

All-transistor Stereophonic/Monaural  
Tape Recorder

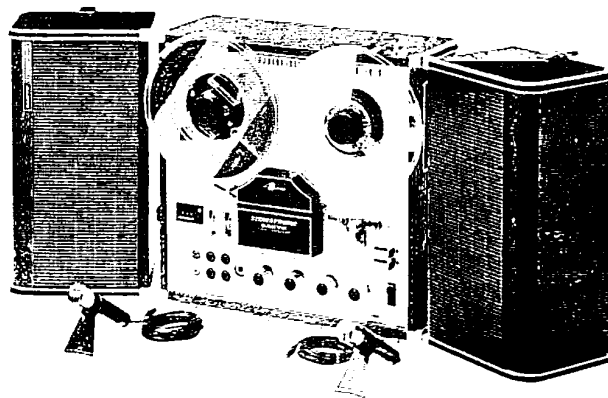
MODEL

# MR-929MK-II

## SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

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



### SPECIFICATIONS

Recording System .....	AC bias 1/4 track mono & stereo-ponic
Erasing System .....	AC erasing 1/4 track
Tape Speed .....	7-1/2 ips (19 cm/sec.)
	3-3/4 ips (9.5 cm/sec.)
Used Transistor .....	2SB490 × 2
	2SB186 × 4
	2SB187 × 4
	2SB492 × 4
Other Elements .....	1S188 × 2
	1S1849R × 1
Heads (each one) .....	1/4 track recording-playback heap
	1/4 track erasing head
Power Output .....	Maximum output 4W
(each channel)	Music output 6.5W
Frequency Response .....	20 - 19000 Hz (at 7-1/2 ips)
	30 - 12000 Hz (at 3-3/4 ips)
Speaker .....	Permanent dynamic speaker Imp. 8 ohms.
Microphone .....	Dynamic microphone
Recording Indicator .....	VU meter
Recording Input Terminal .....	MIC. × 2 Imp. 70K ohms.
	AUX. × 2 Imp. 100K ohms.
Output Terminal .....	Ext. Sp. × 2 Imp. 8 ohms.
	Line out × 2 Imp. 1K ohms.
	Headphone × 1 Imp. 10K ohms.
Motor .....	4 pole induction motor
Rewind Time .....	Up to 3 minutes at 1200 Ft tape
Forward Time .....	Up to 3 minutes at 1200 Ft tape
Power Source & Consumption .....	100, 117, 125, 220, 240V, 50/60 Hz 40W
Dimension & Weight .....	Main 13" (W) × 5-1/2" (D) × 12-3/4" (H)
	Speaker 6-1/2" (W) × 5-1/4" (D) × 12-3/4" (H)
	Approx. 38 lbs. (17 Kg)

### REMOVING MECHANISM FROM CABINET

In order to repair the mechanism or amplifier, it is necessary to remove the recorder unit from the cabinet. To remove, observe the following instruction:

- 1) Remove two volume control knobs, two tone control knobs by pulling upward. Remove two recording knobs unscrewed and pulling upward. And, remove operating lever knob by turning counter-clockwise.

- 2) The recorder to normal position and remove four philips screws at the four corners of upper panel and a screw in the head housing
  - 3) Turn the recorder upside down and remove five philips screw at the bottom and two philips screw at the side of cabinet
- Above procedure will permit the removal of mechanism and amplifier from the cabinet.

## ADJUSTMENT OF MECHANISM

When inadequate operation is noticed in fast forward or rewinding, or when unusual slackening of tape occurs at the time of changing (switching) from stop to play, or when improper tension is noted on the tape in each operation, while the tape recorder is operating properly otherwise, the following adjustments are required.

### 1) Measuring Equipment.

Although no measuring equipment or tool is required, tension gauge (500g with 20g scale, 2kg with 100g scale) will be useful after adjustment.

### 2) Brake Mechanism.

For operation at regular speed (record-playback) and for changing from fast forward to stop the brake should apply strongly to feed reel base and weakly to takeup reel.

Turn the adjusting screw to adjust contact to the reel base. (See Fig. 1).

When the brake doesn't apply, it causes an opening of over 0.5mm between reel base and brake shoe. Therefore, the brake shoe should touch the reel base smoothly.

### 3) Fast Wind Mechanism.

There must be no aperture between the take-up reel base and the screw for fixing takeup reel base. Should there be an aperture at fast winding, it is necessary to change the nylon washer to a thicker one, or to move the lever upward a little to uphold the fixing metal so that the pressure between reel base and pulley becomes satisfactory (See Fig. 2)

Check the rotation of feed reel base. After completing this adjust-

ment, function 'Rewind' and 'Playback' and check for defective operation and unusual noise.

### 4) Rewind Mechanism.

If the nut (1) is worn out, the rewinding roller pressure against feed reel will increase gradually. Tighten nut (2) so that the rewind operation can be completed within 3 minutes for a full 7" reel tape. After making this adjustment, tighten the nut (2) to clamp the nut (1). This will be followed by lacquer fixing. Check the tension of takeup reel base, contact between brake and reel base, and also for unusual noise.

Note: Pay particular care when shifting the operating lever so that its position will be correct (See Fig. 3).

### 5) Playback Mechanism

Pressure between the pinch roller and capstan (flywheel shaft) is to be gauged; satisfactory tension is between 650 to 950g. To take the reading, playback the tape at 9.5cm (3-3/4in)/sec. speed, then pull the pinch roller toward you until tape stops and read the tension gauge. This process should be repeated two or three times, and adjustment is made with coil spring (See Fig. 4).

### 6) Adjusting Pad

The felt should be placed so that it will come into contact with the head core slit right angle and that the center of the felt properly meets the core slit section. The felt should firmly contact the entire width of the tape. The pressure between the pad and head should be measured; satisfactory tension is between 20 to 25g.

## MAINTENANCE

### 1. Oiling (Lubrication)

When excessive oil supplied, it may overflow along the shaft and adhere to the rubber parts of the belt and pinch roller, causing slipping, wow or flutter. Care should be taken to limit the amount of oil applied or on how to oil.

### 2. Oiling Parts.

Pinch Roller (Fig. 5), Flywheel Shaft (Fig. 6),  
Rewind Roller (Fig. 7), Motor  
Reel Base and Reel Base Pulley (Fig.8), Counter and Pulley, Idler

### 3. Oiling of Other Parts.

Oiling of the revolving parts is mentioned above. It is essential to clean and oil metal-to-metal contact shaft and bearing of each lever at least once a year.

### 4. Cleaning of the Tape Transport Sections.

The tape travels from the feed reel to pinch roller through two tape guides, erasing head, recording head, pad, tape guide and capstan.

