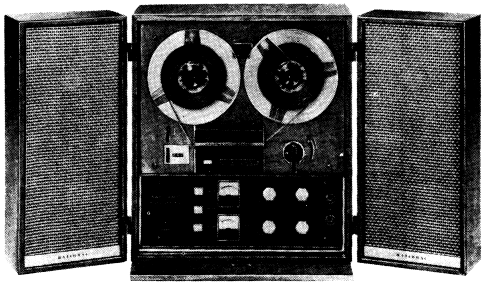


MODEL RS-770S

4-TRACK STEREO TAPE RECORDER

SPECIFICATIONS

Power Source:	AC 100/115/125/200/230/250 volts 50, 60 cycles
Power Consumption:	30 watts (approx.)
Audio Output:	2 watts×2 (stereo) maximum
Transistors:	2SB 345(2) 2SB 175(6) 2SB 324(4) 2SB 178(2)
Recording System:	AC Bias 50K cycles
Erasure System:	AC Erase 50K cycles
Track System:	4 Track Stereo System
Monitor System:	Sound Monitor System
Tape Speeds:	7-1/2 ips. and 3-3/4 ips.
Frequency Response:	60~15,000 c/s at 7-1/2 ips.
	60~8,000 c/s at 3-3/4 ips.
Input Impedance:	Microphone 20 KΩ (unbalanced)×2 circuits
	Auxiliary Input 1.5 MΩ (unbalanced)×2 circuits
Output Impedance:	External Speaker Output 8Ω×2 circuits
	External Line Output 47Ω×2 circuits
Playing Time: (stereo)	1-1/2 hours at 7-1/2 ips. with 7″ Tape (1,800 ft)
	3 hours at 3-3/4 ips. with 7″ Tape (1,800 ft)
(monaural)	3 hours at 7-1/2 ips. with 7″ Tape (1,800 ft)
	6 hours at 3-3/4 ips. with 7″ Tape (1,800 ft)
Recording Level Indicator:	VU Meters (2)
Built-in Speakers:	Woofer 6″×4″ Dynamic (2)
	Tweeter 2-3/4″ (2)
Dimensions:	20″(H)×11-3/8″(D)×16-3/8″(W)
Weight:	44.2 lbs.

PARTS LOCATION

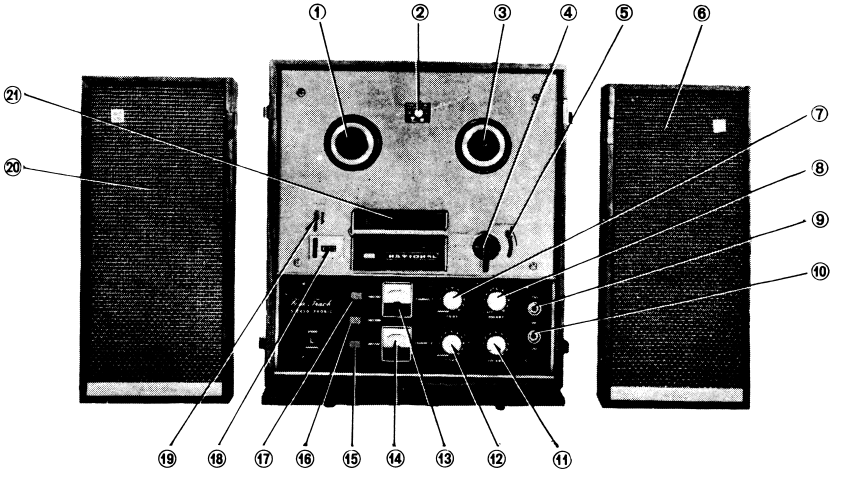
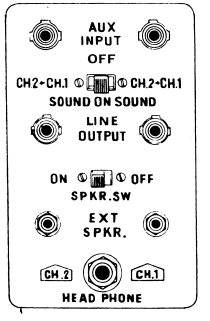


Fig. 1

① Supply Reel Table
② Speed Selector Button
③ Takeup Reel Table
④ Operating Knob
⑤ F.F. Lever
⑥ Channel 2 Speaker Box
⑦ Channel 1 Tone Control and Monitor Switch
⑧ Channel 1 Volume Control
⑨ Channel 1 Microphone Jack
⑩ Channel 2 Microphone Jack
⑪ Channel 2 Volume Control
⑫ Channel 2 Tone Control and Monitor Switch
⑬ Channel 1 VU Meter
⑭ Channel 2 VU Meter
⑮ Channel 2 Record Button
⑯ STEREO/MONAURAL Selector Switch
⑰ Channel 1 Record Button
⑱ Tape Counter
⑲ Pause Lever
⑳ Channel 1 Speaker Box
㉑ Head Cover



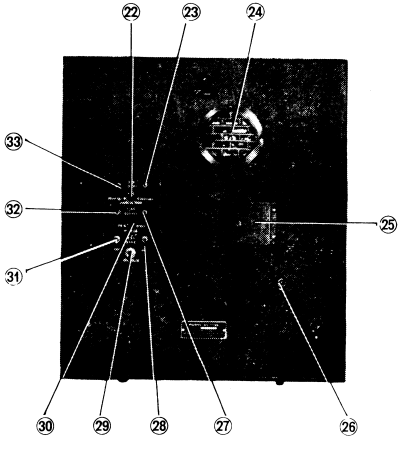


Fig. 2

㉒ Sound-on-sound Switch
㉓ Channel 1 Aux. Input Jack
㉔ Motor Cover
㉕ Storage Pocket
㉖ Voltage Selector Switch
㉗ Channel 1 LINE Output Jack
㉘ Channel 1 EXT. Speaker Jack
㉙ HEAD PHONE
㉚ Channel 2 EXT. Speaker Jack
㉛ Speaker Selector Switch
㉜ Channel 2 LINE Output Jack
㉝ Channel 2 Aux. Input Jack

MAIN CABINET BODY CASE

1. Remove the 7 Screws which hold the Main Case.
2. Pay attention to AC Power Cord when removing the Main Case.

PROTECT THE MOTOR FAN

Reinstall the 4 Rubber Feet to prevent damage while inspecting the mechanism out of the cabinet.

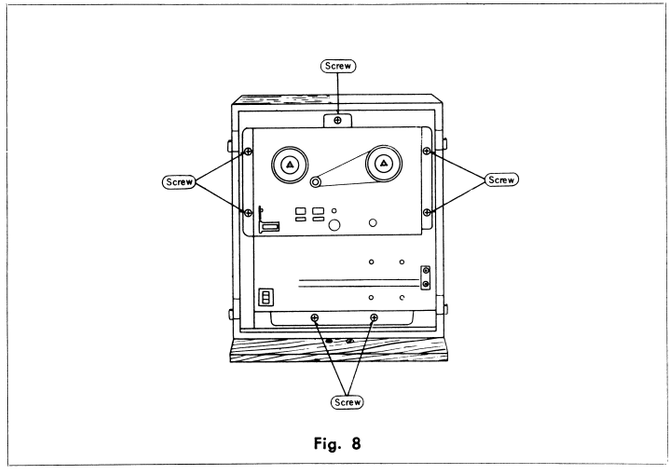


Fig. 8

MOTOR

1. Remove the 3 motor lead wires (blue, red and yellow).
2. Remove the Takeup Belt.
3. Remove the Motor Pulley-A and -B.
4. Remove the Rubber Drive Belt
5. Remove the 4 screws and washers located on the Motor Mounting Board.
6. Carefully unhook the Equalizer Switch Plate from the Belt Lifter.
7. The Motor is removed along with the Motor Mounting Board.
8. Remove the Motor Oil Cap.
9. Remove the Motor from the Motor Mounting Board

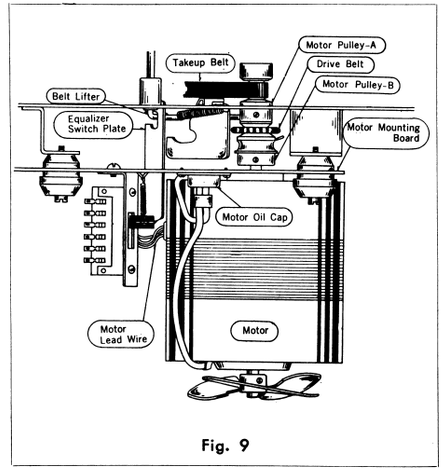


Fig. 9

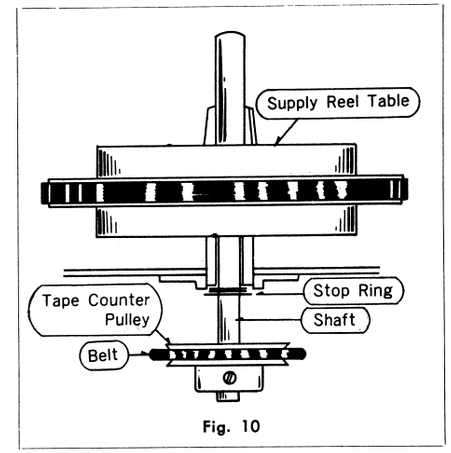


Fig. 10

SUPPLY REEL TABLE

1. Remove the Tape Counter Belt.
2. Remove the Tape Counter Pulley.
3. Remove the Stop Ring from the Supply Reel Table Shaft.
4. Pull the Reel Table upward.

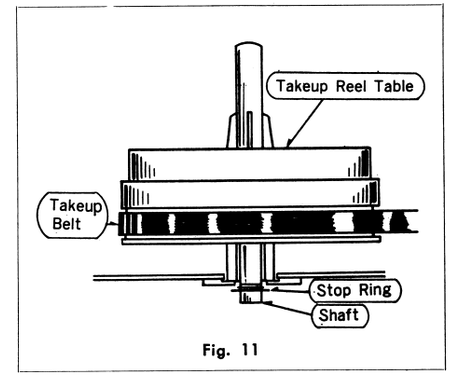


Fig. 11

TAKEUP REEL TABLE

1. Remove the Takeup Belt.
2. Remove the Stop Ring from the Takeup Reel Table Shaft.

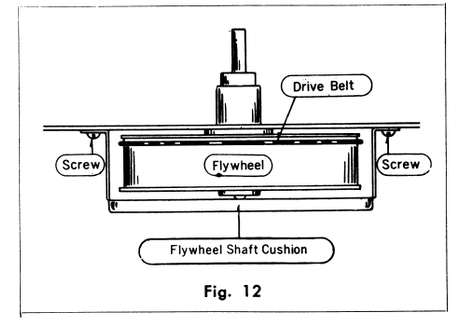


Fig. 12

FLYWHEEL

1. Take out the flywheel shaft cushion by removing the 2 holding screws.
2. Remove the Rubber Drive Belt.
3. Pull out the Flywheel downward.

WINDING TORQUE FOR FAST FORWARD

Measurement

1. Place the unit in the Fast Forward mode and measure in a manner similar to playback.
2. Normal winding torque in Fast Forward mode shall be over 3.17 ozs. (90g) for a 7″ Reel of tape, fully wound.

Adjustment

1. Adjust Fast Forward Spring.
2. If tension is insufficient, cut the spring one or two coils shorter.
3. If too strong, stretch the whole length of the spring.

