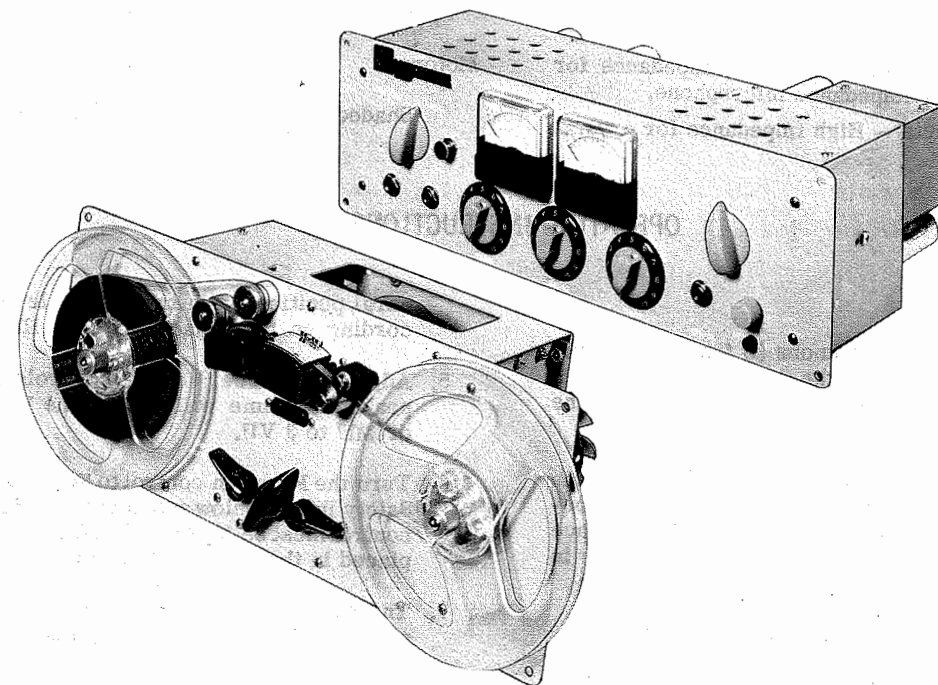


PHOTOFACT* Folder



MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG

MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG



MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG

GENERAL INFORMATION

Magnecord Series 100 Magnecordette stereo tape recorders will record and play back in-line stereo.

The Model 102 Magnecordette is the basic recorder, without a portable carrying case. The Model 101 is the 102 in a portable carrying case. The Model 100-B, 100-T, or 100-W is the Model 102 basic recorder in a blonde, teak, or walnut cabinet, respectively. The Model 128-CG stereo center includes the equipment cabinet, speakers, accessory cabinet, and table.

The Magnecord Series 100 Magnecordette features Stop, Forward, Fast Forward, and Rewind modes of operation by a mere turn of a knob. Playback or Record is selected by a switch on the amplifier. Any reel size up to 7 inches can be accommodated. New recordings can be made on a previously recorded tape, since the erase head is automatically connected when the amplifier switch is in the Record position.

Manufactured by:

Magnecord Division
Midwestern Instruments Inc.
41st Street and Sheridan Road
Tulsa, Oklahoma

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C402

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DATE 9-59

SET 457

FOLDER 10

SET 457 FOLDER 10

SPECIFICATIONS

Recording Speeds:

7 1/2 or 3 3/4 ips.

Input Impedance:

Two microphone inputs — High impedance for crystal or high-impedance microphone.

Two phono inputs — High impedance for crystal

pickup or detector output of tuner.

Output:

Cathode follower

Motors:

Shaded pole, 117 volts, 60 cycles AC

OPERATING INSTRUCTIONS

Threading the Tape

1. Remove reel retainer knobs (1) from right-hand spindle (2) by pushing the reel retainer knob in and turning it counterclockwise to release the bayonet pins.
2. Place an empty reel on the spindle, with the small projection from the spindle hub plate between the spoke openings of the reel. Replace the reel retainer knob to hold the reel firmly in place.
3. Place a reel of tape on left-hand spindle (33). The tape should unwind from the top when the reel is turned clockwise, the coated or dull side facing down.
4. Pass the tape over the top guide roller, down and back around the lower guide roller, over the heads — by lifting head shield (8) and placing the tape underneath — and then between capstan (6) and pressure roller (4).
5. Insert the end of the tape into the hub slot of the right-hand reel, and wind at least two full turns of tape onto the reel.

To Make a Recording

1. Turn on the unit by turning the On-Off switch to On.
2. Set the Equalization switch in either the Fast (7 1/2 ips) or Slow (3 3/4 ips) position, depending upon the tape speed desired.
3. Set the Record-Play back switch to Record. This will switch on the phono and mike inputs to the amplifier, and will set the circuits for recording.

NOTE: The Safety switch must be depressed before the Record-Playback switch can be moved from one position to another.

4. The recorder is equipped with a Monaural-Stereo switch on the front panel. During a monaural recording, the channel - 1 mike or phono input should be employed. The record level will register on the left-hand VU meter.

CAUTION: When making a monaural recording, be sure the Monaural-Stereo switch is in the Mon-

aural position. Otherwise, the level of any recording on the adjacent track will be reduced.

5. Adjust the three Volume controls so that the peaks of volume will deflect the VU meter M16 or M17 to 3 VU.
6. Turn the Function control to Forward. The small Safety button below and to the left of the Function control must be depressed before the knob can be placed in the Forward position.
7. The recorder will now record. The red Record pilot light will go on, showing that the unit is recording.
8. The recording may be monitored at the Monitor jack with headphones, or may be heard through the amplifier and speaker combination.
9. After the recording is completed, turn the Function control to Stop.

To Rewind Tape

1. To rewind the tape, turn the Function control to Stop. Place the tape over the top of head shield (8), to avoid excessive wear on the head.
2. Turn Function control to Rewind position. The Function control may be turned to Stop any time during rewind without danger of tape spillage.

CAUTION: When switching from Rewind to Forward, always pause in the Stop position long enough for the tape to stop completely. Otherwise, the tape will break because of the tight grip exerted by the capstan and pressure roller in the Forward position.

To Play Back a Tape

1. Thread the tape (see "Threading the Tape").
2. Set the Record-Playback switch to Playback.

NOTE: The red Record pilot light should not go on during play back.

3. Start the tape by turning the Function control to Forward.

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Ch. 1 Pre-amplifier	12AX7	
V2	Ch. 1AF Amplifier	12AT7	
V3	Ch. 1 Cath. Follower	12AU6	
V4	Ch. 2 Pre-amplifier	12AX7	
V5	Ch. 2 AF Amplifier	12AT7	
V6	Rectifier	6X4	
V7	Bias Oscillator	12AU7	

ELECTROLYTIC CAPACITORS

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	CORNELL-DUBIER	ITEM No.	RATING	MAGNECOR	CORNELL-DUBIER
C1A	20 450	23X23	AFH4-14	C10	5000	27X15	DD-250
C1B	20 450			C11	750	27X15	DD-503
C1C	20 450			C12	20000	27X13	DD-751
C2	500 25	23X13	AFH1-08	C13	50000	28X5	DD-203
C3	1000 15	23X1	AFH1-02	C14	50000	28X5	DD-503
C4A	10 450	23X47	AFH2-47	C15	50000	28X5	DD-503
C5	25 25	23X12	PRH25V25	C16	50000	28X5	DD-503
C6	25 25	23X12	PRH25V25	C17	200	27X3	DD-201
C7	2 450	23X4	PRH450V2	C18	1500	27X10	DD-152
				C19	10000	28X7	DD-1000
				C20	1	28X7	DD-104
				C21	65-340	28X3	DD-503
				C22	50000	28X3	DD-503
				C23	5	22X37	DD-203
				C24	2000	22X39	DD-203
				C25	20000	27X13	DD-203

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

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	CORNELL-DUBIER	ITEM No.	RATING	MAGNECOR	CORNELL-DUBIER
C8	25	27X15	DD-250	C16	50000	28X5	DD-503
C9	5000	27X15	DD-503	C17	200	27X3	DD-201
C10	5000	27X15	DD-503	C18	1500	27X10	DD-152
C11	750	27X15	DD-751	C19	10000	28X7	DD-1000
C12	20000	27X13	DD-203	C20	1	28X7	DD-104
C13	50000	28X5	DD-203	C21	65-340	28X3	DD-503
C14	50000	28X5	DD-503	C22	50000	28X3	DD-503
C15	50000	28X5	DD-503	C23	5	22X37	DD-203
C16	50000	28X5	DD-503	C24	2000	22X39	DD-203
C17	200	27X3	DD-201	C25	20000	27X13	DD-203
C18	1500	27X10	DD-152				
C19	10000	28X7	DD-1000				
C20	1	28X7	DD-104				
C21	65-340	28X3	DD-503				
C22	50000	28X3	DD-503				
C23	5	22X37	DD-203				
C24	2000	22X39	DD-203				
C25	20000	27X13	DD-203				

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

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

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	NOTES	ITEM No.	RATING	MAGNECOR	NOTES
R8	470K	11X4		R40	10meg	11X65	
R7	180K	11X37		R41	39K	11X17	
R8	220K 5%	13X71		R42	47K	11X8	
R9	10000 5%	13X70		R43	39000	11X25	
R10	4.7meg	11X142		R44	680K	11X4	
R11	220K	11X121		R45	470K	11X17	
R12	220K	11X121		R46	47K	11X3	
R13	68K	11X74		R47	15000	11X12	
R14	10meg	11X65		R48	27K	11X12	
R15	39K	11X27		R49	4.7meg	11X142	
R16	47K	11X37		R50	75K 5%	11X336	
R17	39000	11X25		R51	560K	11X109	
R18	680K	11X4		R52	560K	11X109	
R19	470K	11X4		R53	470K	11X4	
R20	47K	11X3		R54	8200	11X3	
R21	15000	11X3		R55	15K	11X4	
R22	27K	11X42		R56	36000	11X4	
R23	4.7meg	11X396		R57	32000	11X63	
R24	180K 5%	11X142		R58	470K	11X20	
R25	500K	11X109		R59	470K	11X20	
R26	470K	11X109		R60	10K	11X2	
R27	470K	11X4		R61	22000	11X11	
R28	8200	11X15		R62	12000	11X3	
R29	15K	11X34		R63	5600	11X163	
R30	56000	11X65		R64	5600	11X63	
R31	82000	11X153		R65	39K	11X65	
R32	470K	11X4		R66	500	11X65	
R33	180K	11X37		R67	22K	6A11X10	
R34	220K 5%	13X71		R68	22K	6A11X10	
R35	10000 5%	13X70		R69	10K	6A11X10	
R36	4.7meg	11X42		R70	10000	6A11X10	
R37	220K	11X121		R71	100K	6A11X10	
R38	220K	11X121		R72	4700	11X20	
R39	68K	11X74		R73	12000	11X190	

Note 1. Not used in some versions.

