

SANYO



All-transistor, Battery-operated Tape Recorder

MODEL **MR-322**

SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

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

SPECIFICATIONS

Transistors	2SB303×1	1st audio amplifier
	2SB186×1	2nd audio amplifier
	2SB186×1	3rd audio amplifier
	2SB272×2	Power amplifier
	2SB22B×1	AC bias oscillator
Thermistor	SDT-02	Temperature compensator
Recording System	AC bias, 2-track	
Erasing System	DC bias	
Output Power	Max. 650mW Undistorted 500mW	
Power Supply	110-117/220-240V AC (50/60 cps)	
Tape Speed	1 7/8" (4.75 cm)/sec	
	3 3/4" (9.5 cm)/sec	
Tape Reel	Maximum 3 1/4" (82mm) dia.	

Forward-Rewind Time	Up to 3 minutes
Frequency Response	200 to 5000 cps (3 3/4"/sec)
	200 to 3000 cps (1 7/8"/sec)
Playing Time (2-track)	30 minutes (3 3/4"/sec)
	60 minutes (1 7/8"/sec)
Loudspeaker	4 3/16" × 2 5/16" (10 × 6.5cm)
	Voice coil impedance 8 ohms
Dimensions	8" width × 8 1/2" depth × 4" height (20 × 21 × 10 cm)
Net Weight	6.6 lbs (3 Kgs)
ACCESSORIES	Dynamic microphone, Splicing tape, Full tape reel and empty reel 3 1/4"

REMOVING MECHANISM OUT OF CABINET

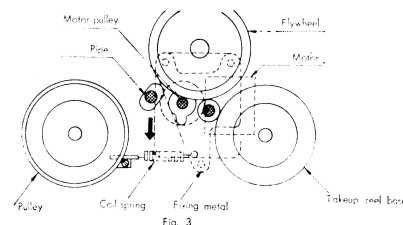
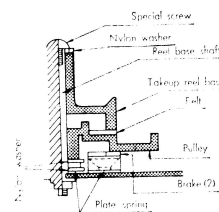
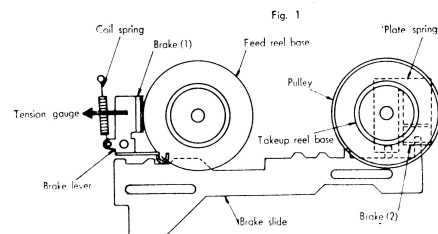
In making repairs of the mechanism or the amplifier or when cleaning them, it is necessary to remove the recorder set from the cabinet. In such cases follow the instructions given below.

1. Pull out the operation knob and On/OFF & Volume knob. Loosen special screw and pull out the pinch roller.
 2. Loosen two truss screws and capstan rest, then remove the panel.
 3. Loosen two round small screws and remove the fixing metal.
- The above will permit the removal of mechanism from the cabinet and panel. But lead wire between panel and chassis is soldered.

ADJUSTING THE MECHANISM

When defective operation occurs in rewinding or fast winding, unusual slack appears on the tape at the time of changing from Stop to Play, or when improper tension is on the tape in each operation, although the tape recorder is properly operated, following adjustments are necessary:

