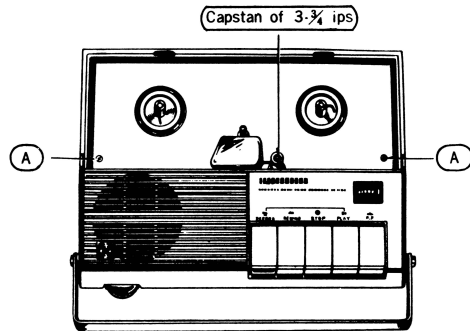


DISASSEMBLY INSTRUCTIONS

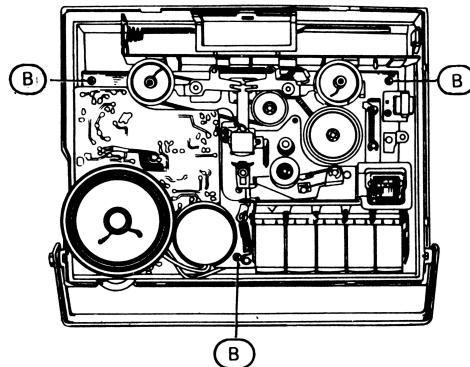
MAIN CABINET BODY CASE

1. Remove 2 screws (A) on the Main Cabinet Body Case, and lift up the Main Cabinet Body Case.



BOTTOM COVER

1. Take out the Main Cabinet Body Case.
2. Remove 3 screws (B) on the Base Plate, and lift up the Base Plate.



MOTOR

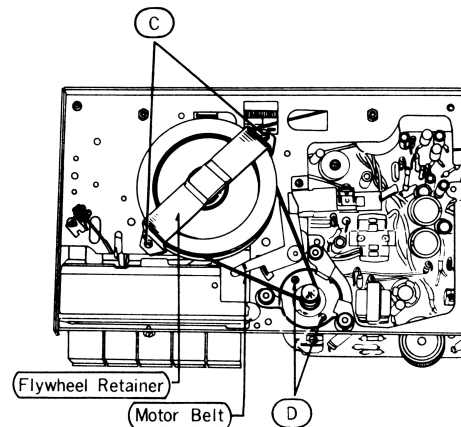
1. Reverse the Base Plate, and slip off the Motor Belt.
2. If the Motor fixing 2 screws (C) are removed, the Motor can be demounted.

FLYWHEEL

1. Remove the Capstan of 3-3/4 ips.
2. Reverse the Base Plate, remove the Flywheel Retainer, and then remove 2 screws (D).

3. Slip off the Motor Belt, and take out the Flywheel.

(NOTE) Care must be taken so that the Thrust Steel Ball under the Flywheel Shaft may not be lost.



TAPE TRANSPORT OPERATION

PLAYBACK

If the Playback Button is pushed, the electric circuit is switched, simultaneously there occur the undermentioned operations, the Motor is put in motion, and the mechanism gets into a Playback mode.

1. The Brake Lever-C is pushed, the Brake Lever-B and the Brake Lever-A are moved, and the Brake Rubbers are separated from Takeup and Supply Reel Tables.
2. The F.F. Playback Lever, the Idler Lever is moved, pressing the Idler to the Flywheel and the Reel Pulley under the Takeup Reel Tables. F.F. Playback Lever pushes the Fast Forward Spring, and the Fast Forward Spring increases friction between the Takeup Reel Table the Reel Pulley.
3. The Pressure Roller Release Lever is pushed, the Pressure Roller Lever is moved, and the Pressure Roller is pressed on the Capstan Shaft. By the Pressure Roller Lever, the Pad part is moved, and the Pad is Pressed against the Head.
4. Motor Pulley rotation is transmitted to the Flywheel by the Motor Belt, and the Flywheel rotation is conveyed to Takeup Reel Table through the Idler.

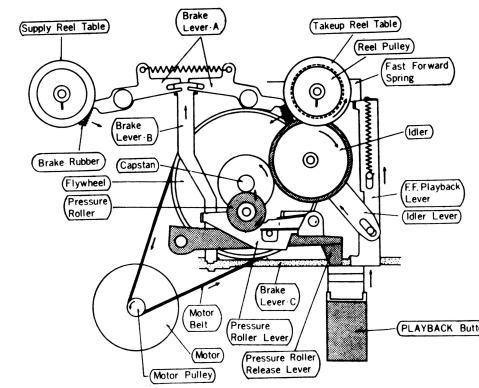
RECORD

If both the Record Button and the Playback Button are pushed at one time, the recording circuit is switched ON.

Operation of the mechanism is same as in case of playback.

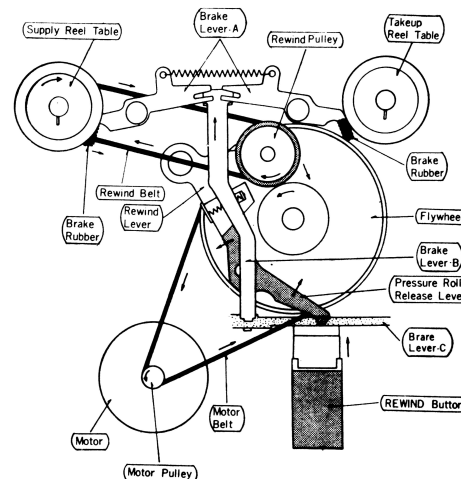
FAST FORWARD

If the Fast Forward Button is pushed, there occur simultaneously operations of mechanism except operations of the Pressure Roller part and the Pad part (Refer to the item of Playback), and the Fast Forward mode is brought in.



REWIND

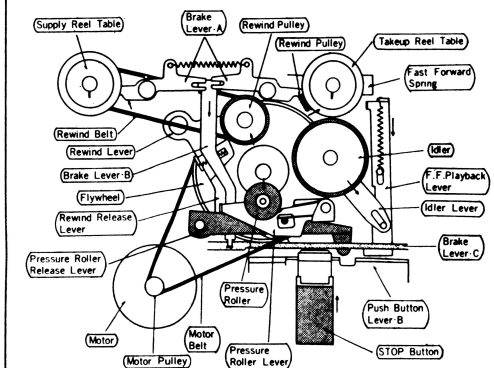
If the Rewind Button is pushed, the undermentioned operations simultaneously occur, and the mechanism is put in a rewinding mode.



1. The Brake Lever-C is pushed, the Brake Lever-B and the Brake Lever-A are moved, and the Brake Rubbers are separated from both Reel Table.
2. The Rewind Release Lever is pushed, Rewind Lever is moved, and the Rewind Pulley is pressed against the Flywheel.
3. Motor Pulley rotation is transmitted to the Flywheel by the Motor Belt, Flywheel rotation is transmitted to Rewind Pulley, and the Supply Reel Table is turned to the rewinding direction by the Rewind Belt.

STOP

From Record, Playback, Fast Forward and Rewinding modes, if Stop Button is pushed, the electric circuit is switched OFF, the following operations occur at once, and the operation of the mechanism stops.



1. From Fast Forward mode, the Push Button Lever-B releases the locked Push Button, the F.F. Playback Lever moves, and the Idler separates from the Flywheel and the Takeup Reel Pulley.
2. The Brake Lever-B operates to move the Brake Lever-A, the Brake Rubbers are pushed towards both side Reels, and braking is effected.
3. From record or playback mode, same operations occur as from Fast Forward mode. With release of the Push Button, the Pressure Roller Release Lever and the Pressure Roller are moved, and the Pressure Roller comes off from the Capstan.
4. From the rewind mode, the locked Push Button is released by operation of the Push Button-B, the Rewind Release Lever and the Rewind Lever are moved, and the Rewind Pulley comes off from the Flywheel, the Brake Lever-B operates to move the Brake Lever-A, the Brake Rubbers are pushed to both side Reels and braking is effected.

