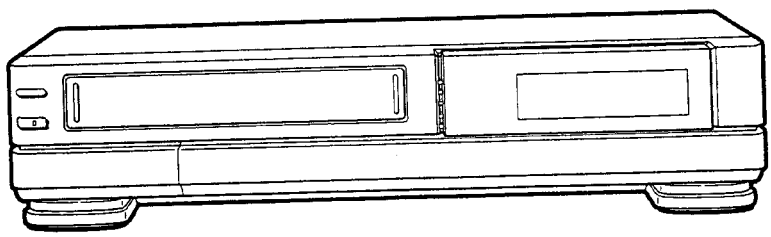
1991

MITSUBISHI Service Manual

VIDEO CASSETTE RECORDER



VHS
PAL SECAM NTSC

MODEL

HS-MS5
HS-MS7

Only cassettes marked VHS can be used with this video cassette recorder.

SPECIFICATION

Tape Format	:	VHS 1/2" high-density video cassette tape
Power Source	:	100~260V AC; 50/60Hz
Power Consumption	:	Approx. 28W[MS5], 32W[MS7]
Television System	:	625 lines, 50 fields System CCIR B&G,I,D&K PAL System CCIR B&G,D&K SECAM 525 lines, 60 fields System CCIR M NTSC
Video Recording System	:	Azimuth helical scanning system
Luminance	:	Frequency modulation recording
Colour Signal	:	Low frequency conversion sub-carrier phase shift recording
Hi-Fi Audio Recording System	:	Azimuth helical scanning system, Frequency modulation, deep layer recording[HS-MS7]
Linear Audio Track	:	1 track
Tape Speed	:	23.39 mm/sec (PAL/SECAM SP mode) 11.70 mm/sec (PAL/SECAM LP mode) 33.35 mm/sec (NTSC SP mode) 11.12 mm/sec (NTSC EP mode)
Record/Playback Time	:	240 min. with E-240 cassette (PAL/SECAM SP mode) 480 min. with E-240 cassette (PAL/SECAM LP mode) 160 min. with T-160 cassette (NTSC SP mode) 480 min. with T-160 cassette (NTSC EP mode)

Heads:Video	:	4 rotary heads
Hi-Fi Audio	:	2 rotary heads[HS-MS7]
Audio/Control	:	1 stationary head
Erase	:	1 full track head
Video Input	:	0.75 to 1.5 Vp-p, 75 ohm unbalanced RCA pin plug
Audio Input:Line	:	−8dBs, 50k ohm unbalanced RCA pin plug
Video Output	:	1.0Vp-p, 75 ohm unbalanced RCA pin plug
Audio Output	:	−6dBs, 1k ohm unbalanced RCA pin plug
TV Tuner		
VHF	:	48.25~112.25 MHz, 119.25~294.25 MHz
UHF	:	471.25~855.25 MHz
Operating Temperature	:	5°C to 40°C
RF Channel Output	:	558~630 MHz Selectable
Weight	:	Approx. 5.5 kg [HS-MS5] Approx. 5.6 kg [HS-MS7]
Dimensions	:	425(W) x 92(H) x 338(D) mm
Timer	:	8 programmes for any channels in one month/every day/every week day 24 hour digital synchronized with crystal oscillator frequency.
Channel Selection	:	99 position Up/Down + EXT
Deck	:	F-Deck

- Weight and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

MITSUBISHI ELECTRIC CORPORATION

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4. Deck Assembly

Circuit Diagrams

DISASSEMBLY

1. Removal of Top Cover

A. Remove the four screws (ⓐ~ⓓ) retaining the top cover as shown in Fig. 1

B. Gently expand the bottom edges of the top cover, pivot cover forward, then slide toward rear in the direction of the arrows.

2. Removal of Front Panel

A. Remove the top cover.

B. Remove the two screws (ⓔ,ⓕ) retaining the front insulators.

C. Unfasten the six snaps (ⓖ~ⓛ) as shown in Figure, and remove the front panel in the direction shown by the arrows.

3. Installation of Front Panel

A. Check that the door arm is low position.

B. While holding the Cassette door open, mount the front panel to the VCR and fasten the six snaps (ⓖ~ⓛ) using gentle pressure to the front panel.

4. Removal of Bottom Cover

A. Remove the four screws (ⓔ, ⓕ, ⓜ, ⓝ) retaining the insulators.

B. Remove the eight screws (ⓞ~ⓥ) retaining the bottom cover.

C. Remove the bottom cover.

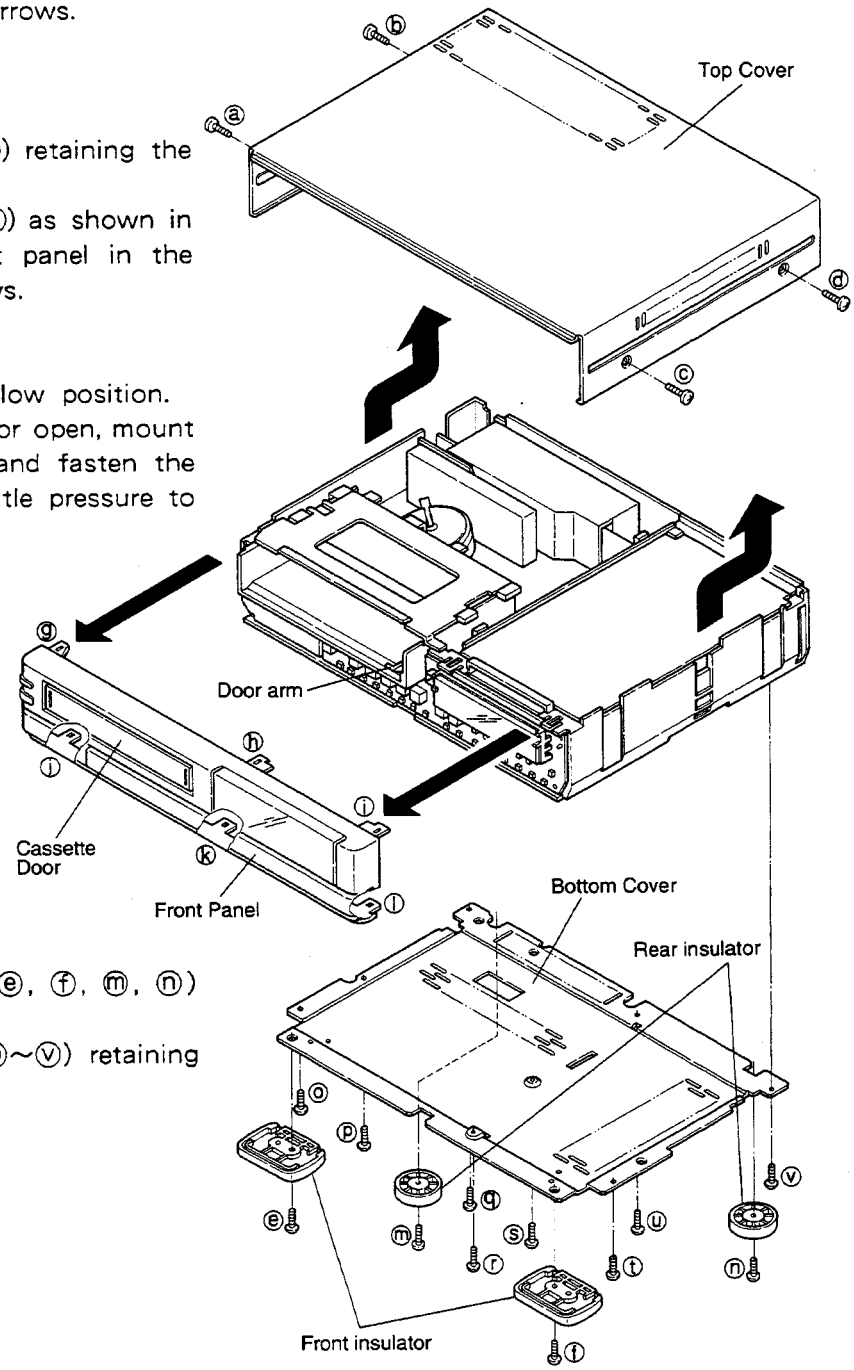


Fig.1

HOW TO EXECUTE CIRCUIT BOARD SERVICE

CAUTION : BEFORE ATTEMPTING TO RE – MOVE OR REPAIR ANY PCB UNPLUG THE POWER CORD FROM THE A.C. SOURCE.

Location of Printed Circuit Boards
(Refer to Fig. 2)

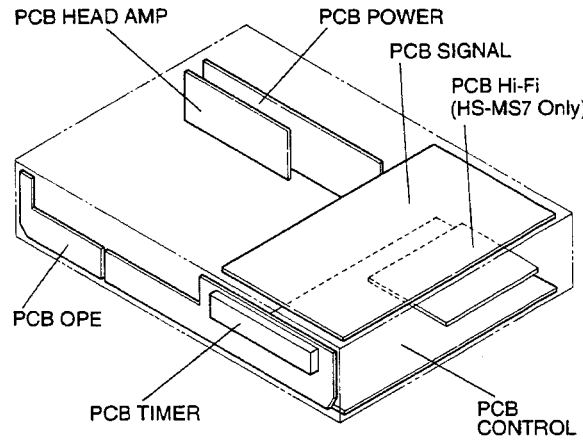


Fig.2

1. Removal of PCB SIGNAL

A. Remove the top cover
(Refer to page 1, item 1).

B. Remove the four screws (ⓐ~ⓓ) as shown in Fig. 3.

C. Pivot the PCB SIGNAL in the direction of the arrow.

D. To service with power on, use the insulating sheet under the PCB SIGNAL.

Note :

- Use caution when disconnecting flat cable connectors to avoid possible contact problems when reconnected.
- Use an insulating sheet under the PCB SIGNAL on the component side when servicing it in this position.

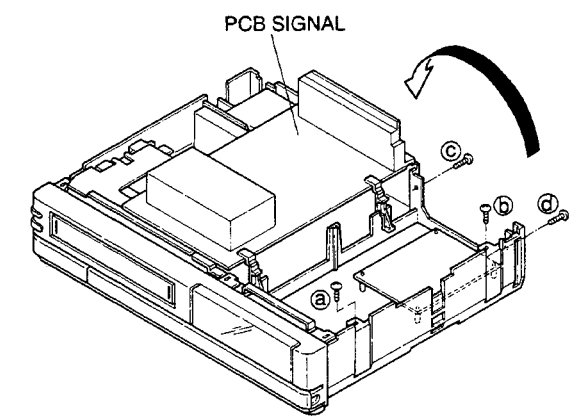


Fig.3

2. Removal of PCB Hi – Fi (HS – MS7 only)

A. Remove the top cover
(Refer to page 1, item 1).

B. Remove the PCB SIGNAL (Item 1).

C. Unfasten the four holders (ⓐ~ⓓ) retaning the PCB Hi – Fi as shown in Fig. 4

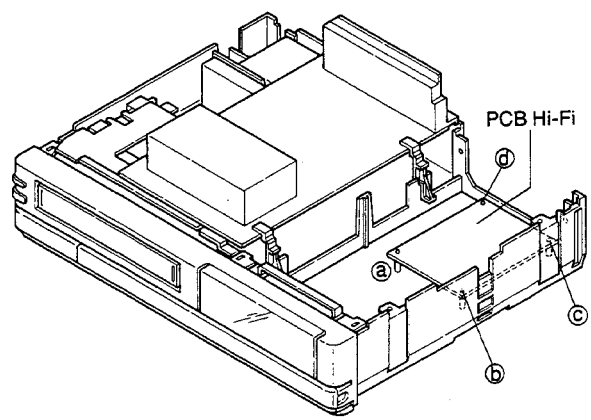


Fig.4

3. Removal of PCB CONTROL

A. Remove the bottom cover (Refer to page 1, item 4) and the service of the PCB CONTROL will be available.

B. If it is necessary to remove the PCB CONTROL, comply with the following steps.

a. Remove the PCB SIGNAL (Item 1).

b. Remove the PCB Hi – Fi (item 2.)
< HS – MS7 only >

c. Remove the two screws (ⓐ,ⓑ) retaining the PCB CONTROL as shown in Fig. 5.

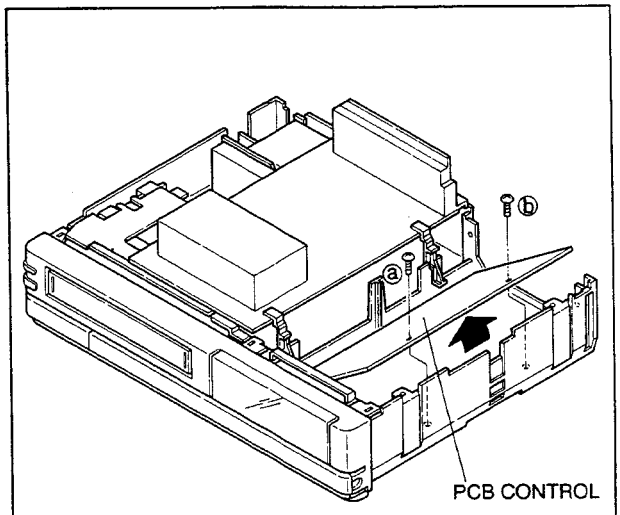


Fig.5

4. Removal of PCB OPE and PCB TIMER

A. Remove the Front Panel.(Page 1, item 2).

B. Unfasten the four stopperⓐ~ⓓ, and remove the PCB OPE and PCB TIMER as shown in Fig. 6.

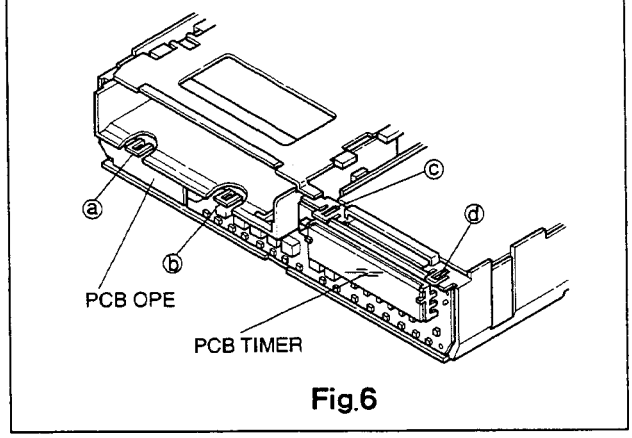


Fig.6

5. Removal of PCB HEAD AMP

A. Remove the top cover
(Refer to page1, iten1)

B. Lift the shield cover A upward to remove it.

C. Disconnect the ribbon cable by gently pulling cover C on the socket housing as shown in Fig. 7.

D. Remove the three screws (ⓐ~ⓒ) retaining the wire and the PCB HEAD AMP.

E. To service the solder side, remove the shield cover B, use the extension cord (859C 344040) and a short wire to ground the shield wire removed in above para. C.

F. To service the component side unsolder the soldering points of the shield case to remove it.

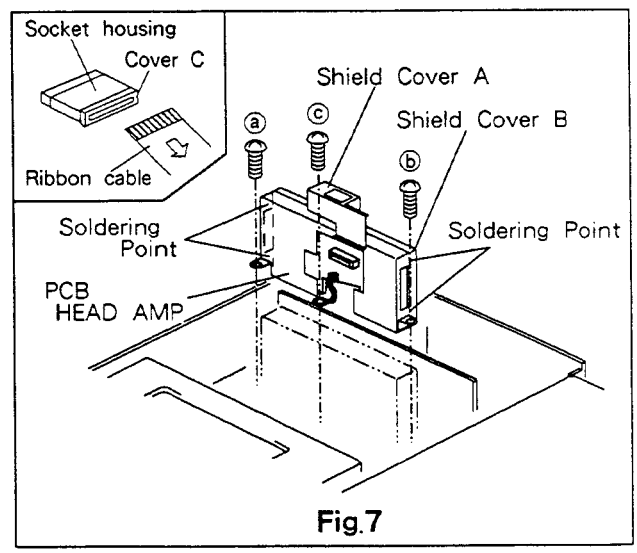


Fig.7

6. Removal of PCB POWER

A. Removal the top cover
(Refer to page 1, item 1).

B. Removal a screw (ⓐ) retaining the power bracket as shown in Fig. 8.

C. Remove the two scerws (ⓑ、ⓒ).

D. Remove the holder of AC power cord from the VCR base chassis and pull the PCB POWER upward.

E. To service the solder side, remove the shield plate.

F. To service the component side, remove the shield cover.

G. Remove the four screws (ⓐ~ⓓ), as shown in Fig. 9.

H. Unsolder the four soldering points of the PCB POWER to remove it.

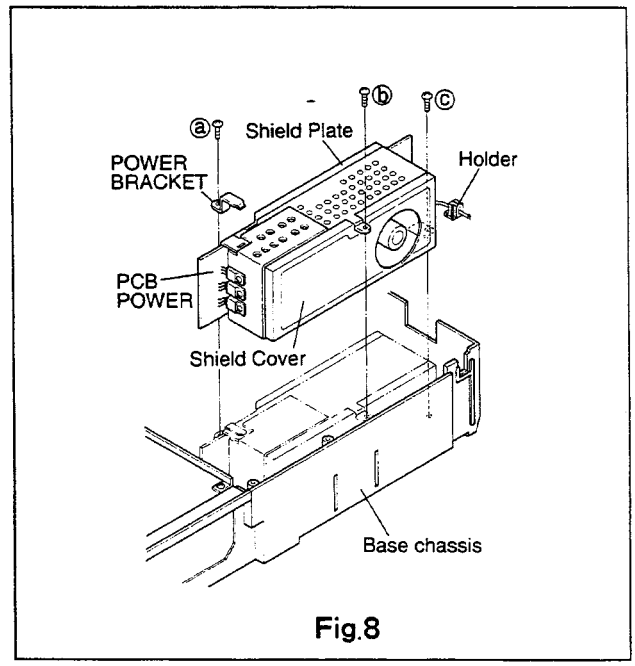


Fig.8

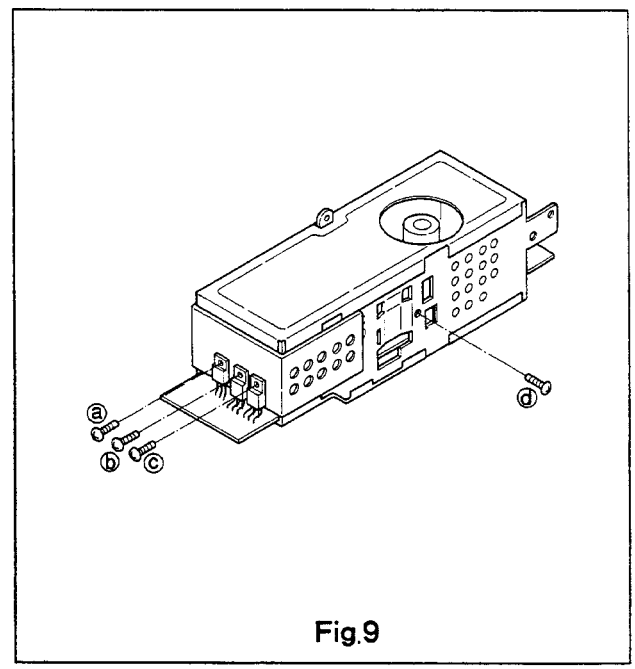
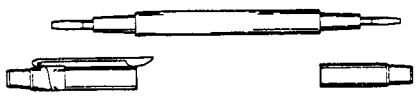
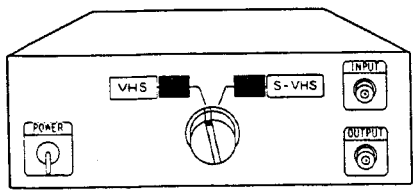
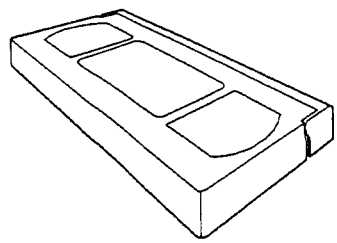
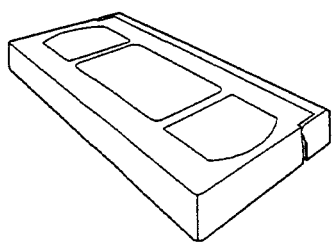
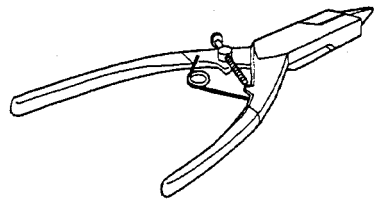
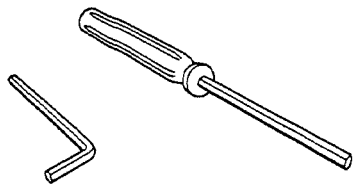
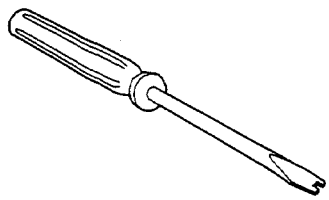
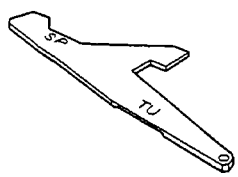
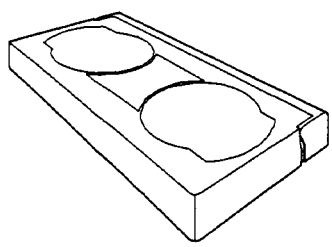


Fig.9

ELECTRICAL ADJUSTMENT TOOLS

	PURPOSE	METHOD
Adjustment Driver (859C338000) 767-M 	The adjustment driver is intended to adjust variable resistors, trimmers, transformers etc. in the circuitry.	Select a tip suitable for the particular head of the component concerned and adjust.
Carrier Checker (859C346050) 	Used for the adjustment or inspec – tion of the carrier set deviation.	Use in conjunction with the oscillo – scope. For detail refer to the service manual or the attached data.
Alignment Tape (NTSC: 859C339000) **(PAL: 859C339010)** **(SECAM: 859C339020)** 	Standard signals (VHS Standard) are recorded on the alignment tape and reproduced when required in the adjustment of Y/C circuit, audio circuit and interchangeability alignment.	Install and run in the play mode, the same as for an ordinary tape.
Alignment Tape (Hi-Fi) (859C339030) 	For adjusting the switching point of FM audio. The Video signal can also be used for interchangeability adjustment of SP (4H) /LP (8H) modes.	Install the tape and run the recorder in the play mode. The same as for an ordinary tape.
Record Current Adjustment Jig (859C347080)	For Y/C recording level and Hi-Fi FM recording level adjust.	Use as per Electrical adjustment Section 15,16 and 20 of this manual.

MECHANICAL ADJUSTMENT TOOLS

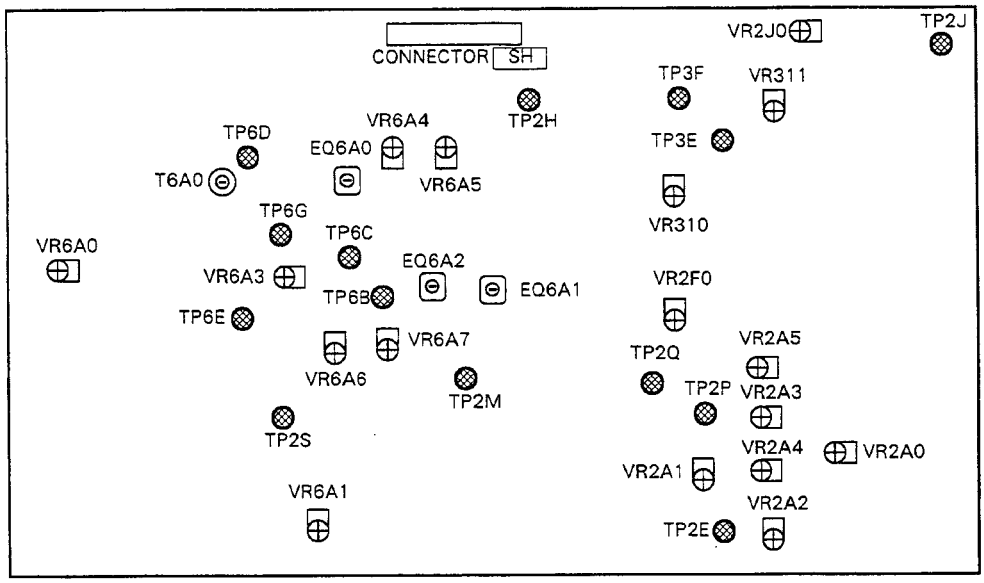
	PURPOSE	METHOD
Grip ring fixer (859C347050) 	A tool for preventing the grip ring from opening excessively.	While opening the grip ring with the tips of this tool, install the grip ring on to the shaft.
Hex Keys (1. 5mm)  **(859C259020) (859C259050)**	The hex keys are used for tightening or removing hexagonal socket head screws which fasten the guide rollers.	Insert the given size (1.5mm) hexagonal socket and turn.
Adjustment Driver (859C259080) 	For adjustment of guide rollers.	Carefully insert and adjust guide rollers.
Reel disk Adj. Jig (859C342020) 	The height gauge is used for measuring height and parpendicula – rity of the reel disk and Takeup guide arm.	The gauge is applied to the part being measured.
Back Tension Gauge (859C345080) 	The back tension gauge is used for measuring the tension of the tape on the supply side.	Load this gauge in the cassette housing and run in the play mode. Read the gauge indicator.
Extension Cord (859C344040)	For PCB head Amp service.	Use when repair of the PCB Head Amp is necessary.
Cotton gloves	For changing, cleaning and handling of drum, heads and guides.	Use when handling all parts in the tape path.

ELECTRICAL ADJUSTMENT

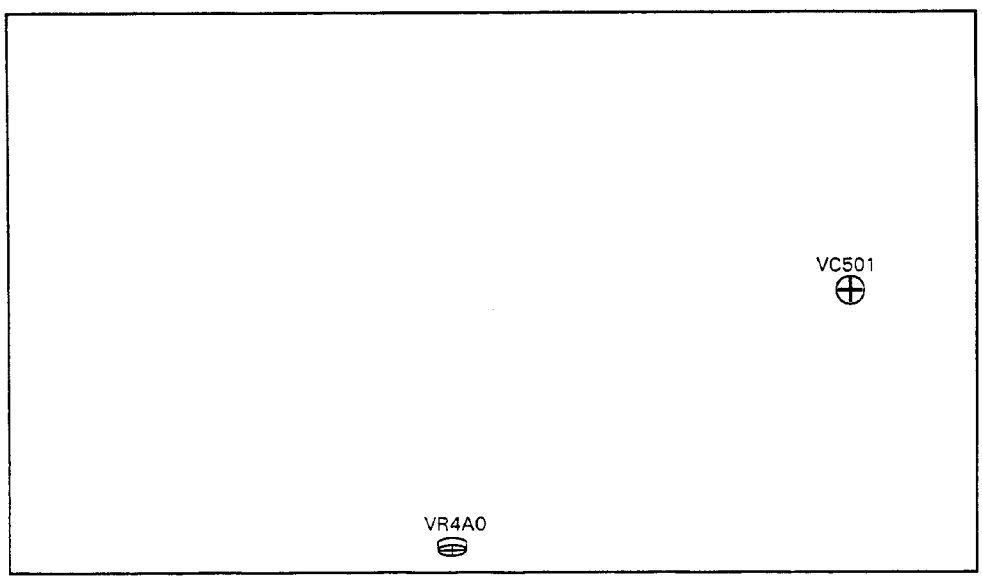
Circuit adjustments become necessary, in most cases, due to the wear of mechanical parts or following the replacement of critical components such as the video head. Certain circuit defects can often cause circuit adjustments to vary considerably. Should this occur, be sure to determine the nature of the defect and repair prior to proceeding with adjustments.

Always use the test equipment recommended for a given adjustment procedure. If the appropriate test equipment is not available, it is recommended that adjustments NOT be attempted. Refrain from the indiscreet adjustment of circuit adjustment controls unless properly equipped to do so.

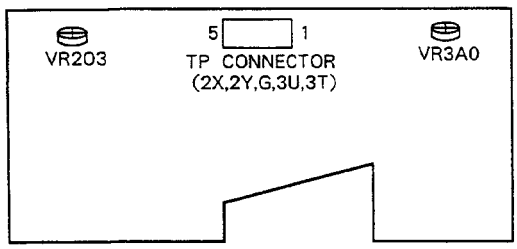
PCB－SIGNAL (COPPER SIDE)



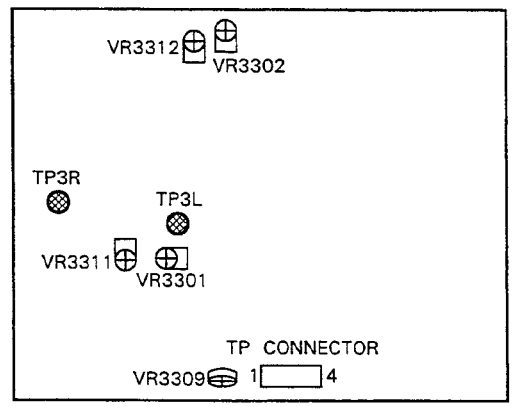
PCB－CONTROL (COMPONENT SIDE)



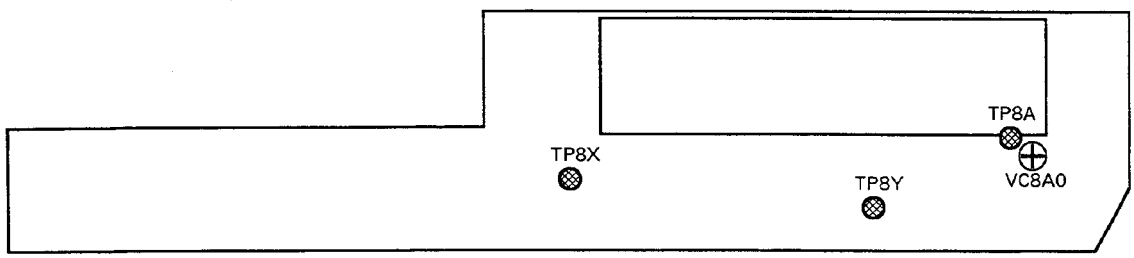
PCB－HEAD－AMP （COMPONENT SIDE）



PCB－Hi－Fi （COMPONENT SIDE）



PCB－TIMER （COMPONENT SIDE）



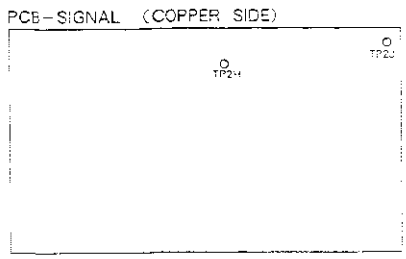
[Servo Circuit]
1. Playback Switching Point

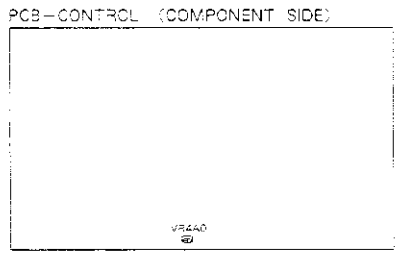
Adjustment purpose: Video switch over timing during playback.

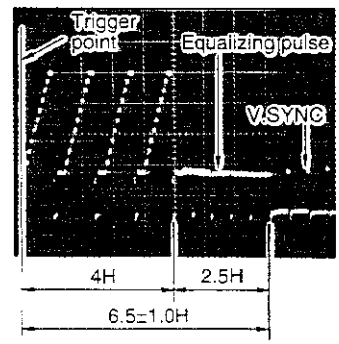
Symptom when incorrectly adjusted: Switching noise or jitter on the playback picture.

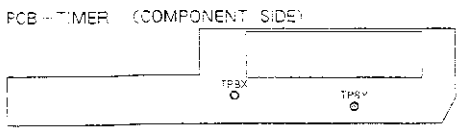
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (PAL grey scale step signal)
EXT trigger	TP2H	VCR condition	Playback
Measurement range	DIV 20mV TIM 50 μ sec	Using Jig.	---

1. Short-circuit TP8X and TP8Y via the diode (MA165) (cathode side : TP8Y) on PCB TIMER. Confirm that the "DTR" displayed in Fluorescent Display flashed fast.
2. Observe TP2J.
3. Set the oscilloscope's Slope to (-).
4. Adjust VR4A0 on PCB CONTROL so that the trigger point is located at 6.5±1.0H front of vertical synchronizing signal.









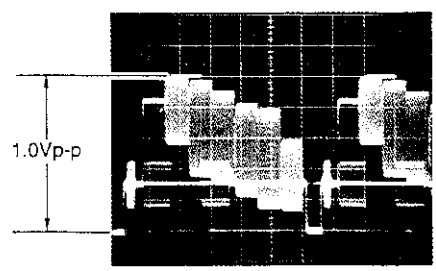
[Y/C Signal Circuit]
2. EE Output Level

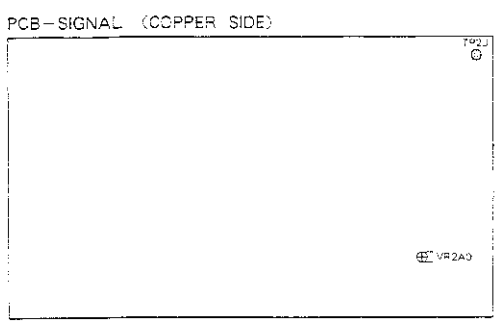
Adjustment purpose: Output level of SECAM video signal at Pause.

Symptom when incorrectly adjusted: Too bright or too dark picture: improper colour.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	EXT signal (PAL colour bar)
Test point	CH-1:TP2J CH-2:---	Using tape	---
EXT trigger	---	VCR condition	STOP
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

1. Observe TP2J.
2. Adjust VR2A0 so that the amplitude of waveform is 1.0Vp-p.



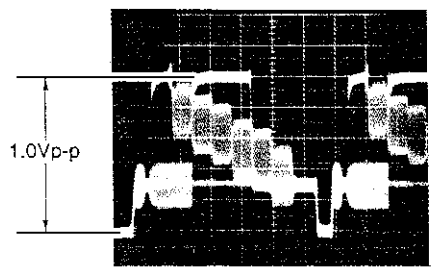


3. Playback Video Output Level	**Adjustment purpose:** Video output level during playback. **Symptom when incorrectly adjusted:** Incorrect colour.

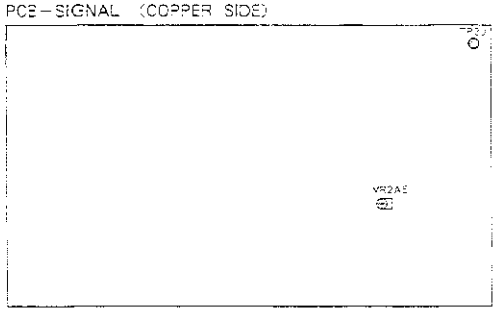
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (PAL colour bar)
EXT trigger	---	VCR condition	Playback
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

Perform the EE Output Level adjustment before this adjustment.

1. Observe TP2J.
2. Adjust VR2A5 so that the amplitude of waveform is 1.0Vp-p.



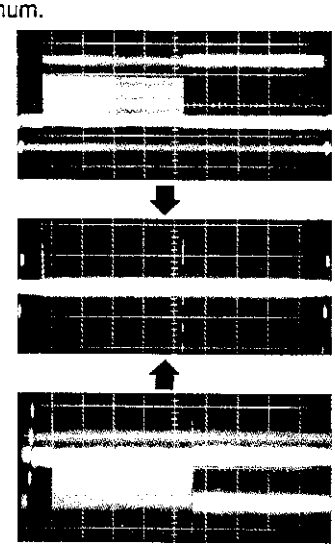
PCB-SIGNAL (COPPER SIDE)



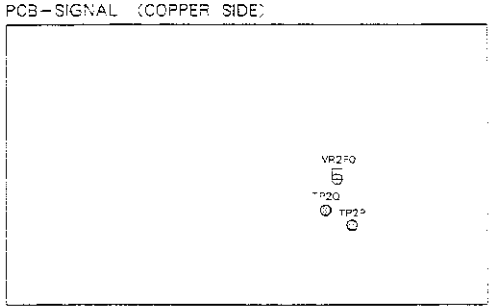
4. Noise Cancel	**Adjustment purpose:** S/N ratio and resolution of colour signal. **Symptom when incorrectly adjusted:** Poor S/N ratio; poor colour signal resolution.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2P CH-2:TP2Q	Using tape	Alignment tape (PAL colour bar)
EXT trigger	---	VCR condition	Playback
Measurement range	DIV 20mV TIM 2msec	Using Jig.	---

1. Set the oscilloscope's volt range of CH-1 and CH-2 for same range.
2. Set the oscilloscope to ADD mode and CH-2 to Invert mode.
3. Observe TP2P and TP2Q.
4. Adjust VR2F0 so that the amplitude of waveform is minimum.



PCB-SIGNAL (COPPER SIDE)

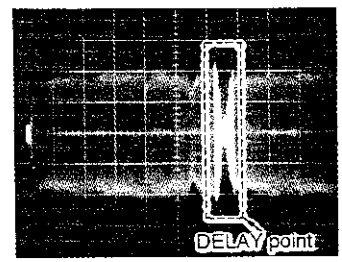


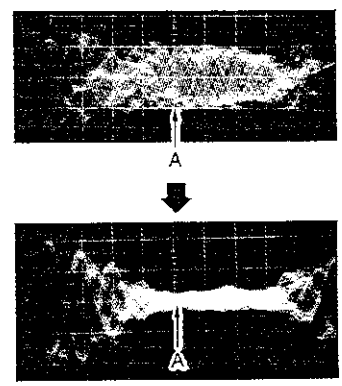
5.SECAM Playback Bell (1.1MHz) (HS-MS7 Only)

Adjustment purpose: Level compensation of playback signal so that it can be processed at Y/C circuit.
Symptom when incorrectly adjusted: Colour streaking and colour smear on the playback picture.

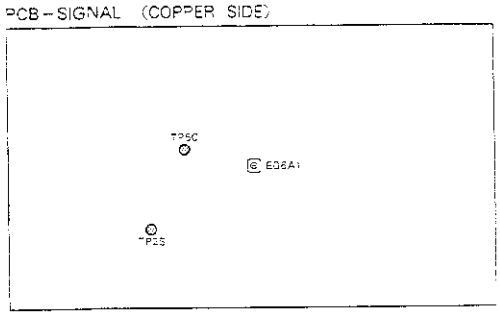
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP6C CH-2---	Using tape	Alignment tape (SECAM colour bar)
EXT trigger	TP2S	VCR condition	Playback
Measurement range	DIV 5mV TIM 0.5 μ sec (DELAY mode)	Using Jig.	---

1. Observe TP6C.
2. Adjust EQ6A1 so that the amplitude of the part A is minimum.





PCB – SIGNAL (COPPER SIDE)

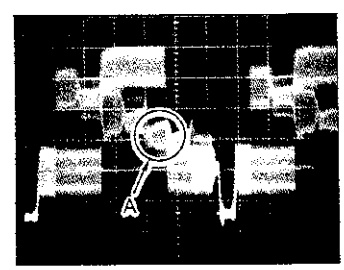


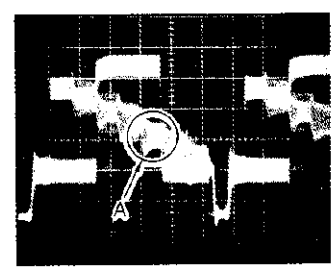
6.SECAM Playback Bell (4.3MHz) (HS-MS7 Only)

Adjustment purpose: Level compensation of playback signal processed at Y/C circuit so that it can be received by TV set.
Symptom when incorrectly adjusted: Colour smear and streaking.

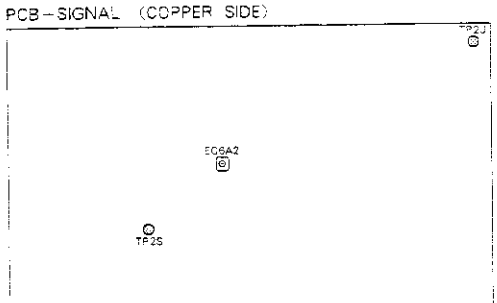
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (SECAM colour bar)
EXT trigger	TP2S	VCR condition	Playback
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

1. Observe TP2J.
2. Adjust EQ6A2 so that the waveform of the part A is single as shown in figure.





PCB – SIGNAL (COPPER SIDE)



7.SECAM Playback Colour Level (HS-MS7 Only)

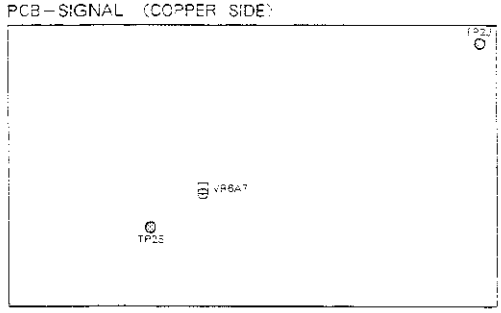
Adjustment purpose: Colour leveling during playback.

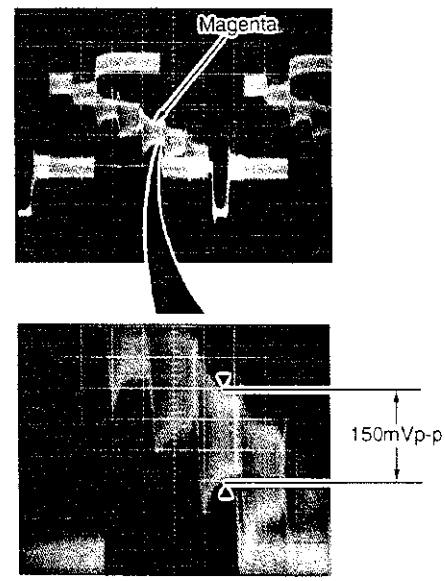
Symptom when incorrectly adjusted: Dot noise and degraded S/N ratio.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (SECAM colour bar)
EXT trigger	TP2S	VCR condition	Playback
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

1. Observe TP2J.
2. Adjust VR6A7 so that the amplitude of magenta level is 150mVp-p.

PCB-SIGNAL (COPPER SIDE)





DIV 5mV
TIM 5µsec

8.SECAM Blanking (HS-MS7 Only)

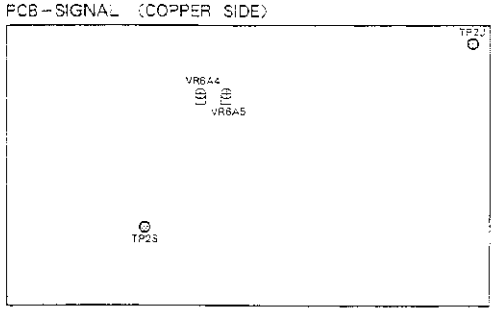
Adjustment purpose: Positioning of Gate Signal which removes noise in no signal period for colour signal processing.

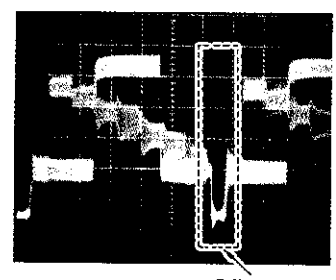
Symptom when incorrectly adjusted: Missing colour signal.

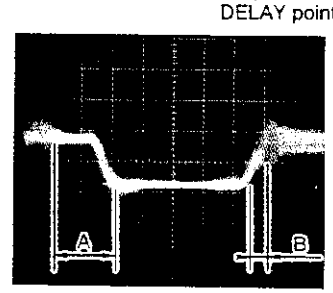
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (SECAM colour bar)
EXT trigger	TP2S	VCR condition	Playback
Measurement range	DIV 20mV TIM 1 μ sec (DELAY mode)	Using Jig.	---

1. Observe TP2J.
2. Adjust VR6A5 so that the waveform of the part A is 2.0 μ sec as shown below.
3. Adjust VR6A4 so that the waveform of the part B is 0.5 μ sec as shown below.

PCB-SIGNAL (COPPER SIDE)







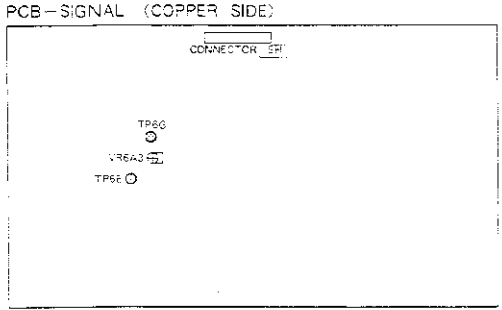
9.N-PAL VCO

Adjustment purpose: Frequency setting of gate pulse for sampling the burst signal in order to convert NTSC signal to a quasi-PAL signal.
Symptom when incorrectly adjusted: No colour signal during N-PAL playback.

Measuring instrument and condition		VCR set up condition	
Frequency counter		Input signal	----
Test point	TP6G	Using tape	Alignment tape (NTSC colour bar)
EXT trigger	---	VCR condition	Playback
Measurement range	---	Using Jig.	----

1. Set COLOUR SYSTEM switch (Right side) to "MANUAL" position.
2. Set COLOUR SYSTEM switch (Left side) to "PAL-TV" position.
3. Short-circuit TP6E and connector SH pin ⑤ (SW 5V).
4. Observe TP6G.
5. Adjust VR6A3 so that the frequency is 15.73 ± 0.05kHz.
6. Open-circuit TP6E and connector SH pin ⑤ (SW 5V).

PCB – SIGNAL (COPPER SIDE)

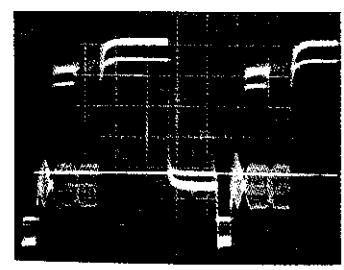


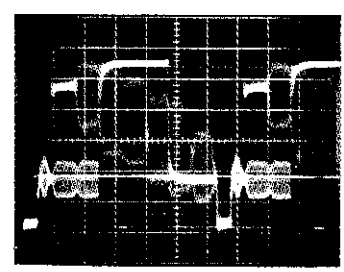
10.Skew Correction

Adjustment purpose: Corrects the disturbance of vertical synchronization during the Still mode.
Symptom when incorrectly adjusted: The disturbance of vertical synchronization appears on screen at the Still mode.

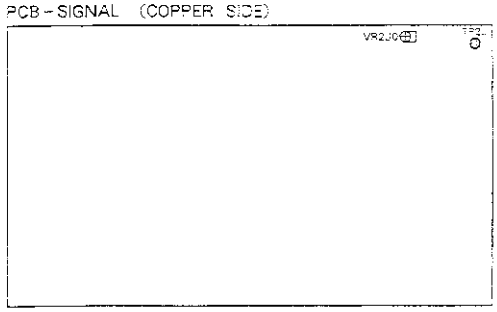
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP2J CH-2:---	Using tape	Alignment tape (NTSC colour bar)
EXT trigger	---	VCR condition	STILL
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

1. Observe TP2J.
2. Adjust VR2J0 so that the waveform is single as shown in figure.





PCB – SIGNAL (COPPER SIDE)



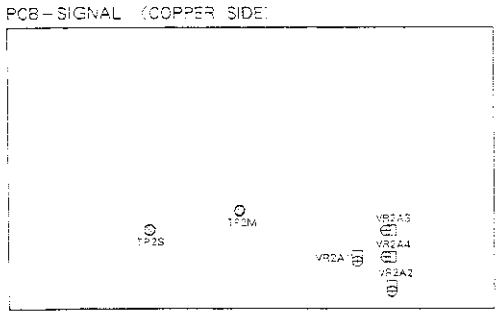
11. Carrier set, Deviation

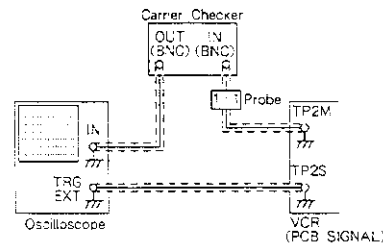
Adjustment purpose: FM carrier frequency and frequency deviations.

Symptom when incorrectly adjusted: Too bright or too dark picture. Horizontal noise or out of sync.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 1:1)		Input signal	EXT signal (PAL colour bar)
Test point	CH-1:TP2M CH-2:---	Using tape	---
EXT trigger	TP2S	VCR condition	STOP
Measurement range	DIV 0.2V TIM 10 μ sec	Using Jig.	Carrier checker

1. Turn VR2A4 and VR2A3 fully counter clockwise as seen from the copper side.
2. Observe TP2M via the carrier checker.
3. Adjust VR2A2 and VR2A1 so that the response waveform 3.8MHz line and 4.8MHz just touch each of white lines on the oscilloscope.
4. Perform the white clip and dark clip adjustment (ITEM 12).





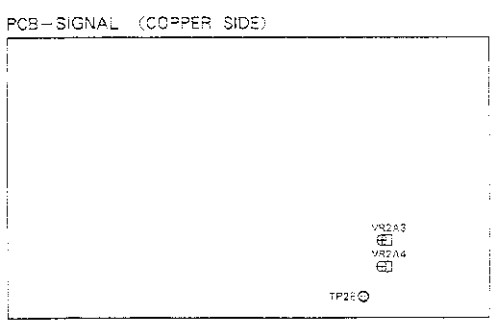
12. White Clip and Dark Clip

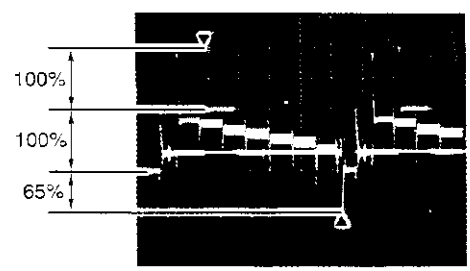
Adjustment purpose: Sharpening of aperture in picture.

Symptom when incorrectly adjusted: Blur image, white streaking, black streaking.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	EXT signal (PAL colour bar)
Test point	CH-1:TP2E CH-2:---	Using tape	---
EXT trigger	TP2S	VCR condition	STOP
Measurement range	DIV 20mV (VARIABLE mode) TIM 10 μ sec	Using Jig.	---

1. Observe TP2E.
2. Adjust VR2A3 and VR2A4 so that the overshoot appearing at the white peak side and the undershoot below sync tip are 100% and 65% respectively.

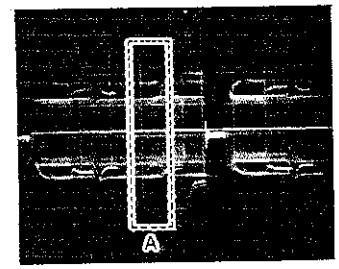


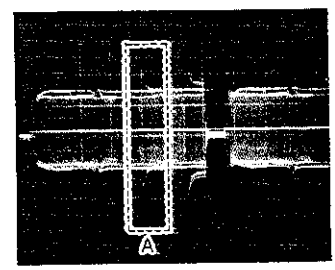


13.SECAM Recording Bell (1.1MHz) (HS-MS7 Only)	**Adjustment purpose:** Level compensation of Y/C output signal so that it can be recorded on tape. **Symptom when incorrectly adjusted:** Colour smear and colour streaking on the playback.

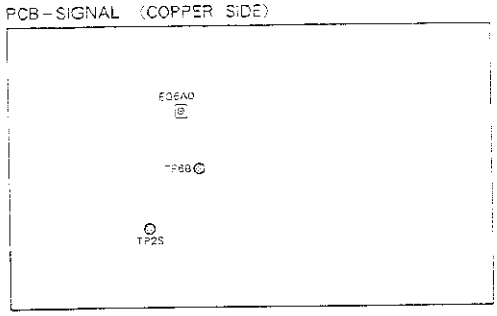
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	EXT signal (SECAM colour bar)
Test point	CH-1:TP6B CH-2:---	Using tape	A tape
EXT trigger	TP2S	VCR condition	SP REC
Measurement range	DIV 10mV TIM 10 μ sec	Using Jig.	---

1. Observe TP6B
2. Adjust EQ6A0 so that the waveform of the part A is single as shown in figure.





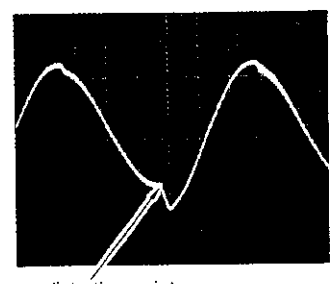
PCB – SIGNAL (COPPER SIDE)



14.1/2fH Resonance Frequency (HS-MS7 Only)	**Adjustment purpose:** Maximize sensitivity of SECAM discrimination circuit. **Symptom when incorrectly adjusted:** Loss of colour signal because SECAM signal cannot be detected.

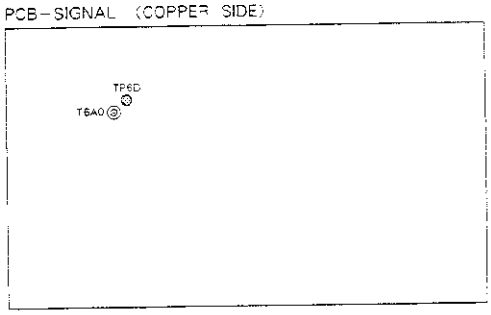
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	EXT signal (SECAM colour bar)
Test point	CH-1:TP6D CH-2:---	Using tape	A tape
EXT trigger	---	VCR condition	SP REC
Measurement range	DIV 0.1V TIM 20 μ sec	Using Jig.	---

1. Observe TP6D.
2. Adjust T6A0 so that the distortion point is at the lowest point.



distortion point

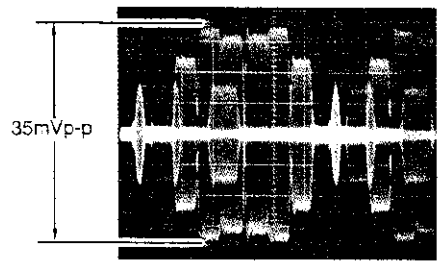
PCB – SIGNAL (COPPER SIDE)



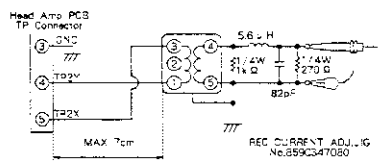
15.Y/C Recording Level (HS-MS7 Only)	**Adjustment purpose:** Level setting of video signal for recording. **Symptom when incorrectly adjusted:** Low luminance S/N, beats, colour banding of chrominance signal or flicker.

