

# TC-WR620

## SERVICE MANUAL

US Model  
UK Model



Model Name Using Similar Mechanism	TC-W320 TC-WR520
Tape Transport Mechanism Type	deck A : TCM-190RA12 deck B : TCM-190RB12

### SPECIFICATIONS

Recording system 4-track 2-channel stereo  
 Fast winding time Approx. 90 sec. (with HF-60 cassette)  
 Bias AC bias  
 Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch Cassette	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	58 dB	66 dB	73 dB
TYPE II (Sony UX-S)	57 dB	65 dB	72 dB
TYPE I (Sony HF-S)	55 dB	63 dB	70 dB

Total harmonic distortion 1.0% (with Sony METAL-ES cassettes)

Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	30-15,000 Hz ( $\pm 3$ dB) 30-13,000 Hz (OVU recording)
TYPE II cassette (Sony UX-S)	30-15,000 Hz ( $\pm 3$ dB)
TYPE I cassette (Sony HF-S)	30-14,000 Hz ( $\pm 3$ dB)


Wow and flutter 0.07% WRMS (NAB)  
 Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV ( $-20$ dB)
	Input impedance	50 kohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44 V ( $-5$ dB) at a load impedance 47 kohms
	Load impedance	Over 10 kohms
Headphones (stereo phone jack)	Output level	0.3 mW at a load impedance of 32 ohms

— continued on next page —

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
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**STEREO CASSETTE DECK**  
**SONY®**

General

Power requirements US model:  
120V AC, 60Hz  
UK model:  
240V AC, 50Hz

Power consumption 26 Watts

Dimensions Approx. 430 × 135 × 285 mm (w/h/d)  
(17 × 5<sup>3</sup>/<sub>8</sub> × 11<sup>1</sup>/<sub>4</sub> inches)  
including projecting parts and controls

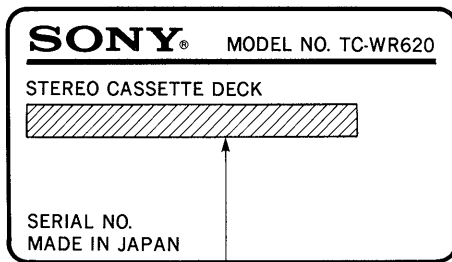
Weight Approx. 4.5 kg (9 lbs 15 oz)

Supplied accessory

Audio connecting cord (2)

MODEL IDENTIFICATION

—Specification Label—



US model: AC 120V 60Hz 26W  
UK model: AC 240V~50Hz 26W

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

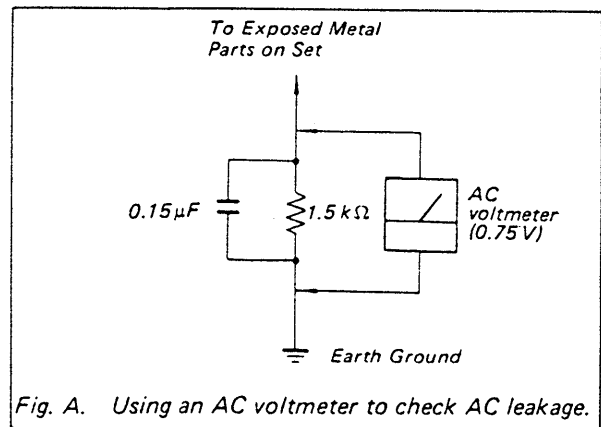


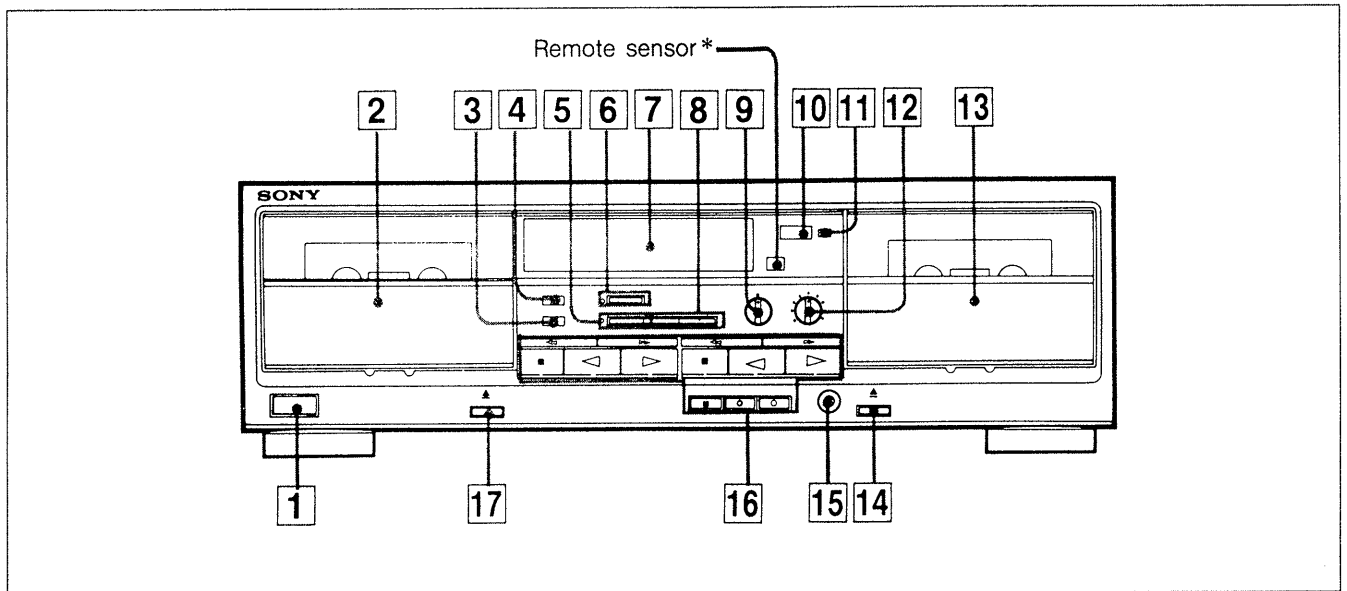
Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## SECTION 1 GENERAL

### 1-1. PARTS IDENTIFICATION



- |   |  |
|---|--|
| <p>1 POWER switch</p> <p>2 Cassette holder (deck A)</p> <p>3 <math>\square\square</math> NR (Dolby noise reduction) switch</p> <p>4 DIR (direction) MODE switch</p> <p>5 AUTO PAUSE button and indicator</p> <p>6 BLANK SKIP button and indicator</p> <p>7 Display panel</p> <p>8 SYNCHRO DUBBING buttons<br/>HIGH SPEED button<br/>NORM (normal) SPEED button</p> <p>9 BALANCE control</p> <p>10 Tape COUNTER</p> <p>11 Counter RESET button</p> <p>12 REC (recording) LEVEL control</p> | <p>13 Cassette holder (deck B)</p> <p>14 <math>\blacktriangle</math> Eject button (deck B)</p> <p>15 PHONES (headphones) jack (stereo phone jack)</p> <p>16 Tape operation buttons<br/> <ul style="list-style-type: none"> <li>■ (stop) button</li> <li>◀◀ (leftward fast winding) button</li> <li>▶ (forward play) button</li> <li>◀ (reverse play) button</li> <li>▶▶ (rightward fast winding) button</li> <li>   PAUSE button</li> <li>○ REC MUTE (recording muting) button</li> <li>● REC (recording) button</li> </ul> </p> <p>17 <math>\blacktriangle</math> Eject button (deck A)</p> |
|---|--|

\* You can remotely control this cassette deck with:

- A remote commander that came with a Sony amplifier or receiver if it has the  $\square$  mark and cassette deck control capability.
- Any optional Sony remote commander with the  $\square$  mark.

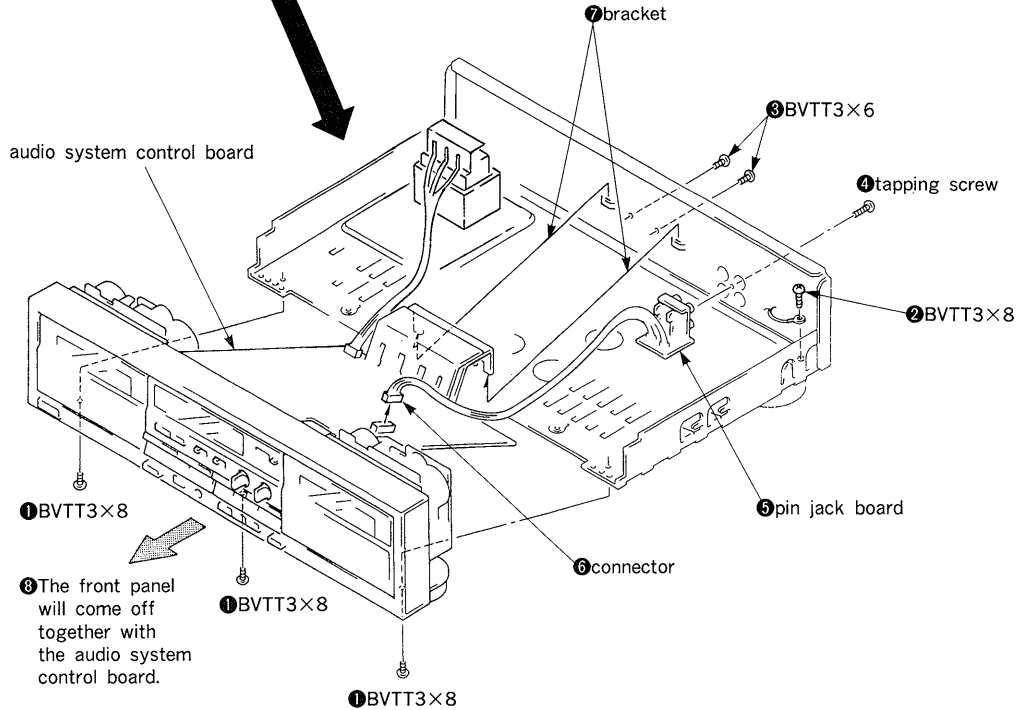
## SECTION 2 DISASSEMBLY

**Note :** Follow the disassembly procedure in the numerical order given.

### CASE

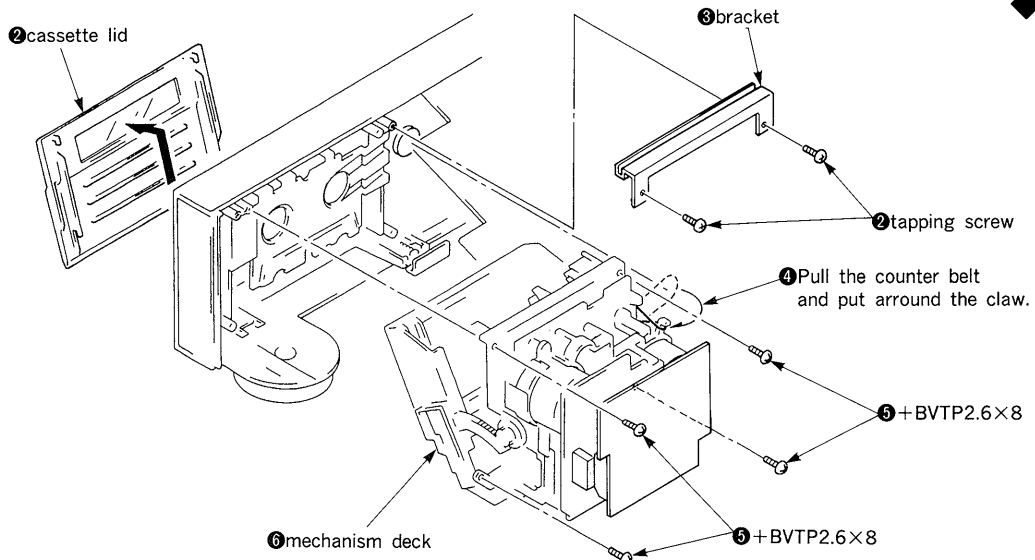
Unscrew the four case attachment screws M3×8 and remove the case.

### 2-1. FRONT PANEL

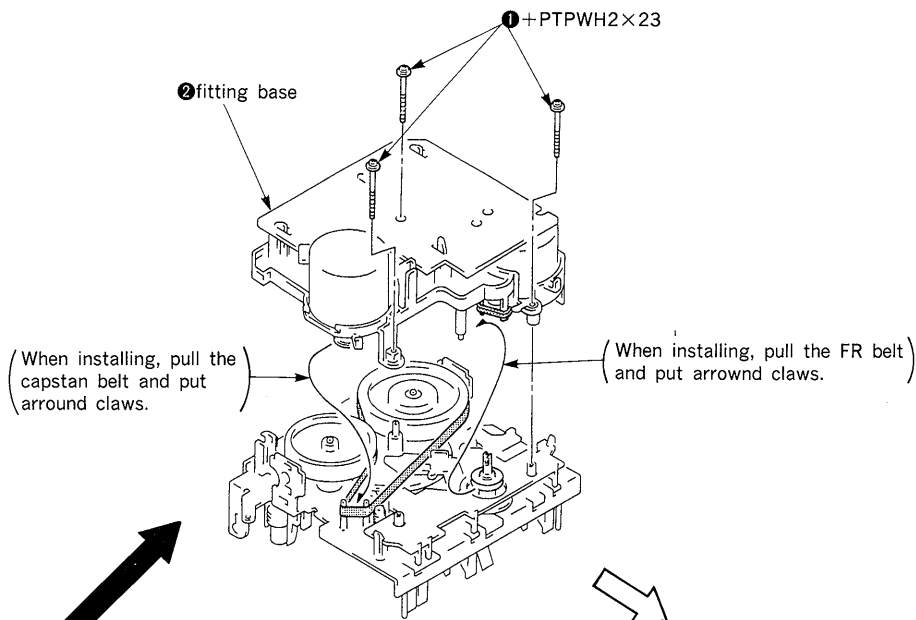


### 2-2. MECHANISM DECK

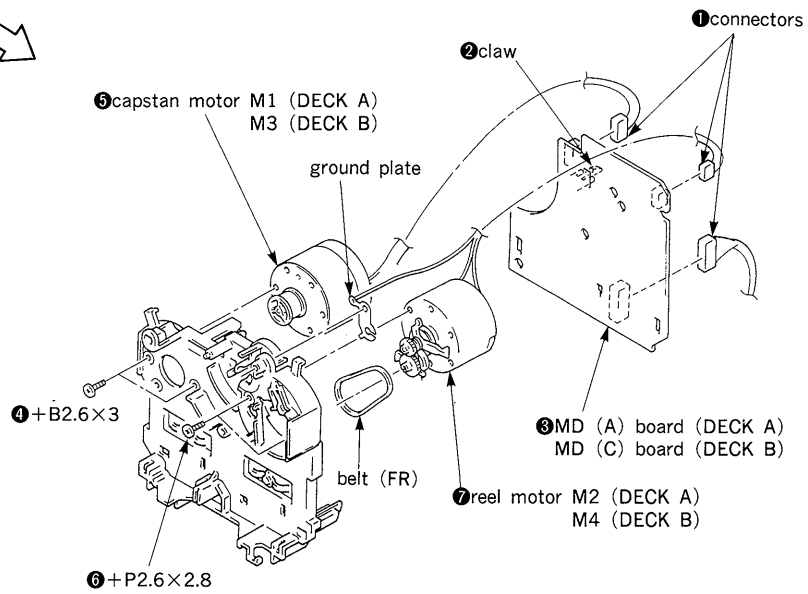
① Press the EJECT button.