AMPLIFIER ADJUSTMENTS

RECORD BIAS FREQUENCY

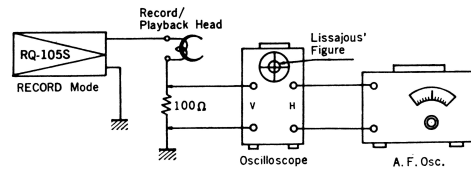


Fig. 9

Instruments Required: Oscilloscope; A.F. Oscillator;
100 Ω Resistor

Measuring Circuit: Refer to Fig. 9.

Connect a 100 Ω Resistor in series to the ground side of the Record/Playback Head, and compare the frequency of voltage across the resistor with the frequency of the A.F. Oscillator.

To compare, make the oscilloscope form a Lissajous' Figure, and bringing the frequency of the A.F. Oscillator close to 50 kc, watch the point at which the circle of the Lissajous' Figure stands still which is the frequency to be measured. The standard frequency is: 25~35 kc. If the frequency is not within the above range, slowly the core of the Oscillator Transformer (T3) until the correct frequency range is obtained, retuning the frequency of the A.F. Oscillator as necessary.

RECORD BIAS CURRENT

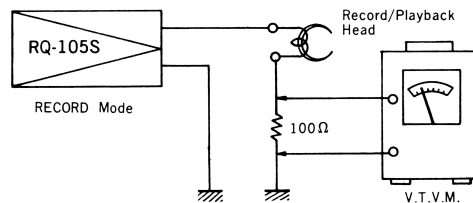


Fig. 10

Instruments Required: V.T.V.M.; 100 Ω Resistor

Measuring Circuit: Refer to Fig. 10.

After adjusting Record bias frequency, connect the V.T.V.M. across the 100 Ω Resistor, and check that the Record bias current is 0.65~1.1 mA. Voltage across the 100 Ω Resistor is 0.065~0.11 V.

If the Record bias current is not within the above range, correct by varying the Record bias frequency within the range of 25~35 kc.

When all measurements are finished, the original wiring of the heads should be restored. Care should be taken to keep correct polarity to avoid distortion noise.

ERASE CURRENT

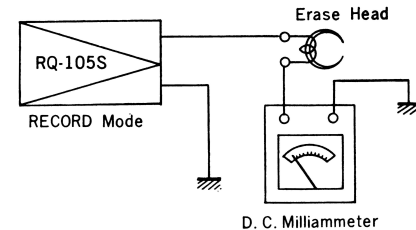


Fig. 11

Instrument Required: D.C. milliammeter

Measuring Circuit: Refer to Fig. 11.

Connect the D.C. milliammeter in series to the ground side of the Erase head.

When the Tape Recorder is set in Record mode, D.C. milliammeter will indicate Erase current. The standard Erase current is between 5.35~7.5 mA.

If the erase-current falls off specification, the cause can be attributed to consumption of battery or shortage of the layer at the erasing head, and inspection of the part is required.

RECORDING LEVEL

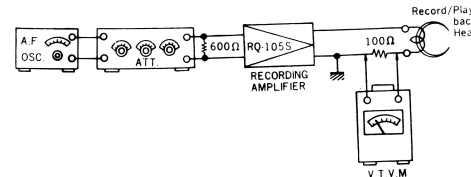


Fig. 12

Instruments Required: A.F. Oscillator; Attenuator; V.T.V.M.;
600 Ω and 100 Ω Resistors

Measuring Circuit: Refer to Fig. 12.

Remove the soldered lead wire from No. 3 terminal of the Oscillator Transformer (T3) to stop the bias oscillation.

Set the Tape Recorder in Recrod mode and turn the volume control knob to maximum. Measure the recording level necessary to feed 0.05 mA to the Record head from the input jack.

Connect a 100 Ω Resistor to the ground side of the Record head, and adjust the attenuator so that the voltage across the resistor is maintained at 0.05 V, and confirm if its value is -71~-77 db. Also confirm the indication of the V.U. meter which should be -3~-3 db.

MAINTENANCE

LUBRICATION AND CLEANING

This tape recorder does not, as a rule, require oiling, however, it is preferable to oil once a year or when parts are repaired, as follows:

Capstan Bearing	1-2 drops Oil
Pressure Roller Bearing	1-2 drops Oil
Rewind Pulley Bearing	1-2 drops Oil
Reel Table Spindles	1-2 drops Oil
Guide Pulley A and B	1-2 drops Oil

RECORD/PLAYBACK & ERASE HEADS

When Heads get dirty, it is important to wipe off dirt using a soft cloth moistened with alcohol. As Heads are constantly brushed by tape, they gradually wear out. After many hours of use, their characteristics may deteriorate somewhat.

It is desirable to replace Heads after about 1,000 hours of use.

MOTOR

The Motor bearings are constructed of "Oilless Metal" and requires no additional lubrication during the lifetime of the motor. Should the bearings or armature shaft indicate signs of excessive wear, replace the motor.

PRESSURE ROLLER

Use alcohol to clean the surface of the Pressure Roller which comes in contact with the Capstan. Oil the Pressure Roller bearing 1 to 2 drops once every 200 hours. Use a good quality spindle or sewing machine oil.

CAPSTAN

Clean the surface of Idler with alcohol. Oil the Capstan bearing 1 to 2 drops once every 200 hours. Use spindle or sewing machine oil. Any remaining oil or grease on the surface of Capstan in contact with Pressure Roller may cause the tape to slip and deteriorate the Pressure Roller.

ROLLERS

Oil bearings once every 200 hours of operation. Clean the surface in contact with the belt with alcohol. Remove all traces of oil or grease in order to prevent slippage.

