

# RCA VICTOR

## RP-168 Series

45 R.P.M. Automatic Record Changer

### TYPE AND MODEL IDENTIFICATION

The record changer mechanism may be used either with or without a metal motorboard. When a metal motorboard is not used, the instrument cabinet serves as the motorboard.

Two major changes have been made since the start of production. One change is the type of pickup arm rest, the original design used a visible rest on the motorboard or instrument cabinet which has been replaced by a rest on the sub-base. The other major change is in the record separators, the original type used rotating gear type of separators which were replaced by a push-out type of separators.

Many other changes have been made and there are differences in the color and finish of some parts when used with certain instruments. These changes did not necessarily involve a change in the identification applied to the bottom of the mechanism sub-base.

Five different pickups are in use: Two (2) crystal pickups, one (1) magnetic pickup and two (2) ceramic pickups.

The RP 168 Series record changer is used in the following instrument models:

#### RECORD PLAYER ATTACHMENTS

9JY, CP-5203, 45J, QJY

#### RECORD PLAYERS (without radio)

9EY3, 9EY31, 9EY32, 9EY35, 9EY36, 45EY, QEY3

#### RADIO-PHONOGRAPH COMBINATIONS

9QV5, 9W51, 9W78, 9W101, 9W102, 9W103, 9W105, 9W106, 9Y7, 9Y51, A55, A78, A106

#### RADIO-PHONOGRAPH-TELEVISION COMBINATIONS

9TW309, 9TW333, 9TW390, TA128, TA129, TA169, S1000

### CAUTION

1. Avoid handling the pickup 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.

During service, the position of the star wheel on the underside of the record changer may be accidentally shifted; this may cause the separator knives to be extended when they should be concealed.

If the separator knives are thus extended—turn the power on so that the turntable is revolving, push the "start-reject" knob and allow the mechanism to complete 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.

### REPLACEMENT PARTS

STOCK No.	ILL. No.	DESCRIPTION
<b>SUB-BASE ASSEMBLIES</b>		
74256	16	Washer—Vellutex washer (pivot arm shaft bearing washer)
74060	17-19	Washer—Washer for turntable bearing
72349	18	Bearing—Turntable thrust bearing
72888	20	Washer—"C" washer—turntable assembly retainer
74079	22	Stud—Idler wheel mounting stud—for Sub-base Types I, II, III, IV, early VI, and early VII
74078	23	Washer—Dampening washer for idler wheel—top
74077	24	Wheel—Idler wheel for all except Model CP-5203
74470	24	Wheel—Idler wheel for Model CP-5203
74132	25	Hardware—Motor mounting hardware consisting of:
	26	Three hex nuts
	26	Three lockwashers
	27-72	Six flat washers
	28	Three spacers
74087	29	Grommet—Rubber grommet to mount motor (3 required)
74089	30	Spring—Idler wheel tension spring (.195" O.D. x .593" I.D. x 14 turns)
35969	34	Washer—"C" washer to retain pickup arm lift lever
74073	35	Lever—Pickup arm lift lever for mechanisms without dashpot
74757	35	Lever—Pickup arm lift lever for mechanisms with dashpot
—	35	Lever—Two piece pickup arm lift lever (use No. 74073 or No. 74757 for replacement)
74805	—	Spring—Tension spring for two piece pickup arm lift lever (.170" O.D. x 3/4")
33726	36	Washer—"C" washer to retain trip pawl
74072	37	Pawl—Trip pawl
74453	—	Washer—Bearing washer between trip pawl (Ill. No. 37) and trip pawl lever (Ill. No. 66)
35969	38	Washer—"C" Washer to retain main lever
74076	41	Lever—Main lever (director lever) for use with turntables having rotating gear record separators
74857	41	Lever—Main lever (director lever) for use with turntables having push-out record separators
74084	42	Spring—Main lever spring (.195" O.D. x .800"—27 1/4 turns)
—	43	Screw—Screw to mount muting switch (No. 6-32 or No. 6 self tapping)
—	44	Washer—No. 6 lockwasher used with Item 43 (No. 6-32 screw)
74070	45	Base—Sub-base assembly complete with all staked and riveted parts, including idler lever and reject lever—Type I without pickup rest
74743	45	Base—Sub-base assembly complete with all staked and riveted parts, including idler lever and reject lever—Type II with pickup rest
74468	45	Base—Sub-base assembly complete with all staked and riveted parts, including idler lever and reject lever—less No. 74473 bracket—Type IV—for RP-168-2—used only on Model CP-5203
74473	—	Bracket—Metal bracket with power input connector and audio output jack—RP168-2 only
74856	45	Base—Sub-base assembly complete with all staked and riveted parts—less idler lever and reject lever—Type V—with pickup rest
74803	45	Base—Sub-base assembly complete with all staked and riveted parts, including idler lever—less reject lever—Type VI—with pickup rest
74860	45A-1	Lever—Reject lever—bottom section—for sub-base Types V, VI, and VII
74861	45A-2	Lever—Reject lever—top section—for sub-base Types V, VI, and VII
74814	45B	Plate—Idler wheel mounting plate and stud—for sub-base Type V
74870	45B-1	Retainer—Idler wheel retainer (spring sleeve) for use with No. 74814 plate (45B)
75081	45B-1	Retainer—Idler wheel retainer (horseshoe washer) for use with sub-base Types VI and VII (late production)
74804	45B-2	Washer—Idler wheel bearing washer (1/2" O.D. x .165" I.D. x .032" thick) for sub-base Types VI and VII (late production)
74430	45C	Stud—Eccentric stud for landing adjustment
74429	45D	Stud—Eccentric stud for height adjustment
74082	45E	Washer—Felt washer (1/2" O.D. x 1/4" I.D. x 3/16" thick)
74086	46	Spring—Reject lever spring (.203" O.D. x 13/16"—34 1/2 turns) for sub-base having one piece reject lever—1 required

STOCK No.	ILL. No.	DESCRIPTION
74427	46	Spring—Reject lever spring (.203" O.D. x .531"—13 turns) for sub-bases having two piece reject lever—2 required
74074	50	Lever—Return lever (includes spring Ill. No. 51)
74085	51	Spring—Return lever actuating spring (.195" O.D. x .29/32"—37½ turns)
74075	52	Spring—Return lever latch spring (.180" O.D. x .535"—21½ turns)
—	54	Washer } To clamp trip lever
—	55	Nut } (Ill. No. 58) to pivot
—	56	Washer } arm shaft (Ill. No. 40)
—	57	Screw }
74099	58	Lever—Trip lever (includes Items 54, 55, 56, 57 and 59)
74426	59	Spring—Trip lever spring (.171" O.D. x .595"—30 turns)
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
74088	63	Switch—Muting switch
—	64	Screw—No. 8 x 1/4" self tapping screw
33726	65	Washer—"C" washer to retain trip pawl lever
74245	66	Lever—Trip pawl lever
74100	67	Spring—Trip pawl take up spring (.195" O.D. x 5/8"—20½ turns)
—	68	Clamp—Cable clamp
74078	69	Washer—Dampening washer for idler wheel (bottom)
—	70	Washer—No. 4 lockwasher for idler mounting stud (Ill. No. 22)
—	71	Nut—No. 4.40 hex nut for idler wheel mounting stud (Ill. No. 22)
—	72	Washer—Part of No. 74132—see Ill. No. 27
74071	73	Motor—115 volt, 60 cycle motor complete with connector—shaded pole type. Not suitable for 50 cycle conversion
74624	73	Motor—115 volt, 60 cycle motor complete with connector and No. 73138 spring sleeve (for 50 cycle conversion), shaded pole type
74469	73	Motor—115 volt, 60 cycle motor complete with connector and 5 mf. capacitor—for RP 168-2 only
74621	74	Capacitor—Motor capacitor (5 mf.) for No. 74469 motor
30870	74	Connector—Two prong male plug (connector) for motor cable
73158	—	Spring—Spring sleeve to convert motors No. 74624 to 50 cycle operation
—	89	Screw—No. 8 x 1/4" self tapping screw
74859	90	Clamp—To mount dash-pot
74428	91	Dash-pot—Pneumatic dash-pot complete with plunger
74431	92	Washer—"C" washer for mounting adjustment studs No. 74429 (Ill. No. 45D) and No. 74430 (Ill. No. 45C)
<b>PICKUP ARM ASSEMBLIES</b>		
74041	9	Arm—Pickup shell and stud—with pivot (9B) and lead counter-balance—Type I for use with rest on motor-board
74443	9	Arm—Pickup arm shell and stud—with pivot (9B) and lead counter-balance—for Model CP-5203 only—black finish
74824	9	Arm—Pickup arm shell and stud—with pivot (9B) and lead counter-balance—Type II for use with rest on sub-base
75058	9	Arm—Pickup arm shell and stud—with pivot (9B) and lead counter-balance—for Model 45EY only—two-tone finish
75073	9	Arm—Pickup arm shell and stud—with pivot (9B)—less lead counter-balance—Type III—for use with either type of pickup rest
74796	9	Arm—Pickup shell and stud—with pivot (9B)—less balance spring—Type V—for use with either type of pickup rest
74061	9B	Pivot—Pickup arm pivot—for use with arms No. 74041, No. 74443, No. 74824, and No. 75058 only (arms stamped 970488)
74067	10	Pickup—Crystal pickup cartridge complete including sapphire and guard—RMP 128-1
74625	10	Pickup—Crystal pickup cartridge complete including sapphire and guard—RMP 128-2
74466	10	Pickup—Magnetic pickup cartridge complete with stylus—for Model CP-5203 only
74984	10	Pickup—Ceramic pickup cartridge complete with stylus—for Models QJY and QEY3
*S-5578	10	Pickup—Ceramic pickup cartridge complete with stylus—for Model 9QV5
74065	10A	Screw—No. 2-56 x 3/16" fillister head screw to mount No. 74067 or No. 74625 crystal pickups or No. S-5578 ceramic pickup
74464	10A	Screw—No. 2-56 x 1/4" fillister head screw to mount No. 74466 pickup (Model CP-5203)
74986	10A	Screw—No. 2-56 x 3/16" screw for mounting No. 74984 pickup (Models QJY and QEY3)
74069	10B	Guard—Stylus guard for No. 74067 pickup (RMP 128-1)
74819	10B	Guard—Stylus guard for No. 74625 pickup (RMP 128-2)
74068	10C	Sapphire—Sapphire and holder (WHITE) for No. 74067 pickup (RMP 128-1)
74818	10C	Sapphire—Sapphire and holder (BLUE) for No. 74625 pickup (RMP 128-2)
74622	10C	Stylus—Diamond stylus and holder for No. 74466 pickup (Model CP-5203)
74985	10C	Stylus—Stylus and holder for No. 74984 pickup (Models QJY and QEY3)
74230	10D	Washer and Nut—to mount No. 74068 or No. 74818 stylus
74065	11	Screw—No. 2-56 x 3/16" fillister head screw to mount stylus guard on No. 74067 or No. 74625 pickups
74062	12	Screw—No. 8-32 x 13/32" cone point pivot adjusting screw

