



V-M
MODEL 1500



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GENERAL INFORMATION

V-M Model 1500 record changers automatically play a stack of 16 2/3- or 45-rpm records and shut off after playing the last record.

The records are separated by an actuator rod inside the spindle. This rod actuates the bolts and separator blades, allowing the bottom record of a stack to drop to the turntable.

A positive position trip mechanism is used in this changer. The trip is actuated and the change cycle started when the tone arm reaches a predetermined distance from the center of the record.

When servicing this changer, connect to a supply of 90 volts, 60 cycles AC only, unless otherwise specified.

MANUFACTURED BY:

V-M Corporation
Benton Harbor, Michigan

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C387

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PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	*14993	Spindle Cap	37	14922	Tone Arm Shaft
2	14992	Spring, Blade Return	38	14926	Spring, Follower Arm
3	14989	Separator Blade	39	14927	Trip Spring
4	14990	Bolt	40	14955	Lift Pin
5	14991	Spring, Bolt	41	14948	Switch Lever
6	14987	Actuator Rod Ass'y.	42	14950	Spring, Switch Lever
7	*14984	Turntable Ass'y.	43	14949	Detent Lever
8	14646	Screw, #4-24 X 1"	44	1652	"C" Washer
9	14966	Washer, Bearing-Turntable	45	14954	Trip Actuator
	*14904	Tone Arm & Hinge Ass'y. — Consists of:	46	18928	Shoulder Screw, #6-32
10	4923	Hinge Pivot Screw	47	14930	Cam Gear Ass'y., Consists of:
11	14914	Hinge Pivot Button	47A	14935	Shuttle (Located on top side of cam. Not shown on exploded view.)
12	*14903	Tone Arm	48	14934	Shuttle Actuator
13	7634	Lock Spring, Lift Screw	49	14936	Trip Pawl
14	7635	Lift Screw	50	14962	Ejecting Spring
15	14917	Hinge Arm	51	1652	"C" Washer
16	14915	Hinge Spring	52	14957	Ejector Bracket Ass'y.
17	14916	Adjusting Spring	53	18492	Screw, #8-32 X 1/4
18	6963	Tone Arm Clip	54	14968	Motor, Shift Arm
19	14918	Cartridge, Astatic 310 14627 Needle Unit, Sapphire	55	1588	"C" Washer
20	4262	Cartridge Mtg. Screw	56	5040	Rubber Grommet
21	14498	Nut & Lockwasher, Tone Arm Mtg.	57	4401	Speed Nut, Knob Mtg.
22	*14967	Rest Post	58	1652	"C" Washer
23	*14966	Control Knob, On-Off-Rej.	59	2583	Fibre Washer
24	*14966	Control Knob, Speed Selector	60	16929	Idler Wheel
25	*14961	Baseplate Ass'y.	61	2583	Fibre Washer
26	14575	AC Switch	62	16927	Idler Link Ass'y.
27	1895	Terminal Strip	63	1652	"C" Washer
28	5718	Screw, Rest Post Mtg.	64	16922	Cam Follower
29	1651	"C" Washer, Turntable Mtg.	65	16921	Cam & Link
30	1737	Switch Cover	66	16923	Cam Spring
31	14960	Mounting Cup, Rubber	67	16924	Spring Cup
32	14952	Control Lever	68	16918	Motor Plate Ass'y.
33	1652	"C" Washer	69	2773	Grommet
34	4401	Speed Nut, Knob Mtg.	70	5022	"C" Washer
	14921	Tone Arm Shaft Ass'y., Consists of:	71	16928	Idler Spring
35	14980	Adjusting Arm Ass'y.	72	16916	Motor Ass'y (complete) 90V 60 Cycle
36	14937	Follower Arm Ass'y.			

* When ordering specify color.

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FOLDER 15

TROUBLE CHART (Cont.)

SYMPTOM	CAUSE	REMEDY
	2. Trip pawl (49) bent.	2. Straighten trip pawl (49) so that it is moved away from the turntable hub as the changer completes its cycle.
Changer does not cycle when needle reaches end of record.	1. Trip actuator (45) binding or bent.	1. Clean, straighten, or replace. When engaged by trip spring (39), trip actuator (45) should move trip pawl (49) toward the turntable hub.
	2. Trip spring (39) bent, broken, or missing.	2. Straighten or replace trip spring (39).
Needle does not properly track across record.	1. Needle may be clogged by an accumulation of foreign matter.	1. Clean needle with a soft brush.
	2. Needle tip worn or chipped.	2. Replace needle.
	3. Tone arm leads too tight.	3. Give the tone arm leads enough slack to allow the tone arm to move freely across record.
	4. Tone arm shaft (37) binding in housing.	4. Clean foreign matter from tone arm shaft (37) and housing.
	5. Insufficient needle pressure.	5. Needle pressure should be 6 to 8 grams. Adjust by moving spring clip (17) backward or forward until correct pressure is obtained.
Erratic tone arm movement.	1. Follower arm spring (38) disconnected or broken.	1. Replace follower arm spring (38).

