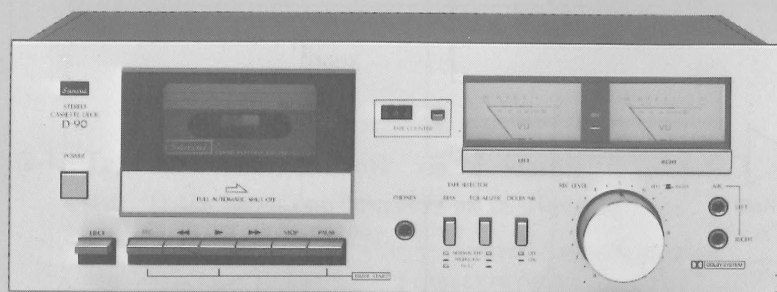


SERVICE MANUAL

STEREO CASSETTE DECK

SANSUI D-90 (Silver & Black Model)



SPECIFICATIONS

- Track 4-Track (2-Channel Stereo)
 Wow and flutter within 0.055 % WRMS
 Frequency response (Record/Playback)
 Normal Tape (LH) . . 20 to 15,000 Hz
 (35 to 14,000 Hz ± 3 dB)
 Chromium Tape . . . 20 to 16,000 Hz
 (35 to 15,000 Hz ± 3 dB)
 Signal to noise ratio (Record/Playback)
 Chromium Tape (without Dolby Noise Reduction Effect)
 better than 59 dB (weighted)
 (With Dolby Noise Reduction)
 better than 69 dB (above 5 kHz)
 Input sensitivity and impedance (0 VU, 1,000 Hz)
 MIC 0.3 mV/200 Ω $\sim$ 5 k Ω
 LINE IN (REC) . . . 70 mV/47 k Ω
 Output level (0 VU, 1,000 Hz)
 LINE OUT (PLAY) . . 400 mV
 PHONES 60 mV/8 Ω
 Power voltage 110 $\sim$ 120, 220 $\sim$ 240 V
 (50/60 Hz)
 For USA and Canada
 120 V (60 Hz)
 Power consumption . . 12 W
 Dimensions 430 mm (16-15/16") W
 147 mm (5-13/16") H
 241 mm (9-1/2") D
 Weight 4.9 kg (10.8 lbs) net
 5.6 kg (12.3 lbs) packed

* Design and specifications subject to change without notice for improvements.

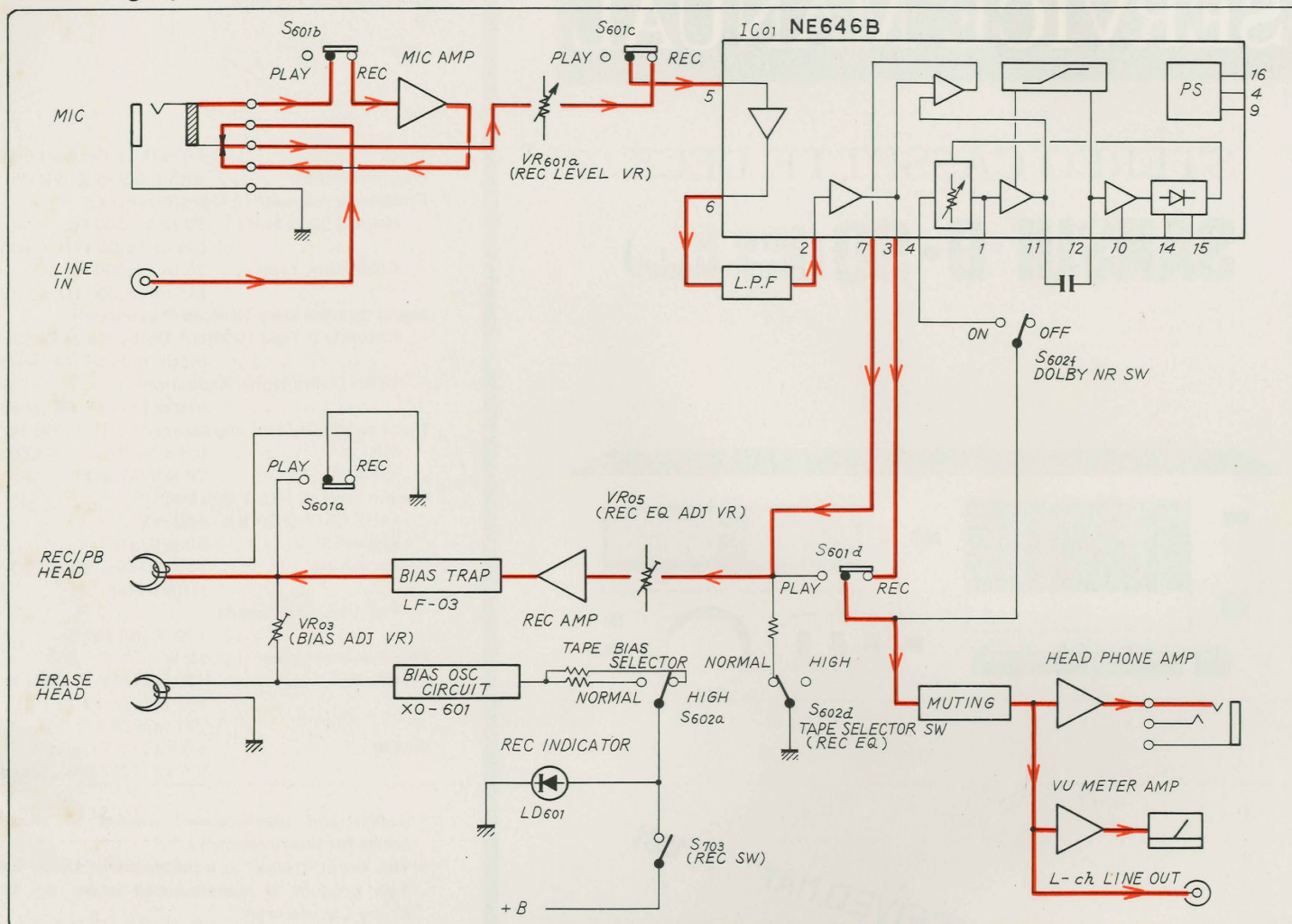
* The word "Dolby" is a trademark of Dolby Laboratories. This product is manufactured under the license from Dolby Laboratories.