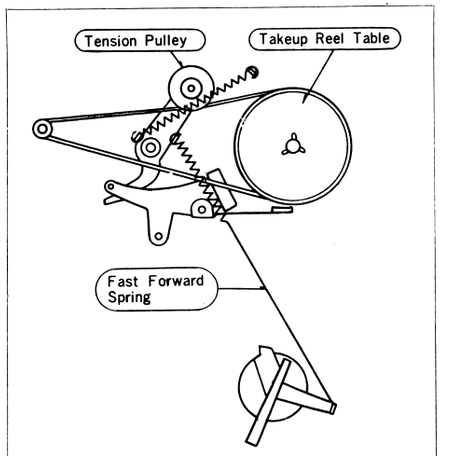


Fig. 23

SUPPLY REEL TENSION

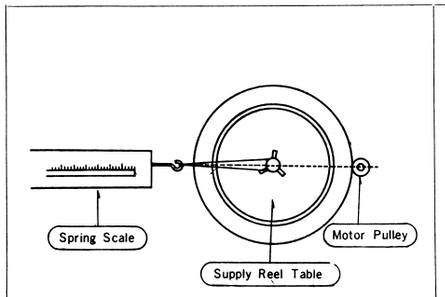


Fig. 24

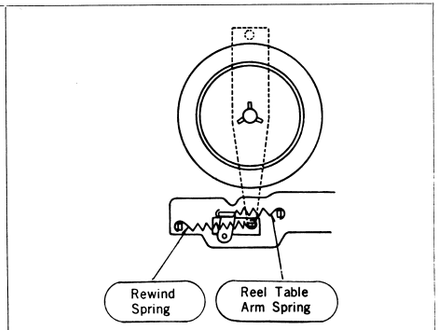


Fig. 25

Measurement

1. Do not load Tape Reel.
2. Attach a string to the Supply Reel Table.
3. Hook Spring Scale on Supply Reel Table set the Recorder in Rewind mode and turn ON.
4. Pull Supply Reel Table in the direction of a straight line from the centers of the Motor Pulley and Supply Reel Table.
5. Observe the reading of the Spring Scale at the point where the Supply Reel Table ceases to rotate.
6. Pressure of Supply Reel Table shall normally be. 1.1~3.31 lbs. (0.5~1.5 Kg)

Adjustment

1. Adjust Rewind Spring.
2. If tension is insufficient, stretch the whole length of the spring.
3. If too strong, cut the spring one or two coils shorter.

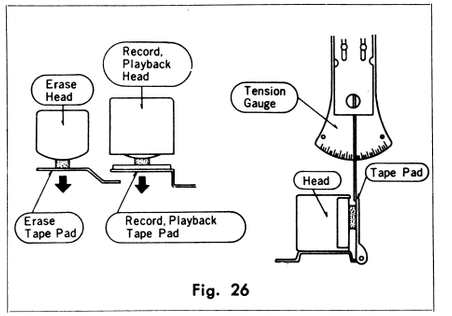


Fig. 26

TAPE PAD PRESSURE

1. Set the unit in Playback mode.
2. Press Tension Gauge on the center of Tape Pads.
3. Lightly separate Tape Pads from Head.
4. Read the gauge when Tape Pads are released.
5. Normal Pressure at the point of the pin at the center of Tape Pads shall be:

   Record/Playback Tape Pad 0.88~1.23 ozs. (25~35g)
   Erase Tape Pad 0.53~0.88 ozs. (15~25g)

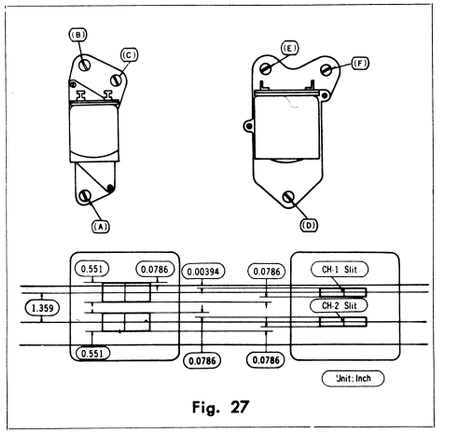


Fig. 27

HEAD ADJUSTMENTS

RELATIVE POSITION OF HEAD AND TAPE

1. Thread the Recorder with tape and turn Operating Knob to Playback mode.
2. Pull back Tape Pads and adjust the relative position of the Heads and tape by turning the Adjustment Screw for each Head.

RECORD/PLAYBACK HEAD

1. Connect a VTVM to CH-1 EXT. SPKR. Jack and playback a 4 track Standard Alignment tape (7,000 CPS. at 7-1/2 ips.)
2. Turn Adjustment Screw (E) or (F) until maximum meter reading is obtained.
3. Check CH-2 for similar meter reading and readjust slightly to obtain equal output, only if necessary.

NOTE: As the relative position of the Heads and tape are fairly critical, Adjustment Screws (E) and (F) must be alternately moved 1/4 turn, repeatedly, to gradually find the maximum meter reading.

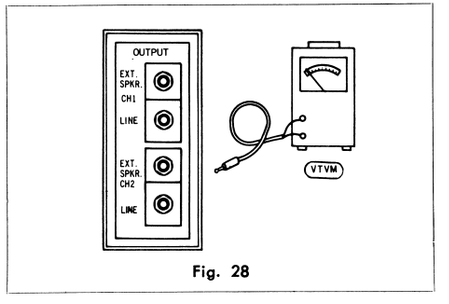


Fig. 28

ERASE HEAD

1. After the Record/Playback Head is adjusted, regulate the relative position of the Erase Head to the Record/Playback Head and the tape as shown Fig. 27.

TREATMENT AFTER ADJUSTMENT

After the adjustments coat the Adjustment Screws with lacquer.

MAINTENANCE

OILING 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	2~3 drops oil
Pressure Roller Bearing	2~3 drops oil
Reel Table Shafts	2~3 drops oil
Motor Bearing	2~3 drops oil

RECORD/PLAYBACK HEAD AND ERASE HEAD

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. Be sure to adjust the head correctly when you exchange it.

MOTOR

The motor also has to be oiled once every 500 hours. Use a good quality spindle oil or machine oil.

PRESSURE ROLLER

Clean the surface of the Pressure Roller in contact with the Capstan with alcohol. Oil the central shaft of Pressure Roller 2 to 3 drops once every 200 hours.
Use a good quality spindle or sewing machine oil.

CAPSTAN

Clean the surface of Idler with alcohol. Oil the shaft of Capstan 2 to 3 drops once every 200 hours. Use spindle or sewing machine oil. Any remaining oil or grease oil on the surface of Capstan in contact with Pressure Roller might cause the tape to slip and deteriorate the Pressure Roller. AVOID EXCESSIVE OILING.

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.

RESISTORS

Ref. No.	Description			Part No.
R2, R44	Solid Resistor	1.5MΩ	1/6 Watt	ERC-16GK155
R3, R4, R43, R45	Solid Resistor	22KΩ	1/6 Watt	ERC-16GK223
R5, R7, R24, R46 R48, R65	Carbon Resistor	5.6KΩ	1/4 Watt	QRD-14TRK562
R6, R47	Carbon Resistpr	10KΩ	1/4 Watt	QRD-14TRK103
R8, R31, R33, R49, R72, R74	Carbon Resistor	2.2KΩ	1/4 Watt	QRD-14TRK222
R9, R50	Carbon Resistor	180Ω	1/4 Watt	QRD-14TRK181
R10, R51	Carbon Resistor	12KΩ	1/4 Watt	QRD-14TRK123
R11, R13, R52, R54	Carbon Resistor	3.9KΩ	1/4 Watt	QRD-14TRK392
R12, R53	Carbon Resistor	6.8KΩ	1/4 Watt	QRD-14TRK682
R14, R55	Carbon Resistor	2.7KΩ	1/4 Watt	QRD-14TRK272
R15, R19, R23, R56, R60, R64	Carbon Resistor	4.7KΩ	1/4 Watt	QRD-14TRK472
R16, R26, R30, R57, R67, R71	Carbon Resistor	1.8KΩ	1/4 Watt	QRD-14TRK182
R17, R58	Carbon Resistor	180KΩ	1/4 Watt	QRD-14TRK184
R18, R59	Carbon Resistor	27KΩ	1/4 Watt	QRD-14TRK273
R20, R61	Carbon Resistor	3.3KΩ	1/4 Watt	QRD-14TRK332
R21, R62	Carbon Resistor	1KΩ	1/4 Watt	QRD-14TRK102
R22, R63	Carbon Resistor	150Ω	1/4 Watt	QRD-14TRK151
R25, R66	Carbon Resistor	22KΩ	1/4 Watt	QRD-14TRK223
R27, R68	Carbon Resistor	390Ω	1/4 Watt	QRD-14TRK391
R28, R69	Carbon Resistor	47Ω	1/4 Watt	QRD-14TRK470
R29, R70	Carbon Resistor	680Ω	1/4 Watt	QRD-14TRK681
R32, R34, R73, R75	Carbon Resistor	68Ω	1/4 Watt	QRD-14TRK680
R35, R36, R76, R77	Wire Wound Resistor	1.5Ω	1/2 Watt	ERW-12R1R5
R37, R78	Carbon Resistor	10Ω	1/4 Watt	QRD-14TRK100
R38, R79, R95, R96	Wire Wound Resistor	10Ω	1/2 Watt	ERC-12GK100
R39, R80	Solid Resistor	100Ω	1/6 Watt	ERC-16GK101
R40, R81	Solid Resistor	47Ω	1/6 Watt	DRC-16GK470
R41, R82	Carbon Resistor	390KΩ	1/4 Watt	QRD-14TRK394
R42, R83	Carbon Resistor	100KΩ	1/4 Watt	QRD-14TRK104
R84	Wire Wound Resistor	470Ω	2 Watt	ERM-2P471
R85	Solid Resistor	120Ω	1/2 Watt	ERC-12GM121
R86	Carbon Resistor	4.7Ω	1/4 Watt	QRD-14TRK4R7
R87	Carbon Resistor	150Ω	1/4 Watt	QRD-14TRK151
R88, R89	Carbon Resistor	100Ω	1/4 Watt	QRD-14TRK101
R90	Carbon Resistor	8.2KΩ	1/4 Watt	QRD-14TRK822
R91, R92	Solid Resistor	47KΩ	1/2 Watt	ERC-12GM473
R93, R94	Solid Resistor	820KΩ	1/2 Watt	ERC-12GM824
R97, R98	Solid Resistor	120Ω	1/2 Watt	ERC-12BM121

