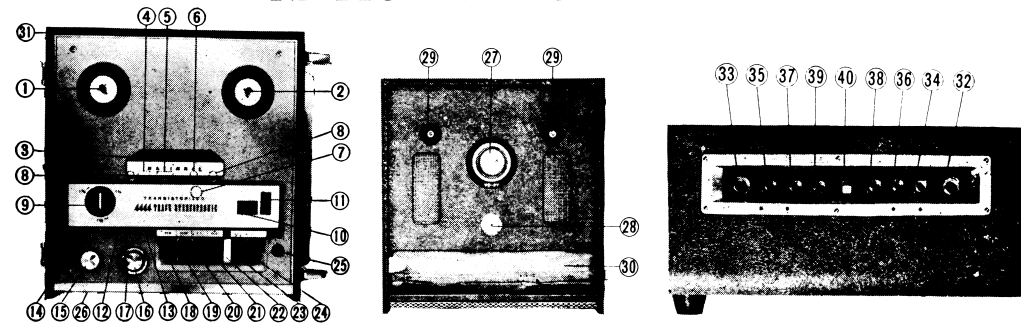


MODEL RS-753

SPECIFICATIONS

| | |
|---|--|
| Power source: | AC 100-250V (50-60 c/s) |
| Power Consumption: | Abt. 70W |
| Output Power: | 1 W x 2 (stereo), 2W (monaural) |
| Transistors: | 2SB-177(2) 2SB-175(2) 2SB-173(2) |
| Diode: | OA-70(2) |
| Tube Complement: | 30A5(3) |
| Selenium Rectifier: | KC 08C 21/5 x 2 (2) |
| Recording System: | AC Bias 65 KC |
| Erasing System: | AC Erasure |
| Tape Speeds: | 3 speeds: 7-1/2 ips. (19 cm/sec) 3-3/4 ips. (9.5 cm/sec) 1-7/8 ips. (4.75 cm/sec) |
| Frequency Response: | 60-15,000 c/s at 7-1/2 ips. 60-10,000 c/s at 3-3/4 ips. 60-5,000 c/s at 1-7/8 ips. MIC. 20K Ω (unbalanced) 2 circuits AUX. 1M Ω (unbalanced) 2 circuits |
| Input Impedance: | External speaker output 8 Ω 2 circuits External main output 47 Ω (max. Odb) 2 circuits |
| Output Impedance: | |
| Recording Time: (stereo) | 3 hours x 2 at 1-7/8 ips. with 1,800 ft tape |
| (monaural) | 3 hours x 4 at 1-7/8 ips. with 1,800 ft tape |
| Recording & Playback System: | 4 track stereo recording & Playback. 4 track monaural recording & Playback. 2 track stereo recording & Playback. 2 track monaural recording & Playback. First track Playback, third track Recording (simultaneously) First track Recording, third track Playback (simultaneously) |
| Wow and Flutters: | 7-1/2 ips. less than 0.2% (WRMS) |
| Built-in Speaker: | 4 x 6 inches permanent dynamic speaker (1) 6 inches permanent dynamic speaker (1) |
| Dimensions: | 9-1/2 x 13-5/8 x 14 inches |
| Weight: | 31-1/2 lbs. |



- Supply Reel Table
- Takeup Reel Table
- Head Cover
- Erase Head
- Record/Playback Head
- Capstan
- Pinch Roller
- Tape Guide
- Speed Selector Knob
- Tape Counter
- Tape Counter Re-setting Knob
- Level Indicator for Channel 1
- Level Indicator for Channel 2
- Pilot Lamp
- Tone Control with Speaker Monitor Switch
- Volume Control for Channel 1 with ON/OFF Switch
- Volume Control for Channel 2
- Rewind Push Button
- Stop Push Button
- Fast Forward push Button
- Play Push Button
- Instant Stop Push Button
- Channel 1 Record Push Button
- Channel 2 Record Push Button
- Push Button Release Button
- Built-in Speaker for Channel 1
- Extension Speaker for Channel 2
- Jack for Extension Speaker
- Reel Holders
- Accessory Storage Bag
- A.C. Cord Receptacle
- Channel 1 Microphone Input Jack
- Channel 2 Microphone Input Jack
- Channel 1 Auxiliary Input Jack
- Channel 2 Auxiliary Input Jack
- Channel 1 Line Output Jack for External Amplifier
- Channel 2 Line Output Jack for External Amplifier
- Channel 1 Output Jack for External Speaker
- Channel 2 Output Jack for External Speaker
- Stereo/Monaural Selector Switch
- Tension Arm Switch

A. To Turn "ON":

To turn "ON" the recorder, turn the Channel 1 Volume Control with ON/OFF Switch slightly clockwise until it clicks.

B. Push Button Operation:

- When "PLAY" push button is pressed, the unit is set at "PLAY" mode.
- When "PLAY" and "RECORD" push buttons are pressed simultaneously, the unit is set at "RECORD" mode.
- When "RECORD" push button is pressed, the tape just recorded or played back is rewound rapidly.
- When "FAST FORWARD" push button is pressed, the tape is advanced rapidly.
- When "INSTANT STOP" push button is pressed, the tape motion stops instantly for cueing and editing purposes.

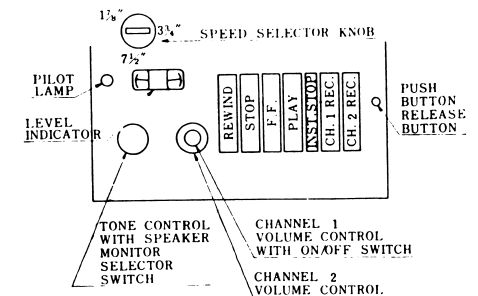
C. Volume Control:

- When playing back: The playback sound level can be controlled by respective Volume Controls.
- When recording: Volume level for left and right channels can be controlled by respective Volume Controls

D. Tone Control:

The tonal quality of playback sound can be adjusted with the Tone Control.
When this control is set at "SP MONITOR" position monitoring through built-in speakers is accomplished while recording.

TAPE TRANSPORT CONTROL FUNCTIONS:



- * The buttons are released automatically, when the case cover is closed.
- * The buttons are released automatically, when the other buttons are pressed, except "Instant Stop" button.
- * The "Instant Stop" button is inoperative when unit is set at "Fast Forward" or "Rewind" mode.
- * The speed selector knob is automatically locked when tape is in motion, preventing resultant damage to the tape.

- d. Remove four bolts holding the motor mounting board to the chassis.
- e. Remove the motor from the base plate together with the motor mounting board.
- f. Remove four nuts holding the motor mounting board together with the retaining screws of the oiling cup to the motor, thus the motor can be removed from the motor mounting board.

D. TO REMOVE TAPE COUNTER:

- a. Loosen set screws of the upper part of the spring-joint of the counter.
- b. Remove two screws holding the counter bracket to the base plate, thus the counter can be removed together with holding bracket.
- c. By removing two screws holding the counter to the bracket, the counter can be disassembled from the bracket.

E. TO REMOVE COUNTER BELT:

Remove the belt from the pulleys after removing two screws holding the takeup reel shaft bearing bracket.

F. TO REMOVE SUPPLY REEL TABLE:

Pull the table after removing the "C" washer holding the reel table shaft to the base plate.

G. TO REMOVE TAKEUP REEL TABLE:

Pull the table after removing the set screws at the bottom of the reel shaft support-A.

MECHANISM ADJUSTMENT

1. PINCH ROLLER ADJUSTMENT:

The shaft of the Pinch Roller must be parallel to the shaft of the Capstan. The proper pressure between Roller and Capstan is about 2.0 lbs. (0.9 kg) to 3.1 lbs. (1.4 kg). The pressure can be adjusted by turning the Pinch Roller Pressure Adjustment Nut.

2. IDLER ADJUSTMENT:

The shaft of the idler must be parallel to the shaft of the motor and the capstan. The whole edge of the idler must contact the respective speed steps on the motor Pulley. The proper pressure is about 7 oz. (200 g) to 11 oz. (50 g) at 1-7/8 ips position and the pressure can be adjusted by the Idler Spring.

3. TAKEUP TORQUE ADJUSTMENT:

The proper takeup torque is about 2 in.-oz. (25 g) to 5.0 in.-oz. (50 g). To increase the torque, depress the PLAY push button, loosen the set screws of the Tape Counter Pulley-A (M245) and adjust the Pulley position approximately 1/32" apart from the Take-up Reel Spindle Bearing Bracket (M246) and retighten the screws.

4. FAST FORWARD IDLER ADJUSTMENT:

The proper pressure between the Fast Forward Roller and the Takeup Reel Table is about 24 oz. (670 g), and the pressure

adjustment can be made by Fast Forward Pressure Spring Adjustment Nut. Adjustmen with almost fully wound 7" reel tape is preferable. The fast forward torque is to be at least 11 in.-oz. (110 g).

5. REWIND ADJUSTMENT:

When the rewind button is pressed, the grooves of the supply reel table, motor pulley and the tension pulley must be on the same level. The rewind torque must be at least 11 in.-oz. (110 g).

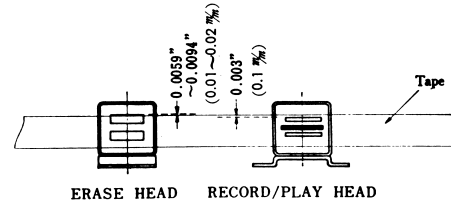
6. PAD ADJUSTMENT:

The proper pressure of the pressure pads are about 0.5 to 0.9 oz. (20 g) for the erase head and 0.8 oz. (20 g) to 1.2 oz. (30 g) for the record/play head.

