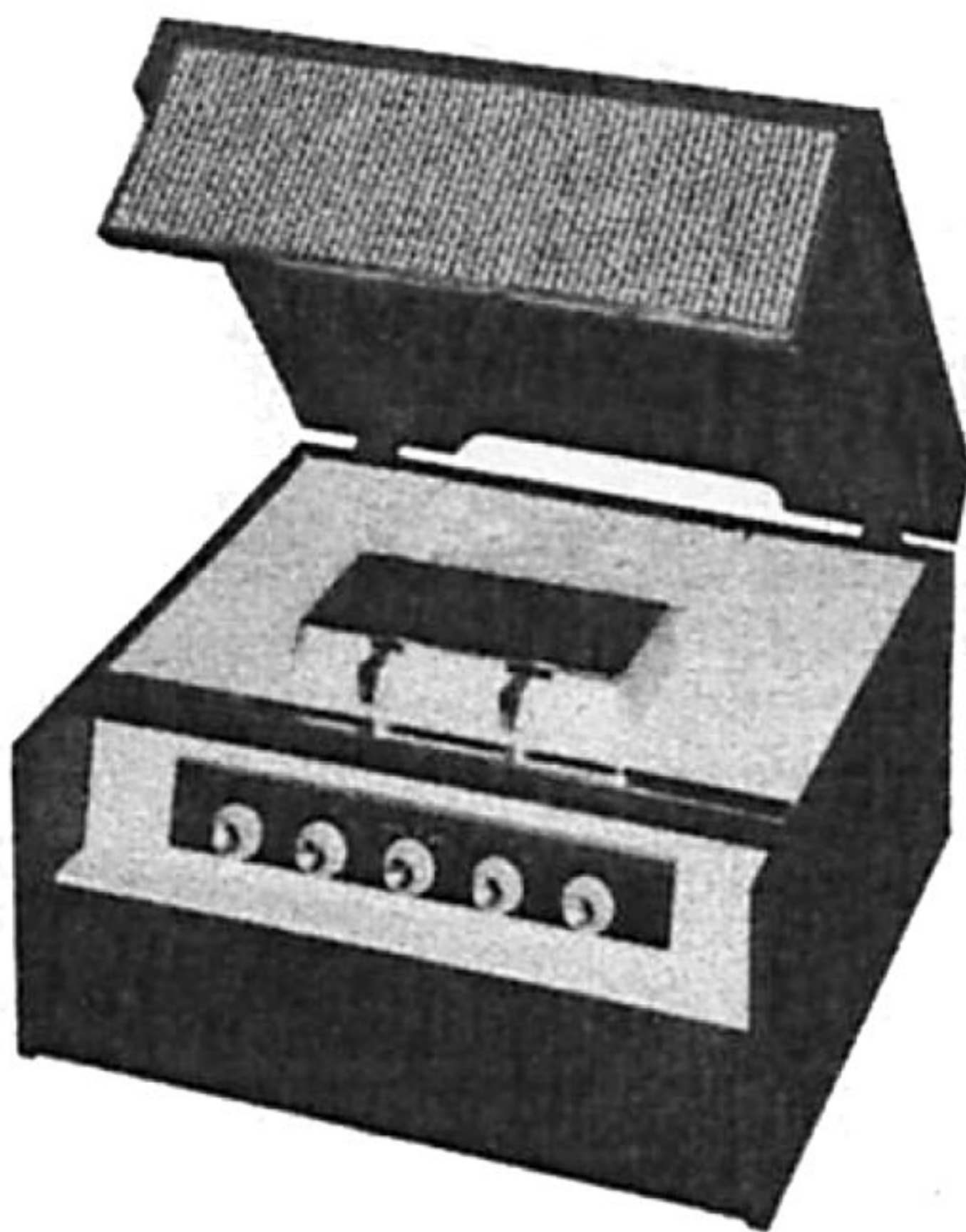
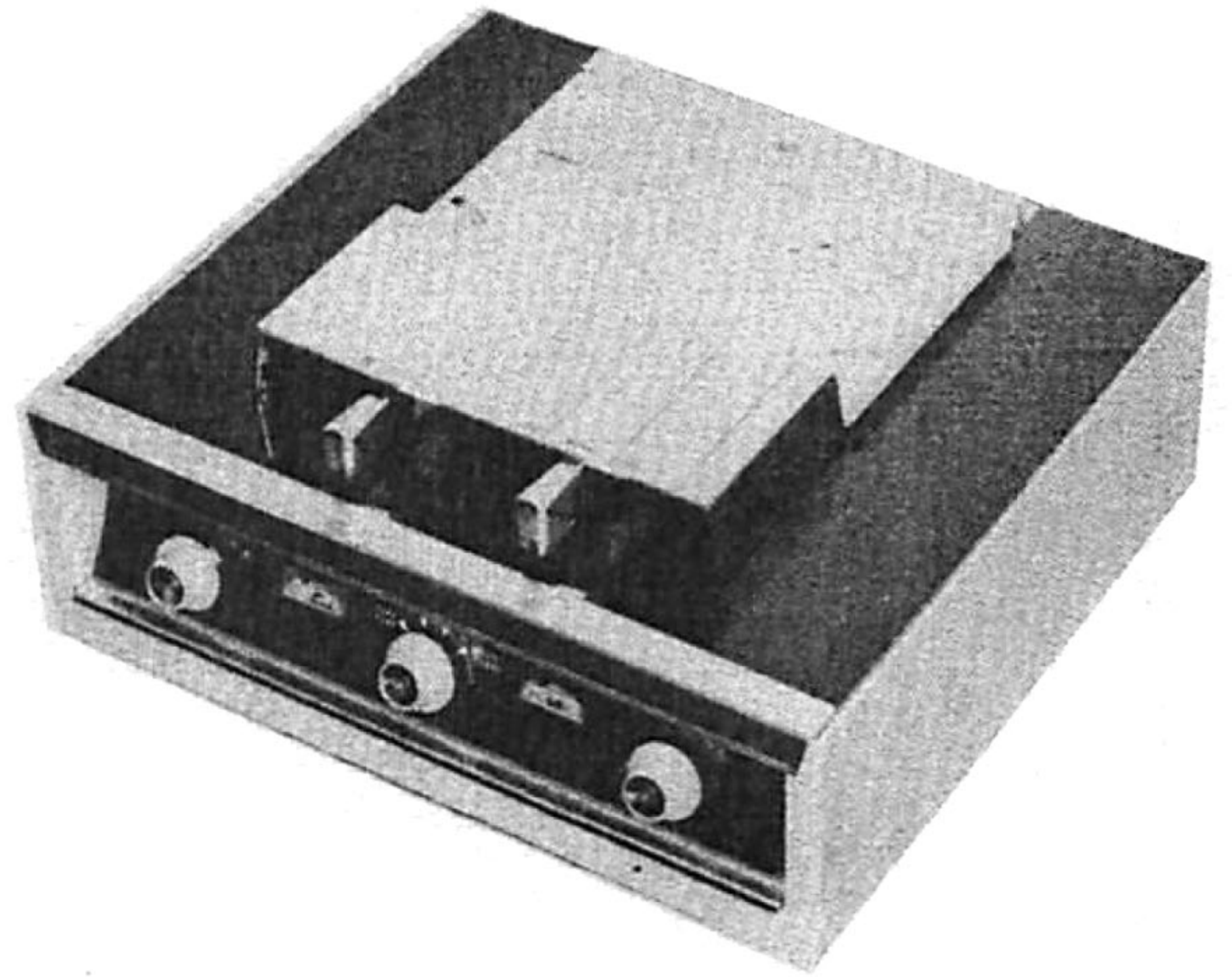
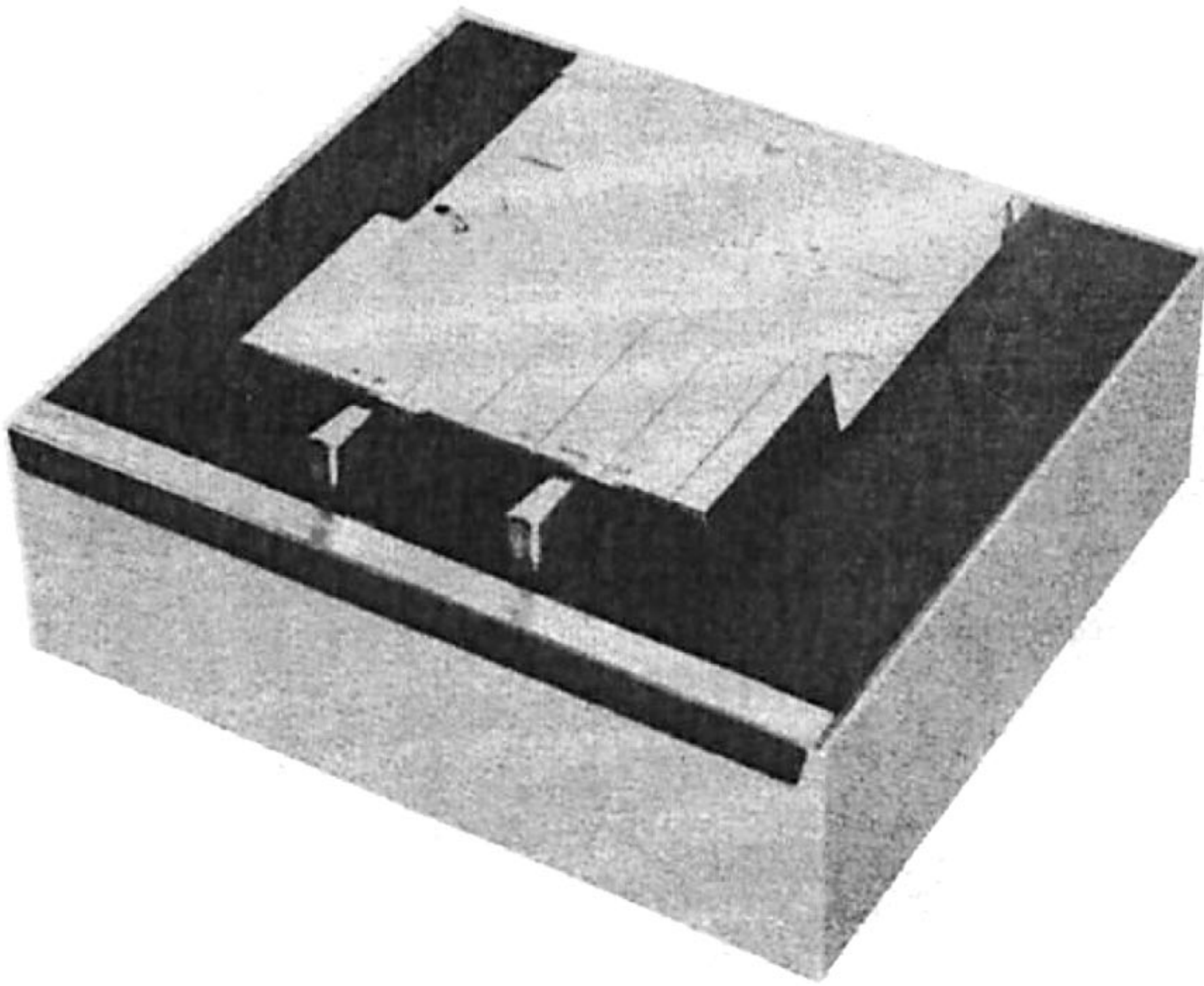


**BELL SOUND MODELS
401, 402, 403, 404, 405, 406**



GENERAL INFORMATION

Bell Model 401 is a Stereo-Pak cartridge tape transport mechanism. It is connected directly into the tape-head inputs of a stereo amplifier.

Bell Model 402 has a dual playback preamplifier. Thus, a stereo tape cartridge can be played back into any stereo amplifier or combination of two amplifiers.

Bell Model 403 is a Stereo-Pak cartridge tape recorder with a built-in transistor record-playback preamplifier. This unit is connected to a stereo amplifier or two separate amplifiers.

Bell Model 404 is a Stereo-Pak cartridge tape player. The preamplifier and amplifier are enclosed within the case.

Bell Models 405 and 406 are complete stereo cartridge tape recorders. Both models contain a 14-watt stereo amplifier and a transistorized record-playback preamplifier. The only difference between these two models is the case. All units have one tape speed — 3 3/4 ips. They should be connected to an outlet supplying 110 - 120 volts, 60 cycles AC only.

Manufactured by:

Bell Sound Division
Thompson Ramo Wooldridge, Inc.
555 Marion Road
Columbus 7, Ohio

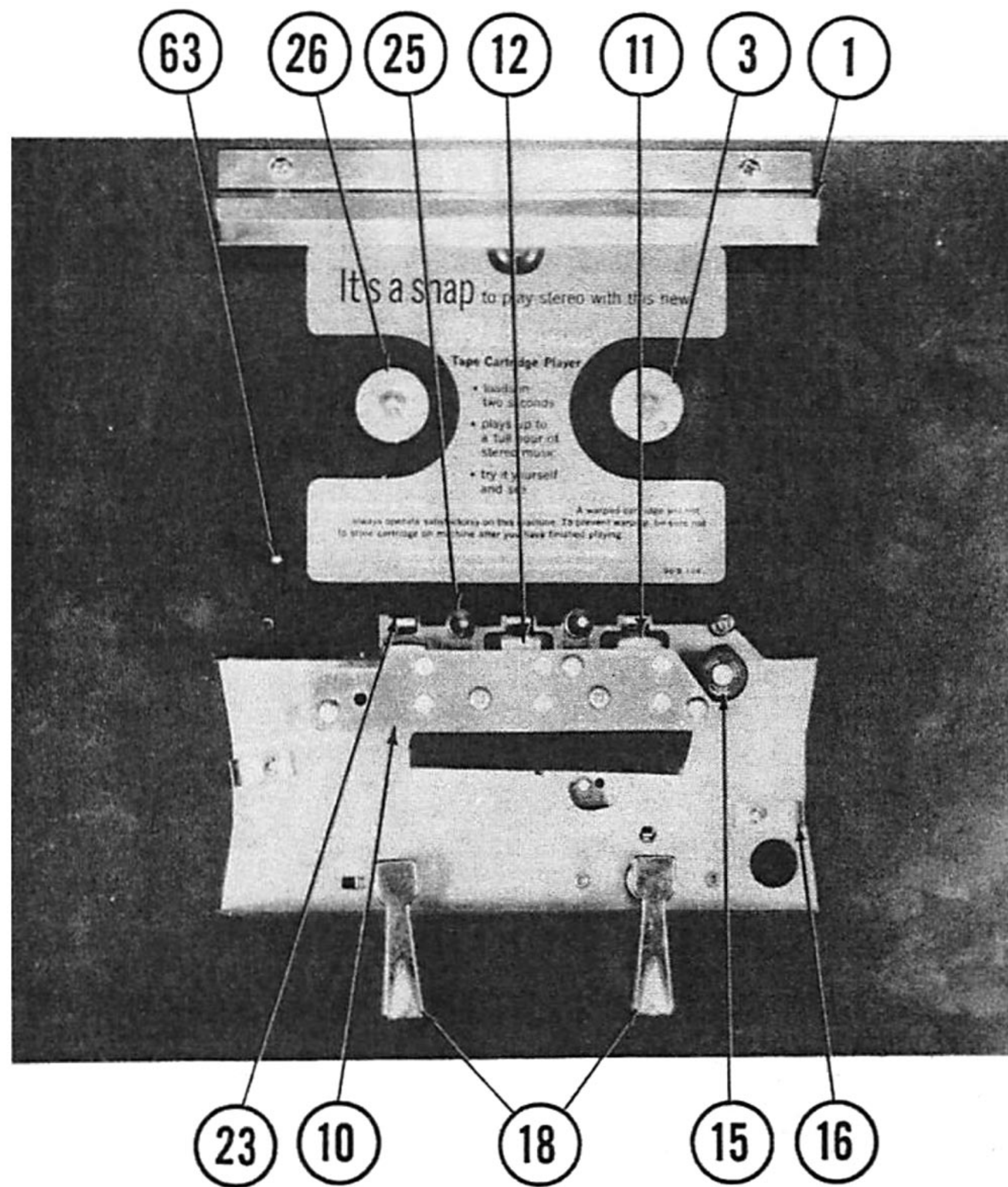


FIG.1 TOP VIEW OF MECHANISM WITH HEAD COVER REMOVED

PREPARING FOR OPERATION

1. Place the unit on a level surface.
2. Make all necessary connections. "See Typical Hookup" under the appropriate model.
3. Plug the AC cord into an outlet of proper rating.

TYPICAL HOOKUP

Model 401

Plug the head leads into the tape-head inputs of any stereo amplifier.

Model 402

Plug the output leads of the stereo tape cartridge player into the auxiliary, radio, or other high-level inputs of a stereo amplifier or combination of amplifiers.

A high-fidelity system can be used as one channel, and a radio, phonograph, or TV set, as the other channel.

Model 403

1. Plug the outputs of the Stereo-Pak into the auxiliary, radio, or high-level inputs of a stereo

amplifier or combination of amplifiers.

2. Plug the auxiliary inputs of the Stereo-Pak into the record outputs of a stereo amplifier.
3. To make live recordings, connect low-impedance microphones to the microphone inputs.
4. To transfer a stereo disc to a tape cartridge, connect a record player with a stereo magnetic cartridge to the Stereo-Pak Mag Phono inputs.
5. Connect a stereo radio tuner to the auxiliary inputs for recording stereo radio programs directly on a tape cartridge.

Model 404, 405, and 406

1. Plug the cables from the left and right speakers into their respective speaker terminals on the

rear panel.

2. Connect a record changer or turntable with a magnetic stereo cartridge to the Mag Phono inputs.
3. Connect a stereo radio tuner to the auxiliary inputs.

4. On Models 405, and 406 only, connect low-impedance microphones to the microphone inputs.
5. Plug power cords of the tuner and record player into the auxiliary AC receptacles on rear panel of Stereo-Pak.

FUNCTION OF TAPE-DECK CONTROLS

On-Off

Turning this control to the left turns the power on; to the right, turns the power off.

Operating Lever

Turn this control to Play to play back a tape cartridge; to Fast to move the tape rapidly to any desired selection. To rewind tape, turn the cartridge over, and place the lever in the Fast position.

FUNCTION OF AMPLIFIER CONTROLS

Models 403 and 404

1. Set the Selector switch to the desired function.
2. Adjust the Left and Right Volume controls until the sound from each channel is balanced.
3. (Model 404 only) Adjust the Bass and Treble controls to the desired listening level. The tone is controlled in both speakers simultaneously.

Models 405 and 406

1. Set the Selector switch to the desired function.

2. Adjust the Left and Right Volume controls until the sound from each channel is balanced.
3. Adjust the Bass and Treble controls to the desired listening level. The tone is controlled in both speakers simultaneously.
4. The Monitor Volume control (on the back panel) regulates the volume of the power amplifiers. Turn this control off during all live microphone recordings, but leave it fully on during all other operations.

OPERATING INSTRUCTIONS

NOTE: See "Typical Hookup" for proper connections.

Loading the Tape Cartridge

Place the back of the cartridge under the retainer flange. While pressing the cartridge against the flange, push the front down firmly into position.

To Play a Recording

1. Load the cartridge (see "Loading the Tape Cartridge").
2. Move the On-Off switch to the On position.
3. On Models 401 and 402, move the Operating Lever to Play.
4. On Models 403, 404, 405, and 406, turn the Selector switch to the Tape position; then move the Operating Lever to Play.
5. Adjust the Volume controls to the desired sound level.
6. On Models 404, 405, and 406, adjust the Bass

and Treble controls to the desired settings.

NOTE: The Bass and Treble controls affect the playback response only.

To Play a Phonograph — Models 403, 404, 405, and 406

1. Turn the Selector switch to the Phono position.
2. Turn the On-Off switch to On.
3. Load the phonograph with stereo records.
4. Adjust the Volume and the Bass and Treble controls to the desired sound level.