Sansui

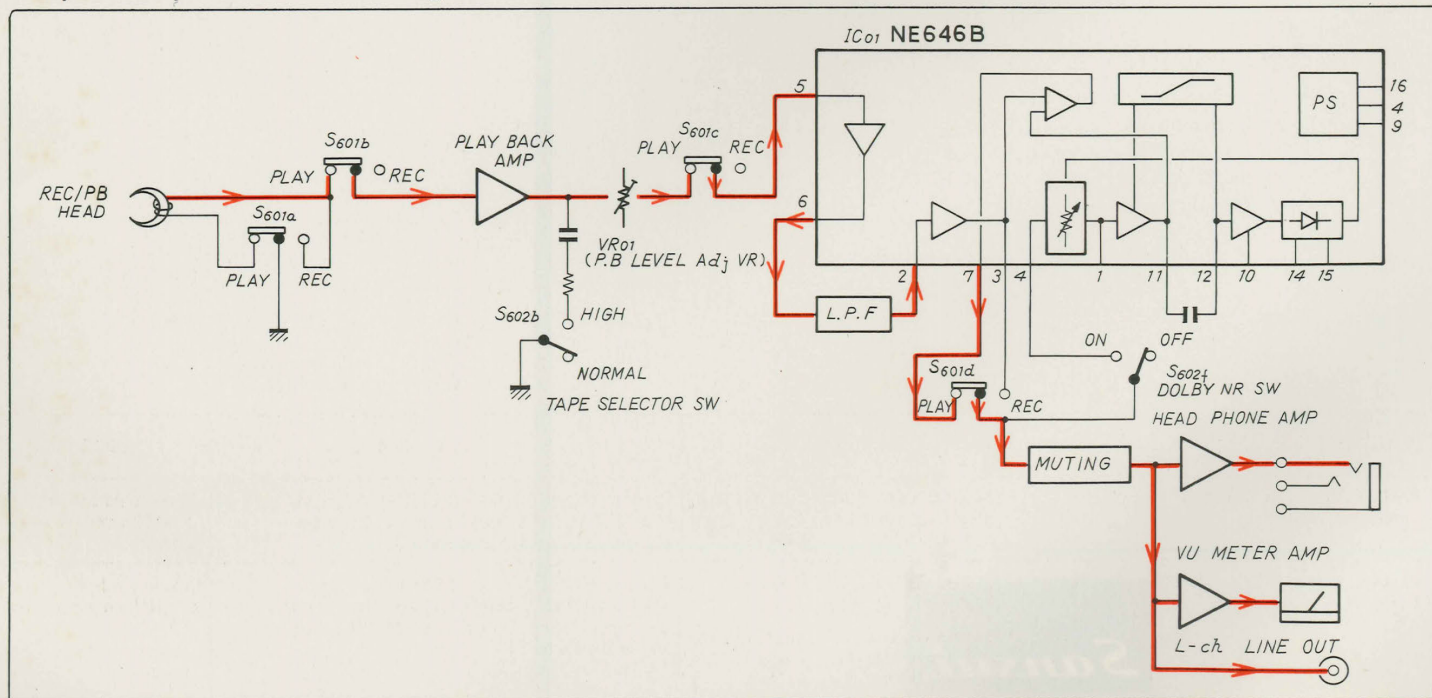
SANSUI ELECTRIC CO., LTD.

1. BLOCK DIAGRAM

1-1. Recording Operation Block Diagram



1-2. Playback Operation Block Diagram



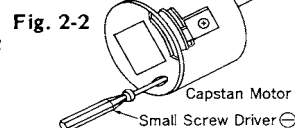
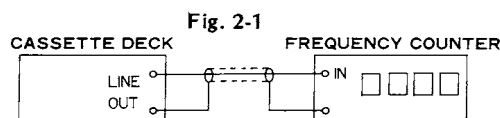
2. ADJUSTMENTS

*List of Sansui Test Tapes

Name of test tape	Recorded Frequency	Description
SCT-S3K	3 kHz	Speed Check, Wow & Flutter Check
SCT-L400N	400 Hz	Playback level and VU meter level adjustment
SCT-F1K	1 kHz	High frequency equalization check
SCT-F10KN	10 kHz	REC/PB head adjustment
SCT-SA [HIGH (CrO ₂)]		Recording bias adjustment
SCT-LH [NORMAL (LH)]		REC/PB level adjustment
SCT-CS (Fe-Cr)		Frequency response check
SCT-F40	40 Hz	Playback frequency response check

2-1. Tape Speed Adjustment

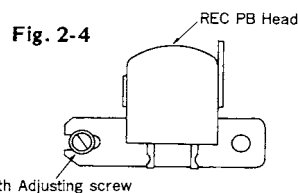
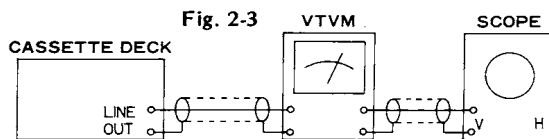
- Note: 1) Use Sansui Test Tape, SCT-S3K (3 kHz signals are recorded on the tape).
2) Connections are shown below.



SUBJECT	TEST TAPE	CHECK POINT	SETTING	ADJUST FOR	ADJUST	DESCRIPTION
TAPE SPEED ADJ.	SCT-S3K	LINE OUT	Depress the PLAY button and play back the Test Tape, SCT-S3K	3000 Hz ±60 Hz	If not, turn semi-variable resistor as Fig. 2-2 until 3000 Hz ±60 Hz is obtained.	Use small screw driver.

2-2. Playback Adjustment (See Top View on Page 8)

- Note: 1) Before this adjustment, clean REC/P.B head surface.
2) Demagnetize the head by demagnetizer, if necessary.
3) For this adjustment, use Sansui Test Tape, SCT-10KN, SCT-L400N and SCT-F1K.
4) Set the Dolby switch to be OFF.
5) Connections are shown below.



SUBJECT	TEST TAPE	CHECK POINT	SETTING	ADJUST FOR	DESCRIPTION
REC/PB Head Adj.	SCT-F10KN	LINE OUT	Depress the PLAY button and play back the Test Tape, SCT-F10KN	Adjust the azimuth adjusting screw in Fig. 2-4 for the maximum reading on the VTVM on both channels.	After this adjustment, lock the screw with paint.
Playback Level Adj.	SCT-L400N	LINE OUT	Set TAPE SELECTOR to NORMAL (LH) position. Depress the PLAY button and play back the Test Tape, SCT-L400N	Adjust VR01 (47 kΩ) for L-CH and VR02 (47 kΩ) for R-CH for the reading of 500 mV ±1 dB on VTVM (See Top View on Page 8)	Set same level (500 mV ±1 dB) on both channels.

2-3. Recording Bias Adjustment (See Top View on Page 8)

- Note: 1) Connections are shown below.
2) Complete the same adjustments on both channel.