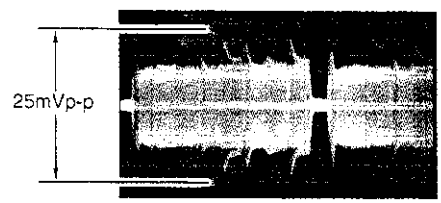
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 1:1)		Input signal	EXT signal (PAL colour bar)
Test point	TP connector pin ⑤ and pin ④	Using tape	A tape
EXT trigger	TP2S	VCR condition	LP REC
Measurement range	DIV 5mV TIM 10 μ sec	Using Jig.	REC CURRENT ADJ. JIG

1. Observes TP connector pin ⑤ and pin ④ via the REC CURRENT ADJ. JIG.
2. Turn VR203 fully counter clockwise as seen from top side.
3. Adjust VR6A0 so that the amplitude of cyan is 35mVp-p.

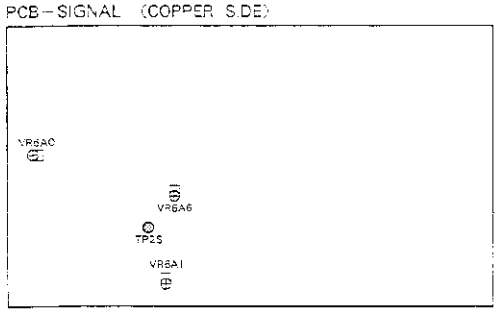


4. Change EXT signal to SECAM colour bar.
5. Adjust VR6A6 so that the amplitude of cyan is 25mVp-p.

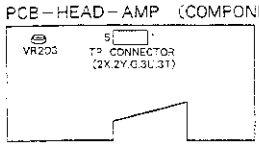




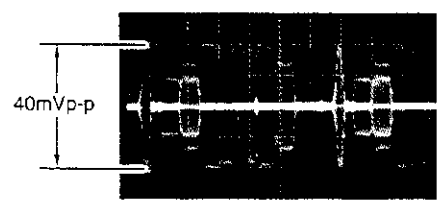
PCB－SIGNAL (COPPER SIDE)



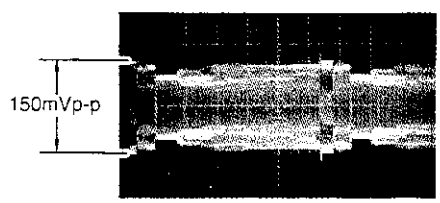
PCB－HEAD－AMP (COMPONENT SIDE)



6. Change EXT signal to NTSC colour bar.
7. Set the oscilloscope's volt range to 10mV/div.
8. Adjust VR6A1 so that the amplitude of burst is 40mVp-p.



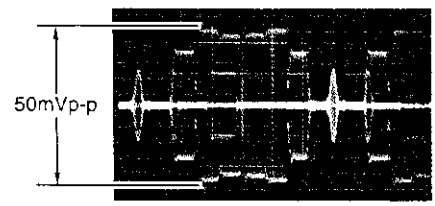
9. Change EXT signal to PAL colour bar.
10. Set the oscilloscope's probe to 10:1.
11. Set the oscilloscope's volt range to 5mV/div.
12. Adjust VR203 so that the amplitude of horizontal sync is 150mVp-p.



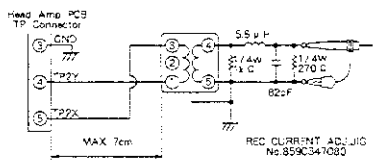
16.Y/C Recording Level (HS-MS5 Only)	**Adjustment purpose:** Level setting of video signal for recording. **Symptom when incorrectly adjusted:** Low luminance S/N, beats, colour banding of chrominance signal or flicker.

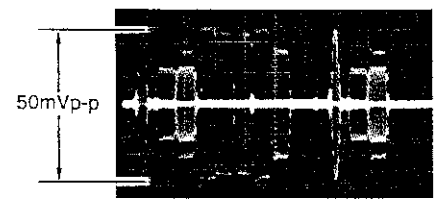
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 1:1)		Input signal	EXT signal (PAL colour bar)
Test point	TP connector pin ⑤ and pin ④	Using tape	A tape
EXT trigger	TP2S	VCR condition	LP REC
Measurement range	DIV 10mV TIM 10 μ sec	Using Jig.	REC CURRENT ADJ. JIG

1. Observes TP connector pin ⑤ and pin ④ via the REC CURRENT ADJ. JIG.
2. Turn VR203 fully counter clockwise as seen from top side.
3. Adjust VR6A0 so that the amplitude of cyan is 50mVp-p.

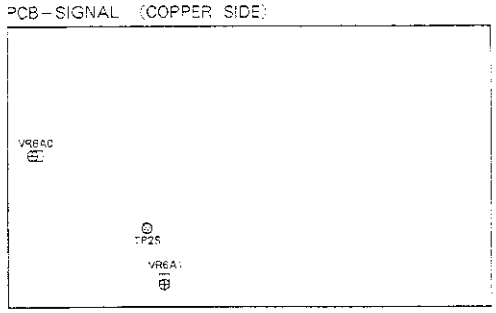


4. Change EXT signal to NTSC colour bar.
5. Adjust VR6A1 so that the amplitude of burst is 50mVp-p.

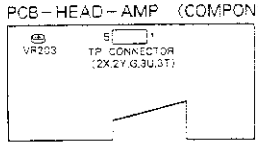




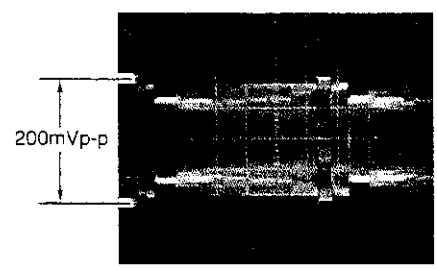
PCB－SIGNAL (COPPER SIDE)



PCB－HEAD－AMP (COMPONENT SIDE)



6. Change EXT signal to PAL colour bar.
7. Set the oscilloscope's probe to 10:1.
8. Set the oscilloscope's volt range to 5mV/div.
9. Adjust VR203 so that the amplitude of horizontal sync is 200mVp-p.



[Audio Circuit]
17.Playback Audio Level
(HS-MS5 Only)

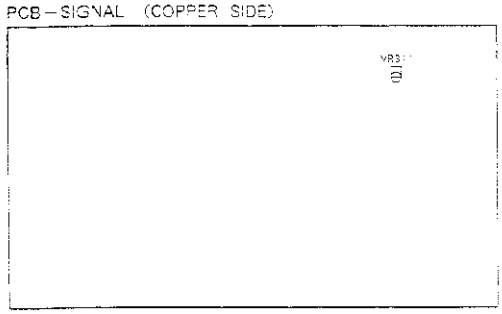
Adjustment purpose: Audio level setting for playback.

Symptom when incorrectly adjusted: Too loud or too low audio level during playback.

Measuring instrument and condition		VCR set up condition	
Audio Tester		Input signal	EXT signal (PAL colour bar)
Test point	AUDIO OUT terminal	Using tape	Alignment tape (PAL 1kHz audio signal)
EXT trigger	---	VCR condition	Playback
Measurement range	---	Using Jig.	---

1. Observe AUDIO OUT terminal.
2. Adjust VR311 so that the audio output level is -6dBs(388mVr.m.s.).
   (0dBs=1mW 600Ω :0.775Vr.m.s.)
3. Check that the level fluctuation is less than ±1dBs. If level fluctuation is over ±1dBs then check that the mechanical adjustment of A/C HEAD slant adjustment.

PCB－SIGNAL (COPPER SIDE)



18.Audio Bias Level

Adjustment purpose: Audio bias level setting for recording.

Symptom when incorrectly adjusted: Poor Audio response in high frequency area.

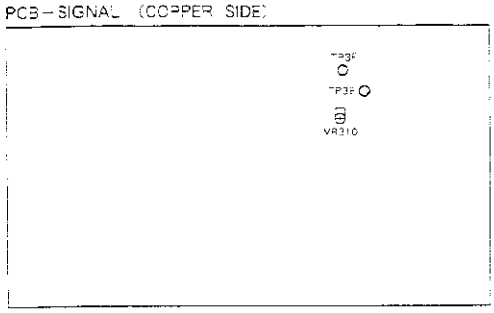
Measuring instrument and condition		VCR set up condition	
Audio tester		Input signal	EXT signal (PAL colour bar)
Test point	TP3E TP3F	Using tape	A tape
EXT trigger	---	VCR condition	SP REC High pass filter
Measurement range	---	Using Jig.	

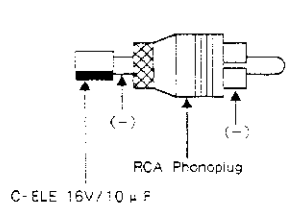
1. Insert shorted RCA type phonoplug into the AUDIO IN terminal.
2. Observe TP3E and TP3F with Audio Tester via high pass filter.
3. Confirm that the monitor TV etc. dose not affect the indication of the audio tester and then adjust VR310 so that the level of 2.6mVr.m.s.

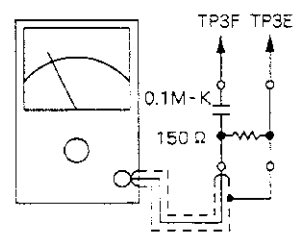
Note 1:
Be sure that the audio tester housing never touches the VCR chassis.

Note 2:
Never set the VCR to PLAY mode with the audio tester connected. (The audio amplifier will be overloaded.)

PCB－SIGNAL (COPPER SIDE)





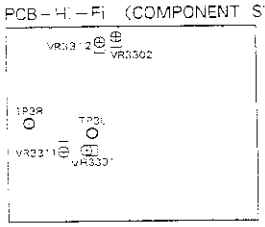


[Hi-Fi Audio Circuit] (HS-MS7 Only) 19.VCO	**Adjustment purpose:** Setting of FM carrier frequency for Hi-Fi audio. **Symptom when incorrectly adjusted:** Buzz.

Measuring instrument and condition		VCR set up condition	
Frequency counter		Input signal	---
Test point	TP3L TP3R	Using tape	A tape
EXT trigger	---	VCR condition	SP REC
Measurement range	---	Using Jig.	---

1. Set CH button to "EXT" position.
2. Set MONITOR button to "STEREO" mode.
3. Connect AUDIO IN terminal to GND (L-CH and R-CH).
4. Set COLOUR SYSTEM switch (Right side) to "MANUAL" position.
5. Set COLOUR SYSTEM switch (Left side) to "NOR" position.
6. Set SYSTEM SELECT button to "NTSC" mode.
7. Observe TP3L.
8. Adjust VR3301 so that the frequency is 1.3MHz.
9. Observe TP3R.
10. Adjust VR3302 so that the frequency is 1.7MHz.
11. Set SYSTEM SELECT button to "PAL" mode.
12. Observe TP3L.
13. Adjust VR3311 so that the frequency is 1.4MHz.
14. Observe TP3R.
15. Adjust VR3312 so that the frequency is 1.8MHz.

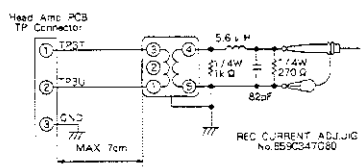
PCB – HI – FI (COMPONENT SIDE)



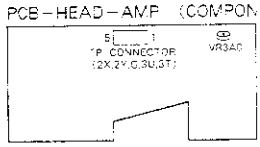
20.FM REC Level	**Adjustment purpose:** Setting of record level of Hi-Fi audio signal. **Symptom when incorrectly adjusted:** Wow/flutter in audio. Poor S/N in video signal.

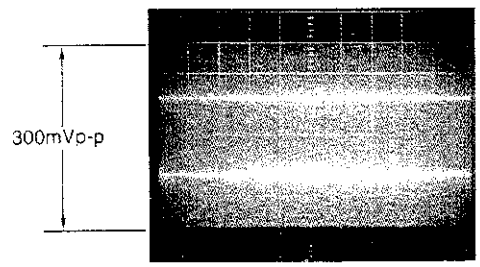
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	TP connector pin ① and pin ②	Using tape	A tape
EXT trigger	---	VCR condition	SP REC
Measurement range	DIV 5mV TIM 10 μ sec	Using Jig.	REC CURRENT ADJ. JIG

1. Set CH button to "EXT" position.
2. Set MONITOR switch to "STEREO" mode.
3. Connect AUDIO IN terminal to GND (L-CH and R-CH).
4. Set COLOUR SYSTEM switch (Right side) to "MANUAL" position.
5. Set COLOUR SYSTEM switch (Left side) to "NOR" position.
6. Set SYSTEM SELECT button to "PAL" mode.
7. Observe TP connector pin ① and pin ② via the REC CURRENT ADJ. JIG.
8. Adjust VR3A0 so that the amplitude of waveform is 300mVp-p.



PCB – HEAD – AMP (COMPONENT SIDE)





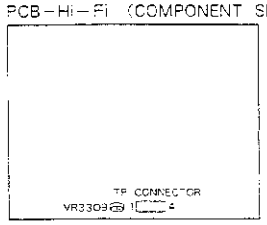
21.DOP Level	**Adjustment purpose:** Setting of detection level of recorded Hi-Fi audio signal in the video tape. **Symptom when incorrectly adjusted:** Cannot detect Hi-Fi audio signal or cannot change to Normal audio.

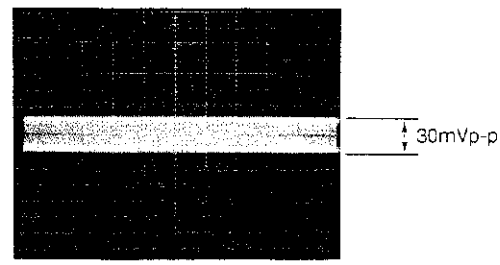
Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	---
Test point	CH-1:TP connector pin ③ CH-2:---	Using tape	A tape
EXT trigger	---	VCR condition	SP REC
Measurement range	DIV 5mV TIM 10 μ sec	Using Jig.	---

1. Set CH button to "EXT" position.
2. Observe TP connector pin ③.
3. Connect oscilloscope's GND to TP connector pin ②.
4. Adjust VR3309 so that the amplitude of waveform is minimum.

Note:
The amplitude of waveform must be below 30mVp-p.

PCB－Hi－Fi (COMPONENT SIDE)



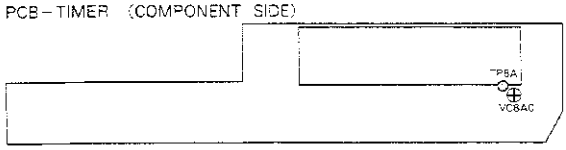


[Timer Circuit] 22.Clock OSC Frequency	**Adjustment purpose:** Accuracy of clock. **Symptom when incorrectly adjusted:** Poor clock accuracy.

Measuring instrument and condition		VCR set up condition	
Frequency counter		Input signal	---
Test point	TP8A	Using tape	---
EXT trigger	---	VCR condition	Stand by
Measurement range	PERIOD mode	Using Jig.	---

1. Observe TP8A.
2. Adjust VC8A0 so that the period is 7.324219± 0.000030msec (136.533332± 0.000540Hz).

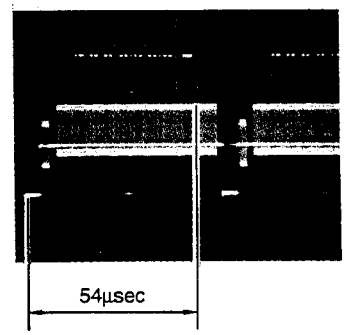
PCB－TIMER (COMPONENT SIDE)



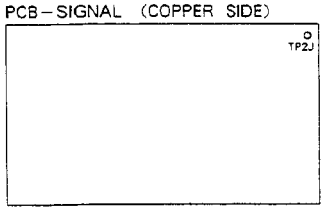
23.Display Position	**Adjustment purpose:** Positioning of display characters. **Symptom when incorrectly adjusted:** Incorrect position.

Measuring instrument and condition		VCR set up condition	
Oscilloscope (Probe 10:1)		Input signal	EXT signal (PAL colour bar)
Test point	CH-1:TP2J CH-2:---	Using tape	---
EXT trigger	---	VCR condition	STOP
Measurement range	DIV 20mV TIM 10 μ sec	Using Jig.	---

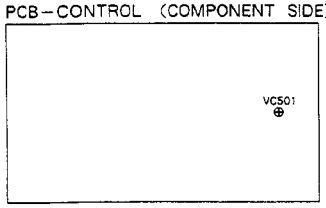
1. Push PROG REC button on the remote hand unit. Display the Programme Timer screen.
2. Observe TP2J.
3. Adjust VC501 so that the time difference between the falling edge of H-SYNC and end of character signal is 54 μ sec.



PCB – SIGNAL (COPPER SIDE)



PCB – CONTROL (COMPONENT SIDE)



MECHANICAL ADJUSTMENT AND REPLACEMENT (F DECK)

1. Cleaning of Deck

The following parts require cleaning whenever serviced to maintain satisfactory performance.

1-1 Video Head

A. Clean the video heads in the following method if dust and other foreign objects on the video heads disturb the normal playback of images :
Dampen video head cleaning cloth with alcohol. Hold the cloth against the drum and turn the drum slowly counterclockwise to clean.
Note :
Do not directly touch the head attached to the upper drum. The head is very hard but brittle to impact, especially in the vertical direction.
Do not apply force in the vertical direction.

B. Allow residual alcohol to dry thoroughly before running tape . Otherwise, the liquid may stick to and damage the tape.

1-2 Tape Transport (Refer to Fig. 1-1.)

Clean the following parts of the tape transport.

1. Tension regulation arm S
2. Tension arm
3. Supply guide pole
4. FE head
5. Impedance roller
6. Supply guide roller
7. Supply slant pole
8. Upper and lower drum
9. Takeup slant pole
10. Takeup guide roller
11. A/C head
12. Takeup guide pole
13. Pinch roller
14. Capstan shaft
15. Takeup guide arm
16. Tension regulation arm T

A. Clean the tape transport with gauze dampened with alcohol, except the supply and takeup guide rollers.
If Guide rollers are stained with dust, clean them with dry gauze or exchange them for new parts.

B. Allow residual alcohol to dry thoroughly before running a tape. Otherwise the liquid may stick to and damage the tape.

1-3 Reel Disk Drive System

A. Clean the reel disk braking surfaces and the reel belt.

B. Clean the above parts with gauze dampened with alcohol.

C. Allow the residual liquid to dry thoroughly before operating the reel disk.

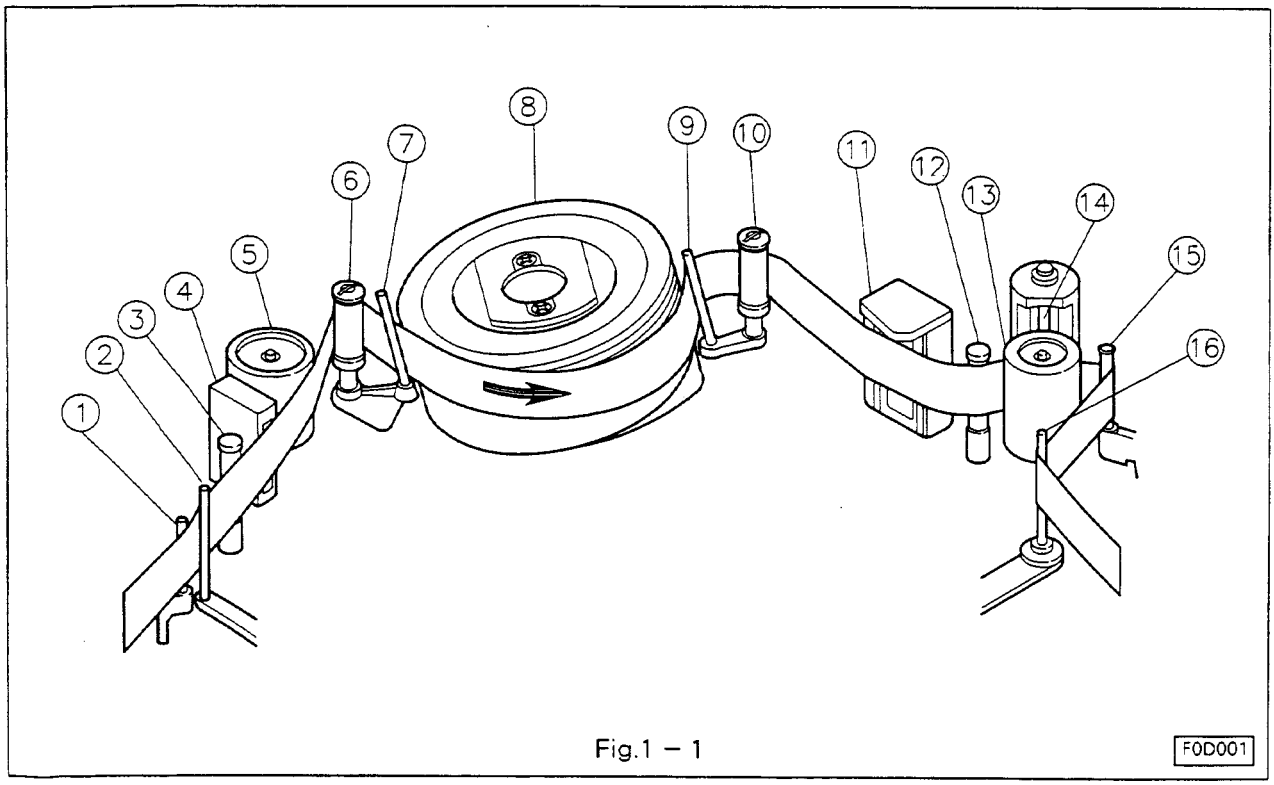


Fig.1 – 1

F0D001

2. Replacement of Major Parts

2-1 Cassette Housing

2-1-1 Removal (Refer to Fig. 2-1-1~2-1-2.)

A. Set the VCR to the eject mode.
B. Remove the top panel, bottom panel, and front panel.
C. Unfasten the snap of the cable holder and remove the cable holder from the cassette housing as shown in Fig.2-1-1.
D. Unscrew four cassette housing fastening screws (ⓐ,ⓑ,ⓒ, and ⓓ). Raise the cassette housing slowly in the direction shown by the arrow.

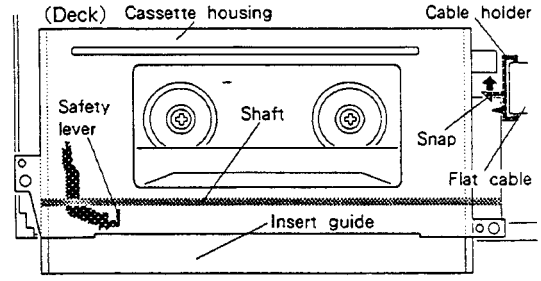


Fig. 2 – 1 – 1

2-1-2 Installation (Refer to Fig.2-1-1~2-1-3.)

A. Slowly lower the cassette housing onto the main plate of the deck so that the safety lever enters between the insert guide and the shaft as shown in Fig.2-1-1. Align the two positioning holes (ⓔ and ⓕ) and the two U holes (ⓖ and ⓗ) located on the cassette housing with the matching holes in the deck.
B. In step A above, if the front loading gear of the cassette housing does NOT engage the boss on the main plate, carefully push the gear toward the front of the VCR using a small-diameter screwdriver, as illustrated in Fig.2-1-3. If the gear still will not engage, rotate the Front Loading Gear a few degrees from the below the deck until the gear engages the boss correctly.
C. Fasten the housing to the deck with the four screws (ⓐ,ⓑ,ⓒ and ⓓ).

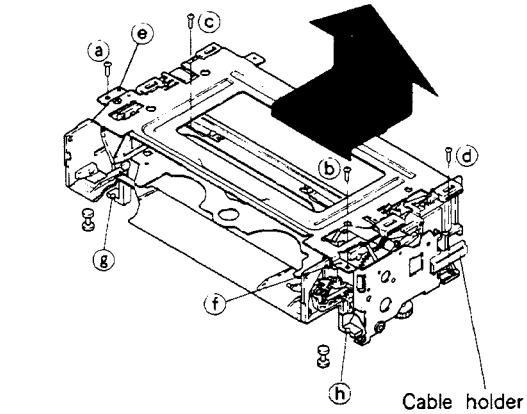


Fig. 2 – 1 – 2 F0D002

2-2 Lock arm and Drive gear

2-2-1 Removal (Refer to Fig. 2-1-3~2-2.)

A. Unfasten four snaps (ⓐ, ⓑ, ⓒ and ⓓ) as shown in Fig.2-1-3, and remove the side plate TU.
B. Turn the FL SW lever clockwise to separate the FL SW lever from the drive gear, and pull the lock arm and drive gear to remove them from the shaft as shown in Fig.2-2.

2-2-2 Installation (Refer to Fig.2-1-3~2-2.)

A. Install the drive gear on the shaft as shown in Fig.2-2.
B. Line the matching mark on the drive gear and beginning of gear section on the lock arm as shown in Fig.2-2, and install the lock arm.
C. Install the side plate TU to the cassette housing, and secure it with four snaps (ⓐ,ⓑ, ⓒ and ⓓ) as shown in Fig.2-1-3.

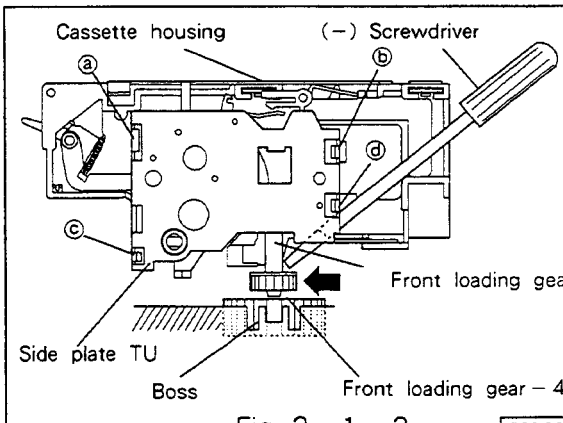


Fig. 2 – 1 – 3 F0D003

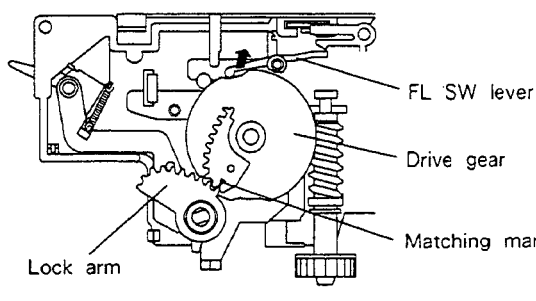


Fig. 2 – 2

2-3 Drum Assembly

2-3-1 Removal (Refer to Fig. 2-3-1~2-3-3.)

A. Unscrew the brush fastening screw and remove the brush.

B. Unscrew two fastening screws (ⓐ and ⓑ) and remove the head amplifier PCB which is connected to the drum assembly.

Note :

The cable and connector between the drum and head amplifier may be damaged if the cable is pulled strongly, as the cable is short. Remove the shield cap of the PCB, raise the PCB slightly and disconnect the flat cable. (Removal method for the flat cable connector and stopper is shown in Fig.2-3-3.)

Disconnect the grounding wire and remove the head amplifier PCB.

C. Unscrew three drum fastening screws (ⓒ,ⓓ and ⓔ) from the reverse side of the deck.

D. Remove the drum assembly by raising it with care not to touch other parts around the drum assembly.

E. Disconnect the connectors from the drum assembly.

2-3-2 Installation (Refer to Fig. 2-3-1,2-3-2.)

A. Connect the connectors to a new drum assembly.

B. Place the new drum assembly on the main plate of the deck slowly with care not to touch other parts.

C. Fasten the drum assembly with three fastening screws (ⓒ, ⓓ and ⓔ) on the reverse side of the deck.

D. Connect the head amplifier PCB to the drum assembly and fasten the PCB with two screws (ⓐ and ⓑ).

Note :

Conduct the mechanism interchangeability adjustment outlined in Para. 3 to give optimum performance when the drum assembly is replaced.

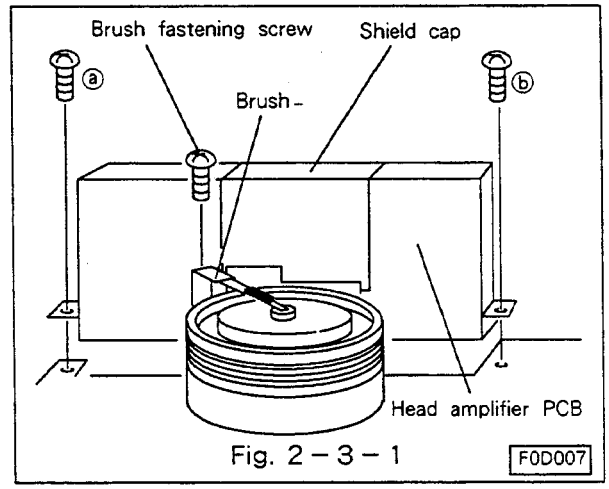


Fig. 2 – 3 – 1 F0D007

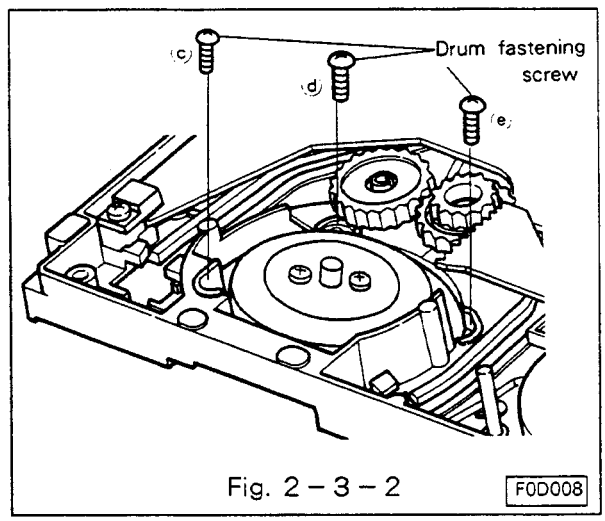


Fig. 2 – 3 – 2 F0D008

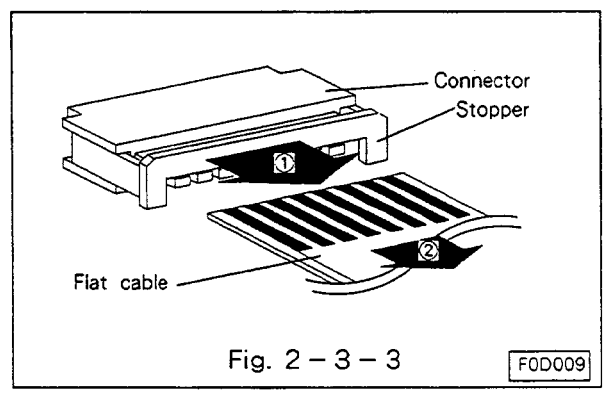


Fig. 2 – 3 – 3 F0D009

2-4 Upper Drum

2-4-1 Removal (Refer to Fig. 2-4-1.)

A. Unscrew the brush fastening screw and remove the brush.
B. Unsolder two inside soldered terminals of each head on the upper drum.
C. Unscrew the upper drum fastening screws.
D. Remove the upper drum slowly and carefully.

Note :
If the upper drum is difficult to remove, heat the upper drum fastening screw holes with a soldering iron, and the drum will be easily removed.

2-4-2 Installation (Refer to Fig. 2-4-1.)

Note :
Handle the upper drum carefully as the video heads are fragile.

A. Position the lower drum so that the hole in the shaft faces the operator. Align the upper drum with the lower drum so that the CH1 mark on the upper drum is on the right side, and couple the drums.
B. Fasten the upper drum with two screws. (Tighten the screws alternately.)
C. Solder the terminals not soldered on the upper drum.
D. Clean the video heads as outlined in Para. 1-1.

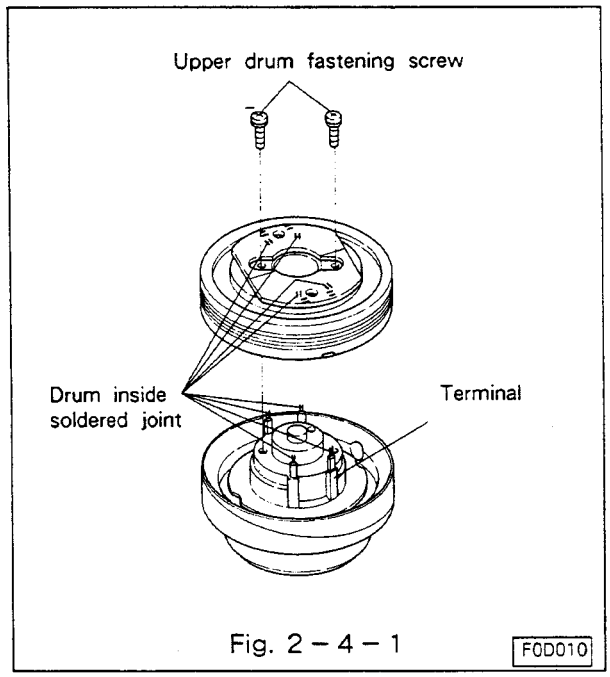


Fig. 2 – 4 – 1 F0D010

2-5 Reel Belt (Refer to Fig. 2-5)

A. Remove the reel belt from the capstan motor and the belt pulley.
B. Install a new reel belt.

Note :
Make certain that the new belt is free from grease, before installing.

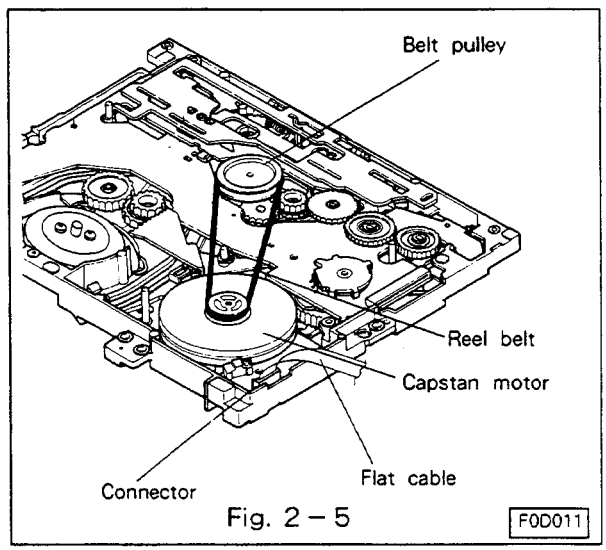


Fig. 2 – 5 F0D011

2-6 Capstan Motor

2-6-1 Removal (Refer to Fig. 2-5, 2-6)

A. Disconnect the flat cable.
B. Remove the reel belt.
C. Remove three fastening screws shown in Fig. 2-6 and remove the capstan motor.

CAUTION :
Restrain the capstan motor as the three screws are removed, since an un-restrained motor may damage other parts of the deck. When performing removal or installation of the capstan motor,take care that the outside of the rotor's rim is not greased.(Refer to Fig.2-5.)
If greasy components are attached on the outside of the rotor's rim, wipe them off with a dry cloth because they may cause defects during special effects playback.

2-6-2 Installation (Refer to Fig. 2-5, 2-6.)

A. Fasten the motor with three fastening screws.(Refer to Fig. 2-6.)
B. Install the reel belt.
C. Connect the flat cable.

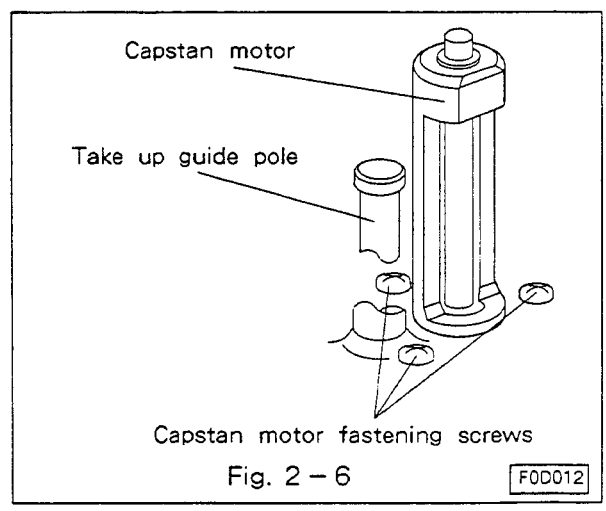


Fig. 2 – 6 F0D012

2-7 Loading Motor

2-7-1 Removal (Refer to Fig. 2-7-1, 2-7-2.)

A. Set the VCR to the eject mode.
B. Disconnect the wires from the loading motor.
C. Remove two stoppers securing the motor and the motor holder plate.(Refer to Fig. 2-7-2.)
D. Slide the motor and motor holder plate away, and then raise them to remove.
E. Remove the belt – LM from the loading motor and the pulley – L.(TYPE – B only)
F. Unscrew two screws and detach the motor holder plate from the motor.
G. Disconnect the coupling from the motor.

2-7-2 Installation (Refer to Fig. 2-7-1~2-7-3.)

A. Fasten the coupling to a new loading motor. (Refer to Fig. 2-7-3.)
B. Fasten the motor holder plate to the motor with two screws.
C. Install the belt – LM.(TYPE – B only)
D. Place the motor and motor holder plate in the motor holder to the rear of the deck.
E. Turn the motor shaft so that the coupling on the loading motors shall match the worm gear of the motor holder. Slide the loading motor forward and secure it with the stoppers.
F. Solder the leads to the loading motor. (Brown lead wire to the positive terminal and red lead wire to the negative terminal.)

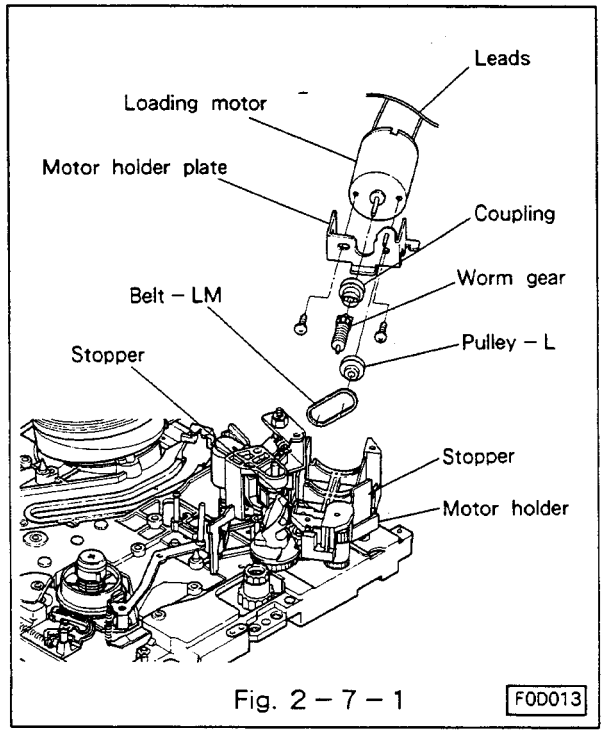


Fig. 2 – 7 – 1 F0D013

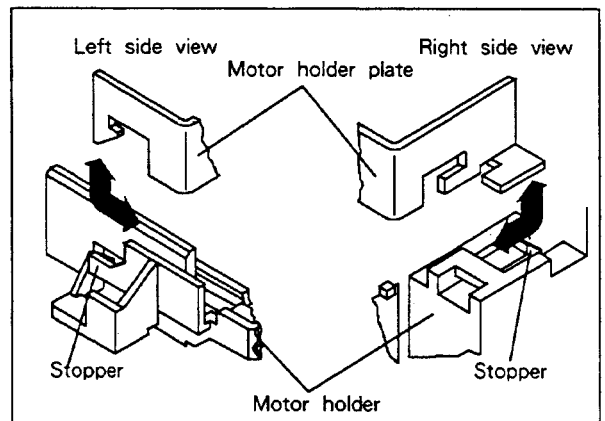


Fig. 2 – 7 – 2 F0D014

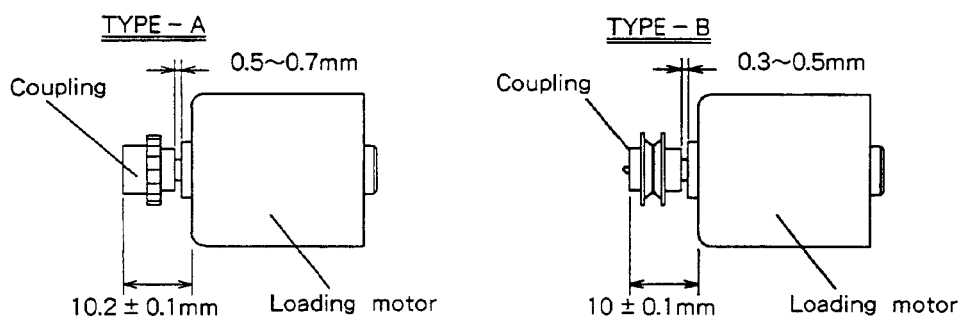


Fig. 2 – 7 – 3 F0D015

2-8 Pinch Roller

2-8-1 Removal (Refer to Fig. 2-8-1, 2-8-2.)

A. Set the VCR to the eject mode.
B. Remove the pinch roller arm cap and the grip ring which secures the pinch roller arm assembly.
C. Pull the pinch roller arm assembly upwards to remove.
D. Remove the pinch roller cap from the pinch roller arm, and remove the pinch roller. (Refer to Fig. 2-8-2.)

2-8-2 Installation (Refer to Fig. 2-8-1,2-8-2.)

A. Assemble the pinch roller cap and the pinch roller to the pinch roller arm by exercising care with the installation angle of the pinch roller cap and the marking of the Pinch Roller. (Refer to Fig. 2-8-2.)
B. Assemble the pinch roller assembly to the shaft on the main plate.
C. Secure the pinch roller arm assembly with the pinch roller arm cap and the grip ring.

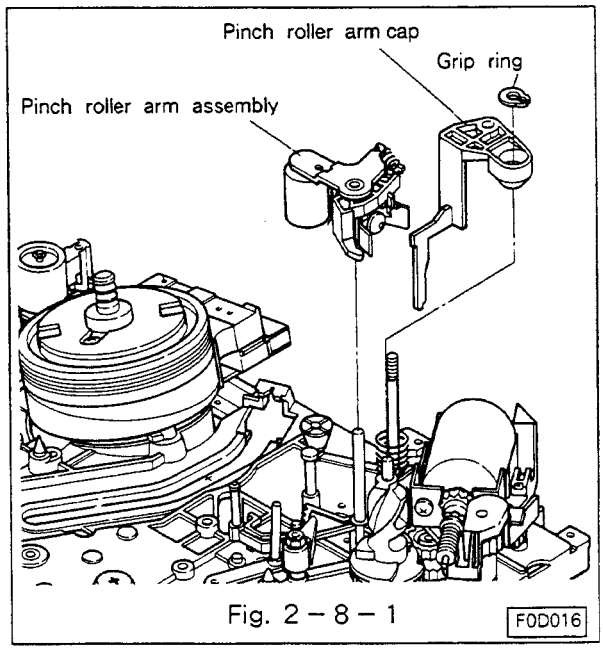


Fig. 2 – 8 – 1 F0D016

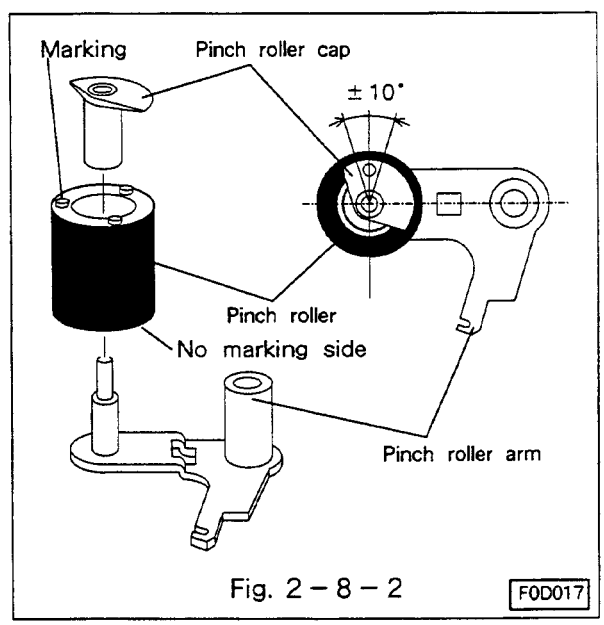


Fig. 2 – 8 – 2 F0D017

2-9 Mode Switch

Note :
Replace the mode switch with the VCR in the eject mode.

2-9-1 Removal (Refer to Fig. 2-9-1)

A. Unsolder the five soldered joints of the mode switch from the deck PCB.
B. Unfasten two catches fastening the switch to the deck PCB assembly.
(Exercise care as the catches may be broken off.)
C. Remove the mode switch slowly while assuring that the soldered joints are all unsoldered.

2-9-2 Installation (Refer to Fig. 2-9-1,2-9-2.)

A. Line the matching marks of the mode switch.
(Refer to Fig. 2-9-2.)
B. Finely adjust the mode switch so that continuity at each terminal shall be as given in the illustration.
C. Fasten the switch to the deck PCB with care so that the switch shall not turn, and secure with two catches.(Refer to Fig. 2-9-1.)
D. Solder the five terminals which connect the mode switch to the deck PCB assembly.

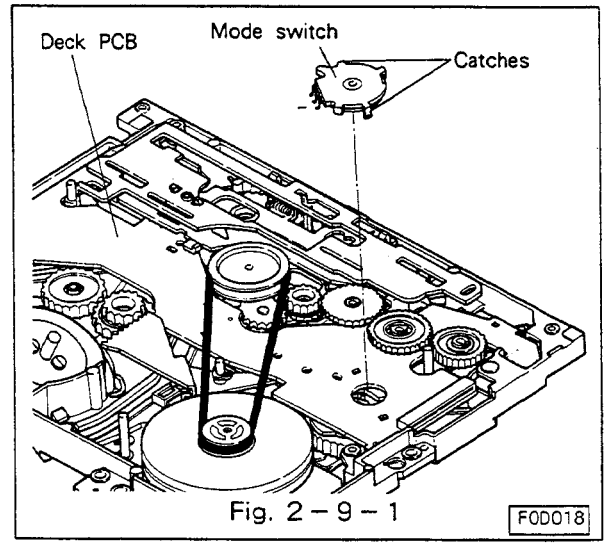


Fig. 2 – 9 – 1 F0D018

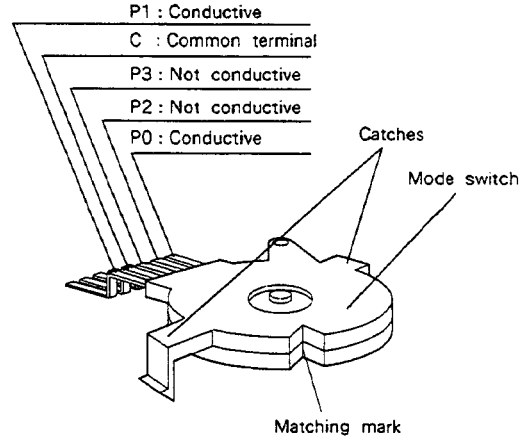


Fig. 2 – 9 – 2 F0D019

2-10 Supply Reel Disk

2-10-1 Removal (Refer to Fig. 2-10-1~2-10-3.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Unscrew the screw ⓐ which fastens the T band holder.
C. Unfasten the catch of the T band holder from the main plate with a small screw driver etc. as shown in Fig. 2-10-2.
Raise and remove the T band holder with care not to score or dirty the tension brake belt.
D. Detach the tension spring from the tension arm and the tension lever.
E. Remove the grip ring ⓑ which secures the tension arm. Raise the tension arm upward to remove it from the shaft.
F. Detach the tension regulation spring S from the tension regulating arm S and the tension lever.
G. Detach the safety lever spring from the safety lever and the tension lever.

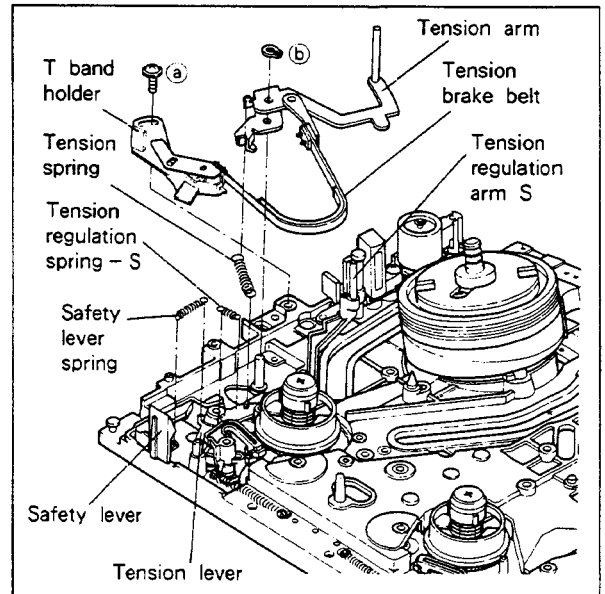


Fig. 2 – 10 – 1 F0D020

H. Raise the tension lever avoiding the main brake S and remove the lever from the shaft. (Refer to Fig. 2-10-3.)
I. Raise the tension regulation arm S and remove it from the shaft.
J. While turning the main brake S slightly clockwise to separate the brake from the supply reel disk, raise the supply reel disk to remove it from the shaft.(Refer to Fig. 2-10-3.)

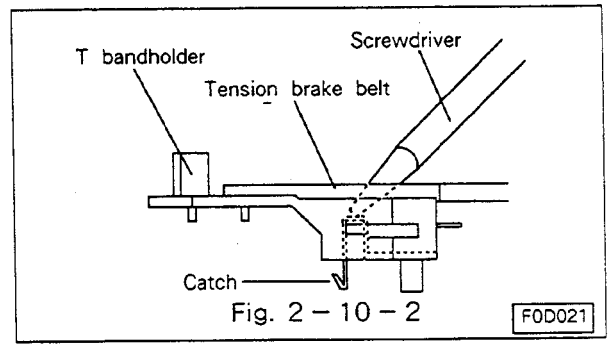


Fig. 2 – 10 – 2 F0D021

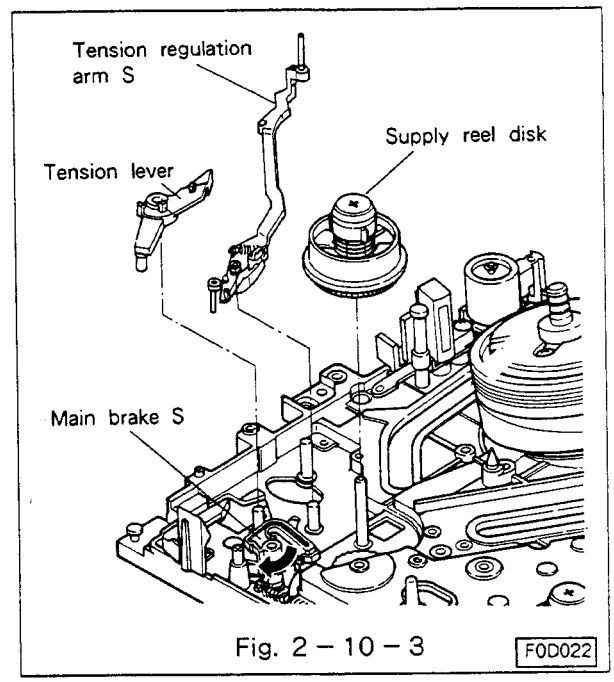


Fig. 2 – 10 – 3 F0D022

2-10-2 Installation (Refer to Fig. 2-10-4~2-10-7.)

A. Turn the main brake S slightly clockwise to separate it from the supply reel disk shaft, and mount the supply reel disk on the shaft so that the reel gear meshes with the gear of the supply reel disk.
B. Assemble the tension regulation arm S to the shaft.
C. Assemble the tension lever to the shaft avoiding the main brake S.
Note :
Install the tension lever so that the pin at the lower part of the lever shall be in front of the slot in the main plate (viewing the front).
D. Fasten the safety lever spring to the safety lever and the tension lever.
E. Fasten the tension regulation spring S to the tension regulation arm S and the tension lever.

