

Service Manual

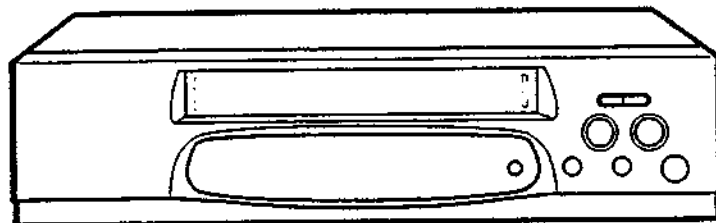
ORION

VH-2799 HiFi

VN-396 VR 2972

VN-418 VR 2973

VIDEO CASSETTE RECORDER



Änderungen vorbehalten!

Chassis Code:

A

Bestell-Nr.:

7931

SPECIFICATIONS

Power Source : AC230V/50Hz Power Consumption : Approx. 22W Power Consumption-stand-by : Less than 6W Operation Temperature : 5°C to 40°C Television System : CCIR : 625 lines, 50 fields PAL NTSC Playback in PAL 60Hz Video Recording System : VHS, 2 rotary heads, helical scanning system Luminance:FM azimuth recording Colour Signal:Converted subcarrier phase shift recording Tape Format : 12.65mm high density tape RF Output Channel : 67 (53~69, Adjustable) channel F.FWD/REW Time : 2'30" (with E-180 cassette) Audio Track : 3 track (Hi-Fi Sound 2track, Normal 1 track) Hi-Fi Audio Recording System : Depth Multiplex Recording Rotary, Slant Azimuth Two Head Helical Scan System	Tape Speed : SP:23.39mm/s, NTSC:SP:33.35mm/s LP:11.69mm/s Hi-Fi Audio Signal : Output Level Line:-3.8dB 1K ohm S/N Ratio:More Than 65 dB Dynamic Range:More Than 75dB Frequency Response:20Hz - 20KHz (± 6db) Wow And Flutter:Less Than 0.01% Wrms Heads : Video:4 rotary heads FM Audio:2 rotary heads Audio/Control:1 stationary head Erase:1 full track erase Input Level : Video:1.0Vp-p, 75 ohm unbalanced Audio:RCA:300 mV, 50K ohm unbalanced SCART:500 mV, 50K ohm unbalanced Output Level : Video:1.0Vp-p, 75 ohm unbalanced Audio:RCA:390 mV, 1K ohm unbalanced SCART:500 mV, 1K ohm unbalanced Hi-Fi Audio:500 mV, 1K ohm unbalanced Weight : 3.7 Kg Dimension : 355 (W) × 92 (H) × 273 (D) mm
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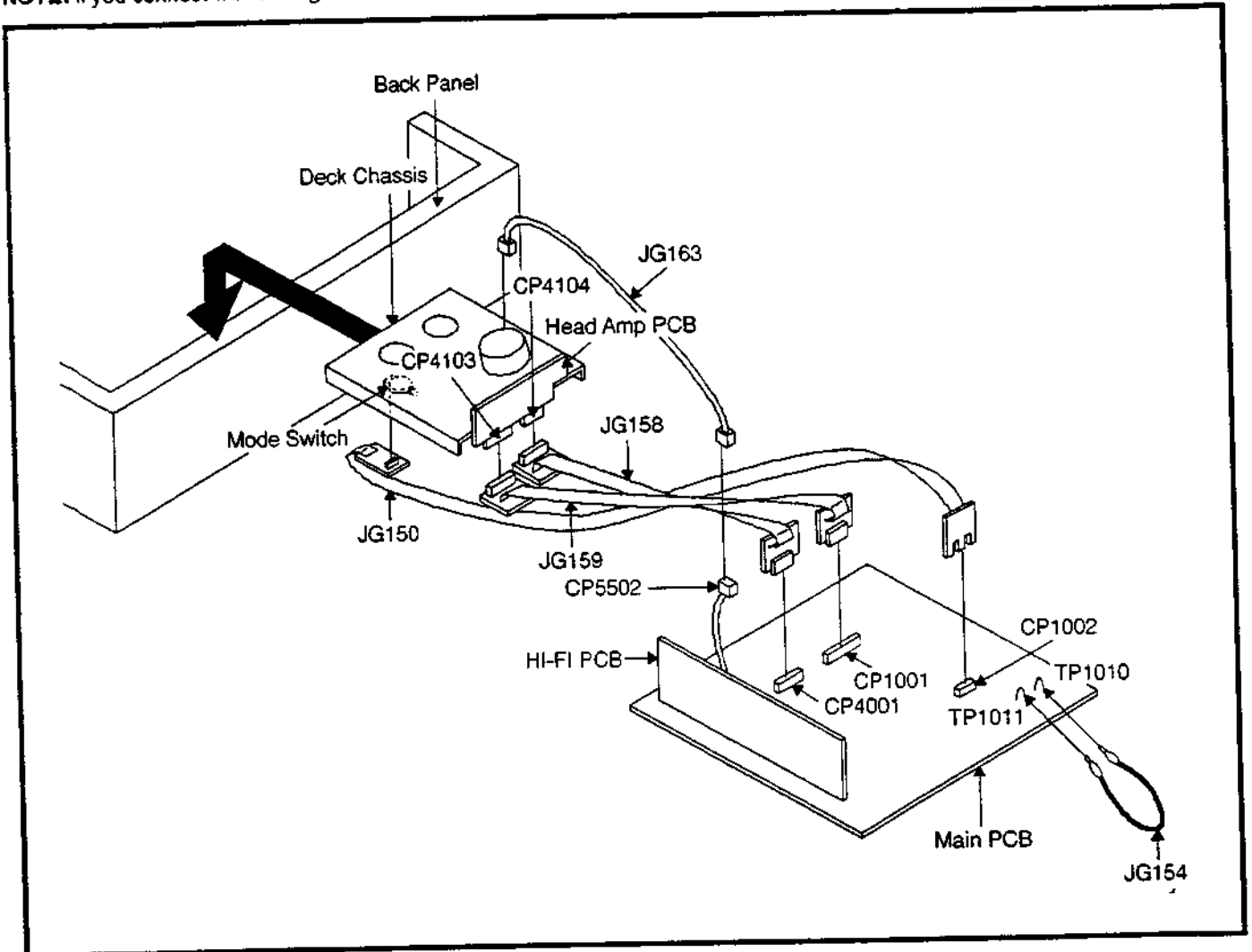
Design and specifications are subject to change without notice.

PREPARATION FOR SERVICING



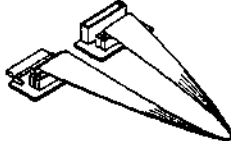
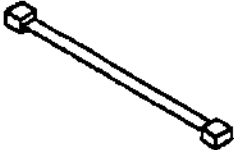
How to use the Servicing Fixture

1. Remove the Main PCB from the Deck Chassis.
2. Connect as shown in the below figure using the Service Fixture.
 - Connect the Main PCB to the Mode Switch with the cable JG150.
 - Connect the Main PCB to the Head Amp PCB with the cable JG158 and JG159.
 - Connect the Main PCB to the FE Head with the cable JG163.
3. Short circuit between TP1010 and TP1011 with the cable JG154.
(Refer to MAJOR COMPONENT LOCATION GUIDE)
4. The EQT, BOT and Reel Sensor do not work at this moment.
5. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

NOTE: If you connect with the Jig Cable, the Audio is not heard on Hi-Fi.



SERVICING FIXTURES AND TOOLS

<p>JG150 Cable</p> 	<p>JG154 Cable</p> 	<p>JG158 Cable (16 Pins) JG159 Cable (20 Pins)</p> 	<p>JG163 Cable</p> 
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Part No.	Remarks
JG150	Used to connect the MAIN PCB and MODE SWITCH
JG154	Used to connect the test point of SERVICE and GROUND
JG158/JG159	Used to connect the MAIN PCB and HEAD AMP PCB
JG163	Used to connect the HI-FI PCB and FE HEAD

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a \triangle mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE

You can find it in the back of your unit.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

CONTENTS

	PAGE		PAGE
SPECIFICATIONS	COVER	ELECTRICAL ADJUSTMENTS	
SERVICING NOTICES ON CHECKING	1	3. ADJUSTMENT PROCEDURE	
HOW TO ORDER PARTS	1	3-1: PG SHIFTER	20
CONTENTS	2	3-2: PILOT	20
DISASSEMBLY INSTRUCTIONS		3-3: SEPARATION	20
1. REMOVAL OF MECHANICAL PARTS AND		MAJOR COMPONENTS LOCATION GUIDE	21
P. C. BOARDS	3, 4	BLOCK DIAGRAMS	
2. REMOVAL OF DECK PARTS	5~9	Y/C/HEAD AMP	22
KEY TO ABBREVIATIONS	10, 11	TUNER/AUDIO/21PIN/OSD	23
PREVENTIVE CHECKS AND SERVICE INTERVALS	12	SYSTEM CONTROL/SERVO	24
DECK PARTS LOCATIONS	13, 14	HI-FI	25
SERVICING FIXTURES & TOOLS	15	OPERATION/POWER	26
TO CHECK INITIAL SETTING	16	PRINTED CIRCUIT BOARDS	
MECHANICAL ADJUSTMENTS		MAIN	27, 28
1. CONFIRMATION AND ADJUSTMENT		HI-FI/HEAD AMP/OPERATION	29
1-1: CONFIRMATION AND ADJUSTMENT OF REEL		SCHEMATIC DIAGRAMS	
DISK HEIGHT	17	Y/C	30
1-2: CONFIRMATION AND ADJUSTMENT OF TENSION		TUNER/AUDIO	31
POST POSITION	17	HEAD AMP	32
1-3: CONFIRMATION AND ADJUSTMENT OF BACK		SYSTEM CONTROL/SERVO	33
TENSION ON PLAYBACK	17	HI-FI	34
1-4: CONFIRMATION OF FAST FORWARD TORQUE	18	21PIN/OSD	35
1-5: CONFIRMATION OF REWIND TORQUE	18	POWER	36
1-6: CONFIRMATION OF REEL BRAKE TORQUE	18	OPERATION	37
2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT		INTERCONNECTION DIAGRAM	38
2-1: GUIDE ROLLER	18	WAVEFORMS	39, 40
2-2: CONFIRMATION AND ADJUSTMENT OF A/C		MECHANICAL EXPLODED VIEW	41
HEAD TILT	19	MECHANICAL REPLACEMENT PARTS LIST	42
2-3: ADJUSTMENT OF A/C HEAD HEIGHT		CHASSIS EXPLODED VIEW(TOP VIEW)	43
AND AZIMUTH	19	CHASSIS EXPLODED VIEW(BOTTOM VIEW)	44
2-4: TAPE RUNNING ADJUSTMENT	19	UNIT ASS'Y EXPLODED VIEW	45
		CHASSIS/UNIT ASS'Y REPLACEMENT PARTS LIST	46
		ELECTRICAL REPLACEMENT PARTS LIST	47, 48

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Top Cabinet and Angle Deck Back in the direction of arrow (A).
3. Disconnect the following connector: (CP651 3 pins).
4. Unlock the 2 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 3 screws ③ and remove the Operation PCB.

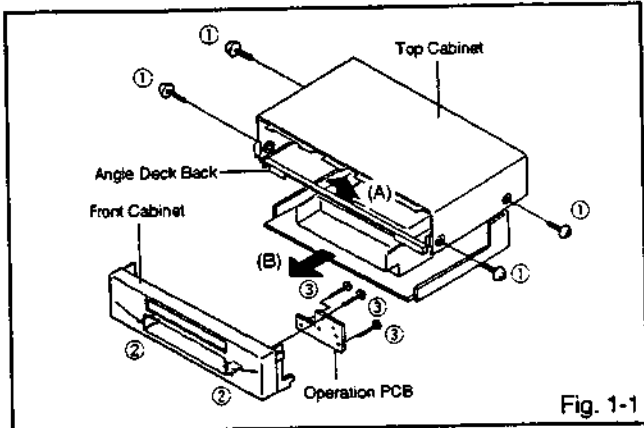


Fig. 1-1

1-2: LOCATION OF P.C. BOARDS (Refer to Fig. 1-2)

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

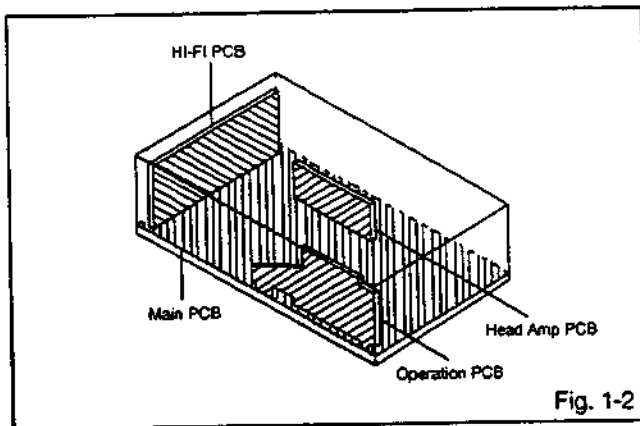


Fig. 1-2

1-3: BOTTOM CHASSIS (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Unlock the 2 supports ②.
3. Remove the Bottom Chassis in the direction of arrow.

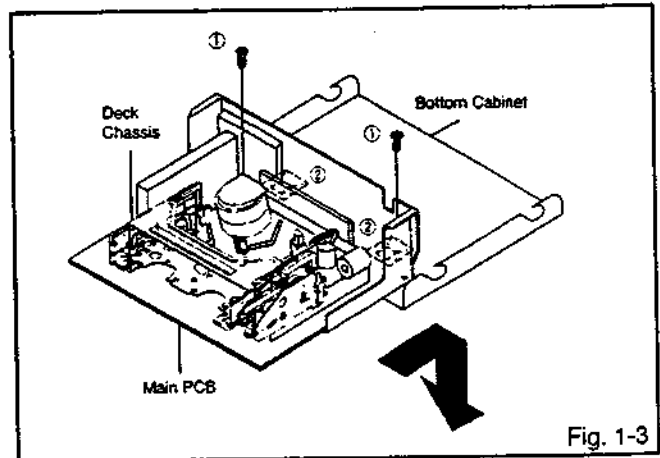


Fig. 1-3

1-4: FLAP (Refer to Fig. 1-4)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

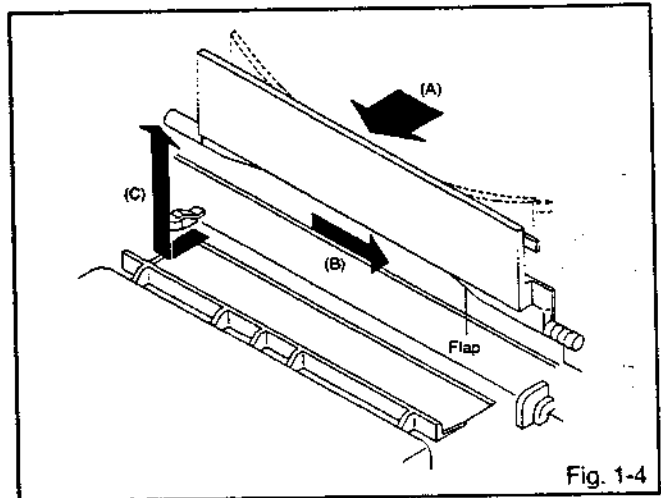


Fig. 1-4

1-5: DECK CHASSIS (Refer to Fig. 1-5)

1. Remove the 3 screws ①.
2. Remove the screw ②.
3. Disconnect the 4 connectors: (CP1001 20 pins, CP4001 16 pins, CP4107 4 pins and CP5502 2 pins) and remove the Deck Chassis in the direction of arrow.

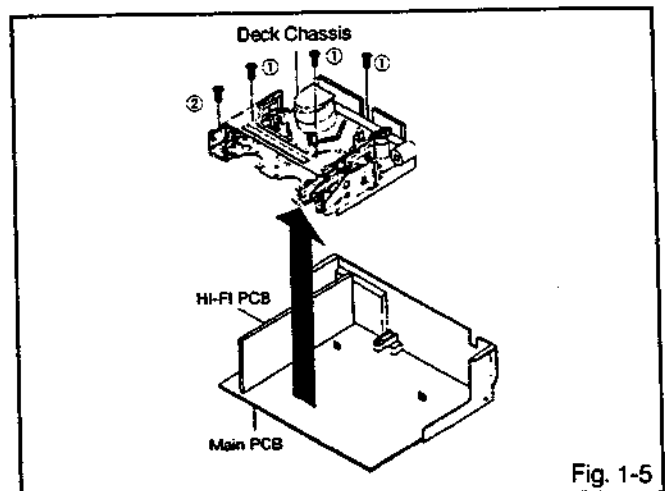


Fig. 1-5

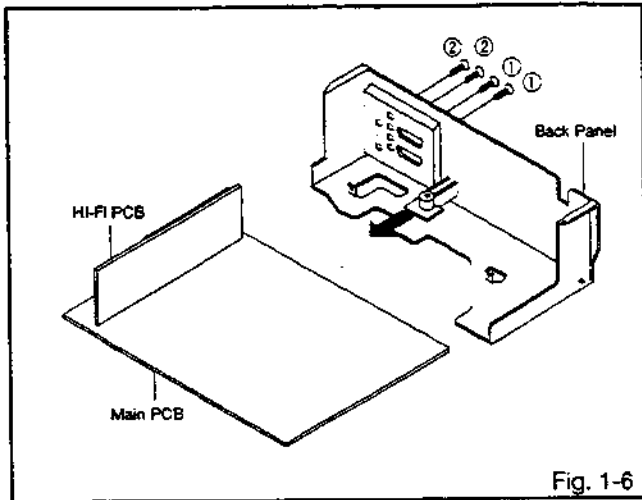
DISASSEMBLY INSTRUCTIONS

1-6: MAIN PCB AND BACK PANEL (Refer to Fig. 1-6)

1. Remove the 2 screws ①.
2. Remove the 2 screws ②.
3. Remove the Main PCB in the direction of arrow.

NOTE

AC Cord must be removed from the fitting in the back panel before the Main PCB can be removed.

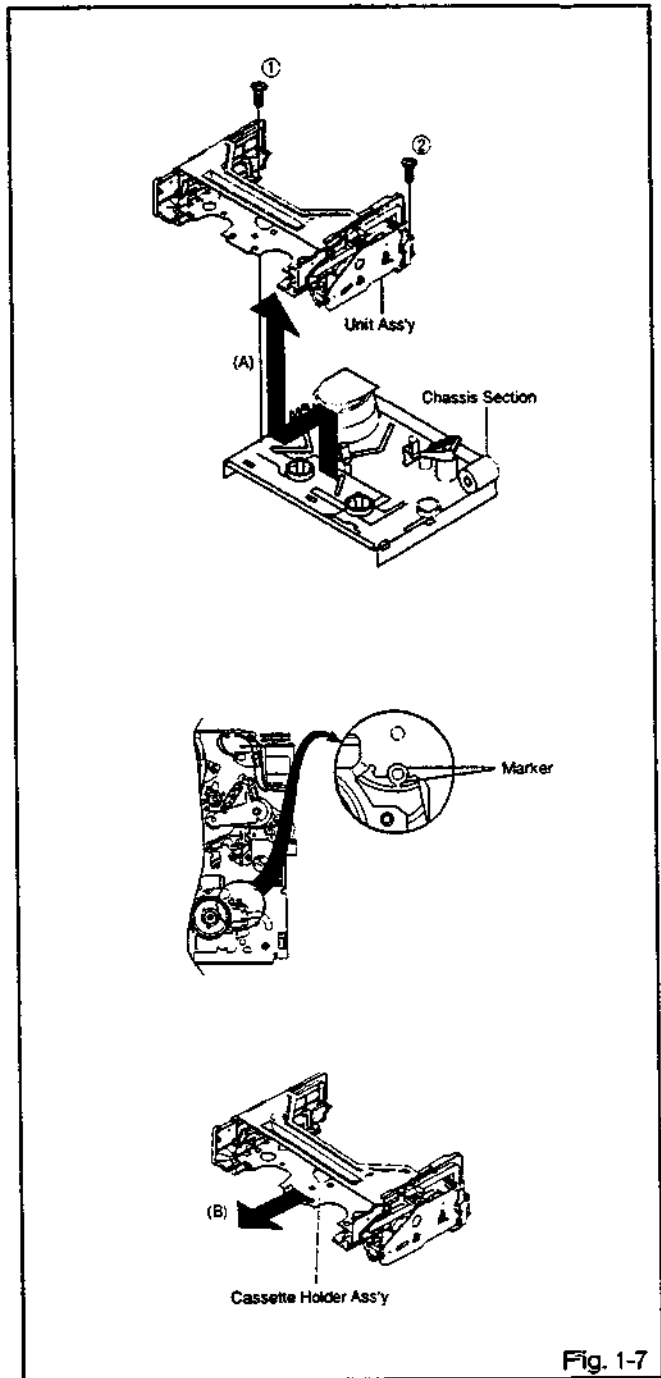


1-7: CHASSIS SECTION AND UNIT ASS'Y (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove Unit Ass'y in the direction of arrow (A).

NOTE

When installing the Unit Ass'y, align the timing marks and pull the Cassette Holder Ass'y in the direction of arrow (B).



DISASSEMBLY INSTRUCTIONS

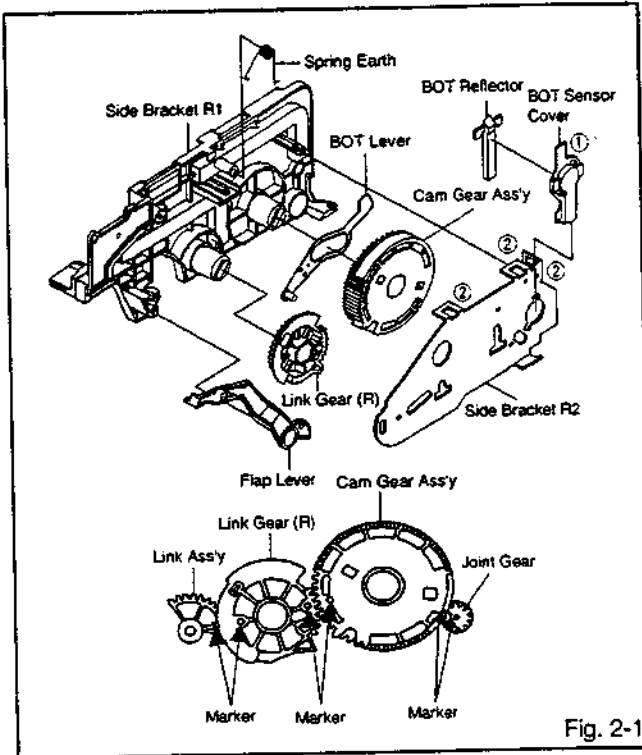
2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CLUTCH GEAR (Refer to Fig. 2-1)

1. Unlock the support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever, Link Gear (R), Cam Gear Ass'y and BOT Lever.

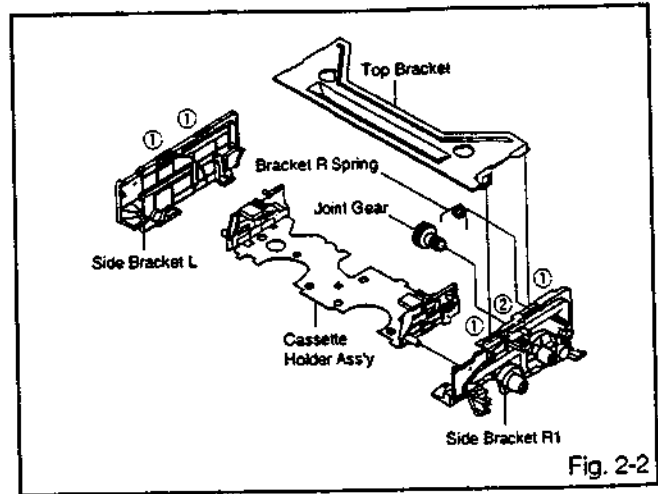
NOTE

When installing the Link Ass'y and Link Gear (R), align the timing Marks.



2-2: TOP BRACKET / TAPE PIECE GUIDE (Refer to Fig. 2-2)

1. Unlock the 4 supports ①.
2. Remove the Top Bracket.
3. Remove the Side Bracket R1 and Side Bracket L.
4. Unlock the support ②.
5. Remove the Joint Gear.
6. Remove the Bracket R Spring.

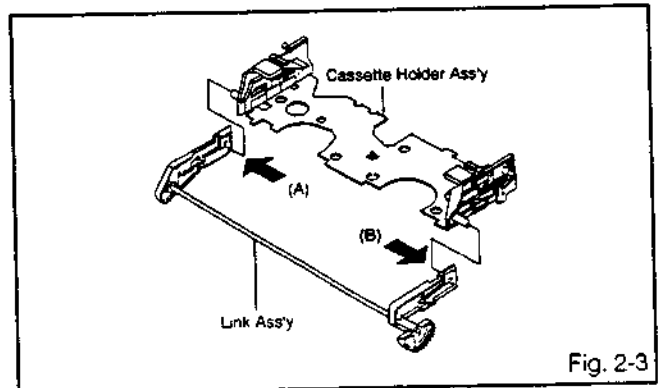


2-3: LINK ASS'Y (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y, remove the Link Ass'y in the direction (B).