STOCK No.	ILL. No.	DESCRIPTION
72765	13	Nut—Speed nut to hold pickup arm cable
74801	—	Clip—Spring clip to hold pickup arm cable (used only on pickup arm Type V and VI—No. 74796)
74410	14	Screw—No. 4-40 x 3/16" fillister head screw to lock pivot screw No. 74062
74066	15	Cable—3 wire twisted pickup arm cable complete with connectors
74465	15	Cable—Shielded pickup arm cable complete with connectors—Model CP-5203 only
*S-5580	15	Cable—Shielded pickup arm cable complete with connectors—Model 9QV5 only
74060	39	Spring—Counter-balance spring (.171" O.D. x .695"—43 turns) for Pickup Arm Types I, II, III and IV when using No. 74067, No. 74625 or No. 74984 pickups (most models)
74426	39	Spring—Counter-balance spring (.171" O.D. x .595"—30 turns) for Model 9QV5 only
74461	39	Spring—Counter-balance spring (.185" O.D. x .695"—29¾ turns) for Model CP-5203 only
74798	39	Spring—Counter-balance spring (3/8" O.D.—11 turns) for Pickup Arm Types V and VI (Stock No. 74796)
74797	—	Nut—Speed nut to hold No. 74798 spring in Pickup Arm Types V and VI
75074	—	Weight—Lead counter-balance weight for Pickup Arm Types III and IV
—	—	Screw—No. 4-40 round head screw to hold No. 75074 weight to No. 75073 Arm
74059	40	Arm—Pivot arm and shaft for use with all pickup arms having lead counter-balance except Model CP-5203
74744	40	Arm—Pivot arm and shaft for Model CP-5203 only
74799	40	Arm—Pivot arm and shaft for use with Pickup Arm Types V and VI
74802	—	Screw—No. 4 x 9/16" oval head counter-balance adjusting screw for use with No. 74799 pivot arm
74800	—	Bumper—Rubber bumper for No. 74799 pivot arm
<b>TURNTABLE ASSEMBLIES</b>		
74090	1	Nose—Spindle nose—RED (early type—thin wall) for Turntable Type I
74620	1	Nose—Spindle nose—RED (late type—thick wall) for Turntable Type I or II
74863	1	Nose—Spindle nose—RED—for Turntable Type III
74472	1	Nose—Spindle nose—BLACK—for Turntable Type I
74795	1	Nose—Spindle nose—BLACK—for Turntable Type III
74091	2	Spring—Spindle nose spring—formed—for spindle nose No. 74090, No. 74620, or No. 74472
74862	2	Spring—Spindle nose spring—formed wire—for spindle nose No. 74863 or No. 74795
—	3	Screw—No. 6-32 round head machine screw for spindle nose spring No. 74091
74095	4	Spring—Separator shell return spring (.180" O.D. x 1 1/16"—10 turns) for Turntable Types I and II
74866	4	Spring—Separator shell return spring (.118" O.D. x 3/4"—15 turns)—two required—for Turntable Type III
74096	5-6	Separator—Separator knife, shell and gear assembly for Turntable Types I and II
74865	5-6	Shell—Separator shell for Turntable Type III
74864	5B	Separator—Separator knife for Turntable Type III
—	6B	
74092	7	Shaft—Star wheel shaft and gear assembly for Turntable Types I and II
74867	7	Shaft—Star wheel shaft with cam for Turntable Type III
33726	—	Washer—"C" washer for top of No. 74867 shaft
74042	8	Turntable—Turntable with TAN MARBLEIZED mat—Type I—use No. 74090 RED nose thin wall
75065	8	Turntable—Turntable with TAN MARBLEIZED mat—Type I—use No. 74620 RED nose thick wall
74813	8	Turntable—Turntable with TAN MARBLEIZED mat—Type III—use No. 74863 RED nose
74445	8	Turntable—Turntable with BLACK mat—Type I—use No. 74472 BLACK nose
75145	8	Turntable—Turntable with RED mat—Type I—use No. 74472 BLACK nose
75059	8	Turntable—Turntable with RED mat—Type III—use No. 74795 BLACK nose
74094	8C	Mat—Turntable mat—TAN MARBLEIZED
74471	8C	Mat—Turntable mat—BLACK
74794	8C	Mat—Turntable mat—RED
—	21	Screw—No. 6-32 x 13/4" fillister head screw holds nose to spindle) two required for Turntable Type I
74868	21	Screw—No. 6-32 x 15/8" fillister head screw holds nose to spindle) two required for Turntable Types II and III
74869	21A	Washer—No. 6 flat washer for use under No. 74868 screw—two required for Turntable Types II and III
—	31	Screw—No. 4-40 x 3/8" fillister head screw for use with cam. Ill. No. 33)—two required for Turntable Type I
—	32	Washer—No. 4 lockwasher—for use with cam Ill. No. 33)—two required for Turntable Type I
74231	33	Cam—Follower cam for Turntable Type I

Two different main levers (director lever) are used, depending upon which turntable assembly is used. Lever (41) Stock No. 74076 has a long end (41C) and is used with Turntables Type I and II. Lever (41) Stock No. 74857 has a short end and is used with Turntable Assembly Type III.

Items listed but without Stock Nos. are not stock items.

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.

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.

Pickup arm rises

1. As the turntable continues to rotate it carries the trip pawl (37) along for a short distance.
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).
3. The end (41C) of the director lever extending below the motorboard moves away, allowing the muting switch (63) to close.
4. At the same time the stud (41A) pushes the pickup arm lift lever (35) which in turn raises the pickup arm.

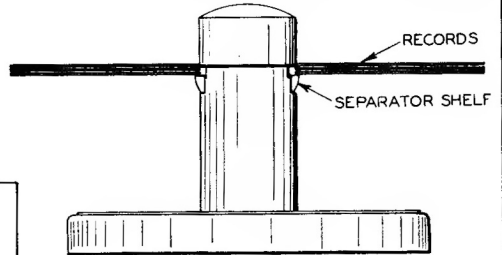


Figure 1.

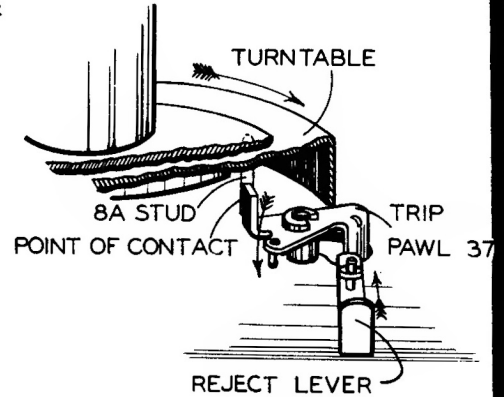


Figure 2.

