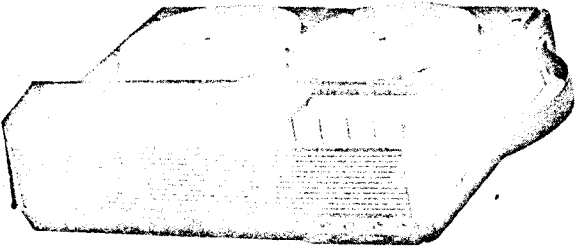


HITACHI TAPE RECORDER

MODEL TRQ-520

SERVICE MANUAL



No. 119 1966

SPECIFICATIONS

TRANSISTOR COMPONENT	AUDIO OUTPUT	1W (Maximum)
2SB73, 2SB75, 2SB77×2, 2SB156A×2	FREQUENCY RANGE	
DIODE & VARISTOR	3¾"/sec	150~8,000 c/s
1N34A, 1S310×4, HV16, HV15	1⅞"/sec	150~4,000 c/s
TAPE SPEED	INPUT IMPEDANCE.	Approx. 2KΩ at MIC terminal
3¾"/sec, 1⅞"/sec (9.5cm/sec, 4.75cm/sec)	Approx. 200KΩ at LINE terminal	
TAPE REEL	OUTPUT IMPEDANCE	10Ω
.5" reel	REWINDING TIME	Within 3 min. (5" reel, 50μ tape)
RECORDING TIME	FAST-FORWARDING TIME	Within 6 min. (5" reel, 50μ tape)
3¾"/sec, 2 tracks.	
1⅞"/sec, 2 tracks.	MICROPHONE.	Dynamic, with remote ON/OFF switch
RECORDING SYSTEM.	OPERATING SYSTEM.	All push button
AC bias	DIMENSIONS11⅝" (W), 3¾" (H), 9⅜" (D)
ERASING SYSTEM	(30×9×25cm)	
DC erasing	WEIGHT.	8.4 lbs (3.8kg)
TRACK SYSTEM		
monaural dual-track		
POWER SOURCE		
DC 9V ("D" cell×6)		
AC 100V, 115V, 200, 230V (50~60 c/s)		
MOTOR		
DC Micro Motor with Governor		
POWER CONSUMPTION		
DC 1.8W, AC 3.6W		
SPEAKER		
4"×2¾" (10×7cm) PM		

ACCESSORIES

DYNAMIC MICROPHONE	EXTENSION CORD
5" RECORDING TAPE	SPLICING TAPE
5" REEL	MAGNETIC EARPHONE
POWER SOURCE CORD	CELL (UM-1H)×6

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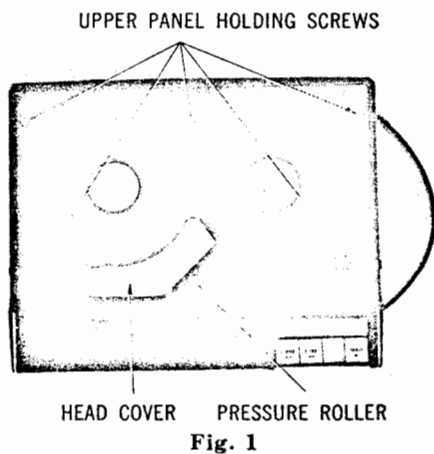
DESCRIPTION

1. The recorder operates on DC and AC (AC adaptor built-in.)
2. "Push button" system renders its operation simple and easy with one hand.
3. LEVELMATIC device, which controls recording level automatically, is provided.
4. Front speaker system provides large audio output (1 W) and beautiful, rich sound.
5. Tape counter is provided.
6. You can carry the recorder with the microphone and 5-inch tape enclosed.
7. Monitoring is possible through the speaker.
8. Mixing is possible.

