AMPLIFIER ADJUSTMENTS

Adjustment of the Stroke of Stop-switch

- Set mechanism in playback mode.
- Contact point shall be OFF and clearance, 0.8 mm-1.5 mm then.
- Then set it in Stop mode from Playback.
- Adjust screw of stop-switch so that contact point will close and its stroke be 4 mm-5 mm in this condition.

Playback mode

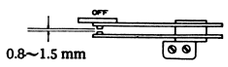


Fig. 6

Record mode

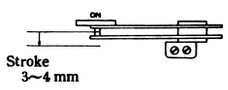


Fig. 7

Adjustment of Slide-switch

- Set mechanism in Record mode.
- Adjust the position of print base-board so that the position of slide-switch knob is moved about 0.2 mm-0.4 mm toward playback side from its position when fully pushed to Record mode.
- In this case clearance between the side of the knob and switch-lever.

Playback Side

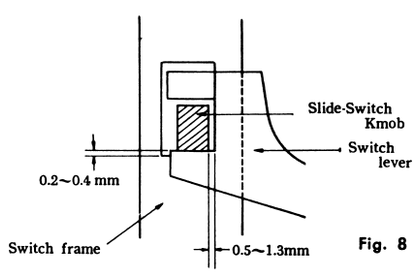


Fig. 8

- After securing print base-board in position, set mechanism in playback mode.
- In this condition, slide-knob shall be ascertained to be
- fully pushed to Playback side.
- Whenever printed circuit board is removed and reinstalled, the slide-switch must be adjusted.

LUBRICATION & CLEANING

If Insulation Felt falls off Print Base-board (Wiring)

As the space between printed circuit board and chssis (mechanism) is little, print base-board is liable to be grounded to chassis. To prevent this, felt or vinyl tape is pasted to print base-board (wiring). If it falls off it must be properly repasted.

Protection of Cabinet Case (Styrol)

Cabinet case is of impact and heat resistant high-impact styrol but care shall be taken against the action of chemicals.
For cleaning the styrol parts, avoid the use of benzine, alcohol, thinner and the like. Use weak soap water.
Do not place vinylware on the case for a long time or wrap it with vinyl sheet.

REPLACEMENT PARTS

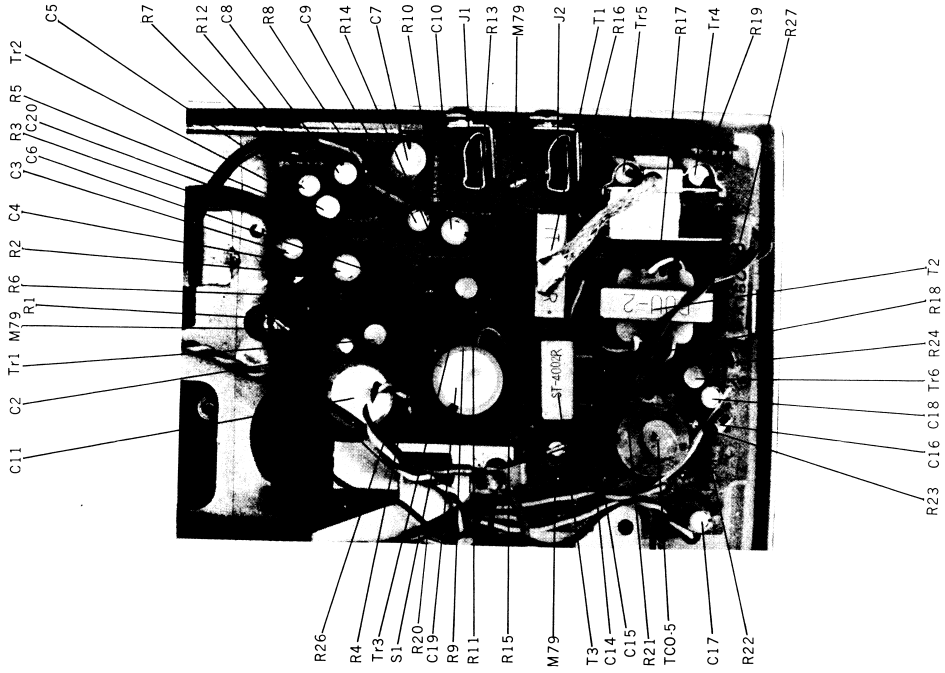
R 1	Carbon Film Resistor	RD1/4LZK	15KΩ
R 2	〃	〃	68Ω
R 3	〃	〃	2.2KΩ
R 4	〃	〃	10KΩ
R 5	〃	〃	33KΩ
R 6	〃	〃	10KΩ
R 7	〃	〃	3.3KΩ
R 8	〃	〃	2.2KΩ
R 9	〃	〃	1.8KΩ
R 10	〃	〃	560Ω
R 11	〃	〃	1.8KΩ
R 12	〃	〃	22KΩ
R 13	〃	〃	15Ω
R 14	〃	〃	180Ω
R 15	〃	RD1/6RZK	100Ω
R 16	〃	RD1/4TK	820Ω
R 17	〃	RD1/4LZK	150Ω
R 18	〃	RD1/4TK	4.7KΩ
R 19	〃	RD1/4LZK	4.7KΩ
R 20	Solid Resistor	RC1/2BFM	10KΩ
R 21	Carbon Film Resistor	RD1/4TK	10KΩ
R 22	Solid Resistor	RC1/2BFM	10KΩ
R 23	Corbon Film Resistor	RD1/4TK	6.8KΩ
R 24	〃	RD1/4LZK	100Ω
R 25			
R 26	〃	RC1/4TK	560Ω
R 27	〃	RD1LZK	150Ω
R 28	〃	RD1/4LZK	470KΩ
R 29	〃	〃	8.2KΩ
VR 1	Variable Resistor	SNV-24CL30 20kΩ BSF	

