

# AKAI

MODEL **VS-P120**<sub>EM</sub>

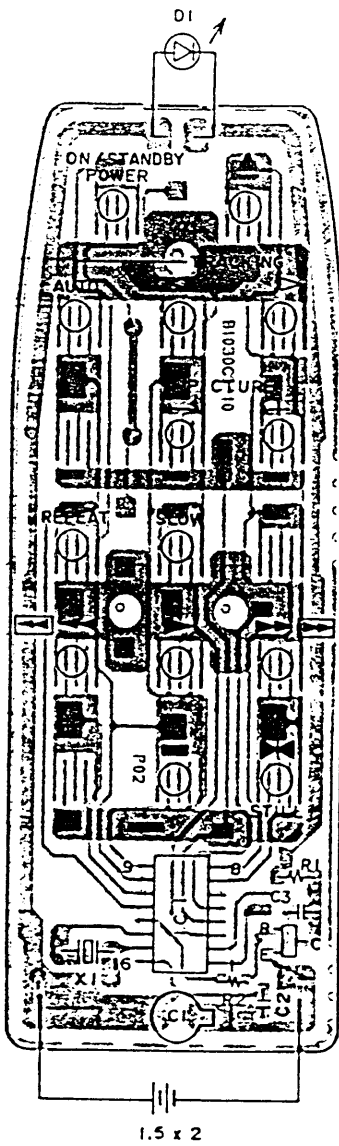
MODEL **VS-R120**<sub>EM/EDG</sub>

## **SCHEMATIC DIAGRAMS AND PC BOARDS**

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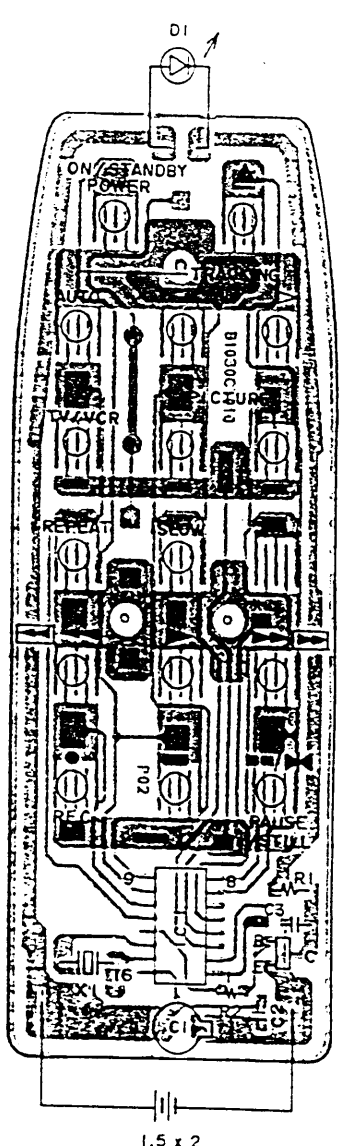
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Use these schematic diagrams and PC boards together with the provided service manual.



1.5 x 2

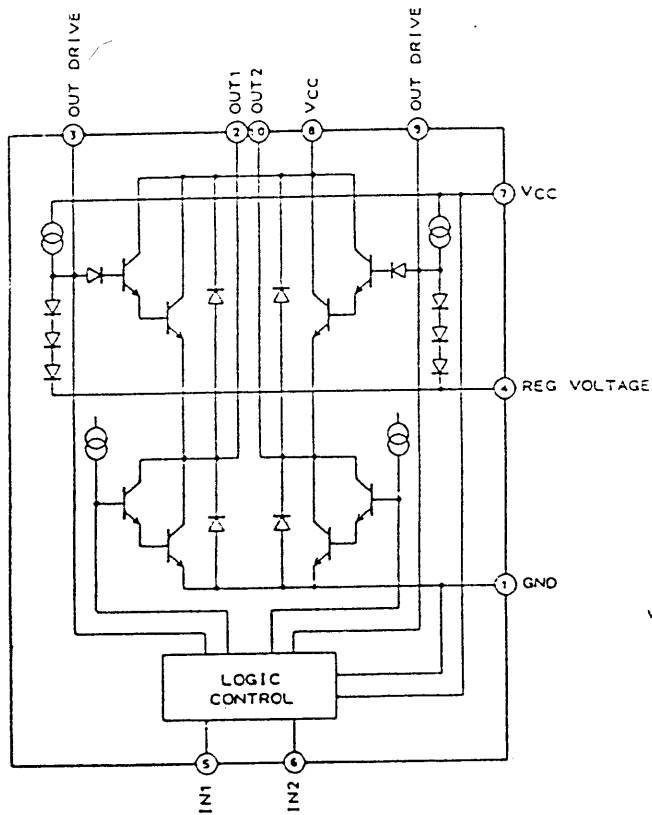
REMO-CON PCB  
BIO30C5010  
(RC-V22E)



1.5 x 2

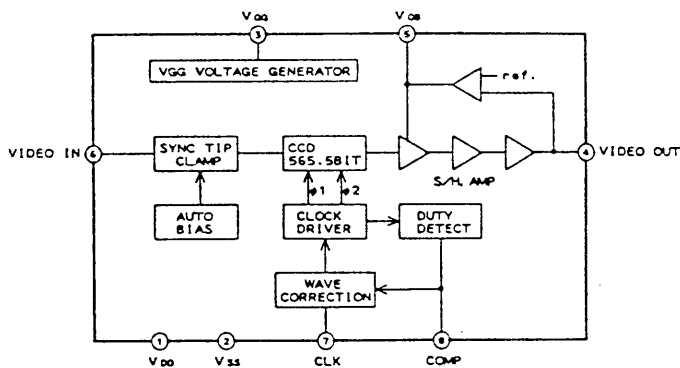
REMO-CON PCB  
BIO30C5010  
(RC-V23E)

# BA6229 (BI-DIRECTIONAL MOTOR DRIVE)

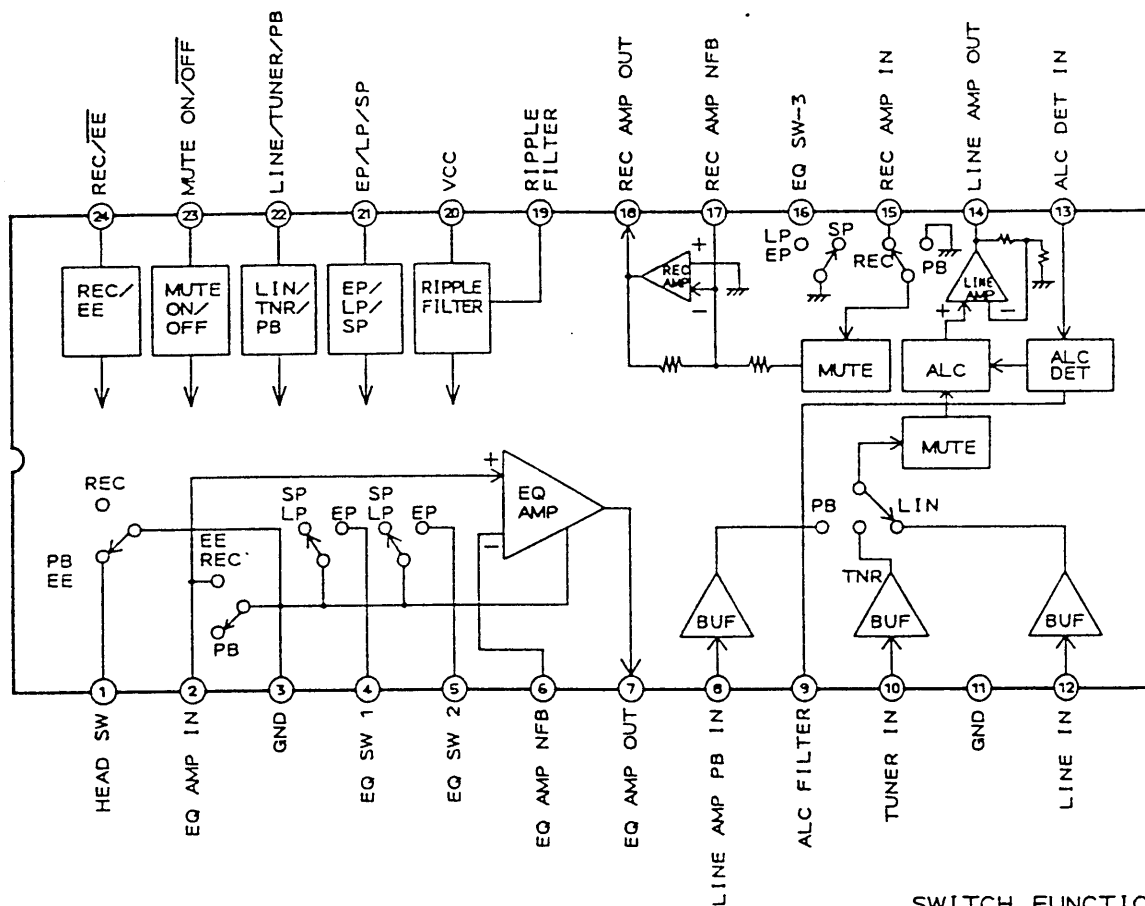


| INPUT |     | OUTPUT |      | MODE                      |
|-------|-----|--------|------|---------------------------|
| (5)   | (6) | (2)    | (10) |                           |
| H     | H   | L      | L    | BRAKE                     |
| L     | H   | L      | H    | CASSETTE & TAPE LOADING   |
| H     | L   | H      | L    | CASSETTE & TAPE UNLOADING |
| L     | L   | OPEN   | OPEN | STOP                      |

# LC8992 (CCD 1H DELAY LINE)

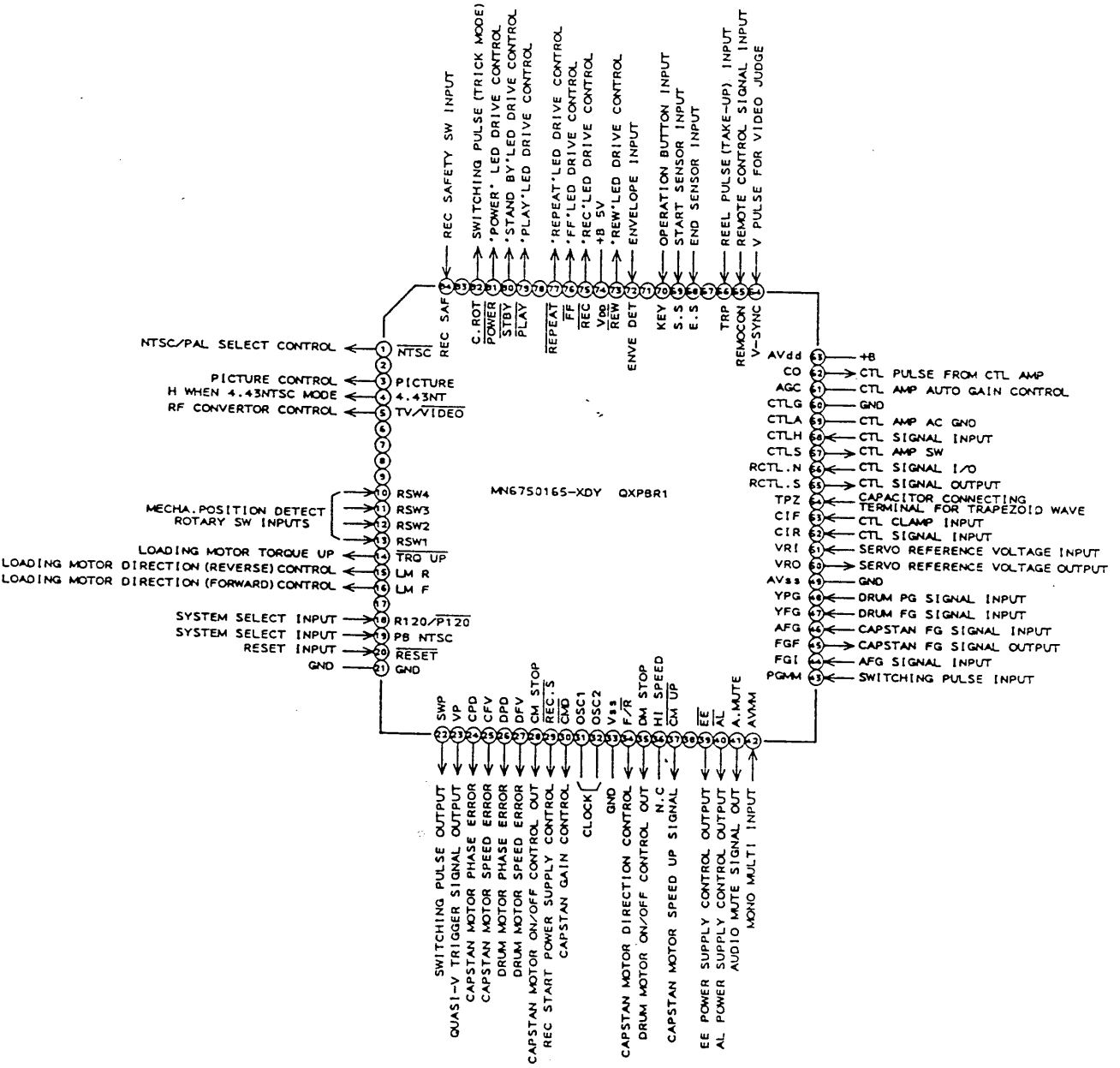


# LA7285 (AUDIO SIGNAL REC/PB AMP)



## SWITCH FUNCTION

|          | DC LEVEL |            |      |
|----------|----------|------------|------|
|          | 0 ~ 1.0V | 1.8 ~ 2.6V | 3.6V |
| (21) PIN | SP       | LP         | EP   |
| (22) PIN | PB       | TUNER      | LINE |



MODE SWITCH TRUTH TABLE

| MODE OUTPUT | EJECT  | STOP (TAPE LOADED) | PAUSE/PLAY |   | PLAY |   | REVIEW |   | CUE |   | FF | REW | POWER OFF (WITH CASSETTE) |
|-------------|--------|--------------------|------------|---|------|---|--------|---|-----|---|----|-----|---------------------------|
|             |        |                    | A          | B | A    | B | A      | B | A   | B |    |     |                           |
| RSW 4       | H (5V) | L                  | L          | L | L    | L | L      | H | L   | L | L  | L   | H                         |
| RSW 3       | L (0V) | L                  | H          | H | L    | L | H      | H | H   | H | L  | L   | H                         |
| RSW 2       | L      | L                  | L          | L | H    | L | H      | H | L   | L | H  | H   | L                         |
| RSW 1       | L      | H                  | H          | L | L    | H | L      | L | L   | H | H  | H   | L                         |

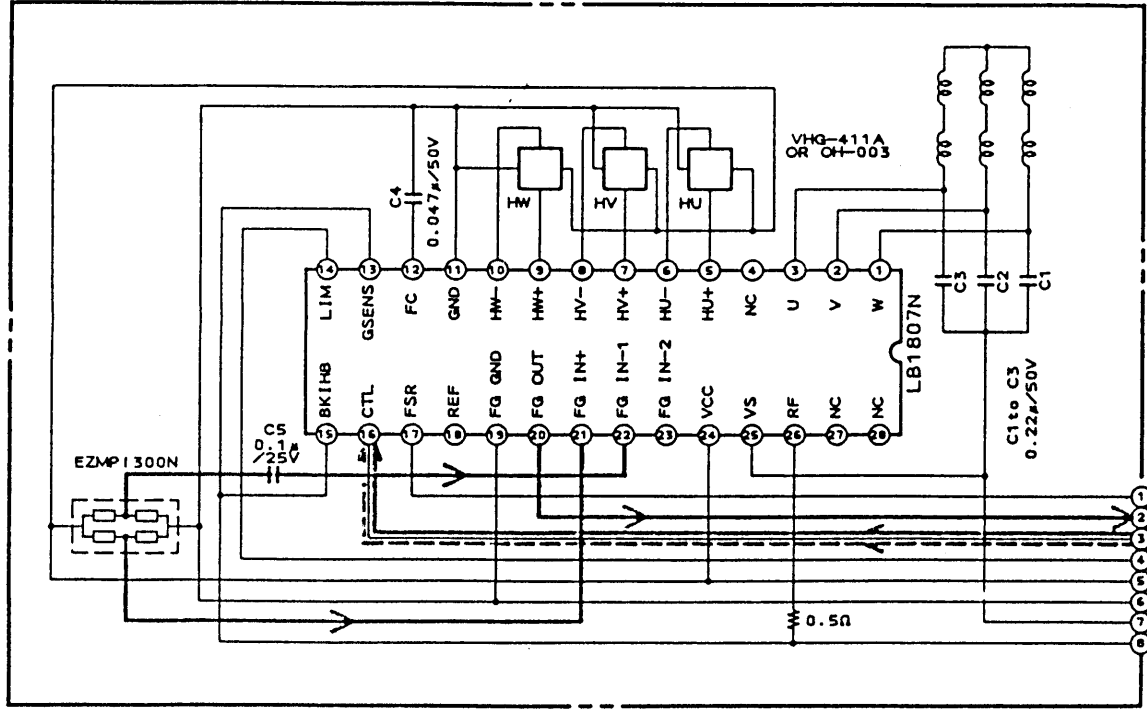
(A: 2 VIDEO HEADS MODEL  
B: 3 OR 4 VIDEO HEADS MODEL)

CTL (PB)

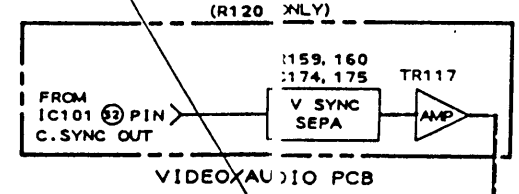


CM PHASE REFERENCE

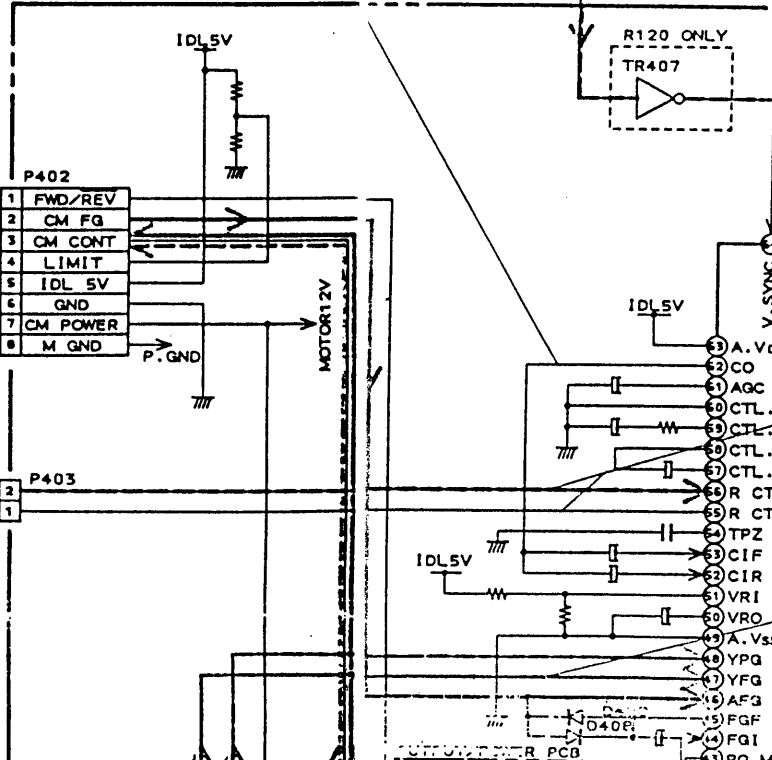
| MODE | REFERENCE  |
|------|------------|
| PB   | CTL SIGNAL |
| REC  | V-SYNC     |



