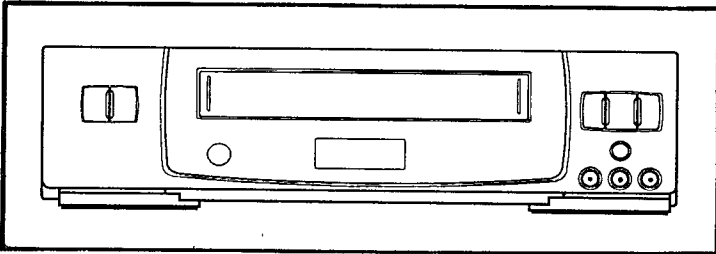


# TEAC®



# MV-8020



## VIDEO CASSETTE RECORDER



Video cassette recorders bearing the "HQ" mark incorporate VHS high quality technology. Note that there is interchangeability with former VHS video cassette recorder.

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SECTION 2.....	CABINET & MAIN FRAME
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# SERVICE MANUAL

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# SECTION 1 SUMMARY

## KEY TO ABBREVIATIONS

A	AC	: Alternating Current	L	L	: Low, Left, Coil
	ACC	: Automatic Color Control		LD	: LED
	ADJ	: Adjust		LECHA	: Letter Character
	A/E	: Audio Erase		LP	: Long Play
	AFC	: Automatic Frequency Control		LPF	: Low Pass Filter
	AFT	: Automatic Fine Tuning	M	MAX	: Maximum
	AGC	: Automatic Gain Control		MD	: Modulator
	ALC	: Automatic Level Control		MIC	: Microphone
	AM	: Amplitude Modulation		MIN	: Minimum
	AMP	: Amplifier		MIX	: Mixer, Mixing
	ANT	: Antenna		M M	: Mono Multi Vibrator
	APC	: Automatic Phase Control		MMV	: Monostable Multivibrator
	ASS'Y	: Assembly		MOD	: Modulation, Modulator
	AUD	: Audio		MODEM	: Modulator-Demodulator
	AUTO	: Automatic	N	NR	: Noise Reduction
	AUX	: Auxiliary	O	OSC	: Oscillator
B	B	: Base		OSD	: On Screen Display
	BPF	: Bandpass Filter	P	PB	: Playback
	BW or B/W	: Black and White		PCB	: Printed Circuit Board
C	C	: Capacitor, Chroma, Collector		PG	: Pulse Generator
	CAN	: Cancel		PLL	: Phase Locked Loop
	CAP	: Capstan		P-P	: Peak-to-Peak
	CATV	: Cable Television		PRE-AMP	: Preamplifier
	CBA	: Circuit Board Assembly		PS	: Phase Shift
	CCD	: Charge Coupled Device		PWM	: Pulse Width Modulation
	CFG	: Capstan Frequency Generator	Q	Q	: Transistor
	CH	: Channel		QH	: Quasi Horizontal
	CHROMA	: Chrominance		QSR	: Quick Setting Record
	CLK	: Clock		QTR	: Quick Timer Record
	CNR	: Chroma Noise Reduction		QV	: Quasi Vertical
	COMB	: Combination Comb Filter	R	R	: Resistor, Right
	COMP	: Comparator Composite Compensation		RE(or RC)	: Remocon, Receiver
	CONV	: Converter		REC	: Recording
	CS	: Chip Select		REF	: Reference
	CST	: Cassette		REG	: Regulated, Regulator
	CTL	: Control		REMOCON	: Remote Control(unit)
	CUR	: Current		REV	: Reverse
	CYL	: Cylinder		REW	: Rewind
D	D	: Drum, Digital, Diode, Drain		RF	: Radio Frequency
	dB	: Decibel		R/P	: Record/Playback
	DC	: Direct Current		RTC	: Real Time Counter
	DEMOD	: Demodulator	S	S	: Serial
	DET	: Detector		SH	: Shift
	DEV	: Deviation		SHARP	: Sharpness
	DHP	: Double High Pass		SIF	: Sound Intermediate Frequency
	DIGITRON	: Digital Display Tube		SLD	: Side Locking
	DL	: Delay Line		S/N	: Signal to Noise Ratio
	DOC	: Drop Out Compensator		SP	: Standard Play
	D/V	: Dummy Vertical		SUB	: Subtract, Subcarrier
E	E	: Emitter		SW or S/W	: Switch
	EE	: Electric to Electric		SYNC	: Synchronization
	EMP	: Emphasis		SYSCON	: System Control
	EP	: Extended Play	T	T	: Coil
	EQ	: Equalizer		TP	: Test Point
	ES	: Electrostatically Sensitive		TR	: Transistor
F	F	: Fuse		TRK	: Tracking
	FB	: Feed Back		TRANS	: Transformer
	FBC	: Feed Back Clamp		TU	: Tuner, Take-Up
	FE	: Full Erase	U	UHF	: Ultra High Frequency
	FF	: Fast Forward		UNREG	: Unregulated
	FG	: Frequency Generator	V	V	: Volt, Vertical
	FL	: Filter		VA	: Always Voltage
	FM	: Frequency Modulation		VCO	: Voltage Controlled Oscillator
	F/R	: Front/Rear		VGC	: Voltage Gain Control
	FS	: Frequency Synthesizer		VHF	: Very High Frequency
	FSC	: Subcarrier Frequency		VISS	: VHS Index Search
	F/V	: Frequency Voltage		VR	: Variable Resistor or Volume
	FWD	: Forward		V-Sync	: Vertical Synchronization
G	GEN	: Generator		VTG	: Voltage
	GND	: Ground		VV	: Voltage to Voltage
H	H	: High, Horizontal		VXO	: Voltage X-tal Oscillator
	Hz	: Hertz	W	W	: Watt
I	IC	: Intergrated Circuit		WHT	: White
	IF	: Intermediate Frequency		W/O	: With Out
	INS	: Insert	X	X-TAL	: Crystal
	I/O	: Input/Output	Y	Y/C	: Luminance/Chrominance
				YNR	: Luminance Noise Reduction
			Z	ZD	: Zener Diode

# IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, the products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## • Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the  $\triangle$  symbol and shaded (■) parts are critical for safety.

Replace only with specified part numbers.

Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use Specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially:

- 1) Insulation Tape
- 2) PVC tubing
- 3) Spacers
- 4) Insulation sheets for transistor

5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.(Fig. 1)

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

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10-15Kg of force in any direction will not loosen it.(Fig. 2)

9. Also check areas surrounding repaired locations.

10. Products using cathode ray tubes (CRTs)

In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the parts specified. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

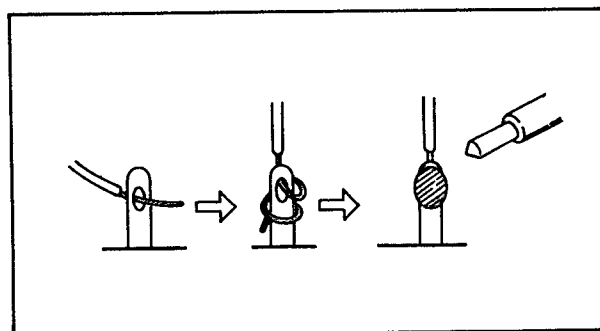


Fig. 1

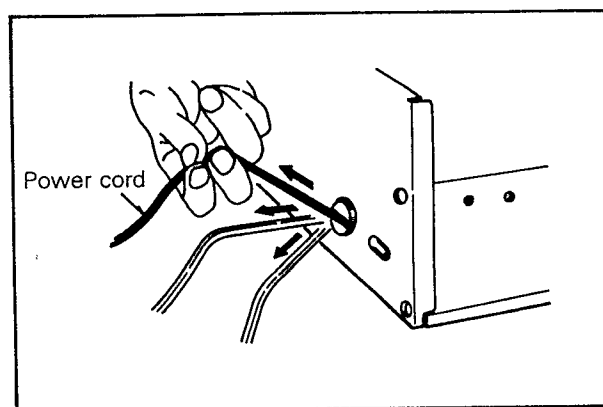


Fig. 2

# SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

- **Insulation resistance test**

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

- **Dielectric strength test**

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

- **Clearance distance**

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

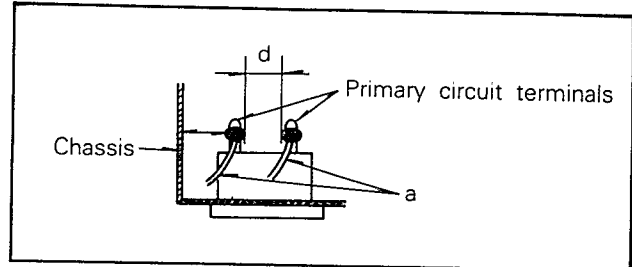


Fig. 3

Table 1: Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d),(d')
*110 to 130 V 200 to 240 V	Europe Australia	$\geq 10 \text{ M}\Omega/500 \text{ V DC}$	4kV 1 minute	$\geq 6\text{mm}(d)$ $\geq 8\text{mm}(d')$ (a Power cord)

\*Class II model only.

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

- **Leakage Current test**

Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method: (Power ON)

Insert load Z between B(earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

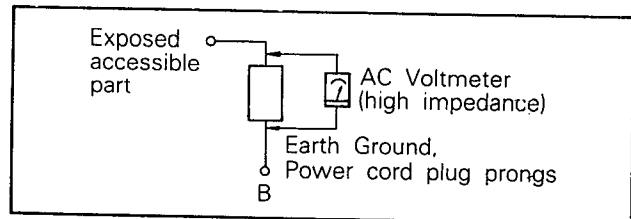


Fig. 4

Table 2: Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to:
100 to 130 V	Europe		$i \leq 0.7\text{m A peak}$ $i \leq 2\text{m A dc}$	Antenna earth terminals
200 to 240 V	Australia		$i \leq 0.7\text{m A peak}$ $i \leq 2\text{m A dc}$	Other terminals

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# INTRODUCTION

This service manual provides a variety of service information. It contains the mechanical structure of the Video Cassette Recorder(VCR) together with mechanical adjustments and the electronic circuits in schematic form.

This VCR was manufactured and assembled under our strict quality control standards and meets or exceeds industry specifications and standards.

## FEATURES

- HQ, High Quality picture enhancement system improves image sharpness and detail
- Double-Azimuth 4-head system
- Hi-Fi Audio sound system
- Simulcast recording Function
- Dual Audio (STEREO/BILINGUAL) TV programmes recording
- Audio level indicator
- Audio Dubbing Function
- 8 event/1 year programmable timer with everyday recording
- QSR, Quick Set Recording with stand-by (up to 9 hours)
- Programmable channel memory with frequency synthesized tuner (up to 40 positions)
- Full-function infrared remote control
- Auto Power and Play function
- Automatic rewind
- Fine Still, Frame Advance, Variable Slow
- Tape Remaining time display function
- Jet Search
- Quick Start Function
- Real Time Counter
- Logic Search Function
- Digital Auto Tracking System
- LP Record and Playback Function
- Auto Head Cleaner
- G-Code

\* G-Code is a trademark applied for by Gemstar Development Corp.  
G-Code system is manufactured under license from Gemstar Development Corporation.

## SPECIFICATION

### General

Power Source :	AC 240V $\pm$ 10%, 50Hz
Power Consumption :	Approx. 36 Watts
Video Recording System :	Double Azimuth 4 heads helical scanning system
Tape Speed :	23.39mm/sec (SP mode), 11.69mm/sec (LP mode)
Tape Format :	Tape Width 1/2" (12.7mm high density tape VHS)
Maximum Recording Time :	4.2hours at SP mode/8.4hours at LP mode (with E-260 cassette)
FF/Rewind Time :	Less than 300secs (with E-180 cassette)
Dimensions (W $\times$ H $\times$ D) :	14.2" $\times$ 3.5" $\times$ 13.6" (360 $\times$ 88 $\times$ 345mm)
Weight :	About 12.79 lbs (5.8kg)
Operating Temperature :	41° F-95° F (5° C-35° C)
Operating Humidity :	35%~80%
Timer :	24 hours display type

### Video

Television System :	CCIR standard (625 lines, 50 fields) PAL Colour signal
Recording Format :	PAL
RF Reception :	PAL B/H
RF OUT :	PAL B
Input Level :	VIDEO IN (SCART-PIN, RCA type) 1.0Vp-p, 75ohm, unbalanced
Output Level :	VIDEO OUT (SCART-PIN, RCA type) 1.0Vp-p, 75ohm, unbalanced
Signal to Noise Ratio :	More than 43dB
RF Modulator :	VHF Channels 0-1 (Switchable)

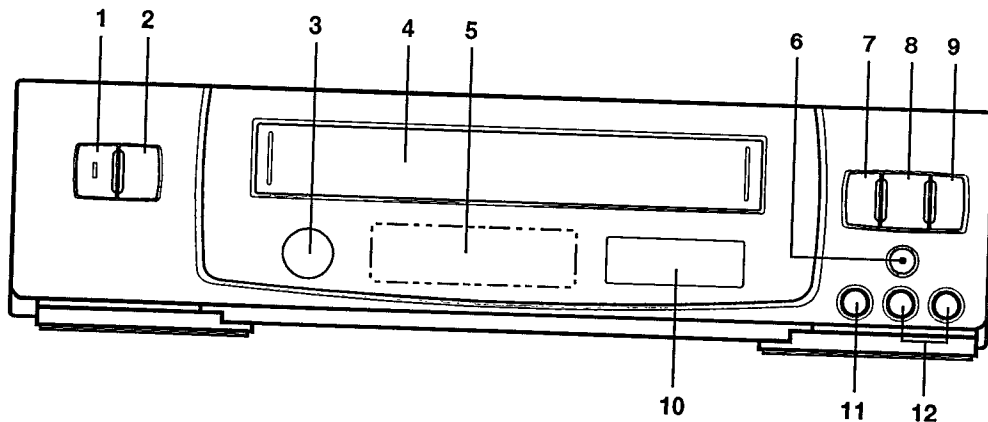
### Audio

Input Level :	AUDIO IN (SCART-PIN, RCA tape) -5dBm More than 50Kohm
Output Level :	AUDIO OUT -5dBm Less than 1Kohm (SCART-PIN type) -5dBm Less than 10Kohm (RCA type)
Audio Track :	Mono + Hi-Fi track type
Audio Frequency Response :	Normal : 100Hz~12KHz ( $\pm$ 3 dB), Hi-Fi : 20Hz~20KHz ( $\pm$ 2dB)
Signal to Noise Ratio :	FM Audio : More than 73dB (JISA Filter)
Dynamic Range :	Hi-Fi Audio : More than 83dB (JISA Filter)

\* Designs and specifications are subject to change without notice.

# LOCATION OF CUSTOMER CONTROLS

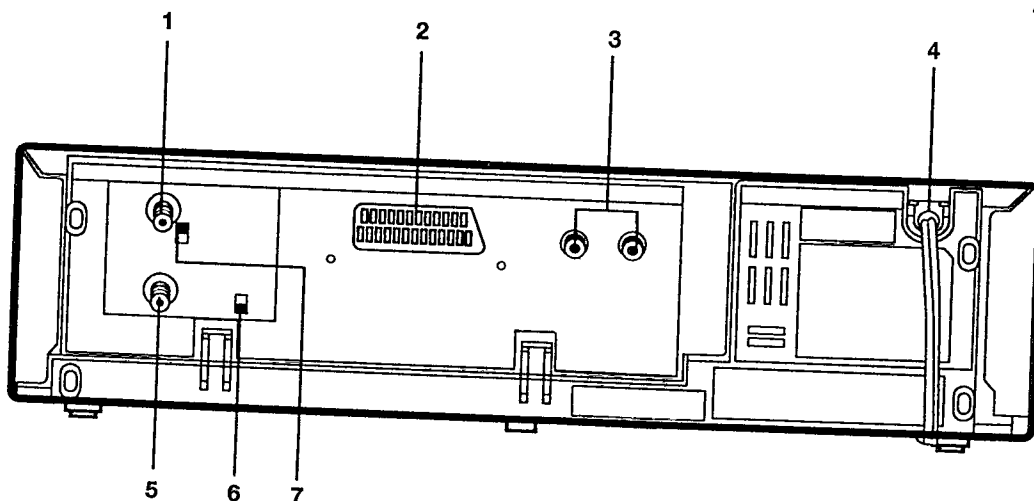
FRONT



1. OPERATE BUTTON AND INDICATOR
2. STOP/EJECT BUTTON
3. REMOTE SENSOR WINDOW
4. CASSETTE COMPARTMENT
5. MULTI-FUNCTION DISPLAY
6. RECORD/QSR BUTTON

7. REWIND/REVIEW BUTTON
8. PLAY (x2) BUTTON
9. FAST FORWARD/CUE BUTTON
10. AUDIO LEVEL METER
11. VIDEO INPUT JACK
12. AUDIO INPUT JACKS (L/R)

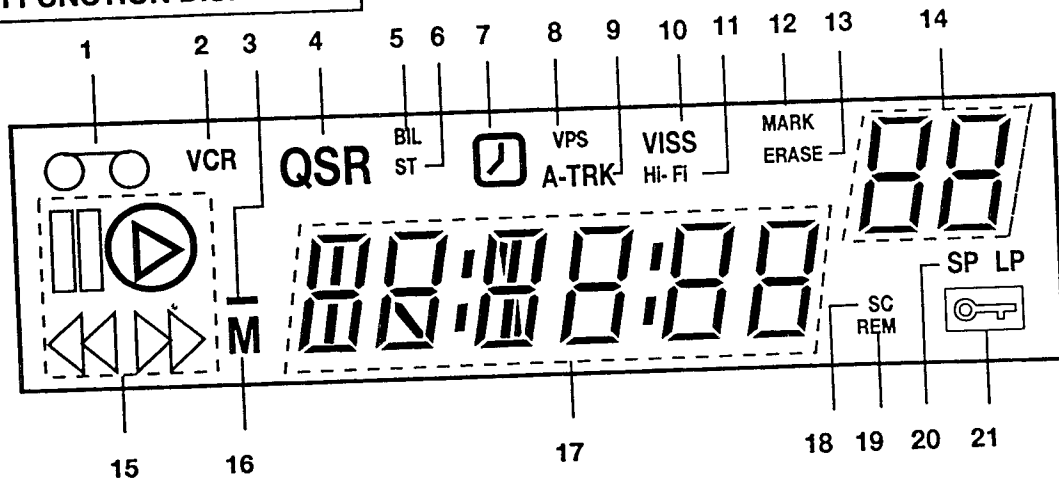
REAR



1. AERIAL INPUT
2. EURO-AV SOCKET
3. AUDIO OUTPUT JACKS (L/R)
4. MAINS LEAD

5. RF OUTPUT
6. RF CHANNEL CONTROL
7. ATTENUATION (ATT.) SWITCH

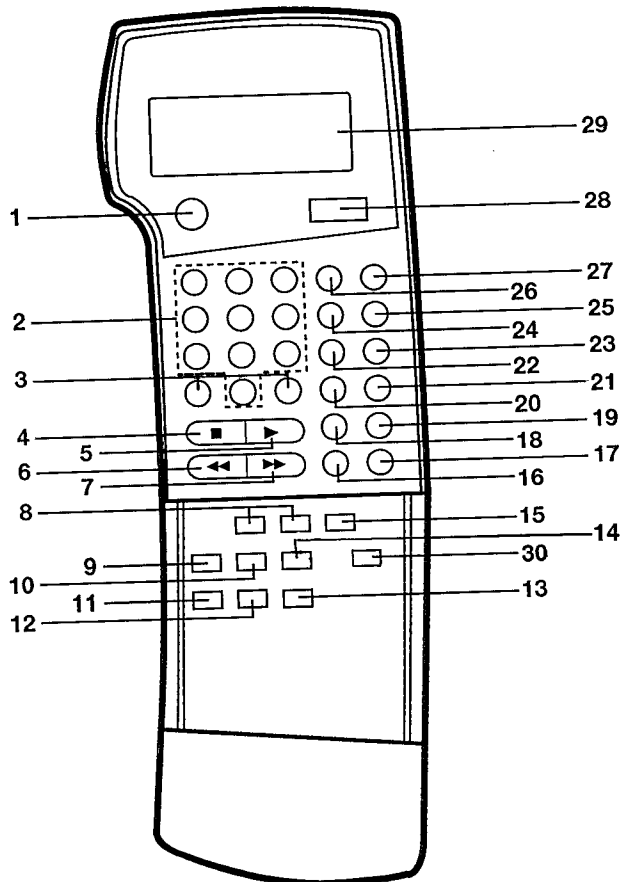
## MULTI FUNCTION DISPLAY



1. CASSETTE-IN INDICATOR (∞)
2. VCR INDICATOR
3. MINUS INDICATOR (-)
4. QSR INDICATOR (QSR)
5. BILINGUAL INDICATOR
6. STEREO INDICATOR
7. TIMER INDICATOR (⏰)
8. VPS INDICATOR (VPS) : Optional Function
9. AUTO TRACKING INDICATOR
10. VISS INDICATOR
11. HI-FI INDICATOR

12. MARK INDICATOR
13. ERASE INDICATOR
14. SWITCHABLE DISPLAY
15. FUNCTION INDICATORS
16. MEMORY INDICATOR (M)
17. SWITCHABLE DISPLAY
18. SIMULCAST INDICATOR
19. TAPE REMAINING INDICATOR
20. TAPE SPEED INDICATOR
21. CHILD LOCK INDICATOR

## REMOTE CONTROL



1. OPERATE BUTTON
2. NUMBER BUTTONS "0" THROUGH "9"
3. PROGRAMMING (+/-)/TRACKING (+/-) BUTTONS
4. STOP BUTTON
5. PLAY BUTTON
6. REWIND/REVIEW BUTTON
7. FAST FORWARD/CUE BUTTON
8. MFT (+/-)/SLOW (+/-) BUTTONS
9. TAPE SPEED MODE SELECT BUTTON (SP/LP)
10. TV/VCR SELECT BUTTON
11. VISS BUTTON
12. MARK BUTTON
13. ERASE BUTTON
14. AUDIO DUBBING BUTTON
15. FRAME ADVANCE BUTTON
16. PAUSE/STILL BUTTON
17. RECORD/QSR BUTTON
18. RESET BUTTON
19. CLOCK/COUNTER/TAPE REMAIN BUTTON
20. AUTO TRACKING BUTTON
21. INPUT SELECT BUTTON (TU/SC/AV)
22. TRANS BUTTON
23. MENU BUTTON
24. DISPLAY BUTTON
25. CLEAR BUTTON
26. CHILD LOCK BUTTON
27. PROG BUTTON
28. EJECT BUTTON
29. LCD (Liquid Crystal Display) PANEL
30. G-CODE BUTTON



# SECTION 2 CABINET & MAIN FRAME

## SERVICE FIXTURE CONNECTING METHOD

### 1. SVC FIXTURE Connecting Method

- A. Connect the FIXTURE Cable ① between Main C.B.A and Pre-Amp Ass'y. (P8301=P3801, See Fig. 2-a, 2-b)
- B. Connect the FIXTURE Cable ② between Main C.B.A and Timer C.B.A (P5601=P6501, P5602=P6502, See Fig. 2-a, 2-c)
- C. At this time, should be in the left side " ← LEFT" mark on the P.C.B of the FIXTURE Cable.
- D. Connect the connector of "MAIN" mark of FIXTURE Cable with the Main C.B.A and the connector of "JUNCTION" mark with the Pre-Amp Ass'y and Timer C.B.A.

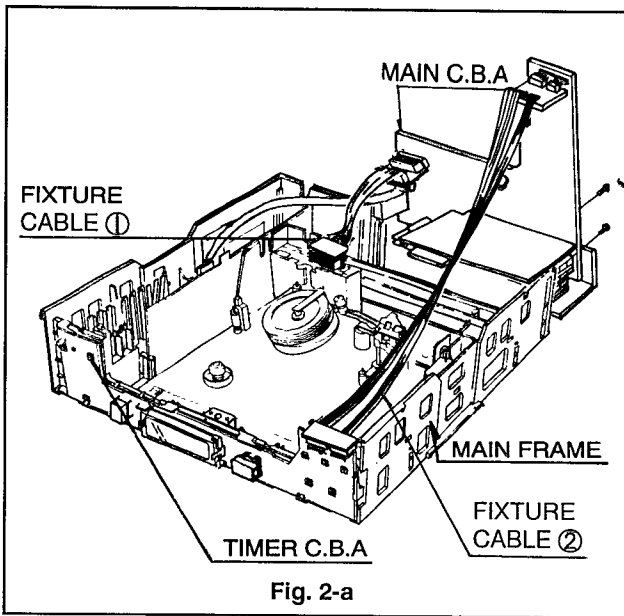


Fig. 2-a

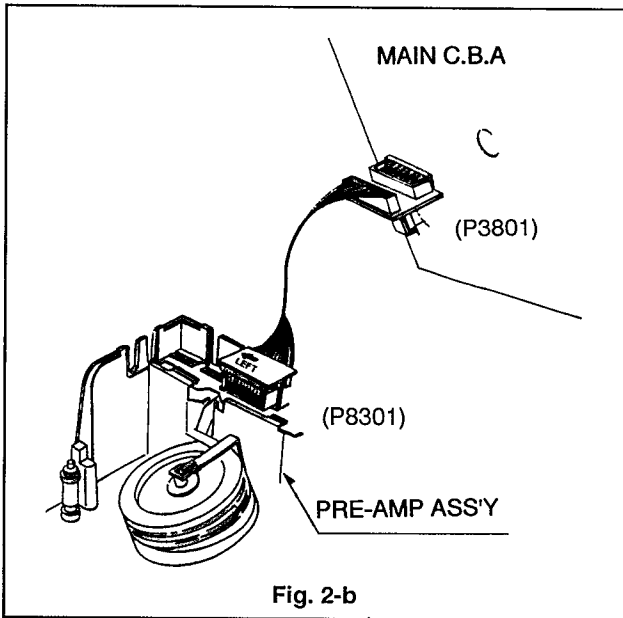


Fig. 2-b

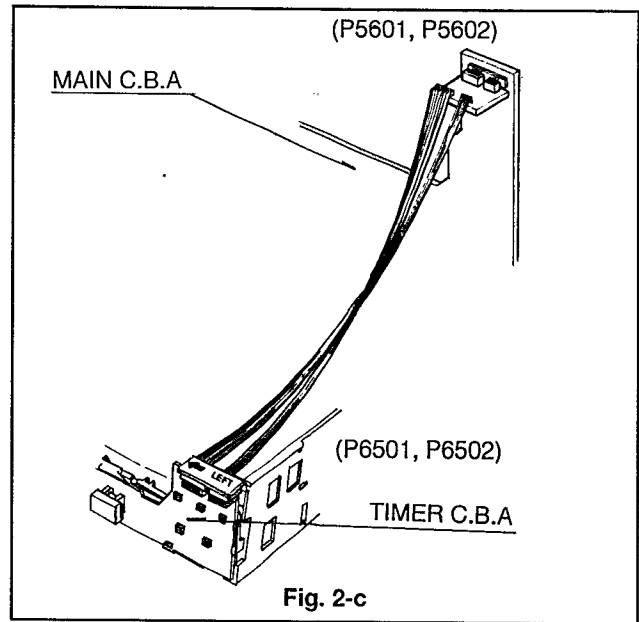
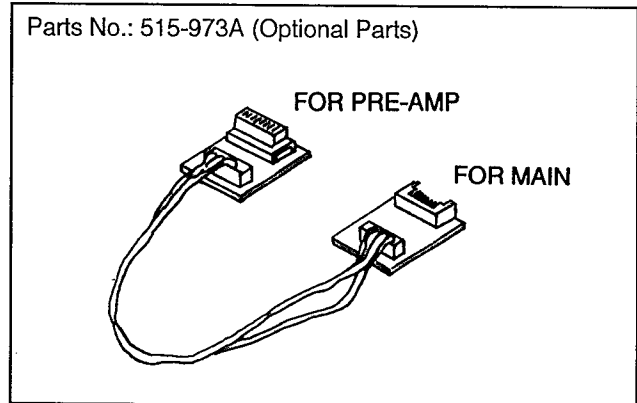


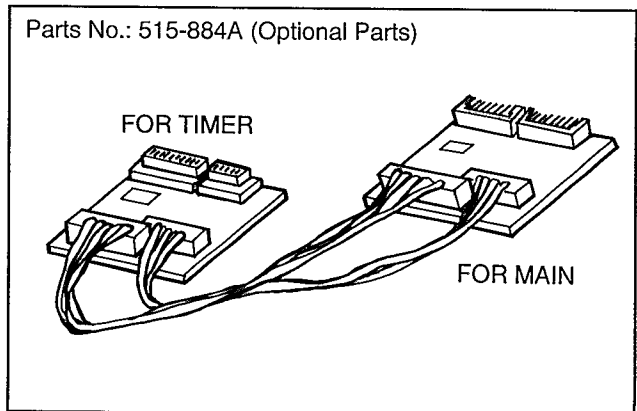
Fig. 2-c

### 2. Electrical Service Fixture List

- A. Fixture Cable ①.



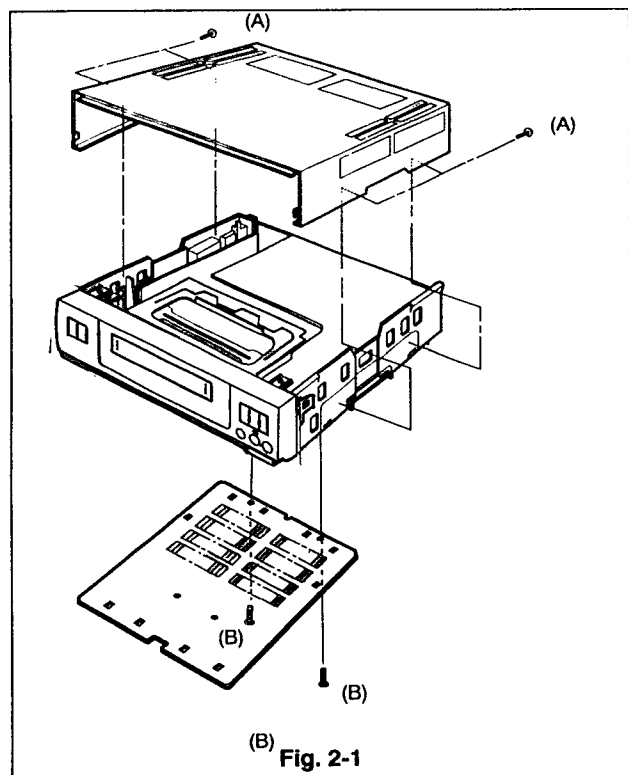
- B. Fixture Cable ②.



## CABINET DISASSEMBLY

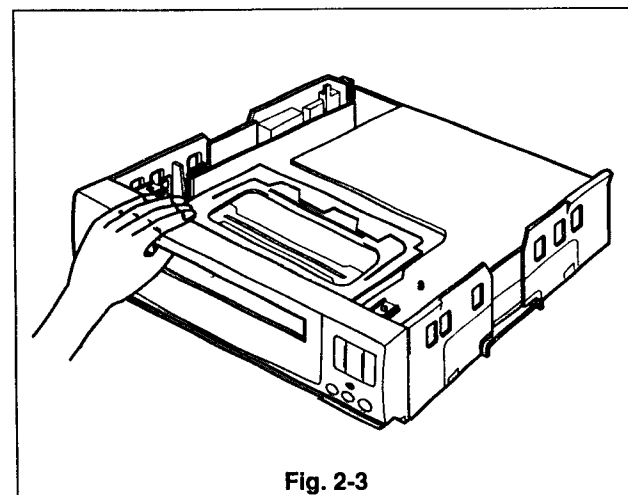
### 1. Top Case, Bottom Cover

- Release 4 screws (A). (See Fig. 2-1)
- Hold the back of Top Case and lift it up slightly backward to remove it.
- Release 2 screws (B). (See Fig. 2-1)
- Hold the Bottom Cover and pull it slightly forward to remove it.



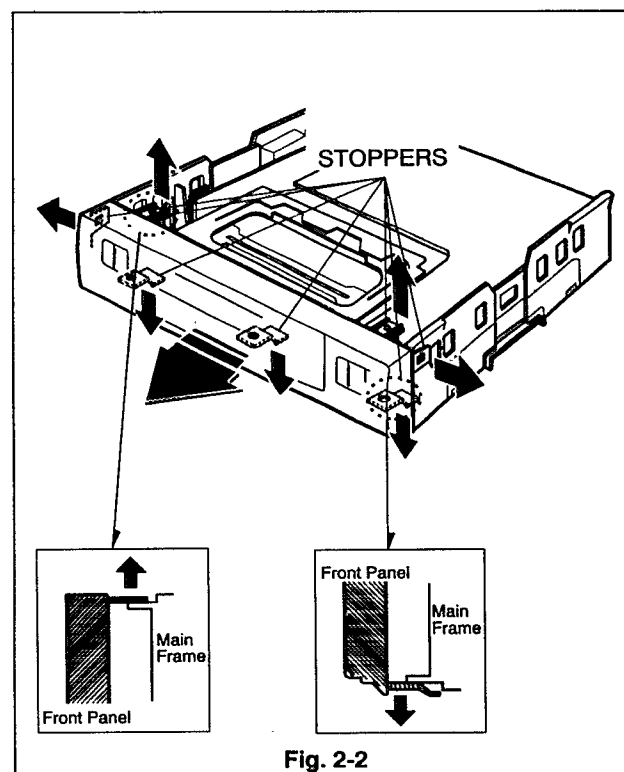
#### \*Caution

When reassemble the Front Panel, assemble it in condition of inserting the Door Cassette inside, as shown in Fig. 2-3.



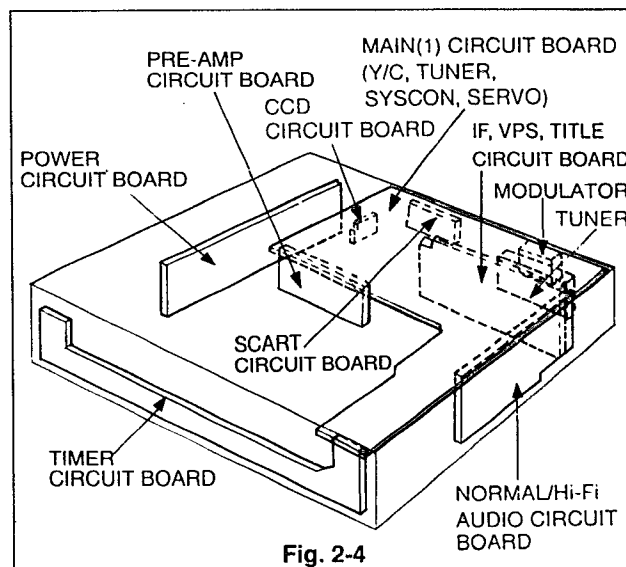
### 2. Front Panel

- Remove the top Case (See Fig. 2-1).
- Remove the bottom Cover (See Fig 2-1).
- Remove the stoppers on the top of Front Panel.
- Remove the stoppers on the bottom of Front Panel.



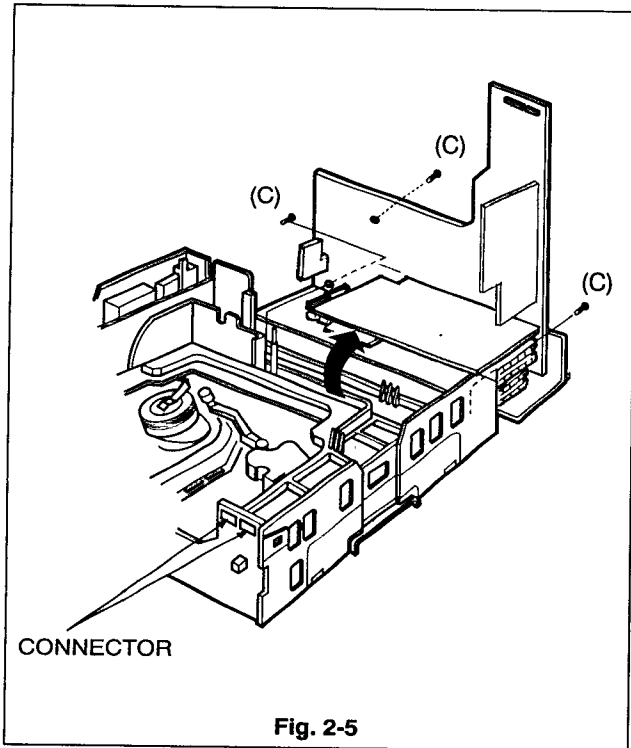
## CIRCUIT BOARD DISASSEMBLY

### 1. Circuit Board Arrangement



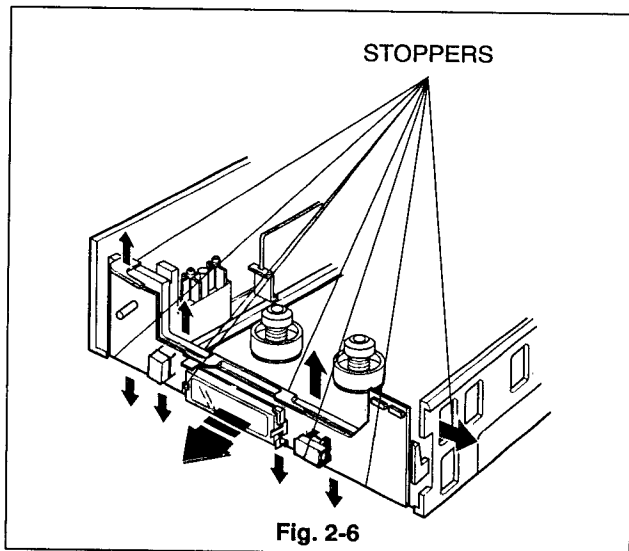
## 2. Main Circuit Board (I) (Y/C, Audio, Tuner/IF, Syscon, Servo)

- A. Release 3 screws (C). (See Fig. 2-5)
- B. Disconnect the connector between Main Circuit Board and Timer Circuit Board.
- C. Disconnect the connector between Main Circuit Board and Power Circuit Board.
- D. Lift the rear part up and pull the P.C. Board backward.
- E. Remove the connector for complete removal.



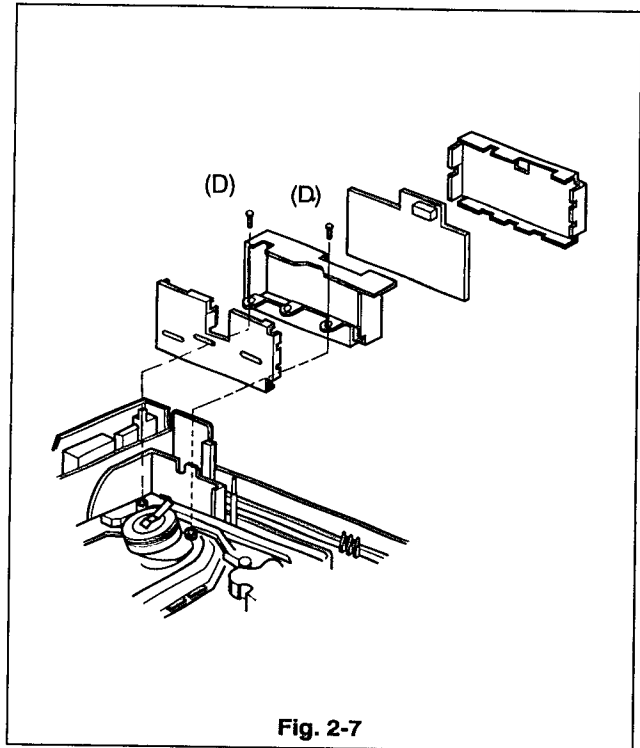
## 3. Timer Circuit Board

- A. Pull the P.C. Board toward you while pressing 8 stoppers in the direction of the arrows to disengage, and remove the P.C. Board (See Fig. 2-6).
- B. Remove the connector for complete removal.



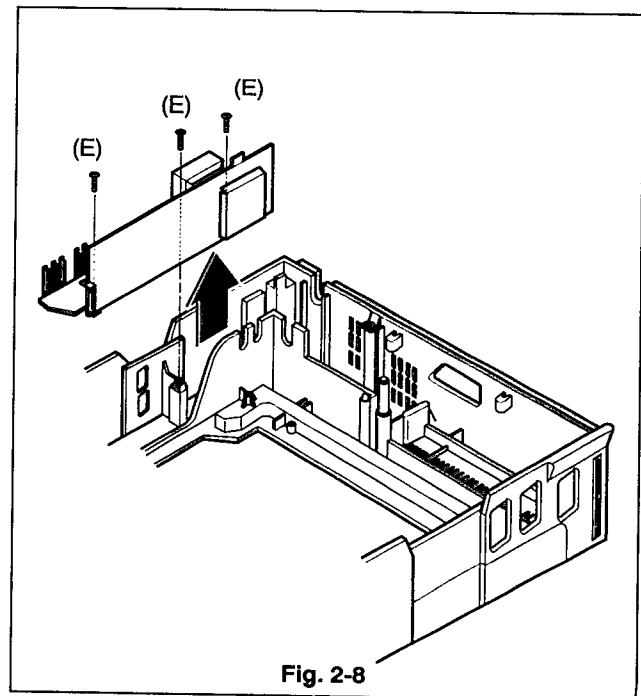
## 4. Pre-Amp Circuit Board

- A. Release 2 screws (D) (See Fig. 2-7).
- B. Remove Pre-Amp Package from Main Frame.
- C. Remove bracket Pre-Amp from Pre-Amp Package.
- D. Remove Pre-Amp Circuit Board from Pre-Amp Package.



## 5. Power Circuit Board

- A. Remove Main (I) P.C. Board (See Fig. 2-5).
- B. Release 3 screws (E). (See Fig. 2-8)



5

4

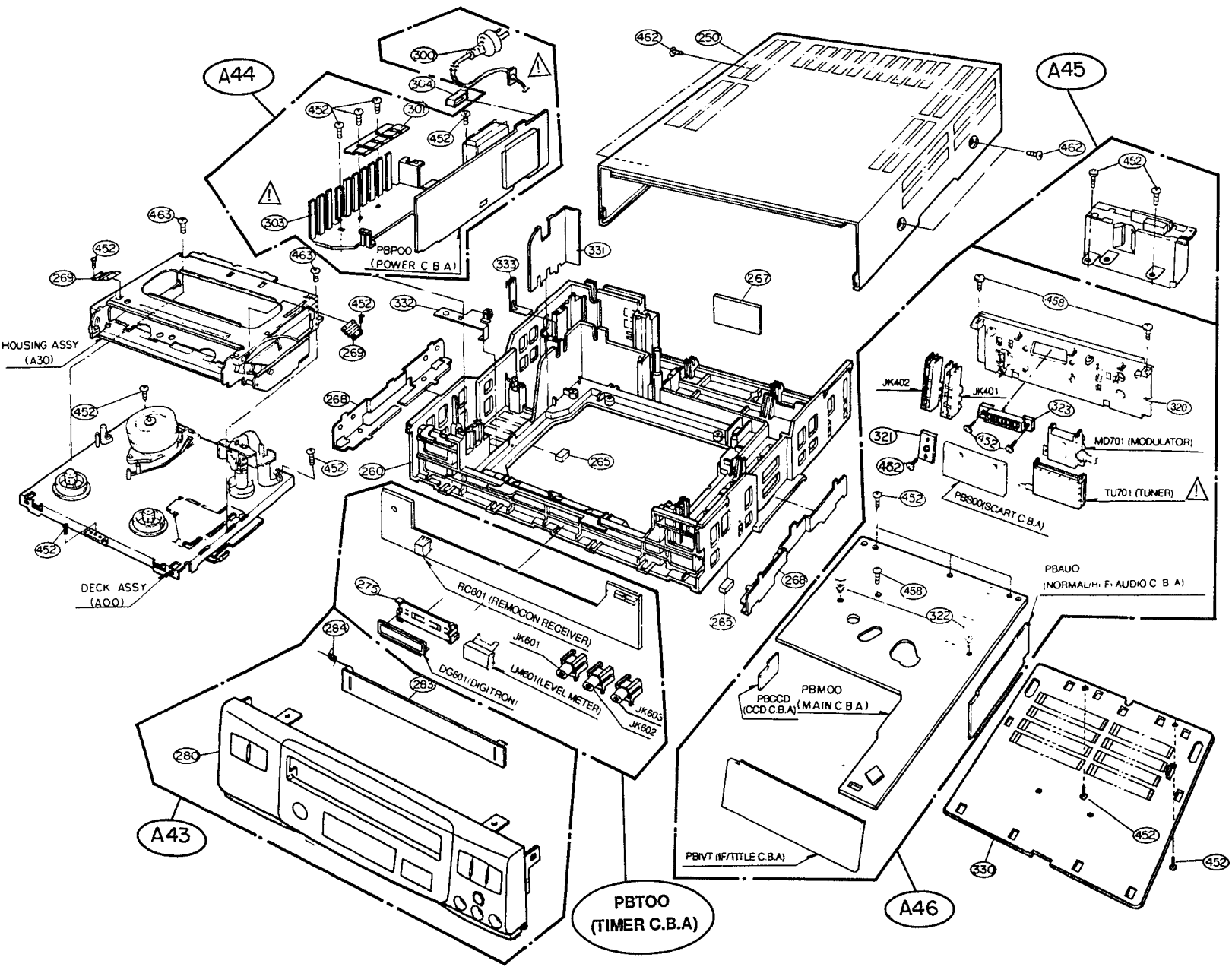
3


2

1

# EXPLODED VIEWS

## 1. Cabinet & Main Frame Section

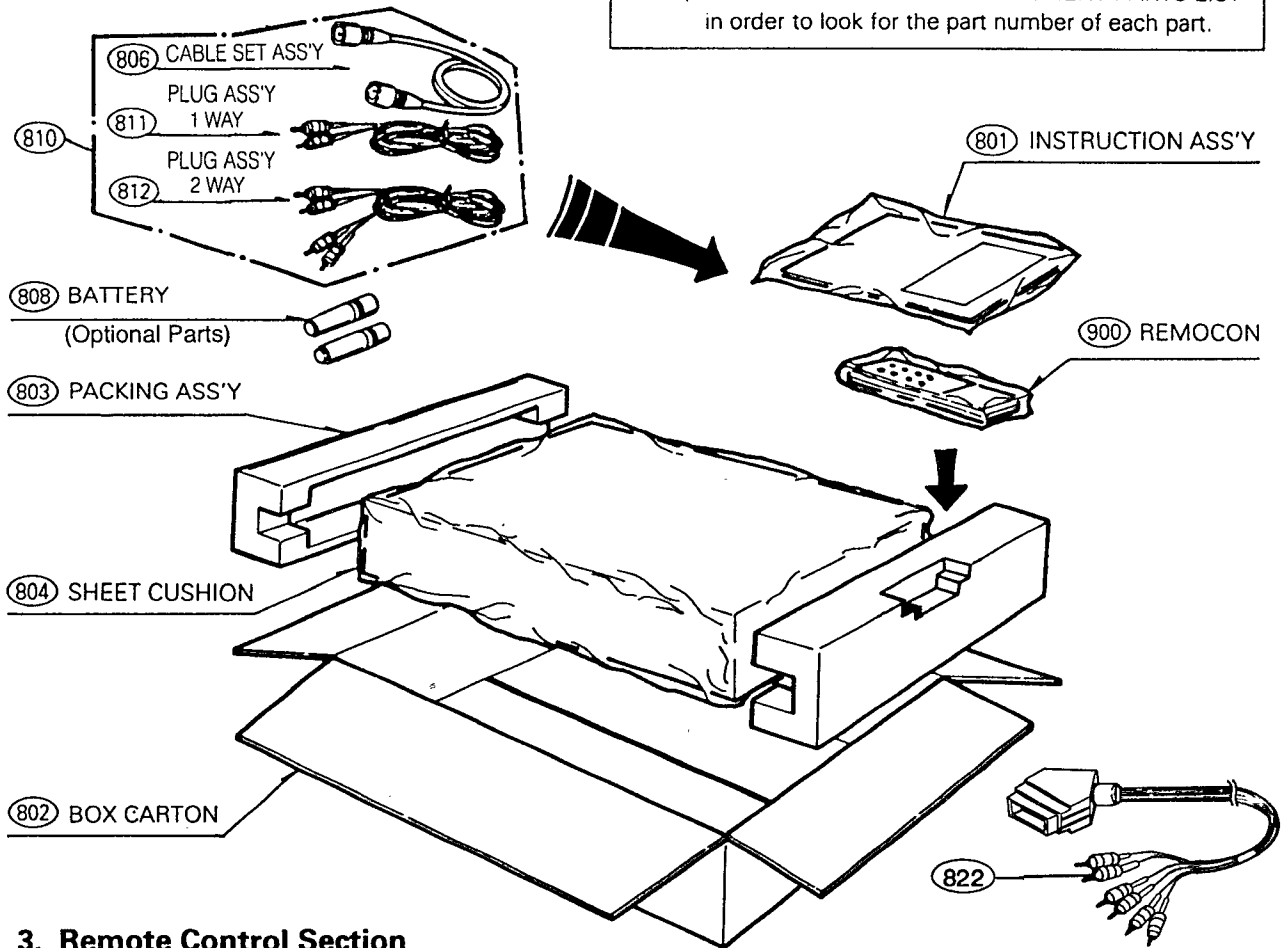


NOTE) 1. Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.  
 2. The components identified by mark  are critical for safety. Replace only with part number specified.

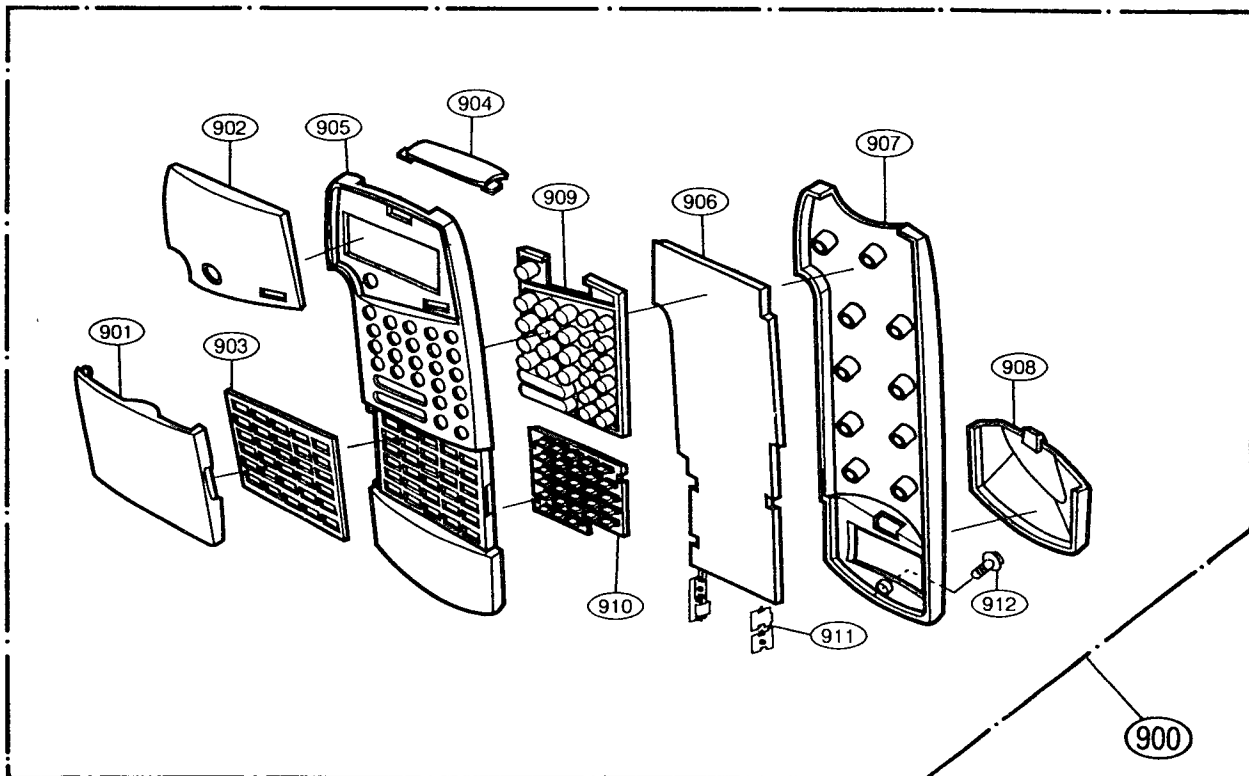
2-4 A B C D

## 2. Packing Accessory Section

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



## 3. Remote Control Section



# SECTION 3 ELECTRICAL

## ELECTRICAL ADJUSTMENT PROCEDURES

### Electronic Test Equipment Requirement:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Oscilloscope</li> <li>• Video Signal Generator</li> <li>• Modem Tester</li> <li>• Level Meter</li> <li>• Frequency Counter</li> </ul> | <ul style="list-style-type: none"> <li>• + Driver</li> <li>• Test Tape (SP)</li> <li>• Recording Tape</li> <li>• Digital Multimeter</li> <li>• Distortion Meter</li> </ul> |
|--|--|

### 1. Servo Circuit

#### 1) ±PG Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Playback	6.5H ± 0.5H (416μ sec, 1H=64μ sec)	H/SW TP(H.SW) VIDEO OUT TP	VR201

#### Purpose:

It is for the phase dividing of the Video A, B heads with 180° and the exact tracing of each track to meet head switching point with VHS Spec.

#### Procedure:

- Playback a PAL/SP test tape.
- At this time, the "ATR" is lighting, after pressing the PROG (+) or PROG (-) and adjust the X-Value.
- Connect CH-1 terminal of oscilloscope to H/SWTP, and CH-2 terminal to video out terminal (VIDEO OUT TP) of VCR.
- Trigger the complex Video signal of CH-2 to CH-1 H. SW, and adjust VR201 so that the distance from A(B) head selection point of H.SW signal to the starting point of horizontal synchronized signal is 6.5H (416μ sec, 1H=64μ sec).

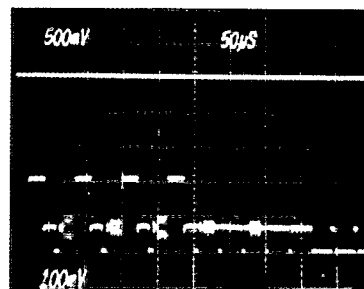
#### Reference)

- ±PG adjustment is practiced in the state of maximum RF level and locked servo system. (MTR Mode.)
- The deviation between A/B Head Adjustment location should be within ±0.5H (32μ sec).

- The deviation between the specification of adjustment and the practical measurement value should be within ±0.5H (32μ sec).
- Oscilloscope and VCR set should be connected with GND.

#### Waveform

Composite Video Signal



6.5H (416μ sec)  
H.SW (H/SW TP)

Fig. 3-1

### 2. Y/C Circuit

#### 1) EE Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
1 ± 0.1Vp-p	1 ± 0.1Vp-p	VIDEO OUT TP	VR302

#### Procedure:

- Connect the Video Signal Generator to Video in terminal.
- Connect CH-1 terminal of the oscilloscope to VIDEO OUT TP.
- Adjust VR302 so that the value from the lower part of synchronism to 100% white signal is 1 ± 0.1Vp-p.

#### Waveform

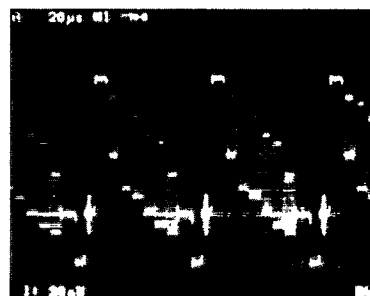


Fig. 3-2

## 2) Playback Luminance Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Playback (SP mode)	$1 \pm 0.1V_{p-p}$	VIDEO OUT TP	VR305

**Procedure:**

- Connect the Video Signal Generator to Video in terminal.
- Connect CH-1 terminal of the oscilloscope to VIDEO OUT TP.
- Playback a PAL SP test tape (with 100% white signal)
- Adjust VR305 so that Video Waveform is  $1 \pm 0.1V_{p-p}$ .

**Waveform**

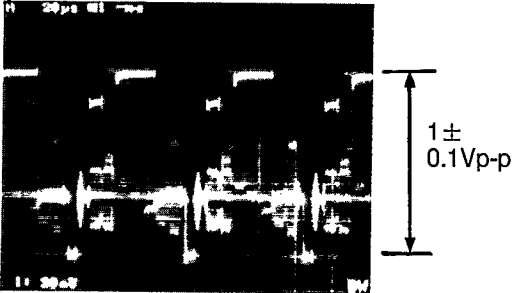


Fig 3-3

## 3) FM Carrier Frequency Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Record (PAL E-11 CH)	White Peak : $4.8 \pm 0.05MHz$ Sync Tip : $3.8 \pm 0.05MHz$	CAR/DEV TP (IC301 Pin ③)	VR301

**Procedure:**

- Receive the PAL E-11 CH.
- Connect CH-1 terminal of the oscilloscope to VIDEO OUT TP.
- Connect CH-2 terminal of the oscilloscope to modem tester output terminal. (But the set and the modem tester should be connected with 10:1 probe).
- Connect input terminal of modem tester to CAR/DEV TP.
- Input the Video Signal of 100% white to Video Input Jack.
- The terminal position of modem tester is operated to be ATT. 0dB, PAL/SECAM mode, Demod, Marker on.
- Adjust VR301 to right side in left maximum state so that 3.8MHz Marker on scope is agreed with the lower part of sync.

**Waveform**

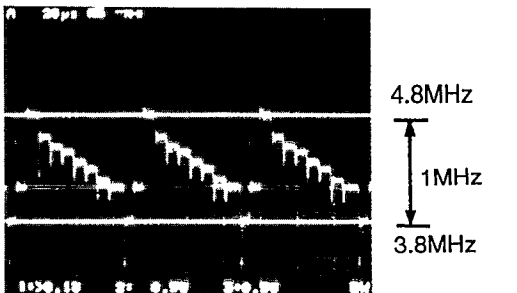


Fig 3-4

## 4) FM Deviation Frequency Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Record (PAL E-11 CH)	White Peak : $4.8 \pm 0.05MHz$ Sync Tip : $3.8 \pm 0.05MHz$	CAR/DEV TP (IC301 Pin ③)	VR304

**Procedure:**

- Receive the PAL E-11 CH.
- Connect CH-1 terminal of the oscilloscope to VIDEO OUT TP.
- Connect CH-2 terminal of the oscilloscope to modem tester output terminal. (But the set and the modem tester should be connected with 10:1 probe).
- Connect input terminal of modem tester to CAR/DEV TP.
- Input the Video Signal of 100% white to Video Input Jack.
- The terminal position of modem tester is operated to be ATT. 0dB, PAL/SECAM mode, Demod, Marker on.
- Adjust VR304 to right side in left maximum state so that 4.8MHz Marker on scope is agreed with the level of 100% white signal.

