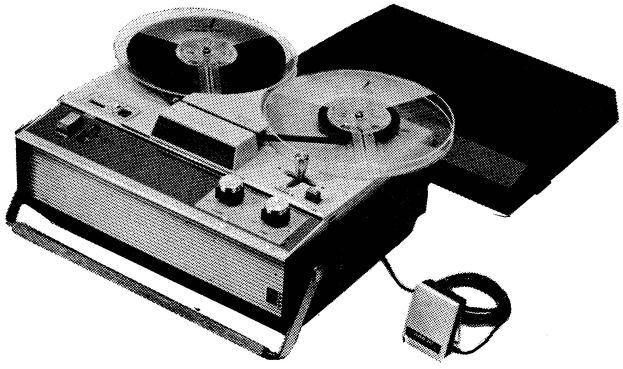
SANYO

Solid State AC Operated
PORTABLE TAPE RECORDER

MODEL MR-710

SERVICE MANUAL

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



SPECIFICATIONS

Recording ..... AC bias, double track
Erasing System ..... DC erase
Output Power ..... 2.4W Undistorted
2.7W Maximum
Power Supply ..... 110-117/220-240 V, 50/60 c/s
Tape Speed & Recording Time ..... (at 7″ reel, 2-track)
1⅞″ (4.75 cm)/sec. 4 hours
3¾″ (9.5 cm)/sec. 2 hours
Tape Reel ..... 7″ dia. max.
Forward & Rewind Time ..... Up to 3 min. (7″ reel)
Frequency Response ..... 100-4000 (1⅞″/sec.)
100-8000 (3¾″/sec.)
Loudspeaker ..... 3⅛″×6¼″ (78 mm×158 mm)
Permanent dynamic speaker
Voice coil impecance 8 ohms
Signal-to-Noise Ratio ..... Over than 40 db

Transistors ..... 2SB346C ..... 1st audio amplifier
2SB186A ..... 2nd audio amplifier
2SB186A ..... 3rd audio amplifier
2SB373×2 ..... Power amplifier
2SB22B ..... Biasing oscillator
Diodes ..... 1S188 (or 1S426G) ..... Automatic level control & for level meter
SV-30 ..... Automatic level control
Thermistor ..... SDT-04 ... For temperature compensation
Silicon Rectifier ..... FR-1P×2 ..... For AC rectifier
Dimensions ..... 12⅜″ wide×10″ deep×5⅞″ high
(316 mm×255 mm×150 mm)
Net Weight ..... 12 lbs. (5.4 kg)

ACCESSORIES

Microphone, Patch cord, Full 7″ tape reel, Empty 7″ tape reel, Splicing tape.

REMOVING MECHANISM OUT OF CABINET

For repairing of mechanism of amplifier, or cleaning them, it is necessary to remove the recorder set from the cabinet. Followings are the instructions:

1) Reverse the recorder upside down and turn four screws on the bumpers counter-clockwise to remove them, and take off four bumpers.
2) Take off top cover and turn shift lever knob counter-clockwise to remove it.
3) Pull head-housing, volume control knob, tone control knob, ALC switch knob straight up from each shaft.
4) Turn screws counter-clockwise, one on the head base and two on the upper panel, and remove them.
5) Lift upper panel and turn shift level toward you.
6) Remove red screw between two reel bases.
7) Then disconnect lead wires from speaker and loosen AC line cord to remove cabinet easily.

Above procedures will permit removal of the mechanism and amplifier from the cabinet.

ADJUSTING MECHANISM

When rewinding or fast winding is unsatisfactory or when recording tape becomes loosened in changing from stop to play-back, or becomes strained too much in spite of correct operation, following adjustments must be required.

Shift Lever

1) Stop-Play
Check movement of levers 1, 2 and 3 be smooth and the position of lever 3 be not so tight (Fig. 1). If the movement of lever is not sharp or certain, remove spring 1 and expand it to tighten.
2) Stop-Rewind
Check pressure between roller and spring be normal (Fig. 1)