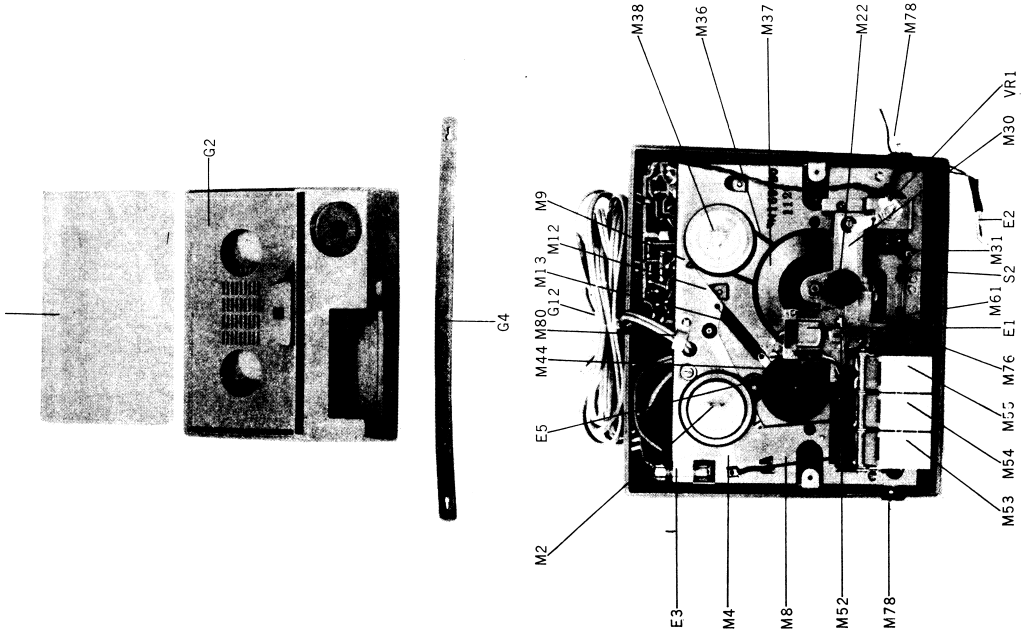
C 1	Myler Capasitor		WV50V	0.0033μF
C 2	Electrolytic Capacitor	NCA-6V10	WV6V	10μF
C 3	Electrolytic Capacitor	NCA-15V1	WV15V	1μF
C 4	Electrolytic Capacitor	NCA-6V30	WV6V	30μF
C 5	Electrolytic Capacitor	NCA-15V3	WV15V	3μF
C 6	Myler Capasitor		WV50V	0.047μF
C 7	Electrolytic Capacitor	NCA-10V50	WV10V	50μF
C 8	Electrolytic Capacitor	NCA-6V10	WV6V	10μF
C 9	Electrolytic Capacitor	NCA-6V10	WV6V	10μF
C 10	Electrolytic Capacitor	NCA-6V30	WV6V	30μF
C 11	Electrolytic Capacitor	NCA-15V300	WV15V	300μF
C 12	Myler Capasitor		WV50V	0.3μF
C 13	Myler Capasitor		WV50V	0.022μF
C 14	Ceramic Capasitor		WV125V	560PF
C 15	Myler Capasitor		WV50V	0.0068μF
C 16	Ceramic Capasitor		WV125V	560PF
C 17	Electrolytic Capacitor	NCA-15V3	WV15V	3μF
C 18	Electrolytic Capacitor	NCA-6V10	WV6V	10μF
C 19	Electrolytic Capacitor	NCA-15V500	WV15V	500μF
C 20	Myler Capasitor		WV50V	0.01μF

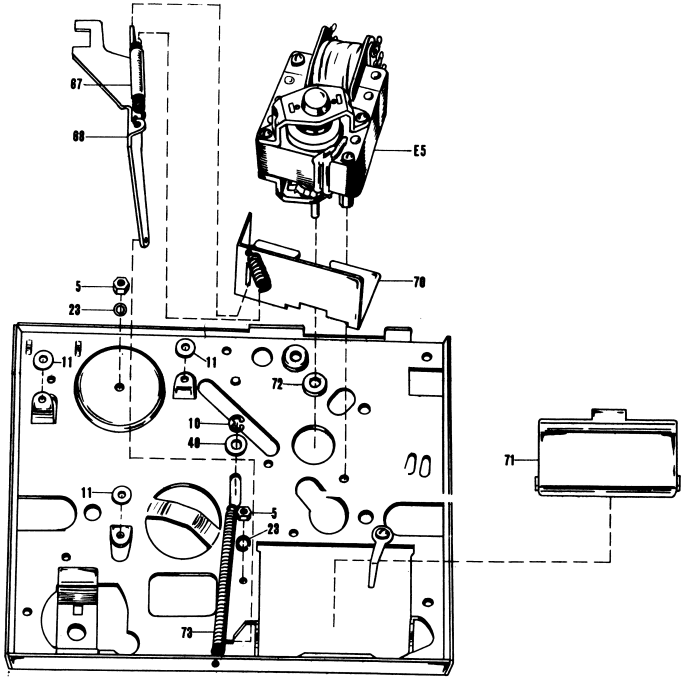
Tr 1	Transistor	2SB-173
Tr 2	Transistor	2SB-175
Tr 3	Transistor	2SB-175
Tr 4	Transistor	2SB-178
Tr 5	Transistor	2SB-178
Tr 6	Transistor	2SB-176
MT-25T	Thermistor	

