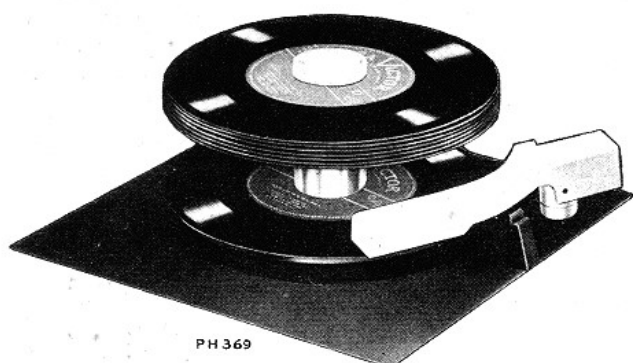




# RCA VICTOR



PH 369

## RP-168 Series Automatic Record Changer Mfr. No. 274

# SERVICE DATA

—1949 No. 5—

RADIO CORPORATION OF AMERICA  
RCA VICTOR DIVISION  
CAMDEN, N. J., U. S. A.

The basic RP168 mechanism includes the metal sub-panel and all necessary operating parts except the tone arm and trip lever assemblies. Instruments using the cabinet as the motor board will have additional items (other than the tone arm and trip lever assemblies) listed in the Service Data issued for the individual models.

RP-168-1: Record changer mechanism plus tone arm assembly  
RMP-129-1; instrument cabinet is used as record changer motor board. Used in Models 9JY and 9EY3.

RP-168A-1: Record changer mechanism plus tone arm assembly  
RMP-129-1 and metal motor board. Used in Models 9W101, 9W103, 9W105, 9TW333, 9TW390 and 9Y7.

Complete record changer parts listing (except output cable), included in this Service Data. Different types and lengths of output cables are used—listed in Service Data of Individual Instruments.

RP-168A-2: Record changer mechanism plus tone arm assembly  
RMP-130-1 and metal motor board. Used in Berkshire Models.

## AUTOMATIC OPERATION

1. Place a stack of records over the center post, with the desired selections upward the last record to be played on top.
2. Apply power to drive motor.
3. Push the "start-reject" knob to "start" and let go. The mechanism will automatically play in sequence one side of each record stacked on the separator shelves.
4. To reject a record being played push the "start-reject" knob to "reject."
5. At conclusion of playing and as the last record is being repeated, lift tone arm and place on rest. Push "on-off" knob to the "off" position.

## SPECIFICATIONS

This mechanism is designed to play automatically a series of eight new RCA seven-inch fine groove records.

RPM .....	45
Pickup .....	Crystal
Sapphire dia. ....	.0009 inches
Pickup voltage output .....	Medium
Pickup force .....	5 grams

## CAUTION

1. Avoid handling the tone arm when the mechanism is in cycle.
2. Do not use force to release a jam.
3. Do not try to remove the records on the turntable if the turntable is stopped in cycle.
4. Do not try to operate the mechanism if the separator knives protrude from the center post when the mechanism is out of cycle.

Turn Power control on. The turntable revolves. Press finger gently against protruding discs until they disappear inside the holder. Do not do this during a change cycle.

## LUBRICATION

A light machine oil (SAE No. 10) should be used to oil the bearings of the drive motor.

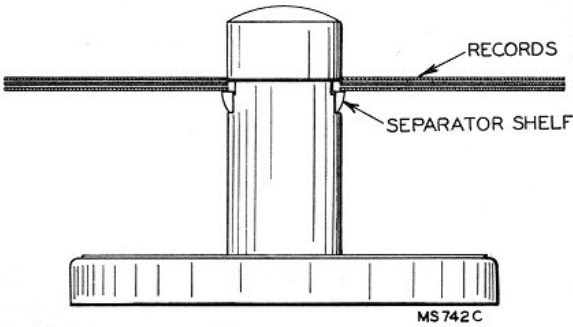
On all bearing surfaces, excepting the motor bearings, Houghton STA-PUT No. 320, or equivalent, should be used. On all other sliding surfaces, STA-PUT No. 512, or equivalent, is recommended. STA-PUT can be purchased from E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia, Pa.

(Do not oil or grease record separator shelves.)