When dust or ferrous powder on the tape adheres to these parts, insufficient erasing, non-recording, poor high tones, less volume and slipping may result. Utmost care should be taken to clean these parts.

Parts such as tape guide, each head, pinch roller and capstan should be thoroughly cleaned with a soft cloth or gauze soaked in carbon tetrachloride.

### 5. Oiling of Rotating Parts.

All rotating parts of this set are of oil-less metal, except for reel spindle, rewind roller, and fast forward roller. To insure smooth functions, oil-less metal parts are sealed from exposition to air. Accordingly, these parts must be disassembled before applying lubricant.

### 6. Storing

Before closing the lid of tape recorder ..... after operation or when storing ..... make sure the control is set to "STOP" position.

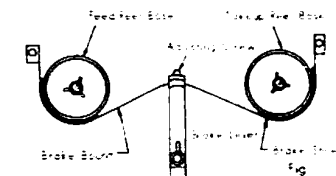


Fig. 1

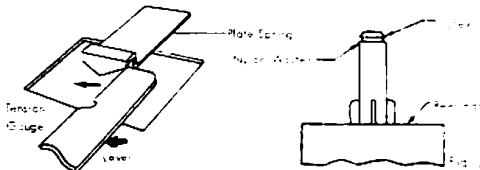


Fig. 2

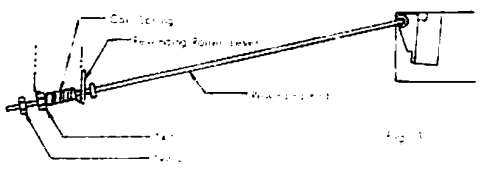


Fig. 3

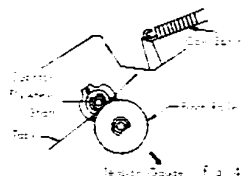


Fig. 4

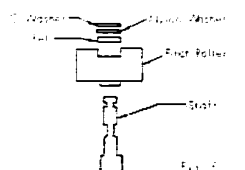


Fig. 5

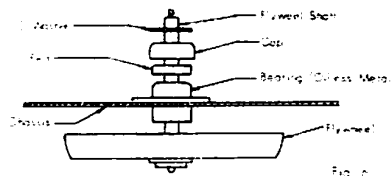


Fig. 6

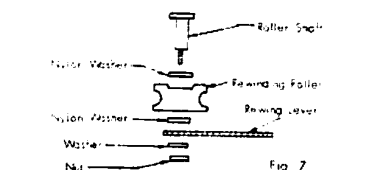


Fig. 7

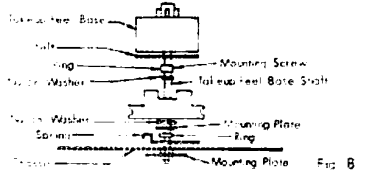


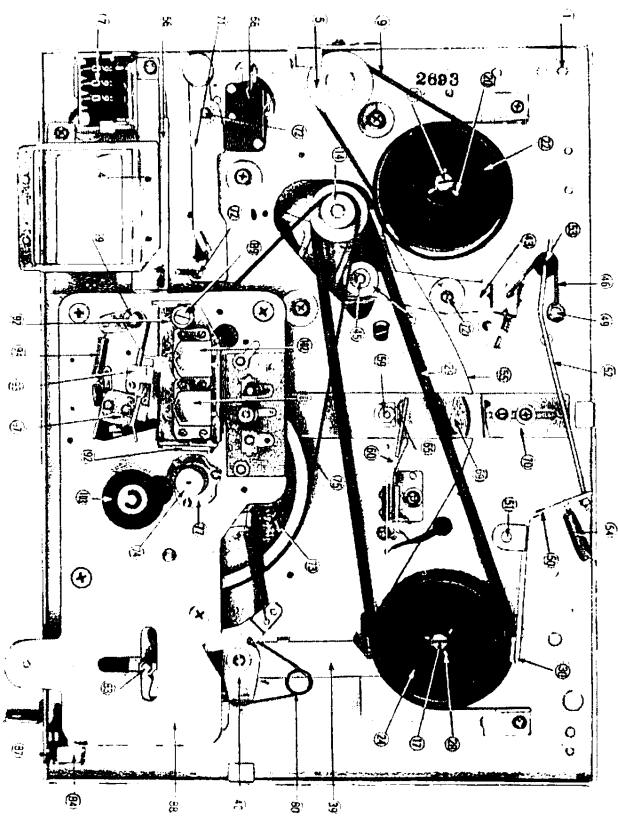
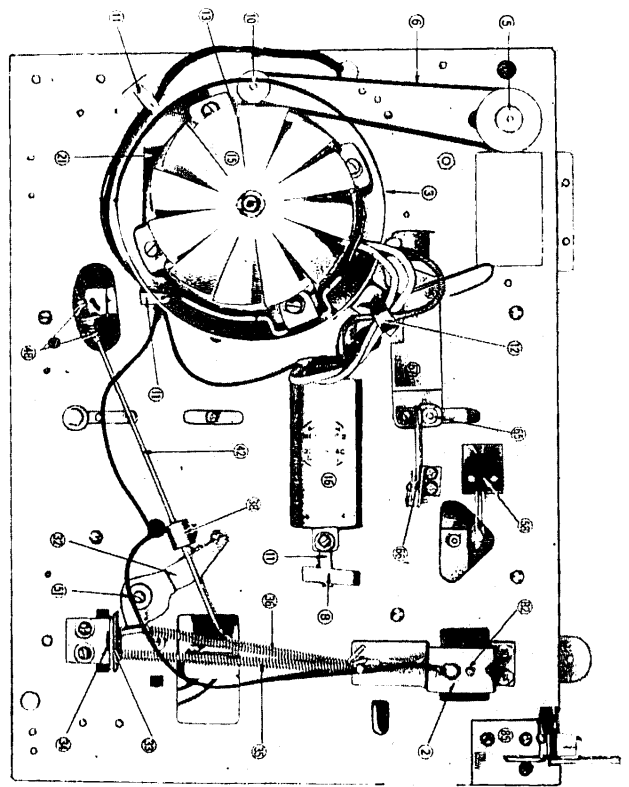
Fig. 8

