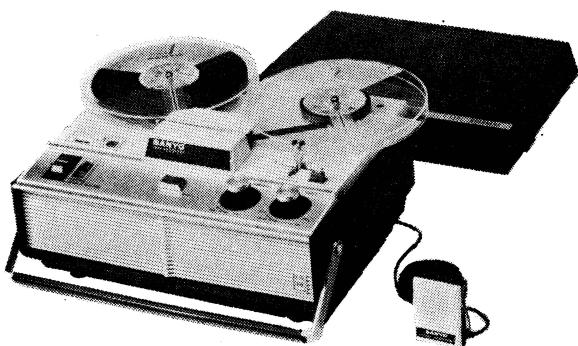


# SANYO

## SOLIO STATE 4-TRACK MONAURAL TAPE RECORDER MODEL MR-702 SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.  
OSAKA, JAPAN



### SPECIFICATIONS

Recording System	AC bias, 4-track monaural
Erasing System	DC erase
Output Power	2.4 W Undistorted 2.7 W Maximum
Power Supply	110-117/220-240V 50/60 c/s
Tape Speed & Recording Time	1-7/8 ips (4.8cm/sec) 8 H (4-track) 3-3/4 ips (9.5cm/sec) 4 H (4-track)
Tape Reel	7" dia, Max.
Forward & Rewind Time	Up to 3 min (7" reel 1200ft)
Frequency Response	100-4000 (1-7/8 ips) 100-8000 (3-3/4 ips)
Loud Speaker	3-1/8" x 6-1/4" (78 x 158mm) Permanent Dynamic Speaker Imp. 8 ohm

Signal to Noise Ratio	Better than 40db
Transistor Complement	2SB303 x 2 1st 2nd audio amplifier 2SB186 3rd audio amplifier 2SB187 Driver amplifier 2SB373 x 2 Power amplifier 2SB22 Bias oscillator 2SA203 ALC
Diodes	1S188 (or 1N60) Level meter
Thermistor	SDT-04 Temperature compensation
Silicon Rectifier	FR-1P x 4 AC rectifier
Dimensions	12-1/2" (W) x 10" (D) x 5-7/8" (H) 316mm x 255mm x 150mm
Net Weight	12 lbs (5.4kg)

### REMOVING MECHANISM

#### FROM CABINET

To repair or clean amplifier or mechanism, it is necessary to remove the set from the cabinet.

- 1) Turn the set upside down, remove the four screws on the bumpers (turn counter-clockwise) and take off the bumpers.
- 2) Take off head cover and unscrew shift lever knob (counter-clockwise).
- 3) Pull volume control knob, tone control knob, track selector knob and ALC switch knob straight up from each shaft.
- 4) Remove the head base screw and two upper panel screws.
- 5) Lift off upper panel and pull shift lever forward.
- 6) Remove red screw between two reel bases.
- 7) Disconnect lead wires from speaker and loosen AC line cord to remove cabinet easily.

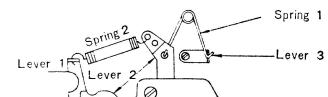
#### Shift Lever

##### 1) Stop-Play

Make sure the levers in figures 1, 2 and 3 move smoothly; the lever in figure 3 should not be too tight.

##### 2) Stop-Rewind

Check pressure between roller and spring.



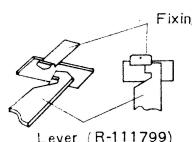
(Fig. 1)

#### Rapid Winding Mechanism

There must be no space between the reel base shaft screw and the reel base shaft. If there is space at fast winding, insert a thin washer. (Fig. 2)

If the shaft still moves up and down, remove the reel base shaft screw, the reel base shaft, and the pulley. Bend the brass-colored shaft slightly upward so that it more strongly pushes against the copper-colored pulley/reel base support during fast forward operation.

Make sure the rotation of the feed reel base is not too tight. After these adjustments, operate the machine for rewind and play, and check for irregular operation or noise. (Fig. 2)



There should not be aperture this part at rapid winding

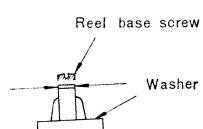


Fig. 2

### ADJUSTING MECHANISM

When rewinding or fast winding is unsatisfactory, or when recording tape slackens when changing from stop to playback, or has excessive tension in spite of correct operation, the following should be checked.