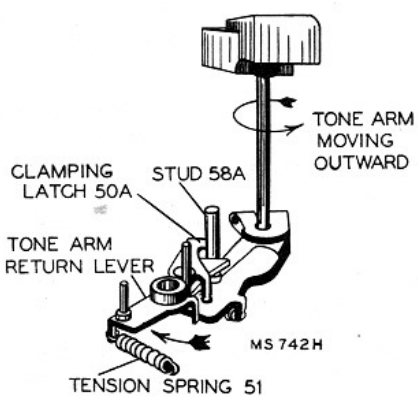
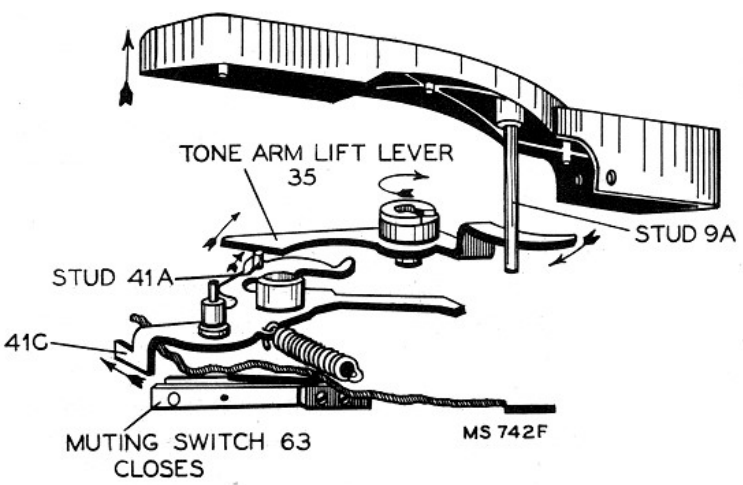
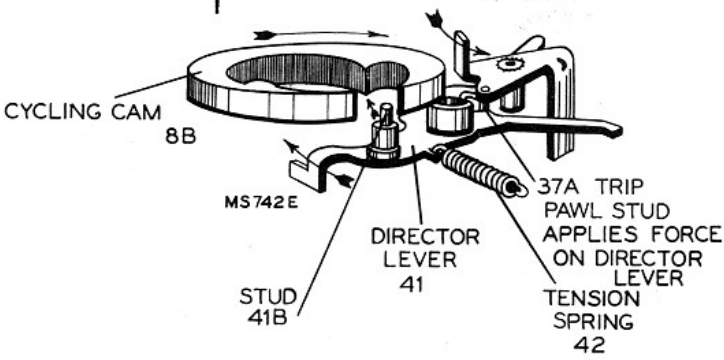
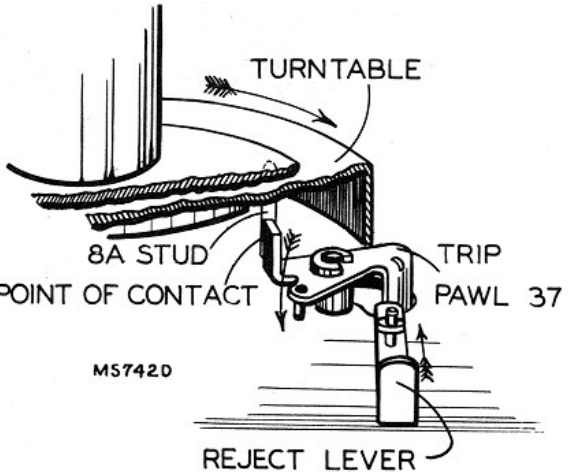
It is important that the drive motor spindle and the rubber tire on the idler wheel be kept clean and free from oil or grease, dirt, or any foreign material at all times. Carbon tetrachloride or naphtha is satisfactory for cleaning these parts.

CYCLE OF OPERATION RP-168

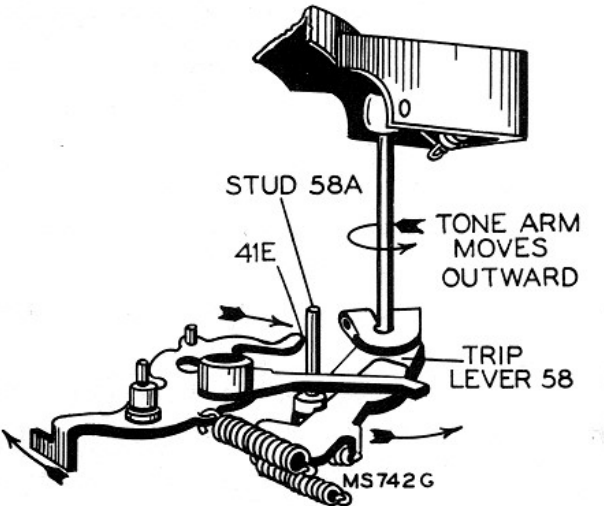
Function	Explanation
Place records over the center post and turn the power on	1. Records rest on separator shelves protruding from either side of the center post.
Operator Push start-reject knob	1. Start-reject knob which is linked to start-reject slide (45A) moves trip pawl (37) into tripping position. 2. As the turntable rotates the small projection (8A) extending from the underside of the turntable contacts end of trip pawl.



Automatic Cycle	Tone arm rises	<ol style="list-style-type: none"><li>1. As the turntable continues to rotate it carries the trip pawl (37) along for a short distance.</li><li>2. The stud (37A) on trip pawl applies force against director lever (41) in opposition to tension spring (42). This force continues to be applied until the stud (41B) on the director lever has been forced through the slot and into the cycling cam (8B).</li><li>3. The end (41C) of the director lever extending below the motor board moves away allowing the muting switch (63) to close.</li><li>4. At the same time the stud (41A) pushes the tone arm lift lever (35) which in turn raises the tone arm.</li></ol>
-----------------	----------------	--



Automatic Cycle	Tone arm moves out	<ol style="list-style-type: none"><li>1. The end (41E) of the director lever (41) contacts stud (58A) on trip lever (58), starting the tone arm on its outward movement.</li><li>2. The stud (58A) on trip lever contacts tone arm return lever (50), pushing it outward against the tension spring (51).</li><li>3. As the tone arm reaches its outermost position, it is locked in position by the latch (50A) clamping the stud (58A) on the end of the tone arm return lever.</li></ol>
-----------------	--------------------	---