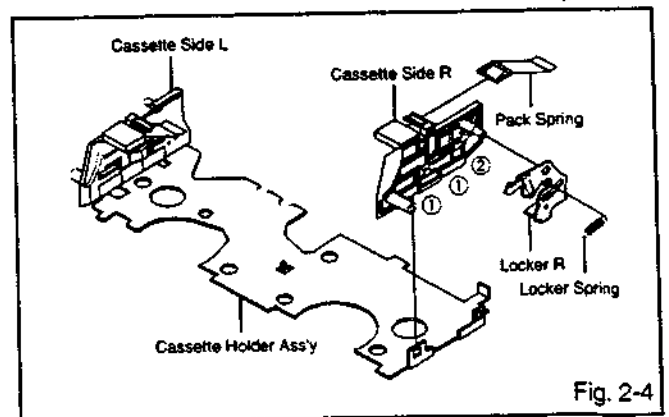
NOTE

Install the (B) first, then install the (A).



2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.



DISASSEMBLY INSTRUCTIONS

2-5: CASSETTE SIDE L (Refer to Fig. 2-5)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock the support ②.
6. Remove the Locker L.

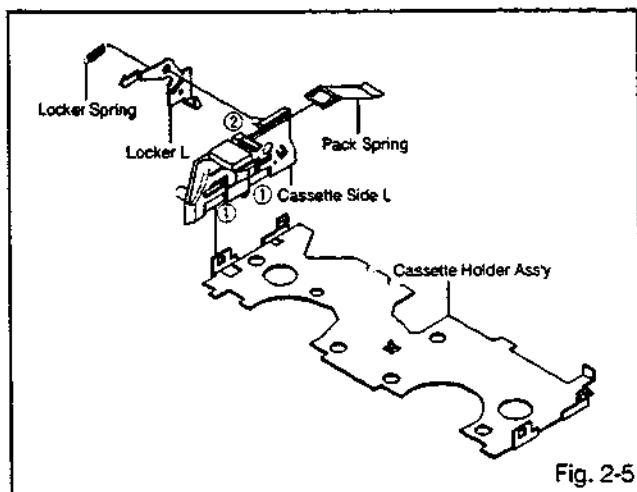


Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Assy and Main Brake T Assy.
6. Remove the Joint Arm.
7. Remove the Reflector LED 2.

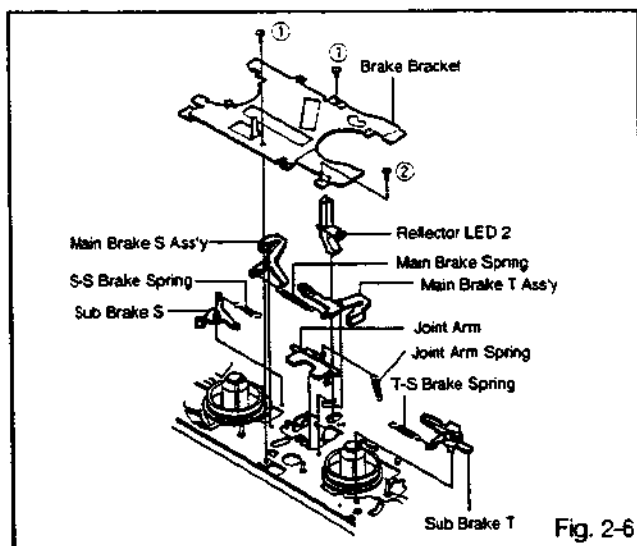


Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Assy.
5. Remove the Tension Band Assy.
6. Remove the Tension Lever 2 Assy.

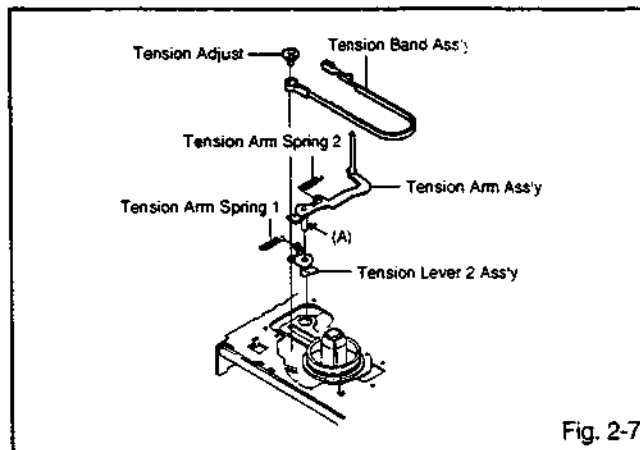


Fig. 2-7

NOTE

1. Install the Tension Band Assy without twisting it.
2. Turbine Oil (Lubricating Grade #150) the area marked with A in Fig. 2-7.

EX: KYOUDO Oil Sulaidasu #150
IDEMITSU Oil SuSper Multi #150

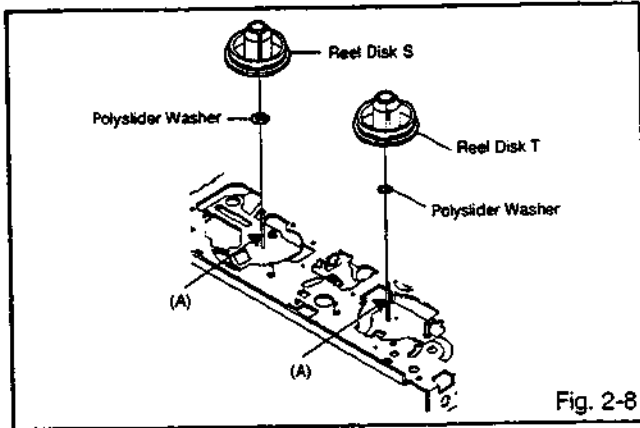
2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 of DISASSEMBLY INSTRUCTIONS.
 2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
 3. Clean the Reel Disk Shaft and put in height adjusting washers.
 4. Be careful not to damage the Tension Band Assy at the time of removal and installation.
 5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
 6. After oiling (Lubricating Grade #150) the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
- EX: KYOUDO Oil Sulaidasu #150
IDEMITSU Oil Super Multi #150
7. After installation, adjust the height of the Reel Disk. (Refer to item 1-1 of MECHANICAL ADJUSTMENTS)
 8. After installation, adjust and confirm the tension post position. (Refer to item 1-2 of MECHANICAL ADJUSTMENTS)

DISASSEMBLY INSTRUCTIONS

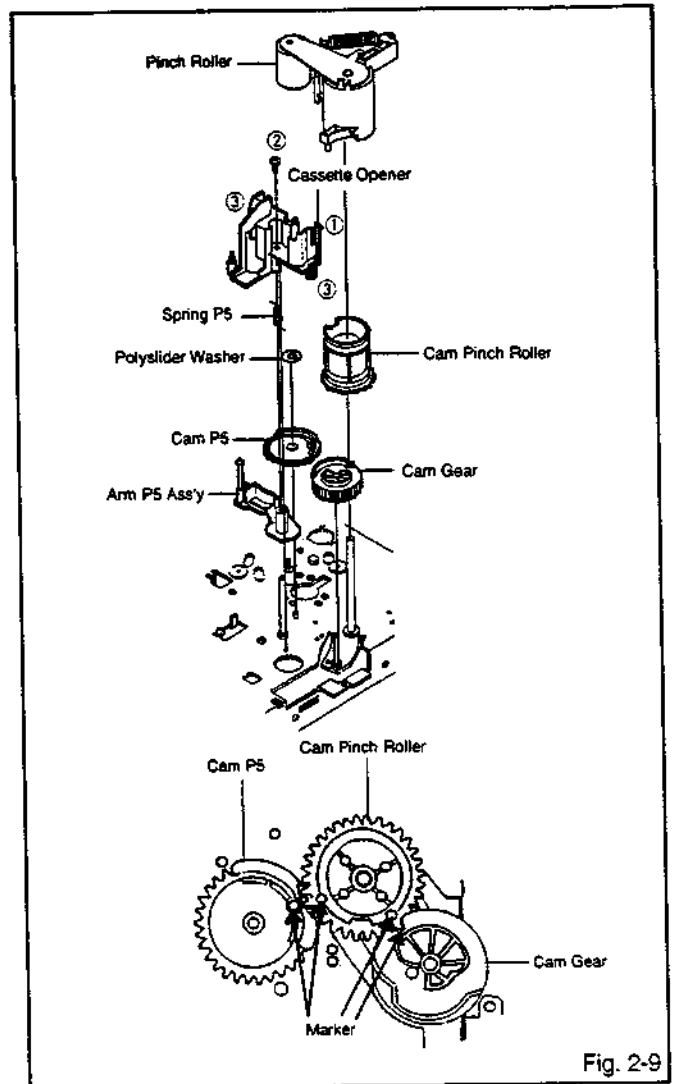


2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear and Cam Pinch Roller.
8. Remove the polyslider washer and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.



2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Disconnect the connector: (CP4106 6 pins) on the Head Amp PCB.
2. Remove the 3 screws ①.
3. Remove the 3 Audio Control Head Springs.
4. Remove the Audio Control Head.

NOTES

1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
 - a. MECHANICAL ADJUSTMENTS: ITEM 2-2
 - b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS

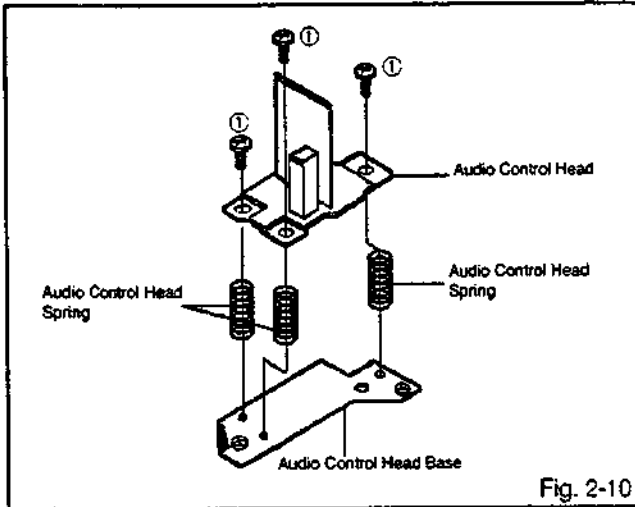


Fig. 2-10

2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Disconnect the following connectors:
(CP4101 6 pins and CP4102 5 pins).
2. Remove the Joint Screw, then remove the Azimuth Spring.
3. Remove the 2 screws ①, then remove the Polyslider Washer and Cylinder Unit from the Main Chassis.

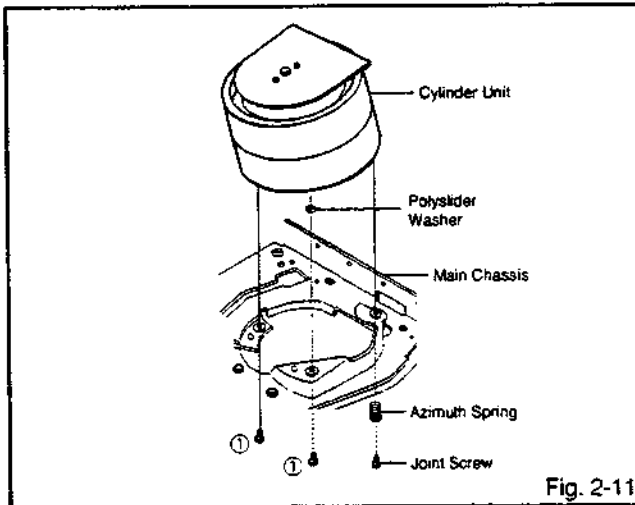


Fig. 2-11

2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

NOTE

When installing the Mode Switch, align the timing position.

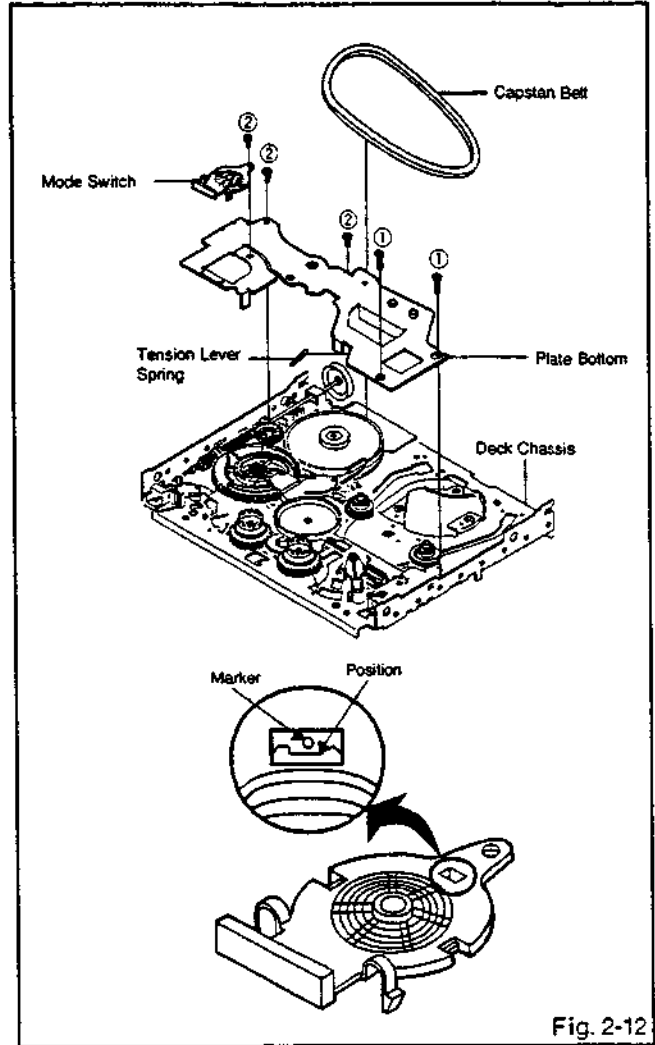


Fig. 2-12

2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the polyslider washer ①.
2. Remove the Center Pulley.
3. Remove the polyslider washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 polyslider washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.

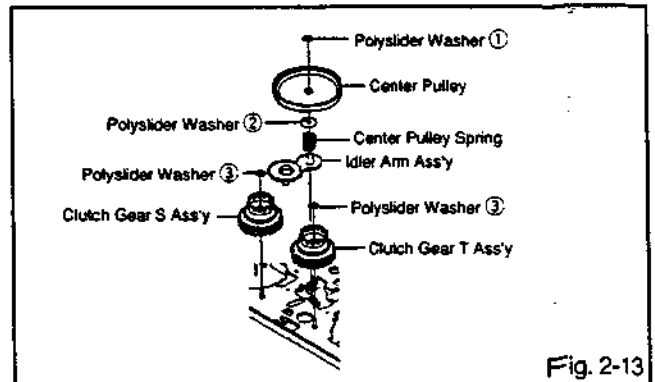


Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Main Rod Spring.
6. Remove the Tension Holder.
7. Remove the Tension Lever.
8. Remove the Main Cam.
9. Remove the Middle Gear.
10. Remove the Main Rod Ass'y.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

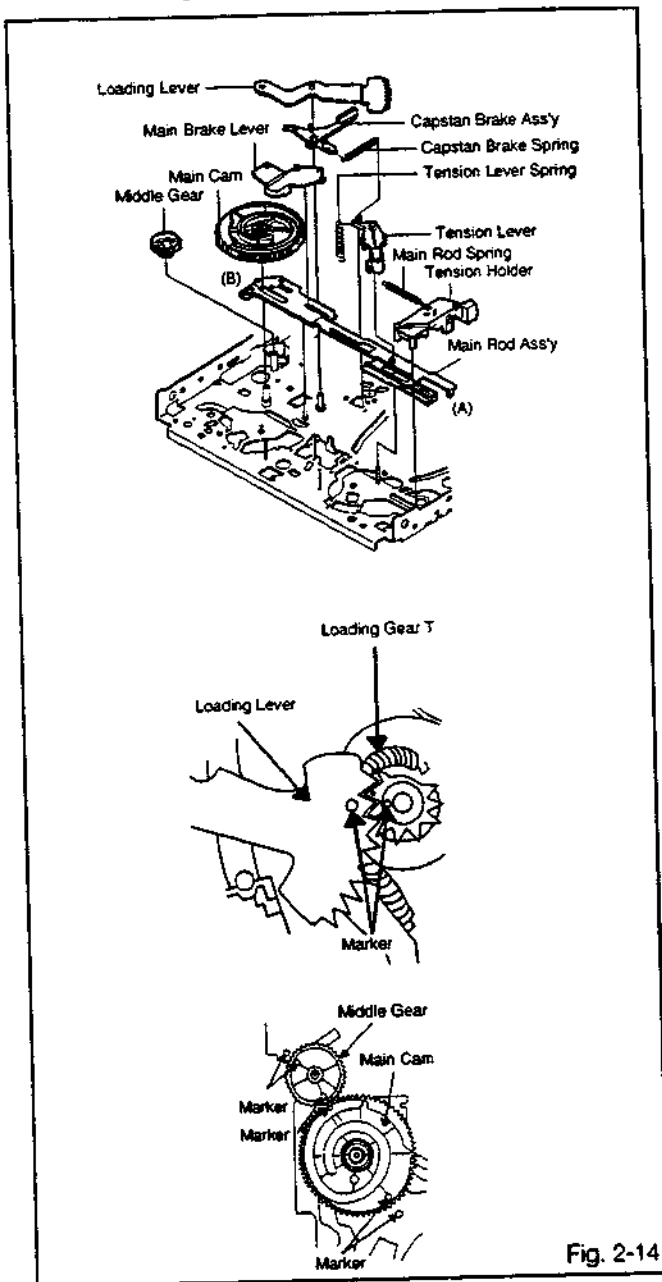


Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the screw ①.
2. Disconnect the CP4105 9 pins.
3. Remove the 3 screws ②.
4. Remove the Capstan DD Unit.

NOTE

Use the specified screw to hold the Capstan DD Unit.

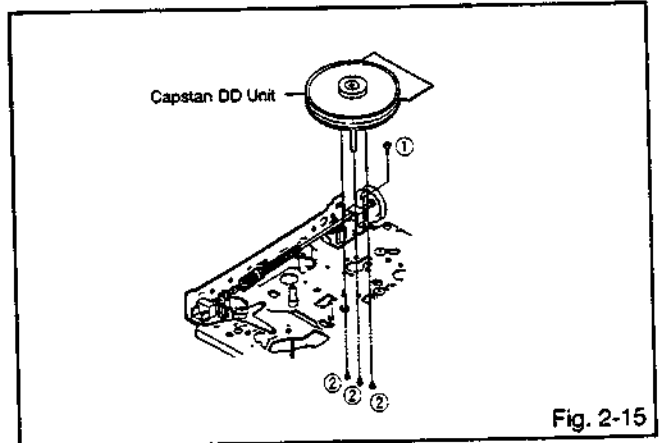


Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 2 Slider Loadings.
2. Remove the Inclined T Ass'y and Inclined S Ass'y.
3. Remove the Loading Gear T Ass'y.
4. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

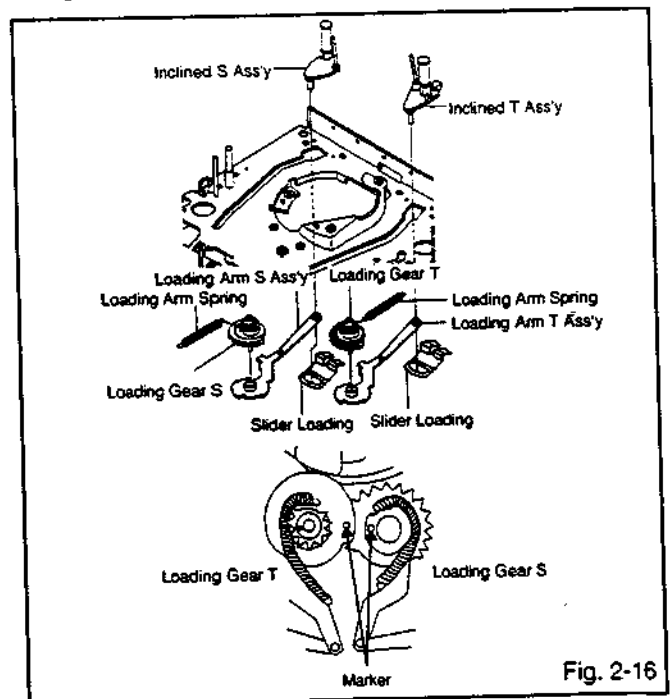


Fig. 2-16

KEY TO ABBREVIATIONS

A	A/C	: Audio/Control	H.SW	: Head Switch
	ACC	: Automatic Color Control	Hz	: Hertz
	AE	: Audio Erase	I IC	: Integrated Circuit
	AFC	: Automatic Frequency Control	IF	: Intermediate Frequency
	AFT	: Automatic Fine Tuning	IND	: Indicator
	AFT DET	: Automatic Fine Tuning Detect	INV	: Inverter
	AGC	: Automatic Gain Control	K KIL	: Killer
	AMP	: Amplifier	L L	: Left
	ANT	: Antenna	LED	: Light Emitting Diode
	A.PB	: Audio Playback	LIMIT AMP	: Limiter Amplifier
	APC	: Automatic Phase Control	LM, LDM	: Loading Motor
	ASS'Y	: Assembly	LP	: Long Play
	AT	: All Time	L.P.F	: Low Pass Filter
	AUTO	: Automatic	LUMI.	: Luminance
	A/V	: Audio/Video	M M	: Motor
B	BGP	: Burst Gate Pulse	MAX	: Maximum
	BOT	: Beginning of Tape	MINI	: Minimum
	BPF	: Bandpass Filter	MIX	: Mixer, mixing
	BRAKE SOL	: Brake Solenoid	MM	: Monostable Multivibrator
	BUFF	: Buffer	MOD	: Modulator, Modulation
	B/W	: Black and White	MPX	: Multiplexer, Multiplex
C	C	: Capacitance, Collector	MS SW	: Mech State Switch
	CASE	: Cassette	N NC	: Non Connection
	CAP	: Capstan	NR	: Noise Reduction
	CARR	: Carrier	O OSC	: Oscillator
	CH	: Channel	OPE	: Operation
	CLK	: Clock	P PB	: Playback
	CLOCK (SY-SE)	: Clock (Syscon to Servo)	PB CTL	: Playback Control
	COMB	: Combination, Comb Filter	PB-C	: Playback-Chrominance
	CONV	: Converter	PB-Y	: Playback-Luminance
	CPM	: Capstan Motor	PCB	: Printed Circuit Board
	CTL	: Control	P. CON	: Power Control
	CYL	: Cylinder	PD	: Phase Detector
	CYL-M	: Cylinder-Motor	PG	: Pulse Generator
	CYL SENS	: Cylinder-Sensor	P-P	: Peak-to Peak
D	DATA (SY-CE)	: Data (Syscon to Servo)	R R	: Right
	dB	: Decibel	REC	: Recording
	DC	: Direct Current	REC-C	: Recording-Chrominance
	DD Unit	: Direct Drive Motor Unit	REC-Y	: Recording-Luminance
	DEMOD	: Demodulator	REEL BRK	: Reel Brake
	DET	: Detector	REEL S	: Reel Sensor
	DEV	: Deviation	REF	: Reference
E	E	: Emitter	REG	: Regulated, Regulator
	EF	: Emitter Follower	REW	: Rewind
	EMPH	: Emphasis	REV, RVS	: Reverse
	ENC	: Encoder	RF	: Radio Frequency
	ENV	: Envelope	RMC	: Remote Control
	EOT	: End of Tape	RY	: Relay
	EQ	: Equalizer	S S. CLK	: Serial Clock
	EXT	: External	S. COM	: Sensor Common
F	F	: Fuse	S. DATA	: Serial Data
	FBC	: Feed Back Clamp	SEG	: Segment
	FE	: Full Erase	SEL	: Select, Selector
	FF	: Fast Forward, Flipflop	SENS	: Sensor
	FG	: Frequency Generator	SER	: Search Mode
	FLSW	: Front Loading Switch	SI	: Serial Input
	FM	: Frequency Modulation	SIF	: Sound Intermediate Frequency
	FSC	: Frequency Sub Carrier	SO	: Serial Output
	FWD	: Forward	SOL	: Solenoid
G	GEN	: Generator	SP	: Standard Play
	GND	: Ground	STB	: Serial Strobe
H	H.P.F	: High Pass Filter	SW	: Switch

KEY TO ABBREVIATIONS

S	SYNC	: Synchronization
	SYNC SEP	: Sync Separator, Separation
T	TR	: Transistor
	TRAC	: Tracking
	TRICK PB	: Trick Playback
	TP	: Test Point
U	UNREG	: Unregulated
V	V	: Volt
	VCO	: Voltage Controlled Oscillator
	VIF	: Video intermediate Frequency
	VP	: Vertical Pulse, Voltage Display
	V.PB	: Video Playback
	VR	: Variable Resistor
	V.REC	: Video Recording
	VSF	: Visual Search Fast Forward
	VSR	: Visual Search Rewind
	VSS	: Voltage Super Source
	V-SYNC	: Vertical-Synchronization
	VT	: Voltage Tuning
X	X'TAL	: Crystal
Y	Y/C	: Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time \ Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Loading Motor Belt		■		●		Clean the rubber, and parts which the rubber touches.
Reel Belt		■		●		
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■ ●	■	■ ●	■ ●	Clean the Head.