E 1	Record/play and Erasing Head	WY-004
E 2	Neon Lamp	NE-2
E 3	Fuse	0.3A
E 4	Selemium Rectifier	KC-1.3C 1/22
E 5	Motor	2S-16C
E 6	Speaker D-429S	
E 7	Fuse Holder	
T 1	Input Transformer	IT-1002R
T 2	Output Transformer	OT-3009R
T 3	Neon Transformer	ST-4002R
T 4	Oscillator Coil	ICO-5
J 1	Microphone Jack	
J 2	Output Jack	
S 1	Record/playback Selector Switch	
S 2	Stop Switch	
S 3	AC Mains ON/OFF Switch (Ganged with VR1)	
S 4	AC Mains Selector Switch	
G 1	Cover for Cabinet Case (A)	
G 2	Cabinet Case (A)	
G 3	Cabinet Case (B)	
G 4	Carrying Belt	
G 5	Rubber Foot	
G 6	Volume Control Knob	
G 7	AC Cord Holder Band	
G 8	AC Mains Selector Switch Namer	
G 9	Screw for Rubber Foot	
G 10	Speaker Holding Metal	
M 1	Rewind Reel Holder Rubber Ring	
M 2	Rewind Reel Holder	
M 3	Rewind Reel Holder Shaft	
M 4	Rewind Reel Holder Lever	
M 5	Nut 3¢	
M 6	Fiber Washer for Rewind Reel Holder Lever	
M 7	Rewind Rod Spring	
M 8	Rewind Rod	
M 9	Brake Rubber	
M 10	Stop Ring for Brake Lever 3.2¢	
M 11	Fiber Washer for Brake Lever 5¢×9¢×1t	
M 12	Brake Lever	
M 13	Spring for Brake Lever	
M 14	Brake Rod	
M 15	Screw 2¢×4	
M 16	Head Shield	
M 17	Screw for Head Adjustment 2¢×12	
M 18	Screw for Head	
M 19	Spring Washer 2¢	
M 20	Head Adjustment Spring	
M 21	Fiber Washer for Pinch Roller	
M 22	Pinch Roller	
M 23	Spring Washer 2.6¢	
M 24	Flywheel Bearing	
M 25	Upper Shassis	
M 26	Spring Washer for Flywheel Bearing 8¢	
M 27	Washer for Flywheel Bearing 8¢	
M 28	Nut for Flywheel Bearing	
M 29	Stop Ring for Pinch Roller Lever 4¢	
M 30	Pinch Roller Lever	
M 31	Pinch Roller Spring	
M 32	Pinch Roller Lever Shaft	
M 33	Fiber Washer for Pinch Roller Shaft 5¢×9.5¢×1t	
M 34	Screw for Sub-Baseplate Holder 3¢×5	
M 35	Spring Washer for Sub-Baseplate 3¢	