# MECHANICAL TROUBLE CHART

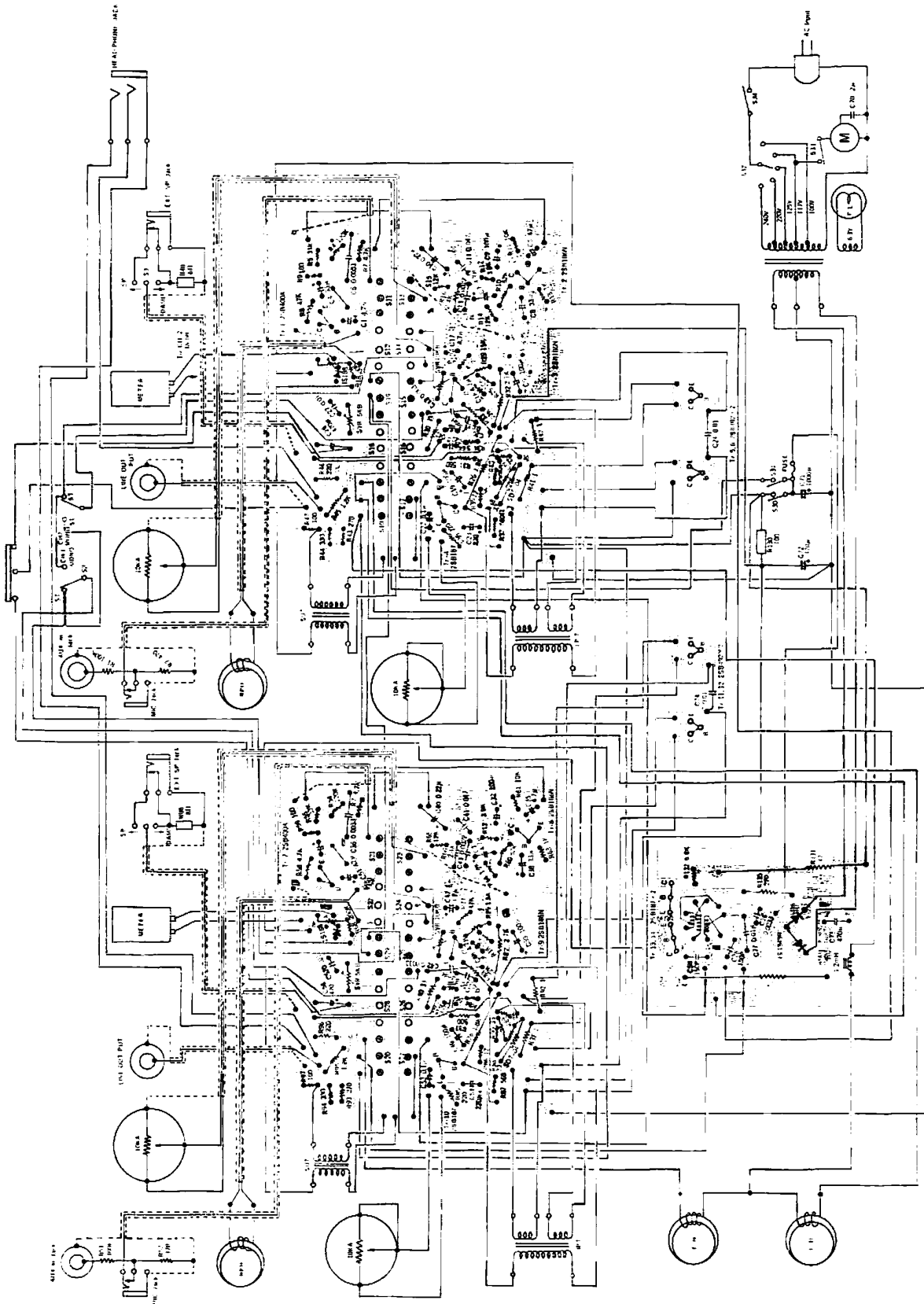
SYMPTOM	CAUSE	REMEDY
Capstan doesn't rotate	<ul style="list-style-type: none"> <li>* Motor trouble                             <ol style="list-style-type: none"> <li>1. Coil failure.</li> <li>2. Metal bearing burnt.</li> <li>3. Foreign material between rotor and stator.</li> <li>4. Motor pulley loosened</li> </ol> </li> <li>* Transmission mechanism trouble.                             <ol style="list-style-type: none"> <li>1. Oil adheres to motor pulley or rubber belt.</li> <li>2. Rubber belt loosen</li> <li>3. Motor pulley loosen</li> <li>4. Capstan sleeve loosen.</li> <li>5. Flywheel shaft burning or oil shortage.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Check and replace.</li> <li>2. Lubricate or replace.</li> <li>3. Remove foreign material, motor replace.</li> <li>4. Tighten.</li> <li>1. Clean with carbon-tetrachloride or alcohol.</li> <li>2. Check and replace.</li> <li>3. Tighten.</li> <li>4. Tighten.</li> <li>5. Lubricate or replace.</li> </ol>
Wow and Flutter	<ul style="list-style-type: none"> <li>* Motor trouble                             <ol style="list-style-type: none"> <li>1. Foreign material between rotor and stator.</li> <li>2. Motor power down.</li> </ol> </li> <li>* Slipping transmission mechanism                             <ol style="list-style-type: none"> <li>1. Foreign material, oil, or greese on flywheel.</li> <li>2. Foreign material, oil, or greese on flywheel.</li> <li>3. Foreign material, oil or greese on motor pully.</li> <li>4. Take up reel base shaft burnt.</li> <li>5. Capstan sleeve loosen.</li> </ol> </li> <li>* Flywheel                             <ol style="list-style-type: none"> <li>1. Flywheel shaft bent or inclined</li> <li>2. Flywheel shaft does be just in time for the burnt.</li> </ol> </li> <li>* Defective tape transport                             <ol style="list-style-type: none"> <li>1. Lack of pinch roller pressure</li> <li>2. Foreign material on pinch roller or transformation.</li> <li>3. Dust adheres to tape transport slot. (head, tape guide pads or capstan sleeve)</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Remove foreign material, motor replace.</li> <li>2. Check and replace.</li> <li>1. Clean with carbon-tetrachloride or alcohol.</li> <li>2. Clean with carbon tetrachloride or alcohol.</li> <li>3. Clean with cleaner or alcohol.</li> <li>4. Lubricate or replace.</li> <li>5. Tighten.</li> <li>1. Replace.</li> <li>2. Check and lubricate.</li> <li>1. Check and adjust pinch roller pressure.</li> <li>2. Clean with cleaner or alcohol.</li> <li>3. Clean with cleaner or alcohol.</li> </ol>
Reel base does not rotate	<ul style="list-style-type: none"> <li>* Defective winding                             <ol style="list-style-type: none"> <li>1. Defective rubber belt.</li> <li>2. Take up reel base or pulley lacks oil.</li> <li>3. Feed reel base lacks oil.</li> <li>4. Brake folding reel base.</li> </ol> </li> <li>* Slipping transmission mechanism.                             <ol style="list-style-type: none"> <li>1. Slipping of pulley, flywheel, reel base or reel base pulley.