COILS (RF-IF)

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	USE	MAGNECOR	NOTES	ITEM No.	USE	MAGNECOR	NOTES
L1	Bias Osc.	31A6		L17	660 VCT 21VAC@ .33A	31A6	
L2	Equalizer Coll	31X46		L18	660 VCT 21VAC@ .33A	31X46	
L3	Equalizer Coll	31X46					

TRANSFORMER (POWER)

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	NOTES	ITEM No.	RATING	MAGNECOR	NOTES
T1	117V@ .33A	32B48		T2	117V@ .33A	32B48	
	SEC. 1	SEC. 2			SEC. 3	SEC. 4	
	6.3V@ 1.6A						

RECTIFIERS

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	NOTES	ITEM No.	RATING	MAGNECOR	NOTES
M1	.30A	42A6		M2	.30A	42A6	

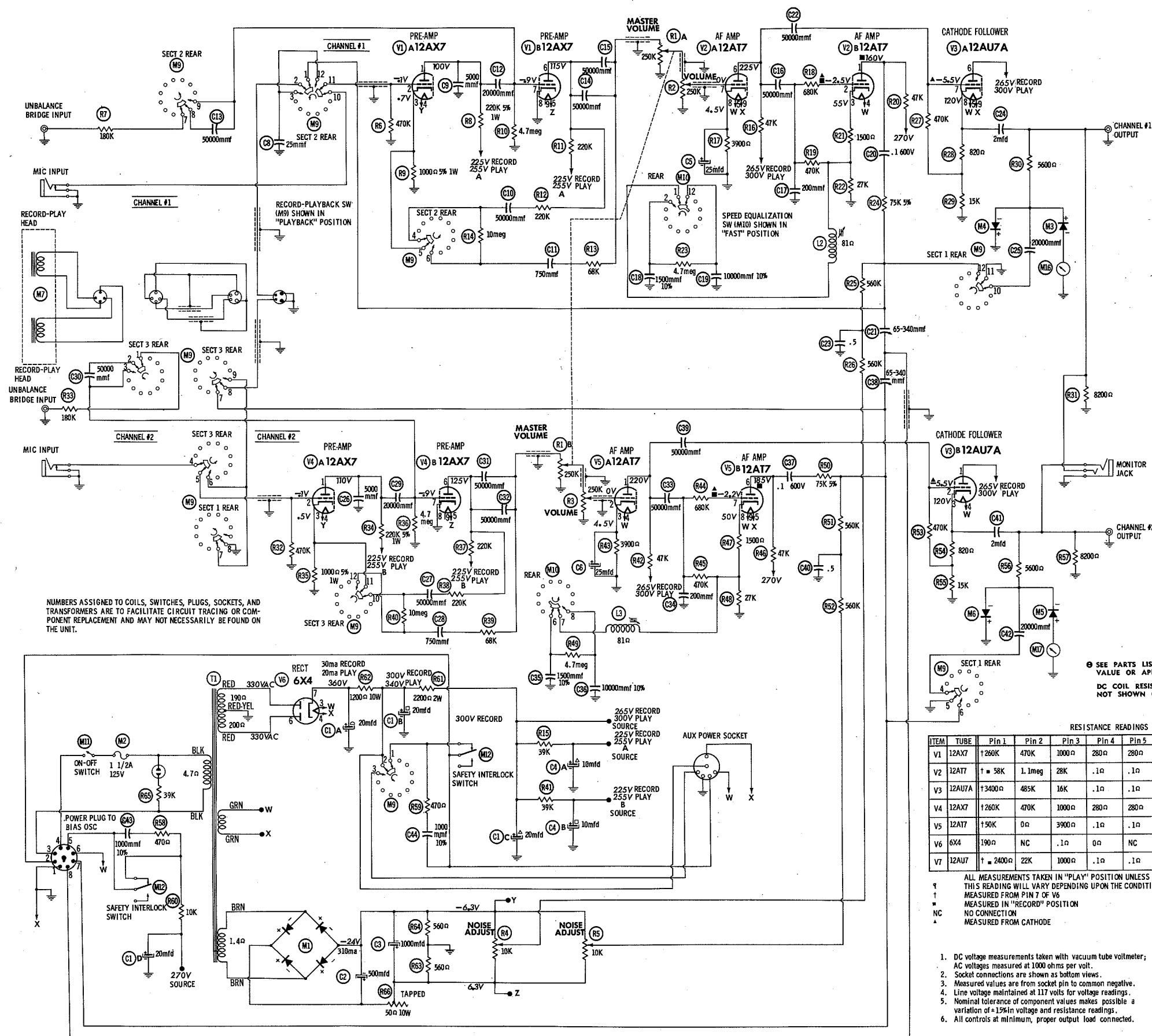
CAPACITORS (cont)

REPLACEMENT DATA				REPLACEMENT DATA			
ITEM No.	RATING	MAGNECOR	NOTES	ITEM No.	RATING	MAGNECOR	NOTES
C26	5000	27X15		C26	5000	27X15	
C27	5000	27X15		C27	5000	27X15	
C28	5000	27X15		C28	5000	27X15	
C29	5000	27X15		C29	5000	27X15	
C30	5000	27X15		C30	5000	27X15	
C31	5000	27X15		C31	5000	27X15	
C32	5000	27X15		C32	5000	27X15	
C33	5000	27X15		C33	5000	27X15	
C34	200	27X3		C34	200	27X3	
C35	1500	27X10		C35	1500	27X10	
C36	10000	28X7		C36	10000	28X7	
C37	1	28X7		C37	1	28X7	
C38	65-340	28X3		C38	65-340	28X3	
C39	50000	28X3		C39	50000	28X3	
C40	5	22X37		C40	5	22X37	
C41	2000	22X39		C41	2000	22X39	
C42	20000	27X13		C42	20000	27X13	
C43	1000	27X7		C43	1000	27X7	
C44	1000	27X7		C44	1000	27X7	
C45	2000	27X7		C45	2000	27X7	
C46	50	27X10		C46	50	27X10	
C47	2000	27X10		C47	2000	27X10	
C48	1000	27X10		C48	1000	27X10	
C49	10000	27X10		C49	10000	27X10	
C50	1	27X24		C50	1	27X24	
C51	1000	28X7		C51	1000	28X7	
C52	1	28X7		C52	1	28X7	
C53	1	28X7		C53	1	28X7	

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

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				MALLORY PART No.	INSTALLATION NOTES
	RESIST.-ANCE	WATTS	MAGNECOR PART No.	CENTRAL8 PART No.	CLAROSTAT PART No.	IRC PART No.		
R1A	250K	1/4	14A81	B-51	AD47-250K-Z	Q13-130	Master Volume, Channel 1 Master Volume, Channel 2	
R1B	250K	1/4		SR-51	Not Req.	M13-130		
R1C	Shart	1/4		Not Req.	RS-2	M13-130		
R2A	250K	1/4	14A80	B-51	A47-250K-Z	Q13-130	Volume, Channel 1 Volume, Channel 2	
R2B	Shart	1/4		Not Req.	RS-2	Not Req.		
R3A	250K	1/4	14A80	B-51	A47-250K-Z	Q13-130	Noise Adjust, Channel 1 Noise Adjust, Channel 2	
R3B	Shart	1/4		Not Req.	RS-2	Not Req.		
R4A	10K	1/4	14X45	AB-14	A47-10K-S	B11-116	Noise Adjust, Channel 1 Noise Adjust, Channel 2	
R4B	Shart	1/4		AK-1	FKS-1/4	SK2		
R5A	10K	1/4	14X45	AB-14	A47-10K-S	B11-116	Noise Adjust, Channel 1 Noise Adjust, Channel 2	
R5B	Shart	1/4		AK-1	FKS-1/4	SK2		