CAPSTAN MOTOR (DFX-67B3VWB2)



VIDEO AUDIO PCB



CONTROL HEAD

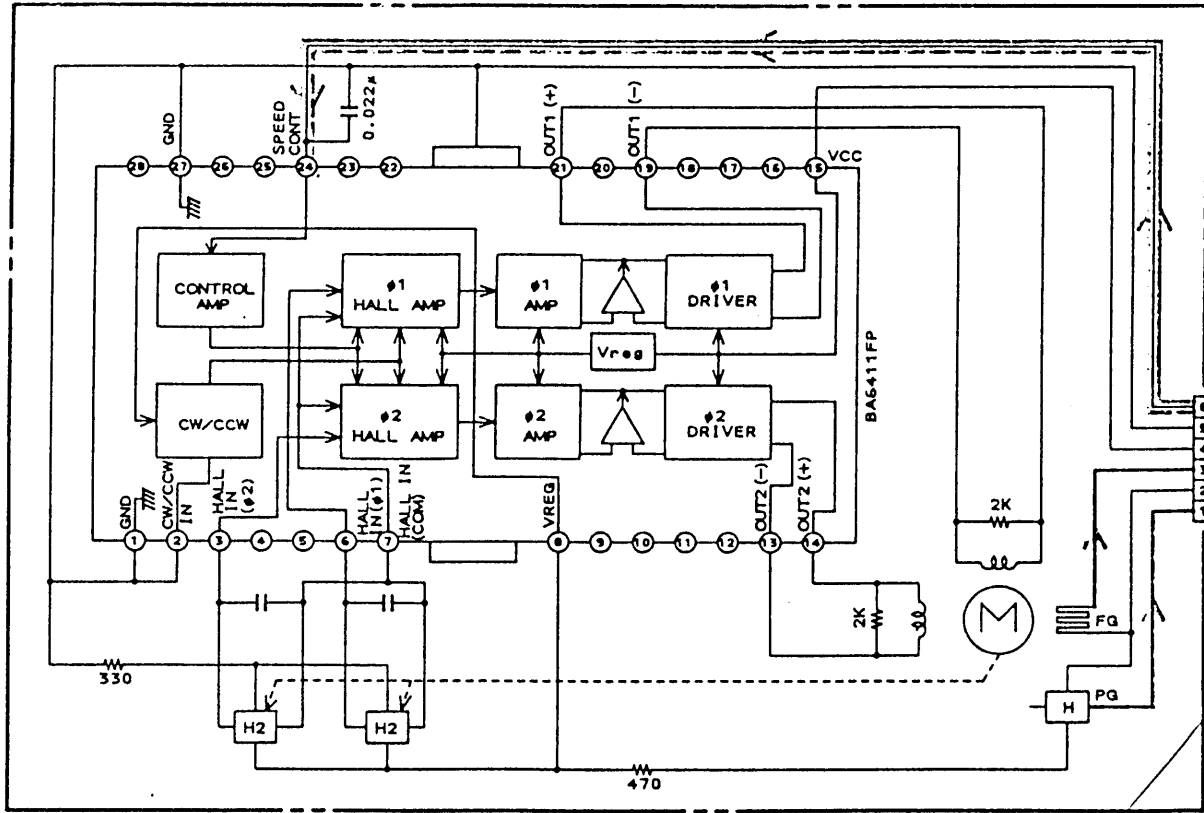
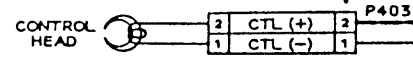
P403

P402

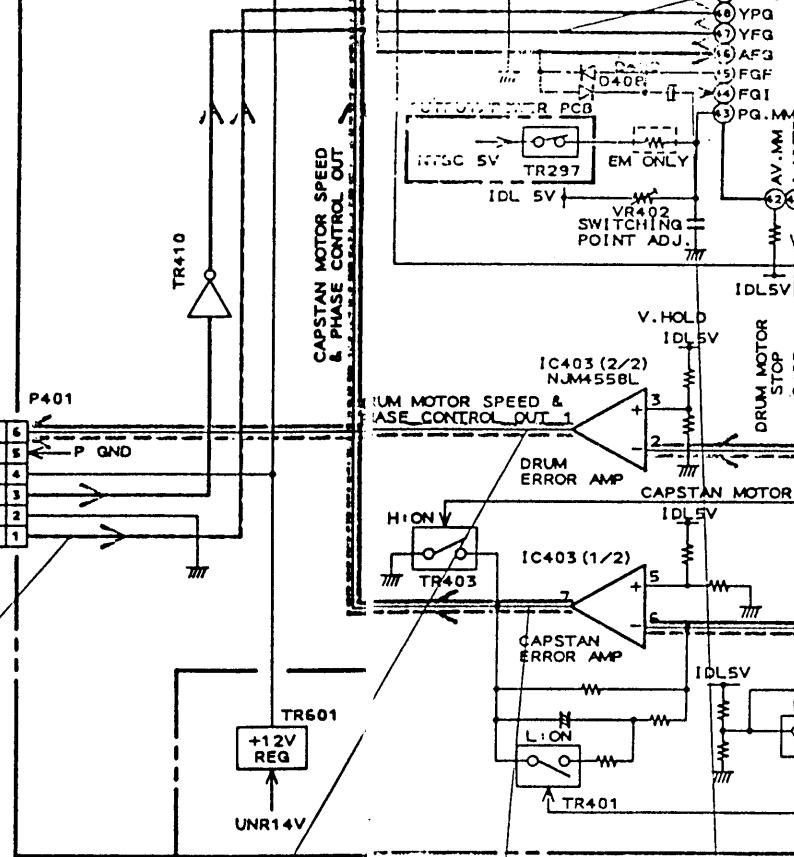
- ① A. Vcc
- ② CO
- ③ AGC
- ④ CTL. (
- ⑤ CTL. (
- ⑥ CTL. (
- ⑦ CTL. (
- ⑧ R CTL
- ⑨ R CTL
- ⑩ TPZ
- ⑪ CIF
- ⑫ CIR
- ⑬ VRI
- ⑭ VRO
- ⑮ A. Vss
- ⑯ YPG
- ⑰ YFG
- ⑱ AFG
- ⑲ FGI
- ⑳ FQI
- ㉑

OUTPUT POWER PCB

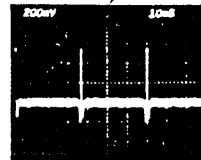
CAPSTAN MOTOR (DFX-67B3VWB2)



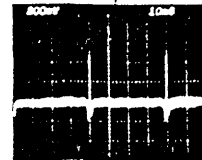
DRUM MOTOR (DCX-3A3VRA)



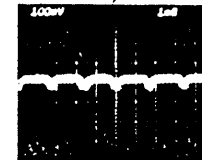
- CAPSTAN MOTOR PHASE
- CAPSTAN MOTOR SPEED
- DRUM MOTOR PHASE
- DRUM MOTOR SPEED



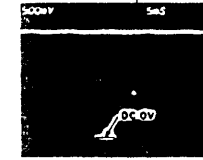
DM PG IN (NTSC)



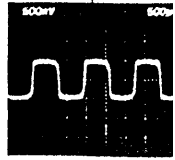
DM PG IN (PAL)



DM CONT OUT



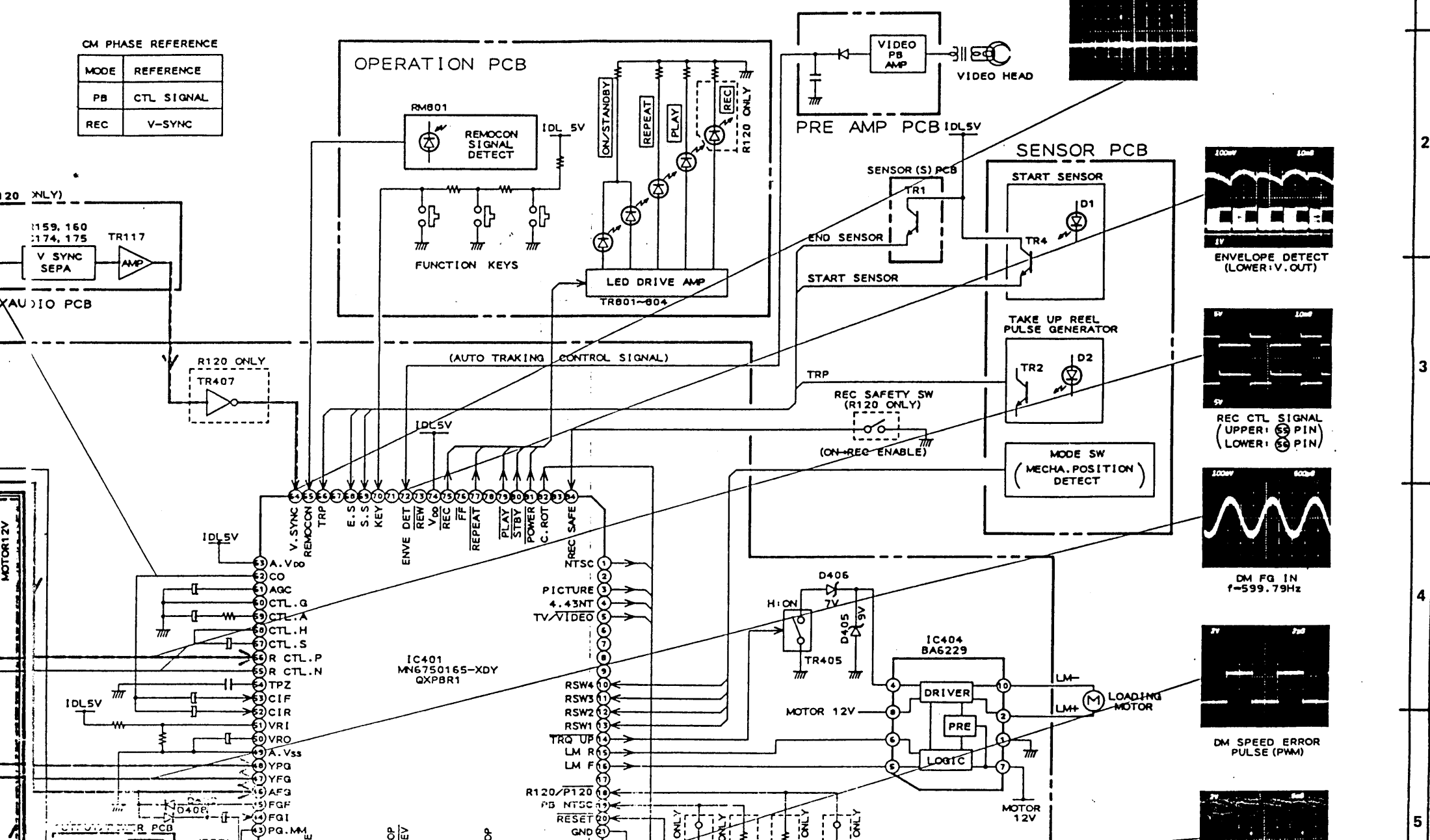
CM CONT OUT



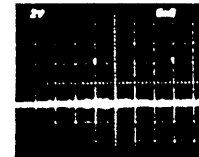
CM FG IN SIGN

CM PHASE REFERENCE

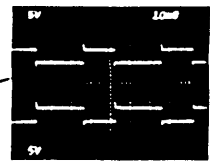
| MODE | REFERENCE  |
|------|------------|
| PB   | CTL SIGNAL |
| REC  | V-SYNC     |



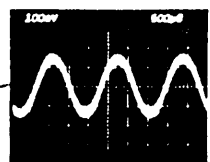
V SYNC



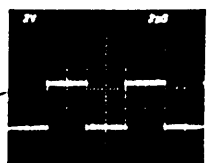
ENVELOPE DETECT (LOWER: V.OUT)



REC CTL SIGNAL (UPPER: 59 PIN, LOWER: 66 PIN)



DM FG IN f=599.79Hz

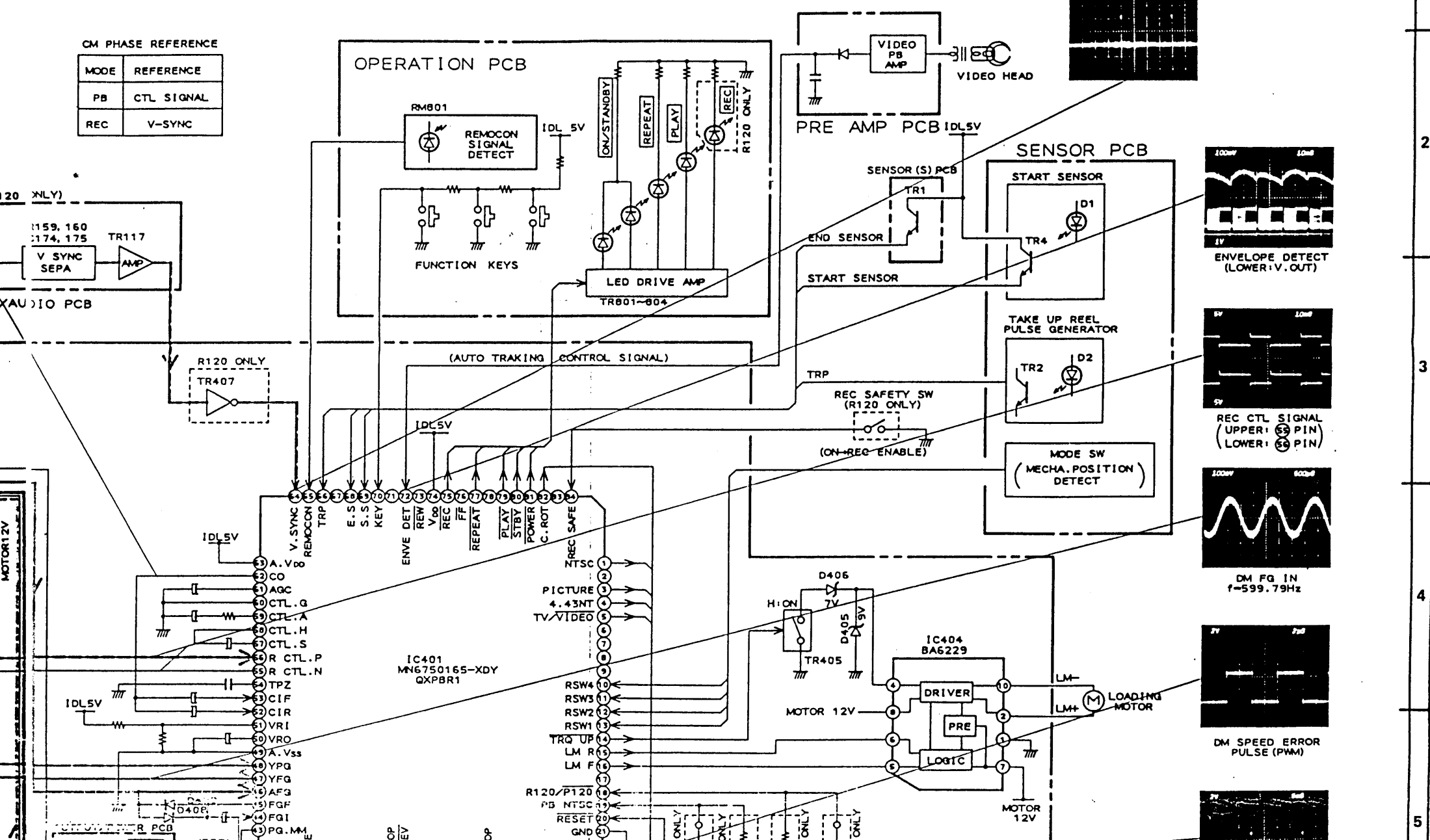


DM SPEED ERROR PULSE (PWM)

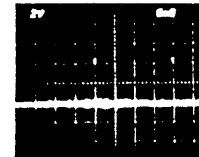


CM PHASE REFERENCE

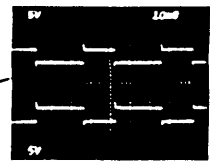
| MODE | REFERENCE  |
|------|------------|
| PB   | CTL SIGNAL |
| REC  | V-SYNC     |



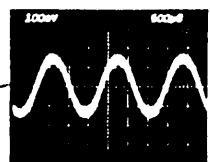
V SYNC



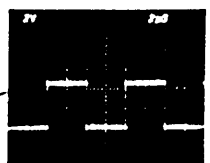
ENVELOPE DETECT (LOWER: V.OUT)



REC CTL SIGNAL (UPPER: 59 PIN, LOWER: 66 PIN)