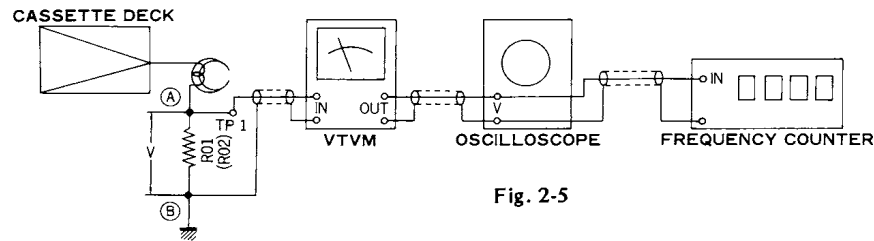


Fig. 2-5

SUBJECT	TEST TAPE	CHECK POINT	SETTING	ADJUST	DESCRIPTION
Recording bias Adj.	SCT-SA	Voltage value between A and B of R01 & R02 (See Top View on Page 8.)	Depress REC and PLAY buttons. Set TAPE SELECTOR to HIGH (CrO ₂) position.	Adjust VR03 (100 kΩ) for L-CH and VR04 (100 kΩ) for R-CH for the reading of 50 mV on VTVM.	
			Set TAPE SELECTOR to NORMAL (LH) position.	Confirm that the indication on VTVM shows 35 mV.	

2-4. Recording Level, Frequency Response & Filter Adjustment (See Top View on Page 8)

- Note: 1) Connections are shown below.
2) Set the Dolby Switch to be OFF.
3) Complete the same adjustments on both channel.

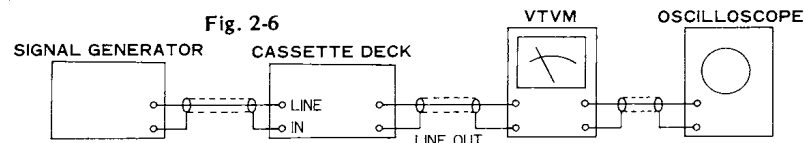


Fig. 2-6

SUBJECT	INPUT SIGNAL & TEST TAPE	CHECK POINT	SETTING	ADJUST FOR	DESCRIPTION
REC Level Adj. HIGH (CrO ₂)	Use recording HIGH (CrO ₂) tape SCT-SA Feed 1 kHz, 70 mV (0 dB) from S.G. into LINE IN.	LINE OUT	Set TAPE SELECTOR to HIGH (CrO ₂) position. 1. Depress PAUSE, PLAY and REC button. 2. Adjust the MIC/LINE volume for obtaining 0 dB on the VU meters. 3. Push the PAUSE button, then record the 1 kHz signal. 4. Play back the 1 kHz signal. 5. Confirm that the output levels on both channels are 400 mV $\pm$ 2 dB on VTVM.	1. If not, turn VR05 (10 kΩ) for L-CH and VR06 (10 kΩ) for R-CH until output Level, 400 mV $\pm$ 2 dB on both channels are obtained. 2. Repeat this REC Level adj. until the indication on VTVM will be 400 mV $\pm$ 2 dB. (See Top View on Page 8)	
Frequency Response Adj. HIGH (CrO ₂)	Feed 1 kHz, 7 mV (−20 dB) and 10 kHz; 7 mV (−20 dB) from S.G. into LINE IN. SCT-SA	LINE OUT	Set TAPE SELECTOR to HIGH (CrO ₂) position. 1. Record the 1 kHz and 10 kHz signals from S.G. 2. Play back the 1 kHz and 10 kHz signals, then confirm that the difference of output levels between 1 kHz and 10 kHz are 0 dB against that of 1 kHz.	1. If not, adjust VR03 (100 kΩ) for L-CH and VR04 (100 kΩ) for R-CH slightly until difference of output levels between 1 kHz and 10 kHz recorded are 0 dB against that of 1 kHz (See Top View on page 8)	Though VR03 and VR04 previously adjusted in step of Bias Adjustment, turn them slightly, if necessary. (See Top View on Page 8)
19 kHz, 85 kHz Filter Adj.	19 kHz 110 mV 85 kHz 110 mV	LINE OUT	Push REC & PLAY Button to make REC mode	Adjust white core (19 kHz) and black core (85 kHz) of LF01 (L-ch) and LF02 (R-ch) to make the outputs minimum.	

*TAPE SELECTOR position

TAPE \ MODE		TAPE SELECTOR position	
		REC	PLAY
AGFA	Hifi-Low-Noise SUPER	normal (LH)	normal (LH)
BASF	LN LH LH super		
FUJI FILM	FL FX FX Duo		
MAXELL	LN UD-XLI		
SCOTCH	LD LH CRYSTAL		
SONY	LOW-NOISE HF		
TDK	D SD ED		
AGFA	STEREO CHROM	high (CrO ₂)	high (CrO ₂)
BASF	chromdioxid		
MAXELL	UD-XLII		
SONY	CR		
TDK	SA	Fe-Cr	Fe-Cr
BASF	ferrochrom		
SCOTCH	CLASSIC		
SONY	DUAD	normal (LH)	high (CrO ₂)
SCOTCH	Master		
TDK	AD	normal (LH)	normal (LH) high (CrO ₂)
FUJI FILM	FX Jr		
MAXELL	UD		