SERVICE POINTS

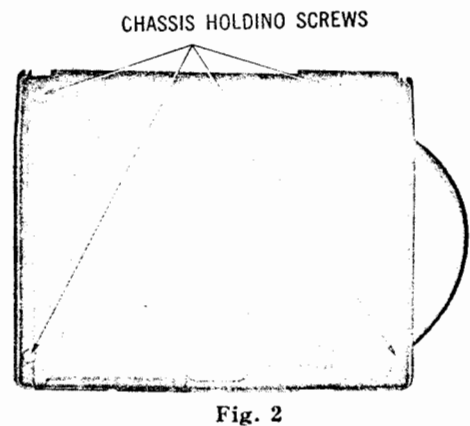
1. How to remove the upper panel

Remove the head cover and pressure roller. Loosen the five screws shown in Fig. 1, and the upper panel is ready to be taken off for inspecting or lubricating the mechanical parts.



2. How to draw out the chassis

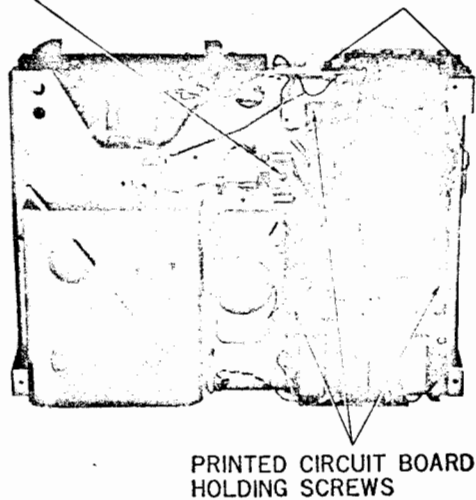
After removing the battery cover, loosen the four screws shown in Fig. 2, and the chassis can be drawn out to inspecting the amplifier part.



3. How to remove the printed circuit board

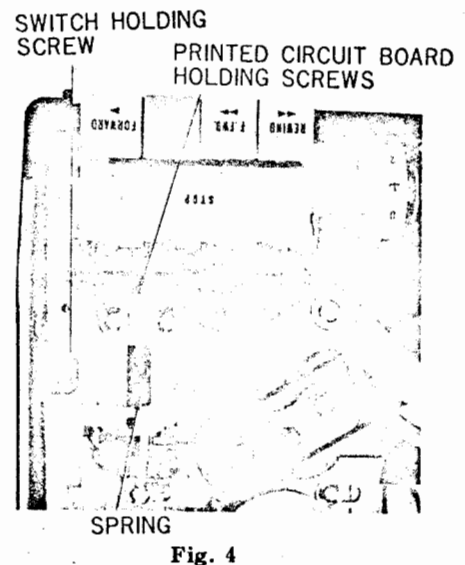
Take off the three circuit board holding screws shown in Fig. 3, the radiated board holding screw, the circuit board holding screw shown in Fig. 4, the switch holding screw and

RADIATION PLATE HOLDING SCREW
JACK PLATE HOLDING SCREWS



the spring.

Take off the two jack board holding screws and raise jack side, and you check the pattern of the printed circuit board.



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4. How to change tape speed

To use the recorder at 9.5cm/s, leave the capstan collar attached.

To use the recorder at 4.75cm/s, remove the capstan collar by turning it clockwise and screw onto the capstan collar holder.

5. How to lubricate the recorder

Each mechanism of the set should be properly lubricated (2 or 3 drops) in reference to Fig. 5. Take care not to apply oil to the part of capstan touching on tape.

