

BELL MODEL T-300 Series
(Ch. RP-320, RP-320A, RP-321)

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GENERAL INFORMATION

The Bell T-300 Series Tape Transports are two speed with pushbutton controls.

An automatic stop is provided to turn the take-up motor off after the tape has passed through the transport to prevent damage to the tape.

Electro-Dynamic braking is used to provide instant braking without strain, stretching, or breakage of tape.

All models using the T-300 Series Tape Transports are identical mechanically. The only difference is the head arrangement and preamplifier used.

The recording and playing time using 7 1/2 ips or 3 3/4 ips is as follows:

Tape Length In Feet	4 Track Stereo		2 Track Stereo	
	7 1/2 IPS	3 3/4 IPS	7 1/2 IPS	3 3/4 IPS
150	7 1/2 min.	15 min.	3 3/4 min.	7 1/2 min.
225	11 1/4 min.	22 1/2 min.	5 5/8 min.	11 1/4 min.
300	15 min.	30 min.	7 1/2 min.	15 min.
600	30 min.	1 hr.	15 min.	30 min.
900	45 min.	1 1/2 hrs.	22 1/2 min.	45 min.
1200	1 hr.	2 hrs.	30 min.	1 hr.
1800	1 1/2 hrs.	3 hrs.	45 min.	1 1/2 hrs.
2400	2 hrs.	4 hrs.	1 hr.	2 hrs.

Tape Length In Feet	4 Track Monaural		2 Track Monaural	
	7 1/2 IPS	3 3/4 IPS	7 1/2 IPS	3 3/4 IPS
150	15 min.	30 min.	7 1/2 min.	15 min.
225	22 1/2 min.	45 min.	11 1/4 min.	22 1/2 min.
300	30 min.	1 hr.	15 min.	30 min.
600	1 hr.	2 hrs.	30 min.	1 hr.
900	1 1/2 hrs.	3 hrs.	45 min.	1 1/2 hrs.
1200	2 hrs.	4 hrs.	1 hr.	2 hrs.
1800	3 hrs.	6 hrs.	1 1/2 hrs.	3 hrs.
2400	4 hrs.	8 hrs.	2 hrs.	4 hrs.

These recorders are to be connected to an outlet supplying 117 volts, 60 cycles AC.

Manufactured By:

Bell Sound Division
Thompson Ramo Wooldridge Inc.
6325 Huntley Road
Columbus 24, Ohio

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

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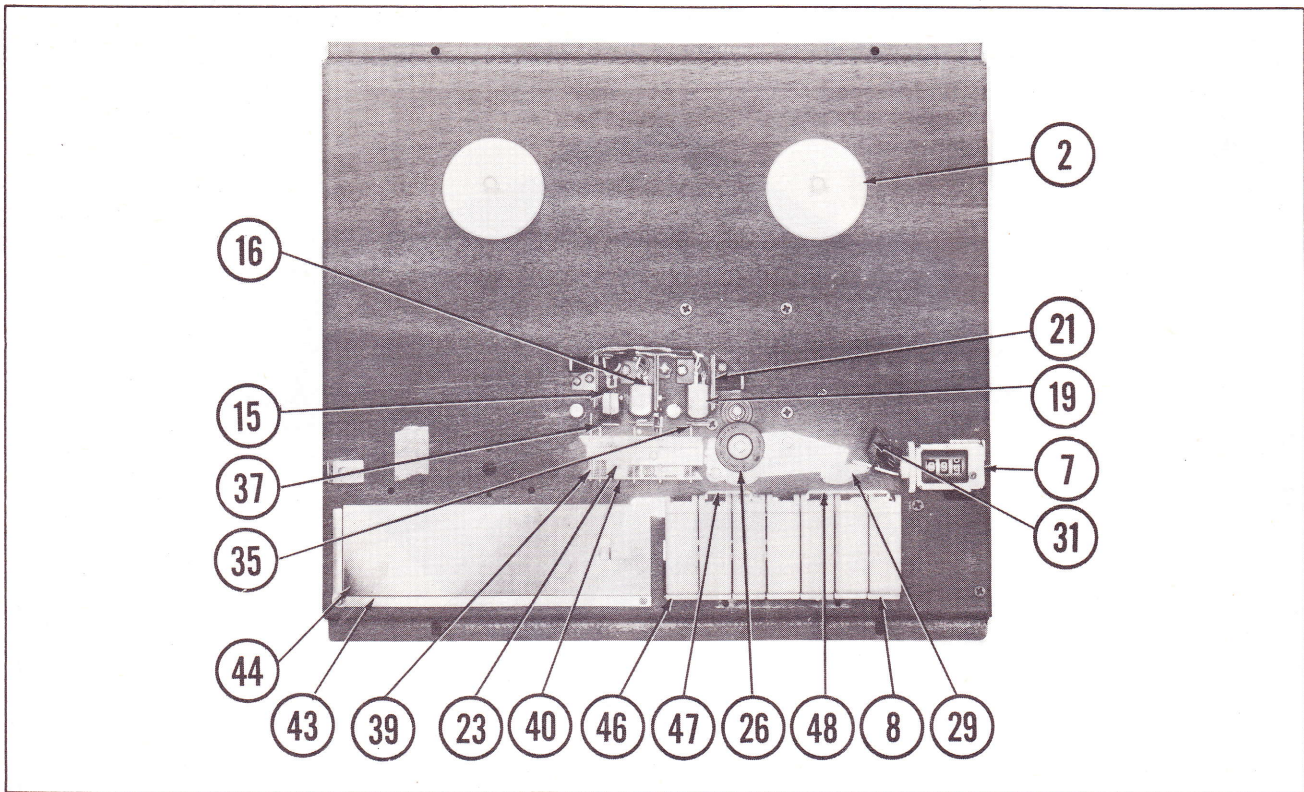


FIG.1 TOP VIEW OF MECHANISM

DESCRIPTION OF MODELS

Model T-310 is a 2 track monaural record-play-back tape deck requiring the RP-321 preamplifier.

Model T-313 is a 2 track stereo record-play-back tape deck requiring the RP-320 or RP-320A pre-amplifier.

Model T-321 is a 2 track - 4 track stereo play-back tape deck requiring a stereo amplifier with tape head inputs.

Model T-323 is a 2 track stereo record-play-

back and 4 track stereo playback tape deck requiring the RP-320 or RP-320A preamplifier.

Model T-333 is a 4 track stereo record-play-back and 2 track stereo playback tape deck requiring the RP-320 or RP-320A preamplifier.

Model T-337 is a Model T-333 tape deck with the RP-320 or RP-320A installed.

Model T-338 is a Model T-337 installed in the 300-CC portable carrying case.

FUNCTION OF CONTROLS

3 3/4 ips

When this key is depressed, the capstan lever (75) is actuated and leaves the motor pivot so the 3 3/4 ips drive on the motor will engage with drive pulley (66E) on the capstan.

7 1/2 ips

When this key is depressed, it releases the 3 3/4 ips key so the capstan lever (75) will be actuated by motor spring (82) causing the motor (57) to pivot so the 7 1/2 ips drive on the motor will engage with drive pulley (66A) on the capstan.

Off

The power to the tape transport is switched off and disengages the capstan motor idler drives when depressed.

Run

Depressing this key places the tape transport into operation.

Fast Rewind

By depressing this key, the tape will be rewound onto the supply reel to any desired place at a rapid rate of speed.

Fast Forward

By depressing this key, the tape will be advanced onto the take-up reel to any desired place at a rapid rate of speed.

Standby

This key turns the power on to the tape transport, opens the head assembly so the tape can be threaded, and releases the run, stop, fast rewind, or fast forward keys from the depressed position.

Head Selector

Set the switch to 2-T for 2-track tape and to 4-T for 4-track tape.

OPERATING INSTRUCTIONS

Threading the Tape

1. Depress the standby key.
2. Place a reel of tape on the supply spindle (2).
3. Place an empty reel on the take-up spindle (2).
4. Unwind approximately 12 inches of tape from the supply reel, hold a section taut and insert it into the head slot opening.
5. Insert the free end into one of the slots in the take-up reel. Turn the take-up reel a few complete revolutions to secure the tape to the reel and to take all slack up between reels.

Playback

1. Connect the outputs of the preamplifier being used to the inputs of an amplifier.
2. Depress the Standby key. It turns the AC power on and opens the head assembly.
3. Place the Selector Switch or Switches in play position.
4. Place a reel of tape on left-hand supply reel, and thread the tape through the head slot opening and between the capstan and pressure roller. Place an empty reel of the same size on the right-hand take-up reel and turn the reel in a counterclockwise direction to fasten the tape to the reel and to remove all slack between reels.
5. Switch the Head Selector Switch to 2-T for two track tape and to 4-T for four track tape.
6. Place the rubber reel retainers on the reel stand hubs.
7. Depress the speed key for the desired tape speed.
8. Depress the run key.
9. Adjust the volume controls, on stereo recordings, until the two meters are balanced. On monaural recordings, adjust the volume control to the desired listening level.

Recording

1. Connect the sound source to be recorded to the proper input receptacles on the preamplifier.
2. Thread a blank tape onto the transport.
3. Depress the desired speed key.
4. Set the Head Selector Switch to 2-T on models T-313 and T-323 and to 4-T on models T-333, T-337, and T-338. The four track models will also record 2 track when used with blank or bulk-erased tape.
5. Depress the interlock buttons, just to the left of the record/playback head, and move the levers to the right to place the transport in record operation.
6. Adjust the volume controls until the meters are

fluctuating in the center or upper half of the black area for 7 1/2 ips speed. Adjust slightly lower for 3 3/4 ips speed.

7. Depress the Run key.
8. When the recording is finished, set the selector switches to play and then depress the standby key.

Rewind

To rewind a tape, depress the key with the arrow pointing toward the left.

Fast Forward

To advance the tape, depress the key with the arrow pointing toward the right.

2-Track Monaural Recording

1. Thread the tape. See "Threading the Tape".
2. Connect the signal source to the left channel input.
3. Place the left channel in record position.

NOTE: Keep the right channel in play position and the volume turned down.

4. Make the recording.
5. After the recording is completed, reverse the reels; rethread the tape, and make a recording on the other half of the tape.
6. To play back the recordings, use the left channel output.

4-Track Monaural Recording

1. Thread the tape. See "Threading the Tape".
2. Connect the signal source to the left channel input.
3. Place the left channel in record position.

NOTE: Keep the right channel in play position and the volume turned down.

4. Make the recording.
5. After the recording is completed, reverse the reels; rethread the tape and make a second recording.
6. Place the left channel in play position and turn the volume down.
7. Connect the signal source to the right channel.
8. Reverse the reels, rethread the tape, and place the right channel in record position.
9. Make the recording.
10. After the third recording is completed, reverse reels, rethread tape, and make fourth recording.

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11. After the fourth recording is completed, the tape is wound onto the take-up reel and the first recording is then ready for playback.
12. Use the left channel to play back the first and second tracks and the right channel for the third and fourth tracks.

Microphone Recordings

1. Plug the two microphones into the two microphone input jacks.
2. Place the microphones six feet in front of the group to be recorded.
3. Place the microphones approximately six feet apart.

Phonograph Recording

1. Connect the record changer to input of the stereo amplifier.
2. Connect the tape head output leads to the proper input of the preamplifier. See Head and Preamplifier Hookup.
3. Connect the preamplifier to the input of the stereo amplifier.
4. Place the tape recorder in record position.
5. Place the record or records to be recorded on the record changer and place the record changer into operation.

Radio Recording

1. Connect the tape transport to a stereo amplifier.
2. Connect a stereo tuner to the stereo amplifier.
3. Tune to the desired program and record it as outlined in "Recording".

NOTE: A stereo tuner or separate AM and FM tuners may be connected to the high level inputs on the rear of the tape transport preamplifier.

Installing a RP-320 or a RP-320A Stereo Record/Playback Preamplifier or a RP-321 Monaural Record/Playback Preamplifier

1. Remove the gold aluminum cover plate (5) by removing the screws at each end.
2. Remove the green control panel (44) by removing the screws at the front corners.
3. Depress the 3 3/4 ips speed key and the standby key.
4. Place the tape transport on its right side.
5. Rotate the preamplifier equalizer switch shaft, on the RP-320 extending from the right side, fully clockwise.
6. Place the equalizer switch operating lever assembly on the equalizer switch shaft and temporarily position it against the preamplifier

chassis on the RP-320. Tighten the set screw finger tight.