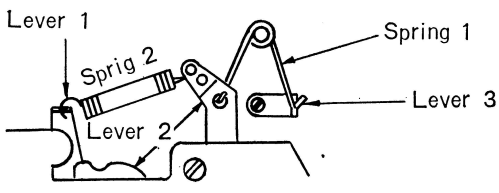
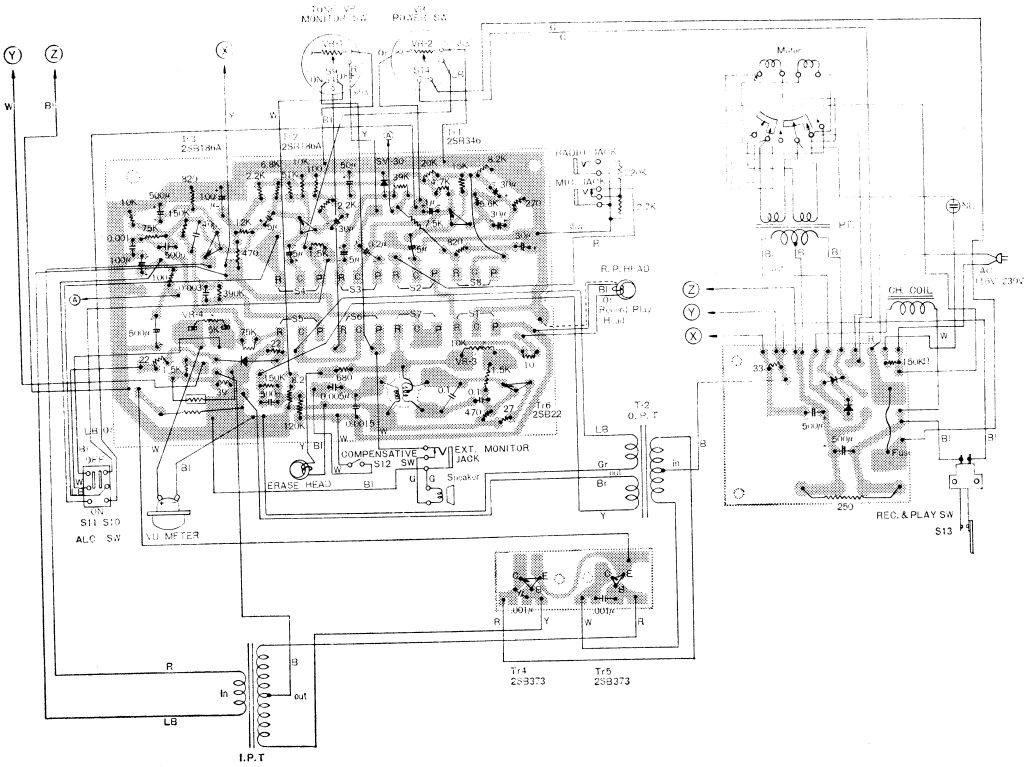
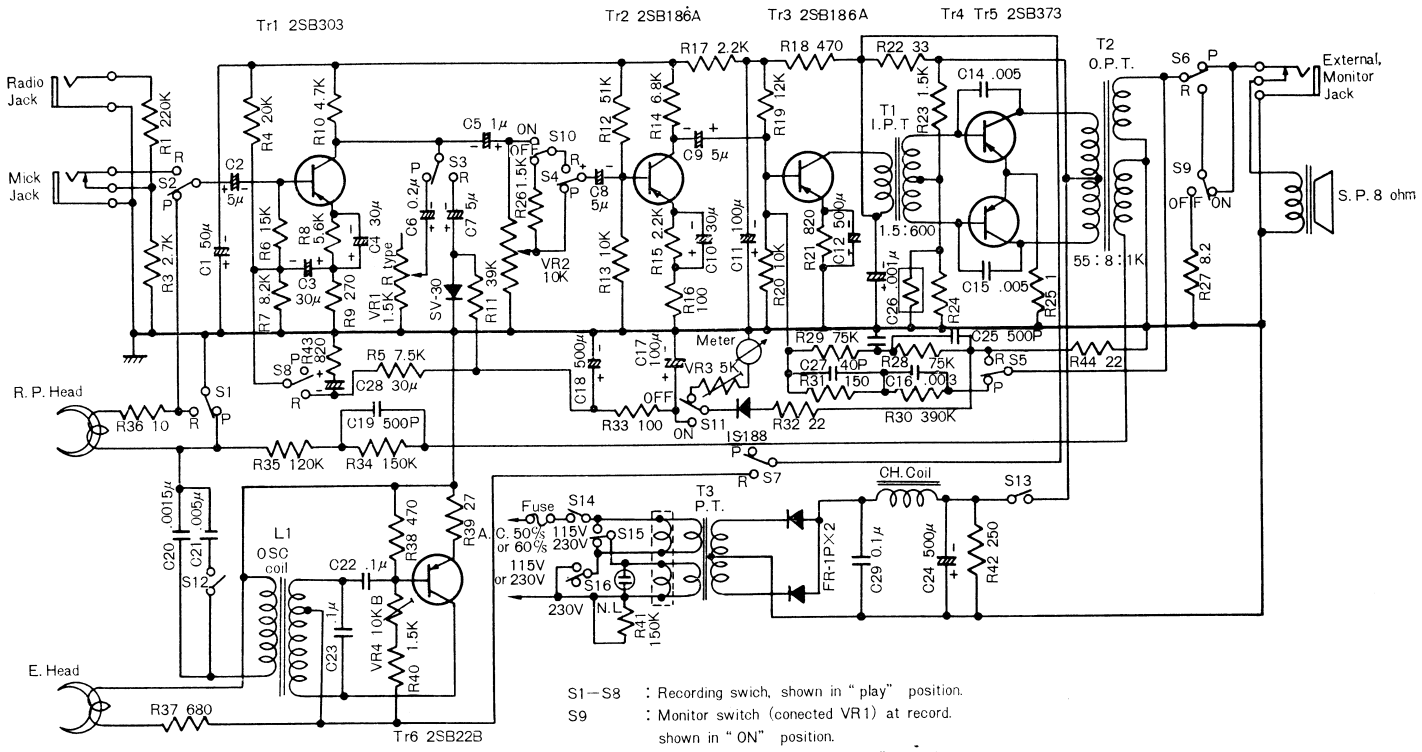


Fig. 1

INTER PARTS CONNECTION



CIRCUIT DIAGRAM



VR1 : Tone control at play 5K B type.
VR2 : Volume control at play level control. at record 10KΩ SD type.
VR3 : Input control of recording level. indicator 5KΩ B type (Fixed).
VR4 : Bias current control. 10K B type (Fixed)

S1—S8 : Recording swich, shown in "play" position.
S9 : Monitor switch (conected VR1) at record. shown in "ON" position.
S10—S11 : A.L.C. switch shown in "OFF" position.
S12 : Compensative switch. switch on at "1⅞ ips"
S13S : Switch on at record and play.
S14 : Power switch (Conected VR2).
S15—S16 : Power line changing, switch, shown in "230V" position.