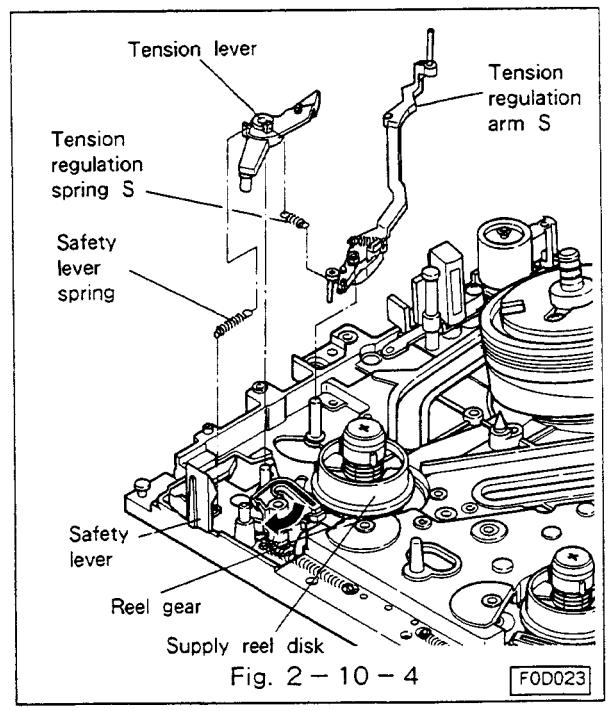


Fig. 2 – 10 – 4 F0D023

F. Assemble the tension arm to the shaft and secure the arm with the grip ring ⓑ. (Refer to Fig. 2-10-5.)

G. Fasten the tension spring to the tension arm and the tension lever. (Refer to Fig. 2-10-5.)

H. Assemble the T band holder to the main plate with care not to score or dirty the tension brake belt, and secure the holder with the screw ⓐ lightly. (Refer to Fig. 2-10-5.)

Note :

In the assembly of the T band holder, make certain that the hook of the holder positively engages with the reverse side of the main plate.

If the hook is difficult to engage with the main plate, push the hook lightly with a small screw driver etc. (Refer to Fig. 2-10-2.)

I. Separate the main brake S and the tension regulation arm S from the supply reel disk and make certain that the disk turns freely.

J. Place the reel disk adjusting jig (Part Number 859C342020) in the reference position on the main plate. (Refer to Fig. 2-10-6.)

K. Slowly turn the jig about the point A and make sure that the height of the supply reel disk flange shall agree with the point B on the supply disk adjusting side of the jig (marked SP). (Refer to Fig. 2-10-7.)

L. If the height of the disk is not satisfactory, hold the disk so that it shall not turn, and turn the height adjusting screw at the top of the disk to adjust the height. (Refer to Fig. 2-11-3.)

A) Turn the screw clockwise if the measured height is low.

B) Turn the screw counterclockwise if the measured height is high.

M. On completion of adjustment, lock the height adjusting screw by burning it with the tip of the hot iron.

N. Install the cassette housing as in Para. 2-1-2.

O. Adjust back tension and tension pole position as outlined in Para. 3-1.

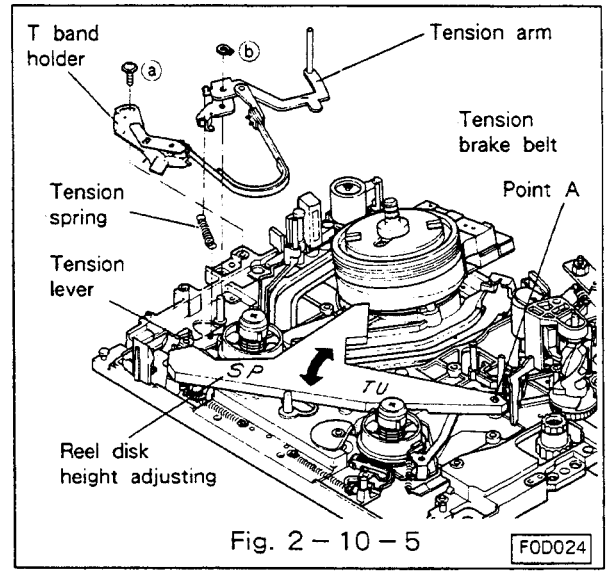


Fig. 2 – 10 – 5 F0D024

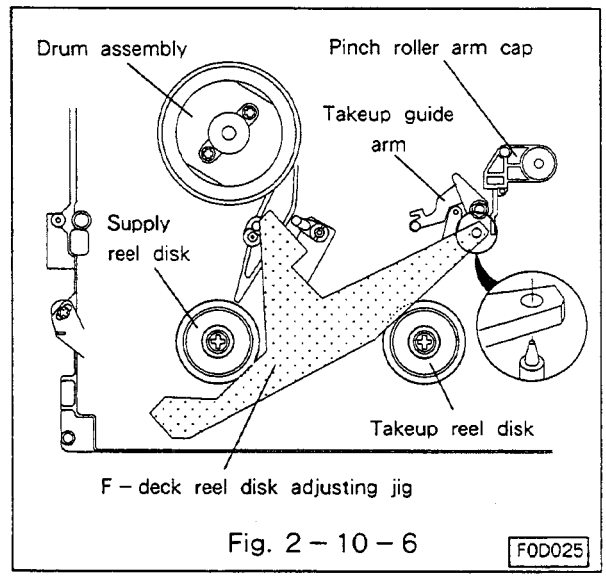


Fig. 2 – 10 – 6 F0D025

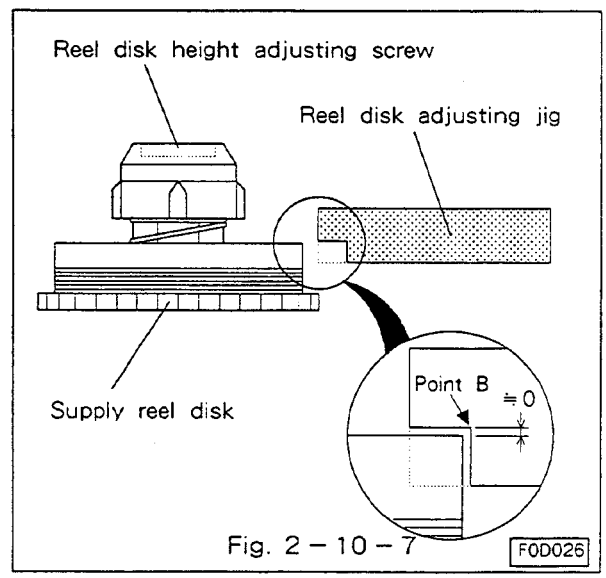


Fig. 2 – 10 – 7 F0D026

2-11 Takeup Reel Disk

2-11-1 Removal (Refer to Fig. 2-11-1.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Detach the spring RS and the tension regulation spring T from the tension regulation arm T and the lever RS.
C. Remove the cut washer which fastens the tension regulation arm T.
D. Turn the takeup guide arm slightly clockwise and raise the tension regulation arm T to remove it from the shaft.
E. Turn the main brake slightly counter-clockwise to separate the brake from the takeup reel disk and raise the disk upwards to remove it from the shaft.

2-11-2 Installation (Refer to Fig. 2-11-2, 2-11-3.)

A. Turn the main brake T slightly counter-clockwise to release the takeup reel disk shaft. Slip the takeup reel disk onto the shaft so that the gear of the takeup reel shall mesh with the reel gear.
B. Turn the takeup guide arm slightly clockwise and install the tension regulation arm T to the shaft. Secure the arm with a cut washer.
C. Fasten the tension regulation spring T and the spring RS to the tension regulation arm T and the lever RS.
D. Separate the main brake T and the tension regulation arm T from the takeup reel disk and make certain that the takeup reel disk turns freely.
E. Place the reel disk adjusting jig (Part Number 859C342020) in the reference position on the main plate. (Refer to Fig. 2-10-6.)
F. Turn the jig slowly about the point A towards the takeup reel disk to make certain that the height of the disk flange agrees with the point B on the takeup side of the jig (marked TU). (Refer to Fig. 2-11-3.)
G. If the height of the disk is not satisfactory, hold the disk so that it shall not turn, and turn the height adjusting screw at the top of the disk to adjust the height. (Refer to Fig. 2-11-3.)
   A) Turn the screw clockwise if the measured height is low.
   B) Turn the screw counterclockwise if the measured height is high.
H. On completion of height adjustment, lock the adjusting screw by burning it with the tip of the hot iron.
I. Install the cassette housing as in Para. 2-1-2.

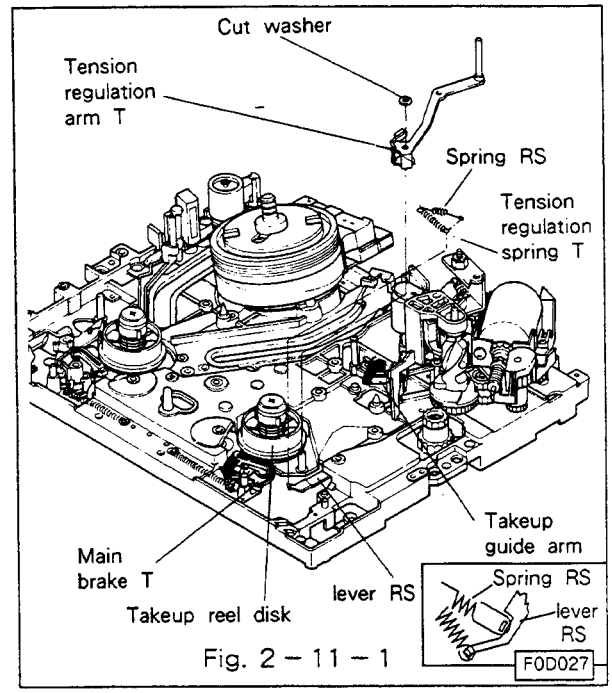


Fig. 2 – 11 – 1

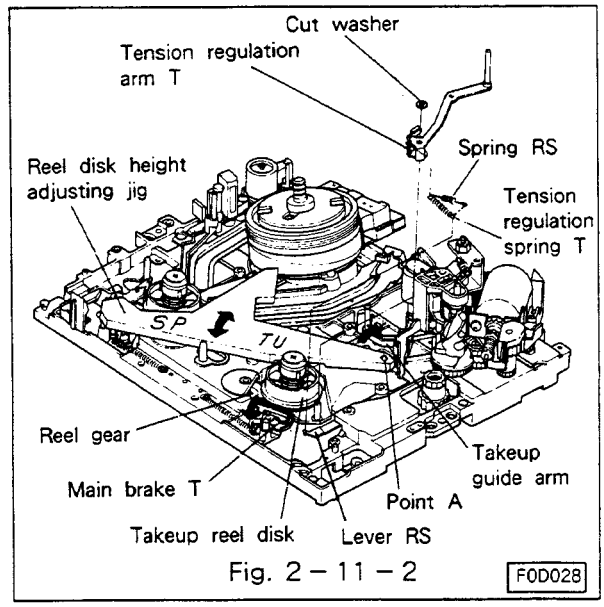


Fig. 2 – 11 – 2

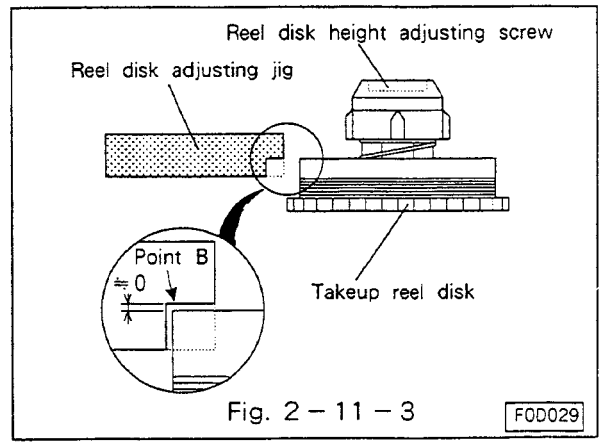


Fig. 2 – 11 – 3

2-12 A/C Head

2-12-1 Removal (Refer to Fig. 2-12-1, 2-12-2.)

A. Disconnect the connector from the A/C head PCB.
B. Remove the nut which fastens the A/C head assembly.
C. Raise upwards and remove the A/C head assembly from the shaft by paying attention to the A/C arm spring which turns the A/C head assembly clockwise.
D. Remove three A/C head fastening screws (ⓐ, ⓑ, and ⓒ) and the A/C spring shown in Fig. 2-12-2, and remove the A/C head from the A/C arm.
E. Unsolder the A/C head PCB from the A/C head.(Refer to Fig. 2-12-2.)

2-12-2 Installation (Refer to Fig. 2-12-1~2-12-3.)

A. Solder the A/C head PCB to the A/C head. (Refer to Fig. 2-12-2.)
B. Fasten the A/C head to the A/C arm with three screws (ⓐ, ⓑ, and ⓒ) and the A/C spring.
Note :
Install the A/C head to the A/C arm so that the base surface of the A/C head shall be parallel to the A/C arm, and their spacing and the A/C head installation screwⓒ height shall be as specified in Fig. 2-12-3.
C. Assemble the A/C head assembly to the shaft while turning the A/C arm spring counter-clockwise about 60°.(Refer to Fig. 2-12-1.)
D. Tighten the A/C head assembly fastening nut so that the base surface of the A/C head shall be about 7mm above the main plate surface.(Refer to Fig. 2-12-3.)
E. Plug in the connector to the A/C head PCB. (Refer to Fig. 2-12-1.)
F. Conduct the A/C head adjustment and the phase adjustment as outlined in Para. 3-3 and 3-4.

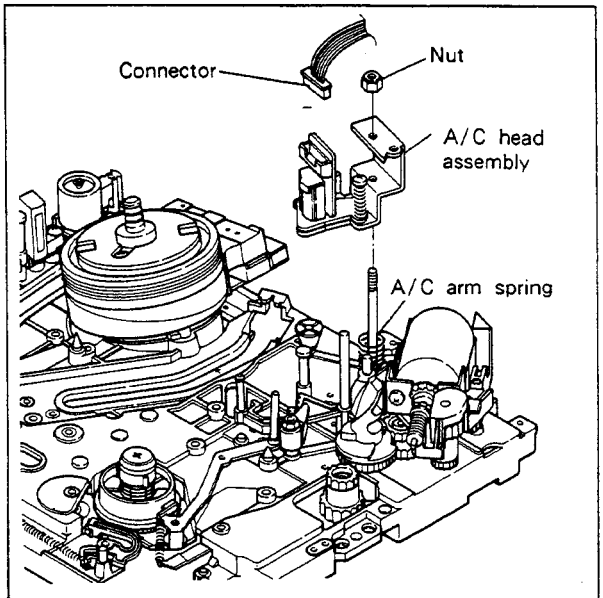


Fig. 2-12-1 F0D030

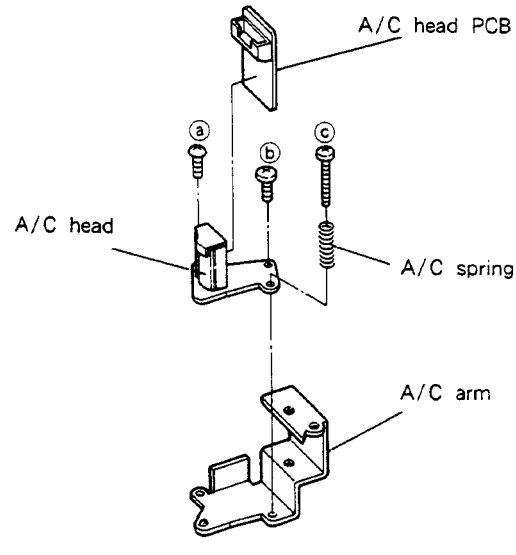


Fig. 2-12-2 F0D031

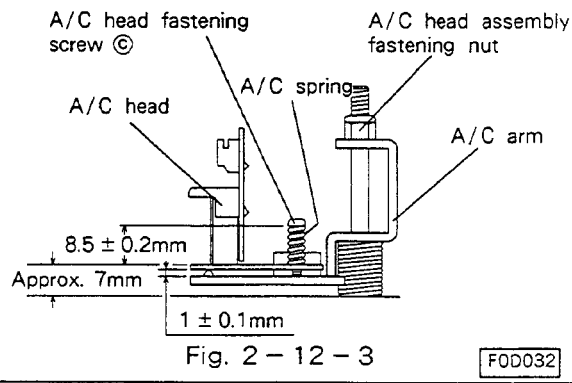


Fig. 2-12-3 F0D032

2-13 Take Up Guide Arm

2-13-1 Removal (Refer to Fig. 2-13-1.)

A. Set the VCR in the eject mode.
B. Remove the pinch roller arm assembly. (Refer to Para. 2-8 "Pinch Roller.")
C. Raise and separate the pinch roller cam and the TU-G gear arm from the shaft at the same time.
D. Remove the takeup guide arm fastening nut. Raise and separate the takeup guide arm from the shaft with care not to lose the TU-G spring.

2-13-2 Installation (Refer to Fig. 2-13-1~2-13-3.)

A. Install the TU-G spring and the takeup guide arm so that one end of the TU-G spring is fastened to the takeup guide arm and the other end is fastened to the hook of the main plate. Secure them with the fastening nut temporarily.
B. Place the reel disk adjusting jig (for the F deck) in the reference position on the main plate (Refer to Fig. 2-10-6). Tighten the takeup guide arm fastening nut so that the lower flange of the takeup guide arm is level with point B of the height adjusting jig (for the E deck). (Refer to Fig. 2-13-2.)
C. Turn the takeup tension lever fully clockwise as shown in Fig. 2-13-1.
D. Line the matching mark on the gear arm and beginning of gear section on the takeup guide arm, and line the matching mark on the pinch roller cam and centre of gear on the joint gear as shown in Fig. 2-13-3, and install the pinch roller cam and the TU-G gear to the shaft at the same time.
E. Assemble the pinch roller assembly to the shaft on the main plate.
F. Secure the pinch roller arm assembly with the pinch roller arm cap and the grip ring.

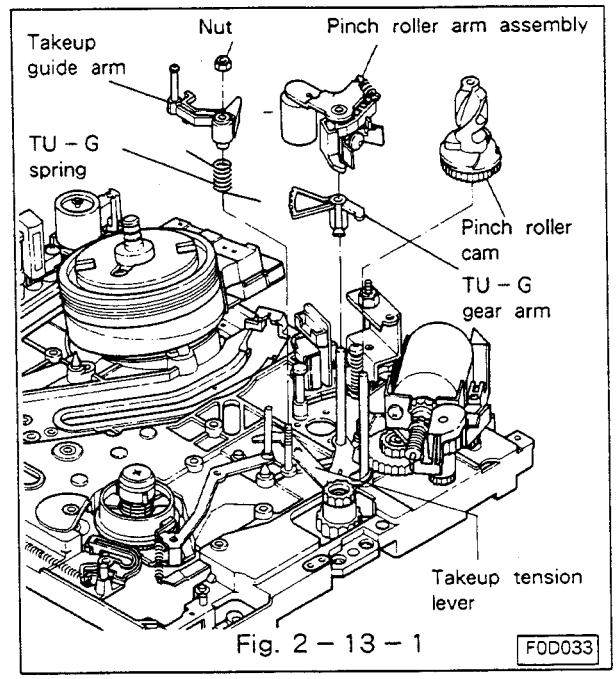


Fig. 2 – 13 – 1 F0D033

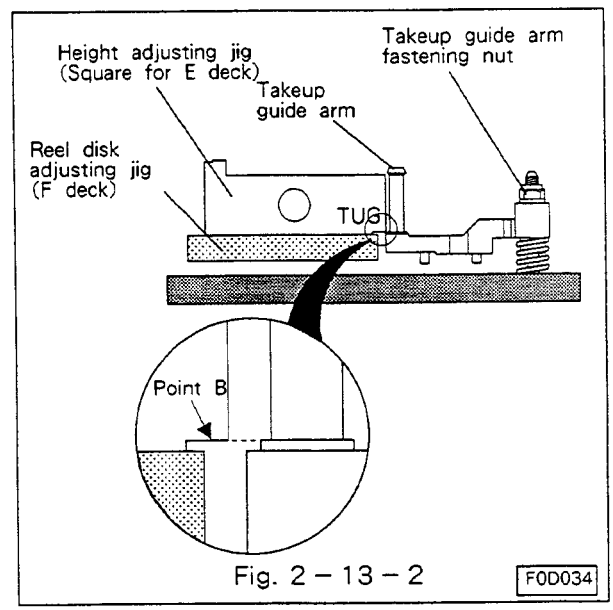


Fig. 2 – 13 – 2 F0D034

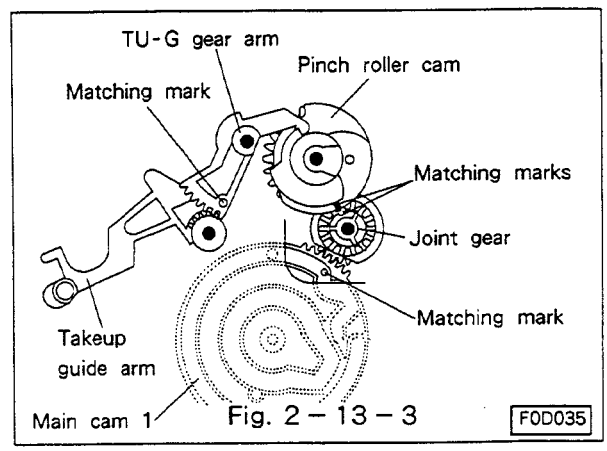


Fig. 2 – 13 – 3 F0D035

2-14 Deck PCB (Printed Circuit Board)

2-14-1 Removal (Refer to Fig. 2-14-1, 2-14-2.)

A. Detach the capstan brake spring from the capstan brake and the loading gear arm.
B. Remove the reel belt from the bottom of the deck.(Refer to Fig. 2-5.)
C. Detach two grip rings ⓕ shown in Fig. 2-14-2 and remove the loading gear arm.
D. Unsolder the terminals of the FE head.
E. Unfasten the catches and remove the F/L gear 2, 3 and 4.(Refer to Fig. 2-14-2.)
F. Remove grip ring ⓖ and cut washer ⓗ, and unfasten three catches shown in Fig. 2-14-3 to remove the cam plate B.(Refer to Fig. 2-14-2.)
G. Unscrew five fastening screws (ⓐ to ⓔ) and remove the deck PCB.(Refer to Fig. 2-14-2.)

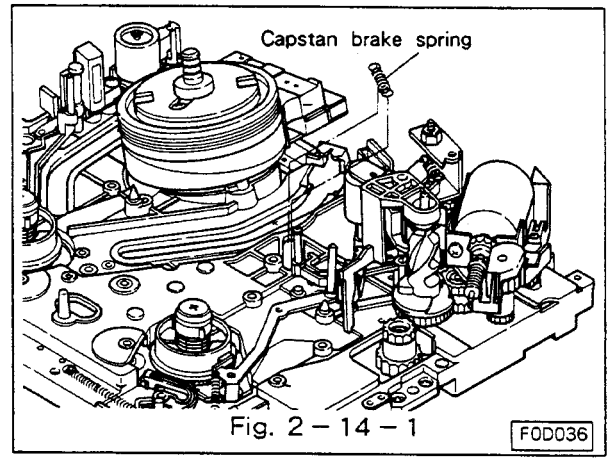


Fig. 2 – 14 – 1 F0D036

2-14-2 Installation (Refer to Fig. 2-14-1~2-14-3.)

A. Make certain that the mode switch is set to the eject position.(Refer to section 2-9.) Fasten the deck PCB with five screws and solder the FE head terminals. (Refer to Fig. 2-14-1.)
Note :
The safety lever is normally held leftward with a spring. Pull the safety lever forwards and install the deck PCB.
B. Install the cam plate B by paying attention to the pin ⓐ to ⓖ positions shown in Fig. 2-14-3, and secure the plate with three catches, grip ring ⓖ and cut washer ⓗ.
C. Line the matching mark on the loading arm T and that on the loading gear arm as shown in Fig. 2-14-3, and assemble the loading gear arm so that the pin of the loading gear arm enters the groove of the main cam 2. Secure the loading gear arm with two grip rings ⓕ.
D. Assemble the F/L gear 2, 3, and 4 to the shafts.
E. Install the reel belt.(Refer to Fig. 2-5.)
F. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck.(Refer to Fig. 2-14-1.)

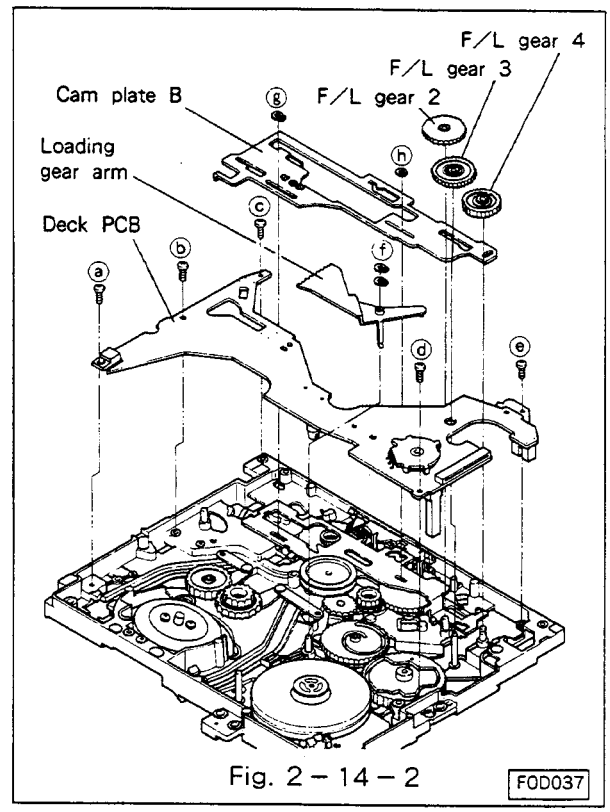


Fig. 2 – 14 – 2 F0D037

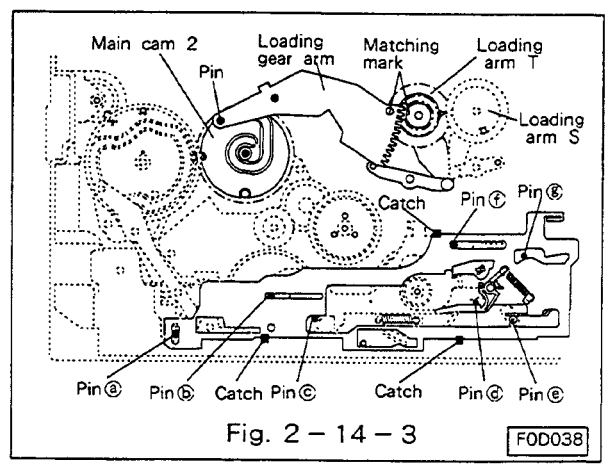


Fig. 2 – 14 – 3 F0D038

2-15 Positioning and Installation Sequence of Parts Around Main Cam 1 (Bottom Side of Deck) (Refer to Fig. 2-15-1~2-15-6.)

Note :
Set the VCR to the eject mode to install the main cam 1 and its peripheral parts.

A. Line the positioning hole in the lever RS and that of the main plate, and assemble the lever RS to the shaft.

B. Line the positioning hole in the lever C with that of the main plate, and assemble the lever C to the shaft.

C. With care not to move the lever RS and lever C, assemble the main cam 1 to the shaft by lining the matching mark of the joint gear with the positioning hole of main plate. Secure the main cam 1 with the grip ring.(Refer to Fig. 2-15-2.)

Note :
The pins of the lever RS and the lever C enter the groove of the main cam 1 when the levers are lined with the positioning holes.
Make certain that the pins of the levers enter the groove of the main cam 1.

D. Assemble the thrust washer to the pin ⓒ shown in Fig. 2-15-2, and install the cam plate C so that the corresponding positions of the plate shall match the pins ⓐ to ⓖ.

E. Fasten the cam spring C to the cam plate C and the cam plate holder.(Refer to Fig. 2-15-2.)

F. Assemble the lever B to the shaft so that the pin of the lever shown in Fig. 2-15-3 shall enter the groove of the main cam 1. Secure the lever with a grip ring.

G. Line the positioning hole of the F/L idler lever with that of the main plate.(Refer to Fig. 2-15-3.)

Note :
The pin of the F/L idler lever enters the groove of the main cam 2 when the positioning hole of the F/L idler lever is lined.
Make certain that the pin of the lever enters the groove of the main cam 2.

H. Line the matching mark of the main cam 2 with that of the main cam 1, and also the positioning hole of the main cam 2, and assemble the main cam 2 to the shaft. (Refer to Fig. 2-15-3.)

Note :
Make certain that the pin of the F/L idler lever correctly enters in the groove of the main cam 2.

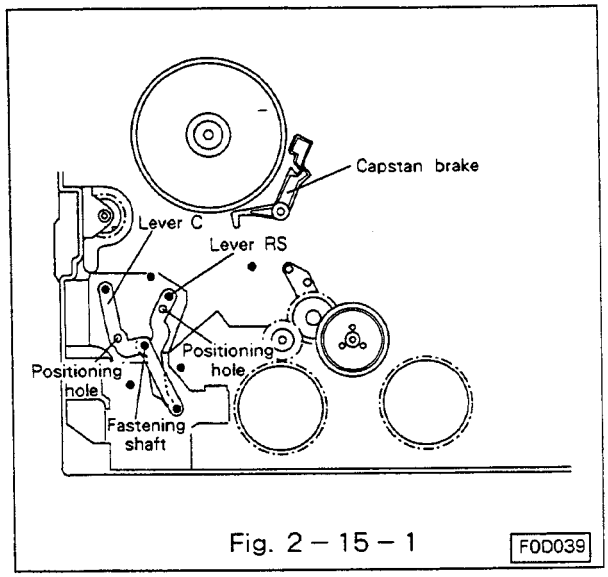


Fig. 2 – 15 – 1 F0D039

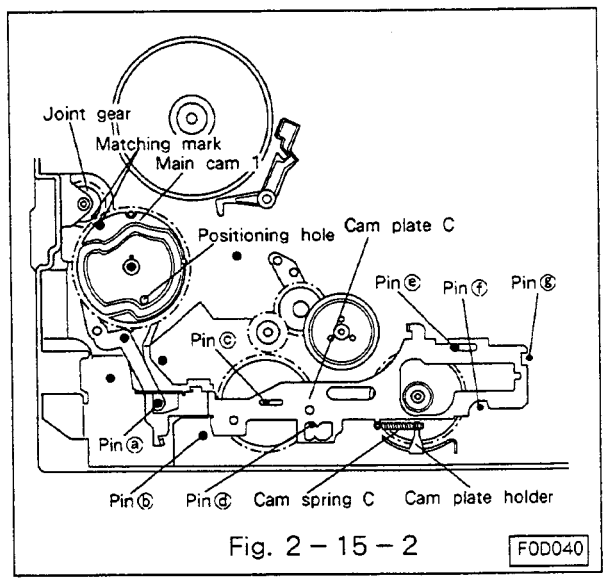


Fig. 2 – 15 – 2 F0D040

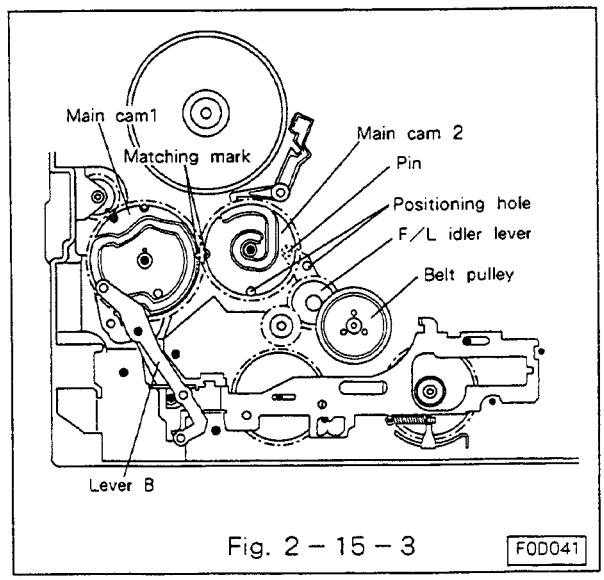


Fig. 2 – 15 – 3 F0D041

I. Make certain that the mode switch is in the eject position. Fasten the deck PCB assembly with five screws and solder the FE head terminals.(Refer to Fig. 2-14-2 and 2-14-1.)
Note :
The safety lever is normally held in the leftward position by the spring. Pull the lever forwards and install the deck PCB assembly.

J. Install the cam plate B so that the plate shall match the pins ⓐ to ⓖ as shown in Fig. 2-15-4, especially the pin ⓔ, and secure the plate with three clamps, cut washer (pin ⓑ) and grip ring (pin ⓕ).

K. Line the matching mark of the loading arm T with that of the loading gear arm as shown in Fig. 2-15-4, and assemble the loading gear arm to the shaft so that the pin of the loading gear arm shall enter the groove of the main cam 2. Secure the arm with two grip rings ⓕ.(Refer to Fig. 2-15-5.)

L. Assemble the F/L gear 2, 3 and 4 to the shafts as shown in Fig. 2-15-5.

M. Install the reel belt. (Refer to Fig. 2-5.)

N. Fasten the tension regulation spring T and the spring RS to the tension regulation arm T and the lever RS from the top side of the deck. (Refer to Fig. 2-11-1.)

O. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck. (Refer to Fig. 2-15-6.)

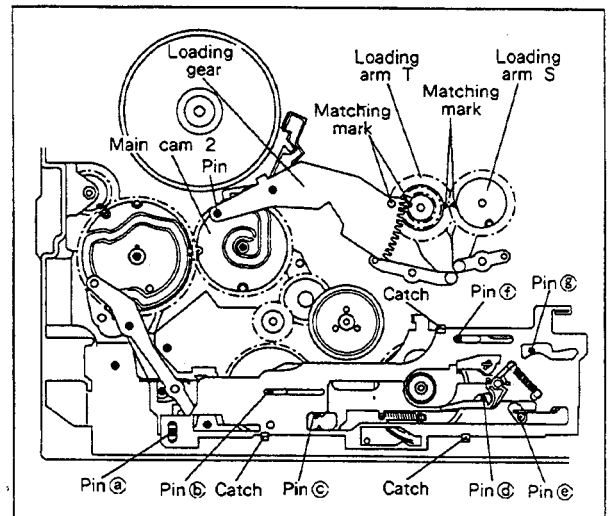


Fig. 2 – 15 – 4 F0D042

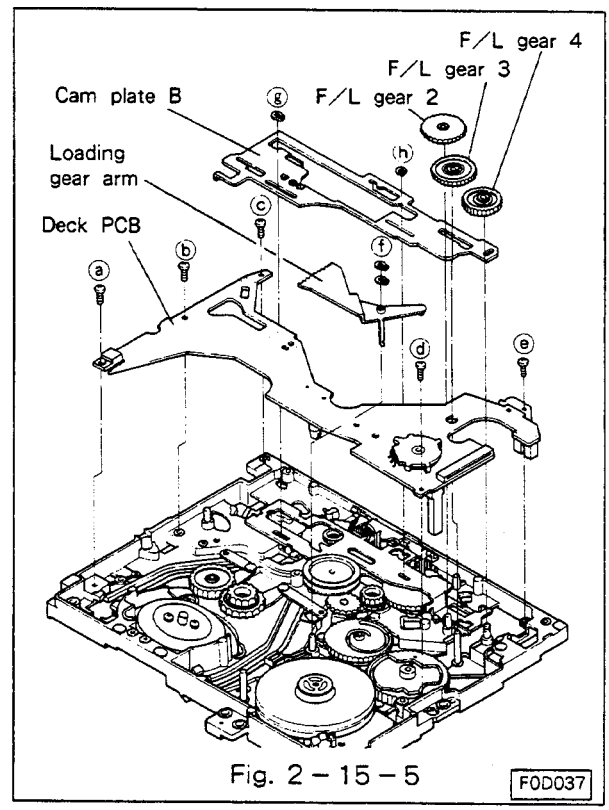


Fig. 2 – 15 – 5 F0D037

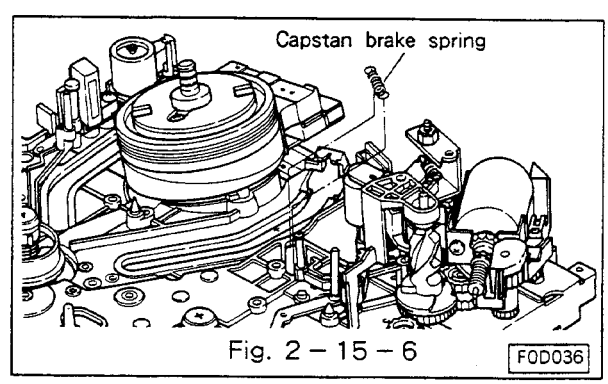


Fig. 2 – 15 – 6 F0D036

2-16 Supply and Takeup Guide Rollers

2-16-1 Removal (Refer to Fig. 2-16.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Loosen the set screw to such a degree as the guide roller turns lightly.
C. Loosen the guide roller height adjusting screw located at the top of the guide roller by turning counterclockwise with the height adjusting screwdriver. Raise and remove the roller from the tape guide.

2-16-2 Installation (Refer to Fig. 2-16.)

A. Make certain that the fastening thread section of a new guide roller is provided with a rubber ring.
B. Set the new guide roller in the tape guide fastening hole.
C. Turn the guide roller slowly clockwise till it becomes heavy.
D. Turn further about 1/6 turns from a point where the guide roller becomes heavy, and return the roller about one turn counter-clockwise.
E. Again turn the guide roller slowly clockwise till it becomes heavy. Turn the roller further about 1/6 turn from the point where the roller becomes heavy.
F. Secure the guide roller lightly with the set screw. Check and adjust the envelope as in Para. 3-2.

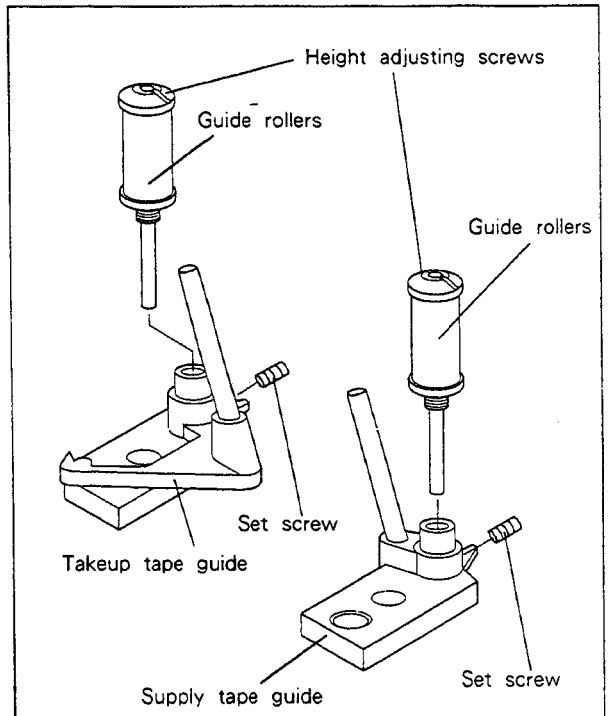


Fig. 2 – 16 F0D043

2-17 Supply and Takeup Tape Guide Assemblies

Note :
Refer to section 3-2-7 and 3-3-3 before replacing the supply or takeup tape guide assemblies.

2-17-1 Removal (Refer to Fig. 2-17-1~2-17-4.)

A. Remove the cassette housing as in Para. 2-1-1.
B. Detach the capstan brake spring from the capstan brake and the loading gear arm.
C. Remove the reel belt. (Refer to Fig. 2-5.)
D. Secure the tension arm and the tension regulation arm S with a rubber band etc. so as to separate them from the supply guide roller.

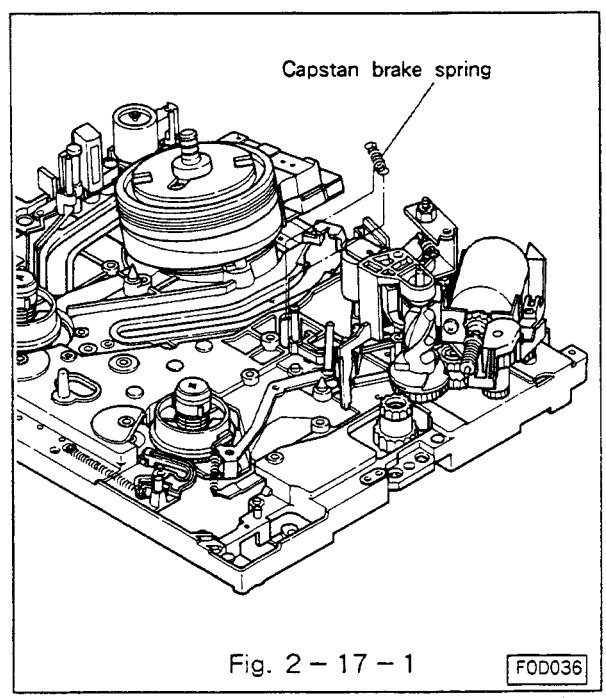


Fig. 2 – 17 – 1 F0D036

E. Remove the grip ring and remove the loading gear arm.(Refer to Fig. 2-17-2.)
F. Turn the loading arm S and T to the loading position.(Refer to Fig. 2-17-2.)
G. Unfasten the clamp shown in Fig. 2-17-3, and remove the loading arm S.
H. Remove the loading arm T further in case of replacing the takeup guide assembly.
I. Unfasten the clamp of the slider which secures the supply or takeup tape guide assembly , and remove the tape guide assembly and the slider from the main plate. (Refer to Fig. 2-17-4.)

2-17-2 Installation (Refer to Fig. 2-17-1~2-17-4.)

A. Place a new tape guide assembly on the installation rail of the main plate and install the slider on the reverse side of the main plate so that the catch of the slider enters the fastening hole of the tape guide assembly.
B. If the takeup tape guide is replaced, install the loading arm T at first.(Refer to Fig. 2-14-2.)
C. Install the loading arm T so that the matching mark of the loading arm S is lined with the matching mark of the loading arm T as illustrated in Fig. 2-17-2.
D. Line the matching mark of the loading gear arm with that of the loading arm T, and assemble the loading gear arm to the shaft so that the pin of the loading gear arm enters the groove of the main cam 2. Secure the loading gear arm with two grip rings.
E. Install the reel belt.(Refer to Fig. 2-5.)
F. Fasten the capstan brake spring to the capstan brake and the loading gear arm from the top side of the deck.(Refer to Fig. 2-17-1.)
G. Install the cassette housing as in Para. 2-1-2.

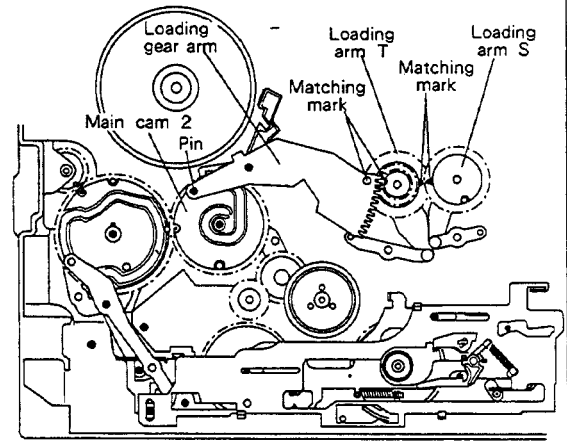


Fig. 2 – 17 – 2 F0D044

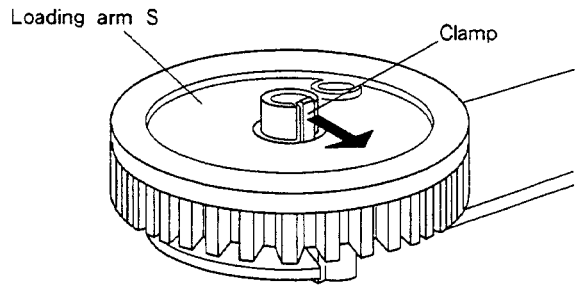


Fig. 2 – 17 – 3 F0D045

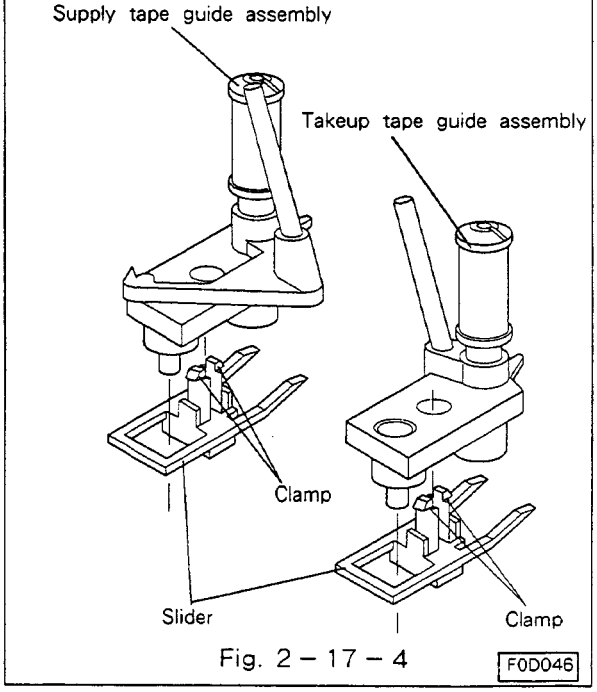


Fig. 2 – 17 – 4 F0D046

3. Interchangeability Adjustment of Mechanism

Note :
Tracking may need to be preset in the interchangeability adjustment of the mechanism. Digital tracking should be pre-setted. To preset, short circuit TP8X and TP8Y on the PCB TIMER.

Note :
The adjustment is conducted in the playback mode, using the stair step signal of the alignment tape, connect an oscilloscope to TP2A and external Trig. to TP2H, unless otherwise specified.

3-1 Adjustment of Back Tension and Tension Pole Position (Refer to Fig. 3-1.)

Run a blank tape for several minutes to break in the reel disks and the transport before beginning the adjustment.

A. Set the back tension measuring jig and set the VCR to the playback mode.
B. When the running of the tape becomes steady, make certain that the tension arm check hole is within the M/P hole of the main plate (0 ± 0.5mm) or the interval between the centre of tension pole and the centre of Supply guide pole is 2 ± 0.5mm.
C. If neither the centre of Tension pole nor the tension arm check hole is in position, loosen the T band holder fastening screw lightly and move the T band holder so that the condition specified by the para.B is satisfied.
D. On completion of adjustment, tighten the T band fastening screw.
E. Make certain that the reading of the back tension measuring jig is 50 ± 6g-cm.
F. When the running of the tape is steady, check visually to make certain that the deflection of the Tension pole is 1mm or less.

Note :
Slight fluctuation of back tension may be tolerated, however if fluctuation exceeds 5g-cm, the reel disk etc. may be defective. Examine and correct the defect.

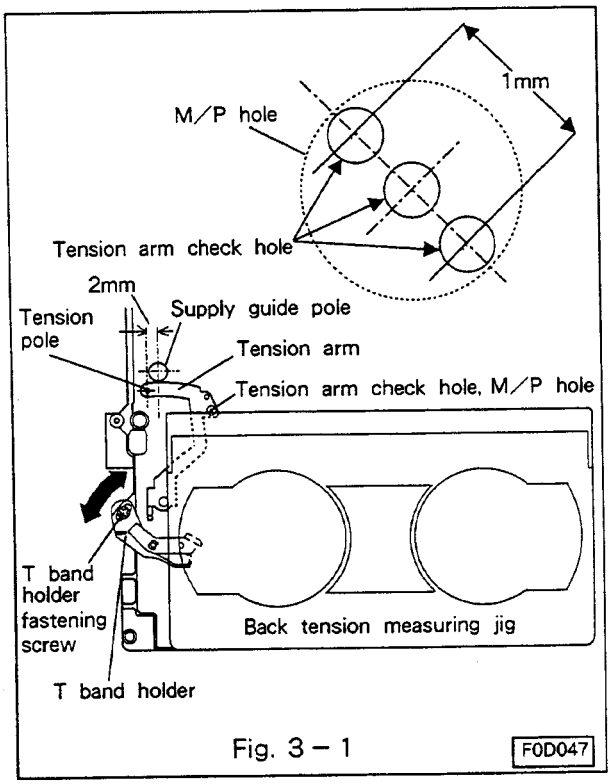


Fig. 3 – 1 F0D047

3-2 Check and Adjustment of FM Envelope

3-2-1 Guide Roller Adjustment (Refer to Fig. 3-2-1.)

A. Set the VCR to the playback mode.
B. Preset tracking.
C. Check if the FM waveform is flat like A shown in Fig. 3-2-1.
D. Adjust the height of the supply guide roller as in 3-2-2 if the leading portion (the entry side of the drum) of the FM waveform is not flat like B or C.
Adjust the height of the takeup guide roller as in 3-2-3 if the trailing portion (the exit side of the drum) is not flat like D or E.

3-2-2 Adjustment of Supply Guide Roller Height (Refer to Fig. 3-2-1, 3-2-2.)

A. Loosen the set screw to such a degree as the supply guide roller turns lightly.(Refer to Fig. 3-2-2.)
B. The supply guide roller is low if the leading portion (the entry side of the drum) of the FM waveform is like B, and high if like C. Adjust the height of the roller by turning the adjusting screw at the top of the roller so that the FM waveform shall be flat like A.
- Turn the adjusting screw counterclockwise if the roller is low.
- Turn the adjusting screw clockwise if the roller is high.

C. Carry out the coarse adjustment of phase as in 3-2-4.

3-2-3 Adjustment of Takeup Guide Roller Height (Refer to Fig. 3-2-1, 3-2-2.)

A. Loosen the set screw to such a degree as the takeup guide roller turns lightly.(Refer to Fig. 3-2-2.)
B. The takeup guide roller is low if the trailing portion (the exit side of the drum) of the FM waveform is like D, and high if like E. Adjust the height of the roller by turning the adjusting screw at the top of the roller so that the FM waveform shall be flat like A.
- Turn the adjusting screw counterclockwise if the roller is low.
- Turn the adjusting screw clockwise if the roller is high.

C. On completion of height adjustment, adjust the azimuth and height of the A/C head as in 3-3-2.
D. Coarsely adjust the phase as in 3-2-4.

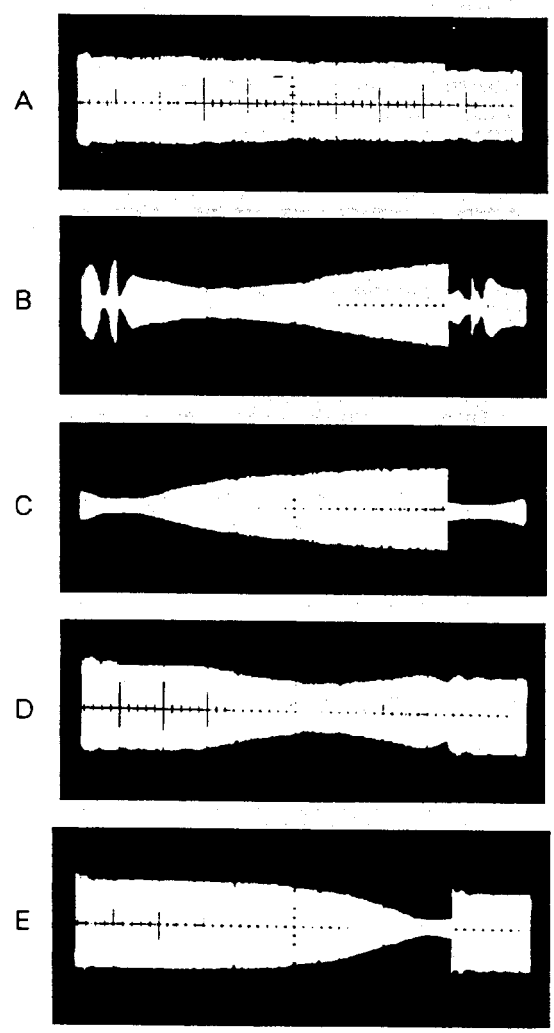


Fig. 3 – 2 – 1 F0D048~052

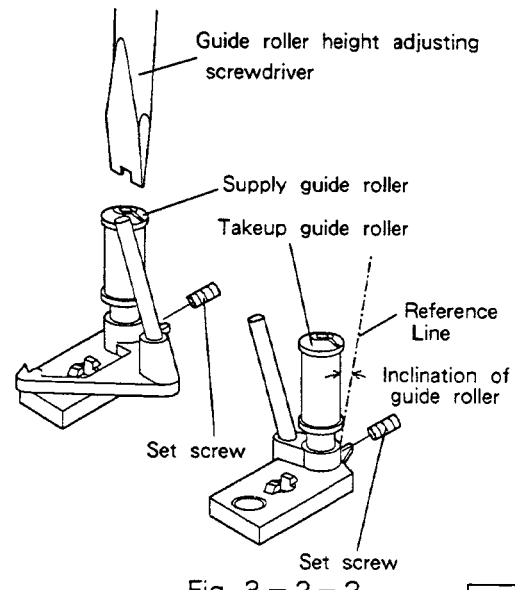


Fig. 3 – 2 – 2 F0D053

3-2-4 Coarse Phase Adjustment (Refer to Fig. 3-2-3, 3-2-4.)

A. Set the VCR to the playback mode.
B. Preset tracking.
C. Check the FM waveform after checking and adjusting the guide rollers.
D. If the amplitude of the FM waveform is narrow like F because of out of phase, adjust the phase adjusting nut so that the amplitude of the FM waveform shall be maximum.