</li> <li>2. Rewinding roller does not contact reel base or belt.</li> <li>3. Reel base clutch felt is oily.</li> </ol> </li> <li>* Transmission mechanism others                             <ol style="list-style-type: none"> <li>1. Brake folding</li> <li>2. Not changing operation lever</li> <li>3. Pinch roller lacks.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Clean or replace.</li> <li>2. Clean or lubricate.</li> <li>3. Clean or lubricate.</li> <li>4. Check and adjustment. (repair)</li> <li>1. Clean and adjustment.</li> <li>2. Clean and rewinding roller pressure adjutment.</li> <li>3. Check and replace.</li> <li>1. Adjust and repair.</li> <li>2. Adjust and repair.</li> <li>3. Check and lubricate.</li> </ol>
Unable to record	<ul style="list-style-type: none"> <li>* Mechanism.                             <ol style="list-style-type: none"> <li>1. Recording lever coil spring broken</li> <li>2. Recording lever mechanism fail out.</li> <li>3. Head pads unwork.</li> <li>4. Head face adheres to tape dust.</li> <li>5. Foreign material on RP select switch.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Check and replace.</li> <li>2. Check and repair.</li> <li>3. Check and lubrication.</li> <li>4. Clean with cleaner or alcohol.</li> <li>5. Check and clean with cleaner or alcohol.</li> </ol>
Imperfect erasing	<ul style="list-style-type: none"> <li>* Head                             <ol style="list-style-type: none"> <li>1. Erasing head wrong position.</li> <li>2. Erasing head slit dirty.</li> </ol> </li> <li>* Pad                             <ol style="list-style-type: none"> <li>1. Weak pressure of head pads.</li> <li>2. Head pad dirty.</li> </ol> </li> <li>* Tape guide.                             <ol style="list-style-type: none"> <li>1. Dust adheres to tape guide.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Adjust hight or put forward.</li> <li>2. Clean with cleaner or alcohol.</li> <li>1. Adjust coil spring pressure or replace felt</li> <li>2. Clean with cleaner or alcohol.</li> <li>1. Clean with cleaner or alcohol.</li> </ol>
Motor noise	<ul style="list-style-type: none"> <li>* Motor                             <ol style="list-style-type: none"> <li>1. Rotation noise.</li> <li>2. Loosened screw of motor mounting.</li> <li>3. Motor fan click noise.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Lubricate or replace.</li> <li>2. Check and tighten.</li> <li>3. Motor fan check and repair.</li> </ol>
Reel base noise.	<ul style="list-style-type: none"> <li>* Reel base.                             <ol style="list-style-type: none"> <li>1. Brake shoe contacts reel base</li> <li>2. Reel base clutch felt is broken.</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Repair and replace.</li> <li>2. Check and replace.</li> </ol>
Defective tape counter	<ul style="list-style-type: none"> <li>* Tape counter                             <ol style="list-style-type: none"> <li>1. Tape counter gear</li> <li>2. Tape counter pulley loosen</li> <li>3. Tape counter belt broken or loosen</li> </ol> </li> </ul>	<ol style="list-style-type: none"> <li>1. Repair or replace.</li> <li>2. Tighten.</li> <li>3. Check and replace.</li> </ol>

