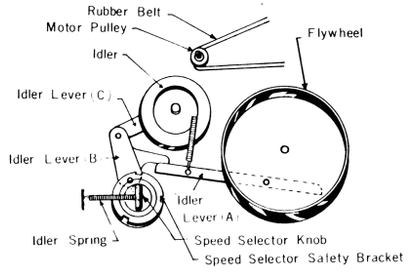
* The "Stop" button is inoperative when unit is set at "Fast Forward" or "Rewind" mode.
* The speed selector knob is automatically locked when tape is in motion, preventing resultant damage to the tape.

OPERATIONS

1. When the unit is turned "ON", the pilot lamp will indicate the operational mode. Motor stars driving the Takeup Reel Pulley, but reel pans will not rotate until a push button is pressed.
2. By turning the Speed Selector Knob, the Drive Idler is set at the required speed position.
3. When the "PLAY" push button is pressed, the Drive Idler contacts the Flywheel, and the Pinch Roller is pressed against Capstan. Simultaneously, the takeup reel pan starts rotating and the unit is ready for "PLAY".
4. When the "RECORD" and "PLAY" push buttons are pressed simultaneourly, the unit is in the "RECORD" mode. Pressing only the "RECORD" push button is not sufficient.
5. If the "INSTANT STOP" push button is pressed while the unit is in "RECORD" or "PLAY" mode, the Pinch Roller is disengaged from Capstan, the Brake Shoe contacts the Rewind Reel Pan and stops the tape motion. When the button is released, the unit is returned to the original mode.
6. When the "REWIND" push button is pressed, the Driving Belt contacts the Rewind Reel Pan by means of Rewind Tensino Pulley thus rotating the Rewind Reel Pan rapidly.
7. When the "FAST FORWARD" push button is pressed, the Takeup Reel Pan starts rotating rapidly.

TAPE SPEED SELECTION

As the Speed Selector Knob is turned, the Drive Idler is set at the selected position of the motor pulley by means of the Selector Cam. The speed selector cannot be made when the "PLAY" push button is pressed, as the speed selector shaft is locked by the speed selector safety bracket to prevent accidental tape damages.

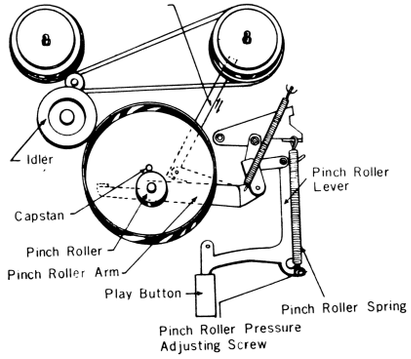


PLAYBACK AND RECORD

When the "PLAY" push button is pressed, the Drive Idler contacts the flywheel, while the Takeup Reel Pulley contacts the Takeup Reel Pan and the Pinch Roller is pressed against capstan simultaneously. When the "RECORD" and "PLAY" push buttons are pressed simultaneously, the unit is in the "RECORD" mode.

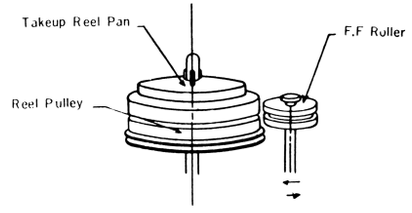
During "PLAY" and "RECORD" modes, the Takeup Reel Pulley is lifted by the Takeup Rod and contacts the Takeup Reel Pan. A friction clutch mechanism, composed of stainless steel disc on the takeup reel pulley and a felt washer in the takeup reel hub, is supplying the requisite friction for smooth takeup. The takeup torque will vary according to the weight of the reel positioned on the takeup reel hub thus eliminating the uneven torque to the tape regardless of the length of the tape on the takeup reel.

The slight back tension to tape is supplied by the friction of the stainless steel disc on the supply reel spindle bearing and the felt washer in the supply reel hub.



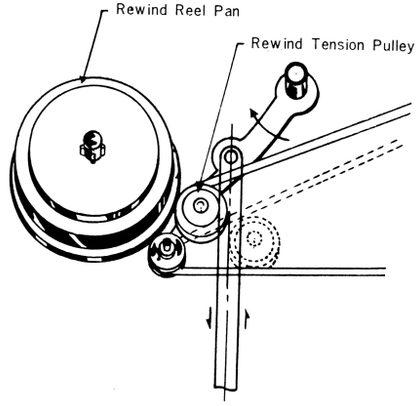
FAST FORWARD

When the Fast Forward button is pressed, the Fast Forward Idler contacts the Takeup Reel Pan thus rotating the pan rapidly.



REWIND

When the "REWIND" push button is pressed, the Drive Rubber Belt is pressed against the Rewind Reel Pan by means of the Rewind Tension Pulley. The rotation of the Motor Pulley is transmitted to the Rewind Reel Pan, thus rotating it rapidly. The rewind friction clutch mechanism in the Takeup Reel Pan will give the requisite back tension to the tape for smooth rewind.



INSTANT STOP

When the "INSTANT STOP" push button is pressed, the pinch roller disengages from the capstan, thus stopping the tape motion.

simultanously, the Rewind Brake Assembly engages the Rewind Reel Pan in order to keep the tape taut. When the button is released, the unit is returned to the original mode.

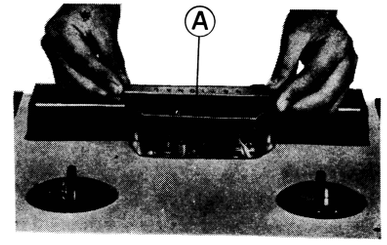
STOP

When the "STOP" push button is pressed, the previously pressed push button is instantly released. Simultaneously, the brake will stop both reel pans.

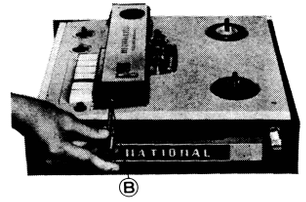
DISASSEMBLY INSTRUCTIONS

A. TO REMOVE PANEL AND PLASTIC CONSOLE

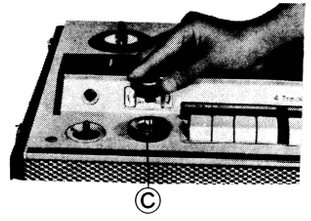
1. Remove Head Cover (B) by Pulling up both ends.



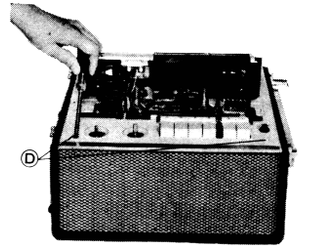
2. Remove two screws (B) located at the both sides of the Plastic Console and lift the console with care.

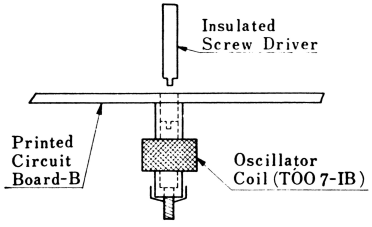


3. Remove all knobs (C) by pulling them out.



4. Remove four screws (D) holding panel to the chassis.





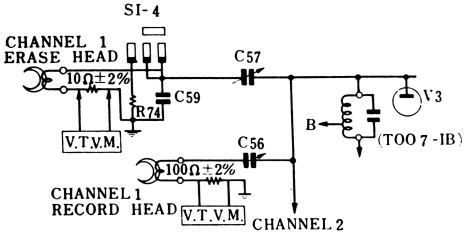
If the frequency is not within the above range by a wide margin, check the Oscillator Coil (E-115, T007-1B), C-52, 53, 54, 55, 56, 57, 58, 59 and 60 Capacitors as well as erase head.

D. RECORD BIAS ADJUSTMENT

Record bias is set at 0.55mA ± 0.05mA when stereo play-back 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, Slide-switch (S1-4, S2-4) and erase head.

F. RECORDING LEVEL ADJUSTMENT

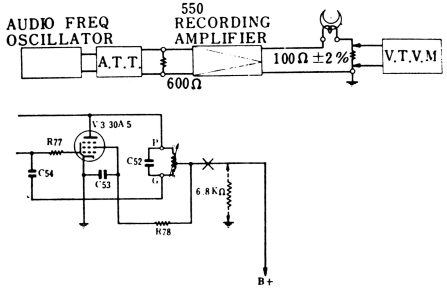
Standard recording level is set when record head current is at 0.064 mA with 1,000 cps tone input.

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 recording 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 factry 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 overflown 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 Pulley Bearing
- 2 drops to the Reel Hub 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 grecse. Use a soft cloth or a corron swab and cleaning fluid (carbon tetra-chloride) 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.