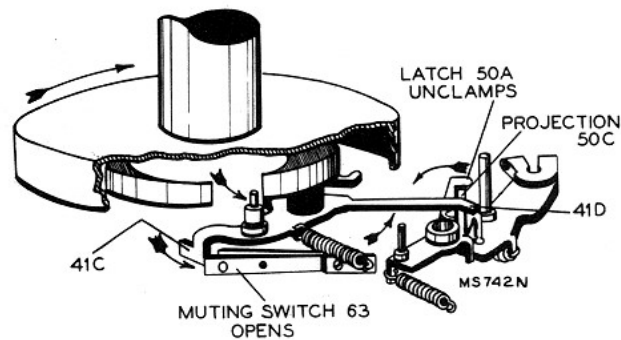
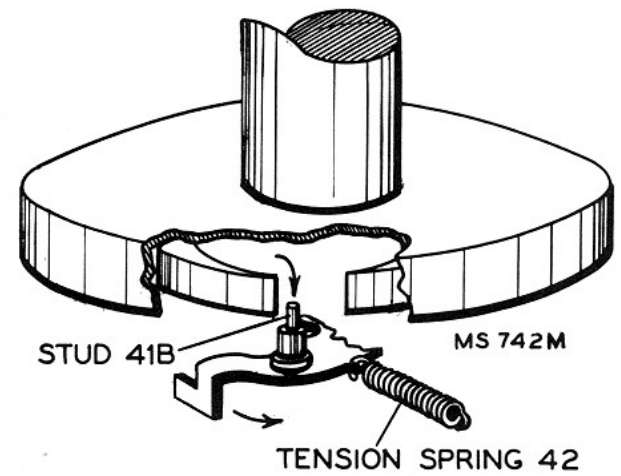
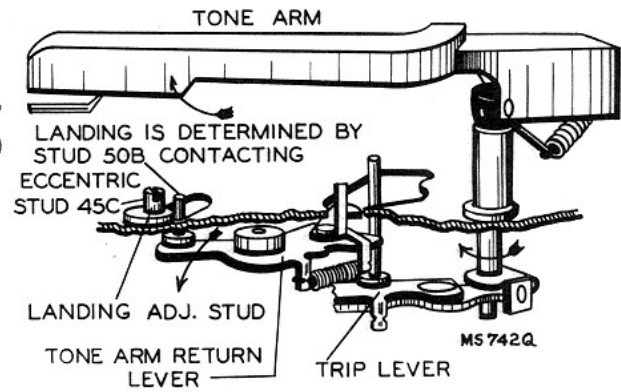
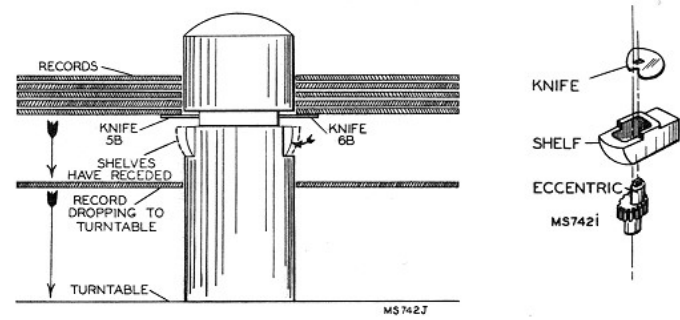
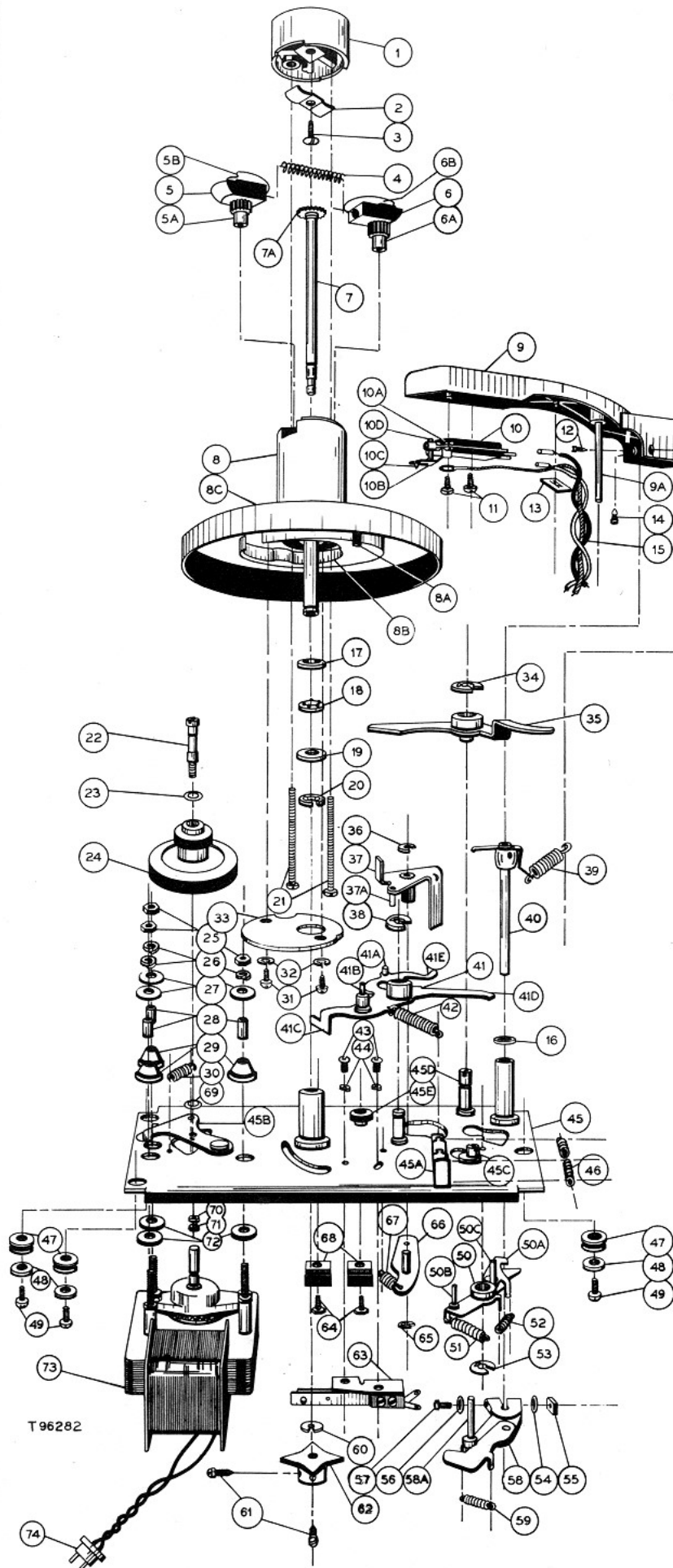
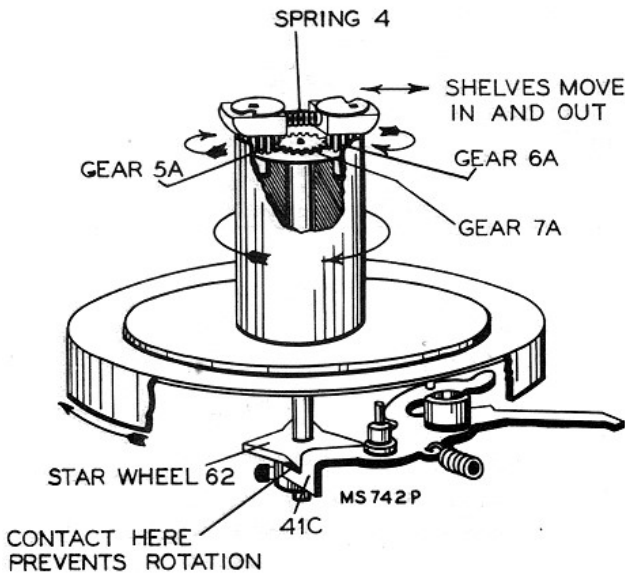
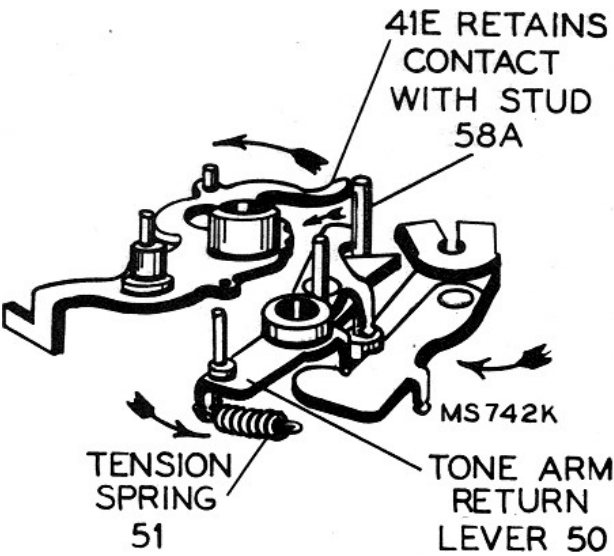