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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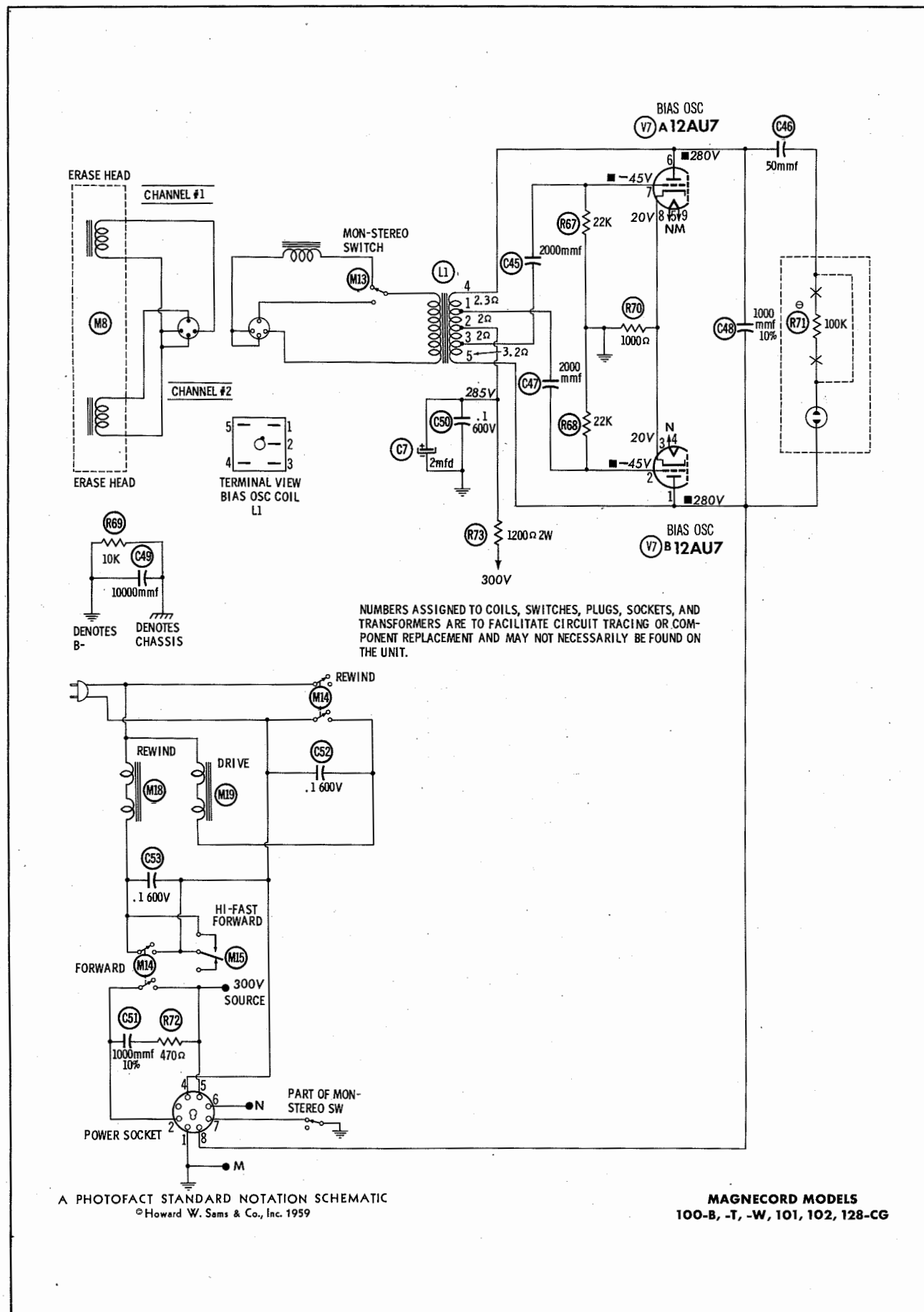
SEE PARTS LIST FOR ALTERNATE
VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM
NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS									
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12AX7	1260K	470K	1000Ω	280Ω	280Ω	1260K	4.7meg	0Ω
V2	12AT7	158K	1.1meg	28K	.1Ω	.1Ω	150K	0Ω	3900Ω
V3	12AU7A	13400Ω	485K	16K	.1Ω	.1Ω	13400Ω	485K	16K
V4	12AX7	1260K	470K	1000Ω	280Ω	280Ω	1260K	4.7meg	0Ω
V5	12AT7	150K	0Ω	3900Ω	.1Ω	.1Ω	158K	1.1meg	28K
V6	6X4	190Ω	NC	.1Ω	0Ω	NC	200Ω	1	
V7	12AU7	12400Ω	22K	1000Ω	.1Ω	.1Ω	12400Ω	22K	1000Ω

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
1 MEASURED FROM PIN 7 OF V6
2 MEASURED IN "RECORD" POSITION
NC NO CONNECTION
Δ MEASURED FROM CATHODE

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

MAGNECORD MODELS
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BIAS OSCILLATOR SCHEMATIC

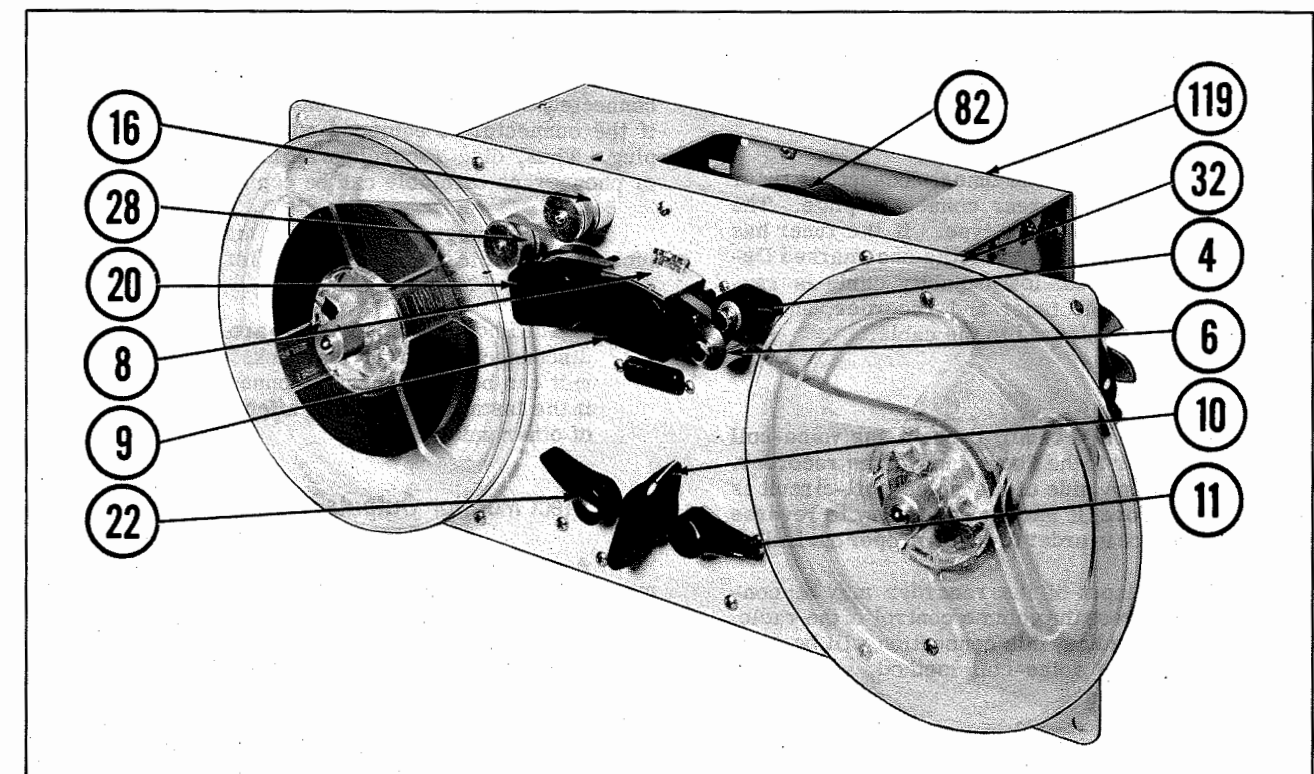


FIG. 1 TOP VIEW OF MECHANISM

- Adjust the Volume controls for the desired volume and balance of the two channels.

NOTE: If the playback is distorted, the recorder volume may be too high. Lower the recorder volume, and raise the volume of the radio or amplifier. The position of the Equalization switch does not affect the playback.

To Erase a Tape

To erase a recorded tape, set the Record-Playback switch to Record, disconnect the inputs, and turn the Function control to Forward.

NOTE: It is not necessary to erase a recording before making a new one. The erase head is activated in the Record position, and automatically erases the tape before it reaches the recording head.

Hi-Speed Forward

The Hi-Speed Forward control is the knob marked Hi on the right side of the unit. When this knob is turned, a large puck engages the take-up reel shaft and drives it at eight times the normal capstan

or drive speed. This rapid speed permits faster cueing or editing of a recorded tape. The Hi-Speed Forward control is spring-loaded, so that the more it is depressed, the faster the high-speed forward action. Before turning the Hi-Speed Forward knob, be sure the Function control is in the Stop position.

CAUTION: When going from Hi-Speed Forward to standard Forward, be sure the tape has stopped before the capstan and pressure roller are closed.

To Change Speeds

Two sets of capstans and pressure rollers permit two-speed operation of the recorder. The smaller capstan and larger pressure roller provide the 3 3/4-ips tape speed; the larger capstan and smaller pressure roller, the 7 1/2-ips tape speed. To change the capstans and pressure rollers, merely remove the knurled screws holding them in place, slip off the capstan and pressure roller and drop in the new ones. The surfaces of the shaft and capstan bore must be extremely clean; otherwise, the capstan and pressure roller will not fit properly.

INPUT AND OUTPUT CONNECTIONS

These units will record from one or two microphones, or from the output of a radio tuner or phonograph crystal pickup. For highest fidelity, the connecting cords between the unit and the tuner or phono should not be over ten feet long.

To Connect a Microphone

Any high-impedance microphone can be used. Select a low-capacity, shielded microphone cable. The shorting-type microphone connector silences the

MAGNECORD MODELS
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FOLDER 10

microphone preamplifier when no microphone is used. Insert the microphone connector into the input marked Microphone Channel 1 or 2, on the left side of the panel.

To Connect a Tuner

To record from a radio tuner, connect the tuner to the Phono input on the rear connector plate. The connector is the EIA pin type. If the tuner has several output connections, use the one marked Detector. A well-shielded, low-capacity cable is recommended between the tuner and recorder, and the pin plugs should be soldered to the cable.

To Connect a Radio

To record from a radio, connect the voice-coil leads of the speaker to the Phono input of the recorder. On most radios, one side of the voice coil-circuit is grounded. Therefore, it may be necessary to reverse this connection once in order to obtain proper operation.

The Phono input of the recorder may be connected directly across the volume control of the radio. On some types of radios, this connection will be more satisfactory than the voice-coil method, and can be left attached at all times.