Ref. No.	Description	Part No.
M21A	Tape Tension Arm	QAG-1050-1
M22	Recording Synchronizer Plate	QMQ-1007
M23A	Speed Selector Knob	QGT-2112
M24	Roller	QDP-1015
M26	Belt Shifter Spring	QBT-1039
M27A	Brake Spring	QBC-1040
M28	Fast Forward Cam Plate Spring	QBT-1035
M29	Capstan Oil Cap	QDH-1002
M30	Capstan Oil Seal	QBG-1048
M31D	Baseplate Assembly	QXK-1014-2
M32	Instant Stop Rod Spring Adjust Nut	QMZ-1001
M33	Instant Stop Rod Spring	QBC-1004
M34A	Backtension Arm Assembly	QXA-0017W1
M34-1A	Instant Stop Brake Shoe	QBG-1061
M35A	Backtension Spring	QBT-1037
M36	Record/Playback Pad Assembly	QXV-0011
M36-1	Pad Felt	QAP-1061
M37	Record/Playback Head Speacer	QBK-1009
M38	Record/Playback Head Mounting Plate	QKT-1048
M39	Head Adjustment Spring	QBC-1002
M40	Erase Head Pad Assembly	QXV-0010
M41	Tape Guide Screw	QAG-1024
M42	Tape Guide Washer	QAG-1015
M43A	Tape Guide	QAG-0007
M44	Tape Guide Plate	QAG-1014
M45D	Head Mounting Plate Assembly	QXK-0008
M46	Instant Stop Rod	QMR-1004
M47	Instant Stop Lever Guide	QMQ-1017
M48A	Instant Stop Lever	QML-1197
M49	Tape Counter	QDC-0009
—	—	—
M51	Click	QML-1040
M52	Click Roller	QDP-1018-1
M53A	Click Spring	QBT-1032-1
M54A	Fast Forward Cam Plate	QMF-1090-1
M55B	Fast Forward Spring	QBT-1142
M56	Main Cam Plate Washer	QWQ-1015
M57A	Main Cam Plate Assembly	QXH-0008
M58	Main Cam Plate Holder	QMH-1007
M59A	Operation Lever Assembly	QXL-0026-1
M60	Reel Table Bearing	QMM-1020-1
M61	Reel Table Bearing Retainer	QMH-1010
—	—	—
M63A	Reel Table Arm Bracket	QMH-1032
M64A	Tape Counter Pulley Assembly	QDP-1006-1
M65	Tape Counter Belt	QDB-0031
M66	Reel Table Arm Assembly	QXA-0015
M67	Reel Table Tape Counter Pulley Assembly	QXP-0089
M68B	Tension Spring	QBT-1143
—	—	—
M70	Belt Lifter	QAS-1001-2
M71	Capstan Bearing Assembly	QYQ-0007
M72A	Flywheel Assembly	QXF-0022
M73	Drive Belt	QDB-0016
M74	Flywheel Thrust Steel Ball 1/8″	QDK-1001
M75	Thrust Steel Ball Retainer	QMQ-1004
M76	Flywheel Shaft Cushion	QMF-1029
M77	Motor Pulley-A	QDP-1030
M78A	Motor Pulley-B	QDP-1031
M79	Motor Mounting Board	QMK-1009-1
M80	Equalizer Switch Holder	QMA1033-1
M81	Equalizer Switch Plate	QMF-1023
M82	Equalizer Switch Spring	QBT-1040
M83A	Motor Mounting Board Rubber Cushion	QBQ-1003
M84	Washer for Rubber Cushion	QWQ-1016
M85A	Screw for Rubber Cushion	QHQ-1024
M86	Motor	2HC-20HL
—	—	—
M88A	Amp Baseplate	QEC-1008
M89A	Amp Baseplate Bracket (A)	QLE-1021
M90A	Amp Baseplate Bracket (B)	QLE-1020
M91	Circuit Board Holder	QTT-1104
M92A	Socket Holder (A)	QTT-1101-1
M93A	Socket Holder (B)	QTT-1102-3
M94	Heat Sink Holder	QTT-1119
M95	Shield Plate for Record/Playback Selector Switch	QTS-1019
M96	Heat Sink (A)	QTH-1006
M97	Heat Sink (B)	QTH-1007
—	—	—
M100	Heat Sink Cap	QTH-1001
M101A	Recording Rod Holder	QMA-1038-2
M102A	Recording Rod Guide	QMH-1015-1
M103A	Synchronizer Rod	QMR-1013-2
M104	Recording Rod (A)	QMR-1010
M105B	Recording Rod (B)	QMR-1011-2
M106	Recording Rod (C)	QMR-1012
—	—	—
M107	Recording Rod Spring	QXJ-0010
—	—	—
M109	Tension Arm Switch Washer	QBK-1020
M112A	Capstan Sleeve 60 c/s	QMP-1074-2
M113A	Capstan Sleeve 50 c/s	QMP-1073-2
M114	Capstan Holding Nut	QNQ-1015-2
M115	Brake Arm Holder	QMS-1170
M116	Brake Arm Pin	QMN-1095
M117	Tension Lever-Assembly	QXA-0026
M117-1	Backtension Felt	QBF-1023
M118	Tension Lever-B Assembly	QXA-0027
M119	Rewind Idler Lever Shaft	QMS-1061
M120	Fast Forward Lever	QML-1196
M121A	Backtension Spring-B	QBT-1116-1
M122	Backtension Spring-B Retainer	QWQ-1057
M123	Backtension Washer	QBJ-3015
M124	Tension Pulley Washer	QWQ-1023
M125	Idler Tension Shaft	QMS-1031
M126	Baseplate Holding Plate	QMA-1094
M127	Socket Angle	QTT-1207
M128	Microphone Jack Angle	QTT-1208
M129	Mixing Switch Angle	TTT-1209-1
M130	Microphone Jack Shield Plate	QTS-1059
M131	4-Pin Socket Holder	QTT-1211
M132	Circuit Board Angle	QTT-1210
M133	Tube 4×7×0.75	QTL-040V×7F
M134	Jack Board Holder Assembly	QEL-1022
M135	Base Plate Holding Washer	QWQ-1005
M136	Base Plate Holding Pipe	QKT-1028
M137	Base Plate Holding Rubber	QBG-1019
M138	Spring	QBT-1154
M139	Shut off Spring Hanger	QMF-1144

CABINET PARTS

G5D	Top Panel-B Assembly	QYP-0060
G16D	Control Knob	QYT-0037
G17D	Operating Knob	QGT-2019A
G18D	Lever Knob	QGT-2009A
G19D	Channel 1 Record Button	QGO-1006A
G20D	Channel 2 Record Button	QGO-1007A
G21D	Stereo Record Button	QGO-1008A
G22D	Top Panel-A Assembly	QYP-0061
G23D	Head Cover Assembly	QYR-0062
G25	Operating Knob Holding Screw	QHQ-1004
G26D	Mount Assembly	QYM-0038
G30	Main Case Assembly	QYJ-1061
G30-1	Rubber	QBG-1081
G30-2	Motor Cover	QGC-1002A
G30-3	Storage Pocket Lid Assembly	QKD-1022C
G30-4	Rubber Foot	QKA-1030
G30-5	NATIONAL Mark	QGN-1023
G31	Mount Washer	QWQ-1010-1
G32	Spacer Rubber	QTW-1026

SCREWS, NUTS, WASHERS

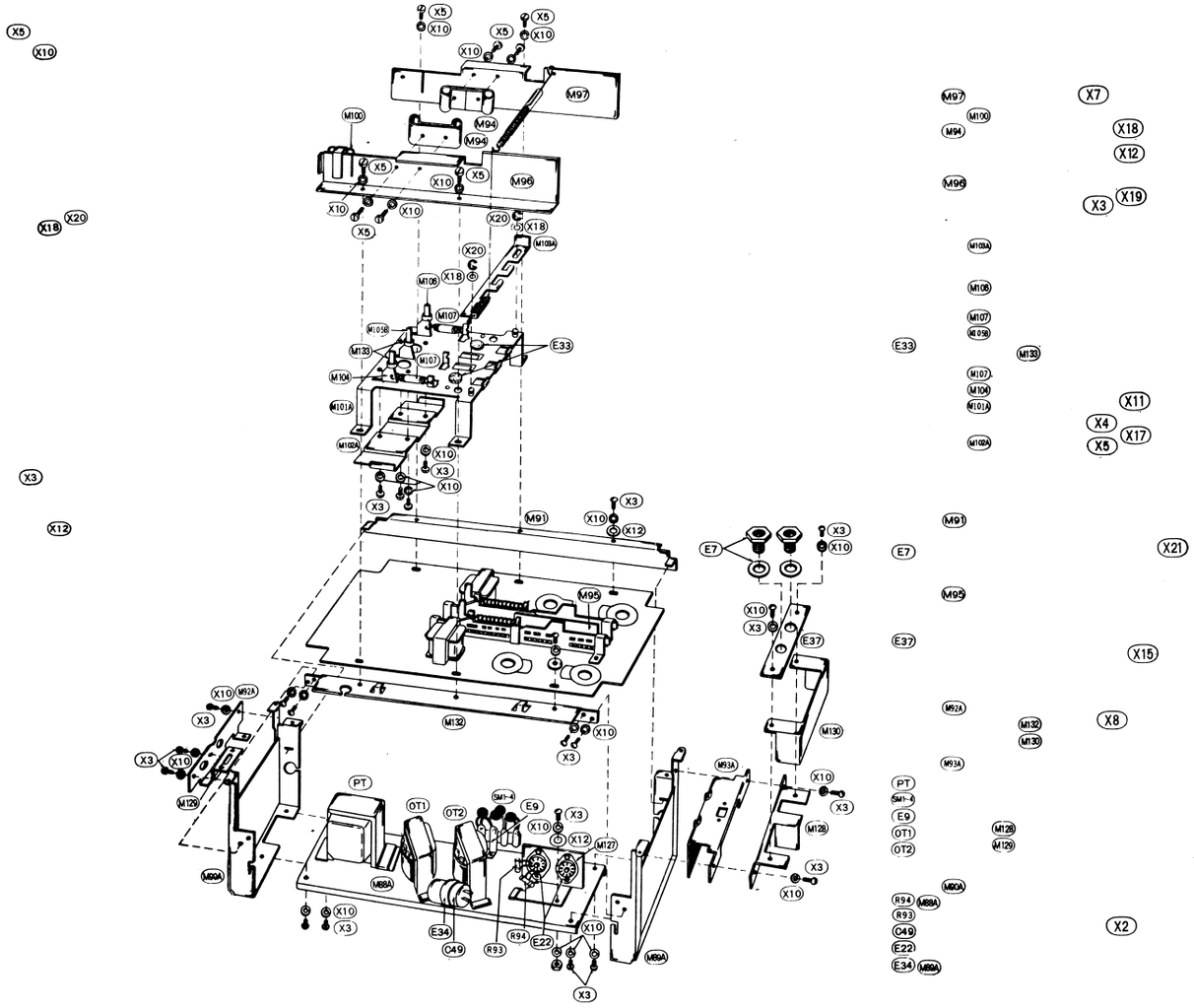
X1	Screw, Round Head HM2φ×4	QHM-120×4U3
X2	Screw, Round Head HM2.6φ×5	QHM-126×5U3
X3	Screw, Round Head HM3φ×5	QHM-130×5U3
X4	Screw, Philips Round Head MK4φ×8	QHH-140×8U3
X5	Screw, Philips Round Head BH3φ×8	QHB-230×8U3
X6	Screw, Flat Head HS2.6φ×12	QHS-126×12U3
X7	Hexagonal Nut N3φ	QNN-3022U3
X8	Hexagonal Nut N4φ	QNN-4022U3
X9	Spring Washer SW2φ	QWS-202U3
X10	Spring Washer SW3φ	QWS-302U3
X11	Spring Washer SW4φ	QWS-402U3
X12	Flat Washer 3φ	QWP-3012N1
X13	Lock Washer 3φ	QWG-302U3
X14	Paper Washer 3.5×5×0.5	QBK-7011
X15	Paper Washer 4×9×0.5	QBK-7012
X16	Paper Washer 6.2×8.2×0.5	QBK-7013
X17	Paper Washer 6.2×8.2×1	QBK-7014
X18	Paper Washer 6.2×10×0.5	QBK-7003
X19	Stop Ring E2.6φ	QNS-264T3
X20	Stop Ring E3φ	QNS-304T3
X21	Stop Ring E5φ	QNS-504T3
X22	Screw, Round Head HM3φ×8	QHM-130×84U3
X23	Screw, Philips Round Head M5φ×25	QHM-250×25CL3
X24	Screw, Philips Round Head M2.6φ×12	QHM-226×12CL1
X25	Tapping Screw, Philips Round Head M3φ×14	QHB-530×14U3
X26	Screw, Philips Round Head M3φ×14	QHM-230×14CL1
X27	Screw, Philips Round Head M3φ×10	QHM-230×10CL
X28	Screw, Philips Round Head M4φ×10	QHM-240×10N11
X29	Screw, Philips Round Head MS4φ×10	QHV-240×10CL1
X30	Hexagonal Nut N2.6φ	QNN-2622N1
X31	Hexagonal Nut N5φ	QNN-5022U3
X32	Spring Washer SW2.6φ	QWS-262U3
X33	Spring Washer SW5φ	QWS-502U3
X34	Flat Washer 3φ	QWQ-1003
X35	Flat Washer 4φ	QWQ-1040
X36	Plastic Washer 3φ	QBJ-3007
X37	Lock Washer	QWG-502K3
X38	Wood Screw	QHM-431×16N1