7. HEAD ADJUSTMENT:

A. Position Adjustment:

Adjust the levels of the head retaining screws so as the tape during "RECORD" or "PLAY" modes will be positioned in relationship to the heads as per the diagram below. For quick check, lift the pressure pad assemblies with fingers and see position of tape in relationship to the heads.



B. Azimuth Adjustment:

a. Play/record head adjustment:

Thread AMPEX standard alignment tape on the recorder. While playing back the head azimuth adjustment part, adjust the screws of the head mounting plate for the proper position which will give maximum output. The mounting screws must be fixed thereafter.

b. Erase head adjustment:

The mounting screws must be fixed thereafter. After completion of the above adjustment, record a 450 cps tone on the completely erased tape and erase the recorded portion with erase frequency of 60 Kc and current of 30mA to 40mA and playback. Adjust the height of erase head, so that no recorded signal can be heard through speaker.

AMPLIFIER ADJUSTMENTS

A. STOP SWITCH ADJUSTMENT:

In order not to produce any sound from the speaker when the recorder is in the "STOP", "FAST FORWARD" or "REWIND" modes, the secondary winding of the output transformer must be short circuited.

B. SPEED SELECTOR SWITCH ADJUSTMENT:

In order to obtain the proper playback equalization, the following connection must be made when the speed selector switch is set at each speed.

The selection of the equalization circuit is made by changing the connection of the capacitors connected parallel to the playback circuit and in the negative feedback circuit.

- a. At 7-1/2 ips. (19 cm/sec) position, capacitors (C17/18 and C40/41) are disconnected from the circuit.
- b. At 3-3/4 ips. (9.5 cm/sec) position, the capacitors (C17 and C40) are connected parallel to the playback circuit.
- c. At 1-7/8 ips. (4.75 cm/sec) position, the capacitors (C17/18 and C40/41) are connected parallel to the playback circuit.

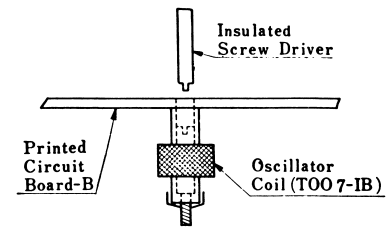
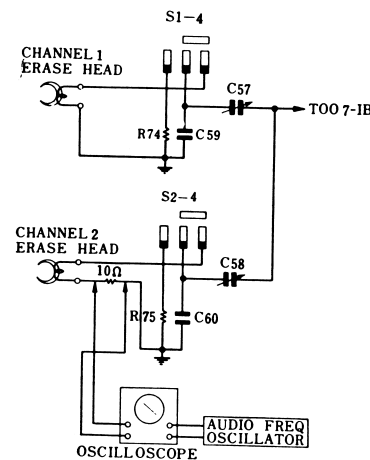
C. OSCILLATION FREQUENCY ADJUSTMENT:

The record bias and erase frequency are determined by the inductance of the oscillator coil (E-115, T007-1B) and C-52 (Styrol Capacitor, 0.001μF).

Frequency is adjusted at 65KC±3KC. The oscillation frequency is measured by the methods as shown in the following drawing.

First insert a 10Ω resistor in series to the ground lead wire of the erase head and measure the voltage across the 10Ω resistor, and compare the frequency with standard CR Oscillator. (The comparison is to be made by the Lissajous, figure on the Oscilloscope connected to the both units.) However, if the oscillation frequency is not within the above range, adjust the frequency by turning the adjusting screw of the dust core of the Oscillator Coil (T007-1B).

If the frequency is not within the above range by a wide margin, check the Oscillator Coil (E-115, T007-1B), C-52, 53, 54, 55, 56, 57, 58, 59, and 60 Capacitors as well as erase head.

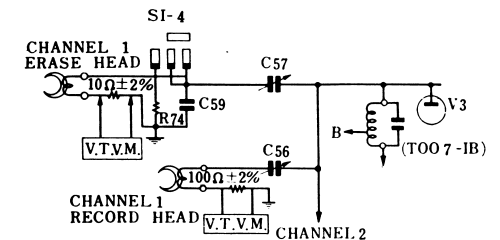


D. RECORD BIAS ADJUSTMENT:

Record bias is set at 0.5mA±0.5mA when stereo playback at 7-1/2 ips speed. To check record bias, measure the voltage with V.T.V.M. connected across the series resistor of 100Ω, specially connected to the ground lead wire of the record/play head. In this instance, the recording bias current is obtained by the following formula.

$$\text{Current (mA)} = \frac{\text{Voltage on V.T.V.M.}}{100 (\Omega)} \times 10^3$$

If the voltage is not between the above range, adjust the trimmer capacitor (C-55/56) to obtain the above voltage. And if the current is not within the above range by wide margin, check the trimmer capacitor (C55/56) and recording head.



E. ERASE CURRENT ADJUSTMENT:

Erase current is adjusted for 35mA-45mA at stereo record mode. To measure the erase current, check with V.T.V.M. connected across the series resistor of 10Ω, specially connected to the ground lead wire of the erase head. In this instance, the erase current is obtained by:

$$\text{Current (mA)} = \frac{\text{Voltage on V.T.V.M.}}{10 (\Omega)}$$

If the current is not between the above range, adjust the screw of the padding capacitor (C57/58) to obtain the above current. And if the current is not within the above range by wide margin check the padding capacitor (C57/58), C59, C60, Side-switch (S1-4, S2-4) and erase head.

F. RECORDING LEVEL ADJUSTMENT:

Standard recording level is set when record head current is at 0.64mA with 1,000 cps tone input.

The MIC input level to obtain this output should be -60db±5db (0db=1V), when equalizer circuit is set for 7-1/2 ips speed and volume control is set for maximum. The VU meter is calibrated at 0VU±2VU for this output level.

Adjustment of VU meters is made by VR3 and VR4 (1kΩ semi-fixed resistors) for each channel.

The record head current is measured in the following setup, and V.T.V.M. reading of 6.4mV indicates the standard re-

REPLACEMENT PARTS

| Symbol | Description | Parts No. | |
|--------|-----------------------|-----------|---------------|
| R-1 | Carbon Film Resistor, | ERD-14LZK | 22K Ω |
| R-2 | " " " " | " | 1M Ω |
| R-3 | " " " " | " | 4.7K Ω |
| R-4 | " " " " | " | 39 Ω |
| R-5 | " " " " | " | 100K Ω |
| R-6 | " " " " | ERD-18RZK | 4.7K Ω |
| R-7 | " " " " | ERD-14LZK | 2.2K Ω |
| R-8 | " " " " | " | 5.6K Ω |
| R-9 | " " " " | ERD-18RZK | 2.7K Ω |
| R-10 | " " " " | ERD-18RZK | 1.5K Ω |
| R-11 | " " " " | " | 2.7K Ω |
| R-12 | " " " " | " | 8.2K Ω |
| R-13 | " " " " | ERD-14LZK | 1K Ω |
| R-14 | " " " " | " | 33K Ω |
| R-16 | " " " " | " | 47K Ω |
| R-17 | " " " " | " | 10K Ω |
| R-18 | " " " " | " | 10K Ω |
| R-19 | " " " " | " | 330K Ω |
| R-20 | " " " " | " | 1K Ω |
| R-21 | " " " " | ERD-18RZK | 47 Ω |
| R-22 | " " " " | " | 18 Ω |
| R-23 | " " " " | RED-14LZK | 22K Ω |
| R-24 | " " " " | " | 470K Ω |
| R-25 | " " " " | " | 4.7K Ω |
| R-26 | " " " " | " | 470K Ω |
| R-27 | " " " " | " | 150K Ω |
| R-28 | " " " " | ERD-34LZK | 100 Ω |
| R-29 | " " " " | ERD-12LZK | 3.3K Ω |
| R-30 | " " " " | ERD-34LZK | 15K Ω |
| R-31 | " " " " | ERD-12LZK | 47 Ω |
| R-32 | " " " " | ERD-14LZK | 1.5K Ω |
| R-33 | " " " " | ERD-1LZK | 8 Ω |
| R-34 | " " " " | ERD-14LZK | 10K Ω |
| R-35 | " " " " | " | 47 Ω |
| R-36 | " " " " | " | 100 Ω |
| R-37 | " " " " | " | 2.2K Ω |
| R-38 | " " " " | " | 22K Ω |
| R-39 | " " " " | " | 1M Ω |
| R-40 | " " " " | " | 4.7K Ω |
| R-41 | " " " " | " | 39 Ω |
| R-42 | " " " " | " | 100K Ω |
| R-43 | " " " " | ERD-18RZK | 4.7K Ω |
| R-44 | " " " " | ERD-14LZK | 2.2K Ω |
| R-45 | " " " " | " | 5.6K Ω |
| R-46 | " " " " | " | 2.7K Ω |
| R-47 | " " " " | ERD-18RZK | 1.5K Ω |
| R-48 | " " " " | " | 2.7K Ω |
| R-49 | " " " " | " | 8.2K Ω |
| R-50 | " " " " | ERD-14LZK | 1K Ω |
| R-51 | " " " " | " | 33K Ω |
| R-53 | " " " " | " | 47K Ω |
| R-54 | " " " " | " | 10K Ω |
| R-55 | " " " " | " | 330K Ω |
| R-56 | " " " " | " | 1K Ω |
| R-57 | " " " " | " | 47 Ω |
| R-58 | " " " " | ERD-18RZK | 18 Ω |
| R-59 | " " " " | ERD-14JZK | 22K Ω |
| R-60 | " " " " | " | 470K Ω |
| R-61 | " " " " | " | 4.7K Ω |
| R-62 | " " " " | " | 470K Ω |
| R-63 | " " " " | " | 150K Ω |
| R-64 | " " " " | ERD-34LZK | 100 Ω |
| R-65 | " " " " | ERD-12LZK | 3.3K Ω |
| R-66 | " " " " | " | 47 Ω |
| R-67 | " " " " | ERD-14LZK | 1.5K Ω |