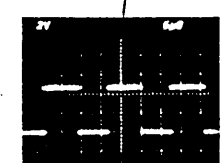
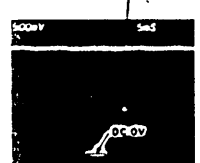
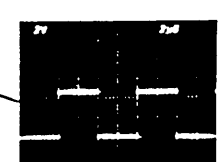
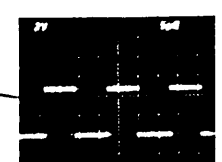
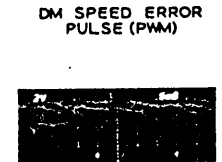
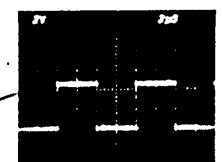
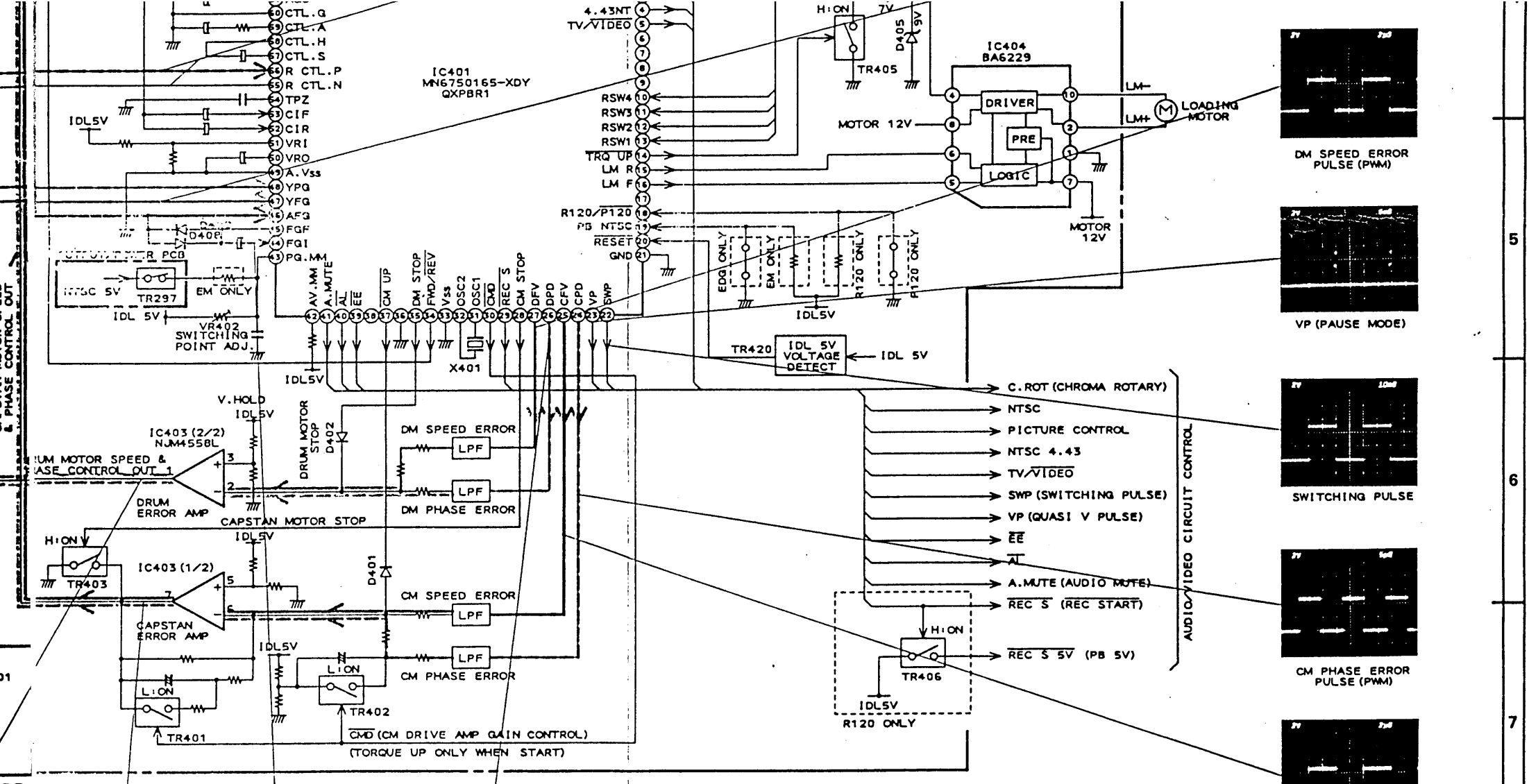


DM FG IN f=599.79Hz



DM SPEED ERROR PULSE (PWM)

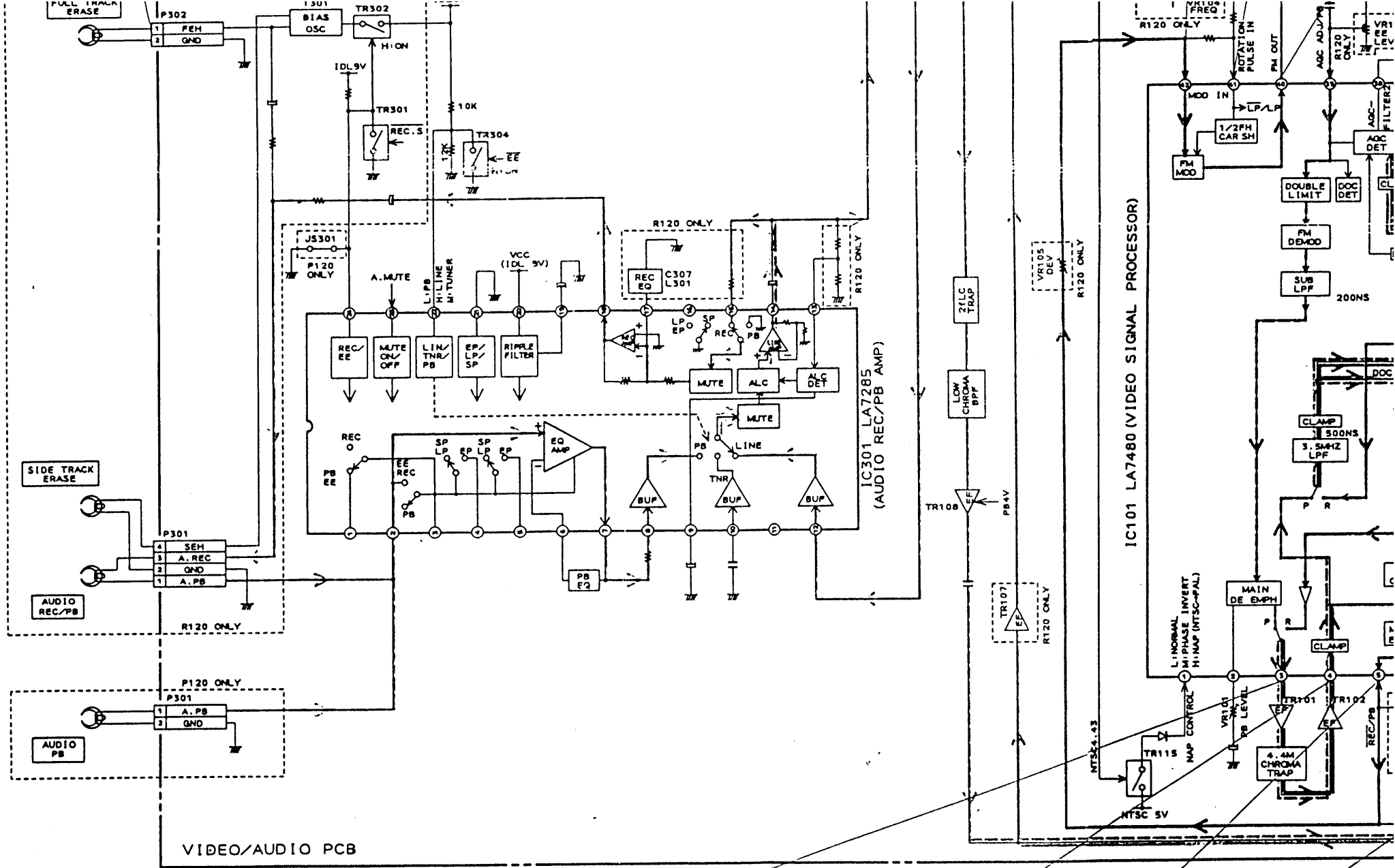




VS-R120EM  
 VS-P120EM/EDG  
 SERVO & SYSCON  
 BLOCK DIAGRAM  
 No. 2-1 V118151M  
 A1





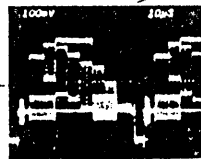


VIDEO/AUDIO PCB

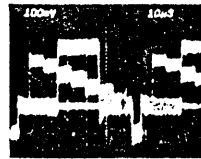
- PB Y SIGNAL LINE
- REC Y SIGNAL LINE
- PB CHROMA SIGNAL LINE
- REC CHROMA SIGNAL LINE
- PB AUDIO SIGNAL LINE
- REC AUDIO SIGNAL LINE



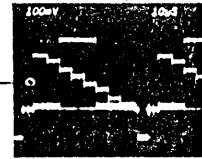
FILTER IN (PB)



FILTER IN (REC)



Y IN (PB)



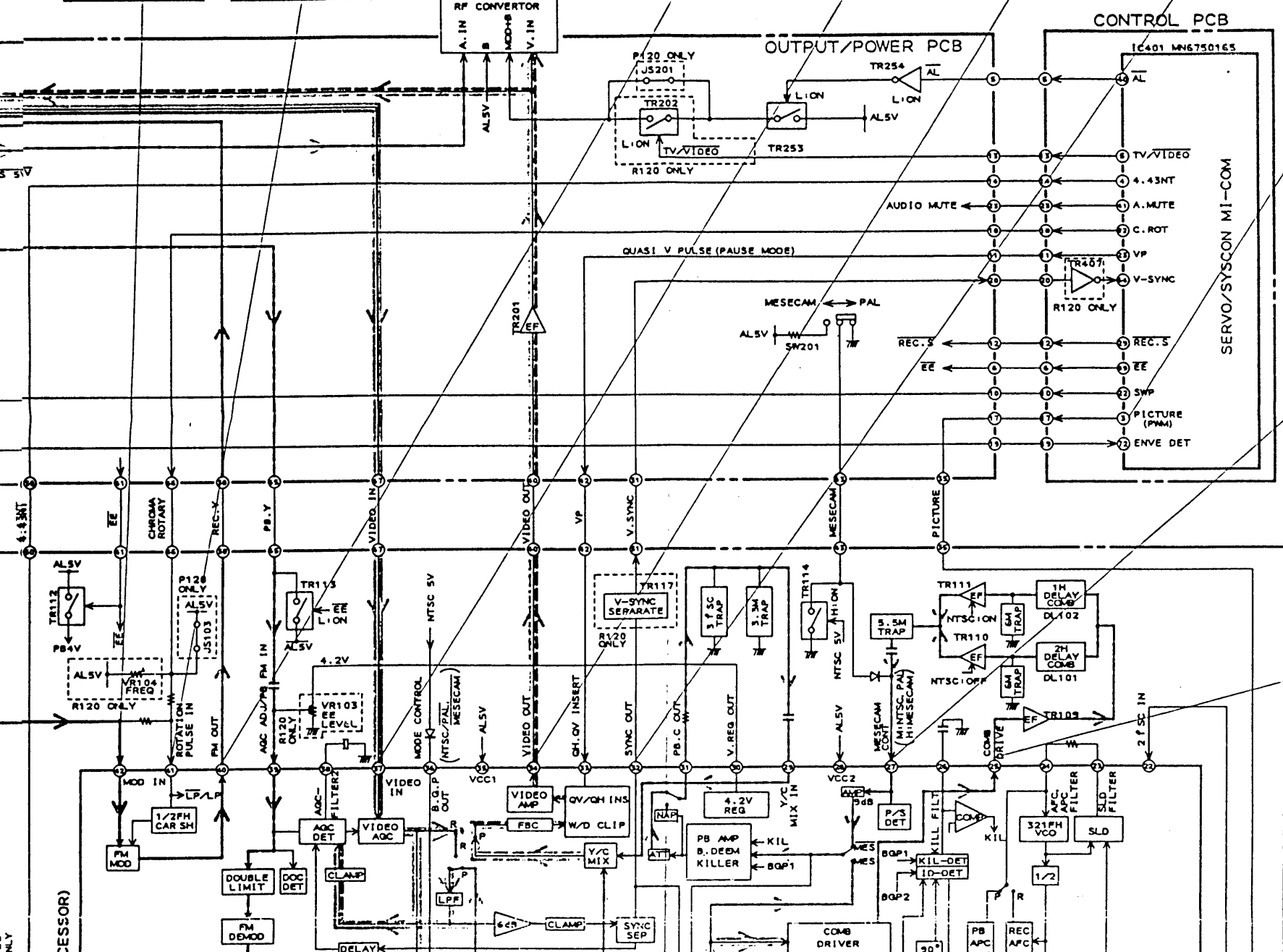
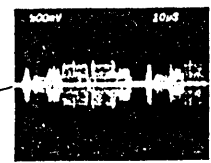
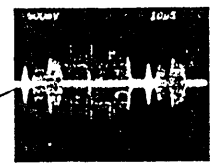
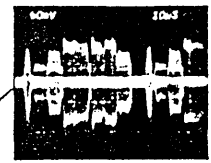
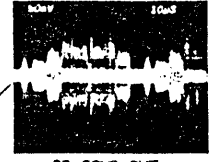
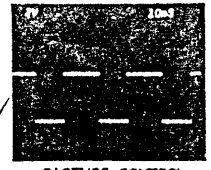
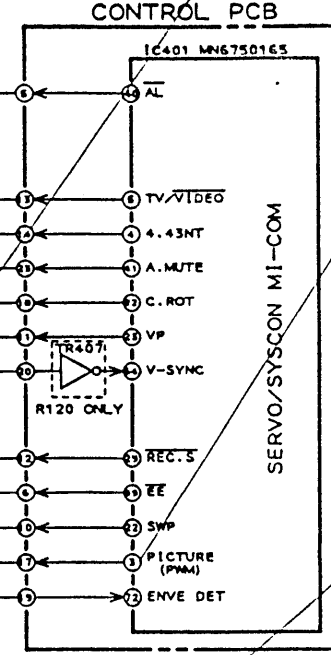
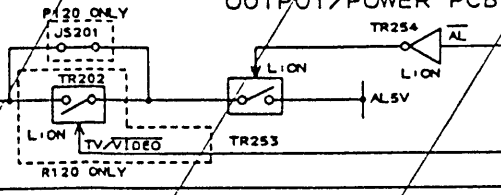
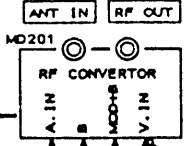
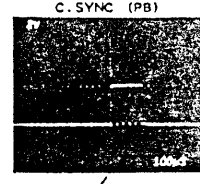
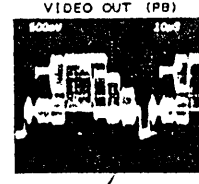
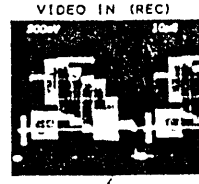
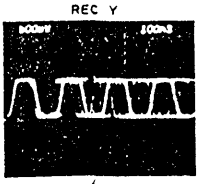
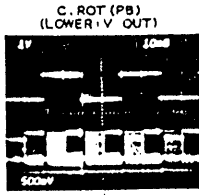
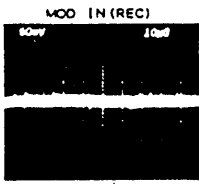
Y IN (REC)



MAIN EMPHASIS OUT (REC)

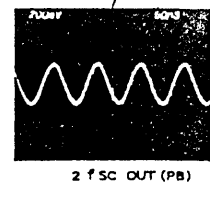
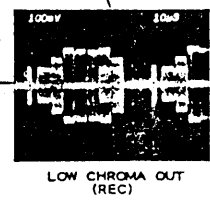
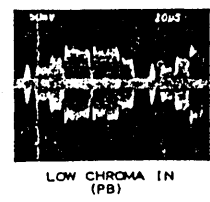
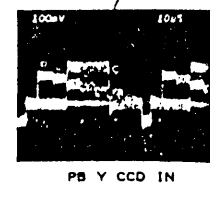
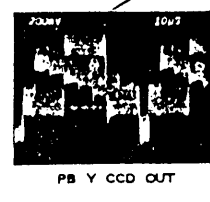
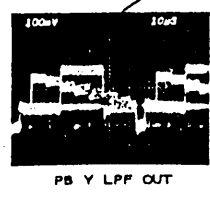
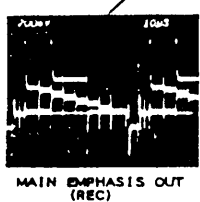
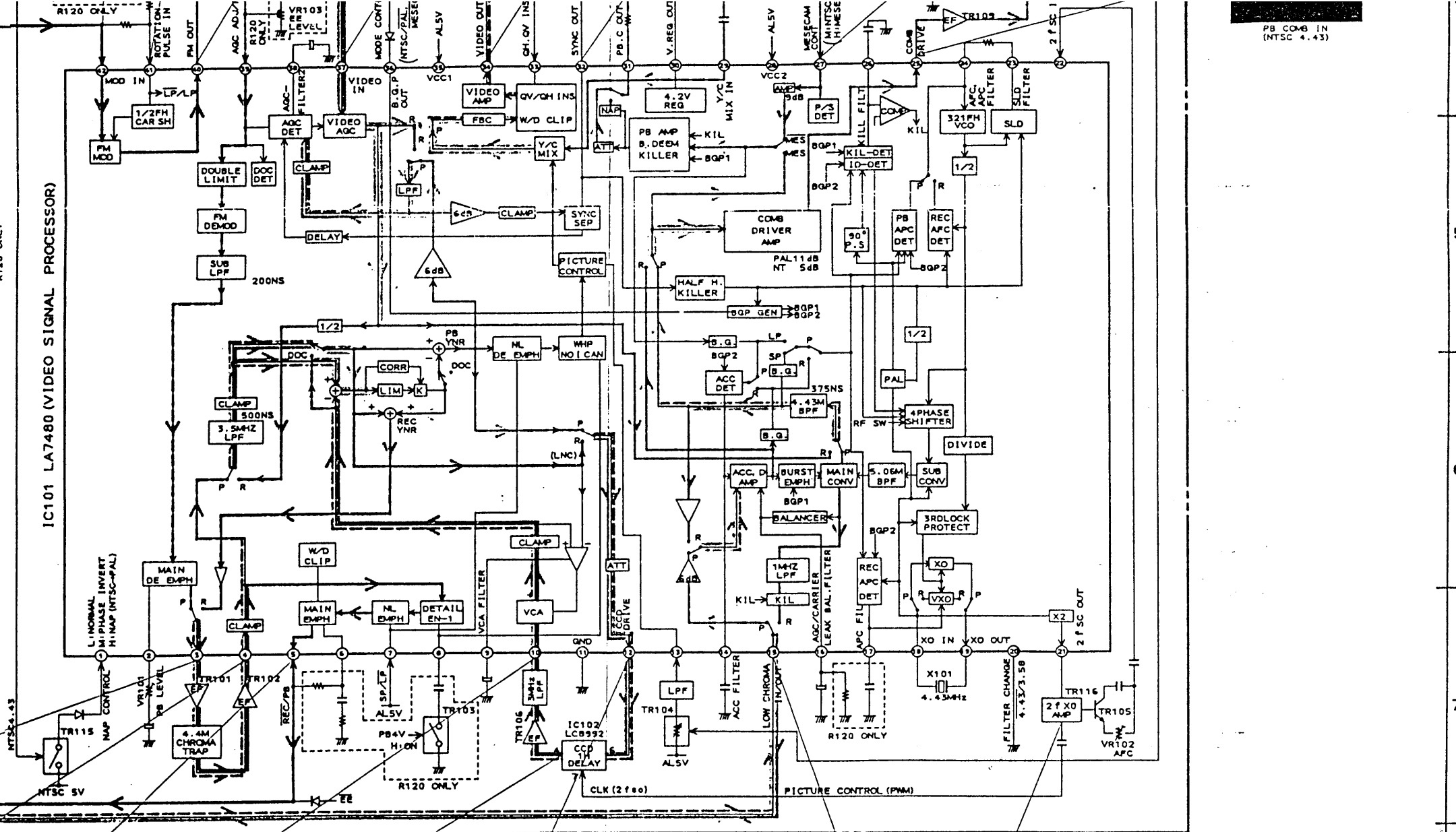


