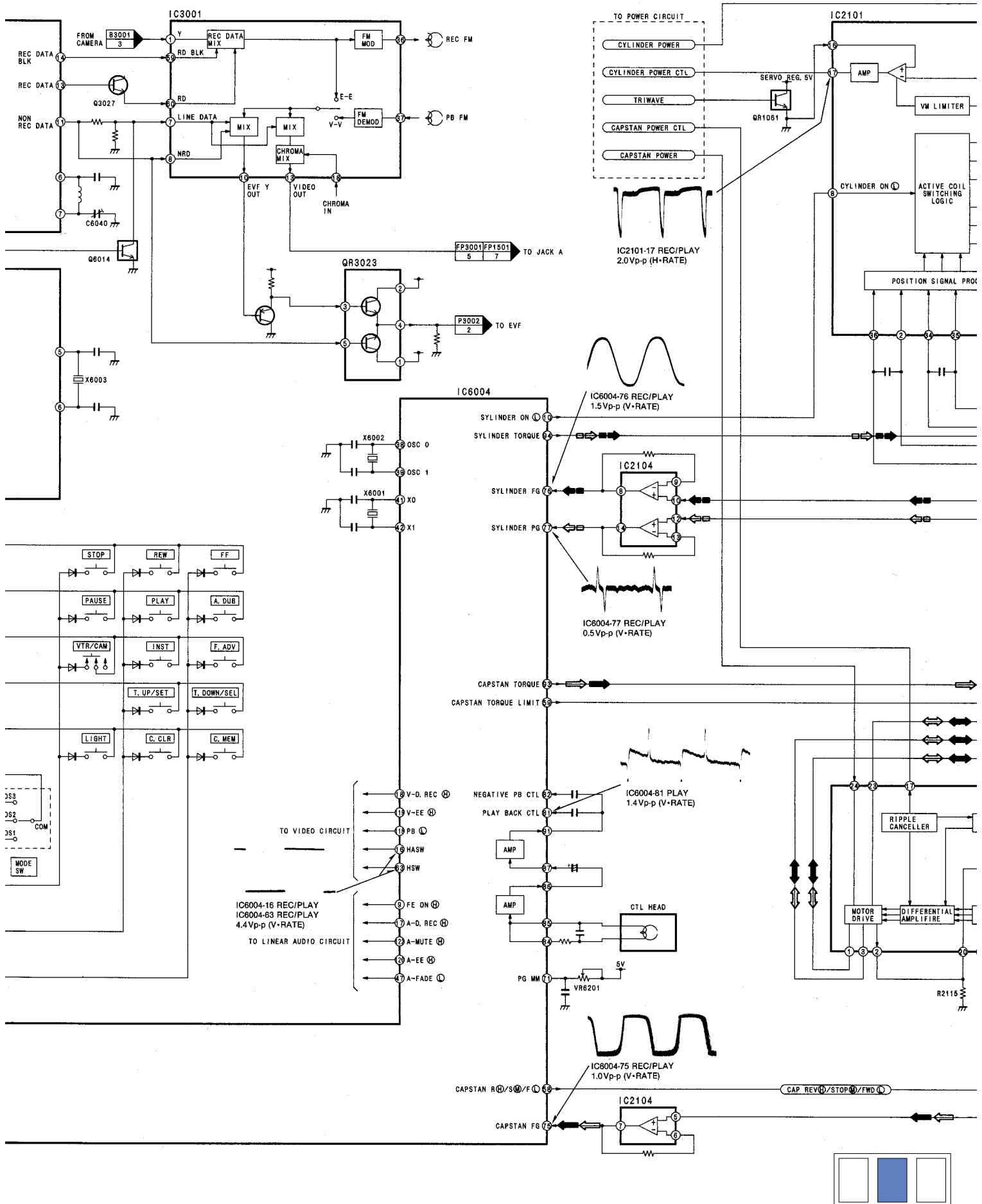


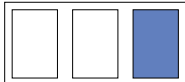
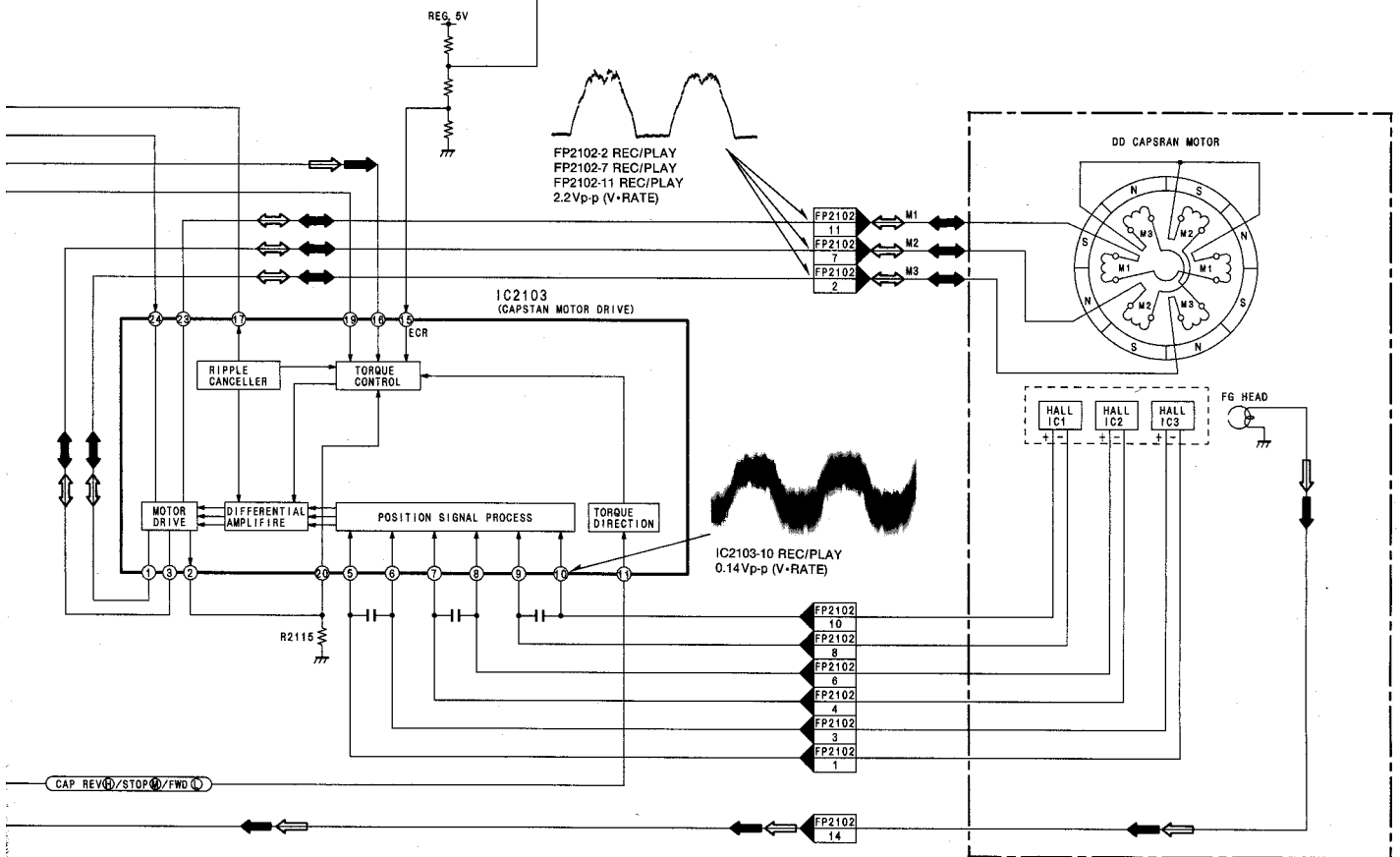
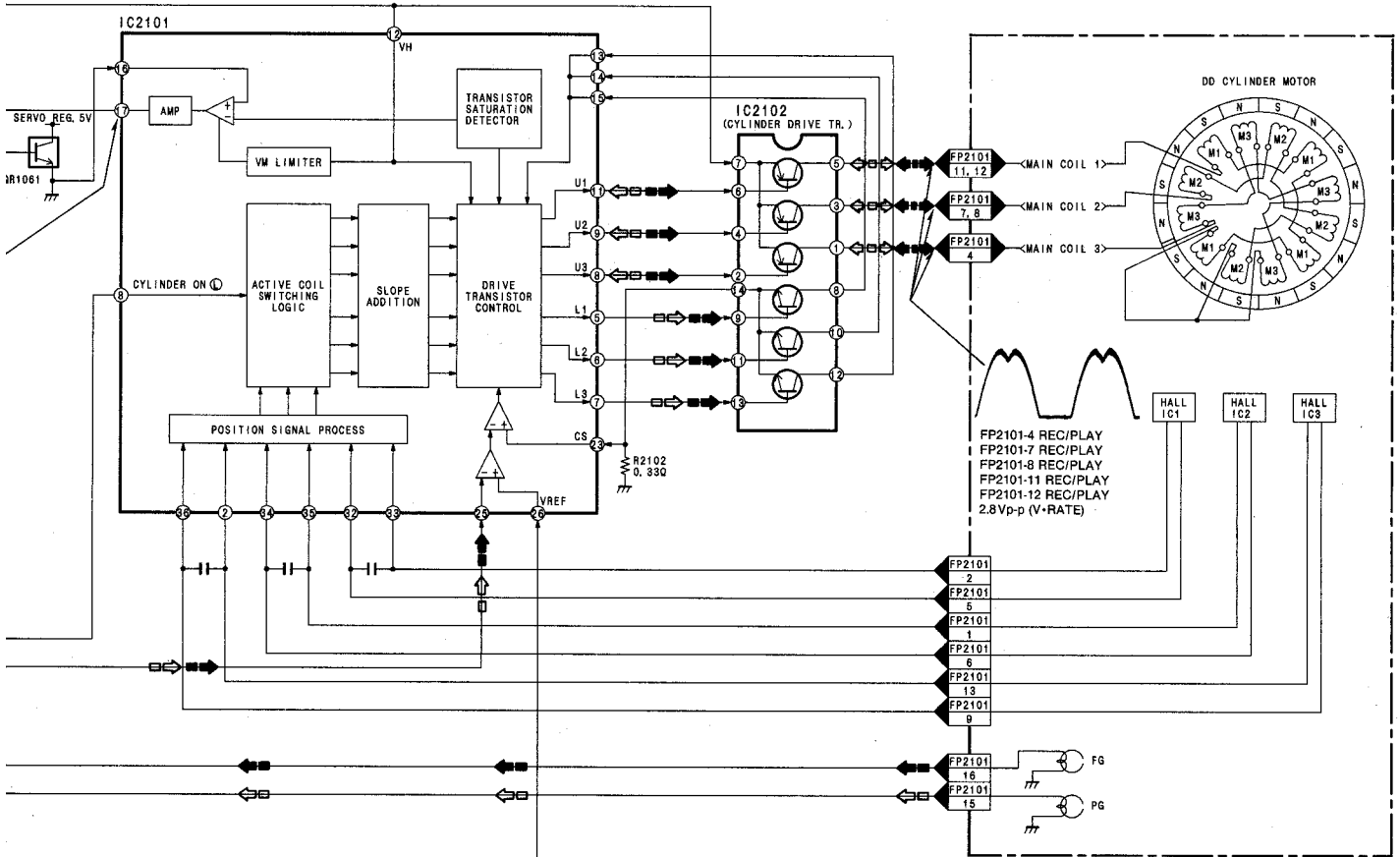
▶ CAPSTAN SERVO SPEED LOOP

◀ CYLINDER SERVO SPEED LOOP

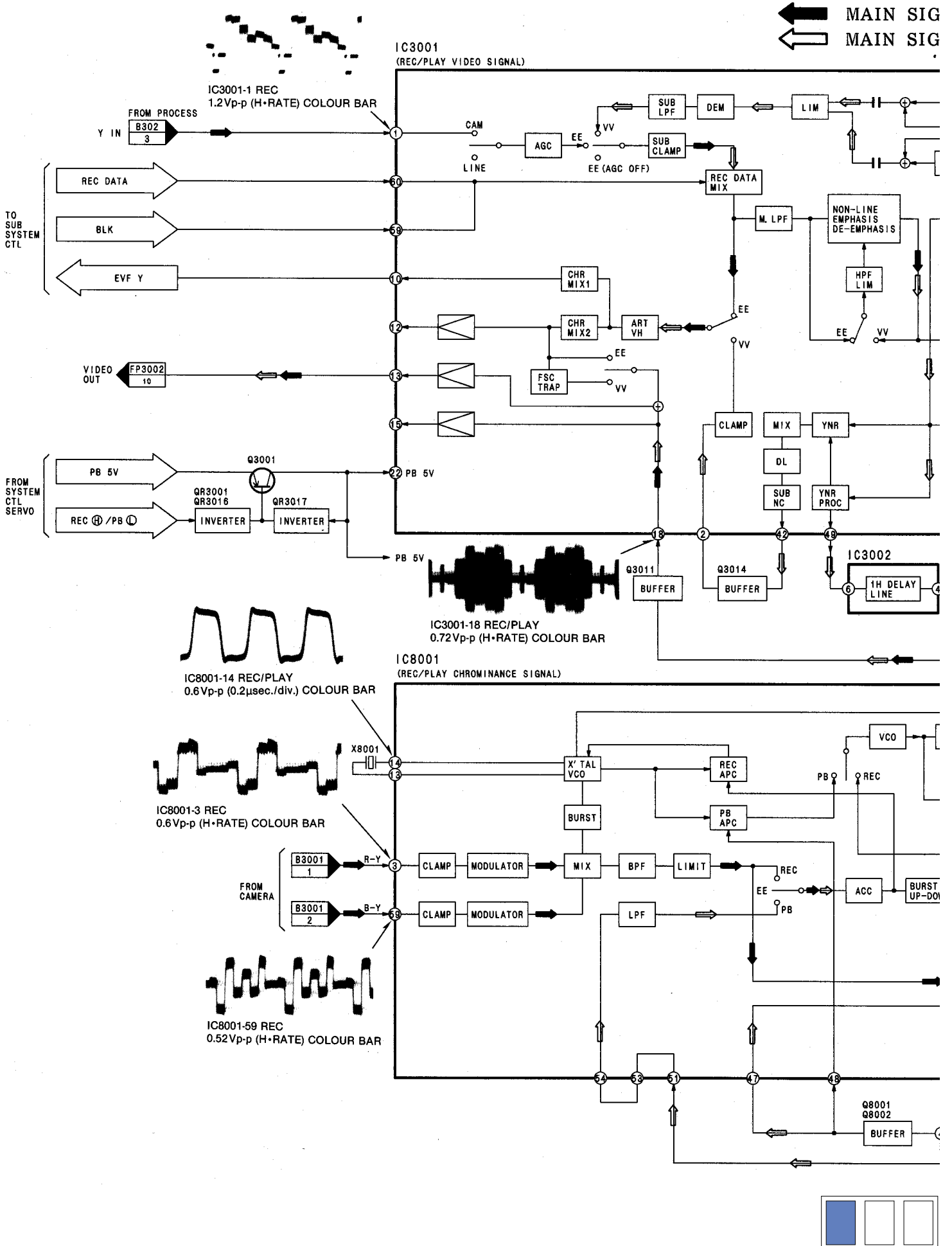
↔ CAPSTAN SERVO PHASE LOOP

◁ CYLINDER SERVO PHASE LOOP

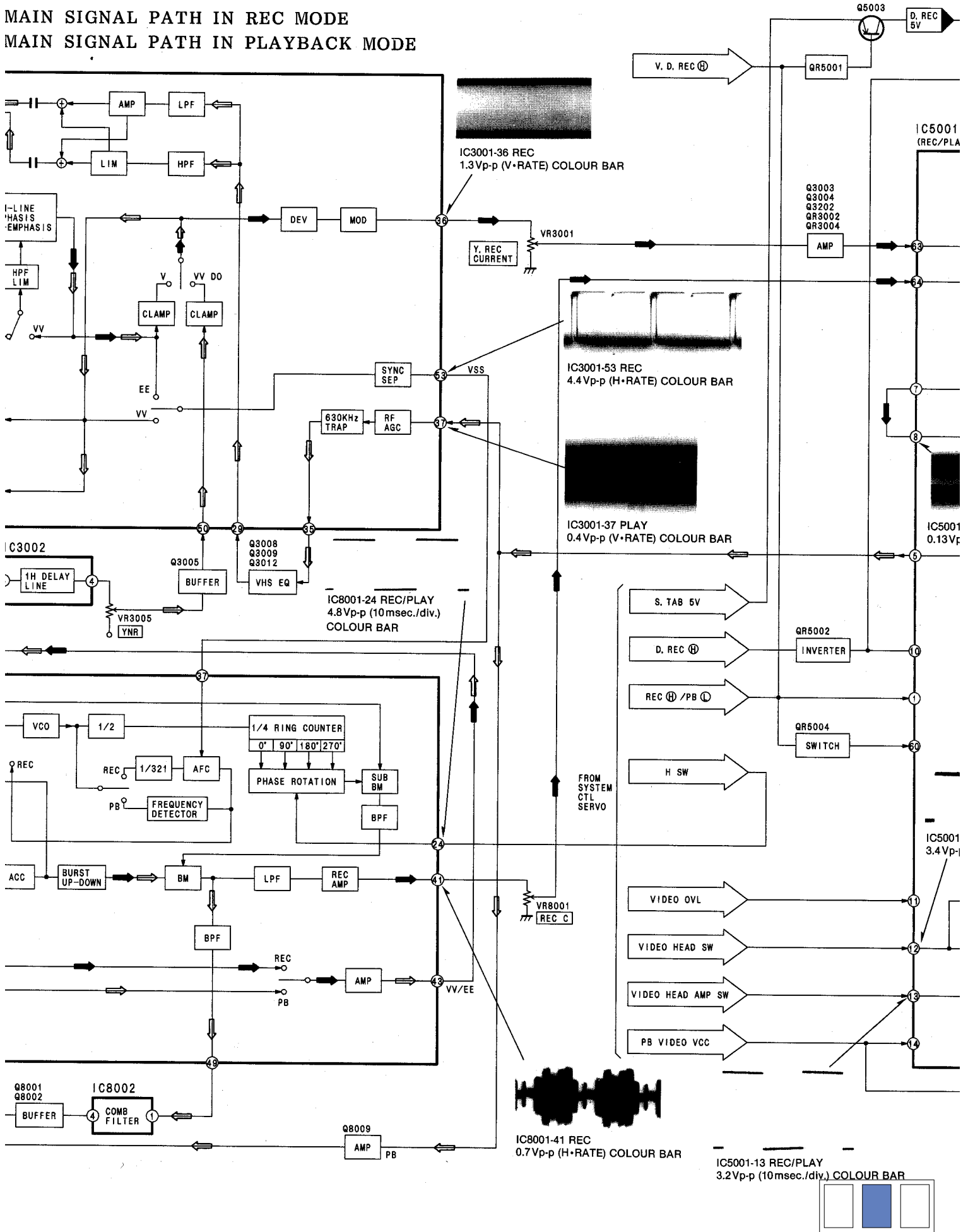




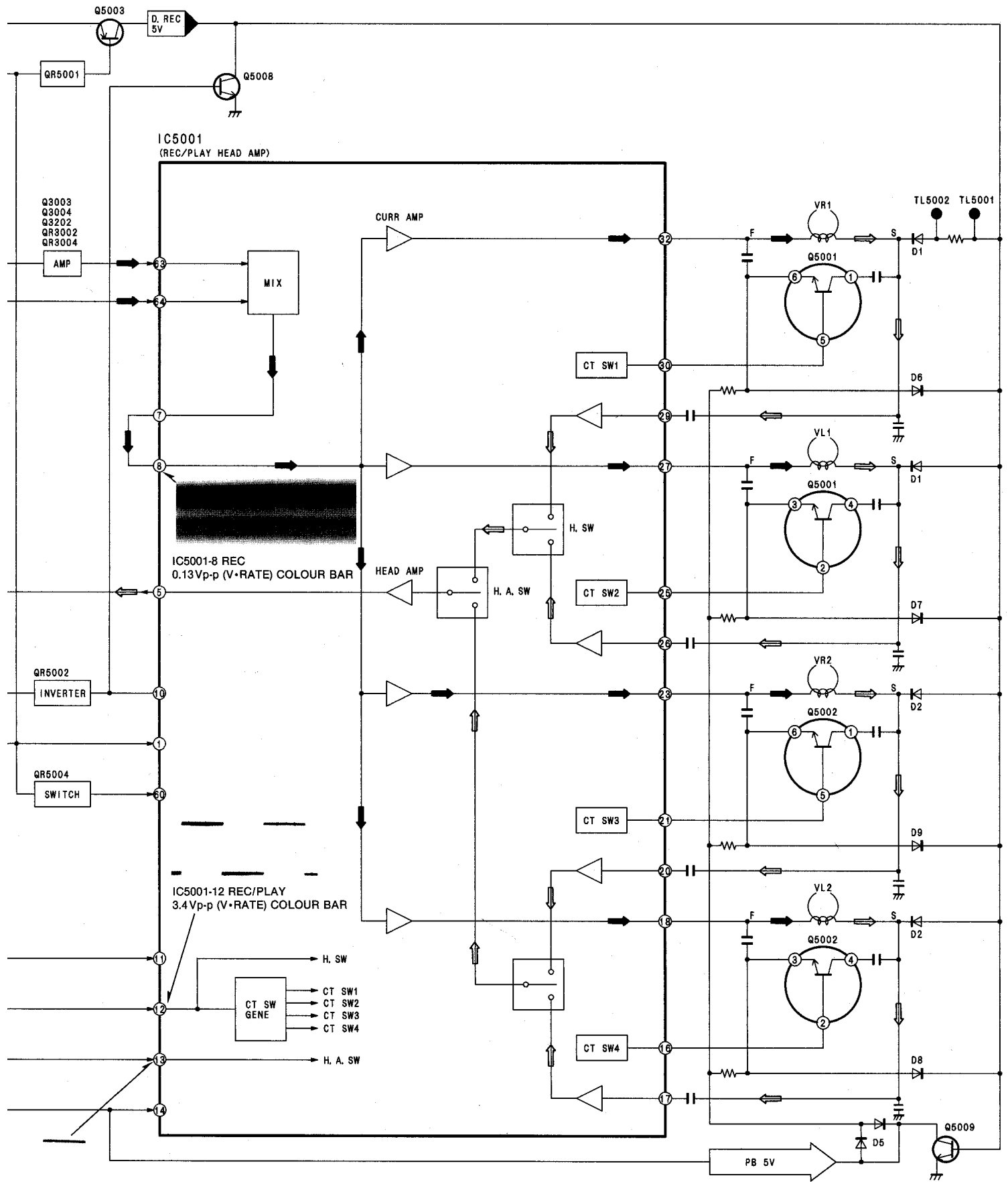
### 3-6. LUMINANCE/CHROMINANCE & HEAD AMP BLOCK DIAGRAM



MAIN SIGNAL PATH IN REC MODE  
MAIN SIGNAL PATH IN PLAYBACK MODE

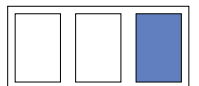






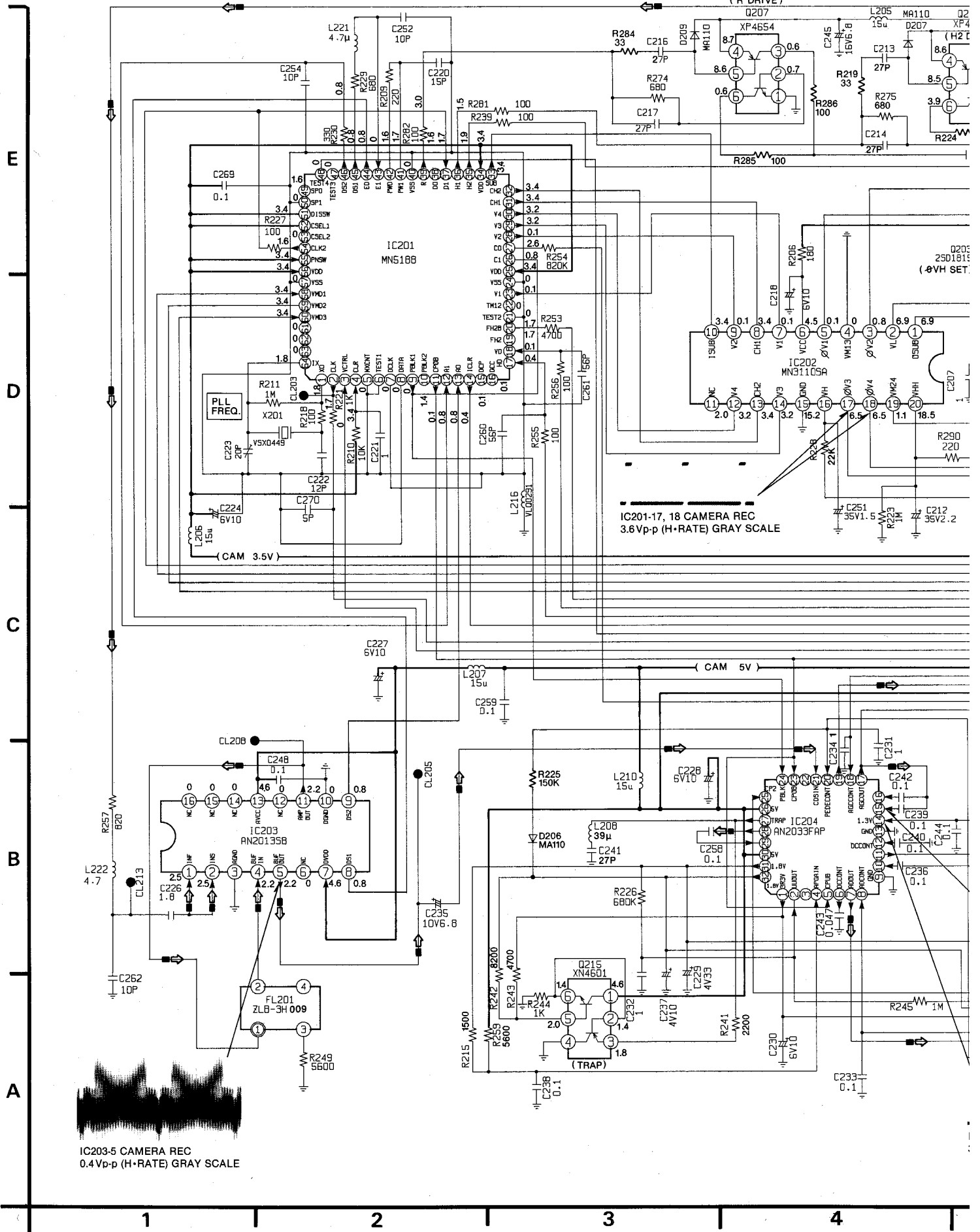
REC/PLAY  
0msec./div. COLOUR BAR

Next Page:



# 3-7. CCD DRIVE SCHEMATIC DIAGRAM

← VIDEO SIGNAL



E

D

C

B

A

IC203-5 CAMERA REC  
0.4 Vp-p (H-RATE) GRAY SCALE

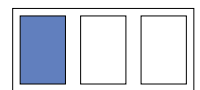
IC201-17, 18 CAMERA REC  
3.6 Vp-p (H-RATE) GRAY SCALE

1

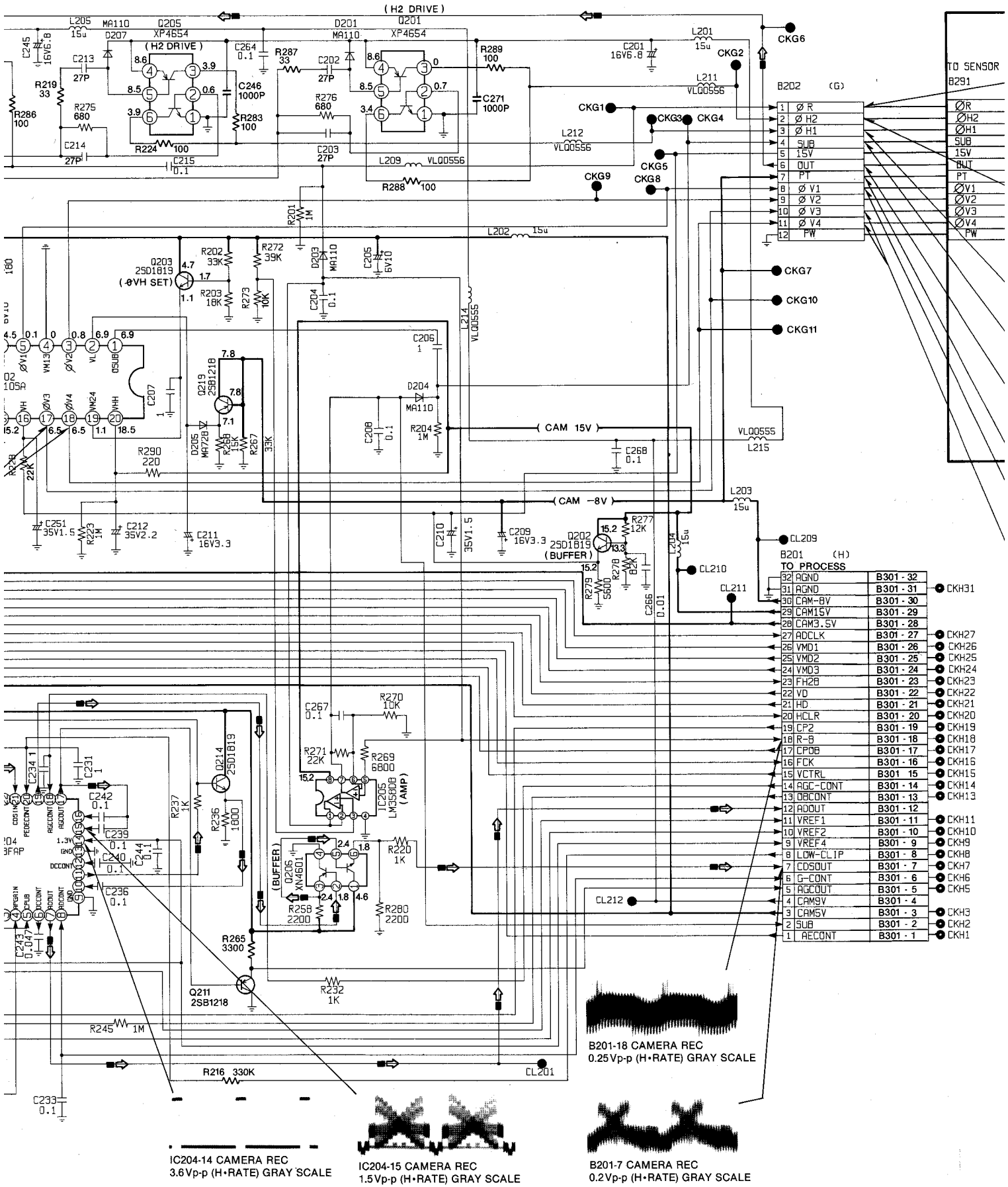
2

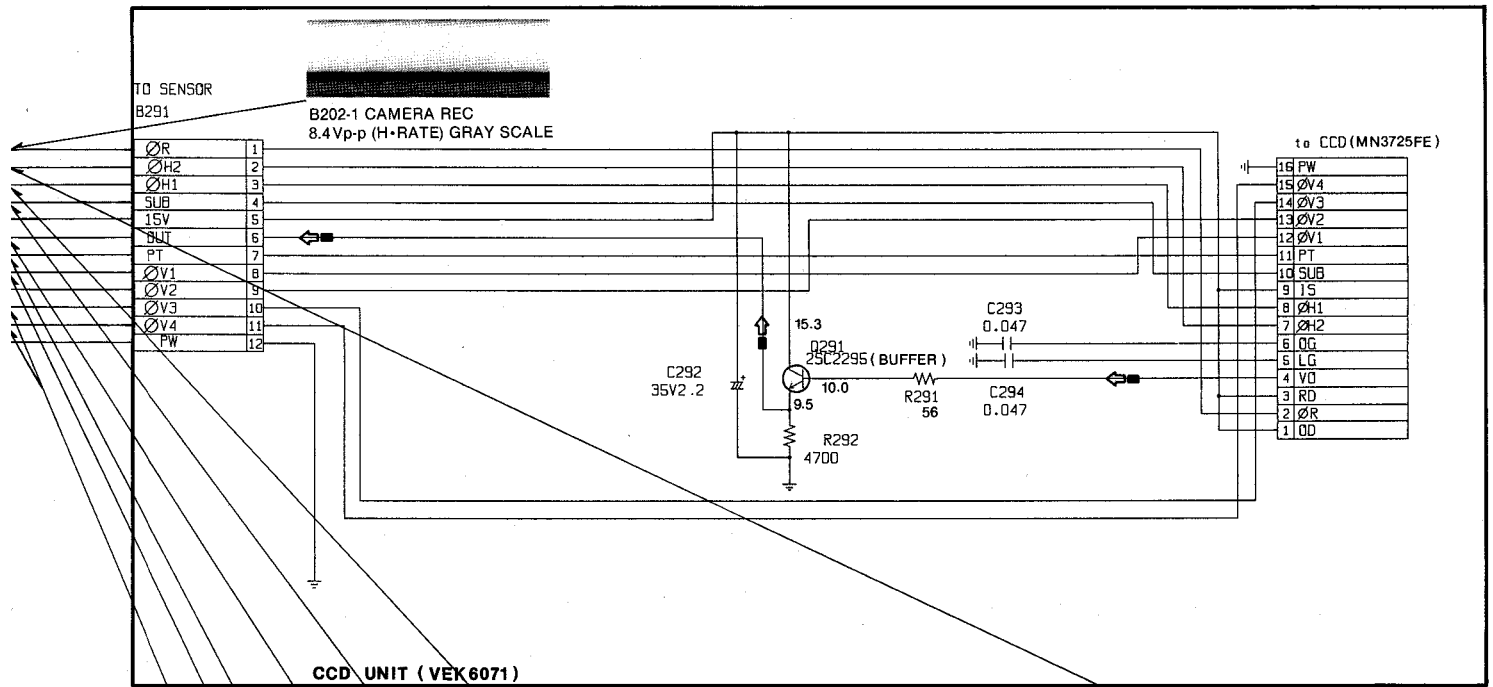
3

4

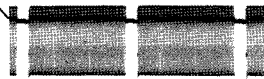


# VIDEO SIGNAL

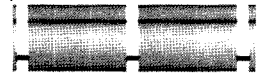




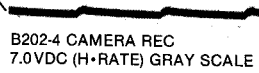
- B301 - 32
- B301 - 31 ● CKH31
- B301 - 30
- B301 - 29
- B301 - 28
- B301 - 27 ● CKH27
- B301 - 26 ● CKH26
- B301 - 25 ● CKH25
- B301 - 24 ● CKH24
- B301 - 23 ● CKH23
- B301 - 22 ● CKH22
- B301 - 21 ● CKH21
- B301 - 20 ● CKH20
- B301 - 19 ● CKH19
- B301 - 18 ● CKH18
- B301 - 17 ● CKH17
- B301 - 16 ● CKH16
- B301 - 15 ● CKH15
- B301 - 14 ● CKH14
- B301 - 13 ● CKH13
- B301 - 12
- B301 - 11 ● CKH11
- B301 - 10 ● CKH10
- B301 - 9 ● CKH9
- B301 - 8 ● CKH8
- B301 - 7 ● CKH7
- B301 - 6 ● CKH6
- B301 - 5 ● CKH5
- B301 - 4
- B301 - 3 ● CKH3
- B301 - 2 ● CKH2
- B301 - 1 ● CKH1



B202-3 CAMERA REC  
15.1Vp-p (H-RATE) GRAY SCALE



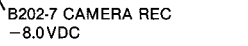
B202-2 CAMERA REC  
15.1Vp-p (H-RATE) GRAY SCALE



B202-4 CAMERA REC  
7.0VDC (H-RATE) GRAY SCALE



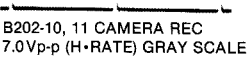
B202-6 CAMERA REC  
0.8Vp-p (H-RATE) GRAY SCALE



B202-7 CAMERA REC  
-8.0VDC



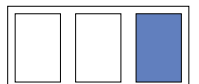
B202-8, 9 CAMERA REC  
7.0Vp-p (H-RATE) GRAY SCALE