7. Turn the gold record-interlock keys so the higher sections are to the left toward the mike input jacks.
8. Place the record-play indicator vanes on the control shaft with the pins on the vanes interlocking the slots in the outer control ring. When the selector switches are in the play position, the white plastic play sections of the vanes should face each other with the lettering horizontal. Place a felt washer on each control shaft
9. Hold the preamplifier in position and feed the two twisted-pair meter leads through the small hole in the deck plate.
10. Place the preamplifier equalizer switch shaft through its hole in the motor mounting bracket on the RP-320. Place the preamplifier in its correct position while guiding the record-interlock keys into their slots.
11. Insert two sheet metal screws into the top panel of the preamplifier through the deck plate; four sheet metal screws into the rear panel through the rear edge of the deck plate; and two sheet metal screws into the front panel through the front edge of the deck plate.
12. Recheck the equalizer switch shaft to be sure it is turned fully clockwise and is not binding in the clearance hole on the RP-320.
13. Loosen the set screw on the equalizer switch operating lever assembly and slide it down the shaft until the black steel pin fits into the slot in the motor shift bracket on the RP-320. Tighten the set screw.
14. Connect the long end of the equalizer arm spring (Part #77A71) over the steel pin in the equalizer switch operating assembly on the RP-320 and the short end to the left rear corner of the transport power supply chassis.
15. Connect the head leads to their appropriate receptacles on the preamplifier. See Head and Preamplifier Hookup.
16. Mount the record level meters onto their bracket.
17. Feed the meter leads through the hole in the meter bracket and connect the leads to the meters.
18. Fasten the meter bracket to the transport deck with two sheet metal screws.
19. Install the new control panel on the deck plate and fasten it with the two small brass screws that held the original panel.
20. Place the black selector switch lever knobs on the shafts over the record-play indicator vanes. Be sure they interlock with the outer control shaft slots. Place the lever knobs in the center position between the two sections of the gold interlock keys. The indicator vanes should have their white play sections in line and level. The selector level knobs will not move to the

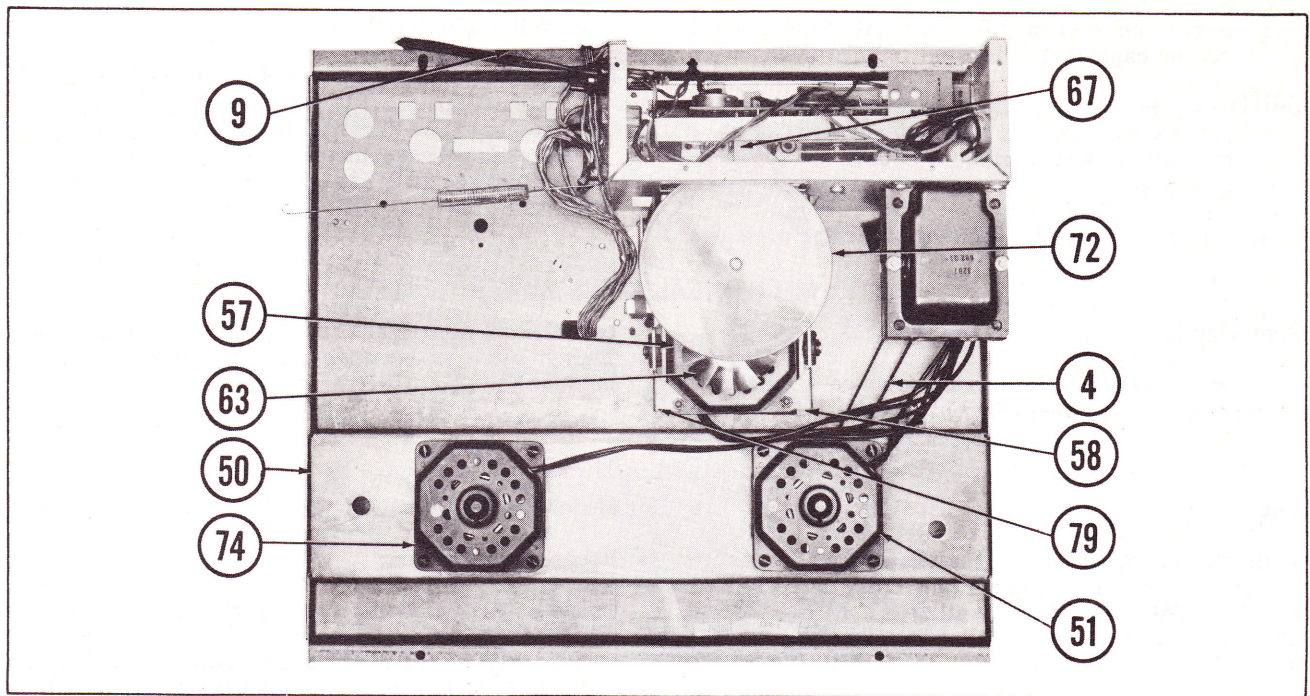


FIG. 2 BOTTOM VIEW OF MECHANISM

right or record position until the interlock keys are depressed

21. Place the volume control knobs on the center control shafts.

22. Knock out the two meter punch-outs in the long gold aluminum trim cover and install it using the mounting screws at each end.

HEAD AND PREAMPLIFIER HOOKUPS

Models T-313, T-323, and T-333 with a RP-320 or RP-320A Preamplifier

1. Connect the left channel, White record/ playback head lead to the L Record Head receptacle.
2. Connect the right channel Yellow record/ playback head lead to the R Record Head receptacle.
3. Connect the left channel Red erase head lead to the L Erase Head receptacle.
4. Connect the right channel Blue erase head lead to the R Erase Head receptacle.

Left tape head input of a stereo amplifier.

2. Connect the right channel Yellow head lead to the Right tape head input of the stereo amplifier.
3. Connect a ground wire between the ground shell of one of the input cables to the transport chassis.

T-310 with a RP-320 Preamplifier

1. Connect the White record/ playback head lead to the Record Head receptacle.
2. Connect the Red erase head lead to the Erase Head receptacle.

T-321

1. Connect the left channel White head lead to the

CLEANING

Capstan shaft, pressure roller (26), support guide post (22) record-playback heads (16), and (19) and erase head (15), may accumulate tape coating oxide, which is worn off tape as it passes these parts. Clean these parts with head cleaning solvent or with petroleum solvent. Never use cleaning fluids on the

capstan shaft, because the fluid may run down the shaft and into the bearings.

CAUTION: Never clean the record-playback heads or erase head with a metal object because they could be damaged.

LUBRICATION

Lubricants applied during manufacture will last for a long time. However, if parts are replaced, or after each 1,000 hours of operation, lubricate as follows:

1. Apply one drop of #10 motor oil to the top and bottom bearing of the take-up motor (51) and

rewind motor (74).

2. Apply one drop of #10 motor oil to the top and bottom bearings of capstan motor (57).

CAUTION: Be certain that no oil seeps onto the motor pulleys.

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3. Apply one drop of #10 motor oil to the top and bottom capstan bearings.

roller (26) bearing.

CAUTION: Be sure no oil seeps onto the drive pulleys (66A) and (66E) or onto any part of the capstan shaft extending above the top deck plate.

NOTE: Only a small amount of oil is needed on each bearing. It is better to use too little rather than too much. Oil on running surfaces, between motor pulleys and rubber idlers, could cause poor drive or no drive at all, as well as excessive wow and flutter.

4. Apply one drop of #10 motor oil to the pressure

MECHANICAL ADJUSTMENTS

Reel Stands

The reel stands are to be adjusted so the tape does not rub on the reel edges. To adjust, loosen the

two allen set screws and raise or lower the reel stands. Tighten the allen set screws to secure the reel stands in place.

ELECTRICAL ADJUSTMENTS

Oscillator

With the unit operating in record position, measure the oscillator plate voltages (pins 1 and 6 of V5) with an AC VTVM. Adjust the oscillator coil (A1, Models 320, 320A, or A6, Model RP-321) for equal voltages, approximately 100V RMS AC.

Model RP-321 (Erase Head) A8 for 1.5V

Record Equalization

Connect a $100\Omega + 1\%$ resistor in series with the low side of the record head. Connect an AC VTVM across the resistor. Remove the bias oscillator tube. Inject a 15KC Audio signal to the high level input jack and adjust the equalizer coil to peak at 15KC (Repeat procedure for second channel on stereo models).

Bias

Connect a $100\Omega + 1\%$ resistor in series with the low side of the record head. Connect an AC VTVM across the resistor. With the unit operating in record position, adjust as follows:

Record Level Meter

Remove the bias oscillator tube and disconnect the record head. Set unit for record, 7 1/2 ips operation. Inject a 1KC audio signal to the high level input jack. Adjust volume control for 3.75V RMS at the record head jack (measured with AC VTVM). Adjust record level meter adjust control, R3 or R4 (RP320), R70 (RP321) R104 or R105 (RP320A), until indicator coincides with the intersection of the red and black areas (Repeat procedure for second channel on stereo models).

- Models RP-320, RP-320A (4 Track Head)
Left Channel 3 3/4 ips A2 for .02V
- Models RP-320, RP-320A (2 Track Head)
Left Channel 7 1/2 ips A3 for .055V
- Models RP-320, RP-320A (4 Track Head)
Right Channel 3 3/4 ips A4 for .02V
- Models RP-320, RP-320A (2 Track Head)
Right Channel 7 1/2 ips A5 for .055V

TROUBLE CHART

Symptom	Cause	Remedy
Poor tape drive in Playback and Record.	<ol style="list-style-type: none"> 1. Oil or grease on driving surfaces of the drive wheel (66A) or (66E) and on upper pulley on capstan motor (57). 2. Oil, grease, or tape coating oxide on pressure roller (26) and on upper portion of capstan shaft. 	<ol style="list-style-type: none"> 1. See "Cleaning". 2. See "Cleaning".
No tape drive at 7 1/2 ips speed in playback and Record.	<ol style="list-style-type: none"> 1. Motor spring (82) disconnected or missing. 	<ol style="list-style-type: none"> 1. Replace motor spring (82).
No tape drive at 3 3/4 ips speed in Playback and Record.	<ol style="list-style-type: none"> 1. Motor spring (78) disconnected or missing. 	<ol style="list-style-type: none"> 1. Replace motor spring (78).
Take-up reel will not take up tape in Playback or Record.	<ol style="list-style-type: none"> 1. Loose set screw (3) in reel platform (2) causing reel platform to slip on motor shaft. 	<ol style="list-style-type: none"> 1. Tighten set screw (3).
No rewind.	<ol style="list-style-type: none"> 1. Loose set screw (3) in supply reel platform causing reel platform to slip on rewind motor shaft. 	<ol style="list-style-type: none"> 1. Tighten set screw (3).

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
Tape rubs against edge of reels.	1. Reel platforms need adjusting. 2. Loose rewind-take-up motor mounting bracket.	1. See "Reel Platform" under "Mechanical Adjustments". 2. Tighten the two screws on each end of the deck plate.
Tape spills during rewind or fast forward.	1. Memory switch needs adjusting.	1. Remove the electrical chassis cover off the tape transport. The memory switch positions itself one way when the rewind key is depressed and the other way when the fast forward key is depressed. Slightly bend the switch with a pair of long-nosed pliers.
Tape does not stop. Dynamic Brakes not functioning properly.	1. Weak selenium rectifier. 2. R163 or R164 open.	1. Replace selenium rectifier. 2. Replace R163 or R164.
Tape spills during Rewind when Stop key is depressed.	1. R164 open.	1. Replace R164.
Tape spills during Fast Forward when Stop key is depressed.	1. R163 open.	1. Replace R163.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	83B79	Reel Retainer	26	83A4	Pressure Roller
2	89A12	Reel Platform	27	A23822	Truarc Retaining Ring No. 5133-18S-MF-RS
3		Bristol Set Screw 8-32 x 3/16 Stl. Pl. Cup Point	28	63A3	Nylon Washer
4	83A19	Counter Drive Belt (WALSCO #1410-54)	29	91B47	Pressure Roller Ass'y.
5	89B32	Cover Plate	30	63A5	XP Bakelite Flat Washer
6		#6-32 x 1/8 PHBHMS Gold Finish Screw	31	77A9	Toggle Spring
7	89A14	Index Counter	32	71A19	Counter Mounting Plate
8	89A11	Piano Key	33*	72B74	Retractor
9	91B1106	Deck, Riveted Ass'y.	34*	86A-8	Record-Playback Pressure Pad
10		#6 x 1/4 - Type Z, Gold Plated Screw	35*	91A41	Pressure Pad Arm Subassembly
11	89A13	Head Cover	36*	86A8	Erase Head Pressure Pad
12		#4 x 1/4 - Type Z, Gold Plated Screw	37*	91A42	Erase Head Pressure Pad Arm Ass'y.
13		#4 x 1/4 - Type Z, PHBHMS, Stl. Pl.	38	77A40	Pressure Pad Actuating Spring
14	91A1047	Erase Head Mtg. Ass'y. T-310, T-312, T-313, T-314, T-323, T-333	39*	77A25	Pressure Pad Arm Spring
15	36B5	Erase Head T-310, T-312	40*	72A63	Pressure Pad Yoke
	36B4	Dual Erase Head T-313, T-323	41	76A36	Key Shaft
	36B27	Erase Head T-314	42	67X24	Retaining Ring
	36B16	Erase Head T-333	43	89A27	Control Panel
16	36B17	Play-Record Head T-310	44	89A28	Control Panel Models T-310, T-313, T-312
	36B15	Play-Record Head T-312, T-313, T-321, T-323, T-333		89A26	Control Panel Models T-321, T-323, T-333, T-337, T-338
	36B26	Lower Play-Record Head T-314	45	86A84	Keys Bumper
17		#6 -32 x 3/8 PHBHMS, Stl. Pl. Screw	46	89A10	Piano Key 3 3/4 ips and Stop
18		#6 -32 x 1/4 PHBHMS, Stl. Pl. Screw	47	72A66	Key Coupler, Short
19	36B17	Upper Record-Playback Head, T-314	48	72A65	Key Coupler, Long
	36B12	Record-Playback Head, T-321, T-323, T-333	49		#6 -32 x 3/8 PHBHMS, Stl. Pl.
20	77A50	Head Mounting Spring	50	72C135	Motor Mounting Bracket
21	91A1046	Record-Playback Head Mtg. Ass'y.	51	35B4	Take-up Motor
22	75A131	Tape Guide Post		35C8	Alt. Take-up Motor
23*	72A67	Yoke Retractor Coupler	52	86A7	Insulating Felt Gasket
24	A23822	Truarc Retaining Ring No. 5133-18S-MF-RS	53	72B479	Capstan Support
25	63A3	Nylon Washer	54	72A52	Slide Return Spring
			55	72A493	Motor Disengage Slide
			56	61A6	Shoulder Type Screw
			57	35C16	Capstan Motor Ass'y.