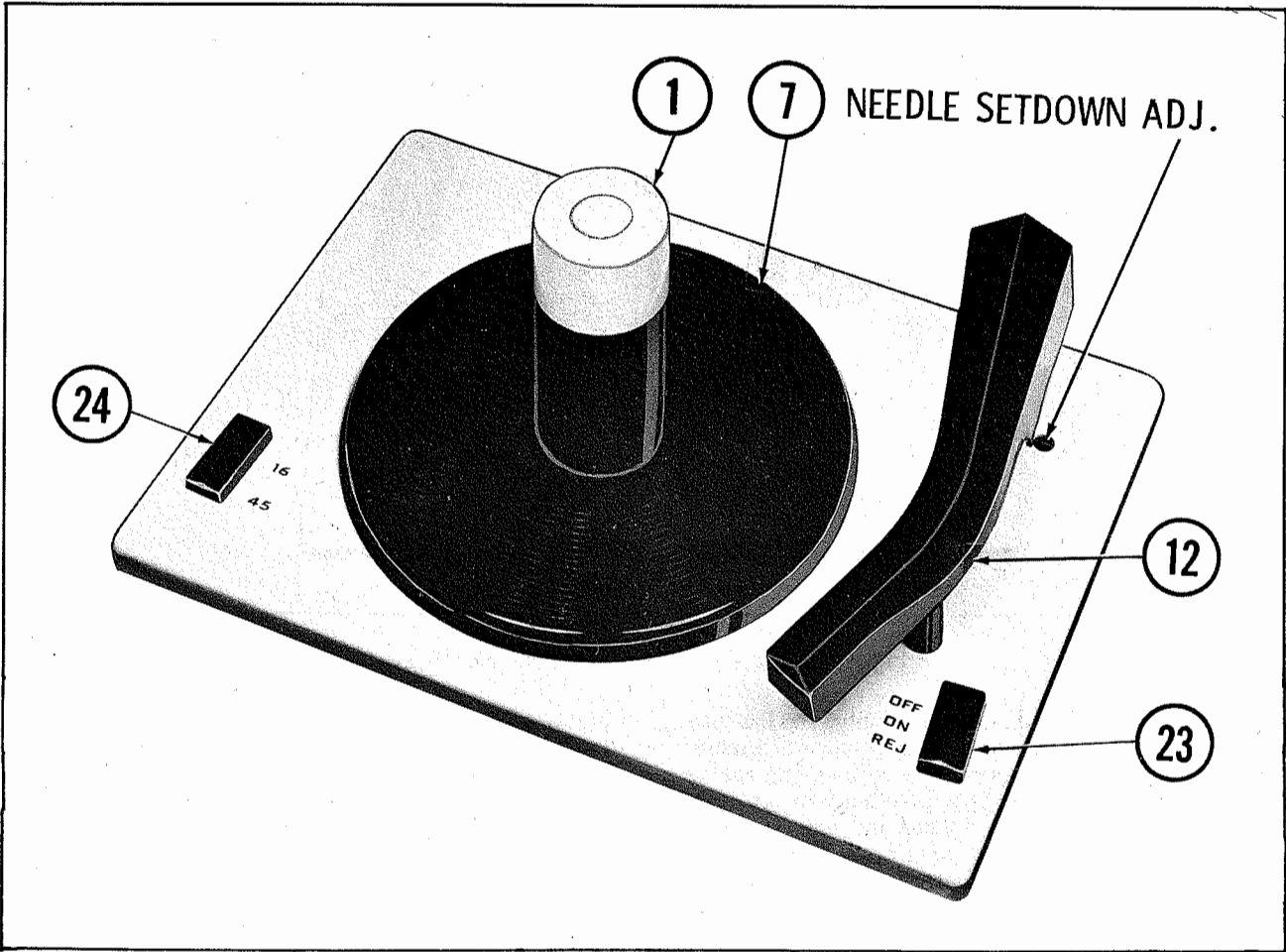


Figure 1. Top View

OPERATING INSTRUCTIONS

CAUTION: Before operating changer, always make sure that tone arm is not clipped to tone arm rest.

Loading

1. Place up to fourteen 16 2/3- or 45-rpm records on the spindle.

Starting

CAUTION: Do not operate speed change knob unless motor is running.

Make sure that speed control is in position corresponding to type of records to be played. Place Off-On-Rej. knob in Rej. and release. The changer will operate automatically until the last record has been

played. The tone arm will then return to its rest, and the supply to the motor will be switched off.

Rejecting

To reject a record, place Off-On-Rej. knob in Rej. and release.

Stopping

The changer may be stopped anytime a record is playing by placing Off-On-Rej. knob in Off position. Tone arm should be lifted and placed on its rest.