# ELECTRICAL TROUBLE CHART

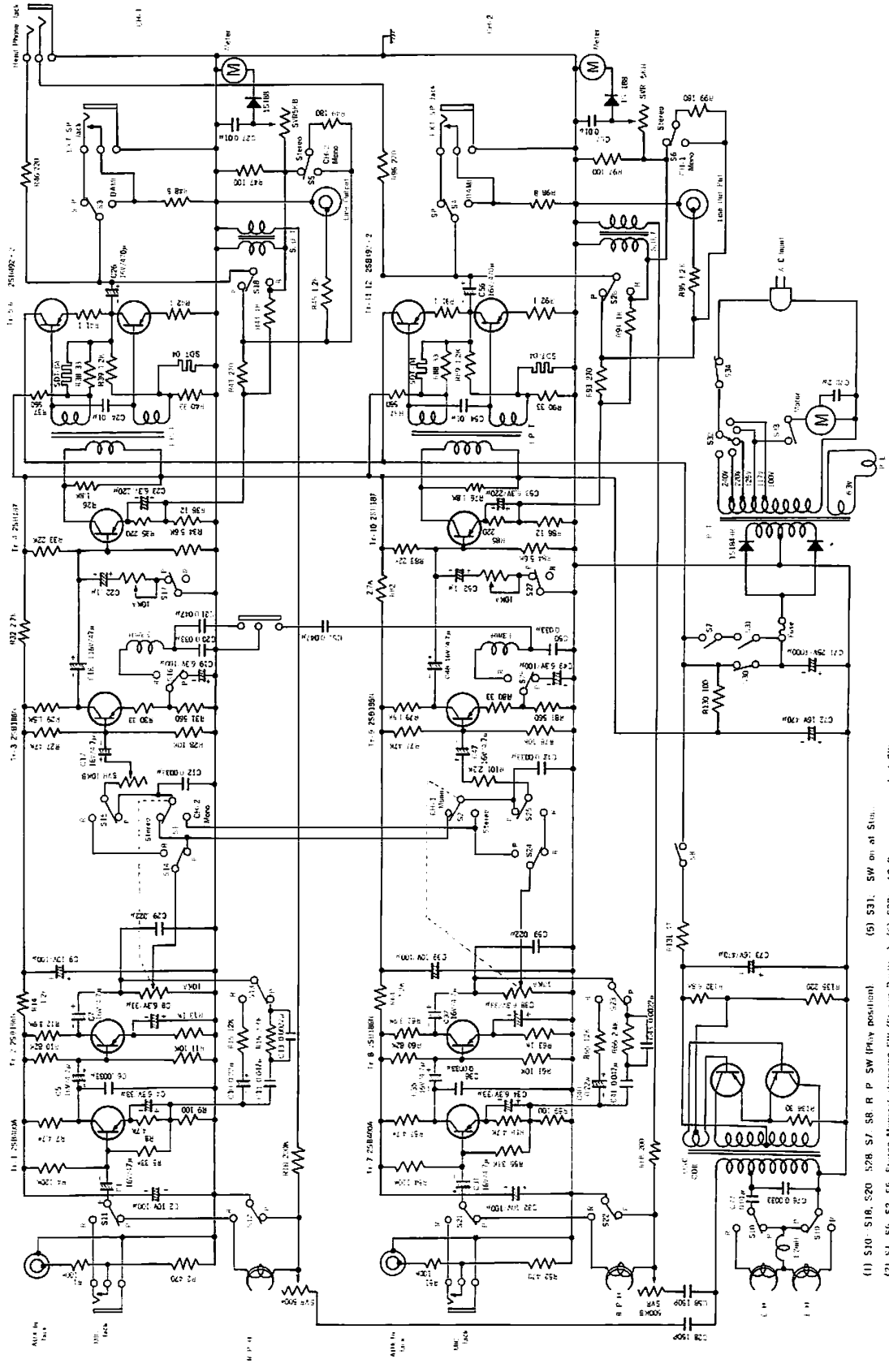
SYMPTOM	CAUSE	REMEDY
Fails to Record.	<ol style="list-style-type: none"> <li>1. Defective amplifier</li> <li>2. Faulty Record lever switching linkage.</li> <li>3. Defective pressure pad assembly.</li> <li>4. Defective play/record head.</li> <li>5. Faulty circuit connections between play record head and amplifier</li> <li>6. Faulty microphone or cord.</li> <li>7. faulty input jack.</li> <li>8. Dirty play/record head.</li> <li>9. Oscillator not functioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check amplifier circuitry and voltage per schematic, replace defective components.</li> <li>2. Repair or replace linkage.</li> <li>3. Repair or replace pressure pad assembly.</li> <li>4. Replace play/record head.</li> <li>5. Replace wire connecting head to amplifier.</li> <li>6. Replace microphone or cord.</li> <li>7. Repair or replace input jack.</li> <li>8. Clean head with alcohol and soft cloth.</li> <li>9. Check or replace for defective components.</li> </ol>
Fails to erase.	<ol style="list-style-type: none"> <li>1. Defective pressure pad assembly</li> <li>2. faulty erase head.</li> <li>3. Dirty or corroded contact surface on erase head.</li> <li>4. Lack of erasing current.</li> <li>5. Bad positioning of erasing head.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace pressure pad assembly.</li> <li>2. Replace erase head.</li> <li>3. Clean head with alcohol and soft cloth.</li> <li>4. Check or replace for defective components.</li> <li>5. Adjust position.</li> </ol>
Fails to play-back. * No sound or sound is fuzzy, faint, or distorted.	<ol style="list-style-type: none"> <li>1. Defective amplifier.</li> <li>2. Defective play/record head.</li> <li>3. Broken wire to play/record head.</li> <li>4. Defective power source circuitry.</li> <li>5. Dirty play/record-erase head.</li> <li>6. Transistor trouble.</li> <li>7. Play-record switch not sliding properly between play and record positions.</li> <li>8. Defective pressure pad assembly.</li> <li>9. Bad speaker.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check amplifier circuitry and voltage per schematic, replace defective components.</li> <li>2. Replace play/record head.</li> <li>3. Repair or replace.</li> <li>4. Check circuitry and replace defective components.</li> <li>5. Clean head with alcohol and soft cloth.</li> <li>6. Replace transistor.</li> <li>7. Move switch arm and tighten securely to screw so switch tracks properly.</li> <li>8. Replace pressure pad assembly.</li> <li>9. Check and replace.</li> </ol>
* Playback has poor response to high frequencies.	<ol style="list-style-type: none"> <li>1. Not enough pressure pad.</li> <li>2. Head not perpendicular.</li> <li>3. Capacitor has big at pre-emphasis network to across</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjustment.</li> <li>2. Check and adjust.</li> <li>3. Check and repair.</li> </ol>
* Playback has excessive high tone.	<ol style="list-style-type: none"> <li>1. Capacitor to across between stage and stage is small.</li> <li>2. Capacitor has big at deemphasis network to across.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and repair.</li> <li>2. Check and repair.</li> </ol>
Class talk	<ol style="list-style-type: none"> <li>1. Inclined, head or tape guide</li> <li>2. Play/Record head wrong position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and adjustment. Tape guide &amp; head</li> <li>2. Head hight adjust.</li> </ol>
Poor output power	<ol style="list-style-type: none"> <li>1. Amplifier elements decline and damage.</li> <li>2. Speaker</li> <li>3. Head</li> </ol> <p>* Head face adhers to tape dust * Weak contact head and pads * Head declined</p>	<ol style="list-style-type: none"> <li>1. Check and replace</li> <li>2. Check and replace</li> <li>3. Check, Clean, Repace and adjustment. Clean with cleaner or alcohol. Pad pressure adjustment. Check and replace.</li> </ol>
High hum level	<ol style="list-style-type: none"> <li>1. Defective power supply Element (diode &amp; capacitor Resistor &amp; coils)</li> <li>2. Amplifier element decline and damage</li> <li>3. Poor solder paint</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and replace.</li> <li>2. Check and replace.</li> <li>3. Check and repair.</li> </ol>



# WIRING DIAGRAM



# CIRCUIT DIAGRAM



- (1) 510-518, 520, 528, 57, 58, R, P, SW (Play position).
- (2) S1, S5, S2, Stereo Manual Changing SW (Stereo Position).
- (3) S3, S4, Ext. SP ON OFF SW.
- (4) S30, SW ON at Rec. and Play.
- (5) S31, SW on at Stop.
- (6) S32, AC Power on/off select SW.
- (7) S33, Auto Repeat SW.
- (8) S34, Power SW.