**Waveform**

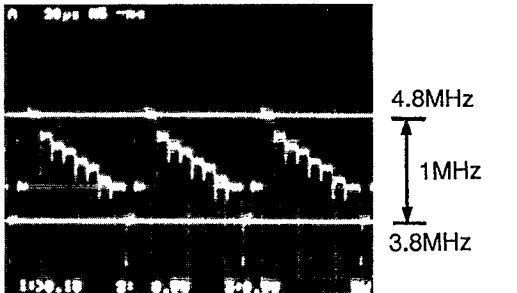
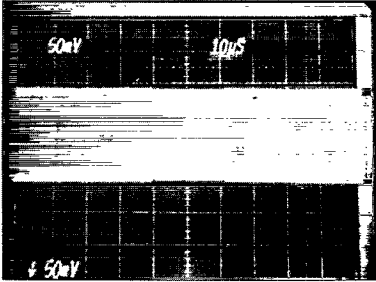


Fig 3-5

### 5) Recording Luminance Level Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Record (SP mode)	$250_{.10}^{+0}$ mVp-p	REC-Y TP	VR303 REC-Y
<b>Procedure:</b> a. Receive the PAL E-11 CH. b. Connect CH-1 terminal of the oscilloscope to VIDEO OUT TP. c. Connect CH-2 terminal of the oscilloscope to REC-Y TP. d. Adjust VR303 so that the luminance FM output is $250_{.10}^{+0}$ mVp-p.		<b>Waveform</b> 	
<b>Fig 3-6</b>			

## 3. Audio Circuit

### 1) Record Oscillation Voltage Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
Record	2.2mV RMS	PM402 Pin ⑭, ⑮	VR4M1
<b>Purpose :</b> This is for adjusting bias voltage to specification in recording.		<b>Procedure:</b> a. Connect the Level Meter terminal to PM402 Pin ⑭ and ⑮. b. Confirm that the Oscillation Voltage is 2.2mV RMS. c. At this time, Adjust VR4M1 and make the Oscillation voltage fit to specification.	

## 4. Hi-Fi Circuit

### 1) Fo Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
E.E (without signal)	$1.4\text{MHz} \pm 5\text{KHz}$ $1.8\text{MHz} \pm 5\text{KHz}$	IC403 Pin ④⑧	VR451 VR452
<b>Procedure:</b> A. With Jig for adjusting fo a. Connect the Jig input terminal for adjusting fo to IC403 Pin ④⑧ . b. Connect the Jig output terminal for adjusting fo to the Frequency Counter. c. Choose the 1.4MHz , 1.8MHz Switch of the Jig for adjusting fo. d. Adjust VR451 so that the Frequency Counter is $1.4\text{MHz} \pm 5\text{KHz}$ and VR452 so that the Frequency Counter is $1.8\text{MHz} \pm 5\text{KHz}$ .		B. Without Jig for adjusting fo a. Disconnect the P4803 connector Ass'y from Hi-Fi circuit board. b. Connect the IC403 Pin ④⑧ to the P4803 Pin ①. c. Connect the Frequency Counter to IC403 pin ④⑤ and adjust VR451 so that the Frequency Counter is $1.4\text{MHz} \pm 5\text{KHz}$ . d. Connect the Frequency Counter to IC403 Pin ⑤② and adjust VR452 so that the Frequency Counter is $1.8\text{MHz} \pm 5\text{KHz}$	
<b>Reference)</b> The Set and the Frequency Counter should be connected with 1:1 probe both A and B method.			

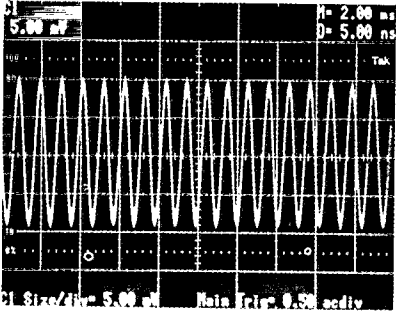
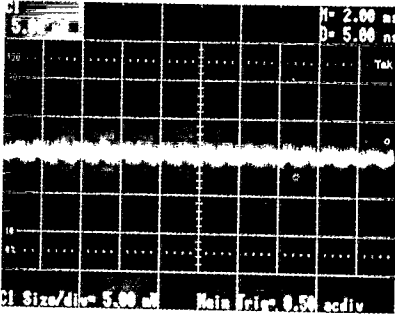


## 5. Tuner/IF Circuit

### 1) RF AGC Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
CCIR CH-11 Reception (Color Bar 70dB $\mu$ )	DC 4.7 $\pm$ 0.1V	TUNER AGC Terminal	VR7M1
<b>Procedure:</b> a. Be tuning CH-11 (strength of input electric field: 70dB $\mu$ $\pm$ 1dB $\mu$ ) fine. b. Connect the Digital Multimeter to TUNER AGC Terminal. c. Adjust VR7M1 so that the digital multimeter is DC 4.7 $\pm$ 0.1V.		<b>Reference)</b> Maintain the input gain in adjusting AGC faithfully.	

### 2) Stereo Correction Adjustment

MODE	SPECIFICATION	MEASUREMENT POINT	ADJUSTMENT POINT
CCIR CH-25 Reception (Stereo Mode, Without L CH)	Minimum	PM701 Pin (13) (IC703 Pin (14))	VR7M2
<b>Procedure:</b> a. Connect the Philips Pattern Generator to Video Input Terminal. b. Connect the oscilloscope to PM701 Pin (13). c. At this time, Video Signal Generator must be switched to Stereo mode.		d. Be tuning CH-25 fine. e. Adjust VR7M2 so that the monitor waveform is as shown in Fig. 3-7.	
<b>Waveform</b>			
 <p>Before Adjustment</p>		 <p>After Adjustment</p>	
<b>Fig. 3-7</b>			

#### \*Caution in testing

1. When practicing this adjustment, adjust after more than 10 minutes with TV set turning on.
2. Adjust after completing itself test of measuring apparatus.
3. Sweep OSC marker frequency is followed by Table 1.

#### \*Abbreviation

- APC: Adjacent Picture Carrier
- SIF: Sound Intermediate Frequency
- CIF: Color Intermediate Frequency
- CEN: Center Frequency
- PIF: Picture Intermediate Frequency
- ASC: Adjacent Sound Carrier

Table 1 Frequency Table

(MHz)

BROADCASTING SYSTEM	ADJUSTMENT MARKER FREQUENCY					
	APC	SIF	CIF	CEN	PIF	ASC
PAL (B/G)	31.90	33.40	34.47	36.00	38.90	40.40

3-5

A

B

C

D

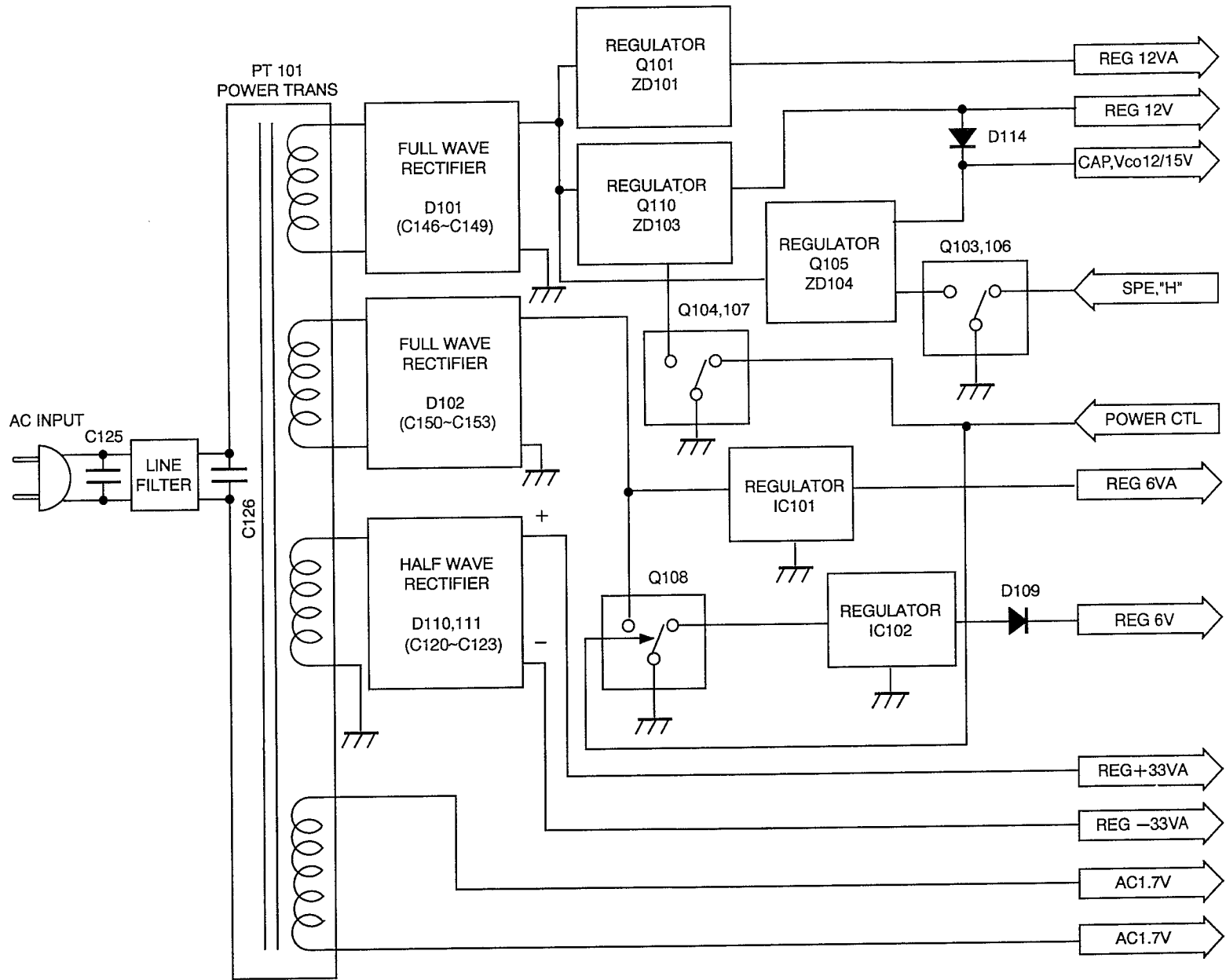
1

2

3

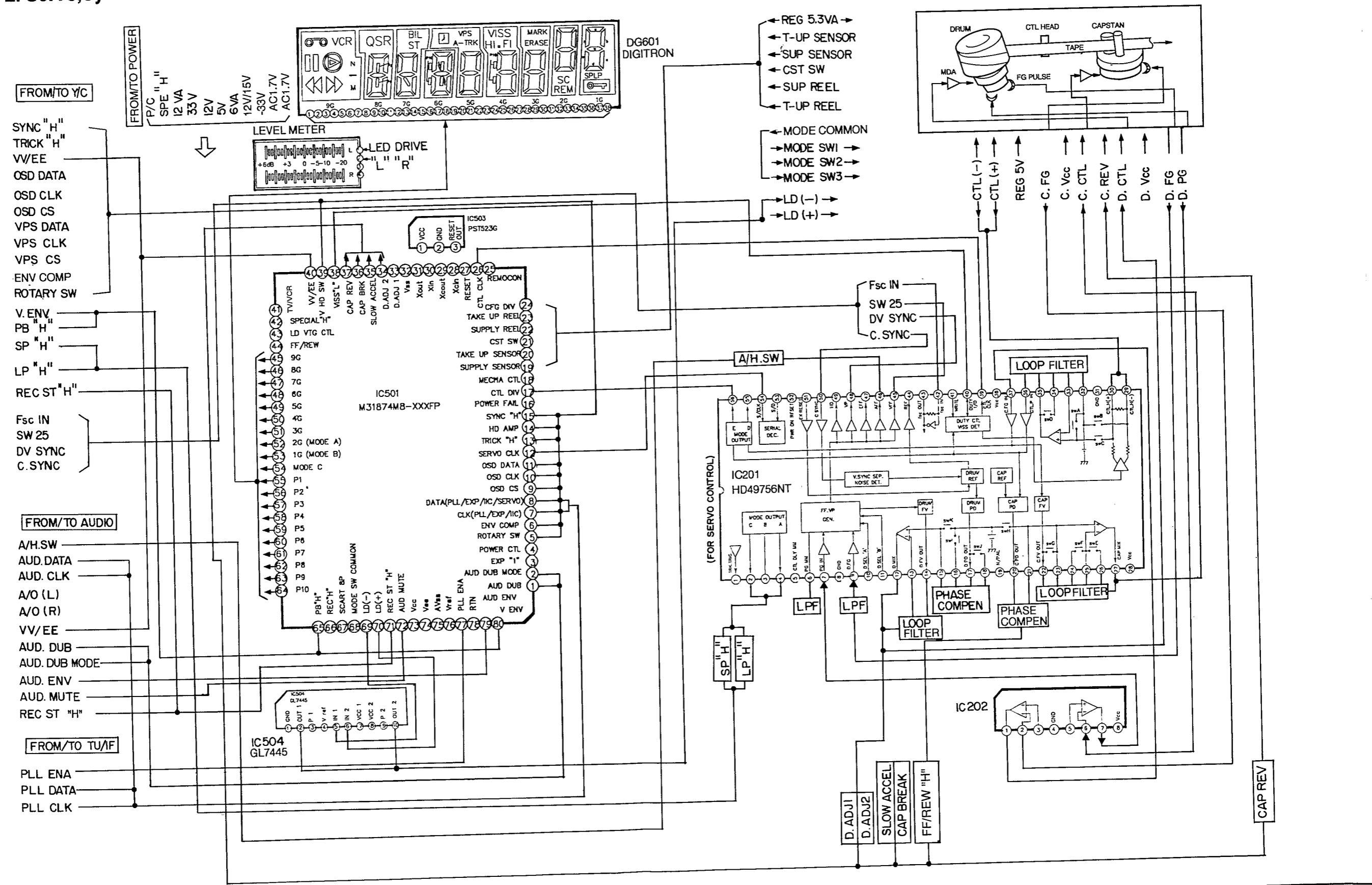
4

5

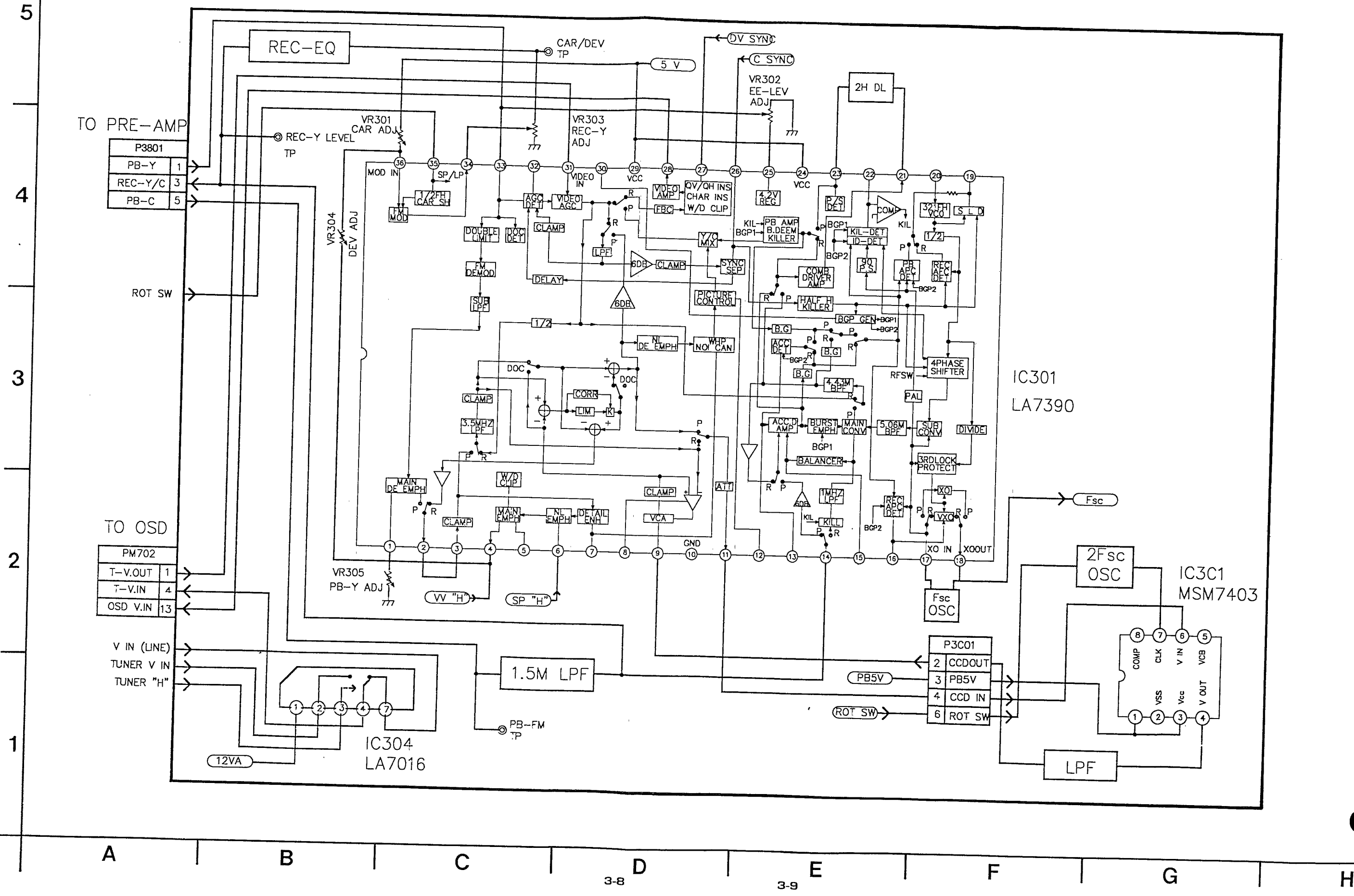


**BLOCK DIAGRAMS**  
**1. Power Block Diagram**

## 2. Servo, System Control & Timer Block Diagram.



### 3. Y/C Block Diagram



# 4. Normal Audio & Hi-Fi Block Diagram

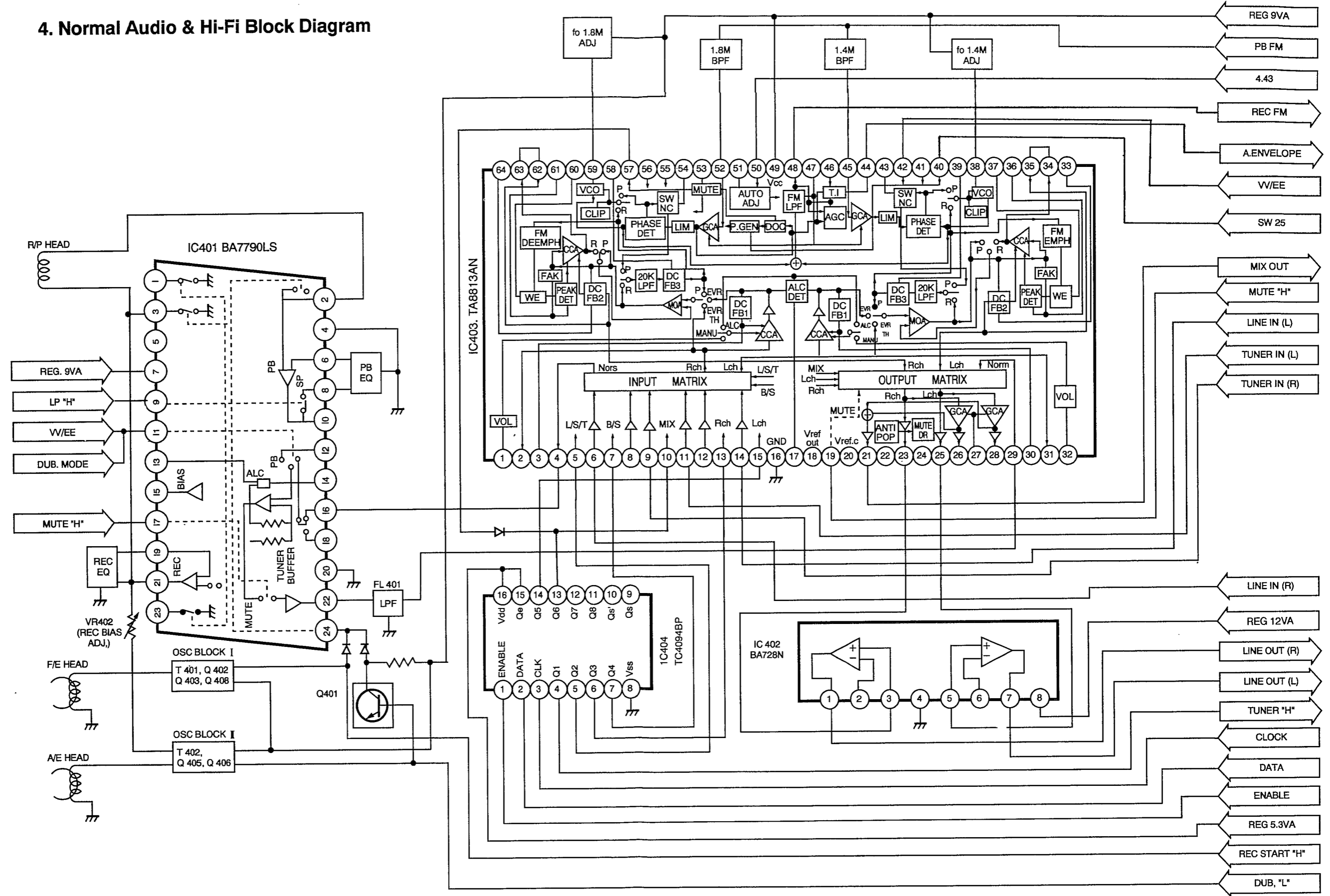
5

4

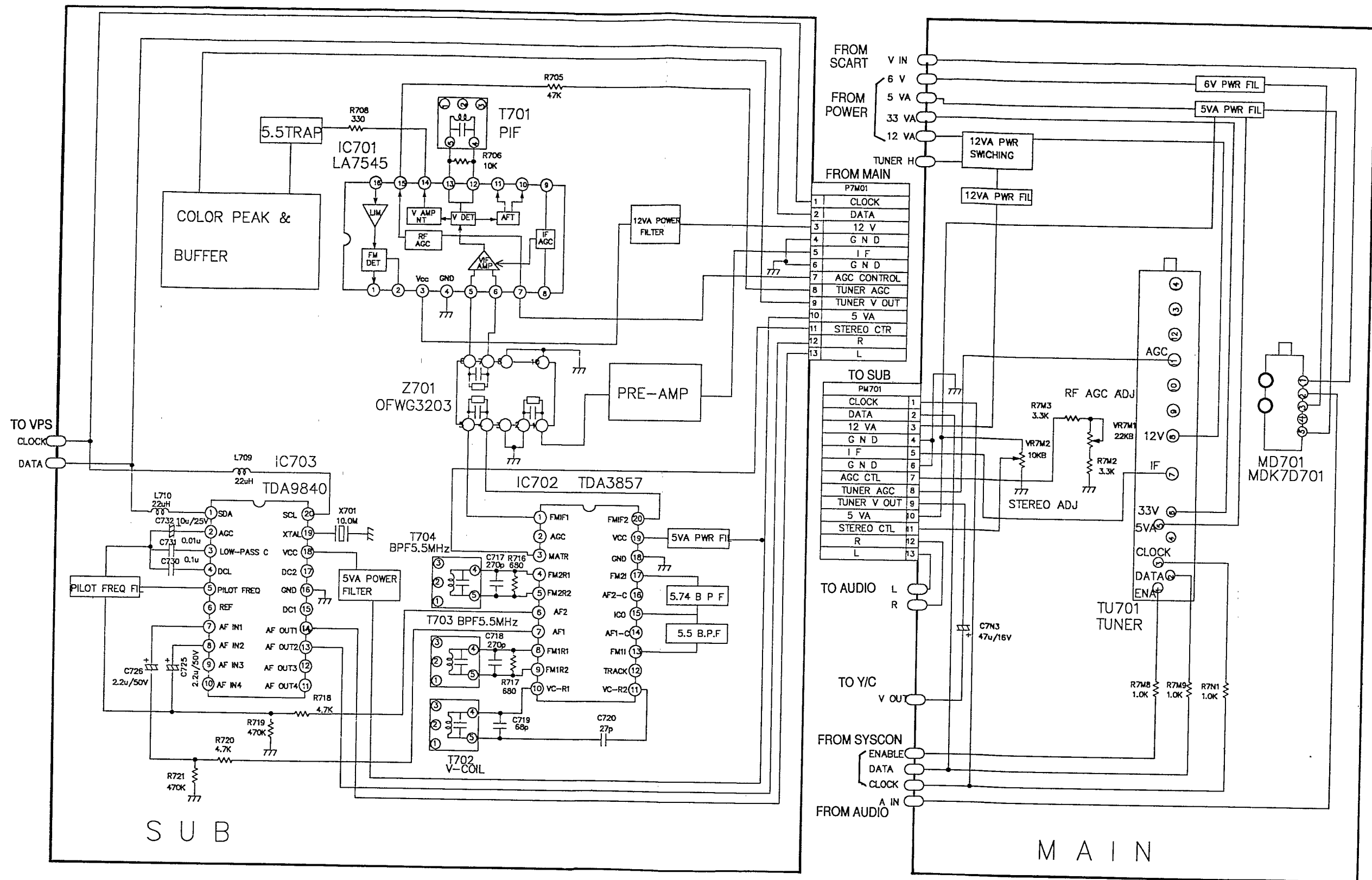
3

2

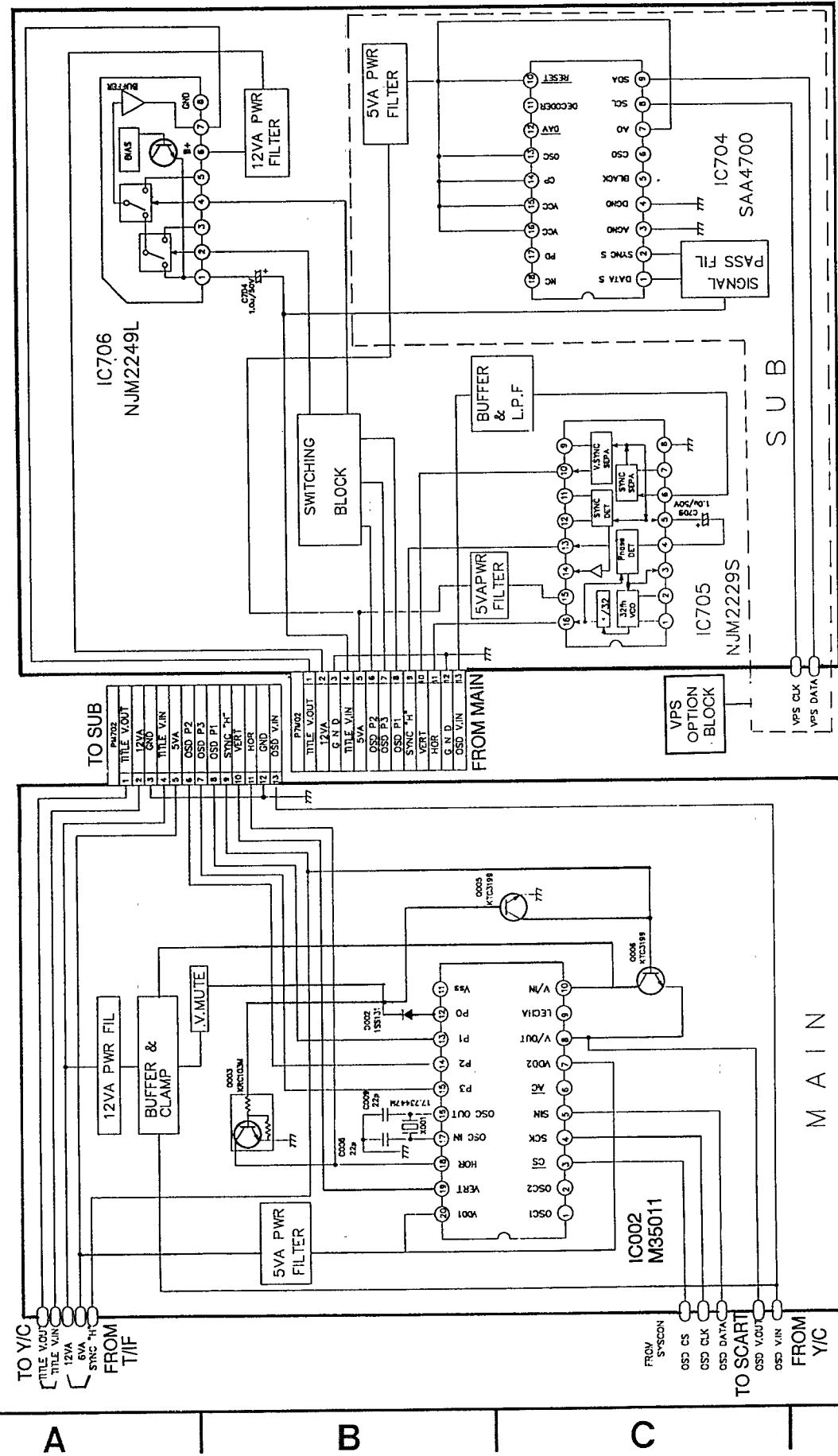
1



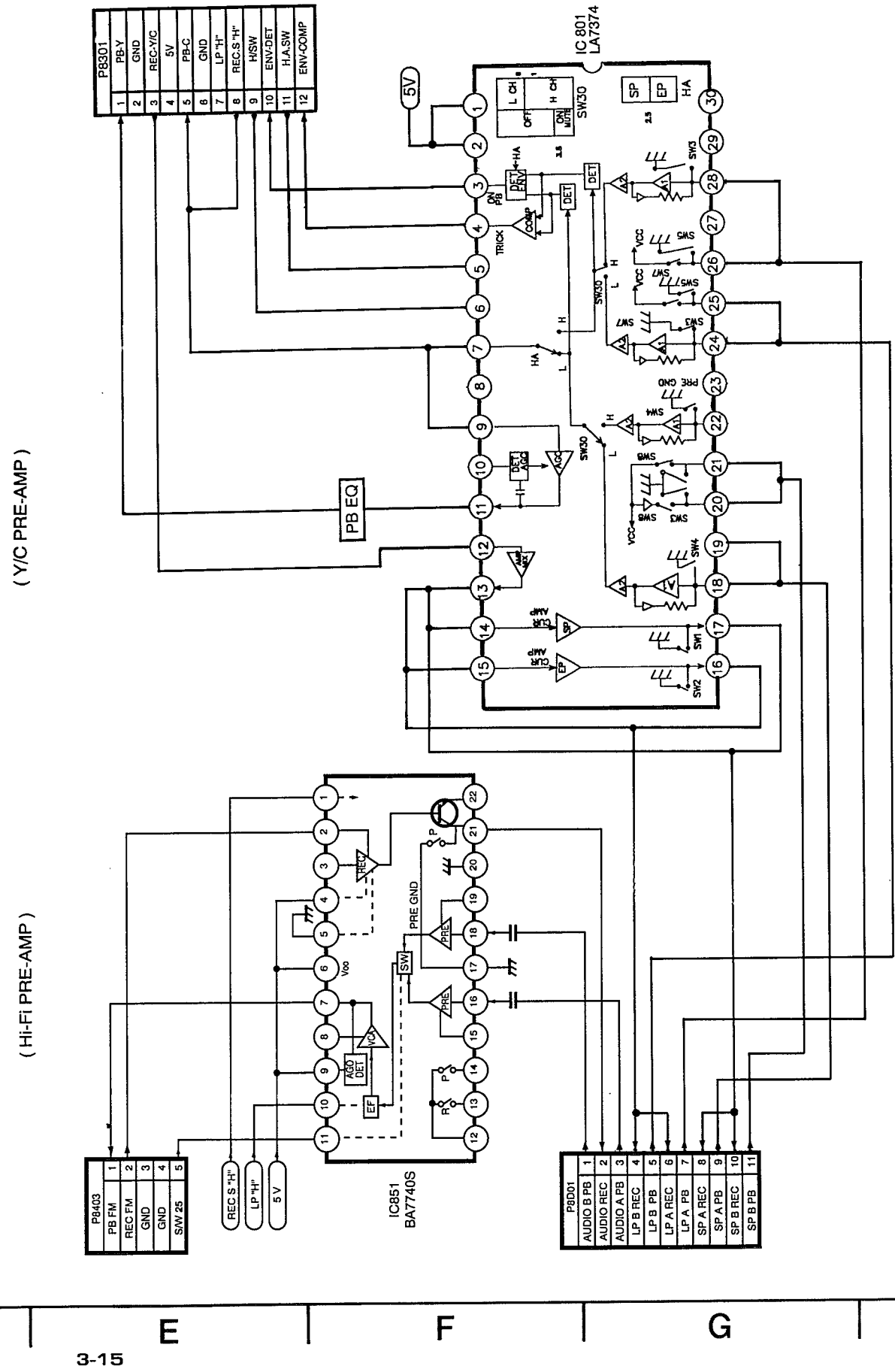
# 5. Tuner/IF Block Diagram



### 6. Function OSD / Title / VPS Block Diagram



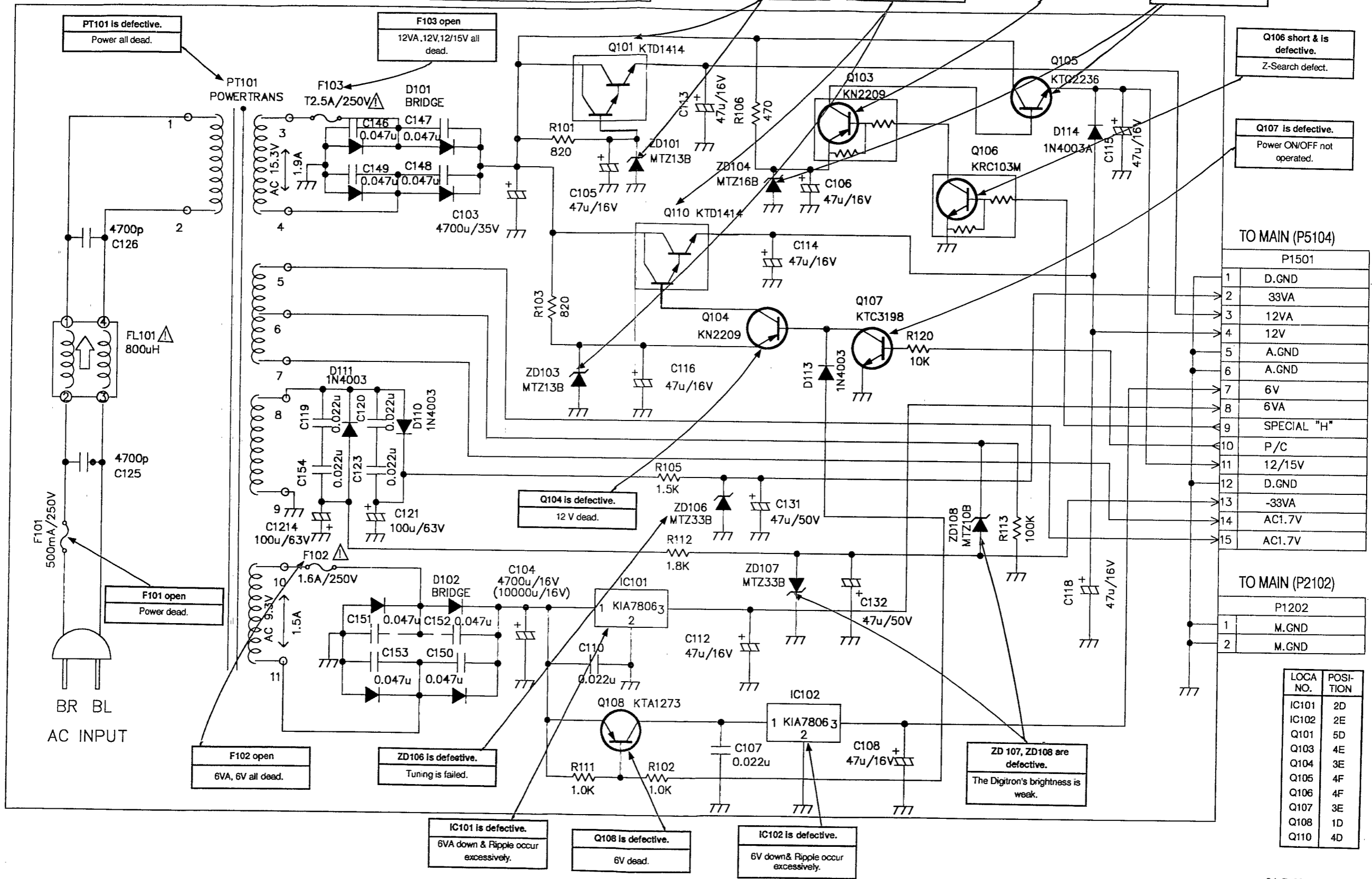
### 7. Pre-Amp Block Diagram



# CIRCUIT DIAGRAMS

## 1. Power Circuit Diagram

Note) The components identified by mark  $\Delta$  are critical for safety. Replace only with part number specified.



TO MAIN (P5104)

P1501	
1	D.GND
2	33VA
3	12VA
4	12V
5	A.GND
6	A.GND
7	6V
8	6VA
9	SPECIAL "H"
10	P/C
11	12/15V
12	D.GND
13	-33VA
14	AC1.7V
15	AC1.7V

TO MAIN (P2102)

P2102	
1	M.GND
2	M.GND

LOCA NO.	POSITION
IC101	2D
IC102	2E
Q101	5D
Q103	4E
Q104	3E
Q105	4F
Q106	4F
Q107	3E
Q108	1D
Q110	4D

PT101 is defective.  
Power all dead.

F103 open  
12VA, 12V, 12/15V all dead.

Q101, ZD101 are defective.  
12VA dead.

Q110, ZD103 are defective.  
12V dead.

Q103 is defective.  
12/15V dead.

Q105, ZD104 are defective.  
12/15V dead.

Q106 short & is defective.  
Z-Search defect.

Q107 is defective.  
Power ON/OFF not operated.

Q104 is defective.  
12V dead.

F101 open  
Power dead.

F102 open  
6VA, 6V all dead.

ZD106 is defective.  
Tuning is failed.

IC101 is defective.  
6VA down & Ripple occur excessively.

Q108 is defective.  
6V dead.

IC102 is defective.  
6V down & Ripple occur excessively.

ZD107, ZD108 are defective.  
The Digitron's brightness is weak.

5

4

3

2

1

A

B

C

D

E

F

G

H

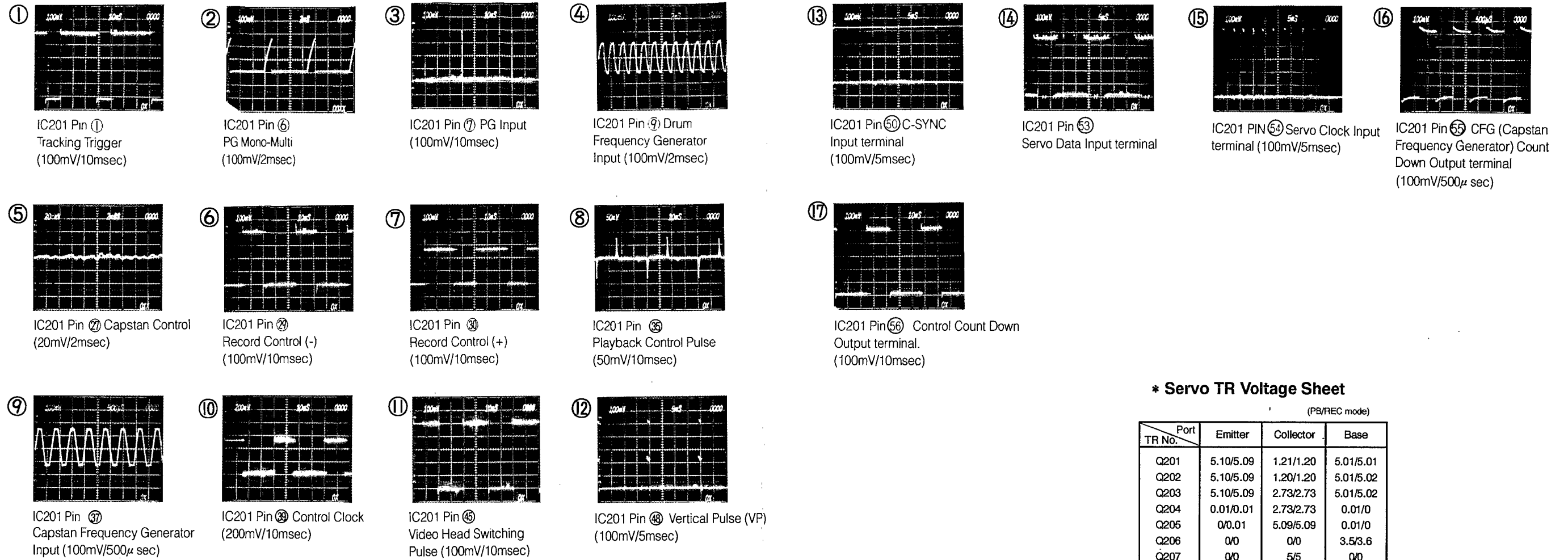
3-16

3-17





**\* Servo Waveform**



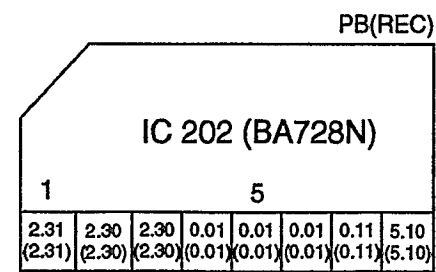
**\* Servo TR Voltage Sheet**

(PB/REC mode)

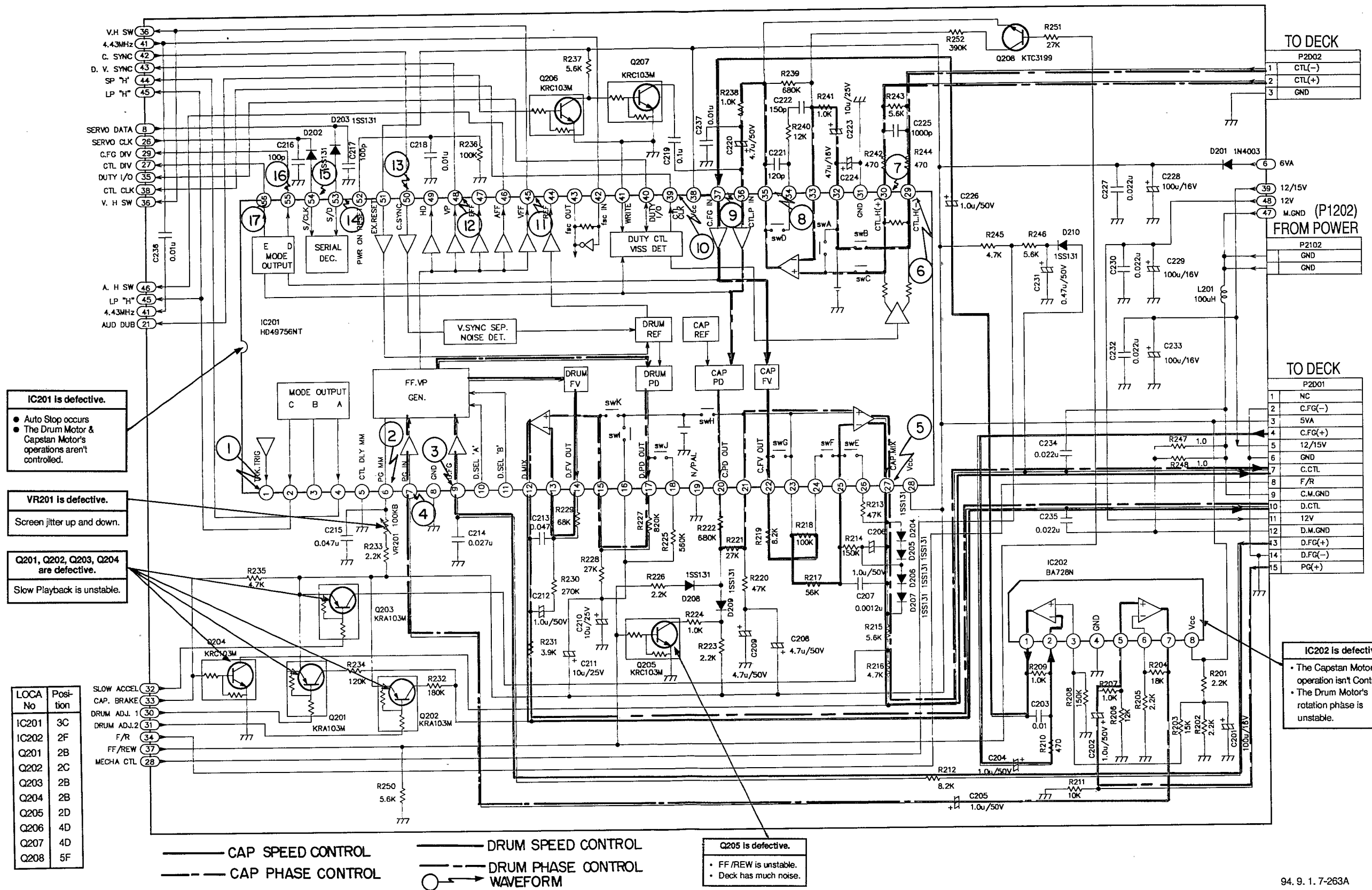
Port TR No.	Emitter	Collector	Base
Q201	5.10/5.09	1.21/1.20	5.01/5.01
Q202	5.10/5.09	1.20/1.20	5.01/5.02
Q203	5.10/5.09	2.73/2.73	5.01/5.02
Q204	0.01/0.01	2.73/2.73	0.01/0
Q205	0/0.01	5.09/5.09	0.01/0
Q206	0/0	0/0	3.5/3.6
Q207	0/0	5/5	0/0
Q208	2.5/2.5	2.5/2.5	0/0

**\* Servo IC Voltage Sheet**

PB(REC)																											
1.95	2.55	0.75	2.25	5.06	5.10	0.12	0.03	0.01	2.55	2.56	2.56	2.64	2.63	2.63	5.08	5.08	1.98	5.10	2.71	2.53	2.55	2.55	2.55	0	2.55	0.01	
(5.07)	(2.55)	(0.75)	(2.25)	(5.03)	(5.09)	(0.52)	(0.04)	(0.01)	(2.55)	(0.01)	(2.55)	(2.63)	(2.63)	(2.63)	(5.07)	(5.07)	(3.68)	(5.09)	(2.71)	(2.53)	(2.55)	(2.55)	(2.55)	(0.01)	(2.80)	(2.14)	
55	50				45				40				35				30										
IC201 (HD49756NT)																											
1	5				10				15				20				25										
3.68	0.01	0.01	5.04	0.01	0.29	2.11	0	2.67	2.67	2.68	1.32	2.55	2.56	2.57	2.56	2.56	2.42	0	2.58	2.58	2.58	2.58	2.58	2.57	2.67	2.70	5.10
(3.68)	(0.01)	(0.01)	(5.04)	(0)	(0.02)	(2.11)	(0.01)	(2.67)	(2.67)	(2.68)	(1.32)	(2.55)	(2.68)	(2.56)	(2.55)	(2.58)	(2.42)	(0.01)	(2.58)	(2.57)	(2.57)	(2.57)	(2.57)	(2.57)	(2.67)	(2.67)	(5.10)



### 3. Servo Circuit Diagram



**IC201 is defective.**

- Auto Stop occurs
- The Drum Motor & Capstan Motor's operations aren't controlled.

**VR201 is defective.**

- Screen jitter up and down.

**Q201, Q202, Q203, Q204 are defective.**

- Slow Playback is unstable.

LOCA No	Position
IC201	3C
IC202	2F
Q201	2B
Q202	2C
Q203	2B
Q204	2B
Q205	2D
Q206	4D
Q207	4D
Q208	5F

— CAP SPEED CONTROL  
 — DRUM SPEED CONTROL  
 - - - CAP PHASE CONTROL  
 - - - DRUM PHASE CONTROL  
 ○ → WAVEFORM

**Q205 is defective.**

- FF/REW is unstable.
- Deck has much noise.

**TO DECK**

P2D02	Terminal
1	CTL(-)
2	CTL(+)
3	GND

**FROM POWER**

P2102	Terminal
1	GND
2	GND
3	GND

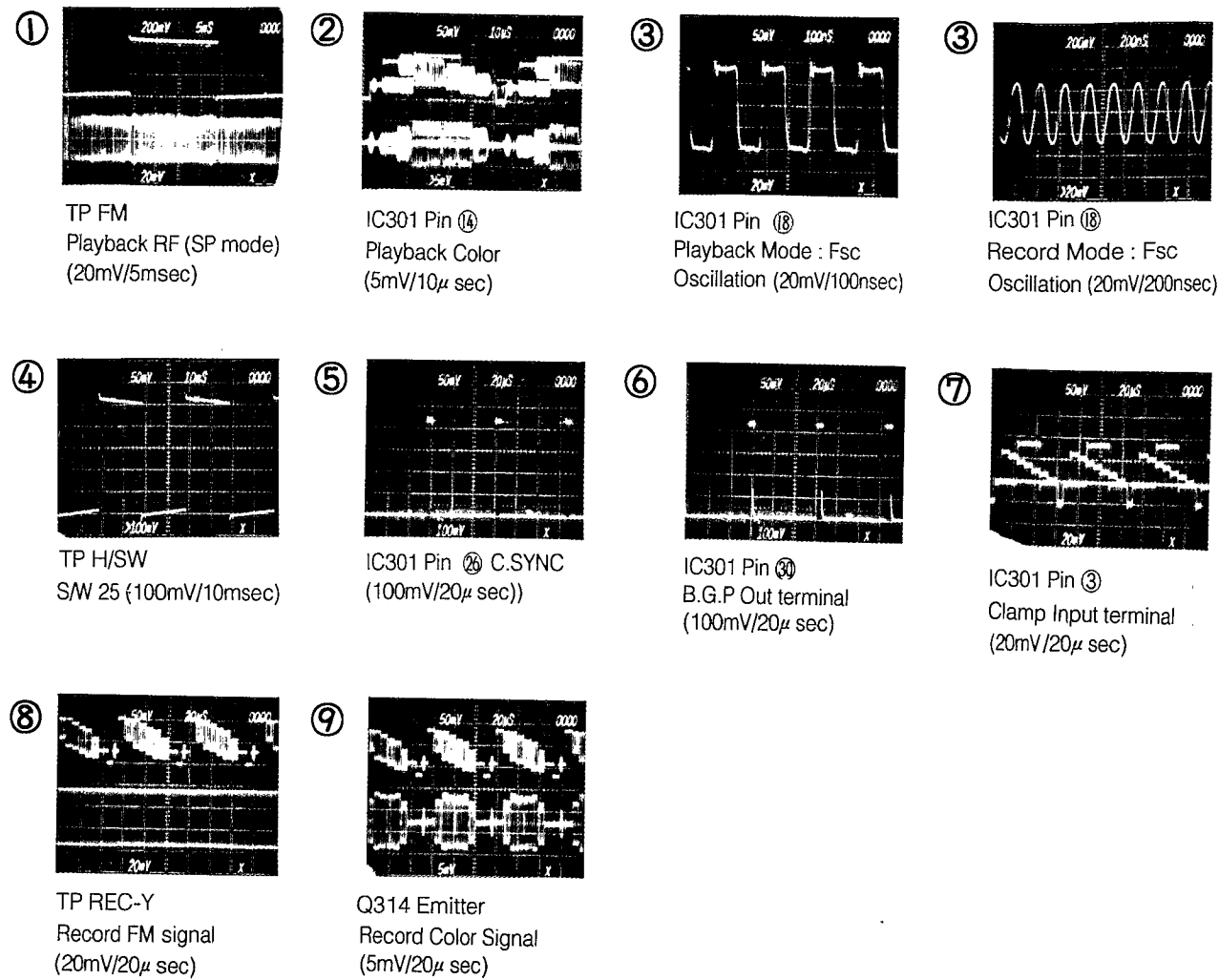
**TO DECK**

P2D01	Terminal
1	NC
2	C.FG(-)
3	5VA
4	C.FG(+)
5	12/15V
6	GND
7	C.CTL
8	F/R
9	C.M.GND
10	D.CTL
11	12V
12	D.M.GND
13	D.FG(+)
14	D.FG(-)
15	PG(+)

**IC202 is defective.**

- The Capstan Motor's operation isn't Controlled.
- The Drum Motor's rotation phase is unstable.

