SANYO

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Compact Cassette Recorder

MODEL M-148

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

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

SPECIFICATIONS

Transistors.....2SB303×1 2SB186×2
2SB22×3 2SA202×1
Thermistors .....SDT09×1
Recording system.....Double track, AC bias (38 KHz)
200 to 400 μA
Erasing system.....DC erase
Tape speed.....1⅞″(4.75cm)/sec.
Recording time .....30 minutes with single track (C-60)
60 minutes with double track (C-60)
Rewinding time .....less than 2 minutes
Fast forward time .....less than 4 minutes
Power output .....maximum power output
more than 500 mW
at 10% distortion more than 300 mW

Speaker.....2⅝″(66mm) impedance 8 ohm
Recording tape .....300 feet (90m).....length
Wow and flutter .....better than 0.5% RMS
Signal to Noise ratio .....better than -35 db
Frequency response .....150 Hz to 6,000 Hz within 6 db band
Operating temperature.....0°C~40°C
Batteries .....UM-2×4 pcs. (C size cell×4)
Dimensions .....2⅜″(L)×4¾″(W)×9½″(H)
(60×120×240mm)
Net weight .....2.9 lbs. (1.3 Kg)

ADJUSTMENTS

(A) Adjusting Recording Bias

The following adjustments should be made after changing a recording/playback head, an erasing head or the volume control variable resistor (VR-2).

1. Supply DC 6V to the unit and set it for recording condition.
2. Connect both terminals of a vacuum tube volt meter (VTVM) with R4 (10 ohm) resistor in parallel as shown below. (See fig. 1)

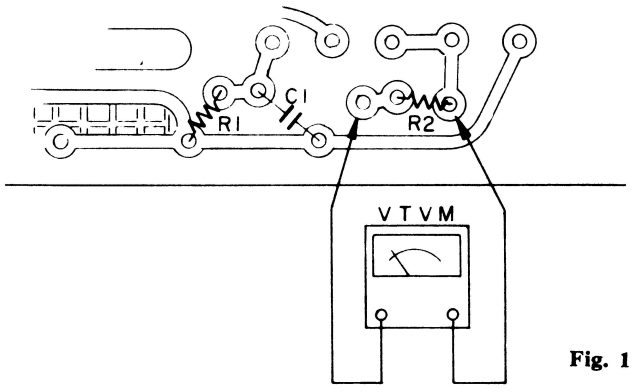
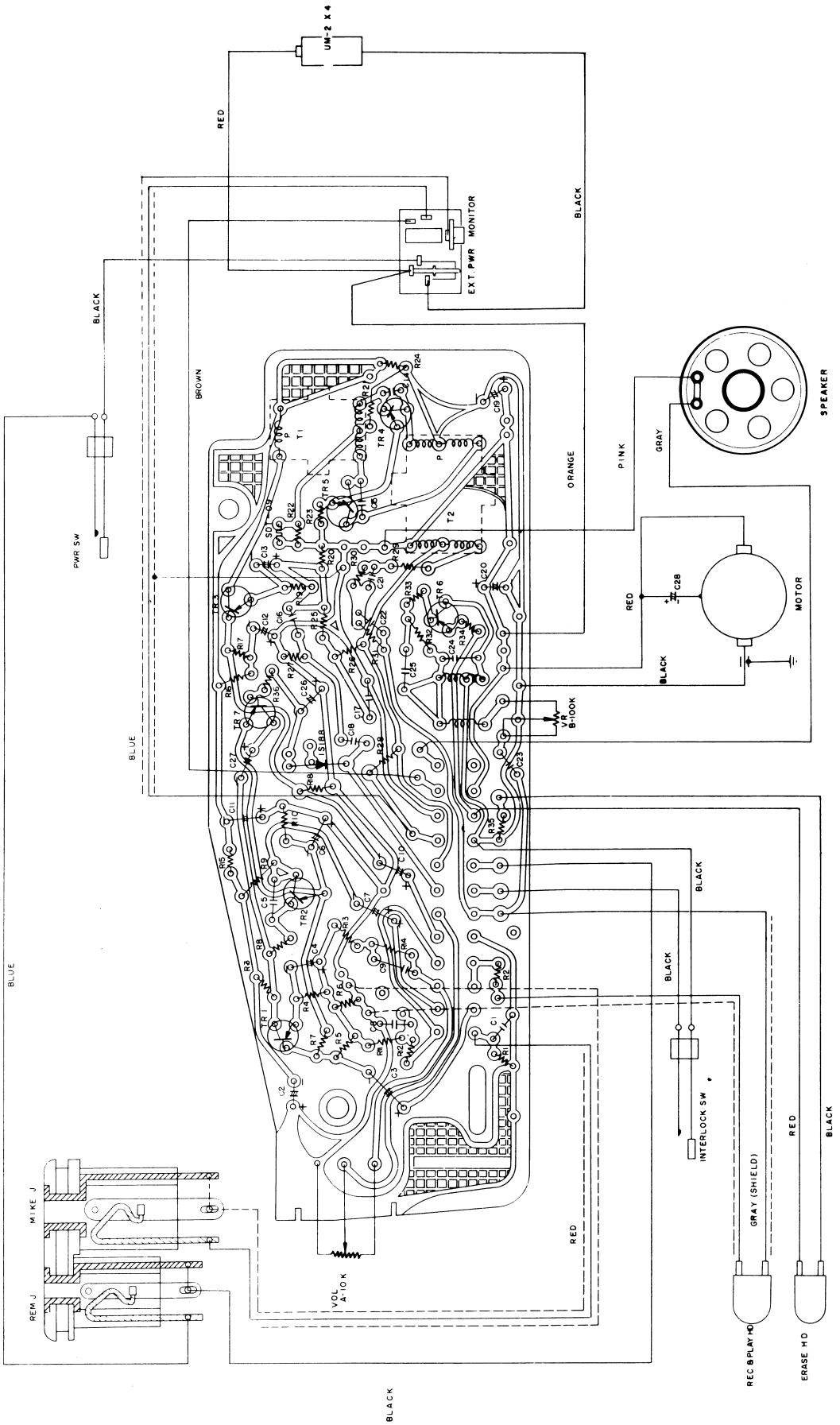