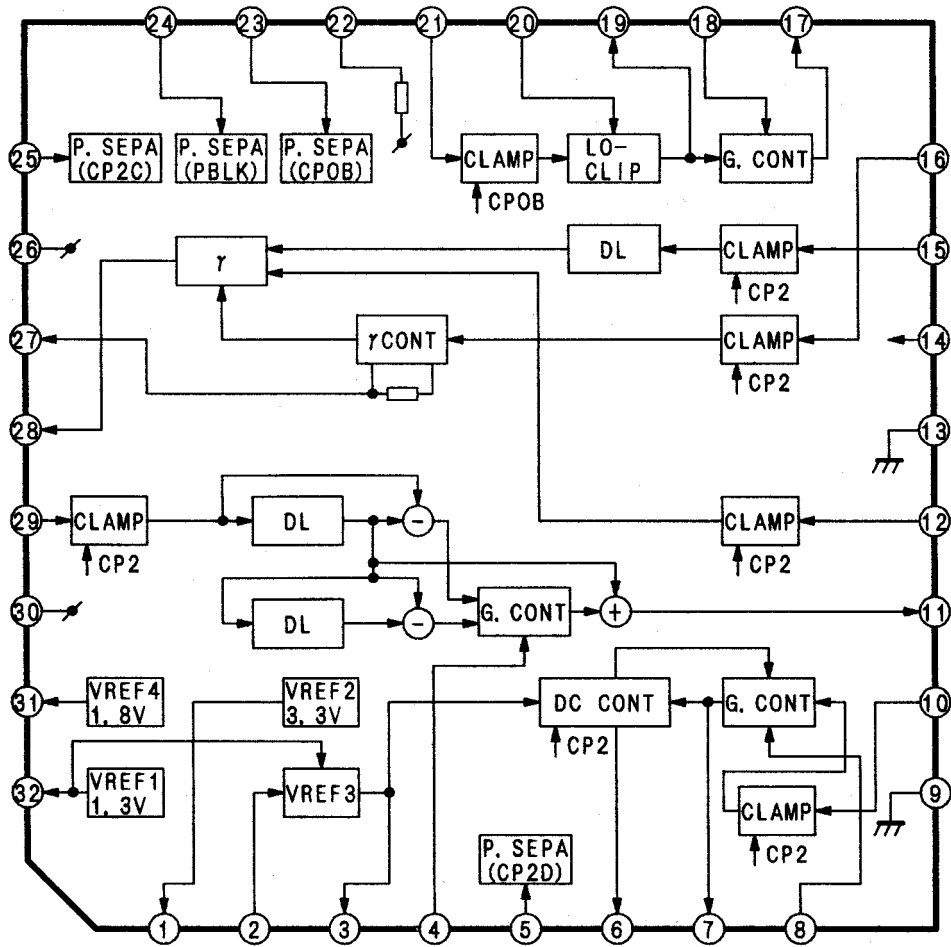
B202-10, 11 CAMERA REC  
7.0Vp-p (H-RATE) GRAY SCALE

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

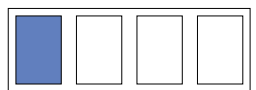
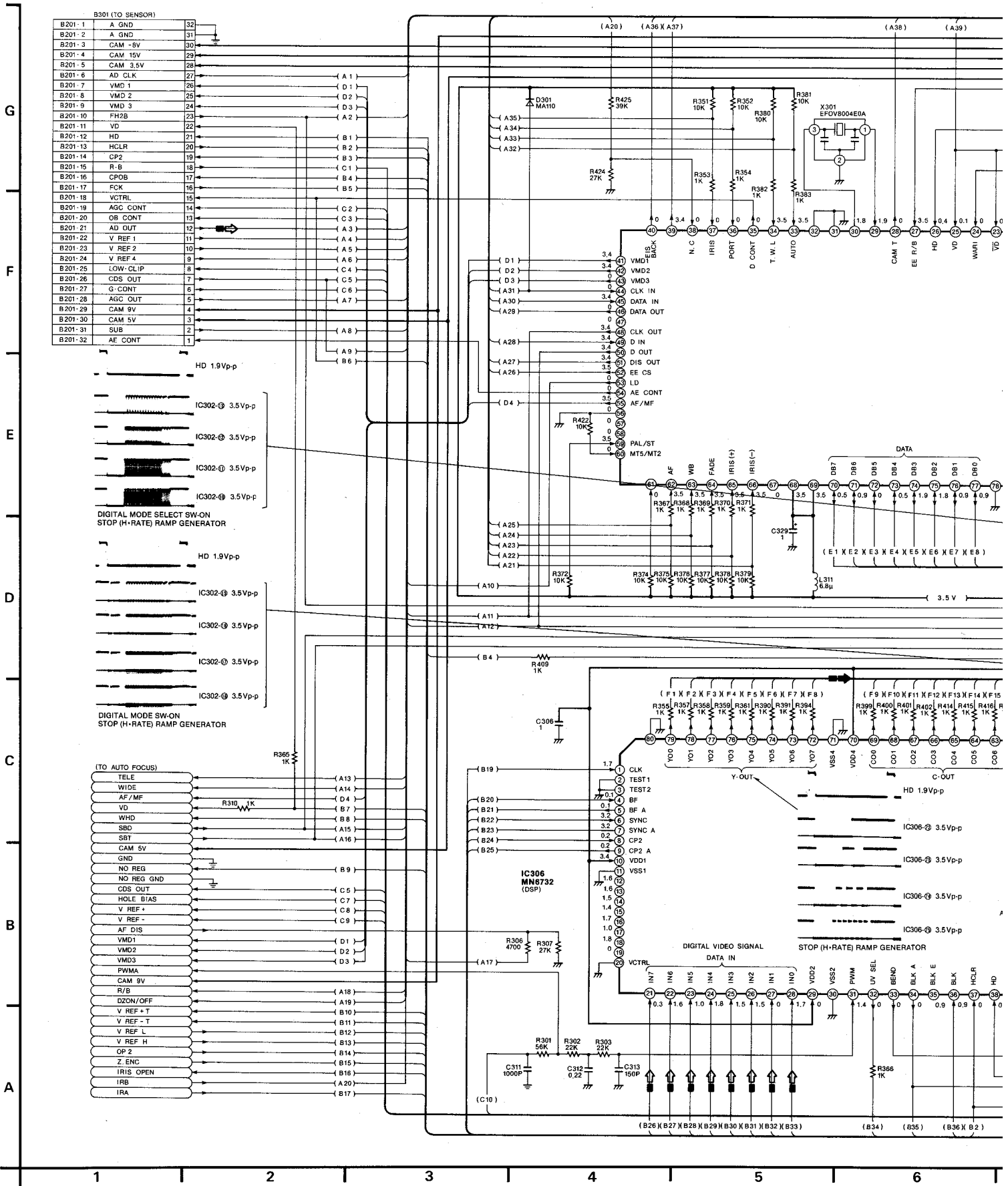
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

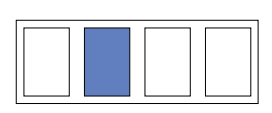
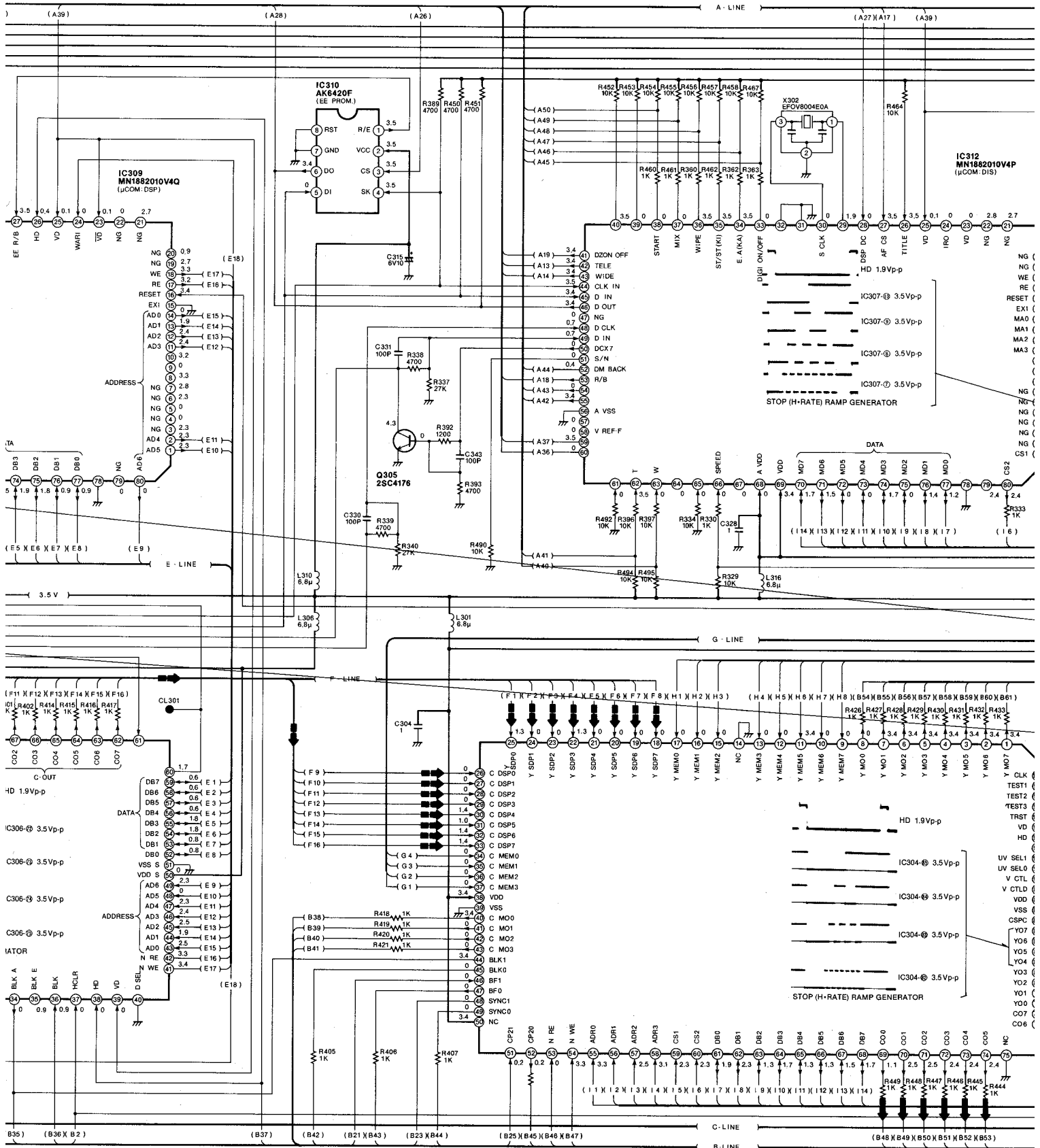


IC204  
 AN2033FAP  
 AN2032FAP

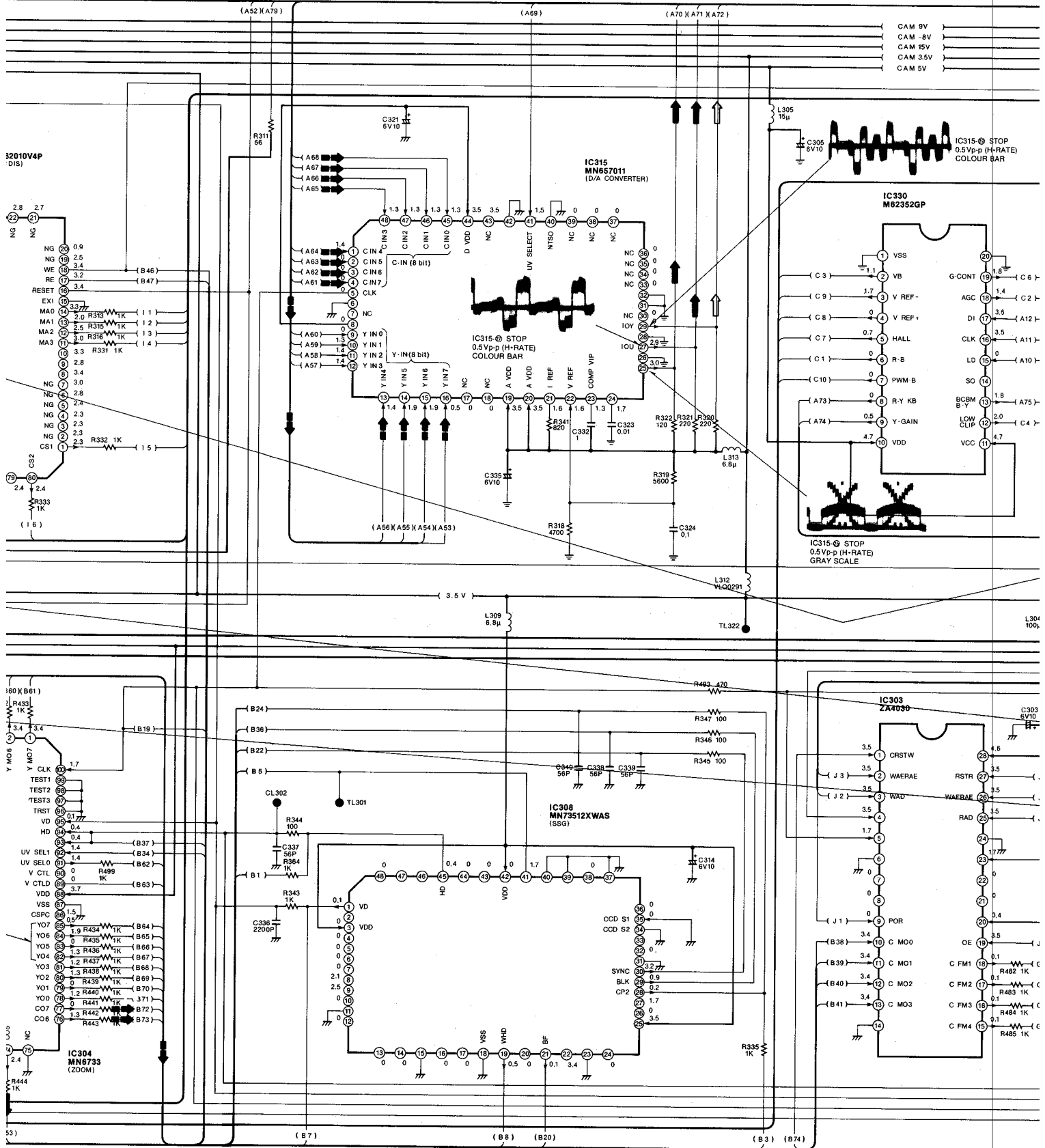


# 3-9. PROCESS, CAMERA OPERATION & CCD UNIT SCHEMATIC DIAGRAM





AL ← Y SIGNAL ← R-Y SIGNAL ← B-Y SIGNAL



12

13

14

15

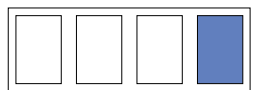
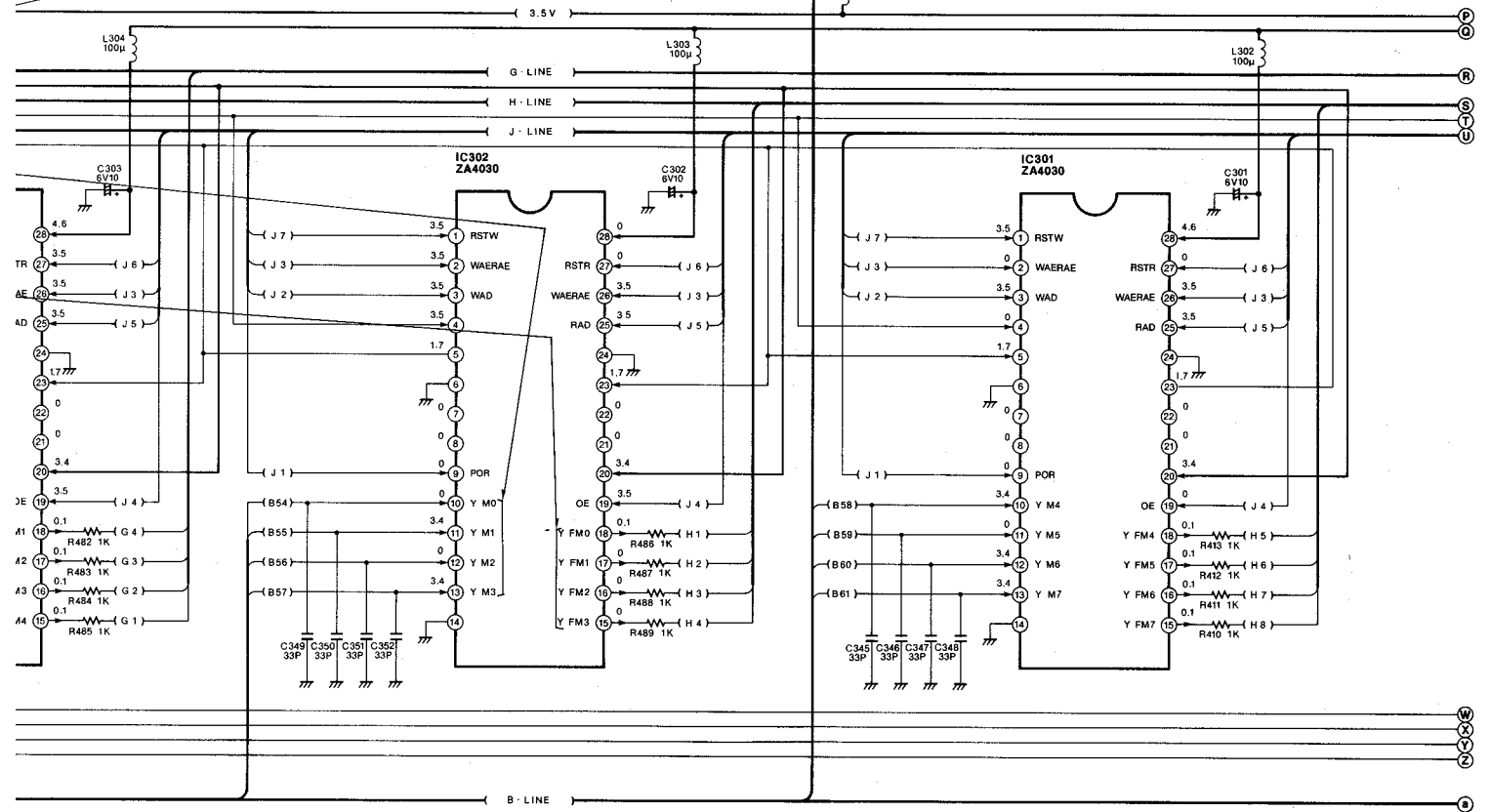
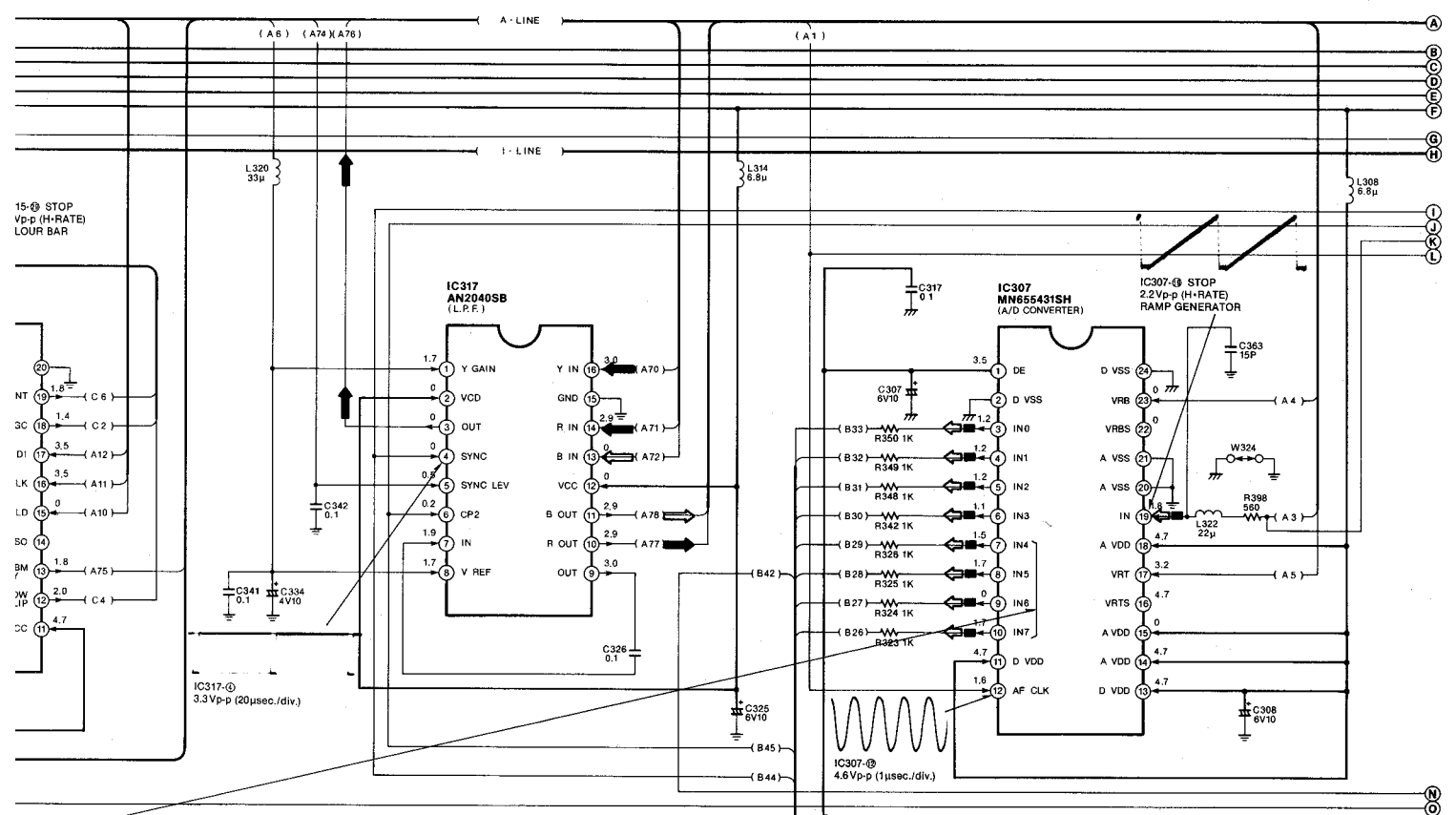
16

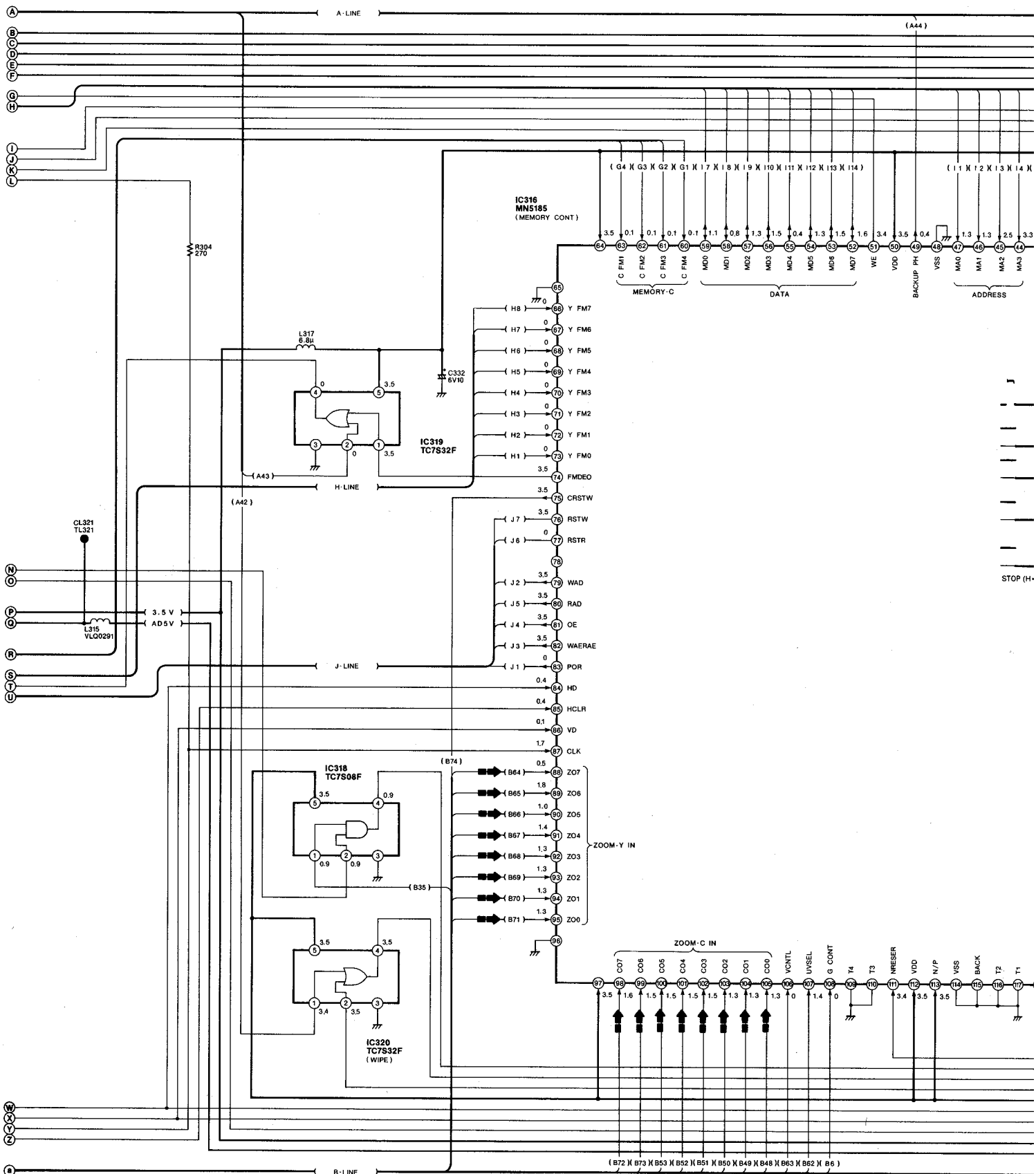
17

18



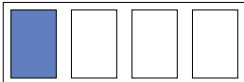


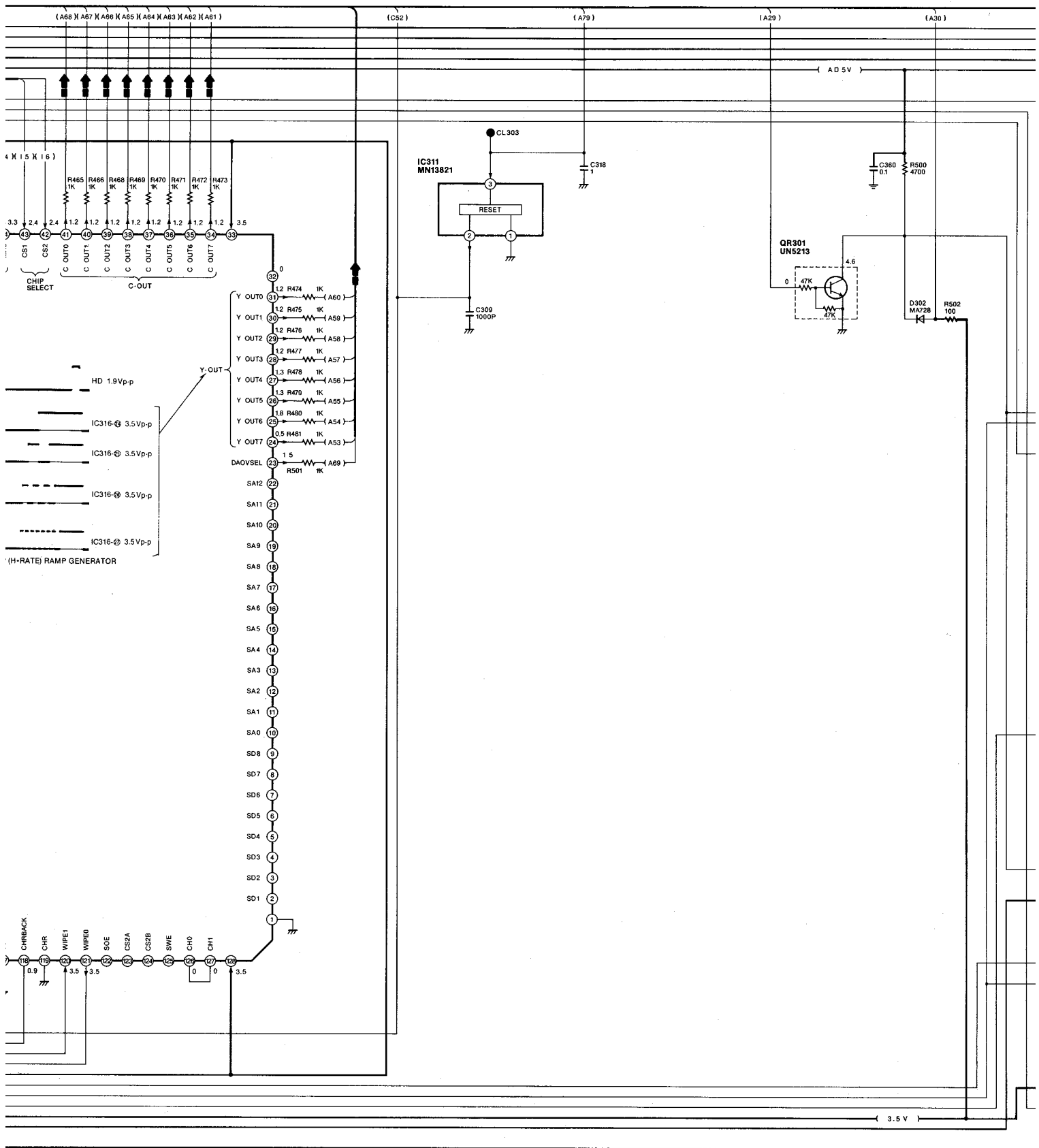




24      25      26      27      28      29

STOP (H-





30

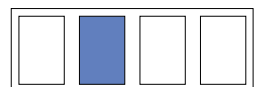
31

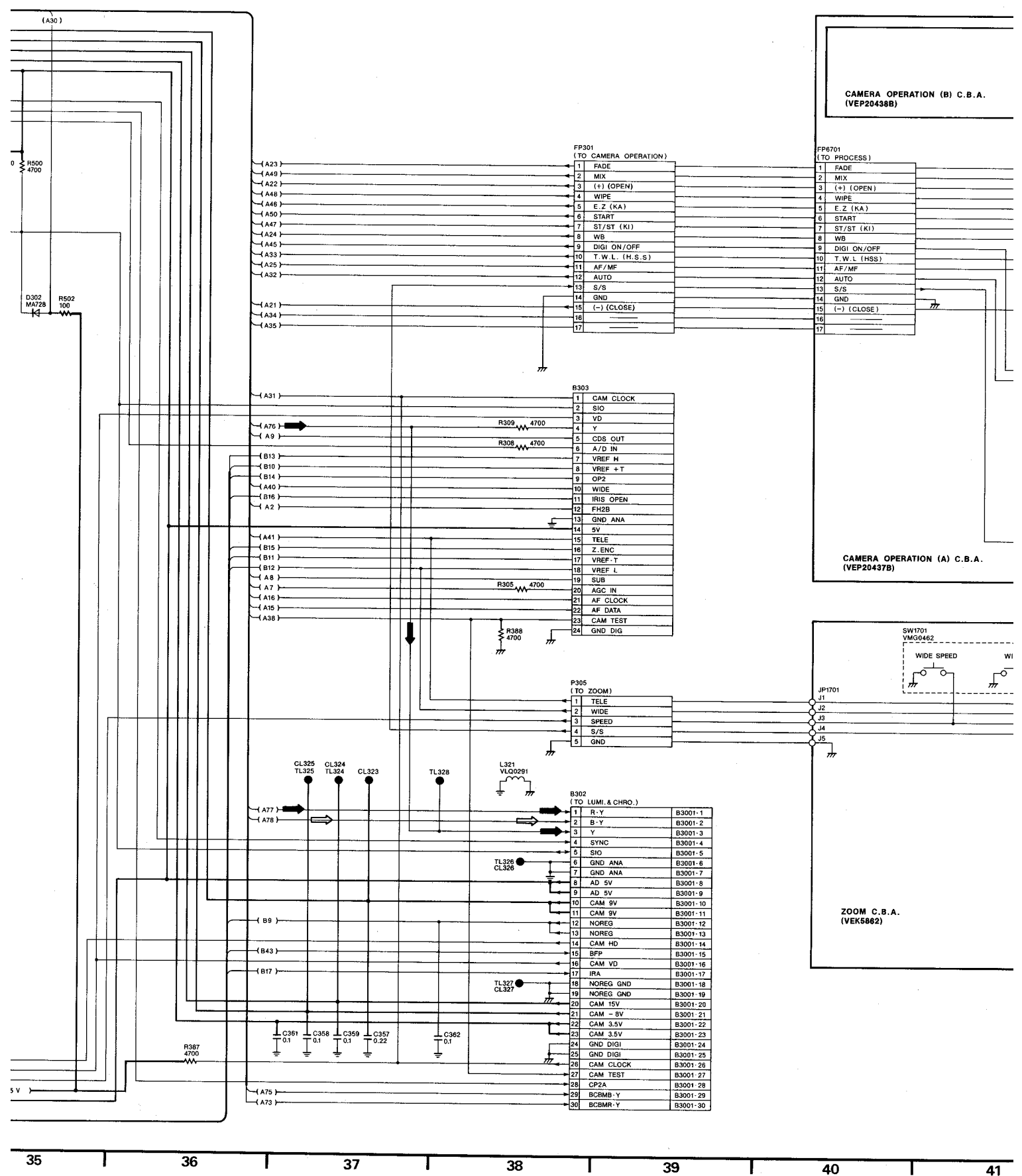
32

33

34

35





**CAMERA OPERATION (B) C.B.A. (VEP20438B)**

FP301  
(TO CAMERA OPERATION)

1	FADE
2	MIX
3	(+) (OPEN)
4	WIPE
5	E.Z. (KA)
6	START
7	ST/ST (KI)
8	WB
9	DIGI ON/OFF
10	T.W.L. (H.S.S.)
11	AF/MF
12	AUTO
13	S/S
14	GND
15	(-) (CLOSE)
16	
17	

FP8701  
(TO PROCESS)

1	FADE
2	MIX
3	(+) (OPEN)
4	WIPE
5	E.Z. (KA)
6	START
7	ST/ST (KI)
8	WB
9	DIGI ON/OFF
10	T.W.L. (H.S.S.)
11	AF/MF
12	AUTO
13	S/S
14	GND
15	(-) (CLOSE)
16	
17	

B303

1	CAM CLOCK
2	SIO
3	VD
4	Y
5	CDS OUT
6	A/D IN
7	VREF H
8	VREF + T
9	OP2
10	WIDE
11	IRIS OPEN
12	FH2B
13	GND ANA
14	5V
15	TELE
16	Z. ENC
17	VREF - T
18	VREF L
19	SUB
20	AGC IN
21	AF CLOCK
22	AF DATA
23	CAM TEST
24	GND DIG

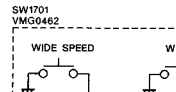
P305  
(TO ZOOM)

1	TELE
2	WIDE
3	SPEED
4	S/S
5	GND

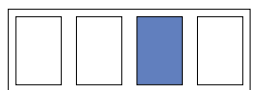
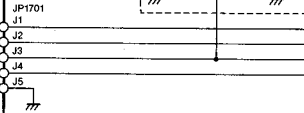
B302  
(TO LUMI. & CHRO.)