3. OPERATION OF MECHANISM

Fig. 3-1 <Mechanism Front View>

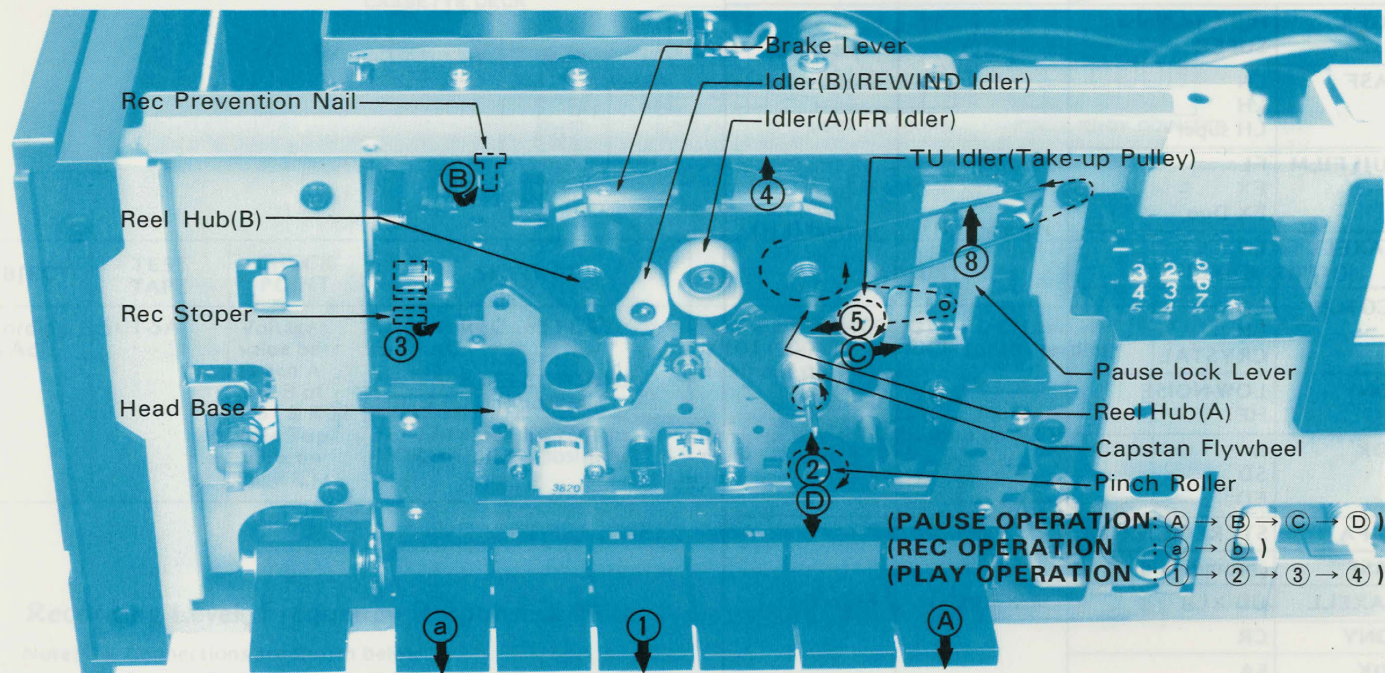


Fig. 3-2 <Mechanism Front View>

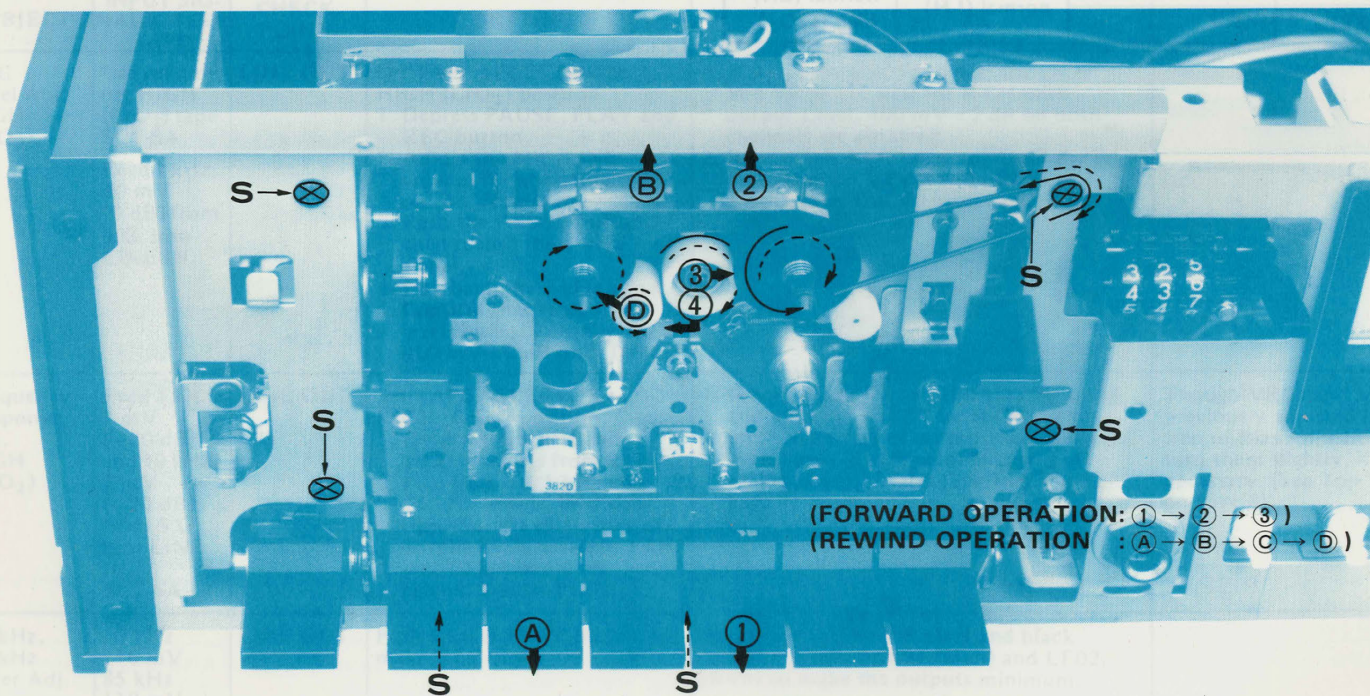
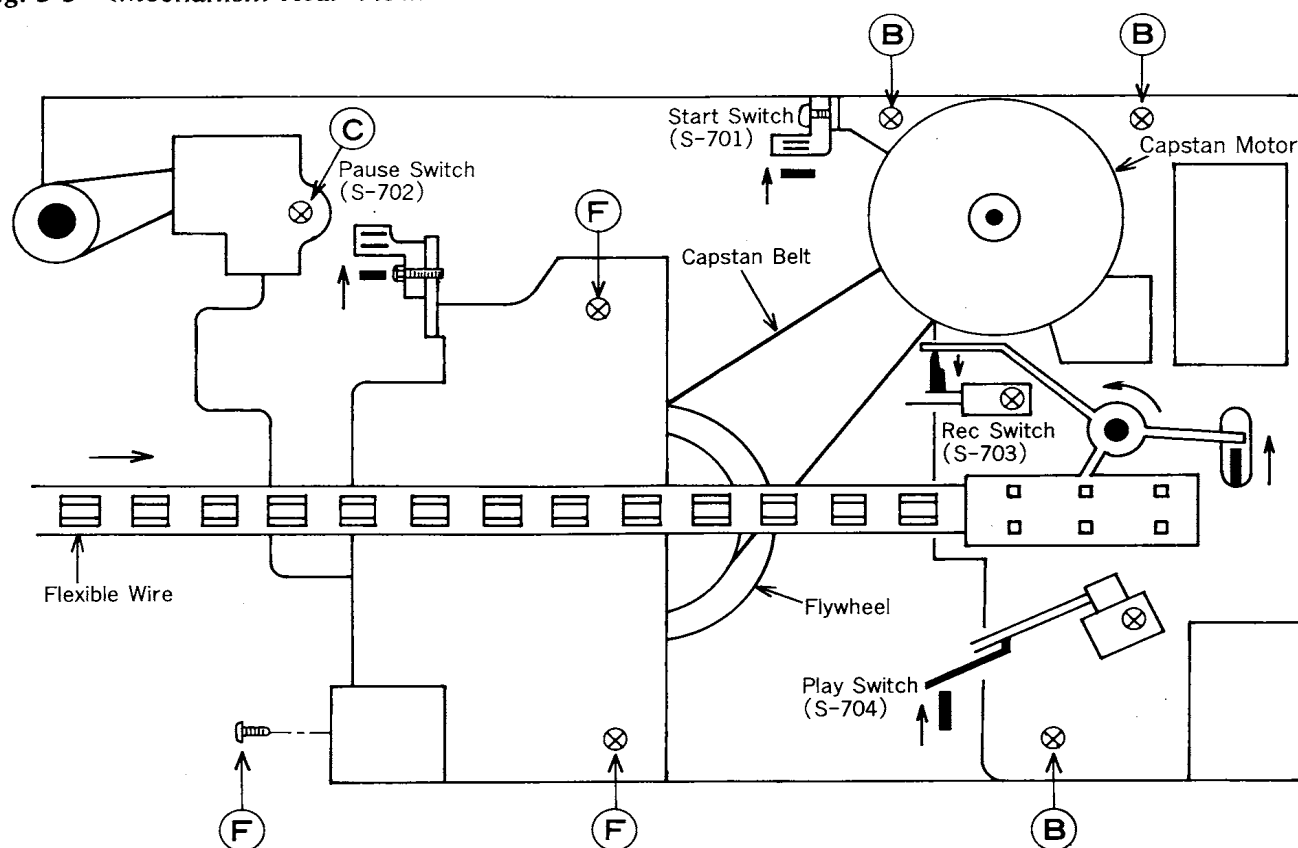