● : Replace ■ : Clean

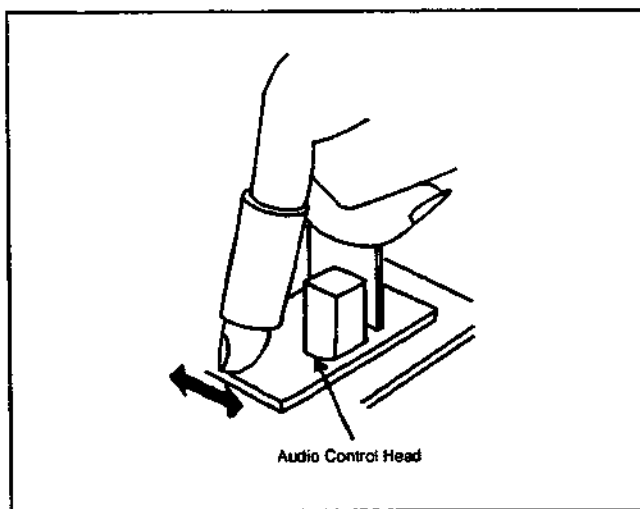
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. (Refer to the figure below)



2. TAPE RUNNING SYSTEM

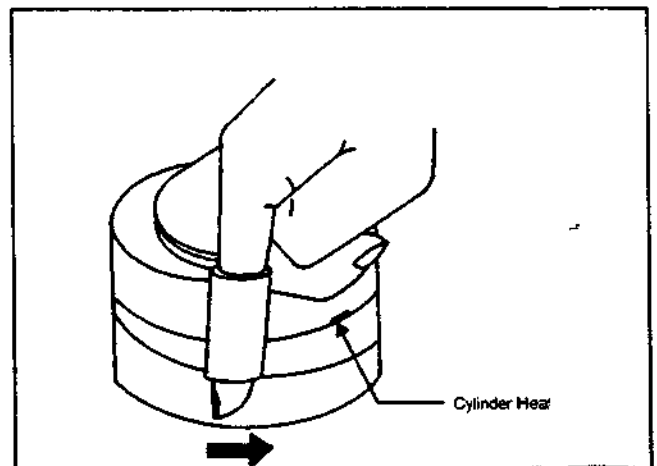
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). (Refer to the figure below)

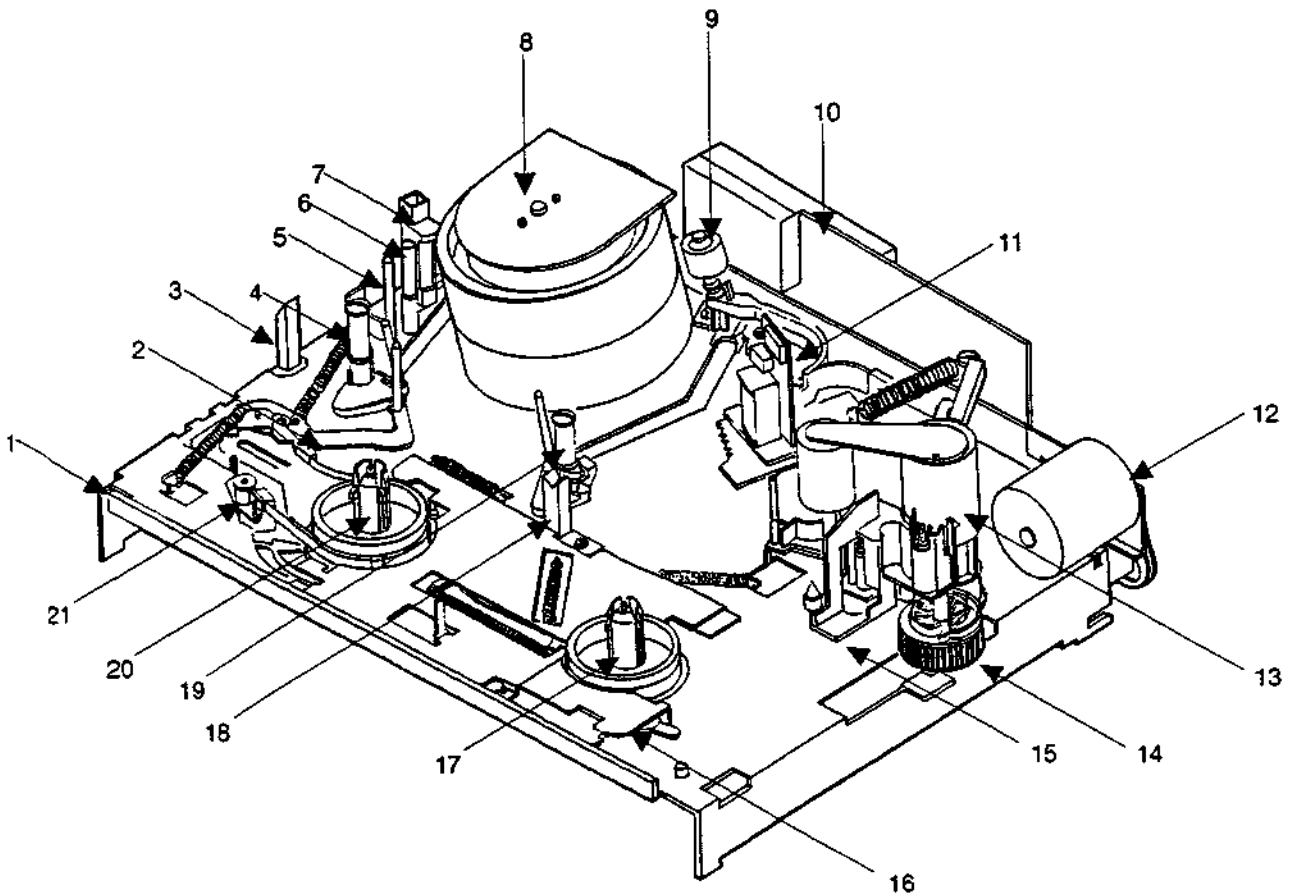
NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.



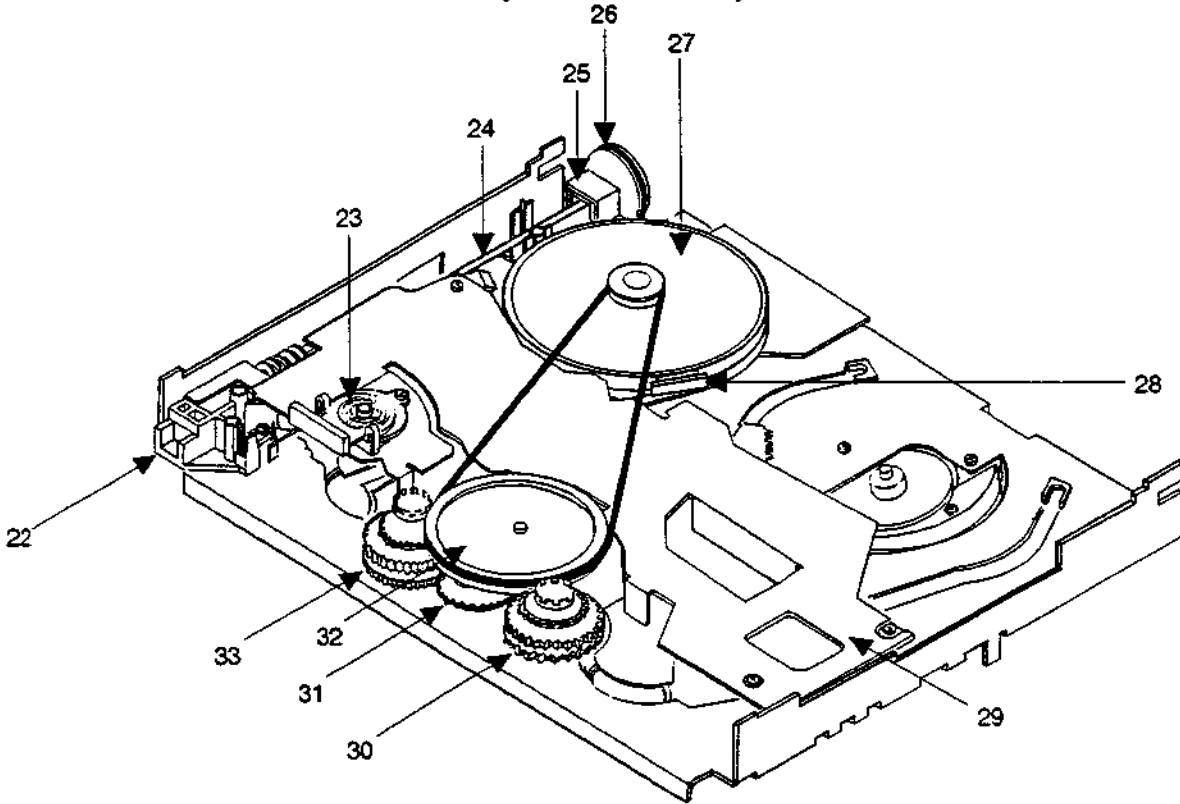
DECK PARTS LOCATIONS

(TOP VIEW)



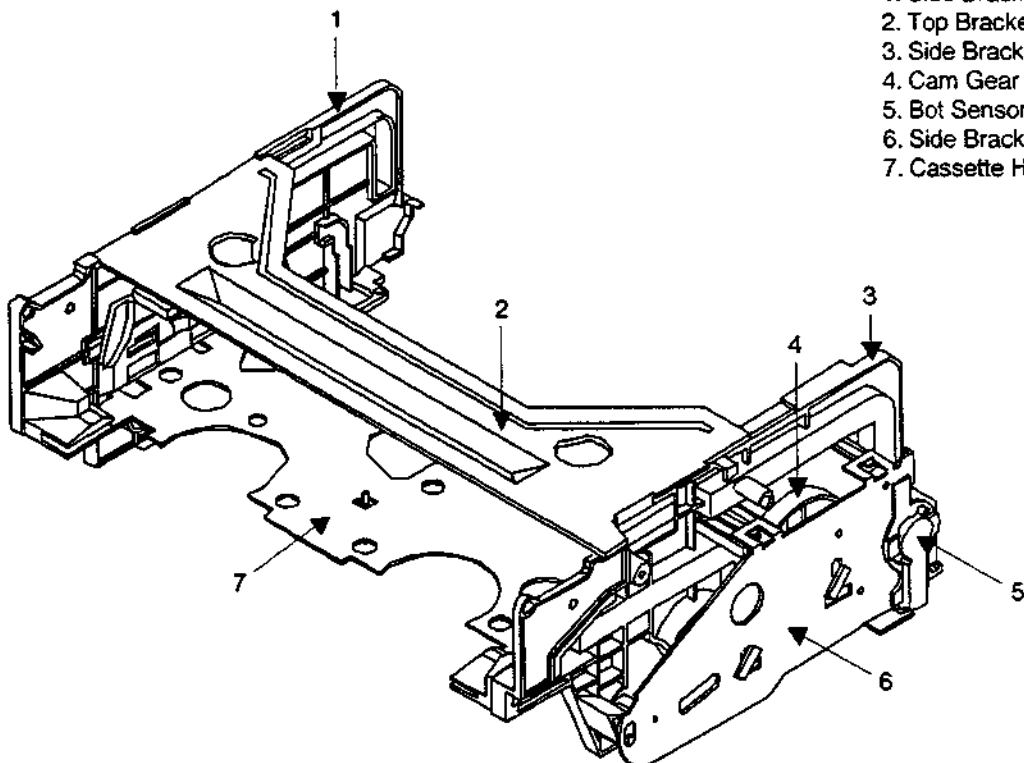
- | | |
|-------------------------|--------------------------|
| 1. Main Chassis | 12. Loading Motor |
| 2. Tension Arm Ass'y | 13. Pinch Roller Block |
| 3. EOT Reflector | 14. Cam Gear |
| 4. Guide Roller S Ass'y | 15. Cassette Opener |
| 5. P0 Post | 16. Brake Bracket |
| 6. P1 Post | 17. Reel |
| 7. FE Head | 18. LED Reflector |
| 8. Cylinder Unit | 19. Guide Roller T Ass'y |
| 9. Auto Head Cleaning | 20. Reel |
| 10. Head Amp PCB | 21. Tension Band Ass'y |
| 11. Audio/Control Head | |

DECK PARTS LOCATIONS (BOTTOM VIEW)



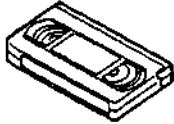

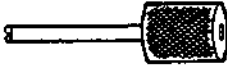

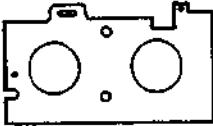


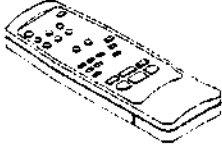

- | | |
|--------------------------|-------------------------|
| 22. Worm Bracket F Ass'y | 28. Capstan Brake Ass'y |
| 23. Mode Switch | 29. Bottom Plate |
| 24. Worm Ass'y | 30. Clutch Gear S Ass'y |
| 25. Worm Bracket R Ass'y | 31. Idler Arm Ass'y |
| 26. Loading Motor Belt | 32. Center Pulley |
| 27. Capstan DD Unit | 33. Clutch Gear T Ass'y |

(UNIT ASS'Y)



1. Side Bracket L
2. Top Bracket Ass'y
3. Side Bracket R Ass'y
4. Cam Gear Ass'y
5. Bot Sensor Cover
6. Side Bracket R2
7. Cassette Holder Ass'y

SERVICING FIXTURES AND TOOLS

<p>VHS Alignment Tape JG001E (VP1S-LI6³) JG001F (VP1S-C01³)</p> 	<p>JG002B Adapter JG002F Dial Torque Gauge (60~600gr/cm) JG002G (100~1200gr/cm)</p> 	<p>JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small)</p> 	<p>JG153 X Value Adjustment Screwdriver</p> 
<p>JG022 Master Plane</p> 	<p>JG024 Reel Disk Height Adjustment Jig</p> 	<p>JG100A Torque Tape (VHT-063)</p> 	<p>JG155 Remote Control</p> 
<p>Tentelometer</p> 			

Part No.	Remarks
JG001E	Monoscope, 6KHz
JG001F	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG155	Used for PG SHIFTER Adjustment

TO CHECK INITIAL SETTING

NOTE: If there is an error in the data, the unit may indicate malfunction.

INSTRUCTIONS

1. Turn on the POWER and press both FF key and CH UP key on the set simultaneously for more than 2 seconds.
The Initial Set Mode indicator will appear and the Address will blink. (Refer to Fig. 1)
2. Press the SET +/- button on the remote control to modify the address and check the data of each addresses are correct. (Refer to Table 1)
3. After checking, turn off the Power.

(if the wrong data is input)

4. Press the SET +/- button on the remote control to set to the address of the wrong data, then press the ENTER button.
The data will blink. (Refer to Fig. 1)
5. Press the SET +/- button on the remote control to set to the correct data, then press the ENTER button. (Refer to Table 1)
6. Repeat the above steps 4 and 5 and input the data into the each Address.
7. After the data input, turn off the Power.

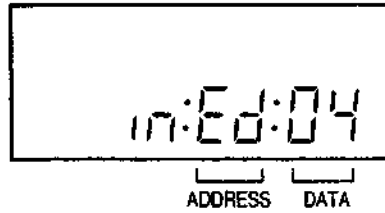


Fig. 1

ADDRESS	INI ED	INI EE	INI EF	INI F0	INI F1	INI F2	INI F3	INI F4	INI F5	INI F6	INI F7	INI F8	INI F9	INI FA	INI FB	INI FC	INI FD	INI FE
DATA	02	82	84	06	02	05	40	00	00	A1	9B	13	00	E0	ED	0F	EE	09

Table 1

MECHANICAL ADJUSTMENTS

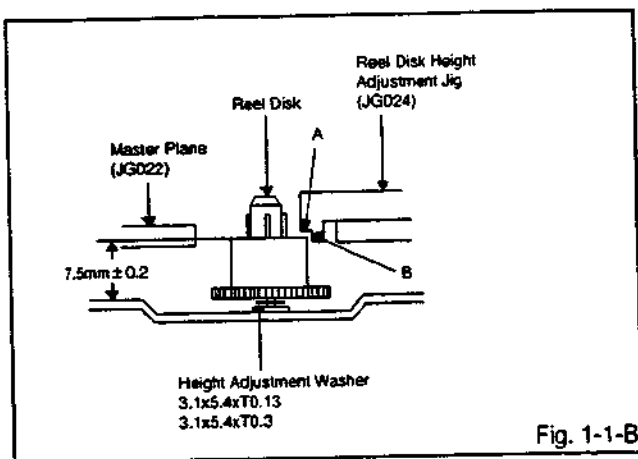
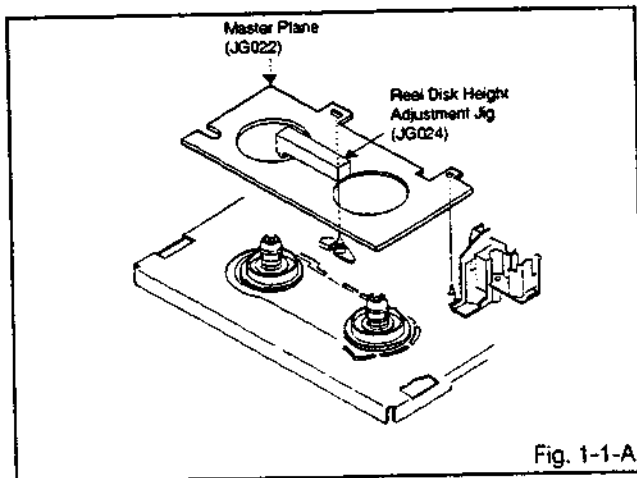
1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

- * Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Unit Ass'y. (Do not place an object which weighs over 500g.)
- * When you activate the deck without the Unit Ass'y, short circuit between TP1010 and TP1011. In this condition the BOT/EOT/Reel Sensor will not function.

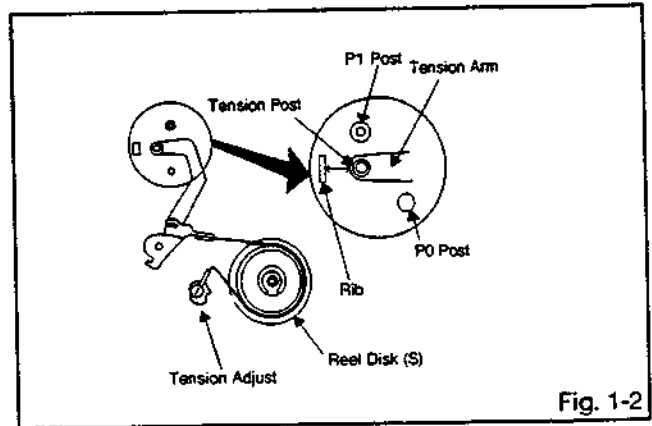
1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (JG022) and reel disk height adjustment jig (JG024) on mechanism framework, taking care not to scratch the drum, as shown in Fig. 1-1-A.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig (JG024) on the master plane and higher than "B" as shown in Fig. 1-1-B. If it is not, adjust to less than $7.5\text{mm} \pm 0.2\text{mm}$ with the height adjustment washer.
4. Perform the same adjustment for other reel.



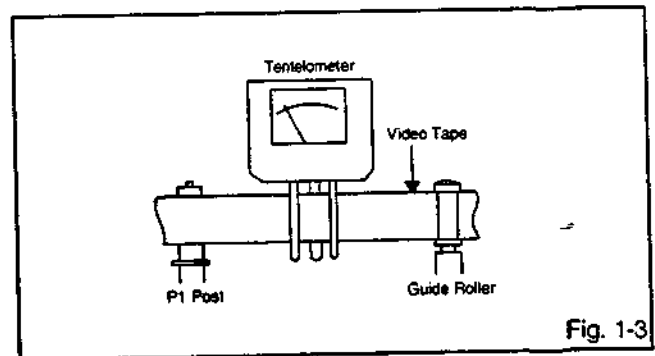
1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension so that the Tension Post is at the position of 0.3mm-0.5mm from the Rib. (Refer to Fig. 1-2)
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.



1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
 2. Install the tentelometer as shown in Fig. 1-3. Confirm the value is within 20~27gr/cm at this time.
- ※ IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.
1. After adjustment, confirm and adjust the tension post position (Refer to item 1-2) for the tension arm, install the cassette type torque tape (JG100A) and set to the PLAY mode.
 2. Confirm that the left hand side tension value of the torque tape is 25~38gr/cm for the standard mode tape.



MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge (JG002G) on take-up reel disk, and place unit in FAST FORWARD mode. (Refer to Fig. 1-4)
2. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (JG002G) on supply reel disk, and place the unit in REWIND mode. (Refer to Fig 1-4).
3. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) (Refer to Fig. 1-4)

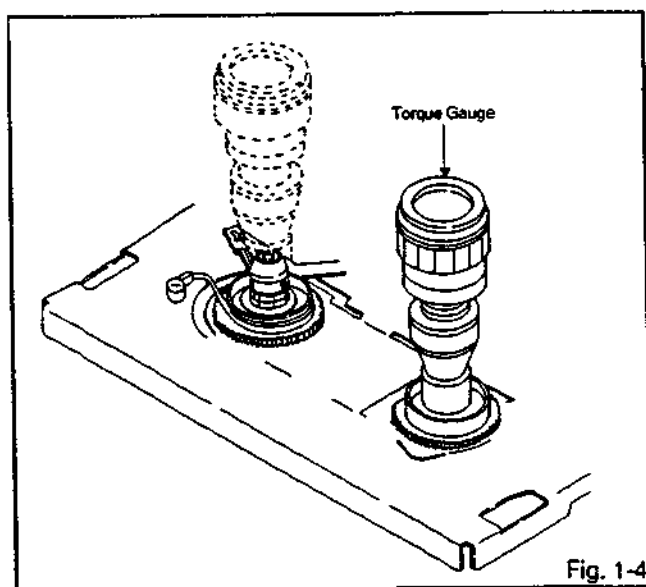
1. Set to STOP mode.
2. Set the torque gauge (JG002G) to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gr/cm at that time.

(Supply Reel Brake) (Refer to Fig. 1-4)

1. Set to STOP mode.
2. Set the torque gauge (JG002G) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gr/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.



NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

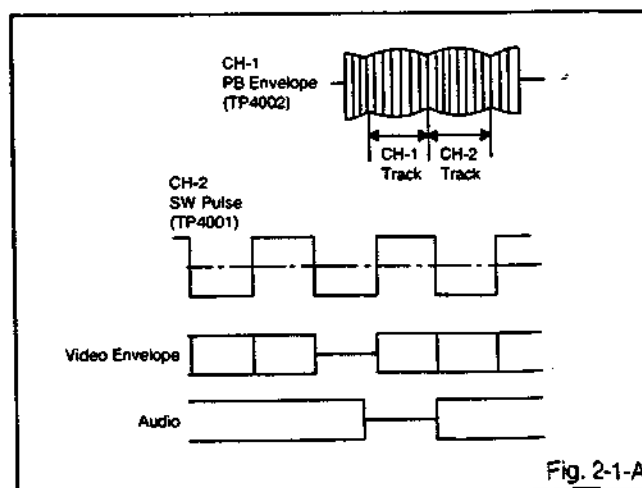
Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

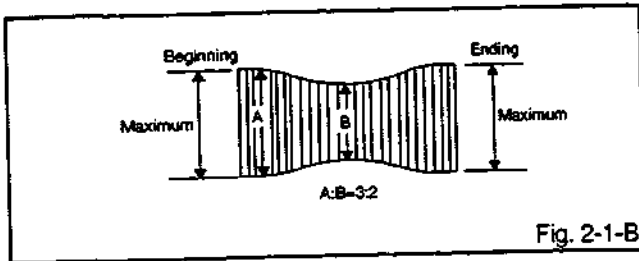
1. Connect CH-1 on the oscilloscope to TP4002 (PB Envelope) and CH-2 to TP4001 (SW Pulse).
2. Set the tracking to manual center position in the following way. Hold and press the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. (Refer to Fig. 2-1-A)
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver JG005).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. (Refer to Fig. 2-1-B)
6. Adjust the PG shifter (ELECTRICAL ADJUSTMENTS : ITEM 3-1) in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. (Refer to item 2-2)



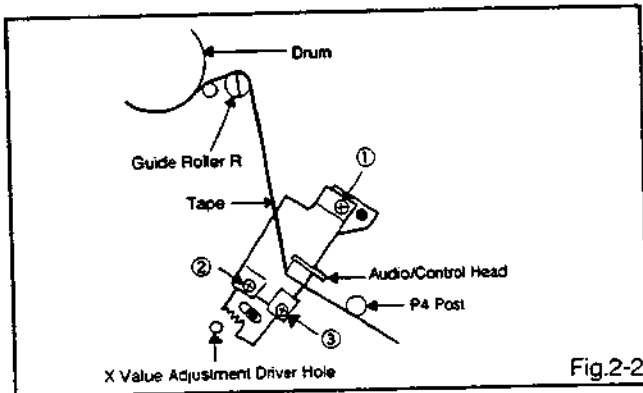
MECHANICAL ADJUSTMENTS



2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

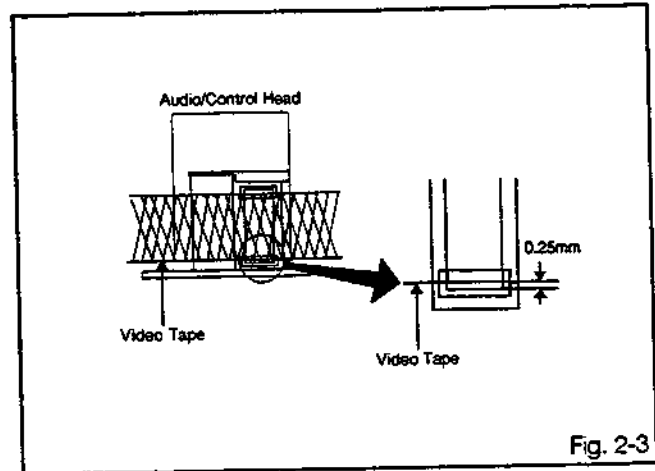
When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. (Refer to Fig. 2-2)



2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape (JG001E) and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. (Refer to Fig. 2-2)
3. Adjust the screw ③, (Refer to Fig. 2-2) until the height of the A/C head reaches the position against the tape as shown in Fig. 2-3.
4. When the control head height is not correct. (When you must turn the screw more than 45 degrees), Turn all of the screws ①, ② and ③ to the same degrees. Then confirm the angle of the audio/control head and adjust again.



2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk. (Refer to item 1-1)
2. Confirm and adjust tension post position. (Refer to item 1-2)
3. Adjust the guide roller. (Refer to item 2-1)
4. Adjust the A/C head tilt. (Refer to item 2-2)
5. Adjust the A/C head height and azimuth. (Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to TP4002. Playback the VHS alignment tape (JG001E). Set the tracking to manual center. Adjust X with the screw driver for X (JG153) as the Fig. 2-1-A and Fig. 2-1-B. (Refer to No. 2 of the item 2-1).

ELECTRICAL ADJUSTMENTS

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease (YG6260M).

(To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK

Input Signal-Alignment Tape (JG001F)

INSTRUCTIONS

1. Playback the alignment tape. (JG001F)
2. Press the PLAY button on the set for more than 3 seconds. If the indicator ATR disappears, the adjustment is finished.

(If the above adjustments doesn't work well:)

1. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to Pin 19 of J4501.
2. Press the PG AUTO key. (JG155)
3. While the ATR indicator is flashing, press the PG MANUAL key. (JG155)
4. Adjust the Tracking +/- key until waveform of the oscilloscope measures $6.5 \pm 0.5(H)$ at both leading and trailing edges. (Refer to Fig. 3-1-A, B)
5. Press the Tracking Auto key.

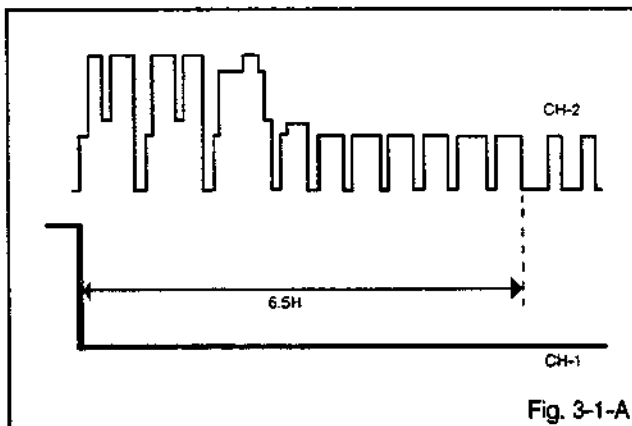


Fig. 3-1-A

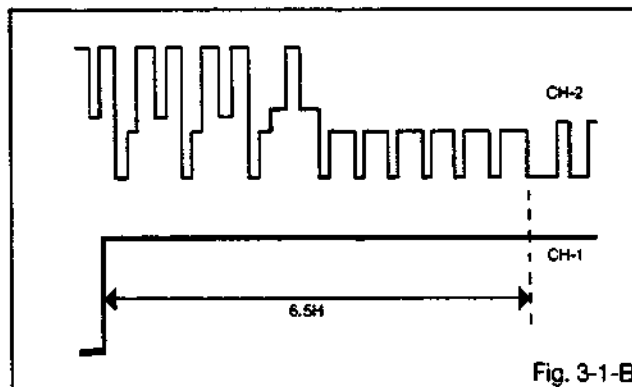


Fig. 3-1-B

3-2: PILOT

CONDITIONS

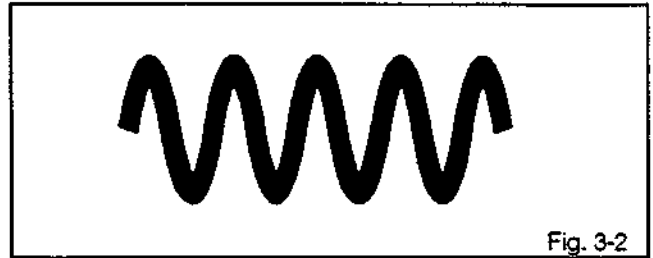
MODE-TUNER

AUDIO OUTPUT SW : STEREO POSITION

Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: 1KHz, R ch: 3KHz).
2. Connect the oscilloscope to TP6603.
3. Adjust L6604 until the waveform becomes as shown in Fig. 3-2.



3-3: SEPARATION

CONDITIONS

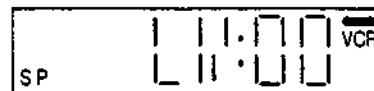
MODE-STOP

AUDIO OUTPUT SW : STEREO POSITION

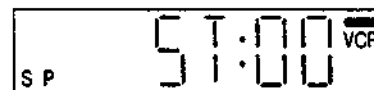
Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: No Signal, R ch: 1KHz).
2. Connect the AC voltmeter to AUDIO OUT (L ch).
3. Press the PLAY button on the set for more than 2 seconds. The fluorescent display on the set displays as below.

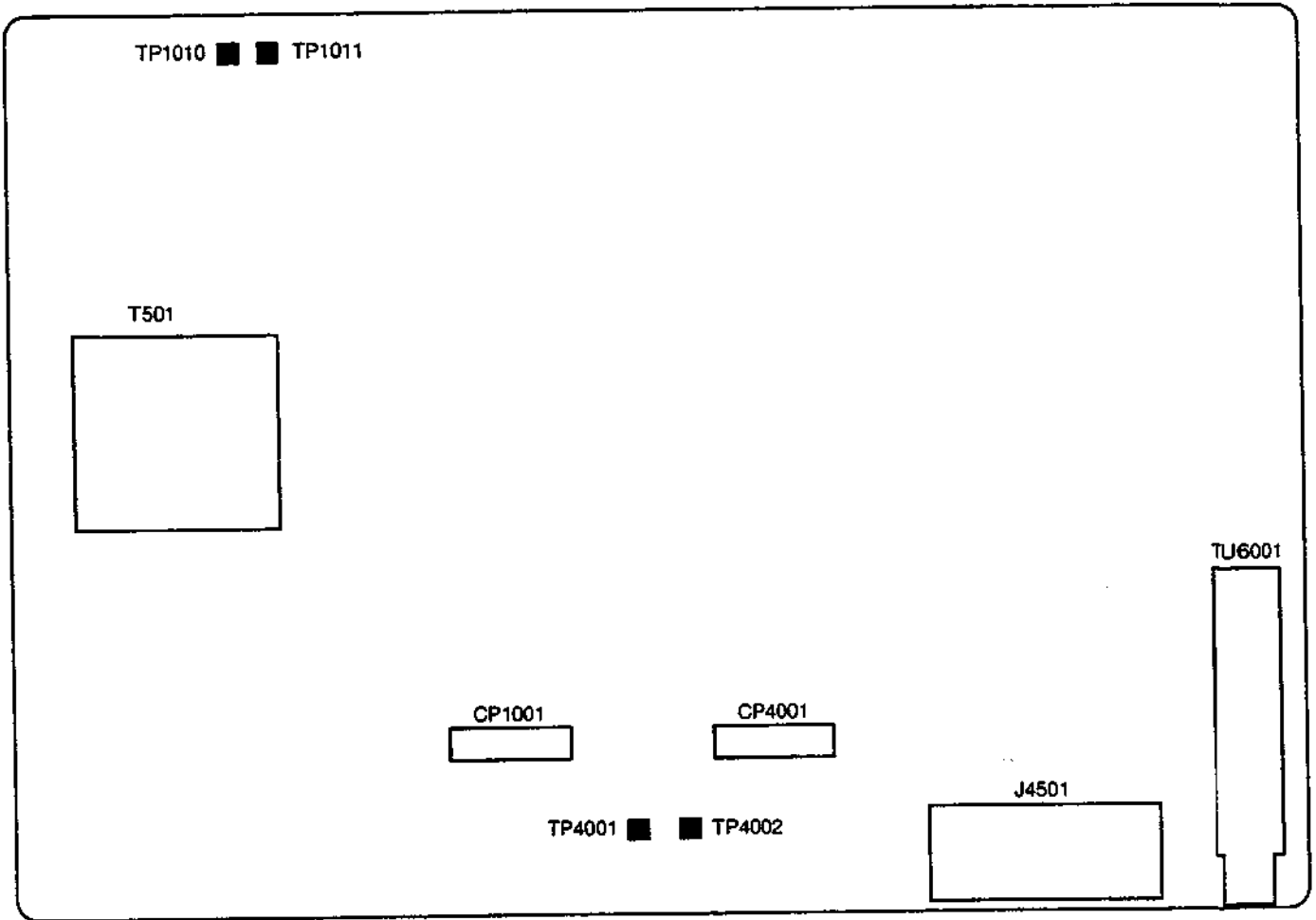


4. Press the PLAY button on the set for more than 2 seconds. The fluorescent display on the set displays as below.

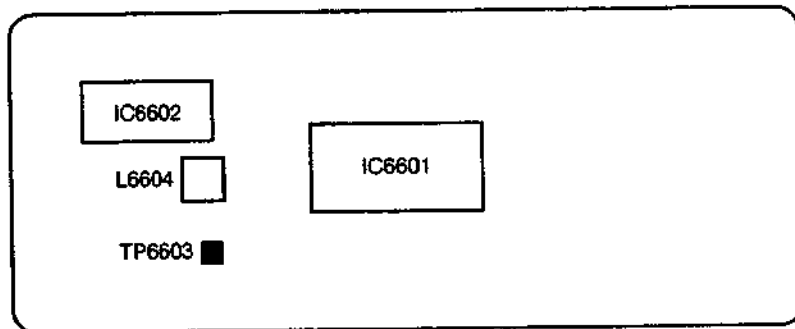


5. Adjust the Set +/- key on the remote control until output signal is minimum. (more than 30dB)
6. Press the PLAY button on the set for more than 2 seconds to complete the adjustment.
7. Receive the audio signal (L ch: 1KHz, R ch: No Signal).
8. Connect the AC voltmeter to AUDIO OUT (R ch).
9. Repeat steps 3 ~ 6.

