



SERVICE MANUAL

Video Cassette Recorder

VHR-267SP

(Product Code : 143 171 07) ✓
(Spain)

VHR-277SP

(Product Code : 143 171 06) ✓
(Spain)

VHR-277G

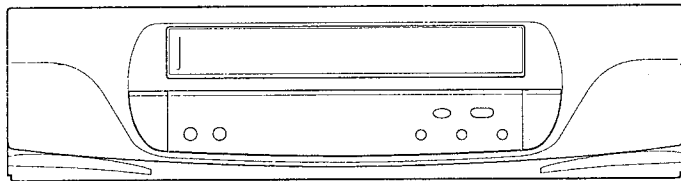
(Product Code : 143 171 17) ✓
(Germany)

VHR-277E

(Product Code : 143 171 04) ✓
(U.K.)

VHR-287E

(Product Code : 143 171 03) ✓
(U.K.)



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Please see other materials with Reference number given in table below.

Materials	Model No.	Reference No.
Mechanism	V95 I	MM531433
	Mechanism	
Manual	V95 II	MS531500
	Mechanism	

PRODUCT SAFETY NOTICE

The components designated by a symbol (\triangle) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

- NOTE: 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P. : Not available as service parts.

Design and specifications are subject to change without notice.

SELF-DIAGNOSIS DISPLAY

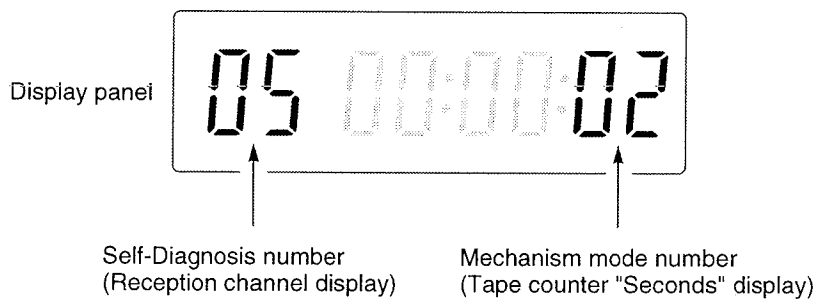
Mechanism Mode Display / Head Output Drop Warning Display / Cylinder Rotation Accumulated Time Display

This unit displays the diagnosis contents of abnormalities and the mechanism, mode on its display panel in 2-digit numbers. When the head playback output has dropped, the "L" sign will be blinked. Some models (listed later) will also display the cylinder rotation accumulated time.

These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contentes and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self-diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 10 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number and the cylinder accumulated rotation time display described later (some models only) will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.
- When the "0" button on the remote control unit is pressed during display, and clearing the self-diagnosis display and mechanism mode display.



Self-Diagnosis Contents

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	<ul style="list-style-type: none"> • The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder. 	Shifts to the STOP mode.
02	The take-up reel does not rotate.	<ul style="list-style-type: none"> • The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased. 	Shifts to the STOP mode.
03	The capstan motor does not rotate.	<ul style="list-style-type: none"> • The capstan motor is faulty. • The control of the capstan motor is faulty. 	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	<ul style="list-style-type: none"> • Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released. 	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	<ul style="list-style-type: none"> • The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty. 	The power is forcibly turned off with the mechanism at its current position.

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	<ul style="list-style-type: none"> The cassette drive mechanism is faulty. The front door is caught. 	Front loads and shifts to the STOP or INITIAL mode. <ul style="list-style-type: none"> When the power switch is turned on before eject operations: Shifts to the STOP mode. When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	<ul style="list-style-type: none"> The tape cassette is caught in the cassette drive mechanism. The main cam and front rack gear of the front loading mechanism have not engaged properly. The gears of the front loading drive mechanism have not engaged properly. 	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (REVIEW) while moving from 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	<ul style="list-style-type: none"> The mechanism mode switch contact is faulty. 	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	<ul style="list-style-type: none"> The mechanism mode switch contact is faulty. 	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

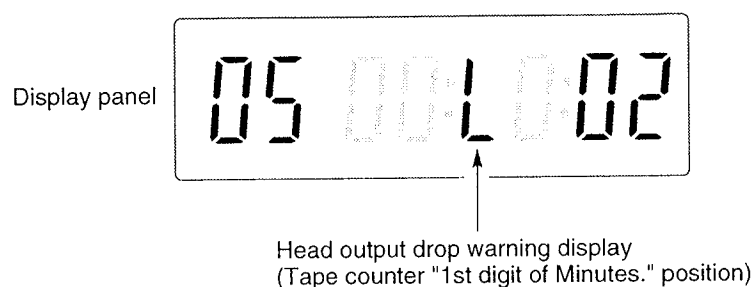
Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual. These manual reference numbers are shown in the cover.

Mechanism Mode Display Contents

Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	08	PLAY	16	VIDEO INSERT
01	STANDBY	09	REC	17	VIDEO INSERT-PAUSE
02	STOP	10	AUDIO DUBBING	18	AUDIO/VIDEO INSERT
03	STILL	11	X2 SPEED PLAY	19	REVERSE X2 SPEED PLAY
04	REC-PAUSE	12	CUE		
05	AUDIO DUBBING-PAUSE	13	REVIEW		
06	FRAME ADVANCE	14	FAST FORWARD		
07	SLOW	15	REWIND	99	OTHERS

2. Head Output Drop Warning Display

- When the STOP button on the remote control is pressed for 10 seconds continuously 10 seconds after play starts, "L" will be displayed blinking at the first digit of the minutes position on the tape counter when the head output is lower than the specified value to indicate an abnormality.
- The cause of the abnormality may be due to drop in the playback output caused by drop in the efficiency of the cassette used or head clogging. Refer to "Head Playback Output Voltage Check" as a means to judge the abnormality.

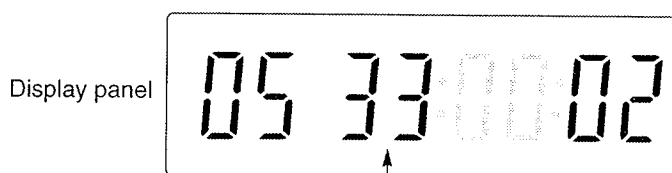


Head playback output voltage check

Cassette Used	Warning Display	Envelope Detection Output Voltage	Main Cause
Cassette with normal playback output	-	<p>Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2)</p>	<p>When the output voltage difference of the two channels is 0.5 to 0.95V</p> <ul style="list-style-type: none"> The video heads of both are normal
Recorded cassette (with tabs)	"L" blinking	<p>Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2)</p>	<p>When the output voltage difference of the two channels is more than 0.95V</p> <ul style="list-style-type: none"> Tracking adjustment has not been performed accurately One video head is clogged One video head has worn out
	"L" blinking	<p>Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2)</p>	<p>When the average output voltage of the two channels is less than 0.5V</p> <ul style="list-style-type: none"> Tracking adjustment has not been performed accurately Both video heads are clogged Both video heads have worn out
Rental cassette (without tabs)	"L" blinking	<p>Envelope detection output (IC301 Pin 25 or R3032 Mark side: see Fig. 2-1-1) Switching pulse (TP183: see Fig. 2-1-2)</p>	<p>When the output voltage difference of the two channels is more than 0.95V</p> <ul style="list-style-type: none"> Tracking adjustment has not been performed accurately One video head is clogged One video head has worn out
<p>• Some rental cassettes may have extremely low video playback outputs even when both video heads are normal. As the average output voltage of the two heads may be less than 0.5V for some, no warning displays will be shown.</p>			

3. Cylinder rotation accumulated time display

- Press the STOP button on the remote control for approximately 10 seconds and the cylinder rotation accumulated time excluding the cassette out and standby operation time will be displayed on the "Hours" display in units of 100 hours. ("33" will be displayed for 10 seconds for 3,200 to 3,299 hours.)
- To erase the cylinder rotation accumulated time display, press the RESET button on the remote control during the accumulated time display.



Cylinder rotation accumulated display (Tape counter "Hours" display)

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT, AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ②.
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

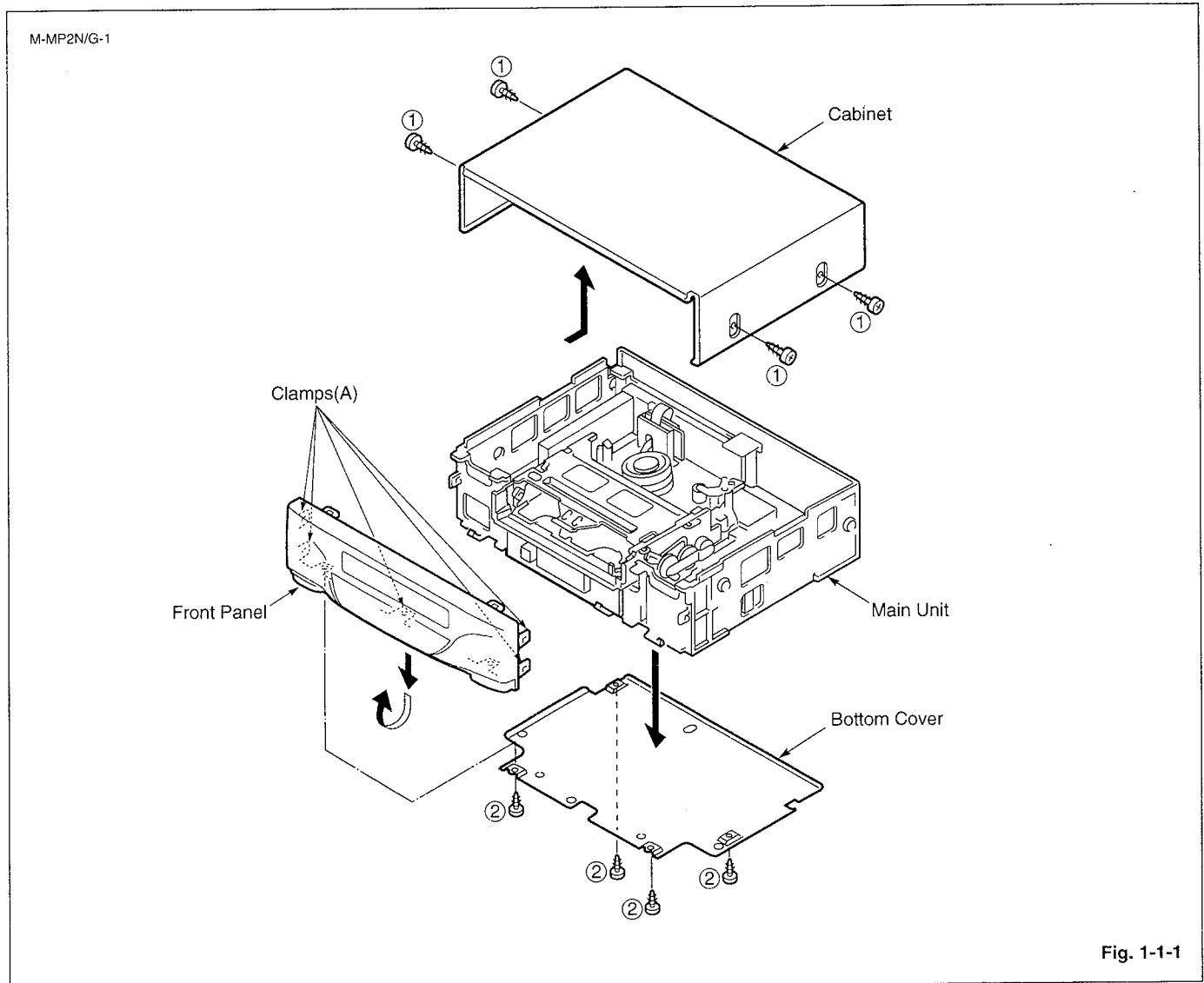
Notes:

- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screws taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig. 1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. Spread out the lock clamps (C) in the arrow direction slightly and remove the TM-1 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the chassis.
3. Remove the screw ⑤ in the chassis, the screw ⑥, and the holder in this order.
4. Remove the two screws ⑦ and two screws ⑧ of the mechanism unit. The two screws ⑧ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
5. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock clamps (D) of the chassis in the arrow direction so that they can be removed from the chassis.



M-PF2LN/TA-2

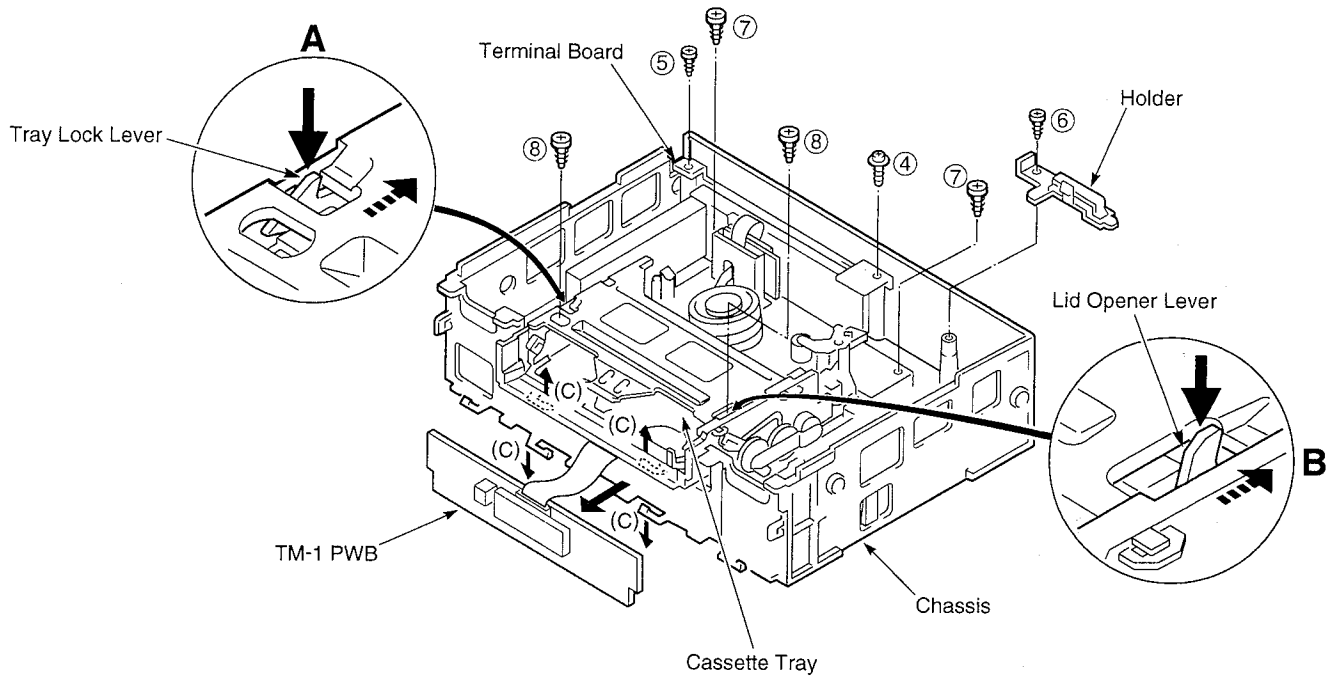


Fig. 1-1-2

M-MA4/U-3

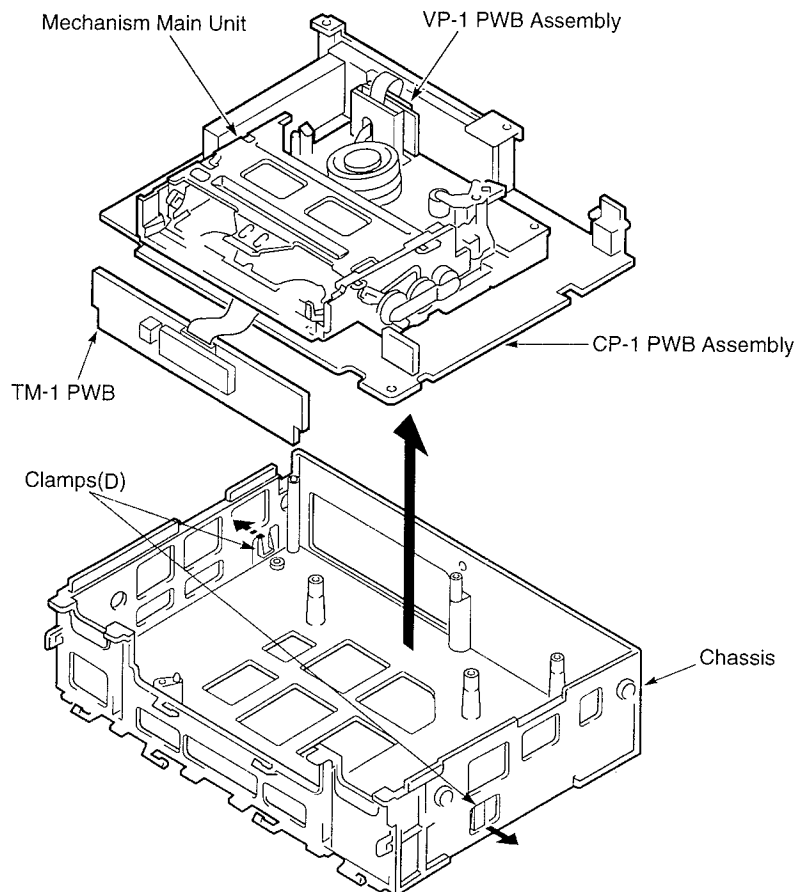
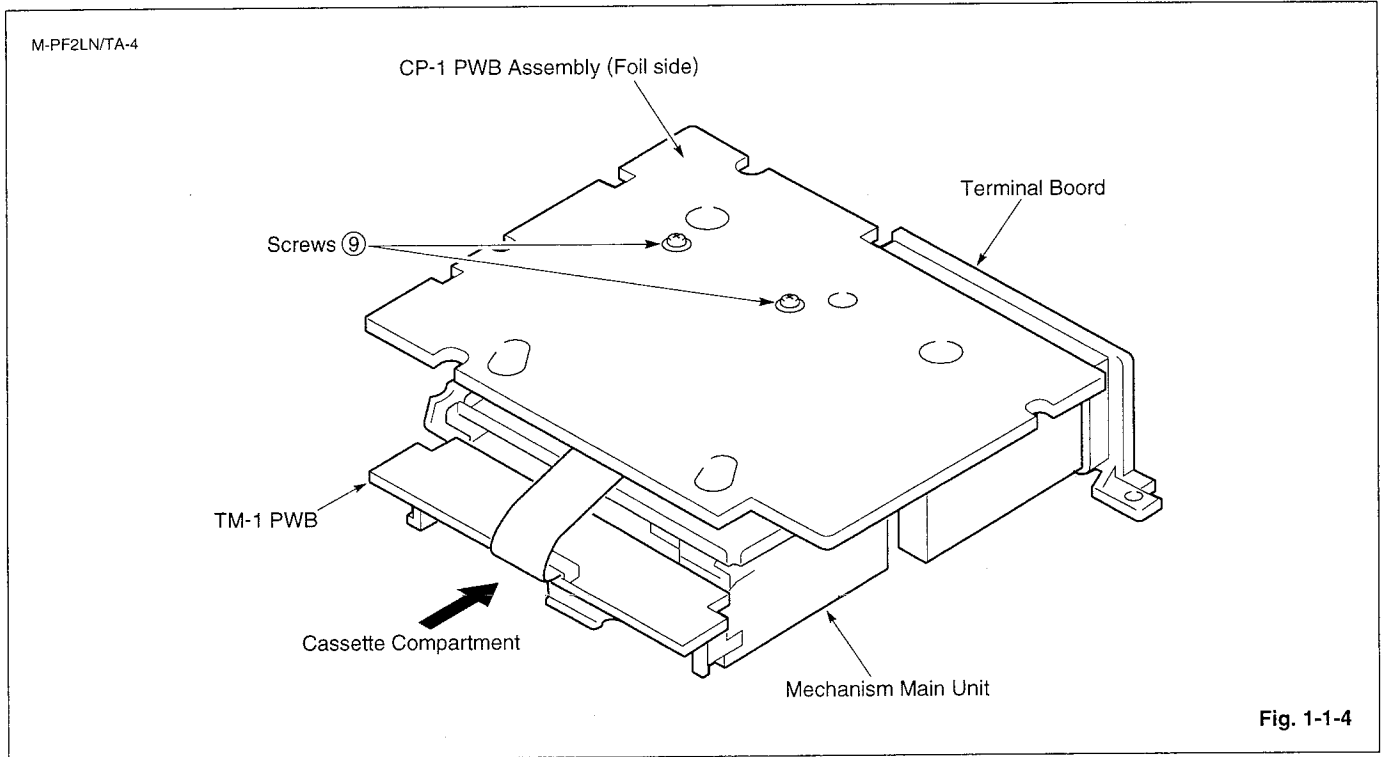


Fig. 1-1-3

1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

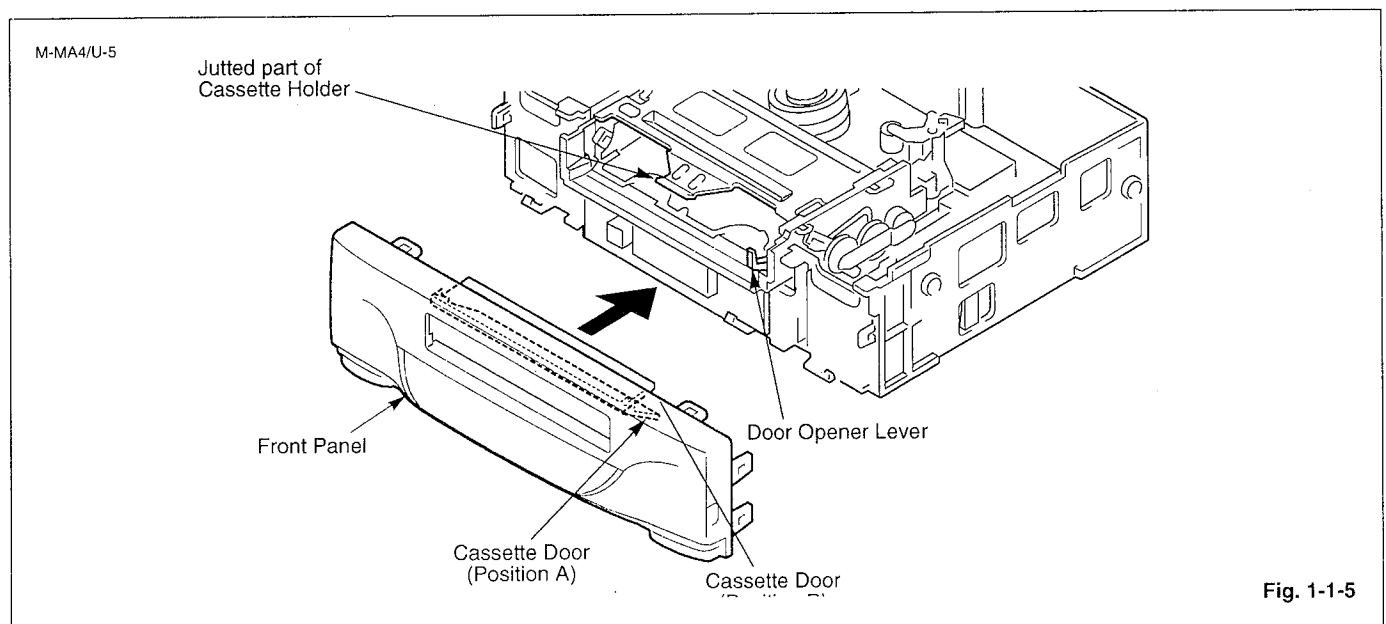
1. Place the mechanism unit and main board up side down as a whole on a flat surface with foil side of the main board facing up.
2. Operate the unit using the buttons on TM-1 PWB or the remote control.



1-3. INSTALLATION OF THE FRONT PANEL

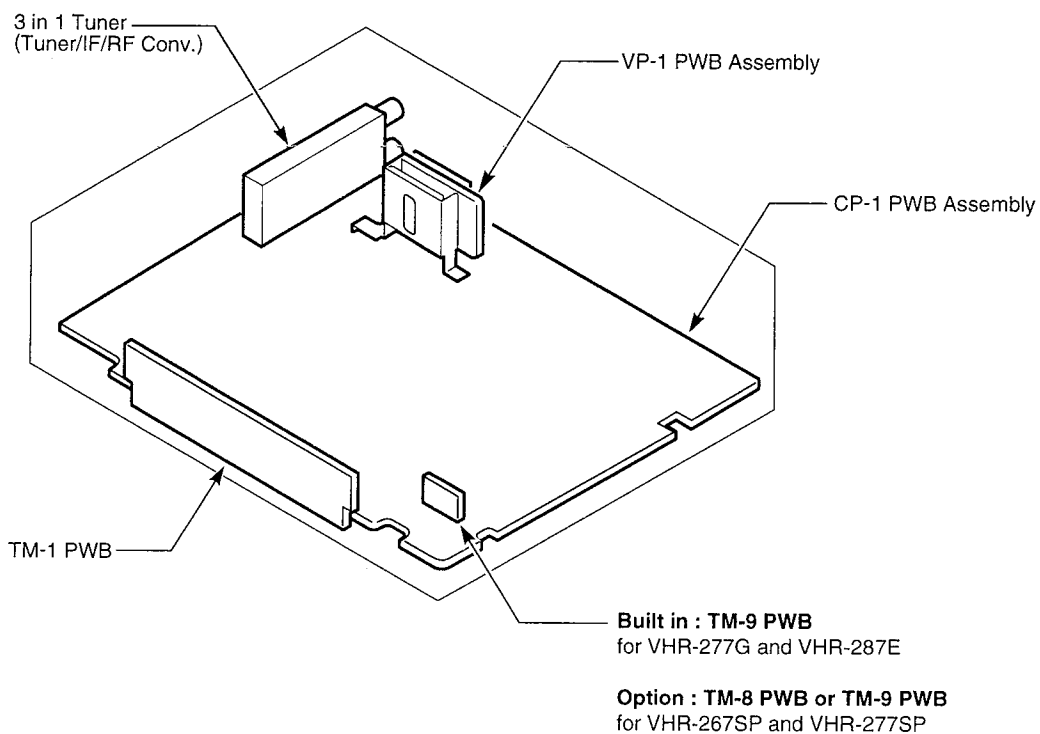
When installing the front panel to the chassis after repairs and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
 2. Set the cassette door to half-opened state as shown in Fig. 1-1-5, and install the front panel to the chassis.
- Note:** Opened cassette door position does not install the front panel to the chassis.



1-4. CIRCUIT BOARD LOCATIONS

L-MP4N/E2



2. ELECTRICAL ADJUSTMENT

VCR PRESETTING

This VCR need three basic presetting by using the menus displayed on-screen. After all connection have been made, then follow steps 1 to 3 to preset the VCR.

The three presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The AUTO SETUP screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Country selection: Using the numeric button, select the country of use.
3. Language selection: When the desired language has been select, press the MENU/TV button directly before prevent auto tuning will start.

When steps 1 to 3 have been finish, ready to operate the all operating mode.

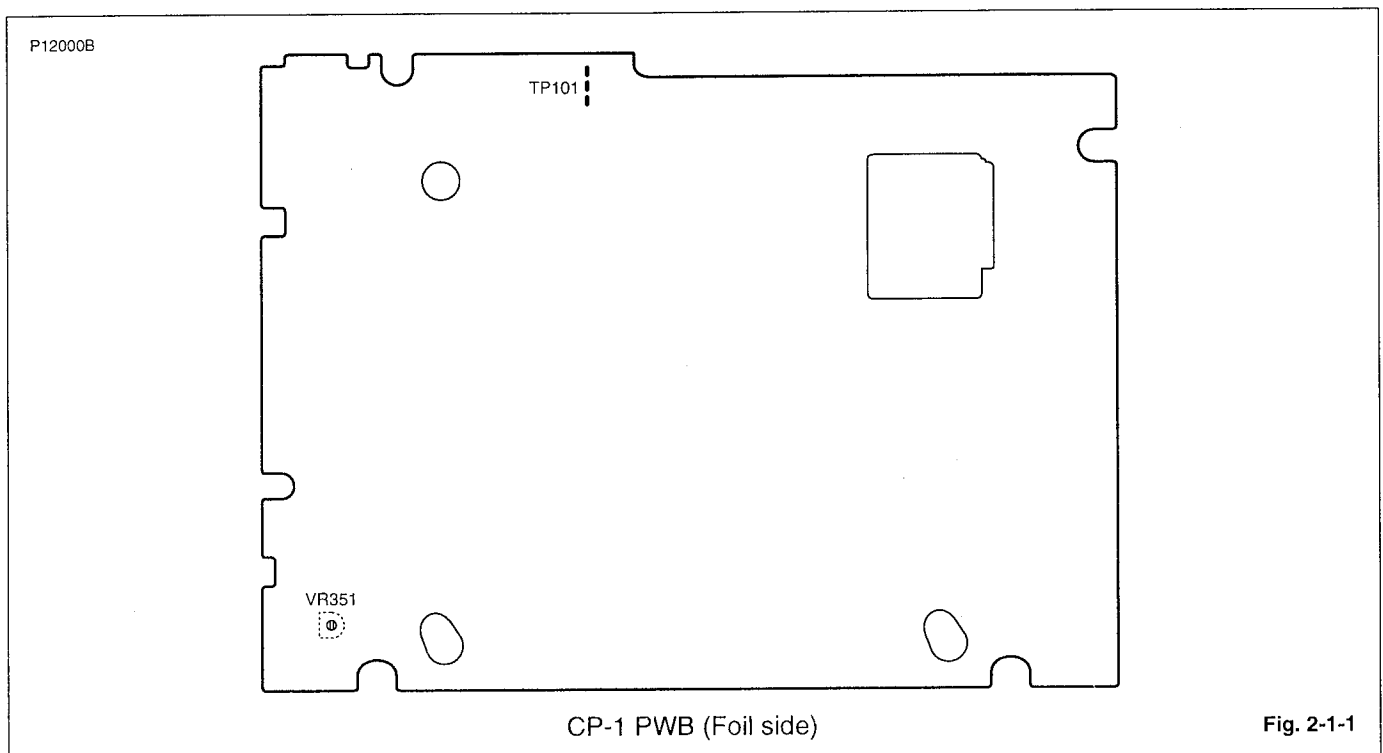
2-1. SERVO CIRCUIT ADJUSTMENT

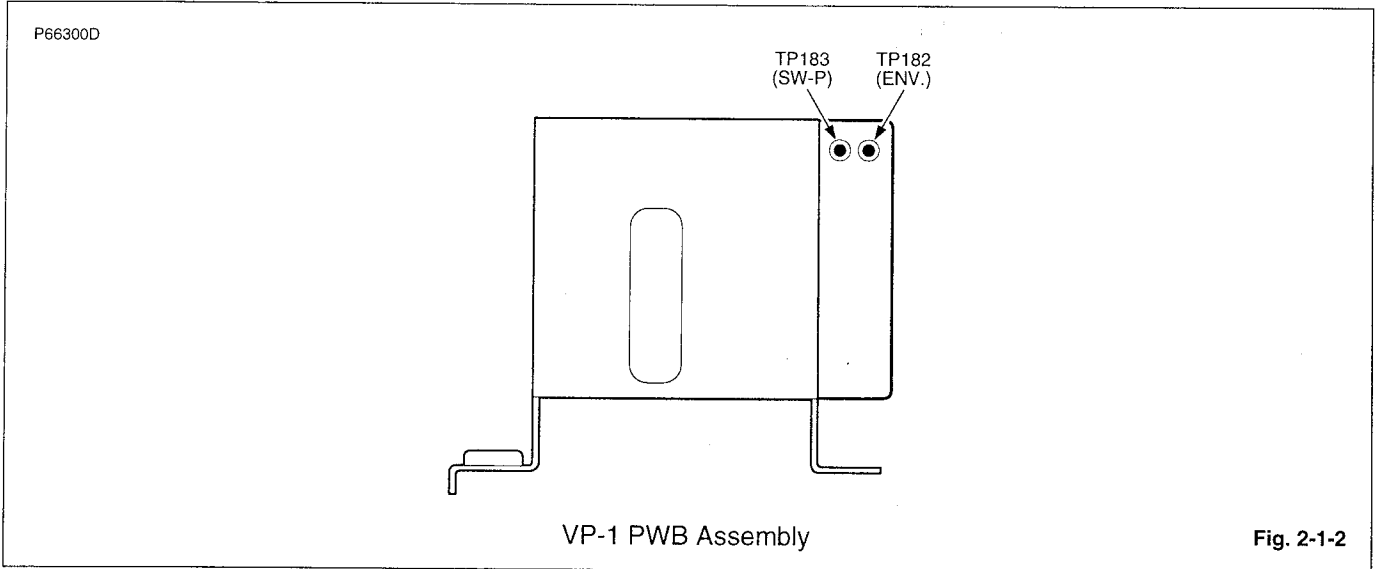
- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, "Switching position adj."
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will daviate the tracking center set, be sure to press the channel buttons (+) and (-) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023 : SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape
Monitor TV	

2-1-2. LOCATION OF ADJUSTMENT POINTS

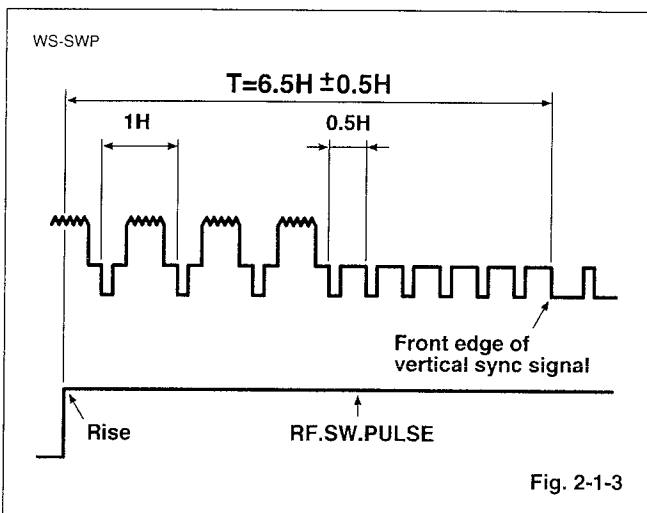




2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (VHJ-0009 or VHJ-0023)
Adj. Location	Adj. Value	
VR351 (SW-P)	6.5 H \pm 0.5 H	

1. Play back the alignment tape.
2. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (-) simultaneously.
3. Adjust VR351 (SW-P) so that the width of "T" becomes 6.5 H \pm 0.5 H as shown in Fig. 2-1-3.