Fig. 3-3 <Mechanism Rear View>



<Operation>

3-1. Driving Mechanism (See Figs. 3-1, 3-2)

Motor begins to rotate by pushing the REWIND, PLAY and FF button. The Driving Motor is an electronically controlled DC Motor and driving torque is transmitted to Flywheel by Motor Pulley and Capstan Belt.

3-2. Play Mode (See Fig. 3-1)

When the PLAY Button is pushed, the head base moves toward the Reel Hub, which makes the Take-up Pulley Shaft bear against the Reel Hub. At the same time, the Brake is released by Brake Lever and Pinch Roller bears against the Capstan Pulley through tape. In accordance with the above, cassette tape gets constant speed running. During Play Mode operation, the Record Button can not be pushed because Rec Stopper Lever is borne to mechanism chassis.

3-3. Fast Forward & Rewind Operation (See Fig. 3-2)

When the FF Button is pushed, the FR Idler bears against the Flywheel and Reel hub (A). When the REWIND button is pushed, the above Mechanism is operated through REWIND Idler between FR Idler and Reel hub (B). The take-up torque in FF MODE is transmitted from Flywheel next FR Idler to Reel hub (A) and REWIND torque is transmitted from Flywheel next FR Idler and REWIND Idler to Reel hub (B). Abnormal torque occurred by tape starting, tape stopping or other causes is absorbed by slipping of felt around FR Idler.

3-4. Pause Mode (See Figs. 3-1, 3-3)

PAUSE operation is only performed in PLAY or REC MODE. When the PAUSE Button is pushed, the Pinch Roller is disengaged from Capstan shaft and Take-up Pulley shaft is disengaged from the Reel hub (A). That tape travel is stopped.

At the same time, Pause switch (S-702) behind mechanism turns on that a voltage is applied to base of TR606 on Automatic Shut off circuit.

As a result, plunger solenoid does not turn on and pause operation is kept on even if voltage from lead switch is not output to stop the rotation of reel hub (A).

3-5. REC Mode (See Fig. 3-1)

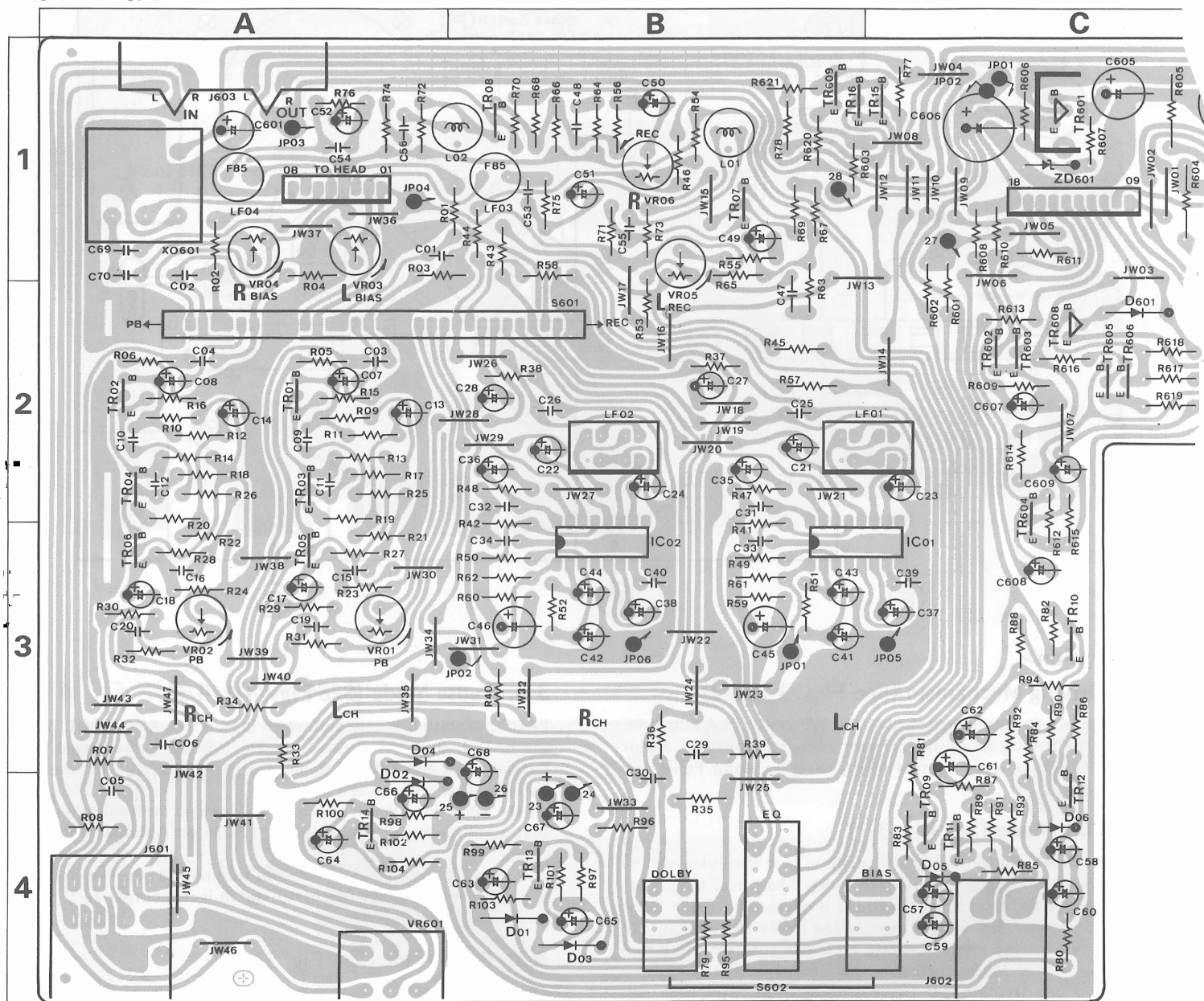
The function of tape transport mechanism is the same as that of PLAY MODE operation. A cassette has "tabs" on the side opposite to that exposing the bare tape. If they are broken off, the cassette will prevent the depression of RECORD Button. When the Record Button and the PLAY Button are pushed, the slide switch on G-1266 main circuit board is changed from PLAY MODE to REC MODE.