| | | | |
|------|-----------------------|-----------|---------------|
| R-68 | " " " " | ERD-1LZK | 8 Ω |
| R-69 | " " " " | ERD-14LZK | 10K Ω |
| R-70 | " " " " | ERD-2LZK | 8 Ω |
| R-71 | " " " " | ERD-14LZK | 47 Ω |
| R-72 | " " " " | " | 100 Ω |
| R-73 | " " " " | " | 2.2K Ω |
| R-74 | " " " " | ERD-2LZK | 1K Ω |
| R-75 | " " " " | " | 1K Ω |
| R-76 | " " " " | ERD-14LZK | 47K Ω |
| R-77 | " " " " | " | 4.7K Ω |
| R-78 | " " " " | ERD-1LZK | 10K Ω |
| R-79 | Wire-wound Resistor, | ERE-5H | 240 Ω |
| R-80 | Carbon Film Resistor, | ERD-14LZK | 220K Ω |
| R-81 | " " " " | " | 220K Ω |

| | | |
|------|--------------------|---------------|
| VR-1 | Variable Resistor, | EVF-04CR42B24 |
| VR-2 | " " " | EVF-53QL50A14 |
| VR-3 | " " " | EVJ-L0AA00B13 |
| VR-4 | " " " | EVJ-L0AA00B13 |

| | | |
|------|---------------------------------|--------------|
| C-1 | Electrolytic Tubular Capacitor, | ECE-A15V3 |
| C-2 | " " " " | ECE-A15V30 |
| C-3 | " " " " | " |
| C-4 | " " " " | " |
| C-5 | Mylar Capacitor, | ECQ-G05332MZ |
| C-6 | " " " " | ECQ-G05102MZ |
| C-7 | " " " " | ECQ-G05152MZ |
| C-8 | " " " " | ECQ-G05333MZ |
| C-9 | Electrolytic Tubular Capacitor, | ECE-A15V3 |
| C-10 | " " " " | ECE-A15V500 |

| | | |
|------|-------------------------------------|--------------|
| C-11 | Metallized Paper Tubular Capacitor, | ECH-R2104M |
| C-12 | Electrolytic Tubular Capacitor, | ECE-A50V30 |
| C-13 | " " " " | " |
| C-14 | " " " " | ECE-A15V0.3M |
| C-15 | " " " " | ECE-A50V100 |
| C-16 | Ceramic Capacitor, | D-50500K |
| C-17 | " " " " | D-50101K |
| C-18 | " " " " | D-50151K |
| C-19 | Mylar Capacitor, | ECQ-G05473MZ |
| C-20 | Paper Tubular Capacitor, | ECN-W4103M |
| C-21 | Electrolytic Tubular Capacitor, | ECE-A15V30 |
| C-22 | " " " " | ECE-C350V3 |
| C-23 | Paper Tubular Capacitor, | ECN-W4472M |

| | | |
|------|-------------------------------------|--------------|
| C-24 | Metallized Paper Tubular Capacitor, | ECH-2503M |
| C-25 | Paper Tubular Capacitor, | ECN-R5403M |
| C-26 | Electrolytic Tubular Capacitor, | ECE-A15V3 |
| C-27 | " " " " | ECE-A15V30 |
| C-28 | " " " " | " |
| C-29 | " " " " | " |
| C-30 | Mylar Capacitor, | ECQ-G05332MZ |
| C-31 | " " " " | ECQ-G05102MZ |
| C-32 | " " " " | ECQ-G05152MZ |
| C-33 | " " " " | ECQ-G05333MZ |

| | | |
|------|-------------------------------------|------------|
| C-34 | Electrolytic Tubular Capacitor, | ECE-A15V3 |
| C-35 | Metallized Paper Tubular Capacitor, | ECH-R2104M |
| C-36 | Electrolytic Tubular Capacitor, | ECE-A50V30 |

| | | |
|------|------------------------------------|--------------|
| C-37 | " " " " | " |
| C-38 | " " " " | ECE-A15V0.3M |
| C-39 | Ceramic Capacitor, | D-50500K |
| C-40 | " " " " | D-501019K |
| C-41 | " " " " | D-50151K |
| C-42 | Mylar Capacitor, | ECQ-G05473MZ |
| C-43 | Paper Tubular Capacitor, | ECN-W4103M |
| C-44 | Electrolytic Tubular Capacitor, | ECE-A15V30 |
| C-45 | " " " " | ECE-C350V3 |
| C-46 | Paper Tubular Capacitor, | ECN-W4472M |
| C-47 | Metallized Paper Tubular Capacitor | ECH-S2503M |

| | | |
|------|-------------------------------------|------------------------|
| C-48 | Paper Tubular Capacitor, | ECN-R4503M |
| C-49 | Electrolytic Block Capacitor, | ECE-R250VB \times 1F |
| C-50 | " " " " | " |
| C-51 | Metallized Paper Capacitor, | PMP-250/2/P65 |
| C-52 | Styrol Capacitor, | ECQ-S4102K |
| C-53 | Paper Tubular Capacitor, | ECN-R4103K |
| C-54 | " " " " | ECN-W4472M |
| C-55 | Trimmer Capacitor, | BTC-2L(A) |
| C-56 | " " " " | " |
| C-57 | Padding Capacitor, | " |
| C-58 | " " " " | " |
| C-59 | Paper Tubular Capacitor, | ECN-W4222M |
| C-60 | " " " " | " |
| C-61 | Metallized Paper Tubular Capacitor, | ECH-R2104M |

| | | |
|------|---------------------------------|-------------|
| C-62 | " " " " | " |
| C-63 | Electrolytic Tubular Capacitor, | ECE-15V0.5M |
| C-64 | " " " " | " |
| C-65 | Paper Tubular Capacitor, | ECN-W4104M |

| | | |
|-----|--------------|------|
| V-1 | Vacuum Tube, | 30A5 |
| V-2 | " " " " | " |
| V-3 | " " " " | " |

| | | |
|------|-------------|---------|
| TR-1 | Transistor, | 25B173A |
| TR-2 | " | 25B175A |
| TR-3 | " | 25B177A |
| TR-4 | " | 25B173A |
| TR-5 | " | 25B175A |
| TR-6 | " | 25B177A |

| | | |
|--------|------------------------------|----------------------------|
| E-1A | Recording and Playback Head, | WY-400Z |
| E-3A | Erasing Head, | WY-500Z |
| E-14 | Pilot Lamp Socket | " |
| E-15 | Pilot Lamp, | 6.3V, 0.15A |
| E-18A | Jack, | M3A |
| E-21 | Lug Board, (2P) | 1-2PH (B) |
| E-22 | " " (4P) | 1-4PH (A) |
| E-65A | Speaker, | ESA-15D285G(for channel 1) |
| E-66 | Microphone Jack | " |
| E-92 | Slide Switch Spring | " |
| E-110 | Selenium Rectifier, | KCO3.C21/5 |
| E-111 | Level Indicator, | V-203 |
| E-112 | " " " | V-203R |
| E-113 | Power Transformer, | PT-2018R |
| E-114 | Output Transformer, | OT-3004R |
| E-115 | Oscillator Coil, | TOO7-1B |
| E-116A | Speaker, | EAS-16P36S (for channel 2) |