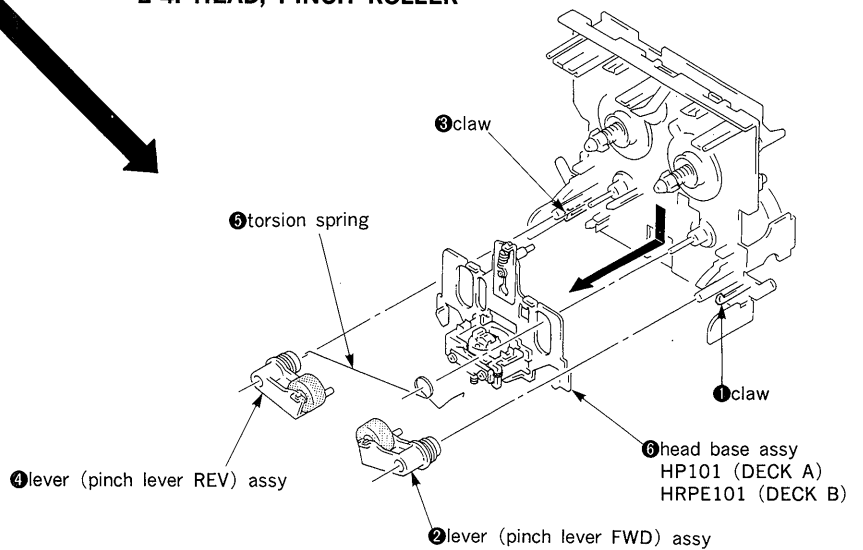
### 2-3. CAPSTAN MOTOR, REEL MOTOR



Remove the cassette holder



### 2-4. HEAD, PINCH ROLLER



# SECTION 3 ADJUSTMENTS

## 3-1. MECHANICAL ADJUSTMENTS

### PRECAUTION

- Clean the following parts with a denaturated alcohol-moistened swab :
 

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers
- Demagnetize the record/playback head with a head demagnetizer.  
(Head demagnetizer do not approach for the erase head.)
- Do not use a magnetized screwdriver for the adjustment.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

### Torque Measurement

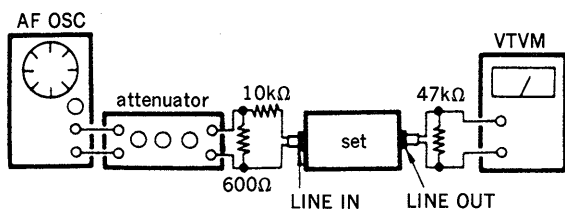
Torque	Torque meter	Meter reading
Forward	CQ-102C	35 to 60g·cm (0.49 to 0.83 oz·inch)
Forward back tension	CQ-102C	1 to 5g·cm (0.014 to 0.06 oz·inch)
Reverse	CQ-102RB	35 to 60g·cm (0.49 to 0.83 oz·inch)
Reverse back tension	CQ-102RB	1 to 5g·cm (0.014 to 0.06 oz·inch)
Forward, Reverse	CQ-201B	70 to 110g·cm (0.98 to 1.52 oz·inch)

## 3-2. ELECTRICAL ADJUSTMENTS

### PRECAUTION

- The adjustment should be performed in the publication.  
(Be sure to make playback adjustment at first.)
- The adjustment and measurement should be performed for both L-CH and R-CH.
  - Switch position  
DOLBY NR switch : OFF  
DIR MODE switch : ⇌
  - Standard record position  
Deliver the standard input signal level to input jack and set the REC LEVEL control to obtain the standard output signal level as follows.

—Record Mode—



### Standard Input Level

Input terminal	LINE IN
source impedance	10kΩ
input signal level	0.25V (-10dB)

### Standard Output Level

Output terminal	LINE OUT
load impedance	47kΩ
output signal level	0.44V (-5dB)

### Test Tape

Tape	Contents	Use
P-4-A100	10kHz, -10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

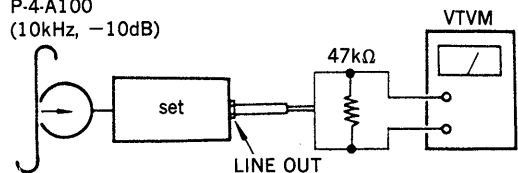
## Record/Playback Head Azimuth Adjustment

### DECK A DECK B

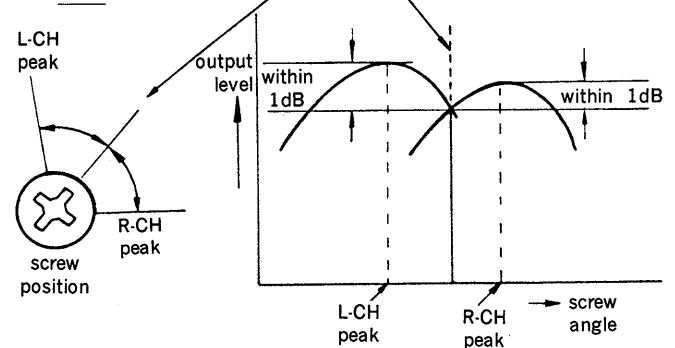
#### Procedure :

- Forward Playback Mode

test tape  
P-4-A100  
(10kHz, -10dB)

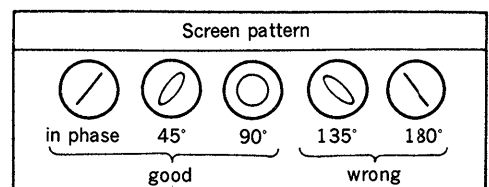
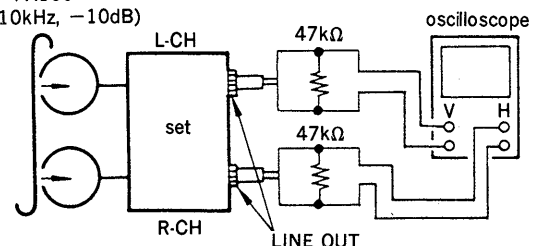


- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.



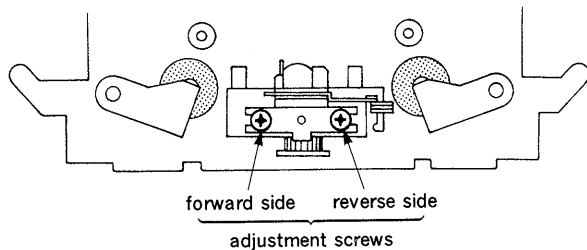
- Playback Mode

test tape  
P-4-A100  
(10kHz, -10dB)



- Change the reverse playback mode and repeat the steps 1 to 3.
- After the adjustment, lock the adjustment screw with suitable locking compound.

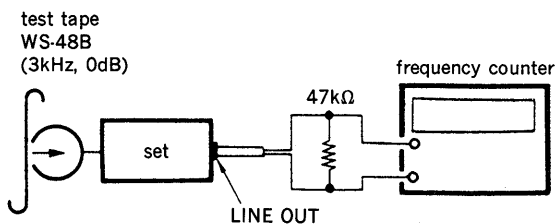
**Adjustment Location :** —record/playback head—



### Tape Speed Adjustment DECK A DECK B

**Procedure :**

—Forward Playback Mode—



Perform high speed adjustment before normal speed adjustment.

(high speed adjustment)

- Short test pin TP801 on audio system control board.
- Set to FWD playback mode.
- Keep on pressing the HIGH SPEED DUBBING switch.
- Adjust RV72A, B so that the frequency counter reading becomes  $6,000 \pm 20\text{Hz}$ .
- After adjustment, disconnect TP801 shorted in step 1.

(normal speed adjustment)

- Set to FWD playback mode.
- Adjust RV71A, B so that the frequency counter reading becomes  $3,000 \pm 10\text{Hz}$ .

Frequency difference between the beginning and the end of the tape should be within 3%.

Frequency difference between deck A and deck B the beginning of the tape should be within 1.5%.

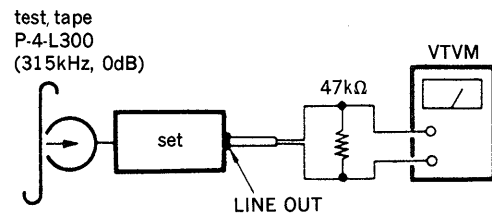
**Adjustment Location :**

MD(A), MD(C) board

### Playback Level Adjustment DECK A DECK B

**Procedure :**

—Forward Playback Mode—



Adjust deck A : RV11A (L-CH), RV21A R-CH) and deck B : RV11B (L-CH), RV21B (R-CH) so that the VTVM reading becomes the adjustment limits below.

**Adjustment Limits :**

LINE OUT level :  $-5 \pm 0.5\text{dB}$  (0.412 to 0.461V)

Level Difference between Channels : within 0.5dB

Confirm the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

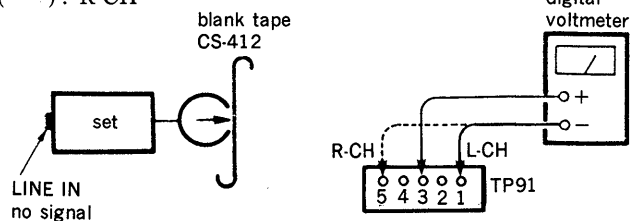
**Adjustment Location :** MD(A), MD(C) board

### Bias Consumption Current Adjustment DECK B

This adjustment should be performed when replacing the head assy or the bias oscillating transformer (T51C, T71), or DOLBY HX PRO IC (IC51).

**Procedure :**

( ) : R-CH



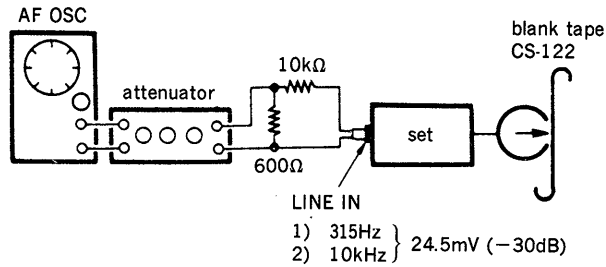
- Connect the digital voltmeter to test point TP91.
- Set RV42 (RV62) to mechanical center.
- Set to FWD record mode.
- Adjust T51C (T71) so that the digital voltmeter reading becomes minimum.

**Adjustment Location :** HX PRO board

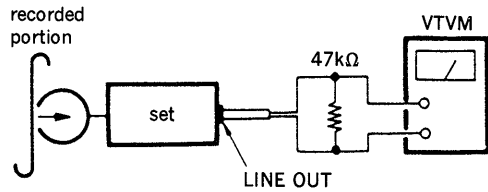
**Record Bias Adjustment** DECK B

**Setting :**  
 REC LEVEL control: standard record position (Refer to page 6.)  
 Test pin TP801: short

**Procedure :**  
 1. Record Mode



2. Playback Mode



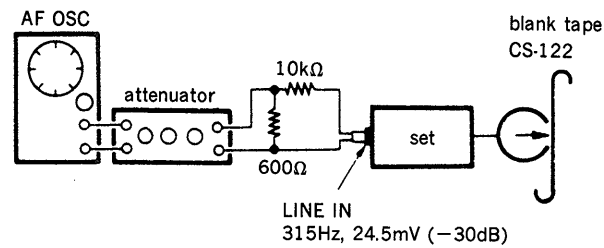
Playback the signal recorded in step 1.  
 Confirm that the 10kHz playback output is  $0 \pm 0.5\text{dB}$  relative to the 315Hz output. If necessary, adjust RV42 (L-CH), RV62 (R-CH) and repeat the steps given above.