To Play a Stereo Tuner — Models 403, 404, 405, and 406

1. Turn the Selector switch to the Aux position.
2. Turn the On-Off switch to On.
3. Tune the tuner to the desired program.
4. On Models 404, 405, and 406, adjust the volume

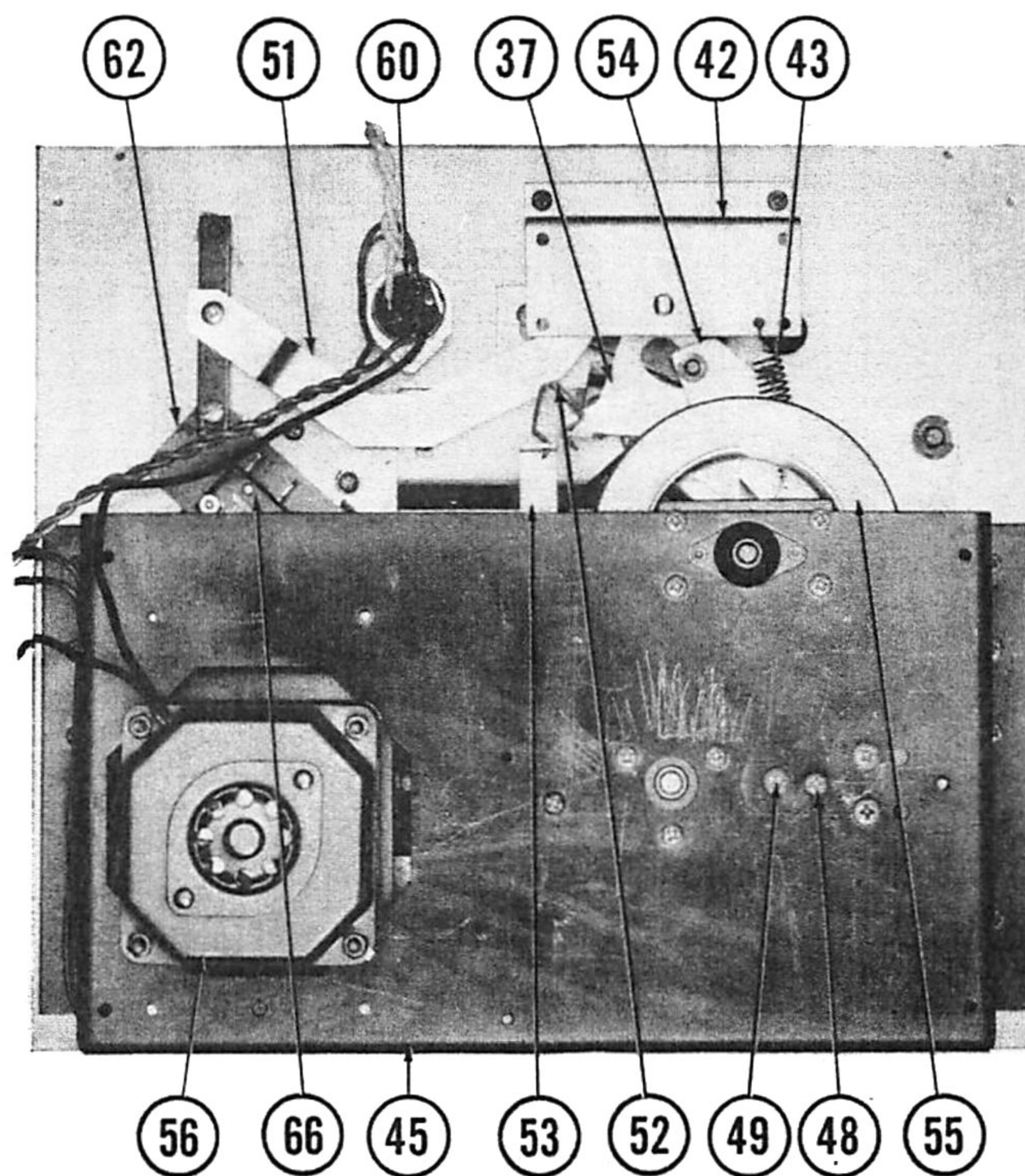


FIG.2 BOTTOM VIEW OF MECHANISM

and the Bass and Treble controls to the desired sound level.

Fast Forward

Move the Operating Lever to Fast to advance the tape rapidly to a desired selection.

Rewind

To rewind a tape, turn the tape cartridge over, and move the Operating Lever to Fast.

NOTE: Always return the Operating Lever to neutral before loading or unloading a cartridge.

To Make a Stereo Recording — Models 403, 405, and 406

1. Set the Selector switch to correspond to the source being recorded (phonograph, stereo radio tuner, or microphone).
2. Load a blank tape cartridge into the unit.
3. Adjust the Left and Right Volume controls until the Volume Level meters fluctuate in the upper part of the black scales.
4. Move the Operating Lever to Play.

NOTE: Always set the Selector switch to Tape Play before setting the Operating Lever to Fast.

5. After a recording has finished in one direction, it can be kept permanently, by breaking out the plastic insert between the two small slots (on the back of the cartridge, to the right of the guide slot). Repeat this procedure after recording in the other direction.

To Erase a Prerecorded Tape Cartridge — Models 403, 405, and 406

1. Cover the open slot of the tape cartridge with a double thickness of cellophane tape.
2. If a new recording is to be made, proceed as described under "To Make a Stereo Recording".
3. If no recording is to be made, turn the Selector switch to the Phono, Aux, or Microphone position; then rotate the Volume controls fully counterclockwise, and move the Operating Lever to Play.

Splicing the Tape

1. Remove the two screws at the front of the cartridge.

2. Remove the top half of the shell and the Mylar sheet.
3. Pull the brake lever forward to free the hubs, and unwind a few inches of tape.
4. Butt the broken ends together, and apply the

splicing tape to the glossy side of the recorded tape.

5. Trim the tape slightly narrower at the splice.
6. When reassembling, insert the rear edges together first.

DISASSEMBLY

Removing Model 402 From Cabinet

1. Remove the screws holding the bottom pan onto the cabinet.
2. Remove the pan.
3. Remove the screws holding the tape transport to the rails in the cabinet.
4. Lift the unit from the cabinet.
5. To reassemble, reverse this procedure.

Removing Model 403 Tape Transport and Preamplifier From Cabinet

1. Remove the control knobs on the front of the unit.
2. Remove the hex nut from the Selector switch.
3. Remove the screws holding the pan to the bottom of the cabinet.
4. Move the pan to one side, and disconnect the power plug.
5. Remove the head cover.
6. Disconnect the head leads.
7. Remove the pan and preamplifier from cabinet.
8. Remove the screws holding the tape transport to the side rails of the cabinet.
9. Lift the tape transport from the cabinet.
10. To reassemble, reverse this procedure.

Removing Models 404 and 405 From Cabinet

1. Remove the tube guard on the rear of the unit.
2. Remove the tubes.
3. Remove the screws from the bottom of the cabinet.
4. Remove the bronze screws extending through the back of the cabinet into the mechanism.
5. Lift the unit from the cabinet.
6. To reassemble, reverse this procedure.

Removing Amplifier From Tape Transport Mechanism - Model 404

1. Remove the control knobs.
2. Remove the hex nuts from the left-and right-channel Volume controls and the Selector switch.
3. Remove the small escutcheon and the spaces over the control shafts.
4. Remove the large escutcheon.
5. Disconnect the motor leads from the AC supply.
6. Disconnect the AC supply from the On-Off switch.
7. Remove the two screws from the bracket (on right side) holding the tape transport to the amplifier.
8. Remove the two screws, one on each side, holding the front escutcheon to the front escutcheon to the tape transport.
9. Remove the two screws from the bottom of the amplifier pan holding the bracket (on left side of tape transport) to the amplifier pan.
10. Remove the leads to the playback head.
11. Lift the tape transport from the amplifier.
12. To reassemble, reverse this procedure.

To Remove Preamplifier and Amplifier From Tape Transport Mechanism - Models 405 and 406

1. Remove the control knobs.
2. Remove the hex nuts from the left-and right-channel Volume controls and Selector switch.
3. Remove the small escutcheon and spacers over the control shafts.
4. Remove the Record Level Indicator meters and the large escutcheon.
5. Disconnect the motor leads from the AC supply.
6. Disconnect the AC supply from the On-Off switch.
7. Disconnect the leads to the erase and record-playback heads.
8. Remove the two screws from the bracket (on right side) holding the tape transport to the bottom pan.

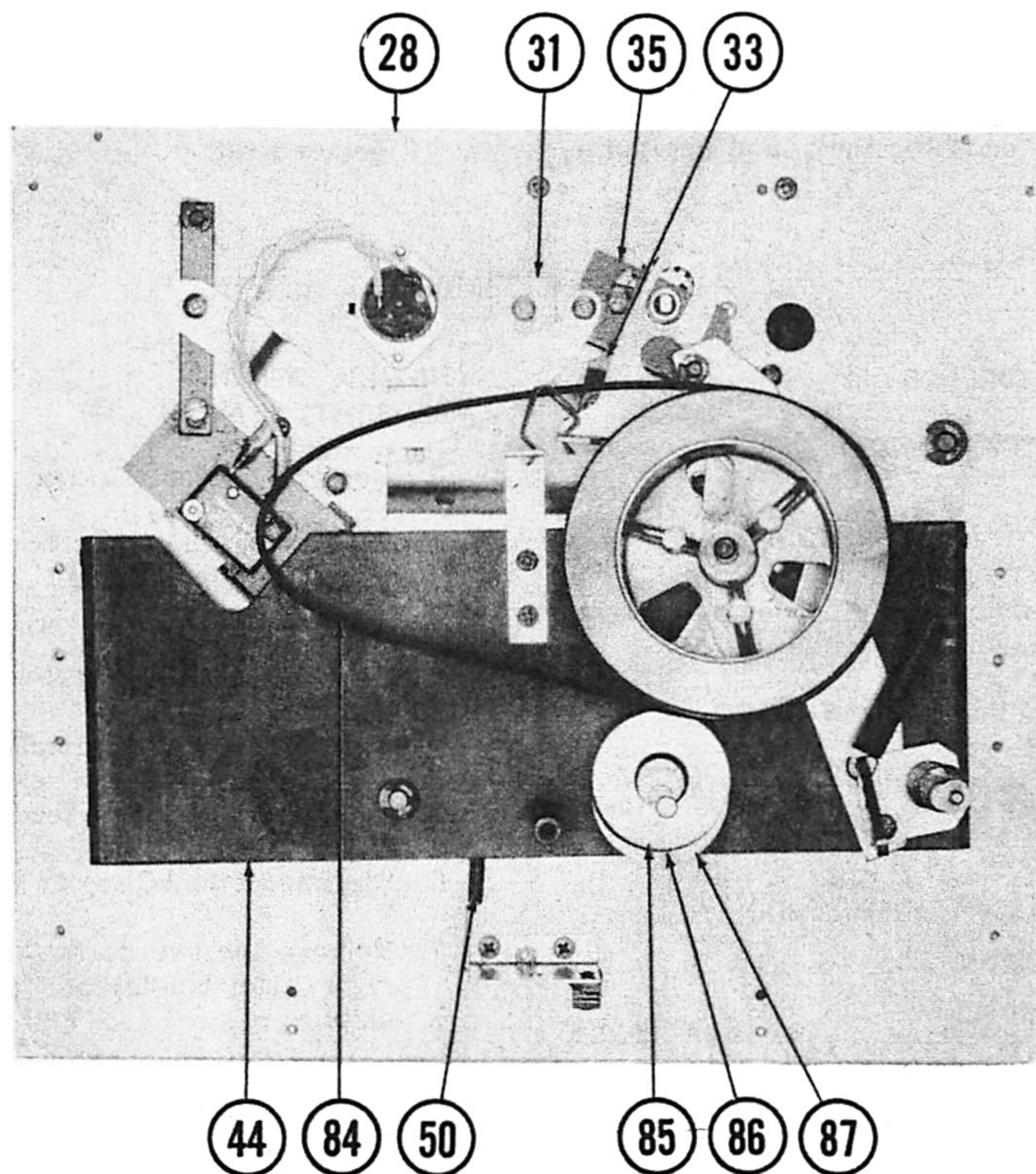


FIG.3 BOTTOM VIEW OF MECHANISM WITH BOTTOM OF SUB DECK REMOVED

9. Remove the two screws, one on each side, holding the front escutcheon to the tape transport.
10. Remove the two screws from the bottom of the pan holding the bracket (on left side of tape transport) to the amplifier pan.
11. Lift the tape transport from the amplifier pan.
12. To reassemble, reverse this procedure.

MECHANICAL ADJUSTMENTS

Clutch

To vary the friction of the clutch on second production models, tighten clutch adjusting screw (48) until the torque is 6 inch-ounces, and loosen clutch plate mounting and adjusting screw (49) until the torque is 3 inch-ounces. On first production models, loosen the locknut, and adjust the screw for a torque of 3 inch-ounces.

Play - Record Head (See Exploded View, Item 11)

1. Loosen the locking nuts on the sides of the heads. Adjust the vertical position of the erase and record/play heads until the top edge of the tape is even with the top edge of the lamination of the head.
2. To adjust the horizontal position, turn head ad-

justing screw (8) to the right or left.

Play-Record Head (See Exploded View, Item 96)

1. Slightly loosen the two head mounting nuts.
2. Place the unit in Playback, and connect an ACVTVM to the outputs.
3. Play back a test-tape cartridge and raise or lower the head bracket, by means of the bent-out tab at the rear, until maximum output is obtained from the right channel.
4. Check the left-channel output.
5. Tighten the head mounting nuts.

6. Play back the 7.5- or 15- kc portion of the test tape, and set the Azimuth adjustment for max-

imum output from the right channel.

CLEANING

Pressure roller (15) should be wiped with a dry cloth. Clean record playback heads (11), erase head

(12), the capstan shaft, and the brass tape guides with a good head-cleaning solvent.

LUBRICATION

All bearings are Oilite and should therefore require no further lubrication. All sliding levers

should be lubricated with a clinging type of grease.

TROUBLE CHART

Symptom	Cause	Remedy
No drive in record or playback.	<ol style="list-style-type: none"> 1. Clutch drive belt (88) broken or off the pulleys. 2. Clutch out of adjustment. 3. Clutch top disc (85) or rubber clutch disc (87) worn. 4. Defective drive motor (56). 	<ol style="list-style-type: none"> 1. Replace clutch drive belt (88), or put it back on the pulleys. 2. See "Clutch Adjustment". 3. Replace clutch top disc (85) or rubber clutch disc (87). 4. Replace drive motor (56).
No record or playback.	<ol style="list-style-type: none"> 1. Defective record/ playback head (11). 2. Defective component in amplifier. 	<ol style="list-style-type: none"> 1. Replace record/ playback head (11). 2. Check values in schematic.
Wow or flutter.	<ol style="list-style-type: none"> 1. Dirty or oily capstan, pressure roller (15), flywheel (55), motor pulley (81), or clutch plate (86). 2. Clutch out of adjustment. 3. Clutch top disc (85) or rubber clutch disc (87) worn. 	<ol style="list-style-type: none"> 1. Clean these parts with a good solvent, except pressure roller (15), which should be wiped with a dry cloth. 2. See "Clutch Adjustment". 3. Replace clutch top disc (85) or rubber clutch disc (87).
Will not shut off automatically.	<ol style="list-style-type: none"> 1. Auto stop switch (66) defective. 	<ol style="list-style-type: none"> 1. Replace auto stop switch (66).
One channel reproducing weakly or not at all during playback, or may play back in reverse occasionally.	<ol style="list-style-type: none"> 1. Cartridge not properly seated on tape deck. 2. Tape pulls up and out of the guides. 3. Pressure pad spring (23) bent, so that the pressure pads are not contacting the tape squarely. 4. Pressure roller (15) shaft bent. 5. Cartridge damaged. 	<ol style="list-style-type: none"> 1. Make sure the cartridge is seated properly so the tape will follow the tape guides and contact the head correctly. 2. Excessive take-up clutch tension. To remedy, see "Clutch Adjustment". 3. Bend pressure pad spring (23) until the pressure pads engage the head squarely in the center. 4. Straighten the shaft until pressure roller (15) contacts the capstan evenly. 5. Replace cartridge.

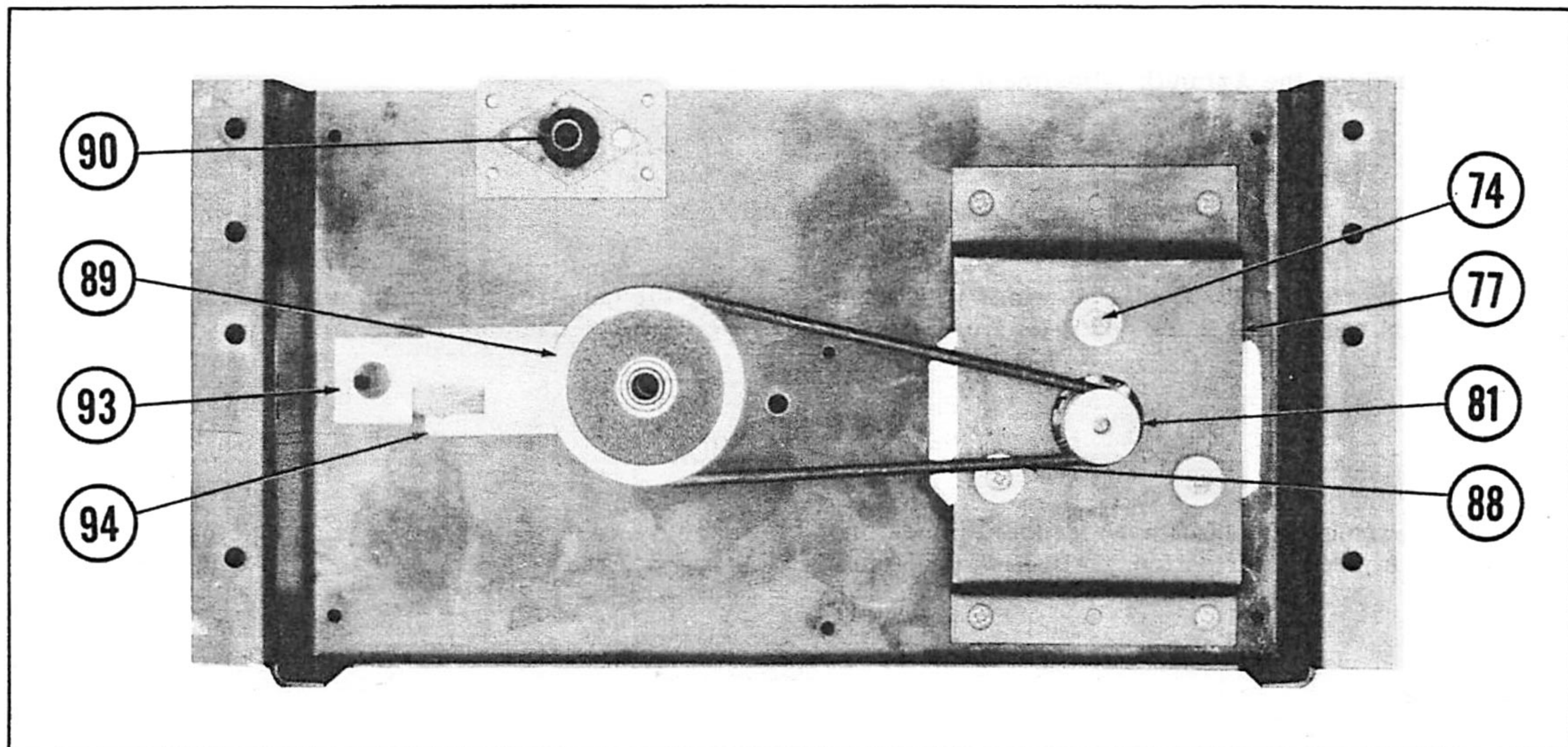


FIG.4 TOP VIEW OF SUB DECK

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Intermittent blank spots on recorded tape.	<ol style="list-style-type: none"> 1. Dirty heads and tape guides. 2. Fingerprints on oxide side of tape. 	<ol style="list-style-type: none"> 1. See "Cleaning". 2. Cut out this section, and splice the tape.
Noisy preamplifier.	<ol style="list-style-type: none"> 1. Defective transistors, usually in the first and second stages. 	<ol style="list-style-type: none"> 1. Replace any defective transistors.
Record meter reads when no signal is applied and unit is in Record with a blank cartridge inserted.	<ol style="list-style-type: none"> 1. Defective blue-dot meter transistor. 	<ol style="list-style-type: none"> 1. Replace the blue-dot meter transistor.
Insufficient erase and record bias.	<ol style="list-style-type: none"> 1. Defective bias-oscillator transistor. 	<ol style="list-style-type: none"> 1. Replace bias-oscillator transistor.
Weak bass response on Models 403, 404, and 405.	<ol style="list-style-type: none"> 1. High-impedance microphone being used. 	<ol style="list-style-type: none"> 1. For proper sound, a low-impedance microphone must be used.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1		Cartridge Retainer Screws	11	36B10	Record/ Playback Head
2	78B164	Cartridge Retainer		36B9	Playback Head
3	75B67	Take-up Reel Platform	12	36B11	Erase Head
4	77A19	Reel Platform Index Spring	13		Tension Spring
5	75A64	Index Pin	14	67X8	Retaining Ring - 3/16"
6	76A19	Take-up Shaft	15	83A39	Pressure Roller
7	78B106	Head Cover	16	66A19	Head-Cover Retaining Clip
8		Head Adjusting Screw	17		Set Screw, Allen Cup Point
9		Head Mounting Plate Screws	18	73A4	Function Selector Knob & On-Off Knob
10	91B242	Head Mounting Plate Ass'y-Models 401, 402, 404	19		Hex Nut
10	91B243	Head Mounting Plate Ass'y-Models 403, 405, 406	20	72D332	Deck Cover
			21	78B165	Front Frame Strip-Model 402