Fig. 1

3. Then insert the cassette and set the volume knob VR-1 (A-10K ohm) to center.
4. Connect an audio generator to the microphone terminal and record two electric signals (600 Hz and 6,000 Hz) at 90 db input.
5. Connect an 8 ohm load resistor with the earphone terminal. Then play-back the signal recorded. Turn the volume knob VR 2(B-100k ohm) clockwise when the play-back signal of 600 Hz is stronger than that of 6,000 Hz. When the former signal output power is weaker than the latter, turn it counter-clockwise. Repeat above adjustment so that the signal out-put power at 600 Hz is same to at 6,000 Hz.
6. Follow the steps from 1 to 5 when changing an erasing head or an RP head. When changing the VR-2, take the steps from 3 to 5.

CIRCUIT BOARD DIAGRAM



(B) Adjusting the Mechanism

1. Position of Pinch Roller

The space between the pinch roller stopper and pinch roller arm must be 0.7-1.2mm when the PLAY button is pressed down. If not, adjust the angle of the pinch roller stopper by bending it. (See fig. 2)

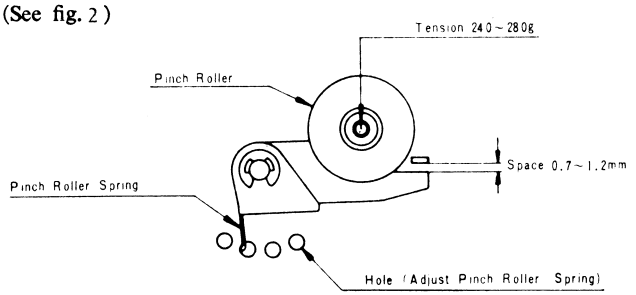


Fig. 2

2. Pressing Force of Pinch Roller

When measuring the pressure of the pinch roller as shown in figure 2. the pressure of the pinch roller should be between 240 and 280 grams. If not, adjustment is possible by resetting the pinch roller spring into another hole.