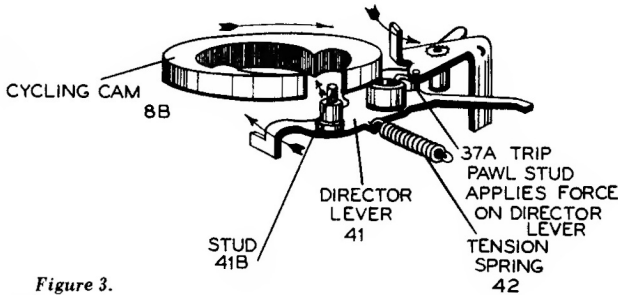


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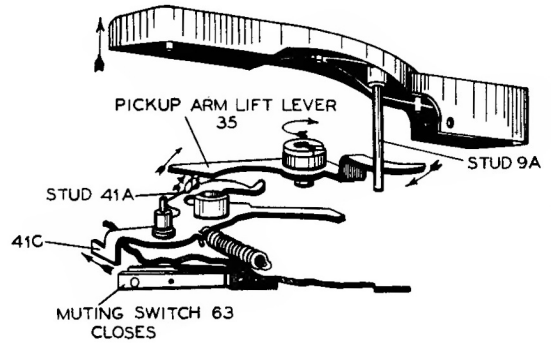


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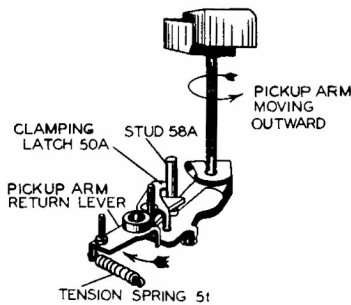


Figure 5.

Pickup arm moves out

1. The end (41E) of the director lever (41) contacts stud (58A) on trip lever (58), starting the pickup arm on its outward movement.
2. The stud (58A) on trip lever contacts pickup arm return lever (50), pushing it outward against the tension spring (51).
3. As the pickup arm reaches its outermost position, it is locked in position by the latch (50A) clamping the stud (58A) on the end of the pickup arm return lever.

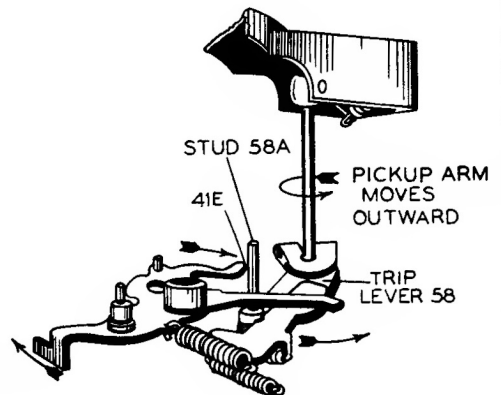


Figure 6.

RP-168 Series

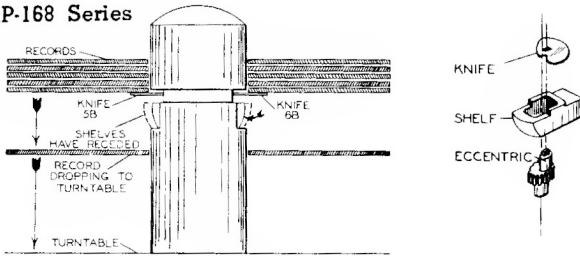


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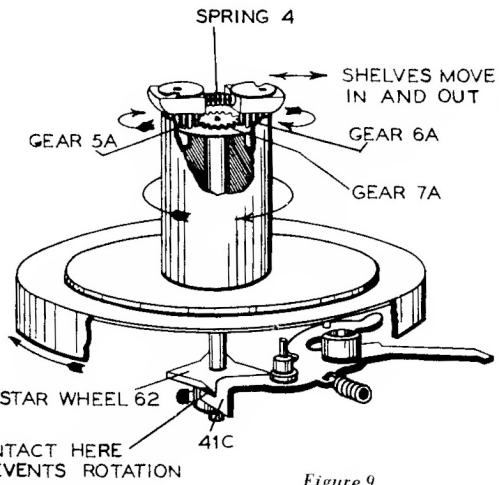


Figure 9.

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

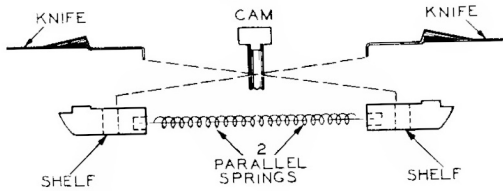


Figure 8.

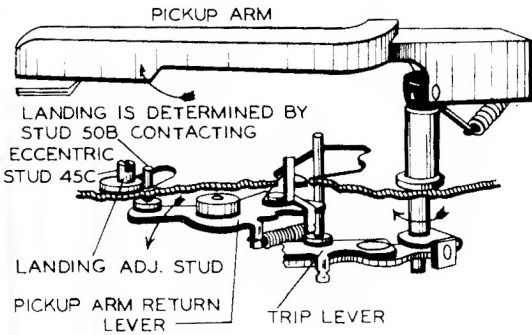


Figure 10.

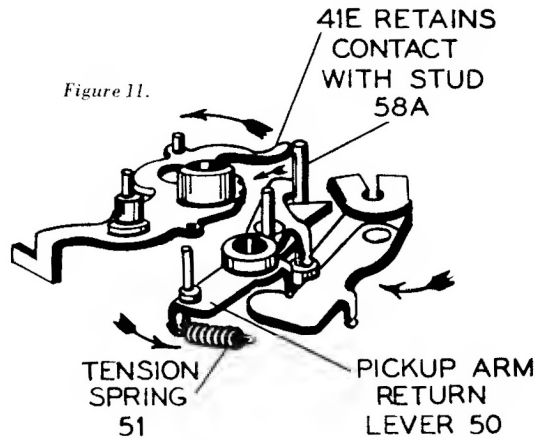


Figure 11.

Pickup arm moves in for landing

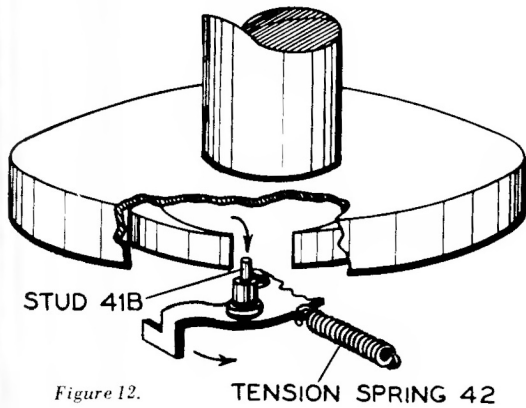


Figure 12.

Sapphire is lowered to the record

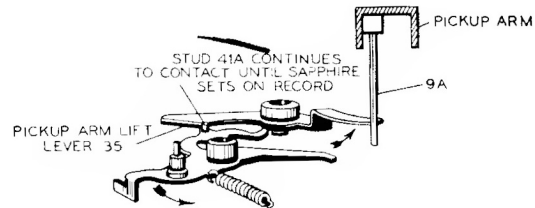


Figure 13.

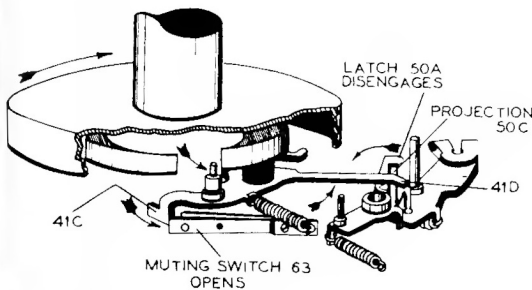


Figure 14.

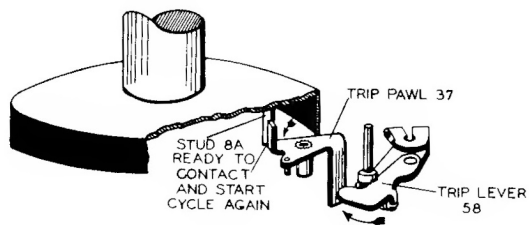


Figure 15.

Playing of record is completed and mechanism starts change cycle

**SERVICE HINTS**

**Care of Pickup**

LINT MAY COLLECT TO CLOG THE OPENING IN THE GUARD AT THE STYLUS POINT AND CAUSE POOR RECORD REPRODUCTION. This may require occasional cleaning of the guard opening—clean by carefully brushing with a small soft brush.

**Replacement of Stylus**

Caution: Never bend the stylus support wire.

**CRYSTAL PICKUPS (Stock Nos. 74067 and 74625)**

Remove the two screws holding sapphire guard in place and remove the guard. Remove the small nut and washer on the threaded shaft of the sapphire holder and gently push the shaft through the hole in the armature shaft until the sapphire holder assembly comes free.

Extreme care should be used when loosening the nut so that the twisting motion does not break the crystal. Take hold of the lower end of the shaft with a pair of pliers while loosening or tightening the nut, being very careful so as not to strip the threads or break the crystal.

Insert threaded shaft of replacement sapphire holder through armature shaft and replace the washer and nut. Make sure that the sapphire is in the correct position.

Replace the sapphire guard, positioning it by means of the oversize screw slots. Make certain that the sapphire and its supporting wire are centered in the guard. Tighten the guard screws. Before using, check to see that the sapphire projects far enough beyond the guard so that the guard will not touch the record. If necessary, bend the guard a little.

**VARIABLE RELUCTANCE PICKUP (Stock No. 74466)**

To remove the stylus assembly, insert a bent paper clip or equivalent tool into the stylus stud pin socket at point "A." Press the assembly out from the cartridge with the tool as shown by the arrow in the illustration below.