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
22	75A57	Head-Plate Mtg. Stud	61	75A46	Auto Stop Pivot Stud
23	77A38	Pressure Pad Spring	62	72A236	Auto Stop Plate
24	75A75	Head-Plate Center Stud	63	72A401	Auto Stop Arm
25	75A60	Tape Guide Post	64	67X5	Retaining Ring
26	91A254	Feed-Reel Shaft Ass'y	65		Screw
27	75A63	Brake Release Pin	66	43A53	Auto Stop Switch
28	71D47	Deck Plate	66A	63A19	Phenolic Washer
29	91B211	Selector Shaft	67		4-40 Hex Nut
30		Flat Washer	68	72B235	Auto Stop Link
31	91A384	Pressure-Pad Actuator Ass'y	69		Screw
32		Screw	70	67X8	Retaining Ring
33	72A239	Pressure-Pad Actuator Link	71	74A6	Feed Reel Bearing
34		Screw	72	63A40	Reel Platform Shims
35	71A54	Index Cam	73	67A10	Push-on Fastener
36		Roller	74		#6-32 x 9/16 Screw
37	72C232	Pressure Roller Actuator	75		#6 Flat Washer
38	63A20	Flat Phenolic Washer	76		Motor Mounting-Plate Screw
39	67X6	Retaining Ring	77	72B371	Motor Support Bracket
40	75A70	Selector Shaft Spacer	78		Subdeck Top Plate Screws
41		Screw	79	64A28	Motor-Mounting Spacer Eyelet
42	72B247	Selector Support Bracket	80		Motor Mounting Spacer
43	77A31	Clutch Fork Spring	81		Motor Pulley
44	Part of	Subdeck Top Plate	82	71A48	Clutch Plate
	Item 45		83		Set Screw
45	72B242	Subdeck	84 *	83A40 *	* Flywheel Drive Belt
46		Subdeck Mounting Screws	85	75A65	Clutch Top Disc
47		Clutch-Plate Mounting Screws	86	71A48	Clutch Plate
48		Clutch Adjusting Screw	87	83A54	Rubber Clutch Disc
49		Clutch-Plate Mounting & Adjusting Screw	88 *	83A41 *	* Clutch Drive Belt
50	77A30	Pressure-Pad Return Spring	89	75A85	Clutch Pulley
51	71A46	Auto-Stop Actuator	90	74A8	Self-aligning Bearing
52	77A36	Pressure-Roller Toggle Spring	91	75A59	Subdeck Support Post
53		Pressure-Roller Toggle-Spring Bracket	92	74A8	Self-aligning Bearing
54	72A245	Bottom Clutch-Actuator Cam	93	72A372	Clutch Fork
55	73B5	Flywheel	94	72A234	Actuator Clutch Pivot Bracket
56	35C13	Drive Motor-Models 404, 405, 406	95	91A238	Platform Bearing Assembly
	35C12	Drive Motor-Models 401, 402, 403	96		Head Mounting Bracket Ass'y.
57	91A270	Fan-Models 404, 405, 406	97		Bracket Mounting Screw
58	91A269	Switch Bracket Assembly	98	91A432	Head Nest Assembly
59		Mounting Screws	99	77A5	Spring
60	43B52	On-Off Switch	100		Azimuth Adjust Screw

* Flywheel Drive Belt, Walsco Part No. 1410-18.

* Clutch Drive Belt, Walsco Part No. 1410-12.

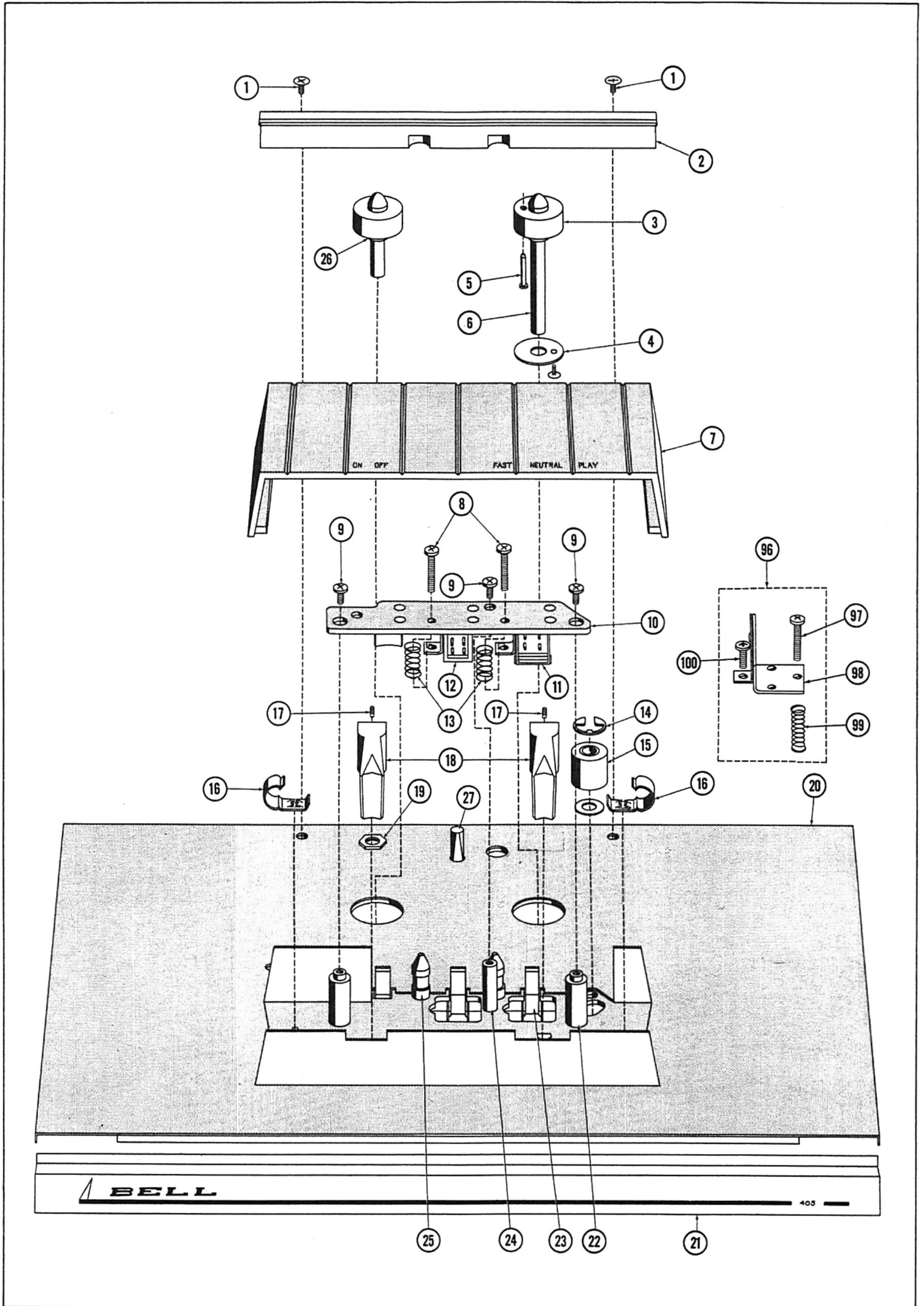


FIG.5A EXPLODED VIEW OF PARTS ABOVE DECK COVER

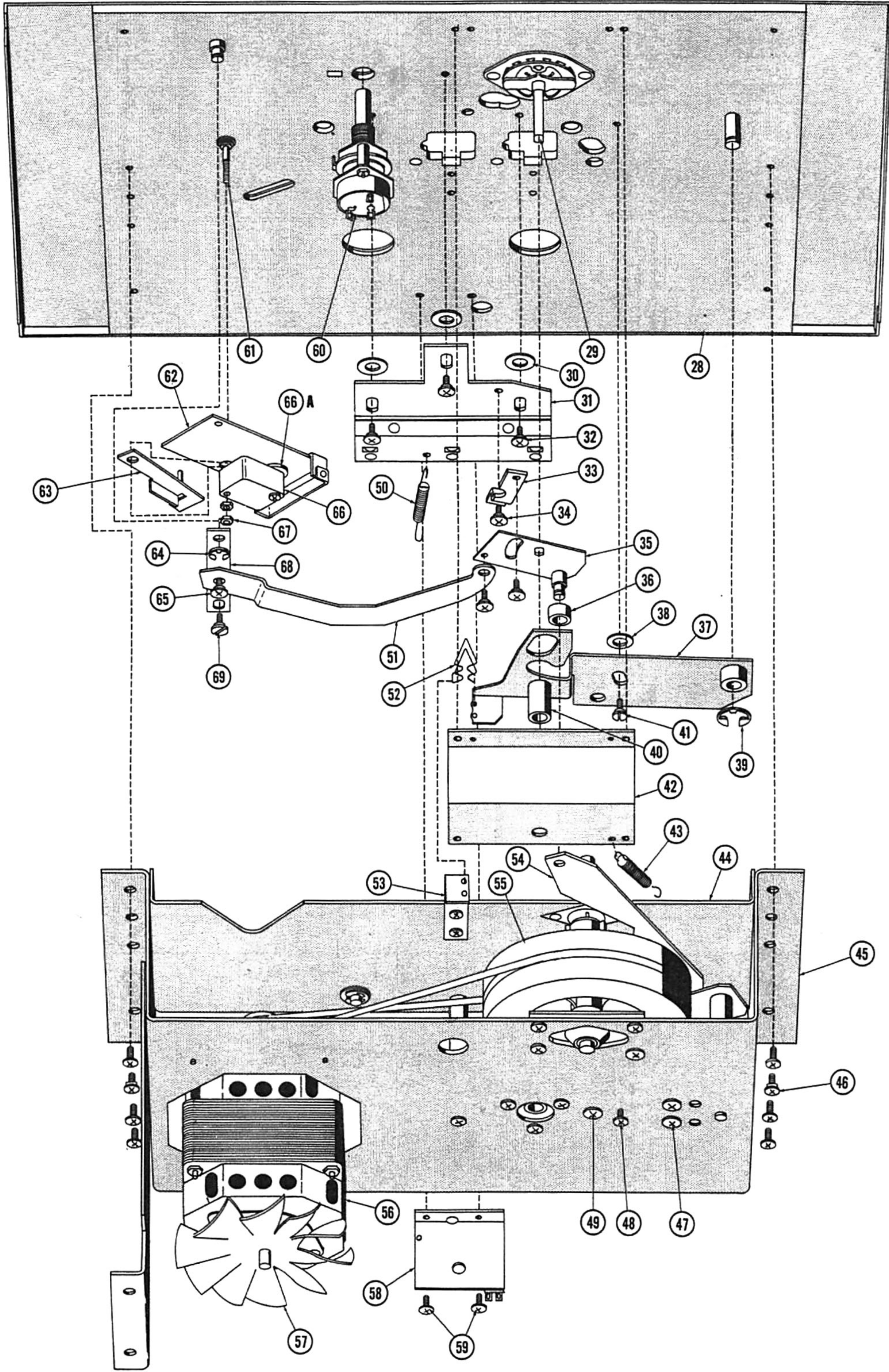


FIG.5B EXPLODED VIEW OF PARTS BELOW DECK PLATE

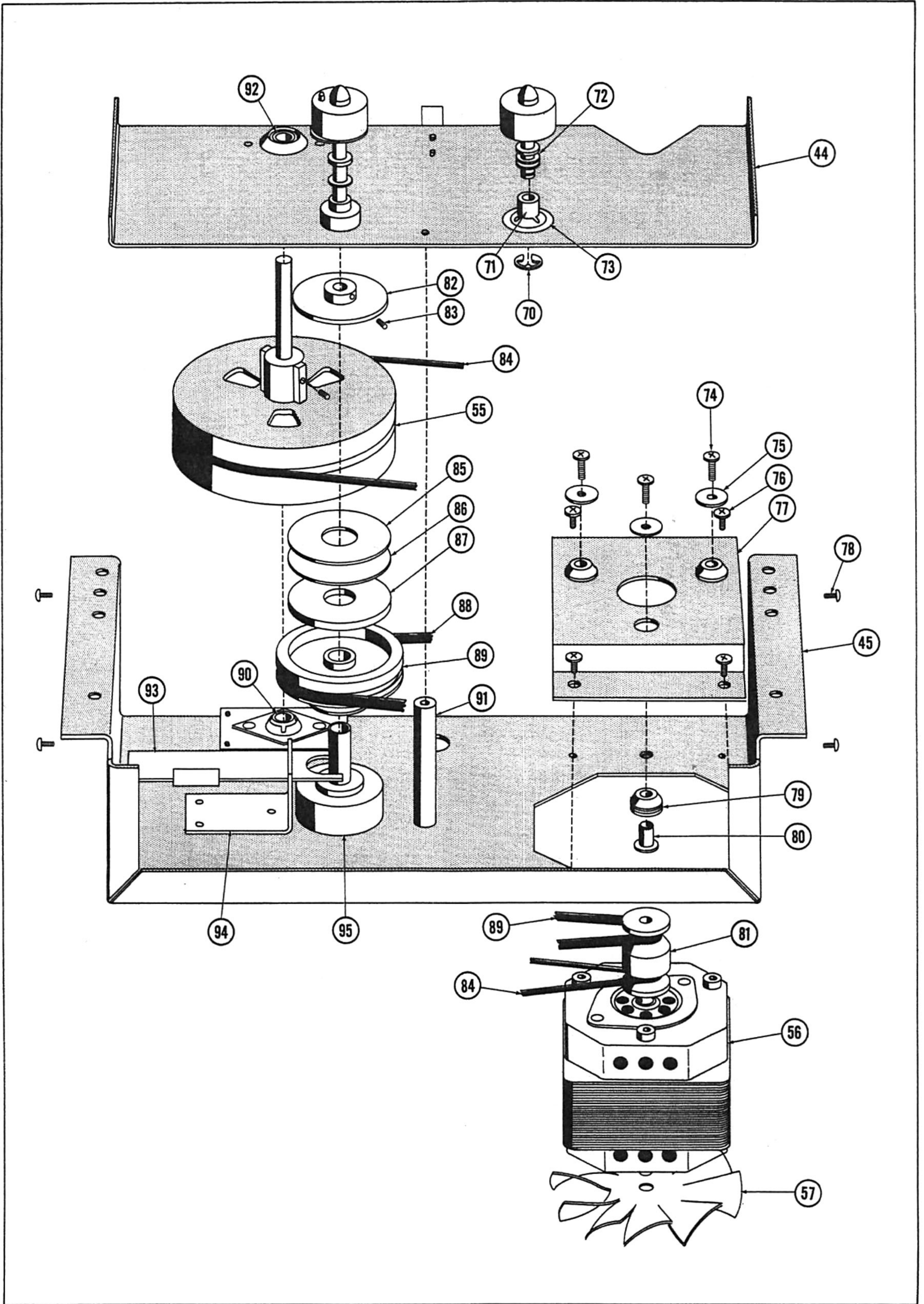
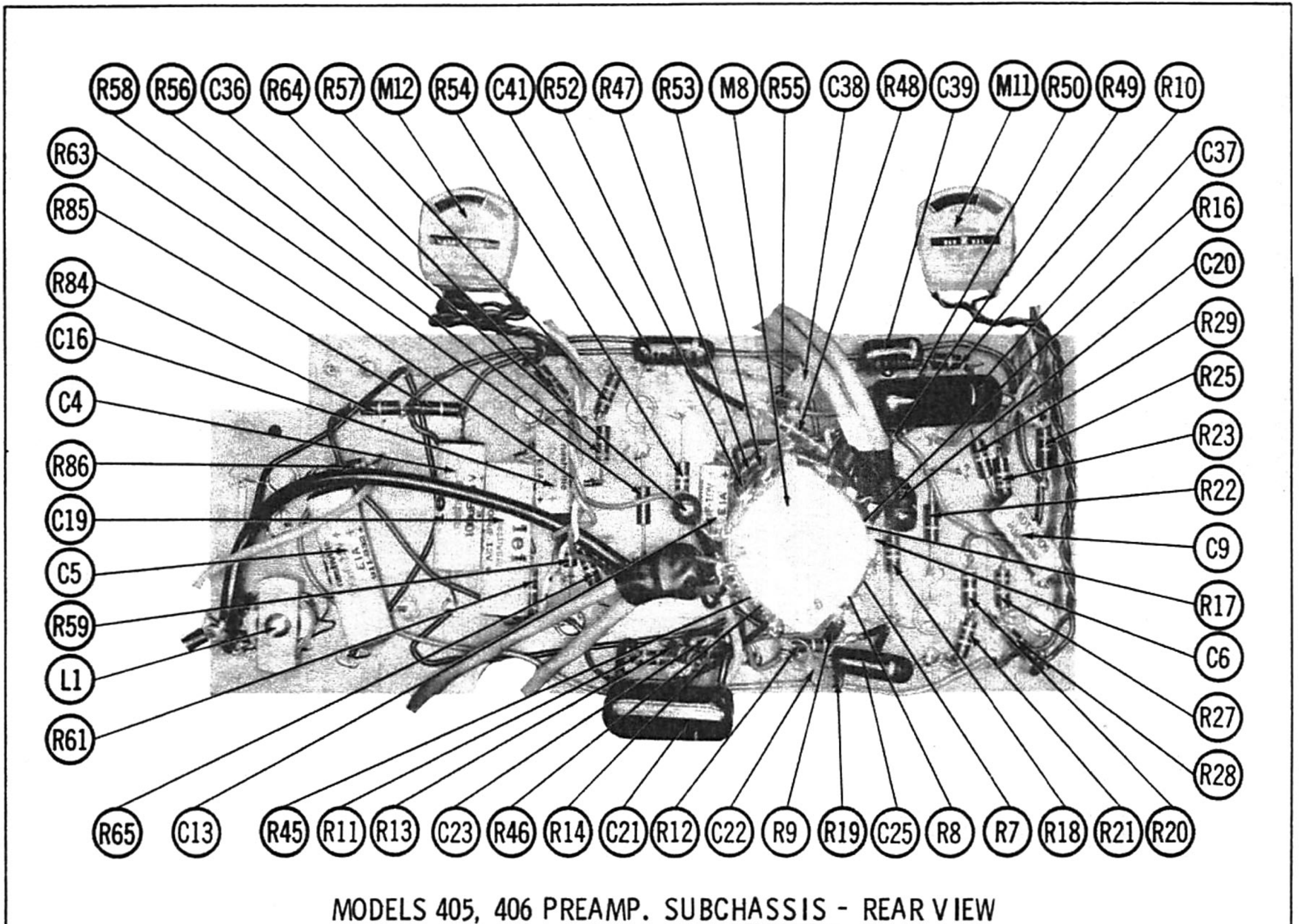
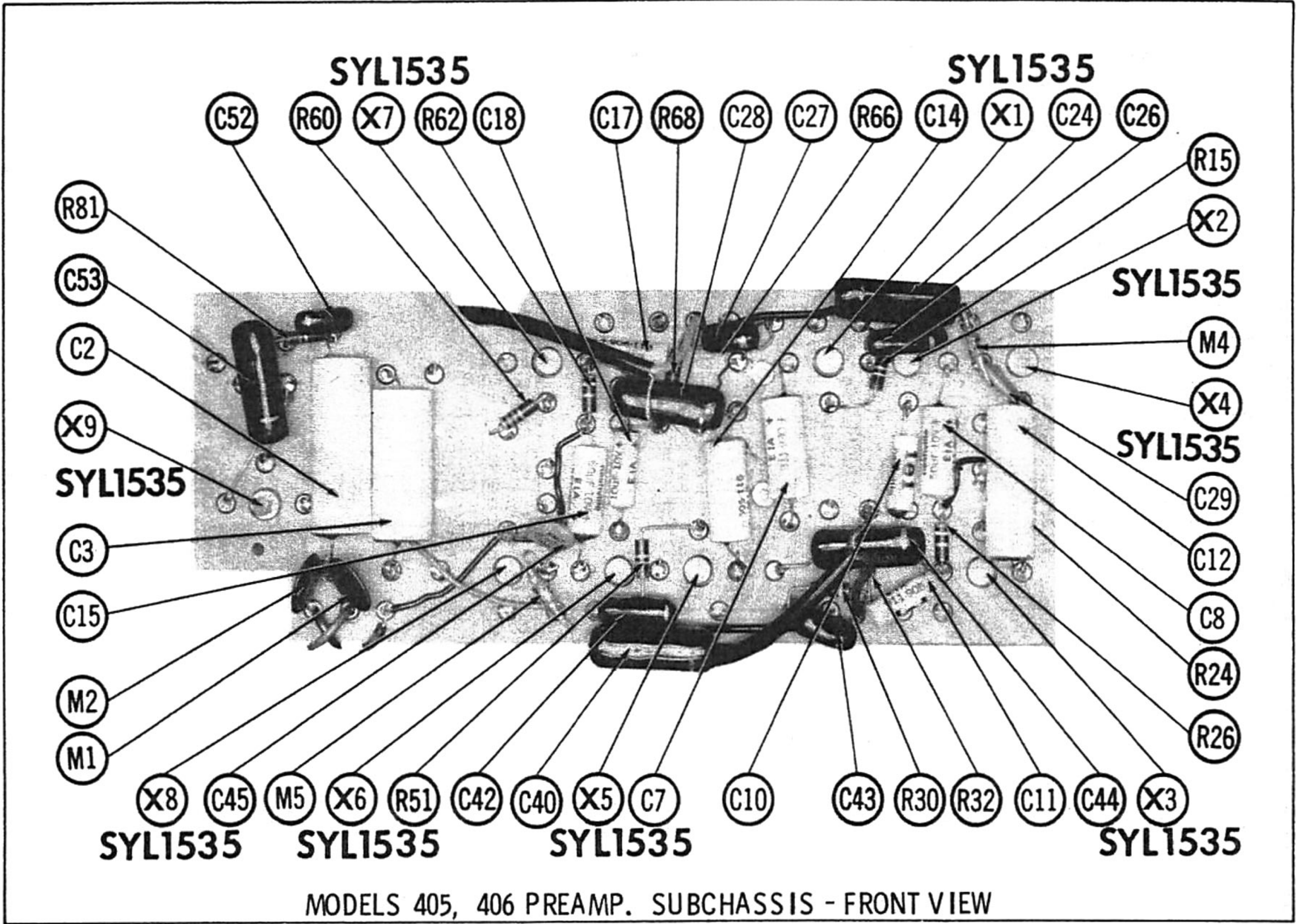