\* Y/C Waveform (When taking a photograph of waveform, set probe of oscilloscope to 10:1)



\* Y/C TR Voltage Sheet

TR No.	Port	Emitter	Collector	Base	Remark
Q302		0/0	0/0	0/0	SP mode
Q303		0/0	0/0	0/5.01	LP mode
Q304		3.93/3.03	0/0	2.78/2.41	
Q305		4.0/3.64	0/0	3.4/3.03	
Q306		0/0	0/0	5.04/0	
Q312		0/0	0/5.1	5.09/0	
Q313		5.11/5.1	5.05/0	4.32/5.1	
Q314		1.0/0.63	0/0	0.39/0	
Q321		2.79/0	5.03/0	3.40/0	
Q322		0.89/0	1.56/0	1.51/0	
Q323		0.95/0	5.03/0	1.56/0	
Q3C1		1.17/0	5.05/0	1.78/0	
Q3C2		2.01/0	0/0	1.38/0	
Q3C3		2.8/0	5.01/0	3.41/0	

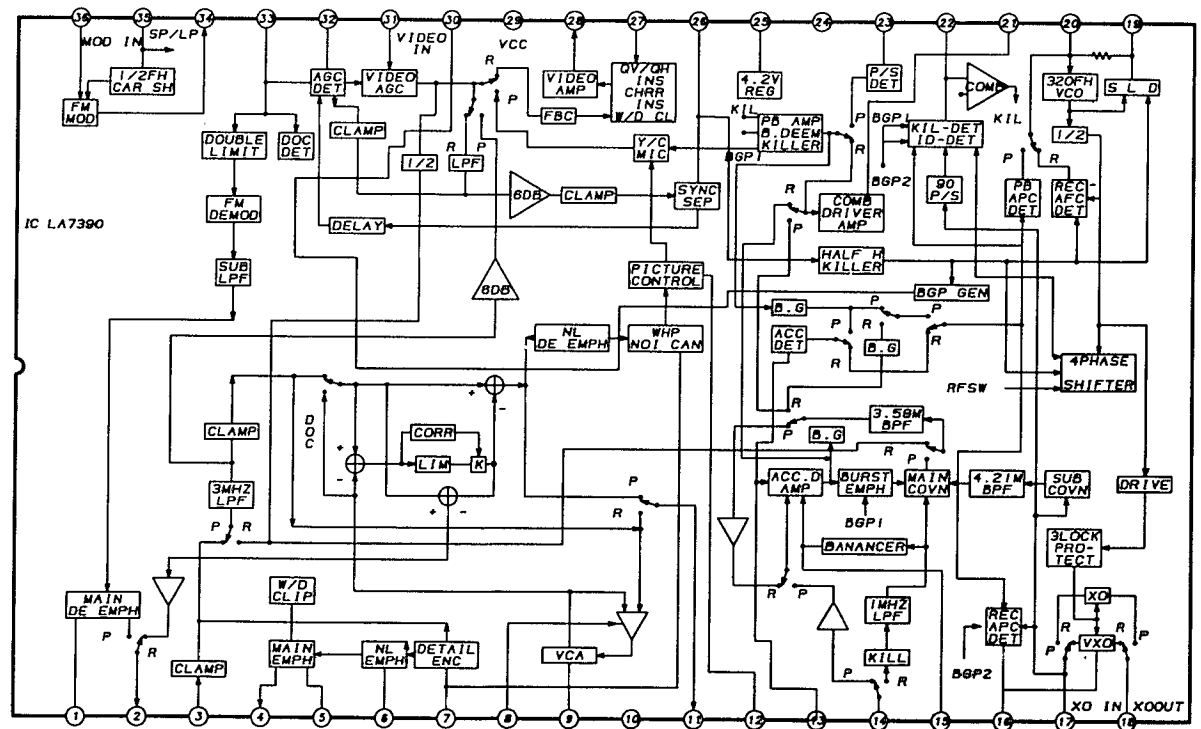
\* Y/C IC Voltage Sheet

PAL mode													PB(REC)				
2.38	0.63	3.63	3.37	1.44	3.21	0.57	4.96	2.05	0	0.53	4.19	4.96	1.96	1.98	2.69	3.20	3.19
(2.41)	(0.63)	(3.21)	(3.37)	(1.40)	(3.21)	(0)	(4.99)	(2.02)	(0)	(0.51)	(4.19)	(4.95)	(1.96)	(1.99)	(2.54)	(3.20)	(3.19)
2.45 : PB (2.44) : (REC) MESECAM mode													30 25 PB : 3.94 (REC) : (3.93) MESECAM mode				
IC 301 (LA7390)													20				
1			5			10			15								
2.32	2.79	2.48	4.44	4.43	4.50	2.39	3.16	2.13	0	2.05	2.51	1.73	2.96	2.27	2.18	3.65	2.55
(0)	(2.42)	(2.75)	(2.68)	(2.68)	(4.49)	(2.29)	(2.25)	(2.13)	(0)	(2.09)	(2.53)	(1.69)	(2.97)	(2.55)	(2.19)	(3.66)	(3.26)

PB(REC)				
8.51	2.60	2.12	2.05	
(0)	(0)	(0)	(0.2)	
IC3C1 (MSM7403)				
5				
1				
5.01	0	5.01	3.42	
(0)	(0)	(0)	(0)	

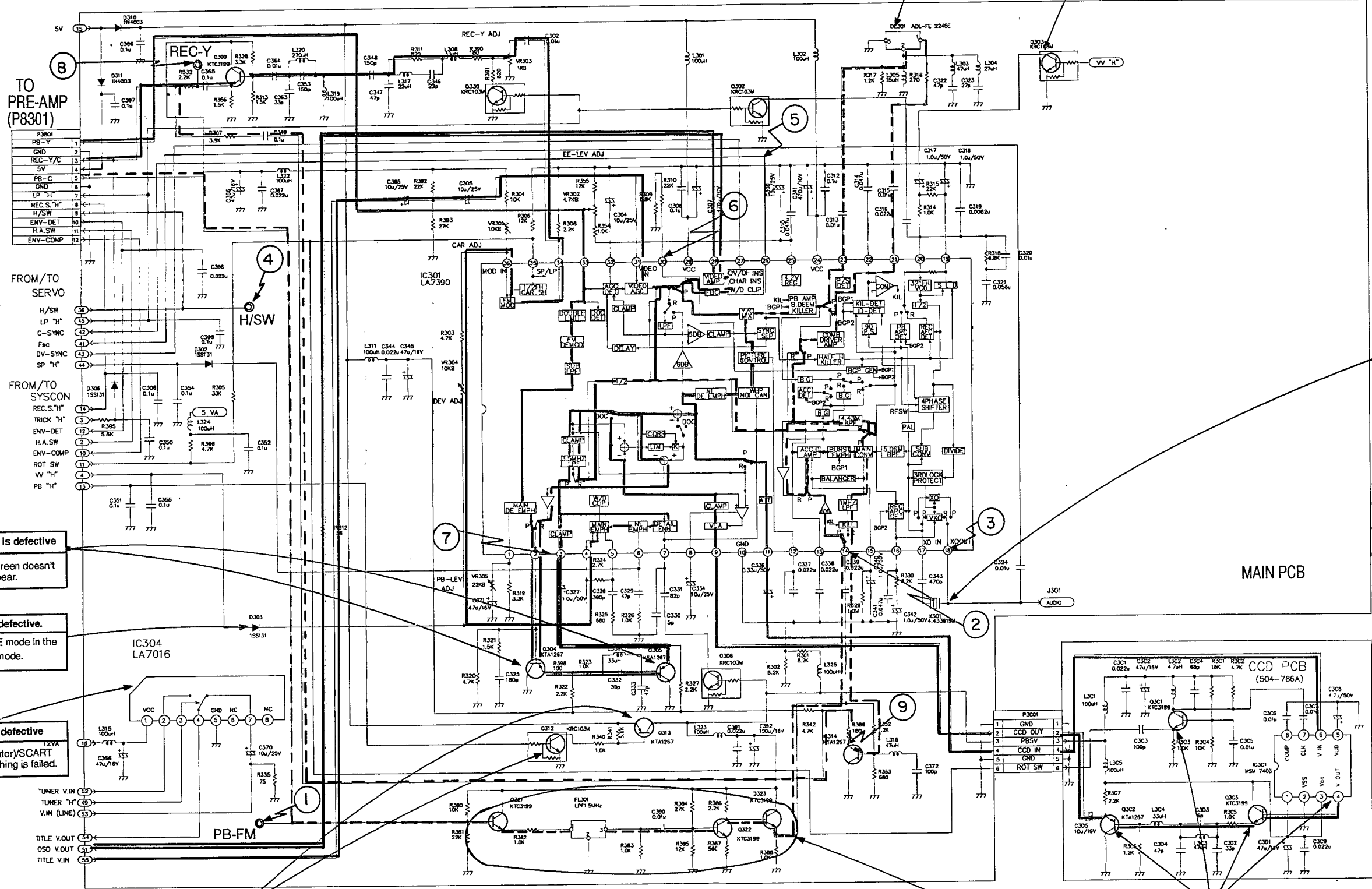
PB(REC)						
IC 304 (LA7016)						
1						
5						
11.7	7.64	0	6.96	0	0	7.6
(11.6)	(7.58)	(0)	(6.9)	(0)	(0)	(7.54)

\*IC301 (LA7390) Block Diagram



# 4. Y/C Circuit Diagram

5  
4  
3  
2  
1



**Q304, Q305 is defective**  
Playback screen doesn't appear.

**D303 is defective.**  
Switch to EE mode in the PB mode.

**IC304 is defective**  
TU (Modulator)/SCART Video Switching is failed.

**Q312, Q313 are defective.**  
Playback is failed.

— PB Y SIGNAL — REC Y SIGNAL  
- - - PB C SIGNAL - - - REC C SIGNAL  
○ → WAVEFORM

**Q321, Q322, Q323, FL301 are defective.**  
No color in the PB mode.

**Q3C1, Q3C2, Q3C3, IC101 are defective.**  
• Drop-out compensation is failed.  
• Screen is defective in the PB mode.

**DL301 is defective.**  
Horizontal line beat appears on the color signal.

**Q303 is defective.**  
Color signal is defective or Beat occurs.

**X301 is defective.**  
• No color.  
• Drum speed not controlled.

LOCA. No	Position
IC301	3D
IC303	4F
IC304	2B
IC3C1	2G
Q302	5D
Q303	5F
Q304	2C
Q305	2D
Q306	2D
Q307	4F
Q309	5B
Q312	2C
Q313	2D
Q314	2E
Q321	1C
Q322	1D
Q323	1E
Q330	5C
Q3C1	2F
Q3C2	1F
Q3C3	1G

A B C D E F G H

# 5. Audio Circuit Diagram

5  
4  
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2  
1

TO PRE-AMP (P8403)

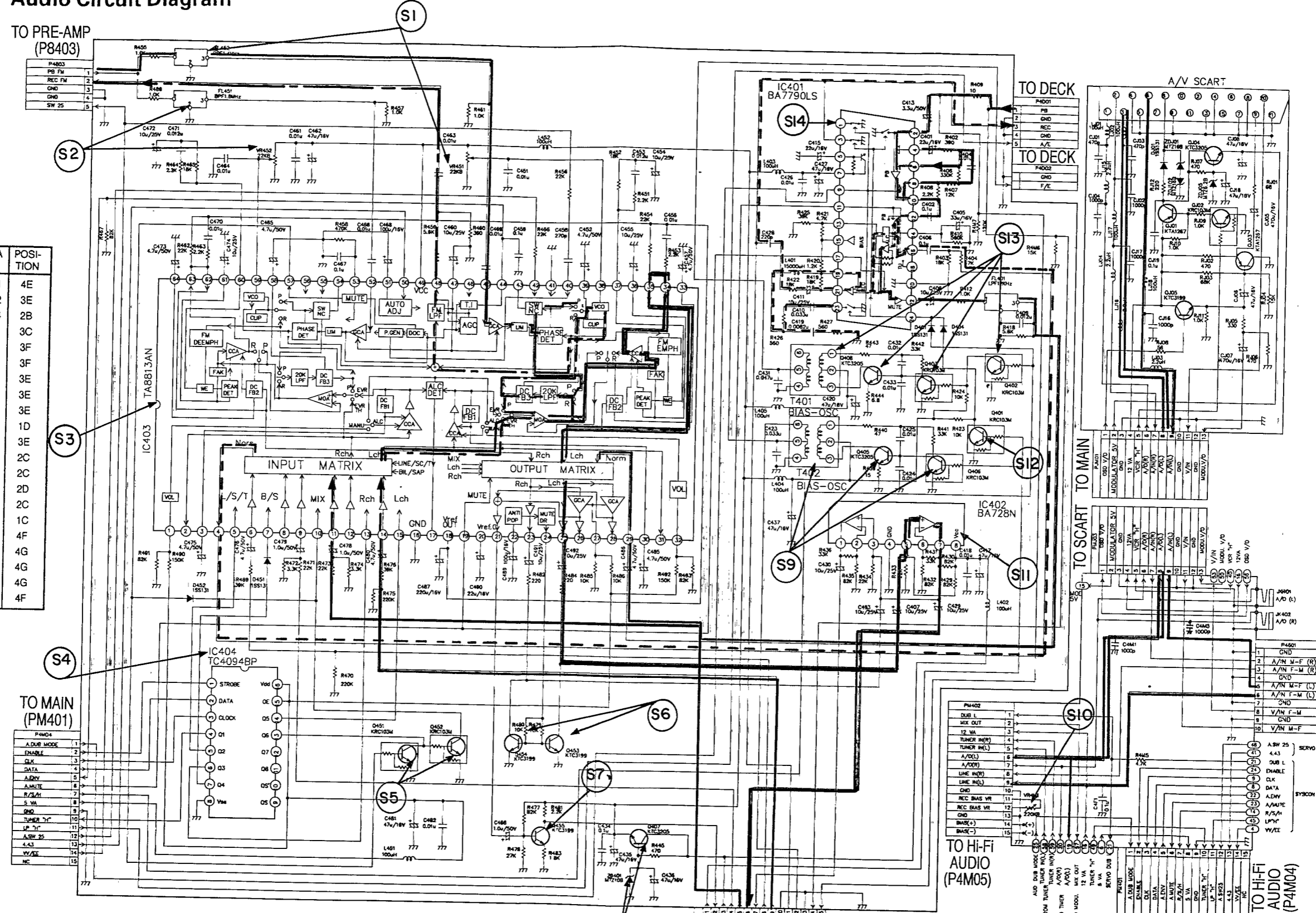
LOCA NO.	POSITION
IC401	4E
IC402	3E
IC404	2B
IC451	3C
Q401	3F
Q402	3F
Q403	3E
Q405	3E
Q406	3E
Q407	1D
Q408	3E
Q451	2C
Q452	2C
Q453	2D
Q454	2C
Q455	1C
QJ01	4F
QJ02	4G
QJ03	4G
QJ04	4G
QJ05	4F

TO MAIN (PM401)

P404	FUNCTION
1	A/DUB MODE
2	ENABLE
3	CLK
4	DATA
5	A/ENV
6	A/MUTE
7	B/S/21
8	S VA
9	SPD
10	TUNER "H"
11	A SW 25
12	L 4.3
13	VV/EE
14	NC
15	NC

— Hi-Fi & NORMAL AUDIO PB MODE  
 - - - NORMAL AUDIO REC MODE

— Hi-Fi(L) EE MODE  
 - - - Hi-Fi(L) REC MODE



A B C D E F G H

**\* Audio Symptom Defect**

- |                                 |                             |
|---------------------------------|-----------------------------|
| <b>S1</b>                       | VR451, FL452 are defective. |
| Hi-Fi Audio signal (L CH) dead. |                             |
- |                                |                             |
|--------------------------------|-----------------------------|
| <b>S2</b>                      | VR452, FL451 are defective. |
| Hi-Fi Audio signal(R CH) dead. |                             |
- |                          |                     |
|--------------------------|---------------------|
| <b>S3</b>                | IC403 is defective. |
| No Hi-Fi & Normal Audio. |                     |
- |   |                     |
|---|---------------------|
| <b>S4</b>                                 | IC404 is defective. |
| Input, output Matrix Switching is failed. |                     |
- 
- |   |                   |
|---|-------------------|
| <b>S5</b>                                   | Q451, Q452 short. |
| Hi - Fi & Normal Audio mixing are unstable. |                   |
- |                            |                   |
|----------------------------|-------------------|
| <b>S6</b>                  | Q453, Q454 short. |
| Hi - Fi Audio signal mute. |                   |
- |                                |             |
|--------------------------------|-------------|
| <b>S7</b>                      | Q455 short. |
| Modulator Audio output defect. |             |
- |                          |                            |
|--------------------------|----------------------------|
| <b>S8</b>                | Q407, ZD401 are defective. |
| No Hi-Fi & Normal Audio. |                            |
- 
- |                                |                                 |
|--------------------------------|---------------------------------|
| <b>S9</b>                      | Q405, Q406, T402 are defective. |
| Audio Erase Head is defective. |                                 |
- |                            |                     |
|----------------------------|---------------------|
| <b>S10</b>                 | VR4M1 is defective. |
| Normal Audio not recorded. |                     |
- |                 |                     |
|-----------------|---------------------|
| <b>S11</b>      | IC402 is defective. |
| No Hi-Fi Audio. |                     |
- |                          |                    |
|--------------------------|--------------------|
| <b>S12</b>               | Q401 is defective. |
| Audio Dubbing is failed. |                    |
- 
- |                               |                                       |
|-------------------------------|---------------------------------------|
| <b>S13</b>                    | Q402, Q403, Q408, T401 are defective. |
| Full Erase Head is defective. |                                       |
- |   |                     |
|---|---------------------|
| <b>S14</b>                                    | IC401 is defective. |
| Normal Audio Playback & Recording are failed. |                     |

**\* Audio TR Voltage Sheet**

(PB/REC mode)

Port TR No.	Emitter	Collector	Base
Q401	0/0	0/8.9	5/0
Q402	0/0	6.3/0	0.35/5.0
Q403	0/0	0/0.7	6.3/0
Q405	0/0.5	9.1/8.8	0/1.0
Q406	0/0	0/1.0	5/0
Q407	9.2/9.2	12/12	9.8/9.8
Q408	0/0.33	9.1/8.9	0/0.7
Q451	0/0	5.2/5.2	0.5/0
Q452	0/0	0/0	5.2/5.2
Q453	0/0	0.1/0.1	0.1/0.1
Q454	0/0	0.1/0.1	0.1/0.1
Q455	1.6/1.6	6.7/6.7	2.2/2.2

**\* Audio IC Voltage Sheet**

PB(REC)

3.5 (3.5)	0 (0)	3.6 (3.6)	3.6 (3.6)	3.6 (3.6)	4.2 (4.1)	0 (0.6)	4.2 (4.1)	4.2 (4.1)	0 (0)	4.2 (4.2)	1.1 (8.6)
10			20			24					
IC 401 (BA7790LS)											
1			5			15					
0 (0)	0 (0.2)	9 (9)	9.2 (9.1)	0 (0)	5 (0)	3.8 (3.8)	4.2 (4.2)	0.6 (0.6)	4.2 (4.2)	4.2 (4.2)	0.1 (0)

PB(REC)

IC 402 (BA728N)							
1				5			
5.6 (5.6)	2.6 (2.6)	2.5 (2.5)	0 (0)	2.5 (2.5)	2.5 (2.5)	5.4 (5.4)	12 (12)

PB(REC)

4.9 (4.9)	4.9 (4.9)	4.9 (4.9)	0 (0)	0 (0)	4.9 (4.9)	2.0 (2.0)	2.0 (2.0)
15				10			
IC404 (TC4094BP)							
1				5			
0 (0)	0.2 (0.2)	0 (0)	4.8 (4.8)	0 (0)	4.9 (4.9)	4.9 (4.9)	0 (0)

PB(REC)

4.4 (4.4)	4.4 (4.4)	4.4 (4.4)	0.3 (0.3)	4.5 (4.47)	5 (5)	4.9 (4.6)	0.5 (0)	0 (0)	0 (0)	3.8 (3.8)	1.7 (1.7)	3.7 (3.9)	2.0 (2)	3.0 (3.1)	9 (9)	5.5 (5.3)	1.2 (1.3)	2.5 (2.6)	3.7 (3.9)	3.0 (0)	3.8 (3.8)	4.3 (0.7)	0 (0)	3.7 (3.9)	4.8 (4.6)	4.3 (4.3)	4.4 (4.4)	0.4 (0.4)	4.4 (4.4)	4.4 (4.4)	4.4 (4.4)																															
64						60						55						50						45						40						35																										
IC 403 (TA8813AN)																																																														
1									5									10									15									20									25									30								
1.75 (1.75)	4.5 (4.43)	4.5 (4.44)	4.5 (4.45)	0 (0)	4.4 (4.43)	4.5 (4.47)	4.4 (4.43)	4.4 (4.40)	0 (0)	4.4 (4.40)	4.4 (4.43)	4.9 (4.9)	4.4 (4.43)	4.9 (4.9)	0 (0)	0.2 (0.5)	4.4 (4.4)	0.6 (0.6)	4.4 (4.4)	4.5 (4.4)	7.5 (7.5)	4.5 (4.5)	0 (0)	4.5 (4.5)	4.4 (4.4)	2.5 (2.5)	4.5 (4.5)	4.4 (4.4)	4.5 (4.4)	4.4 (4.6)	4.4 (4.4)	1.78 (1.78)																														

**\* System Control TR Voltage Sheet**

(PB/REC mode)

Port TR No.	Emitter	Collector	Base
Q501	0.01/0.01	0.01/0.01	5.10/5.10
Q502	0.01/0.01	Pulse	Pulse
Q503	0.01/0.01	Pluse	Pulse

**\* System Control IC Voltage Sheet**

PB(REC)

5.01 (5.01)	0.01 (0.01)	5.01 (4.97)	5.01 (4.97)
IC 502 <sup>5</sup> (X24C02)			
1			
0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)

PB(REC)

IC503 (PST523G)		
1		
5.03 (5.03)	0 (0)	5.04 (5.04)

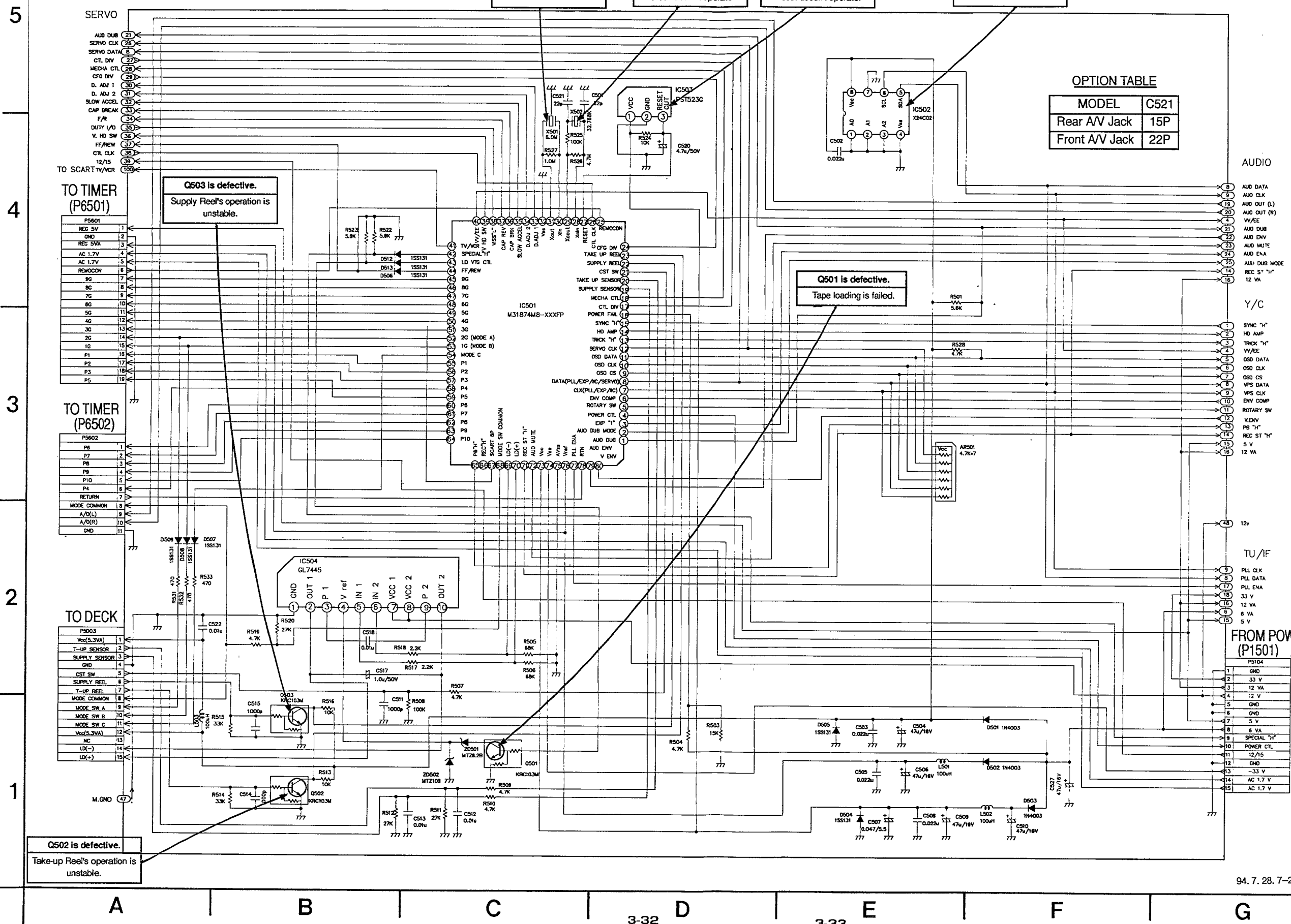
PB(REC)

IC504 (GL7445)									
1	5								10
0.01 (0.02)	0.56 (0.57)	0.80 (0.81)	0.92 (0.36)	1.79 (1.79)	1.78 (1.78)	12.03 (11.9)	12.03 (11.9)	0.81 (0.82)	0.56 (0.57)

PB (REC)		5.0 (0.0)	2.5 (2.5)	0.0 (5.0)	0.0 (0.0)	0.0 (0.0)	5.0 (5.0)	5.0 (5.0)	5.0 (5.0)	0.0 (0.0)	2.0 (2.0)	2.4 (2.3)	2.5 (2.4)	2.5 (2.4)	5.0 (2.0)	2.0 (3.7)	4.9 (4.6)		
PB (REC)	5 (5)	40					35											25	Pulse (Pulse)
PB (REC)	-27 (-27)																		Pulse (Pulse)
	5 (5)																		Pulse (Pulse)
	-27 (-27)																		5.0 (5.0)
	-27 (-27)	45																20	0.0 (0.0)
	-27 (-27)																		0.0 (0.0)
	-27 (-27)																		5.0 (5.0)
	-27 (-27)																		Pulse (Pulse)
	-27 (-27)																		4.5 (3.67)
	-27 (-27)	50																15	4.0 (0.06)
	-27 (-27)																		0.0 (5.0)
	-27 (-27)																		0.0 (5.0)
	-18 (-18.5)																		0.0 (0.07)
	-25 (-26.0)																		5.0 (5.0)
	-18.4 (-16)	55																	5.0 (0.0)
	-27 (-27)																		5.0 (0.0)
	-27 (-27)																		4.5 Pulse (4.5 Pulse)
	-24 (-24)																		4.5 Pulse (4.5 Pulse)
	-19 (2)																		0.0 (0.0)
	-13 (16)	60																	Pulse (Pulse)
	-24 (24)																		5.0 (5.0)
	-22 (22)																		0.0 (0.0)
	-27 (27)																		5.0 (0.0)
	-27 (24)	65																	5.0 (0.0)
PB (REC)		5 (5)	0 (0)	0 (0)	3.9 (0)	5 (0)	5 (0)	0.4 (5)	0.6 (-0.6)	5.0 (-5.0)	-27 (-27)	0 (0)	5.26 (5.26)	0.0 (0.0)	5.0 (5.0)	3.9 (3.9)	2.2 (0.0)		



# 6. System Control Circuit Diagram



**X501 is defective.**  
 • Digitron doesn't operate.  
 • System control is unstable.

**X502 is defective.**  
 Clock doesn't operate.

**IC503 is defective.**  
 Reset doesn't operate.

**IC502 is defective.**  
 Memory of CH is unstable.

**Q503 is defective.**  
 Supply Reel's operation is unstable.

**Q501 is defective.**  
 Tape loading is failed.

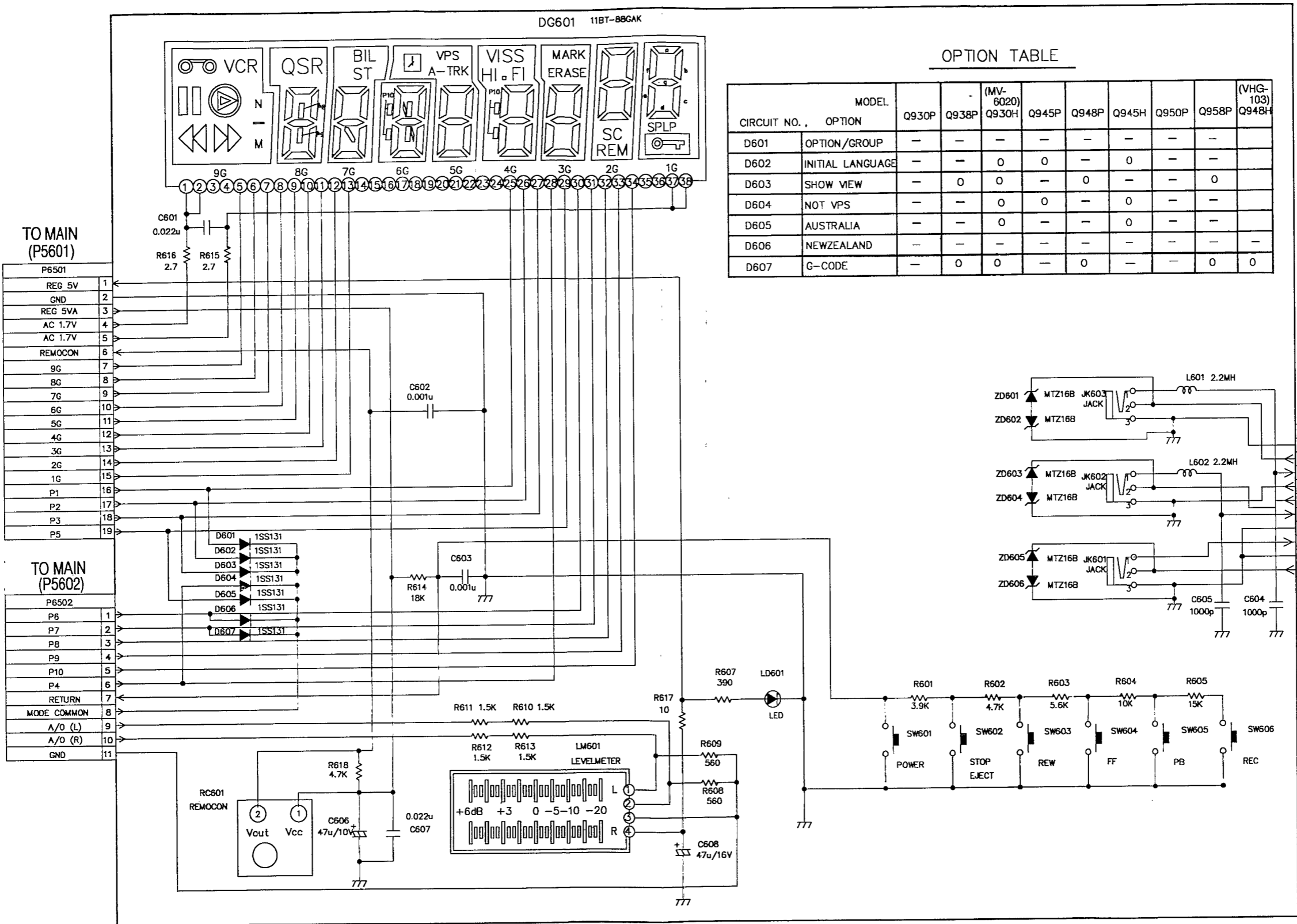
**Q502 is defective.**  
 Take-up Reel's operation is unstable.

**OPTION TABLE**

MODEL	C521
Rear A/V Jack	15P
Front A/V Jack	22P

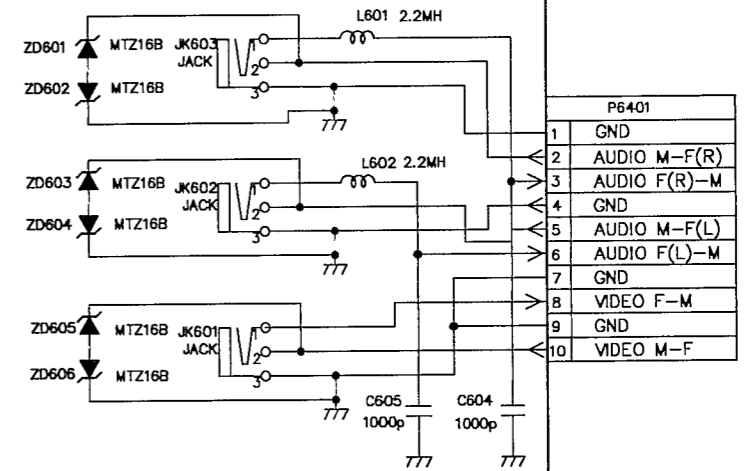
LOCA NO.	POSITION
IC501	3C
IC502	4E
IC503	4D
IC504	2C
Q501	1C
Q502	1B
Q503	1B

# 7. Timer Circuit Diagram



OPTION TABLE

CIRCUIT NO.	MODEL	Q930P	Q938P	(MV-6020) Q930H	Q945P	Q948P	Q945H	Q950P	Q958P	(VHG-103) Q948H
D601	OPTION/GROUP	-	-	-	-	-	-	-	-	-
D602	INITIAL LANGUAGE	-	-	0	0	-	0	-	-	-
D603	SHOW VIEW	-	0	0	-	0	-	-	0	-
D604	NOT VPS	-	-	0	0	-	0	-	-	-
D605	AUSTRALIA	-	-	0	-	-	0	-	-	-
D606	NEWZEALAND	-	-	-	-	-	-	-	-	-
D607	G-CODE	-	0	0	-	0	-	-	0	0



P6401	Pin	Signal
	1	GND
	2	AUDIO M-F(R)
	3	AUDIO F(R)-M
	4	GND
	5	AUDIO M-F(L)
	6	AUDIO F(L)-M
	7	GND
	8	VIDEO F-M
	9	GND
	10	VIDEO M-F

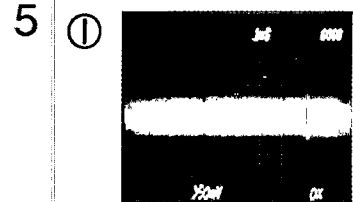
94. 7. 28. 7-267C

5  
4  
3  
2  
1

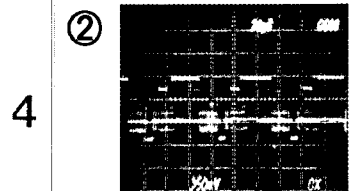
A B C D E F G H

# 8. Tuner/IF Circuit Diagram

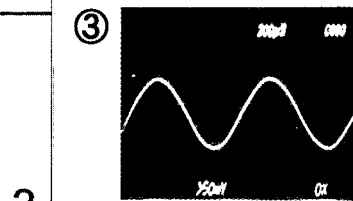
## \* Tuner/IF Waveform



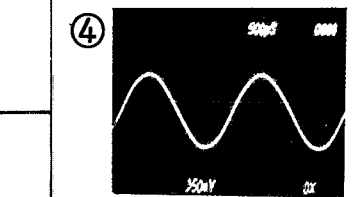
Q701 Base  
(50mV/1msec)



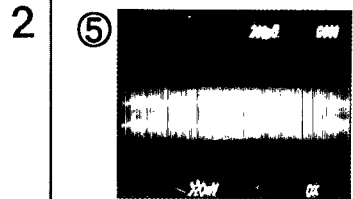
Q703 Emitter  
(50mV/20µsec)



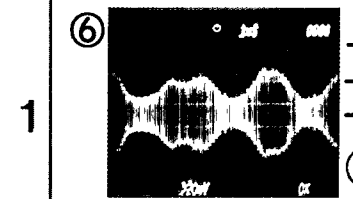
Audio Left Out Terminal  
(50mV/200µsec)



Audio Right Out Terminal  
(50mV/500µsec)



IC702 Pin 15  
(20mV/200µsec)



IC703 Pin 5  
(20mV/1msec)

— AUDIO SIGNAL LOOP (L)  
 - - - AUDIO SIGNAL LOOP (R)  
 — VIDEO SIGNAL LOOP  
 ○ WAVEFORM

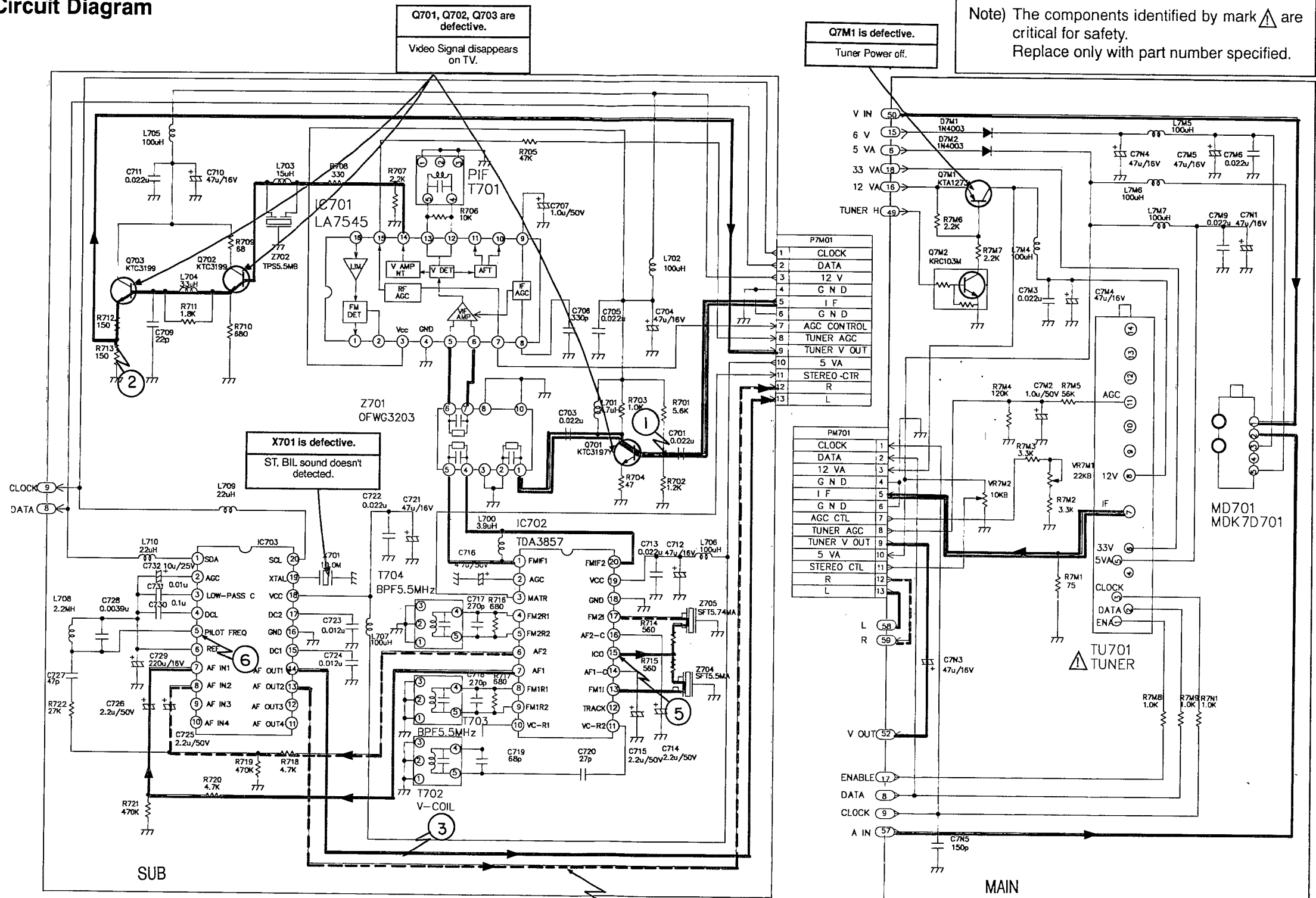
### \*Tuner/IF IC Voltage Sheet

1.89	11.06	5.56	6.60	6.60	0.37	9.50	11.10	1.76	4.87	0	0	1.86	1.92	1.89	0	3.13	3.83
15				10				20				15					
IC701 (LA 7545)								IC702 (TDA 3857)									
1	5	10	15	20	25	30	35	1	5	10	15	20	25	30	35		
10.17	5.02	12	0	4.50	4.49	3.36	11.09	1.76	2.35	2.59	1.82	1.82	2.13	2.10	1.80	1.80	1.80

### \* Tuner/IF TR Voltage Sheet

0	3.20	5	2.50	0	2.50	2.50	2.50	2.50
20				15				
IC703 (TDA 9840)								
1	5	10	15	20	25	30	35	
0	3.47	2.80	2.50	2.52	1.97	2.50	2.50	2.50

LOCA. NO.	POSITION
IC701	4C
IC702	2D
IC703	2B
Q701	3D
Q702	4B
Q703	4B
Q7M1	4F
Q7M2	4F



Note) The components identified by mark  $\Delta$  are critical for safety. Replace only with part number specified.

Q7M1 is defective. Tuner Power off.

X701 is defective. ST. BIL. sound doesn't detected.

Q701, Q702, Q703 are defective. Video Signal disappears on TV.

94. 9. 1. 7-269B

A

B

C

D

E

F

G

H

# 9. Function OSD/Title Circuit Diagram

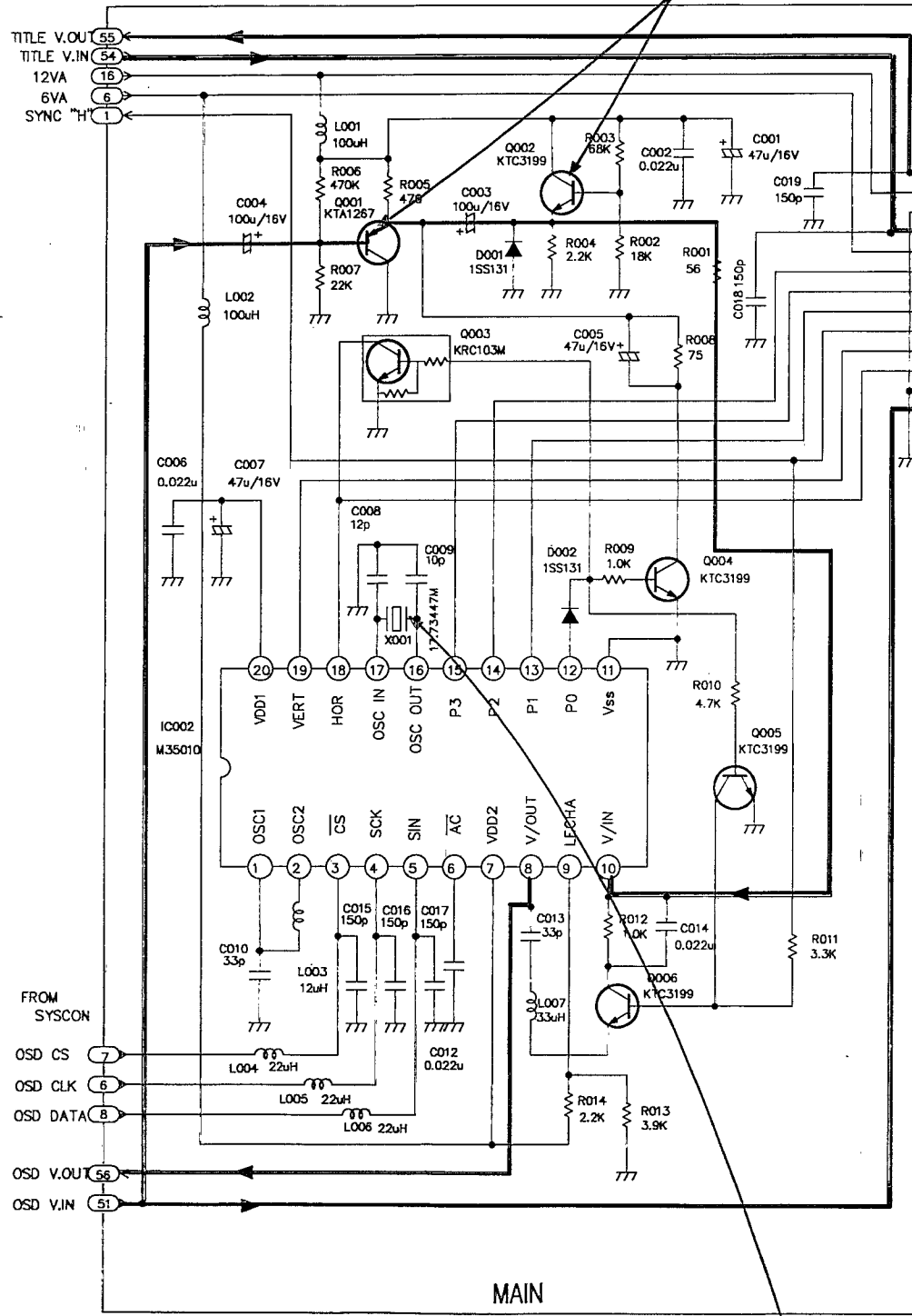
\* Function OSD/Title IC Voltage Sheet

5	4.8	4.4	2.1	2.3	0	0	0	0	0
20	15								
IC 002 (M35011)									
1	5								10
2.3	2.4	5	5	5	4.9	0	2.4	3.2	2.4

0.32	4.98	0.02	4.23	1.86	0.58	0.09	0.20
15	10						
IC 705 (NJM2229S)							
1	5						
2.67	2.13	2.20	0	0.72	3.13	2.44	0

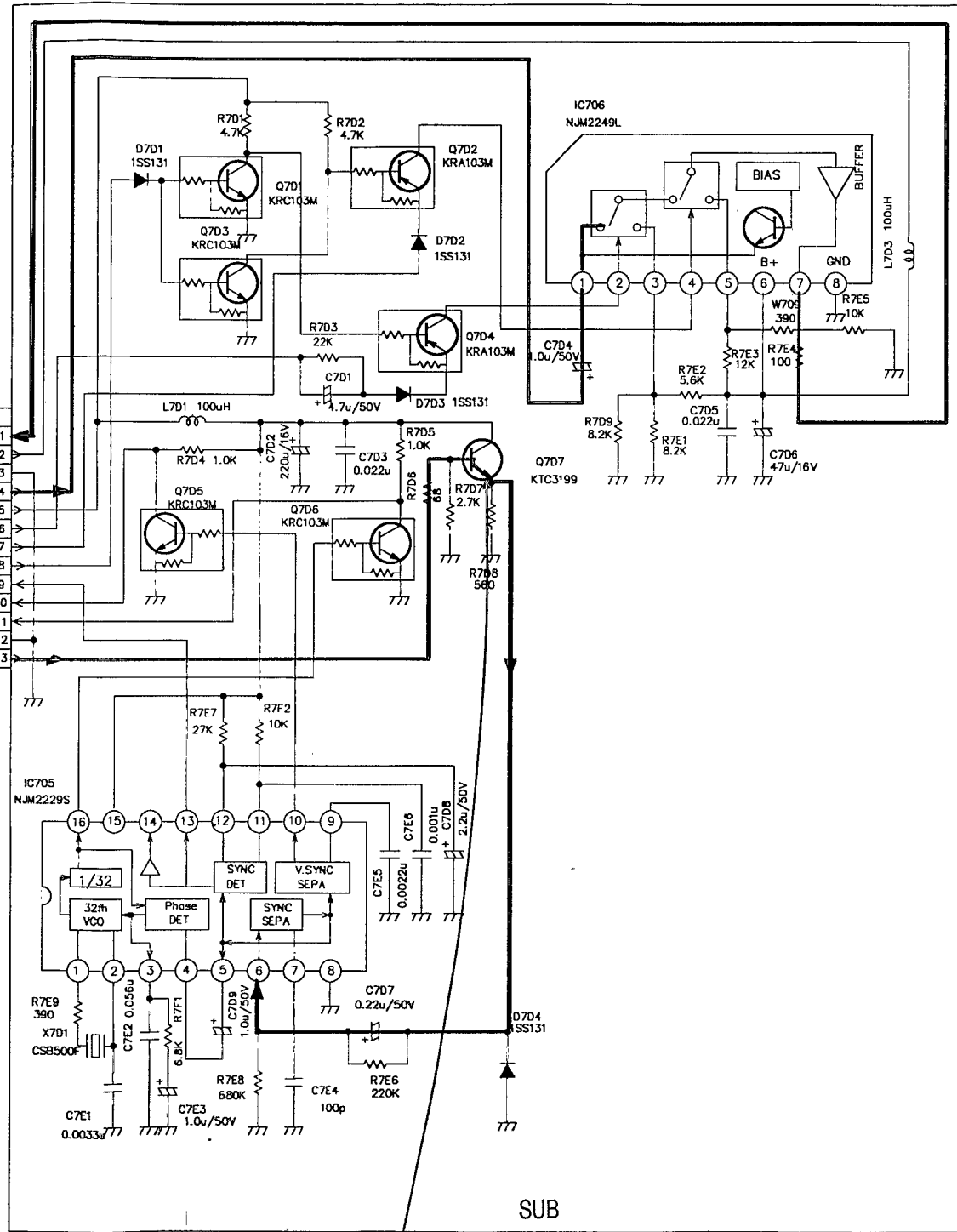
IC 706 (NJM2249L)									
1	5								
5.08	0.05	5.36	0.05	5.29	11.7	4.35	0		

Q001, Q002 are defective.  
TV screen doesn't appear.



1	TITLE V.OUT
2	12VA
3	GND
4	TITLE V.IN
5	5VA
6	OSD P2
7	OSD P3
8	OSD P1
9	SYNC "H"
10	VERT
11	HOR
12	GND
13	OSD V.IN

1	TITLE V.OUT
2	12VA
3	GND
4	TITLE V.IN
5	5VA
6	OSD P2
7	OSD P3
8	OSD P1
9	SYNC "H"
10	VERT
11	HOR
12	GND
13	OSD V.IN



\* Function OSD/Title TR Voltage sheet

Port TR No.	Emitter	Collector	Base
Q001	2.7	0	2.0
Q002	2.4	12.2	2.5
Q003	0	4.5	0
Q004	0	2.1	0
Q005	0	3.3	0
Q006	2.7	2.7	3.3
Q7D1	0	5	0
Q7D2	5	0	5
Q7D3	0	5	0
Q7D4	5	0	5
Q7D5	0	4.9	0
Q7D6	0	4.9	0
Q7D7	1.2	5	1.9

LOCA. No	Position
IC001	2B
IC704	2G
IC705	2E
IC706	4G
Q001	4B
Q002	4C
Q003	4B
Q004	3C
Q005	2C
Q006	2C
Q7D1	4E
Q7D2	4F
Q7D3	4E
Q7D4	4F
Q7D5	3E
Q7D6	3F
Q7D7	3F

X001 is defective.  
No F.OSD screen.

Q7D7 is defective.  
VCR doesn't search TV RF Signal.

95. 1. 10. 7-270B

5

4

3

2

1

A

B

C

D

E

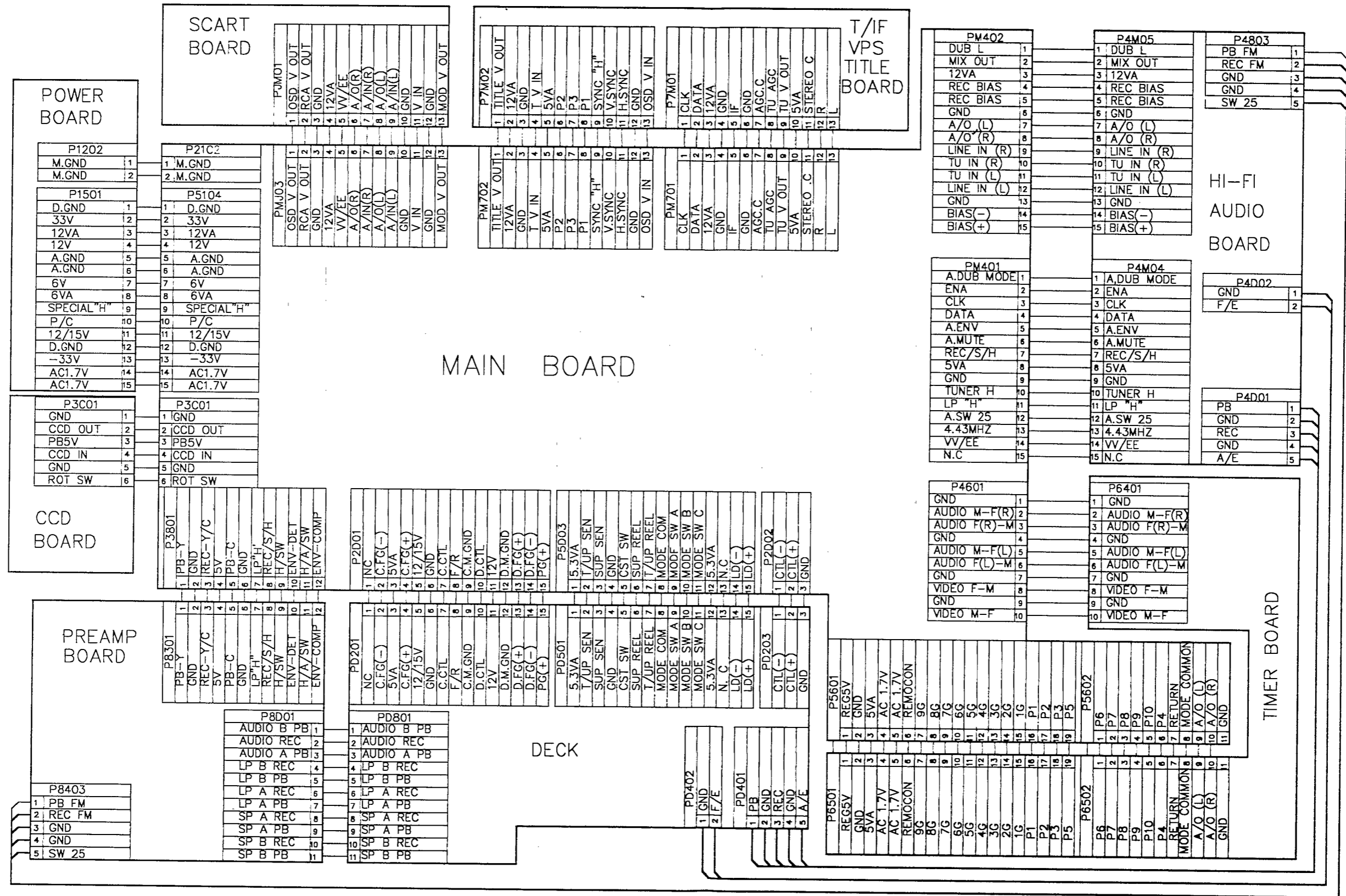
F

G

H

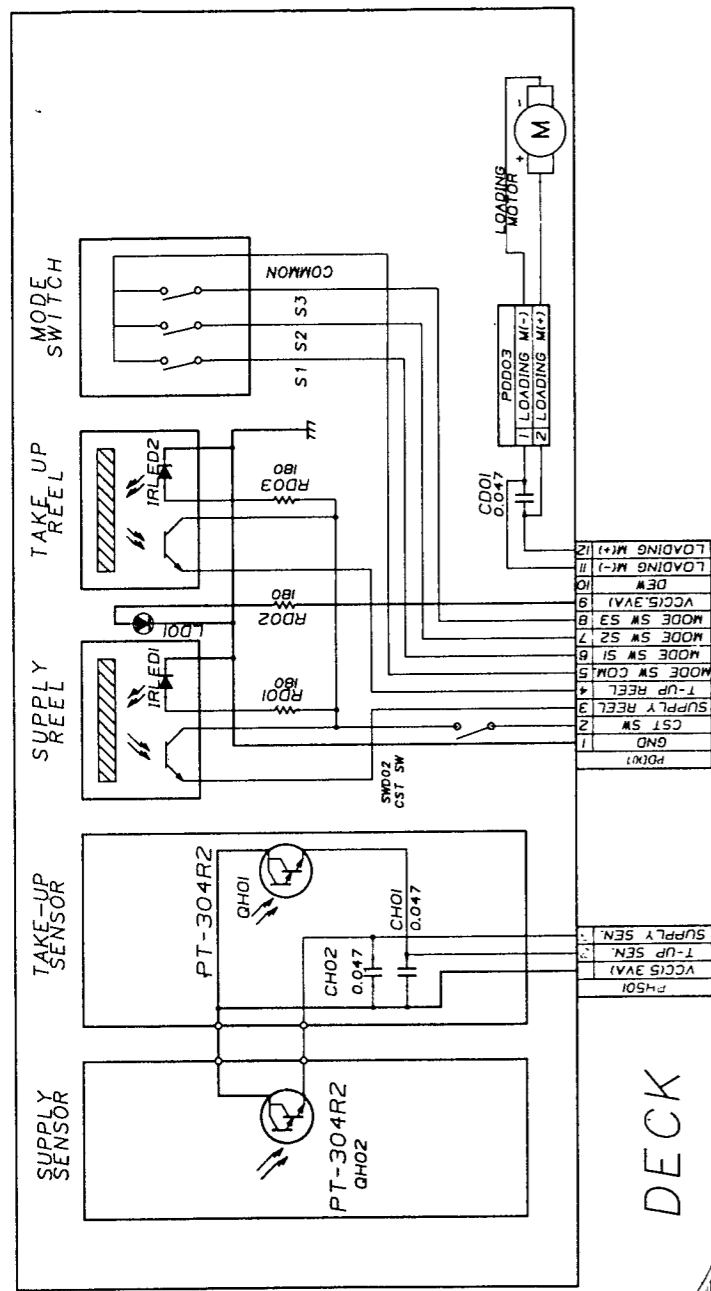
# 10. Connection Diagram

5  
4  
3  
2  
1  
A B C D E F G H

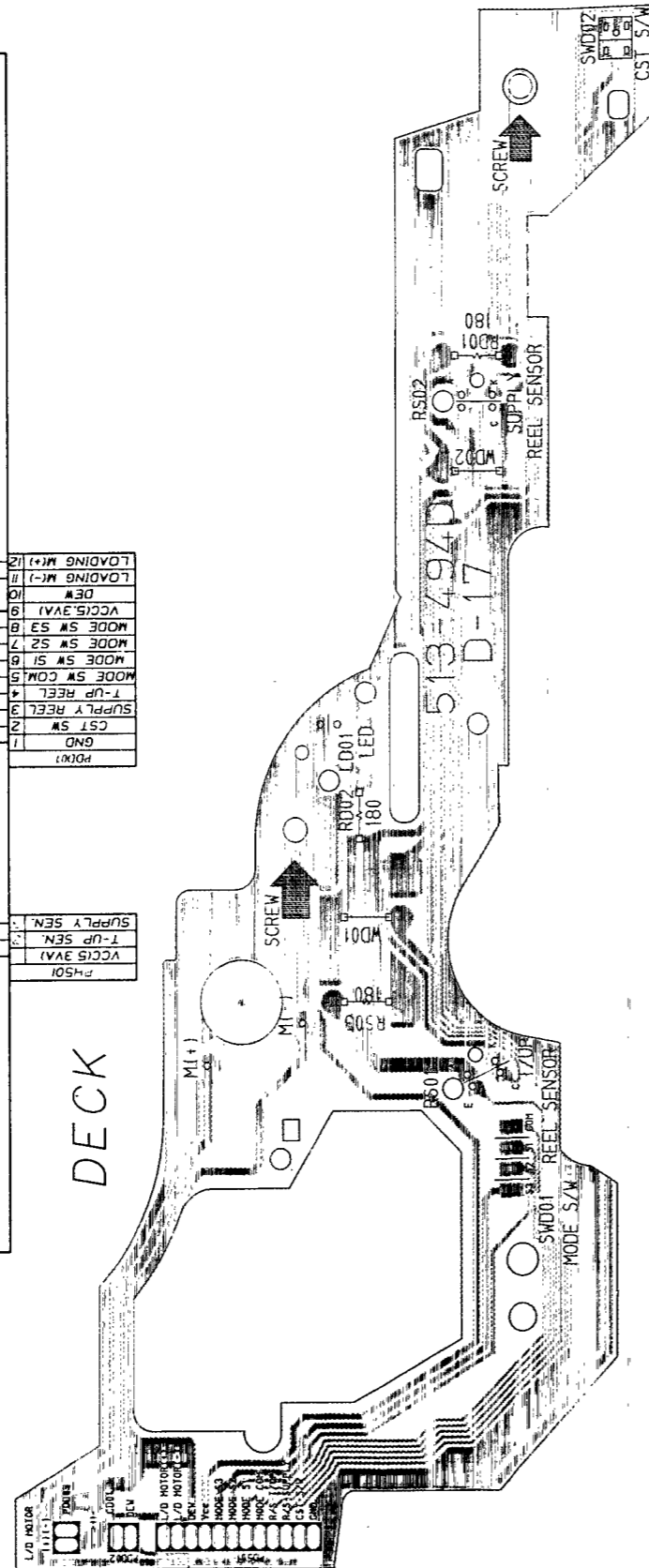


# DECK JUNCTION

## 1. Deck Junction Circuit Diagram



## 2. Deck Junction P.C.Board



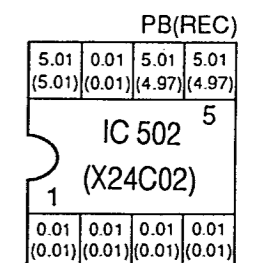
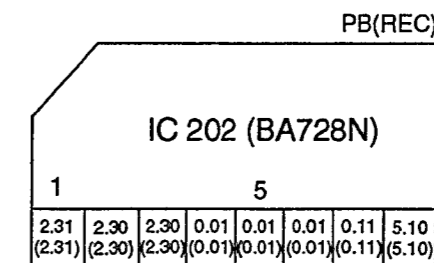
(Solder Side)

## \* TR Voltage Sheet (PB/REC mode)

TR No.	Port	Emitter	Collector	Base	Remark
Q001		2.7	0	2.0	
Q002		2.4	12.2	2.5	
Q003		0	4.5	0	
Q004		0	0.1	0	
Q005		0	3.3	0	
Q006		2.7	2.7	3.3	
Q201		5.10/5.09	1.21/20	5.01/5.01	
Q202		5.10/5.09	1.21/20	5.01/5.01	
Q203		5.10/5.09	1.73/2.73	5.01/5.02	
Q204		0.01/0.01	2.75/2.75	0.01/0	
Q205		0.01	5.09/5.09	0.01/0	
Q206		0/0	0/0	33.5/3.6	
Q207		0/0	5/5	0/0	
Q208		2.5/2.5	2.5/2.5	0/0	
Q302		0/0	0/0	0/0	SP mode
Q303		0/0	0/0	0/5.01	LP mode
Q304		3.93/3.03	0/0	2.78/2.41	
Q305		4.0/3.64	0/0	3.4/3.03	
Q306		0/0	0/0	5.04/0	
Q307		0/0	4.55/4.54	0.12/0.11	
Q312		0/0	0/5.1	5.09/0	
Q313		5.11/5.1	5.05/0	4.32/5.1	
Q314		1.00/63	0/0	0.39/0	
Q321		2.79/0	5.03/0	3.40/0	
Q322		0.89/0	1.56/0	1.51/0	
Q323		0.95/0	5.03/0	1.56/0	
Q3C1		1.17/0	5.05/0	1.78/0	
Q3C2		2.01/0	0/0	1.38/0	
Q3C3		2.80	5.01/0	3.41/0	
Q401		0/0	0/8.9	5/0	
Q402		0/0	6.3/0	0.35/5.0	
Q403		0/0	0/0.7	6.3/0	
Q405		0.05	9.1/8.9	0/1.0	
Q406		0/0	0/1.0	5/0	
Q407		9.29/2	12/12	9.8/9.8	
Q408		0/0.33	9.1/8.9	0/0.7	
Q451		0/0	5.2/5.2	0.5/0	
Q452		0/0	0/0	5.2/5.2	
Q453		0/0	0.1/0.1	0.1/0.1	
Q454		0/0	0.1/0.1	0.1/0.1	
Q455		1.6/1.6	6.7/6.7	2.2/2.2	
Q501		0.01/0.01	0.01/0.01	5.10/5.10	
Q502		0.01/0.01	Pulse	Pulse	
Q503		0.01/0.01	Pulse	Pulse	
Q701		0.54	11.89	1.25	
Q702		4.75	11.9	5.34	
Q703		4.03	12	4.60	
Q7D1		0	5	0	
Q7D2		5	0	5	
Q7D3		0	5	0	
Q7D4		5	0	5	
Q7D5		0	4.9	0	
Q7D6		0	4.9	0	
Q7D7		1.2	5	1.9	
Q7M1		12	12	11.3	
Q7M2		0	0	4.80	

## \* IC Voltage Sheet

IC	Pin	Voltage	Waveform
IC501	5	5.0 (0.0)	Pulse (5.0)
	25	4.9 (4.8)	Pulse (5.0)
	30	3.0	Pulse (5.0)
	35	3.5	Pulse (5.0)
	40	4.0	Pulse (5.0)
	45	4.5 (3.87)	Pulse (5.0)
	50	5.0 (0.06)	Pulse (5.0)
	55	5.0 (0.0)	Pulse (5.0)
	60	5.0 (0.0)	Pulse (5.0)
	65	5.0 (0.0)	Pulse (5.0)
	70	5.0 (0.0)	Pulse (5.0)
	75	5.0 (0.0)	Pulse (5.0)
1	5.0 (0.0)	Pulse (5.0)	



IC	Pin	Voltage
IC201 (HD49756NT)	1	3.68 (3.68)
	5	5.04 (5.04)
	10	2.67 (2.67)
	15	2.56 (2.56)
	20	2.58 (2.57)
	25	2.67 (2.67)
	30	2.70 (2.67)
	35	2.58 (2.57)
	40	2.58 (2.57)
	45	2.58 (2.57)
	50	2.68 (2.68)
	55	2.67 (2.67)

# SECTION 4

## MECHANISM

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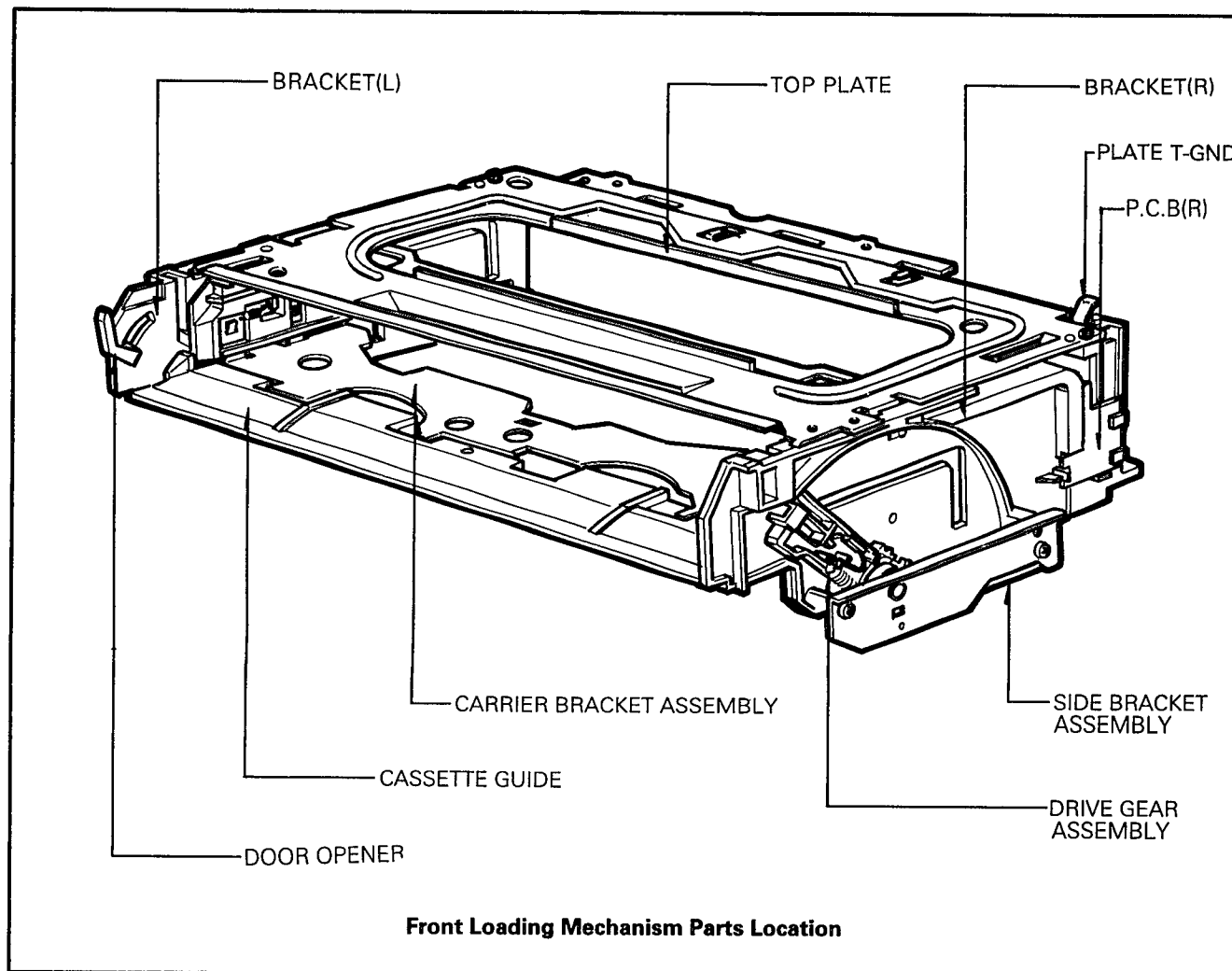
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# FRONT LOADING MECHANISM DISASSEMBLY

## • Front Loading Mechanism Parts Location



1. Component list below will be described as if the top and bottom covers and the front panel have already been removed.
2. P.C.B Assembly
3. Top Plate
4. Carrier Bracket Assembly
5. Cassette Guide
6. Side Bracket Assembly
7. Bracket(L), (R)
8. Door Opener
9. Drive Gear Assembly



## 1. Front Loading Mechanism Assembly (Fig. A-1-1)

- 1) Remove the Top and Bottom Covers and the Front panel.
- 2) Unplug the connector.
- 3) Remove two screws(A).
- 4) Lift up the Front Loading Mechanism in the direction of arrow(C).