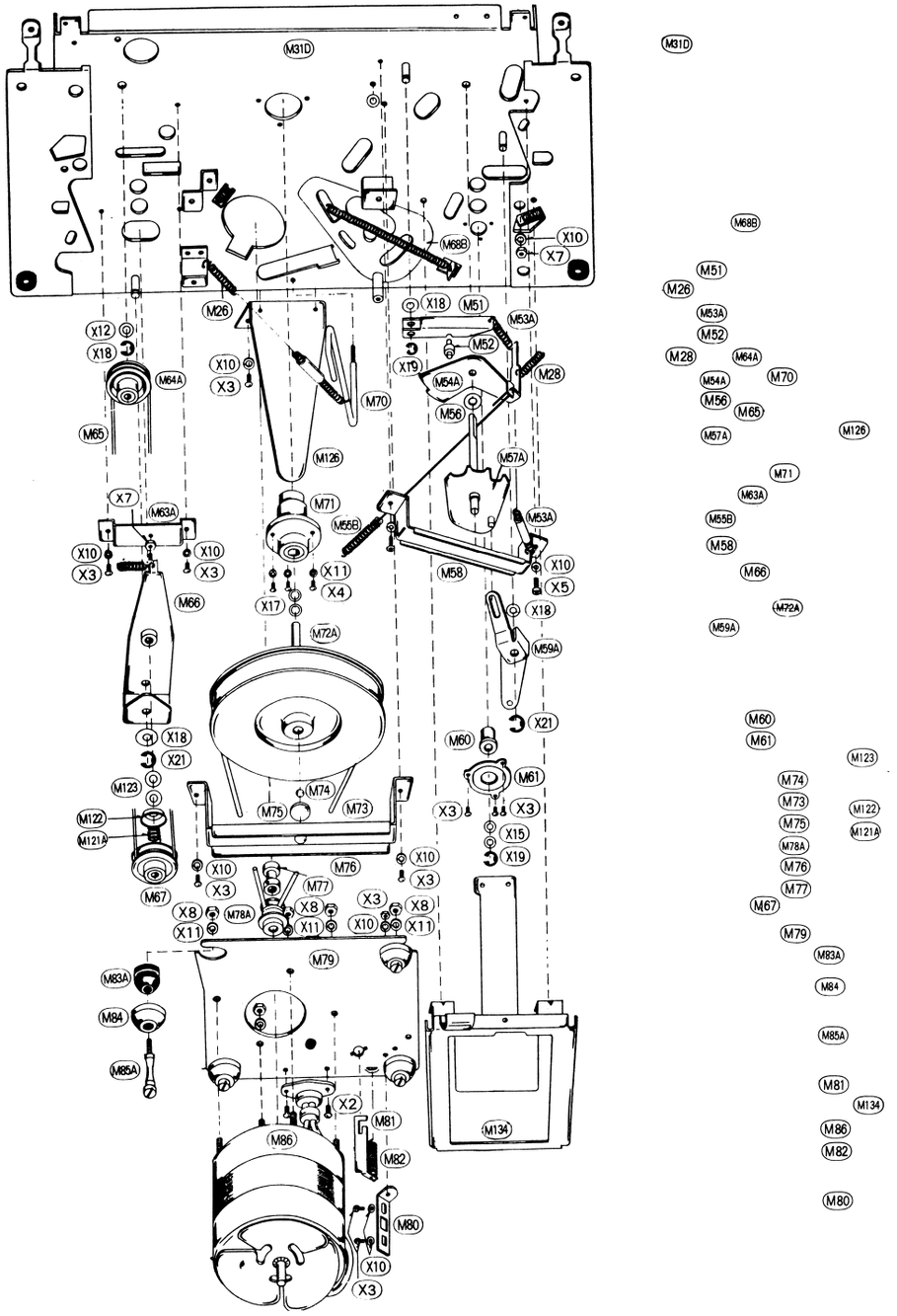
ACCESSORIES

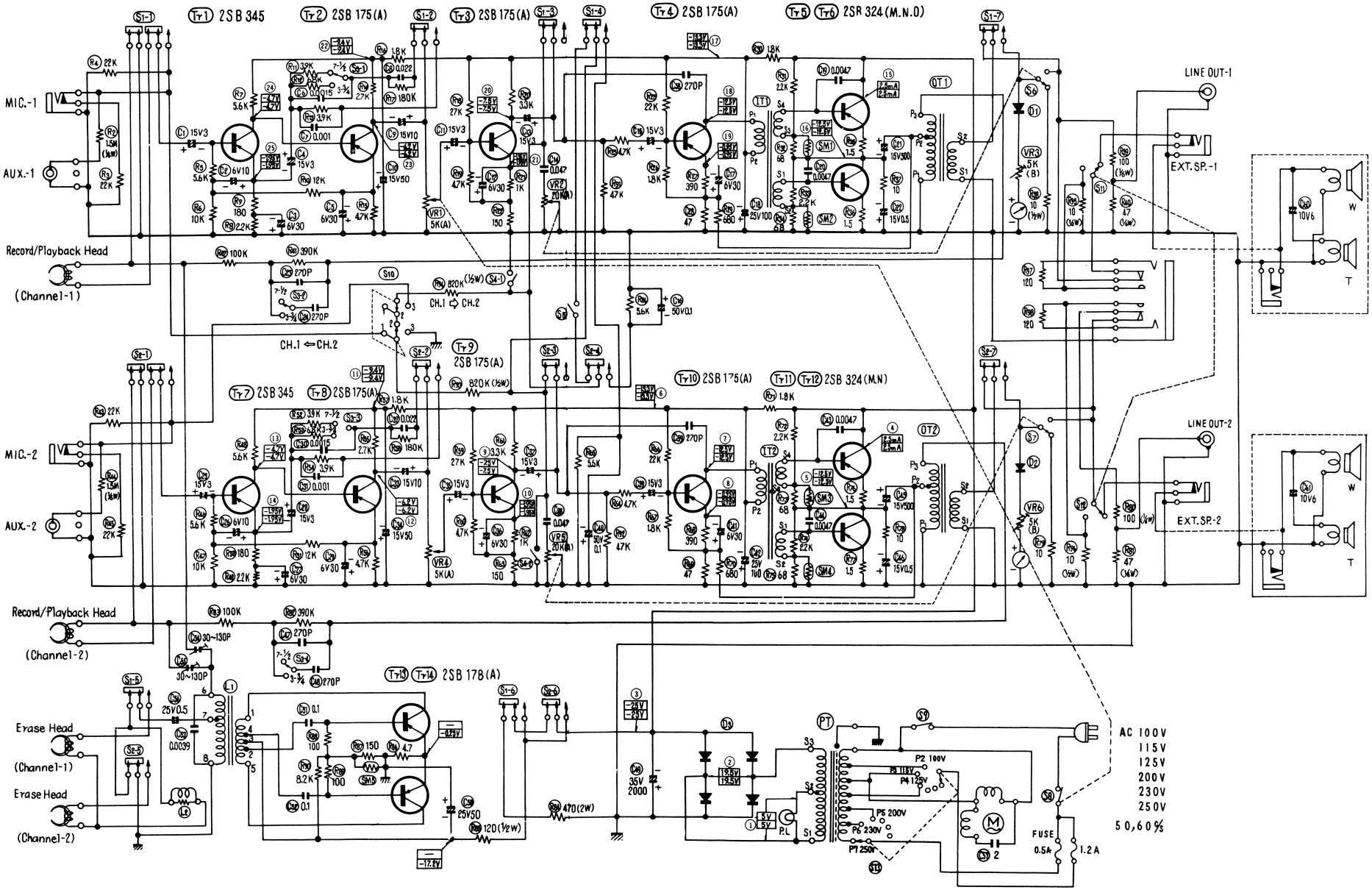
A2	7″ Recording Tape	QFT-7N1
A3	7″ Empty Reel	QFR-7N1
A7	Splicing Tape	QSF-2-1
A11	Dynamic Microphone	WM-2052N
A12	Microphone Stand	WN-105N
A13	Speaker Cord	QEB-0036P-1
A14	Connection Cord-C	QEB-14P-1
A15	Instruction Book	QTT-0213

PACKING

P1	Packing Case	QPN-1368
P2	Inner Cushion (A)	QPN-1309
P3	Inner Cushion (B)	QPN-1310
P4	Dust Cover	QFD-0059
P5	Wadding	QPN-1311
P6	Accessory Case	QPW-1065





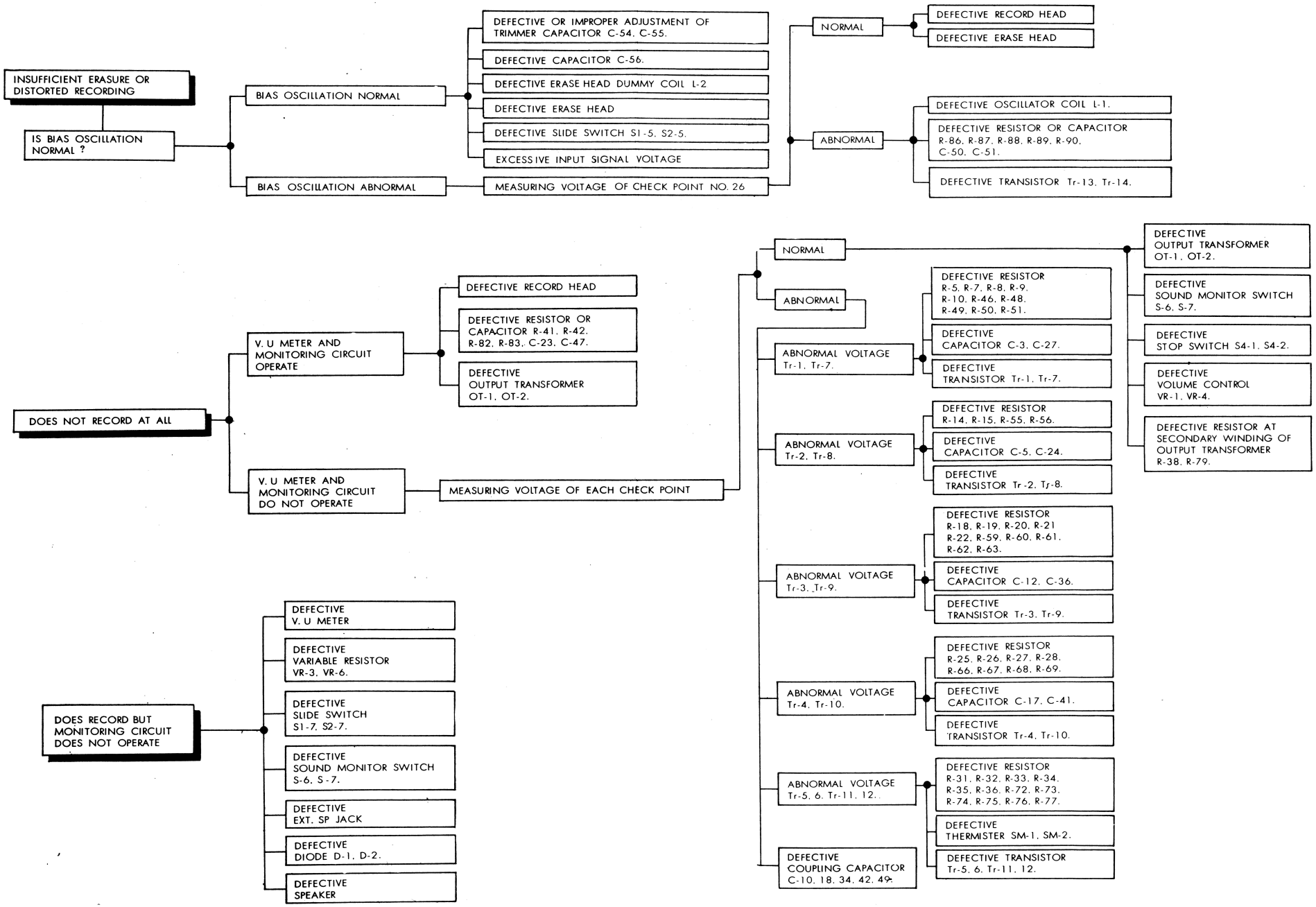


NOTE:

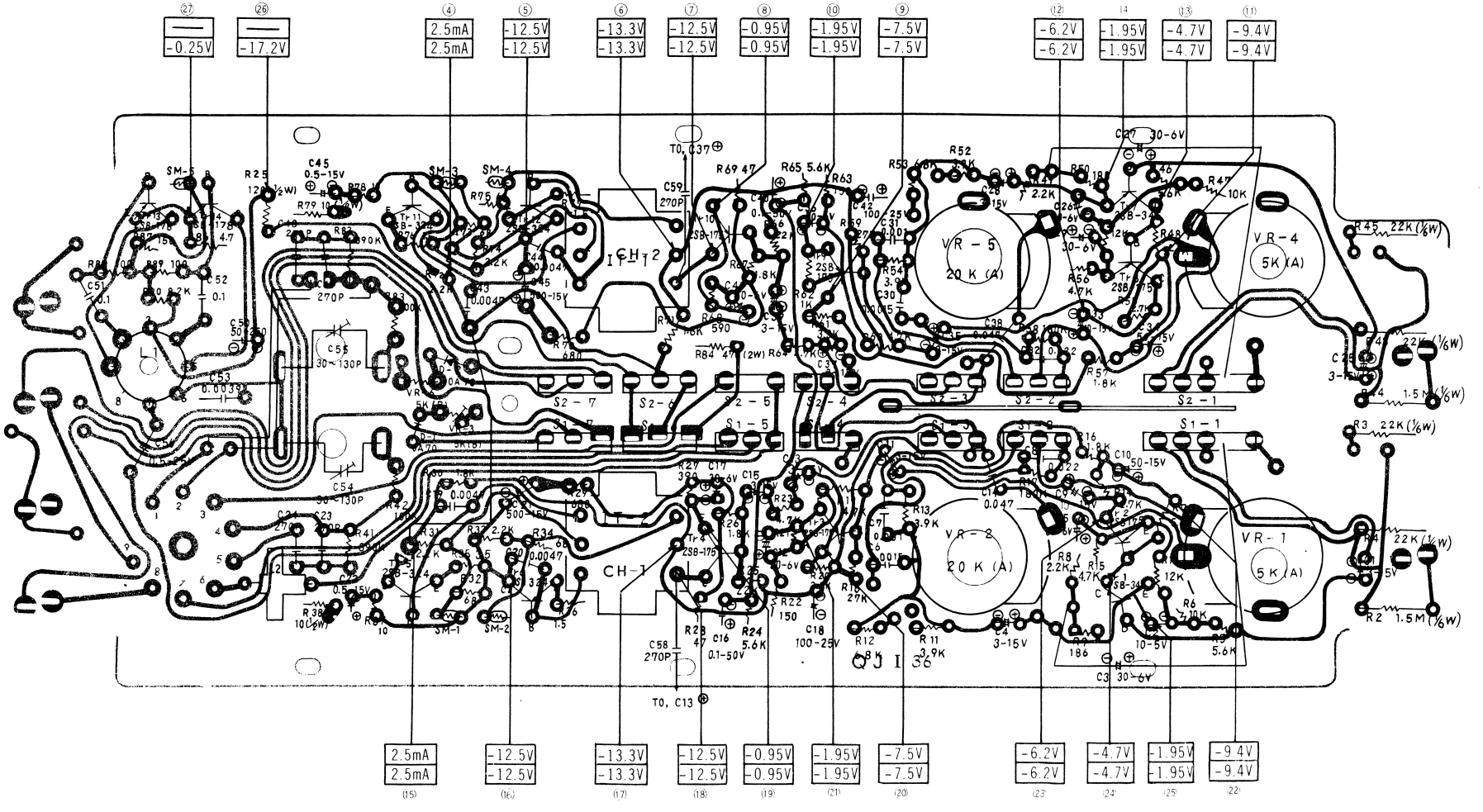
1. S1, S2 .....Record/Playback Selector Switch (illustrated in playback mode)
2. S3 .....Speed Selector Switch
3. S4 .....Stop Switch (with the Recorder in OFF position, contacts are closed)
4. S5 .....Mixing Switch
5. S6, S7 .....Sound Monitor Switch (ganged with the volume control VR-2, VR-5)
6. S8 .....ON/OFF Switch (ganged with the volume control (VR-1)
7. S9 .....Tension Arm Switch
8. S10 .....Sound-on-sound Switch
9. S11, S12...Speaker Switch
10. S13 .....Voltage Selector Switch
11. Value of resistors with no unit indication is ohm K=1,000 ohm; M=Megohm Resistors with no wattage indication are 1/4 Watts.
12. Value of capacitors with no unit indication is μF, P=Pico Farads=uuf
13. Values indicated in □ are DC. to chassis ground with no signal applied.
    Values in □ with arrows are AC. between arrows-points.
    The upper values should be measured during playback and the lower Values during recording.
14. Current Value in the diagram shows the DC. current at the time of no signal operation.

TROUBLE SHCOTING GUIDES

NATIONAL MODEL RS-770S N30-14.



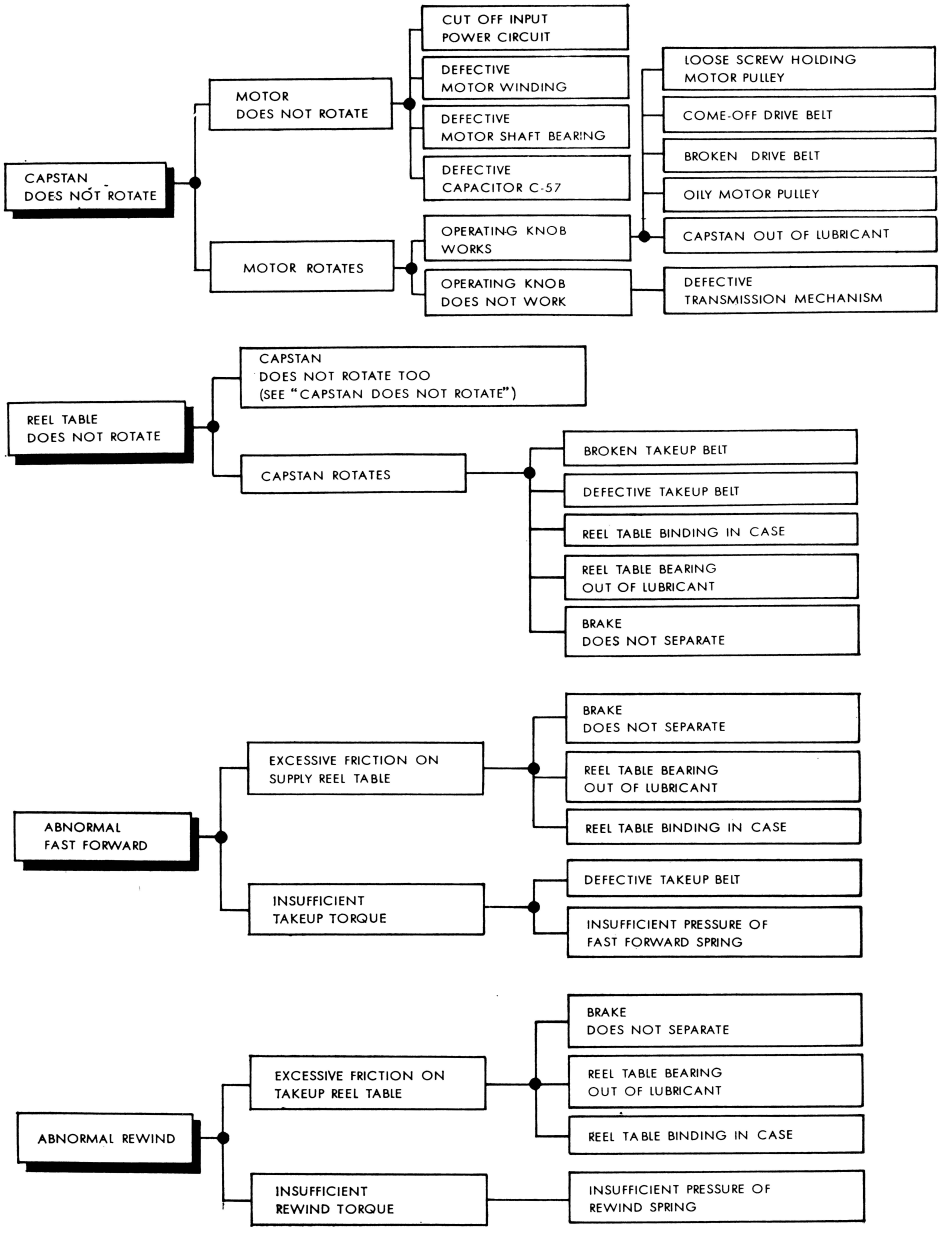
CONDUCTOR SIDE

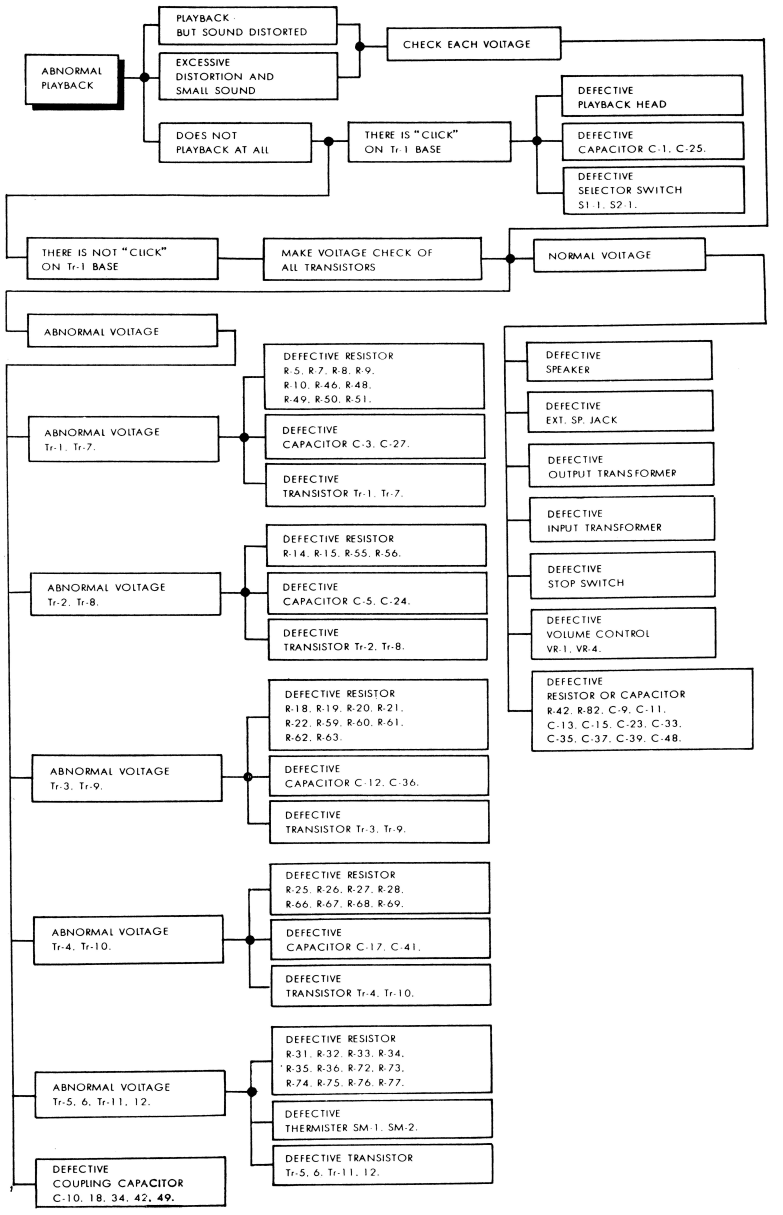


NOTE:

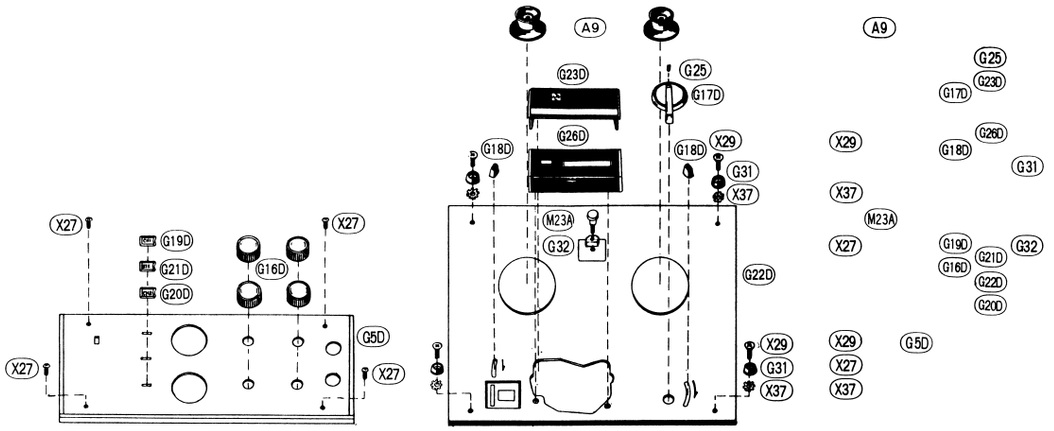
Values indicated in ☐ are DC to chassis ground with no signal applied.
The upper values should be measured during playback and the lower values during recording.