FIG.5C EXPLODED VIEW OF PARTS BELOW SUB DECK TOP PLATE



MODELS 405 AND 406 AMP PARTS LIST AND DESCRIPTIONS

TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp.	ECC83/12AX7	V5	Right Channel AF Amp.	ECC83/12AX7			
V2	Left Channel Phase Inv.	ECC82/12AU7	V6	Right Channel Output	6AQ5A			
V3	Left Channel Output	6AQ5A	V7	Right Channel Output	6AQ5A			
V4	Left Channel Output	6AQ5A	V8	Rectifier	EZ81			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	SYL-1535	Left Channel Preamp.			SYL-1535	PNP
X2	SYL-1535	Left Channel 1st AF Amp.			SYL-1535	PNP
X3	SYL-1535	Left Channel 2nd AF Amp.			SYL-1535	PNP
X4	SYL-1535	Left Channel Meter Amp.			SYL-1535	PNP
X5	SYL-1535	Right Channel Preamp.			SYL-1535	PNP
X6	SYL-1535	Right Channel 1st AF Amp.			SYL-1535	PNP
X7	SYL-1535	Right Channel 2nd AF Amp.			SYL-1535	PNP
X8	SYL-1535	Right Channel Meter Amp.			SYL-1535	PNP
X9	SYL-1535	Bias Oscillator			SYL-1535	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
CLA	40	350	23B47	PR4-200	BRQ0174	WQ795	TDDL-31	TVAS-3745 *	
B	40	300					TD-40-450		
C	40	300							
C2	400	15	23B54	PR81220	BR5001	TC1505	TD-500-15	TVAS-1161.5 *	
C3	200	15	23B55	PR81210	NLW200-15	TC1502	TD-250-15	TE-1164	
C4	100	15	23B56	PWE25100	NLW100-15	TT15X100	ML100-15	TE-1162	
C5	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	
C6	25	10	23B60	PWE10025	NLW25-10	TT10X25	ML30-15	TE-1118	
C7	100	10	23B58	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	
C8	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C9	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C10	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C11	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C12	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	
C13	25	10	23B60	PWE10025	NLW25-10	TT10X25	ML30-15	TE-1118	
C14	100	10	23B58	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	
C15	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C16	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C17	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C18	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C19	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic 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.
C20	.01 50V 10%		V84C281-10%		PM451	1DP-1-103	GEM-1611	4TM-S1
C21	.47 50V 10%		V84C2P47-10%		PM2P47	2DP-5-474	GEM-2047	2TM-P47
C22	1000 10%		DI-1000	DD-102	PM8D1	CCD-102	GP210	10TS-D10
C23	.01 50V 10%		V84C281-10%		PM451	1DP-1-103	GEM-1611	4TM-S1
C24	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33
C25	.047 50V 10%		V84C2847-10%		PM2847	1DP-2-473		2TM-S47
C26	.047 50V 10%		V84C2847-10%		PM2847	1DP-2-473		2TM-S47
C27	.0082 50V 10%		P684CM-0082			6DP-1-822	GEM-16282	5BF-D82
C28	.22 50V 10%		V84C2P22-10%		PM2P22	1DP-3-224	GEM-2022	2TM-P22
C29	2200 10%		DI-2200		PM8D22	CCD-222	GP222	10TS-D22
C30	.033 100V 10%		V84C2833-10%		PM4533	1DP-2-333		6TM-S33
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	2.2 NPO .25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C34	68 NPO		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	.01 50V 10%		V84C281-10%		PM451	1DP-1-103	GEM-1611	4TM-S1

FIXED CAPACITORS (cont)

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.
C37	.47 50V 10%		V84C2P47-10%		PM2P47	2DP-5-474	GEM-2047	2TM-P47
C38	1000 10%		DI-1000	DD-102	PM8D1	CCD-102	GP210	10TS-D10
C39	.01 50V 10%		V84C281-10%		PM451	1DP-1-103	GEM-1611	4TM-S1
C40	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33
C41	.047 50V 10%		V84C2847-10%		PM2847	1DP-2-473		4TM-S47
C42	.047 50V 10%		V84C2847-10%		PM2847	1DP-2-473		4TM-S47
C43	.0082 50V 10%		P684CM-0082			6DP-1-822	GEM-16282	5BF-D82
C44	.22 50V 10%		V84C2P22-10%		PM2P22	1DP-3-224	GEM-2022	2TM-P22
C45	2200 10%		DI-2200		PM8D22	CCD-222	GP222	10TS-D22
C46	.033 100V 10%		V84C2833-10%		PM4533	1DP-2-333		6TM-S33
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C48	2.2 NPO .25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C49	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C50	68 NPO		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C52	.022 50V 10%		V84C2822-10%		PM4822	1DP-1-223		2TM-S22
C53	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	100K	↑	15B64					Left Volume Note 1
R2A	2meg	↑	15B65	B-76	AD47-2meg-2		FA28A	Bass, Right Channel Note 2
B	2meg	↑		SR-76	Not Req.		RU28A	Bass, Left Channel
C	Shaft	↑		Not Req.	F8-3		CSS500	
R3A	2meg	↑	15B66	B-76	AD47-2meg-2		FA28A	Treble, Right Channel Note 2
B	2meg	↑		SR-76	Not Req.		RU28A	Treble, Left Channel
C	Shaft	↑		Not Req.	F8-3		CSS500	
R4	100K	↑	15B64					Right Volume Note 1
R5A	100K	↑	15B62	B-41			FA15A	Monitor Volume, Left Chan.
B	100K	↑		SR-41	Not Req.		RU15A	Monitor Volume, Right Chan.
C	Shaft	↑		Not Req.			CSS500	
R6A	250Ω	↑	15B35	B-2		B11-201		Hum Balance
B	Shaft	↑		Not Req.		TM4		

Note 1. Model 406 uses Part #15B73. Some versions may use 500K in this application.
Note 2. In some versions, R2 and R3 part numbers are reversed.

RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R7	4700Ω		R34	2200Ω		R61	1800Ω	
R8	100K		R35	270K		R62	3900Ω	
R9	22Ω		R36	1000Ω		R63	18K	
R10	39Ω		R37	22K	(15K) *	R64	22K	
R11	39Ω		R38	1meg		R65	22K	
R12	5600Ω		R39	47K		R66	3900Ω	
R13	470Ω		R40	2200Ω		R67	220K	
R14	270Ω		R41	47K		R68	68K	
R15	100K		R42	470K		R69	100K	
R16	220K		R43	180Ω 1W		R70	2200Ω	
R17	18K		R44	470K		R71	270K	
R18	22K		R45	4700Ω		R72	1000Ω	
R19	47Ω		R46	100K		R73	22K	(15K) *
R20	6800Ω		R47	22Ω		R74	1meg	
R21	560Ω		R48	5600Ω		R75	47K	
R22	2200Ω		R49	470Ω		R76	2200Ω	
R23	27K		R50	270Ω		R77	47K	
R24	68K		R51	100K		R78	470K	
R25	1800Ω		R52	220K		R79	180Ω 1W	
R26	3900Ω		R53	18K		R80	470K	
R27	18K		R54	22K		R81	15K	
R28	22K		R55	47Ω		R82	250Ω 5W	IRC #PW5-250Ω
R29	22K		R56	6800Ω		R83	15K	
R30	3900Ω		R57	560Ω		R84	220Ω	
R31	220K		R58	2200Ω		R85	1000Ω	
R32	68K		R59	27K		R86	68Ω	
R33	100K		R60	68K				

*Alternate Value

MODELS 405 AND 406 AMP PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BELL SOUND PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Osc. Coil	31A33				①

① Alternate Part #31A48.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .78Ω	6.3V @ 3.5A	22VCT @ .035A	32B71					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6800Ω CT	6-8Ω	32B74	A-2901	A-3823	24S06	S-53X	
T3	6800Ω CT	6-8Ω	32B74	A-2901	A-3823	24S06	S-53X	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BELL SOUND PART No.	REPLACEMENT DATA
K1	Tone Compensator	220mmf, 1000mmf, 2000mmf, 5000mmf, 22K, 47K, 220K	91A196	
K2	Tone Compensator	220mmf, 1000mmf, 2000mmf, 5000mmf, 22K, 47K, 220K	91A196	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BELL SOUND PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.035A	42A6	1N1763	40K	SR500	Silicon Type
M2	.035A	42A6	1N1763	40K	SR500	Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL SOUND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	2A 250V	53A9	53A8	312002 (3AG 2A 250V)	342007	AGC 2	HKP

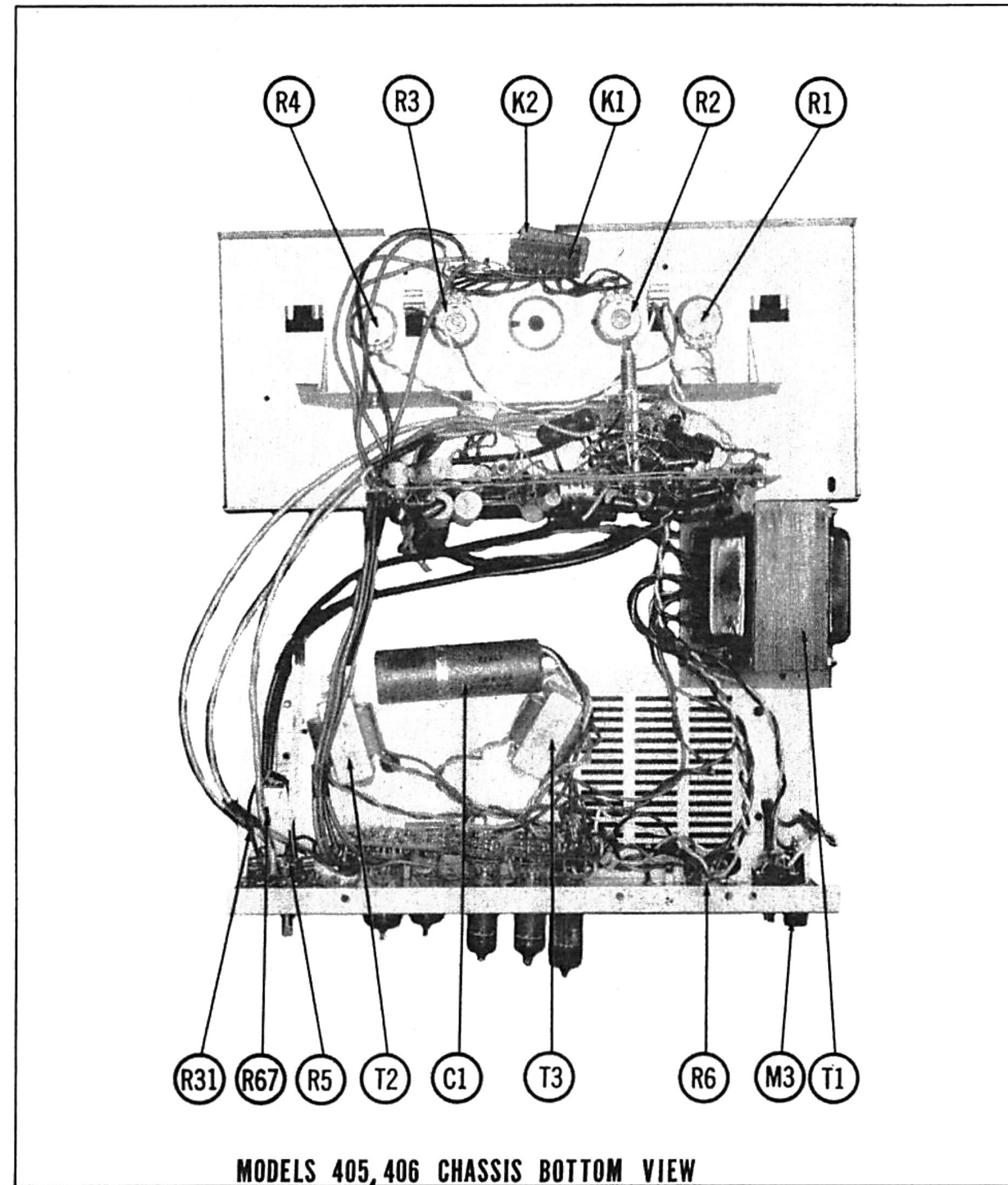
SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BELL SOUND PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N60	42X3		1N60	1N60	Base, Meter Amp. (Left Channel)
M5	1N60	42X3		1N60	1N60	Base, Meter Amp. (Right Channel)

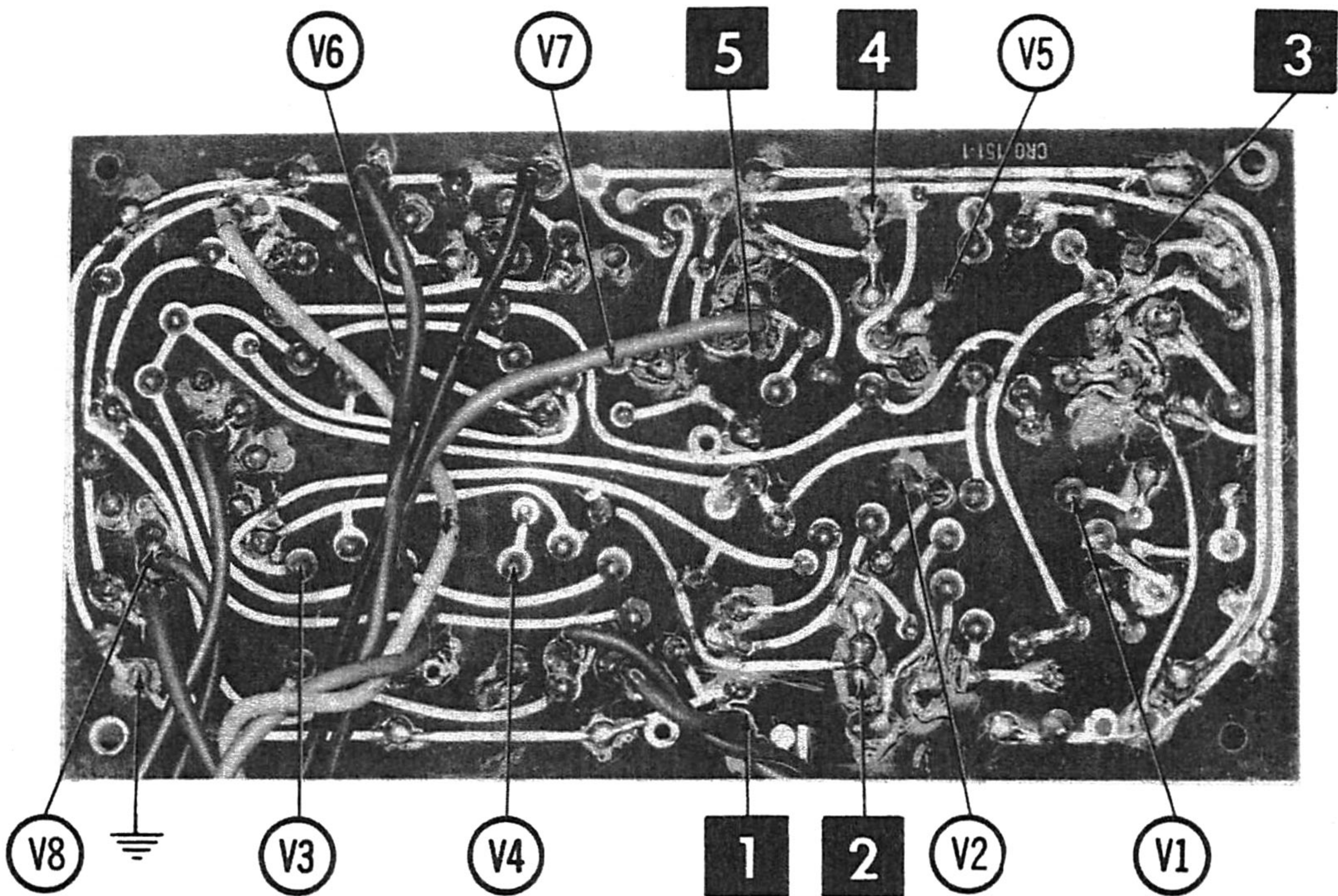
MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M6	Head	36B10	Playback
M7	Head	36B11	Erase
M8	Switch	43B74	Function Selector
M9	Switch	43B52	Off-On
M10	Switch	43A53	Auto Stop
M11	Meter	46B5	Record Level Indicator (Left Channel)
M12	Meter	46B5	Record Level Indicator (Right Channel)

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) Use BELDEN No. 8401
Phono Pick-up Arm Cable Use BELDEN No. 8430 (Two Conductor - Twisted)