MAJOR COMPONENTS LOCATION GUIDE

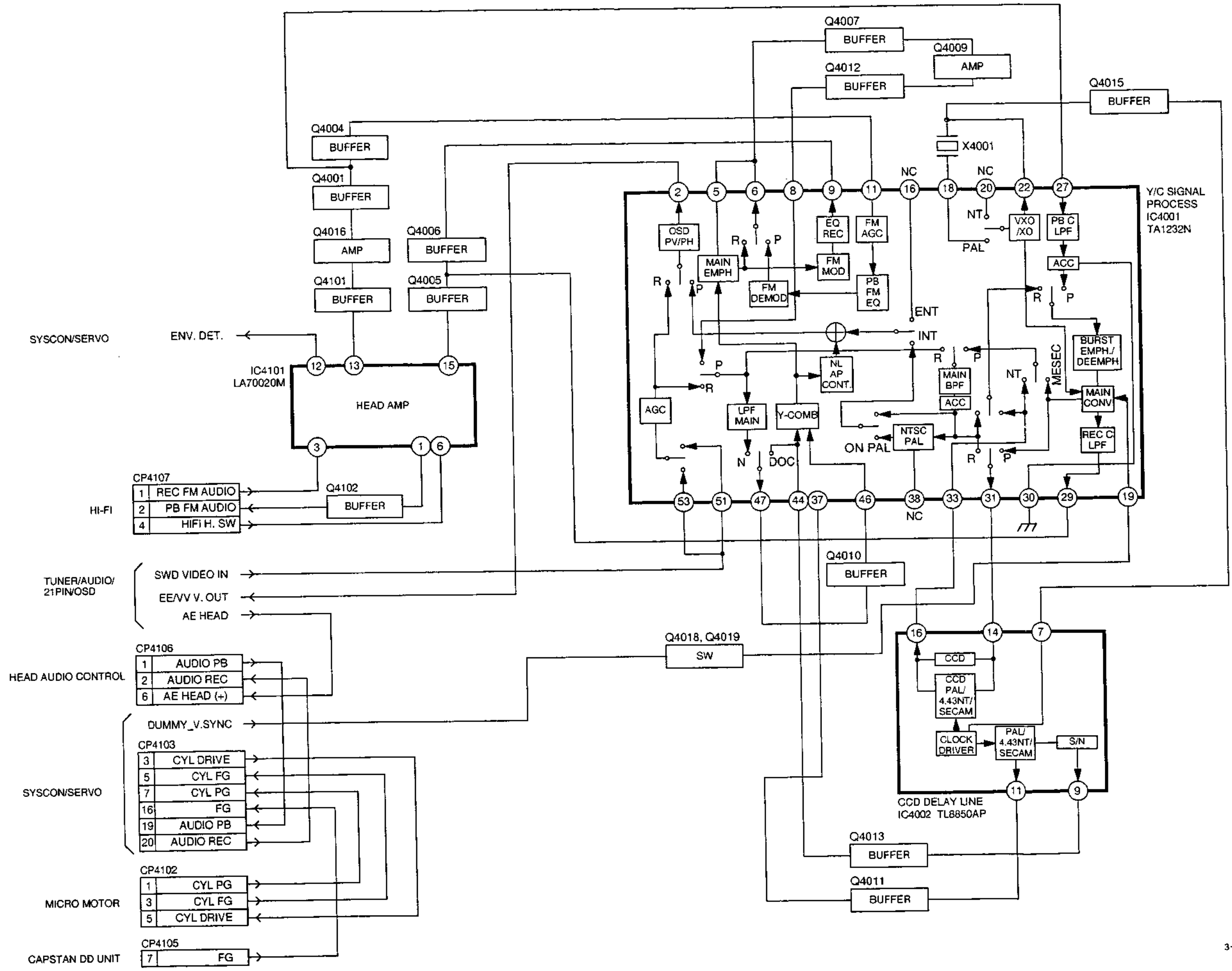


MAIN

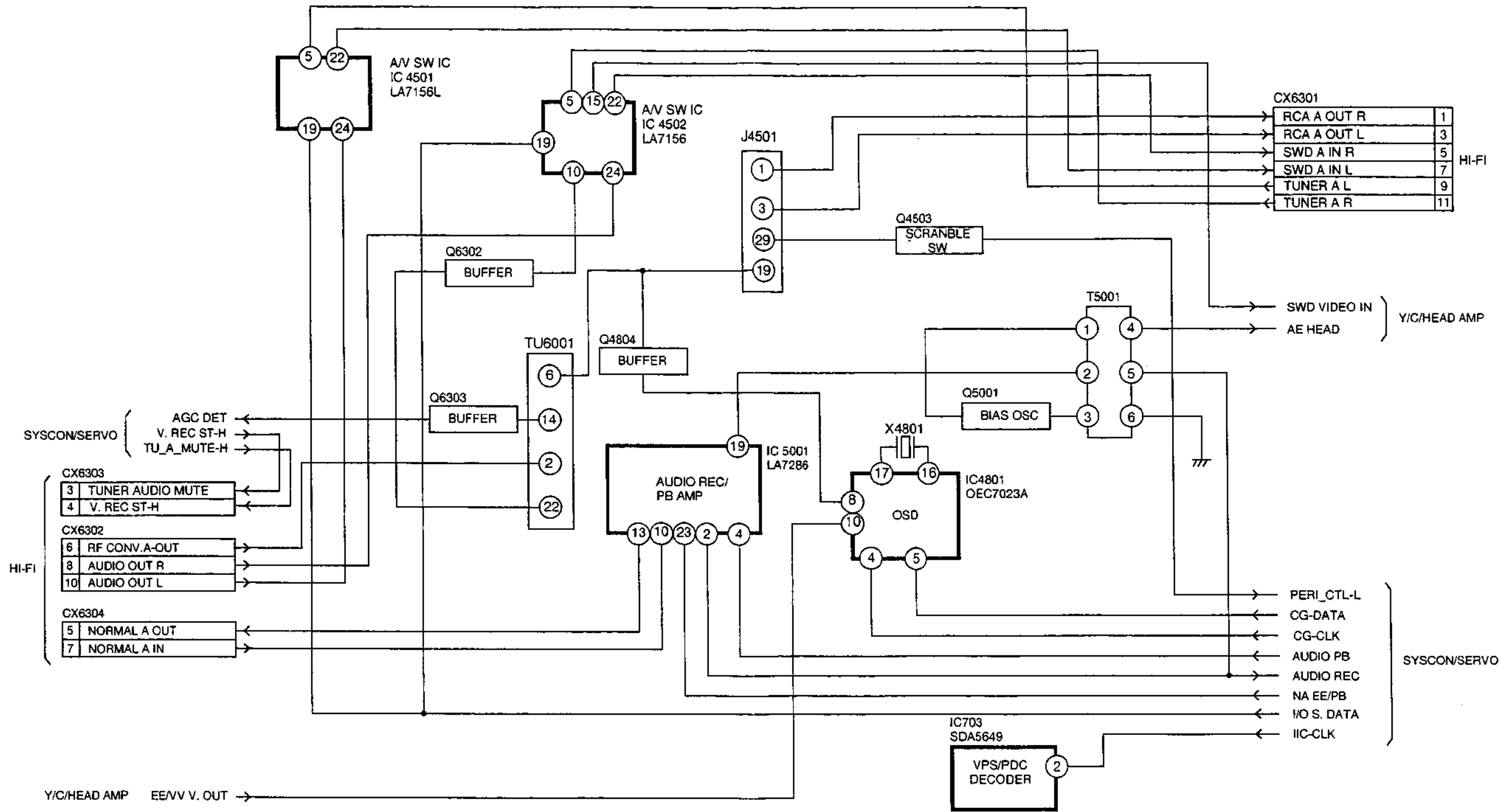


HI-FI

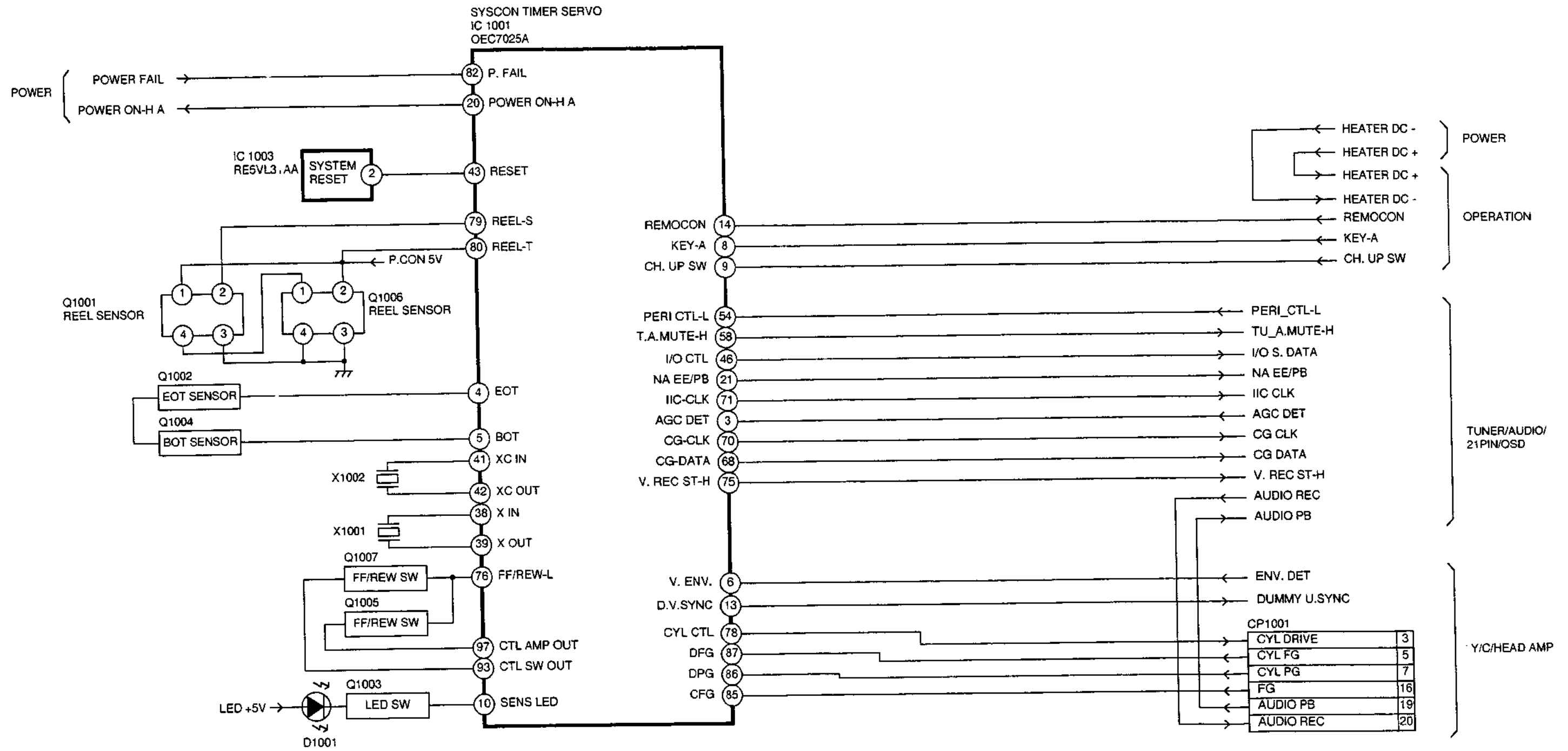
Y/C HEAD AMP BLOCK DIAGRAM



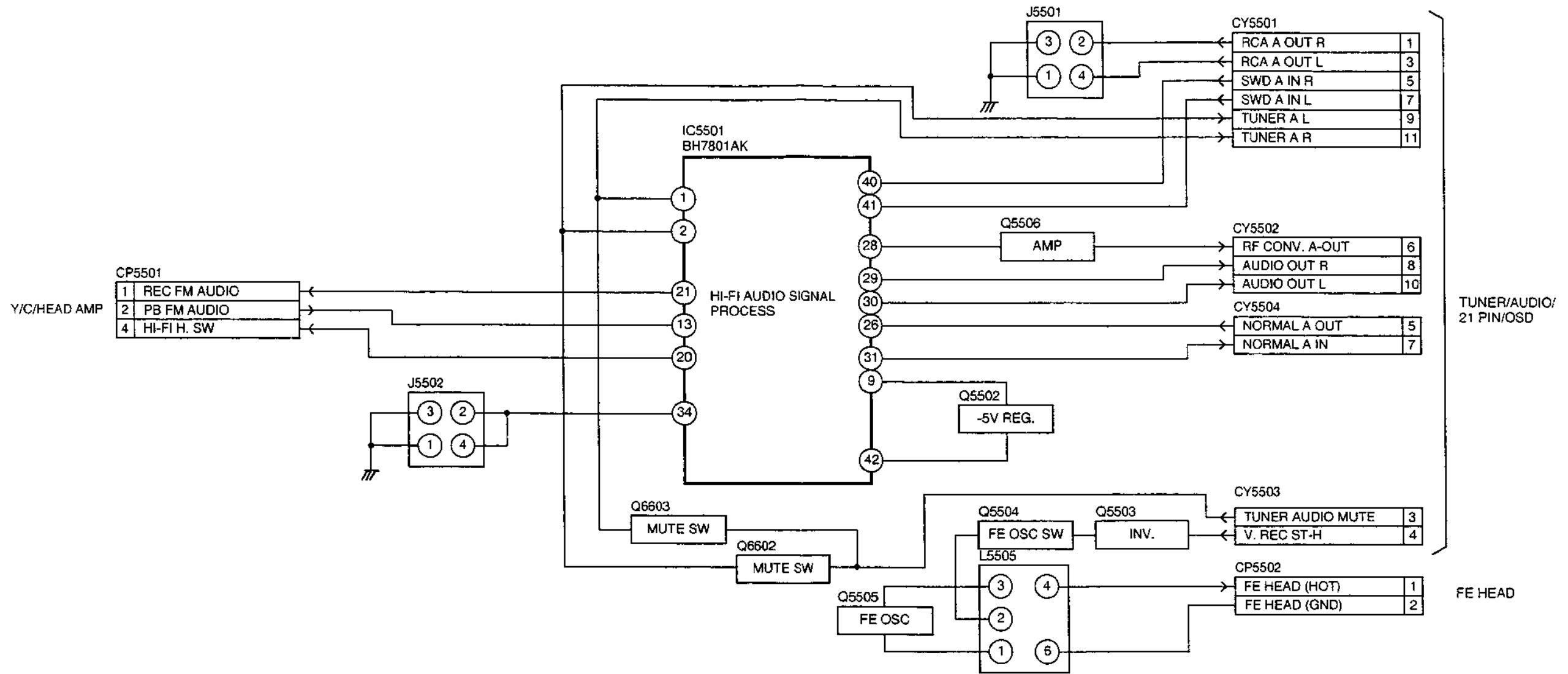
TUNER/AUDIO/21PIN/OSD BLOCK DIAGRAM



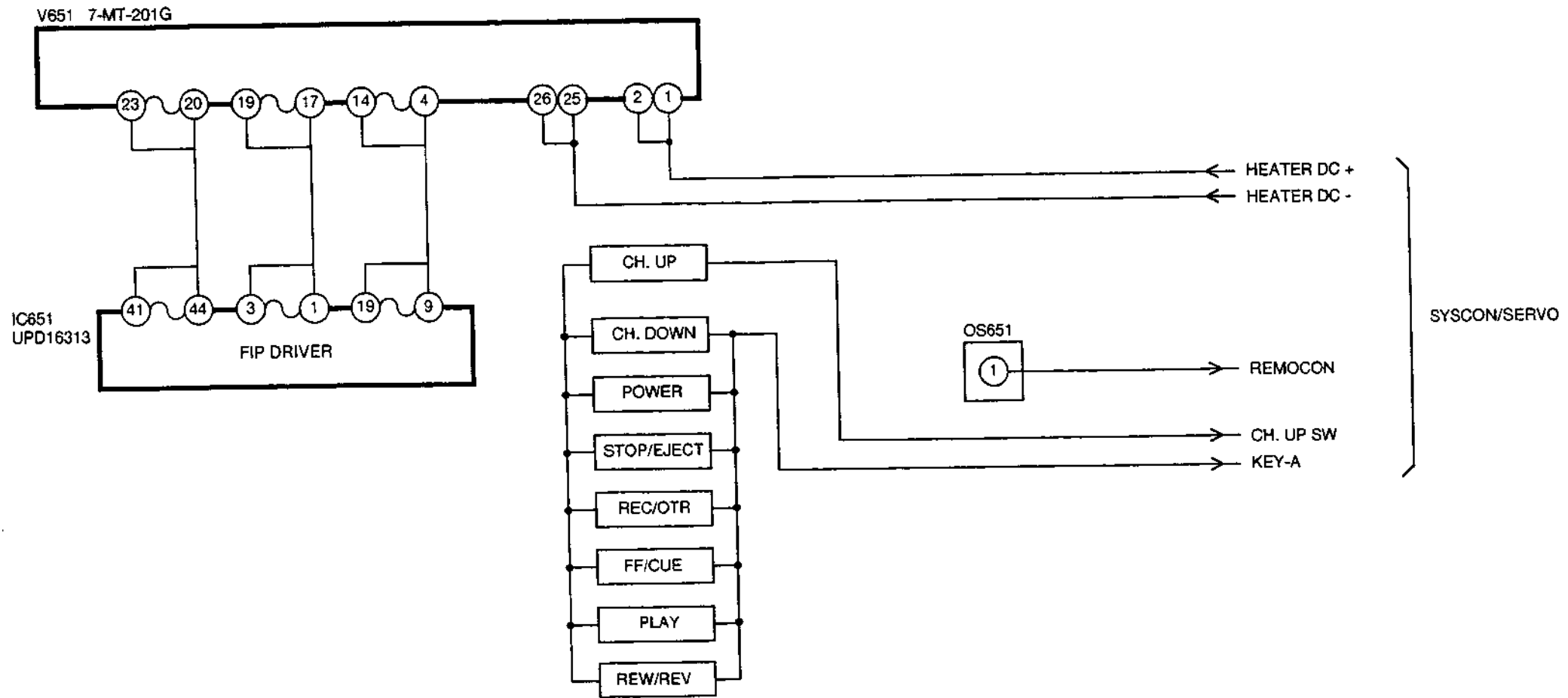
SYSTEM CONTROL/SERVO BLOCK DIAGRAM



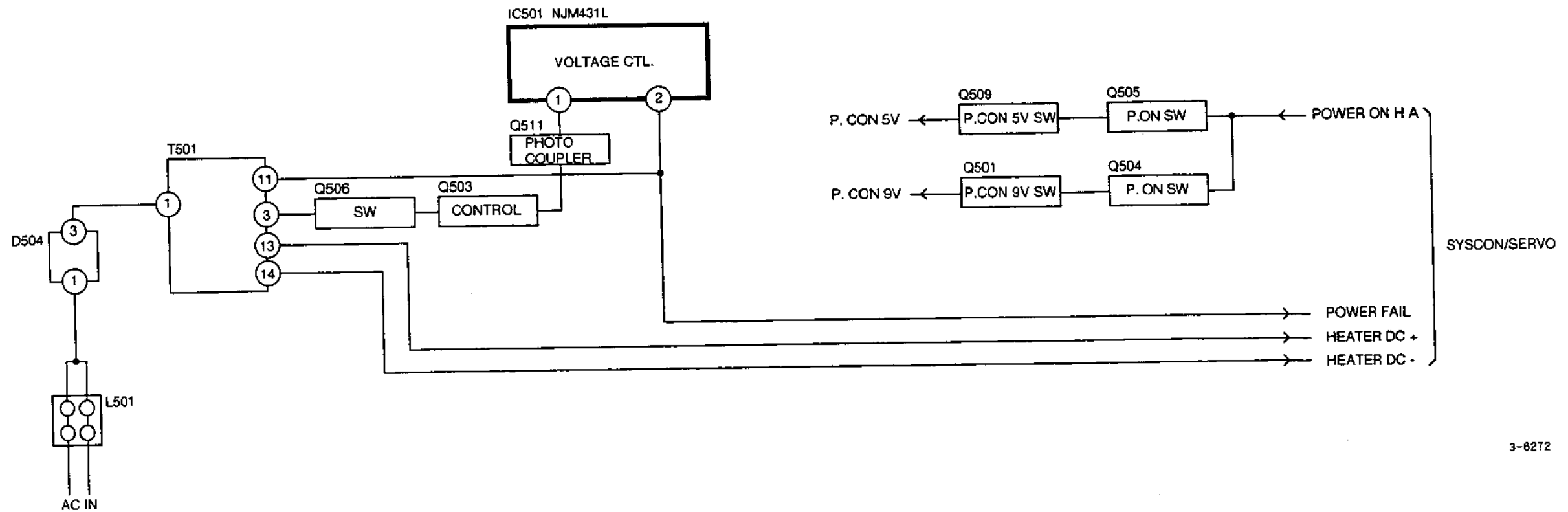
HI-FI BLOCK DIAGRAM



OPERATION BLOCK DIAGRAM

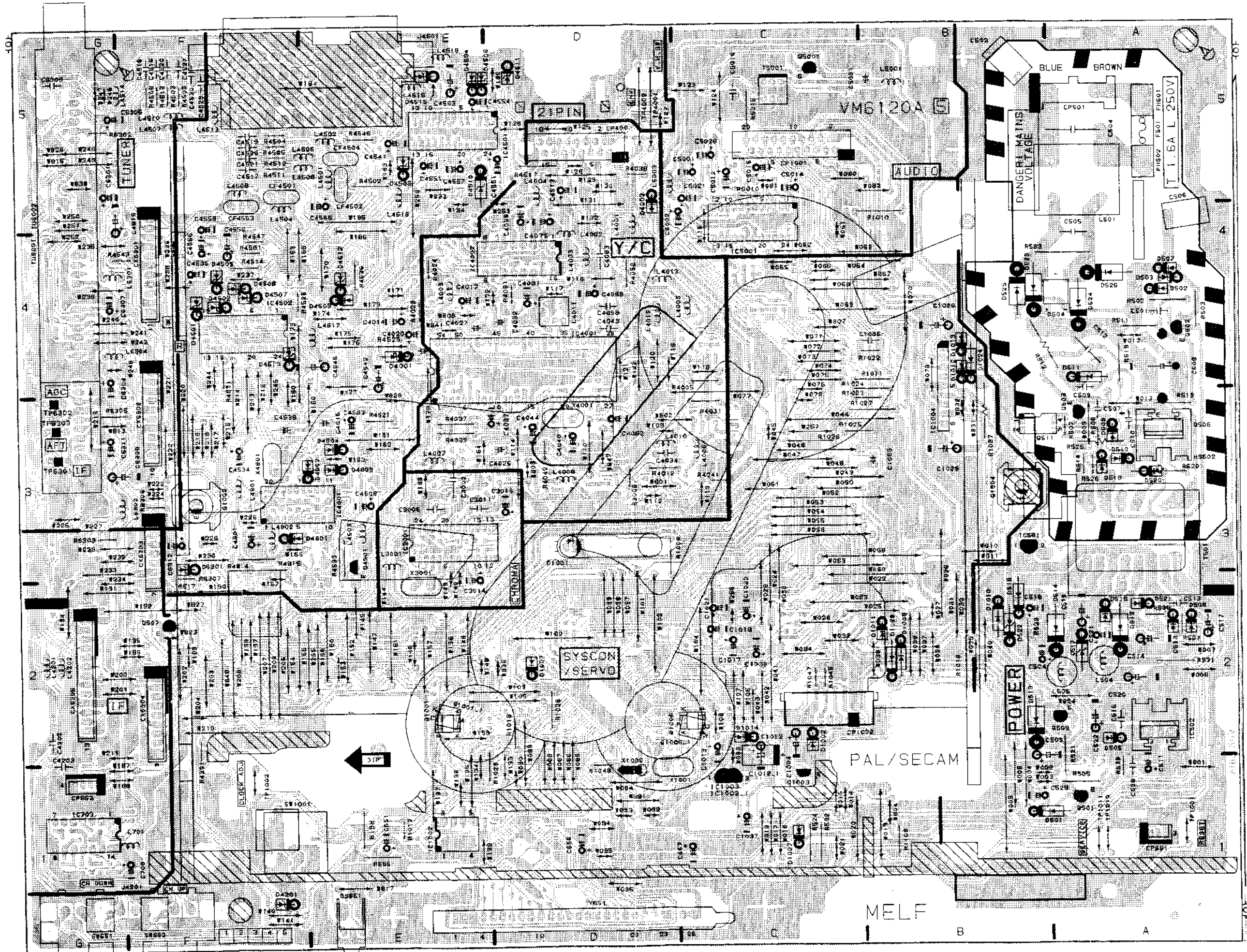


POWER BLOCK DIAGRAM

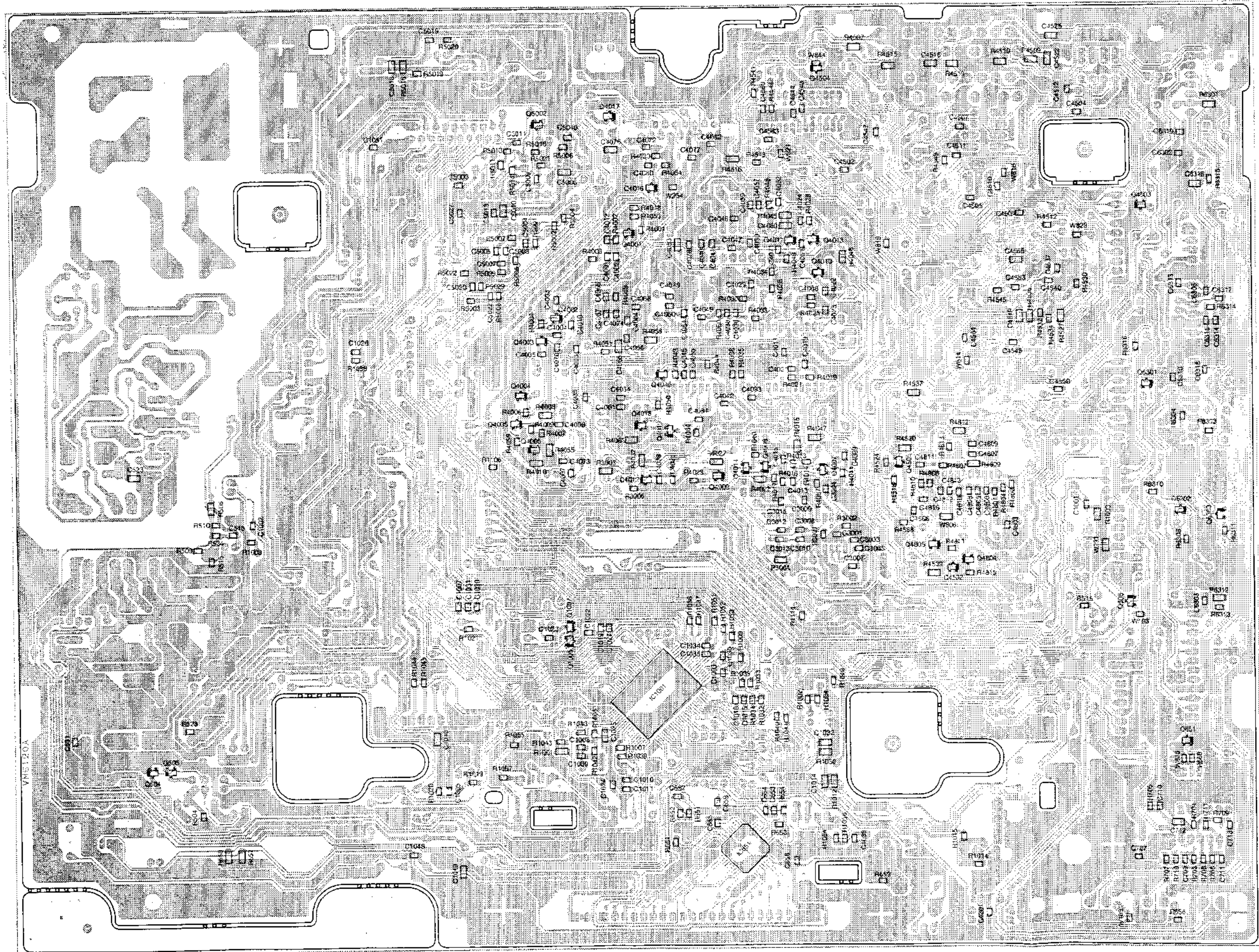


3-8272

PRINTED CIRCUIT BOARDS
MAIN
COMPONENT SIDE

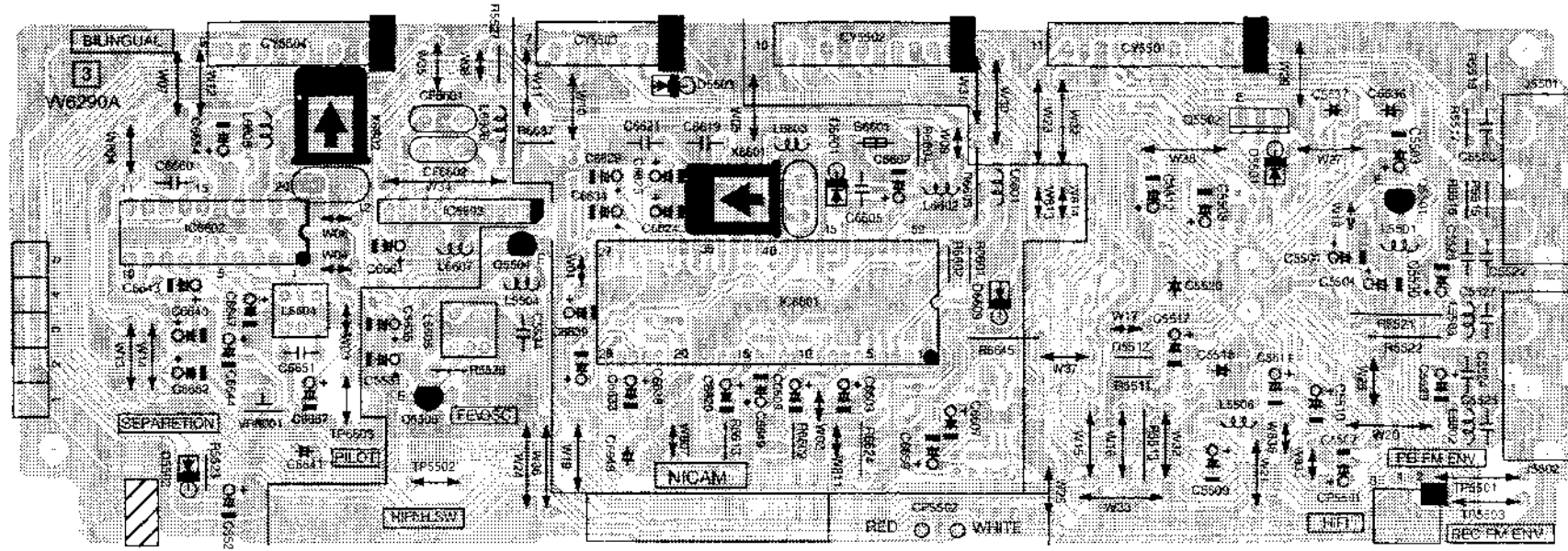


PRINTED CIRCUIT BOARDS
MAIN
SOLDER SIDE

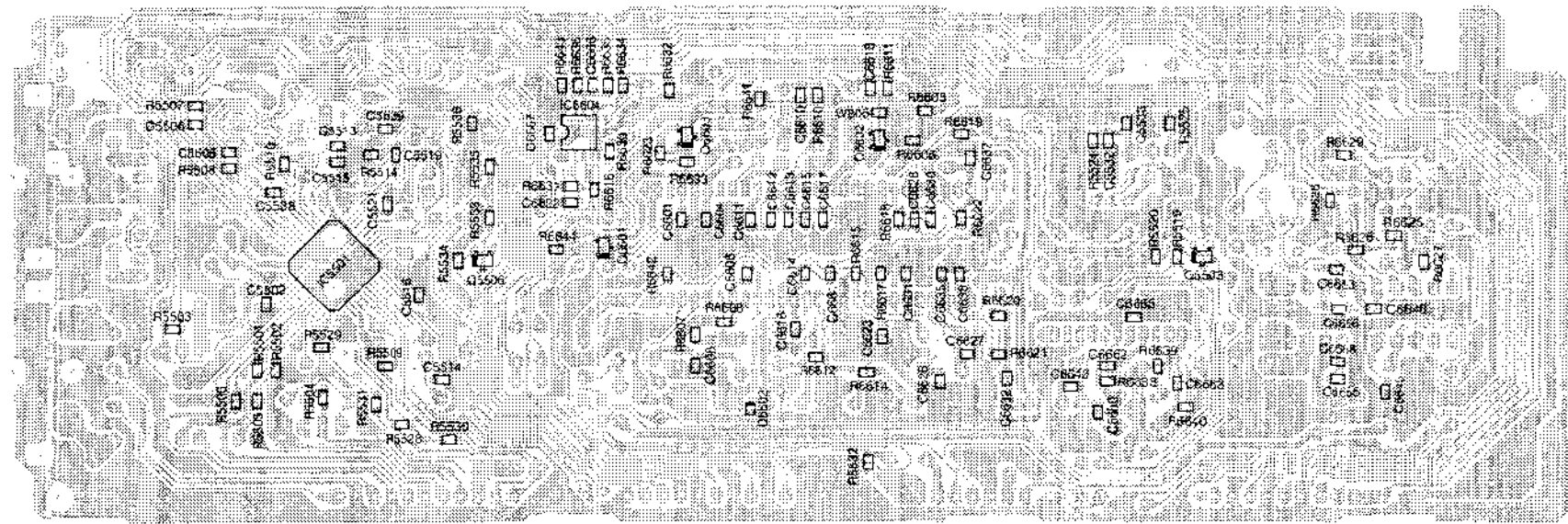


PRINTED CIRCUIT BOARDS

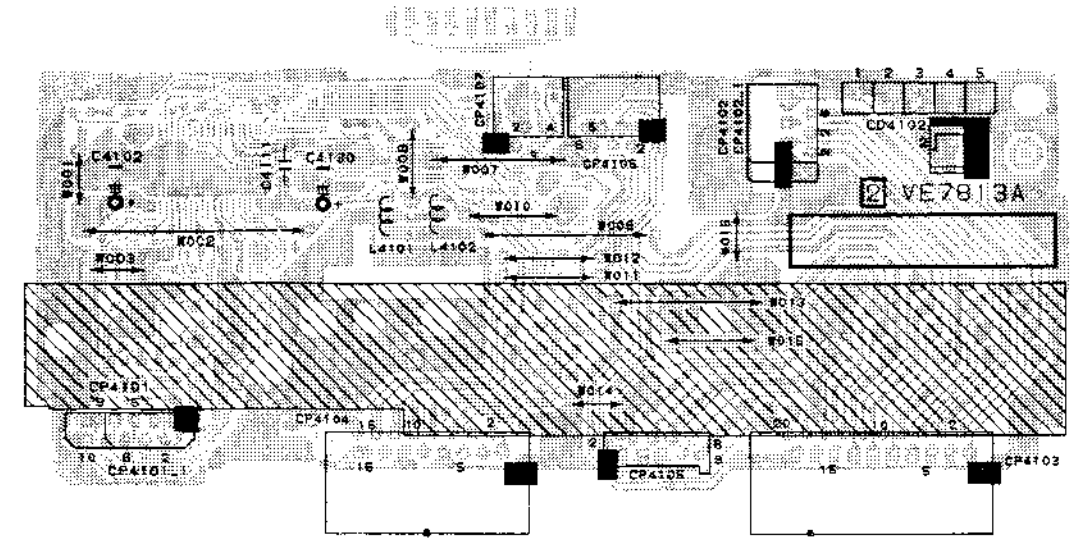
HI-FI
COMPONENT SIDE



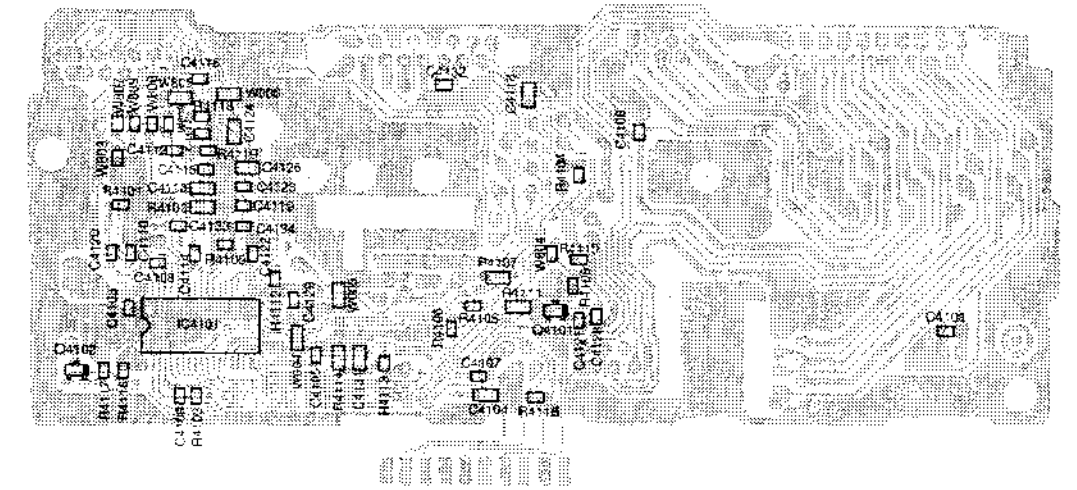
SOLDER SIDE



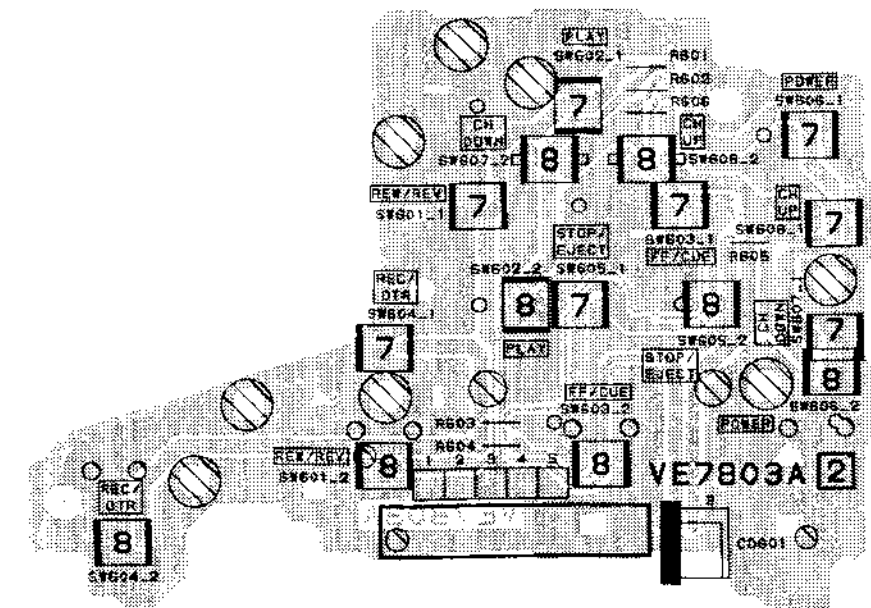
HEAD AMP
COMPONENT SIDE



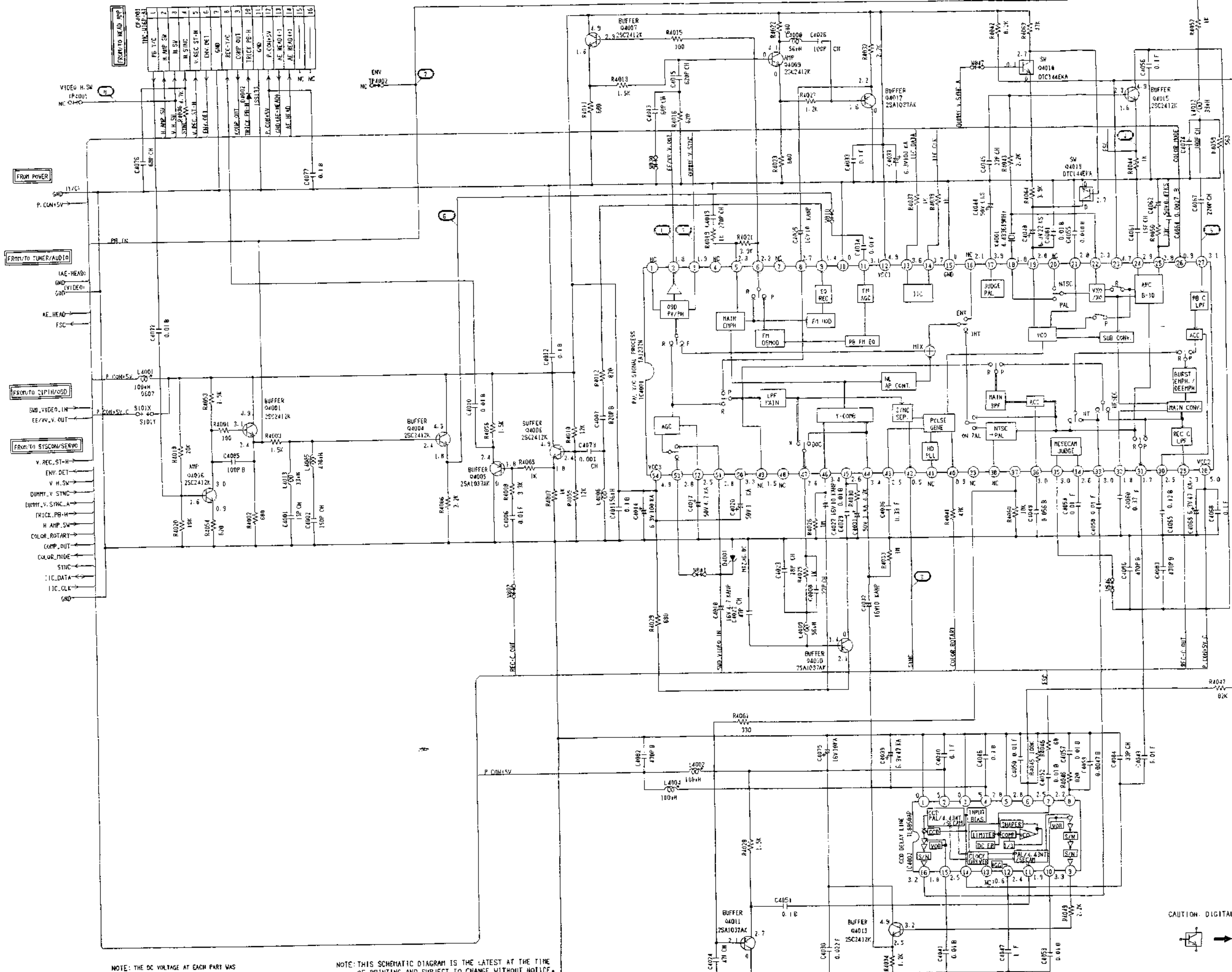
SOLDER SIDE



OPERATION



Y/C SCHEMATIC DIAGRAM



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK (PAL MODE)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

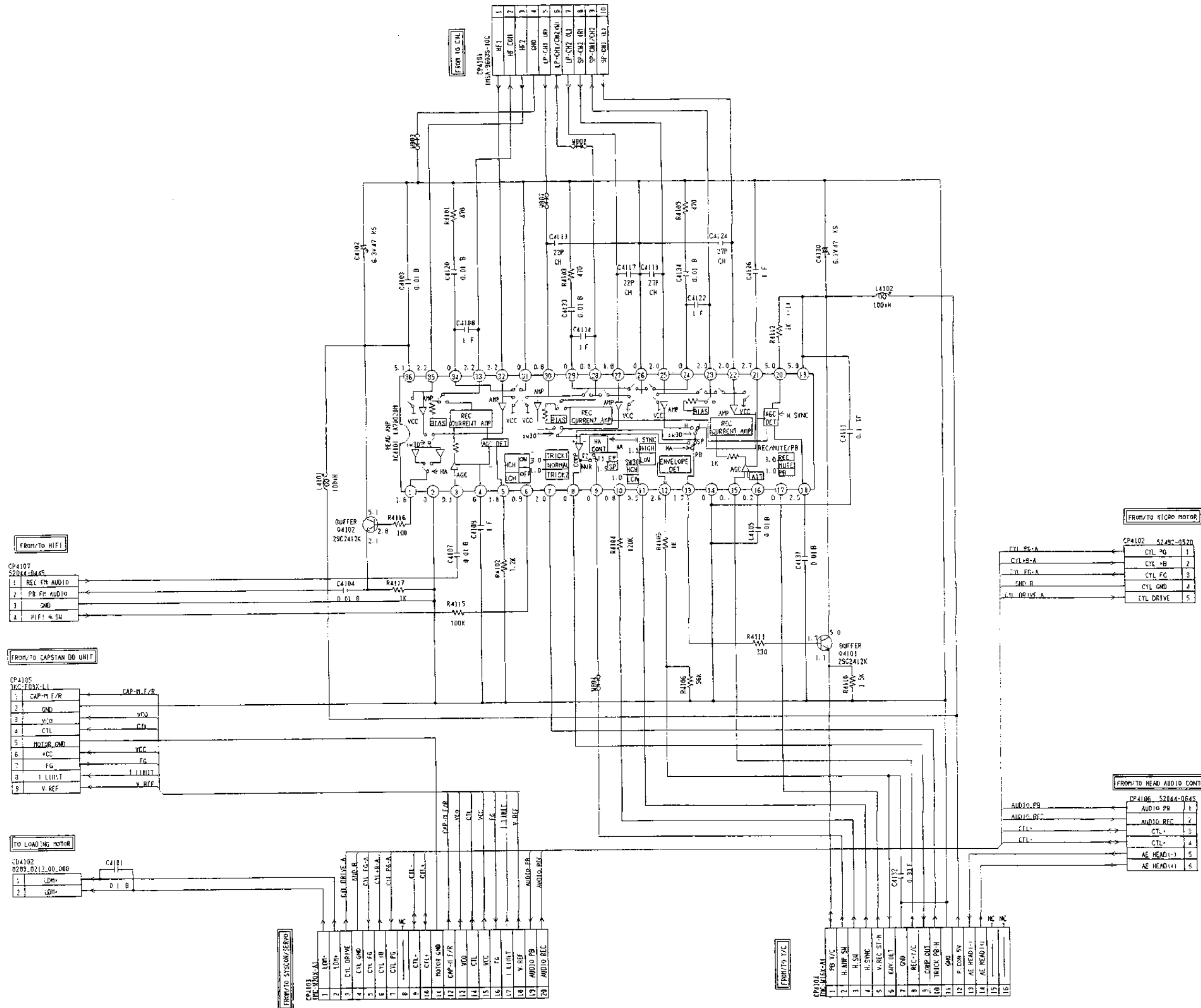
CAUTION: DIGITAL TRANSISTOR



PCB010
VME120

3-826

HEAD AMP SCHEMATIC DIAGRAM

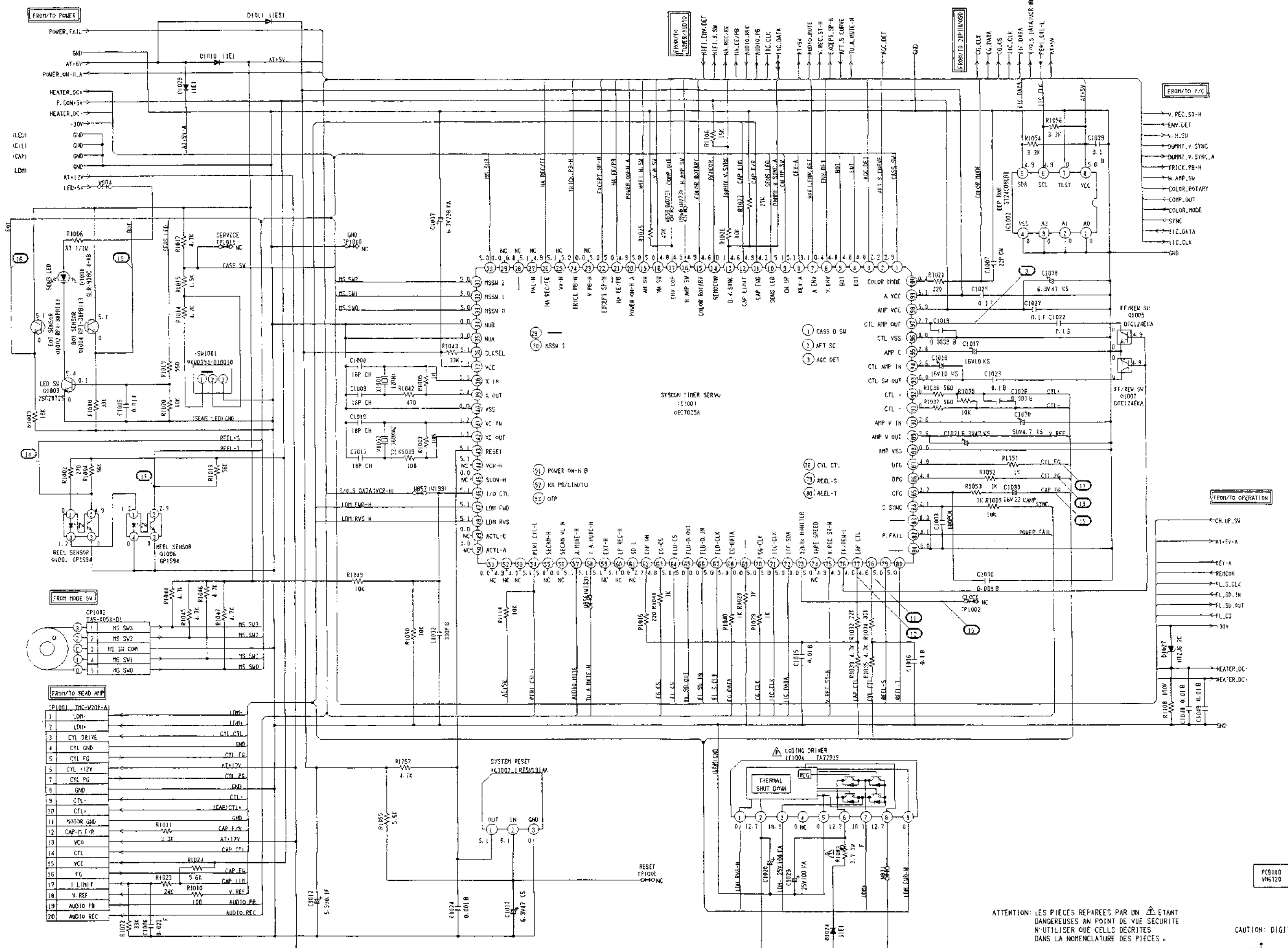


