

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	V-M PART No.	REPLACEMENT DATA
K1	Preamp. Circuit	560mmf, 10000mmf, 2200Ω, 100K, 180K, 220K, 1meg, 2.2meg, 10meg	8943	
K2	Audio Output Plate	180mmf, 470mmf, 10000mmf, 47K, 47K, 100K, 100K, 220K	12563	
K3	Bias Osc. Grid	200mmf, (2) 1000mmf, 2000mmf, (4) 100K	12565	
K4	Stereo Preamp. Circuit	560mmf, 10000mmf, 2200Ω, 100K, 180K, 220K, 1meg, 2.2meg, 10meg	8943	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			V-M PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V P/T	8635		318003 (3AG 3A 250V) P/T		GJV 3	

MISCELLANEOUS

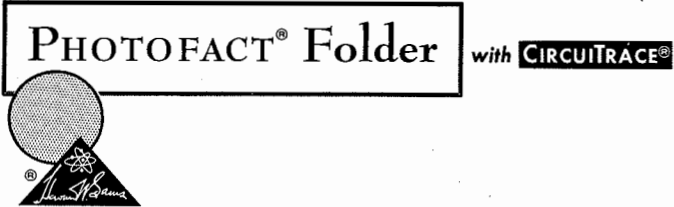
ITEM No.	PART NAME	V-M PART No.	NOTES
M2	Switch	15931	Selector
M3	Switch	8219	Play
M4	Switch	8219	Record
	Switch		Muting (Used in later versions)
M5	Switch	8220	Monitor
M6	Switch	15865	Safety
M7	Switch	15937	Equalization

CABINETS & CABINET PARTS

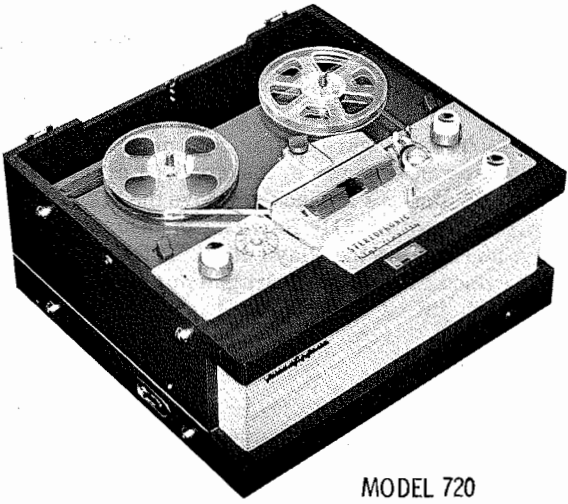
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8852-A	Volume, Model 720
Knob	8852-B	Volume, Model 755
Knob	8853-A	Brilliance, Model 720
Knob	8853-B	Brilliance, Model 755
Knob	8854-A	Tone
Knob	8140-A51	Speed Control
Knob	15836-A	Track Selector, Model 720
Knob	15836-B	Track Selector, Model 755
Pushbutton	8074-A51	(Dark Grey)
Pushbutton	8074-A10	(Red)
Button	8048-A52	Pause
Case	15835	Complete, Model 720
Handle	8073-C	Model 720
Cabinet	15879-B	Complete, Blond Model 755
Cabinet	15879-M	Complete, Mahogany, Model 755
Cabinet Lid	1029-B	Model 755, Blond
Cabinet Lid	1029-M	Model 755, Mahogany

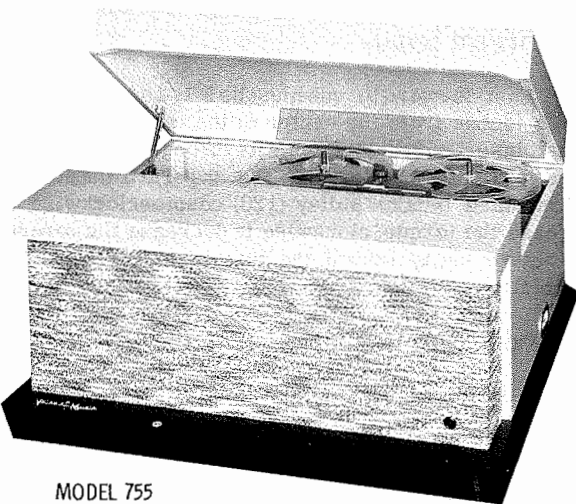
FOLDER 12  
SET 581



V-M MODELS  
720, 755



MODEL 720



MODEL 755

V-M MODELS  
720, 755

V-M MODELS  
720, 755

GENERAL INFORMATION

V-M Models 720 and 755 are four track, stereo recorders with five safety interlocked buttons: Stop, Record, Play, Fast Forward, Fast Rewind, preventing the operator from going from one mode to another without stopping the tape motion. An automatic shutoff is provided to shut off the mechanism after the tape has been run through in the Play or Record modes.

Recordings can be made from a microphone, radio, phonograph, or TV.

Using a 7-inch reel (1200 ft) of tape, playing and recording time for four track monaural at 3 3/4 ips is 4 hours; at 7 1/2 ips, 2 hours; 1/4-track stereo at 3 3/4 ips, 2 hours; at 7 1/2 ips, 1 hour.

Connect these recorders to an outlet supplying 110-117 volts, 60 cycle, AC only.

Manufactured By:

V-M Corporation  
Benton Harbor, Michigan

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of

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MECHANICAL ADJUSTMENTS

Head-Bar Bracket

Adjust head-bar bracket (32) so that head bar (35) moves freely without binding. If the bracket is too loose, pressure roller (52) will not press against the capstan evenly, causing flutter or the tape to climb.

Fast-Forward Torque

Fast-forward torque must be 5 1/2 ounces measured 3 inches from the center of the take-up reel. To adjust, insert a 3/8-inch Spintite through the hole provided in the base plate. (See Fig. 2.) Turn the eccentric-mounted tension pulley (120) counterclockwise to increase the torque, clockwise to decrease the torque. Make sure not to exceed the maximum travel of the eccentric.

Play and Record Torque

Take-up torque in Play and Record positions should be 1 3/4 to 2 1/2 ounces, measured 3 inches from the center of the take-up reel. To adjust the play and record torque, loosen the screw (see Fig. 2) on slide (110). Move the slide toward front of machine to increase the torque, toward back of machine to decrease the torque.

Pressure-Roller Pressure

The pressure-roller pressure should be 2 to 3 1/2 pounds against the capstan in the Record and Play positions. To adjust the pressure, bend button levers (86), at the point where head bar activating springs (69) and (71) are hooked. Bend the tab in to decrease the pressure, out to increase the pressure.

Release Wire

Adjust take-up bar release wire (109) so that the belt is applying no drag to the right wind reel pulley when the unit is in Rewind. To adjust, bend the "Z" portion of the wire to lengthen or shorten the wire. If too much drag is applied, there will be no rewind.

Stop Adjustment

Bend stop button lever (86), at the point where the brake activating hook connects, so that the brakes release the reel discs when another button is depressed. When the Stop button is depressed, bell crank (124) must disengage capstan idler (117) from the motor shaft and from flywheel and capstan assembly (140).

Pressure Roller

The pressure-roller stud must be parallel with the capstan; otherwise, the tape will creep up or down the capstan. As a check, remove the "C" washer from pressure roller (51). Raise the pressure roller slightly, and depress the Play button. If the pressure roller is raised or lowered, straighten the stud by slipping a close-fitting sleeve over it.

Rewind Torque

Rewind torque should be 3 ounces measured 3 inches from the center of the rewind reel. If the torque is low, make sure rewind driver (136) is not skidding on take-up driver (134). Clean the drivers and rewind belt (137) of any oil or grease.

Pause Brake

With tape threaded on the machine and the Play button depressed, bend the tap (see point A on Exploded View) on pause control arm (29) so that the takeup driver (134) is released from the motor pulley, and the pressure roller (53) is released from the capstan simultaneously. With the pause button "locked on" there should be no contact between the takeup driver (134) and the motor pulley.