Fig. 1



Separator knives separate the lower record from the stack and allows the record to drop to the turntable

1. While the tone arm is moving outward the end (41C) of the director lever (41) extending below the motor board, contacts and prevents the star wheel (62) from rotating.
2. Since the turntable continues to rotate and the star wheel and shaft remain stationary. The two small gears (5A and 6A) embedded in the upper section of the center post rotate around the gear (7A) on the upper end of the star wheel shaft (7).
3. The eccentric extending from the upper end of the two embedded gears runs in a slot in the separator shelves (5 and 6). This produces the necessary action which causes the shelves to move in against the tension of spring (4).
4. As the shelves recede the separator knives (5B and 6B) mounted above each separator shelf, separate the lower record of the stack and support the remaining stack while the lower record drops to the turntable.



Tone arm moves in for landing

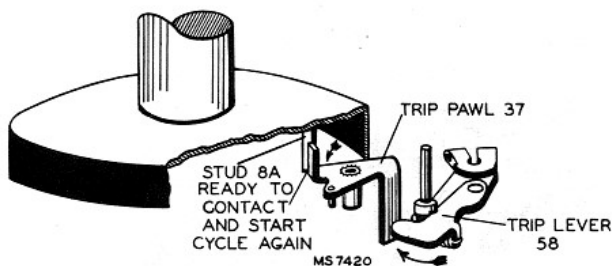
1. As the locator lever (41) continues to move toward the out of cycle position the end of the locator lever (41E) retains contact with the stud (58A) on the trip lever (58). This contact stabilizes the inward movement of the tone arm which is being pushed in by the tone arm return lever (50).
2. The inward movement of the tone arm is stopped directly above the landing position due to the stud (50B) on tone arm return lever coming in contact with the eccentric stud (45C).



Tone arm lowers sapphire to the record

1. The stud (41A) on director lever (41) continues to contact tone arm elevating lever (35) and lowers the sapphire on the start of the record.
2. As the turntable completes on revolution the stud (41B) on director lever is pulled through the slot in the cycling cam by the force produced by tension spring (42).
3. While the stud (41B) on director lever slides through the slot in the cam and assumes the out of cycle position, the end of the director lever (41D) contacts projection (50C) and unlatches the tone arm return lever (50).
4. The end (41C) of the director lever below the motor board moves away from the star wheel and opens muting switch.

Record plays



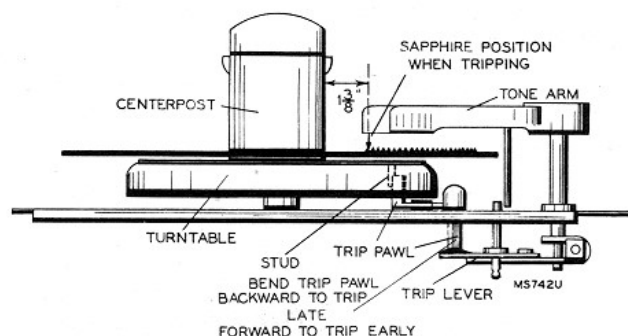
1. After the selection has been completed the sapphire moves into the tripping groove. At this time the trip lever (58) pushes the trip pawl (37) into position for engagement with the stud (8A) on the under side of the turntable.
2. This contact between stud (8A) and the trip pawl (37) starts another change cycle and the next record is moved into position for playing.