HEAD DE-MAGNETIZATION

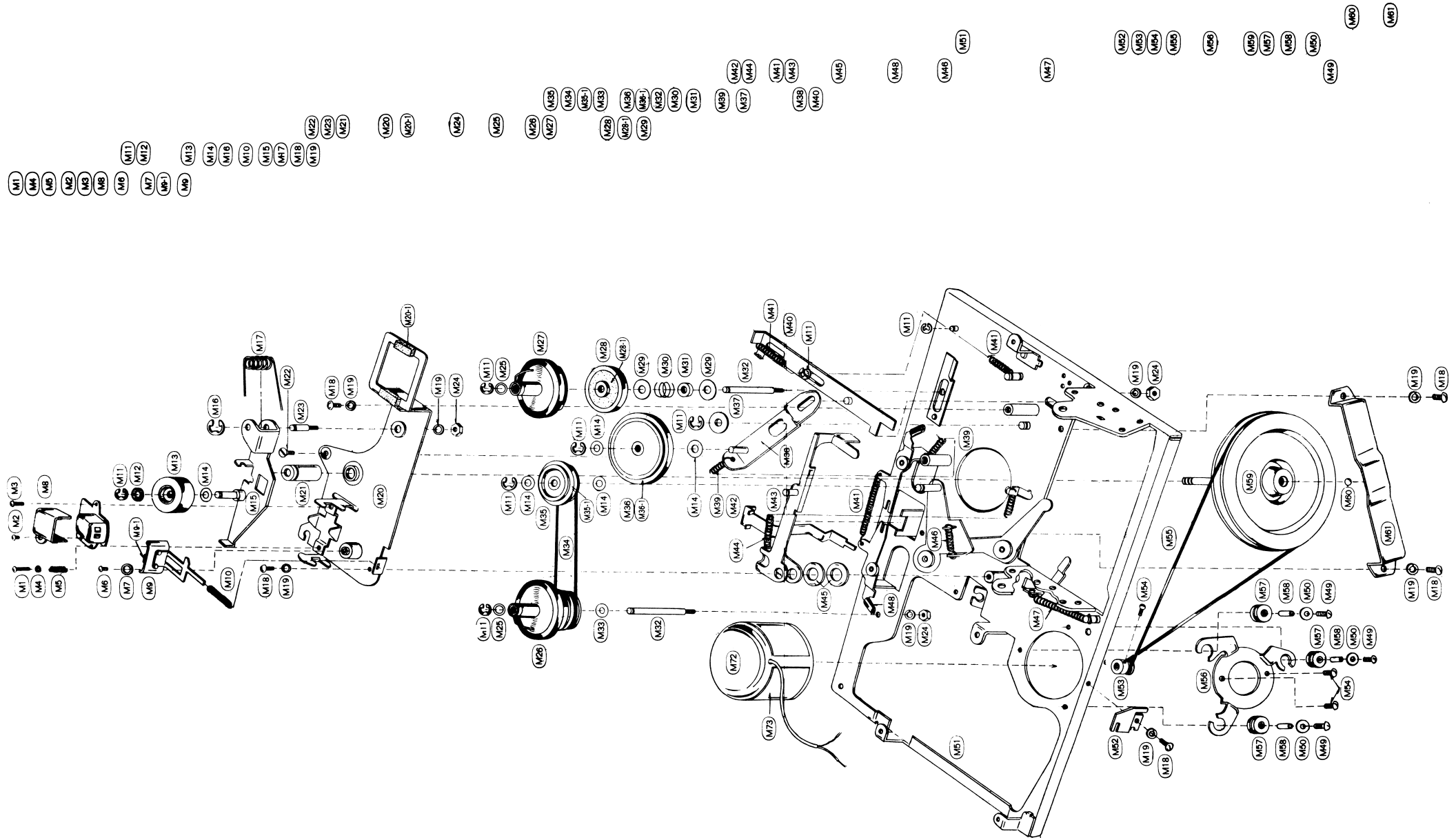
Magnetization of the Heads may result when the continuity of the Heads is measured with an ohmmeter. If it is necessary to measure Head continuity, the Heads should be de-magnetized after the continuity check. The magnetized Head can be neutralized with the use of a standard de-magnetization tool. The tip of the tool should not be used through the pad, but should be thin enough to fit between the pressure pad and the Head. A piece of cellulose tape should be placed over the Head of the tool to prevent metal to metal contact between the tool and the Head. After de-magnetization is completed, slowly remove the tool from the vicinity of the Head before turning off the current.

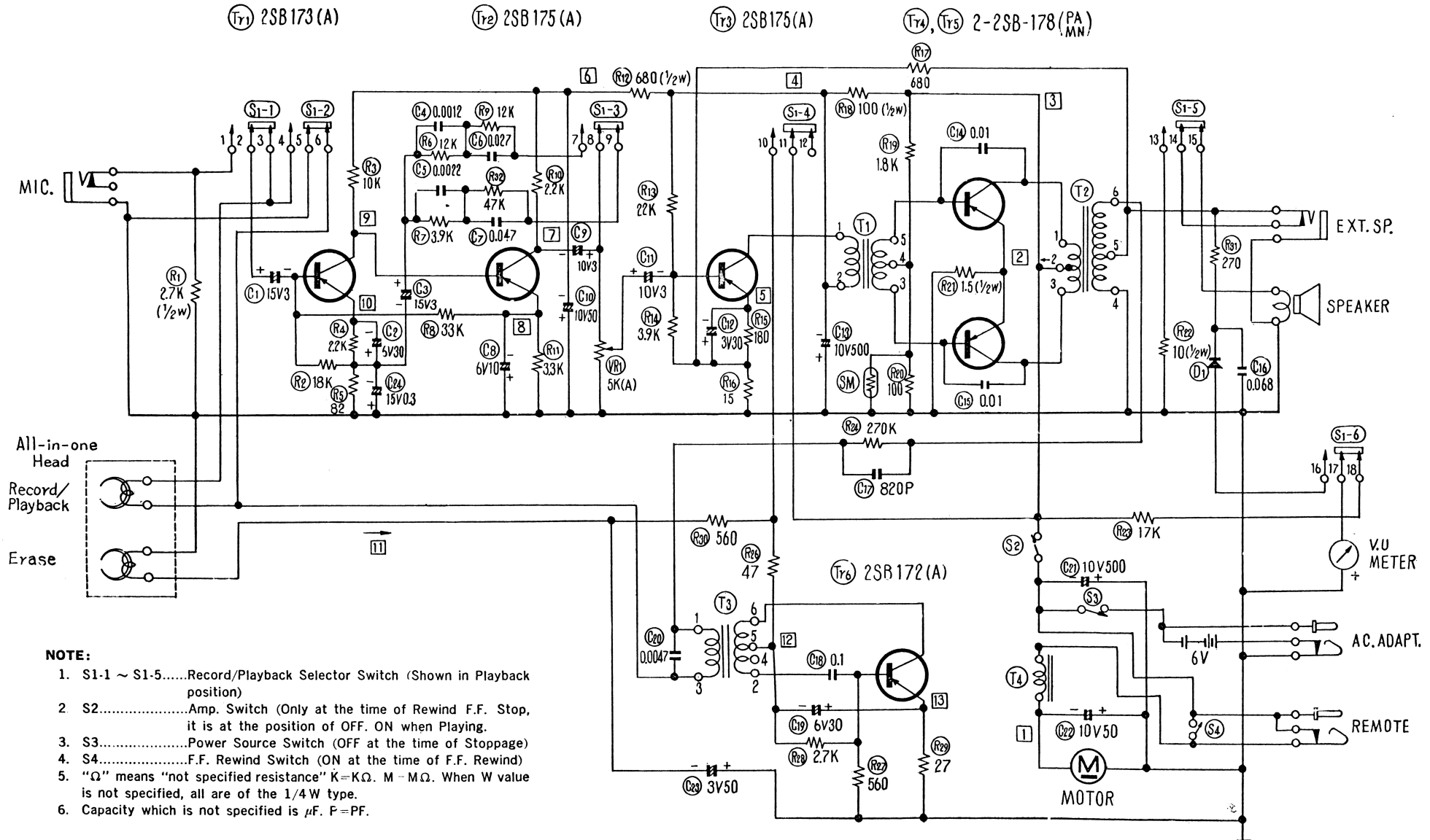
REPLACEMENT PARTS LIST

ATTENTION: Parts which are not listed are part of an assembly and are not stocked as a separate item. To obtain parts not listed, order the entire assembly.