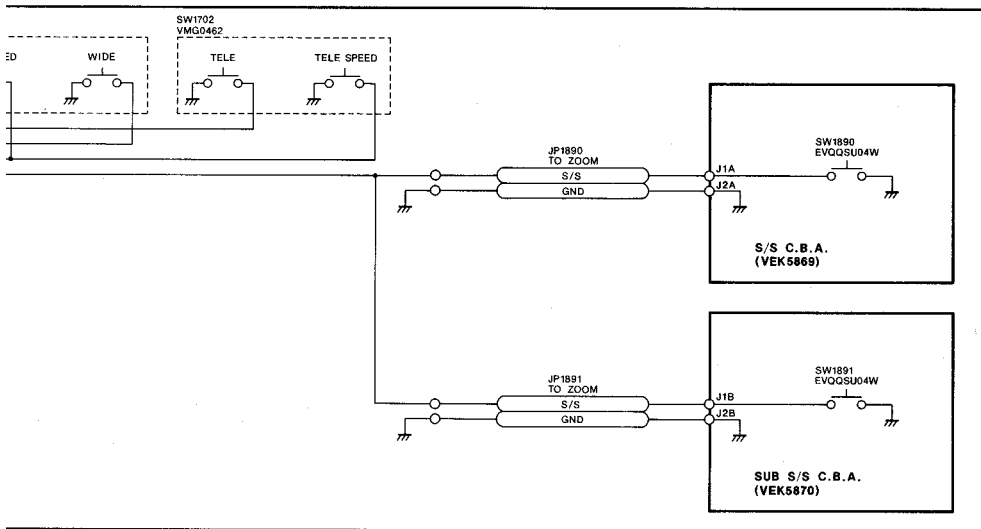
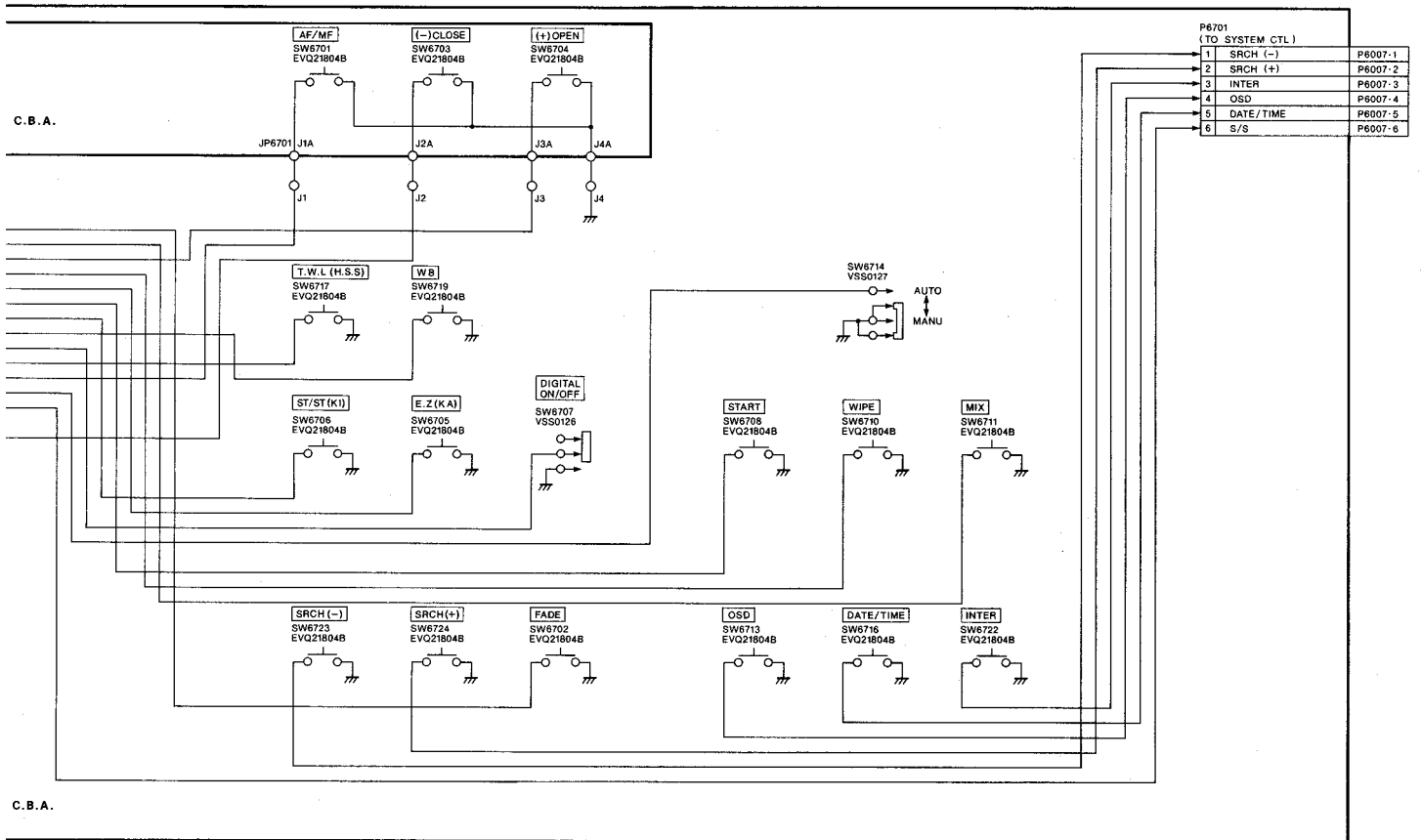
1	R-Y	B3001-1
2	B-Y	B3001-2
3	Y	B3001-3
4	SYNC	B3001-4
5	SIO	B3001-5
6	GND ANA	B3001-6
7	GND ANA	B3001-7
8	AD 5V	B3001-8
9	AD 5V	B3001-9
10	CAM 9V	B3001-10
11	CAM 9V	B3001-11
12	NOREG	B3001-12
13	NOREG	B3001-13
14	CAM HD	B3001-14
15	BFP	B3001-15
16	CAM VD	B3001-16
17	IRA	B3001-17
18	NOREG GND	B3001-18
19	NOREG GND	B3001-19
20	CAM 15V	B3001-20
21	CAM - 8V	B3001-21
22	CAM 3.5V	B3001-22
23	CAM 3.5V	B3001-23
24	GND DIGI	B3001-24
25	GND DIGI	B3001-25
26	CAM CLOCK	B3001-26
27	CAM TEST	B3001-27
28	CP2A	B3001-28
29	BCMB-Y	B3001-29
30	BCBMR-Y	B3001-30

**CAMERA OPERATION (A) C.B.A. (VEP20437B)**



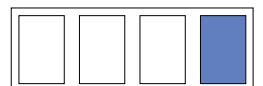
**ZOOM C.B.A. (VEK5862)**



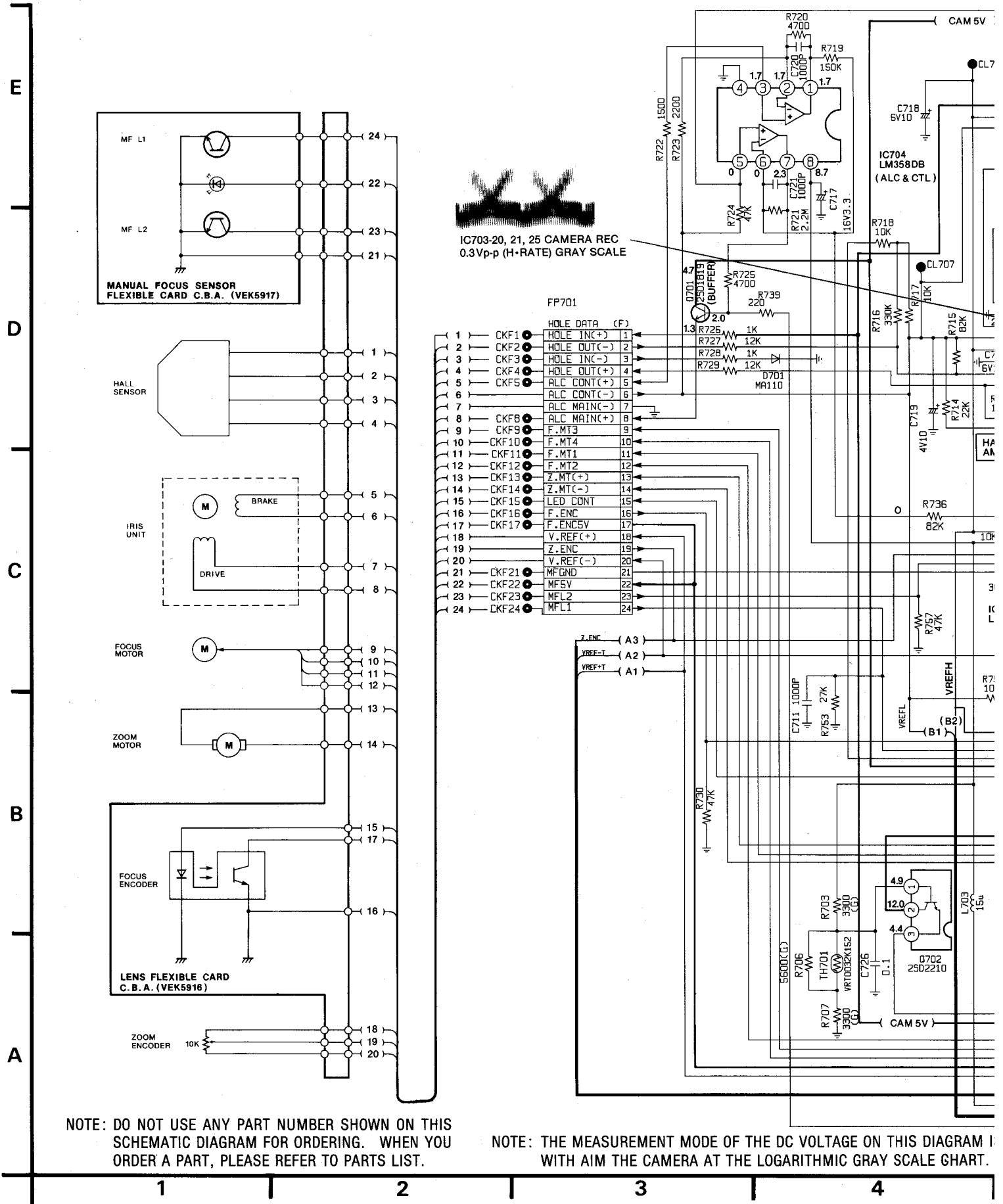


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

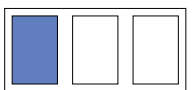


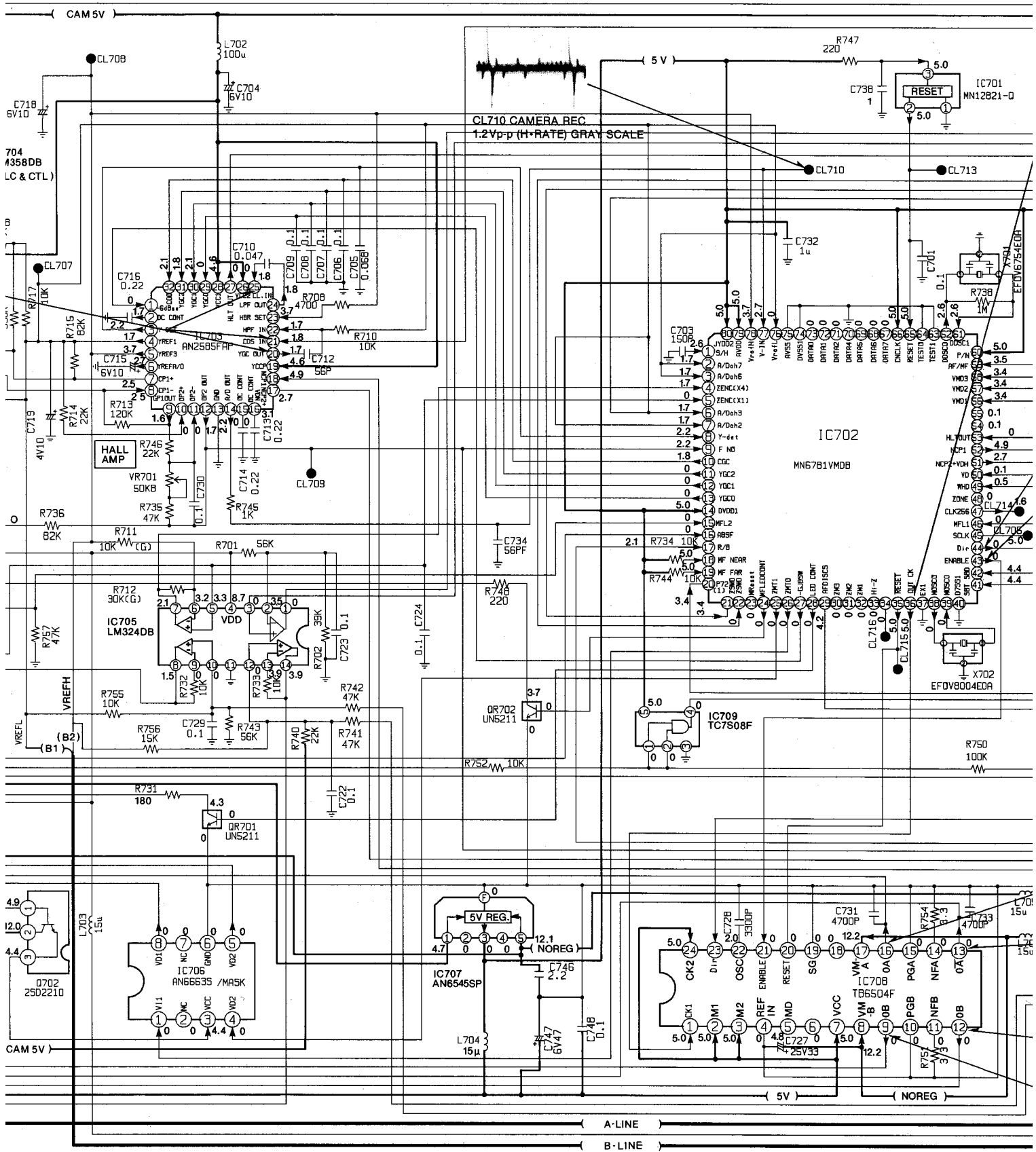
# 3-10. AUTO FOCUS SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

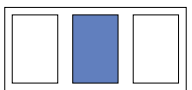
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

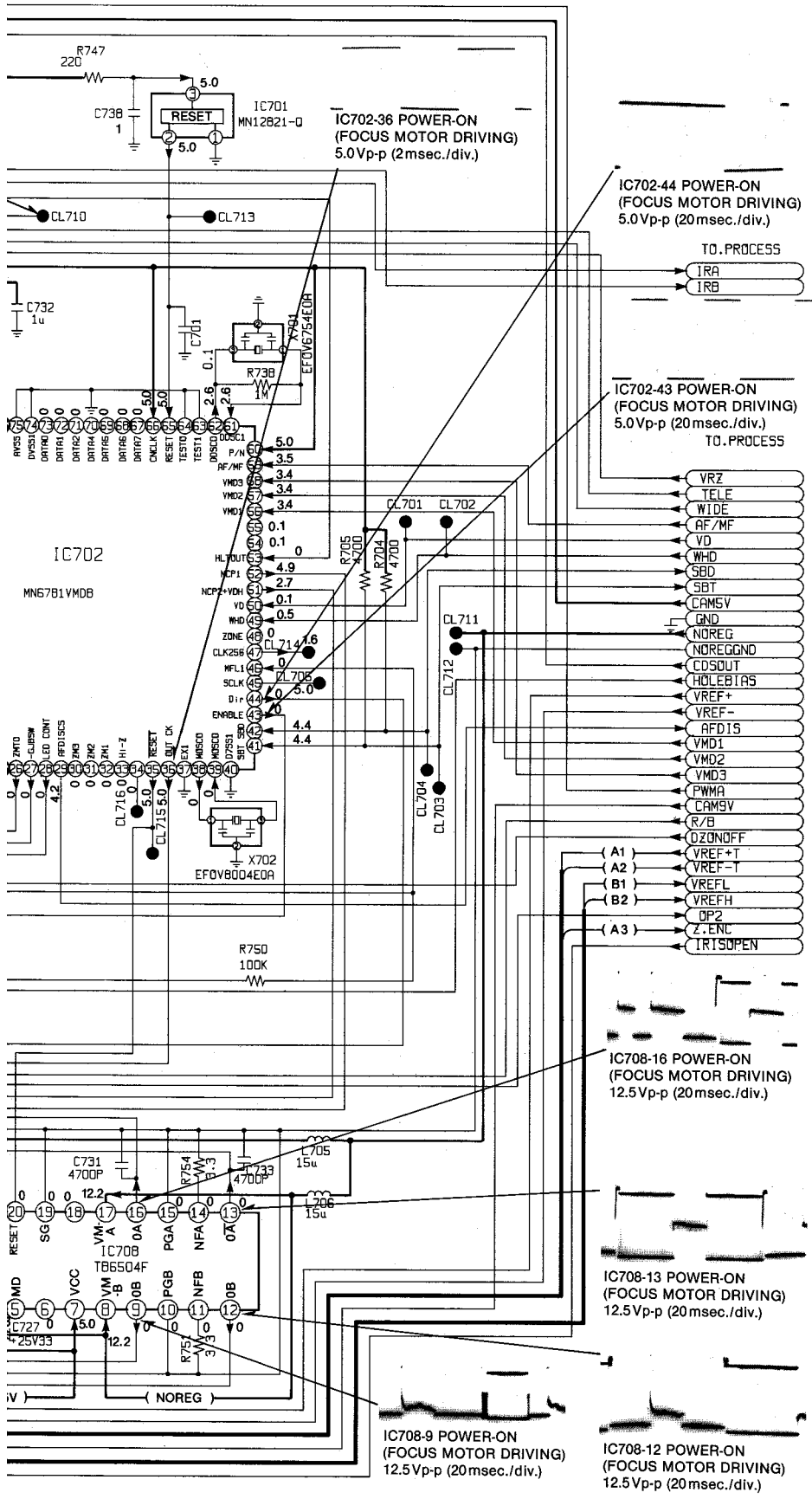




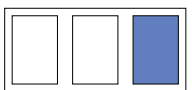
THIS DIAGRAM IS STOP MODE  
SCALE CHART.

5 6 7 8



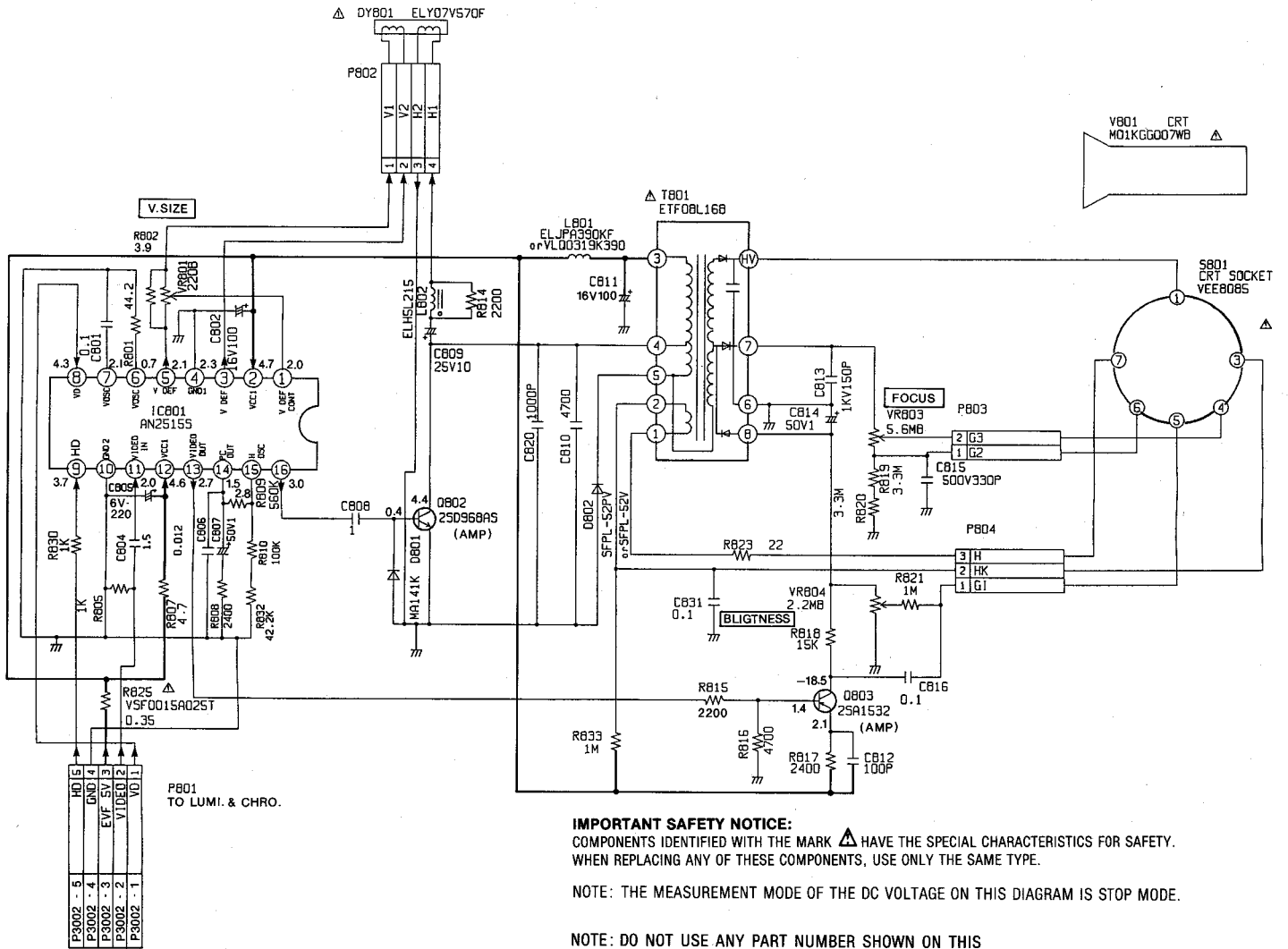


8 9

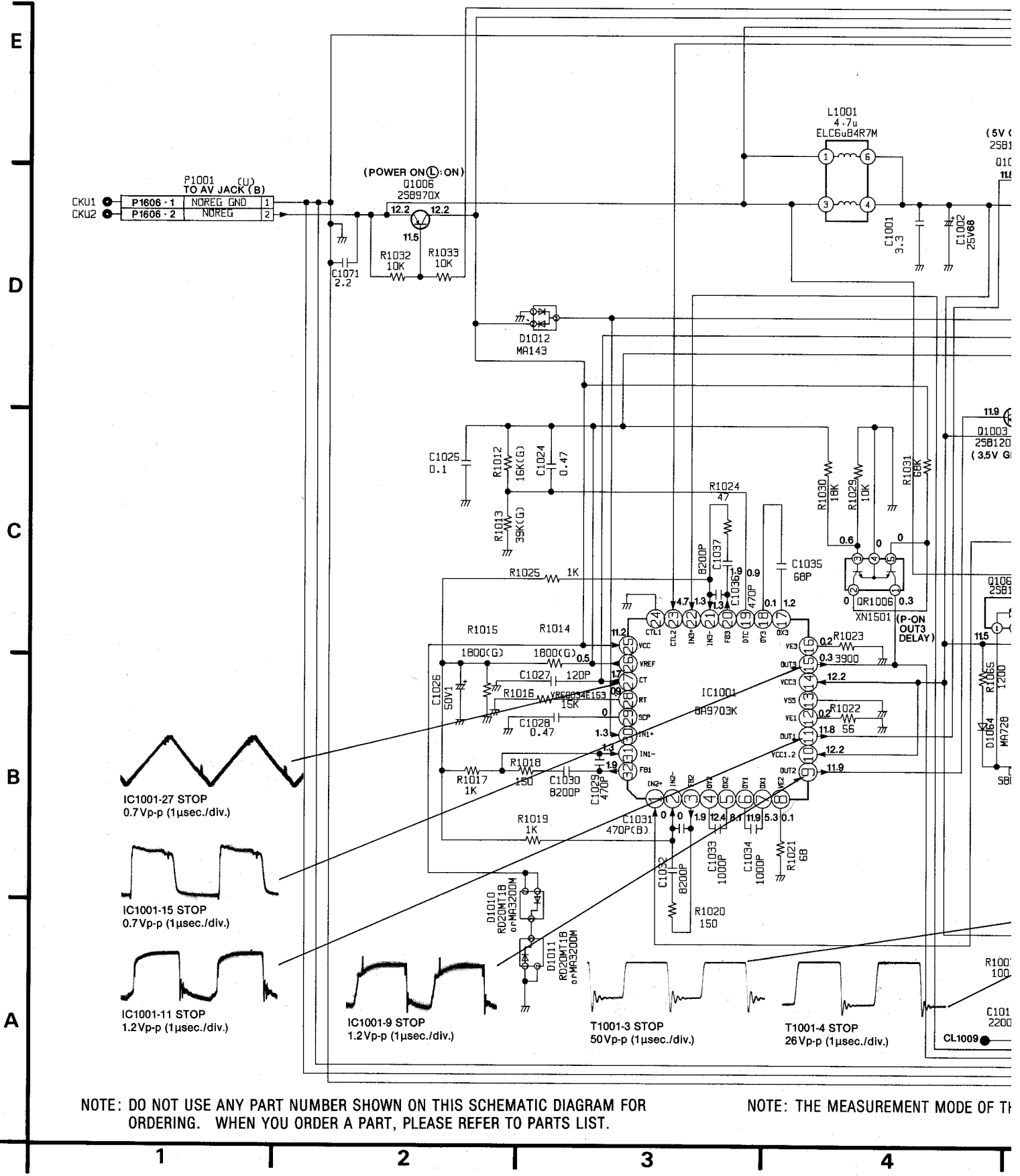




# EVF SCHEMATIC DIAGRAM

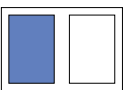


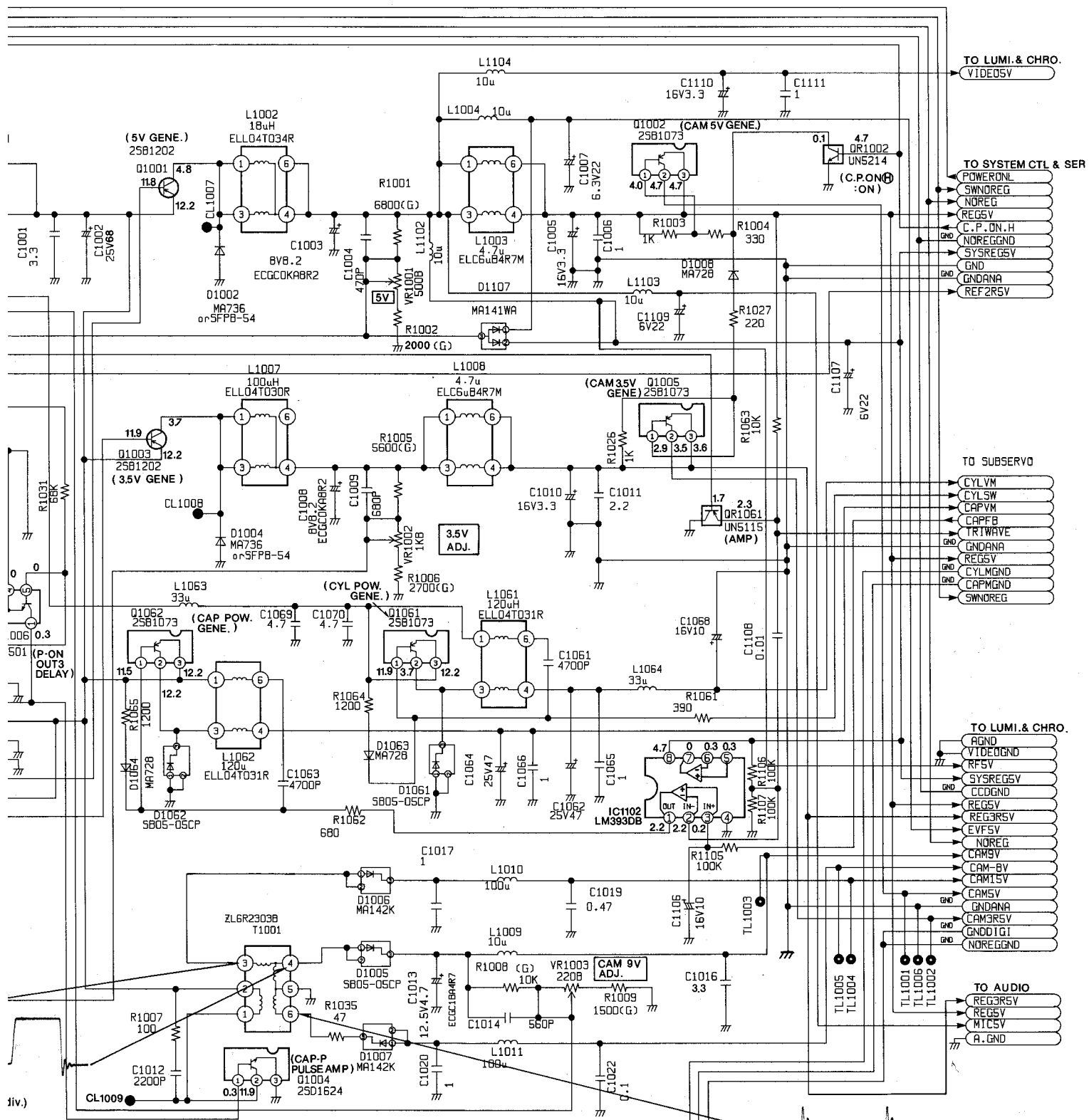
# 3-15. POWER SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE

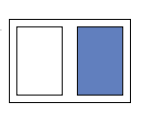
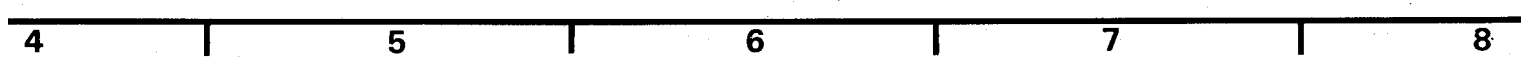




- TO LUMI. & CHRO. VIDEO5V
- TO SYSTEM CTL & SER
  - POWERONL
  - SWNOREG
  - NOREG
  - REG5V
  - C.P. DN.H
  - NOREGGND
  - SYSREG5V
  - GND
  - GNDANA
  - REF25V
- TO SUBSERVO
  - CYLSVM
  - CYLSW
  - CAPVM
  - CAPFB
  - TRTWAVE
  - GNDANA
  - REG5V
  - CYLMGND
  - CAPMGND
  - SWNOREG
- TO LUMI. & CHRO.
  - AGND
  - VIDEOGND
  - RF5V
  - SYSREG5V
  - CCDGND
  - REG5V
  - REG35V
  - EVFSV
  - NOREG
  - CAMS5V
  - CAM-BV
  - CAM15V
  - CAMS5V
  - GNDANA
  - CAM35V
  - GNDDIGI
  - NOREGGND
- TO AUDIO
  - REG35V
  - REG5V
  - MICS5V
  - A.GND

INUMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

T1001-6 STOP  
30Vp-p (1μsec./div.)





## SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART

REF. NO.	IC6009									IC6010								
MODE	1	2	3							1	2	3						
STOP	0	4.7	4.7							5.0	0	12.2						
REC/PLAY	0	4.7	4.7							5.0	0	12.1						
F.F	0	4.7	4.7							5.0	0	12.1						

REF. NO.	IC6011									
MODE	1	2	3	4	5					
STOP	4.7	4.5	0	4.5	4.7					
REC/PLAY	4.7	4.6	0	4.6	4.7					
F.F	4.6	4.6	0	4.7	4.7					

## SYSTEM CONTROL & SERVO TRANSISTORS DC VOLTAGE CHART

REF. NO.	Q6002			Q6003					Q6004			Q6005			Q6006		
MODE	E	C	B	1	2	3	4	5	E	C	B	E	C	B	E	C	B
STOP	0	12.2	0	1.8	1.8	0	0	0	4.7	4.7	4.0	0	0.1	0.7	0	4.6	0.1
REC/PLAY	0	12.1	0	1.8	1.8	0	0	0	4.7	4.7	4.0	0	0.1	0.7	0	4.7	0.1
F.F	1.6	10.9	1.6	1.8	1.8	0	0	0	4.7	4.7	4.0	0	0.1	0.7	0	4.6	0.1

REF. NO.	Q6007			Q6008			Q6009			Q6010			Q6012		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.7	0	4.7	3.1	0	0									
REC/PLAY	4.7	0	4.7	3.1	3.9	0									
F.F	4.7	0	4.7	3.1	4.0	0									

REF. NO.	QR6001			QR6002			QR6003			QR6004						QR6005		
MODE	E	C	B	E	C	B	E	C	B	1	2	3	4	5	6	E	C	B
STOP	0	0.1	0	4.7	0.1	4.7	0	0	0	4.7	4.0	4.7	4.7	4.1	4.7	4.7	0	4.7
REC/PLAY	0	0	4.4	4.7	1.6	4.7	0	4.7	0.1	4.7	0	4.7	4.6	4.0	4.7	4.7	0	4.7
F.F	0	0	0	4.7	0.1	4.7	0	4.7	0	4.7	4.0	4.7	4.7	4.1	4.7	4.7	1.6	3.8

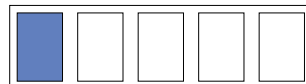
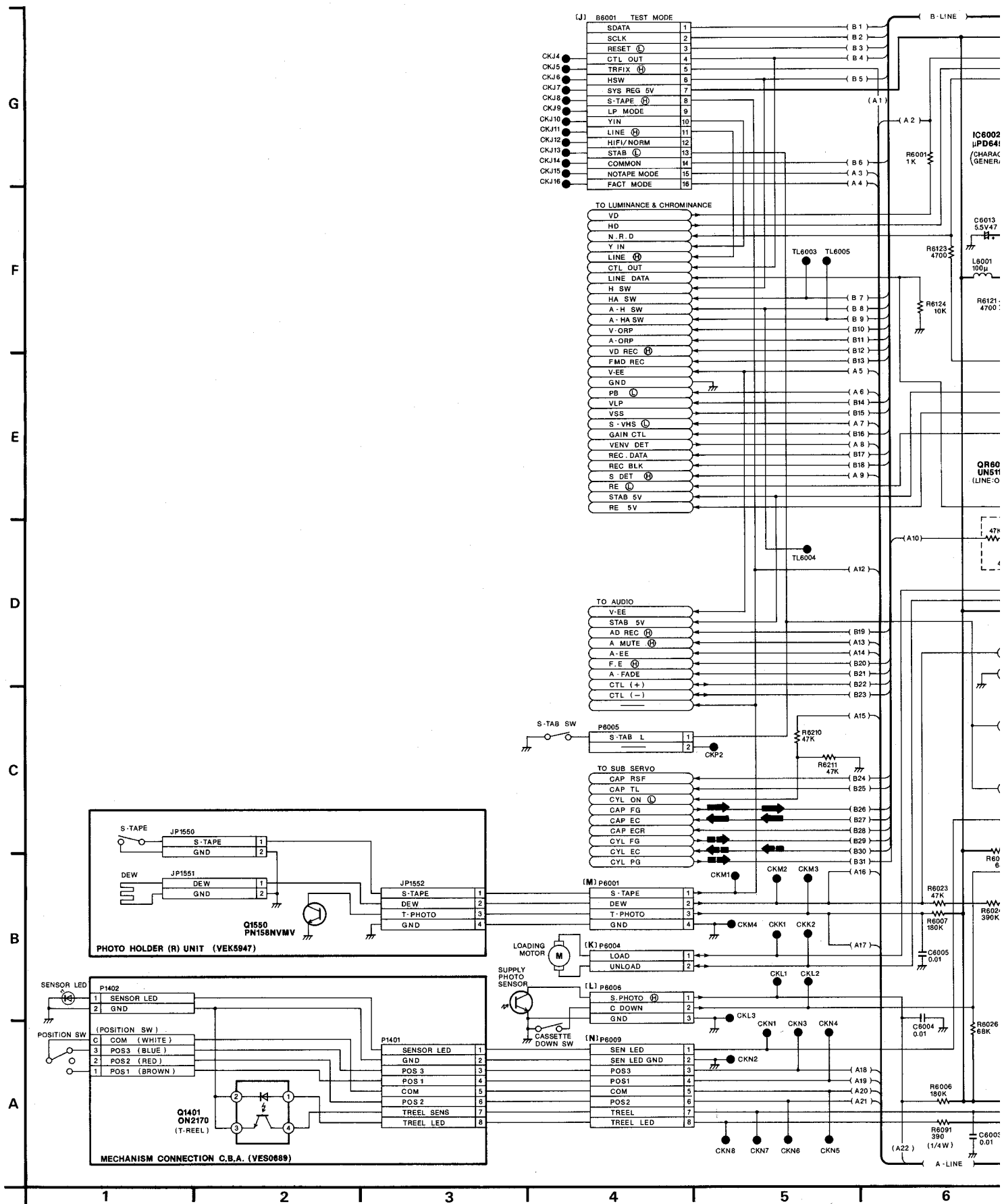
  