P: Launa oil G: Grease

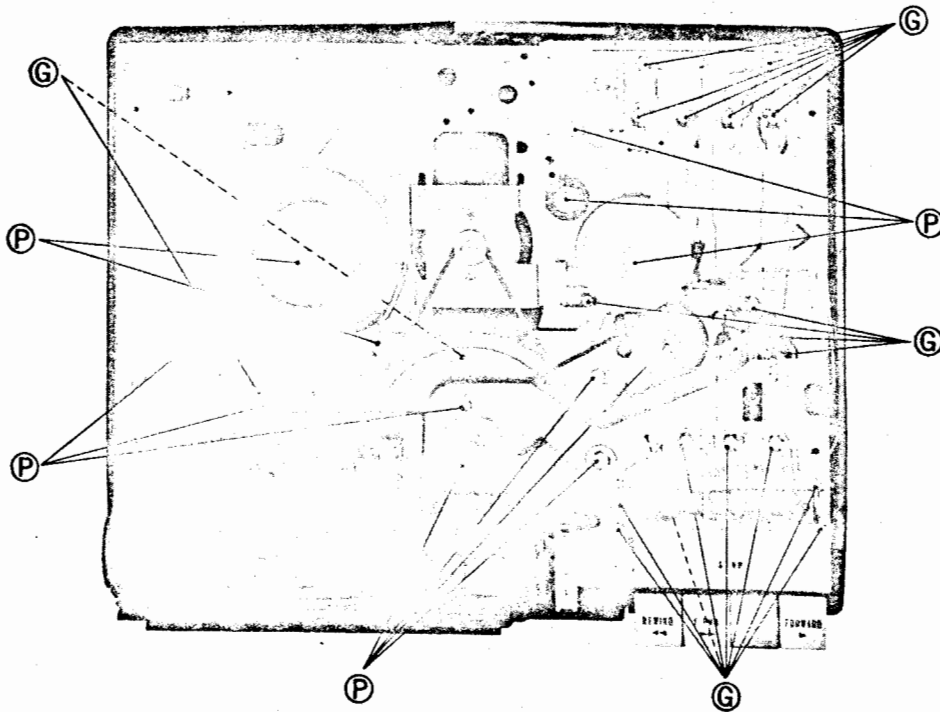


Fig. 5

CONTROLS AND JACKS