CAUTION: To prevent shock or damage, use proper isolation when connecting the recorder to an AC-DC radio.

To Connect a Phonograph

The output from most crystal pickups may be connected directly to the Phono input of the recorder if the connector is equipped with an EIA pin-type plug. Thus, disc recordings from a record changer or phonograph turntable can be copied onto a tape.

If the phonograph contains a magnetic — or reluctance-type pickup, a preamplifier must be used.

NOTE: The Phono and Mike inputs are automatically disconnected during playback. Therefore, the unit can be permanently connected at any point in the installation without affecting the operation of other units.

To Connect Monitor Outputs

A standard Phono jack, marked Monitor, is mounted on the front panel. Any type of high-impedance earphones can be used during record or playback.

The output is connected by means of a cord with an EIA pin-type connector at one end and with a connector suitable to the power amplifier on the other end. This pin connection will fit either connection. Since the output operates at all times, the output connection can be used for monitoring during a recording.

MECHANICAL OPERATION

Flywheel and Capstan

The balanced flywheel, and drive hub and capstan shaft assembly (82) are driven by two rubber-tired wheels (65) and (68) to provide a constant tape speed.

Pressure Roller

Pressure roller (4) is actuated by the Function control, through switch control shaft (92) and pressure roller arm assembly (77). The tension spring keeps a positive pressure against the tape and the capstan, so that the tape travels at a constant speed.

Fast Forward

Turning the Hi-Speed Forward knob clockwise actuates control shaft and wire (76), pivot arm (51), wire (50), and fast forward wheel mounting bracket (48). As a result, fast forward wheel (54) is pulled into contact with the drive motor shaft and with take-up hub (37). Simultaneously, pivot arm (51) moves against fast forward actuating switch M15; and main drive motor (127) is turned on.

Rewind

Turning the Function control to Rewind actuates switch M14 and starts rewind motor (138). Rewind link (95) is also actuated during rewind and pulls forward idler wheel (57) away from take-up hub (39), so that bearing-mounted take-up spindle shaft (2) can turn freely. When the Function control is returned to Stop, rewind link (95) is disengaged. Forward idler wheel (57) contacts take-up hub (39) and applies a breaking force sufficient to stop the reel.

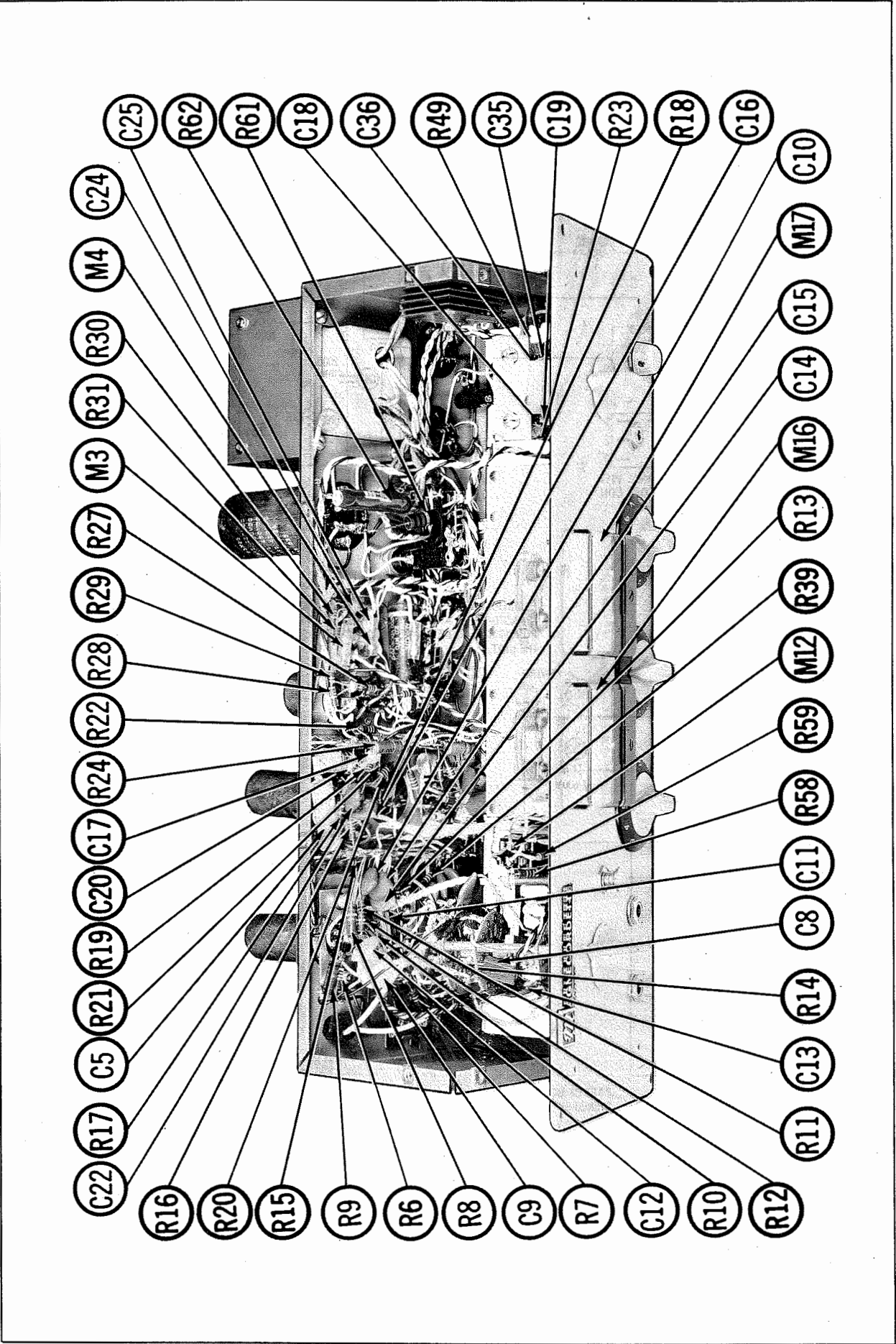
The one-way, pawl-actuated clutch on the rear shaft extension of rewind motor (138), imparts a drag to the motor shaft as the tape unwinds from payoff spindle (33). This drag is transmitted to the tape as tension. During rewind, pawl (105) is disengaged from ratchet disc (111) by direction-sensitive rewind pawl spring (110). The motor shaft can now turn freely, and the tape rewinds rapidly.

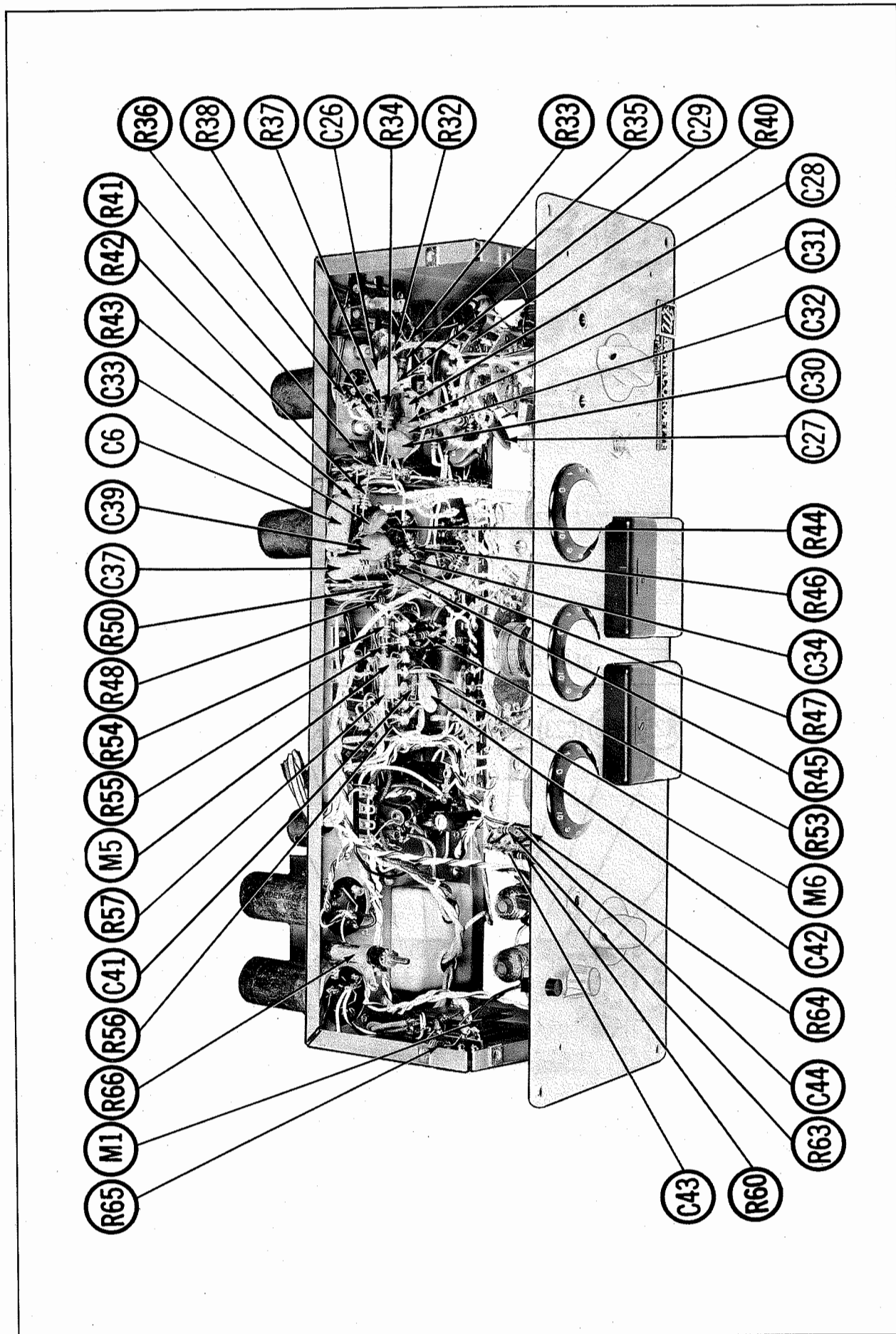
Drive System

The drive system is driven by main drive motor (127), through two rubber-tired wheels (65) and (68) on sliding suspension arm supports (85) and (87). Idler wheels (65) and (68) are held against the hub of flywheel assembly (82) and the drive motor shaft by springs (69) and (84). This action drives capstan (6), which is secured to the flywheel shaft. Capstan (6) and pressure roller (4) then move the tape at a constant speed.