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MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
58	A25382	Right Capstan Motor Support	69	B25381	Capstan Yoke
59	B20029P41	Grommet	70	79A8	Bearing, Centered Bronze
60	B20025P23	Spacer	71	A25255	Bearing, Retainer
61		#6 - 32 x 3/8 Stl. Phillips PHL Head Screw	72	73B11	Flywheel
62		#8 - 32 x 3/16 Stl. Pl. Bristol Set Screw	73		Allen Head Set Screw
63	72A576	Motor Fan	74	35B5	Rewind Motor
64		Fiber Washer		35C9	Alt. Rewind Motor
65	B20089P71	Felt Washer	75	91A1039	Capstan Lever Ass'y.
66	91B32	Capstan Shaft and Drive Wheel Ass'y. Includes Items 66A, 66B, 66C, 66D, and 66E	76	83A1	Isolator
67	72B484	Slide Actuator Bracket	77	A25396P1	Drive Pulley
68	B20089P73	Thrust Washer	78	A25397P1	Motor Spring
			79	A25382	Left Capstan Motor Support
			80	75A133	Pivot Actuator Stud
			81	67X25	Retaining Ring, Truarc #5133-12
			82	77A70	Motor Spring

* 91B10-60 Includes items 23, 33, 36, 37, (1) 39, 40 (2 Heads) Assembly used on T-310, T-312, T-313

* 91B10-80 Includes items 23, 33, 34, 35, 36, 37, 39, 40 (3 Heads) Assembly used on T-323, T-333, T-337, T-338

* 91B1102 Includes items 23, 33, 34, 35, (1) 39, 40 Assembly used on T-321.

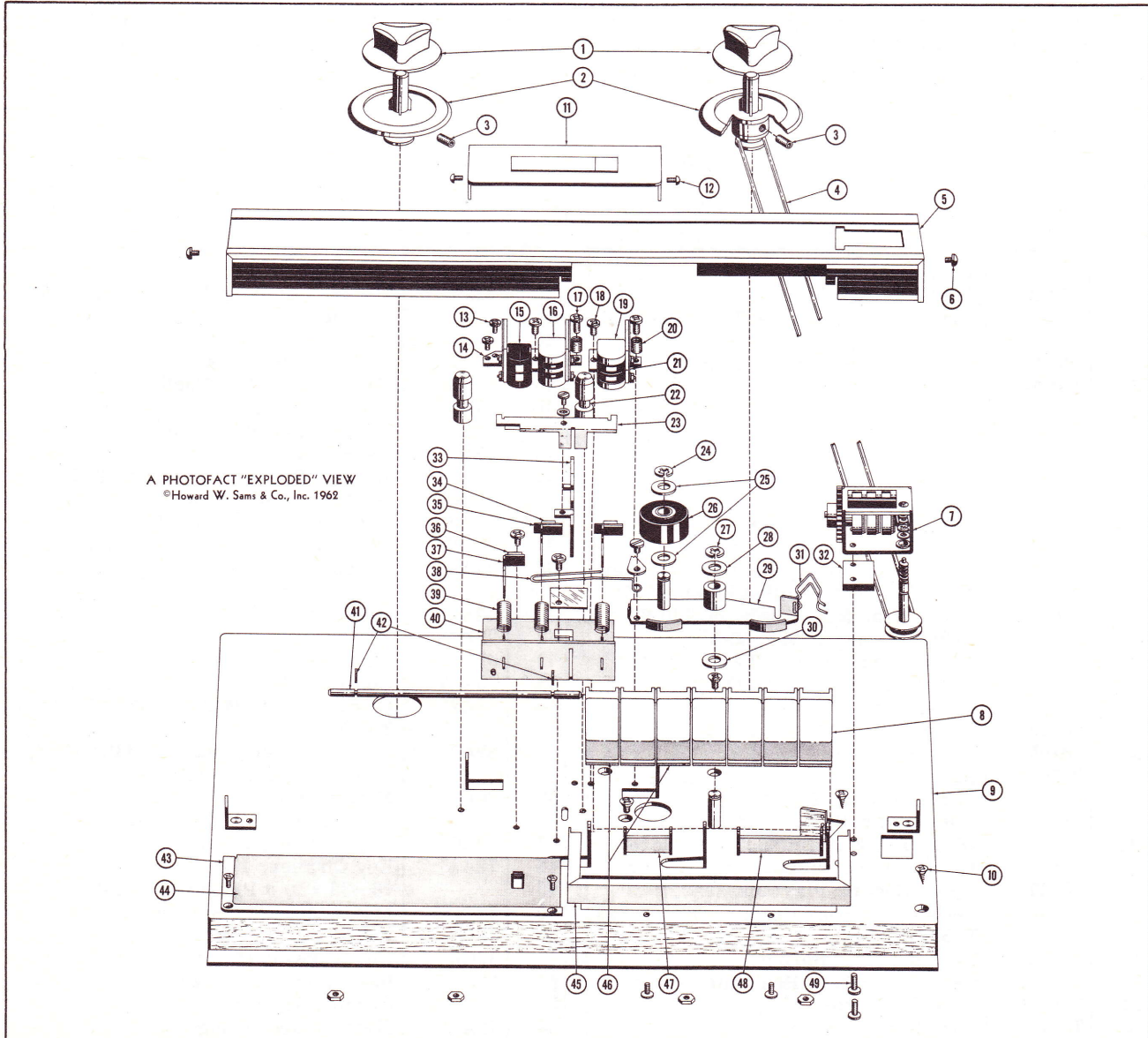
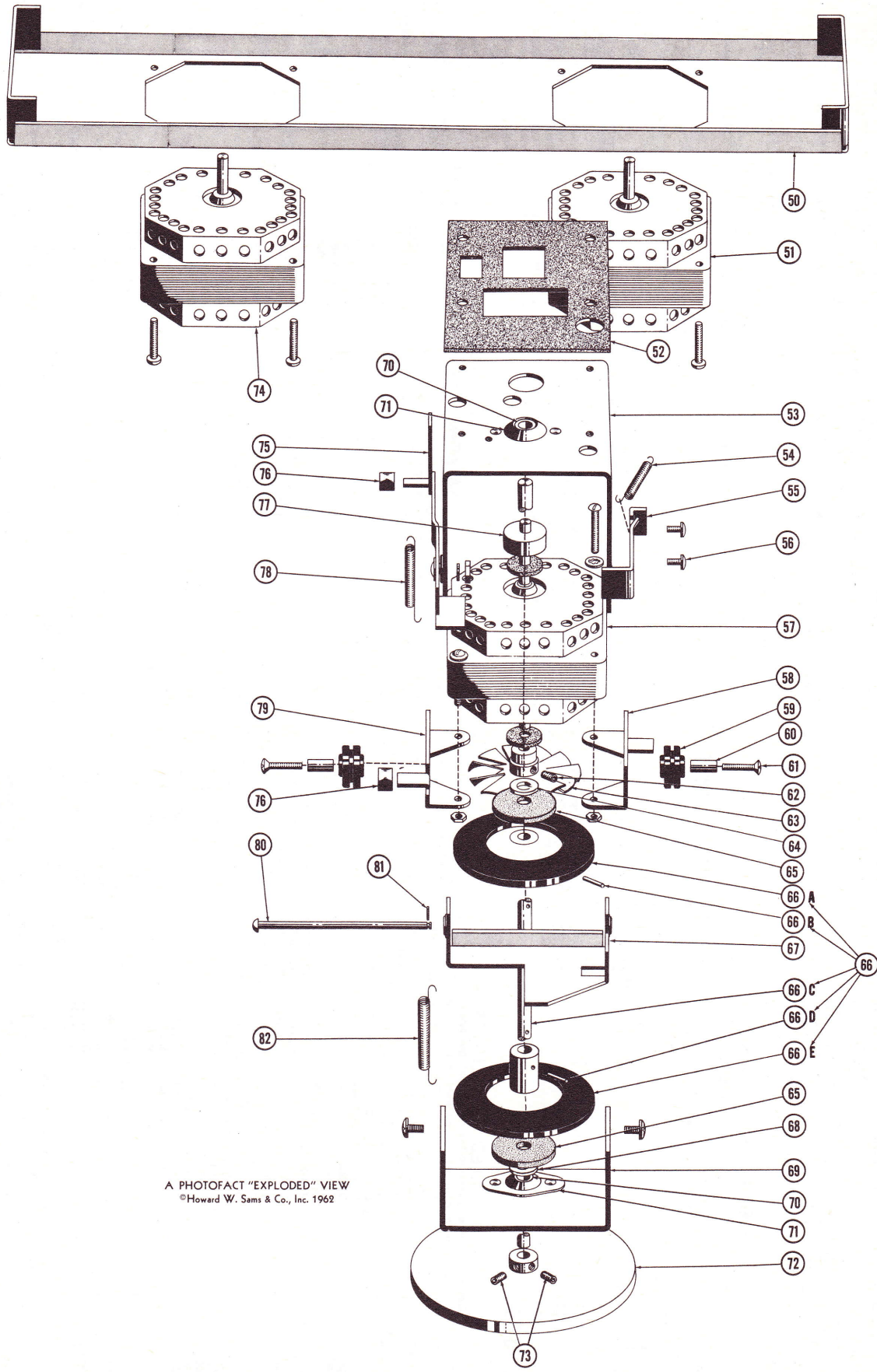


FIG.3A EXPLODED VIEW OF PARTS ABOVE DECK ASSEMBLY



A PHOTOFAC "EXPLODED" VIEW
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FIG.3B EXPLODED VIEW OF PARTS BELOW MOTOR MOUNTING BRACKET

RP-320 PARTS LIST AND DESCRIPTIONS (Cont'd)

RP-320 CHASSIS—TOP VIEW

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BELL PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Equalizer	31A60				
L2	Equalizer	31A60				
L3	Osc.	31A51				

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA				NOTES
		BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	
T1	PRI 117V @ 50VCT .3A SEC. 1 24V @ .250A DC SEC. 2 .030A DC SEC. 3 6.3V @ 1.2A SEC. 4 SEC. 5	32B121				

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
		BELL PART No.	RCA PART No.	SYLVANIA PART No.	
M1	CURRENT (Measured) .250A	42B2 *	304B *		* Selenium, Bridge Type

SIGNAL DIODES

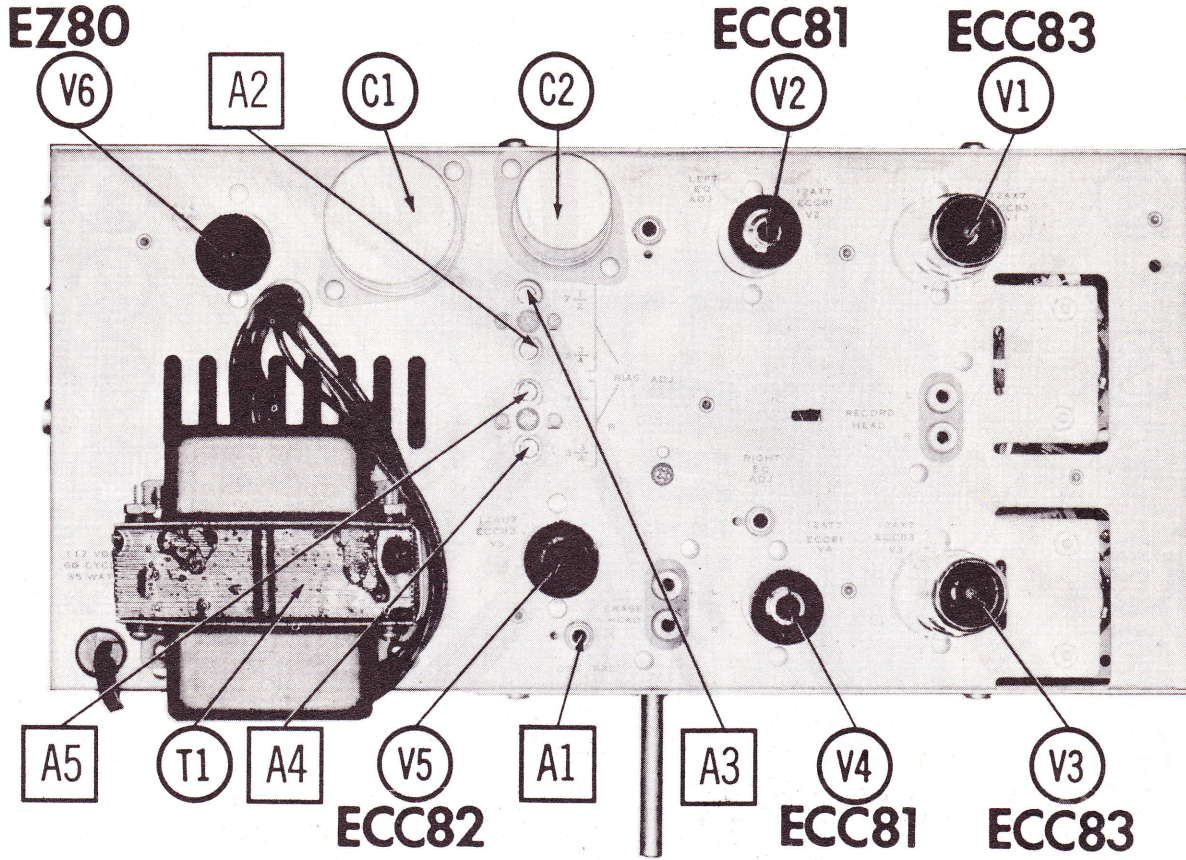
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		BELL PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	IN87	42A15	IN87	IN87	Record Level (Pigtail)
M3	IN87	42A15	IN87	IN87	

MISCELLANEOUS

ITEM No.	PART NAME	BELL PART No.	NOTES
M4	Switch	43A90	Equalization (Rotary Type) Record Level Indicator, Left Channel Record Level Indicator, Right Channel
M5	Meter	46B10	
M6	Meter	46B10	