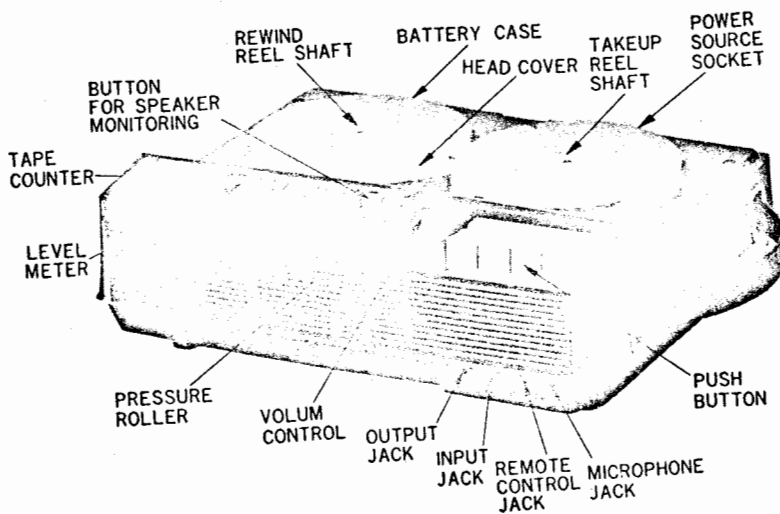
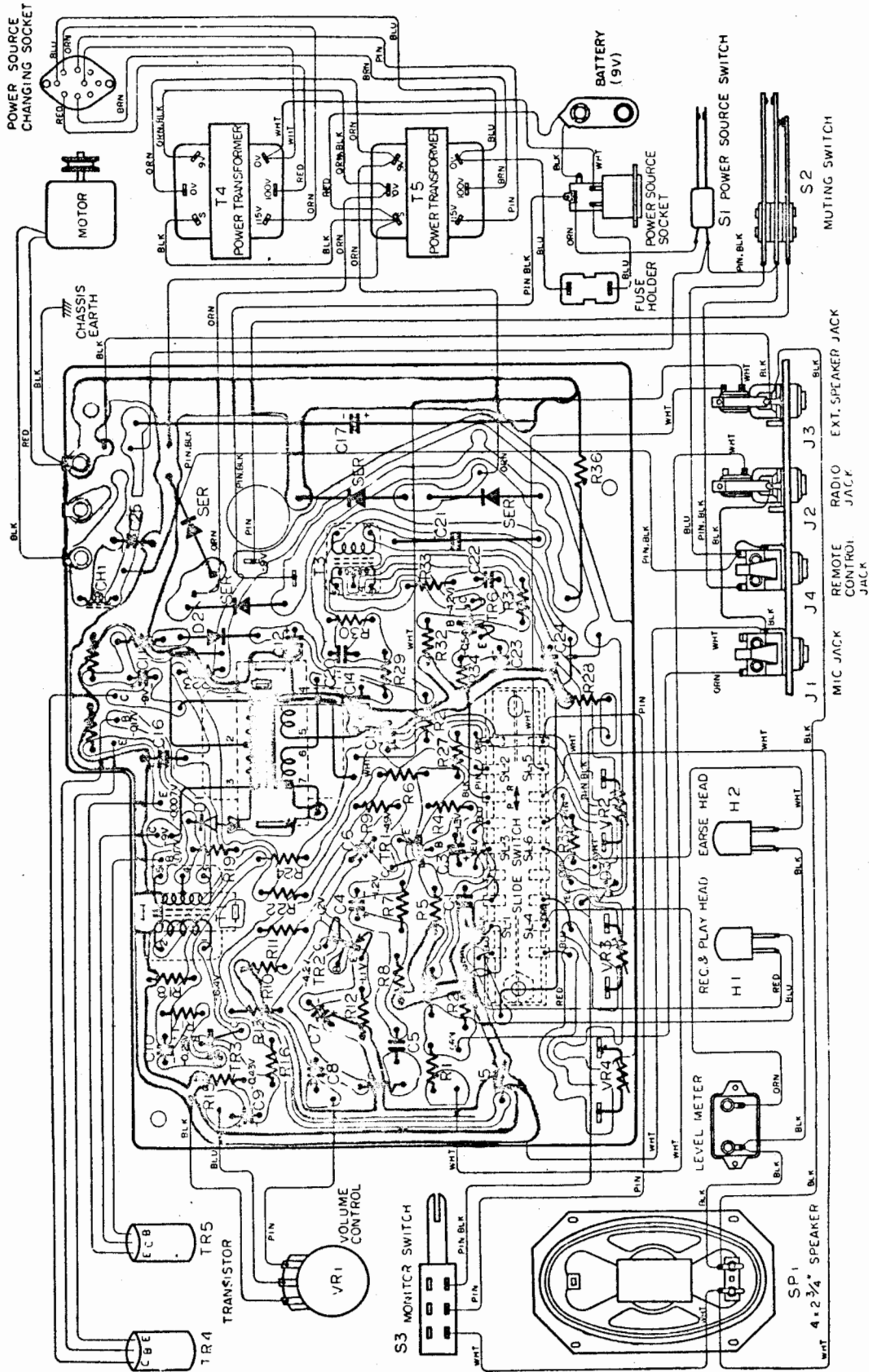