# PARTS LIST

PARTS NO.	DESCRIPTION	Q'TY
<b>FLYWHEEL</b>		
R-112505	Fiber	1
R-22036	Mtg. metal	1
R-12199	Bearing	1
	Ring	1
	Felt, 9 $\phi$ × 13 $\phi$ × 7t	1
	Felt, 6 $\phi$ × 10 $\phi$ × 2t	1
	Washer, nylon, 6.2 × 12 × 0.5t	1
	Washer, nylon, 4.4 × 6.7 × 0.6	3
	R.H. Screw, 2 × 6-(R-112505)	3
	Spring washer, 2-(R " )	1
	Felt, Flywheel oil up proof	1
R-S5161a	AC motor	1
R-261202b	Fan	1
R-44207	Felt, white, 10 $\phi$ 20 $\phi$ × 1t-Fan	1
R-241271	Flat belt	1
R-448004	Cord stopper-Motor lead wire	1
	Round belt	3
	P.H. Screw, 4 × 6-(R-S5109)	1
	Spring washer, 4-( " )	3
	Stopper, 3 × 6-Pulley	3
R-278001	Pulley	1
R-278014	Pulley } 60 c/s	1
R-278015	Pulley	1
R-278058	Tube-Motor lead wire	1
R-278059	Pulley	1
R-278060	Pulley } 50 c/s.	1
<b>REEL BASE</b>		
R-24668	Ring	1
R-14105a	Shaft	1
R-24865	Special Screw	1
	Washer, 5.2 $\phi$ × 11.5 $\phi$ × 0.5t	1
R-34168a	Felt, 34 $\phi$ × 46 $\phi$ × 2t (right)	1
	Pulley	1
	Hex.Nut, 4-(R-14105a)	1
	Washer, 4-( " )	1
	Washer nylon, 5 $\phi$ × 7.3 $\phi$ × 0.3t-( " )	1
R-118046	Mtg. metal-Plate spring	1
R-258005	Plate spring	1
R-34128b	Pulley	1
R-112404	Mtg. metal	1
R-241031	Ring	1
R-14106a	Shaft	1
R-24865	Special Screw	1
	Felt, white, 4.5 $\phi$ × 44 $\phi$ × 1t	1
	Felt, white, 40 $\phi$ × 50 $\phi$ × 1t (left)	1
R-158004	Coil spring-under reel base	1
R-378002	Special Washer, Nylon	1
	Hex. nut, 4-(R-14106a)	1
	Washer, 4-( " )	1
	Washer, nylon, 5 $\phi$ × 7.3 $\phi$ × 0.3t-( " )	1
R-S88031	Reel base, complete	1
R-118055	Guide	3
R-448006	Cushion	1
R-34127b	Reel base	1
R-12199	Ring	2
<b>BRAKE</b>		
R-112417a	Lever	1
R-111803b	Slide	1
R-24686	Ring	1
R-24666	Ring	1
R-112050	Mtg. metal	1
R-112051	Mtg. metal	1
R-13072	Band	1
R-48106	Band	2
R-111960a	Pressing metal	1
R-24697	Ring	1

PARTS NO.	DESCRIPTION	Q'TY
<b>BRAKE</b>		
R-24671a	Ring	2
	Pipe, 2.2 $\phi$ × 5 $\phi$ × 13-Spring switch	1
	R.H. Screw, 3 × 20-(R-11960)	1
	" 3 × 10-(R-111803a)	2
	Spring washer, 3-( " )	3
	Special washer, 3.3 $\phi$ × 10 $\phi$ × 1t-( " )	3
	Washer, 3-( " )	1
	Hex. nut, 3-( " )	3
	R.H. Rivet, 2 × 4-(R-13072)	4
	R.H. Screw, 2 × 16-Pipe	1
	Spring washer, 2- "	1
	Hex. nut, 2- "	1
	P.H. Screw, 3 × 10-(R-111803a)	1
	Washer, 3 × 0.5t-( " )	1
<b>ROLLER</b>		
R-111937	Lever	1
R-24672a	Ring	1
R-111801a	Lever	1
R-158006	Coil spring	1
R-12192	Shaft	1
R-15177	Coil spring	1
R-24670	Ring	1
R-118047	Vinyl tube-(R-15177)	1
R-398001	Lever	1
R-158005	Roller-REW roller	1
	Rod-(R-158005)	1
	R.H. Screw, 3 × 10-(R-111937)	1
	" 3 × 8-(R-111801a)	1
	Special washer, 3.3 $\phi$ × 10 $\phi$ × 1t-(R-111937)	1
	" 3.3 $\phi$ × 16 $\phi$ × 1t-(R-111801a)	1
	Washer, nylon, 3.6 $\phi$ × 7 $\phi$ × 1.5t-(R-39143)	2
	" fiber, 6.2 $\phi$ × 14 $\phi$ × 1.5t-(R-111937)	1
	Spring washer, 3-(R-111799b)	1
	" 3-(R-111801a)	1
	" 2.6-(R-12192)	1
	Hex. Nut, 3-(R-111799b)	1
	" 3-(R-111801a)	1
	" 2.6-(R-12192)	1
	" 2-(R-24674a)	2
	Washer, 2-Rod	1
<b>REEL BASE</b>		
R-S88030	Reel Base, complete	1
R-118055	Guide	3
R-448006	Cushion	1
R-34072b	Reel base	1
	Felt, 15 $\phi$ × 28 $\phi$ × 2t	1
	P.H. Screw, 3 × 4-(R-118046)	2
	P.H. tapping screw, 3 × 6-Plate spring	2
	Washer, 5.2 $\phi$ × 11.5 $\phi$ × 1t	1
	Felt, 13 $\phi$ × 27 $\phi$ 1t	1
	Washer nylon 13 $\phi$ × 18 $\phi$ 10.5t-Slip mood	1
	Felt-Pulley (right)	1

## Rewind Mechanism

Turn nut 1 clockwise to tighten the roller. Adjust this nut to finish rewinding within 3 minutes (rated time on 7" tape). Lock with nut 2 and apply grease to the coil spring. Make sure rotation of takeup reel base is smooth. Check for clip noise or inoperative brake. (Fig. 3)

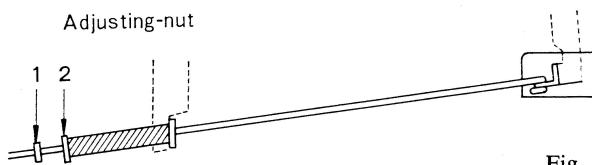


Fig. 3

## Play Mechanism

When pinch roller pressure is weak, the recording tape may slip between the capstan and pinch roller.