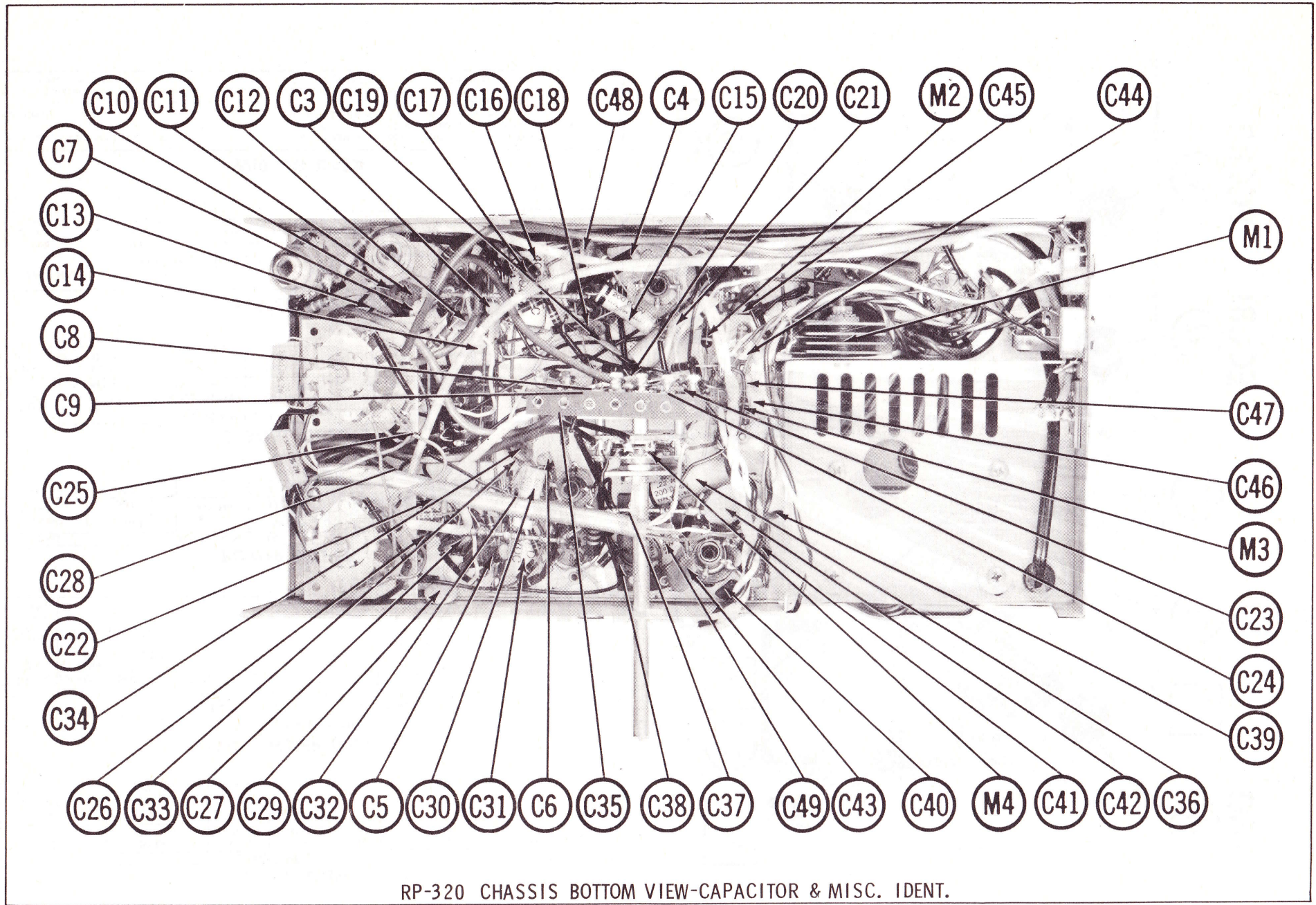
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Power Cord	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 1765-B (6 FT. Length)
Photo Pick-up Arm Cable	Use BELDEN No. 1725-K (1/2 FT. Length)
	Use BELDEN No. 8401
	Use BELDEN No. 8430 (Two Conductor - Twisted)

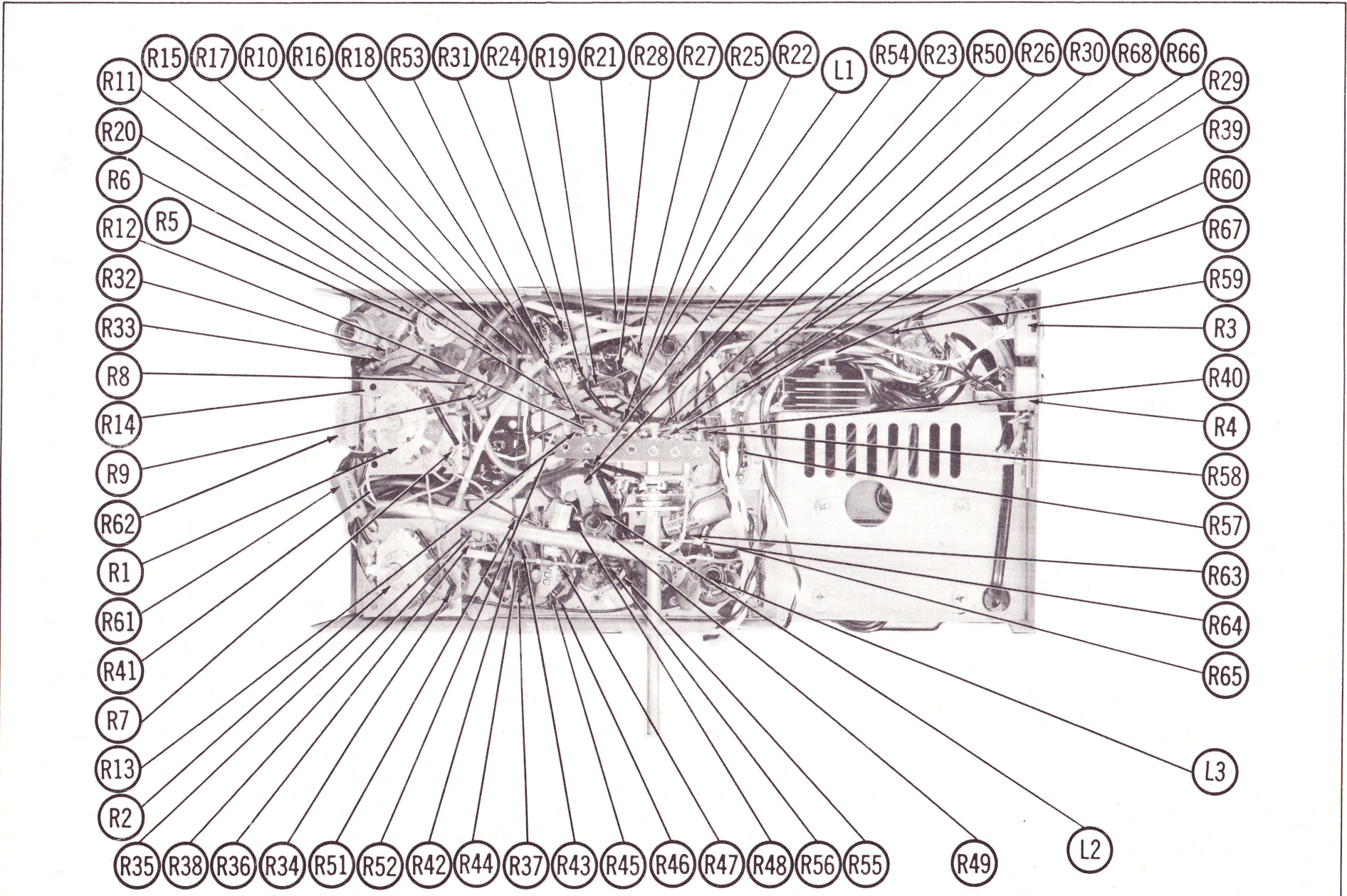


BELL MODEL T-300 Series
(Ch. RP-320, RP-320A, RP-321)

FOLDER 5



RP-320 CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.



RP-320 CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

(Ch. RP-320, RP-320A, RP-321)
BELL MODEL T-300 Series

RP-321 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
V7	AF Amplifier	ECC83/12AX7	V9	Bias Oscillator	ECC82/12AU7			
V8	AF Amp. -Record Level Indicator Amp.	ECC81/12AT7	V10	Rectifier	EZ80/6V4			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C50A	20	350	23B92		D0032	XC4-50	FP420.35	TMQ-4616	TVL-4635
B	20	350							
C	20	300							
D	20	300							
C51A	150	25	23B93				WP202.5		
B	150	25					TC25015		
C	150	25							
C52	20	6	23B8	PTT25	NLW20-6	MT1-10	TT15X20	MLV20-12	TE-1090
C53	20	6	23B8	PTT25	NLW20-6	MT1-10	TT15X20	MLV20-12	TE-1090

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.	
C54	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10	
C55	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30	
C56	800 10%		DI-820	DD-801	5R5T8	CCD-801	GP382	10TS-T80	
C57	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30	
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C59	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50	
C60	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C61	.013 200V				D PMS6S12	6DP-2-123	GEM-6112	6PS-S12	
C62	.25 400V				CUB4P25	4DP-5-254	GEM-4025	4TM-P25	
C63	270 10%		P488N-25	DD-271	Li0T27	CCD-271	GP327	10TS-T27	
C64	68 NPO		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68	
C65	68 NPO		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68	
C66	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C67	.22 200V		P288N-22	DD-801	CUB2P22	ZDP-4-224	GEM-2022	2TM-P22	
C68	800 10%		DI-820		5R5T8	CCD-801	GP382	10TS-T80	
C69	1800 5%		1464-0018		5R5D18	CM-19B-182J	MCJ456.5	MS-218	
C70	2200 10%		DI-2200		1R5D22	CCD-222	GP222	10TS-D22	
C71	2200 10%		DI-2200		1R5D22	CCD-222	GP222	10TS-D22	
C72A	15-150	#25A22							
B	15-150								
C73	20000								
			BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20	

Bell Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	BELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R69A	Switch		18B8					Selector Volume Meter Adjust.
B	250K	½						
R70	5000Ω	2(WW)	15A100		39-5000	112-5000	FL-5K	

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 TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R71	100K				R87	1meg			
R72	2700Ω				R88	270K			
R73	120K				R89	270K			
R74	10K				R90	2.2meg			
R75	390K				R91	27K 1W			
R76	4700Ω				R92	6800Ω			
R77	200K				R93	4700Ω			
R78	1.2meg				R94	47K			
R79	2.2meg				R95	47K			
R80	100K				R96	47K			
R81	1200Ω				R97	10K 1W			
R82	10K				R98	1200Ω 2W			
R83	1meg				R99	1200Ω 2W			
R84	22K				R100	15Ω 1W			
R85	270Ω				R101	3.3meg			
R86	2200Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BELL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L4	Equalizer	31A60					
L5	Osc.	31A51					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	117V @ .3A	520VCT @ .030A DC	24V @ .150A DC	32B121					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 1.2A								

POWER RECTIFIERS

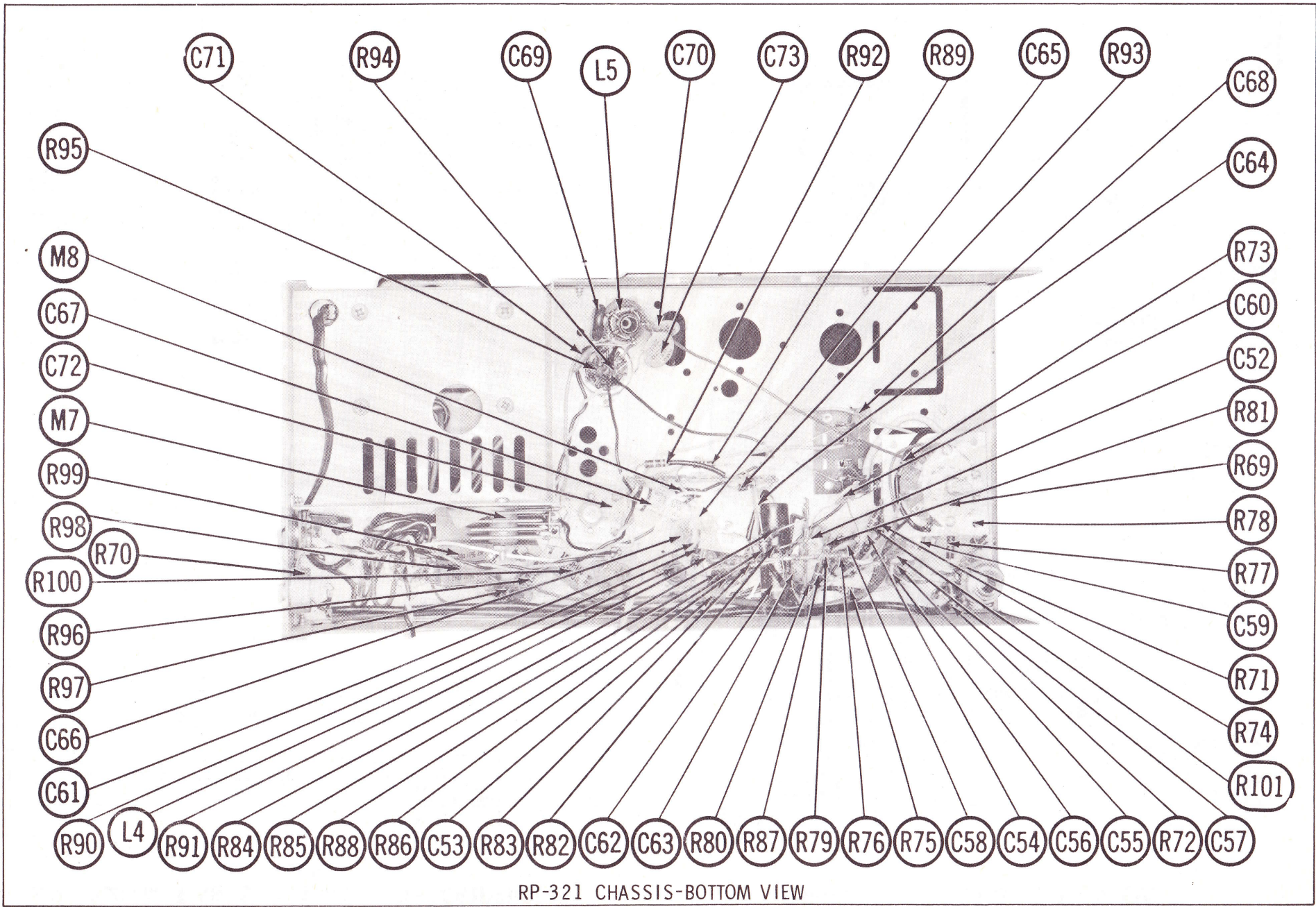
ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BELL PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M7	.250A	42B2 *		304B *		* Bridge Type Selenium