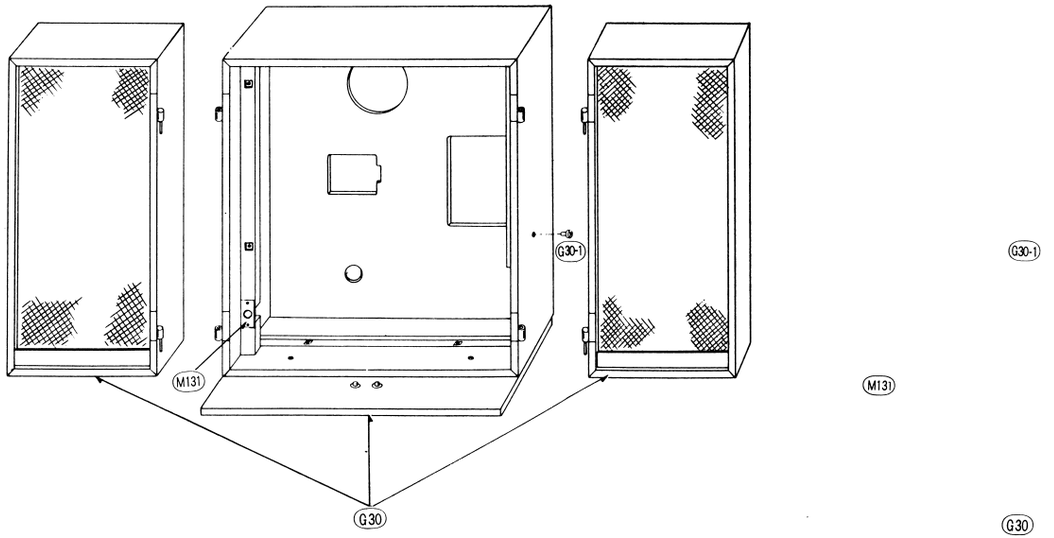
TROUBLE SHOOTING GUIDES

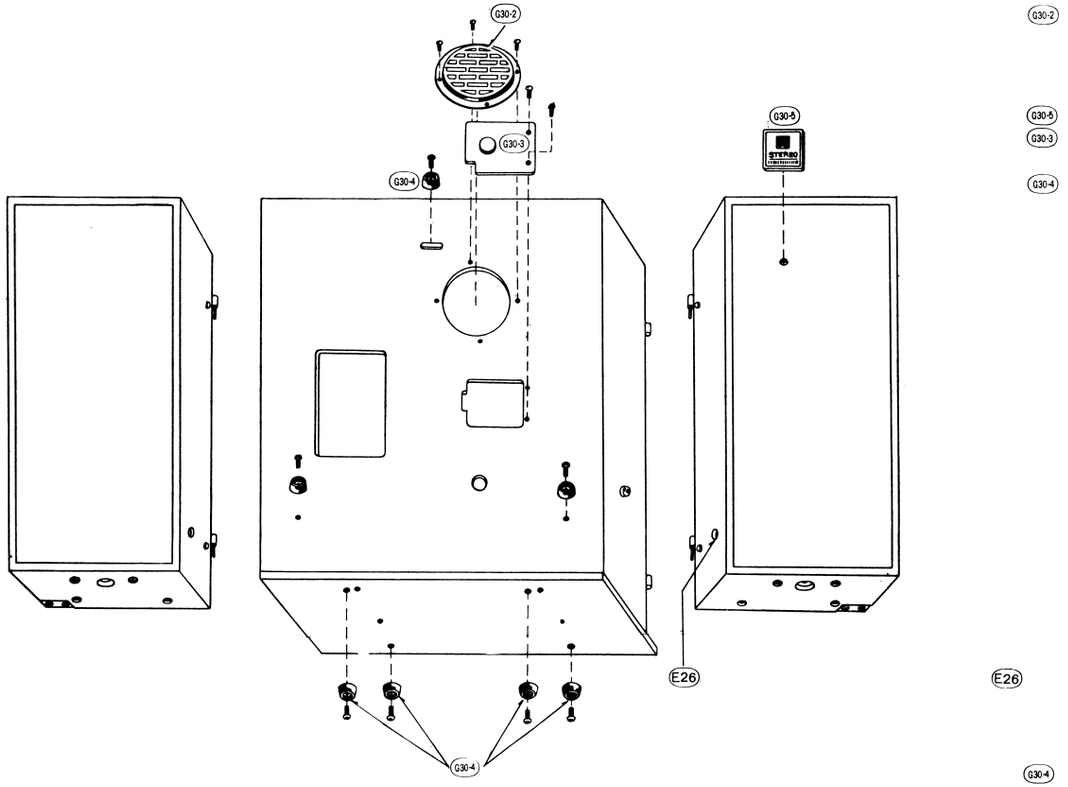


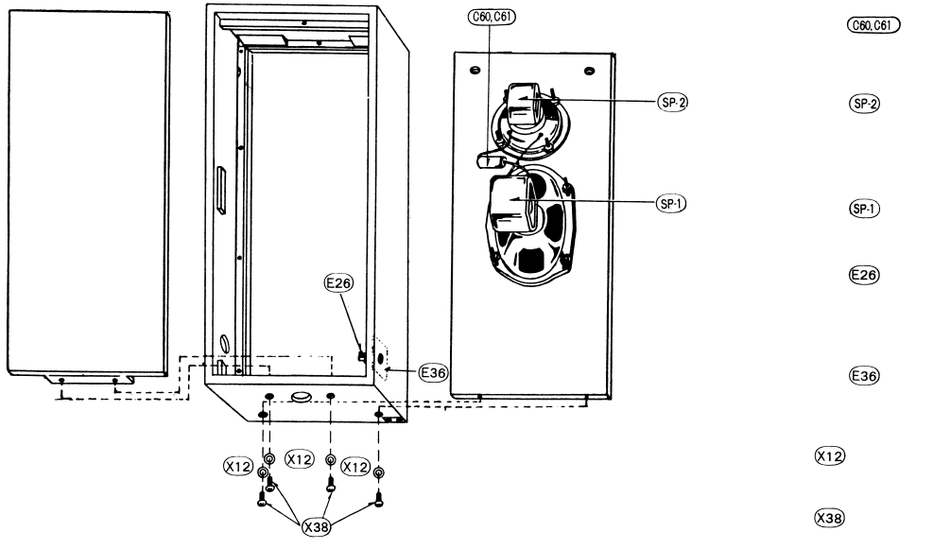


N30-11. NATIONAL MODEL RS-770S

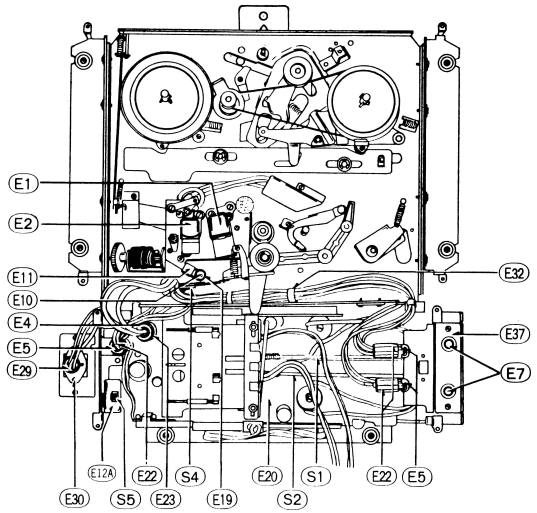


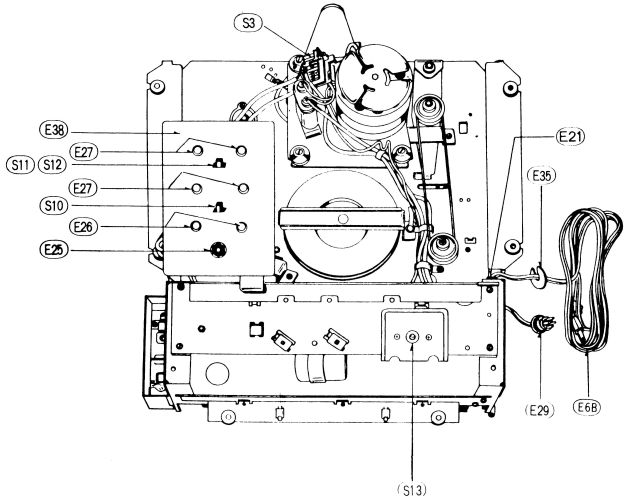


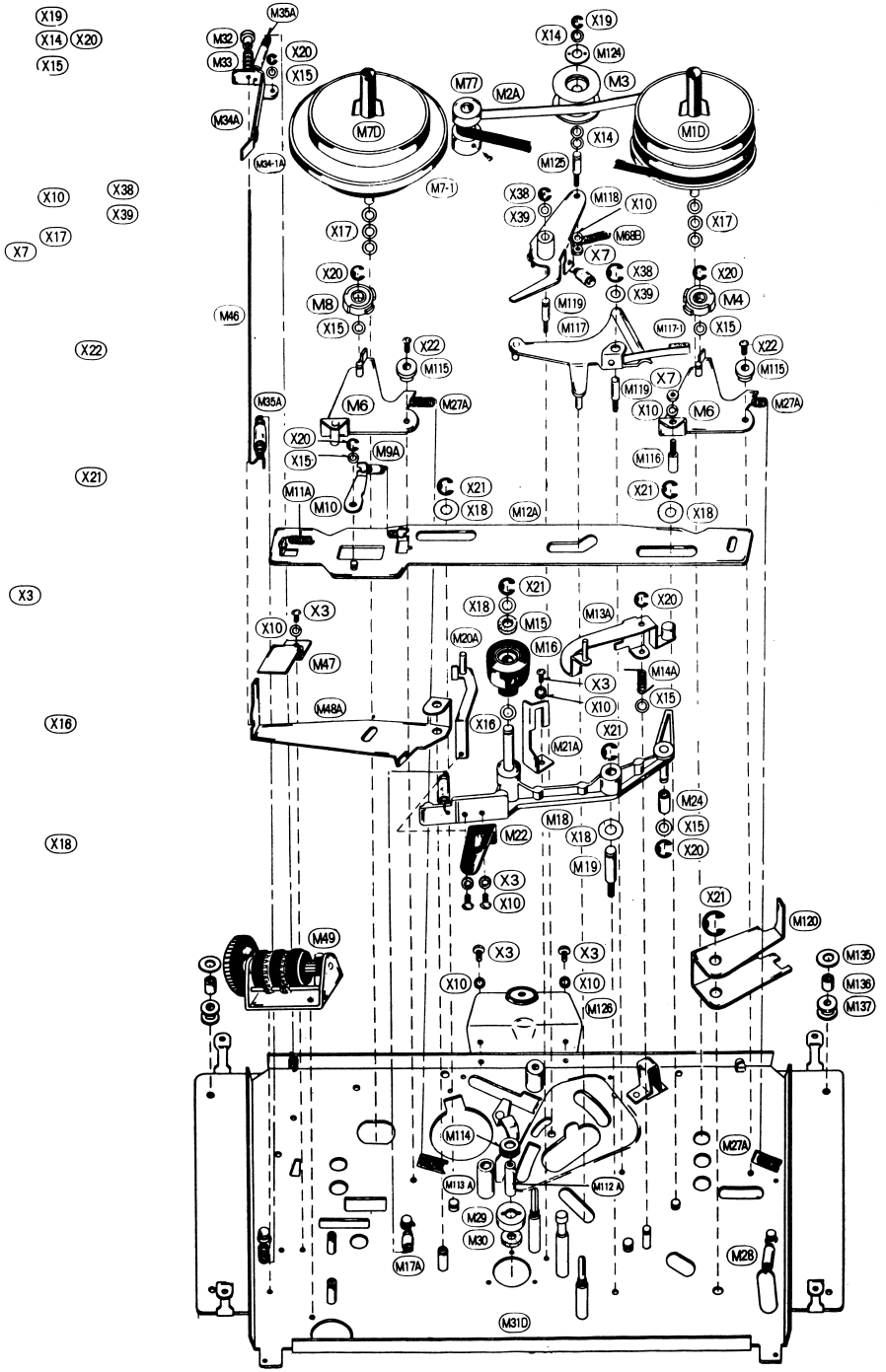




ELECTRICAL PARTS LOCATION







VARIABLE RESISTORS

Ref. No.	Description		Part No.
VR1	Volume Control	5KΩ-A	EVD-FOC451A53
VR2	Tone Control	20KΩ-A	EVD-FOG451A24
VR3	VU Meter Control	5KΩ-B	EVL-TOAA00B53
VR4	Volume Control	5KΩ-A	EVD-F9A451A53
VR5	Tone Control	20 KΩ-A	EVD-FOG451A24
VR6	VU Meter Control	5 KΩ-B	EVL-TOAA00B53