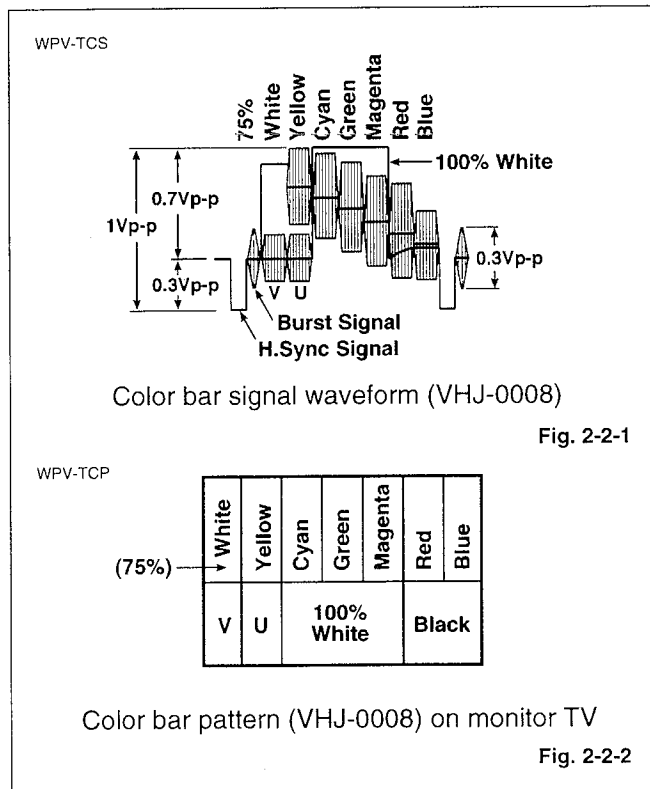


2-2. VIDEO CIRCUIT RELAY JIG

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

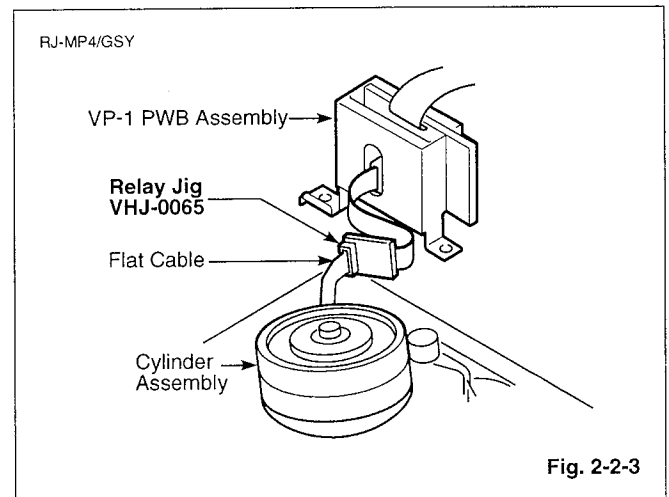
Color Bar Signal Generator	PAL Color bar signal with 100% white level (EBU color bar signal)
Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Oscilloscope Probe	Input capacity : less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency : DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023 : SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2-2-1)
Relay Jig	VHJ-0065 : 5-wire flat cable for VP-1 PWB assembly

ALIGNMENT TAPE COLOR BAR SIGNAL



RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing of the VP-1 PWB assembly, as shown in Fig.2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.



2-3. IF CIRCUIT ADJUSTMENT

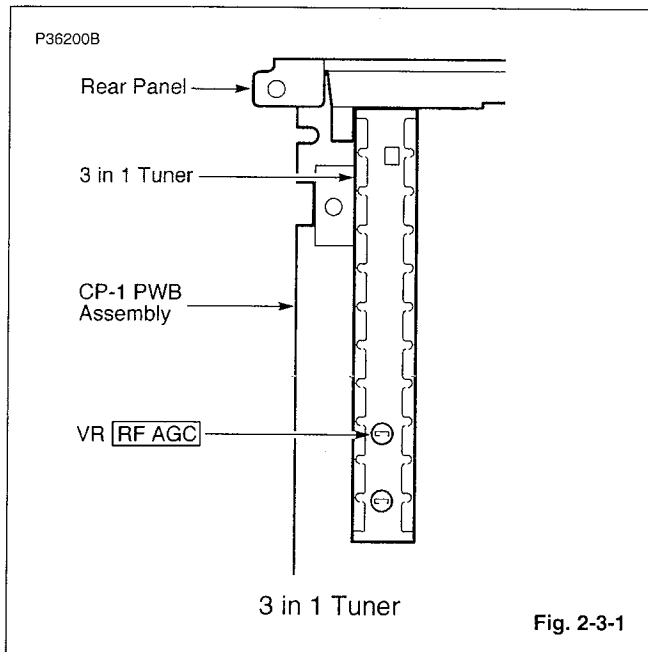
- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.
- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

Note: The 3 in tuner dose not need any adjustments, because precise adjustments were down before shipment.

2-3-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	
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2-3-2. LOCATION OF ADJUSTMENT POINT



2-3-3. RF AGC ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode
Adj. Location		Adj. Value
VR (RF AGC) (on the 3 in 1 tuner)		S/N is best point

- Connect the monitor TV to the VHF/UHF antenna output terminal.
- Connect the VHF or UHF antenna to the VHF/UHF antenna input terminal.
- Receive the middle electrical field (70 dB μ ~ 90 dB μ) of the VHF or UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
- Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

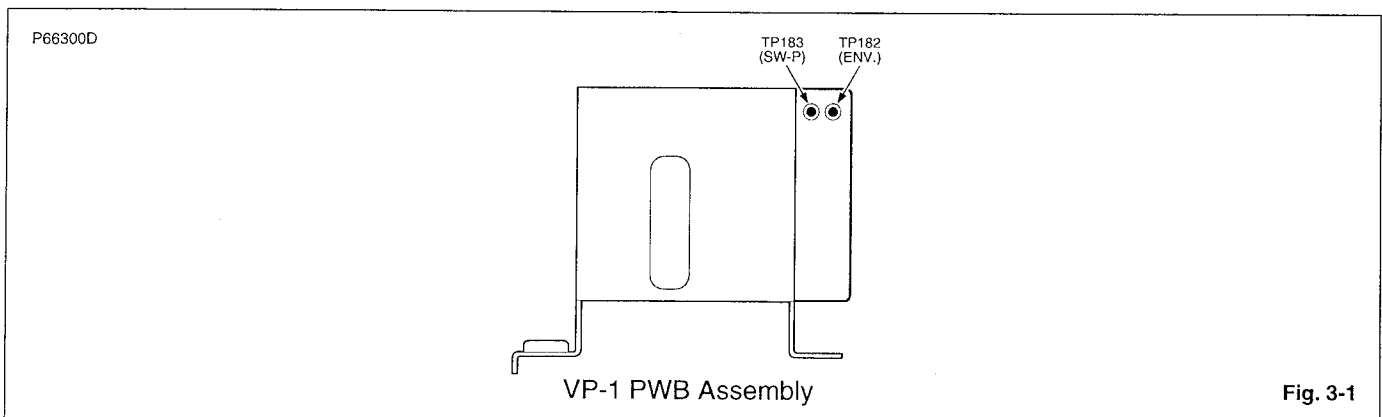
2-4. CHECKING THE RF CHANNEL

If the TV and VCR are connected by an aerial output cable which has poor shielding characteristics, turn off the RF converter of the VCR and use the VCR with an AV cable. To turn the RF converter off, input "00" when setting the RF (when "RF" is displayed) during VCR pre-setting.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.

For adjustment, refer to the separate volume "V95 I Mechanism Manual" (MM531433) and "V95 II Mechanism Manual" (MS531500).

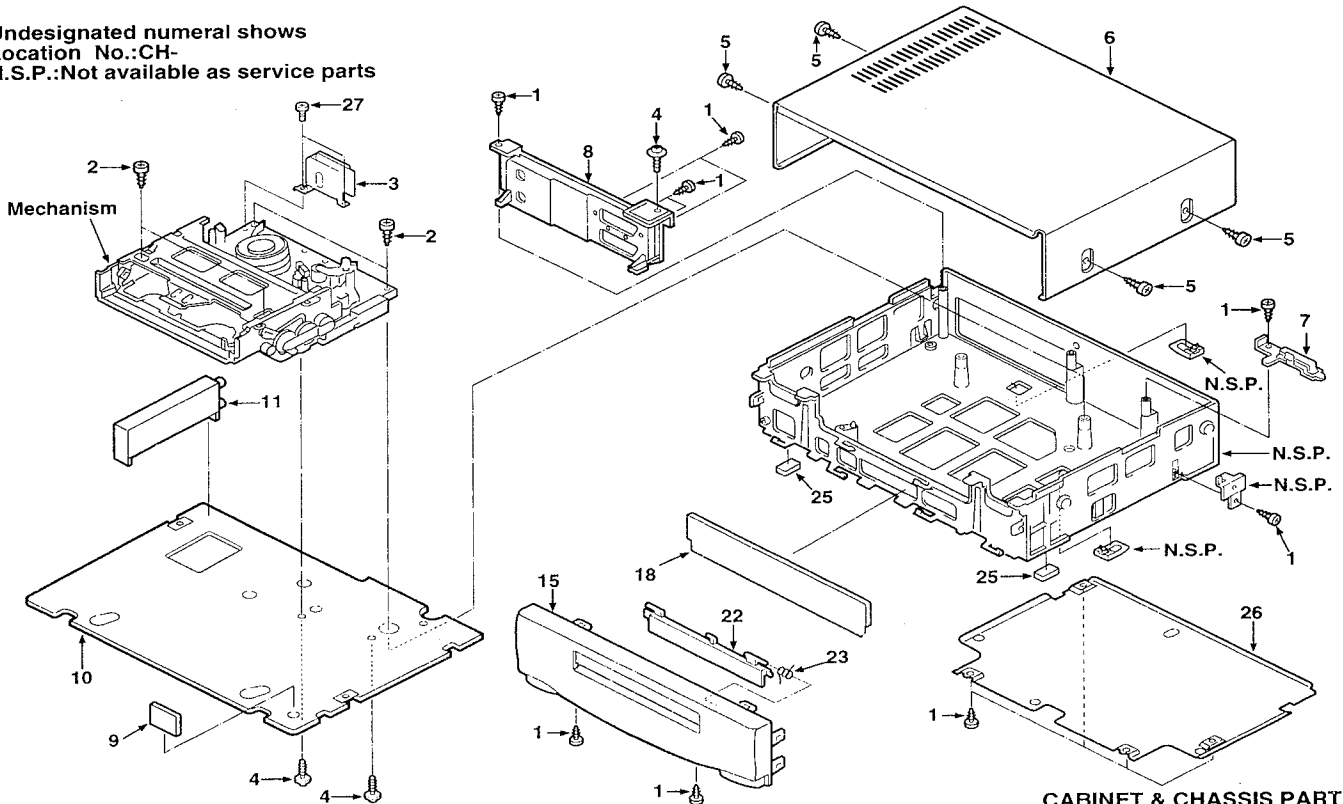


4. PARTS LIST

LOCATION	PARTS NO.	DESCRIPTION
ACCESSORIES		
	645 021 4332	REMOCON,INFRARED,WITH COVER BATTERY, VHR-277E ONLY
OR	645 020 6948	REMOCON,INFRARED,WITH COVER,BATTERY, VHR-287E ONLY
OR	645 022 0289	REMOCON,INFRARED,WITH COVER BATTERY, VHR-267SP ONLY
OR	645 021 0136	REMOCON,INFRARED,WITH COVER BATTERY, VHR-277SP ONLY
OR	645 014 6282	REMOCON,INFRARED,WITH COVER BATTERY, VHR-277G ONLY
	613 173 7013	COVER BATTERY,FOR REMOCON, VHR-267SP,277SP
OR	613 169 4385	COVER,BATTERY,FOR REMOCON, VHR-277E,277G,287E
	613 174 1645	INSTRUCTION MANUAL,VHR-277E ONLY
OR	613 174 8248	INSTRUCTION MANUAL,VHR-267SP ONLY
OR	613 174 2659	INSTRUCTION MANUAL,VHR-277G ONLY
OR	613 173 1363	INSTRUCTION MANUAL,VHR-287E ONLY
OR	613 173 6771	INSTRUCTION MANUAL,VHR-277SP ONLY
	645 009 4569	CABLE,ANT PAL
OR	645 003 1182	CABLE,ANT PAL,EXCEPT VHR-277G
OR	613 077 4415	CABLE,ANT,VHR-277G ONLY
OR	613 132 6125	CABLE,ANT,VHR-277G ONLY
OR	645 003 3711	CABLE,ANT PAL,VHR-277G ONLY
OR	645 003 1182	CABLE,ANT PAL,VHR-277G ONLY
OR	△ 613 136 6411	CORD,POWER,VHR-287E,VHR-277E
OR	△ 645 023 4156	CORD,POWER,VHR-287E,VHR-277E
OR	△ 613 132 3568	CORD,POWER,VHR-277SP,VHR-267SP
OR	△ 613 095 0550	CORD,POWER,VHR-277G ONLY
OR	△ 613 133 2393	CORD,POWER,VHR-277G ONLY
OR	△ 645 023 4163	CORD,POWER,VHR-277SP,VHR-267SP
OR	△ 645 002 6805	CORD,POWER,VHR-277G,VHR-277SP, VHR-267SP
OR	△ 645 019 1923	CORD,POWER,VHR-287E,VHR-277E
OR	△ 645 003 3766	CORD,POWER,VHR-277G,VHR-277SP, VHR-267SP
OR	△ 645 009 0400	CORD,POWER,VHR-VHR-277G, VHR-277SP,VHR-267SP
OR	△ 645 011 4335	CORD,POWER,VHR-287E,VHR-277E
OR	△ 645 019 2647	CORD,POWER,VHR-277SP,VHR-267SP
OR	△ 645 024 0522	CORD,POWER,EXCEPT VHR-287E,VHR-277E

LOCATION	PARTS NO.	DESCRIPTION
CABINET & CHASSIS PARTS		
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-3	613 173 7211	COMPL PWB,VP-1, EXCEPT VHR-287E,VHR-277E
OR	613 173 2858	COMPL PWB,VP-1, VHR-287E,VHR-277E
CH-4	412 052 5108	SPECIAL SCREW-2.6X12
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 160 6036	COVER TOP,VHR-277E ONLY
OR	613 163 4794	COVER TOP,EXCEPT VHR-277E
OR	613 177 5381	COVER TOP,VHR-277E ONLY
OR	613 177 5404	COVER TOP,EXCEPT VHR-277E
CH-7	613 160 2885	HOLDER
CH-8	613 173 8317	TERMINAL,VHR-287E ONLY
OR	613 173 7075	TERMINAL,VHR-277SP,VHR-267SP
OR	613 173 5620	TERMINAL,VHR-277E,VHR-277G
CH-9	613 134 4730	COMPL PCB,TM-8(OPTION:VHR-267SP, VHR-277SP)
OR	613 158 5751	COMPL PCB,TM-9,VHR-287E,VHR-277G (OPTION:VHR-267SP,VHR-277SP)
CH-10	613 174 0587	COMPL PWB,CP-1-A,VHR-277SP ONLY
OR	613 174 4332	COMPL PWB,CP-1-A,VHR-277E ONLY
OR	613 174 9108	COMPL PWB,CP-1-A,VHR-277G ONLY
OR	613 175 3921	COMPL PWB,CP-1-A,VHR-267SP ONLY
OR	613 173 5668	COMPL PWB,CP-1-A,VHR-287E ONLY
CH-11	645 019 0100	TUNER,RF/TU/IF,VHR-287E,VHR-277E
OR	645 019 0063	TUNER,RF/TU/IF,EXCEPT VHR-287E,VHR-277E
CH-15	613 175 4041	ASSY,CABINET FRONT,VHR-267SP ONLY
OR	613 173 6894	ASSY,CABINET FRONT,VHR-287E ONLY
OR	613 174 1157	ASSY,CABINET FRONT,VHR-277SP ONLY
OR	613 174 9481	ASSY,CABINET FRONT,VHR-277G ONLY
OR	613 174 6121	ASSY,CABINET FRONT,VHR-277E ONLY
CH-18	613 173 3817	COMPL PWB,TM-1,VHR-287E ONLY
OR	613 173 9192	COMPL PWB,TM-1,EXCEPT VHR-287E
CH-22	613 174 9566	DOOR CASSETTE,VHR-277G ONLY
OR	613 173 7020	DOOR CASSETTE,VHR-287E ONLY
OR	613 174 1218	DOOR CASSETTE,VHR-277SP ONLY
OR	613 174 6213	DOOR CASSETTE,VHR-277E ONLY
OR	613 175 4065	DOOR CASSETTE,VHR-267SP ONLY
CH-23	613 153 0478	SPRING
CH-25	613 121 1001	STAND,FELT (FRONT)
CH-26	613 160 5091	COVER BOTTOM
CH-27	411 001 1901	SCR S-TPG BIN 3X6

Undesignated numeral shows
Location No.:CH-
N.S.P.:Not available as service parts



CABINET & CHASSIS PARTS

MECHANISM PARTS

Note:

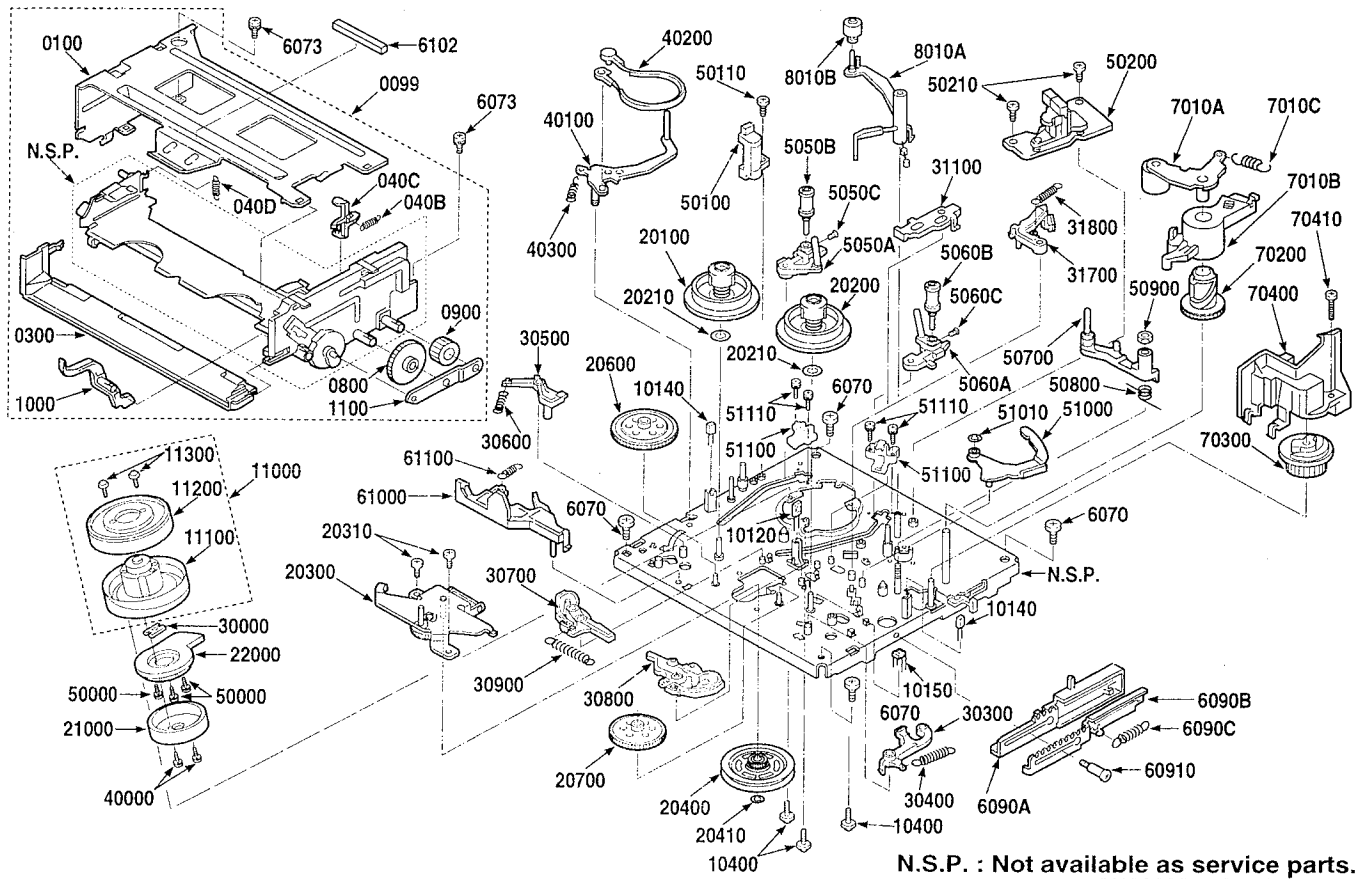
For Location numbers 8010A and 8010B, parts marked (#C) and (#D) in DESCRIPTION are not interchangeable with each other.

However, these are interchangeable when 8010A and 8010B are in the assembled state.

(#C) and (#D) can be differentiated from the color and height of the roller (8010B).

(#C) is gray and toll and (#D) is black and short.

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 1					
11000	613 142 9574	COMPL,CYLINDER,2N2S-V, EXCEPT VHR-287E,VHR-277E	20100	613 169 0974	REEL,SUPPLY
OR	613 142 9529	COMPL,CYLINDER,2N2P-L,VHR-287E,VHR-277E	20200	613 160 4193	ASSY,REEL TAKE UP
11100	613 108 6241	ASSY,CYLINDER,LWR 2AL	OR	613 168 1514	ASSY,REEL TAKE UP
11200	613 114 2831	ASSY,CYLINDER,UPR 2N2S-V, EXCEPT VHR-287E,VHR-277E	20210	412 015 8504	SPECIAL WASHER 3.1X6X0.5
OR	613 087 6867	ASSY,CYLINDER,UPR 2N2P-L, VHR-287E,VHR-277E	OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
11300	411 038 1608	SCR PAN+W 3X8	OR	412 021 5306	SPECIAL WASHER 3.1X6X0.3
21000	645 015 7875	MOTOR,ROTOR,CYL DC 2W	20300	613 171 6896	COMPL,MOUNTING CLUTCH
22000	645 015 7868	MOTOR,STATOR,CYL DC 2W	OR	613 175 0661	COMPL,MOUNTING CLUTCH
30000	613 081 4036	SPACER,MOTOR	20310	412 048 7505	SPECIAL SCREW-2.6X4
40000	412 036 5001	SPECIAL SCREW 2.3X6	20400	613 151 9701	PULLEY,REEL
50000	412 036 4905	SPECIAL SCREW 2.3X10	20410	412 045 4606	SPECIAL WASHER 2.4X6X0.25
6073	412 048 8205	SPECIAL SCREW-2.6X6	20600	613 152 2749	GEAR,REEL S
6102	613 151 6618	PAD	20700	613 152 2756	GEAR,REEL T
0099	613 152 0578	COMPL,CASSETTE MECHANISM	30300	613 160 3356	ASSY,BRAKE SOFT T
0100	613 152 0738	STAND,L	30400	613 152 0295	SPRING,SOFT T
0300	613 152 0660	FRAME,UNDER	30500	613 151 9411	LEVER,SOFT S
040B	613 152 0417	SPRING,LID OPENER	30600	613 152 0318	SPRING,SOFT S
040C	613 152 0707	LEVER,RELEASE	30700	613 160 6166	ASSY,BRAKE,S
040D	613 152 0424	SPRING,TRAY LOCK	30800	613 159 2193	ASSY,BRAKE T
0800	613 152 2794	GEAR,LOCK	30900	613 163 6996	SPRING,BRAKE
0900	613 152 2800	GEAR,PINION	31100	613 152 0189	SLIDE,ACT BRAKE T
1000	613 151 9480	LEVER,DOOR OPENER	31700	613 151 8490	ASSY,BRAKE CAPSTAN
1100	613 151 9299	HOLDER,GEAR	31800	613 152 0356	SPRING,BRAKE CAPSTAN
6070	411 021 7907	SCR S-TPG BIN 4X12	40100	613 151 8759	ASSY,LEVER,BT
10120	407 162 1102	LED LN59L	40200	613 160 5282	ASSY,BRAKE,BAND
10140	407 162 8705	PHOTO DIODE PN263L-(NC)	40300	613 152 0271	SPRING,BT
10150	407 165 8108	PHOTO COUPLE SG-105F	50100	645 017 6432	HEAD,ERASE FULL
OR	407 043 0101	PHOTO DIODE ON2170-R	50110	412 048 9707	SPECIAL SCREW-2.6X10
10400	412 052 6204	SPECIAL SCREW-2.6X5.5	50200	613 176 8406	ASSY,HEAD R/P ACE
20100	613 160 5503	ASSY,REEL SUPPLY	50210	412 052 3500	SPECIAL SCREW 2.6X12
			5050A	613 164 7237	ASSY,MOUNTING,INCLINE S
			5050B	613 022 0233	ASSY,GUIDE,ROLLER
			5050C	412 048 4504	SPECIAL SCREW-2X3
			5060A	613 164 7251	ASSY,MOUNTING,INCLINE T



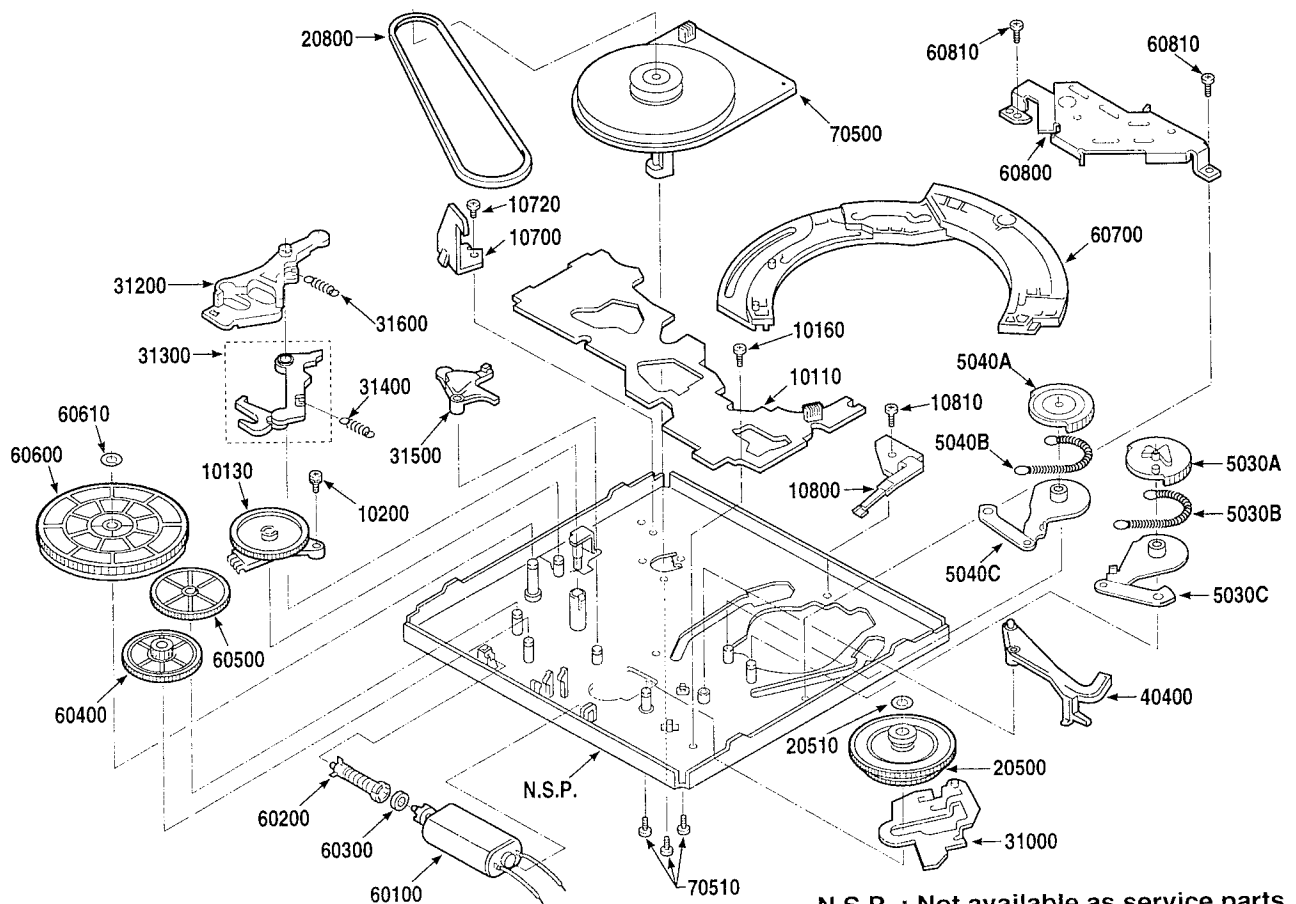
N.S.P. : Not available as service parts.
MECHANISM-PART 1