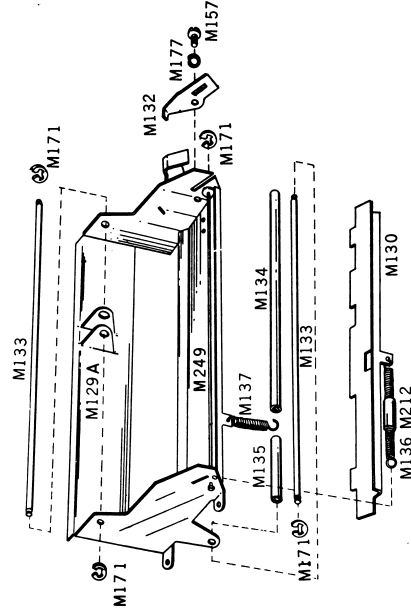
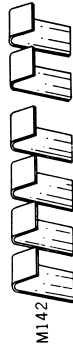
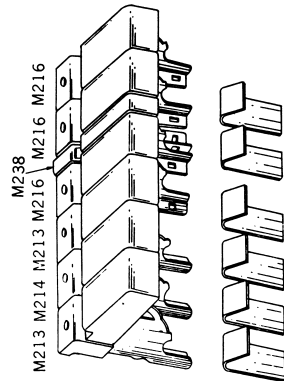
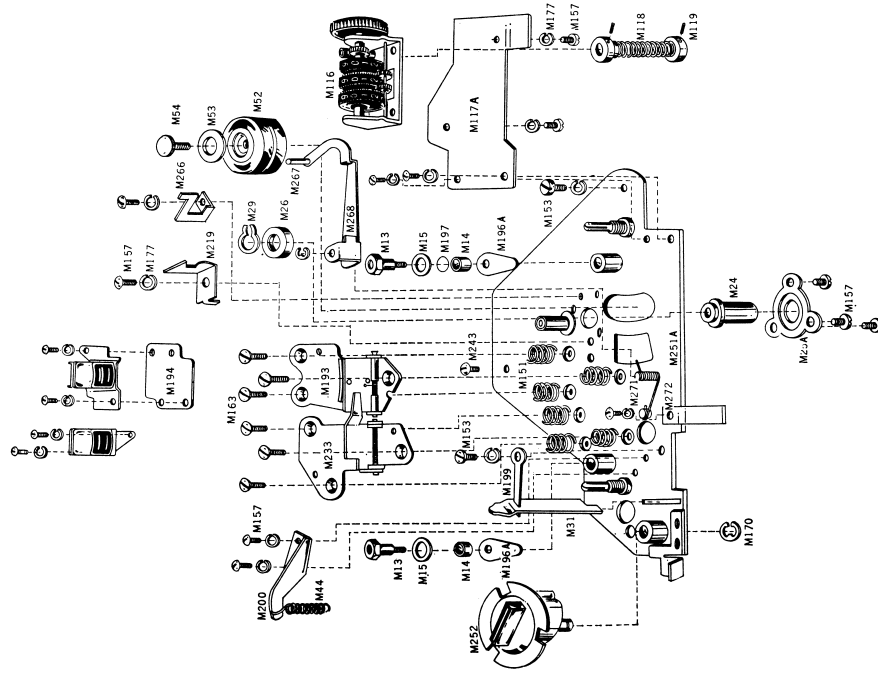
| | | |
|-------|---|----|
| E-117 | Speaker Connector Plug | " |
| E-118 | Printed Circuit Board-A | " |
| E-119 | " " " " | -B |
| E-120 | " " " " | -C |
| E-122 | Jack Board | " |
| E-123 | AC Socket | " |
| E-124 | 7-P Molded Socket | " |
| E-125 | MT Spring B | " |
| E-126 | Pilot Lamp Cover B | " |
| E-127 | Record Switch Lever-A | " |
| E-128 | " " " " | -B |
| E-129 | Slide Switch Lever Holder | " |
| E-130 | Slide Switch Lever Shaft | " |
| E-131 | Switch Shielding Plate | " |
| E-132 | Printed Circuit Board Bracket-A | " |
| E-133 | " " " " | -B |
| E-134 | Shielding Plate for Printed Circuit Board | " |
| E-135 | Transformer Base | " |
| E-136 | Printed Circuit Board Holder-A | " |
| E-137 | " " " " | -B |
| E-138 | Power Source Terminal Bracket | " |
| E-139 | AC Socket Bracket | " |
| E-141 | Cord Clamper | " |

| | | |
|-------|------------------------------|---|
| E-142 | Jack Bracket | " |
| E-143 | Jack Shielding Plate | " |
| E-144 | Lever Cushion | " |
| E-155 | Cover for Tension Arm Switch | " |
| E-156 | Lug Board (4P) | " |
| E-157 | Fuse Holder | " |
| E-158 | Fuse 0.5A | " |
| E-159 | Fuse 1A | " |

| | | |
|-----|------------------------|-------|
| D-1 | Germanium Diode, OA-70 | " |
| D-2 | " " " " | OA-70 |

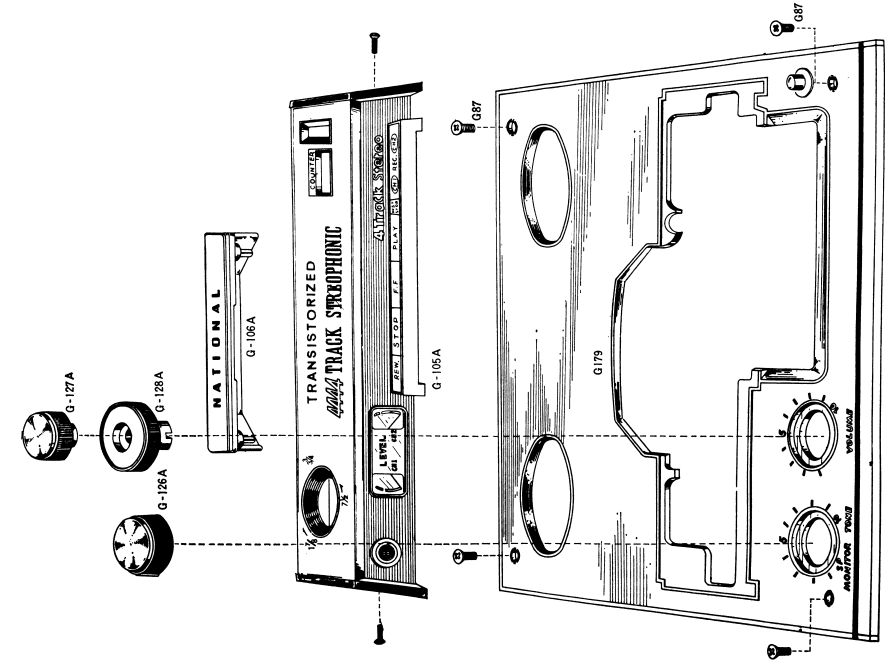
| | | |
|------|--|---|
| S-1 | Slide Switch, TR-6E | " |
| S-2 | " " " " | " |
| S-3 | Leaf Switch, AS-103 | " |
| S-4 | Stop Switch | " |
| S-5 | Leaf Switch, AS-202 | " |
| S-6 | Speaker Monitor Selector Switch, coupled with VR-2 | " |
| S-7 | Leaf Switch, LS-11020 | " |
| S-8 | " " " " | " |
| S-9 | Stereo/Mono Selector Switch | " |
| S-10 | Power Switch, coupled with VR-1 | " |
| S-11 | AC Main Selector Switch | " |
| S-12 | " " " " | " |
| S-13 | Tension Arm Switch | " |