PB Y LFP OUT

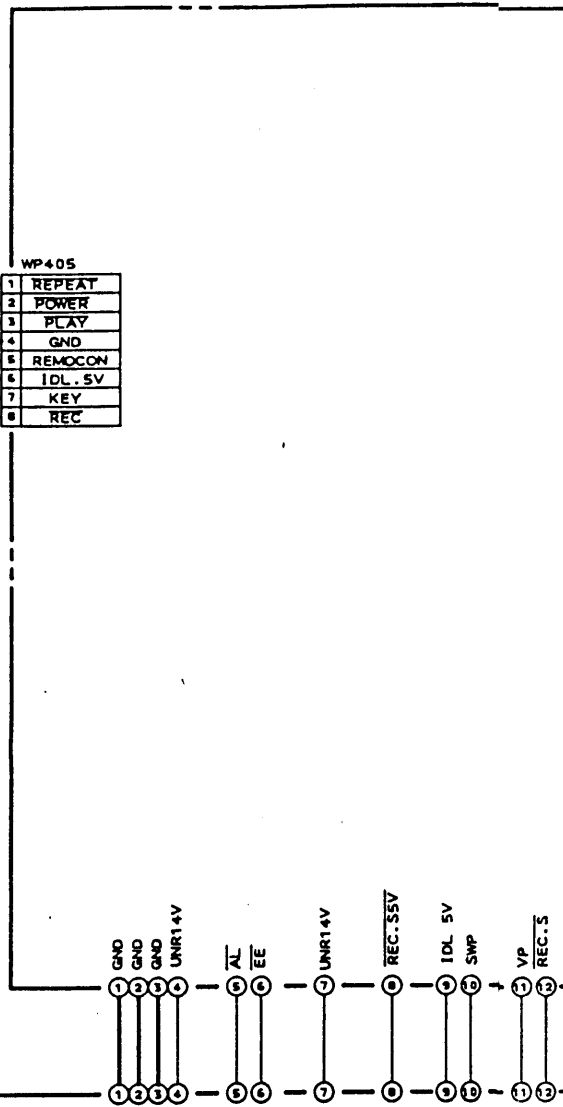
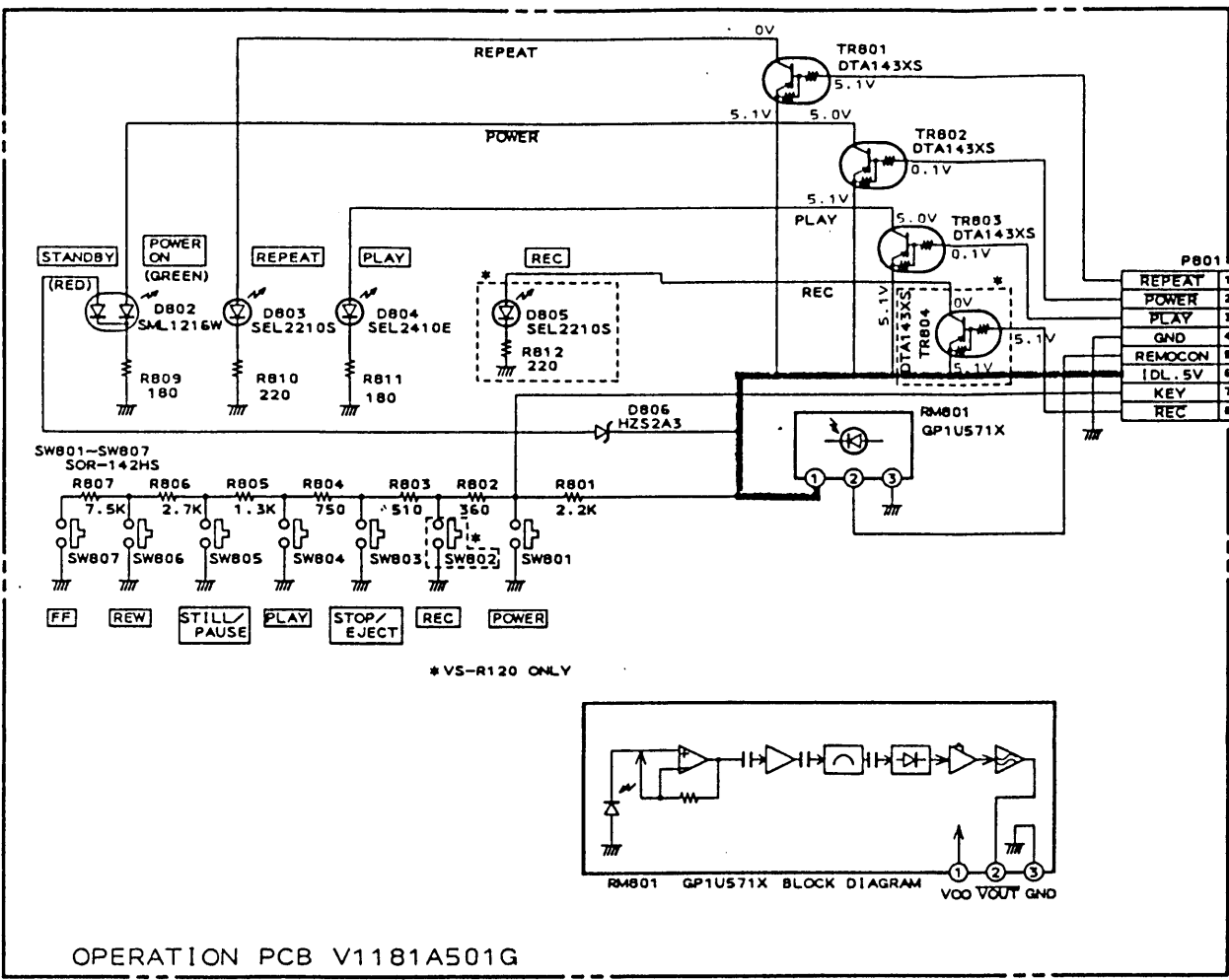


PB COMB IN  
(NTSC 4.43)

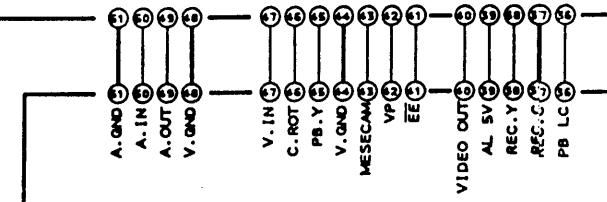
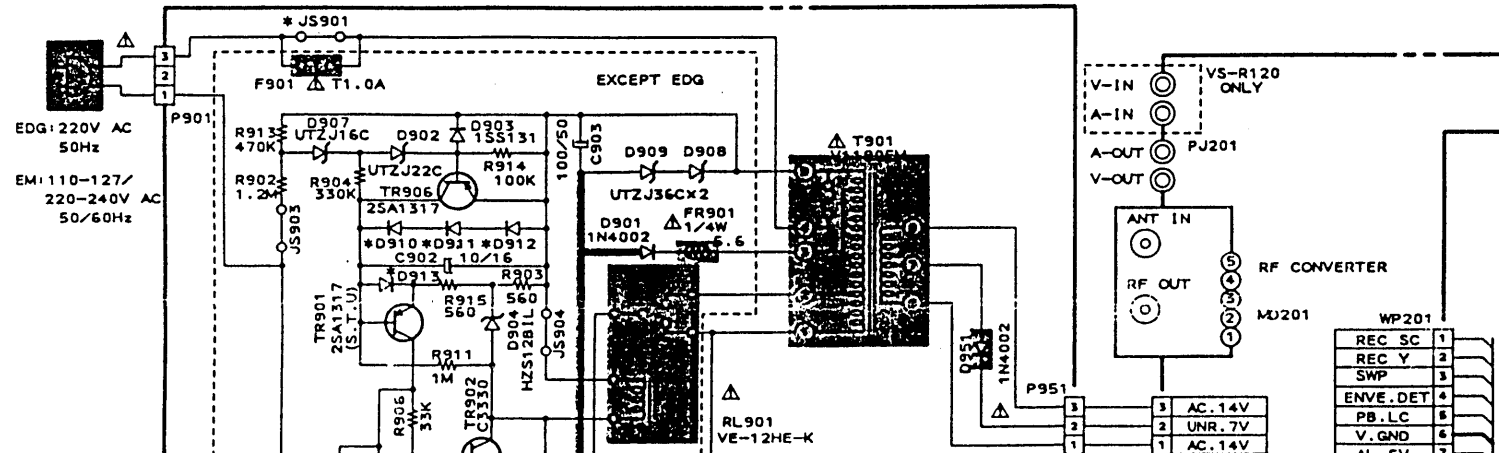
IC101 LA7480 (VIDEO SIGNAL PROCESSOR)

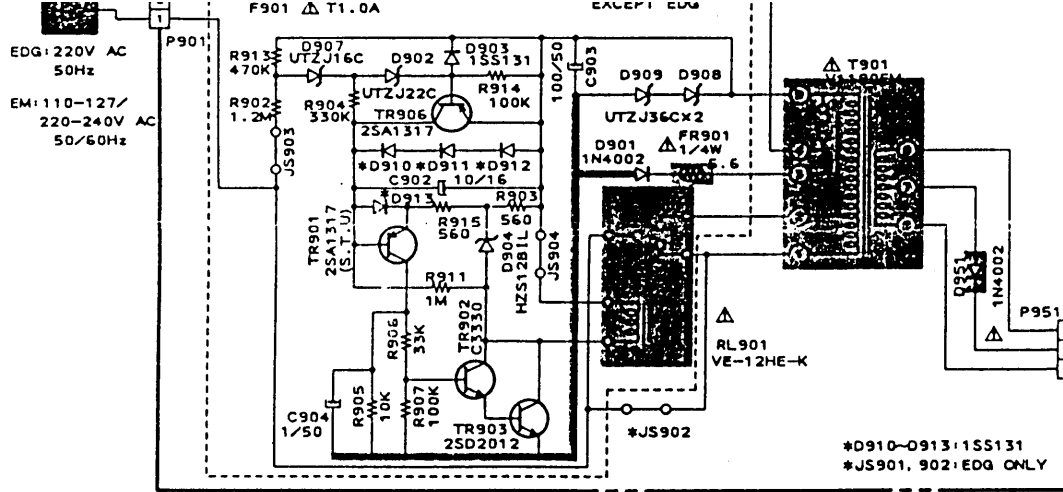


VS-R120EM  
VS-P120EM  
VIDEO & AUDIO  
BLOCK DIAGRAM  
No.2-2 V118152M  
A1



OPERATION PCB V1181A501G





POWER TRANS PCB V1181A501H

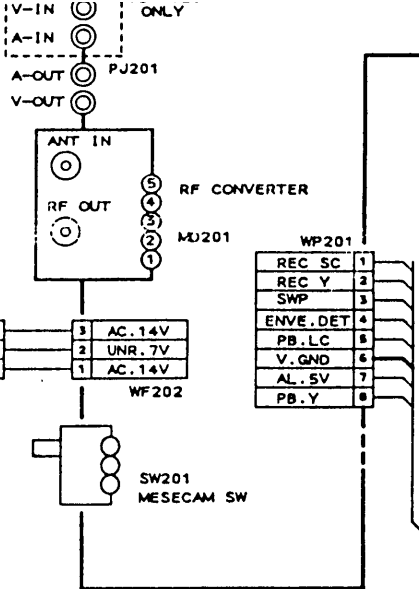
PRIMARY SECTION  
 \*INDICATED VOLTAGES WERE MEASURED DURING STOP MODE.  
 (CONNECTED DC VOLTMETER'S GROUND TO THE TR903 EMITTER WHEN MEASURED)

|                |       | DC VOLTAGES   |               |               |
|----------------|-------|---------------|---------------|---------------|
|                |       | B             | C             | E             |
| AC 110V (220V) | TR901 | 35.4V (41.8V) | 1.4V (0V)     | 36.0V (41.8V) |
|                | TR902 | 1.1V (0V)     | 0.5V (0V)     | 23.3V (41.8V) |
|                | TR903 | 23.3V (0V)    | 0.5V (41.8V)  | 0V (0V)       |
|                | TR906 | 36.5V (41.9V) | 35.4V (41.8V) | 36.6V (41.7V) |

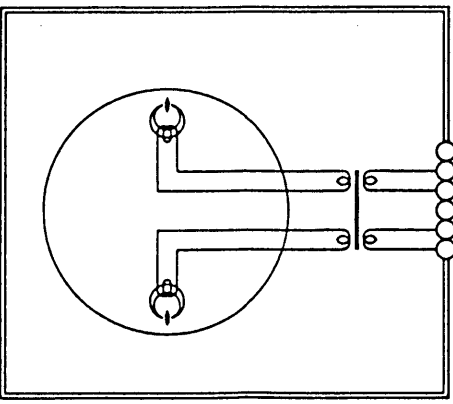
- B (POWER SUPPLY) LINE
- - - - - PB Y SIGNAL LINE
- REC Y SIGNAL LINE
- - - - - PB CHROMA SIGNAL LINE
- REC CHROMA SIGNAL LINE

NOTE:  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu$ F (P-PF)  
 ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/W

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.  
 ( ) : REC MODE



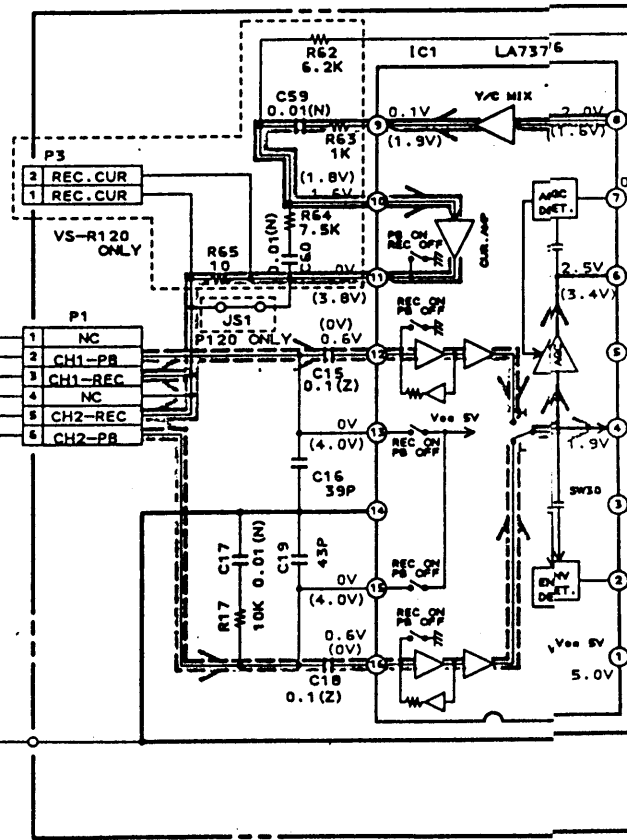
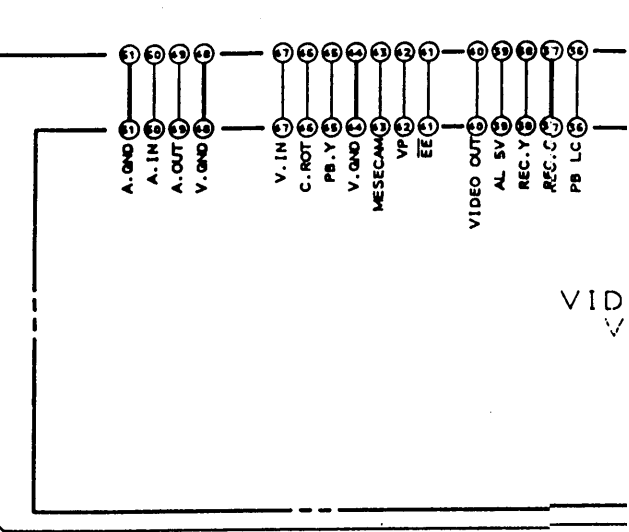
OUTPUT/POWER PCB V1181A501B



VIDEO HEAD DRUM BLOCK

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

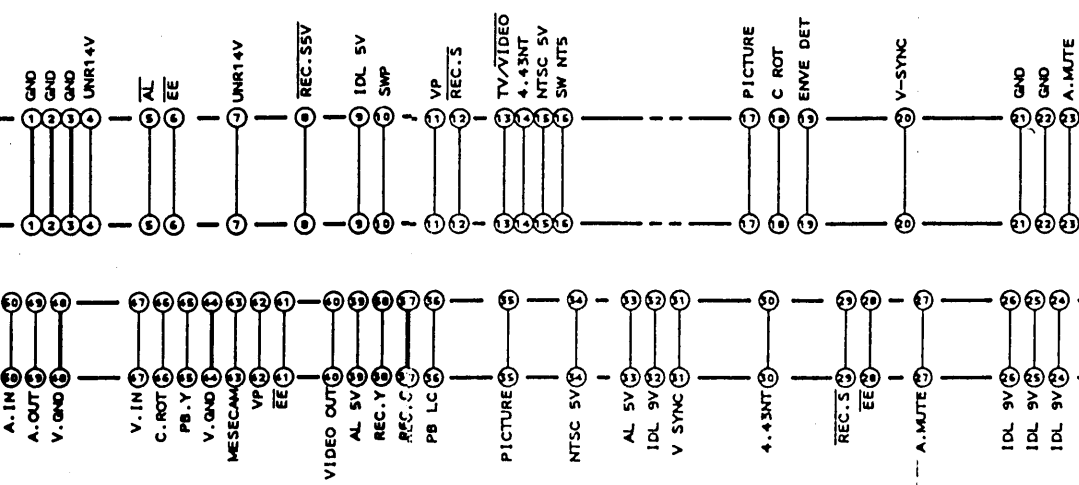
AVERTISSEMENT:  $\Delta$  ET  $\blacksquare$ , ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT



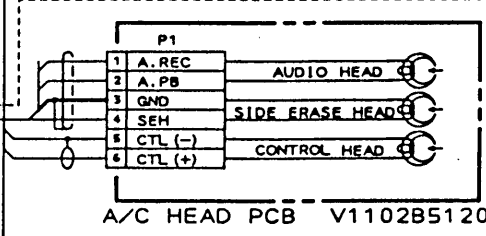
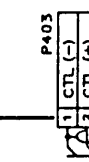
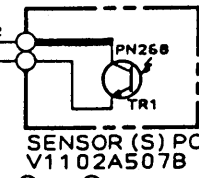
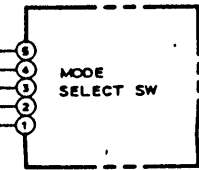
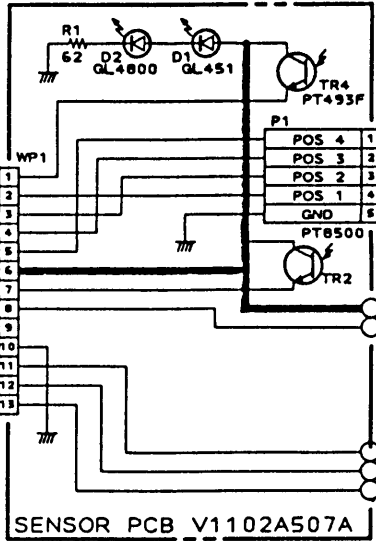
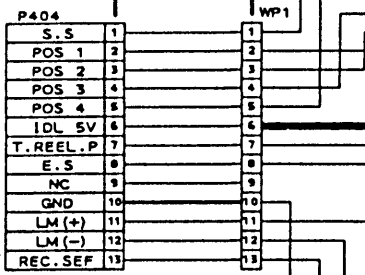
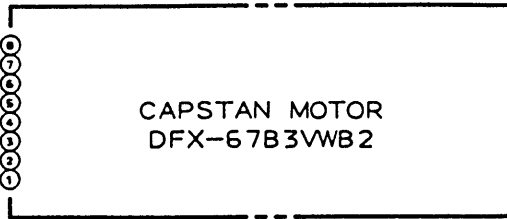
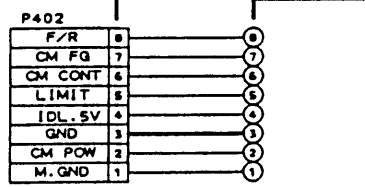
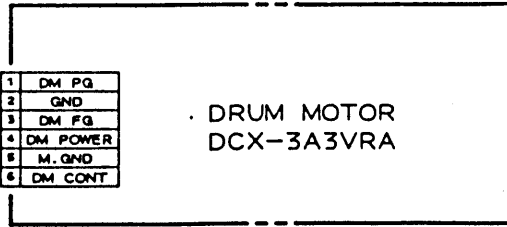
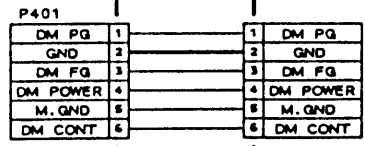
PRE AMP PCB V1181A501D