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB330
VE7813

SYSTEM CONTROL/SERVO SCHEMATIC DIAGRAM



NOTE THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

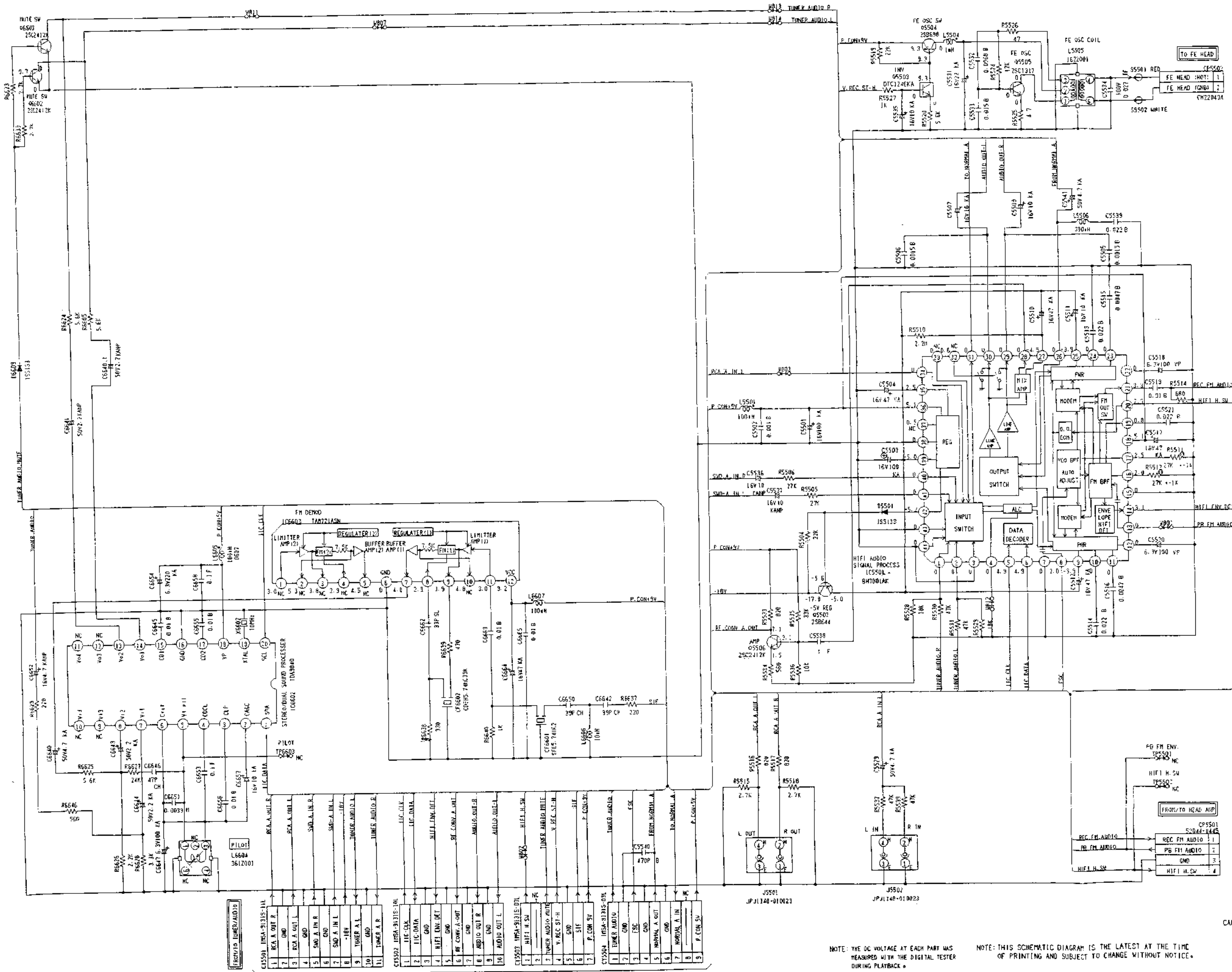
ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR



HI-FI SCHEMATIC DIAGRAM



FRONT TUNER/AUDIO

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5501

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC6602

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5502

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5503

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5504

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5505

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5506

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5507

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

IC5508

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

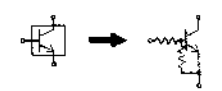
IC5509

1	RECA A OUT R
2	RECA A OUT L
3	GND
4	GND
5	SND A IN R
6	SND A IN L
7	-12V
8	TUNER A L
9	TUNER A R
10	GND
11	TUNER A R

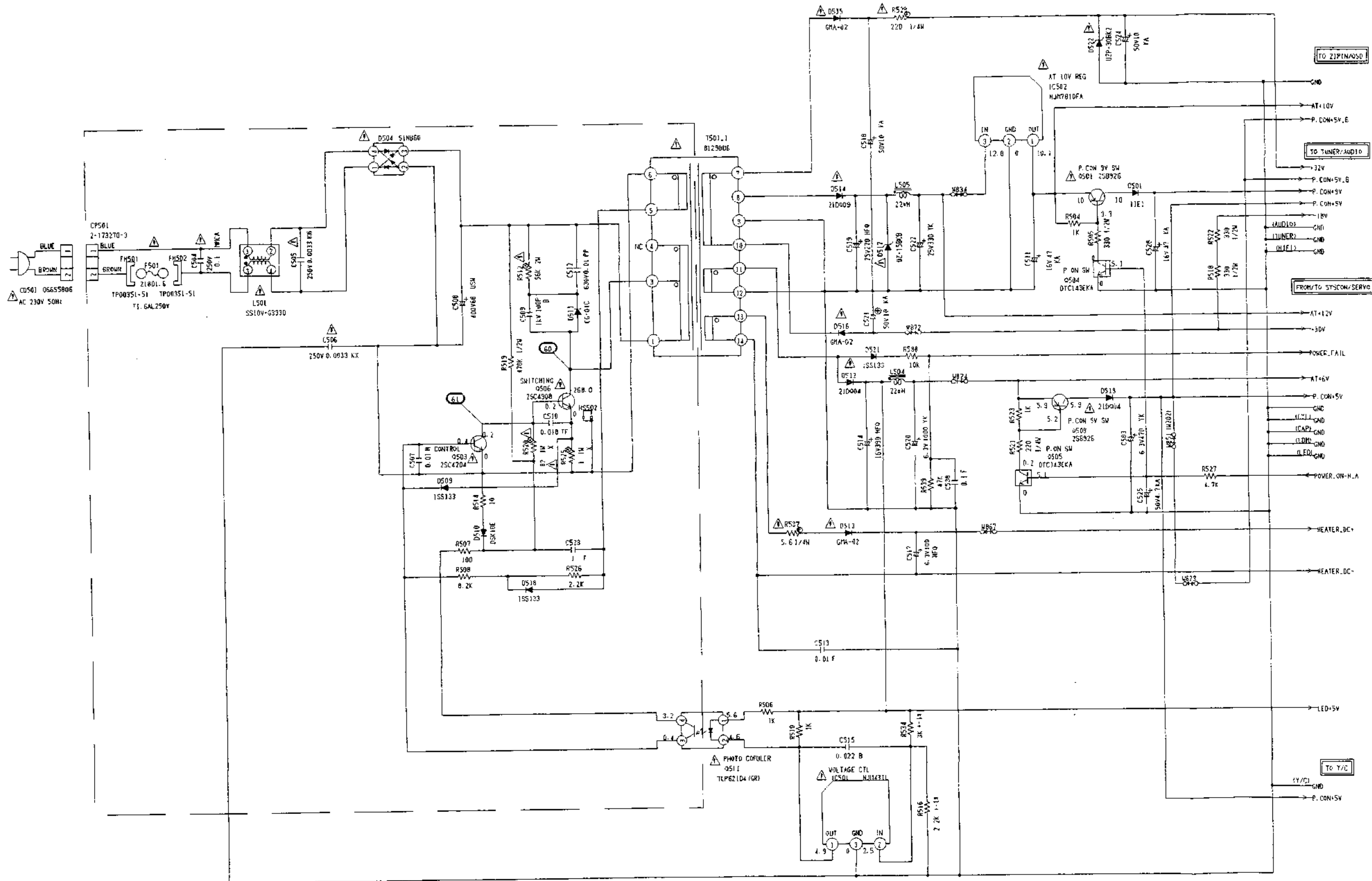
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR



POWER SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES REPAREES PAR UN Δ ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