LOCATION	PARTS NO.	DESCRIPTION
5060B	613 022 0233	ASSY, GUIDE, ROLLER
5060C	412 048 4504	SPECIAL SCREW-2X3
50700	613 164 4762	ASSY, LEVER, LOAD
50800	613 152 0387	SPRING, LEVER L GUIDE
50900	412 048 8908	SPECIAL NUT-3X3
51000	613 161 2365	ASSY, LEVER, ACT L GUIDE
OR	613 173 6153	ASSY, LEVER, ACT L GUIDE
51010	412 033 4106	WASHER SLIT 2.6X5X0.50
51100	613 160 7057	MOUNTING, CATCHER
51110	412 049 1700	SPECIAL SCREW-2.6X10
6090A	613 151 9152	GEAR, RACK FRONT
OR	613 160 4636	GEAR, RACK FRONT
6090B	613 151 9114	GEAR, RACK START
6090C	613 152 0226	SPRING, RACK FRONT
60910	412 050 2802	SPECIAL SCREW-2.6X6
61000	613 151 9398	LEVER, EP SW
61100	613 152 3692	SPRING, EP SW
7010A	613 151 8803	ASSY, LEVER, PINCH ROLLER
OR	613 175 1194	ASSY, LEVER, PINCH ROLLER
7010B	613 171 0221	MOUNTING, LIFT PINCH
7010C	613 152 0233	SPRING, PINCH ROLLER
70200	613 156 3841	CAM, LIFT PINCH
70300	613 152 0677	GEAR, CAM PINCH
70400	613 152 0714	MOUNTING, OPENER
70410	412 049 1106	SPECIAL SCREW-2.6X16
8010A	613 159 7273	LEVER, CLEANER, VHR-277SP, VHR-267SP (#C)
OR	613 171 9606	LEVER, CLEANER, VHR-277SP, VHR-267SP (#D)
8010B	613 158 5829	ASSY, ROLLER, CLEANER, VHR-277SP, VHR-267SP (#C)
OR	613 171 9439	ASSY, MOUNTING CLEANER, VHR-277SP, VHR-267SP (#D)

MECHANISM PARTS 2

10110	613 173 9451	COMPL PWB, MC-1
10130	645 007 1560	SWITCH, MODE
10160	412 048 7505	SPECIAL SCREW-2.6X4

LOCATION	PARTS NO.	DESCRIPTION
10200	412 048 8304	SPECIAL SCREW-2.6X8
10700	613 167 5926	MOUNTING CAPSTAN
10720	412 048 8007	SPECIAL SCREW-2.6X6
10800	613 160 4179	ASSY, EARTH CYL
OR	613 165 8523	ASSY, EARTH CYL
10810	412 048 8007	SPECIAL SCREW-2.6X6
20500	613 160 4186	ASSY, GEAR, FRICTION
20510	411 109 1605	WASHER Y 2.6X6X0.25
20800	613 151 9039	BELT REEL
31000	613 152 0165	SLIDE, ACT BRAKE S
31200	613 159 0991	LEVER, CONTROL BRAKE
31300	613 159 0847	COMPL, LEVER, ACT BRAKE
31400	613 152 0332	SPRING, RETURN BRAKE
31500	613 151 9459	LEVER, CHANGE CLUTCH
31600	613 152 0349	SPRING, CHANGE CLUTCH
40400	613 153 7583	ASSY, LEVER SPRING BT
5030A	613 152 2763	GEAR, LOAD S
5030B	613 152 0370	SPRING, LOAD S
5030C	613 160 3691	ASSY, LEVER, LOAD S
5040A	613 152 2770	GEAR, LOAD T
5040B	613 152 0363	SPRING, LOAD T
5040C	613 160 3707	ASSY, LEVER, LOAD T
60100	645 003 4305	ASSY, MOTOR LOADING
60200	613 151 8599	COMPL, GEAR, WORM
60300	613 151 9107	DAMPER
60400	613 151 9138	GEAR, WHEEL 1
60500	613 160 3790	GEAR, WHEEL 2
60600	613 156 4008	CAM, MAIN
60610	412 054 6806	SPECIAL WASHER 3.6X0.5
60700	613 159 9017	SLIDE, CRESCENT
60800	613 159 8997	MOUNTING, CRESCENT
60810	412 048 8007	SPECIAL SCREW-2.6X6
70500	645 020 9123	MOTOR, CAPSTAN DC 3W
OR	645 008 1897	MOTOR, CAPSTAN DC 3W
70510	412 048 7604	SPECIAL SCREW-2.6X6



N.S.P. : Not available as service parts.
MECHANISM-PART 2

ELECTRICAL PARTS

Note:

1. Materials of Capacitors and Resistors are abbreviated as follows ;

Resistors		Capacitors	
MT-FILM	Metallized Film Resistor	MT-POLYEST	Metallized Polyester Capacitor
MT-GLAZE	Metallized Glaze Resistor	MT-COMPO	Metallized Composite Capacitor
OXIDE-MT	Oxide Metallized Film Resistor	TA-SOLD	Tantalum Solid Capacitor
		AL-SOLID	Aluminum Solid Capacitor
		NP-ELECT	Non-Polarized Electrolytic Capacitor
		OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
		DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor (10pF over) and Resistor are noted with follow symboles.

F	.....1%	G	.....2%	J	.....5%	K	.....10%
M	.....20%	N	.....30%	Z	.....+80%		-20%

3. Capacitors

U : μ F P : pF

4. Inductors

UH : μ H MH : mH

5. N.S.P. : Not available as service parts.

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A					
	613 174 0587	VHR-277SP ONLY	Q3401	405 084 8308	TR 2SC2960-G-SPA,VHR-287E,VHR-277E
	613 174 4332	VHR-277E ONLY	OR	405 084 8209	TR 2SC2960-F-SPA,VHR-287E,VHR-277E
	613 174 9108	VHR-277G ONLY	Q3503	405 029 3504	TR DTC144EK,VHR-287E,VHR-277E
	613 175 3921	VHR-267SP ONLY	Q3504	405 029 3504	TR DTC144EK
	613 173 5668	VHR-287E ONLY	Q3553	405 014 4509	TR 2SC2412K-R
			OR	405 014 4608	TR 2SC2412K-S
			Q3554	405 029 3504	TR DTC144EK,VHR-287E,VHR-277E
			Q3581	405 029 3504	TR DTC144EK,VHR-287E,VHR-277E
			Q5001	405 126 0208	TR 2SK1460LS
			Q5002	405 013 7303	TR 2SC2274K-F
			OR	405 013 7006	TR 2SC2274-F
			Q5003	405 006 7204	TR 2SA984K-F
			OR	405 006 6702	TR 2SA984-F
			Q5004	405 013 7303	TR 2SC2274K-F
			OR	405 013 7006	TR 2SC2274-F
			Q5101	405 089 2202	TR 2SC4483-T
			OR	405 089 2103	TR 2SC4483-S
			Q5102	405 089 2202	TR 2SC4483-T
			OR	405 089 2103	TR 2SC4483-S
			Q5103	405 013 7204	TR 2SC2274K-E
			OR	405 013 7006	TR 2SC2274-F
			OR	405 013 7303	TR 2SC2274K-F
			OR	405 013 6801	TR 2SC2274-E
			Q5104	405 089 2103	TR 2SC4483-S
			OR	405 089 2202	TR 2SC4483-T
			Q5105	405 099 8607	TR 2SC4640T
			OR	405 011 8401	TR 2SC1740S-Q
			OR	405 099 8508	TR 2SC4640S
			OR	405 011 8500	TR 2SC1740S-R
			OR	405 093 0607	TR KSC2785-Y
			Q5131	405 089 2202	TR 2SC4483-T
			OR	405 089 2103	TR 2SC4483-S
			Q5132	405 000 0409	TR DTA114EK
			Q5133	405 000 2908	TR DTC114EK
			Q5134	405 099 8607	TR 2SC4640T
			OR	405 011 8500	TR 2SC1740S-R
			OR	405 093 0607	TR KSC2785-Y
			OR	405 099 8508	TR 2SC4640S
			OR	405 011 8401	TR 2SC1740S-Q
			(INTEGRATED CIRCUITS)		
			IC101	410 273 1909	IC LA71511ML-MPB
			IC102	409 372 4508	IC LC89977M
			IC131	409 258 5209	IC BA7630S,VHR-277SP,VHR-267SP
			IC141	410 228 1404	IC LC74783M-9095-TRM,VHR-287E,VHR-277G
			OR	410 225 2701	IC LC74783M-9083-TRM,VHR-287E,VHR-277G
			IC232	409 051 2900	IC TC4053BF,VHR-277SP,VHR-267SP
			OR	409 051 2900	IC TC4053BF,VHR-277SP,VHR-267SP
			IC301	410 282 7701	IC LC866852A-5D92,VHR-277G ONLY
			OR	410 282 1204	IC LC866744A-5D86,EXCEPT VHR-287E,VHR-277G
			OR	410288 0409	IC LC866852A-5E48,VHR-287E ONLY
			IC302	409 314 2005	IC LB1643
			IC303	409 243 4101	IC MN1380-L
			OR	409 313 0903	IC MN1381-L
			IC304	409 348 3702	IC XL24C01AP,VHR-267SP ONLY

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
IC304	410 177 3801	IC AT24C01A-10PC,VHR-267SP ONLY	D5105	407 198 2401	DIODE SFT14
OR	410 172 6708	IC X24C01APC7284,VHR-267SP ONLY	D5107	407 063 8903	ZENER DIODE MTZJ5.6C
OR	409 368 9807	IC BR24C01A,VHR-267SP ONLY	D5108	407 063 8903	ZENER DIODE MTZJ5.6C
OR	410 189 5602	IC 24LC01B/P,VHR-267SP ONLY	D5109	407 063 8903	ZENER DIODE MTZJ5.6C
OR	410 177 3702	IC AT24C04-10PC,VHR-277SP,VHR-277G	D5110	407 099 6607	ZENER DIODE MTZJ12B
OR	410 189 5800	IC 24LC04B/P,VHR-277SP,VHR-277G	D5111	407 099 5501	ZENER DIODE MTZJ6.2C
OR	409 348 6901	IC XL24C04P,VHR-277SP,VHR-277G	D5112	407 004 9709	DIODE DSK10C
OR	410 172 6906	IC X24C04PC7346,VHR-277SP,VHR-277G	OR	407 005 8701	DIODE ERA15-02
OR	410 172 6807	IC X24C02PC7189,VHR-287E,VHR-277E	D5113	407 005 8701	DIODE ERA15-02
OR	409 401 6305	IC BR24C02,VHR-287E,VHR-277E	OR	407 004 9709	DIODE DSK10C
OR	409 348 6802	IC XL24C02P,VHR-287E,VHR-277E			(CRYSTAL DEVICES)
OR	410 189 5701	IC 24LC02B/P,VHR-287E,VHR-277E	X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	410 177 3603	IC AT24C02-10PC,VHR-287E,VHR-277E	OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
IC341	409 057 5103	IC UPC574J,VHR-287E,VHR-277E	OR	645 014 8378	OSC,CRYSTAL 4.433619MHZ
OR	409 026 8203	IC L5631,VHR-287E,VHR-277E	OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
IC351	409 348 6604	IC BU2899K	X3001	645 007 8460	OSC,CERAMIC 8.500MHZ
OR	409 348 8103	IC XLU2899K	OR	645 008 8360	OSC,CERAMIC 8.500MHZ
IC511	409 180 2307	IC UPC1093J	X3002	645 004 1938	OSC,CRYSTAL 32.768KHZ
		(DIODES)	OR	613 109 0972	OSC,CRYSTAL 32KHZ
D1001	407 012 4406	DIODE 1SS133,EXCEPT VHR-287E,VHR-277G			(VARIABLE RESISTORS)
D1002	407 012 4406	DIODE 1SS133,EXCEPT VHR-287E,VHR-277G	VR351	645 003 5166	VR,SEMI,220K N
D1005	407 012 4406	DIODE 1SS133,VHR-287E,VHR-277E	OR	645 003 5593	VR,SEMI,220K N
D1301	407 012 4406	DIODE 1SS133	OR	645 006 5538	VR,SEMI,220K N
D1302	407 012 4406	DIODE 1SS133			(INDUCTORS)
D1303	407 012 4406	DIODE 1SS133,VHR-277SP,VHR-267SP	L1002	645 001 4611	INDUCTOR 120U J
D1304	407 012 4406	DIODE 1SS133,VHR-277SP,VHR-267SP	OR	645 003 7948	INDUCTOR,120U J
D1341	407 012 4406	DIODE 1SS133,EXCEPT VHR-277SP,VHR-267SP	L1003	645 002 1510	INDUCTOR 68U J
D1342	407 012 4406	DIODE 1SS133,EXCEPT VHR-277SP,VHR-267SP	OR	645 003 8228	INDUCTOR,68U J
D1345	407 063 8804	ZENER DIODE MTZJ5.6A,VHR-277SP, VHR-267SP	L1006	645 001 4642	INDUCTOR 22U J
			OR	645 003 8013	INDUCTOR,22U J
D1346	407 063 8804	ZENER DIODE MTZJ5.6A,VHR-277SP, VHR-267SP	L1007	645 002 1411	INDUCTOR 10U J
			OR	645 003 7894	INDUCTOR,10U J
D1347	407 012 4406	DIODE 1SS133,VHR-287E ONLY	L1101	645 008 7400	CORE,BEAD
D1348	407 012 4406	DIODE 1SS133,VHR-287E ONLY	L1102	645 009 3791	CORE,BEAD
D2341	407 012 4406	DIODE 1SS133	L1401	645 001 5472	INDUCTOR 33U J,VHR-287E,VHR-277G
D2371	407 099 7000	ZENER DIODE MTZJ15B	OR	645 003 8105	INDUCTOR,33U J,VHR-287E,VHR-277G
D2372	407 063 8804	ZENER DIODE MTZJ5.6A,VHR-277SP, VHR-267SP	L1402	645 002 1497	INDUCTOR 56U J,VHR-287E,VHR-277G
			OR	645 003 8181	INDUCTOR,56U J,VHR-287E,VHR-277G
D2373	407 099 7000	ZENER DIODE MTZJ15B, EXCEPT VHR-277E,VHR-277G	L1404	645 002 1442	INDUCTOR 18U J,VHR-287E,VHR-277G
			OR	645 003 7986	INDUCTOR,18U J,VHR-287E,VHR-277G
D2374	407 063 8804	ZENER DIODE MTZJ5.6A, VHR-277SP,VHR-267SP	L2021	645 003 6934	INDUCTOR,100U J
			OR	645 003 7634	INDUCTOR,100U J
D3001	407 012 4406	DIODE 1SS133	L2371	645 008 7400	CORE,BEAD
D3102	407 012 4406	DIODE 1SS133	L2372	645 008 7400	CORE,BEAD,EXCEPT VHR-277E,VHR-277G
D3103	407 012 4406	DIODE 1SS133,VHR-267SP ONLY	L3001	645 009 3791	CORE,BEAD
D3104	407 012 4406	DIODE 1SS133,VHR-277E ONLY	L3003	645 009 3791	CORE,BEAD
D3105	407 012 4406	DIODE 1SS133,VHR-287E ONLY	L3301	645 001 4550	INDUCTOR 10U K
D3106	407 012 4406	DIODE 1SS133,VHR-287E ONLY	OR	645 003 7900	INDUCTOR,10U K
D3108	407 012 4406	DIODE 1SS133,VHR-277SP,VHR-267SP	L3304	645 006 3886	INDUCTOR,1U K
D3111	407 012 4406	DIODE 1SS133,VHR-277E ONLY	OR	645 005 3856	INDUCTOR,1U M
D3112	407 012 4406	DIODE 1SS133,VHR-277E ONLY	L5001	△ 645 013 5620	LINE FILTER
D3115	407 012 4406	DIODE 1SS133,VHR-287E,VHR-277G (OPTION:VHR-267SP,VHR-277SP The D3115 is necessary when install the COMPL PWB TM-9)	L5010	645 024 3417	INDUCTOR,2.0UH
			OR	645 006 3602	INDUCTOR,1.1UH
D3116	407 012 4406	DIODE 1SS133,VHR-287E ONLY	L5101	645 024 3417	INDUCTOR,2.0UH
D3118	407 012 4406	DIODE 1SS133	OR	645 006 3602	INDUCTOR,1.1UH
D3120	407 012 4406	DIODE 1SS133,VHR-287E,VHR-277E	L5102	645 006 3602	INDUCTOR,1.1UH
D3124	407 012 4406	DIODE 1SS133,VHR-287E,VHR-277E	OR	645 024 3417	INDUCTOR,2.0UH
D3401	407 100 0006	ZENER DIODE MTZJ33C,EXCEPT VHR-287E,VHR-277E	L5109	645 009 3791	CORE,BEAD
					(TRANSFORMERS)
D3502	407 012 4406	DIODE 1SS133	T2001	△ 645 018 3515	TRANS,OSC,70KHZ
D3505	407 100 6602	DIODE 1SS291,VHR-287E,VHR-277E	T5001	645 020 8676	TRANS,POWER,PULSE
D3506	407 100 6602	DIODE 1SS291,VHR-287E,VHR-277E			(CAPACITORS)
D5001	407 104 5304	DIODE S1WB(A)60	C1001	403 191 8709	ELECT 1U M 50V
OR	407 197 6509	DIODE DB155G-S	C1002	403 189 2405	ELECT 10U M 16V
D5003	407 078 2705	DIODE 1SS244	C1003	403 135 4002	ELECT 47U M 6.3V
D5004	407 078 2705	DIODE 1SS244	C1004	403 068 0409	CERAMIC 0.1U Z 25V
D5006	407 078 2705	DIODE 1SS244	C1005	403 163 7907	ELECT 47U M 6.3V
D5010	407 091 6704	DIODE AP01C	C1006	403 068 0409	CERAMIC 0.1U Z 25V
D5013	△ 407 169 5608	PHOTO COUPLE PC123U2	C1007	403 191 8709	ELECT 1U M 50V
D5101	407 160 9308	DIODE ERB93-02L3	C1009	403 191 8709	ELECT 1U M 50V
OR	407 169 5707	DIODE RL2Z-LF-C4	C1010	403 014 9302	CERAMIC 180P J 50V
OR	407 198 2609	DIODE SF34	C1011	403 023 4503	CERAMIC 330P J 50V
D5102	407 160 9308	DIODE ERB93-02L3	C1012	403 020 0508	CERAMIC 27P J 50V
OR	407 198 2500	DIODE SF24	C1013	403 150 6500	ELECT 22U M 16V
D5103	407 078 2705	DIODE 1SS244	C1014	403 069 5601	CERAMIC 0.01U K 50V
D5104	407 078 2705	DIODE 1SS244	C1015	403 020 0508	CERAMIC 27P J 50V,EXCEPT VHR-287E, VHR-277E
D5105	407 100 6909	DIODE AG01	C1015	403 022 8304	CERAMIC 33P J 50V,VHR-287E,VHR-277E
			C1016	403 001 1906	CERAMIC 0.01U M 16V
			C1017	403 001 1906	CERAMIC 0.01U M 16V

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
C1018	403 130 3109	CERAMIC 0.047U K 50V	C2024	403 075 0706	CERAMIC 6800P K 50V
C1019	403 191 8709	ELECT 1U M 50V	C2025	403 193 7809	ELECT 100U M 16V
C1021	403 130 3109	CERAMIC 0.047U K 50V	C2026	403 081 3302	POLYPRO 0.022U J 100V
C1022	403 109 6308	ELECT 1U M 50V	C2027	403 068 0409	CERAMIC 0.1U Z 25V
C1023	403 130 3109	CERAMIC 0.047U K 50V	C2363	403 069 1702	CERAMIC 1000P K 50V
C1024	403 192 5905	CERAMIC 0.1U K 25V	C2365	403 069 1702	CERAMIC 1000P K 50V
C1025	403 069 5601	CERAMIC 0.01U K 50V	C2367	403 069 1702	CERAMIC 1000P K 50V,VHR-277SP, VHR-267SP
C1026	403 191 8709	ELECT 1U M 50V	C2369	403 069 1702	CERAMIC 1000P K 50V,EXCEPT VHR-277E, VHR-277G
C1027	403 072 1607	CERAMIC 0.022U K 50V	C2371	403 134 9602	ELECT 47U M 16V,VHR-277SP,VHR-267SP
C1028	403 191 8709	ELECT 1U M 50V	C2372	403 074 7607	CERAMIC 5600P K 50V
C1029	403 163 7907	ELECT 47U M 6.3V	C2373	403 121 3507	ELECT 4.7U M 50V,VHR-277SP,VHR-267SP
C1030	403 068 0409	CERAMIC 0.1U Z 25V	C3001	403 018 0503	CERAMIC 22P J 50V
C1031	403 069 5601	CERAMIC 0.01U K 50V	C3002	403 014 2501	CERAMIC 18P J 50V,EXCEPT VHR-287E, VHR-277G
C1032	403 191 8709	ELECT 1U M 50V	OR	403 012 5900	CERAMIC 15P J 50V,VHR-287E,VHR-277G
C1033	403 014 3409	CERAMIC 18P J 50V	C3004	403 069 5601	CERAMIC 0.01U K 50V
C1038	403 010 1102	CERAMIC 1000P J 50V,VHR-287E,VHR-277E	C3005	403 069 5601	CERAMIC 0.01U K 50V
C1040	403 189 2405	ELECT 10U M 16V	C3008	403 150 6500	ELECT 22U M 16V
C1041	403 020 0409	CERAMIC 27P J 50V	C3009	403 069 5601	CERAMIC 0.01U K 50V
C1043	403 086 2805	NP-ELECT 1U M 50V,EXCEPT VHR-277SP, VHR-267SP	C3011	403 068 0409	CERAMIC 0.1U Z 25V
C1044	403 026 2803	CERAMIC 47P J 50V,EXCEPT VHR-277SP, VHR-267SP	C3012	403 069 5601	CERAMIC 0.01U K 50V
C1046	403 001 3306	CERAMIC 1200P M 16V	C3014	403 135 4101	ELECT 470U M 6.3V,EXCEPT VHR-267SP
C1047	403 026 2803	CERAMIC 47P J 50V	OR	403 206 9004	ELECT 1000U M 6.3V,VHR-267SP ONLY
C1048	403 012 6907	CERAMIC 15P J 50V	C3016	403 069 5601	CERAMIC 0.01U K 50V
C1050	403 012 6907	CERAMIC 15P J 50V	C3017	403 069 1702	CERAMIC 1000P K 50V,VHR-287E,VHR-277E
C1051	403 026 2803	CERAMIC 47P J 50V	C3019	403 068 0409	CERAMIC 0.1U Z 25V
C1052	403 026 2803	CERAMIC 47P J 50V,VHR-287E ONLY	C3022	403 305 4801	DL-ELECT 0.1F Z 5.5V,EXCEPT VHR-267SP
C1101	403 191 8709	ELECT 1U M 50V	C3034	403 069 5601	CERAMIC 0.01U K 50V
C1102	403 163 7907	ELECT 47U M 6.3V	C3037	403 075 3103	CERAMIC 82P J 50V,VHR-287E,VHR-277E
C1103	403 068 0409	CERAMIC 0.1U Z 25V	OR	403 028 3402	CERAMIC 56P J 50V,EXCEPT VHR-287E, VHR-277E
C1104	403 069 5601	CERAMIC 0.01U K 50V	C3040	403 009 5807	CERAMIC 100P J 50V,VHR-277G ONLY
C1105	403 069 5601	CERAMIC 0.01U K 50V	C3041	403 009 5807	CERAMIC 100P J 50V,VHR-277G ONLY
C1106	403 069 5601	CERAMIC 0.01U K 50V	C3042	403 009 5807	CERAMIC 100P J 50V,VHR-277G ONLY
C1107	403 069 5601	CERAMIC 0.01U K 50V	C3043	403 009 5807	CERAMIC 100P J 50V,VHR-277G ONLY
C1108	403 192 5905	CERAMIC 0.1U K 25V	C3301	403 107 9905	ELECT 10U M 16V
C1109	403 068 0409	CERAMIC 0.1U Z 25V	C3302	403 107 9905	ELECT 10U M 16V
C1301	403 135 4101	ELECT 470U M 6.3V	C3303	403 024 7206	CERAMIC 390P J 50V,EXCEPT VHR-287E, VHR-277E
C1302	403 068 0409	CERAMIC 0.1U Z 25V,VHR-277SP,VHR-267SP	C3307	403 068 0409	CERAMIC 0.1U Z 25V
C1303	403 068 0409	CERAMIC 0.1U Z 25V	C3314	403 189 2405	ELECT 10U M 16V
C1341	403 154 2102	NP-ELECT 1U M 50V,VHR-277SP,VHR-267SP	C3315	403 068 3608	CERAMIC 0.033U Z 25V
C1342	403 068 0409	CERAMIC 0.1U Z 25V,VHR-277SP,VHR-267SP	C3318	403 011 5000	CERAMIC 120P J 50V
C1344	403 154 2102	NP-ELECT 1U M 50V,VHR-277SP,VHR-267SP	C3320	403 030 7009	CERAMIC 68P J 50V
C1346	403 107 9905	ELECT 10U M 16V,VHR-277SP,VHR-267SP	C3401	403 014 9203	CERAMIC 180P J 50V,VHR-287E,VHR-277E
C1351	403 107 9905	ELECT 10U M 16V,VHR-277SP,VHR-267SP	C3402	403 168 6202	MT-POLYEST 0.33U J 50V,VHR-287E,VHR-277E
C1352	403 191 8709	ELECT 1U M 50V,EXCEPT VHR-277SP, VHR-267SP	C3403	403 184 9805	MT-POLYEST 0.22U J 50V,VHR-287E,VHR-277E
OR	403 086 2805	NP-ELECT 1U M 50V,VHR-277SP,VHR-267SP	C3404	403 193 8905	ELECT 22U M 50V
C1353	403 109 6308	ELECT 1U M 50V,VHR-287E ONLY	C3406	403 168 6103	MT-POLYEST 0.1U J 50V,VHR-287E,VHR-277E
C1401	403 022 8205	CERAMIC 33P J 50V,VHR-287E,VHR-277G	C3501	403 070 9803	CERAMIC 0.015U K 50V
C1403	403 109 6308	ELECT 1U M 50V,VHR-287E,VHR-277G	C3502	403 075 0706	CERAMIC 6800P K 50V
C1404	403 069 9500	CERAMIC 0.01U Z 50V,VHR-287E,VHR-277G	C3503	403 070 9803	CERAMIC 0.015U K 50V
C1405	403 135 4002	ELECT 47U M 6.3V,VHR-287E,VHR-277G	C3504	403 228 8207	ELECT 22U M 16V
C1406	403 018 0503	CERAMIC 22P J 50V,VHR-287E,VHR-277G	C3505	403 228 8207	ELECT 22U M 16V
C1407	403 018 0503	CERAMIC 22P J 50V,VHR-287E,VHR-277G	C3506	403 075 0706	CERAMIC 6800P K 50V
C1410	403 009 5807	CERAMIC 100P J 50V,VHR-287E,VHR-277G	C3507	403 150 6500	ELECT 22U M 16V
C1411	403 070 5508	CERAMIC 1200P K 50V,VHR-287E,VHR-277G	C3508	403 150 6500	ELECT 22U M 16V
C1412	403 109 6308	ELECT 1U M 50V,VHR-287E,VHR-277G	C3509	403 163 7907	ELECT 47U M 6.3V
C1414	403 014 3508	CERAMIC 18P J 50V,VHR-287E,VHR-277G	C3511	403 071 6504	CERAMIC 220P K 50V
C2001	403 191 8709	ELECT 1U M 50V	C3512	403 056 9704	POLYESTER 0.01U J 50V,VHR-287E,VHR-277E
C2002	403 069 1702	CERAMIC 1000P K 50V	OR	403 061 3407	POLYESTER 0.039U J 50V,EXCEPT VHR-287E, VHR-277E
C2003	403 069 5601	CERAMIC 0.01U K 50V	C3513	403 119 6701	CERAMIC 0.068U K 16V
C2004	403 150 6500	ELECT 22U M 16V	C3514	403 175 1009	MT-POLYEST 0.15U J 50V,EXCEPT VHR-287E, VHR-277E
C2005	403 167 7002	ELECT 4.7U M 50V	OR	403 184 9805	MT-POLYEST 0.22U J 50V,VHR-287E,VHR-277E
C2006	403 068 0409	CERAMIC 0.1U Z 25V	C3515	403 059 6205	POLYESTER 0.022U K 50V,EXCEPT VHR-287E, VHR-277E
C2007	403 167 7002	ELECT 4.7U M 50V	OR	403 063 0206	POLYESTER 6800P K 50V,VHR-287E, VHR-277E
C2008	403 068 0409	CERAMIC 0.1U Z 25V	C3516	403 071 8102	CERAMIC 2200P K 50V
C2009	403 159 8109	ELECT 100U M 6.3V	C3517	403 070 8806	CERAMIC 1500P K 50V
C2010	403 167 6500	ELECT 33U M 6.3V	C3522	403 069 1207	CERAMIC 1000P K 50V
C2011	403 167 6500	ELECT 33U M 6.3V	C3523	403 139 2707	ELECT 1U M 50V
C2012	403 068 0409	CERAMIC 0.1U Z 25V	C3524	403 069 5601	CERAMIC 0.01U K 50V
C2013	403 189 2405	ELECT 10U M 16V	C3525	403 139 2608	ELECT 0.47U M 50V
C2014	403 068 0409	CERAMIC 0.1U Z 25V	C3526	403 063 7205	POLYESTER 0.082U J 50V
C2015	403 068 0409	CERAMIC 0.1U Z 25V,VHR-287E ONLY			
C2016	403 163 8409	ELECT 47U M 16V			
C2017	403 075 5305	CERAMIC 8200P K 50V			
C2021	403 075 4803	CERAMIC 820P K 50V			
C2022	403 070 5508	CERAMIC 1200P K 50V			
C2023	403 075 0706	CERAMIC 6800P K 50V			