# PARTS LIST

Key No.	Parts No.	Description	Q'ty
<b>CABINET</b>			
	R-S98119	Cabinet assy.	1
	R-478494	Circuit diagram	1
	R-24887a	Mtg. metal, handle	2
	R-112202	Reinforcing metal, handle	1
	R-27034	Ornament metal	2
	R-36160	Tape, ornament metal	2
	R-35251	Cover, cabinet corner	2
	R-35252	Cover, cabinet corner	2
	R-112266	Fixing metal, accessories compartment	1
	R-268007	Ornament metal, jack	1
	R-23746a	Fixing metal, lock fixer	2
	R-111737	Stud nut, hinge	4
	R-12130b	Hinge assy.	4
	R-44067	Leg	4
	R-S8733	Lid assy. accessories compartment	1
	R-358029	Leg	7
	R-34110	Handle	1
	R-112855	Louver, motor	1
<b>SPEAKER BOX</b>			
	R-S98117	Speaker box assy., Right	1
	R-27036	Ornament metal	1
	R-27037	Ornament metal	1
	R-31582b	Speaker panel	1
	R-36167	Cover, accessories compartment	1
	R-S81006a	Lock assy.	1
	R-36161	Tape, ornament metal	2
	R-35251	Cover, speaker box corner	2
	R-35252	Cover, speaker box corner	2
	R-12129a	Hinge	2
	R-111737	Plate nut, hinge	2
	R-111848	Plate nut, lock	1
	R-44067	Fixing rubber, accessories compartment	2
	R-158204	Special screw, speaker fixed	4
	R-358029	Leg	4
	R-S6978	Speaker	1
	R-88631	Speaker cord assy.	1
	R-S3008	Lug, speaker cord fixer	1
	R-44222b	Stoper, operation lever stoper	1
	R-S98118	Speaker box assy., Left	1
	R-36161	Tape, ornament metal	2
	R-35251	Cover, speaker box corner	2
	R-35252	Cover, speaker box corner	2
	R-27036	Ornament metal	1
	R-27037	Ornament metal	1
	R-31582b	Speaker panel	1
	R-36167	Cover, accessories compartment	1
	R-26993	Badge	1
	R-S81006a	Lock assy.	1
	R-12232	Special washer, badge fixer	2
	R-12129a	Hinge	2
	R-111737	Plate nut, hinge	2
	R-111848	Plate nut, lock	1
	R-358029	Leg	3
	R-44067	Fixing rubber, accessories compartment	2
	R-S6978	Speaker	1
	R-S88631	Speaker cord assy.	1
	R-S3008	Lug, speaker cord fixer	1
<b>TOP PANEL</b>			
	R-268787	Top panel	1
	R-32436	Decoration ring, reel base	2
	R-318316	Decoration, tape counter	1
	R-39148	Decoration, operation lever	1
	R-39305	Cover felt, record lever	4
	R-248279	Post, head housing	4
	R-12131	Felt 10 × 10 × 3t, panel	3
		Tape guide	1
		Sheet, fiber 30 × 30 × 0.35t	2
		Sheet, fiber 30 × 30 × 0.35t	1
		Felt 10 × 10 × 3t, pane	1
	R-39130	Knob, operation lever	1
	R-S88629	Head housing assy. upper	1
	R-S88630	Head housing assy. lower	1
	R-328195	Button, record lever	2
	R-S81171	Knob assy.	4
	R-12381	Special washer, chassis fixer	7
	R-24889	Special washer, top panel fixer	4
		Felt 20 × 10 × 1t, knob	4
		Felt 10 × 13 × 19	1
		Vinyl washer 6.5 × 3.3 × 0.5t, top panel fixer	5

Key No.	Parts No.	Description	Q'ty
<b>CHASSIS</b>			
	R-112816a	Chassis assy., power	1
	R-268788	Index plate, jack plate	1
	R-418219	Printed circuit board, amp.	2
	R-34180	Mtg. panel, jack	1
	R-241236	Boss, coil spring	1
	R-41396	Printed circuit board, power Tr.	2
	R-112203	Reinforcing metal, power trans	2
	R-112177a	Mtg. metal, heat sink	1
	R-418185	Printed circuit board, OSC	1
	R-112923	Shield plate, power trans	1
		Felt 8 × 1t	1
		Felt 7 × 10 × 15	2
	R-12382	Shield plate, OSC PCB	2
		Washer, fiber 3 × 8 × 0.5t, PCB	4
		Fiber 1.5 × 15 × 0.5t	2
	R-S3008	Lug, cord fixer	3
		Washer, fiber 3 × 8 × 0.5t 500 μF	1
	R-S88089	Chassis assy. amp.	1
	R-14213	Special screw, RP switch	1
	R-14214	Special screw, RP switch	1
	R-112183	Mtg. metal, mechanism leg	1
	R-112184	Mtg. metal, panel	2
	R-112182	Mtg. metal, mechanism	1
	R-112628	Lever, RP switch	1
	R-112629	Lever, RP switch	1
	R-12345	Coil spring, RP switch	2
	R-12346	Coil spring, RP switch	2
	R-112173Le	Panel, operation lever	1
	R-24876	Spacer, operation lever panel	1
	R-24730	Spacer, RP switch	2
	R-44033	Pilot lamp rubber	1
		Felt 8 × 1	3
	R-12011	Lug, power cord fixer	1
	R-15257	Coil spring, brake slide	1
	R-112865	Mtg. metal power cord fixer	1
	R-418186	Cushion, indicator	2
	TM-929	Mechanism	1
<b>ELECTRICAL PARTS</b>			
	R-W6860	Step up trans	2
	R-S5837	Level meter	2
	R-R124148	VR 10K ohm A type w/switch	2
	R-R124158	VR 10K ohm A type	2
	R-W7829	Power trans	1
	R-W1816	Choke coil 1.2mH	1
	R-S6889	Microphone	2
	R-W6177 (1)	IPT	2
	R-W8810	OSC coil	1
	R-W1808	Choke coil 3.3mH	2
	R-R11015	Semifixed VR 500K ohm	2
	R-R11013	Semifixed VR 10K ohm	1
	R-R11012	Semifixed VR 5K ohm	2
	R-S2876	Socket assy. AUX IN, LINE OUT	1
	R-S4266	Slide switch, speaker selector	1
	R-S4325	Slide switch, R-P selector	1
	R-S4326	Slide switch, R-P selector	1
	R-S4274a	Power switch	1
	R-S2854	Socket, MIC, SP	4
	R-S2131	Jack, headphone	1
	R-S2133	Socket, voltage selector	1
	R-S1227	Plug, voltage selector	1
	R-S2125a	Socket assy. pilot lamp	1
	R-28085	Heat sink, 2SB492	4
	R-41370	Film insulator, 2SB492	4
	R-44223	Rubber sheet insulator, 2SB492	4
	R-S1038	Fuse holder	1
	R-S1090	Fuse 2.0A	1
	R-S5044	Pilot lamp, 6.3V 0.2A	1
	R-39320	Mtg. base, 2SB492	8
	R-261193a	Heat sink, 2SB187	1
	R-S3007	Lug, 4P	1
	R-S3011	Lug, 2P	1
	R-S3063	Lug,	2
	R-R7031	Winding resistor 8 ohm 5W	1
	R-S88632	7" full tape reel	1
	R-31304b	7" empty reel	1
	R-S88577	Patch cord, RCA - RCA	2
		Splicing tape	1
	R-398065	Microphone stand	2
		AC CORD IS CHOSEN AMONG FOLLOWING A, B, C, D.	
	(R-S1076a	Plug, English type 3-pin	1
		3 wired cord	1
		Rubber cushion	1
	R-S1245	Plug, Australia type 3-pin	1