The best pinch roller pressure is  $1100\text{g} \pm 100\text{g}$  at 4.75 cm/sec. Measuring must be done 2 or 3 times, and adjustment is made with the pinch lever spring. To measure the pressure, as shown in fig. 4, pull the tension gauge away from the pinch roller until the pinch roller separates from the capstan, then read the gauge when the tape stops. (Fig. 4)

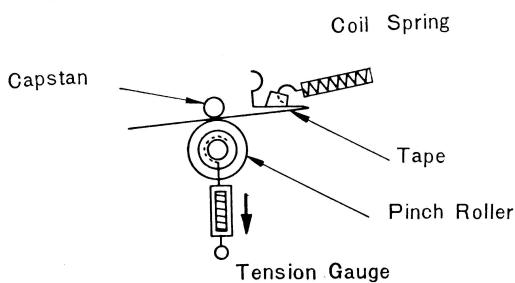


Fig. 4

## MAINTENANCE

### Storing

Before storing the recorder, make sure the shift lever is in Stop position.

### Lubrication

This recorder needs little oiling because shafts are equipped with an automatic lubricating device.

### Cleaning Rubber Parts

Pinch roller, flywheel and belt must be wiped every 6 months. Use a cloth dampened with carbon tetrachloride.

## AMPLIFIER ADJUSTMENTS

The following adjustments should be made whenever amplifier circuit components are replaced or repaired.

The adjustments should be checked periodically.

## RECORDING BIAS CURRENT

The record bias current should be  $0.46\text{mA}-0.47\text{mA}$ . This may be checked by measuring the voltage developed across R3 while the set is operating in the record position.

Adjustment is made as follows;

1. Connect VTVM across R3.
2. Adjust VR4 for a reading of  $4.6 - 4.7\text{mV}$  on the VTVM.

## RECORDING LEVEL INDICATOR

Adjust as follows;

1. Using an audio signal generator, feed 1 kc/s  $0.32\text{mV}$  signal to the MIC jack.
2. Turn the Volume Control fully clockwise, the Tone Control switch to "MONITOR," and ALC switch to "OFF".
3. Operate recorder in Record position.
4. Adjust level indicator control VR3 and set the pointer to the boundary of the green and red areas.

## ERASING HEAD CURRENT

Erasing head current must be more than  $30\text{mA}$ .

When this current is less than  $30\text{mA}$ , the erasing efficiency will deteriorate.

## ALIGNMENT OF HEAD ASSEMBLY

The Erase and Record/Play heads are adjustable in their vertical and azimuth positions. However it is not necessary to adjust the Erase head in its azimuth position.

### Vertical Positioning

Transparent tape is required when making the vertical adjustment shown in the figure below.

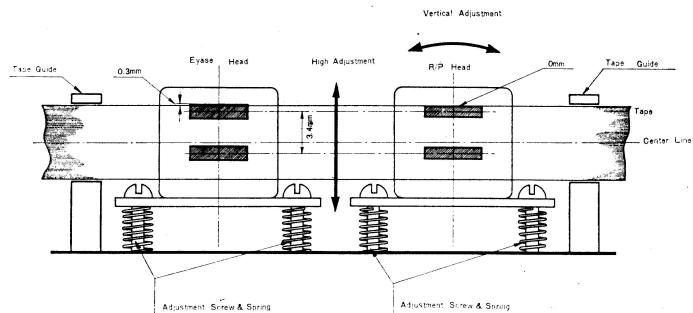
The vertical position of the Record/Play and Erase heads can be altered by rotating the two adjustment screws for each head.

### Azimuth Positioning

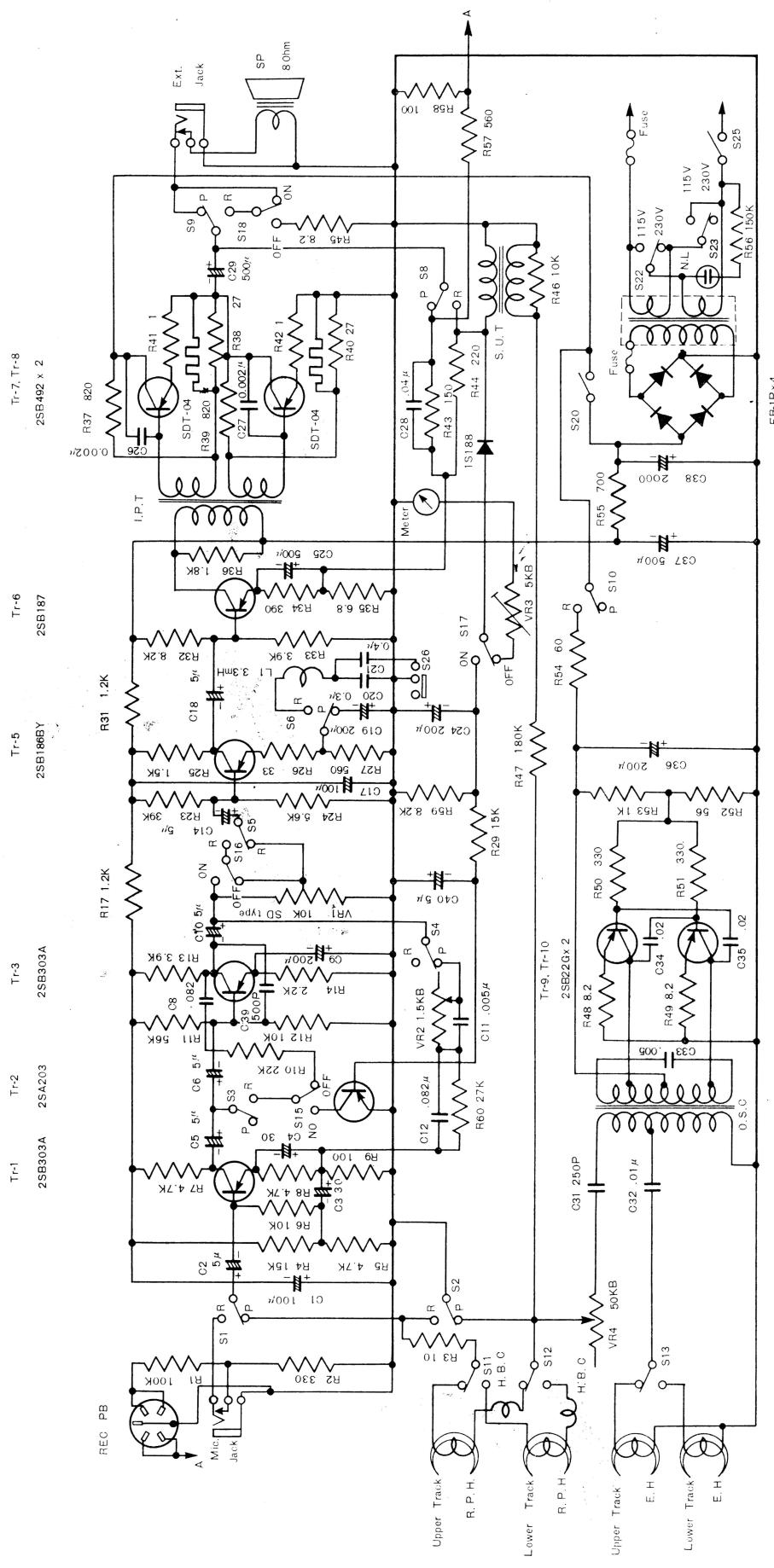
The azimuth position of the Record/Play head must be set using pre-recorded standard tape.