CAPACITORS

C1, C4, C11, C13, C15, C25, C28, C35, C37, C39	Electrolytic Capacitor	3 μF	ECE-A15V3
C2, C26	Electrolytic Capacitor	10 μF	ECE-A6V10
C3, C27	Electrolytic Capacitor	30 μF	ECE-B6V30
C5, C12, C17, C29. C36, C41	Electrolytic Capacitor	30 μF	ECE-A6V30
C6, C30	Mylar Capacitor	0.0015 μF	ECQ-M05152MZ
C7, C31	Mylar Capacitor	0.001 μF	ECQ-M05102MZ
C8, C32	Mylar Capacitor	0.022 μF	ECQ-M05223MZ
C9, C33	Electrolytic Capacitor	10 μF	ECE-A15V10
C10, C34	Electrolytic Capacitor	50 μF	ECE-A15V50
C14, C38	Electrolytic Capacitor	0.047 μF	ECQ-M05473MZ
C16, C40	Electrolytic Capacitor	0.1 μF	ECE-A50V0.1M
C18, C42	Electrolytic Capacitor	100 μF	ECE-A25V100
C19, C20, C43, C44	Mylar Capacitor	0.0047μF	ECQ-M05472MZ
C21, C45	Electrolytic Capacitor	500 μF	ECE-A15V500Z
C22, C46	Electrolytic Capacitor	0.5 μF	ECE-A15V0.5M
C23, C24, C41, C48, C58, C59	Polystyrene Capacitor	270 PF	ECQ-S1271KZ
C49	Electrolytic Capacitor	2000 μF	ECE-M35R2000B
C50	Electrolytic Capacitor	50 μF	ECE-A25V50
C51, C52	Mylar Capacitor	0.1 μF	ECQ-M05104MZ
C53	Polystrene Capacitor	0.0039 μF	ECQ-S1392JZ
C54, C55	Trimmer Capacitor	30~130 PF	QCV-2013
C56	Electrolytic Capacitor	0.5 μF	ECE-A25N0R5
C57	Metallized Paper Capacitor	2 μF	MP-250V2μ
C60, C61	Electrolytic Capacitor	6 μF	ECE-B10Y6

ELECTRICAL PARTS

Tr1, Tr7	Transistor	2SB 345
Tr2, Tr3, Tr4, Tr8, Tr9, Tr10	Transistor	2SB 175 (A)
Tr5, Tr6, Tr11, Tr12	Transistor	2SB 324 (M,N,)
Tr13, Tr14	Transistor	2SB 178 (A)
SM1, SM2, SM3, SM4	Thermistor	QVM-300A
SM5	Thermistor	QVM-251-A
D1, D2	Diode	OA-70
D3	Diode	SD-1U

Ref. No.	Description	Part No.
LV1, LV2	VU Meter	QSL-20
PT	Power Transformer	QLP-0339
IT1, IT2	Input Transformer	QLA-116
OT1, OT2	Output Transformer	QLA-318-1
L1	Oscillator Coil	QLB-115-1
L2	Erasing Head Dummy Coil	QLH-9004
SP1	PM Dynamic Speaker (woofer)	EAS-15D57SD
SP2	PM Dynamic Speaker (tweetor)	EAS-65PH09SB
S1, S2	Record/Playback Selector Switch	ESD-1217-1
S3	Speed Selector Switch	ESD-1129-1
S4	Stop Switch	QSB-119-1
S5	Mixing Switch	QSS-1013
S9	Shut Off Switch	QSM-0015
S10	Sound-on-sound Switch	QSS-1012
S11, S12	Speaker Selector Switch	QSS-2
S13	Voltage Selector Switch	ESR-E126S20BE

ELECTRICAL PARTS

Ref. No.	Description	Part No.
E1	Record/Playback Head	WY-411Z
E2	Erase Head	WY-504Z
E4	9-Pin Molded Socket (F)	QJS-709
E5	9-Pin Molded Socket	QJS-703
E6B	AC Power Cord	QFC-1022
E7	Microphone Jack	QJA-201
E9	Lug Board	QJT-3006-1
E10	Pilot Lamp	QVL-101
E11	Pilot Lamp Socket	QJS-104
E12A	Mixing Switch Cover	QBJ-1149-1
E18A	Fiber Washer	QBK-1020
E19	Pilot Lamp Cover	QTV-1016
E20	Circuit Board Assembly	QEI-0052
E21	Wire Cramper-B	QTT-1081
E22	9-Pin Plug (M)	QJP-0920
E23	9-Pin Plug (M1)	QJP-0926-1
E24	Tube Pin	QJQ-1001
E25	Stereophone Jack	QJA-205-1
E26	M3 Jack-A	QJA-102
E27	Pin Jack Assembly	QEJ-0021
E28	Cord Bushing	QTD-1126A
E29	4-Pin Plug	QJP-0925
E30	4-Pin Socket	QJS-0504
E31	Wire Cramper	QTD-1001
E32	Wire Cramper-A	QTD-1002
E33	Panel Felt	QBF-5602
E34	Capacitor Board	QTD-1138
E35	Cord Cramper (F)	QTD-1105
E36	Jack Board	QTT-1216
E37	Microphone Jack Board	QGJ-1054
E38	Jack Board	QGJ-1055
E39	Fuse (0.5 A)	QJF-1001
E40	Fuse (1.2 A)	QJF-1002
E41	Voltage Selector Switch Angle	QTT-1283
E42	Voltage Selector Switch Plate	QGS-2107
E43	Voltage Selector Switch Collor	QBJ-1152
E44	2P Fuse Holder	QTF-1002

MECHANICAL PARTS

M1D	Takeup Reel Table Assembly	QXP-0127
M2A	Takeup Belt	QDB-0017-1
M3	Tension Pulley Assembly	QXP-0090
M4	Takeup Reel Table Brake Roller Assembly	QUV-1010
—	—	—
M6	Brake Arm Assembly	QXA-0022
M7D	Supply Reel Table Assembly	QXP-0128
M7-1	Rubber Ring	QBC-1029
M8	Supply Reel Table Brake Roller Assembly	QUV-1011
M9A	Reel Table Arm Spring	QBT-1120-1
M10	Reel Table Control Plate	QMF-1024-1
M11A	Rewind Spring	QBT-1121
M12A	Slide Cam Plate Assembly	QXH-0008
M13A	Shut Off Arm Assembly	QXF-0019-1
M14A	Shut Off Spring	QBN-1011
M15	Pressure Roller Felt	QBF-1022
M16	Pressure Roller Assembly	QXP-0091
M17A	Pressure Roller Spring	QBT-1119
M18	Pressure Roller Arm Assembly	QXA-0024
M19	Pressure Roller Shaft	QMS-1026-1
M20A	Tape Pusher Plate Assembly	QYQ-0031

ELECTRICAL ADJUSTMENTS

RECORD BIAS FREQUENCY

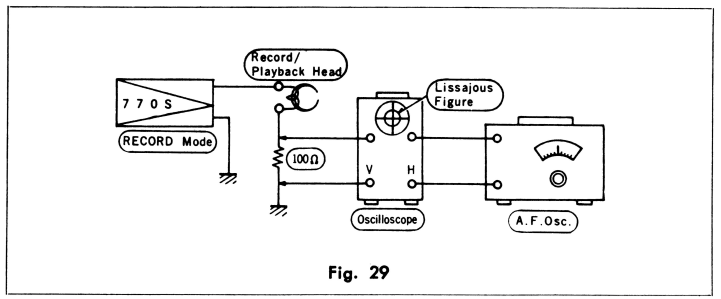


Fig. 29

Equipment Required: Oscilloscope, AF Oscillator, 100 Ω ±10% Resistor
Measuring Circuit: Refer to Fig. 29

Connect a 100 Ω resistor in series with the ground lead wire of Record/Playback Head.
Connect vertical input of Oscilloscope across resistor; connect horizontal input of Oscilloscope at output terminal of Audio Frequency Oscillator (AF Osc.).
With Model RS-770S set to RECORD mode and connected as above, Lissajous figure will appear on the Oscilloscope.
Standard frequency is 45~55 Kc.
It is only necessary to measure one channel.
Change L-1 (Oscillator Coil) or C-53 (Polystyrene Capacitor) if frequency is not within above range.

RECORD BIAS CURRENT

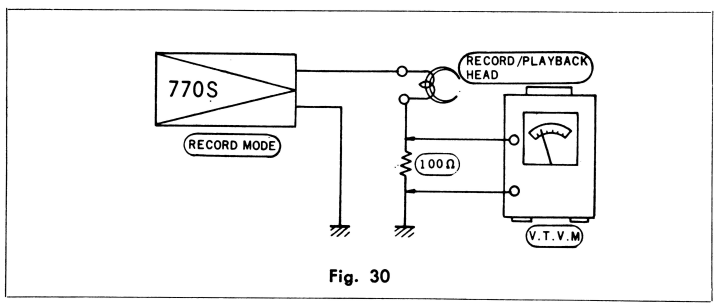


Fig. 30

Equipment Required: VTVM, 100 Ω ±10% Resistor
Measuring Circuit: Refer to Fig. 30

Proper bias is necessary for optimum recording.
Adjust the bias oscillator frequency as described above.
Connect a 100 Ω resistor in series with the ground side of the Record/Playback Head and measure the voltage across the resistor. Teh adjustment for CH-1 and CH-2 are made the same way.
Adjust C-54 (CH-1 Trimmer Capacitor) and C-55 (CH-2 Trimmer Capacitor) for the correct AC Bias Current 0.45~0.55 mA.
(Voltage across the 100 Ω resistor: $0.5\times10^{-3}\times100=0.05$ V).

ERASE CURRENT

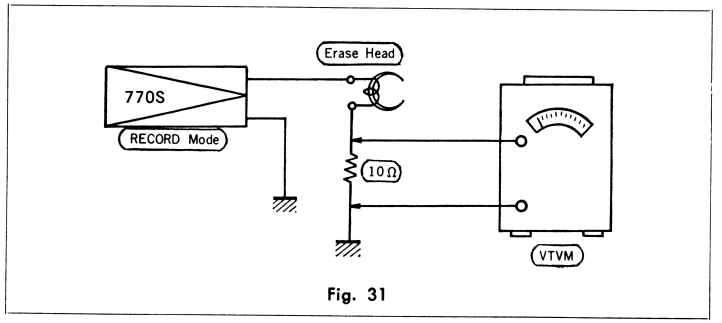


Fig. 31

Equipment Required: VTVM, 10 Ω ±10% Resistor
Measuring Circuit: Refer to Fig. 31

Should the erase current be incorrect, imperfect erasure or over-heating of the Erase Head may occur. Connect a 10 Ω resistor in series with the ground side of the Erase Head and measure the voltage across the resistor.
Correct AC erase current 30~50 mA.
(Voltage across the 10 Ω resistor: $40\times10^{-3}\times10=0.4$ V).
If necessary, adjust current by replacing coil L-1 (Oscillator Coil).

RECORDING LEVEL

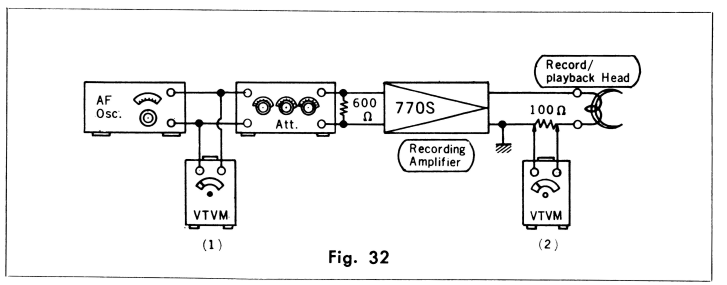


Fig. 32

Equipment Required: AF Oscillator, Attenuator, VTVM, 600 Ω ±20% and 100 Ω± 10% Resistors
Measuring Circuit: Refer to Fig. 32

Connect the Attenuator to the Recorder amplifier through the MIC jack. Short circuit terminal 6 to terminal 8 of L-1, Oscillator Coil, to disable the oscillator circuit.
Set the Recorder in the recording mode. Turn the Volume Control Knob and Tone Control Knob to the maximum positions.
Adjust the AF Osc. to produce 1 volt at 1,000 CPS. on the first VTVM Regulate the Attenuator to produce 0.05 mA through the 100 Ω resistor.
The input to obtain this current is −65db ±4db.
(The Voltage across the VTVM(2)is $0.05\times10^{-3}\times100=0.005$ V).
The VU Meter is calibrated at 0-VU for this Output level
Adjustment of VU Meter is made by VR-3 (CH-1) and VR-6 (CH-2).
The Record Head current is measured using the above setup and a VTVM reading of 5 mV indicates the standard recording level.