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
C3536	403 193 7601	ELECT 220U M 6.3V	R1048	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
C3540	403 009 5708	CERAMIC 100P J 50V	R1049	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
C3551	403 168 6202	MT-POLYEST 0.33U J 50V,VHR-287E,VHR-277E	R1101	401 038 0701	MT-GLAZE 2.2K JA 1/10W
OR	403 175 0903	MT-POLYEST 0.12U J 50V,EXCEPT VHR-287E, VHR-277E	R1102	401 038 0701	MT-GLAZE 2.2K JA 1/10W
C3552	403 028 4102	CERAMIC 56P J 50V	R1104	401 015 2605	CARBON 1.8K JA 1/4W
C3553	403 191 8709	ELECT1U M 50V	R1301	401 021 1807	CARBON 560 JA 1/4W,VHR-277SP, VHR-267SP
C3554	403 013 3004	CERAMIC 150P J 50V	OR	401 019 0904	CARBON 390 JA 1/4W, EXCEPT VHR-277SP,VHR-267SP
C3555	403 069 5601	CERAMIC 0.01U K 50V	R1303	401 022 6702	CARBON 75 JA 1/4W
C3556	403 069 1702	CERAMIC 1000P K 50V	R1304	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277SP,VHR-267SP
C3558	403 167 6500	ELECT 33U M 6.3V	R1309	401 022 1806	CARBON 680 JA 1/4W, VHR-277SP,VHR-267SP
C3561	403 058 9306	POLYESTER 0.018U J 50V,VHR-287E, VHR-277E	R1310	401 022 1806	CARBON 680 JA 1/4W, VHR-277SP,VHR-267SP
C3562	403 138 5600	POLYESTER 5600P J 50V,VHR-287E,VHR-277E	R1311	401 038 4907	MT-GLAZE 39 JA 1/10W, VHR-277SP,VHR-267SP
C3570	403 070 2606	CERAMIC 0.1U Z 50V	R1312	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
C3571	403 070 2606	CERAMIC 0.1U Z 50V	OR	401 038 0602	MT-GLAZE 220 JA 1/10W, EXCEPT VHR-277SP,VHR-267SP
C3581	403 184 9805	MT-POLYEST 0.22U J 50V,VHR-287E,VHR-277E	R1313	401 038 2002	MT-GLAZE 270 JA 1/10W, EXCEPT VHR-277SP,VHR-267SP
C5001	△ 404 055 4905	MT-POLYEST 0.068U M 250V	R1314	401 038 3405	MT-GLAZE 33 JA 1/10W, VHR-277SP,VHR-267SP
C5002	△ 404 055 4905	MT-POLYEST 0.068U M 250V	R1341	401 037 5400	MT-GLAZE 1K JA 1/10W, VHR-277SP,VHR-267SP
C5005	△ 404 074 2104	CERAMIC 1000P M 250V	R1342	401 012 5609	CARBON 1K JA 1/4W,VHR-277SP,VHR-267SP
C5007	△ 404 074 2104	CERAMIC 1000P M 250V	R1343	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP
C5010	403 249 0204	ELECT 47U M 400V	R1344	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP
C5011	403 301 1101	ELECT 4.7U M 50V	R1345	401 038 6406	MT-GLAZE 4.7K JA 1/10W, VHR-277SP,VHR-267SP
C5012	403 076 2402	CERAMIC 3300P K 500V	R1346	401 038 6406	MT-GLAZE 4.7K JA 1/10W, VHR-277SP,VHR-267SP
C5013	403 255 8409	CERAMIC 39P J 1K	R1347	401 038 6406	MT-GLAZE 4.7K JA 1/10W, VHR-277SP,VHR-267SP
C5015	403 192 5905	CERAMIC 0.1U K 25V	R1348	401 038 6406	MT-GLAZE 4.7K JA 1/10W, VHR-277SP,VHR-267SP
C5017	403 024 7107	CERAMIC 390P J 50V	R1349	401 038 3504	MT-GLAZE 330 JA 1/10W, VHR-277SP,VHR-267SP
C5020	403 255 8508	CERAMIC 47P J 1K	R1350	401 038 5003	MT-GLAZE 390 JA 1/10W, VHR-277SP,VHR-267SP
C5021	403 076 0507	CERAMIC 2200P K 500V	R1351	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
C5025	403 255 8409	CERAMIC 39P J 1K	R1352	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
C5101	403 314 0207	ELECT 1000U M 16V	R1404	401 038 3603	MT-GLAZE 3.3K JA 1/10W,VHR-287E,VHR-277G
C5102	403 135 3302	ELECT 1000U M 6.3V	R1405	401 038 0602	MT-GLAZE 220 JA 1/10W,VHR-287E,VHR-277G
C5103	403 314 0108	ELECT 470U M 16V	R1408	401 038 7601	MT-GLAZE 560 JA 1/10W, VHR-277SP,VHR-267SP
C5104	403 125 5507	ELECT 1000U M 16V	R1409	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-287E,VHR-277G
C5105	403 304 9302	ELECT 47U M 50V	R1410	401 037 6704	MT-GLAZE 1.2K JA 1/10W, VHR-277SP,VHR-267SP
C5106	403 301 1309	ELECT 47U M 35V	OR	401 038 0602	MT-GLAZE 220 JA 1/10W, EXCEPT VHR-277SP,VHR-267SP
C5107	403 301 1507	ELECT 220U M 6.3V	R1411	401 037 6704	MT-GLAZE 1.2K JA 1/10W, VHR-277SP,VHR-267SP
C5111	403 125 5606	ELECT 100U M 16V	R1412	401 018 9700	CARBON 39 JA 1/4W,VHR-277SP,VHR-267SP
C5112	403 189 2405	ELECT 10U M 16V	R2001	401 038 6406	MT-GLAZE 4.7K JA 1/10W
C5113	403 193 9001	ELECT 3.3U M 50V	R2002	401 037 6803	MT-GLAZE 12K JA 1/10W
C5114	403 107 9905	ELECT 10U M 16V	R2003	401 037 6803	MT-GLAZE 12K JA 1/10W
C5115	403 135 7805	ELECT 3.3U M 50V	R2004	401 038 3801	MT-GLAZE 330K JA 1/10W
C5116	403 107 9905	ELECT 10U M 16V	R2005	401 037 7206	MT-GLAZE 130 JA 1/10W
C5117	403 135 7805	ELECT 3.3U M 50V	R2006	401 038 3603	MT-GLAZE 3.3K JA 1/10W
C5118	403 189 2405	ELECT 10U M 16V	R2007	401 038 6406	MT-GLAZE 4.7K JA 1/10W
C5124	403 108 0000	ELECT 0.22U M 50V	R2008	401 039 0403	MT-GLAZE 8.2K JA 1/10W
C5134	403 076 2006	CERAMIC 330P K 500V	R2009	401 038 3900	MT-GLAZE 3.3M JA 1/10W
C5135	403 057 3107	POLYESTER 0.1U K 50V	R2010	401 038 3702	MT-GLAZE 33K JA 1/10W
R1001	401 037 5400	MT-GLAZE 1K JA 1/10W	R2011	401 037 5608	MT-GLAZE 10K JA 1/10W
R1002	401 038 6406	MT-GLAZE 4.7K JA 1/10W	R2012	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R1003	401 037 9200	MT-GLAZE 1.8K JA 1/10W	R2013	401 038 3702	MT-GLAZE 33K JA 1/10W
R1004	401 037 6704	MT-GLAZE 1.2K JA 1/10W	R2014	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-287E ONLY
R1005	401 038 6307	MT-GLAZE 470 JA 1/10W	R2015	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-287E ONLY
R1006	401 038 6307	MT-GLAZE 470 JA 1/10W	R2017	401 037 5608	MT-GLAZE 10K JA 1/10W
R1011	401 037 5400	MT-GLAZE 1K JA 1/10W	R2021	401 038 2200	MT-GLAZE 27K JA 1/10W
R1012	401 038 6505	MT-GLAZE 47K JA 1/10W	R2022	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R1014	401 037 9200	MT-GLAZE 1.8K JA 1/10W			
R1015	401 039 0403	MT-GLAZE 8.2K JA 1/10W			
R1016	401 037 7909	MT-GLAZE 1.5K JA 1/10W			
R1017	401 016 4707	CARBON 22K JA 1/4W,VHR-287E,VHR-277G			
OR	401 013 6308	CARBON 12K JA 1/4W,EXCEPT VHR-287E, VHR-277G			
R1018	401 014 4006	CARBON 1.5K JA 1/4W,EXCEPT VHR-287E, VHR-277G			
R1024	401 037 5400	MT-GLAZE 1K JA 1/10W			
R1025	401 037 5004	MT-GLAZE 0.000 ZA 1/10W			
R1028	401 038 0701	MT-GLAZE 2.2K JA 1/10W			
R1032	401 037 5400	MT-GLAZE 1K JA 1/10W,VHR-287E,VHR-277E			
R1033	401 018 2701	CARBON 330 JA 1/4W,EXCEPT VHR-277SP, VHR-267SP			
R1034	401 038 5003	MT-GLAZE 390 JA 1/10W,EXCEPT VHR-277SP, VHR-267SP			
R1040	401 037 5004	MT-GLAZE 0.000 ZA 1/10W			
R1041	401 038 0701	MT-GLAZE 2.2K JA 1/10W,VHR-287E,VHR-277G			
R1042	401 037 5004	MT-GLAZE 0.000 ZA 1/10W			
R1045	401 037 7008	MT-GLAZE 1.2M JA 1/10W			
R1046	401 037 5004	MT-GLAZE 0.000 ZA 1/10W			
R1047	401 037 5004	MT-GLAZE 0.000 ZA 1/10W			

LOCATION	PARTS NO.	DESCRIPTION	LOCATION	PARTS NO.	DESCRIPTION
R2023	401 037 5400	MT-GLAZE 1K JA 1/10W	R3036	401 016 3700	CARBON 2.2K JA 1/4W
R2024	401 038 6208	MT-GLAZE 47 JA 1/10W	R3037	401 038 5300	MT-GLAZE 39K JA 1/10W,EXCEPT VHR-287E, VHR-277E
R2025	401 011 8809	CARBON 1 JA 1/4W	OR	401 038 2200	MT-GLAZE 27K JA 1/10W,VHR-287E,VHR-277E
R2026	401 038 0701	MT-GLAZE 2.2K JA 1/10W	R3047	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R2027	401 038 0701	MT-GLAZE 2.2K JA 1/10W	R3048	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R2028	401 037 9101	MT-GLAZE 180 JA 1/10W	R3049	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R2029	401 037 5608	MT-GLAZE 10K JA 1/10W	R3050	401 016 4707	CARBON 22K JA 1/4W
R2030	401 038 0800	MT-GLAZE 22K JA 1/10W	R3051	401 016 4707	CARBON 22K JA 1/4W
R2031	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	R3056	401 038 6505	MT-GLAZE 47K JA 1/10W,VHR-287E ONLY
OR	401 037 6704	MT-GLAZE 1.2K JA 1/10W	R3059	401 012 6903	CARBON 10K JA 1/4W
R2332	401 038 2101	MT-GLAZE 2.7K JA 1/10W	R3090	401 016 2505	CARBON 220 JA 1/4W,EXCEPT VHR-277SP, VHR-267SP
R2340	401 018 2701	CARBON 330 JA 1/4W	R3091	401 016 2505	CARBON 220 JA 1/4W,EXCEPT VHR-277SP, VHR-267SP
R2341	401 021 2903	CARBON 5.6K JA 1/4W	R3092	401 016 2505	CARBON 220 JA 1/4W,EXCEPT VHR-277SP, VHR-267SP
R2342	401 021 2903	CARBON 5.6K JA 1/4W	R3094	401 013 5202	CARBON 1.2K JA 1/4W,EXCEPT VHR-277SP, VHR-267SP
R2343	401 012 4404	CARBON 100 JA 1/4W	R3095	401 013 5202	CARBON 1.2K JA 1/4W,EXCEPT VHR-277SP, VHR-267SP
R2344	401 012 6903	CARBON 10K JA 1/4W	R3101	401 012 6903	CARBON 10K JA 1/4W
R2345	401 012 6903	CARBON 10K JA 1/4W	R3102	401 012 6903	CARBON 10K JA 1/4W
R2347	401 020 1907	CARBON 4.7K JA 1/4W	R3103	401 012 6903	CARBON 10K JA 1/4W
R2363	401 038 7601	MT-GLAZE 560 JA 1/10W	R3104	401 012 6903	CARBON 10K JA 1/4W
R2365	401 038 2101	MT-GLAZE 2.7K JA 1/10W	R3301	401 038 5003	MT-GLAZE 390 JA 1/10W
R2366	401 038 2101	MT-GLAZE 2.7K JA 1/10W	R3302	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R2367	401 038 7601	MT-GLAZE 560 JA 1/10W, VHR-277SP,VHR-267SP	R3305	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R2369	401 038 2101	MT-GLAZE 2.7K JA 1/10W, EXCEPT VHR-277E,VHR-277G	R3306	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2370	401 038 2101	MT-GLAZE 2.7K JA 1/10W,EXCEPT VHR-277E, VHR-277G	R3309	△ 402 078 2908	FUSIBLE RES 680 GA 1/4W
R2371	401 013 6308	CARBON 12K JA 1/4W, VHR-277SP,VHR-267SP	R3401	401 038 3702	MT-GLAZE 33K JA 1/10W,VHR-287E,VHR-277E
R2372	401 023 2703	CARBON 8.2K JA 1/4W, VHR-277SP,VHR-267SP	R3402	401 037 5608	MT-GLAZE 10K JA 1/10W,VHR-287E,VHR-277E
R2373	401 039 0403	MT-GLAZE 8.2K JA 1/10W, VHR-277SP,VHR-267SP	R3403	401 037 6605	MT-GLAZE 120 JA 1/10W,VHR-287E,VHR-277E
R2374	401 012 5609	CARBON 1K JA 1/4W,VHR-277SP,VHR-267SP	R3404	401 012 6903	CARBON 10K JA 1/4W,VHR-287E,VHR-277E
R2376	401 037 5400	MT-GLAZE 1K JA 1/10W, VHR-277SP,VHR-267SP	R3405	401 037 9309	MT-GLAZE 18K JA 1/10W,VHR-287E,VHR-277E
R2377	401 037 5400	MT-GLAZE 1K JA 1/10W, VHR-277SP,VHR-267SP	R3406	401 037 8005	MT-GLAZE 15K JA 1/10W,VHR-287E,VHR-277E
R2378	401 037 5400	MT-GLAZE 1K JA 1/10W, VHR-277SP,VHR-267SP	R3407	401 037 6803	MT-GLAZE 12K JA 1/10W,VHR-287E,VHR-277E
R2380	401 037 5004	MT-GLAZE 0.000 ZA 1/10W	R3501	401 012 8006	CARBON 100K JA 1/4W
R2381	401 037 5400	MT-GLAZE 1K JA 1/10W	R3502	401 037 5707	MT-GLAZE 100K JA 1/10W
R2382	401 037 5608	MT-GLAZE 10K JA 1/10W, VHR-277SP,VHR-267SP	R3503	401 038 3801	MT-GLAZE 330K JA 1/10W
R2383	401 038 2101	MT-GLAZE 2.7K JA 1/10W, VHR-277SP,VHR-267SP	R3504	401 014 6000	CARBON 150K JA 1/4W
R2384	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP	R3505	401 014 5102	CARBON 15K JA 1/4W
R2385	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP	R3506	401 038 0909	MT-GLAZE 220K JA 1/10W
R2386	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP	R3507	401 014 6000	CARBON 150K JA 1/4W
R2387	401 037 5202	MT-GLAZE 100 JA 1/10W, VHR-277SP,VHR-267SP	R3508	401 020 2805	CARBON 47K JA 1/4W,VHR-287E,VHR-277E
R2391	401 038 9506	MT-GLAZE 75 JA 1/10W, VHR-277SP,VHR-267SP	OR	401 017 2702	CARBON 27K JA 1/4W,EXCEPT VHR-287E, VHR-277E
R2392	401 038 9506	MT-GLAZE 75 JA 1/10W, EXCEPT VHR-277E,VHR-277G	R3516	401 037 5608	MT-GLAZE 10K JA 1/10W
R2393	401 038 6406	MT-GLAZE 4.7K JA 1/10W, VHR-277SP,VHR-267SP	R3517	401 038 6505	MT-GLAZE 47K JA 1/10W
R2394	401 038 0701	MT-GLAZE 2.2K JA 1/10W, VHR-277SP,VHR-267SP	R3518	401 020 2805	CARBON 47K JA 1/4W
R2396	401 038 9506	MT-GLAZE 75 JA 1/10W, EXCEPT VHR-277SP,VHR-267SP	R3519	401 038 3801	MT-GLAZE 330K JA 1/10W, VHR-287E,VHR-277E
R3001	△ 402 067 7402	FUSIBLE RES 3.3 JA 1/2W	R3520	401 038 5409	MT-GLAZE 390K JA 1/10W
R3004	401 037 7909	MT-GLAZE 1.5K JA 1/10W	R3521	401 037 5608	MT-GLAZE 10K JA 1/10W
R3008	401 020 1907	CARBON 4.7K JA 1/4W	R3525	401 012 5609	CARBON 1K JA 1/4W
R3009	401 023 1607	CARBON 820 JA 1/4W	R3526	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R3011	401 020 2805	CARBON 47K JA 1/4W	R3527	401 037 5400	MT-GLAZE 1K JA 1/10W
R3013	401 038 6406	MT-GLAZE 4.7K JA 1/10W	R3528	401 020 7800	CARBON 510 JA 1/4W
R3014	401 014 9001	CARBON 16K JA 1/4W	R3529	401 020 7800	CARBON 510 JA 1/4W
R3015	401 014 9001	CARBON 16K JA 1/4W	R3533	401 014 4006	CARBON 1.5K JA 1/4W,VHR-287E,VHR-277E
R3018	401 038 9209	MT-GLAZE 6.8K JA 1/10W	R3537	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R3019	401 037 9309	MT-GLAZE 18K JA 1/10W	R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3023	401 037 5400	MT-GLAZE 1K JA 1/10W	R3547	401 037 8005	MT-GLAZE 15K JA 1/10W
R3024	401 037 5400	MT-GLAZE 1K JA 1/10W	R3549	401 037 5608	MT-GLAZE 10K JA 1/10W
R3025	401 037 5400	MT-GLAZE 1K JA 1/10W	R3550	401 039 0403	MT-GLAZE 8.2K JA 1/10W
R3026	401 037 5400	MT-GLAZE 1K JA 1/10W	R3556	401 037 5608	MT-GLAZE 10K JA 1/10W
R3032	401 018 4804	CARBON 33K JA 1/4W	R3557	401 038 3801	MT-GLAZE 330K JA 1/10W
			R3558	401 038 6307	MT-GLAZE 470 JA 1/10W
			R3560	401 037 5400	MT-GLAZE 1K JA 1/10W
			R3581	401 021 4006	CARBON 56K JA 1/4W,VHR-287E,VHR-277E
			R5001	402 013 9108	SOLID 2.7M KB 1/2W
			R5002	401 037 9101	MT-GLAZE 180 JA 1/10W
			R5003	401 037 9200	MT-GLAZE 1.8K JA 1/10W
			R5004	401 038 3801	MT-GLAZE 330K JA 1/10W
			R5005	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
			R5006	401 037 5608	MT-GLAZE 10K JA 1/10W
			R5007	401 038 0800	MT-GLAZE 22K JA 1/10W
			R5009	401 038 9308	MT-GLAZE 68K JA 1/10W
			R5010	401 019 3905	CARBON 390K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R5011	401 019 3905	CARBON 390K JA 1/4W
R5020	401 069 4402	OXIDE-MT 68K JA 2W
R5021	401 069 4402	OXIDE-MT 68K JA 2W
R5101	401 018 2701	CARBON 330 JA 1/4W
R5102	401 038 5003	MT-GLAZE 390 JA 1/10W
R5103	401 021 1807	CARBON 560 JA 1/4W
R5104	401 018 3708	CARBON 3.3K JA 1/4W
R5105	401 016 2505	CARBON 220 JA 1/4W
R5106	401 020 0702	CARBON 470 JA 1/4W
R5108	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R5109	401 018 3708	CARBON 3.3K JA 1/4W
R5110	△ 402 071 3100	FUSIBLE RES 27 JA 1/4W
R5111	401 020 7800	CARBON 510 JA 1/4W
R5112	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R5114	401 038 6208	MT-GLAZE 47 JA 1/10W
R5120	△ 402 004 2705	FUSIBLE RES 8.2 JA 1/4W
R5121	401 015 7709	CARBON 2.7 JA 1/4W
R5123	401 015 2605	CARBON 1.8K JA 1/4W
R5132	401 018 3708	CARBON 3.3K JA 1/4W
R5133	401 023 2703	CARBON 8.2K JA 1/4W
R5134	401 018 3708	CARBON 3.3K JA 1/4W
R5135	401 037 6605	MT-GLAZE 120 JA 1/10W
(JUMPERS)		
J1082	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1083	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1084	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1306	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277SP,VHR-267SP
J1342	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,VHR-287E ONLY
J1343	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277SP,VHR-267SP
J1359	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1402	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-287E,VHR-277G
J1502	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1617	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1618	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1621	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2032	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2307	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2328	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2357	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2362	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277SP,VHR-267SP
J2363	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2364	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2371	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2372	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2373	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2374	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277E,VHR-277G
J2380	401 037 5004	MT-GLAZE 0.000 ZA 1/10W,VHR-287E ONLY
J2381	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, EXCEPT VHR-277SP,VHR-267SP
J2384	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2385	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2391	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2392	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2393	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J2399	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2403	401 037 5004	MT-GLAZE 0.000 ZA 1/10W, VHR-277SP,VHR-267SP
J3200	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J3404	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J3465	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J3503	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
(FUSES)		
F5001	△ 423 025 9900	FUSE 250V 2.5A
OR	△ 423 021 8402	FUSE 250V 2.5A
(PROTECTORS)		
PR511	△ 645 005 9858	PROTECTOR,IC 0.8A 50V
PR512	△ 645 014 2512	PROTECTOR,1A 125V

LOCATION	PARTS NO.	DESCRIPTION
(CONNECTORS)		
CN231	645 021 1522	SOCKET,RGB 21P (N.S.P), VHR-277SP,VHR-267SP
OR	645 021 1515	SOCKET,RGB 21P (N.S.P),VHR-287E ONLY
OR	645 021 1508	SOCKET,RGB 21P (N.S.P),VHR-277E,VHR-277G
CN301	645 009 4361	SOCKET,FFC 31P (N.S.P)
OR	645 005 4761	SOCKET,31P (N.S.P)
CN303	645 007 8422	PLUG,12P (N.S.P)
CN351	645 007 8927	PLUG,6P (N.S.P)
CN352	645 008 1842	PLUG,8P (N.S.P)
CN501	△ 645 000 5411	SOCKET,INLET AC (N.S.P)
(MISCELLANEOUS)		
	613 053 8048	FIXER
	645 008 7660	HOLDER,FUSE
OR	645 016 0479	HOLDER,FUSE
OR	645 008 7677	HOLDER,FUSE

COMPL PWB,VP-1

613 173 7211	EXCEPT VHR-287E,VHR-277E
613 173 2858	VHR-287E,VHR-277E

(INTEGRATED CIRCUITS)

IC181	409 391 5203	IC LA70002L
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(CAPACITORS)

C1805	403 068 0409	CERAMIC 0.1U Z 25V
C1806	403 069 5601	CERAMIC 0.01U K 50V
C1807	403 163 7907	ELECT 47U M 6.3V
C1808	403 068 0409	CERAMIC 0.1U Z 25V
C1809	403 191 8709	ELECT 1U M 50V
C1810	403 069 5601	CERAMIC 0.01U K 50V
C1812	403 018 0602	CERAMIC 22P J 50V
C1813	403 018 0602	CERAMIC 22P J 50V
C1835	403 069 5601	CERAMIC 0.01U K 50V
C1836	403 072 1607	CERAMIC 0.022U K 50V

(RESISTORS)

R1801	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1802	401 037 7909	MT-GLAZE 1.5K JA 1/10W,VHR-287E,VHR-277E
OR	401 037 6704	MT-GLAZE 1.2K JA 1/10W, EXCEPT VHR-287E,VHR-277E
R1804	401 038 9001	MT-GLAZE 680 JA 1/10W
R1806	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R1807	401 037 5400	MT-GLAZE 1K JA 1/10W
R1831	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
R1833	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

(CONNECTORS)

CN182	645 005 4136	SOCKET,5P (N.S.P)
OR	645 009 4095	SOCKET,FFC 5P (N.S.P)

COMPL PWB,TM-1

613 173 3817	VHR-287E ONLY
613 173 9192	EXCEPT VHR-287E

(DIODES)

D7101	407 012 4406	DIODE 1SS133
D7102	407 012 4406	DIODE 1SS133
D7103	407 012 4406	DIODE 1SS133
D7104	407 012 4406	DIODE 1SS133

(CAPACITORS)

C7101	403 043 8802	ELECT 4.7U M 16V
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(SWITCHES)

S7101	645 001 9777	SWITCH,PUSH 1P-1T, POWER
OR	645 011 5172	SWITCH,PUSH 1P-1T, POWER
OR	645 011 5165	SWITCH,PUSH 1P-1T, POWER
OR	645 006 2797	SWITCH,PUSH 1P-1T, POWER
OR	645 008 8049	SWITCH,PUSH 1P-1T, POWER
S7102	645 006 2797	SWITCH,PUSH 1P-1T, STOP/EJECT
OR	645 008 8049	SWITCH,PUSH 1P-1T, STOP/EJECT
OR	645 011 5165	SWITCH,PUSH 1P-1T, STOP/EJECT
OR	645 001 9777	SWITCH,PUSH 1P-1T, STOP/EJECT
OR	645 011 5172	SWITCH,PUSH 1P-1T, STOP/EJECT
S7103	645 008 8049	SWITCH,PUSH 1P-1T, CH-UP
OR	645 001 9777	SWITCH,PUSH 1P-1T, CH-UP
OR	645 011 5172	SWITCH,PUSH 1P-1T, CH-UP
OR	645 011 5165	SWITCH,PUSH 1P-1T, CH-UP
OR	645 006 2797	SWITCH,PUSH 1P-1T, CH-UP
S7104	645 011 5172	SWITCH,PUSH 1P-1T, CH-DOWN

LOCATION	PARTS NO.	DESCRIPTION
S7104	645 011 5165	SWITCH,PUSH 1P-1T, CH-DOWN
OR	645 006 2797	SWITCH,PUSH 1P-1T, CH-DOWN
OR	645 008 8049	SWITCH,PUSH 1P-1T, CH-DOWN
OR	645 001 9777	SWITCH,PUSH 1P-1T, CH-DOWN
S7106	645 008 8049	SWITCH,PUSH 1P-1T, PAUSE
OR	645 011 5165	SWITCH,PUSH 1P-1T, PAUSE
OR	645 006 2797	SWITCH,PUSH 1P-1T, PAUSE
OR	645 001 9777	SWITCH,PUSH 1P-1T, PAUSE
OR	645 011 5172	SWITCH,PUSH 1P-1T, PAUSE
S7107	645 006 2797	SWITCH,PUSH 1P-1T, REW
OR	645 008 8049	SWITCH,PUSH 1P-1T, REW
OR	645 001 9777	SWITCH,PUSH 1P-1T, REW
OR	645 011 5172	SWITCH,PUSH 1P-1T, REW
OR	645 011 5165	SWITCH,PUSH 1P-1T, REW
S7108	645 008 8049	SWITCH,PUSH 1P-1T, PLAY
OR	645 001 9777	SWITCH,PUSH 1P-1T, PLAY
OR	645 006 2797	SWITCH,PUSH 1P-1T, PLAY
OR	645 011 5172	SWITCH,PUSH 1P-1T, PLAY
OR	645 011 5165	SWITCH,PUSH 1P-1T, PLAY
S7109	645 001 9777	SWITCH,PUSH 1P-1T, FF
OR	645 011 5172	SWITCH,PUSH 1P-1T, FF
OR	645 011 5165	SWITCH,PUSH 1P-1T, FF
OR	645 006 2797	SWITCH,PUSH 1P-1T, FF
OR	645 008 8049	SWITCH,PUSH 1P-1T, FF
S7110	645 008 8049	SWITCH,PUSH 1P-1T, REC
OR	645 011 5165	SWITCH,PUSH 1P-1T, REC
OR	645 006 2797	SWITCH,PUSH 1P-1T, REC
OR	645 001 9777	SWITCH,PUSH 1P-1T, REC
OR	645 011 5172	SWITCH,PUSH 1P-1T, REC
(REMOTE RECEIVERS)		
RR711	645 021 6152	UNIT,IR RECEIVER PACK
OR	645 006 8720	UNIT,IR RECEIVER PACK
(DISPLAYS)		
A7101	645 020 9437	FLUORESCENT TUBE
OR	645 004 0597	FLUORESCENT TUBE
(CONNECTORS)		
CN711	645 009 4361	SOCKET,FFC 31P (N.S.P)
OR	645 005 4761	SOCKET,31P (N.S.P)
(MISCELLANEOUS)		
	613 173 7488	HOLDER,IR
OR	613 163 1700	HOLDER IR, RR711
	613 139 2267	HOLDER FL, FL

COMPL PCB, TM-8

613 134 4730 (OPTION:VHR-267SP,VHR-277SP)

(INTEGRATED CIRCUITS)

IC781 409 338 8809 IC SDA5642-5
OR 409 148 5104 IC SDA5642

(CAPACITORS)

C7802 403 013 3103 CERAMIC 150P J 50V
C7803 403 256 4608 MT-COMPO 0.33U J 50V
C7804 403 057 2407 POLYESTER 0.1U J 50V

(RESISTORS)

R7805 401 038 0701 MT-GLAZE 2.2K JA 1/10W
R7806 401 037 5806 MT-GLAZE 1M JA 1/10W
R7807 401 039 0601 MT-GLAZE 820K JA 1/10W
R7808 401 037 5707 MT-GLAZE 100K JA 1/10W
R7809 401 037 5608 MT-GLAZE 10K JA 1/10W
R7810 401 037 7008 MT-GLAZE 1.2M JA 1/10W
R7811 401 037 5202 MT-GLAZE 100 JA 1/10W
R7812 401 038 7700 MT-GLAZE 5.6K JA 1/10W

COMPL PCB, TM-9

613 158 5751 VHR277G,VHR287E
(OPTION:VHR-267SP,VHR-277SP)

(INTEGRATED CIRCUITS)

IC771 409 340 9600 IC SDA5649

(CAPACITORS)

C7701 403 060 7505 POLYESTER 0.033U J 50V
C7702 403 071 8102 CERAMIC 2200P K 50V
C7703 403 256 4608 MT-COMPO 0.33U J 50V
C7704 403 013 3004 CERAMIC 150P J 50V
C7705 403 068 0409 CERAMIC 0.1U Z 25V
C7706 403 129 0409 CERAMIC 0.01U K 16V

LOCATION	PARTS NO.	DESCRIPTION
(RESISTORS)		
R7701	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7702	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7703	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7704	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7705	401 037 5806	MT-GLAZE 1M JA 1/10W
R7706	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R7707	401 037 5707	MT-GLAZE 100K JA 1/10W
R7708	401 037 5608	MT-GLAZE 10K JA 1/10W
(CONNECTORS)		
CN771	613 113 3853	CONNECTOR,5P (N.S.P)
OR	645 003 0840	PLUG,5P (N.S.P)

COMPL PWB, MC-1

613 173 9451

(CAPACITORS)

C8001 403 121 9509 CERAMIC 0.1U Z 50V

(RESISTORS)

R8001 401 015 2605 CARBON 1.8K JA 1/4W
R8002 401 023 1607 CARBON 820 JA 1/4W
R8003 401 017 0708 CARBON 270 JA 1/4W
R8004 401 014 2804 CARBON 150 JA 1/4W

(SWITCHES)

S8002 645 003 4589 SWITCH,DETECTOR 1P-1T,
OR 645 009 3388 SWITCH,DETECTOR 1P-1T,

(CONNECTORS)

CN801 645 007 8446 SOCKET,12P (N.S.P)

(MISCELLANEOUS)

613 152 4002 SPACER,MC1

FLEXIBLE FLAT CABLE

645 017 0645 FLEXIBLE FLAT CABLE, (CN301-CN711)

PACKING MATERIALS

OR 613 174 1263 CARTON CASE,VHR-277SP ONLY
OR 613 173 7082 CARTON CASE,VHR-287E ONLY
OR 613 175 4096 CARTON CASE,VHR-267SP ONLY
OR 613 174 6459 CARTON CASE,VHR-277E ONLY
OR 613 174 9641 CARTON CASE,VHR-277G ONLY
613 173 2537 CUSHION, FRONT (SID)
613 173 2544 CUSHION, BACK (SID)
613 099 1768 POLYE COVER,INNER-K,EXCEPT VHR-277G
OR 613 139 8047 POLYE COVER,INNER-K,VHR-277G ONLY



SANYO Electric Co.,Ltd.
Osaka, Japan

VHR-267SP VHR-277E VHR-277SP VHR-287E VHR-277G

BLOCK DIAGRAMS, CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS


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TM-1 P.W.B.	39
A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE	39
CP-1 BOARD (PW-A) POWER SUPPLY	41
TM-8 BOARD VPS (OPTION FOR VHR-267SP & VHR-277SP)	43
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TM-9 BOARD PDC/VPS (ASSEMBLED FOR VHR-277G & VHR-287E, OPTION FOR VHR-267SP & VHR-277SP)	44
TM-9 P.W.B. (ASSEMBLED FOR VHR-277G & VHR-287E, OPTION FOR VHR-267SP & VHR-277SP)	44

NOTES:

1. All resistance values in "OHMS" unless otherwise noted.
(K=1,000 ; M=1,000,000)
2. All capacitance values in " μ F" unless otherwise noted.
p=pico farad ; μ , u or U=micro farad
3. All inductance values in " μ H" unless otherwise noted.
 μ , u or U=micro henry ; m=milli henry

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL () IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.

DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

EXPLANATORY NOTES (EXAMPLES)

Resistor 10K:16J means 10kilo ohm $\pm 5\%$, 1/16watt max.

1M:1/10K means 1mega ohm $\pm 10\%$, 1/10watt max.

Capacitor 0.047:F means 0.047micro farad, Ftype.

Chemical capacitor

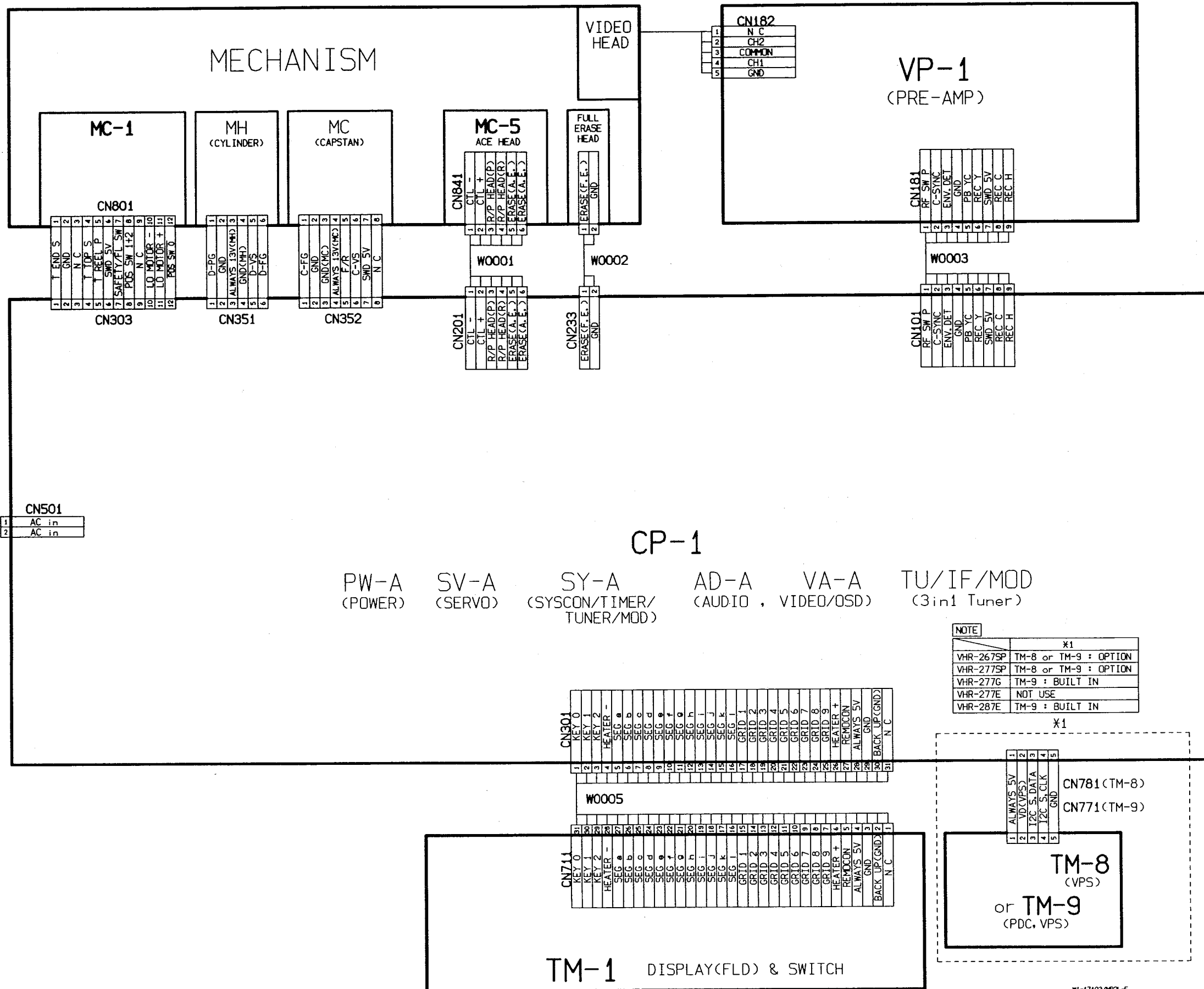
10:16 means 10micro farad, 16volt max.

Inductor 330:J means 330micro henry $\pm 5\%$

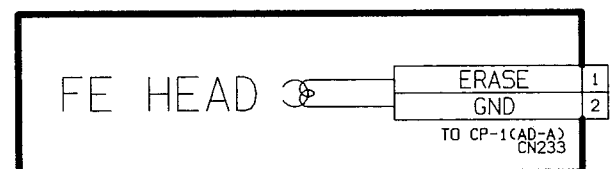
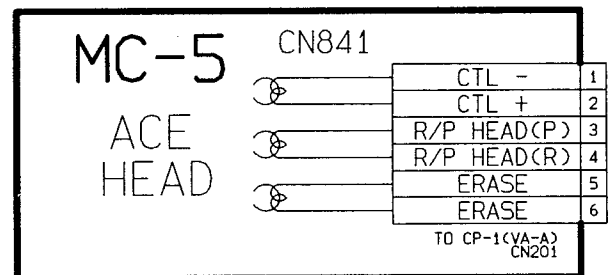
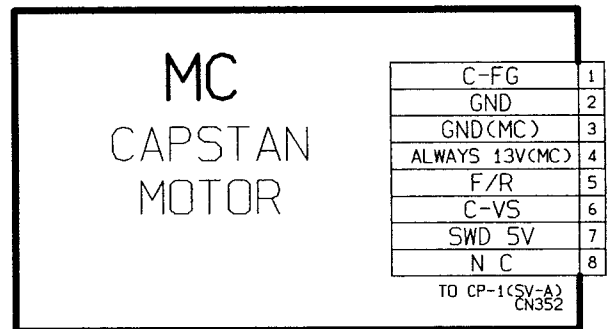
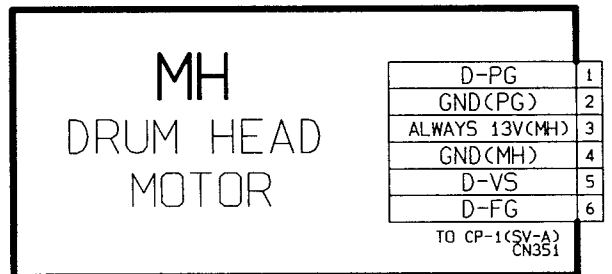
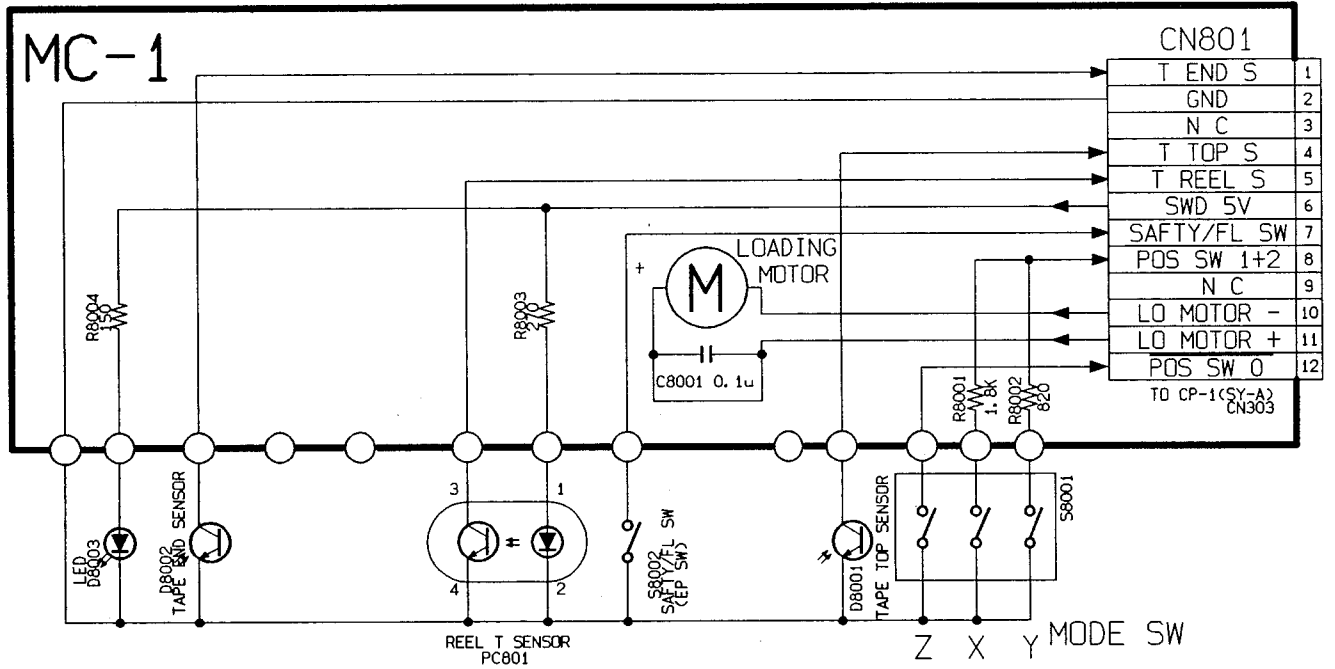
470:K means 470micro henry $\pm 10\%$

1. OVERALL WIRING, MECHANISM CONNECTION & BLOCK DIAGRAMS

OVERALL WIRING

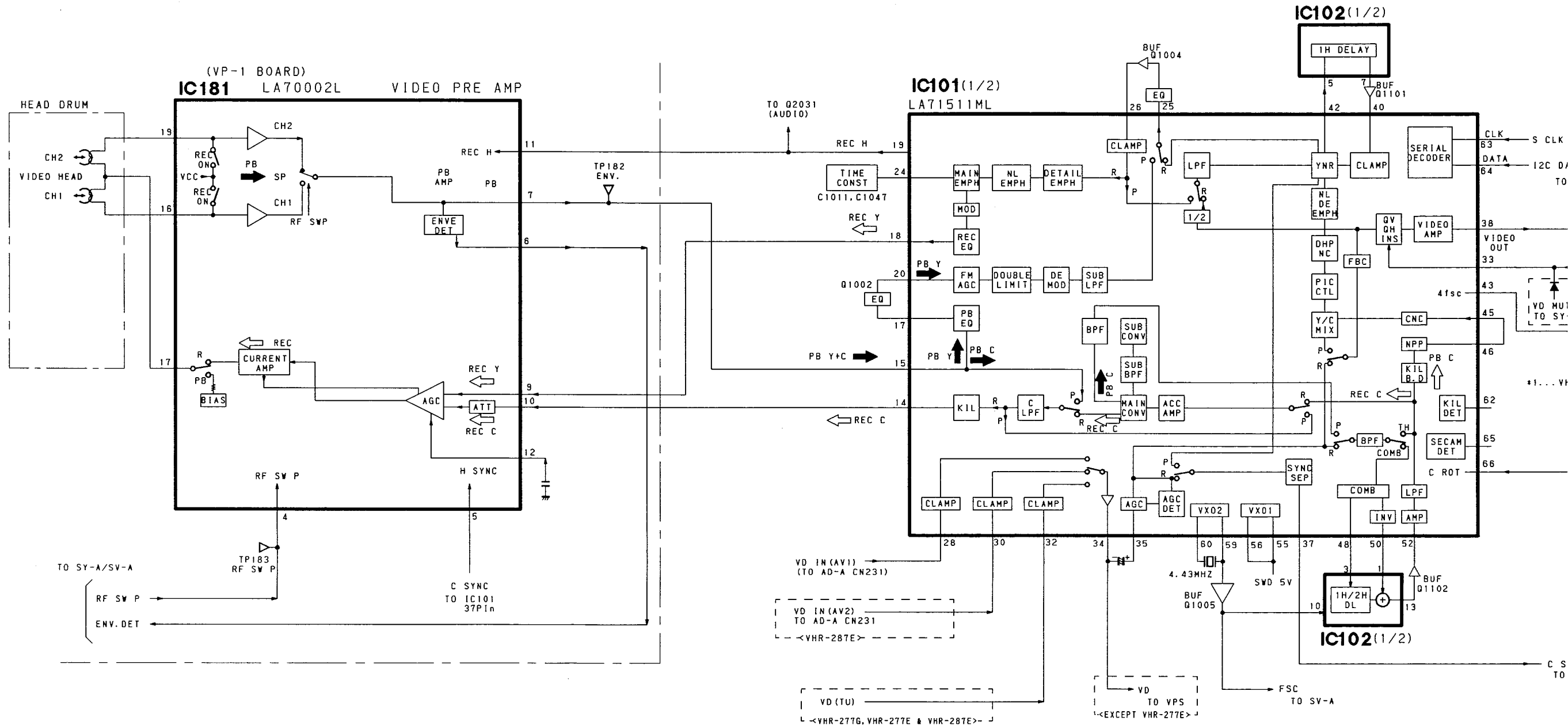


MECHANISM CONNECTION



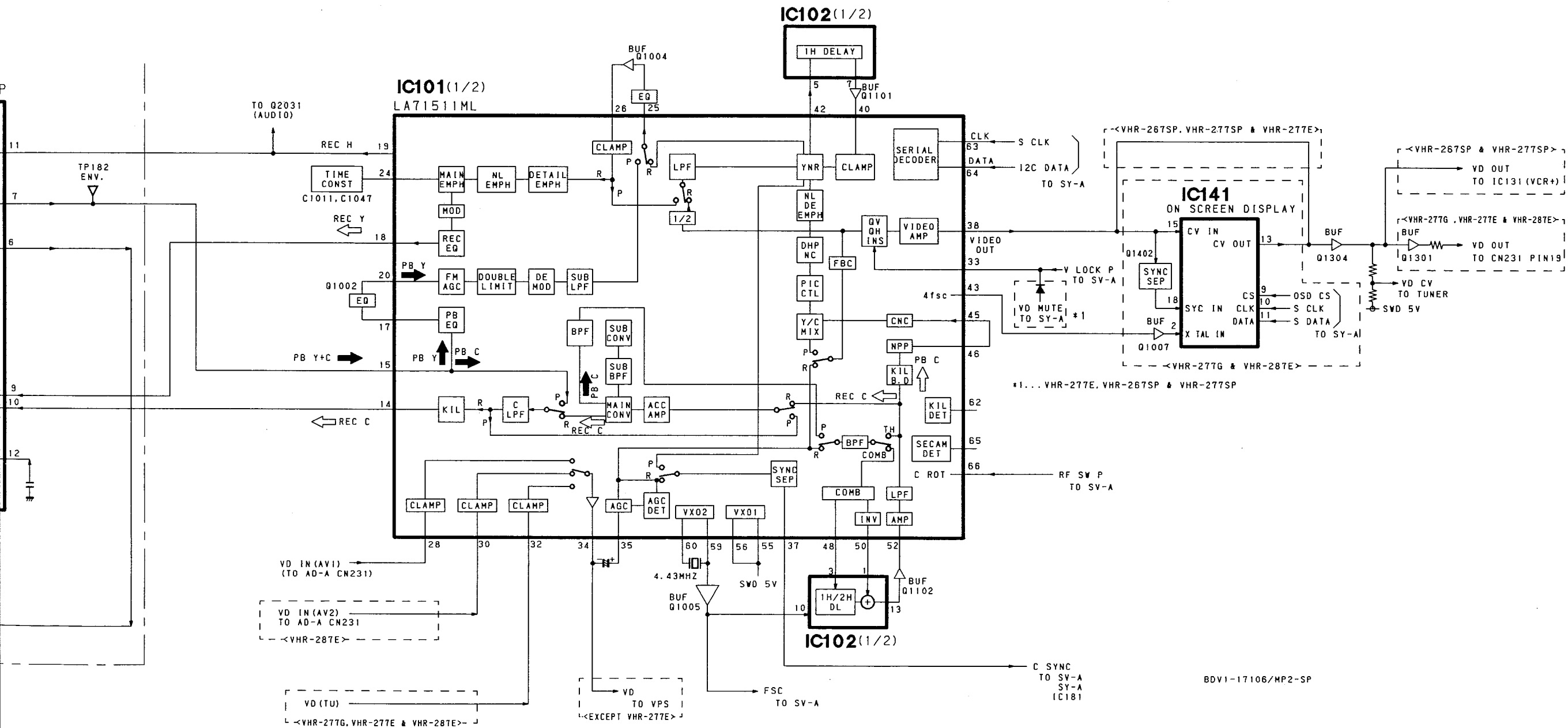
M1-17108/MP4-GSY

VIDEO CIRCUIT



K
J
I
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G
F
E
D
C
B
A

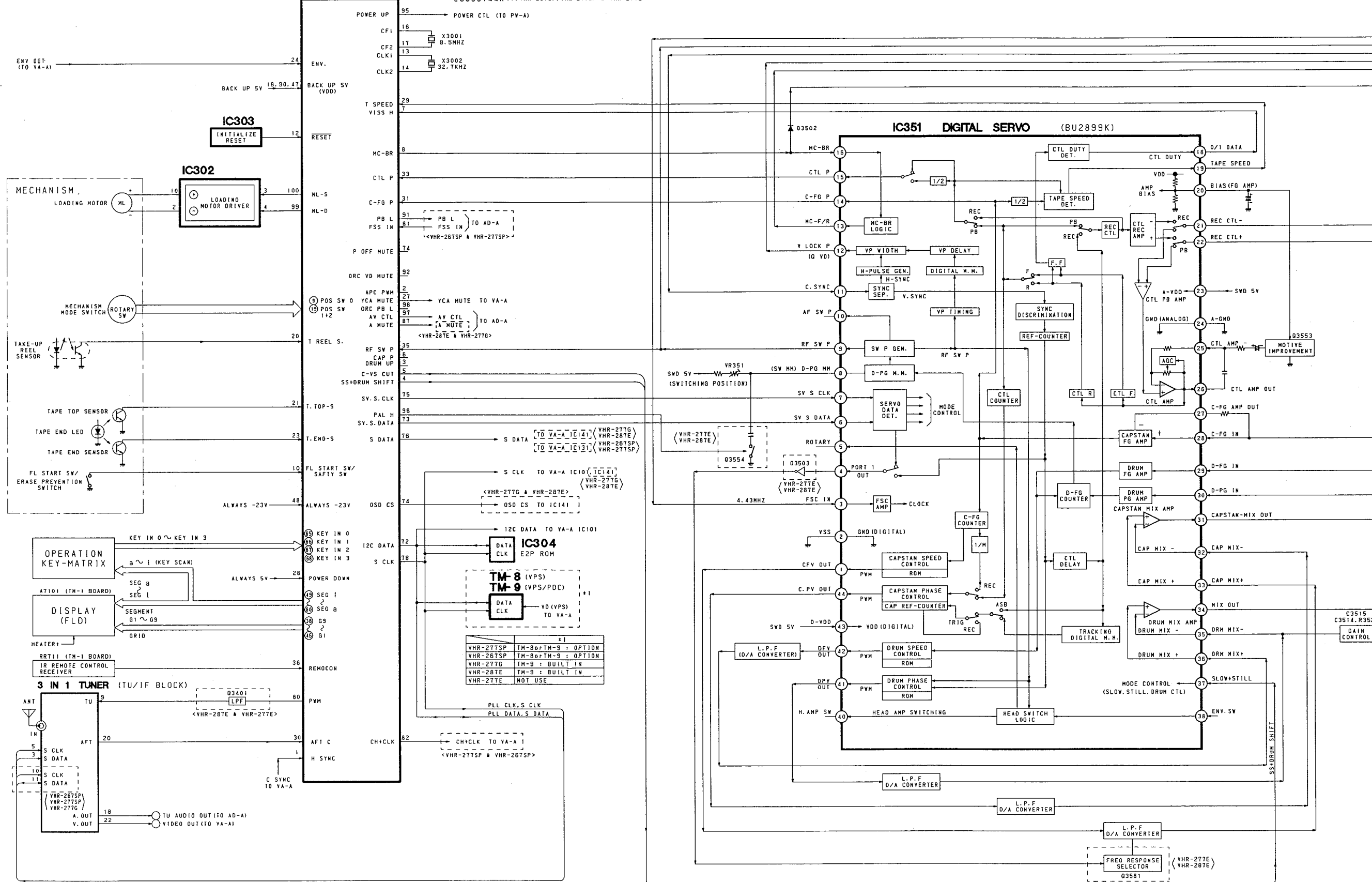
VIDEO CIRCUIT



BDV1-17106/MP2-SP

SYSTEM CONTROL & SERVO CIRCUIT

IC301 MPU
SYSTEM CONTROL,
TIMER, TUNING CONTROL
 LC866852A ... VHR-277G & VHR-287E
 LC866744A ... VHR-267SP, VHR-277SP & VHR-277E



K
J
I
H
G
F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SYSTEM CONTROL & SERVO CIRCUIT

LC866852A...VHR-277G & VHR-287E
 LC866744A...VHR-267SP, VHR-277SP & VHR-277E

POWER CTL (TO PV-A)

X3001
 8.5MHZ
 X3002
 32.768KHZ

PB L TO AD-A
 FSS IN TO AD-A
 <VHR-277SP & VHR-277SP>

VCA MUTE TO YA-A
 VCA MUTE TO AD-A
 MUTE & VHR-277G

S DATA TO VA-A IC101, IC141
 (VHR-277G, VHR-287E, VHR-267SP, VHR-277SP)

S CLK TO VA-A IC101, IC141
 (VHR-277G & VHR-287E, OSD CS TO IC141, VHR-287E)

I2C DATA TO YA-A IC101

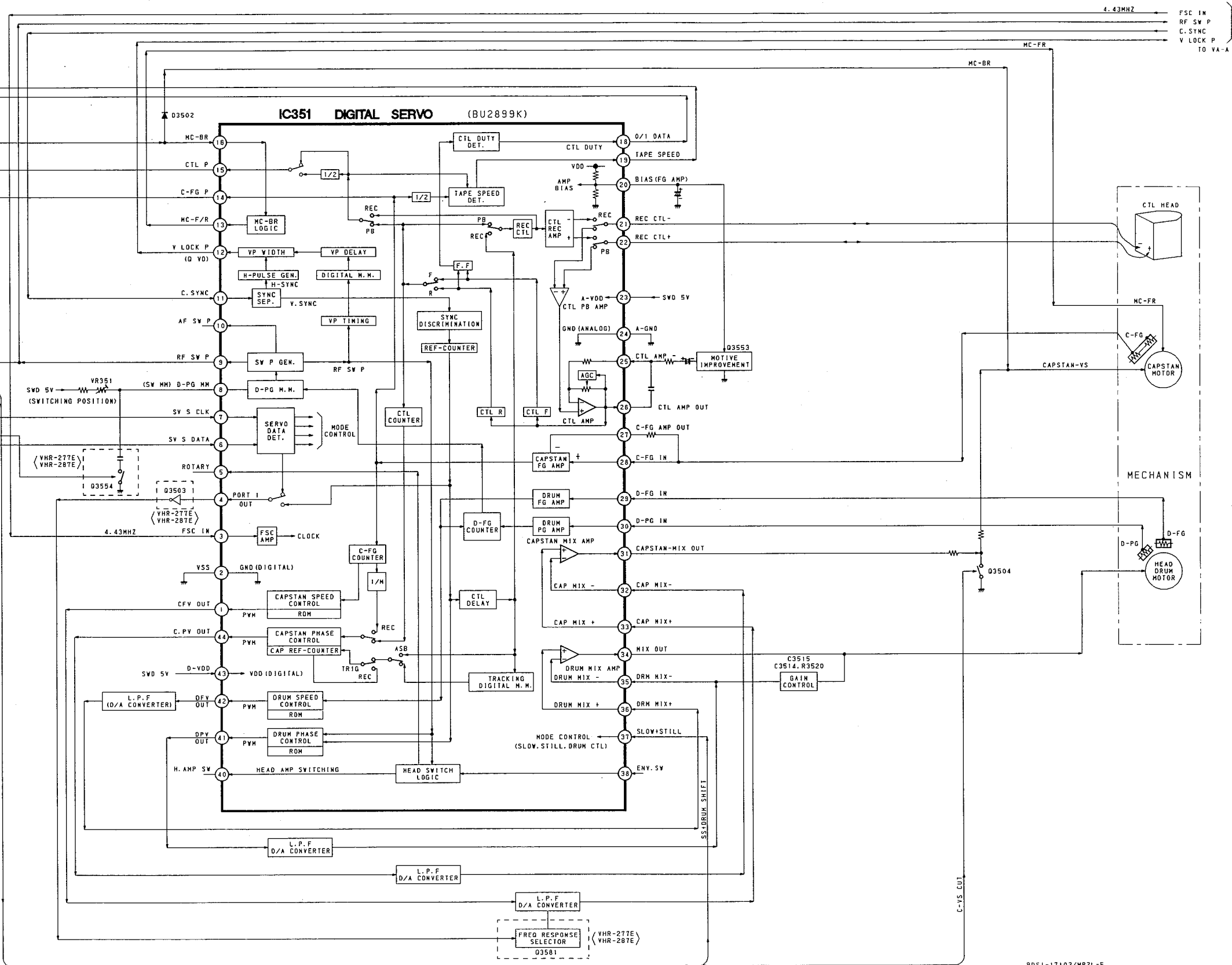
DATA CLK IC304
 E2P ROM

TM-8 (VPS)
 TM-9 (VPS/PDC)
 DATA CLK VD (VPS) TO YA-A

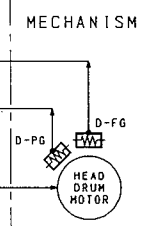
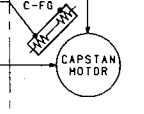
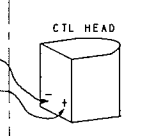
	#1
VHR-277SP	TM-8 or TM-9 : OPTION
VHR-267SP	TM-8 or TM-9 : OPTION
VHR-277G	TM-9 : BUILT IN
VHR-287E	TM-9 : BUILT IN
VHR-277E	NOT USE

PLL CLK, S CLK
 PLL DATA, S DATA

CH CLK TO YA-A
 <VHR-277SP & VHR-267SP>

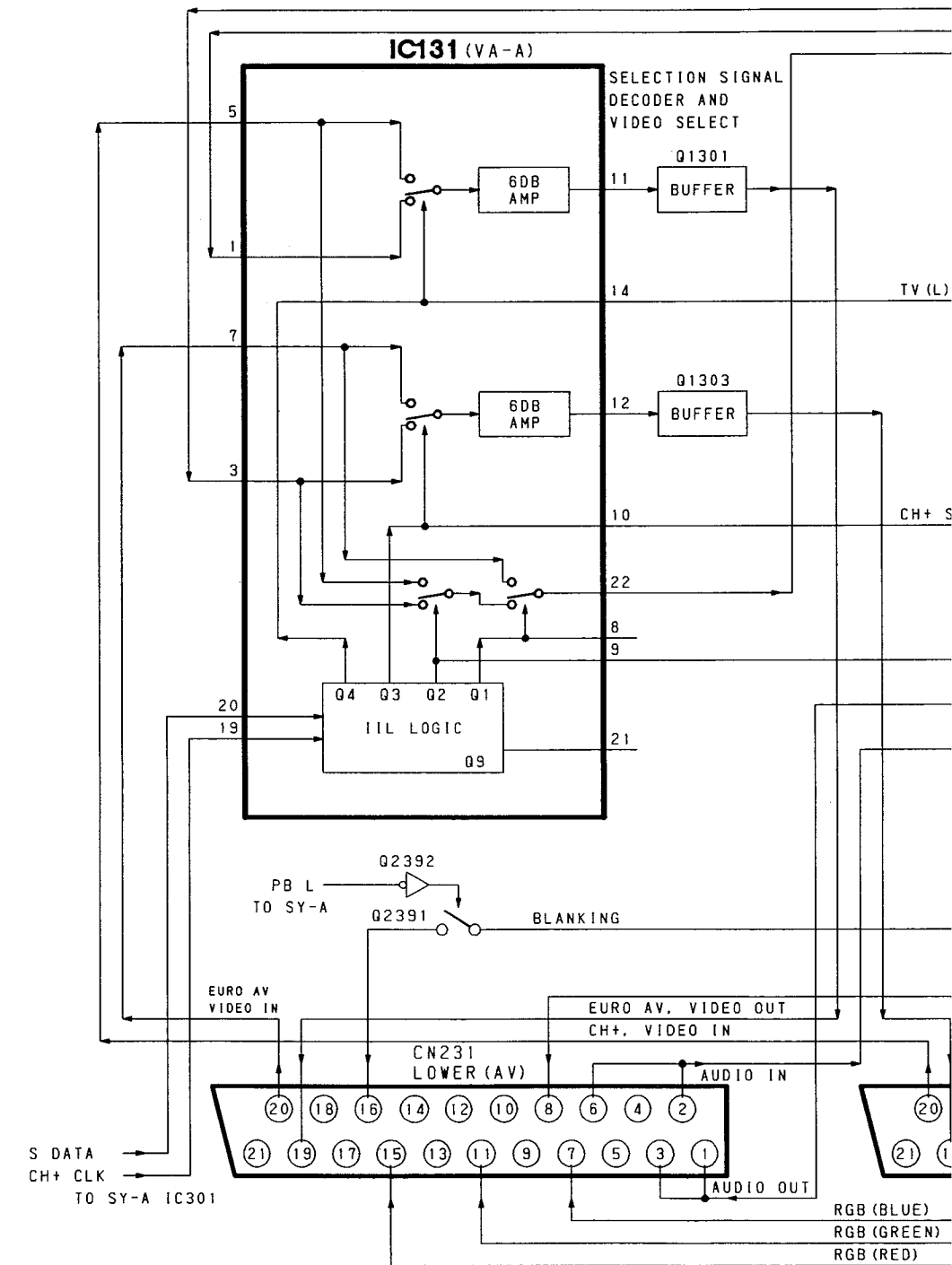
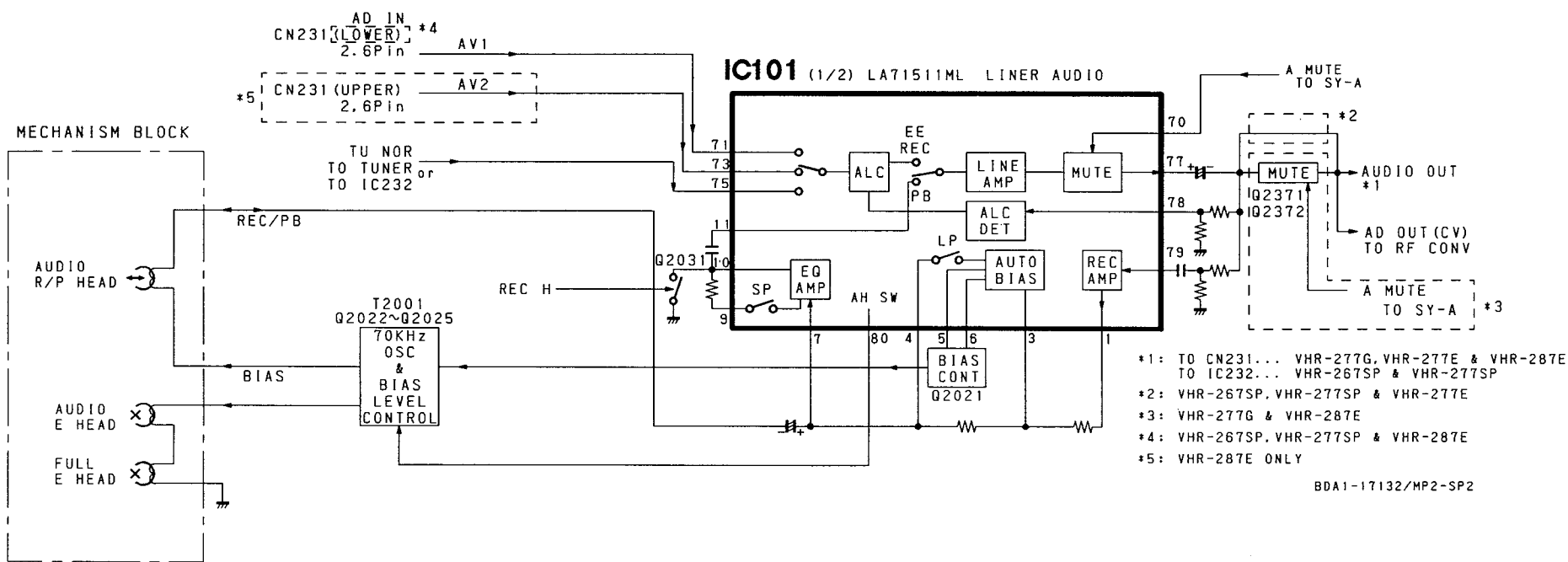