## REPLACEMENT PARTS

STOCK No.	ILL. No.	DESCRIPTION	STOCK No.	ILL. No.	DESCRIPTION
<b>MODEL RP-168</b>					
*74090	1	Nose—Spindle nose	*74088	63	Switch—Muting switch
*74091	2	Spring—Spindle nose spring (formed)	33726	65	Washer—"C" washer for trip pawl lever
	3	Screw—No. 6-32 round head machine screw for spindle nose spring	*74245	66	Lever—Trip pawl lever
*74095	4	Spring—Separator shelf return spring (.180" O.D. x 1-1 16"—10 turns)	*74100	67	Spring—Trip pawl take-up spring (.195" O.D. x 5/8"—20 1/2 turns)
*74096	5	Separator—Separator knife, shelf and gear assembly	*74102	69	Washer—Dampening washer for idler wheel (bottom)
*74096	6	Separator—Separator knife, shelf and gear assembly		70	Lockwasher—No. 4 lockwasher for idler wheel mounting stud
*74092	7	Gear—Star wheel shaft and gear assembly		71	Nut—No. 4-40 hex nut for idler wheel mounting stud
*74042	8	Turntable—Turntable and shaft complete with mat	*74071	73	Motor—105/125 volts, 60 cycles
*74094	8A	Mat—Turntable mat	<b>MODEL RP-168A-1</b>		
*74080	17	Washer—Washer for turntable assembly	NOTE: Parts listed for mechanism RP-168 plus the following are those parts for the above Record Changer. (For Pickup and Arm Assembly RMP-129-1, see separate listing.)		
72349	18	Bearing—Turntable thrust bearing	*74256	16	Washer—Vellutex washer
72688	20	Washer—"C" washer for turntable assembly	58	58	Lever—Trip lever (includes spring No. 59)
	21	Screw—No. 6-32 x 1 3/4" fillister head machine screw for turntable assembly (2 required)	74060	59	Spring—Trip lever spring (.171" O.D. x .695"—43 turns)
*74079	22	Stud—Idler wheel mounting stud	73549		Emblem—"RCA-Victor" emblem
*74078	23	Washer—Dampening washer for idler wheel (top)	*74210		Knob—Reject control knob
*74077	24	Wheel—Idler wheel	*74211		Lever—Reject lever actuating lever
*74132	25	Hardware—Motor mounting hardware consisting of Three (3) hex nuts	*74184		Motorboard—Motorboard complete with welded brackets and stud—less rest and operating parts
	26	Three (3) lockwashers	*74212		Nut—Speed nut for reject control knob
	27-72	Six (6) flat washers	*74185		Rest—Pickup arm rest
	28	Three (3) spacers	33726		Washer—"C" washer for mounting reject lever actuating lever
*74087	29	Grommet—Rubber grommet to mount motor (3 required)	<b>MODEL RMP-129-1</b>		
*74089	30	Spring—Idler wheel spring (.195" O.D. x .593"—14 turns)	Pickup and Arm Assembly (Used with 9EY3, 9JY and RP-168A)		
*74231	33	Cam—Follower cam	*74041	9	Arm—Pickup arm shell and stud less crystal, cable and rear pivot arm
35969	34	Washer—"C" washer for tone arm lift lever	*74061	9B	Pivot—Tone arm pivot
*74073	35	Lever—Tone arm lift lever	*74067	10	Crystal—Crystal cartridge complete including sapphire and guard
33726	36	Washer—"C" washer for trip pawl	*74065	10A	Screw—No. 2-56 x 3/16" fillister head screw to mount crystal (2 required) or needle guard (2 required)
*74072	37	Pawl—Trip pawl	*74069	10B	Guard—Needle guard
35969	38	Washer—"C" washer for director lever	*74068	10C	Sapphire—Sapphire and holder
*74076	41	Lever—Director lever	*74230	10D	Washer—Washer and nut to mount sapphire and holder
*74084	42	Spring—Director lever spring (.195" O.D. x .732"—23 1/4 turns)	74065	11	Screw—No. 2-56 x 3/16" fillister head screw to mount crystal (2 required) or needle guard (2 required)
	43	Screw—No. 6-32 screw to mount muting switch	*74062	12	Screw—No. 8-32 x 13/32" cone point pivot adjusting screw
	44	Lockwasher—No. 6 lockwasher (external) to mount muting switch	38458	13	Nut—Speed nut to hold pickup cable
*74070	45	Base—Sub-base assembly complete with all staked and riveted parts including idler lever and reject lever	74410	14	Screw—No. 4-40 x 3/16" fillister head set screw to lock pivot screw 74062
*74082	45E	Washer—Felt washer (1/2" O.D. x 1/4" I.D. x 3/16" thick)	*74066	15	Cable—Twisted pickup cable (12") complete with connectors
*74086	46	Spring—Reject lever spring (.203" O.D. x 13/16"—34 3/4 turns)	*74060	39	Spring—Pivot arm spring (.171" O.D. x .695"—43 turns)
*74074	50	Lever—Return lever (includes spring No. 61)	*74059	40	Arm—Pivot arm and shaft
*74085	51	Spring—Return lever actuating spring (.195" O.D. x 29/32"—37 1/2 turns)			
*74075	52	Spring—Return lever latch spring (.180" O.D. x .535"—21 1/2 turns)			
35969	53	Washer—"C" washer for tone arm return lever			
33726	60	Washer—"C" washer for star wheel shaft			
*74083	61	Screw—No. 6-32 x .281" cone point set screw for star wheel (2 required)			
*74081	62	Wheel—Star wheel			

## TRIPPING ADJUSTMENT

The tripping should occur after the sapphire leaves the last playing groove. This point of tripping should be when the sapphire is 1 3/8 inches from the side of the centerpost. Bend end of trip pawl as required.