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BELL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M8	1N87	42A15		1N87	1N87	Record Level

MISCELLANEOUS

ITEM No.	PART NAME	BELL PART No.	NOTES
M9	Meter	46B10	Record Level Indicator



BELL MODEL T-300 Series
 (Ch. RP-320, RP-320A, RP-321)
 RP-321 CHASSIS-BOTTOM VIEW

RP-320A PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC		RAYTHEON		SYLVANIA	
	USE	TYPE	ITEM No.	USE	TYPE	
V11	Left Channel AF Amp.	ECC88/12AX7	V14	Right Channel AF Amp. - Record Level Ind. Amp. Bias Oscillator	ECC81/12AT7	
V12	Left Channel AF Amp. - Record Level Ind. Amp.	ECC81/12AT7	V15	Rectifier	ECC82/12A6TA	
V13	Right Channel AF Amp.	ECC88/12AX7	V16		EZ80/6V4	

ELECTROLYTIC CAPACITORS

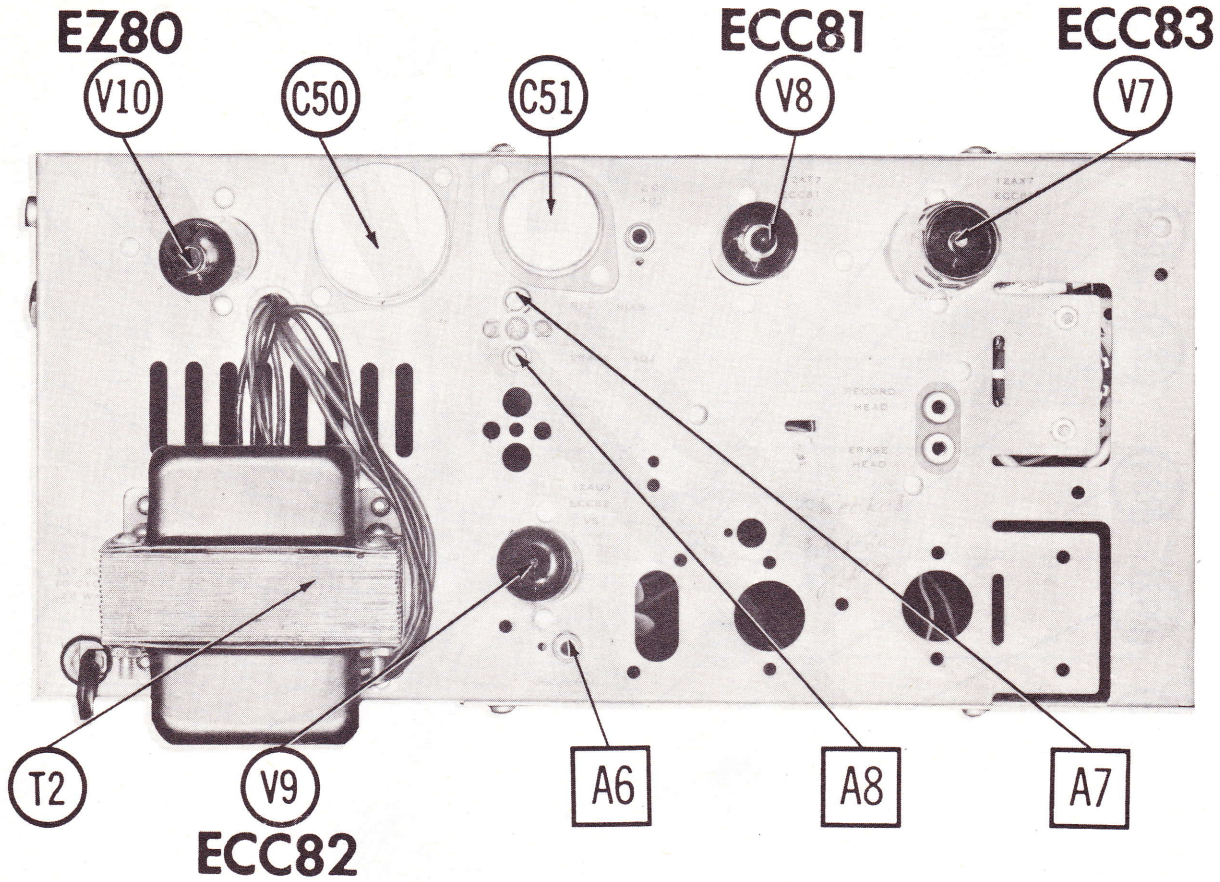
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C74A	.20	350	23A113			XC3-23	FP217 TC65	TMD-2375 TD-20-150	
C75A	.20	350	23A114				TT15X20	MLY20-12	
C76	.20	6	23B8	PTT25	NLW20-6	MTL-10	TT15X20	MLY20-12	TE-1090
C77	.20	6	23B8	PTT23	NLW20-6	MTL-10	TT15X20	MLY20-12	TE-1090

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.
C78	100 N750 10%		N750-DI 100	DTN-100	C107TU	CCTN-101	CNT-310	10TCU-T10
C79	3000 10%		DI-3000	PM6D3	PM6D3	CCD-302	JL-233	10TS-D30
C80	3000 10%		DI-3000	PM6D3	PM6D3	CCD-302	JL-233	10TS-D30
C81	800 10%		BPD-01	DD-801	5R578	CCD-801	GF382	10TS-T80
C82	10000		P288N-05	DD-503	BYA10S1	CCD-103	B-110	5HK-S10
C83	.05 200V		BPD-01	DD-103	BYA10S1	CCD-103	GEM-415	2TM-S50
C84	10000		P488N-25	DD-271	DPM6S12	CCD-103	B-110	5HK-S10
C85	.013 200V		DI-270	DD-151	LI0715	CCD-271	GF327	10TS-T27
C86	.25 400V		DI-150	DD-151	LI0715	CCD-151	GF315	10TS-T15
C87	270 10%		P288N-22	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C88	150 10%		BPD-01	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C89	10000		DI-3000	DTN-100	C107TU	CCTN-101	GEM-2022	2TM-P22
C90	.22 200V		DI-3000	DTN-100	C107TU	CCTN-101	JL-233	10TS-D30
C91	100 N750 10%		N750-DI 100	DTN-100	C107TU	CCD-302	JL-233	10TS-D30
C92	3000 10%		DI-3000	PM6D3	PM6D3	CCD-302	JL-233	10TS-D30
C93	3000 10%		DI-3000	PM6D3	PM6D3	CCD-302	JL-233	10TS-D30
C94	800 10%		BPD-01	DD-801	5R578	CCD-801	GF382	10TS-T80
C95	10000		P288N-05	DD-503	BYA10S1	CCD-103	B-110	5HK-S10
C96	.05 200V		BPD-01	DD-103	BYA10S1	CCD-103	GEM-415	2TM-S50
C97	10000		P488N-25	DD-271	DPM6S12	CCD-103	B-110	5HK-S10
C98	.013 200V		DI-270	DD-151	LI0715	CCD-271	GF327	10TS-T27
C99	.25 400V		DI-150	DD-151	LI0715	CCD-151	GF315	10TS-T15
C100	270 10%		P288N-22	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C101	150 10%		BPD-01	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C102	10000		DI-3000	DTN-100	C107TU	CCTN-101	GEM-2022	2TM-P22
C103	.22 200V		DI-3000	DTN-100	C107TU	CCTN-101	JL-233	10TS-D30
C104	800 10%		P488N-25	DD-271	DPM6S12	CCD-103	B-110	5HK-S10
C105	800 10%		DI-270	DD-151	LI0715	CCD-271	GF327	10TS-T27
C106	220 10%		DI-150	DD-151	LI0715	CCD-151	GF315	10TS-T15
C107	220 10%		P288N-22	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C108	1800 10%		BPD-01	DD-103	CUB2P22	CCD-103	B-110	5HK-S10
C109	2200 10%		DI-2200	DD-821	5R578	CCD-801	GEM-2022	2TM-P22
C110	2200 10%		DI-2200	DD-821	5R578	CCD-801	GEM-2022	2TM-P22
C111A	15-150	#25A22		DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C112A	15-150	#25A22		DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C113	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

Bell Part Number.



RP-320A PARTS LIST AND DESCRIPTIONS (Cont'd)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RI02A	Switch		18B10					Selector, Left Channel Volume, Left Channel Selector, Right Channel Volume, Right Channel Meter Adjust, Left Channel Meter Adjust, Right Channel
B	250K							
RI03A	Switch		18B10					
B	250K							
RI04	5000Ω	2(WW)	15A100		39-5000	112-5000	FL-5K	
RI05	5000Ω	2(WW)	15A100		39-5000	112-5000	FL-5K	

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 TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
RI06	100K				RI34	3.3meg			
RI07	2700Ω				RI35	390K			
RI08	120K				RI36	4700Ω			
RI09	10K				RI37	200K			
RI10	3.3meg				RI38	1.2meg			
RI11	390K				RI39	2.2meg			
RI12	4700Ω				RI40	100K			
RI13	200K				RI41	1200Ω			
RI14	1.2meg				RI42	10K			
RI15	2.2meg				RI43	10meg			
RI16	100K				RI44	22K			
RI17	1200Ω				RI45	3300Ω			
RI18	10K				RI46	6800Ω			
RI19	10meg				RI47	1meg			
RI20	22K				RI48	270K			
RI21	3300Ω				RI49	270K			
RI22	6800Ω				RI50	10meg			
RI23	1meg				RI51	27K 1W			
RI24	270K				RI52	6800Ω			
RI25	270K				RI53	4700Ω			
RI26	10meg				RI54	47K			
RI27	27K 1W				RI55	47K			
RI28	6800Ω				RI56	3900Ω 2W			
RI29	4700Ω				RI57	3900Ω 2W			
RI30	100K				RI58	470K			
RI31	2700Ω				RI59	10K 1W			
RI32	120K				RI60	1200Ω 2W			
RI33	10K				RI61	4.7Ω			

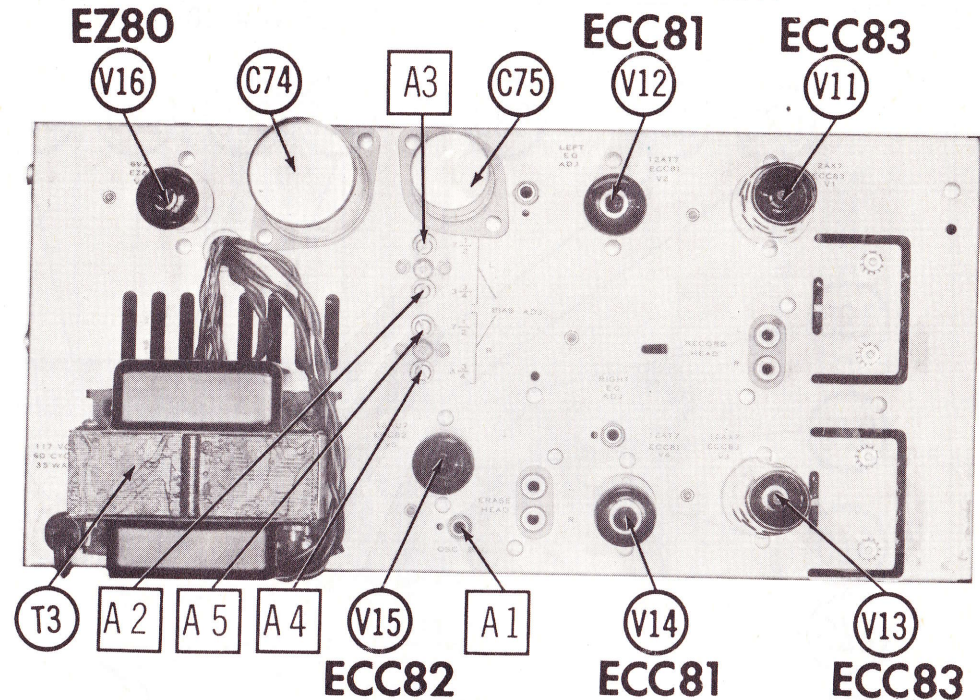
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BELL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L6	Equalizer	31A60					
L7	Equalizer	31A60					
L8	Osc.	31A51					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triod PART No.	
T3	117V @ .3A	520VCT @ .030A	24V @ .150A DC	32B121 ①					① Part #32B171 used in 50% power versions
	6.3V @ 1.2A								

RP-320A CHASSIS—TOP VIEW



POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BELL PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
MI0	.250A	42B2 *		304B *		* Bridge Type Selenium