NATIONAL MODEL RQ-303



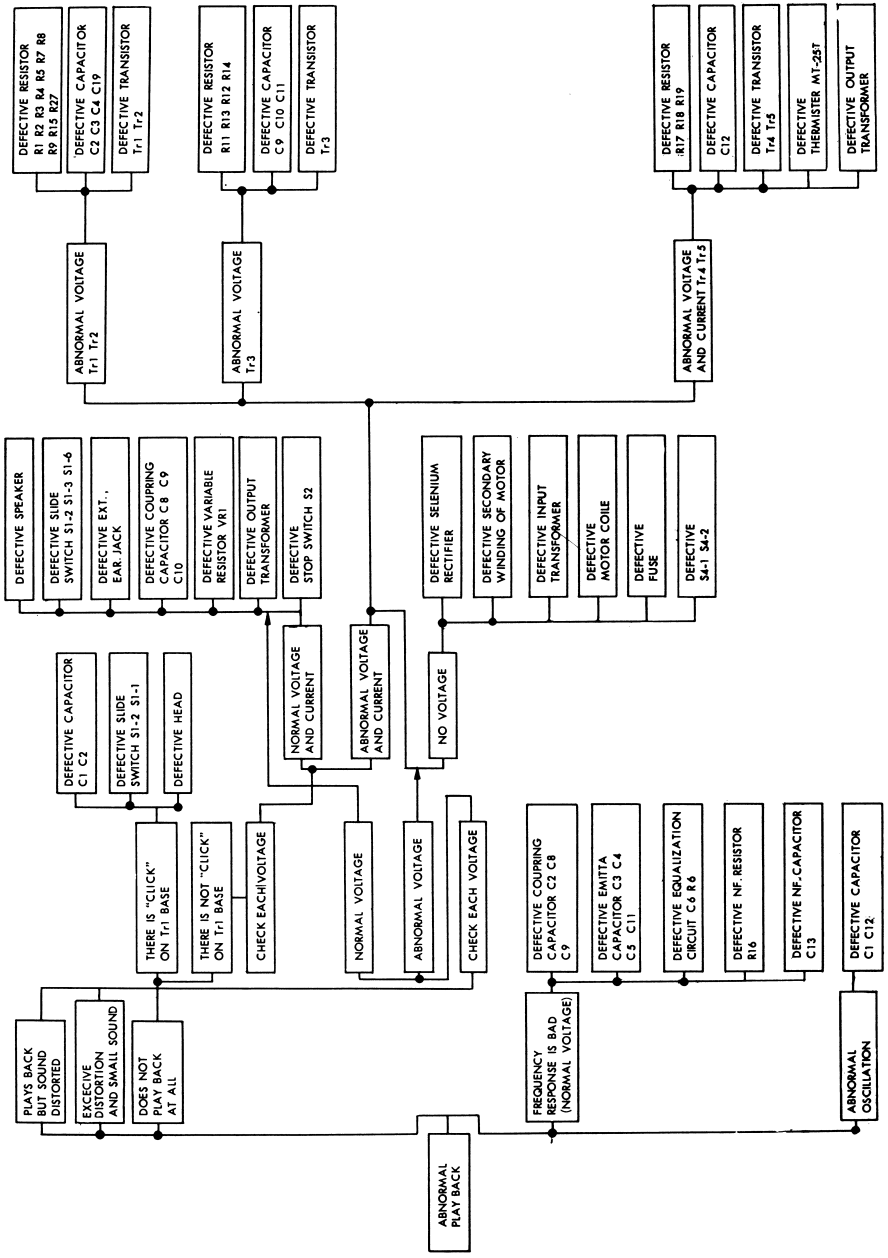




NOTE: Bare Figures Indicate M Group

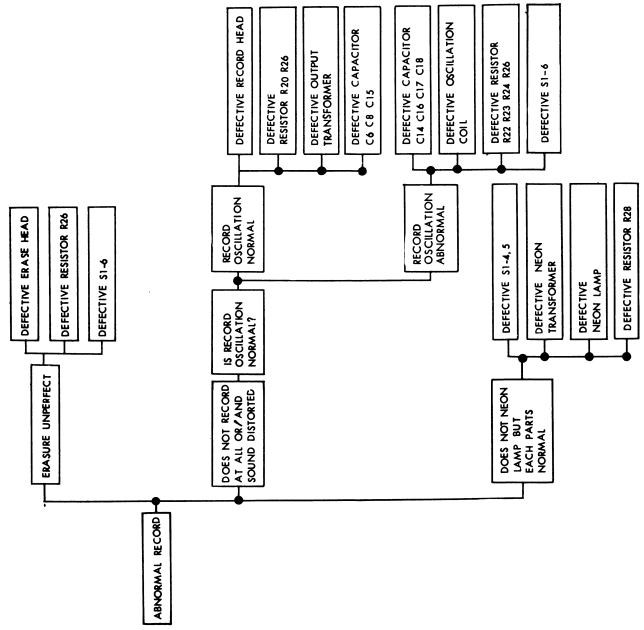
TROUBLE SHOOTING GUIDE 1

DEFECTIVE PLAYBACK CIRCUIT



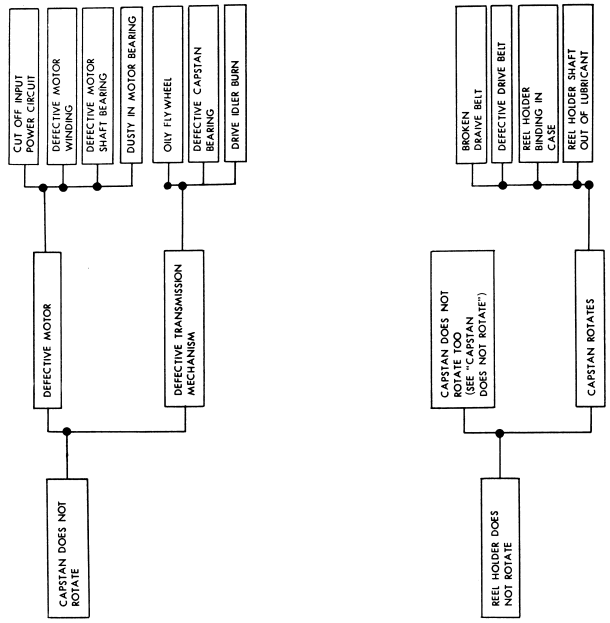
TROUBLE SHOOTING GUIDE 2

DEFECTIVE RECORDING CIRCUIT



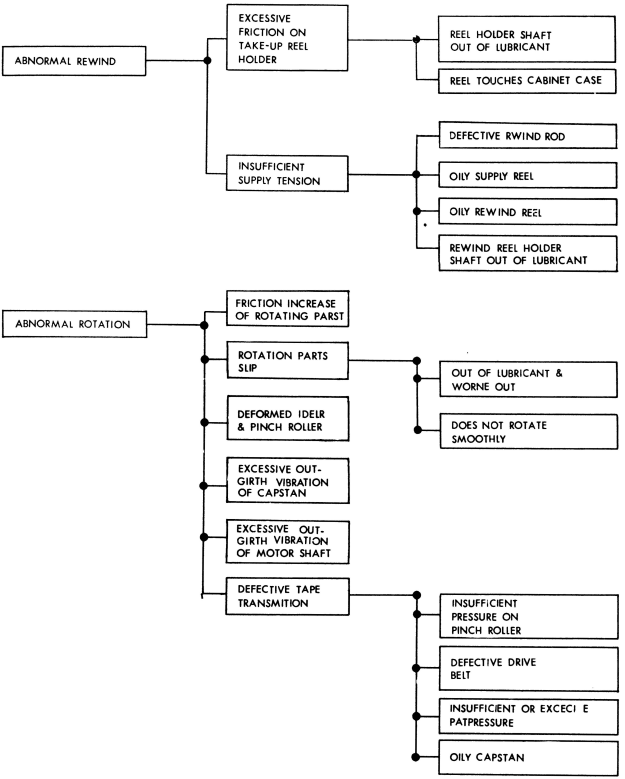
TROUBLE SHOOTING GUIDE 3

DEFECTIVE MECHANISM

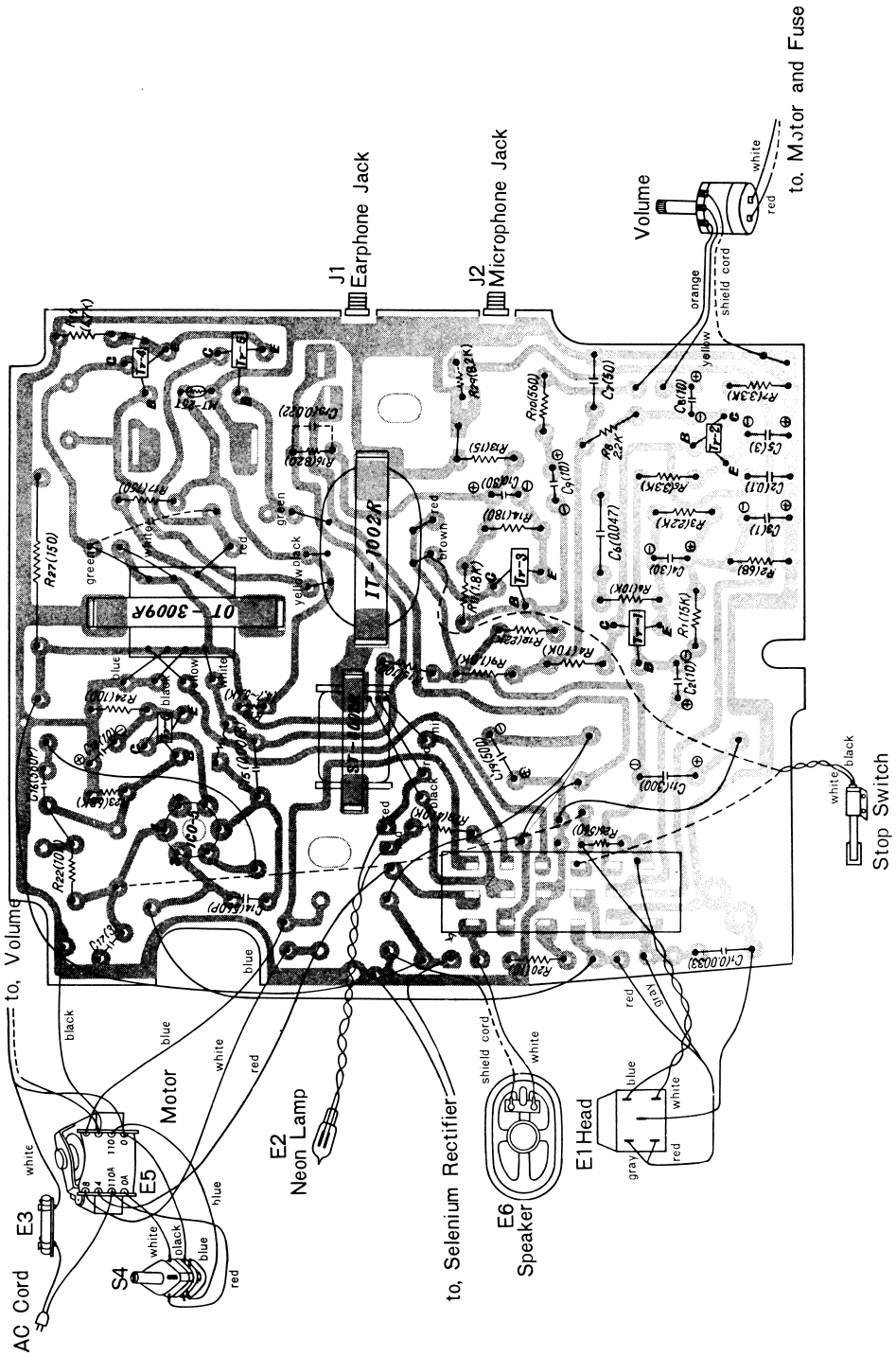


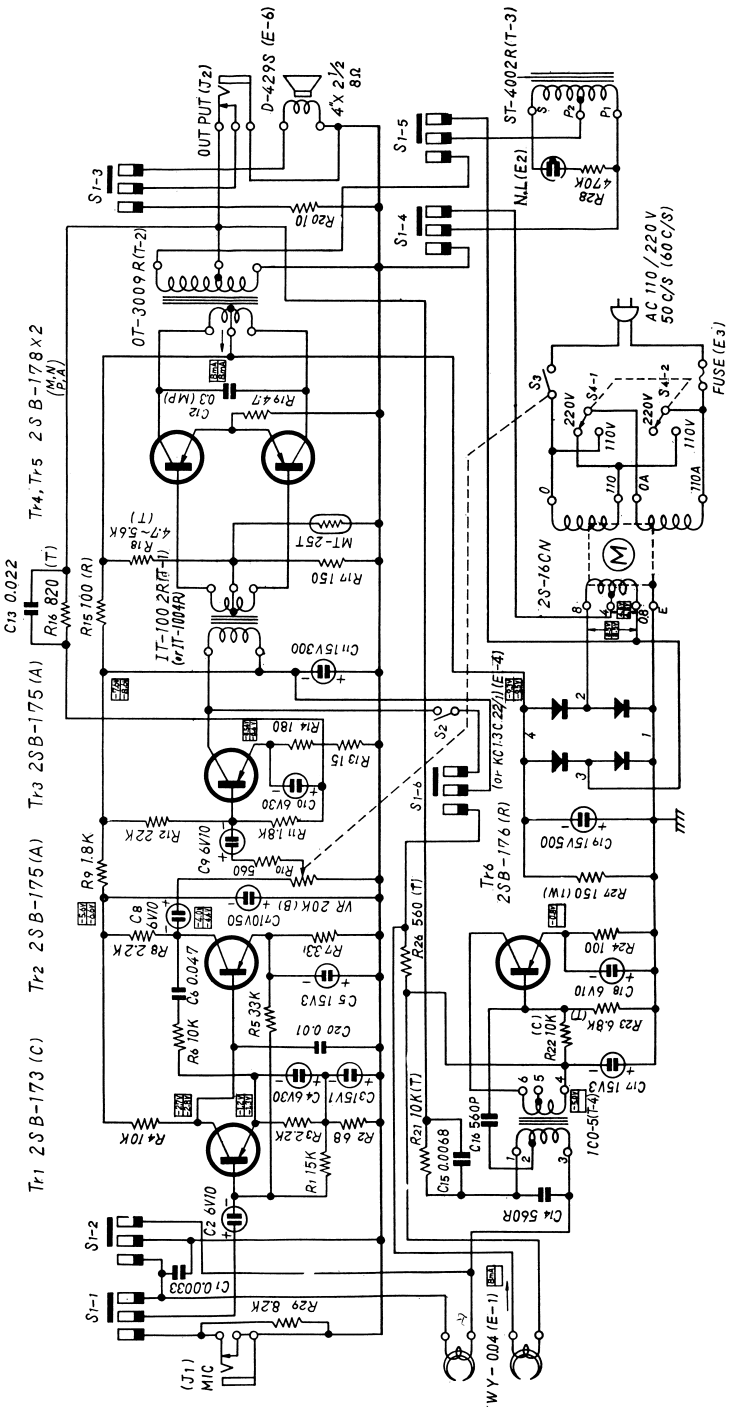