Connect an AC-VTVM and load resistor (8 ohms) to the external speaker. Thread the standard tape and place the control lever in its Play position. Turn the Record/Play head adjustment screws alternately to change the azimuth position of the head.

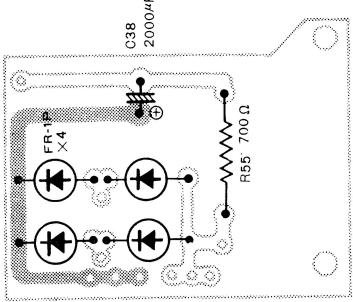
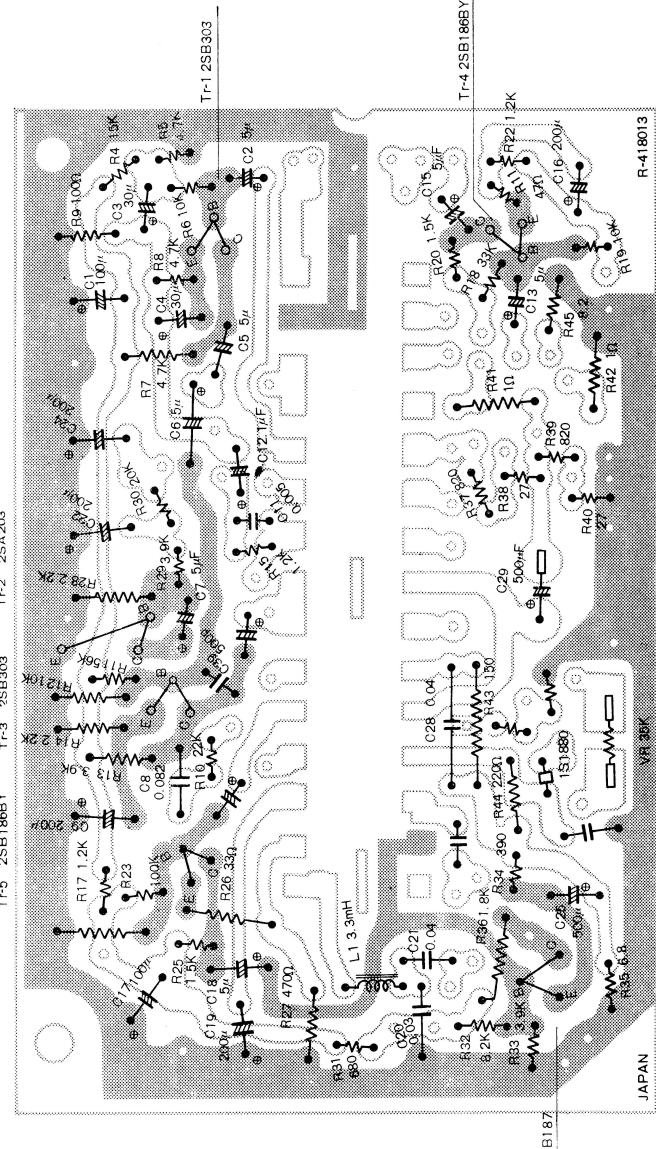
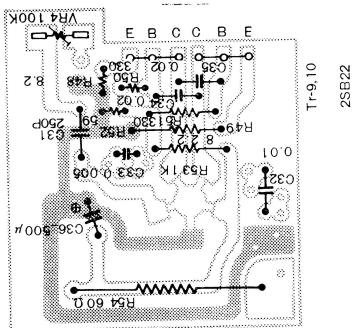
The head is at its proper azimuth position when a maximum or peaked meter deflection is obtained on the AC-VTVM.