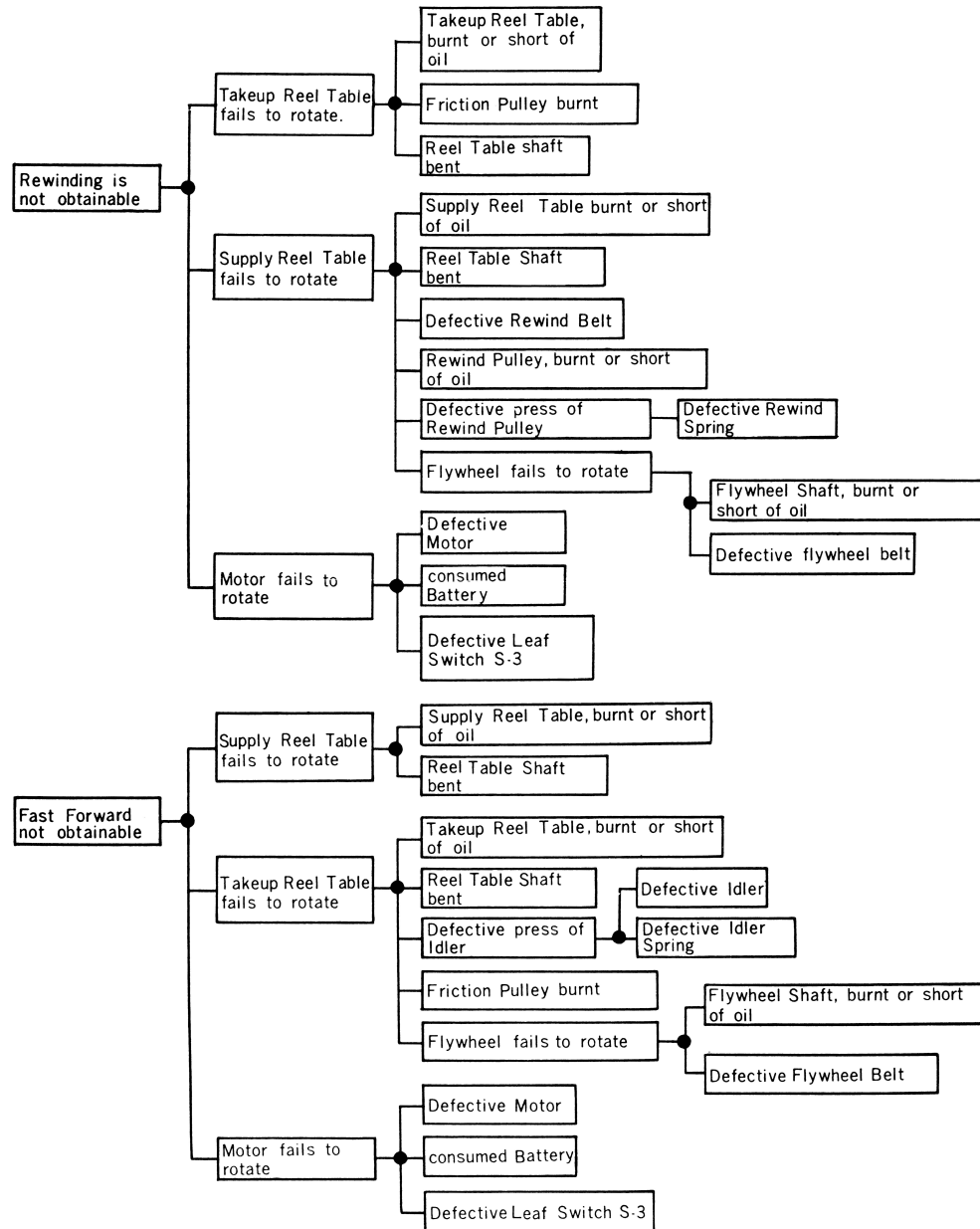
CAPACITORS

Ref. No.	Description	Part No.
C 1	Electrolytic Capacitor 3 μ F WV 15 V	ECE-A15V3
C 2	Electrolytic Capacitor 30 μ F WV 6 V	ECE-A6V30
C 3	Electrolytic Capacitor 3 μ F WV 15 V	ECE-A15V3
C 4	Mylar Capacitor 0.0012 μ F WV 50 V	ECQ-M05122MZ
C 5	Mylar Capacitor 0.0022 μ F WV 50 V	ECQ-M05222MZ
C 6	Mylar Capacitor 0.027 μ F WV 50 V	ECQ-M05273MZ
C 7	Mylar Capacitor 0.047 μ F WV 50 V	ECQ-M05473KZ
C 8	Electrolytic Capacitor 10 μ F WV 6 V	ECE-A6V10
C 9	Electrolytic Capacitor 3 μ F WV 10 V	ECE-B10V3
C 10	Electrolytic Capacitor 50 μ F WV 10 V	ECE-A10V50
C 11	Electrolytic Capacitor 3 μ F WV 10 V	ECE-B10V3
C 12	Electrolytic Capacitor 30 μ F WV 3 V	ECE-B3V30
C 13	Electrolytic Capacitor 500 μ F WV 10 V	ECE-A10V500
C 14	Mylar Capacitor 0.01 μ F WV 50 V	ECQ-M05103MZ
C 15	Mylar Capacitor 0.01 μ F WV 50 V	ECQ-M05103MZ
C 16	Ceramic Capacitor 0.068 μ F	QCK-D01683M
C 17	Polystyrene Capacitor 820 PF WV 125 V	ECQ-S1821KK
C 18	Mylar Capacitor 0.1 μ F WV 50 V	ECQ-M05104MZ
C 19	Electrolytic Capacitor 30 μ F WV 6 V	ECE-A6V30M
C 20	Mylar Capacitor 0.0047 μ F WV 50 V	ECQ-M05472KZ
C 21	Electrolytic Capacitor 500 μ F WV 10 V	ECE-A10V500
C 22	Electrolytic Capacitor 50 μ F WV 10 V	ECE-A10V50
C 23	Electrolytic Capacitor 50 μ F WV 3 V	ECE-B3V50
C 24	Electrolytic Capacitor 0.3 μ F WV 15 V	ECE-A15V0.3M