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Rapid Winding Mechanism

There must be no aperture between reel base shaft screw and reel base shaft. If there is an aperture at fast winding, it is necessary to use thin washer (Fig. 2).

Bend lever a little upside and uphold fixing metal so that the pressure between reel base and pulley becomes satisfactory. Check rotation of feed reel base be not tight.
After these adjustments, operate the machine for rewind and play, and check irregular operation or noise not to occur (Fig. 2).

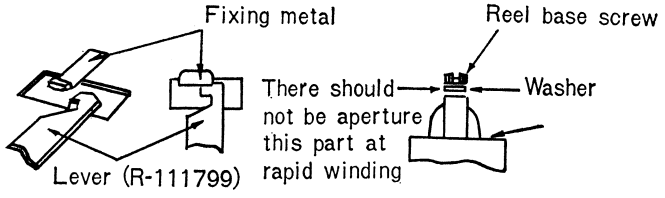


Fig. 2

Rewind Mechanism

Turn nut 1 clockwise to tighten the roller. Adjust this nut to finish rewinding within 3 minutes (rated time on 7″ tape). Then lock it with nut 2 and apply grease to coil spring. Check rotation of takeup reel base be smooth and no clip noise nor inoperative brake (Fig. 3).

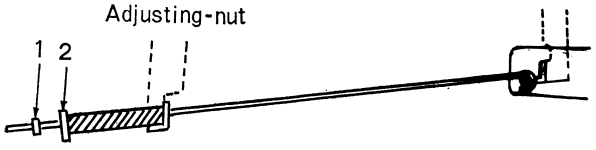


Fig. 3

Play Mechanism

When pressure of pinch roller is weak, recording tape may slip between capstan and pinch roller.
The best pressure of pinch roller is 1100g±100g at 4.75cm/sec. Measuring must be done 2 or 3 times and adjusting is made with pinch lever spring. To measure the pressure, as shown in Fig. 4, pull the tension gauge away from the pinch roller so that the pinch roller will separate from capstan, then read the gauge when tape stops (Fig. 4).

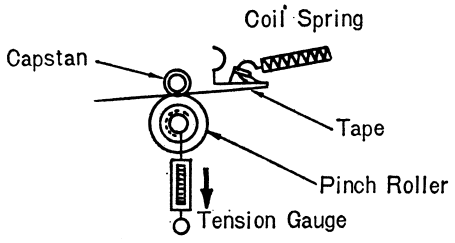


Fig. 4

MAINTENANCE

Storing

Before storing the recorder, make sure the shift lever be in stop position.