Take-Up System

Take-up spindle shaft (2) is driven by forward idler wheel (57), and contacts the drive motor shaft and take-up hub (39). Take-up hub (39) is concentrically mounted on take-up spindle shaft (2), and is coupled to the shaft by means of clutch assembly (36) through (44) (similar to the one in the rewind system). When the tape is properly threaded and the mechanism is in Forward, take-up spindle shaft (2) slips because of the pressure applied to the tape by the slower-turning capstan and pressure roller. Consequently, tension imparted to the tape prevents throwing or stalling of the tape as it goes from one reel to the other.





ELECTRICAL CHASSIS - BOTTOM VIEW

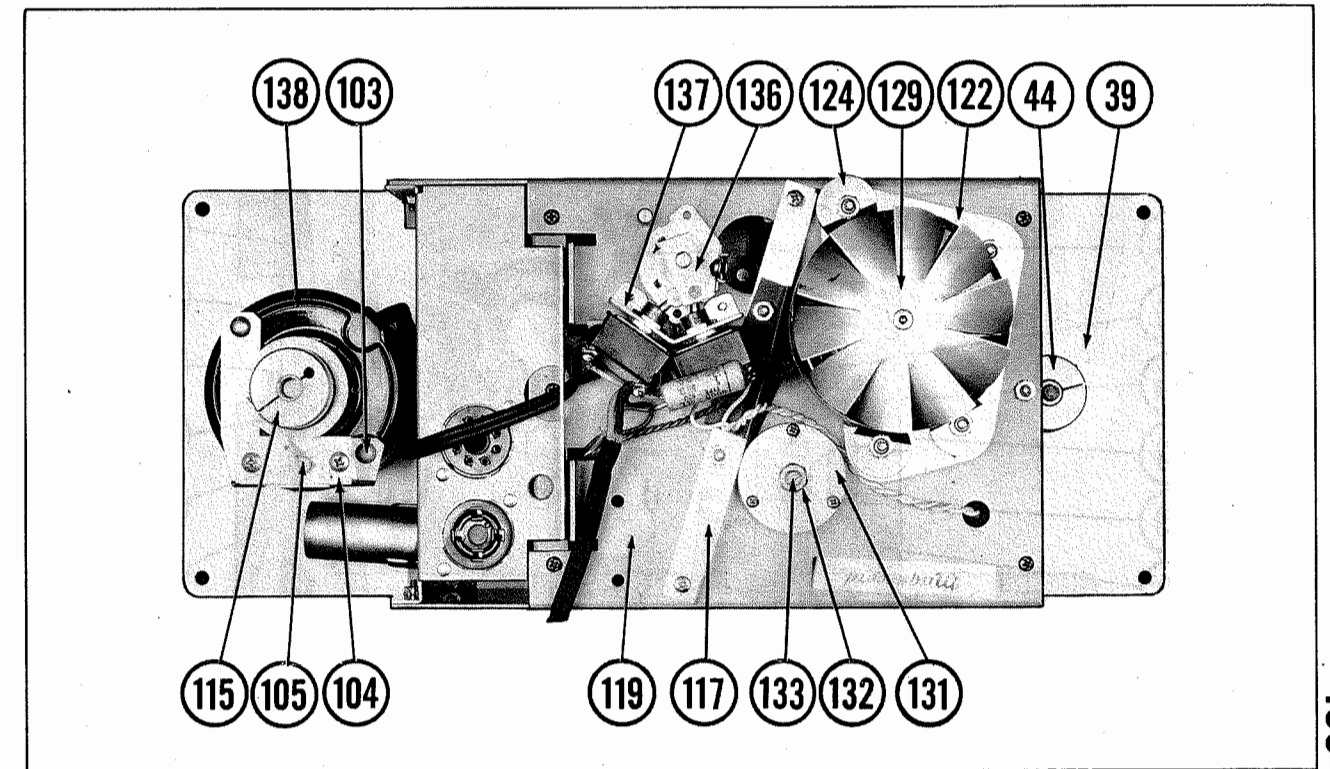


FIG. 2 BOTTOM VIEW OF MECHANISM

ADJUSTMENTS

Head Alignment

The primary purpose in head alignment is to provide maximum frequency response.

NOTE: If the frequency response is poor, make certain the difficulty is not due to tape coating residue on the pole surfaces.

The right mounting screw of the record-reproduce head is drawn up securely. This side of the head holder has a rocker action. Left adjustment screw (7) is associated with compression spring (21). Rotating this screw changes the gap alignment. The alignment is correct when, at a given setting of the gain control, maximum signal is reproduced from an alignment tape as alignment screw (7) is turned in or out.

Clutch Adjustment

Two friction clutches maintain the tape tension. If they are adjusted correctly, the tape will be taken up in either direction without throwing or stalling.

The clutches are on the rear of supply reel spindle (33) and take-up reel spindle (2). The supply reel spindle clutch is at the right (as you face the rear of the unit). It consists of an oiled felt washer (112) pressing against knurled ratchet (111). Ratchet (111) is free to rotate clockwise, but prevented from turning counterclockwise by a spring-loaded pawl (105). Pressing against the opposite side of the felt washer is a sponge rubber pad (114). A split, knurled adjustment

ring (115) contacts sponge rubber pad (114), and is locked in place by set screw (116). Set screw (116) must be backed off before knurled adjustment ring (115) can be turned. Rotating knurled adjustment ring (115) clockwise increases the clutch friction.

When the machine is in the Forward position, the supply reel spindle clutch should drag as the supply reel rotates. This drag should be such that it will stop the supply reel without permitting the tape to loop or throw when the Function control is turned from Forward to Stop. The amount of friction should be the minimum necessary to accomplish this, (3 to 4 inch-ounces).

Too much clutch friction will increase the tape drag until the tape will not run at the normal speed.

The take-up reel friction clutch is on the left (as you face the rear of unit). It looks like the other clutch, except that no pawl is employed. Also, set screw (43) must be backed off before the clutch is adjusted. The friction clutch of take-up reel spindle (2) couples the spindle to the synchronous motor drive when the Function-control is set to Forward. The clutch acts as a brake on the take-up reel when the take-up reel is almost completely full and the supply reel nearly empty. The clutch should also provide sufficient braking to maintain tape tension and prevent tape throw when the Function control is turned to Stop after the take-up reel has been rotating at high speed. The split knurled ring (44) should be adjusted to provide the minimum clutch friction (6 to 7 inch ounces) for these functions.

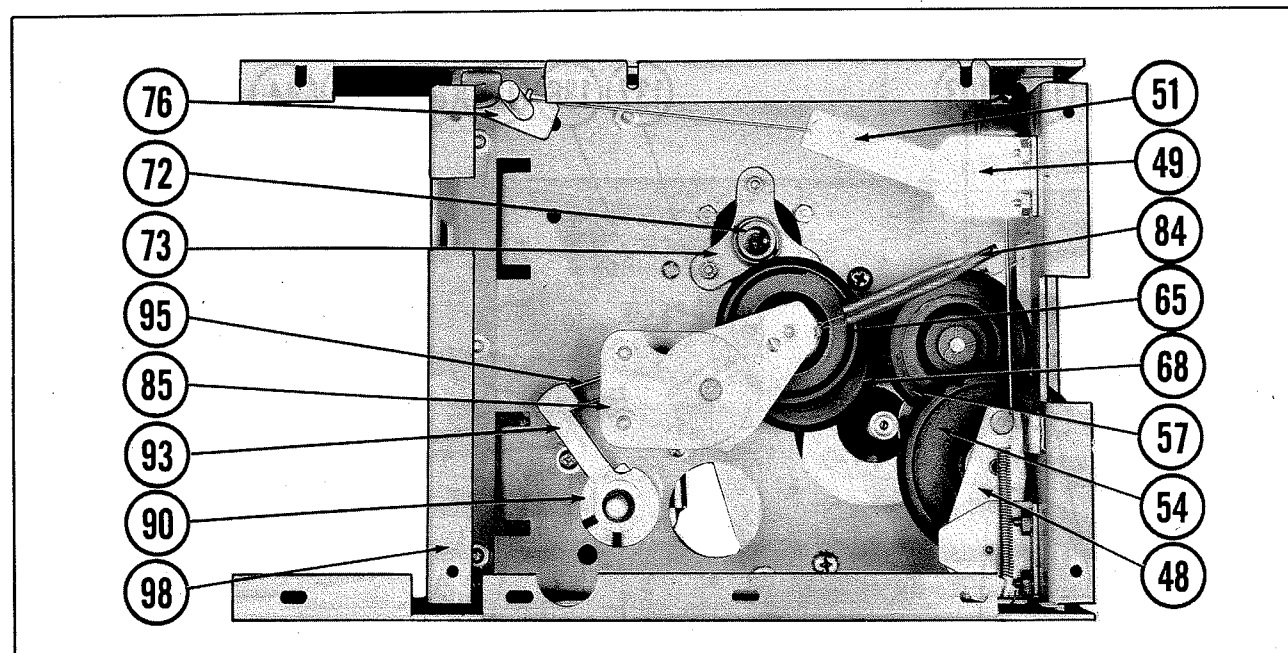


FIG. 3 DRIVE MECHANISM

CLEANING

Those portions of the erase head and the record-reproduce head which contact the tape must be kept free of dust, grease, and other foreign matter; otherwise, the frequency response characteristics will be poor. After every five hours of operation, clean them with a soft cloth slightly moistened with carbon tetrachloride or ethyl alcohol.