To replace the stylus assembly, insert the stud pin into the recess "A," with the locating tab positioned above the locating slot "B" between the two pole pieces. Press assembly in firmly by applying pressure upon the stud pin at point "C" with a blunt tool. Care must be taken to press assembly only at point "C" so as not to damage or distort the stylus arm.

**CERAMIC PICKUP (Stock No. 74984)**

To remove stylus, insert the point of a knife blade between the stylus wire and the case. The stylus may be pried out of its rubber mounting with a twisting motion of the knife blade.

To replace stylus, push end of stylus wire down into its rubber mounting. Be certain that the stylus is centered in the groove of the pickup case.

1. While the pickup arm is moving outward, the end (41C) of the director lever (41) extending below the motorboard, 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 turns in a slot in the separator shelves (5 and 6). This causes the shelves to move in against the tension of spring (4).

A later type of record separators (knives and shelves), illustrated in Figure 8, are actuated by a cam at the top of the shaft. No gears are used. The cam pushes out on the knives which in turn pull in on the opposite shelves.

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 records while the lower record drops to the turntable.

1. As the director lever (41) continues to move toward the out of cycle position the end of the director lever (41E) retains contact with the stud (58A) on the trip lever (58). This contact stabilizes the inward movement of the pickup arm which is being pushed in by the pickup arm return lever (50).

2. The inward movement of the pickup arm is stopped directly above the landing position due to the stud (50B) on pickup arm return lever coming in contact with the eccentric stud (45C).

1. The stud (41A) on director lever (41) continues to contact pickup arm elevating lever (35) and lowers the sapphire on the start of the record.

2. As the turntable completes one revolution, the stud (41B) on director lever is pulled through the slot in the cycling cam by the tension spring (42).

3. The end of the director lever (41D) contacts projection (50C) and unlatches the pickup 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.

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 underside 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.

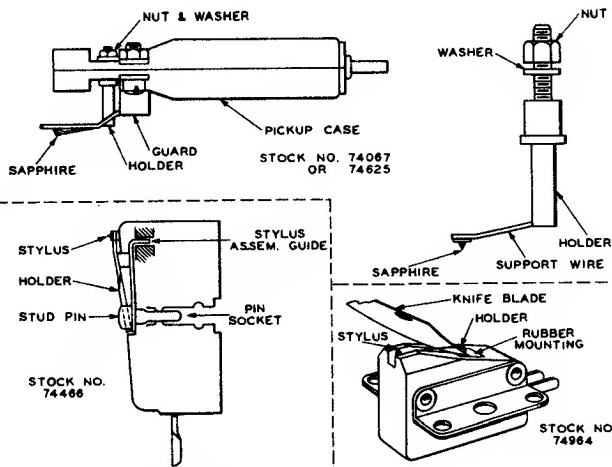
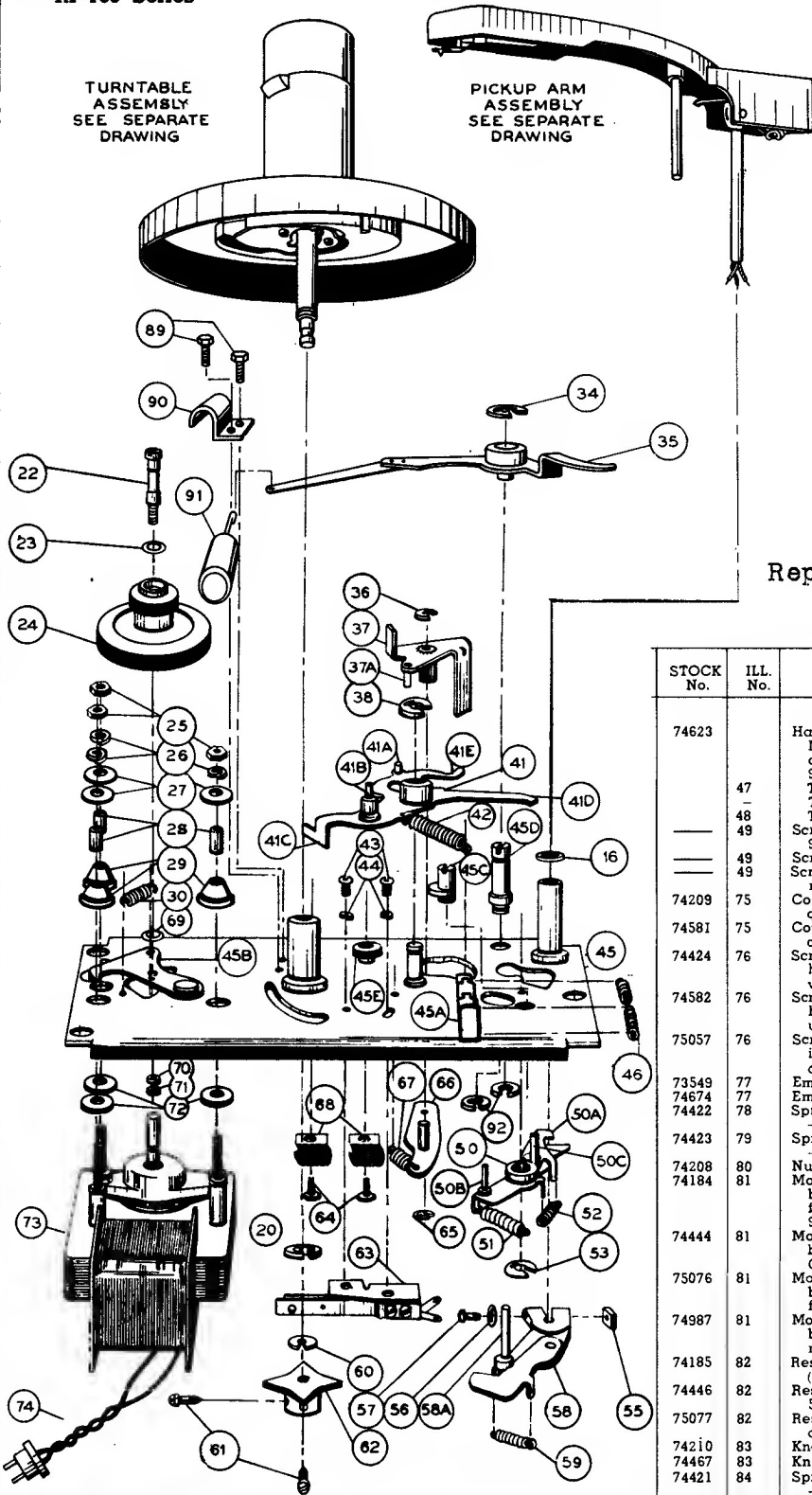


Figure 16—Stylus Replacement.



Replacement Parts List

STOCK No.	ILL. No.	DESCRIPTION
<b>MOTORBOARD ASSEMBLIES</b>		
74623		Hardware—To mount sub-base to plastic cabinet of Models 9EY3, 9EY35, 9EY36, 9Y51, 45EY and QEY3 or sub-base to motorboard of Models 9EY31 and 9EY32, consisting of:
	47	Three (3) grommets
	48	Three (3) spacers
	49	Three (3) flat washers
	49	Screw—No. 8-32 x 3/4"—for Models 9EY3, 9EY35, 9EY36, 9Y51, 45EY and QEY3
	49	Screw—No. 8-32 x 1/2"—for 9Y and 45J
	49	Screw—No. 8-32 x 3/8"—for instruments using spring mounting of motorboard
74209	75	Cover—Mounting screw cover (threaded type—3 required)—use with No. 74424 screw (Ill. No. 76)
74581	75	Cover—Mounting screw cover (plug-in type—3 required)—use with No. 74582 screw (Ill. No. 76)
74424	76	Screw—No. 8-32 x 1 3/4" special screw (with tapped hole) for mounting record changer (3 required)—use with No. 74209 cover (Ill. No. 75)
74582	76	Screw—No. 8-32 x 1 3/4" special screw (non-tapped hole) for mounting record changer (3 required)—use with No. 74581 cover (Ill. No. 75)
75057	76	Screw—No. 8 x 7/8" oval head wood screw for mounting record changer (3 required)—for Models 9EY31 and 9EY32
73549	77	Emblem—"RCA Victor" emblem—metal
74674	77	Emblem—"RCA Victor" emblem—plastic
74422	78	Spring—Conical spring for mounting record changer—upper L.H. side (2 required)
74423	79	Spring—Conical spring for mounting record changer—bottom (3 required)
74208	80	Nut—Tee nut for mounting record changer (3 required)
74184	81	Motorboard—Motorboard complete with welded brackets and stud—less rest and operating parts—for all models with motorboard rest except CP-5203, 9EY31 and 9EY32
74444	81	Motorboard—Motorboard complete with welded brackets and stud—less operating parts—for Model CP-5203
75076	81	Motorboard—Motorboard complete with welded brackets and stud—less rest and operating parts—for Models 9EY31 and 9EY32
74987	81	Motorboard—Motorboard complete with welded brackets and stud—less operating parts—for all models without motorboard rest
74185	82	Rest—Pickup arm rest—maroon—for all models (where required) except CP-5203, 9EY31 and 9EY32
74446	82	Rest—Pickup arm rest—black—used on Model CP-5203 only
75077	82	Rest—Pickup arm rest and latch—for Models 9EY31 and 9EY32
74210	83	Knob—Reject control knob—maroon
74467	83	Knob—Reject control knob—black
74421	84	Spring—Conical spring for mounting record changer—upper R.H. side (1 required)
74212	85	Nut—Speed nut for reject control knob
	86	Screw—No. 6 self-tapping screw
33726	87	Washer—"C" washer for mounting reject lever actuating lever.
74211	88	Lever—Reject lever actuating lever
74474	-	Switch—"ON-OFF" switch—used on Model CP-5203 only