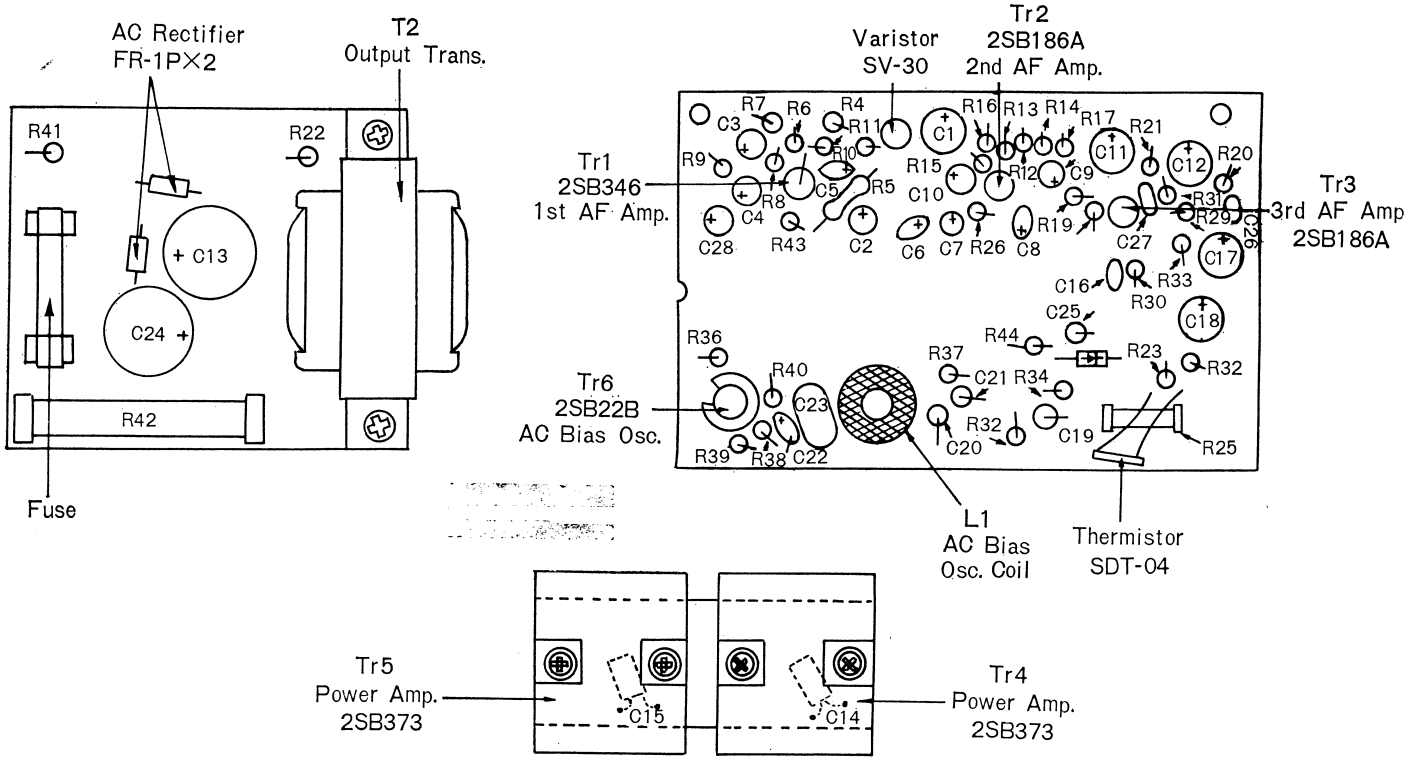
Lubrication

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

Cleaning Rubber Parts

Pinch roller, flywheel and belt must be wiped with cloth damped with Quad Carbon Chloride every 6 months.

MAIN PARTS LOCATION



TROUBLESHOOTING CHART

(Mechanical)

Symptom	Cause	Remedy
Tape loops or spills	1. Spindle shaft (42) binding in bushing. 2. Broken rubber belt (37). 3. Oil on take-up pulley felt washer (117).	1. Clean spindle and bushing, relubricate. 2. Replace belt. 3. Replace.
No fast toward or improper fast forward operation.	1. Oil on rubber belt (37) and Take up spindle pulley (44). 2. Inadequate tension on pressure springs (46) and (47). 3. Binding take-up spindle. 4. Broken belt.	1. Clean pulley with a dry cloth and replace belt if necessary. 2. Replace. 3. Clean spindle and bushing, relubricate. 4. Replace.
No fast rewind or improper rewind operation.	1. Broken rubber belt (39). 2. Oil on rewind pulley (17).	1. Replace. 2. Clean pulley with a clean dry cloth and replace belt if necessary.
Speed inconsistent. Signs of excessive wow flutter.	1. Tape slipping due to oily flywheel capstan shaft (30) or pressure roller (23). 2. Binding spiudles. 3. Improper take-up torque. 4. Binding pressure roller arm (Include the capstan & Head Base Plate Assembly (2)). 5. Insufficient pressure roller spring tension (Include the capsten & Head base Plate Assembly (2)). 6. Defective motor. 7. Defective flywheel assembly. 8. Tight capstan shaft bearing.	1. Wipe parts with a dry cloth and replace all parts that appear oilsoaked. Clean pressure roller and capstan shaft. 2. Clean spindles and bushings, relubricate. 3. Reduce take-up torque. 4. Clean and lubricate. 5. Replace. 6. Check motor and replace if necessary. 7. Replace. 8. Clean bearing and capstan shaft, relubricate.
Tape counter indicator (8) does not register.	1. Counter defective. 2. Drive belt (10) broken or off pulleys.	1. Replace. 2. Replace.
Sticky or slow return of record-play slide switch.	1. Inadequate tension on switch return spring (76). 2. Record Interlock Lever (5) binding.	1. Replace. 2. Relubricate. Also check the switch for binding.
Brakes unreliable.	1. Brakes out of adjustment. 2. Oil on brake band.	1. Readjust using instructions on page (7-1). 2. Clean or replace Brake.

TROUBLESHOOTING CHART

(Amplifier)

Symptom	Cause	Remedy
No play back from pre-recorded tape.	1. Isolate trouble to one particular audio stage. 2. Open or shorted Record/Playback head. 3. Record/Ployback head coated with oxide. 4. Slide switch in record position.	1. Use schematic and pictorial views. 2. Replace. 3. Clean heads and pressure roller. 4. Check return (76) springs and Record/Play slide switch.
Low output from pre-recorded tape.	1. Check voltages. 2. Record/Playback head coated with oxide. 3. Defective Record/Playback head. 4. Record/Playback head not propery adjusted. 5. Oxide surface of tape not facing heads.	1. Replace components if necessary. 2. Clean heads. 3. Replace head. 4. Adjust head. 5. Check threading. Use "A" Wound tape.
No record or weak record (playback OK).	1. Shorted erase head. 2. Oscillator circuit not operating. 3. Record/Play switch dirty or not making contact. 4. Defective microphone. 5. Defective input jack. 6. Oxide surface of tape not facing heads.	1. Replace. 2. See schematic and repair. Check voltages. 3. Check contacts and clean with tuner contact cleaner if necessary. 4. Replace. 5. Adjust or replace. 6. Check threading. Use "A" wound tape.
No Erase.	1. Defective resistor R37 in Erasing circuit. 2. Open or shorted erase head. 3. Erase head coated with oxide. 4. Loose connection at erase head.	1. Repair using schematic as a guide. 2. Replace. 3. Clean. 4. Re-solder.
Partial Erase.	1. Increase resistance of Eresing circuit (R37 & S7). 2. Partially shorted erase head. 3. Head coated with oxide.	1. Repair using schematic as a guide. 2. Replace. 3. Clean heads.
Excessive hum at maximum volume.	1. Shielded portion of head leads touching a grounded point. 2. Defective driver transistor. 3. Poor lead dress. 4. Defective filter capacitor C1, C11, C13, C24.	1. Dress leads away from all ground points. 2. Replace. 3. Dress leads for minimum hum. 4. Replace.
Excessive hum at minimum volume.	1. Defective filter capacitor, C11, C13, C24. 2. Poor lead dress.	1. Replace. 2. Redress leads.