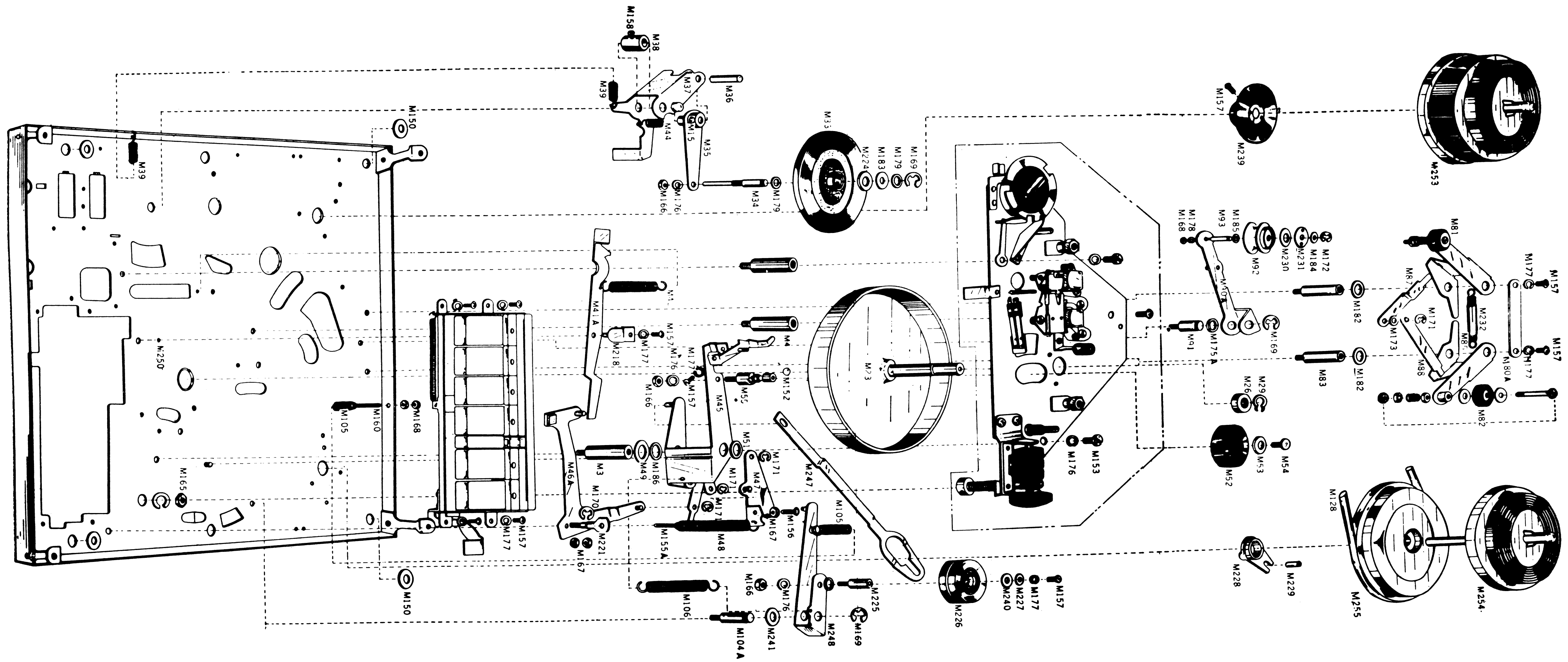
M- 38 〃 〃 Arm Spacer
M- 39 Crive Idler Spring
M- 40 〃 〃 Lever Shaft
M- 41A 〃 〃 Lever-A Assembly
M- 42 〃 〃 Lever Spring
M- 44 〃 〃 Lever-B Spring
M- 45 Pinch Roller Holder Assembly
M- 46A 〃 〃 Lever-A
M- 47 〃 〃 〃 -B
M- 48 〃 〃 Spring
M- 49 〃 〃 Holder Washer-A
M- 51 〃 〃 〃 〃 -C
M- 52 Pinch Roller
M- 53 〃 〃 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 Brake Roller Assembly
M- 82 Takeup 〃 〃 〃
M- 83 Brake Arm Shaft
M- 85 〃 Spring
M- 86 〃 Rod
M- 87 Rewind Brake Arm
M- 88 Takeup 〃 〃
M- 90A Rewind Tension Pulley Arm
M- 91 〃 〃 〃 〃 Shaft
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 〃 〃 Sprlng
M-106 Pinch Roller Spring
M-108 Fast Forward Rod
M-109 〃 〃 〃 Spring
M-110A Instant Stop Lever-A Assembly
M-111A Instant Stop Lever-B
M-112A 〃 〃 〃 -C Assembly
M-113 〃 〃 Rod
M-115 〃 〃 〃 Spring
M-116 Tape Counter
M-117A 〃 〃 Holding Bracket
M-118 〃 〃 Spring Joint
M-119 〃 〃 〃 〃 Screw
M-126 Motor Pulley
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 Base Plate Rubber Cushion 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 〃 4φ
M-167 〃 3φ
M-168 〃 2.6φ
M-169 C-Washer 5φ
M-170 〃 4φ
M-171 〃 3.2φ
M-172 〃 2.2φ
M-173 Phenolic Masher 4.2×9×0.5t
M-175A 〃 〃 7.1×12×1t
M-176 Spring Washer 4φ
M-177 〃 〃 3φ
M-178 〃 〃 2.6φ
M-179 Phenolic Washer 6.1×8.2×0.25t
M-182 〃 〃 6.1×11×0.5t
M-183 〃 〃 6.1×13.5×0.5t
M-184 〃 〃 3.5×5.5×1t
M-185 〃 〃 3.5×5.5×0.5t
M-186 〃 〃 9.2×13.5×1t
M-187 Spring Washer 8φ
M-193 R/P Head Mounting Plate
M-194 〃 〃 〃 〃 Spacer
M-196 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-213 Rewind/F.F. Button Assembly
M-214 Stop Botton Assembly
M-216 Record and Playback Button Assembly
M-218 Lever Bracket
M-219 Tape Limitter
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 Pan Pulley Retainer
M-229 Vinyl Pipe for above
M-230 Rewind Tension Pulley Felt
M-231 〃 〃 〃 Washer
M-232 Vinyl Pipe for above
M-233 Erase Head Spacer
M-234 Motor 2HC-20DF
M-235 Reel Pan Bearing Retainer
M-236 〃 〃 〃
M-237 Vinyl Pipe for above
M-238 Instant Stop Button
M-239 Rewind Reel Hub Friction Disc
M-240 Phenolic Washer 4.1φ×3.1φ×0.5t
M-241 〃 〃 12φ×6.1φ×0.5t
M-242 Small Screw 2.6φ×10 Countersink, Half-Round Head
M-243 〃 〃 4φ× 8 Round Head
M-244 Instant Stop Level Spring
M-245 Tape Counter Pulley-A
M-246 Takeup Reel Spindle Bearing Bracket
M-247 Takeup Rod
M-248 Fast Forward Lever-A
M-249 Push Button Lever-B Assembly
M-250 Base-Plate
M-251 Sub Base-Plate
M-252 Speed Selector Knob
M-253 Rewind Reel Pan
M-254 Takeup Reel Pan
M-255 Takeup Reel Pan Pulley

CABINET ASSEMBLY

G- 5 Hinge
G- 24 Handle
G- 87 Panel Retaining Screw
G-102 Recorder Cbinet Body
G-103 Recorder Cabinet Lid
G-104 Front Panel
G-105 Plastic Console Assembly
G-106 Head Cover
G-107 AC Socket Frame
G-108 Rubber Foot-L
G-109 Rubber Foot-S
G-110 Perforated Metal Grille-A for Cabinet Body
G-111 Perforated Metal Grille-B for Cabinet Lid
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-119 Extension Speaker Grille
G-120 Storage Bag
G-121 Ventilation Hole Metal
G-122 Extension Rpeaker Back Board
G-123 Extension Speaker Buffle Board
G-124 Extension Speaker Jack Ring
G-126 Tone Control Knob
G-127 CH. 1 Volume Control Knob
G-128 CH. 2 Volume Control Knob
G-129 Jack Board
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, M3S×10, for Plastic Console Hinge
G-136 Nail, 1×8, for Motor Cover Ventilation Hole Metal
G-137 Nail, 1.6×10, for AC Socket Frame
G-138 Nail, 1×10, for Jack Panel
G-139 Hex. Washer, 3φ, for Hinge
G-140 Screw, 3×20, for Speaker Buffle Board
G-141 Speaker Bracket for Speaker Buffle Board
G-142 Wood Screw, M27×6.3, for Jack Bracket
G-143 Wood Screw, M3.1×16, for Perforated Metel Grille-B
G-144 Screw, S4×35, for Mechanism Holding Bracket
G-145 Screw, 3×22, for Perforated Metal Grille-A
G-146 Screw, S3×10, for Handle
G-147 Screw, S3×16, for Handle

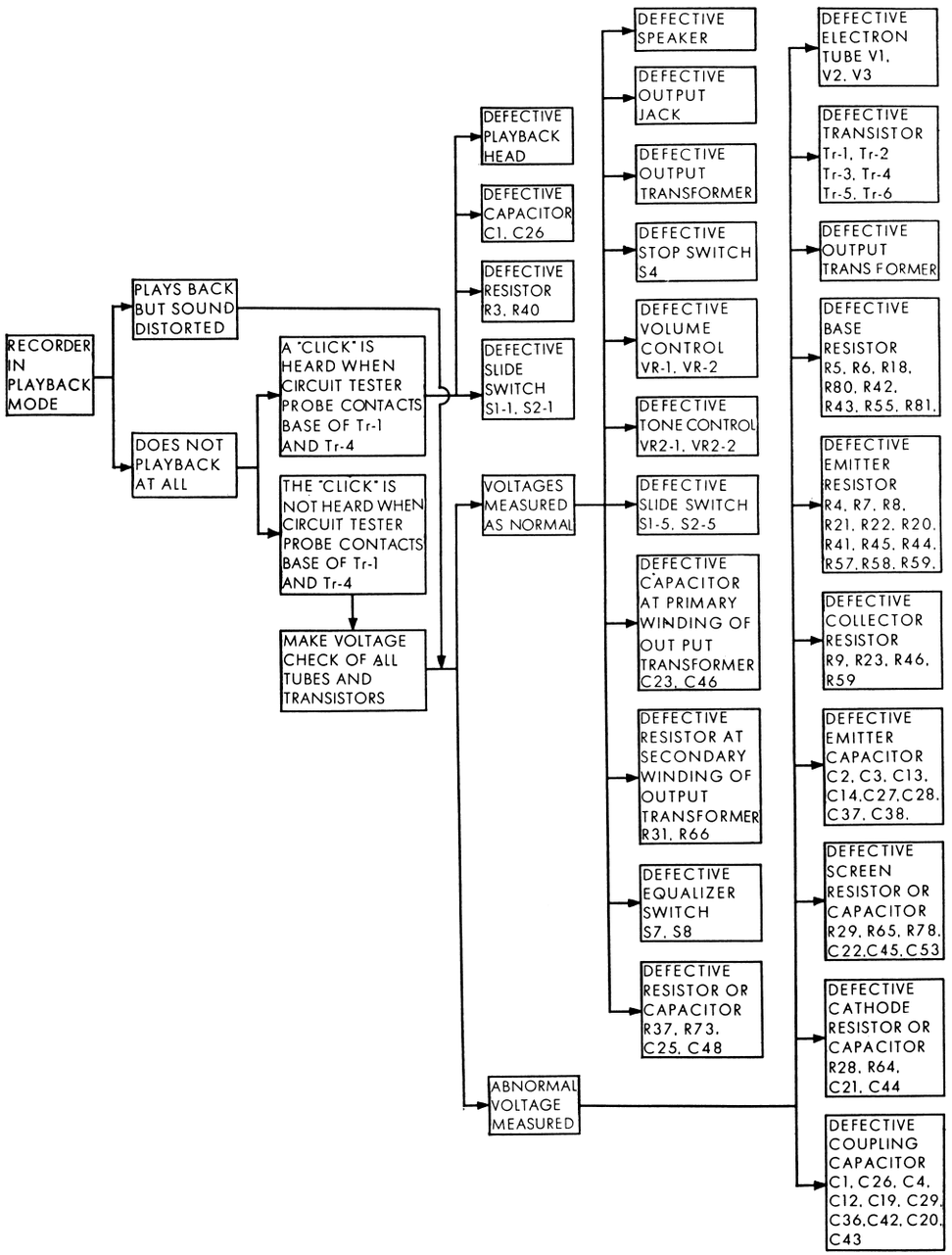
SMALL SCREWS, NUTS, WASHERS

X- 8 Small Screw, Round, M3×5, for
Speed Selector Switch
Motor Starting Capacitor
Jack 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
Transforomrer Base
AC Socket
Jack Bracket
X- 40 Nut, N-3, for Wire-wound Resistor
Hinge
Speaker Buffle Board
Perforated Metal Grille-A
X- 51 Spring Washer, 3φ, for all the 3φ screws except
Lever Holder and AC Socket
X- 80 Washer, 3φ, for Transformer Base
Printed Circuit Board Holder-A
Printed Circuit Board Holder-B
Perforated Metal Grille-A
Motor Starting Capacitor
Buffle Board
X- 83 Spring Washer, 2.6φ, for Record/Playback Head
X-102 Small Screw, Round, M2×8, for Stereo/Mono
Selector Switch
X-105 Small Screw, Round, M2.6×5, for Record/Playback
Head
X-108 Small Screw, Round, M2.6×4, for Stop Switch
X-150 Small Screw, Round, M2×4, for Erase Head
X-151 Small Screw, Round, M3×6, for Jack Board
X-152 Small Screw, Round, M4×5, for Transformer Base
X-153 Small Screw, Round, M4×8, for Transformer Base
X-154 Washer, 4φ, for Transformer Base