**Adjustment Location :** HX PRO board

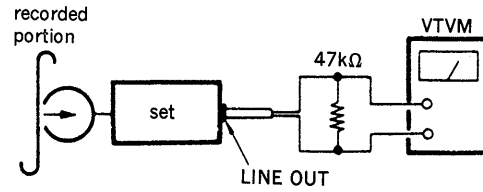
**Record Level Adjustment** DECK B

**Setting :**  
 REC LEVEL control: standard record position (Refer to page 6.)  
 Test pin TP801: short

**Procedure :**  
 1. Record Mode



2. Playback Mode



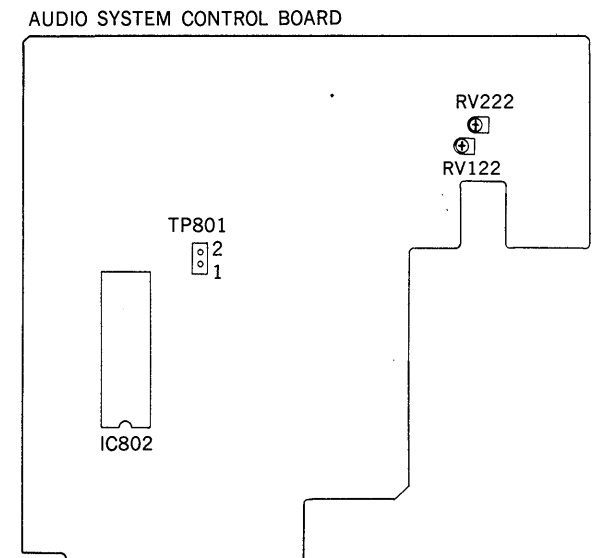
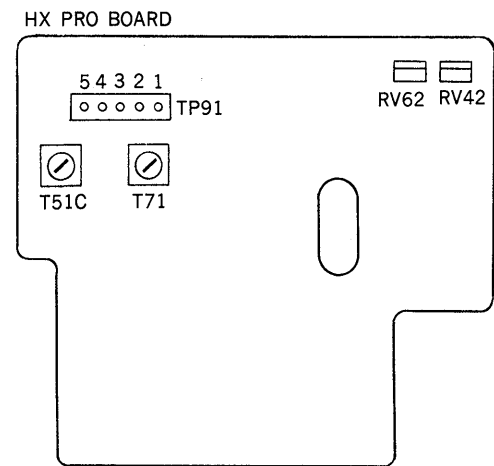
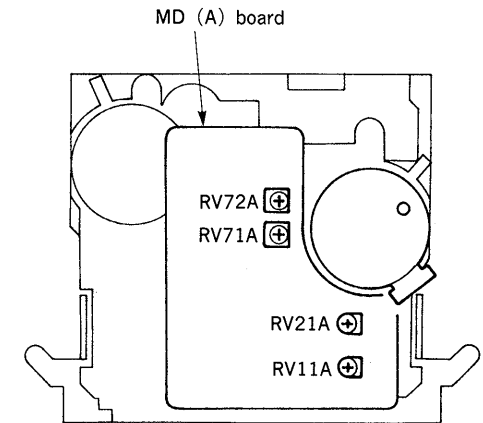
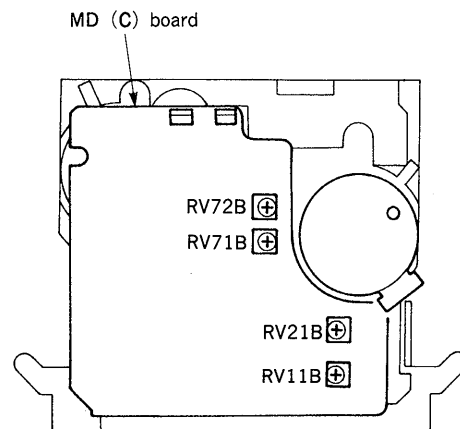
Confirm playback the tape recorded become adjustment level as follows.  
 If necessary, adjust RV122 (L-CH), RV222 (R-CH) and repeat steps 1 and 2.

**Adjustment Limits :**

LINE OUT level:  $-25 \pm 0.5\text{dB}$  (42 to 46mV)

**Adjustment Location :** audio system control board

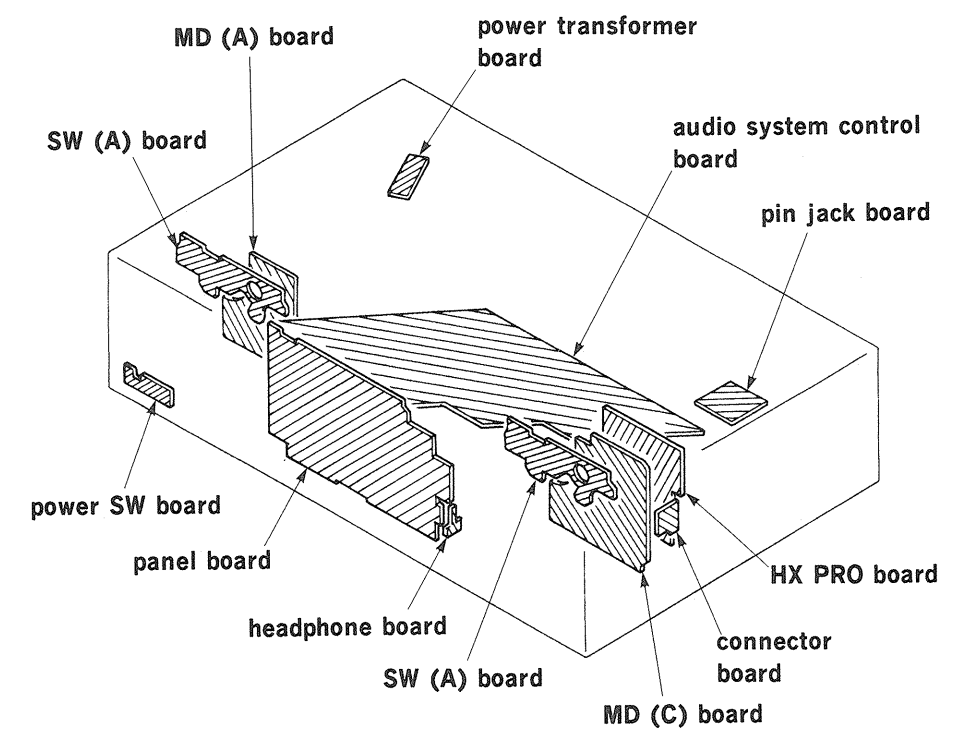
—Adjustment Parts Location Diagrams—



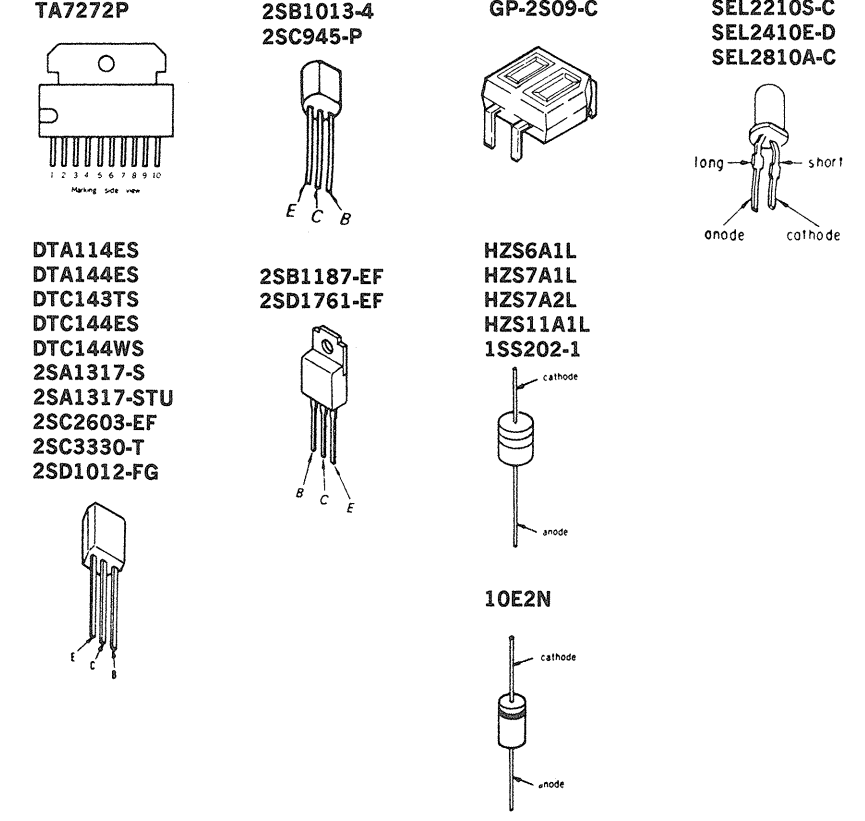


SECTION 4  
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION



4-2. SEMICONDUCTOR LEAD LAYOUTS



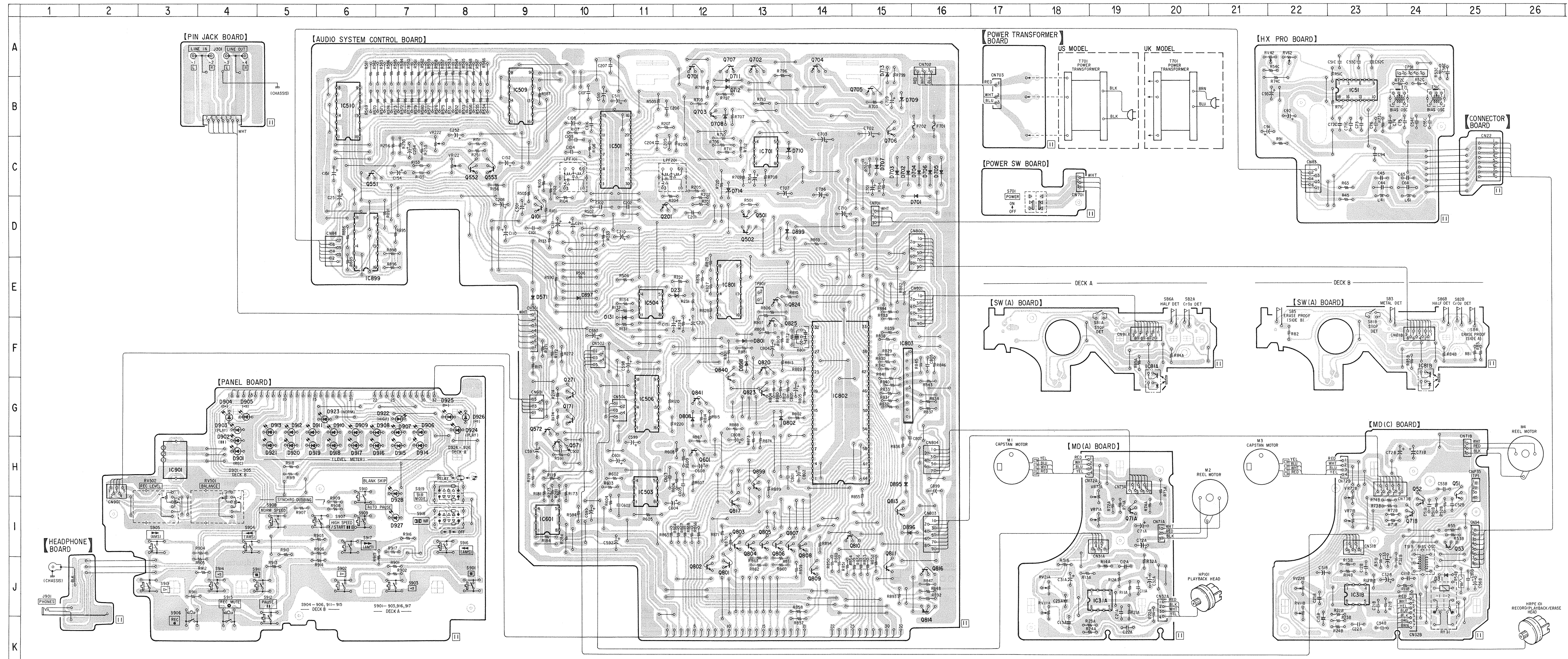
4-3. PRINTED WIRING BOARDS

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D31	J-24	D907	G-7	IC509	B-9	Q706	C-15
D131	E-10	D908	G-7	IC510	B-6	Q707	A-12
D231	E-12	D909	G-6	IC501	I-9	Q801	J-12
D571	E-9	D910	G-6	IC701	C-13	Q802	J-12
D701	D-16	D911	G-5	IC801	E-12	Q803	I-13
D702	C-15	D912	G-5	IC802	G-14	Q804	I-13
D703	C-15	D913	G-5	IC803	F-15	Q805	I-13
D704	C-15	D914	H-7	IC899	E-6	Q806	I-13
D705	C-16	D915	H-7	IC901	H-3	Q807	I-13
D706	C-16	D916	H-6			Q808	I-14
D707	C-15	D917	H-6	Q51	H-25	Q809	J-14
D708	B-12	D918	H-6	Q52	H-24	Q810	I-14
D709	B-15	D919	H-5	Q53	I-25	Q811	I-15
D710	C-14	D920	H-5	Q71A	I-19	Q813	I-15
D711	B-13	D921	H-5	Q71B	I-24	Q814	K-16
D712	B-13	D922	G-7	Q101	D-9	Q816	J-16
D713	A-15	D923	G-6	Q171	G-10	Q817	I-12
D714	C-13	D924	G-8	Q201	D-11	Q820	F-13
D801	F-13	D925	G-8	Q271	G-10	Q823	G-13
D802	G-13	D926	G-8	Q501	D-13	Q824	E-13
D808	G-12	D927	I-7	Q502	D-13	Q825	F-13
D895	H-15	D928	I-7	Q551	C-6	Q840	F-12
D896	I-15			Q552	C-8	Q841	G-12
D897	E-10	IC31A	J-19	Q553	C-8	Q899	H-13
D898	F-13	IC31B	J-23	Q571	H-10		
D899	D-14	IC51	B-23	Q572	G-9		
D901	H-4	IC81A	F-19	Q601	H-12		
D902	H-4	IC81B	F-24	Q701	A-12		
D903	G-4	IC501	C-10	Q702	A-13		
D904	G-4	IC503	H-11	Q703	B-12		
D905	G-4	IC504	E-11	Q704	A-14		
D906	G-7	IC506	G-11	Q705	B-15		