Unloading

Using both hands, and with fingers under the edge of the bottom record, lift records straight up and off the spindle.

CHANGE CYCLE

Observe the change cycle operation while rotating the turntable by hand. The following description can then be readily followed, and the function of each part can be more easily understood.

This changer is provided with a positive position trip mechanism. The trip is actuated and the change cycle started when the tone arm reaches a predetermined distance from the center of a record.

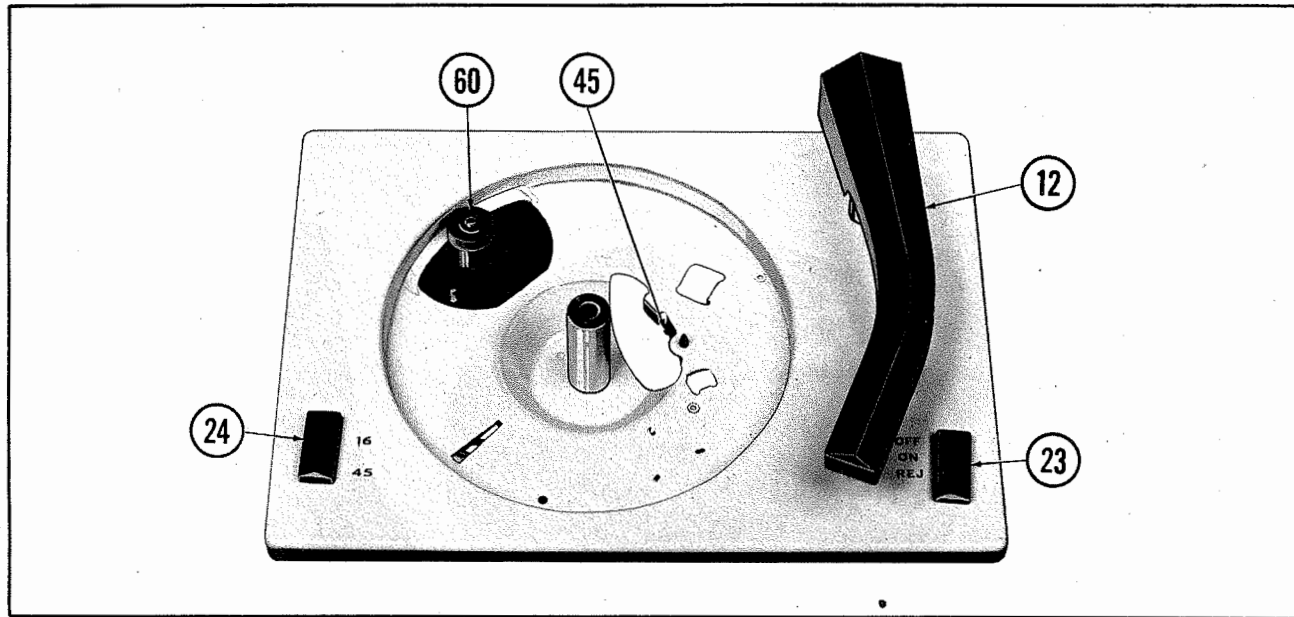


Figure 2. Top View With Turntable Removed

The tone arm and hinge assembly, and the tone arm shaft are connected so that they move in unison. As the tone arm nears the end of a record, trip spring (39) engages trip actuator (45), pivoting trip pawl (49) toward the turntable hub. When the tone arm has reached a predetermined distance from the center of the record (within the diameter of the record trip grooves), trip pawl (49) engages the projection on the turntable hub. Contact between the trip pawl and turntable hub projection gives the required push for the teeth in cam gear assembly (47) to engage the teeth in the turntable hub, rotating the cam gear.

As cam gear (47) begins to rotate, lift pin (40) travels up the cam incline (point "A", Fig. 3). When the lift pin reaches the top of the incline, the follower stud on the end of follower arm assembly (36) contacts the cammed surface (point "B", Fig. 3), and pivots the tone arm outward.

When the tone arm is positioned over rest post (22), lift pin (40) rides up the small incline (point "C", Fig. 3), raising the cartridge end of the tone arm to the height of a record resting on spindle bolts (4).

The follower stud on follower arm assembly (36) follows the cammed groove (point "D", Fig. 3) in cam gear (47), moving the tone arm inward toward the center of the record.

When a record is resting on spindle bolts (4), the inward travel of the tone arm is stopped by the edge of the record. Since adjusting arm assembly (35) is permanently staked to tone arm shaft (37), its inward movement is also stopped. However, the follower stud on follower arm assembly (36) continues to follow the cam groove (point "D", Fig. 3) toward the center of the cam gear and then back out. Tension of follower arm spring (38) returns follower arm assembly (36) and adjusting arm assembly (35) to their original positions.

As the tone arm moves outward from the record stack, ejector arm (52) starts down the incline of

ejecting spring (50) and begins to actuate the spindle, in order to drop the next record. At the same time, lift pin (40) rides down the small incline (point "E", Fig. 3), lowering the tone arm below the record stack.