M158
M38
M39
M37
M36
M44
M15
M35
M166
M176
M34
M179
M150
M39
M33
M224
M183
M179
M169
M157
M239
M253
M41A
M218
M177
M157
M250
M176
M166
M157
M45
M55
M152
M4
M73
M105
M160
M168
M3
M49
M186
M51
M171
M47
M46A
M170
M221
M167
M155A
M48
M167
M156
M105
M247
M165
M177
M157
M150
M106
M104A
M241
M166
M176
M248
M225
M169
M226
M240
M227
M177
M157
M176
M153
M178
M168
M93
M185
M92
M230
M231
M184
M172
M91
M175A
M169
M182
M83
M182
M81
M87
M171
M173
M232
M86
M177
M157
M180A
M82
M26
M29
M52
M53
M54
M128
M228
M229
M255
M254

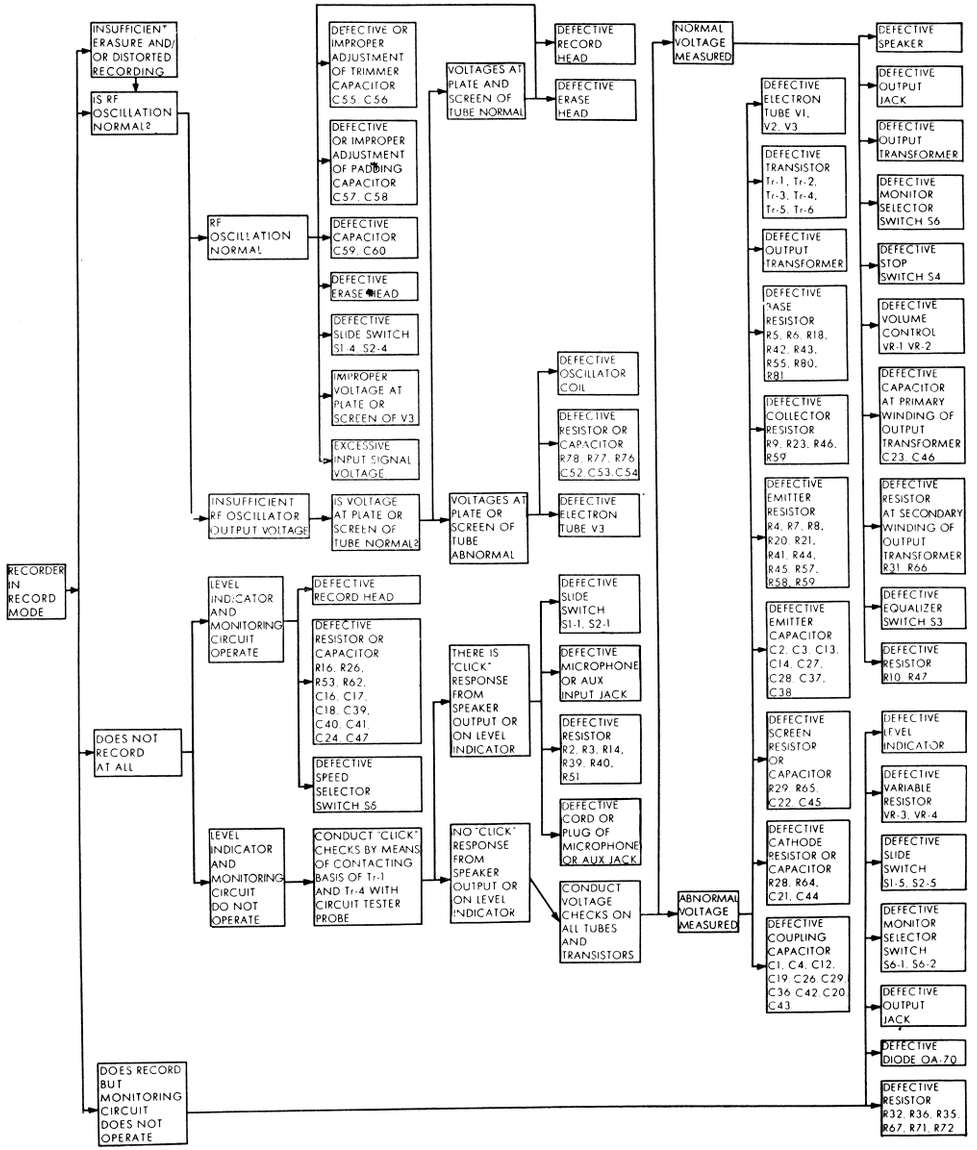
TROUBL SHOOTING GUID :

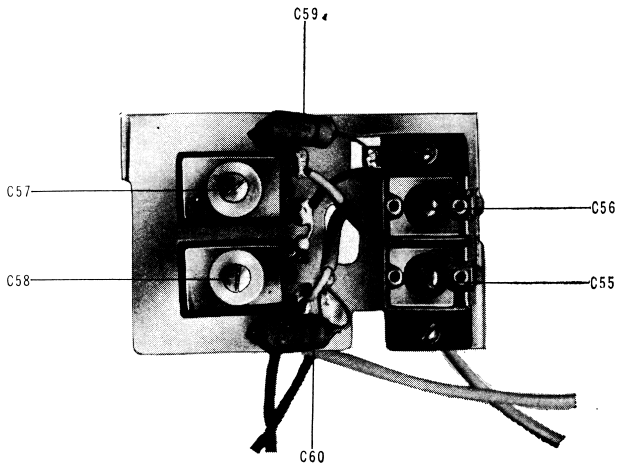
2. DEFECTIVE PLAYBACK CIRCUIT

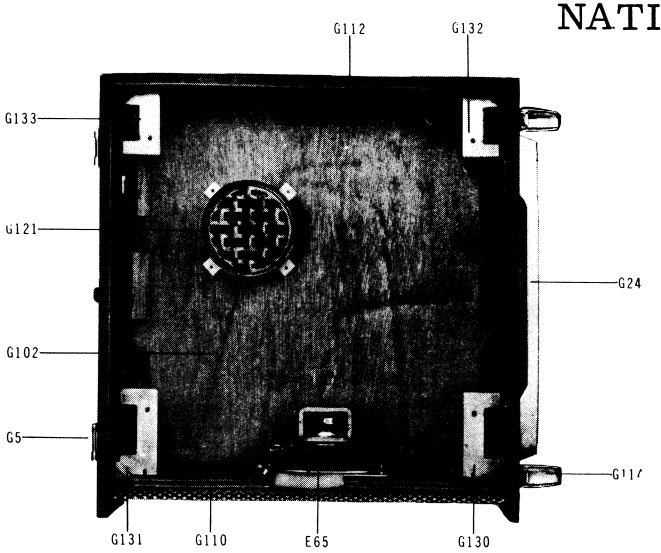


TROUBLE SHOOTING GUIDE :