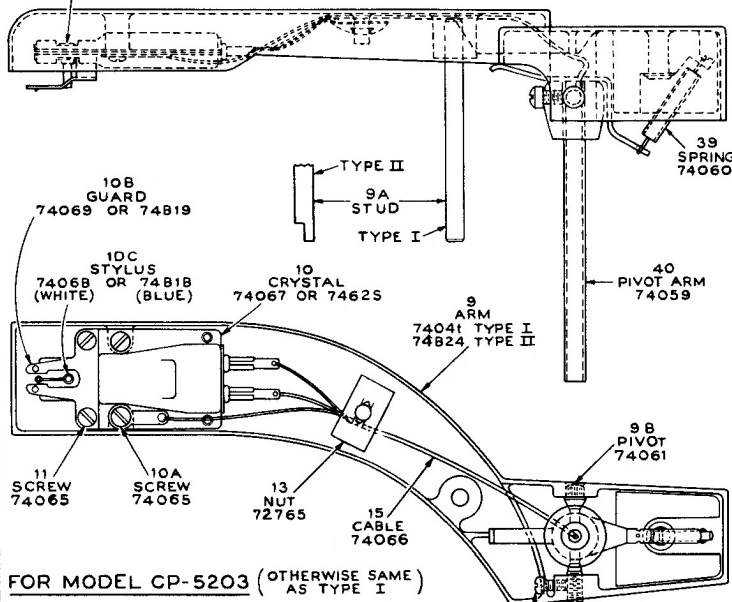
Figure 17—Exploded View of Sub-base Assembly.

10 D  
NUT & WASHER  
74230

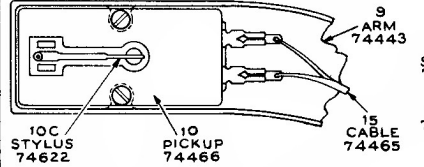
**TYPES I AND II**

Figure 18—Pickup Arm Assemblies.

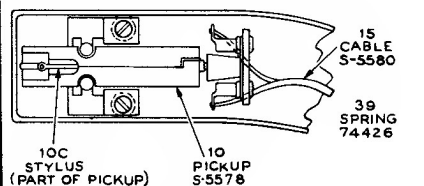
**RP-168 Series**



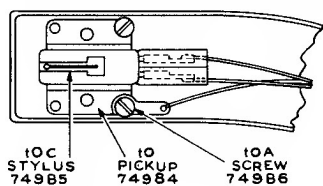
FOR MODEL CP-5203 (OTHERWISE SAME AS TYPE I)



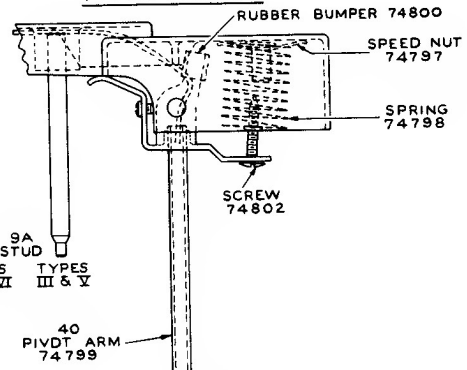
FOR MODEL 9QV5 (OTHERWISE SAME AS TYPE II)



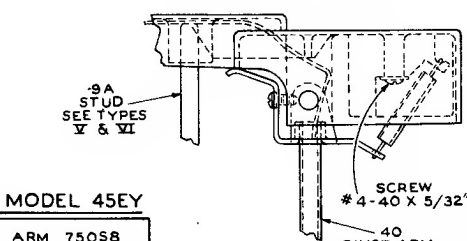
FOR MODELS QJY & QEY3 (OTHERWISE SAME AS TYPE II)



**TYPES V AND VI**



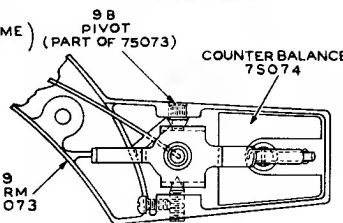
**TYPES III AND IV**



FOR MODEL 45EY

9 ARM 75058  
TWO-TONE FINISH  
(OTHERWISE SAME AS TYPE II)

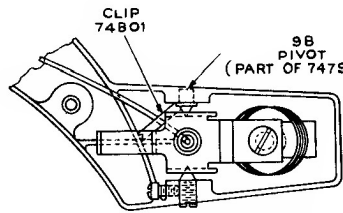
TYPES III & IV AS SHOWN OTHERWISE SAME AS TYPES I & II



**PICKUP ARM ASSEMBLIES (LESS PICKUP)**

**SUB-BASE ASSEMBLIES**

- Type I**  
Sub-base Stock No. 74070. Has staked studs for spring anchors and one-piece reject lever. Stamped or labelled RP168-1 or RP168-3.
- Type II**  
Same as Type I, except it uses a two-piece reject lever. Use Stock No. 74743 Sub-base (Type III) for replacement.
- Type III**  
Sub-base Stock No. 74743. Same as Type II, except that it has pickup arm rest on sub-base (when motorboard rest is used, the sub-base rest is to be deformed).
- Type IV**  
Sub-base Stock No. 74468. It uses an a.c. input connector and audio output jack mounted on a separate bracket. Labelled RP168-2 and used only with Model CP-5203.
- Type V**  
Sub-base Stock No. 74856. Has turned up lances for spring anchors. Idler wheel mounting plate (45B—Stock No. 74814) is removable. It is labelled RP168-1, RP168B-1, etc. It has pickup arm rest on sub-base (when motorboard rest is used, the sub-base rest is to be deformed).
- Type VI**  
Stock No. 74803. Similar to Type V, but it does not bear any "RP168" identification. It has pickup arm rest on sub-base. Idler wheel mounting plate (45B) is secured to the sub-base with a shoulder rivet.
- Type VII**  
Same as Type VI, except it does not have pickup arm rest on sub-base. Use Stock No. 74803 (Type VI) for replacement (the pickup arm rest is to be deformed).



**NOTE: Types VI and VII**  
Late production of these types have the idler wheel mounting stud (22) staked to its mounting plate. The idler wheel retainer (horseshoe washer) is Stock No. 75081.

**NOTE: Type V**  
Two different main levers (director lever) are used, depending upon which turntable assembly is used. Lever (41). Stock No. 74076 has a long end (41C) and is used with Turntables Types I and II. Lever (41). Stock No. 74857 has a short end and is used with Turntable Type III.

- Type I**  
Arm Stock No. 74041. Stamped 970488. Pickup arm stud (9A) is full diameter for entire length (do not use where pickup arm rest is on sub-base). Lead counter-balance is riveted to arm.  
Arm Stock No. 74443. For Model CP-5203 only. Black finish, otherwise similar to No. 74041.
- Type II**  
Arm Stock No. 74824. Same as No. 74041 except that stud (9A) has a flat on one side at bottom end. Can be used with either type of pickup rest.  
Arm Stock No. 75058. For Model 45EY only. Two-tone finish, otherwise same as No. 74824.
- Type III**  
Arm stock No. 75073. Stamped 3R1. Similar to No. 74824 except that a different pivot (9B) is used and the lead counter-balance is fastened to the arm with a screw. Stud (9A) is of smaller diameter at bottom end. Can be used with either type of pickup rest. Use only with No. 74059 pivot arm.
- Type IV**  
Same as Type III except that stud (9A) is of full diameter for entire length. Use No. 75073 for replacement.
- Type V**  
Arm Stock No. 74796. Stamped 3R1. Similar to Type III except that a different pivot (9B) is used and the lead counter-balance is not used. A 5/8" O.D. counter-balance spring is used. Can be used with either type of pickup rest. Use only with No. 74799 pivot arm.
- Type VI**  
Same as Type V except that stud (9A) is of full diameter for entire length. Use No. 74796 for replacement.