RART SLIST

Stock No.	Description	Q'ty
Cabinet:		
R-31608e	Cabinet	1
R-31609a	Lid—for Set	1
R-31736	Panel—Speaker Grille	1
R-31611b	Panel—Deck	1
R-S81022a	Lid—Accessary Compartment	1
R-268039	Index Plate - Deck Panel	1
R-268040	Name Plate—Deck Panel	1
R-268041	Spec. Panel—Cabinet	1
R-268042	Badge—Speaker Grille	1
R-261089	Metal Sash—Deck Panel	1
R-261090	Metal Sash—Deck Panel	1
R-268043	Name Plate— Top Lid.	1
R-32357a	Transparent Window—P.L.	1
R-12200	Spring—Lid. Fixed	2
R-44229	Cushion—for Deck Panel	9
R-44228	Cushion—for Deck Panel	4
	Cushion—for Deck Panel (Form)	1
R-41285	Cushion (Rubber)—Deck Panel Edge	1
R-478028	Schematic Diagram	1
	Cushion (Felt) 1×10×292—Cabinet	1
	Cushion (Felt) 6×10×35—Cabinet	1
	Cushion (Felt) 10×10×3	1
	Fiber Sheet——7.5×299×0.35	1
	Cushion (Rubber)—Cabinet 20×15×8 t	2
	Cushion (Rubber)—Cabinet 2.5×10×0.5 t	2
	Cushion (Rubber)—for Speaker 3×100×1 t	1
R-44228	Cushion for Speaker	1
R-12086	Tape Guide	1
R-24946	Special Screw—Handle Fixing	2
	Plastic Washer 8.2φ×12φ×0.5t—Handle Fixing	4
	Cushion (Rubber)—3×100×1 t Speaker	1
R-44228	Cushion (Rubber)—Deck Panel Edge	1
	Plastic Washer 8.2φ×12φ×2 t—Handle Fixing	2
R-112432	Lug—Lead Fixer	1
R-248011	Sprit pin Head Housing Fixing	2
R-S88005	Handle Assembly	1
R-39256	Knob—ALC	1
R-32674a	Head Cover	1
R-44067	Plastie Leg—Set	4
R-S8948	Knob Assembly—Tone & Volume	2
R-S81001	Knob Assembly—Fanction Lever	1
R-35275	Sheet—ALC Knob	1
	Cushion (Rubber)—3×4×8	2
	Felt Ring—Tone & Volume Knob	2
Chassis:		
R-112317a	Chassis—Amplifier	1
R-112321b	Bracket—VR	1
R-112319	Lever—R/P Actuating	1
R-112320a	Slide Arm—R/P Switch Actuating	1
R-12256a	Coil Spring—R/P Actuating Lever	1
R-12178a	Coil Spring—R/P Switch Actuating	1
R-24730	Spacer—R/P Switch Slide Plate	1
R-24921	Spacer—R/P Switch Slide Plate	1
R-32478a	Bracket (Plastic)—Output Input Jacks	1
R-41409a	Printed Circuit Board—Output Power Stage	1
R-41410a	Printed Circuit Board—Power Supply	1
R-41411b	Printed Circuit Board—Amplifier	1
	Fiber Washer 3φ×10φ×1 t	1
R-118002	Bracket—R/P Switch Actuating Slide Arm	1
R-112318a	—Bracket—VU Meter (W/R118003 Bracket)	1
R-37036a	—Button—R/P Changing Switch	1
R-44004	—Cushion (Rubber)—P.L.	1
	—Cushion (Form)—VU Meter	1
R-112350	—Bracket—Power Transformer	1
R-112351	—Bracket—Voltage Changing Switch	1
	—Cushion (Rubber)—4.5×4.5×8 Chassis	2
	Sheet (Fiber)—15×25×0.35 ALC Slide Swith	1
	Sheet (Cloth)—15×5×0.15 ALC Knob	1
	Cushion (Felt)—10×15×15 VU Meter	1
	Mechanism TM-15B	1
R-428003	Cover—Power Cord	1
R-358004	Ring (Plastic)—Power Cord Outlet	1
R-112332	Bracket—Power Cord	1
Electric Parts:		
R-W6262	Output Tsansformer	1
R-W6263	Input Transformer	1
R-R124133	Variable Resistor—10K ohm with AC Switch	1
R-S6317	Speaker 8×16cm	1
R-S5528	VU Meter	1
R-W7084a	Power Transformer	1