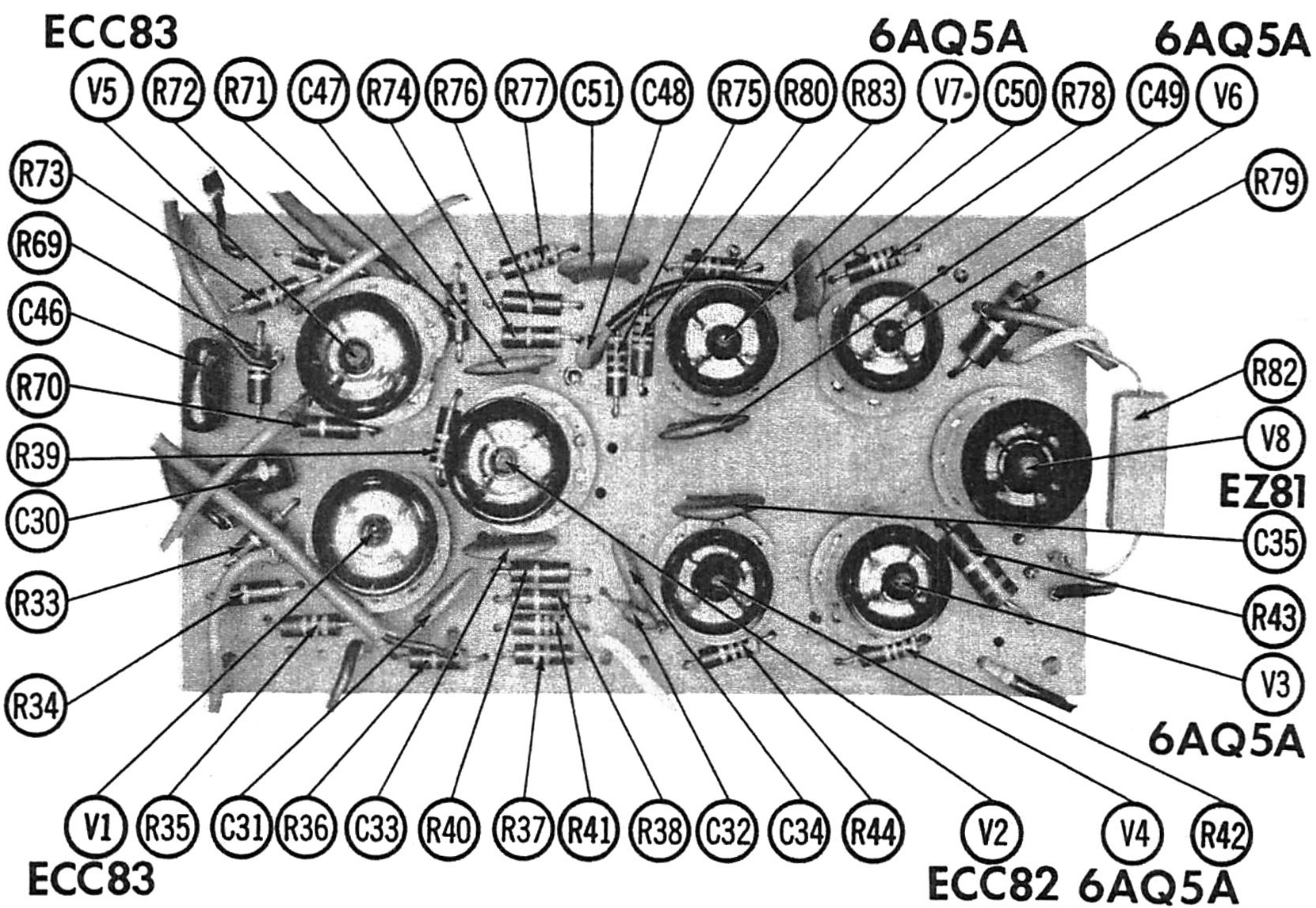


MODELS 405, 406 CHASSIS BOTTOM VIEW

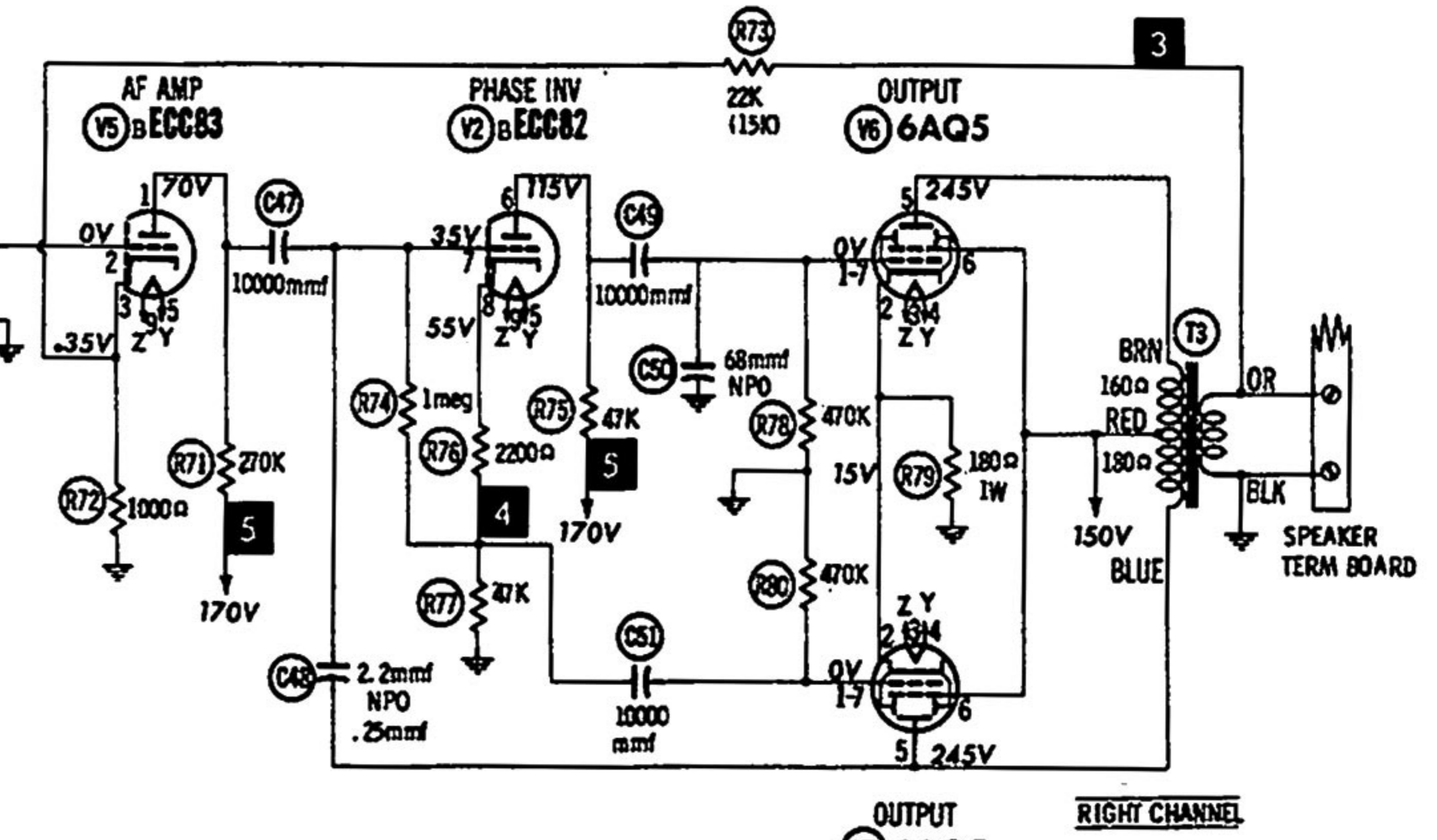
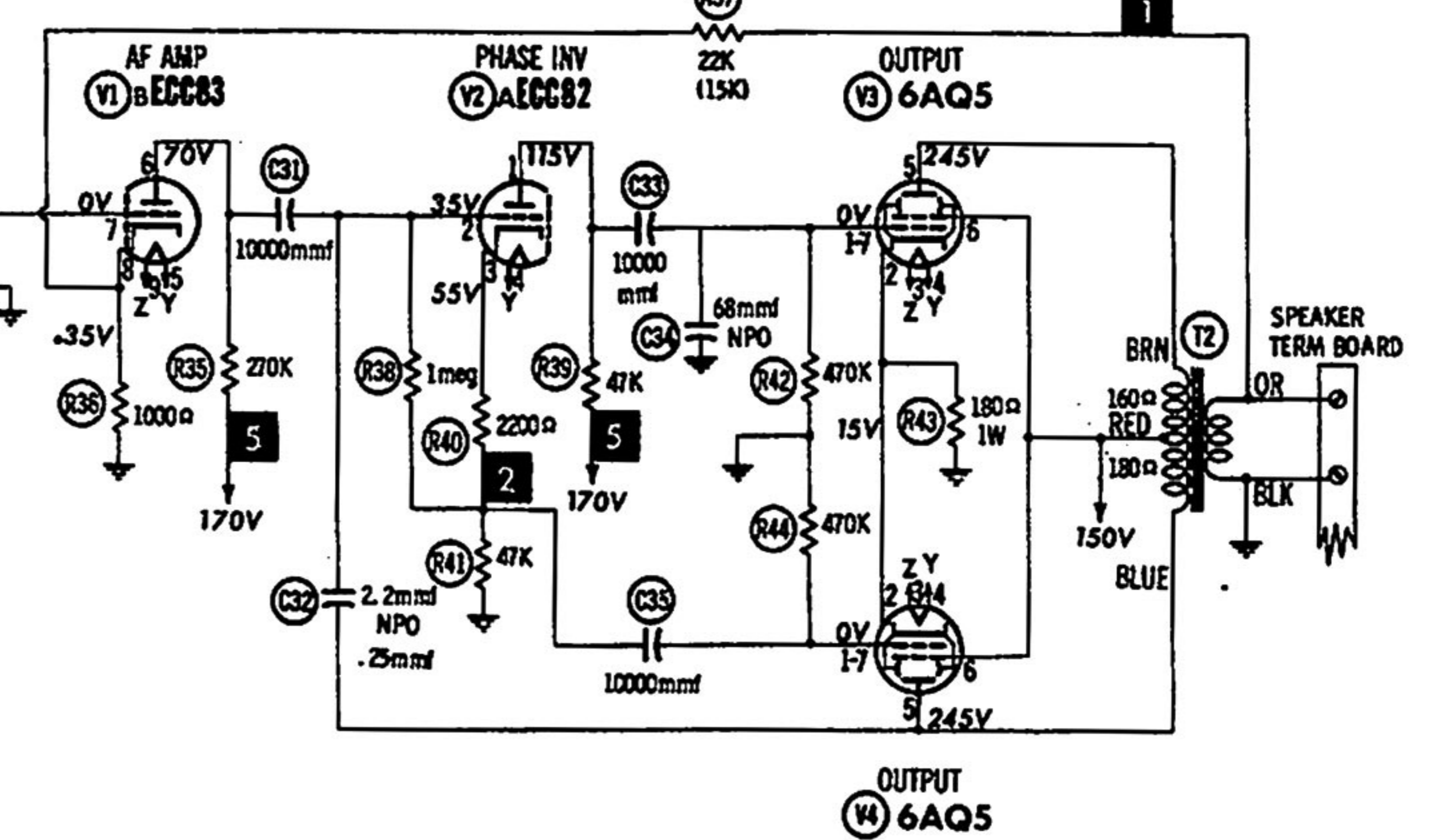
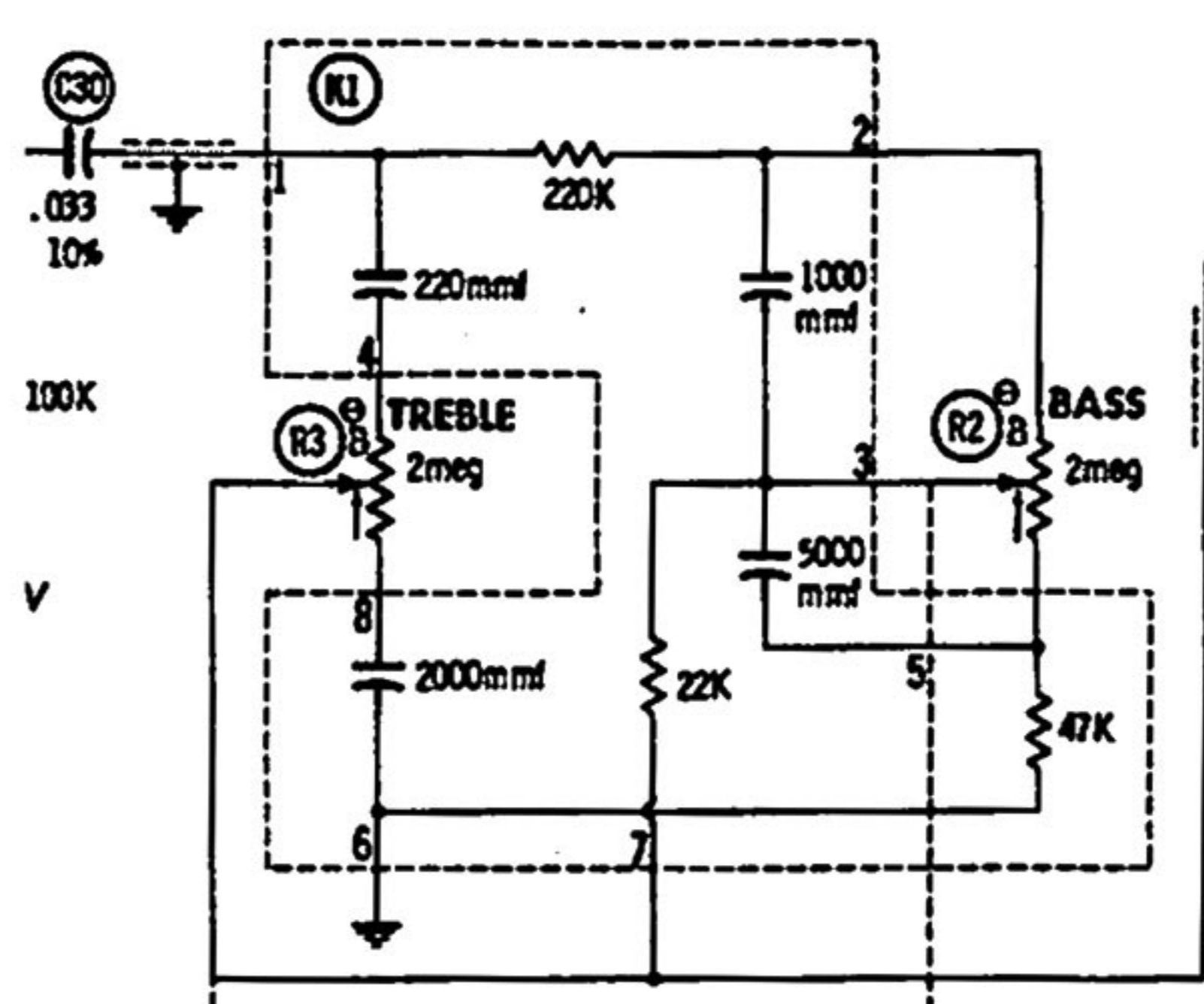
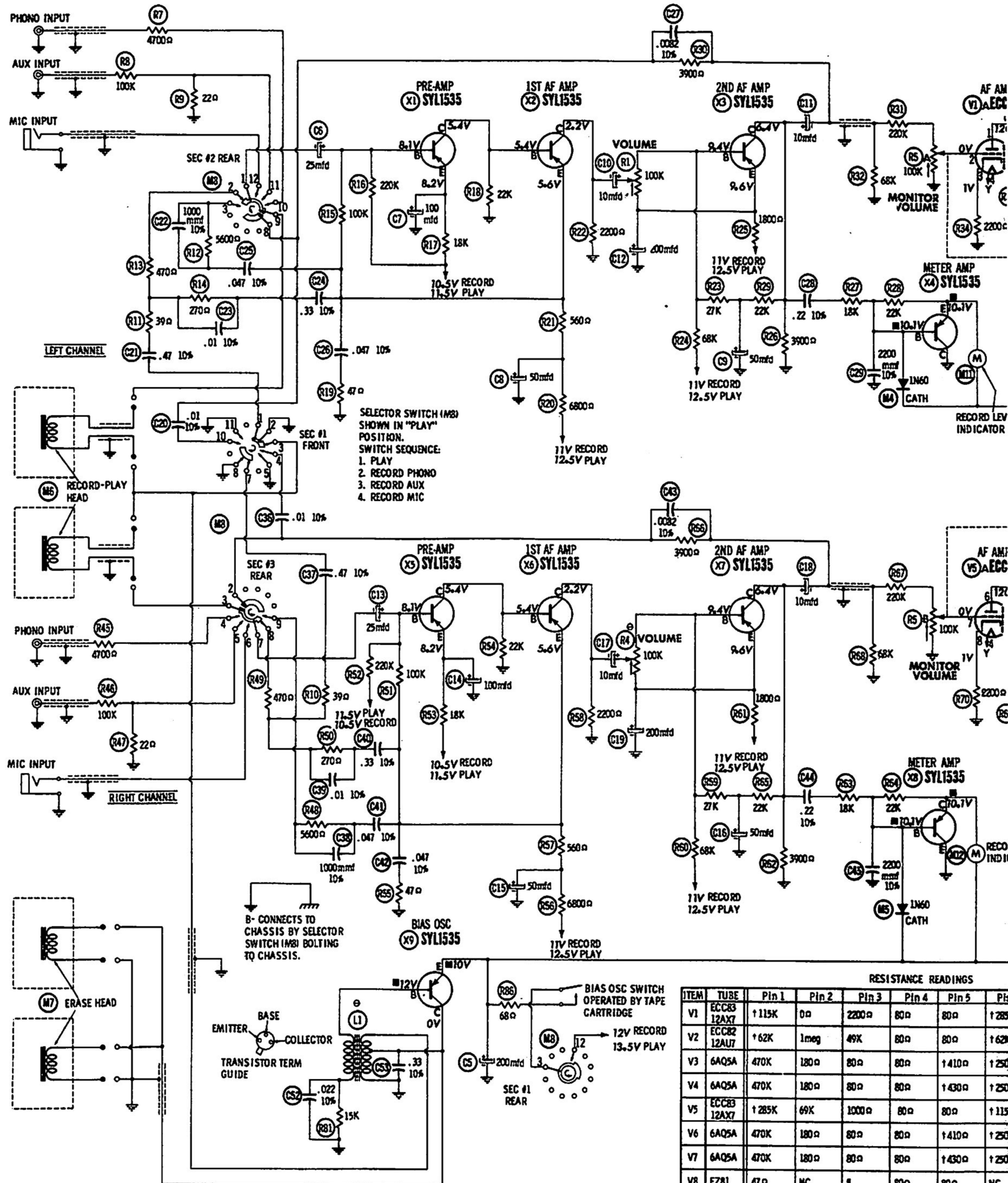


MODEL 405, 406 OUTPUT-POWER PRINTED BOARD

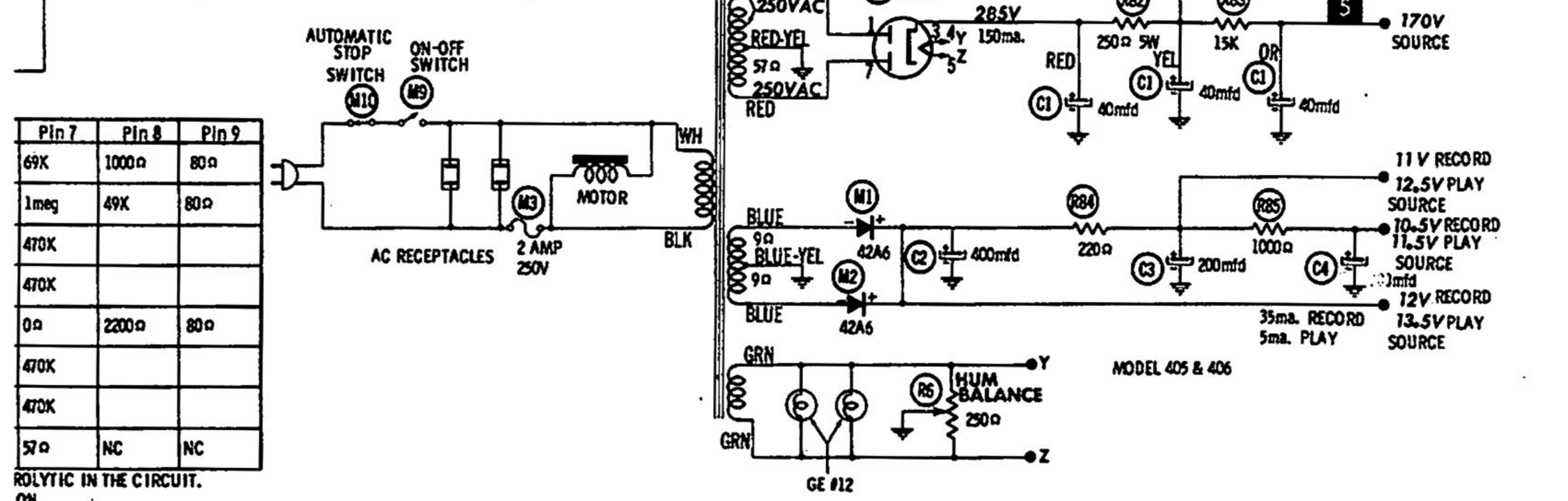
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



MODEL 405, 406 OUTPUT-POWER PRINTED BOARD



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
 DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