Inside the spindle, actuator rod (6) raises and, with its cone point, begins to extend separator blades (3) out of the spindle housing. After the separator blades have projected far enough to separate the bottom record of the stack, bolts (4) retract into the spindle, in order to allow the bottom record to drop to the turntable. The bolts are actuated by the outward movement of the separator blades. After the record has dropped, actuator rod (6) is lowered, bolts (4) extend, and separator blades (3) retract, in order to allow the next record to drop into position on the bolts.

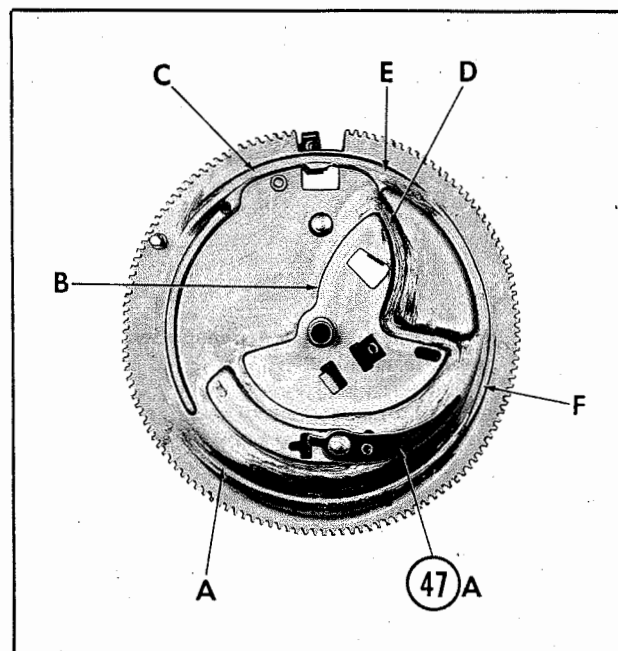


Figure 3. Top View of Cam Gear

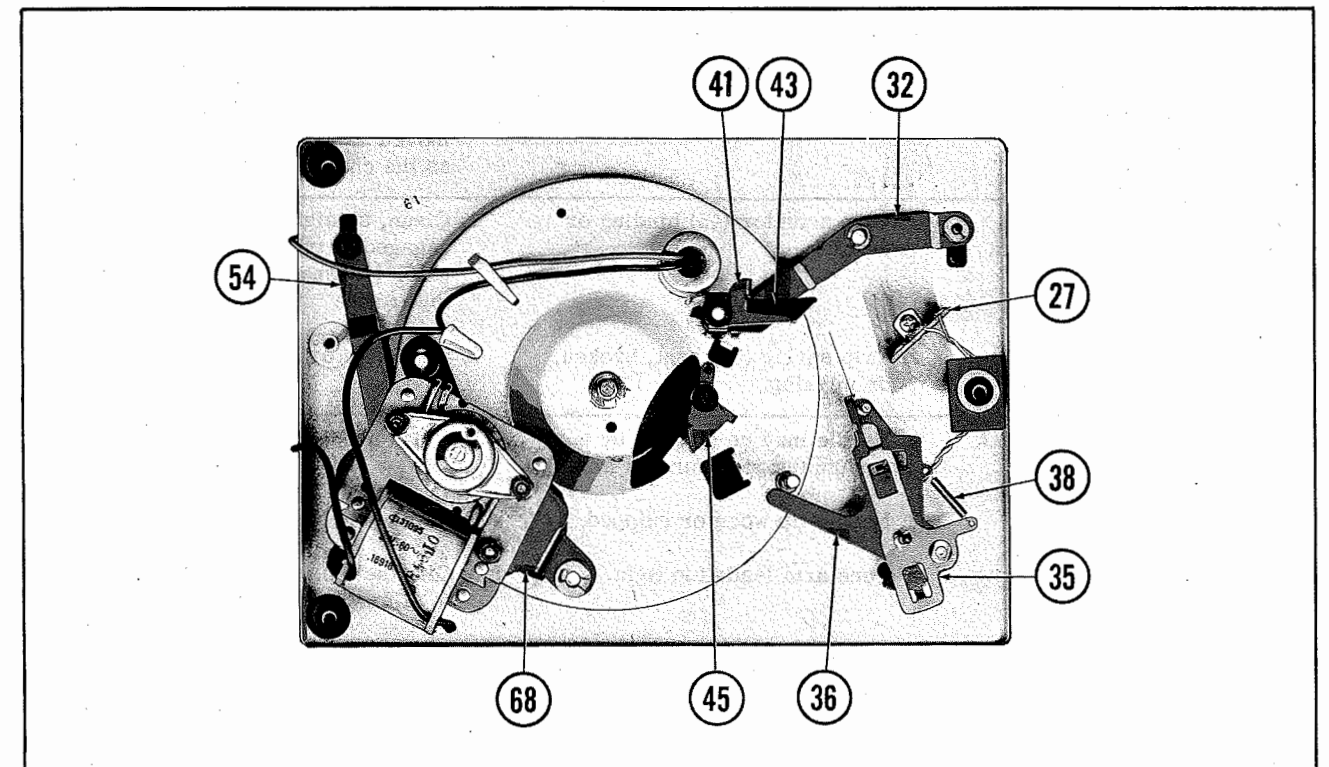


Figure 7. Bottom View With Cam Gear Removed

TROUBLE CHART (Cont.)