4.43MHZ
 FSC IN
 RF SW P
 C. SYNC
 V LOCK P
 TO YA-A



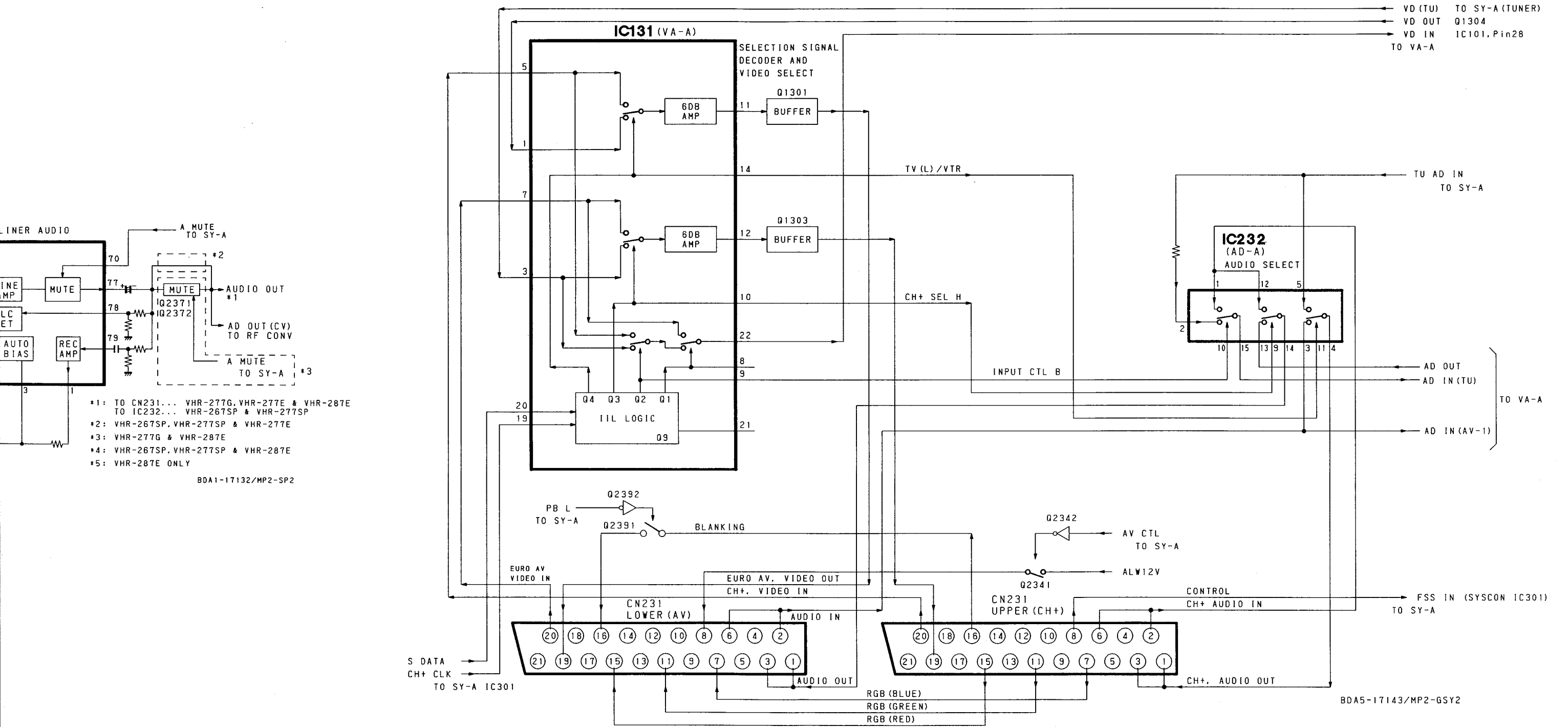
8051-17103/MP2L-E

AUDIO CIRCUIT



K
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TERMINAL & INPUT/OUTPUT SELECTOR CIRCUIT (VHR-267SP & VHR-277SP)



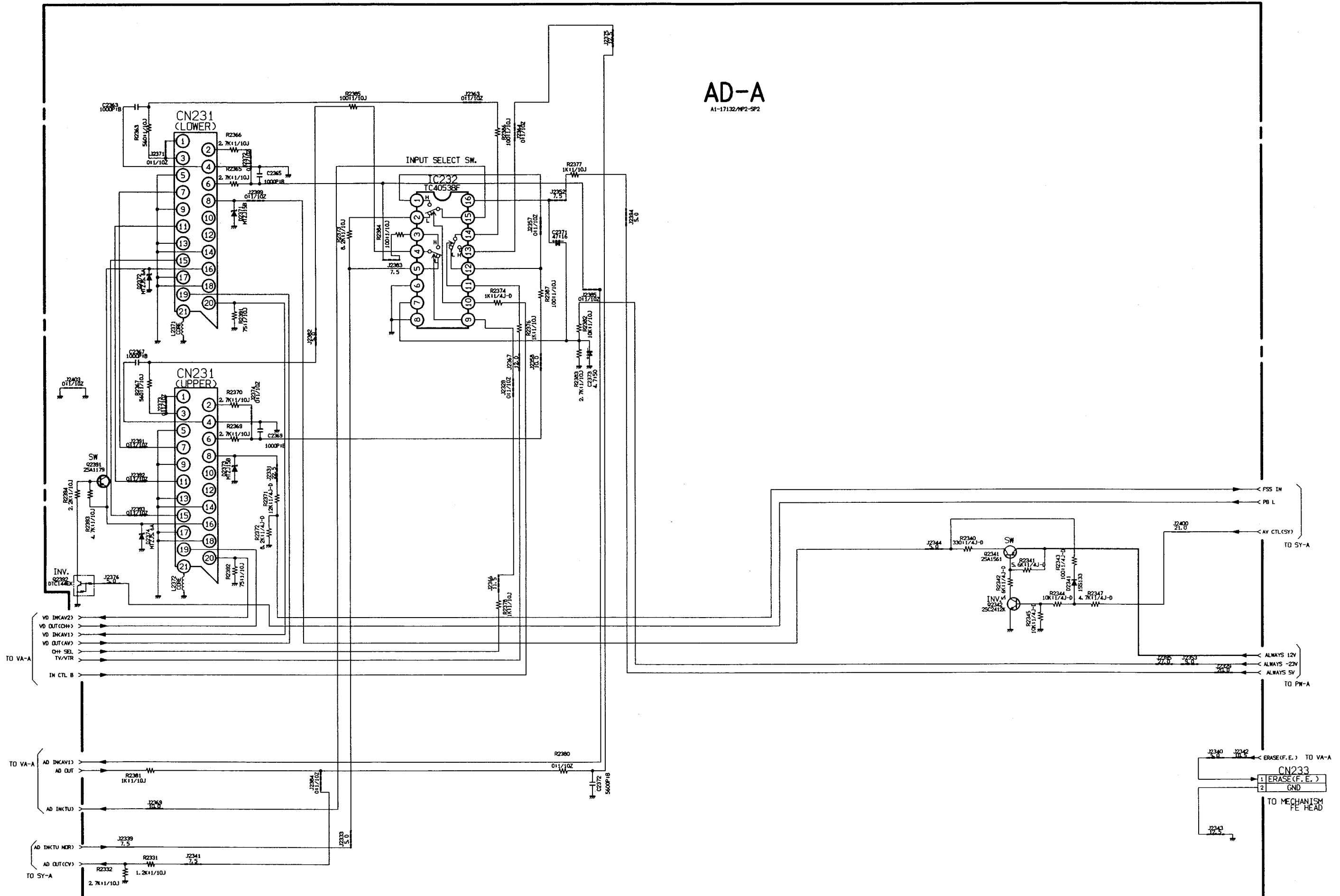
- *1: TO CN231... VHR-277G, VHR-277E & VHR-287E
TO IC232... VHR-267SP & VHR-277SP
- *2: VHR-267SP, VHR-277SP & VHR-277E
- *3: VHR-277G & VHR-287E
- *4: VHR-267SP, VHR-277SP & VHR-287E
- *5: VHR-287E ONLY

BDA1-17132/MP2-SP2

BDA5-17143/MP2-GSY2

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

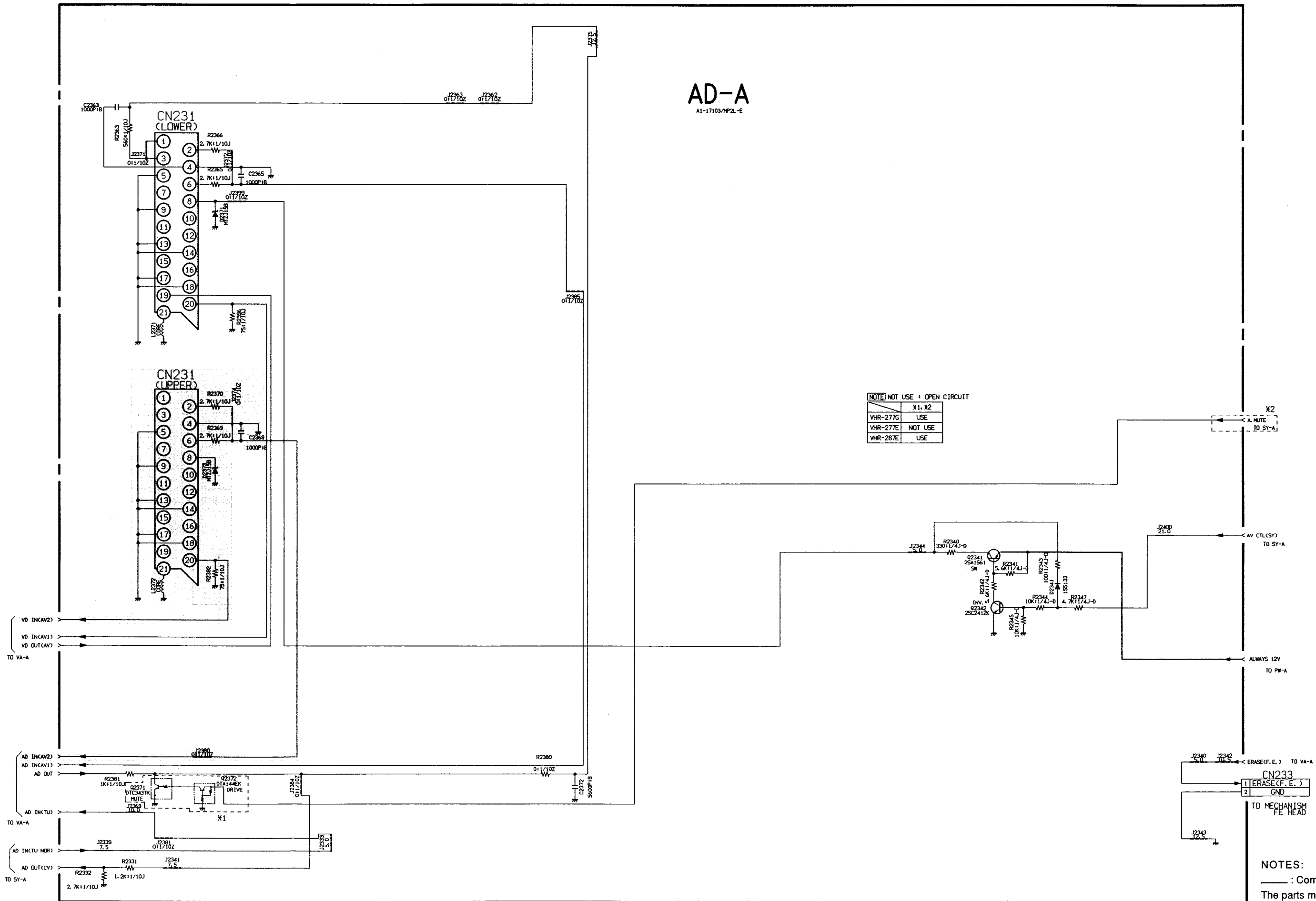
CP-1 BOARD (AD-A) TERMINAL & INPUT/OUTPUT SELECTOR (VHR-267SP & VHR-277SP)



AD-A
A1-17132/MP2-SP2

CP-1 BOARD (AD-A) TERMINAL (VHR-277G,VHR-277E & VHR-287E)

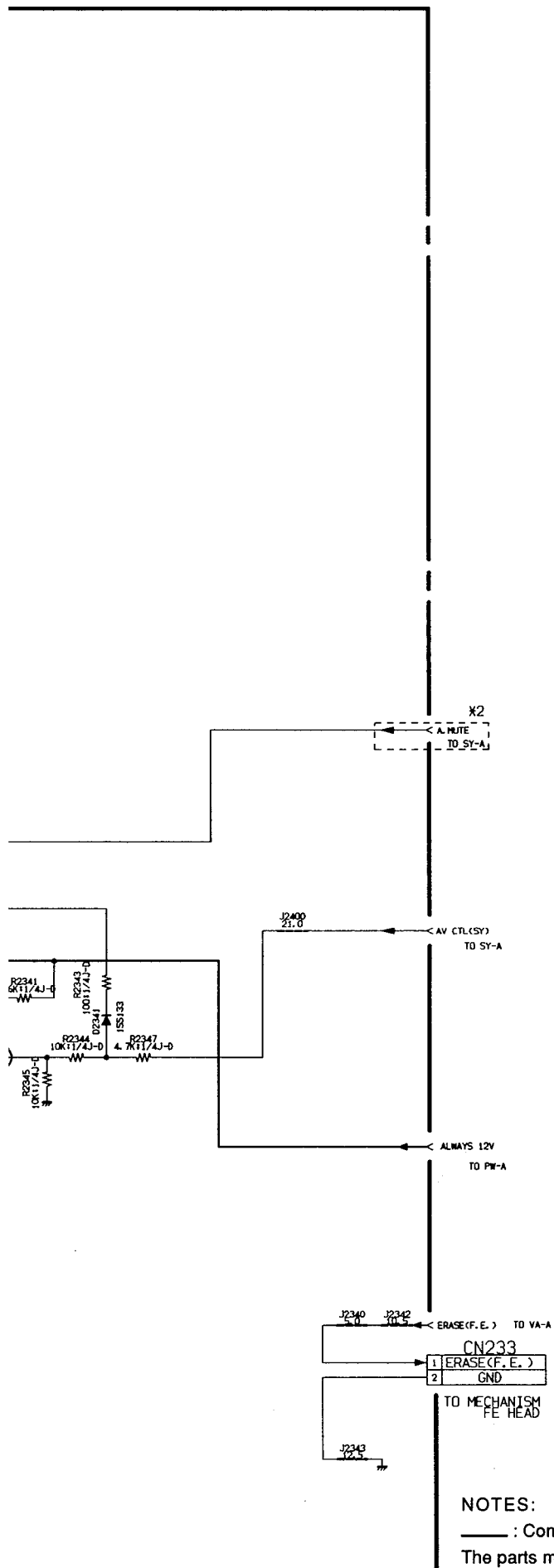
AD-A
A1-17103/MP2-E



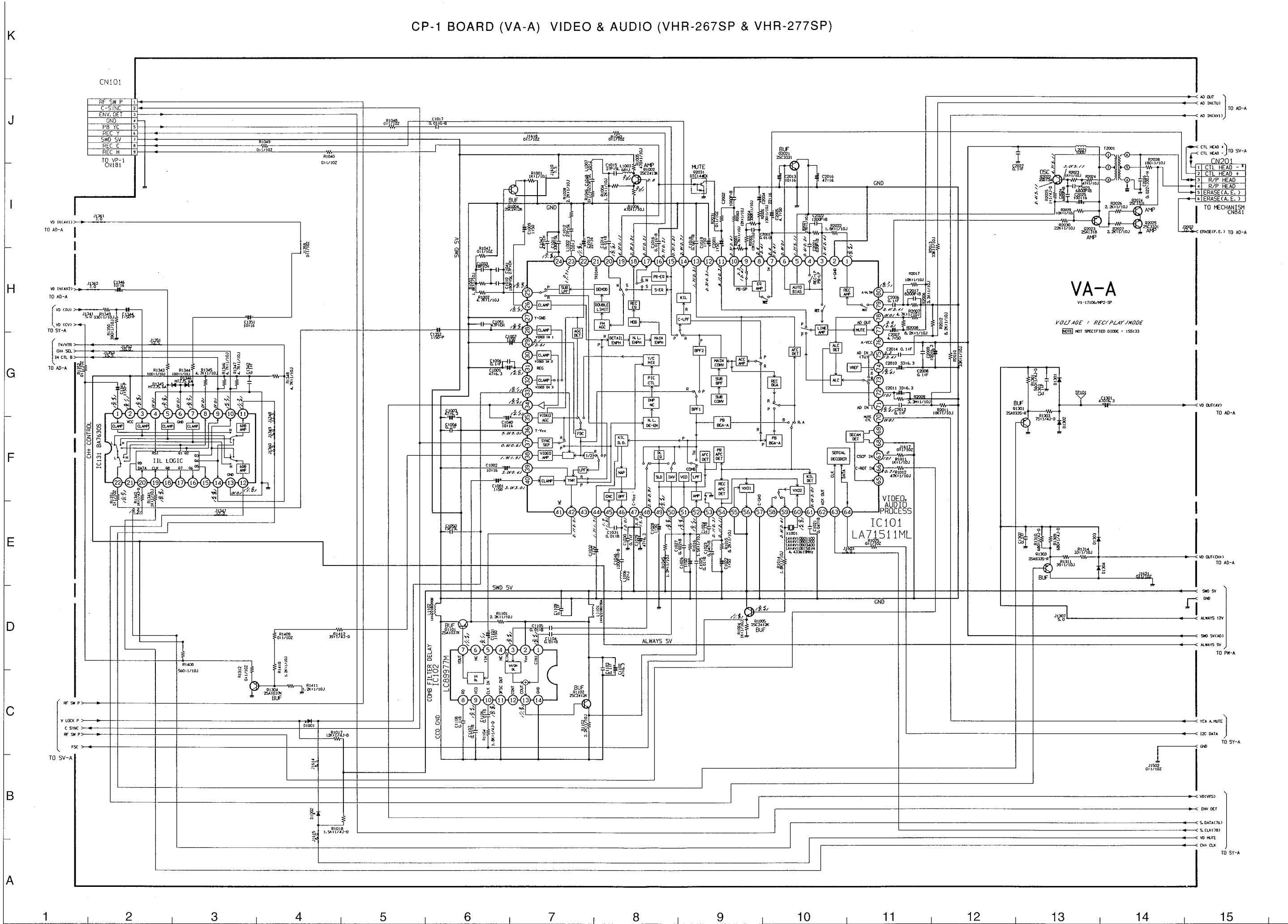
NOTE: NOT USE = OPEN CIRCUIT

	X1, X2
VHR-277G	USE
VHR-277E	NOT USE
VHR-287E	USE

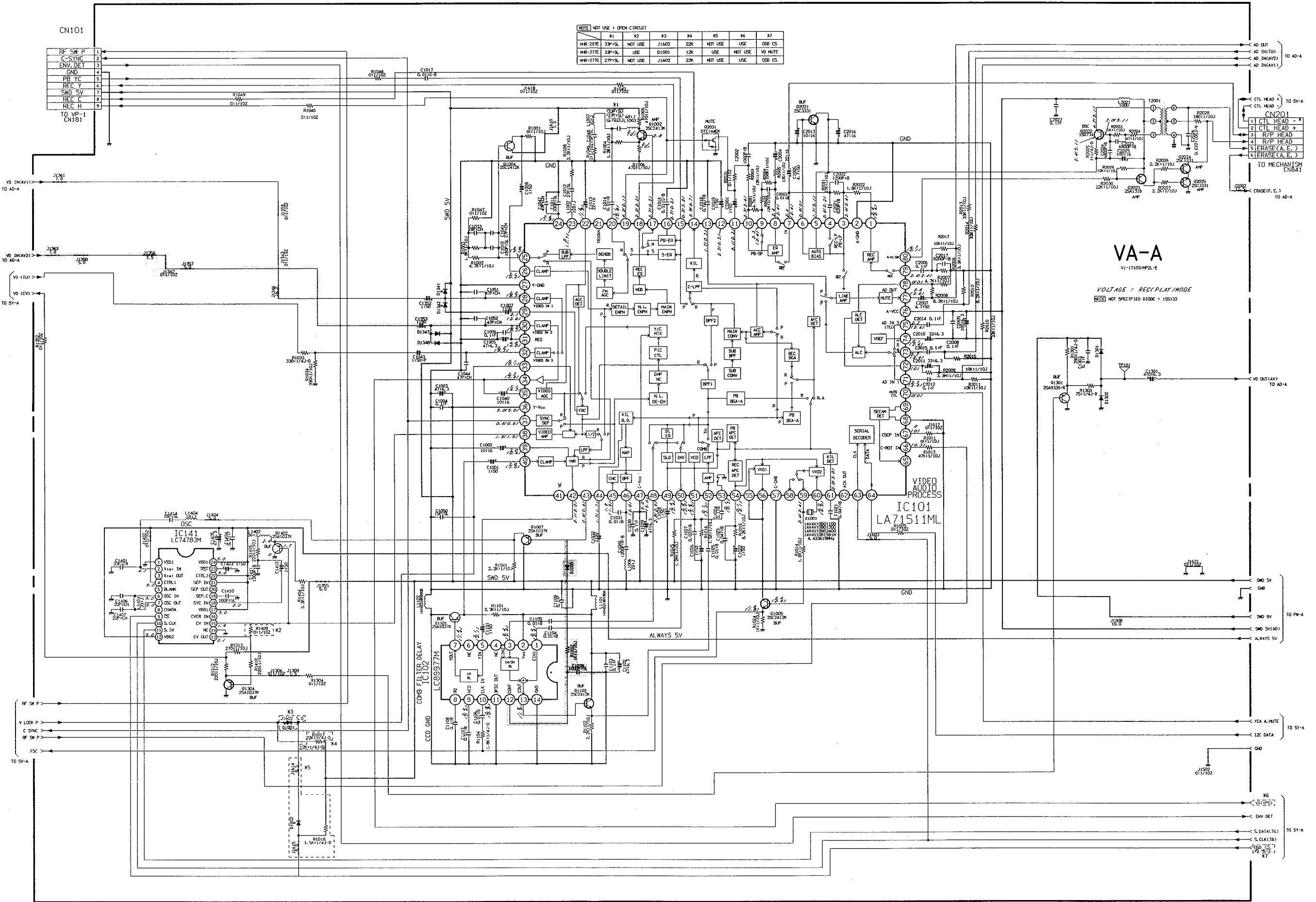
NOTES:
 _____ : Common parts for VHR-277G,
 The parts marked _____ are VHR-287E



CP-1 BOARD (VA-A) VIDEO & AUDIO (VHR-267SP & VHR-277SP)



CP-1 BOARD (VA-A) VIDEO & AUDIO (VHR-277G, VHR-277E & VHR-287E)



NOTE: NOT USE - OPEN CIRCUIT

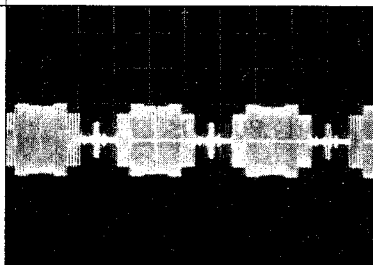
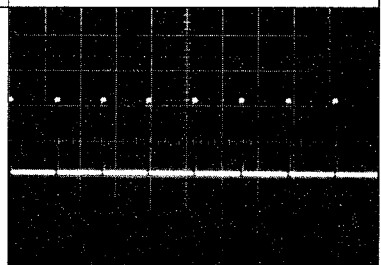
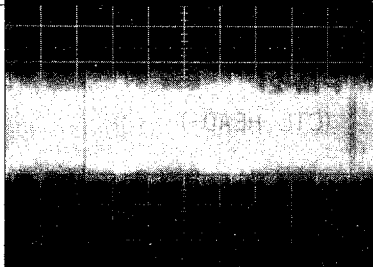
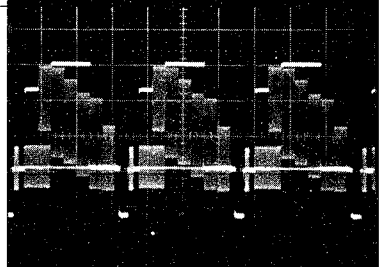
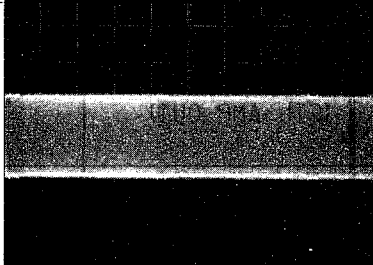
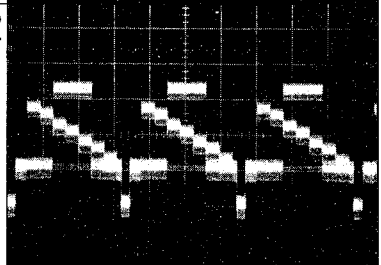
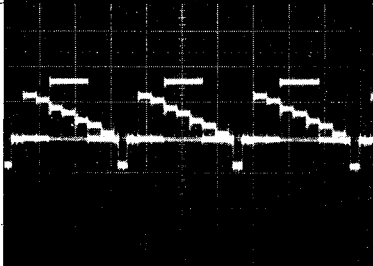
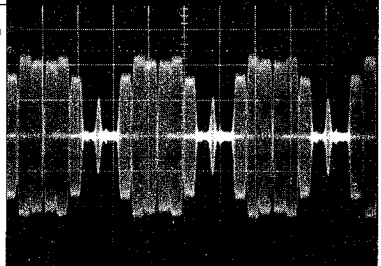
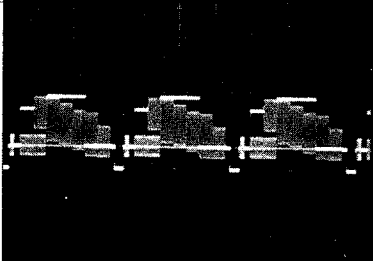
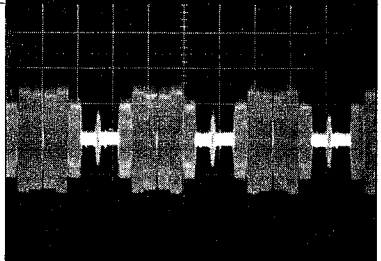
	X1	X2	X3	X4	X5	X6	X7
VHR-287E	33P/5L	NOT USE	J1602	22K	NOT USE	USE	OSP CS
VHR-277E	33P/5L	USE	D1001	12K	USE	NOT USE	VO MUTE
VHR-277G	27P/5L	NOT USE	J1602	22K	NOT USE	USE	OSP CS

NOTES:
 — : Common parts for VHR-277G, VHR-277E & VHR-287E. The parts marked [hatched] are VHR-287E only.
 — : The parts for VHR-277G & VHR-287E. The parts marked [dotted] are VHR-277E & VHR-287E.