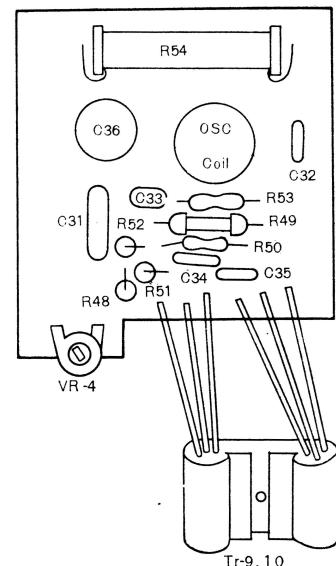
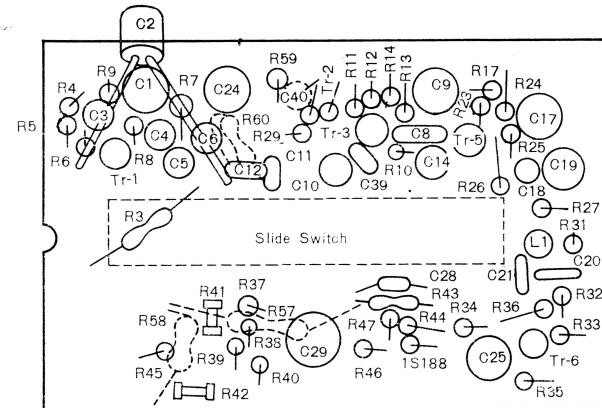
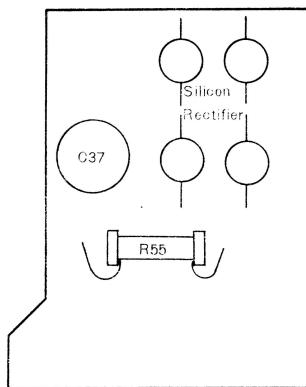
# CIRCUIT DIAGRAM



- VR1 : Volume control at Play level control at record. 10K SD type  
 VR2 : Tone control at play 1.5KB type  
 VR3 : Input control of recording lever indicator 5KB type (Fixed)  
 VR4 : Bias current control 50KB type (Fixed)  
 S1-S10 : Recording SW (Play Position)  
 S11-S13 : Track change SW (Upper Track Position)  
 S15-S17 : A,L,C SW (OFF Position)  
 S18 : Monitor SW (connected VR2) at record (ON Position)  
 S20 : Switch on at play  
 S22-S23 : Power Line changing SW (230V Position)  
 S25 : Power SW (connected VRI)  
 S26 : Compensation SW (7 1/2 ips Position)