### \* NOTE

- 1) When disassembling and reassembling
  - ① Give special attention to removal and to reassemble, because two tabs(D) are engaged.

- ② Make sure that Bosses of Bracket(L),(R) are properly engaged in the holes of the chassis.
- ③ To reassemble Front Loading Mechanism, the Drive Gear Assembly should be turned in a counterclockwise as shown in Fig. A-1-2 so that the Rack Gear N.D of Front Loading Mechanism Assembly is meshed into Rack Gear F.L of Deck Mechanism Assembly correctly as shown in Fig. A-1-1.(B).

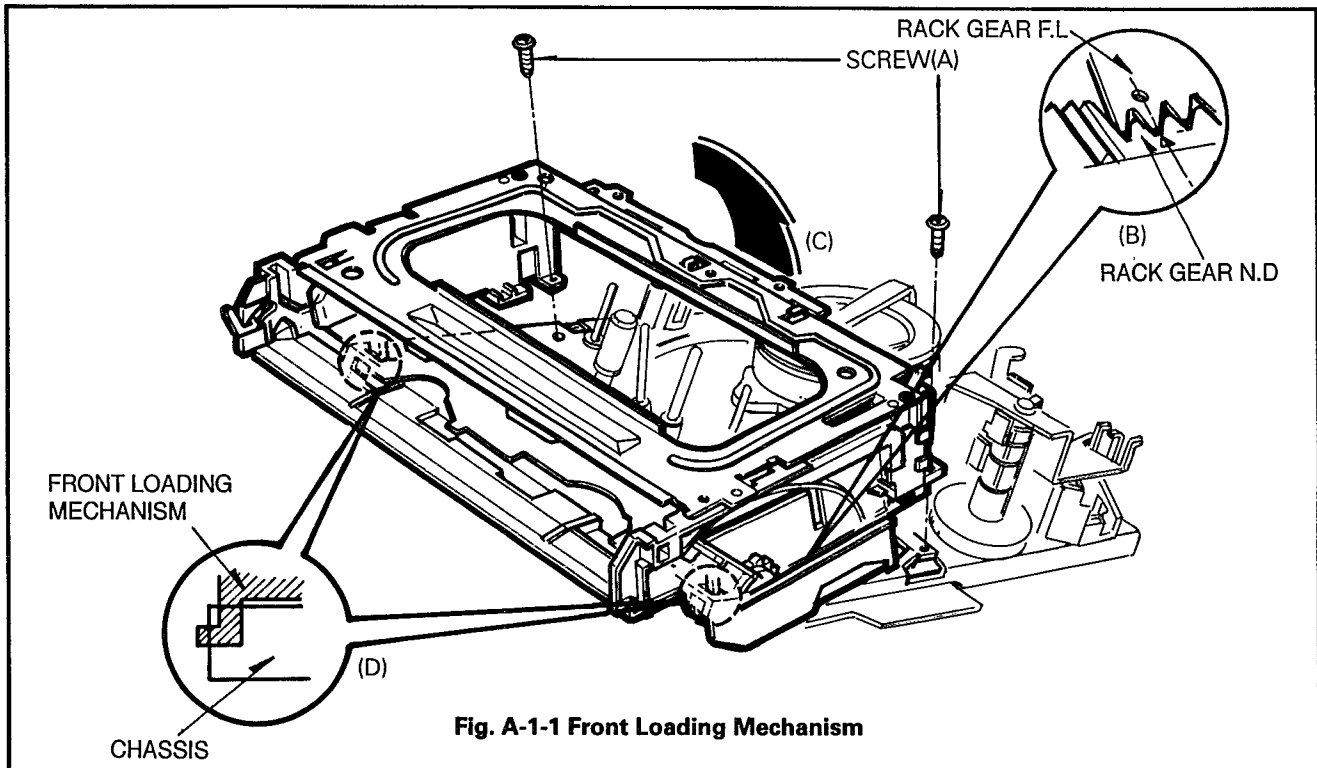


Fig. A-1-1 Front Loading Mechanism

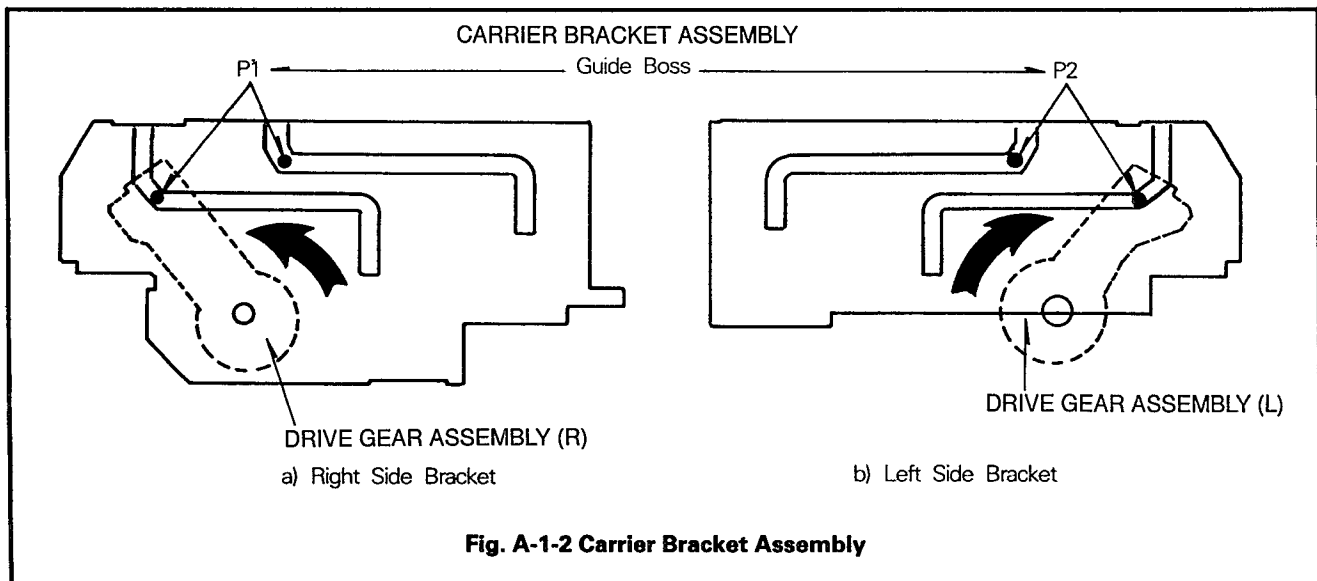


Fig. A-1-2 Carrier Bracket Assembly

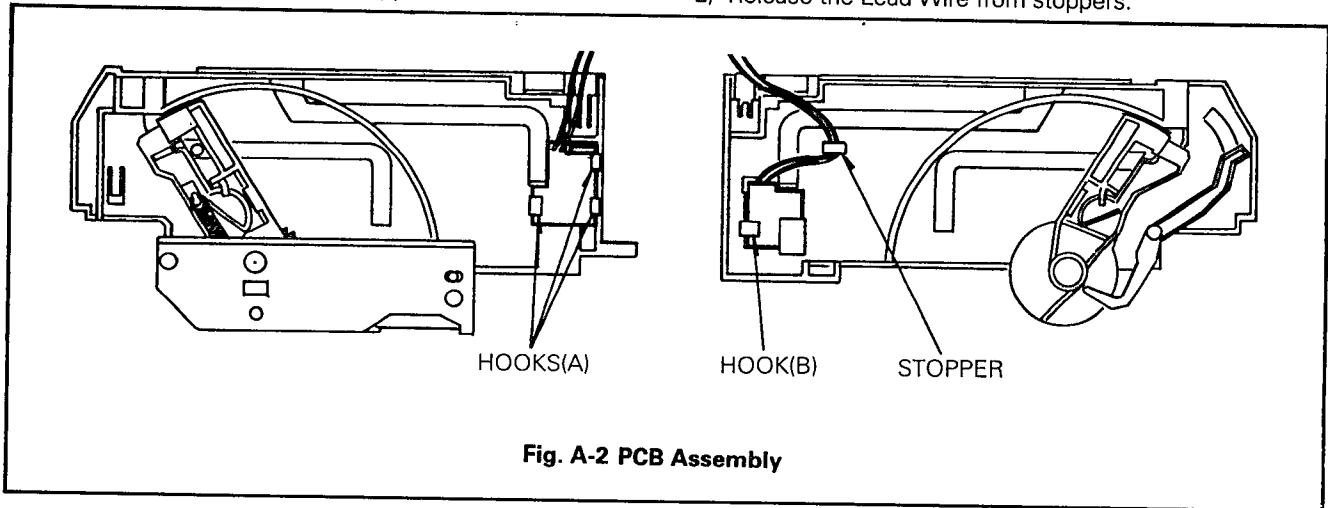
## 2. PCB(Printed Circuit Board) Assembly

### 2-1. P.C.B Assembly(R)(Fig. A-2)

- 1) Remove the PCB Assembly(R) by pushing three Hooks (A) outward.
- 2) Release the Lead wire from stoppers.

### 2-2. PCB Assembly(L).(Fig. A-2)

- 1) Remove the PCB Assembly(L) by pushing the Hook(B) outward.
- 2) Release the Lead Wire from stoppers.

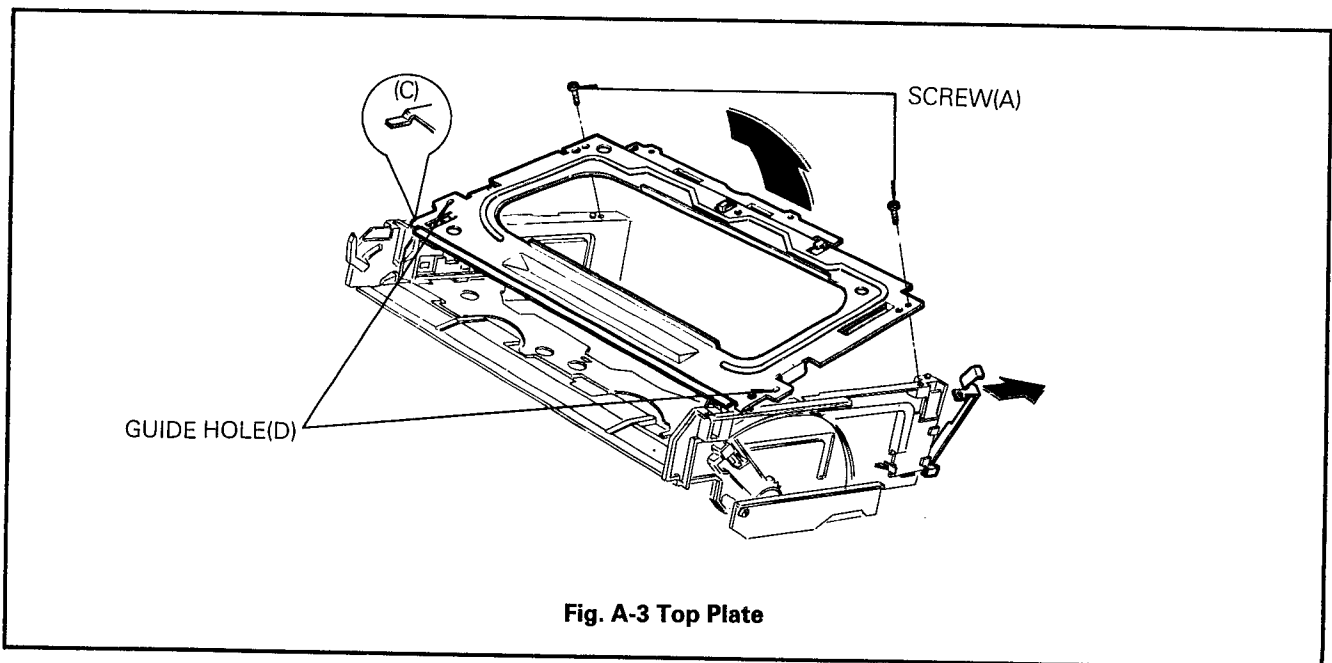


## 3. Top Plate(Fig. A-3)

- 1) Remove two screws(A).
- 2) Push the upper part of Top plate Ground and then lift up the Top Plate in the direction of arrow(B).

### \* NOTE

- 1) When reassembling, be certain that the tabs(C) of Top Plate is in both Bracket(L),(R).
- ① Then align the guide holes(D) of Top Plate with Bosses of side Bracket(L),(R).



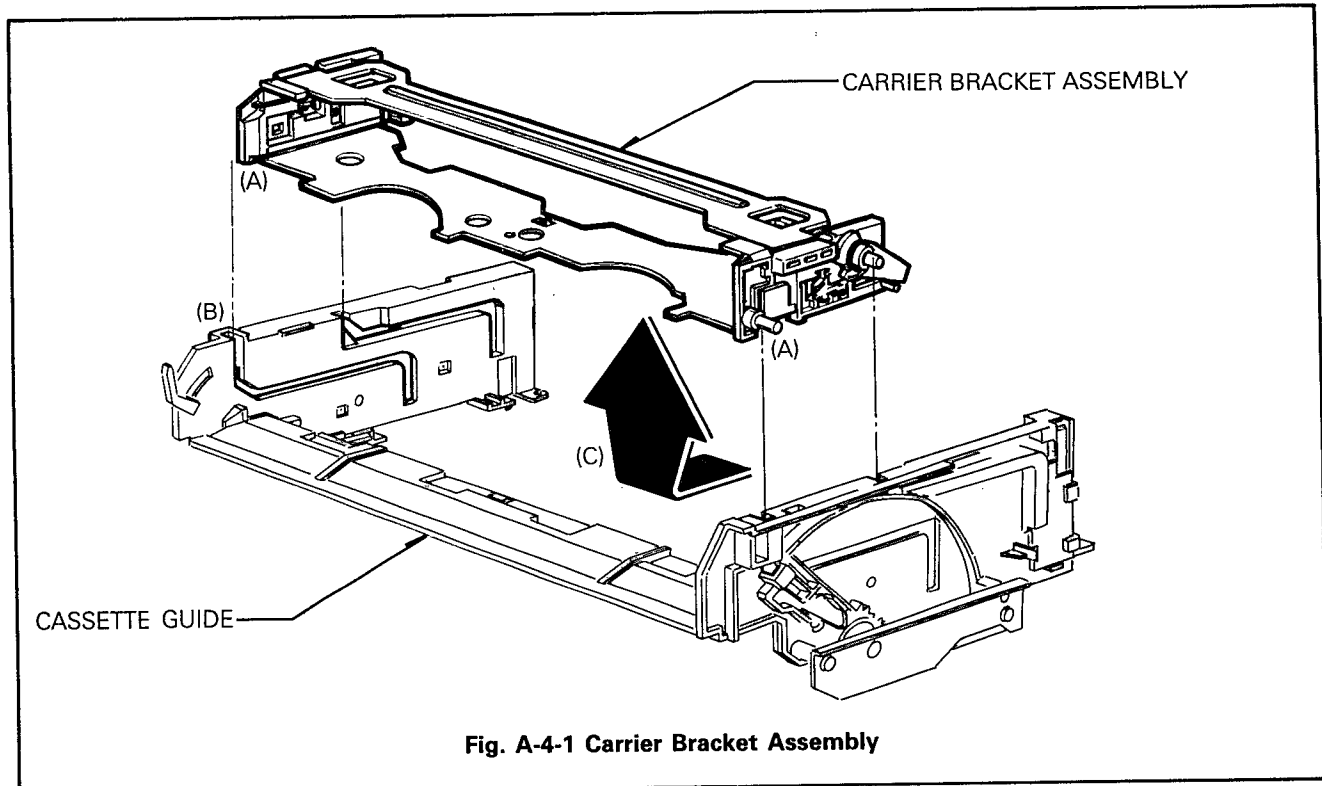
## 4. Carrier Bracket Assembly

### 4-1. Carrier Bracket Assembly(Fig. A-4-1)

- 1) Remove the Carrier Bracket Assembly by moving it in the direction of arrow(C).

#### \* NOTE

- 1) When reassembling, be sure that parts(A) of Carrier Bracket Assembly are seated in parts(B) of Bracket(L),(R).



### 4-2. Cassette Opener(Fig. A-4-2)

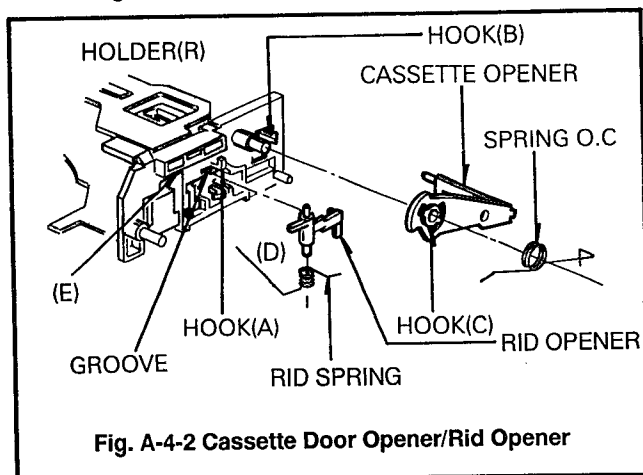
- 1) Release the spring O.C from the Hook(A) and then release it from Hook(C) of cassette opener.
- 2) Remove the cassette opener by releasing the Hook(B) from the Holder(R).

### 4-3. Rid Opener(Fig. A-4-2)

- 1) Remove the rid opener by pushing it outward.

#### \* NOTE

- 1) When reassembling, seat the upper part of the rid opener in the groove of Holder(R) and push it inward.

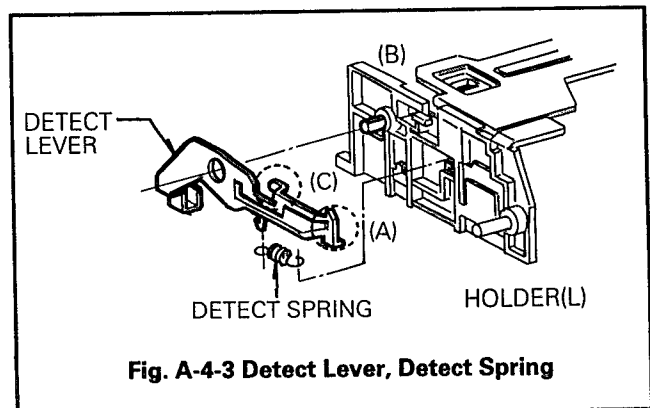


### 4-4. Detect Lever and Detect Spring

- 1) Remove the spring detect.
- 2) Lower the side(A) of Detect Lever and then remove the Detect Lever by pushing it outward.

#### \* NOTE

- 1) When reassembling, make sure that the part(C) of Detect Lever set in the part(B) of Holder(R).



#### 4-5. Support Bracket Assembly(Fig. A-4-4)

1) Take the Support Bracket out by releasing hooks(A),(B).

#### \* NOTE

1) When disassembling and reassembling, be careful because heavy force can damage the hooks.

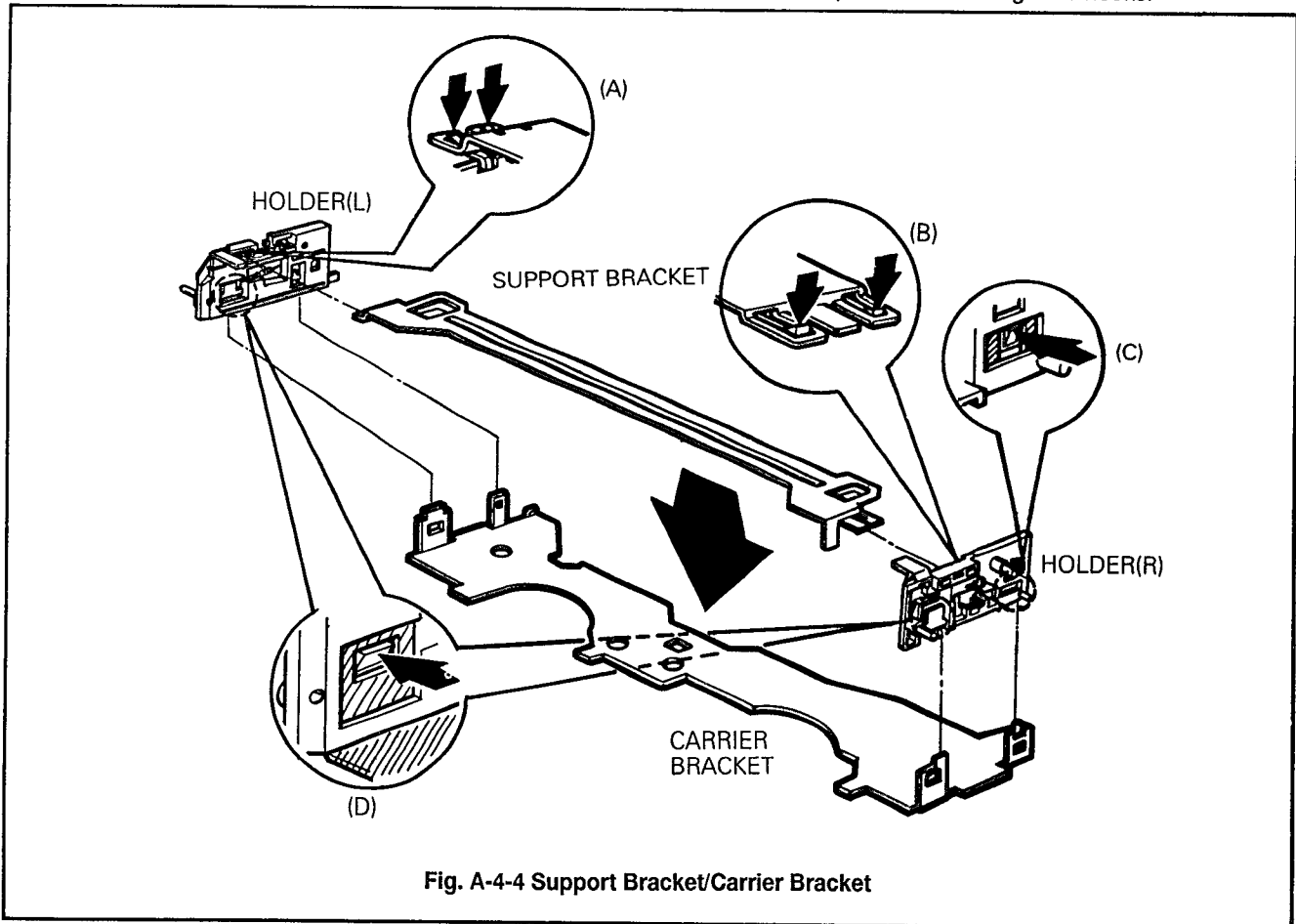


Fig. A-4-4 Support Bracket/Carrier Bracket

#### 4-6. Carrier Bracket Assembly(Fig. A-4-4)

1) Remove the Carrier Bracket by releasing hooks(C),(D).

#### 5. Cassette Guide(Fig. A-5)

- 1) Remove the Switch Spring with the Front Loading Mechanism Assembly turned over.
- 2) Push two hooks(B) outward.
- 3) Remove the Cassette Guide by pushing two hooks(A) outward(if one is removed, the other will be easy to remove)

#### \* NOTE

- 1) When reassembling
  - ① Seat projections(E) of Cassette Guide in holes of Bracket Assembly(L),(R) and then engage the Hook(A).
  - ② After finishing previous step, fix the Cassette Guide to the Bracket Assembly(L),(R) by pushing two hooks(B) inward.

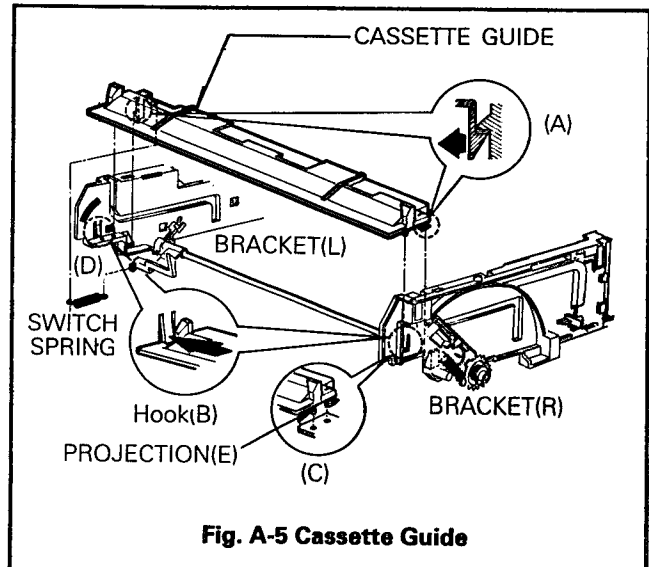


Fig. A-5 Cassette Guide

## 6. Bracket Assembly Side (Fig. A-6-1)

- 1) Remove two screws(A) and then remove the Side Bracket Assembly and the Rack Gear N.D.

### \* NOTE

- 1) When reassembling
  - ① Turn the Drive Gear Assembly in the direction of arrow (C).
  - ② Reassemble the Rack Gear N.D. to the Side Bracket Assembly, as shown in Fig. A-6-2, and then reassemble

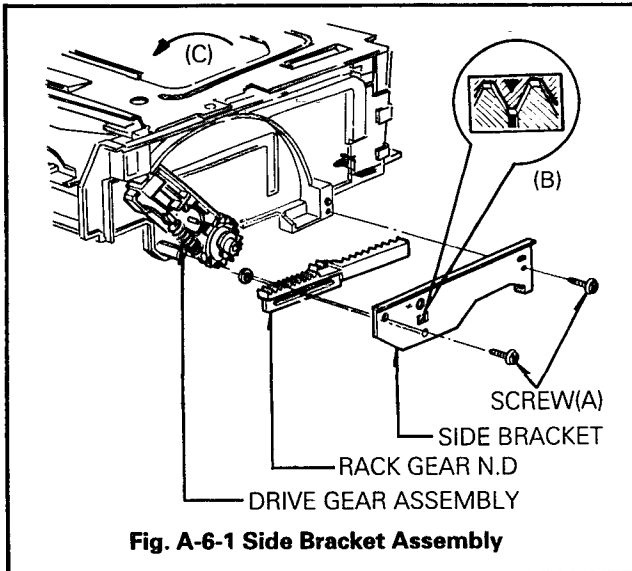


Fig. A-6-1 Side Bracket Assembly

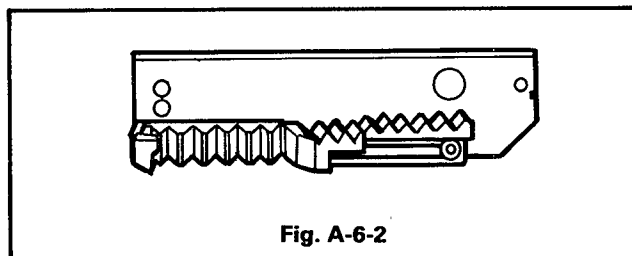


Fig. A-6-2

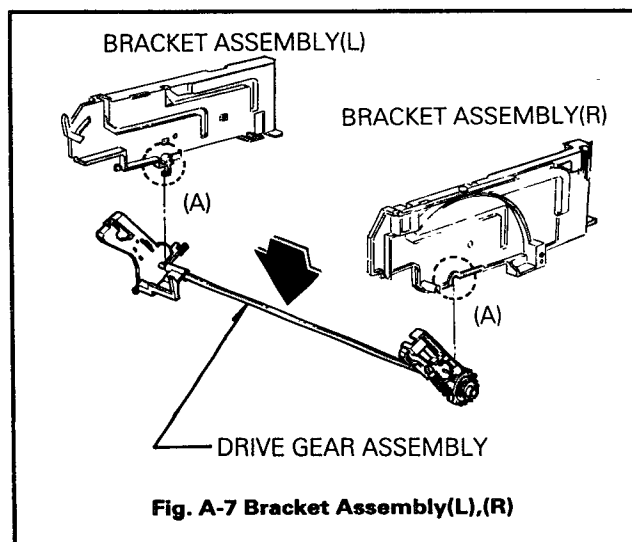


Fig. A-7 Bracket Assembly(L),(R)

it to the Bracket Assembly(L), This time the Assembling Figure should be the same as(B) at the rectangular hole of Bracket Side.

## 7. Bracket Assembly(L),(R)(Fig. A-7)

- 1) Separate the Bracket Assembly(L),(R) from the Gear Assembly Drive.

### \* NOTE

- 1) When reassembling, seat the shaft in the part(A) of Bracket Assembly(L),(R).

## 8. Door Opener(Fig. A-8)

- 1) Remove the Door Opener by pushing Hook(A) outward.

### \* NOTE

- 1) When reassembling, seat the part(B) of Door Opener in the hole( ) of Bracket(L).

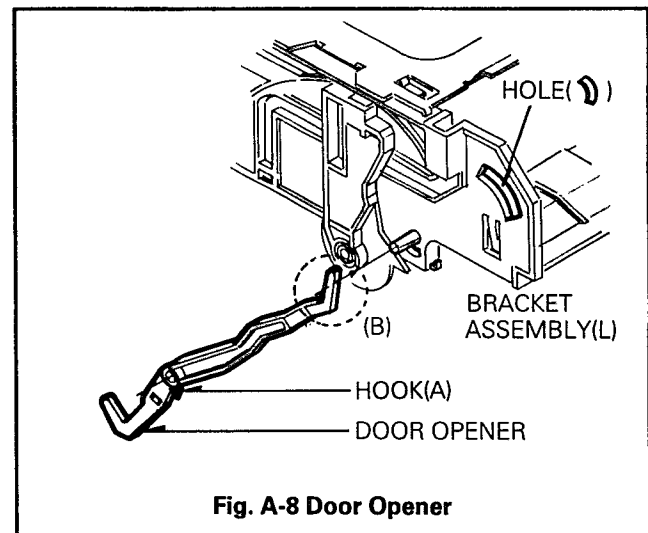


Fig. A-8 Door Opener

## 9. Drive Gear Assembly

### 9-1. Drive Gear Assembly(Fig. A-9-1)

- 1) Remove the Drive Gear Assembly from the Bracket Assembly(L),(R).

### 9-2. Cushion Spring(Fig. A-9-1)

- 1) Remove the cushion spring from the Gear R.

### 9-3. Cap-D(Fig. A-9-1)

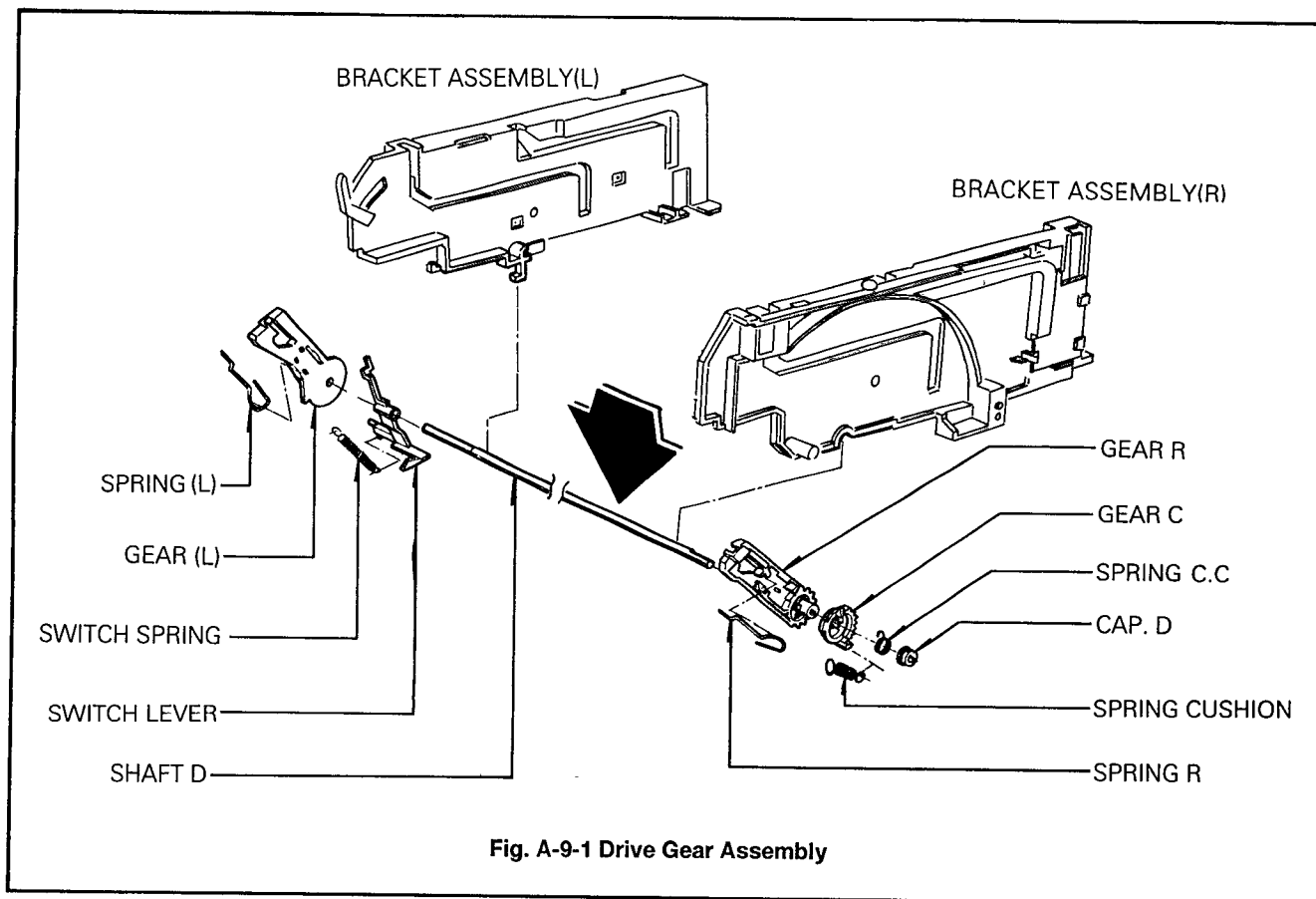
- 1) Remove the Cap-D by lifting it up.

### 9-4. Spring C.C(Fig. A-9-1)

- 1) Remove the Spring C.C from the Gear R.

### 9-5. Gear C(Fig. A-9-1)

- 1) Remove the Gear C by lifting up when the projection of Gear C is aligned with the hole of Gear R while rotating the Gear C in the counterclockwise direction.



**\* NOTE**

- 1) When reassembling, seat the projections of Gear R in the holes of Gear C when the projection of Gear R is aligned with the hole of Gear C, and then keep the Gear C turned in the clockwise direction.

**9-6. Gear R(Fig. A-9-1)**

- 1) Lift up the Gear R from the Shaft.

**9-7. Spring R(Fig. A-9-2)**

- 1) Remove the Spring R by releasing Hooks.

**\* NOTE**

- 1) When reassembling, be certain Spring R in the part(A) of Gear R.

**9-8. Gear L.(Fig. A-9-1)**

- 1) Remove the Gear L from the shaft.

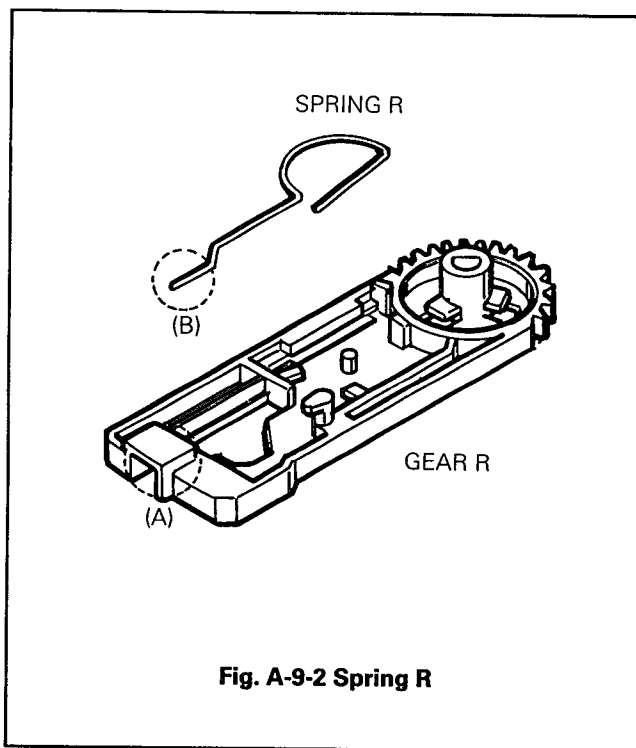
**9-9. Spring L (Fig. A-9-2)**

- 1) Remove the Spring L by releasing Hooks from the Gear L.

**\* NOTE:**(Refer to the Spring R Section)

**9-10. Switch Lever(Fig. A-9-1)**

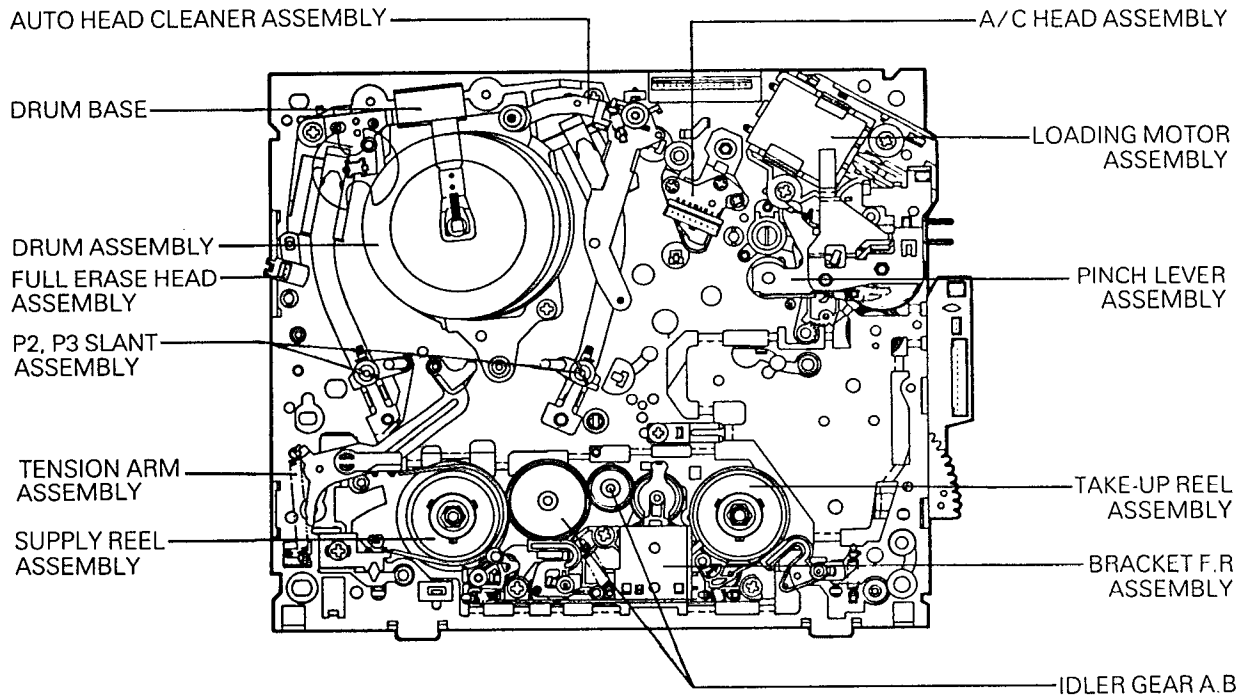
- 1) Remove the Switch Lever from the shaft.



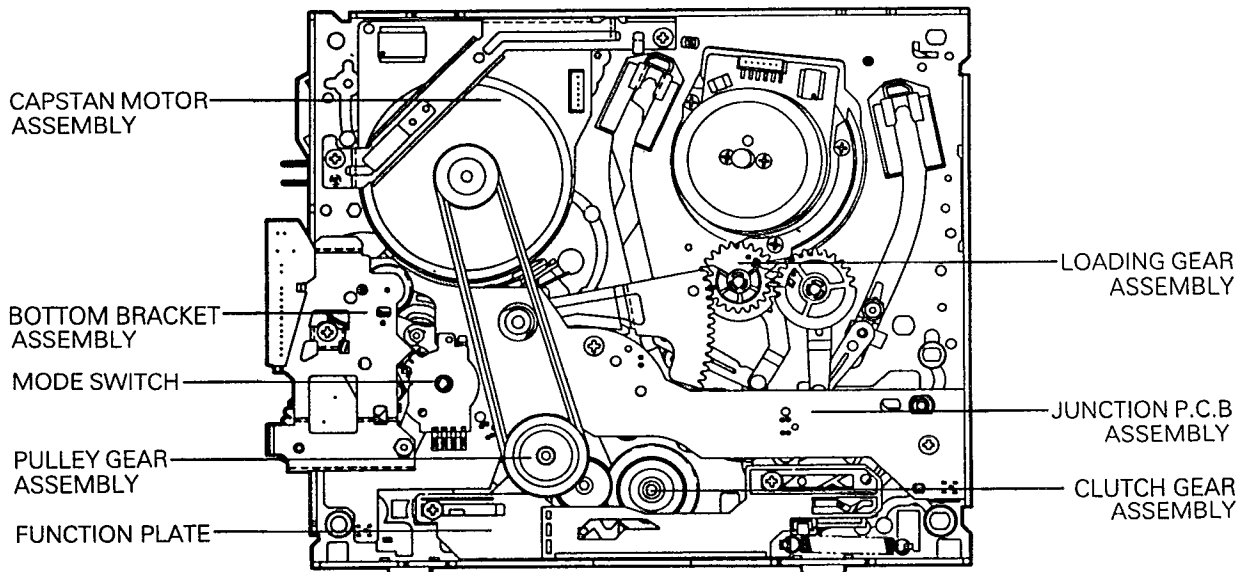
# DECK MECHANISM DISASSEMBLY

## • Deck Mechanism Parts Location

### Top Side



### Bottom Side

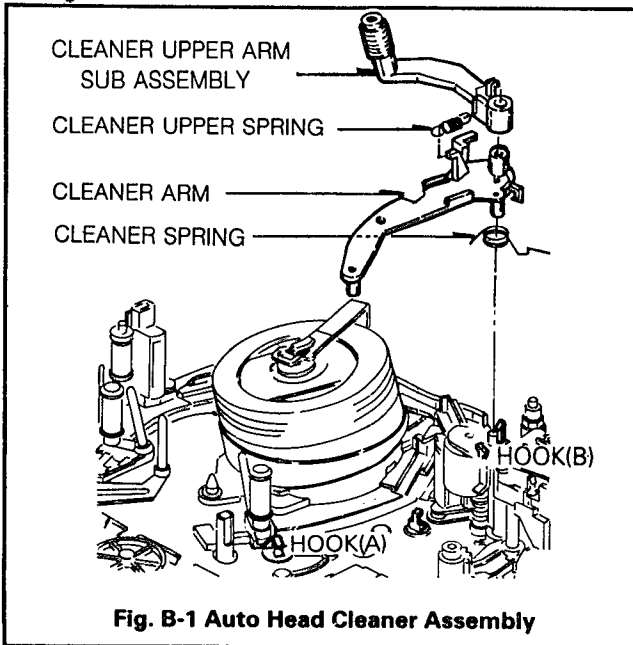


## 1. Auto Head Cleaner Assembly (Fig. B-1) (Optional Item)

- 1) Remove the Cleaner Arm Assembly (Auto Head Cleaner Assembly) by pushing the Locking Tab.(B) outward.
- 2) Remove the Cleaner Upper Spring and then remove the Cleaner Upper Arm Sub Assembly.
- 3) Remove the Cleaner Spring.

### \* NOTE

- 1) When reassembling, do not touch the Video Head Tip with fingers or tools.

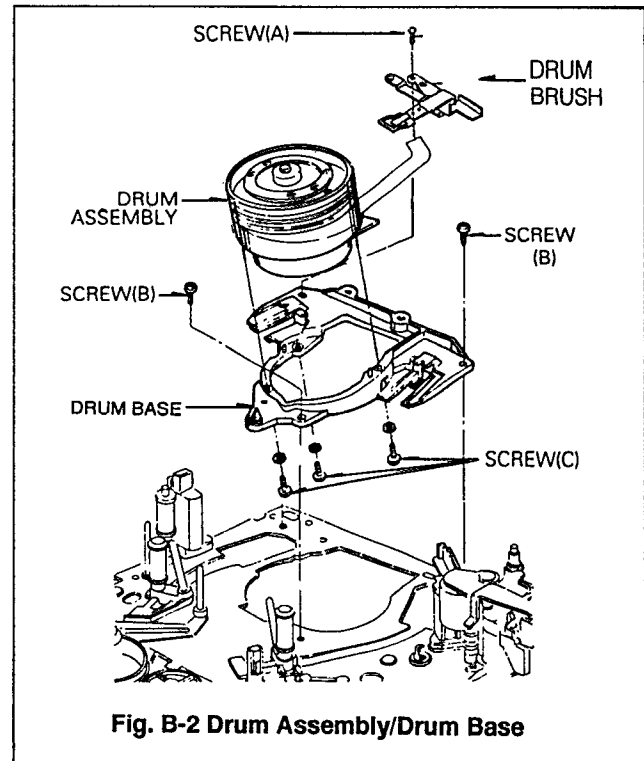


## 2. Drum Assembly and Drum Base(Fig. B-2)

- 1) Remove the Auto Head Cleaner Assembly. (Option)
- 2) Unplug the connector with the Deck Mechanism Assembly turned over.
- 3) Loosen the screw(A) and then lift up the Drum Brush.
- 4) Remove two screws(B) and then lift up the Drum Assembly and Drum Base from the Deck Mechanism Assembly.
- 5) Separate the Drum Assembly from the Drum Base by Loosening three screws(C) on the back of Drum Base.

### \* NOTE

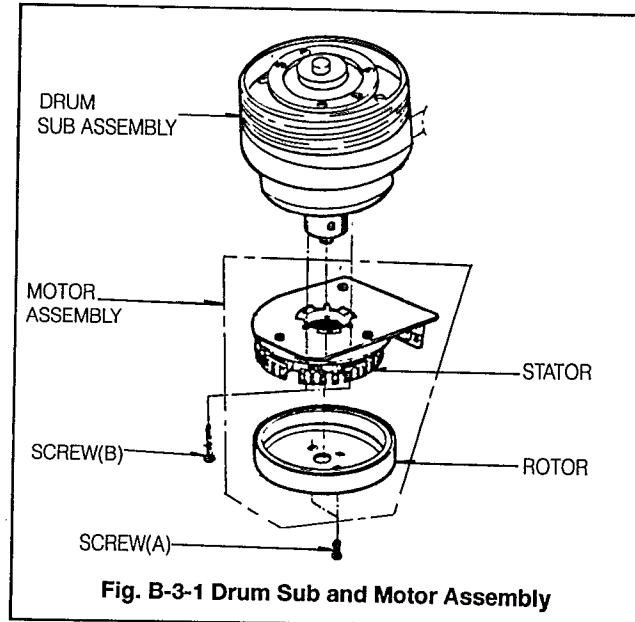
- 1) When disassembling and reassembling
  - ① Do not touch the Video Head tip with fingers or tools. (Give special attention to disassembling and reassembling of Auto Head Cleaner Assembly)
  - ② After reinstalling the Drum Brush, the Drum Brush should be aligned with the center of vertical axis of Drum Assembly.
  - ③ After completing the reassembly, adjust the transportation system and the Servo P.G.



## 3. Drum Assembly

### 3-1. Drum Sub and Motor Assembly (Fig. B-3-1) : New Type (No two screws and P.C.B on the Drum)

- 1) Remove the Drum Base from the Deck Mechanism Assembly.
- 2) Separate the Drum Assembly from the Drum Base.
- 3) Remove two screws(A) and then remove the rotor.
- 4) Remove three screws(B) and then remove the stator.



### \* NOTE

- 1) When disassembling and reassembling
  - ① Do not touch the Video Head Tip with fingers or tools.

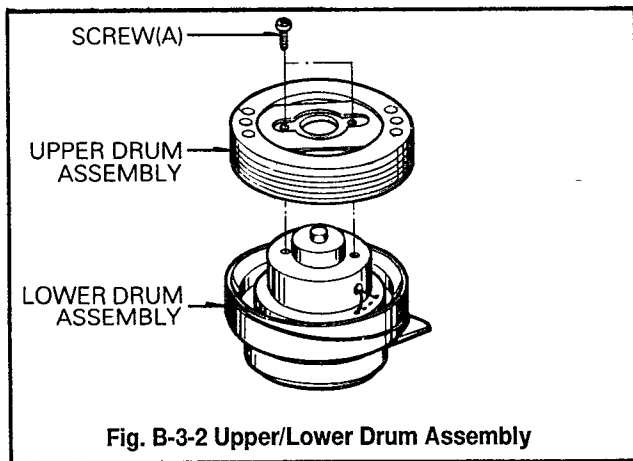


**3-2. Upper and Lower Drum Assembly (Fig. B-3-2)  
: Old Type (There are two screws and P.C.B on the Drum)**

- 1) Remove the Drum Assembly and Drum Base from the Deck Mechanism Assembly.
- 2) Separate the Drum Assembly from the Drum Base.
- 3) Remove two screws(A).
- 4) Remove the P.C.B.
- 5) Separate the upper Drum Assembly from the Lower Drum Assembly.

**\* NOTE**

- 1) When disassembling and reassembling
  - ① Do not touch the Video Head Tip with fingers or tools.
  - ② Make sure that the color(white) marked on the P.C.B of the upper Drum should coincide with the color(Green) marked on the Flange Assembly.



**Fig. B-3-2 Upper/Lower Drum Assembly**

**4. A/C(Audio/Control) Head Assembly (Fig.B-4)**

- 1) Unplug the connector
- 2) Remove the Nut(A), and then lift up the A/C Head Assembly.
- 3) Remove the Azimuth Adjusting Screw.
- 4) Remove two screws(B),(D) and then separate the A/C Head Assembly from the Base A/C Head Assembly.

**\* NOTE**

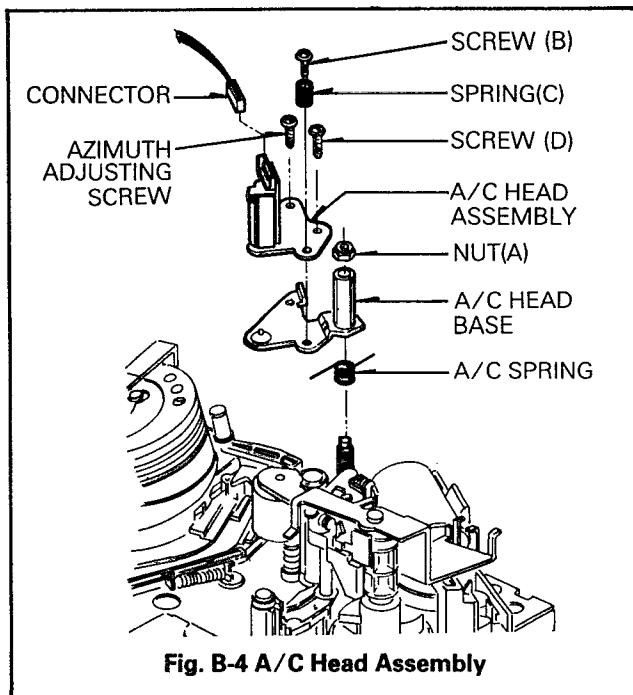
- 1) When disassembling
  - ① First of all, release the spring A/C.
  - ② Do not touch the A/C Head Tip with fingers or tools.
  - ③ After reinstalling the Audio Control Head Assembly, adjust the Tilt, Azimuth and Height of A/C Head.