T  
ON  
SV

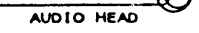
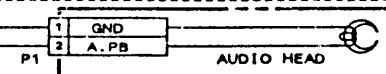
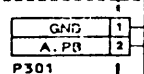
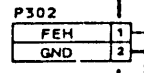
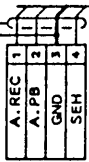
CONTROL PCB  
V1181A501C



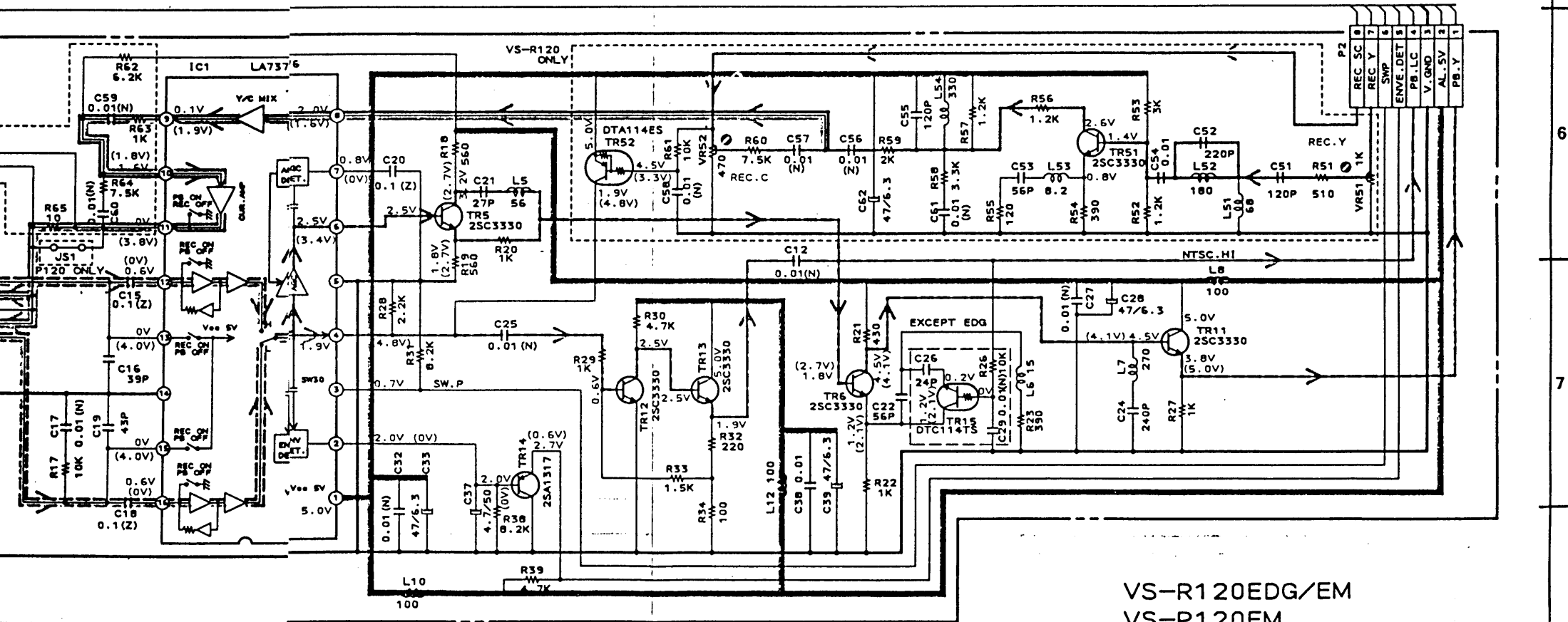
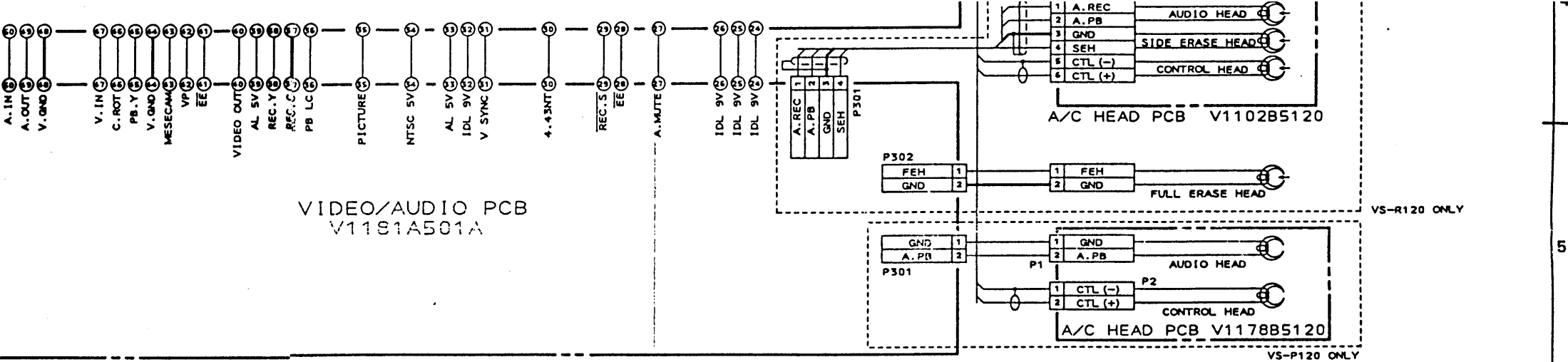
VIDEO/AUDIO PCB  
V1181A501A



A/C HEAD PCB V1102B5120

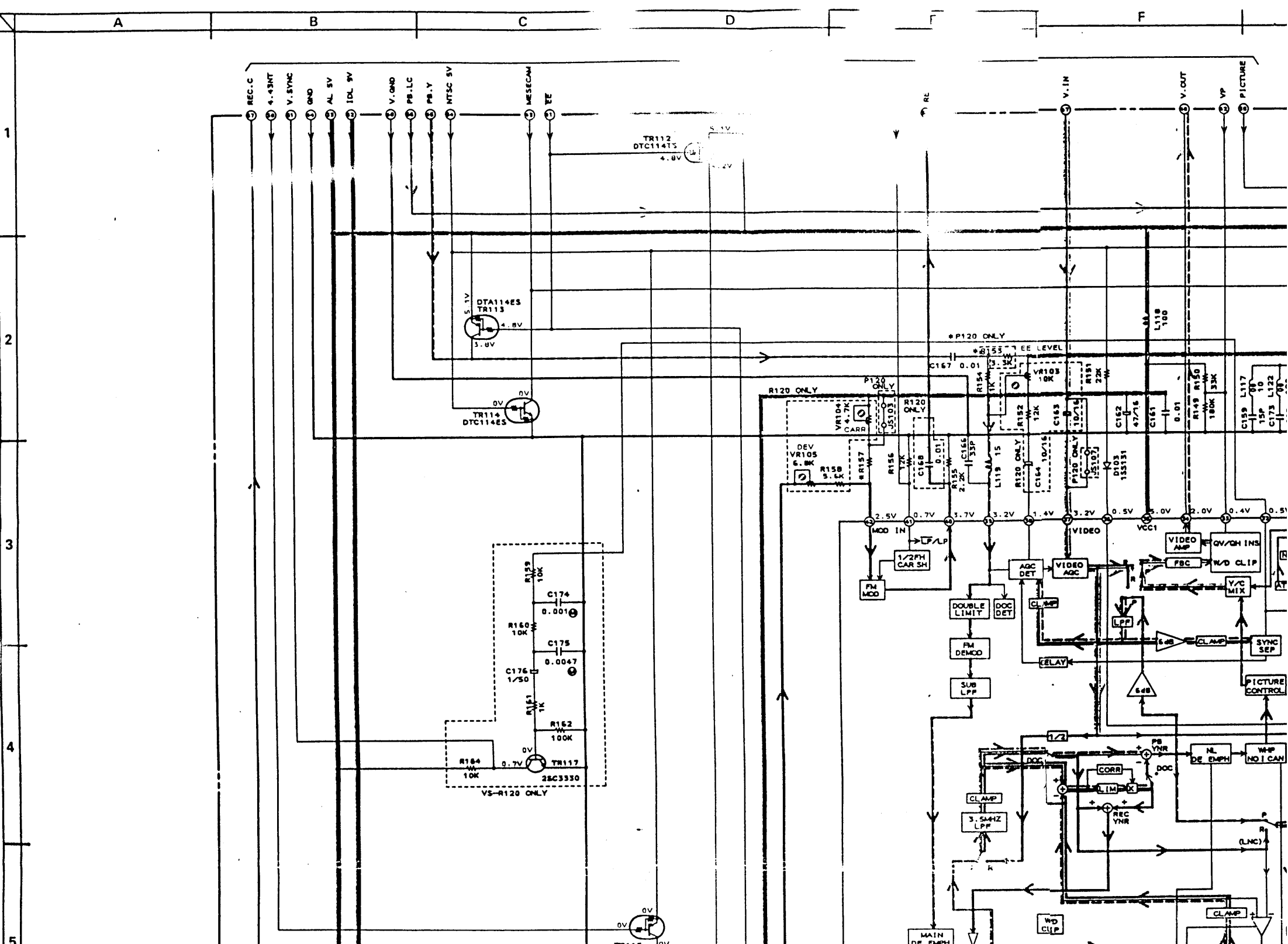


VS-R120 ONLY



IP PCB V1181A501D





A

B

C

D

F

1

2

3

4

5

REC.C

4.33MT

V.SYNC

GND

AL 5V

IDL 9V

V.GND

PB.LC

PB.Y

NTSC 5V

MESECAM

TE

TR112  
DTC11475

5.1V  
DTA114ES  
TR113

0V  
TR114  
DTC114ES

R159 10K  
C174 0.001  
R160 10K  
C175 0.0047  
C176 1/50  
R161 1K  
R162 100K  
R164 10K  
0.7V  
TR117  
28C3330  
VS-R120 ONLY