4. PARTS LOCATION & PARTS LIST

4-1. G-1266 Main Circuit Board (Stock No. 76201801)

Conductor Side

• Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors which was appended previously to each Sansui Manual.



Parts List

Parts No.	Stock No.	Description	Position
• Transistor			
TR01 ~ 06	03060701, 2	2SC1313 G, H	2B, 3B
TR07 ~ 10	03068301, 2	2SC2320 E, F	1B, 3C
TR11, 12	03012700, 1	2SA999 E, F	4C
TR13 ~ 16	03068301, 2	2SC2320 E, F	1B, 4A, B
TR601	03083901, 2	2SD313AL D, E	1C
TR602 ~ 07	03068301, 2	2SC2320 E, F	2C
TR608	03083901, 2	2SD313AL D, E	2C
• IC			
IC 01, 02	03613600	NE646B	3B
• Diode			
D 01 ~ 04	03117800	1N60	4A, B
D 05, 06	03401500	MV-12	4C
D 601	03117700	10E-2	2C
D 602	03117000	RB-152	2D

Parts No.	Stock No.	Description	Position
• Zener Diode			
ZD601	03178500	RD10E-C	1C
L 01, 02	49005500	3.9 mH Inductor	1B
LF 01, 02	09106300	BL-30HA	2B, C
LF 03, 04	42904400	F-85 Trap Coil	1A, B
VR01, 02	10351700	47k Ω (B) P.B Level Adj.	3A
VR03, 04	10351900	100k Ω (B) bias Adj.	1A
VR05, 06	10351300	10k Ω (B) rec level Adj.	1B
VR601	10250400	50k Ω (A) x 2 REC Level Adj.	4A
S 601	11104000	PLAY/REC Slide Switch	2A
S 602	11322700	TAPE SELECTOR Switch (BIAS/E.Q. DOLBY NR)	4B, C

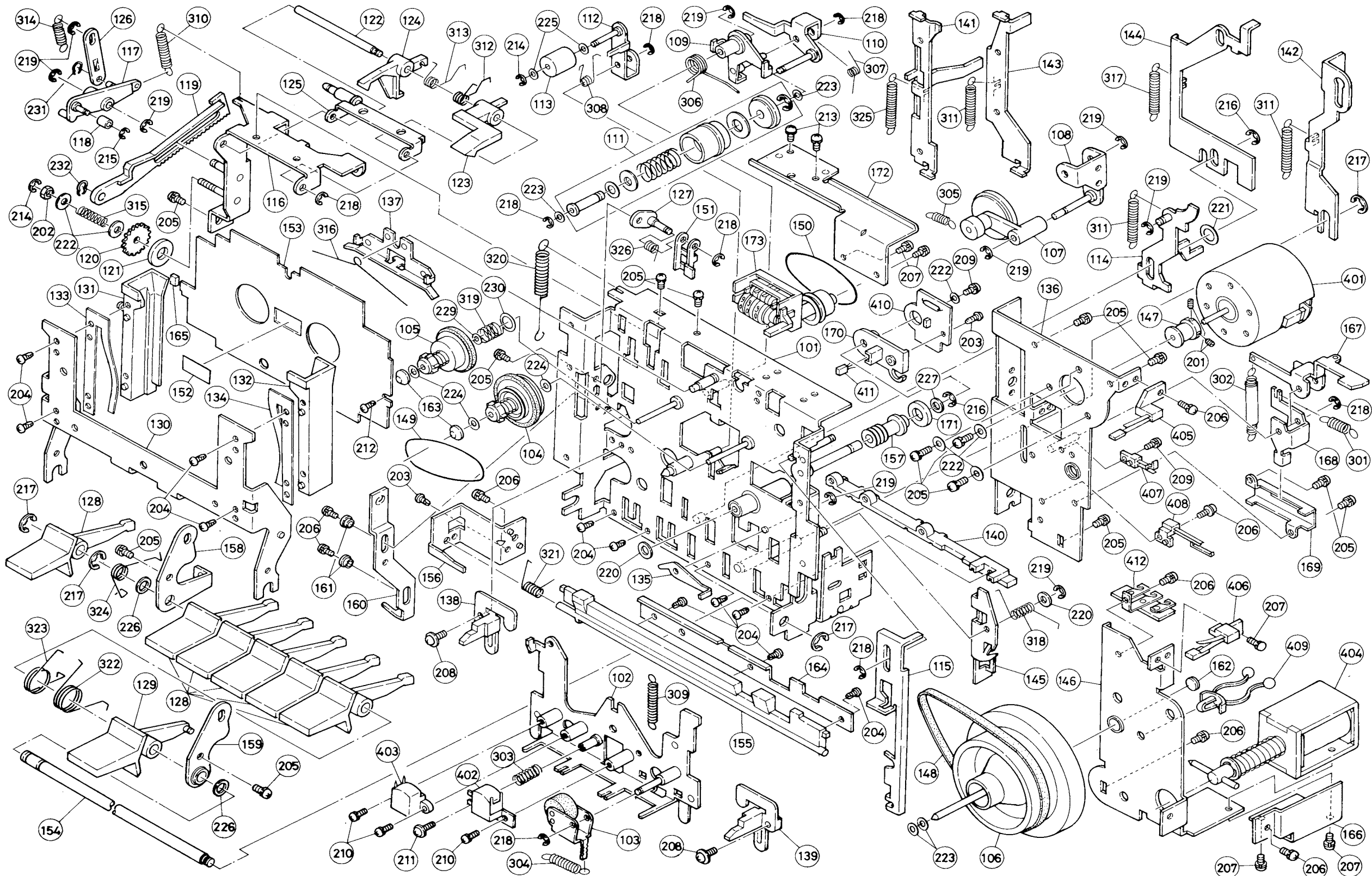
Parts No.	Stock No.	Description	Position
PL 01, 02	04007500	VU Meter Illumination Lamp	2D
J 601	24305300	MIC Jack x 2	4A
J 602	24305900	Head Phone Jack	4C
J 603	22007100	LINE IN/LINE OUT, Terminal	1A
XO601	08250500	Bias OSC	1A