RP-168 Series

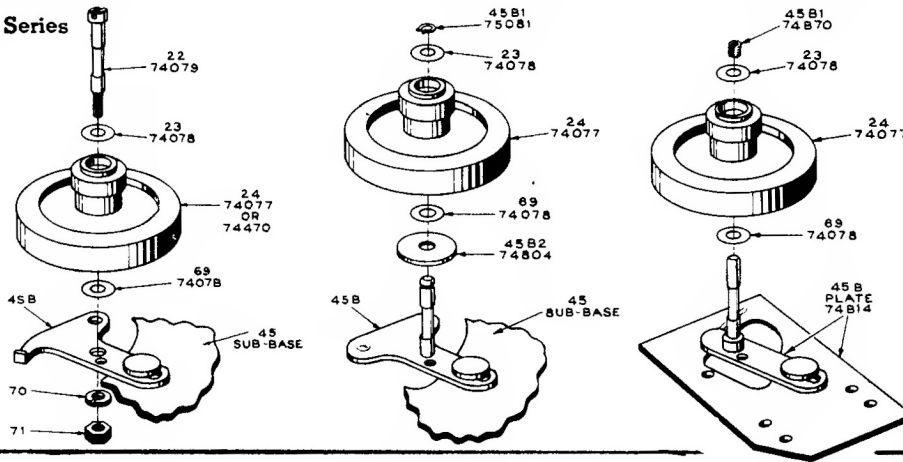
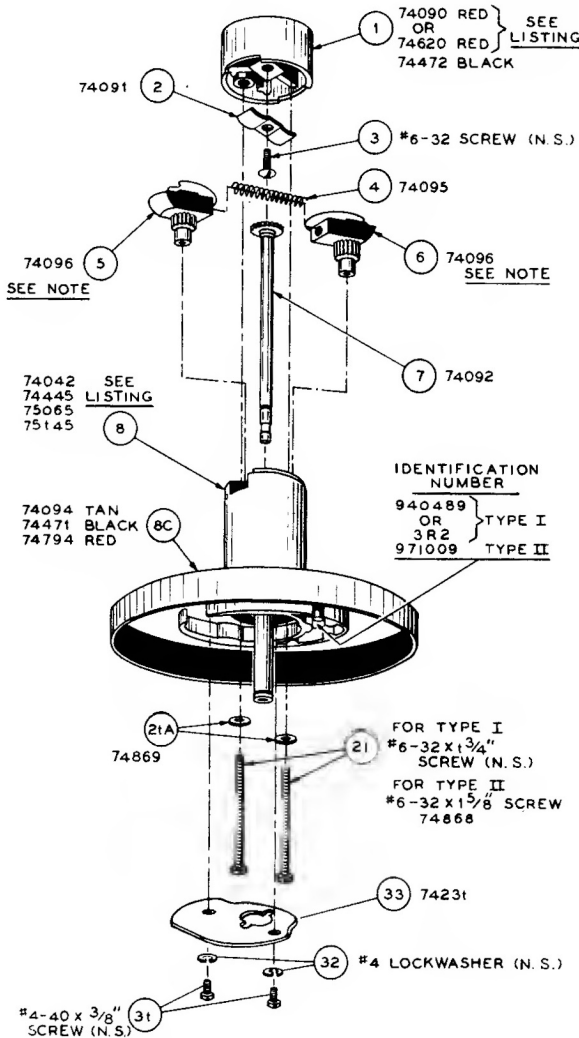
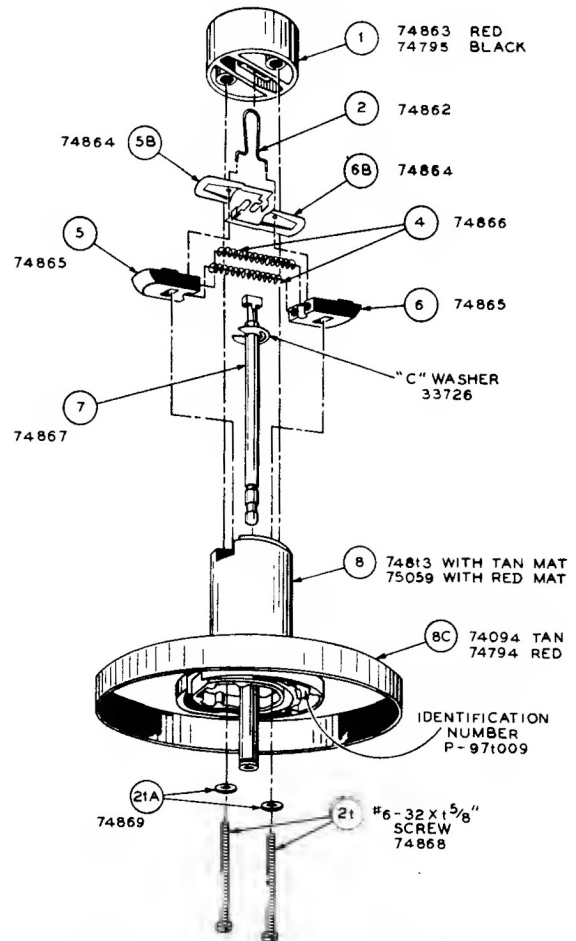


Figure 19—  
Idler Wheel  
Mounting.



ON TYPE II TURNTABLES THE CAM (33) IS  
CAST INTEGRAL WITH THE TURNTABLE (8)

Figure 20. Turntable Assemblies,  
Types I and II.



NOTE: Use care in dis-assembly to prevent loss of  
springs. Remove screws--lift nose slightly--hold both  
separator knives down against shelves--then remove  
nose.

Figure 21 Turntable Assemblies,  
Type III.

Main Lever vs Record Separators:

Two different main levers (director lever) are used depending upon the type of record separators being used.

Stock No. 74076 lever is used only with the rotating gear type of record separators. The end (41C) that engages the star wheel is long.

Stock No. 74857 lever is used only with the push-out type of record separators. The end (41C) that engages the star wheel is short.



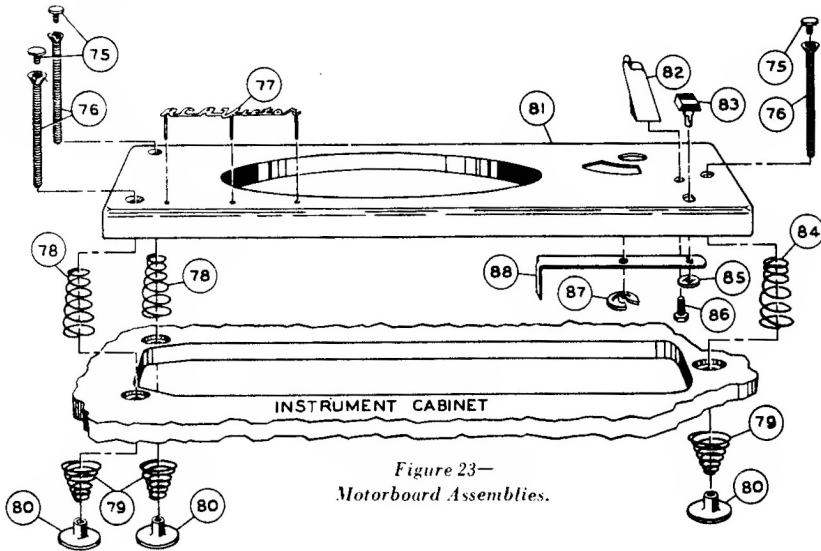


Figure 23—  
Motorboard Assemblies.

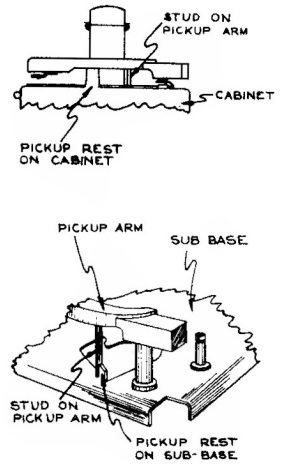


Figure 24—Pickup Arm Rest.

**Pickup Arm Rest:**

Two different types of pickup arm rest are in use. The original type was visible on the motorboard. The type presently in use is a metal projection on the sub-base.

**Sub-base Mounting:**

The sub-base is attached directly to metal motorboards and to the cabinets of Models 9JY, QJY and 45J with three screws and three washers. No grommets or spacers are used except with Models 9EY31 and 9EY32.

On all other instruments, the sub-base is cushion mounted to the plastic cabinet with rubber grommets, metal spacers, screws and washers. The mounting is illustrated below.

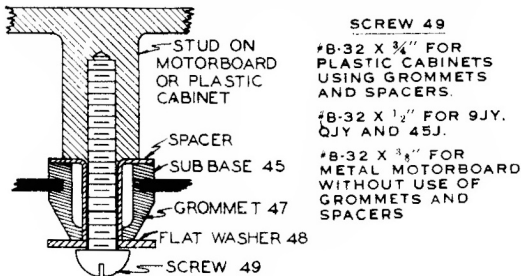


Figure 25—Sub-base Mounting.

**SCREW 49**  
 #8-32 X 3/8" FOR PLASTIC CABINETS USING GROMMETS AND SPACERS.  
 #8-32 X 1/2" FOR 9JY, QJY AND 45J.  
 #8-32 X 3/8" FOR METAL MOTORBOARD WITHOUT USE OF GROMMETS AND SPACERS

The late type (having a flat on the eccentric shaft) do not need to be grouped, but an early assembly should not be used in conjunction with a late assembly (use two early or two late assemblies). The late type may be identified by its having a shroud at the top of the gear (see Figure 27).