3. Adjustment of the Flywheel Support Plate

When the space between the fiywheel hub and the receptacle on the support plate is either too narrow or too wide, adjust it to 0.15~0.3 mm by turning the screws on the side of the plate (See fig. 3)

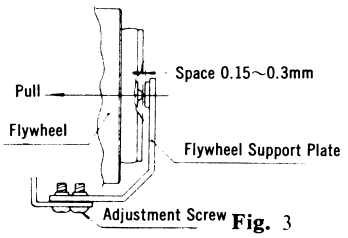


Fig. 3

4. Adjustment of the Take-up Torque

This adjustment should be done only after edging for at least 30 minutes. Before adjusting, insert a Cassette and press the PLAY button. When the adjustment is completed, the take-up torque should be 30-55 gr. and the space between the nylon washer and the upper part of the reel plate should be 0.2-0.4 mm.
Since these two measurements are governed by the same spring, they must be done simultaneously.

First adjust the take-up torque adjustment screw, which pushes up the spring under the reel plate, for the proper torque. Then adjust the take-up torque off screw, which depresses the other end of the spring, until the proper washer-reel plete spacing is achieved. Then adjust once again for torque, and so forth. This adjustment will usually have to be ropeated several times for the proper balance. When the adjustments are completed, secure the nuts with glue.