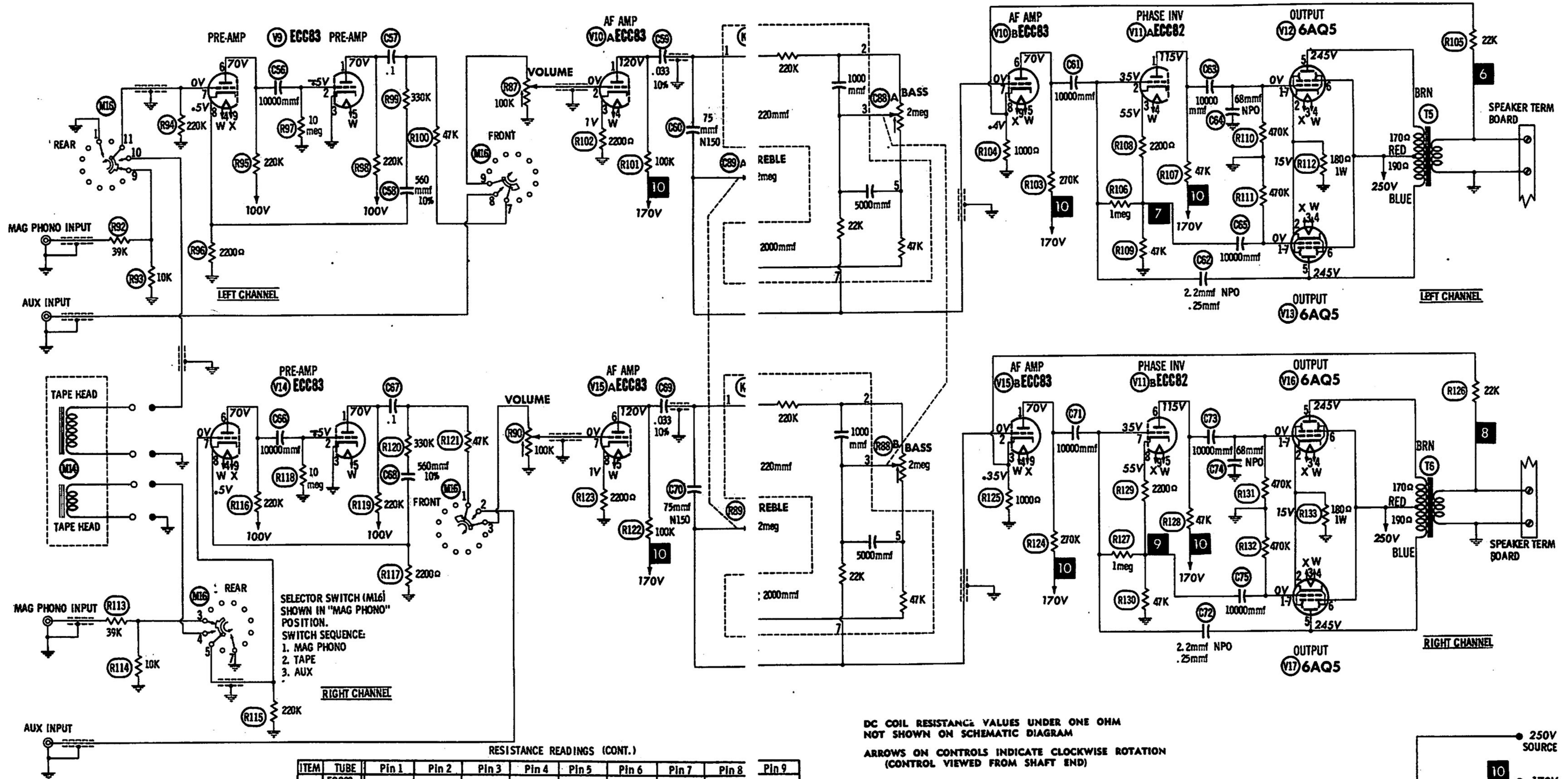


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
V1	ECC83 12AX7	115K	0Ω	2200Ω	80Ω	80Ω	1285
V2	ECC82 12AU7	62K	1meg	49K	80Ω	80Ω	162K
V3	6AQ5A	470K	180Ω	80Ω	80Ω	1410Ω	1250
V4	6AQ5A	470K	180Ω	80Ω	80Ω	1430Ω	1250
V5	ECC83 12AX7	1285K	69K	1000Ω	80Ω	80Ω	1115
V6	6AQ5A	470K	180Ω	80Ω	80Ω	1410Ω	1250
V7	6AQ5A	470K	180Ω	80Ω	80Ω	1430Ω	1250
V8	E281	47Ω	NC	1	80Ω	80Ω	NC

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE TUBE
 2 MEASURED FROM PIN 3 OF V8. NC NO COMMON
 RESISTANCE MEASUREMENTS NOT GIVEN FOR X1 THRU X9 BECAUSE OF THE
 WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
 3 MEASURED IN RECORD POSITION.

MODELS 405, 406



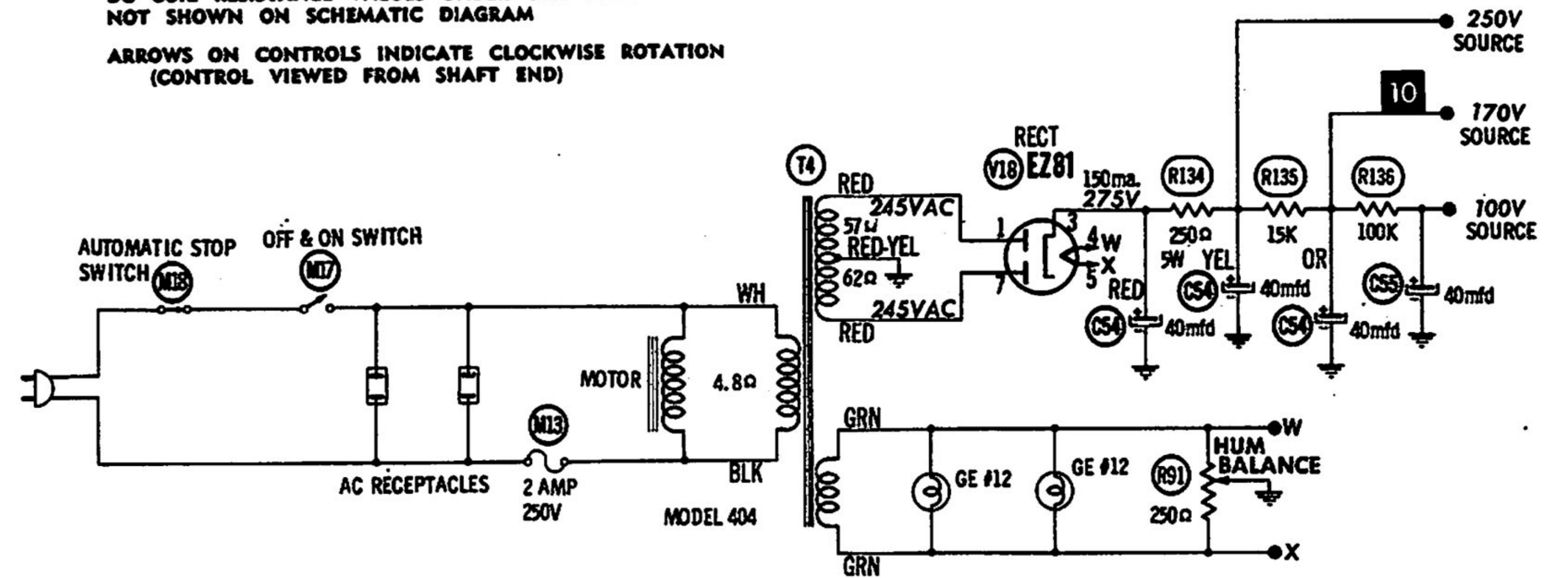
RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V9	ECC83 12AX7	↑↑ 335K	10meg	0Ω	55Ω	55Ω	↑↑ 335K	10K	2200Ω	5Ω
V10	ECC83 12AX7	↑↑ 115K	0Ω	2200Ω	55Ω	55Ω	↑↑ 285K	49K	1000Ω	5Ω
V11	ECC82 12AU7	↑↑ 62K	1meg	49K	55Ω	55Ω	↑↑ 62K	1meg	49K	5Ω
V12	6AQ5A	470K	180Ω	55Ω	55Ω	↑↑ 420Ω	↑↑ 250Ω	470K		
V13	6AQ5A	470K	180Ω	55Ω	55Ω	↑↑ 440Ω	↑↑ 250Ω	470K		
V14	ECC83 12AX7	↑↑ 335K	10meg	0Ω	55Ω	55Ω	↑↑ 335K	10K	2200Ω	55Ω
V15	ECC83 12AX7	↑↑ 285K	69K	1000Ω	55Ω	55Ω	↑↑ 115K	0Ω	2200Ω	55Ω
V16	6AQ5A	470K	180Ω	55Ω	55Ω	↑↑ 420Ω	↑↑ 250Ω	470K		
V17	6AQ5A	470K	180Ω	55Ω	55Ω	440Ω	↑↑ 250Ω	470K		
V18	EZ71	57Ω	NC	1	55Ω	55Ω	NC			

↑ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE C1 UNIT.
 ↑↑ MEASURED FROM PIN 3 OF V18. NC NO CONNECTION

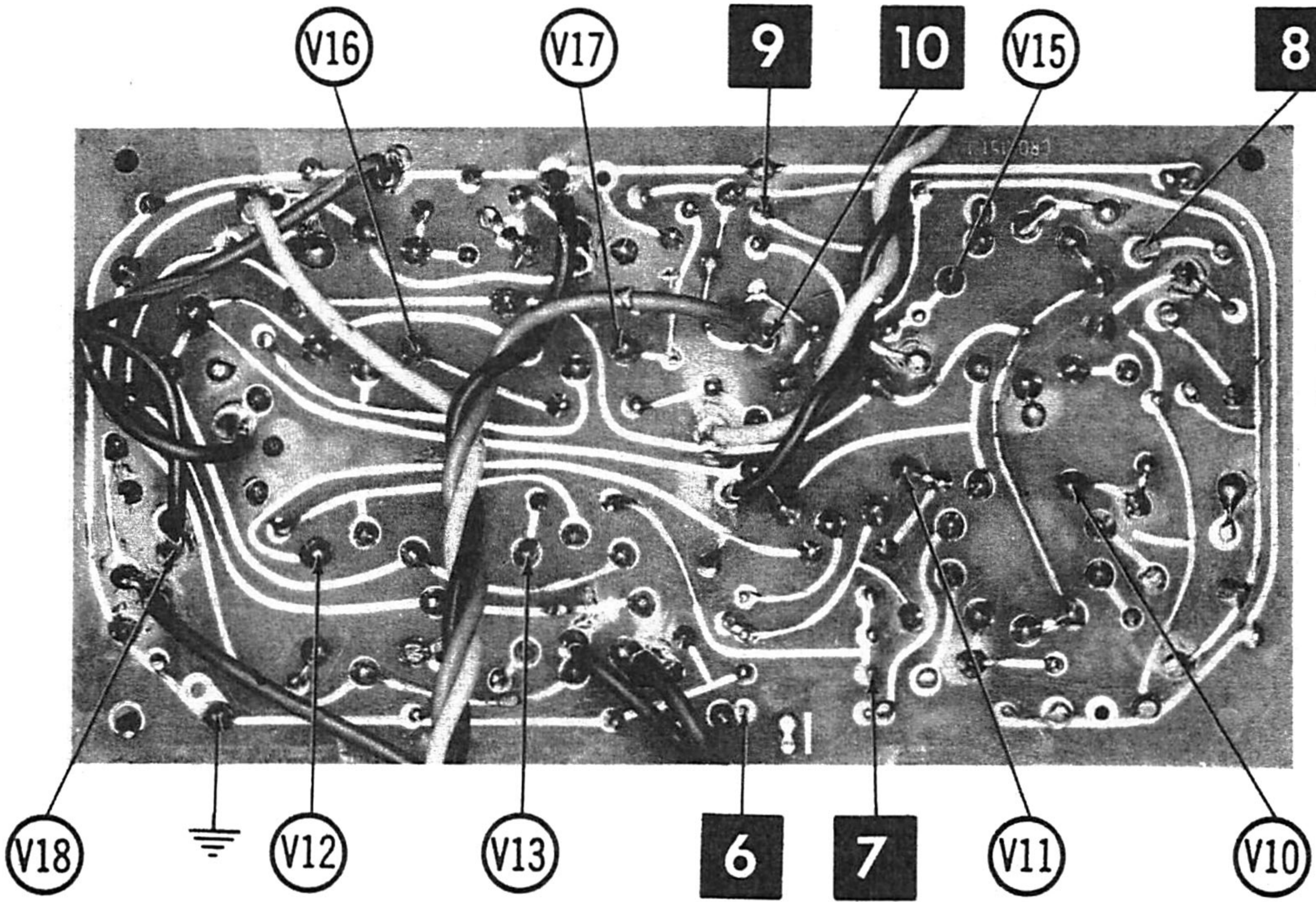
- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common negative.
- Line voltage maintained at 117 volts for voltage readings.
- Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
- All controls at minimum, proper output load connected.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
 ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



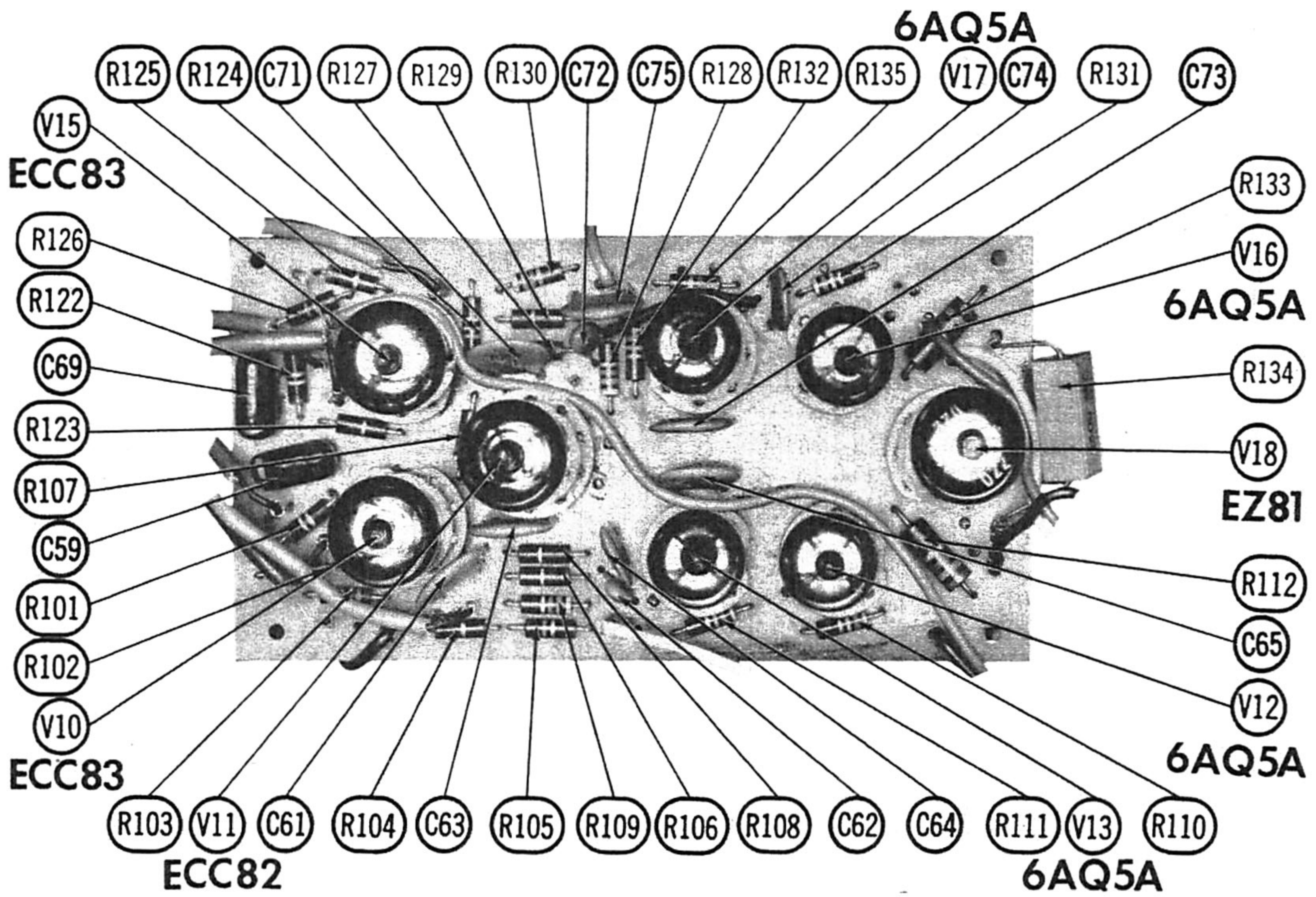
BELL SOUND MODELS
 401, 402, 403, 404, 405, 406

MODEL 404



MODEL 404 OUTPUT-POWER PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



MODEL 404 OUTPUT-POWER PRINTED BOARD

MODEL 404 AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in Ten Colors
 8524 (Stranded) Available in Ten Colors
 Power Cord Use BELDEN No. 1765-B (6 Ft. Length)
 1725-K (7½ Ft. Length)

TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V9	Left Channel Preamp.	ECC83/12AX7	V14	Right Channel Preamp.	ECC83/12AX7			
V10	Left Channel AF Amp.	ECC83/12AX7	V15	Right Channel AF Amp.	ECC83/12AX7			
V11	Left Channel Phase Inv.	ECC82/12AU7	V16	Right Channel Output	6AQ5A			
V12	Left Channel Output	6AQ5A	V17	Right Channel Output	6AQ5A			
V13	Left Channel Output	6AQ5A	V18	Rectifier	EZ81			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C54A	40	350	23B47	PR4-200	BBRQ0174	WQ795	TDLD-31	TVAS-3745 *	
B	40	300					TD40-450		
C	40	300							
C55	40	300	23A52	PR81870	BR4035	TC78	TD40-350	TVA-1611	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C56	10000	#24A28	BPD-01	DD-103	BYA108I	CCD-103	GP110	5HK-810
C57	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C58	560 10%		DI-560	DD-561	IR5T56	CCD-561	GP356	10TS-T56
C59	.033 100V 10%		V84C2833-10%		PM4833	1DP-2-333		6TM-833
C60	75 N150							
C61	10000							
C62	2.2 NPO .25mmf							
C63	10000							
C64	68 NPO							
C65	10000							
C66	10000	#24A28	BPD-01	DD-103	BYA108I	CCD-103	GP110	5HK-810
C67	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C68	560 10%		DI-560	DD-561	IR5T56	CCD-561	GP356	10TS-T56
C69	.033 100V 10%		V84C2833-10%		PM4833	1DP-2-333		6TM-833
C70	75 N150							
C71	10000							
C72	2.2 NPO .25mmf							
C73	10000							
C74	68 NPO							
C75	10000							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

† Bell Sound Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R87	100K	↑	15B78					Left Volume Bass, Left Channel Bass, Right Channel Treble, Left Channel Treble, Right Channel Right Volume Hum Balance
R88A	2meg		15B55					
B	2meg							
R89A	2meg		15B56					
B	2meg							
R90	100K		15B78					
R91A	250Ω		15B35	B-2 Not Req.		B11-201 TM4		
B	Shaft							

RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R92	39K		R107	47K		R123	100K	
R93	10K		R108	2200Ω		R124	270K	
R94	220K		R109	47K		R125	1000Ω	
R95	220K		R110	470K		R126	22K	
R96	2200Ω		R111	470K		R127	1meg	
R97	10meg		R112	180Ω 1W		R128	47K	
R98	220K		R113	39K		R129	2200Ω	
R99	330K		R114	10K		R130	47K	
R100	47K		R115	220K		R131	470K	
R101	100K		R116	220K		R132	470K	
R102	2200Ω		R117	2200Ω		R133	180Ω 1W	
R103	270K		R118	10meg		R134	250Ω 5W	IRC #PW5-250Ω
R104	1000Ω		R119	220K		R135	15K	
R105	22K		R120	330K		R136	100K	
R106	1meg		R121	47K				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BELL SOUND PART No.	REPLACEMENT DATA
K3	Tone Compensator	220mmf, 1000mmf, 2000mmf, 5000mmf, 22K, 47K, 220K	91A196	
K4	Tone Compensator	220mmf, 1000mmf, 2000mmf, 5000mmf, 22K, 47K, 220K	91A196	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	117V @ .8A	490VCT @ .15A	6.3V @ 4.5A	32B72					

TRANSFORMER (AUDIO OUTPUT)