SYMPTOM	CAUSE	REMEDY
	2. Defective motor.	2. Remove turntable and allow motor to run without load. If current is reaching motor and drive shaft does not rotate, the motor is defective. Repair or replace motor.
Turntable speed too slow.	1. Binding in turntable bearing.	1. Hold idler wheel (60) away from the turntable rim and turn the turntable by hand, to see if it turns without binding. If binding occurs, remove turntable, clean foreign matter from bearing, and lubricate with light mineral oil.
Turntable stalls or slows down during cycle.	1. Idler wheel (60) not contacting turntable rim with sufficient pressure. 2. Binding in drive mechanism.	1. Idler spring (71) disconnected or broken. Replace idler spring (71). 2. Hold idler wheel (60) away from turntable rim and cycle machine by turning turntable slowly by hand. Cam gear (47) should turn freely during the complete revolution without binding at any point. If binding occurs, check for foreign matter or bent parts.
Changer continues to cycle.	3. Motor drive system not functioning properly. 1. Changer not level.	3. See "Motor Maintenance and Replacement" under "Servicing Instructions." 1. Make certain that changer is level, or continuous cycling may result.

The tone arm height should be adjusted so that the top of the tone arm clears the bottom of the record by approximately 1/16" when the changer is center-tripped and a record is resting on the spindle bolts.

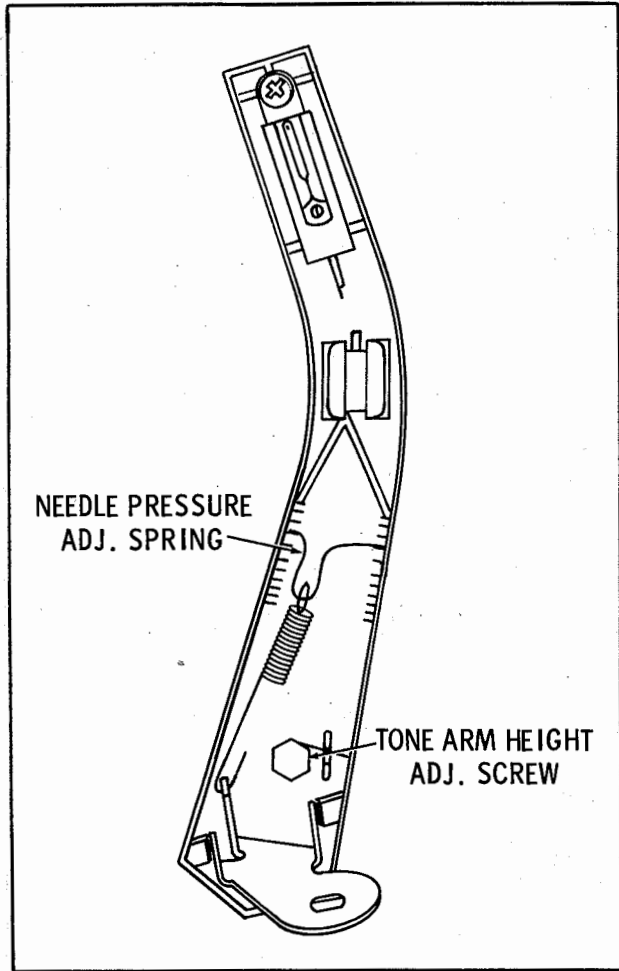


Figure 6. Tone Arm Adjustment Points

Needle Pressure

Needle pressure should be between six and eight grams. To adjust, move spring clip (17) backward or forward until correct needle pressure is obtained.

Needle Replacement

To replace the needle, loosen the screw at the rear of the needle shank and slide the needle forward. When replacing the needle, the channel formed near the needle tip must be placed directly over the element connector.

Motor Maintenance and Replacement

If the turntable stops or slows down during cycle, occasional maintenance of the motor drive system may be required. Remove "C" washer (29) and lift the turntable assembly straight up. Idler wheel (60), motor drive shaft, and inside rim of the turntable should be cleaned with a lint-free cloth and alcohol. When replacing the turntable, make sure the mechanism is out of cycle and trip pawl (49) is pushed back away from the turntable hub.

To replace idler wheel (60), remove the motor assembly from the baseplate by removing three "C" washers (70), lower the motor until it clears the mounting studs and remove idler wheel "C" washer (58). When replacing the motor, make sure motor shift arm (54) is toward the inside of motor; otherwise, the speeds will be reversed.