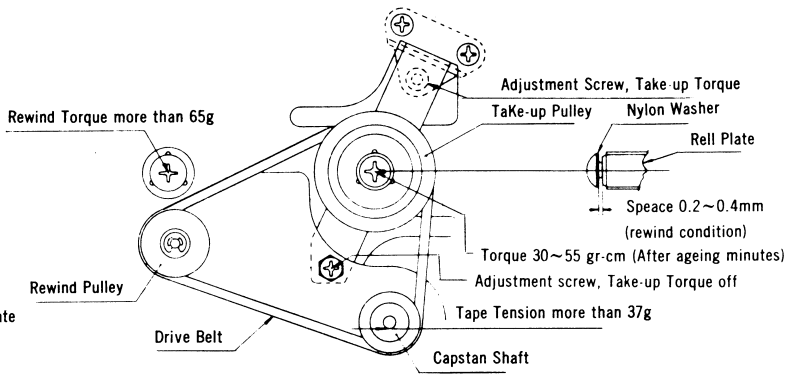


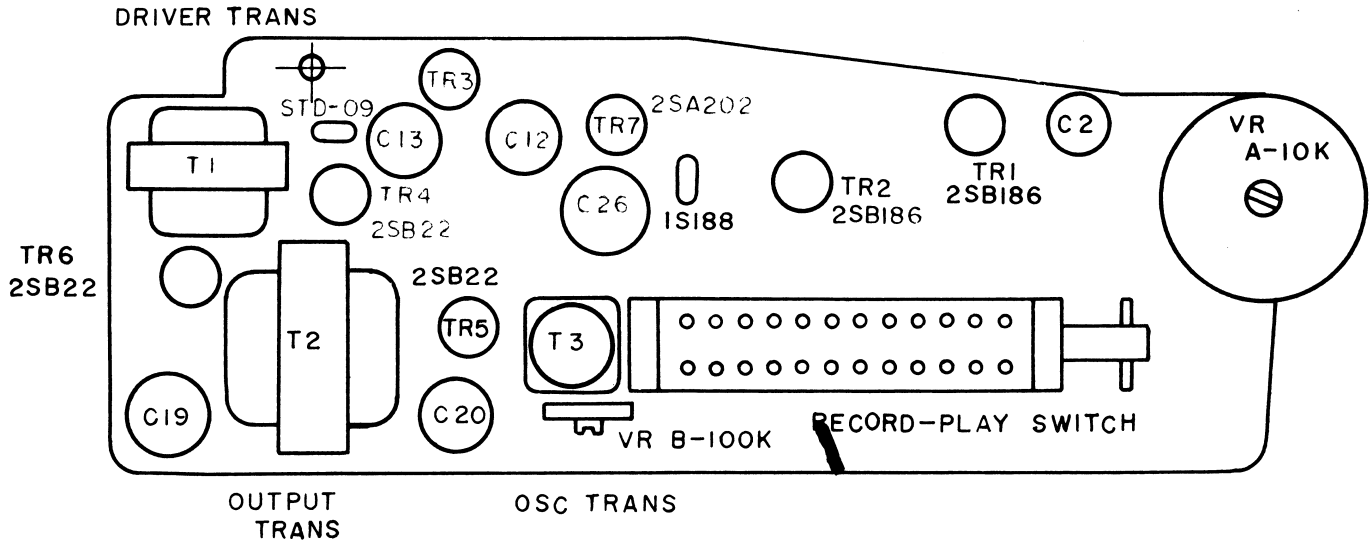
Fig. 4

PARTS LIST

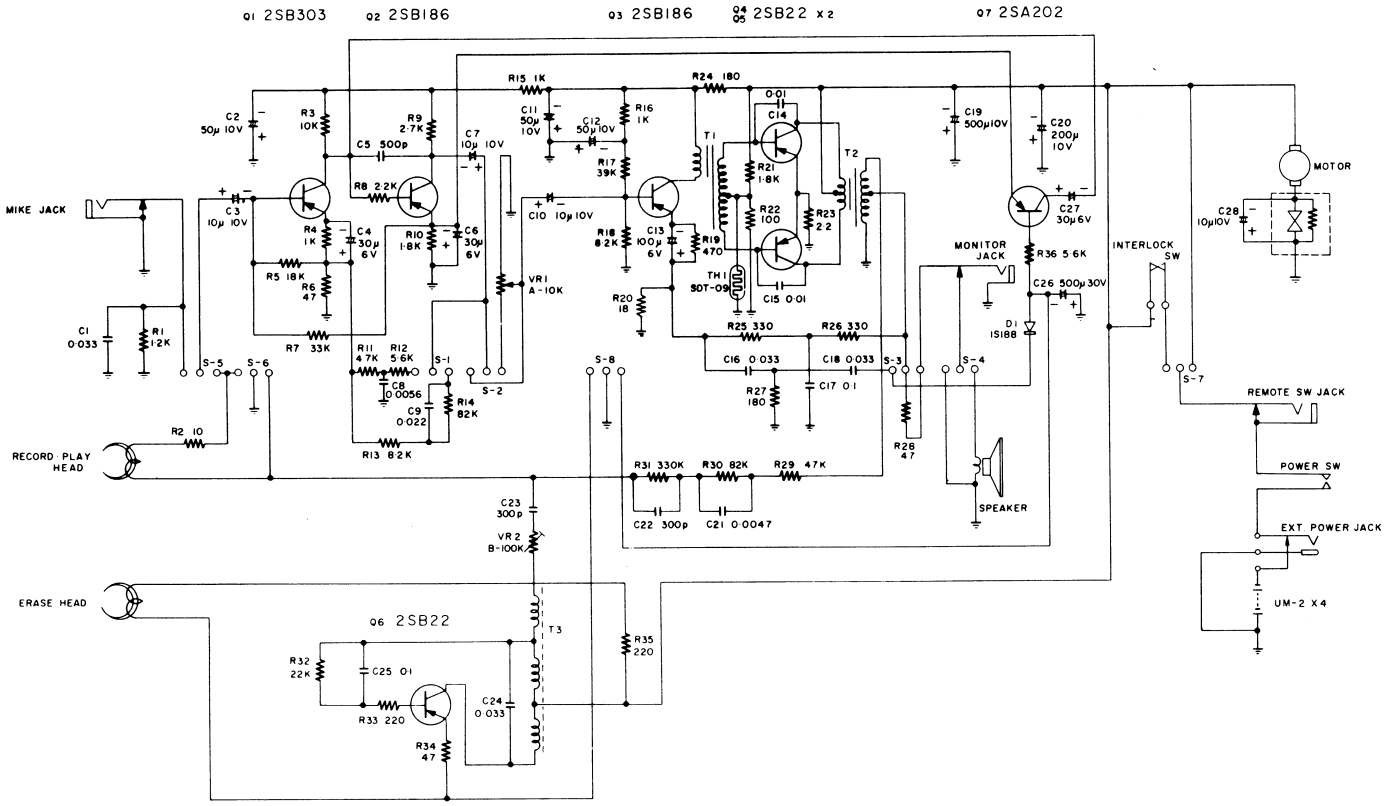
KEY NO.	PARTS NO.	DESCRIPTION	Q'ty
1	141 0 3119 003 00	CHASSIS ASSY	1
2	141 2 8419 009 00	SPACER RECORD BUTTON STOPPER	1
3	141 2 8419 008 00	STOPPER RECORD BUTTON	1
4			
5			
6	141 2 8419 001 00	LEVER RECORD PLAY SW	1
7	4 2319 700 40	SW RECORD INTERLOCK	1
8	141 0 7319 005 00	BASE ASSY SLIDE	1
9	141 2 8519 046 00	SPRING SLIDE BASE	1
10	141 2 8519 030 00	SPRING PINCH ROLLER	1
11	141 2 8519 026 00	SPRING RECORD PLAY HEAD	1
12	141 0 5219 002 00	CAPSTAN ASSY	1
13	4 2429 700 60	HEAD RECORD PLAY	1
14	4 2429 701 20	HEAD ERASE	1
15	141 2 4729 001 00	LUG	1
16	141 2 8529 006 00	LEAF SPRING RECORD BUTTON	1
17	141 2 4569 009 00	WASHER RECORD BUTTON	1
18	141 2 5349 001 00	SPINDLE REEL	1
19	141 2 5349 002 00	SPINDLE REEL	1
20	141 2 8515 028 00	SPRING REEL PLATE	1
21	141 2 4579 003 00	WASHER REEL SPINDLE	2
22	141 0 5519 004 00	TAKE UP PULLEY ASSY	1
23	141 2 5319 005 00	REEL PLATE SUPPLY	1
24	141 0 5319 002 00	REEL PLATE ASSY	1
25		SPRING WASHER 2.3mm	2
26	141 2 4539 003 00	NYLON WASHER	2
27		SCREW 2.6mm×4mm	2
28			
29	141 2 5719 010 00	BUSH SPINDLE	1
30	141 2 5429 003 00	SPINDLE PINCH ROLLER	1
31	141 2 5419 002 00	PINCH ROLLER	1
32		WASHER PLASTIC 4mm×1.7mm	1
33	4 1519 700 30	SPEAKER	1
34	141 2 4459 020 00	CUSHION SPEAKER	1
35	141 2 3519 015 00	BRACKET CASSETTE HOLD	1