# TIMING OF SEPARATOR KNIVES

1. Make certain the two embedded gears (5 and 6) are meshed with gear (7A) on the upper end of the star wheel shaft so the action of the separator knives are synchronized.
2. Loosen the two set screws (61) sufficiently to permit the star wheel to rotate without disturbing the shaft (7).
3. Position the separator knives as indicated in figure (3).
4. Push reject lever and rotate the turntable slowly by hand until the end (41C) of the director lever moves in far enough, so when the star wheel is rotated it contacts by the amount as indicated in figure (2).
5. Tighten the two set screws (61) and rotate the mechanism through a complete cycle.  
The separator knives must rotate 360° and return to the starting position as indicated in figure (3).

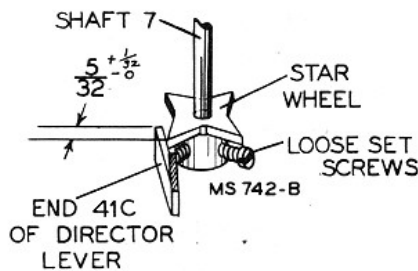


Fig. 2

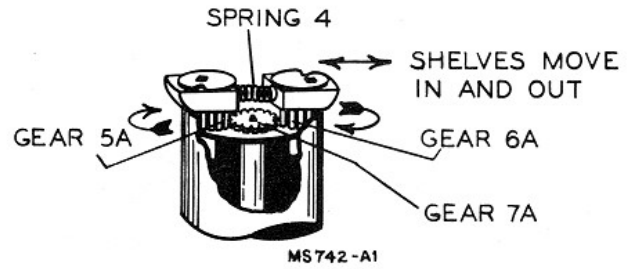
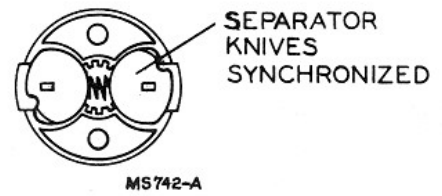


Fig. 3

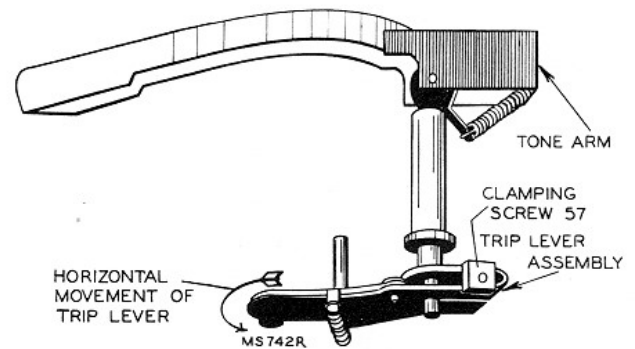


Fig. 4

# PICKUP LANDING ADJUSTMENT

1. Assemble the tone arm and trip lever assemblies as shown in figure (4). Leave the clamping screw (57) loose enough to permit horizontal movement of the trip lever on the shaft. (Allow approx. .010 inch vertical end play.)
2. Turn the eccentric landing adjustment stud (45C) to determine the inward and outward limit of adjustment, then turn it to a setting half way between the limits. Fig. 6. (Screwdriver slot approx. 30° from parallel with front edge of subpanel, in a counter-clockwise direction.)
3. Place a record on the turntable, push the reject lever and slowly rotate the turntable until the sapphire is just ready to set on the start of the record.
4. Hold the trip lever and move the tone arm by hand until sapphire is in position halfway between the music grooves and the edge of the record.
5. Tighten clamp screw (57), apply power and run the mechanism through cycle. (Note the sapphire landing position.)
6. The exact landing position of the sapphire can be adjusted by turning the eccentric landing adjustment screw (45C). (Do not attempt to correct a landing error of more than  $\pm 1/32$ " with the eccentric screw driver adjustment stud.)

Sapphire landing position should be  $(25/8") \pm 1/64"$  from the side of the center post as shown in figure (5).

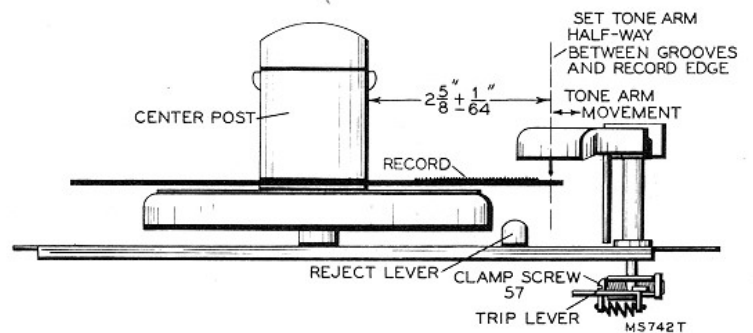


Fig. 5

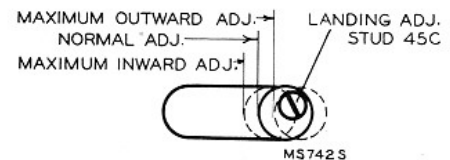


Fig. 6

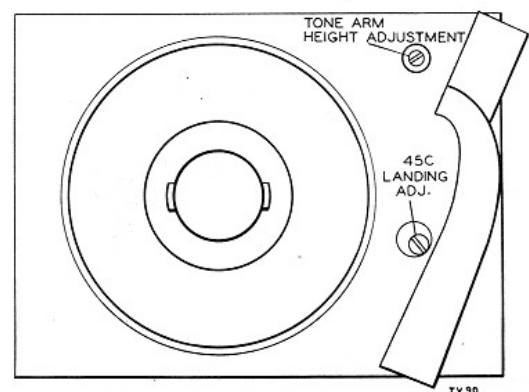


Fig. 7

## OUT OF CYCLE HEIGHT OF TONE ARM

Bend tone arm lug so the sapphire point is approximately  $\frac{1}{16}$ " above the motor board as shown in the sketch.