NOTE: Do not apply carbon tetrachloride to any part

of the recorder while loaded reels are in place. Tape is soluble in carbon tetrachloride, and will be ruined if any of the liquid falls on the tape. After using carbon tetrachloride, make sure that the heads are completely dry before threading the tape and that none of the solution is transferred to the tape from the fingers. In addition, carbon tetrachloride fumes are toxic and should not be inhaled.

LUBRICATION

The motor should be lubricated with a few drops of #SAE 10 oil every three to six months, depending on the amount of use. All motors should be oiled at both the front and the rear.

After the pressure roller shaft has been cleaned with carbon tetrachloride (every three months), apply one drop of a light oil to the shaft. Do not oil the bearing surfaces.

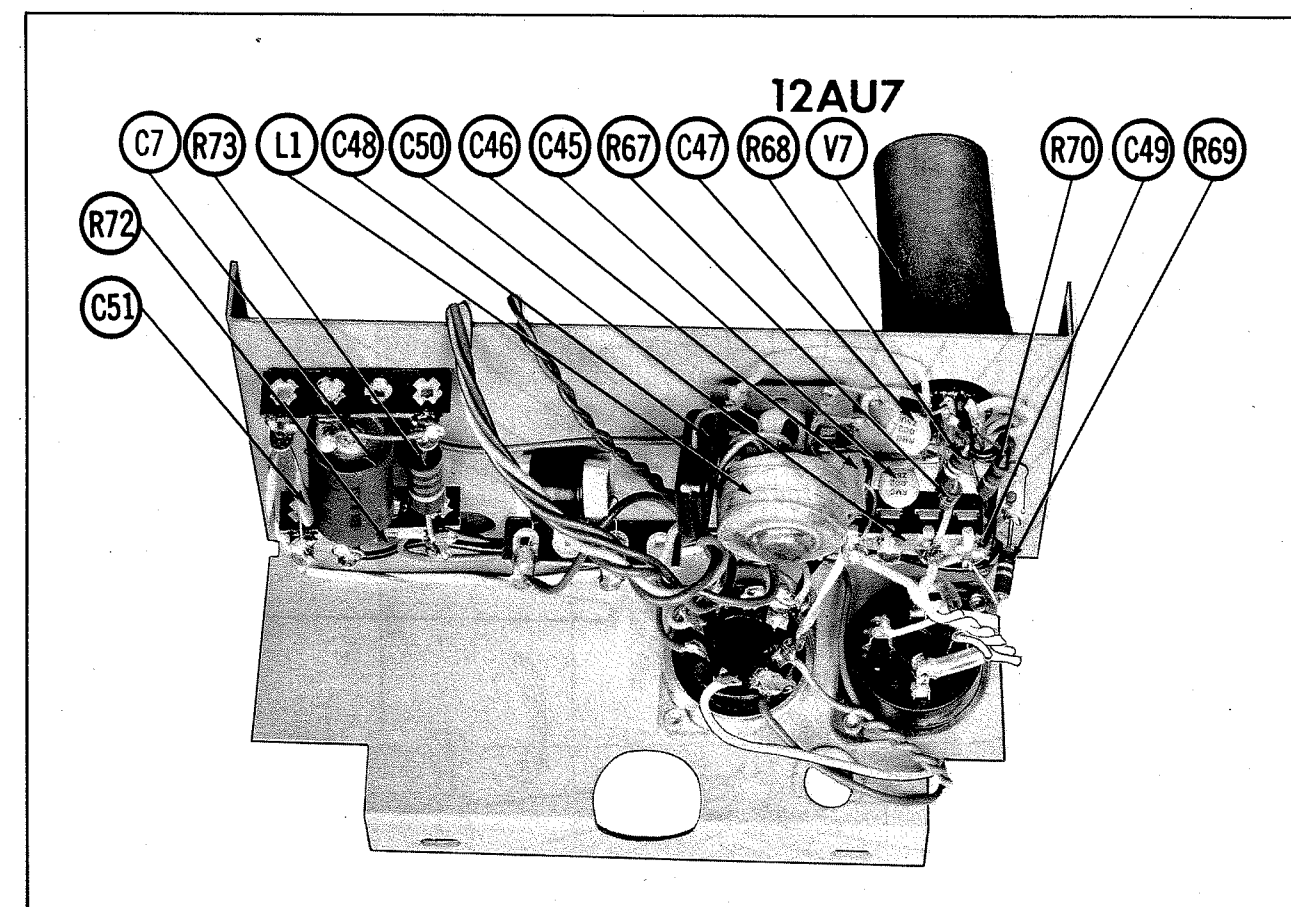
Take-up bearing assembly (35) should be disas-

sembled and the bearings packed with grease once a year. Felt washer (71) on the front and rear of capstan shaft (82) should be given three drops of light oil every six months.

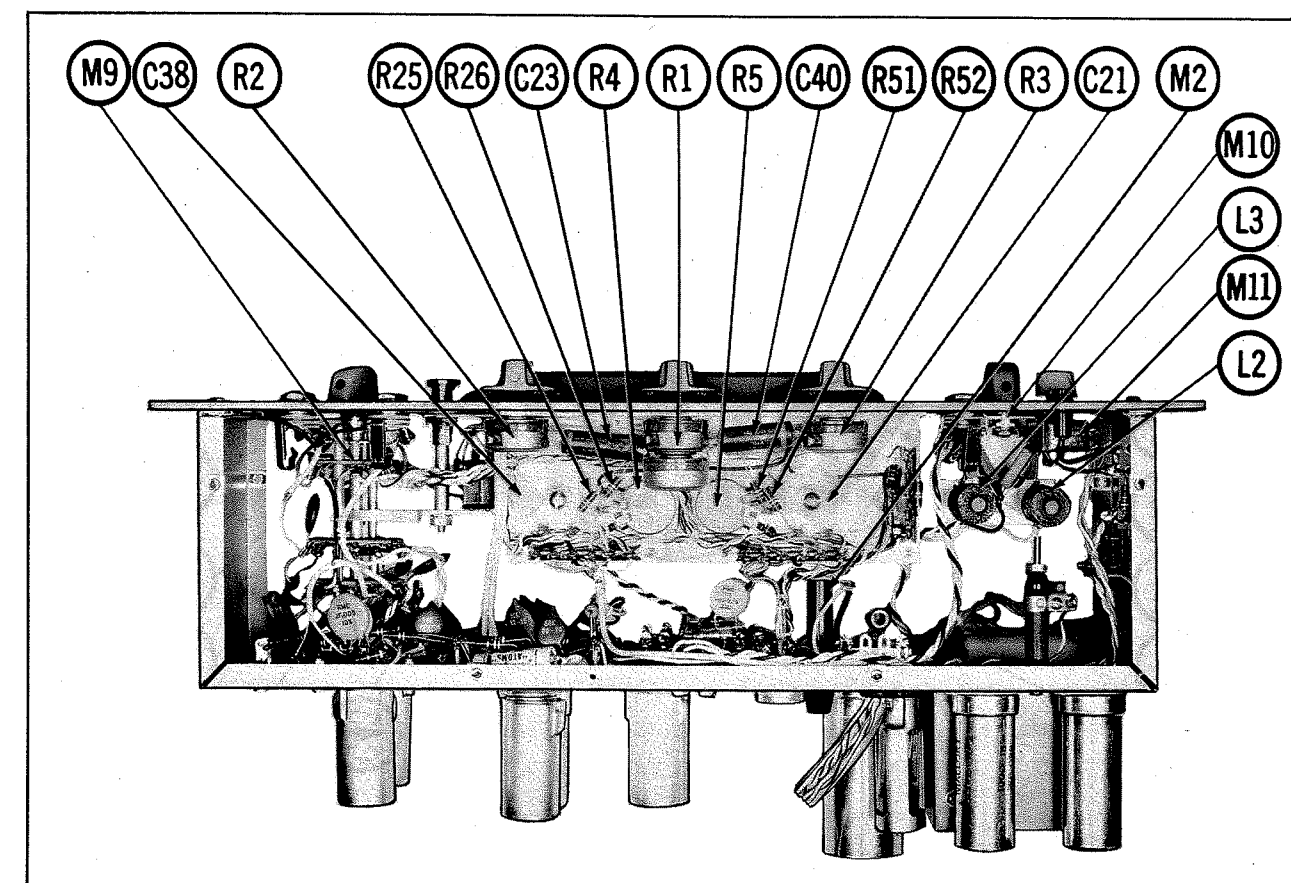
NOTE: Do not allow any oil to accumulate on the rubber-covered idlers because it will cause slippage and impair tape speed regulation. Use a soft cloth moistened with carbon tetrachloride to remove any oil from idlers, drive hubs, or motor shaft.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	91A5	Reel Hold-down assembly (2)	5	61-4K6	4-32 x 3/8 Knurled H. M. S. Brass
2	91A51	Take-up Shaft & Bayonet Spindle Assembly	6	75A16	7-1/2" Capstan, 60 Cycle
3	61-4K5	4-36 x 5/16 Knurled H. M. S. Brass	7	61-2F112	3-3/4" Capstan, 60 Cycle
4	91A14	7-1/2" Pressure Roller Assembly, 60 Cycle			Screw Machine 2-56 x 3/4 Fil. Hd. Stl. N. P. (4)
		3-3/4" Pressure Roller Assembly, 60 Cycles	8	78A572	Head Shield
			9	91X2826	Record and Reproduce Head, and Housing Ass'y.