Turntable and Spindle Assembly

Should the turntable and spindle assembly ever need to be disassembled, be careful not to lose the blade and bolt springs.

When reassembling the spindle, the easiest method is to start by installing actuator rod assembly (6). Then, place the turntable on the unit. This allows the actuator rod to drop to its lowest level. Next, assemble bolts (4) and bolt springs (5) in the spindle slot. Hook separator blades (3) together and assemble to bolts (4). The tabs on the separator blades fit into the slots in the bolts. Separator blade spring (2) is assembled into the slots in the separator blades, and the spindle cap is put on, with the screw holes aligned. Hold the spindle cap tightly to the spindle, remove the turntable assembly, and fasten the spindle cap with cap screws (8).

Lubrication

Additional lubrication should not be required for the life of the changer, but in cases of unusual use or high-operating temperature, the changer should be lubricated as follows:

Apply Andok "B" or Texaco Sta-Put to:

- 1. Cam grooves on top side of cam gear (47).

Apply one drop of light mineral oil to:

- 1. Cam gear (47) mounting shaft.
- 2. Turntable bearing.
- 3. Top and bottom motor bearings.

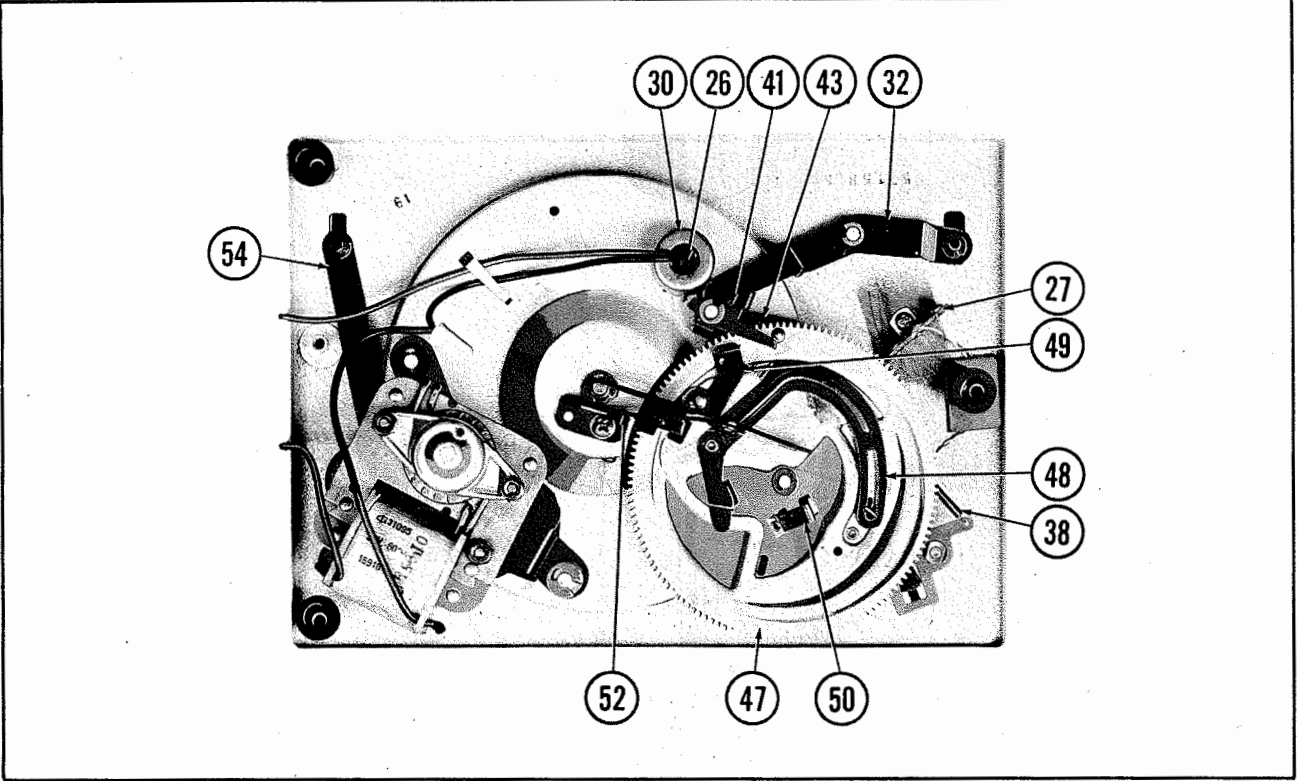


Figure 4. Bottom View

As cam gear (47) continues to rotate, the follower stud on follower arm assembly (36) follows along the inside edge of shuttle (47A) to position the tone arm directly above the point of landing. Lift pin (40) rides down the incline (point "F", Fig. 3) of cam gear (47), lowering the tone arm to the record lead-in groove.