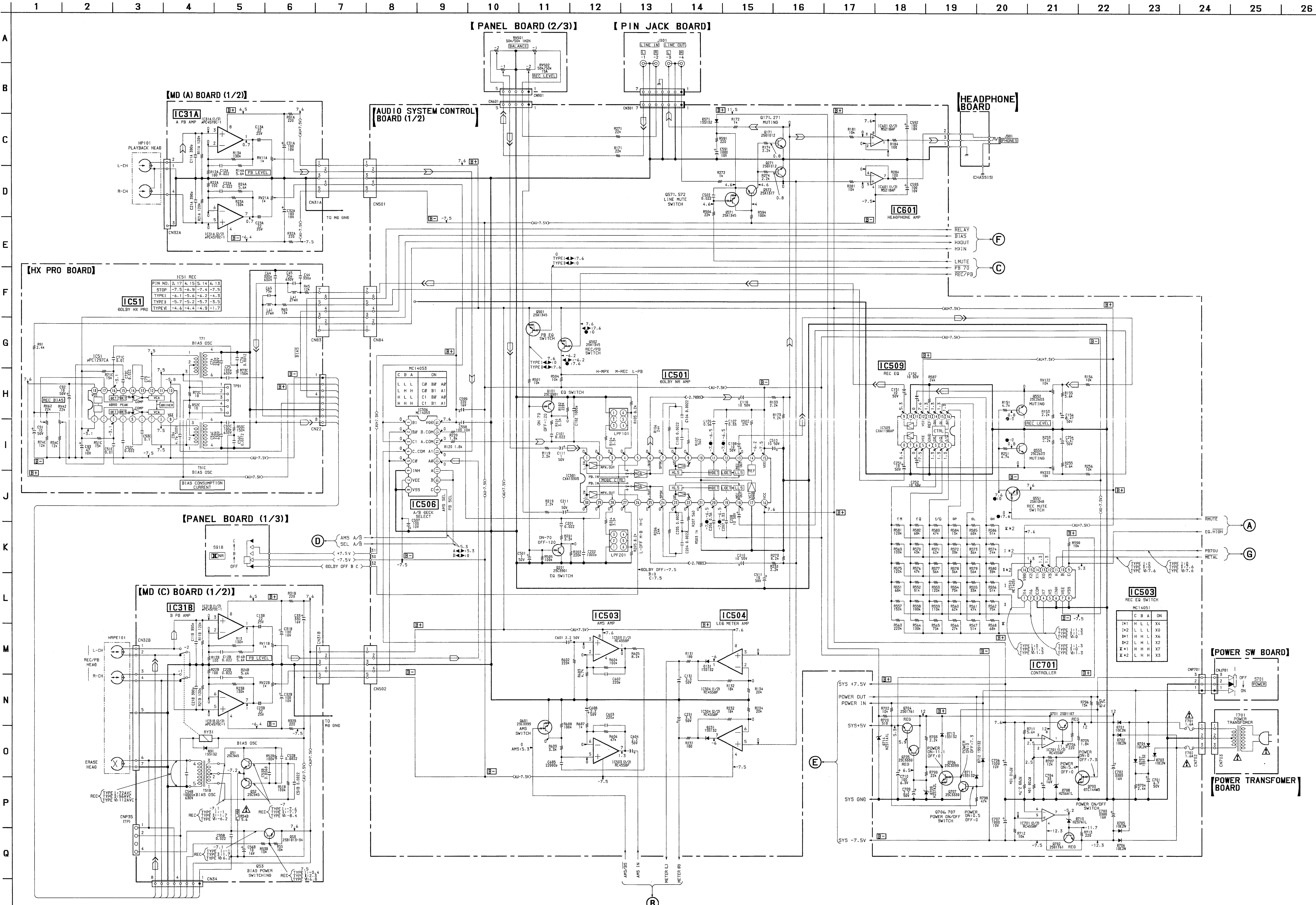
Note:

- : parts extracted from the component side.
- : parts mounted on the conductor side.
- : indicates side identified with part number.
- ▨ : Pattern on the side which is seen.

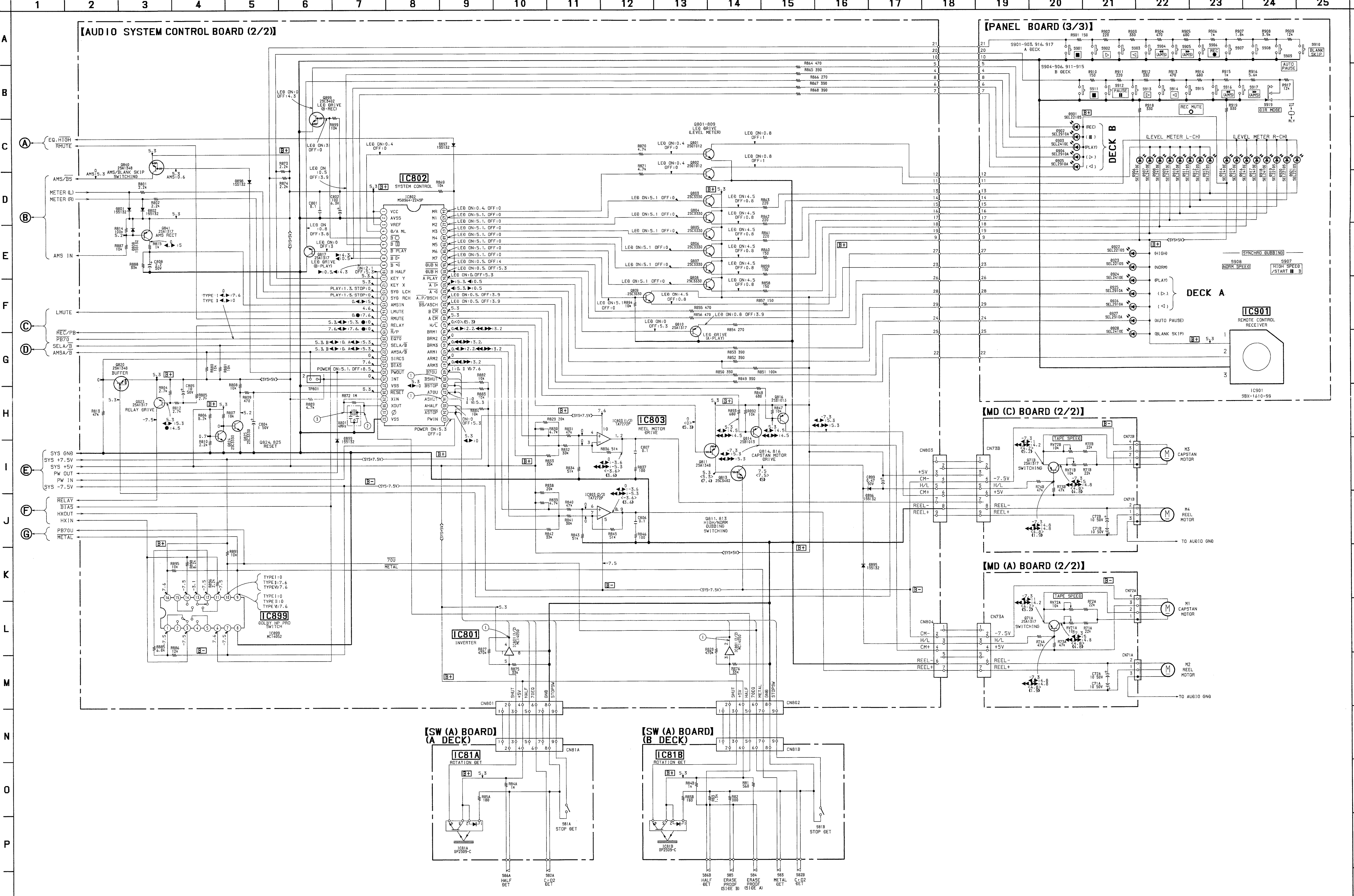




4-4. SCHEMATIC DIAGRAM  
—SYSTEM CONTROL SECTION—



- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
  - $\triangle$ : internal component.
  - $\text{---}/\text{---}$ : fusible resistor.
- Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.
- $\text{---}$ : B+ Line
  - $\text{---}$ : B- Line
  - $\text{---}$ : adjustment for repair.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Voltage and waveforms are dc with respect to ground under no-signal conditions.
  - no mark: STOP
  - $\ll$ : NORMAL SPEED DUBBING
  - $\gg$ : HIGH SPEED DUBBING
  - $\blacktriangle$ : FWD  $\blacktriangleleft$ : REV
  - $\blacktriangleright$ : FF  $\blacktriangleleft$ : REW  $\bullet$ : REC
  - Voltages are taken with a VOM (Input Impedance  $10\text{M}\Omega$ ). Voltage variations may be noted due to normal production tolerances.
  - Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
  - Circled numbers refer to waveforms.
  - Signal path.
  - $\text{---}$ : PB (DECK A)
  - $\text{---}$ : PB (DECK B)
  - $\text{---}$ : REC (DECK B)



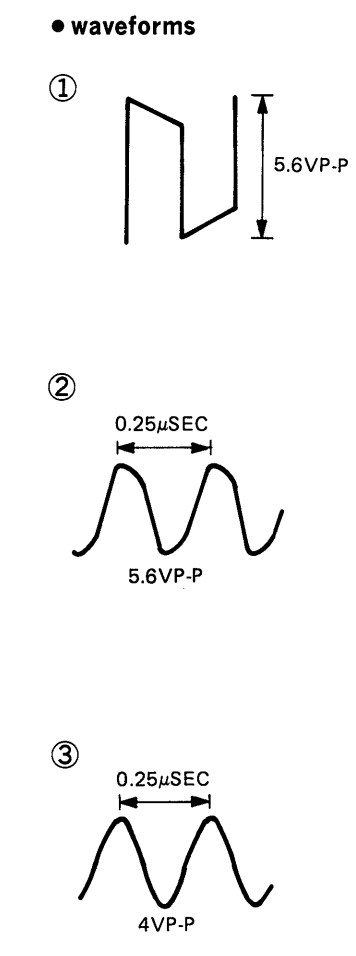
**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- $\Delta$ : internal component.
- $\square$ : fusible resistor.

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

**Note:**

- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\square$ : PB (DECK A)
- $\square$ : PB (DECK B)
- $\square$ : REC (DECK B)



# SECTION 5 EXPLODED VIEWS

**NOTE:**

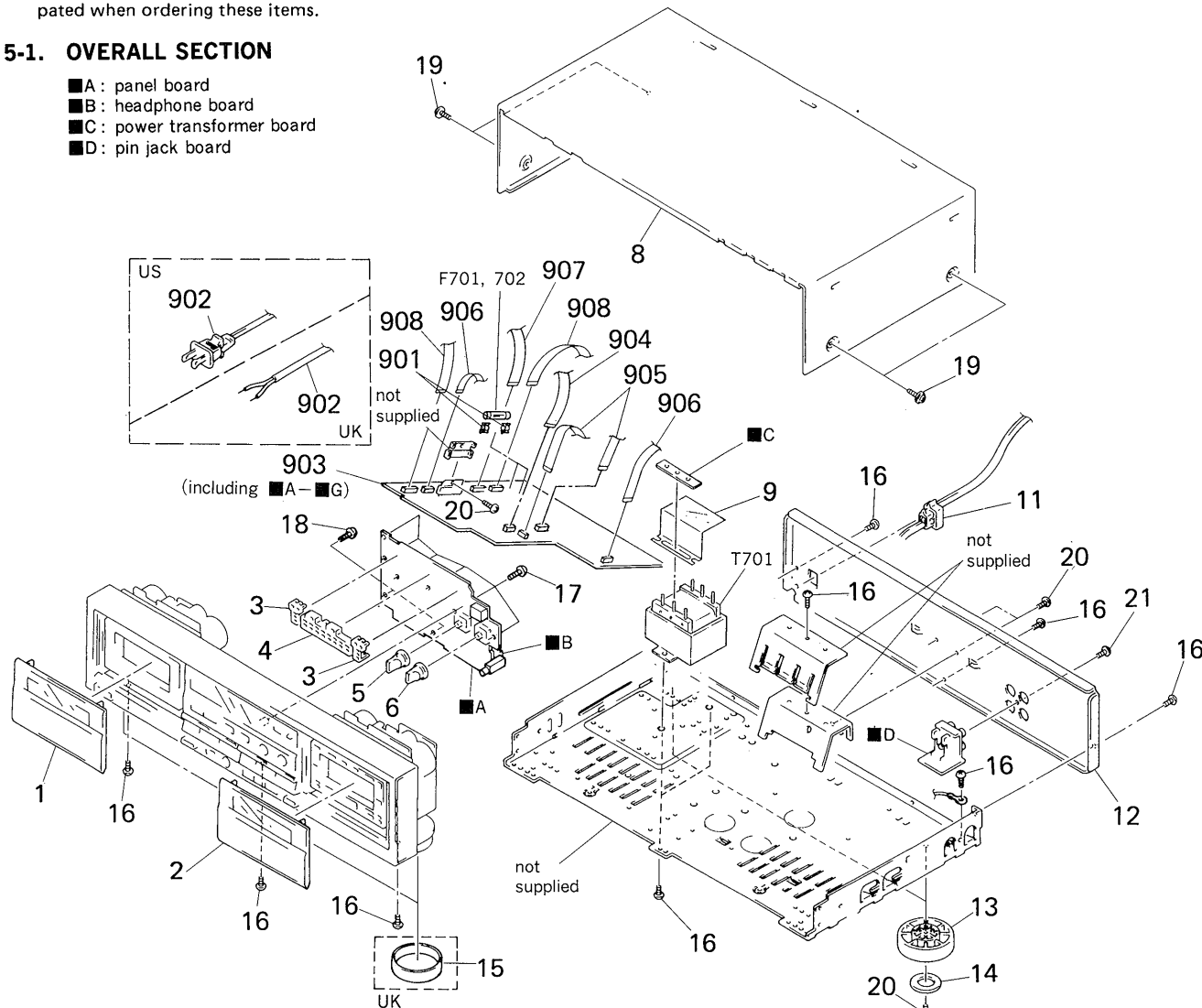
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts  
Example:  
(RED) ... KNOB, BALANCE (WHITE)  
↑ Cabinet's Color                      ↑ Parts Color