6. EXPLODED VIEW AND PARTS LIST

Parts List

Parts No.	Stock No.	Description
103	70603400	Pinch Roller Arm Ass'y
104	71501400	Reel Hub (A) Ass'y
105	07507000	Reel Hub (B) Ass'y
106	70402300	Flywheel Ass'y
107	70603600	FR Lever Ass'y
109	70603700	Idler (A) Ass'y
111	70603800	Idler (B) Ass'y
113	07507100	Eject Hook Lever
117	07507200	Eject Hook Roller
118	07507300	Cassette Holder Lock Arm
120	07507400	Friction Gear
121	07507500	Felt
123	07507600	Upper Nail, cassette holder
124	65011000	Rec Prevention Nail
128	07507700	Eject/REC/Rewind/Play/FF/Stop Button
129	07507800	PAUSE Button
130	07527600	Cassette Well Ass'y
131	07507900	Cassette Guide Plate
132	07508000	Cassette Holder Guide (L)
133	07508100	Cassette Holder Guide (R)
134	07508200	Cassette Holder Spring (L)
138	07508300	Cassette Holder Spring (R)
139	07508400	Cassette Holder Base (L)
147	61402000	Cassette Holder Base (R)
148	60302500	Motor Pulley
149	07508600	Capstan Belt
150	60302400	Counter Belt (A)
152	07508700	Counter Belt (2) (B)
153	07508800	Fluorescent tape
157	07508900	Mechanism Masking Plate
160	07509000	Counter Idler Ass'y
162	51604000	Eject Lever Plate
163	53700900	Flywheel Thrust Screw
170	07509100	Cap
173	07509300	Holl IC Mounting Holder
201	08322300	Hex Socket Setscrew M2 x 3
202	00463400	Hexagon Nuts M2.6
203	08321100	Pan Head Tapping Screw M2.6 x 8
204	00440300	Pan Head Tapping Screw M2 x 6
205	08321300	Pan Head SEMS (A type) M2.6 x 4
206	08321400	Pan Head SEMS (A type) M2.6 x 6
207	08322100	Pan Head SEMS (A type) M3 x 6
208	08322800	Pan Head SEMS (A type) M2.6 x 7
209	08321500	Pan Head SEMS (A type) M2 x 5
210	08321600	Pan Head SEMS (A type) M2 x 6
211	08321800	Serrated Washer Head Screw (+, -) M2 x 5
212	07512700	Pan Head Screw M2.6 x 5
213	00457400	Binding Head Taptite Screw M3 x 6
214	00488900	E Ring M1.5 x 0.4
215	07513400	E Ring M1.2 x 0.3
216	00489200	E Ring M3 x 0.6
217	00489300	E Ring M4 x 0.6
218	00489000	E Ring M2 x 0.4
219	08322600	E Ring M2.5 x 0.4
220	00466500	Plane Washer M3
221	08323300	Plane Washer M5.1 x 0.2
222	00466300	Plane Washer M2.6 x 0.5
223	51804000	Thrust Washer M2.5 x 0.25
224	51804200	Thrust Washer M1.6 x 0.25
225	07513000	Thrust Washer M2.1 x 0.13
226	07513100	Thrust Washer M5.7 x 0.25
227	07513200	Thrust Washer M4.1 x 0.15
228	08323500	Nylon Washer M2.4 x 0.5
229	51804900	Lumiller Washer M6.2 x 0.15
230	07513300	Lumiller Washer M6.8 x 0.15
231	07510900	G Ring M2.5
232	07511000	G Ring M3
301	69020300	Over Stroke
302	69020400	Over Stroke Lever Spring (C)
303	69011000	Head Adjust
304	69018600	Pinch Roller
305	69018700	TU Lever Ass'y
306	69018800	FR Lever Ass'y
307	69018900	Idler Lever
308	69019000	Idler (B) Lever
309	69019100	Play Plunger Rest
310	69019200	Eject Hook
311	69019300	Head Base
312	69019400	Cassette Holder
313	69019500	Rec Prevention Nail
314	07509400	Eject Hook Plate
315	07509500	Friction Gear Spring (B)
316	69019600	Brake Lever
317	69019700	Brake Lever Plate
318	69019800	Pause Lock Plate
319	07509700	Reel Hub (B) (Back Tension)
320	07509800	Cassette Holder
321	07509900	Push Button Lock Plate Spring (B)
322	07510000	Pause Button
323	07510100	Stop Button
324	07510200	Eject Button
325	07510300	Rec Lever Plate
326	07510400	Rec Stopper Lever
401	43207500	Motor
402	07510500	Rec/P.B Head
403	07510600	Erase Head
404	07510700	Plunger Solenoid
405	11908100	Leaf Switch
406	11908000	Leaf Switch
407	11908300	Leaf Switch
408	07510800	Leaf Switch
411	03614000	Holl IC DN-6838 (Read Switch)