Heads

Remove the Speed control, Treble and Bass, and Volume control knobs, the timer dials, and both es-cutcheons. Adjust the heads as follows:

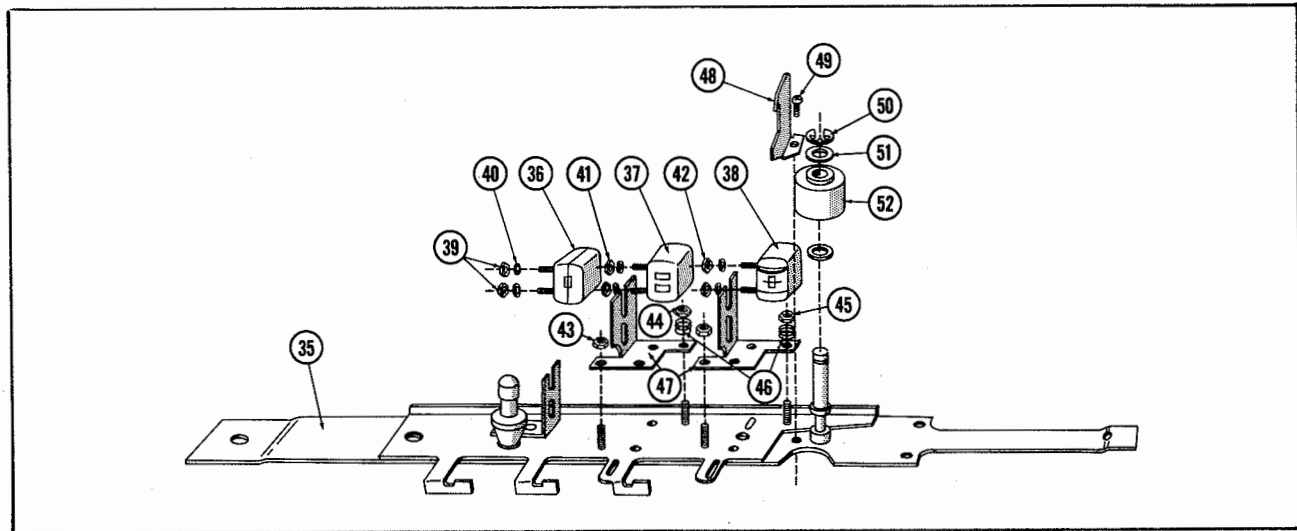


Fig. 1. Exploded View of Head Assembly.

ELECTRICAL PARTS LIST (CONT'D.)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R6	33K				R17	1meg			
R7	1meg				R18	100K			
R8	220K				R19	1000Ω			
R9	10K				R20	22K			
R10	220K				R21	330K			
R11	3300Ω				R22	22K			
R12	100K				R23	100K			
R13	1meg				R24	10K 2W			
R14	120K				R25	500Ω 5W	PW5-500	5W-SQ-500	
R15	1500Ω				R26	300Ω 5W	PW5-300	5W-SQ-300	
R16	4.7meg								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		V-M PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	Bias Osc. Coil	12557					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
				V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC. 1	SEC. 2						
	SEC. 3	SEC. 4	SEC. 5						
T1	117V@ .6A	720VCT @.060A	5V@ 2A	12558-3					
	6.3V@ .9A	6.3V@ 1.3A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.						
T2	5300Ω	30Ω Tap@ 6-8Ω	12559-1	A-2902 ①	A-3849 ①	24S64 ①	S-55Z ①	① Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
				V-M PART No.	QUAM PART No.	
	SIZE	FIELD	V. C. IMP.			
SP1	6"x 9"	PM	6-8Ω	8958-2*	69A3Z8	* Used in Model 720 (Alternate Part #8958) ♦ Used in Model 755
SP2	3½"	PM	14-16Ω	8959-4*	3A15T	
	8"	PM	3-4Ω	7129 ♦	8A10Z3.2	
	3½"	PM	14-16Ω	8440 ♦	3A15T	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	40	450	12044	AFH1-52	A0480	XC1-6	FP146	TMS-57	TVL-1725
C2A	40	450	12045	AFH4-18-10	D0171	XC4-15	FP446	TMQ-18	TVL-4771, 8
B	10	450							
C	10	450							
D	30	450							
C3	10	25	12046	PRS1250	BBR10-25	QT1-5	TC22	TD-10-25	TVA-1204
C4	50	6	12111	PRS1265	BBR50-6	QT1-15	TC29	TD-50-6	TVA-1100
C5	50	6	12111	PRS1265	BBR50-6	QT1-15	TC29	TD-50-6	TVA-1100

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	200 10%		DI-200	DD-201	LI0T2	CCD-201	GP320	10TS-T20
C7	200 10%		DI-200	DD-201	LI0T2	CCD-201	GP320	10TS-T20
C8	1000 10%		DI-1000	DD-102	IR5D1	CCD-102	GP210	10TS-D10
C9	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C10	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C13	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C14	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C15	2000 10%		DI-2000	DD-202	IR5D2	CCD-202	GP220	10TS-D20
C16	40-200					426		
C17	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C18	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C20	2000 10%		DI-2000	DD-202	IR5D2	CCD-202	GP220	10TS-D20
C21	2mf 100V		P282Z-2.0		MP2W2			118P20502S2
C22	20	Note 1	DI-20	DD-200	LI0Q2	CCD-200	GP420	10TS-Q20

Note 1. Not used in some versions.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume	200K	12346-2	AB-51, AK-10		Q13-129, C3	U44, DS-36
R2A	Tone	500K	12344				
B	Brilliance & Switch	50K					
R3	Eye Sensitivity	500K	12349	AB-60, AK-1	B47-500K-Z	BI3-133, TM4, or (BUL, CF25, SS6)*	■ UE3843-S TA55A
R4	Hum Balance No. 1	200Ω	12345	AB-2, AK-1		BI1-201, TM4, or (BUL, CF2, SS6)*	
R5	Hum Balance No. 2	200Ω	12345	AB-2, AK-1		BI1-201, TM4, or (BUL, CF2, SS6)*	

■ "STA-LOC" equivalent: FB55A, RU54A, OS5250, IS5750, US41.

\* "SNAPTROL".

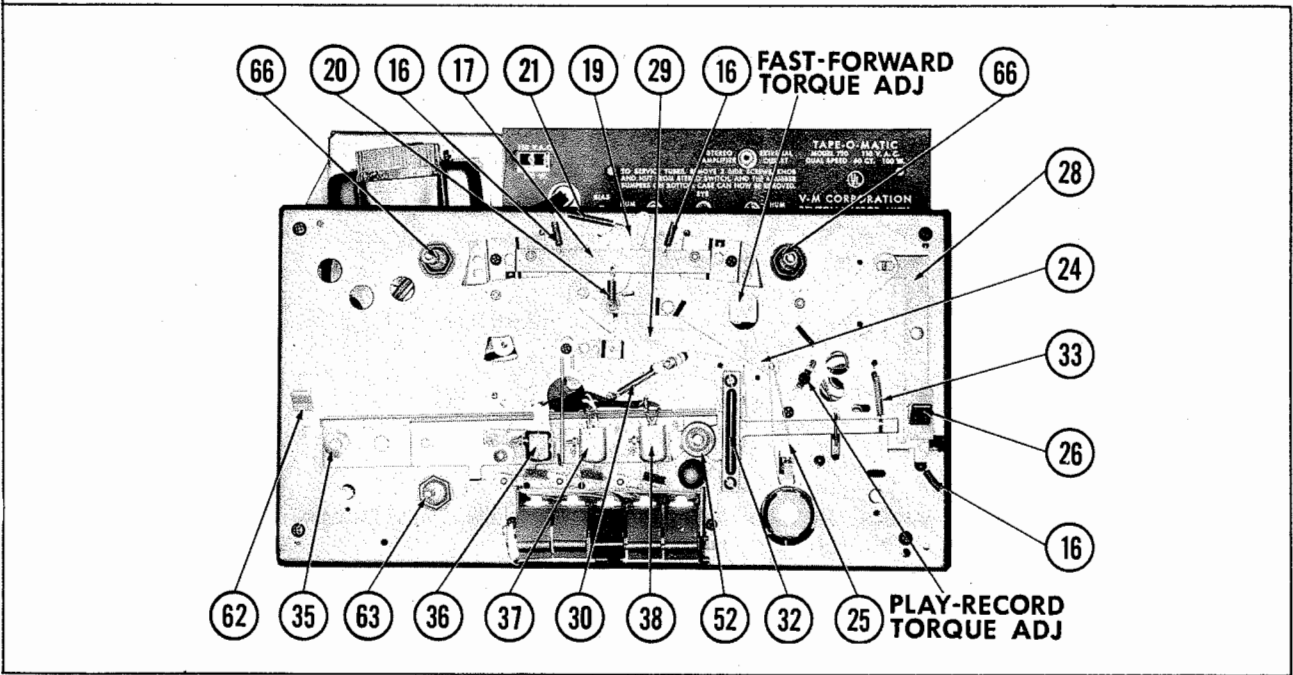


Fig. 2. Tape Transport Assembly, Top View.

MECHANICAL ADJUSTMENTS (CONT'D.)

RECORD-PLAY HEAD

The record-play head (center head) can be adjusted by one of the following methods:

1. Visual Adjustment—Loosen the head mounting nuts. Adjust the head height so that the top of the top pole piece is even with the top edge of the tape. (See Fig. 5.) As a check, use an unrecorded tape to record a signal on track 1. Rewind the tape. Then record a signal on track 3.