KEY NO.	PARTS NO.	DESCRIPTION	Q'ty
36	141 2 3679 025 00	BRACKET 2P JACK	1
37	4 2359 702 50	JACK EXT POWER EARPHONE	1
38	141 2 8519 027 00	SPRING CASSETTE HOLD	1
39	141 2 5629 002 00	BELT ROUND	1
40	141 2 8219 004 00	GUIDE BELT	1
41	141 2 2419 001 00	SCREEN SELECT LEVER	1
42			
43	141 2 3169 005 00	BRACKET CHASSIS MOUNTING	1
44	141 0 7419 002 00	ACTUATING SLIDE BASE ASSY	1
45	141 0 5559 001 00	ARM ASSY REWIND	1
46	141 2 3529 006 00	SPACER REWIND LEVER	1
47	141 2 7419 008 00	LEVER REWIND	1
48	141 2 8519 048 00	SPG REWIND LEVER	1
49	141 0 6217 002 00	LEVER ASSY SELECT	1
50	141 0 7419 001 00	ARM ASSY TENSION	1
51	141 2 1629 001 05	KNOB SELECT	1
52	141 2 3529 007 00	SPACER LEAF SPRING	1
53	141 2 7419 009 00	ACTUATOR LEAF SPRING	1
54	141 2 4179 003 00	HEX NUT 9mm	1
55	141 2 5219 007 00	FLYWHEEL	1
56	141 2 5619 001 00	BELT FLAT	1
57	141 2 4569 011 00	WASHER 6.2mm×12mm	1
58	141 2 4179 004 00	HEX NUT 6mm	1
59	141 2 3519 009 00	SUPPORT FLYWHEEL	1
60	4 5279 700 60	MOTOR	1
61	141 2 3519 011 00	BRACKET LEAT SPRING MTG	1
62	141 2 8519 047 00	SPRING TENSIOM	1
63	141 2 8539 011 00	LEAF SPRING TAKE UP REEL	1
64	141 2 4569 002 00	WASHER	1
65	141 2 8519 029 00	SPRING REWIND PULLEY	1
66	4 2319 700 51	SWITCH POWER	1
67	141 2 5519 012 00	REWIND PULLEY	1
68	141 2 3829 006 00	TERMINAL BATTERY LEFT	1
69	141 2 3839 007 00	TERMINAL BATTERY LEFT	1
70	141 2 4539 008 00	WASHER PHENOLE BATTERY	3
71	141 2 4569 008 00	WASHER PLATE BATT HOLDER	2