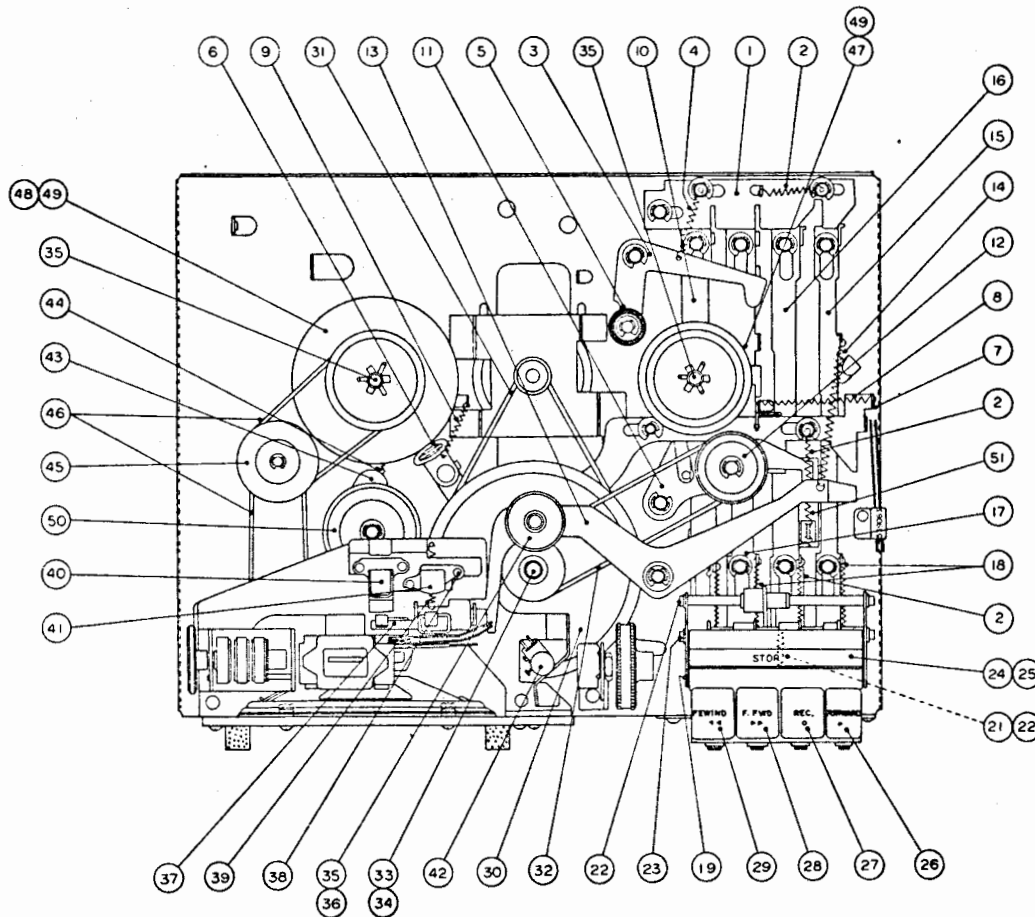
Fig. 6

CIRCUIT BOARD DIAGRAM



MODEL TRQ-520 SERVICE MANUAL

MECHANICAL PARTSVIEW



REPLACEMENT PARTS

SYMBOL NO.	STOCK NO.	DESCRIPTION			
CAPACITORS:					
C 1	275111	Mylar	0.01 μ F \pm 20%	50WV	
C 3	252221	Electrolytic	10 μ F	6WV	
C 4	252123	Electrolytic	30 μ F	3WV	
C 5	275014	Mylar	0.033 μ F \pm 10%	50WV	
C 6	252221	Electrolytic	10 μ F	6WV	
C 7	252123	Electrolytic	30 μ F	3WV	
C 8	252223	Electrolytic	30 μ F	6WV	
C 9	252223	Electrolytic	30 μ F	6WV	
C10	252123	Electrolytic	30 μ F	3WV	
C11	252313	Electrolytic	3 μ F	10WV	
C12	252221	Electrolytic	10 μ F	6WV	
C13	252223	Electrolytic	30 μ F	6WV	
C14	275113	Mylar	0.022 μ F \pm 20%	50WV	
C15	252331	Electrolytic	100 μ F	10WV	
C16	252332	Electrolytic	200 μ F	10WV	
C17	259652	Electrolytic	1000 μ F	15WV	
C20	274011	Mylar	0.001 μ F \pm 10%	50WV	
C21	214091	Paper	0.001 μ F \pm 10%	400WV	
C22	275111	Mylar	0.01 μ F \pm 20%	50WV	
C23	252123	Electrolytic	30 μ F	3WV	
C24	252323	Electrolytic	30 μ F	10WV	
C25	252325	Electrolytic	50 μ F	10WV	
RESISTORS:					
R 1	122537	Carbon film	220k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 2	122370	Carbon film	2.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 3	122300	Carbon film	470 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 4	122455	Carbon film	39k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 5	122456	Carbon film	18k Ω \pm 10%	RD $\frac{1}{2}$ L	