Next, reverse the tape reels, but leave the Track Selector switch in the track-3 position. Play back the empty channel (channel 2), and listen for any signal on this track. No signal should be heard.

2. Prerecorded 4-Track Tape—Using a prerecorded 4-track tape, adjust the head height until the output is maximum on both channels. Reverse the tape reels. Then play back the tape. There should be no cross talk between channels. The

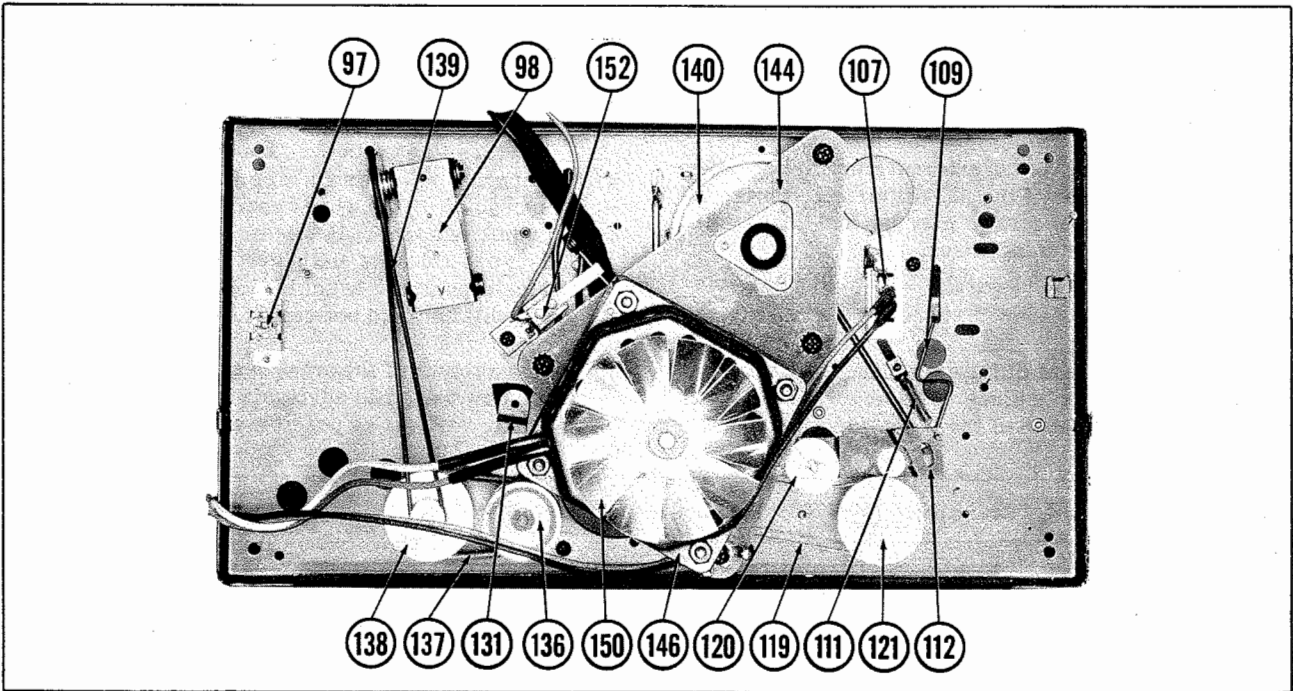


Fig. 3. Tape Transport Assembly Bottom View.

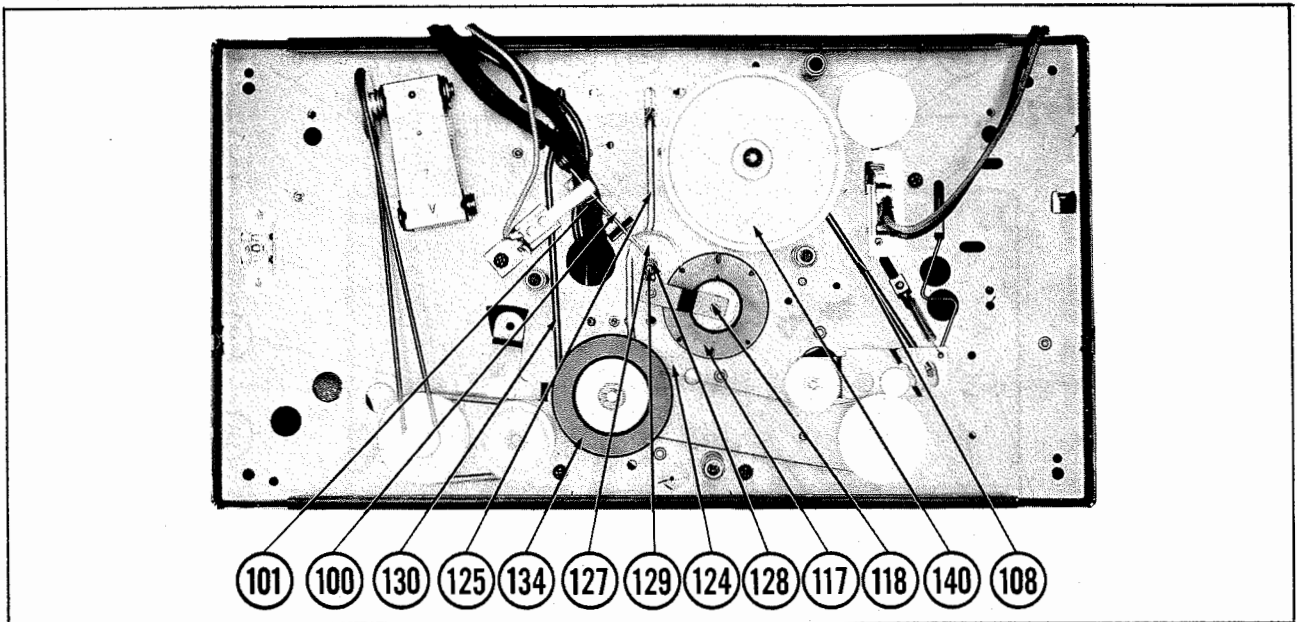


Fig. 4. Tape Transport Assembly, Bottom View.

#### MECHANICAL ADJUSTMENTS (CONT'D.)

same recording check (with a blank tape) described in Method 1 can also be made here.

3. Special Height-Adjustment Tape (Part of VM1046) — Connect an AC voltmeter across the stereo-output receptacle. Place the Track Selector switch in the 1/4-Track Stereo position. Thread the tape. Then loosen the head mounting nuts. Raise the head as high as possible in the head nest. Depress the Play button, and slide the head down until the output voltage increases beyond the normal noise level of the stereo preamplifier (but not more than 0.1 volt above this level). This method is more accurate than the others, because the top of the prerecorded signal is 0.070 inch from the bottom edge of the tape. When the lower pole piece picks up a trace of this signal, the head height is set accurately.

It is possible to use an external amplifier-speaker system instead of the AC voltmeter. However, some of the accuracy may be lost since this would be a listening check.

#### ERASE HEAD

Adjust the height of the erase head (left head) so that the top of the pole piece is barely visible (0.005 inch) above the top edge of the tape. (See Fig. 5.)

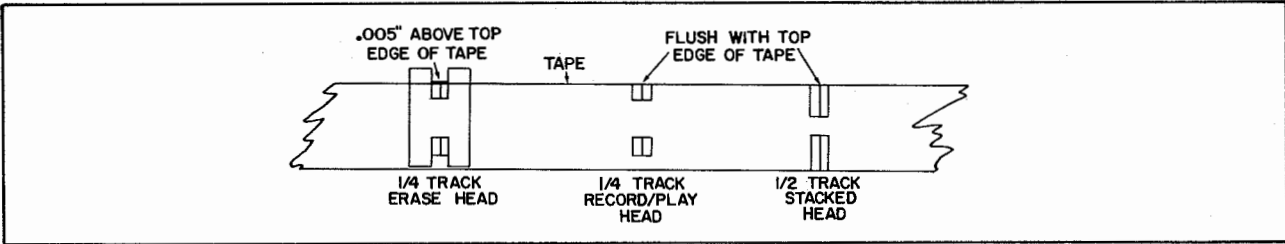


Fig. 5. Relationship of Head Pole Piece with Tape.

#### STACKED 1/2-TRACK HEAD

Adjust the stacked 1/2-track stereo head (right head) so that the top of the top pole piece is even with the top edge of the tape. (See Fig. 5.)

#### AZIMUTH

The azimuth of the record-play and the 1/2-track stacked heads is very important, because it allows the maximum high-frequency response to be obtained from a prerecorded tape.