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

**5-1. OVERALL SECTION**

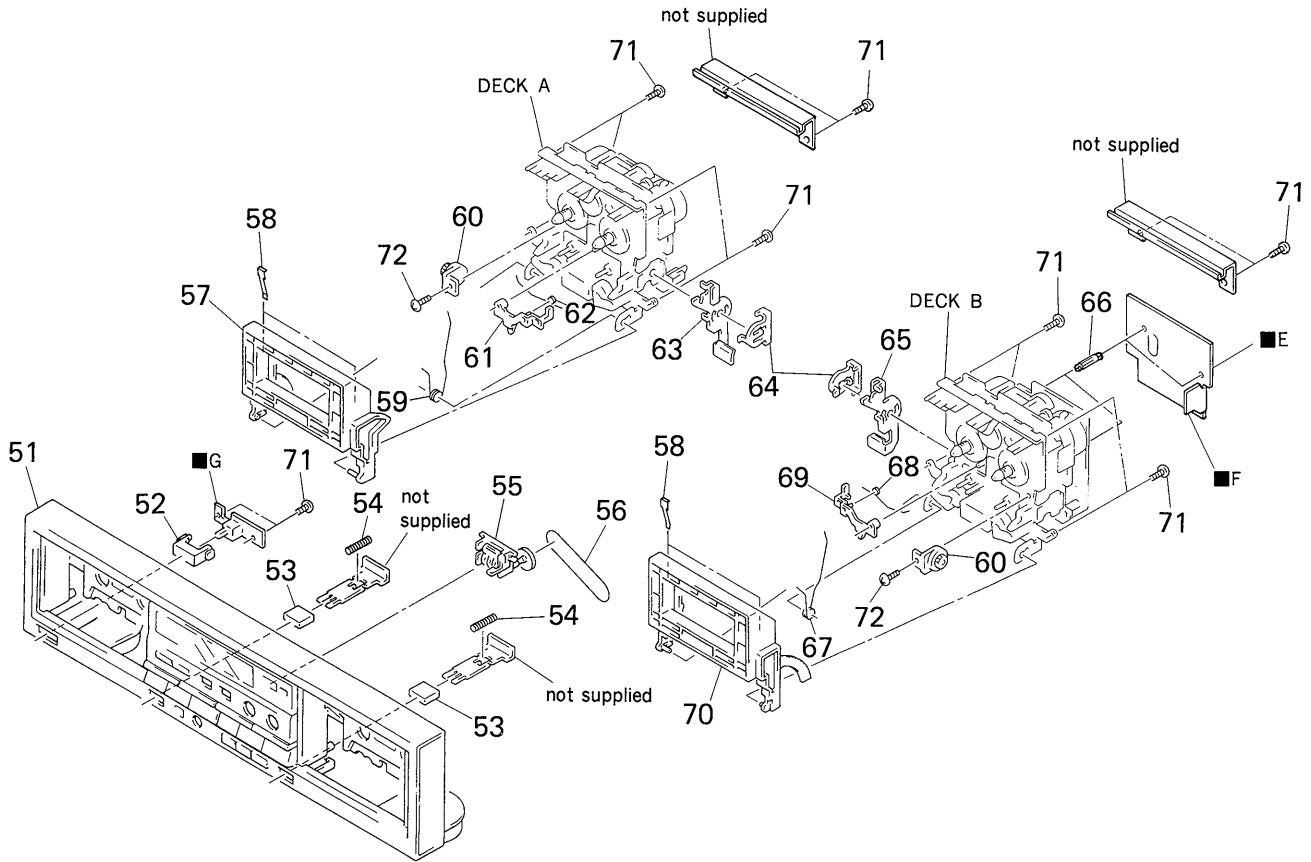
- A: panel board
- B: headphone board
- C: power transformer board
- D: pin jack board



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	3-354-975-01	LID, CASSETTE (A)		19	3-704-366-01	SCREW (CASE) (M3X8)	
2	3-354-975-11	LID, CASSETTE (B)		20	7-682-548-04	SCREW +BVTT 3X8 (S)	
3	*3-354-966-01	HOLDER (DIR), LED		21	7-621-849-00	SCREW, TAPPING	
4	*3-354-972-01	HOLDER (METER), LED		901	1-533-213-31	HOLDER, FUSE	
5	3-354-968-01	KNOB (RT)		902	▲.1-551-506-XX (US)...CORD, POWER		
6	3-354-968-11	KNOB (RT)			▲.1-556-035-00 (UK)...CORD, POWER		
8	*4-929-294-42	CASE		903	*A-2006-256-A (US)...MOUNTED PCB, SYSTEM CONTROL		
9	*3-337-136-11	COVER, TRANSFORMER SAFETY			*A-2006-257-A (UK)...MOUNTED PCB, SYSTEM CONTROL		
11	3-703-244-00	(UK).....BUSHING (2104), CORD		904	1-575-777-11	WIRE, FLAT TYPE (5 CORE)	
	*3-703-571-11	(US)...BUSHING (S) (4516), CORD		905	1-575-778-11	WIRE, FLAT TYPE (5 CORE)	
12	*3-354-948-01	(US)...PANEL, BACK		906	1-575-780-11	WIRE, FLAT TYPE (7 CORE)	
	*3-354-948-11	(UK)...PANEL, BACK		907	1-575-781-11	WIRE, FLAT TYPE (9 CORE)	
13	X-3304-938-2	(UK)...FOOT ASSY		908	1-575-783-21	WIRE, FLAT TYPE (9 CORE)	
	X-4885-950-1	(US)...FOOT ASSY		F701	▲.1-532-259-00 (UK)....FUSE, TIME-LAG (1.6A)		
14	4-923-836-11	CUSHION			F701 ▲.1-532-742-11 (US)...FUSE, GLASS TUBE (1.6A)		
15	4-933-135-01	(UK)...RING (DIA.58A), ORNAMENTAL		F702	▲.1-532-259-00 (UK)....FUSE, TIME-LAG (1.6A)		
16	7-682-548-09	SCREW +BVTT 3X8 (S)			F702 ▲.1-532-742-11 (US)...FUSE, GLASS TUBE (1.6A)		
17	4-928-635-01	SCREW, +BV (2.6X8) TAPPING		T701	▲.1-449-420-21 (US)...TRANSFORMER, POWER		
18	7-685-134-19	SCREW (+ PTPWH)(2.6X8)			T701 ▲.1-449-661-21 (UK)...TRANSFORMER, POWER		

5-2. FRONT PANEL SECTION

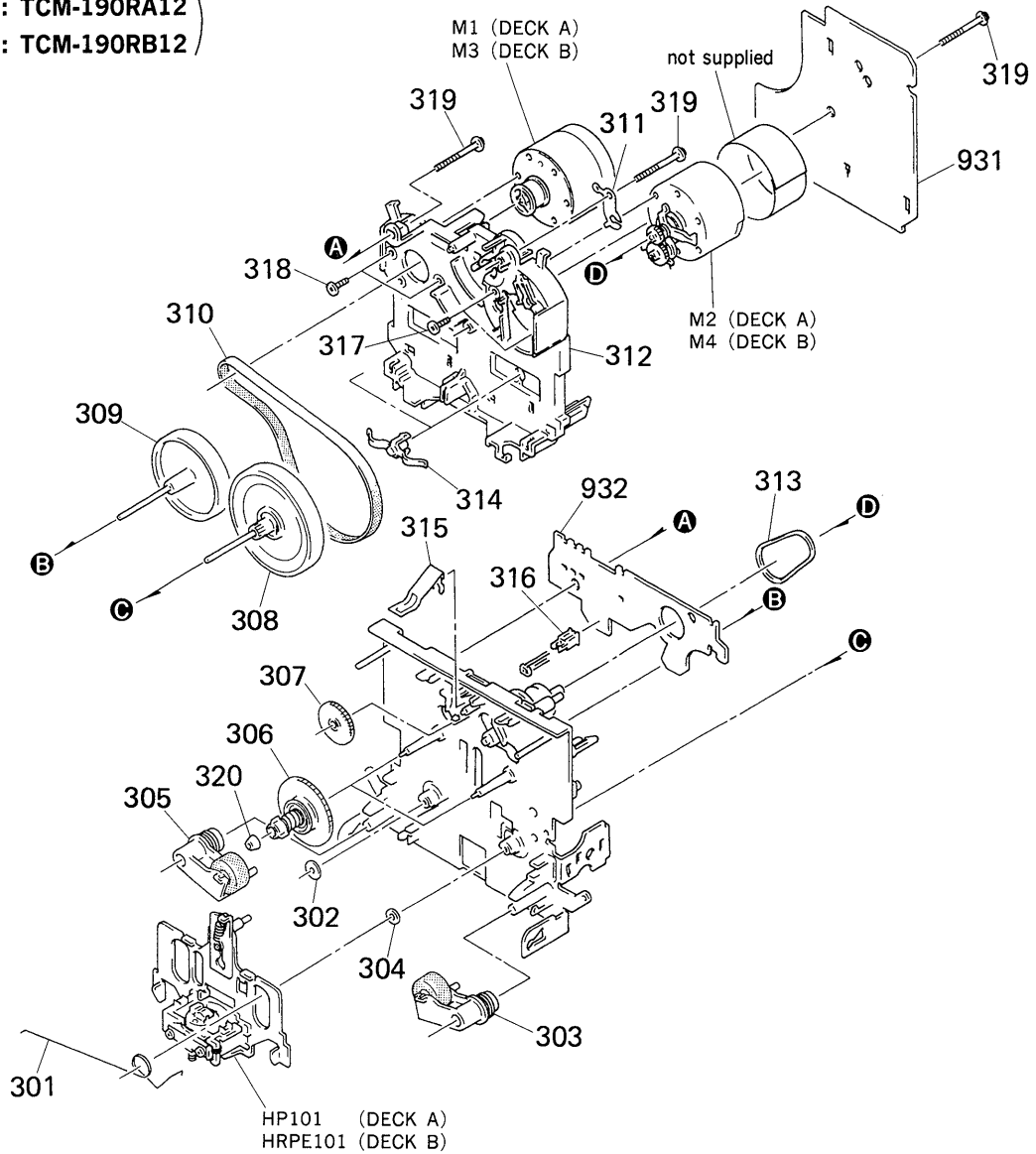
- E: HX PRO board
- F: connector board
- G: power SW board



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	X-3340-196-1 X-3340-197-1	(UK)...PANEL ASSY, FRONT (US)...PANEL ASSY, FRONT		61	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
52	3-354-932-01	BUTTON (POWER)		62	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
53	3-340-188-11	BUTTON (EJECT)		63	*3-354-954-01	LEVER (LOCK LEVER R)	
54	3-500-131-00	SPRING, COMPRESSION		64	3-354-957-01	JOINT (LOCK LEVER)	
55	1-548-596-41	COUNTER, TAPE (MIDDLE TYPE)		65	3-354-953-01	LEVER (LOCK LEVER L)	
56	3-499-042-XX	BELT, COUNTER		66	*3-682-419-21	HOLDER, P.C.B	
57	X-3340-195-1	HOLDER (R) ASSY, CASSETTE	58	67	3-354-959-01	SPRING (LOADING L), TORSION	
58	3-308-823-11	SPRING		68	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
59	3-354-960-01	SPRING (LOADING R), TORSION		69	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
60	3-354-963-01	DAMPER		70	X-3340-194-1	HOLDER (L) ASSY, CASSETTE	88
				71	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
				72	7-621-773-95	SCREW +BVTT 2.6X6 (S)	

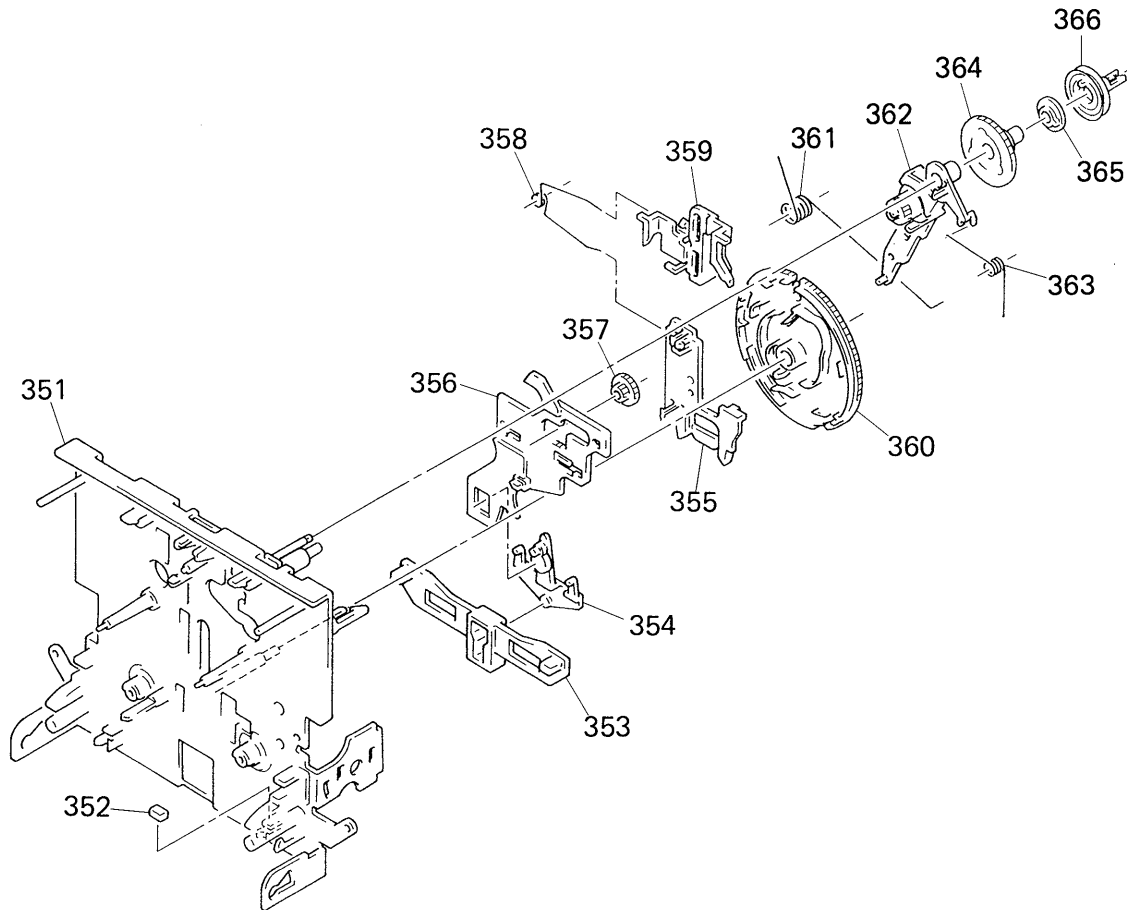
5-3. MECHANISM SECTION-1

( DECK A: TCM-190RA12 )  
 ( DECK B: TCM-190RB12 )



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
301	3-359-455-01	SPRING, TORSION		316	3-343-419-01	HOLDER (S SENSOR A)	
302	3-356-714-01	WASHER		317	7-627-556-08	SCREW +P 2.6X2.8	
303	X-3359-408-1	LEVER (PINCH LEVER FWD) ASSY		318	7-621-775-00	SCREW +B 2.6X3	
304	3-356-713-01	WASHER		319	3-359-414-01	SCREW (+PTPWH 2X23)	
305	X-3359-409-1	LEVER (PINCH LEVER REV) ASSY		320	3-356-618-01	CAP (REEL)	
306	X-3359-404-1	TABLE ASSY, REEL		931	*1-634-840-11	(DECK A)...PC BOARD, MD (A)	
307	3-359-424-01	GEAR (REV GEAR)			*1-634-842-11	(DECK B)...PC BOARD, MD (C)	
308	X-3359-406-1	FLYWHEEL (FWD) COMPLETE ASSY		932	*1-634-841-11	PC BOARD, SW (A)	
309	X-3359-410-1	FLYWHEEL (REV) ASSY		HP101	A-2003-418-A	BASE ASSY, HEAD (PLAYBACK)	
310	3-359-417-01	BELT (FLAT), CAPSTAN		HRPE101A	2003-477-A	BASE ASSY, HEAD (REC/PB/ERASE)	
311	3-359-450-01	PLATE, GROUND		M1	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY	
312	*3-359-436-01	BASE (THRUST RETAINER), FITTING		M2	A-2003-474-A	MOTOR (REEL MOTOR) ASSY	
313	3-359-466-01	BELT (FR), SQUARE		M3	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY	
314	3-575-321-00	RETAINER, THRUST, CAPSTAN		M4	A-2003-474-A	MOTOR (REEL MOTOR) ASSY	
315	3-359-430-01	SPRING (CASSETTE RETAINER), LEAF					

5-4. MECHANISM SECTION-2



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
351	X-3359-415-1	CHASSIS ASSY, MECHANICAL		359	3-359-429-01	SLIDER (BRAKE PLATE)	
352	*3-359-469-01	SPACER		360	3-359-420-01	GEAR (CAM GEAR)	
353	*3-359-425-01	SLIDER (REVERSE SLIDER)		361	3-359-456-01	SPRING (TRIGGER SPRING), TORSION	
354	3-359-426-01	LEVER (REVERSE LEVER)		362	X-3359-405-1	LEVER (FR ARM) ASSY	
355	*3-359-427-01	SLIDER (LEVERSE SLIDER)		363	3-359-453-01	SPRING (FR ARM), TORSION	
356	*3-359-415-01	SLIDER (TRIGGER SLIDER)		364	3-359-419-01	GEAR (FR GEAR)	
357	3-359-448-01	GEAR (TRIGGER)		365	3-359-421-01	CLUTCH (REEL DISK)	
358	3-359-454-01	SPRING, TORSION		366	3-359-418-01	PULLEY (FR PULLEY)	

## SECTION 6 ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**

MF:  $\mu$ F, PF:  $\mu$ MF.