TROUBLE SHOOTING GUIDE 4

DEFECTIVE MECHANISM



N15-4. NATIONAL MODEL RQ-303





Note.

1. S_1 Record-Playback Selector Switch (Shown in playback position, ganged with mechanism)
2. S_2 Stop Switch (When the recorder is off, the switch is on, ganged with mechanism)
3. S_3 Power **ON/OFF** Switch (ganged with the Volume Control VR)
4. S_4 Voltage Selector Switch

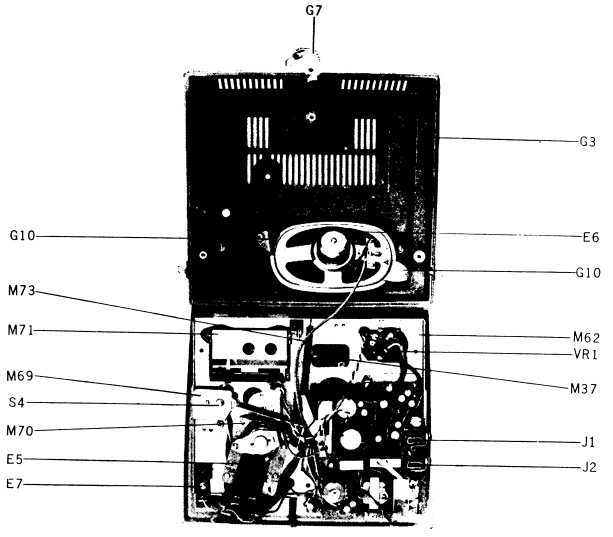
terminal	1	110V
	2	220V

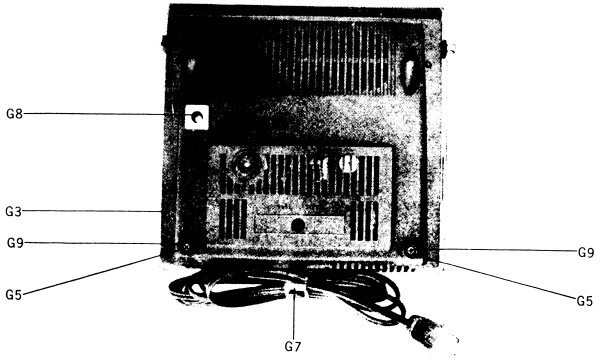
5. Capacity of resistor with no unit indication is Ω; K is 1000Ω; M is 1000,000Ω. Resistor with no wattage indication is 1/4 wattage; R is 1/6 wattage; C is 1/2 wattage; T is 1/4 wattage.
6. Value of capacitors with no unit indication is PF; P is PF.
7. Values indicated in ▭ are D.C. voltages between the chassis, values in ▭ with arrows are A.C. voltages between lines. The upper values should be measured during recording and the lower values during playback.