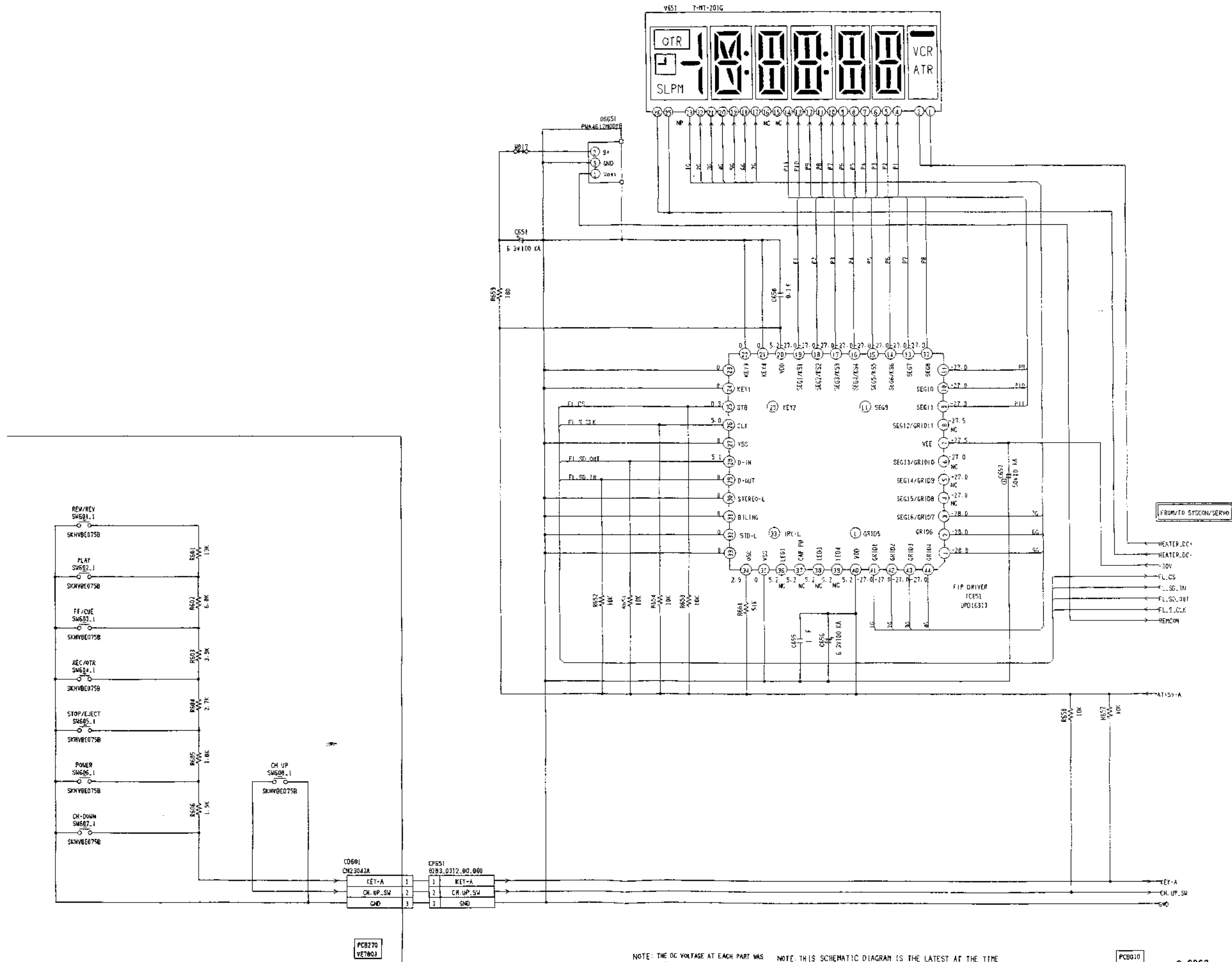
CAUTION: DIGITAL TRANSISTOR



PC8010
VMS120

3-6262

OPERATION SCHEMATIC DIAGRAM



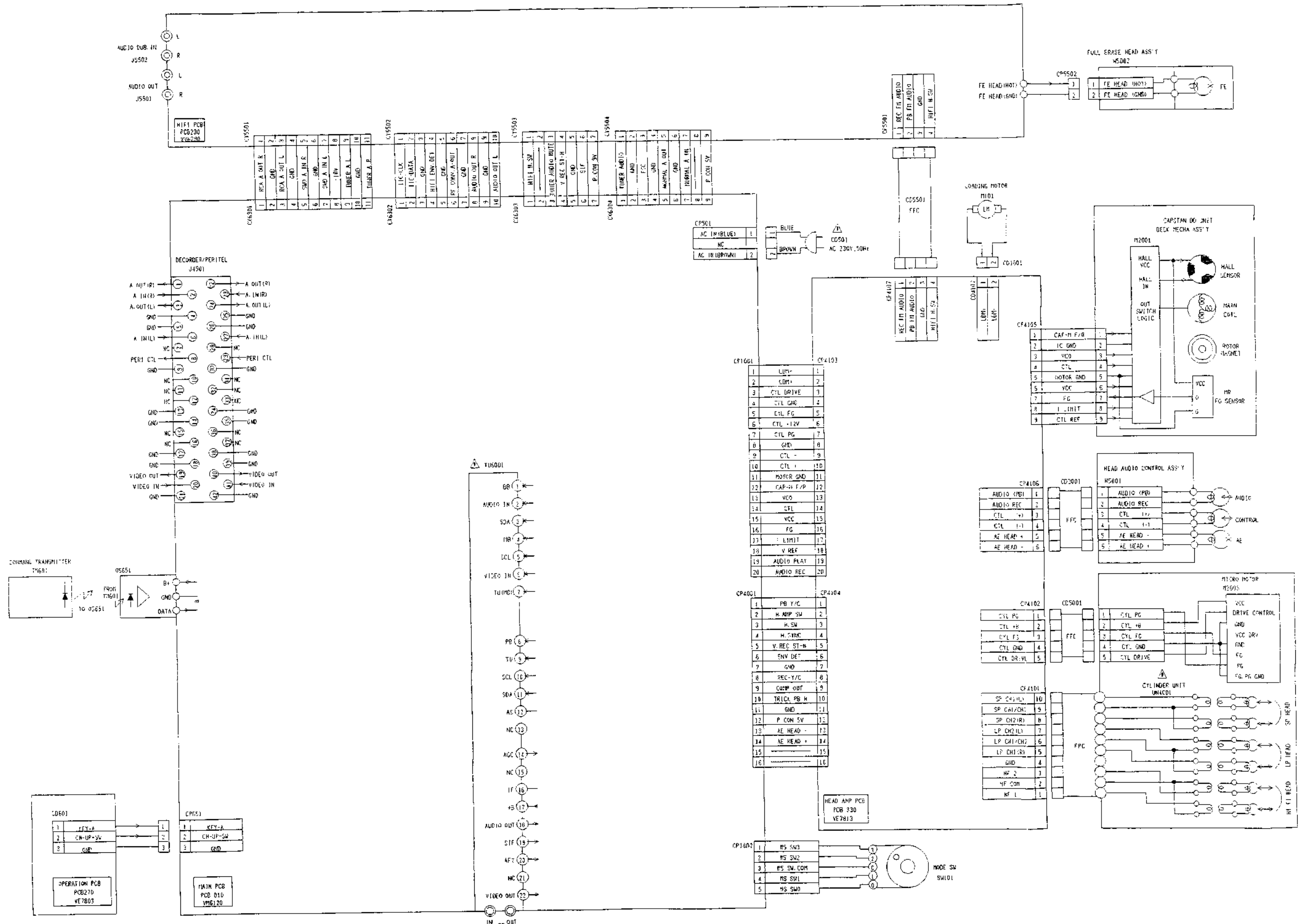
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM6120

3-6263

INTERCONNECTION DIAGRAM



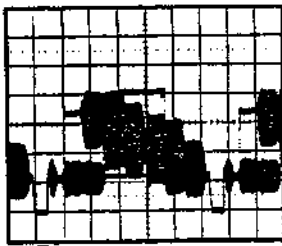
CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN Δ ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

WAVEFORMS

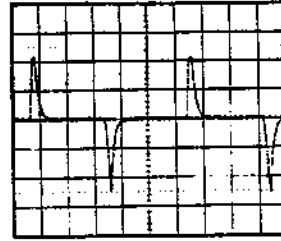
YIC



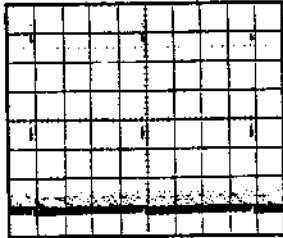
① 0.5V 10 μ s/div



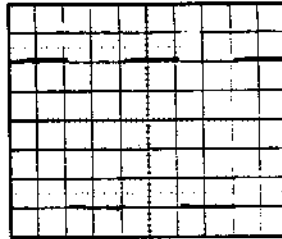
⑦ 200mV 2ms/div



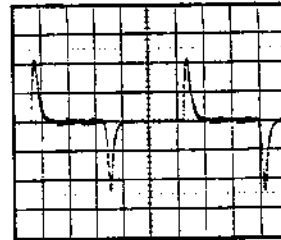
⑬ 1V 0.2s/div



② 0.5V 5ms/div

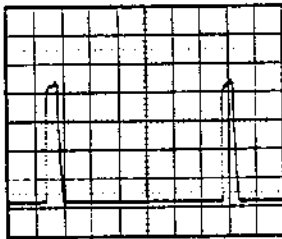


⑧ 1V 10ms/div

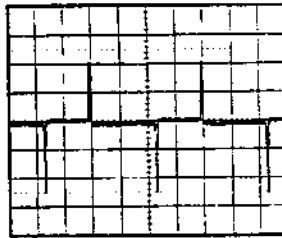


⑭ 1V 0.2s/div

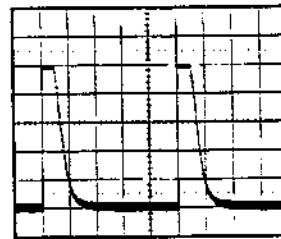
SYSCON/SERVO



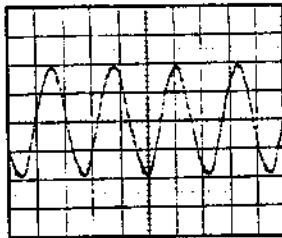
③ 1V 10 μ s/div



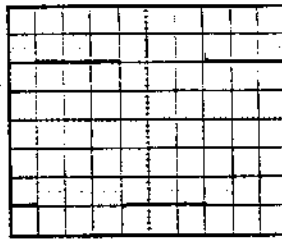
⑨ 1V 10ms/div



⑮ 1V 2ms/div



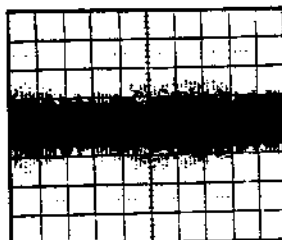
④ 100mV 0.1 μ s/div



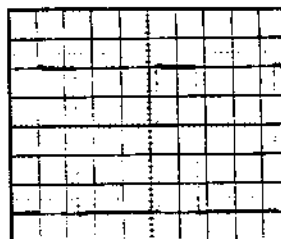
⑩ 1V 10 μ s/div



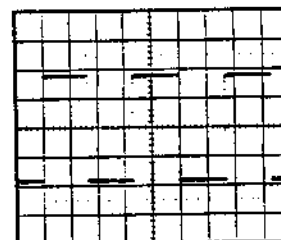
⑯ 1V 2ms/div



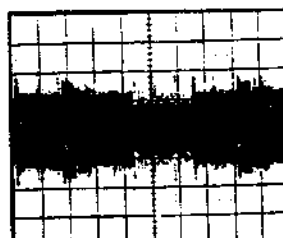
⑤ 50mV 10 μ s/div



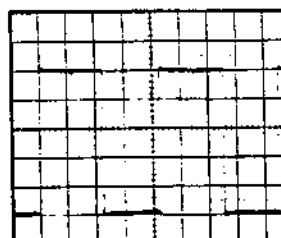
⑪ 1V 5 μ s/div



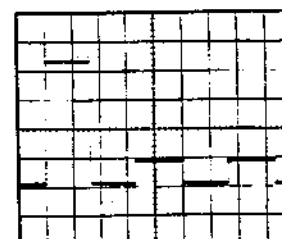
⑰ 1V 0.5ms/div



⑥ 100mV 10 μ s/div



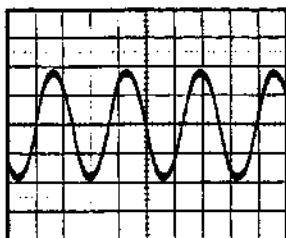
⑫ 1V 5 μ s/div



⑱ 1V 0.5ms/div

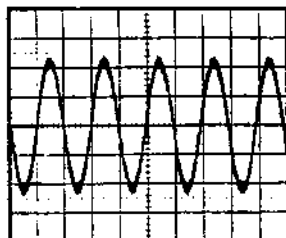
The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

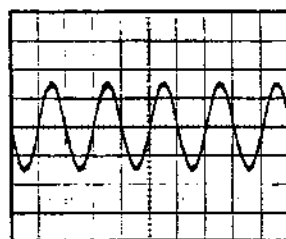


19 0.5V 0.5ms/div

TUNER/AUDIO

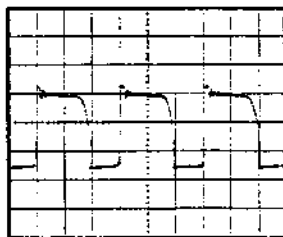


20 200mV 0.5ms/div

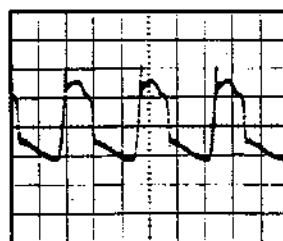


21 100mV 0.5ms/div

POWER



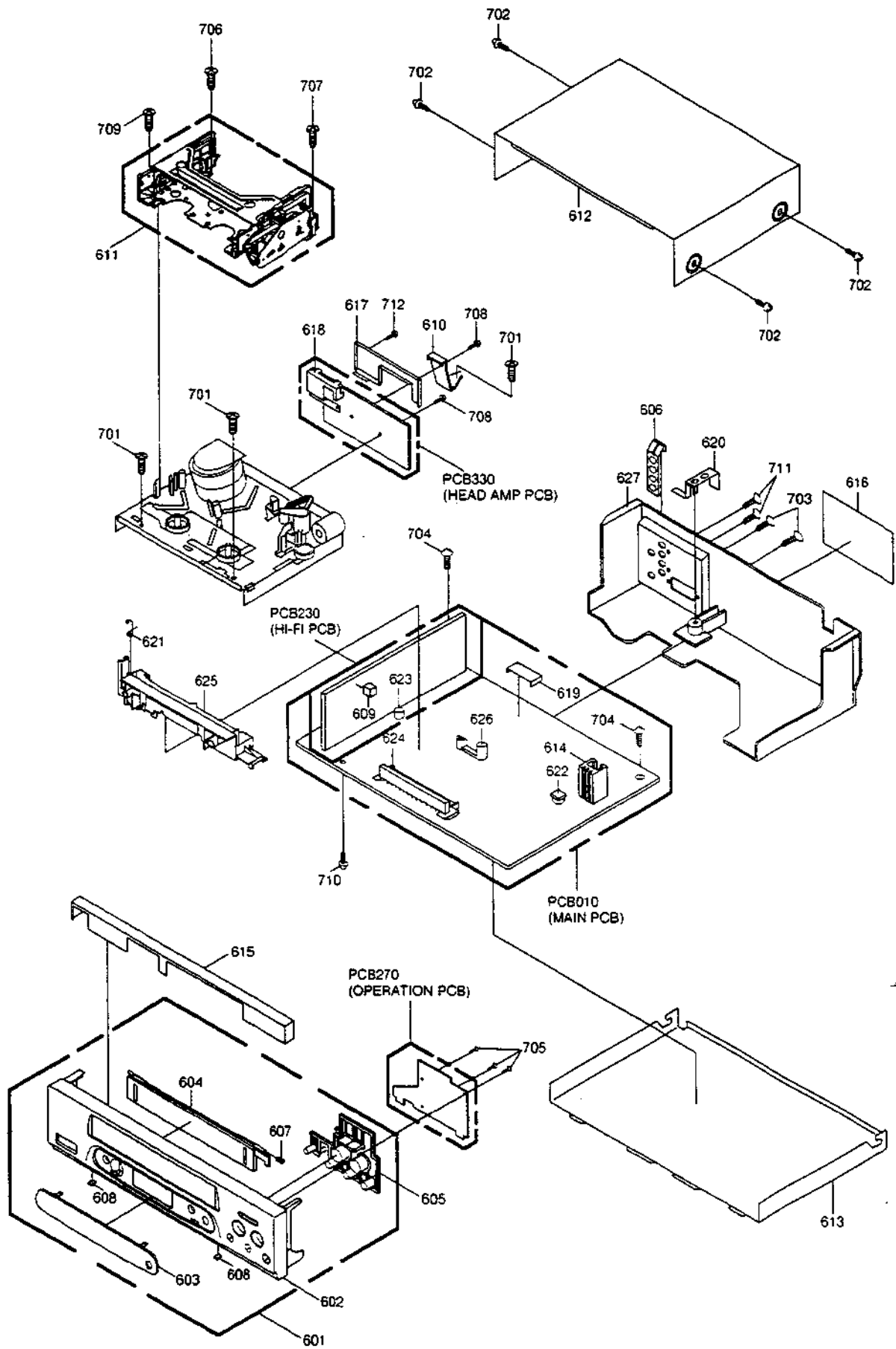
60 200V 5 μ s/div



61 0.5V 5 μ s/div

The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW

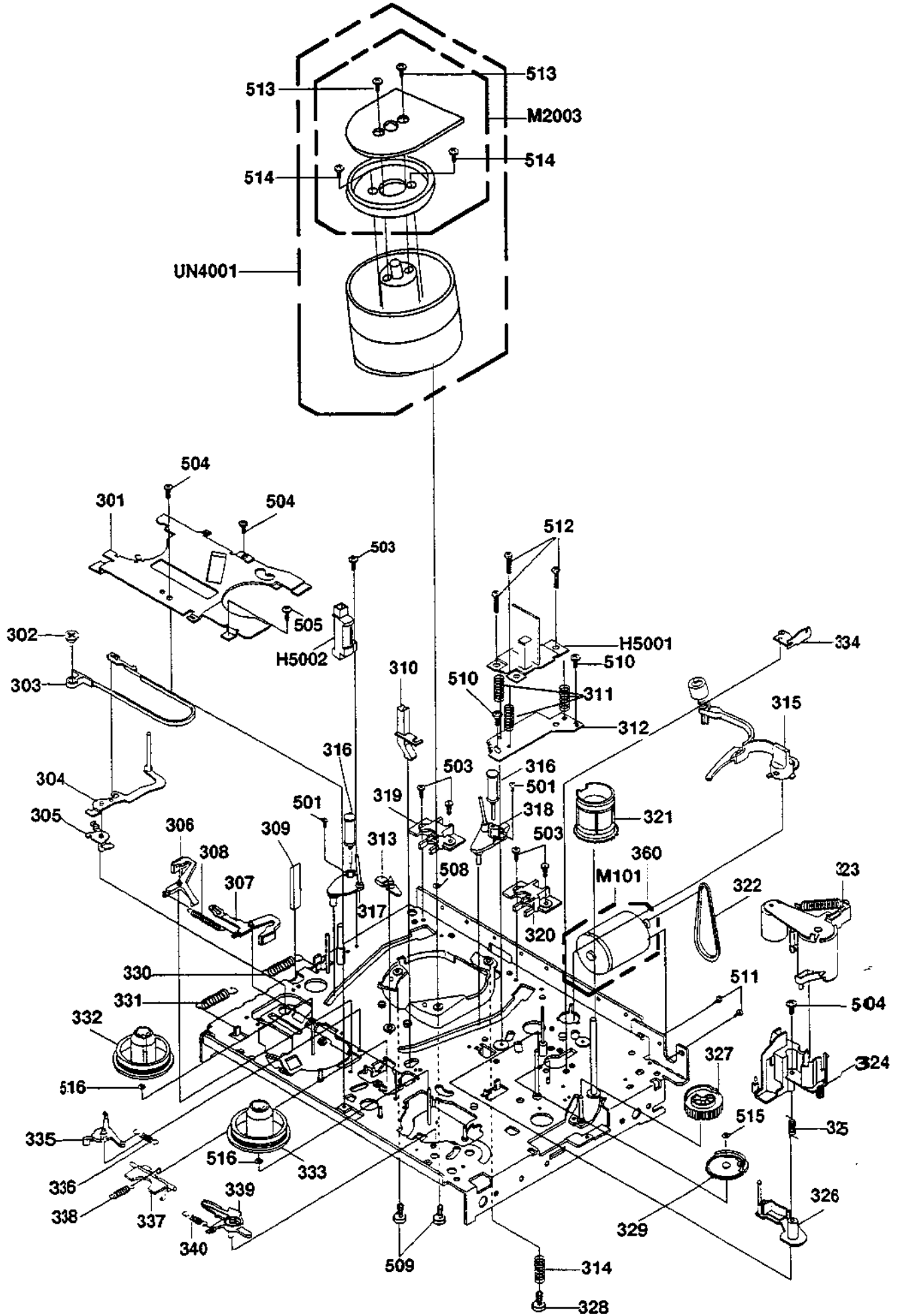


4-3667

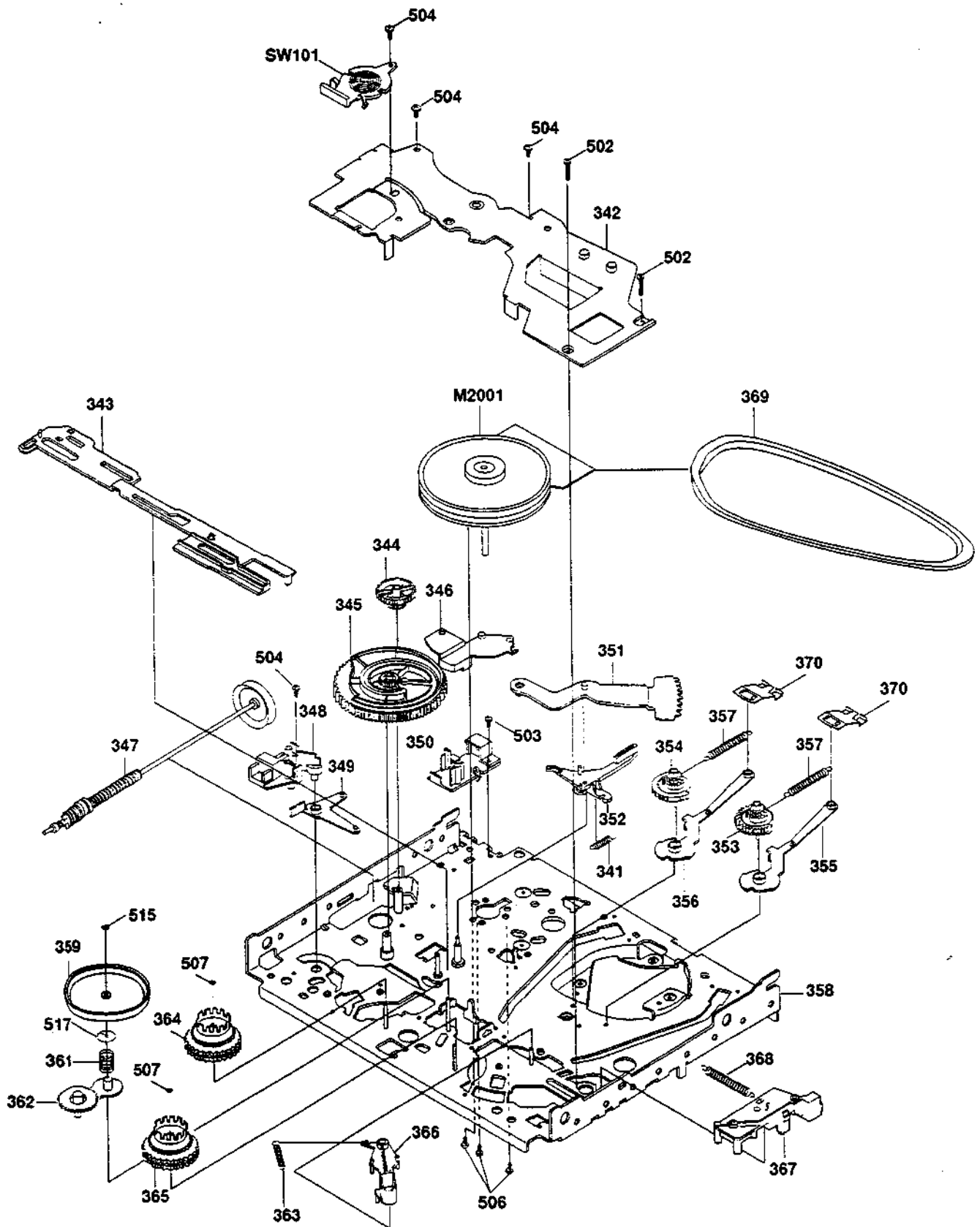
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
601	A4C015B720	CABINET, FRONT ASS'Y
602	T01WPJA183	CABINET, FRONT
603	T11WPDA050	PLATE, DISPLAY
604	T12WPJA109	FLAP
605	T35WPA041	BUTTON, DECK
606	T53WUA0049	SPRING, EARTH 4PIN
607	T43WKAA001	SPRING, FLAP
608	800WFA0001	CUSHION, LEG
609	800WFO0015	CUSHION (10*10*T9)
610	T62WSA0028	ANGLE, DECK BACK
611	850A900163	UNIT ASS'Y
612	T02USS0023	CABINET, TOP
613	T02WSA0033	PLATE, BOTTOM
614	----	HEAT SINK
615	T61WSAA002	ANGLE, DECK
616	T22202A130	SHEET, RATING
617	T53WSA0095	SHIELD, CASE HEAD AMP
618	T53WSA0106	SHIELD, COVER HEAD AMP
619	T53WSA0098	PLATE, EARTH SYSCON
620	T53WSA0099	PLATE, EARTH BOTTOM
621	T43WKAA003	SPRING, FL EARTH
622	T54WPA0015	COVER, LED(R)
623	T54WPA0014	COVER, LED(L)
624	T56WPA003	HOLDER, CLOCK
625	T61WPA004	HOLDER, DECK
626	85OPT00031	HOLDER, LED
627	T02WPA0382	PANEL, BACK
701	8117140A24	SCREW, TAPPING (BO) PAN 4*12
702	8117540A02	SCREW, TAPPING (BO) TRUSS 4*10
703	8117426A02	SCREW, TAPPING (BO) OVAL 2.6*10
704	8107230604	SCREW, TAP TITE (S) BIND 3*6
705	8110226084	SCREW, TAP TITE (P) BIND 2.6*8
706	8107226604	SCREW, TAP TITE (S) BIND 2.6*6
707	8107126805	SCREW, TAP TITE (S) PAN 2.6*8
708	8107230804	SCREW, TAP TITE (S) BIND 3*8
709	8110630A04	SCREW, TAP TITE (P) BRAZIER 3*10
710	8110630804	SCREW, TAP TITE (P) BRAZIER 3*8
711	8110230A02	SCREW, TAP TITE (P) BIND 3*10
712	810A130604	SCREW/WASHER (A) M3*6
---	J85X0300	POLYBAG
---	J3A20702	GUARANTEE CARD
---	J4C01501	INSTRUCTION BOOK
---	J4C01507	QUICK SET UP SHEET
---	T91UHA0005	GIFT SHEET
---	T92UHA0083	PACKAGE
---	T93UCDA112	GIFT BOX