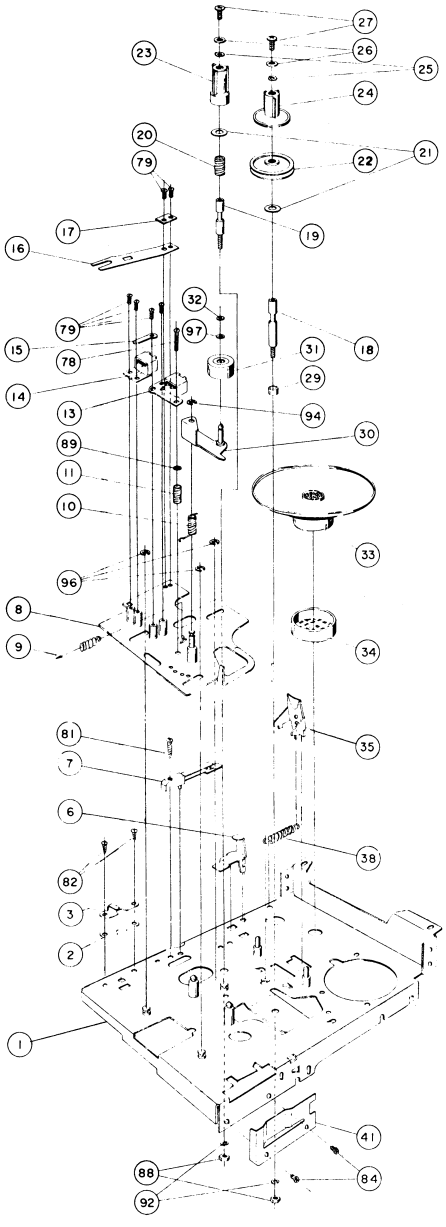
MAIN PARTS LOCATION

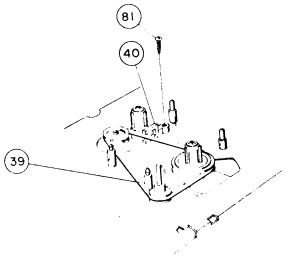


SCHEMATIC DIAGRAM

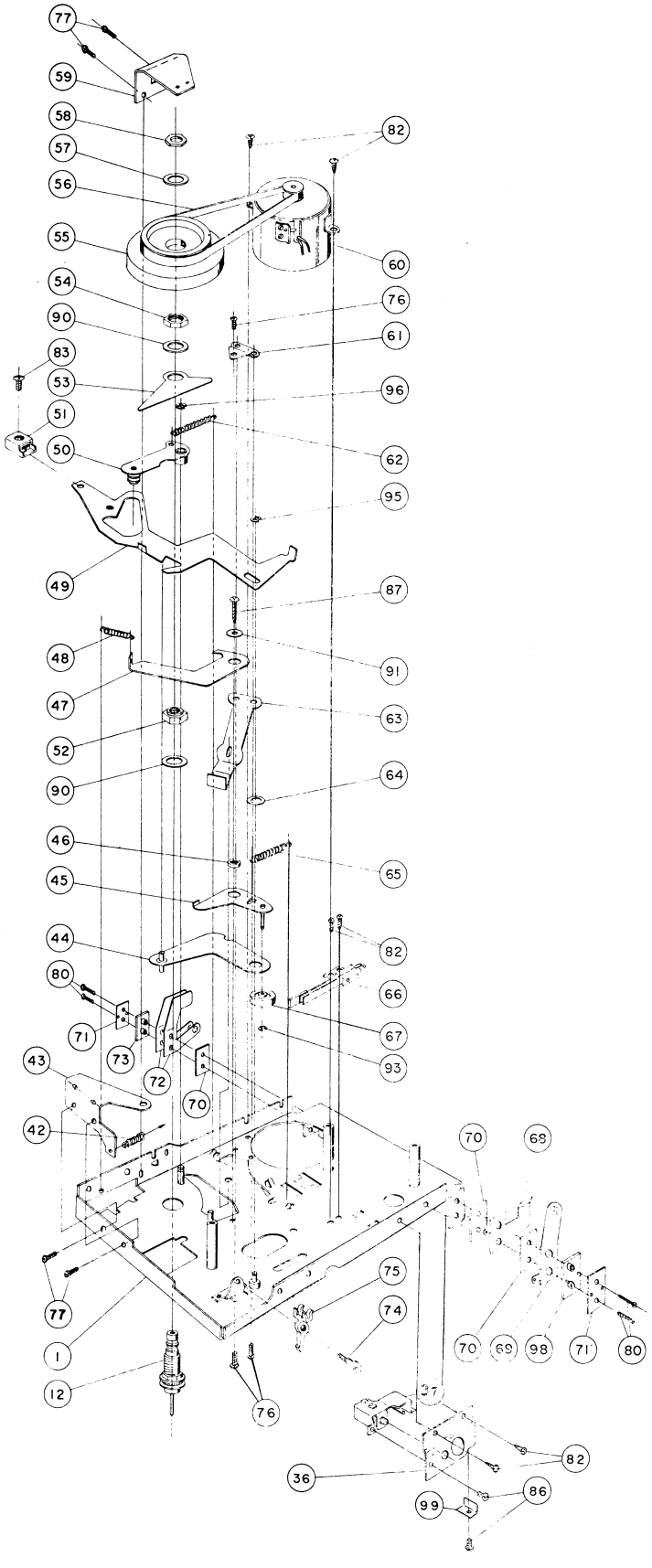


EXPLODED VIEW





TOP VIEW



BOTTOM VIEW

PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION	Q'ty
72	141 2 3829 008 00	TERMINAL BATTERY RIGHT	2
73	141 2 4539 007 00	SPACER POLYCARBO BATTERY	1
74	141 2 4219 005 00	SCREW RECORD SW LEVER	1
75	141 2 8419 005 00	LEVER R/P SW	1
76		SCREW 2.6mm×6mm	3
77		SCREW 2.6mm×4mm	4
78		SCREW 2mm×14mm	1
79		SCREW 2mm×4mm	6
80		SELF TAPPING SCREW	4
81		SELF TAPPING SCREW 2.6mm×10mm	2
82		SELF TAPPING SCREW 2.6mm×6mm	8
83		SCREW OVAL HEAD 2.6mm×5mm	1
84		SELF TAPPING SCREW 2.6mm×6mm	6
85			
86			
87		SELF TAPPING SCREW 2.6mm×8mm	1
88		HEX NUT 2.3mm	2
89		WASHER 2mm	1
90	141 2 4569 010 00	WASHER SPINDLE 9.2mm×15mm	2
91	141 2 4569 002 00	WASHER	1
92		C CLAMP 2.3mm	2
93		C CLAMP 1.5mm	1
94		C CLAMP 2.0mm	1
95		C CLAMP 2.5mm	1
96		C CLAMP 3.0mm	4
97		WASHER PLASTIC 4mm×2mm	1
98			
99	141 2 4359 009 00	INSULATOR EXT POWER SOCKET	1