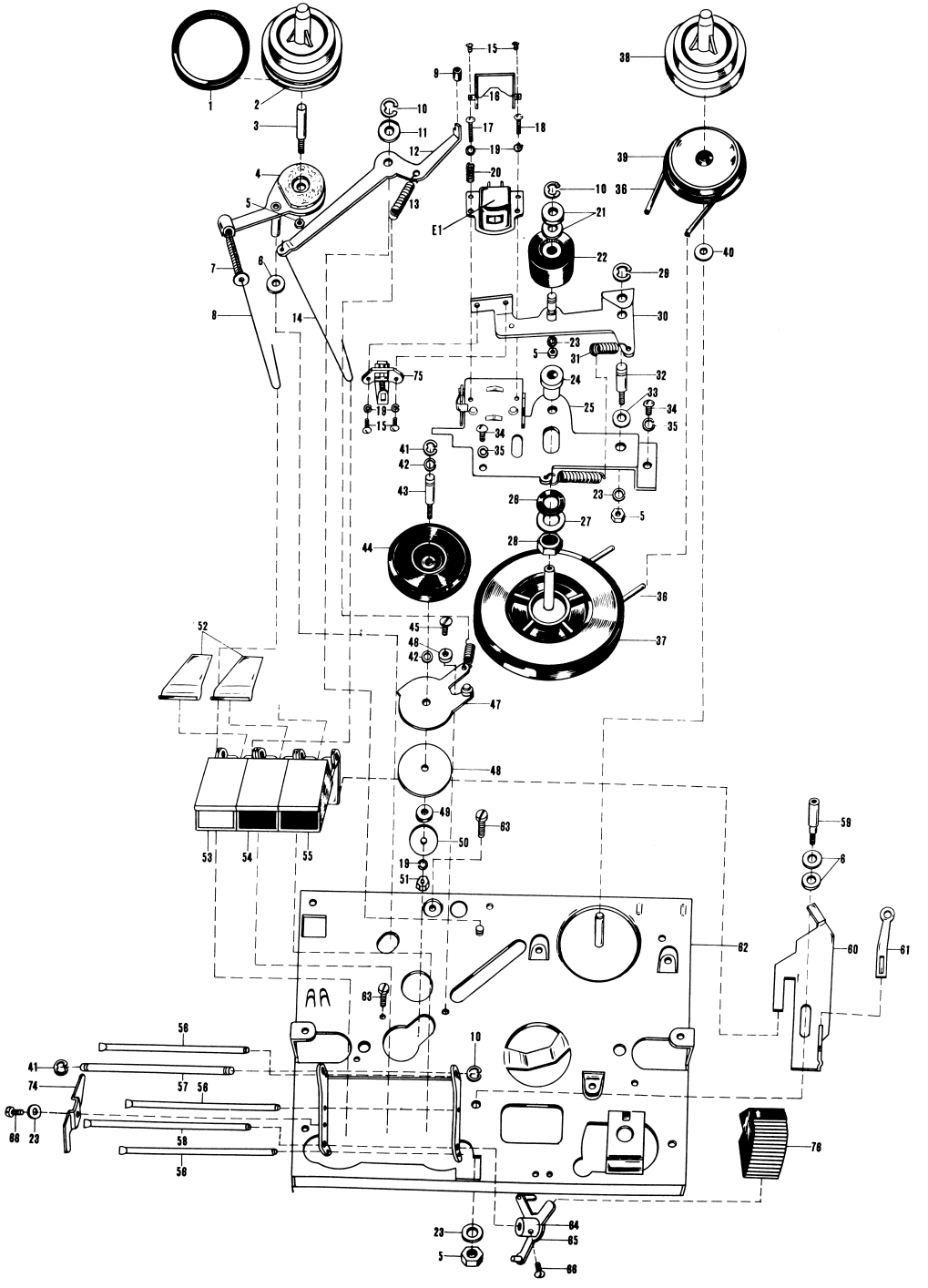
N15-2. NATIONAL MODEL RQ-303

VIEW OF ASSEMBLY

M 36 Rubber Belt
M 37 Flywheel
M 38 Takeup Reel Holder
M 39 Takeup Reel Pulley
M 40 Fiber Washre for Reel Pulley 4¢×9¢×1t
M 41 Stop Ring for Drive Idler 2.3¢
M 42 Fiber Washer for Drive Idler Shaft 3.5¢ ~ 5¢×0.5t
M 43 Drive Idler Shaft
M 44 Drive Idler
M 45 Screw for Drive Idler Hook 3¢×8
M 46 Drive Idler Hook
M 47 Drive Idler Holder
M 48 Washer for Drive Idler Holder (A)
M 49 Drive Idler Metal
M 50 Washer for Drive Idler Holder (B)
M 51 Nut for Drive Idler Shaft
M 52 Push Button Spring
M 53 Rewind Push Button
M 54 Stop Push Button
M 55 Play Push Button
M 56 Push Button Shaft (C)
M 57 Push Button Shaft (A)
M 58 Push Button Shaft (B)
M 59 Record Button Lever Shaft
M 60 Record Button Lever
M 61 Pinch Roller Lever Rod
M 62 Baseplate
M 63 Screw for Motor Holder
M 64 Record Button Lever
M 65 Record Button Lever Mettal
M 66 Screw for Record Lever 2.6¢×5
M 67 Record Lever Spring
M 68 Record Lever
M 69 AC Mains Selector Switch Holder
M 70 Motor Shield
M 71 Push Button Frame Assembly
M 72 Rubber for Motor Shaft
M 73 Push Button Lever Spring
M 74 Push Button Frame (B)
M 75 Tape Pad Holder
M 76 Record Button
M 77 Spring Washer for Tape pad 2¢
M 78 Carrying Belt Hook
MB-01 Silicon Diode
M 79 Screw for Printed Bord
M 80 AC Cord Holder