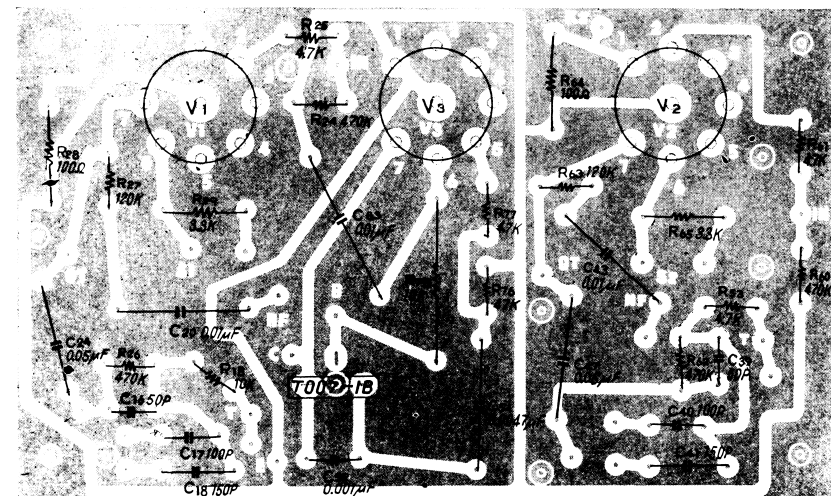
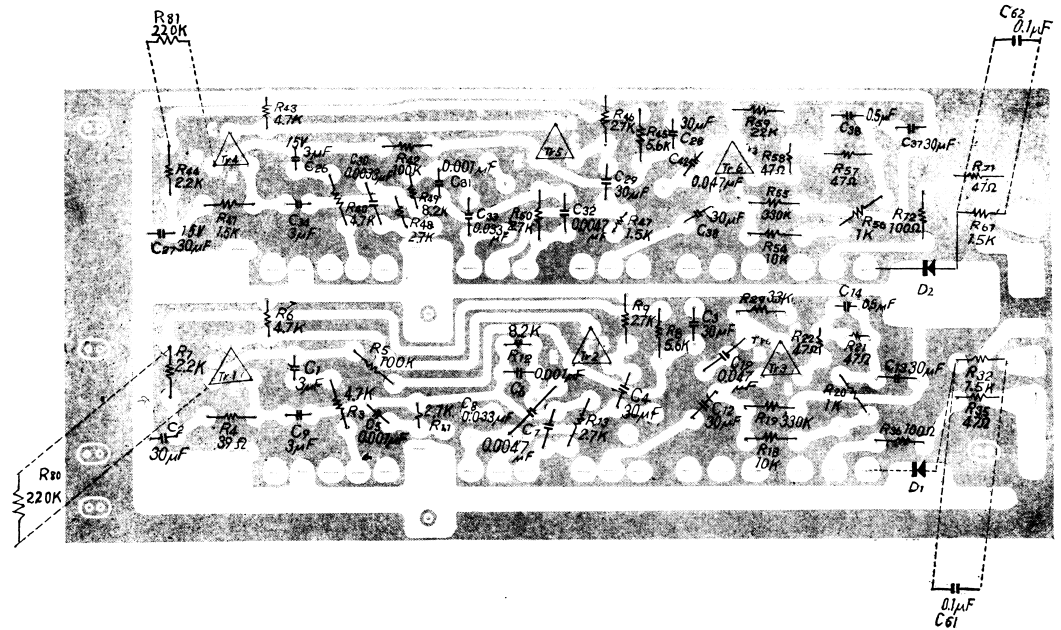
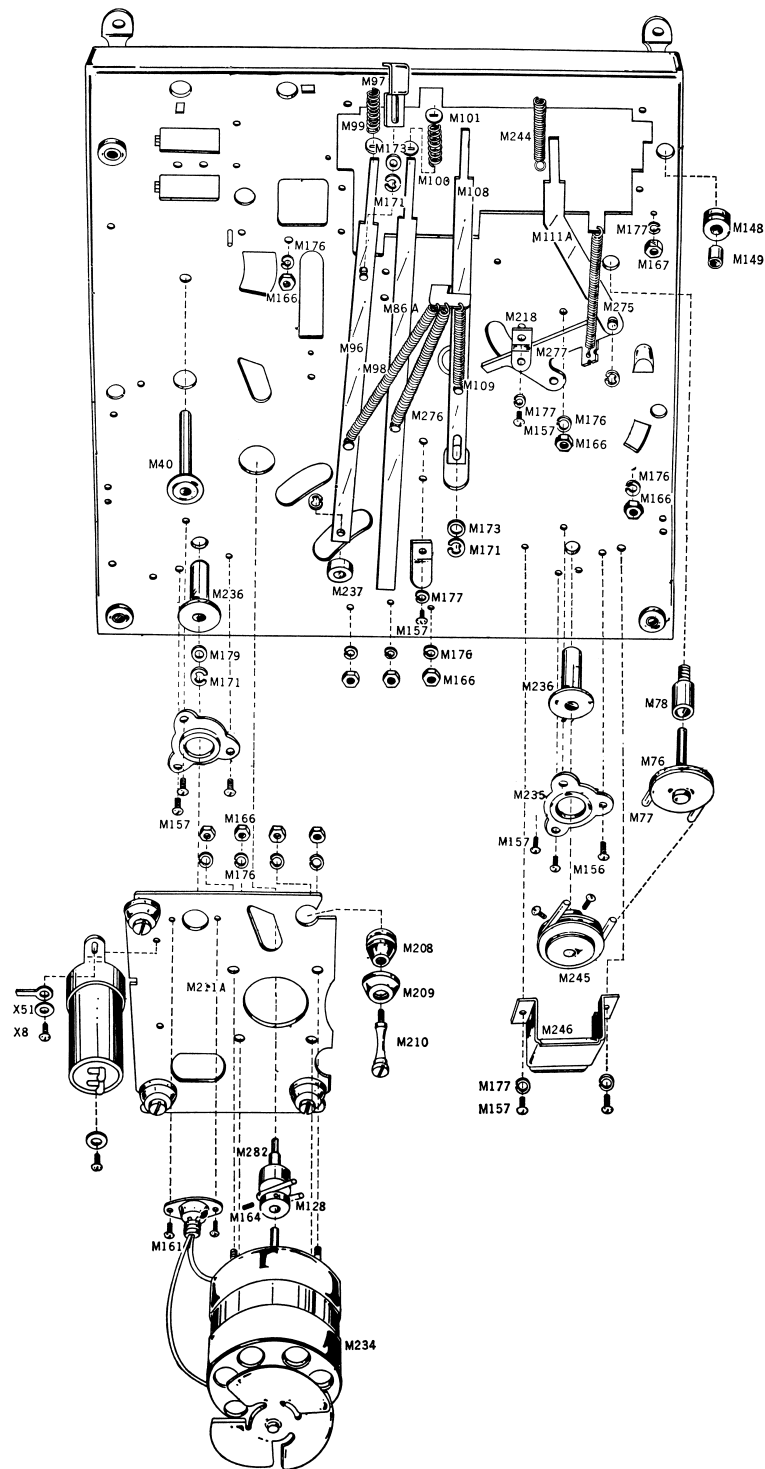
| | | |
|-------|-------------------------------|------------------|
| M-3 | Sub-plate Pole-A | " |
| M-4 | " " " " | -B |
| M-13 | Tape Guide Screw | " |
| M-14 | Tape Guide | " |
| M-15 | Tape Guide Washer | " |
| M-23 | Flywheel | " |
| M-24 | " " " " | Bearing |
| M-25A | " " " " | Retainer |
| M-26 | Capston Oil-Cap | " |
| M-29 | " " " " | Holding Washer |
| M-31 | Speed Selector Safety Bracket | " |
| M-33 | Drive Idler | " |
| M-34 | " " " " | Shaft |
| M-35 | " " " " | Arm |
| M-36 | " " " " | pin |
| M-37A | " " " " | Lever-B |
| M-38 | " " " " | Arm Spacer |
| M-39 | " " " " | Spring |
| M-40 | " " " " | Lever Shaft |
| M-41B | " " " " | Lever-A Assembly |
| M-42 | " " " " | Lever Spring |
| M-44 | " " " " | Lever-B Spring |
| M-45 | Pinch Roller Holder Assembly | " |
| M-46A | " " " " | Lever-A |
| M-47 | " " " " | -B |
| M-48 | " " " " | Spring-A |
| M-49 | " " " " | Holder Washer-A |
| M-51 | " " " " | " " -C |
| M-52 | Pinch Roller | " |
| M-53 | " " " " | Felt |
| M-54 | " " " " | Holding Screw |
| M-55 | " " " " | Shaft |
| M-76 | Tape Counter Pulley-B | " |
| M-77 | " " " " | Belt |
| M-78 | " " " " | Shaft Bearing |
| M-80A | Brake Holding Bracket | " |
| M-81 | Rewind Brack Roller Assembly | " |
| M-82 | Takeup Brack Roller Assembly | " |
| M-83 | Brake Arm Shaft | " |
| M-85 | Brake Spring | " |
| M-86A | Brake Rod | " |
| M-87 | Rewind Brake Arm | " |
| M-88 | Takeup Brake Arm | " |
| M-90A | Rewind Tension Pulley Arm | " |
| M-91 | " " " " | Shaft |



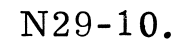
STANDARD VOLTAGE CHART FOR TROUBLE SHOOTING

| Chck Point | Voltage in Play mode | Voltage in Record mode | Tolerance (%) |
|------------|----------------------|------------------------|---------------|
| 1 | AC 115V | AC 115V | ± 1 |
| 2 | AC 30V | AC 30V | ± 5 |
| 3 | AC 5V | AC 5V | ± 5 |
| 4 | AC 134V | AC 134V | ± 10 |
| 5 | DC 157V | DC 157V | ± 15 |
| 6 | DC 125V | DC 125V | ± 15 |
| 7 | DC 41V | DC 41V | ± 15 |
| 8 | DC 8.5V | DC 8.5V | ± 15 |
| 9 | DC 112V | DC 112V | ± 15 |
| 10 | DC 112V | DC 112V | ± 15 |
| 11 | DC 6V | DC 6V | ± 15 |
| 12 | DC 23V | DC 23V | ± 15 |
| 13 | DC 40V | DC 40V | ± 15 |
| 14 | DC 40V | DC 40V | ± 15 |
| 15 | DC 2.2V | DC 2.2V | ± 15 |
| 16 | DC 3.9V | DC 3.9V | ± 15 |
| 17 | DC 3.8V | DC 3.8V | ± 15 |
| 18 | DC 6.5V | DC 6.5V | ± 15 |
| 19 | DC 6.4V | DC 6.4V | ± 15 |
| 20 | DC 112V | DC 112V | ± 15 |
| 21 | DC 112V | DC 112V | ± 15 |
| 22 | DC 6V | DC 6V | ± 15 |
| 23 | DC 23V | DC 23V | ± 15 |
| 24 | DC 40V | DC 40V | ± 15 |
| 25 | DC 40V | DC 40V | ± 15 |
| 26 | DC 2.2V | DC 2.2V | ± 15 |
| 27 | DC 3.9V | DC 3.9V | ± 15 |
| 28 | DC 3.8V | DC 3.8V | ± 15 |
| 29 | DC 6.5V | DC 6.5V | ± 15 |
| 30 | DC 6.4V | DC 6.4V | ± 15 |
| 31 | DC 57V | DC 64V | ± 15 |
| 32 | DC 157V | DC 157V | ± 15 |