REF. NO.	QR6006			QR6007			QR6008			QR6010			QR6011			QR6012		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0	0	0	0.1	4.5	0	0.1	4.7	4.7	4.6	0	4.7	0	4.7	4.7	0	4.7
REC/PLAY	0	4.7	0	0	0.1	4.3	0	0.1	4.7	4.7	4.6	0	4.7	0	4.7	4.7	0	4.7
F.F	0	4.7	0	0	0.1	4.3	0	0.1	4.7	4.7	4.6	0	4.7	0	4.7	4.7	0	4.7

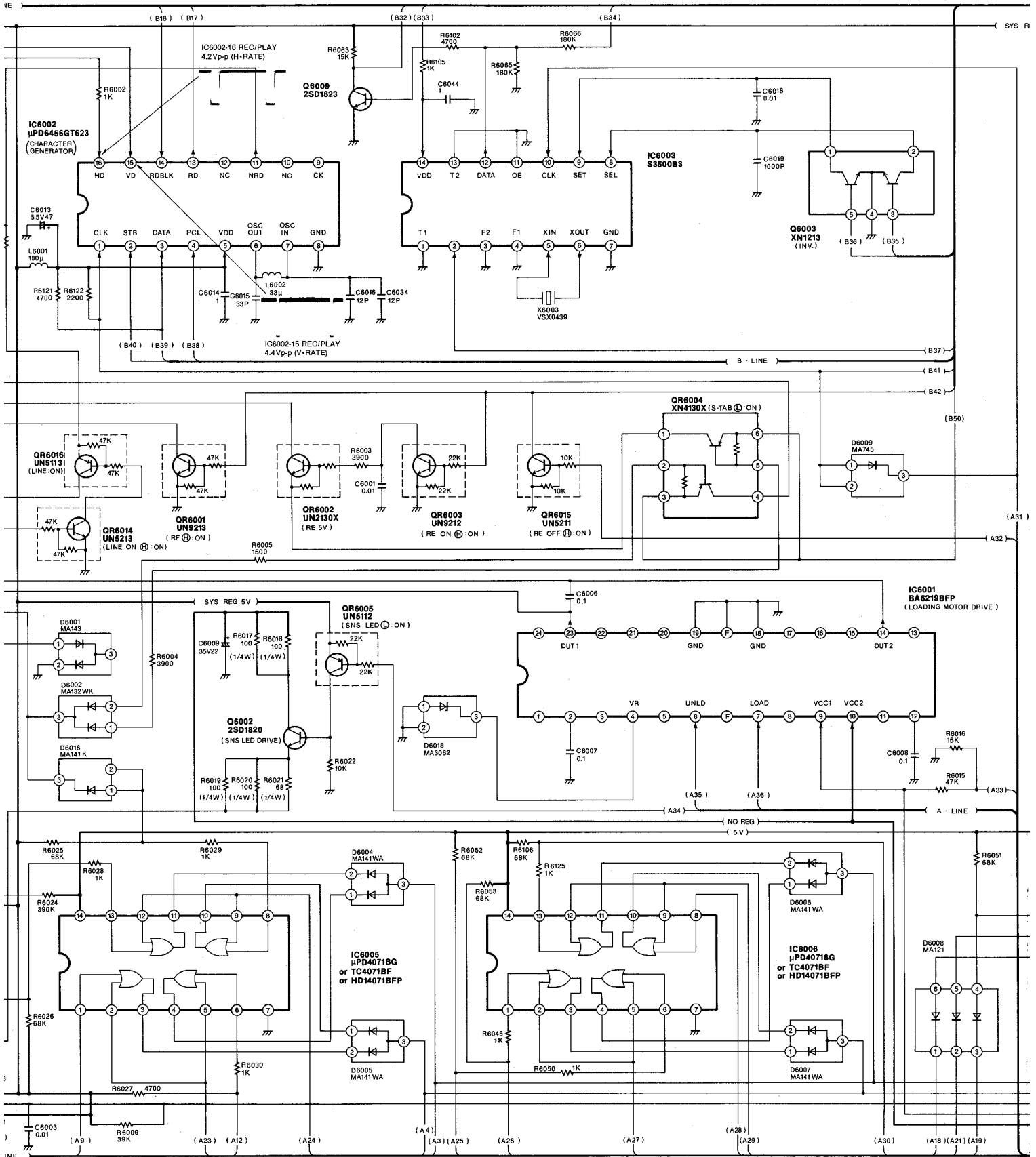
REF. NO.	QR6013			QR6014			QR6015			QR6016			QR6017			QR6018		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0	12.6	0	0	0	0	0	0									
REC/PLAY	0	0	12.5	0	0	4.7	0	0	4.7									
F.F	0	0	12.4	0	0	0	0	0	0									

# 3-16. SYSTEM CONTROL & SERVO SCHEMATIC DIAGRAM



← CAPSTAN SERVO SPEED LOOP

← CAPSTAN SERVO PHA



7

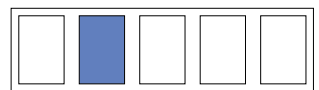
8

9

10

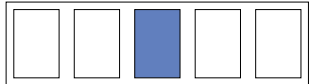
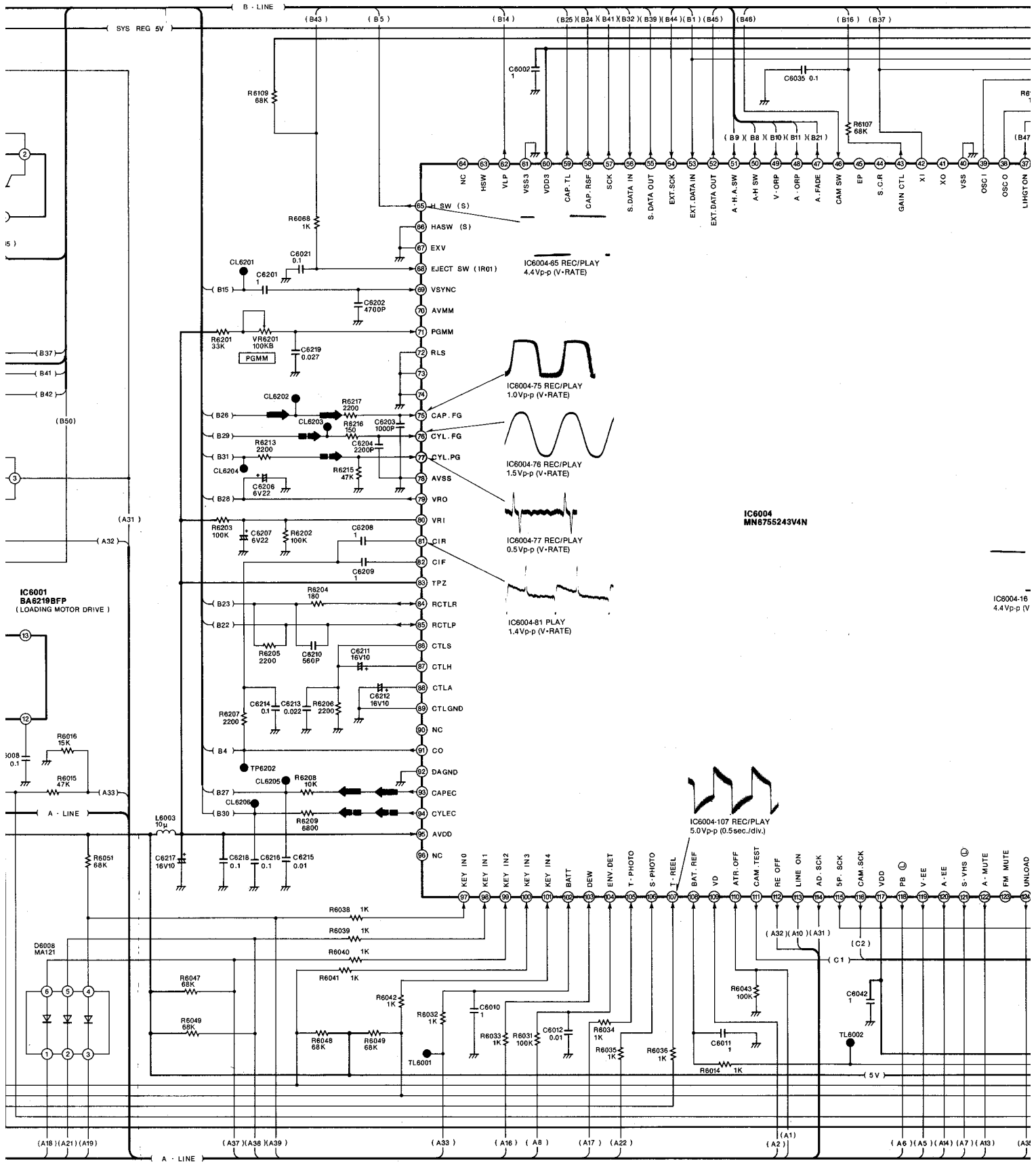
11

12



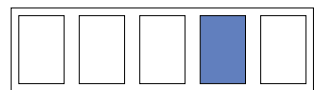
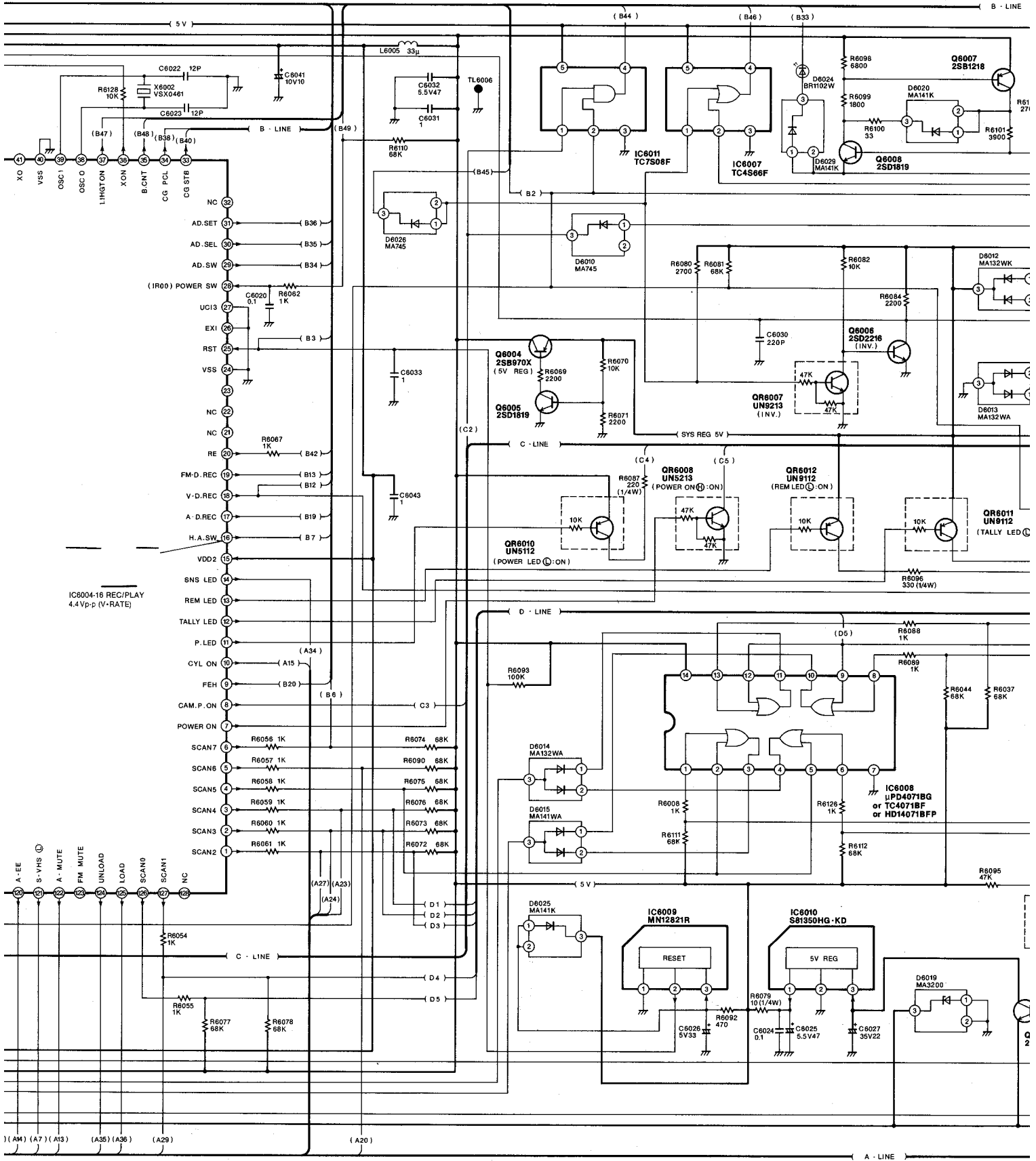
1 SERVO PHASE LOOP

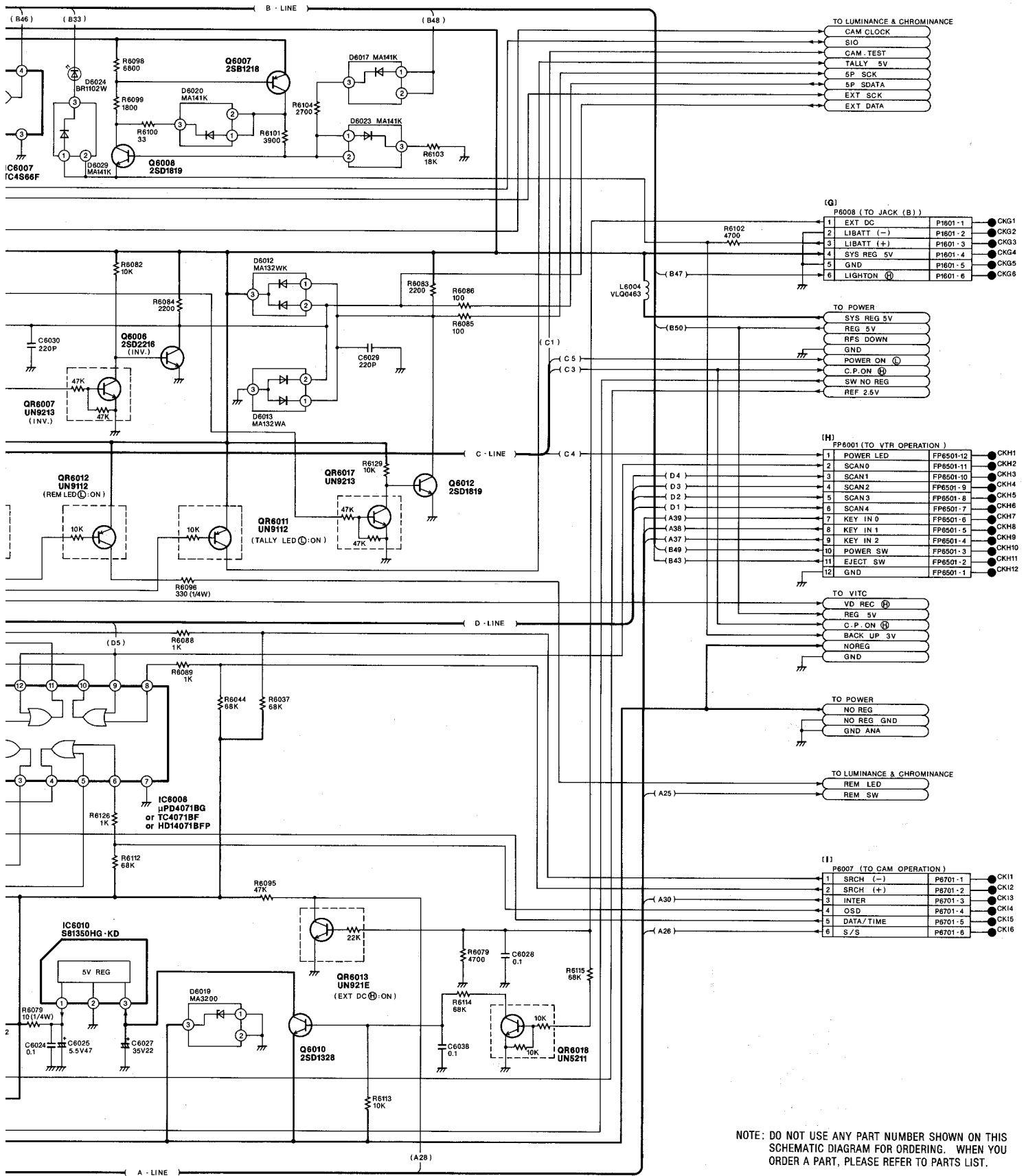
← CYLINDER SERVO SPEED LOOP →



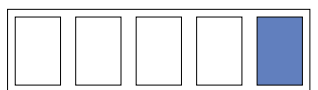


# CYLINDER SERVO PHASE LOOP



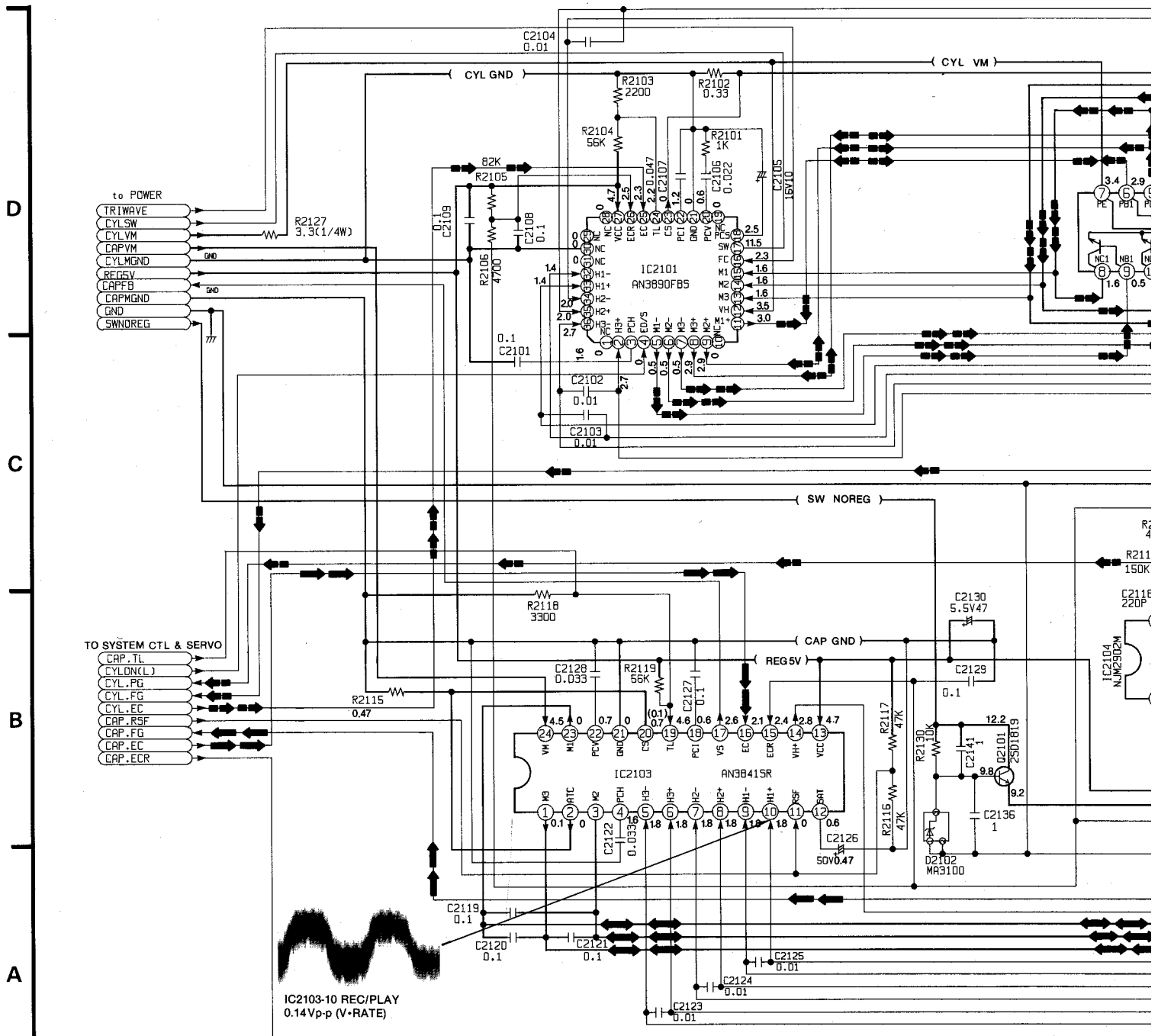


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.



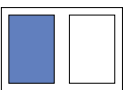
# 3-17. SUB SERVO SCHEMATIC DIAGRAM

- ← CAPSTAN SE
- ← CAPSTAN SE
- ← CYLINDER S
- ← CYLINDER S

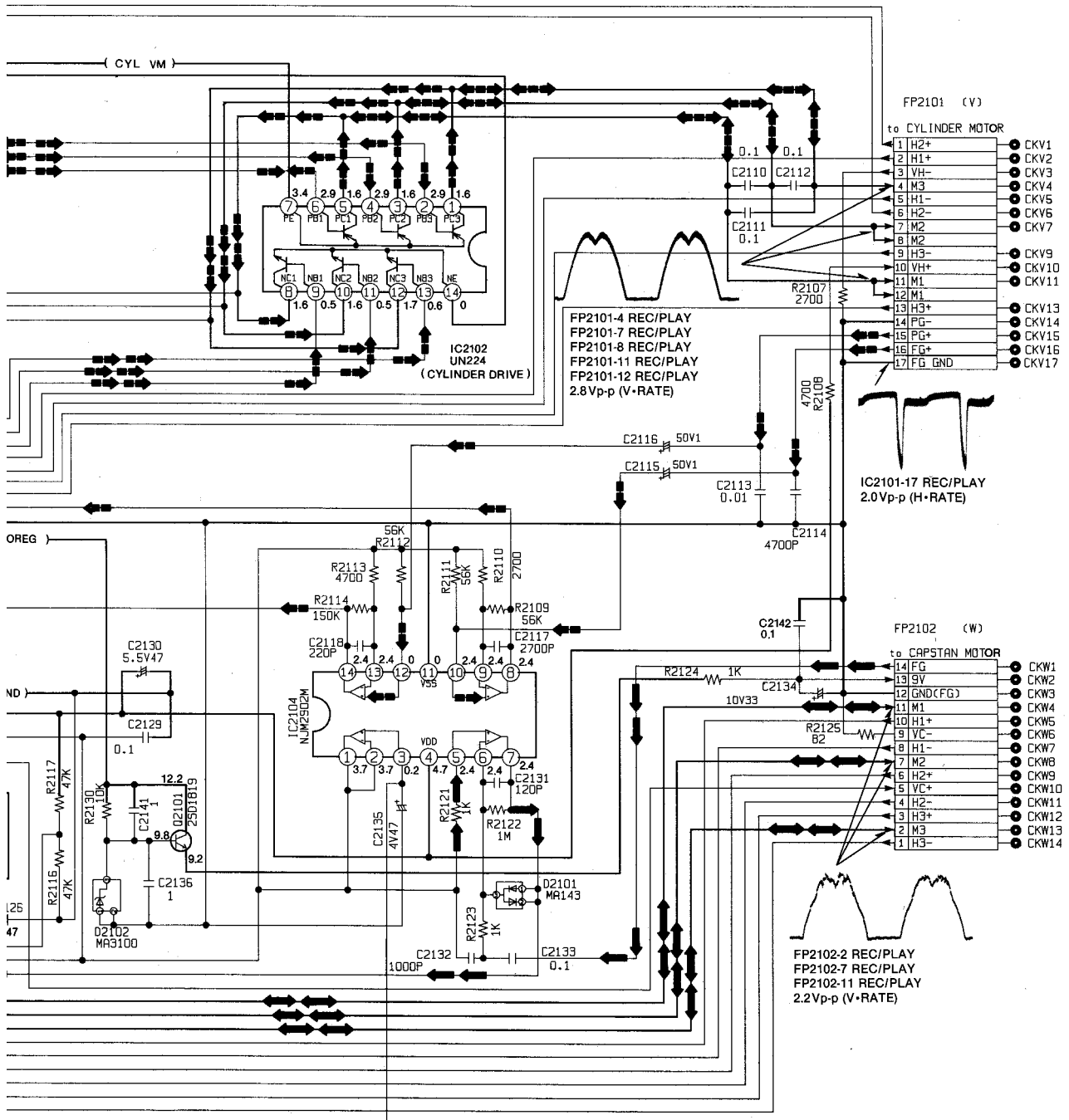


NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS

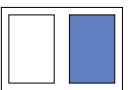


- ← CAPSTAN SERVO SPEED LOOP
- ← CAPSTAN SERVO PHASE LOOP
- ← CYLINDER SERVO SPEED LOOP
- ← CYLINDER SERVO PHASE LOOP

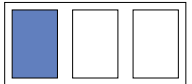
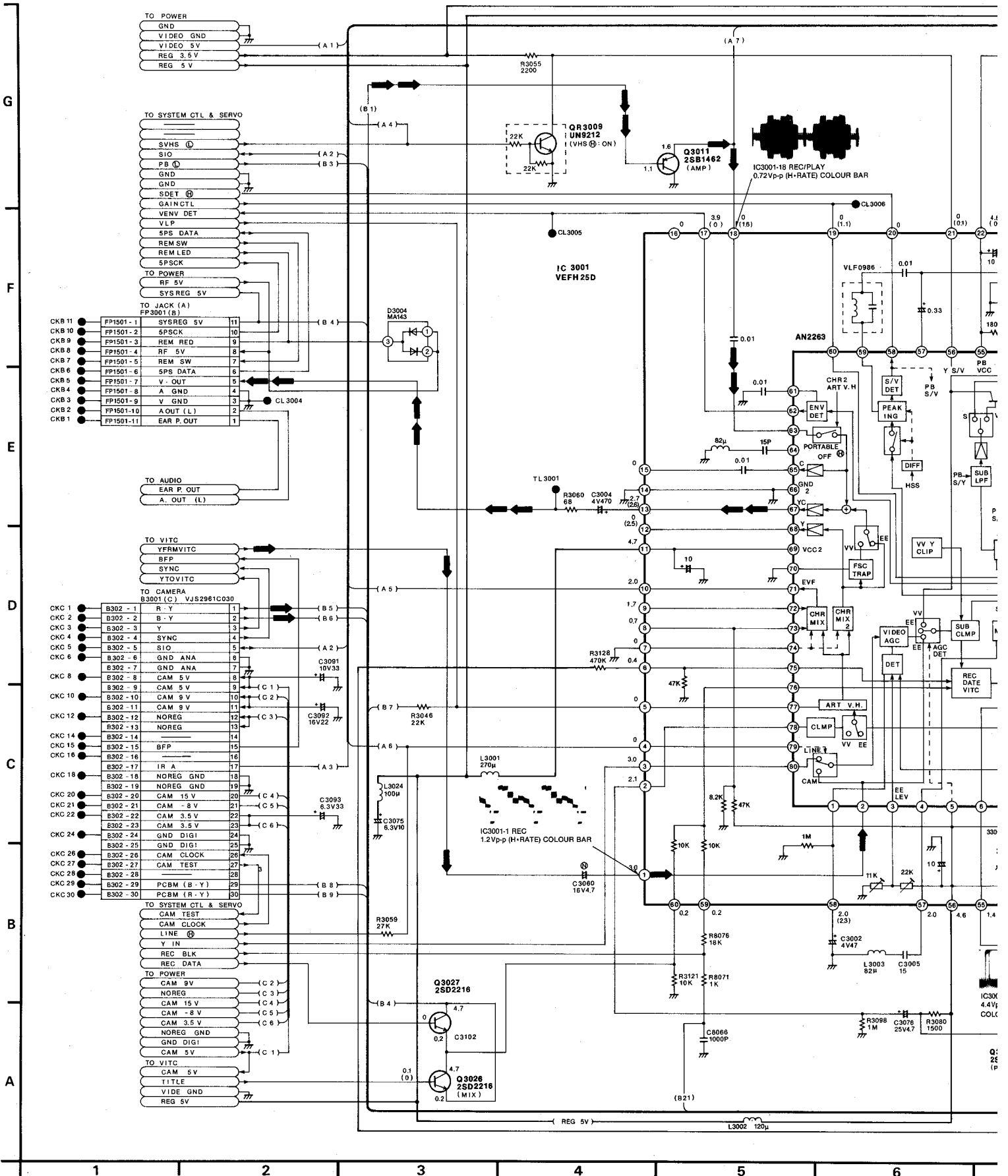


MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE.  
 MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

4 | 5 | 6 | 7

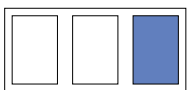
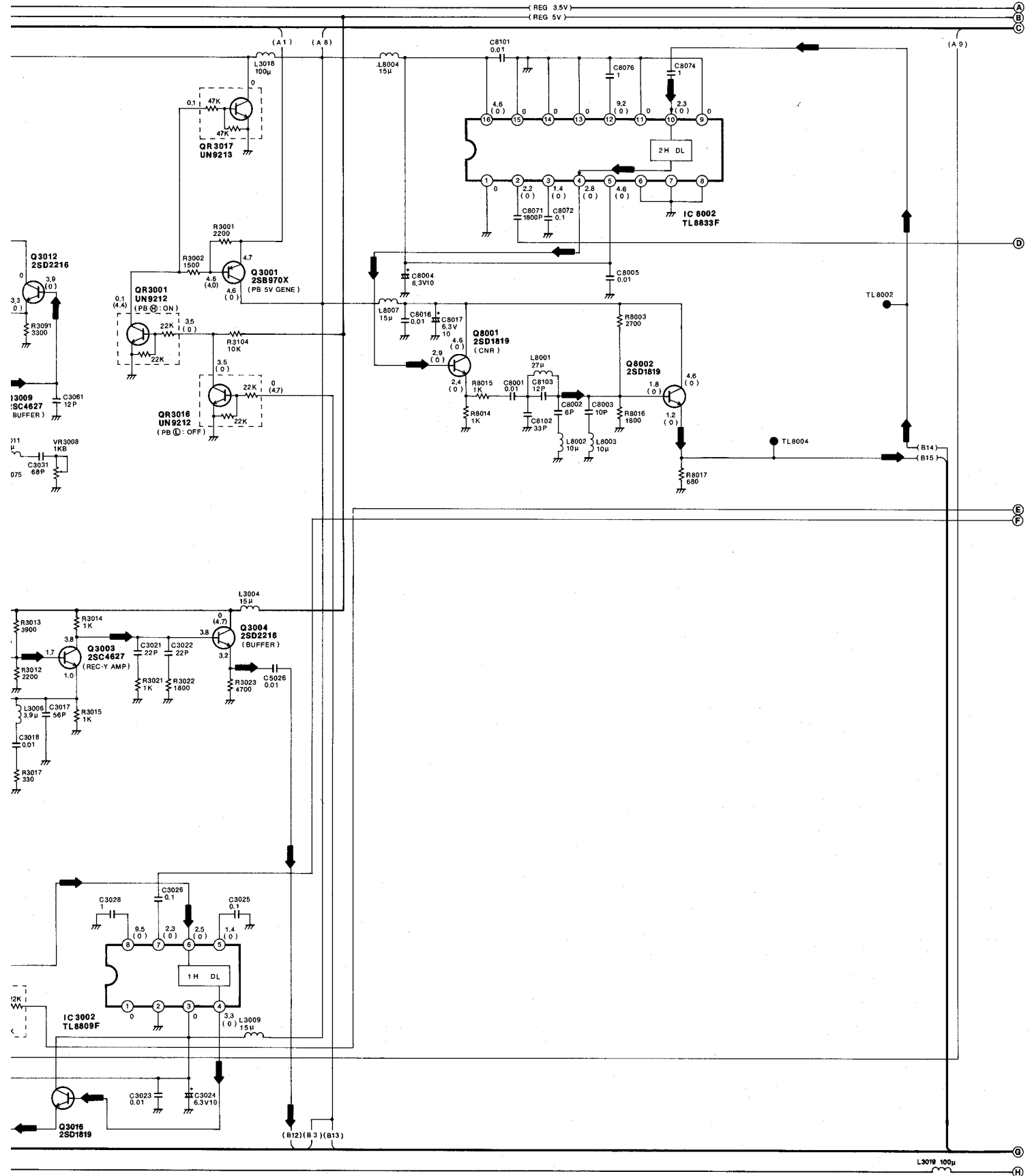


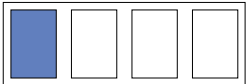
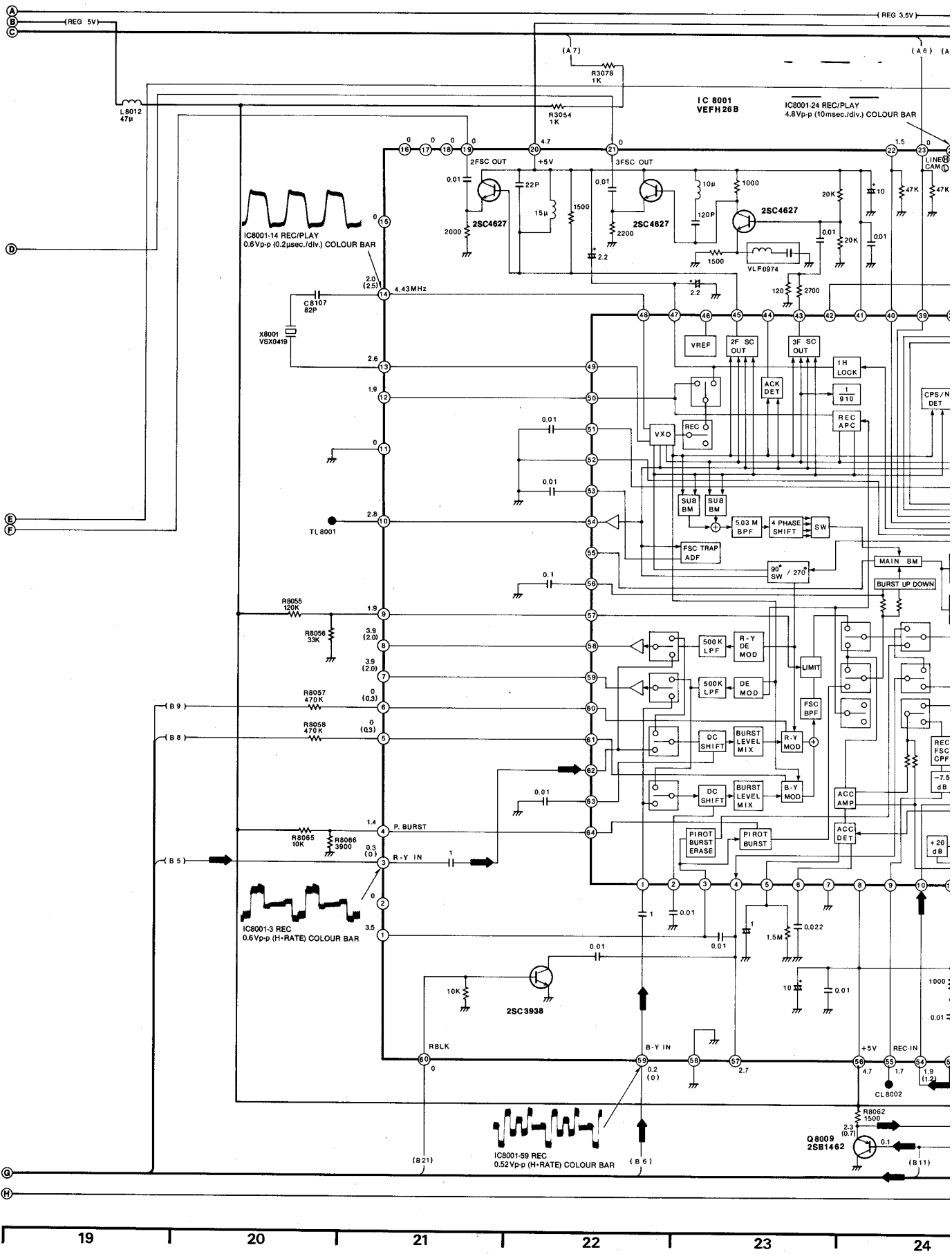
# 3-18. LUMINANCE/CHROMINANCE & HEAD AMP SCHEMATIC DI