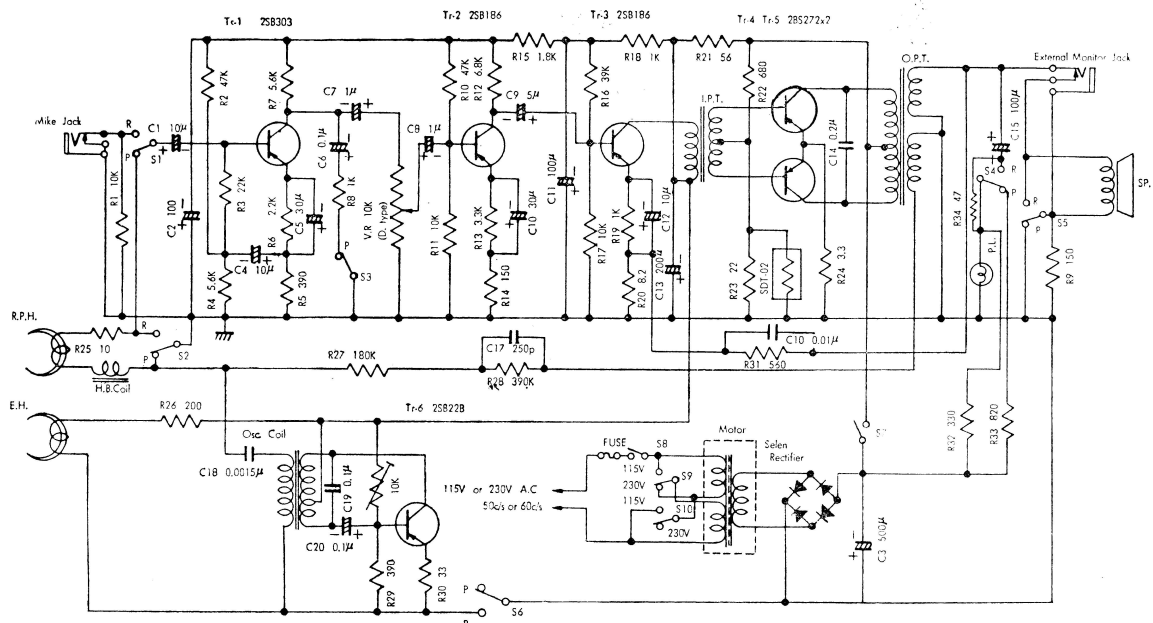
- a) When the recorder stops from normal speed or fast winding, a brake must be applied weakly to Takeup reel base and strongly to Feed reel base. When the recorder stops from Rewinding, the brake must be applied to Feed reel. (Fig. 1)
- b) At fast winding, no aperture must be found between Takeup feed reel base and screw for fixing shaft. Adjust nylon washer to eliminate aperture. (Fig.2)



TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Motor does not turn and level lamp does not light up.	1. Defective power switch. 2. Short of filter circuit.	Check and replace. Check and replace.
Plays back but can not record.	3. Defective DC motor and level lamp 1. Defective RP selector switch.	Check and replace. Check switch contact.
Records but does not playback.	2. Defective microphone jack or microphone. 1. Defective RP selector switch.	Check and replace. Check switch contact.
Much noise.	2. Defective speaker. 1. Defective transistor. 2. Defective VR contact or soldering element. 3. Defective microphone. 4. Defective filter circuit.	Replace. Replace. Check each element. Check whether mic. is bad or cord broken. Check each capacitor.
Unable to erase.	1. Bad position or erasing head. 2. Defective contact of tape & erasing head. 3. Lack of erasing current.	Adjust position. Adjust and clean. Check.
Lack of volume.	1. Head not perpendicular. 2. Capacity loss of bypass capacitor of each stage emitter bias.	Check and adjust. Check and replace.
Capstan fails to rotate.	3. Defective AC bias oscillator. 1. Open in motor coil or burnt metal bearing. 2. Oil on flywheel rubber. 3. Defective motor spring.	Adjust AC bias current to 700 mA. Replace motor. Clean with alcohol. Adjust tension.
Defective winding.	1. Pressure between idler and winding reel base or idler and flywheel is weak.	Adjust coil spring.
Defective rewinding.	2. Pulley or winding reel base lacks oil. 1. Pressure between flywheel and winding reel base is weak. 2. Idler lacks oil.	Oil to shaft. Adjust or replace. Oil or replace.
Brake does not function.	1. Peeled brake shoe. 2. Defective adjustment. 3. Defective slide switch.	Apply adhesive. Adjust coil spring. Apply grease.
Unable to record.	1. Defective fixing RP selector.	Adjust switch position.
Unable to erase.	1. Inadequate position of erasing head. 2. Pad pressure is weak. 3. Dust adhering to tape guide.	Adjust position. Adjust coil spring or replace felt. Clean with alcohol.