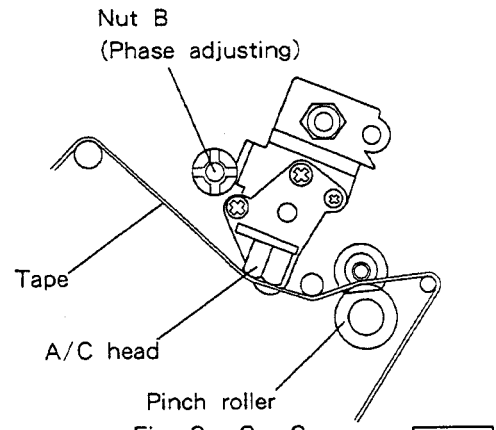
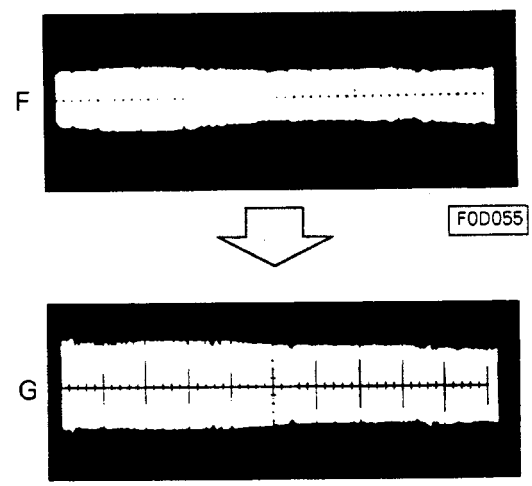


Fig. 3 – 2 – 3 F0D054

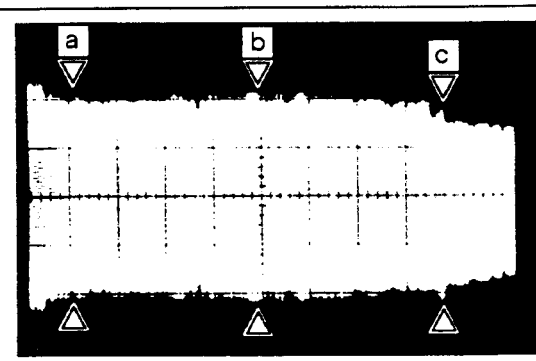


F0D055

Fig. 3 – 2 – 4 F0D056

3-2-5 Check of FM Waveform Flatness (Refer to Fig. 3-2-5.)

A. Set the VCR to the playback mode.
B. Set the tracking switch to the manual mode. Vary tracking and check if the amplitude changes while the waveform remains flat.
C. Adjust tracking in the manual mode so that the amplitude shall be maximum, and adjust the oscilloscope so that the amplitude shall be '5' on the scale of the oscilloscope.
D. Adjust tracking so that the amplitude at the middle (around the point 'b') of the FM wave form is about 80% ('4' on the scale of the scope) of the maximum amplitude. Make certain that the amplitudes around the points 'a' and 'c' satisfy the requirements given in Fig. 3-2-5.
E. If deviating from the requirements, conduct the check and adjustment of the FM envelope as in 3-2 from beginning.



a	c
At least 2.8 of the scale	At least 2.8 of the scale

Fig. 3 – 2 – 5 F0D057

3-2-6 Check 1 : Tape Running Condition on Guide Rollers (Refer to Fig. 3-2-6.)

A. Set the VCR to the playback mode.
B. Visually check if there is a space between the tape and the lower flange of the supply and the take up guide roller.
C. If not, replace the tape guide as in 3-2-7.
Note :
In this case the tape guide should be replaced with the tape guide which has a larger inclination.
D. If the supply tape guide is replaced, check the guide roller as in 3-2-1.
If the take up tape guide is replaced, check the guide roller as in 3-2-3, and the waveform flatness as in 3-2-5
E. Load and unload the tape several times to make certain that the flatness of the FM waveform dose not change.
F. If changes occur, check the A/C arm shaft for looseness.
If not free, replace the A/C arm and adjust the audio/control head as in 3-3.

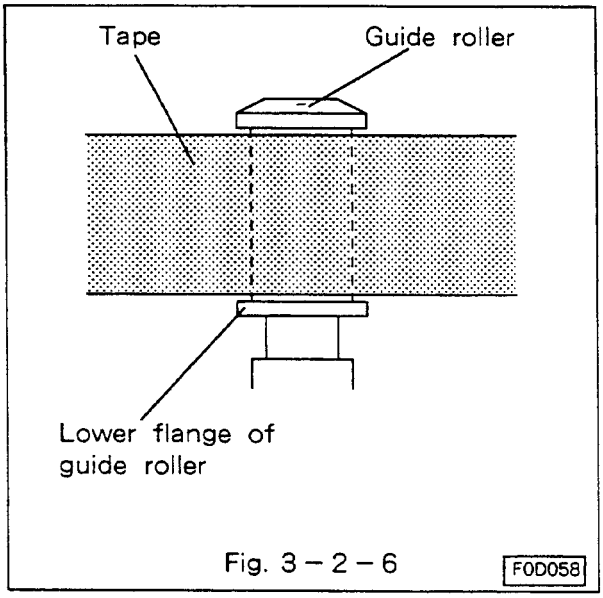


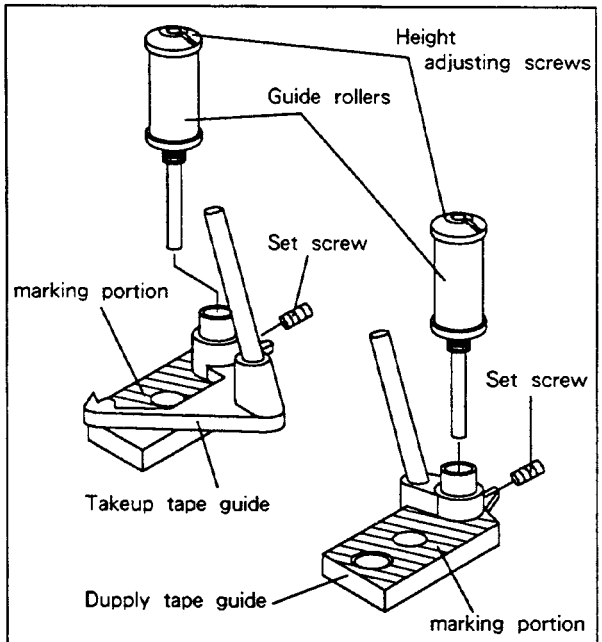
Fig. 3 – 2 – 6 F0D058

3-2-7 Replacement of Tape Guides

A. Identify the Item Number of the tape guide to be replaced. This is done by observing the marking present on the die-cast portion of the tape guide base, and comparing that marking to Fig. 3-2-7.
B. If the Item Number of the tape guide presently installed is a '2', replace the guide with an Item Number '1' guide. (Part No. 635B059010)
C. If the Item Number of the present tape guide is a '1', replace the guide with an Item Number '3' guide.
D. If the Item Number of the present tape guide is a '3', replace the guide with other Item Number '3' guide.
E. Once the tape guide is replaced, resume alignment starting with 3-2-1.

3-2-8 Check 2 : Tape Running Condition on Guide Rollers

A. Set the VCR to the playback mode.
B. Press the head of the supply guide roller and the take up guide roller lightly, and release the roller. Check if the FM waveform is quickly restored to the previous level.
C. If the FM waveform is not restored quickly, replace the tape guide as in 3-2-7.
D. If the supply tape guide is replaced, check the guide roller as in 3-2-1.
If the takeup tape guide is replaced, check the guide roller as in 3-2-1, and check the FM waveform as flatness as in 3-2-5
E. If satisfactory, tighten the set screw of the guide roller on the supply side and the take up side.



Identification of Tape Guide Item Number
(Example ; Parts No. 635B059010)
Item No.

Item No.1	No marking
Item No.2	Marked with black magic marker
Item No.3	Marked with red magic marker

※The marking point is marked in oblique line portion shown in figure above.

Fig. 3 – 2 – 7

3-3 Adjustment of Audio/Control Head

3-3-1 Adjustment of A/C Head Slant (Refer to Fig. 3-3-1.)

A. Play back a blank tape.
B. Turn the screw C slowly clockwise to crease the bottom edge of the tape slightly by the lower flange of the takeup guide pole.
C. Turn the screw C slowly counterclockwise to eliminate the crease of the bottom edge of the tape.
D. Turn the screw C slowly clockwise again and stop turning just before the tape is creased.

3-3-2 Adjustment of A/C Head Azimuth and Height (Refer to Fig. 3-3-1~3-3-3.)

A. Using stair step signal of alignment tape, connect an oscilloscope to the audio output terminal and set the VCR to the playback mode.
B. Turn the nut A (height adjusting) and the screw B (azimuth adjusting) so that the audio output level shall be maximum.
C. Turn the A/C head counterclockwise and release it to make certain that the audio output level does not change.
D. If the level changes, check if the A/C arm shaft is loose. If not free, replace the A/C arm and adjust the slant of the A/C head as in 3-3-1 and the azimuth and height of the A/C head from beginning.
E. Apply a force lightly to the A/C head shaft in the direction of A and A' of the arrow shown in Fig. 3-3-3 to make certain that the audio output level remains at maximum level and does not change.
F. If the level changes, turn the nut A (height adjusting) so that the audio output level shall be maximum. Apply a force lightly to the A/C head shaft in the direction of B and B' of the arrow shown in Fig. 3-3-3 and adjust so that the sound output level shall be maximum.
G. Check the sound output level in the playback mode to make sure that the fluctuation of the level is less than 2dBp-p.
H. If the fluctuation exceeds 2dBp-p, adjust the slant of the A/C head and the azimuth and height of the head.
I. If this is still not satisfactory, replace the takeup tape guide as outlined in 3-3-3.
Note :
In this case the tape guide should be replaced with a guide which has less inclination.
J. On completion of the above adjustment, adjust phase as in 3-4.

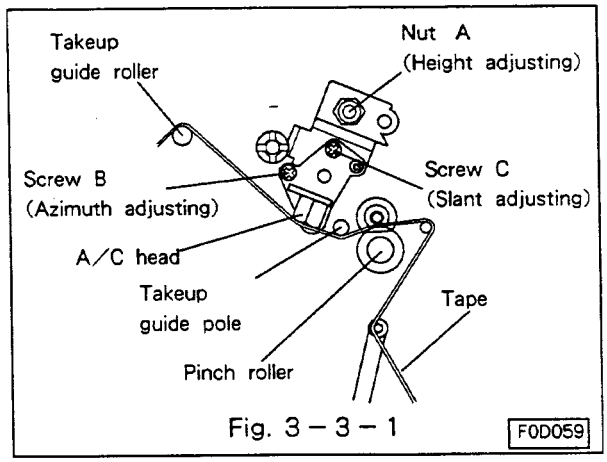


Fig. 3 – 3 – 1 F0D059

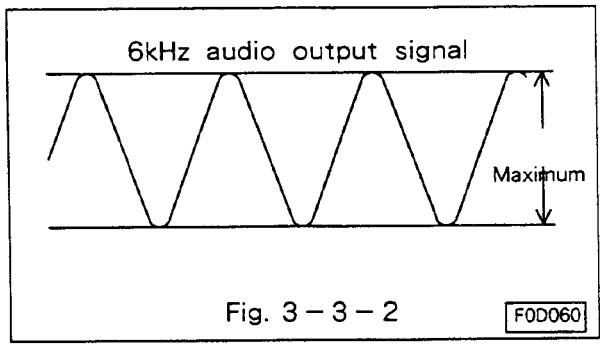


Fig. 3 – 3 – 2 F0D060

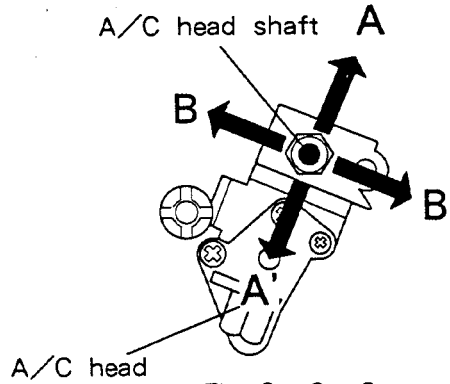


Fig. 3 – 3 – 3 F0D061

Identification of Tape Guide Item Number
(Example ; Parts No. 635B0600[1]0)
Item No.

Item No.1	No marking
Item No.2	Marked with black magic marker
Item No.3	Marked with red magic marker

※The marking points are marked in the tops of the Takeup and Supply tape guides.(Refer to Fig. 3 – 2 – 7)

Fig. 3 – 3 – 4

3-3-3 Replacement of Tape Guides

A. Identify the Item Number of the Tape Guide to be replaced. This is done by observing the marking present on the die-cast portion of the Tape Guide base, and comparing that marking to Fig. 3-3-4.
B. If the Item Number of the tape guide presently installed is a '3', replace the guide with an Item Number '1' guide.
C. If the Item Number of the present tape guide is a '1', replace the guide with an Item Number '2' guide.
D. If the Item Number of the present tape guide is a '2', replace the guide with other Item Number '2' guide.
E. Once the tape guide is replaced, resume alignment starting with 3-2-1.

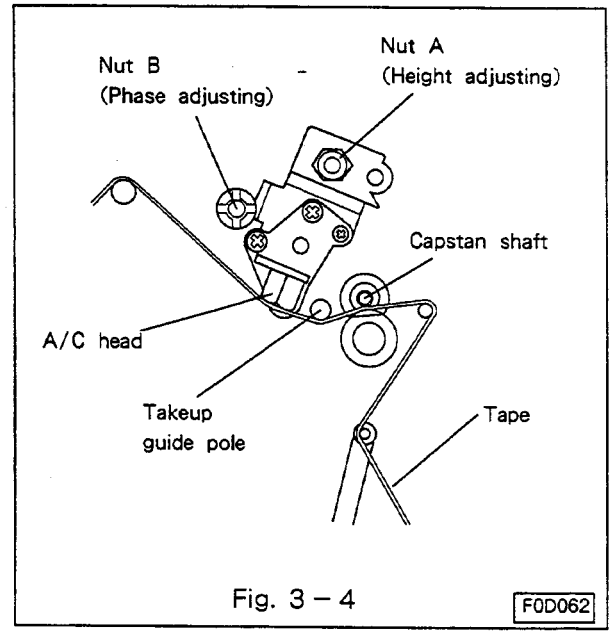


Fig. 3 – 4 F0D062

3-4 Phase Adjustment (Refer to Fig. 3-4.)

A. Set the VCR to the playback mode.
B. Preset tracking.
C. Turn the phase adjusting nuts to make the amplitude of the FM waveform maximum.
Note :
Do not turn the phase adjusting nut exceeding one turn in either direction.
D. Turn the A/C head counterclockwise and return to make sure that the amplitude of the FM waveform is the same as that before turning the head.
E. If the amplitude changes, check the A/C arm shaft if loose. If not free, replace the A/C arm and adjust the A/C head as in 3-3 and the phase as in this section from beginning.
F. Load and unload the tape several times to make certain that the amplitude of the FM waveform does not change.

3-5 Adjustment of Takeup Guide Arm Height (Refer to Fig. 3-5.)

A. Run a final portion of E-240 blank tape in the reverse search mode.
B. Adjust the height of the takeup guide pole by turning the height adjusting nut so that the tape shall not be creased at the upper and the lower flange portion of the take up guide pole.
Note :
Set the adjusting nut in the screwing-in direction.
Do not turn the nut exceeding one turn in either direction.
C. Eject the cassette tape and set to the reverse search mode again to make certain that the tape is not creased at the upper and the lower flange portion of the takeup guide pole.
D. Set to the playback mode and be sure that the tape is not creased at the upper and the lower flange portion of the takeup guide pole.

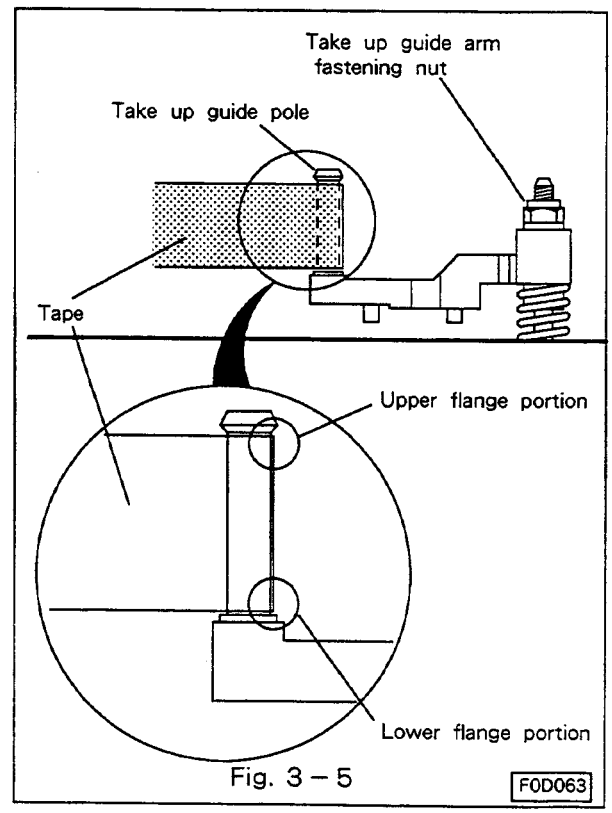


Fig. 3 – 5 F0D063

KEY TO ABBREVIATIONS

A/C : Audio/Control
ACC : Automatic Colour Control
A.E : Audio Erase
AFC : Automatic Frequency Control
AFT-D : Automatic Fine Tuning Door Switch
AGC : Automatic Gain Control
AL : After Loading
AMP : Amplifier
ANT : Antenna
A-PB : Audio-Playback
A-REC : Audio-Recording
ALC : Automatic Level Control

BPF : Band-Pass Filter
B/W : Black and White
BS : Band SW

CASS : Cassette
CP : Capstan
CP-FG : Capstan-Frequency Generator
CP-F/R : Capstan-Forward/Reverse
CP-M : Capstan-Motor
CONV : Converter
CTL : Control
C-LAMP : Cassette Lamp
C-I LAMP : Cassette Indicator Lamp

DAL : Delay-After Loading
DEMOD : Demodulator
DET : Detector
DL : Delay Line
DL-REV : Delay Reverse
DL-FWD : Delay Forward
DOC : Drop Out Compensator

EF : Emitter Follower
EMPHA : Emphasis
EQ : Equalizer
EE : Electronic-Electronic
ES : End Sensor

FE-H : Full Erase Head
FF : Flip Flop or Fast Forward
FG : Frequency generator
FL-SW : Front Loading SW
FLM : Front Loading Motor
F/R-SW : FF/Rewind Switch

G : Ground

HE-1 : Hall Element-1
HE-2 : Hall Element-2
H-LED : Humidity-LED
H-SENS : Humidity-Sensor
HPF : High-Pass Filter

LIM : Limiter
LPF : Low-Pass Filter
LM : Loading Motor

MDA : Motor Drive Amplifier
MC : Mechanical Control
MIC : Microphone
MOD : Modulator

OPE : Operation
OSC : Oscillator

PB : Play Back
PG : Pulse Generator
P/R-SW : P.B/REC-SW
PCB : Printed Circuit Board
PIC : Picture Control

REC : Recording
REF : Reference
RIS : Record Inhibit Switch
REW : Rewind
REG : Regulator
RS : Reverse Search

SENS : Sensor
SM : Supply Motor
S/P : Still/Pause
SS : Speed Search
STBY : Stand By
S & H : Sample & Hold
SYNC SEP : Sync Separator

TM : Take up Motor
T-REC : Timer-Recording
T.P : Test Point
TR : Transistor
TU-P : Tuner-Power

UL : Unloading

VS : Voltage Synthesizer
V.SYNC : Vertical Sync
VCO : Voltage Controlled Oscillator
VXO : Variable Crystal Oscillator

W/D : White/Dark

X'OSC : Crystal Oscillator

Y/C : Luminance/Chrominance

SURFACE MOUNT PARTS REPLACEMENT

SURFACE MOUNT PARTS REPLACEMENT

Some resistors, shorting jumpers (0Ω resistor), ceramic capacitors, transistors and diodes are chip parts which are used for certain circuit elements. When replacing these parts, note the cautions as follows.

Cautions:

A. Use fine tipped, well insulated soldering pencil (iron) about 30 watts and the tweezers.
B. Melting the solder, remove the Chip Parts carefully not to tear off the copper foil of the printed circuit board.
C. Discard removed chips; do not reuse them.
D. Do not apply heat for more than 3 seconds to the new chip Parts.
E. Avoid using a rubbing stroke when soldering.
F. Take care not to scratch when soldering, or damage the Chip Parts.
G. Supplementary cementing is not required.

1 Removal of chip Parts (Resistors, capacitors, etc.)

A. Grasp the part with tweezers. Melting the solder at both side alternately, remove the one side of the part with a twisting motion.
B. Melt the solder at the other side and remove the part.

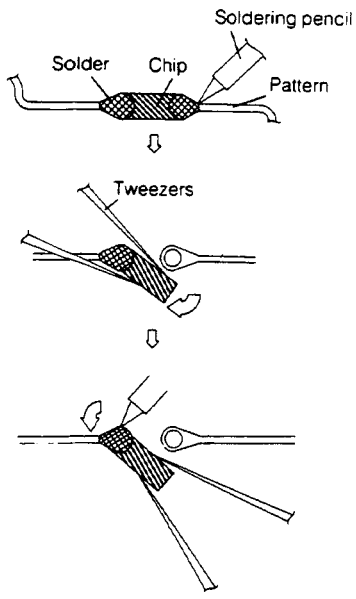


Fig. 1

2 Removal of Chip Parts (Transistors)

A. Melting the solder of one lead, Lift the side of that lead upward.
B. Simultaneously melt the solder of the two remaining leads and lift the part to remove.

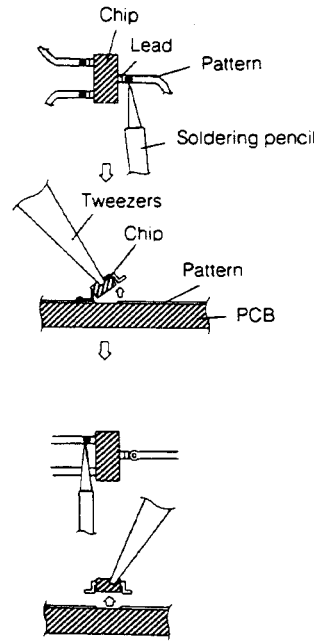


Fig. 2

3 Replacement

A. Presolder the contact points of the circuit pattern.
B. Press the part downward with tweezers and apply the soldering pencil as shown in the figure.

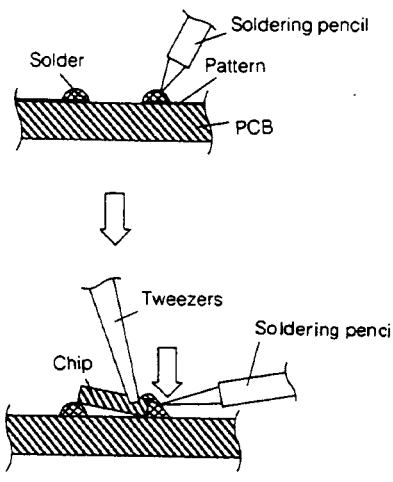
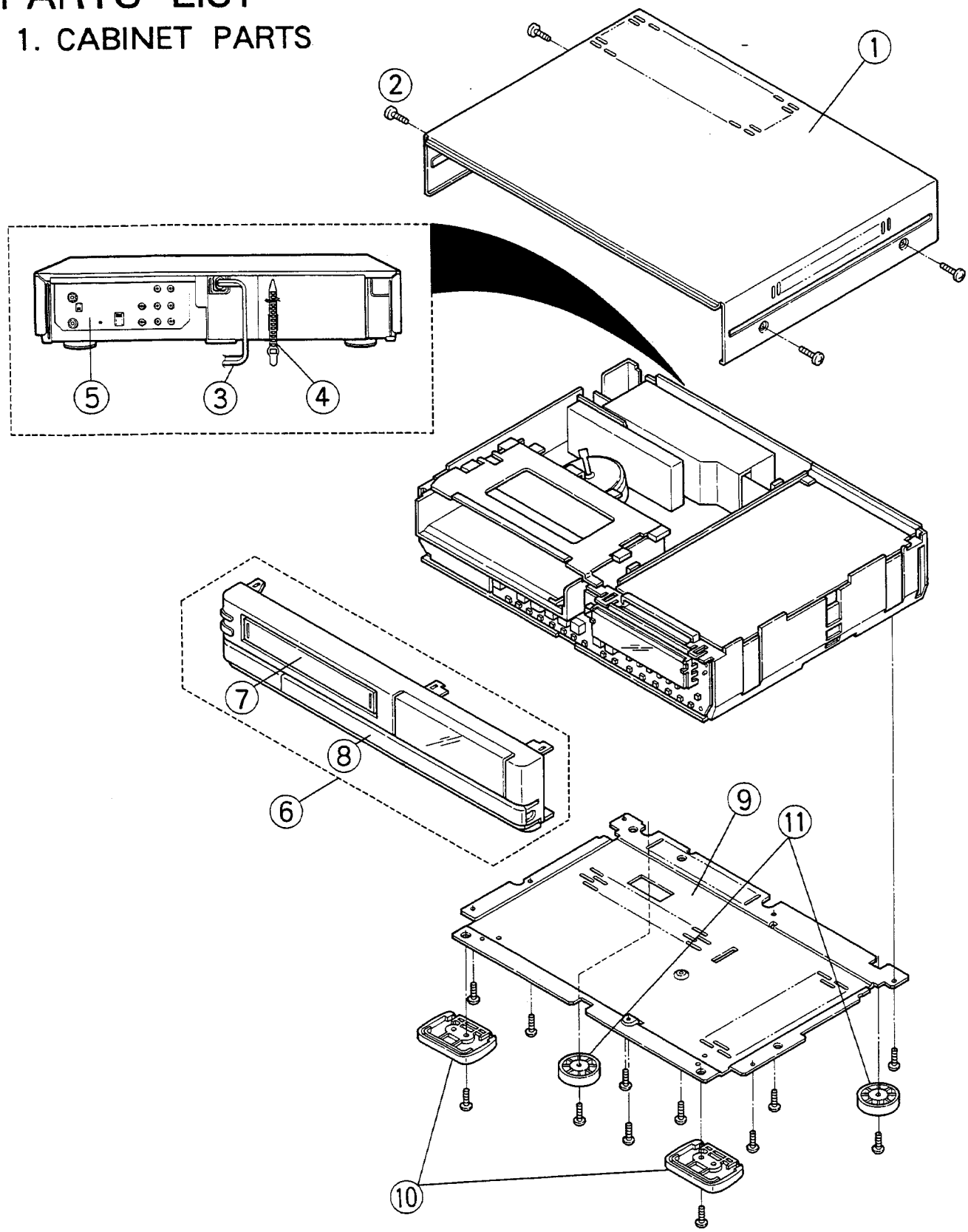


Fig. 3

MEMO

PARTS LIST

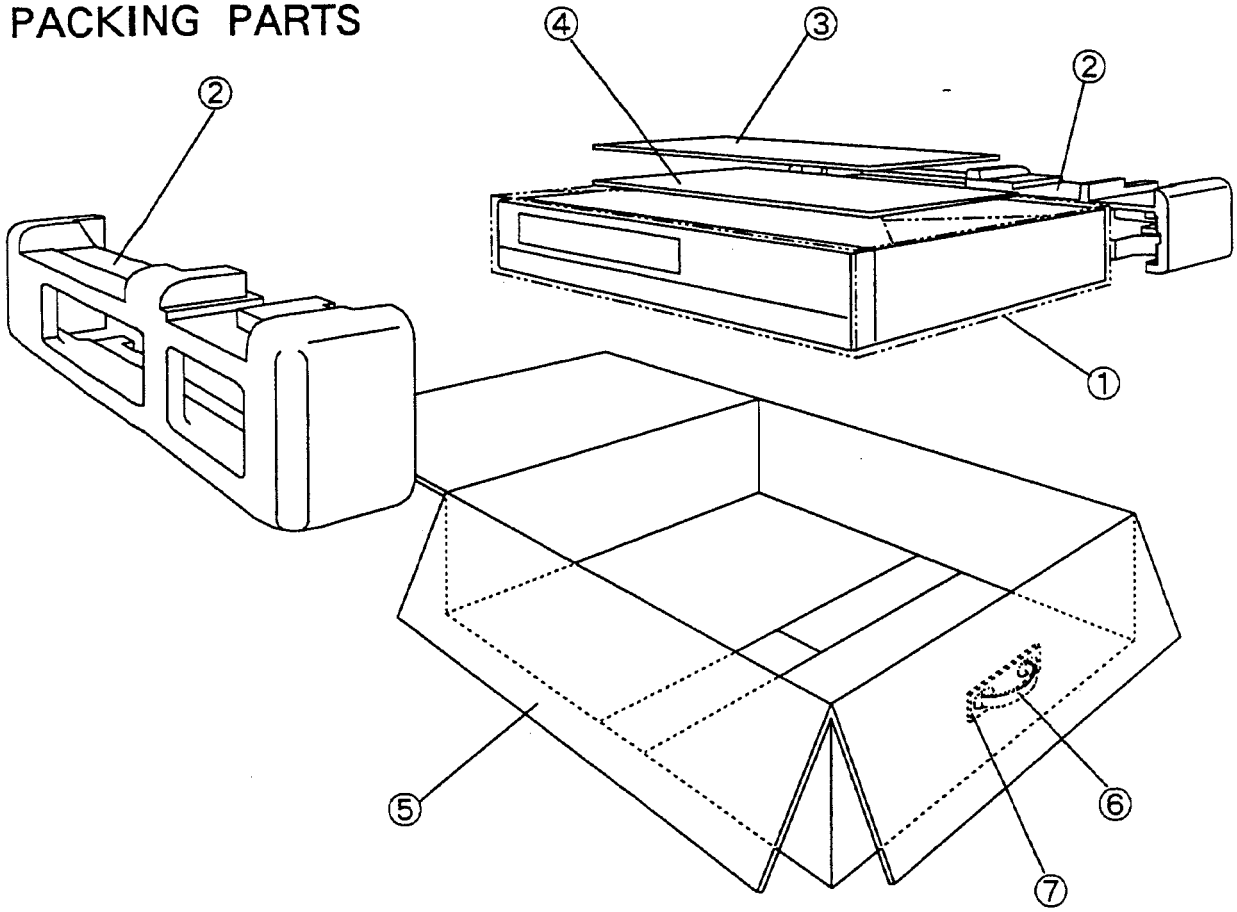
1. CABINET PARTS



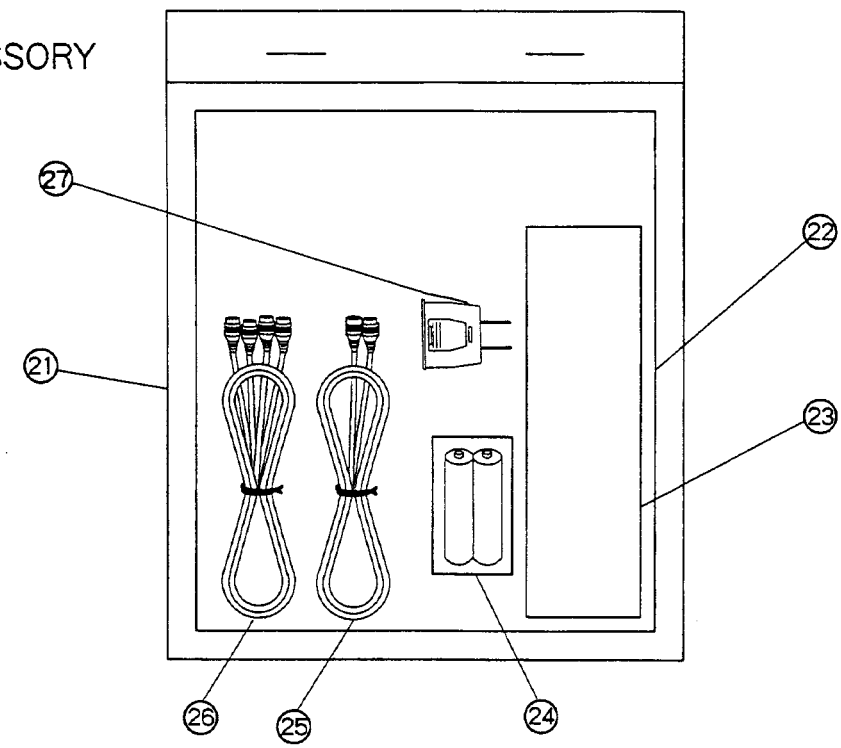
NOTE :
Broken AC power cord must be exchanged with a new original cord.

ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		CABINET ASSEMBLY	
1	968C020040	TOP COVER ASSY	
2	669D223080	SCREW (10P)	
3	246C149010	AC POWER CORD	
4	621C027010	CORD BAND	
5	761B223020	ANTENNA COVER	[MS5]
5	761B223010	ANTENNA COVER	[MS7]
6	701B213090	FRONT UNIT	[MS5]
6	701B213080	FRONT UNIT	[MS7]
7	702B731060	CASSETTE DOOR	
8	702C897090	DOOR PANEL	[MS5]
8	702C897080	DOOR PANEL	[MS7]
9	590A267010	BOTTOM PANEL	
10	771C101010	INSULATOR-F	
11	771C086020	INSULATOR-R	

2. PACKING PARTS



ACCESSORY



ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		PACKING PARTS	
1	831D190030	PACKING SHEET	
2	803A226010	PACKING CUSHION	
3	----------	ACCESSORY-A	
4	----------	ACCESSORY-B	
5	801C059060	PACKING CASE	[MS5]
5	801C059050	PACKING CASE	[MS7]
6	829D094020	QUICK HAND	
7	829D129010	STOPPER	
	831D198020	PACKING BAG (FOR AC POWER CORD)	
		ACCESSORY – A	
	872C050050	INSTRUCTION BOOK	[MS5]
	872C050040	INSTRUCTION BOOK	[MS7]
	851B545010	SHEET CAUTION DEW	
		ACCESSORY – B	
21	831D181020	PACKING BAG	
22	829C054070	PACKING SHEET	
23	939P447010	REMOTE HAND UNIT	[MS5]
23	939P447020	REMOTE HAND UNIT	[MS7]
24	----------	BATTERY	
25	242D231030	CABLE (1.5M)	
26	242C938010	CABLE (2P)	[MS7]
27	451C072010	JACK AC	

3. ELECTRICAL PARTS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
INTEGRATED CIRCUITS				
IC 311	272P400010	IC	NJM2233BL	[MS5]
IC101	266P192010	IC	LA7910	
IC102	272P270010	IC	LA7212	
IC201	272P221020	IC	XRA7254S	
IC2A0	272P232020	IC	BA7255BS	
IC2A1	272P265010	IC	BA7021	
IC2A2	272P390010	IC	BA7604	
IC2A3	272P402010	IC	NJM2243L	
IC2H0	272P274010	IC	TL8709P	
IC2J0	272P565020	IC	TL8812P	
IC2X1	272P325020	IC	NJM2235S	
IC310	272P234010	IC	LA7295	
IC3A0	272P378020	IC	BA7740S	[MS7]
IC3301	272P390010	IC	BA7604	[MS7]
IC3304	272P488010	IC	BA7703K1	[MS7]
IC4A0	263P415050	IC	MN67492MSG3	
IC4A1	272P237010	IC	LA6324N	
IC4A2	272P235010	IC	TA7291S	
IC501	263P610010	IC	M50455-090SP	
IC5A0	263P562020	IC	M37420M6-475SP	
IC5A1	263P030020	IC	TC4030BP	
IC5Z0	274P005010	IC	M34225M2-125SP	
IC5Z1	266P419010	IC	M5223P	[MS7]
IC6A0	272P271030	IC	LA7333	
IC6A1	272P233030	IC	LA7312A	
IC6A2	272P316020	IC	BA7107F	[MS7]
IC6A3	272P277010	IC	BA7025L	
IC6A4	272P494010	IC	M52063SP	
IC6A8	263P653030	IC	MC14053BF	
IC6A9	263P653030	IC	MC14053BF	
IC8A0	263P559010	IC	μPD75217GF-563-3BE	
IC8A1	263P170020	IC	CAT35C102P/S-292	
IC8A2	266P010020	IC	μPC574J-K	
IC901	267P107010	IC	STR- D6009E	
IC902	267P062040	IC	SE012N	
IC903	267P076010	IC	SI-3120C	
IC904	267P076050	IC	SI-3050CA	
TRANSISTORS				
	268P045010	PHOTO INTERRUPTER	GP1L52	[MS5]
Q 01	260P804020	CHIP TRANSISTOR	2SC3052-F	
Q 02	260P807010	CHIP TRANSISTOR	DTC124K	
Q 101	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 102	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 201	260P356010	TRANSISTOR	2SC1906	[MS7]
Q 208	260P817030	CHIP TRANSISTOR	2SA1037K	
Q 210	260P807010	CHIP TRANSISTOR	DTC124K	[MS7]
Q 2A0	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 2A1	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 2A2	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2A3	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2A4	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2A5	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2A6	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 2A7	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2A8	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 2A9	260P562040	TRANSISTOR	2SA952-K	
Q 2B0	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2B1	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2B2	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2B3	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2B4	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 2B5	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 2B6	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 2B7	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2B8	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2B9	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2C0	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2C1	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2C5	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2C7	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2D1	260P559050	TRANSISTOR	2SC1740S-E	
Q 2J0	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2J1	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2J2	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 2J3	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2J4	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2J5	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2J6	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2J7	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2J8	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 2N1	260P807010	CHIP TRANSISTOR	DTC124K	
Q 2N2	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 310	260P629060	TRANSISTOR	2SC3331-S, T, U	
Q 311	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 3A0	260P817030	CHIP TRANSISTOR	2SA1037K	[MS7]
Q 3301	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3302	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3303	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3304	260P559060	TRANSISTOR	2SC1740S-S, E	[MS7]
Q 3305	260P559060	TRANSISTOR	2SC1740S-S, E	[MS7]
Q 3307	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 3308	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3309	260P603010	TRANSISTOR	DTA124ES/UN4112	[MS7]
Q 3310	260P603010	TRANSISTOR	DTA124ES/UN4112	[MS7]
Q 3311	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 3312	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 3313	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 3314	260P559060	TRANSISTOR	2SC1740S-S, E	[MS7]
Q 3315	260P559060	TRANSISTOR	2SC1740S-S, E	[MS7]
Q 3405	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3406	260P559040	TRANSISTOR	2SC1740S-R, S	[MS7]
Q 3409	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 4A0	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 4A2	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 4A3	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 4A4	260P560040	TRANSISTOR	2SA933S-S	
Q 4A5	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 4A7	260P560010	TRANSISTOR	2SA933S-R, S	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
Q 4A8	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 501	260P560010	TRANSISTOR	2SA933S-R, S	
Q 502	260P632010	TRANSISTOR	DTC124ES	
Q 503	260P560010	TRANSISTOR	2SA933S-R, S	
Q 504	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 506	260P560010	TRANSISTOR	2SA933S-R, S	
Q 507	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 508	260P632010	TRANSISTOR	DTC124ES	
Q 509	260P559030	TRANSISTOR	2SC1740S	
Q 510	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 511	260P632010	TRANSISTOR	DTC124ES	
Q 512	260P632010	TRANSISTOR	DTC124ES	
Q 513	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 514	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 571	268P014020	PHOTO TRANSISTOR	PN205L-(NC)	
Q 572	268P014020	PHOTO TRANSISTOR	PN205L-(NC)	
Q 573	268P044010	PHOTO INTERRUPTER	ON2270-R	
Q 574	268P044010	PHOTO INTERRUPTER	ON2270-R	
Q 575	268D013010	PHOTO INTERRUPTER		
Q 5A1	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5A2	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5A3	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 5A4	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 5A5	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 5A7	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 5A8	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5B4	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 5B5	260P559040	TRANSISTOR	2SC1740S-R, S	
Q 5C0	260P632010	TRANSISTOR	DTC124ES	
Q 5C1	260P632010	TRANSISTOR	DTC124ES	
Q 5C2	260P419030	TRANSISTOR	2SC2724-D	
Q 5C3	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5C4	260P356010	TRANSISTOR	2SC1906	
Q 5C5	260P419030	TRANSISTOR	2SC2724-D	
Q 5C6	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5D1	260P632010	TRANSISTOR	DTC124ES	
Q 5D2	260P632010	TRANSISTOR	DTC124ES	[MS7]
Q 5D3	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5D4	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5D5	260P632010	TRANSISTOR	DTC124ES	
Q 5D6	260P632010	TRANSISTOR	DTC124ES	
Q 5D7	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 5H2	260P632010	TRANSISTOR	DTC124ES	
Q 5P0	260P560010	TRANSISTOR	2SA933S-R, S	
Q 5P1	260P560010	TRANSISTOR	2SA933S-R, S	
Q 6A0	260P807010	CHIP TRANSISTOR	DTC124K	
Q 6A2	260P807010	CHIP TRANSISTOR	DTC124K	
Q 6A3	260P807010	CHIP TRANSISTOR	DTC124K	
Q 6A5	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 6A6	260P806010	CHIP TRANSISTOR	DTA124EK	
Q 6A7	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6A8	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6A9	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B0	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B1	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B2	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B3	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B4	260P805030	CHIP TRANSISTOR	2SC3053-D	
Q 6B5	260P356010	TRANSISTOR	2SC1906	
Q 6B6	260P805030	CHIP TRANSISTOR	2SC3053-D	[MS7]
Q 6B7	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 6B8	260P562040	TRANSISTOR	2SA952-K	[MS7]
Q 6B9	260P805030	CHIP TRANSISTOR	2SC3053-D	[MS7]
Q 6C0	260P802020	CHIP TRANSISTOR	2SA 1235-F	
Q 6C1	260P807010	CHIP TRANSISTOR	DTC124K	[MS7]
Q 6C2	260P802020	CHIP TRANSISTOR	2SA 1235-F	[MS7]
Q 6C5	260P805030	CHIP TRANSISTOR	2SC3053-D	[MS7]
Q 8A5	260P560010	TRANSISTOR	2SA933S-R, S	
Q 8A8	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 8M0	260P603010	TRANSISTOR	DTA124ES/UN4112	[MS7]
Q 8M1	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 8M2	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 8M3	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 8M4	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 901	260P613010	TRANSISTOR	2SC4208A	
Q 904	260P613010	TRANSISTOR	2SC4208A	
Q 905	260P630010	TRANSISTOR	2SD2012	
Q 971	260P630010	TRANSISTOR	2SD2012	

DIODES

D 202	264P568010	DIODE	1SS252	
D 2A0	264P568010	DIODE	1SS252	
D 2A1	264P568010	DIODE	1SS252	
D 2A2	264P568010	DIODE	1SS252	
D 2A3	264P568010	DIODE	1SS252	
D 2A4	264P568010	DIODE	1SS252	
D 2A5	264P568010	DIODE	1SS252	
D 2A6	264P568010	DIODE	1SS252	
D 2A7	264P568010	DIODE	1SS252	
D 2A8	264P568010	DIODE	1SS252	
D 2A9	264P568010	DIODE	1SS252	
D 2B0	264P568010	DIODE	1SS252	
D 2B1	264P568010	DIODE	1SS252	
D 2B2	264P568010	DIODE	1SS252	
D 2B3	264P568010	DIODE	1SS252	
D 2B4	264P568010	DIODE	1SS252	
D 2N1	264P568010	DIODE	1SS252	
D 2N2	264P568010	DIODE	1SS252	
D 3301	264P341020	DIODE	HZ11A1	[MS7]
D 3305	264P568010	DIODE	1SS252	[MS7]
D 4A0	264P568010	DIODE	1SS252	
D 4A6	264P568010	DIODE	1SS252	
D 501	264P568010	DIODE	1SS252	
D 502	264P568010	DIODE	1SS252	
D 503	264P568010	DIODE	1SS252	
D 570	264P307020	LIGHT EMITTING DIODE	GL-451	
D 571	264P515010	DIODE	MA165	
D 5A0	264P568010	DIODE	1SS252	
D 5A2	264P342070	DIODE	HZ4C2	
D 5A3	264P568010	DIODE	1SS252	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
D 5A4	264P568010	DIODE	1SS252	
D 5A5	264P568010	DIODE	1SS252	
D 5B4	264P568010	DIODE	1SS252	
D 5B9	264P342080	DIODE	HZ6B1	
D 5C0	264P568010	DIODE	1SS252	
D 5C1	264P568010	DIODE	1SS252	
D 5C5	264P568010	DIODE	1SS252	
D 5C9	264P568010	DIODE	1SS252	
D 5D2	264P568010	DIODE	1SS252	
D 5P0	264P568010	DIODE	1SS252	
D 5P1	264P568010	DIODE	1SS252	
D 5Z0	264P568010	DIODE	1SS252	[MS7]
D 5Z1	264P568010	DIODE	1SS252	[MS7]
D 5Z2	264P568010	DIODE	1SS252	[MS7]
D 5Z3	264P568010	DIODE	1SS252	[MS7]
D 6A1	264P568010	DIODE	1SS252	
D 6A2	264P568010	DIODE	1SS252	
D 6A3	264P568010	DIODE	1SS252	
D 6A4	264P568010	DIODE	1SS252	
D 6A5	264P568010	DIODE	1SS252	
D 6A6	264P568010	DIODE	1SS252	
D 6A7	264P568010	DIODE	1SS252	[MS7]
D 701	264P572010	LIGHT EMITTING DIODE	SEL 2210R	
D 8A0	264P568010	DIODE	1SS252	
D 8A1	264P568010	DIODE	1SS252	
D 8A2	264P568010	DIODE	1SS252	
D 8A3	264P568010	DIODE	1SS252	
D 8A4	264P568010	DIODE	1SS252	
D 8A5	264P568010	DIODE	1SS252	
D 8A6	264P568010	DIODE	1SS252	
D 8A7	264P568010	DIODE	1SS252	
D 8A8	264P568010	DIODE	1SS252	
D 8A9	264P568010	DIODE	1SS252	
D 8B0	264P568010	DIODE	1SS252	
D 8B1	264P568010	DIODE	1SS252	
D 8B2	264P568010	DIODE	1SS252	
D 8B3	264P568010	DIODE	1SS252	
D 8B9	264P568010	DIODE	1SS252	
D 8C9	264P568010	DIODE	1SS252	
D 8J2	264P568010	DIODE	1SS252	
D 8J3	264P568010	DIODE	1SS252	
D 8J4	264P568010	DIODE	1SS252	[MS5]
D 8M0	264P313060	LIGHT EMITTING DIODE	SLR-34DC3	[MS7]
D 8M1	264P313060	LIGHT EMITTING DIODE	SLR-34DC3	[MS5]
D 8M1	264P313040	DIODE	SLR-34MC3	[MS7]
D 8M2	264P313040	DIODE	SLR-34MC3	
D 8M3	264P313050	DIODE	SLR-34URC3	
D 8M4	264P313050	DIODE	SLR-34URC3	
D 8Z0	264P501040	DIODE	HZ3ALL	
D 8Z1	264P459030	DIODE	RD4.7EB1	
D 8Z2	264P193080	DIODE	MZ309B2/HZ9B24	
D 901	264P598010	DIODE	LB-156	
D 902	264P543030	DIODE	EG01C	
D 903	264P600010	DIODE	EH1	
D 904	264P457050	DIODE	RD3.0EB1	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
D 905	264P521040	DIODE	EU 1A	
D 906	264P521040	DIODE	EU 1A	
D 907	264P521040	DIODE	EU 1A	
D 908	264P358070	DIODE	RU 4AM	
D 909	264P358070	DIODE	RU 4AM	
D 910	264P521040	DIODE	EU 1A	
D 911	264P521040	DIODE	EU 1A	
D 912	264P599010	DIODE	EK04	
D 915	264P465060	DIODE	EQA02-12B	
D 916	264P464040	DIODE	EQA02-10B	
FILTERS				
BF3301	409P371010	BAND PASS FILTER		[MS7]
BF3302	409P356010	BAND PASS FILTER		[MS7]
BPF6A0	409P541010	BAND PASS FILTER		
BPF6A1	409P540010	BAND PASS FILTER		
BPF6A2	409P370010	BAND PASS FILTER	SBP-4029	
BPF6A3	409P421010	BAND PASS FILTER	MYV-30M	
BPF6A4	409P302010	BAND PASS FILTER		[MS7]
BPF6A5	409P302010	BAND PASS FILTER		[MS7]
CF101	299P034030	CERAMIC RESONATOR		
CF5A0	299P118020	CERAMIC RESONATOR	CST8.00MT	
CF5Z0	299P116010	CERAMIC RESONATOR	KBR-4.0MES	
CF6A0	296P098010	CERAMIC FILTER		
DL6A1	337P160010	COMB FILTER	EFD-VR645A45H	
LPF2A0	409P633010	LOW PASS FILTER		
LPF2A1	409P435010	LOW PASS FILTER	SEL 4214	
LPF6A0	409P543010	LOW PASS FILTER		
LPF6A1	409P438010	LOW PASS FILTER	MYV-2A6	
LPF6A2	409P643010	LOW PASS FILTER		[MS7]
DELAY LINES				
DL2A0	409P586010	DELAY EQUALIZER	MZV-56VP	
DL6A0	337P063010	DELAY LINE		
DL6A2	337P155010	DELAY LINE		
COILS				
EQ6A0	332P009010	COIL	BELL 1.1MHz	[MS7]
EQ6A1	332P009010	COIL	BELL 1.1MHz	[MS7]
EQ6A2	409P632010	COIL		[MS7]
L 101	325C111030	PEAKING COIL	10 μH-K	
L 102	321C132030	RF COIL	100MHz+-7.5%	
L 103	321C010010	RF COIL	100 μH-K	
L 201	325C122050	PEAKING COIL	100 μH-K	
L 206	325C166070	PEAKING COIL	22 μH-J	
L 210	325C166070	PEAKING COIL	22 μH-J	
L 211	325C166000	PEAKING COIL	5.6 μH-J	
L 212	325C121000	PEAKING COIL	5.6 μH-K	
L 213	325C122050	PEAKING COIL	100 μH-K	
L 219	325C167040	PEAKING COIL	82 μH-J	
L 220	325C167070	PEAKING COIL	150 μH-J	
L 2A0	325C102050	PEAKING COIL	100 μH-K	
L 2A1	325C167060	PEAKING COIL	120 μH-J	
L 2A3	325C166050	PEAKING COIL	15 μH-J	
L 2A4	325C167030	PEAKING COIL	68 μH-J	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
L 2A5	325C167080	PEAKING COIL	180 μH-J	
L 2A8	325C122050	PEAKING COIL	100 μH-K	
L 2A9	325C167010	PEAKING COIL	47 μH-J	
L 2B0	325C122050	PEAKING COIL	100 μH-K	
L 2B1	325C122050	PEAKING COIL	100 μH-K	
L 2H0	325C162050	PEAKING COIL	100 μH-K	
L 2H1	325C166090	PEAKING COIL	33 μH-J	
L 2H2	325C166090	PEAKING COIL	33 μH-J	
L 2J0	325C162050	PEAKING COIL	100 μH-K	
L 2J1	325C162050	PEAKING COIL	100 μH-K	
L 2J2	325C166090	PEAKING COIL	33 μH-J	
L 2J3	325C166050	PEAKING COIL	15 μH-J	
L 2J4	325C166090	PEAKING COIL	33 μH-J	
L 2J5	325C167010	PEAKING COIL	47 μH-J	
L 2J6	325C167020	PEAKING COIL	56 μH-J	
L 2J7	325C166080	PEAKING COIL	27 μH-J	
L 2J8	325C122050	PEAKING COIL	100 μH-K	
L 2J9	325C167030	PEAKING COIL	68 μH-J	
L 2K0	325C166030	PEAKING COIL	10 μH-J	
L 2X0	325C166030	PEAKING COIL	10 μH-J	
L 2Y1	325C166030	PEAKING COIL	10 μH-J	
L 310	321C010040	RF COIL	1000 μH-J	
L 311	321C015050	RF COIL	8200 μH-J	
L 312	321C114080	RF COIL	8200 μH-J	
L 3A0	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3302	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3303	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3304	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3317	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3319	325C262050	PEAKING COIL	100 μH-K	[MS7]
L 3320	325C162010	PEAKING COIL	47 μH-K	[MS7]
L 3324	325C162010	PEAKING COIL	47 μH-K	[MS7]
L 501	325C262050	PEAKING COIL	100 μH-K	
L 502	325C266050	PEAKING COIL	15 μH-J	
L 503	325C262050	PEAKING COIL	100 μH-K	
L 507	325C266030	PEAKING COIL	10 μH-J SO	
L 570	299P124010	LATCH MAGNET		
L 5A0	325C262050	PEAKING COIL	100 μH-K	
L 5A2	325C266070	PEAKING COIL	22 μH-J SO	
L 5A4	325C124080	PEAKING COIL	0.56 μH-M	
L 5A5	325C124050	PEAKING COIL	0.33 μH-M	
L 5A6	325C124050	PEAKING COIL	0.33 μH-M	
L 5Z0	325C261030	PEAKING COIL	10 μH-K	
L 6A0	325C162050	PEAKING COIL	100 μH-K	
L 6A1	325C162050	PEAKING COIL	100 μH-K	
L 6A2	325C162050	PEAKING COIL	100 μH-K	
L 6A3	325C162050	PEAKING COIL	100 μH-K	[MS7]
L 6A5	325C162050	PEAKING COIL	100 μH-K	
L 6A6	325C162050	PEAKING COIL	100 μH-K	
L 6A7	325C165070	PEAKING COIL	3.3 μH-J	
L 6A8	325C166060	PEAKING COIL	18 μH-J	
L 6A9	325C166050	PEAKING COIL	15 μH-J	
L 6B0	325C166050	PEAKING COIL	15 μH-J	
L 6B1	325C166050	PEAKING COIL	15 μH-J	
L 6B2	325C167000	PEAKING COIL	39 μH-J	
L 6B3	325C168010	PEAKING COIL	330 μH-J	
L 6B4	325C167010	PEAKING COIL	47 μH-J	
L 6B5	325C167000	PEAKING COIL	39 μH-J	[MS7]
L 6B6	325C167090	PEAKING COIL	220 μH-J	[MS7]
L 6B7	325C167090	PEAKING COIL	220 μH-J	[MS7]
L 6B8	325C166090	PEAKING COIL	33 μH-J	[MS7]
L 6C0	325C167030	PEAKING COIL	68 μH-J	
L 6C1	325C162050	PEAKING COIL	100 μH-K	
L 901	351P038010	LINE FILTER		
T 6A0	332P007010	H-OSCILLATOR		