**Spindle Nose and Turntable (Type I):**

The wall thickness of the spindle nose (Ill. No. 1) has been increased and the machined shoulder at the top of the turntable decreased accordingly. Thick wall spindle nose will not fit on early type turntable. The new type red spindle nose (thick wall) is available as Stock No. 74620.

NOTE: The screws (Ill. No. 21) which hold the spindle nose to the turntable should not be tightened too tight. The spindle nose can be distorted and cause records to bind.

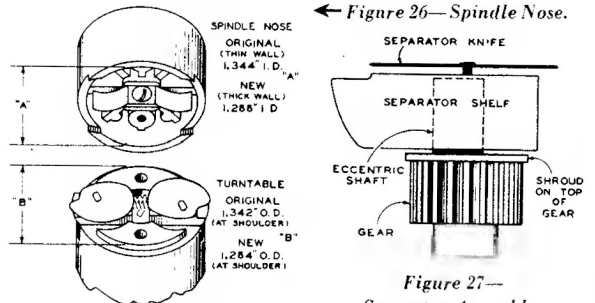


Figure 26—Spindle Nose.

Figure 27—  
Separator Assembly.

**Separator Assemblies (Rotating Gear Type):**

A flat has been added to the separator gears eccentric shafts. This flat permits the shelf (Ill. Nos. 5 and 6) to stay out until the nose of the blade (Ill. Nos. 5B and 6B) is approximately half-way out. Then the shelf retracts fast. This faster action minimizes unequal dropping of records.

The two types of separator assemblies (Stock No. 74092 Ill. No. 7) are NOT INTERCHANGEABLE. In addition the early type has been grouped according to mold number (at bottom of spring hole) and installed in pairs.

Group Mold Number	Group Mold Number	Group Mold Number
1, 3, 5	9, 10	0, 8

Assemblies of one group should not be mixed with assemblies of another group or unequal dropping of records may occur. If a matched pair is not available, first check timing of separator knives then the dropping of records; it may be necessary to file the edge of the shelf which released the record last.

**Jamming:**

On early RP-168-1 mechanisms it was sometimes possible to jam the mechanism by maintaining pressure on the reject button during cycle. If such jamming should occur check the following:

1. The tip radius of the reject lever (Ill. No. 45A) should be 1/16".
2. The edges of the trip pawl (Ill. No. 37) should have a slightly rounded edge (.010" radius).

Present production uses a two piece spring loaded reject lever (Ill. No. 45A) which eliminates the possibility of jamming caused by pressure on the reject button.

Jamming can also be caused by incorrect positioning of the director lever (main lever) (Ill. No. 41) in relation to the star wheel (Ill. No. 62). See Figure 35.

## RP-168 Series

### CHANGES—SERVICE HINTS (Continued)

#### Intermittent Non-Tripping:

The trip lever spring (Ill. No. 59) has been increased in tension to provide better tripping action. The new spring has 30 turns and is available as Stock No. 74426.

To reduce friction a washer has been added between the trip pawl (Ill. No. 37) and the trip pawl lever (Ill. No. 66). It is available as Stock No. 74453.

#### Eccentric Adjustment Studs:

In early production the eccentric landing (Ill. No. 45C) and height (Ill. No. 45D) adjustment studs were staked to the sub-base assembly. They are now secured to the sub-base assembly with "C" washers. The landing adjustment stud (Ill. No. 45C) is available as Stock No. 74430. The height adjustment stud (Ill. No. 45D) as Stock No. 74429 and the "C" washer (Ill. No. 92) as Stock No. 74431.

#### Pneumatic Dashpot

A pneumatic dashpot (Stock No. 74428) has been added to improve pickup arm landing. The dashpot case is clamped to the base sub-assembly and the plunger is attached to the long end of the tone arm lift lever (Ill. No. 35) (Stock No. 74757).

## ADJUSTMENTS

#### Adjustment Sequence:

1. Synchronize separator sheaf (Ill. No. 5) and separator knife (Ill. No. 5B) action (necessary only on rotating gear type of record separators).

2. Adjust position of star wheel (Ill. No. 62).
3. Adjust position of director lever (main lever) (Ill. No. 41) in relation to the star wheel by bending if necessary.
4. Adjust tone arm pivot screw (Ill. No. 12) for minimum side play without binding.
5. Adjust sapphire height above motorboard.
6. Adjust tripping position.
7. Adjust landing position.
8. Adjust pickup arm height during cycle.
9. Adjust position of muting switch so that contacts are open during playing and are closed during cycle.

#### Separator Synchronization:

The following applies only to the rotating gear type of record separators:

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 is synchronized.

#### Star Wheel Position:

1. Turn the star wheel so that the separator knives are in the position indicated in Figure 33 for rotating gear type of separators or fully retracted for push-out separators.
2. Loosen the two set screws (61) sufficiently to permit the star wheel to rotate without disturbing the shaft (7).
3. Rotate the star wheel points directly to a cam screw or nose screw (visible through slot) as shown in Figure 34.
4. Tighten the two set screws (61) and rotate the mechanism through a complete cycle to check operation. The separator knives must rotate 360° to the starting position as indicated in Figure 33.

### ERRATIC PICKUP LANDING

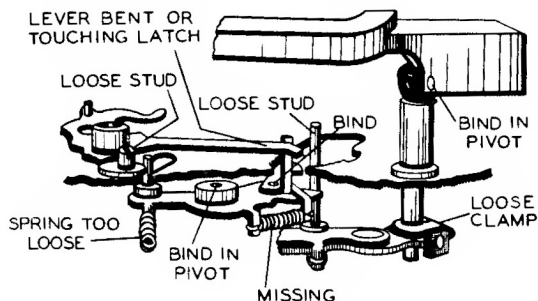


Figure 28.

### DISTORTED OUTPUT

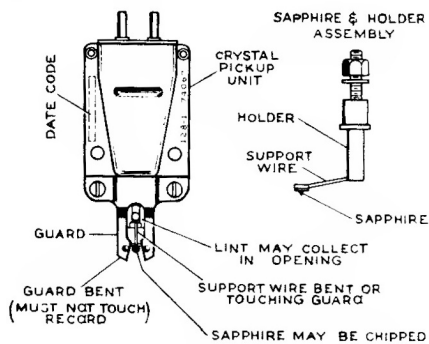


Figure 29.

### WOW (Speed Variation)

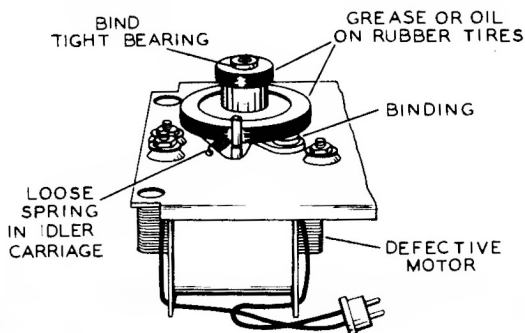


Figure 30.

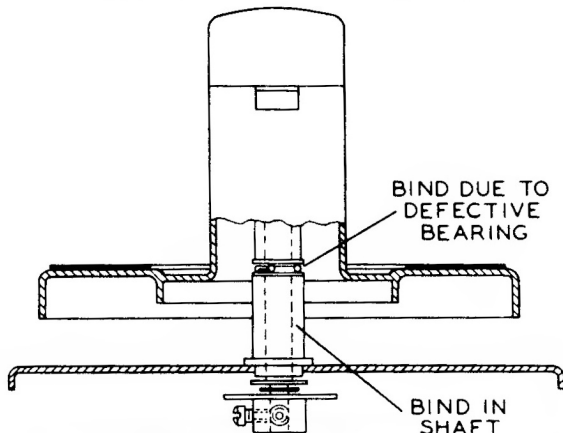


Figure 31.

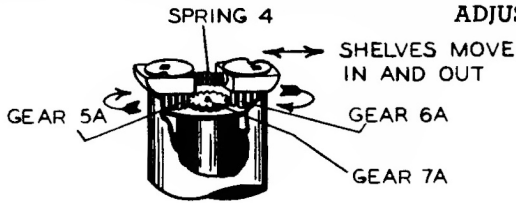


Figure 32.

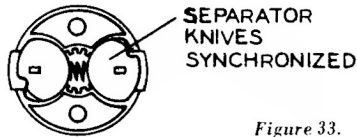


Figure 33.

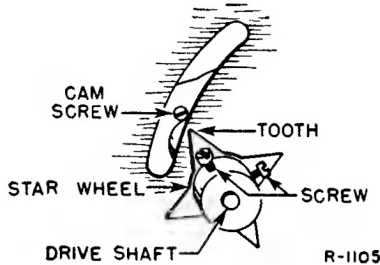


Figure 34—Star Wheel Timing.

**Director Lever Position:**

Push reject lever and rotate the turntable slowly by hand until the end (41C) of the director lever moves in to its limit of travel so when the star wheel is rotated it contacts by the amount indicated in Figure 35 for lever with long end. For lever with short end, the star wheel should first contact the end (41C) approximately 1/16-inch from the front or leading edge of the lever.