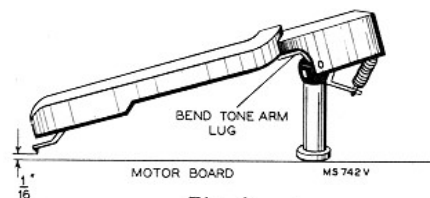


Fig. 8

## TONE ARM IN CYCLE HEIGHT ADJUSTMENT

Set the mechanism in cycle. Turn the turntable by hand, until the tone arm has reached its maximum height. By means of a screwdriver turn the height adjustment stud until the distance between the top of the turntable and the sapphire point is  $\frac{3}{4}$ ". Turning the stud clockwise will raise the arm and counter-clockwise will lower the arm.

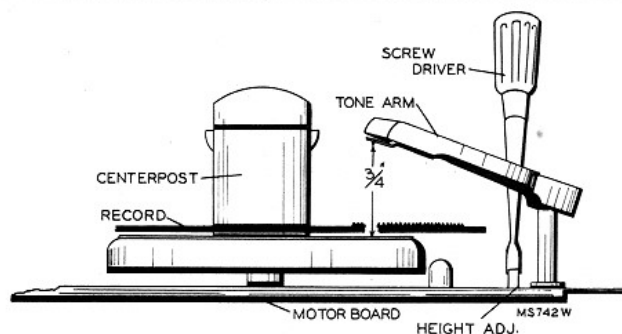
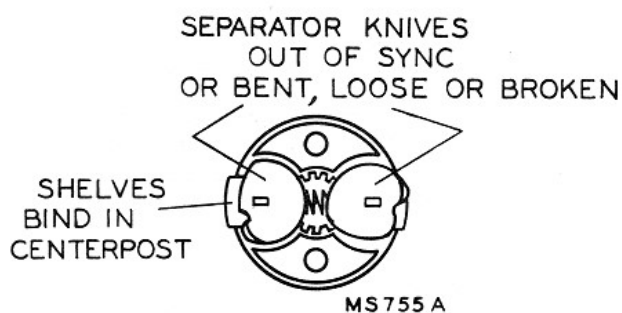


Fig. 9

## IMPROPER RECORD SEPARATION

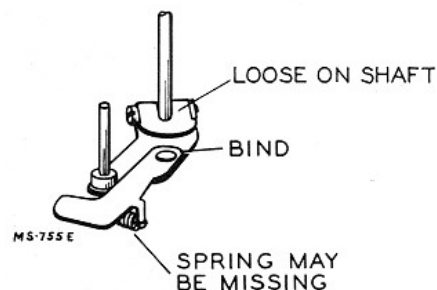
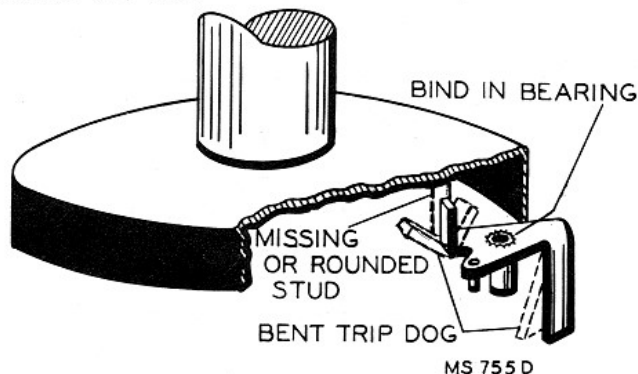


## STAR WHEEL OUT OF SYNC

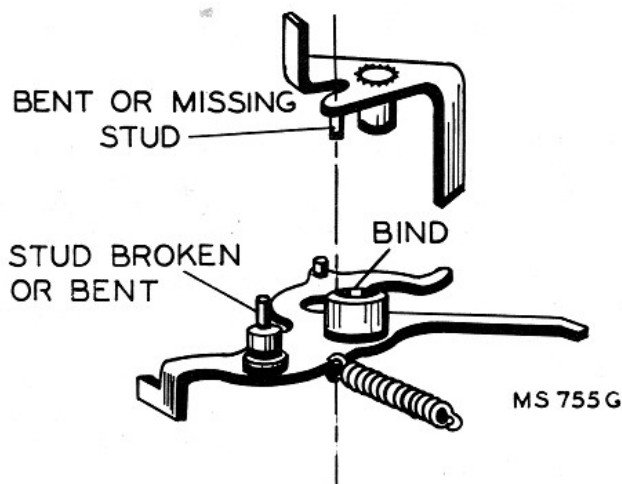


To insure proper dropping of records and avoid tilting of stack. It is important that the separator shelves move in and out freely. It is therefore essential that the shelves be free from burrs, grease, grit or dirt in general.