**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**

In each case, U:  $\mu$ , for example:

UA....:  $\mu$ A..., UPA....:  $\mu$ PA...,

UPC....:  $\mu$ PC, UPD....:  $\mu$ PD...

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.



Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
901	1-533-213-31	HOLDER, FUSE	C55B	1-161-494-00	CERAMIC 0.022MF 25V
902	1-551-506-XX (US)...CORD, POWER		C55C	1-136-433-11	FILM 100PF 5% 630V
	1-556-035-00 (UK)...CORD, POWER		C56B	1-126-157-11	ELECT 10MF 20% 16V
903	*A-2006-256-A (US)...MOUNTED PCB, SYSTEM CONTROL		C56C	1-130-472-00	MYLAR 0.0012MF 5% 50V
	*A-2006-257-A (UK)...MOUNTED PCB, SYSTEM CONTROL		C64	1-162-288-31	CERAMIC 330PF 10% 50V
904	1-575-777-11	WIRE, FLAT TYPE (5 CORE)	C65	1-136-273-91	FILM 75PF 5% 630V
905	1-575-778-11	WIRE, FLAT TYPE (5 CORE)	C71A	1-123-875-11	ELECT 10MF 20% 50V
906	1-575-780-11	WIRE, FLAT TYPE (7 CORE)	C71B	1-123-875-11	ELECT 10MF 20% 50V
907	1-575-781-11	WIRE, FLAT TYPE (9 CORE)	C71C	1-136-153-00	FILM 0.01MF 5% 50V
908	1-575-783-21	WIRE, FLAT TYPE (9 CORE)	C72A	1-123-875-11	ELECT 10MF 20% 50V
931	*1-634-840-11 (DECK A)...PC BOARD, MD (A)		C72B	1-123-875-11	ELECT 10MF 20% 50V
	*1-634-842-11 (DECK B)...PC BOARD, MD (C)		C72C	1-136-157-00	FILM 0.022MF 5% 50V
932	*1-634-841-11 (DECK A)...PC BOARD, SW (A)		C73	1-136-165-00	FILM 0.1MF 5% 50V
C11A	1-110-342-11	MYLAR 390PF 5% 50V	C74	1-136-437-11	FILM 220PF 5% 630V
C11B	1-110-342-11	MYLAR 390PF 5% 50V	C75	1-136-433-11	FILM 100PF 5% 630V
C12A	1-136-157-00	FILM 0.022MF 5% 50V	C76	1-130-472-00	MYLAR 0.0012MF 5% 50V
C12B	1-136-157-00	FILM 0.022MF 5% 50V	C91	1-126-059-11	ELECT 10MF 20% 50V
C13A	1-124-282-00	ELECT 22MF 20% 25V	C92	1-126-059-11	ELECT 10MF 20% 50V
C13B	1-124-282-00	ELECT 22MF 20% 25V	C93	1-126-022-11	ELECT 47MF 20% 10V
C21A	1-110-342-11	MYLAR 390PF 5% 50V	C94	1-107-046-00	MICA 4.7PF 0.5PF 500V
C21B	1-110-342-11	MYLAR 390PF 5% 50V	C101	1-136-157-00	FILM 0.022MF 5% 50V
C22A	1-136-157-00	FILM 0.022MF 5% 50V	C102	1-162-294-31	CERAMIC 0.001MF 10% 50V
C22B	1-136-157-00	FILM 0.022MF 5% 50V	C104	1-130-475-00	MYLAR 0.0022MF 5% 50V
C23A	1-124-282-00	ELECT 22MF 20% 25V	C105	1-130-475-00	MYLAR 0.0022MF 5% 50V
C23B	1-124-282-00	ELECT 22MF 20% 25V	C106	1-136-174-00	FILM 0.56MF 5% 50V
C31A	1-124-443-00	ELECT 100MF 20% 10V	C107	1-136-171-00	FILM 0.33MF 5% 50V
C31B	1-124-443-00	ELECT 100MF 20% 10V	C108	1-126-059-11	ELECT 10MF 20% 50V
C32A	1-124-443-00	ELECT 100MF 20% 10V	C110	1-126-059-11	ELECT 10MF 20% 50V
C32B	1-124-443-00	ELECT 100MF 20% 10V	C111	1-126-301-11	ELECT 1MF 20% 50V
C33	1-124-119-00	ELECT 330MF 20% 16V	C131	1-126-162-11	ELECT 3.3MF 20% 50V
C44	1-162-288-31	CERAMIC 330PF 10% 50V	C151	1-126-059-11	ELECT 10MF 20% 50V
C45	1-136-273-91	FILM 75PF 5% 630V	C152	1-126-059-11	ELECT 10MF 20% 50V
C51B	1-136-230-00	FILM 0.0022MF 5% 100V	C154	1-126-300-11	ELECT 0.47MF 20% 50V
C51C	1-136-153-00	FILM 0.01MF 5% 50V	C201	1-136-157-00	FILM 0.022MF 5% 50V
C52B	1-136-230-00	FILM 0.0022MF 5% 100V	C202	1-162-294-31	CERAMIC 0.001MF 10% 50V
C52C	1-136-157-00	FILM 0.022MF 5% 50V	C204	1-130-475-00	MYLAR 0.0022MF 5% 50V
C53B	1-130-856-00	FILM 0.0068MF 5% 100V	C205	1-130-475-00	MYLAR 0.0022MF 5% 50V
C53C	1-136-165-00	FILM 0.1MF 5% 50V	C206	1-136-174-00	FILM 0.56MF 5% 50V
C54B	1-136-601-11	FILM 0.01MF 5% 630V	C207	1-136-171-00	FILM 0.33MF 5% 50V
C54C	1-136-437-11	FILM 220PF 5% 630V	C208	1-126-059-11	ELECT 10MF 20% 50V
			C210	1-126-059-11	ELECT 10MF 20% 50V
			C211	1-126-301-11	ELECT 1MF 20% 50V
			C231	1-126-162-11	ELECT 3.3MF 20% 50V
			C251	1-126-059-11	ELECT 10MF 20% 50V
			C252	1-126-059-11	ELECT 10MF 20% 50V



Ref.No.	Part No.	Description				
C254	1-126-300-11	ELECT	0.47MF	20%	50V	
C501	1-126-301-11	ELECT	1MF	20%	50V	
C502	1-161-494-00	CERAMIC	0.022MF		25V	
C510	1-126-059-11	ELECT	10MF	20%	50V	
C511	1-126-059-11	ELECT	10MF	20%	50V	
C591	1-124-473-11	ELECT	1000MF	20%	10V	
C592	1-124-994-11	ELECT	100MF	20%	10V	
C593	1-124-994-11	ELECT	100MF	20%	10V	
C597	1-124-994-11	ELECT	100MF	20%	10V	
C598	1-124-994-11	ELECT	100MF	20%	10V	
C599	1-126-024-11	ELECT	220MF	20%	16V	
C601	1-126-161-11	ELECT	2.2MF	20%	50V	
C602	1-162-286-31	CERAMIC	220PF	10%	50V	
C603	1-162-286-31	CERAMIC	220PF	10%	50V	
C604	1-126-161-11	ELECT	2.2MF	20%	50V	
C605	1-161-494-00	CERAMIC	0.022MF		25V	
C608	1-126-161-11	ELECT	2.2MF	20%	50V	
C701	1-124-045-00	ELECT	4.7MF	20%	50V	
C702	1-124-887-00	ELECT	3300MF	20%	16V	
C703	1-124-887-00	ELECT	3300MF	20%	16V	
C704	1-124-963-11	ELECT	33MF	20%	16V	
C706	1-124-473-11	ELECT	1000MF	20%	10V	
C707	1-124-473-11	ELECT	1000MF	20%	10V	
C709	1-126-161-11	ELECT	2.2MF	20%	50V	
C710	1-124-443-00	ELECT	100MF	20%	6.3V	
C801	1-164-159-11	CERAMIC	0.1MF		50V	
C802	1-124-443-00	ELECT	100MF	20%	6.3V	
C804	1-126-301-11	ELECT	1MF	20%	50V	
C805	1-126-059-11	ELECT	10MF	20%	50V	
C806	1-136-165-00	FILM	0.1MF	5%	50V	
C807	1-136-165-00	FILM	0.1MF	5%	50V	
C808	1-126-161-11	ELECT	2.2MF	20%	50V	
C899	1-126-300-11	ELECT	0.47MF	20%	50V	
CN702	*1-564-506-11	PLUG, CONNECTOR 3P				
CNP22	*1-565-347-11	SOCKET, CONNECTOR (PC BOARD) 8P				
CNP31A	*1-568-824-11	SOCKET, CONNECTOR 5P				
CNP31B	*1-568-824-11	SOCKET, CONNECTOR 5P				
CNP32A	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P				
CNP32B	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P				
CNP34	*1-565-344-11	PIN, CONNECTOR (PC BOARD) 8P				
CNP35	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P				
CNP71A	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P				
CNP71B	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P				
CNP72A	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P				
CNP72B	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P				
CNP73A	*1-568-826-11	SOCKET, CONNECTOR 7P				
CNP73B	*1-568-828-11	SOCKET, CONNECTOR 9P				
CNP81A	*1-568-852-11	SOCKET, CONNECTOR 9P				
CNP81B	*1-568-852-11	SOCKET, CONNECTOR 9P				
CNP83	*1-568-826-11	SOCKET, CONNECTOR 7P				
CNP84	*1-568-826-11	SOCKET, CONNECTOR 7P				
CNP501	*1-568-824-11	SOCKET, CONNECTOR 5P				
CNP502	*1-568-824-21	SOCKET, CONNECTOR 5P				
CNP601	*1-568-824-11	SOCKET, CONNECTOR 5P				

Ref.No.	Part No.	Description
CNP701	*1-564-337-00	PIN, CONNECTOR 3P
CNP801	*1-568-828-21	SOCKET, CONNECTOR 9P
CNP802	*1-568-828-11	SOCKET, CONNECTOR 9P
CNP803	*1-568-828-11	SOCKET, CONNECTOR 9P
CNP804	*1-568-826-11	SOCKET, CONNECTOR 7P
CNP901	*1-568-848-11	SOCKET, CONNECTOR 5P
D31	8-719-107-94	DIODE 1SS202-1
D131	8-719-107-94	DIODE 1SS202-1
D231	8-719-107-94	DIODE 1SS202-1
D571	8-719-107-94	DIODE 1SS202-1
D701	8-719-200-77	DIODE 10E2N
D702	8-719-200-77	DIODE 10E2N
D703	8-719-200-77	DIODE 10E2N
D704	8-719-200-77	DIODE 10E2N
D705	8-719-200-77	DIODE 10E2N
D706	8-719-200-77	DIODE 10E2N
D707	8-719-107-94	DIODE 1SS202-1
D708	8-719-933-33	DIODE HZS6A1L
D709	8-719-933-44	DIODE HZS7A2L
D710	8-719-933-43	DIODE HZS7A1L
D711	8-719-107-94	DIODE 1SS202-1
D712	8-719-107-94	DIODE 1SS202-1
D713	8-719-107-94	DIODE 1SS202-1
D714	8-719-933-63	DIODE HZS11A1L
D801	8-719-107-94	DIODE 1SS202-1
D802	8-719-107-94	DIODE 1SS202-1
D808	8-719-107-94	DIODE 1SS202-1
D895	8-719-107-94	DIODE 1SS202-1
D896	8-719-107-94	DIODE 1SS202-1
D897	8-719-107-94	DIODE 1SS202-1
D898	8-719-107-94	DIODE 1SS202-1
D899	8-719-107-94	DIODE 1SS202-1
D901	8-719-301-38	DIODE SEL2210S-C
D902	8-719-301-52	DIODE SEL2910A-C
D903	8-719-301-44	DIODE SEL2410E-D
D904	8-719-301-52	DIODE SEL2910A-C
D905	8-719-301-52	DIODE SEL2910A-C
D906	8-719-301-44	DIODE SEL2410E-D
D907	8-719-301-44	DIODE SEL2410E-D
D908	8-719-301-44	DIODE SEL2410E-D
D909	8-719-301-44	DIODE SEL2410E-D
D910	8-719-301-44	DIODE SEL2410E-D
D911	8-719-301-38	DIODE SEL2210S-C
D912	8-719-301-38	DIODE SEL2210S-C
D913	8-719-301-38	DIODE SEL2210S-C
D914	8-719-301-44	DIODE SEL2410E-D
D915	8-719-301-44	DIODE SEL2410E-D
D916	8-719-301-44	DIODE SEL2410E-D
D917	8-719-301-44	DIODE SEL2410E-D
D918	8-719-301-44	DIODE SEL2410E-D
D919	8-719-301-38	DIODE SEL2210S-C
D920	8-719-301-38	DIODE SEL2210S-C
D921	8-719-301-38	DIODE SEL2210S-C
D922	8-719-301-38	DIODE SEL2210S-C
D923	8-719-301-38	DIODE SEL2210S-C
D924	8-719-301-44	DIODE SEL2410E-D
D925	8-719-301-52	DIODE SEL2910A-C