TRANSFORMERS

T 310	409P423010	AUDIO BIAS OSC	705720044D	
T 901	350P531020	POWER		

VARIABLE RESISTORS

VR203	127C290080	VR-SEMIFIXED	1/10W B10kΩ-N	
VR280	120C381040	VR-PCB	1/20W B20kΩ-20TM CS	
VR2A0	127C080070	VR-SEMIFIXED	1/5W B5kΩ-M	
VR2A1	127C080080	VR-SEMIFIXED	1/5W B10kΩ-M	
VR2A2	127C090090	VR-SEMIFIXED	1/5W B20kΩ-M	
VR2A3	127C081020	VR-SEMIFIXED	1/5W B100kΩ-M	
VR2A4	127C081020	VR-SEMIFIXED	1/5W B100kΩ-M	
VR2A5	127C080070	VR-SEMIFIXED	1/5W B5kΩ-M	
VR2F0	127C080070	VR-SEMIFIXED	1/5W B5kΩ-M	
VR2J0	127C280070	VR SEMIFIXED	1/10W B5kΩ-N	
VR310	127C081020	VR-SEMIFIXED	1/5W B100kΩ-M	
VR311	127C080080	VR-SEMIFIXED	1/5W B10kΩ-M	[MS5]
VR3A0	127C290070	VR-SEMIFIXED	1/10W B5kΩ-N	[MS7]
VR3301	127C090080	VR-SEMIFIXED	1/5W B10kΩ-M	[MS7]
VR3302	127C090080	VR-SEMIFIXED	1/5W B10kΩ-M	[MS7]
VR3305	127C080090	VR-SEMIFIXED	1/5W B20kΩ-M	[MS7]
VR3306	127C080090	VR-SEMIFIXED	1/5W B20kΩ-M	[MS7]
VR3309	127C180050	VR-SEMIFIXED	1/5W B2kΩ-M	[MS7]
VR3311	127C091030	VR-SEMIFIXED	1/5W B200kΩ-M	[MS7]
VR3312	127C091030	VR-SEMIFIXED	1/5W B200kΩ-M	[MS7]
VR4A0	127C181020	VR-SEMIFIXED	1/5W B100kΩ-M	
VR580	120C381090	VR-PCB	1/20W B100kΩ-20TM	
VR6A0	127C280040	VR-SEMIFIXED	1/10W B1kΩ-N	
VR6A1	127C280040	VR-SEMIFIXED	1/10W B1kΩ-N	
VR6A3	127C090080	VR-SEMIFIXED	1/5W B10kΩ-M	
VR6A4	127C281020	VR SEMIFIXED	1/10W B100kΩ-N	[MS7]
VR6A5	127C281020	VR SEMIFIXED	1/10W B100kΩ-N	[MS7]
VR6A6	127C280040	VR-SEMIFIXED	1/10W B1kΩ-N	[MS7]
VR6A7	127C280040	VR-SEMIFIXED	1/10W B1kΩ-N	[MS7]

RESISTORS

R 01	103P404080	CHIP RESISTOR	1/10W 82kΩ-J
R 02	103P404020	CHIP RESISTOR	1/10W 27kΩ-J
R 03	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 04	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 05	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 06	103P404050	CHIP RESISTOR	1/10W 47kΩ-J
R 119	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 120	103P403070	CHIP RESISTOR	1/10W 10kΩ-J

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
R 121	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H
R 122	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H
R 124	103P401060	CHIP RESISTOR	1/10W 180Ω-J
R 125	103P401050	CHIP RESISTOR	1/10W 150Ω-J
R 127	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 128	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 129	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 130	103P405060	CHIP RESISTOR	1/10W 390kΩ-J
R 131	103P404000	CHIP RESISTOR	1/10W 18kΩ-J
R 132	103P404080	CHIP RESISTOR	1/10W 82kΩ-J
R 133	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J
R 134	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J
R 135	103P403090	CHIP RESISTOR	1/10W 15kΩ-J
R 136	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J
R 137	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 138	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 140	103P401070	CHIP RESISTOR	1/10W 220Ω-J
R 201	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 202	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 206	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J
R 208	103P402000	CHIP RESISTOR	1/10W 390Ω-JX10/05K
R 209	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 210	103P401020	CHIP RESISTOR	1/10W 82Ω-J
R 212	103P402010	CHIP RESISTOR	1/10W 470Ω-J
R 214	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 219	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J
R 227	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 242	103P403040	CHIP RESISTOR	1/10W 5.6kΩ-J [MS7]
R 283	103P403000	CHIP RESISTOR	1/10W 2.7kΩ-J
R 284	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J
R 286	103P405000	CHIP RESISTOR	1/10W 120kΩ-J
R 287	103P401090	CHIP RESISTOR	1/10W 330Ω-J
R 290	103P409050	CHIP RESISTOR	1/10W 0Ω
R 2A0	103P403090	CHIP RESISTOR	1/10W 15kΩ-J
R 2A1	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2A2	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2A3	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2A4	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 2A5	103P404030	CHIP RESISTOR	1/10W 33kΩ-J
R 2A6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2A7	103P406010	CHIP RESISTOR	1/10W 1MΩ-J
R 2A8	103P404030	CHIP RESISTOR	1/10W 33kΩ-J
R 2A9	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 2B0	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 2B1	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2B2	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2B3	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J
R 2B4	103P406000	CHIP RESISTOR	1/10W 820kΩ-J
R 2B5	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 2B6	103P404030	CHIP RESISTOR	1/10W 33kΩ-J
R 2B7	103P403090	CHIP RESISTOR	1/10W 15kΩ-J
R 2B8	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2B9	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J
R 2C0	103P402000	CHIP RESISTOR	1/10W 390Ω-JX10/05K
R 2C1	103P402040	CHIP RESISTOR	1/10W 820Ω-J

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
R 2C2	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J
R 2C3	103P401080	CHIP RESISTOR	1/10W 270Ω-J
R 2C4	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2C5	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J
R 2C6	103P404040	CHIP RESISTOR	1/10W 39kΩ-J
R 2C7	103P404010	CHIP RESISTOR	1/10W 22kΩ-J
R 2C8	103P404050	CHIP RESISTOR	1/10W 47kΩ-J
R 2C9	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J
R 2D0	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2D1	103P402010	CHIP RESISTOR	1/10W 470Ω-J
R 2D3	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 2D4	103P405000	CHIP RESISTOR	1/10W 120kΩ-J
R 2D5	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H
R 2D8	103P401070	CHIP RESISTOR	1/10W 220Ω-J
R 2D9	103P401010	CHIP RESISTOR	1/10W 68Ω-J
R 2E0	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 2E2	103P401020	CHIP RESISTOR	1/10W 82Ω-J
R 2E3	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 2E4	103P404000	CHIP RESISTOR	1/10W 18kΩ-J
R 2E5	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2E6	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 2E7	103P403000	CHIP RESISTOR	1/10W 2.7kΩ-J
R 2E8	103P402010	CHIP RESISTOR	1/10W 470Ω-J
R 2E9	103P402040	CHIP RESISTOR	1/10W 820Ω-J
R 2F0	103P404050	CHIP RESISTOR	1/10W 47kΩ-J
R 2F1	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 2F2	103P401060	CHIP RESISTOR	1/10W 180Ω-J
R 2F3	103P401070	CHIP RESISTOR	1/10W 220Ω-J
R 2F4	103P404090	CHIP RESISTOR	1/10W 100kΩ-J
R 2F6	103P404040	CHIP RESISTOR	1/10W 39kΩ-J
R 2F7	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2F8	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2F9	103P472050	CHIP RESISTOR	1/10W 1kΩ-F
R 2G0	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2G1	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 2G2	103P401030	CHIP RESISTOR	1/10W 100Ω-J
R 2G3	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2G4	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 2G5	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2G7	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J
R 2H0	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2H1	103P401010	CHIP RESISTOR	1/10W 68Ω-J
R 2H2	103P402020	CHIP RESISTOR	1/10W 560Ω-J
R 2H3	103P402020	CHIP RESISTOR	1/10W 560Ω-J
R 2H4	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H
R 2J0	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J
R 2J1	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 2J2	103P402030	CHIP RESISTOR	1/10W 680Ω-J
R 2J3	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J
R 2J4	103P401070	CHIP RESISTOR	1/10W 220Ω-J
R 2J7	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 2J8	103P402050	CHIP RESISTOR	1/10W 1kΩ-J
R 2J9	103P403070	CHIP RESISTOR	1/10W 10kΩ-J
R 2K0	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J
R 2K1	103P402010	CHIP RESISTOR	1/10W 470Ω-J

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
R 2K2	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	
R 2K3	103P401040	CHIP RESISTOR	1/10W 120Ω-J	
R 2K5	103P403000	CHIP RESISTOR	1/10W 2.7kΩ-J	
R 2K6	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 2K7	103P404020	CHIP RESISTOR	1/10W 27kΩ-J	
R 2K8	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H	
R 2K9	103P403040	CHIP RESISTOR	1/10W 5.6kΩ-J	
R 2L1	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 2L2	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J	
R 2L3	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 2L4	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 2L5	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 2L6	103P402010	CHIP RESISTOR	1/10W 470Ω-J	
R 2L7	103P405010	CHIP RESISTOR	1/10W 150kΩ-J	
R 2N1	103P404050	CHIP RESISTOR	1/10W 47kΩ-J	
R 2N2	103P404050	CHIP RESISTOR	1/10W 47kΩ-J	
R 2X0	103P403050	CHIP RESISTOR	1/10W 6.8kΩ-J	
R 2X1	103P471080	CHIP RESISTOR	1/10W 510Ω-F	
R 2X2	103P403040	CHIP RESISTOR	1/10W 5.6kΩ-J	
R 2X3	103P405040	CHIP RESISTOR	1/10W 270kΩ-J	
R 2X4	103P401070	CHIP RESISTOR	1/10W 220Ω-J	
R 310	103P400010	CHIP RESISTOR	1/10W 10Ω-J	
R 311	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	
R 312	103P401080	CHIP RESISTOR	1/10W 270Ω-J	[MS5]
R 312	103P402020	CHIP RESISTOR	1/10W 560Ω-J	[MS7]
R 313	103P401030	CHIP RESISTOR	1/10W 100Ω-J	[MS5]
R 313	103P470080	CHIP RESISTOR	1/10W 200Ω-F	[MS7]
R 314	103P405050	CHIP RESISTOR	1/10W 330kΩ-J	[MS5]
R 314	103P478050	CHIP RESISTOR	1/10W 330kΩ-F	[MS7]
R 315	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	[MS5]
R 315	103P474010	CHIP RESISTOR	1/10W 4.7kΩ-F	[MS7]
R 316	103P406010	CHIP RESISTOR	1/10W 1MΩ-J	
R 317	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 318	103P403080	CHIP RESISTOR	1/10W 12kΩ-J	
R 319	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	[MS5]
R 319	103P403050	CHIP RESISTOR	1/10W 6.8kΩ-J	[MS7]
R 320	103P402040	CHIP RESISTOR	1/10W 820Ω-J	
R 321	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	[MS5]
R 322	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	[MS5]
R 323	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J	[MS5]
R 324	103P402030	CHIP RESISTOR	1/10W 680Ω-J	[MS5]
R 324	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	[MS7]
R 325	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J	
R 326	103P401030	CHIP RESISTOR	1/10W 100Ω-J	
R 327	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J	
R 328	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 329	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 330	103P404000	CHIP RESISTOR	1/10W 18kΩ-J	
R 331	103P404020	CHIP RESISTOR	1/10W 27kΩ-J	
R 332	103P403090	CHIP RESISTOR	1/10W 15kΩ-J	
R 333	103P404070	CHIP RESISTOR	1/10W 68kΩ-J	[MS5]
R 335	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 336	103P402040	CHIP RESISTOR	1/10W 820Ω-J	
R 337	103P401030	CHIP RESISTOR	1/10W 100Ω-J	
R 3A0	103P400010	CHIP RESISTOR	1/10W 10Ω-J	[MS7]

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
R 3A1	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	[MS7]
R 3A2	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	[MS7]
R 3A3	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	[MS7]
R 3A4	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	[MS7]
R 3A5	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H	[MS7]
R 3A6	103P404020	CHIP RESISTOR	1/10W 27kΩ-J	[MS7]
R 3A7	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	[MS7]
R 3A8	103P401030	CHIP RESISTOR	1/10W 100Ω-J	[MS7]
R 3B1	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	[MS7]
R 3B2	103P404050	CHIP RESISTOR	1/10W 47kΩ-J	[MS7]
R 3B6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6A0	103P405030	CHIP RESISTOR	1/10W 220kΩ-J	
R 6A1	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6A2	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	
R 6A3	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J	
R 6A4	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6A5	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J	
R 6A6	103P404020	CHIP RESISTOR	1/10W 27kΩ-J	
R 6A7	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J	
R 6A8	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6A9	103P401010	CHIP RESISTOR	1/10W 68Ω-J	
R 6B0	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J	
R 6B1	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6B2	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	
R 6B3	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 6B4	103P401030	CHIP RESISTOR	1/10W 100Ω-J	
R 6B5	103P404040	CHIP RESISTOR	1/10W 39kΩ-J	
R 6B6	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6B7	103P401030	CHIP RESISTOR	1/10W 100Ω-J	
R 6B8	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6B9	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6C0	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 6C1	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 6C2	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6C3	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 6C4	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 6C5	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6C6	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 6C7	103P401070	CHIP RESISTOR	1/10W 220Ω-J	
R 6C8	103P402000	CHIP RESISTOR	1/10W 390Ω-JX10/05K	
R 6C9	103P403020	CHIP RESISTOR	1/10W 3.9kΩ-H	
R 6D0	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	
R 6D1	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6D2	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6D3	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6D4	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6D5	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 6D6	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 6D7	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6D8	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6D9	103P405030	CHIP RESISTOR	1/10W 220kΩ-J	
R 6E0	103P403050	CHIP RESISTOR	1/10W 6.8kΩ-J	
R 6E1	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J	
R 6E2	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6E3	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
R 6E4	103P401080	CHIP RESISTOR	1/10W 270Ω-J	
R 6E5	103P402060	CHIP RESISTOR	1/10W 1.2kΩ-J	
R 6E6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6E7	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6E8	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J	
R 6E9	103P402040	CHIP RESISTOR	1/10W 820Ω-J	
R 6F0	103P402000	CHIP RESISTOR	1/10W 390Ω-JX10/05K	
R 6F1	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	
R 6F2	103P404050	CHIP RESISTOR	1/10W 47kΩ-J	
R 6F3	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6F4	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6F5	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6F6	103P400060	CHIP RESISTOR	1/10W 27Ω-J	
R 6F7	103P405010	CHIP RESISTOR	1/10W 150kΩ-J	
R 6F8	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J	
R 6F9	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	
R 6G0	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	
R 6G1	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 6G2	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	
R 6G3	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6G4	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6G5	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 6G6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6G7	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	
R 6G8	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 6G9	103P402030	CHIP RESISTOR	1/10W 680Ω-J	
R 6H0	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	
R 6H1	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6H2	103P404000	CHIP RESISTOR	1/10W 18kΩ-J	
R 6H3	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	
R 6H4	103P404030	CHIP RESISTOR	1/10W 33kΩ-J	
R 6H5	103P404010	CHIP RESISTOR	1/10W 22kΩ-J	
R 6H6	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	[MS7]
R 6H7	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6H8	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6H9	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6J0	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6J1	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	[MS7]
R 6J2	103P405010	CHIP RESISTOR	1/10W 150kΩ-J	[MS7]
R 6J3	103P402010	CHIP RESISTOR	1/10W 470Ω-J	[MS7]
R 6J4	103P401070	CHIP RESISTOR	1/10W 220Ω-J	[MS7]
R 6J5	103P401030	CHIP RESISTOR	1/10W 100Ω-J	[MS7]
R 6J6	103P402040	CHIP RESISTOR	1/10W 820Ω-J	[MS7]
R 6J7	103P403010	CHIP RESISTOR	1/10W 3.3kΩ-J	[MS7]
R 6J8	103P403060	CHIP RESISTOR	1/10W 8.2kΩ-J	[MS7]
R 6J9	103P402020	CHIP RESISTOR	1/10W 560Ω-J	[MS7]
R 6K0	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6K1	103P403000	CHIP RESISTOR	1/10W 2.7kΩ-J	[MS7]
R 6K2	103P401030	CHIP RESISTOR	1/10W 100Ω-J	[MS7]
R 6K3	103P402040	CHIP RESISTOR	1/10W 820Ω-J	[MS7]
R 6K4	103P401000	CHIP RESISTOR	1/10W 56Ω-J	[MS7]
R 6K5	103P402030	CHIP RESISTOR	1/10W 680Ω-J	[MS7]
R 6K6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6K7	103P403050	CHIP RESISTOR	1/10W 6.8kΩ-J	[MS7]
R 6K8	103P403070	CHIP RESISTOR	1/10W 10kΩ-J	
R 6K9	103P402040	CHIP RESISTOR	1/10W 820Ω-J	
R 6L0	103P402090	CHIP RESISTOR	1/10W 2.2kΩ-J	[MS7]
R 6L1	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	[MS7]
R 6L2	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6L3	103P400090	CHIP RESISTOR	1/10W 47Ω-J	[MS7]
R 6L5	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	[MS7]
R 6L6	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6L7	103P404090	CHIP RESISTOR	1/10W 100kΩ-J	
R 6L8	103P401030	CHIP RESISTOR	1/10W 100Ω-J	[MS5]
R 6L8	103P470010	CHIP RESISTOR	1/10W 100Ω-F	[MS7]
R 6L9	103P402070	CHIP RESISTOR	1/10W 1.5kΩ-J	
R 6M0	103P402020	CHIP RESISTOR	1/10W 560Ω-J	[MS7]
R 6M1	103P402080	CHIP RESISTOR	1/10W 1.8kΩ-J	[MS7]
R 6M2	103P402050	CHIP RESISTOR	1/10W 1kΩ-J	
R 6M7	103P473030	CHIP RESISTOR	1/10W 2.2kΩ-F	[MS7]
R 6M8	103P403030	CHIP RESISTOR	1/10W 4.7kΩ-J	[MS7]
R 6M9	103P404080	CHIP RESISTOR	1/10W 82kΩ-J	
R 901	109D061060	CEMENT WIRE	7W 4.7Ω-K/J	
RJ 01	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 02	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 03	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 04	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 05	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 06	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 07	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 08	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 09	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 10	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 11	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 12	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 13	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 1	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 2	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 3	103P409050	CHIP RESISTOR	1/10W 0Ω	
RJ 4	103P409050	CHIP RESISTOR	1/10W 0Ω	

CAPACITORS AND TRIMMERS

C 101	141P130090	CHIP CAPACITOR	B50V 1000pF-K
C 102	154P324040	CHIP CAPACITOR	SL50V 220pF-J
C 105	141P131040	CHIP CAPACITOR	B50V 2700pF-K
C 107	141P133080	CHIP CAPACITOR	F50V 0.01μF-Z
C 114	154P323060	CHIP CAPACITOR	SL50V 100pF-J
C 201	154P323000	CHIP CAPACITOR	SL50V 56pF-J
C 202	154P322000	CHIP CAPACITOR	SL50V 22pF-J
C 205	141P139030	CHIP CAPACITOR	B25V 0.1μF-K
C 207	154P323020	CHIP CAPACITOR	SL50V 68pF-J
C 210	141P137080	CHIP CAPACITOR	B50V 0.047μF-K
C 211	141P137080	CHIP CAPACITOR	B50V 0.047μF-K
C 220	154P322080	CHIP CAPACITOR	SL50V 47pF-J
C 227	141P130090	CHIP CAPACITOR	B50V 1000pF-K
C 234	154P320090	CHIP CAPACITOR	SL50V 7pF-C
C 235	154P324040	CHIP CAPACITOR	SL50V 220pF-J
C 236	154P320090	CHIP CAPACITOR	SL50V 7pF-C
C 245	154P323040	CHIP CAPACITOR	SL50V 82pF-J
C 249	154P323040	CHIP CAPACITOR	SL50V 82pF-J

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
C 252	154P323040	CHIP CAPACITOR	SL50V 82pF-J	[MS7]
C 256	154P324020	CHIP CAPACITOR	SL50V 180pF-J	[MS5]
C 256	154P323060	CHIP CAPACITOR	SL50V 100pF-J	[MS7]
C 2A0	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2A1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2A2	154P323060	CHIP CAPACITOR	SL50V 100pF-J	
C 2A7	154P322080	CHIP CAPACITOR	SL50V 47pF-J	
C 2B3	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 2B5	154P324020	CHIP CAPACITOR	SL50V 180pF-J	
C 2B6	154P325020	CHIP CAPACITOR	SL50V 470pF-J	
C 2B7	154P322020	CHIP CAPACITOR	SL50V 27pF-J	
C 2B8	154P320090	CHIP CAPACITOR	SL50V 7pF-C	
C 2B9	154P321020	CHIP CAPACITOR	SL50V 10pF-C	
C 2C0	141P131050	CHIP CAPACITOR	B50V 3300pF-K	
C 2C1	141P132030	CHIP CAPACITOR	B50V 0.015 μF-K	
C 2C2	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2C3	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2C6	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2C7	154P323080	CHIP CAPACITOR	SL50V 120pF-J	
C 2C9	154P325000	CHIP CAPACITOR	SL50V 390pF-J	
C 2D1	154P322020	CHIP CAPACITOR	SL50V 27pF-J	
C 2D2	154P321080	CHIP CAPACITOR	SL50V 18pF-J	
C 2D8	154P322080	CHIP CAPACITOR	SL50V 47pF-J	
C 2E0	141P130090	CHIP CAPACITOR	B50V 1000pF-K	
C 2E3	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2E7	154P320090	CHIP CAPACITOR	SL50V 7pF-C	
C 2F0	154P321000	CHIP CAPACITOR	SL50V 8pF-C	
C 2G1	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 2G2	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 2G4	154P331010	CHIP CAPACITOR	CH50V 10pF-C	
C 2H0	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2H1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2H4	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2H5	154P321020	CHIP CAPACITOR	SL50V 10pF-C	
C 2H7	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2H8	154P322060	CHIP CAPACITOR	SL50V 39pF-J	
C 2H9	154P322060	CHIP CAPACITOR	SL50V 39pF-J	
C 2J2	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	
C 2J3	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	
C 2J4	154P331030	CHIP CAPACITOR	CH50V 12pF-J	
C 2J5	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 2J6	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 2J7	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 2K3	154P323020	CHIP CAPACITOR	SL50V 68pF-J	
C 2K4	154P321080	CHIP CAPACITOR	SL50V 18pF-J	
C 2K5	154P322020	CHIP CAPACITOR	SL50V 27pF-J	
C 2K6	154P323000	CHIP CAPACITOR	SL50V 56pF-J	
C 2K7	154P323060	CHIP CAPACITOR	SL50V 100pF-J	
C 2L7	154P321000	CHIP CAPACITOR	SL50V 8pF-C	
C 2L8	154P323060	CHIP CAPACITOR	SL50V 100pF-J	
C 2N1	141P137040	CHIP CAPACITOR	B25V 0.022 μF-K	
C 2X5	154P323080	CHIP CAPACITOR	SL50V 120pF-J	
C 2Y1	154P322040	CHIP CAPACITOR	SL50V 33pF-J	
C 2Y2	141P131070	CHIP CAPACITOR	B50V 4700pF-K	
C 310	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
C 311	141P130080	CHIP CAPACITOR	B50V 820pF-K	
C 318	141P131080	CHIP CAPACITOR	B50V 5600pF-K	
C 328	141P130060	CHIP CAPACITOR	B50V 560pF-K	
C 330	141P130090	CHIP CAPACITOR	B50V 1000pF-K	
C 331	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 3A2	154P323060	CHIP CAPACITOR	SL50V 100pF-J	[MS7]
C 3A3	154P323060	CHIP CAPACITOR	SL50V 100pF-J	[MS7]
C 3A8	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B0	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B3	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B4	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B5	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B6	141P132010	CHIP CAPACITOR	B50V 0.01 μF-K	[MS7]
C 3B8	154P323060	CHIP CAPACITOR	SL50V 100pF-J	[MS7]
C 5A0	189P097020	C-LYTIC-DBL-LAYER	FYD0H473Z	
C 6A0	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A2	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A3	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A4	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A5	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A6	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A7	154P323020	CHIP CAPACITOR	SL50V 68pF-J	
C 6A8	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6A9	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B2	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B3	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B4	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B5	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B6	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6B7	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B8	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6B9	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C2	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C3	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C4	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C6	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6C7	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6C8	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6C9	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6D0	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6D1	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6D5	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	
C 6D6	141P133080	CHIP CAPACITOR	F50V 0.01 μF-Z	[MS7]
C 6E0	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	
C 6E2	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	
C 6E6	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	[MS7]
C 6E9	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	[MS7]
C 6F1	141P135080	CHIP CAPACITOR	F25V 0.1 μF-Z	[MS7]
C 6G0	154P323060	CHIP CAPACITOR	SL50V 100pF-J	
C 6G1	141P137080	CHIP CAPACITOR	B50V 0.047 μF-K	
C 6G2	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 6G4	141P137080	CHIP CAPACITOR	B50V 0.047 μF-K	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
C 6G5	154P323000	CHIP CAPACITOR	SL50V 56pF-J	
C 6G7	141P137040	CHIP CAPACITOR	B25V 0.022μF-K	
C 6G8	154P323060	CHIP CAPACITOR	SL50V 100pF-J	
C 6G9	141P137080	CHIP CAPACITOR	B50V 0.047μF-K	
C 6H0	154P323020	CHIP CAPACITOR	SL50V 68pF-J	
C 6H2	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z	
C 6H4	154P333050	CHIP CAPACITOR	CH50V 100pF-J	
C 6H5	141P137040	CHIP CAPACITOR	B25V 0.022μF-K	
C 6H6	141P133080	CHIP CAPACITOR	F50V 0.01μF-Z	
C 6H7	141P137060	CHIP CAPACITOR	B50V 0.033μF-K	
C 6H8	154P323020	CHIP CAPACITOR	SL50V 68pF-J	
C 6H9	154P322040	CHIP CAPACITOR	SL50V 33pF-J	
C 6J0	154P324020	CHIP CAPACITOR	SL50V 180pF-J	
C 6J1	154P324000	CHIP CAPACITOR	SL50V 150pF-J	
C 6J3	141P137080	CHIP CAPACITOR	B50V 0.047μF-K	
C 6J4	154P322020	CHIP CAPACITOR	SL50V 27pF-J	
C 6J5	154P332070	CHIP CAPACITOR	CH50V 47pF-J	
C 6J6	154P332070	CHIP CAPACITOR	CH50V 47pF-J	
C 6J7	154P323040	CHIP CAPACITOR	SL50V 82pF-J	
C 6K2	154P332030	CHIP CAPACITOR	CH50V 33pF-J	[MS7]
C 6K4	154P321080	CHIP CAPACITOR	SL50V 18pF-J	[MS7]
C 6K5	154P333050	CHIP CAPACITOR	CH50V 100pF-J	[MS7]
C 6K6	141P133080	CHIP CAPACITOR	F50V 0.01μF-Z	[MS7]
C 6K7	154P332030	CHIP CAPACITOR	CH50V 33pF-J	[MS7]
C 6K8	154P323080	CHIP CAPACITOR	SL50V 120pF-J	[MS7]
C 6K9	154P323080	CHIP CAPACITOR	SL50V 120pF-J	[MS7]
C 6L0	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z	[MS7]
C 6L1	154P322080	CHIP CAPACITOR	SL50V 47pF-J	
C 6L2	141P133090	CHIP CAPACITOR	F50V 0.022μF-Z	
C 6L3	141P135080	CHIP CAPACITOR	F25V 0.1μF-Z	[MS7]
C 6L9	154P322000	CHIP CAPACITOR	SL50V 22pF-J	
C 6W0	154P322040	CHIP CAPACITOR	SL50V 33pF-J	
C 905	185D064050	ELECTROLYTIC-C	H400V 120μF-M	
VC501	202P109040	TRIMMER CAPACITOR	7.3pF-45pF	
VC8A0	202P109020	TRIMMER CAPACITOR	4.2pF-20pF	

SWITCHES

S 701	432P089040	KEY BOARD SWITCH	POWER	
S 702	432P089040	KEY BOARD SWITCH	EJECT	
S 704	431C099020	SLIDE SWITCH	EDIT	
S 8A1	432P089020	KEY BOARD SWITCH	SELECT	
S 8A2	432P089020	KEY BOARD SWITCH	OTR	
S 8A3	432P089020	KEY BOARD SWITCH	S-OTR	
S 8A4	432P089020	KEY BOARD SWITCH	STOP	
S 8A5	432P089020	KEY BOARD SWITCH	STILL/PAUSE	
S 8A6	432P089020	KEY BOARD SWITCH	TAPE SPEED	
S 8A9	431C099010	SLIDE SWITCH	REMAIN	
S 8B2	432P089020	KEY BOARD SWITCH	DTR	
S 8B4	432P089020	KEY BOARD SWITCH	REW	
S 8B5	432P089020	KEY BOARD SWITCH	REC	
S 8B6	432P089020	KEY BOARD SWITCH	PROG REC	
S 8B7	432P089020	KEY BOARD SWITCH	CH-DOWN	
S 8B8	432P089020	KEY BOARD SWITCH	REPEAT	
S 8B9	431C099010	SLIDE SWITCH	VIDEO MUTE	
S 8C1	432P089020	KEY BOARD SWITCH	DISPLAY	
S 8C2	432P089020	KEY BOARD SWITCH	TUNING	
S 8C4	432P089020	KEY BOARD SWITCH	FF	
S 8C5	432P089020	KEY BOARD SWITCH	AFT	
S 8C6	432P089020	KEY BOARD SWITCH	FT+	
S 8C7	432P089020	KEY BOARD SWITCH	CH-UP	
S 8C9	431C099010	SLIDE SWITCH	DATE REC	
S 8D0	431C099010	SLIDE SWITCH	COLOR-1	
S 8D1	431C099040	SLIDE SWITCH	COLOR-2	
S 8D4	432P089020	KEY BOARD SWITCH	PB	
S 8D5	432P089020	KEY BOARD SWITCH	SKIP	
S 8D6	432P089020	KEY BOARD SWITCH	FT-	
S 8D7	432P089020	KEY BOARD SWITCH	BAND	
S 8R0	432P089020	KEY BOARD SWITCH	RESET	
SW570	439P019010	MODE SELECT SWITCH		
SW571	439P020010	LIMIT SWITCH		

MISCELLANEOUS

	242D212040	IF CABLE		
	295P099030	TUNER VIF PACK		
CU 01	295P192010	RF CONVERTER		
CU HU	243C094030	CARD LEAD	13P	[MS7]
DC CC	243C061020	CARD LEAD	9P	
DM CM	243C061030	CARD LEAD	21P	
F 901	283D047050	FUSE	2.5A-T	
J 2A0	451C096020	PIN JACK		
J 2A1	451C096020	PIN JACK		
J 3A0	451C096010	PIN JACK		[MS5]
J 3A1	451C096010	PIN JACK		[MS5]
J 3A1	451C105080	PIN JACK		[MS7]
J 3A2	451C086010	PIN JACK		[MS7]
J 3A3	451C086010	PIN JACK		[MS7]
J 3B1	451C086090	PIN JACK		[MS7]
J 3B2	451C086090	PIN JACK		[MS7]
J 3B3	451C086090	PIN JACK		[MS7]
M 470	288P107020	CAPSTAN MOTOR		
M 570	288P088020	DRUM MOTOR		
M 571	288D025010	LOADING MOTOR		
PC901	268P050010	PHOTO COUPLER	TLP621	
SA901	299P089010	SURGE ABSORBER		
SG CG	243C049080	CARD LEAD	13P	
SH CH	243C063020	CARD LEAD	15P	
T 370	460P060050	HEAD		
T 371	460P061020	FE HEAD		
TK CK	243C065020	CARD LEAD	23P	
TL SL	243C072090	CARD LEAD	19P	
V 8A0	253P084010	TUBE FLUOR	BG-953GK	
X 2H0	285P055020	CRYSTAL RESONATOR		
X 2J0	285P055010	CRYSTAL RESONATOR		
X 501	285P084010	CRYSTAL RESONATOR		
X 502	285P123010	CRYSTAL RESONATOR		
X 6A0	285P083010	CRYSTAL RESONATOR		
X 6A1	285P074010	CRYSTAL RESONATOR	M3-20	
X 8A0	285P063040	CRYSTAL RESONATOR	4.194304MHz	
X 8A1	285P054010	CRYSTAL RESONATOR	32.768kHz	
Z 8A0	939P359010	PREAMP UNIT		

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
PRINTED CIRCUIT BOARD ASSY'S			
	927B421002	CONTROL PCB ASSY	[MS5]
	927B421001	CONTROL PCB ASSY	[MS7]
	928C510010	DECK PCB ASSY	
	928B940020	HEAD-AMP PCB ASSY	[MS5]
	928B940021	HEAD-AMP PCB ASSY	[MS7]
	927B422001	Hi-Fi PCB ASSY	[MS7]
	928C709001	JACK PCB ASSY	[MS7]
	927B423002	POWER PCB ASSY	[MS5]
	927B423001	POWER PCB ASSY	[MS7]
	927B420002	SIGNAL PCB ASSY	[MS5]
	927B420001	SIGNAL PCB ASSY	[MS7]
	927B424002	TIMER PCB ASSY	[MS5]
	927B424001	TIMER PCB ASSY	[MS7]

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION

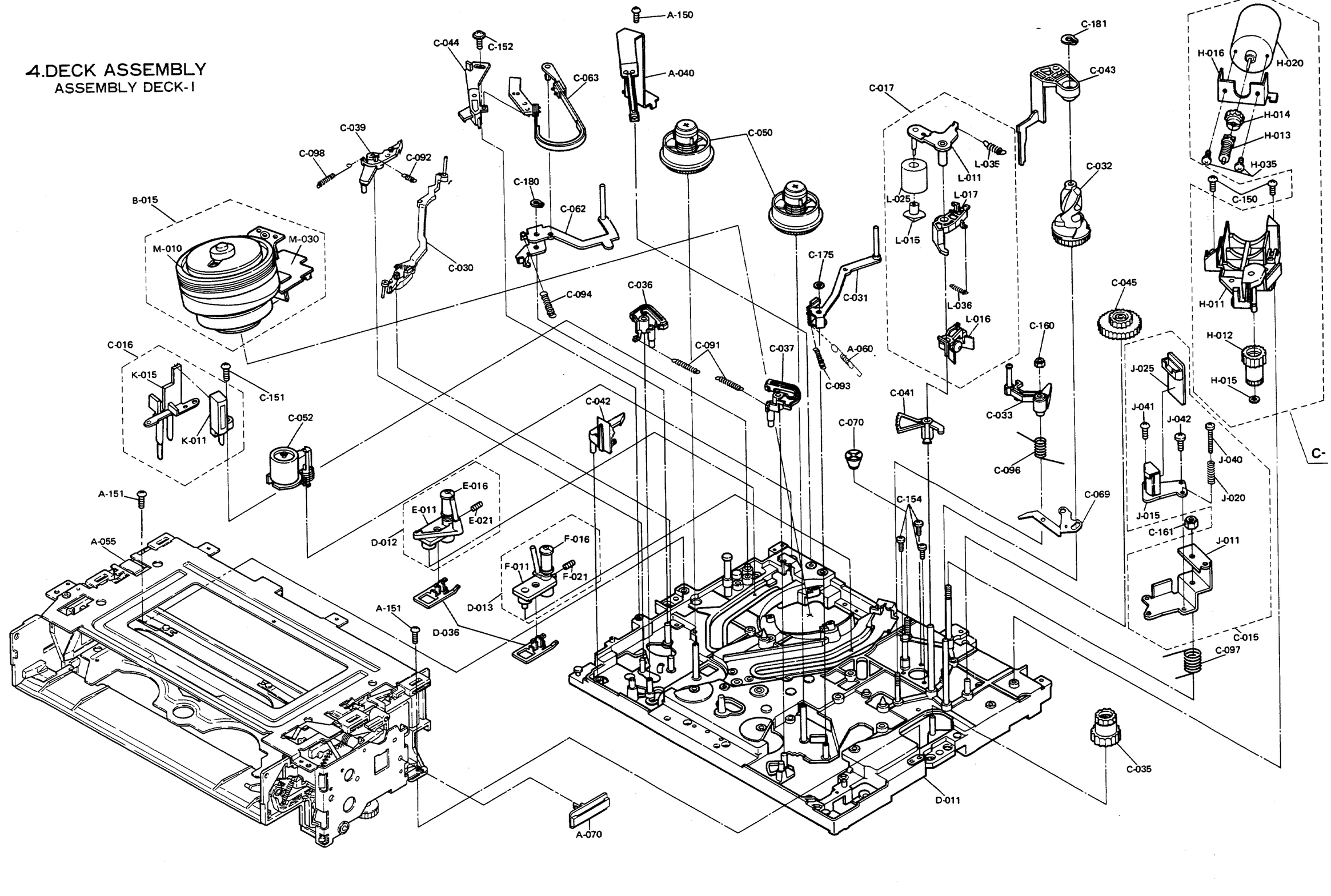
MEMO

MEMO

MEMO

4.DECK ASSEMBLY

ASSEMBLY DECK-I



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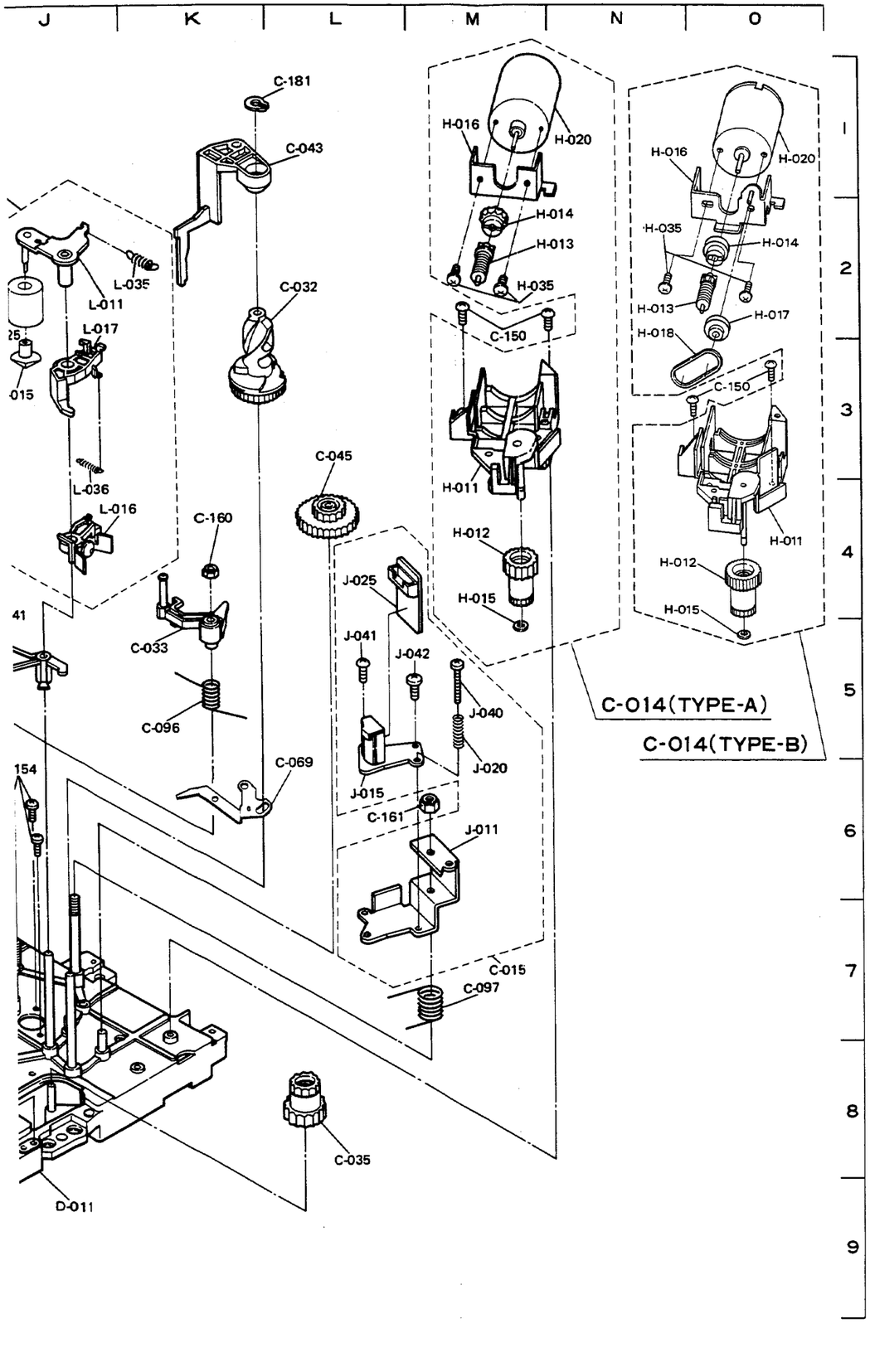


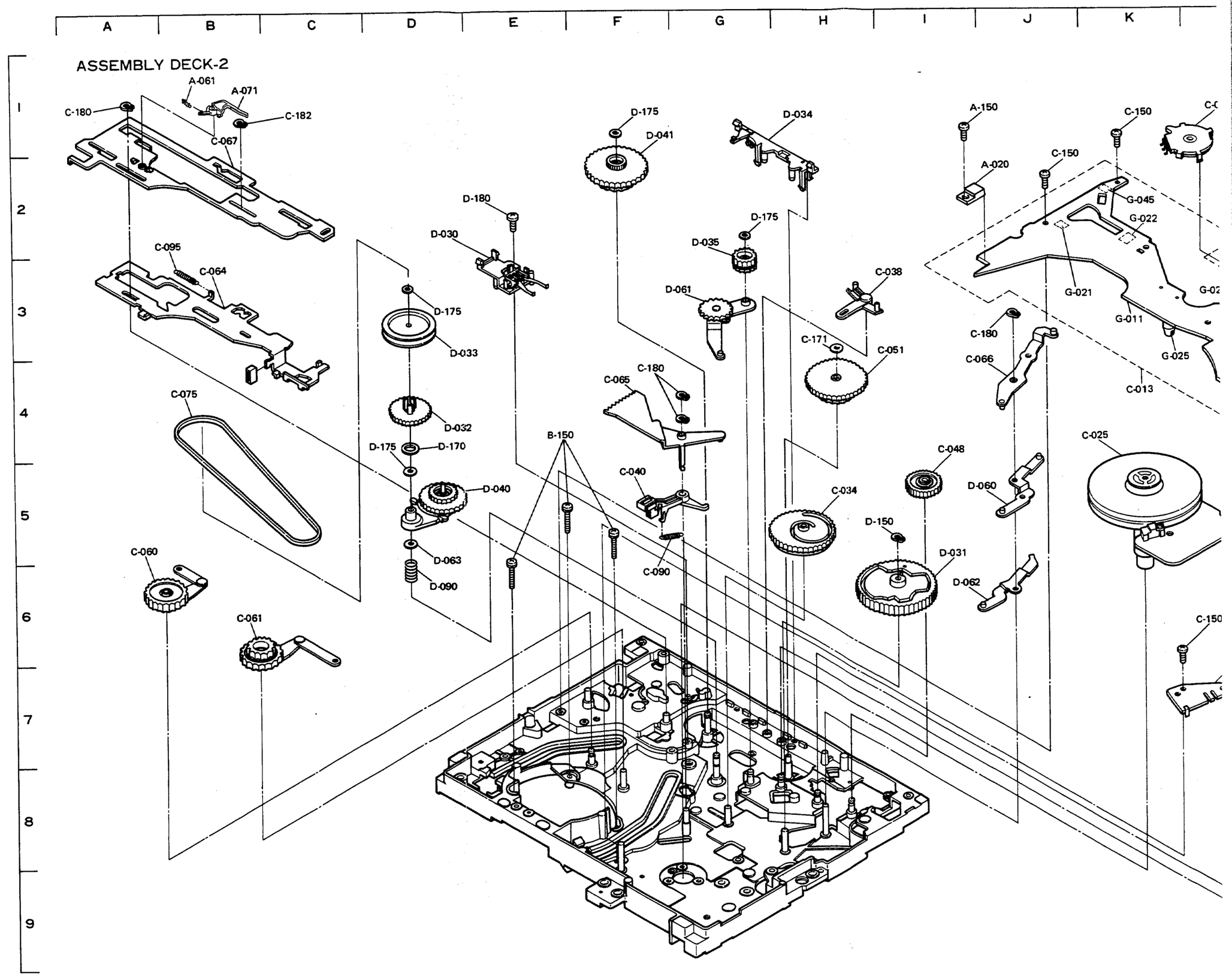
* Settelled Service Parts

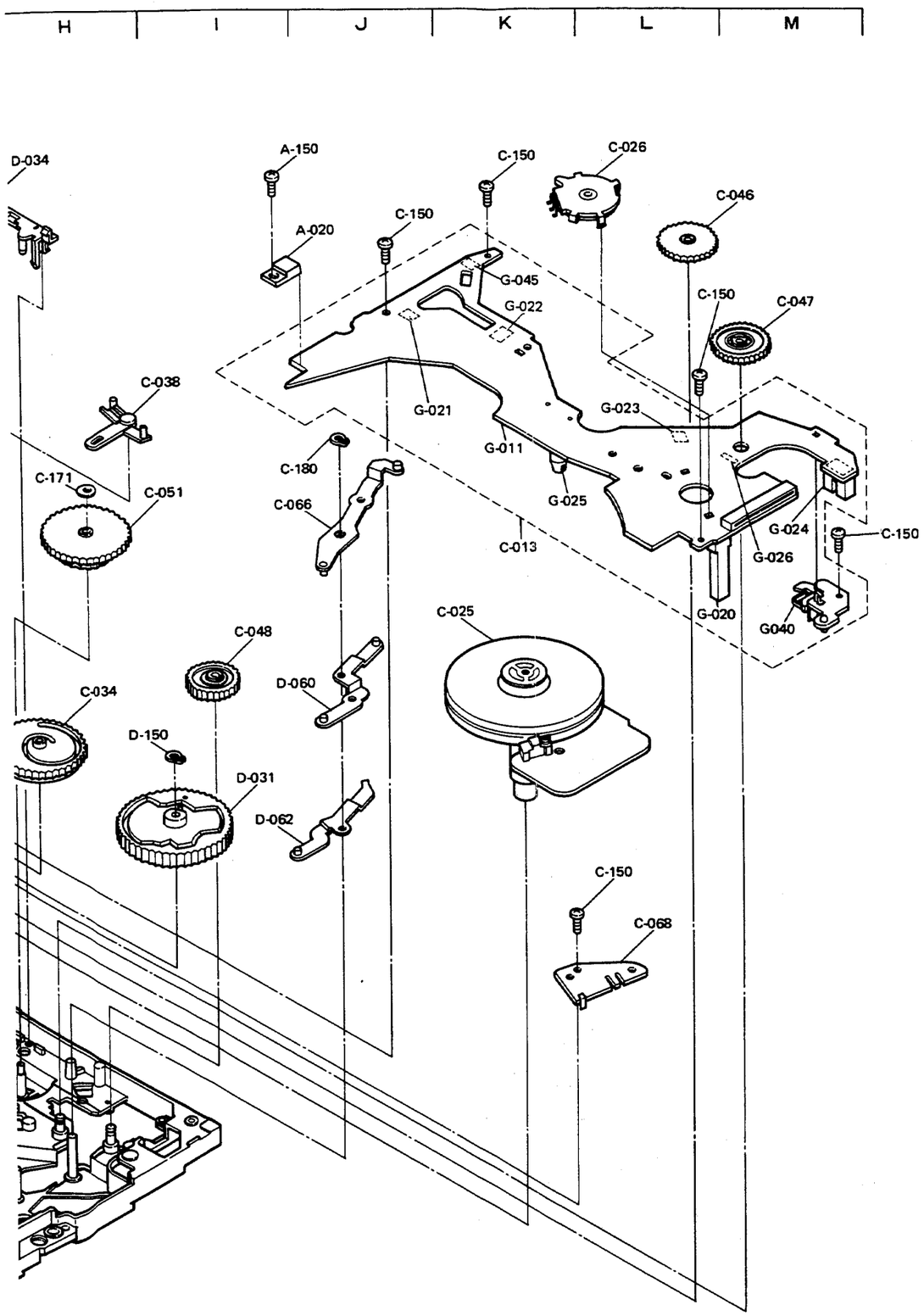
ITEM	PARTS No.	*	ADDRESS	PARTS NAME	DESCRIPTION	Qt.
B-015	948B284006	○	B-2	ASSY-DRUM	[HS-MS5]	01
B-015	948B207009	○	B-2	ASSY-DRUM	[HS-MS7]	01
M-010	927B510021	○	B-3	ASSY-UPPER-DRUM	[HS-MS5]	01
M-010	927B373019	○	B-3	ASSY-UPPER-DRUM	[HS-MS7]	01
M-030	288P088010	○	C-3	MOTOR-DRUM	M570[HS-MS5]	01
M-030	288P088020	○	C-3	MOTOR-DRUM	M570[HS-MS7]	01
D-011	948A071020		J-9	ASSY-MAIN-PLATE		01
D-012	948D018040	○	D-6	ASSY-TAPE-GUIDE-S		01
D-012	948D018050	○	D-6	ASSY-TAPE-GUIDE-S		01
D-012	948D018060	○	D-6	ASSY-TAPE-GUIDE-S		01
E-011	635B059010	○	E-6	TAPE-GUIDE-S		01
E-011	635B059020	○	E-6	TAPE-GUIDE-S		01
E-011	635B059030	○	E-6	TAPE-GUIDE-S		01
E-016	522D177010	○	E-5	GUIDE-ROLLER		01
E-021	669D197020		E-6	SET-SCREW-F	M3×0.5-4	01
D-013	948D019040	○	E-7	ASSY-TAPE-GUIDE-T		01
D-013	948D019050	○	E-7	ASSY-TAPE-GUIDE-T		01
D-013	948D019060	○	E-7	ASSY-TAPE-GUIDE-T		01
F-011	635B060010	○	F-6	TAPE-GUIDE-T		01
F-011	635B060020	○	F-6	TAPE-GUIDE-T		01
F-011	635B060030	○	F-6	TAPE-GUIDE-T		01
F-016	522D177010	○	F-6	GUIDE-ROLLER		01
F-021	669D197020		F-6	SET-SCREW-F	M3×0.5-4	01
D-036	621D522010	○	E-7	SLIDER		02
C-015	928D032030	○	M-7	ASSY-AC-HEAD		01
J-011	592C760010		M-6	ARM-AC		01
J-015	460P060050	○	L-6	HEAD-AC	T370	01
J-020	570D593010		M-6	SPRING-AC		01
J-025	215C393010		L-4	PWB-AC-F		01
J-040	650P261040		M-5	SCREW-F-FE-PAN	M2.6×0.45-14	01
J-041	669D227010	○	L-5	SCREW-TS	M2.6×6	01
J-042	669D206030		L-5	SCREW		01
C-016	928D033010		B-4	ASSY-FE-HEAD		01
K-011	460P061020	○	B-5	HEAD-FE	T371	01
K-015	641C870010		B-4	HOLDER-FE		01
C-017	948D020010	○	I-1	ASSY-ARM-PINCH		01
L-011	591B536010		J-2	ARM-PINCH		01
L-015	621D523010	○	J-3	CAP-ROLLER		01
L-016	641C797010		J-4	LEVER-CAM-PINCH		01
L-017	641C798010		J-2	LEVER-ARM-PINCH		01
L-025	522D174010	○	J-2	ROLLER-PINCH		01
L-035	572D314010	○	K-2	SPRING-PINCH		01
L-036	572D315010	○	J-4	SPRING-CAM-PINCH		01
C-030	641B368010	○	E-3	ARM-TENS-REG-S2		01
C-031	591B551020	○	I-3	ARM-TENS-REG-T		01
C-032	641B314020	○	L-2	CAM-PINCH		01
C-033	635B068010	○	K-5	ARM-TU-G		01
C-035	641C782010	○	L-8	GEAR-JOINT		01
C-036	641C791010	○	G-3	BRAKE-MAIN-S		01
C-037	641C792010	○	H-4	BRAKE-MAIN-T		01
C-039	641C796010		D-2	LEVER-TENS		01
C-041	641C991010	○	J-4	ARM-GEAR-TU-G2		01
C-042	641C804010	○	F-5	LEVER-REC-SAFETY		01
C-043	641C806010		L-1	CAP-ARM-PINCH		01
C-044	641C861010		E-1	HOLDER-T-BAND		01
C-045	621D509010	○	L-3	GEAR-1		01
C-050	522C076020	○	H-2	UNIT-REEL-DISK		02
C-052	641B319010	○	C-5	UNIT-IMP-ROLLER		01
C-062	591B547010		F-3	ARM-TENSION		01