Stock No.	Description	Q'ty
Electric Parts:		
R-R124145	Variable Resistor 1.5 K ohm	1
R-W6209a	Choke Coil	1
R-W8107	Oscillating Coil	1
R-R11013	Semifixed Resistor 10 K ohm	1
R-R11012	Semifixed Resistor 5 K ohm	1
R-S6297(1)	Microphone	1
R-S88071	7″ Full Tape Reel (1200 ft)	1
R-31304b	7″ Empty Reel	1
	Splicing Tape	1
R-S4241	Slide Switch—R/P Changing Switch	1
R-S4106	Slide Switch—ALC ON-OFF Switch	1
R-S4286a	Rotary Switch—Voltage Changing Switch	1
R-S1044	Fuse	1
R-S1146b(6)	Neon Lamp	1
R-S3063	Lug (Small)—Printed Circuit Board Earth	1
R-S3008	Lug (Large) Lead Fixer	6
R-23232	Fuse Holder	2
R-28085	Heat Sink—2SB373	2
R-41370	Insulating Sheet (Plastic)—Heat Sink 2SB373	2
R-44223	Insulating Sheet (Rubber)—Heat Sink 2SB373	2
R-39320	Special Washer (Plastic)—Heat Sink 2SB373	4
R-112432	Lug—Lead Fixer	2
R-S2139	Jack—Input Output Terminal MIC. Radio Ext SP	3
R-S1805	Silicon Rectifier SD-1Y } or	2
R-S1234	〃 FR-1P } or	2
R-S1182	Varistor SV-30	1
	Thermistor SDT-04	1
	Diode 1N60 or 1S188	1
	Transistor 2SB346 Tr-1	1
	〃 2SB186A Tr-2	1
	〃 2SB373 Tr-4, Tr-5	2
	〃 2SB22 Tr-6	1
	〃 2SB186 Tr-3	1
R-S3134	Power Cord—for AC	1
R-S8574b	Plug Adaptor—Siemens type 2 pin	1
R-S8575b	Plug Apaptor—England type 2 pin	1
	Power Cord—for AC Three wire	1
R-S1076a	Plug—England type 3 pin	1
	Cushion (Rubber)—Plug	1
R-S1245	Plug—Australia type 3 pin	1
R-S8678b	Patch Cord—(Plug—Clip tope)	1
Resistor:		
R-R7027	Resistor (Winding) 1 ohm ½W ± 5 % R25	1
	Carbon P type 220K ¼W ±10% R1	1
	〃 150K 〃 〃 R41	1
	〃 39K 〃 〃 R11	1
	〃 15K 〃 〃 R6	1
	〃 12K 〃 〃 R19	1
	〃 10K 〃 〃 R13, R20	2
	〃 8.2K 〃 〃 R7	1
	〃 6.8K 〃 〃 R14	1
	〃 5.6K 〃 〃 R8	1
	〃 4.7K 〃 〃 R10	1
	〃 2.7K 〃 〃 R3	1
	〃 2.2K 〃 〃 R15, R17	2
	〃 1.5K 〃 〃 R26	1
	〃 820 〃 〃 R21	1
	〃 820 〃 〃 R43	1
	〃 470 〃 〃 R18, R38	2
	〃 100 〃 〃 R33	1
	〃 33 〃 〃 R22	1
	〃 27 〃 〃 R39	1
	〃 22 〃 〃 R32	1
	〃 39 〃 〃 R24	1
	Carbon P or Solid type	1
	8.2 ½W ±10% R27	1
	Carbon P type 390K ¼W ± 5 % R30	1
	〃 150K 〃 〃 R31	1
	〃 150K 〃 〃 R34	1
	〃 120K 〃 〃 R35	1
	〃 75K 〃 〃 R28, R29	2
	〃 51K 〃 〃 R12	1
	〃 20K 〃 〃 R4	1
	〃 7.5K 〃 〃 R5	1
	〃 270 〃 〃 R9	1
	〃 680 〃 〃 R37	1
	〃 100 〃 〃 R16	1
	〃 10 〃 〃 R36	1
	〃 220ohm 〃 ±10% R44	1
	〃 1.5K 〃 ± 5 % R23	1
	〃 1.5K 〃 ±10% R40	1
	Carbon L type 250 2W ±10% R42	1