As cam gear (47) is about to complete its cycle, the tab on trip pawl (49) contacts a formed tab on the baseplate and is pivoted back into a position where it will not engage the projection on the turntable hub and cause the mechanism to cycle again.

To complete the change cycle, the detent stud of cam gear (47) catches in the cutout of detent lever (43), stopping the rotation of the cam gear. With the gear in this position, the tone arm is free to track across the record.

After the record plays and the mechanism has been tripped, the preceding sequence of cycling and playing of records is again followed until the last record has been played.

After the last record has finished playing, the changer trips, and the same cycle sequence is followed until the tone arm moves inward to contact a record stack on top of the spindle.

Since the inward movement of the tone arm is not stopped by a record, adjusting arm assembly (35) is allowed to follow along with follower arm assembly (36), which contacts the tab of shuttle actuator (48). By pivoting the shuttle actuator, shuttle (47A) is pivoted inward, closing the entrance to the inner cam groove.

With the inner cam groove closed, the stud on follower arm assembly (36) is forced to follow the outer edge of the shuttle and the outer cam groove. This outer groove keeps the tone arm position over the rest post.

Pivoting of shuttle actuator (48) caused the mechanism to shut off. As the mechanism nears the end of the shutoff cycle, the turned-down tab of shuttle actuator (48) contacts switch lever (41) and pivots the lever to shut off AC switch (26).

TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Turntable does not revolve when control is placed in On position.	1. No current at motor.	1. Make sure that current is reaching AC leads of changer and switch (26) is closing.

SERVICING INSTRUCTIONS

Needle Setdown

The setdown position of the needle is adjusted by the screw on adjusting arm assembly (35). A hole beside the hinge post provides access to this screw.

Tone Arm Height

Tone arm height is adjusted by lift screw (14). To raise the tone arm, turn the screw counterclockwise. To lower the arm, turn the screw clockwise.