K

VIDEO CIRCUIT WAVEFORMS

J

TEST LOCATION	WAVE FORM	TEST LOCATION	WAVE FORM
IC101 PIN14 REC 0.4Vp-p (REC C)		IC101 PIN37 REC, PLAY 4Vp-p (C SYNC)	
IC101 PIN15 PLAY 0.25Vp-p (PB Y, C)		IC101 PIN38 REC, PLAY 2Vp-p (VIDEO OUT)	
IC101 PIN18 REC 0.2Vp-p (REC Y)		IC101 PIN40, 42 REC, PLAY 0.35Vp-p	
IC101 PIN25, 26 REC, PLAY 0.5Vp-p		IC101 PIN45, 46 PLAY 0.4Vp-p	
IC101 PIN28 REC 1Vp-p (VIDEO IN)		IC101 PIN48, 50, 52 REC, PLAY 0.25Vp-p	

WF-V-PG2ZK

B

A

1

2

3

4

5

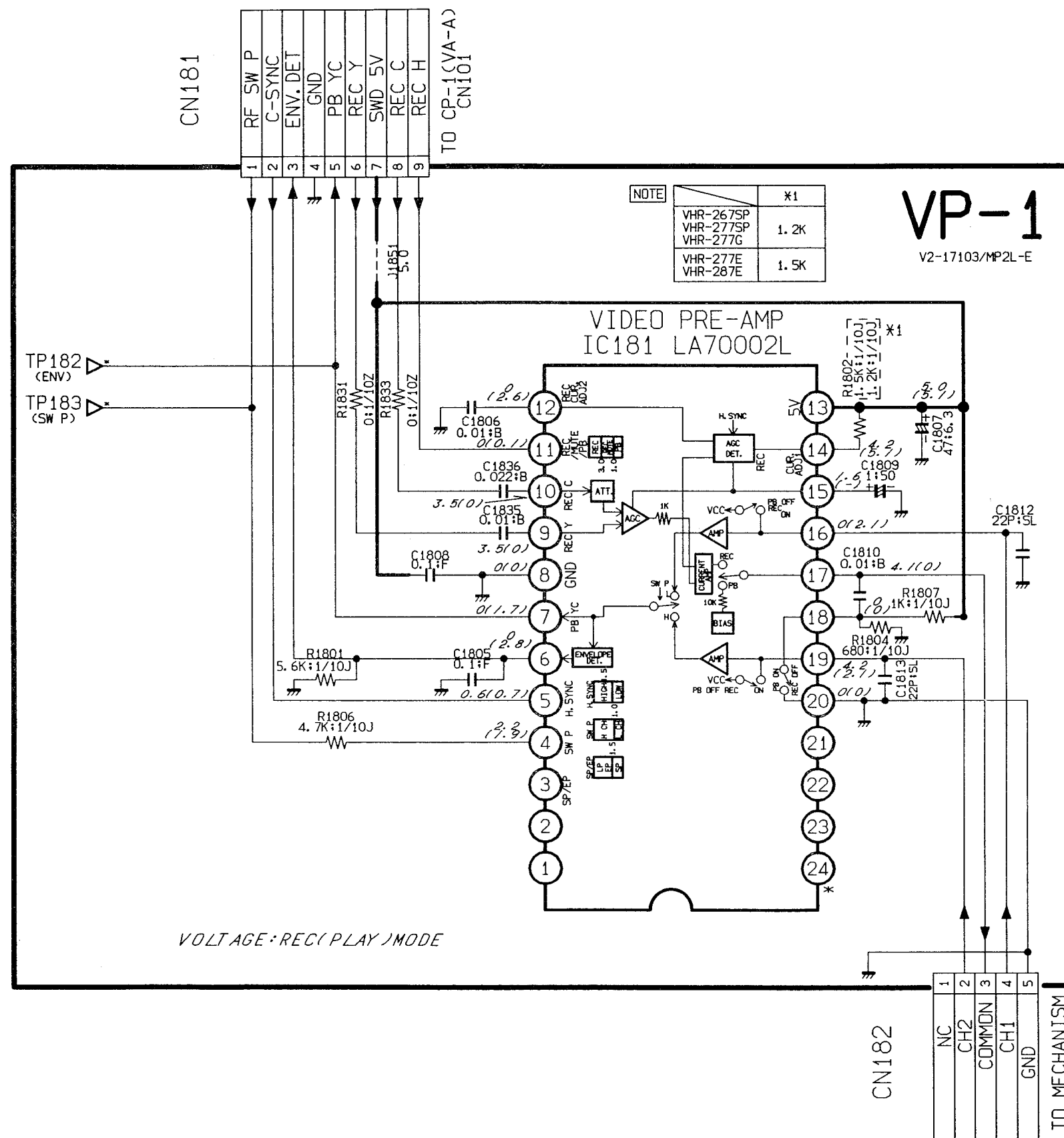
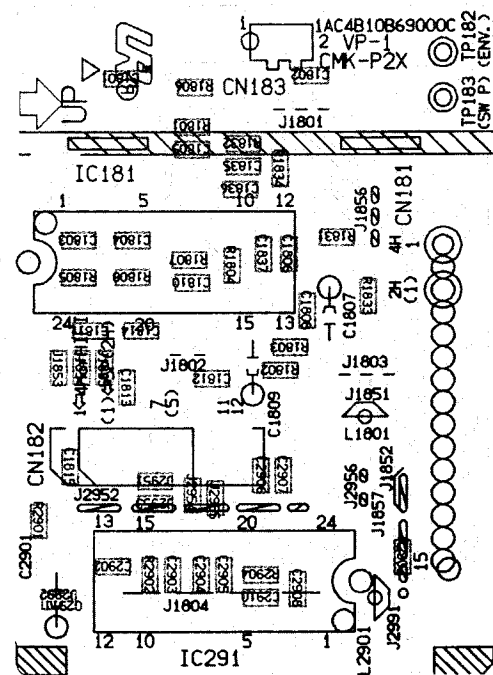
6

7

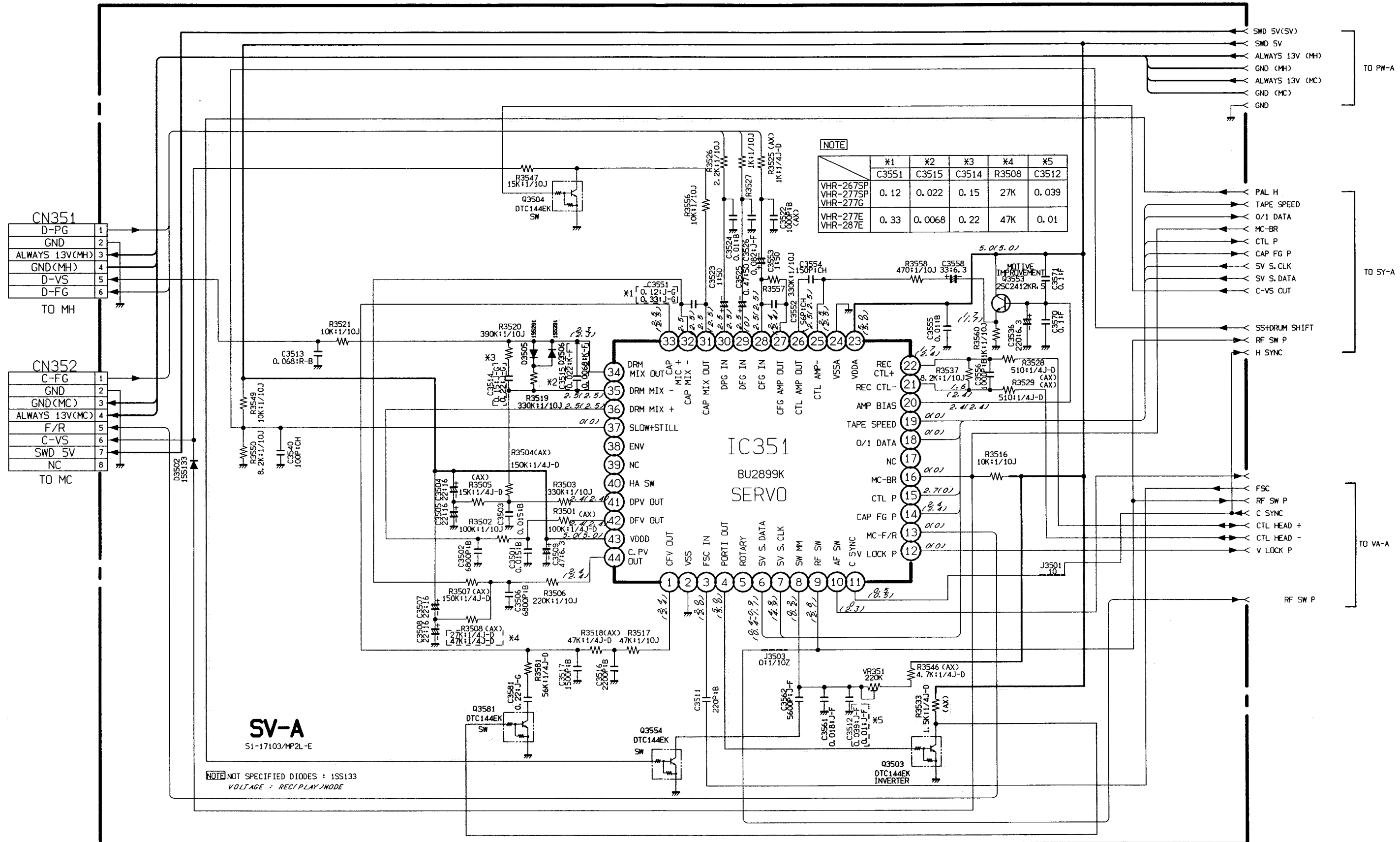
8

VP-1 BOARD VIDEO PRE-AMP

VP-1 P.W.B.



CP-1 BOARD (SV-A) SERVO



NOTE


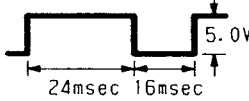

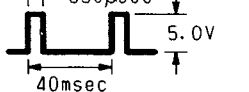

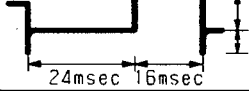
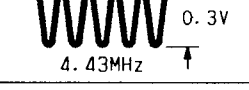

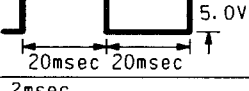
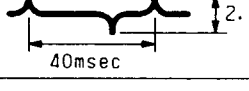
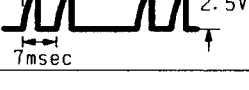
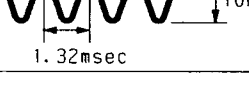
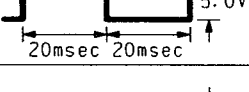
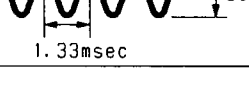
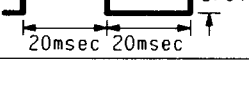
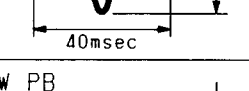
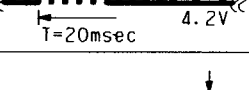
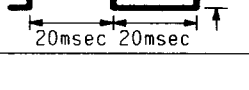
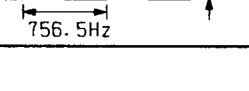
	X1	X2	X3	X4	X5
VHR-267SP	0.12	0.022	0.15	27K	0.039
VHR-277SP					
VHR-277G					
VHR-277E	0.33	0.0068	0.22	47K	0.01
VHR-287E					

- SERVO CI
- TEST LOC
- Pin 40 (H. A. SWIT)
 - Pin 42 (PWM)
 - Pin 41, 44 (PWM)
 - Pin 3 (FSC INPU)
 - Pin 5 (ROTARY)
 - Pin 8 (D-PG MM)
 - Pin 9 (RF SW PU)
 - Pin 10 (AF SW PU)
 - Pin 11 (COMPOSIT SYNC I)
 - Pin 14 (C-FG PUL)

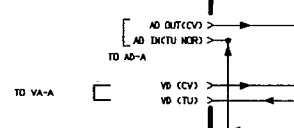
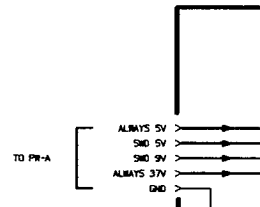
NOTES:
 _____ : Common parts for VHR-267SP, VHR-277SP, VHR-277G, VHR-277E & VHR-287E.
 The parts marked _____ are VHR-277E & VHR-287E.

K
J
I
H
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D
C
B
A

SERVO CIRCUIT WAVEFORMS

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H. A. SWITCHING)	SLOW PB 	Pin 15 (CTL PULSE)	REC 
Pin 42 (PWM)		Pin 15 (CTL PULSE)	PB 
Pin 41, 44, 1 (PWM)		Pin 21 (CTL HEAD-)	REC 
Pin 3 (FSC INPUT)		Pin 22 (CTL HEAD+)	REC 
Pin 5 (ROTARY)	PB 	Pin 26 (CTL AMP OUT)	PB 
Pin 8 (D-PG MM)		Pin 28 (C-FG INPUT)	
Pin 9 (RF SW PULSE)		Pin 29 (D-FG INPUT)	
Pin 10 (AF SW PULSE)	PB 	Pin 30 (D-PG INPUT)	
Pin 11 (COMPOSITE SYNC INPUT)		Pin 38 (ENV. SW INPUT)	SLOW PB 
Pin 14 (C-FG PULSE)			

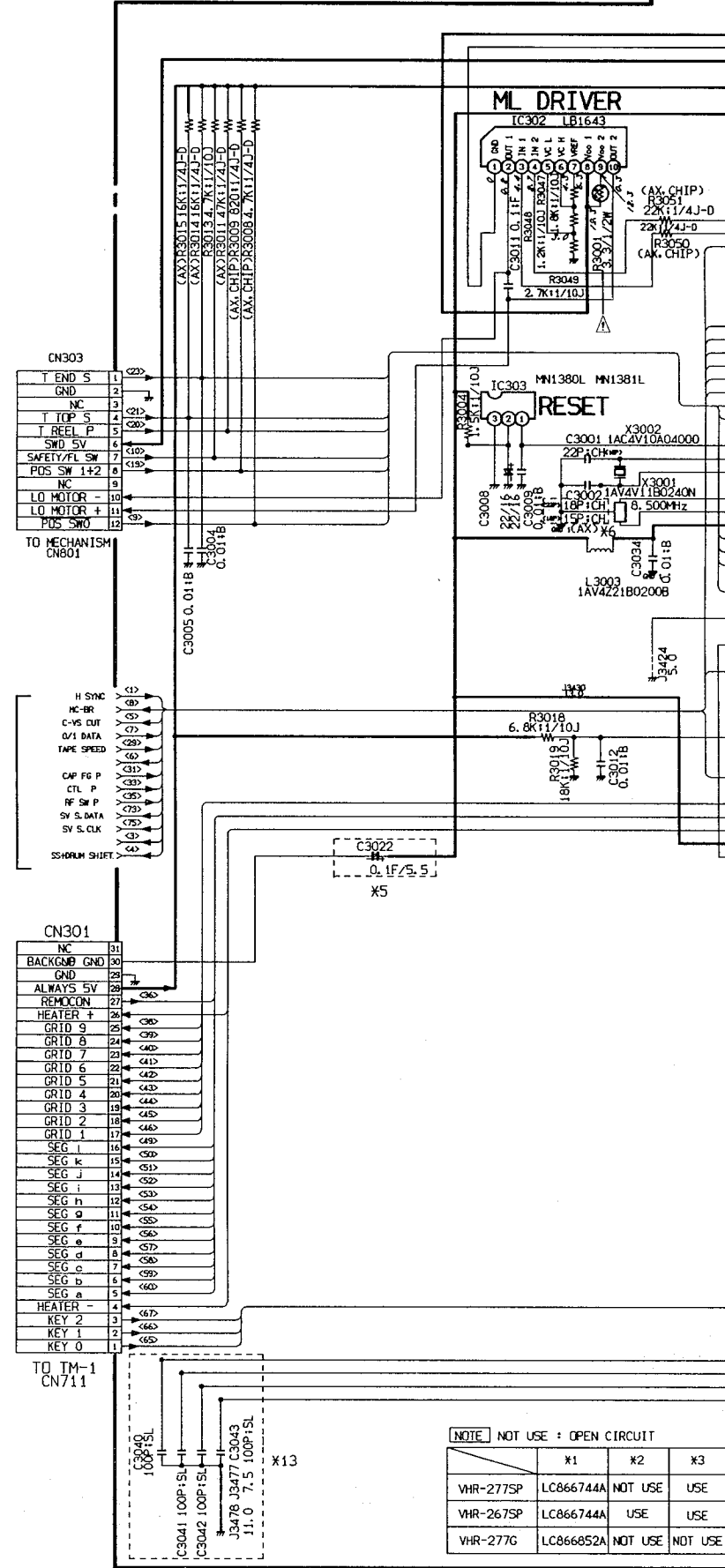
VF-S-PP



IC301 SYSTEM CONTROL, TIMER & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	H/L	I/O Signal Function
1	H SYNC	I	-	Sync. signal input for existing channel discrimination and TV system discrimination.
2	APC PWM	O	-	Signal to control video recording current EQ-amp.
3	DRUM UP	O	H	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	-	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	C - Vs CUT	O	H	Cut off for capstan motor control voltage in SLOW / STILL modes.
6	CAP P.	O	H	Gain down control for Head Motor at SLOW mode.
7	VISS H	I	H	CTL pulse duty detection signal input. Used for VISS detection.
8	MC - BR	O	H	Brake signal for capstan motor.
9	POS SW0	I	L	Data indicating operation position of mechanism. (0V : SEARCH, STILL, SLOW, STOP, PLAY, and REC modes) (5V : EJECT, REW, and INITIAL modes)
10	FL - START + SAFETY SW	I	L	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
11	-	-	-	-
12	RESET	I	L	Initial reset terminal for this IC.
13	CLK 1	-	-	Clock OSC during power failures.
14	CLK 2	-	-	Frequency is 32kHz.
15	VSS	-	-	Ground terminal
16	CF 1	-	-	IC clock OSC terminal.
17	CF 2	-	-	Frequency is 8.5MHz.
18	VDD	-	-	IC power supply terminal. (5Vdc)
19	POS SW1+2	I	-	Data indicating operation position of mechanism. (2V: EJECT, REW, and INITIAL modes) (3.4V: STOP, PLAY, REC, and F-SEARCH modes) (2.5V: STILL and SLOW modes) (5V: R-SEARCH mode)
20	T. REEL S.	I	-	Pulse input for detection of take-up reel table rotation.
21	T. TOP S.	I	L	Sensor signal input for tape beginning detection.
22	CM SKIP IN	I	-	CM-DET signal input.
23	T. END S.	I	L	Sensor signal input for tape end detection.
24	ENV.	I	-	Video head envelope detection signal input for ATR function.
25	HIFI ENV.	I	-	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
26	TUNER SENS	-	-	NOT USE
27	YCA MUTE	O	H	Signal to disable audio signal output.
28	POWER DOWN	I	L	Power failure detection terminal.
29	TAPE SPEED	I	-	Input of result of tape speed discrimination by digital servo IC.
30	AFT - C	I	-	Tuner AFT S-curve signal input for tuner AFT control.
31	C - FG P.	I	-	FG signal input of capstan motor.
32	MESECAM DET	I	-	NOT USE
33	CTL P.	I	-	CTL head recording / playback pulse signal input.
34	S REEL P	I	-	NOT USE
35	RF SW P.	I	-	RF switching pulse input, created by head drum PG.
36	REMOCON	I	-	Remote control signal input.
37	AFT MUTE	O	H	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	-	
39	G8	O	-	
40	G7	O	-	
41	G6	O	-	
42	G5	O	-	
43	G4	O	-	Display grid outputs (FLD).
44	G3	O	-	
45	G2	O	-	
46	G1	O	-	
47	VDD	-	-	IC power supply input.(5Vdc)
48	V LOAD	-	-	-23V input for FLD drive.
49	SEG l	O	-	
50	SEG k	O	-	
51	SEG j	O	-	Display segment outputs (FLD).
52	SEG i	O	-	(Includes key-scan output)
53	SEG h	O	-	
54	SEG g	O	-	
55	SEG f	O	-	
56	SEG e	O	-	
57	SEG d	O	-	Display segment outputs (FLD).
58	SEG c	O	-	(Includes key-scan output)
59	SEG b	O	-	
60	SEG a	O	-	
61	REW LED	O	H	Signal for indicating REW mode.
	VPS P OFF	O	H	Signal to disable power LED while OPC-DET is working.
62	FF/OPC LED	O	H	Signal for indicating FF or OPC mode.
63	PLAY/ATR LED	O	H	Signal for indicating PLAY or ATR mode.
64	DMSS LED	O	H	Signal for indicating DMSS mode.
65	KEY IN 0	I	-	
66	KEY IN 1	I	-	Operation key data inputs.
67	KEY IN 2	I	-	
68	KEY IN 3	I	-	
69	SAT CS	O	H	NOT USE
70	SUB BUSY	I	H	NOT USE
71	SUB CS	O	H	NOT USE
72	I2C S.DATA	I/O	-	Data exchange with I2C ROM, TUNER and video-audio IC.
73	SV S. DATA	O	-	Output 8-bit X 4 serial data giving operation mode and tracking data, etc., to digital servo IC.
74	OSD CS	O	H	Chip enable (access) signal output to OSD IC.
75	POWER OFF MUTE	O	H	"H" output when power is off, for disable output signal.
76	COMMON DATA	O	-	The clock pulse for digital servo IC.(TUNER,VA-A)
77	COM S DA I	-	-	NOT USE
78	COMMON CLK	O	-	The clock pulse for TUNER, video-audio IC, OSD IC and E2P ROM.
79	TUNER A MUTE	O	H	Signal for disable the tuner audio signal.(HiFi set)
80	TU PWM	O	-	Tuning voltage output (PWM signal). (V-syn model)
81	FSS IN	I	-	CH+ mode control signal input (CH+ model).
82	CH PLUS CLK	O	-	The clock pulse for CH+ in/out-select IC.(CH+ model)
83	DMSS CLK	O	-	Clock signal for audio DMSS unit.
84	MTS ISC DA	I/O	-	NOT USE
85	MTS ISC CLK	O	-	NOT USE
86	SHORT TEST	I	L	REC mode indication signal input. (NOT USE)
87	A MUTE	O	H	"H" output for disable audio output signal.
88	CM SKIP PULSE	O	-	Pulse to sample-hold timing for CM-detector.
89	VSS	-	-	IC ground terminal.
90	VDD	-	-	IC power supply input.(5Vdc)
91	PB L	O	L	Signal for indicating playback mode.
92	ORC VD MUTE	O	H	"H" output for disable video output signal during detection of tape character.
93	R1/R2	O	-	Signal for selecting AV-input(video/audio)source.(R1:L)
94	POWER LED	-	-	NOT USE
95	POWER UP	O	H	"HIGH" output except when power is off. Indicating that power is ON.
96	PAL H	O	H	Signal to indicate "PAL" mode.
97	AV CTL	O	-	Audio input source selecting for audio IC.
98	ORC PB L	O	L	Signal to indicated "ORC PB" mode
99	ML - D	O	-	Loading motor rotation direction (FWD / REV) indication signal.
100	ML - S	O	-	Loading motor rotation speed (low / medium / high) indication signal.

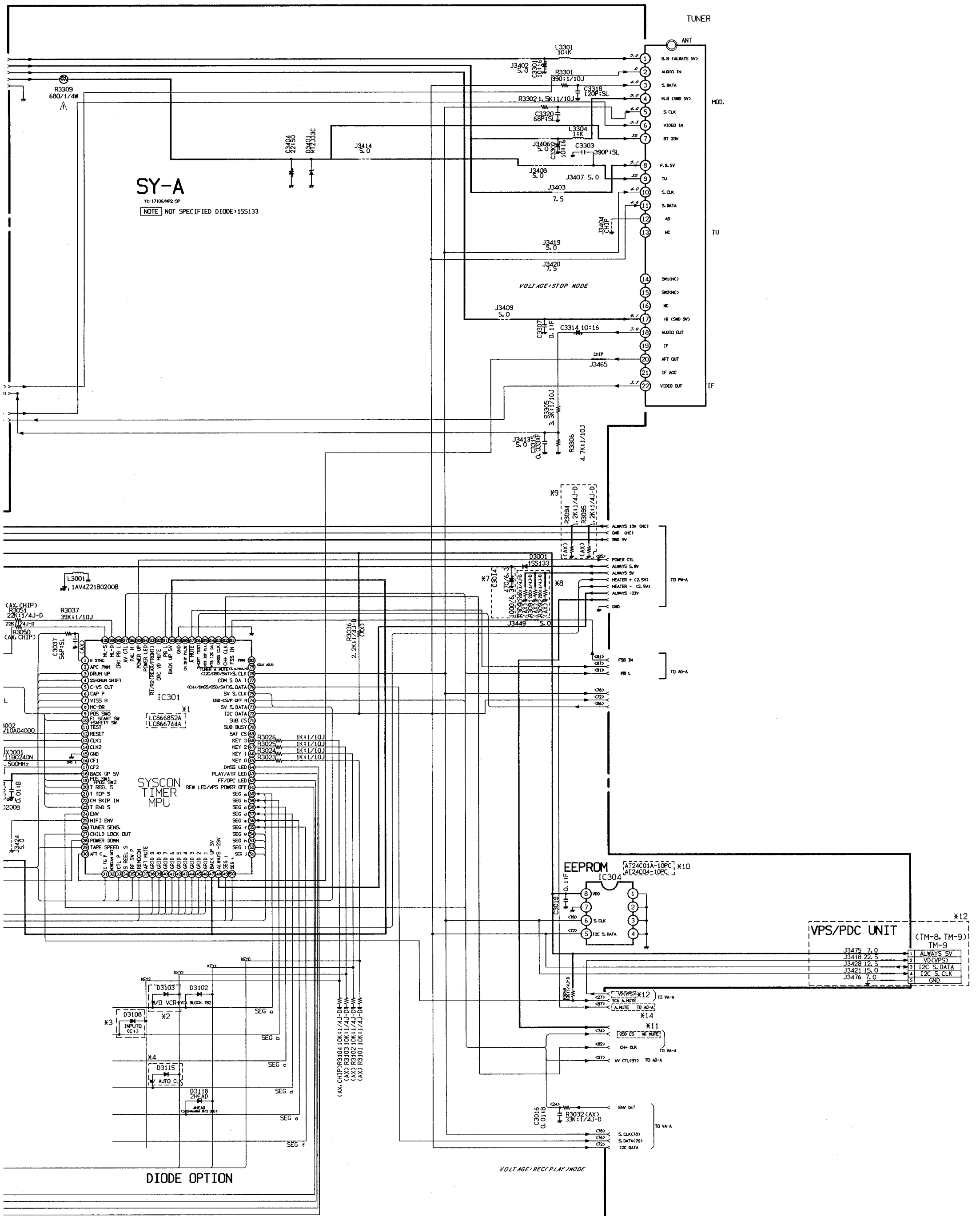
MP_IC301



NOTE NOT USE = OPEN CIRCUIT

	X1	X2	X3
WHR-2775P	LC866744A	NOT USE	USE
WHR-2675P	LC866744A	USE	USE
WHR-277G	LC866852A	NOT USE	NOT USE

CP-1 BOARD (SY-A) SYSTEM CONTROL, TIMER & TUNER
(VHR-267SP, VHR-277SP & VHR-277G)



SY-A
Y1-1710A/P2-9P
NOTE: NOT SPECIFIED DIODE: 1SS133

**SYCON
TIMER
MPU**

DIODE OPTION

TUNER

- 1 ANT
- 2 B.B (ALWAYS 5V)
- 3 AUDIO IN
- 4 S. DATA
- 5 H.B (CMD 5V)
- 6 S. CLK
- 7 VIDEO IN
- 8 BT 33V
- 9 P.B. 5V
- 10 TU
- 11 S. CLK
- 12 S. DATA
- 13 AS
- 14 NC
- 15 SW10K
- 16 SW20K
- 17 NC
- 18 H.B (CMD 5V)
- 19 AUDIO OUT
- 20 IF
- 21 AFT OUT
- 22 IF AGC
- 23 VIDEO OUT

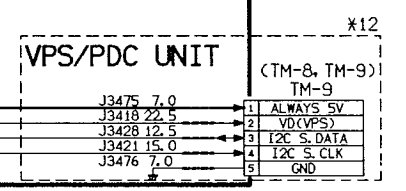
TO PW-A

TO AD-A

TO VA-A

TO AD-A

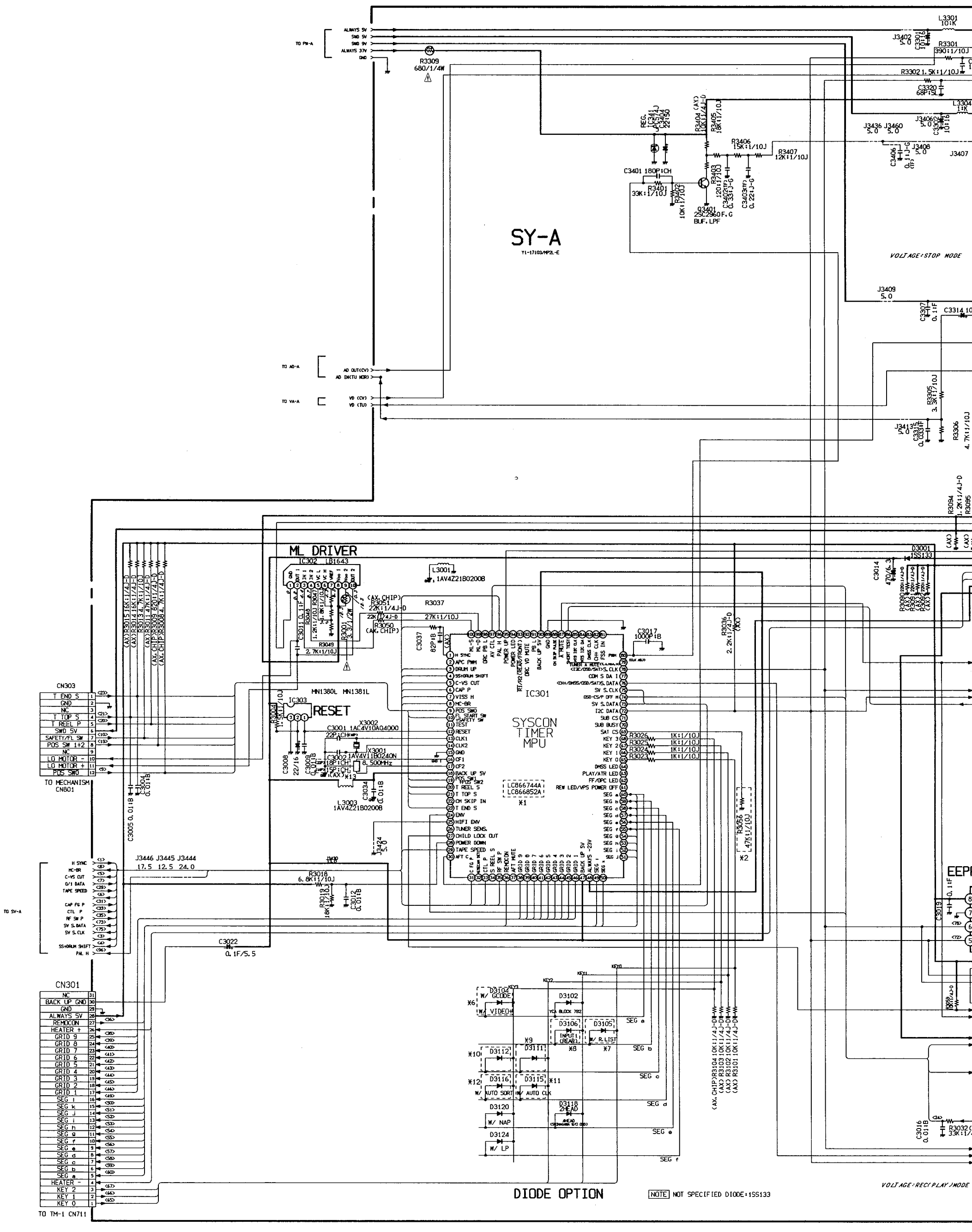
TO VA-A

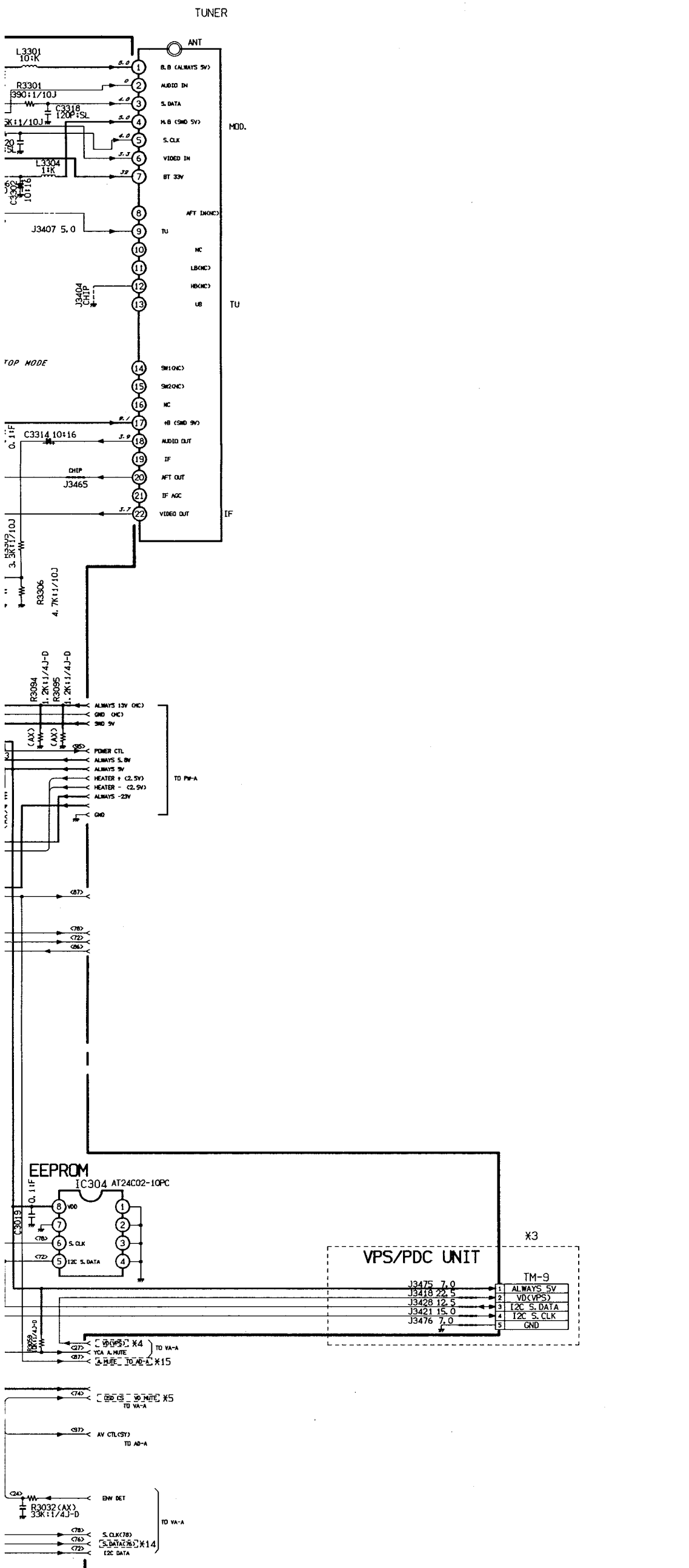


NOTES:
— : Common parts for VHR-267SP, VHR-277SP & VHR-277G.
The parts marked are VHR-267SP & VHR-277SP.