CIRCUIT DIAGRAM



- c) The pressure between a motor and flywheel is desirable to be 240-260 gr. Adjusting is done with motor spring. (Fig. 3)
- d) The pressure between pinch roller and capstan is the best at 170-200 gr. (at 4.75 cm/sec speed). Adjusting is done with coil spring. (Fig. 4)
- e) When sound reproduction is uneven or erasing is insufficient, the pressure of pad must be adjusted with coil spring. Adequate pressure is 20-25 gr. (Fig. 5)
- f) To obtain sufficient erasing, the position of erasing head must be correct. In addition, the position of recording and playback heads must be correct for the best result of reproduction. (Fig. 6)

Note: The tools used for adjustment must be non-magnetic.

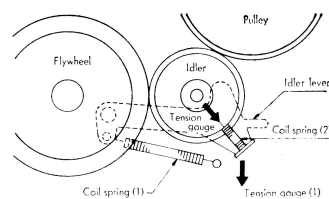


Fig. 4

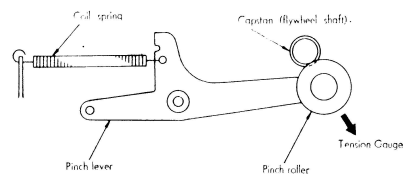


Fig. 5

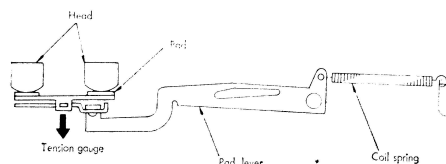


Fig. 6

MAINTENANCE

1. Storing

Before storing tape recorder, make sure the operation lever be shifted to STOP (neutral).

2. Lubrication

Needs little lubrication, because shafts are equipped with lubricating device. Motor and flywheel last more than 1,000 hours without lubrication.

3. For cleaning tape guide, each head, pinch roller, capstan etc., apply cloth or gauze soaked in carbon tetra-chloride.

Photo No.	Stock No.	Description	Q'ty
1	R-112110a	Chassis	1
2	R-S8876	Flywheel (complete)	1
3	R-S8830	Capstan (complete)	1
4	R-24858	Bearing	1
5	R-44205a	Roller	1
6	R-S8815	Lever (complete)	1
7	R-14120	Shaft	1
8	R-24760	Screw	1
9	R-112017	Lever	1
10	R-24784	Bearing	1
11	R-112024	Fixing metal	1
12	R-25201	Plate spring	1
13	R-14128	Shaft	1
14	R-S8931	Lever (complete)	1
15	R-S8933a	Cam (complete)	1
16	R-24762	Cam shaft	1
17	R-23733	Tape guide	1
18	R-23673	Tape guide	1
19	R-112023a	Fixing metal	1
20	R-25187	Plate spring	2
21	R-112105	Lever	1
22	R-112197	Lever	1
23	R-112019	Lever	1
24	R-S8725L	Idler (complete)	1
25	R-14126	Shaft	1
26	R-112115	Slide	1

Photo No.	Stock No.	Description	Q'ty
27	R-39132	Pulley	1
28	R-39159	Winding reel base	1
29	R-14122	Shaft	1
30	R-39158	Feed reel base	1
31	R-14137	Shaft	1
32	R-112025	Fixing metal	1
33	R-112014	Lever	1
34	R-S8970	Motor fixing metal (complete)	1
35	R-24881	Bearing	1
36	R-44045	Cushion	1
37	R-24763a	Boss	1
38	R-24860	Boss	1
39	R-24814a	Boss	1
40	R-48145	Brake	1
41	R-12242	Coil spring	1
42	R-15191	Coil spring	1
43	R-15186a	Coil spring	1
44	R-15187a	Coil spring	1
45	R-15188a	Coil spring	1
46	R-15189a	Coil spring	1
47	R-15182a	Coil spring	1
48	R-15185	Coil spring	1
49	R-12203a	Coil spring	1
50	R-S5089	AC motor	1
51	R-S6273	RP head	1
52	R-S6284	Erasing head	1