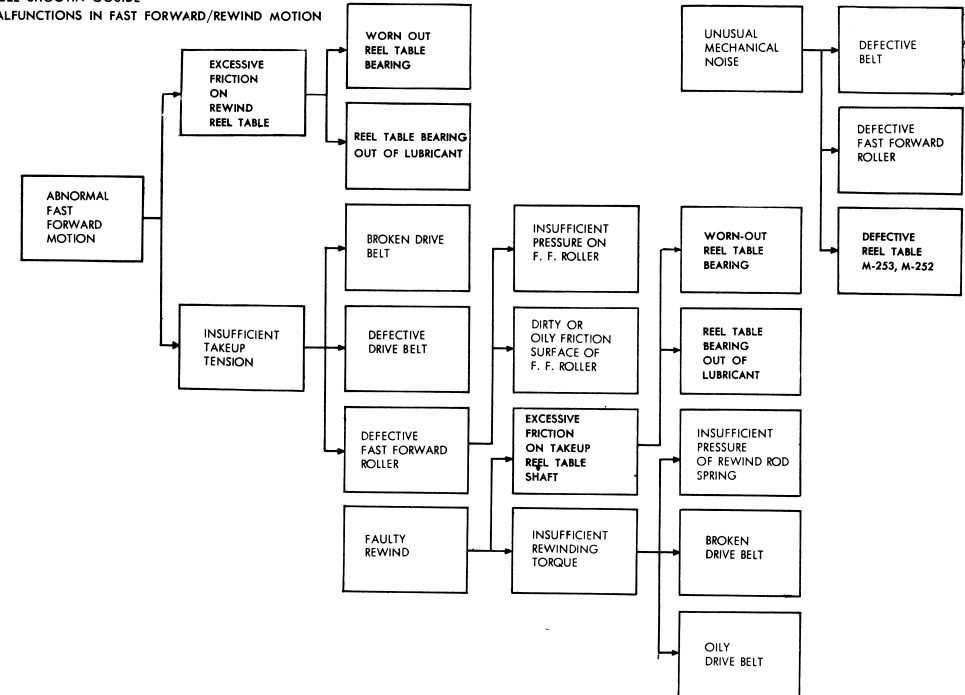
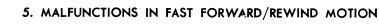




3. DEFECTIVE RECORDING CIRCUIT

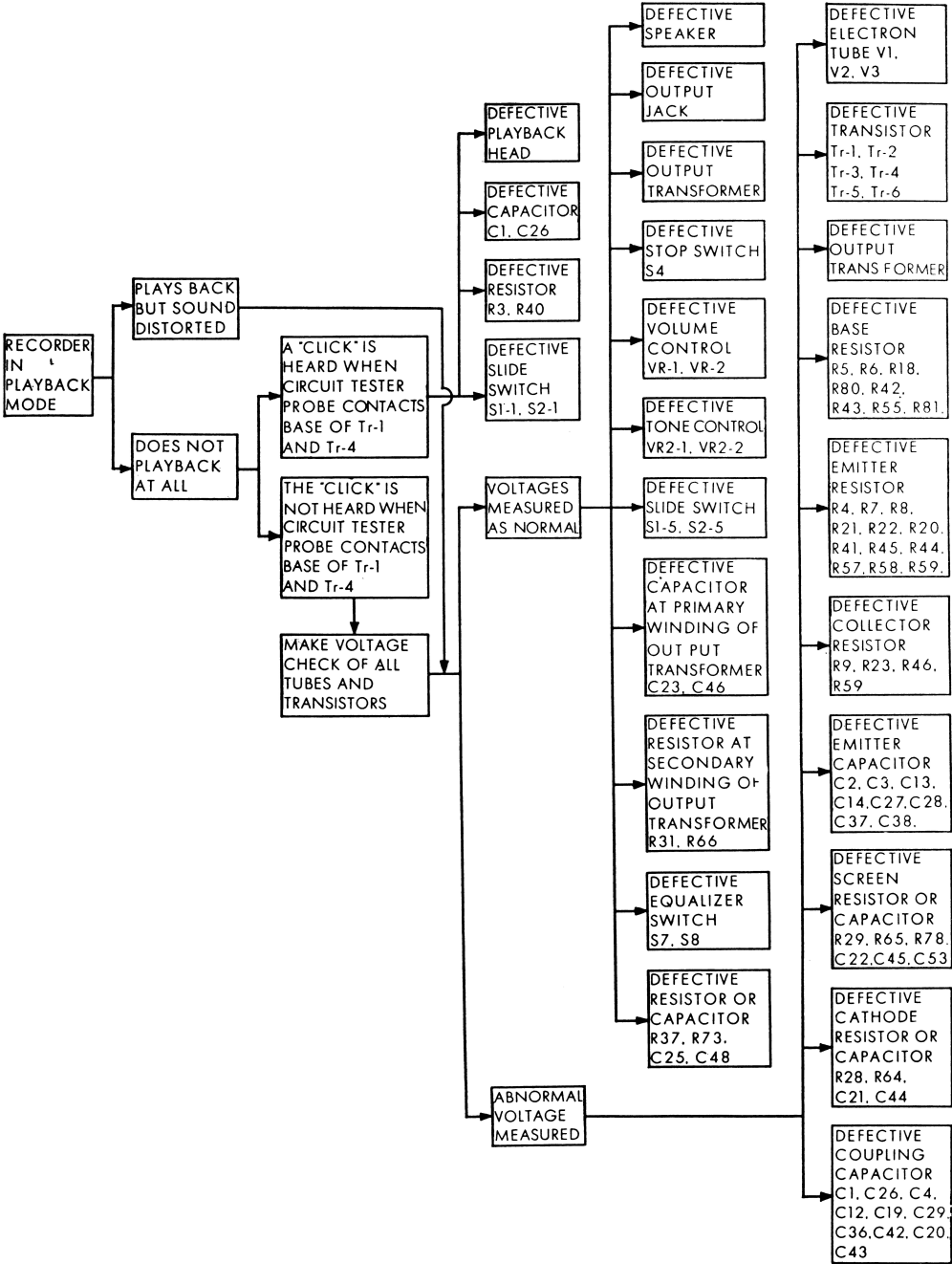
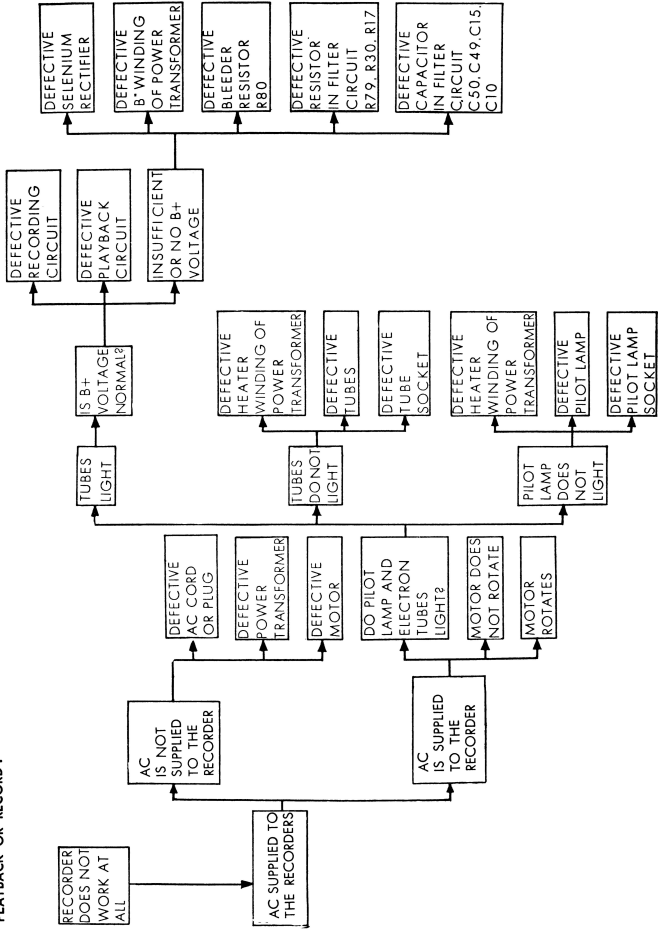