**5. Pinch Lever Assembly(Fig. B-5)**

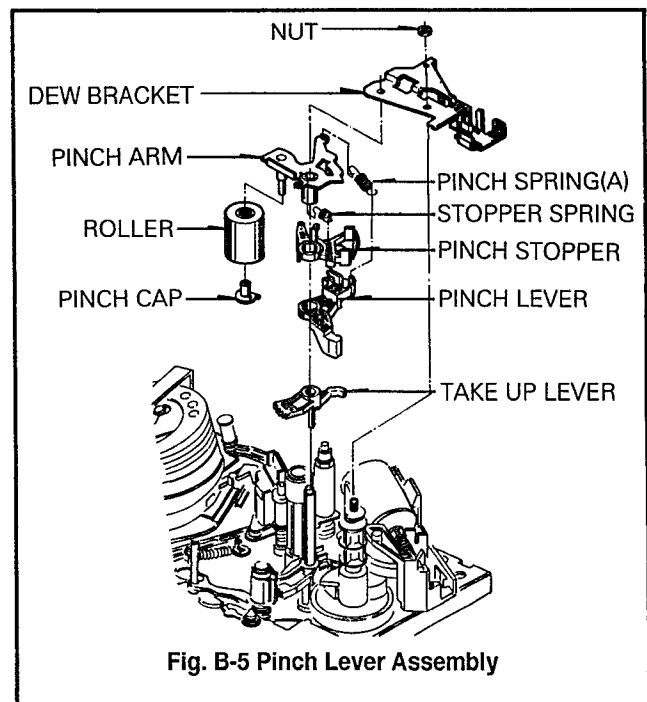
- 1) Remove one Nut, and then remove the Dew Bracket.
- 2) Lift up Pinch Lever Assembly.
- 3) Remove the Pinch Spring, and remove the Pinch Lever.
- 4) Remove the Stopper Spring and remove the Pinch Stopper by lifting it up when the Hook of Pinch Stopper is aligned with the hole of Pinch Arm while rotating the Pinch Stopper in the counterclockwise direction.
- 5) Remove the Pinch Cap, and then remove the Pinch Roller Assembly.

**\* NOTE**

- 1) When disassembling and reassembling
  - ① Be careful not to get any foreign substance on the Roller.
  - ② When disassembling the Pinch Cap, be careful not to damage the Pinch Arm.



**Fig. B-4 A/C Head Assembly**



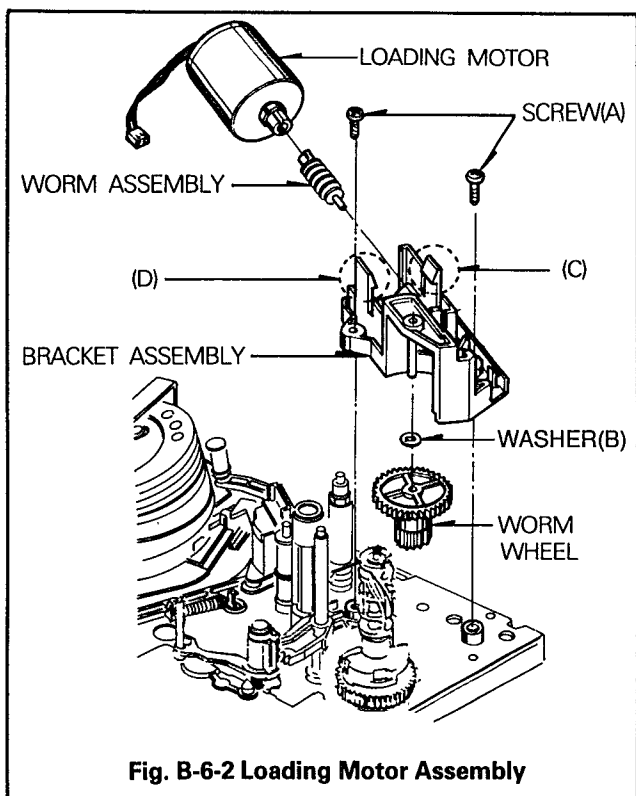
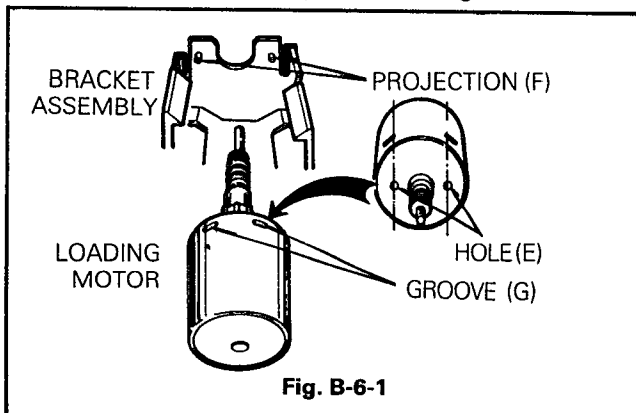
**Fig. B-5 Pinch Lever Assembly**

## 6. Loading Motor Assembly(Fig. B-6-1, B-6-2)

- 1) Remove the Dew Bracket.
- 2) Unplug the connector from the Junction P.C.B Assembly
- 3) Remove two screws(A).
- 4) Remove the worm wheel by pushing it down.
- 5) Remove the Loading Motor Assembly by pushing(C) and (D) outward.
- 6) Remove the worm Gear Assembly from the Loading Motor Assembly by pushing it.

### \* NOTE

- 1) When reassembling
  - ① Make sure that the worm assembly is seated in the axis of Loading Motor.
  - ② Two grooves(G) of Loading Motor should be turned up and two projections(F) of Bracket Assembly should be seated in each at the two holes(E)(Fig. B-6-1).
  - ③ Take notice of the polarity of the Loading Motor.

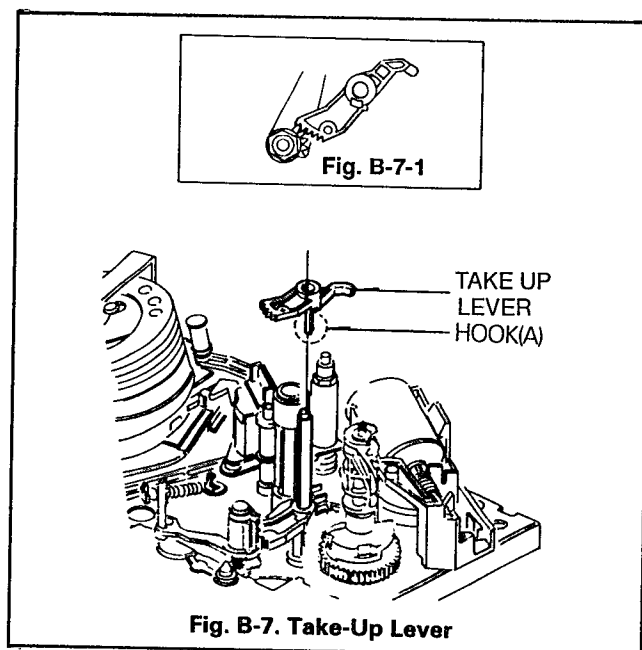


## 7. Take Up Lever(Fig. B-7)

- 1) Remove the Loading Motor Assembly.
- 2) Remove the Dew Bracket(Fig. B-5).
- 3) Remove the Pinch Lever Assembly(Fig. B-5).
- 4) Keep the Pinch Gear turned in the clockwise direction (180°).
- 5) Remove the Take-Up Lever by pushing the hook(A) outward.

### \* NOTE

- 1) When disassembling and reassembling
  - ① When disassembling the Take-Up Lever, be careful not to break the Hook(A).
  - ② When reassemble the Take-Up Lever, align the appendant Gear of Lever Take-Up with the appendant Gear of Take-up Arm
  - ③ Reassemble the Take-Up Lever completely by hooking (A).
  - ④ Be sure to replace together Take-Up Lever and Pinch Gear.
  - ⑤ Be sure to assemble Pinch Lever Assembly before operating.



## 8. Take Up Arm Assembly(Fig. B-8)

- 1) Remove the Loading Motor Assembly.
- 2) Remove the Dew Bracket, Pinch Gear, and the Take-Up Lever.
- 3) Remove one Washer(A).
- 4) Remove the Take-Up Arm Assembly by lifting it up.
- 5) Remove the spring(B).

### \* NOTE

- 1) When reassembling
  - ① Align the Gear of Take-Up Arm with the Gear of Take-Up Lever(Fig. B-7-1).

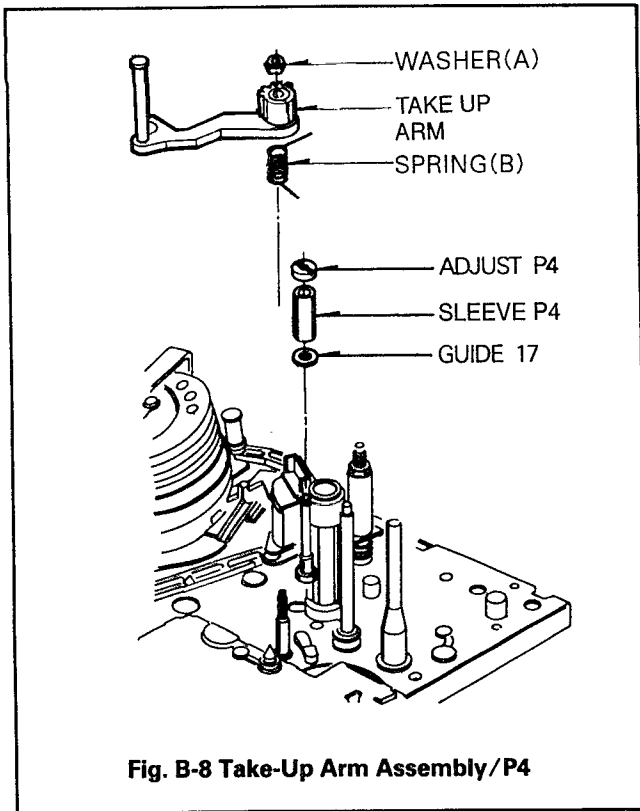


Fig. B-8 Take-Up Arm Assembly/P4

### 9. P4 Assembly(Fig. B-8)

- 1) Remove the Adjust P4.
- 2) Remove the Sleeve P4.
- 3) Remove the Guide 17.

### 10. Pinch Gear(Fig. B-10-1, B-10-2)

- 1) Remove the Loading Motor Assembly.
- 2) Remove one Nut(A) and then remove the Dew Bracket (Fig. B-5).
- 3) Remove the Pinch Lever Assembly by lifting it up(Fig. B-5)
- 4) Keep the Pinch Gear turned in the clockwise direction (180°).
- 5) Remove the Take-Up Lever by pushing the hook(A) outward(Fig. B-7).
- 6) Keep the Pinch Gear turned in the counterclockwise direction (180°).
- 7) Remove the Pinch Gear Assembly.

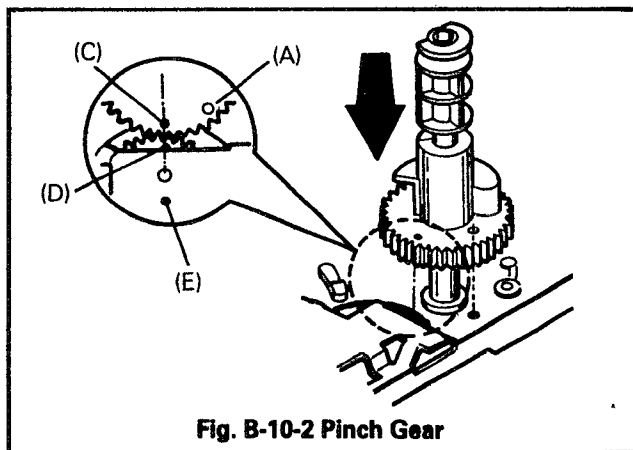


Fig. B-10-2 Pinch Gear

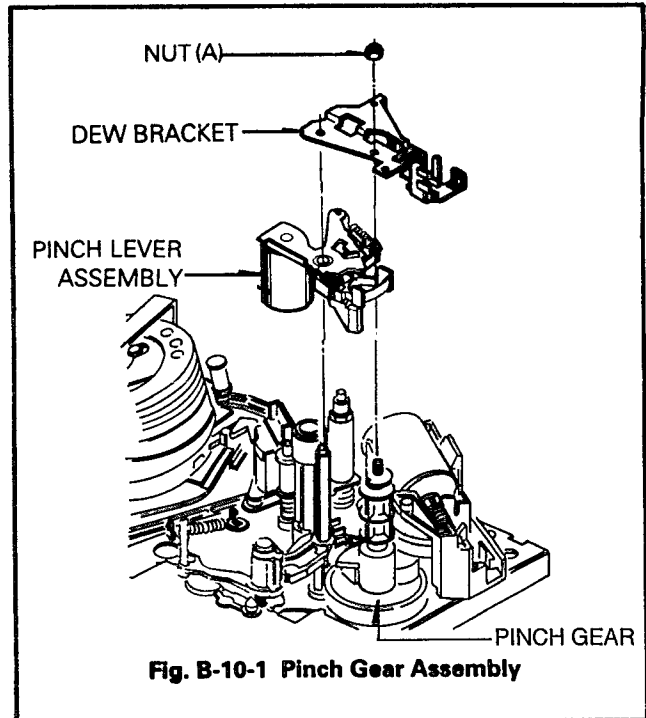


Fig. B-10-1 Pinch Gear Assembly

#### \* NOTE

- 1) When reassembling, align the hole(A) of Pinch Gear with the hole of chassis, and the hole(C) of Pinch Gear with the groove(D) of the P.C.Gear. Hole(E) of chassis should be aligned with the hole of P.C.Gear.
- 2) Be sure to replace together Take-Up Lever and Pinch Gear.
- 3) Be sure to assemble Pinch Lever Assembly before operating.

### 11. FE(Full Erase) Head Assembly(Fig. B-11) (Optional Item)

- 1) Unplug the connector.
- 2) Remove one screw(A), and then remove the FE Head.

#### \* NOTE

- 1) When disassembling and reassembling
- ① Do not touch the Video Head Tip with fingers or tools.

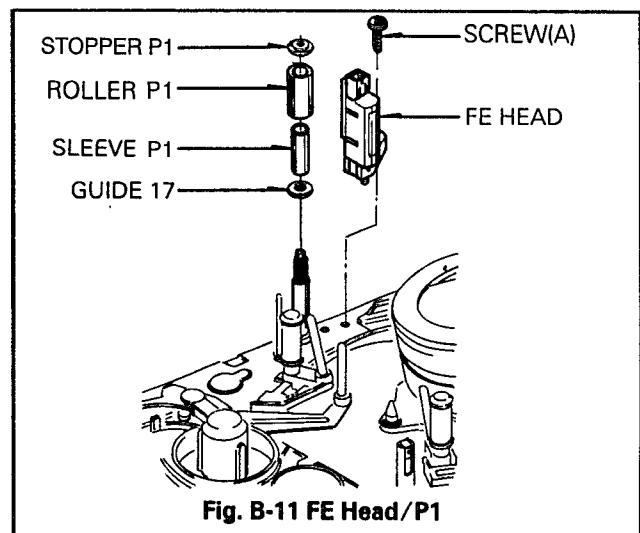


Fig. B-11 FE Head/P1

## 12. P1 Assembly(Fig. B-11)

- 1) Remove the Stopper P1.
- 2) Remove the Roller P1 .
- 3) Remove the Sleeve P1.
- 4) Remove the Guide 17.

## 13. Tension Arm Assembly(Fig. B-13)

- 1) Remove one screw(C).
- 2) Remove the Tension Spring.
- 3) Remove the Tension Arm Assembly by pushing hooks outward with the Deck Mechanism Assembly turned over.
- 4) Remove the Tension Band Assembly from the Tension Arm by pushing Hooks of Holder(A).

### \* NOTE

- 1) When disassembling and reassembling, give special attention to the disassembling and reassembling of Tension Arm Assembly, because the Tension Band is interposed between the Supply Reel and the Soft Brake.

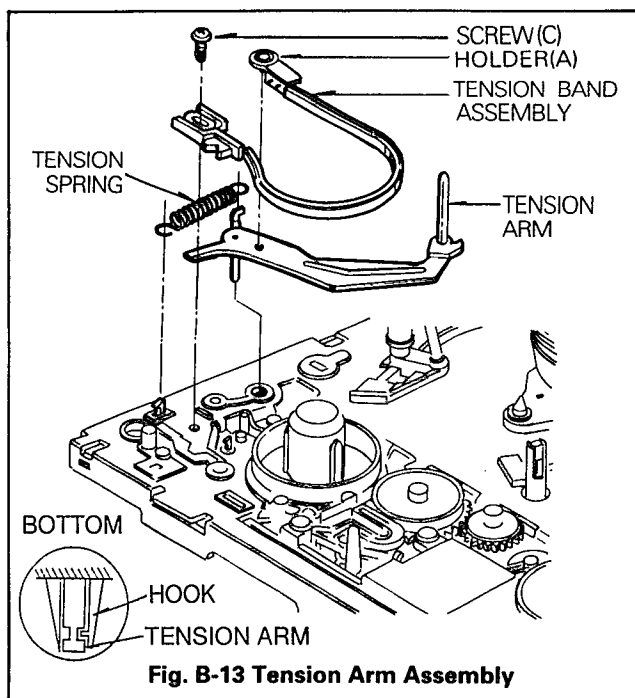


Fig. B-13 Tension Arm Assembly

## 14. Supply Soft /Supply Main /Take-Up Soft /Take-Up Main Brake Assembly

- 1) Supply Soft Brake(SSB)
  - ① Remove the SSB Spring.
  - ② Remove the SSB.
- 2) Supply Main Brake(SMB)
  - ① Remove the SMB Spring.
  - ② Remove the SMB.
- 3) Take Up Soft Brake(TSB)
  - ① Remove the TSB Spring.
  - ② Remove the TSB.
- 4) Take-Up Main Brake(TMB)
  - ① Remove the TMB Spring.
  - ② Remove the TMB.

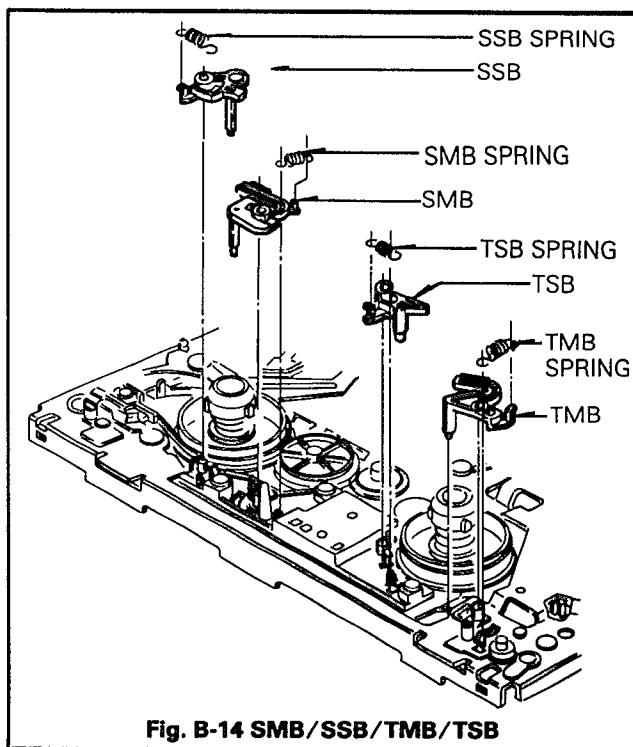


Fig. B-14 SMB/SSB/TMB/TSB

## 15. Bracket F/R(FF/Rewind) Assembly (Fig. B-15)

- 1) Remove the TMB.
- 2) Remove the Washer(A), and then remove the Gear F.R.
- 3) Remove three screws, and then remove Bracket F/R Assembly from the Deck Mechanism Assembly.
- 4) Remove the Washer(B), and spring Up/D, and then remove the Gear Up/D.
- 5) Remove the shaft(C), and then remove the Arm F.R, Lever F.R and Spring F.R.

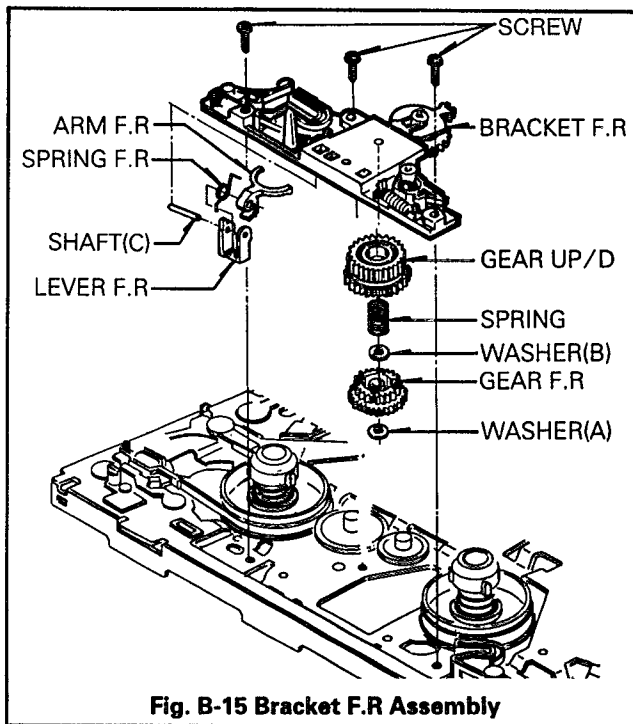


Fig. B-15 Bracket F.R Assembly

## 16. Supply Reel Assembly(Fig. B-16)

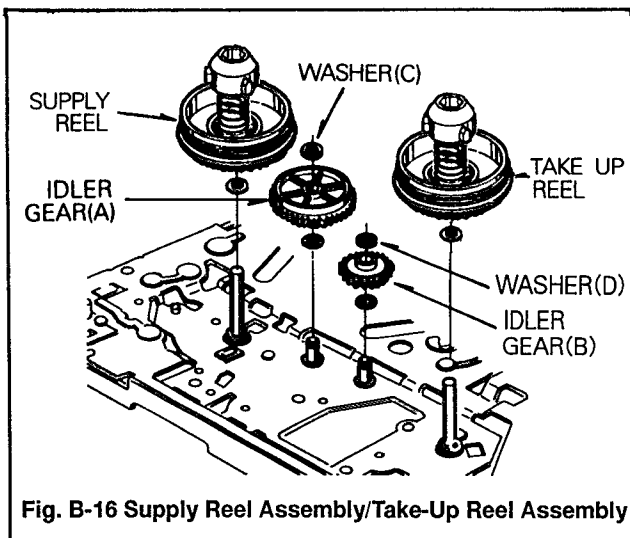
- 1) Remove the Tension Band Assembly.
- 2) Remove the Bracket F/R.
- 3) Lift up the Supply Reel Assembly from the Deck Mechanism Assembly.

## 17. Take Up Reel Assembly(Fig. B-16)

- 1) Remove the TMB(Fig. B-14)
- 2) Lift up the Take-up Reel Assembly from the Deck Mechanism Assembly.

### \* NOTE

- 1) When reassembling
  - ① Make sure that the Supply and Take Up Reel are not exchanged.
  - ② After reinstalling the Supply Reel Assembly, Adjust the Tension.

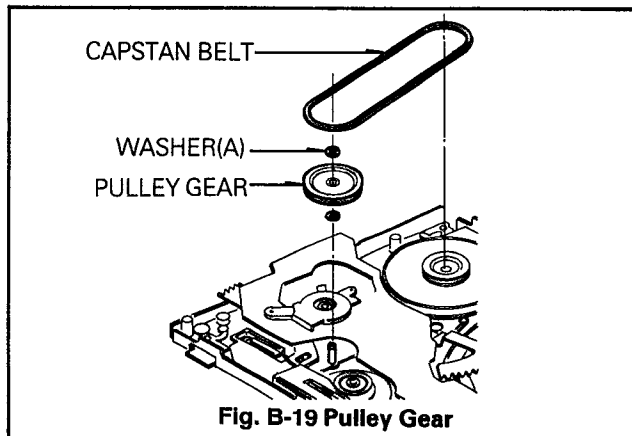


## 18. Idler Gear(A), (B)(Fig. B-16)

- 1) After removing the Supply Reel and supply Main Brake Assembly, remove the washer(C) and then remove the Idler Gear(A).
- 2) Remove the Washer(D) and remove the Idler Gear(B).

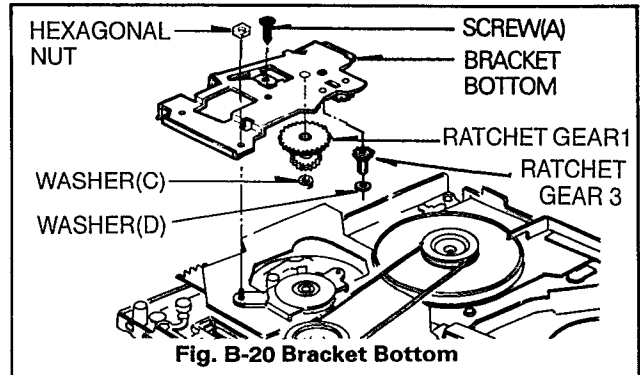
## 19. Pulley Gear Assembly(Fig. B-19)

- 1) Turn over the Deck Mechanism Assembly.
- 2) Remove the Capstan Belt.
- 3) Remove the Washer(A) and lift up the Pulley Gear.



## 20. Bracket Bottom Assembly(Fig. B-20)

- 1) Remove one screw(A).
- 2) Remove one Hexagonal Nut, and then lift up the Bracket Bottom Assembly.
- 3) Remove one Washer(C), and lift up the Ratchet Gear 1.
- 4) Remove the washer(D), and then remove Ratchet Gear 3 from the Bracket Bottom.

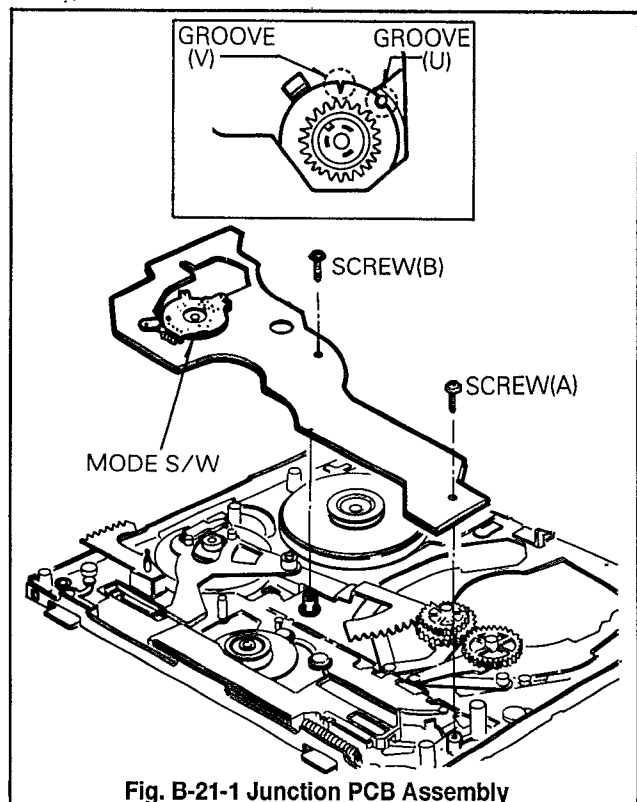


## 21. Junction PCB(Printed Circuit Board) Assembly(Fig. B-21-1)

- 1) Remove the Bracket Bottom Assembly.
- 2) Remove two screws(A), (B) and then remove the Junction P.C.B Assembly.
- 3) Remove the Mode Switch from the Junction P.C.B Assembly.
- 4) Remove the Reel Sensor, Sensor LEDs and each holder from the Junction P.C.B(Fig. B-21-2).

### \* NOTE

- 1) When reassembling the Mode Switch, the groove(V) and (U) of Mode Switch should be at their original place in the Eject Mode.



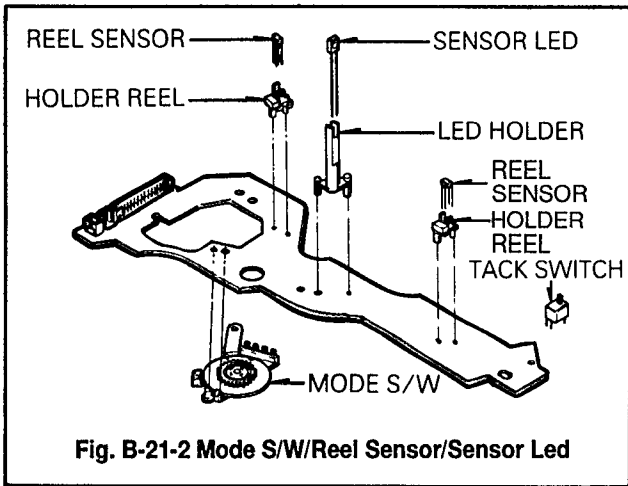


Fig. B-21-2 Mode S/W/Reel Sensor/Sensor Led

## 22. Capstan Motor and Brake Assembly (Fig. B-22-1)

- 1) Remove the Junction P.C.B Assembly
- 2) Hook the end of Capstan Brake Spring to the projection of Capstan Brake and then remove the Capstan Brake Assembly by lifting it up (Fig. B-22-2).
- 3) Remove two Screws(A), and then remove the Bracket C-Guide.
- 4) Remove the Connector.
- 5) Remove three screws(B), and then remove the Capstan Motor Assembly from the Deck Mechanism Assembly.

### \* NOTE

- 1) When disassembling and reassembling, hook end of the spring on the projection of Cap-Brake and remove it by lifting it up. Reassemble it in the opposite manner.

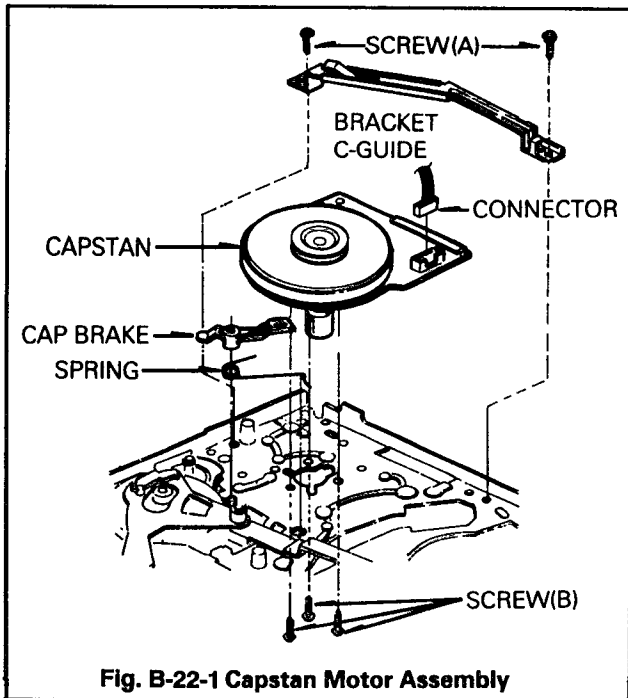


Fig. B-22-1 Capstan Motor Assembly

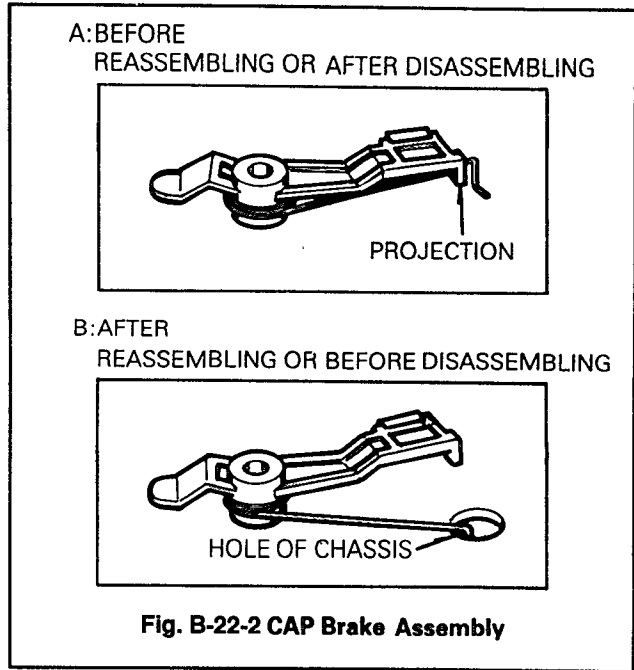


Fig. B-22-2 CAP Brake Assembly

## 23. Function Plate (Fig. B-23)

- 1) Remove two screws(B) in Eject Mode.
- 2) Remove the Function Plate Spring.
- 3) Push the Function Plate in the direction of arrow(A) and then lift it up.

### \* NOTE

- 1) When reassembling, the groove of Lower part of Function Plate should be aligned with the shaft of Tension Lever Assembly (Fig. B-29).

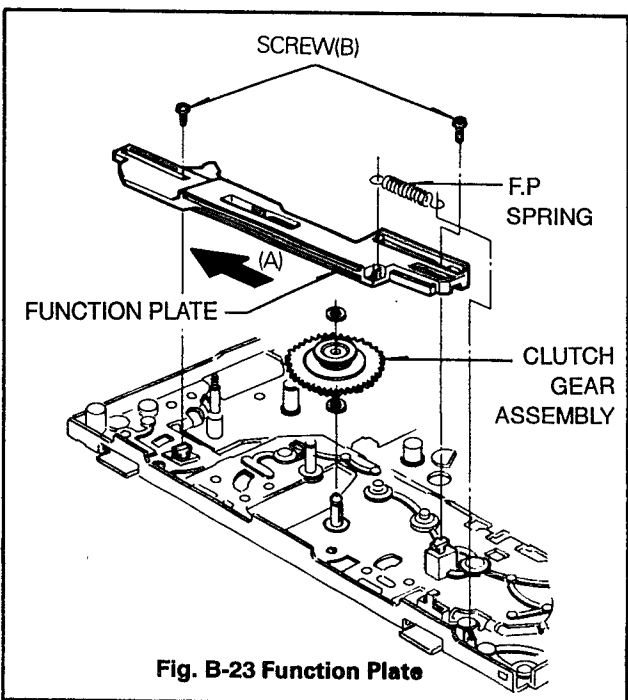
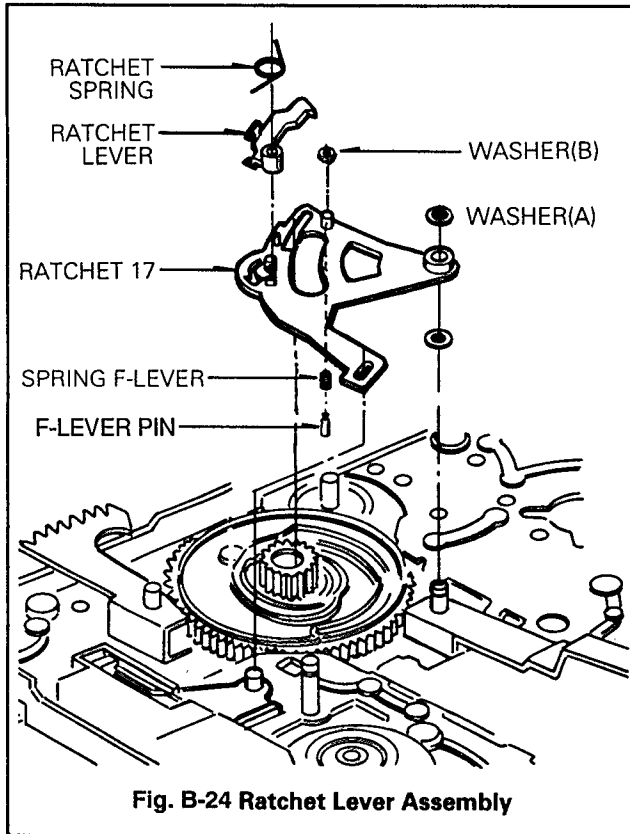


Fig. B-23 Function Plate

## 24. Ratchet Lever Assembly(Fig. B-24)

- 1) Remove the Function Plate.
- 2) Remove the Junction P.C.B Assembly.
- 3) Remove the Washer(A) and then remove the Ratchet Lever Assembly.
- 4) Remove the Ratchet Spring.
- 5) Remove the Ratchet Lever from the Ratchet 17 by lifting it up when the hook of it is aligned with the hole of Ratchet 17 while rotating it counterclockwise direction.
- 6) Remove the Washer(B), and turn over the Ratchet 17 and then remove the F-Lever Pin, Spring F-Lever.

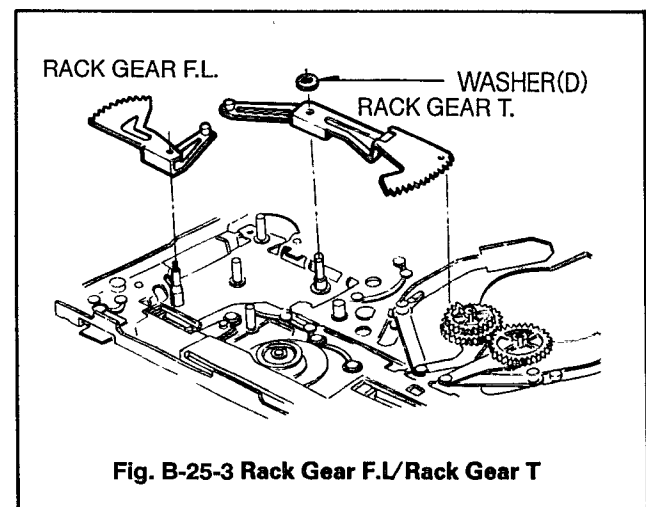
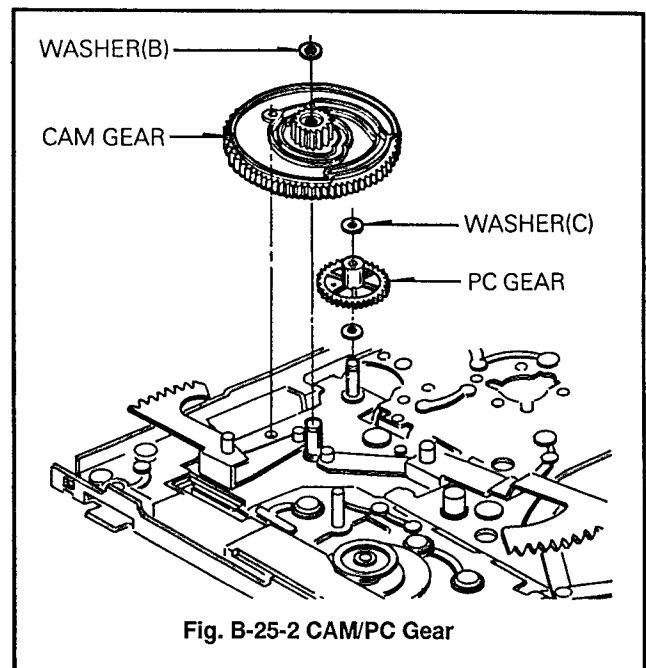
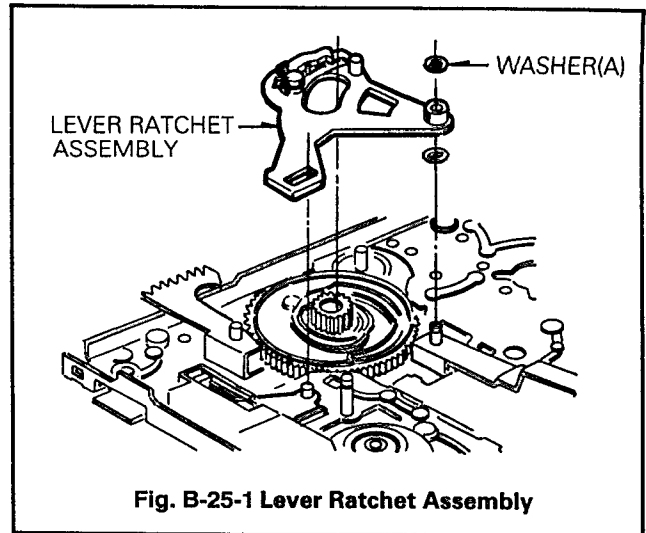


## 25. Cam Gear/Rack Gear T/Rack Gear FL(Fig. B-25-2)

- 1) Remove the washer(A) and remove the Ratchet Lever Assembly.(Fig. B-25-1).
- 2) Remove the washer(B), and then remove the Cam Gear (Fig. B-25-2).
- 3) Remove the Rack Gear F.L.(Fig B-25-3).
- 4) Remove the Washer(D).(Fig. B-25-3).
- 5) Remove the Rack Gear T.(Fig. B-25-3).

### \* NOTE

- 1) When reassembling
  - ① Align the Projection of Rack Gear T with the hole of Loading Gear.
  - ② Drive the Rack Gear F.L in the direction of arrow(D).
  - ③ Hole of Cam should be aligned with the hole of chassis, and the groove(■) of Cam Gear should be aligned with the hole of PC Gear (Fig. B-26).



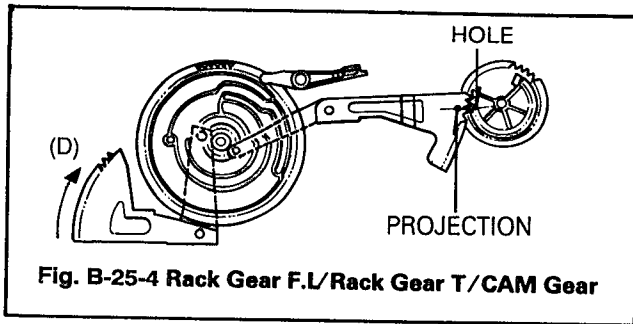


Fig. B-25-4 Rack Gear F.L./Rack Gear T/CAM Gear

## 26. PC Gear (Fig. B-26)

- 1) Remove the washer(C).
- 2) Remove the P.C Gear by lifting it up.

### \* NOTE

- 1) When reassembling
  - ① The Groove of PC Gear should be aligned with the groove(V) of Cam Gear, and another hole of it should be aligned with the hole of chassis (Fig. B-26).

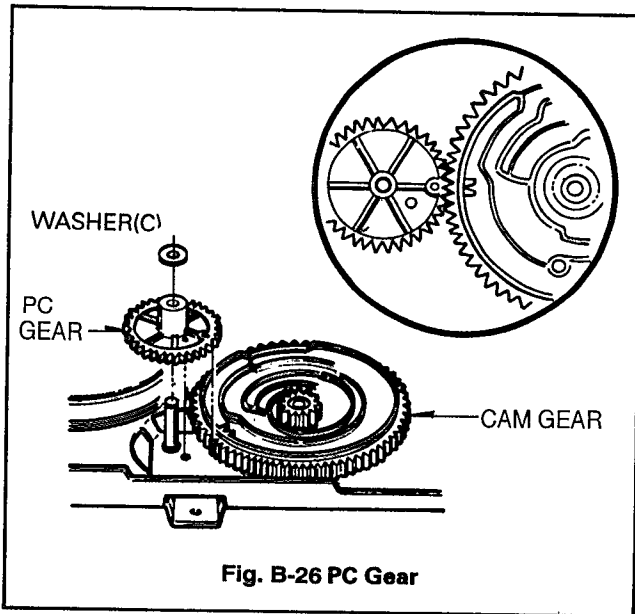


Fig. B-26 PC Gear

## 27. P2 and P3 Slant Assembly (Fig. B-27)

- 1) After finishing the disassembly of Drum Assembly, remove the P2 and P3 Slant Assembly by turning the Loading Gear(R) in the clockwise direction.(Loading direction)
- 2) Loosen the set screws.
- 3) Remove the Roller Guide from the Slant Base.

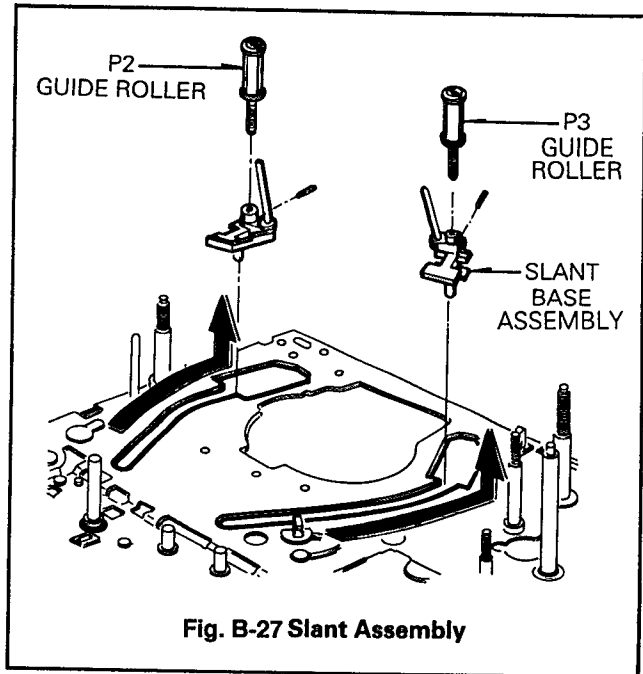


Fig. B-27 Slant Assembly

### \* NOTE

- 1) When disassembling and reassembling
  - ① Use a Hexagonal wrench to remove set screw.
  - ② Take notice that the P2 and P3 Slant Assembly should not be changed from their original place.

## 28. Loading Gear Assembly(L),(R) (Fig. B-28)

- 1) Remove the Cam Gear, Rack-T.
- 2) Remove the P2 and P3 Slant Assembly by turning the Loading Gear(L),(R) in the Loading direction
- 3) Lift up the Loading Gear Assembly(L),(R) from the Deck Mechanism Assembly.
- 4) Remove the Spring Load(L),(R).
- 5) Separate the Loading Gear(L), (R) from Arm Load(L), (R).

### \* NOTE

- 1) When reassembling
  - ① Make sure that the Loading Gear(L) and (R) should not be changed from their original place.
  - ② Align the groove of Loading Gear(L),(O) with the groove of Gear(R),(O).



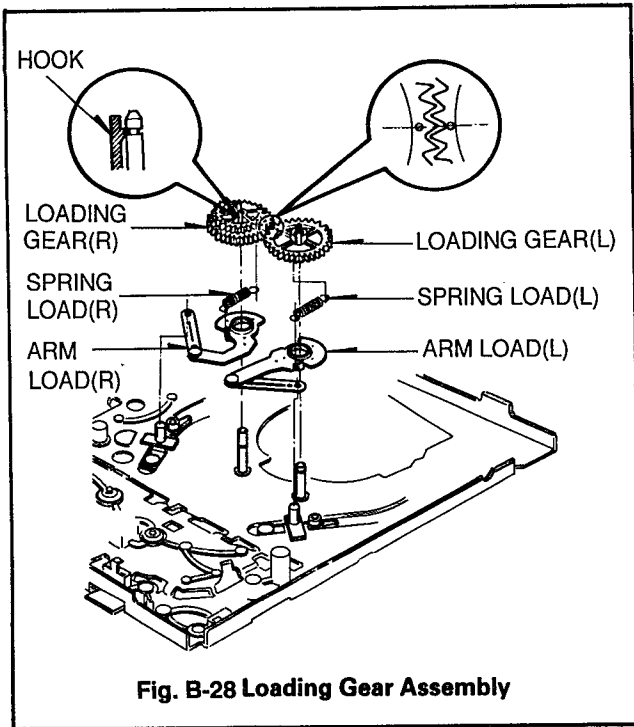


Fig. B-28 Loading Gear Assembly

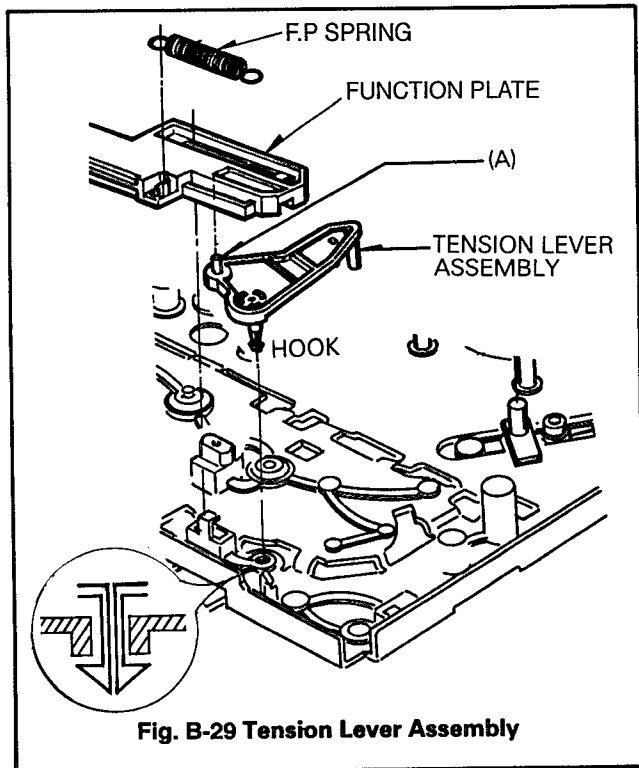


Fig. B-29 Tension Lever Assembly

### 29. Tension Lever Assembly (Fig. B-29)

- 1) Remove the Function Plate.
- 2) Remove the Tension Lever Assembly by pushing hooks inward.

**\* NOTE**

- 1) When reassembling
  - ① Set the part(A) of Tension Lever Assembly in the groove of Lower part of Function Plate.

### 30. Clutch Gear Assembly (Fig. B-30)

- 1) Remove the Pulley Gear.
- 2) Remove the Plate Function.
- 3) Remove the washer(A), and then remove the Clutch Gear Assembly.

**\* NOTE**

- 1) When reassembling
  - ① Do not disassemble the Clutch Gear Assembly any further, because Torque adjustment is not adjustable.

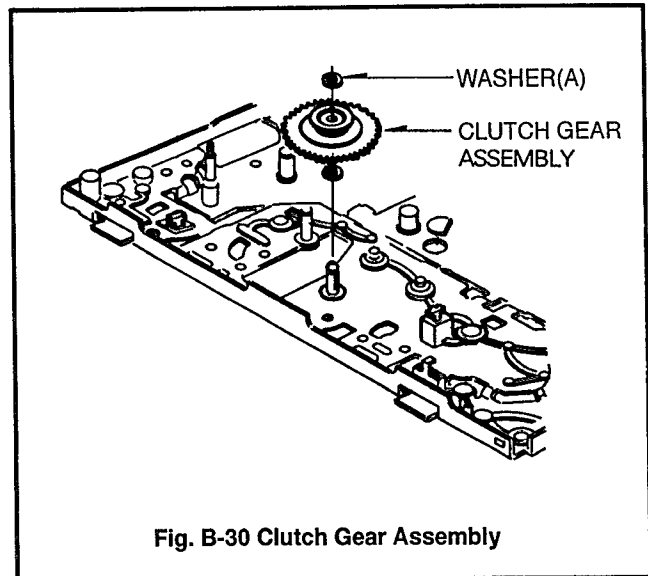
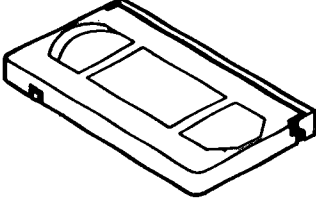
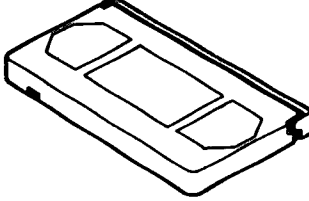
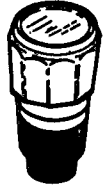


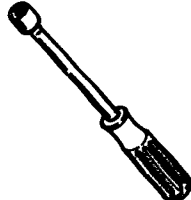


Fig. B-30 Clutch Gear Assembly

# MECHANISM ADJUSTMENTS

## • Tools and Fixtures for Deck

<p>1. Back tension meter Parts No : D00-D006</p> 	<p>2. Alignment tape Parts No NTSC: DTN-0001 PAL : DTN-0002</p> 	<p>3. Torque gauge Parts No : D00-D002</p> 
<p>4. Torque gauge adaptor Parts No : D09-R001</p> 	<p>5. Post height adjusting driver Parts No : DTL-0005</p> 	<p>6. M3 Nut driver Parts No : DTL-0006</p> 

# 1. Mechanism State Switch (Mode Switch) Check

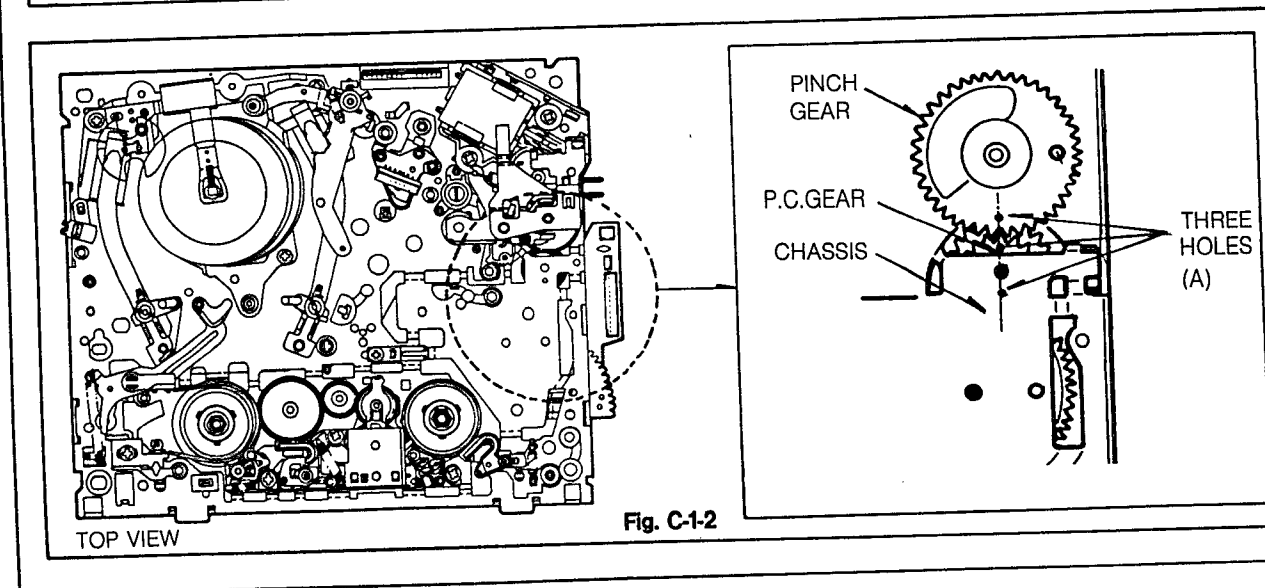
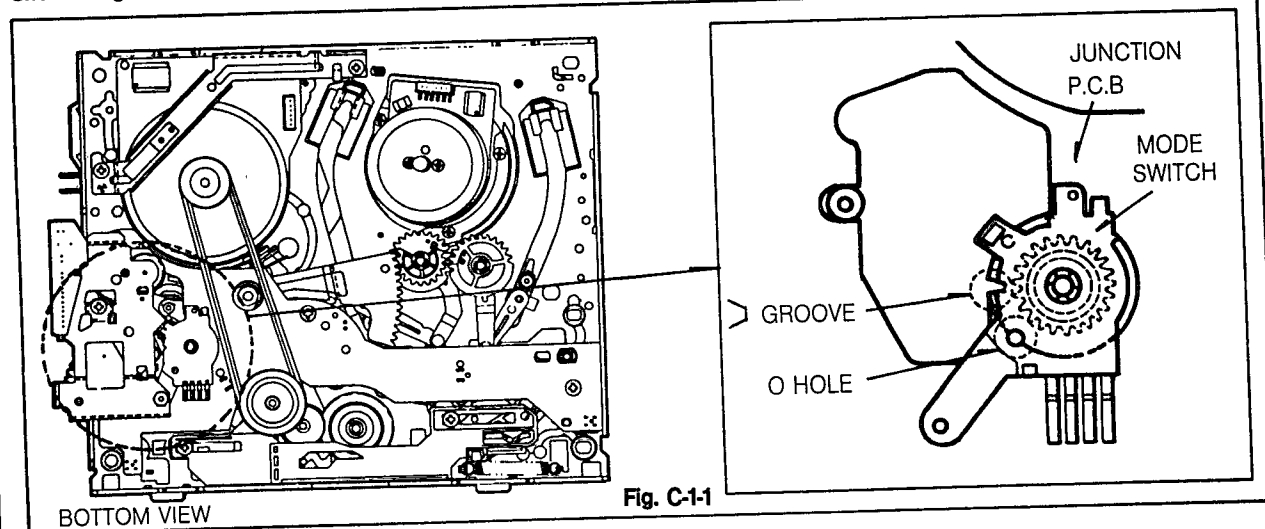
**Purpose:** To detect accurately the mechanism state and prevent the mechanism from malfunction.

Test Equipment/Fixture	VCR State	Check Point
●Blank tape	●Eject Mode (with cassette ejected)	●Mechanism state switch (Mode Switch and Cam)

### Check Procedure

- 1) Turn the VCR on and eject the tape by pressing eject button.
- 2) Remove the Cabinet Top, the Main P.C.Board and the CST Housing. Then push the CST IN/OUT switch (Loca. #137) and eject button at the same time.
- 3) Turn the worm (Loca. #082) of Loading Motor Assembly (Loca. #A10) to the left side (counter-clockwise) to align the three holes (A) of the Pinch Gear, the P.C.Gear and the Chassis.
- 4) Remove the Bottom Cover and then check that the groove (V) and the hole (O) of Mode S/W are aligned each other. If the above alignment is not obtained, adjust as follows.
  - (1) Remove the Bracket Assembly Bottom and the Capstan Belt in the state of power off.
  - (2) Remove the P.C.B Assembly, align the groove (V) and the hole (O) of Mode S/W each other and then reassemble the P.C.B Assembly.
  - (3) Turn the power on and perform the various operations to check that the loading and the unloading are correct.

### Check Diagram



## **2. Preparation for Adjustment(To set VCR to the loading state without inserting a cassette)**

- 1) Unplug the power cord from the AC outlet.
- 2) Remove the Cabinet Top and Front Loading mechanism.
- 3) Plug the power cord into the AC outlet.
- 4) Turn the VCR on and push the tact switch in the PCB Assembly.

The VCR can accept input of each mode in this case. However the rewind and review operation cannot be performed for more than a few seconds because the take-up reel table is in the stop state and reel pulses cannot be detected.

### **(NOTE)**

Always return the VCR to the Front Loading Mechanism Assembling State in the following order after the above operations have been performed.

- 1) Press the Eject button after turning the power on.
- 2) Wait for about 10 seconds until searching out the assembly position.
- 3) Assemble the Front Loading Mechanism and connect the Front Loading Mechanism Connector.
- 4) Refer to the "Front Loading Mechanism Disassembly" which is described previously.