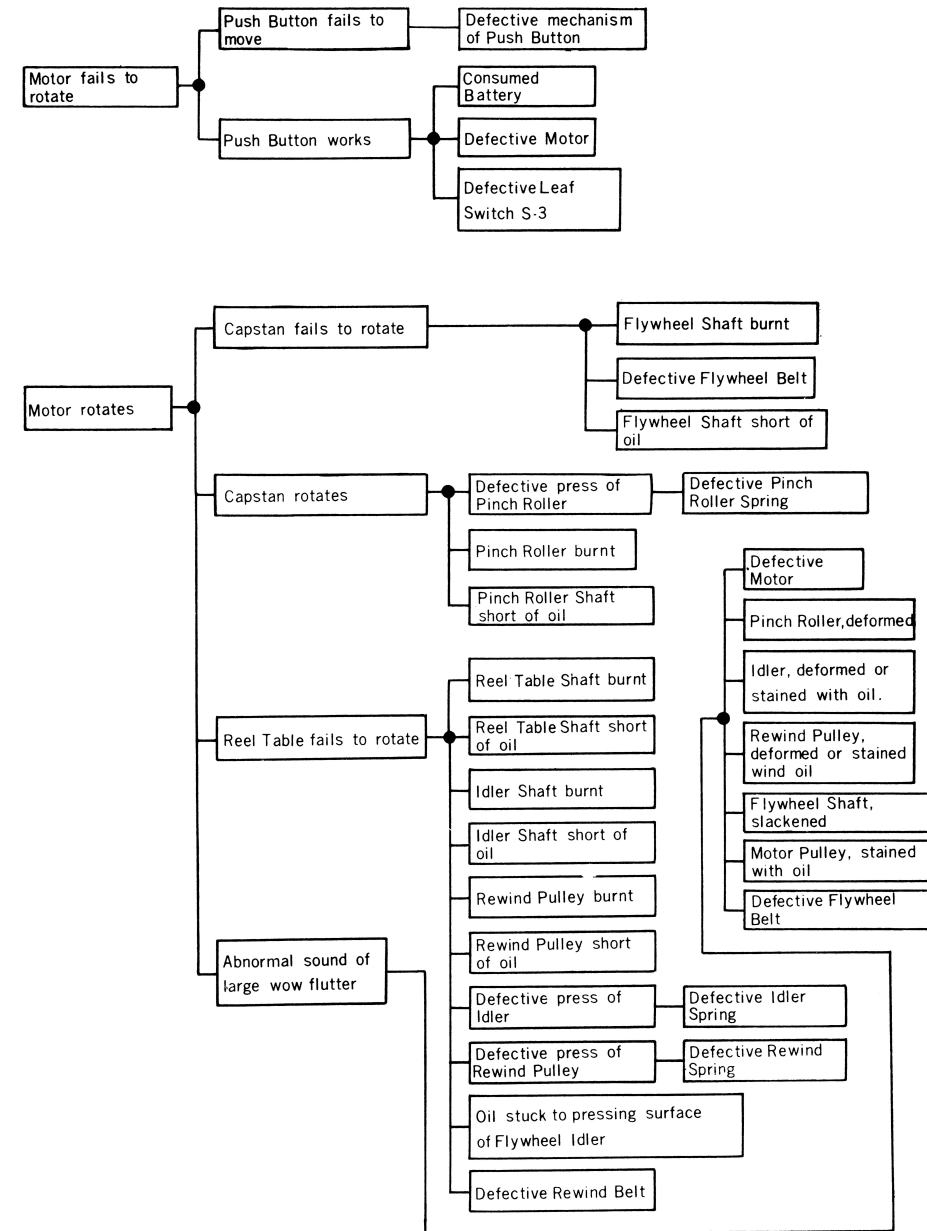




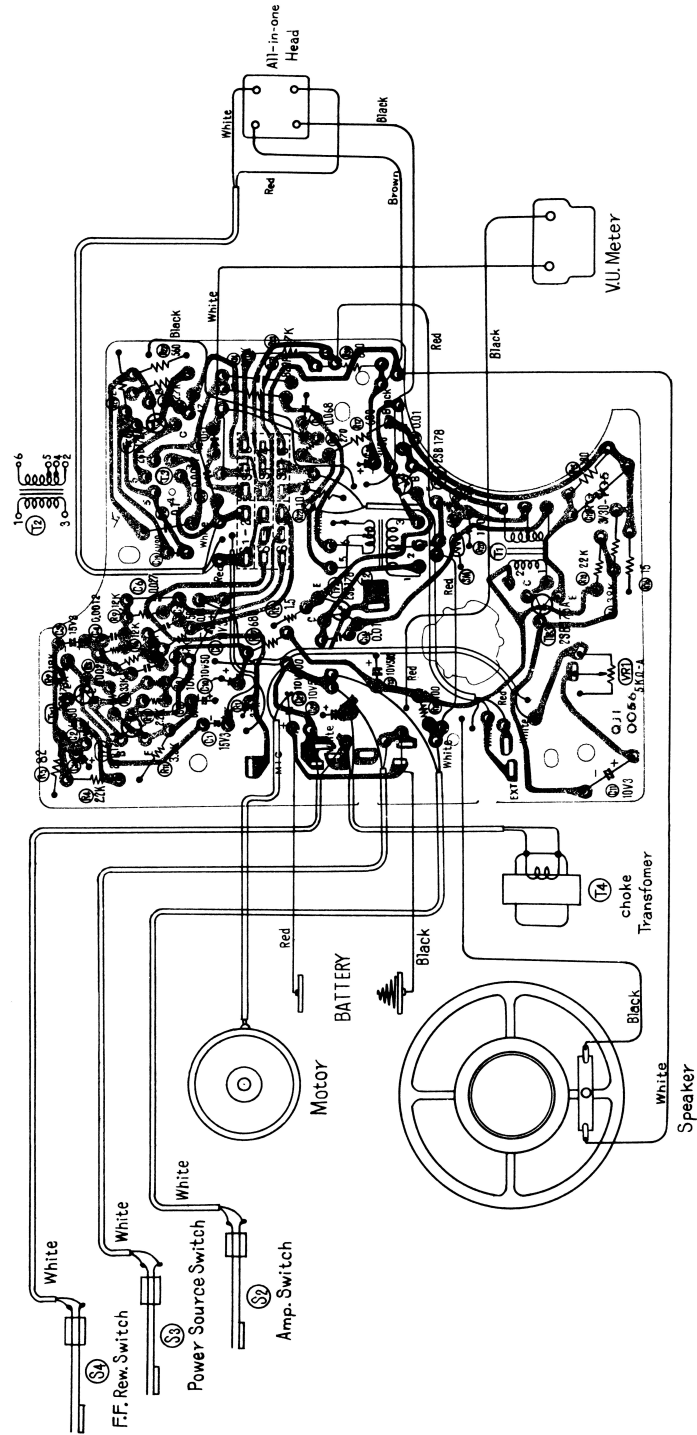
TROUBLE SHOOTING GUIDE 1



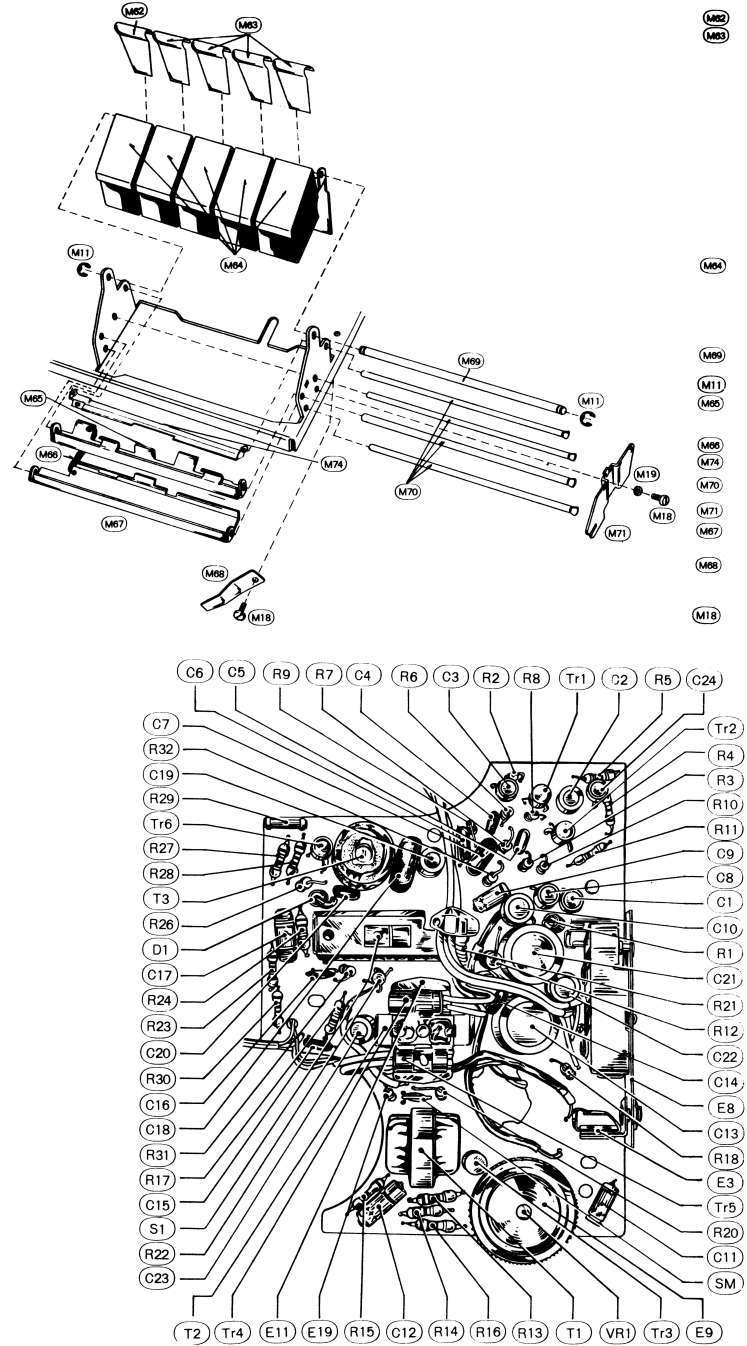
TROUBLE SHOOTING GUIDE 2



WIRING CONNECTION DIAGRAM



NOTE:
The Circuit shown in Blue on the Conductor side is Earth Circuit.