Key No.	Parts No.	Description	Q'ty	
	B	R-S1817	Plug, Siemens type 2-pin 2 wired vinyl cord	1
			Plug, Photex type 3-pin 3 wired cord	1
	C	R-S1076a	Plug, English type 3-pin	1
		R-3134	AC cord 6A 250V	1
	D	R-S8574b	AC adaptor, Siemens type 2-pin	1
R-S8575b		AC adaptor, English type 2-pin	1	
Tr-1,Tr-7		Transistor 2SB400A	2	
Tr-2,Tr-8		2SB186	2	
Tr-4,Tr-10		"	2	
Tr-13,Tr-14		2SB187	4	
Tr-5,Tr-6		"	4	
Tr-11,Tr-12		2SB492	4	
Tr-3,Tr-9		2SB186	2	
		Thermistor SDT-04	4	
		Diode 1S188 or 1S426G	2	
		Silicon rectifier 1S1849R	1	

Key No.	Description	Q'ty
---------	-------------	------

### RESISTORS

Key No.	Parts No.	Description	Q'ty
R1,51	Carbon P type	100 Kohm ±10% 1/4W	2
R2,52	"	470 ohm	2
R4,54	"	120 Kohm	2
R5,55	"	33 Kohm	2
R7,57	"	4.7 Kohm	2
R8,58	"	4.7 Kohm	2
R9,59,47,97	"	100 ohm	4
R10,60	"	82 Kohm	2
R11,61	"	10 Kohm	2
R12,62	"	3.9 Kohm	2
R13,63	"	1 Kohm	2
R14,64,39,89	"	"	2
45,95	"	1.2 Kohm	6
R15,65	"	12 Kohm	2
R16,66	"	2.4 Kohm	2
R18,68	"	200 Kohm	2
R27,77	"	47 Kohm	2
R28,78	"	10 Kohm	2
R29,79	"	1.5 Kohm	2
R30,80,38,88	"	"	2
40,90	"	33 ohm	6
R31,81,37,87	"	560 ohm	4
R32,82	"	2.7 Kohm	2
R33,83	"	22 Kohm	2
R34,84	"	5.6 Kohm	2
R35,85,46,96	"	"	2
135	"	220 ohm	5
R36,86	"	12 ohm	2
R26,76	"	1.8 Kohm	2
R43,93	"	270 ohm	2
R44,94	"	330 ohm	2
R132	"	6.8 Kohm	1
R101	"	2.2 Kohm	1
R41,42,91,92	"	1 ohm 1/2W	4
R136	Carbon L type	30 ohm 2W	1
R131	"	47 ohm	1
R130	Soled	100 ohm 1/2W	1

Key No.	Parts No.	Description	Q'ty
---------	-----------	-------------	------

### CAPACITORS

Key No.	Parts No.	Description	Q'ty
C71	R-C9848	Electrolytic 1000 µF 25WV	1
C72	R-C9938	" 470 µF 16WV	1
C23,53	R-C9864	" 220 µF 6.3WV	2
C19,49	R-C9871	" 100 µF 6.3WV	2
C4,34,8,38	R-C9865	" 33 µF 6.3WV	4
C1,31,5,35,7,37,17,47,18,48	R-C9867	" 4.7 µF 16WV	10
C73,26,56	R-C9918	" 470 µF 16WV	3
C2,32,9,39	R-C9145	" 100 µF 10WV	4
C10,40	R-C9869	" 0.22 µF 10WV	2
C22,52	R-C9126	" 0.1 µF 10WV	2
	R-C9831	" 0.1 µF 10WV	2
C11,41,21,51	Mylar	0.047 µF ±20% 50WV	4
C20,50	"	0.033 µF 50WV	2
C76	"	0.0033 µF 100WV	1
C24,54,27,57	"	0.01 µF 50WV	4
C6,36,12,42	"	0.0033 µF 50WV	4

Key No.	Parts No.	Description	Q'ty
C13,43		Mylar 0.0022 µF ±20% 50WV	2
C77		Ceramic 0.01 µF +80 -20% 250WV	1
C28,58		" 150 pF 125WV	2

### MECHANISM (Motor & Chassis)

Key No.	Parts No.	Description	Q'ty
1	R-AM01201	Chassis, assembly	1
2	R-112652	Bracket-top panel	1
3	R-112166	Cover-motor cover	1
4	R-112165a	Mtg. metal-level meter and counter	1
5	R-AM01202	Pulley, assembly-counter drive	2
6	R-448003a	Belt-counter drive belt	1
7	R-S5820	Counter-tape counter	1
8	R-S3008	Clamp-lead clamp	1
9	R-44243a	Belt-counter drive belt	1
10	R-S81242	Pulley and shaft, assembly-counter drive	1
11	R-112432	Lug-head clamp	3
12	R-S3063	Lug-head clamp	1
		Screw, round head-3×4mm	2
		" -3×6mm	5
		Screw, tapping-3×6mm	4
		Screw, pan head-3×10mm	1
		Screw, tapping pan head-3×6mm	1
		Hexagonal nut	2
		Spring washer-3mm	9
		Metal washer-3mm	2
		Nylon washer-3×6×0.5t	2
13	R-AM01203	AC motor, assembly	1
14	R-AM04401-50	Motor, pulley, assembly 50Hz	1
15	R-AM04401-60	" 60Hz	1
16	R-C7006	Capacitor-2µF 230V AC	1
		Screw -4×6mm	3
		" -3×6mm	2
		" -3×28mm	1
		Spring washer -4mm	3
		" -3mm	2
		Metal washer -3mm	2
		Metal washer -3mm	1

### MECHANISM (Feed Reel)

Key No.	Parts No.	Description	Q'ty
17	R-24865	Thumb screw-retaining supply reel	1
	R-AM01204	Slip disk, assembly	1
	R-24867b	Spacer-feed reel spindle	1
	R-14139a	Shaft feed reel spindle	1
21	R-13060b	Spring-flat spring-back tension spring	1
22	R-AM04402	Feed reel base, assembly	1
		Plastic washer-4.7ø×7ø×0.5t	1
		Rubber washer-4ø×10ø×2t	2
		Lock washer (external) -4mm	1
		Hexagonal nut -4mm	2
		Hexagonal nut -4mm	1