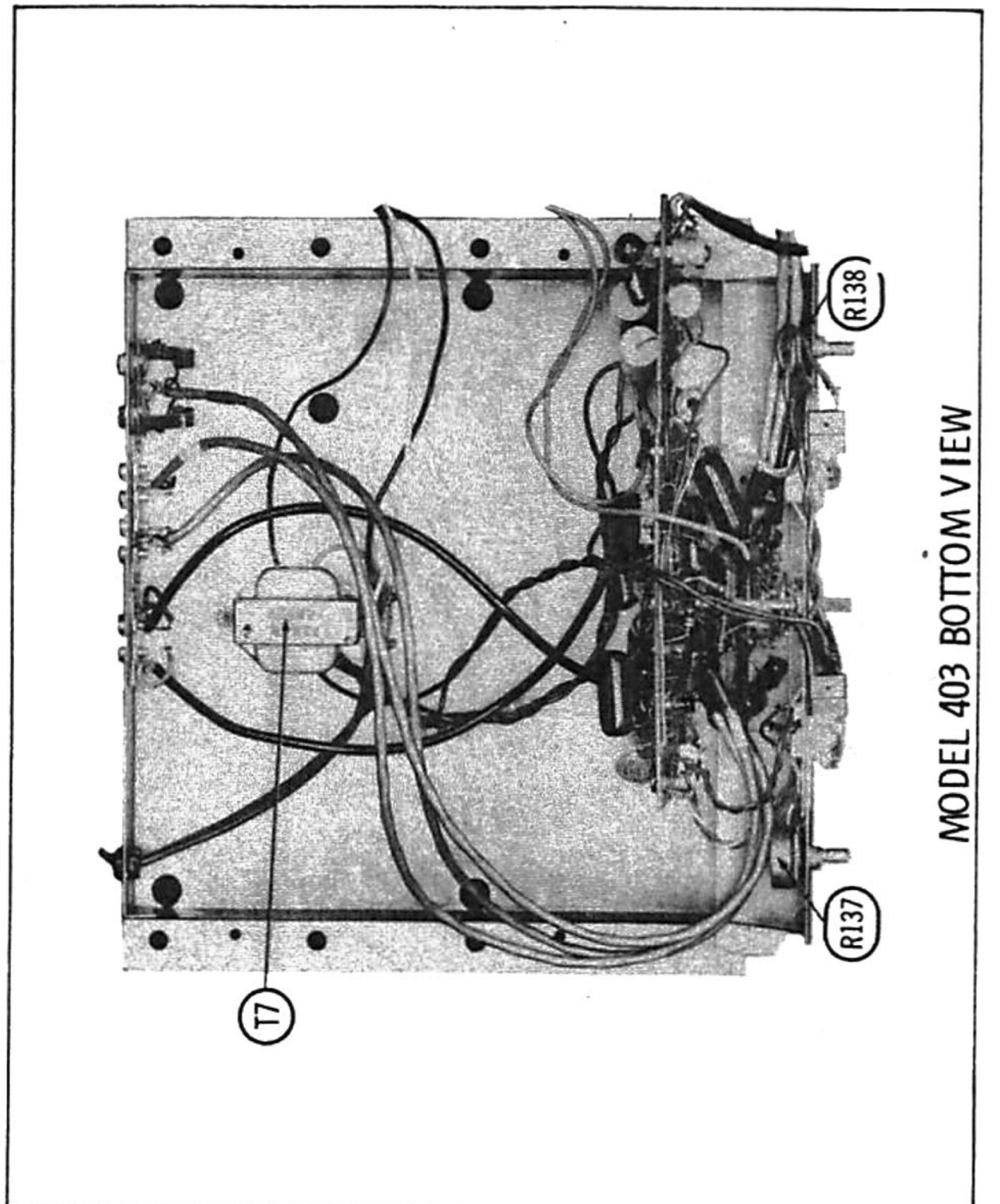
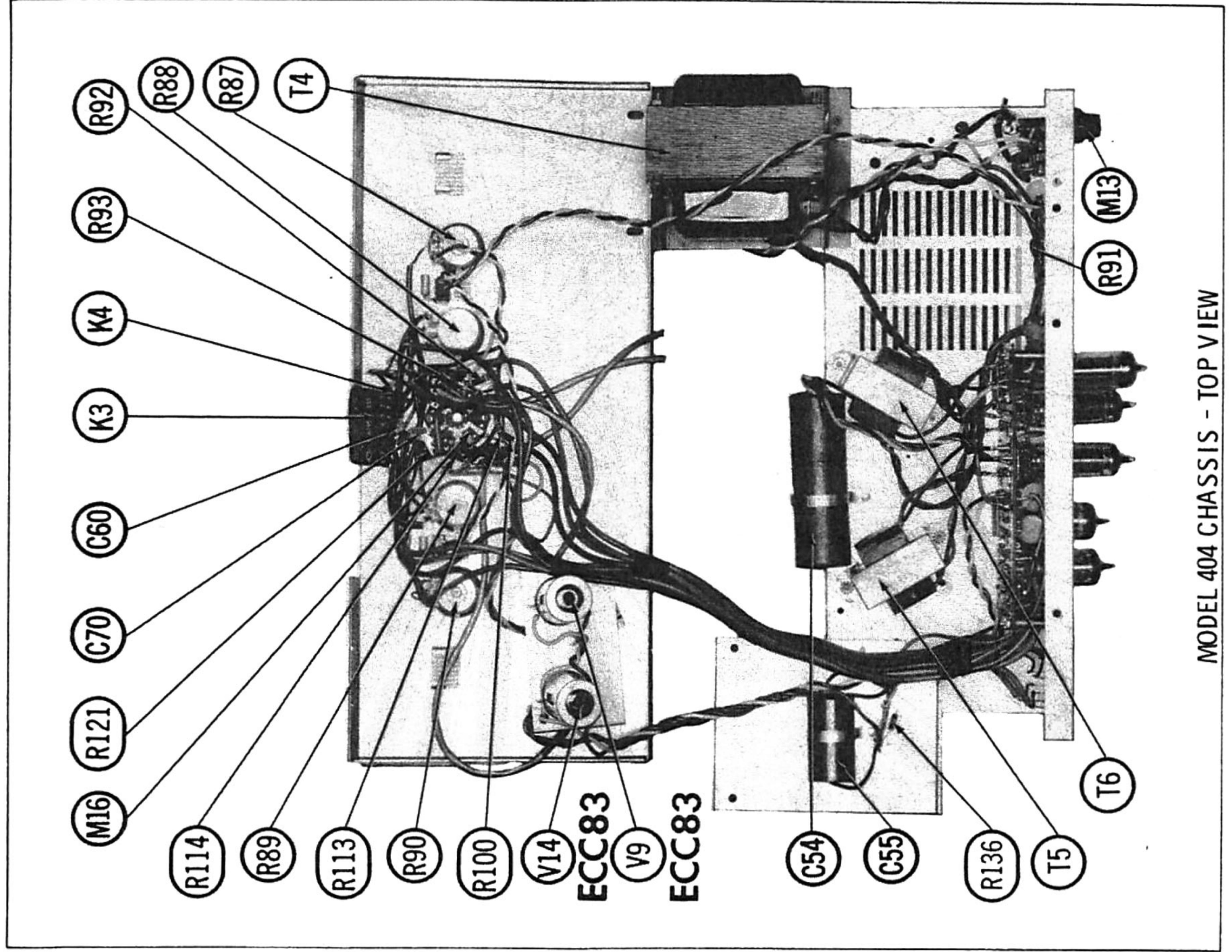
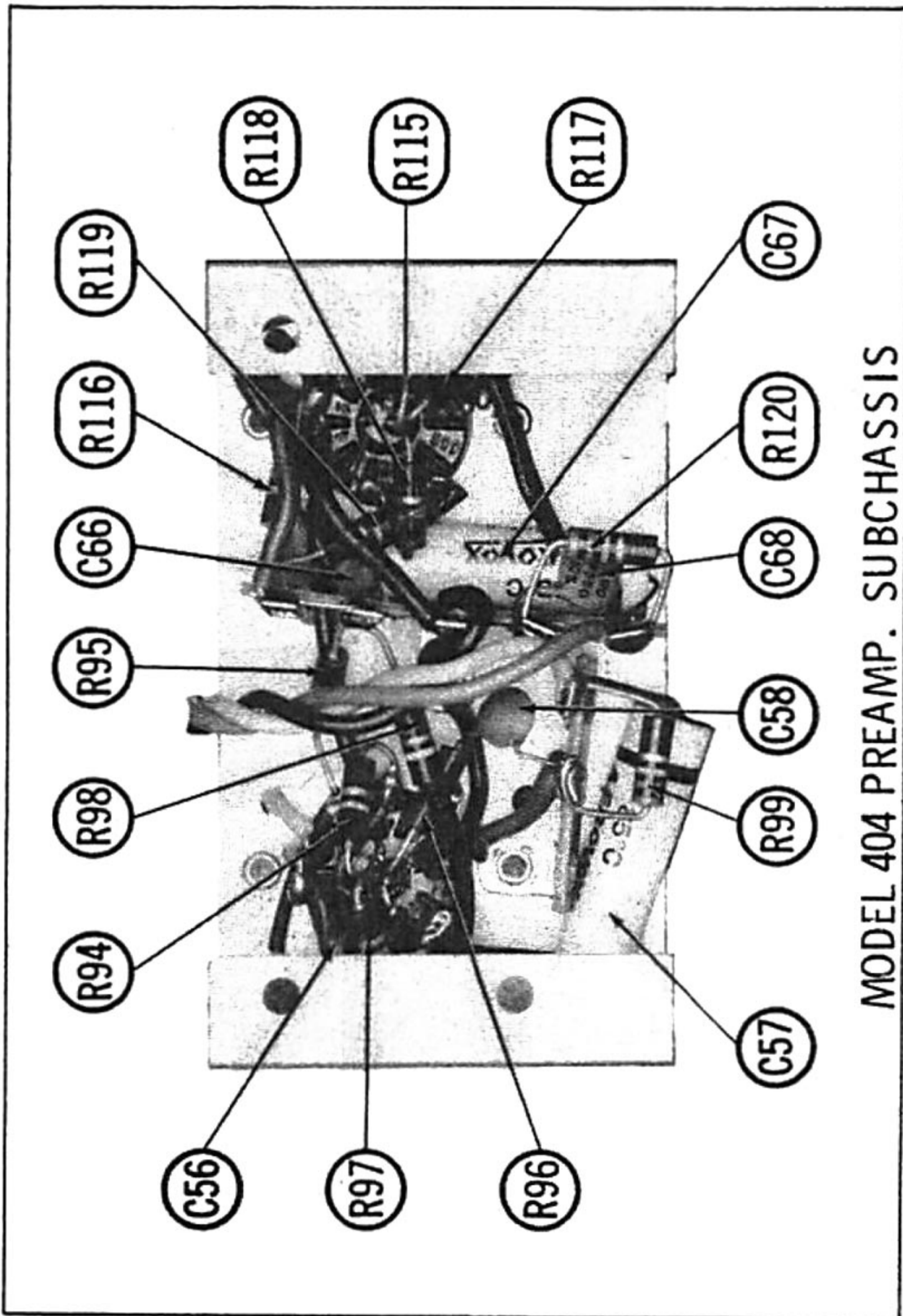
ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	6800Ω CT	6-8Ω	32B74	A-2901	A-3823	24806	8-53X	
T6	6800Ω CT	6-8Ω	32B74	A-2901	A-3823	24806	8-53X	

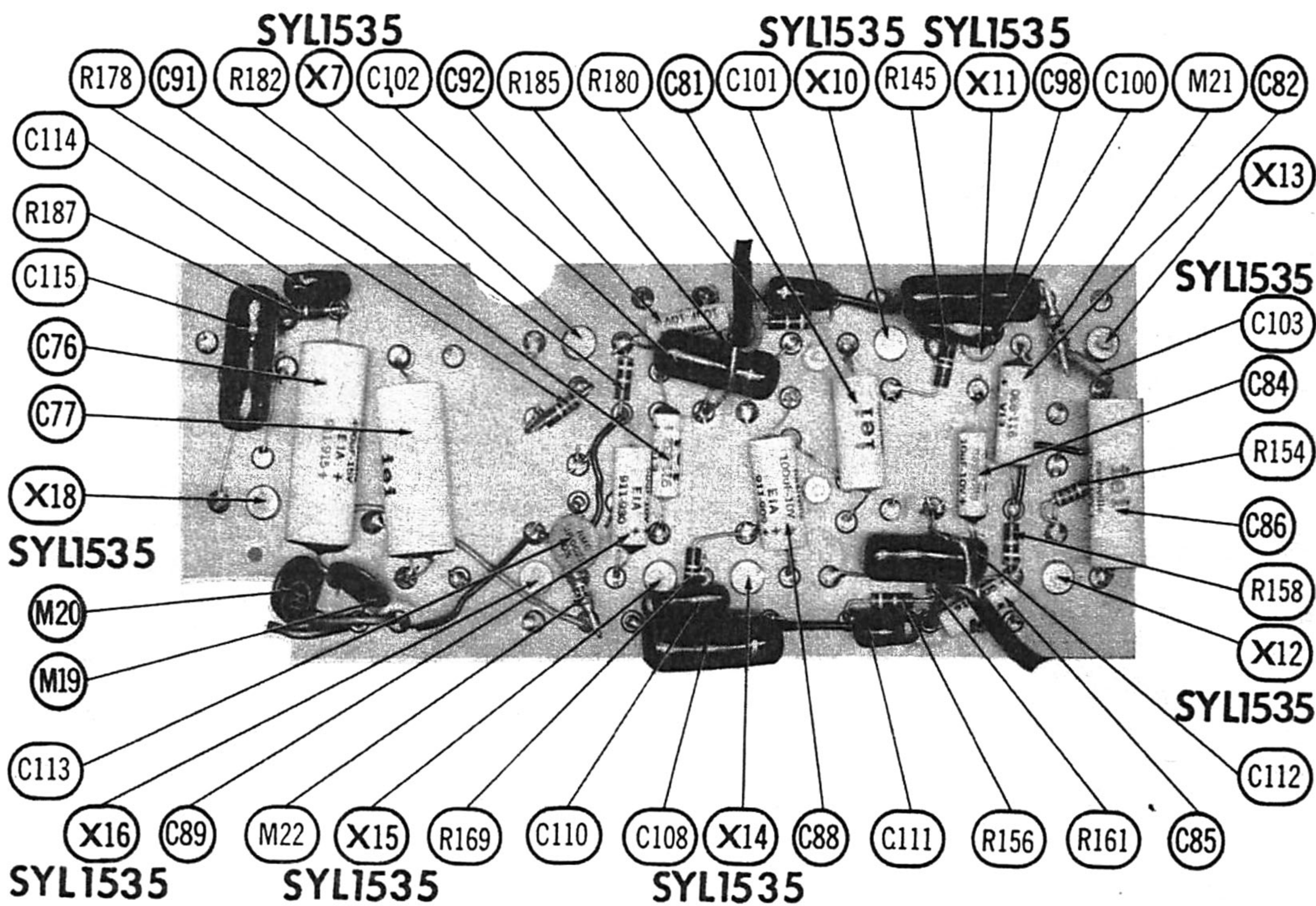
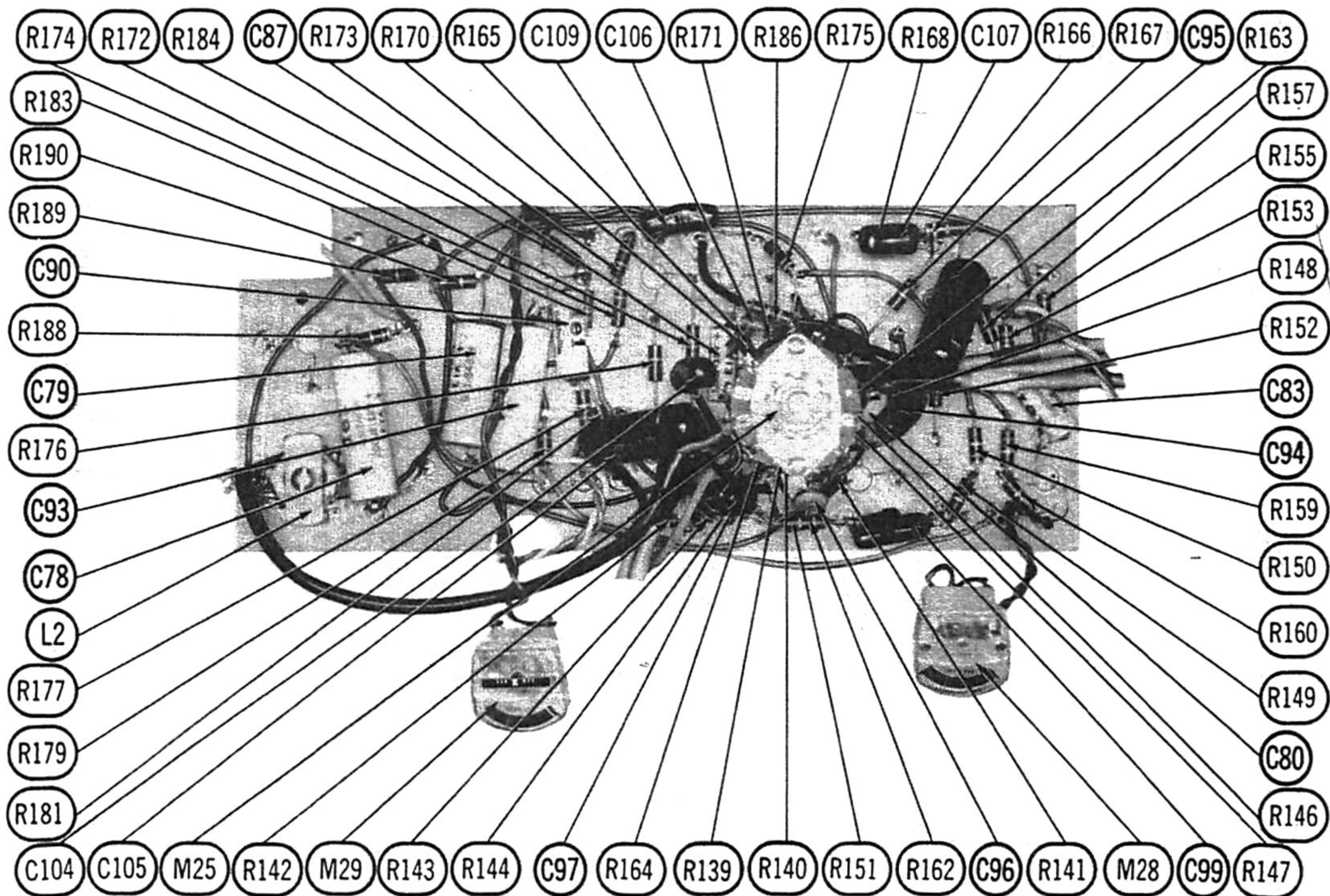
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL SOUND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M13	SAG	2A 250V	53A9	53A8	312002 (SAG 2A 250V)	342007	AGC 2	HKP

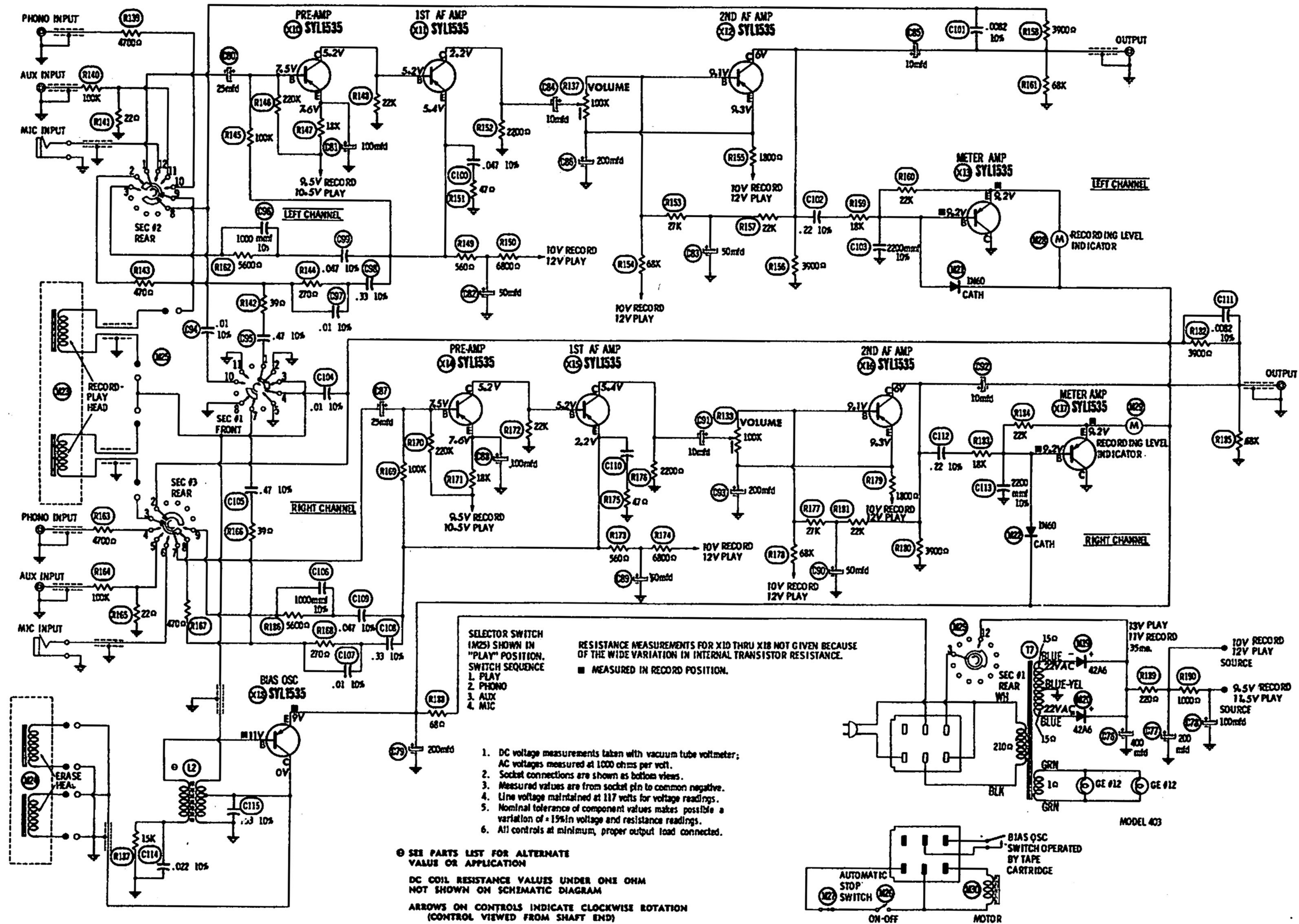
MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M14	Head	36B9	Playback
M15	Head	72A284	Dummy
M16	Switch	43B55	Function
M17	Switch	43B52	Off-On
M18	Switch	43A53	Automatic Stop