To adjust, load the recorder with a specially recorded azimuth or prerecorded tape. With the unit in the Play position, adjust the front mounting nut (43) for maximum high-frequency response.

Improper azimuth does not mean the recorder will not operate. There should be no difference between the response of a tape when recorded and played back on the same machine. However, when a tape is recorded on one machine and played back on a machine with an improperly set head, the loss of high-frequency response will be quite noticeable.

The azimuth of the erase head is not particularly critical. However, it is advisable for the pole piece to be as nearly vertical as possible with a visual setting.

#### MECHANICAL PARTS LIST (CONT'D.)

Ref. No.	Part No.	Description
107	15865	Safety Switch
108	8121	Rod, Fast Forward
109	15918	Takeup Bar Release Wire
110	2934	Slide, Takeup Adjustment
111	8138	Spring
112	S8377	Takeup Bar Assembly
113	8331	Rivet
114	2829	Washer, Fibre
115	15844	"E" Ring
116	2829	Washer, Fibre
117	8079	Capstan Idler
118	S8391	Pivot Arm, Capstan Idler
119	8034	Takeup Belt
120	8103	Tension Pulley and Bearing Assembly
121	15761	Reel Shaft Assembly, Right Hand
122	8568	Washer, Cork
123	15844	"E" Ring
124	8014	Bell Crank
125	15872	Brake Rod
126	8037	Rivet
127	8039	Cam and Shaft Assembly
128	S8029	Cam Link
129	8535	Spring, Cam Link Lift
130	8035	Rewind Rod
131	8973	Rewind Arm Assembly

Ref. No.	Part No.	Description
132	2583	Washer, Fibre
133	8566	Washer, Cork
134	15774	Driver, Takeup
135	8489	"E" Ring
136	8106	Rewind Driver
137	8063	Rewind Belt
138	15762	Reel Shaft Assembly, Left Hand
139	8141	Counter Belt
140	8110	Flywheel and Capstan Assembly
141	8489	"E" Ring
142	8373	Washer
143	15828	Motor Mounting Grommet
144	8378	Subplate Assembly
145	8146	Screw
146	8015	Motor
147	8258	Spring,
148	2279	Washer,
149	7470	Washer, Cork
150	8255	Fan
151	1719	"C" Washer
152	15937	Equalization Switch and Bracket
*153	8945	Speed Nut
*154	8917	Bracket, Cover Plate
*155	8685	Scratch Shield
*156	8307	Safety Switch Shield
157	8475	Screw

\*Parts not called out on exploded views.

#### ELECTRICAL PARTS LIST

#### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Power Cord .....	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft. 17109 (Plastic) or 17129 (Rubber) - 9 Ft.
Power Cord (Interlock Type) .....	Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)
Low-Loss Shielded Lead (Interconnecting) .....	Use BELDEN No. 8401 or 8421
Phono Pick-up Arm Cable .....	Use BELDEN No. 8430 (Two Conductor-Unshielded) 8429 (Two Conductor-Shielded) 8419 (Three Conductor-Shielded)

#### TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp.	ECC83/12AX7	V5	Stereo Preamp.	ECC83/12AX7			
V2	Left Channel AF Amp.	ECC83/12AX7	V6	Left Channel Output	6L6GB(6V6GTA) ①			
V3	Record Level Indicator	6E5	V7	Rectifier	5Y3GT			
V4	Bias Oscillator	12AU7						

① Used in some versions. Replace with original type.

#### POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES		NOTES
			RCA PART No.	SARKES TARZIAN PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
X1		17001				1N34A	Record Level Rect. (1N34A)



MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1 A	15928	Screw, Reel Hold Down, Left Hand
B	15925	Spring, Reel Hold Down
C	15926	Washer
D	15929-CD	Reel Hold Down
2 A	15927	Screw, Reel Hold Down, Right Hand
B	15925	Spring, Reel Hold Down
C	15926	Washer
D	15929-CD	Reel Hold Down
3	15914-CD	Reel Disc
4	8140-A51	Knob, Speed Control
5	8256-A	Screw, Head Escutcheon
6	8118-B	Head Escutcheon (Model 720)
	8118-C	Head Escutcheon (Model 755)
7	8852-A	Knob, Volume (Model 720)
	8852-B	Knob, Volume (Model 755)
	8853-A	Knob, Brilliance (Model 720)
	8853-B	Knob, Brilliance (Model 755)
	8854-A	Knob, Tone
8	6990	Washer, Felt
9	8407	Screw, Main Escutcheon
10	15637-A	Counter Dial, Small
11	15636-A	Counter Dial, Large
12	8939-B	Main Escutcheon (Model 720)
	8939-C	Main Escutcheon (Model 755)
13	8214	Stud, Tri-Mount
14	8607-CD	Cover Plate Assembly (Model 720)
	8069-CR	Cover Plate Assembly (Model 755)
15	8296	Screw, Brake Arm
16	8138	Spring, Brake Arm
17	8297	Brake Arm Assembly
18	8567	Shoulder Rivet
19	15873	Takeup Arm Assembly
20	8441	Spring, Brake Activating
21	15775	Spring, Takeup
22	8199	Washer, Fibre
23	8037	Rivet
24	8293	Lever, Safety Switch Release
25	8294	Release Wire, Safety Switch
26	8048-A52	Pause Button
27	4092	Rivet
28	8044	Lever, Pause
29	15919	Control Arm, Pause
30	8078	Spring, Idler Return
31	8152	Screw, Head Bar Bracket
32	8147	Head Bar Bracket
33	8138	Spring, Head Bar Return
34	8520	Spring Washer
35	8593	Head Bar and Plate Assembly
36	12630	Erase Head (Alternate Part No. 12593, 12586)
37	12585	Record/Play Head (Alternate Part No. 12595)
38	12548	Play Head (Alternate Part No. 12607)
39	2300	Hex Nut, Erase Head Mounting
40	8424	Washer, Head Mounting
41	2300	Hex Nut, Four-Track Head
42	2300	Hex Nut, Two-Track Head
43	2300	Hex Nut, Head Nest Mounting
44	2300	Hex Nut, Head Nest Mounting
45	2300	Hex Nut, Head Nest Mounting
46	8131	Spring, Head Nest
47	8023	Head Nest
48	8045	Tape Guide

Ref. No.	Part No.	Description
49	8175	Screw, Tape Guide
50	8489	"E" Ring
51	8266	Washer, Fibre
52	8123	Pressure Roller
53	15844	"E" Ring
54	15716	Spring, Pressure Pad Arm
55	8393	Pressure Pad Assembly, Erase
56	15800	Pressure Pad Assembly, Record/Play
57	15801	Felt Pressure Pad
58	15844	"E" Ring
59	15716	Spring, Pressure Pad Arm
60	15800	Pressure Pad Assembly, Play
61	15801	Felt Pressure Pad
62	8048-A52	Monitor Button
63	8398	Pal Nut, Counter Mounting
64	8489	"E" Ring
65	2583	Washer, Fibre
66	8398	Pal Nut, Reel Bearing
67	8298	Screw, Push-Button Assembly Mounting
68	8173	Spring, Activating
69	8174	Spring, Head Bar Activating-Record
70	8285	Activating Hook
71	15972	Spring, Head Bar Activating - Play
72	15908	Spring, Fast Forward Activating
73	8608	Screw, Baseplate Mounting
74	8050	Tape Stud
75	8434	Spring, Head Bar Bracket
76	8031	Dust Shield
77	2274	Washer
78	15550	Tape Release Wire
79	15845-A	Push-Button Assembly Complete
80	8074-A51	Button, Dark Grey
	8074-A10	Button, Red
81	8082	Latch Bar
82	8037	Rivet, Play Interlock
83	8432	Lever, Interlock
84	8128	Spring, Interlock Lever
85	8114	Interlock Bar
86	8024	Button Lever
87	8256-A	Screw, Button Mounting
88	8382	Button Housing Assembly
89	8089	Rod, Button Lever
90	8489	"E" Ring
91	15844	"E" Ring
92	8116	Stop Rod
93	8125	Spring, Push Button
94	8128	Spring, Latch Bar
95	15978	Baseplate Assembly (Includes Permanently Fixed Parts)
96	8298	Screw, Tape Stud
97	8220	Switch, Monitor
98	8046	Counter Assembly
99A	15902	Bearing, Right Hand
B	15917	Spring, Reel Drag, Right Hand
C	88006	Bearing, Left Hand
100	88076	Guide, Cam Link Spring
101	8040	Spring, Cam Link
102	8859	Rivet, Cam Link Guide Mounting
103	8084	Capstan Bearing
104	15522	Plate, Capstan Bearing
105	8133	Spring Washer
106	15844	"E" Ring

LUBRICATION

Lubricants applied during manufacture last for a long time. Approximately once a year, or if parts are replaced, lubricate as follows:

Apply S. A. E. 10-30 motor oil to:

1. Both capstan bearings. To oil the capstan bearings, place a small drop of oil on each bearing.

CAUTION: Be sure no oil is on the portion of the capstan extending above the base plate.