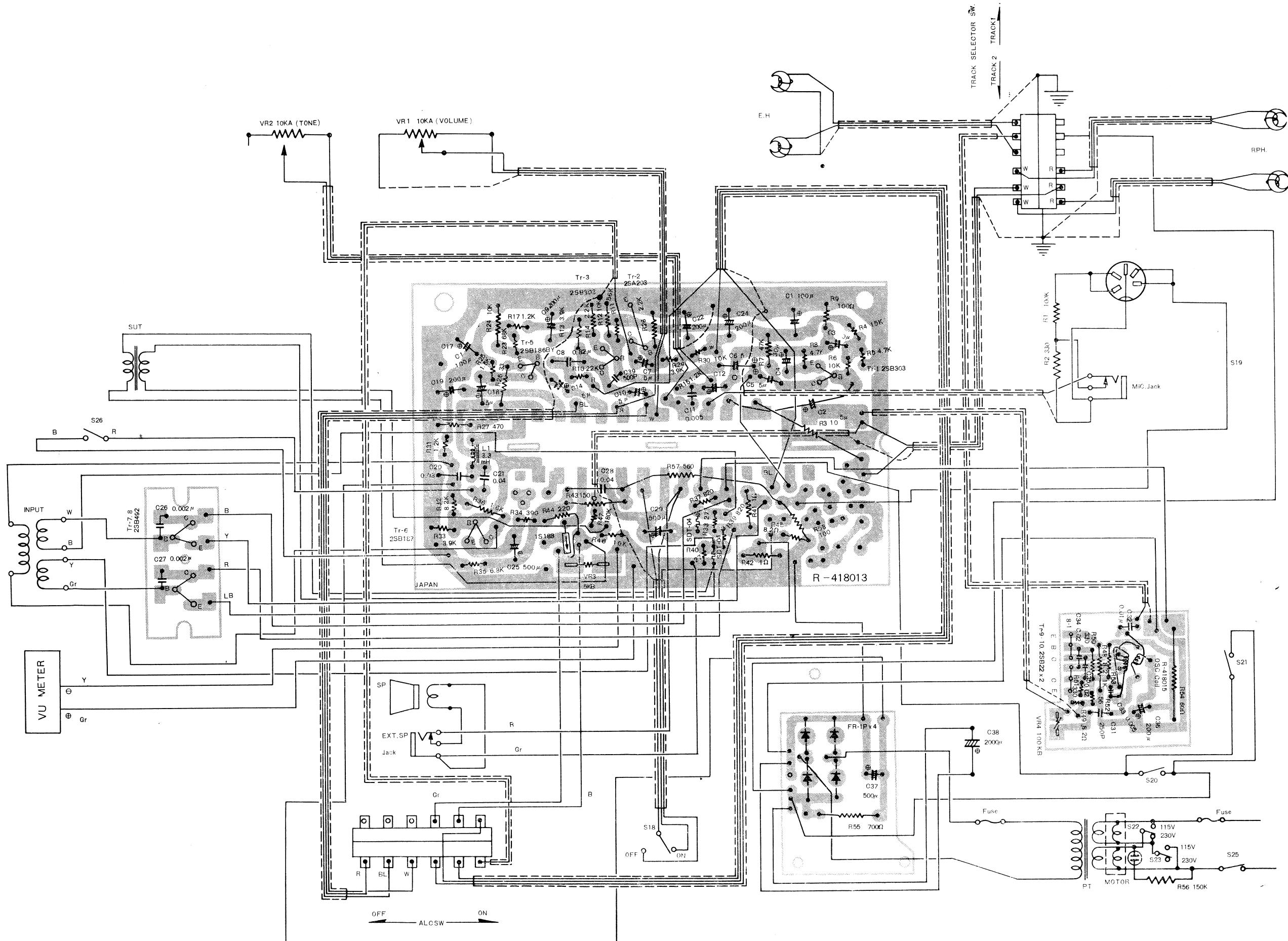
# MAIN PARTS LOCATION



# PARTS LIST

PARTS NO.	DESCRIPTION	Q'TY	PARTS NO.	DESCRIPTION	Q'TY			
<b>CABINET</b>								
R-31608g	Cabinet	1	R-112432	Lug-Lead for speaker	1			
R-24808	Insert nut	1		Washer, nylon, $8.2\phi \times 12\phi \times 0.5t$ -Handle	4			
R-31609a	Lid	1		Washer, $8.2\phi \times 12\phi \times 0.5t$ -Handle	2			
R-31610	Panel	1	R-39256	Pad, black rubber, $3 \times 100 \times 1t$	1			
R-31611a	Panel, upper	1	R-318050	Knob-Track selecting & ALC	2			
R-S81022a	Lid, complete-accessory compartment	1	R-35273	Head cover	1			
R-39221a	Lid	1	R-35275	Leg	4			
R-12152	Plate spring	2	R-S8948	Sheet-ALC knob	2			
R-39267	Knob	2	R-39174	Knob, complete-VR	2			
	Bolt nut washer, 2	2	R-26994	Knob	2			
R-261089	Pan head tapping screw, $2.3 \times 4$	2	R-S81001	Decoration-knob	2			
R-261090	Metal sash, upper panel	1	R-24748b	Knob, complete-Operation	1			
R-261093a	" "	1	R-261047	Knob	1			
R-32357a	Badge-Lid	1		Decoration-knob	1			
R-12200	Sign plate	1		Felt, black, $20\phi \times 10\phi \times 1$ -knob	2			
R-41285	Plate spring-Lock for Lid	2		Cushion, white rubber, $3 \times 4 \times 8$	1			
R-44228	Pad-VU meter	1		Sheet, fiber, $8 \times 4 \times 0.5t$ -knob (R-39256)	4			
R-44229	Cushion	5	<b>CHASSIS</b>					
	"	9	R-112317d	Chassis	1			
	Splicing tape-upper panel shake proof	1	R-418013	Printed circuit board-amplifier	1			
	" -speaker fixing screw	1	R-418014	" -power supply circuit	1			
	Pad, black rubber, $3 \times 100 \times 1t$ -Speaker	1	R-112310	Mtg. bracket-R/P switch	1			
	Cushion, black rubber,	2		Sheet, fiber, $10 \times 10 \times 0.5t$ -semi-fixed VR	1			
	$2.5 \times 10 \times 0.5t$ -Cabinet			Felt, black, $10 \times 20 \times 0.5t$ -C29	1			
	Felt, white, $10 \times 10 \times 3t$ -Panel	1	R-328042a	Insulator, fiber, $5 \times 35 \times 0.3t$ ALC switch	1			
	" , black, $6 \times 10 \times 95$ -AC cord	1		Mounting base-Jack	1			
	" , black, $292 \times 10 \times 1t$ -Oil spread proof	1	R-24921	Pipe-R/P switch	1			
R-268152a	Name plate-Upper panel	1	R-418015	P.C.B.-Oscillation circuit	1			
R-261222	" -Upper panel	1	R-418016	P.C.B.-Power transformer	1			
R-261224	Badge-Panel	1	R-128058	Coil spring-R/P switch	1			
	Pad, black rubber, $20 \times 15 \times 8t$ -Cabinet	2	R-12178a	" "	1			
R-478078	Circuit diagram	1	R-118329	Lever-R/P switch	1			
	Felt, black, $1t \times 10 \times 48$ -Cabinet	1	R-118330	" "	1			
R-268167a	Instruction plate	1	R-118293	Pipe-shield plate	1			
R-12086	Guide pin-Tape guide	1	R-24730	Pipe-R/P switch	1			
R-S81023	Handle, complete	1	R-112318d	Mtg. bracket-VU meter	1			
R-112324	Handle	1	R-118003	Reinforcement	1			
R-36178	Cover	1	R-37036	Button-R/P switch	1			
R-24946	Special screw-Handle	2						
R-44228	Cushion	1						