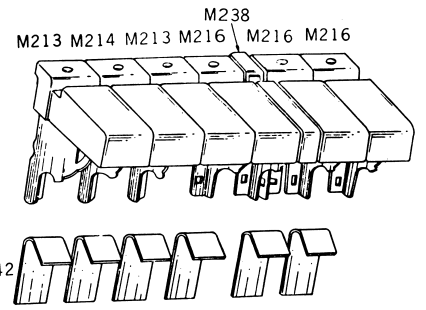
3. DEFECTIVE RECORDING CIRCUIT

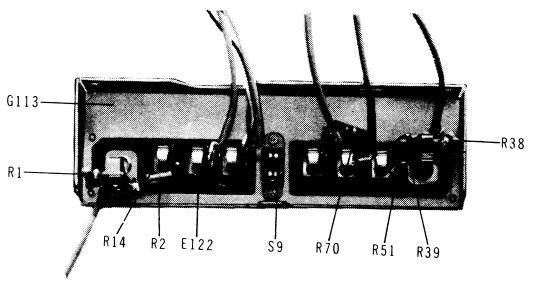


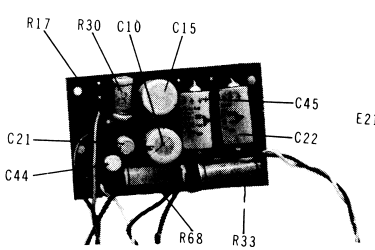


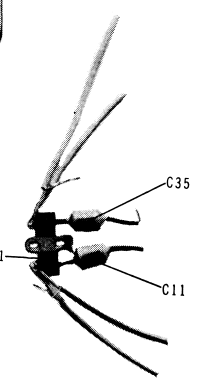


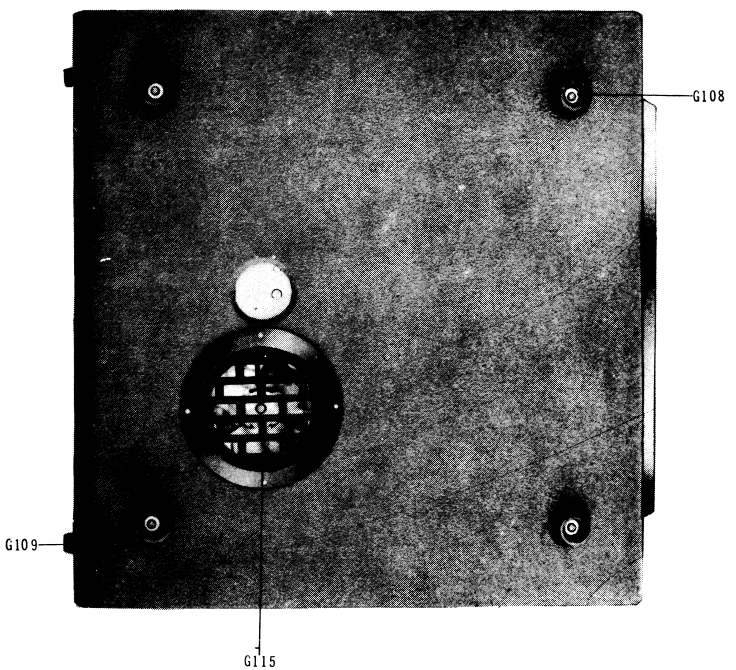
NATIONAL MODEL RS-750

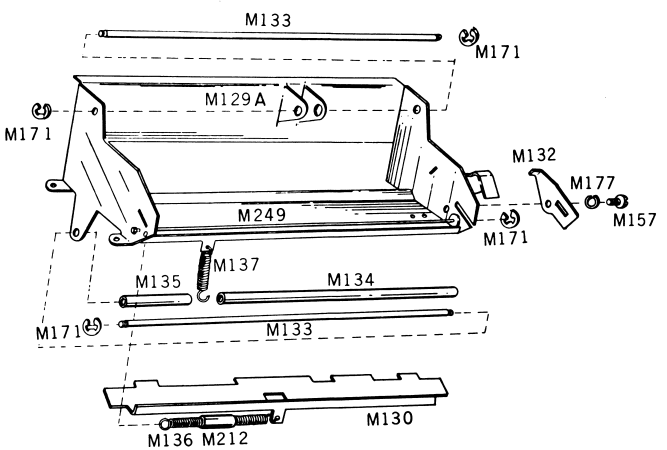


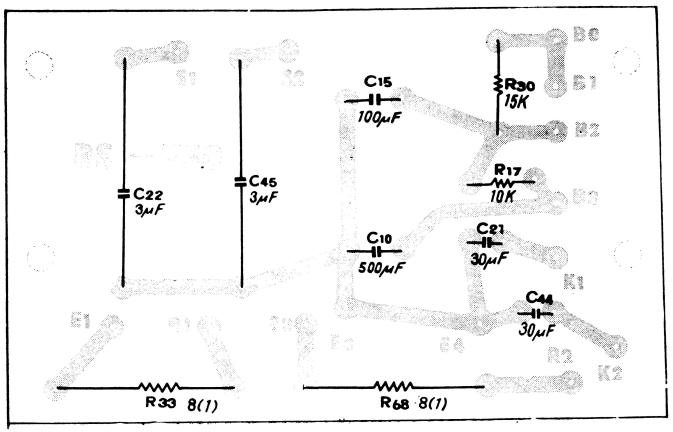


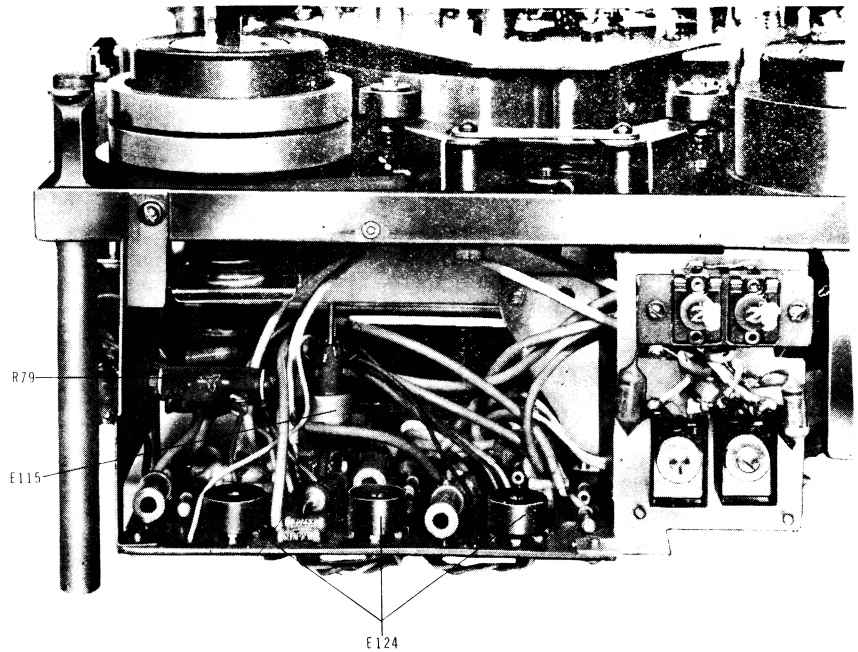


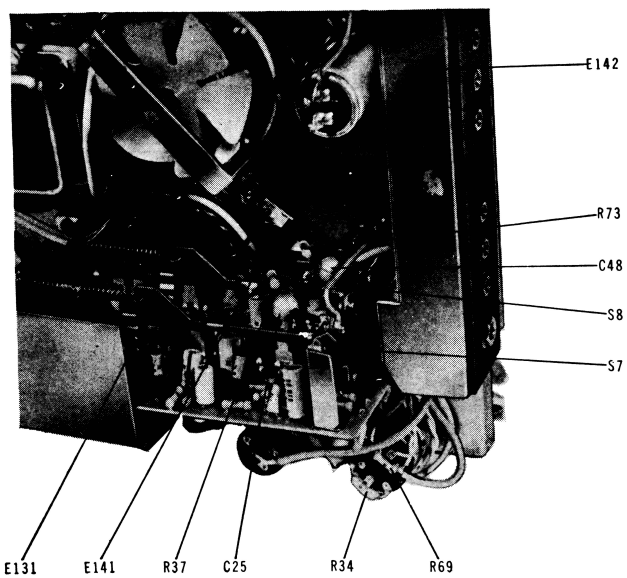


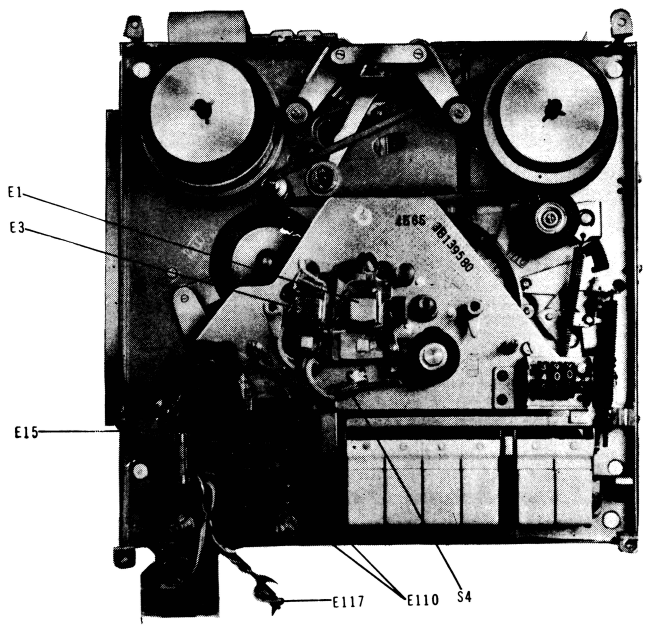




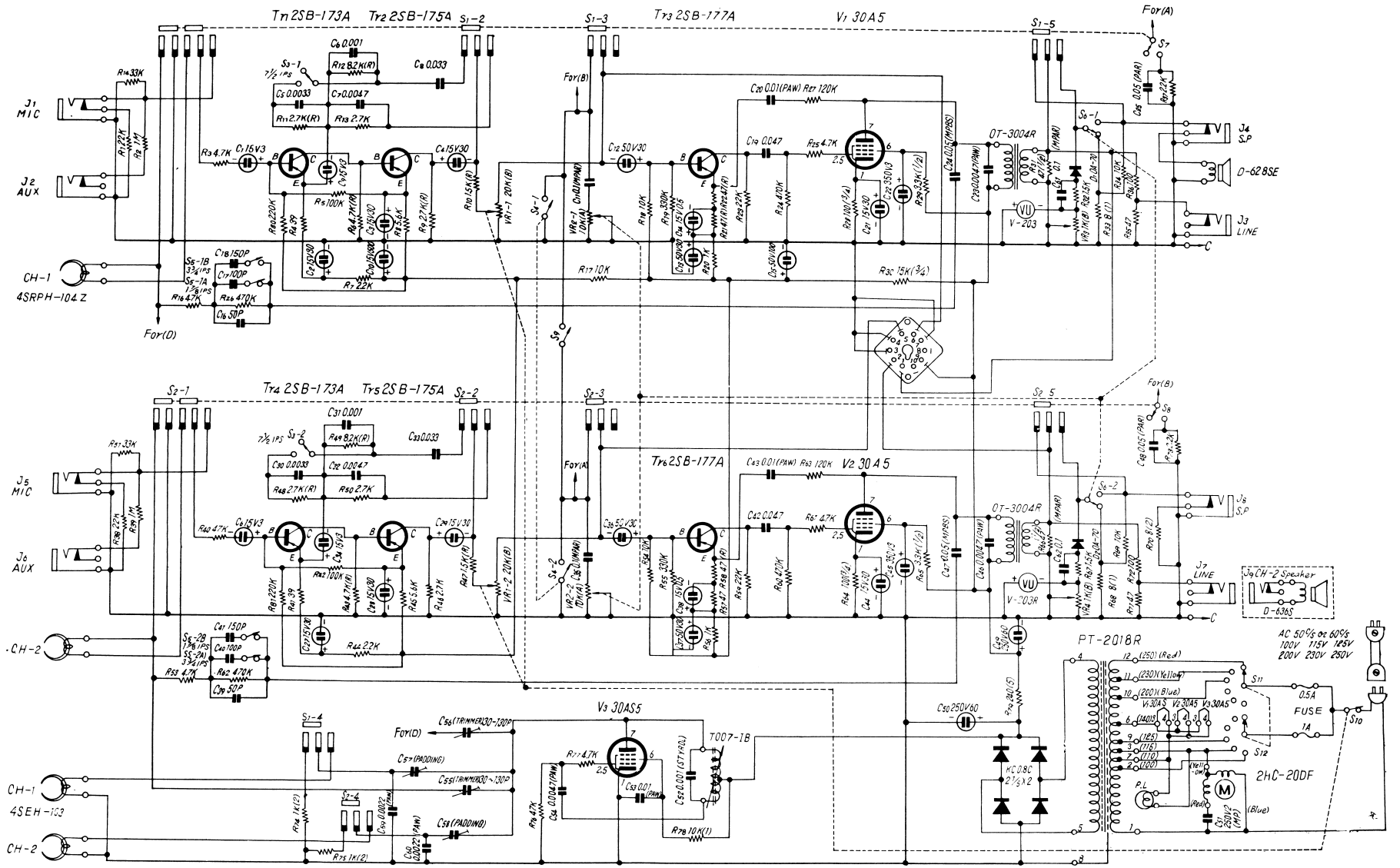

C15
100μF
R30
15K
C22
3μF
C45
3μF
R17
10K
C10
500μF
C21
30μF
C44
30μF
R33 8(1)
R68 8(1)