SYMBOL NO.	STOCK NO.	DESCRIPTION			
R 6	122458	Carbon film	68k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 7	122375	Carbon film	8.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 8	122302	Carbon film	120 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 9	122460	Carbon film	12k Ω \pm 10%	RD $\frac{1}{2}$ L	
R10	122456	Carbon film	18k Ω \pm 10%	RD $\frac{1}{2}$ L	
R11	122457	Carbon film	56k Ω \pm 10%	RD $\frac{1}{2}$ L	
R12	122378	Carbon film	3.3k Ω \pm 10%	RD $\frac{1}{2}$ L	
R13	122373	Carbon film	5.6k Ω \pm 10%	RD $\frac{1}{2}$ L	
R14	122441	Carbon film	10k Ω \pm 10%	RD $\frac{1}{2}$ L	
R15	122374	Carbon film	6.8k Ω \pm 10%	RD $\frac{1}{2}$ L	
R16	122457	Carbon film	56k Ω \pm 10%	RD $\frac{1}{2}$ L	
R17	122222	Carbon film	47 Ω \pm 10%	RD $\frac{1}{2}$ L	
R18	122218	Carbon film	22 Ω \pm 10%	RD $\frac{1}{2}$ L	
R19	122370	Carbon film	2.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R20	122370	Carbon film	2.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 21	122206	Carbon film	2.2 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 22	122370	Carbon film	2.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 23	122292	Carbon film	150 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 24	122369	Carbon film	1.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 25	122376	Carbon film	1.8k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 26	122369	Carbon film	1.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 27	122370	Carbon film	2.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 28	122215	Carbon film	10 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 29	122375	Carbon film	8.2k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 30	122467	Carbon film	82k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 31	122457	Carbon film	56k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 32	122372	Carbon film	4.7k Ω \pm 10%	RD $\frac{1}{2}$ L	
R 33	122302	Carbon film	120 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 34	122218	Carbon film	22 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 35	122296	Carbon film	820 Ω \pm 10%	RD $\frac{1}{2}$ L	
R 36	126206	Carbon film	68 Ω \pm 10%	RD $\frac{1}{2}$ L	

(Continued on Page 7)

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REPLACEMENT PARTS

(Continued from Page 6)

SYMBOL NO.	STOCK NO.	DESCRIPTION		
VR1	152005	Variable, carbon	10kΩ(A)	Volume
VR2	159016	Semi variable, carbon	500Ω (B)	
VR3	159017	Semi variable, carbon	1kΩ (B)	
VR4	159023	Semi variable, carbon	100kΩ(B)	
TRANSISTORS:				
TR1	573001		2SB73(A)	
TR2	573117		2SB75(B)	
TR3	573119		2SB77(C)	
TR4	573029		2SB77(A) P	
TR5				
TR6	573103		2SB77(A)	
D1	576005	Varistor,	HV16	
D2	575001	Diode-Germanum	1N34A	
D3	576001	Varistor	HV15	
SER	552010	Rectifier-Sillicon	1S10	
TRANSFORMERS:				
T1	441086	Input		
T2	451081	Output		
T3	316526	Oscillator		
T4	411237	Power		
T5	411237	Power		
CHI	333117	Coil-Choke		
MISCELLANEOUS:				
for Chassis assembly				
1	940585	Plate—Lock plate		
2	948212	Spring—Play lock plate spring		
3	940559	Lever—Fast forward lever assembly		
4	948552	Spring—Fast forward roller spring		
5	971089	Roller—Fast forward roller		
6	971048	Rubber—Brake rubber		
7	948686	Plate—Stopper plate assembly		
8	948461	Spring—Stopper spring		
9	948202	Spring—Supply reel brake spring		
10	941285	Bar—Rewind bar assembly		
11	944642 (941506)	Plate—Play lock plate assembly		
12	948652 (615171)	Rubber—Play roller rubber assembly		
13	941446 (941537)	Arm—Pressure roller arm assembly		
14	948414	Spring—Pressure roller spring		
15	941287	Bar—Playing bar		
16	941288	Bar—Recording bar		
17	941289	Bar—Fast forward bar		
18	948206	Spring—Function spring		
19	940234	Case—Pushbutton case		
20	940760	Stopper		
21	948454	Spring—Stopper spring		
22	944200	Shaft—Pushbutton shaft		
23	944201	Shaft—Pushbutton shaft		
24	968319	Button—Stop button		
25	968186	Button—Stop button assembly		
26	968178	Button—Play pushbutton assembly		
27	968183	Button—Record pushbutton assembly		
28	968184	Button—Fast forward pushbutton assembly		
29	968185	Button—Rewind pushbutton assembly		
30	970061	Flywheel—Capstan drive flywheel assembly		
31	971123	Belt—2mmφ rubber belt (Put the rubber belt on the pulley and flywheel)		
	948275	Boal—(Part of flywheel shaft)		
32	971156	Belt—Rubber belt (Flywheel-motor)		
33	944165	Capstan		
34	944214	Screw—Capstan top screw (1 req'd)		
35	637688	Screw—Capstan screw, for pressure roller and reel shaft (3 req'd)		
36	639127 (971104) 958380	Roller—Pressure roller Cushion—Level meter cushion assembly (for sub chassis)		