N3-4

NATIONAL MODEL RQ-105S

RESISTORS

Ref. No.	Description	Part No.
R 1	Solid Resistor 2.7 K Ω 1/2 Watt 20%	ERC-12BFM272
R 2	Carbon Resistor 18 K Ω 1/4 Watt 10%	ERD-14VK183
R 3	Carbon Resistor 10 K Ω 1/4 Watt 10%	ERD-14VK103
R 4	Carbon Resistor 2.2 K Ω 1/4 Watt 10%	ERD-14TK222
R 5	Carbon Resistor 82 Ω 1/4 Watt 10%	ERD-14TK820
R 6	Carbon Resistor 12 K Ω 1/4 Watt 10%	ERD-14VK123
R 7	Carbon Resistor 3.9 K Ω 1/4 Watt 10%	ERD-14VK392
R 8	Carbon Resistor 33 K Ω 1/4 Watt 10%	ERD-14VK333
R 9	Carbon Resistor 12 K Ω 1/4 Watt 10%	ERD-14VK123
R 10	Carbon Resistor 2.2 K Ω 1/4 Watt 10%	ERD-14VK222
R 11	Carbon Resistor 3.3 K Ω 1/4 Watt 10%	ERD-14TK333
R 12	Solid Resistor 680 Ω 1/2 Watt 20%	ERC-12BFM681
R 13	Carbon Resistor 22 K Ω 1/4 Watt 10%	ERD-14TK223
R 14	Carbon Resistor 3.9 K Ω 1/4 Watt 10%	ERD-14TK392
R 15	Carbon Resistor 180 Ω 1/4 Watt 10%	ERD-14TK181
R 16	Carbon Resistor 15 Ω 1/4 Watt 10%	ERD-14TK150
R 17	Carbon Resistor 680 Ω 1/4 Watt 10%	ERD-14TK681
R 18	Solid Resistor 100 Ω 1/2 Watt 20%	ERC-12BFM101
R 19	Carbon Resistor 1.8 K Ω 1/4 Watt 10%	ERD-14VK182
R 20	Carbon Resistor 100 Ω 1/4 Watt 10%	ERD-14VK101
R 21	Wire Wound Resistor 1.5 Ω 1/2 Watt	ERW-12L1R5
R 22	Solid Resistor 10 Ω 1/2 Watt 20%	ERC-12BFM100
R 23	Carbon Resistor 17 K Ω 1/4 Watt	ERD-14TJ173
R 24	Carbon Resistor 270 K Ω 1/4 Watt 10%	ERD-14TK274
R 26	Carbon Resistor 47 Ω 1/4 Watt 10%	ERD-14TK470
R 27	Carbon Resistor 560 Ω 1/4 Watt 10%	ERD-14TK561
R 28	Carbon Resistor 2.7 K Ω 1/4 Watt 10%	ERD-14VK272
R 29	Carbon Resistor 27 Ω 1/4 Watt 10%	ERD-14TK270
R 30	Carbon Resistor 820 Ω 1/4 Watt 10%	ERD-14TK821
R 31	Carbon Resistor 270 Ω 1/4 Watt 10%	ERD-14VK271
R 32	Carbon Resistor 47 K Ω 1/4 Watt 10%	ERD-14VK473

VARIABLE RESISTORS

Ref. No.	Description	Part No.
VR 1	Volume/Level Control 5 K Ω -A	EVJ-A2AT12A53

TRANSISTORS

Tr 1	Transistor	2SB 173A
Tr 2	Transistor	2SB 175A
Tr 3	Transistor	2SB 175A
Tr 4	Transistor	2SB 178
Tr 5	Transistor	2SB 178
Tr 6	Transistor	2SB 172A

DIODE

D 1	Diode	OA-70
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THERMISTOR

SM	Thermistor	QVM-800B
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TRANSFORMER

T 1	Input Transformer	QLA-108-1
T 2	Output Transformer	QLA-0327
T 3	Oscillator Transformer	QLB-0119
T 4	Choke Transformer	QLP-0107

SWITCHES

Ref. No.	Description	Part No.
S 1	Record/Playback Selector Switch	ESD-1610
S 2	Amp. Switch	QSB-0107
S 3	Power Switch	QSB-0107
S 4	F.F. REW. Switch	QSB-0107

ELECTRICAL PARTS

E 1	All-in-one Head	WY-015Z
E 2	Speaker	EAS-8P655A
E 3	Jack M3-B	QJA-0104
E 4	Jack Unit-B	QJA-0109
E 5	Circuit Board Assembly	QEI-0073
E 6	V.U. Meter	QSL-0021
E 7	Speaker Mounting Bracket	QTW-1023
E 8	Jack Plate	QGJ-1049
E 9	Volume Knob	QGT-1037
E 10	Head Spacer-B	QTW-1006
E 11	Heat Sink	QTH-1011

MECHANICAL PARTS

Ref. No.	Description	Part No.
M 1	Screw, Round Head PH2 ϕ ×12	QHN-120×12U3
M 2	Screw, Round Head PH2 ϕ ×3	QHN-120×3U3
M 3	Screw, Round Head PH2 ϕ ×8	QHN-120×8U3
M 4	Flat Washer W2 ϕ	QWP-2012N1
M 5	Head Adjustment Spring	QBC-1035
M 6	Screw, Round Head PH2 ϕ ×4	QHN-120×4U3
M 7	Pad Washer	QAP-1075
M 8	Head Shield Cover	QTS-1051
M 9	Pad Assembly	—
M 9-1	Pad Felt	QBJ-1042
M 10	Pad Spring	QAP-1083
M 11	Stop Ring E3 ϕ	QNS-304T3
M 12	Pressure Roller Felt	QBF-1004
M 13	Pressure Roller	QDP-1035
M 14	Paper Washer 4.2×8×0.5	QBK-7006
M 15	Pressure Roller Lever Assembly	—
M 16	Stop Ring E4 ϕ	QNS-404T3
M 17	Pressure Roller Spring	QBN-1014
M 18	Screw, Round Head PH3 ϕ ×5	QHN-130×5U3
M 19	Spring Washer SW3 ϕ	QWS-302U3
M 20	Upper Base Plate Assembly	—
M 20-1	V.U. Meter Felt	QBF-5616
M 21	3-3/4 ips. Capstan Sleeve	QYQ-0028
M 22	Screw, Countersink S3 ϕ ×5	QHS-130×5U3
M 23	Pressure Roller Shaft	QMS-1125-1
M 24	Hexagonal Nut N3 ϕ	QNN-3022U3
M 25	Plastic Washer 4.2×7×0.25	QBJ-3008-1
M 26	Supply Reel Table Assembly	QXP-0122
M 27	Takeup Reel Table Assembly	QXP-0123
M 28	Takeup Reel Pulley Assembly	QXP-0113
M 28-1	Takeup Reel Washer	QBJ-1049
M 29	Friction Washer	QBJ-1106
M 30	Friction Spring	QBC-1038
M 31	Friction Collar	QMP-1060
M 32	Takeup Reel Table Shaft	QMS-1142
M 33	Paper Washer 4.2×8×1.0	QBK-7026
M 34	Rewind Belt	QDB-0037
M 35	Rewind Pulley Assembly	QXP-0121
M 35-1	Rewind Pulley Rubber	QBG-1072
M 36	Idler Assembly	QXI-0007
M 36-1	Idler Rubber	QBG-1071
M 37	Idler Lever Washer	QWQ-1054
M 38	Idler Lever Assembly	—
M 39	Idler Spring	QBT-1097
M 40	F.F. Playback Lever Assembly	—
M 41	F.F. Playback Brake Spring	QBT-1099
M 42	Brake Lever-B	QML-1164
M 43	Pressure Roller Release Lever Assembly	—
M 44	Cancellation Lever Spring	QBN-1023
M 45	Flat Washer W6 ϕ	QWP-6012U3
M 46	Rewind Spring	QBT-1100
M 47	Recording Lever Spring	QBT-1101
M 48	Brake Rubber	QBG-1073
M 49	Screw, Round Head PH2.6 ϕ ×8	QHN-126×8U3
M 50	Flat Washer W2.6 ϕ	QWP-2612U3
M 51	Lower Base Plate Assembly	—
M 52	Circuit Board Holding Plate	QMA-1072
M 53	Motor Pulley	QDP-1082
M 54	Screw, Round Head PH2.6 ϕ ×5	QHN-126×5U3