* Settelled Service Parts

ITEM	PARTS No.	*	ADDRESS	PARTS NAME	DESCRIPTION	Qt.
C-063	591B552010	○	F-1	BELT-TENS-BRAKE		01
C-069	592C930010		L-6	LEVER-TENS-TU		01
C-070	635D063010	○	I-5	NUT-TAPER		01
C-091	572D309010	○	H-4	SPRING-M-B		02
C-092	572D391010	○	E-2	SPRING-TENS-REG-S2		01
C-093	572D390010	○	I-4	SPRING-TENS-REG-T2		01
C-094	572D312010	○	F-3	SPRING-TENS		01
C-096	572D317010	○	K-5	SPRING-TU-G		01
C-097	572D318010	○	M-7	SPRING-ARM-A/C		01
C-098	572D328010	○	D-2	SPRING-REC-SAFETY		01
C-150	669D227010	○	M-2 (0-3)	SCREW-TS	M2.6×6	02
C-151	669D227030	○	C-4	SCREW-TS	M2.6×10	01
C-152	669D228010		E-1	SCREW-TS-SEMS	M2.6×6	01
C-154	669D285040		J-6	SCREW-TB-PAN	M2.6×8	03
C-160	674D081020	○	K-4	NUT-NYLON	M3×0.5	01
C-161	674D100010	○	L-6	NUT-NYLON-S	M4×0.7	01
C-175	552C007030	○	I-3	CUT-WASHER	2.5	01
C-180	685C009010	○	F-2	GRIP-RING		01
C-181	685C009020	○	L-1	GRIP-RING		01
A-040	299C025010	○	G-1	BRUSH		01
A-055	590A256020	○	A-6	UNIT-F/L-F		01
A-060	572D401010		I-4	SPRING-RS		01
A-070	641C906010		F-9	HOLDER-CARD		01
A-150	669D227010	○	G-1	SCREW-TS	M2.6×6	01
A-151	669D227020	○	A-5 D-7	SCREW-TS	M2.6×8	02
TYPE-A						
C-014	928D031010	○	N-5	ASSY-LOAD-MOTOR		01
H-011	641B313010		M-4	HOLDER-MOTOR		01
H-012	641C783010		M-4	GEAR-WHEEL		01
H-013	641C801010		M-2	GEAR-WORM		01
H-014	621D525010		M-2	CUPLING		01
H-015	552C007030	○	M-4	CUT-WASHER	2.5	01
H-016	596D157010		M-1	PLATE-HOLDER-M		01
H-020	288D025010	○	M-1	MOTOR-LOADING	M571	01
H-035	650P300030		M-2	SCREW-F-FE-PAN	M3×0.5-3	02
TYPE-B						
C-014	928D031010	○	N-5	ASSY-LOAD-MOTOR		01
H-011	641B313010		O-4	HOLDER-MOTOR		01
H-012	641C783010		N-4	GEAR-WHEEL		01
H-013	641C801010		N-2	GEAR-WORM		01
H-014	621D784010		O-2	CUPLING-2		01
H-015	552C007030	○	N-4	CUT-WASHER	2.5	01
H-016	593C059010		N-1	PLATE-HOLDER-M2		01
H-017	621D793010	○	O-1	PULLEY-L		01
H-018	521D074010	○	N-2	BELT-LM		01
H-020	288D025010	○	O-1	MOTOR-LOADING	M571	01
H-035	650P300030		N-2	SCREW-F-FE-PAN	M3×0.5-3	02

ASSEMBLY DECK-2

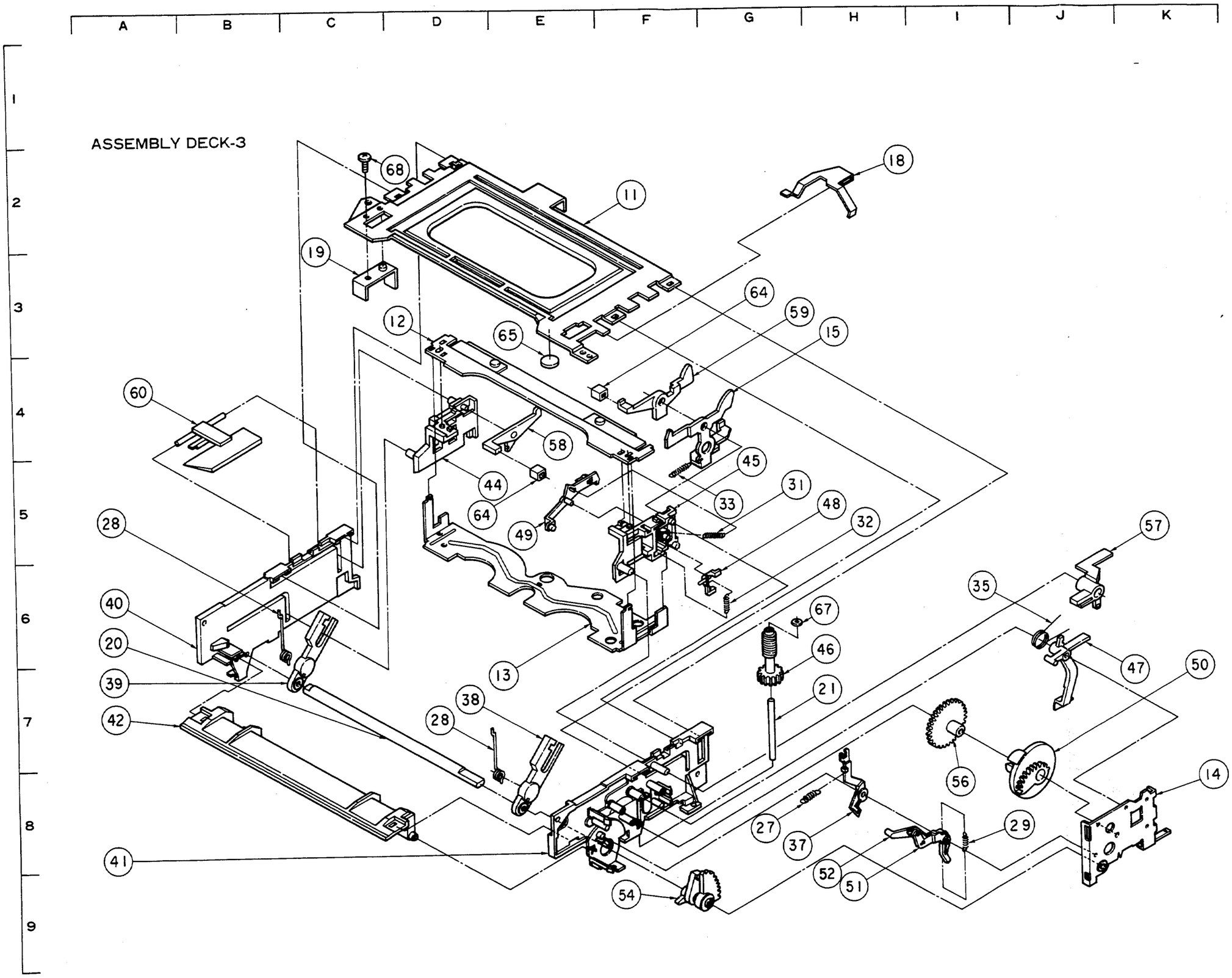




* Settelled Service Parts

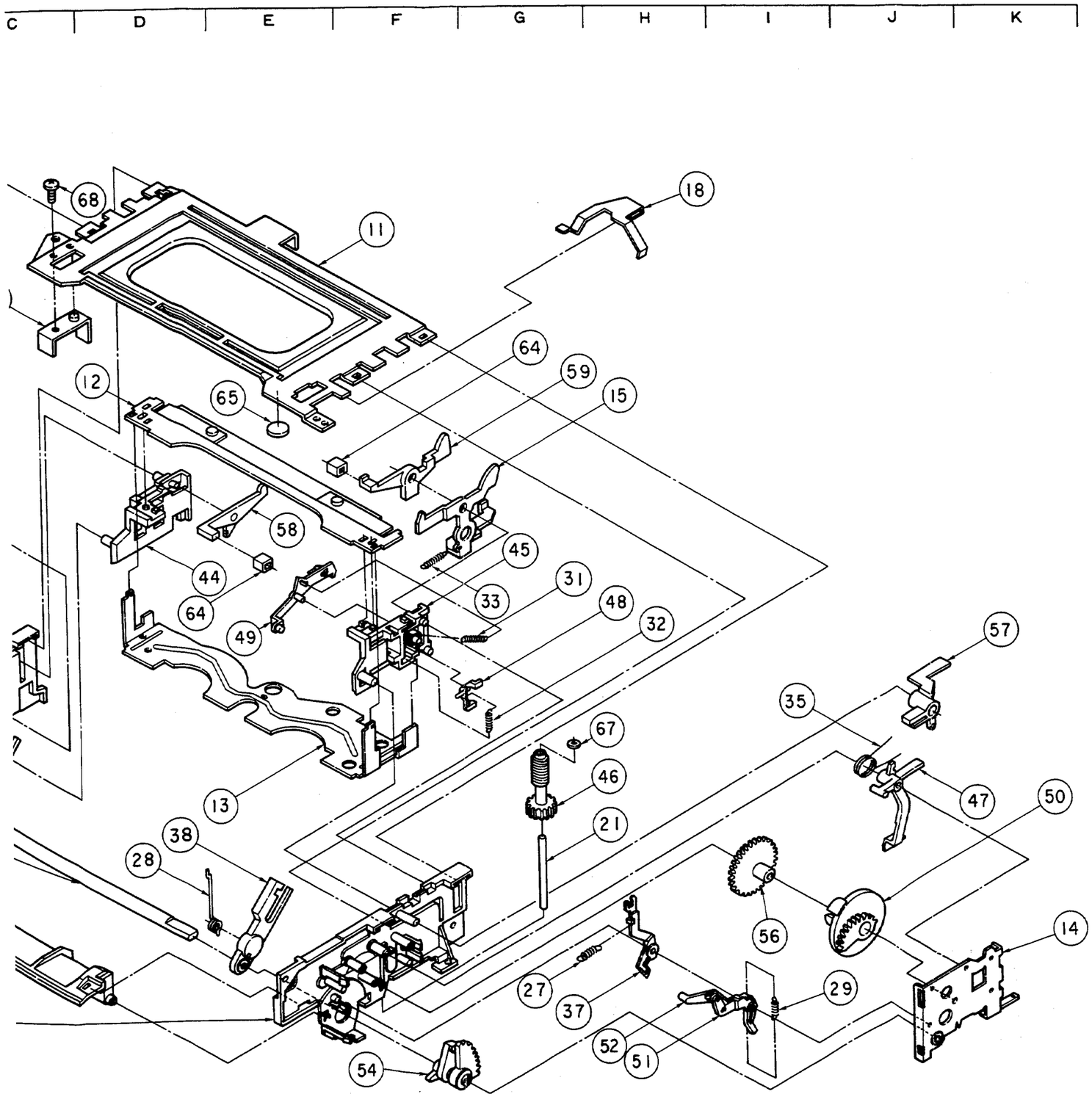
ITEM	PARTS No.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
B-150	669D431040		E-4		SCREW-SEMS	M2.6×0.45-10	03
D-030	641B310010	○	E-2		UNIT-LEVER-SHIFT		01
D-031	641B323010	○	I-5		CAM-MAIN-1		01
D-032	641C789020	○	D-4		PULLEY-GEAR		01
D-033	641C790010	○	D-3		PULLEY-BELT		01
D-034	641C815010		H-1		HOLDER-P-CAM		01
D-035	621D516010	○	G-2		GEAR-F/L-1		01
D-040	522C077020	○	E-5		UNIT-GEAR-IDLER		01
D-041	522C083010	○	F-1		UNIT-GEAR-REEL-S		01
D-060	591B559010		I-5		LEVER-C		01
D-061	591B567010	○	G-3		LEVER-F/L-ID		01
D-062	592C830010		I-6		LEVER-RS		01
D-063	596D057010	○	D-5		WASHER-R	T=0.3	01
D-090	572D306010	○	D-6		SPRING-SHIFT		01
D-150	685C009010	○	H-5		GRIP-RING		01
D-170	552C010040	○	D-4		WASHER-THRUST	6.7×12×0.13	01
D-175	552C007030	○	D-3	D-4	CUT-WASHER	2.5	04
			G-2	F-1			
D-180	669D227010	○	E-2		SCREW-TS	M2.6×6	01
C-013	928C510010	○	K-4		ASSY-PWB-DECK		01
G-011	240A651010		K-3		PWB-DECK		01
G-020	268P014020	○	L-4		TRANSISTOR	Q571 PN205L-(NC)	01
G-021	268P014020	○	J-3		TRANSISTOR	Q572 PN205L-(NC)	01
G-022	268P044010	○	K-2		PHOTO-INTERRUPTER	Q573 ON2270-R	01
G-023	268P044010	○	L-3		PHOTO-INTERRUPTER	Q574 ON2270-R	01
G-024	268P045010	○	M-4		PHOTO-INTERRUPTER	Q575 GP1L52	01
G-025	264P307020	○	K-4		DIODE-LE	D570 GL-451	01
G-026	264P515010	○	M-4		DIODE	D571 MA165	01
G-040	299P124010	○	M-4		LATCH-MAGNET	L570	01
G-045	439P020010	○	K-2		SW-LIMIT	SW571	01
C-025	288P107020	○	K-4		MOTOR-CP	M470	01
C-026	439P019010	○	L-1		SW-MODE-SELECT-F	SW570	01
C-034	641B324010	○	H-5		CAM-MAIN-2		01
C-038	641C795010		I-3		LEVER-IDLER-S		01
C-040	641C800010	○	F-5		BRAKE-CP		01
C-046	621D517010	○	L-1		GEAR-F/L-2		01
C-047	621D518010	○	M-2		GEAR-F/L-3		01
C-048	621D519010	○	I-4		GEAR-F/L-4		01
C-051	522C078040	○	I-3		UNIT-GEAR-REEL		01
C-060	591B543010	○	A-5		ARM-LOAD-S		01
C-061	591B544010	○	B-6		ARM-LOAD-T		01
C-064	591B554010		B-3		PLATE-CAM-C		01
C-065	591B557010	○	F-4		ARM-GEAR-LOAD		01
C-066	591B558010		J-4		LEVER-B		01
C-067	592C949010		B-1		UNIT-PLATE-CAM-B3		01
C-068	596D186010		L-6		PLATE-SHIELD-F		01
C-075	521D062010	○	B-4		BELT-REEL		01
C-090	572D308020	○	F-6		SPRING-B-CP		01
C-095	572D313010	○	B-2		SPRING-CAM-C		01
C-150	669D227010	○	J-2	K-1	SCREW-TS	M2.6×6	05
			K-2	L-6			
			M-4				
C-171	552C006020	○	H-3		WASHER-THRUST	2.0×0.13	01
C-180	685C009010	○	A-1	F-4	GRIP-RING		04
			J-3				
C-182	552C009050	○	C-1		CUT-WASHER		01
A-020	260P630010	○	J-2		TRANSISTOR	Q971 2SD2012	01
A-061	572D404010		B-1		SPRING-B-RS		01
A-071	641C928010		B-1		LEVER-B-RS		01
A-150	669D227010	○	I-1		SCREW-TS	M2.6×6	01

ASSEMBLY DECK-3



* Settelled Serv

ITEM	PARTS No.
11	591B54501(
12	593C00101(
13	591B54601(
14	591B54201(
15	592C85101(
18	596D15001(
19	596D21701(
20	631D13401(
21	631D13501(
27	(not used)
28	572D30101(
29	572D38901(
31	572D30401(
32	572D30501(
33	572D38001(
35	572D36701(
37	(not used)
38	641B31501(
39	641B31502(
40	641A11001(
41	641A10901(
42	641B30601(
44	641B30901(
45	641B30701(
46	621D51301(
47	621D51401(
48	621D51501(
49	641C79401(
50	641C79301(
51	641C89701(
52	641C89801(
54	641C85801(
56	641C81401(
57	641C85701(
58	621D58501(
59	621D58601(
60	641C87801(
64	642D49401(
65	(not used
67	552C00304(
68	----------



* Settelled Service Parts

ITEM	PARTS No.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
11	591B545010		F-2		PLATE-ROOF		01
12	593C001010		D-3		PLATE-UPPER-P		01
13	591B546010		E-7		PLATE-BOTTOM		01
14	591B542010		K-8		PLATE-SIDE-TU		01
15	592C851010		H-3		LEVER-LOCK-FL		01
18	596D150010		H-2		PLATE-EARTH		01
19	596D217010		C-3		PLATE-GUARD		01
20	631D134010		A-6		SHAFT-FL		01
21	631D135010		H-7		SHAFT-WORM		01
27	(not used)						
28	572D301010	○	A-5	D-7	SPRING-FL		02
29	572D389010		J-8		SPRING-DOOR-SUB		01
31	572D304010		G-5		SPRING-OPENER-LID		01
32	572D305010		H-5		SPRING-JUT-FL		01
33	572D380010		G-5		SPRING-LEVER-LOCK		01
35	572D367010		I-6		SPRING-LEVER-SW		01
37	(not used)						
38	641B315010	○	A-7		ARM-FL		01
39	641B315020	○	D-7		ARM-FL		01
40	641A110010		A-6		HOLDER-SIDE-SP		01
41	641A109010		A-8		HOLDER-SIDE-TU		01
42	641B306010		A-7		GUIDE-INSERT		01
44	641B309010		D-5		HOUSING-CASSETTE-SP		01
45	641B307010		G-5		HOUSING-CASSETTE-TU		01
46	621D513010	○	H-6		GEAR-WORM-FL		01
47	621D514010		K-7		LEVER-SW-FL		01
48	621D515010	○	H-5		JUT		01
49	641C794010		E-5		OPENER-LID-CAS		01
50	641C793010	○	K-7		GEAR-DRIVE		01
51	641C897010	○	H-9		ARM-FL-DOOR-A		01
52	641C898010	○	H-9		ARM-FL-DOOR-B		01
54	641C858010	○	F-9		ARM-LOCK		01
56	641C814010	○	I-8		GEAR-W-H-F/L		01
57	641C857010		K-5		LEVER-PICK-CAS		01
58	621D585010		E-4		LEVER-CAS-SP		01
59	621D586010		G-3		LEVER-CAS-TU		01
60	641C878010		A-4		STOPPER-SP-FL		01
64	642D494010		D-5	G-3	RUBBER-FL		02
65	(not used)						
67	552C003040		H-6		WASHER-THRUST	3 T0.5	01
68	--------		D-2		SCREW	2.6-5	01

PCB-BLOCK DIAGRAM

ONLY FOR HS-MS7

PCB-DECK

PCB-CONTROL
- MC (MECHANISM CONTROL)
- SERVO
- CG
- REMAIN

PCB-HEAD AMP

PCB-SIGNAL
- Y
- CHROMA
- TUNER/VIF
- AUDIO

PCB-VIF PACK

PCB-JACK

PCB-HIFI

PCB-POWER

PCB-OPERATION

PCB-TIMER

ONLY FOR HS-MS7

SERVICING
SYMBOL
CHARACTERISTICS
FORMANCE
TY PARTS
ACTERIST
DON'T DE
IMPROPE

6 7 8 9 10 11 12 13

RAM

PCB-VIF PACK

ONLY FOR HS-MS5

TOP COVER

PCB-JACK

-SIGNAL
- Y
- CHROMA
- TUNER/VIF
- AUDIO

PCB-HIFI

ONLY FOR HS-MS7

/ER

T901 350P53102

D901 LB156

IC901 STR-D6009E

Q901 2SC4208A

PC901 TLP621

BB

SCHEMATIC DIAGRAM

NOTE 1:

1. DC voltages were measured from points indicated to the circuit ground with a digital voltmeter.
2. The voltages parenthesised are on SP recording mode. While those without parenthesised on SP play back mode.

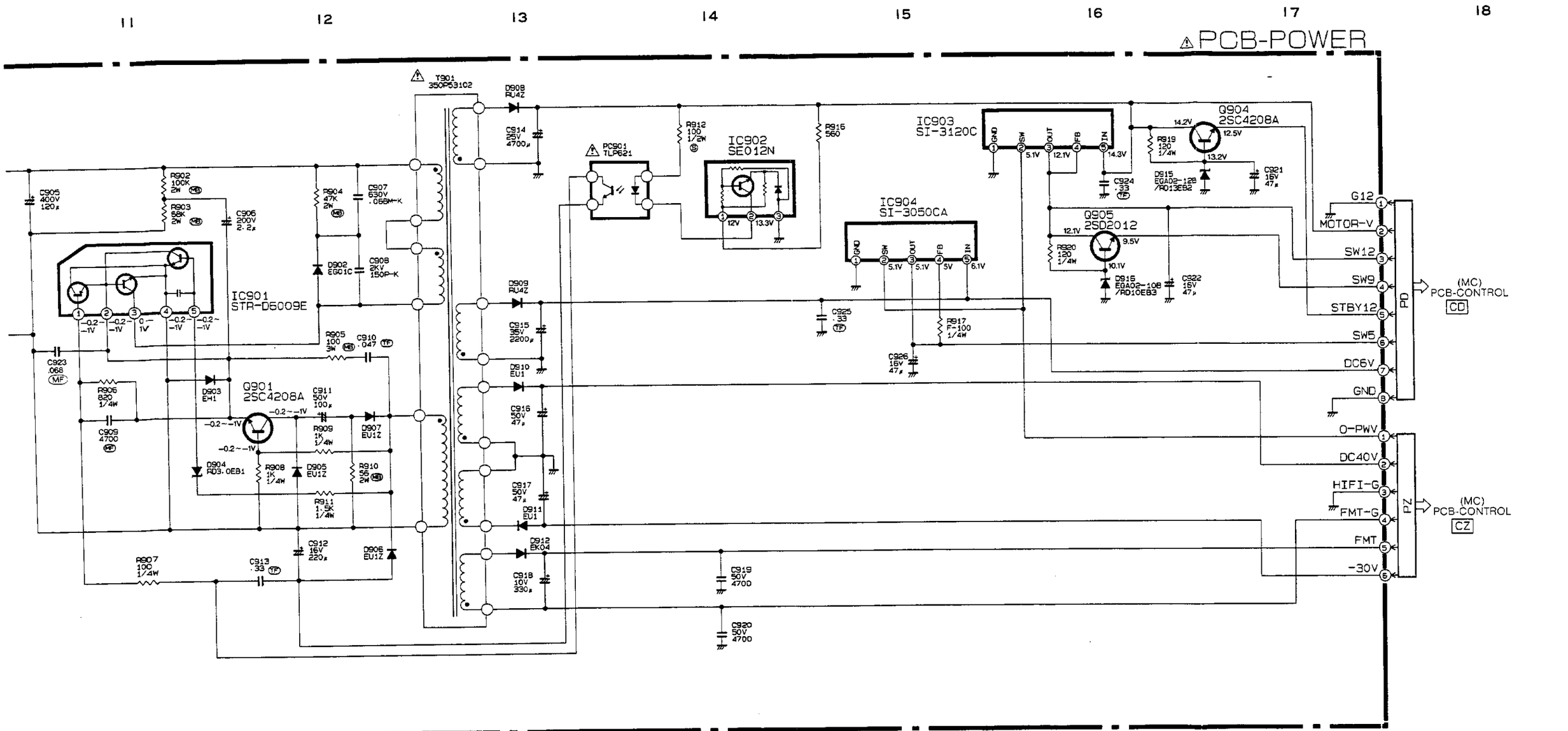
NOTE 2:

1. The unit of resistance "ohm" entirely omitted.
   Accordingly, K = 1000 ohms
   M = 1000K ohms.
2. The wattage of resistor, not specifically designated, is 1/4 watt except CHIP resistors.
3. Resistors, not specifically designated, are carbon resistors except CHIP resistors.
4. The marks of resistors are as follows.
   - (CE) : Cemented resistor
   - (MB) : Metal oxide film resistor (type B)
   - (S) : Fixed composition resistors
   - (W) : Wire wound resistor
   - (M) : Metal film resistor
5. The tolerance of resistor value, not specifically designated, is: ±5%, K = ±10% M = ±20%
6. The unit of capacitance, not specifically designated, is:
   a) µF, for numbers less than 1
   b) PF, for numbers more than 1
7. Capacitors, not specifically designated are Ceramic capacitors except electrolytic capacitors.
8. The marks of capa
   - (ALM) : Alur
   - (MF) : Poly
   - (PP) : Poly
   - (TAN) : Tant
   - (SC) : Sem
   - (TF) : Twi
   - (NP) : Non
   - ⏚ : Elect
9. The DC working
   nated is: 50V

⚠ SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFOR REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS.

DON'T DEGRADE THE SAFETY OF THE VCR THROUGH IMPROPER SERVICING.



ATIC DIAGRAM

were measured from points indicated to the cir-
with a digital voltmeter.
parenthesised are on SP recording mode.
without parenthesised on SP play back mode.

esistance "ohm" entirely omitted.
K = 1000 ohms
M = 1000K ohms.

of resistor, not specifically designated, is 1/4
CHIP resistors.
ot specifically designated, are carbon resistors
resistors.

4. The marks of resistors are as follows.
   - (CE) : Cemented resistor
   - (MB) : Metal oxide film resistor (type B)
   - (S) : Fixed composition resistors
   - (W) : Wire wound resistor
   - (M) : Metal film resistor
5. The tolerance of resistor value, not specifically designated, is: ±5%, K = ±10% M = ±20%
6. The unit of capacitance, not specifically designated, is:
   a) μF, for numbers less than 1
   b) PF, for numbers more than 1
7. Capacitors, not specifically designated are Ceramic capacitors except electrolytic capacitors.
8. The marks of capacitors are as follows:
   - (ALM) : Aluminus electrolytic capacitor
   - (MF) : Polyester capacitor
   - (PP) : Polypropylene film capacitor
   - (TAN) : Tantalum capacitor
   - (SC) : Semiconductor Ceramic Capacitors
   - (TF) : Twin film capacitor
   - (NP) : Non polarized electrolytic capacitor
   - ⊣⊢ : Electrolytic capacitor
9. The DC working voltage of capacitor, not specifically designated is: 50V
10. The tolerance of capacitor value, not specifically designated is: ±10%
    and J = ±5% K = ±10% M = ±20% P = $^{+100\%}_{-\ 0\%}$
    C = ±0.25PF D = ±0.5PF F = ±1PF Z = $^{+80\%}_{-20\%}$ N=±30%
11. Ceramic capacitors with the marks RH, UJ, SL, etc. are temperature compensating types.

SPECIFIC SYMBOL

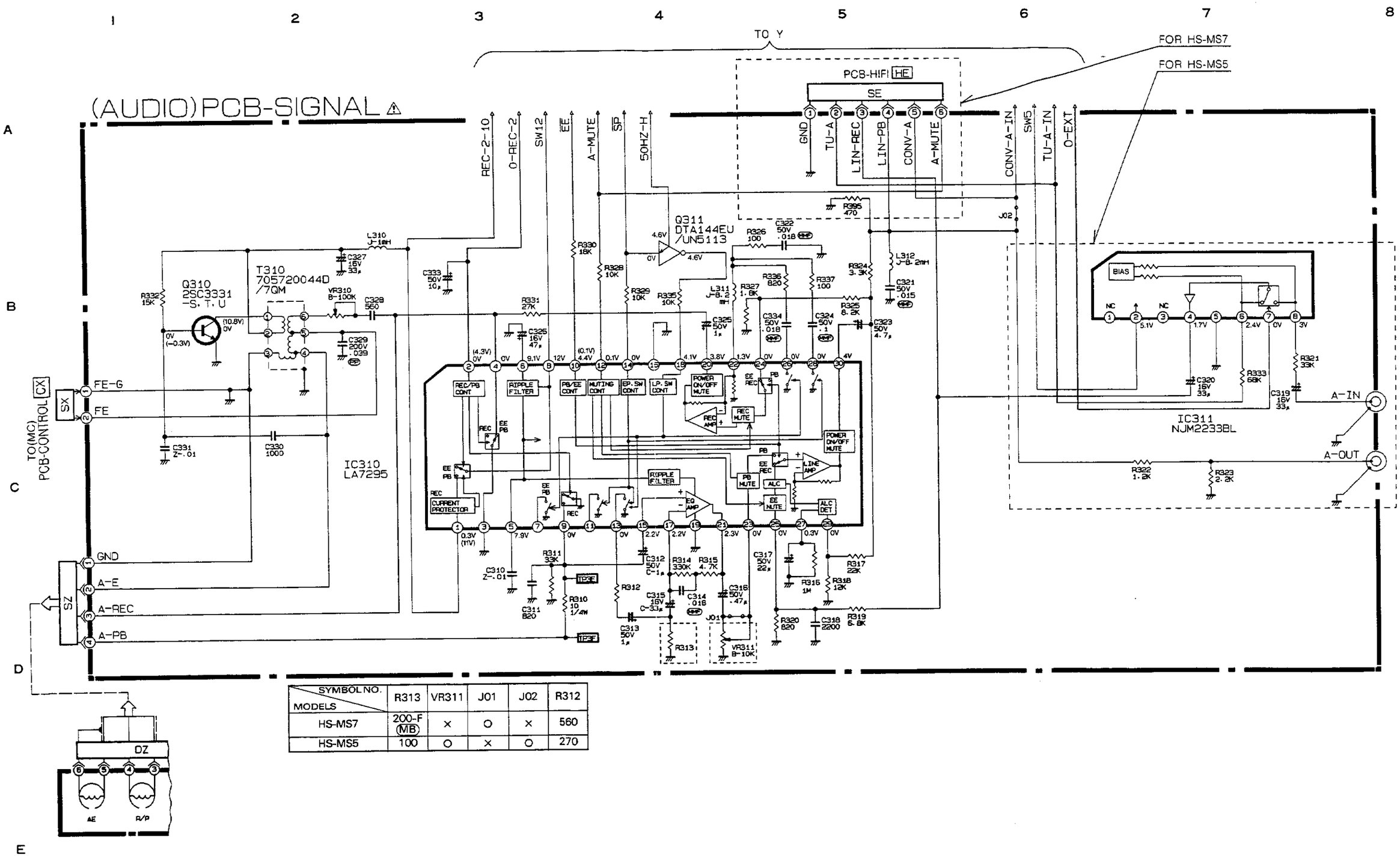
- Zener Diode
- Varicap
- Posistor
- Thermistor
- Fusible Resistor
- Crystal unit
- LE Diode
- Photo Diode
- Ceramic filter

PNP DIGITAL TRANSISTOR

NPN DIGITAL TRANSISTOR

This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

HS-MS5
HS-MS7(1/5)



SYMBOL NO. / MODELS	R313	VR311	J01	J02	R312
HS-MS7	200-F (MB)	×	○	×	560
HS-MS5	100	○	×	○	270

7 8 9 10 11 12 TEST 13 14

FOR HS-MS7

FOR HS-MS5

C256	
J-100	HS-MS7
J-180	HS-MS5

ONLY FOR HS-MS7

⚠ PCB-HEAD AMP

TP2XY

TP-3T HIF1-G GND TP-2Y TP-2X

BIAS NC NC 5.1V 1.7V 2.4V 0V 3V

IC311
NJM2233BL

A-IN A-OUT

R322 1.2K R323 2.2K R321 33K R333 68K C320 16V 33μ C319 16V 33μ

PCB-SIGNAL (Y) SA GA

PB-FM
PB-5V
REC-FM
FM-GND
PB-C
GND
REC-2-10
REC-C
SECAM

PCB-CONTROL (MC) CJ GJ

D-FF
HA-SW
NC
PB-FM
GND
SP
COMP

J03

R290 0 R227 1K C227 1000

Q201 2SC1906
R223 4.7K R240 330 R288 1K C249 SL L219 J-82μH L220 J-150μ R243 1.2K R267 330 C255 J-47 SL C252 SL-82 C256 SL VR203 B10K-N

Q210 DTC124EK R242 5.6K

C272 16V MA-.01 R201 680 L210 J-22μH R209 100 R210 82 C220 47 R202 330 R208 390 L211 J-5.6μH

C205 50 C209 J-.1μ TP

L201 100μH L213 100μ C206 6.3V 47μ C218 16V 47μ C204 L205 L206 J-22μH C207 J-6.8 SL R206 1.2K R207 1.5K

D202 R285 330K R286 120K C210 Z-.047 C211 Z-.047 C213 16V 47μ C216 16V MA-.01 C215 16V MA-.01 C221 25V .01

R211 470 R212 470 C230 50V 4.7μ R214 100 L212 5.6μH

IC201
XRA7254S

(0V) 3.2V (0V) 4.7V (0V) 2.7V (0V) 4.7V 0V (0V) 2.3V (0V) 2.2V 0V (10.6V) .5V (6V) 0V (6V) 0V (5.3V) 0V (5.3V) 0V (5.4V) 0V (5.3V) 0V

AGC Peaking Chroma Amp AGC Det Comp En V Det En V Det HA SW Head SW Head SW

PRE1 PRE2 PRE3 PRE4

1.5V (0V) 3V (1.2V) .8V (0V) .7V (0V) .7V (0V) .7V (0V) .8V (0V) .7V (0V) .7V (0V) .8V (0V) 4.9V 0V (5.3V)

R217 390 C240 J-.1 C246 50V 1μ R222 1K R249 150 Q208 2SA1037K-S 2.2V (0V) 1.5V (0V)

C237 C231 J-.1 C232 1μ C233 1μ C234 J-.1 C236 SL-.1

C244 J-.1 R219 1.5K C243 1μ C201 SL-56 C245 SL-82

R216 680 R218 1K C241 J-.1 C242 1μ R284 8.2K R283 2.7K C208 SL-82 C235 SL-220

R215 10 R340 10

IC3A0
BA7740S

A-L A-COM A-R LP-L LP-COM LP-R SP-L SP-COM SP-R

GB

TO DRUM

00	HS-MS7
80	HS-MS5

11 12 TEST 13 14 15 16 17

ONLY FOR HS-MS7

TP2XY

TP-3T HIFI-G GND TP-2Y TP-2X

Q210 DTC124EK

Q201 2SC1906

IC201 XRA7254S

AGC Peaking Chroma Amp Comp AGC Det En V Det En V Det H4 SW Head SW Head SW PRE1 PRE2 PRE3 PRE4

Q208 2SA1037K-S

IC3A0 BA7740S

PRE PRE SW VCA REC EP VCC

Q3A0 2SA1037K-S

ONLY FOR HS-MS7

A-L A-COM A-R LP-L LP-COM LP-R SP-L SP-COM SP-R

GB

TO DRUM

SW-5 PB.HIFI REC-HIFI A-FF-2

GF

PCB-HIFI HF

ONLY FOR HS-MS7

LP-L LP-COM LP-R SP-COM SP-R SP-L A-R A-COM A-L

1 2 3 4 5

A

B

C

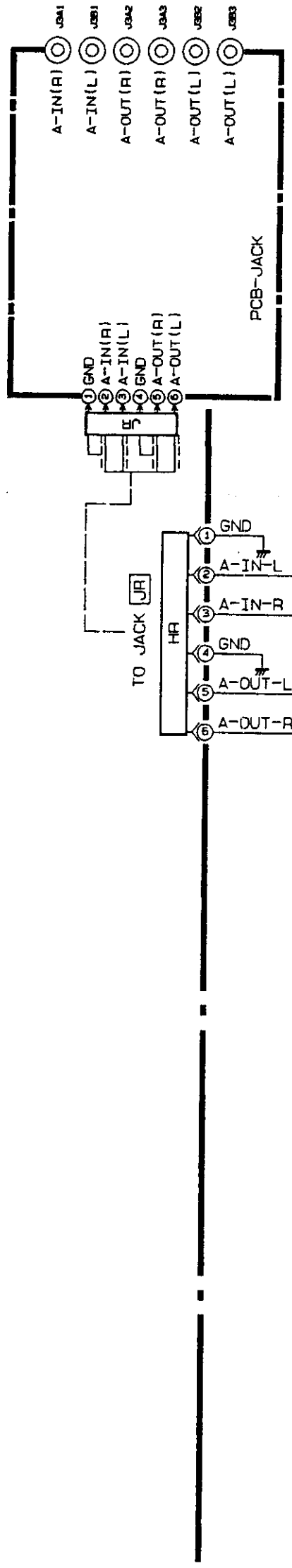
D

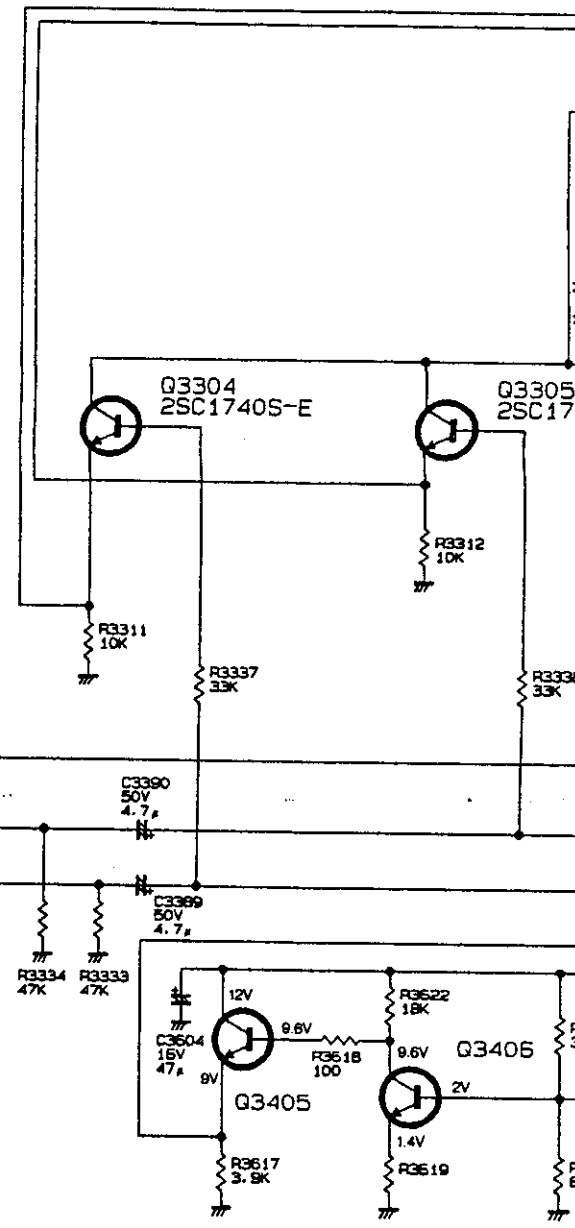
E

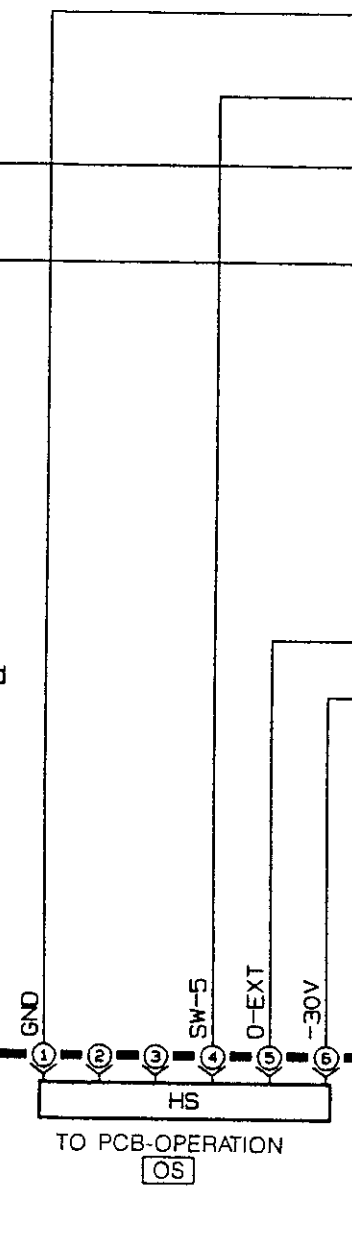
F

G

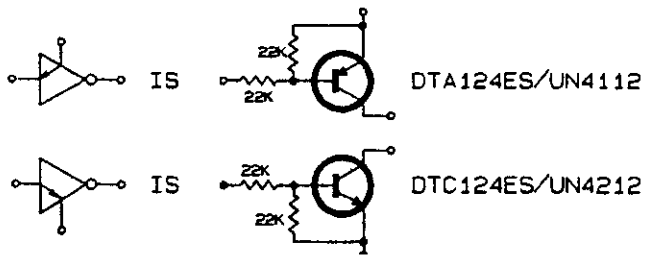
H

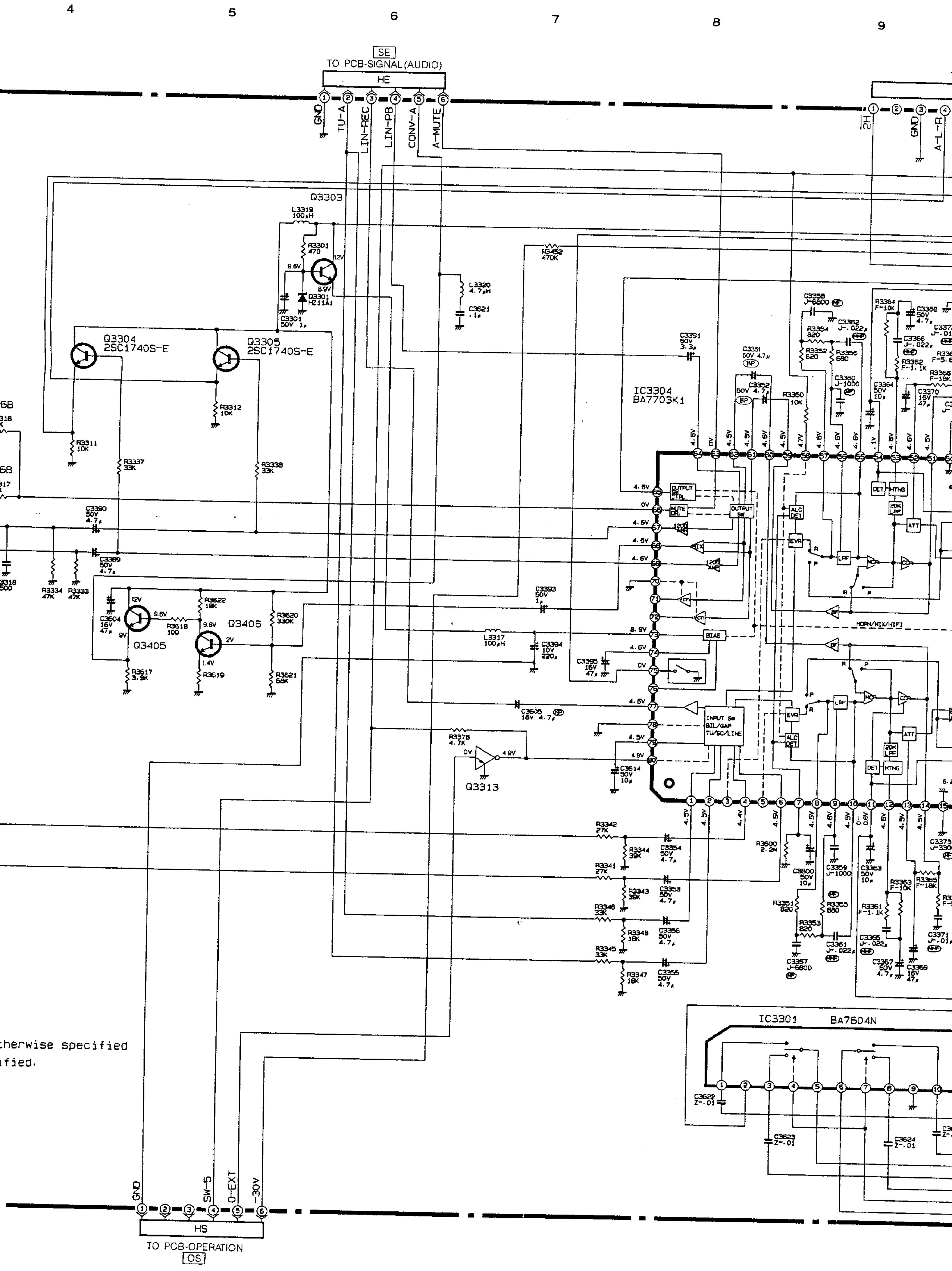






All diodes are 1SS252/1N4531 unless otherwise specified.
All NPN transistors are 2SC3311A-R.S/2SC1740S-R.S/JC501-P.Q unless otherwise specified
All PNP transistors are 2SA1309A-R.S/JA101-P.Q unless otherwise specified.





therwise specified
ified.

CU
TO PCB-CONTROL (REMAIN)
HU
2H GND A-L-R A-L-L NTSC HIFI -ENV SW-12 A-FF EE LNR-H R-ACT L-ACT

A-MUTE

R3630 10K
R3452 470K
L3320 4.7μH
C3621 .1μ

Q3409
4.8V (0V) 0V (3.6V)

IC3304
BA7703K1

C3391 50V 3.3μ
C3351 50V 4.7μ BP
C3352 50V 4.7μ BP
R3350 10K
C3358 J-6800 MF
C3362 J-.022μ MF
R3354 820
R3352 820
R3356 680
C3360 J-1000 MF
R3364 F-10K
C3368 50V 4.7μ
C3366 J-.022μ MF
R3362 F-1.1K
R3366 F-18K
C3364 50V 10μ
C3370 16V 47μ
C3410 J-1000 SL
C3372 J-.01μ MF
R3368 F-5.6K
C3374 J-3300 MF
C3376 K-1000 MF
C3378 K-1200 MF
C3408 J-1000P SL
R3390 27K
C3380 50V 4.7μ
VR3302 10K B
VR3312 200K-B
Q3310
R3370 F-27K
VR3306 B-20K
R3372 F-8.2K
C3382 16V 100μ
C3384 Z-.01μ
L3302 100μH

4.6V 0V 4.5V 4.5V 4.6V 4.5V 4.7V 4.6V 4.6V 4.6V .1V 4.5V 4.6V 4.5V 4.6V 4.5V 4.6V 4.5V 4.5V 2.5V 2.5V 2.4V 5V 2.5V
54 53 52 51 50 49 48 47 46 45 44 43 42 41

4.5V 56 OUTPUT SW CTRL
0V 55 MUTE CTRL
4.6V 57 120K MIX
4.5V 58 MIX
4.6V 59 120K AMP
OUTPUT SW
70 VCT
71 VCT
72 VCT
8.9V 73 BIAS
4.6V 74
0V 75
76
4.6V 77
78
4.5V 79
4.9V 80
INPUT SW BIL/GAP TU/SC/LINE

C3393 50V 1μ
L3317 100μH
C3394 10V 220μ
C3395 16V 47μ
C3605 16V 4.7μ
R3378 4.7K
0V 4.9V
Q3313
C3614 50V 10μ

ALC DET
EVR
LPF
MIX
CCA
AMP
ATT
20K LPF
DET HTNG
6.2K
HOLD2
11K
HOLD1
AUDIO LIM
PLC
EMPH AMP
RF
HORN/KIX/HIFI
PB/REC CTRL
P.O.
FM LPF
FM LIM
VCO
VCC
H.P. SHIFT
HOLD P.MM
FM DET
ENVE
OFF
C.O. DET
CARR DET

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
4.5V 4.5V 4.4V 4.5V 4.5V 4.6V 4.5V 0~0.6V 4.5V 4.5V 4.6V 4.6V 4.5V 2.5V 2.5V 2.5V 4.5V 2.3V

R3342 27K
R3344 39K
C3354 50V 4.7μ
R3341 27K
R3343 39K
C3353 50V 4.7μ
R3346 33K
R3348 18K
C3356 50V 4.7μ
R3345 33K
R3347 18K
C3355 50V 4.7μ

R3600 2.2M
C3600 50V 10μ
R3351 820
R3353 820
C3357 J-6800 MF
C3359 J-1000 MF
R3355 680
C3361 J-.022μ MF
C3363 50V 10μ
R3361 F-1.1K
C3365 J-.022μ MF
R3363 F-10K
R3365 F-18K
C3367 50V 4.7μ
C3369 16V 47μ
R3367 F-5.6K
C3371 J-.01μ MF
C3373 J-3300 MF
C3375 K-1000 MF
C3377 K-1200 MF
C3379 50V 4.7μ
R3389 27K
C3407 J-1000P SL
C3409 J-1000 SL
R3369 F-27K
VR3305 B-20K

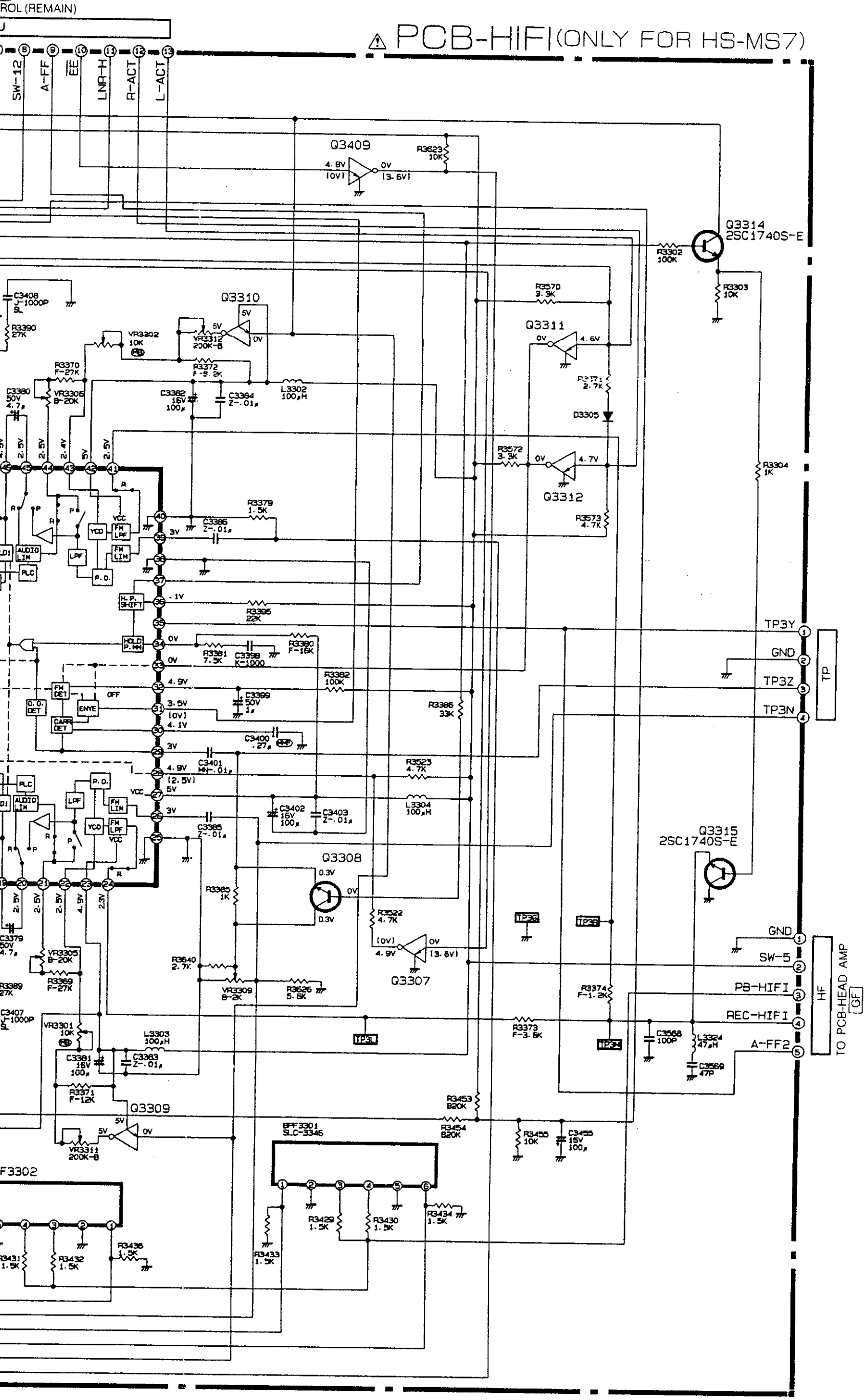
R3379 1.5K
C3386 Z-.01μ
3V
.1V
R3395 22K
0V
4.9V
3.5V (0V)
4.1V
3V
4.9V (2.5V)
5V
R3380 F-16K
R3381 7.5K
C3398 K-1000
R3382 100K
C3399 50V 1μ
C3400 .27μ MF
C3401 MN-.01μ
R3523 4.7K
L3304 100μH
C3385 Z-.01μ
C3402 16V 100μ
C3403 Z-.01μ
Q3308
0.3V 0V 0.3V
R3385 1K
R3522 4.7K
(0V) 0V 4.9V (3.
Q3307
R3640 2.7K
VR3309 B-2K
R3626 5.6K
VR3301 10K B
L3303 100μH
C3381 16V 100μ
C3383 Z-.01μ
TP3L
R3371 F-12K
Q3309
5V 5V 0V
VR3311 200K-B

IC3301 BA7604N
C3622 Z-.01
C3623 Z-.01
C3624 Z-.01
C3625 Z-.01
BPF3302
R3435 1.5K
R3431 1.5K
R3432 1.5K
R3436 1.5K
BPF3301 SLC-3345
R3433 1.5K
R3429 1.5K
R3430 1.5K

10 11 12 13 14

J
ROL (REMAIN)

⚠ PCB-HIFI (ONLY FOR HS-MS7)



HS-MS5
HS-MS7(2/5)

(CHROMA) PCB-SIGNAL ⚠

TO(Y): EE, SW5, C-SYNC, N, 8.86MHZ, V-IN, ROT, 4.43MHZ

PAL, 4.43NTSC, N-PAL, MESECAM

IC6A0 LA7333

IC6A0 ⑳ PLAY — 0.9Vp-p(H)

IC6A0 ① REC — 0.2Vp-p(H)