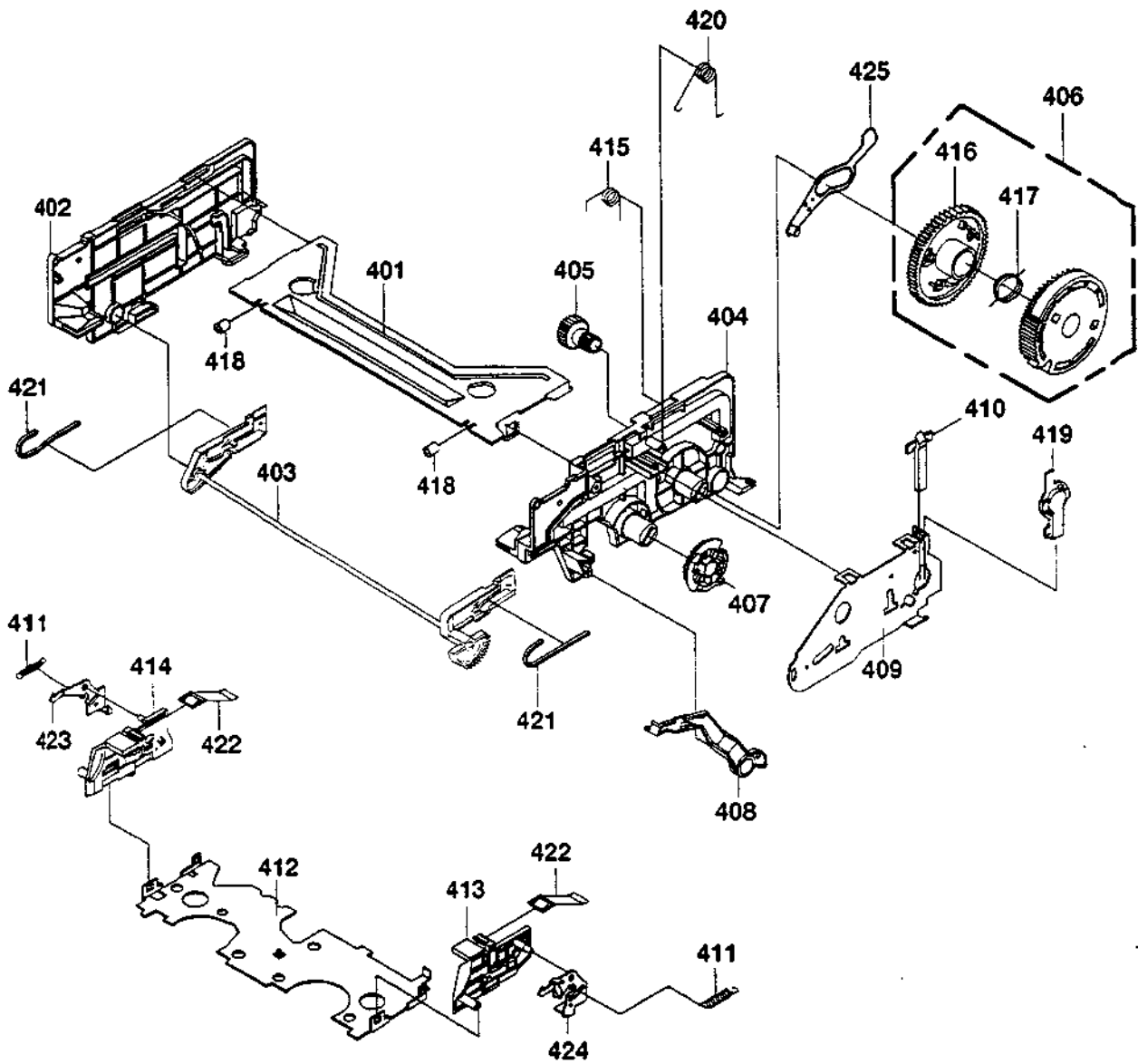
CHASSIS EXPLODED VIEW (TOP VIEW)



CHASSIS EXPLODED VIEW (BOTTOM VIEW)



UNIT ASS'Y EXPLODED VIEW



CHASSIS/UNIT ASS'Y REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
301	850P600471	BRACKET, BRAKE	401	850P900617	BRACKET, TOP
302	850P400358	ADJUST, TENSION	402	850P900673	BRACKET, SIDE L
303	850A400122	TENSION BAND ASS'Y	403	850A900165	LINK ASSY
304	850A400124	TENSION ARM ASS'Y	404	850P900615	BRACKET, SIDE R
305	850A400123	TENSION LEVER 2 ASS'Y	405	850P900601	GEAR, JOINT
306	850A600155	MAIN BRAKE S ASS'Y	406	850P900602	GEAR, CAM
307	850A600156	MAIN BRAKE T ASS'Y	407	850P900609	GEAR, LINK R
308	850P800252	SPRING, MAIN BRAKE	408	850P900618	LEVER, FLAP 2
309	850P900564	REFLECTOR, EOT	409	850P900616	BRACKET, SIDE R2
310	850P400411	REFLECTOR, LED 2	410	850P900621	REFLECTOR, BOT
311	850P800269	SPRING, AC HEAD	411	850P800296	SPRING, LOCKER
312	850P500060	BASE, AC HEAD	412	850P900611	CASS HOLDER
313	850P000394	POST, CASS GUIDE L	413	850P900613	CASS, SIDE R
314	850P800245	SPRING, AZIMUTH 2	414	850P900612	CASS, SIDE L
315	850A500013	AHC ASS'Y	415	850P800298	SPRING, BRACKET R
316	850A400102	GUIDE ROLLER ASS'Y	416	850P900608	GEAR, CLUTCH
317	850A400114	BASE, S INCLINED ASS'Y	417	850P800297	SPRING, CLUTCH
318	850A400115	BASE, T INCLINED ASS'Y	418	850P8A001	RUBBER, SILICON
319	850P400330	CATCHER S	419	850P900620	COVER, SENSOR BOT
320	850P400332	CATCHER T	420	850P800290	SPRING, EARTH
321	850P400343	CAM, PINCH ROLLER	421	850P800294	SPRING, LINK
322	850P600487	BELT, LOADING	422	850P800299	SPRING, PACK
323	850A400117	PINCH ROLLER BLOCK	423	850P900605	LOCKER, L
324	850P900541	CASS OPENER	424	850P900606	LOCKER, R
325	850P800264	SPRING, P5	425	850P900610	LEVER, BOT
326	850A400120	P5 ARM ASS'Y			
327	850P400342	CAM, GEAR	501	8110217401	SCREW, TAP TITE(P) BIND 1.7*4.0
328	8146230A14	JOINT SCREW BIND	502	8109226A64	SCREW, TAP TITE(B) BIND 2.6*16
329	850P400344	CAM, P5	503	8107226804	SCREW, TAP TITE(S) BIND 2.6*8
			504	8107226604	SCREW, TAP TITE(S) BIND 2.6*6
330	850P400356	SPRING, TENSION ARM 2	505	8107123604	SCREW, TAP TITE(S) PAN 2.3*6
331	850P400357	SPRING, TENSION ARM 1	506	8109126804	SCREW, TAP TITE(B) PAN 2.6*8
332	850P200216	REEL S	507	82P166005N	POLYSLIDER WASHER (CUT) 1.6*6.0*TO.5
333	850P200217	REEL T	508	82Q315483N	POLYSLIDER WASHER
334	850P400402	CATCHER, P5 2	509	810A130604	SCREW/WASHER(A) M3*6
335	850P600465	SUB BRAKE S			
336	850P800253	SPRING, S-S BRAKE	510	810B126604	SCREW/WASHER(B) M2.6*6.0
337	850P200247	ARM, JOINT	511	8102130304	SCREW, PAN M3.0*3.0
338	850P800262	SPRING, JOINT ARM	512	8102126A04	SCREW, PAN M2.6*10
339	850A600157	SUB BRAKE T ASS'Y	513	810A123504	SEMS A M2.3*5.0
			514	850PAA0197	SCREW, MOTOR M3*5
340	850P800254	SPRING, T-S BRAKE	515	82P266005N	POLYSLIDER WASHER (CUT) 2.6*6.0*TO.5
341	850P800255	SPRING, CAP BRAKE	516	82Q264713N	POLYSLIDER WASHER 2.6*4.7*TO.13
342	850P600485	PLATE, BOTTOM	517	82P26A005N	POLYSLIDER WASHER (CUT) 2.6*10*TO.5
343	850A600178	ROD, MAIN ASS'Y			
344	850P400341	GEAR, MIDDLE	CD1001	068722058A	CORD EIS CONNECTOR 8722058A
345	850P600472	CAM, MAIN	CD2001	122W060803	CORD JUMPER 2W060803
346	850P600468	LEVER, MAIN BRAKE	CD5001	122LD51501	CORD JUMPER 2L051501
347	850A600159	WORM ASS'Y			
348	850P600483	BRACKET, WORM F	H5001	1523D91029	HEAD, AUDIO CONTROL HVMZA1254A
349	850P600474	LEVER, RATCHET	H5002	1543D02010	HEAD, FULL ERASE HVFHF0059A
350	850P600484	BRACKET, WORM R	M101	1596P48001	MOTOR, LOADING MXN-13FB09C
351	850P300151	LEVER, LOADING	M2001	1510398028	CAPSTAN DD UNIT F20T827
352	850A600158	CAP BRAKE ASS'Y (S)	M2003	1589V11004	MICRO MOTOR EP148A
353	850P300152	GEAR, LOADING S			
354	850P300153	GEAR, LOADING T	SW101	0520244003	MODE SWITCH SRZ20B068B
355	850A300053	LOADING ARM S ASS'Y	UN4001	A4B305A500	CYLINDER UNIT ASS'Y A4B305A500
356	850A300054	LOADING ARM T ASS'Y			
357	850P800263	SPRING, LOADING GEAR			
358	850A000222	MAIN CHASSIS ASS'Y			
359	850P200213	CENTER PULLEY			
360	850P600486	PULLEY, LDM 5			
361	850P800261	SPRING, C-PULLEY			
362	850A200065	ARM IDLER ASS'Y			
363	850P800270	SPRING, LEVER TENSION			
364	850A200064	CLUTCH GEAR T ASS'Y			
365	850A200063	CLUTCH GEAR S ASS'Y			
366	850P400360	LEVER, TENSION			
367	850P400359	HOLDER, TENSION			
368	850P800256	SPRING, MAIN ROD			
369	850P200215	BELT, CAPSTAN			
370	850P300150	SLIDER, LOADING			

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION				
RESISTORS			SEMICONDUCTORS (CONT.)						
△ R512	R3X2&A563J	R.METAL OXIDE	56K	OHM	2W	IC4801	I96D07023A	IC	DEC7023A
△ R520	R3X181820J	R.METAL OXIDE	82	OHM	1W	IC5001	103D772860	IC	LA7286
R522	R00202331J	RC	330	OHM	1/2W	IC5501	107J701AK0	IC	BH7801AK-E2
△ R525	R3X181010J	R.METAL OXIDE	1.0	OHM	1W	IC6602	10KDF98400	IC	TDA9840
△ R529	R61584221J	R.FUSE	220	OHM	1/4W	IC6603	105SB8721A	IC	TA8721ASN
△ R537	R615U45R6J	R.FUSE	5.6	OHM	1/4W	△ Q501	TBWT009260	TRANSISTOR.SILICON	2SB926(S,T)-AA
△ R1081	R635812R7J	R.FUSE	2.7	OHM	1W	△ Q503	TC3T042040	TRANSISTOR.SILICON	2SC4204-AA
△ R4524	R00106750J	RC	75	OHM	1/6W	△ Q504	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
R5539	R00106473J	RC	47K	OHM	1/6W	△ Q505	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
CAPACITORS			SEMICONDUCTORS (CONT.)						
△ C504	P2222B104K	CMP	0.1	UF	250V AC	△ Q506	TCB0049080	TRANSISTOR.SILICON	2SC4908
△ C505	CB3LE0ML3M	CC	0.0033UF	250V		△ Q509	TBWT009260	TRANSISTOR.SILICON	2SB926(S,T)-AA
△ C506	CB3930ML3M	CC	0.0033UF	250V		△ Q511	0002500480	PHOTO COUPLER	TLP621D4(6R)
C508	E027FH630M	CE	68	UF	400V	Q1001	0002600490	PHOTO COUPLER	GP1S94
C509	C0J0B0612K	CC	100	PF	1KV B	Q1002	0000700320	TRANSISTOR.PHOTO	RPT-38PB113
C512	P312F5103J	CPP	0.01	UF	630V	Q1003	TCYT287250	TRANSISTOR.SILICON	2SC2872S
C525	E50HU54R7M	CE	4.7	UF	50V	Q1004	0000700320	TRANSISTOR.PHOTO	RPT-38PB113
C701	CHG0F0415Z	CC	0.1	UF	25V F	Q1005	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
C708	E50HU2470M	CE	47	UF	16V	Q1006	0002600490	PHOTO COUPLER	GP1S94
C4085	CHG0B0412J	CC	100	PF	50V B	Q1007	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
C4086	CHG0B0402K	CC	470	PF	50V B	Q4001	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C4102	E02P00470M	CE	47	UF	6.3V	Q4004	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C4111	P6M300104J	CMP	0.1	UF	50V TF	Q4005	T8YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
C4130	E02P00470M	CE	47	UF	6.3V	Q4006	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C4514	CHG0B0402K	CC	470	PF	50V B	Q4007	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C4524	CHG0B0402J	CC	470	PF	50V B	Q4009	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C4531	CHG0CH411J	CC	10	PF	50V CH	Q4010	T6YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
C5540	CHG0B0402J	CC	470	PF	50V B	Q4011	T6YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
C5541	E50HT54R7M	CE	4.7	UF	50V	Q4012	T8YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
C6301	E02L00102M	CE	1000	UF	6.3V	Q4013	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C6320	CHG0SL401J	CC	47	PF	50V SL	Q4015	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
C6651	P1S300332J	CP	0.0033UF	50V		Q4016	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
SEMICONDUCTORS			SEMICONDUCTORS (CONT.)						
△ D501	D28T011E10	DIODE.SILICON	11E1TA182			Q4018	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
D504	D410S1W860	DIODE	S1WB60			Q4019	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
D509	D1VT001330	DIODE.SILICON	1SS133T-77			Q4101	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
D510	D23TDSK10E	DIODE.RECTIFIER	DSK10E-BT			Q4102	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
D511	D28T0E601C	DIODE.RECTIFIER	EG-01C			Q4503	TWQTD05001	COMPOUND TRANSISTOR	DTC144EKT147
△ D512	D28T1DQ040	DIODE.RECTIFIER	21DQ04-TA2B1			Q4804	T6YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
△ D513	D13TGMA020	DIODE.SILICON	GMA-02-BT			Q5001	TCKT013170	TRANSISTOR.SILICON	2SC1317-T
△ D514	D28T1DQ090	DIODE.RECTIFIER	21DQ09-TA2B1			Q5502	TB10006440	TRANSISTOR.SILICON	2SB644
△ D515	D13TGMA020	DIODE.SILICON	GMA-02-BT			Q5503	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
△ D516	D13TGMA020	DIODE.SILICON	GMA-02-BT			Q5504	TBWT006980	TRANSISTOR.SILICON	2SB691(E,F)-AA
△ D517	D9JT01501B	DIODE.ZENER	UZ-15BCB-TA			Q5505	TCKT013170	TRANSISTOR.SILICON	2SC1317-T
D518	D1VT001330	DIODE.SILICON	1SS133T-77			Q5506	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
D519	D28T1DQ040	DIODE.RECTIFIER	21DQ04-TA2B1			Q6302	T6YJ1037K0	TRANSISTOR.SILICON	2SA1037AKT146
D521	D1VT001330	DIODE.SILICON	1SS133T-77			Q6303	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
△ D522	D9JD1300B2	DIODE.ZENER	UZP-30BK2			Q6602	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
D1001	0001300030	LED	SLR-938C-4-AB			Q6603	T8YJ2412K0	TRANSISTOR.SILICON	2SC2412AKT146
D1010	D28T011E10	DIODE.SILICON	11E1TA182			COILS & TRANSFORMERS			
D1011	D28T011ES1	DIODE.SILICON	11ES1TA1			△ L501	029X000070	COIL.LINE FILTER	SS10V-03330
D1024	D28T011E10	DIODE.SILICON	11E1TA182			L504	021W66220M	COIL.CHOKE	22 UH
D1027	D9TU06R21C	DIODE.ZENER	MTZJ6.2C T-77			L505	021W66220M	COIL.CHOKE	22 UH
D1028	D28T011E10	DIODE.SILICON	11E1TA182			L701	021673101K	COIL	100 UH
D4001	D9TU06R81C	DIODE.ZENER	MTZJ6.8C T-77			L4001	02167D101K	COIL	100 UH
D4002	D1VT001330	DIODE.SILICON	1SS133T-77			L4002	021673101K	COIL	100 UH
D4501	D9TU015010	DIODE.ZENER	MTZJ15 T-77			L4004	021673101K	COIL	100 UH
D4502	D9TU015010	DIODE.ZENER	MTZJ15 T-77			L4005	0210A6471K	COIL	470 UH
D4510	D9TU015010	DIODE.ZENER	MTZJ15 T-77			L4006	021LA6560K	COIL	56 UH
D4513	D9TU015010	DIODE.ZENER	MTZJ15 T-77			L4008	021LA6560K	COIL	56 UH
D4515	D9TU015010	DIODE.ZENER	MTZJ15 T-77			L4009	021LA6560K	COIL	56 UH
D4802	D1VT001330	DIODE.SILICON	1SS133T-77			L4012	021LA6390K	COIL	39 UH
D4803	D1VT001330	DIODE.SILICON	1SS133T-77			L4013	021LA6330K	COIL	33 UH
D5501	D1VT001330	DIODE.SILICON	1SS133T-77			L4101	021663101K	COIL	100 UH
D6603	D1VT001330	DIODE.SILICON	1SS133T-77			L4102	021663101K	COIL	100 UH
△ IC501	10Q90431L0	IC	NJM431L			L4504	021LA6220K	COIL	22 UH
△ IC502	10QA97810F	IC	NJM7810FA			L4506	021LA6220K	COIL	22 UH
IC651	10XF516313	IC	UPD16313			L4507	021LA6220K	COIL	22 UH
IC703	13ED656490	IC	SDA5649			L4508	021LA6220K	COIL	22 UH
IC1001	156F57025A	IC	0EC7025A			L4509	021LA6220K	COIL	22 UH
IC1002	153D08CB10	IC	ST24C08CB1			L4510	021LA6220K	COIL	22 UH
IC1003	1E1J031AA0	IC	RESVL3:AA-TZC			L4513	021LA6100K	COIL	10 UH
△ IC1004	105S07291S	IC	TAT291S			L4514	021LA6100K	COIL	10 UH
IC4001	105D31232N	IC	TA1232N			L4515	021LA6100K	COIL	10 UH
IC4002	105D08850A	IC	TL8850AP			L4516	02167D101K	COIL	100 UH
IC4101	103F070020	IC	LA70020M			L4517	02167D101K	COIL	100 UH
IC4501	103D07156L	IC	LA7156L			L4801	021673101K	COIL	100 UH
IC4502	103D071560	IC	LA7156			L5001	021673102K	COIL	1000 UH
						L5501	021673101K	COIL	100 UH
						L5504	021673102K	COIL	1000 UH
						L5505	031622001R	COIL	16220 1

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
COILS & TRANSFORMERS (CONT.)		
L5506	0210A6391K	COIL 390 UH
L6301	021673101K	COIL 100 UH
L6302	02167D101K	COIL 100 UH
L6303	021J91680K	COIL 68 UH
L6304	02167D101K	COIL 100 UH
L6604	03361Z001R	COIL.SOUND IFT 361Z001
L6605	02167D101K	COIL 100 UH
L6606	021LA6100K	COIL 10 UH
L6607	021673101K	COIL 100 UH
▲ T501	0481290064	TRANSFORMER.SWITCHING 8129006
T5001	031626001R	COIL.BIAS OSC 1626001
JACKS		
J4501	063G100036	SOCKET.21PIN*2 035 0 8085 00
J5501	0602411004	JACK.PLATE JPJ1148-010023
J5502	0602411004	JACK.PLATE JPJ1148-010023
SWITCHES		
SW601	0504201T31	SWITCH.TACT SKHVBE075B
SW602	0504201T31	SWITCH.TACT SKHVBE075B
SW603	0504201T31	SWITCH.TACT SKHVBE075B
SW604	0504201T31	SWITCH.TACT SKHVBE075B
SW605	0504201T31	SWITCH.TACT SKHVBE075B
SW606	0504201T31	SWITCH.TACT SKHVBE075B
SW607	0504201T31	SWITCH.TACT SKHVBE075B
SW608	0504201T31	SWITCH.TACT SKHVBE075B
SW1001	0550322004	SWITCH.LEAF HXW0394-010010
P. C. BOARD ASSEMBLIES		
PCB010	A4C015B01A	PCB ASS'Y VM6120A
PCB230	A4C001B23A	PCB ASS'Y VV6290A
PCB270	A4C015B27A	PCB ASS'Y VET803A
PCB330	A4C001B33A	PCB ASS'Y VET813A
MISCELLANEOUS		
▲ BT601	1412004008	BATTERY.MANGAN R03(AB)E 20 T
CDE01	1206655806	CORD.AC BUSH E2R 6FEET 06655806
CD601	06CH23042A	CORD.EIS CONNECTOR CH23042A
CP501	0694430100	CORD.UX CONNECTOR 2-173270-3
CP651	069E230129	CONNECTOR PCB SIDE 8283-0312-00-000
CD4102	069E220129	CONNECTOR PCB SIDE 8283-0212-00-000
CD5501	122L041507	CORD.JUMPER 2L041507
CD6002	06CZL05015	RF CABLE PAL FTZ D-2070
CF4502	1162LTQ2M1	FILTER.EMI DSS306-93B471M10
CF4504	1162LTQ2M1	FILTER.EMI DSS306-93B471M10
CF6601	1012T5R742	FILTER.CERAMIC SFE5.74MC2-TF2;
CF6602	1012T5R702	FILTER.C.DISCR1 CDSH5.74MC39K7F2
CP1001	06977K0580	CONNECTOR PCB SIDE TMC-W20P-A1
CP1002	0697150310	CONNECTOR PCB SIDE TAS-X05X-D1
CP4001	06977G0580	CONNECTOR PCB SIDE TMC-W16P-A1
CP4101	069J7A0109	CONNECTOR PCB SIDE IMSA-9603S-10C
CP4102	069R750499	CONNECTOR PCB SIDE 52492-0520
CP4103	06977K0570	CONNECTOR PCB SIDE TMC-W20X-A1
CP4104	06977G0570	CONNECTOR PCB SIDE TMC-W16X-A1
CP4105	069779M010	CONNECTOR PCB SIDE TKC-F09X-L1
CP4106	069R760018	CONNECTOR PCB SIDE 52044-0645
CP4107	069R740018	CONNECTOR PCB SIDE 52044-0445
CP5501	069R740018	CONNECTOR PCB SIDE 52044-0445
CP5502	06CH22043A	CORD.EIS CONNECTOR CH22043A
CUS011	800WF00004	CUSHION-A
CUS012	800WF00019	CUSHION-C
CUS231	800WF00004	CUSHION-A
CUS232	800WF00019	CUSHION-C
CX6301	069J1B0038	CONNECTOR PCB SIDE IMSA-9130B-11
CX6302	069J1A0038	CONNECTOR PCB SIDE IMSA-9130B-10
CX6303	069J170038	CONNECTOR PCB SIDE IMSA-9130B-07
CX6304	069J190038	CONNECTOR PCB SIDE IMSA-9130B-09
CY5501	069J1B0028	CONNECTOR PCB SIDE IMSA-9131S-11L
CY5502	069J1A0028	CONNECTOR PCB SIDE IMSA-9131S-10L
CY5503	069J170028	CONNECTOR PCB SIDE IMSA-9131S-07L
CY5504	069J190028	CONNECTOR PCB SIDE IMSA-9131S-09L
▲ F501	080PT1R602	FUSE 21801.6
FH501	06710T0006	HOLDER.FUSE TP00351-51
FH502	06710T0006	HOLDER.FUSE TP00351-51
DS651	0771000013	REMOTE RECEIVER PNA4612M00YB
▲ TM601	07660AK320	TRANSMITTER SBERT20134A
TU6001	0162601009	RF UNIT TMLG2-104A
V651	096779R001	TUBE FLUCRESCENT DISPLAY 7-MT-201G
X1001	100CA01203	CRYSTAL HC-49/U-S 12.0MHZ
X1002	100C32R803	CRYSTAL DSVT-200 32.768KHZ
X4001	100CA4R404	CRYSTAL HC-49/U-S 4.433619MHZ
X4801	100W17R702	CRYSTAL HC-49/U 17734.475KHZ
X6602	100CF01001	CRYSTAL HC-49/U-F 10MHZ

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR