

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	84-3405	* Plunger Knob & Shaft Ass'y.			528.58031 - 528.58011 -
2	70-259-0	* Compression Spring			567.58031
3	86-270	* Flatwasher, Rubber 5/16" I.D. x 9/16" O.D.	40	86-295	Flatwasher, .092" I.D. x 7/32" O.D. (Part of 84-3403 Head Ass'y.)
4	70-256-0	* Spring, Plunger Detent	41	22-40-1	Retainer Spring
5	52-846-0	† Knob, Play-Record (U	42	86-282	Washer, Cloth (2)
	52-779-0	* Knob, Play-Record	43	39-1-5	Pressure Roller
6	84-3781	† Head Cover	44	70-258-0	Spring, Pressure Roller
	21-337-0	* Head Cover	45	70-251-0	Spring, Slide Return
7	21-141-0	† Cover, Pressure Roller	46	22-37-1	Split Ring Retainer
	21-338-0	* Cover, Pressure Roller	47	86-280	Flatwasher, Capstan & Flywheel
8	22-41-1	† Retainer Spring (2)	48	84-3404	Spindle Ass'y.
	22-110-0	* Retainer Spring (2)	49	22-15-4	* Lever, Foot Switch
9	83-1127	† Reel Plate (2)	50	97-569	Screw, #6-32 x 1/4" Phil. Bd. Hd.
	84-3381	* Reel Plate	51	70-252-0	Brake Spring (Right)
10	97-569	Screw, #6-32 x 1/4" Phil. Pan Hd. (2)	52	84-3419	Feed Reel Arm Assembly
11	84-3780	† Top Plate Ass'y.	53	86-289	Flatwasher, .440" I.D. x 11/16" O.D.
	84-3296	* Top Plate Ass'y.		86-290	Flatwasher, .440" I.D. x 11/16" O.D.
12	52-845-0	† Knob, Volume & Off/ On-Tone	54	22-42-1	Hairpin Retainer (Large)
	52-781-0	* Knob, Volume & Off/ On-Tone	55	84-3413	Spindle Pulley & Set Screw Ass'y. (2)
13	52-844-0	† Knob, Fast Forward & Fast Rewind (2)	56	84-3407	Bracket, Motor & Lug Ass'y.
	52-782-0	* Knob, Fast Forward & Fast Rewind (2)	57	86-294	Flatwasher, .188 "I.D. x 7/16" O.D. (4)
14	56-230	Hex Nut, #3/8-32 (2)	58	97-567	Screw, #8-32 x 3/16" Hex. Hd.
15	48-138-2	Jewel, Neon Lamp	59	62-78-0	Drive Belt
	48-139-2	Jewel, Neon Lamp (Alternate Part)	60	65-123	Eyelet (3)
16	86-265	* Flatwasher, Fiber (1)	61		Drive Pulley (Part of Motor)
17	22-120-0	Retainer Spring	62	84-3456	Motor, Plug & Pulley Ass'y.
18	86-273	* Flatwasher, .176" I.D. x 5/8" O.D. (2)	63	97-619	Set Screw, #8 x 3/16" "Allen Hd." Cup. Pt.
19	84-3404	Spindle Ass'y.	64	84-4240	Fan, Hub & Set Screw Ass'y.
20		Roll Pin (2)	65	97-577	Set Screw, #6-32 x 3/8" "Slab Hd." Cone Pt.
21	86-280	Flatwasher, .315" I.D. x 1/2" O.D. (4)	66	86-288	Washer, Rubber
22	84-3800	† Base Plate, Includes Staked & Riveted Parts	67	22-38-1	"E" Washer, Retainer
	84-3421	* Base Plate, Includes Staked & Riveted Parts	68	70-260-0	Record Release Spring
23	97-575	Head Retaining Screw	69	11-1046	Control Shaft Bracket
24	86-294	Washer, Flat	70	84-3410	Control Shaft & Lever Ass'y.
25	11-1048	Bracket, Head Mounting	71	84-3466	Capstan Shaft & Flywheel Ass'y.
26	33-271-0	Record Head (MM #3M-20) (Used In Chassis 528.58031-528.58011 - 567.58031)	72	62-79-0	Flywheel Belt
27	56-234	Hex Nut (4)	73	70-259-0	* Spring, Two Speed Control (Lower)
28	33-270-0	Erase Head (MM #7EM-12) (Used In Chassis 528.58031-528.58011 - 567.58031)	74	22-14-4	* Speed Control Bracket
29	97-573	Screw, #6-32 x 1/4" Phil. Flat Hd. (4)	75	86-284	* Washer, Flat
30	72-135	Washer, Slide Button (4)	76	86-45	* Lockwasher
31	84-3408	Pressure Roller Arm	77	97-569	Screw, #6-32 x 1/4" Phil. Pan Hd.
32	84-3458	Pressure Plate & Spring Ass'y.	78	97-574	Screw, #8-32 x 5/8" Hex. Hd. Motor Mounting (3)
33	97-577	Set Screw, #6-32 x 3/8" "Slab Hd."	79	86-293	Washer, Motor Mounting (3)
34	84-3409	† Lifter Arm & Set Screw Ass'y.	80	62-74-0	Rubber Bushing, Motor Mounting (3)
	84-3399	* Lifter Arm & Set Screw Ass'y.	81	70-244-0	* Return Spring, Foot Switch
35	70-253-0	Spring, Pressure Shoe	82	39-1-0	* Cam, Foot Switch Adjustment
36	84-3401	Pressure Shoe Ass'y.	83	70-250-0	Take-up Spring
37	70-249-0	* Spring, Brake Lever	84	22-46-1	* Retainer, Foot Switch Adjust. Cam
38	28-112-1	* Brake Plate	85	84-3420	Reel Arm Take Up Ass'y.
39	84-3403	Head Ass'y. (Used In Chassis 528.58030 - 528.58010 - 567.58030)	86	70-257-0	Brake Spring (Left)
	84-3418	Head Ass'y. (Used In Chassis	87	39-5-3	Foot Switch Linkage Rod
			88	62-78-0	Drive Belt, Take-Up
			89	72-135	Washer, Slide Button Spacer
			90	22-13-4	Take Up Lever
			91	97-573	Screw

† Parts Marked With Dagger Used In Model 8070.

* Parts Marked With Asterisk Used In Model 8072.

FOLDER 11

PHOTOFACT* Folder



GENERAL INFORMATION

Silvertone Models 8070 and 8072 are electrically alike. The major difference between the two models is mechanical. Model 8070 is a single speed and Model 8072 is two speed.

Models 8070 and 8072 are designed to record and play two tracks of material on standard width recording tape. This doubles the recording and playing time without loss of quality or frequency response. Recordings can be made from a phonograph, radio or television receiver, in addition to those made directly from the microphone.

Model 8070 has one speed, 7 1/2" per second, while Model 8072 has two speeds, 3 3/4" and 7 1/2" per second. Using both tracks, the recording times are as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour
7" (1200 ft.)	2 hours	1 hour

Models 8070 and 8072 are designed to operate on 60 cycle, 110-120 volts, AC supply only. Before connecting to a supply line, be absolutely certain that it agrees with the above specifications.

SUPPLIED by:

SEARS, ROEBUCK & CO.
925 S. HOMAN STREET
CHICAGO 7, ILLINOIS

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SILVERTONE MODELS 8070, 8072 (Ch. 528.58010, 528.58011, 528.58030, 528.58031, 528.59040, 528.59041, 528.59060, 528.59061)

FOLDER 11

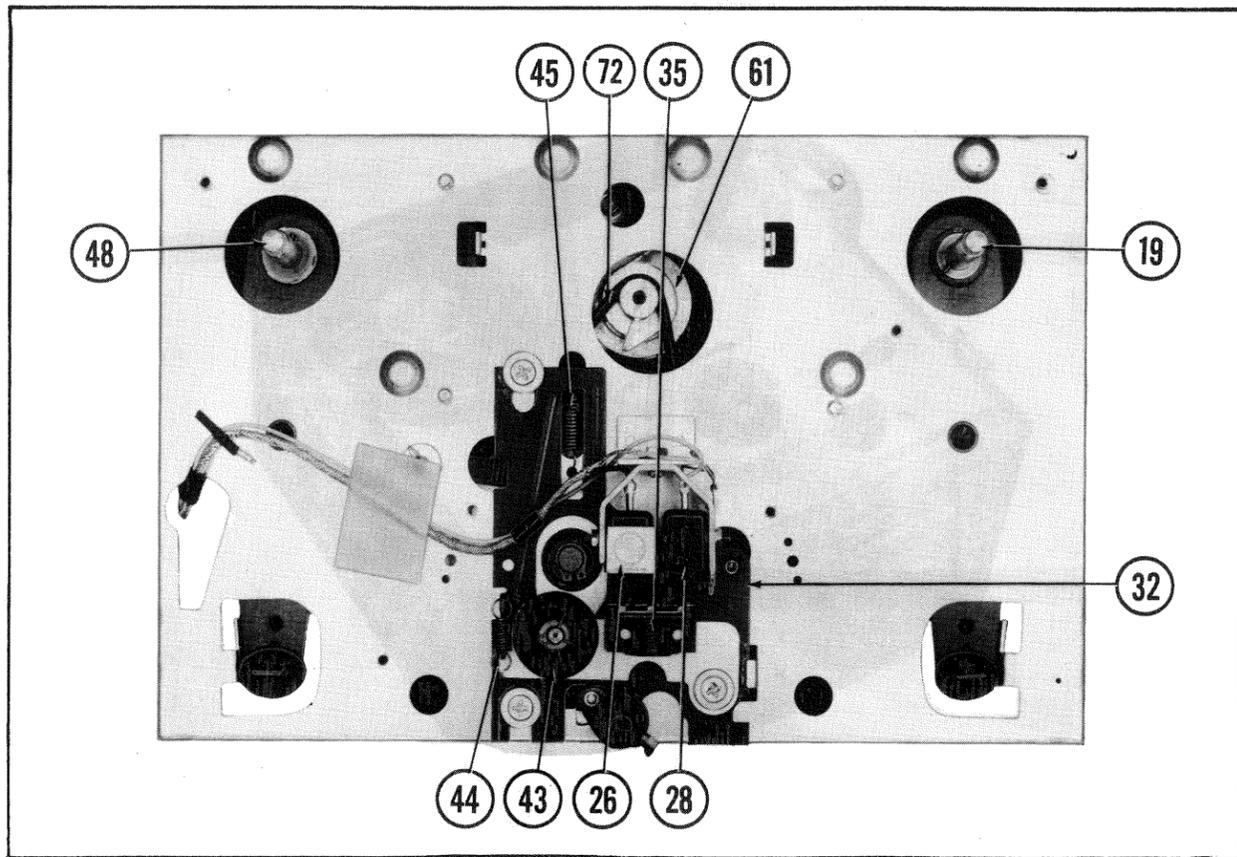


FIG. 1

SPECIFICATIONS

Fast Forward And Fast Rewind Speed:

5" Reel, (600 ft.) 55 Seconds (Approx.)
 7" Reel, (1200 ft.) 105 Seconds (Approx.)

Frequency Response:

3 3/4" speed - 65 to 6000 cycles per second
 7 1/2" speed - 65 to 8500 cycles per second

Bias And Erase Frequency:

52.5KC

Bias Voltage:

Shure Head, 10 volts bias
 Michigan Mag. Head, 20 volts bias

Power Output:

2 Watts undistorted
 3 Watts maximum

Inputs:

Microphone, 1 Meg. impedance
 Radio-Phone, .5 Meg. impedance

Outputs:

Two internal 5" speakers

External 3.2 ohm speaker
 External-low impedance across 3.2 ohm voice coil for external speaker.
 External high impedance for external amplifier or monitor in record or playback position.

Maximum Reel Size:

7" (1200 ft.)

OPERATING INSTRUCTIONS

Speed Control-

The operating speed setting is accomplished by placing the speed control button (1) in either the "Up" or "Down" position. "Up" for 3 3/4" per second and "Down" for 7 1/2" per second. (Model 8072 only).

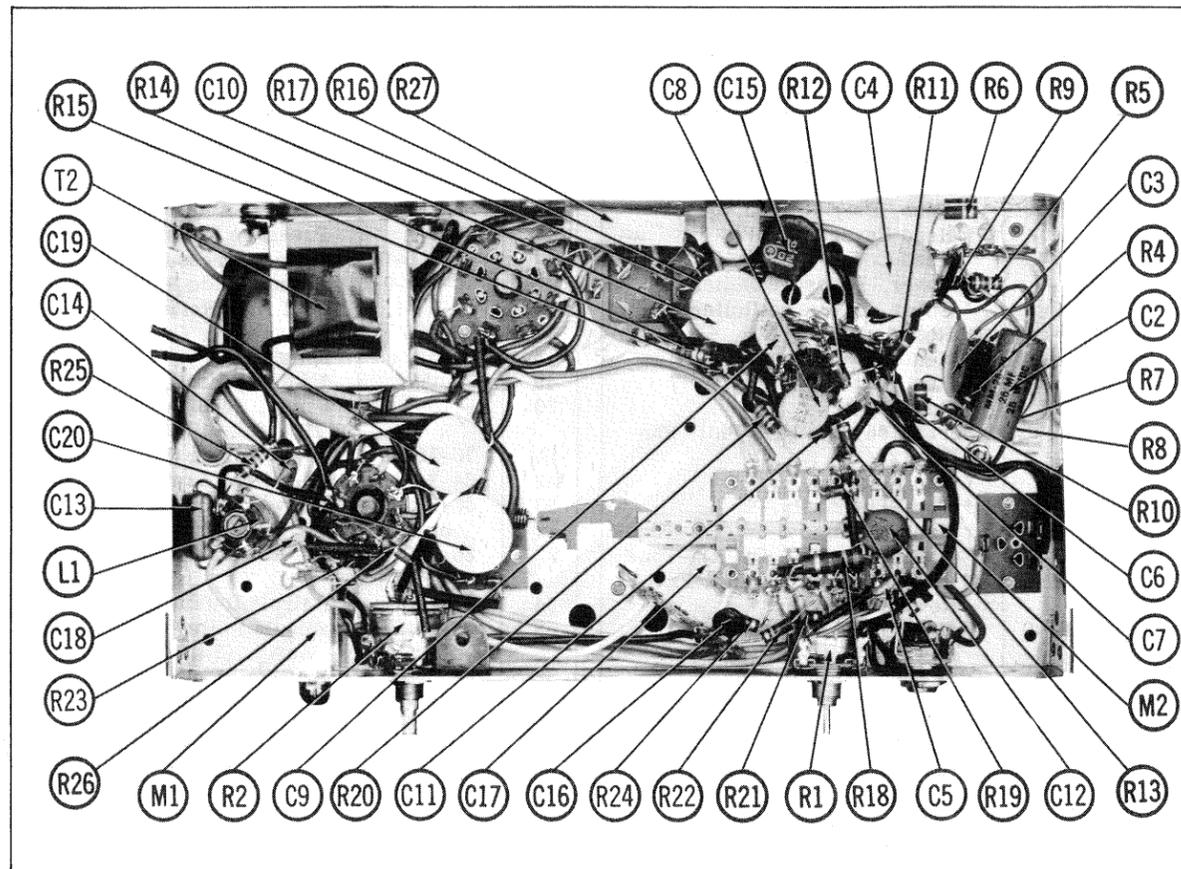
CAUTION: NEVER operate this control unless the ON-OFF switch (12) is in the ON position.

Threading Tape-

1. Place a reel of tape on the right reel plate (9), and an empty reel on the left reel plate (9) making certain the reel slots engage the pins on the reel plates.

2. Turn the Play-Record control knob (5) in the center of the machine to the fully counterclock-wise position.

3. Unwind about 10" of tape from the reel. Hold



CHASSIS - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

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

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	IRC PART No.			SILVERTONE PART No.	IRC PART No.			SILVERTONE PART No.	IRC PART No.			SILVERTONE PART No.	IRC PART No.			SILVERTONE PART No.	IRC PART No.
R4	1Meg	60-10501	EITS-1Meg	R17	15K	60-15302	EITS-15K	R20	68K	60-68301	EITS-68K	R23	2.2Meg	60-22502	EITS-2.2Meg	R26	10K	60-10302	PWT-1000
R5	470K	60-47401	EITS-470K	R18	270K	60-27401	EITS-270K	R21	5.6Meg	60-56401	EITS-5.6Meg	R24	1Meg	60-10501	EITS-1Meg	R27	1000K	60-10302	PWT-1000
R6	220K	60-22401	EITS-220K	R19	150K	60-15401	EITS-150K	R22	560K	60-56401	EITS-560K	R25	47K	60-47301	EITS-47K				
R7	4700K	60-47003	EITS-4700K	R20	68K	60-68301	EITS-68K	R23	2.2Meg	60-22502	EITS-2.2Meg	R26	10K	60-10302	EITS-10K				
R8	470K	60-47401	EITS-470K	R21	5.6Meg	60-56401	EITS-5.6Meg	R24	1Meg	60-10501	EITS-1Meg	R27	1000K	60-10302	EITS-1000K				
R9	220K	60-22401	EITS-220K	R22	560K	60-56401	EITS-560K	R25	47K	60-47301	EITS-47K								
R10	4700K	60-47003	EITS-4700K	R23	2.2Meg	60-22502	EITS-2.2Meg	R26	10K	60-10302	EITS-10K								
R11	100K	60-10402	EITS-100K	R24	1Meg	60-10501	EITS-1Meg	R27	1000K	60-10302	EITS-1000K								
R12	220K	60-22401	EITS-220K	R25	47K	60-47301	EITS-47K												
R13	1500K	60-15201	EITS-1500K	R26	10K	60-10302	EITS-10K												
R14	220K	60-22401	EITS-220K	R27	1000K	60-10302	EITS-1000K												
R15	2200	60-22202	EITS-2200																

Note 1. Alternate Part No. 60-27401, 270KΩ Used In Ch. 567-59060 Only.

TRANSFORMER (POWER)

ITEM No.	IMPEDANCE	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	Heildorson PART No.			SILVERTONE PART No.	Merit PART No.			SILVERTONE PART No.	Stancor PART No.			SILVERTONE PART No.	Theodaron PART No.
T1	ITVAC	60-30A	6.3V @ 1.0A	P9205	②	P-3048	FMB403	①	22R00	①	R-88	②			

① Tape 5V Winding.

② Tape center tape on 6.3V Winding.

③ Alternate Part No. 80-2-0.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	Heildorson PART No.			SILVERTONE PART No.	Merit PART No.			SILVERTONE PART No.	Stancor PART No.
T2	4600Ω	3-4G	700055	①	Z1107	A-2930	A-3877	24851	S-3X		

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	QUAM PART No.			SILVERTONE PART No.	IRC PART No.
SPL	5 1/4" PM	3-4G	013630	①	52A21		① Alternate Part Number 33-286-4, 33-285-4

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	MEISSNER PART No.			SILVERTONE PART No.	MILLER PART No.
L1	Bias Oscillator	10-31-4	69-238-0				Includes C13.

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		SILVERTONE PART No.	NOTES			SILVERTONE PART No.	NOTES
M1	Indicator Switch	89-19	Type NE51 Record & Playback (Slide Type)				

CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	52-845-0	Or. Orf. Volume (Model 8070)
Cabinet	42-12-5	W/ Lit (Model 8070)
Cabinet	42-1-5	W/ Lit (Model 8072)

SILVERTONE MODELS 8070, 8072 (Ch. 528,58010, 528,58011, 528,58030, 528,58031, 528,59040, 528,59041, 528,59060, 528,59061)

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PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Pre-Amplifier	12AU7A	
V2	A.F. Amplifier	12AX7	

ITEM No.	USE	TYPE	NOTES
V3	Output Bias Osc	6V6GT	
V4	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP. VOLT.	REPLACEMENT DATA			
		SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBIER PART No.	MALLOYRY PART No.
C1A	40	18-31-3	AFB3-44	DO020	F9377
C1B	40				
C1C	40				
C2	25	18-52-5	PRS25V25	EBR25-25	TC26

* Non-Catalog Item.

FIXED CAPACITORS

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

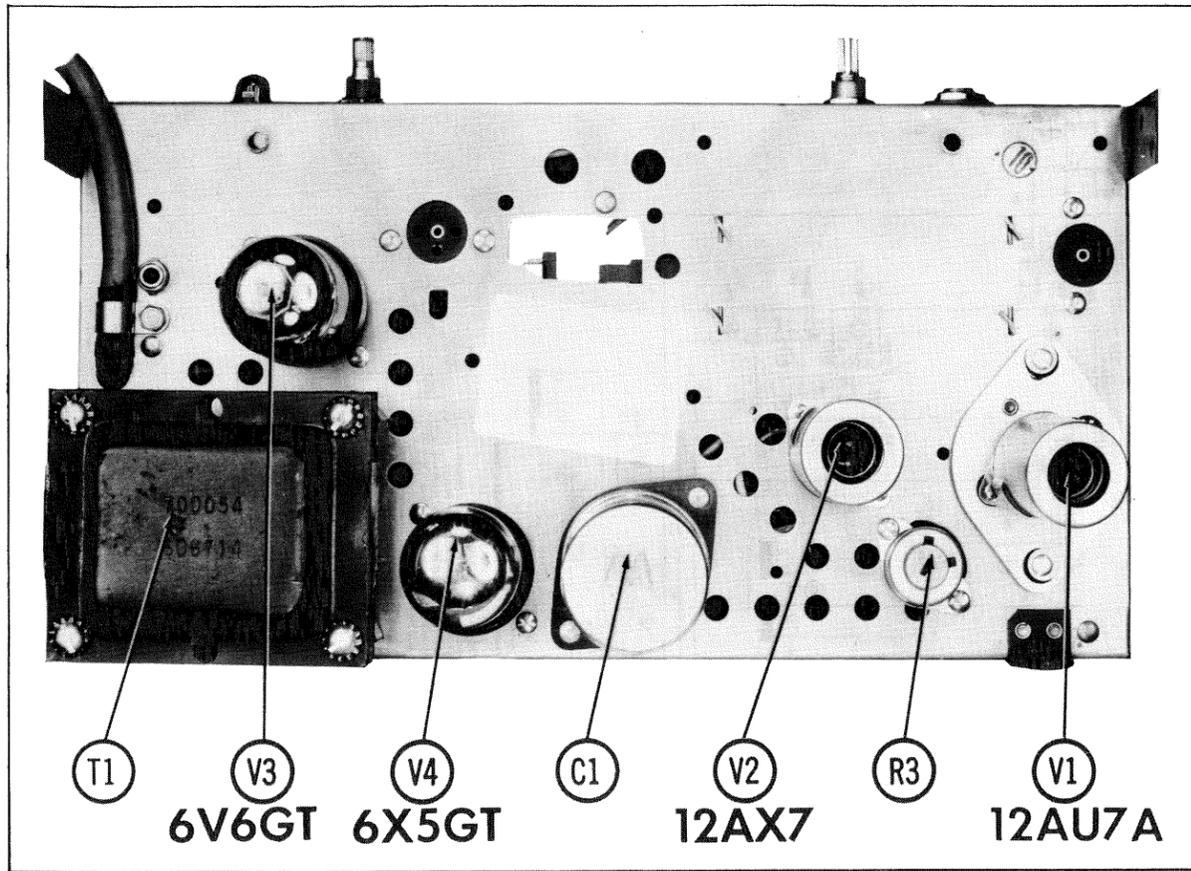
ITEM No.	RATING CAP. VOLT.	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBIER PART No.	MALLOYRY PART No.	
C3	20000	15-20316	BPD-02	BYB652	ED-02	
C4	10000	15-47111	BPD-01	BYA651	ED-01	Note 1
C5	470	15-10011	NPO-S10	L10747	ED-470	10%
C6	10	15-10011	NPO-S10	L100Q1	ED-10	10%
C7	10000	15-10316	BPD-01	BYA651	ED-1000	10%
C8	10000	15-10211	BPD-02	BYB652	ED-02	Note 2 10%
C9	20000	15-20316	BPD-02	BYB652	ED-02	10%
C10	470	15-47111	BPD-02	L10747	ED-470	Note 3 10%
C11	120	15-12111	1467-0003	W5D3	ED-70	10%
C12	3000	15-47111	BPD-02	L10747	ED-470	10%
C13	470	15-20316	BPD-02	BYB652	ED-02	10%
C14	20000	15-75011	NPO-S175	L100Q75	ED-75	10%
C15	75	15-20226	NPO-S175	BYA10D2		10%
C16	2000	15-20226	NPO-S175	BYA10D2		
C17	2000	15-20226	NPO-S175	HVE16S1		
C18	2000	15-20226	NPO-S175	HVE16S1		
C19	10000	15000	DAC-27		GEM-1611	
C20	10000	15000	DAC-27		GEM-1611	

① Some versions use an .01 in this application.
② In Chassis 587, 59060 a 1500 MMF @ 500V 10% GP Part #15-15211 is used in this application.
③ In Chassis 528, 59040 a 750 MMF @ 500V 10% GP Part #15-75011 is used.

CONTROLS

ITEM No.	RATING RESIST. ANCE	WATTS	REPLACEMENT DATA				INSTALLATION NOTES
			SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IBC PART No.	
R1A	500K	1/2	24-267-0	B-60	A47-500K-Z	Q13-133	Volume
R2A	500K	1/2	24-143-2	B-60	A47-500K-Z	Q13-133	Tone
R3	Switch	2 W	24-1-3	KB-1	SWE-12	76-1	Hum Balance Wire Wound

CHASSIS—TOP VIEW



a section of the tape straight with both hands and insert the tape in the tape slot making certain that the dull coated side faces the rear of the recorder.

4. Insert the end of the tape into one of the three radial slots in hub of the take-up reel. Turn the reel several turns, clockwise, until the tape is secured to the reel and all slack is taken up between the reels.

To Record From Microphone-

1. Turn the recorder on by rotating the "ON"-OFF" control to the right. Allow about 30 seconds for the tubes to warm up.

2. Insert the microphone plug into the "Mike" jack.

3. Adjust the speed control knob (1) for the desired speed - 3 3/4" or 7 1/2" per second.

4. Push down on the Play-Record control knob (5) as far as it will go. Hold down and turn clockwise until it locks.

5. Hold the microphone away from your mouth about 6 to 12 inches and speak in a normal voice. DO NOT SHOUT. Adjust the volume control until the record level indicator flashes on the loudest sound.

NOTE: Correct volume level on recording is very important. Too weak a signal, which does not cause flashing on the recording level indicator, will result in weak playback and high background noise. Too strong a signal, which causes continuous flashing of the level indicator, will result in distortion during playback.

To Record From Radio-

Recordings from a radio may be made by one of these methods.

1. Through the microphone by pickup from the radio speaker:

Place the microphone about 6" to 12" in front of the radio speaker. Turn the radio volume control to a normal level. Setting it too high will cause distortion. Turn the radio tone control to treble or high. Set the recording level and record as under "To Record From Microphone."

2. Through a direct connection to the Radio speaker:

Make up a shielded cable with a two conductor phone plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice coil terminals of the radio speaker and insert the plug into the "Radio-Phono" jack. Set the radio volume and tone controls as described above. Set the recording level and proceed as described under "To Record From Microphone".

3. Through a direct connection to the volume control of the radio:

Make up a shielded cable with a two conductor plug on one end. Connect the other end across the radio volume control. Insert the phone plug in the "Radio-Phono" jack. Set the recording level and pro-

ceed as described under "To Record from Microphone". The radio volume and tone controls do not affect this set up, consequently they may be set any place.

To Record From Record Player-

1. If the Record Player being used has a phone type plug on the pick-up leads, insert it into the "Radio-Phono" Jack. Set the recording level and proceed as listed under "To Record From Microphone".

2. If the Record Player has a standard pin type plug, which is more common, an adapter is needed. Insert the pin plug into the adapter and plug the adapter into the "Radio-Phono" jack.

To Record From Television Receiver-

Use one of the three methods described under "To Record From Radio".

Dual Track Recording-

These recorders are designed to record and play on one-half the width of the tape at a time; thereby resulting in two track recording. To record on the other half of the tape remove the full reel from the takeup (left) side, turn reel over and place it on the feed (right) side. In playing or recording you may stop any place and reverse the reels to use the other track.

Fast Forward And Fast Rewind-

High speed forward or rewind operation may be obtained by pressing the desired knob (13) toward the head cover. This will wind the tape on the desired reel at a high speed as long as the knob is held in this position.

NOTE: Do not attempt fast forward or rewind with the Play-Record control on any setting except neutral position, as damage to the unit or tearing of the tape will result.

Braking-

This recorder contains an automatic brake mechanism giving more accurate tape control. To stop the tape at any time, when operating on fast forward or fast rewind, simply release the forward or rewind control. The tape will automatically come to a stop.

To Play A Recording-

1. Thread the tape as described under "Threading Tape".

2. Turn play-record control (5) clockwise without depressing until it locks.

3. Adjust the "Volume" and "Tone" controls (12) to desired listening level.

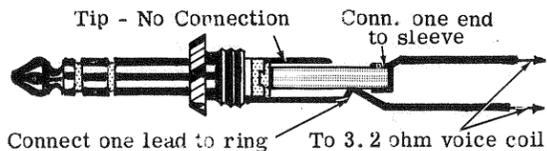
To Use An External Speaker-

Plug external speaker through a three conductor plug into the "Output Jack". Connect the three conductor plug as shown in sketch.

CAUTION: Do not insert plug into recorder without external speaker attached.

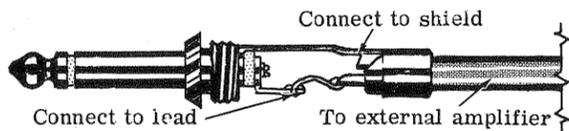
SILVERTONE MODELS 8070, 8072 (Ch. 528.58010, 528.58011, 528.58030, 528.58031, 528.59040, 528.59041, 528.59060, 528.59061)

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To Use An External Amplifier-

Plug the external amplifier into the "Output Jack" through a two conductor plug connected as shown in sketch.



To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for reuse.

2. For best results cut tape at a slight diagonal, joining ends together with a butt joint and fastening on the glossy side with splicing tape. Trim off any excessive width.

To Erase A Recording-

In the record position any recording on the tape is automatically erased before the new recording is put on the tape. Should it be desired to erase a recording without recording new material, follow the normal recording procedure, except set the volume control to the full counter-clockwise position.

ADJUSTMENTS

Spindle (19 And 48) End Play Adjustment-

The spindles should have from 1/32" to 1/16" of up and down movement. To adjust loosen set screw (65) on spindle to be adjusted and move the pulley (55) up or down as required until the correct end play is obtained.

Take-Up Lever Adjustment-

Spring (83) on the take-up lever (90) controls the timing of the left take-up reel holder (9). With the control knob (5) in the play back position, the take-up reel should start revolving at the same time or a little after the Pressure Roller (43) starts pulling the tape past the head (39).

Check adjustment by placing a fully loaded 7" reel on the take-up spindle. Rewind for about 10 seconds. Move the control knob (5) to the playback position and observe the action described above.

If adjustment is required, bend ear on take-up arm (85) in the position and direction indicated in

sketch on exploded view. Care must be exercised when making this adjustment and repeated trials between bends should be made.

Take-Up And Feed Reel Drag-

When the control knob (5) is placed in the "Neutral" position the reels should stop promptly with a minimum of overrun. There should be no looping of the tape. With control knob (5) in the neutral position and without reels on the holders, they may revolve slightly, but once the reels are put in place they should not revolve.

Stops, labeled "C" and "D" on Figure 3B, located on baseplate (22) controls the above action. They regulate the amount of return that take-up arm (85) or rewind arm (52) makes after controls have been released; not sufficient return would cause continued Fast Rewind or Fast Forward operation, while too much return would not allow drive belts (88) or (59) to put a drag on the respective pulleys. Bend these stops carefully so as to obtain operation described above. Stop "C" controls the take-up side while stop "D" controls the rewind side.

Head Alignment Adjustment-

It is extremely important that the Head (39) be lined up perfectly with the tape. If not, the result will probably be low output, track overlap, or loss of high frequencies.

1. Chassis 567, 58030, 528, 58030 and 528, 58010 (SHURE Head).

If the SHURE Head requires replacement, the complete assembly composed of the head and head holder should be replaced. The head holder is adjusted individually to the head and sealed at the factory. When installing head (39A) observe the following precautions:

HEAD HEIGHT: Place a .179" gauge (between 11/64" and 3/16") near the mounting bracket and between base plate (22) and bottom of head holder. Push down on head (39A) and tighten set screw (23). Remove gauge.

An alternate method of adjusting the head height when a gauge is not available is as follows:

(a) Remove the pressure shoe assembly (36) from the pressure bracket so the head can be observed through the opening in the pressure bracket.

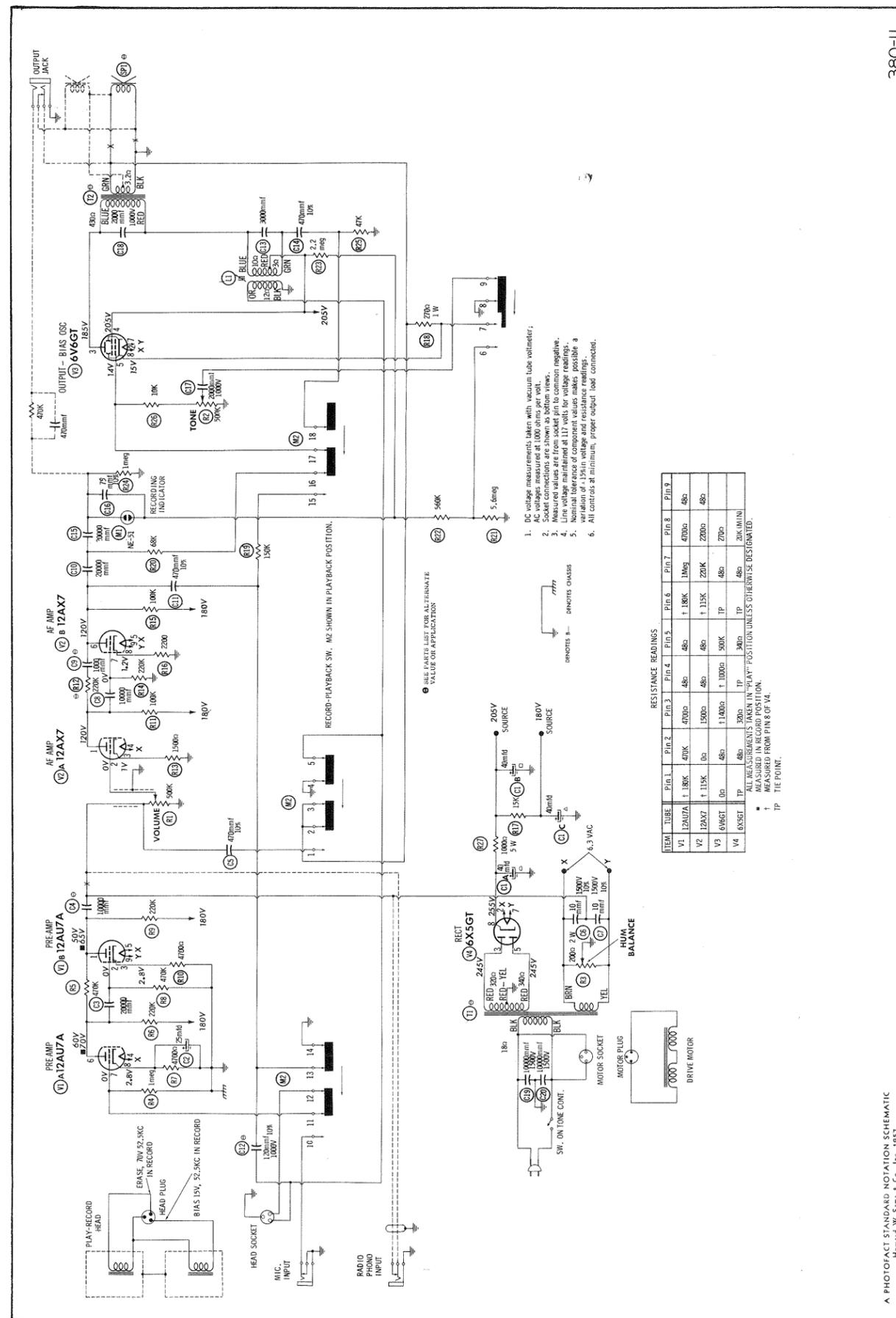
(b) Align head (39A) so the bottom of the head opening is at the same level (or slightly higher) as the corresponding bottom of the opening of the pressure bracket.

(c) With the unit pulling tape, the tape should approach the take-up reel nearly centered between the flanges of the reel. If the tape runs against the bottom flange, it is an indication that the head is too low.

(d) Make "Output Response" adjustment as described in Section 3 below.

2. Chassis 567, 58031, 528, 58031 and 528, 58011 (Michigan Magnetic Head)

On units using the Michigan Magnetic Head, a



slide contact touches only the first two wiper contacts. At all times during this step, switch cam (70) must touch switch cam at end at switch slide.

5. Move pusher stud (34) to the "Record" position and tighten set screw (33).

6. Reconnect switch spring.

Oscillator Coil Adjustment-

If the oscillator coil (L1) is replaced, the setting of the adjustable slug should be checked as follows:

1. Connect a frequency meter between point 2 of the erase head and ground.

2. Turn volume and tone controls on.

3. Set the Play-Record knob (5) to the "Record" position.

4. Adjust the oscillator slug for a 52.5 KC reading on the meter (A non-metallic screwdriver should be used for this adjustment.)

Hum Balance-

When either the 12AX7 tube or the Head (39) has been changed, the setting of the hum balancing control should be checked. This can be done as follows:

1. Connect an A.C. V.T.V.M. across the speaker coil. The meter's lowest scale should have a .1 volt reading at full scale deflection, or at least 1/3 of full scale.

2. Turn volume control and tone control fully clockwise.

3. Set control knob (5) to the playback position.

4. Adjust the hum balance control for a minimum reading. This reading should not exceed .1 volt.

LUBRICATION

The lubrication applied at the time of manufacture should be sufficient for a long period of time. In cases of unusual use, high operating temperatures, or the replacement of a part, lubrication may be required.

TROUBLES

Improper Tape Take-Up-

1. Spindle (48) binding.

(a) Lubricate and check end play. See adjustment section "Spindle End Play".

2. Improper Take-up spring (83) action.

(a) See "Take-up Lever Adjustment".

3. Drive belt slipping.

(a) Clean pulleys.

4. Broken drive belt.

Fails To Fast Forward Properly-

1. See above except for step 2.

(a) See corresponding remedies above.

Fails To Fast Rewind Properly-

1. See above except for step 2.

(a) See corresponding remedies above. CAUTION: When replacing belt (59) be sure to give it a half-twist.

Stalling Or Binding-

1. Speed control (11 setting changed while unit is not turned on. This should be done only while motor (62) is rotating.

(a) With motor (62) turned on, try moving Speed Control (1) up and down several times.

(b) Should the above fail, try holding Fast Forward Control to the left as far as it will go, and with the other hand manually rotate Take-up Reel Spindle (48).

(c) If binding continues it will be necessary to remove unit from cabinet and free any binding action.

Speed Does Not Agree With Speed Setting-

1. Bend Speed Control Bracket (74).

(a) Straighten bracket (74) so that upper and lower fingers are equal distant from drive belt when belt is in normal operating position.

2. Broken "ears" on Drive Pulley (61).

(a) Replace entire motor (62).

Tape Creeps Out Of Tape Slot-

1. Head (93) improperly adjusted.

(a) See "Head Alignment Adjustment".

Plays Back But Does Not Record-

1. Bad component.

(a) Check voltage and resistance readings.

2. Switch slide not contacting proper terminal.

(a) See "Switch Cam Adjustment".

Does Not Completely Erase Previous Recording-

1. Bad 6V6GT tube.

(a) Replace tube. This tube may function properly as a power amplifier but not as an oscillator which is needed for erasing.

2. Bad Head.

(a) Replace head following "Head Alignment Adjustment".

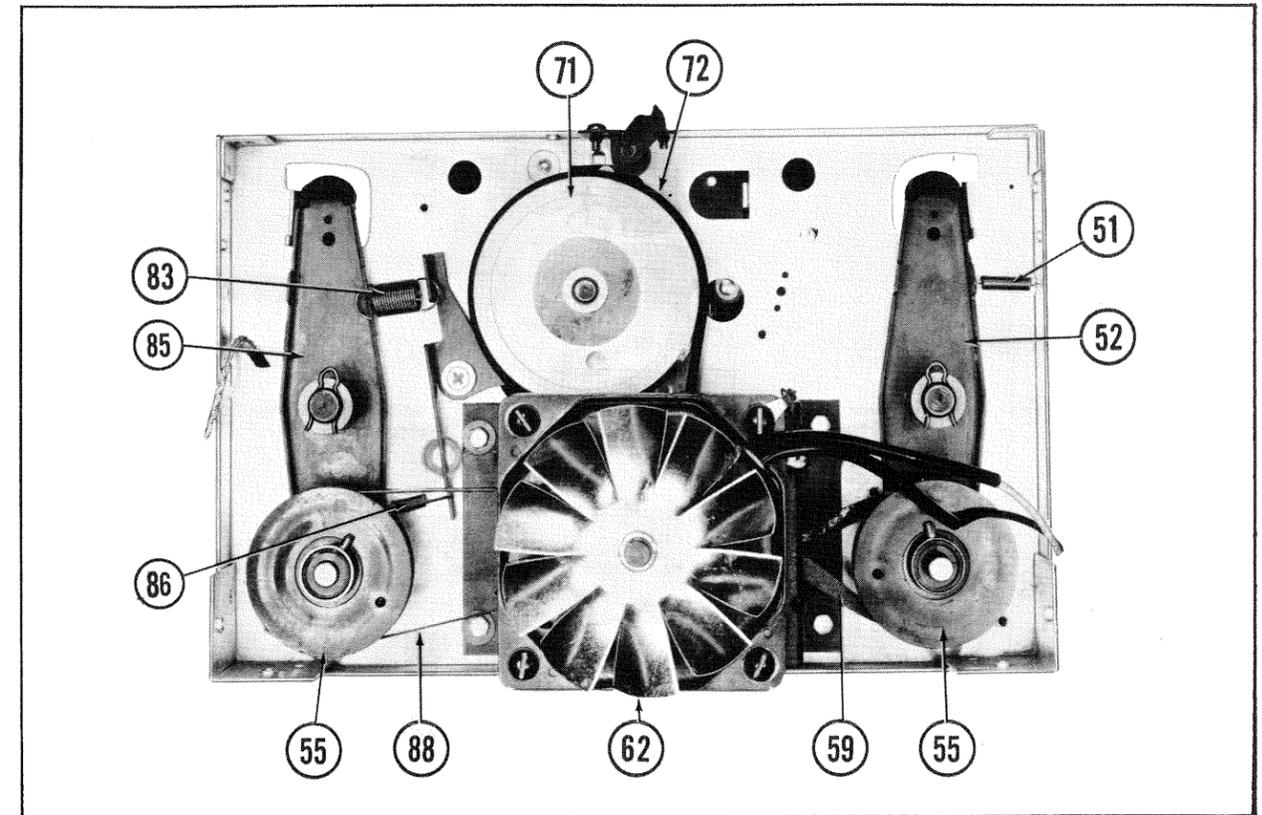


FIG. 2

simple alignment procedure is as follows:

(a) Place a full reel of tape on the right hand spindle (19) and thread tape. See "Threading Tape".

(b) Pull tape tight against Heads (26) and (28) by rotating one reel while holding the other reel.

(c) Both heads should then be positioned so the top edge of the tape is exactly even with the bottom edge of the ground down "flat" section on the face of the heads.

(d) When in this position, both heads should also be perpendicular to the bracket vertically and horizontally.

(e) The faces of the heads should be in line with each other so as to present a flat surface to the tape, i.e. one head should not protrude further forward than the other.

3. Output Response

To make this adjustment, a tape on which a 3000 cycle note has been recorded by a unit known to be in good operating condition will be required.

Connect an output meter, or AC voltmeter, across the speaker voice coil of the unit to be adjusted. While playing back the 3000 cycle note tape, pivot head (39) back and forth on mounting screw (23) until maximum amplitude on output meter is achieved. Make certain that head height has not been changed.

If a 3000 cycle tape cannot be made, use a recording with high note content to make the adjustment described above.

4. Track Overlap

This should be checked by first making a recording on a blank tape with the unit being checked.

Do not rewind the tape, merely reverse the reels and play back the other track.

There should be no sound but, if what is heard is backwards, there is track overlap. To correct this, it will be necessary to adjust the tape guide on the side of the head holder by bending it upwards. This should move the tracks further apart.

Switch Cam Adjustment-

The Play-Record Switch in the amplifier chassis is normally held in the play position by a spring located on the switch arm. When cam on the end of the control shaft (70) actuates switch, it should move the switch far enough to allow all circuits to be switched from Playback to Record. If adjustment is required proceed as follows:

1. Loosen set screw (33).

2. Carefully detach one end of switch spring.

3. Push down on control knob (5) and turn it clockwise to the Record position.

4. Manually move switch cam (70) until first

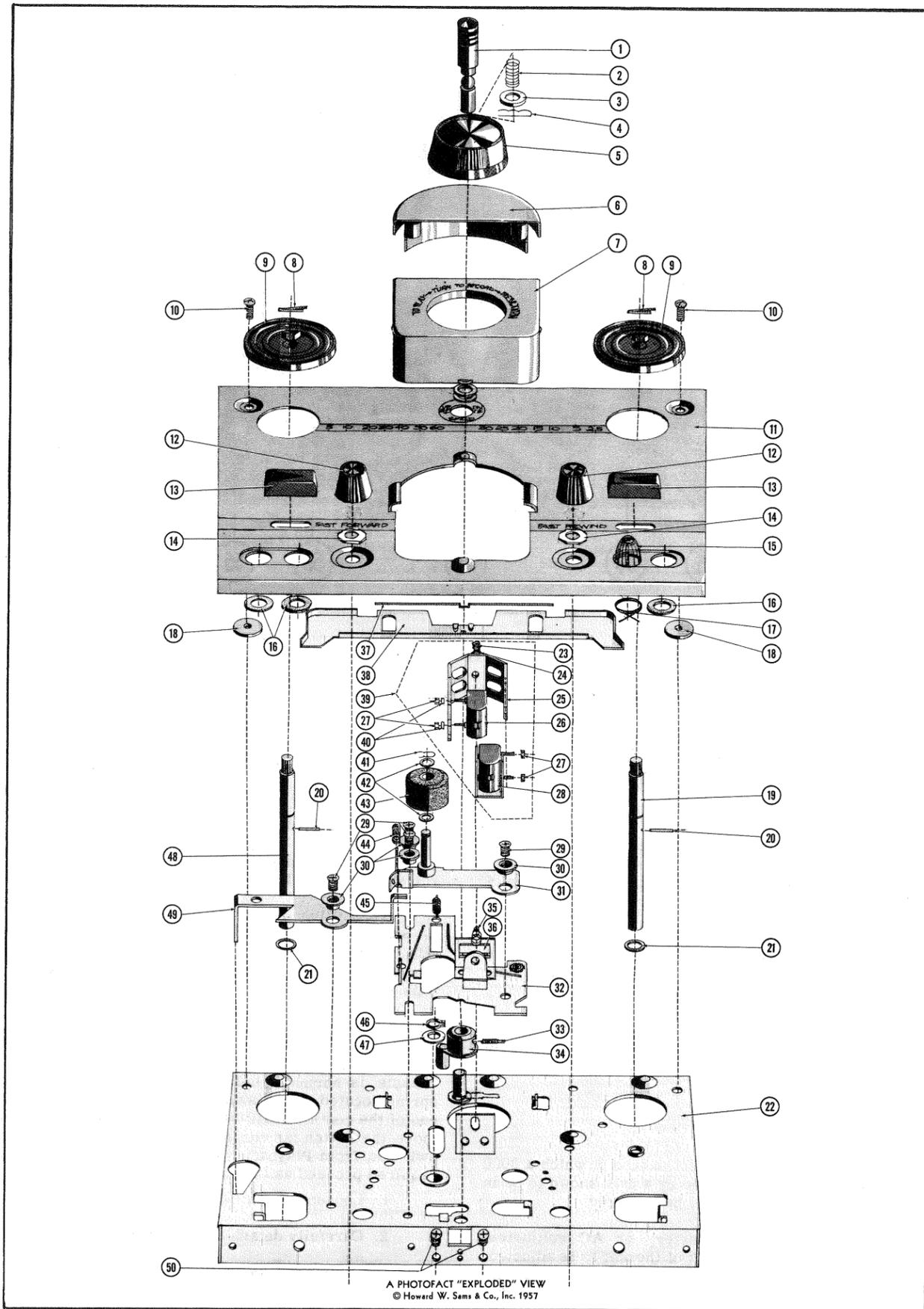


FIGURE 3A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

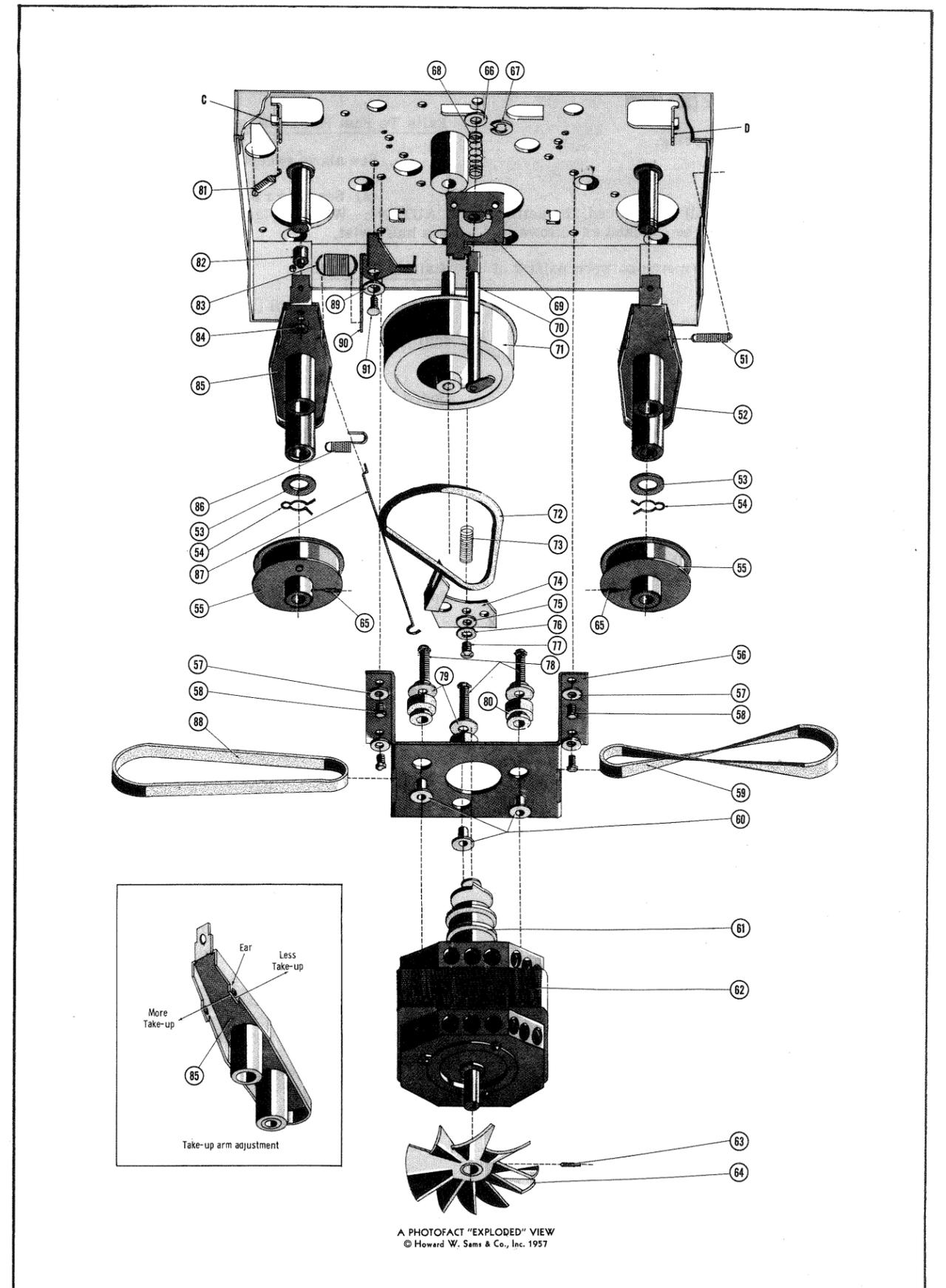


FIGURE 3B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.