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
D926	8-719-301-52	DIODE SEL2910A-C	Q701	8-729-920-97	TRANSISTOR 2SB1187-EF
D927	8-719-301-52	DIODE SEL2910A-C	Q702	8-729-920-98	TRANSISTOR 2SD1761-EF
D928	8-719-301-44	DIODE SEL2410E-D	Q703	8-729-900-85	TRANSISTOR DTC144WS
F701	△ 1-532-259-00	(UK)...FUSE, TIME-LAG (1.6A)	Q704	8-729-920-98	TRANSISTOR 2SD1761-EF
F701	△ 1-532-742-11	(US)...FUSE, GLASS TUBE (1.6A)	Q705	8-729-820-24	TRANSISTOR 2SC3330-T
F702	△ 1-532-259-00	(UK)...FUSE, TIME-LAG (1.6A)	Q706	8-729-900-89	TRANSISTOR DTC144ES
F702	△ 1-532-742-11	(US)...FUSE, GLASS TUBE (1.6A)	Q707	8-729-820-24	TRANSISTOR 2SC3330-T
HP101	A-2003-418-A	BASE ASSY, HEAD (PLAYBACK)	Q801	8-729-821-31	TRANSISTOR 2SD1012-FG
HRPE101	A-2003-477-A	BASE ASSY, HEAD (REC/PB/ERASE)	Q802	8-729-821-31	TRANSISTOR 2SD1012-FG
IC31A	8-759-111-44	IC UPC4570C-1	Q803	8-729-820-24	TRANSISTOR 2SC3330-T
IC31B	8-759-111-44	IC UPC4570C-1	Q804	8-729-820-24	TRANSISTOR 2SC3330-T
IC51	8-759-106-56	IC UPC1297CA	Q805	8-729-820-24	TRANSISTOR 2SC3330-T
IC81A	8-719-939-23	PHOTO SENSOR GP2S09-C	Q806	8-729-820-24	TRANSISTOR 2SC3330-T
IC81B	8-719-939-23	PHOTO SENSOR GP2S09-C	Q807	8-729-820-24	TRANSISTOR 2SC3330-T
IC501	8-752-036-34	IC CXA1330S	Q808	8-729-820-24	TRANSISTOR 2SC3330-T
IC503	8-759-945-58	IC RC4558P	Q809	8-729-820-24	TRANSISTOR 2SC3330-T
IC504	8-759-945-58	IC RC4558P	Q810	8-729-821-04	TRANSISTOR 2SA1317-STU
IC506	8-759-040-53	IC MC14053BCP	Q811	8-729-900-61	TRANSISTOR DTA114ES
IC509	8-752-038-02	IC CXA1198AP	Q813	8-729-900-80	TRANSISTOR DTC114ES
IC510	8-759-208-06	IC TC4051BPHB	Q814	8-729-801-84	TRANSISTOR 2SB1013-4
IC601	8-759-634-51	IC M5218AP	Q816	8-729-801-84	TRANSISTOR 2SB1013-4
IC701	8-759-945-58	IC RC4558P	Q817	8-729-821-04	TRANSISTOR 2SA1317-STU
IC801	8-759-240-50	IC TC4050BPHB	Q820	8-729-900-61	TRANSISTOR DTA114ES
IC802	8-759-634-59	IC M50964-224SP	Q823	8-729-821-04	TRANSISTOR 2SA1317-STU
IC803	8-759-207-05	IC TA7272P	Q824	8-729-820-24	TRANSISTOR 2SC3330-T
IC899	8-759-208-08	IC TC4052BPHB	Q825	8-729-820-24	TRANSISTOR 2SC3330-T
IC901	8-741-100-48	IC SBX1610-59	Q840	8-729-900-61	TRANSISTOR DTA114ES
J301	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)	Q841	8-729-821-04	TRANSISTOR 2SA1317-STU
J901	1-507-796-71	JACK (PHONES)	Q899	8-729-900-80	TRANSISTOR DTC114ES
L41	1-410-780-11	INDUCTOR 27MMH	R11A	1-247-881-00	CARBON 120K 5% 1/4W
L61	1-410-780-11	INDUCTOR 27MMH	R11B	1-247-881-00	CARBON 120K 5% 1/4W
LPF101	1-236-087-11	FILTER, LOW PASS	R12A	1-249-405-11	CARBON 100 5% 1/4W
LPF201	1-236-087-11	FILTER, LOW PASS	R12B	1-249-405-11	CARBON 100 5% 1/4W
M1	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY	R13A	1-247-882-11	CARBON 130K 5% 1/4W
M2	A-2003-474-A	MOTOR (REEL MOTOR) ASSY	R13B	1-247-882-11	CARBON 130K 5% 1/4W
M3	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY	R14A	1-249-426-11	CARBON 5.6K 5% 1/4W
M4	A-2003-474-A	MOTOR (REEL MOTOR) ASSY	R14B	1-249-426-11	CARBON 5.6K 5% 1/4W
Q51	8-729-194-57	TRANSISTOR 2SC945-P	R21A	1-247-881-00	CARBON 120K 5% 1/4W
Q52	8-729-194-57	TRANSISTOR 2SC945-P	R21B	1-247-881-00	CARBON 120K 5% 1/4W
Q53	8-729-801-84	TRANSISTOR 2SB1013-4	R22A	1-249-405-11	CARBON 100 5% 1/4W
Q71A	8-729-820-16	TRANSISTOR 2SA1317-S	R22B	1-249-405-11	CARBON 100 5% 1/4W
Q71B	8-729-820-16	TRANSISTOR 2SA1317-S	R23A	1-247-882-11	CARBON 130K 5% 1/4W
Q101	8-729-900-74	TRANSISTOR DTC143TS	R23B	1-247-882-11	CARBON 130K 5% 1/4W
Q171	8-729-821-31	TRANSISTOR 2SD1012-FG	R24A	1-249-426-11	CARBON 5.6K 5% 1/4W
Q201	8-729-900-74	TRANSISTOR DTC143TS	R24B	1-249-426-11	CARBON 5.6K 5% 1/4W
Q271	8-729-821-31	TRANSISTOR 2SD1012-FG	R31A	1-249-409-11	CARBON 220 5% 1/4W
Q501	8-729-900-65	TRANSISTOR DTA144ES	R31B	1-249-409-11	CARBON 220 5% 1/4W
Q502	8-729-900-65	TRANSISTOR DTA144ES	R32A	1-249-409-11	CARBON 220 5% 1/4W
Q551	8-729-900-61	TRANSISTOR DTA114ES	R32B	1-249-409-11	CARBON 220 5% 1/4W
Q552	8-729-620-05	TRANSISTOR 2SC2603-EF	R45	1-249-430-11	CARBON 12K 5% 1/4W
Q553	8-729-620-05	TRANSISTOR 2SC2603-EF	R51B	1-249-441-11	CARBON 100K 5% 1/4W
Q571	8-729-900-65	TRANSISTOR DTA144ES	R51C	1-249-431-11	CARBON 15K 5% 1/4W
Q572	8-729-821-04	TRANSISTOR 2SA1317-STU	R52B	1-249-441-11	CARBON 100K 5% 1/4W
Q601	8-729-900-89	TRANSISTOR DTC144ES	R52C	1-249-393-11	CARBON 10 5% 1/4W

**Note:** The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				
R53B	1-249-429-11	CARBON	10K	5%	1/4W	
R53C	1-247-883-00	CARBON	150K	5%	1/4W	
R54B	△ 1-212-851-00	FUSIBLE	5.6	5%	1/4W	F
R54C	1-249-430-11	CARBON	12K	5%	1/4W	
R55	1-249-429-11	CARBON	10K	5%	1/4W	
R65	1-249-430-11	CARBON	12K	5%	1/4W	
R71A	1-249-433-11	CARBON	22K	5%	1/4W	
R71B	1-249-433-11	CARBON	22K	5%	1/4W	
R71C	1-249-431-11	CARBON	15K	5%	1/4W	
R72A	1-249-433-11	CARBON	22K	5%	1/4W	
R72B	1-249-433-11	CARBON	22K	5%	1/4W	
R72C	1-249-393-11	CARBON	10	5%	1/4W	
R73A	1-249-437-11	CARBON	47K	5%	1/4W	
R73B	1-249-437-11	CARBON	47K	5%	1/4W	
R73C	1-247-883-00	CARBON	150K	5%	1/4W	
R74A	1-249-437-11	CARBON	47K	5%	1/4W	
R74B	1-249-437-11	CARBON	47K	5%	1/4W	
R74C	1-249-430-11	CARBON	12K	5%	1/4W	
R81	1-249-414-11	CARBON	560	5%	1/4W	
R82	1-247-818-11	CARBON	300	5%	1/4W	
R83	1-247-834-11	CARBON	1.3K	5%	1/4W	
R84A	1-249-417-11	CARBON	1K	5%	1/4W	
R84B	1-249-417-11	CARBON	1K	5%	1/4W	
R85A	1-249-408-11	CARBON	180	5%	1/4W	
R85B	1-249-408-11	CARBON	180	5%	1/4W	
R91	1-247-840-00	CARBON	2.4K	5%	1/4W	
R101	1-249-423-11	CARBON	3.3K	5%	1/4W	
R102	1-247-987-00	CARBON	220K	5%	1/4W	
R104	1-249-423-11	CARBON	3.3K	5%	1/4W	
R105	1-249-428-11	CARBON	8.2K	5%	1/4W	
R106	1-247-864-11	CARBON	24K	5%	1/4W	
R107	1-249-414-11	CARBON	560	5%	1/4W	
R119	1-249-421-11	CARBON	2.2K	5%	1/4W	
R120	1-249-420-11	CARBON	1.8K	5%	1/4W	
R131	1-249-408-11	CARBON	180	5%	1/4W	
R132	1-249-432-11	CARBON	18K	5%	1/4W	
R133	1-249-421-11	CARBON	2.2K	5%	1/4W	
R134	1-247-862-11	CARBON	20K	5%	1/4W	
R151	1-249-425-11	CARBON	4.7K	5%	1/4W	
R153	1-249-421-11	CARBON	2.2K	5%	1/4W	
R155	1-249-426-11	CARBON	5.6K	5%	1/4W	
R156	1-249-429-11	CARBON	10K	5%	1/4W	
R171	1-249-433-11	CARBON	22K	5%	1/4W	
R172	1-249-417-11	CARBON	1K	5%	1/4W	
R173	1-249-428-11	CARBON	8.2K	5%	1/4W	
R174	1-249-421-11	CARBON	2.2K	5%	1/4W	
R181	1-249-429-11	CARBON	10K	5%	1/4W	
R184	1-249-405-11	CARBON	100	5%	1/4W	
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	
R202	1-247-887-00	CARBON	220K	5%	1/4W	
R204	1-249-423-11	CARBON	3.3K	5%	1/4W	
R205	1-249-428-11	CARBON	8.2K	5%	1/4W	
R206	1-247-864-11	CARBON	24K	5%	1/4W	
R207	1-249-414-11	CARBON	560	5%	1/4W	
R219	1-249-421-11	CARBON	2.2K	5%	1/4W	

Ref.No.	Part No.	Description				
R220	1-249-420-11	CARBON	1.8K	5%	1/4W	
R231	1-249-408-11	CARBON	180	5%	1/4W	
R232	1-249-432-11	CARBON	18K	5%	1/4W	
R233	1-249-421-11	CARBON	2.2K	5%	1/4W	
R234	1-247-862-11	CARBON	20K	5%	1/4W	
R251	1-249-425-11	CARBON	4.7K	5%	1/4W	
R253	1-249-421-11	CARBON	2.2K	5%	1/4W	
R255	1-249-426-11	CARBON	5.6K	5%	1/4W	
R256	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-249-433-11	CARBON	22K	5%	1/4W	
R272	1-249-417-11	CARBON	1K	5%	1/4W	
R273	1-249-428-11	CARBON	8.2K	5%	1/4W	
R274	1-249-421-11	CARBON	2.2K	5%	1/4W	
R281	1-249-429-11	CARBON	10K	5%	1/4W	
R284	1-249-405-11	CARBON	100	5%	1/4W	
R501	1-249-429-11	CARBON	10K	5%	1/4W	
R502	1-249-434-11	CARBON	27K	5%	1/4W	
R503	1-249-417-11	CARBON	1K	5%	1/4W	
R504	1-249-429-11	CARBON	10K	5%	1/4W	
R505	1-249-441-11	CARBON	100K	5%	1/4W	
R506	1-249-433-11	CARBON	22K	5%	1/4W	
R551	1-249-439-11	CARBON	68K	5%	1/4W	
R552	1-247-878-00	CARBON	91K	5%	1/4W	
R553	1-247-881-00	CARBON	120K	5%	1/4W	
R554	1-247-876-11	CARBON	75K	5%	1/4W	
R555	1-249-435-11	CARBON	33K	5%	1/4W	
R556	1-247-872-11	CARBON	51K	5%	1/4W	
R557	1-247-883-00	CARBON	150K	5%	1/4W	
R558	1-249-441-11	CARBON	100K	5%	1/4W	
R559	1-247-880-11	CARBON	110K	5%	1/4W	
R560	1-247-874-11	CARBON	62K	5%	1/4W	
R561	1-249-437-11	CARBON	47K	5%	1/4W	
R562	1-247-876-11	CARBON	75K	5%	1/4W	
R563	1-247-887-00	CARBON	220K	5%	1/4W	
R564	1-247-882-11	CARBON	130K	5%	1/4W	
R565	1-247-876-11	CARBON	75K	5%	1/4W	
R566	1-249-434-11	CARBON	27K	5%	1/4W	
R567	1-247-872-11	CARBON	51K	5%	1/4W	
R568	1-249-439-11	CARBON	68K	5%	1/4W	
R569	1-249-441-11	CARBON	100K	5%	1/4W	
R570	1-247-870-11	CARBON	43K	5%	1/4W	
R571	1-247-874-11	CARBON	62K	5%	1/4W	
R572	1-249-436-11	CARBON	39K	5%	1/4W	
R573	1-247-868-11	CARBON	36K	5%	1/4W	
R574	1-247-864-11	CARBON	24K	5%	1/4W	
R575	1-247-881-00	CARBON	120K	5%	1/4W	
R576	1-249-437-11	CARBON	47K	5%	1/4W	
R577	1-249-438-11	CARBON	56K	5%	1/4W	
R578	1-247-868-11	CARBON	36K	5%	1/4W	
R579	1-249-438-11	CARBON	56K	5%	1/4W	
R580	1-249-436-11	CARBON	39K	5%	1/4W	
R581	1-247-881-00	CARBON	120K	5%	1/4W	
R582	1-249-439-11	CARBON	68K	5%	1/4W	
R583	1-249-437-11	CARBON	47K	5%	1/4W	
R584	1-247-858-11	CARBON	13K	5%	1/4W	
R585	1-249-439-11	CARBON	68K	5%	1/4W	
R586	1-247-872-11	CARBON	51K	5%	1/4W	