### 3. Tension Post Position and Tension Adjustment

**Purpose:** To make the tension of tape constant so that the contact between the video heads and tape is stabilized.

Test Equipment/Fixture	VCR State	Adjustment Point
● Tension Meter (Tension adjustment)	● Play without cassette and with a Tension Meter	● Holder Band(B)

#### Adjustment Procedures

⟨Position Adjustment⟩

- 1) Perform loading without inserting a tape and loosen the screw that attaches the Holder Band(B) to the Deck Mechanism Assembly.
- 2) Insert the (-)type driver between the Holder Band(B) and the "V" groove of the chassis.
- 3) Move the Holder Band(B) right and left and align the center of tension post(Guide T-Post) with the center of P1(Shaft P1).(tolerance:Less than  $\pm 0.3\text{mm}$ )
- 4) Tighten the screw that attaches the Holder Band(B) to Deck Mechanism Assembly.

- (2) below the standard:loosen the screw, move the Holder Band(B) to the left a little and then tighten the screw and make sure that this adjustment is correct.

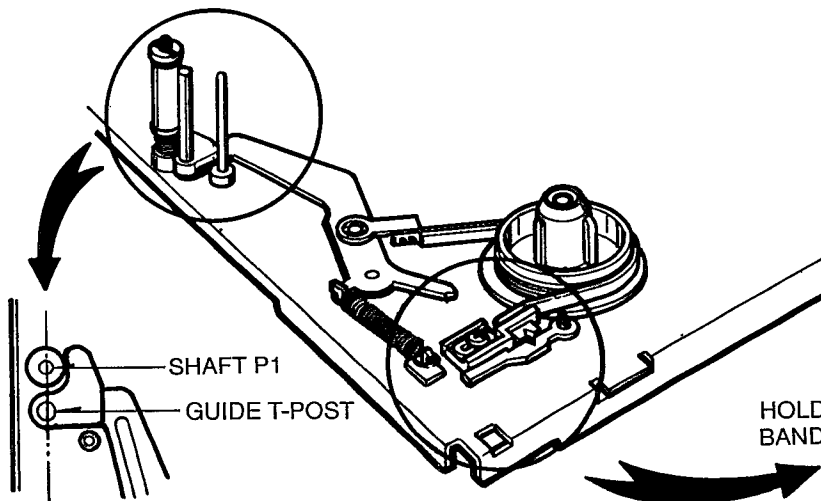
#### **\*\*CAUTION\*\***

The range of movement of Holder Band(B) should be within  $\pm 1.5\text{mm}$  while being adjusted. If the range is over, you should recheck the Reel Brake, Tension Arm and Spring.

⟨Tension Adjustment⟩

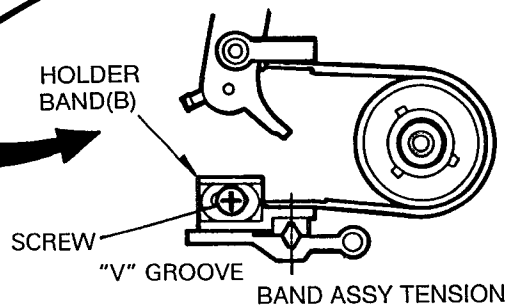
- 1) Play the Tension Meter and read the Tension Meter:  $38\text{g}\cdot\text{cm} \pm 4\text{g}\cdot\text{cm}$ (reference value).
- 2) If the result is abnormal.
  - (1) over the standard:loosen the screw, move the Holder Band(B) to the right a little and then tighten the screw and make sure that this adjustment is correct.

#### Adjustment Diagram



ALIGN THE CENTER OF P1 AND TENSION POST

Fig. C-3-1



BAND ASSY TENSION

Fig. C-3-2

## 4. Checking Torque

**Purpose:** It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape run smoothly and satisfy the basic performance of the VCR. Check these if the tape does not run smoothly or the tape speed is abnormal.

Test Equipment/Fixture		VCR state	
<ul style="list-style-type: none"> <li>● Torque Gauge</li> <li>● Torque Gauge Adaptor</li> <li>● Cassette Torque Meter SRK-VHT-063 : Play, Cue SRK-VHT-303 : Review</li> </ul>		<ul style="list-style-type: none"> <li>● Set the VCR to each operation mode without inserting a cassette. (See '2 Preparation for Adjustment')</li> </ul>	
Item	VCR Operation mode	Measurement Reel	Measurement Values
Main brake torque,	Eject	Supply and take-up reels	600g.cm or more
Slack removal torque	Unloading(power off)	Supply reel	120~220g.cm
Fast forward torque	Fast forward	Take-up reel	600g.cm or more
Rewind torque	Rewind	Supply reel	600g.cm or more
Play take-up torque	Play	Take-Up reel	90~150g.cm
Review Torque	Review	Supply Reel	120~180 g.cm
CUE Torque	Cue	Take-Up Reel	110~170 g.cm

### Checking Method

The values are measured by using a torque gauge and torque gauge adaptor with the torque gauge fixed.

**Note:** This value is measured when the VCR is shifted in the unloading direction from the fast forward or rewind mode and quick braking is applied to both Reel Tables.

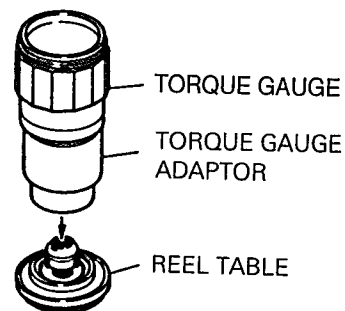
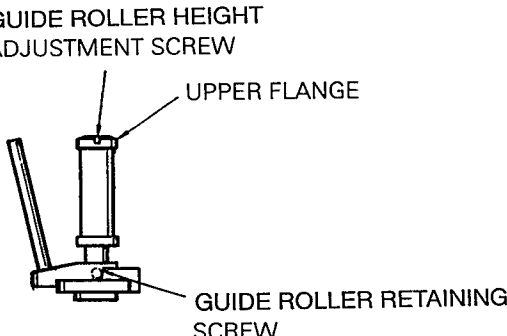


Fig. C-4

## 5. Guide Roller Height Adjustment

**Purpose:** To regulate the height of tape so that the bottom of tape runs along the tape guide line on the lower drum.

### A. Preliminary Adjustment

Test Equipment/Fixture	VCR State	Adjustment Point
<ul style="list-style-type: none"> <li>● Hexagonal Wrench or Bended Drive (+) Type</li> <li>● Post Height Adjusting Driver</li> </ul>	<ul style="list-style-type: none"> <li>● Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>● Guide Roller Height Adjustment Screws on the Supply and Take-Up Guide Rollers.</li> </ul>
<p><b>Adjustment Procedure</b></p> <ol style="list-style-type: none"> <li>1) Perform the precise adjustment.</li> <li>2) When the Guide Roller is damaged, release the Guide Roller retaining screw and then replace the Guide Roller.</li> </ol>		<p><b>Adjustment Diagram</b></p>  <p>The diagram shows a side view of a guide roller assembly. It consists of a vertical cylindrical component with a horizontal flange at the top, labeled 'UPPER FLANGE'. A vertical screw, labeled 'GUIDE ROLLER HEIGHT ADJUSTMENT SCREW', passes through the center of the upper flange. At the bottom of the assembly, a horizontal screw, labeled 'GUIDE ROLLER RETAINING SCREW', is shown passing through the side of the roller housing. A diagonal line indicates the position of the roller housing.</p> <p style="text-align: center;"><b>Fig. C-5-1</b></p>

## B. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	VCR State	Adjustment Point
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Post Height Adjusting Driver</li> <li>● Alignment Tape(30HMP-2)</li> <li>● Hexagonal wrench</li> </ul>	<ul style="list-style-type: none"> <li>● CH-1: PB RF Envelope</li> <li>● CH-2 ( NTSC : SW30Hz PAL : SW25Hz</li> <li>● Head Switching Output Point</li> <li>● RF Envelope Output Point</li> </ul>	<ul style="list-style-type: none"> <li>● Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>● Guide Roller Height Adjustment Screws.</li> </ul>

### Adjustment Procedure

- 1) Play an alignment tape after connecting the probe of the oscilloscope to RF Envelope Output Test Point and Head Switching Output Test Point.
- 2) Tracking control(in PB mode):Center position(When this adjustment is performed after the drum assembly has been replaced, set the tracking control so that the RF output is maximum.)
- 3) Height adjustment screw:Flatten the RF waveform.
- 4) Turn(Move) the tracking control(playback) clockwise and counterclockwise.(to the right and left)
- 5) Check that any drop of RF output is uniform at the start and end of the waveform.

### \*\*CAUTION\*\*

If the adjustment is excessive or insufficient the tape is jammed or folded.

### Waveform Diagrams

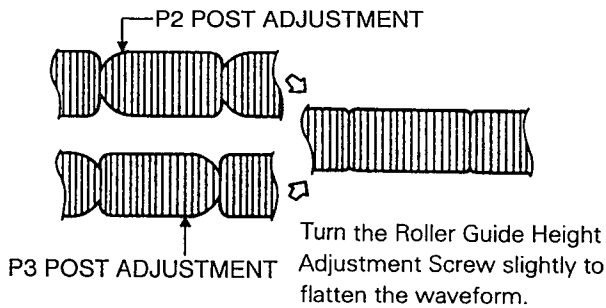


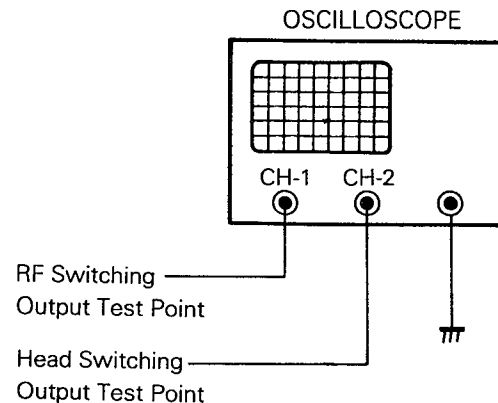
Fig. C-5-2



Tracking control at center Turn(Move) the tracking control to both directions.

Fig. C-5-3

### Connection Diagram





## 6. Audio/Control(A/C) Head Adjustment

**Purpose:** To keep the contact between the tape and head so that the specified track is recorded and played back.

**A. Preliminary Adjustment** (Perform the preliminary adjustment, when there is no Audio Output signal with alignment tape.)

Test Equipment/Fixture	VCR State	Adjustment Points
● M3 Nut Driver		● Special screw ● Cone Point Screw for tilt ● Azimuth Adjustment Screw
● Blank tape	● Run the blank tape	● A/C Head Adjuster

### Adjustment procedure/Adjustment Diagram

- 1) Tighten the special screw so that the spring section protrudes 6.4mm(approx.) over the top of Head Base (1).

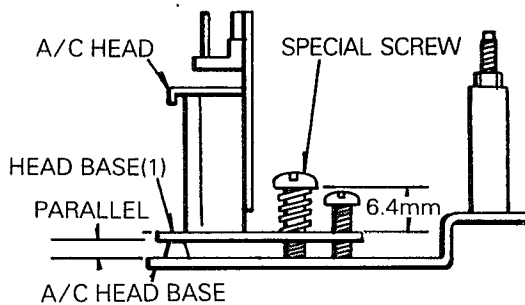


Fig. C-6-1

- 2) Turn the Azimuth Adjustment Screw and Cone Point Screw so that the Head Base(1) and A/C Head Base are parallel.

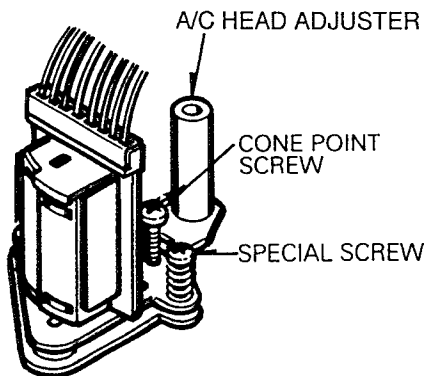


Fig. C-6-2

- 3) Load a blank tape and set the VCR to the play mode.

- 4) Confirm that the tape runs fittingly to the lower limit of the P4 post. Also confirm that the tape runs smoothly.
- 5) If adjustment is required, turn Cone Point Screw clockwise until curling is apparent at the lower edge of P4. Then turn Cone Point Screw counterclockwise until the curling smooths out.

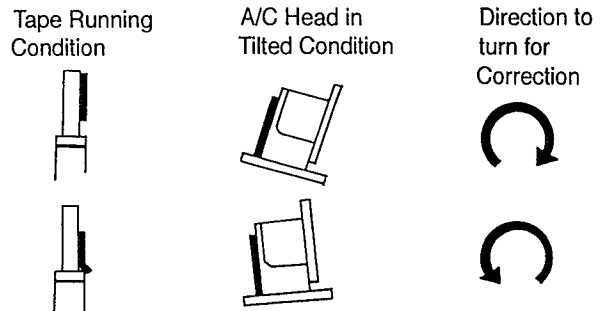


Fig. C-6-3

- 6) Check that there is no conspicuous curling and folding around the A/C head. If there is conspicuous curling or folding, readjust the Cone Point Screw, Azimuth Adjustment Screw and A/C Head Adjuster. When the bottom edge of tape is 0.20~0.25mm from the bottom edge of the control head's core, the height of A/C head is ideal.

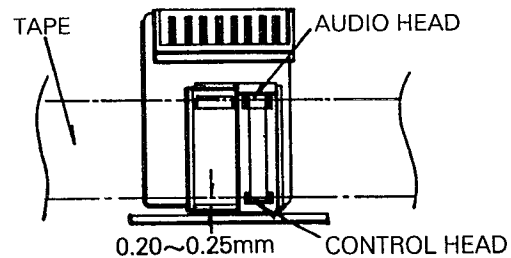


Fig. C-6-4

- 7) If necessary repeat steps 1 through 4 until a precise adjustment is achieved.

## B. Precise Adjustment

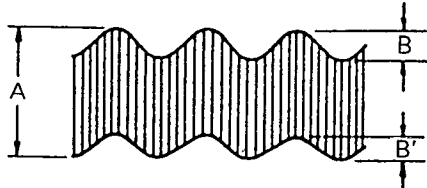
Test Equipment/Fixture	Test Equipment Connection Point	VCR State	Adjustment Points
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Alignment tapes</li> <li>● M3 Nut Driver</li> </ul>	<ul style="list-style-type: none"> <li>● Audio output jack</li> </ul>	<ul style="list-style-type: none"> <li>● Play an alignment tape 1KHz, 7KHz sections</li> </ul>	<ul style="list-style-type: none"> <li>● Azimuth Adjustment Screw</li> <li>● A/C Head adjuster</li> <li>● Cone point screw</li> </ul>
<p><b>Adjustment Procedure</b></p> <ol style="list-style-type: none"> <li>1) Connect the probe of oscilloscope to audio output jack.</li> <li>2) Adjust the Azimuth Adjustment Screw, A/C Head adjuster and cone point screw slightly and alternately so that an Audio 1KHz output is maximum and flat. (minimum fluctuation).</li> <li>3) Adjust the Azimuth Adjustment Screw slightly and alternately so that the Audio 7KHz output is maximum.</li> </ol>		<p><b>Waveform Diagram</b></p>  <p style="text-align: center;">A:Maximum    BB':Minimum</p>	

Fig. C-6-5

## 7. X-Value Adjustment

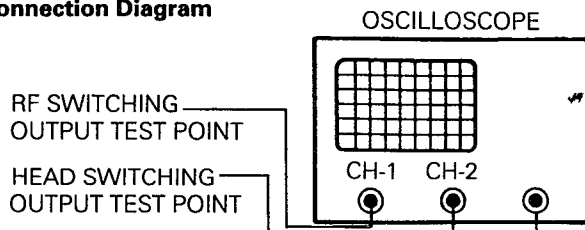
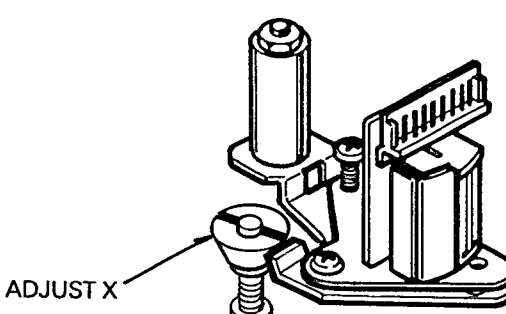
<b>Purpose:</b> To obtain compatibility with other VCRs.			
Test Equipment/Jigs	Test Equipment Connection Points	VCR State	Adjustment Points
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Alignment tapes</li> <li>● Post Height Adjusting Driver</li> </ul>	<ul style="list-style-type: none"> <li>● CH-1:PB RF Envelope</li> <li>● CH-2:SW 30Hz</li> <li>● Head Switching Output Test Point</li> <li>● RF Envelope Output Test Point</li> </ul>	<ul style="list-style-type: none"> <li>● Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>● Adjust X</li> </ul>
<p><b>Connection Diagram</b></p> 		<p><b>Adjustment Diagram</b></p> 	
<p><b>Adjustment Procedure</b></p> <ol style="list-style-type: none"> <li>1) Insert a cassette tape, and then "AUTO TRACKING" will be displayed on the Digitron, then push the Tracking ⊕ or ⊖ Keys one time as soon as possible to make the VCR release the Auto Tracking.</li> <li>2) Turn the Adjust X to the maximum RF Envelope level when the VCR is free from the Auto tracking.</li> <li>3) If RF envelope output is maximized from the center click position in the right direction (clockwise), set the tracking control to the center and turn the X Adjust counterclockwise.</li> <li>4) If in the left direction (counterclockwise), turn it clockwise by the same method.</li> <li>5) In case of the 30 μ m, head will trace over a 60 μ m width track, readjust it so that RF Envelope output begins falling at the same angle when tracking control is turned either left or right.</li> </ol>			

Fig. C-7

## 8. Adjustment after Replacing Drum Assembly(Video Heads)

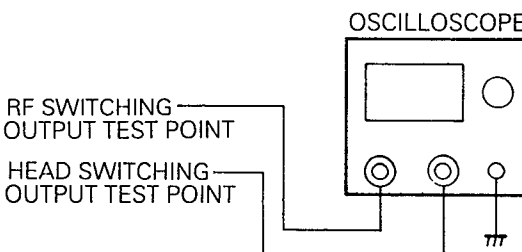
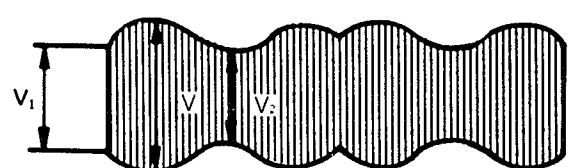
<b>Purpose:</b> To suppress drift in the height relative to the Guide Roller and drift of the X Value after replacing the drum.			
<b>Test Equipment/Fixture</b>	<b>Test Equipment Connection Points</b>	<b>VCR State</b>	<b>Adjustment Points</b>
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Post Height Adjusting Driver</li> <li>● Alignment tape</li> <li>● Blank tape</li> <li>● M3 Nut Driver</li> </ul>	Checking the flatness <ul style="list-style-type: none"> <li>● CH-1: PB RF Envelope</li> <li>● CH-2 (NTSC : SW30Hz PAL : SW25Hz)</li> <li>● Head Switching Output Point</li> <li>● RF Envelope Output Point</li> </ul>	<ul style="list-style-type: none"> <li>● Run the blank tape</li> <li>● Play an alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>● Guide Rollers Precise Adjustment</li> <li>● Switching point</li> <li>● Tracking point</li> <li>● X-Value</li> </ul>
<b>Connection Diagram</b> 		<b>Waveform Diagram</b>  <p> <math>V_1/V \text{ MAX} &gt; 0.7</math>  <math>V_2/V \text{ MAX} &gt; 0.8</math>            RF ENVELOPE OUTPUT         </p>	
<b>Checking / Adjustment Procedure</b> <ol style="list-style-type: none"> <li>1) Run the blank tape, check and adjust whether the Roller Guide is curling or creasing tape around the Roller Guide.</li> <li>2) Check the RF envelope output flatness and adjust the Roller Guide Height while playing an alignment tape.</li> <li>3) Adjust the head switching point.</li> <li>4) Check that RF envelope output is maximum when the tracking is at the initial position.</li> <li>5) Adjust the Tracking Preset and X-Value Adjust with X Adjust.</li> </ol>			

Fig. C-8

## 9. Check of Tape Travel after reassembling Deck Assembly

### 9-1. Check Audio and RF Locking Time during playback after CUE or REV.

<b>Test Equipment/Fixture</b>	<b>Specification</b>	<b>Test Equipment Connection Point</b>	<b>VCR State</b>
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● Alignment tape (with 6H 3kHz Color Bar Signal)</li> <li>● Stop Watch</li> </ul>	<ul style="list-style-type: none"> <li>● RF Locking Time : Less than 5 sec.</li> <li>● Audio Locking Time : Less than 10 sec.</li> </ul>	<ul style="list-style-type: none"> <li>● CH-1 : PB RF Envelope</li> <li>● CH-2 : Audio Output</li> <li>● RF Envelope Output Point</li> <li>● Audio Output Jack</li> </ul>	<ul style="list-style-type: none"> <li>● Play an alignment tape (with 6H 3kHz Color Bar Signal)</li> </ul>
<b>Checking Procedure</b> <ol style="list-style-type: none"> <li>1) Change the mode of CUE or REV to play.</li> <li>2) At this time, confirm that the Locking Time of Audio and RF Output Waveform fits to specification.</li> <li>3) If the results checked above are abnormal, repeat adjustments 4 through 8.</li> </ol>			
※ 6H : LP			

**9-2. Check the coincidence of both Audio and Video Sync.(Lip Sync.)**

Test Equipment/Fixture	Specification	Test Equipment Connection Point	VCR State
<ul style="list-style-type: none"> <li>● Oscilloscope</li> <li>● 2H 9V Tape(for X-Value Adjustment Coincidence) or alignment tape</li> </ul>	<ul style="list-style-type: none"> <li>● Less than <math>\pm 0.5V</math></li> </ul>	<ul style="list-style-type: none"> <li>● CH-1 : PB RF Envelope</li> <li>● CH-2 : Audio Output</li> <li>● RF Envelope Output Point</li> <li>● Audio Output Jack</li> </ul>	<ul style="list-style-type: none"> <li>● Play a 2H 9V tape or an alignment tape.</li> </ul>
<p><b>Checking Procedure</b></p> <ol style="list-style-type: none"> <li>1) Confirm that the period <math>\textcircled{A}</math> of Fig. C-9-1 is within <math>\pm 0.5V</math>.</li> <li>2) If the result is abnormal, repeat adjustment #7. (X-Value adjustment).</li> </ol> <p>※ 2H : SP, V : Vertical</p>			

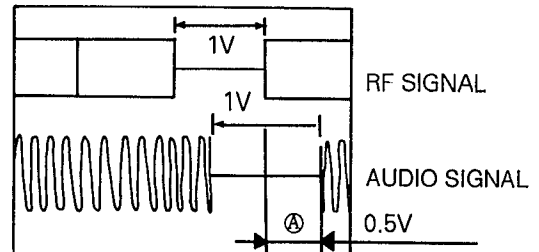


Fig. C-9-1

**9-3. Check the occurrence of tape curl and jam**

Test Equipment/Fixture	Specification	VCR State
<ul style="list-style-type: none"> <li>● T-160 Tape</li> <li>● T-120 Tape</li> </ul>	<ul style="list-style-type: none"> <li>● Be sure there is no jam or curl at the beginning, the middle period or the end of the T-160 tape.</li> </ul>	<ul style="list-style-type: none"> <li>● Run the CUE, REV play mode at the beginning and the end of the tape.</li> </ul>
<p><b>Checking Procedure</b></p> <ol style="list-style-type: none"> <li>1) Confirm whether the state of each transportation post is normal.</li> <li>2) Make sure nothing is wrong with the operation of the Counter, when the lower part of tape is folded.</li> <li>3) Be sure there is nothing wrong in the Audio signal, when the upper part of tape is folded.</li> <li>4) If the result is abnormal, repeat adjustment #5 and #6.</li> </ol>		

**9-4. Check the adjustment state of Take-Up Guide**

Test Equipment/Fixture	Specification									
<ul style="list-style-type: none"> <li>● T-120 Tape</li> <li>● Take-Up Guide Adjusting Driver</li> </ul>	<ul style="list-style-type: none"> <li>● Review : Travel the tape that align the top of the P4 Guide and the bottom of the Tape or be folded.</li> <li>● Play : Travel the tape that align the top of the P4 Guide and the bottom of the Tape.</li> </ul>									
<p><b>Checking Procedure</b></p> <ol style="list-style-type: none"> <li>1) Run the CUE or PLAY mode at the middle period or the end of the T-120 tape.</li> <li>2) Run the REV mode at the play or cue part of tape.</li> <li>3) At this time, confirm that the change of tape height at the P4 Guide fits to specification.</li> <li>4) If the result is abnormal, refer to Table 9-1.</li> <li>5) Play the beginning of T-120 tape(within 5 min.)</li> <li>6) Confirm that the state of tape transportation fit to specification in P4 Guide.</li> <li>7) Remove the Tension Arm Assembly by rotating in the clockwise direction and then confirm that the state of tape transportation fit to specification.</li> <li>8) If the result is abnormal, refer to Table 9-1.</li> </ol>										
<table border="1" style="width: 100%;"> <thead> <tr> <th>PLAY Mode</th> <th>REV Mode</th> <th>Adjustment Method</th> </tr> </thead> <tbody> <tr> <td>Tape Falling</td> <td>Tape Lift</td> <td>Bend the shaft of the direction +Y.</td> </tr> <tr> <td>Tape Lift</td> <td>Tape Falling</td> <td>Bend the shaft of the direction -Y.</td> </tr> </tbody> </table>		PLAY Mode	REV Mode	Adjustment Method	Tape Falling	Tape Lift	Bend the shaft of the direction +Y.	Tape Lift	Tape Falling	Bend the shaft of the direction -Y.
PLAY Mode	REV Mode	Adjustment Method								
Tape Falling	Tape Lift	Bend the shaft of the direction +Y.								
Tape Lift	Tape Falling	Bend the shaft of the direction -Y.								

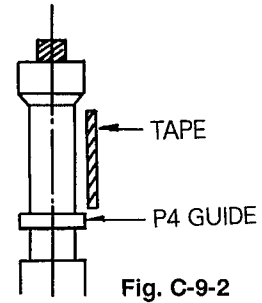


Fig. C-9-2

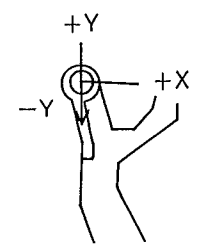


Fig. C-9-3

Table 9-1

## 10. Maintenance/Inspection Procedure

### (1) Required Maintenance

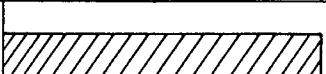
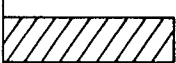

The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, are necessary.

### (2) Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used.

But, in general home use, a good picture will be maintained if the inspection and maintenance is made every 1,000hours. The table below shows the relation between time used and inspection period.

**Table 1**

When inspection is necessary Average hours used per day	About 1 year	About 18 months	About 3 years
One hour			
Two hours			
Three hours			

### (3) Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

**Table 2**

Phenomenon	Inspection
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Color beats	Dirt on full-erase head
Low volume or sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on belt

### (4) Supplies Required for Inspection and Maintenance

- (1) Greases Kanto G-31 (or equivalent)
- (2) Alcohol (Isopropyl Alcohol)
- (3) Cleaning Patches

## 5) Maintenance Procedure

### 5-1) Cleaning

#### (1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with alcohol (Isopropyl Alcohol) to the point indicated. Touch the cleaning patch to the head tip and gently turn the head (rotating cylinder) right and left.

(Do not move the cleaning patch vertically and make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run test tape. If alcohol (Isopropyl Alcohol) remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with alcohol (Isopropyl Alcohol).

#### Note:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which move the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no force is applied to the system that would cause deforming.

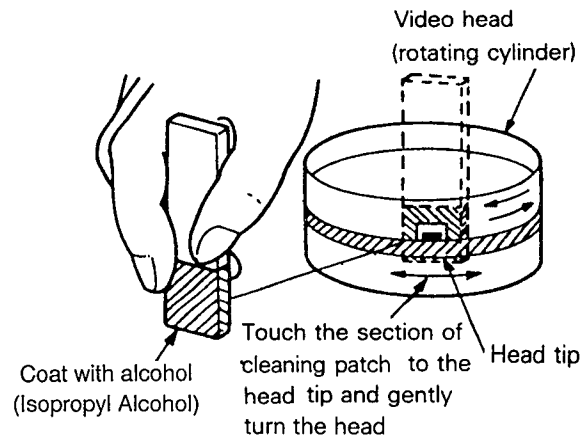


Fig. C-10-1

### 5-2) Greasing

#### (1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with cleaning patch wetted in alcohol (Isopropyl Alcohol).

#### (2) Periodic greasing

Grease specified locations every 5,000 hours.

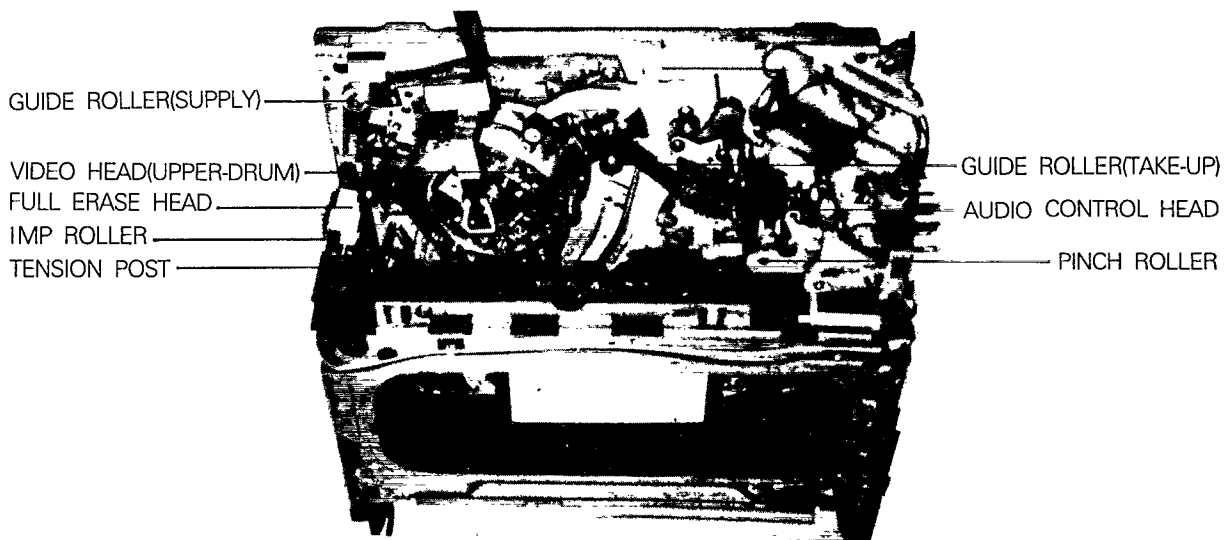


Fig. C-10-2 Tape Transport System

Phenomenon	Inspection	Replace ment	
Color beats	Dirt on full-erase head	○	→ ①
Poor S/N no color	Dirt on video head	○	→ ②
Vertical jitter	Dirt on video head	○	→ ③
	Dirt in tape transport system		
Low volume, Sound distorted	Dirt on audio/control head	○	→ ④
Tape does not run. Tape is slack	Dirt on pinch roller	○	→ ⑤

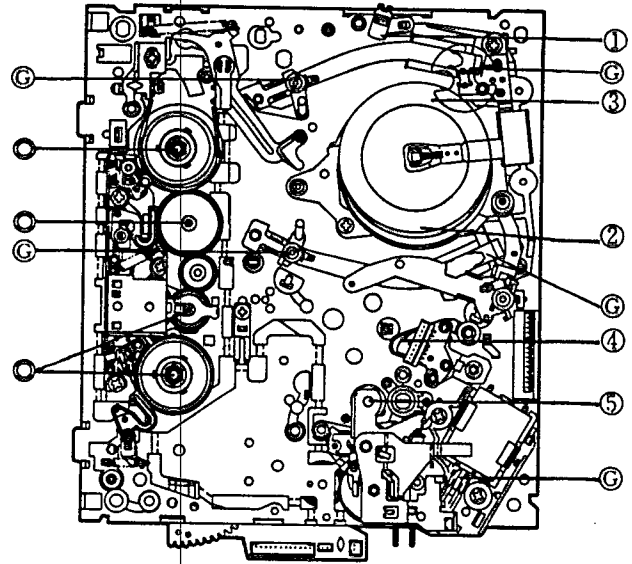


Fig. A-11 Top View of Mechanism

Phenomenon	Inspection Location	Replace ment	
Do not fast forward or rewind, or rotation is slow	Dirt on reel belt	○	→ ⑥
Tape does not run			
Slack tape			

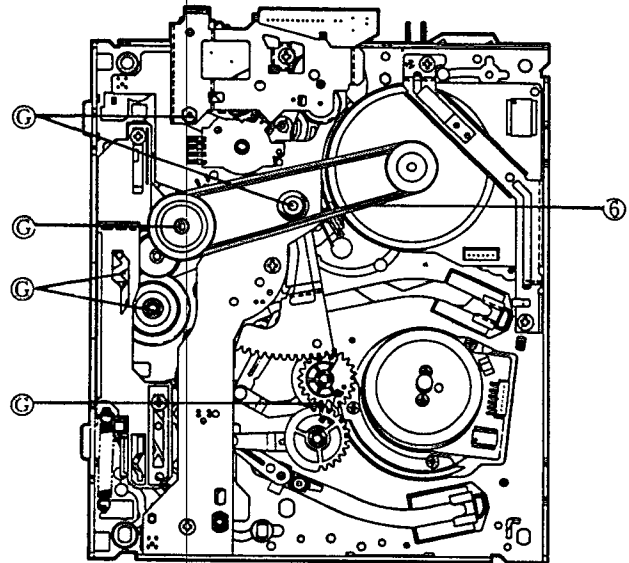


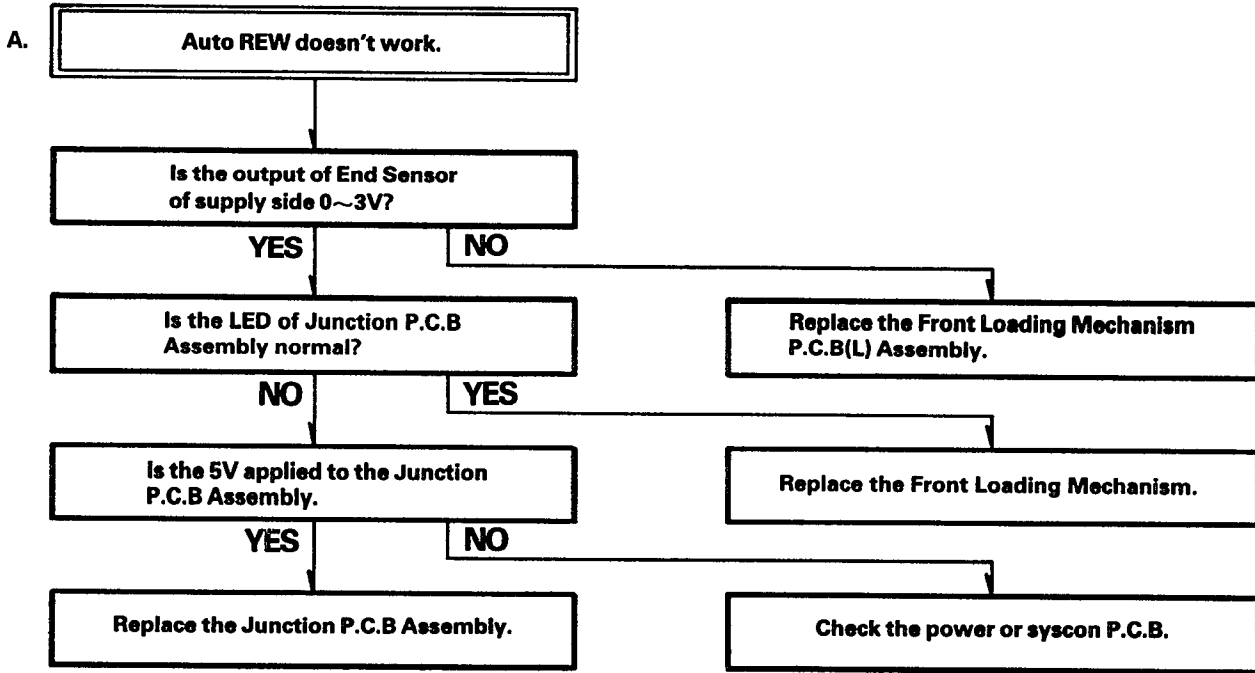
Fig. A-12 Bottom View of Mechanism

ⓐ: Grease  
ⓐ: Oil

**Note:** If locations marked with ○ do not operate normally after cleaning, check for wear and replace.  
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

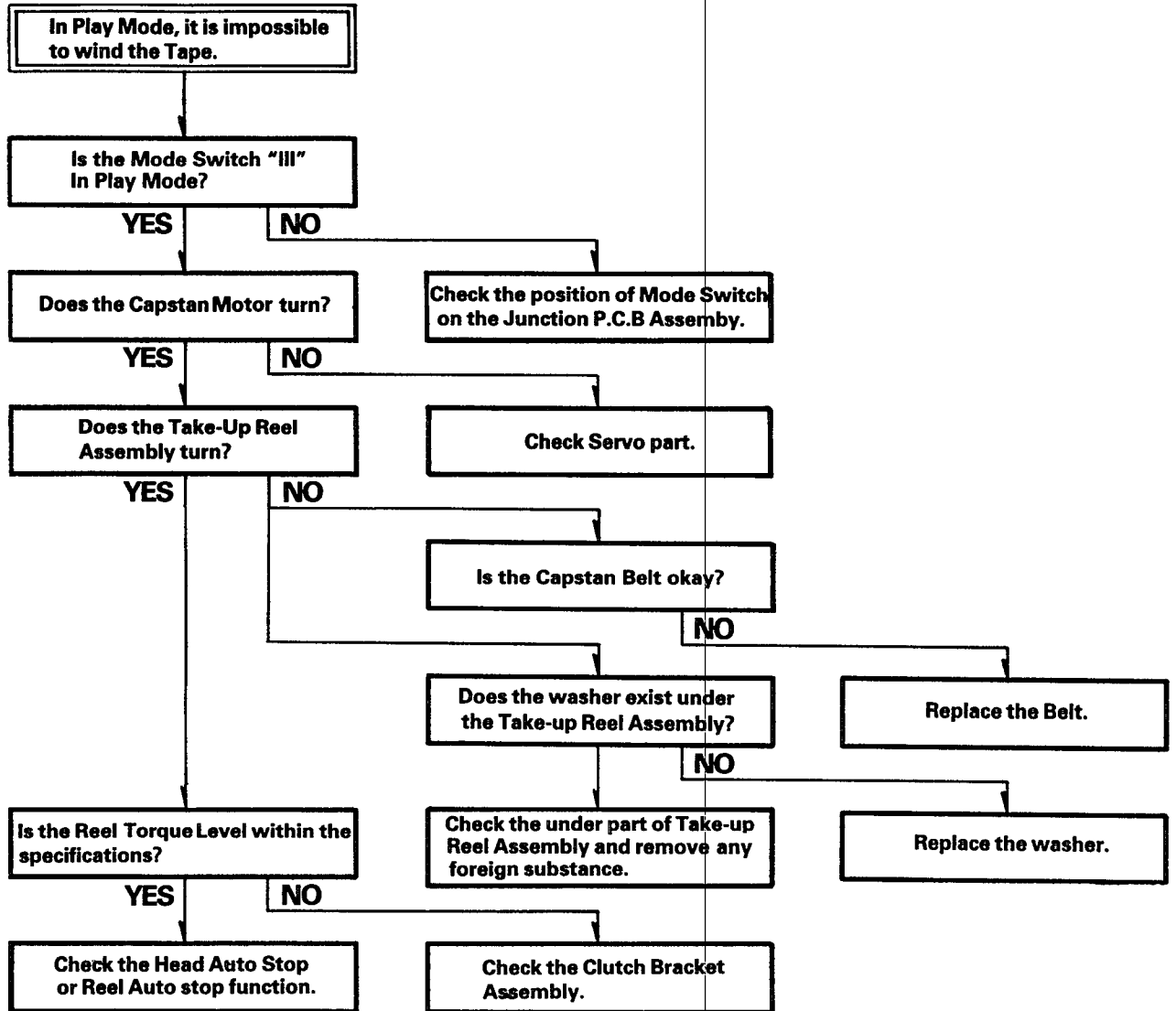
# MECHANISM TROUBLESHOOTING GUIDE

## 1. Deck Mechanism

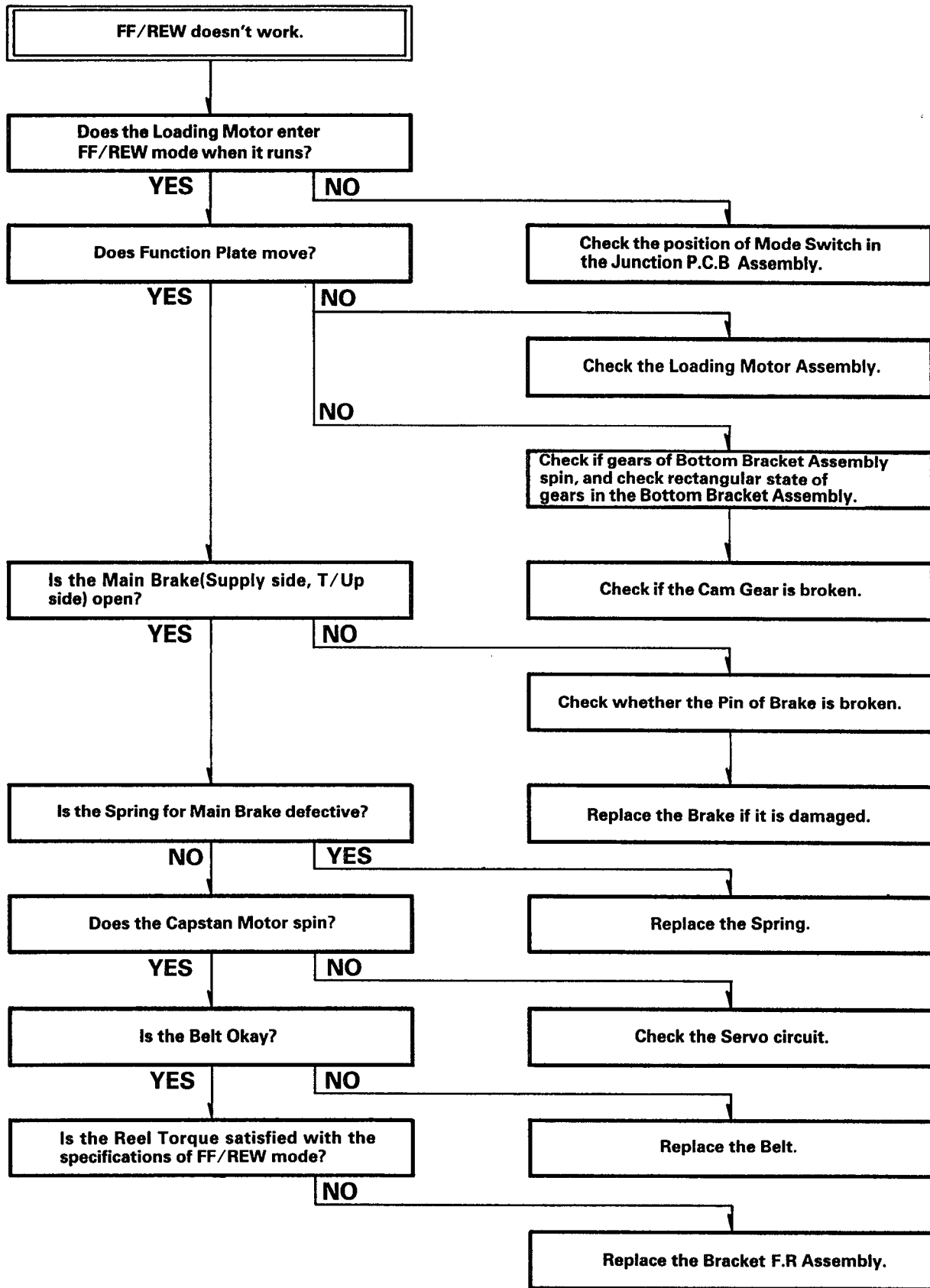


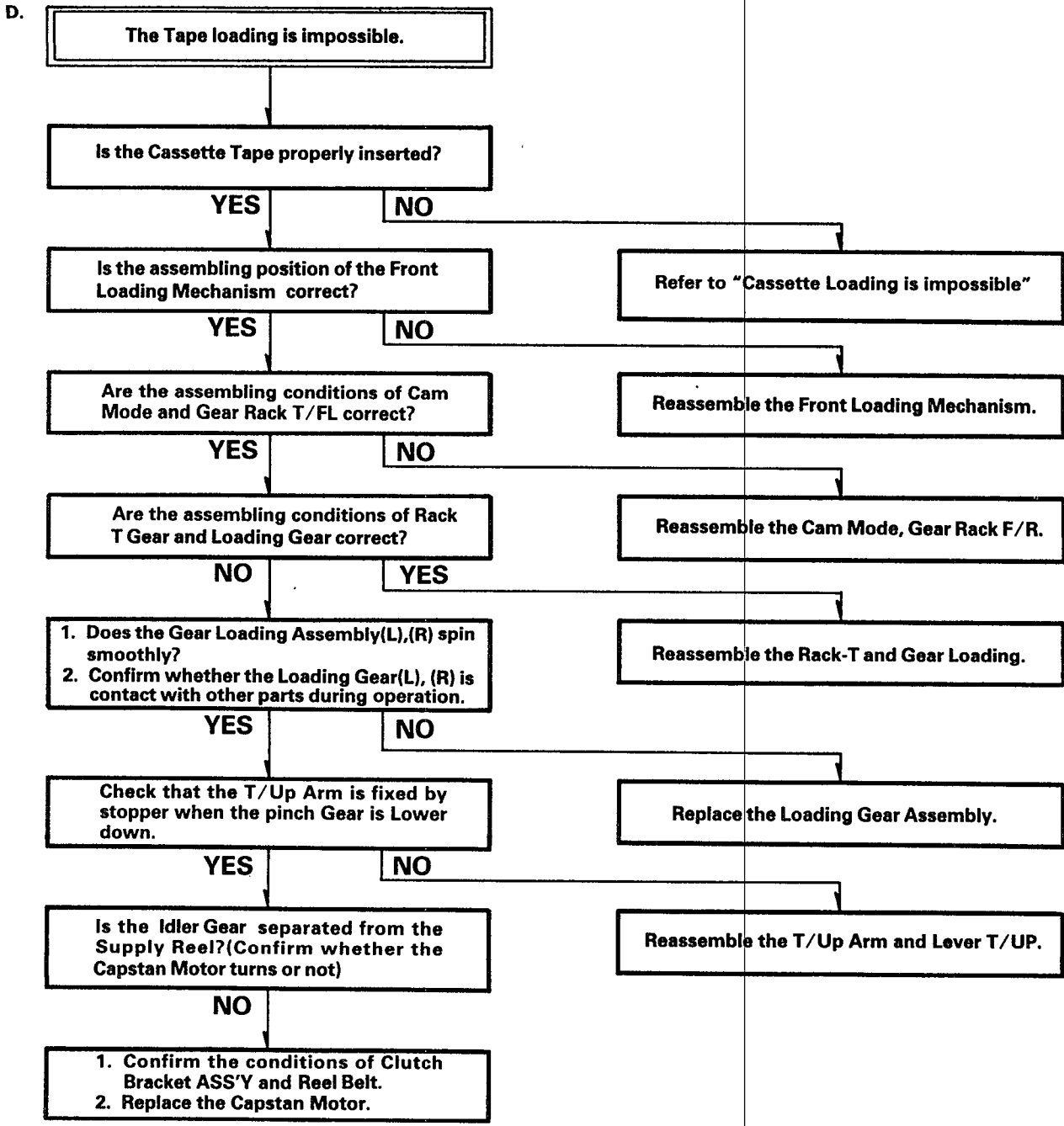


B.

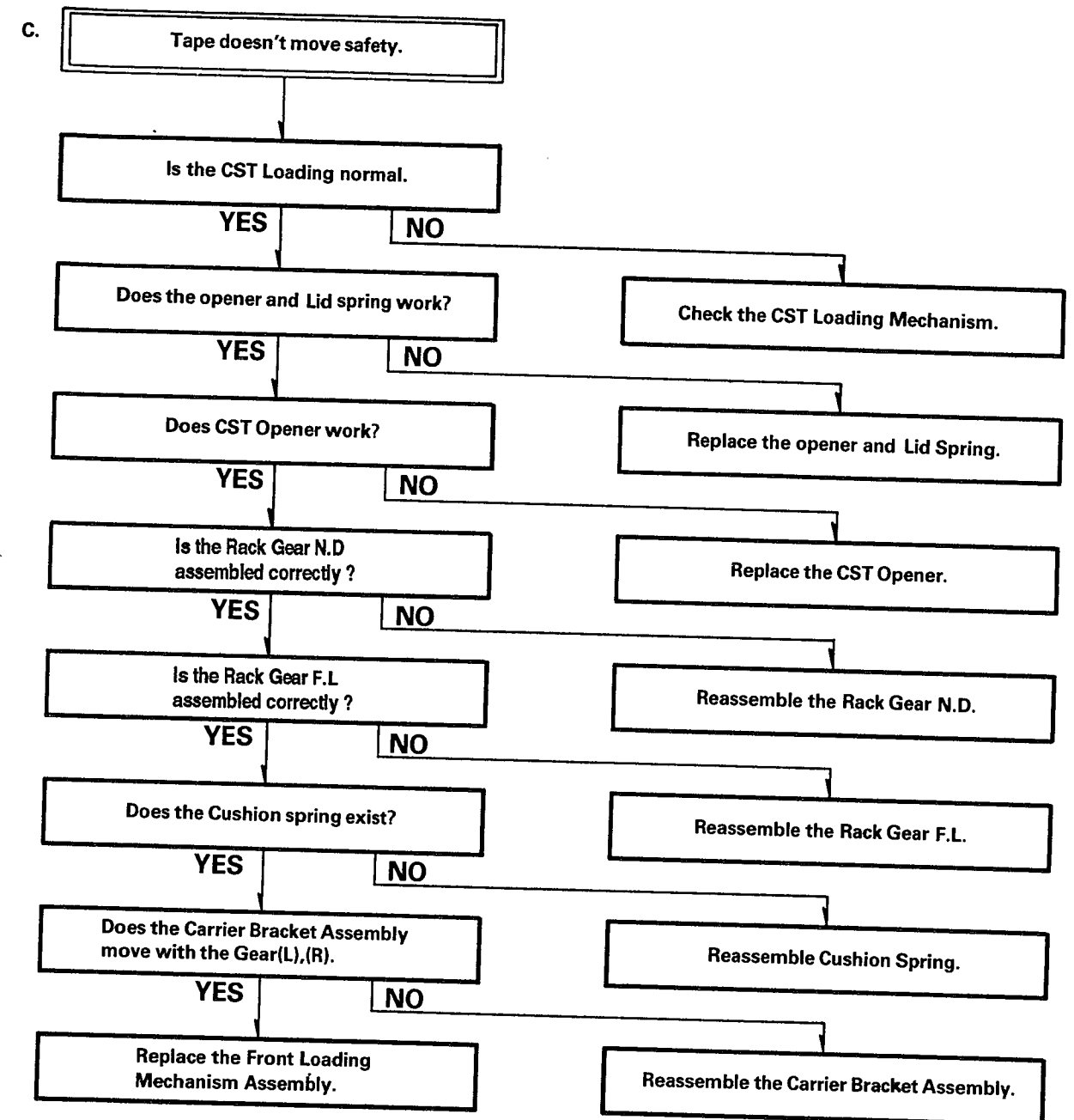
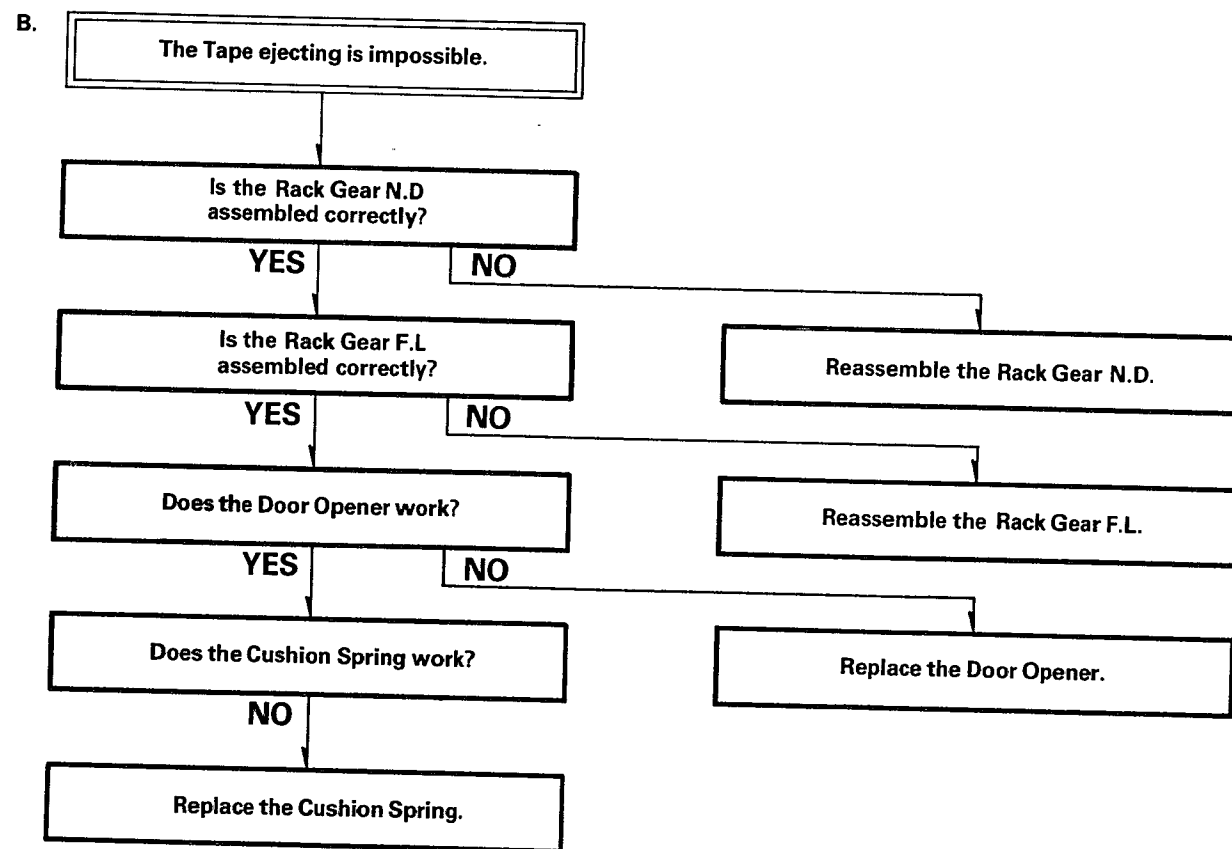
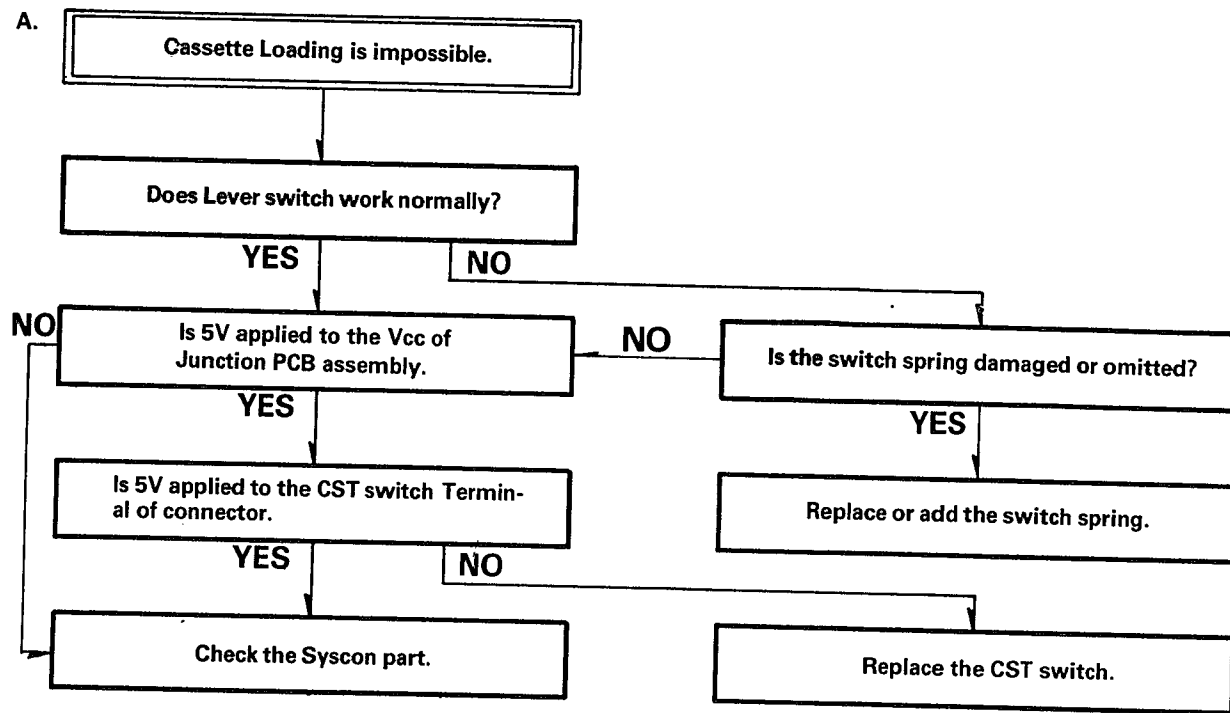


C.