2. Tension pulley (120) bearings.
3. Reel disc bearings (99).
4. Rewind driver (136) bearing.
5. Capstan idler (117) bearing.
6. Take-up driver (134) bearing.
7. Pressure roller (52) bearing.

NOTE: When oiling any bearing in which a rubber part is mounted, or a part using a belt, apply only one small drop of oil. Oil and grease must be kept off all idlers,

belts, the rim of the flywheels, and off all parts that might transfer oil or grease to them.

Apply Trojan "H2" grease:

1. Between brake arm (17) and brake shoes.
2. Between brake shoes and base plate.
3. Between rewind arm (131) and base plate.
4. Under head bar (35) pivot bosses.
5. Top of head bar (35) above R. H. bosses.
6. Between take-up bar (112) and base plate.
7. Between pause lever (28) and base plate.
8. Between bell crank (124) and base plate.
9. To latch bar (81) on cam side, where button levers (86) make contact.
10. To latch bar (81) and button housing (88) pivot holes.
11. To brake rod (125) ends at base-plate holes.
12. To rewind rod (130) at base-plate hole.
13. To fast-forward rod (108) at take-up bar (112) slot.
14. To holes in base plate where amplifier switch extensions slide.

TROUBLE CHART

Symptom	Cause	Remedy
Take-up reel does not revolve in Play or Record position.	1. Pause brake on or sticking.	1. Release pause brake; check that pause brake lever (28) is free and releases completely.
	2. Brakes (17) not releasing properly.	2. Check that brakes (17) are releasing completely; if not, adjust button lever (86) on Stop button.
	3. Take-up belt (119) stretched or worn.	3. Replace stretched or worn take-up belt (119).
	4. Take-up belt (119) off pulleys.	4. Pulleys must be aligned correctly. Otherwise, belt will continue to slip off.
	5. Capstan idler (117) not engaging flywheel.	5. Check that Speed Change button is in detent completely; also check that bell crank (124) is releasing capstan idler (117).
	6. Speed change not in detent completely.	6. Turn button to proper speed.
	7. Tension pulley (120) not engaging take-up belt.	7. Check that take-up arm (112) is not binding on base plate or take-up rod (108).
	8. Pressure roller (52) applying too much pressure against capstan; stalling motor.	8. Adjust button lever (86) on Play and/or Record buttons so that pressure roller applies from 2 to 3 1/2 lbs. pressure on the capstan. (See "Mechanical Adjustments".)
	9. Tension pulley (120) not adjusted properly.	9. Tension pulley must be adjusted properly. (See "Mechanical Adjustments".)

# TROUBLE CHART (CONT'D.)

Symptom	Cause	Remedy
	10. Head bar activating springs (69) or (71) off or broken.	10. Replace springs (69) or (71).
	11. Take-up bar actuator not adjusted properly.	11. See "Mechanical Adjustments".
	12. Take-up driver (134) not engaging motor shaft.	12. Take-up arm (19) must operate freely.
Take-up reel does not revolve in Forward position.	1. Button lever (86) not adjusted properly.	1. Button lever can be adjusted to provide small deviations in torque. (See No. 5.)
	2. Activating spring (20) loose or broken.	2. Replace activating spring (20).
	3. Take-up belt (119) off pulleys.	3. Replace (see "Take-up reel does not revolve in Play or Record position").
	4. Take-up belt (119) worn.	4. Replace take-up belt (119).
	5. Tension pulley (120) not adjusted properly.	5. In Forward position, tension pulley should be adjusted so that there are 5 1/2 ounces of torque approximately 3 inches from the center of the reel. See "Mechanical Adjustments".
	6. Brake sticking on supply-reel disc.	6. Check that brake return springs are releasing brakes.
	7. Too much friction in counter (98).	7. Counter should turn freely without binding.
	8. Motor stalling.	8. Check that tension pulley (120) is adjusted properly. (See No. 5.)
	9. Tension pulley (120) not engaging take-up belt.	9. Check that take-up arm (112) is not binding on base plate or take-up rod (108).
Reels do not stop when Stop button is depressed.	1. Button lever (86) not adjusted properly.	1. Button lever must be adjusted to release the brakes completely when another button is depressed.
	2. Brake activating hook (70) or spring (20) loose or broken.	2. Replace hook (70) or spring (20).
	3. Brake assembly binding.	3. Check to see if brake assembly operates freely.
	4. Tension pulley not adjusted properly.	4. See "Take-up reel does not revolve in Forward position".
	5. Brakes worn.	5. Replace brake assembly (17).
	6. Take-up arm (112) sticking.	6. Take-up arm must operate freely.
Weak output (mechanical).	1. Playback head (37) not aligned properly.	1. Head should be aligned for maximum output. (See "Head Adjustments".)
	2. Pressure pad (57) not contacting head properly.	2. Pressure pad (57) should make complete contact with head pole piece.

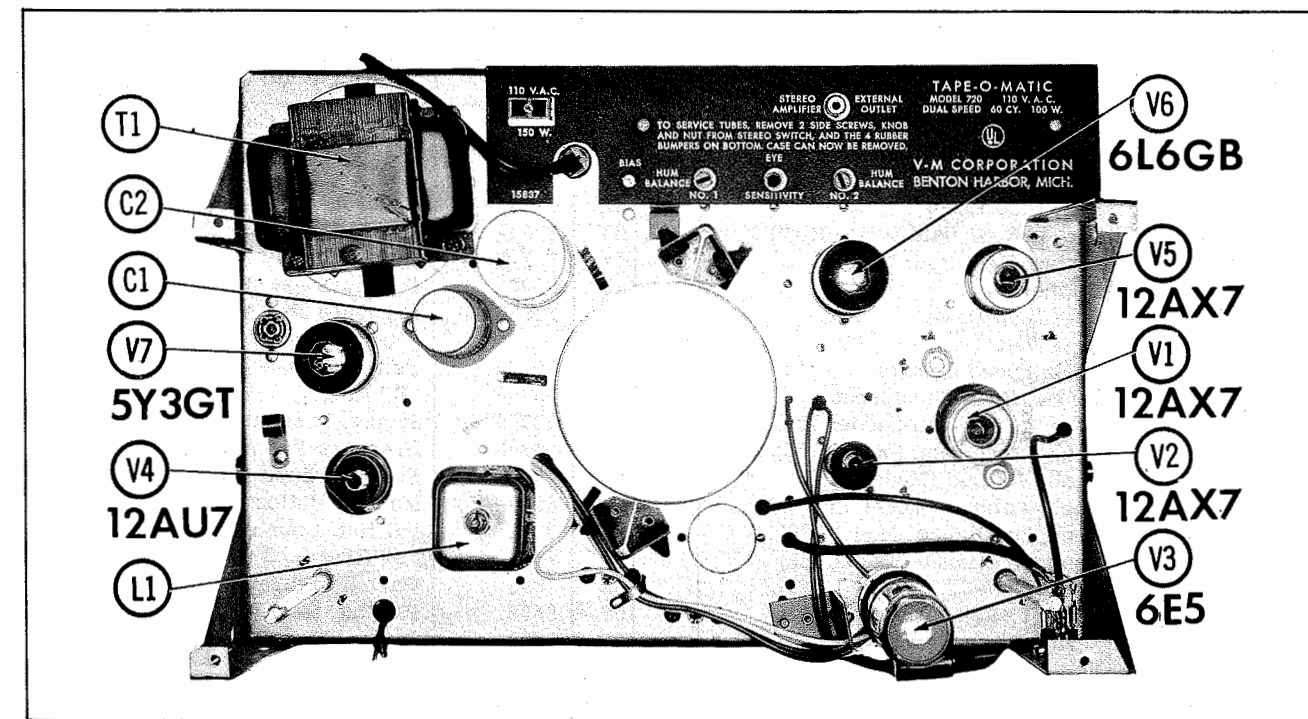


Fig. 14. Amplifier Chassis, Top View.