MECHANICAL OPERATING CONTROLS

OPERATING CONTROLS

The tape transport mechanism of MODEL RS-770S is operated by means of the Operating Knob, Fast Forward and Instant Stop Lever only. By turning the Operating Knob, the mechanical parts are actuated by the Main Cam Plate.

TAPE SPEED CHANGE

Tape speed is changed by the Speed Selector Knob. When the Knob is pulled out, the speed is 3-3/4 ips. and when pushed in the speed is 7-1/2 ips.

POWER SOURCE

Turning the Channel-1 Volume Control and Power ON/OFF Switch Knob clockwise switches the recorder ON and energizes the Pilot Lamp. When the recording is completed and the Tension Switch (Automatic Shut-off) disconnects the AC power, or when the Power ON/OFF Switch is turned to the OFF position, the Operating Knob must always be manually turned to the STOP position. If this is not done and the Operating Knob remains in the PLAYBACK position (with the AC power off) for a great length of time, WOW may develop due to prolonged contact of the Capstan against one spot on the Pressure Roller.

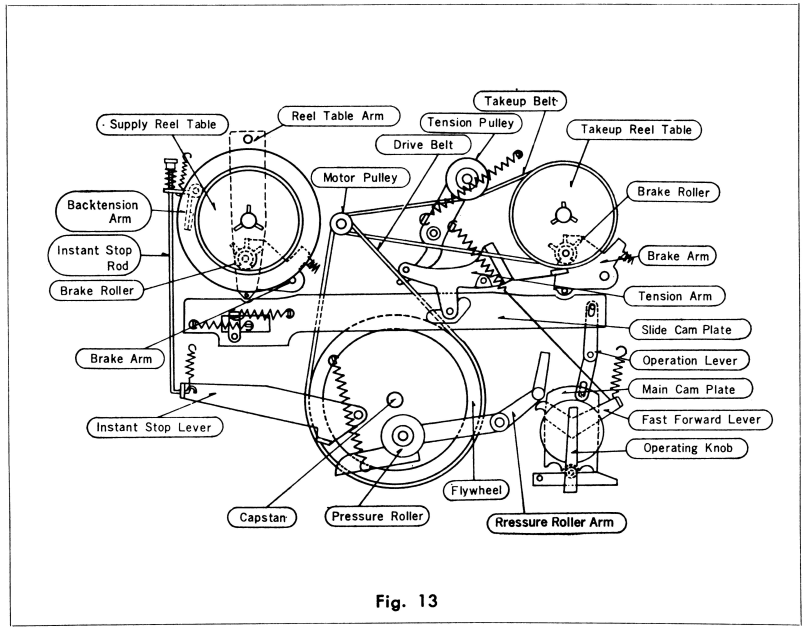


Fig. 13

TAPE TRANSPORT OPERATION

RECORDING AND PLAYBACK

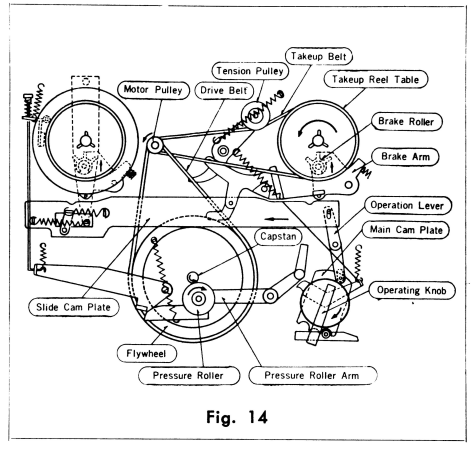


Fig. 14

When the Record Safety Button is pulled, the Electrical Circuit is in RECORD condition, and when not pulled, it is in PLAYBACK. As the Flywheel is connected to the Motor Pulley by the Drive Belt, the Capstan attached to the Flywheel will rotate as soon as the motor begins turning.

When the Operating Knob is turned from STOP to RECORD/PLAYBACK, the Slide Cam Plate will move by the action of the Operating Knob turning the Main Cam Plate.

The Brake Rollers will part from the Reel Tables as the Brake Arms are pushed up by the Slide Cam Plate.

At the moment the Slide Cam Plate is moved, the Tension Pulley applies tension to the Takeup Belt and conveys the rotation of the motor to the Takeup Reel Table.

When the Pressure Roller Arm is released by the pressure of the Main Cam Plate, the Pressure Roller is pushed against the Capstan and moves the tape.

All these movements occur simultaneously by the turning of the Operating Knob, which in turn rotates the Main Cam Plate.

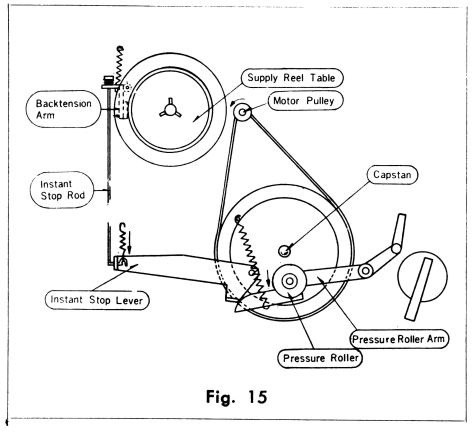


Fig. 15

INSTANT STOP

Moving the Instant Stop Lever pushes the Pressure Roller from the Capstan. At the same time the Instant Stop Rod is pulled, the Back tension Arm will move in the direction of the arrow causion a braking action on the Supply Reel Table. The tape will not move all the time the Instant Stop Lever is being pulled.

BLOCK DIAGRAM OF ELECTRICAL CIRCUITS

RECORDING CIRCUIT

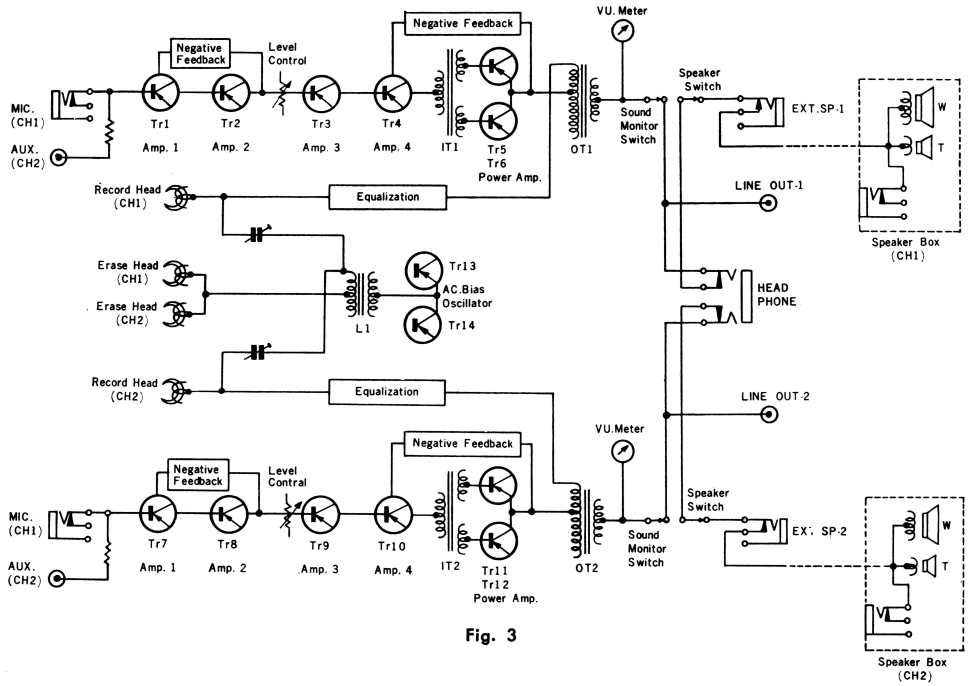


Fig. 3

PLAYBACK CIRCUIT

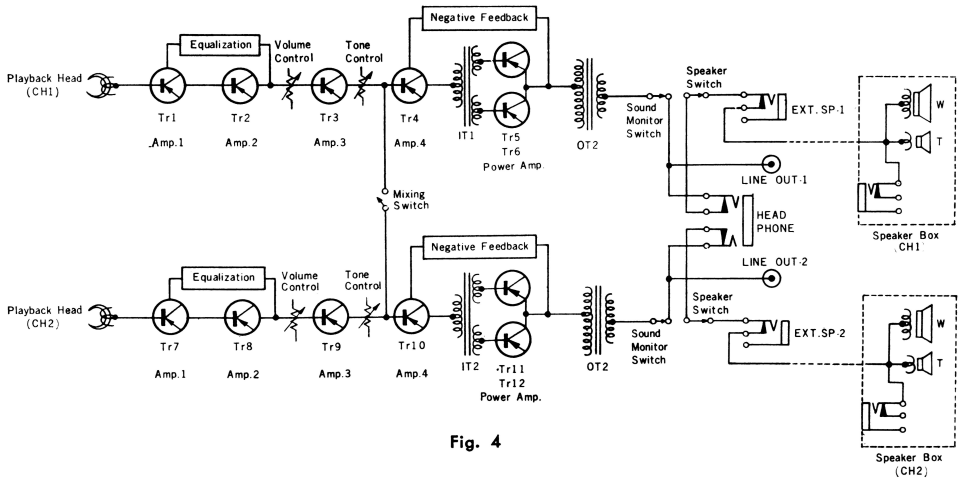


Fig. 4

DISASSEMBLY INSTRUCTIONS

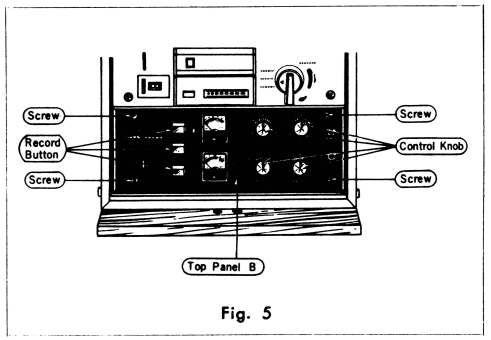


Fig. 5

TOP PANEL (B)

1. Remove the 4 Control Knobs.
2. Remove the 3 Record Buttons.
3. Remove 4 screws which hold the Top Panel (B).
4. Take off the VU. Meter Lead Wires from the VU. Meter when removing the Top Panel (B).

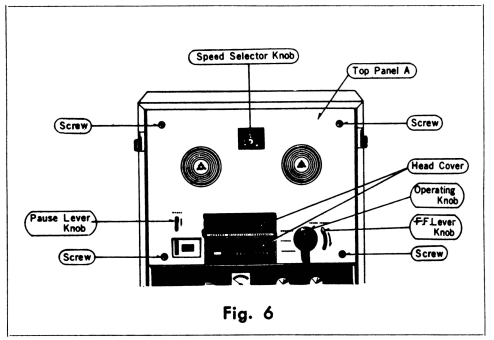


Fig. 6

TOP PANEL (A)

1. Top Panel (B) must be removed before Top Panel (A).
2. Loosen the Operating Knob set screw and pull Knob off remove the F.F Lever Knob and the Instant Stop Lever Knob.
3. Remove the Speed Selector Knob by turning counter-clock wise.

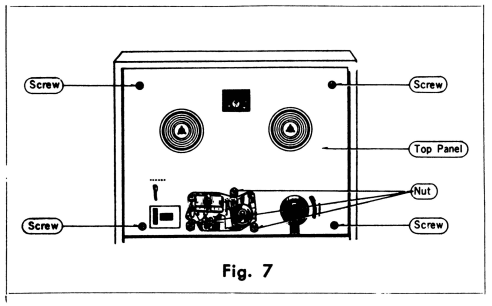


Fig. 7

4. Remove the 3 Nuts and 4 Screws which hold the Top Panel (A).