JIT	X2	X3	X4	X5	X6	X7	X8, X9	X10	X11	X12	X13	X14
USE	USE	Necessary when installing the TM-9 board.	USE	18P(22P)	470/6.3	NOT USE	AT24C04-10PC	VD MUTE	TM-8 or TM-9+OPTION	NOT USE	NOT USE	
SE	USE	Necessary when installing the TM-9 board.	NOT USE	18P(22P)	1000/6.3	NOT USE	AT24C01A-10PC	VD MUTE	TM-8 or TM-9+OPTION	NOT USE	NOT USE	
USE	NOT USE	USE	USE	15P(18P)	470/6.3	USE	AT24C04-10PC	OSD CS	TM-9+BUILT IN	USE	USE	

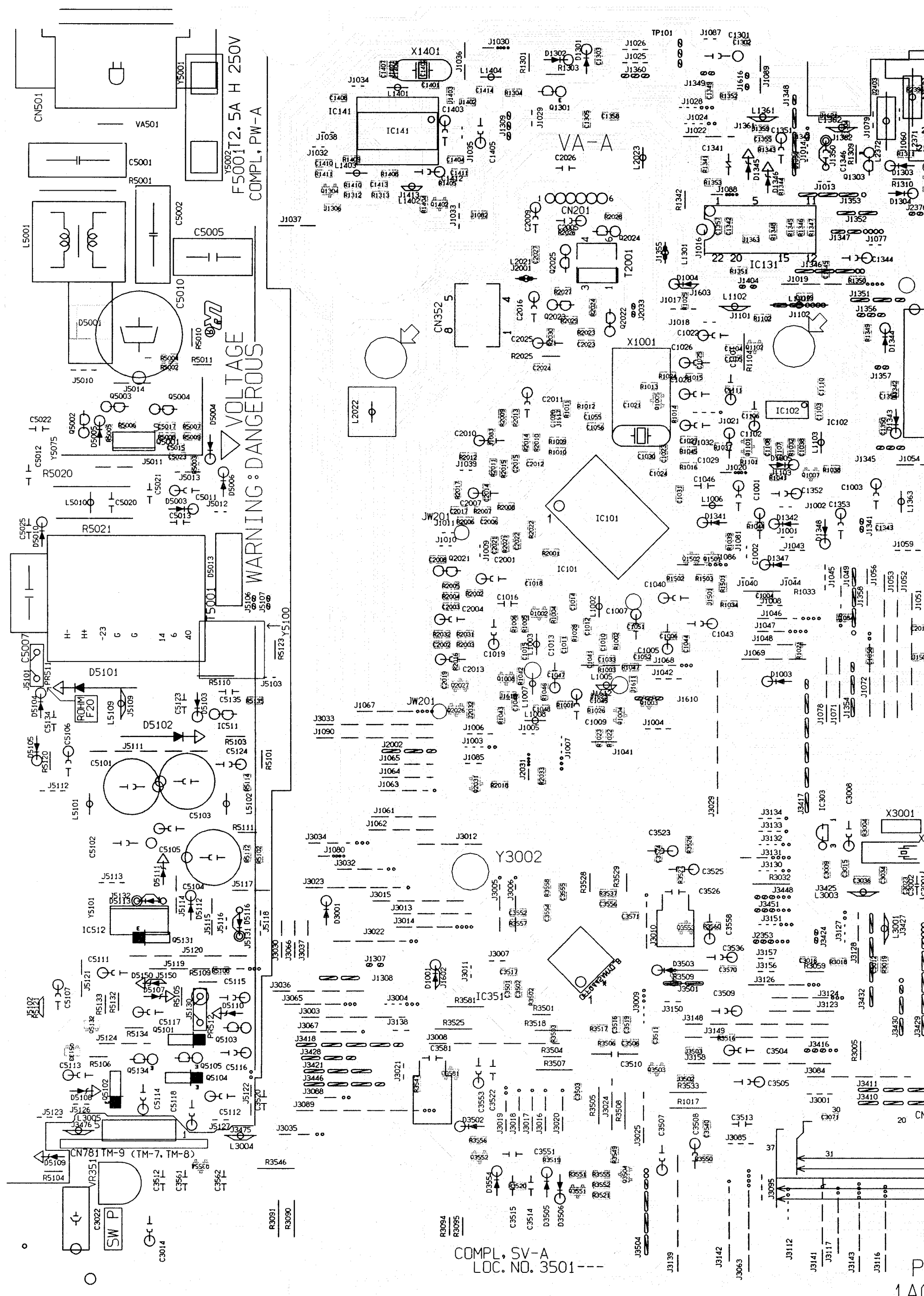
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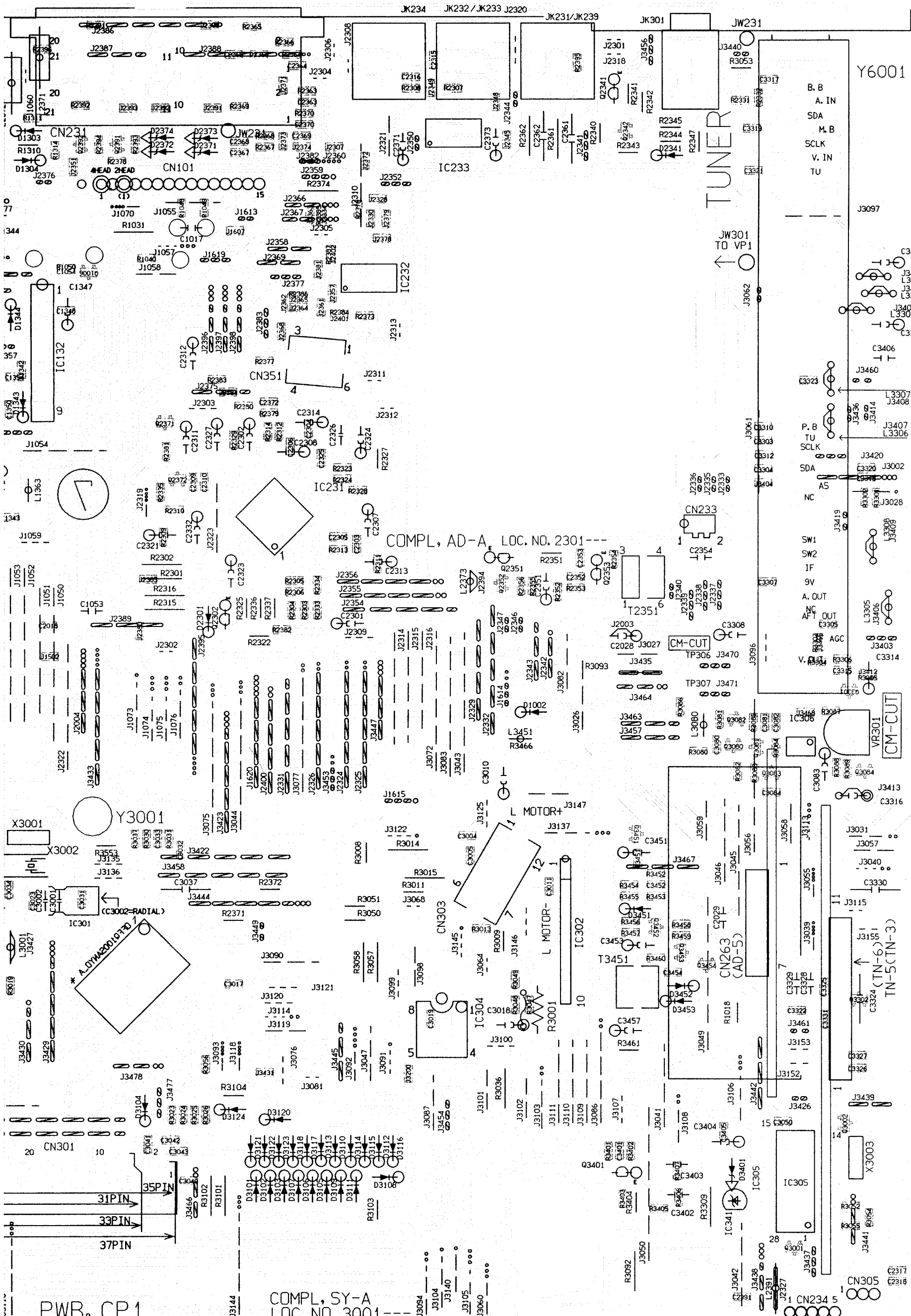
NOTE: NOT USE : OPEN CIRCUIT

	X1	X2	X3, X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
VHR-287E	LC866852A	USE	USE	OSD CS	NOT USE	USE	USE	NOT USE	NOT USE	USE	USE	15P(18P)	USE	USE
VHR-277E	LC866744A	NOT USE	NOT USE	VD MUTE	USE	NOT USE	NOT USE	USE	USE	NOT USE	NOT USE	18P(22P)	NOT USE	NOT USE



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Y6001

B. B
A. IN
SDA
M. B
SCLK
V. IN
TU

TUNER
JW301
TO VP1

COMPL, AD-A LOC. NO. 2301

CM-CUT

CM-CUT

VR301

CM-CUT

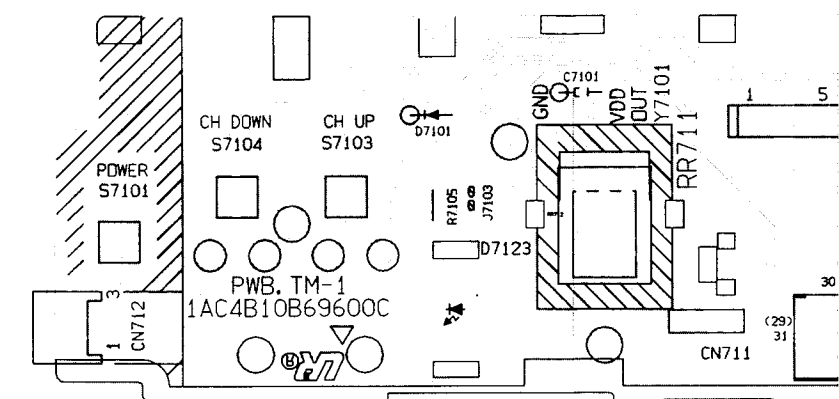
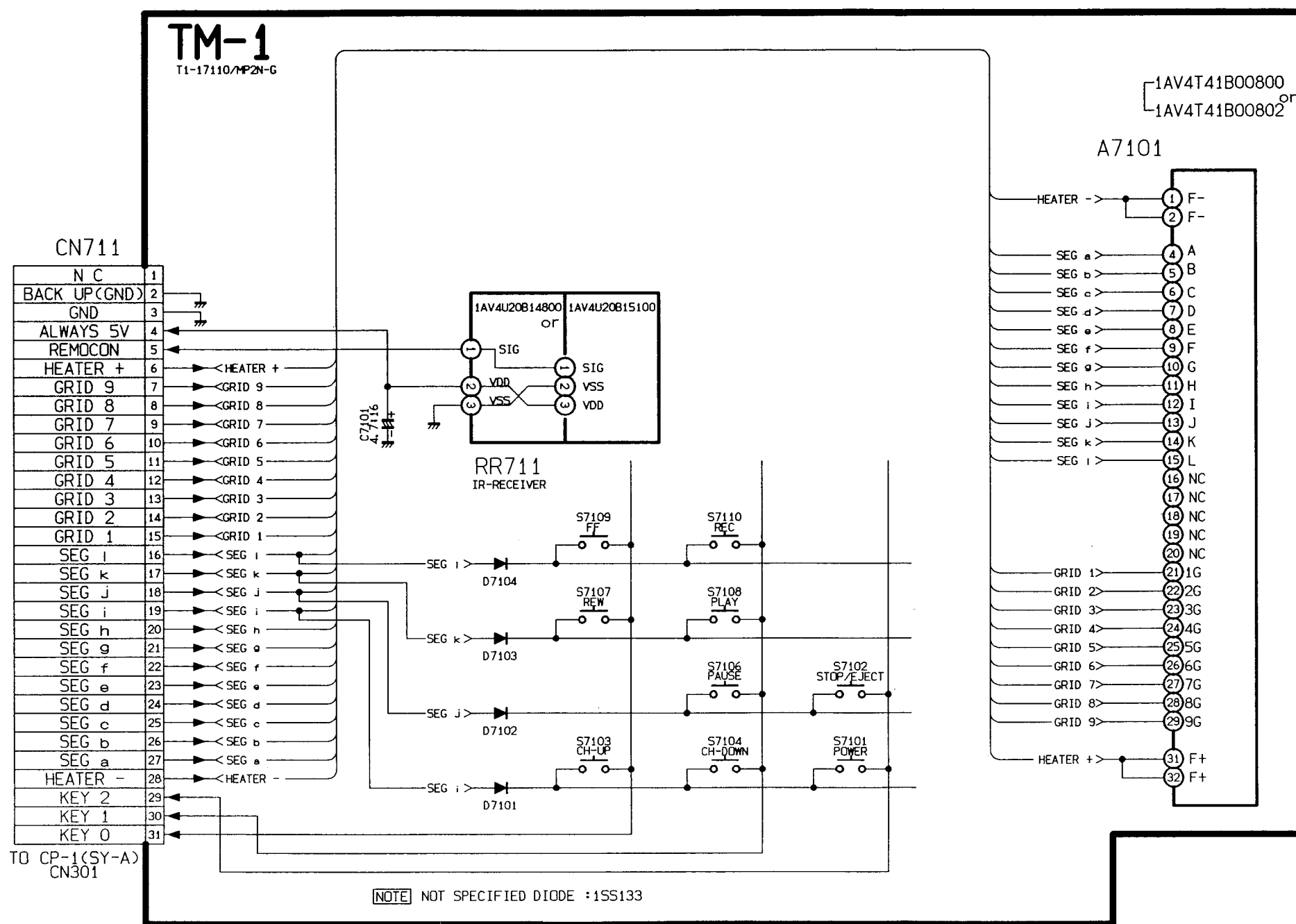
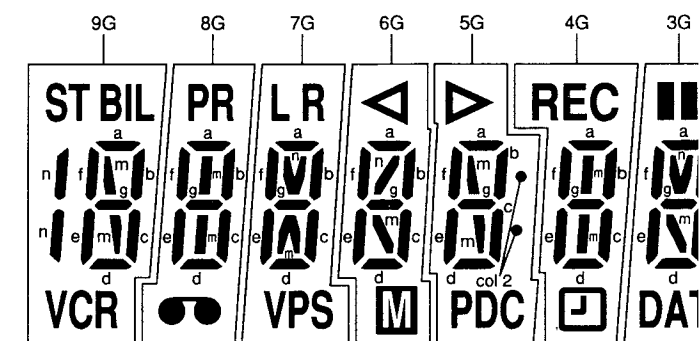
TN-5(CTN-3)

COMPL, SY-A
LOC. NO. 3001

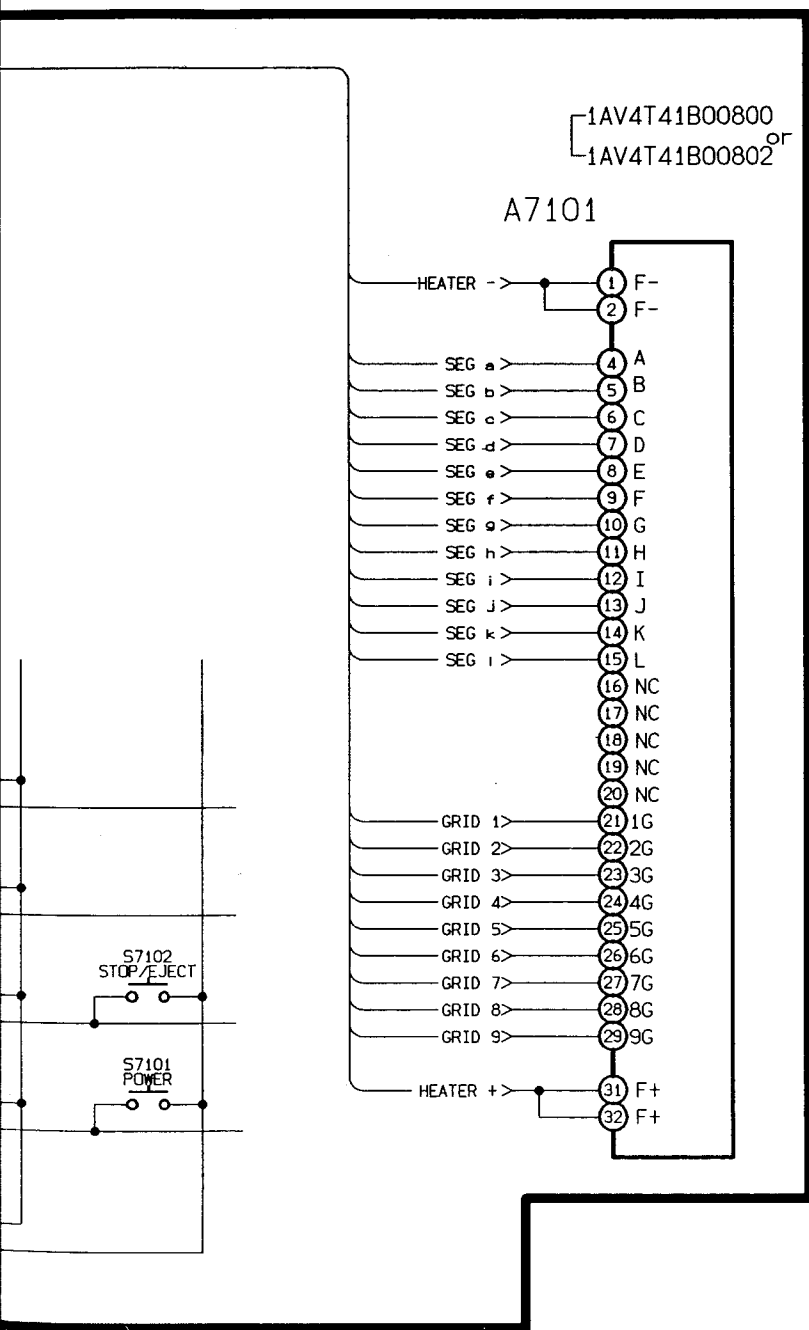
PWB, CP1
1AC4B10B68900C CMK-P2X

TM-1 BOARD OPERATION KEY & DISPLAY

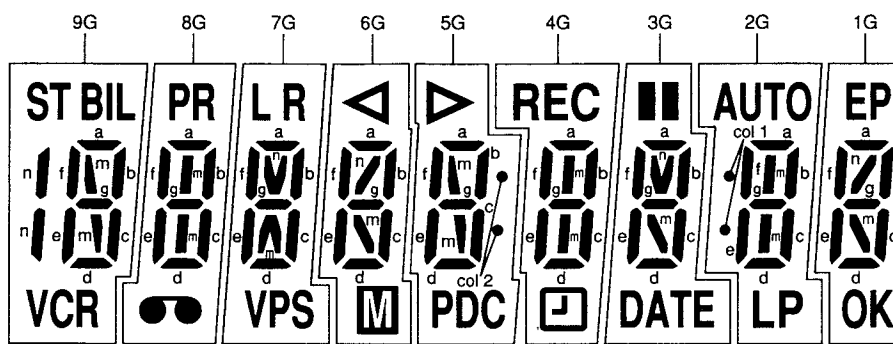
GRID & SEGMENT ASSIGNMENT



A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE



GRID & SEGMENT ASSIGNMENT

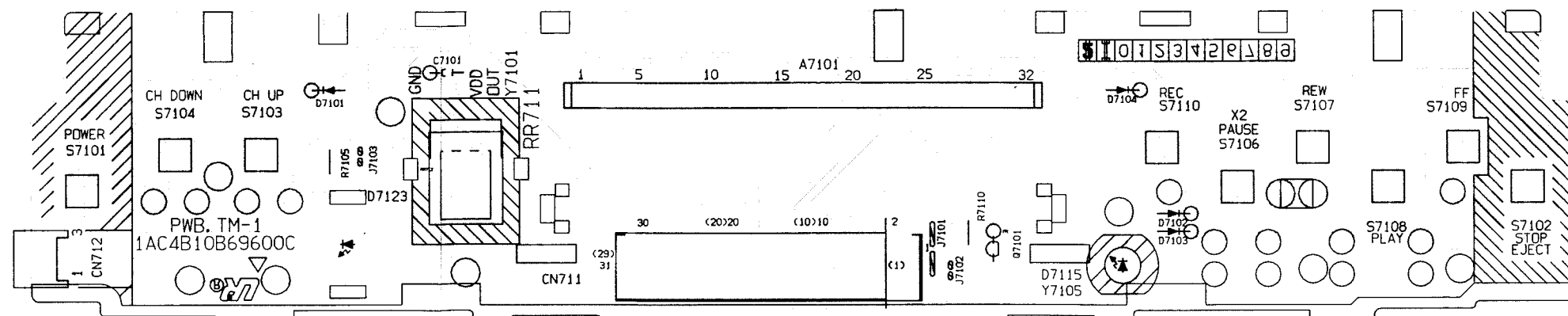


ANODE CONNECTION

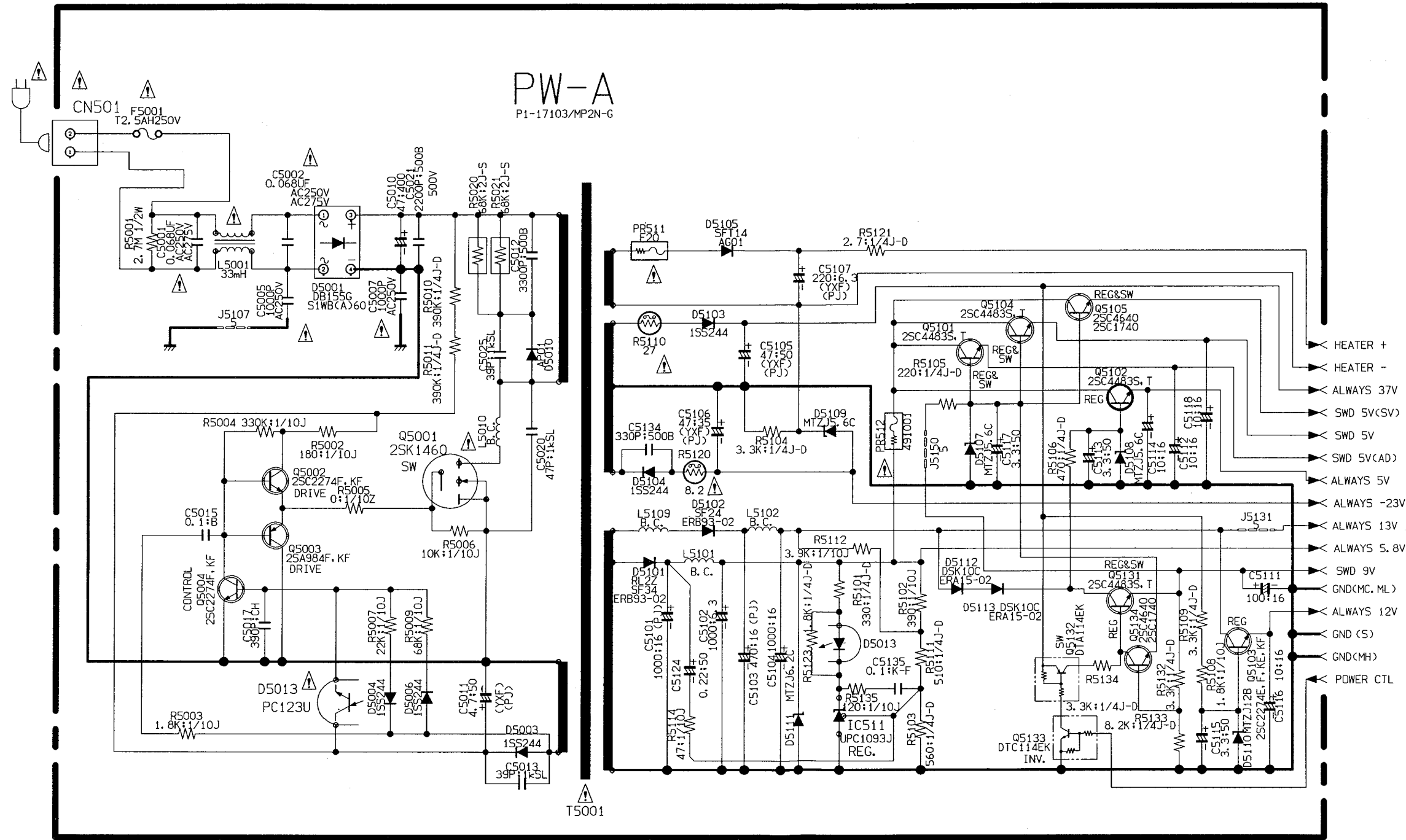
GRID/SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◀	▶	REC	■	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	◻	R	◻	PDC	◻	DATE	LP	OK

GR-00800

TM-1 P.W.B.



CP-1 BOARD (PW-A) POWER SUPPLY

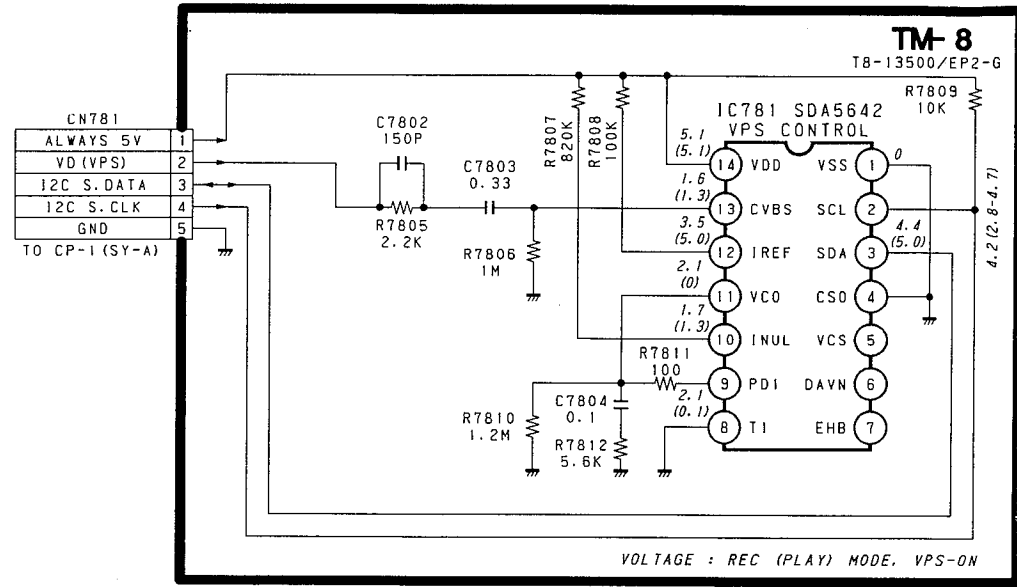


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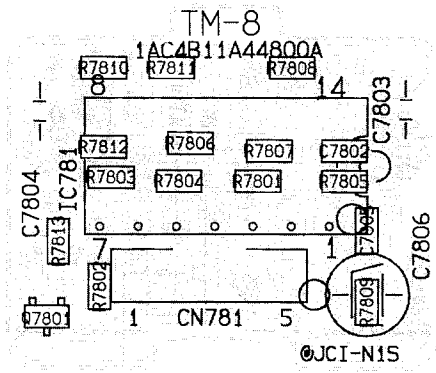
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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TM-8 BOARD VPS (OPTION FOR VHR-267SP & VHR-277SP)

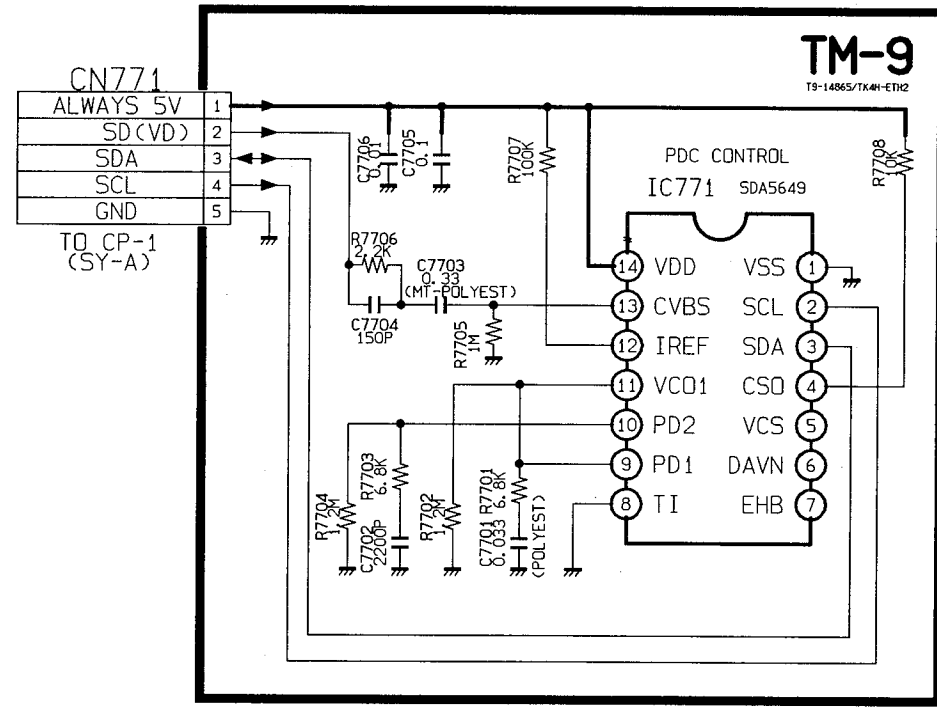


TM-8 P.W.B. (OPTION FOR VHR-267SP & VHR-277SP)



TM-9 BOARD PDC/VPS
(ASSEMBLED FOR VHR-277G & VHR-287E, OPTION FOR VHR-267SP & VHR-277SP)

*1 : The D3115 is necessary on the SY-A block when installing the TM-9 board.



TM-9 P.W.B.
(ASSEMBLED FOR VHR-277G & VHR-287E,
OPTION FOR VHR-267SP & VHR-277SP)