0V  
TR111  
DTC114ES

RE

V.IN

V.OUT

VP

PICTURE

\*P120 ONLY

\*D155 EE LEVEL

R120 ONLY

P120 ONLY

C167 0.01

R154 1K

R152 12K

C163 10/16

R181 22K

C162 47/16

C161 0.01

R149 R150 180K 33K

C159 L117 08 08 10 15P L122 001

DEV VR105 6.8K

R158 3.3K

R157 1K

R156 12K

C168 0.01

R155 2.2K

C166 1/33P

L119 15

R120 ONLY

C164 10/16

2.5V

0.7V

3.7V

3.2V

1.4V

3.2V

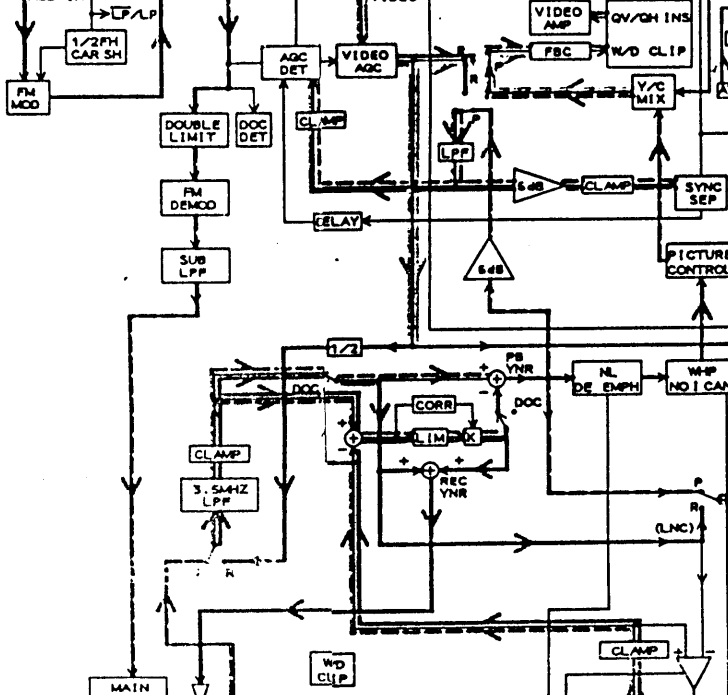
0.5V

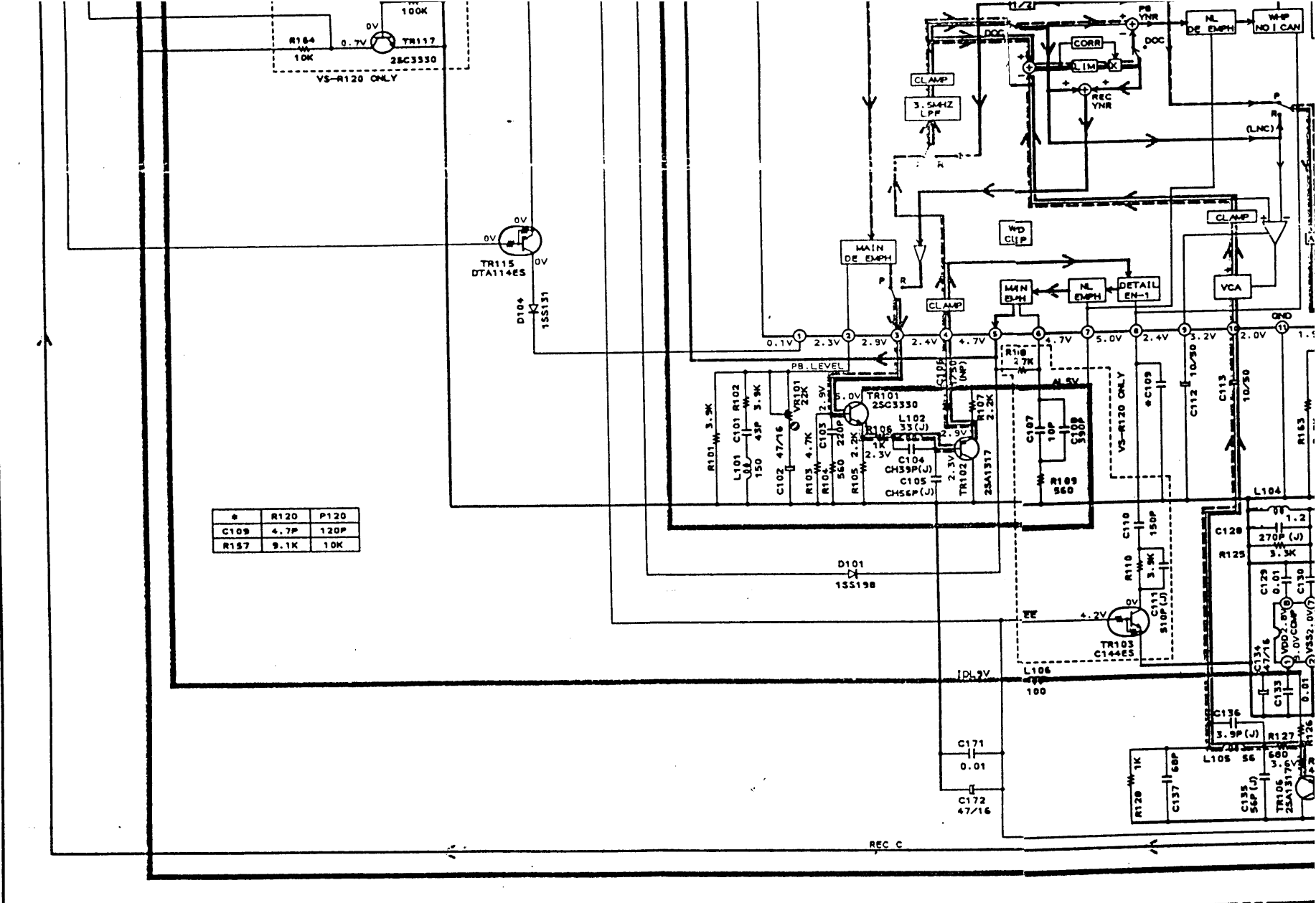
5.0V

2.0V

0.4V

0.5V

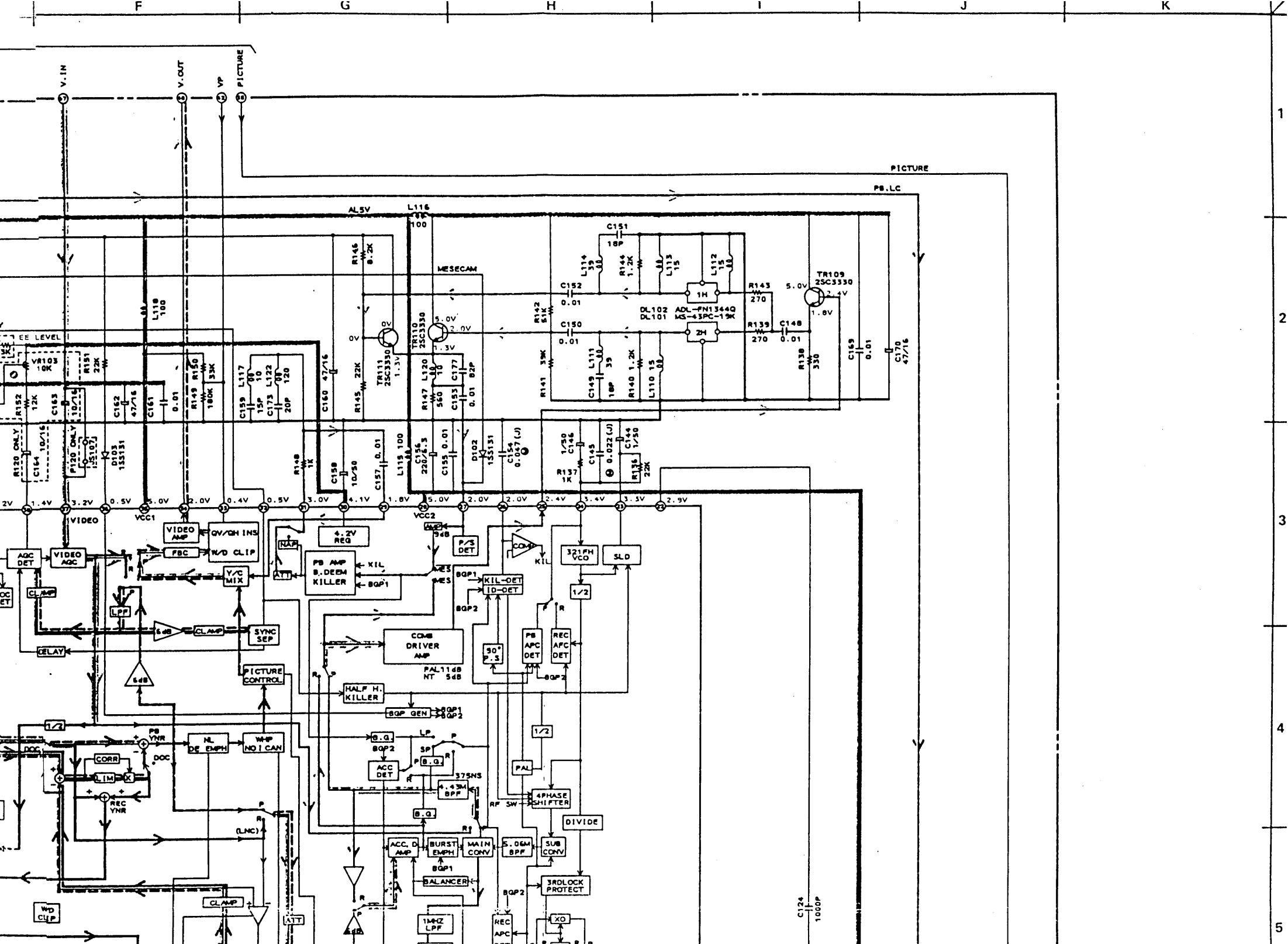


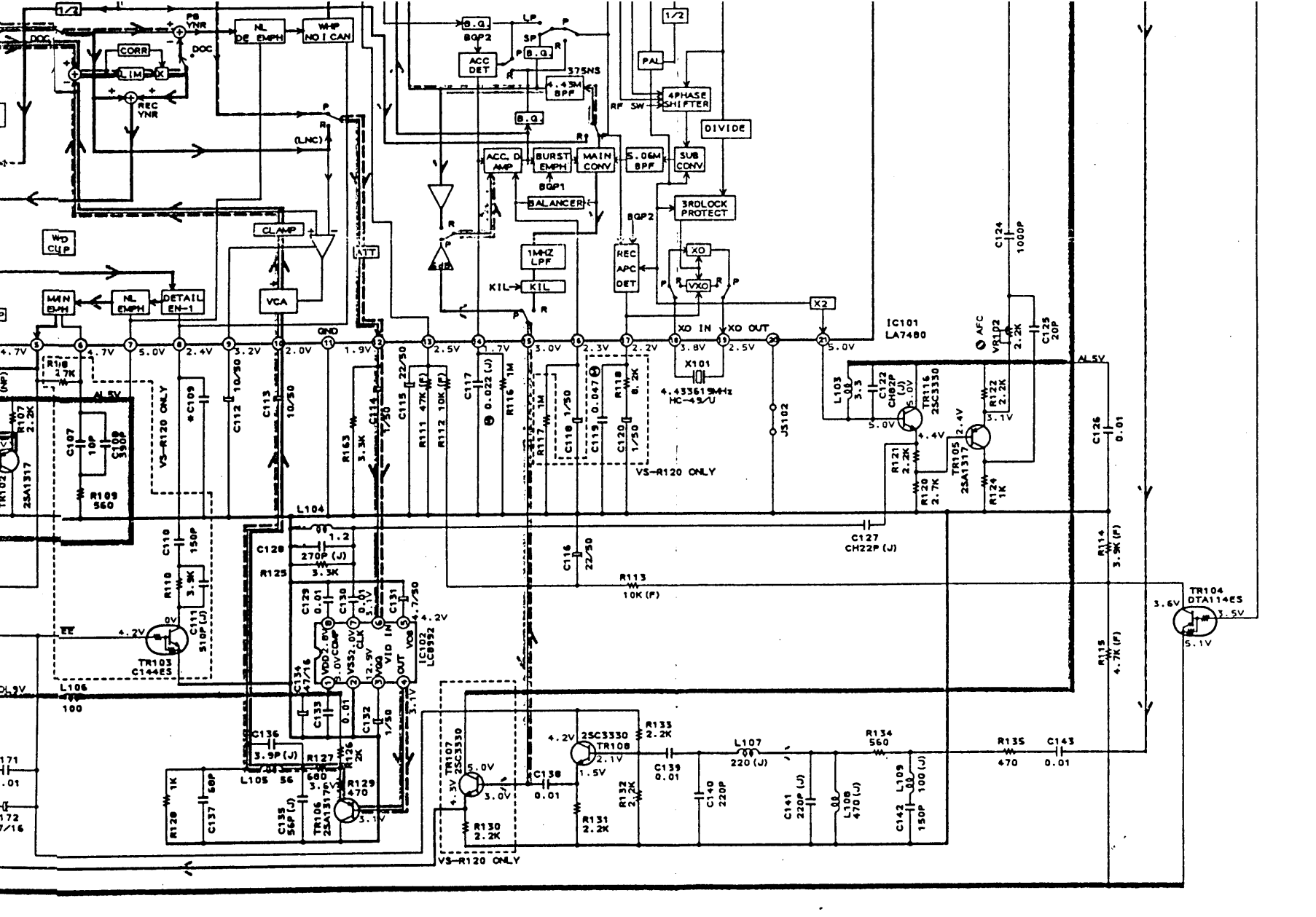


|      |      |      |
|------|------|------|
| *    | R120 | P120 |
| C109 | 4.7P | 120P |
| R157 | 9.1K | 10K  |

VIDEO/AUDIO PCB V1181A501A

- B (POWER SUPPLY) LINE
- - - - - PB Y SIGNAL LINE
- REC Y SIGNAL LINE
- - - - - PB CHROMA SIGNAL LINE
- REC CHROMA SIGNAL LINE





INDICATED VOLTAGES WERE MEASURED DURING PB MODE. (TAPE USED/PAL RECORDED TAPE)

NOTE:  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu$ F (P-PF)  
 ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/W  
 ALL INDUCTOR IN  $\mu$ H(K)  
 $\text{⊗}$  IS FILM CAPACITOR

VS-R120EM  
 VS-P120EM  
 VIDEO/AUDIO (1/2)  
 SCHEMATIC DIAGRAM  
 No.6-2 V118102M  
 AO

A

B

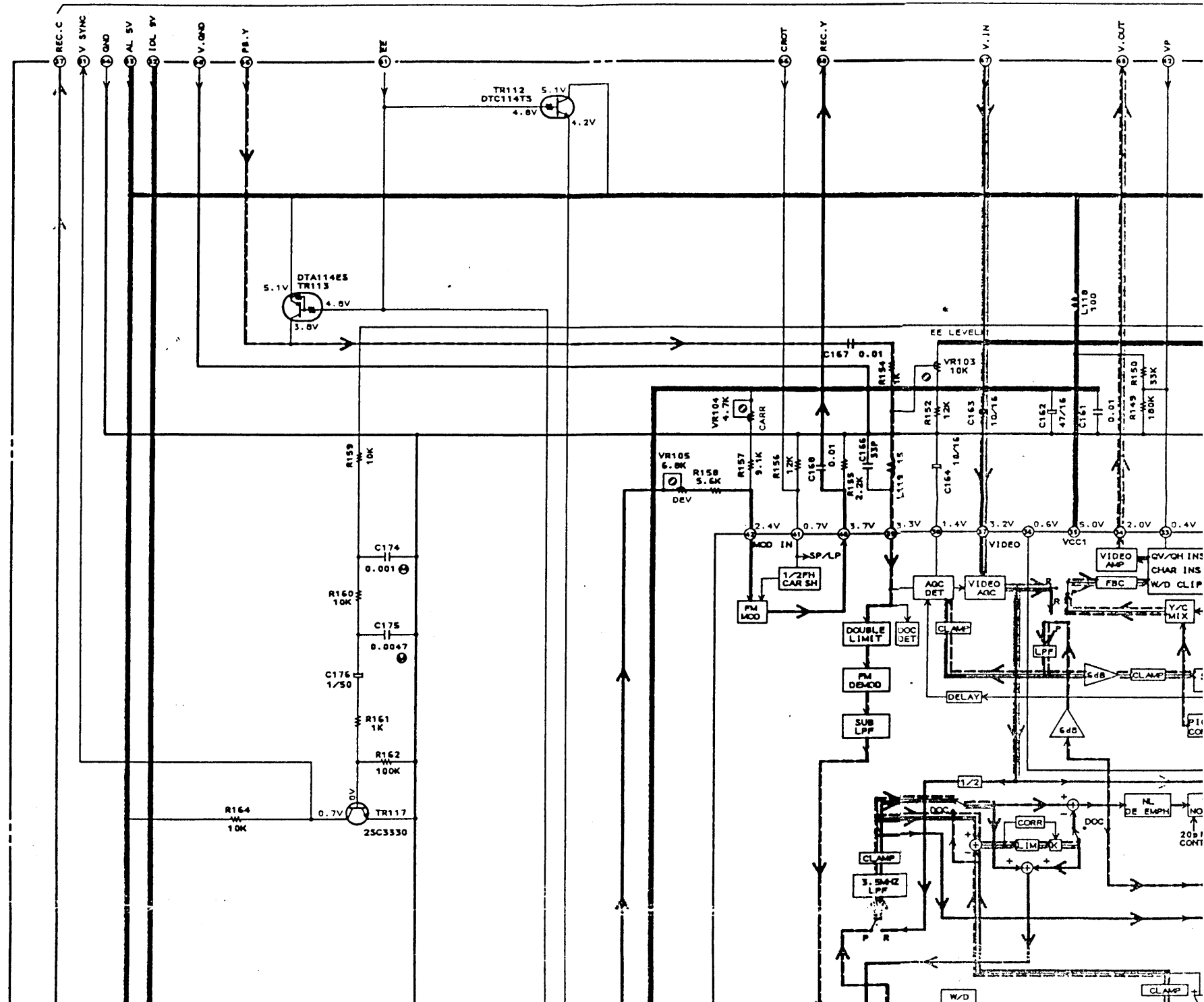
C

D

E

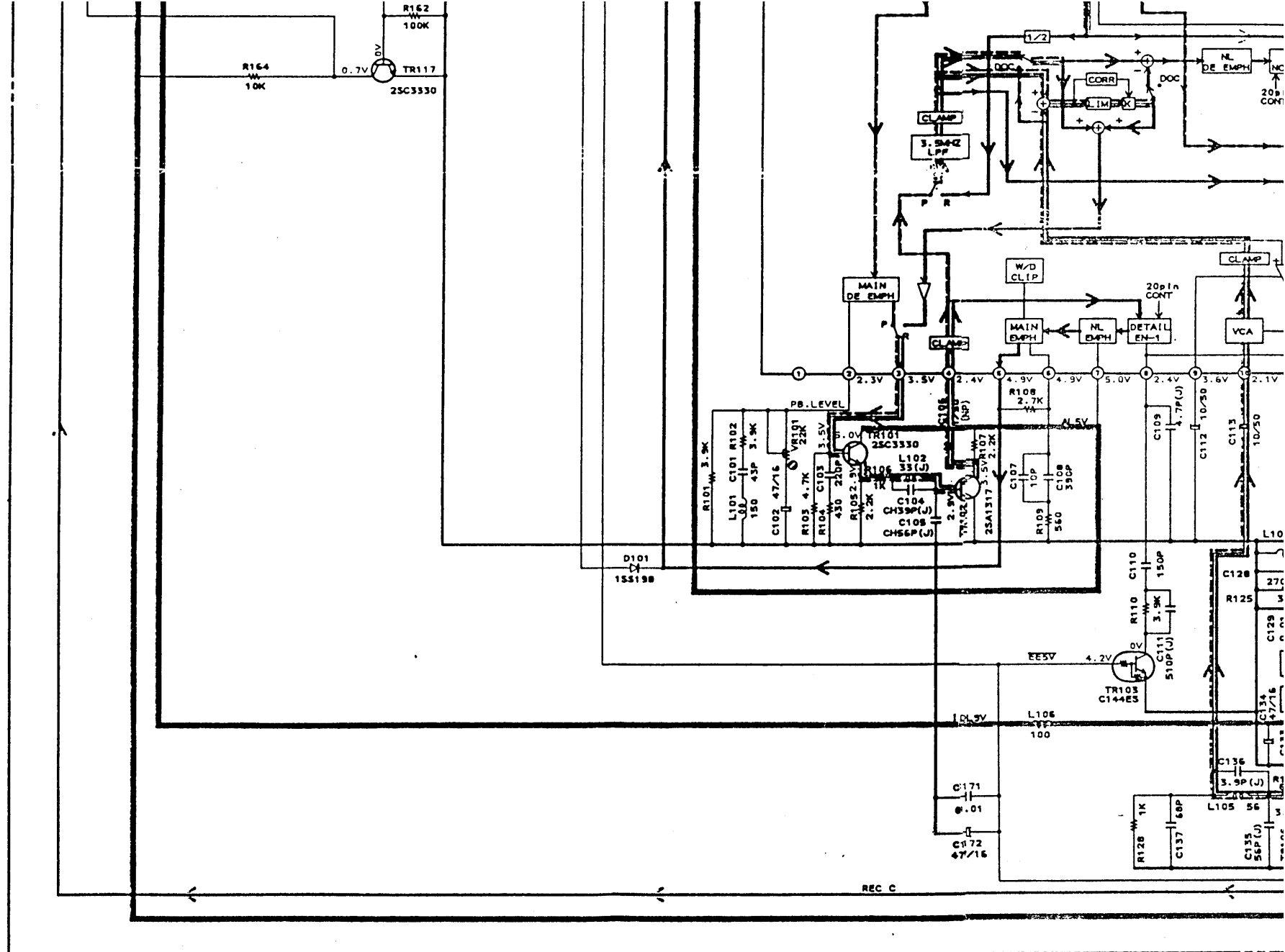
F

TO OUTPUT/POWER PCB



VIDEO/AUDIO PCB V1181A501A

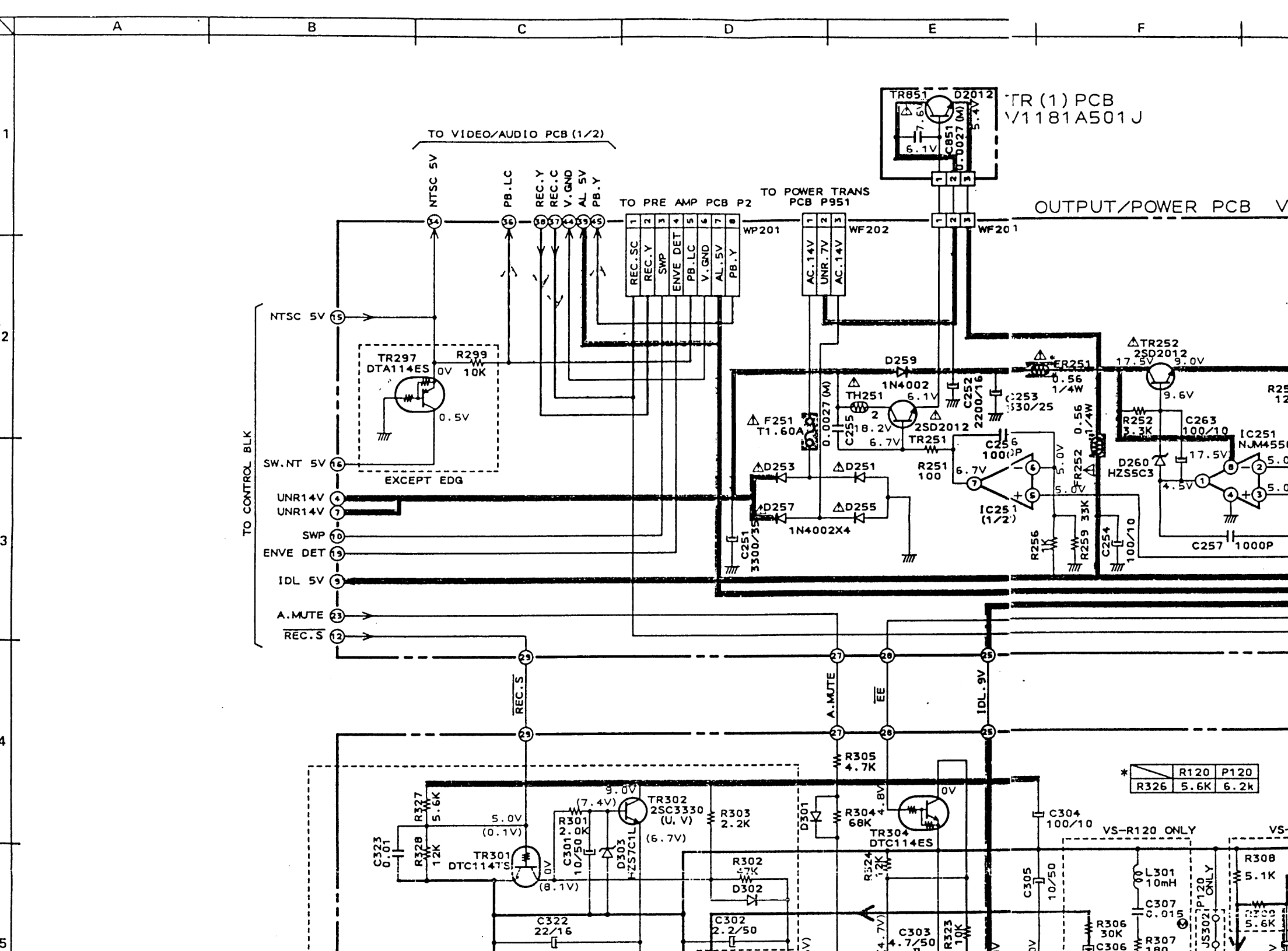
- B (POWER SUPPLY) LINE
- PB Y SIGNAL LINE
- REC Y SIGNAL LINE
- PB CHROMA SIGNAL LINE
- REC CHROMA SIGNAL LINE











TR (1) PCB  
V1181A501J

TO VIDEO/AUDIO PCB (1/2)