Ref. No.	Description	Part No.
M 55	Motor Belt	QDB-0041
M 56	Motor Holding Plate	QMH-1029
M 57	Motor Rubber Cushion	QBG-1055
M 58	Rubber Cushion Spacer	QKT-1131
M 59	Flywheel Assembly	QXF-0018
M 60	Thrust Steel Ball	QDK-1001
M 61	Flywheel Retainer	QMF-1073
M 62	Push Button Spring	QBP-1062
M 63	Push Button Spring-B	QBP-1066
M 64	Push Button Assembly	QXB-0041
M 65	Safety Lever	QML-1166
M 66	Lock Spring	QBT-1102
M 67	Push Button Lever-B	QML-1162
M 68	Stopper Spring	QBP-1063
M 69	Push Button Shaft-A	QMS-1143
M 70	Push Button Shaft-B	QMS-1144
M 71	Push Button Frame	QMQ-1037-1
M 72	Motor Assembly	QDM-0622
M 73	Motor Shield Plate	QTS-1052
M 74	Brake Lever-C	QML-1165

CABINET PARTS

G 1	Top Cover Case Assembly	QYA-0034
G 2	Main Case Assembly	QYB-0083
G 2-1	Capstan Rest	QMS-1122
G 3	Battery Compartment Cover Assembly	QEO-0008
G 4	Bottom Cover Case Assembly	QYC-0048
G 4-1	Handle	QKH-1021
G 4-2	Handle Washer	QBJ-3021
G 4-3	Handle Screw	QHQ-1047
G 5	Screw, Round Head M53 ϕ ×12	QHV-230×12C1

ACCESSORIES

A 1	Dynamic Microphone	WM-2051N
A 2	Accessory Bag	QFK-0012
A 4	3" Recording Tape	QFT-3NR48Z
A 5	3" Empty Reel	QFR-3NZ
A 6	Instruction Book	QQT-0183
A 7	Radio cord-M	QEB-19
A 8	Splicing Tape	QFS-2-1
A 9	Magnetic Earphone	EAE-1QB8

PACKING

P 1	Packing Case	QPN-1268
P 2	Inner Cushion (Left)	QPN-1230
P 3	Inner Cushion (Right)	QPN-1231
P 4	Gauze	QPQ-1009
P 5	Accessory Case	QPW-1044

MECHANICAL ADJUSTMENTS

PRESSURE ROLLER TENSION

- Instruments Required: Spring Scale; Strong Twine.
Measurement: Refer to Fig. 1.
- Set the unit to the Playback mode, hang a Spring Scale in the linear direction of the Capstan Shaft and the Pressure Roller Shaft as shown in Fig. 1, gradually increase the force, and when the Tape stops, read the measure of the Spring Scale.
 - Make sure that value is in a range of 5.7~7.8 ozs. (160~220 g) at 3-3/4 ips. and 5.3~7.4 ozs. (150~210 g) at 1-7/8 ips.
 - The Capstan and the Pressure Roller must be in parallel, and no Tape fluctuation is permissible between the Pressure Roller and the Capstan.

ADJUSTMENT

Make adjustment by the Pressure Roller Spring.

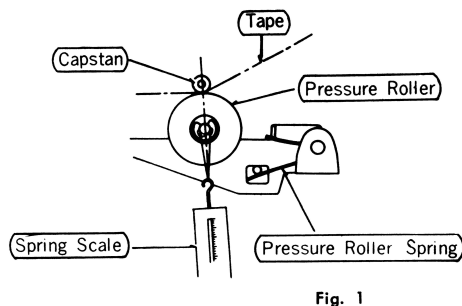


Fig. 1

WINDING TORQUE FOR PLAYBACK

- Instruments Required: Tension Gauge; Splicing Tape.
Measurement: Refer to Fig. 2.
- Make a loop of the Tape (3" Reel) end, fasten the looped end with the Splicing Tape, and put the Reel on the Takeup Reel Table.
 - Hook the Tension Gauge on the loop and pull out 6 inches or so of the Tape end.
 - Set in the Playback mode, and pull the Tension Gauge in the direction of winding keeping the pace with the moving Tape until the reading of the Tension Gauge remains constant at which point take the reading. Repeat this for several times and take the average for a correct torque.
 - The above test should be made with 3" Tape Reel with full load.
 - The standard torque should be: 0.71 ozs.~(20 g)

ADJUSTMENT

Adjust the torque with the Friction Spring on the Takeup Reel Table. If the torque is too strong, loosen the Friction Spring, and if too weak tighten it. If the Friction Washer gets oily clean it immediately to prevent slip.

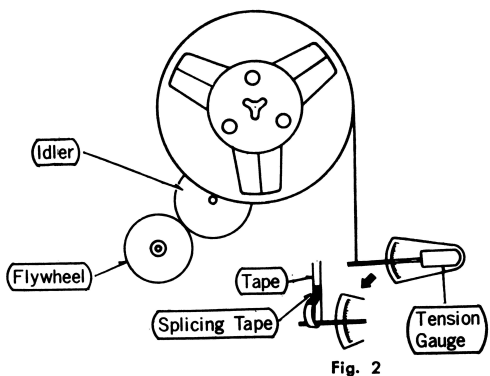


Fig. 2

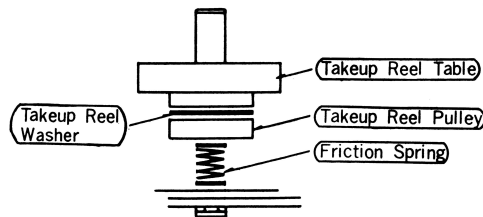


Fig. 3

TAPE PAD PRESSURE

- Instrument Required: Tension Gauge
Measurement: Refer to Fig. 4.
- Set the Tape Recorder in Playback mode without loading the Tape.
 - Hook the Tension Gauge on the Tape Pad for the All-in-one Head at the center and lightly pull the gauge so that the pad parts from the Head. Take the reading just at the point where the pad parts from the Head.
 - The standard pressure of the pad for the All-in-one Head should be: 0.53~1.1 ozs. (15~30 g)

ADJUSTMENT

Adjust the Pad Spring to the standard pressure.

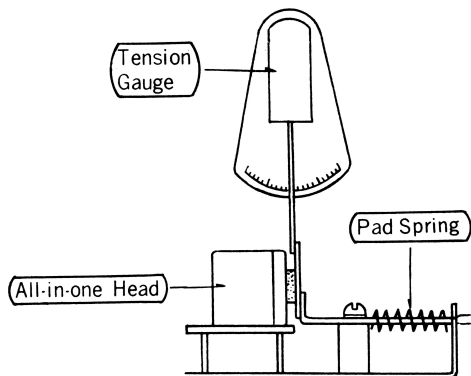


Fig. 4

HEAD ADJUSTMENT

POSITIONING OF HEAD AND TAPE

Adjust the relative positions of All-in-one Head as shown in the drawing. Improper relative positions of these Heads causes imperfect erasure and cross-talk, and the slightest displacement of the mounting may lead to a low position of the Head in respect to the Tape.
Close adjustment is therefore necessary.