BIAS OSCILLATOR ASSEMBLY



ELECTRICAL CHASSIS - BOTTOM VIEW

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
65	9A91A927	Drive Puck and Bearing Assembly	103	72B169	Pawl Mounting Plate Bracket
66	6A63A19	Fiber Washer	104	71A319	Pawl Mounting Plate
67	6A67A12	Hairpin Retainer	105	71A87	Pawl
68	9A91A927	Drive Puck and Bearing Ass'y.	106	75A85	Rewind Hub Tube
69	6A77A4	Puck Spring	107	61-8SS3	8-32 x 3/16 Allen Hd. Set Screw
70		Washer	108	75A84	Rewind Hub Flange
71	63A8	Felt Washer	109	63A9	Felt Washer
72	74A21	Capstan Bearing	110	77A2	Pawl Spring
73	78A22	Bearing Retainer	111	75A86	Ratchet
74	76A2	Pressure Arm Shaft	112	63A9	Felt Washer
75		Washer	113	63A10	Brass Washer
76	91B736	Control Linkage Ass'y.	114	63A11	Rubber Washer
77	91A11	Pressure Arm Ass'y.	115	91A70-10	Locknut Assembly
78	91A214	Pressure Arm Plate Ass'y.	116	61-BCS8	8-32 x 1/2 Lg. Hd. Cap. Screw
79		Washer	117	6A72A50	Reinforcing Angle
80		"C" Washer	118	61-8B16	#8-32 x 1" B. H. M. S. Stl. N. P.
81	77A6	Pressure Arm Spring	119		Back Panel Assembly
82	91A1228	Capstan Shaft Ass'y.	120	63A180	Motor Shock Mount Washer (4)
83	78X28	Thrust Ball Bearing	121	75A323	Spacer Shock Mount (4)
84	77A4	Puck Springs	122	71A482	Motor Mounting Plate
85	6A91A1244	Drive Puck Arm and Plate Ass'y.	123	86A63	Shock Mounts (4)
86	6A75A289	Puck Plate Spacer-Long	124		Flat Washer (4)
87	6A91A1244	Drive Puck Arm and Plate Ass'y.	125		Washer
88		Control Sleeve Washer	126	62-8H11	8-32 Hex Nut Stl. W. P. (4)
89		Control Sleeve Nut	127	35C54	Shaded Pole Motor, Howard Industries
90	74A66	Pressure Roller Cam	128		Set Screw
91	61-6SS3	6-32 x 3/16 Allen Set Screw	129	78A201	Motor Fan
92		Switch Shaft	130		Hex Nut (2)
93	43A101	Switch Detent Assembly	131	6A75A30	Thrust Housing
94		1/4" Tru-Arc Retaining Ring	132	A62-25H720	1/4-20 Hex Nut
95	78A180	Rewind Link	133	6A61A18	1/4-20 x 1/2 Set Screw
96	91A31	Safety Shaft and Pin Assembly	134		Felt Washer
97		Safety Shaft Compression Spring	135		Screw (3)
98	71B58	Left-Hand Side Panel	136	91A30	Switch Arm and Pin Ass'y.
99	75A282	Spacer Rewind Motor (2)	137	6A72A3	Switch Bracket
100	91A918	Bumper and Spacer Ass'y. (2)	138	35C30	Rewind Motor
101		Rewind Motor Mounting Nut (4)			
102	75A283	Motor Spacer			

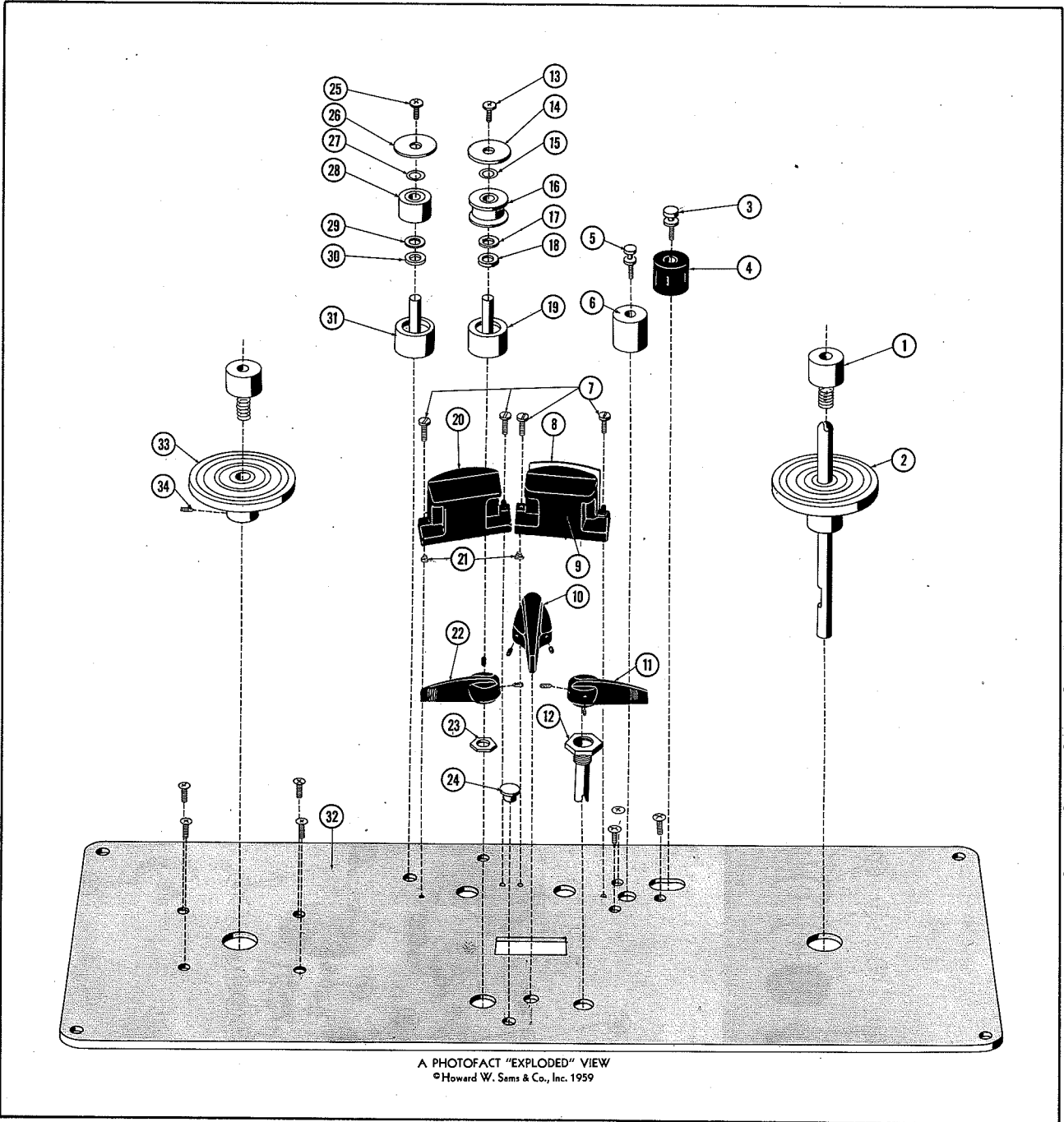
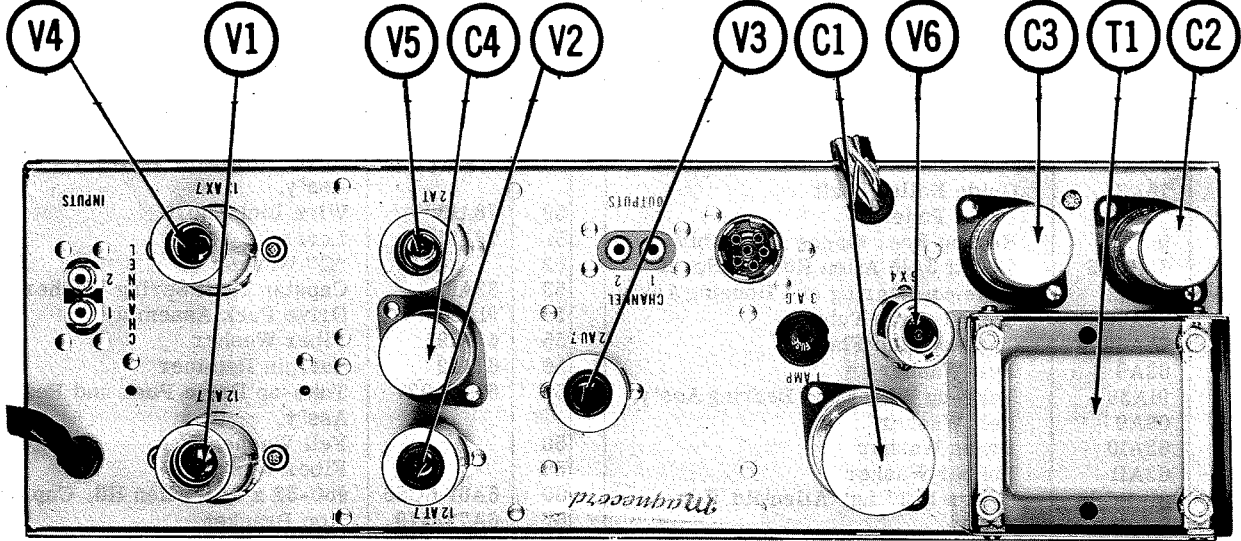


FIG. 4A EXPLODED VIEW OF PARTS ABOVE FRONT PANEL

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
10	87A14	Function Control Knob	20	91X2543	Erase Head and Housing Ass'y. Complete
11	87A8	High Speed Forward Knob	21	77A25	Head Adjusting Spring (2)
12	75A37	Control Sleeve	22	87A8	Stereo-Monaural Control Knob
13	61-4PB5	#4-40 x 5/16 Phillips B. H. M. S. St. N. P.	23	62-43H20	7/16-20 Hex Nut Alum.
14	63A5	Dural Washer	24	75A96	Safety Knob
15	63A28	Fiber Washer	25	61-4PB5	4-40 x 5/16 Phillips B. H. M. S. St. N. P.
16	91A10	Roller and Bearing Assembly	26	63A5	Dural Washer
17	63A28	Fiber Washer	27	63A28	Fiber Washer
18	63X29	Felt Washer	28	91A49	Roller and Bearing Assembly
19	75A11	Spacer	29	63A28	Fiber Washer
19A	76A8	Guide Roller Shaft			