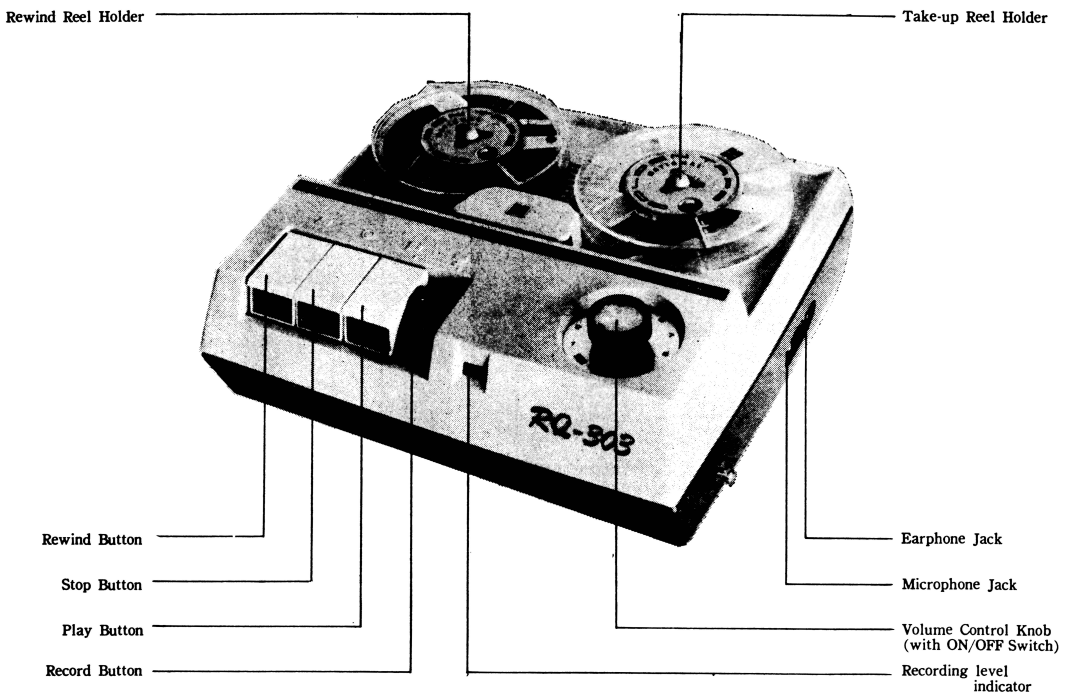






N15. NATIONAL MODEL RQ-303

CONTROLS



SPECIFICATIONS

Power Source:	Voltage of Setting	Local Voltage
	110 V	105, 110, 115V (50-60c/s)
	220 V	210, 230, 240V (50-60c/s)
Power Consumption:	abt 10 W	
Power Output:	500 mW (Max.600 mw)	
Transistors:	2SB-173 (1) 2SB-175 (2) 2SB-176 (1) 2SB-178 (2)	
Thermistor:	MT-25T (1)	
Selenium Rectifier:	KC 1.3C 22/1 (1)	
Recording System:	AC Bias 35 KC	
Erasure System:	DC Erasure	
Track System:	Double Track Recording System	
Operation:	Push Button System	
Tape Speed:	1.7/8 ips (4.75 cm/sec)	
Playing Time:	1.20 min. at 400 ft tape.	
Frequency Response:	150-4.000 c/s at 1.7/8 ips	
Wow and Flutter:	Less than 0.5%	
Input Impedance:	Microphone 10 KΩ 1 circuit.	
Output Impedance:	8Ω 1 circuit.	
Built-in Speaker:	4″×2 1/2″ Wide Dynamic Speaker	
Dimension:	8″×7.2/5″×3.1/4″	
Weight:	abt: abt. 4lbs. (1.8kg)	

ACCESSORIES

Microphone WM-2012 ····· 1
3″ Recording Tape (200 ft) ··· 1
3″ Empty Reel ····· 1
Carrying Belt ····· 1
Splicing Tape ····· 1

HOW TO REMOVE CASE

Main Case

- Pull up and remove case-cover.
- Pull out volume- control knob.
- Remove 2 screws, hdling main case (Mechanical part can be iuspected and abjusted in this condition.)

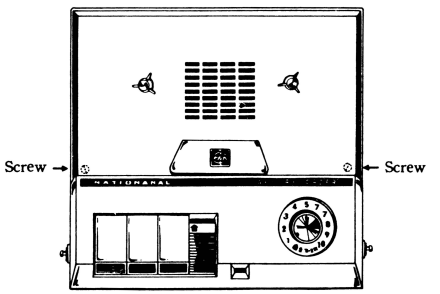


Fig. 1

Bottom Cover Case

- Remove 2 screws, holding mechanism and one screw, holding AC cord. Take out mechanism from cover case.
- In this condition, motor and electric circuit can be inspected. and adjusted.
- Reel-holder will come off if the unit is turned upside down.

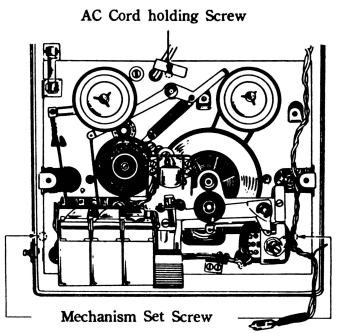


Fig. 2

Take-up Belt

- Remove 2 screws from upper-Shassis.
- Pull up and remove upper-Shassis from flywheel and reel-pulley.

Motor

- Remove pin and washer, holding idler.
- Lift upper-Shassis and remove idler.
- Remove soldered lead-wires from motor-terminals.
- Remove motor after removing 2 holding screws.
- When replacing motor. Reinstall it in the reverse sequence.

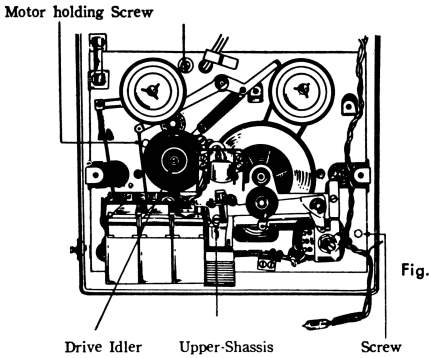


Fig. 3

Head

- Remove head-shield plate, by removing 2 holding screws.
- Remove 5 lead wires from head.
- Remove head after removing 2 head-adjusting screws.

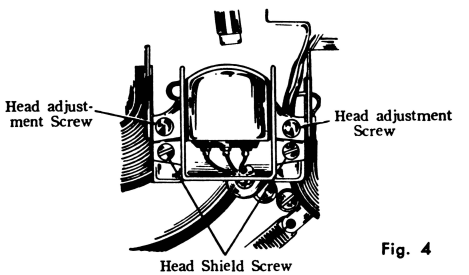


Fig. 4

ADJUSTMENT OF HEAD

- In Model RQ-303, one head functions as a combined record/playbadk/erase head.
- Set tape in travelling condition and pull down head-pad for-ward.
- Adjust the height of head so that relative position of head-core and tape is as shown below.

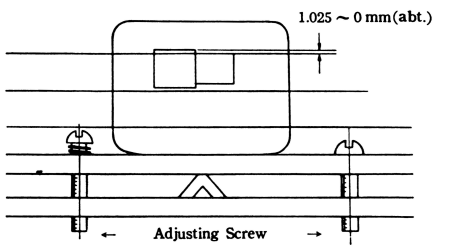


Fig. 5

- Playback the signal (For RQ-303 3,500 c/s at 1.7/8 ips) recorded on the standard alignment tape and determine the maximum output point by adjusting screws.
- If no standard alignment tape is available use a tape with signals properly recorded on a reliable tape recorder, and find out the maximum playback output point by hearing. (After adjustment the screws shall be lacquer-locked.)