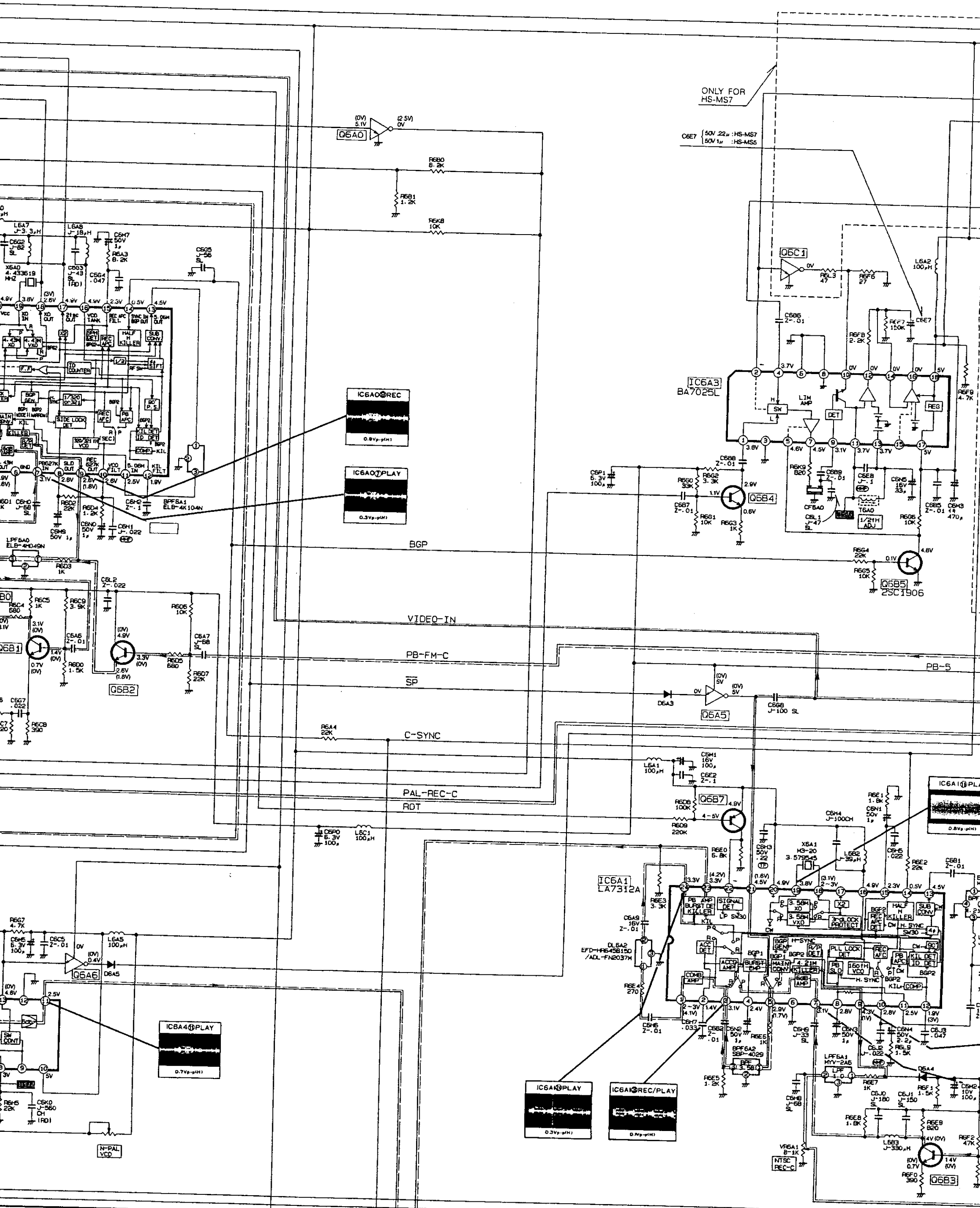
SP, PB-5, PB-FM-C

TO(Y): PAL, 4.43NTSC, N-PAL, MESECAM, SECAM, 3.58NTSC, B/W

TP6E PLAY — 0.3Vp-p(H)

IC6A4 M52063SP

IC6A4 ⑪ PLAY — 0.7Vp-p(H)


ONLY FOR HS-MS7
C6E7 50V .22μ :HS-MS7
50V 1μ :HS-MS5
Q6A0
(0V) 5.1V
(2.5V) 0V
R6B0 8.2K
R6B1 1.2K
R6K8 10K
Q6C1
0V
R6L3 47
R6F6 27
L6A2 100μH
C6B6 Z-.01
R6F8 2.2K
R6F7 150K
C6E7
IC6A3 BA7025L
3.7V
0V
5V
LIM AMP
SW
DET
REG
R6F9 4.7K
R6K9 820
C6B9 Z-.01
C6E8 J-.1
C6N5 16V 33μ
C6B5 Z-.01
C6M3 1μ 470μ
C6A0
T6A0
1/21H ADJ
C6L1 J-47 SL
R6G5 10K
C6P1 6.3V 100μ
C6B8 Z-.01
R6G0 33K
R6G2 3.3K
C6B7 Z-.01
R6G1 10K
R6G3 1K
Q6B4
2.9V
1.1V
0.6V
R6G4 22K
R6G5 10K
Q6B5 2SC1906
4.8V
0.1V
IC6A0 REC
0.8Vp-p(H)
IC6A0 PLAY
0.3Vp-p(H)
BGP
VIDEO-IN
PB-FM-C
SP
C-SYNC
PAL-REC-C
RDT
PB-5
D6A3
Q6A5
C6G8 J-100 SL
L6A1 100μH
C6M1 16V 100μ
C6E2 Z-.1
Q6B7
4.9V
4-5V
R6D8 100K
R6D9 220K
C6P0 6.3V 100μ
L6C1 100μH
R6E0 6.8K
C6H3 50V .22
X6A1 M3-20 3.579545
L6B2 39μH
C6H4 J-100CH
C6N1 50V 1μ
R6E1 1.8K
C6H5 .022
R6E2 22K
C6B1 Z-.01
IC6A1 LA7312A
R6E3 3.3K
C6A9 16V Z-.01
DL6A2 EFD-HR6458150 /ADL-FN2037M
R6E4 270
C6H6 Z-.01
C6H7 .033
C6B2 Z-.01
R6E5 1.2K
BPF6A2 SBP-4029
BPF 3.58
C6N2 50V 1μ
C6N3 50V 1μ
C6B9 J-33 SL
C6J2 J-.022
C6N4 50V 2.2μ
R6L5 1.5K
C6J3 .047
LPF6A1 MYV-2A6
LPF 4.0
D6A4
R6E7 1K
C6J0 J-180 SL
C6J1 J-150 SL
C6M2 10V 100μ
C6H8 J-68 SL
R6F1 1.5K
R6E8 1.8K
R6E9 820
L6B3 J-330μH
VR6A1 B-1K
NTSC REC-C
4V (0V)
(0V) 0.7V
1.4V (0V)
R6F0 390
Q6B3
IC6A1 ⑪ PLAY
0.8Vp-p(H)
R6G7 4.7K
C6H5 6.3V 100μ
C6C5 Z-.01
L6A5 100μH
D6A5
Q6A6
N-PAL VCO
C6K0 J-560 CH (RD)
R6H5 22K
SW CONT
IC6A4 ⑩ PLAY
0.7Vp-p(H)
IC6A4 ⑨ PLAY
0.3Vp-p(H)
IC6A4 ⑬ REC/PLAY
0.7Vp-p(H)
R6C4 680
R6C5 1K
R6C9 3.9K
C6A5 Z-.01
R6D0 1.5K
Q6B1
Q6B2
C6L2 Z-.022
R6D6 10K
R6D5 680
C6A7 SL-68
R6D7 22K
C6G7 .022
R6C8 390
R6A4 22K
C6P2 6.3V 100μ
L6C2 100μH
C6G2 J-82 SL
X6A0 4.433619 MHz
C6G3 J-43 SL (RD)
C6G4 .047
C6G5 J-56 SL
R6A3 8.2K
C6M7 50V 1μ
L6A7 J-3.3μH
L6A8 J-18μH
R6D2 22K
R6D4 1.2K
C6H0 J-68 SL
C6M9 50V 1μ
C6N0 50V 1μ
C6H1 J-.022
C6H2 Z-.1
BPF6A1 ELB-4K104N
LPF6A0 ELB-4H049N
R6D3 1K

8 9 10 11 12 13

ONLY FOR HS-MS7

C6E7 { 50V .22μ :HS-MS7 / 50V 1μ :HS-MS5

IC6A3 BA7025L

IC6A2 BA7107F

IC6A1 LA7312A

IC6A8 MC14053BF

IC6A9 MC14053BF

Q6C1 Q6B4 Q6B5 2SC1906 Q6B7 Q6B8 2SA952K Q6B6 Q6C2 Q6A5 Q6B3

D6A3 D6A5 D6A6 D6A7

BPF6A1 MYV-2A5 BPF6A2 SBP-4029 BPF6A3 MYV-30M BPF6A4 BPF6A5

LPF6A1 LPF6A2

DL6A2 EFD-HA6458150 /ADL-FN2037H

CF6A0 T6A0 X6A1 KG-20 3.579545

E06A0 E06A1 E06A2

VR6A1 B-1K NTSC REC-C

VR6A2 B-100K BLANK ADJ-1

VR6A3 B-1K SECAM REC-C

VR6A4 B-100K BLANK ADJ-2

VR6A5 B-100K

VR6A7 B-1K SECAM PB-C

4.3M-HZ BELL

IC6A1⑧PLAY

IC6A1③REC/PLAY

IC6A1⑦REC

IC6A1⑦PLAY

PB-5

SECAM 3.58NTSC B/W

10 11 12 13 14

O-DET-SW
i-DET
TO(Y)

TP6A PLAY
0.8Vp-p(H)
(MH-4)

TP6A REC
0.8Vp-p(H)
(G CARD)

TP6B REC
0.35Vp-p(H)
(G CARD)

TP6C REC
0.48Vp-p(H)
(G CARD)

TP6C PLAY
0.3Vp-p(H)
(MH-4)

IC6A2 BA7107F
IC6A8 MC14053BF
IC6A9 MC14053BF
Q6C2 2SA952K
Q6C0
Q6C5
BPF6A4
BPF6A5
BPF6A3 MYV-30M
LPF6A2
EQ6A0 REC EQ
EQ6A1 PB-EQ
EQ6A2 4.5M-HZ BELL
REC SYNC GATE
PB SYNC GATE
SYNC GATE TIMING GENERATOR
VR6A4 B-100K BLANK ADJ-1
VR6A5 B-100K BLANK ADJ-2
VR6A5 B-1K SECAM REC-C
VR6A7 B-1K SECAM PB-C
D6A7
D6A5
L6A3 100μH
L6A6 100μH
L6B4 J-47μH
L6B7 J-220μH
L6B6 J-220μH
L6E5 J-39μH
C6H4 10V 470μ
C6E6 Z-.1
C6C7 Z-.01
C6C8 Z-.01
C6B8 33μH
C6K4 SL-18
C6K1 16V 10μ
C6K6 J-33 CH
C6K3 J-560 CH (RD)
C6D6 Z-.01
C6F1 Z-.1
C6E8 Z-.01
C6E7 J-33 CH
C6K5 J-100 CH
C6L0 Z-.1
C6L3 Z-.01
C6C9 Z-.01
C6K8 J-120 SL
C6K9 J-120 SL
C6D0 Z-.01
C6D1 Z-.01
C6D5 Z-.01
C6M6 16V 100μ
C6M2 10V 100μ
C6B4 Z-.01
C6J4 J-27 SL
C6B3 16V Z-.01
C6M7 50V 10μ
C607 16V .01M-N
R6H9 1K
R6J0 1K
R6H6 4.7K
R6H8 1K
R6J2 150K
R6J1 10K
R6L0 2.2K
R6L1 4.7K
R6J6 820
R6J5 100
R6J7 3.3K
R6J8 8.2K
R6J3 470
R6K3 820
R6J4 220
R6M1 1.8K
R6M0 560
R6L5 1K
R6J9 560
R6K4 56
R6K7 8.8K
R6K0 1K
R6K2 100
R6K1 2.7K
R6H7 1K
R6K5 680
R6K6 1K
R6L6 1K
R6L2 100K
R6L8 100
R6M7 2.2K-F
R6M8 4.7K
R6L7 100K
R6F4 100K
R6F5 100K
R6F2 47K
R6F3 22K
R6L8 100-F:HS-MS7 100-J:HS-MS5
ONLY FOR HS-MS7
IC6A1⑧REC
IC6A1⑦PLAY
1.0Vp-p(H)
0.06Vp-p(H)
VIDEO IN
PB-FM-C
REC-C
PB-C
PB-5
SECAM
3.58NTSC
B/W
TO(Y)

1 2 3 4 5

A B C D E F G H

TO AUDIO

SW5 TU-A-OUT REC2-10 O-REC2 SW12 EE A MUTE SP CONV-A-IN O-EXT 50HZ-H

IC2A0⑦PLAY (1.4Vp-p(H))

IC2A0⑦REC (1.2Vp-p(H))

IC2A0⑧PLAY (2.4Vp-p(H))

IC2A2 BA7604N

L2A8 100μH

Q2B0 Q2B2 Q2B1 Q2N2 Q2N1

R2B8 220 R2N1 47K R2N2 47K R2L2 8.2K R2L1 680 R2L3 10K R2M4 3.9K R2K8 5.6K

C2N1 .022 C2B1 C2B3 C2B4 C2N3 4700P

D2N2 D2N1 X2H0 8.8291MHZ

D2B0 D2B2 R2A0 15K

LPF2A0 LPF2A1 NTSC

R2A3 R2A2 R2A1 R2B1 1K-F C2B5 C2B2 50V 10μ

C2D4 6.3V 100μ R2B2 R2F7 1K-F

5P

8.86MHZ

VIDEO IN

PB-C

PB-FM-C

REC-C

PB5V

ROT

SW5V

EE

C-SYNC

N

TO CHROMA

Q2B7 0V 5.1V R2B0 1K

C2H1 Z-.01 C2H0 Z-.01

2.1V 1.6V -5.8V 3.7V

BIAS VGG CLAMP CCD 565-5011 SUB VOLTAGE CLOCK

-5.8V 8.3V 7.8V 12.1V 3.5V 3.2V

C2H3 50V 1μ C2F2 50V 4.7μ

R2H1 68 R2H2 560 R2H3 560 C2H4 Z-.01 C2H5 -10 L2H2 J-33μH C2H6 -30

C2H7 Z-.01 C2H5 16V 33μ L2H0 100μH

C2G0 1000

CONV-V-IN

CONV-A-IN

SW5V

50Hz

TU-V

BS-1

BS-2

NR45V

SW12

SW9

TU-VIDEO OUT

i-SD-1

i-SD-2

TU-A-OUT

STBY12

TO TUNER

D2A2

Q2A3 R2L7 150K

Q2C7 4.6V 0V

4.43MHz

B/W

N-PAL

MESECAM

SECAM

4.43NTSC

3.58NTSC

PAL

i-DET

O-DET-SW

D2B4

D2A3

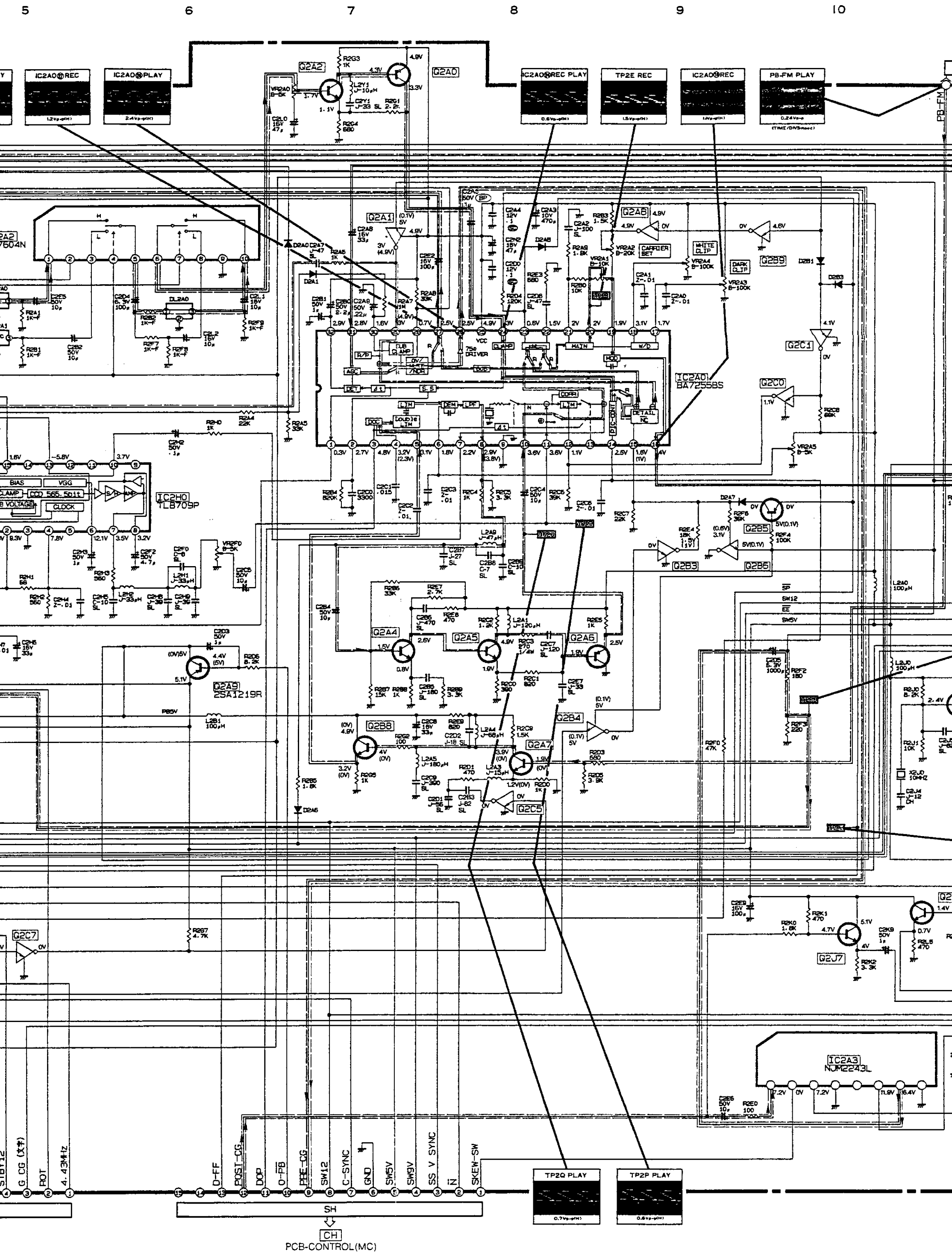
C2C3 .01

O-MUTE 1 | i-SD-1 2 | EE 3 | i-SD-2 4 | PIX 5 | TU-V 6 | O-EXT 7 | BS-1 8 | BS-2 9 | O-DET-SW 10 | i-DET 11 | PAL 12 | 3.58NTSC 13 | 4.43NTSC 14 | SECAM 15 | MESECAM 16 | N-PAL 17 | B/W 18 | EDIT 19 | GND 20 | RC-G (※) 11 | SP 10 | EE 9 | NR45V 8 | REC2 7 | GND 6 | 50HZ-H 5 | STBY12 4 | G CG (※※) 3 | ROT 2 | 4.43MHz 1

SL → TL PCB-TIMER

SG → CG PCB-CONTROL(MC)

※ TO TUNER/VIF


5
6
7
8
9
10
IC2A0 REC
IC2A0 PLAY
IC2A0 REC PLAY
TP2E REC
IC2A0 REC
PB-FM PLAY
PB-FM
Q2A2
Q2A0
Q2A1
Q2A8
Q2A9
2SA1219R
IC2H0
TL8709P
IC2A0
BA7255BS
IC2A3
NJM2243L
Q2A4
Q2A5
Q2A6
Q2A7
Q2A8
Q2B4
Q2B5
Q2B6
Q2C0
Q2C1
Q2C5
Q2C7
Q2J7
CARRIER SET
WHITE CLIP
DARK CLIP
TP2Q PLAY
TP2P PLAY
SH
CH
PCB-CONTROL(MC)

9 10 11 12 13 14

PCB-HEAD AMP
GA

SA

(Y) PCB-SIGNAL

PB-FM
PB-5
REC-FM
PB-C
REC-2-10
REC-C
SECAM

IC2A0 REC
PB-FM PLAY
REC-C
PB-C PLAY
VIDEO IN REC
TP2J PLAY
TP2H PLAY

IC2A0
BA7255BS

IC2A1
BA7021

IC2X1
NJM2235S

IC2J0
TL8812P

IC2A3
NJM2243L

Q2C0 Q2C1 Q2B9 Q2B5 Q2B3 Q2B6 Q2J0 Q2J1 Q2J2 Q2J3 Q2J4 Q2J5 Q2J7 Q2J8

WHITE CLIP
DARK CLIP

IF-IN
GND
RF-AGC OUT

AFT-OUT
SW9
VIDEO-OUT
SW12
AUDIO-OUT
BU
BT
BH
BL
GND
NTSC

TO
TG

Q01
2SC4081-R

CONV-V-IN
CONV-A-IN
SW5
50HZ
Q02
DTC144EU
/UN5312
TU-V
BS-1
BS-2
NR45
SW12
SW9
TUNER-V-OUT
i-SD-1
i-SD-2
AUDIO-OUT
STBY12

TO(Y)

13 14 15 16 17

SIGNAL⚠

VIDEO IN REC

TP2J PLAY

TP2H PLAY

J2A0

R2E2 82

C2D6 16V 100μ

R2D8 68

⚠PCB-VIF PACK

VIF-PACK (PAL/NTSC)

IF-IN GND RF-AGC OUT GND AFT OUT V. VCC RF-AGC DELAY VIDEO-OUT IN B/G I AUDIO-MUTE GND A. VCC A-OUT SIF-OUT

R06 2N FUSE

AFT-OUT
SW9
VIDEO-OUT
SW12
AUDIO-OUT
BU
BT
BH
BL
GND
NTSC

TG

⚠TU01 29SP260-1

BU BT BH AGC BL AFC BM IF

R05 10K R04 4.7K R03 100 C01 50V 3.3μ R01 18K R02 10K C03 .047 C02 25V 100μ C04 .33 (TF)

⚠PCB-SIGNAL(TUNER/VIF)

Q01 2SC4081-R

R01 82K R03 2.2K R02 27K R04 2.2K R05 2.2K C01 50V 1μ (BP)

Q101 2SC4098-Q

R134 3.3K R133 3.3K R131 18K R130 390K C104 50V 1μ C105 2700 C107 .01 C106 50V .47μ R132 82K R128 1K R129 1K R140 220 R125 150 R124 150

IC102 LA7212

GATE COMPARATOR AMP AND ATF WINDOW COMPARATOR 1/32 COUNT DOWN AFC SYNC SEP VCO 321H

CONV-V-IN
CONV-A-IN
SW5
50HZ
TU-V
BS-1
BS-2
NR45
SW12
SW9
TUNER-V-OUT
i-SD-1
i-SD-2
AUDIO-OUT
STBY12

R06 47K C02 50V 22μ Q02 DTC144EU /UN5312

CF101 CSBS00E5 R137 1K R135 15K R136 1.2K C101 P-1000 C102 J-220 SL C103 50V .47μ C114 J-100 SL Q102 2SA1575-R R127 10K C109 J-.33 (TF) C110 16V 47μ L102 100μH L103 100μH

⚠CU01 MDLH3E023A

V G A MOD-HB BST-HB L101 10μH C113 J-.1 (TF)

IC101 LA7910

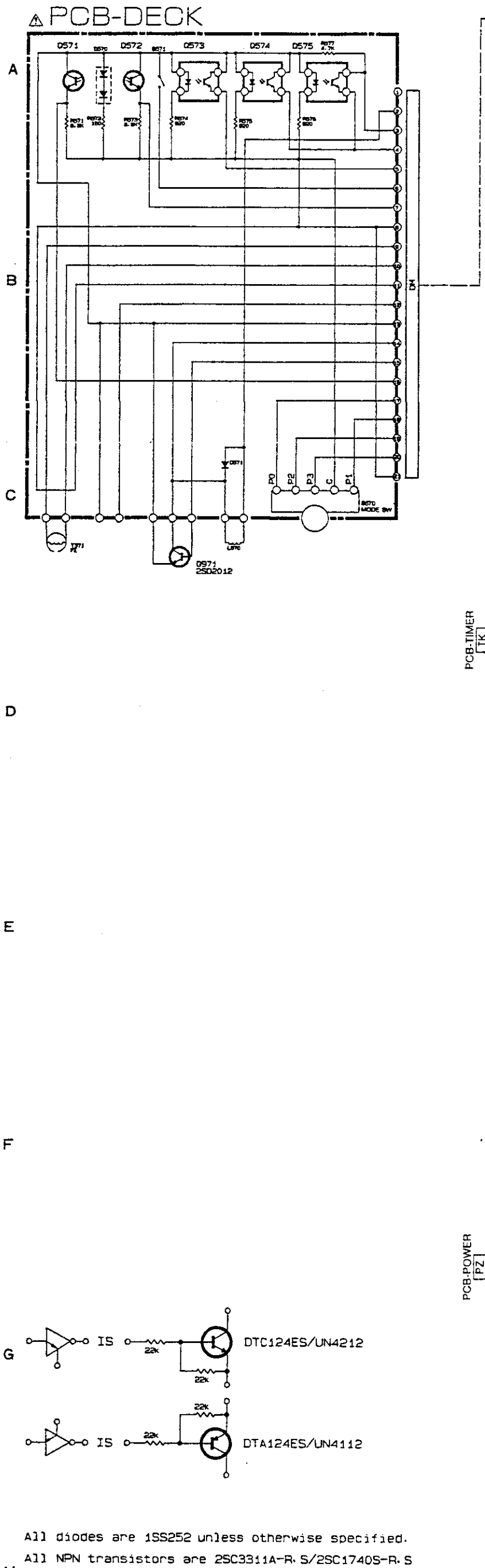
BL BH BU BY

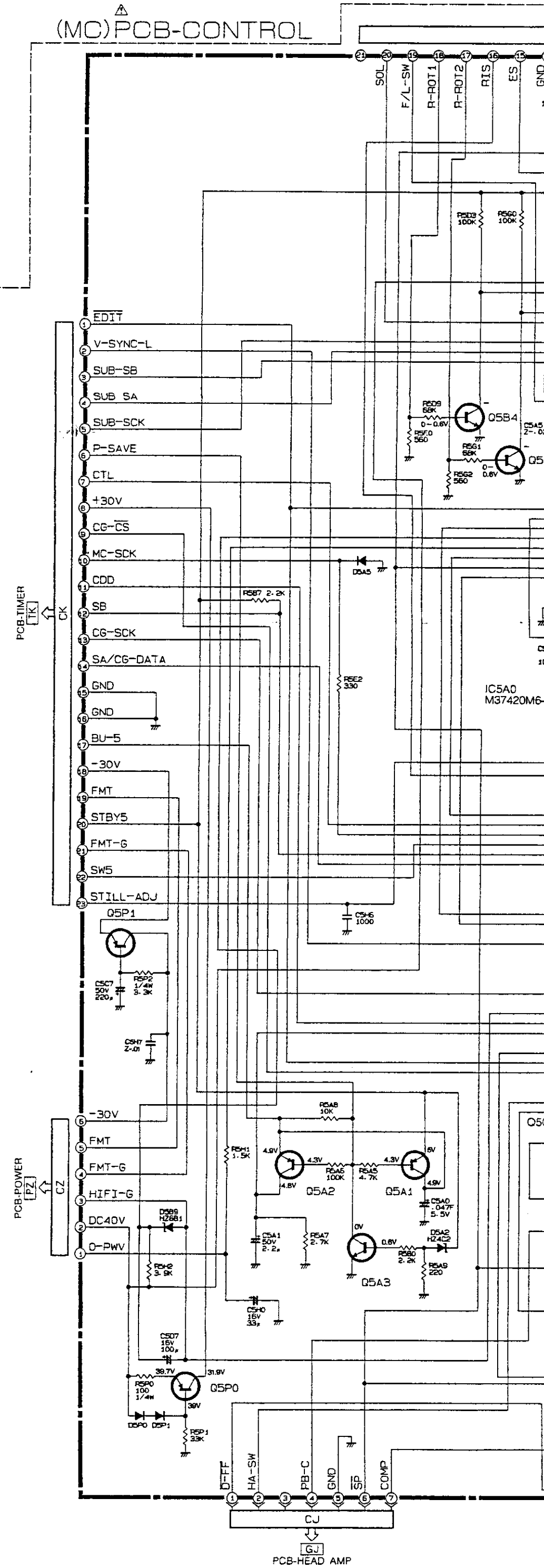
R119 10K R120 10K R121 3.9K R122 3.9K R123 4.7K 1/2W C112 50V 10μ R138 10K

SG

TO(Y)

HS-MS5
HS-MS7(3/5)





All diodes are 1SS252 unless otherwise specified.

All NPN transistors are 2SC3311A-R. S/2SC1740S-R. S unless otherwise specified.

All PNP transistors are 2SA1309A-R. S/2SA933S-R. S unless otherwise specified.

CB-CONTROL

TO DECK

CM

PCB-SIGNAL(Y)

SG

CG

SOL F/L-SW R-ROT1 R-ROT2 RIS ES GND FE FE-G GND STBY5 C B SS P0 P1 P2 P3 GND

EDIT GND R-CG SP EE DC40V REC-2 GND 50/60HZ STBY12 G-CG ROT 4.43MHZ

R5C9 100K R5G0 100K

R5D9 68K 0~0.6V R5F0 560 Q5B4 C5A5 Z-.022

R5G1 68K 0~0.6V R5G2 560 Q5A4

R5H3 4.7K C5A4 Z-.022

D5C9 R5H0 18K

R5C4 1K R5C5 10K R5C0 100K

D5A5 R5B7 2.2K C5F8 MY-.01 C5A2 16V 100μ R5E2 330

IC5A0 M37420M6-475SP

R5C7 10K

Vcc O-EE O-REC2 O-PWV O-HASH O-SP O-SKSH O-L O-UL O-DN O-SL 50/60HZ O-HBRK CP-FWD P0-EE SCK SDT P0 P1 P2 P3 R-ROT FL1 I-VSYNC SS ES

CTL-GAIN OET-SW CP-ADJ DRF-ADJ V-ENV A-ENV STADJ /FED I-PRT I-DET SOK SO SI CP-FG RIS I-CTL I-CON O-HPLS PB-VSYNC O-CPOT SS-VSYNC I-FF CNVSS RES X IN X OUT VSS

R5A1 100K R5A0 1K R5C8 2.2K L5A6 .33μH L5A4 .56μH

C5H6 1000

J1 ONLY FOR HS-MS5

C5F7 270

R5A8 10K R5H1 1.5K Q5A2 Q5A1 C5A0 .047F 5.5V C5A1 50V 2.2μ R5A7 2.7K Q5A3 R5B0 2.2K D5A2 HZ4C2 R5A9 220 D5B9 HZ6B1 R5H2 3.9K C5H0 16V 33μ C5D7 16V 100μ Q5P0 R5P1 33K D5P1

Q5C6 R5G3 82 1/4W R5G4 330 R5G5 1K R5N1 2.2K R5N9 2.2K L5A2 J-22μH Q5C3 C5G2 270 R5N8 8.2K R5N0 1K Q5C2 2SC2058S-P R5N2 1/4W 120 Q5C1 R5G8 820 Q5C0 R5G7 68

C5D0 CH C5D1 J-68P CH C5D2 MN-.01 R5P9 68K D5C5 D5B4 R5N3 4.7K R5N4 470K C5D3 6800 L5A0 100μH C5B2 16V 100μ R5B1 12K R5B2 12K D5D2 R5N5 47K Q5C4 2SC1906

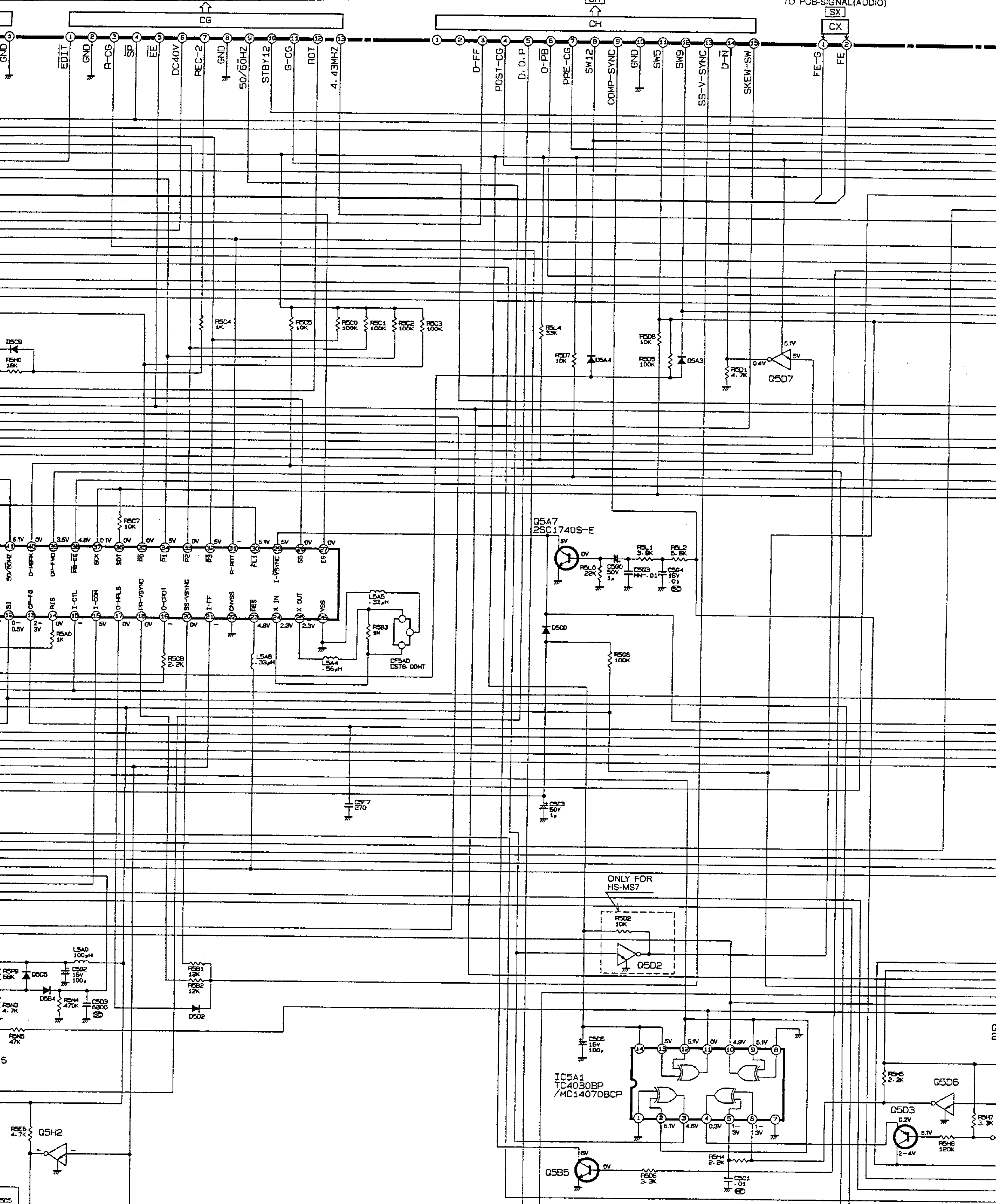
Q5A8 R5E7 27K R5F5 100K R5F4 4.7K C5A9 1800 D5A0 R5F3 120K Q5A5 R5F6 4.7K R5E6 4.7K Q5H2 C5C5 MN-2200 R5A4 4.7K

D-FF HA-SW PB-C GND ISP COMP

CJ

GJ

PCB-HEAD AMP



TO PCB-SIGNAL(AUDIO)
SX
CX
CG
CH
GND
EDIT
GND
R-CG
SP
EE
DC40V
REC-2
GND
50/60HZ
STBY12
G-CG
ROT
4.43MHZ
D-FF
POST-CG
D.O.P
O-PB
PRE-CG
SW12
COMP-SYNC
GND
SW5
SW9
SS-V-SYNC
D-N
SKEW-SW
FE-G
FE
R5C4 1K
R5C5 10K
R5C0 100K
R5C1 100K
R5C2 100K
R5C3 100K
D5C9
R5H0 18K
R5L4 33K
R5D7 10K
D5A4
R5D8 10K
R5D5 100K
D5A3
R5D1 4.7K
Q5D7
R5C7 10K
50/60HZ
O-HSRK
CP-FWD
PB-EE
SCK
SOT
P0
P1
P2
P3
R-ROT
FL1
I-VSYNC
SS
ES
SI
CP-FG
RIS
I-CTL
I-CON
O-HPLS
PR-VSYNC
O-CROT
SS-VSYNC
I-FF
CNVSS
RES
X IN
X OUT
VSS
R5A0 1K
R5C8 2.2K
L5A6 .33μH
L5A5 .33μH
R5B3 1M
L5A4 .56μH
CF5A0 CSTB. DOMT
Q5A7
2SC1740S-E
R5L0 22K
C5G0 50V 1μ
C5G3 MN-.01
R5L1 3.9K
R5L2 5.6K
C5G4 16V .01
D5C0
R5G6 100K
C5F7 270
C5E3 50V 1μ
ONLY FOR HS-MS7
R5D2 10K
Q5D2
L5A0 100μH
R5P9 68K
D5C5
C5B2 16V 100μ
D5B4
R5N3 4.7K
R5N4 470K
C503 6800
R5N5 47K
R5B1 12K
R5B2 12K
D502
C5C6 16V 100μ
IC5A1
TC4030BP
/MC14070BCP
R5H5 2.2K
Q5D6
Q5D3
R5H7 3.3K
R5H6 120K
R5H4 2.2K
C5C1 .01
Q5B5
R506 3.3K
R5E6 4.7K
Q5H2
R5A4 4.7K

PCB-SIGNAL(Y)
SH
CH
TO PCB-SIGNAL(AUDIO)
SX
CX
PCB-POWER
PD
CD
TO DECK
CI
ONLY FOR HS-MS7

6 O-PB
7 PRE-CG
8 SW12
9 COMP-SYNC
10 GND
11 SW5
12 SW9
13 SS-V-SYNC
14 D-N
15 SKEW-SW
1 FE-G
2 FE
1 G12
2 MOTOR-V
3 SW12
4 SW9
5 STBY12
6 SW5
7 DC5V
8 GND
1 GND
2 GND

SP
60HZ
A-FF
HIFI-ENV
SW12
EE
I-DET
DET-SW
NTSC-LP
BB
TU-SENS
SU-SENS
PB
RMN-SCK
RMN-SA
RMN-SB
CTL
SW9
SW5
STBY5
RESET
CP-FG

TO REMAIN

R5L4 33K
R507 10K
D5A4
R508 10K
R505 100K
D5A3
R501 4.7K
5.1V
5V
0.4V
Q5D7
R5K2 10K

Q5A7
2SC1740S-E
6V
0V
R5L1 3.9K
R5L2 5.6K
R5L0 22K
C5G0 50V 1μ
C5G3 MN-.01
C5G4 16V .03
D5C0
R5G5 100K
C5E3 50V 1μ

UL
L
CP-FWD
G12
MOTOR-V
50/60HZ
CP-FG1
STBY5
A-FF
CTL-F
CDD
CP-FG
SI
GND
VSYNC
4.43MHZ
SW5
CP-OUT
SL
CTL
D-OUT
PB-START
D-FF

TO SERVO

R5H4 15K

ONLY FOR HS-MS7
R5D2 10K
Q5D2
D5C1

C5C5 16V 100μ
IC5A1
TC4030BP
/MC14070BCP
5V 5.1V 0V 4.9V 5.1V
5.1V 4.6V 0.3V 1-3V 1-3V
Q5B5
6V
0V
R5B6 3.3K
R5H4 2.2K
C5C1 .01

Q5C5
2SC2058S-N, P
(2.9V) 2.2V
5.1V
R5S7 1K
1.8V (2.6V)
R5H5 2.2K
Q5D6
R5S9 3.3K
2-4V
Q5D3
0.2V
5.1V
R5H6 120K
R5H7 3.3K
Q5D5
R5H8 2.2K
Q5D4
2-3V
2-4V
R5H9 120K
Q5D1

PB-EE
60HZ
50HZ
POST-CG
SW5
G-CG
R-CG
O-BB
STBY5
VSYNC
COMP-SYNC
EDIT
CG-SCK
RESET
CG-CS
CG-DATA
EE
PRE-CG

TO CG

(AUDIO)

PD

TO DECK

CD

CI

ONLY FOR HS-MS7

G12 MOTOR-V SW12 SW9 STBY12 SW5 DC6V GND GND GND

SP
60HZ
A-FF
HIFI-ENV
SW12
EE
I-DET
DET-SW
NTSC-LP
BB
TU-SENS
SU-SENS
PB
RMN-SCK
RMN-SA
RMN-SB
CTL
SW9
SW5
STBY5
RESET
CP-FG

TO REMAIN

R5K2 10K

UL
L
CP-FWD
G12
MOTOR-V
50/60HZ
CP-FG1
STBY5
A-FF
CTL-F
CDD
CP-FG
SI
GND
VSYNC
4.43MHZ
SW5
CP-OUT
SL
CTL
D-OUT
PB-START
D-FF

TO SERVO

R5M4 15.1K

DSC1

Q5C5
2SC2058S-N, P

(2.9V) 2.2V
5.1V
R5S7 1K
1.8V (2.6V)

R5H5 2.2K
Q5D6
R5S9 3.3K
2~4V
Q5D3
0.2V
5.1V
R5H7 3.3K
R5H8 2.2K
Q5D4
R5H9 120K
R5H6 120K
2~4V
Q5D5
2~3V
2~4V
Q5D1

PB-EE
60HZ
50HZ
POST-CG
SW5
G-CG
R-CG
D-BB
STBY5
VSYNC
COMP-SYNC
EDIT
CG-SCK
RESET
CG-CS
CG-DATA
EE
PRE-CG

TO CG

SYMBOL NO. / MODELS	A AREA	B AREA	J1	J2	J3	J4	J5	RSZ0	RSZ1	RSZ2	RSZ3	C AREA	J6	RSX3
HS-MS7	O	O	×	×	×	×	×	O	O	O	O	O	×	O
HS-MS5	×	×	O	O	O	O	O	×	×	×	×	×	O	×

O : Employed × : Not employed

PCB-HIFI HU — CU

L-ACT R-ACT LIN-H EE A-FF SW12 HIFI-ENV 60HZ A-L-L A-L-R SP

PCB-TIMER TY — CY

O-PAL O-SECAM O-MESECAM O-3.58NTSC O-4.43NTSC O-DET-SW I-DET

⚠ PCB-CONTROL (REMAIN)

TO MC

SB 60HZ A-FF HIFI-ENV SW12 EE

I-DET DET-SW NTSC-LP BB TU-SENS SU-SENS PB RMN-SCK RMN-SA RMN-SB CTL SW9 SW5 STBY5 RESET CP-FG

IC5Z1 M5223P

IC5Z0 M34225M2-125SP

TO MC

50/60HZ CP-FG1 STBY5 A-FF CTL-F CDD CP-FG SI GND VSYNC 4.43MHZ SW5 CP-OUT SL CTL D-OUT PB-START D-FF

LOADING MOTOR

CL M LM-1 LM-2

IC4A2 TA7291S

IN2 VSS OUT2 NC GND VS OUT1

UL L CP-FWD G12 MOTOR-V

⚠ PCB-CONTROL (CG)

All diodes are 1SS252 unless otherwise specified
All NPN transistors are 2SC9314-A.S/2SC1740S-A.S unless otherwise specified
All PNP transistors are 2SA1309A-A.S/2SA933S-A.S unless otherwise specified

PB-EE 60Hz 50Hz POST-CG SW5 G-CG R-CG O-BB STBY5 VSYNC COMP-SYNC EDIT CG-SCK RESET CG-CS CG-DATA EE PRE-CG

TO MC

Q513 2SC1740S-E

Q514 2SC1740S-E

Q504 2SC1740S-E

Q509 2SC1740S-S

Q507

Q510

Q506

Q508

Q503

Q502

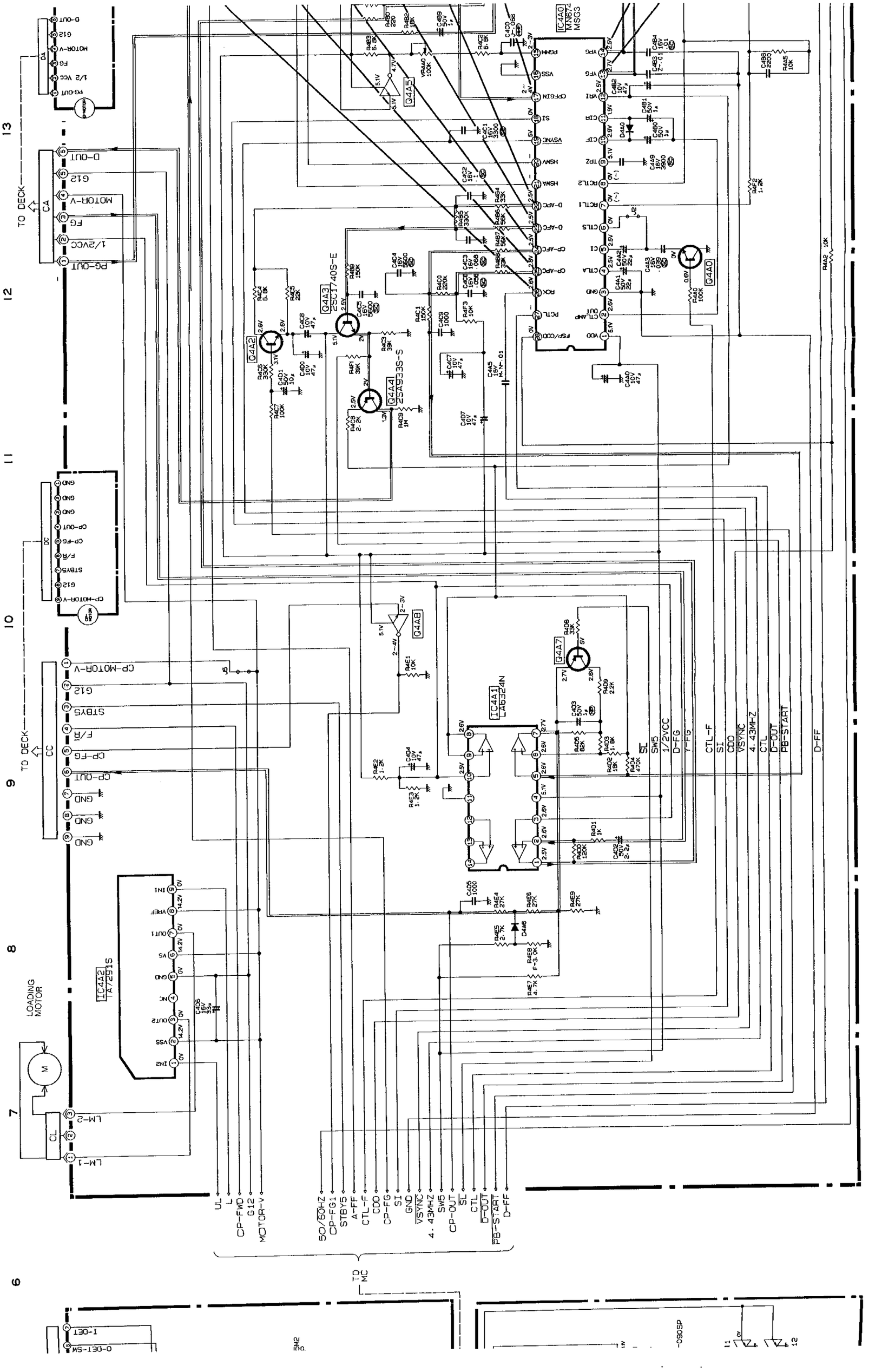
Q501

Q511

Q512

IC501 M50455-090SP

D4A6


TO DECK
CA
D-OUT
G12
MOTOR-V
FG
1/2VCC
PG-OUT
DA
CC
CP-MOTOR-V
STBY5
F/R
CP-FG
CP-OUT
GND
DC
CP-MOTOR-V
G12
STBY5
F/R
CP-FG
CP-OUT
GND
GND
GND
GND
GND
GND
CP-OUT
CP-FG
F/R
STBY5
G12
CP-MOTOR-V
LOADING MOTOR
M
CL
LM-2
LM-1
IC4A2 TA7291S
IC4A0 MN674 MSG3
IC4A1 LA6324N
Q4A0
Q4A2
Q4A3 2SC1740S-E
Q4A4 2SA933S-S
Q4A5
Q4A7
Q4A8
UL
L
CP-FWD
G12
MOTOR-V
50/60HZ
CP-FG1
STBY5
A-FF
CTL-F
CDD
CP-FG
SI
GND
VSYNC
4.43MHZ
SW5
CP-OUT
SL
CTL
D-OUT
PB-START
D-FF
TO MC
1/2VCC
D-FG
Y-FG
SL
SW5
1/2VCC
D-FG
Y-FG
CTL-F
SI
CDD
VSYNC
4.43MHZ
CTL
D-OUT
PB-START
D-FF
I-DET
O-DET-SW
13
12
11
10
9
8
7
6

10 11 12 13 14 15

TO DECK

DC CA DA

CP-MOTOR-V G12 STBY5 F/R CP-FG CP-OUT GND GND GND

PG-OUT 1/2VCC FG MOTOR-V G12 D-OUT

D-MOTOR PG-OUT 1/2 Vcc FG MOTOR-V G12 D-OUT

⚠ PCB-CONTROL (SERVO)

STBY5 G12 CP-MOTOR-V J5

IC4A1 LA5324N

Q4A2 Q4A3 2SC1740S-E Q4A4 2SA933S-S Q4A5 Q4A6 Q4A7 Q4A0

IC4A0 MN67492 MSG3

FSP/COD PCTL ROX CP-APC CP-AFC D-AFC D-APC HSMA HSMV VSYNC CPGIN VSS FGMH VDD CTLAMP OUT GND CTLA CI CTLS RCTL1 RCTL2 TPZ CIF CIH VRI YFG YPG

CTL− CTL+ CP CTL

J1

PLAY ⑦ 5.0Vp-p(V)

PLAY ⑧ 5.0Vp-p (TIME/DIV 10μsec)

PLAY ⑨ 5.0Vp-p (TIME/DIV 10μsec)

PLAY ⑩ 5.0Vp-p (TIME/DIV 10μsec)

PLAY ⑪ 5Vp-p(H)

PLAY ⑰ 5Vp-p (TIME/DIV0.1msec)

PLAY ⑱ 0.48Vp-p(V)

PLAY ⑲ 3.2Vp-p (TIME/DIV0.5msec)

IC4A0

I/O CDD AMP DIV CLOCK PB REC CAP PHASE PWM GAIN CONTROL CAP SPEED DRUM SPEED MM X DRUM PHASE FF REC CTL PCTL LOGIC CLAMP SERIAL DECODER REF LP, EP 1/2 SP FF/REW3,4

DRUM MOTOR

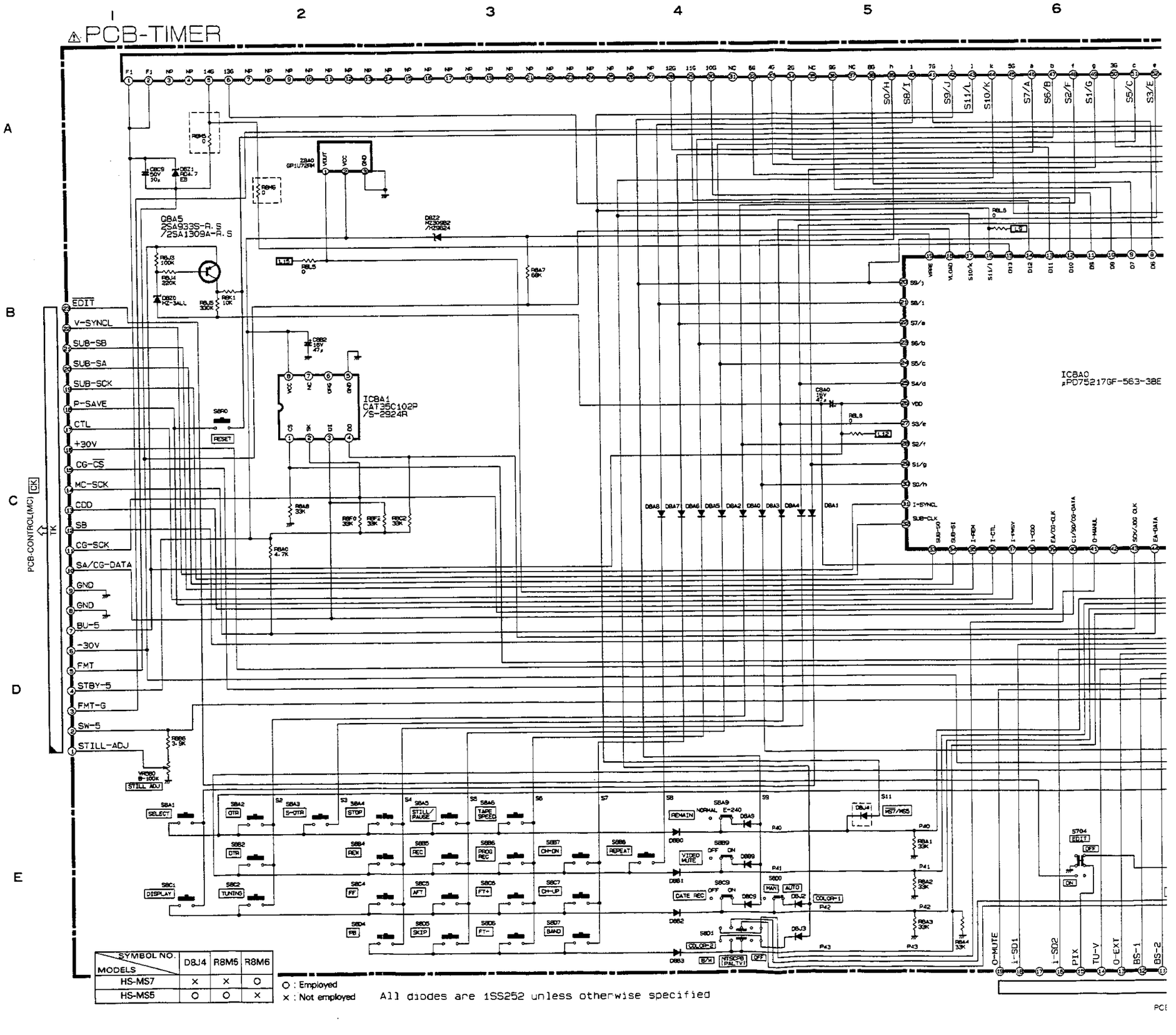
MOTOR(+) M56732L CONTROL MOTOR(−) FG PG GND FG OUTPUT PG OUTPUT FG

CAPSTAN MOTOR

IC M51782ASP TOP VIEW MOTOR COIL FG PG G5 G12

HS-MS5
HS-MS7(4/5)