4. MALFUNCTIONS IN PLAY/RECORD MOTION



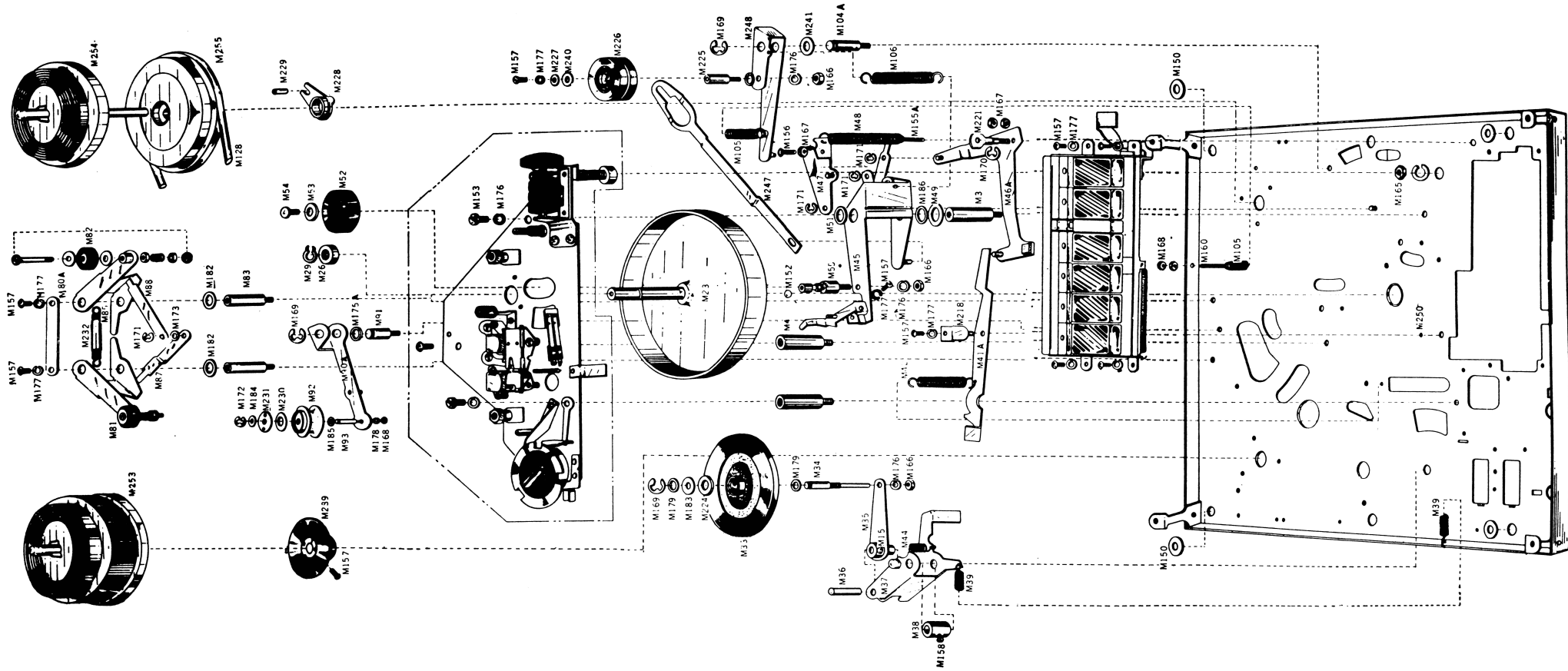


- | | | | |
|--|---|---|---|
| 1. S1/S2---Record/Play Selector Switch (shown in Stereo Play position) | 4. S 5---Record Equalizer Selector Switch (shown in 3-3/4 ips.) | 8. S10---AC On/Off Switch (ganged with VR1) | 12. Value of capacitors with no indication is Microfarads. P=Micro-Microfarads. |
| 2. S 3---Play Equalizer Selector Switch (shown in 3-3/4 ips.) | 5. S 6---Monitor Selector Switch (ganged with VR2) | 9. S11/S12---AC Selector Switch (shown in 250 V) | 13. Values indicated in <input type="text"/> are DC currents between the chassis. Upper Voltage in Play mode, Lower Voltage in Record mode. |
| 3. S 4---Stop Switch. | 6. S7/S8---Equalizer Selector Switch. | 10. S13---Tension Arm Switch | |
| | 7. S 9---Stereo Monaural Selector Switch (shown in Stereo) | 11. Capacity of resistors with no unit indication is Ω , K=1000 Ω M=1,000,000 Ω (R)= | |



N29-7.

NATIONAL MODEL RS-753



N29-5. NATIONAL MODEL RS-753

M- 92 Rewind Tension Pulley
M- 93 " " " " Shaft
M- 96 Rewind Rod
M- 97 " " " Bracket
M- 98 " " " Spring -A
M- 99 " " " " -B
M-100 Brake Rod Spring
M-101 " " " Washer
M-104A Fast Forward Lever Shaft
M-105 " " " Spring
M-106 Pinch Roller Spring B
M-108 Fast Forward Rod
M-109 " " " " Spring
M-111A Instant Stop Lever-B
M-112A Instant Stop Lever-C Assembly
M-116 Tape Counter
M-117A " " " Holding Bracket
M-118 " " " " Spring Joint
M-119 " " " " " Screw
M-128 Rubber Belt
M-129A Push Button Frame Assembly
M-130 " " " Lever-A
M-132 " " " " Bracket
M-133 " " " " Shaft
M-134 Vinyl Pipe-A for Push Button Shaft
M-135 " " " -B " " " "
M-136 Push Button Lever-A Spring
M-137 " " " " -B "
M-142 " " " Leaf Spring
M-148 Base Plate Rubber Cushion
M-149 " " " " " Spacer
M-150 " " " " " Washer
M-151 Head Adjustment Spring
M-152 Flywheel Thrust Steel Ball
M-153 Screw, 4×8, Countersink, Half-round Head
M-155A " 3×25, Round-Head
M-156 " 3×12, " "
M-157 " 3×5, " "
M-158 " 3×4, " "
M-160 " 2.6×25, " "
M-161 " 2×4, " "
M-163 " 3×8, Countersink, Flat-Head
M-164 " 3×5
M-165 Nut, 8φ
M-166 " 3φ
M-167 Nut, 3φ
M-168 " 2.6φ
M-169 C-Washer, 5φ
M-170 " 4φ
M-171 " 3.2φ
M-172 " 2.2φ
M-173 Phenolic Washer, 4.2×9×0.5t
M-175A " " 7.1×9×0.5t
M-176 Spring Washer, 4φ
M-177 " " 3φ
M-178 " " 2.6φ
M-179 Phenolic Washer, 6.1×8.2×0.25t
M-182 " " 6.1×8.2×0.25t
M-183 " " 6.1×13.5×0.5t
M-184 " " 3.5×5.5×1t
M-185 " " 3.5×5×0.5t
M-186 " " 9.2×13.5×1t
M-193 R/P Head Mounting Plate
M-194 " " " " " Spacer
M-196A Tape Guide Plate
M-197 " " " Washer
M-199 Speed Selector Safety Bracket Leaf Spring
M-200 Metal Hook for Drive Idler Spring
M-201 Drive Idler Lever Shaft Cap

M-208 Motor Mounting Board Rubber Cushion
M-209 Washer for above
M-210 Mounting screw for above
M-211A Motor Mounting Board
M-212 Vinyl Pipe for Push Button Lever Spring-A
M-213A Rewind/F.F. Button Assembly
M-214A Stop Button Assembly
M-216A Record and Playback Button Assembly
M-218 Lever Bracket
M-219 Tape Litterer
M-221 Pinch Roller Spring Holding Post
M-224 Idler Felt
M-225 Fast Forward Roller Shaft
M-226 " " " "
M-227 " " " " Washer
M-228 Takeup Reel Table Pulley Retainer
M-229 Vinyl Pipe for above
M-230 Rewind Tension Pulley Felt
M-231 " " " " Washer
M-233 Erase Head Spacer
M-234 Motor, 2HC-20E
M-235 Reel Table Bearing Retainer
M-236 " " " "
M-237 Vinyl Pipe for above
M-238A Instant Stop Button
M-239 Rewind Reel Table Friction Disc
M-240 Phenolic Washer, 9.1×3.1×0.5t
M-241 " " 12×6.1×0.5t
M-242 Small Screw, 2.6φ×10, Countersink, Half-Round Head
M-243 " " 4φ×8, Round Head
M-244 Instant Stop Lever Spring
M-245 Tape Counter Pulley-A
M-246 Takeup Reel Table Bearing Bracket
M-247 Takeup Rod
M-248 Fast Forward Lever-A
M-249 Push Button Lever-B Assembly
M-250A Base-Plate
M-251A Sub Base-Plate
M-252 Speed Selector Knob
M-253 Supply Reel Table
M-254 Takeup Reel Table
M-255 Takeup Reel Table Pulley
M-266 Tape Guide for Tension Arm
M-267 Tension Arm Pin
M-268 Tension Arm
M-271 " " " Spring
M-272 Hook for Tension Arm Spring
M-275 Instant Stop Spring-A
M-276 Brake Rod Spring
M-277 Instant Stop Lever-A
M-282 Motor Pulley
M-305 AC Selector S.W. Holder

CABINET PARTS

G- 5 Hinge
G- 24 Handle
G- 87 Panel Retaining Screw×MS4×10
G-105A Console Assembly
G-106A Head Cover
G-107 AC Socket Frame
G-108 Rubber Foot-L
G-109 Rubber Foot-S
G-112 Ventilation Metal Grille
G-113 Jack Panel
G-114 Lock Hinge
G-115 Motor Cover
G-117 Push Button Release Button Pressor
G-118 Reel Holder
G-120 Storage Bag

G-121 Ventilation Hole Metal
G-122A Extension Speaker Back Board
G-126A Tone Control Knob
G-127A CH. 1 Volume Control Knob
G-128A CH. 2 Volume Control Knob
G-130 Mechanism Holding Bracket F-A
G-131 Mechanism Holding Bracket F-B
G-132 Mechanism Holding Bracket B-A
G-133 Mechanism Holding Bracket B-B
G-134 Wood Screw, 3.1×16, for Rubber Foot
G-135 Screw, MS3×10, for Plastic Console
G-138 Nail, 1×10, for Jack Panel
G-140 Screw, 3×20, for Speaker Baffle Board
G-144 Screw, S4×35, for Mechanism Holding
G-147 Screw, S3×16, for Handle
G-170 Screw, M3×12, for Reel Holder
G-171 Screw, MS3×10, for Hinge
G-172 Wood Screw, 3.1×10, for Push Button Release Button Pressor
G-173 Wood Screw, 2.7×10, for Extension Speaker Back Board
G-174 Wood Screw, 2.1×10, for Motor Cover
G-175 Wood Screw, 2.1×6.3, for Ventilation Hole Metal
G-176 Nail, 1×10, for Perforated Metal Grille A and B
G-177 Recorder Cabinet Body
G-178 Recorder Cabinet Lid
G-179 Front Panel
G-180 Perforated Metal Grille A for Cabinet Body
G-181 Extension Metal Grille B for Cabinet Lid
G-182 Extension Speaker Grille
G-183 Extension Speaker Jack
G-220 Extension Speaker Baffle Board

SMALL SCREWS, NUTS, WASHERS:

X- 8 Small Screw, Round, M3×5, for
Speed Selector Switch
Motor Starting Capacitor
Lock Shielding Plate
Shielding Plate for Printed Circuit Board
Cord Clamper
1-4PH (A) Lug Board
Printed Circuit Board-A
Printed Circuit Board-B
Printed Circuit Board-C
Leaf Switch
Printed Circuit Board Bracket-A
Printed Circuit Board Bracket-B
Lever Holder
Power Source Terminal Bracket
Electrolytic Capacitor
Printed Circuit Board Holder-A
Printed Circuit Board Holder-B
Output Transformer
Trimmer Capacitor
AC Socket Bracket
Selenium Rectifier
X 13 Small Screw, Round M3×8, for Lever Holder
Selenium Rectifier
Transformer Base
AC Socket
Jack Bracket
X-40 Nut, N-3 for Wire-wound Resistor
Handle
Hinge
Lock Hinge
Speaker
Holder Reel
X- 51 Spring Washer, 3φ, for all the 3φ screws except
Jack Board Lever Holder and AC Socket
X- 80 Washer, 3φ, for Transformer Base

Printed Circuit Board Holder-A
Printed Circuit Board Holder-B
Motor Starting Capacitor
Back Board
Storage Bag
Lock Hinge
Reel Holder
Ventilation Metal Grille

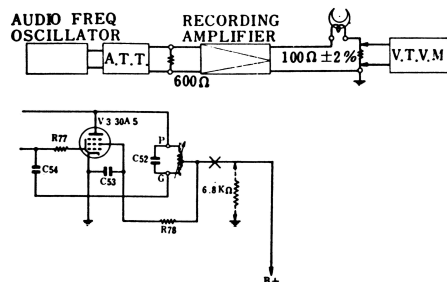
X- 83 Spring Washer, 2.6φ for Record/Playback Head
Cover for Tension Arm Switch
X-102 Small Screw, M2.6×8, for Stereo/Mono Selector Switch
X-105 Small Screw, M2.6×4, for Tension Arm Switch
Cover for Tension Arm Switch
X-150 Small Screw, M2×4, for Erase Head
X-152 Small Screw, M4×5, for Transformer Base
X-153 Small Screw, M4×8, for Transformer Base
Slide Switch Lever Shaft
X-155 Spring Washer, 4φ, for Transformer Base
Mechanism Holding Bracket
X-256 Spring Washer, 2φ, for Erase Head
Stereo/Mono Selector Switch
X-157 Nut, N-2, for Stereo/Mono Selector Switch
X-158 Nut, N-4, for Mechanism Holding Bracket
X-159 Small Screw S1×6, for Jack Board

ACCESSORIES

A-1 Dynamic Microphone WM-2010N
A-2 5" (900 ft) Recording Tape
A-3 5" Empty Reel
A-4 Recording Patch cord
A-5 Extension Speaker connector cord
A-6 Special Patch Cord for "Sound-on-sound" Recording
A-7 AC Power Cord
A-8 Splicing Tape

according level.

NOTE: When measuring the recording level, disconnect the B+ supply to the V3 tube and insert 6.8KΩ 5W-resistor in place as shown below.



LUBRICATION AND CLEANING

All rotating parts are factory lubricated. However, for every 500 hours of use, the following lubrication must be made with sewing machine oil.

These parts are all marked as "OIL". Excessive oil is undesirable, and if the oil is overflowed to the other parts, slippage might happen.

- 2 drops to the Capstan Bearing
- 1 drop to the Pinch Roller Bearing
- 1 drop to Idler Bearing
- 1 drop to the Tension Pully Bearing
- 2 drops to the Reel Table Bearing
- 2 drops to the Fast Forward Roller Bearing

To maintain the high fidelity performance of the recorder, it is important that the residue from the tape be removed from the heads, tape guides, capstan and pinch roller periodically. This is most easily done by using a cotton swab moistened with alcohol.

Rubber tired idlers, rewind roller, rubber belt and pinch roller must be kept free from oil or grease. Use a soft cloth or a cotton swab and cleaning fluid (carbon tetrachloride) to clean oil and grease from rubber parts. When you clean these parts, do not forget to clean other rollers which are in contact with the parts. Always clean the units after service is completed.

THEORY OF REVERBERATION

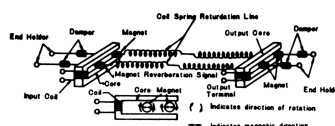


Fig. 1

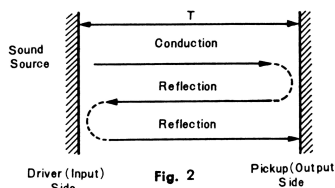


Fig. 2

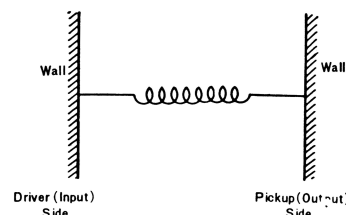
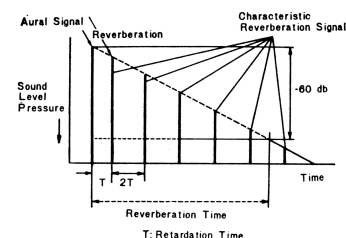


Fig. 3

It is regular practice today to use a Reverberation Unit to produce reverberation sound. It is constructed as shown in Fig. 1 and has Retardation Circuit.

When an aural signal is transmitted to the Driver Coil (Input Side) fixed magnetic field (N & S) occurs at the both ends of the Core in accordance with the aural signal, and the magnetic field of the Core causes the rotary motion of the Magnet, which is magnetized at right angles to the Core.



This rotary motion is transmitted to the Spring attached to the Magnet as torsional vibration, which is transmitted to the Pick-up Coil (Output side).

Torsional vibration reaching the output side, caused by aural signal, causes rotary motion of the Magnet on the output side, and changes magnetic flux of the Magnet, which creates initiative voltage in the Pick-up Coil on the output side, according to the theory of Dynamo, and amplifies the voltage, which is transmitted to low frequency circuit of CH-1 or CH-2. Reverberation is theoretically obtained by substituting both ends of the Spring with two walls of special directionality, as shown in Fig. 3.

A fixed aural, transmitted from Driver (input) side, and then stopped instantaneously, will reach Pick-up (output) side after T seconds (retardation time), and its sound pressure level will attenuate by Output Damper which supports the Spring, and further, excessive torsional vibration energy will go back to Driver (input) side through the Spring as a reflected wave, and return to input side Damper. After repeating reciprocation to and from Pick-up (output) side, attenuated and reflected waves will vanish finally in the progress as shown in Fig. 2.

Fig. 4 indicates the progress. Sound pressure decreases with time, and the dotted line represents Reverberation Characteristic. Thus, reverberation characteristic represents time required for attenuation of sound pressure level - 60 db ($\frac{1}{1000}$) after cutting off the acoustic wave.

HOW TO CONNECT WITH RS-753

Sound is accompanied by reverberation. This means that sound rebounds from objects, and is transmitted more slowly than the original sound.

Reverberation time means time difference between original and rebounded sounds. Different reverberation time changes the

nuance of sound.

Concert halls, studios and the like are designed with special consideration to acoustic effect, so that reverberation can be skillfully controlled.

But, for ordinary households, this sort of acoustic effect is hard to obtain.

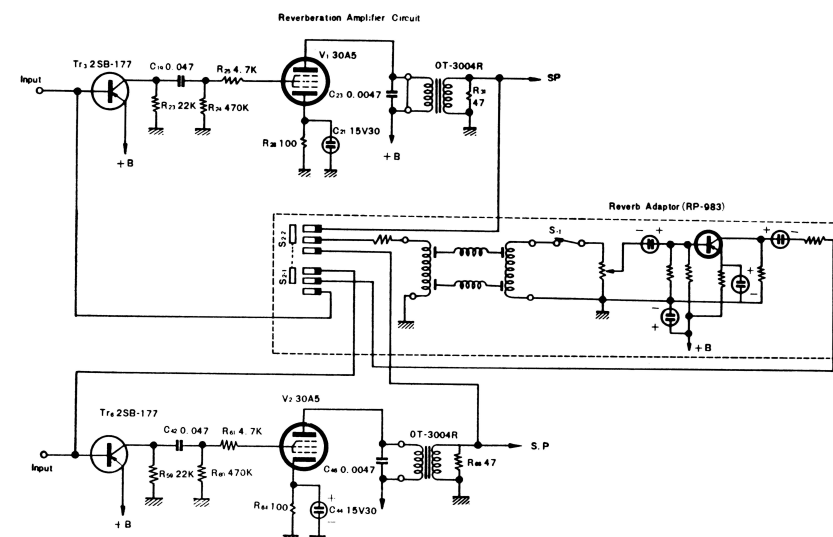
"National" "Reverb Adaptor" RP-983 creates reverberation electrically which can be freely adjusted to one's liking by changing reverberation time.

When the Reverb Adaptor is connected to this taperecorder playback sound will have multiplied depth of sound besides its force of stereo, thus the use of this unit is increased. The Reverb Adaptor Socket is at the rear of this taperecorder.

HOW TO USE REVERV ADAPTOR

1. Insert the Plug of this unit into Reverb Socket of the taperecorder.
2. Set Stereo/Monoral Switch at STEREO on Jack Section of taperecorder.
3. Connect external speaker to External Speaker Jack (SP).
4. Change over Channel Switch of Reverb Adaptor to the

SCHEMATIC DIAGRAM



NATIONAL MODEL RS-753

- Remove the rubber belt from the motor pulley.
- Remove the motor pulley from motor shaft, by loosening two screws holding the motor pulley to the motor shaft.
- Remove lead wires of the motor and capacitor with soldering iron.