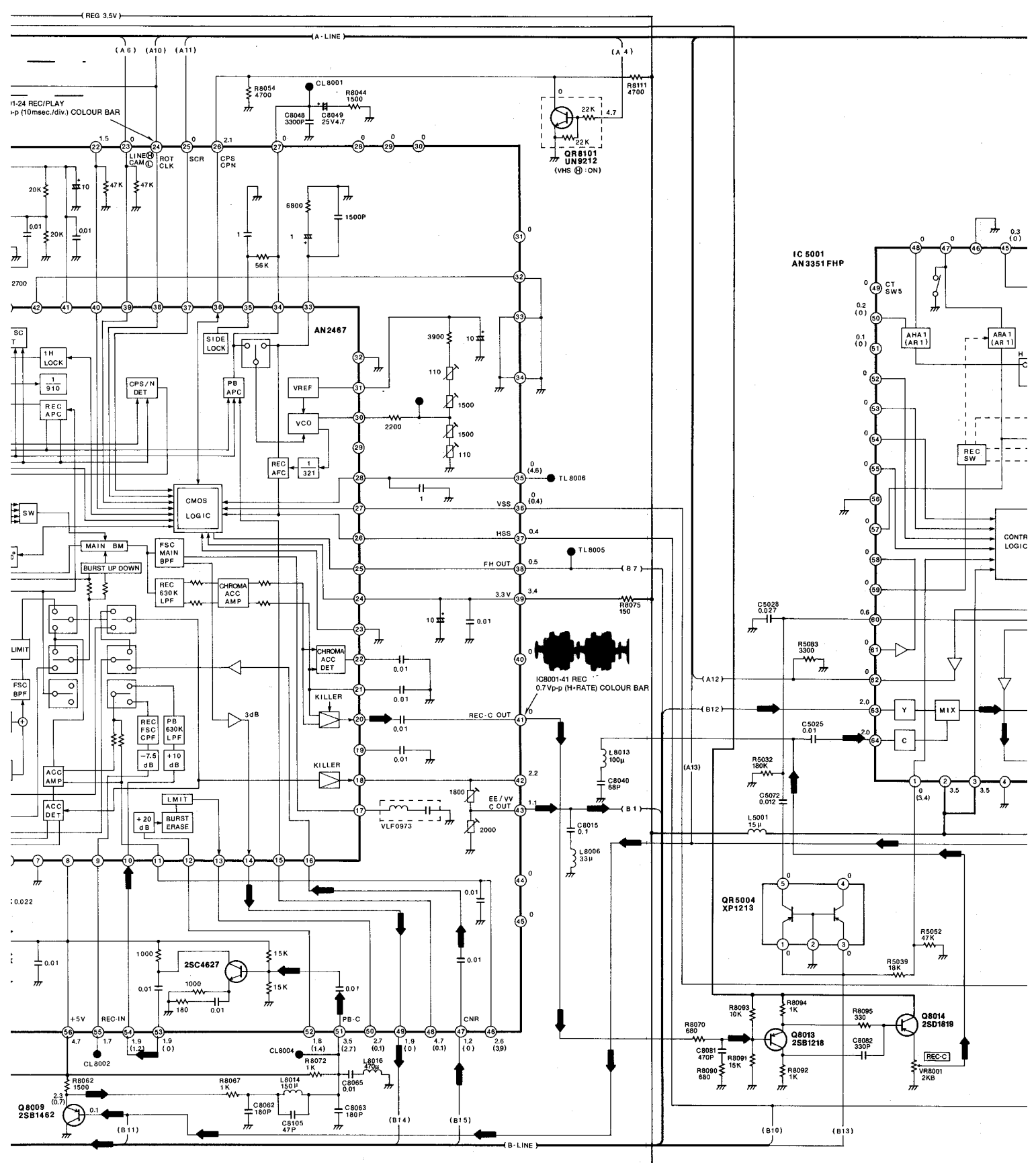


# MAIN SIGNAL PATH IN PLAYBACK MODE





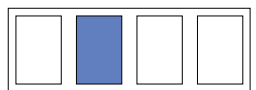


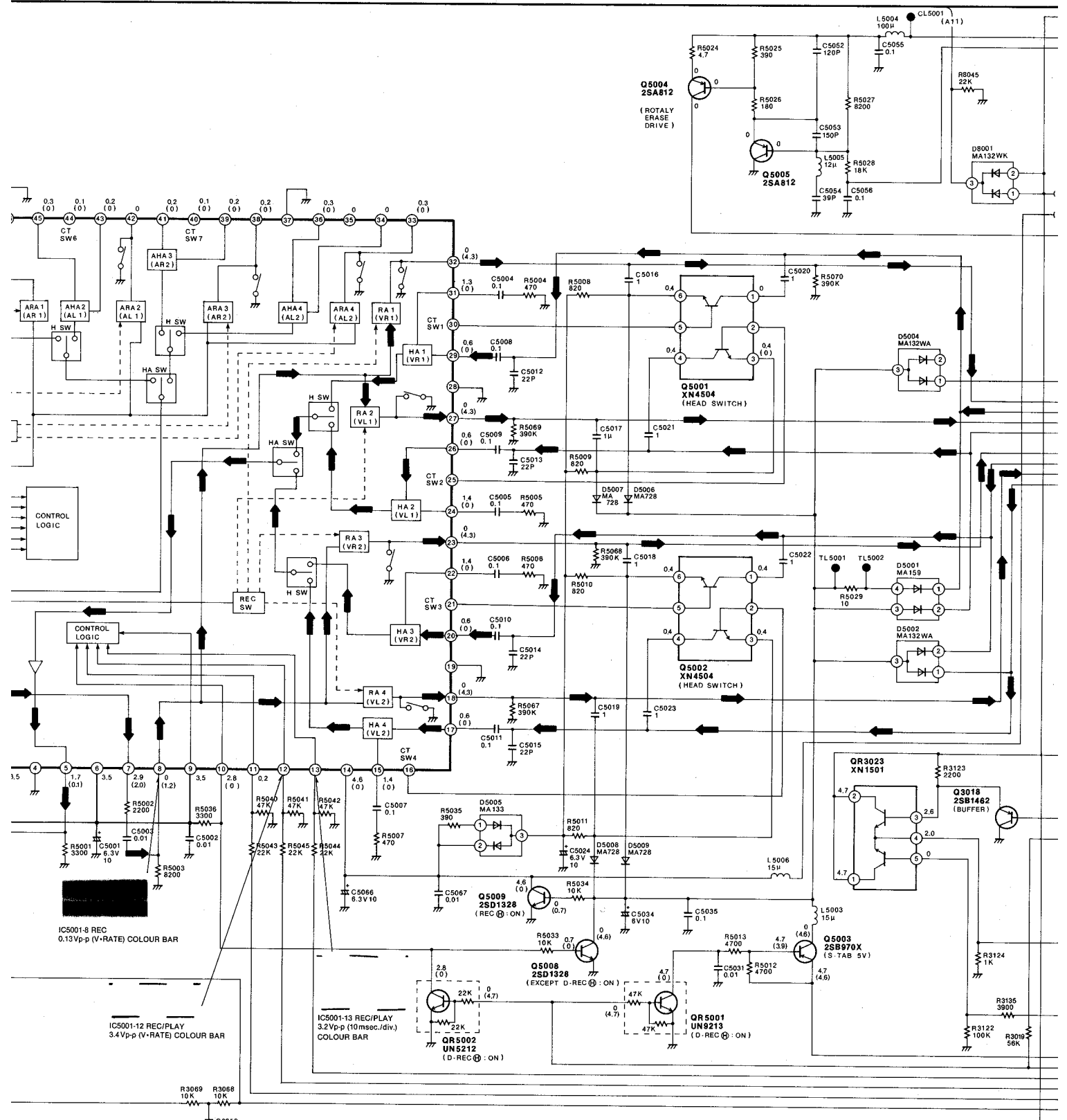


1-24 REC/PLAY  
 >p (10msec/div.) COLOUR BAR

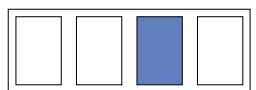
0:022

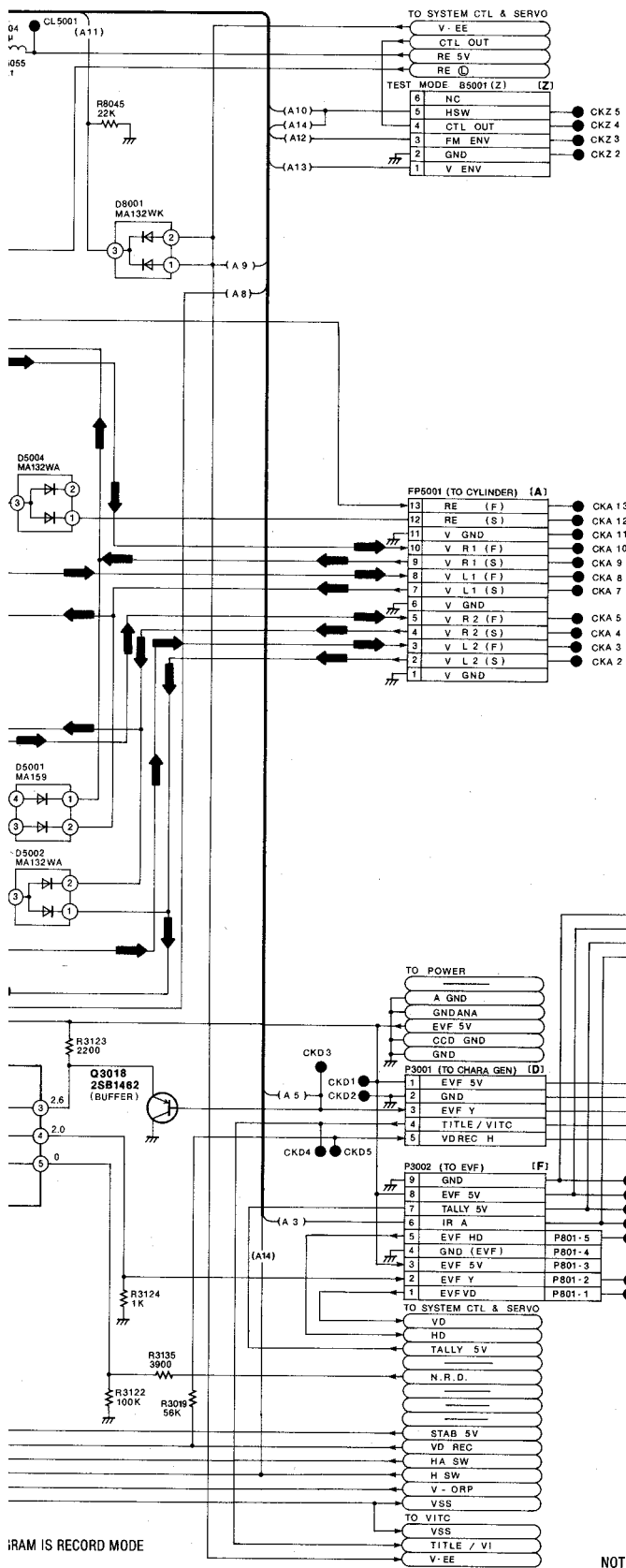
24 25 26 27 28 29



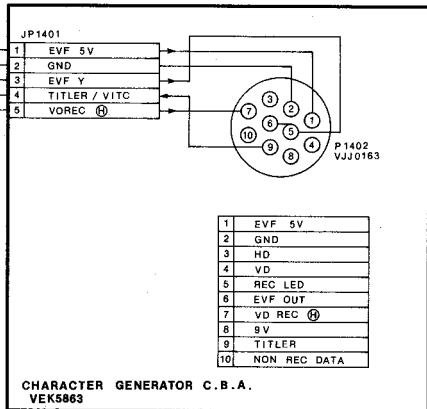
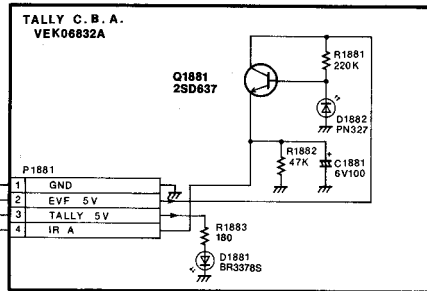


NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.  
 THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.





IRAM IS RECORD MODE  
M IS PLAYBACK MODE



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

G  
F  
E  
D  
C  
B  
A

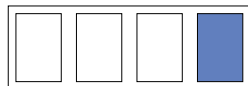
35

36

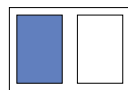
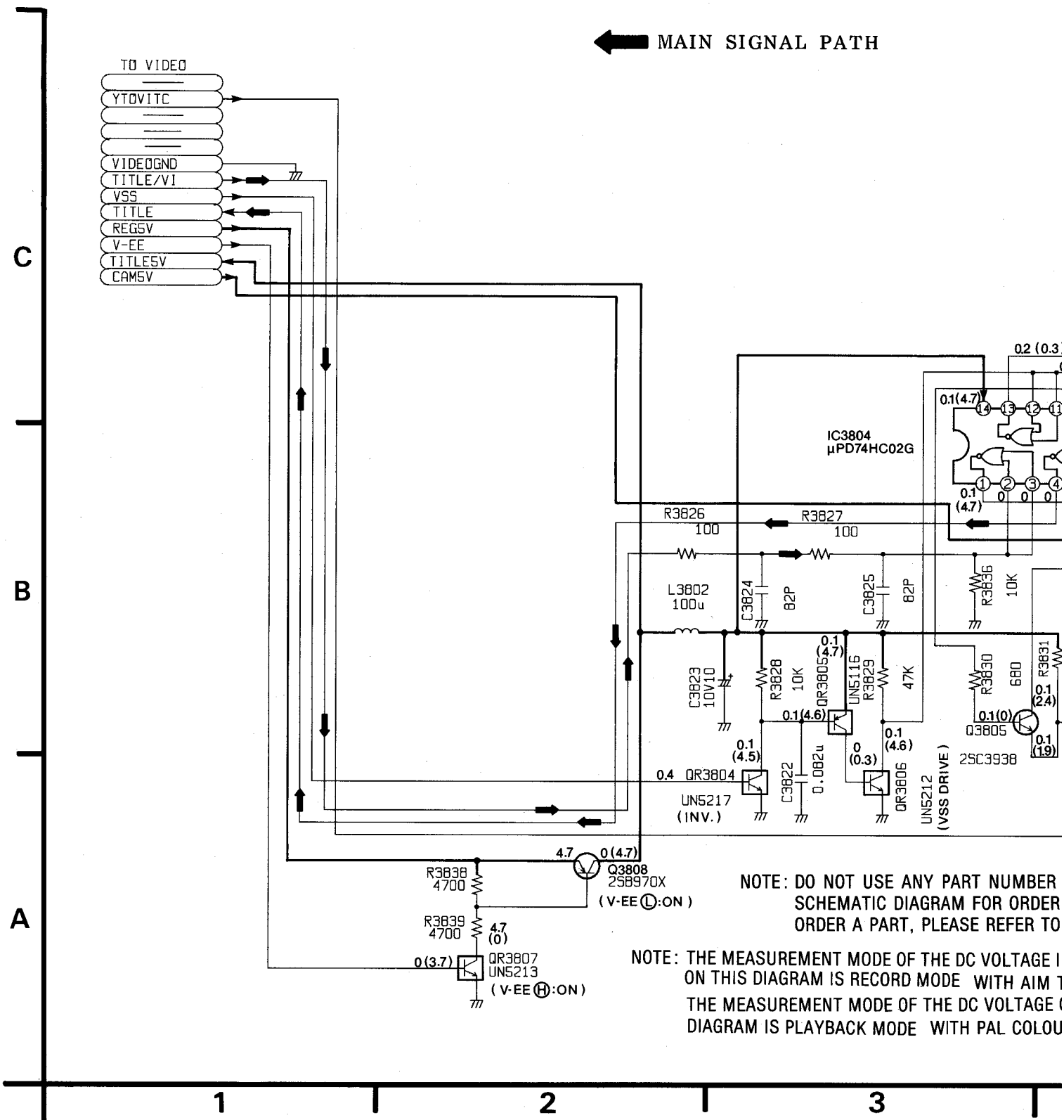
37

38

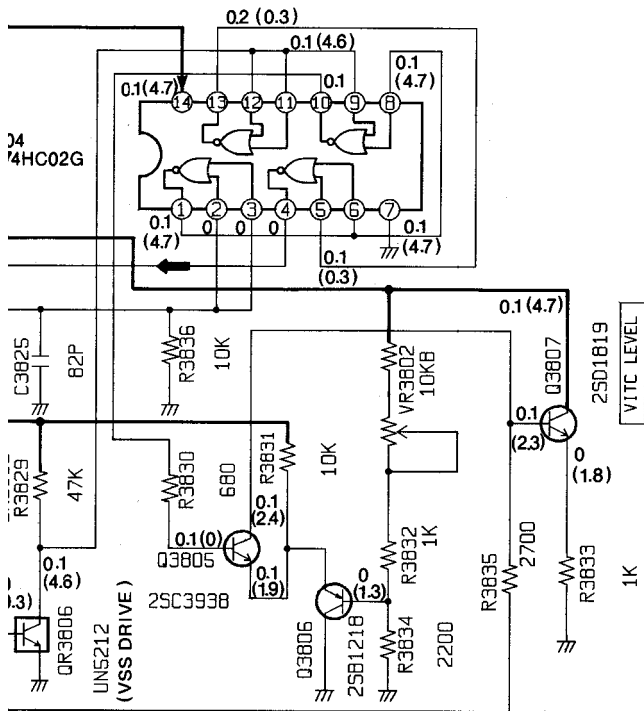
39



# 3-19. VITC SCHEMATIC DIAGRAM



H

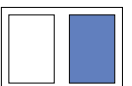


USE ANY PART NUMBER SHOWN ON THIS  
 Schematic Diagram FOR ORDERING. WHEN YOU  
 ORDER A PART, PLEASE REFER TO PARTS LIST.

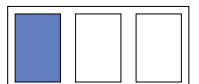
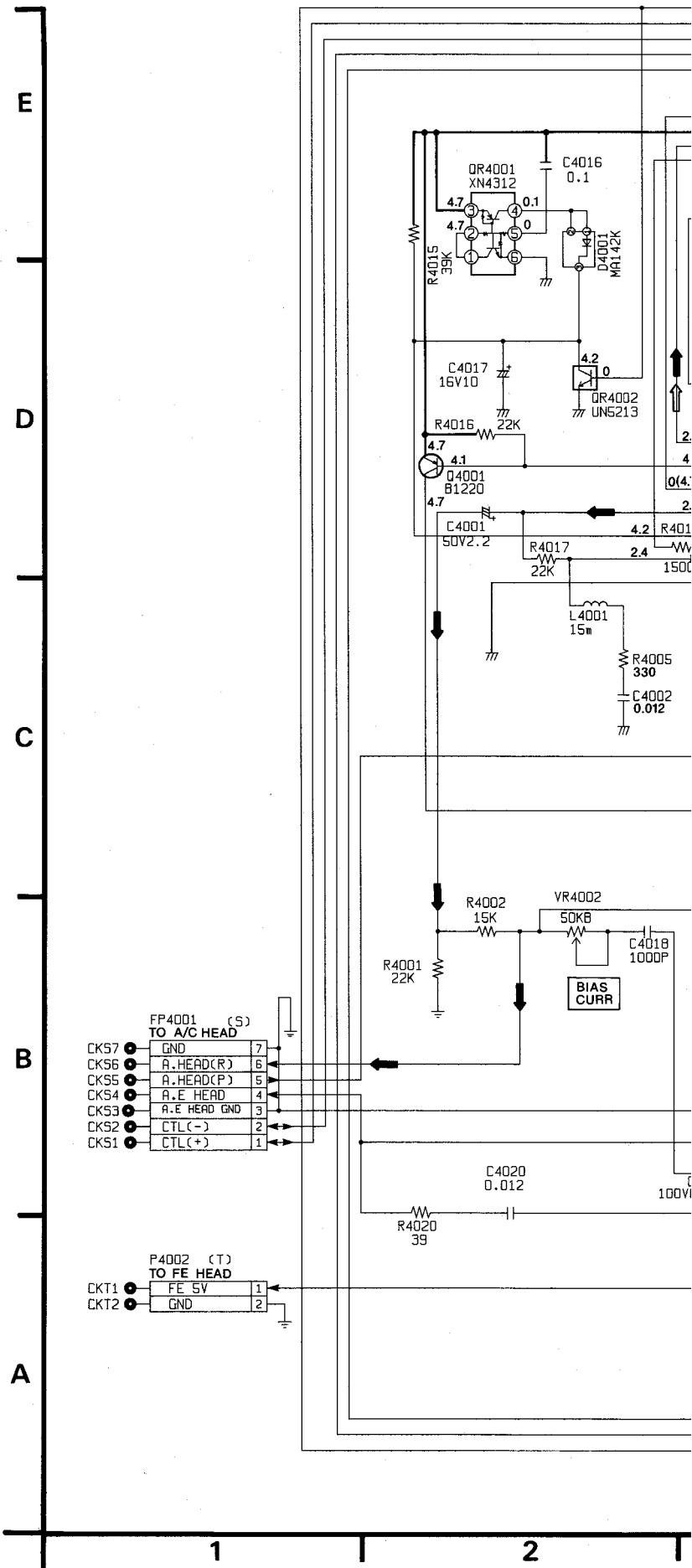
RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.  
 RECORD MODE WITH PAL COLOUR SIGNAL.

3

4

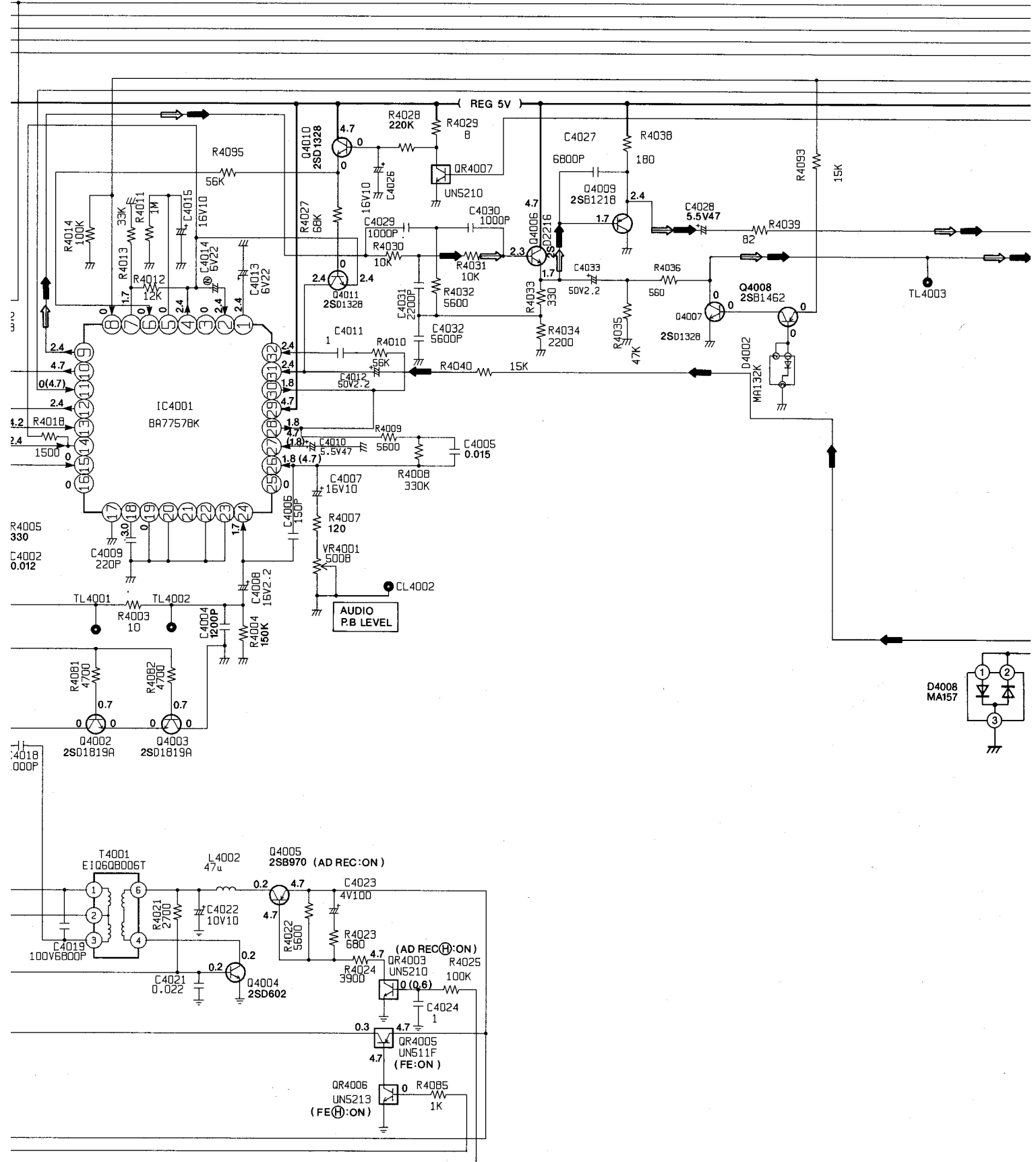


# 3-20. AUDIO SCHEMATIC DIAGRAM



← MAIN SIGNAL PATH IN REC MODE

← MAIN SIGNAL PATH IN PLAY MODE



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

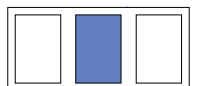
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THE SCHEMATIC DIAGRAM IS THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS SCHEMATIC DIAGRAM.

3

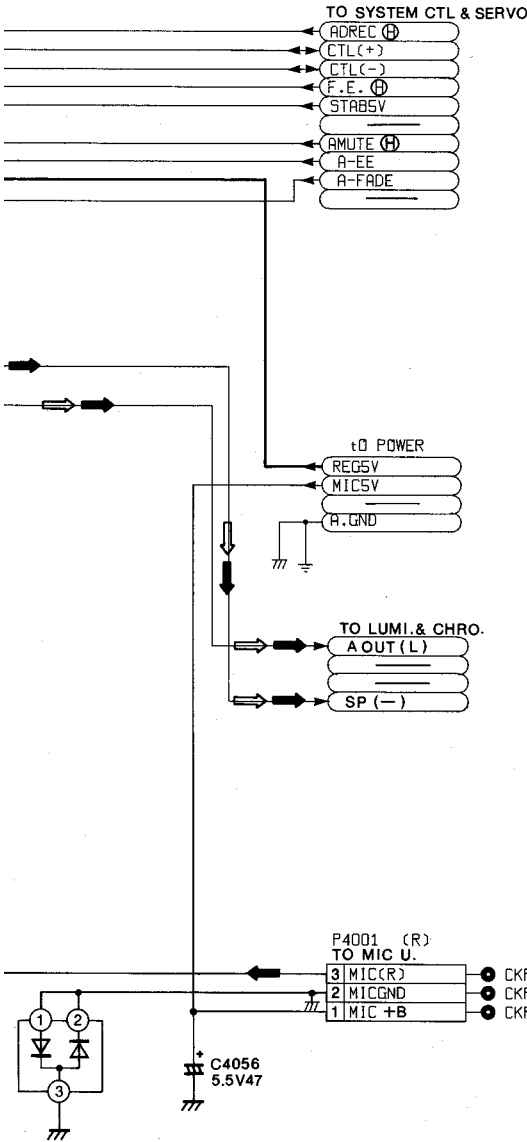
4

5

6



**PLAYBACK MODE**



**MAIN C.B.A. ADDRESS INFORMATION**

POWER Section	
<b>Transistor</b>	
Q1001	G-14
Q1002	E-13
Q1003	G-15
Q1004	G-14
Q1005	F-13
Q1006	E-16
Q1061	G-15
Q1062	G-16
<b>Transistor &amp; Resistor</b>	
QR1002	F-14
QR1006	F-14
QR1061	E-15
<b>Integrated Circuit</b>	
IC1001	F-15
IC1102	E-16
<b>Test Point</b>	
CL1007	G-9
CL1008	G-9
CL1009	G-10
TL1001	E-9
TL1002	E-9
TL1003	E-10
TL1004	E-10
TL1005	E-10
TL1006	E-10
<b>Adjustment</b>	
VR1001	F-9
VR1002	F-9
VR1003	E-8
<b>Connector</b>	
P1001	G-11

ADDRESS INFORMATION

AUDIO Section	
<b>Transistor</b>	
Q4001	B-15
Q4002	A-16
Q4003	A-16
Q4004	A-15
Q4005	A-15
Q4006	B-15
Q4007	B-8
Q4008	B-15
Q4009	B-15
Q4010	B-16
Q4011	B-16
<b>Transistor &amp; Resistor</b>	
QR4001	B-15
QR4002	B-15
QR4003	A-16
QR4005	A-16
QR4006	A-16
QR4007	B-8
<b>Integrated Circuit</b>	
IC4001	B-16
<b>Test Point</b>	
CL4001	B-8
CL4002	B-8
TL4001	B-8
TL4002	A-7
TL4003	B-7
<b>Adjustment</b>	
VR4001	B-8
VR4002	B-8
<b>Connector</b>	
FP4001	A-8
P4001	G-6
P4002	C-1

ADDRESS INFORMATION

LUMINANCE/CHROMINANCE & HEAD AMP Section			
<b>Transistor</b>		<b>Test Point</b>	
Q3001	D-22	CL3001	E-3
Q3008	E-21	CL3002	E-3
Q3009	E-21	CL3003	E-3
Q3011	G-22	CL3004	E-4
Q3012	E-21	CL3005	E-4
Q3014	D-21	CL3006	E-4
Q3016	F-22	CL3007	E-3
Q3018	D-20	CL3008	E-3
Q3022	C-2	CL3009	E-2
Q3025	F-2	CL3010	D-3
Q3026	D-20	CL3011	D-4
Q3027	E-20	CL3012	E-3
Q5001	B-20	CL5001	B-4
Q5002	A-21	CL8001	E-5
Q5003	B-20	CL8002	F-6
Q5004	A-4	CL8003	E-5
Q5005	A-5	CL8004	F-6
Q5008	B-19	TL3001	C-5
Q5009	A-20	TL3003	E-2
Q8001	F-5	TL3004	D-3
Q8002	E-6	TL5001	A-3
Q8009	F-18	TL5002	A-3
Q8013	E-6	TL5003	A-3
Q8014	E-18	TL5004	D-8
<b>Transistor &amp; Resistor</b>		TL8001	F-5
QR3001	D-22	TL8002	E-5
QR3009	E-20	TL8004	E-6
QR3016	D-22	TL8005	E-5
QR3023	F-4	TL8006	E-5
QR3024	C-2	<b>Adjustment</b>	
QR5001	C-19	VR3001	D-2
QR5002	B-3	VR3005	F-2
QR5004	C-21	VR3008	E-2
QR8101	E-19	VR8001	E-5
<b>Integrated Circuit</b>		<b>Connector</b>	
IC3001	E-3	B3001	E-22
IC3002	F-21	B5001	C-4
IC5001	B-3	FP3001	B-6
IC8001	E-5	FP5001	A-3
IC8002	F-19	P3001	G-2
		P3002	G-4
		P3004	G-3

ADDRESS INFORMATION

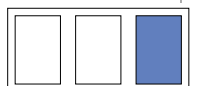
SUB SERVO Section	
<b>Transistor</b>	
Q2101	B-11
<b>Integrated Circuit</b>	
IC2101	B-14
IC2102	A-14
IC2103	B-13
IC2104	B-13
<b>Test Point</b>	
CL2101	B-9
<b>Connector</b>	
FP2101	A-9
FP2102	A-11

ADDRESS INFORMATION

VITC Section	
<b>Transistor</b>	
Q3805	B-2
Q3806	A-2
Q3807	B-2
Q3808	C-22
<b>Transistor &amp; Resistor</b>	
QR3804	C-21
QR3805	B-21
QR3806	B-2
QR3807	C-22
<b>Test Point</b>	
CL3801	A-1
<b>Integrated Circuit</b>	
IC3804	A-2
<b>Adjustment</b>	
VR3802	A-2

ADDRESS INFORMATION

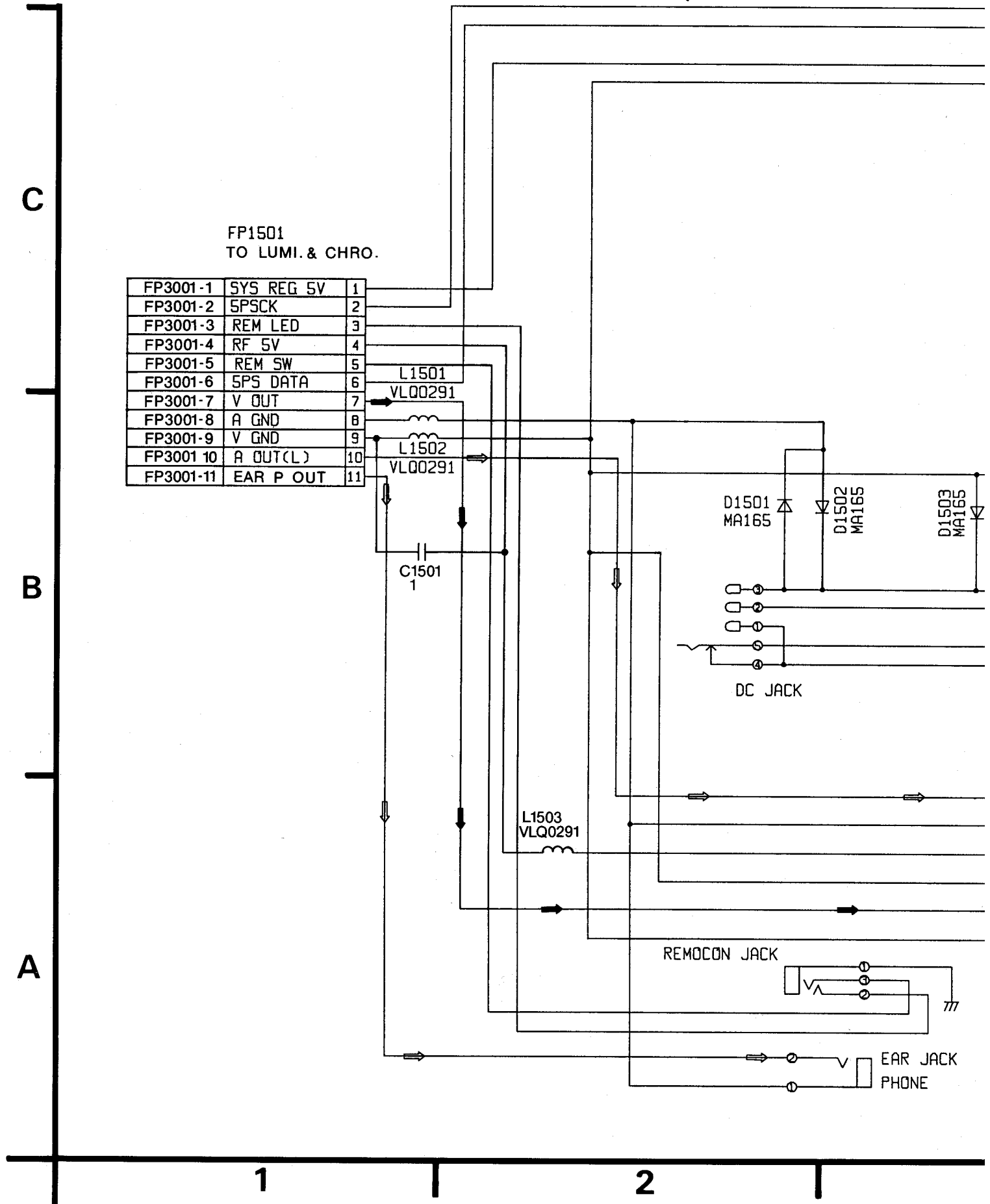
( ) ON THIS DIAGRAM IS RECORD MODE  
 KETS ON THIS DIAGRAM IS PLAYBACK MODE





### 3-22. AV JACK (A) SCHEMATIC DIAGRAM

← VIDEO SIGNAL PATH



FP1501  
TO LUMI. & CHRO.