### MECHANISM (Takeup Reel)

Key No.	Parts No.	Description	Q'ty
17	R-24865	Thumb screw-retaining takeup reel	1
24	R-AM01205	Takeup reel base, assembly	1
	R-S8925a	Stopper, assembly-takeup reel shaft	1
	R-24667a	Spacer-takeup reel spindle	1
	R-24668	Spacer-fast forward mode pressure	1
	R-14140a	Shaft-takeup reel spindle	1
29	R-44274a	Round belt	1
30	R-AM04403	Pulley, assembly-takeup reel base pulley	1
	R-15304	Coil spring	1
32	R-112866	Lever-rewind action for takeup spring	1
		Plastic washer -4.7ø×7ø×0.5t	1
		" -5.2ø×12ø×0.5t	1
		Hexagonal nut -4mm	1
		Lock washer (external) -4mm	1
		Screw, round head -3×30mm	1
		Screw, round head -3×8mm	1
		Screw, round head -3×6mm	2
		Spring washer -3mm	3
		Metal washer -3mm	2
		Screw, pan head	1
		Special metal washer -3.3ø×10ø×1t	1
		Hexagonal nut -3mm	1
		Washer	4
		Takeup plate spring assembly	1
33	R-AM01206	Stopper-takeup spring	1
34	R-112867	Coil spring	1
35	R-15276	"	1
36	R-15277	"	1
	R-24671a	Spacer-R-112866	1
38	R-278124	Stopper-rewind action shaft	1

Key No.	Parts No.	Description	Q'ty
<b>MECHANISM. (Fast forward &amp; rewinding)</b>			
39	R-112167b	Lever-fast forward and rewind actuating lever	1
40	R-111937a	Lever-retaining shaft lever tension spring	1
	R-24672a	Spacer-lever (R-11937)	1
42	R-24918a	Rod-rewind actuating rod	1
43	R-112278	Rewind roller lever	1
44	R-25270	Rewind roller	1
45	R-12192	Shaft-rewind roller shaft	1
46	R-15207	Spring-rewind pressure lever return spring	1
	R-24670	Spacer-for rewind roller shaft	1
48	R-15208	Coil spring	2
49	R-24919	Retaining shaft-rewind lever tension spring	1
50	R-AM01207	Back tension lever-take up reel base	1
		Screw, round head -3 x 6mm	2
		Screw, round head -3 x 10mm	1
		Screw, round head -3 x 8mm	1
		Hexagonal nut -3mm	2
		" -2.6mm	1
		" -2mm	2
		Stopper ring -3mm	2
		Metal washer -2mm	4
		Special metal washer -3.3ø x 10ø x 1	1
		" -3.3ø x 16ø x 11	1
		Plastic washer -3.6ø x 7ø x 0.5t	2
		Fiber washer -6.2ø x 14ø x 0.5t	1
		Spring washer-3mm	4
		Hexagonal nut-2mm	1
		Spring washer-2.6mm	1
51	R-148002	Shaft-back tension lever	1
52	R-241279	Rod-back tension	1
53	R-44277	Mtg. base-back tension	1
54	R-15305	Coil spring-back tension lever	1
<b>MECHANISM. (Brake)</b>			
55	R-S8926	Brake, assembly	1
56	R-AM04404	Lever, assembly-brake actuation	1
	R-423133	Insulation sheet-muting switch	1
58	R-S4287	Switch-muting amplifier	1
59	R-24670	Spacer-retaining brake slide	2
60	R-S4272	Switch-muting switch for motor	1
	R-24671a	Spacer-brake slide	2
	R-24686	"	2
	R-24666	"	1
	R-24697	"	1
65	R-112322	Mtg. metal-flywheel bearing	2
66	R-S4312	Spring switch	1
67	R-112515	Lever	1
68	R-S4925	Micro switch	1
69	R-112860	Brake actuator slide	1
70	R-112861	Bracket-brake adjust	1
		Screw, round head -3 x 10mm	4
		" -3 x 8mm	3
		" -2 x 16mm	2
		" -3 x 6mm	1
		" -2.6mm x 6mm	1
		" -2 x 10mm	2
		" -2 x 18mm	1
		" -2.6 x 16mm	2
		" -3 x 4mm	2
		Screw, flat head -2.6 x 6mm	1
		Hexagonal nut -3mm	5
		" -2.6mm	1
		" -2mm	3
		Spring washer -3mm	7
		" -2.6mm	4
		" -1mm	5
		Metal washer -3mm	2
71	R-S81128	Automatic shut off lever	1
72	R-241037	Shaft-automatic shut off lever	1
		Plastic washer -4ø x 10ø x 0.5t	1

Key No.	Parts No.	Description	Q'ty
<b>MECHANISM. (Flywheel)</b>			
73	R-AM04405	Flywheel assembly	1
74	R-AM01208	Capstan sleeve, assembly	1
		Steel ball	1
		Felt-6ø x 10ø x 2t	1
		Washer-10ø x 1.0t	1
75	R-44230	Belt-capstan drive belt	1
	R-25232	Bearing	1
77	R-112323	Mounting metal-flywheel	1
	R-23754	Cup-flywheel bearing	1
		Felt-6ø x 10ø x 2t	1
		Plastic washer-6.2ø x 10ø x 0.5t	1
		Rubber washer-4ø x 10ø x 2t	1
		Screw, round head -2 x 6mm	3
		Stopper ring -5mm	1
		Felt-9ø x 15ø x 3t	1
		Ring	1
80	R-12199	Spring pad-actuating lever tension spring	1
	R-15210	Spring-shift lever pressure spring	1
	R-15178	Rod-shift lever	1
82	R-14115	Operation lever	1
83	R-14141a	Operation lever	1
84	R-112812b	Record play changing lever	1
85	R-112813	Mtg. metal-record play changing lever	1
	R-24672a	Spacer-record play changing lever	1
87	R-112811a	Record play changing lever	1
		Screw, round head -3 x 6mm	3
		Screw, pan head -3 x 40mm	1
		Special metal washer	1
		Spring washer -3mm	2
		Hexagonal nut -3mm	1
		Stopper ring -3mm	1
<b>MECHANISM. (Head)</b>			
88	R-AM04406	Panel, assembly	1
89	R-12237	Pipe-tape guide post	2
89	R-12148a	Sleeve-	1
89	R-23747b	Tape guide-	1
92	R-23732	Mounting plate-heads	1
93	R-AM01209	Head pad, assembly	1
94	R-12235a	Spring-pressure pad tension spring	1
	R-24873a	Spacer-head base	2
	R-S3008	Lug-lead clump	1
		Screw, round head -2 x 6mm	2
		Screw, flat head -3 x 35	1
		" -3 x 12	1
		" -2 x 8	6
		" -4 x 6	4
		Hexagonal nut -4mm	5
		Stopper ring -3mm	1
		Spring washer -4mm	5
		" -2mm	2
		Metal washer -2mm	2
97	R-29021	Shield plate-head	1
	R-14237a	Stud nut	1
99	R-241173	Shaft-head pad	1
100	R-15244a	Coil spring	3
101	R-S6403a	Record playback head	1
102	R-S6404	Erase head	1
103	R-AM0601	Pinch roller	1
		Felt washer	1
		Washer	1
		Stopper ring	1