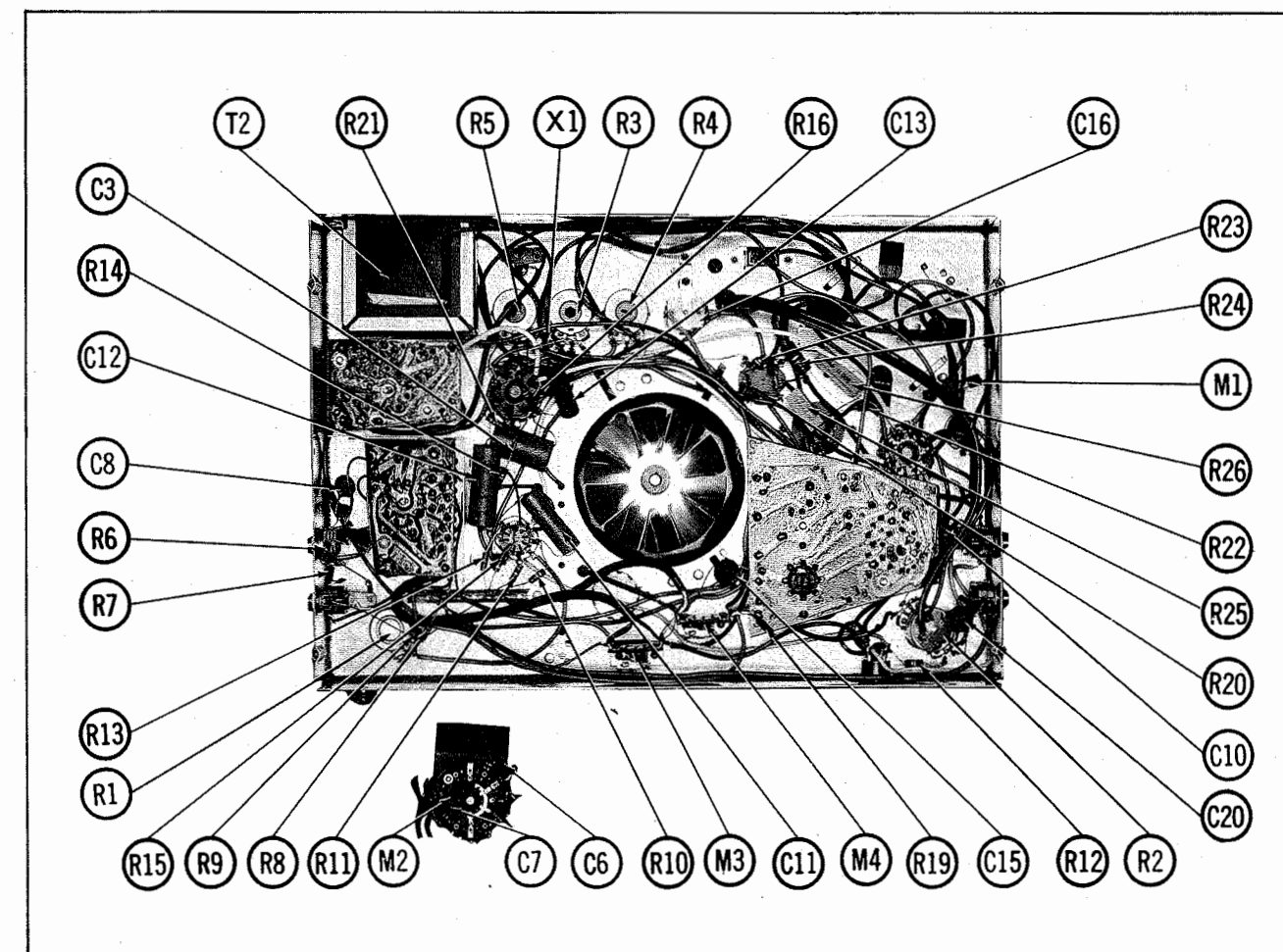


Fig. 15. Amplifier Chassis, Bottom View.

Hum Balance

The Hum Balance controls (R4 and R5) are located at the rear of the amplifier chassis and are accessible through the storage compartment. (On the Model 755, these controls can be adjusted by removing the grille from the rear of the cabinet.)

Control 1 is for the main channel amplifier, and control 2 is for the stereo preamplifier.

Turn the Volume and Tone controls to maximum, and adjust the Hum Balance controls for minimum hum. Try the line-cord plug both ways. If hum is still excessive, the power transformer may have to be repositioned. Repositioning of the transformer and adjustment of the Hum Balance controls should be performed several times, until the minimum hum level is obtained.

Eye Sensitivity

The Eye Sensitivity control should be set so that the eye closes but does not overlap with 0.9 to 1.1 volts across the external-speaker jack (no load) in the Record position.

To adjust, turn the Tone control fully counter-clockwise. Turn the Monitor switch on. Connect an audio generator to the Microphone input, and set to 0.8 volt output at 1,000 cycles. Connect an AC voltmeter to the external-speaker jack (insert the plug all the way, so that no load is applied to the secondary of the output transformer).

With the unit in the Stop position, adjust the Volume control for 1 volt AC at the meter.

HEAD DEMAGNETIZING

It is highly recommended that the record-play head be demagnetized regularly to remove any residual magnetism.

Heads that have become magnetized will cause a definite loss of high-frequency response when previously recorded tapes are played back, and an increase in noise level and distortion will be noticed in new recordings.

This accumulation of residual magnetism in the record-playback head is a normal condition that develops over a period of time from overloading the head while recording. However, another major cause of magnetized heads is working near the heads with magnetized tools, such as screwdrivers or wrenches. Therefore, be extremely careful, when working near the heads, never to use magnetized tools.

HEAD CLEANING

Distortion, loss of high frequency response, and low volume may be due to an accumulation of oxide from recording tape on the record and erase heads. Clean the heads as follows:

- 1. Depress the Stop button.
- 2. Remove the Speed knob by pulling it straight up.
- 3. Remove the two head-escutcheon screws.

Depress the Record button and adjust the Eye Sensitivity control for closing of the eye. DO NOT ALLOW THE EYE TO OVERLAP.

Bias

The bias current to the record head must be set properly to insure the proper recording characteristics. Adjustment SHOULD NOT be attempted without proper equipment.

To adjust the bias, disconnect the top lead from the record-playback head. Connect a wide-range AC voltmeter between the head pin previously connected to the top and chassis. Then connect a 100-ohm resistor (noninductive) of at least 5% accuracy across the meter terminal.

Set the Speed control to 7 1/2 ips, and depress the Record button. Adjust the Bias adjustment (C16) until the voltmeter reads approximately 0.04 volt. At this voltage reading, the head current is approximately 0.4 milliamps. DO NOT SET THE BIAS AT 3 3/4 IPS.

CAUTION: Under no circumstances should the oscillator coil be adjusted. This is a balanced coil, and any adjustment will distort the bias signal.

For special applications, it may be desirable to use different bias currents. Higher bias current affords less distortion, but some of the high frequency response is lost. Lower bias current improves the frequency response, but distortion at peak levels is greater.

- 4. Lift off the head escutcheon, exposing the record and erase heads.
- 5. Use a cotton swab moistened with alcohol to clean the surface of the heads. Then wipe dry.

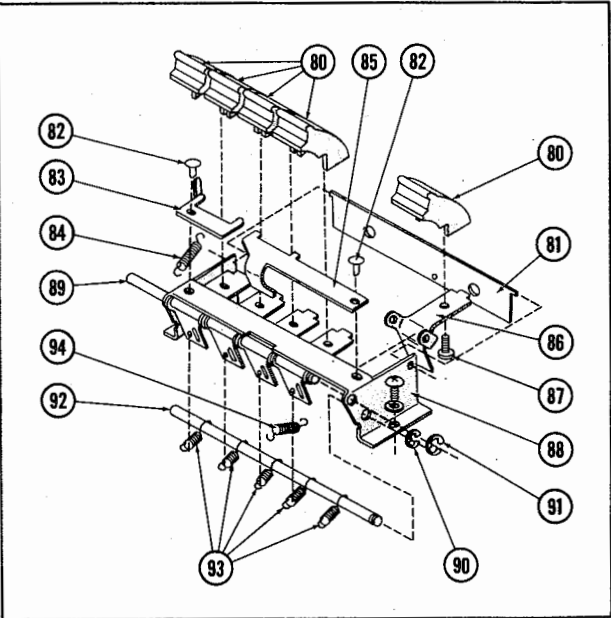


Fig. 13. Exploded View of Pushbutton Assembly.

TROUBLE CHART (CONT'D.)