SIGNAL DIODES

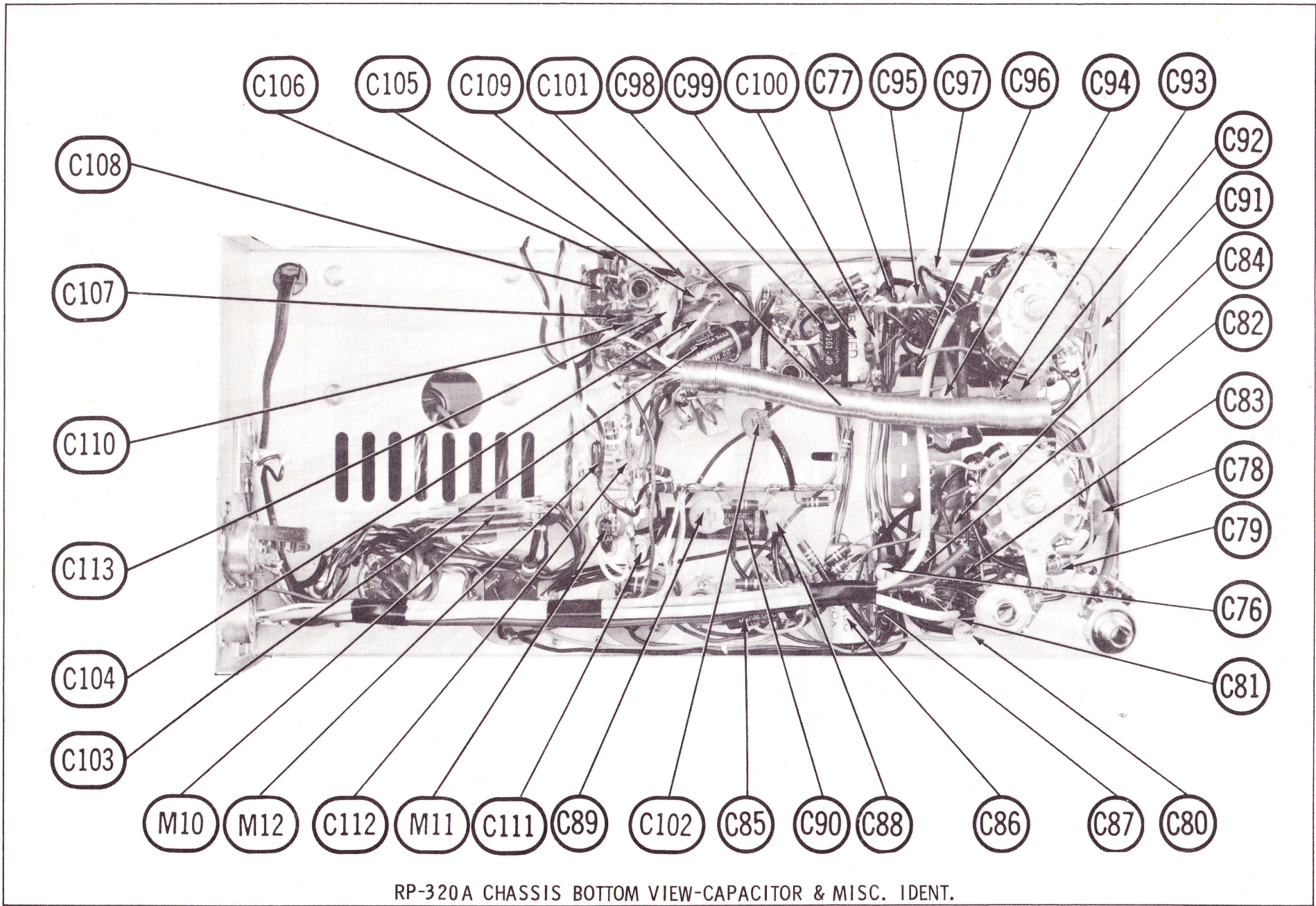
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BELL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
MI1	1N87	42A15		1N87		Record Level (Pigtail)
MI2	1N87	42A15		1N87		Record Level (Pigtail)

MISCELLANEOUS

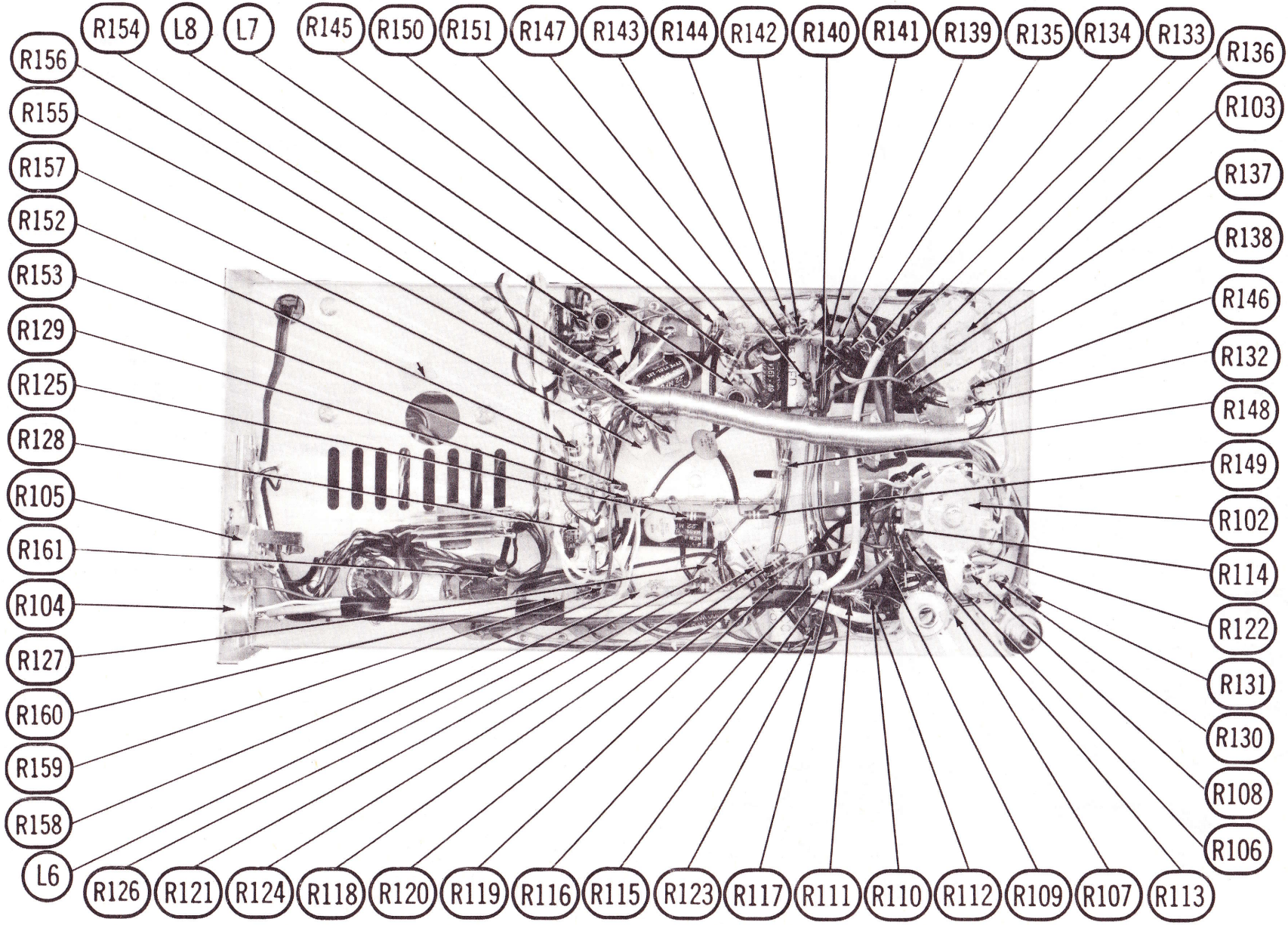
ITEM No.	PART NAME	BELL PART No.	NOTES
MI3	Meter	46B10	Record Level Left Channel
MI4	Meter	46B10	Record Level Right Channel

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)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RP-320A CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.



RP-320A CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

(Ch. RP-320, RP-320A, RP-321)
BELL MODEL T-300 Series

HEAD-POWER PARTS LIST AND DESCRIPTIONS

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.
C114	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C115	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10

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 TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R162	75Ω 10W	PW10-75	10W-SQ-75		R164	50Ω 5W	PW5-50	5W-SQ-50	
R163	150Ω 5W	PW5-150	5W-SQ-150						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BELL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	117V @ .210A	35V @ .700A AC		32B1					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BELL PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M15	.100A	B-20107P10 *		4N33-1B1-RV*		* Selenium, Bridge Type

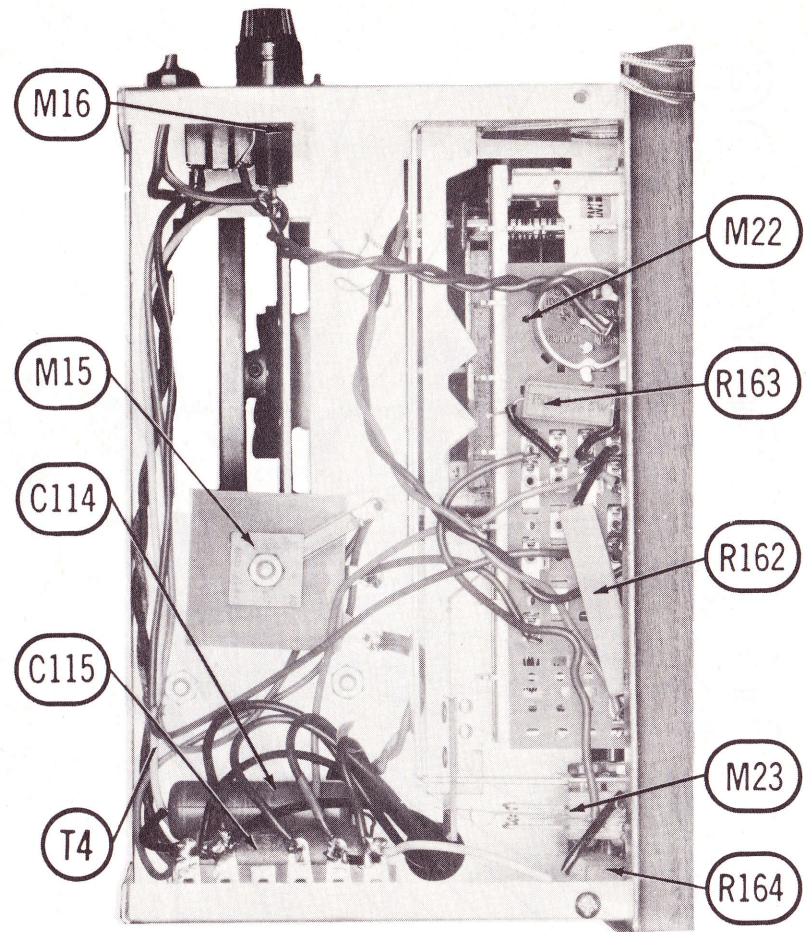
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BELL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M16	3AG	2 8/10A 125V S/B	53X3	53A8	313003 (3AG 2 8/10A 125V S/B)	342001	MDL 2 8/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	BELL PART No.	NOTES
M17	Head	36B12	Record-Playback, 4 Track
M18	Head	36B15	Record-Playback, 2 Track
M19	Head	36B16	Erase, 4 Track
M20	Head	36B4	Erase, 2 Track
M21	Switch	B-20219P4	Head Selector (DPDT Slide Type)
M22	Switch	43C99	Function Selector (Pushbutton Type)
M23	Switch	43A101	Memory (Leaf Type)
M24	Switch	43B103	Auto-Stop
M25	Motor	35B4	Takeup
M26	Motor	35B5	Rewind
M27	Motor	35C16	Capstan Ass'y.