PARTS NO.	DESCRIPTION	Q'ty
Cabinet and Accessoris		
141 0 1119 016 01	CABINET ASSY	1
141 2 1249 019 01	CASSETTE LID	1
141 2 1639 005 00	KNOB VOL	1
141 0 1259 012 01	CABINET ASSY BOTTOM	1
141 2 1339 016 01	BATTERY COVER	1
141 2 1829 011 01	POUCH MICROPHONE	1
141 6 4119 019 00	INSTRUCTION MANUAL	1
4 1539 700 57	MICROPHONE	1
4 2419 731 92	CASSETTE	1
Electrical Parts		
4 2549 700 20	VOICE INPUT TRANS	1
4 2549 700 40	VOICE OUTPUT TRANS	1
4 2589 700 30	OSC COIL	1
4 2229 700 50	CONTROL VOLUME	1
4 2319 700 21	SWITCH SLIDE	1
4 2359 702 40	JACK 2P	1
4 2229 720 20	POTENTIOMETER (B-100K)	1
4 2269 731 10	PRINTED CIRCUIT BOARD ASSY	1
Packing		
141 6 1419 016 00	INDIVIDUAL CARTON	1
141 6 2519 007 00	POLY COVER CABINET	1
141 6 1449 030 00	CASE STYROFOAM TOP	1
141 6 1449 012 00	CASE STYROFOAM BOTTOM	1

SYMBOL NO.	DESCRIPTION	Q'ty
Semiconductors		
TR1	2SB303	1
TR2, TR3	2SB186A	2
TR4, TR5, TR6	2SB22	3
TR7	2SA202	1
D1	1S188 AM	1
TH1	SDT 09	1
Capacitors		
C22, C23	Mylar 300 PF	2
C5	Mylar 500 PF	1
C21	Mylar 0.0047 μF	1
C8	Mylar 0.0056 μF	1
C14, C15	Mylar 0.01 μF	2
C9	Mylar 0.022 μF	1
C1, C16, C18, C24	Mylar 0.033 μF	4
C17, C25	Mylar 0.1	2
C3, C7, C10, C28 (Motor)	Electrolytic 10 μF 10WV	4
C4, C6, C27	Electrolytic 30 μF 6WV	3
C2, C11, C12	Electrolytic 50 μF 10WV	3
C13	Electrolytic 100 μF 6WV	1
C20	Electrolytic 200 μF 10WV	1
C26	Electrolytic 500 μF 3WV	1
C19	Electrolytic 500 μF 10WV	1
Resistors		
R-23	2.2 ohm ¼W	1
R-2	10 ohm ¼W	1
R-20	18 ohm ¼W	1
R-6, R-28, R-34	47 ohm ¼W	3
R-22	100 ohm ¼W	1
R-24, R-27	180 ohm ¼W	2
R-33, R-35	220 ohm ¼W	2
R-25, R-26	330 ohm ¼W	2
R-19	470 ohm ¼W	1
R-4, R-16, R-15	1K ohm ¼W	3
R-1	1.2K ohm ¼W	1
R-10, R-21	1.8K ohm ¼W	2
R-8	2.2K ohm ¼W	1
R-9	2.7K ohm ¼W	1
R-11	4.7K ohm ¼W	1
R-12, R-36	5.6K ohm ¼W	2
R-13, R-18	8.2K ohm ¼W	2
R-3	10K ohm ¼W	1
R-5	18K ohm ¼W	1
R-32	22K ohm ¼W	1
R-7	33K ohm ¼W	1
R-17	39K ohm ¼W	1
R-29	47K ohm ¼W	1
R-30, R-14	82K ohm ¼W	2
R-31	330K ohm ¼W	1