FP3001-1	SYS REG 5V	1
FP3001-2	SPSCK	2
FP3001-3	REM LED	3
FP3001-4	RF 5V	4
FP3001-5	REM SW	5
FP3001-6	SPS DATA	6
FP3001-7	V OUT	7
FP3001-8	A GND	8
FP3001-9	V GND	9
FP3001-10	A OUT(L)	10
FP3001-11	EAR P OUT	11

C1501  
1

L1501  
VLQ0291

L1502  
VLQ0291

L1503  
VLQ0291

D1501  
MA165

D1502  
MA165

D1503  
MA165

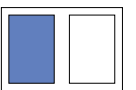
DC JACK

REMOCON JACK

EAR JACK  
PHONE

1

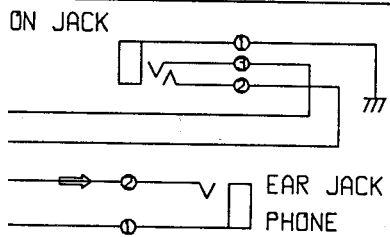
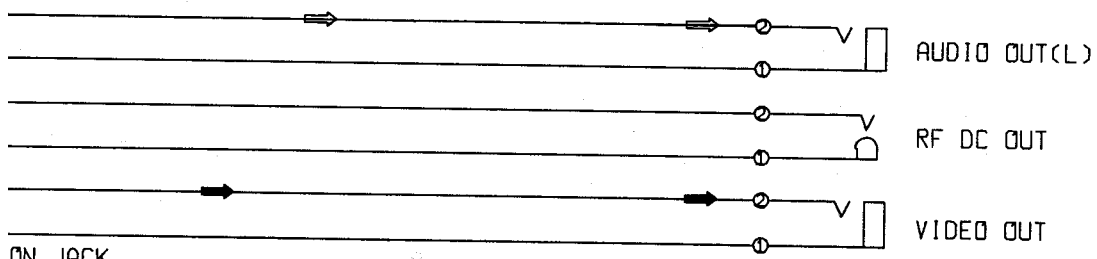
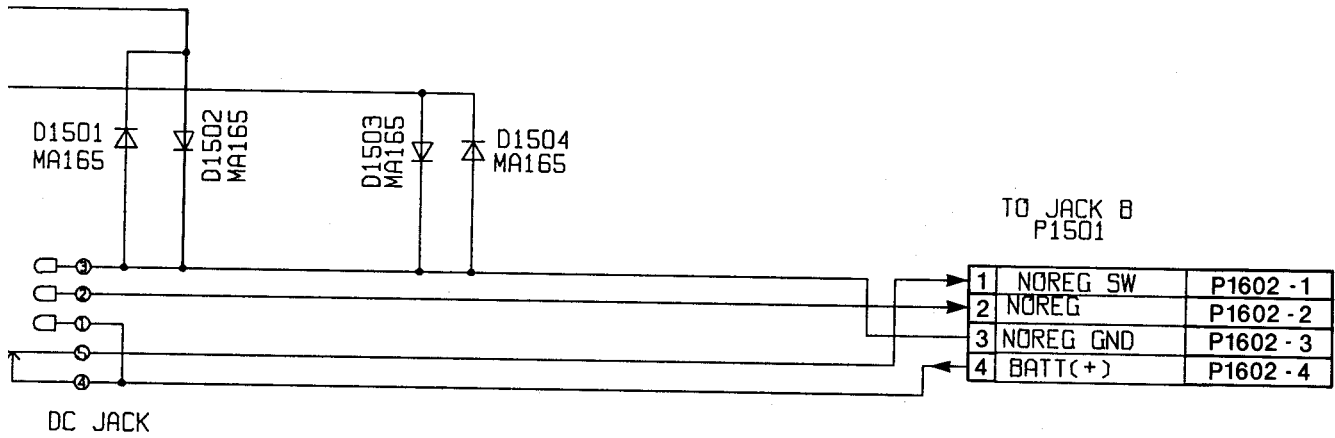
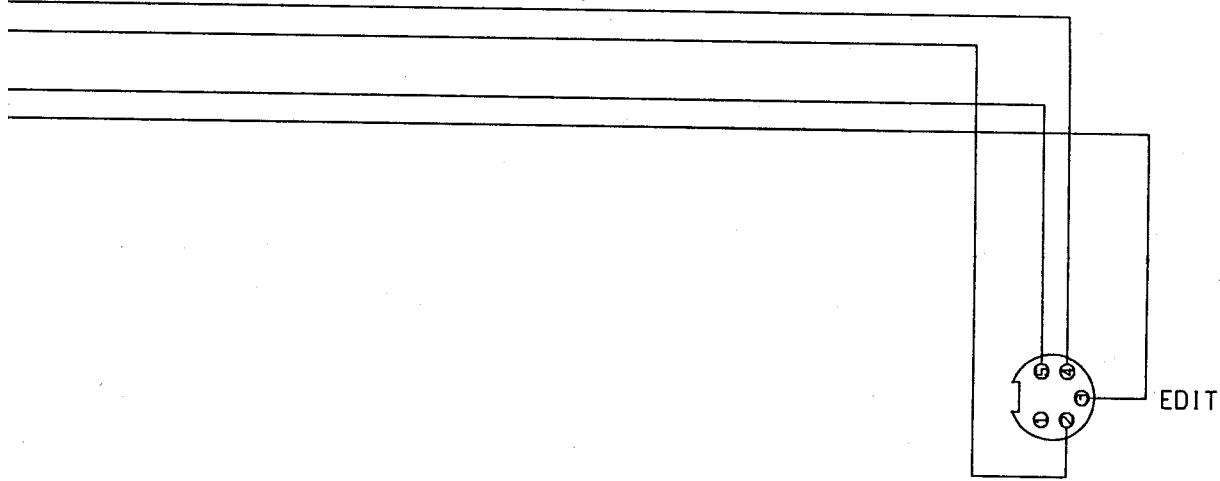
2



■ VIDEO SIGNAL PATH

← AUDIO SIGNAL PATH

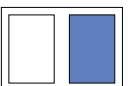
AV JACK (A) Section



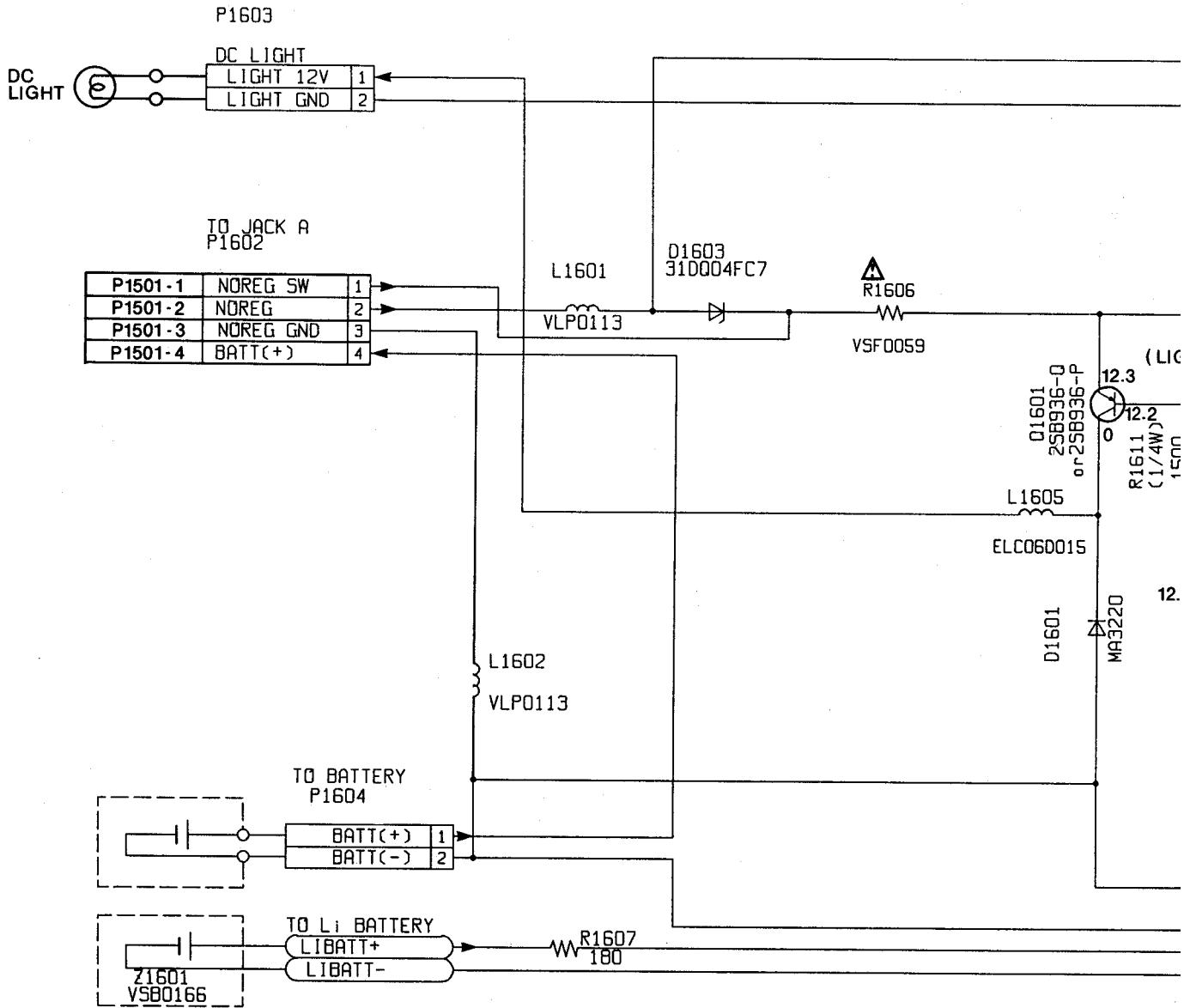
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3

4



### 3-24. AV JACK (B) SCHEMATIC DIAGRAM

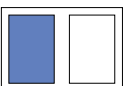


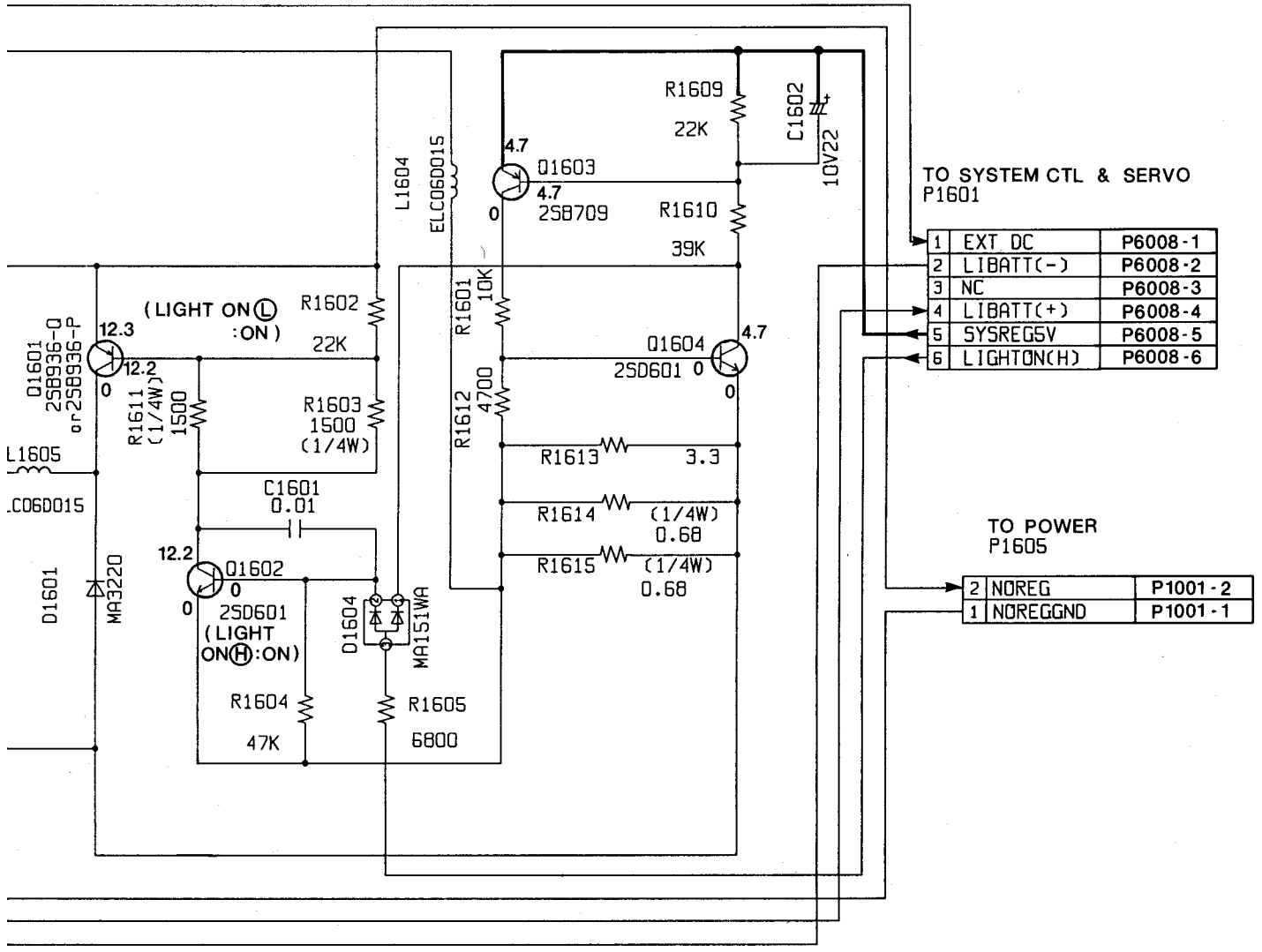
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS

1

2

3





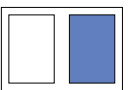
VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

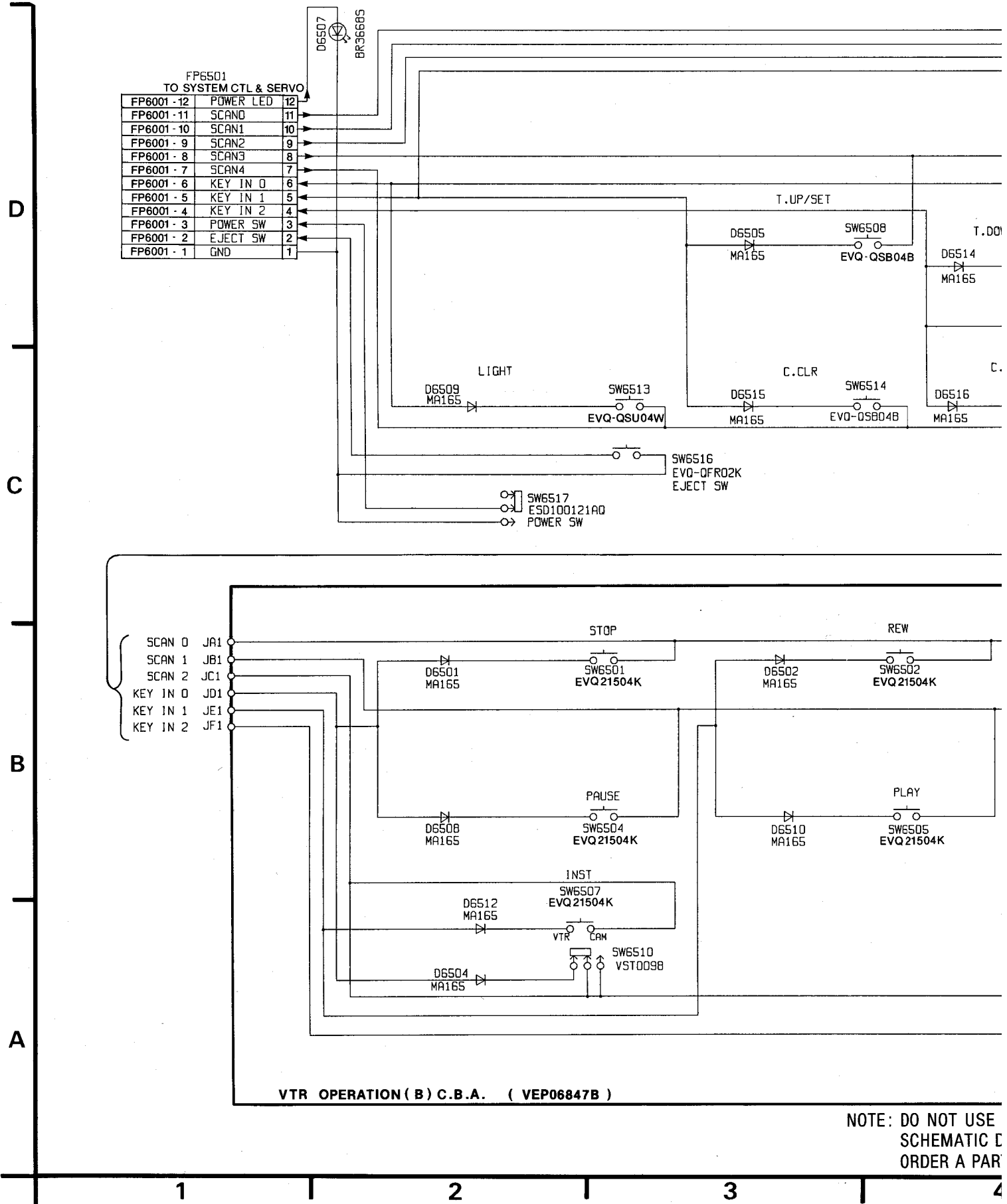
3

4

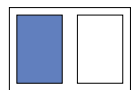
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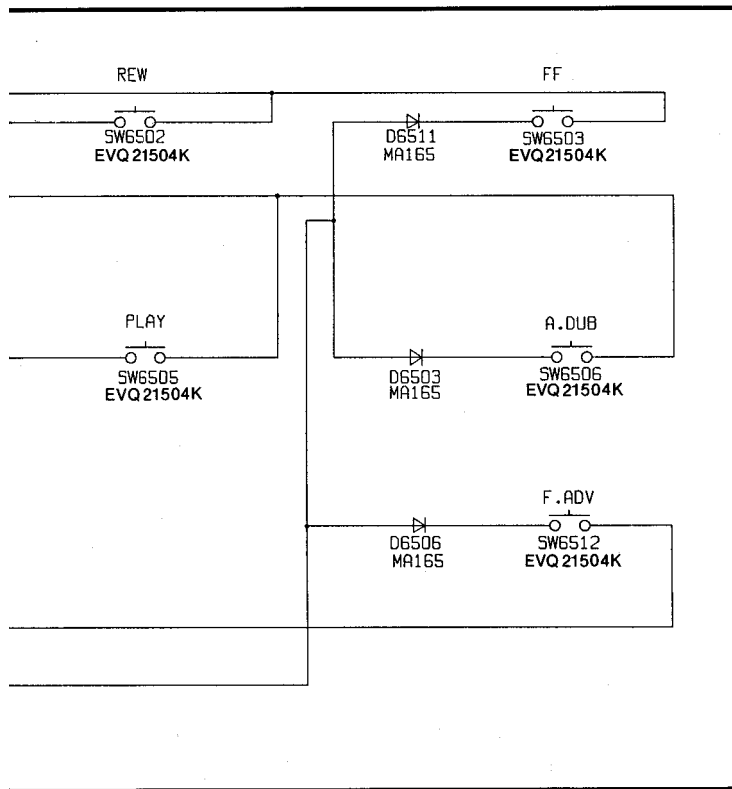
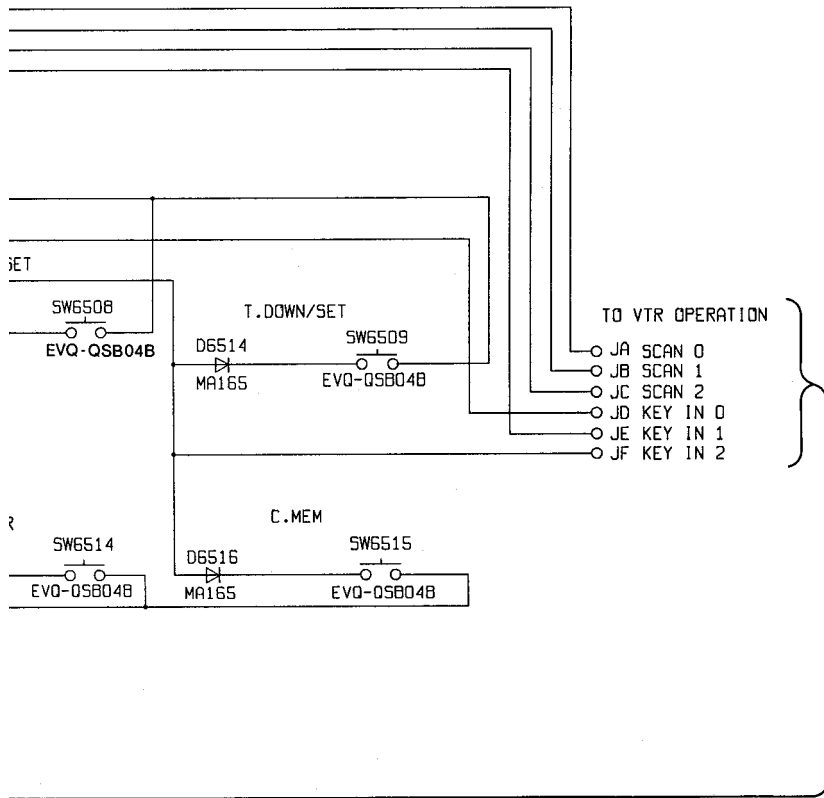


### 3-26. VTR OPERATION SCHEMATIC DIAGRAM

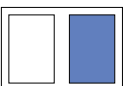


NOTE: DO NOT USE SCHEMATIC ORDER A PAR

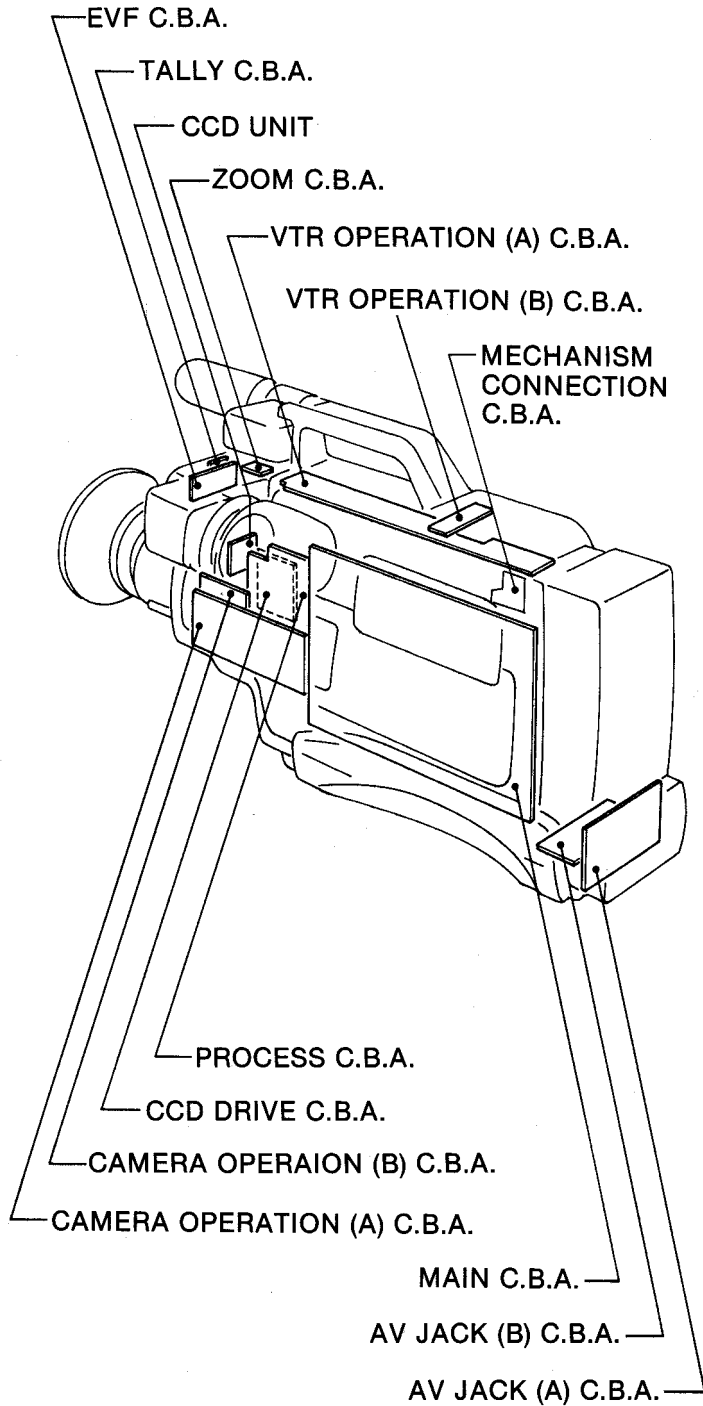




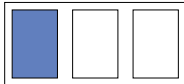
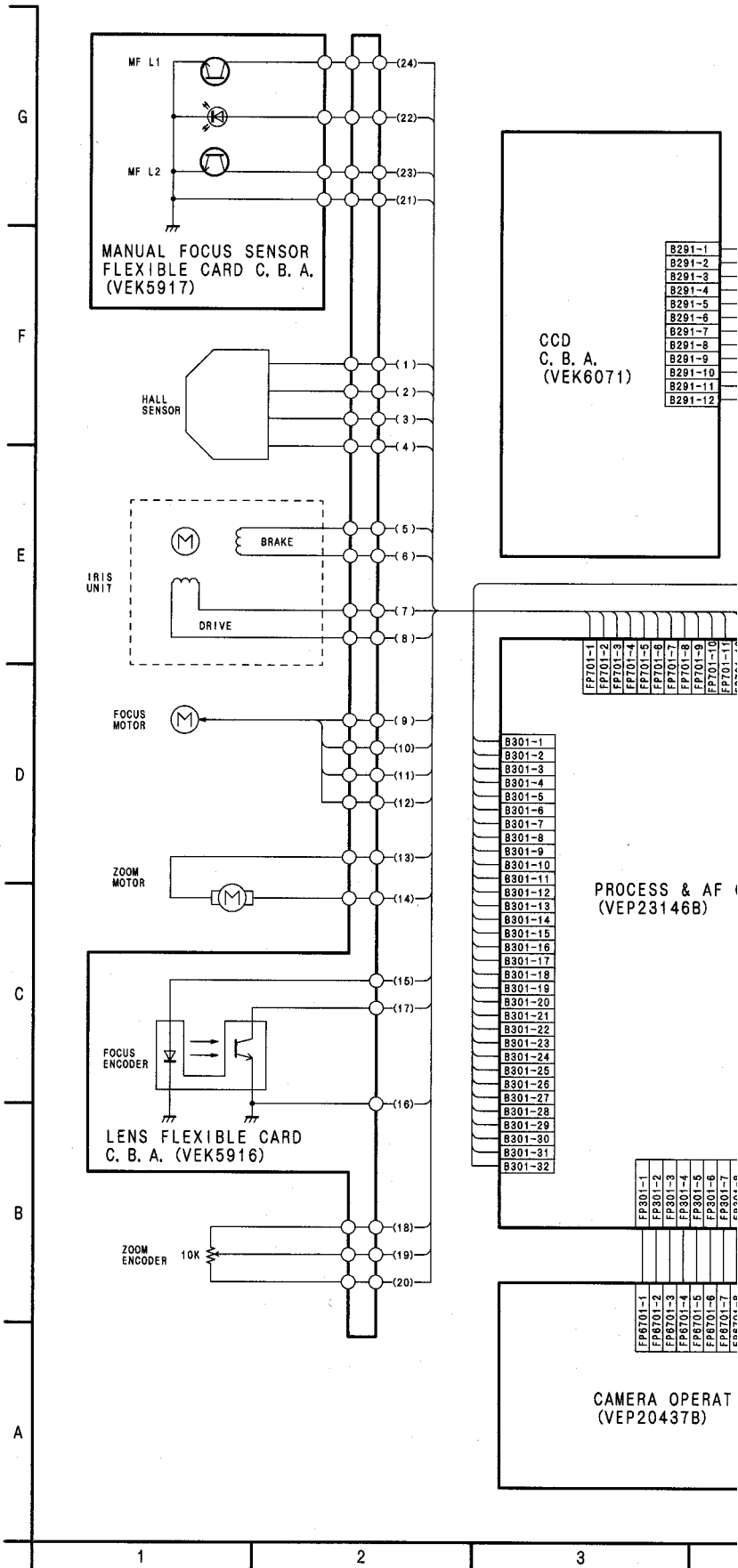
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.



### 3-28. CIRCUIT BOARD LAYOUT

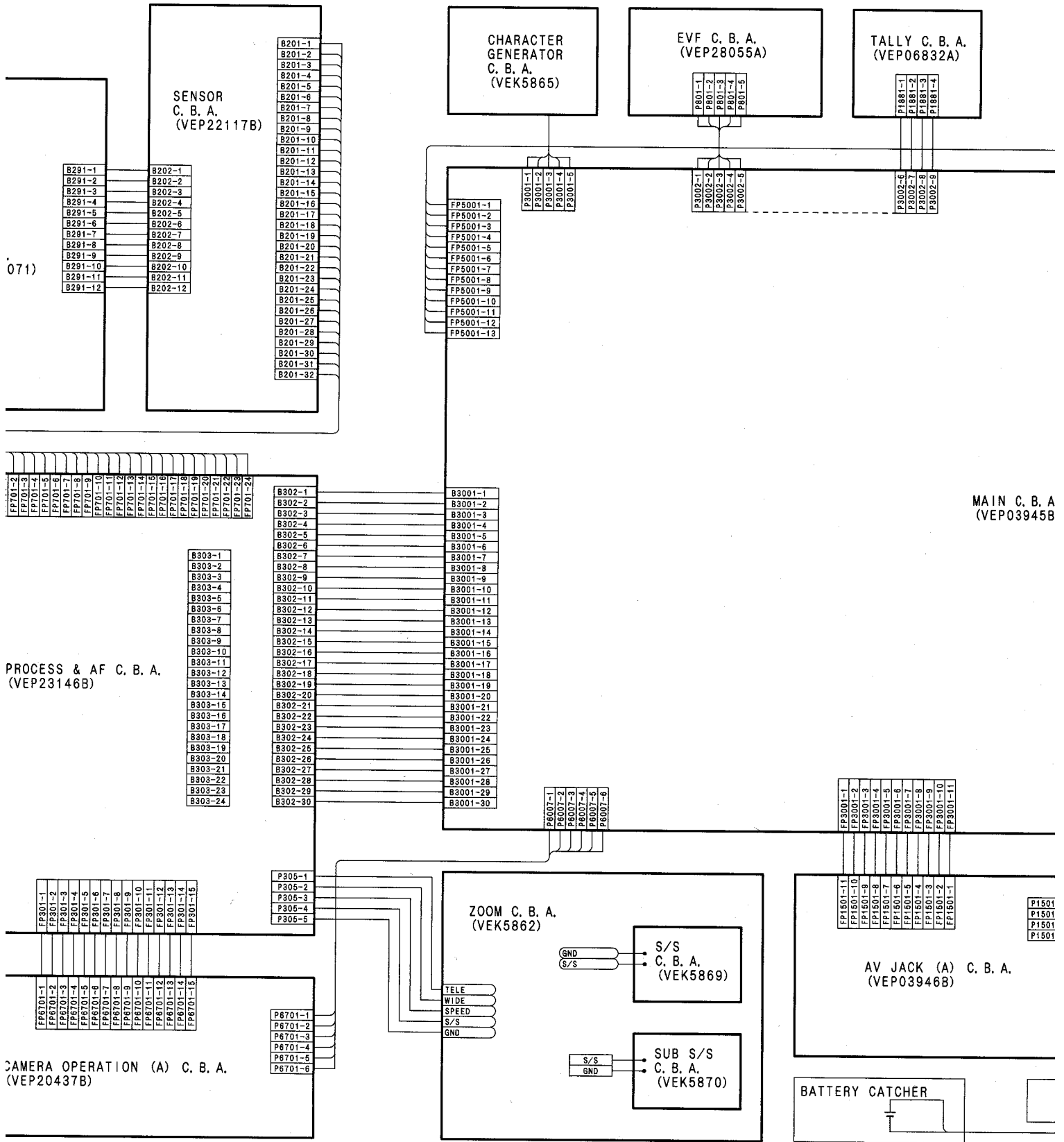


### 3-29. INTERCONNECTION SCHEMATIC D





# MATIC DIAGRAM



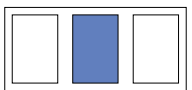
071)

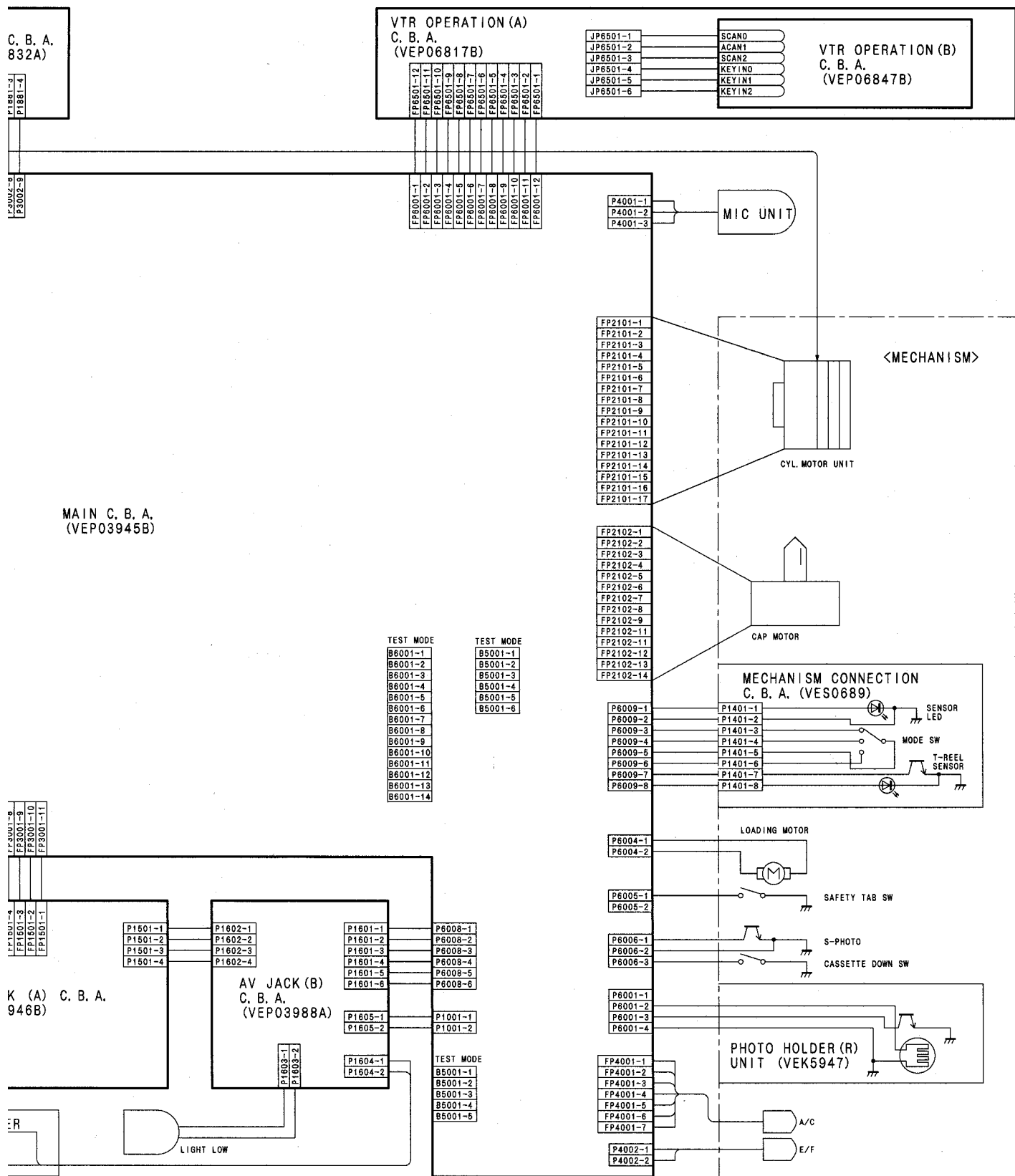
PROCESS & AF C. B. A. (VEP23146B)

CAMERA OPERATION (A) C. B. A. (VEP20437B)

MAIN C. B. A. (VEP03945B)

4 | 5 | 6 | 7 | 8 | 9





NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

9

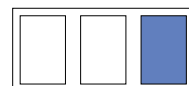
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11