R79
E115
E124


E142
R73
C48
S8
S7
E131
E141
R37
C25
R34
R69


E1
E3
E15
E117
E110
S4

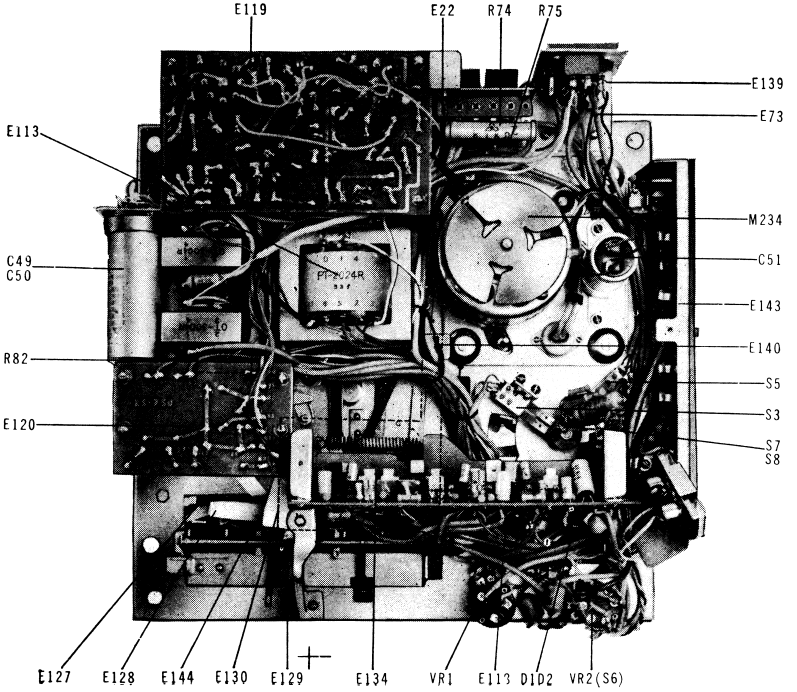
NATIONAL MODEL RS-750

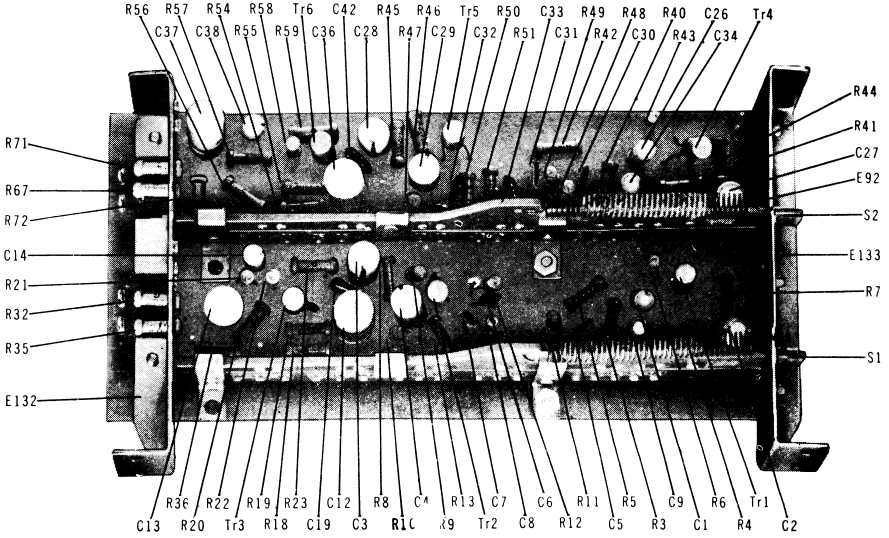


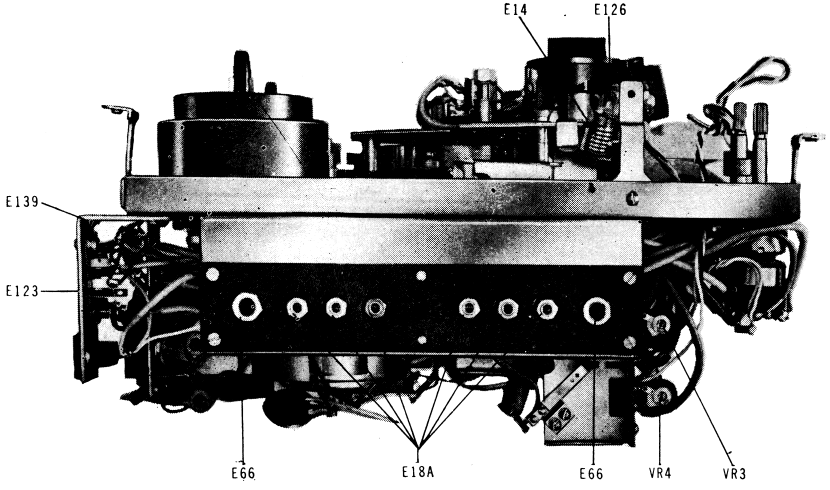
NOTE:

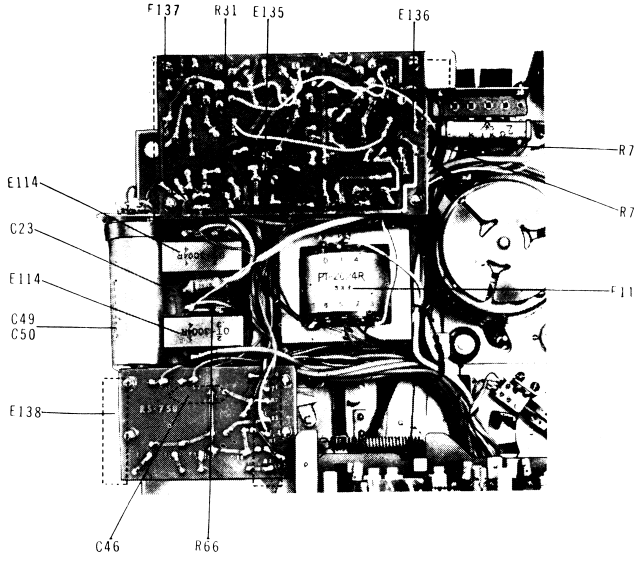
1. S_1/S_2 ... Record/Play Selector Switch (shown in Stereo Play position)
2. S_3.....Playback Equalization Selector Switch (shown in 3-¾ ips. position)
3. S_4.....STOP Push Button Switch
4. S_5.....Recording Equalization Selector Switch (shown in 3-¾ ips. position)
5. S_6.....Speaker Monitor Selector Switch (coupled with VR_2-Tone Control)
6. S_7/S_8 ... Equalization Selector Switch (When making Sound-on-sound recording)
7. S_9.....STEREO/MONO Selector Switch
8. S_{10}..... AC ON/OFF Switch, coupled with VR_1 Volume Control
9. S_{11}/S_{12}...Main Voltage Selector
10. A_{11} resistance in Ω, ¼ watts. K=1,000Ω M=1,000,000Ω
    (R)=Single-ended Axial Lead type Resistors of 1/6W, etc.
11. A_{11} capa- in Microfarads. P=Micro-Microfarads

NATIONAL MODEL RS-750





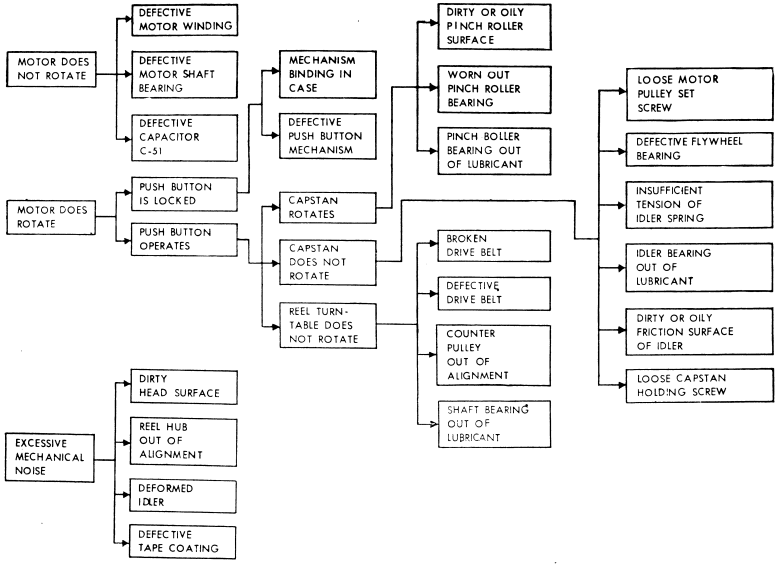




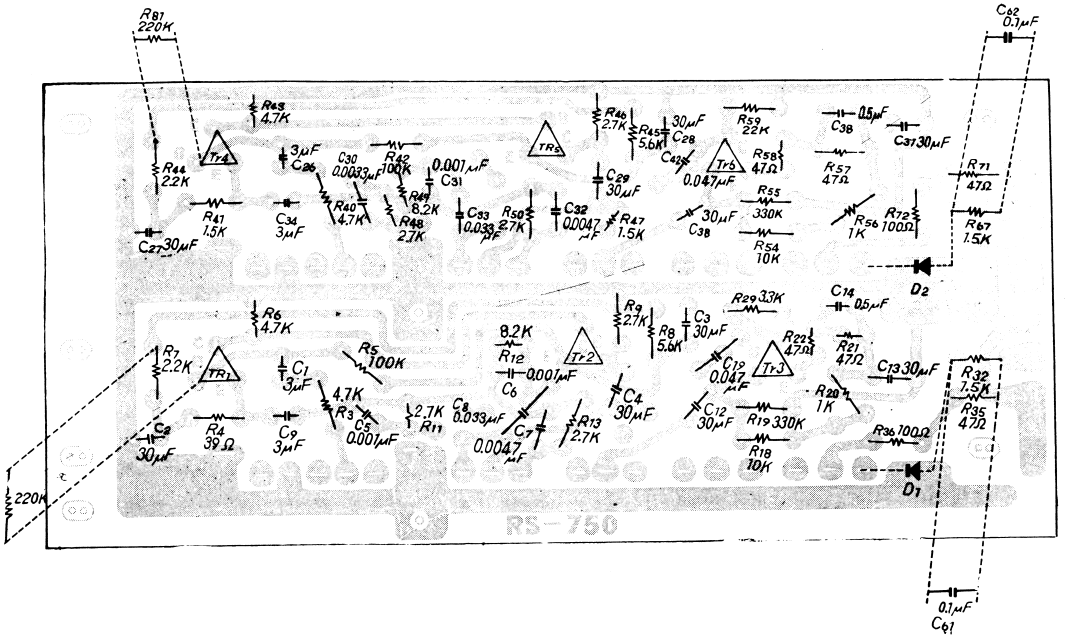
N27-10. NATIONAL MODEL RS-750

TROUBLE SHOOTING GUIDE:

4. MALFUNCTIONS IN PLAY/RCORD MOTION

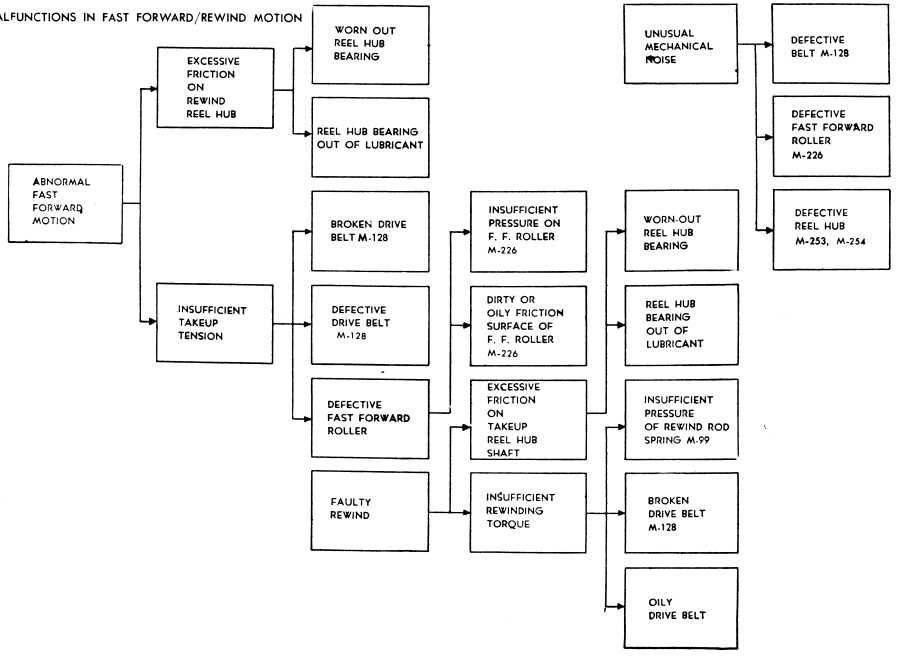


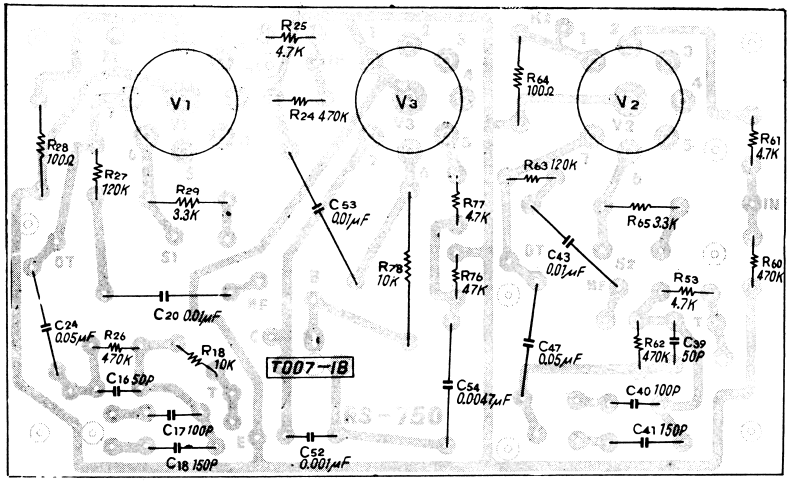
NATIONAL MODEL RS-750

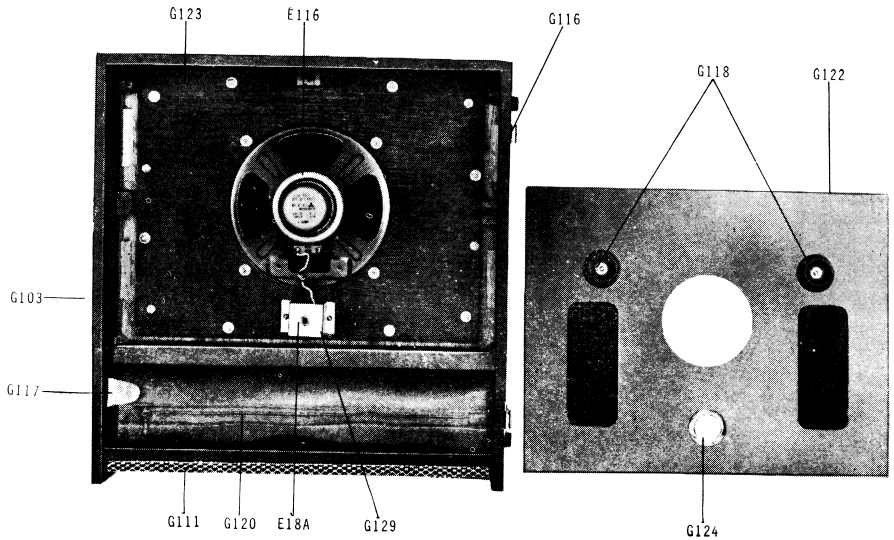


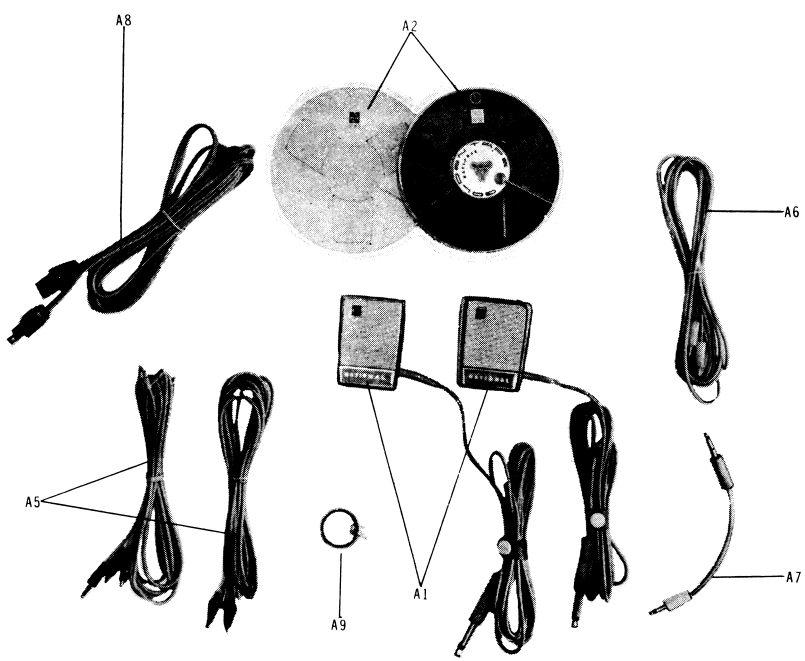
TROUBLE SHOOTING GUIDE:

5. MALFUNCTIONS IN FAST FORWARD/REWIND MOTION



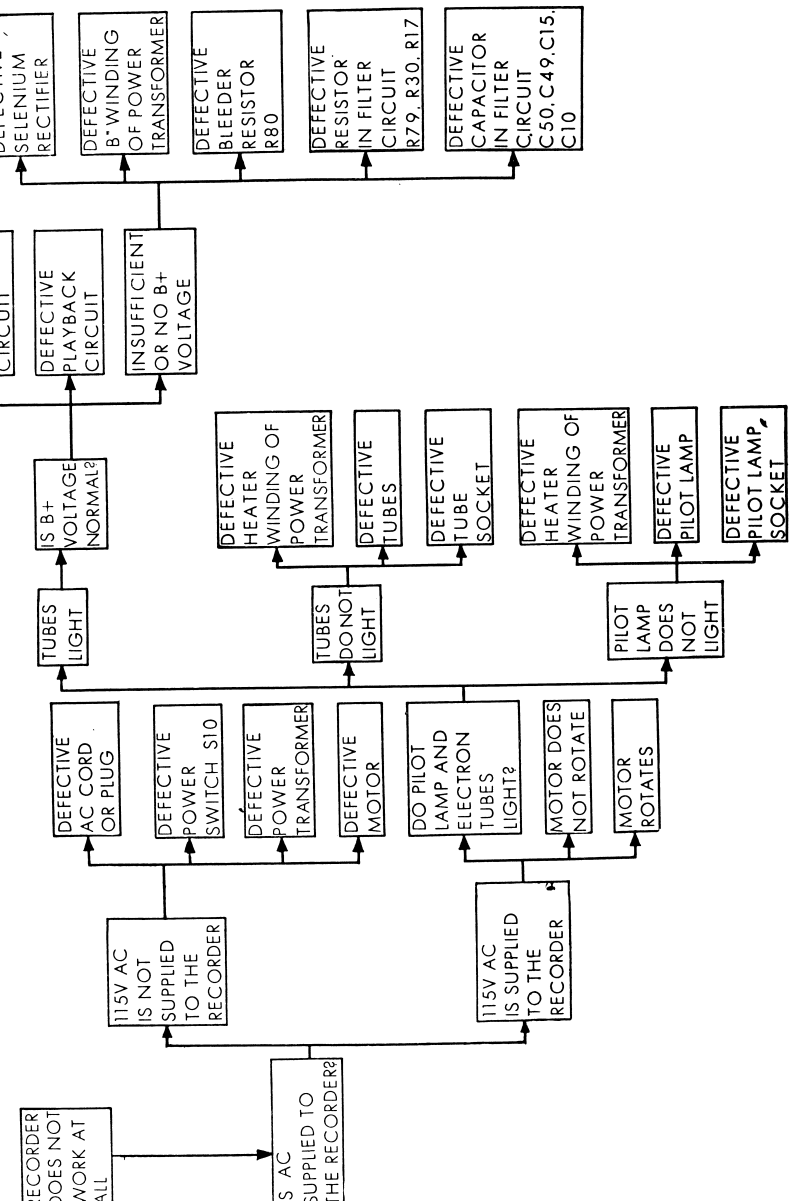






TROUBLE SHOOTING GUIDE:

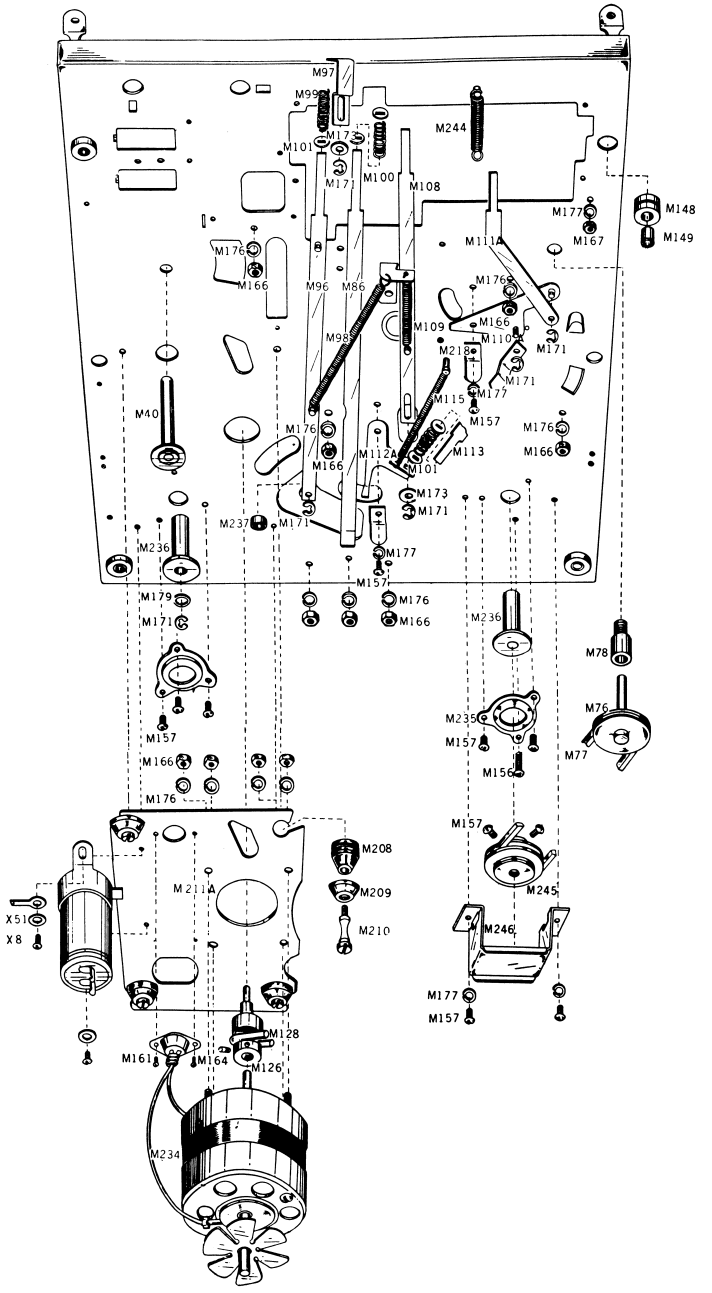
1. NO PLAYBACK OR RECORD

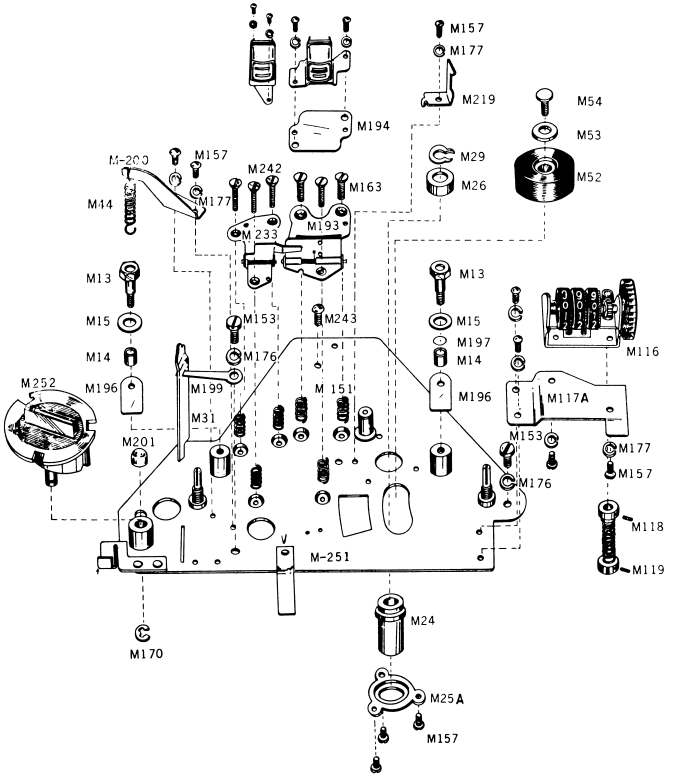


NATIONAL MODEL RS-750

X-155 Spring Washer, 4ϕ, for Transformer Base Mechanism Holding Bracket
X-156 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