POWER CHASSIS—BOTTOM VIEW



CABINETS & CABINET PARTS

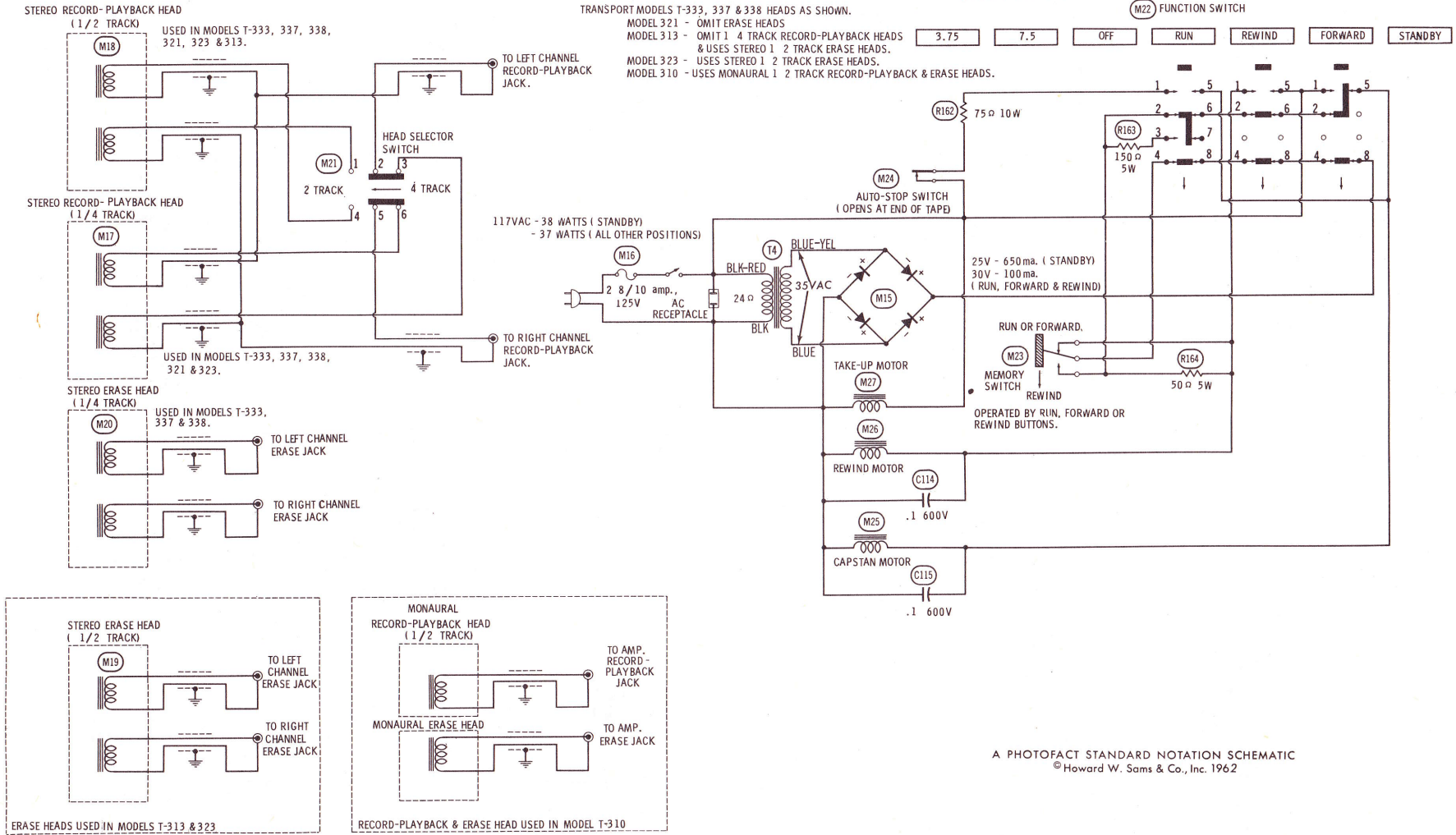
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	84A66	With Indicator
Knob	84A65	Lever

WIRING DATA

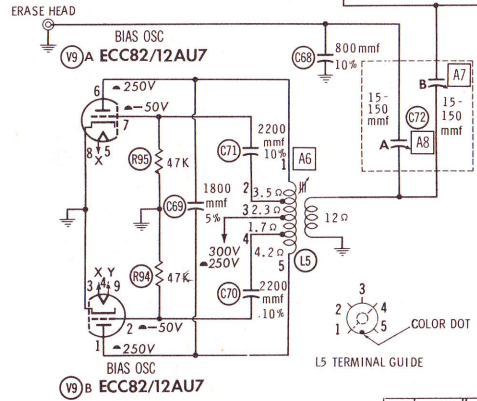
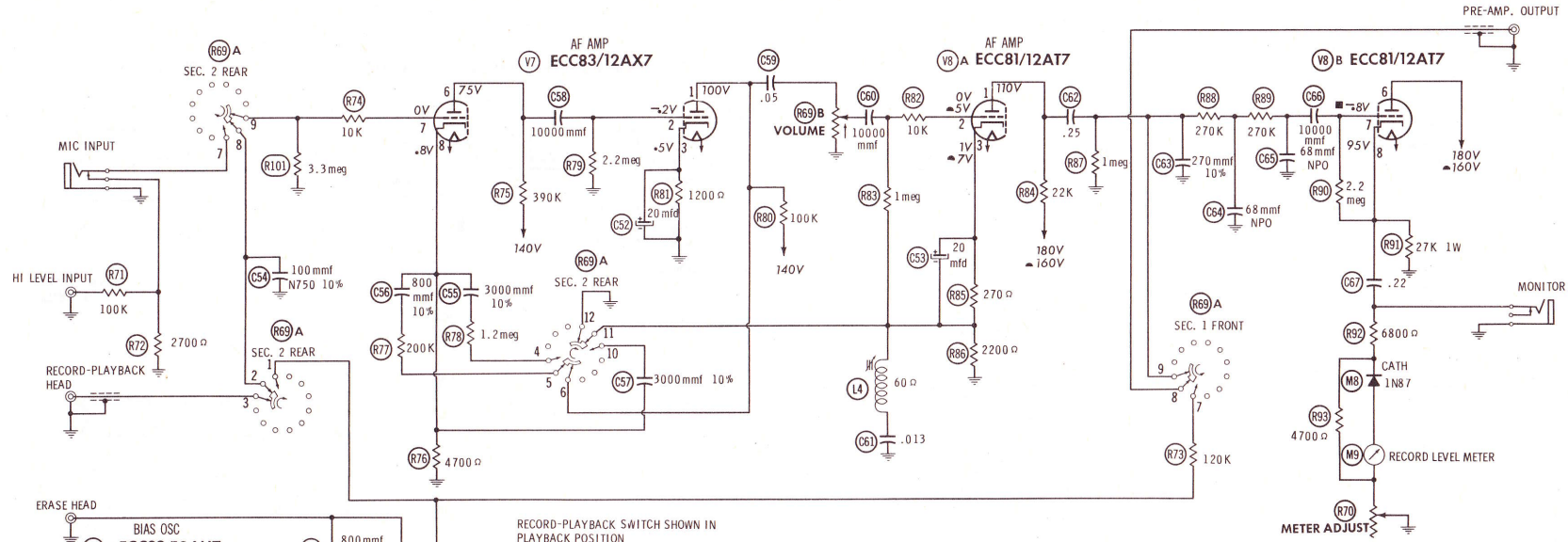
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1785-B (6 Ft. Length)
	1725-K (7½ Ft. Length)

SET MUST BE RETURNED TO STANDBY POSITION BEFORE OFF, RUN, REWIND OR FORWARD BUTTONS CAN BE DEPRESSED.



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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BELL MODEL T-300 Series
 (Ch. RP-320, RP-320A, RP-321)
 HEAD & POWER SCHEMATIC

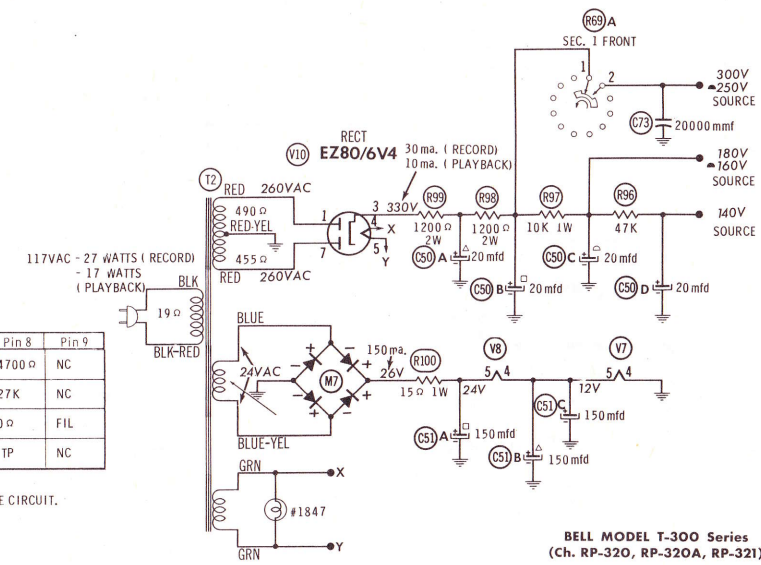


■ MEASURED FROM CATHODE

RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V7	ECC83 12AX7	††1160K	2.2meg	1200 Ω	0 Ω	15 Ω	††450K	3.3meg ▲13K	4700 Ω	NC
V8	ECC81 12AT7	††135K	1meg	270 Ω ▲2500 Ω	15 Ω	30 Ω	††13K	2.2meg	27K	NC
V9	ECC82 12AU7	††12500 Ω	47K	0 Ω	FIL	FIL	††2500 Ω	47K	0 Ω	FIL
V10	EZ80 6V4	490 Ω	NC	†	FIL	FIL	NC	455 Ω	TP	NC

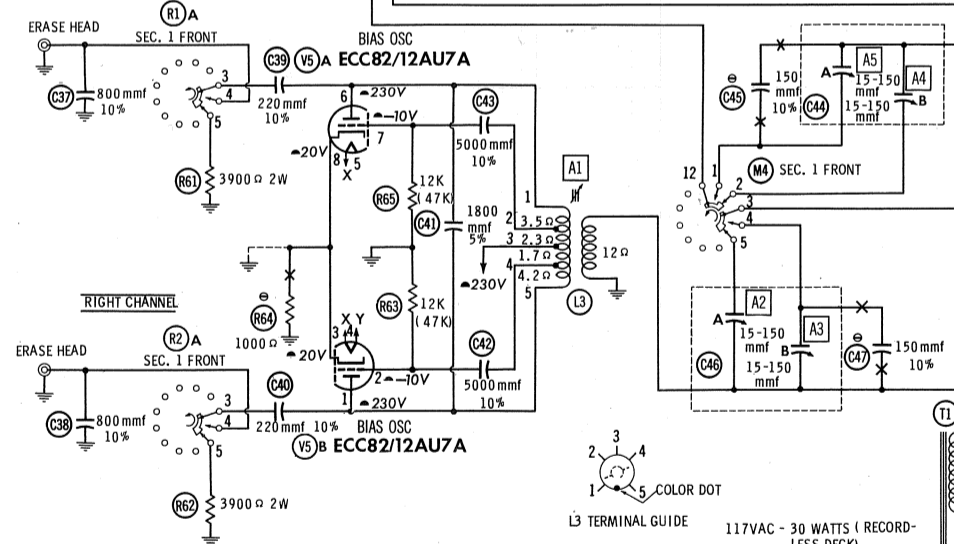
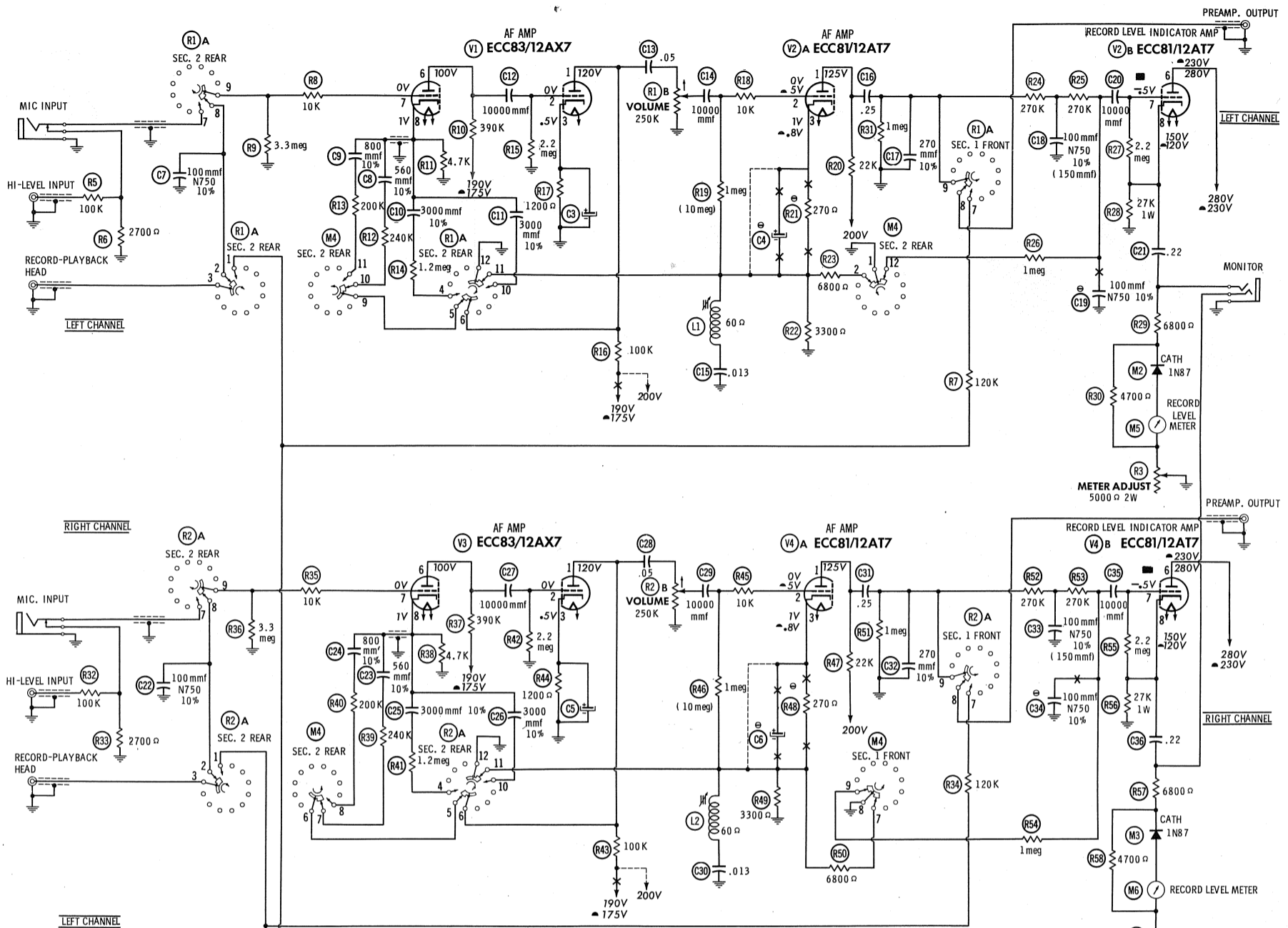
ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
 † THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
 †† MEASURED FROM PIN 3 OF V10.
 NC NO CONNECTION
 † MEASURED IN "RECORD" POSITION.
 TP TIE POINT



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BELL MODEL T-300 Series
 (Ch. RP-320, RP-320A, RP-321)