12

13

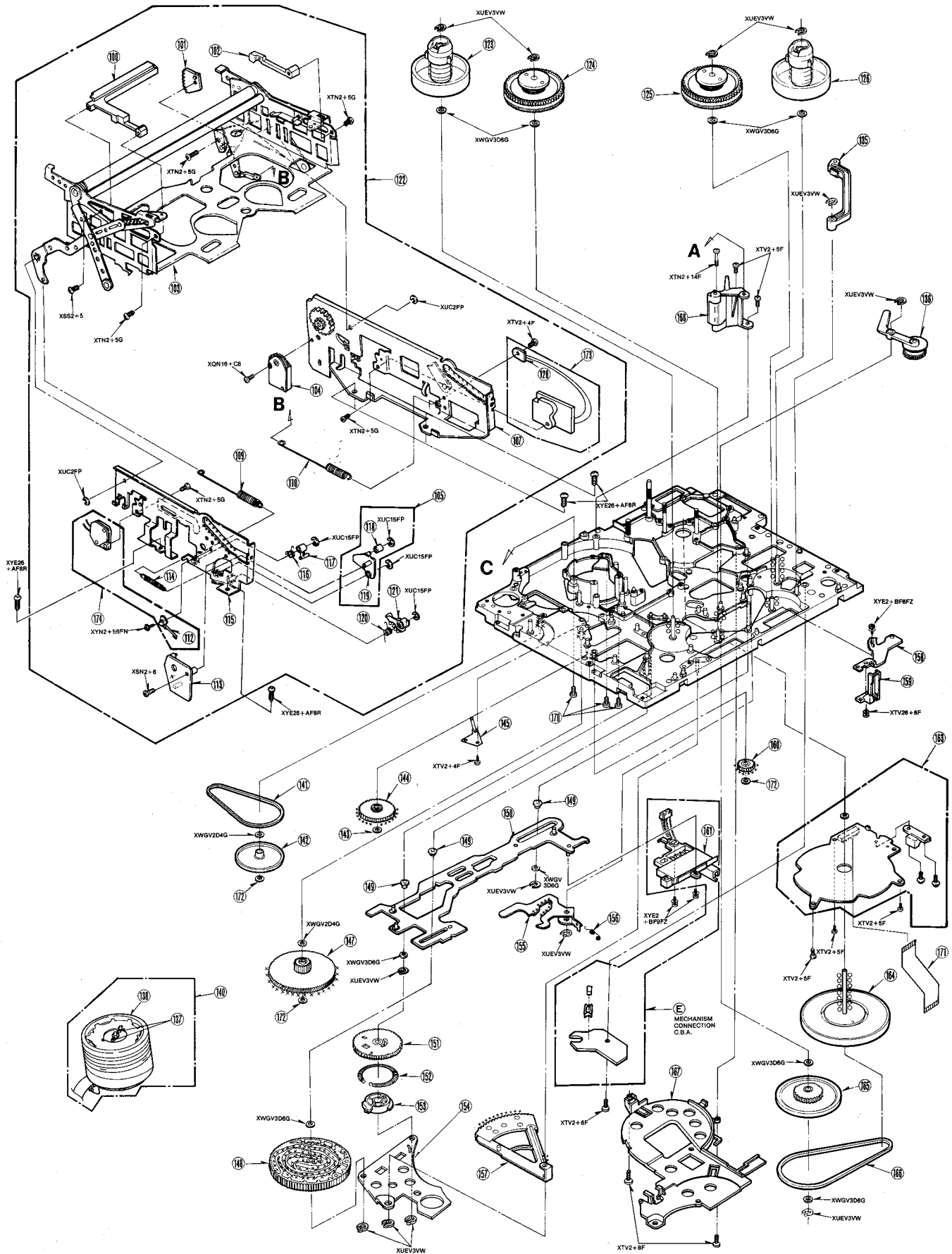
14



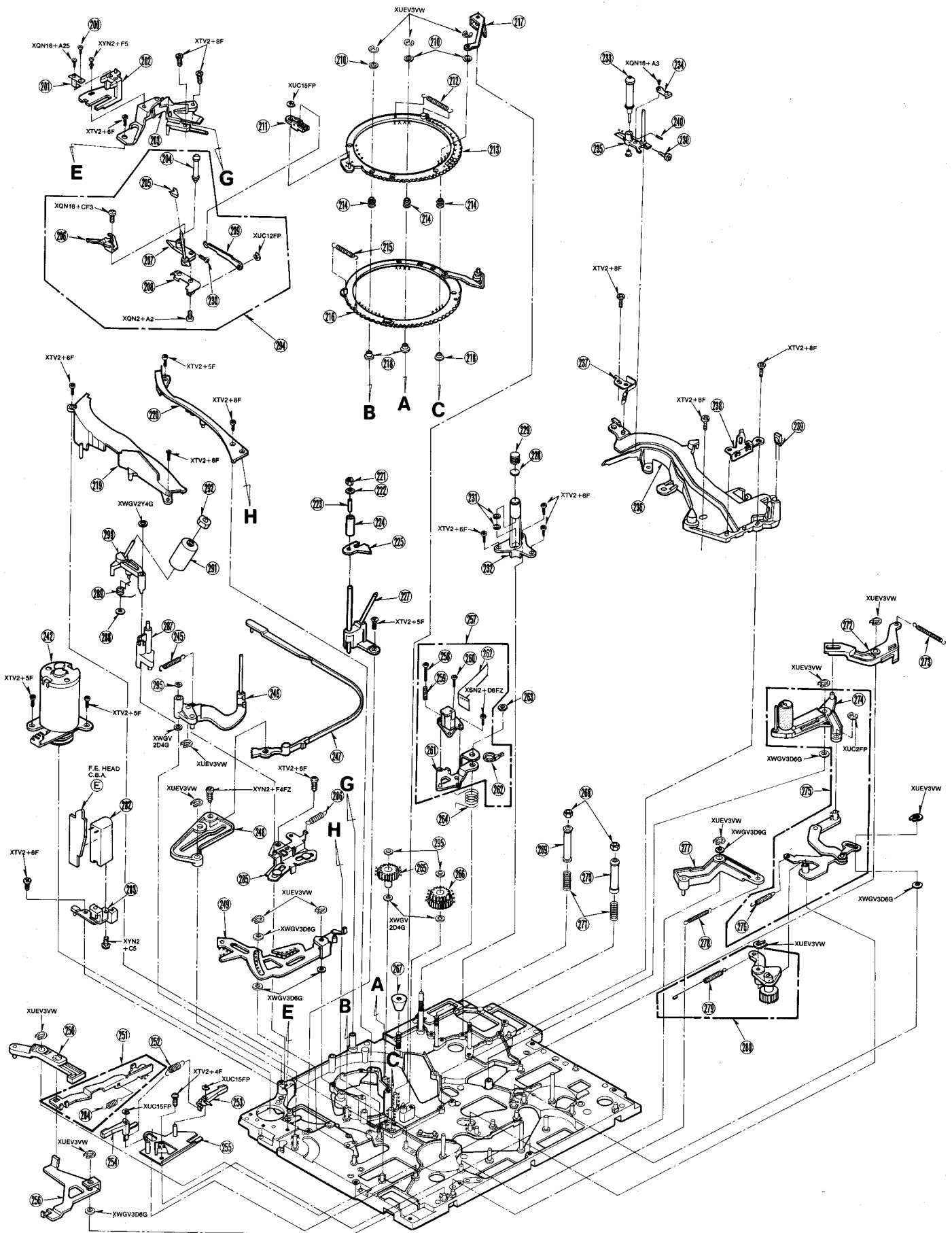
# SECTION 4 EXPLODED VIEWS & PARTS LISTS

## 4-1. EXPLODED VIEWS

## ● VTR MECHANISM SECTION (1)

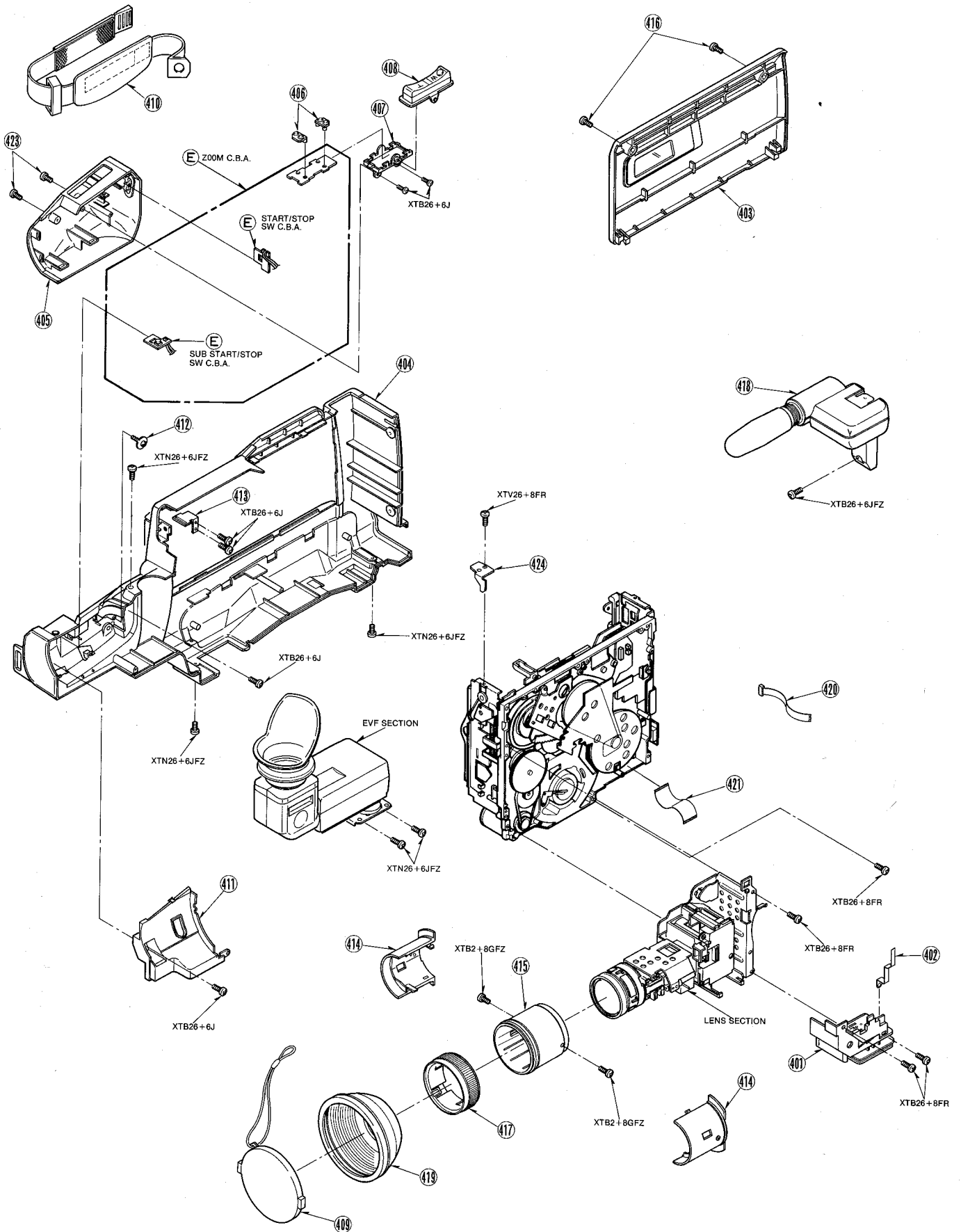


## 2 VTR MECHANISM SECTION (2)



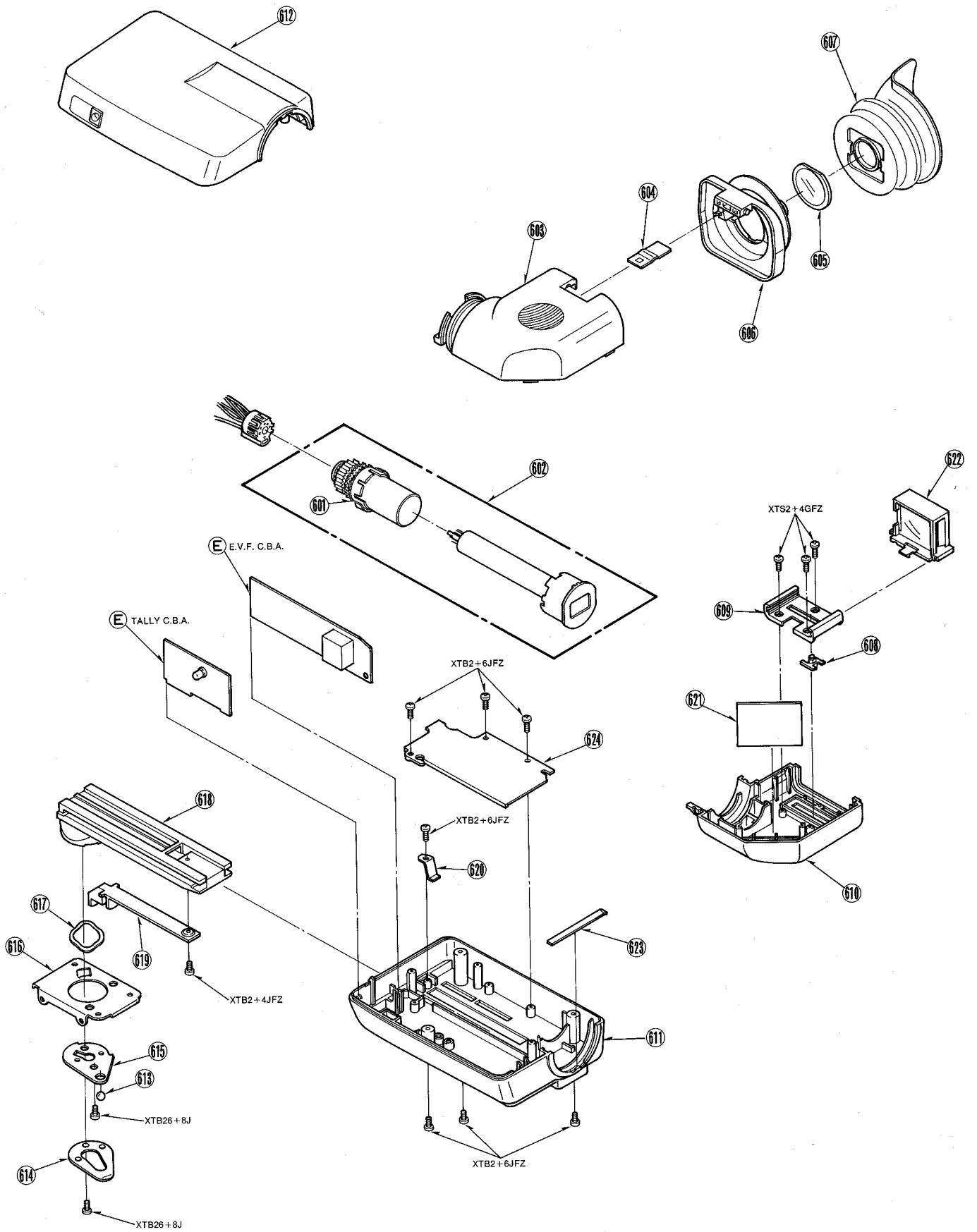


# 4 FRAME & CASING PARTS SECTION (1)



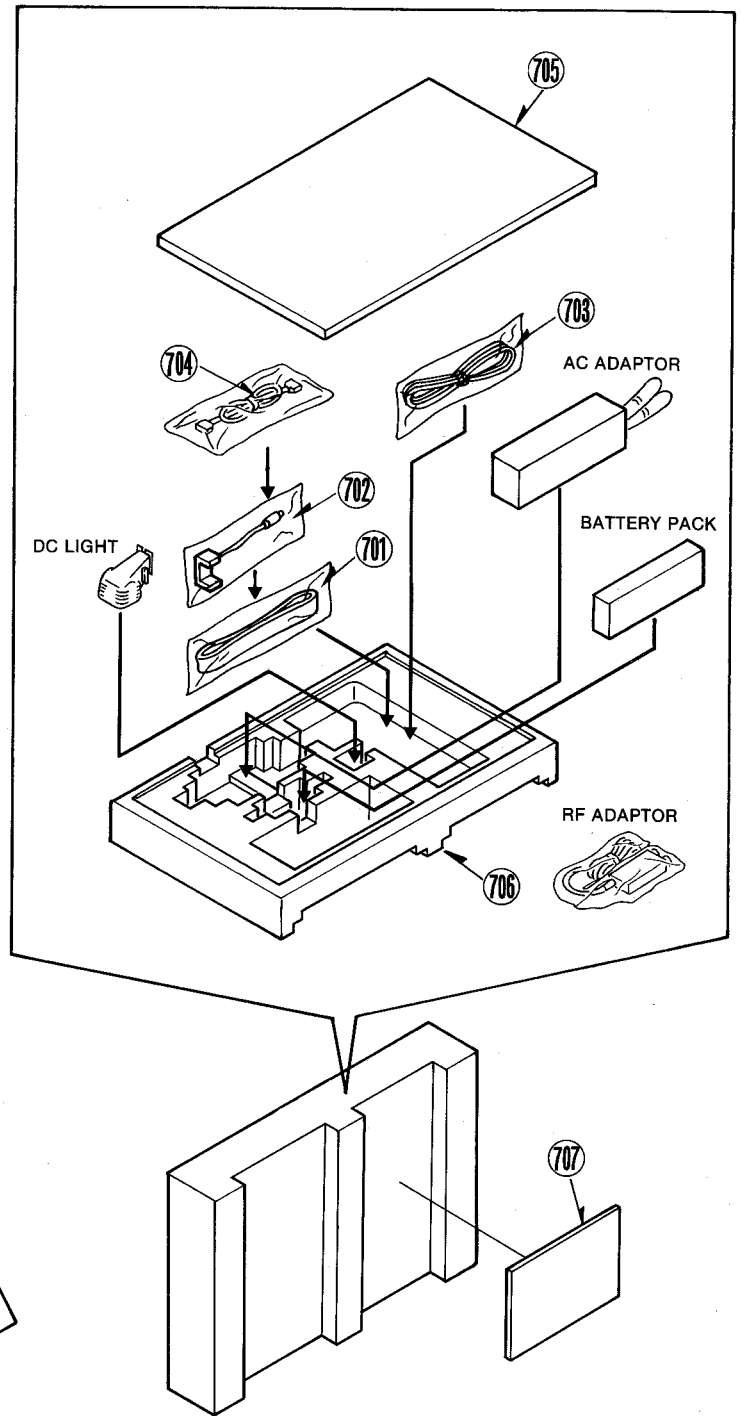
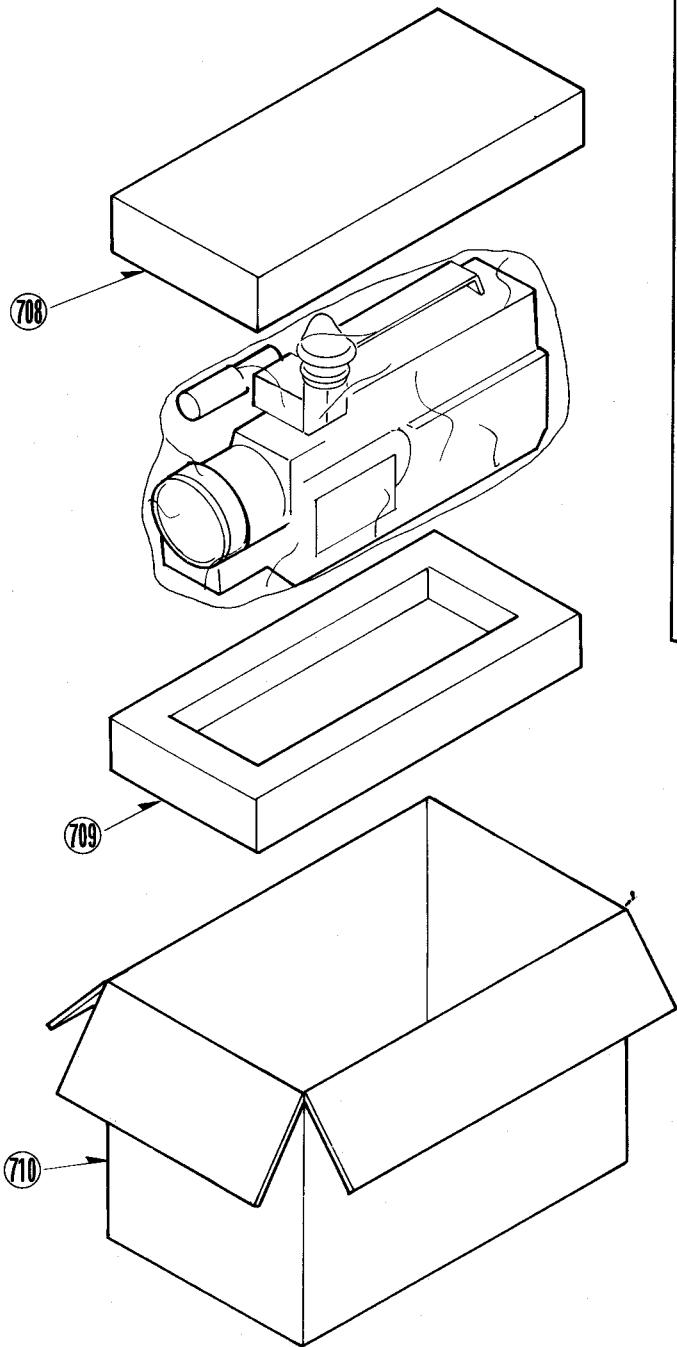


# 6 EVF SECTION

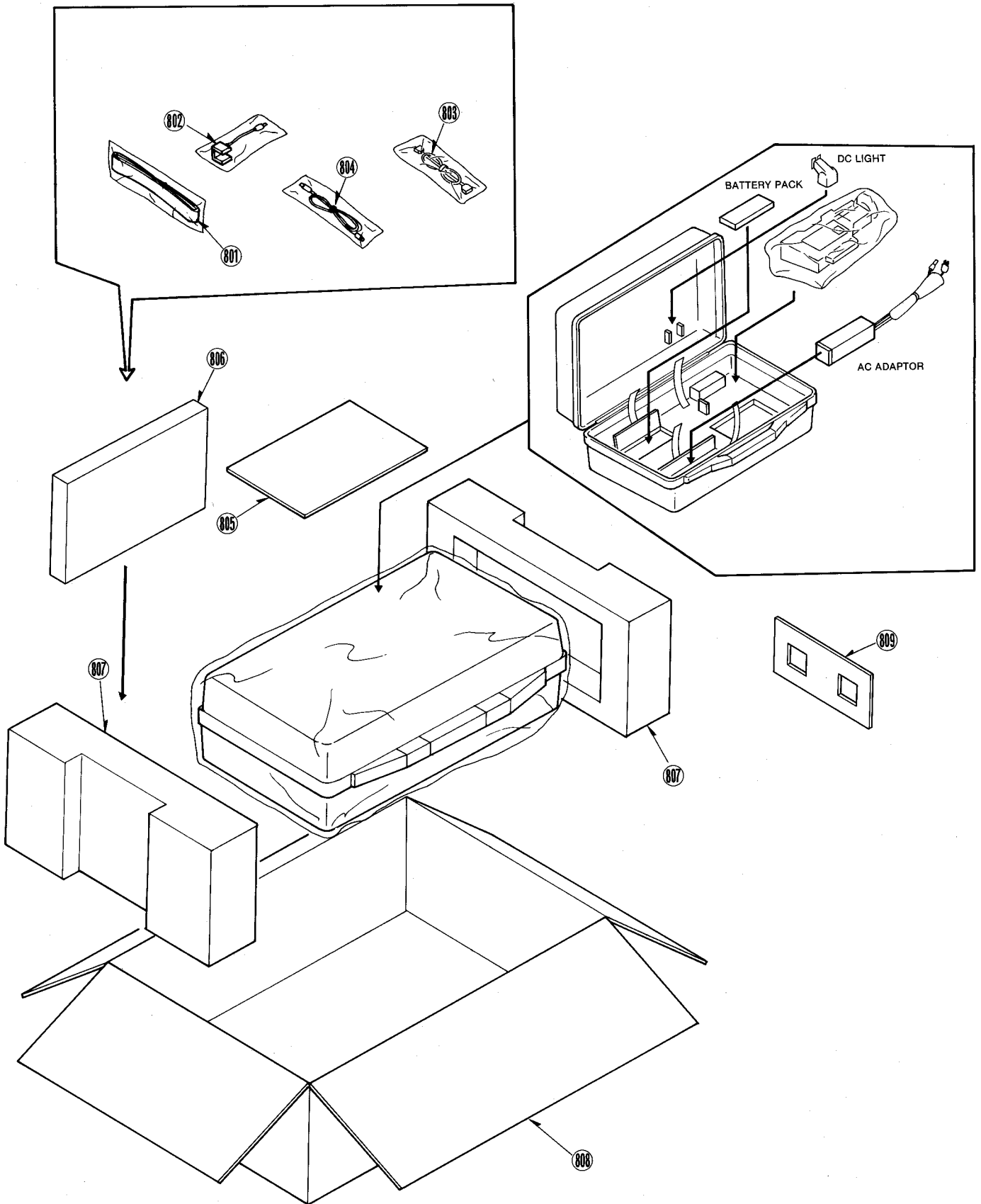




**7 PACKING PARTS & ACCESSORIES SECTION**  
**(NV-M40E/A, NV-M3000EN, NV-M3300MC)**



### 8 PACKING PARTS & ACCESSORIES SECTION (NV-M3000EM)





Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
279(2)	VMB1771	REW ARM SPRING	1		502(5)	VMC0876	BATTERY LOCK ANGLE	1	
280(2)	VXL1649	FF/REW ARM UNIT	1		503(5)	VGQ2849	BATTERY LOCK	1	
282(2)	VBS0021	FE HEAD	1		504(5)	VGQ2850	INTERMEDIATE LEVER	1	
283(2)	VMD1129	FE HEAD BASE	1		505(5)	VMP3689	SHOLDER ANGLE	1	
284(2)	VMB1447	SUPPORTER SPRING	1		506(5)	VMP3692	BATTERY CASE FIX.ANGLE	1	
285(2)	VXA3579	SLIDE BASE (O) UNIT	1		507(5)	VMB2524	BATTERY PUSHING SPRING	1	
286(2)	VMB1965	SLIDE SPRING	1		508(5)	VKM3072	BATTERY CASE U.	1	
287(2)	VML2285	IMPEDANCE LEVER	1		509(5)	VKFI876	BATTERY DOOR	1	
288(2)	VHNO109	PUSH NUT	1		510(5)	VMC0237	DOOR SPRING	1	
289(2)	VMB1964	IMPEDANCE DRIVE SPRING	1		511(5)	VXU1104	TOP OPERATION PANEL (1)U.	1	
290(2)	VXL1879	IMPEDANCE ARM (1) UNIT	1		512(5)	VKFI881	CURSOR	1	
291(2)	VDP1285	IMPEDANCE ROLLER	1		513(5)	VKFI878	RESET MEMORY DOOR	1	
292(2)	VWX1088	SUPPLY UPPER LIMITER	1		514(5)	VMD2006	TOP FRAME	1	
294(2)	VXA2220	SUPPLY SHAFT HOLDER UNIT	1		515(5)	VEK6049	HOT SHOE TERMINAL U.	1	
295(2)	XWGV0006	WASHER	4		516(5)	VKM3071	HANDLE UPPER CASE	1	
301(3)	VXW0115	LENS U.	1		517(5)	VMC0726	SHOE SPRING	1	
302(3)	VXQ0331	LENS MAIN U.	1		518(5)	VMP2407	SHOE	1	
303(3)	VXP1300	2ND MOVING FRAME U.	1		519(5)	VGU5898	SLIDE KNOB (A)	1	
304(3)	VXP1302	SCREW SHAFT U.	1		520(5)	VGU5908	SLIDE KNOB (B)	1	
305(3)	VXQ0266	3RD FRAME LENS U.	1		521(5)	VMC0889	CAMERA EARTH PLATE	1	
306(3)	VXL2126	IRIS U.	1		522(5)	VGP3162	CAMERA OPERATION PANEL	1	
307(3)	VXP1301	4TH MOVING FRAME U.	1		523(5)	VVK4574	SIDE CASE (R) U.	1	NV-M40E/A
308(3)	VMD1815	MASTER FLANGE	1		523(5)	VYK4484	SIDE CASE (R) U.	1	NV-M3000EN/EM
309(3)	EVAJH4JO3B14	ZOOM ENCODER U.	1		523(5)	VYK4486	SIDE CASE (R) U.	1	NV-M3300MC
310(3)	VEM0421	ZOOM MOTOR U.	1		524(5)	VMT0452	SHOLDER PAD	1	
311(3)	VEM0422	FOCUS MOTOR U.	1		525(5)	VWJ0640	AV JACK-MAIN CABLE	1	
312(3)	VMT0342	MOTOR CUSHION	2		526(5)	VYK4487	BATTERY CASE U.	1	
313(3)	VHD0666	SCREW	1		527(5)	VMP2063	JACK BARRIER	1	
314(3)	VMT0336	IRIS CUSHION	1		528(5)	VWJ0638	CAM OPE.-PROCESS FLEX.	1	
315(3)	VDLO314	CRYSTAL FILTER	1		529(5)	VWJ0610	VIR OPE.-MAIN FLEX.	1	
316(3)	VWX2124	CCD CUSHION	1		601(6)	ELY07V570F	DY	1	
317(3)	VEK6071	CCD U.	1		602(6)	VEK6002	CRT U.	1	
318(3)	VSC3804	CCD SHIELD CASE	1		603(6)	VKM3078	FINDER CASE (UPPER)	1	
319(3)	VMD2023	CAM P.C.BOARD FRAME	1		604(6)	VMC0316	EYE CAP HOLDER SPRING	1	
320(3)	VMP3695	CAMERA FRAME	1		605(6)	VDLO347	LENS (2)	1	
321(3)	VGFO416	SHADING PIECE	1		606(6)	VKFI879	EYE CAP HOLDER	1	
322(3)	VMA8700	HOLD PLATE	1		607(6)	VMC0716	EYE CAP	1	
323(3)	VDW0182	FRONT FRAME	1		608(6)	VGJ3895	EYESIGHT ADJ. LEVER	1	
324(3)	VDW0184	FOCUS RING	1		609(6)	VKFI278	LENS HOLDER GUIDE	1	
325(3)	VDW0183	REAR FRAME	1		610(6)	VKM3077	FINDER CASE (LOWER)	1	
326(3)	VMS4675	ZOOM GUIDE POLE	1		611(6)	VYK4494	EVF MAIN CASE LOWER U.	1	
327(3)	VMS4908	ZOOM GUIDE POLE (B)	1		612(6)	VYK4493	EVF MAIN CASE UPPER U.	1	
328(3)	VMS4676	FOCUS GUIDE POLE (A)	1		613(6)	VMP1358	EVF BEARING	1	
329(3)	VMS4677	FOCUS GUIDE POLE (B)	1		614(6)	VMC0902	EVF LOCK SPRING	1	
330(3)	VGQ1986	CHARA.GENE.JACK PIECE	1		615(6)	VMP3823	EVF ROTARY PLATE	1	
331(3)	VMP3694	LENS FRAME	1		616(6)	VMP3690	EVF MOUNT ANGLE	1	
332(3)	VSC3632	HEAD AMP SHIELD CASE (C)	1		617(6)	VWX2172	WAVING WASHER	1	
401(4)	VMD2007	TRIPOD FRAME	1		618(6)	VGQ2914	EVF ROTATION BASE	1	
402(4)	VSC3733	TRIPOD SHIELD PLATE	1		619(6)	VGQ2967	ROTARY BASE COVER	1	
403(4)	VYP4219	CASSETTE COVER U.	1	NV-M40E/A	620(6)	VMC0914	ROTARY BASE SPRING	1	
403(4)	VYP4182	CASSETTE COVER U.	1	NV-M3000EN/EM	621(6)	VDLO349	MIRROR	1	
403(4)	VYP4183	CASSETTE COVER U.	1	NV-M3300MC	622(6)	VYQ0815	LENS HOLDER U.	1	
404(4)	VYK4490	SIDE CASE (L) (1) U.	1		623(6)	VMC0890	SPRING PLATE	1	
405(4)	VYK4497	GRIP CASE (1) U.	1		624(6)	VGQ2846	WIRE COVER	1	
406(4)	VMO4462	ZOOM RUBBER CONTACT	2		701(7)	VFC1309	SHOLDER STRAP	1	NV-M3000EN,M3300MC, M40E/A.
407(4)	VGQ1790	ZOOM PIECE	1		702(7)	VJA0180	BATTERY CATCHER	1	NV-M3000EN,M3300MC, M40E/A.
408(4)	VGU5007	ZOOM BUTTON	1		703(7)	VFA0039	AV OUTPUT CABLE	1	NV-M3000EN,M3300MC, M40A.
409(4)	VYF1893	HOOD CAP U.	1		703(7)	VFA0095	AV OUTPUT CABLE	1	NV-M40E
410(4)	VYCO557	GRIP BELT U.	1		704(7)	VJA0573	3PIN DC INPUT CABLE	1	NV-M3000EN,M3300MC, M40E/A.
411(4)	VKM3088	FRONT CASE	1		705(7)	VPN3478	ACCESSORY PAD	1	NV-M3000EN,M3300MC, M40E/A.
412(4)	VHD0386	GRIP BELT SCREW	1		706(7)	VPN3476	ACCESSORY BOX	1	NV-M3000EN,M3300MC, M40E/A.
413(4)	VMP3822	SHOLDER ANGLE (F)	1		707(7)	VQT4826	OPERATING INSTRUCTIONS (ENGLISH/GERMAN/FRENCH/ SPANISH)	1	NV-M40E
414(4)	VGQ2848	LENS PIECE	2		707(7)	VQT4827	OPERATING INSTRUCTIONS (ITALIAN/DUTCH/SWEDISH/ DENISH)	1	NV-M40E
415(4)	VKM3090	LENS COVER	1	NV-M3000EN,M3300MC	707(7)	VQT4828	OPERATING INSTRUCTIONS (FINNISH/RUSSIAN/POLISH)	1	NV-M40E
415(4)	VKM3185	LENS COVER	1	NV-M3000EM,M40E/A					
416(4)	VHD0371	SCREW	2						
417(4)	VYK4426	MANUAL FOCUS RING U.	1						
418(4)	VEK5864	MIC U.	1						
419(4)	VDW0191	LENS HOOD	1						
420(4)	VWJ0632	CYLINDER FLEX.CABLE	1						
421(4)	VWJ0636	CAPSTAN FLEX.CABLE	1						
423(4)	VHD0771	SCREW	2						
424(4)	VMP3688	FRAME SET. ANGLE	1						
501(5)	VGQ1129	BATTERY CATCHER	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
707(7)	VQT4829	OPERATING INSTRUCTIONS (ENGLISH)	1	NV-M40A
707(7)	VQT4763	OPERATING INSTRUCTIONS (ENGLISH/CHINESE/HINDI/ URDU)	1	NV-M3000EN
707(7)	VQT4764	OPERATING INSTRUCTIONS (ENGLISH/ARABIC/HINDI/ URDU)	1	NV-M3000EM
707(7)	VQT4762	OPERATING INSTRUCTIONS (ENGLISH/CHINESE)	1	NV-M3300MC
708(7)	VFN3474	CUSHION (UPPER)	1	NV-M3000EN,M3300MC
709(7)	VFN3475	CUSHION (LOWER)	1	NV-M3000EN,M3300MC
710(7)	VPG6647	PACKING CASE	1	NV-M40E
710(7)	VPG6624	PACKING CASE	1	NV-M40A
710(7)	VPG6521	PACKING CASE	1	NV-M3000EN
710(7)	VPG6519	PACKING CASE	1	NV-M3300MC
801(8)	VFC1309	SHOLDER STRAP	1	NV-M3000EM
802(8)	VJA0180	BATTERY CATCHER	1	NV-M3000EM
803(8)	VJA0573	3PIN DC INPUT CABLE	1	NV-M3000EM
804(8)	VFA0039	AV OUTPUT CABLE	1	NV-M3000EM
806(8)	VPK1492	ACCESSORY CASE	1	NV-M3000EM
807(8)	VFN2612	CUSHION	2	NV-M3000EM
808(8)	VFG6520	PACKING CASE	1	NV-M3000EM
809(8)	VPQ0001	HANDLE	1	NV-M3000EM
		JIG & TOOLS		
	VFK0374	COLOUR TEMP. CONV. FILTER	1	(C12) OR VFK0713
	VFK0375	COLOUR TEMP. CONV. FILTER	1	(C2) OR VFK0716
	VFK0644	EVR FIXTURE	1	
	VFK0701ROM7	RGM	1	
	VFK0766A	EVR CONNECTION CABLE	1	
	VFK0734W	CONNECTION CABLE FOR MEASUREMENT	1	
	VFK0667	EXTENSION CABLE 30P	1	
	VFK0724	EXTENSION CABLE 32P	1	
	VFK0783	EXTENSION CABLE 12P	1	
	VFK0802	FLAT CABLE 24P	1	
	VFK0823	FLAT CABLE 6P	1	
	VFJ8125H3F	VHS-ALIGNMENT TAPE (PAL)	1	
	VFK0144	RETAINING RING REMOVER (3mm)	1	
	VFK0191	POST ADJUSTMENT PLATE	1	
	VFK0190	REEL TABLE HEIGHT GAUGE	1	
	VFK0189	H-POSITION ADJ. -FIXTURE	1	
	VFK0137	POST ADJUSTMENT SCREWDRIVER	1	
	VFK66	FAN TYPE TENSION GAUGE	1	
	VFK0326	HEX WRENCH SET	1	
	VFK0343	CHECK LIGHT	1	
	VFK27	HEAD CLEANING STICK	1	
	MOR265	MORLYTONE GREASE	1	
	VFK0136	FINE ADJUSTMENT SCREWDRIVER	1	
	VFK0134	ADAPTOR FOR VFK0133	1	
	VFK0133	DIAL TORQUE GAUGE	1	

# 4-3. ELECTRICAL REPLACEMENT PARTS LIST

Note: 1. \* Be sure to make your orders of replacement parts according to this list.  
 2. IMPORTANT SAFETY NOTICE  
 Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.  
 3. Unless otherwise specified, All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uf), P=uuF.  
 4. The P.C. Board units marked with "■" show below the main assembled parts.  
 5. Printed circuit board assembly with mark (NLA) is no longer available after discontinuation of the product.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP22117B	CCD DRIVE C.B.A.	1	(NLA)
	VEP23146B	PROCESS C.B.A.	1	(NLA)
	VEP20437B	CAMERA OPERATION (A) C.B.A.	1	(NLA) INCLUDING THE CAMERA OPERATION (A) C.B.A. (VEP20438B).
	VEP20438B	CAMERA OPERATION (B) C.B.A.	1	(NLA) INCLUDED IN CAMERA OPERATION (B) C.B.A. (VEP20437B).
	VEK5916	LENS FLEXIBLE CARD C.B.A.	1	(NLA)
	VEK5917	MANUAL FOCUS SENSOR FLEXIBLE CARD C.B.A.	1	(NLA)
	VEP28055A	EVF C.B.A.	1	(NLA)
	VEP06832A	TALLY C.B.A.	1	(NLA)
	VEP03945B	MAIN C.B.A.	1	(NLA)
	VEP06817B	VTR OPERATION (A) C.B.A.	1	(NLA) INCLUDING THE VTR OPERATION (B) C.B.A. (VEP06847B).
	VEP06847B	VTR OPERATION (B) C.B.A.	1	(NLA) INCLUDED IN VTR OPERATION (A) C.B.A. (VEP06817B).
	VEP03946B	AV JACK (A) C.B.A.	1	(NLA)
	VEP03957B	AV JACK (B) C.B.A.	1	(NLA)
	VEK5862	ZOOM C.B.A.	1	(NLA) INCLUDING THE S/S C.B.A. (VEK5869), SUB S/S C.B.A. (VEK5870).
	VEK5869	S/S C.B.A.	1	(NLA) INCLUDED IN ZOOM C.B.A. (VEK5862).
	VEK5870	SUB S/S C.B.A.	1	(NLA) INCLUDED IN ZOOM C.B.A. (VEK5862).