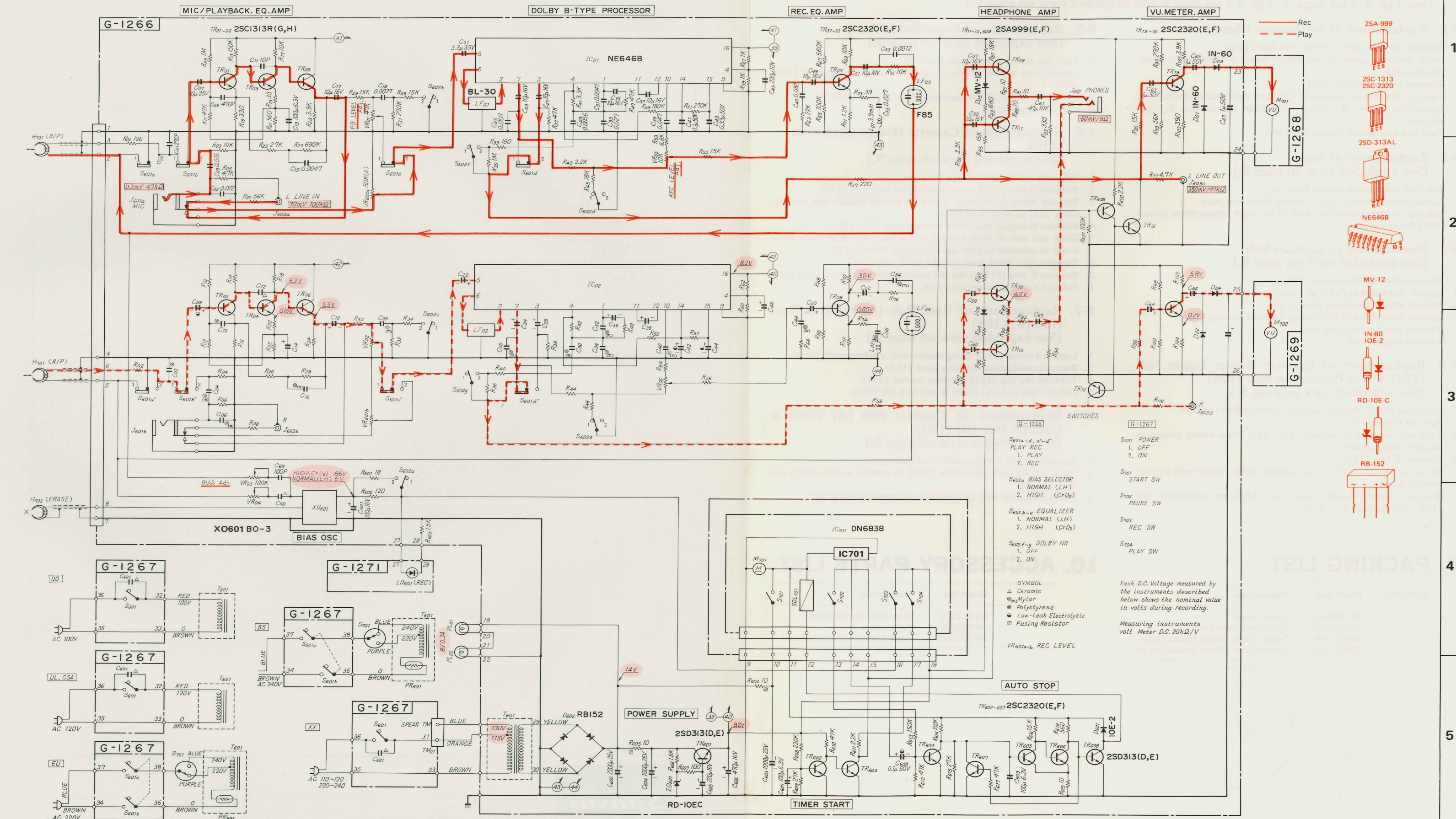
Note: Parts indicated their parts number in the mechanism exploded view and unlisted in the parts list are not supplied a through ordered.



Abbreviations

1. Pan Head Tapping Screw ...PT Type	3. Pan Head Screw ...P Type	5. Pan Head SEMS B Screw ...PSB Type	7. Binding Head Screw ...B Type	9. Flat Countersunk Wood Screw ...FC Type	11. Hex. Socket Setscrew ...SC Type	13. Spring Washer ...S Type	15. Retaining Ring (E Washer) ...E Type
2. Washer Head Tapping Screw ...WT Type	4. Pan Head SEMS A Screw ...PSA Type	6. Binding Head SEMS F Screw ...BSF Type	8. Flat Countersunk Head Screw ...F Type	10. Round Head Wood Screw ...RH Type	12. Slot Type Setscrew ...SS Type	14. Plain Washer ...P Type	

7. SCHEMATIC DIAGRAM



8. REPLACEMENT OF MAIN PARTS

(See Fig. 3-2 on page 5, Fig. 3-3 on page 6 and exploded view on page 9.)

8-1. Replacement of Mechanism Chassis

1. Remove bonnet, bottom plate, and front panel.
2. Pluck out two connector on circuit board G-1266 and pull out flexible wire.
3. Remove side panel (left side)
4. Take off the spacer between G-1267 and mechanism chassis.
5. Loosen six screws (S) fixing mechanism chassis (See Fig. 3-2 on page 5.)
6. Take out mechanism chassis from set.

8-2. Replacement of Motor (See exploded view on page 9.)

1. Take out mechanism chassis from set.
2. Loosen three screws (205) at motor mounting plate.
3. Pull out motor mounting plate (136) then loosen three screws (205) fixing motor.

8-3. Replacement of Capstan Belt (See exploded view on page 9.)

1. Take out mechanism chassis from set.
2. Loosen three screws (205) at motor mounting plate.
3. Pull out motor mounting plate (136)
4. Loosen three screws (206) fixing flywheel bearing plate.
5. Remove flywheel bearing plate.
6. Remove capstan belt.

8-4. Replacement of Cassette Holder Upper Nail (123) & Rec Prevention Nail (124) (See exploded view on page 9.)

1. Carry out No. 3 "Replacement of Capstan Belt" at first.
2. Pull out flywheel (106).
3. Take off the end of springs (312, 313) from fixing groove to weaken their tension.
4. Remove E ring (218).
5. Draw out the shaft (122) for cassette holder upper nail and rec prevention nail.
6. Remove cassette holder upper nail (123), rec prevention nail (124), and springs (312, 313).

8-5. Replacement of Cassette Lid Ass'y (See exploded view on page 9.)

1. Take out mechanism chassis from set.
2. Loosen two screws (205) at cassette holder fixing plate (158, 159).
3. Remove G ring (232) at cassette holder lock arm (119).
4. Remove cassette lid.

8-6. Replacement of Cassette Holder Lock Arm (119) (See exploded view on page 9.)

1. Take out mechanism chassis from set.
2. Remove G ring (232) at cassette holder lock arm (119).
3. Remove eject lever plate (160) to loosen screws and washers (206, 161) at eject lever plate.
4. Remove G ring at eject inter locking lever (A) (126).
5. Draw out one of inter locking levers (A) from shaft then move it not to obstacle to take out eject hook lever (117).
6. Remove eject hook lever to take off E ring (219).
7. Remove E ring (219) at the off cassette holder locking arm (119).
8. Pull out cassette holder lock arm.

8-7. Replacement of Reel Hub (A) (104) & Reel Hub (B) (105) (See exploded view on page 9.)

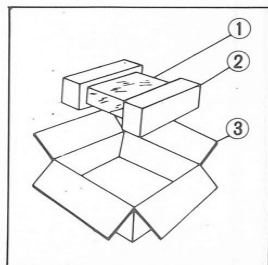
1. Loosen a screw (212) fixing mechanism masking plate (153).
2. Remove mechanism masking plate (153).
3. Take off the cap (163) & thrust washer (224).
4. Pull off reel hub (A) (104) & reel hub (B) (105).

8-8. Replacement of Counter Belt (A) (149) & Counter Belt (B) (150) (See exploded view on page 9.)

1. Loosen a screw (209) at hall IC circuit board.
2. Draw out counter idler ass'y (157) to remove washer (227) and E ring (216).
3. Replace counter belt (A) (149) & counter belt (B) (150).

9. PACKING LIST

Parts No.	Stock No.	Description
1	91263800	Vinyl Cover
2	90284000	Styrofoam Packing
3	90501200	Carton Case (Silver Model Only)
	90501300	Carton Case (Black Model Only)



10. ACCESSORY PARTS LIST

Stock No.	Description
92054300	Operating Instructions
38103300, 1	PJP Cord x 2
94300500	Head Cleaner (Cotton Buds)

Sansui

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