MODEL 403 SUB-CHASSIS



MODEL 403

MODEL 403 AMP PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X10	SYL1535	Left Channel Preamp.			SYL1535	PNP
X11	SYL1535	Left Channel 1st AF Amp.			SYL1535	PNP
X12	SYL1535	Left Channel 2nd AF Amp.			SYL1535	PNP
X13	SYL1535	Left Channel Meter Amp.			SYL1535	PNP
X14	SYL1535	Right Channel Preamp.			SYL1535	PNP
X15	SYL1535	Right Channel 1st AF Amp.			SYL1535	PNP
X16	SYL1535	Right Channel 2nd AF Amp.			SYL1535	PNP
X17	SYL1535	Right Channel Meter Amp.			SYL1535	PNP
X18	SYL1535	Bias Oscillator			SYL1535	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C76	400	15	23B54	PR81220	BR5001	TC1505	TD-500-15	TVAS-1161.5*	
C77	200	15	23B55	PR81210	NLW200-15	TC1502	TD-250-15	TE-1164	
C78	100	15	23B56	PWE25100	NLW100-15	TT15X100	ML100-15	TE-1162	
C79	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	
C80	25	10	23B60	PWE10025	NLW25-10	TT10X25	ML30-15	TE-1118	
C81	100	10	23B58	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	
C82	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C83	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C84	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C85	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C86	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	
C87	25	10	23B60	PWE10025	NLW25-10	TT10X25	ML30-15	TE-1118	
C88	100	10	23B58	PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	
C89	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C90	50	10	23B59	PWE10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C91	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C92	10	10	23B61	PWE10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C93	200	12	23B70	SRE12V200	NLW200-12	TC1502	TD-250-15	TE-1137	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C94	.01 50V 10%		V84C2S1-10%		PM4S1	1DP-1-103	GEM-1611	4TM-S1
C95	.47 50V 10%		V84C2P47-10%		PM2P47	2DP-5-474	GEM-2047	2TM-P1
C96	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C97	.01 50V 10%		V84C2S1-10%		PM4S1	1DP-1-103	GEM-1611	4TM-S1
C98	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33
C99	.047 50V 10%		V84C2S47-10%		PM2S47	1DP-2-473		2TM-S47
C100	.047 50V 10%		V84C2S47-10%		PM2S47	1DP-2-473		2TM-S47
C101	.0082 50V 10%		P684CM-0082			6DP-1-822	GEM-16232	5BF-D82
C102	.22 50V 10%		V84C2P22-10%		PM2P22	6DP-3-224	GEM-2022	2TM-P22
C103	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C104	.01 50V 10%		V84C2S1-10%		PM4S1	1DP-1-103	GEM-1611	4TM-S1
C105	.47 50V 10%		V84C2P47-10%		PM2P47	2DP-5-474	GEM-2047	2TM-P47
C106	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C107	.01 50V 10%		V84C2S1-10%		PM4S1	1DP-1-103	GEM-1611	4TM-S1
C108	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33
C109	.047 50V 10%		V84C2S47-10%		PM2S47	1DP-2-473		2TM-S47
C110	.047 50V 10%		V84C2S47-10%		PM2S47	1DP-2-473		2TM-S47
C111	.0082 50V 10%		P684CM-0082			6DP-1-822	GEM-16232	5BF-D82
C112	.22 50V 10%		V84C2P22-10%		PM2P22	1DP-3-224	GEM-2022	2TM-P22
C113	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C114	.022 50V 10%		V84C2S22-10%		PM4S22	1DP-1-223		2TM-S22
C115	.33 50V 10%		V84C2P33-10%		PM2P33	2DP-5-334	GEM-2033	2WF-P33

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES	
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.		
R137A	100K	1/2	15B72	B-36		B17-128	U40	Left Volume	Note 2
B	Shaft			Not Req.		8K-1	Not Req.		
R138A	100K	1/2	15B72	B-36		B17-128	U40	Right Volume	Note 2
B	Shaft			Not Req.		8K-1	Not Req.		

Note 2. Some versions may use 500K in this application.

RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R139	4700Ω		R157	22K		R175	47Ω	
R140	100K		R158	3900Ω		R176	2200Ω	
R141	22Ω		R159	18K		R177	27K	
R142	39Ω		R160	22K		R178	68K	
R143	470Ω		R161	68K		R179	1800Ω	
R144	270Ω		R162	5600Ω		R180	3900Ω	
R145	100K		R163	4700Ω		R181	22K	
R146	220K		R164	100K		R182	3900Ω	
R147	18K		R165	22Ω		R183	18K	
R148	22K		R166	39Ω		R184	22K	
R149	560Ω		R167	470Ω		R185	68K	
R150	6800Ω		R168	270Ω		R186	5600Ω	
R151	47Ω		R169	100K		R187	15K	
R152	2200Ω		R170	220K		R188	68Ω	
R153	27K		R171	18K		R189	220Ω	
R154	68K		R172	22K		R190	1000Ω	
R155	1800Ω		R173	560Ω				
R156	3900Ω		R174	6800Ω				

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BELL SOUND PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L2	Osc. Coil	31A33 ①				① Alternate Part #31A48

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T7	117V @ .03A	22VCT @ .035A	6.3V @ .2A	32B96					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	BELL SOUND PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.		
M19	.035A	42A6	1N1763	40K	SR500	Silicon Type	
M20	.035A	42A6	1N1763	40K	SR500	Silicon Type	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BELL SOUND PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M21	1N60	42X3		1N60	1N60	Base, Meter Amp. (Left Channel)
M22	1N60	42X3		1N60	1N60	Base, Meter Amp. (Right Channel)

MODEL 403 AMP PARTS LIST (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M23	Head	36B10	Playback
M24	Head	36B11	Erase
M25	Switch	43B73	Function
M26	Switch	43B52	Off-On
M27	Switch	43A53	Automatic Stop
M28	Meter	46B5	Left Channel Recording Level Indicator
M29	Meter	46B5	Right Channel Recording Level Indicator
M30	Motor	35C10	Drive

MODEL 402 AMP PARTS LIST AND DESCRIPTIONS

TUBES

GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE			
V19	Left Channel Preamp.	ECC83/12AX7	V21	Rectifier	EZ80			
V20	Right Channel Preamp.	ECC83/12AX7						

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C116A	40	250	23B51	AFH2-28	B0230	FP230	TMD-26	TVL-2519	
B	20	250							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
	CAP.	VOLT.		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C117	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C118	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C119	560	10%		DI-560	DD-561	IR5T56	CCD-561	GP356	10TS-T56
C120	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C121	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C122	560	10%		DI-560	DD-561	IR5T56	CCD-561	GP356	10TS-T56

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R191A	250Ω		15B35	B-2		B11-201		Hum Balance
B	Shaft			Not Req.		TM4		

RESISTORS (IRC or EQUIVALENT)

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

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R192	220K		R197	330K		R202	220K	
R193	220K		R198	220K		R203	330K	
R194	2200Ω		R199	220K		R204	47K	
R195	10meg		R200	2200Ω				
R196	220K		R201	10meg				

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T8	117V @ .12A	300VCT @ .001A	6.3V @ 1.2A	32B70					

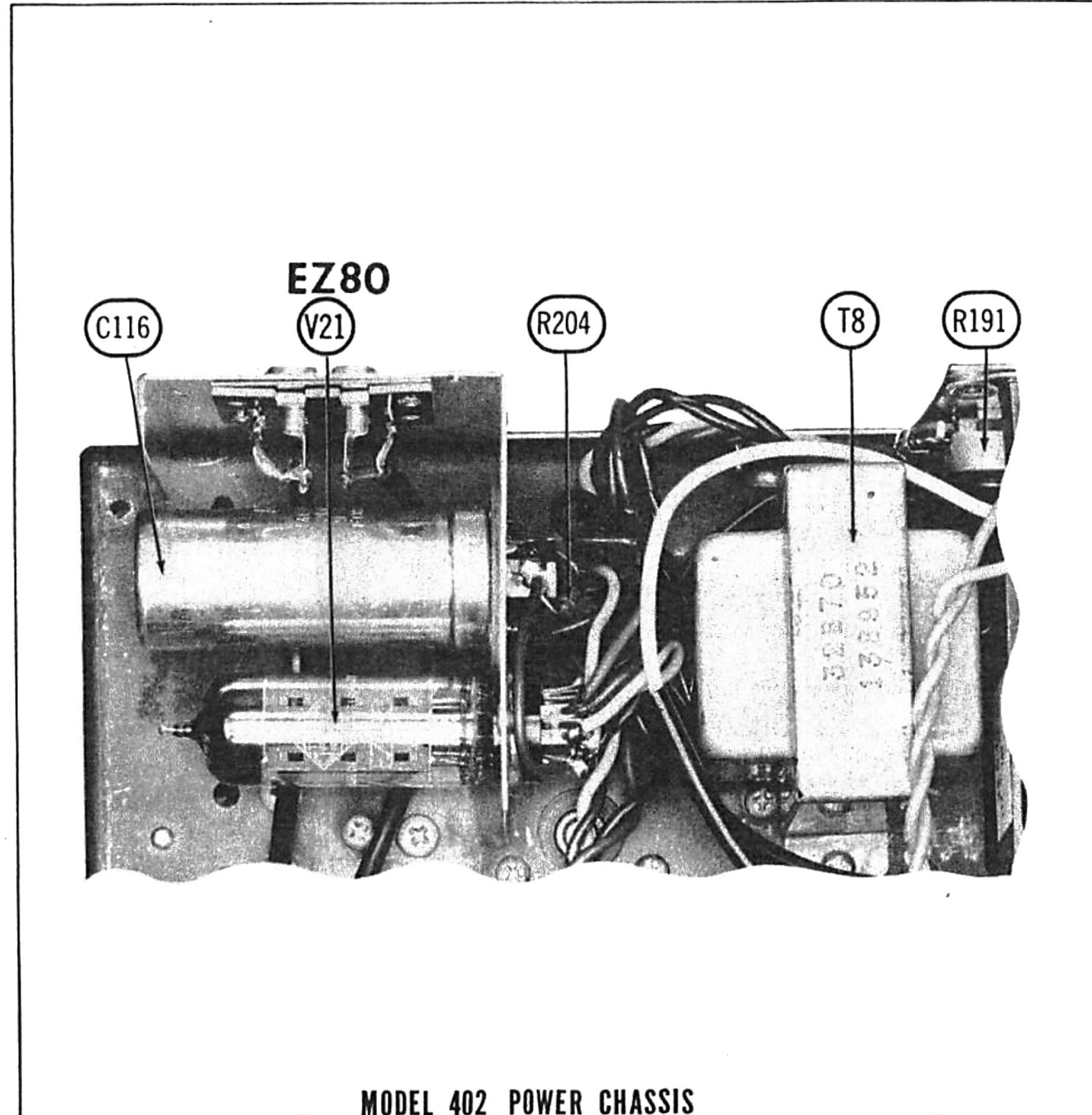
MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M31	Head	36B9	Playback
M32	Switch	43B52	Off-On
M33	Switch	43A53	Automatic Stop
M34	Motor	35C10	Drive

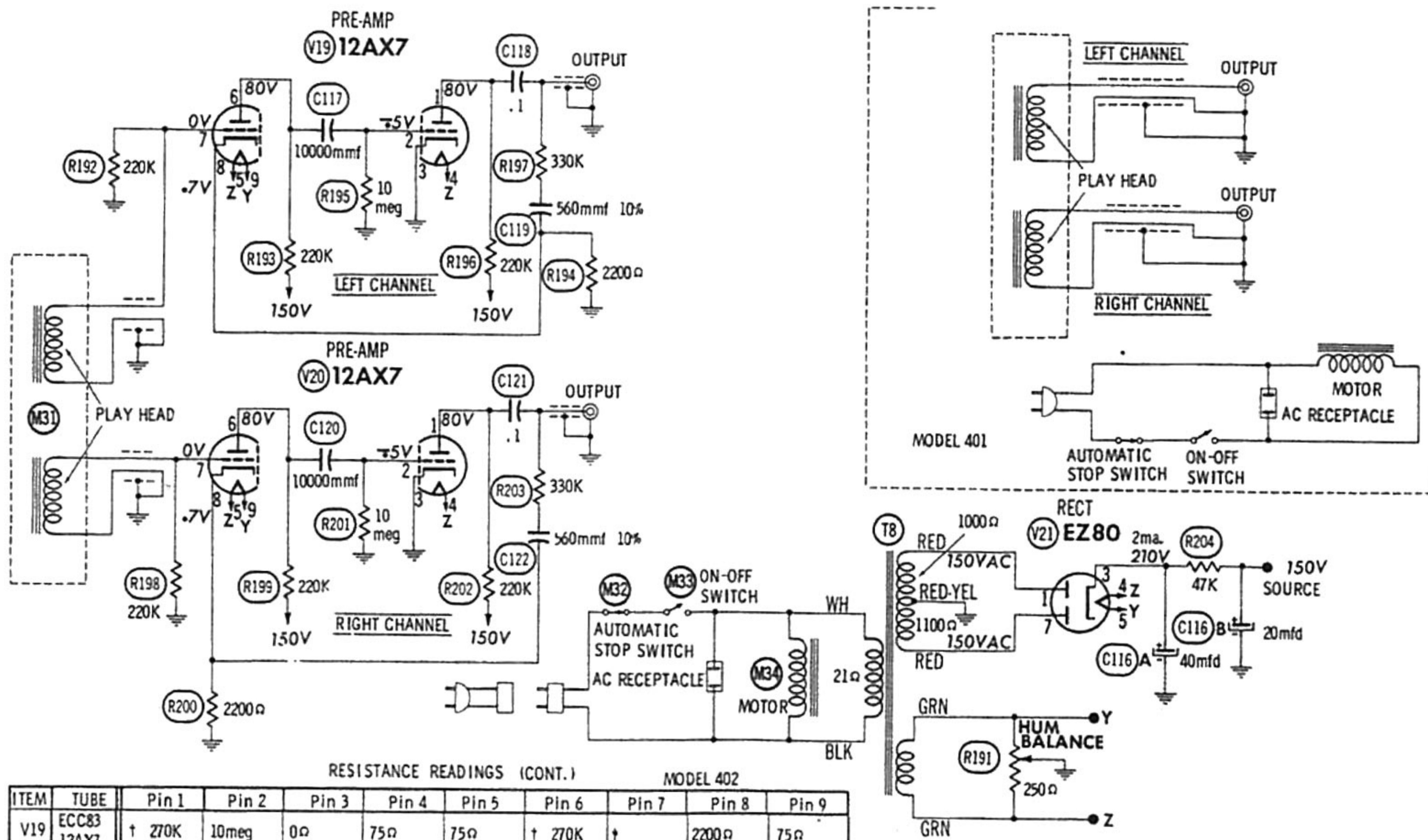
CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	84A35	All controls and switch



MODEL 402 POWER CHASSIS



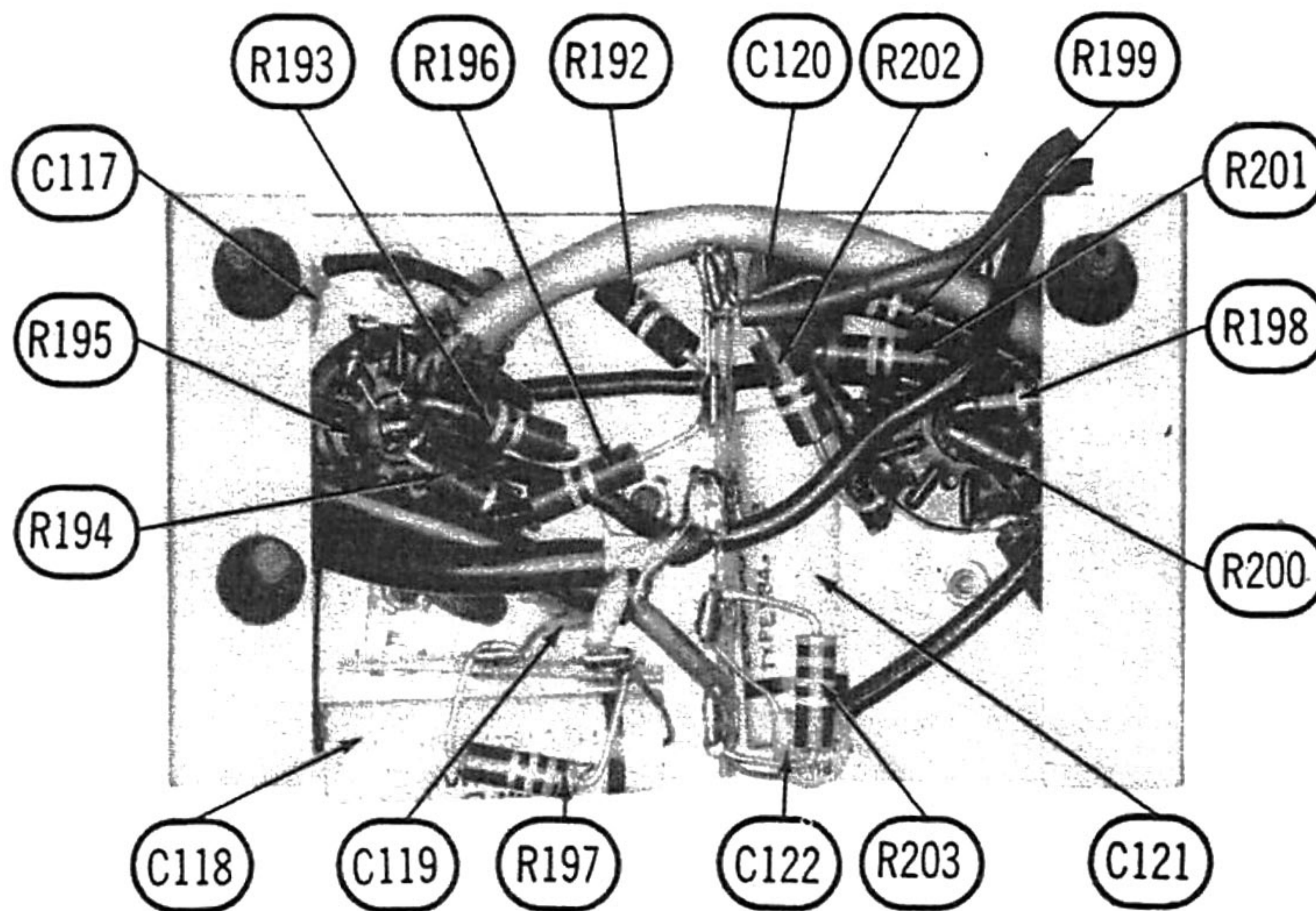
RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V19	ECC83 12AX7	† 270K	10meg	0Ω	75Ω	75Ω	† 270K	†	2200Ω	75Ω
V20	ECC83 12AX7	† 270K	10meg	0Ω	75Ω	75Ω	† 270K	†	2200Ω	75Ω
V21	EZ80	1000Ω	NC	†	75Ω	75Ω	NC	1100Ω	NC	NC

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
 † MEASURED FROM PIN 3 OF V21.
 † DO NOT MEASURE

NC NO CONNECTION

MODEL 401, 402



MODEL 402 PREAMP. CHASSIS - BOTTOM VIEW