Symptom	Cause	Remedy
	3. Light pressure-pad pressure.	3. Pressure pad must have from 12 to 18 grams pressure on head.
	4. Defective record head (37).	4. Replace record head (37).
Take-up reel revolves rapidly when Play or Record button is depressed.	1. Tab on pause control lever (29) not adjusted properly.	1. Adjust pause control arm (29) so that pressure roller (52) disengages capstan and take-up driver stops simultaneously.
	2. Head bar bracket (32) too tight.	2. See "Mechanical Adjustments".
	3. Button levers not adjusted properly.	3. Button levers (86) must be adjusted so that pressure roller (52) applies from 2 1/2 to 3 1/2 pounds pressure on capstan in Play or Record position. (See "Mechanical Adjustments".)
	4. Pressure roller (52) not aligned properly.	4. See "Mechanical Adjustments".
Supply reel does not revolve in Rewind position.	1. Loose reel shaft screw (1).	1. Tighten reel shaft screw (1).
	2. Rewind belt (137) off drive pulleys.	2. Replace rewind belt (137).
	3. Rewind torque not sufficient.	3. See "Mechanical Adjustments".
	4. Activating spring (20) loose.	4. Replace activating spring (20).
	5. Take-up driver (134) not engaging motor drive shaft.	5. See "Take-up Reel does not revolve in Play or Record position".
	6. Brake sticking on take-up pulley.	6. Check that brake-arm assembly is free and not binding; also check that brake return springs are releasing brakes.
	7. Pause brake on.	7. Release Pause brake.
	8. Oil on rewind belt (137).	8. Remove any oil from belt and pulleys.
Does not shut off at end of tape.	1. Defective switch.	1. Replace or repair switch.
	2. Switch wand catching on plastic escutcheon (12).	2. Position switch by loosening self-tapping screw (96).
Wow or flutter (Record or Playback).	1. Bump on take-up belt (119).	1. Replace take-up belt (119).
	2. Safety switch (107) applying too much pressure on tape.	2. Replace safety switch (107).
	3. Brakes dragging.	3. (A) Adjust Stop button lever (86) so that brakes release completely. (B) Check that brake return springs (16) are not loose or broken. (C) Brake arm assembly must be free and not binding. (D) Pause brake must release completely.
	4. Flat or bumpy pressure roller.	4. Replace pressure roller.
	5. Capstan bearings not aligned properly.	5. Tap capstan slightly (bearings are self-aligning).

TROUBLE CHART (CONT'D.)

Symptom	Cause	Remedy
	6. Eccentric flywheel.	6. Replace flywheel.
	7. Bumpy or eccentric capstan idler (117).	7. Replace capstan idler (117).
	8. Head bar bracket loose.	8. See "Take-up reel revolves rapidly in Play or Record position".
	9. Pressure roller (52) not aligned properly.	9. See "Mechanical Adjustments".
Unit does not turn on with Off-On switch.	1. No current at motor or amplifier.	1. (A) Check that current is reaching AC leads. (B) Check that fuse is not burned out. If so, replace. (C) Check that Off-On switch and automatic shutoff switch are closing.
Button interlock (85) inoperative.	1. Interlock bar return spring loose or broken.  2. Buttons sheared.  3. Tabs on interlock bar (85) bent.	1. Replace spring.  2. Replace buttons.  3. Straighten or replace tabs. Tab on back of interlock bar must be set so that button lever on the Stop button can remove the interlock bar from under the Play and Record buttons.
Record button can be depressed without Safety lever.	1. Record interlock return spring off or broken.  2. Tabs on Record button interlock lever bent or broken.  3. Button sheared.	1. Replace spring.  2. Straighten or replace tabs.  3. Replace latch bar spring.
Buttons do not stay depressed.	1. Latch bar spring off or broken.  2. Latch bar sticking or bent.	1. Replace latch bar spring.  2. Repair or replace latch bar.
Counter inoperative.	1. Counter belt (139) off pulleys.  2. Counter dial loose.  3. Gears binding.	1. Replace counter belt (139).  2. Repair or replace counter dial.  3. Counter must turn freely without binding. Check gears and pulleys for binding.
Does not erase cleanly.	1. Leads off erase head (36).  2. Erase head (36) not adjusted properly.  3. Low erase current.	1. Replace leads.  2. Erase head (36) should be adjusted so that top of head pole piece is approximately 0.005 inch above edge of tape.  3. To determine the proper erase current, place a 10-ohm precision resistor in series with either lead from the erase head. Place the recorder in the Record position and, with an AC voltmeter, check the voltage across the resistor. When the oscillator and erase head are

TROUBLE CHART (CONT'D)

Symptom	Cause	Remedy
		functioning properly, the voltage across the resistor should be approximately .18 volts. With a .18-volt reading, the required 18 milliamps of current are present.
Pause brake does not operate properly.	1. Tab on pause brake not adjusted properly.  2. Brake worn.	1. See "Take-up Reel revolves rapidly when Play or Record button is depressed".  2. Replace brake.

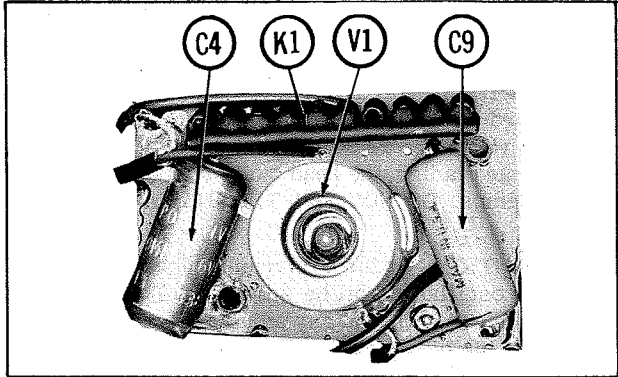


Fig. 7. Preamplifier Printed Board, Top View.

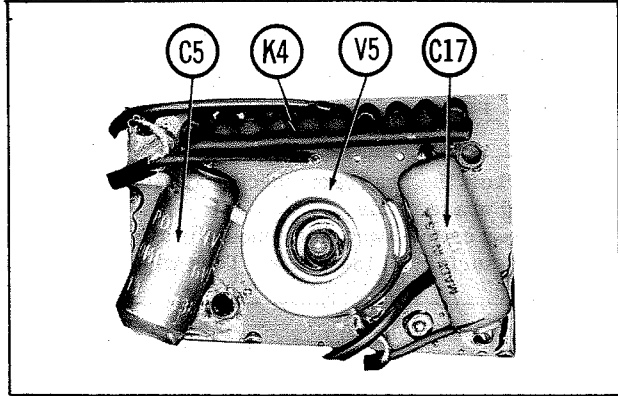


Fig. 9. Stereo Preamplifier Printed Board, Top View.

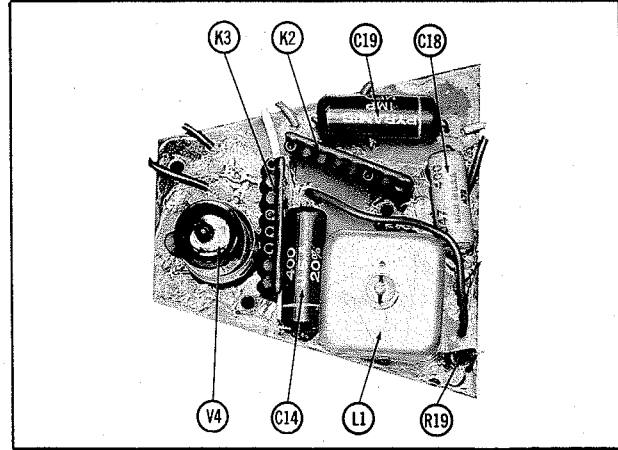


Fig. 11. Oscillator Printed Board, Top View.

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED  
Howard W. Sams **CIRCUITRACE** Photos

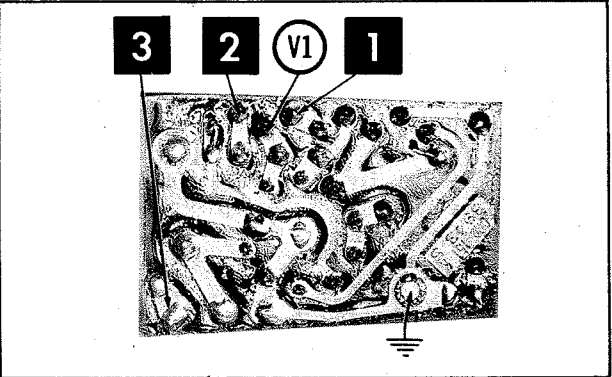


Fig. 8. Preamplifier Printed Board, Bottom View.

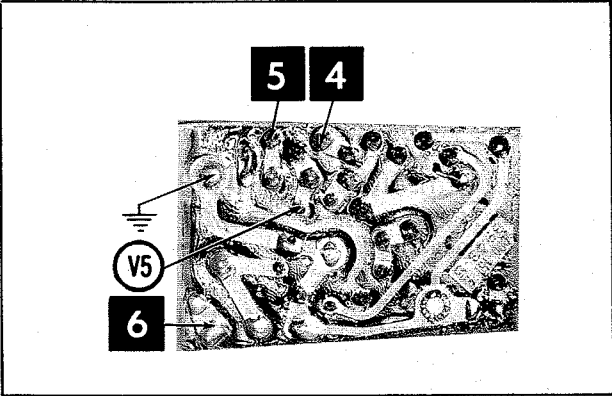


Fig. 10. Stereo Preamplifier Printed Board, Bottom View.

