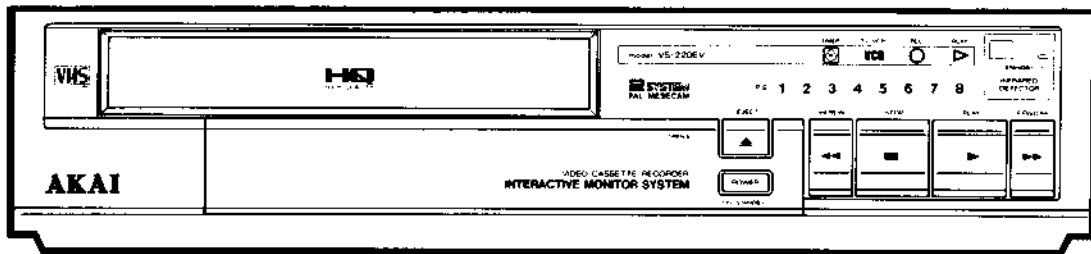


# AKAI SERVICE MANUAL



## VIDEO CASSETTE RECORDER

# MODEL VS-220EV

## SPECIFICATIONS

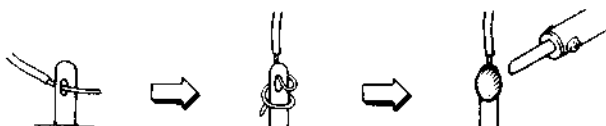
Format . . . . .	VHS standard	Audio	
Video recording system . . . .	Rotary, slant azimuth two-head helical scan system	Line input level . . . . .	-8 dBm/50 K ohms, unbalanced
Rotary heads . . . . .	Two video heads	Line output level . . . . .	-6 dBm/ 1 K ohms, unbalanced
RF input . . . . .	System B, G VHF ch 2 - 12, UHF ch 21 - 69	S/N ratio . . . . .	more than 40 dB
RF output . . . . .	System B type modulation VHF ch 3, 4 switchable (preset ch 4)	Frequency response . . . . .	70 - 10,000 Hz
Recording (line input) . . . . .	PAL, CCIR (System B, G, I)	Recording/playback time . . . .	240 min. with E-240 cassette
Playback (line output) . . . . .	PAL, CCIR (System B, G, I)	Tape speed . . . . .	23.39 mm/sec.
Video		Quick finder . . . . .	approx. 7 times normal speed
Line input level . . . . .	0.5 - 2.0 Vp-p/75 ohms, unbalanced	FF, REW time . . . . .	approx. 5 min. with E-240 cassette
Line output level . . . . .	1.0 Vp-p/75 ohms, unbalanced	Timer	
S/N ratio . . . . .	more than 45 dB	Program . . . . .	4 program/2 week and sleep timer
Horizontal resolution . . . . .	more than 250 lines	Clock reference . . . . .	Quartz crystal
		Display . . . . .	TV screen (Tape counter, Timer etc.)
		Power requirements . . . . .	115/230 V AC, 50/60 Hz
		Power consumption . . . . .	28 W
		Operating temperature . . . . .	5°C - 40°C
		Dimensions . . . . .	425 (W) x 95 (H) x 345 (D) mm
		Weight . . . . .	5.9 Kg

\* For improvement purposes, specifications and design are subject to change without notice.

# ★ SAFETY INSTRUCTIONS

## PRECAUTIONS DURING SERVICING

1. Parts identified by the  $\Delta$  symbol parts are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.  
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (Insulating Barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 M ohms. but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for  $\square C$  or  $\square A$ , specified insulation resistance should be headphone jacks line-in-out jacks etc. more than 2.2 M ohms (ground terminals, microphone jacks).

# ★ INFORMATION

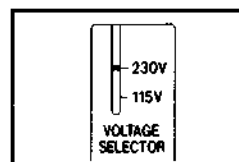
## SYMBOLS FOR PRIMARY DESTINATION

Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
$\square A$	USA
$\square B$	UK
$\square C$	Canada
$\square E$	Europe (except UK)
$\square J$	Japan
$\square S$	Australia
$\square V$	W. Germany only
$\square U$	Universal Area
$\square Y^*$	Custom version

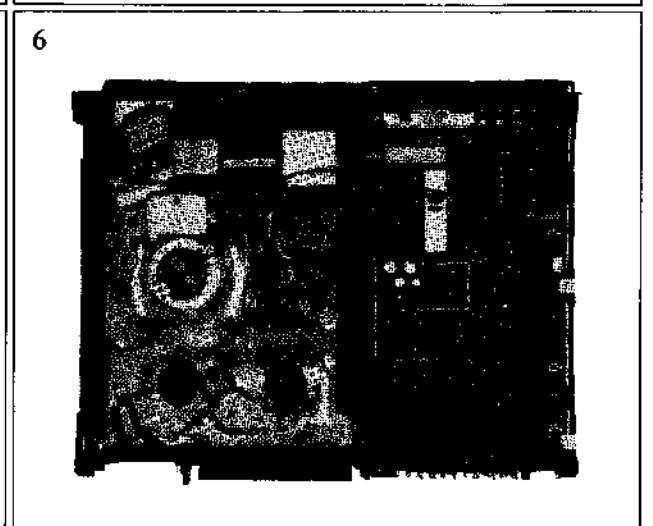
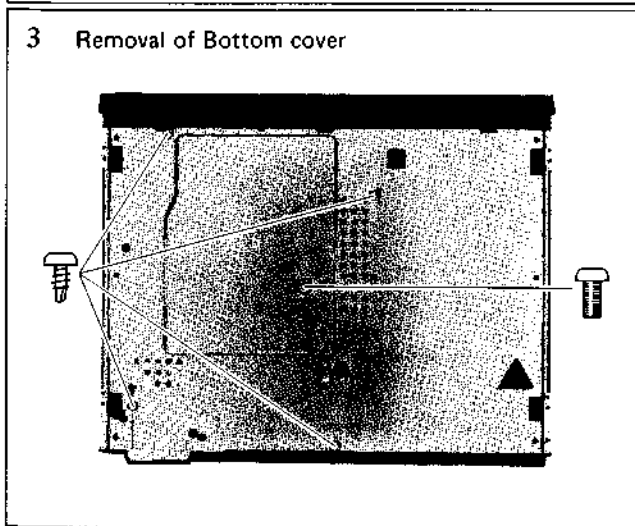
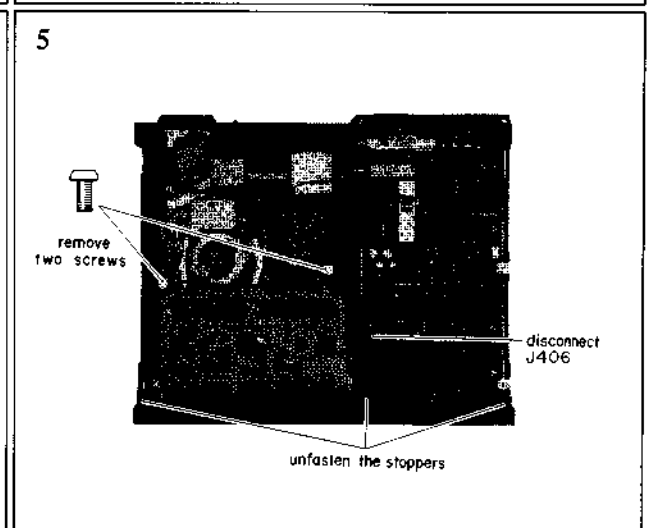
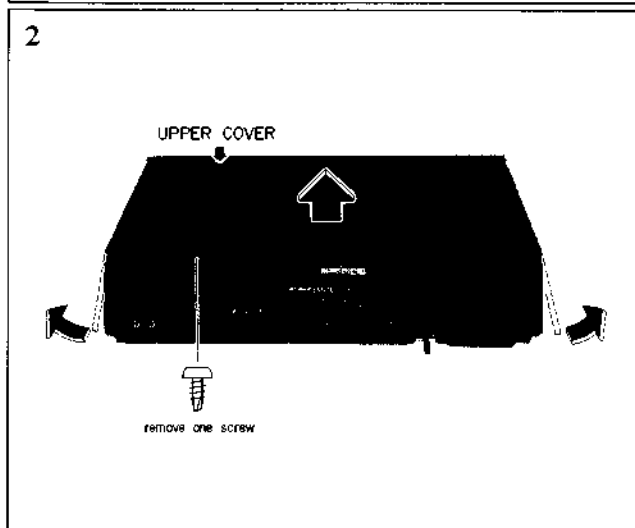
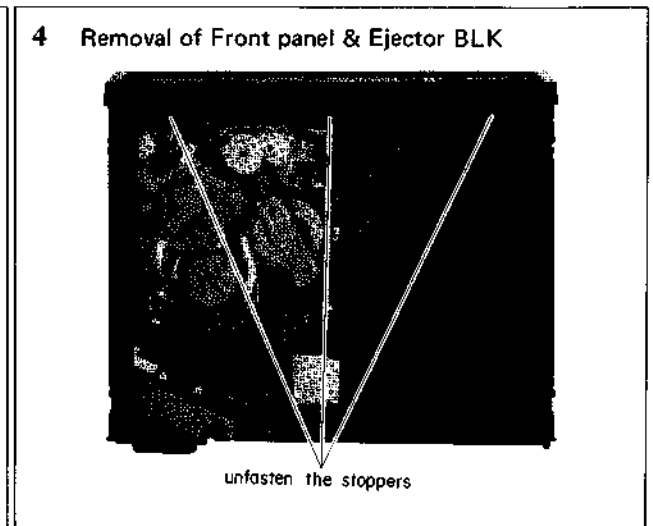
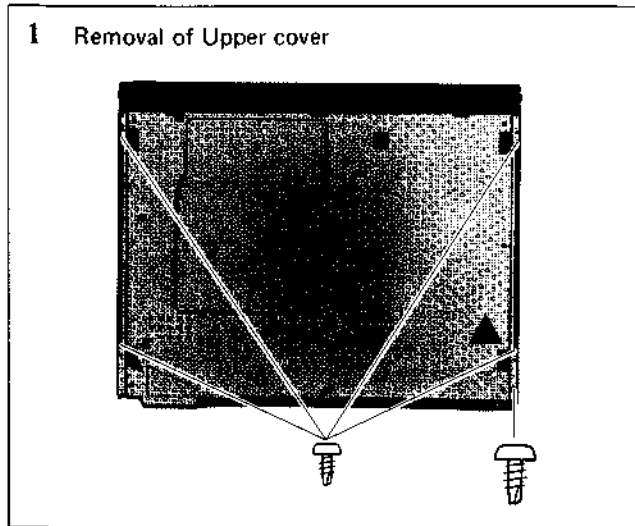
## VOLTAGE CONVERSION

Set the VOLTAGE SELECTOR with a screwdriver to voltage for your area.



# I. DISASSEMBLY

In case of trouble, etc, necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.



## II. CONTROLS

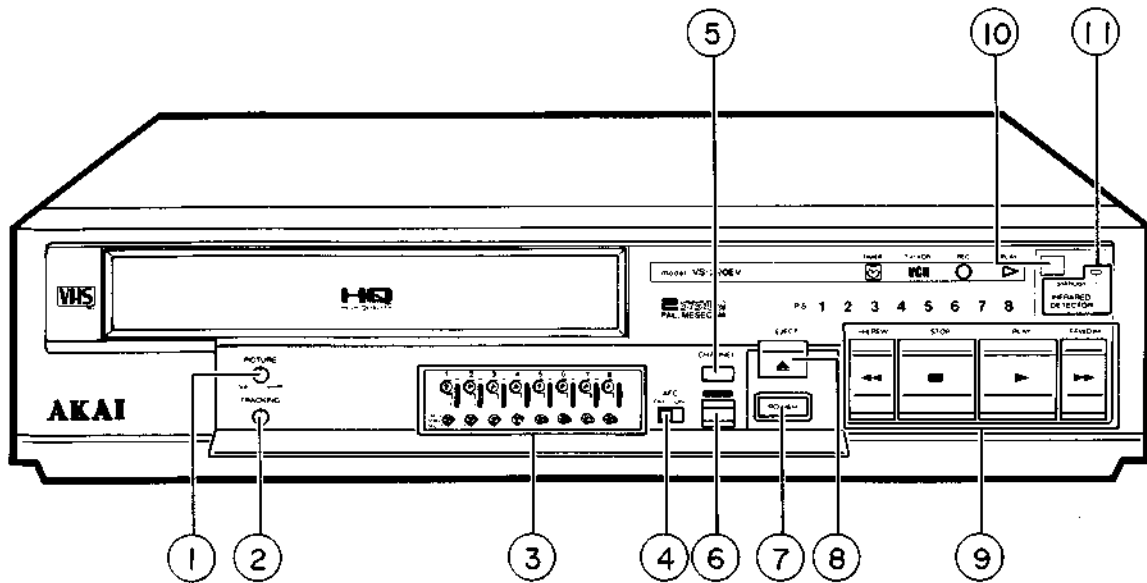


Fig. 2-1 Front View

- |                               |  |
|-------------------------------|--|
| 1. SOFT/SHARP PICTURE CONTROL | 7. POWER BUTTON                          |
| 2. TRACKING CONTROL           | 8. EJECT BUTTON                          |
| 3. TUNING CONTROL             | 9. TAPE TRANSPORT BUTTONS                |
| 4. AFC SWITCH                 | 10. REMOTE CONTROL SENSOR                |
| 5. CHANNEL SELECT BUTTON      | 11. STAND-BY INDICATOR/INFRARED DETECTOR |
| 6. REC BUTTON                 |  |

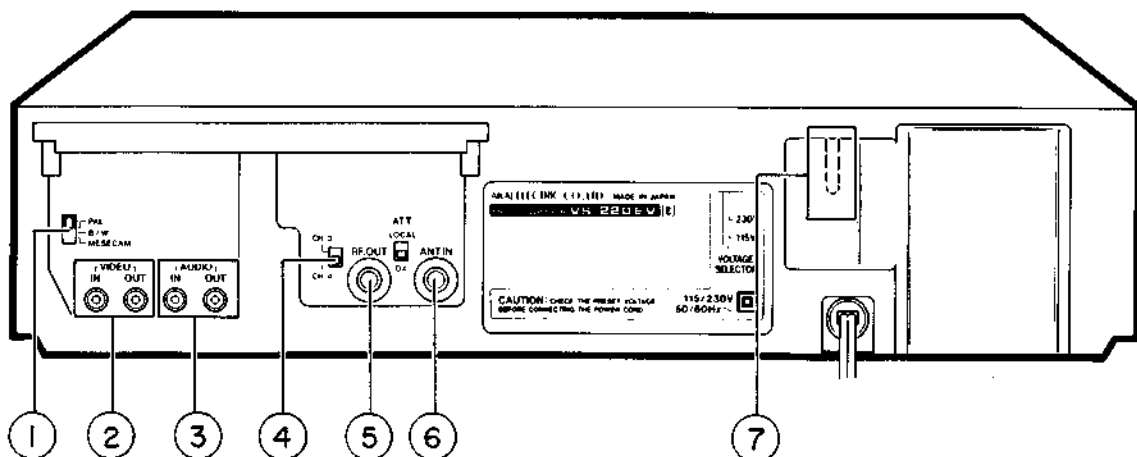


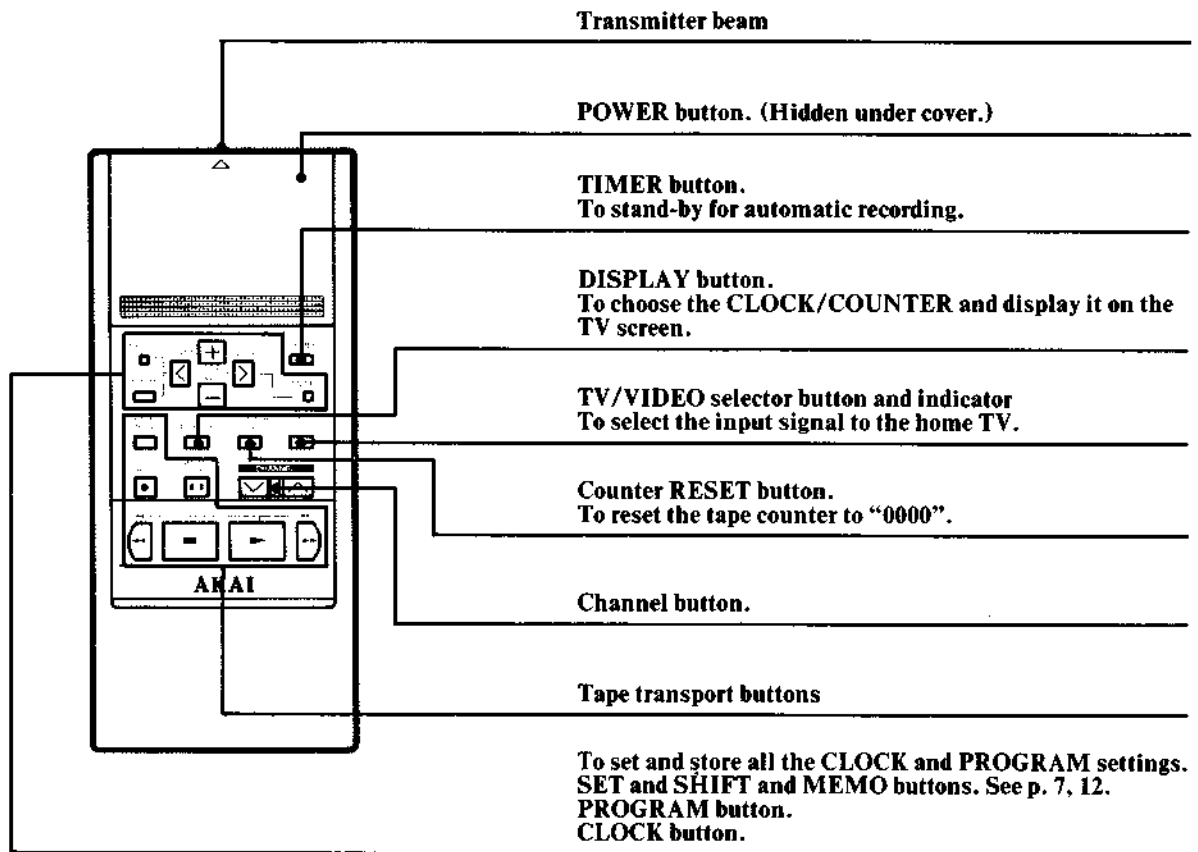
Fig. 2-2 Rear View

- |                            |                     |
|----------------------------|---------------------|
| 1. VIDEO MODE SELECTOR     | 5. RF OUT TERMINAL  |
| 2. VIDEO IN/OUT JACKS      | 6. ANT IN JACK      |
| 3. AUDIO IN/OUT JACKS      | 7. VOLTAGE SELECTOR |
| 4. RF OUT CHANNEL SELECTOR |                     |

---

## REMOTE CONTROL UNIT RC-V220

The remote control contains operation buttons which are used the same way as the operation buttons on the front panel of the Akai VCR, and many which appear on the remote control only. The remote control can be used from a distance of up to 5 meters.



### III. PRINCIPAL PARTS LOCATION

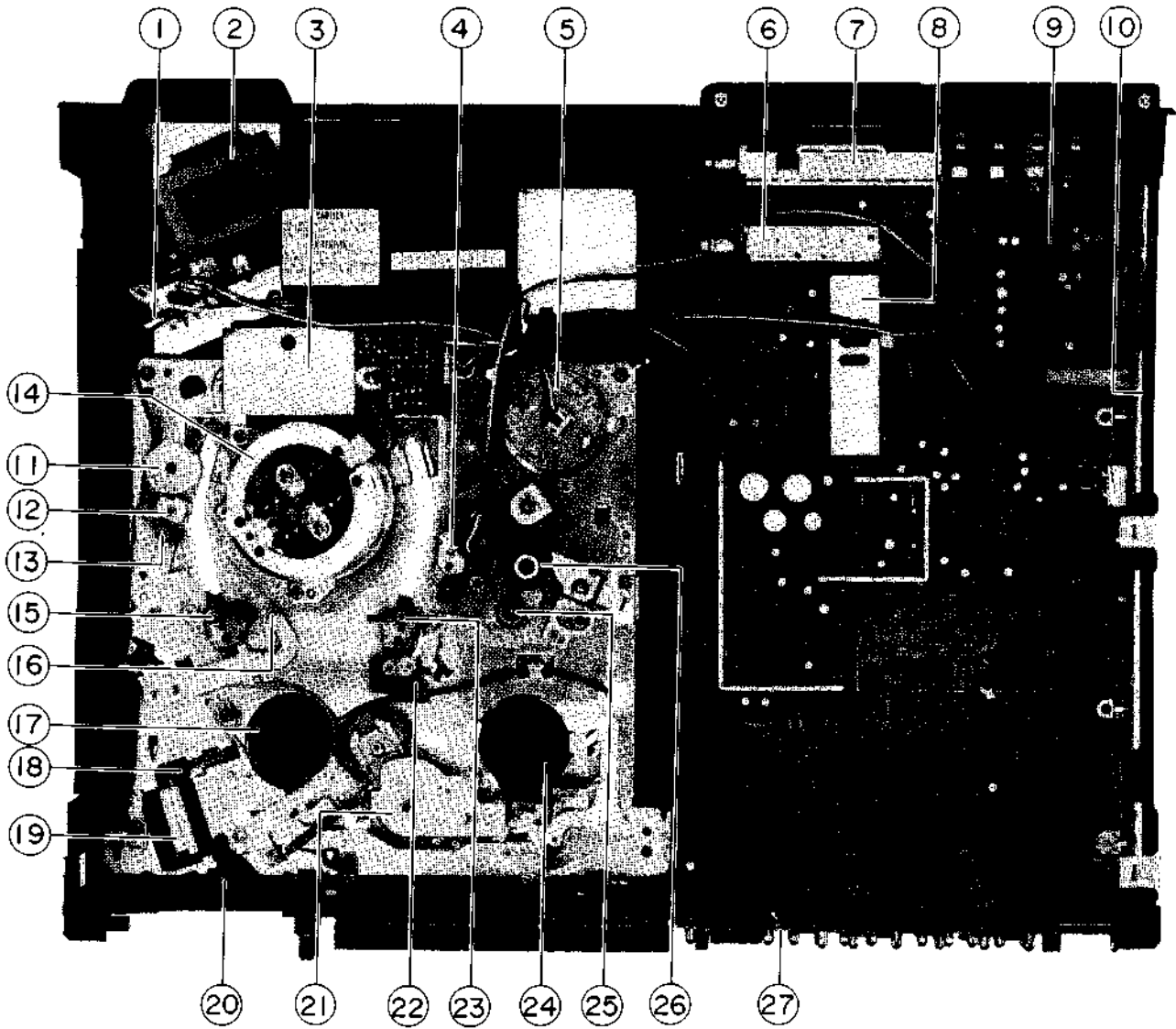


Fig. 3-1 Top View

- |                           |                             |
|---------------------------|-----------------------------|
| 1. TRANS PCB              | 15. LOADING LEADER LEFT     |
| 2. POWER TRANSFORMER      | 16. TENSION ARM             |
| 3. PREAMP PCB             | 17. SUPPLY REEL TABLE       |
| 4. AUDIO/CONTROL HEAD     | 18. SYNCHRO BELT            |
| 5. CAPSTAN MOTOR (M902)   | 19. LOADING MOTOR (M903)    |
| 6. TUNER UNIT             | 20. REC SAFETY SWITCH (SW1) |
| 7. RF CONVERTER           | 21. TAKE UP GEAR BLOCK      |
| 8. VIF UNIT               | 22. SENSOR LED              |
| 9. MAIN PCB               | 23. LOADING LEADER RIGHT    |
| 10. MAIN (VIDEO) PCB      | 24. TAKE UP REEL TABLE      |
| 11. IMPEDANCE ROLLER      | 25. CAPSTAN SHAFT           |
| 12. FULL TRACK ERASE HEAD | 26. PINCH ROLLER            |
| 13. SUPPLY TAPE GUIDE     | 27. OPERATION PCB           |
| 14. HEAD DRUM BLK         |                             |

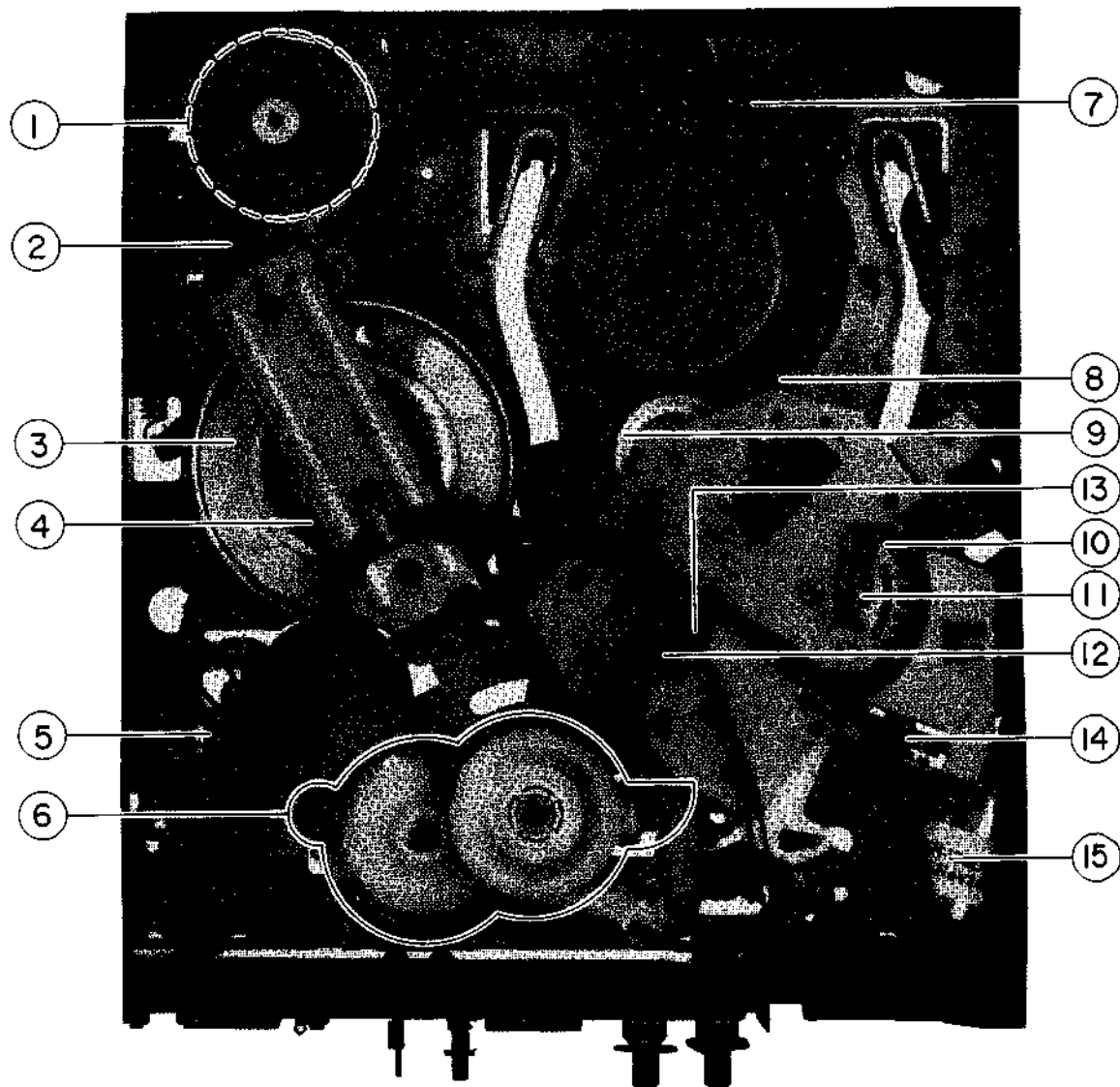


Fig. 3-2 Bottom View

- 1. CAPSTAN MOTOR
- 2. CAPSTAN BELT
- 3. CAPSTAN FLYWHEEL
- 4. IDLER BELT
- 5. REEL SENSOR PCB
- 6. TAKE-UP GEAR BLOCK
- 7. DRUM MOTOR BLOCK
- 8. SUPPLY LOADING GEAR

- 9. TAKE-UP LOADING GEAR
- 10. EJECT CAM GEAR
- 11. EJECT SWITCH
- 12. ROTARY ENCODER
- 13. MAIN GEAR CAM
- 14. SYNCHRO BELT
- 15. LOADING MOTOR

## IV. MECHANICAL ADJUSTMENT

### 4-1. BACK TENSION ADJUSTMENT

- 1) Remove the EJECTOR BLK. and disconnect J406 from P406 on the MAIN PCB. (Refer to dismantling of EJECTOR BLK. to chapter I.)
- 2) Depress the Power button on the Front Panel.
- 3) Short pin ③ and pin ⑤ of P406 to maintain cassette tape loaded mode with a tweezer or some jumper wires as shown in Fig. 4-1.

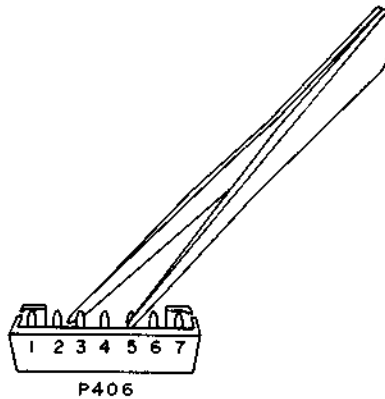


Fig. 4-1

- 4) Set the Back Tension jig (AT-751181) and put some weight on the Back Tension jig as a stabilizer.
- 5) Press the PLAY button, then check and adjust back tension as 30 ~ 35 g-cm by the TENSION HOLDER position.