TO PRE AMP PCB P2

TO POWER TRANS PCB P951

OUTPUT/POWER PCB V

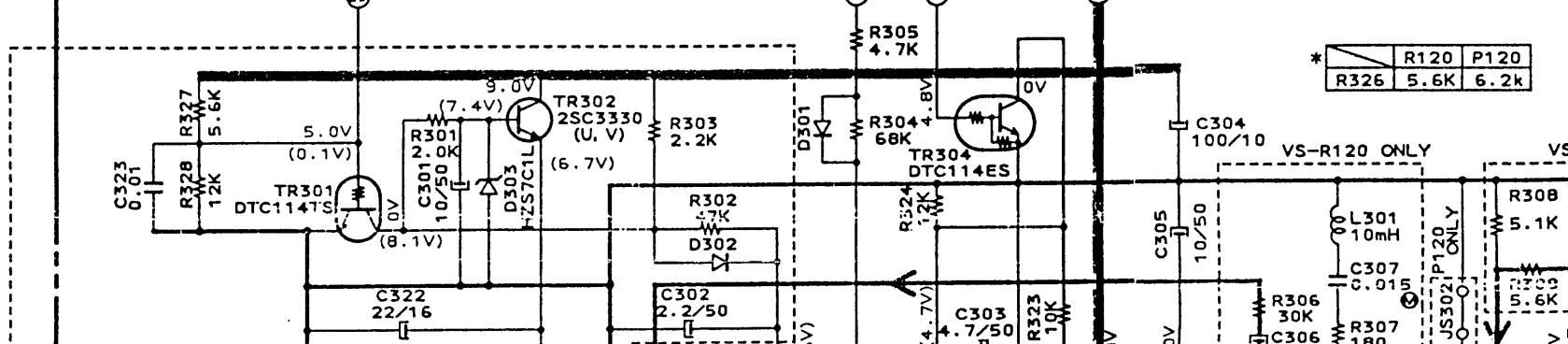
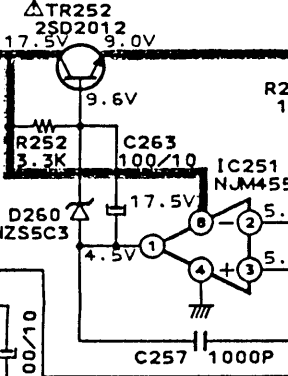
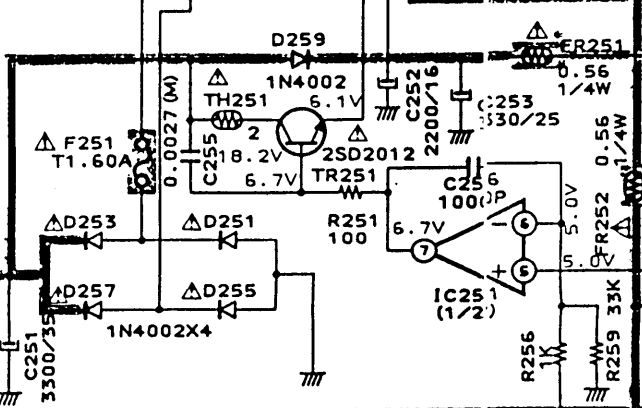
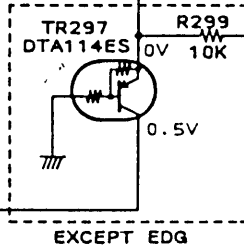
TO CONTROL BLK

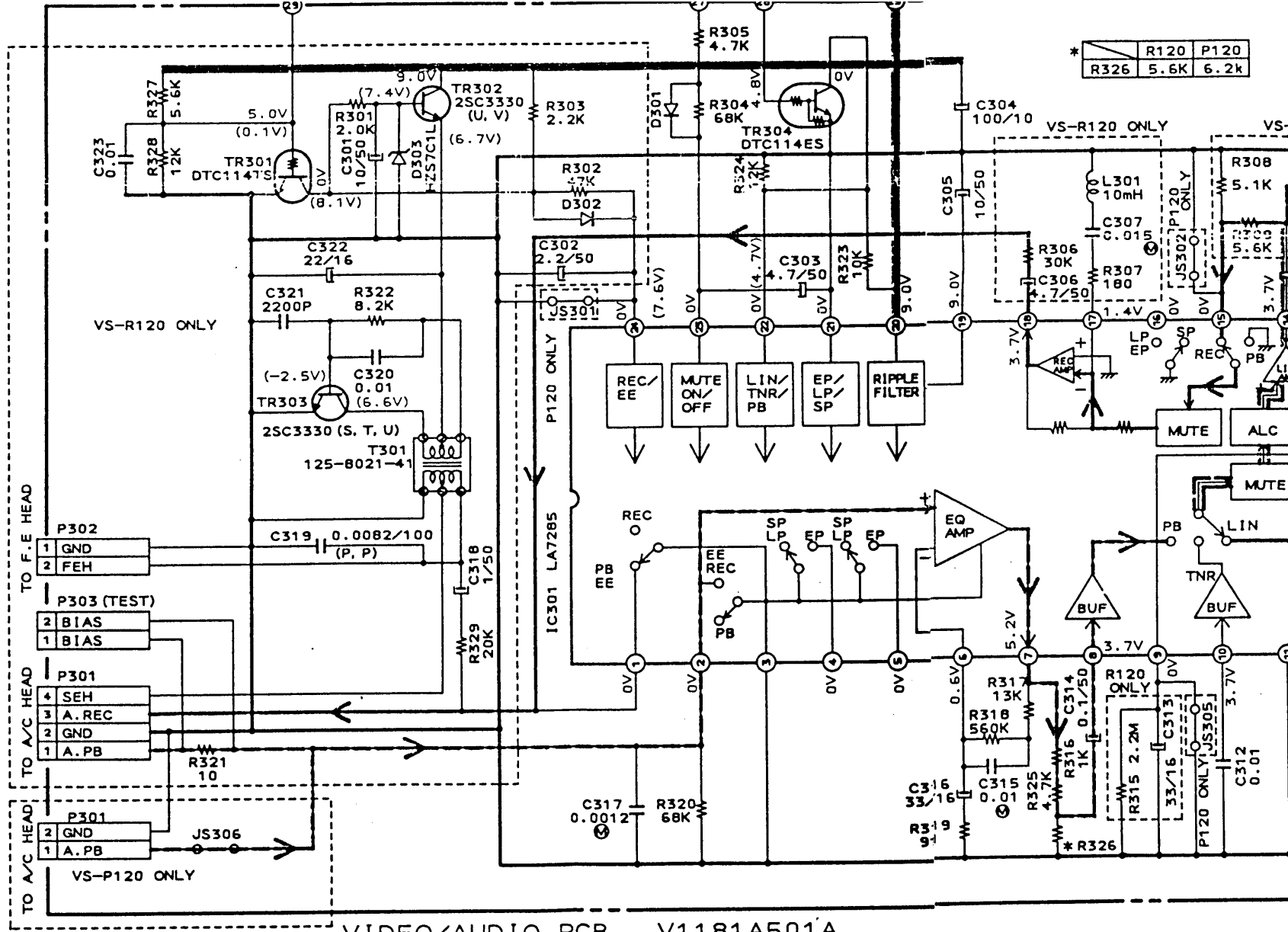
- NTSC 5V 15
- SW.NT 5V 16
- UNR14V 4
- UNR14V 7
- SWP 10
- ENVE DET 19
- IDL 5V 9
- A.MUTE 23
- REC.S 12

- REC.SC 1
- REC.Y 2
- SWP 3
- ENVE DET 4
- PB.LC 5
- V.GND 6
- AL.5V 7
- PB.Y 8

- AC.14V 1
- UNR.7V 2
- AC.14V 3

- WF201 1
- WF202 2
- WF201 3





VIDEO/AUDIO PCB V1181A501A

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.  
( ) : REC MODE

- B (POWER SUPPLY) LINE
- PB AUDIO SIGNAL LINE
- REC AUDIO SIGNAL LINE
- PB VIDEO SIGNAL LINE
- REC VIDEO SIGNAL LINE

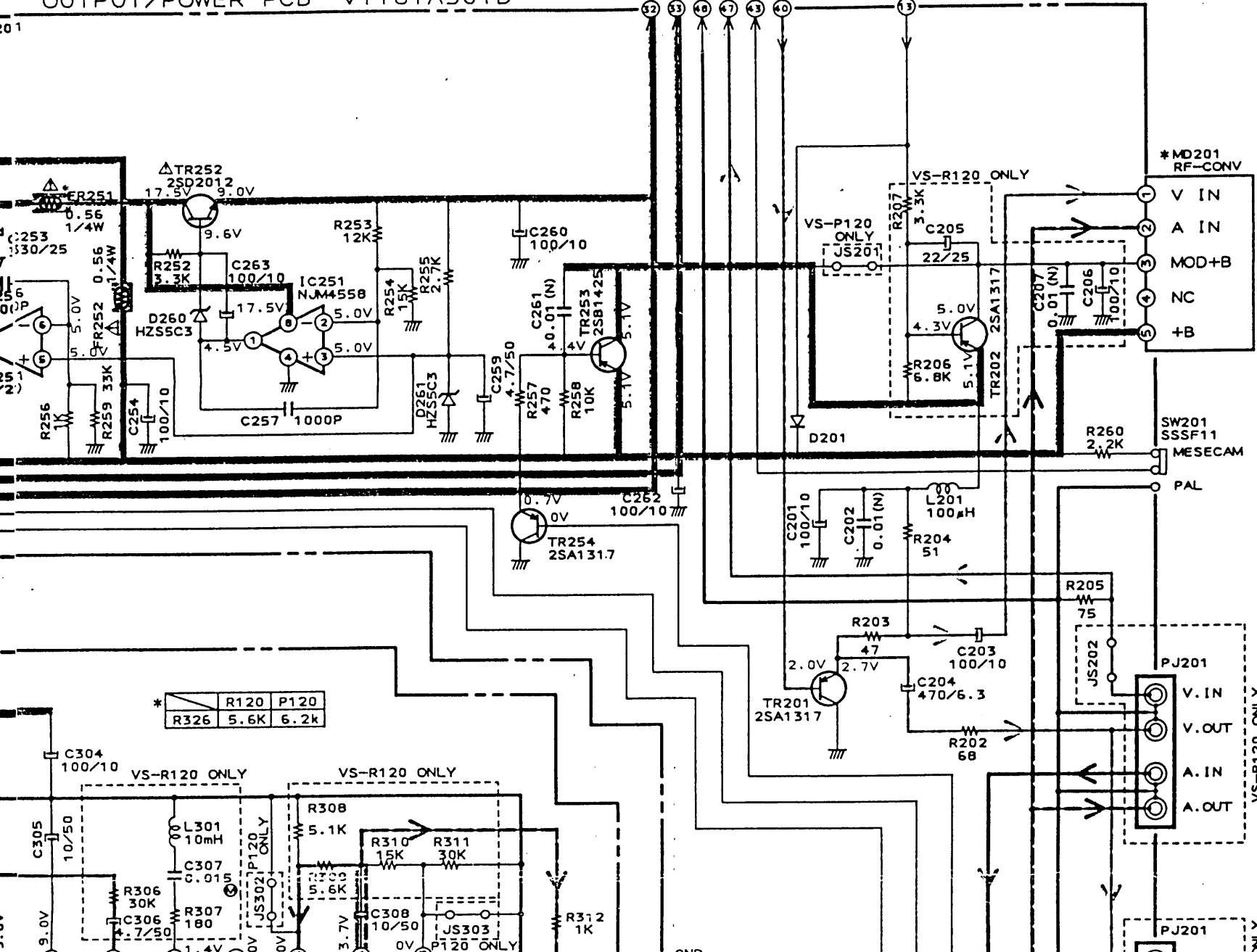
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL RESISTORS IN OHMS  
ALL CAPACITORS IN  $\mu$ F (P-PF)  
ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/W  
ALL DIODES ARE 1SS131T  
Ⓞ IS FILM CAPASITOR

TR (1) PCB  
V1181A501J

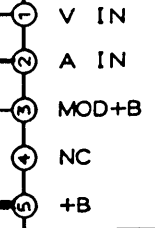
TO VIDEO/AUDIO PCB (1/2) TO CONTROL PCB

OUTPUT/POWER PCB V1181A501B

|                        |              |
|------------------------|--------------|
| * MD201 RF-CONV        |              |
| R120EM<br>P120EM (Y2)  | YAA21-0921G  |
| R120EDG<br>P120EM (Y1) | MDF33-UD360P |



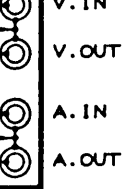
\* MD201 RF-CONV



SW201 SSSF11 MESECAM

PAL

PJ201



PJ201

|           |      |
|-----------|------|
| * R120    | P120 |
| R326 5.6K | 6.2k |

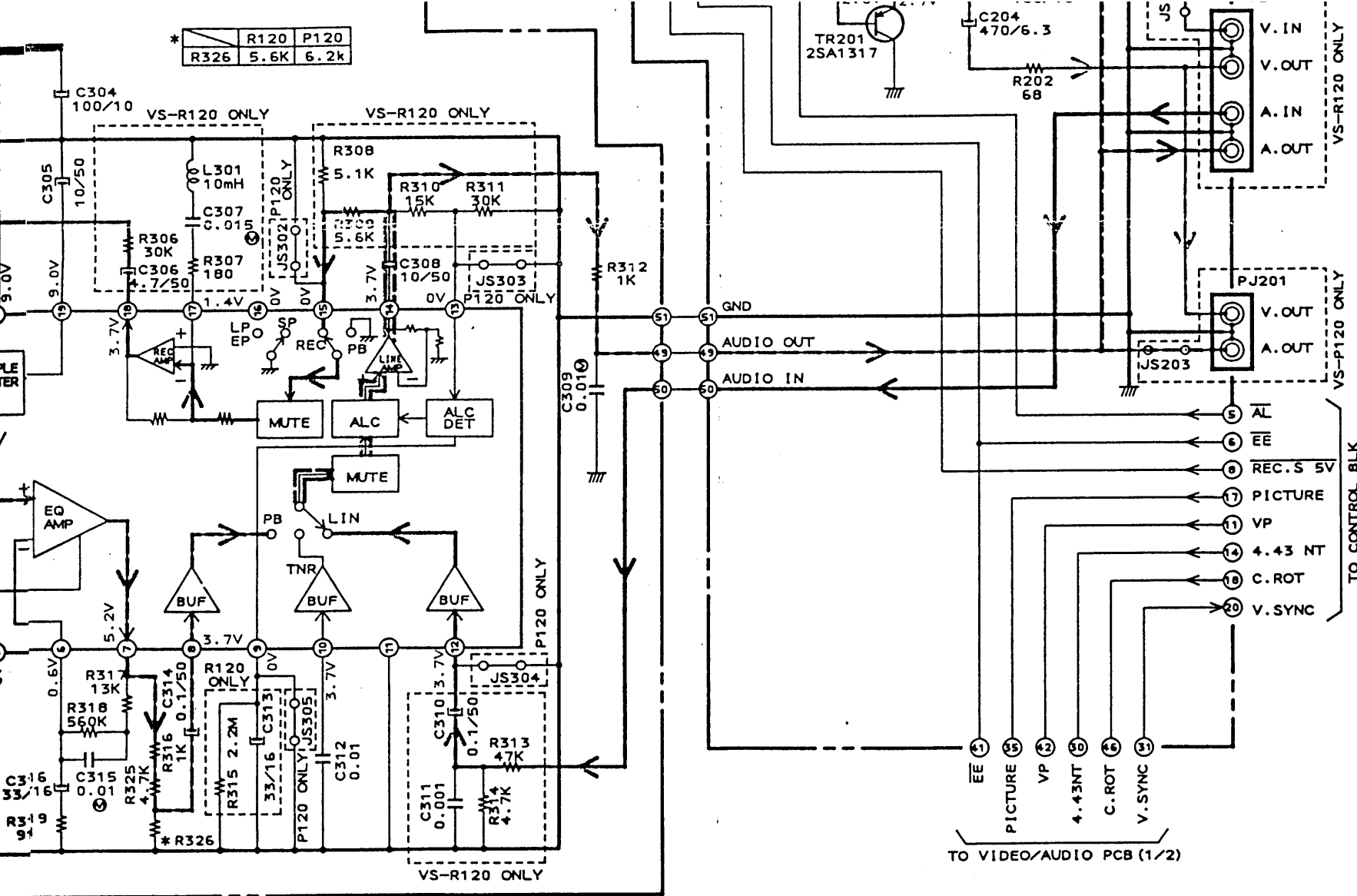
1

2

3

4

5

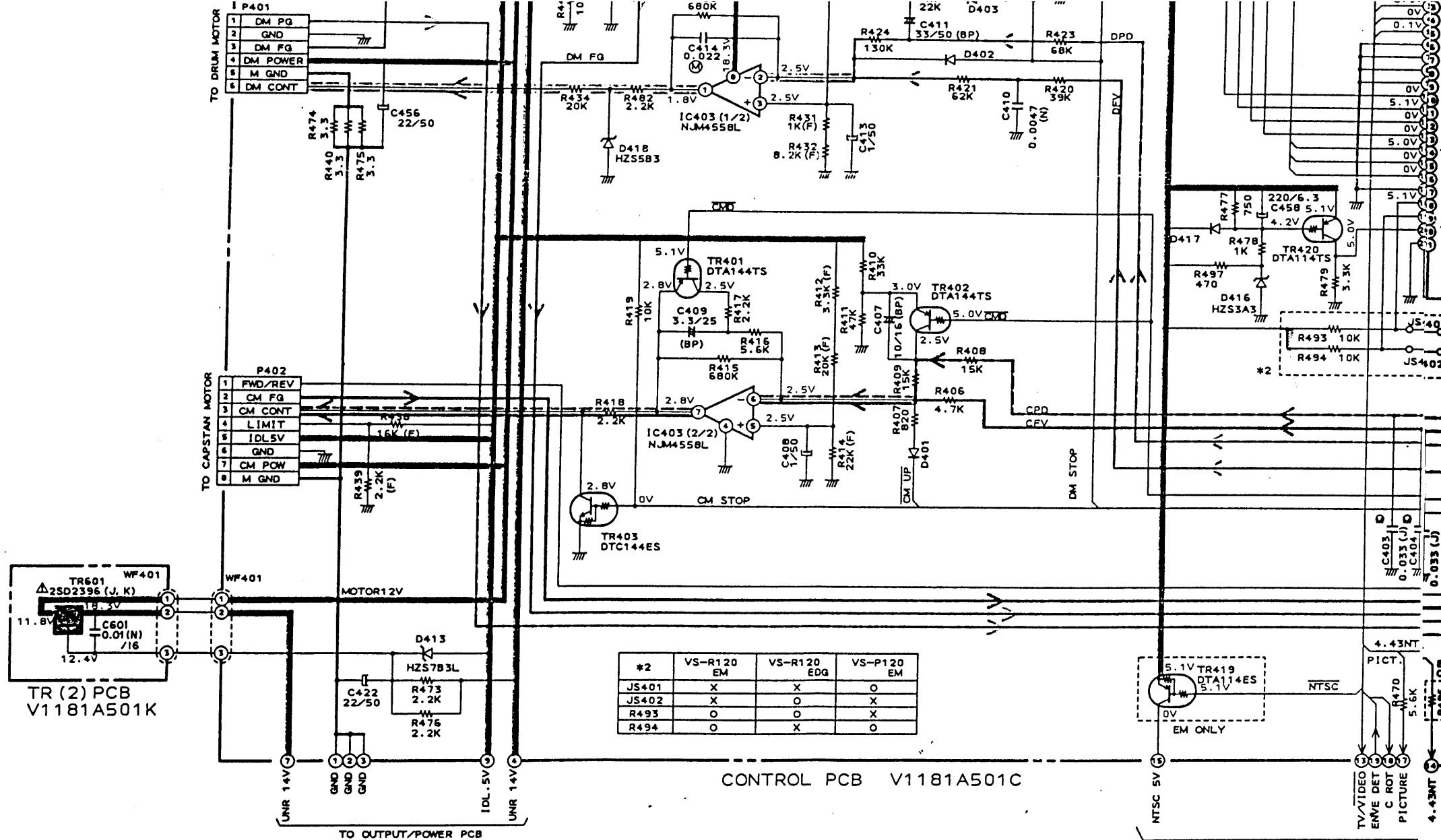


NOTE:  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu$ F (P=PF)  
 ALL ELECTROLYTIC CAPACITORS IN  $\mu$ F/WV  
 ALL DIODES ARE 1SS131T  
 $\text{\textcircled{C}}$  IS FILM CAPASITOR