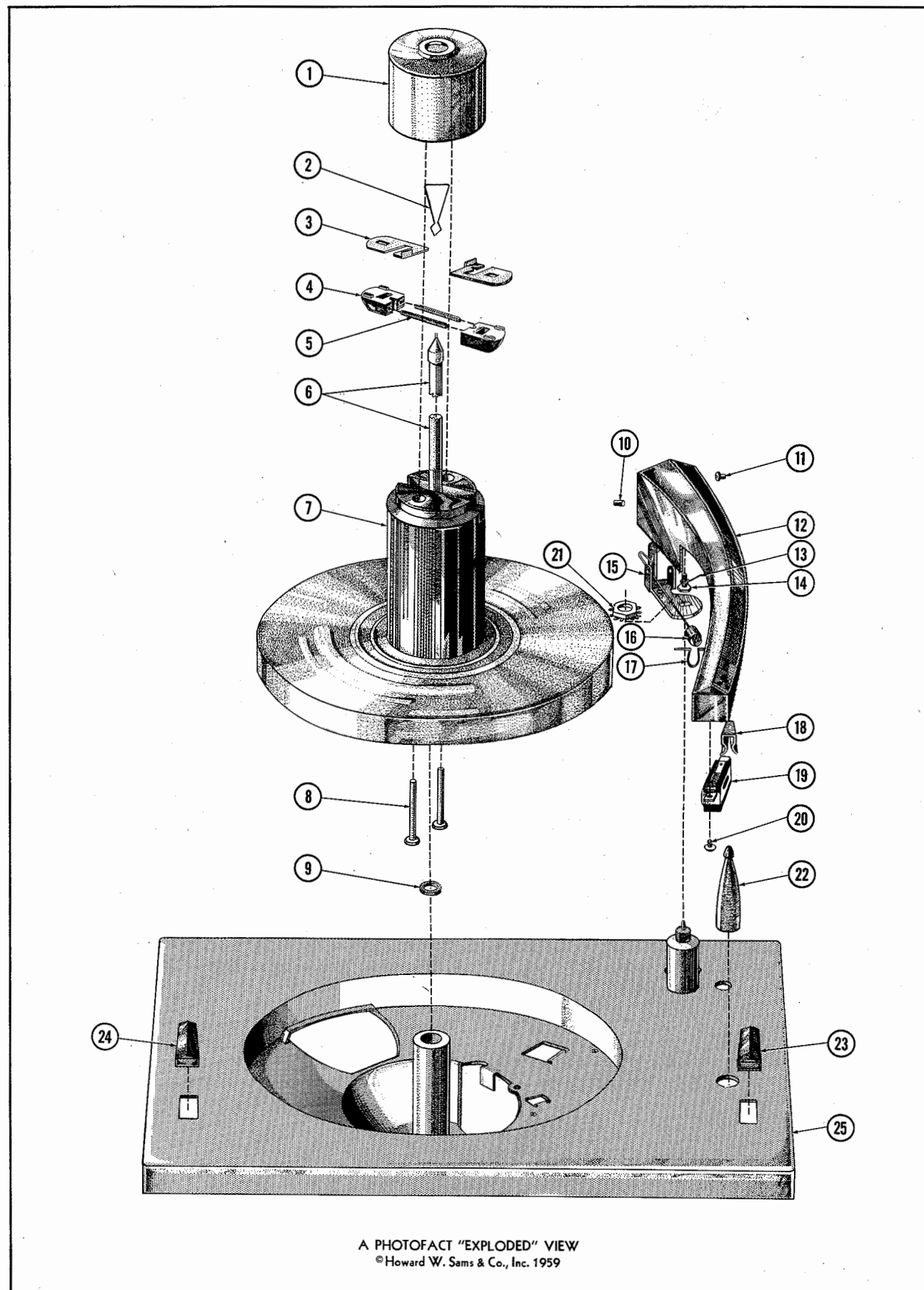


Figure 5A. Exploded View of Parts Above Baseplate

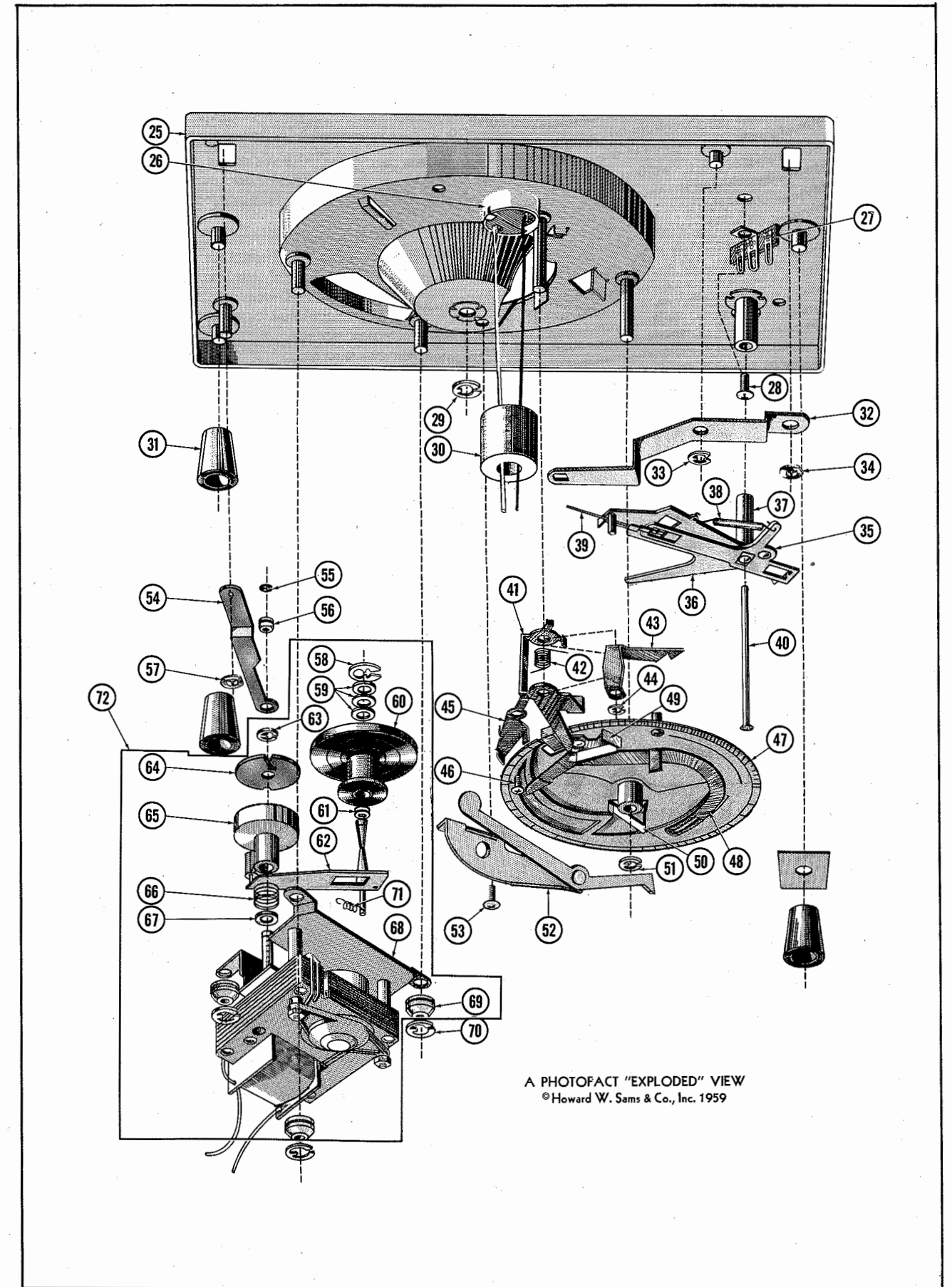


Figure 5B. Exploded View of Parts Below Baseplate