⚠PCB-TIMER



SYMBOL NO. / MODELS	D8J4	R8M5	R8M6
HS-MS7	×	×	○
HS-MS5	○	○	×

○ : Employed
× : Not employed

All diodes are 1SS252 unless otherwise specified

4 5 6 7 8 9 10 11

Q8M0 DTA124ES /UN4112 | Q8M1 DTA124ES /UN4112 | Q8M2 DTA124ES /UN4112 | Q8M3 DTA124ES /UN4112 | Q8M4 DTA124ES /UN4112

i-DET
O-DETSW
4.43NTSC
3.58NTSC
O-MESECAM
O-SECAM
O-PAL
TO PCB-CONTROL (REMAIN) CT

IC8A0
μPD75217GF-563-3BE

SYMBOL NO. / MODELS	R8N1 R8N3	R8N0 R8N2	D8M1
HS-MS7	×	○	SLR-34MC3 SECAM
HS-MS5	○	×	SLR-340C3 PAL

○ : Employed × : Not employed

ONLY FOR HS-MS7

IC8A2 μPC574J-K. L
Q8A8 2SC1740S-E

TO PCB-HIFI HS
SW-5
O-EXT
-30V

S701 POWER
S702 EJECT
D701 SEL2210R POWER
R701 390

S0 P41 P40 SW-5 O-EXT -30V
TN ON
(FJ-H) (FJ-P)

S704 EDIT OFF ON
VR280 B-20K PICTURE

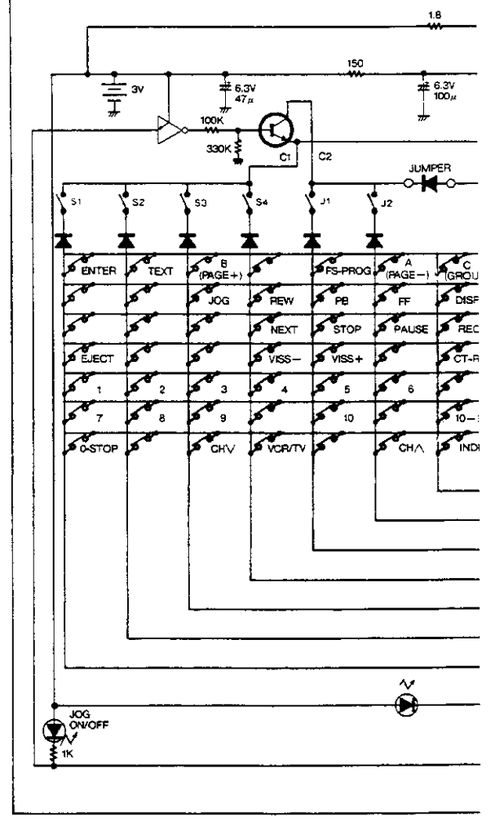
S8A9 REMAIN NORMAL E-240
S8B8 REPEAT
S8B9 VIDEO MUTE OFF ON
S8C0 MAN AUTO
S8C9 DATE REC OFF ON
S8D1 COLOR-2
S11 RST/MSS
B/W NTSC/PAL/TV OFF

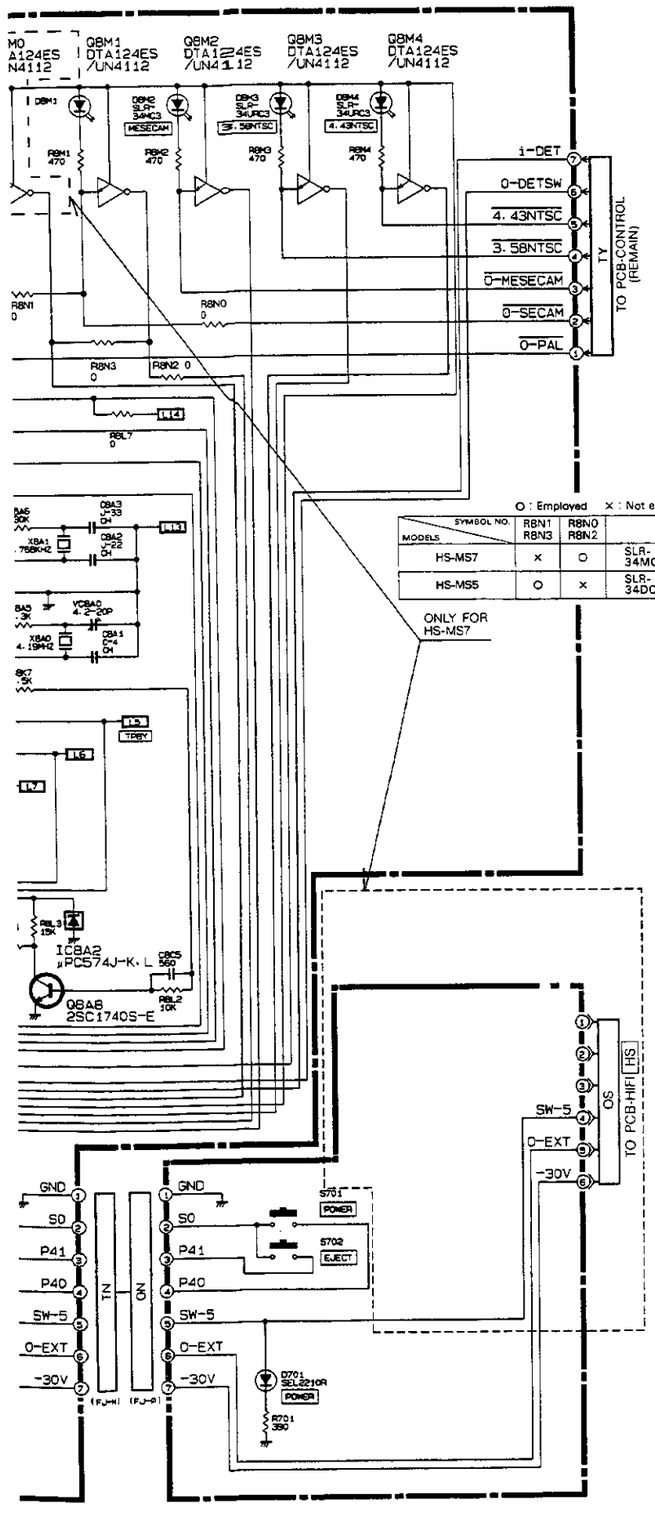
O-MUTE i-SD1 i-SD2 PIX TU-V O-EXT BS-1 BS-2 O-DETSW i-DET O-PAL O-3.58NTSC O-4.43NTSC O-SECAM O-MESECAM O-N-PAL O-B/W

TL
PCB-SIGNAL(Y) SL

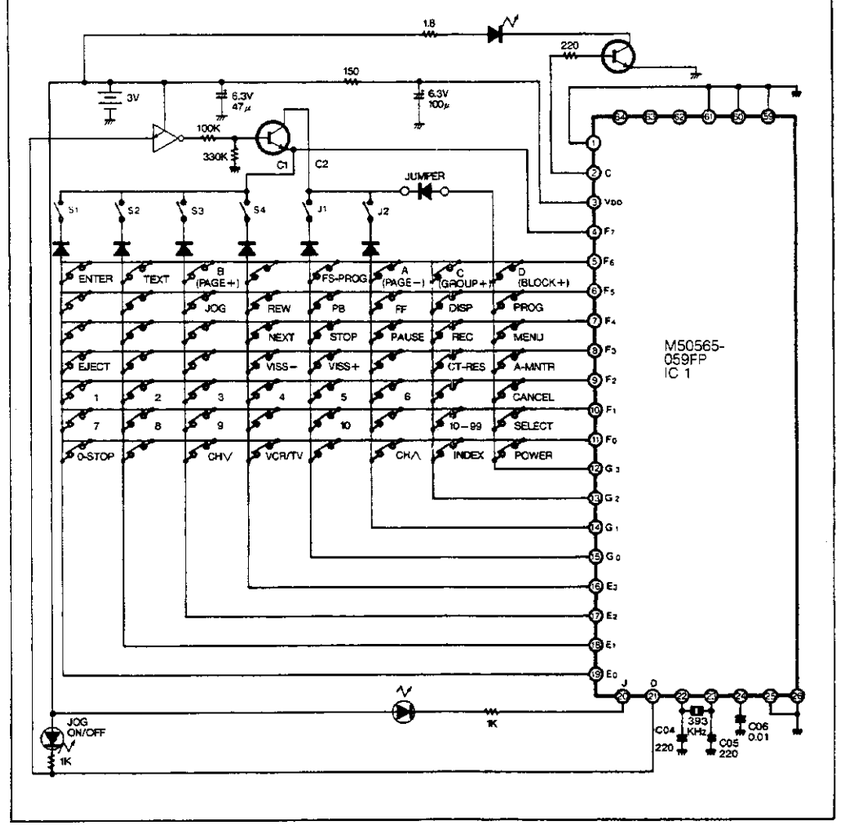
erwise specified

TRANSMITTER REM

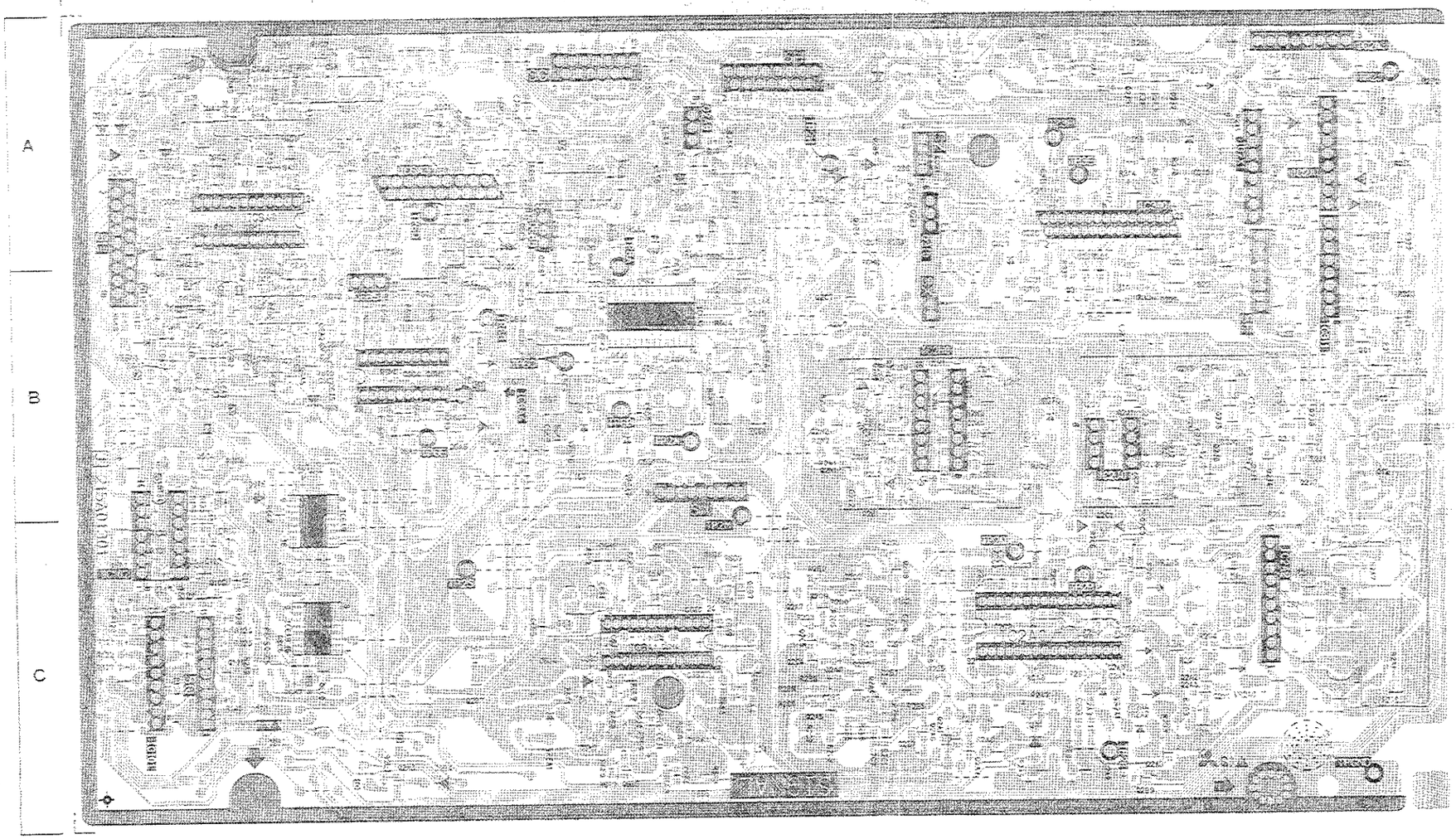




TRANSMITTER REMOTE CONTROL

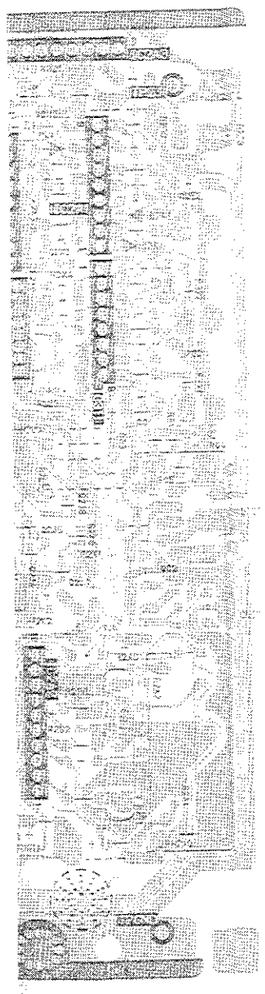


PCB-SIGNAL



SYMBOL NO.	ADDRESS
BPF6A5	A-3
BPF6A0	B-1
BPF6A1	A-1
BPF6A2	C-3
BPF6A3	C-3
BPF6A4	A-3
CF101	C-1
CF6A0	A-2
CU01	C-6
D2A0	A-1
D2A1	C-4
D2A2	A-1
D2A3	A-1
D2A4	A-6
D2A5	A-6
D2A6	C-4
D2A7	A-4
D2A8	A-4
D2A9	A-5
D2B0	C-1
D2B1	C-5
D2B2	C-1
D2B3	C-5
D2B4	C-2
D2N1	B-4
D2N2	B-4
D2Z0	A-4
D6A0	A-1
D6A1	A-1
D6A2	A-1
D6A3	B-1
D6A4	C-3
D6A5	B-2
D6A6	B-1
D6A7	A-3
D6A8	A-2
DL2A0	C-5
DL6A0	A-1
DL6A1	A-2
DL6A2	C-3
EQ6A0	B-2
EQ6A1	B-3
EQ6A2	B-3
IC101	C-1
IC102	C-1
IC2A0	C-4
IC2A1	A-5
IC2A2	C-5
IC2A3	A-6
IC2H0	B-4
IC2J0	B-5
IC2X1	A-5
IC310	A-5

SYMBOL NO.	ADDRESS
IC311	B-6
IC6A0	A-1
IC6A1	C-3
IC6A2	B-3
IC6A3	A-2
IC6A4	B-2
IC6A8	C-1
IC6A9	C-2
L101	B-6
L102	C-1
L103	B-3
L2A0	C-5
L2A1	C-3
L2A3	C-4
L2A4	C-4
L2A5	C-4
L2A8	B-4
L2A9	C-4
L2B0	A-5
L2H0	B-4
L2H1	B-4
L2H2	B-4
L2J0	B-6
L2J1	B-5
L2J2	B-5
L2J3	B-6
L2J4	B-6
L2J5	B-5
L2J6	B-5
L2J7	B-5
L2J8	A-4
L2J9	A-5
L2K0	A-5
L2X0	A-5
L2Y1	C-5
L310	A-4
L311	B-5
L312	A-6
L6A0	A-2
L6A1	C-3
L6A2	A-2
L6A3	A-3
L6A4	B-1
L6A5	B-2
L6A6	B-1
L6A7	A-1
L6A8	A-1
L6A9	A-1
L6B0	A-2
L6B1	A-2
L6B2	C-3
L6B3	C-3
L6B4	C-2
L6B5	B-3
L6B6	B-3
L6B7	B-2
L6B8	A-3
L6C0	B-1
L6C1	B-1



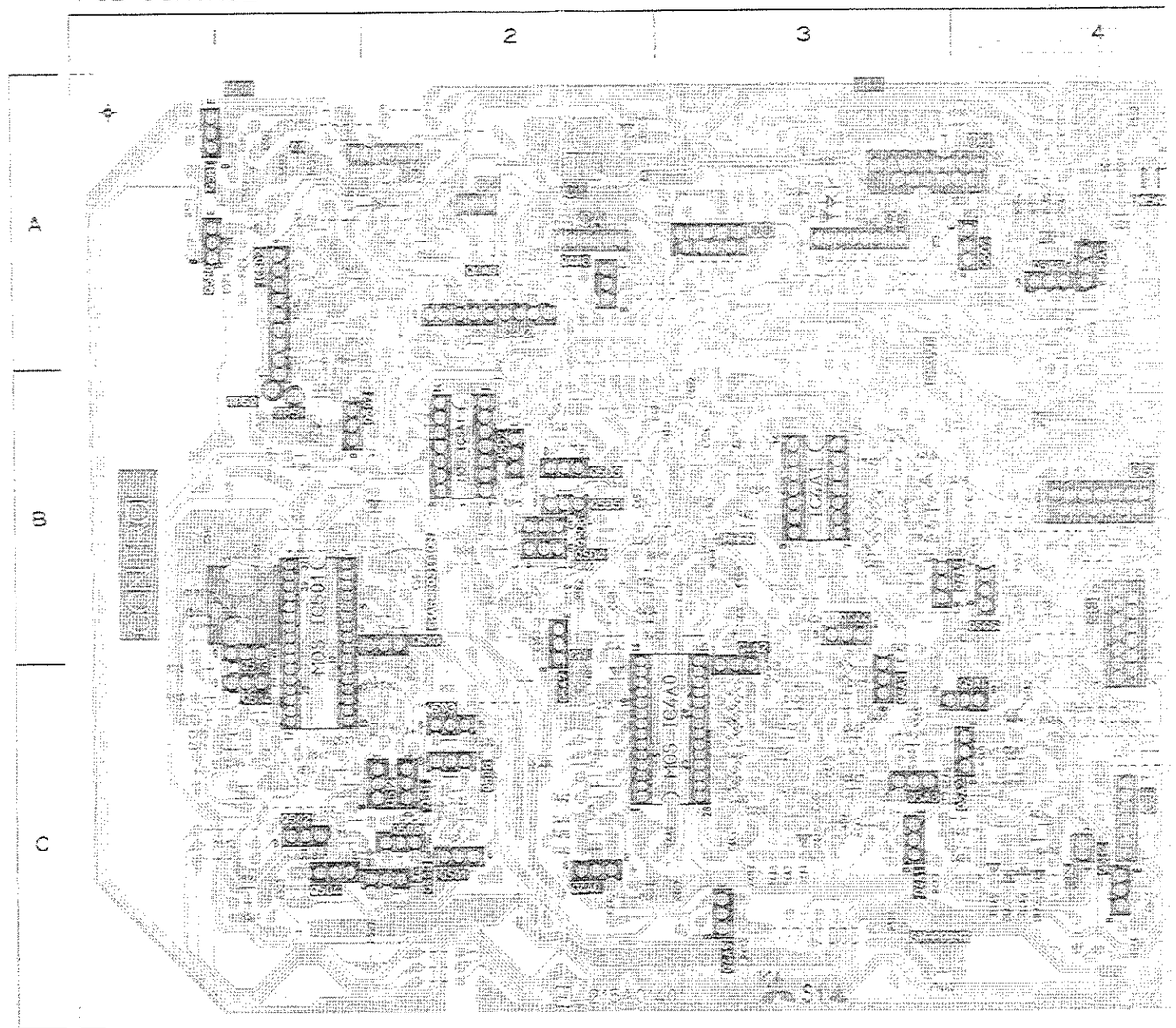
SYMBOL NO.	ADDRESS
BPF6A5	A-3
BPF6A0	B-1
BPF6A1	A-1
BPF6A2	C-3
BPF6A3	C-3
BPF6A4	A-3
CF101	C-1
CF6A0	A-2
CU01	C-6
D2A0	A-1
D2A1	C-4
D2A2	A-1
D2A3	A-1
D2A4	A-6
D2A5	A-6
D2A6	C-4
D2A7	A-4
D2A8	A-4
D2A9	A-5
D2B0	C-1
D2B1	C-5
D2B2	C-1
D2B3	C-5
D2B4	C-2
D2N1	B-4
D2N2	B-4
D2Z0	A-4
D6A0	A-1
D6A1	A-1
D6A2	A-1
D6A3	B-1
D6A4	C-3
D6A5	B-2
D6A6	B-1
D6A7	A-3
D6A8	A-2
DL2A0	C-5
DL6A0	A-1
DL6A1	A-2
DL6A2	C-3
EQ6A0	B-2
EQ6A1	B-3
EQ6A2	B-3
IC101	C-1
IC102	C-1
IC2A0	C-4
IC2A1	A-5
IC2A2	C-5
IC2A3	A-6
IC2H0	B-4
IC2J0	B-5
IC2X1	A-5
IC310	A-5

SYMBOL NO.	ADDRESS
IC311	B-6
IC6A0	A-1
IC6A1	C-3
IC6A2	B-3
IC6A3	A-2
IC6A4	B-2
IC6A8	C-1
IC6A9	C-2
L101	B-6
L102	C-1
L103	B-3
L2A0	C-5
L2A1	C-3
L2A3	C-4
L2A4	C-4
L2A5	C-4
L2A6	B-4
L2A9	C-4
L2B0	A-5
L2H0	B-4
L2H1	B-4
L2H2	B-4
L2J0	B-5
L2J1	B-5
L2J2	B-5
L2J3	B-5
L2J4	B-5
L2J5	B-5
L2J6	B-5
L2J7	B-5
L2J8	A-4
L2J9	A-5
L2K0	A-5
L2X3	A-5
L2Y1	C-5
L310	A-4
L311	B-5
L312	A-5
L6A0	A-2
L6A1	C-3
L6A2	A-2
L6A3	A-3
L6A4	B-1
L6A5	B-2
L6A6	B-1
L6A7	A-1
L6A8	A-1
L6A9	A-1
L6B0	A-2
L6B1	A-2
L6B2	C-3
L6B3	C-3
L6B4	C-2
L6B5	B-3
L6B6	B-3
L6B7	B-2
L6B8	A-3
L6C0	B-1
L6C1	B-1

SYMBOL NO.	ADDRESS
LPF2A0	C-6
LPF2A1	C-6
LPF6A0	B-1
LPF6A1	C-3
LPF6A2	B-3
Q01	B-6
Q02	B-6
Q101	C-1
Q102	C-1
Q2A0	C-5
Q2A1	C-4
Q2A2	C-5
Q2A3	C-2
Q2A4	C-4
Q2A5	C-3
Q2A6	C-4
Q2A7	C-3
Q2A8	C-5
Q2A9	A-3
Q2B0	B-4
Q2B1	C-4
Q2B2	B-4
Q2B3	A-4
Q2B4	A-4
Q2B5	A-4
Q2B6	A-4
Q2B7	C-2
Q2B8	C-4
Q2B9	C-5
Q2C0	C-5
Q2C1	C-5
Q2C4	C-3
Q2C5	C-3
Q2C7	B-4
Q2J0	B-5
Q2J1	B-5
Q2J2	A-5
Q2J3	A-5
Q2J4	B-5
Q2J5	B-5
Q2J6	B-5
Q2J7	B-5
Q2J8	B-5
Q2N1	B-4
Q2N2	B-4
Q310	A-4
Q311	B-5
Q6A0	B-1
Q6A2	B-2
Q6A3	B-2
Q6A5	B-1
Q6A6	B-2
Q6A7	B-1
Q6A8	A-1
Q6A9	A-1
Q6B0	B-1
Q6B1	B-1
Q6B2	B-1

SYMBOL NO.	ADDRESS
Q6B3	C-3
Q6B4	A-2
Q6B5	B-2
Q6B6	B-2
Q6B7	C-3
Q6B8	A-2
Q6B9	A-3
Q6C0	C-1
Q6C1	A-2
Q6C2	B-3
Q6C3	A-2
Q6C4	B-1
Q6C5	C-1
7SA0	A-2
TP2A	B-3
TP2E	C-5
TP2H	A-3
TP2J	A-6
TP2M	C-3
TP2P	C-5
TP2Q	C-4
TP2S	C-2
TP3E	A-5
TP3F	A-4
TP6A	A-3
TP6B	B-3
TP6C	B-2
TP6D	A-2
TP6E	B-2
TP6G	B-2
TPGND	C-6
VR2A0	C-5
VR2A1	C-5
VR2A2	C-5
VR2A3	C-5
VR2A4	C-5
VR2A5	C-5
VR2F0	B-4
VR2J0	A-5
VR310	B-4
VR311	A-5
VR6A0	B-1
VR6A1	C-2
VR6A3	B-2
VR6A4	A-3
VR6A5	A-3
VR6A6	B-2
VR6A7	B-3
X2H0	B-4
X2J0	B-5
X6A0	A-1
X6A1	C-3

PCB-CONTROL



ADDRESS
C-3
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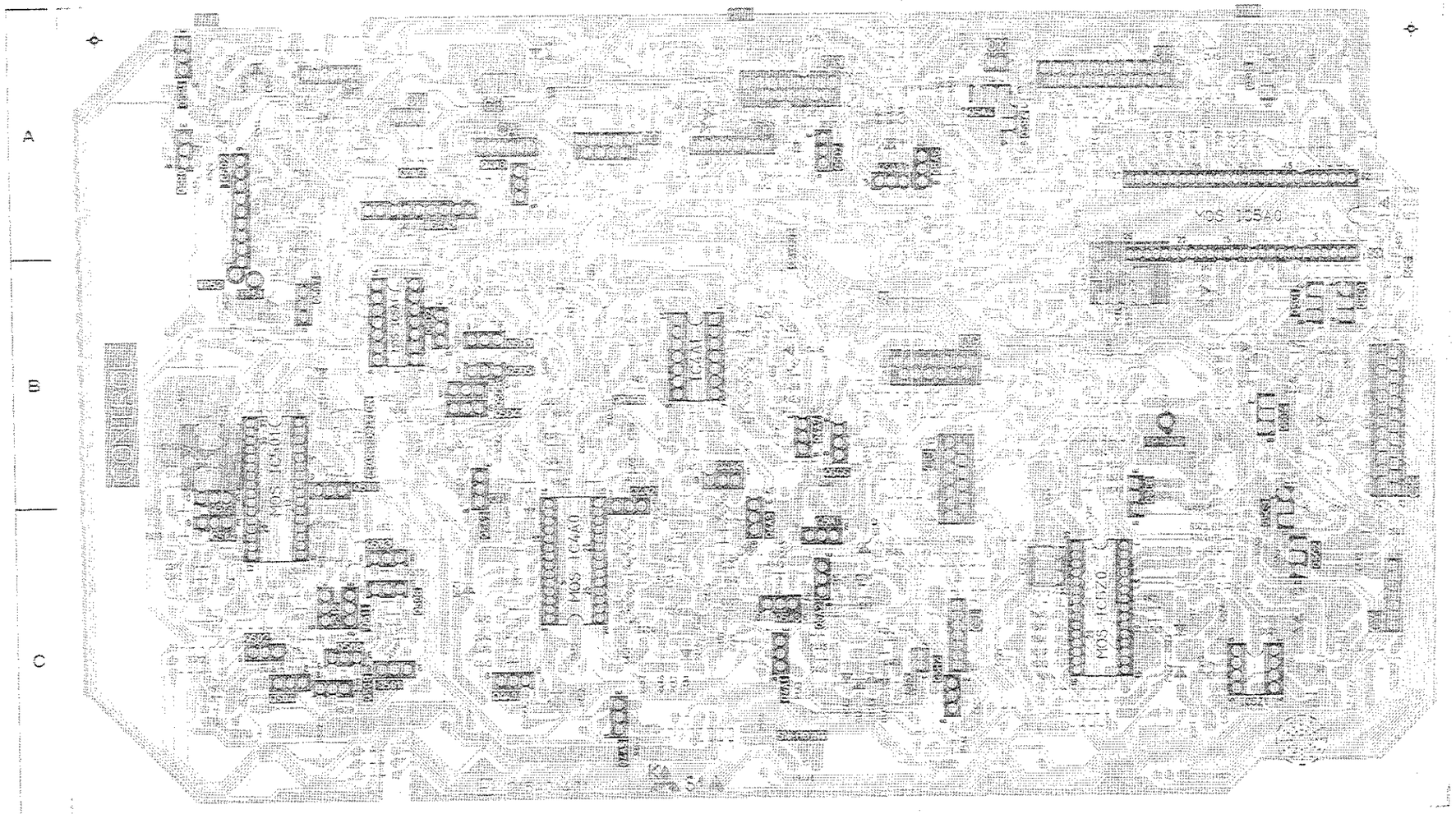
A-1
C-3

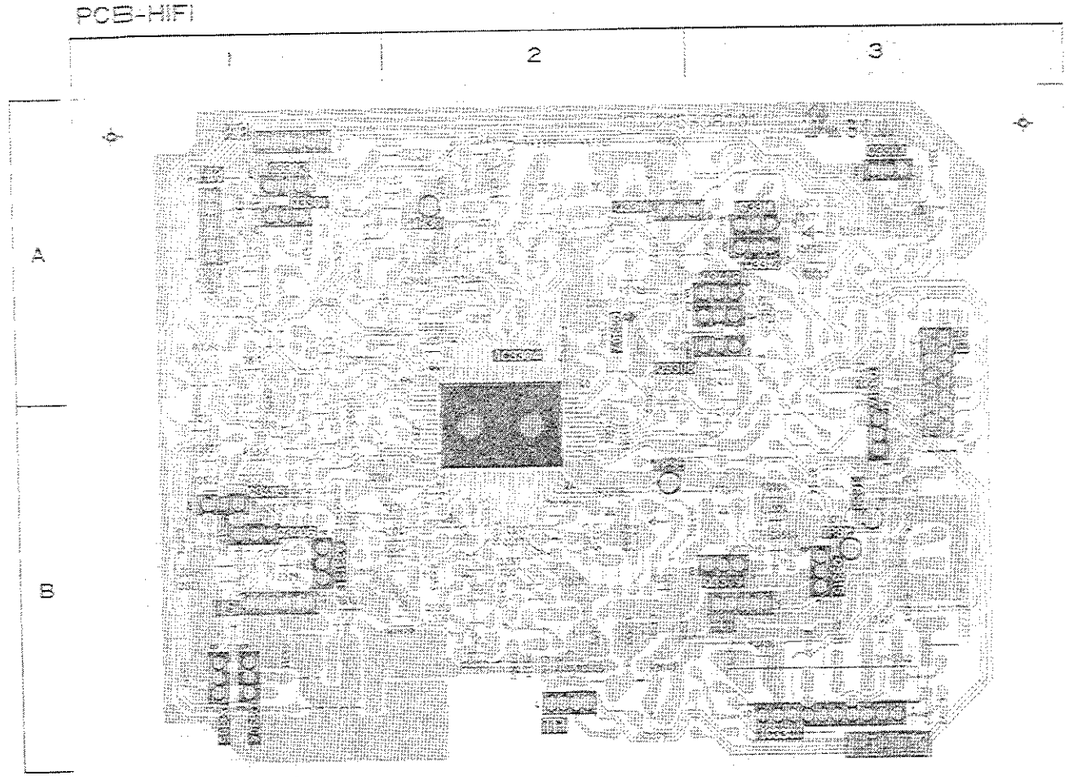
PCB-CONTROL



SYMBOL NO.	ADDRESS
CF5A0	B-5
CF5Z0	C-4
D4A0	B-2
D4A1	C-3
D4A2	C-4
D4A3	C-4
D4A4	C-4
D4A5	C-4
D4A6	B-3
D501	B-2
D502	B-1
D503	A-1
D5A0	A-4
D5A2	C-4
D5A3	A-3
D5A4	A-3
D5A5	B-6
D5B4	B-5
D5B9	A-1
D5C0	A-2
D5C1	C-2
D5C5	B-5
D5C9	A-6
D5D2	B-5
D5P0	A-1
D5P1	A-1
D5Z0	C-5
D5Z1	C-5
D5Z2	C-5
D5Z3	C-5
IC4A0	C-3
IC4A1	B-3
IC4A2	A-2
IC501	B-1
IC502	A-1
IC5A0	A-5
IC5A1	B-2
IC5Z0	C-5
IC5Z1	C-5
L501	B-1
L502	B-2
L503	C-1
L507	C-2
L5A0	B-5
L5A2	C-6
L5A4	B-5
L5A5	B-5
L5A6	B-5
L5A8	B-4
L5Z0	C-5
Q4A0	C-2
Q4A1	C-3
Q4A2	B-3
Q4A3	C-3
Q4A4	B-3
Q4A5	C-3

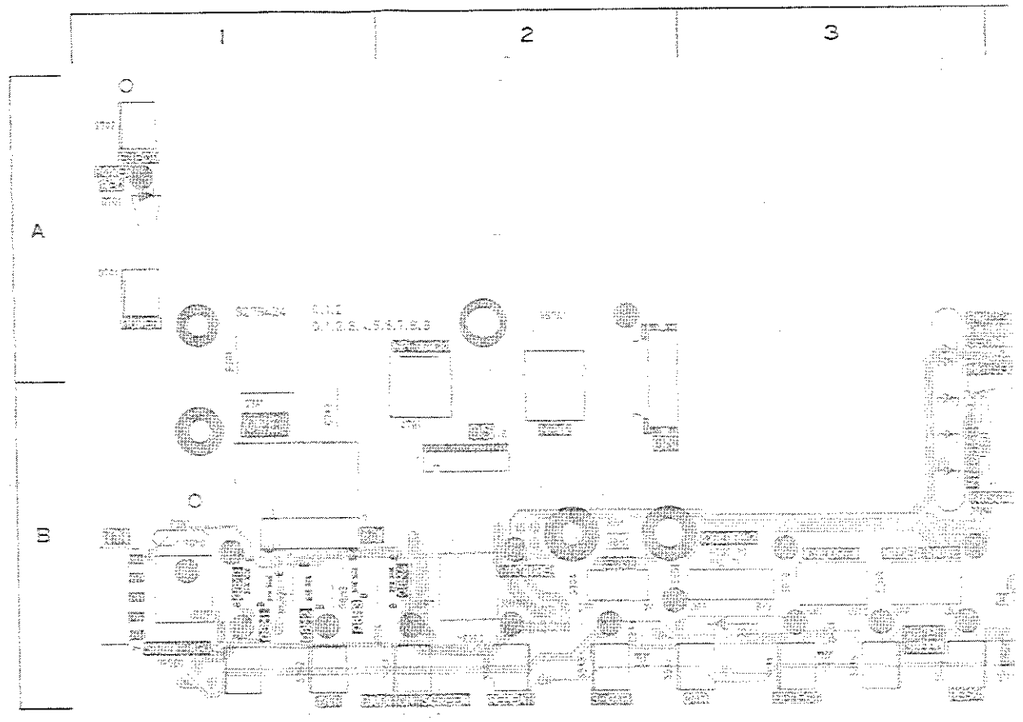
SYMBOL NO.	ADDRESS
Q4A7	B-4
Q4A8	A-2
Q4A9	A-2
Q501	C-2
Q502	C-1
Q503	C-2
Q504	C-1
Q506	C-2
Q507	B-1
Q508	C-2
Q509	C-2
Q510	B-2
Q511	C-2
Q512	C-2
Q513	C-1
Q514	C-1
Q5A1	C-4
Q5A2	C-4
Q5A3	C-3
Q5A4	A-4
Q5A5	A-4
Q5A7	C-2
Q5A8	A-4
Q5B4	A-4
Q5B5	A-5
Q5C0	B-6
Q5C1	B-5
Q5C2	C-6
Q5C3	C-5
Q5C4	B-5
Q5C5	B-4
Q5C6	B-5
Q5D2	B-2
Q5D3	B-2
Q5D4	B-2
Q5D5	B-2
Q5D6	B-2
Q5D7	A-4
Q5H2	C-4
Q5P0	A-1
Q5P1	A-1
TP-GND	B-5
TP51	B-1
TP52	B-1
VC501	B-2
VR4A0	C-3
VR501	A-1
X501	B-1
X502	B-1

PCB-HIFI

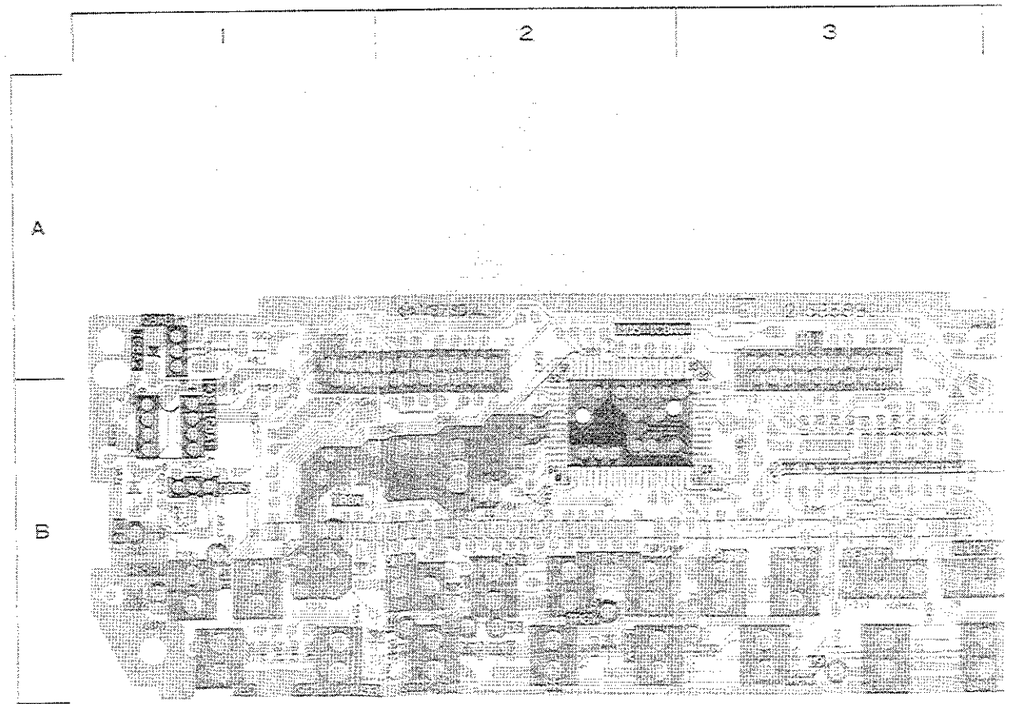


SYMBOL NO.	ADDRESS
BPF3301	B-3
BPF3302	B-3
D3301	A-3
D3305	A-3
IC3301	B-3
IC3304	A-2
L3302	A-2
L3303	B-2
L3304	B-3
L3317	A-1
L3319	B-1
L3320	A-2
L3324	B-3
Q3301	A-1
Q3302	A-1
Q3303	A-3
Q3304	B-1
Q3305	B-1
Q3307	A-2
Q3308	A-2
Q3309	B-3
Q3310	A-2
Q3311	A-3
Q3312	A-3
Q3313	B-1
Q3314	A-3
Q3315	B-3
Q3405	B-1
Q3406	B-1
Q3409	A-3
TP3G	A-2
TP3L	B-2
TP3M	B-3
TP3R	B-3
VR3301	B-2
VR3302	A-2
VR3305	B-2
VR3306	A-2
VR3309	B-2
VR3311	B-3
VR3312	A-2

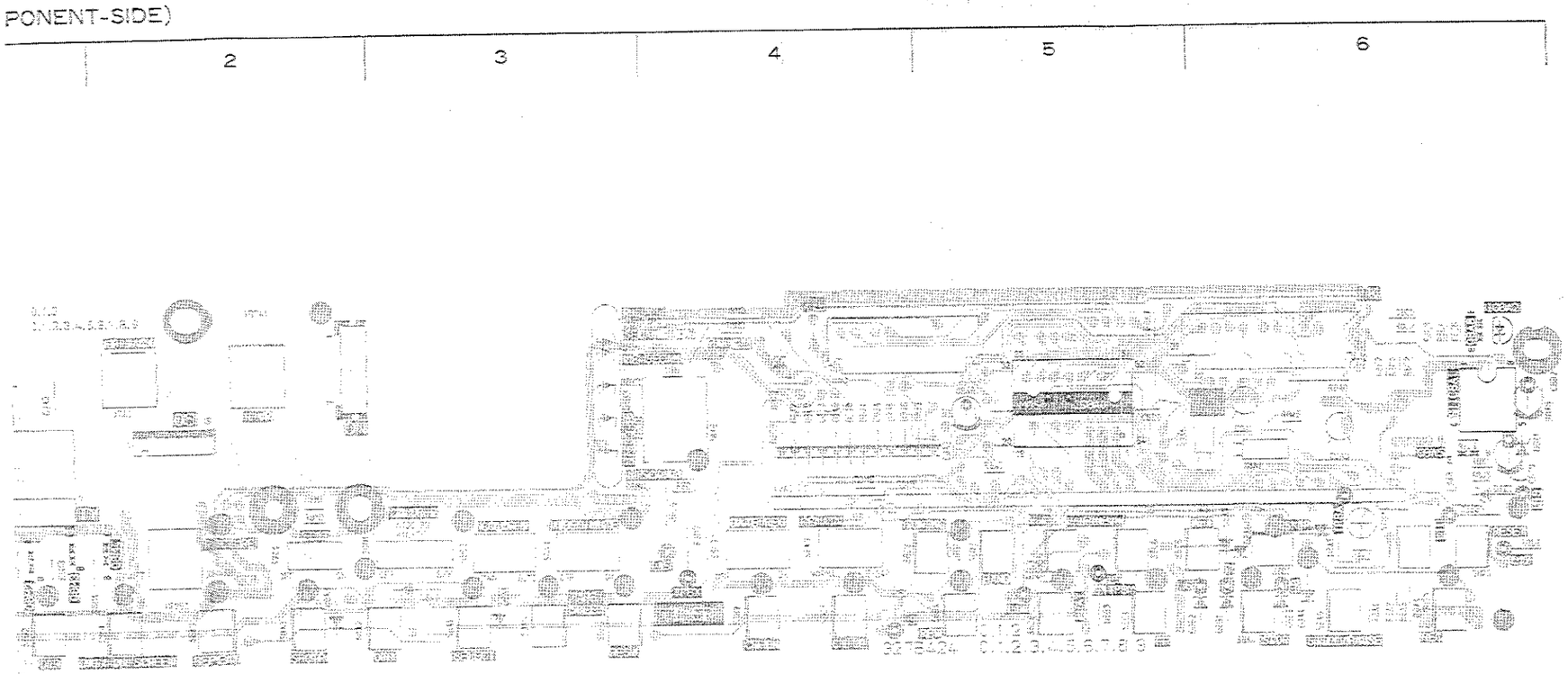
PCB-TIMER(COMPONENT-SIDE)



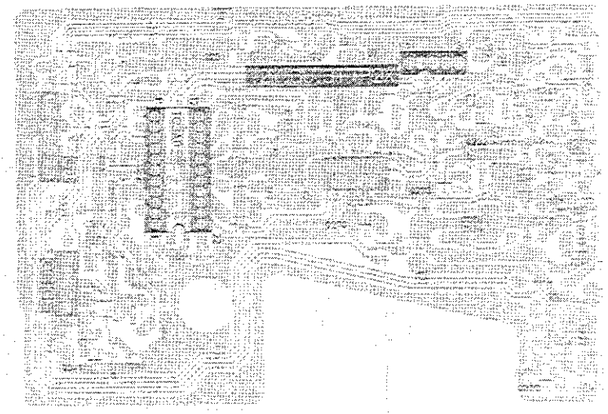
PCB-TIMER (COPPER-SIDE)



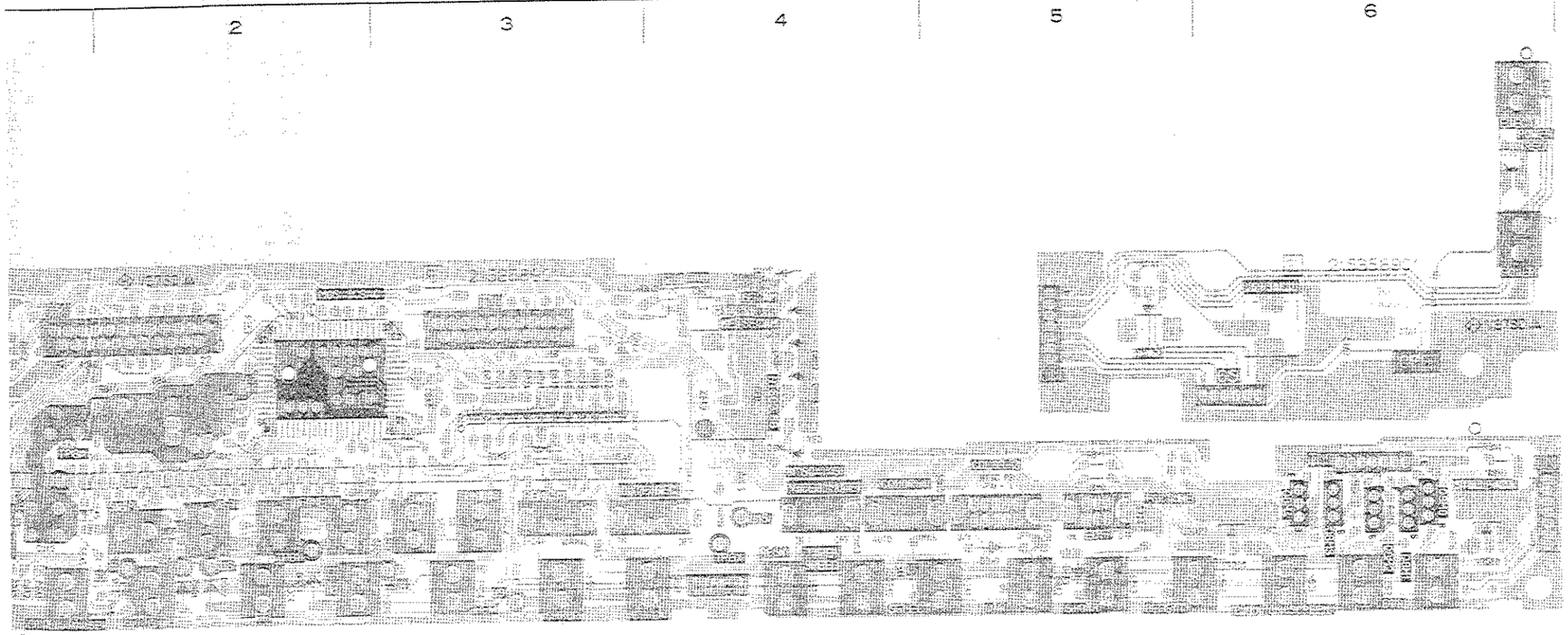
PONENT-SIDE)



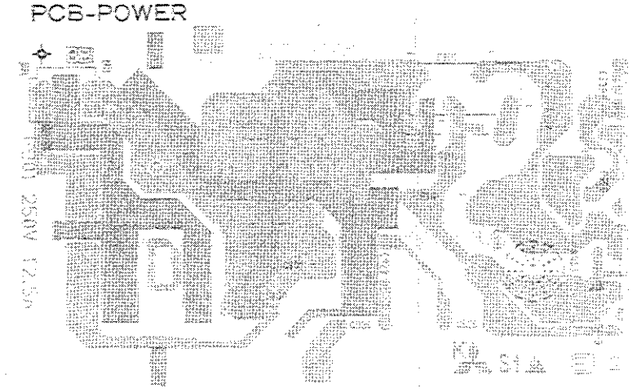
PCB-HEAD-AMP



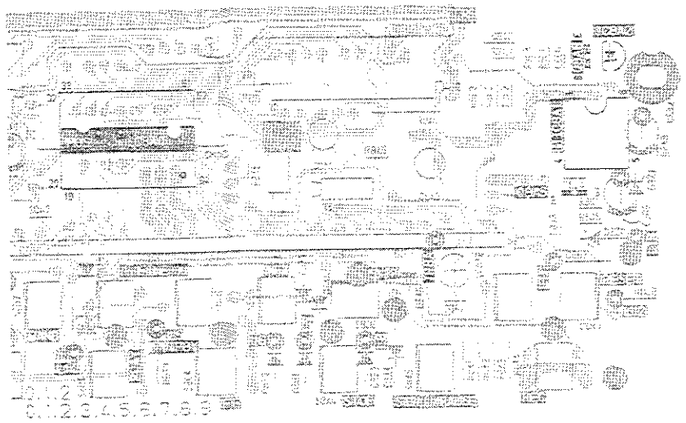
PPER-SIDE)



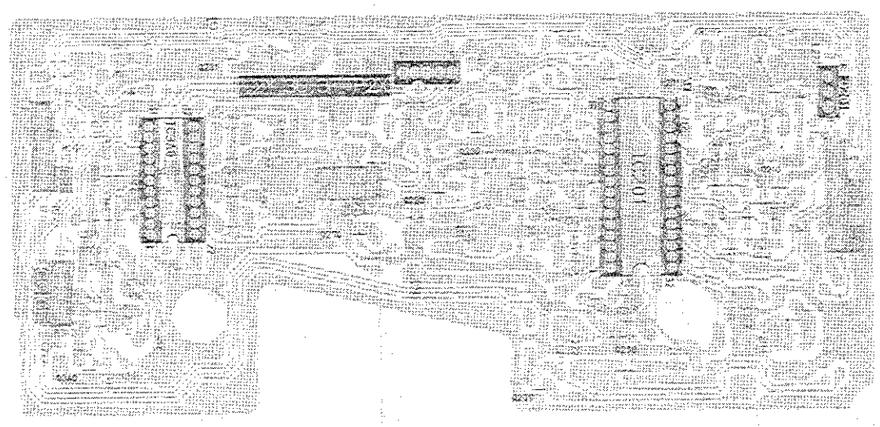
PCB-POWER



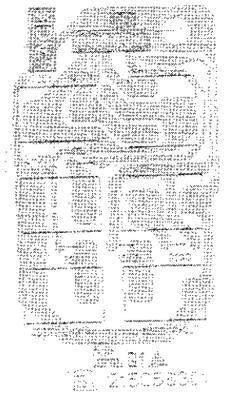
5 6



PCB-HEAD-AMP



PCB-JACK



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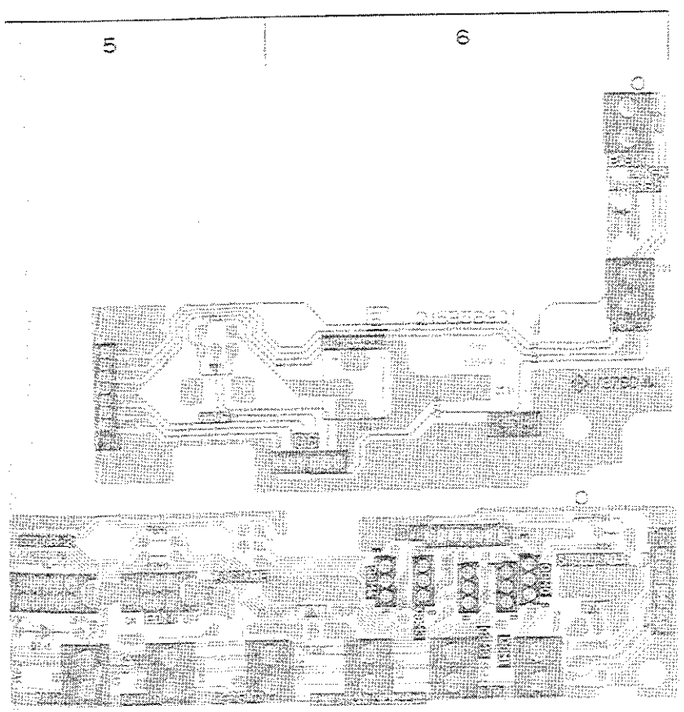

PCB-POWER