If the end of the director lever (main lever) is too close to the star wheel, it will jam. If too far away, it will cause erratic record dropping. If in doubt and unable to measure, move the end toward the star wheel until most of the play is removed when the star wheel is moved back and forth at this setting. With the push-out record separators and the lever with short end, there will be considerable play but the tension of the separator springs holds the star wheel against the lever.

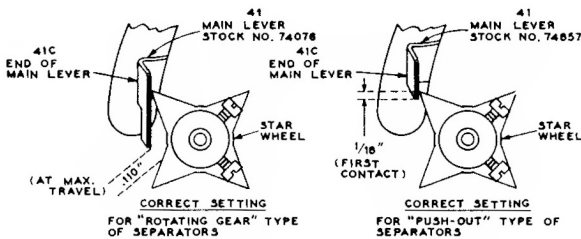


Figure 35 Setting of Director Lever.

**Sapphire Height Adjustment (Out of Cycle):**

Bend the lug on the pivot arm (40) so that the sapphire point is approximately 1/16" above the motorboard.

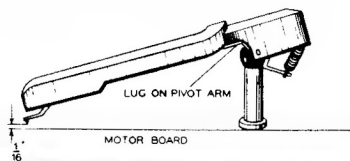


Figure 37.

**Pivot Screw Adjustment:**

Loosen the pivot locking screw (14) and adjust the pivot screw (12) for minimum side play without causing binding.

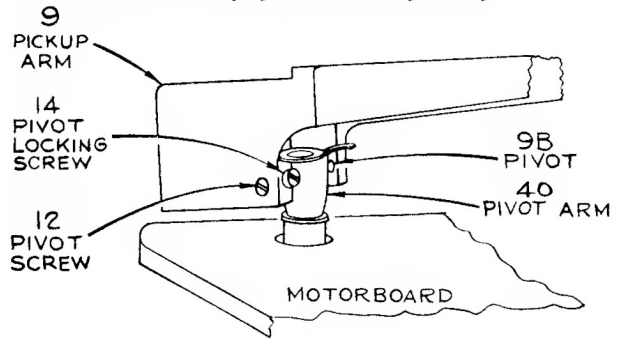


Figure 36.

**Tripping Adjustment:**

1. Assemble the pickup arm and trip lever assemblies as shown in Figure 38. Leave the clamping screw (57) loose enough to permit horizontal movement of the trip lever on the shaft. (Allow approximately .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.

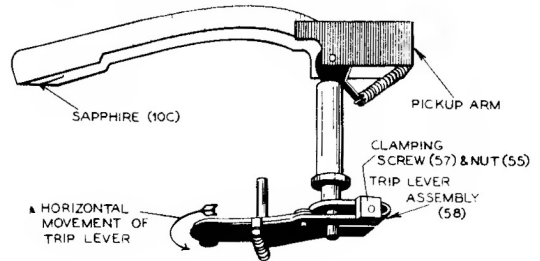


Figure 38.

3. Tripping should occur when the sapphire reaches a position 1 9/32" from the near side of the turntable spindle. This position is adjusted by holding the trip lever and moving the pickup arm inward or outward to obtain the specified position.
4. A convenient way of measuring this distance is to make a mark on the back side of a stroboscope disc 1 9/32" from the inner edge, place the disc on the turntable, with the turntable revolving, hold the disc stationary and move the pickup arm very slowly in towards the turntable spindle.
5. After this position has been obtained, tighten the clamping screw (57) and recheck the tripping position and vertical end play.

**Landing Adjustment:**

1. After the tripping adjustment has been made as described above, turn the eccentric landing adjustment stud (45C) so that the sapphire will set down on the record half-way between the outer edge and the first music groove. This position is 2 5/8" from the turntable spindle. The location of the adjustment stud is illustrated in Figure 42.

RP-168 Series

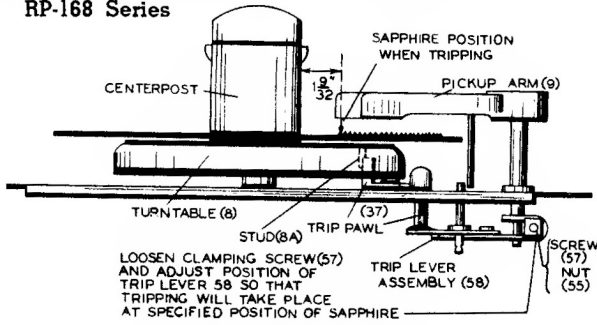


Figure 39—Tripping Position.

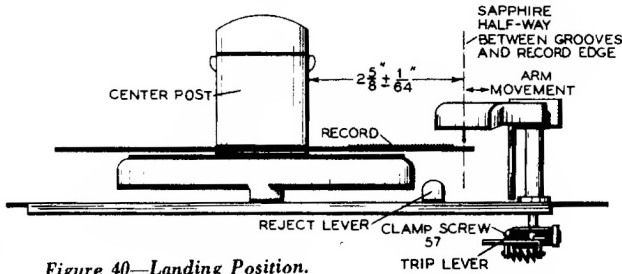


Figure 40—Landing Position.

Pickup Arm Height Adjustment (In Cycle):

Set the mechanism in cycle. Turn the turntable by hand, until the pickup arm has reached its maximum height. By means of a screwdriver turn the height adjustment stud (45D) until the distance between the top of the turntable and the sapphire point is  $\frac{3}{4}$ " Use that position of the eccentric stud which causes the pickup arm to rise during clockwise adjustment of the stud. The location of the adjusting stud is illustrated in Figure 42.

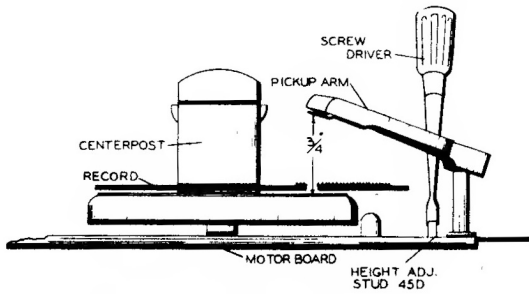


Figure 41—Height Adjustment.

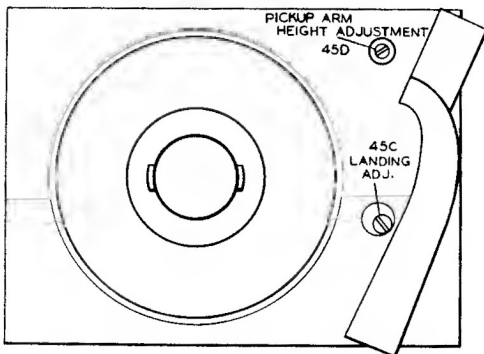


Figure 42—Height and Landing Adjustment Studs.

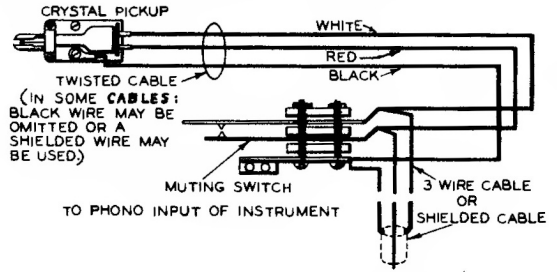


Figure 43—Pickup Muting Switch Wiring.

SERVICE HINTS (Continued)

REPEATS GROOVES

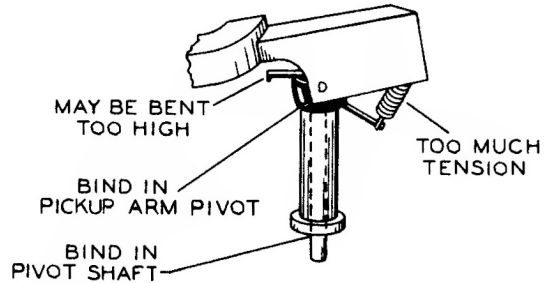


Figure 45.

FAILS TO GO INTO CYCLE

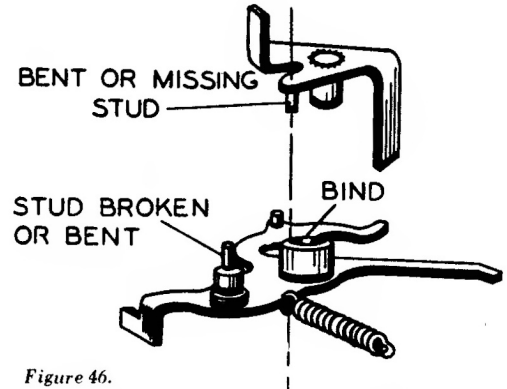


Figure 46.

RECORD DROP ON OR HIT PICKUP ARM

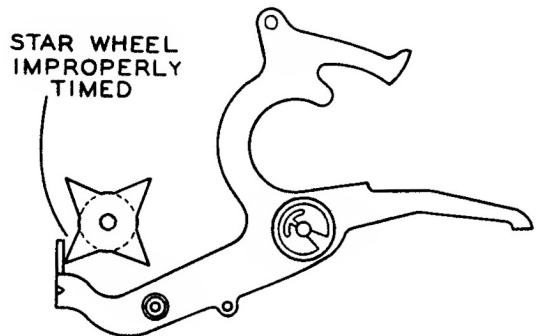


Figure 48.