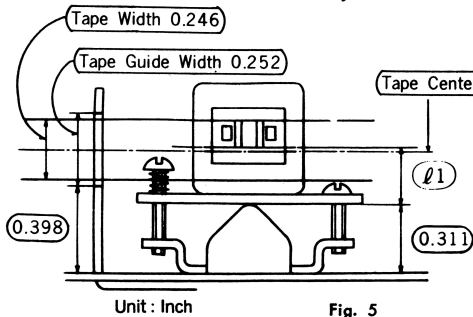


Fig. 5

Indication is given at the corner of each Head Mounting Plate, ranking by black, colorless or red color. The length (L1) from the base of Head Mounting Plate to the lower limit of core of All-in-one Head is ranked as follows:

Color-ranking	Length (L1) (unit:inch)
Black	0.228~0.248
Colorless	0.212~0.236
Red	0.197~0.216

Adjust the height of L1 by putting a spacer, the ranked size of which is listed below, under Head Mounting Plate so that the lower limit of core is in position above the tape center.

Color-ranking of All-in-one Head	Thickness of Inserting Spacer (unit: inch)
Black	0
Color less	0.0197
Red	0.0393

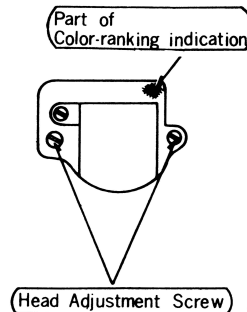


Fig. 6

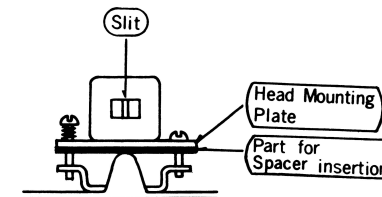


Fig. 7

HEAD AZIMUTH ADJUSTMENT

Deflection of the angle of the Head slit from vertical will deteriorate high frequency characteristics on playing back the tape with recording made with another Tape Recorder, while it is not so important with the tape recorded and played back on one and the same Tape Recorder. The higher the deflection, the poorer the performance.
To prevent this trouble, the slit of the Head should be maintained precisely at right angles to the path of the tape.
Connect the Vacuum Tube Voltage Meter (V.T.V.M.) with 8 Ω Resistor in parallel to the Monitor Jack, and playback a standard alignment tape (tape with recording of signals, 3,000 cps. at 3-3/4 ips. on vertical slit).
Adjust the angle of the Head slit to be precisely vertical by turning the adjusting screws so as to obtain the maximum output signal.
When the All-in-one Head is replaced, it must be adjusted as described above.

AFTER ADJUSTMENT

Lacquer-lock all the holding and adjusting screws of the Head after the adjustment has been completed.

ADJUSTMENT OF PAD HITTING

Make sure that the Pad felt is rightly struck against the head slit part as shown in Fig. 7. and that the running tape height does not vary between the time when the pad hits and the when it separates.

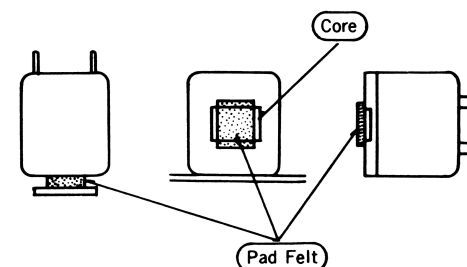


Fig. 8

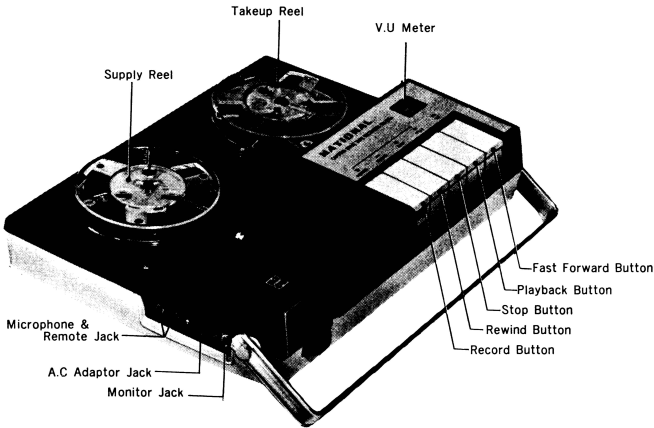


SPECIFICATIONS

MODEL RQ-105S

Power Source:	4 Batteries, 6 Volts D.C
Audio Output:	500 mW (700 mW maximum)
Transistors:	2SB-173 (1) 2SB-175 (2) 2SB-178 (2) 2SB-172 (1)
Recording System:	A.C Bias 30 K cycles
Erase System:	D.C Erase
Track System:	2 Track System
Recording Level Indicator:	V.U Meter
Tape Speed:	3-3/4 ips. and 1-7/8 ips.
Frequency Response:	100~7,000 c/s at 3-3/4 ips. 100~4,000 c/s at 1-7/8 ips.
Input Impedance:	Microphone 2.7 K Ω
Playing Time:	30 min. at 3-3/4 ips. with 3" Tape (300 ft) 1 hour at 1-7/8 ips. with 3" Tape (300 ft) Within 3 min.
Rewind Time:	More than 10 hours (using NATIONAL "Hi-Top" Batteries)
Life of Batteries:	Earphone
Monitor System:	3" Dynamic Speaker
Built-in Speaker:	2-5/8" (H) \times 10-1/4" (W) \times 7-3/4" (D)
Dimensions:	4 lbs. without Batteries (approx.)
Weight:	

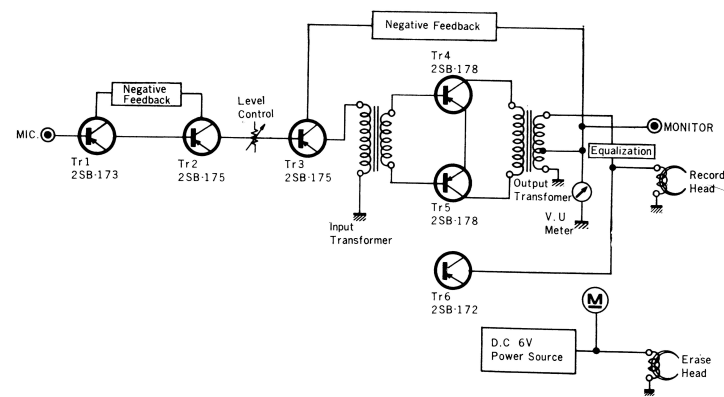
PARTS LOCATION



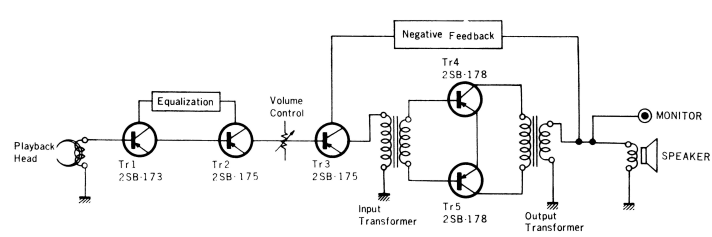
NATIONAL MODEL RQ-105S

BLOCK DIAGRAM OF ELECTRICAL CIRCUITS

RECORDING CIRCUIT



PLAYBACK CIRCUIT



CABINET PARTS