PARTS LIST

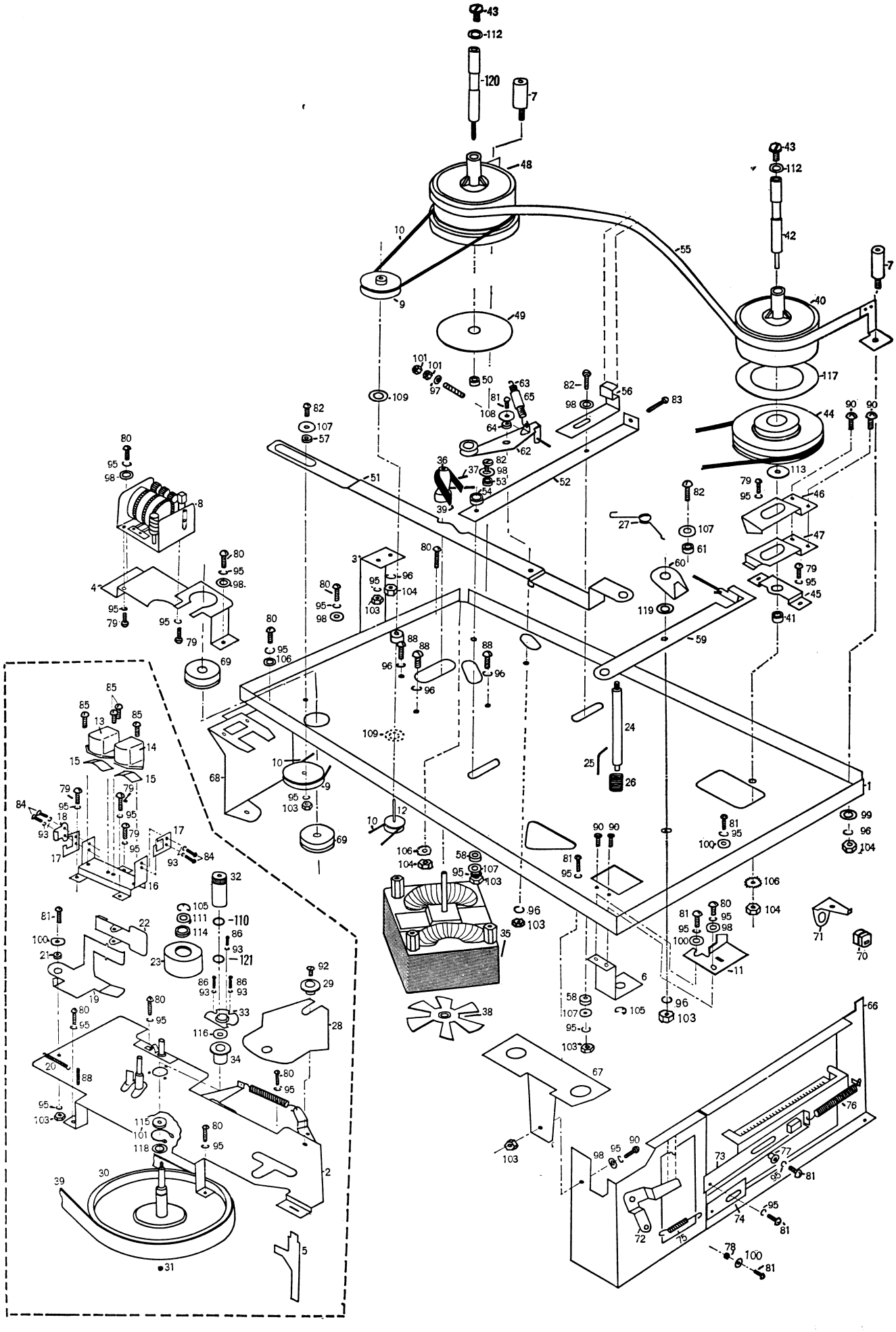
Stock No.	Description				Q'ty
Capacitors:					
	Eletrolytic Capacitor				
R-C9144	〃	500μF	3V	C12, C18	2
R-C9227a	〃	500μF	15WV	C13, C24	2
R-C9145	〃	100μF	10WV	C11	1
R-C9081b	〃	50μF	9WV	C1	1
R-C9134	〃	100μF	3WV	C17	1
R-C9133	〃	30μF	3WV	C3, C4, C10, C28	4
R-C9131	〃	5μF	6WV	C2, C7, C9	3
R-C9115	〃	1μF	10WV	C5, C8	2
R-C9120	〃	0.2μF	10WV	C6	1

Stock No.	Description				Q'ty
	Mylar Squere	0.1μF	±01% or ±20% 35W or 50W		1 C23
	〃	0.005μF	±20% 35W or 50W		2 C14, C15
	Axis	0.003μE	±10% or ±20% 35W or 50W		1 C16
	〃	0.001μE	±10% or ±20% 35W or 50W		1 C26
	〃	500pE	±10% or ±20% 35W or 50W		2 C19, C25
	Squere	0.005μE	±10% or ±20% 35WV or 50WV		1 C21
	〃	0.0015μE	±20% or ±20% 35WV or 50WV		1 C20
	〃	0.1μE	±20% 25WV or 50WV		2 C22, C29
	Ceramic Disk	40pE	±10% 250V or 500V		1 C27