# WIRING DIAGRAM



# PARTS LIST

PARTS NO.	DESCRIPTION	Q'TY
<b>CHASSI</b>		
R-118325a	Mtg. bracket-track selecting switch Pad. white, 5t×20×55-VU meter Cushion, white rubber Sheet, fiber-ALC switch Pelt 10×15×15-shake proof for VU meter	1 1 2 1 1
R-428003	Cover-AC cord	1
R-358004	Ring-protection for power supply cord	1
R-112332	Mtg. angle- " "	1
R-118331	MECHANISM-TM-702	1
R-118034	Mtg. metal-Fuse stopper " -capacitor	1 1
R-118293	Pipe-shielding	1
R-478085	Specification sheet	1
R-112351	Mtg. metal	1
R-44004	Cushion-pilot lamp	1
R-112321b	— Mtg. metal-VR — Reinforcement	1 1
R-112416	Insulator, fiber-track selecting SW	1
R-112865	Mtg. metal-protection for power supply cord	1
<b>ELECTRICAL PARTS</b>		
R-W6816	Input transformer	1
R-124133	VR 10 Kohm	1
R-R124145	VR 1.5 Kohm	1
R-W6821	Step up transformer 100 ohm: 1Kohm	1
R-S5528	VU meter-level indicating	1
R-W8180a	OSC coil	1
R-R11011	Semi-fixed VR as VR4 " as VR3	1 1
R-R11012	Choke coil 3.3mH	1
R-R7026	Special resistor 1ohm-R41, 42	2
R-R7034	" 60 " -R54	1
R-C9128	Electrolytic capacitor 2000μF-C38	1
R-C9127a	" 500μF-C29	1
R-C9144	" 500μF-C25	1
R-C9145	" 100μF-C1, 17	2
R-C9105	" 30μF-C3, 4	2
R-C9078	" 5μF-C2, 5, 6, 10, 14, 18, 40	7
R-C9127	" 500μF-C37	1
R-C9129	" 200μF-C36	1
R-C9143	" 200μF 6WV-C9, 19, 24	3
R-W6822	Hum balance coil	2
R-S6839	Speaker	1
R-S6297(1)	Microphone	1
R-31304b	7 inch dia. empty reel	1
R-S88203	Splicing tape	1
R-S88144	7 inch dia. tape	1
R-S4286a	Fuse holder, complete	1
R-S3008	Rotary switch	1
R-S3008	Lug-Lead for S.V.T.	4
R-S4311	Lug-Lead for H.B.C.	1
R-S4326	Slide switch-Track selecting " -R/P selecting S1-S10	1
R-S4311	" -A.L.C.	1
R-S1146b	Neon lamp	1
R-S2123	Jack-Mic. & Ext. Speaker	2
R-S2802	Socket-R/P	1
R-28085	Heat sink, aluminum-2SB492	2
R-41370	Insulator, film-2SB492	2
R-39320	Mtg. base-2SB492	4
R-44223	Insulator, black rubber-2SB492	2
R-261193	Heat sink-2SB22	1
R-35272	Cord stopper-AC cord	1
R-S3063	Lug-Earth	1
R-S3008	Lug-Lead	1
R-112432	Lug-thermistor	1
R-S1044	Fuse, 1.2A	1
R-S1092	" 1.5A	1
R-29021	Shield plate	2

PARTS NO.	DESCRIPTION	Q'TY
<b>ELECTRICAL PART</b>		
R-S3134	Power supply cord, 2 wire	1
R-S8574b	Adaptor, S 2pin	1
R-S8575b	Adaptor, E 2pin	1
R-S1234	Silicon rectifier	4
	Transistor 2SB303A-Tr. 1, 3	2
	" 2SB186B-Tr. 5	1
	" 2SB187-Tr. 6	1
	" 2SA203AA-Tr. 2	1
	" 2SB22-Tr. 9, 10	2
	Diode, 1S188	1
	Thermistor, SDT-04	2
	Temperature compensation	
	Transistor, 2SB373-Tr. 7, 8	2
<b>DESCRIPTION</b>		
<b>CAPACITORS</b>		
Mylar, square type	500 pF ±20% 50WV C39	1
	0.002 μF " " " C26, 27	2
	0.005 " " " C11, 33	2
	0.02 " " " C34, 35	2
	0.03 " " " C20	1
	0.04 " " " C21, 28	2
	0.082 " " " C8	1
	0.082 " " " C12	1
Ceramic, disc type	250 pF ±10% 250WV C31	1
	0.01 μF " " " C32	1
<b>RESISTORS</b>		
Carbon P type	6.8 ohm ±10% 1/4W R35	1
	27 " " " R38, 40	2
	33 " " " R26	1
	56 " " " R52	1
	100 " " " R9	1
	220 " " " R44	1
	330 " " " R2, 50, 51	3
	390 " " " R34	1
	560 " " " R27	1
	1.2K " " " R31	1
	820 " " " R37, 39	2
	1 K " " " R53	1
	1.2K " " " R17	1
	1.5K " " " R25	1
	1.8K " " " R36	1
	2.2K " " " R14	1
	3.9K " " " R13, 33	2
	4.7K " " " R5, 7, 8	3
	8.2K " " " R32, 59	1
	10 K " " " R6, 12, 24	4
	15 K " " " R4, 29	2
	22 K " " " R10	1
	56 K " " " R11	1
	68 K " " " R23	1
	100 K " " " R1	1
	150 K " " " R56	1
	180 K " " " R47	1
	100 " " " R43, 58	1
	8.2 " " 1/2W R45, 48, 49	3
	560 " " 1/4W R57	
	27 K " " " R60	1
	10 " ±5% " " R3	1
	700 " ±10% 1W R55	1