WARNING:  $\Delta$  AND  $\blacksquare$  INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS  
 AVERTISSEMENT:  $\Delta$  ET  $\blacksquare$  ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

VS-R120EDG/EM  
 VS-P120EM  
 OUTPUT/POWER &  
 VIDEO/AUDIO (2/2)  
 SCHEMATIC DIAGRAM  
 No.6-4 V118104M  
 A1

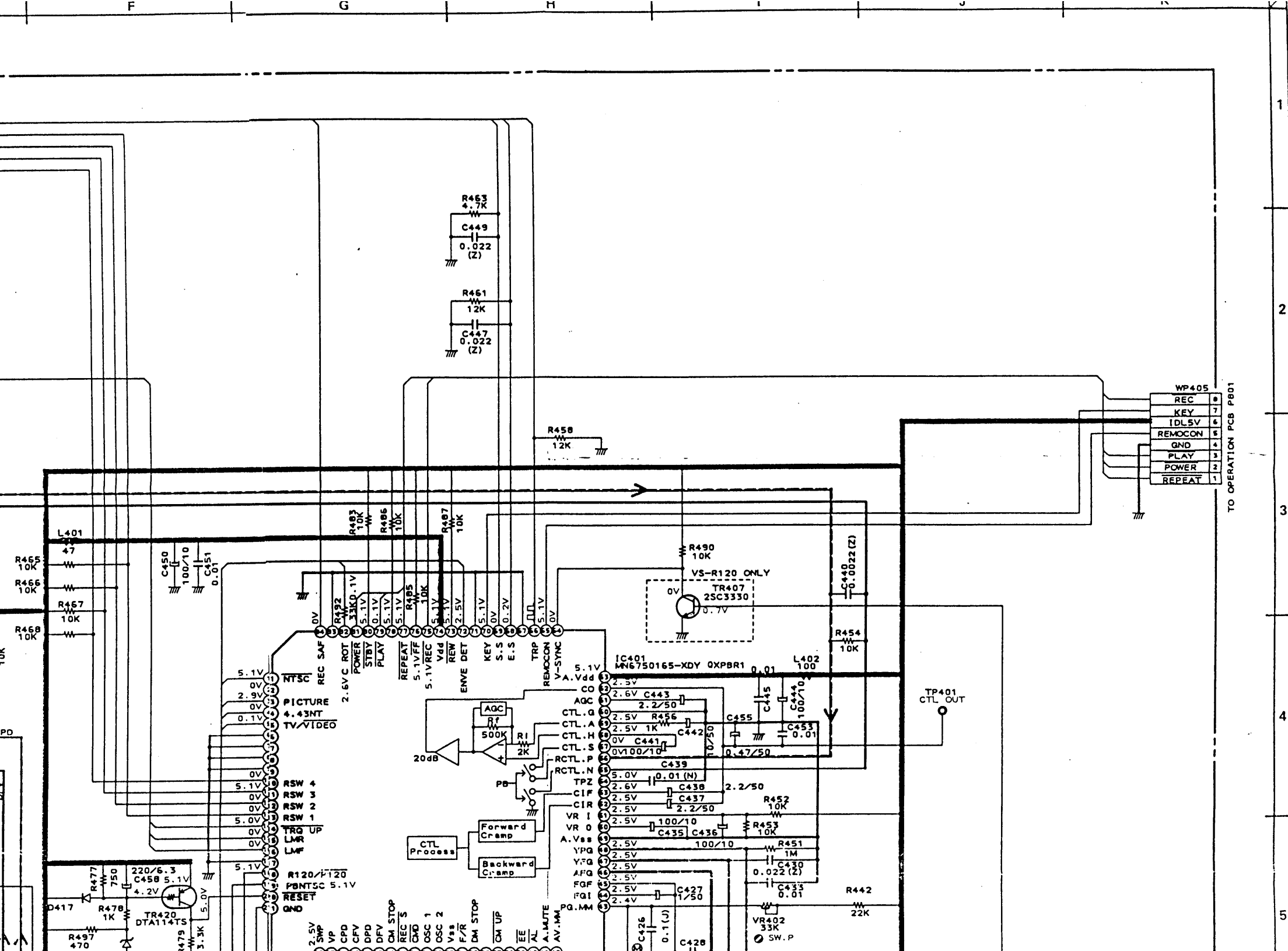


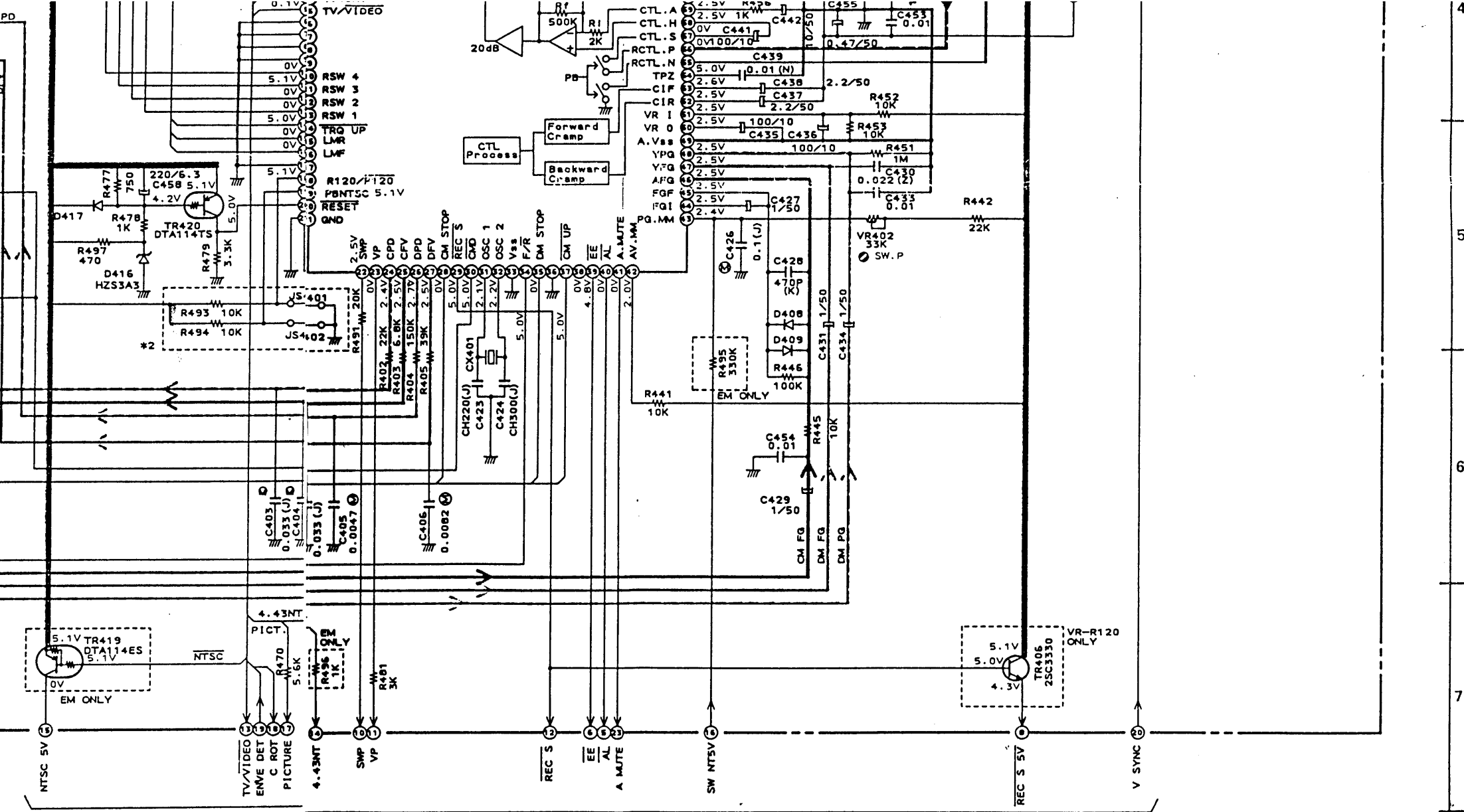


**—————** B (POWER SUPPLY) LINE  
**-----** CAPSTAN MOTOR PHASE CONTROL LINE  
**—————** CAPSTAN MOTOR SPEED CONTROL LINE  
**-----** DRUM MOTOR PHASE CONTROL LINE  
**—————** DRUM MOTOR SPEED CONTROL LINE

WARNING: **▲** AND **■** INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.  
 AVERTISSEMENT: **▲** ET **■**, ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

INDICATED VOLTAGES WERE MEASURED DURING PB 100



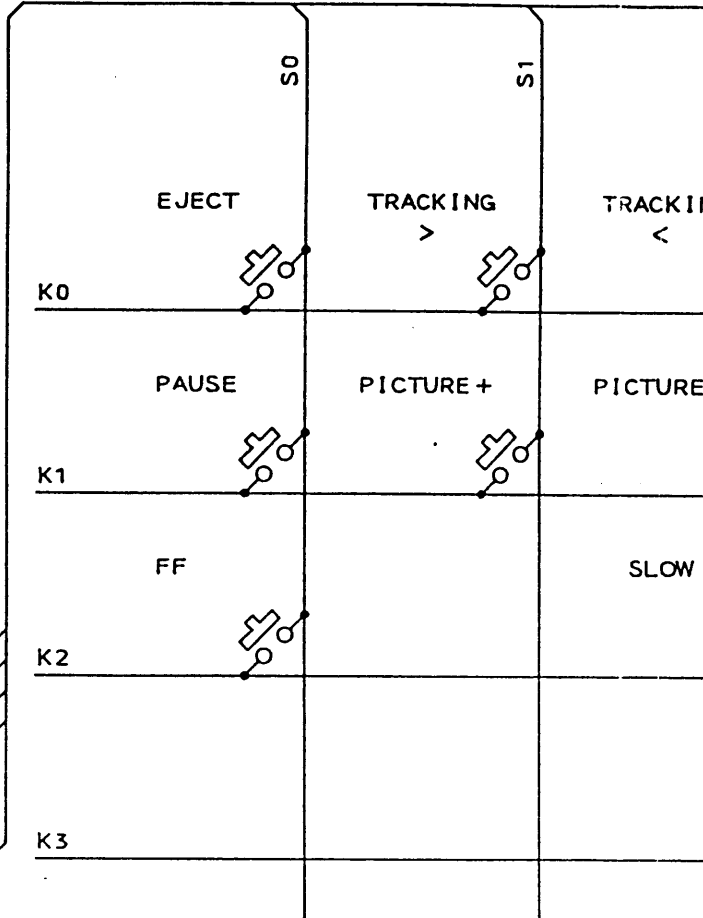
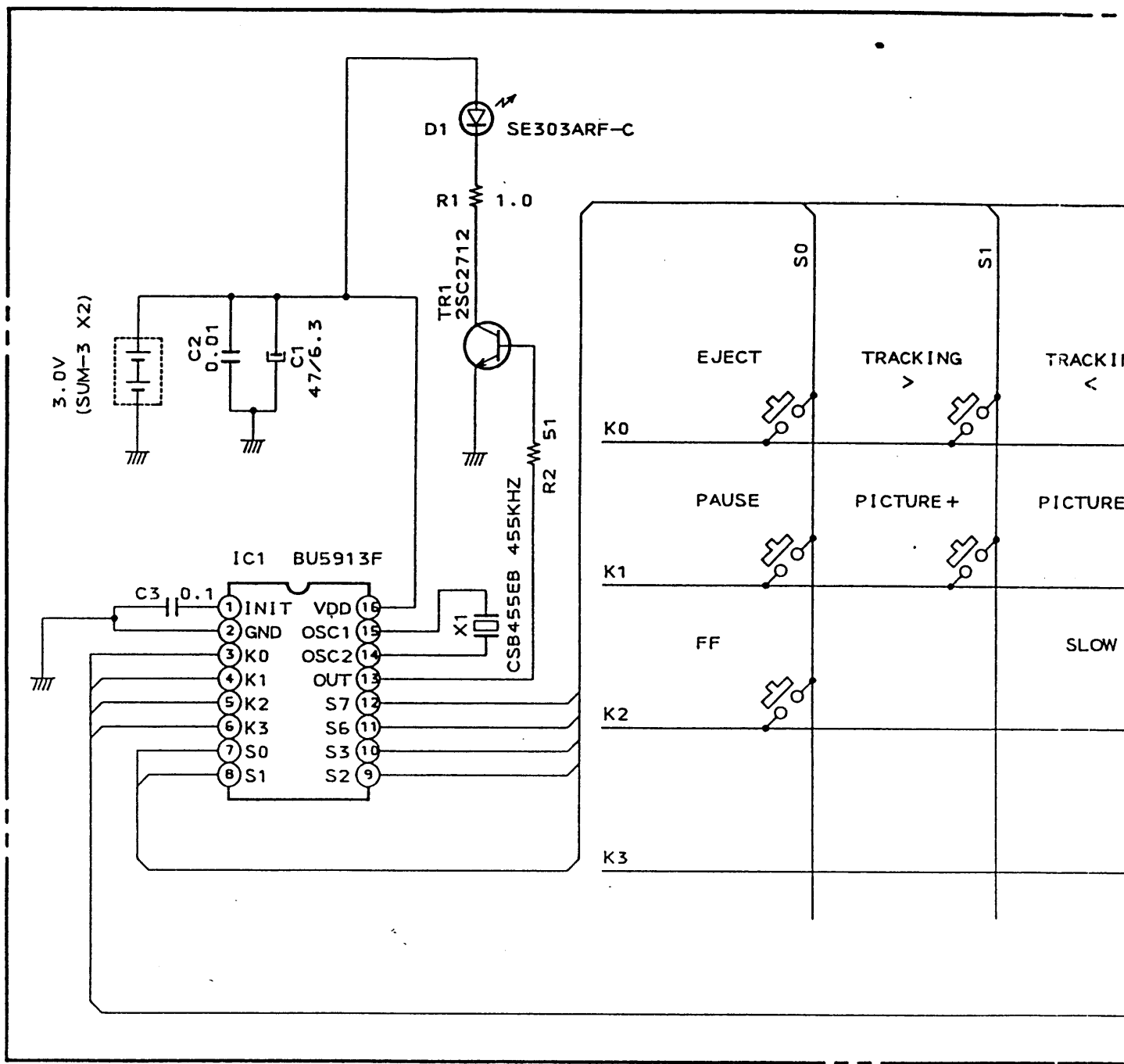


INDICATED VOLTAGES WERE MEASURED DURING PB MODE.

NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS (Ω) (K) (M)  
 ALL ELECTROLYTIC CAPACITORS IN μF/W (M) (P-PF) 50W (N)  
 ALL INDUCTORS IN μH (K)  
 ALL DIODES ARE 1SS131  
 ALL CAPACITORS IN μF (P-PF) 50W (N)  
 BUT 0.01 μ IS 16W (N)  
 ⊕ IS FILM CAPACITOR

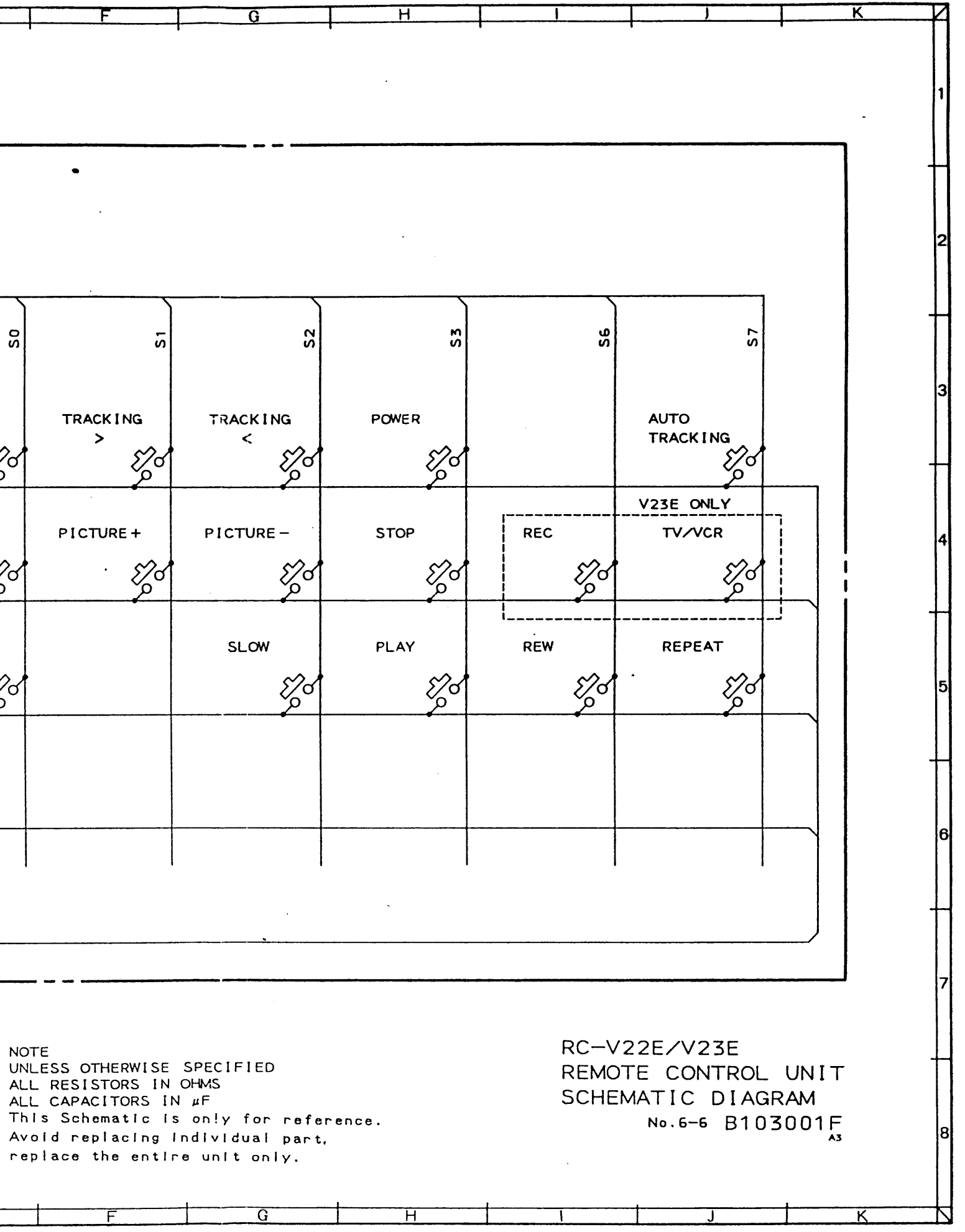
VS-R120EDG/EM  
 VS-P120EM  
 CONTROL  
 SCHEMATIC DIAGRAM  
 No. 6-5 V118105M  
 A1





REMO-CON PCB B1030C5010

NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN µF  
 This Schematic is only for  
 Avoid replacing individual  
 replace the entire unit onl



NOTE  
 UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS  
 ALL CAPACITORS IN  $\mu$ F  
 This Schematic is only for reference.  
 Avoid replacing individual part,  
 replace the entire unit only.

RC-V22E/V23E  
 REMOTE CONTROL UNIT  
 SCHEMATIC DIAGRAM  
 No.6-6 B103001F  
 A3