A- 1 Dynamic Microphone
A- 2 Recording Tape & Empty Reel
A- 5 Conector Cord with Plug
A- 6 Extension Speaker Connector Cord with Plug
A- 7 Patch Cord for "Sound on Sound" Recording
A- 8 Electlic Power Cord
A- 9 Splicing Tape





REPLACEMENT PARTS

AMPLIFIER PARTS

R- 1	Carbon Film Resistor		RD1/4	LZK	22KΩ
R- 2	〃	〃	〃	〃	1MΩ
R- 3	〃	〃	〃	〃	4.7KΩ
R- 4	〃	〃	〃	〃	47Ω
R- 5	〃	〃	〃	〃	100KΩ
R- 6	〃	〃	〃	RD1/6 RZK	4.7KΩ
R- 7	〃	〃	〃	RD1/4 LZK	2.2KΩ
R- 8	〃	〃	〃	〃 〃	5.6KΩ
R- 9	〃	〃	〃	RD1/6 RZK	2.7KΩ
R-10	〃	〃	〃	〃 〃	1.5KΩ
R-11	〃	〃	〃	〃 〃	4.7KΩ
R-12	〃	〃	〃	〃 〃	8.2KΩ
R-13	〃	〃	〃	RD1/4 LZK	2.7KΩ
R-14	〃	〃	〃	〃 〃	33KΩ
R-16	〃	〃	〃	〃 〃	47KΩ
R-17	〃	〃	〃	〃 〃	10KΩ
R-18	〃	〃	〃	〃 〃	10KΩ
R-19	〃	〃	〃	〃 〃	330KΩ
R-20	〃	〃	〃	〃 〃	1KΩ
R-21	〃	〃	〃	RD1/6 RZK	47Ω
R-22	〃	〃	〃	〃 〃	47Ω
R-23	〃	〃	〃	RD1/4 LZK	22KΩ
R-24	〃	〃	〃	〃 〃	470KΩ
R-25	〃	〃	〃	〃 〃	4.7KΩ
R-26	〃	〃	〃	〃 〃	470KΩ
R-27	〃	〃	〃	〃 〃	120KΩ
R-28	〃	〃	〃	RD3/4 LZK	100Ω
R-29	〃	〃	〃	RD1/2 LZK	3.3KΩ
R-30	〃	〃	〃	RD3/4 LZK	15KΩ
R-31	〃	〃	〃	RD1/2 LZK	47Ω
R-32	〃	〃	〃	RD1/4 LZK	1.5KΩ
R-33	〃	〃	〃	RD1 LZK	8Ω
R-34	〃	〃	〃	RD1/4 LZK	10KΩ
R-35	〃	〃	〃	〃 〃	47Ω
R-36	〃	〃	〃	〃 〃	100Ω
R-37	〃	〃	〃	〃 〃	2.2KΩ
R-38	〃	〃	〃	〃 〃	22KΩ
R-39	〃	〃	〃	〃 〃	1MΩ
R-40	〃	〃	〃	〃 〃	4.7KΩ
R-41	〃	〃	〃	〃 〃	47Ω
R-42	〃	〃	〃	〃 〃	100KΩ
R-43	〃	〃	〃	RD1/6 RZK	4.7KΩ
R-44	〃	〃	〃	RD1/4 LZK	2.2KΩ
R-45	〃	〃	〃	〃 〃	5.6KΩ
R-46	〃	〃	〃	〃 〃	2.7KΩ
R-47	〃	〃	〃	RD1/6 RZK	1.5KΩ
R-48	〃	〃	〃	〃 〃	4.7KΩ
R-49	〃	〃	〃	〃 〃	8.2KΩ
R-50	〃	〃	〃	RD1/4 LZK	2.7KΩ
R-51	〃	〃	〃	〃 〃	33KΩ
R-53	〃	〃	〃	〃 〃	47KΩ
R-54	〃	〃	〃	〃 〃	10KΩ
R-55	〃	〃	〃	〃 〃	330KΩ
R-56	〃	〃	〃	〃 〃	1KΩ
R-57	〃	〃	〃	〃 〃	47Ω
R-58	〃	〃	〃	RD1/6 LZK	47Ω
R-59	Carbon Film Resistor			RD1/4 LZK	22KΩ
R-60	〃	〃	〃	〃 〃	470KΩ
R-61	〃	〃	〃	〃 〃	4.7KΩ
R-62	〃	〃	〃	〃 〃	470KΩ
R-63	〃	〃	〃	〃 〃	120KΩ
R-64	〃	〃	〃	RD3/4 LZK	100Ω
R-65	〃	〃	〃	RD1/2 LZK	3.3KΩ
R-66	〃	〃	〃	〃 〃	47Ω
R-67	〃	〃	〃	RD1/4 LZK	1.5KΩ
R-68	〃	〃	〃	RD1 LZK	8Ω
R-69	〃	〃	〃	RD1/4 LZK	10KΩ
R-70	〃	〃	〃	RD2 LZK	8Ω
R-71	〃	〃	〃	RD1/4 LZK	47Ω
R-72	〃	〃	〃	〃 〃	100Ω
R-73	〃	〃	〃	〃 〃	2.2KΩ
R-74	〃	〃	〃	RD2 LZK	1KΩ
R-75	〃	〃	〃	〃 〃	1KΩ
R-76	〃	〃	〃	RD1/4 LZK	47KΩ
R-77	〃	〃	〃	〃 〃	4.7KΩ
R-78	〃	〃	〃	RD1 LZK	10KΩ
R-79	Wire-wound Resistor			ER5HB	240Ω
R-80	Carbon Film Resistor			RD1/4 LZK	220KΩ
R-81	〃	〃	〃	〃 〃	220KΩ

VR-1	Variable Resistor	SDNV-24CSA1R40, 20KΩ, L55, 20KΩC, ME
VR-2	〃 〃	SGNV-24CSA3L50, 50KΩAX2Q
VR-3	〃 〃	NV16FB, 1KΩB
VR-4	〃 〃	〃

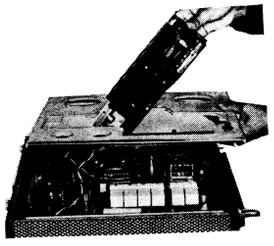
C- 1	Electrolytic Tubular Capacitor	NCA-15V3	3μF
C- 2	〃 〃 〃	NCA-15V30	30μF
C- 3	〃 〃 〃	〃	〃
C- 4	〃 〃 〃	〃	〃
C- 5	Flat-type, Mylar Capacitor	MKAZ-05102M	0.001μF
C- 6	〃 〃 〃	MKAZ-05102M	0.001μF
C- 7	Flat-type, Mylar Capacitor	MKAZ-05472M	0.0047μF
C- 8	〃 〃 〃	MKAZ-05333M	0.033μF
C- 9	Electrolytic Tubular Capacitor	NCA-15V3	3μF
C-10	〃 〃 〃	NCA-15V500	500μF
C-11	Metallized Paper Tubular Capacitor	MPAR-1104M	0.1μF
C-12	Electrolytic Tubular Copacitor	NCA-50V30	30μF
C-13	〃 〃 〃	〃	〃
C-14	〃 〃 〃	NCA-15V3	3μF
C-15	〃 〃 〃	NCA-50V100	100μF
C-16	Ceramic Capacitor	D-50500K	50pF
C-17	〃 〃	D-5010K	100pF
C-18	〃 〃	D-50151K	150pF
C-19	Flat-type Mylar Capacitor	MKAZ-05473M	0.047μF
C-20	Paper Tubular Capacitor	PAW-4103M	0.01μF
C-21	Electrolytic Tubular Capacitor	NCA-15V30	30μF
C-22	〃 〃 〃	CT-350V3	3μF
C-23	Paper Tubular Capacitor	PAW-4472M	0.0047μF
C-24	Metallized Paper Tubular Capacitor	MPBS-2503M	0.05μF
C-25	Paper Tubular Capacitor	PAR-4503M	0.05μF
C-26	Electrolytic Tubular Capacitor	NCA-15V3	3μF
C-27	〃 〃 〃	NCA-15V30	30μF
C-28	〃 〃 〃	〃	〃
C-29	〃 〃 〃	〃	〃
C-30	Flat-type Mylar Capacitor	MKAZ-05102M	0.001μF
C-31	〃 〃 〃	MKAZ-05102M	0.001μF
C-32	Flat-type Mylar Capacitor	MKAZ-05472M	0.0047μF
C-33	〃 〃 〃	MKAZ-05333M	0.033μF
C-34	Electrolytic Tubular Capacitor	NCA-15V3	3μF
C-35	Metallized Paper Tubular Capacitor	MPAR-1104M	0.1μF
C-36	Electrolytic Tubular Capacitor	NCA-50V30	30μF
C-37	〃 〃 〃	〃	〃
C-38	〃 〃 〃	NCA-15V3	3μF
C-39	Ceramic Capacitor	D-50500K	50pF
C-40	〃 〃	D-50101K	100PF
C-41	〃 〃	D-50151K	150pF
C-42	Flat-type Mylar Capacitor	MKAZ-05463M	0.047μF
C-43	Paper Tubular Capacitor	PAW-4103M	0.01μF
C-44	Electrolytic Tubular Capacitor	NCA-15V30	30μF
C-45	〃 〃 〃	CT-350V3	3μF
C-46	Paper Tubular Capacitor	PAW-4472M	0.0047μF
C-47	Metallized Paper Tubular Capacitor	MPBS-2503M	0.05μF
C-48	Paper Tubular Capacitor	PAR-4503M	0.05μF
C-49	Electrolytic Tubular Capacitor	RA-250V120BF	60μF
C-50	〃 〃 〃	〃	〃
C-51	Metallized Paper Capacitor	PMP-250/2/P65	2μF
C-52	Styrol Capacitor	SHDZ-4102K	0.001μF
C-53	Paper Tubular Capacitor	PAW-4103K	0.01μF
C-54	〃 〃 〃	PAW-4472M	0.0047μF
C-55	Trimmer Capacitor	BTC-2L(A)	30-130pF
C-56	〃 〃	〃	〃
C-57	Padding Capacitor		200-600pF
C-58	〃 〃		〃
C-59	Paper Tubular Capacitor	PAW-4222M	0.0022μF
C-60	〃 〃 〃	〃	〃
C-61	Metallized Paper Tubular Capacitor	MPAR-1104M	0.1μF
C-62	〃 〃 〃	〃 〃	〃