RP-321 SCHEMATIC



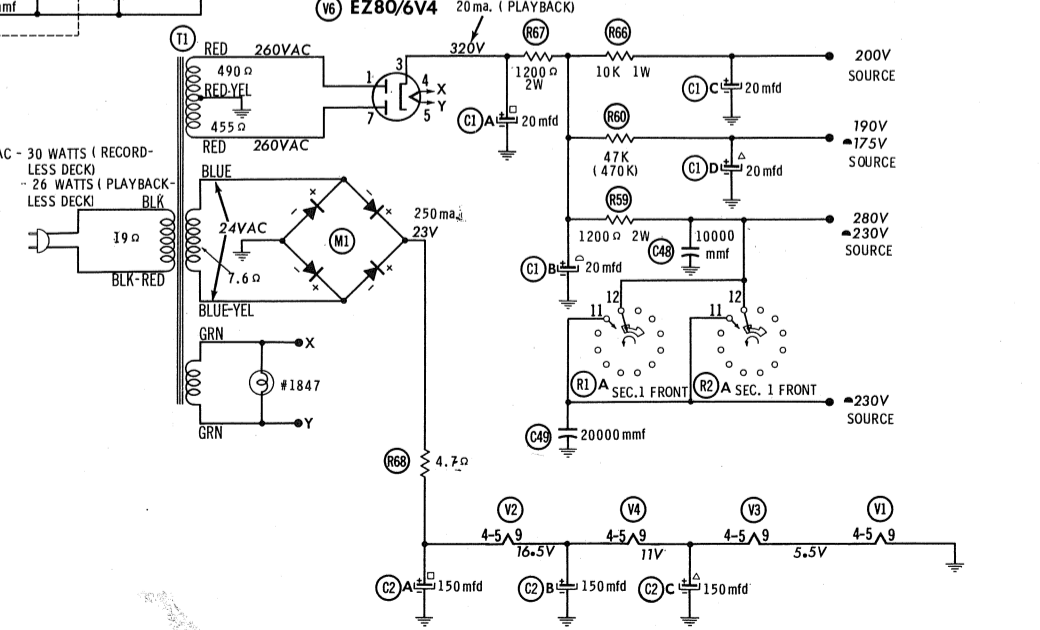
RECORD-PLAYBACK SWITCHES (R1A & R2A) SHOWN IN PLAYBACK POSITION
 3 3/4 & 7 1/2 I.P.S. EQUALIZATION SWITCH (M4) SHOWN IN 3 3/4 I.P.S. POSITION
 MODEL RP-320, BEGINNING WITH SERIES NO. "20", USE SAME POWER SUPPLY AS THAT SHOWN ON SCHEMATIC FOR MODEL RP-320A.

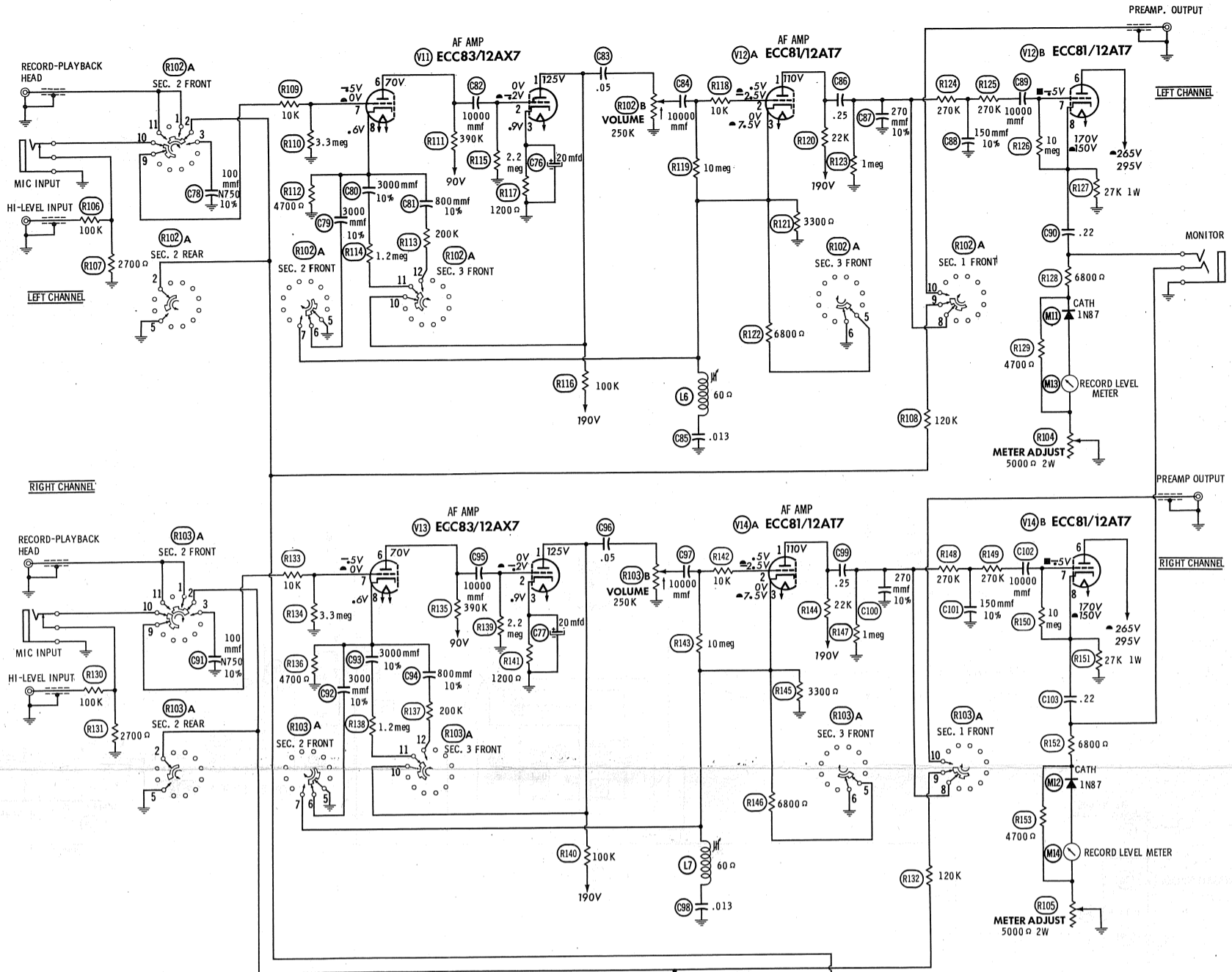
MEASURED FROM CATHODE

RESISTANCE READINGS

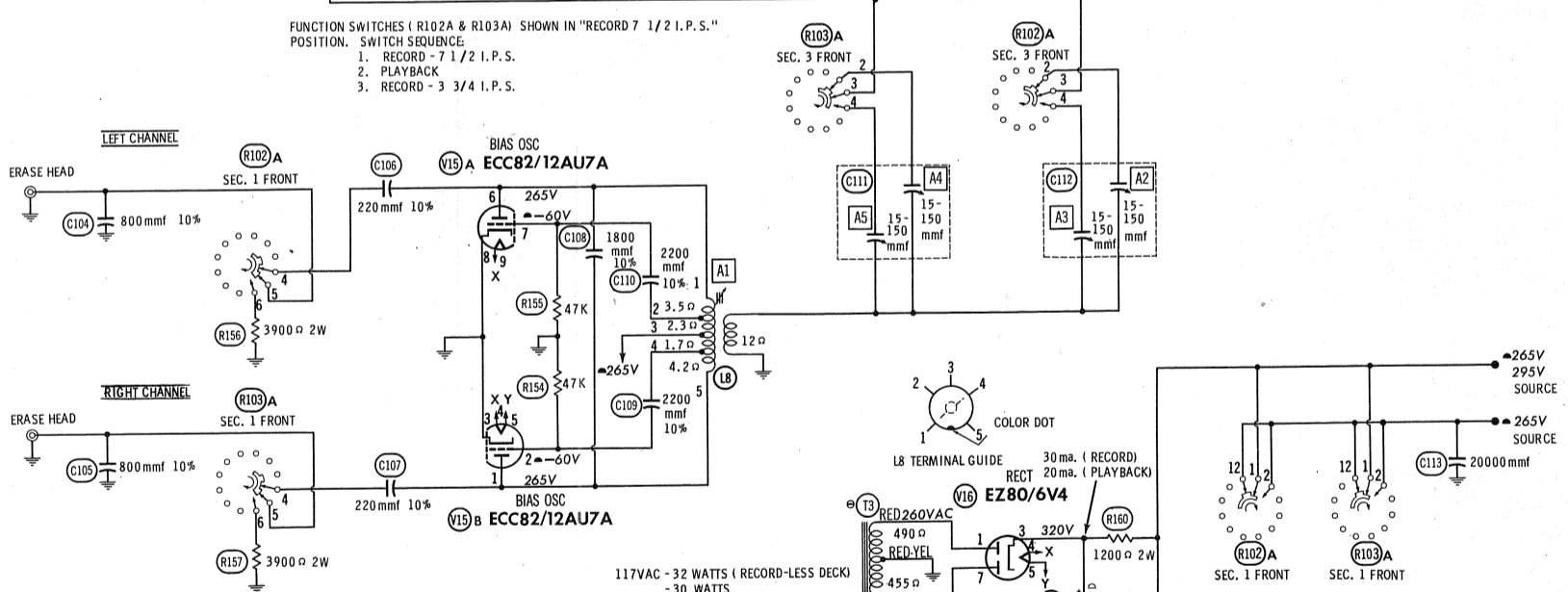
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	+150K	2.2meg	1200Ω	5Ω	5Ω	+440K	3.3meg 13K	4700Ω	0Ω
V2	ECC81 12AT7	+33K	1meg	270Ω 2700Ω	20Ω	20Ω	+2500Ω	2.2meg	27K	15Ω
V3	ECC83 12AX7	+150K	2.2meg	1200Ω	10Ω	10Ω	+440K	3.3meg 13K	4700Ω	5Ω
V4	ECC81 12AT7	+33K	1meg	270Ω 2700Ω	15Ω	15Ω	+2500Ω	2.2meg	27K	10Ω
V5	ECC82 12AU7A	+2500Ω	12K	1000Ω	FIL	FIL	+2500Ω	12K	1000Ω	FIL
V6	EZ80 6V4	490Ω	NC	9	FIL	FIL	NC	455Ω	TP	NC

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
 † THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
 † MEASURED FROM PIN 3 OF V6. NC NO CONNECTION
 • MEASURED IN "RECORD" POSITION. TP TIE POINT





FUNCTION SWITCHES (R102A & R103A) SHOWN IN "RECORD 7 1/2 I.P.S." POSITION. SWITCH SEQUENCE:
 1. RECORD - 7 1/2 I.P.S.
 2. PLAYBACK
 3. RECORD - 3 3/4 I.P.S.



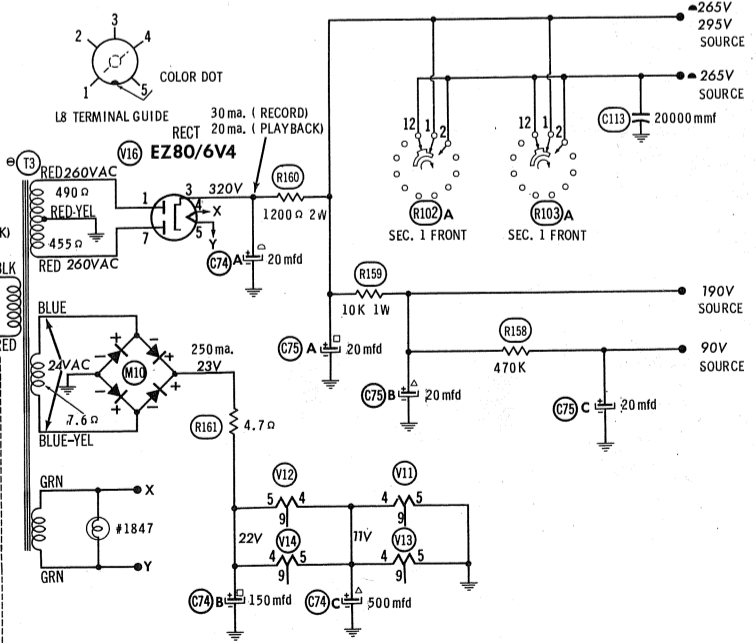
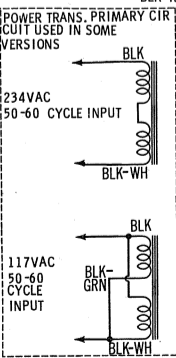
MEASURED FROM CATHODE

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V11	ECC83 12AX7	†110K	2.2meg	1200Ω	10Ω	0Ω	†870K	3.3meg	4700Ω	5Ω
V12	ECC81 12AT7	†33K	10meg	0Ω-2200Ω *3300Ω	10Ω	20Ω	†1200Ω	10meg	27K	15Ω
V13	ECC83 12AX7	†110K	2.2meg	1200Ω	10Ω	0Ω	†870K	3.3meg	4700Ω	5Ω
V14	ECC81 12AT7	†33K	10meg	0Ω-2200Ω *3300Ω	10Ω	20Ω	†1200Ω	10meg	27K	15Ω
V15	ECC82 12AU7A	†1200Ω	47K	0Ω	FIL	FIL	†1200Ω	47K	0Ω	FIL
V16	EZ80 6V4	490Ω	NC	†	FIL	FIL	NC	455Ω	NC	NC

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
 † MEASURED FROM PIN 3 OF V16. * MEASURED IN "7 1/2 RECORD" POSITION.
 NC NO CONNECTION * MEASURED IN "3 3/4 RECORD" POSITION.
 ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.

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RP-320A SCHEMATIC