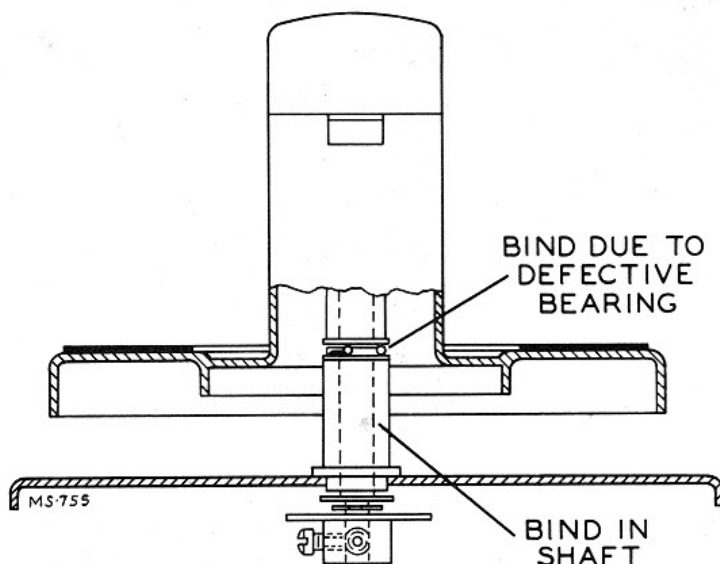
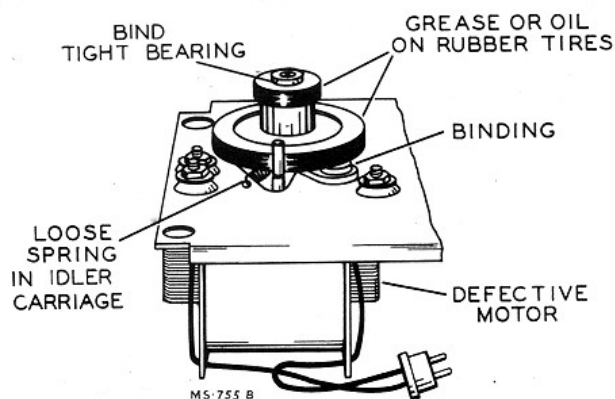
## FAILS TO TRIP



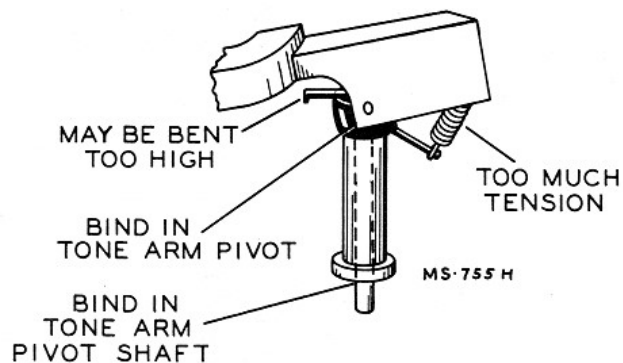
## FAILS TO GO INTO CYCLE



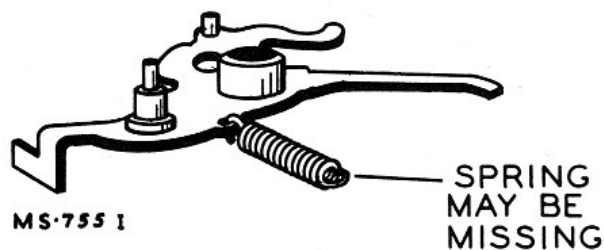
# WOW (Speed Variation)



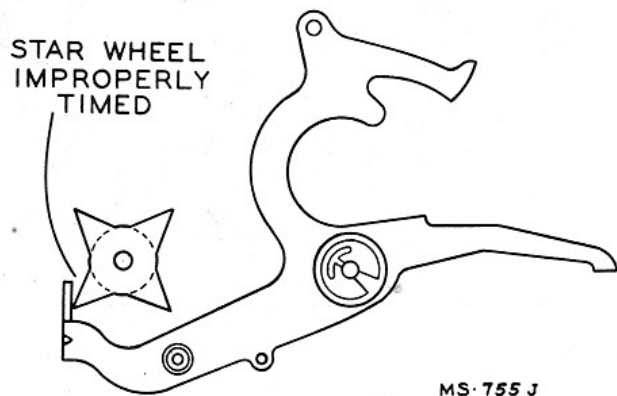
## REPEATS GROOVES



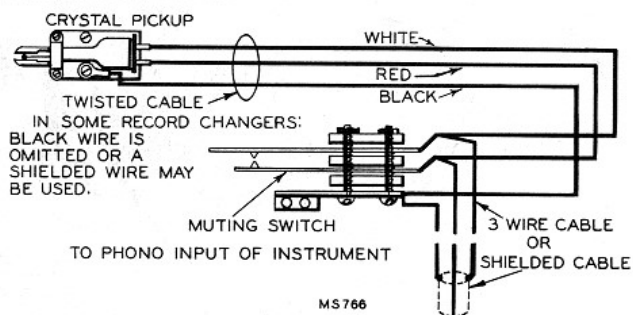
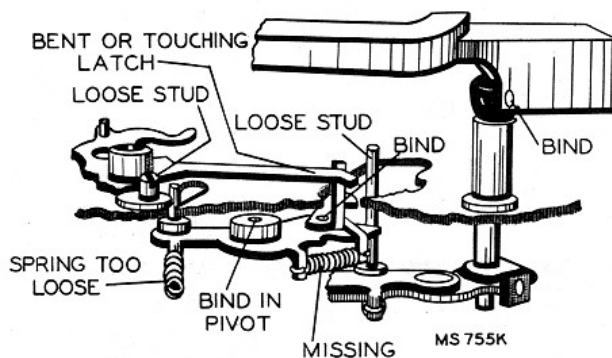
## CONTINUOUS TRIPPING



## RECORD DROP ON OR HIT TONE ARM



## ERRATIC PICKUP LANDING



- A BENT SAPPHIRE SUPPORT
- CHIPPED SAPPHIRE
- SAPPHIRE TOUCHING TONE GUARD
- LINT OR FOREIGN MATERIAL IN GUARD

A CHIPPED SAPPHIRE MAY CAUSE SKIPPING OF GROOVES

A CHIPPED SAPPHIRE MAY CAUSE FAILURE TO TRIP

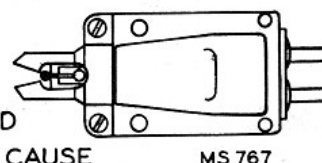


Fig. 10