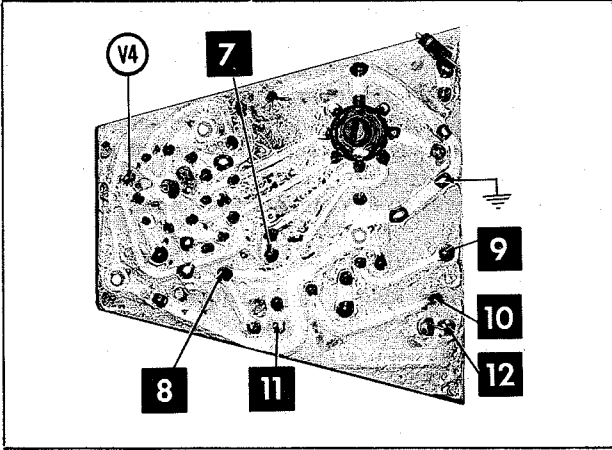


Fig. 12. Oscillator Printed Board, Bottom View.





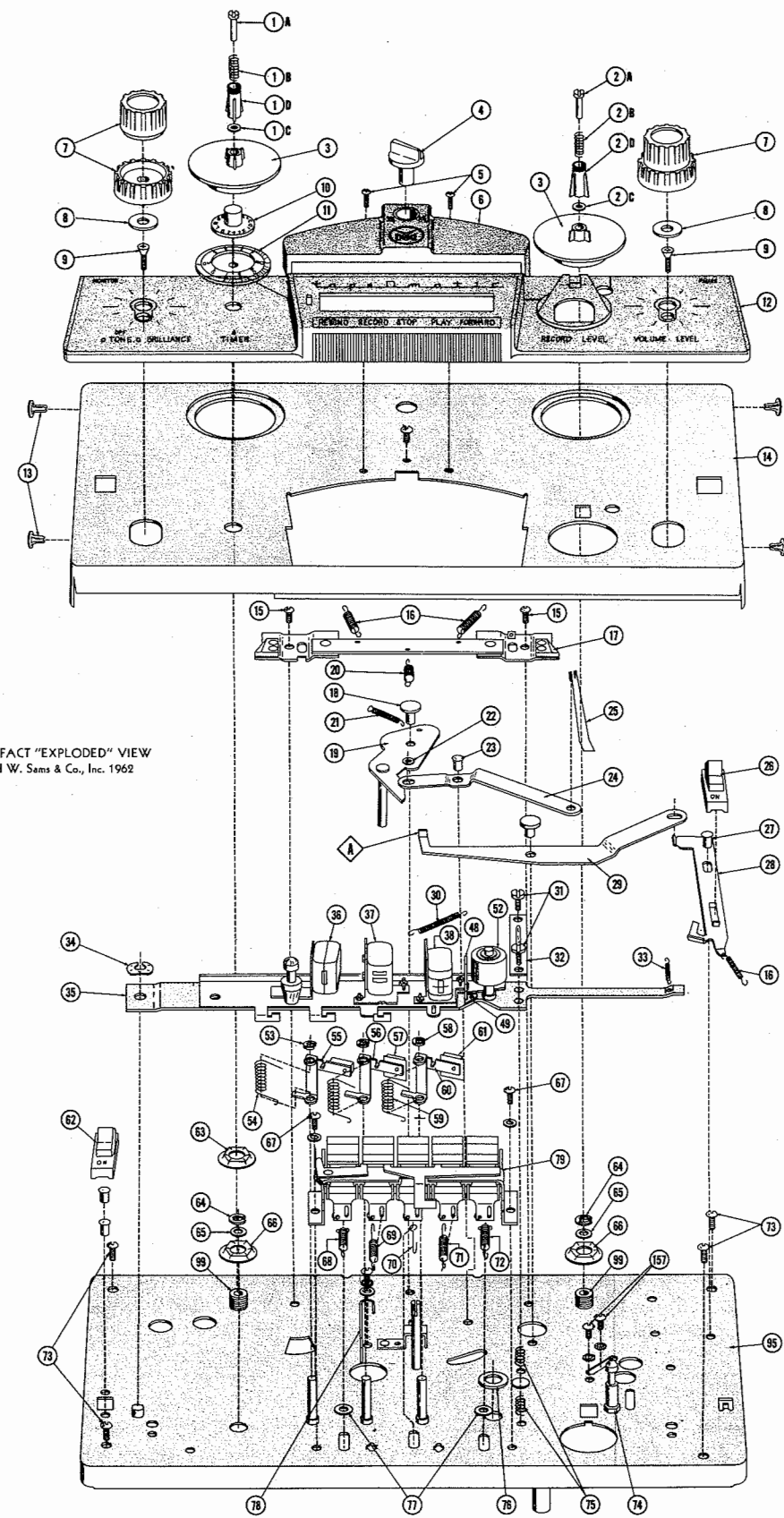


Fig. 6A. Exploded View of Tape Transport Assembly Above Base Plate.

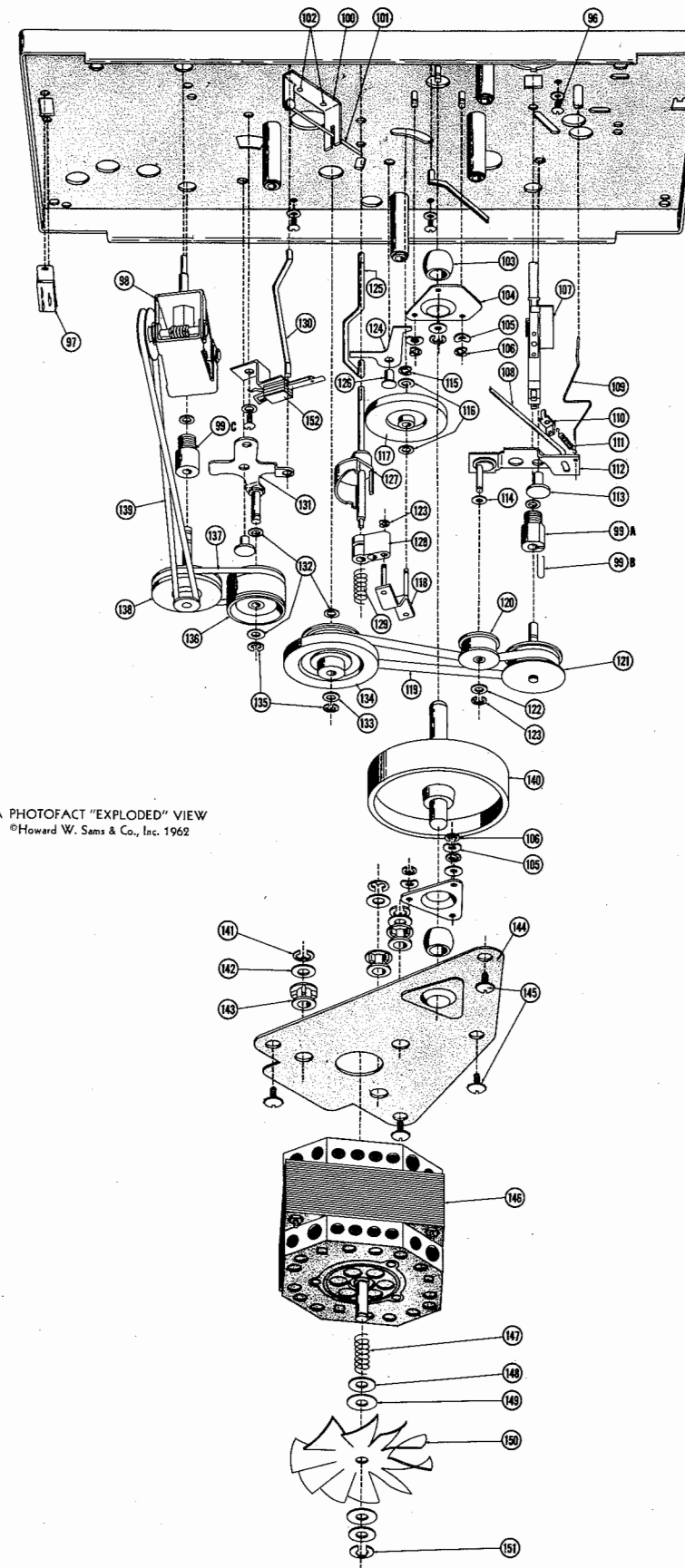


Fig. 6B. Exploded View of Tape Transport Assembly Below Base Plate.