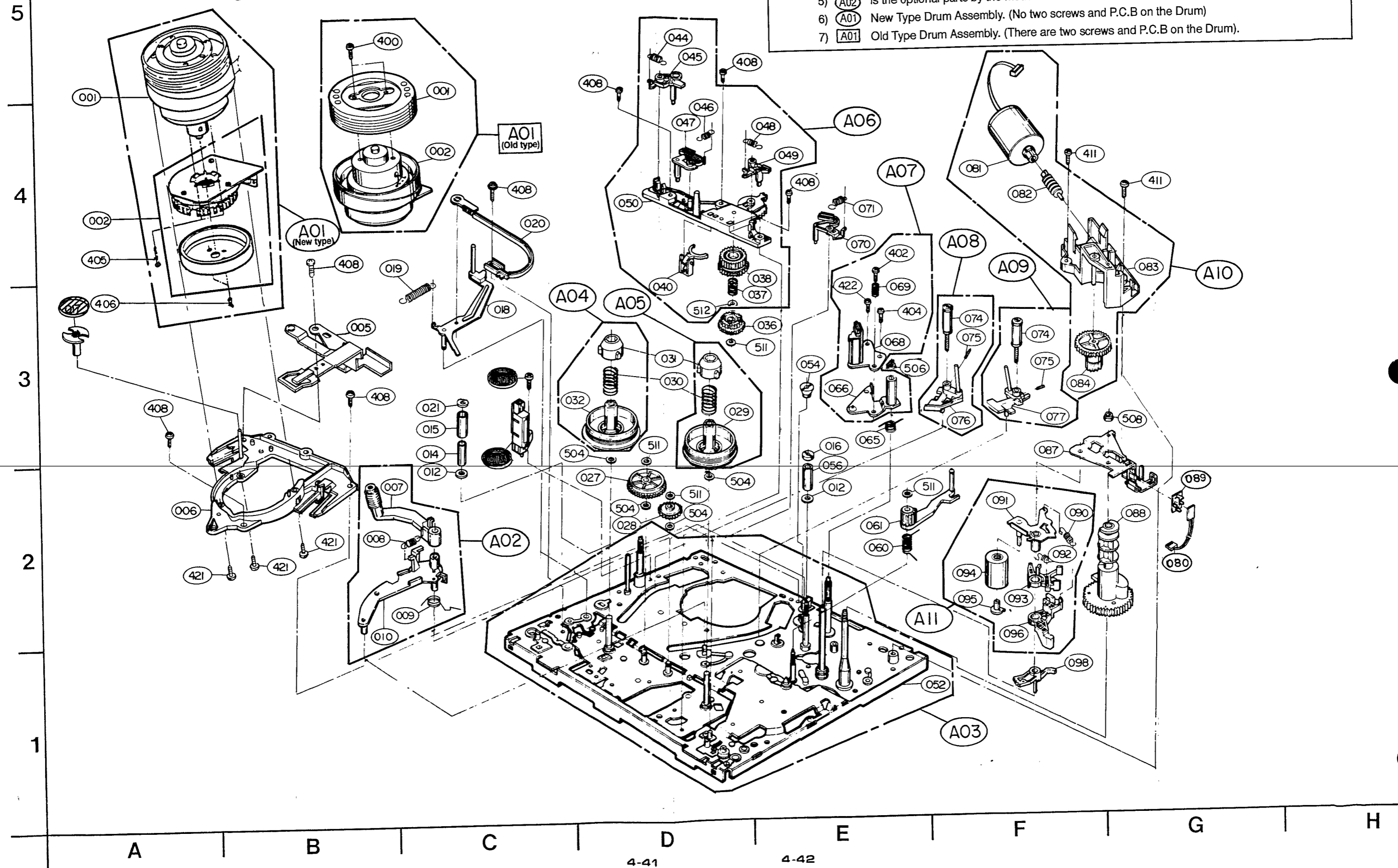
## 2. Front Loading Mechanism



# EXPLODED VIEW

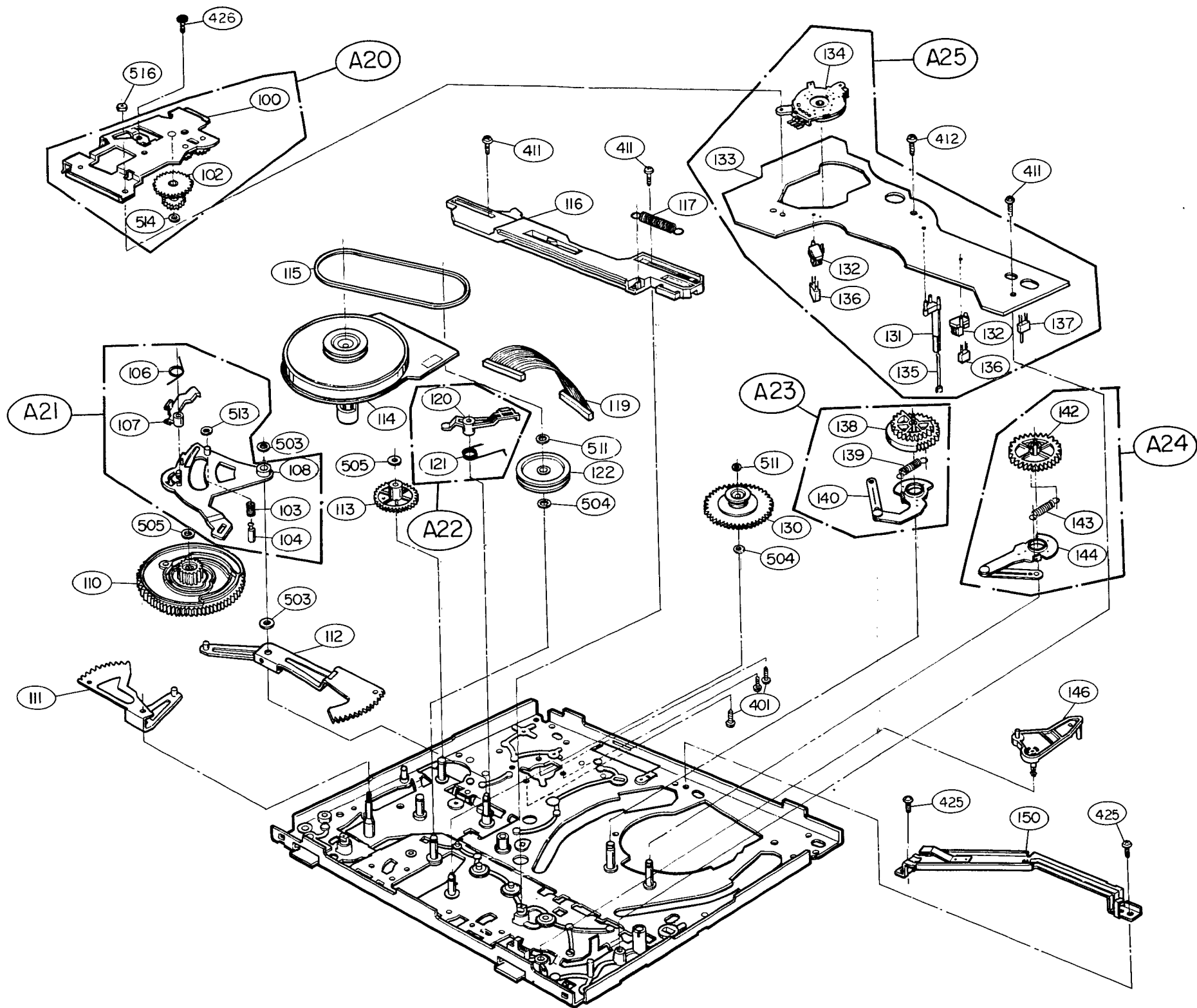
## 1. Moving Mechanism Section(I)

**NOTE)** 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.  
 2) ● marks the optional parts only in VCR (Video Cassette Recorder) Models.  
 3) ○ marks the optional parts only in VCP (Video Cassette Player) Models.  
 4) ▨ marks the optional parts only in Hi-Fi Models.  
 5) A02 is the optional parts by the Models.  
 6) A01 New Type Drum Assembly. (No two screws and P.C.B on the Drum)  
 7) A01 Old Type Drum Assembly. (There are two screws and P.C.B on the Drum).



## 2. Moving Mechanism Section( II )

NOTE) 1) Refer to "SECTION 5 REPLACEMENT PARTS LIST"  
in order to look for the part number of each part.  
2) (119) is the optional parts by the Models.



5

4

3

2

1

A

B

C

D

E

F

G

H



# SECTION 5 REPLACEMENT PARTS LIST

• Mechanical Section

RUN DATE : 95.01.25  
NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
<b>ASSEMBLY PARTS SECTION</b>						
	OR	A00	412-104A	DECK	ASSY D17	
	OR	A00	412C104A	DECK	ASSY D17 (4HD HIFI)	
	OR	A00	412G104A	DECK	ASSY D17 (4HD HIFI)	
	OR	A00	412H104A	DECK	ASSY D17 (4HD HIFI)	
	OR	A00	412W104A	DECK	ASSY D-17 (DONG YOUNG)	
		A01	413-225B	DRUM	ASSY (D17 PAL 6CH)	
		A02	386-296B	ARM	ASSY CL	
	OR	A03	311-005G	CHASSIS ASSY'	D17	NSP
		A03	311-005M	CHASSIS ASSY'	D17	NSP
		A04	456-048A	REEL	ASSY SUPPLY POM 7G	
		A05	456-045A	REEL	ASSY T/UP POM 7G	
		A06	321-397D	BRACKET	ASSY F/R	
		A07	225-228A	BASE	ASSY A/C	
	OR	A08	225-248A	BASE	ASSY,P2	
		A08	225-248B	BASE	ASSY P2 (W-W)	
	OR	A09	225-249A	BASE	ASSY,P3	
		A09	225-249B	BASE	ASSY P3 (W-W)	
		A10	414-104A	MOTOR	ASSY LOAD	
		A11	333-209E	LEVER	ASSY PINCH	
		A20	321-401A	BRACKET	ASSY BOTTOM	
		A21	333-208A	LEVER	ASSY RAT	
		A22	338-078A	BRAKE	ASSY CAP	
		A23	386-218A	ARM	ASSY LOAD(R)	
		A24	386-219A	ARM	ASSY LOAD(L)	
	OR	A25	511-997D	PWB ASSY	D-17,VCR	
		A30	219-017E	HOUSING	ASSY (D17)	
		A30	219-017K	HOUSING	ASSY (D17)	
		A32	435-257B	GEAR	ASSY DRIVE (HOOK ADDED)	
		A33	321-406A	BRACKET	ASSY CARRIER	
		A34	321-441A	BRACKET	ASSY SIDE	
		A35	515-106B	PWB ASSY	SENSOR	
<b>PARTS SECTION</b>						
		001	413-174D	DRUM	ASSY UPPER (D17 PAL 6CH)	
		002	413-213A	DRUM	ASSY,LOWER(D17-6CH)	
		005	225-231B	BASE	ASSY D-BRUSH	NSP
		006	225-296A	BASE	ASSY DRUM (HI-FI)	NSP
		007	386-297A	ARM	SUB ASSY CU	
		008	442-460B	SPRING	CU	
		009	442-459A	SPRING	CL	
		010	386-295B	ARM	CL	
		012	384-071A	GUIDE	17	
		013	523-082B	HEAD	FE,HVFHF0010AK	
	OR	013	523-824A	HEAD	F.E MH-131G (D-17)	
		014	378-017A	SLEEVE	P1	
		015	434-178A	ROLLER	P1	
	OR	015	434-178B	ROLLER	P1	
		016	389-003B	ADJUST	P(4)	



S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		017	434-244A	ROLLER	ASSY INERTIA	NSP
		018	386-205A	ARM	ASSY TENSION	
		019	442-331C	SPRING	TENSION	
		020	328-052B	BAND	ASSY TENSION	
		021	334-066A	STOPPER	P1	
		027	435-243A	GEAR	IDLE A POM 3G	
		028	435-244A	GEAR	IDLE B POM 3G	
		029	456-040A	REEL	T17	NSP
		030	442-341A	SPRING	REEL	NSP
		031	276-068A	CAP	REEL	NSP
		032	456-039A	REEL	S17	NSP
		036	435-240A	GEAR	F/R POM 3G	
		037	442-336A	SPRING	UP/D	NSP
		038	435-239A	GEAR	UP/D POM 3G	NSP
		040	333-201B	LEVER	ASSY F/R	NSP
		044	442-338B	SPRING	SSB	NSP
		045	338-081A	BRAKE	S-SOFT	NSP
		046	442-337A	SPRING	SMB	NSP
		047	338-080A	BRAKE	ASSY S-MAIN	NSP
		048	442-339D	SPRING	TSB	NSP
		049	338-083A	BRAKE	ASSY T-SOFT	NSP
		050	321-396A	BRACKET	SUB ASSY F/R	NSP
		054	389-013A	ADJUST	X-ASSY	
		056	378-018A	SLEEVE	P4	
		060	442-343A	SPRING	T/UP	
		061	386-387B	ARM	ASSY T/UP	
		065	442-332A	SPRING	A/C	
		066	225-219A	BASE	SUB ASSY A/C	NSP
		068	523-089A	HEAD	SUB ASSY A/C	
		069	442-362A	SPRING	AZIMUTH	
		070	338-085A	BRAKE	ASSY T-MAIN	
		071	442-344A	SPRING	TMB	
		074	434-173A	ROLLER	ASSY GUIDE	
		075	353-054B	SCREW	MINIATURE	
		076	225-226B	BASE	SUB ASSY SLALT (L,W-W)	
		077	225-225B	BASE	SUB ASSY SLALT (R,W-W)	
		081	414-105A	MOTOR	SUB ASSY,L	
		082	437-009A	WORM	ASSY	
		083	321-410A	BRACKET	SUB ASSY L/M	
		084	433-023A	WHEEL	WORM	
		087	321-470A	BRACKET	ASSY DEW	
		088	435-448A	GEAR	PINCH (N)	
		090	442-347A	SPRING	PINCH	NSP
		091	386-210A	ARM	ASSY PINCH	NSP
		092	442-346A	SPRING	STOPPER	NSP
		093	334-050C	STOPPER	PINCH	NSP
	OR	094	434-181A	ROLLER	ASSY PINCH	NSP
		094	434-181B	ROLLER	PINCH D14 X L18	
		095	276-089B	CAP	PINCH	NSP
		096	333-203A	LEVER	PINCH	NSP
		098	333-344A	LEVER	T-UP (N)	
		100	321-463A	BRACKET	SUB ASSY B	NSP
		102	435-249A	SPRING	RAT1	NSP
		103	442-356A	SPRING	F-LEVER	NSP
		104	356-208A	PIN	F-LEVER	NSP

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		106	442-345A	SPRING	RAT	NSP
		107	333-202A	LEVER	RAT	NSP
		108	333-207A	LEVER	F17	NSP
		110	374-005A	CAM	D17 POM 10G	
		111	435-318A	GEAR	ASSY RACK F/L	
		112	435-291A	GEAR	ASSY RACK T	
		113	435-246A	GEAR	PC POM 3G	
	OR	114	414-115A	MOTOR	CAPSTAN SVC-102A,D-17	
		114	414-121A	MOTOR	CAPSTAN GVC-017B	
		115	452-047A	BELT	CENTER D71.9 X SQRT2.0	
		116	256-734A	PLATE	F17	
		117	442-342B	SPRING	FP	
		119	672-400G	CONNECTOR ASSY	6P 85 (8283-8283) D-17	
		120	338-089A	BRAKE	SUB ASSY CAP	
		121	442-333A	SPRING	CAPSTAN	
		122	432-038A	PULLEY	GEAR POM 3G	
		130	337-005A	CLUTCH	ASSY POM 7G FELT 20X1X1T 2EA	
		131	340-001A	HOLDER	LED (Q)	
		132	324-642A	HOLDER	R/S	
		133	513-494D	PWB	JUNCTION D-17 VCR	NSP
		134	556-133A	SWITCH	MODE	
	OR	134	556-133B	SWITCH	MODE, ALPS	
	OR	135	ODL451000AA	DIODE LED	IR SENSOR GL451(LONG) SHARP	
		135	ODL550000AB	DIODE LED	IR SENSOR EL-55L(LONG) KOC	
		136	657-102K	SENSOR	SG-105(REEL) D-16 KOC	
		137	556-131A	SWITCH	ESE-105SV1	
		138	435-234A	GEAR	LOAD(R)	
		139	442-330A	SPRING	LOADING	
		140	386-274A	ARM	SUB ASSY (R)	
		142	435-235A	GEAR	LOAD(L)	
		143	442-330B	SPRING	LOADING	
		144	386-273A	ARM	SUB ASSY (L)	
		146	333-218A	LEVER	ASSY A-TEN	
		150	321-527A	BRACKET	ASSY C-GUIDE	
		201	256-934B	PLATE	TOP	
		204	465-032A	OPENER	DOOR	
		205	321-517B	BRACKET	LEFT (D17)	
		206	321-518A	BRACKET	RIGHT (D17)	
		207	435-278A	GEAR	RACK N/D	
		208	256-910A	PLATE	GND TOP	
		210	321-440A	BRACKET	SIDE	
		213	442-351A	SPRING	OC	NSP
		214	465-028A	OPENER	CST	NSP
		215	442-357A	SPRING	RID	NSP
		216	465-027A	OPENER	RID	NSP
		217	324-647A	HOLDER	R	NSP
		218	321-407A	BRACKET	SUPPORT	NSP
		219	321-405A	BRACKET	CARRIER	NSP
		220	324-646A	HOLDER	L	NSP
		221	333-210A	LEVER	DT	NSP
		222	442-358B	SPRING	DT	NSP
		225	384-074A	GUIDE	CST	
		226	442-352A	SPRING	L	NSP
		227	435-254A	GEAR	L	NSP
		228	442-350A	SPRING	SW	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		229	333-204A	LEVER	S/W	NSP
		230	423-368A	SHAFT	D	NSP
		231	442-353A	SPRING	R	NSP
		232	435-255A	GEAR	R	NSP
		233	435-256B	GEAR	C (HOOK ADDED)	NSP
		234	442-359C	SPRING	CUSHION (D17F/L)	NSP
		235	442-354A	SPRING	CC	NSP
		236	276-086A	CAP	DRIVE	NSP
<b>SCREW</b>						
		400	1MDC0302418	PAN HEAD MACHINE SCREW P/WASH+	D 3.0 L 8.0 MSWR3/FZY	
		401	1MPK0261418	PAN HEAD MACHINE SCREW +,-	D 2.6 L 4.0 MSWR3/FZY	
		402	353-021D	SCREW	SPECIAL	
		404	353-048C	SCREW	CONE POINT 3X10	
		408	1MBC0302418	BINDING HEAD MACHINE SCREW +	D 3.0 L 8.0 MSWR3/FZY	
		411	353-046B	SCREW	SPECIAL (3X8 FZMY)	
		412	1MBC0302818	BINDING HEAD MACHINE SCREW +	D 3.0 L 12 MSWR3/FZY	
		421	1MPC0302618	PAN HEAD MACHINE SCREW +	D3.0 L10.0,MSWR3/FZY	
		422	1MPC0302418	PAN HEAD MACHINE SCREW +	D 3.0 L 8.0 MSWR3/FZY	
		425	1SRF0302418	BRAIZER HD TAP TITE SCREW +	D 3.0 L 8.0 MSWR3/FZY	
		426	1MPC0302018	PAN HEAD MACHINE SCREW +	D 3.0 L 6.0 MSWR3/FZY	
<b>NUT, WASHER</b>						
		503	354-020E	WASHER	STOPPER	
		504	354-001B	WASHER	P.S D3.1XD6X0.5T	
		505	354-080E	WASHER	STOPPER	
		506	352-025A	NUT	NYLON M3	
		507	354-020J	WASHER	STOPPER(2.6X4.8X0.5)	
		508	352-033A	NUT	NUT NYLON(M3)	
		511	354-080C	WASHER	STOPPER	
		512	354-080E	WASHER	STOPPER	NSP
		513	354-080A	WASHER	STOPPER	NSP
		514	354-080B	WASHER	STOPPER	NSP
		516	354-033B	WASHER	STOPPER	

• Cabinet & Main Frame Section

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
<b>ASSEMBLY PARTS SECTION</b>						
		A43	258-623Z	PANEL	ASSY FRONT	
		A44	232-715C	BOARD ASSY	POWER	
		A45	501-714B	MODULE	BOARD ASSY PRE-AMP,NEW-CASE	
		A46	232-712G	BOARD ASSY	MAIN	
<b>PARTS SECTION</b>						
		250	217-448H	CASE	TOP	
		260	315-302C	FRAME	MAIN	NSP
OR		260	315-302D	FRAME	MAIN(PAL)	NSP

RUN DATE : 95.01.25  
NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		265	477-034B	RUBBER	BUMPON	NSP
		267	246-076D	LABEL	MAIN	NSP
		269	321-532A	BRACKET	HOUSING	
		275	324-802A	HOLDER	DIGITRON	
		280	258-646X	PANEL	FRONT	NSP
		283	226-092M	DOOR	CST	
		284	442-469A	SPRING	DOOR	
		300	681-036A	CORD	POWER SAA W/STOPPER	
		301	321-462A	BRACKET	TR	
*		303	255-150A	PLATE	HEAT SINK	
		304	221-407A	COVER	FUSE	
		320	258-615Z	PANEL	ASSY DISTRIBUTOR	
		323	573-006A	SOCKET	RGB 21P	
		330	221-687B	COVER	BOTTOM	
		332	255-153A	PLATE	DECK GND (FTZ)	NSP
<b>SCREW</b>						
		452	353-051A	SCREW	SPECIAL	
		458	353-051C	SCREW	SPECIAL(3X12)	
		462	353-136A	SCREW	SPECIAL(FBK) (353S353A)	
		463	1MBC0302418	BINDING HEAD MACHINE SCREW +	D 3.0 L 8.0 MSWR3/EZY	

• Packing Accessory Section

RUN DATE : 95.01.25  
NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		801	480-474S	INSTRUCTION ASSY		
		802	290-222A	BOX CARTON		
		803	283-241A	PACKING	E,PS	
		804	291-002B	SHEET CUSHION		NSP
		806	861-010B	CABLE SET ASSY	RF-CABLE PAL (3C-2V)	
		808	534-008C	BATTERY	AAAM(R03) 1.5V 1PAIR(LOCAL)	
		810	861-507M	CABLE SET ASSY	PAL CABLE ASSY (3C-2V)HI-FI	
		811	564-017B	PLUG ASSY	PHONO CORD 1WAY (YL)	
		812	564-018B	PLUG ASSY	PHONO CORD 2WAY (RD/WH)	
		822	861-039A	CABLE SET ASSY	SCART/6RCA	

• Remote Control Section

RUN DATE : 95.01.25  
NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		900	597-093Y	REMOTE CONTROL	C4 ASSY	
		901	221-807F	COVER	PROTECTOR	
		902	236-442E	WINDOW	LCD	
		903	255-355D	PLATE	TOP	
		904	236-443A	WINDOW	FILTER	
		905	220-011E	COVER	COVER TOP (C4)	
		906	515-674D	PWB ASSY	R/C C4 NOT VPS,SP/LP,40POS	

RUN DATE : 95.01.25  
 NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		907	221-806C	COVER	BOTTOM	
		908	221-808C	COVER	BATTERY	
		909	556-206D	SWITCH	CONDUCTIVE RUBBER(A)	
		910	556-207Z	SWITCH	CONDUCTIVE, RUBBER	
		911	442-518A	SPRING	BATTERY(A)	
		912	1TPH0202016	PAN HEAD TAPPING SCREW + 2	D 2.0 L 6.0 MSWR3/(BK)	

• Fixture Section

RUN DATE : 95.01.25  
 NSP: Not Service Part

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		FIX	960-015G	FIXTURE	SVC FIXTURE	
		FIX1	515-973A	PWB ASSY	SVC FIXTURE-2	
		FIX2	515-884A	PWB ASSY	SVC FIXTURE(TIMER TO MAIN)	

# Electrical Section

RUN DATE : 95.01.25

**CAUTION:** The \* marks in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the SAFETY PRECAUTIONS and SERVICING PRECAUTIONS in the manual. Do not degrade the safety of the unit through improper servicing.

### Tolerance

Symbol	C	J	K	M	N	Z	P	A
%	±2	±5	±10	±20	±30	+80 -20	+100 -10	+100 -10

CC, CJ, CK: Capacitor, Ceramic  
 CE: Capacitor, Electrolytic  
 CQ: Capacitor, Polyester

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
<b>CAPACITOR</b>				
		C001	OCE4766F638	47M SMS 16V M FM5 TP5
		C002	OCN2230H948	0.022M 25V Z F TA26
		C003	OCE1076F638	100M SMS 16V M FM5 TP(5)
		C004	OCE1076F638	100M SMS 16V M FM5 TP(5)
		C005	OCE4766F638	47M SMS 16V M FM5 TP5
		C006	OCN2230H948	0.022M 25V Z F TA26
		C007	OCE4766F638	47M SMS 16V M FM5 TP5
		C008	OCC1200K415	12P 50V JNP0 TS
		C009	OCC1000K015	10P 50V CNP0 TS
		C010	OCC3300K415	33P 50V JNP0 TP
		C012	OCN2230H948	0.022M 25V Z F TA26
		C013	OCC3300K415	33P 50V JNP0 TP
		C014	OCN2230H948	0.022M 25V Z F TA26
		C015	OCN1510K518	150P 50V KB TA26
		C016	OCN1510K518	150P 50V KB TA26
		C017	OCN1510K518	150P 50V KB TA26
		C018	OCN1510K518	150P 50V KB TA26
		C019	OCN1510K518	150P 50V KB TA26
		C103	624-084J	4700/35 16*41 SMALL TYPE RI-C
		C104	624-055C	10000UF/16V 18X35.5 SHL
		C105	OCE4766F638	47M SMS 16V M FM5 TP5
		C106	OCE4766F638	47M SMS 16V M FM5 TP5
		C107	OCK2230K945	0.022M 50V Z F TS
		C108	OCE4766F638	47M SMS 16V M FM5 TP5
		C110	OCK2230K945	0.022M 50V Z F TS
		C112	OCE4766F638	47M SMS 16V M FM5 TP5
		C113	OCE4766F638	47M SMS 16V M FM5 TP5
		C114	OCE4766F638	47M SMS 16V M FM5 TP5
		C115	OCE4766F638	47M SMS 16V M FM5 TP5
		C116	OCE4766F638	47M SMS 16V M FM5 TP5
		C118	OCE4766F638	47M SMS 16V M FM5 TP5
		C119	OCK2230K945	0.022M 50V Z F TS
		C120	OCK2230K945	0.022M 50V Z F TS
		C121	OCE1076L610	100M SMS 63V M FM5
		C122	OCK2230K945	0.022M 50V Z F TS
		C124	OCE1076L610	100M SMS 63V M FM5
		C125	624-018A	LINE DE7100 FZ 472P VA1-KC
		C126	624-018A	LINE DE7100 FZ 472P VA1-KC
		C131	OCE4766F638	47M SMS 50V M FM5 TP
		C132	OCE4766F638	47M SMS 50V M FM5 TP
		C146	OCK4730K945	0.047U 50V Z F TS
		C147	OCK4730K945	0.047U 50V Z F TS
		C148	OCK4730K945	0.047U 50V Z F TS

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
			C149	OCK4730K945
			C150	OCK4730K945
			C151	OCK4730K945
			C152	OCK4730K945
			C153	OCK4730K945
			C154	OCK2230K945
			C201	OCE1076F638
			C202	OCE1056K638
			C203	OCN1030F678
			C204	OCE1056K638
			C205	OCE1056K638
			C206	OCE1051K636
			C207	OCQ1221N409
			C208	OCE4756K638
			C209	OCE4756K638
			C210	OCE1066H638
			C211	OCE1066H638
			C212	OCE1051K636
			C213	OCQ4731N409
			C214	OCQ2731N409
			C215	OCQ4731N409
			C216	OCN1010K518
			C217	OCN1010K518
			C218	OCN1030F678
			C219	OCN1040K948
			C220	OCE4756K638
			C221	OCC1210K415
			C222	OCC1510K415
			C223	OCE1066H638
			C224	OCE4766F638
			C225	OCN1020K518
			C226	OCE1056K638
			C227	OCN2230H948
			C228	OCE1076F638
			C229	OCE1076F638
			C230	OCN2230H948
			C231	OCE4746K638
			C232	OCN2230H948
			C233	OCE1076F638
			C234	OCN2230H948
			C235	OCN2230H948
			C236	OCN1030F678
			C237	OCN1030F678
			C2A1	OCN1040K948
			C302	OCN1030F678

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C304	OCE1066H638	10M SMS 25V M FM5 TP
		C305	OCE1066H638	10M SMS 25V M FM5 TP
		C306	OCN1040K948	0.1M 50V ZF TA26
		C307	OCE4776D638	470U SMS 10V M FM5 TP(5)
		C308	OCN1040K948	0.1M 50V ZF TA26
		C309	OCE1066H638	10M SMS 25V M FM5 TP
		C310	OCN4730K948	0.047M 50V Z F TA26
		C311	OCE4776D638	470U SMS 10V M FM5 TP(5)
		C312	OCK1040K945	0.1M 50V ZF TS
		C313	OCN1030F678	0.01M 16V M Y TA26
		C314	OCN4730K948	0.047M 50V Z F TA26
		C315	OCK1030K945	0.01M 50V ZF TS
		C316	OCN2230H948	0.022M 25V Z F TA26
		C317	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C318	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C319	OCQ8221N409	0.0082U 100V J POLY TP
		C320	OCN1030F678	0.01M 16V M Y TA26
		C321	OCQ5631N409	0.056U 100V J POLY TP
		C322	OCX4700K408	47P 50V JSL TA26
		C323	OCX2700K408	27P 50V JSL TA26
		C324	OCN1030F678	0.01M 16V M Y TA26
		C325	OCC1810K405	180P 50V JSL TP
		C327	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C328	OCN3910K518	390P 50V KB TA26
		C329	OCX4700K408	47P 50V JSL TA26
		C330	OCC0500K015	5P 50V C NPO TR
		C331	OCN8200K518	82PF 50V K B TA26
		C332	OCX3900K408	39P 50V JSL TA26
		C333	OCX4700K408	47P 50V JSL TA26
		C334	OCE1066H638	10M SMS 25V M FM5 TP
		C336	OCE3346K638	0.33M SMS 50V M FM5 TP(5)
		C337	OCN2230H948	0.022M 25V ZF TA26
		C338	OCQ2231N409	0.022U 100V J POLY TP
		C339	OCN2230H948	0.022M 25V ZF TA26
		C340	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C341	OCN4730K948	0.047M 50V Z F TA26
		C342	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C343	OCC4710K405	470P 50V JSL TP
		C344	OCN2230H948	0.022M 25V ZF TA26
		C345	OCE4766F638	47M SMS 16V M FM5 TP5
		C346	OCX2200K408	22P 50V J SL TP26
		C347	OCX4700K408	47P 50V JSL TA26
		C348	OCN1510K518	150P 50V KB TA26
		C349	OCN1040K948	0.1M 50V ZF TA26
		C350	OCN1040K948	0.1M 50V ZF TA26
		C351	OCK1040K945	0.1M 50V ZF TS
		C352	OCK1040K945	0.1M 50V ZF TS
		C353	OCC1510K415	150P 50V JNPO TS
		C354	OCN1040K948	0.1M 50V ZF TA26
		C355	OCN1040K948	0.1M 50V ZF TA26
		C363	OCX3300K408	33P 50V JSL TA26
		C364	OCN1030F678	0.01M 16V M Y TA26
		C365	OCK1040K945	0.1M 50V ZF TS
		C366	OCE4766F638	47M SMS 16V M FM5 TP5
		C370	OCE1066H638	10M SMS 25V M FM5 TP
		C371	OCE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C372	OCN1010K518	100P 50V KB TA26
		C386	OCE4766F638	47M SMS 16V M FM5 TP5
		C387	OCN2230H948	0.022M 25V ZF TA26
		C390	OCN1030F678	0.01M 16V M Y TA26
		C391	OCN2230H948	0.022M 25V ZF TA26
		C392	OCE1076F638	100M SMS 16V M FM5 TP(5)

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C395	OCE1066H638	10M SMS 25V M FM5 TP
		C396	OCN1040K948	0.1M 50V ZF TA26
		C397	OCN1040K948	0.1M 50V ZF TA26
		C398	OCK2230K945	0.022M 50V Z F TS
		C399	OCN1040K948	0.1M 50V ZF TA26
		C3A1	OCX1000K408	10P 50V JSL TA26
		C3C1	OCN2230H948	0.022M 25V Z F TA26
		C3C2	OCE4766F638	47M SMS 16V M FM5 TP5
		C3C3	OCN1010K518	100P 50V KB TA26
		C3C4	OCX6800K408	68P 50V J SL TA26
		C3C5	OCN1030F678	0.01M 16V M Y TA26
		C3C6	OCN1030F678	0.01M 16V M Y TA26
		C3C7	OCN1030F678	0.01M 16V M Y TA26
		C3C8	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C3C9	OCN2230H948	0.022M 25V Z F TA26
		C3D1	OCE4766F638	47M SMS 16V M FM5 TP5
		C3D2	OCX3300K408	33P 50V JSL TA26
		C3D3	OCC0600K015	6P 50V C NPO TS
		C3D4	OCX4700K408	47P 50V JSL TA26
		C3D5	OCE1064F638	10M SRA 16V M FM5 TP(5)
		C401	OCE2266F638	22M SMS 16V M FM5 TP5
		C402	OCN1040K948	0.1M 50V ZF TA26
		C404	OCQ1031N409	0.01UF 100V J PE TP
		C405	OCE3366F638	33M SMS 16V M FM5 TP(5)
		C406	OCN1040K948	0.1M 50V ZF TA26
		C407	OCE1066H638	10M SMS 25V M FM5 TP
		C408	OCE1066H638	10M SMS 25V M FM5 TP
		C409	OCQ1231N409	0.012U 100V J POLY TP
		C410	OCQ3331N409	0.033U 100V J POLY TP
		C411	OCE1066H638	10M SMS 25V M FM5 TP
		C413	OCE3356K638	3.3M SMS 50V M FM5 TP(5)
		C415	OCE2266F638	22M SMS 16V M FM5 TP5
		C417	OCE4766F638	47M SMS 16V M FM5 TP5
		C418	OCN1030F678	0.01M 16V M Y TA26
		C419	OCQ8221N409	0.0082U 100V J POLY TP
		C420	OCE4766F638	47M SMS 16V M FM5 TP5
		C423	OCQ3331N409	0.033U 100V J POLY TP
		C424	OCQ1031N409	0.01UF 100V J PE TP
		C425	OCQ1031N409	0.01UF 100V J PE TP
		C426	OCN1030F678	0.01M 16V M Y TA26
		C427	OCE4766F638	47M SMS 16V M FM5 TP5
		C428	OCN2210K518	220P 50V KB TA26
		C429	OCE1066H638	10M SMS 25V M FM5 TP
		C430	OCE1066H638	10M SMS 25V M FM5 TP
		C431	OCQ4731N409	0.047U 100V J POLY TP
		C432	OCQ1031N409	0.01UF 100V J PE TP
		C433	OCQ1031N409	0.01UF 100V J PE TP
		C434	OCN1040K948	0.1M 50V ZF TA26
		C435	OCE4766F638	47M SMS 16V M FM5 TP5
		C436	OCE4766F638	47M SMS 16V M FM5 TP5
		C437	OCE4766F638	47M SMS 16V M FM5 TP5
		C451	OCN1030F678	0.01M 16V M Y TA26
		C452	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C453	OCQ1231N409	0.012U 100V J POLY TP
		C454	OCE1066H638	10M SMS 25V M FM5 TP
		C455	OCE1066H638	10M SMS 25V M FM5 TP
		C456	OCQ1031N409	0.01UF 100V J PE TP
		C457	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C458	OCN2710K518	270P 50V KB TA26
		C459	OCN1040K948	0.1M 50V ZF TA26
		C460	OCE1066H638	10M SMS 25V M FM5 TP
		C461	OCN1030F678	0.01M 16V M Y TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C462	OCE4766F638	47M SMS 16V M FM5 TP5
		C463	OCN1030F678	0.01M 16V M Y TA26
		C464	OCN1030F678	0.01M 16V M Y TA26
		C465	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C466	OCK1030K945	0.01M 50V Z F TS
		C467	OCN1040K948	0.1M 50V Z F TA26
		C468	OCE1076F638	100M SMS 16V M FM5 TP(5)
		C469	OCN1030F678	0.01M 16V M Y TA26
		C470	OCQ1031N409	0.01UF 100V J PE TP
		C471	OCQ1231N409	0.012U 100V J POLY TP
		C472	OCE1066H638	10M SMS 25V M FM5 TP
		C473	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C474	OCE1066H638	10M SMS 25V M FM5 TP
		C475	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C476	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C478	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C479	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C480	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C481	OCE4766F638	47M SMS 16V M FM5 TP5
		C482	OCN1030F678	0.01M 16V M Y TA26
		C485	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C486	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C487	OCE2276F638	220U SMS 16V M FM5 TP(5)
		C488	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C489	OCE1076F638	100M SMS 16V M FM5 TP(5)
		C490	OCE2266F638	22M SMS 16V M FM5 TP5
		C491	OCE1066H638	10M SMS 25V M FM5 TP
		C492	OCE1066H638	10M SMS 25V M FM5 TP
		C493	OCE1066H638	10M SMS 25V M FM5 TP
		C4F1	OCN1040K948	0.1M 50V Z F TA26
		C4M1	OCN1020K518	1000P 50V K B TA26
		C4M3	OCN1020K518	1000P 50V K B TA26
		C501	OCC2200K415	22P 50V J NPO TS
		C502	OCQ2231N409	0.022U 100V J POLY TP
		C503	OCN2230H948	0.022M 25V Z F TA26
		C504	OCE4766F638	47M SMS 16V M FM5 TP5
		C505	OCN2230H948	0.022M 25V Z F TA26
		C506	OCE4766F638	47M SMS 16V M FM5 TP5
		C507	624-027A	GOLD 0.047F-5.5V D13.0X8.5 NEC
		C508	OCN2230H948	0.022M 25V Z F TA26
		C509	OCE4766F638	47M SMS 16V M FM5 TP5
		C510	OCE4766F638	47M SMS 16V M FM5 TP5
		C511	OCN1020K518	1000P 50V K B TA26
		C512	OCN1030F678	0.01M 16V M Y TA26
		C513	OCN1030F678	0.01M 16V M Y TA26
		C514	OCN1020K518	1000P 50V K B TA26
		C515	OCQ1024K409	0.001U 50V J POLY TE TP
		C517	OCE1051K636	1.0U SM 50V M FM5 BP TP(D)
		C518	OCQ1034K409	0.01U 50V J POLY TE TP
		C520	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C521	OCC2200K415	22P 50V J NPO TS
		C522	OCN1030F678	0.01M 16V M Y TA26
		C527	OCE4766F638	47M SMS 16V M FM5 TP5
		C601	OCN2230H948	0.022M 25V Z F TA26
		C602	OCN1020K518	1000P 50V K B TA26
		C603	OCN1020K518	1000P 50V K B TA26
		C604	OCN1020K518	1000P 50V K B TA26
		C605	OCN1020K518	1000P 50V K B TA26
		C606	OCE4766D630	47M SMS 10V M FM5
		C607	OCN2230H948	0.022M 25V Z F TA26
		C608	OCE4766D630	47M SMS 10V M FM5
		C701	OCN2230H948	0.022M 25V Z F TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C703	OCN2230H948	0.022M 25V Z F TA26
		C704	OCE4766F638	47M SMS 16V M FM5 TP5
		C705	OCN2230H948	0.022M 25V Z F TA26
		C706	OCN3310K518	330P 50V K B TA26
		C707	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C709	OCX2200K408	22P 50V J SL TP26
		C710	OCE4766F638	47M SMS 16V M FM5 TP5
		C711	OCN2230H948	0.022M 25V Z F TA26
		C712	OCE4766F638	47M SMS 16V M FM5 TP5
		C713	OCN2230H948	0.022M 25V Z F TA26
		C714	OCE2256K638	2.2M SMS 50V M FM5 TP(5)
		C715	OCE2256K638	2.2M SMS 50V M FM5 TP(5)
		C716	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C717	OCC2710K415	270P 50V J NPO TP
		C718	OCC2710K415	270P 50V J NPO TP
		C719	OCC6800K415	68P 50V J NPO TP
		C720	OCC2700K415	27P 50V J NPO TP
		C721	OCE4766F638	47M SMS 16V M FM5 TP5
		C722	OCN2230H948	0.022M 25V Z F TA26
		C723	OCQ1231N409	0.012U 100V J POLY TP
		C724	OCQ1231N409	0.012U 100V J POLY TP
		C725	OCE2256K638	2.2M SMS 50V M FM5 TP(5)
		C726	OCE2256K638	2.2M SMS 50V M FM5 TP(5)
		C727	OCC4700K415	47P 50V J NPO TP
		C728	OCQ3921N409	0.0039U 100V J POLY TP
		C729	OCE2276F638	220U SMS 16V M FM5 TP(5)
		C730	OCN1040K948	0.1M 50V Z F TA26
		C731	OCN1030F678	0.01M 16V M Y TA26
		C732	OCE1066H638	10M SMS 25V M FM5 TP
		C7D1	OCE4756K638	4.7M SMS 50V M FM5 TP(5)
		C7D2	OCE2276F638	220U SMS 16V M FM5 TP(5)
		C7D3	OCN2230H948	0.022M 25V Z F TA26
		C7D4	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C7D5	OCN2230H948	0.022M 25V Z F TA26
		C7D6	OCE4766F638	47M SMS 16V M FM5 TP5
		C7D7	OCE2246K638	0.22M SMS 50V M FM5 TP(5)
		C7D8	OCE2256K638	2.2M SMS 50V M FM5 TP(5)
		C7D9	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C7E1	OCQ3321N409	0.0033U 100V J POLY TP
		C7E2	OCQ5631N409	0.056U 100V J POLY TP
		C7E3	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C7E4	OCN1010K518	100P 50V K B TA26
		C7E5	OCQ2221N409	0.0022U 100V J POLY TP
		C7E6	OCQ1024K409	0.001U 50V J POLY TE TP
		C7M2	OCE1056K638	1.0M SMS 50V M FM5 TP(5)
		C7M3	OCN2230H948	0.022M 25V Z F TA26
		C7M4	OCE4766F638	47M SMS 16V M FM5 TP5
		C7M5	OCE4766F638	47M SMS 16V M FM5 TP5
		C7M6	OCN2230H948	0.022M 25V Z F TA26
		C7M9	OCN2230H948	0.022M 25V Z F TA26
		C7N1	OCE4766F638	47M SMS 16V M FM5 TP5
		C7N3	OCE4766F638	47M SMS 16V M FM5 TP5
		C7N4	OCE4766F638	47M SMS 16V M FM5 TP5
		C7N5	OCN1510K518	150P 50V K B TA26
		C801	OCH1104K946	0.1U 50V Z F 2.0X1.2 R/TP
		C802	OCH1104K946	0.1U 50V Z F 2.0X1.2 R/TP
		C803	OCH1104K946	0.1U 50V Z F 2.0X1.2 R/TP
		C804	OCH1104K946	0.1U 50V Z F 2.0X1.2 R/TP
		C805	OCH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C806	OCH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C807	OCH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C808	OCH1103K516	0.01U 50V K B 2.0X1.25 R/TP



S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		C809	0CH1104K946	0.1U 50V Z F 2.0X1.2 R/TP
		C810	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C811	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C812	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C813	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C814	0CH4121K416	120P 50V J NP0 2.0X1.2 R/TP
		C820	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C821	0CH4050K016	5P 50V C COG 2.0X1.2 R/TP
		C822	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C823	0CH4270K416	27P 50V J COG 2.0X1.2 R/TP
		C824	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C825	0CH4820K416	82P 50V J COG 2.0X1.2 R/TP
		C826	0CH4331K416	330P 50V J NP0 2.0X1.2 R/TP
		C827	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C828	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C829	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C835	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C851	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C852	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C853	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		C854	0CH1102K516	1000P 50V K B 2.0X1.25 R/TP
		C855	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
		C856	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
		C857	0CH1102K516	1000P 50V K B 2.0X1.25 R/TP
		C858	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		C859	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
		C860	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C861	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C862	0CE4764F638	47M SRA/SS 16V M FM5 TP(5)
		C863	0CH1103K516	0.01U 50V K B 2.0X1.25 R/TP
		C864	0CE1054K638	1.0M SRA/SS50V M FM5 TP(5)
		CJ01	0CN4710K518	470P 50V K B TA26
		CJ02	0CN1020K518	1000P 50V K B TA26
		CJ03	0CN4710K518	470P 50V K B TA26
		CJ04	0CK1020K945	1000P 50V Z F TS
		CJ05	0CE4775F638	470M SR 16V M FM5 TP(5)
		CJ06	0CE4766F638	47M SMS 16V M FM5 TP5
		CJ07	0CE4775F638	470M SR 16V M FM5 TP(5)
		CJ08	0CE4766F638	47M SMS 16V M FM5 TP5
		CJ15	0CK1020K945	1000P 50V Z F TS
		CJ16	0CK1020K945	1000P 50V Z F TS
		CJ17	0CN1020K518	1000P 50V K B TA26
		CJ18	0CE4766F638	47M SMS 16V M FM5 TP5
		CJ19	0CN1040K948	0.1M 50V Z F TA26
<b>DIODE</b>				
		D001	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D002	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D101	0DD402000AC	BRIDGE RBA-402 SANKEN
		D102	0DD402000AC	BRIDGE RBA-402 SANKEN
		D110	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D111	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D113	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D114	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D201	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D202	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D203	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D204	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D205	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D206	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D207	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D208	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		D209	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D210	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D302	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D303	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D306	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D310	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D3A1	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D401	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D404	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D451	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D452	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D501	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D502	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D503	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D504	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D505	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D506	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D507	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D508	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D509	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D512	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D513	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D602	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D603	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D604	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D605	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D607	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D7D1	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D7D2	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D7D3	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D7D4	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		D7M1	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D7M2	0DD400309AB	IN4003A(1SR35-200A)5M/M TP ROH
		D801	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		DJ01	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
		W087	0DD131009AA	1SS131 DETECT,SW(26MM)TP ROHM
<b>DISPLAY TUBE</b>				
		DG601	514-032A	9BT-123GK 85X25 PAL SEJIN
<b>LEVEL METER</b>				
		LM601	514-505B	LEVEL METER KI-212G1,ROHM-K
<b>DELAY LINE</b>				
		DL301	617-022B	ADL-FE 2245E PAL ASAHI GLASS
<b>FUSE</b>				
		F101	585-011A	T 500MA 250V S504
		F102	585-011C	T 1.6A 250V S506
		F103	585-011H	T 2.5A, 250V S506
<b>FILTER</b>				
*		FL101	616-004B	LINE 801-302-FD(BUJEON)
		FL301	616-064D	L/C CL00047A 1.5M LPF S/S
		FL401	616-069C	LPF 12KHZ(JH-1058) SAMMI
		FL451	616-405B	F-K5D9568A 1.8M SAMMI C900P
		FL452	616-405A	F-K5D9567A 1.4M SAMMI C900P
		T703	616-101C	BPF 5.5MHZ (D/S) 8400P
		T704	616-101C	BPF 5.5MHZ (D/S) 8400P

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		Z701	616-098A	SAW OFWG3203 SIEMENS
		Z702	616-036B	TRAP TPS5.5MB MURA
		Z704	616-038D	CERAMIC SFT5.5MA MURATA
		Z705	616-038E	CERAMIC SFT5.74MA
<b>IC</b>				
	OR	IC002	0IM1350110B	M35011-058SP(OSD 64CHAR)
		IC101	0IMA780600A	AN7806 6V1AREG MATSUSHITA
		IC102	0IMA780600A	AN7806 6V1AREG MATSUSHITA
		IC201	0IH1497560A	HD49756NT(SERVO)
		IC202	0IRH728000B	BA728N(DUAL OP-AMP)SIP
		IC301	0ISA739000A	LA7390(PAL,Y/C1CHIP)
		IC304	0IGS381600A	GL3816
		IC304	0ISA701600A	LA7016 ANALOG SW
		IC3C1	0IKK740300B	MSM7403RS(2H CCD) DIP-PACK
		IC401	0IRH779000A	BA7790LS(AUDIO NORMAL)
		IC402	0IRH728000B	BA728N(DUAL OP-AMP)SIP
		IC403	0ITO881300A	TA8813AN(HI-FI MAIN PAL)
		IC404	0ITO409400A	TC4094BP 8STAGE BUS REGIST
		IC501	0IMI381770G	M38177MC-062FP(SY+TI)
		IC502	0IX1240200B	X24C02.8D EEP-ROM(2K CMOS)
		IC503	0IMT523000B	PST-523G/T(3.3V) LOW
		IC504	0IRH620930A	BA6209V3 MOTOR DRIVE
		IC701	0ISA754500A	LA7545 (1280 T/IF)
		IC702	0IPH385700A	TDA3857(SIF)
		IC703	0IPH984000A	TDA9840 ST MATRIX
		IC705	0IJR222900A	NJM2229S SYNC SEPA (SIP PACK)
		IC706	0IJR224900A	NJM2249L S/W (8 PIN SIP)
		IC801	0ISA737400A	LA7374(PRE-AMP 4HEAD Y/C)
		IC851	0IRH774000A	BA7740S (PRE-AMP HI-FI)
<b>JACK</b>				
		JK401	572-075C	BJP-202L (WHITE)
		JK402	572-075B	BJP-202L (RED)
		JK601	572-034D	PIN JPJ1022-01-040 (YL)
		JK602	572-034C	PIN JPJ1022-01-030 (WH)
		JK603	572-034B	PIN JPJ1022-01-020 (RED)
<b>COIL</b>				
		L001	0LR1000K035	100M K 6X6 L5 TP
		L002	0LR1000K035	100M K 6X6 L5 TP
		L003	0LR0122J025	12UH 5% 4X5 TR5
		L004	0LA0222K018	22M K 2.3X3.4 L5 TP
		L005	0LA0222K018	22M K 2.3X3.4 L5 TP
		L006	0LA0222K018	22M K 2.3X3.4 L5 TP
		L007	0LA0332K018	33M K 2.3X3.4 L5 TP
		L201	0LR1000K035	100M K 6X6 L5 TP
		L301	0LR1000K035	100M K 6X6 L5 TP
		L302	0LR1000K035	100M K 6X6 L5 TP
		L303	0LA0472K018	47M K 2.3X3.4 L5 TP
		L304	0LA0272K018	27M K 2.3X3.4 L5 TP
		L305	0LA0152K018	15M K 2.3X3.4 L5 TP
		L306	0LA0332K018	33M K 2.3X3.4 L5 TP
		L308	0LA0332K018	33M K 2.3X3.4 L5 TP
		L311	0LR1000K035	100M K 6X6 L5 TP
		L315	0LR1000K035	100M K 6X6 L5 TP
		L316	0LA0472K018	47M K 2.3X3.4 L5 TP
		L317	0LA0222K018	22M K 2.3X3.4 L5 TP
		L319	0LA1000K018	100M K 2.3X3.4 L5 TP
		L320	0LA2700K018	270U K 2.3X3.4 L5 TP

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		L322	0LR1000K035	100M K 6X6 L5 TP
		L323	0LR1000J025	100UH 5% 4X5 TR5
		L324	0LR1000K035	100M K 6X6 L5 TP
		L325	0LR1000J025	100UH 5% 4X5 TR5
		L3C1	0LR1000K035	100M K 6X6 L5 TP
		L3C2	0LA0471K018	4.7M K 2.3X3.4 L5 TP
		L3C3	0LA0472K018	47M K 2.3X3.4 L5 TP
		L3C4	0LA0332K018	33M K 2.3X3.4 L5 TP
		L3C5	0LR1000K035	100M K 6X6 L5 TP
		L401	0LR1502J045	0.015H J 6X7 L5 TP
		L402	0LR1000K035	100M K 6X6 L5 TP
		L403	0LR1000K035	100M K 6X6 L5 TP
		L404	0LR1000K035	100M K 6X6 L5 TP
		L405	0LR1000K035	100M K 6X6 L5 TP
		L451	0LR1000K035	100M K 6X6 L5 TP
		L452	0LR1000K035	100M K 6X6 L5 TP
		L501	0LR1000K035	100M K 6X6 L5 TP
		L502	0LR1000K035	100M K 6X6 L5 TP
		L503	0LR1000K035	100M K 6X6 L5 TP
		L601	0LA1000K018	100M K 2.3X3.4 L5 TP
		L602	0LA1000K018	100M K 2.3X3.4 L5 TP
		L700	0LA0391K018	3.9M K 2.3X3.4 L5 TP
		L701	0LA0471K018	4.7M K 2.3X3.4 L5 TP
		L702	0LR1000K035	100M K 6X6 L5 TP
		L703	0LA0152K018	15M K 2.3X3.4 L5 TP
		L704	0LA0332K018	33M K 2.3X3.4 L5 TP
		L705	0LR1000K035	100M K 6X6 L5 TP
		L706	0LR1000K035	100M K 6X6 L5 TP
		L707	0LR1000K035	100M K 6X6 L5 TP
		L708	0LR2201J045	2200M J 6X7 L5 TP
		L709	0LA0222K018	22M K 2.3X3.4 L5 TP
		L710	0LA0222K018	22M K 2.3X3.4 L5 TP
		L7D1	0LR1000K035	100M K 6X6 L5 TP
		L7D3	0LR1000K035	100M K 6X6 L5 TP
		L7M4	0LR1000K035	100M K 6X6 L5 TP
		L7M5	0LR1000K035	100M K 6X6 L5 TP
		L7M6	0LR1000K035	100M K 6X6 L5 TP
		L7M7	0LR1000K035	100M K 6X6 L5 TP
		L801	0LR1000J025	100UH 5% 4X5 TR5
		L805	0LA0332K018	33M K 2.3X3.4 L5 TP
		L806	0LA0152K018	15M K 2.3X3.4 L5 TP
		L807	0LA0472K018	47M K 2.3X3.4 L5 TP
		L808	0LR0122J025	12UH 5% 4X5 TR5
		L809	0LA1800K018	180M K 2.3X3.4 L5 TP
		L810	0LR1000J025	100UH 5% 4X5 TR5
		L851	0LR1000J025	100UH 5% 4X5 TR5
		LJ01	0LA1000K018	100M K 2.3X3.4 L5 TP
		LJ02	0LA1000K018	100M K 2.3X3.4 L5 TP
		LJ03	0LA0221K018	2.2UH K 2.3X3.4 L5 TP
		LJ04	0LA0221K018	2.2UH K 2.3X3.4 L5 TP
		LJ15	0LA0221K018	2.2UH K 2.3X3.4 L5 TP
		LJ16	0LA0221K018	2.2UH K 2.3X3.4 L5 TP
		LJ17	0LA1000K018	100M K 2.3X3.4 L5 TP
		LJ18	0LA1000K018	100M K 2.3X3.4 L5 TP
		T401	633-032C	BIAS-OSC(MISUMI) 70KHZ
		T402	633-032C	BIAS-OSC(MISUMI) 70KHZ
		T701	633-021C	PIF(D/S)
		T702	633-085A	V-COIL 2920N-K5592Z 77.8 TOKO
<b>LED</b>				
		LD601	ODL162000AA	KLR162E (RD) KEC

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
<b>MODULATOR</b>				
		MD701	592-023B	MUK2H701 AUST.W/B00STER GAE
<b>CIRCUIT BOARD ASSEMBLY</b>				
		PBAU0	515-716B	HIFI
		PBCCD	515-786A	CCD
		PBIVT	515-717C	IF+TITLE
		PBM00	515-712H	MAIN
		PBP00	515-715C	POWER
		PBS00	515-785D	SCART
		PBT00	515-809D	TIMER (G-CODE)
<b>TRANSFORMER</b>				
		PT101	641-343B	120V/230V/240V/50HZ
OR		PT101	641-843B	120V/230V/240V/50HZ
<b>TRANSISTOR</b>				
		Q001	OTR126709AC	KTA1267-GR MINI TP KEC
		Q002	OTR319909AF	KTC3199-BL MINI TP KEC
		Q003	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q004	OTR319909AF	KTC3199-BL MINI TP KEC
		Q005	OTR319909AF	KTC3199-BL MINI TP KEC
		Q006	OTR319909AF	KTC3199-BL MINI TP KEC
		Q101	OTR141400AA	KTD1414 POWER (220 PACK) KEC
		Q103	OTR220909AA	KN2209-KRA2209-KRA109M TP KEC
		Q104	OTR220909AA	KN2209-KRA2209-KRA109M TP KEC
		Q105	OTR320509AB	KTC3205-TP-Y (KTC2236A)KEC
		Q106	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q107	OTR319909AF	KTC3199-BL MINI TP KEC
		Q108	OTR127309AA	KTA1273-TP-Y (KTA966A)KEC
		Q110	OTR141400AA	KTD1414 POWER (220 PACK) KEC
		Q201	OTR103009AF	KRA103M-TP (KRA2203) KEC
		Q202	OTR103009AF	KRA103M-TP (KRA2203) KEC
		Q203	OTR103009AF	KRA103M-TP (KRA2203) KEC
		Q204	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q205	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q206	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q207	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q208	OTR319909AF	KTC3199-BL MINI TP KEC
		Q302	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q303	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q304	OTR126709AC	KTA1267-GR MINI TP KEC
		Q305	OTR126709AC	KTA1267-GR MINI TP KEC
		Q306	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q309	OTR319909AF	KTC3199-BL MINI TP KEC
		Q312	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q313	OTR126709AC	KTA1267-GR MINI TP KEC
		Q314	OTR126709AC	KTA1267-GR MINI TP KEC
		Q321	OTR319909AF	KTC3199-BL MINI TP KEC
		Q322	OTR319909AF	KTC3199-BL MINI TP KEC
		Q323	OTR319909AF	KTC3199-BL MINI TP KEC
		Q330	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q3C1	OTR319909AF	KTC3199-BL MINI TP KEC
		Q3C2	OTR126709AC	KTA1267-GR MINI TP KEC
		Q3C3	OTR319909AF	KTC3199-BL MINI TP KEC
		Q401	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q402	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q403	OTR103009AE	KRC103M-TP (KRC1203) KEC
		Q405	OTR320509AB	KTC3205-TP-Y (KTC2236A)KEC