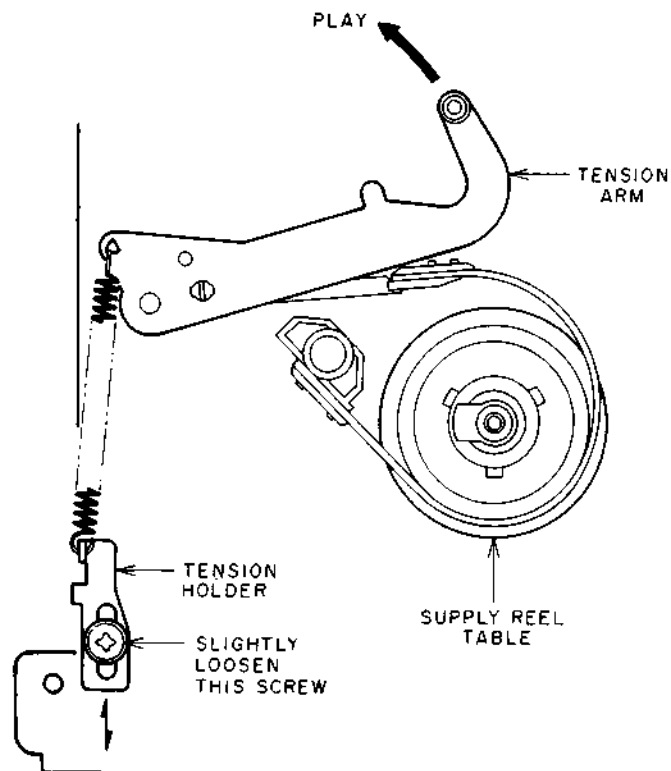


Fig. 4-2



## 4-2. LOADING LEADER HEIGHT ADJUSTMENT

- 1) Slightly loosen the set screws at the lower part of the LOADING LEADER so that the LOADING LEADER can be adjusted with reasonable tightness. Adjust the coarse height of the LOADING LEADER from the base mount as 0.6 to 0.8 mm.
- 2) Set the reference tape TF-530RFS (AT-751775) and press the PLAY button.
- 3) Connect an Oscilloscope to RF ENVELOPE test terminal TP1 on the MAIN (VIDEO) PCB. Turn the LOADING LEADER height adjustment screw head to obtain the flat envelope as Fig. 4-5 ideal envelope.

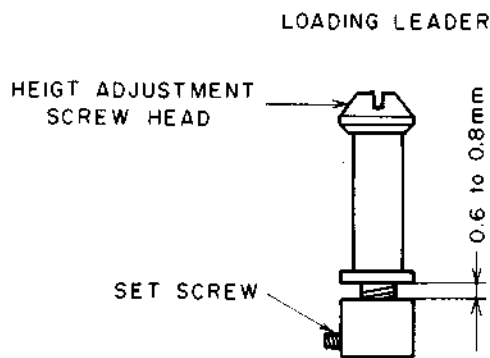


Fig 4-3

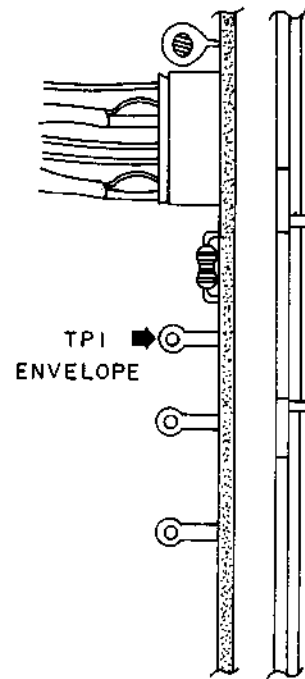


Fig. 4-4 MAIN (VIDEO) PCB.

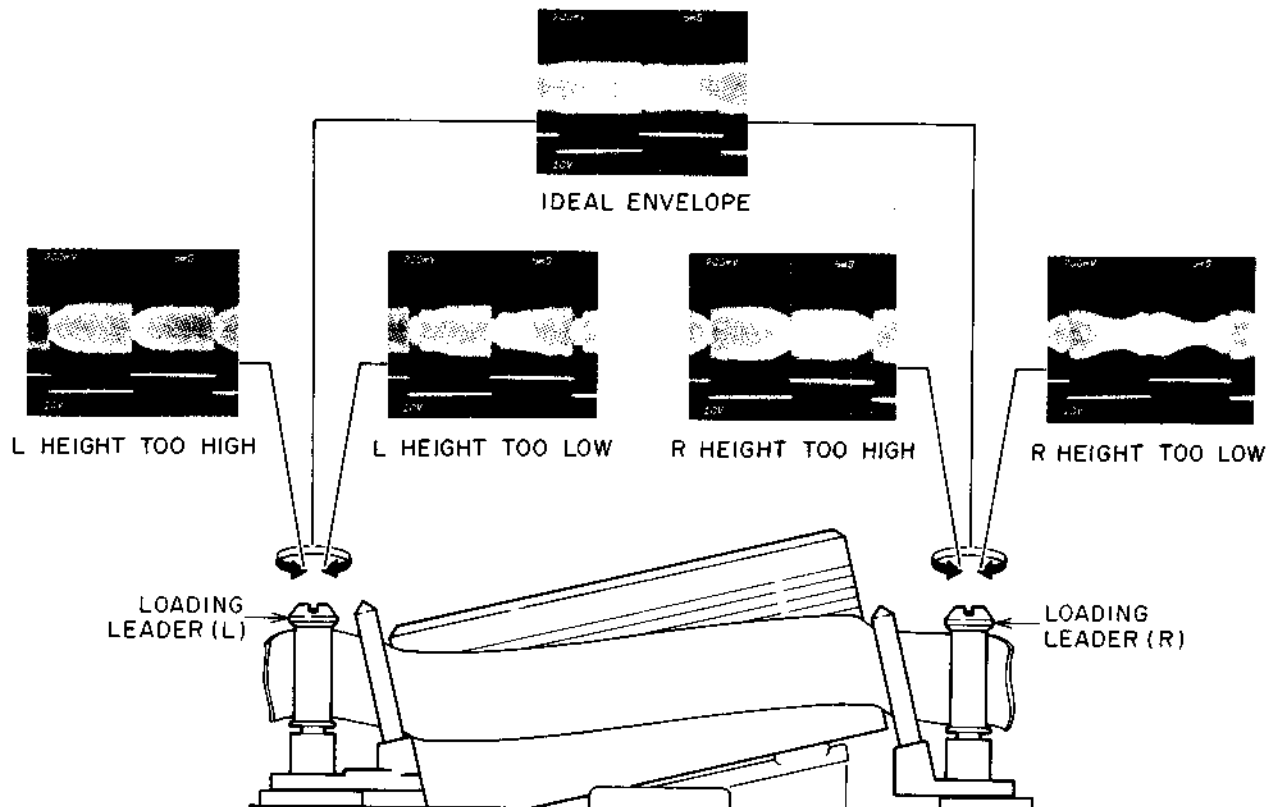


Fig. 4-5

### 4-3. TAPE CURL AT TAKE-UP TAPE GUIDE ADJUSTMENT

Turn the screw (a) on the A/C HEAD BLK so that the down edge of the tape touches the TAKE-UP TAPE GUIDE lower part without any curl or waving.

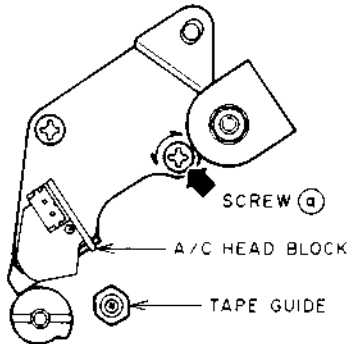


Fig. 4-6

- 2) Connect an oscilloscope or a AC voltmeter to the AUDIO LINE OUT
- 3) Set the reference tape TF-530RFS (AT-751775) and depress the PLAY button.
- 4) Turn the screw (b) to obtain the maximum audio signal output.

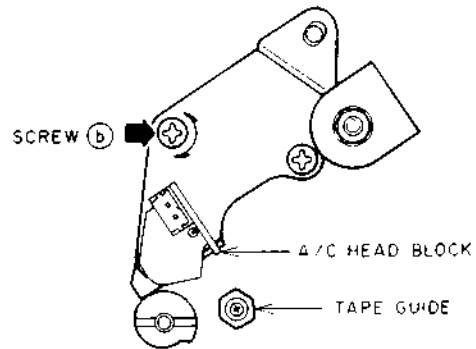


Fig. 4-10

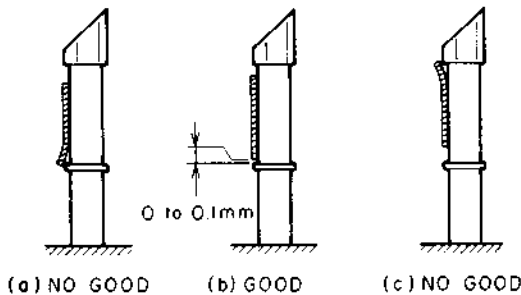


Fig. 4-7

### 4-5. RF ENVELOPE ADJUSTMENT

- 1) Set the reference tape TF-530RFS (AT-751775) and depress the PLAY button.
- 2) Slightly turn the LOADING LEADER HEIGHT ADJUSTMENT SCREW HEAD (L) (R) to obtain the IDEAL ENVELOPE as shown in Fig. 4-5.

### 4-4. AUDIO HEAD AZIMUTH ADJUSTMENT

1) Turn the NUT (a) for coarse A/C BLOCK height adjustment as in Fig. 4-7, 8.

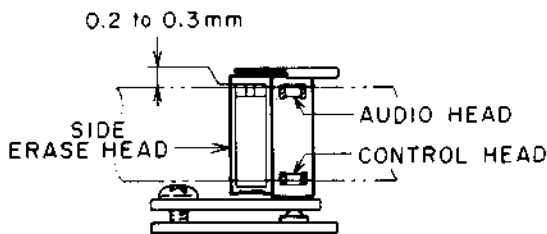


Fig. 4-8

### 4-6. TAPE CURL AT SUPPLY TAPE GUIDE ADJUSTMENT

1) Check the tape curl at Supply Tape Guide slightly turn the NUT (a) if the tape curl exists.

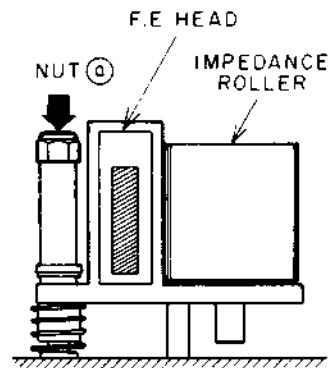


Fig. 4-11

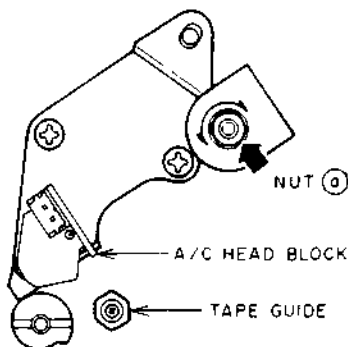


Fig. 4-9

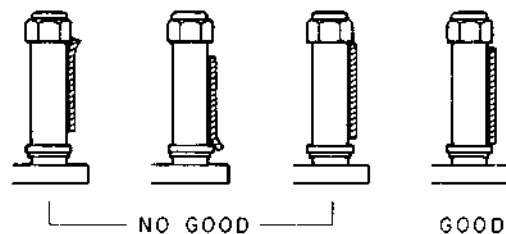


Fig. 4-12

#### 4-7. AUDIO HEAD HEIGHT ADJUSTMENT

- 1) Connect an oscilloscope or a AC Voltmeter to the LINE AUDIO OUT.
- 2) Set the reference tape TF-530RFS (AT-751775) and depress the PLAY button.
- 3) Slightly turn the NUT (a) shown in Fig. 4-9 to obtain the maximum audio output.

#### 4-8. CONTROL HEAD POSITION ADJUSTMENT

- 1) Connect an oscilloscope to RF ENVELOPE test terminal TP1 on the MAIN (VIDEO) PC Board.
- 2) Set the reference tape TF-530RFS (AT-751775) and depress the PLAY button.
- 3) Set the Tracking Control Volume to center click position.
- 4) Adjust Mechanical Tracking Adjustment Screw (a) to obtain the maximum RF ENVELOPE.

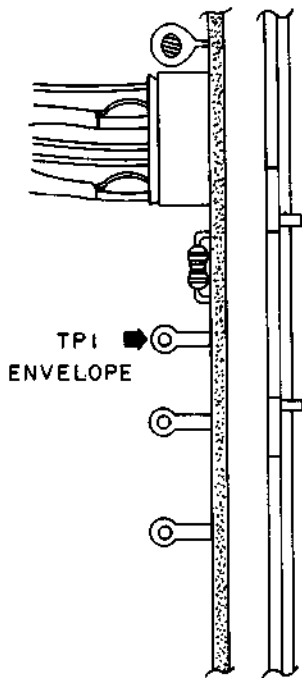


Fig. 4-13

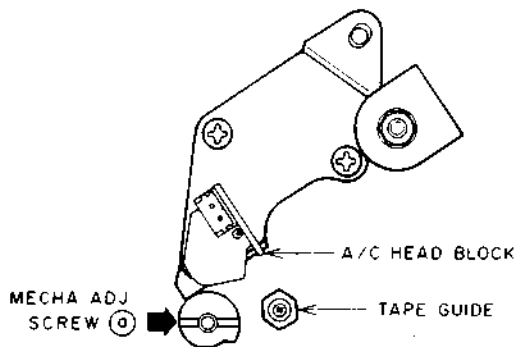


Fig. 4-14

#### 4-9. CUE REVIEW ADJUSTMENT

- 1) Set a E-180 tape, press the PLAY and the F.FWD button (CUE mode).
- 2) Turn the CUE/REVIEW GUIDE height adjustment Nut (c) so that the wrinkle between the PINCH ROLLER and the CUE/REVIEW GUIDE are not existed.
- 3) Depress the REV button (REVIEW mode) confirm the curl at the tape down edge is not existed at the TAPE GUIDE as shown in Fig. 4-7. Fig. 4-7 (c) is not acceptable, but Fig. 4-7 (b) is acceptable).

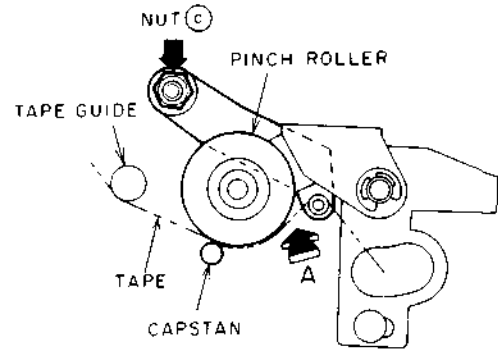


Fig. 4-15

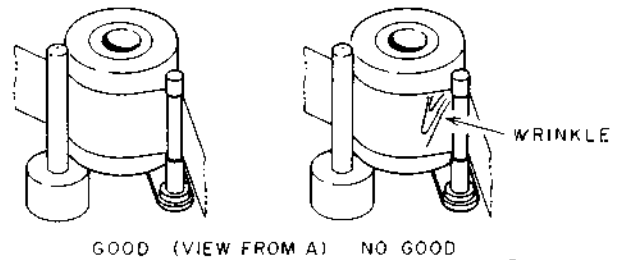


Fig. 4-16

After the adjustments, tighten the **LOADING LEADER** set screw.

# V. HEAD DRUM REPLACEMENT

## 5-1. REPLACEMENT PROCEDURE

- 1) Remove the Drum Earth Brush.
- 2) Unsolder the four wires from the Rotary Trans, BLUE and BROWN for CH1, BLUE and RED for CH2.
- 3) Remove the Upper Drum Fixing Screw.
- 4) Install the Upper Drum. (Head Drum)
- 5) Tighten the Upper Drum Fixing Screws.
- 6) Resolder the four wires from the Rotary trans.

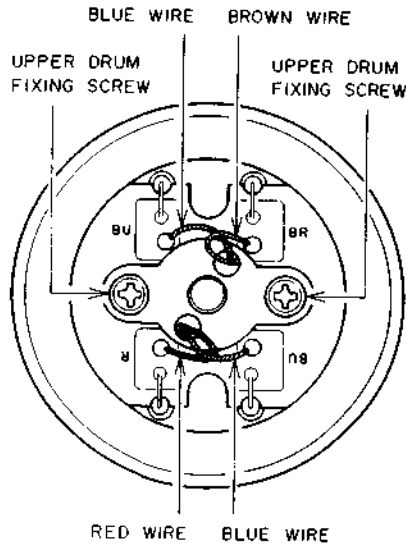


Fig. 5-1

## 5-2. AFTER REPLACEMENT

After replacement, the following adjustments and confirmations are necessary for the proper performance.

- 1) Tracking preset adjustment. (Servo adjustment Step 2)
- 2) PB switching point adjustment. (Servo adjustment Step 3)
- 3) REC current adjustment. (Video adjustment Step 1)

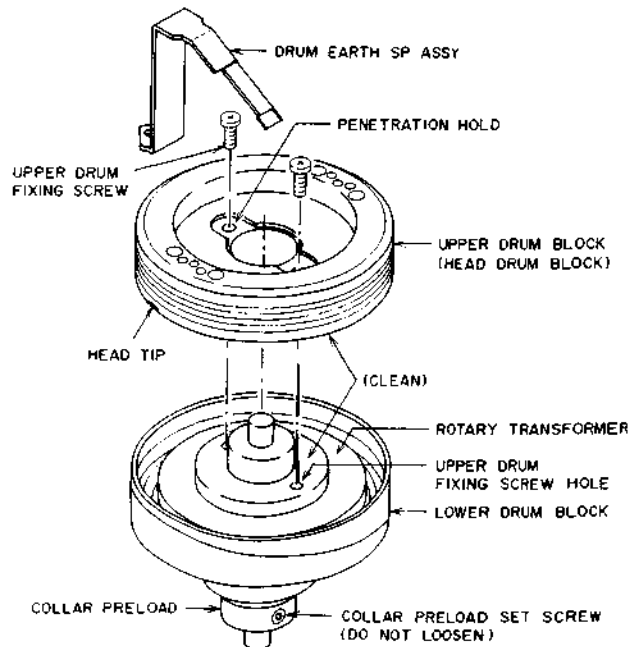


Fig. 5-2

**NOTE:** Height precision is required for the proper performance, and the head tips are fragile, so the following points should be noted when replacing the upper drum block.

- (a) Do not loosen the set screw on the collar preload.
- (b) Before fixing, clean both surfaces where the upper drum and the rotary transformer part meet with alcohol.
- (c) When installation of upper drum, if it does not go on to the shaft easily, clean the hole in the upper drum with alcohol and put a little oil on the shaft.
- (d) Make sure that the upper drum fixing screw holes on the rotary transformer part and the upper drum fixing screw penetration holes match exactly before inserting the fixing screws.
- (e) Tighten the two upper drum fixing screws alternately and gradually. Tighten them at 6 kg-cm torque.

## VI. HOW TO MOUNT THE ROTARY PLATE

When mounting the rotary plate on the drum motor, be sure to align the mark (Small round hole) on the rotary plate (a) with the collar preload set screw (d) on the collar preload (c) as illustrated above.

**NOTE:** Do not attempt to remove the collar preload (c) on the head assy. If removed, a special jig is needed for reinstallation, which almost always requires replacement of the drum assy.

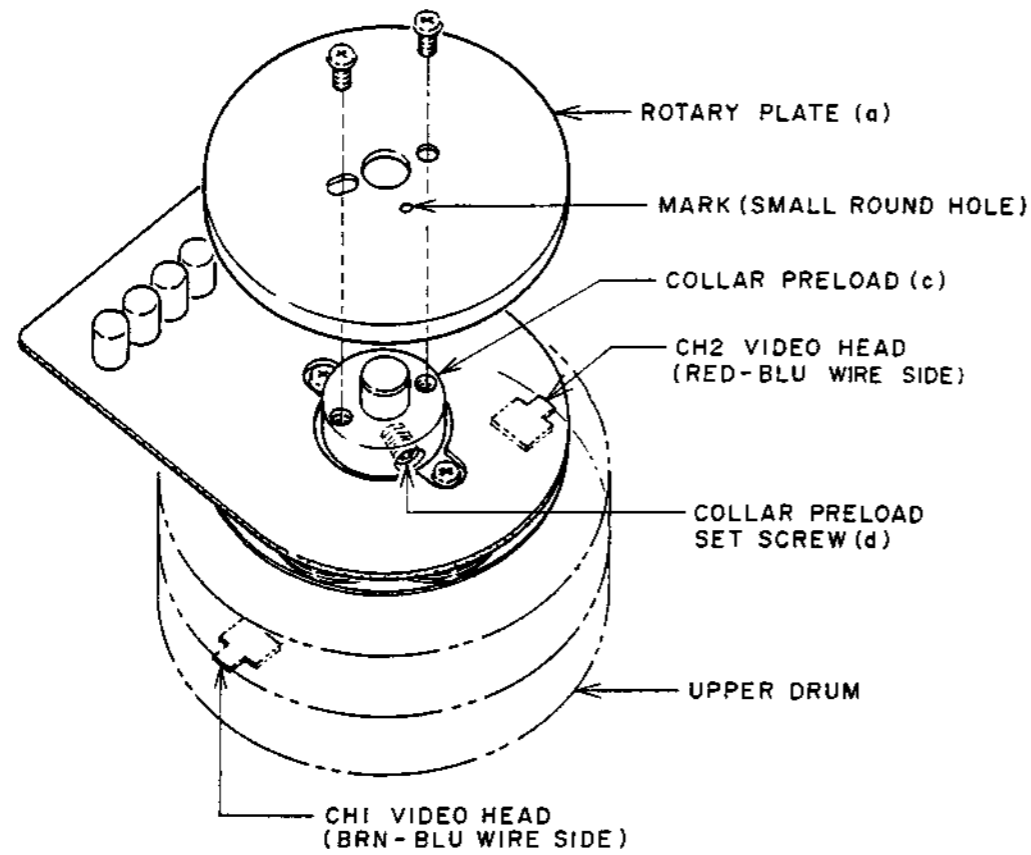


Fig. 6-1 How to Mount the Rotary Plate

## VII. HOW TO ASSEMBLE LOADING MECHANISM

1) With the unit unloaded, attach Gear Loading (S) BLK and Gear Loading (T) BLK to Mecha chassis so that align the mark.

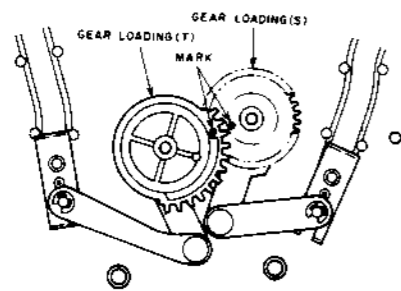


Fig. 7-1

2) Attach Gear Cam Eject to Mecha chassis so that align the marks.

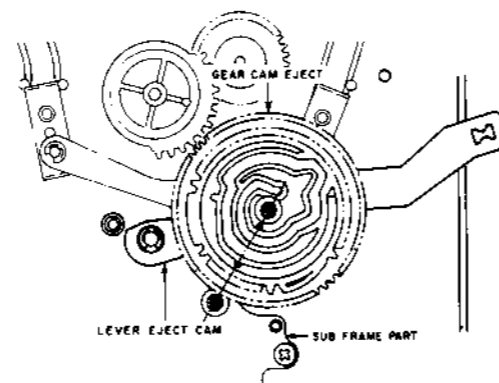


Fig. 7-2

3) Attach Gear Cam Main to Mecha chassis so that Pin (A) of Lever P Cam and Pin (B) of Lever Cam Slide mate oval hole of Gear Cam Main.

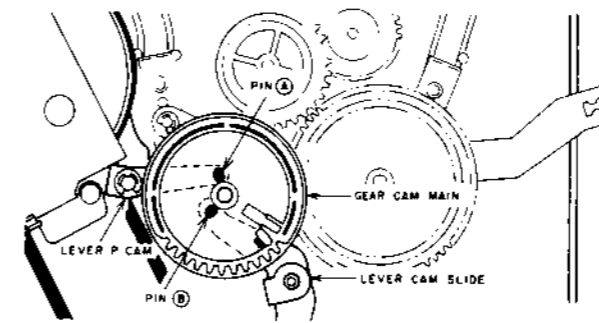


Fig. 7-3

4) Attach Lever Cam Tension to Mecha chassis so that Pin (A) goes into valley of Gear Cam Eject.

5) Attach Lever Cam F/R to Mecha chassis so that Pin (B) goes into valley of Gear Cam Eject, and Pin (C) of Plate F/R Slide (2) Part into hole of lever Cam F/R.

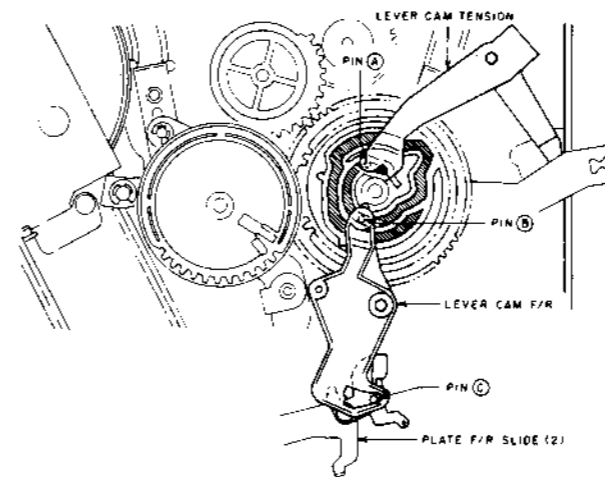


Fig. 7-4

6) Attach Arm Set Free onto Lever Cam Slide.

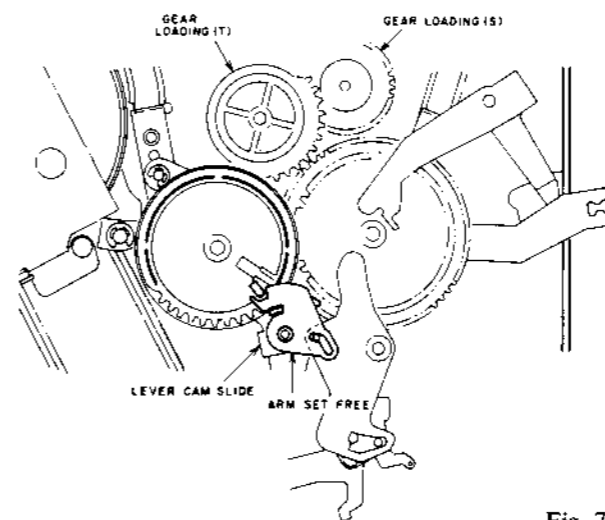


Fig. 7-5

7) Attach Mode SW BLK to Mecha chassis so that the latch of Rotary Encoder goes into slit (A) of Gear Cam Main and tighten with screw (B).

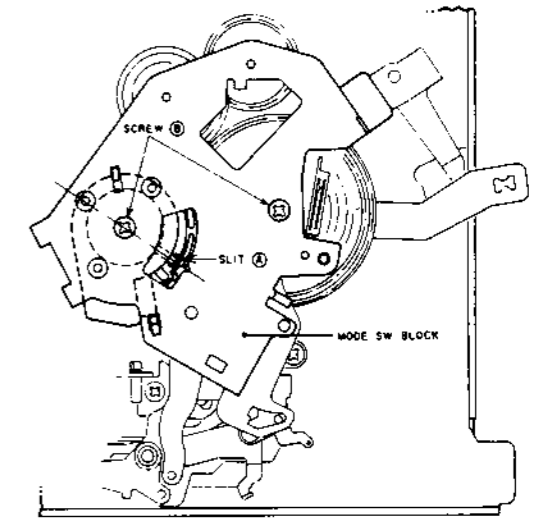


Fig. 7-6

8) Mount Loading Motor BLK and tighten with screw (A).

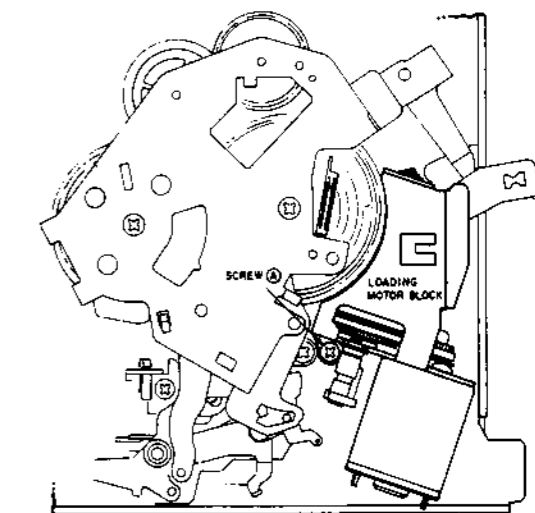


Fig. 7-7

# VIII. ELECTRICAL ADJUSTMENT

## 8-1. MAIN PCB ADJUSTMENTS

Precautionary items prior to adjustments

1. The color bar generator output should be 1.0 Vp-p.
2. Video output terminal should be terminated with 75 ohms (dummy or load).

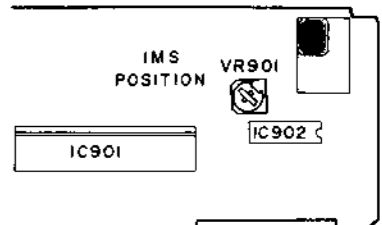
Required following Test tapes.

Test Tape	Part No.
TF-530RFS	AT-751775
TF-527BL	AT-711880

STEP	ADJUSTMENT ITEM
1.	MODE and INPUT SIGNAL/TEST TAPE
2.	TEST POINT and ADJ. part
3.	RESULT & REMARKS

**IMS POSITION**

1. "E-E" Input NTSC color bar signal.
2. TV screen & VR901.
3. Depress the PROGRAM button on the REMOTE CONTROLLER to display the information for programming on the TV screen.
  - Adjust VR901 so that characters located center of the TV screen.



**OPERATION PCB**

**AUDIO ADJUSTMENT**

**3 AUDIO AZIMUTH**

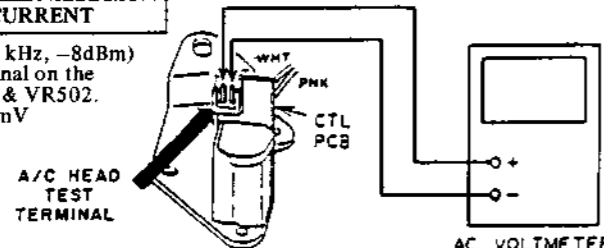
1. "PB" Test tape TF-530RFS.
2. AUDIO OUT.
3. Confirm  $-6 \sim -14$  dBm. (TF-508RF:  $-5 \sim -11$  dBm)

**1 AUDIO PB LEVEL**

1. "PB" Test tape TF-527BL.
2. Audio out & VR501.
3.  $-3.0 \pm 0.5$  dBm (TF-513L:  $-9.0 \pm 0.5$  dBm)

**2 REC CURRENT**


1. "REC" (1 kHz,  $-8$  dBm)
2. Test terminal on the A/C Head & VR502.
3.  $2.9 \pm 0.1$  mV



**SERVO ADJUSTMENT**

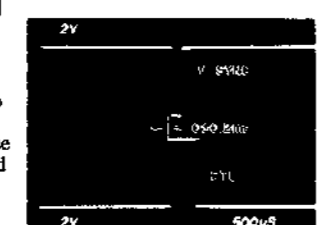
**3 PB SWITCHING POINT**

1. "PB" Test tape TF-530RFS.
2. TP-Video out, P204 pin 1 (SW. P) for trigger signal & VR201.
3. Adjust "T" to  $6.5 \pm 0.5$  H



**2 TRACKING PRESET**

1. "PB" Test tape TF-530RFS.
2. Test terminal P204 pin 2 (CTL), pin 3 (V-SYNC) & VR202.
3. Set the TRACKING Control to center click position.
  - Adjust VR202 so that the phase at raising part of CTL pulse and V-SYNC pulse are lined up.

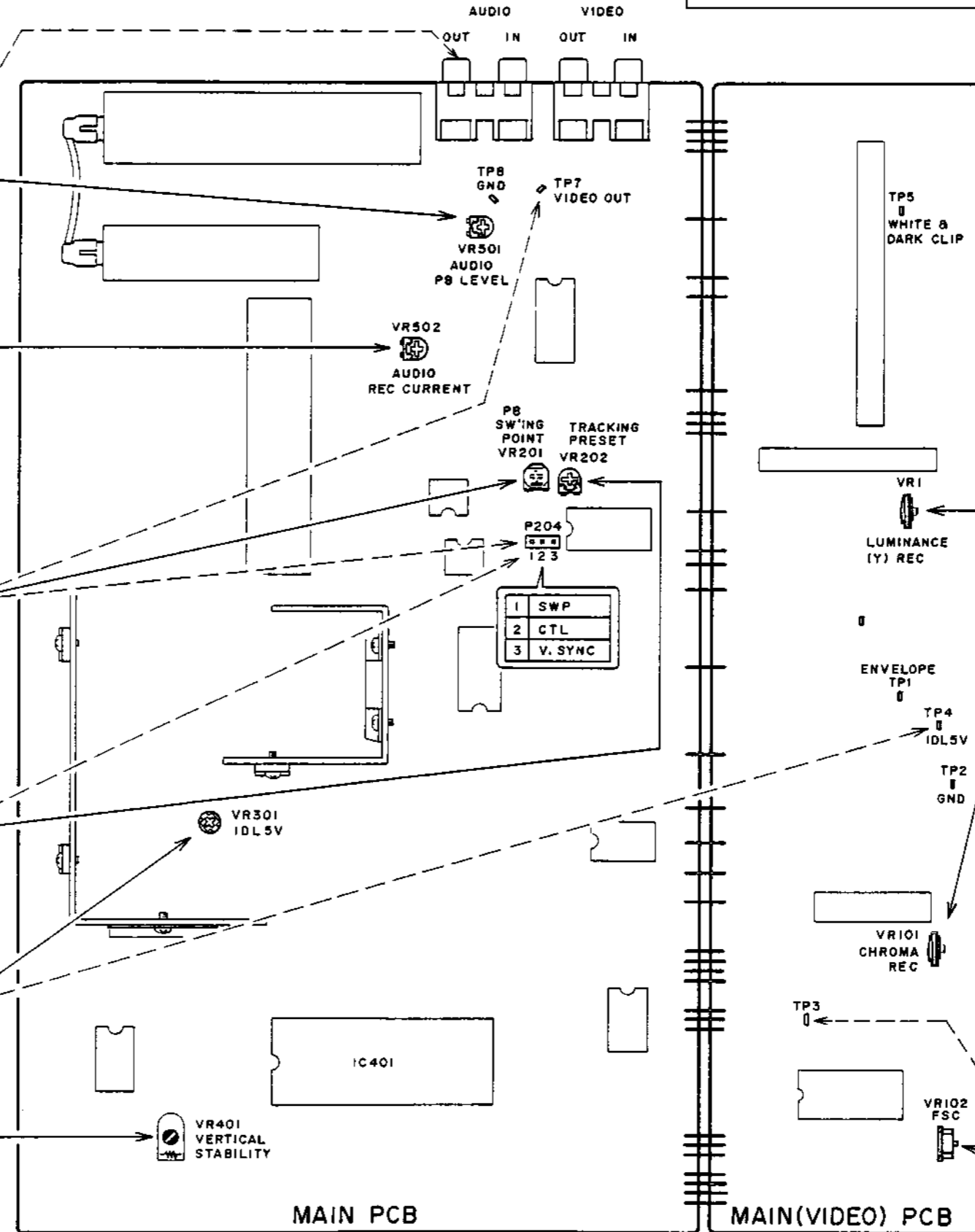


**1 IDL 5V**

1. "E-E" (stop mode)
2. TP4 (IDL 5V) & VR301
3.  $5.1 \pm 0.05$  V

**4 VERTICAL STABILITY**

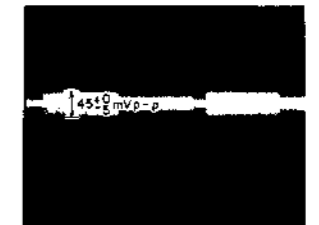
1. "REC" TV program and PB/PAUSE
2. TV screen & VR401
3. Minimum vibration of still picture.



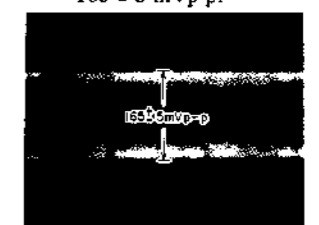
**VIDEO ADJUSTMENT**

**1 REC CURRENT**

1. "REC" PAL color bar signal.
2. TP801 on the PRE-AMP PCB & VR101 (C), VR1 (Y).
3. Turn VR1 (Y) fully clockwise.
  - Adjust VR101 so that Chroma REC current level is  $45 \pm 5$  mVp-p.

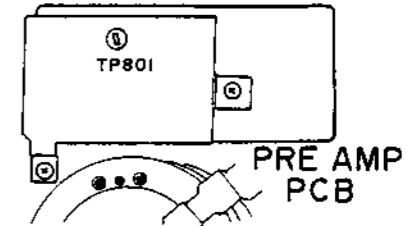


• Adjust VR1 so that Y REC current level is  $165 \pm 5$  mVp-p.



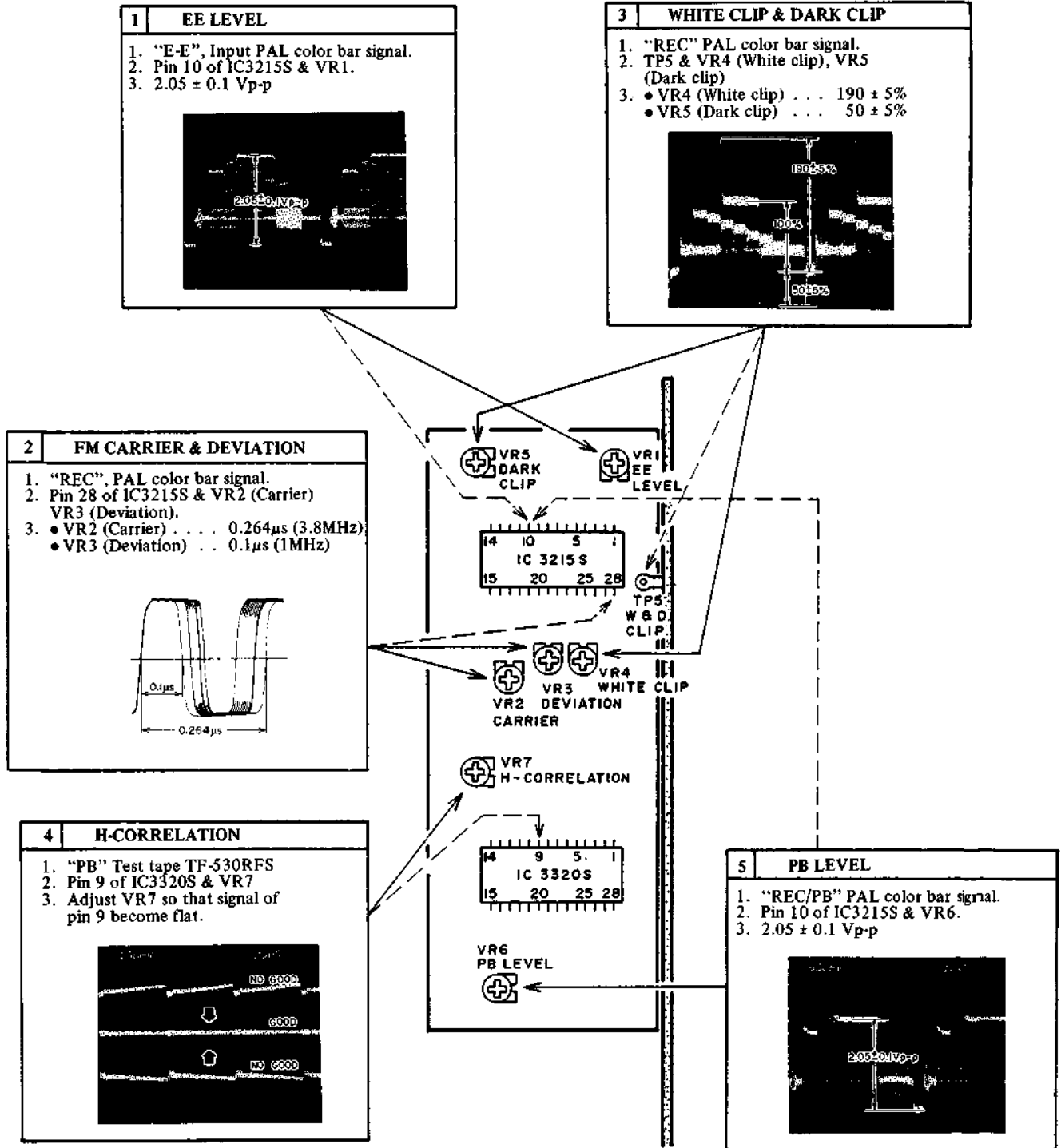
**2 FSC**

1. "E-E"
2. TP3 & VR102
3. Connect an Frequency counter to TP3.
  - Adjust VR102 so that FRQ. counter reads  $4.433619$  MHz  $\pm 100$  Hz.



## 8-2. LUMINANCE SIGNAL PROCESSING IC (EHM-M96A8U63K-II) ADJUSTMENTS

**NOTE:** These adjustment's are generally unnecessary, except when replacing this IC.



# IX. PARTS LIST

## ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.  
If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

## HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

b) PC Board

### 2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20×03STL CMT
2-4	ZS-536488	BID20×08STL CMT
2-5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

A small "x" indicates that this part is not shown in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure.

This number corresponds with the Figure Number.

### 6. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
6-C1B	EC-350949	C MMY V 223M 250DC [J]
6-C1C	EC-338397	C MMY V 223M 125AC [C,A]
6-X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination —

[A]: AAL(U.S.A.) [S]: SAA(Australia)  
 [B]: BEAB(England) [U]: U/T(Universal Area)  
 [C]: CSA(Canada) [V]: VDE(W. Germany)  
 [E]: CEE(Europe) [Y]: Custom Version  
 [J]: JPN(Japan)

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

## WARNING

⚠ (\*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

## AVERTISSEMENT

⚠ (\*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.



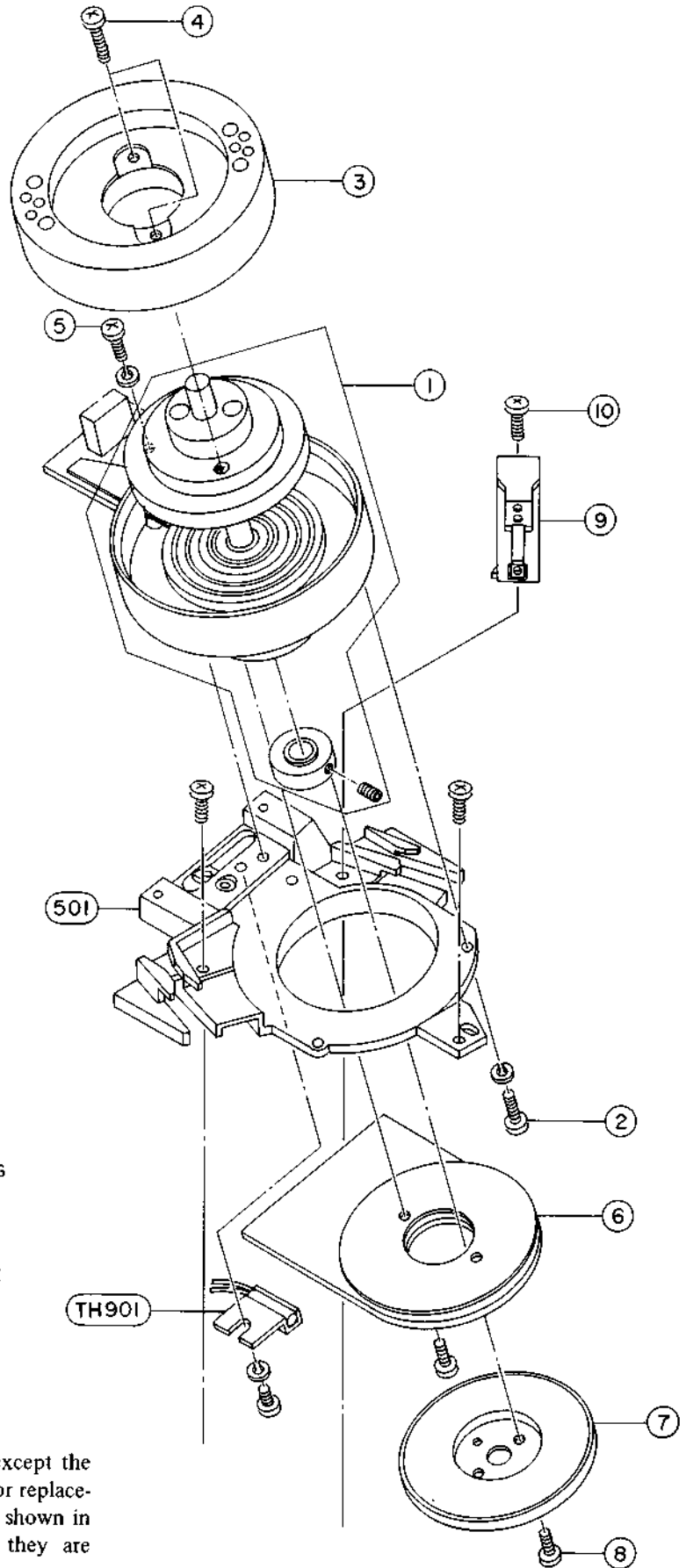
## 1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	BF-B360531-B	FLYWHEEL CAPSTAN PART
2	BL-B360350	ARM TENSION BAND PART
3	BM-B361467	LOADING MOTOR PART
4	BM-361544-B	MOTOR FG KCX-38FS5B
5	BM-M3224A020A	PC MOTOR BLK SM-240
6	BR-B365716-B	SUPPLY REEL TABLE PART 2
7	BR-B365715-B	TAKE-UP REEL TABLE PART 2
8	*BT-373316	TRANS POWER V69L-EV
9	BV-V1047A090A	LOADING LEADER(L) BLK VS-112EG
10	BV-V1047A080A	LOADING LEADER(R) BLK VS-112EG
11	BV-371162	RF CONV./BOOSTER EV
12	ED-356424	D LED 6G5525S GREEN
13	ED-357540	D LED LN59
14	ED-355607	D LED PR5505S RED
15	ED-705414	D LED SE303A INFRARED
16	ED-360409	D PHOTO PN323B
17	ED-371398	D SILICON DSA17-FB8 F12
18	ED-371397	D SILICON DSF10T-FA6 F10
19	ED-344280	D SILICON H GMA-01-FY2 F05
20	ED-307572	D SILICON H 1SS131
21	ED-624903	D SILICON H 1S2473
22	ED-367202	D SILICON S5566B F12
23	ED-361915	D ZENER H HZS8.2J B3 F05
24	ED-370786	D ZENER H HZS9.1J B2 F05
25	ED-362998	D ZENER H HZS9.1J B3 F05
26	ED-367502	D ZENER H HZS9L A1 F05
27	ED-346582	D ZENER H HZ30L 1
28	ED-337292	D ZENER H HZ5 B1
29	EE-360406	TUN-UNIT UBHO2 8CH 203
30	*EF-344106	FUSE ICP-N10 50V 0.4A
31	EF-623103	FUSE SEMKO T 250V 1.00A
32	EF-258344	FUSE SEMKO T 250V 800MA
33	EH-347743	COMP R RKC1/8B4 103J
34	EH-360340-A	DL EFD-EN645A31P
35	EH-371021	DL EFD-HR124A13J
36	EH-360339	FILTER LC AP AF-25P
37	EH-364045	FILTER LC FF-78P
38	EH-373144	FILTER LC LP LF-69P-02 5P
39	EI-360561	IC AN3792
40	EI-360563	IC AN3794
41	EI-360648	IC BA5115
42	EI-353421	IC BA6229
43	EI-352714	IC HA11752
44	EI-371023-A	IC HH3201P
45	EI-367571	IC LA635BT
46	EI-370727	IC MB88501-478M
47	EI-366681	IC MB88521-140M
48	EI-360560	IC MN6178XAL
49	EI-360404	IC M50450-011P
50	EI-356811	IC M5224P
51	EI-360564	IC M54548L
52	EI-360396	IC S-9054HN
53	EI-370614	IC TA8604N
54	EI-719456	IC TC9012F-172
55	EI-363347	IC TC9018P
56	EI-367271	IC UPC1490HA
57	EI-358506	IC UPC1513HA
58	EI-337530	IC UPC574J
59	EI-347991	OSC CE CSA6.00MS 6MHZ
60	EI-710044	OSC CE CSB455EB 455KHZ
61	EI-356371	OSC X'TAL MS-309 4.194304MHZ
62	EI-309878	OSC X'TAL 4.433619MHZ
63	*ER-360559	R FUSE H F12 RF50S 1/2W 1R0J
64	*ER-348272	R FUSE H S10 ERD2FC 1/4W 12R0G
65	*ER-362256	R FUSE H S10 ERQ14LE 1/4W R47K
66	*ER-372129	R FUSE H S10 ERQ14LE 1/4W 2R2K
67	*ER-362257	R FUSE H S17 ERQ-12H 1/2W R47K
68	*ER-371796	R FUSE H S17 ERQ-12H 1/2W 1R0J
69	ES-360433	SW LEAF MRX
70	ES-361479	SW LEAF MSW-1594C

Ref. No.	Part No.	Description
71	ES-353622-A	SW PUSH EVQ-WU7001 02-2
72	ES-360408	SW SLIDE ESD-14187 1-01-02N
73	ES-363102	SW SLIDE HSW0690-01-750 2-3
74	ES-354430	SW SLIDE 00220950 02-02-2N
75	ES-349474	SW TACT SKHHAM004A
76	ET-361463	DETECTOR ON2170 QLR
77	ET-356336	TR DTA114ES
78	ET-354415	TR DTA144ES
79	ET-353897	TR DTC114ES
80	ET-354365	TR DTC114YS
81	ET-364060	TR DTC143ES
82	ET-354414	TR DTC144ES
83	ET-354094	TR DTC144WS
84	ET-361490	TR PHOTO PN268 R.S
85	ET-360400	TR UN4210
86	ET-308472	TR 2SA1115 E,F,G F05
87	ET-349882	TR 2SA1283 D,E F05
88	ET-356224	TR 2SA1286 G,H,J F05
89	ET-352726	TR 2SC1392 T,U
90	ET-308977	TR 2SC2274K F F05
91	ET-308141	TR 2SC2603 G F05
92	ET-355669	TR 2SC3246 G,H,J F05
93	ET-360067	TR 2SC3330 T,U F05
94	ET-371028	TR 2SD1266 P,Q
95	ET-348948	TR 2SD1273 P,Q
96	ET-338565	TR 2SD1302 R.S
97	ET-372080	TR 2SD1330 S,T
98	ET-719455	TR 2SD1469
99	EV-369716	VR ROTARY RK09K1130 B103
100	EV-369717	VR ROTARY RK09K1130 B104
101	EX-361672	DEW SENSOR (HEATER) MRX
102	HE-361456	HEAD E HVFMD0005B
103	HR-361454	HEAD COMBO HVMLA1004C
104	MB-360534	BELT IDLER
105	MB-360533	BELT PAL
106	MB-364011	BELT SYNC NB930N15-020T
107	MP-361543-B	PINCH ROLLER PART
108	MZ-361314-A	GEAR (1)
109	MZ-360640-A	GEAR (2)
110	MZ-361313	GEAR (3)
111	MZ-360639	GEAR (4)
112	MZ-360638	GEAR (5)
113	MZ-364677	GEAR CAM EJECT(2)
114	MZ-364676	GEAR CAM MAIN(2)
115	MZ-B360642	GEAR EJECT PART
116	MZ-360384	GEAR LOADING (S)
117	MZ-360385-A	GEAR LOADING (T)
118	MZ-366960	GEAR TU BLK (2)
119	MZ-360453	WORM GEAR
120	VT-372187	ROTARY ENCODER D2ZQ-R9-1
121	VT-360148-B	VERTICAL POLE PART

# HEAD DRUM BLOCK



## 2. HEAD DRUM BLOCK

Ref. No.	Part No.	Description
2-1	BV-V1030A210F	LOWER DRUM BLK VS-240EG
2-2	ZS-354332	PAN26X08STL CMT SW
2-3	BV-V1030A220D	UPPER DRUM BLK VS-303EG
2-4	ZS-362241	BID30X09STL CMT
2-5	ZS-432843	PAN26X04STL CMT
2-TH901	EX-361672	DEW SENSOR (HEATER) MRX
2-6	BM-M3224A020A	PC MOTOR BLK SM-240
2-7	BV-B362443B	YOKE MAGNET (3) PART
2-8	ZS-356536	PAN26X06BRS N13
2-9	VT-361452	DRUM EARTH SP ASSY(A)
2-10	ZS-421806	PAN30X08STL CMT

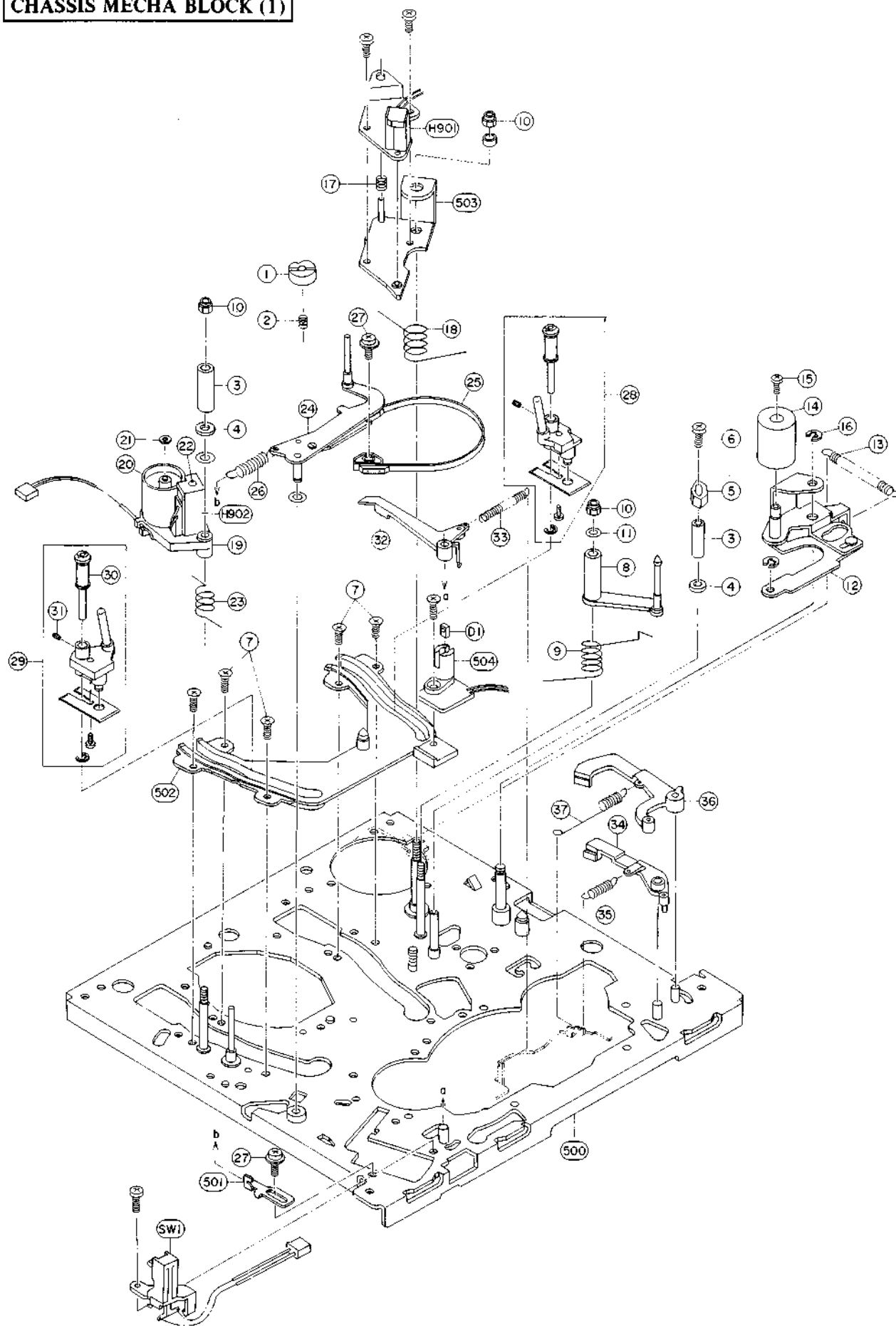
**NOTE:** The parts reference numbered here except the ones in 500's are normally stocked for replacement purpose. The rest of the parts shown in this manual are not stocked since they are seldom required for routine service.

### CHASSIS MECHA BLOCK (1)

### 3. CHASSIS MECHA BLOCK (1)

Ref. No.	Part No.	Description
3-1	ZS-360372-A	SCREW ADJUST
3-2	ZG-363349	SP PUSH ADJUST SCREW
3-3	MS-372186	GUIDE TAPE (6)
3-4	MS-370840-A	GUIDE TAPE (5)
3-5	MS-362181	GUIDE TAPE TU
3-6	ZS-608095	PAN20X05STL CMT
3-7	ZS-360391	SCREW SPECIAL
3-8	BL-B360353	LEVER REVIEW PART
3-9	ZG-360605	SP TORSION REVIEW ARM
3-10	ZW-350839	N30 NYLON
3-11	ZW-324417	PW31X060X050PSL
3-12	BL-B360361-B	ARM PINCH ROLLER PART
3-13	ZG-360602	SP PULL ROLLER
3-14	MP-361543-B	PINCH ROLLER PART
3-15	ZS-477876	PAN20X03STL CMT
3-16	ZW-270101	RING E 300SUP CMT
3-17	ZG-313258	SP C-03.5 / 0.80-10.0 C-102
3-18	ZG-360603	SP TORSION A/C HEAD
3-19	MZ-B362281	HOLDER FE HEAD (2) PART
3-20	MR-364335	ROLLER IMPEDANCE
3-21	ZW-361458	PUSH WASHER 16X032X025PSL
3-22	ZS-460440	PAN20X04STL CMT
3-23	ZG-360604	SP TORSION HOLDER FE HEAD
3-24	BL-B360342-A	LEVER TENSION PART
3-25	BL-B360350	ARM TENSION BAND PART
3-26	ZG-321731	SP T2-04.0 / 0.40-25.0 T2-115
3-27	ZS-200614	SCREW TRIPLE PAN30X06
3-28	BV-V1047A080A	LOADING LEADER(R) BLK VS-112EG
3-29	BV-V1047A090A	LOADING LEADER(L) BLK VS-112EG
3-30	VT-360148-B	VERTICAL POLE PART
3-31	ZS-321729	6SET20X040SCM PKR WP
3-32	BL-B360486	LEVER FF BRAKE PART
3-33	ZG-364338-A	SP PULL FF BRAKE
3-34	ML-B364686-A	LEVER SUB BRAKE(R-2) PART
3-35	ZG-364339	SP PULL REW BRAKE
3-36	ML-B364685	LEVER BRAKE REVIEW(I) PART
3-37	ZG-364337	SP PULL REVIEW BRAKE
3-D1	ED-357540	D LED LN59
3-H901	HR-361454	HEAD COMBO HVMLA1004C
3-H902	HE-361456	HEAD E HVFMD0005B
3-SW1	ES-360433	SW LEAF MRX

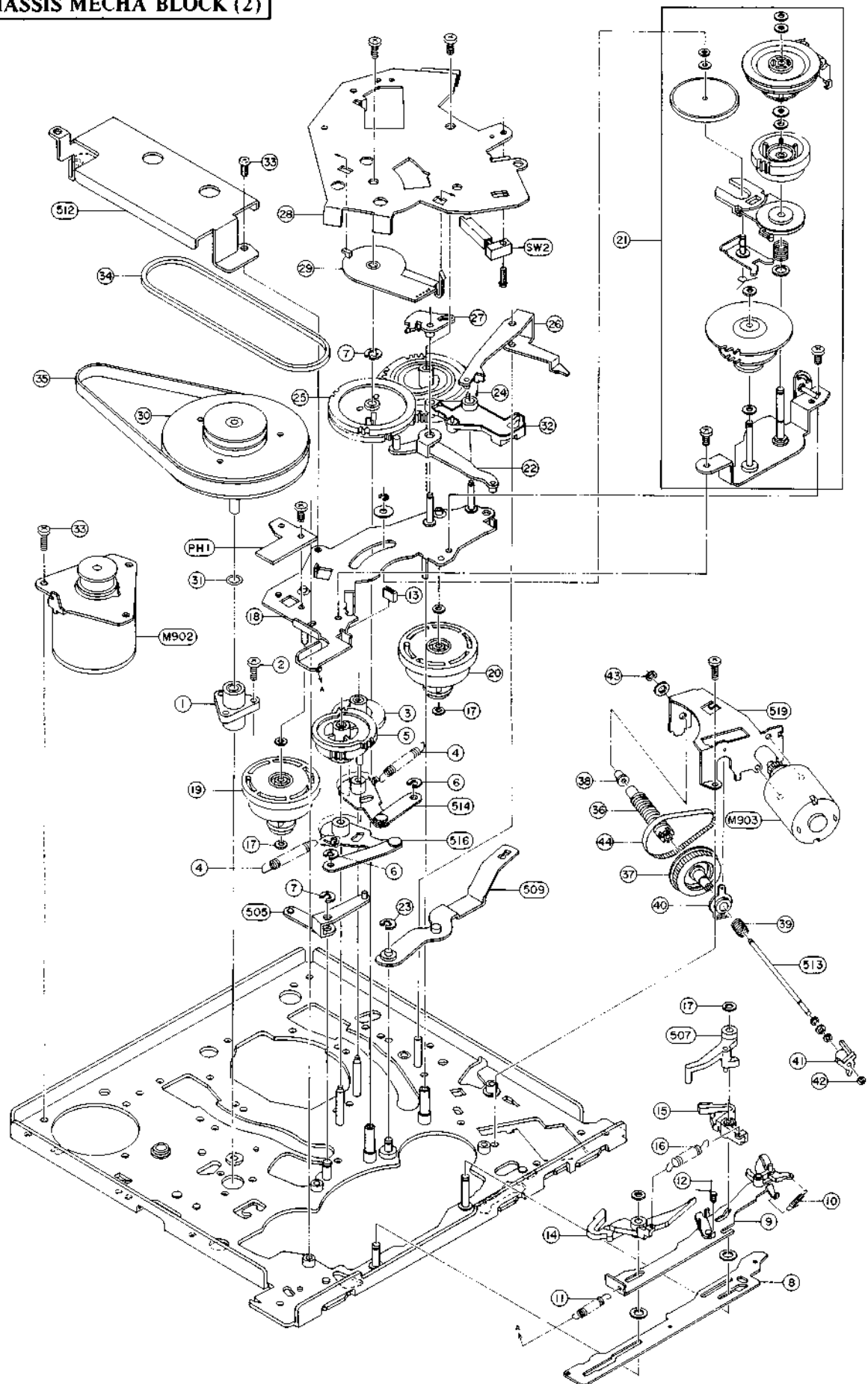
NOTE: The parts reference numbered here except the ones in 500's are normally stocked for replacement purpose. The rest of the parts shown in this manual are not stocked since they are seldom required for routine service.



#### 4. CHASSIS MECHA BLOCK (2)

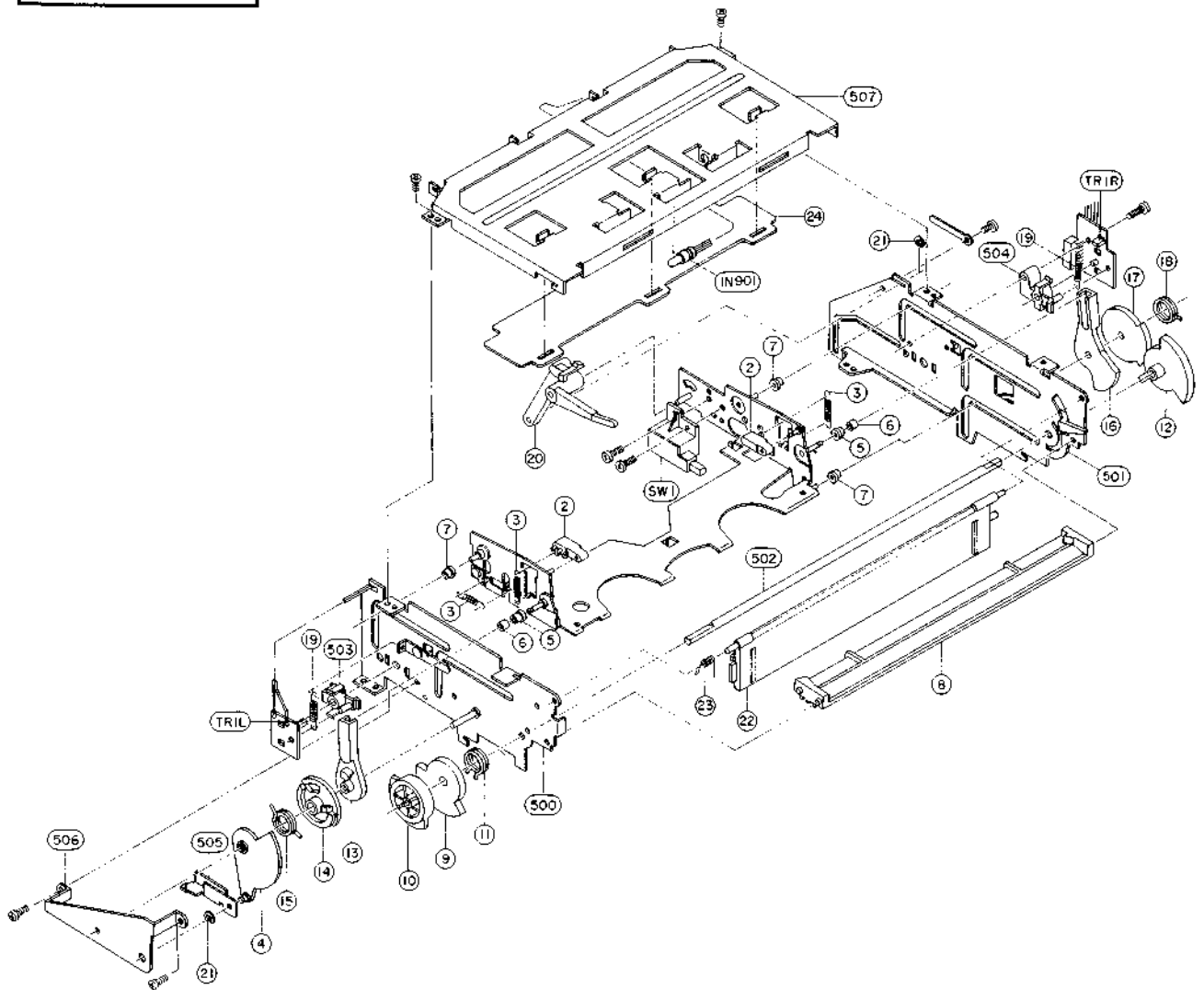
Ref. No.	Part No.	Description
4-1	MZ-B360528	HOLDER CAPSTAN PART
4-2	ZS-379350	PAN30X06STL CMT
4-3	MZ-360384	GEAR LOADING (S)
4-4	ZG-360801-A	SP PULL LOADING
4-5	MZ-360385-A	GEAR LOADING (T)
4-6	ZW-357184	RING E 230SUP CMT
4-7	ZW-270101	RING E 300SUP CMT
4-8	ML-366738	PLATE MAIN SLIDE(2)
4-9	MZ-B366734	PLATE F/R SLIDE (2)PART
4-10	ZG-358276	SP T6-03.2/0.20-12.5 T6-041
4-11	ZG-350891	SP T2-04.0/0.40-22.4 T2-114
4-12	ZG-360438	SP TORSION LIFTER
4-13	MB-366733	STOPPER SLIDE (2)
4-14	ML-B364684	ARM(T/U) MAIN BRAKE(2) PART
4-15	ML-B364683	ARM(S) MAIN BRAKE(2) PART
4-16	ZG-366617	SP PULL MAIN BRAKE
4-17	ZW-360541	WASHER POLY SLIDER(3)
4-18	MZ-B360425-B	SUB FRAME PART
4-19	BR-B365715-B	TAKE-UP REEL TABLE PART 2
4-20	BR-B365716-B	SUPPLY REEL TABLE PART 2
4-21	MZ-366960	GEAR TU BLK (2)
4-22	ML-B360460-B	LEVER CAM SLIDE PART
4-23	ZW-410051	RETAINING RING E250SUP CMT
4-24	MZ-364677	GEAR CAM EJECT(2)
4-25	MZ-364676	GEAR CAM MAIN(2)
4-26	ML-B366735	LEVER CAM TENSION(2) PART
4-27	ML-366736	ARM SET FREE(2)
4-28	MZ-360477-B	PLATE MODE SW
4-29	VT-372187	ROTARY ENCODER D22Q-R9-1
4-30	BF-B360531-B	FLYWHEEL CAPSTAN PART
4-31	ZW-360539	STOPPER OIL
4-32	ML-B366615-A	LEVER CAM F/R PART
4-33	ZS-379350	PAN30X06STL CMT
4-34	MB-360534	BELT IDLER
4-35	MB-360533	BELT PAL
4-36	MZ-360453	WORM GEAR
4-37	MR-364010	PULLEY WORM
4-38	ZW-360479-A	WASHER THRUST WORM
4-39	ZG-360441	SP TORSION ONE WAY
4-40	MZ-360440-A	HOLDER PULLEY WORM
4-41	MR-360432	PULLEY TRIGGER
4-42	ZW-361458	PUSH WASHER 16X032X025PSL
4-43	ZW-356657	RING E150SUP CMT
4-44	MB-364011	BELT SYNC NB930N15-020T
4-M902	BM-361544-B	MOTOR FG KCX-38FS5B
4-M903	BM-B361467	LOADING MOTOR PART
4-SW2	ES-361479	SW LEAF MSW-1594C
4-PH1	ET-361463	DETECTOR ON2170 Q,R

#### CHASSIS MECHA BLOCK (2)



NOTE: The parts reference numbered here except the ones in 500's are normally stocked for replacement purpose. The rest of the parts shown in this manual are not stocked since they are seldom required for routine service.

## EJECTOR BLOCK



### 5. EJECTOR BLOCK

Ref. No.	Part No.	Description
5-1	BB-V1047A250D	EJECTOR BLK VS-220U
5-2	ML-361316	ARM PRESSING
5-3	ZG-357865	SP T5-04.0/0.40-11.2 T5-108
5-4	MZ-8360642	GEAR EJECT PART
5-5	MR-361310	ROLLER (1)
5-6	MR-361311	ROLLER (2)
5-7	MR-361312	ROLLER (3)
5-8	SZ-360607	GUIDE
5-9	MZ-361314-A	GEAR (1)
5-10	MZ-361313	GEAR (3)
5-11	ZG-360615	SP TORSION (EJ)
5-12	MZ-360640-A	GEAR (2)
5-13	ML-360635	ARM LOADING (L)
5-14	MZ-360639	GEAR (4)
5-15	ZG-360614	SP TORSION (L)
5-16	ML-360634	ARM LOADING (R)
5-17	MZ-360638	GEAR (5)
5-18	ZG-360613	SP TORSION (R)

Ref. No.	Part No.	Description
5-19	ZG-358212	SP T5-06.3/0.50-16.0 T5-180
5-20	BL-8361308	ARM LID OPENER PART
5-21	ZW-357164	RING E 230SUP CMT
5-SW1	ES-353622-A	SW PUSH EVQ-WU7001 02-2
5-TR1L	ET-361490	TR PHOTO PN268 R,S
5-TR1R	ET-361490	TR PHOTO PN268 R,S
5-22	SE-361317R-A	MASK CASSETTE HQ
5-23	ZG-360616	SP TORSION

NOTE: The parts reference numbered here except the ones in 500's are normally stocked for replacement purpose. The rest of the parts shown in this manual are not stocked since they are seldom required for routine service.

## 6. P.C BOARD BLOCK

Ref. No.	Part No.	Description
6-1	BA-V1069B300A	PC MAIN (PAL) BLK VS-220EV
6-2	BA-V1071A330B	PC OPERATION BLK VS-220EV
6-3	BA-V1071A400B	PC PRE AMP BLK VS-240

NOTE: PC MAIN BLK CONSISTS OF FOLLOWING P.C BOARD.

- MAIN P.C BOARD
- MAIN (VIDEO) P.C BOARD

## 7. MAIN P.C BOARD

Ref. No.	Part No.	Description
7-C304	EC-363490	C EC V CUT SME 222M 16.0DC
7-C308	EC-363489	C EC V CUT SME 221M 63.0DC
7-C309	EC-363491	C EC V CUT SME 222M 25.0DC
7-C310	EC-363491	C EC V CUT SME 222M 25.0DC
7-DL101	EH-371021	DL EFD-HR124A13J
7-D201	ED-344280	D SILICON H GMA-01-FY2 F05
7-D202	ED-362998	D ZENER H HZS9.1J B3 F05
7-D203	ED-344280	D SILICON H GMA-01-FY2 F05
7-D204	ED-344280	D SILICON H GMA-01-FY2 F05
7-D207	ED-337292	D ZENER H HZ5 B1
7-D208	ED-624903	D SILICON H 1S2473
7-D301	ED-367202	D SILICON S55668 F12
7-D302	ED-344280	D SILICON H GMA-01-FY2 F05
7-D303	ED-344280	D SILICON H GMA-01-FY2 F05
7-D304	ED-346582	D ZENER H HZ30L 1
7-D401	ED-370786	D ZENER H HZS9.1J B2 F05
7-D403	ED-361915	D ZENER H HZS8.2J B3 F05
7-D404	ED-344280	D SILICON H GMA-01-FY2 F05
7-D405	ED-344280	D SILICON H GMA-01-FY2 F05
7-D406	ED-344280	D SILICON H GMA-01-FY2 F05
7-D407	ED-344280	D SILICON H GMA-01-FY2 F05
7-D408	ED-344280	D SILICON H GMA-01-FY2 F05
7-D409	ED-344280	D SILICON H GMA-01-FY2 F05
7-D410	ED-344280	D SILICON H GMA-01-FY2 F05
7-D601	ED-367502	D ZENER H HZS9L A1 F05
7-D603	ED-344280	D SILICON H GMA-01-FY2 F05
7-D604	ED-344280	D SILICON H GMA-01-FY2 F05
7-FL501	EO-360647	COIL OSC 1 MX-102
7-FL551	EH-360339	FILTER LC AP AF-25P
7-FR233	*ER-360559	R FUSE H F12 RF50S 1/2W 1R0J
7-FR308	*ER-372129	R FUSE H S10 ERQ.14LE 1/4W 2R2K
7-FR309	*ER-371796	R FUSE H S17 ERQ.12H 1/2W 1R0J
7-FR310	*ER-362256	R FUSE H S10 ERQ.14LE 1/4W R47K
7-IC201	EI-360561	IC AN3792
7-IC202	EI-360560	IC MN6178XAL
7-IC203	EI-360563	IC AN3794
7-IC204	EI-367571	IC LA6358T
7-IC205	EI-367571	IC LA6358T
7-IC206	EI-360564	IC M54548L
7-IC301	EI-367571	IC LA6358T
7-IC302	EI-337530	IC UPC574J
7-IC401	EI-366681	IC MB88521-140M
7-IC402	*EI-353421	IC BA6229
7-IC403	EI-356811	IC M5224P
7-IC404	EI-360396	IC S-8054HN
7-IC405	EI-363347	IC TC9018P
7-IC501	EI-360648	IC BA5115
7-IC502	EI-358506	IC UPC1513HA
7-L501	EO-361913	COIL FIX 1 L-8 472J
7-L502	EO-370639	COIL FIX 1 L-8 272J
7-L551	EO-345881	COIL FIX 1 EL0606SKI 101J
7-L601	EO-345881	COIL FIX 1 EL0606SKI 101J
7-L602	EO-332105	COIL FIX 1 EL0606SKI 121J
7-L603	EO-345881	COIL FIX 1 EL0606SKI 101J
7-SF301	*EF-344106	FUSE ICP-N10 50V 0.4A
7-TR201	ET-353897	TR DTC114ES
7-TR202	ET-308472	TR 2SA1115 E.F.G F05
7-TR203	ET-360400	TR UN4210

Ref. No.	Part No.	Description
7-TR204	ET-360400	TR UN4210
7-TR205	ET-354414	TR DTC144ES
7-TR301	ET-355669	TR 2SC3246 G.H.J F05
7-TR302	ET-371028	TR 2SD1266 P,Q
7-TR303	ET-352726	TR 2SA1392 T,U
7-TR304	ET-308977	TR 2SC2274K F F05
7-TR305	ET-360067	TR 2SC3330 T,U F05
7-TR306	ET-371028	TR 2SD1266 P,Q
7-TR307	ET-348948	TR 2SD1273 P,Q
7-TR308	ET-360067	TR 2SC3330 T,U F05
7-TR309	ET-356224	TR 2SA1286 G.H.J F05
7-TR310	ET-354094	TR DTC144WS
7-TR401	ET-354415	TR DTA144ES
7-TR404	ET-360400	TR UN4210
7-TR405	ET-360400	TR UN4210
7-TR406	ET-308472	TR 2SA1115 E.F.G F05
7-TR407	ET-308472	TR 2SA1115 E.F.G F05
7-TR408	ET-308472	TR 2SA1115 E.F.G F05
7-TR409	ET-354094	TR DTC144WS
7-TR502	ET-308141	TR 2SC2603 G F05
7-TR503	ET-354414	TR DTC144ES
7-TR551	ET-308472	TR 2SA1115 E.F.G F05
7-TR552	ET-308141	TR 2SC2603 G F05
7-TR553	ET-308141	TR 2SC2603 G F05
7-TR554	ET-308472	TR 2SA1115 E.F.G F05
7-TR555	ET-308141	TR 2SC2603 G F05
7-TR556	ET-308472	TR 2SA1115 E.F.G F05
7-TR557	ET-308472	TR 2SA1115 E.F.G F05
7-TR558	ET-308472	TR 2SA1115 E.F.G F05
7-TR601	ET-356336	TR DTA114ES
7-TR602	ET-356224	TR 2SA1286 G.H.J F05
7-TR603	ET-308141	TR 2SC2603 G F05
7-TR604	ET-308141	TR 2SC2603 G F05
7-TR605	ET-308141	TR 2SC2603 G F05
7-TR606	ET-308472	TR 2SA1115 E.F.G F05
7-TR607	ET-308472	TR 2SA1115 E.F.G F05
7-TR608	ET-308472	TR 2SA1115 E.F.G F05
7-TR610	ET-349882	TR 2SA1283 D.E F05 [EV]
7-VR201	EV-366436	R S-FIX H VM6CKPV31S 3P0.3W104
7-VR202	EV-356582	R S-FIX H RH0615CS4J 3P 473
7-VR301	EV-371696	R S-FIX H VM6CKPV31S 3P0.3W302
7-VR401	EV-363511	R S-FIX EVTK-4CA00BQ4 3P 473
7-VR501	EV-356577	R S-FIX H RH0615C14J 3P 103
7-VR502	EV-356582	R S-FIX H RH0615CS4J 3P 473
7-X401	EI-347991	OSC CE CSA6.00MS 6MHZ
7-J1	EJ-371029	PIN J YKC21-5210 YELLOW 2P [VIDEO]
7-J2	EJ-371030	PIN J YKC21-5187 BLACK 2P [AUDIO]
7-1A	BV-371162	RF CONV./BOOSTER EV [EV]
7-1B	BV-371157	RF CONV./BOOSTER MDLC3D553X [EG]
7-2	BV-V1069A900A	VIF FINAL BLK VS-240EG
7-3	EE-371416	TV TUNER TEMD1-004A EG
7-4A	SP-370064F	PANEL REAR EV
7-4B	SP-370064G	PANEL REAR EG

## 8. MAIN (VIDEO) P.C BOARD

Ref. No.	Part No.	Description
8-DL1	EH-360340-A	DL EFD-EN645A31P
8-D1	ED-344280	D SILICON H GMA-01-FY2 F05
8-D2	ED-344280	D SILICON H GMA-01-FY2 F05
8-D3	ED-344280	D SILICON H GMA-01-FY2 F05
8-D5	ED-344280	D SILICON H GMA-01-FY2 F05
8-D101	ED-344280	D SILICON H GMA-01-FY2 F05
8-D104	ED-624903	D SILICON H 1S2473
8-FL1	EH-373144	FILTER LC LP LF-69P-02 5P
8-FL101	EH-364045	FILTER LC FF-78P
8-FR1	*ER-348272	R FUSE H S10 ERD2FC 1/4W 12R0G
8-IC1	EI-371023-A	IC HH3201P

Ref. No.	Part No.	Description
8-IC101	EI-370614	IC TA8604N
8-L1	EO-351865	COIL FIX 1 LAL02 F05 330J
8-L3	EO-351868	COIL FIX 1 LAL02 F05 470K
8-L5	EO-351869	COIL FIX 1 LAL02 F05 820K
8-L7	EO-354600	COIL FIX 1 LAL02 F05 101K
8-L8	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L9	EO-360555	COIL FIX 1 LAL02 F05 180K
8-L10	EO-360555	COIL FIX 1 LAL02 F05 180K
8-L11	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L12	EO-351868	COIL FIX 1 LAL02 F05 470K
8-L13	EO-356599	COIL FIX 1 LAL02 F05 270K
8-L14	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L15	EO-351869	COIL FIX 1 LAL02 F05 820K
8-L16	EO-357509	COIL FIX 1 LAL02 F05 181K
8-L17	EO-351863	COIL FIX 1 LAL02 F05 120J
8-L18	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L19	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L20	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L101	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L102	EO-360555	COIL FIX 1 LAL02 F05 180K
8-L104	EO-360555	COIL FIX 1 LAL02 F05 180K
8-L105	EO-345891	COIL FIX 1 EL0606SKI 391J
8-L107	EO-345889	COIL FIX 1 EL0606SKI 331J
8-L109	EO-353900	COIL FIX 1 LAL02 F05 150K
8-L110	EO-345881	COIL FIX 1 EL0606SKI 101J
8-L111	EO-356599	COIL FIX 1 LAL02 F05 270K
8-L114	EO-345881	COIL FIX 1 EL0606SKI 101J
8-SW101	ES-363102	SW SLIDE HSW0690-01-750 2-3
8-TR1	ET-308472	TR 2SA1115 E.F.G F05
8-TR2	ET-308141	TR 2SC2603 G F05
8-TR3	ET-354414	TR DTC144ES
8-TR9	ET-308141	TR 2SC2603 G F05
8-TR10	ET-308141	TR 2SC2603 G F05
8-TR12	ET-308141	TR 2SC2603 G F05
8-TR13	ET-308141	TR 2SC2603 G F05
8-TR14	ET-308472	TR 2SA1115 E.F.G F05
8-TR15	ET-356224	TR 2SA1286 G.H.J F05
8-TR16	ET-354365	TR DTC114YS
8-TR17	ET-354415	TR DTA144ES
8-TR19	ET-308141	TR 2SC2603 G F05
8-TR21	ET-308141	TR 2SC2603 G F05
8-TR101	ET-308141	TR 2SC2603 G F05
8-TR102	ET-308472	TR 2SA1115 E.F.G F05
8-TR103	ET-308141	TR 2SC2603 G F05
8-TR105	ET-308141	TR 2SC2603 G F05
8-TR106	ET-353897	TR DTC114ES
8-TR107	ET-308141	TR 2SC2603 G F05
8-TR108	ET-308141	TR 2SC2603 G F05
8-TR109	ET-308141	TR 2SC2603 G F05
8-TR111	ET-354415	TR DTA144ES
8-TR112	ET-308141	TR 2SC2603 G F05
8-VR1	EV-366845	R S-FIX V RVF8W01 3P 102
8-VR101	EV-366845	R S-FIX V RVF8W01 3P 102
8-VR102	EV-341251	R S-FIX V TM8KH1-1S 3P0.50W104
8-X1	EI-309878	OSC X'TAL 4.433619MHZ

## 9. OPERATION (A) P.C BOARD

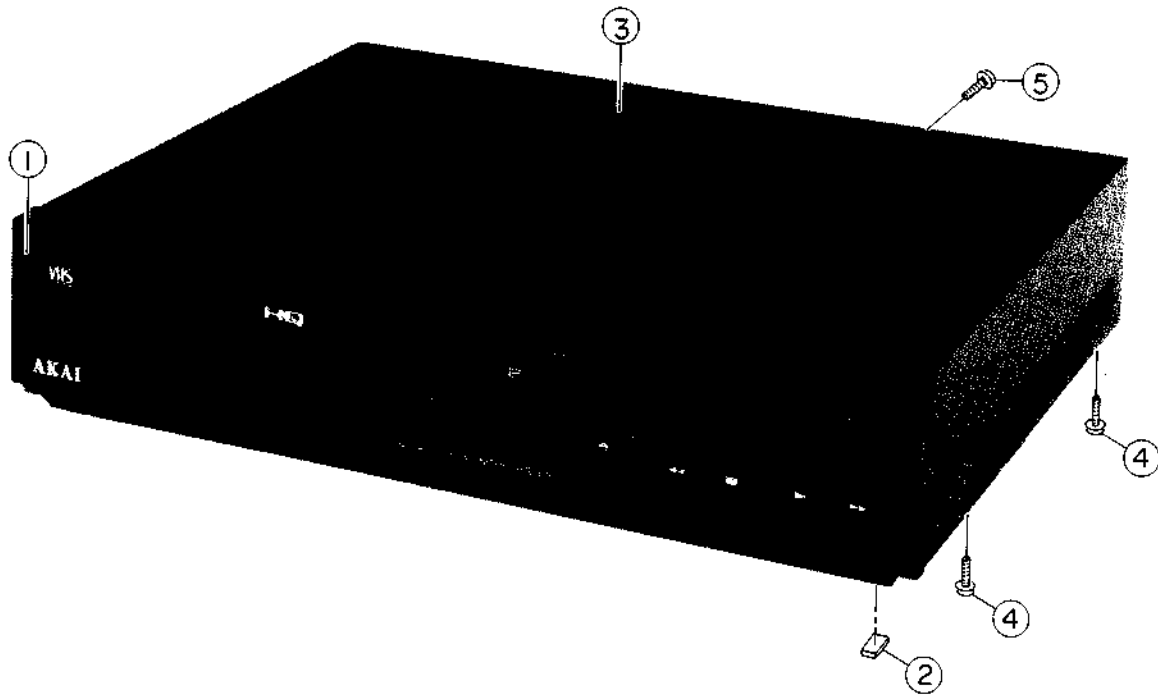
Ref. No.	Part No.	Description
9-D907	ED-356424	D LED BG5525S GREEN
9-D908	ED-356424	D LED BG5525S GREEN
9-D909	ED-356424	D LED BG5525S GREEN
9-D910	ED-356424	D LED BG5525S GREEN
9-D911	ED-356424	D LED BG5525S GREEN
9-D912	ED-356424	D LED BG5525S GREEN
9-D913	ED-356424	D LED BG5525S GREEN
9-D914	ED-356424	D LED BG5525S GREEN
9-D915	ED-356424	D LED BG5525S GREEN
9-D916	ED-355607	D LED PR5505S RED
9-D917	ED-355607	D LED PR5505S RED
9-D918	ED-355607	D LED PR5505S RED
9-D921	ED-355607	D LED PR5505S RED
9-D934	ED-307572	D SILICON H 1SS131
9-D935	ED-307572	D SILICON H 1SS131

Ref. No.	Part No.	Description
9-D936	ED-307572	D SILICON H 1SS131
9-D937	ED-307572	D SILICON H 1SS131
9-D938	ED-307572	D SILICON H 1SS131
9-D939	ED-307572	D SILICON H 1SS131
9-D940	ED-307572	D SILICON H 1SS131
9-D941	ED-307572	D SILICON H 1SS131
9-D942	ED-307572	D SILICON H 1SS131
9-D943	ED-307572	D SILICON H 1SS131
9-D944	ED-307572	D SILICON H 1SS131
9-D945	ED-307572	D SILICON H 1SS131
9-D946	ED-307572	D SILICON H 1SS131
9-D947	ED-307572	D SILICON H 1SS131
9-D948	ED-307572	D SILICON H 1SS131
9-D949	ED-307572	D SILICON H 1SS131
9-D950	ED-307572	D SILICON H 1SS131
9-D957	ED-307572	D SILICON H 1SS131
9-D958	ED-307572	D SILICON H 1SS131
9-D959	ED-307572	D SILICON H 1SS131
9-D960	ED-307572	D SILICON H 1SS131
9-D961	ED-307572	D SILICON H 1SS131
9-D962	ED-307572	D SILICON H 1SS131
9-D963	ED-307572	D SILICON H 1SS131
9-D964	ED-307572	D SILICON H 1SS131
9-D965	ED-307572	D SILICON H 1SS131
9-D973	ED-624903	D SILICON H 1S2473
9-D974	ED-360409	D PHOTO PN323B
9-IB901	EH-347743	COMP R RKCI/8B4 103J
9-IC901	EI-370727	IC MB88501-478M
9-IC902	EI-360404	IC MS0450-011P
9-IC903	EI-367271	IC UPC1490HA
9-PM901	EE-360406	TUN-UNIT UBH02 8CH 203
9-SW901	ES-360408	SW SLIDE ESD-14187 1-01-02N
9-SW902	ES-349474	SW TACT SKHHAM004A
9-SW903	ES-349474	SW TACT SKHHAM004A
9-SW904	ES-349474	SW TACT SKHHAM004A
9-SW905	ES-349474	SW TACT SKHHAM004A
9-SW906	ES-349474	SW TACT SKHHAM004A
9-SW907	ES-349474	SW TACT SKHHAM004A
9-SW908	ES-349474	SW TACT SKHHAM004A
9-SW909	ES-349474	SW TACT SKHHAM004A
9-TR907	ET-308141	TR 2SC2603 G F05
9-TR908	ET-308141	TR 2SC2603 G F05
9-TR909	ET-308141	TR 2SC2603 G F05
9-TR910	ET-308141	TR 2SC2603 G F05
9-TR911	ET-308141	TR 2SC2603 G F05
9-TR912	ET-308141	TR 2SC2603 G F05
9-TR913	ET-308141	TR 2SC2603 G F05
9-TR914	ET-364080	TR DTC143ES
9-TR915	ET-308141	TR 2SC2603 G F05
9-TR916	ET-354415	TR DTA144ES
9-VR901	EV-356322	R S-FIX H KVSF637A 3P 502
9-VR902	EV-369716	VR ROTARY RK09K1130 B103
9-VR903	EV-369717	VR ROTARY RK09K1130 B104
9-X901	EI-356371	OSC X'TAL MS-309 4.194304MHZ

## 10. TRANS. P.C BOARD

Ref. No.	Part No.	Description
10-C701	*EC-369818	C CE V CS17FZ 103Z 400AC
10-D701	*ED-371397	D SILICON DSF10T-FA6 F10
10-D702	*ED-371397	D SILICON DSF10T-FA6 F10
10-D703	*ED-371397	D SILICON DSF10T-FA6 F10
10-D704	*ED-371397	D SILICON DSF10T-FA6 F10
10-D705	*ED-371398	D SILICON DSA17-FB8 F12
10-D706	*ED-371398	D SILICON DSA17-FB8 F12
10-D707	*ED-371398	D SILICON DSA17-FB8 F12
10-D708	*ED-371398	D SILICON DSA17-FB8 F12
10-F1	*EF-258344	FUSE SEMKO T 250V 800MA
10-F2	*EF-623103	FUSE SEMKO T 250V 1.00A
10-FR701	*ER-362257	R FUSE H S17 ERQ-12H 1/2W 147K
10-T1	*BT-373316	TRANS POWER V69L-EV
10-SW701	*ES-354430	SW SLIDE G0220950 02-02-2N
10-1	*EW-371933	AC CORD 200 KP419LTC E B106 A

## FINAL ASSEMBLY BLOCK



### 11. PRE-AMP P.C BOARD

Ref. No.	Part No.	Description
11-IC801	EI-352714	IC HA11752
11-L801	EO-357508	COL FIX 1 LAL02 F05 151K
11-L802	EO-353902	COL FIX 1 LAL02 F05 680K
11-L803	EO-345881	COL FIX 1 EL0606SKI 101J
11-L804	EO-345881	COL FIX 1 EL0606SKI 101J
11-TR801	ET-308141	TR 2SC2603 G F05
11-TR802	ET-338565	TR 2SD1302 R.S
11-TR803	ET-372080	TR 2SD1330 S.T
11-TR804	ET-372080	TR 2SD1330 S.T

### 12. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
12-1	BD-V1071A135A	PANEL FRONT BLK VS-220EV
12-1-B	BD-V1071B135A	PANEL FRONT BLK VS-220EV-B
12-2	SA-353927B	FOOT(2)
12-3	SP-369714A-B	COVER UPPER
12-3-B	SP-369714B-B	COVER UPPER-B
12-4	ZS-362378	PLX BD30X10STL CMT
12-5	ZS-365301	PLX PAN30X10STL NI3
12-5-B	ZS-359125	PLX PAN30X10STL BM

### SYMBOL FOR COLOR VARIATION

NON : SILVER  
B : BLACK

### 13. ACCESSORY

Ref. No.	Part No.	Description
13-1	EW-348414	CORD PAL
13-2	AV-361336	DRIVER

### 14. REMOTE CONTROL UNIT RC-V220

Ref. No.	Part No.	Description
14-1	AV-370539	REMOCON RC-V220A-E WIRELESS(T)
14-1-B	AV-370540	REMOCON RC-V220A-EB
14-D1	ED-705414	D LED SE303A INFRARED
14-IC1	EI-719456	IC TC9012F-172
14-Q1	ET-719455	TR 2SD1469
14-X1	EI-710044	OSC CE CSB455EB 455KHZ
14-2	SC-719457	COVER BATTERY RC-V220-S
14-2-B	SC-719459	COVER BATTERY RC-V220A-B



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AV-370539	14-1	ED-344280	7-D404	EH-373144	38	EO-356599	8-L13
AV-370540	14-1-B	ED-344280	7-D405	EH-373144	8-FL1	EO-356599	8-L111
BA-V1069B300A	6-1	ED-344280	7-D406	EI-309878	62	EO-357508	11-L801
BA-V1071A330B	6-2	ED-344280	7-D407	EI-309878	8-X1	EO-357509	8-L16
BA-V1071A400B	6-3	ED-344280	7-D408	EI-337530	58	EO-360555	8-L9
BB-V1047A250D	5-1	ED-344280	7-D409	EI-337530	7-KC302	EO-360555	8-L10
BD-V1071A135A	12-1	ED-344280	7-D410	EI-347991	59	EO-360555	8-L102
BD-V1071B135A	12-1-B	ED-344280	7-D603	EI-347991	7-X401	EO-360555	8-L104
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BR-B365716-B	6	ED-356424	9-D910	EI-360561	7-IC201	ES-349474	9-SW903
BR-B365716-B	4-20	ED-356424	9-D911	EI-360563	40	ES-349474	9-SW904
BT-373316	8	ED-356424	9-D912	EI-360563	7-IC203	ES-349474	9-SW905
BT-373316	10-T1	ED-356424	9-D913	EI-360564	51	ES-349474	9-SW906
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# ABBREVIATIONS (VIDEO)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
AC	Alternating Current	LM STP	Loading Motor SToP
ACC	Auto Color Control	LP	Long Play
A/C	Audio and Control	LPF	Low Pass Filter
ADJ	ADJust(ment)	LSW	Loading SWitch
AFC	Auto Frequency Control	ME-SECAM	Middle East SECAM
AFT	Auto Fine Tuning	MI-COM	Micro COMputer
AGC	Auto Gain Control	MM	Mono-stayble Multi
AHP)	Audio Head (Play Back)	MRS	Motor ReverSe
AH(R)	Audio Head (Record)	NG	Noise Gate
AL	ALl	NON-LIN	NON-LINear
AL	ALways	N.T.S.C.	National Television System Committee
ALC	Auto Level Control	O MUTE	Output MUTE
A-SW P	Audio-Switching Pulse	OSC	OSCillator
A MUTE	Audio MUTE	PAL	Phase Alternation Line
AUT/MAN	AUTO/MANual	PB	Play Back
ANT	ANTenna	P-COM	Phase-COMparator
APC	Automatic Phase Control	PDN	Power Down
ASSY	ASSEMBLY	PG	Pulse Generator
BAL	BALance	PL, PLG	PLunger (PLunGer)
B/C	Buzz and Charactor	POS	POSition
B DOWN	Break DOWN	PRG	PRoGram
BGP	Burst Gate Pulse	P & S	Power supply & System control
BLK	BLack or BLock	PU	Pick Up (head, pulse)
BM	Balanced Modulator	PWR	POweR
BPF	Band Pass Filter	Q	Quality factor
BS	Band Select	RC	Rotary Control
BS (SB)	Brake Supply (Supply Brake)	REC	RECORD
BT (TB)	Brake Takeup (Takeup Brake)	REF	REfERENCE
BU	Back Up	REF-V	REfERENCE Vertical signal
B/W	Black and White	REG	REGulator
CCIR	Comité Consultatif International des Radio Communications	REV (REvW)	REvIEW (REvIEW)
CH (Ch.)	CHannel (Channel)	REW	REWind
CK	Color Killer	RFB	Radio Frequency Booster
CLK	CLock	RM	Reel Motor
CLP	CLiP	RM PWR	Reel Motor PoWeR
CM	Capstan Motor	R-S SW	Record Safety SWitch
CN	CoNnector	RST (RES)	ReSeT (RESet)
COMP	COMParator	RVS	ReVerSe
Comp	Comparison	S	Sensor, Shield
C or R	Cue or Review	SC	SimulCast
CR 1	Cue Review 1 (high)	S CLK	Serial CLock
CSW	Cassette Switch	S & A	Servo & Audio
CTL	ConTrol	SECAM	Séquentiel à Memoire
CUE	CUE	SEP (SEPA)	SEPARator (SEPARator)
CW	Carrier Wave	SFP	Sync Front Pulse
DAC	Digital to Analog Converter	S & H	Sample and Hold
DC	Direct Current	SLP	Super Long Play
DEM0D	DEM0Dulator	SP	Standard Play
DET	DETECT (DETECTOR)	SPD	SPeED
DL	Delay Line	SRP	Supply Reel Pulse
DM	Drum Motor	SRV	SeRVo
DOC	Drop Out Compensator	SOW	Sync On Word
D-P-E	Drum-Phase-Error	STBY	STandBY
D-PG	Drum-Pulse Generator	SW	SWitch
D-TPZ	Drum-TraPeZoid	SW'NG	SWitchiNG
EE	Electronic to Electronic	SWP	SWitching Pulse
EF	Emitter Follower	SYNC	SYNChronize
EM	Eject Motor	T-AUDIO	Tuner AUDIO
EMPHA	EMPHAsis	TA-MUTE	Tuner Audio MUTE
ENVIN	ENVELOPE INput	TPZ (TRAPE)	TraPeZoid (TRAPEzoid)
ESW	Eject SWitch	TRK	TRackiNG
EQ	EQUALizer	TRP	Take up Reel Pulse
FE	Full track Erase	T/U	Take Up
FF	Flip-Flop	TV	TeLeVIsion
FG	Frequency Generator	UHF	Ultra High Frequency
Fig.	Figure	UNR	UNRegulated
FM	Frequency Modulation	V	Vertical
Fo	resonance Frequency	VCO	Voltage Controlled Oscillator
FREQ	FREQUENCY	VD	Vertical Drive
FSI	Field Start Inhibit	VF	Voltage for Fine tuning
GND	GrouND	VHF	Very High Frequency
H	Horizontal	VHS	Video Home System
HP	Horizontal (sync) Pulse	VID	VIDEO
HPF	High Pass Filter	VIDEO-J	VIDEO Judge
HT	HeaTer	VIF	Video Intermediate Frequency
IC	Integrated Circuit	VJ	Video Judge
ID	IDentification	VM	Voltage for Memory
IDL	IDLe (Voltage)	VOB	Video On Blank
INS	INSert	VOW	Video On Word
INV	INVerter	VP	Vertical (sync) Pulse
L-CTL	Lamp-ConTrol	VT	Voltage for Tuning
LED	Light Emitting Diode	WHT	WHITe
LDI	LoAD Input	2H	2 Hour (SP)
LM	Loading Motor	6H	6 Hour (SLP)

# **AKAI**

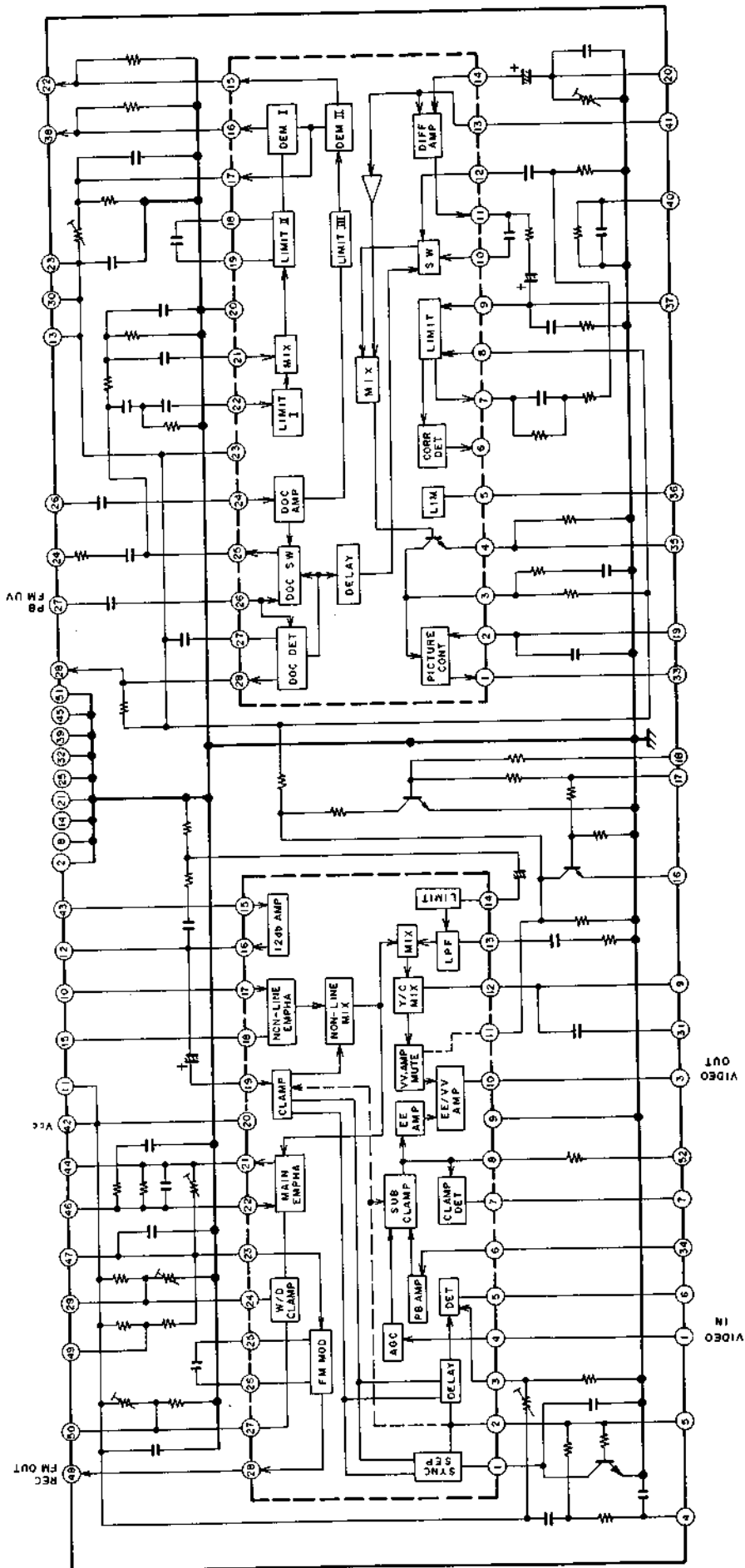
## **MODEL VS-220EV**

### **SCHEMATIC DIAGRAM AND PC BOARDS**

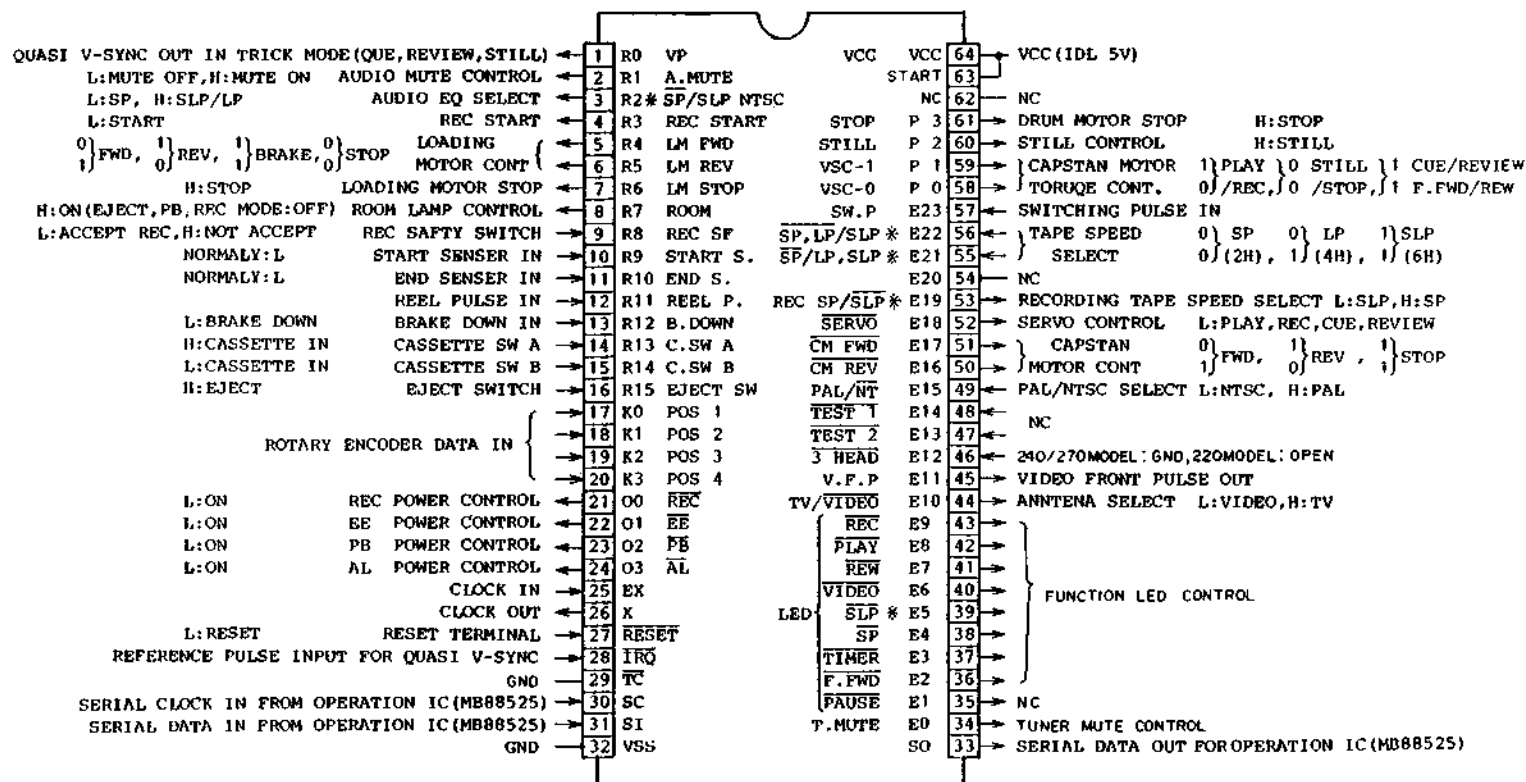
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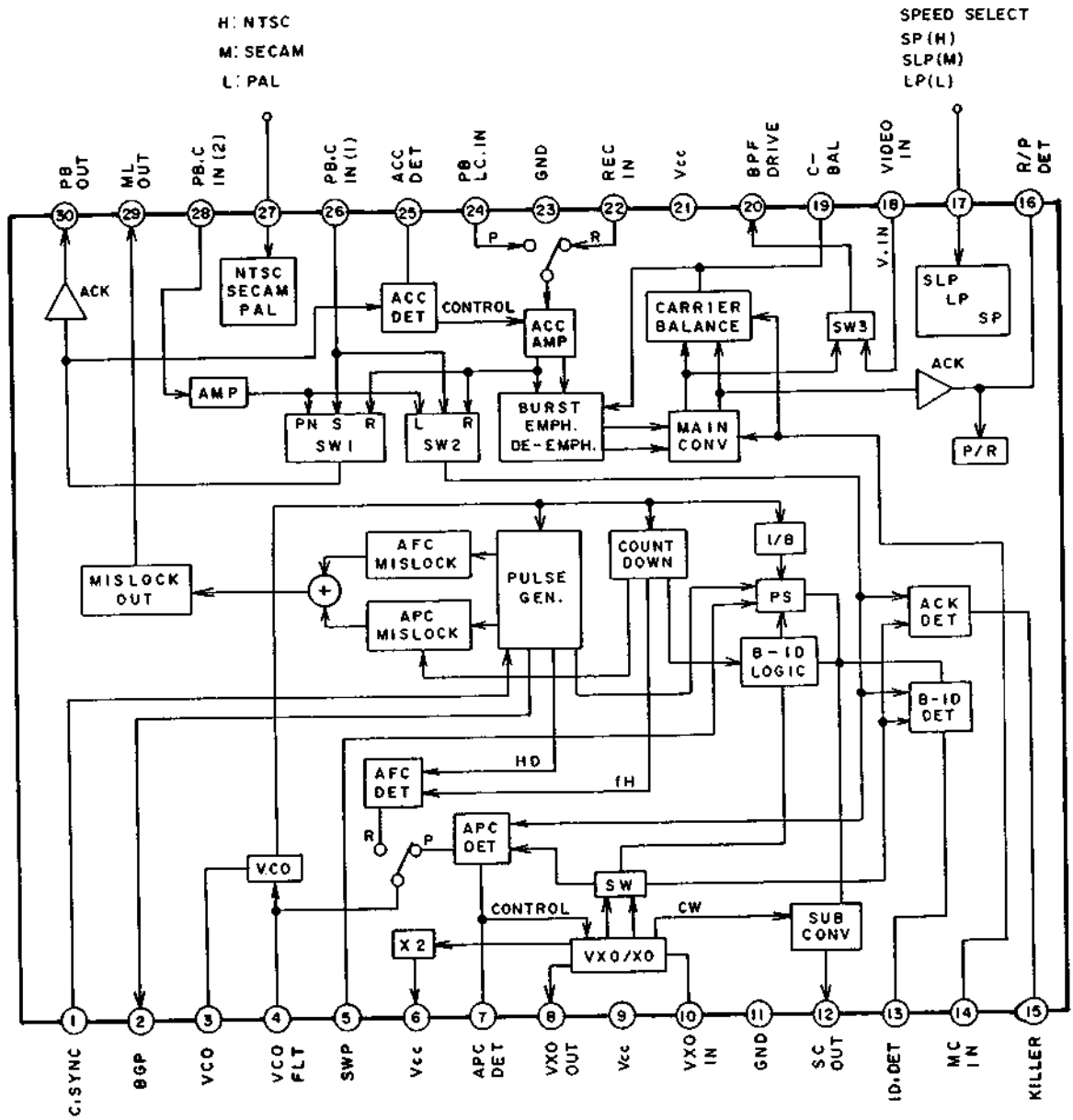


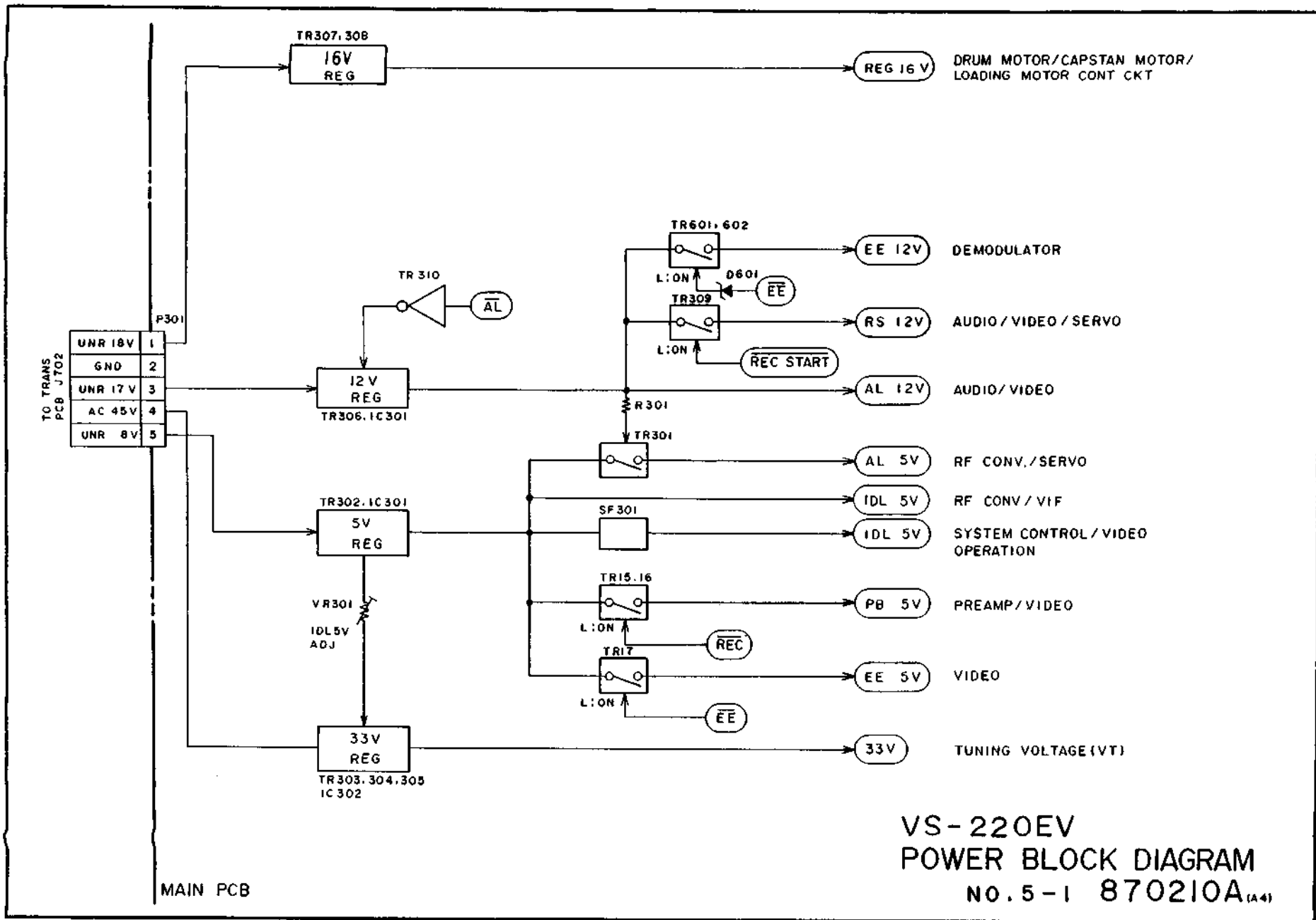
MB88521-140M (SYSTEM CONTROL CPU)



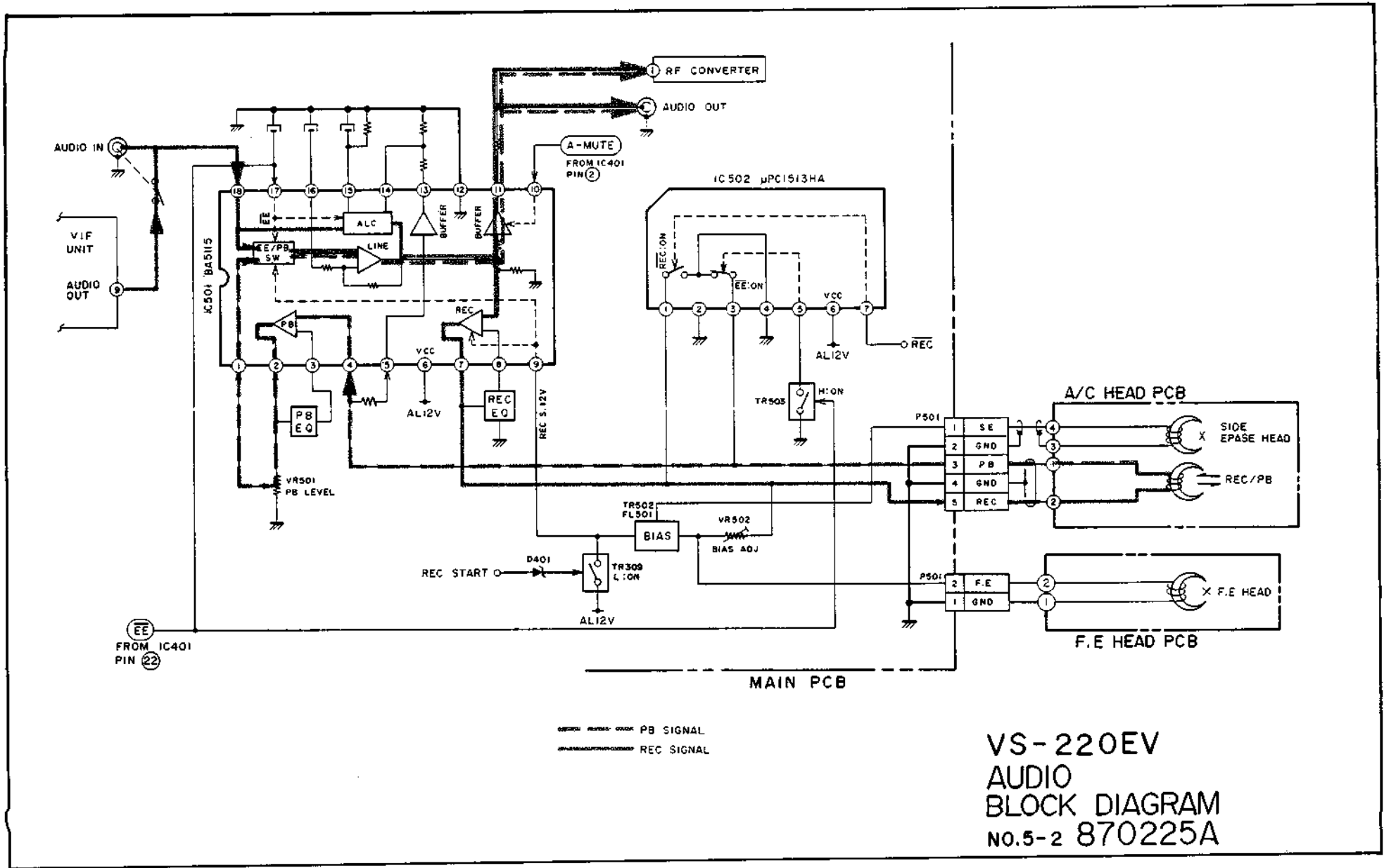
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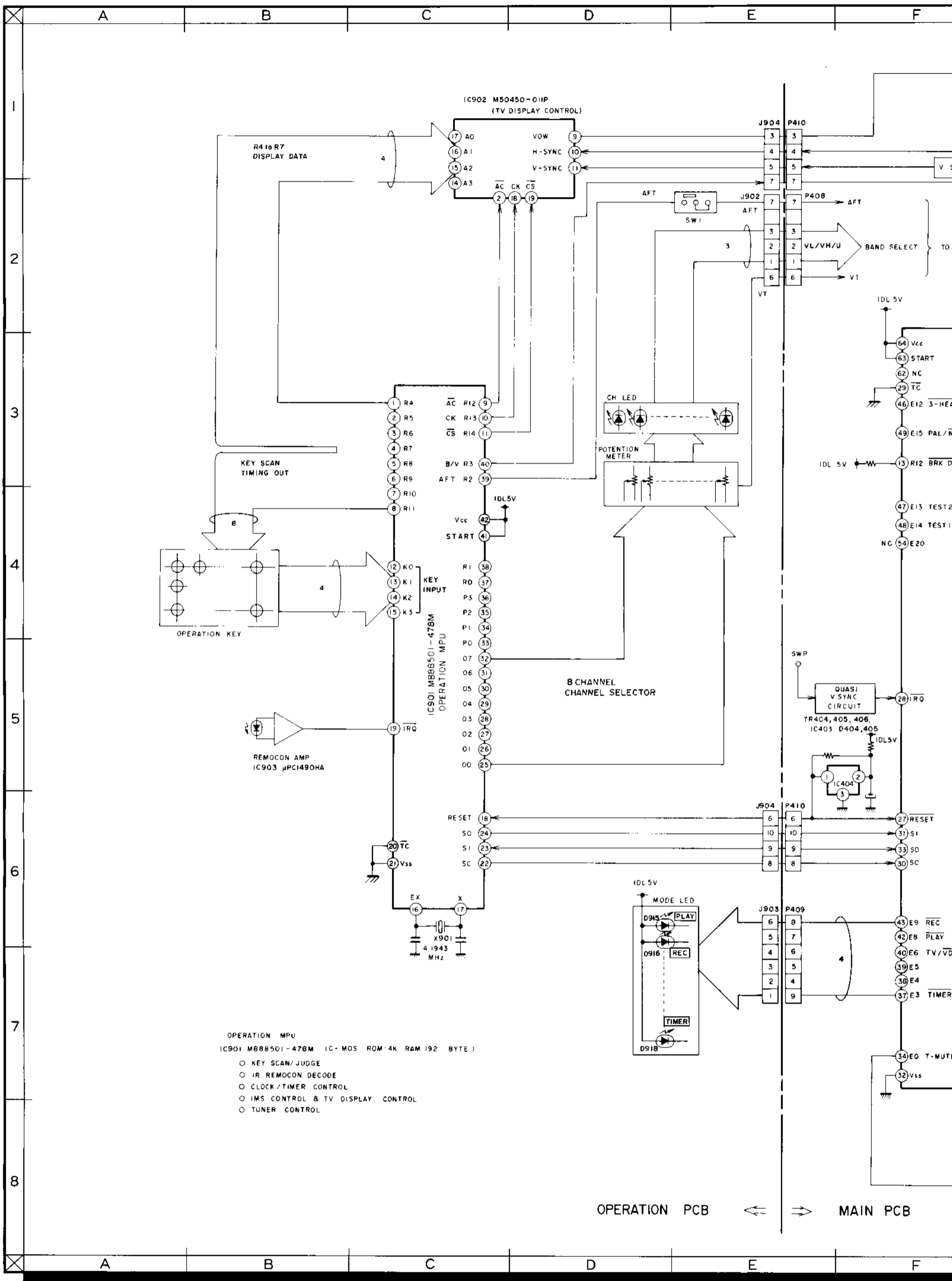
# TA8604N (CHROMA SIGNAL PROCESSING IC)







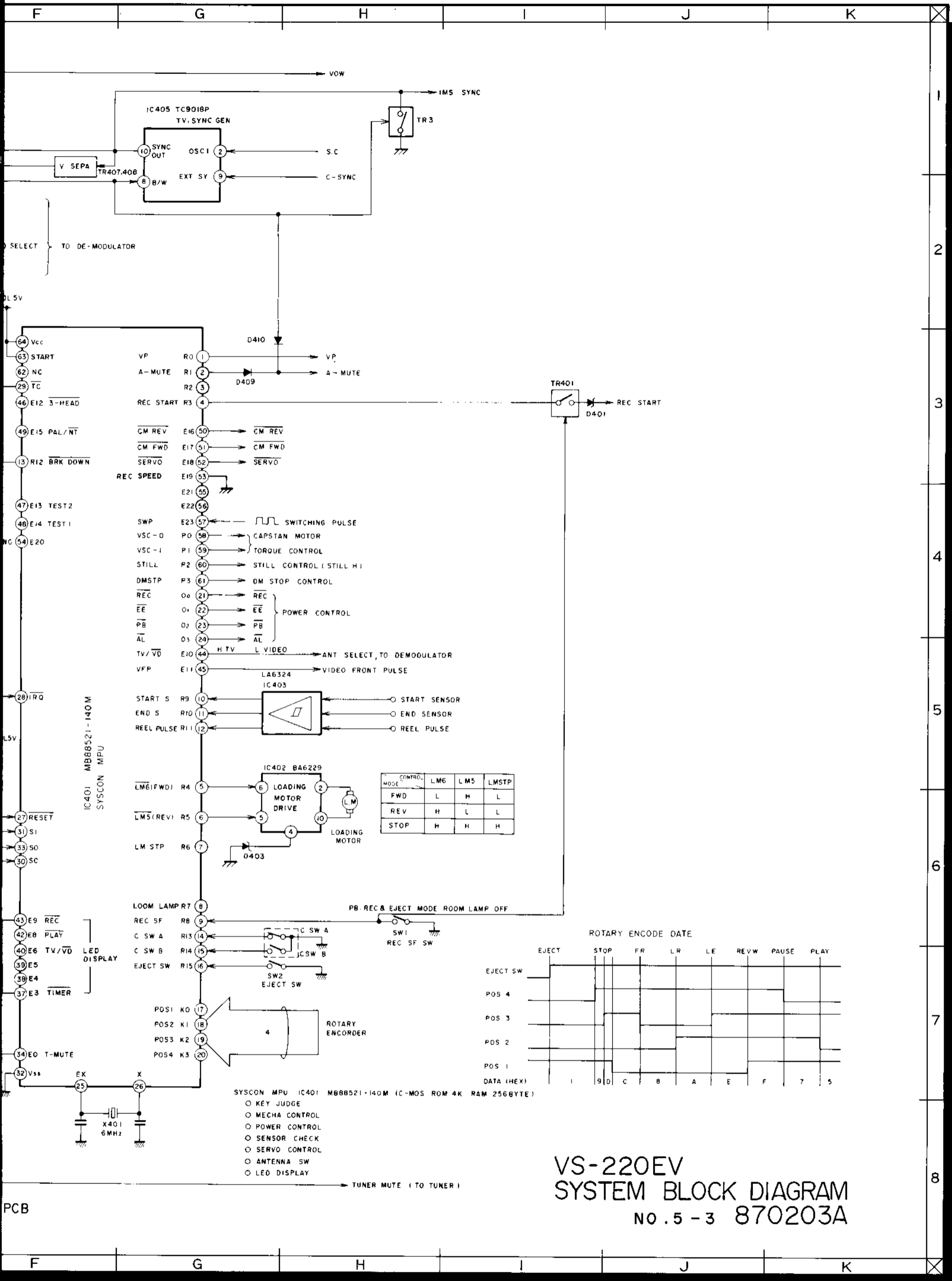




OPERATION MPU  
 IC901 M888501-478M (C-MOS ROM-4K RAM 192 BYTE)

- KEY SCAN/JUDGE
- IR REMOCON DECODE
- CLOCK/TIMER CONTROL
- IMS CONTROL & TV DISPLAY CONTROL
- TUNER CONTROL

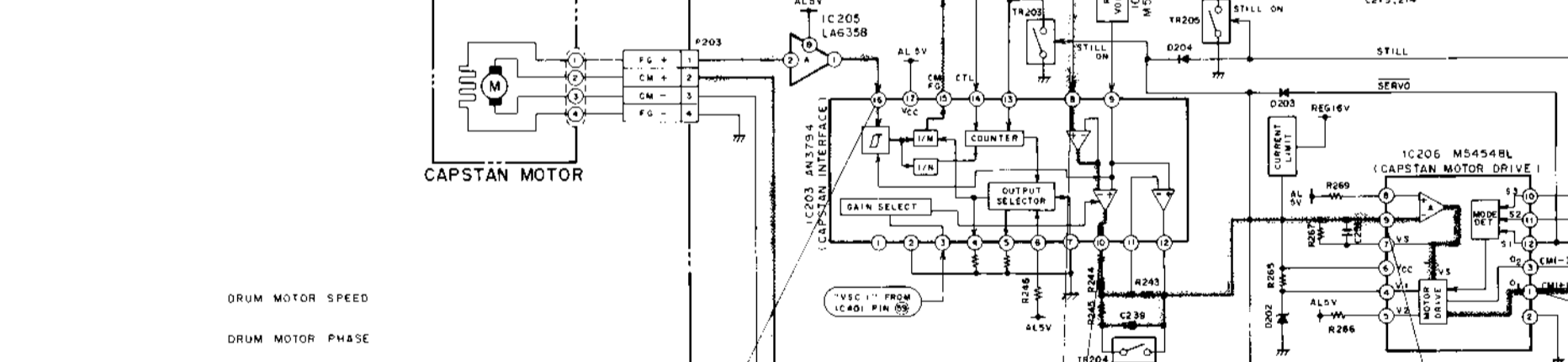
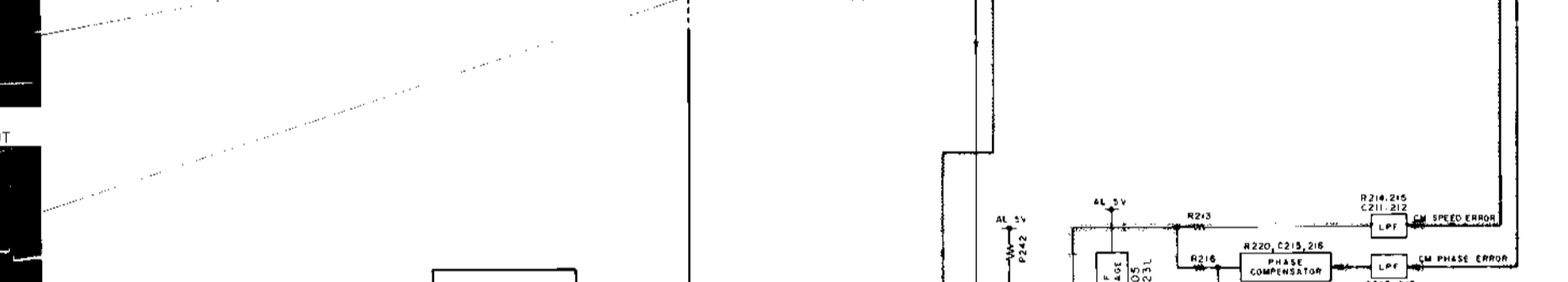
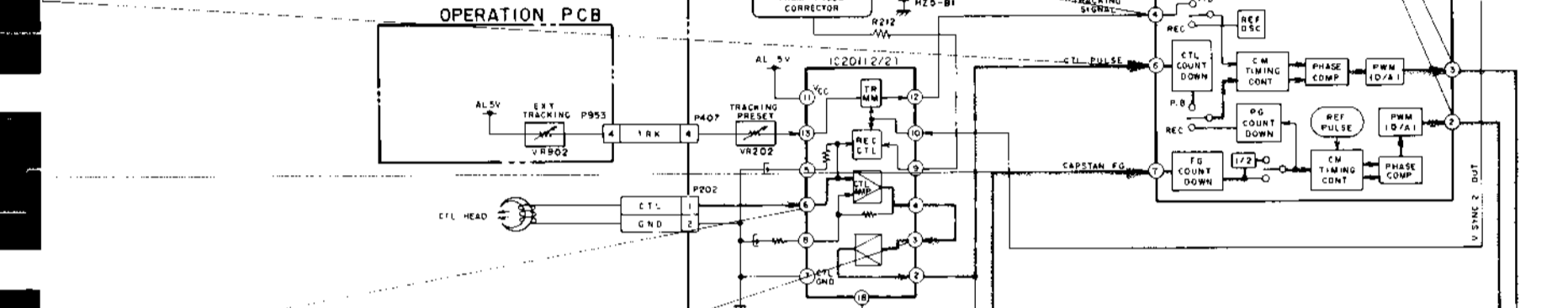
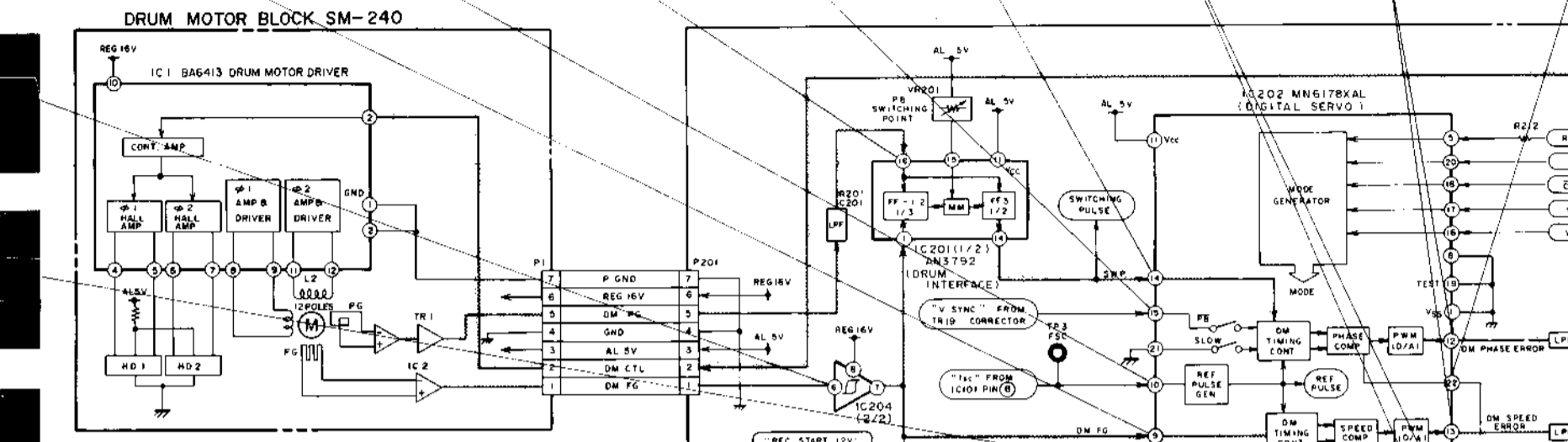
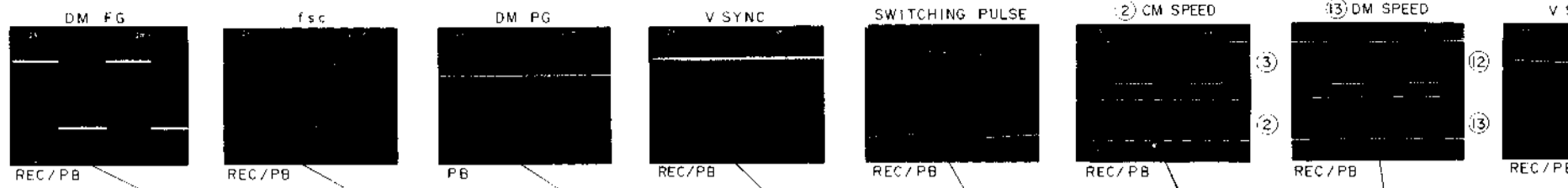
OPERATION PCB ↔ MAIN PCB



VS-220EV  
 SYSTEM BLOCK DIAGRAM  
 No. 5-3 870203A

1  
 2  
 3  
 4  
 5  
 6  
 7  
 8

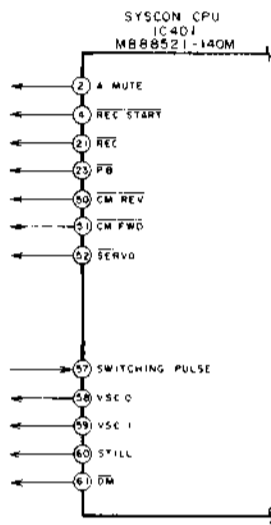
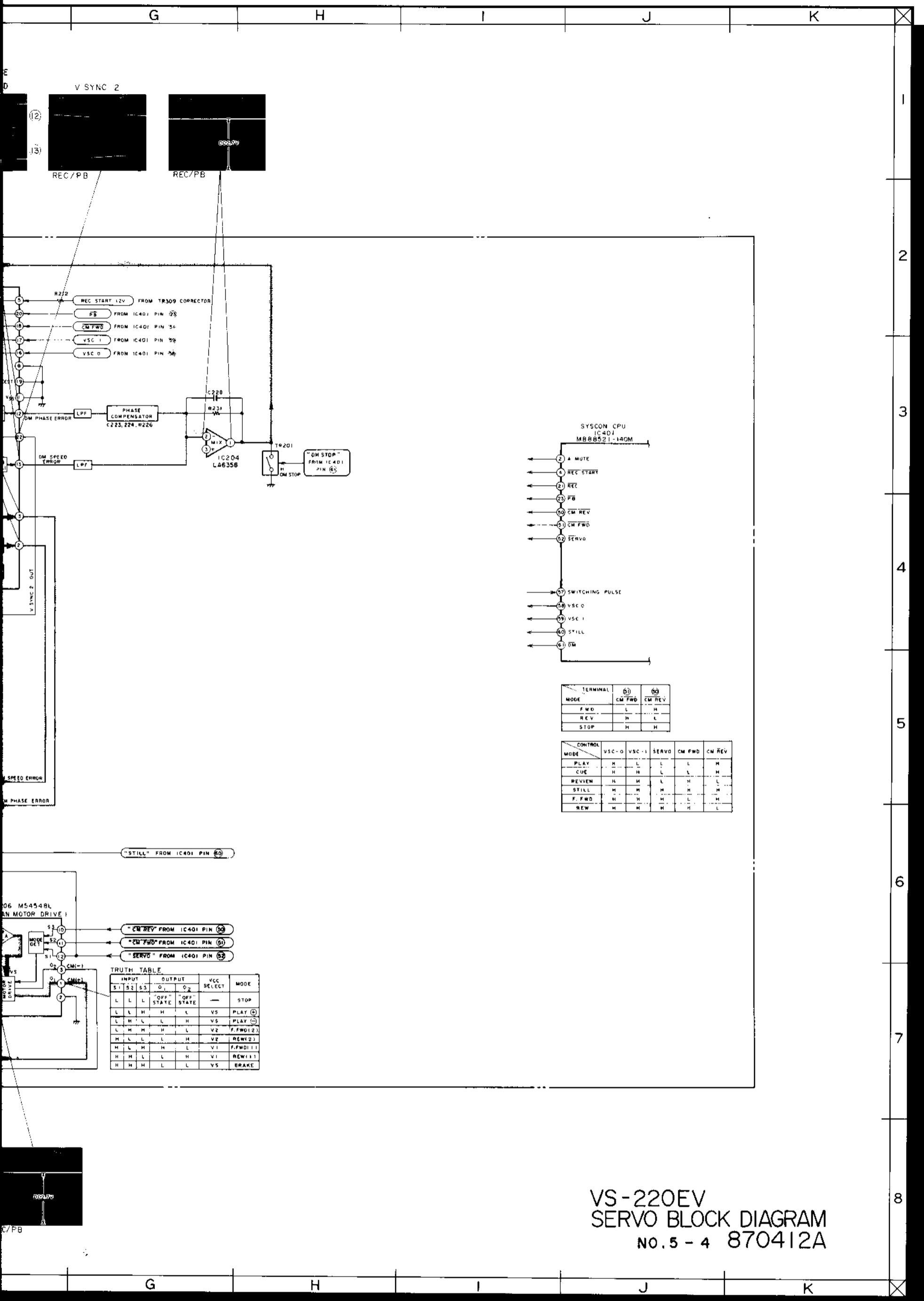
A B C D E F



DRUM MOTOR SPEED  
DRUM MOTOR PHASE  
DRUM MOTOR CONTROL  
CAPSTAN MOTOR SPEED  
CAPSTAN MOTOR PHASE  
CAPSTAN MOTOR CONTROL



A B C D E F



TERMINAL	MODE	CM FWD	CM REV
2	FWD	L	H
4	REV	H	L
21	STOP	H	H

CONTROL MODE	VSC-0	VSC-1	SERVO	CM FWD	CM REV
PLAY	H	L	L	L	H
CUE	H	H	L	L	H
REVIEW	H	H	L	H	L
STILL	H	H	H	H	H
F. FWD	H	H	H	L	H
REW	H	H	H	H	L

TRUTH TABLE

INPUT			OUTPUT		VCC SELECT	MODE
S1	S2	S3	O1	O2		
L	L	L	"OFF" STATE	"OFF" STATE	—	STOP
L	L	H	L	L	V5	PLAY (1)
L	H	L	L	H	V5	PLAY (2)
L	H	H	L	L	V2	F.FWD(2)
H	L	L	L	H	V2	REW(2)
H	L	H	L	L	V1	F.FWD(1)
H	H	L	L	H	V1	REW(1)
H	H	H	L	L	V5	BRAKE

VS-220EV  
SERVO BLOCK DIAGRAM  
NO.5 - 4 870412A

A

B

C

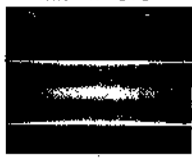
D

E

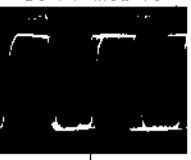
F

1

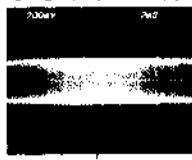
REC FM SIG



REC FM MOD OUT



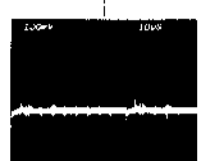
PB PEAKING AMP OUT



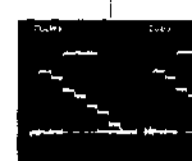
PB NON-LIN DE-EMPHA IN



PB 12dB AMP OUT

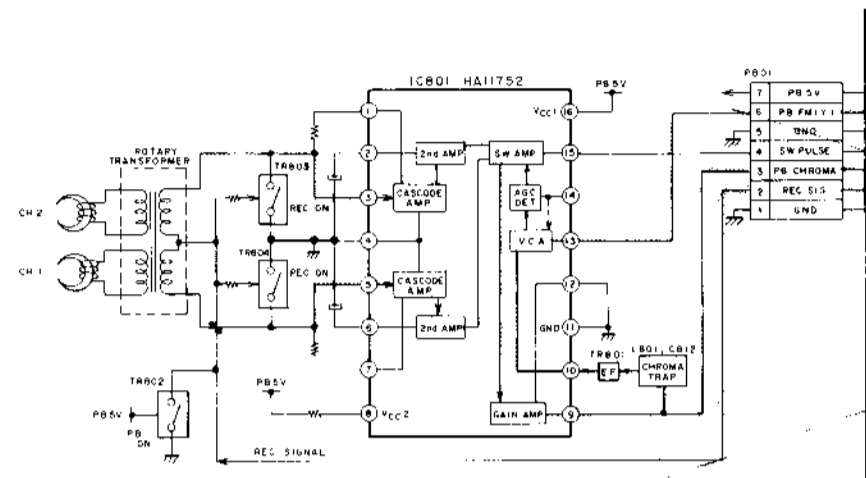


REC NON-LIN EMPHA IN



REC 12dB AMP OUT

2

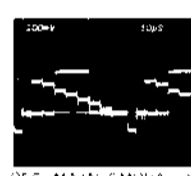


PREAMP PCB

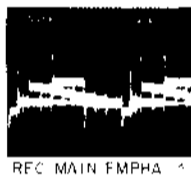
3



REC FM MOD IN



REC MAIN EMPHA



REC MAIN EMPHA



REC/PLAY V-SYNC



REC/PLAY C-SYNC



REC/EE VIDEO IN



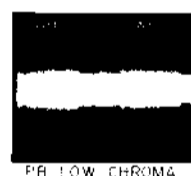
P5 SUB CLAMP OUT



REC SUB CLAMP OUT



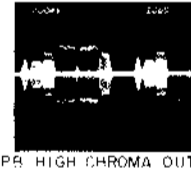
EE/REC/PB VIDEO OUT



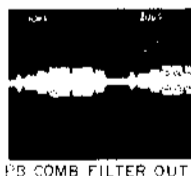
PB LOW CHROMA



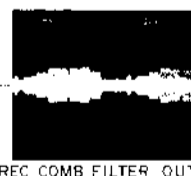
PB CHROMA MIX AMP IN



PB HIGH CHROMA OUT

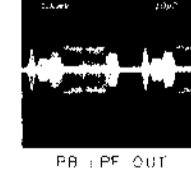


PB COMB FILTER OUT

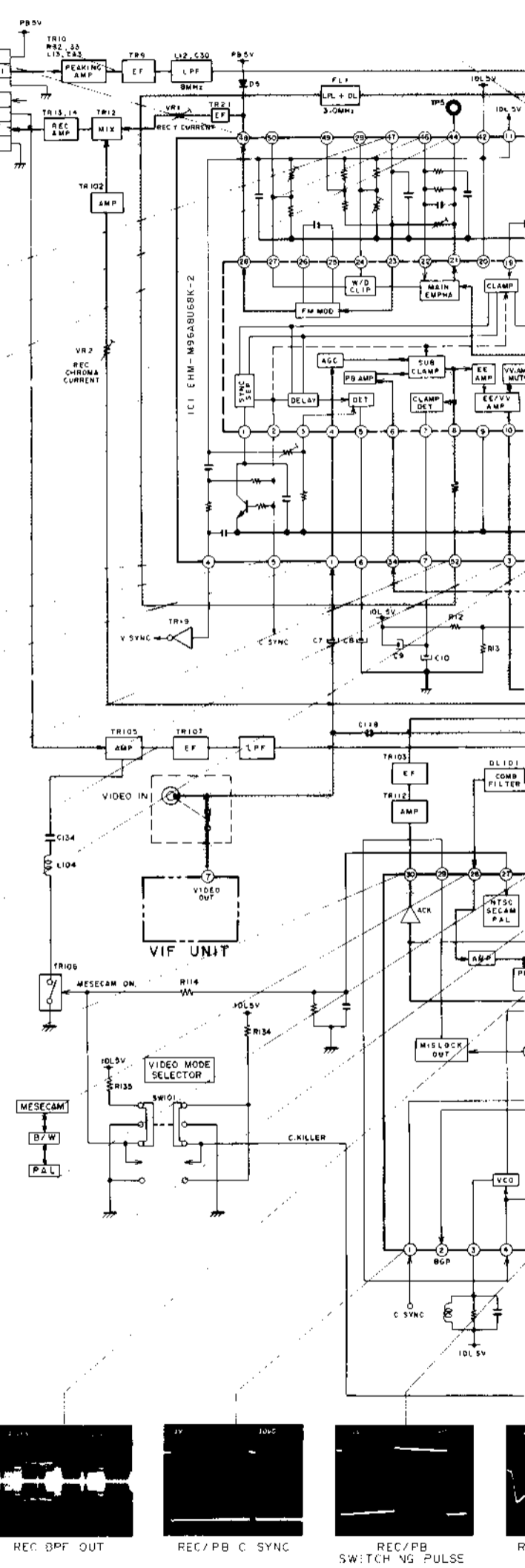


REC COMB FILTER OUT

5



8



A

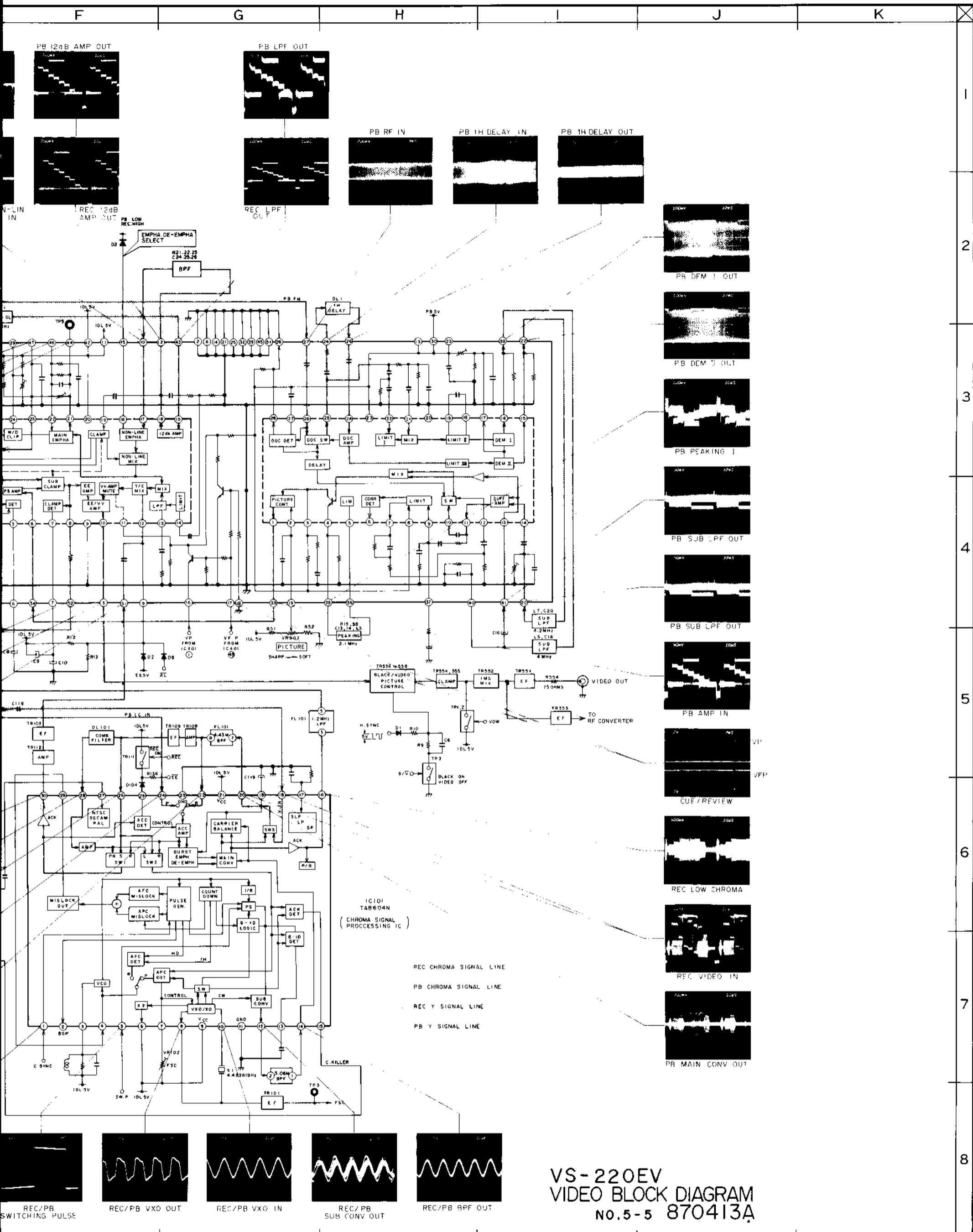
B

C

D

E

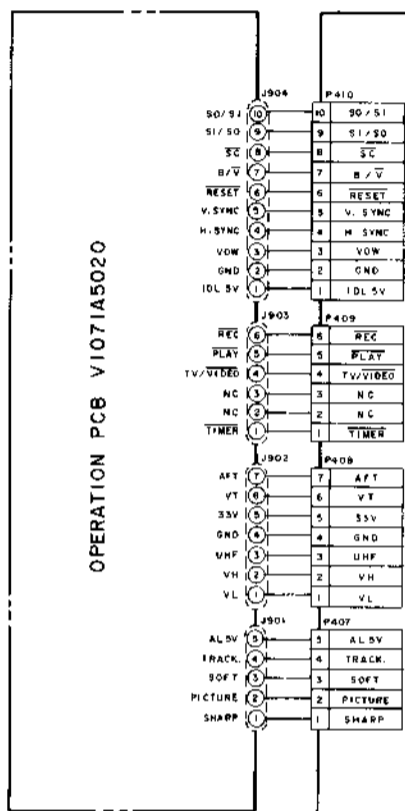
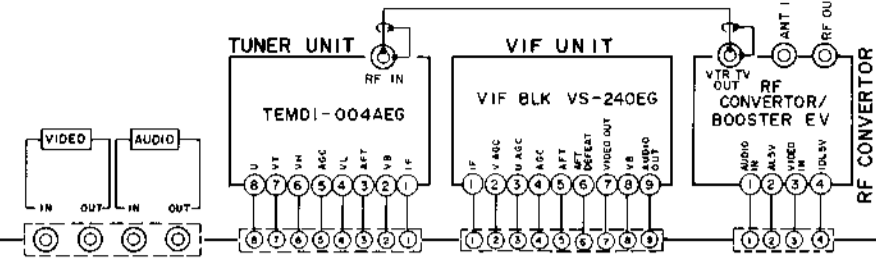
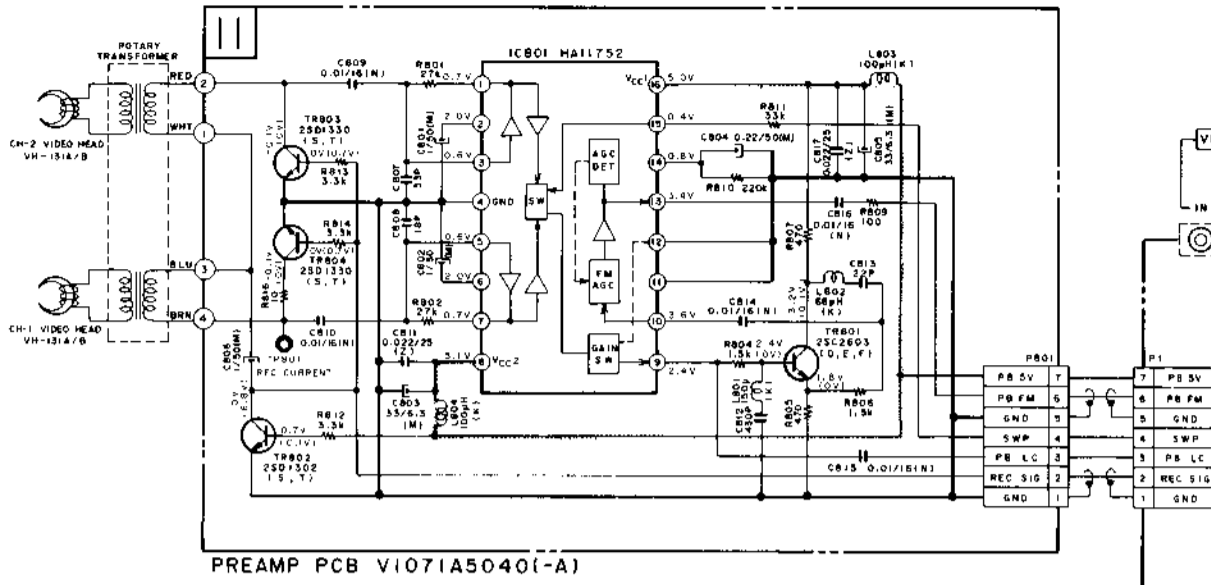
F



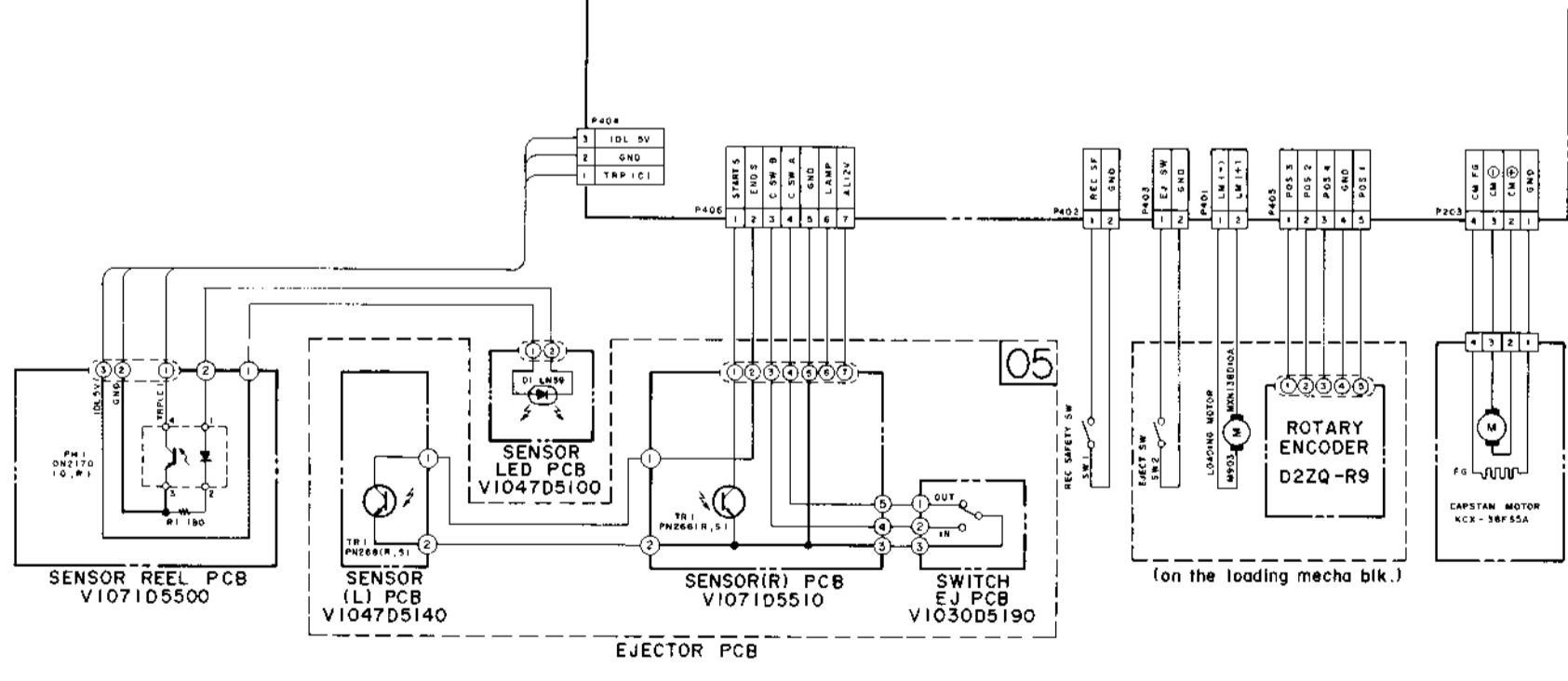
VS-220EV  
VIDEO BLOCK DIAGRAM  
NO.5-5 870413A

1  
2  
3  
4  
5  
6  
7  
8  
9

VS-220EV

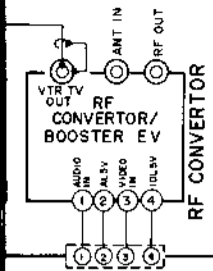


MAIN PCB V1071A5010(-C)

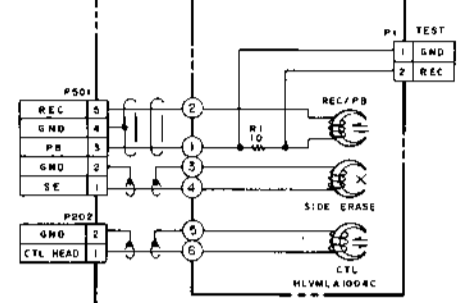


(POWER SUPPLY) LINE

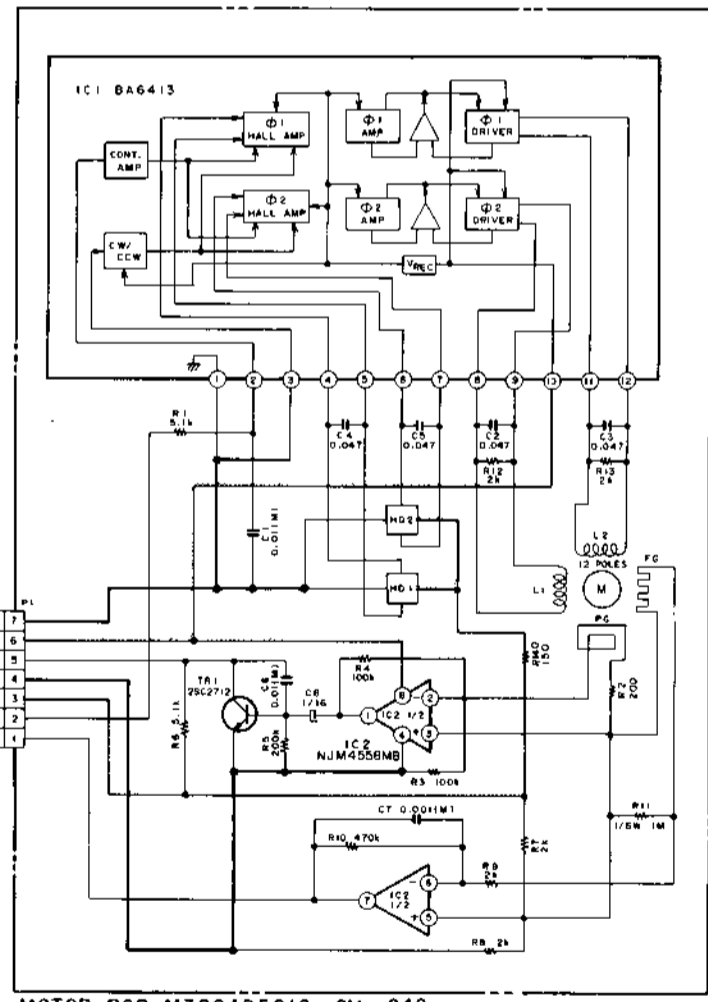
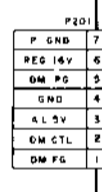
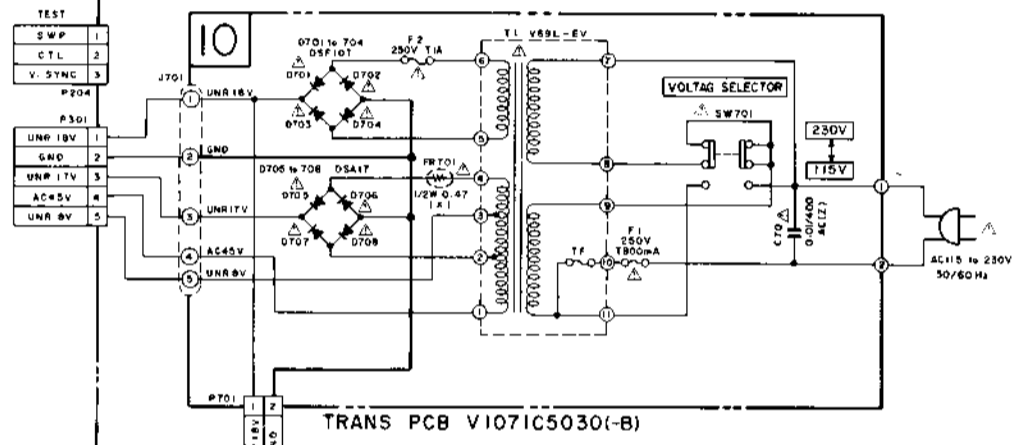
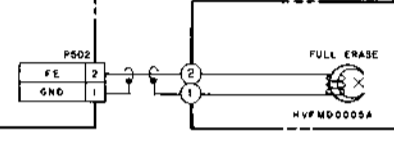




A/C HEAD PCB V1047D5150



FE HEAD PCB V1047D5160

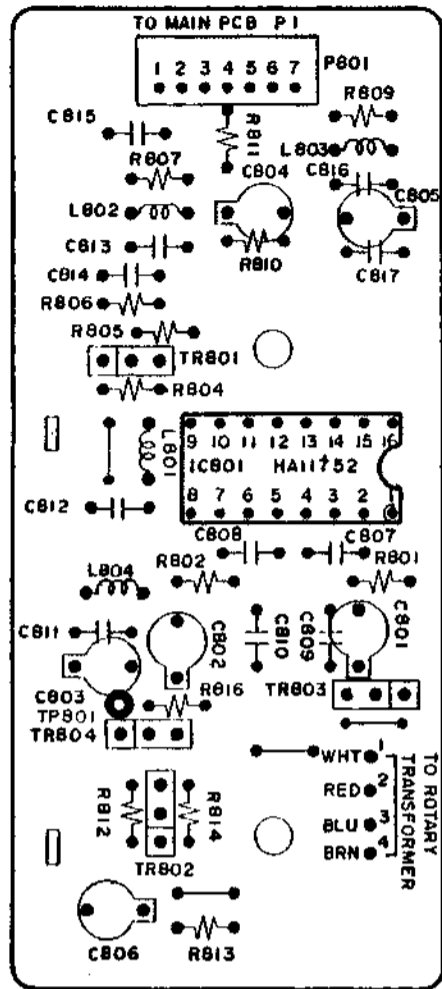


INDICATED VOLTAGE MEASURED ON PB MODE AND INDICATED WITH ( ) MARKS MEASURED ON REC MODE.

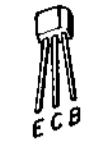
WARNING: INDICATES SAFETY CRITICAL COMPONENTS FOR CONTROLLED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.  
 AVERTISSEMENT: ( ) INDIQUE LES COMPOSANTS CRITIQUES DE SECURITE POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL. NE REMPLACEZ ( ) QUE DES PIECES RECOMMANDEES PAR LE FABRICANT.

NOTE: UNLESS OTHERWISE SPECIFIED ALL RESISTORS IN OHMS 1/6W(1/2) ALL CAPACITORS IN μF 50V(10)

VS-220EV CONNECTION DIAGRAM NO. 4-1 870414A



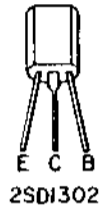
PRE AMP PCB  
V1071A5040(-A)



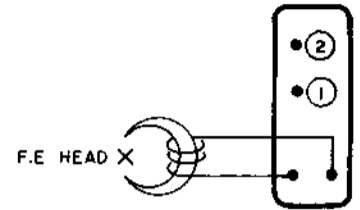
25C2603



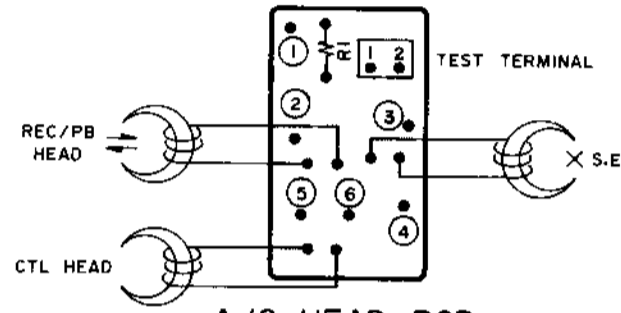
25DI330



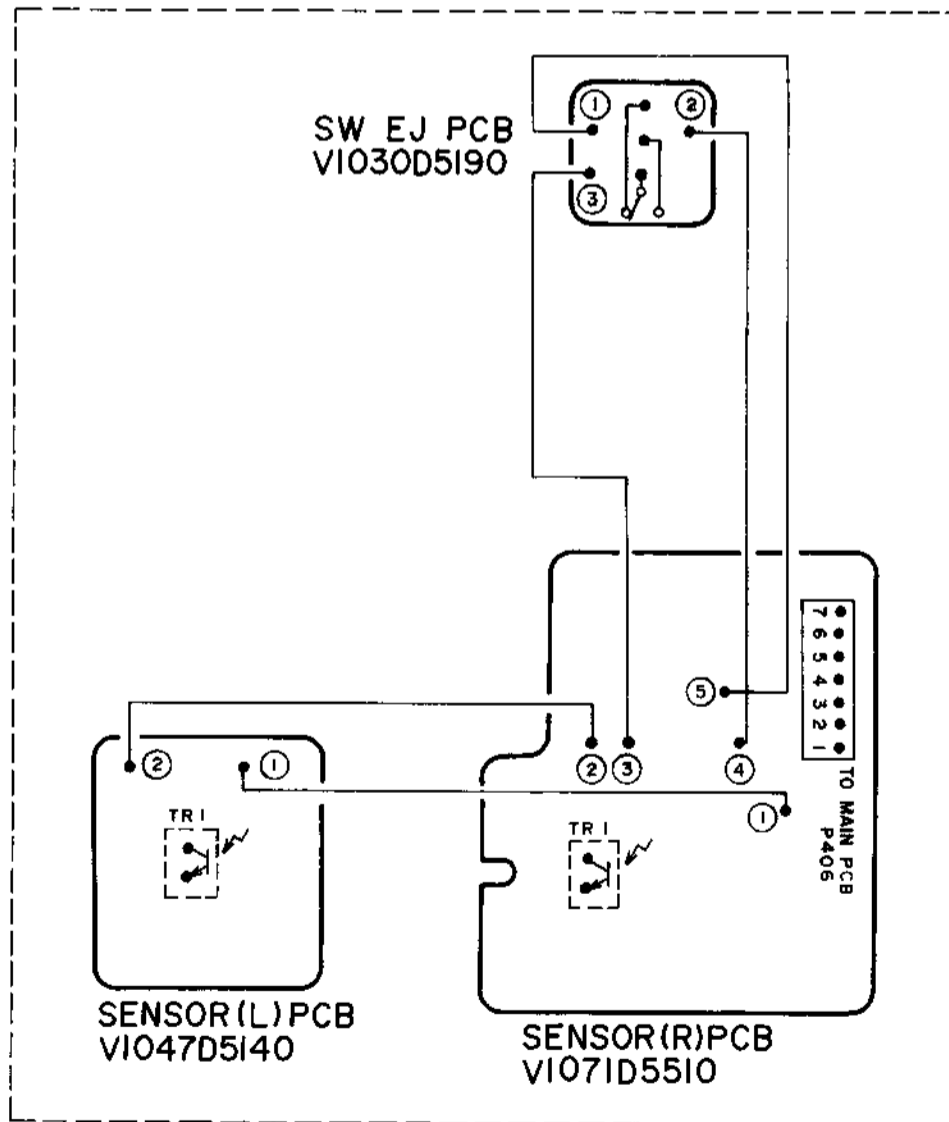
25DI302



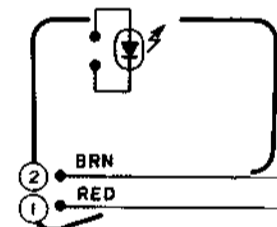
F.E HEAD PCB  
V1047D5160



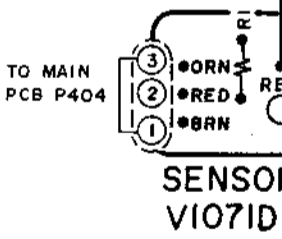
A/C HEAD PCB  
V1047D5150



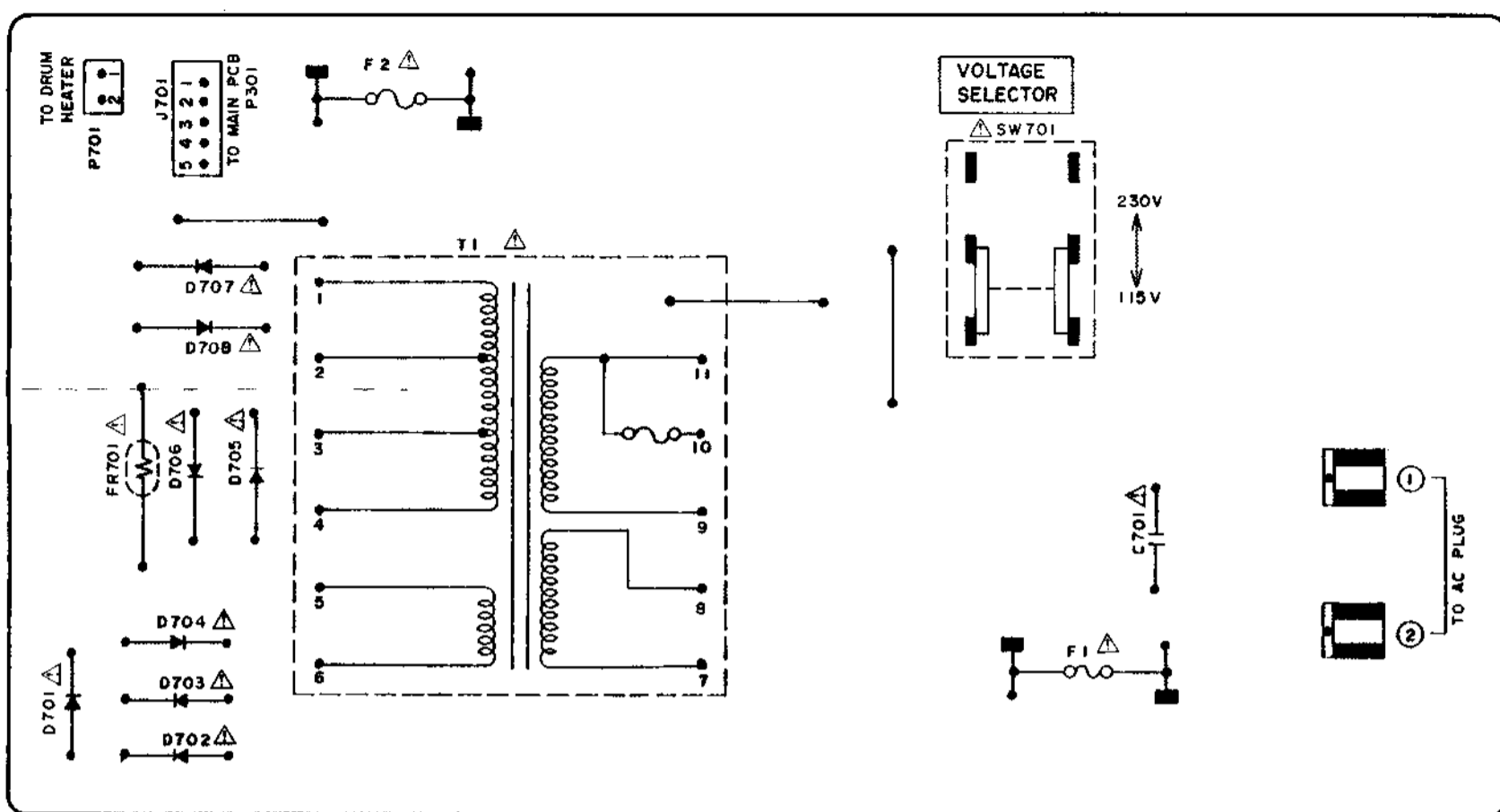
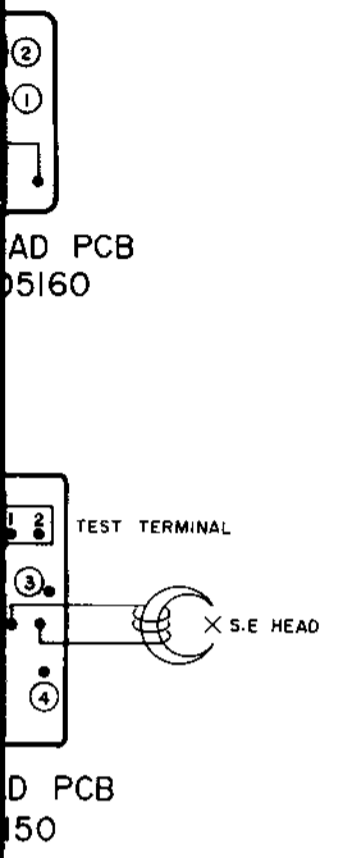
EJECTOR BLOCK



SENSOR LED PCB  
V1047D5100



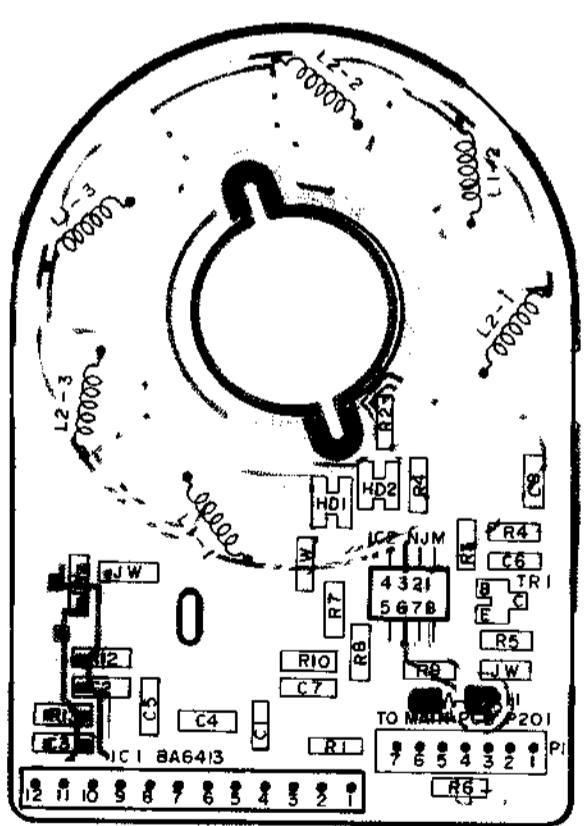
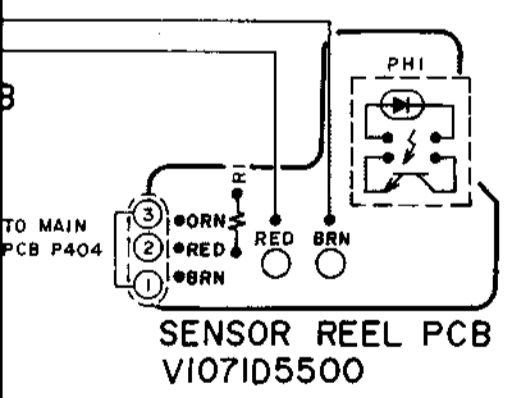
SENSOR  
V1071D



TRANS PCB V1069C5031(-B)

WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

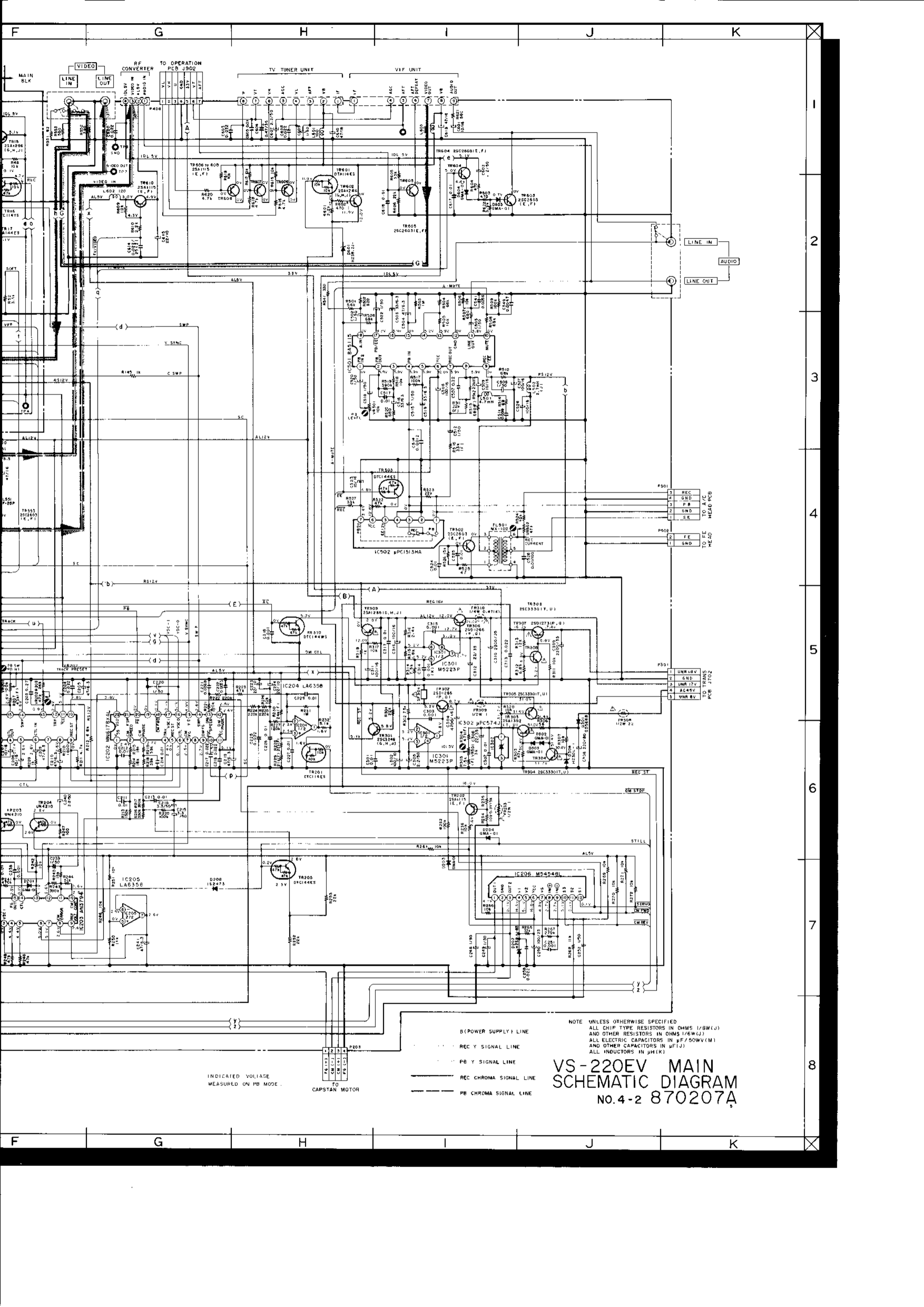
AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.



- JW = JAMPER WIRE
- RI = RI
- CI = CI
- = B C E

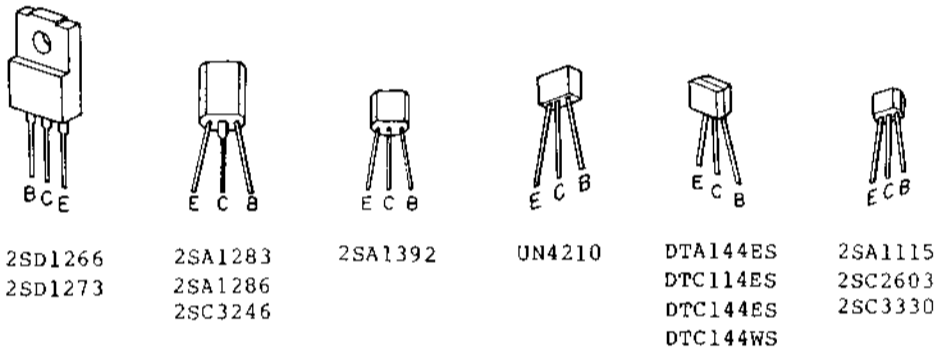
MOTOR PCB M3224D5010 (SM-240)





TRANSISTOR'S

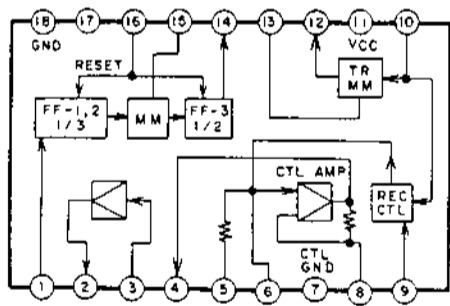
- TR 1....F5
- TR 2....F5
- TR 3....F5
- TR 9....E6
- TR 10....E6
- TR 12....D6
- TR 13....D6
- TR 14....D6
- TR 15....D6
- TR 16....CD5,6
- TR 17....C5,6
- TR 19....G5
- TR 21....E6
- TR101....A6
- TR102....C6
- TR103....C6
- TR105....D6
- TR106....C6
- TR107....C6
- TR108....B6
- TR109....B6
- TR111....B5
- TR112....B5,6
- TR201....E3
- TR202....C3
- TR203....D3
- TR204....D3
- TR205....C3
- TR301....C1
- TR302....C1
- TR303....C1
- TR304....C1
- TR305....C1
- TR306....D1
- TR307....C2
- TR308....D2
- TR309....C2
- TR310....D2
- TR401....A2
- TR404....A1
- TR405....A1
- TR406....A1
- TR407....AB4,5
- TR408....A4,5
- TR409....B2
- TR502....G3
- TR503....G3
- TR551....G4
- TR552....G4,5
- TR553....G4
- TR554....G5
- TR555....G4,5
- TR556....F5
- TR557....F5
- TR558....F4
- TR601....E2
- TR602....F1
- TR603....E2
- TR604....F1
- TR605....F1
- TR606....F1,2
- TR607....FG1
- TR608....F1
- TR610....G1



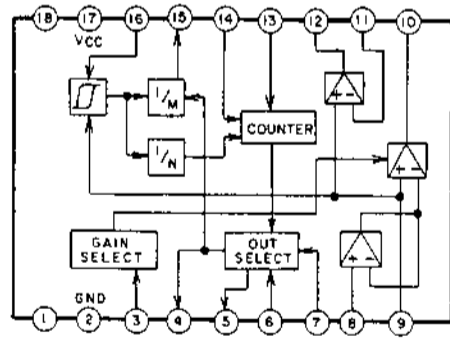
WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

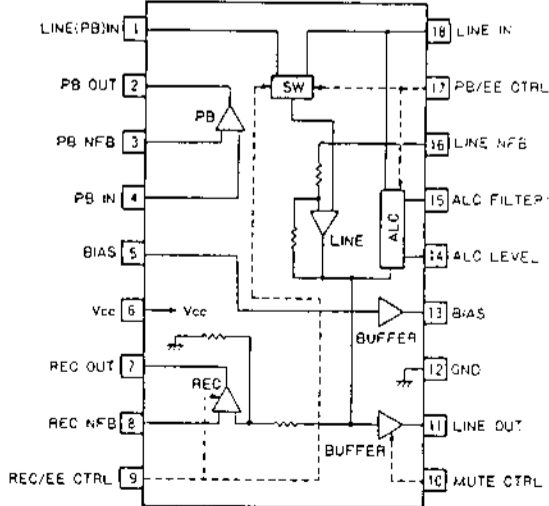
AN3792 (DRUM SERVO INTERFACE IC)



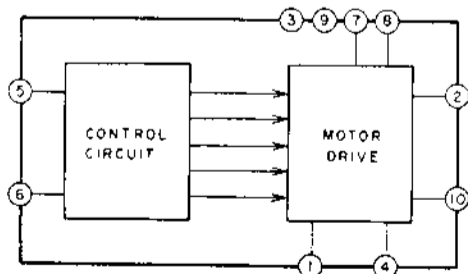
AN3794 (CAPSTAN SERVO INTERFACE IC)



BA5115 (SWITCHLESS REC/PB AMPLIFIER)



BA6229 (BI-DIRECTIONAL MOTOR DRIVER)



CONTROL MODE

MODE	INPUT		OUTPUT	
	5pin	6pin	2pin	10pin
STOP	L	L	OPEN	OPEN
NORMAL	H	L	H	L
REVERSE	L	H	L	H
BRAKE	H	H	L	L

CONNECTOR'S

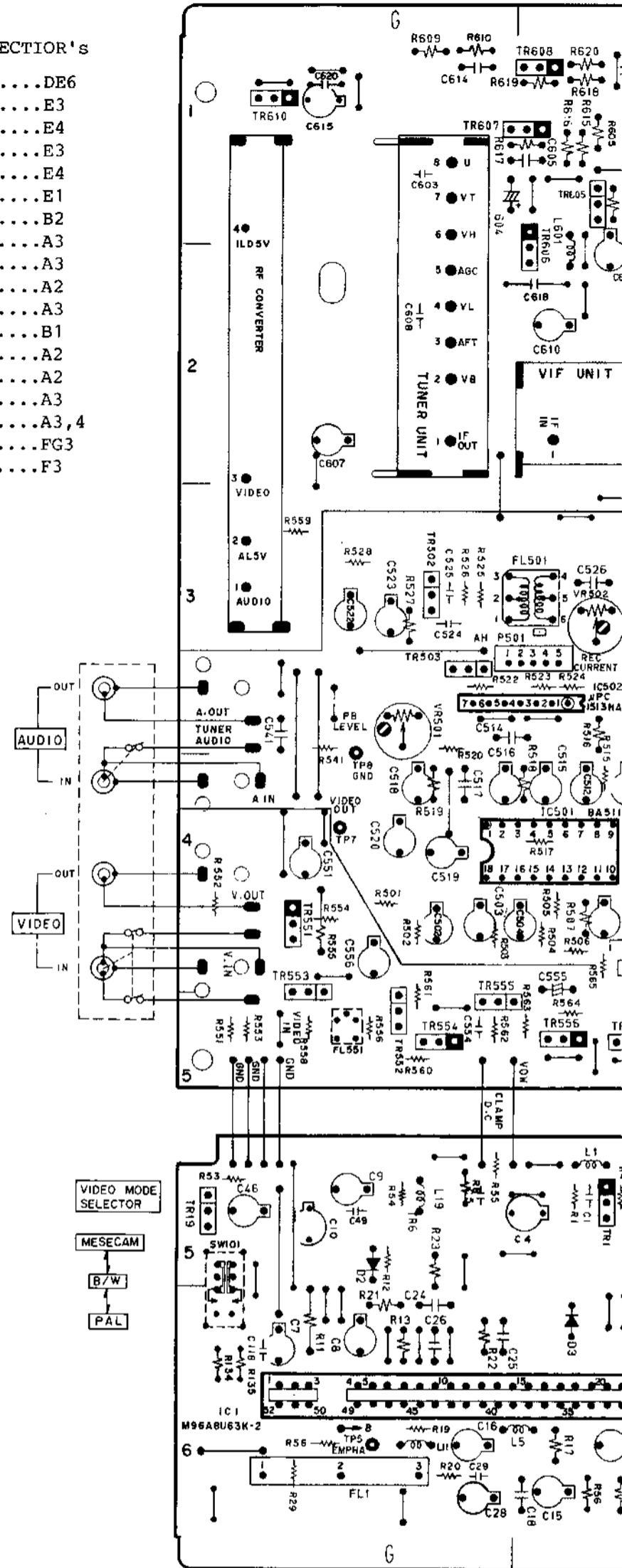
- P 1....DE6
- P201....E3
- P202....E4
- P203....E3
- P204....E4
- P301....E1
- P401....B2
- P402....A3
- P403....A3
- P404....A2
- P405....A3
- P406....B1
- P407....A2
- P408....A2
- P409....A3
- P410....A3,4
- P501....FG3
- P502....F3

PRINCIPAL PARTS LOCATION

IC'S

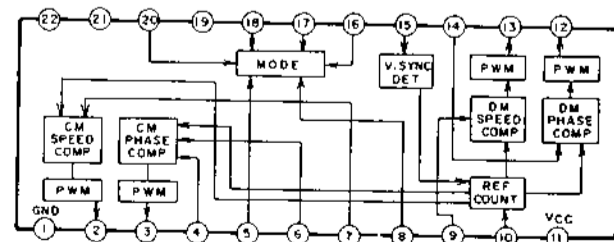
- IC 1....FG6
- IC101....A6
- IC201....E4
- IC202....D4
- IC203....D3,4
- IC204....E3
- IC205....E3
- IC206....D3
- IC301....CD1
- IC302....C2
- IC401....AB3
- IC402....B1,2
- IC403....AB1
- IC404....A4
- IC405....B4
- IC501....FG4
- IC502....FG3

MAIN PCB V1069A501A(-C)

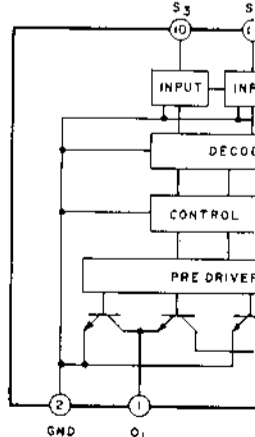


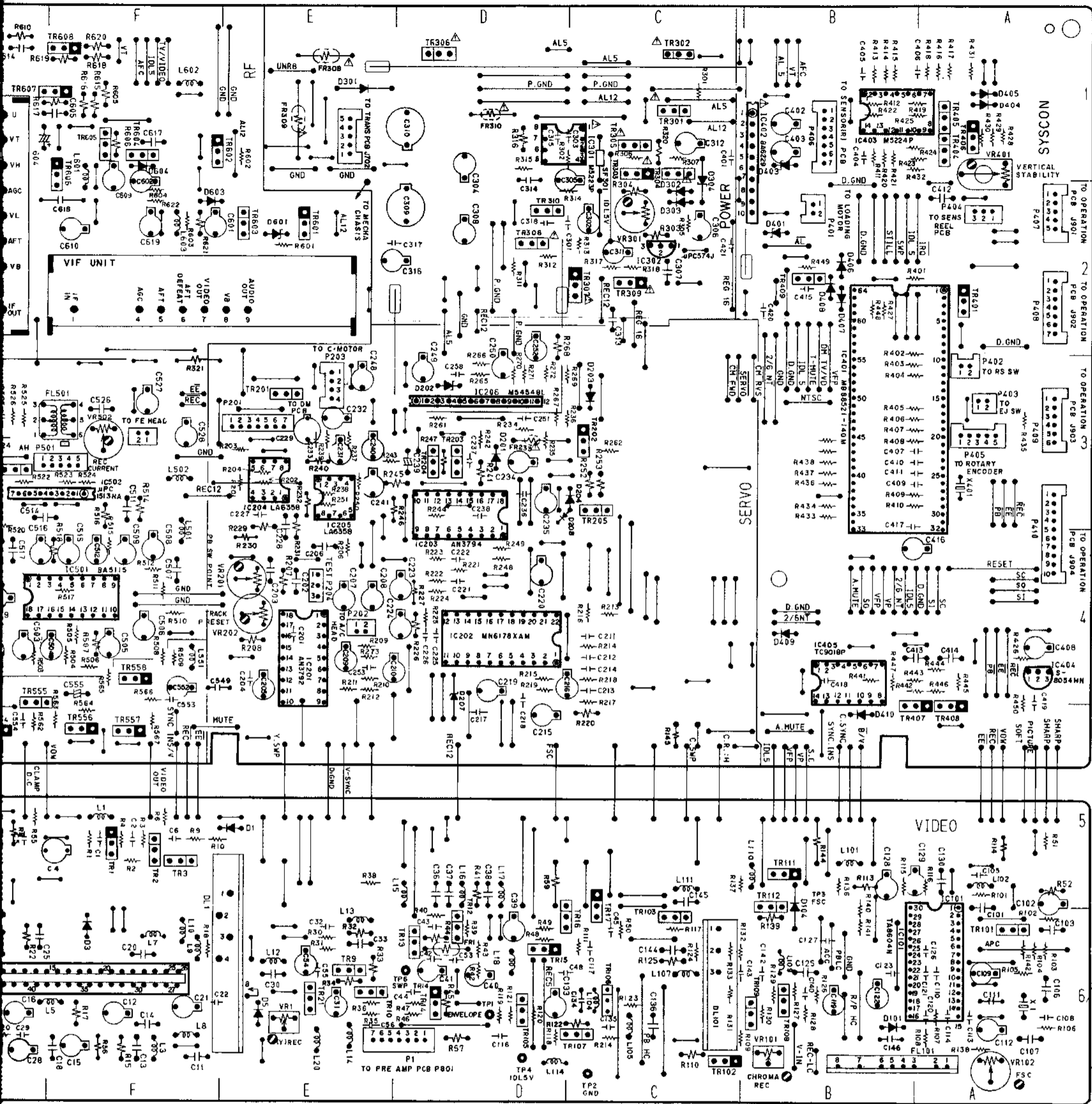
MAIN (VIDEO) PCB V1069A501B(-C)

MN6178XAL (DIGITAL SERVO IC)

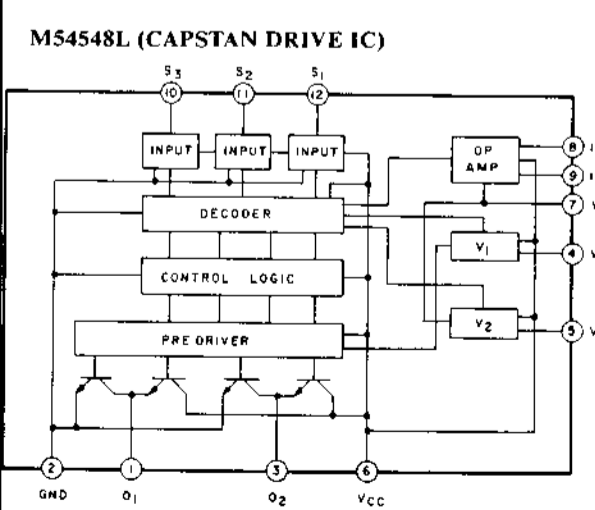


M54548L (CAPSTAN SERVO IC)



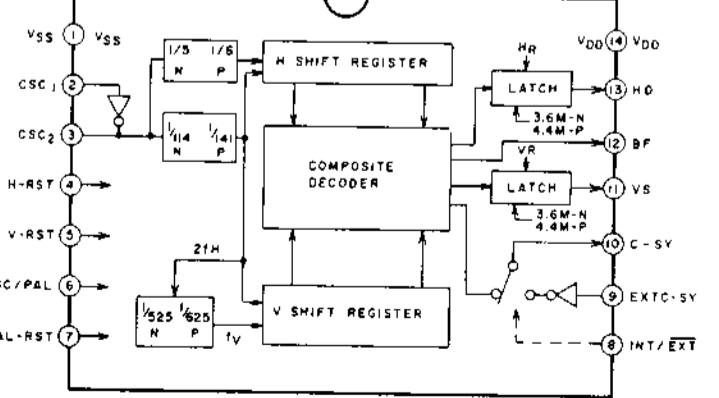


1069A501B(-C)



INPUT			OUTPUT		Vcc SELECT	MODE
S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	O <sub>1</sub>	O <sub>2</sub>		
L	L	L	"OFF" state	"OFF" state	-	STOP
L	L	H	H	L	V <sub>s</sub>	PLAY (+)
L	H	L	L	H	V <sub>s</sub>	PLAY (-)
L	H	H	H	L	V <sub>1</sub>	FF (2)
H	L	L	L	H	V <sub>1</sub>	REW (2)
H	L	H	H	L	V <sub>1</sub>	FF (1)
H	H	L	L	H	V <sub>1</sub>	REW (1)
H	H	H	L	L	V <sub>s</sub>	BRAKE

TC9018P (TV SYNC GENERATOR)



A

B

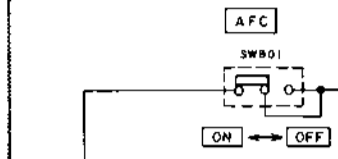
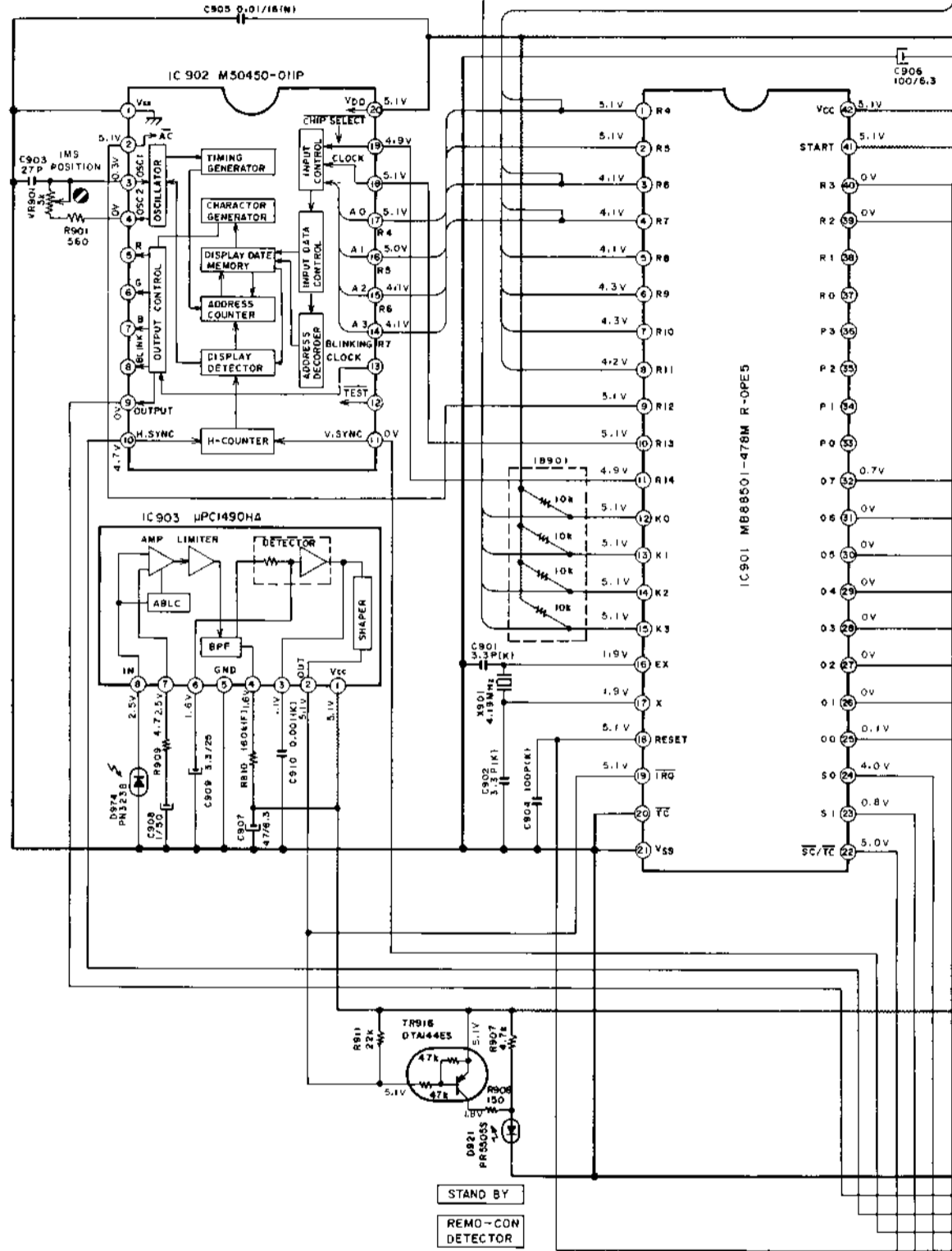
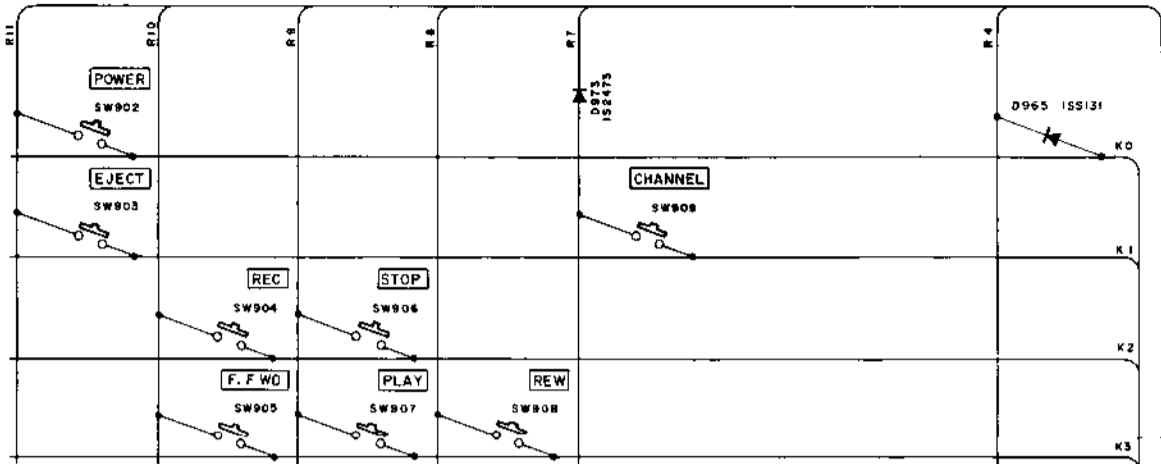
C

D

E

F

09



OPERATION PCB V1071A5020

A

B

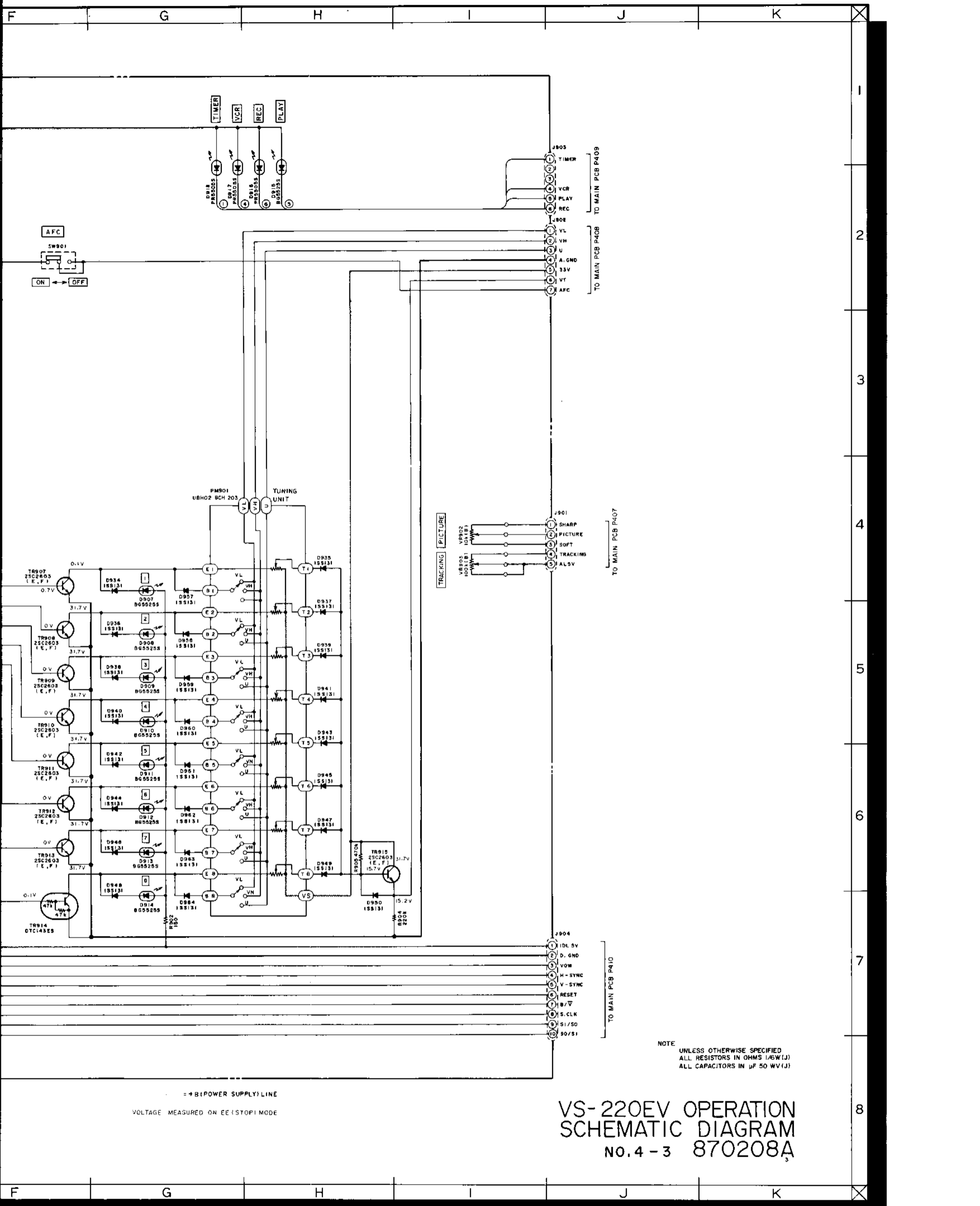
C

D

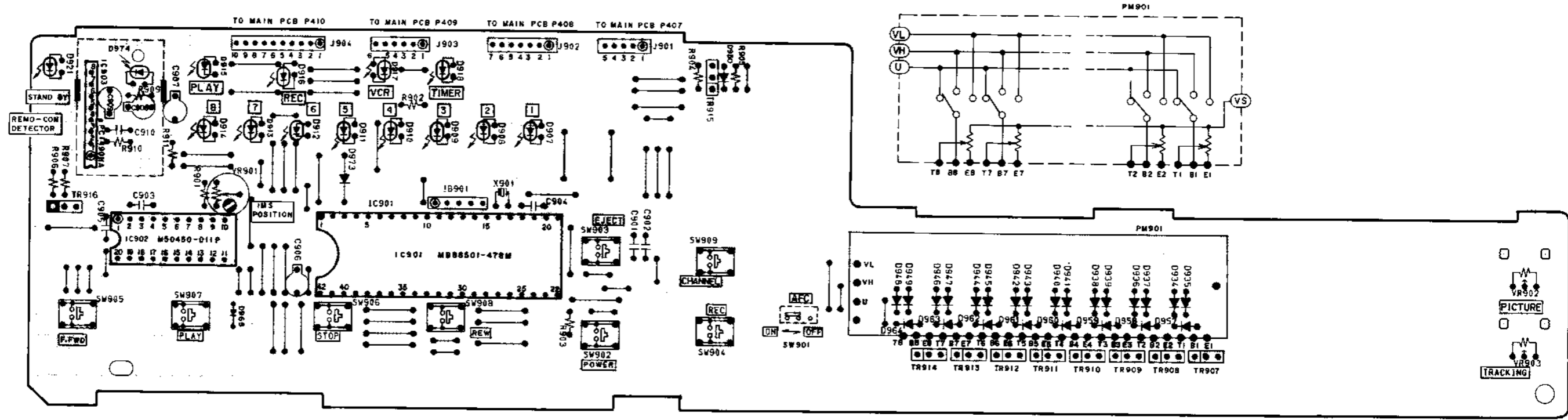
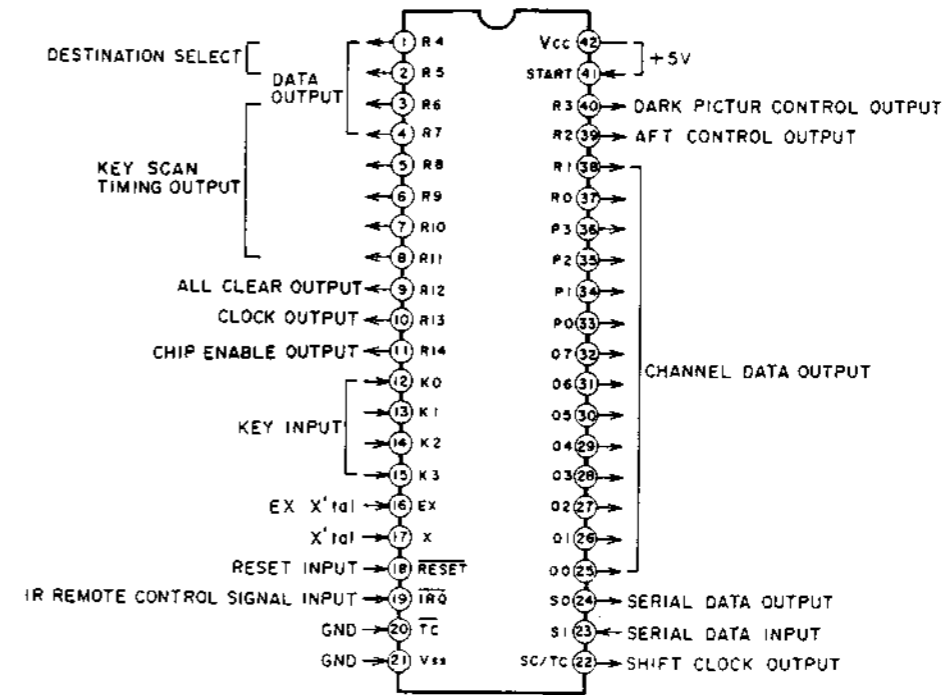
E

F



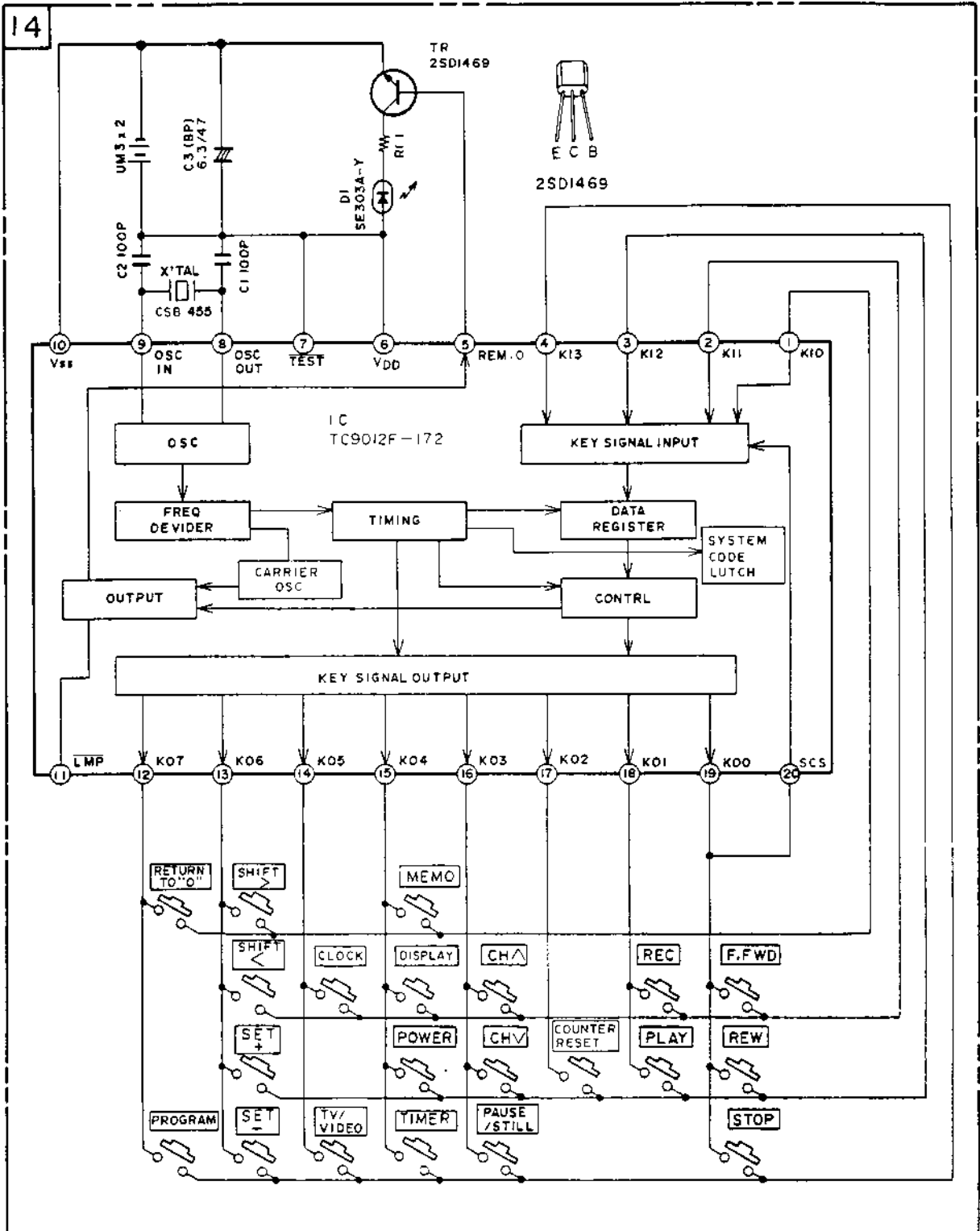


MB88501-478M (OPERATION CPU)



OPERATION PCB V1071A5020





NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS 1/5W(J)  
 ALL CAPACITORS IN  $\mu$ F 50WV(J)

RC-V220A  
 REMOTE CONTROL UNIT  
 SCHEMATIC DIAGRAM  
 NO. 4-4 860707C (A4)