LLUSTRATION FOR MECHANICAL PARTS

Key No.	Parts No.	Description	Q'ty
1	R-112408d	Motor Board	1
2	R-112398a	Base plate Assy., Capstan & Head	1
3	R-112401b	Leg, Motor Board	1
4	R-112397b	Backet, Tape Counter & N.L.	1
5	R-112403a	Lever, Record Interlock	1
6	R-112164	Bracket, Control Lever	1
7	R-14110b	Stud, Top Panel Mounting	2
8	R-S5526	Tape Counter	1
9	R-27038a	Pully, Counter Drive	2
10	R-44243a	Belt, Counter Drive	2
11	R-112405a	Guide, Record Interlock Lever	1
12	R-S81242	Pulley, & Shaft, Counter Drive	1
13	R-S6349	Head, Erase	1
14	R-S6332	Head, Record/Play	1
15	R-25187	Spring, Head Adjustment	2
16	R-118054	Bracket, Head Mounting	1
17	R-125015	Tape Guide	2
18	R-138002	Tape Guide	1
19	R-112406b	Arm, Pressure Pad	1
20	R-12235a	Spring, Pressure Pad Arm	1
21	R-24697	Spacer, Pressure Pad Arm	1
22	R-29012	Pressure Pad	1
23	R-S8681	Pinch Roller	1
24	R-14167	Control Lever	1
25	R-14115	Pir, Control Lever	1
26	R-15178	Spring, Control Lever	1
27	R-15180	Spring, Control Lever Detent	1
28	R-12282	Cover, Control Lever	1
29	R-24682	Guide, Control Lever Cover	1
30	R-S8812a	Flywheel	1
31		Ball, Flywheel	1
32	R-S8842b	Sleeve, Capstan	1
33	R-112505	Holder, Capstan Bearing	1
34	R-22036	Bearing, Flywheel	1
35	R-S5106a	Motor	1
36	R-24722b, R-24723b, R-24724b	Motor pully for 60 cycle	1
	R-24725b, R-24726b, R-24727b	Motor pulley for 50 cycle	1
		*Either one of them is available.	
37	R-448004	Belt, Take Up Reel Drive	1
38	R-261063a	Fan, Motor Cooling	1
39	R-44207	Belt, Flywheel Drive	1
40	R-34072b	Spindle, Take Up	1
41	R-24667a	Spacer, Take up Spindle Shaft	1
42	R-14105a	Shaft, Take Up Spindle	1
43	R-24865	Screw, Spindle Retaining	2
44	R-34168a	Pulley, Take up Spindle	1
45	R-118046	Stopper, Take up Spindle Pressure	1
46	R-258005	Spring, Record/Play Pressure	1
47	R-258004	Spring, Fast Forward Pressure	1
48	R-34127b	Spindle Assy., Supply	1
49	R-112404	Plate, Supply Spindle	1
50	R-241031	Spacer, Supply Shaft	1
51	R-112417a	Lever, Brake Actuating	1
52	R-111803b	Slide Arm, Brake Actuating	1
53	R-24686	Sleeve, Brake Actuating Slide Arm	1
54	R-24666	Roller, Brake Actuating Lever	1
55	R-13072	Brake	1
56	R-111960a	Brake, Retaining Adjustment	1
57	R-24697	Spacer, Brake Actuating Lever	1
58	R-24671a	Spacer, Brake Actuating Slide	1
59	R-118047	Lever, Take up Torque Control	1
60	R-111937	Arm, Control Lever Detent	1

Key No.	Parts No.	Description	Q'ty
61	R-24672a	Spacer, Control Lever Detent Arm	1
62	R-11801a	Roller Arm, Rewind	1
63	R-15177	Spring, Rewind Rollar Arm	1
64	R-24670	Spacer, Rewind Roller Arm	1
65		Tube, Rewind Roller Arm Spring	1
66	R-112317a	Bracket, Amplifier Chassis	1
67	R-112321b	Bracket, Controls	1
68	R-112318d	Bracket, VU Switch, Recording Level Meter & T-2	1
69	R-44004	Cushion, N.L. Rubber	2
70	R-358004	Bushing AC Cord	1
71	R-112332	Bracket, AC Cord	1
72	R-112319	Lever, Record/Play Actuating	1
73	R-112320a	Slide Arm, Record/Play Switch Actuating	1
74	R-118002	Bracket, Record/Play Switch Actuating Slide Arm	1
75	R-12256a	Spring, Record/Play Actuating Lever	1
76	R-12178a	Spring, Record/Play Switch Actuating	1
77	R-24730	Spacer, Record/Play Switch Slide Plate	1
78	R-24921	Spacer, Record/Play Switch Slide Plate	1
79		Screw, 3× 4mm, Round Hd.	7
80		Screw, 3× 6mm, Round Hd.	10
81		Screw, 3× 8mm, Round Hd.	8
82		Screw, 3×10mm, Round Hd.	4
83		Screw, 3×20mm, Round Hd.	4
84		Screw, 2× 4mm, Round Hd.	4
85		Screw, 2× 6mm, Round He.	4
86		Screw, 2×12mm, Round Hd.	3
87		Screw, 2×16mm, Round Hd.	1
88		Screw, 3×12mm, Round Hd.	1
89		Screw, 4× 8mm, Round Hd.	1
90		Selt-tapping Screw, 3×6mm, Binding Hd.	2
91		Self-tapping Screw, 3×6mm, Pan Hd.	2
92		Screw, 3×4mm, Flat Hd.	1
93		Spring Washer, 2mm	12
94		Nylon Washer, 4.4×6.7×0.6 mm	27
95		Spring Washer, 3mm	5
96		Spring Washer, 4mm	1
97		Metal S-washer, 2mm	5
98		Metal S-washer, 3mm	1
199		Metal S-washer, 4mm	1
100		Metal N-washer, 3mm	1
101		External "C" ring	1
102		Nut, 2mm	2
103		Nut, 3mm	5
104		Nut, 4mm	4
105		External "E" ring, 3mm	2
106		External Star Washer, 3mm	2
107		Metal Washer, 3.3×10×1mm	4
108		Metal Washer, 3.3×16×1mm	1
109		Nylon Washer, 3×6×0.5mm	2
110		Nylon Washer, 4×8×0.5mm	1
111		Nylon Washer, 4.5×8×0.5mm	1
112		Nylon Washer, 5×7.3×0.3mm	2
113		Nylon Washer, 5.2×11.5×0.5mm	1
114		Felt Washer, 4.5×10×2mm	1
115		Felt Wafher, 9×13×7mm	1
116		Felt Washer, 6×10×2mm	1
117		Felt Washer, 34×46×2mm	1
118		Nylon Washer, 6.2×12×0.5mm	1
119		Fibre Washer, 6.2×14×0.5mm	1
120		Shaft, Supply Spindle	1
121	R-14106a	Rubber Washer, 4×8×1mm	1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