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION	
			Q406	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q407	OTR320509AB	KTC3205-TP-Y (KTC2236A)KEC
			Q408	OTR320509AB	KTC3205-TP-Y (KTC2236A)KEC
			Q451	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q452	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q453	OTR319909AF	KTC3199-BL MINI TP KEC
			Q454	OTR319909AF	KTC3199-BL MINI TP KEC
			Q455	OTR319909AF	KTC3199-BL MINI TP KEC
			Q501	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q502	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q503	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q701	OTR319709AC	KTC3197 (KTC388A) TP KEC
			Q702	OTR319909AF	KTC3199-BL MINI TP KEC
			Q703	OTR319909AF	KTC3199-BL MINI TP KEC
			Q7D1	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q7D2	OTR103009AF	KRA103M-TP (KRA2203) KEC
			Q7D3	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q7D4	OTR103009AF	KRA103M-TP (KRA2203) KEC
			Q7D5	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q7D6	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q7D7	OTR319909AF	KTC3199-BL MINI TP KEC
			Q7M1	OTR127309AA	KTA1273-TP-Y (KTA966A)KEC
			Q7M2	OTR103009AE	KRC103M-TP (KRC1203) KEC
			Q803	OTR150409AC	KTA1504-GR-T1(ASG) CHIP KEC
			Q804	OTR387509AC	CHIP KTC3875S-GR-T1(ALG) KEC
			Q805	OTR387509AC	CHIP KTC3875S-GR-T1(ALG) KEC
			QJ01	OTR126709AC	KTA1267-GR MINI TP KEC
			QJ02	OTR103009AE	KRC103M-TP (KRC1203) KEC
			QJ03	OTR126709AC	KTA1267-GR MINI TP KEC
			QJ04	OTR320509AB	KTC3205-TP-Y (KTC2236A)KEC
			QJ05	OTR319909AF	KTC3199-BL MINI TP KEC
<b>RESISTOR</b>					
			AR501	615-019A	ANR7X472J 7PIN ABCO
			R001	ORD0562F608	58 1/6W 5 TA26
			R002	ORD1802F608	18K 1/6W 5 TA26
			R003	ORD6802F608	68K 1/6W 5 TA26
			R004	ORD2201F608	2.2K 1/6W 5 TA26
			R005	ORD4700F608	470 1/6W 5 TA26
			R006	ORD4703F608	470K 1/6W 5 TA26
			R007	ORD2202F608	22K 1/6W 5 TA26
			R008	ORD0752F608	75 1/6W 5 TA26
			R009	ORD1001F608	1.0K 1/6W 5 TA26
			R010	ORD4701F608	4.7K 1/6W 5 TA26
			R011	ORD3301F608	3.3K 1/6W 5 TA26
			R012	ORD1001F608	1.0K 1/6W 5 TA26
			R013	ORD3901F608	3.9K 1/6W 5 TA26
			R014	ORD2201F608	2.2K 1/6W 5 TA26
			R101	ORD8200F608	820 1/6W 5 TA26
			R102	ORD1001F608	1.0K 1/6W 5 TA26
			R103	ORD8200F608	820 1/6W 5 TA26
			R105	ORD1501F608	1.5K 1/6W 5 TA26
			R106	ORD4700F608	470 1/6W 5 TA26
			R111	ORD1001F608	1.0K 1/6W 5 TA26
			R112	ORD1801F608	1.8K 1/6W 5 TA26
			R113	ORD1003F608	100K 1/6W 5 TA26
			R120	ORD1002F608	10K 1/6W 5 TA26
			R201	ORD2201F608	2.2K 1/6W 5 TA26
			R202	ORD2201F608	2.2K 1/6W 5 TA26
			R203	ORD1502F608	15K 1/6W 5 TA26
			R204	ORD1802F608	18K 1/6W 5 TA26
			R205	ORD2201F608	2.2K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R206	ORD1202F608	12K 1/6W 5 TA26
		R207	ORD1001F608	1.0K 1/6W 5 TA26
		R208	ORD1503F608	150K 1/6W 5 TA26
		R209	ORD1001F608	1.0K 1/6W 5 TA26
		R210	ORD4700F608	470 1/6W 5 TA26
		R211	ORD1002F608	10K 1/6W 5 TA26
		R212	ORD8201F608	8.2K 1/6W 5 TA26
		R213	ORD4702F608	47K 1/6W 5 TA26
		R214	ORD1503F608	150K 1/6W 5 TA26
		R215	ORD5601F608	5.6K 1/6W 5 TA26
		R216	ORD4701F608	4.7K 1/6W 5 TA26
		R217	ORD5602F608	56K 1/6W 5 TA26
		R218	ORD1003F608	100K 1/6W 5 TA26
		R219	ORD8201F608	8.2K 1/6W 5 TA26
		R220	ORD4702F608	47K 1/6W 5 TA26
		R221	ORD2702F608	27K 1/6W 5 TA26
		R222	ORD6803F608	680K 1/6W 5 TA26
		R223	ORD2201F608	2.2K 1/6W 5 TA26
		R224	ORD1001F608	1.0K 1/6W 5 TA26
		R225	ORD5603F608	560K 1/6W 5 TA26
		R226	ORD2201F608	2.2K 1/6W 5 TA26
		R227	ORD8203F608	820K 1/6W 5 TA26
		R228	ORD2702F608	27K 1/6W 5 TA26
		R229	ORD6802F608	68K 1/6W 5 TA26
		R230	ORD2703F608	270K 1/6W 5 TA26
		R231	ORD3901F608	3.9K 1/6W 5 TA26
		R232	ORD1803F608	180K 1/6W 5 TA26
		R233	ORD2201F608	2.2K 1/6W 5 TA26
		R234	ORD1203F608	120K 1/6W 5 TA26
		R235	ORD4701F608	4.7K 1/6W 5 TA26
		R236	ORD1003F608	100K 1/6W 5 TA26
		R237	ORD5601F608	5.6K 1/6W 5 TA26
		R238	ORD1001F608	1.0K 1/6W 5 TA26
		R239	ORD6803F608	680K 1/6W 5 TA26
		R240	ORD1202F608	12K 1/6W 5 TA26
		R241	ORD1001F608	1.0K 1/6W 5 TA26
		R242	ORD4700F608	470 1/6W 5 TA26
		R243	ORD5601F608	5.6K 1/6W 5 TA26
		R244	ORD4700F608	470 1/6W 5 TA26
		R245	ORD4701F608	4.7K 1/6W 5 TA26
		R246	ORD5601F608	5.6K 1/6W 5 TA26
		R247	ORD0101F608	1.0 1/6W 5 TA26
		R248	ORD0101F608	1.0 1/6W 5 TA26
		R250	ORD5601F608	5.6K 1/6W 5 TA26
		R251	ORD2702F608	27K 1/6W 5 TA26
		R252	ORD3903F608	390K 1/6W 5 TA26
		R301	ORD8201F608	8.2K 1/6W 5 TA26
		R302	ORD8201F608	8.2K 1/6W 5 TA26
		R303	ORD4701F608	4.7K 1/6W 5 TA26
		R304	ORD1002F608	10K 1/6W 5 TA26
		R305	ORD3302F608	33K 1/6W 5 TA26
		R306	ORD1202F608	12K 1/6W 5 TA26
		R307	ORD3901F608	3.9K 1/6W 5 TA26
		R308	ORD2201F608	2.2K 1/6W 5 TA26
		R309	ORD6801F608	6.8K 1/6W 5 TA26
		R310	ORD2202F608	22K 1/6W 5 TA26
		R311	ORD8200F608	820 1/6W 5 TA26
		R312	ORD0562F608	56 1/6W 5 TA26
		R313	ORD1501F608	1.5K 1/6W 5 TA26
		R314	ORD1001F608	1.0K 1/6W 5 TA26
		R315	ORD2202F608	22K 1/6W 5 TA26
		R316	ORD2700F608	270 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R317	ORD1201F608	1.2K 1/6W 5 TA26
		R318	ORD6801F608	6.8K 1/6W 5 TA26
		R319	ORD3301F608	3.3K 1/6W 5 TA26
		R320	ORD4701F608	4.7K 1/6W 5 TA26
		R321	ORD1501F608	1.5K 1/6W 5 TA26
		R322	ORD2201F608	2.2K 1/6W 5 TA26
		R323	ORD1001F608	1.0K 1/6W 5 TA26
		R324	ORD2701F608	2.7K 1/6W 5 TA26
		R325	ORD6800F608	680 1/6W 5 TA26
		R326	ORD1001F608	1.0K 1/6W 5 TA26
		R327	ORD2201F608	2.2K 1/6W 5 TA26
		R328	ORD3301F608	3.3K 1/6W 5 TA26
		R329	ORD1004F608	1.0M 1/6W 5 TA26
		R330	ORD8201F608	8.2K 1/6W 5 TA26
		R331	ORD1200F608	120 1/6W 5 TA26
		R332	ORD2201F608	2.2K 1/6W 5 TA26
		R335	ORD0752F608	75 1/6W 5 TA26
		R340	ORD1001F608	1.0K 1/6W 5 TA26
		R341	ORD5601F608	5.6K 1/6W 5 TA26
		R342	ORD4701F608	4.7K 1/6W 5 TA26
		R352	ORD1201F608	1.2K 1/6W 5 TA26
		R353	ORD6800F608	680 1/6W 5 TA26
		R354	ORD1001F608	1.0K 1/6W 5 TA26
		R355	ORD1202F608	12K 1/6W 5 TA26
		R356	ORD1501F608	1.5K 1/6W 5 TA26
		R380	ORD1002F608	10K 1/6W 5 TA26
		R381	ORD2202F608	22K 1/6W 5 TA26
		R382	ORD1001F608	1.0K 1/6W 5 TA26
		R383	ORD1001F608	1.0K 1/6W 5 TA26
		R384	ORD2702F608	27K 1/6W 5 TA26
		R385	ORD1202F608	12K 1/6W 5 TA26
		R386	ORD2201F608	2.2K 1/6W 5 TA26
		R387	ORD5600F608	560 1/6W 5 TA26
		R388	ORD1001F608	1.0K 1/6W 5 TA26
		R390	ORD1800F608	180 1/6W 5 TA26
		R391	ORD8200F608	820 1/6W 5 TA26
		R392	ORD2202F608	22K 1/6W 5 TA26
		R393	ORD2702F608	27K 1/6W 5 TA26
		R395	ORD5601F608	5.6K 1/6W 5 TA26
		R396	ORD4701F608	4.7K 1/6W 5 TA26
		R398	ORD1000F608	100 1/6W 5 TA26
		R399	ORD1800F608	180 1/6W 5 TA26
		R3C1	ORD1802F608	18K 1/6W 5 TA26
		R3C2	ORD4701F608	4.7K 1/6W 5 TA26
		R3C3	ORD1001F608	1.0K 1/6W 5 TA26
		R3C4	ORD1002F608	10K 1/6W 5 TA26
		R3C5	ORD1001F608	1.0K 1/6W 5 TA26
		R3C6	ORD1201F608	1.2K 1/6W 5 TA26
		R3C7	ORD2201F608	2.2K 1/6W 5 TA26
		R402	ORD3900F608	390 1/6W 5 TA26
		R403	ORD1802F608	18K 1/6W 5 TA26
		R404	ORD4702F608	47K 1/6W 5 TA26
		R406	ORD3303F608	330K 1/6W 5 TA26
		R407	ORD1202F608	12K 1/6W 5 TA26
		R408	ORD2201F608	2.2K 1/6W 5 TA26
		R409	ORD0102F608	10 1/6W 5 TA26
		R410	ORD5603F608	560K 1/6W 5 TA26
		R412	ORD1001F608	1.0K 1/6W 5 TA26
		R418	ORD5601F608	5.6K 1/6W 5 TA26
		R419	ORD1802F608	18K 1/6W 5 TA26
		R420	ORD1201F608	1.2K 1/6W 5 TA26
		R421	ORD4701F608	4.7K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R422	ORD1802F608	18K 1/6W 5 TA26
		R423	ORD1002F608	10K 1/6W 5 TA26
		R424	ORD1002F608	10K 1/6W 5 TA26
		R425	ORD3902F608	39K 1/6W 5 TA26
		R426	ORD5600F608	560 1/6W 5 TA26
		R427	ORD5600F608	560 1/6W 5 TA26
		R429	ORD8202F608	82K 1/6W 5 TA26
		R430	ORD8202F608	82K 1/6W 5 TA26
		R431	ORD3302F608	33K 1/6W 5 TA26
		R432	ORD8202F608	82K 1/6W 5 TA26
		R433	ORD2202F608	22K 1/6W 5 TA26
		R434	ORD2202F608	22K 1/6W 5 TA26
		R435	ORD8202F608	82K 1/6W 5 TA26
		R436	ORD3302F608	33K 1/6W 5 TA26
		R439	ORD0152F608	15 1/6W 5 TA26
		R440	ORD0472F608	47 1/6W 5 TA26
		R441	ORD3302F608	33K 1/6W 5 TA26
		R442	ORD3302F608	33K 1/6W 5 TA26
		R443	ORD0472F608	47 1/6W 5 TA26
		R444	ORD0681F608	6.8 1/6W 5 TA26
		R445	ORD4700F608	470 1/6W 5 TA26
		R451	ORD2201F608	2.2K 1/6W 5 TA26
		R452	ORD1802F608	18K 1/6W 5 TA26
		R453	ORD2201F608	2.2K 1/6W 5 TA26
		R454	ORD2202F608	22K 1/6W 5 TA26
		R455	ORD1001F608	1.0K 1/6W 5 TA26
		R456	ORD2202F608	22K 1/6W 5 TA26
		R457	ORD1001F608	1.0K 1/6W 5 TA26
		R458	ORD4703F608	470K 1/6W 5 TA26
		R459	ORD5601F608	5.6K 1/6W 5 TA26
		R460	ORD3900F608	390 1/6W 5 TA26
		R461	ORD1001F608	1.0K 1/6W 5 TA26
		R462	ORD2202F608	22K 1/6W 5 TA26
		R463	ORD2201F608	2.2K 1/6W 5 TA26
		R464	ORD2201F608	2.2K 1/6W 5 TA26
		R465	ORD1802F608	18K 1/6W 5 TA26
		R466	ORD2202F608	22K 1/6W 5 TA26
		R467	ORD8202F608	82K 1/6W 5 TA26
		R469	ORD3902F608	39K 1/6W 5 TA26
		R470	ORD2203F608	220K 1/6W 5 TA26
		R471	ORD2202F608	22K 1/6W 5 TA26
		R472	ORD3301F608	3.3K 1/6W 5 TA26
		R473	ORD2202F608	22K 1/6W 5 TA26
		R474	ORD3301F608	3.3K 1/6W 5 TA26
		R475	ORD2203F608	220K 1/6W 5 TA26
		R476	ORD3902F608	39K 1/6W 5 TA26
		R477	ORD8202F608	82K 1/6W 5 TA26
		R478	ORD2702F608	27K 1/6W 5 TA26
		R479	ORD1002F608	10K 1/6W 5 TA26
		R480	ORD1002F608	10K 1/6W 5 TA26
		R481	ORD2201F608	2.2K 1/6W 5 TA26
		R482	ORD2200F608	220 1/6W 5 TA26
		R483	ORD1801F608	1.8K 1/6W 5 TA26
		R484	ORD2200F608	220 1/6W 5 TA26
		R485	ORD1002F608	10K 1/6W 5 TA26
		R486	ORD1002F608	10K 1/6W 5 TA26
		R489	ORD1001F608	1.0K 1/6W 5 TA26
		R490	ORD1503F608	150K 1/6W 5 TA26
		R491	ORD8202F608	82K 1/6W 5 TA26
		R492	ORD1503F608	150K 1/6W 5 TA26
		R493	ORD8202F608	82K 1/6W 5 TA26
		R4M5	ORD4701F608	4.7K 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R4M6	ORD1502F608	15K 1/6W 5 TA26
		R4M7	ORD1203F608	120K 1/6W 5 TA26
		R501	ORD5601F608	5.6K 1/6W 5 TA26
		R503	ORD1502F608	15K 1/6W 5 TA26
		R504	ORD4701F608	4.7K 1/6W 5 TA26
		R505	ORD6802F608	68K 1/6W 5 TA26
		R506	ORD6802F608	68K 1/6W 5 TA26
		R507	ORD4701F608	4.7K 1/6W 5 TA26
		R508	ORD1003F608	100K 1/6W 5 TA26
		R509	ORD4701F608	4.7K 1/6W 5 TA26
		R510	ORD4701F608	4.7K 1/6W 5 TA26
		R511	ORD2702F608	27K 1/6W 5 TA26
		R512	ORD2702F608	27K 1/6W 5 TA26
		R513	ORD1002F608	10K 1/6W 5 TA26
		R514	ORD3302F608	33K 1/6W 5 TA26
		R515	ORD3302F608	33K 1/6W 5 TA26
		R516	ORD1002F608	10K 1/6W 5 TA26
		R517	ORD2201F608	2.2K 1/6W 5 TA26
		R518	ORD2201F608	2.2K 1/6W 5 TA26
		R519	ORD4701F608	4.7K 1/6W 5 TA26
		R520	ORD2702F608	27K 1/6W 5 TA26
		R522	ORD5601F608	5.6K 1/6W 5 TA26
		R523	ORD5601F608	5.6K 1/6W 5 TA26
		R524	ORD1002F608	10K 1/6W 5 TA26
		R525	ORD1003F608	100K 1/6W 5 TA26
		R526	ORD4704F608	4.7M 1/6W 5 TA26
		R527	ORD1004F608	1.0M 1/6W 5 TA26
		R528	ORD4701F608	4.7K 1/6W 5 TA26
		R531	ORD4700F608	470 1/6W 5 TA26
		R532	ORD4700F608	470 1/6W 5 TA26
		R533	ORD4700F608	470 1/6W 5 TA26
		R601	ORD3901F608	3.9K 1/6W 5 TA26
		R602	ORD4701F608	4.7K 1/6W 5 TA26
		R603	ORD5601F608	5.6K 1/6W 5 TA26
		R604	ORD1002F608	10K 1/6W 5 TA26
		R605	ORD1502F608	15K 1/6W 5 TA26
		R607	ORD3900F608	390 1/6W 5 TA26
		R608	ORD5600F608	560 1/6W 5 TA26
		R609	ORD5600F608	560 1/6W 5 TA26
		R610	ORD1501F608	1.5K 1/6W 5 TA26
		R611	ORD1501F608	1.5K 1/6W 5 TA26
		R612	ORD1501F608	1.5K 1/6W 5 TA26
		R613	ORD1501F608	1.5K 1/6W 5 TA26
		R614	ORD1802F608	18K 1/6W 5 TA26
		R615	ORD0271F608	2.7 1/6W 5 TA26
		R616	ORD0271F608	2.7 1/6W 5 TA26
		R617	ORD0102F608	10 1/6W 5 TA26
		R618	ORD4701F608	4.7K 1/6W 5 TA26
		R701	ORD5601F608	5.6K 1/6W 5 TA26
		R702	ORD1201F608	1.2K 1/6W 5 TA26
		R703	ORD1001F608	1.0K 1/6W 5 TA26
		R704	ORD0472F608	47 1/6W 5 TA26
		R705	ORD4702F608	47K 1/6W 5 TA26
		R706	ORD1002F608	10K 1/6W 5 TA26
		R707	ORD2201F608	2.2K 1/6W 5 TA26
		R708	ORD3300F608	330 1/6W 5 TA26
		R709	ORD0682F608	68 1/6W 5 TA26
		R710	ORD6800F608	680 1/6W 5 TA26
		R711	ORD1801F608	1.8K 1/6W 5 TA26
		R712	ORD1500F608	150 1/6W 5 TA26
		R713	ORD1500F608	150 1/6W 5 TA26
		R714	ORD5600F608	560 1/6W 5 TA26

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R715	ORD5600F608	560 1/6W 5 TA26
		R716	ORD6800F608	680 1/6W 5 TA26
		R717	ORD6800F608	680 1/6W 5 TA26
		R718	ORD4701F608	4.7K 1/6W 5 TA26
		R719	ORD4703F608	470K 1/6W 5 TA26
		R720	ORD4701F608	4.7K 1/6W 5 TA26
		R721	ORD4703F608	470K 1/6W 5 TA26
		R722	ORD2702F608	27K 1/6W 5 TA26
		R7D1	ORD4701F608	4.7K 1/6W 5 TA26
		R7D2	ORD4701F608	4.7K 1/6W 5 TA26
		R7D3	ORD2202F608	22K 1/6W 5 TA26
		R7D4	ORD1001F608	1.0K 1/6W 5 TA26
		R7D5	ORD1001F608	1.0K 1/6W 5 TA26
		R7D6	ORD0682F608	68 1/6W 5 TA26
		R7D7	ORD2701F608	2.7K 1/6W 5 TA26
		R7D8	ORD5600F608	560 1/6W 5 TA26
		R7D9	ORD8201F608	8.2K 1/6W 5 TA26
		R7E1	ORD8201F608	8.2K 1/6W 5 TA26
		R7E2	ORD5601F608	5.6K 1/6W 5 TA26
		R7E3	ORD1202F608	12K 1/6W 5 TA26
		R7E4	ORD1000F608	100 1/6W 5 TA26
		R7E5	ORD1002F608	10K 1/6W 5 TA26
		R7E6	ORD2203F608	220K 1/6W 5 TA26
		R7E7	ORD2702F608	27K 1/6W 5 TA26
		R7E8	ORD6803F608	680K 1/6W 5 TA26
		R7E9	ORD3900F608	390 1/6W 5 TA26
		R7F1	ORD6801F608	6.8K 1/6W 5 TA26
		R7F2	ORD1002F608	10K 1/6W 5 TA26
		R7M1	ORD0752F608	75 1/6W 5 TA26
		R7M2	ORD3301F608	3.3K 1/6W 5 TA26
		R7M3	ORD3301F608	3.3K 1/6W 5 TA26
		R7M4	ORD1203F608	120K 1/6W 5 TA26
		R7M5	ORD5602F608	56K 1/6W 5 TA26
		R7M6	ORD2201F608	2.2K 1/6W 5 TA26
		R7M7	ORD2201F608	2.2K 1/6W 5 TA26
		R7M8	ORD1001F608	1.0K 1/6W 5 TA26
		R7M9	ORD1001F608	1.0K 1/6W 5 TA26
		R7N1	ORD1001F608	1.0K 1/6W 5 TA26
		R801	ORH2202D622	22K 1/10W 5 D.R/TP
		R802	ORH2202D622	22K 1/10W 5 D.R/TP
		R803	ORH5601D622	5.6K 1/10W 5 D.R/TP
		R804	ORH5601D622	5.6K 1/10W 5 D.R/TP
		R805	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R806	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R807	ORH1502D622	15K 1/10W 5 D.R/TP
		R808	ORH1002D622	10K 1/10W 5 D.R/TP
		R810	ORH2202D622	22K 1/10W 5 D.R/TP
		R811	ORH2202D622	22K 1/10W 5 D.R/TP
		R812	ORH1802D622	18K 1/10W 5 D.R/TP
		R815	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R816	ORH2201D622	2.2K 1/10W 5 D.R/TP
		R817	ORH2201D622	2.2K 1/10W 5 D.R/TP
		R818	ORH3900D622	390 1/10W 5 D.R/TP
		R819	ORH3900D622	390 1/10W 5 D.R/TP
		R820	ORH1501D622	1.5K 1/10W 5 D.R/TP
		R821	ORH5601D622	5.6K 1/10W 5 D.R/TP
		R822	ORH2201D622	2.2K 1/10W 5 D.R/TP
		R823	ORH5600D622	560 1/10W 5 D.R/TP
		R824	ORH8200D622	820 1/10W 5 D.R/TP
		R826	ORH1201D622	1.2K 1/10W 5 D.R/TP
		R830	ORH2700D622	270 1/10W 5 D.R/TP
		R831	ORH5600D622	560 1/10W 5 D.R/TP

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		R840	ORH0000C622	0 1/16W 5 D.R/TP
		R851	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R852	ORH5600D622	560 1/10W 5 D.R/TP
		R853	ORH5600D622	560 1/10W 5 D.R/TP
		R854	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R855	ORH1001D622	1.0K 1/10W 5 D.R/TP
		R856	ORH0102D622	10 1/10W 5 D.R/TP
		R857	ORH3901D622	3.9K 1/10W 5 D.R/TP
		R858	ORH7501D622	7.5K 1/10W 5 D.R/TP
		R859	ORH1002D622	10K 1/10W 5 D.R/TP
		RJ01	ORD0682F608	68 1/6W 5 TA26
		RJ02	ORD4700F608	470 1/6W 5 TA26
		RJ03	ORD6802F608	68K 1/6W 5 TA26
		RJ04	ORD1502F608	15K 1/6W 5 TA26
		RJ05	ORD3300F608	330 1/6W 5 TA26
		RJ06	ORD4700F608	470 1/6W 5 TA26
		RJ07	ORD4700F608	470 1/6W 5 TA26
		RJ08	ORD0562F608	56 1/6W 5 TA26
		RJ09	ORD1001F608	1.0K 1/6W 5 TA26
		RJ10	ORD1001F608	1.0K 1/6W 5 TA26
		RJ11	ORD1001F608	1.0K 1/6W 5 TA26
		RJ12	ORD2200F608	220 1/6W 5 TA26
		W709	ORD3900F608	390 1/6W 5 TA26
<b>REMOCON RECEIVER</b>				
		RC601	668-227C	RECE 15.0 3276A 2800 KOTEC
<b>SWITCH</b>				
		SW601	556-032H	SKHH 15910A
		SW602	556-032H	SKHH 15910A
		SW603	556-032H	SKHH 15910A
		SW604	556-032H	SKHH 15910A
		SW605	556-032H	SKHH 15910A
		SW606	556-032H	SKHH 15910A
<b>TUNER</b>				
*		TU701	521-403A	ENV-57861G3 FS/PLL OSCAR MATS
<b>VARIABLE RESISTOR</b>				
	OR	VR201	613-032U	RH0638C15R0WA (100K)
		VR301	613-029N	VARIABLE EVN-DXA A03B14-10K
		VR301	613-032N	RH0638C14R14A (10K)
		VR302	613-032L	RH0638CS3R0WA (4.7K)
	OR	VR303	613-029G	VARIABLE EVN-DXA A03B13-1K
		VR303	613-032G	RH0638C13R0VA (1K)
	OR	VR304	613-029N	VARIABLE EVN-DXA A03B14-10K
		VR304	613-032N	RH0638C14R14A (10K)
	OR	VR305	613-029Q	VARIABLE EVN-DXA A03BE4-22K
		VR305	613-032Q	RH0638CJ4R0WA (22K)
		VR451	613-032Q	RH0638CJ4R0WA (22K)
		VR452	613-032Q	RH0638CJ4R0WA (22K)
		VR4M1	613-032W	RH0638CJ5R (220K)
		VR7M1	613-032Q	RH0638CJ4R0WA (22K)
		VR7M2	613-032N	RH0638C14R14A (10K)
<b>CRYSTAL</b>				
	OR	X001	529-022V	17.734476MHZ CL-12P 25PPM LEAD
		X301	529-020P	4.433619MHZ 15PPM GRAY L=4.0
		X301	529-027P	4.433619MHZ 15PPM KSS

S	AL	LOCA.NO	PART NO(GS)	SPECIFICATION
		X502	529-001D	32.768KHZ(2X6) SEIKO
		X701	529-020I	10.000000MHZ 30PPM NO-TU L=4.0
		X7D1	529-019A	CSB500F-9 MURATA
<b>RESONATOR</b>				
		X501	618-017A	FCR6.0MCT2 TDK-J(TAPING)
<b>ZENER DIODE</b>				
		ZD101	0DZ130009AB	MTZ13C TP ROHM-K
		ZD103	0DZ130009AB	MTZ13C TP ROHM-K
		ZD104	0DZ160009BA	MTZ16B TP ROHM-K
		ZD106	0DZ330009AF	MTZ33B,TP,ROHM-K
		ZD107	0DZ330009AF	MTZ33B,TP,ROHM-K
		ZD108	0DZ100009AA	MTZ10B MINI TP ROHM-K
		ZD401	0DZ100009AA	MTZ10B MINI TP ROHM-K
		ZD501	0DZ820009AA	MTZ8.2B TP ROHM-K
		ZD502	0DZ100009AA	MTZ10B MINI TP ROHM-K
		ZD601	0DZ160009BA	MTZ16B TP ROHM-K
		ZD602	0DZ160009BA	MTZ16B TP ROHM-K
		ZD603	0DZ160009BA	MTZ16B TP ROHM-K
		ZD604	0DZ160009BA	MTZ16B TP ROHM-K
		ZD605	0DZ160009BA	MTZ16B TP ROHM-K
		ZD606	0DZ160009BA	MTZ16B TP ROHM-K
		ZDJ01	0DZ160009BA	MTZ16B TP ROHM-K
		ZDJ02	0DZ160009BA	MTZ16B TP ROHM-K
		ZDJ05	0DZ620009AA	MTZ6.2B (TA)

# TEAC<sup>®</sup>

**TEAC CORPORATION**

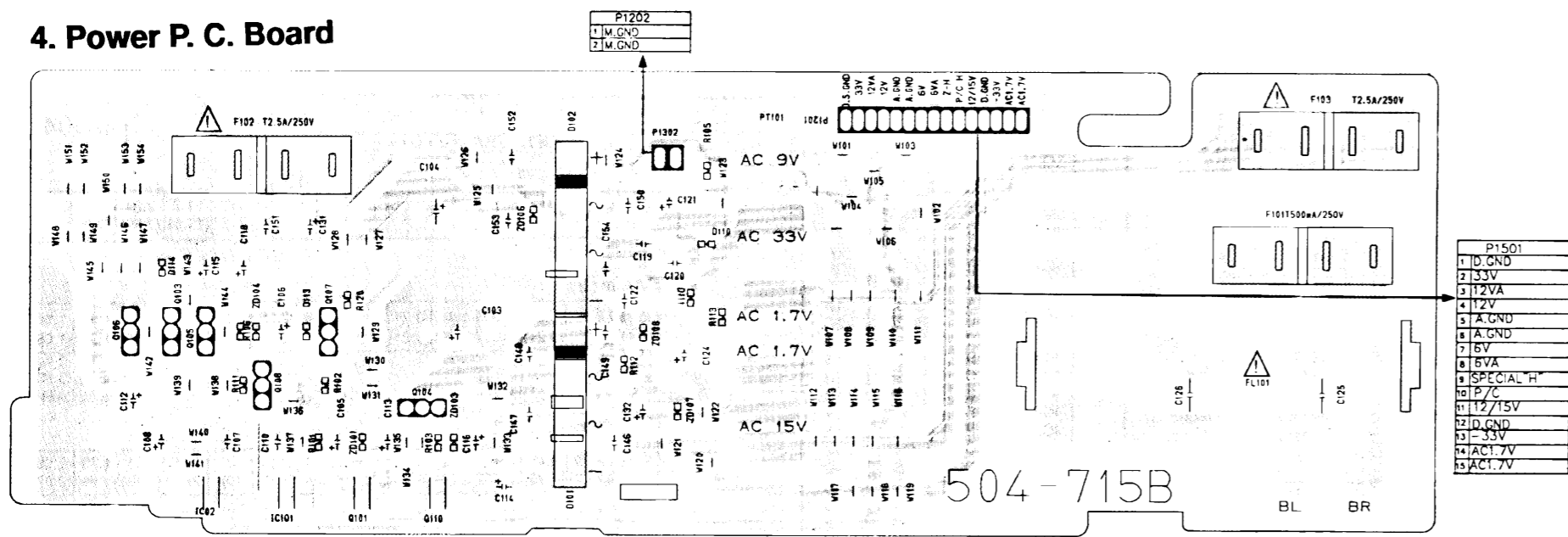
3-7-3, NAKACHO, MUSASHINO-SHI, TOKYO 180, JAPAN  
PHONE : 0422-52-5081 (AV SECTION)

**TEAC AUSTRALIPTY., LTD**  
ACN 005 408 462

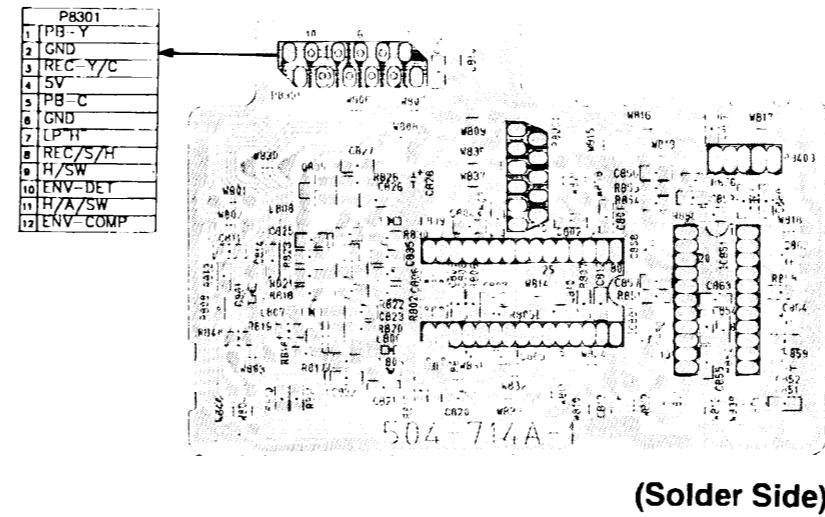
106 Bay Street, Port Melbourne Victoria 3207, Australia Phone: (03) 646-1733



4. Power P. C. Board



5. Pre-Amp P. C. Board



LOCA. No.	Position	LOCA. No.	Position
IC101	4A	Q3C1	3G
IC102	4A	Q3C2	3G
IC3C1	3G	Q3C3	3G
IC401	3D	Q401	3D
IC402	3D	Q402	3E
IC404	3B	Q403	3E
IC801	4G	Q405	3E
IC851	4G	Q406	3D
Q101	4B	Q407	3D
Q103	4A	Q408	2E
Q104	4A	Q451	3B
Q105	4A	Q452	3B
Q106	4A	Q453	2D
Q107	4B	Q454	3C
Q108	4A	Q455	3C
Q110	4B	Q805	5F

\* IC Voltage Sheet

SP mode

0	0	0	0	0	0	0	0	0	0.6	0	0	0	0.6	0	0
(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(4.5)	(4.5)	(0)	(0)	(3.6)	(0)

IC 801 (LA7374)

1	5	10	15											
5	5	3.5	0	0	1.75	1.5	0	3.5	0.8	2.5	2.5	0	1.6	1.6
(5)	(5)	(0)	(0)	(0)	(1.75)	(4.3)	(0)	(3.3)	(0)	(3.7)	(1.5)	(2.0)	(1.6)	(1.6)

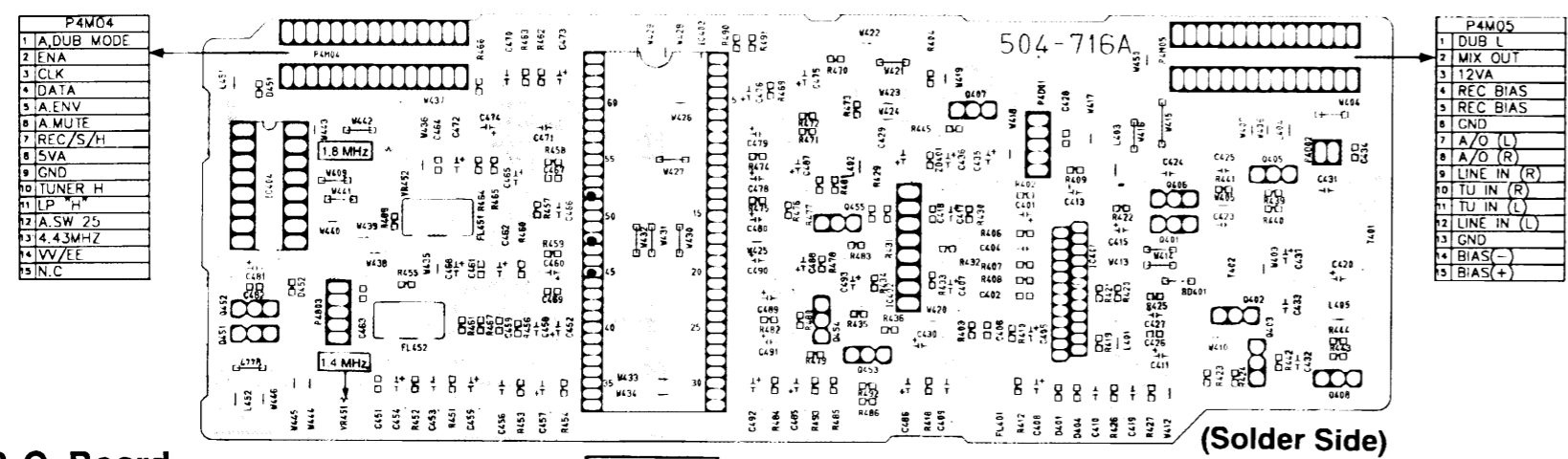
LP mode

0	0.6	0	0	0	0	0.6	0	0	0	0	0	0	0	0
(0)	(0)	(0)	(4.2)	(4.2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3.6)

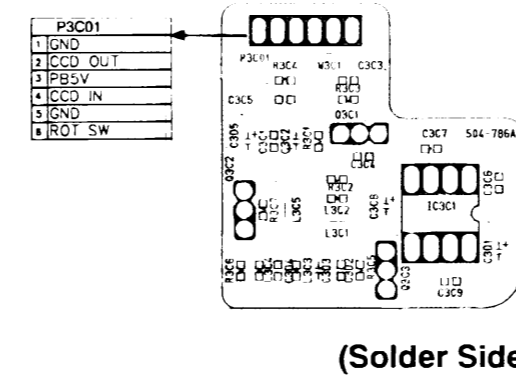
IC 801 (LA7374)

1	5	10	15												
5	5	3.0	0	0	3.8	1.75	1.4	0	3.5	0.8	2.5	2.5	0	1.6	1.6
(5)	(5)	(0)	(0)	(0)	(3.7)	(1.75)	(4.3)	(0)	(3.3)	(0)	(3.7)	(1.5)	(2.0)	(1.6)	(1.6)

6. Normal/Hi-Fi Audio P. C. Board



7. CCD P. C. Board



PB(REC)

8.51	2.60	2.12	2.05
(0)	(0)	(0)	(0.2)

IC 3C1 (MSM7403)

1	5		
5.01	0	5.01	3.42
(0)	(0)	(0)	(0)

SP mode

0	0	0	0.74	0.65	0	0.65	0.74	0	0	5.05
(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(4.27)	(4.27)	(4.98)

IC 851 (BA7740S)

1	5	10								
0.33	0.49	5.05	5.05	5.06	2.39	3.02	5.06	0	2.53	
(6.0)	(1.37)	(2.77)	(4.98)	(0)	(4.98)	(3.60)	(2.97)	(4.98)	(0.02)	(0.01)

PB(REC)

5.6	2.6	2.5	0	2.5	2.5	5.4	12
(5.6)	(2.6)	(2.5)	(0)	(2.5)	(2.5)	(5.4)	(12)

IC 402 (BA728N)

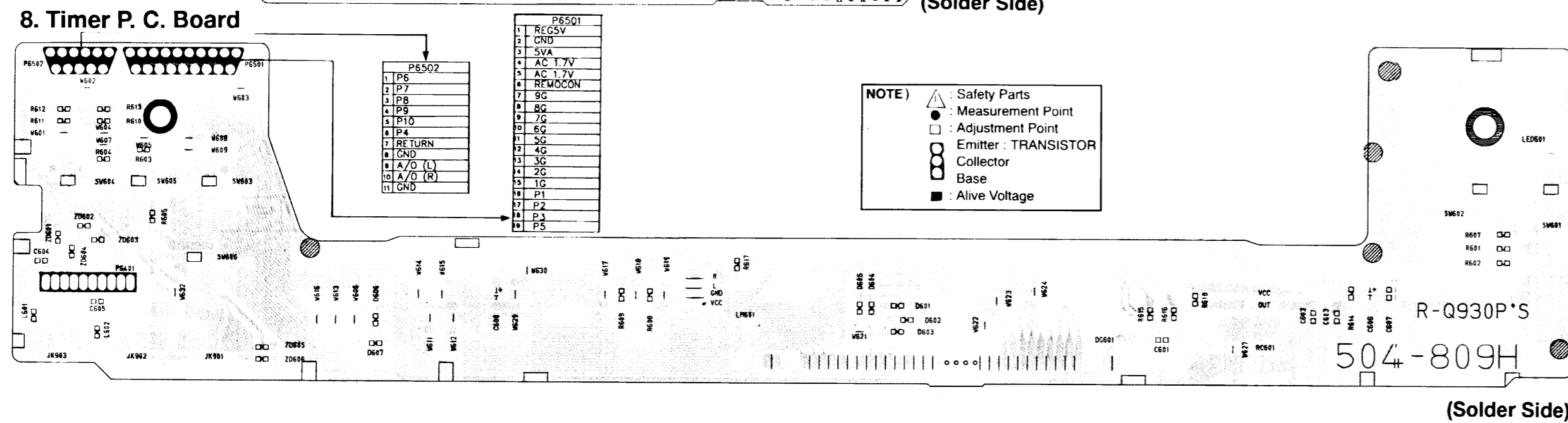
LP mode

0	0	0	0.74	0.65	0	0.65	0.74	0	4.67	5.05
(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(4.27)	(4.27)	(4.98)

IC 851 (BA7740S)

1	5	10								
0.33	0.50	2.82	5.05	0	5.05	2.70	5.05	5.05	5.11	2.53
(6.0)	(1.37)	(2.77)	(4.98)	(0)	(4.98)	(3.60)	(2.97)	(4.98)	(0.02)	(0.01)

8. Timer P. C. Board



NOTE

- ▲ Safety Parts
- Measurement Point
- Adjustment Point
- Emitter: TRANSISTOR
- Collector
- Base
- Alive Voltage

PB(REC)

4.9	4.9	4.9	0	0	4.9	2.0	2.0
(4.9)	(4.9)	(4.9)	(0)	(0)	(4.9)	(2.0)	(2.0)

IC 404 (TC4094BP)

1	5						
0	0.2	0	4.8	0	4.9	4.9	0
(0)	(0.2)	(0)	(4.8)	(0)	(4.9)	(4.9)	(0)

PB(REC)

3.5	0	3.6	3.6	3.6	4.2	0	4.2	4.2	0	4.2	1.1
(3.5)	(0)	(3.6)	(3.6)	(3.6)	(4.1)	(0.6)	(4.1)	(4.1)	(0)	(4.2)	(8.6)

IC 401 (BA7790LS)

1	5	15	20	24							
0	0	9	9.2	0	5	3.8	4.2	0.6	4.2	4.2	0.1
(0)	(0.2)	(9)	(9.1)	(0)	(0)	(3.8)	(4.2)	(0.6)	(4.2)	(4.2)	(0)

PB(REC)

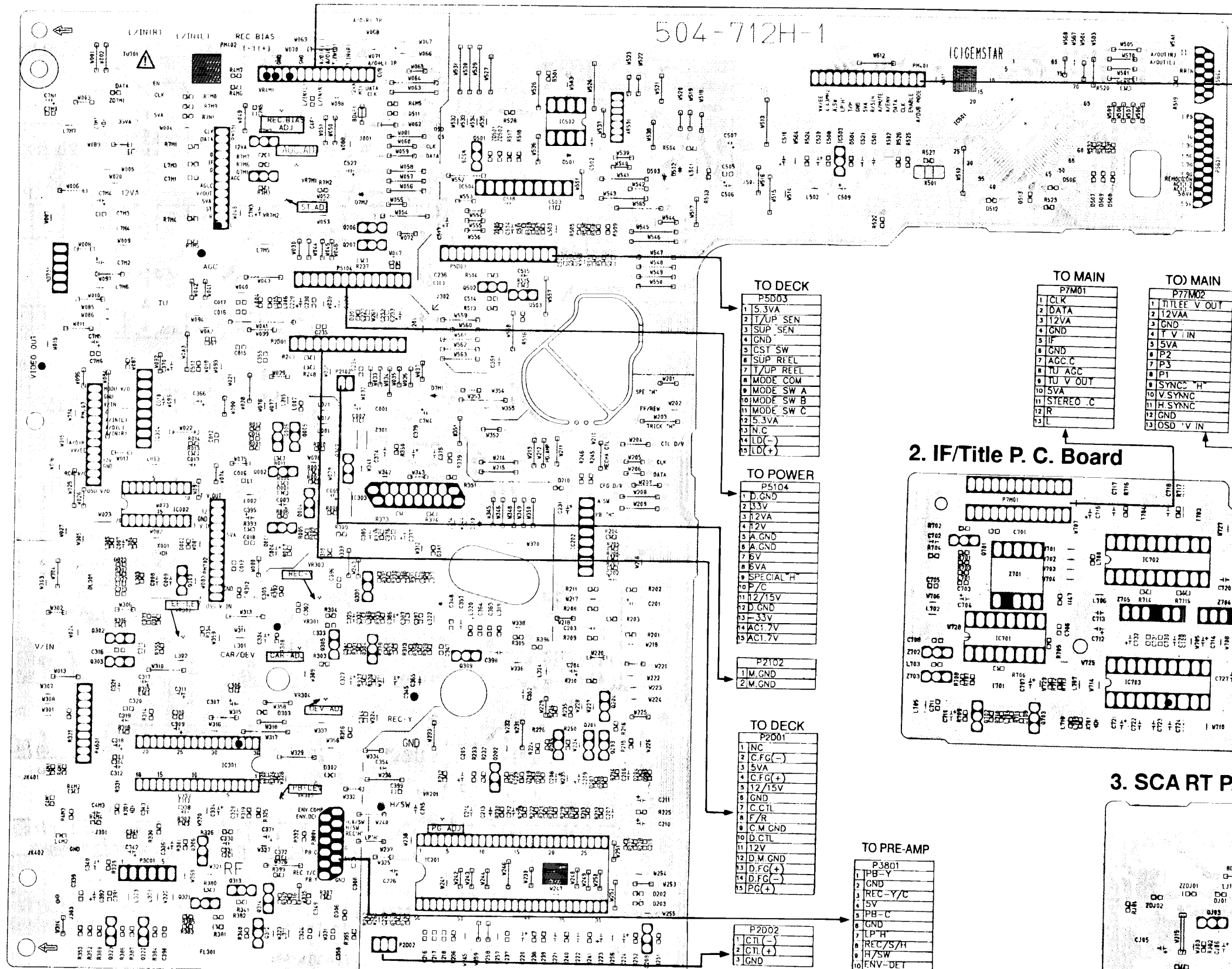
4.4	4.4	4.4	0.3	4.5	5	4.9	0.5	0	0	3.8	1.7	3.7	2.0	3.0	9	5.5	1.2	2.5	3.7	3.0	3.8	4.3	0	3.7	4.8	4.3	4.4	0.4	4.4	4.4	4.4
(4.4)	(4.4)	(4.4)	(0.3)	(4.47)	(5)	(4.6)	(0)	(0)	(0)	(3.8)	(1.7)	(3.9)	(2)	(3.1)	(9)	(5.3)	(1.3)	(2.6)	(3.9)	(0)	(3.8)	(0.7)	(0)	(3.7)	(4.6)	(4.3)	(4.4)	(0.4)	(4.4)	(4.4)	(4.4)

IC 403 (TA8813AN)

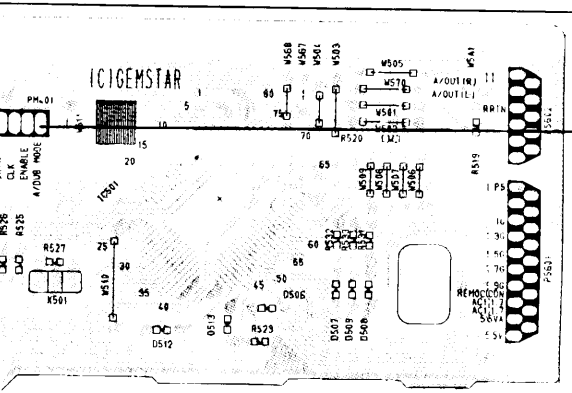
1	5	10	15	20	25	30																									
1.75	4.5	4.5	4.5	0	4.4	4.5	4.4	4.4	0	4.4	4.4	4.9	4.4	4.9	0	0.2	4.4	0.6	4.4	4.5	7.5	4.5	0	4.5	4.4	2.5	4.5	4.4	4.5	4.4	1.78
(1.75)	(4.43)	(4.44)	(4.45)	(0)	(4.43)	(4.47)	(4.43)	(4.40)	(0)	(4.40)	(4.43)	(4.9)	(4.43)	(4.9)	(0)	(0.5)	(4.4)	(0.6)	(4.4)	(4.4)	(7.5)	(4.5)	(0)	(4.5)	(4.4)	(2.5)	(4.5)	(4.4)	(4.6)	(4.4)	(1.78)

# PRINTED CIRCUIT BOARD DIAGRAMS

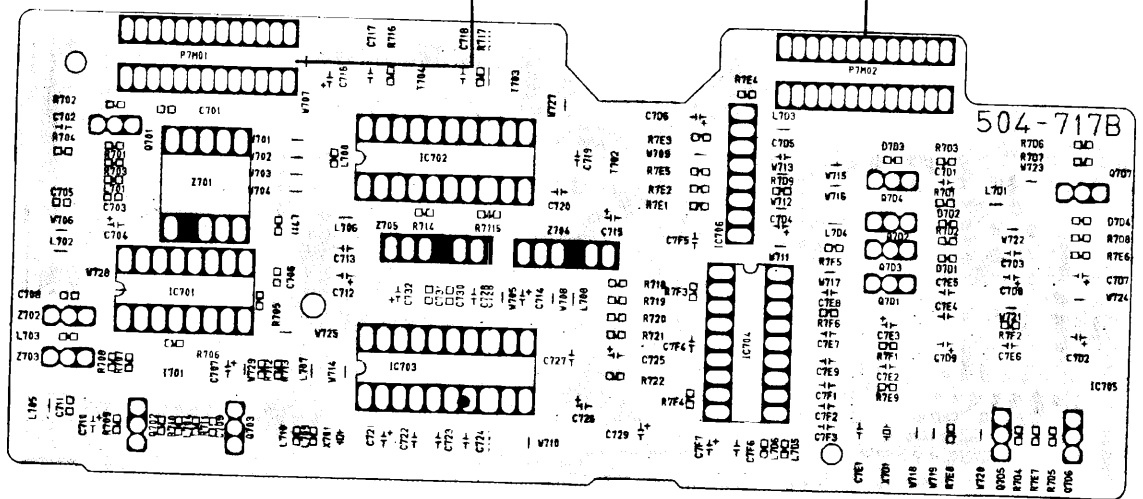
## 1. Main P. C. Board



(Solder Side)

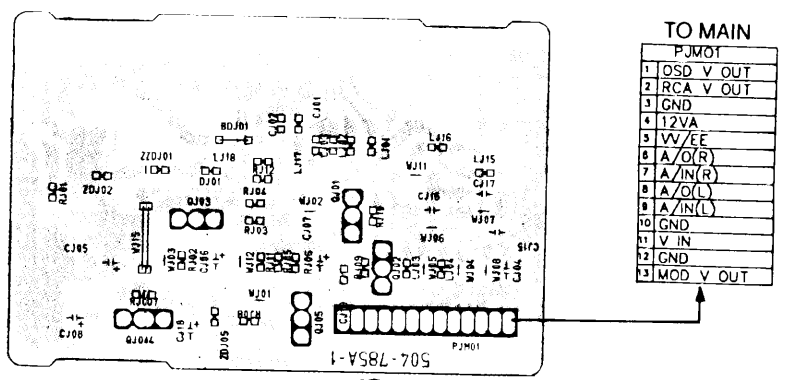


## 2. IF/Title P. C. Board



(Solder Side)

## 3. SCART P. C. Board



(Solder Side)

- IC1GEMSTAR**
- 1 DUB L
  - 2 MIX OUT
  - 3 12VA
  - 4 REC BIAS
  - 5 REC BIAS
  - 6 GND
  - 7 A/O (L)
  - 8 A/O (R)
  - 9 LINE IN (R)
  - 10 TU IN (R)
  - 11 TU IN (L)
  - 12 LINE IN (L)
  - 13 GND
  - 14 BIAS (-)
  - 15 BIAS (+)
- TO AUDIO**
- 1 A/DUB MODE
  - 2 ENA
  - 3 CLK
  - 4 DATA
  - 5 A/ENV
  - 6 A/NOTE
  - 7 REC/S/H
  - 8 SVA
  - 9 SVA
  - 10 GND
  - 11 TUNER H
  - 12 LP
  - 13 LP
  - 14 SW 25
  - 15 4.3MHZ
  - 16 V/EE
  - 17 N.C
- TO DECK**
- 1 P5D03
  - 2 5.3VA
  - 3 SUP SEN
  - 4 SUP SEN
  - 5 12VA
  - 6 GND
  - 7 IF
  - 8 GND
  - 9 AGC C
  - 10 TU ACC
  - 11 TU V OUT
  - 12 MODE COM
  - 13 MODE SW A
  - 14 MODE SW B
  - 15 MODE SW C
  - 16 5.3VA
  - 17 N.C
  - 18 LD (-)
  - 19 LD (+)
- TO MAIN**
- 1 P5M01
  - 2 CLK
  - 3 DATA
  - 4 12VA
  - 5 GND
  - 6 T V IN
  - 7 SVA
  - 8 SVA
  - 9 GND
  - 10 TUNER H
  - 11 LP
  - 12 SW 25
  - 13 4.3MHZ
  - 14 V/EE
  - 15 N.C
- TO MAIN**
- 1 P5M02
  - 2 TITLE V OUT
  - 3 GND
  - 4 12VA
  - 5 GND
  - 6 T V IN
  - 7 SVA
  - 8 SVA
  - 9 GND
  - 10 TUNER H
  - 11 LP
  - 12 SW 25
  - 13 4.3MHZ
  - 14 V/EE
  - 15 N.C
- TO POWER**
- 1 P5104
  - 2 GND
  - 3 5V
  - 4 12VA
  - 5 A.GND
  - 6 A.GND
  - 7 5V
  - 8 SVA
  - 9 SPECIAL H
  - 10 P/C
  - 11 12/15V
  - 12 GND
  - 13 3.3V
  - 14 ACT VV
  - 15 ACT VV
- TO DECK**
- 1 P2D01
  - 2 INC
  - 3 F.G (-)
  - 4 SVA
  - 5 F.G (+)
  - 6 12/15V
  - 7 GND
  - 8 C.CTL
  - 9 F/R
  - 10 C.M GND
  - 11 D.CTL
  - 12 12V
  - 13 D.M GND
  - 14 F.G (+)
  - 15 F.G (-)
  - 16 P.G (+)
- TO PRE-AMP**
- 1 P3801
  - 2 PB-Y
  - 3 GND
  - 4 REC-Y/C
  - 5 REC-C
  - 6 GND
  - 7 LP H
  - 8 REC/S/H
  - 9 F/SW
  - 10 ENV-DET
  - 11 R/A/SW
  - 12 ENV COMP

- ABBREVIATIONS**
- ADJ. (Adjustment)
  - AGC. (Automatic Gain Control)
  - CAR. (Carrier)
  - DEV. (Deviation)
  - EE. (Electronic to Electronic)
  - LEV. (Level)
  - PB. (Playback)
  - PG. (Pulse Generator)
  - REC. BIAS (Record Bias)
  - SIF. (Sound Intermediate Frequency)
  - ST. (Stereo)
  - VIF. (Video Intermediate Frequency)
  - Y. (Luminance)
- NOTE**
- ⚠ Safety Parts
  - Measurement Point
  - Adjustment Point
  - ⊕ Emitter: TRANSISTOR
  - ⊖ Collector
  - Base

IC No	Position	IC No	Position
IC002	3A	Q208	1D
IC201	1C	Q302	2A
IC202	3C	Q303	2A
IC301	2B	Q304	2B
IC303	3B	Q305	2B
IC304	3A	Q306	1B
IC501	5E	Q309	2C
IC502	4C	Q312	1B
IC503	4D	Q313	1B
IC504	4C	Q314	1B
IC701	2E	Q321	1B
IC702	2F	Q322	1A
IC703	2F	Q323	1A
IC704	2G	Q330	2B
Q001	3B	Q501	4C
Q002	3B	Q502	4C
Q003	2A	Q503	4C
Q004	3B	Q701	2E
Q005	3B	Q702	2E
Q006	3B	Q703	2E
Q201	2C	Q7D1	2G
Q202	2C	Q7D2	2G
Q203	2C	Q7D3	2G
Q204	2C	Q7D4	2G
Q205	2C	Q7D7	2G
Q206	4B	Q7M1	4B
Q207	4B	Q7M2	4B

### \* IC Voltage Sheet

5	4.8	4.4	2.1	2.3	0	0	0	0	0	
IC 002 (M35011)										
20									15	
1	5				10					
2.3	2.4	5	5	5	4.9	0	2.4	3.2	2.4	

IC 304 (LA7016)										
PB(REC)										
1	5				10					
11.7	7.64	0	6.96	0	0	0	7.6	0		
(11.6)	(7.58)	(0)	(6.9)	(0)	(0)	(0)	(7.54)	(0)		

IC 301 (LA7390)										
PB(REC)										
PAL mode					MESECAM mode					
2.38	0.63	3.63	3.37	1.44	3.21	0.57	4.96	2.05	0	
(2.41)	(0.63)	(3.21)	(3.37)	(1.40)	(3.21)	(0)	(4.99)	(2.02)	(0)	
2.45 : PB					25 PB : 3.94					
(2.44) : (REC)					(REC) : (3.93)					
MESECAM mode										
1	5				10				15	
2.32	2.79	2.48	4.44	4.43	4.50	2.39	3.16	2.13	0	
(0)	(2.42)	(2.75)	(2.68)	(2.68)	(4.49)	(2.29)	(2.25)	(2.13)	(0)	
2.05	2.51	1.73	2.96	2.27	2.18	3.65	2.55			
(2.09)	(2.53)	(1.69)	(2.97)	(2.55)	(2.19)	(3.66)	(3.26)			

IC 504 (GL7445)										
PB(REC)										
1	5				10					
0.01	0.56	0.80	0.92	1.79	1.78	12.03	12.03	0.81	0.56	
(0.02)	(0.57)	(0.81)	(0.36)	(1.79)	(1.78)	(11.9)	(11.9)	(0.82)	(0.57)	

IC 701 (LA 7545)										
PB(REC)										
1	5				10					
1.89	11.06	5.56	6.60	6.60	0.37	9.50	11.10			
10.17	5.02	12	0	4.50	4.49	3.36	11.09			

IC 702 (TDA3857)									
PB(REC)									
1.77	4.87	0.01	0.03	1.65	1.79	1.76	0.05	2.74	3.86
1.77	2.08	3.17	1.82	1.82	2.13	2.11	1.81	1.81	3.85

IC 503 (PST523G)			
PB(REC)			
1	5		10
5.03	0	5.04	
(5.03)	(0)	(5.04)	

IC 703 (TDA6620)									
PB(REC)									
0.01	3.46	3.39	2.15	0.31	4.93	4.93	11.55	0.37	
5.91	5.94	5.91	5.94	5.94	5.92	5.22	5.22	6.12	

IC 705 (NJM2229S)									
PB(REC)									
0.32	4.98	0.02	4.23	1.86	0.58	0.09	0.20		
2.67	2.13	2.20	0	0.72	3.13	2.44	0		

IC 706 (NJM2249L)										
PB(REC)										
1	5				10					
5.08	0.05	5.36	0.05	5.29	11.7	4.35	0			