V- 1	Electron Tube	30A5
V- 2	〃 〃	〃
V- 3	〃 〃	30A5
TR-1	Ttansistor	2SB173A
TR-2	〃	2SB175A
TR-3	〃	2SB166A
TR-4	〃	2SB173A
TR-5	〃	2SB175A
TR-6	〃	2SB177A
E- 1	Recording and Playback Head	4SRPH-104Z
E- 3	Erasing Head	4SEH-103
E- 14	Pilot Lamp Socket	
E- 15	Pilot Lamp	6.3V 0.15A
E- 18A	Jack	M3A
E- 21	Lug Board	1-2PH(B)
E- 22	〃 〃	1-4PH(A)
E- 65	Speaker	D-628SE(for channel 1)
E- 66	Microphone Jack	
E- 73	Lug Board	1-3PLH(A)
E- 92	Slide Switch Spring	
E-110	Selenium Rectifier	KCO8C21/5
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-IB
E-116	Speaker	P-636S(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-F	
E-125	MT Spring-B	
E-126	Pilot Lamp Cover-B	
E-127	Record Lever-A	
E-128	〃 〃 -B	
E-129	Slide Switc 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 Brackt	
E-140	Clamper	
E-141	Cord Clamper	
E-142	Jack Bracket	
E-143	Jack Shielding Plate	
E-144	Lever Cushion	
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-A1	
S- 5	Leaf Switch AS-202	
S- 6	Speaker Monitor Selector Switch, coupied 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		

MECHANICAL PARTS

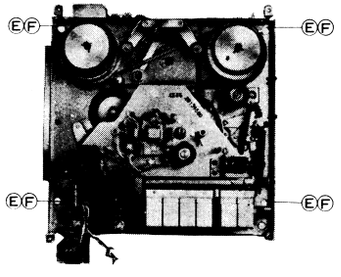
M- 3	Sub-plate Pole-A	
M- 4	〃 〃 -B	
M- 13	Tape Guide Screw	
M- 14	〃 〃 Washer	
M- 23	Flywheel	
M- 24	〃 Bearing	
M- 25A	〃 〃 Retainer	
M- 26	Capstan Oil-Cap	
M- 29	〃 Holding Washer	
M- 31	Speed Selector Safety Bracket	
M- 33	Drive Idler	
M- 34	〃 〃 Shaft	
M- 35	〃 〃 Arm	
M- 36	〃 〃 〃 Pin	
M- 37	〃 〃 Lever-B	

5. Lift the panel with care.



B. TO REMOVE PANEL AND AMPLIFIER ASSEMBLY FROM CABINET

1. Remove four screws (E) and washers (E) holding the assembly to the cabinet.



2. Lift the assembly with care.
3. Remove the speaker connector cords from the speaker terminal.

C. TO REMOVE MOTOR FROM CHASSIS

1. Remove the rubber belt from the motor pulley.
2. Remove the motor pulley from motor shaft, by loosening two screws holding the motor pulley to the motor shaft.
3. Remove lead wires of the motor and capacitor with soldering iron.
4. Remove four bolts holding the motor mounting board to the chassis.
5. Remove the motor from the base plate together with the motor mounting boad.
6. 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

1. Loosen set screws of the upper part of the spring-joint of the counter.
2. Remove two screws holding the counter bracket to the base plate, thus the counter can be removed together with the holding bracket.
3. 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 pulleies after removing two screws holding the takeup reel shaft bearing bracket.

F. TO REMOVE REWIND REEL PAN

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

G. TO REMOVE TAKEUP REEL PAN

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

MECHANISM ADJUSTMENTS

1. PINCH ROLLER ADJUSTMENTS

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 to 3.1 lbs. 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. to 11 oz. 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 to 5.0 in-oz. 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 Takeup Reel Spindle Bearing Bracket (M246) and re-tighten the screws.

4. FAST FORWARD IDLER ADJUSTMENT

The proper pressure between the Forward Roller and the Takeup Reel Hub is about 24 oz., and the pressure adjustment can be made by Fast Forward pressure Spring Adjusment Nut. Adjustment with almost fully wound 7″ reel tape is preferable.
The fast forward torque is to be at least 11 in-oz.

5. REWIND ADJUSTMENT

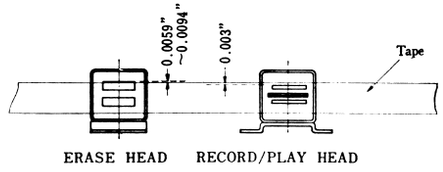
When the rewind button is pressed, the grooves of the rewind reel pan, motor pulley and the tension pulley must be on the same level the rewind torque must be at least 11 in-oz.

6. PAD ADJUSTMENT

The proper pressure of the pressure pads are about 0.5 to 0.9 oz. for the erase head and 0.8 to 1.2 oz. 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:
1. 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.
2. 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.

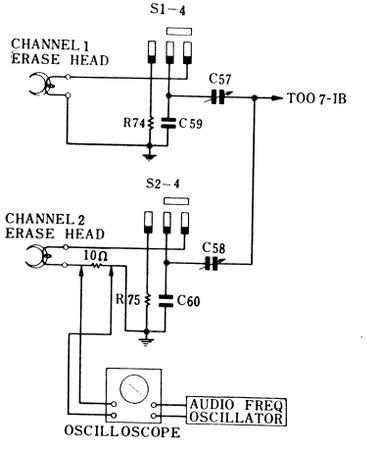
B. SPEED SELECTOR SWITCH ADJUSTMENT

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.

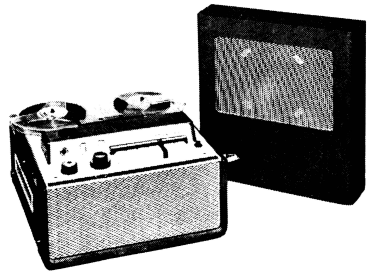
1. At 7-1/2 ips. position, capacitors (C17/18 and C40/41) are disconnected from the circuit.
2. At 3-3/4 ips. position, the capacitors (C17 and C40) are connected parallel to the playback circuit.
3. At 1-7/8 ips. position, the capacitiors (C17/18 and C40/41) are connecteed parallel to the playback circuit.

C. OSCILLATION FREQUENCY ADJUSTMENT

The record bias and erase frequency determined 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.
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, adiust the frequency by turning the adjusting screw of the dust core of the Oscillator Coil (T007-1B).

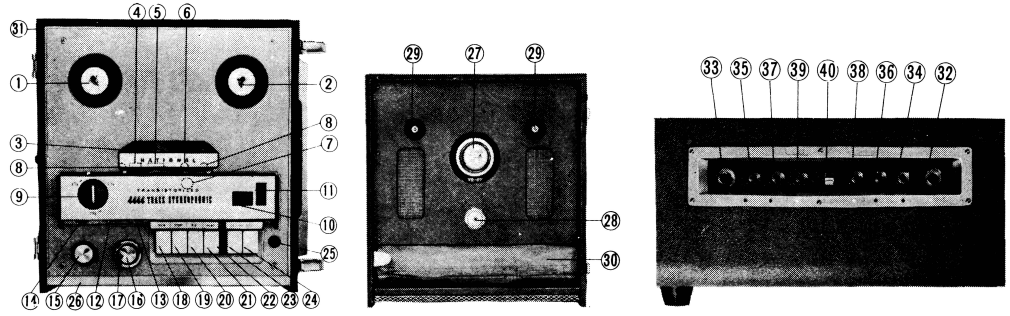


N27. NATIONAL MODEL RS-750



SPECIFICATIONS

Power source:	AC 100-250V (50-60 c/s)
Output power:	2.5W×2 (stereo) 5W (monaural)
Tape speeds:	7.1/2 ips. (19 cm/sec), 3.3/4 ips. (9.5cm/sec) and 1.7/8 ips. (4.75 cm/sec).
Playing time: (stereo)	45 min×4 at 7.1/2 ips. with 1,800 ft tape.
	1.5 hours×2 at 3.3/4 ips. with 1,800 ft tape.
	3 hours×2 at 1.7/8 ips. with 1,800 ft tape.
(monaural)	45 min×4 at 7.1/2 ips. with 1,800 ft tape.
	1.5 hours×4 at 3.3/4 ips. with 1,800 ft tape.
	3 hours×4 at 1.7/8 ips. with 1,800 ft tape.
Frequency response:	60-15,000 c/s at 7.1/2 ips. 60-10,000 c/s at 33/4 ips.
	60-5,000 c/s at 1.7/8 ips.
Built-in speakers:	4″ (10 cm)×6″ (15 cm)..... 1 6.5″ (16 cm)..... 1
Tape counter:	Digital
Recording level indicator:	VU meters..... 2
Track system:	4 track stereo system
Wow and Flutter:	Less than 0.2% at 7.1/2 ips.
Vacuum tubes & Transistors:	30A5 (3) 2SB-177A (2) 2SB-175A (2) 2SB-173A (2) OA-70 (2)
Power consumption:	abt. 70W
Input circuits:	Unbalanced microphone 20 KΩ 2
	Auxiliary input 1 MΩ (unbalanced)..... 2
Output circuits:	External speaker output 8Ω..... 2
	External main 47Ω (max 0 db)..... 2
Recording & reproduction system:	1. 4 track stereo recording & reproduction.
	2. 4 track monaural recording & reproduction.
	3. 2 track stereo recording & reproduction.
	4. 2 track monaural recording & reproduction.
	5. First track recording, third track reproduction. (simultaneously)
	6. First track reproduction, third track recording. (simultaneously)
Dimensions and Weight:	9.3/8″×13.3/8″×14″ (24 cm×34.5 cm×36 cm) 34.1/2 ibs.
Accessories:	Dynamic microphone ..... 2 Connector cord 2
	Patch cord ..... 1 Speaker connector cord 1
	Recording tape 5″ (900 ft) ... 1 Empty reel 5″ 1
	Splicing tape 1



1. Rewind Reel Spindle
2. Takeup Reel Spindle
3. Head Cover
4. Erase Head
5. Record/Playback Head
6. Capstan
7. Pinch Roller
8. Tape Guide
9. Speed Selector Knob
10. Tape Counter
11. Tape Counter Re-setting Knob
12. Level Indicator for Channel 1
13. Level Indicator for Channel 2
14. Pilot Lamp
15. Tone Control with Speaker Monitor Switch
16. Volume Control for Channel 1 with ON/OFF Switch
17. Volume Control for Channel 2
18. Rewind Push Button
19. Stop Push Button
20. Fast Forward Push Button
21. Play Push Button
22. Instant Stop Push Button
23. Channel 1 Record Push Button
24. Channel 2 Record Push Button
25. Push Button Release Button
26. Built-in Speaker for Channel 1
27. Extension Speaker for Channel 2
28. Jack for Extension Speaker
29. Reel Holders
30. Accessory Storage Bag
31. A.C. Cord Receptacle
32. Channel 1 Microphone Input Jack
33. Channel 2 Microphone Input Jack
34. Channel 1 Auviliary Input Jack
35. Channel 2 Auxiliarp Input Jack
36. Channel 1 Line Output Jack for External Amplifier
37. Channel 2 Line Output Jack for External Amplifier
38. Channel 1 Output Jack for External Speaker
39. Channel 2 Output Jack for External Speaker
40. Stereo/Monaural Selector Switch

A. To Turn "ON"

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

B. Push Button Operation

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

C. Volume Control

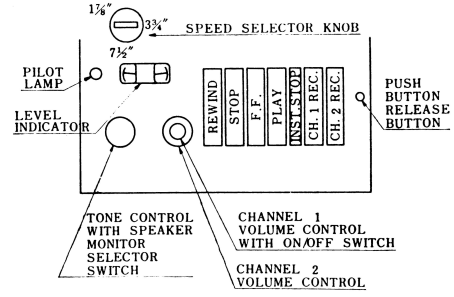
a. When playing back: The playback sound level can be controlled by respective Volume Controls.
b. When recording: Volume level for ieft and right channels can be controlled by respective volume Controls.

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.