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEK5865	CHARA/GENE C.B.A.	1	(NLA)
	VEK5868	FE HEAD C.B.A.	1	(NLA)
	VES0689	MECHANISM CONNECTION C.B.A. (MODE SELECT SWITCH UNIT)	1	(NLA)
	■ VEP22117B	CCD DRIVE C.B.A.		(NLA)
		CONNECTORS		
B201	VJP3159C032	CONNECTOR (MALE)	1	
B202	VJP2962C012	CONNECTOR (MALE)	1	
		CAPACITORS		
C202, 03	ECUX1H270JCV	C. CAPACITOR CH 50V 27P	2	
C204	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C205	ECST0JY106Z	T. CAPACITOR 6.3V 10U	1	
C206, 07	ECUM1C105ZFN	C. CAPACITOR 16V 1U	2	
C208	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C209	ECST1CY335Z	T. CAPACITOR 16V 3.3U	1	
C210	ECST1VX155Z	T. CAPACITOR 35V 1.5U	1	
C211	ECST1CY335Z	T. CAPACITOR 16V 3.3U	1	
C212	ECST1VX225Z	T. CAPACITOR 35V 2.2U	1	
C213, 14	ECUX1H270JCV	C. CAPACITOR CH 50V 27P	2	
C215	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C216, 17	ECUX1H270JCV	C. CAPACITOR CH 50V 27P	2	
C218	ECST0JY106Z	T. CAPACITOR 6.3V 10U	1	
C220	ECUX1H150JCV	C. CAPACITOR CH 50V 15P	1	
C221	ECUM1C105ZFN	C. CAPACITOR 16V 1U	1	
C222	ECUX1H120JCV	C. CAPACITOR CH 50V 12P	1	
C223	ECRJA020E11	CAPACITOR	1	
C224	ECST0JY106Z	T. CAPACITOR 6.3V 10U	1	
C226	ECUM1C185ZFN	C. CAPACITOR CH 16V 1.8U	1	
C227, 28	ECST0JY106Z	T. CAPACITOR 6.3V 10U	2	
C229	ECEVOGA330	E. CAPACITOR 4V 33U	1	
C230	ECST0JY106Z	T. CAPACITOR 6.3V 10U	1	
C231, 32	ECUM1C105ZFN	C. CAPACITOR 16V 1U	2	
C233	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C234	ECUM1C105ZFN	C. CAPACITOR 16V 1U	1	
C235	ECST1CX685Z	T. CAPACITOR 16V 68U	1	
C236	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C237	ECST0GY106Z	T. CAPACITOR CH 4V 10U	1	
C238-40	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	3	
C241	ECUX1H270JCV	C. CAPACITOR CH 50V 27P	1	
C242	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C243	ECUX1C473ZFV	C. CAPACITOR CH 16V 0.047U	1	
C244	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C245	ECST1CX685Z	T. CAPACITOR 16V 68U	1	
C246	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	1	
C248	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C251	ECST1VX155Z	T. CAPACITOR 35V 1.5U	1	
C252	ECUX1H100DCV	C. CAPACITOR CH 50V 10P	1	
C254	ECUX1H100DCV	C. CAPACITOR CH 50V 10P	1	
C258	ECUM1C105ZFN	C. CAPACITOR 16V 1U	1	
C259	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C260, 61	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	2	
C262	ECUX1H100DCV	C. CAPACITOR CH 50V 10P	1	
C264	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	1	
C266	ECUX1H103ZFV	C. CAPACITOR CH 50V 0.01U	1	
C267-69	ECUX1C104ZFV	C. CAPACITOR CH 16V 0.1U	3	
C270	ECUX1H050DCV	C. CAPACITOR CH 50V 5P	1	
C271	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	1	
		DIODES		
D201	MA110	DIODE	1	



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C335	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C336	ECUX1H222KBV	C. CAPACITOR CH 50V 2200P	1	
C337-40	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	4	
C341,42	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	2	
C343	ECUX1H101JCV	C. CAPACITOR CH 50V 100P	1	
C345-52	ECUX1H330JCV	C. CAPACITOR CH 50V 33P	8	
C357	ECUM1C2242FN	C. CAPACITOR CH 16V 0.22U	1	
C358-62	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	5	
C363	ECUX1H150JCV	C. CAPACITOR CH 50V 15P	1	
C701	ECUM1H1042FN	C. CAPACITOR CH 50V 0.1U	1	
C703	ECUX1H151JCV	C. CAPACITOR CH 50V 150P	1	
C704	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C705	ECUM1C6832FV	C. CAPACITOR CH 16V 0.068U	1	
C706-09	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	4	
C710	ECUX1C4732FV	C. CAPACITOR CH 16V 0.047U	1	
C711	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	1	
C712	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	1	
C713,14	ECUM1C2242FN	C. CAPACITOR CH 16V 0.22U	2	
C715	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C716	ECUM1C2242FN	C. CAPACITOR CH 16V 0.22U	1	
C717	ECST1CY335Z	T. CAPACITOR 16V 3.3U	1	
C718	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C719	ECSTOJY106Z	T. CAPACITOR CH 4V 10U	1	
C720,21	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	2	
C722-24	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	3	
C726	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	1	
C727	ECEV1EA330	E. CAPACITOR CH 25V 33U	1	
C728	ECUX1H332KBV	C. CAPACITOR CH 50V 3300P	1	
C729,30	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	2	
C731	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C732	ECUM1C1052FN	C. CAPACITOR 16V 1U	1	
C733	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C734	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	1	
C738	ECUM1C1052FM	C. CAPACITOR CH 16V 1U	1	
C746	ECUM1C2252FM	C. CAPACITOR CH 16V 2.2U	1	
C747	ECEVOJA470	E. CAPACITOR 6.3V 47U	1	
C748	ECUX1C1042FV	C. CAPACITOR CH 16V 0.1U	1	
		DIODES		
D301	MA110	DIODE	1	
D302	MA728	DIODE	1	
D701	MA110	DIODE	1	
		CONNECTORS		
FP301	VJS2958D017	CONNECTOR (FEMALE)	1	
FP701	VJS2959D024	CONNECTOR (FEMALE)	1	
		INTEGRATED CIRCUITS		
IC301-03	2A4030	IC	3	
IC304	MN6733	IC	1	
IC306	MN6732	IC	1	
IC307	MN655431SH	IC	1	
IC308	MN73512XWAS	IC	1	
IC309	MN1882010V4Q	IC	1	
IC310	AK6420F	IC	1	
IC311	MN13821-Y	IC	1	
IC312	MN1882010V4P	IC	1	
IC315	MN657011H	IC	1	
IC316	MN5185	IC	1	
IC317	AN2040SB	IC	1	
IC318	TC7S08F	IC	1	
IC319,20	TC7S32F	IC	2	
IC330	M623526P	IC	1	
IC701	MN12821Q	IC	1	
IC702	MN6781VMDB	IC	1	
IC703	AN2585FAP	IC	1	
IC704	LM358DB	IC	1	
IC705	LM324DB	IC	1	
IC706	AN6663S	IC	1	
IC707	AN6545SP	IC	1	
IC708	TB6504F	IC	1	
IC709	TC7S08F	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		COILS		
L301	ELJFC6R82B	COIL 6.8UH	1	
L302-04	ELJSC101KF	COIL 100UH	3	
L305	ELJFC150KF	COIL 15UH	1	
L306-11	ELJFC6R82B	COIL 6.8UH	6	
L312	VLQ0291	COIL	1	
L313,14	ELJFC6R82B	COIL 6.8UH	2	
L315	VLQ0291	COIL	1	
L316,17	ELJFC6R82B	COIL 6.8UH	2	
L320	ELJSC330KB	COIL 33UH	1	
L321	VLQ0291	COIL	1	
L322	VLQ0401K220	COIL 22UH	1	
L323	VLQ0291	COIL	1	
L702	ELJPA101KB	COIL 100UH	1	
L703	ELJFC150KF	COIL 15UH	1	
L704	ELJFA150KB	COIL 15UH	1	
L705	ELJPA150KB	COIL 15UH	1	
L706	ELJFA150KB	COIL 15UH	1	
		CONNECTORS		
P305	VJP3172D005	CONNECTOR (MALE)	1	
		TRANSISTORS		
Q305	2SC4176	TRANSISTOR	1	
Q701	2SD1819	TRANSISTOR	1	
Q702	2SD2210	TRANSISTOR	1	
		COMBINATION PARTS		
QR301	UN5213	TRANSISTOR	1	
QR701,02	UN5211	TRANSISTOR-RESISTOR	2	
		RESISTORS		
R301	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R302,03	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2	
R304	ERJ3GEYJ271	M.RESISTOR CH 1/16W 270	1	
R305,06	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R307	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R308,09	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R310	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R311	ERJ3GEYJ560	M.RESISTOR CH 1/16W 56	1	
R312	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R313	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R314	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R315,16	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R318	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R319	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1	
R320,21	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	2	
R322	ERJ3GEYJ121	M.RESISTOR CH 1/16W 120	1	
R323-26	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	
R328	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R329	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R330-33	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	4	
R334	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R335	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R337	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R338,39	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2	
R340	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R341	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R342,43	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R344-47	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	4	
R348-50	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R351,52	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R353-55	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R357-71	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	15	
R372	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R374-81	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	8	
R382,83	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R384	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R387-89	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	3	







Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1008	ECG00KA8R2	CAPACITOR	1	
C1009	ECUX1H681KBV	C. CAPACITOR CH 50V 680P	1	
C1010	ECST1CV335Z	T. CAPACITOR 16V 3.3U	1	
C1011	ECUM1C225ZFM	C. CAPACITOR CH 16V 2.2U	1	
C1012	ECUX1H222KBV	C. CAPACITOR CH 50V 2200P	1	
C1013	EBCG1BA4R7	CAPACITOR	1	
C1014	ECUX1H561KBV	C. CAPACITOR CH 50V 560P	1	
C1016	ECUM1C335ZFM	C. CAPACITOR CH 16V 3.3U	1	
C1017	ECUM1E105ZFM	C. CAPACITOR CH 25V 1U	1	
C1019	ECUM1E474ZFM	C. CAPACITOR CH 25V 0.47U	1	
C1020	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C1022	ECUM1H104ZFM	C. CAPACITOR CH 50V 0.1U	1	
C1024	ECUM1C474ZFM	C. CAPACITOR CH 16V 0.47U	1	
C1025	ECUM1E104KBN	C. CAPACITOR CH 25V 0.1U	1	
C1026	ECEV1HA010	E. CAPACITOR 50V 1U	1	
C1027	ECUX1H121JCV	C. CAPACITOR CH 50V 120P	1	
C1028	ECUM1C474KFM	C. CAPACITOR CH 16V 0.47U	1	
C1029	ECUX1H471KBV	C. CAPACITOR CH 50V 470P	1	
C1030	ECUX1H822KBV	C. CAPACITOR CH 50V 8200P	1	
C1031	ECUX1H471KBV	C. CAPACITOR CH 50V 470P	1	
C1032	ECUX1H822KBV	C. CAPACITOR CH 50V 8200P	1	
C1033, 34	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	2	
C1035	ECUX1H680JCV	C. CAPACITOR CH 50V 68P	1	
C1036	ECUX1H471KBV	C. CAPACITOR CH 50V 470P	1	
C1037	ECUX1H822KBV	C. CAPACITOR CH 50V 8200P	1	
C1061	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C1062	ECEV1EA470	E. CAPACITOR CH 25V 47U	1	
C1063	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C1064	ECEV1EA470	E. CAPACITOR CH 25V 47U	1	
C1065, 66	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	2	
C1067	ECEV1EA100	E. CAPACITOR CH 25V 10U	1	
C1068	ECST1CC106Z	T. CAPACITOR 16V 10U	1	
C1069, 70	ECUM1C475ZFM	C. CAPACITOR CH 16V 4.7U	2	
C1071	ECUM1C225ZFM	C. CAPACITOR CH 16V 2.2U	1	
C1106	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C1107	ECEVOJA220	E. CAPACITOR 6.3V 22U	1	
C1108	ECUX1H103KBV	C. CAPACITOR CH 50V 0.01U	1	
C1109	ECEVOJA220	E. CAPACITOR 6.3V 22U	1	
C1110	ECST1CV335Z	T. CAPACITOR 16V 3.3U	1	
C1111	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C2101	ECUM1E104KFM	C. CAPACITOR CH 25V 0.1U	1	
C2102-04	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	3	
C2105	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C2106	ECUM1H223KBM	C. CAPACITOR CH 50V 0.022U	1	
C2107	ECUX1C473ZFM	C. CAPACITOR CH 16V 0.047U	1	
C2108	ECUM1H104ZFM	C. CAPACITOR CH 50V 0.1U	1	
C2109-12	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	4	
C2113	ECUM1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C2114	ECUM1H472KBN	C. CAPACITOR CH 50V 4700P	1	
C2115, 16	ECEV1HA010	E. CAPACITOR 50V 1U	2	
C2117	ECUX1H272KBV	C. CAPACITOR CH 50V 2700P	1	
C2118	ECUX1H221KBV	C. CAPACITOR CH 50V 220P	1	
C2119-21	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	3	
C2122	ECUM1H333ZFM	C. CAPACITOR CH 50V 0.033U	1	
C2123-25	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	3	
C2126	ECEV1HA47	E. CAPACITOR CH 25V 0.47U	1	
C2127	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C2128	ECUM1H333ZFM	C. CAPACITOR CH 50V 0.033U	1	
C2129	ECUM1H104ZFM	C. CAPACITOR CH 50V 0.1U	1	
C2130	ECEVO5A470	E. CAPACITOR 4V 47U	1	
C2131	ECUX1H121JCV	C. CAPACITOR CH 50V 120P	1	
C2132	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C2133	ECUM1H104ZFM	C. CAPACITOR CH 50V 0.1U	1	
C2134	ECEV1AA330	E. CAPACITOR 10V 330U	1	
C2135	ECEVOGA470	E. CAPACITOR CH 4V 47U	1	
C2136	ECUM1C105ZFM	C. CAPACITOR 16V 1U	1	
C2141	ECUM1C105ZFM	C. CAPACITOR 16V 1U	1	
C2141	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C2142	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C3002	ECEVOGA470	E. CAPACITOR CH 4V 47U	1	
C3004	ECEVOGA471	E. CAPACITOR CH 4V 4700P	1	
C3005	ECUX1H150JCV	C. CAPACITOR CH 50V 150P	1	
C3013	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C3014	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C3015	ECUX1H101JCV	C. CAPACITOR CH 50V 100P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3016	ECUX1H471JCV	C. CAPACITOR CH 50V 470P	1	
C3017	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	1	
C3018	ECUX1H103KBV	C. CAPACITOR CH 50V 0.01U	1	
C3019	ECUX1H120JCV	C. CAPACITOR CH 50V 12P	1	
C3021, 22	ECUX1H220JCV	C. CAPACITOR CH 50V 22P	2	
C3023	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C3024	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C3025, 26	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	2	
C3028	ECUM1C105ZFM	C. CAPACITOR 16V 1U	1	
C3029	ECUX1H390JCV	C. CAPACITOR CH 50V 39P	1	
C3030	ECUX1H221JCV	C. CAPACITOR CH 50V 220P	1	
C3031	ECUX1H680JCV	C. CAPACITOR CH 50V 68P	1	
C3042	ECUX1H470JCV	C. CAPACITOR CH 50V 47P	1	
C3043	ECUX1H220JCV	C. CAPACITOR CH 50V 22P	1	
C3055	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C3059	ECUX1H472KBV	C. CAPACITOR CH 50V 4700P	1	
C3060	ECEV1CAN4R7	E. CAPACITOR CH 16V 4.7U	1	
C3061	ECUX1H120JCV	C. CAPACITOR CH 50V 12P	1	
C3062	ECUX1H390JCV	C. CAPACITOR CH 50V 39P	1	
C3065	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C3072	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C3075	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C3076	ECEV1EA4R7	E. CAPACITOR CH 25V 4.7U	1	
C3080	ECUX1H101JCV	C. CAPACITOR CH 50V 100P	1	
C3081	ECUX1H560JCV	C. CAPACITOR CH 50V 56P	1	
C3087	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C3091	ECST1AD336Z	T. CAPACITOR 10V 33U	1	
C3092	ECST1CD226Z	T. CAPACITOR 16V 22U	1	
C3093	ECSTOJY336Z	T. CAPACITOR 6.3V 33U	1	
C3822	ECW1C823JA	F. CAPACITOR CH 16V	1	
C3823	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C3824, 25	ECUX1H820JCV	C. CAPACITOR CH 50V 82P	2	
C4001	ECEV1HA2R2	E. CAPACITOR 50V 2.2U	1	
C4002	ECUM1H123KBN	C. CAPACITOR CH 50V 0.012U	1	
C4004	ECUX1H122KBV	C. CAPACITOR CH 50V 1200P	1	
C4005	ECUX1C153KBV	C. CAPACITOR CH 16V 0.015U	1	
C4006	ECUX1H151JCV	C. CAPACITOR CH 50V 150P	1	
C4007	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C4008	ECST1CV225Z	T. CAPACITOR 16V 2.2U	1	
C4009	ECUX1H221JCV	C. CAPACITOR CH 50V 220P	1	
C4010	ECEVO5A470	E. CAPACITOR 4V 47U	1	
C4011	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C4012	ECEV1HA2R2	E. CAPACITOR 50V 2.2U	1	
C4013	ECEVOJA220	E. CAPACITOR 6.3V 22U	1	
C4014	ECEVOJAN220	E. CAPACITOR 6.3V 22U	1	
C4015	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C4016	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C4017	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C4018	ECUX1H391JCV	C. CAPACITOR CH 50V 390P	1	
C4019	ECUM2A682JCM	C. CAPACITOR CH 10V 6800P	1	
C4020	ECUX1E123KBV	C. CAPACITOR CH 25V 0.012U	1	
C4021	ECUM1E223KBN	C. CAPACITOR CH 25V 0.023U	1	
C4022	ECST1AX106Z	T. CAPACITOR 10V 10U	1	
C4023	ECEVOGA101	E. CAPACITOR 4V 100U	1	
C4024	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C4026	ECEV1CA100	E. CAPACITOR 16V 10U	1	
C4027	ECUX1H682KBV	C. CAPACITOR CH 50V 6800P	1	
C4028	ECEVO5A470	E. CAPACITOR 4V 47U	1	
C4029, 30	ECUX1H102KBV	C. CAPACITOR CH 50V 1000P	2	
C4031	ECUX1H222KBV	C. CAPACITOR CH 50V 2200P	1	
C4032	ECUX1H562KBV	C. CAPACITOR CH 50V 5600P	1	
C4033	ECEV1HA2R2	E. CAPACITOR 50V 2.2U	1	
C4056	ECEVO5A470	E. CAPACITOR 4V 47U	1	
C5001	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C5002, 03	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	2	
C5004-11	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	8	
C5012-15	ECUX1H220JCV	C. CAPACITOR CH 50V 22P	4	
C5016-23	ECUM1C105ZFM	C. CAPACITOR 16V 1U	8	
C5024	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C5025, 26	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	2	
C5028	ECUM1E273KBN	C. CAPACITOR CH 25V 0.027U	1	
C5031	ECUX1H103ZFM	C. CAPACITOR CH 50V 0.01U	1	
C5034	ECSTOJY106Z	T. CAPACITOR 6.3V 10U	1	
C5035	ECUX1C104ZFM	C. CAPACITOR CH 16V 0.1U	1	
C5052	ECUX1H121JCV	C. CAPACITOR CH 50V 120P	1	





Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
QR6007	UN9213	TRANSISTOR-RESISTOR	1		R3002	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
QR6008	UN5213	TRANSISTOR	1		R3010	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
QR6010	UN5112	TRANSISTOR-RESISTOR	1		R3011	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
QR6011,12	UN9112	TRANSISTOR-RESISTOR	2		R3012	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
QR6013	UN521E	TRANSISTOR-RESISTOR	1		R3013	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
QR6014	UN5213	TRANSISTOR	1		R3014,15	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
QR6015	UN5211	TRANSISTOR-RESISTOR	1		R3016	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
QR6016	UN5113	TRANSISTOR-RESISTOR	1		R3017	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1	
QR6017	UN9213	TRANSISTOR-RESISTOR	1		R3018	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	1	
QR6018	UN5211	TRANSISTOR-RESISTOR	1		R3019	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
QR8101	UN9212	TRANSISTOR-RESISTOR	1		R3021	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
					R3022	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
					R3023	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
		RESISTORS			R3024	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	1	
R1001	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	1		R3025	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1002	ERJ6GEYG202	M.RESISTOR CH 1/10W 2K	1		R3026	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R1003	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3028	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R1004	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1		R3041	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R1005	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	1		R3042	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1006	ERJ6GEYG272	M.RESISTOR CH 1/10W 2.7K	1		R3043	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1007	ERJ8GEYJ101	M.RESISTOR CH 1/8W 100	1		R3046	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R1008	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	1		R3047	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1009	ERJ6GEYG152	M.RESISTOR CH 1/10W 1.5K	1		R3049	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R1012	ERJ3GEYJ163	M.RESISTOR CH 1/16W 16K	1		R3054	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1013	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1		R3055	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R1014,15	ERJ6GEYG182	M.RESISTOR CH 1/10W 1.8K	2		R3059	ERJ3GEYJ273	M.RESISTOR CH 1/16W 27K	1	
R1016	VRE0034E153	M.RESISTOR CH 1/10W 15K	1		R3060	ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1	
R1017	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3068,69	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R1018	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1		R3070	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R1019	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3071	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1020	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1		R3072	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1	
R1021	ERJ3GEYJ680	M.RESISTOR CH 1/16W 68	1		R3073	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R1022	ERJ3GEYJ560	M.RESISTOR CH 1/16W 56	1		R3074,75	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R1023	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1		R3078	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1024	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1		R3079	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1	
R1025,26	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		R3080	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1	
R1027	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	1		R3081	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1029	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		R3082	ERJ6GEYOR00	M.RESISTOR CH 1/10W 0	1	
R1030	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1		R3087	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1031	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1		R3090	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1032,33	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2		R3091	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1	
R1034	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R3092	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1035	ERJ3GEYJ470	M.RESISTOR CH 1/16W 47	1		R3094	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1036	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R3098	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1	
R1061	ERJ6GEYJ391	M.RESISTOR CH 1/10W 390	1		R3103,04	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R1062	ERJ6GEYJ681	M.RESISTOR CH 1/10W 680	1		R3107	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1063	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		R3109	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R1064,65	ERJ3GEYJ122	M.RESISTOR CH 1/16W 1.2K	2		R3112	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R1105-07	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	3		R3113	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R1108	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R3115	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2101	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3117,18	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R2102	ERJ8GEYJR33	M.RESISTOR CH 1/8W 0.33	1		R3119	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2103	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		R3121,22	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2	
R2104	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		R3123	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R2105	ERJ3GEYJ823	M.RESISTOR CH 1/16W 82K	1		R3124	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2106	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R3127	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R2107	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1		R3128	ERJ3GEYJ474	M.RESISTOR CH 1/16W 470K	1	
R2108	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R3135	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R2109	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		R3136	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R2110	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1		R3137	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2111,12	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	2		R3139	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2113	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R3143,44	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	2	
R2114	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1		R3147	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2115	ERJ8GEYJR47	M.RESISTOR CH 1/8W 0.47	1		R3226	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2116,17	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2		R3229	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2118	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R3232	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2119	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		R3808	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R2121	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R3826,27	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R2122	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1		R3828	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2123,24	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		R3829	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R2125	ERJ3GEYJ820	M.RESISTOR CH 1/16W 82	1		R3830	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1	
R2126	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1		R3831	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R2127	ERJ8GEYJ5R6	M.RESISTOR CH 1/8W 5.6	1		R3832,33	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R2130	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		R3834	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R3001	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		R3835	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3836	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1		R6014	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R3836, 39	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2		R6015	VRE0067G473	M.RESISTOR 47K	1	
R4001	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1		R6016	VRE0067G153	M.RESISTOR	1	
R4002	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1		R6017-20	ERJ8GEYJ101	M.RESISTOR CH 1/8W 100	4	
R4003	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1		R6021	ERJ8GEYJ680	M.RESISTOR CH 1/8W 68	1	
R4004	ERJ3GEYJ154	M.RESISTOR CH 1/16W 150K	1		R6022	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4005	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1		R6023	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R4007	ERJ3GEYJ121	M.RESISTOR CH 1/16W 120	1		R6024	ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	1	
R4008	ERJ3GEYJ334	M.RESISTOR CH 1/16W 330K	1		R6025,26	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	2	
R4009	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		R6027	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4010	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		R6028-30	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	3	
R4011	ERJ3GEYJ105	M.RESISTOR CH 1/16W 1M	1		R6031	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4012	ERJ3GEYJ123	M.RESISTOR CH 1/16W 12K	1		R6032-36	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	5	
R4013	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1		R6037	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R4014	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1		R6038-42	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	5	
R4015	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1		R6043	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4016, 17	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	2		R6044	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R4018	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1		R6045	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4020	ERJ3GEYJ390	M.RESISTOR CH 1/16W 39	1		R6046-49	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	4	
R4021	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1		R6050	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R4022	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		R6051-53	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	3	
R4023	ERJ3GEYJ681	M.RESISTOR CH 1/16W 680	1		R6054-62	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	9	
R4024	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1		R6063	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4025	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1		R6065,66	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	2	
R4027	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1		R6067,68	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4028	ERJ3GEYJ224	M.RESISTOR CH 1/16W 220K	1		R6069	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4029	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1		R6070	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4030, 31	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2		R6071	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R4032	ERJ3GEYJ562	M.RESISTOR CH 1/16W 5.6K	1		R6072-78	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	7	
R4033	ERJ3GEYJ331	M.RESISTOR CH 1/16W 330	1		R6079	ERJ8GEYJ100	M.RESISTOR CH 1/8W 10	1	
R4034	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		R6080,81	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	2	
R4035	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1		R6082	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R4036	ERJ3GEYJ561	M.RESISTOR CH 1/16W 560	1		R6083,84	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	2	
R4038	ERJ8GEYJ181	M.RESISTOR CH 1/8W 180	1		R6085,86	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	2	
R4039	ERJ6GEYJ820	M.RESISTOR CH 1/10W 82	1		R6087	ERJ8GEYJ221	M.RESISTOR CH 1/8W 220	1	
R4040	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1		R6088,89	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R4041, 42	ERJ6GEYOR00	M.RESISTOR CH 1/10W 0	2		R6090	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R4081, 82	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	2		R6091	ERJ8GEYJ391	M.RESISTOR CH 1/8W 390	1	
R4085	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R6092	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	1	
R4087	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R6093	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	1	
R4093	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1		R6095	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R4095	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1		R6096	ERJ8GEYJ331	M.RESISTOR CH 1/8W 330	1	
R4096	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R6097	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4508	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R6098	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R4530	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R6099	ERJ3GEYJ182	M.RESISTOR CH 1/16W 1.8K	1	
R5001	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R6100	ERJ3GEYJ330	M.RESISTOR CH 1/16W 33	1	
R5002	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1		R6101	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	1	
R5003	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1		R6102	ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R5004-07	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	4		R6102	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5008-11	ERJ3GEYJ821	M.RESISTOR CH 1/16W 820	4		R6103	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1	
R5012	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1		R6104	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1	
R5013	ERJ3GEYJ272	M.RESISTOR CH 1/16W 2.7K	1		R6105	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1	
R5024	ERJ3GEYJ4R7	M.RESISTOR CH 1/16W 4.7	1		R6106,07	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	2	
R5025	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1		R6108	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R5026	ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1		R6109-12	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	4	
R5027	ERJ3GEYJ822	M.RESISTOR CH 1/16W 8.2K	1		R6115	ERJ3GEYJ683	M.RESISTOR CH 1/16W 68K	1	
R5028	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1		R6121	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5029	ERJ3GEYJ100	M.RESISTOR CH 1/16W 10	1		R6122	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R5032	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	1		R6123	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R5033, 34	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	2		R6124	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5035	ERJ3GEYJ391	M.RESISTOR CH 1/16W 390	1		R6125,26	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2	
R5036	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R6127	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R5038	ERJ3GEYJ332	M.RESISTOR CH 1/16W 3.3K	1		R6128	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R5039	ERJ3GEYJ183	M.RESISTOR CH 1/16W 18K	1		R6129	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R5040-42	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	3		R6201	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R5043-45	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	3		R6202,03	ERJ3GEYJ104	M.RESISTOR CH 1/16W 100K	2	
R5052	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1		R6204	ERJ3GEYJ181	M.RESISTOR CH 1/16W 180	1	
R5067-70	ERJ3GEYJ394	M.RESISTOR CH 1/16W 390K	4		R6205-07	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	3	
R5074	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1		R6208	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R6001,02	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	2		R6209	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R6003,04	ERJ3GEYJ392	M.RESISTOR CH 1/16W 3.9K	2		R6210,11	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	2	
R6005	ERJ3GEYJ152	M.RESISTOR CH 1/16W 1.5K	1		R6212	ERJ3GEYOR00	M.RESISTOR CH 1/16W 0	1	
R6006,07	ERJ3GEYJ184	M.RESISTOR CH 1/16W 180K	2		R6213	ERJ3GEYJ222	M.RESISTOR CH 1/16W 2.2K	1	
R6008	ERJ3GEYJ102	M.RESISTOR CH 1/16W 1K	1		R6215	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R6009	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1		R6216	ERJ3GEYJ151	M.RESISTOR CH 1/16W 150	1	





Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		COILS		
L1601,02	VLPO113	COIL	2	
		CONNECTORS		
P1001	WJS1229T	CONNECTOR (FEMALE)	1	
P1601	VJP3318A006	CONNECTOR (MALE)	1	
P1601	VJS3172B006	CONNECTOR (FEMALE)	1	
P1602	VJP1231T	CONNECTOR (MALE) 4P	1	
P1603	VJP1229T	CONNECTOR (MALE) 2P	1	
P1604	VJP1229R	CONNECTOR (MALE)	1	
P6008	VJS3172B006	CONNECTOR (FEMALE)	1	
PJ1605	VJP1253	CONNECTOR (MALE)	1	
		TRANSISTORS		
Q1601	2SB936-P	TRANSISTOR	1	
Q1602	2SD601	TRANSISTOR CHIP	1 (Q,R,S)	
Q1603	2SB709	TRANSISTOR CHIP	1 (Q,R,S)	
Q1604	2SD601	TRANSISTOR CHIP	1 (Q,R,S)	
		RESISTORS		
R1601	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	1	
R1602	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R1603	ERJ8GEYJ152	M.RESISTOR CH 1/8W 1.5K	1	
R1604	ERJ3GEYJ473	M.RESISTOR CH 1/16W 47K	1	
R1605	ERJ3GEYJ682	M.RESISTOR CH 1/16W 6.8K	1	
R1606	VSFO059	FUSE	1	
R1607	ERDS2TJ181	C.RESISTOR 1/4W 180	1	
R1609	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R1610	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	1	
R1611	ERJ8GEYJ152	M.RESISTOR CH 1/8W 1.5K	1	
R1612	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	1	
R1613	ERJ3GEYJ3R3	M.RESISTOR CH 1/16W 3.3K	1	
R1614,15	ERJ8GEYJR68	M.RESISTOR CH 1/8W 0.68	2	
		BATTERYS		
Z1601	VSBO166	BATTERY	1	
	■ VEX5862	ZOOM C.B.A.		(NLA)
		SWITCHES		
SW1890	EVQQS004W	SWITCH	1	
SW1891	EVQQS004W	SWITCH	1	
	■ VEX5865	CHARA/GENE C.B.A.		(NLA)
		CONNECTORS		
P1402	VJJ0163	JACK	1	
P3001	VJS172B005	CONNECTOR (FEMALE)	1	
PJ1402	VJP3130	CONNECTOR (MALE)	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	■ VEX5868	FE HEAD C.B.A.		(NLA)
		CAPACITORS		
C1901	ECEA1CKS100	E.CAPACITOR 16V	1	
C1902	VCYD1E103MR	S.CAPACITOR 25V 0.01U	1	
C1903	VCYD1E682KH	S.CAPACITOR 25V 6800P	1	
C1904	ECQV1H563JZ	P.CAPACITOR 50V 0.056U	1	
		COILS		
L1901	VLQEL05F221K	COILS 220UH	1	
		TRANSISTORS		
Q1901	2SC2603AE2F	TRANSISTOR	1	
		RESISTORS		
R1901	ERDS2TJ822	C.RESISTOR 1/4W 8.2K	1	
		TRANSFORMERS		
T1901	VLQ0586	TRANSFORMER	1	
	■ VES0689	MECHANISM CONNECTION C.B.A. (MODE SELECT SWITCH UNIT)		(NLA)
		MISCELLANEOUS		
	ON2170	PHOTO COUPLER	1	
	VJP1229R	CONNECTOR (MALE)	1	
	VJP3318A008	CONNECTOR (MALE)	1	
	VWX1280	SENSOR SPACER	1	