12AX7 12AX7 12AT7 12AT7 12AU7A 6X4



AMP CHASSIS - BACK SIDE

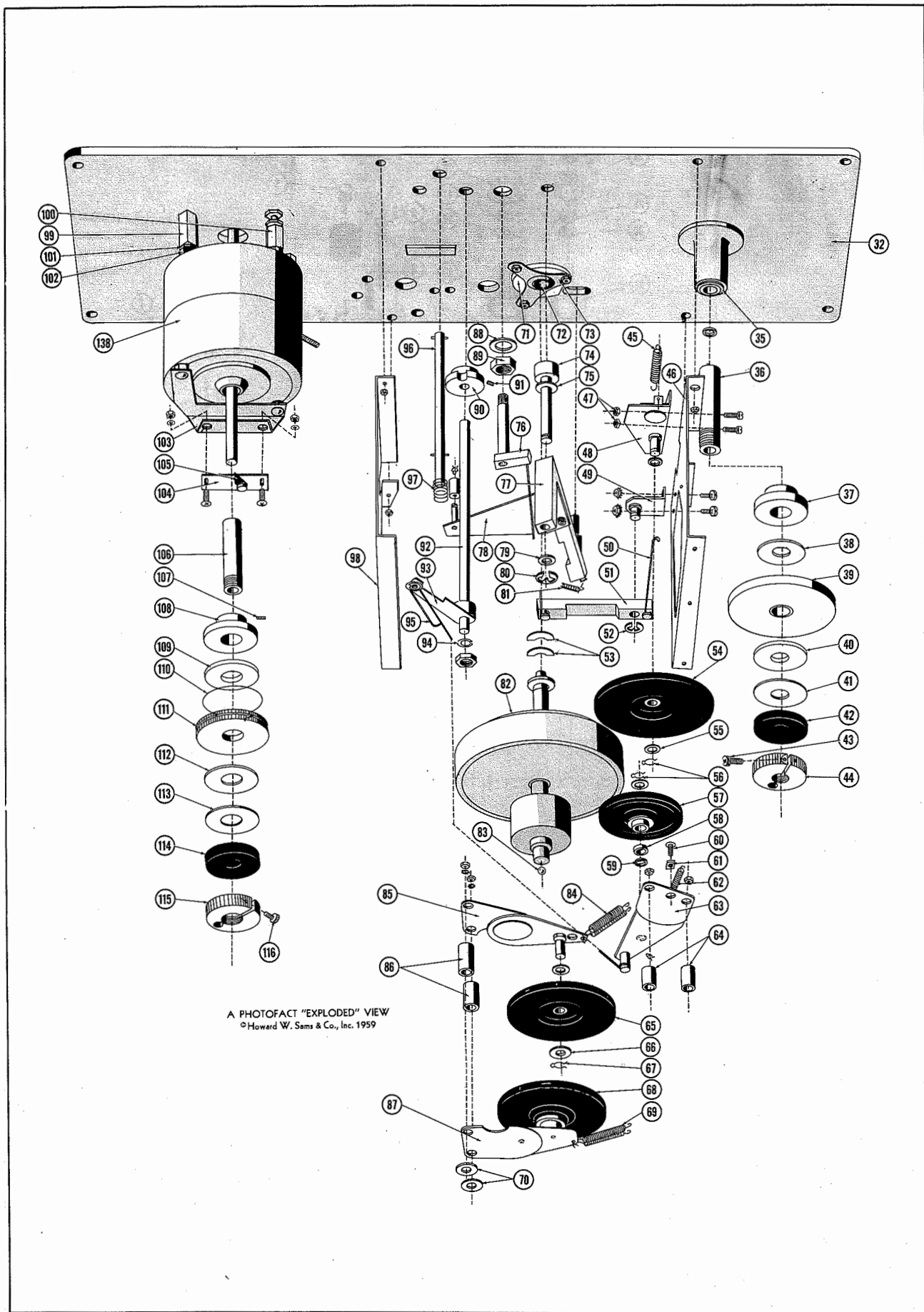


FIG. 4B EXPLODED VIEW OF PARTS BELOW FRONT PLATE

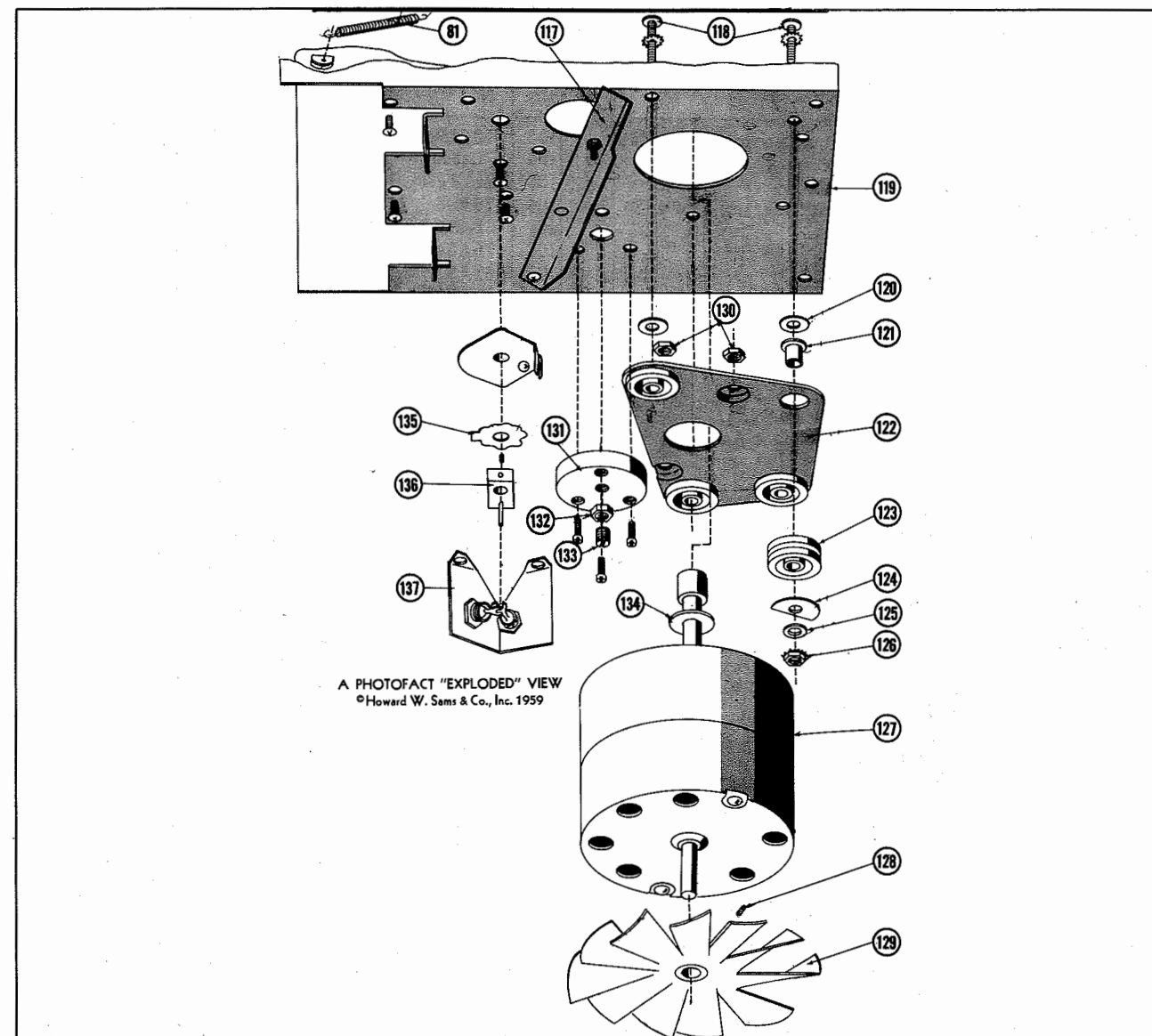


FIG. 4C EXPLODED VIEW OF PARTS BELOW BACK PANEL

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
30	63X29	Felt Spacer .257 I.D. x 7/16 O.D. x 1/16 Th.	47	62-6H4	6-32 x 1/4 Hex Nut
31	75A11	Spacer	48	72A43	Bracket Lever Mounting
31A	76A8	Guide Roller Shaft	49	91A217	Lever Mounting Bracket and Stud Ass'y.
32		Front Panel	50	78A13	Wire Link Short
33	91A82	Rewind Reel Flange Assembly	51	78A91	Lever
34	61-8SS3	3-32 x 3/16 Allen Hd. Set Screw	52		"C" Washer
35	91A52	Take-up Bearing and Housing Ass'y.	53	63A98	Capstan Shaft Spring Washer
36	75A63	Take-up Hub Tube	54	91A86	Drive Puck Assembly
37	75A62	Take-up Hub Flange	55	63X19	Fiber Washer
38	63A9	Felt Washer	56	67A12	Hairpin Retainer
39	91A38	Take-up Wheel and Bearing Ass'y.	57	6A91A927	Take-up Drive Puck and Bearing Ass'y.
40	63A9	Felt Washer	58		Felt Washer
41	63A10	Brass Washer	59		Fiber Washer
42	63A11	Rubber Washer	60	6A61-6CS6	#60-32 x 3/8 Allen Hd. Cap.Screw
43	61-BCS8	8-32 x 1/2" Lg. Allen Hd. Cap. Screw	61	6A72A179	Stop Bracket
44	75A70	Locknut	62	6A77A4	Puck Spring
45		Spring	63	6A91A1229	Take-up Puck Arm Plate Ass'y.
46	71B41	Right-Half Side Panel	64	6A75A44	Puck Plate Spacer-Short (2)