# PARTS LIST

PARTS NO.	DESCRIPTION	Q'TY
<b>CHASSIS</b>		
R-112408d	Chassis	1
R-112398a	Mtg. bracket	1
R-112401b	" -Cabinet	1
R-112397b	" -Counter	1
R-112403a	Lever-R/P selecting	1
R-24983	Boss-Counter	1
R-112164	Mtg. bracket-R-14107d	1
R-14110b	Stud nut-panel	2
R-S4287	Spring switch	1
R-34076	Insulator	1
R-241042	Shaft	1
R-25180L	Plate spring	1
R-S3063	Lug	2
R-S5526	Counter	1
R-27038a	Pulley	1
R-27038	Pulley	1
R-44243a	Belt-counter	2
R-112405a	Mtg. metal-R-112403	1
R-423133	Insulator	1
	Felt-R-112398a	2
	Cushion-Shake proof	1
	Ring, rubber	1
R-112558a	Mtg. metal-transformer	1
R-S3008	Lug-Leaf SW	1
R-112432	Lug-lead	4
R-S3008	Lug-lead	3
R-118327	Shield plate	1
	R.H. Screw, 3×6-Mtg. metal(R-112398)	4
	Spring washer, 3-Mtg.metal( " )	4
	R.H. Screw, 3×6- " (R-112397)	2
	Spring washer, 3- " ( " )	2
	Washer, 3- " ( " )	2
	Hex. nut-(R-14110b)	2
	Spring washer-( " )	2
	R.H. Screw, 2×12-(R-S4287)	2
	Spring wesher, 2-( " )	2
	Hex. nut, 2-( " )	2
	Stopping screw, 3×4-Pulley	2
	P.H. Tapping screw 3×6-(R-112164)	2
	Washer, 4-(R-14110b)	1
	Washer, nylon, 3×6×0. 5t-Pulley shaft	2
	R.H. Rivet, 3×4-(R-25180L)	1
	R.H. Rivet, 2×5-(R-34076)	2
	R.H. Screw, 3×6-(R-112405)	1
	Spring washer, 3-(R-112405)	1
	Washer, 3-( " )	1
	R.H. Screw, 3×4-(R-S5526)	2
	Spring washer, 3-( " )	2
	Hex. nut, 3-(R-24790)	1
	Spring washer- ( " )	1
	R.H. Screw, 3×6-(R-112401a)	1
	Washer, 3-( " )	1
	Spring washer- ( " )	1
	R.H. Screw, 4×8-(R-112558)	2
	Spring washer, 4-(R- " )	2
	Hex. Nut, 4-( " )	2
	Round head screw, 3×6-(R-112432)	1
	" 3×6-(R-S3008)	1
	P.H. Tapping screw, 3×6-(R-112432)	1
	Washer, 4-(R-112558)	2
	" 4-Transformer	2
R-S81242	Pulley, complete	1
R-241013	Pulley	1
R-14138a	Shaft	1
R-24638	Cord stopper	1
R-44004	Cushion, white rubber-Neon lamp	1
R-S4823	Spring switch-amplifier	1
R-S3007	Lug plate	1
R-118339	Shield plate-motor	1
	Spring washer-(R-S3008)	1
	P.H. Screw, 3×6-( " )	1

PARTS NO.	DESCRIPTION	Q'TY
<b>CHASSIS</b>		
	P.H. Screw, 3×6-Shield plate	2
	" 3×6- "	2
	Spring washer, 3-	2
	P.H. Screw, 3×6-Spring switch	1
	Spring washer, 3- "	1
	P.H. Screw, 3×6-Lug Plate	1
	Spring washer, 3- "	1
	Spring washer 3- "	2
<b>HEAD</b>		
R-S6403	Record/Playback head	1
R-S6404	Erasing head	1
R-118326	Mtg. metal-Head fixing	1
R-128059	Guide	1
R-128060	Guide	1
R-278057	Pipe	4
	R.H. Screw-Head	6
	P.H. Screw-Head base	4
	Spring washer- "	4
	R.H. Screw-Guide	2
	Hex. Nut- "	1
	Spring washer-Guide	2
	Spring washer- "	1
R-238005	Pad	1
R-118328	Mtg. metal-Pad	1
R-248117	Shaft-Fulcrum	1
R-158076	Coil spring-pad pressing	1
R-118338	Shield plate-head	1
	Felt, white, 6.5×4×2t-Pad	2
	Hex. nut-Shaft	1
	Spring washer-Shaft	1
	C-washer-Mtg. metal	1
	R.H.Rivet, 2×4-Shield plate	2
<b>PINCH ROLLER</b>		
R-112400	Lever	1
R-12137	Shaft	1
R-S8681	Roller, complete	1
R-44187	Roller	1
R-24665	Boss	1
R-22032	Bearing	1
R-24664	Felt, 4.5Ø × 10Ø × 2t	1
	Bearing	1
	Washer, Nylon, 4.5Ø × 8Ø × 0.5t	1
	Hex. nut, 3-(R-12137)	1
	Spring washer, 3- "	1
	C-Washer, 3- "	1
R-112402	Lever	1
R-14167	Lever	1
R-15176	Coil spring	1
R-24684	Boss	1
R-14109a	Shaft	1
R-4115	Rod	1
R-15178	Coil spring	1
R-15180	Spring	1
R-12282	Panel	1
R-24682	Ring	1
	Vinyl tube-(R-15176)	1
	Dish head screw, 3×4-(R-24632)	1
	C-washer, 3-(R-14107b)	1
<b>FLYWHEEL</b>		
R-S81150a	Flywheel, complete	1
R-28113	Flywheel	1
R-12287a	Shaft	1
	Steel-ball	1
R-S81133	Capstan, complete	1
R-241043	Capstan	1
R-24751	Special screw	1