**Note:** The components identified by mark **△** or dotted line with mark **△** are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				
R587	1-247-864-11	CARBON	24K	5%	1/4W	
R590	1-249-429-11	CARBON	10K	5%	1/4W	
R591	1-249-409-11	CARBON	220	5%	1/4W	
R594	1-249-441-11	CARBON	100K	5%	1/4W	
R602	1-247-887-00	CARBON	220K	5%	1/4W	
R603	1-249-425-11	CARBON	4.7K	5%	1/4W	
R604	1-249-441-11	CARBON	100K	5%	1/4W	
R605	1-249-428-11	CARBON	8.2K	5%	1/4W	
R606	1-249-437-11	CARBON	47K	5%	1/4W	
R607	1-249-417-11	CARBON	1K	5%	1/4W	
R608	1-249-441-11	CARBON	100K	5%	1/4W	
R609	1-249-423-11	CARBON	3.3K	5%	1/4W	
R702	1-249-429-11	CARBON	10K	5%	1/4W	
R703	1-249-421-11	CARBON	2.2K	5%	1/4W	
R704	1-247-840-00	CARBON	2.4K	5%	1/4W	
R705	1-249-420-11	CARBON	1.8K	5%	1/4W	
R706	1-249-409-11	CARBON	220	5%	1/4W	
R707	1-249-430-11	CARBON	12K	5%	1/4W	
R708	1-249-429-11	CARBON	10K	5%	1/4W	
R709	1-249-422-11	CARBON	2.7K	5%	1/4W	
R710	1-249-429-11	CARBON	10K	5%	1/4W	
R711	1-249-426-11	CARBON	5.6K	5%	1/4W	
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-409-11	CARBON	220	5%	1/4W	
R720	1-249-442-11	CARBON	510	5%	1/4W	
R796	1-249-431-11	CARBON	15K	5%	1/4W	
R797	1-249-425-11	CARBON	4.7K	5%	1/4W	
R798	1-249-437-11	CARBON	47K	5%	1/4W	
R799	1-249-433-11	CARBON	22K	5%	1/4W	
R801	1-249-421-11	CARBON	2.2K	5%	1/4W	
R802	1-249-421-11	CARBON	2.2K	5%	1/4W	
R804	1-249-422-11	CARBON	2.7K	5%	1/4W	
R805	1-249-422-11	CARBON	2.7K	5%	1/4W	
R806	1-249-428-11	CARBON	8.2K	5%	1/4W	
R807	1-249-429-11	CARBON	10K	5%	1/4W	
R808	1-249-429-11	CARBON	10K	5%	1/4W	
R809	1-249-413-11	CARBON	470	5%	1/4W	
R810	1-249-421-11	CARBON	2.2K	5%	1/4W	
R812	1-249-422-11	CARBON	2.7K	5%	1/4W	
R813	1-249-437-11	CARBON	47K	5%	1/4W	
R814	1-249-441-11	CARBON	100K	5%	1/4W	
R815	1-249-417-11	CARBON	1K	5%	1/4W	
R827	1-247-895-00	CARBON	470K	5%	1/4W	
R828	1-247-895-00	CARBON	470K	5%	1/4W	
R829	1-247-862-11	CARBON	20K	5%	1/4W	
R830	1-249-425-11	CARBON	4.7K	5%	1/4W	
R831	1-249-437-11	CARBON	47K	5%	1/4W	
R832	1-247-866-11	CARBON	30K	5%	1/4W	
R833	1-249-435-11	CARBON	33K	5%	1/4W	
R834	1-247-872-11	CARBON	51K	5%	1/4W	
R836	1-247-872-11	CARBON	51K	5%	1/4W	
R837	1-249-405-11	CARBON	100	5%	1/4W	
R838	1-247-862-11	CARBON	20K	5%	1/4W	
R839	1-249-425-11	CARBON	4.7K	5%	1/4W	
R840	1-249-437-11	CARBON	47K	5%	1/4W	
R841	1-247-866-11	CARBON	30K	5%	1/4W	
R842	1-249-435-11	CARBON	33K	5%	1/4W	

Ref.No.	Part No.	Description				
R843	1-247-872-11	CARBON	51K	5%	1/4W	
R845	1-247-872-11	CARBON	51K	5%	1/4W	
R846	1-249-405-11	CARBON	100	5%	1/4W	
R847	1-249-429-11	CARBON	10K	5%	1/4W	
R848	1-249-415-11	CARBON	680	5%	1/4W	
R849	1-249-412-11	CARBON	390	5%	1/4W	
R850	1-249-412-11	CARBON	390	5%	1/4W	
R851	1-249-441-11	CARBON	100K	5%	1/4W	
R852	1-249-412-11	CARBON	390	5%	1/4W	
R853	1-249-412-11	CARBON	390	5%	1/4W	
R854	1-249-410-11	CARBON	270	5%	1/4W	
R855	1-249-413-11	CARBON	470	5%	1/4W	
R856	1-249-413-11	CARBON	470	5%	1/4W	
R857	1-249-407-11	CARBON	150	5%	1/4W	
R858	1-249-407-11	CARBON	150	5%	1/4W	
R859	1-249-407-11	CARBON	150	5%	1/4W	
R860	1-249-407-11	CARBON	150	5%	1/4W	
R861	1-249-409-11	CARBON	220	5%	1/4W	
R862	1-249-409-11	CARBON	220	5%	1/4W	
R863	1-249-409-11	CARBON	220	5%	1/4W	
R864	1-249-413-11	CARBON	470	5%	1/4W	
R865	1-249-412-11	CARBON	390	5%	1/4W	
R866	1-249-410-11	CARBON	270	5%	1/4W	
R867	1-249-412-11	CARBON	390	5%	1/4W	
R868	1-249-412-11	CARBON	390	5%	1/4W	
R869	1-249-429-11	CARBON	10K	5%	1/4W	
R870	1-249-425-11	CARBON	4.7K	5%	1/4W	
R871	1-249-425-11	CARBON	4.7K	5%	1/4W	
R872	1-247-903-00	CARBON	1M	5%	1/4W	
R873	1-249-421-11	CARBON	2.2K	5%	1/4W	
R874	1-249-421-11	CARBON	2.2K	5%	1/4W	
R875	1-249-435-11	CARBON	33K	5%	1/4W	
R876	1-249-435-11	CARBON	33K	5%	1/4W	
R880	1-249-429-11	CARBON	10K	5%	1/4W	
R881	1-249-429-11	CARBON	10K	5%	1/4W	
R882	1-249-429-11	CARBON	10K	5%	1/4W	
R883	1-249-429-11	CARBON	10K	5%	1/4W	
R884	1-249-429-11	CARBON	10K	5%	1/4W	
R885	1-249-427-11	CARBON	6.8K	5%	1/4W	
R886	1-249-430-11	CARBON	12K	5%	1/4W	
R887	1-249-429-11	CARBON	10K	5%	1/4W	
R888	1-249-435-11	CARBON	33K	5%	1/4W	
R889	1-249-425-11	CARBON	4.7K	5%	1/4W	
R891	1-249-429-11	CARBON	10K	5%	1/4W	
R892	1-249-429-11	CARBON	10K	5%	1/4W	
R893	1-249-415-11	CARBON	680	5%	1/4W	
R894	1-249-429-11	CARBON	10K	5%	1/4W	
R895	1-249-429-11	CARBON	10K	5%	1/4W	
R896	1-249-421-11	CARBON	2.2K	5%	1/4W	
R898	1-249-428-11	CARBON	8.2K	5%	1/4W	
R899	1-249-429-11	CARBON	10K	5%	1/4W	
R901	1-249-407-11	CARBON	150	5%	1/4W	
R902	1-249-409-11	CARBON	220	5%	1/4W	
R903	1-249-411-11	CARBON	330	5%	1/4W	
R904	1-249-413-11	CARBON	470	5%	1/4W	
R905	1-249-415-11	CARBON	680	5%	1/4W	
R906	1-249-417-11	CARBON	1K	5%	1/4W	

Ref.No.	Part No.	Description
R907	1-249-420-11	CARBON 1.8K 5% 1/4W
R908	1-249-424-11	CARBON 3.9K 5% 1/4W
R909	1-249-430-11	CARBON 12K 5% 1/4W
R910	1-249-407-11	CARBON 150 5% 1/4W
R911	1-249-409-11	CARBON 220 5% 1/4W
R912	1-249-411-11	CARBON 330 5% 1/4W
R913	1-249-413-11	CARBON 470 5% 1/4W
R914	1-249-415-11	CARBON 680 5% 1/4W
R915	1-249-417-11	CARBON 1K 5% 1/4W
R916	1-249-426-11	CARBON 5.6K 5% 1/4W
R917	1-249-430-11	CARBON 12K 5% 1/4W
R918	1-249-411-11	CARBON 330 5% 1/4W
R919	1-249-411-11	CARBON 330 5% 1/4W
RV11A	1-238-597-11	RES, ADJ, CARBON 1K
RV11B	1-238-597-11	RES, ADJ, CARBON 1K
RV21A	1-238-597-11	RES, ADJ, CARBON 1K
RV21B	1-238-597-11	RES, ADJ, CARBON 1K
RV42	1-230-497-11	RES, ADJ, CARBON 22K
RV62	1-230-497-11	RES, ADJ, CARBON 22K
RV71A	1-238-600-11	RES, ADJ, CARBON 10K
RV71B	1-238-600-11	RES, ADJ, CARBON 10K
RV72A	1-238-600-11	RES, ADJ, CARBON 10K
RV72B	1-238-600-11	RES, ADJ, CARBON 10K
RV122	1-238-016-11	RES, ADJ, CARBON 10K
RV222	1-238-016-11	RES, ADJ, CARBON 10K
RV501	1-241-057-11	RES, VAR, CARBON 50K/50K (BALANCE)
RV502	1-241-058-11	RES, VAR, CARBON 50K/50K (REC LEVEL)
RY31	1-515-726-11	RELAY
S81A	1-571-958-11	SWITCH, PUSH (1 KEY)(A.STOP DET)
S81B	1-571-958-11	SWITCH, PUSH (1 KEY)(B.STOP DET)
S82A	1-571-281-21	SWITCH, LEAF (A.CrO2 DET)
S82B	1-571-281-21	SWITCH, LEAF (B.CrO2 DET)
S83	1-571-281-21	SWITCH, LEAF (B.METAL DET)
S84	1-571-281-21	SWITCH, LEAF (B.ERASE PROOF SIDE A)
S85	1-571-281-21	SWITCH, LEAF (B.ERASE PROOF SIDE B)
S86A	1-571-281-21	SWITCH, LEAF (A.HALF DET)
S86B	1-571-281-21	SWITCH, LEAF (B.HALF DET)
S701	1-571-305-11	SWITCH, PUSH (1 KEY)(POWER)
S901	1-554-596-21	SWITCH, KEY BOARD (A.STOP)
S902	1-554-596-21	SWITCH, KEY BOARD (A.FWD)
S903	1-554-596-21	SWITCH, KEY BOARD (A.REV)
S904	1-554-596-21	SWITCH, KEY BOARD (B.REW)
S905	1-554-596-21	SWITCH, KEY BOARD (B.FF)

Ref.No.	Part No.	Description
S906	1-554-596-21	SWITCH, KEY BOARD (B.REC)
S907	1-554-596-21	SWITCH, KEY BOARD (HIGH SPEED)
S908	1-554-596-21	SWITCH, KEY BOARD (NORM SPEED)
S909	1-554-596-21	SWITCH, KEY BOARD (AUTO PAUSE)
S910	1-554-596-21	SWITCH, KEY BOARD (BLANK SKIP)
S911	1-554-596-21	SWITCH, KEY BOARD (B.STOP)
S912	1-554-596-21	SWITCH, KEY BOARD (B.PAUSE)
S913	1-554-596-21	SWITCH, KEY BOARD (B.FWD)
S914	1-554-596-21	SWITCH, KEY BOARD (B.REV)
S915	1-554-596-21	SWITCH, KEY BOARD (B.REC MUTE)
S916	1-554-596-21	SWITCH, KEY BOARD (A.FF)
S917	1-554-596-21	SWITCH, KEY BOARD (A.REW)
S918	1-572-401-11	SWITCH, SLIDE (DOLBY NR)
S919	1-572-401-11	SWITCH, SLIDE (DIR MODE)
T51B	1-433-366-11	TRANSFORMER, BIAS OSCILLATION
T51C	1-433-367-11	TRANSFORMER, BIAS OSCILLATION
T71	1-433-367-11	TRANSFORMER, BIAS OSCILLATION
T701	<u>△</u> 1-449-420-21	(US)...TRANSFORMER, POWER
T701	<u>△</u> 1-449-661-21	(UK)...TRANSFORMER, POWER
TP91	*1-564-520-11	PLUG, CONNECTOR 5P
TP801	*1-564-505-11	PLUG, CONNECTOR 2P
X801	1-577-358-21	VIBRATOR, CERAMIC (4MHZ)

ACCESSORY & PACKING MATERIAL

1-559-533-11	CORD, CONNECTION
3-703-450-01	(US)...INSTRUCTION
3-751-699-21	MANUAL, INSTRUCTION
*3-354-918-01	INDIVIDUAL CARTON
*3-359-942-01	CUSHION

**Note:** The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.