SYMBOL NO.	STOCK NO.	DESCRIPTION
	941221	Holder—Transformer holder assembly
37	958381	Pad assembly
38	948102	Spring—Head adjust spring
39	948241	Spring—Pad spring (1 req'd)
40	513276	Head—Erase head
41	513246	Head—Record playback head
	526136	Speaker—4" x 2 3/4" P.M. speaker 8ohms
	958339	Counter—Tape counter
	599668	Snap—Battery cord snap
	515006	Indicator—Level indicator
42	533097	Switch—Push switch (S3)
43	941514	Plate—Rewind idler lock plate assembly
44	948442	Spring—Rewind idler spring
	940853	Arm—Rewind arm (1)
	940854	Arm—Rewind arm (2)
45	948300	Pulley—Counter drive pulley
46	948343	Belt—Counter drive belt (rubber)
47	948172	Stand—Take up reel stand assembly
48	948173	Stand—Supply reel stand assembly
49	944580	Shaft—Reel shaft
	543082	Jack—Output jack (J2), line jack (J3)
	543112	Jack—Microphone jack (J1)
	543113	Jack—Remote control jack (J4)
50	971157	Roller—Rewind roller assembly
	958222	Knob—Volume knob assembly
	948281	Holder—Switch holeer
51	948150	Spring—Slide switch spring
	940558	Case—Battery holder case
	944643	Metal—Flywheel metal
	944114	Nut—Flywheel metal nut
	514040	Motor—Micromotor "191S" assembly
S2	539090	Switch—bar switch
F1	591045	Fuse (0.5A)
	948314	Spring—Slide switch spring
S1	539063	Switch—Governor switch
	948473	Washer—Playing washer
	948474	Washer—Playing washer
	948114	Washer—Fiber washer
	941428	Washer—Fiber washer
	637120	Washer—Fiber washer
	944281	Screw—Iron screw for tape counter
	944280	Screw—Iron screw for bar switch
	638399	"E" ring—4 mmφ (2 req'd)
	941258	"E" ring—3 mmφ (7 req'd)
	941259	"E" ring—4 mmφ (25 req'd)
	941260	"E" ring—7 mmφ (2 req'd)
	612675	for case assembly
	641941	Case assembly
	641937	Reel—Empty reel assembly
	641937	Reel assembly
	641937	for Printed circuit board assembly
SL1~	532115	Switch—Slide switch
SL6	941215	Plate—Radiation plate
	544449	Terminal for printed circuit board
	592052	for Final assembly
	596091	Earphone—Magnetic earphone (EL-216)
	593464	Microphone—Dynamic (NDM-09)
	612683	Cord—AC power cord and plug
	971046	Cover—Case cover assembly
	968303	Leg—Case leg, rubber (4 req'd)
	612688	Cover—Voltage changing plug cover
	612685	Cover—Microphone case cover assembly
	968305	Cover—Battery case cover assembly
	3114	Cover—Head cover
	958196	Cord—Extension cord
J7	541335	Case—Battery case assembly
	948409	Socket—2P AC socket (J7)
	612874	Handle—Case carrying handle
		Grill—Speaker grill

Stock No. in each parenthesis shows the alteration parts after series No. 26008976.