

ROCKOLA

ARCHIEF
DOCUMENTATIEDIENST
NVHR

SERVICE MANUAL

MODEL 431

□ CORONADO

100 SELECTION PHONOGRAPH

Met dank aan François Jordaens

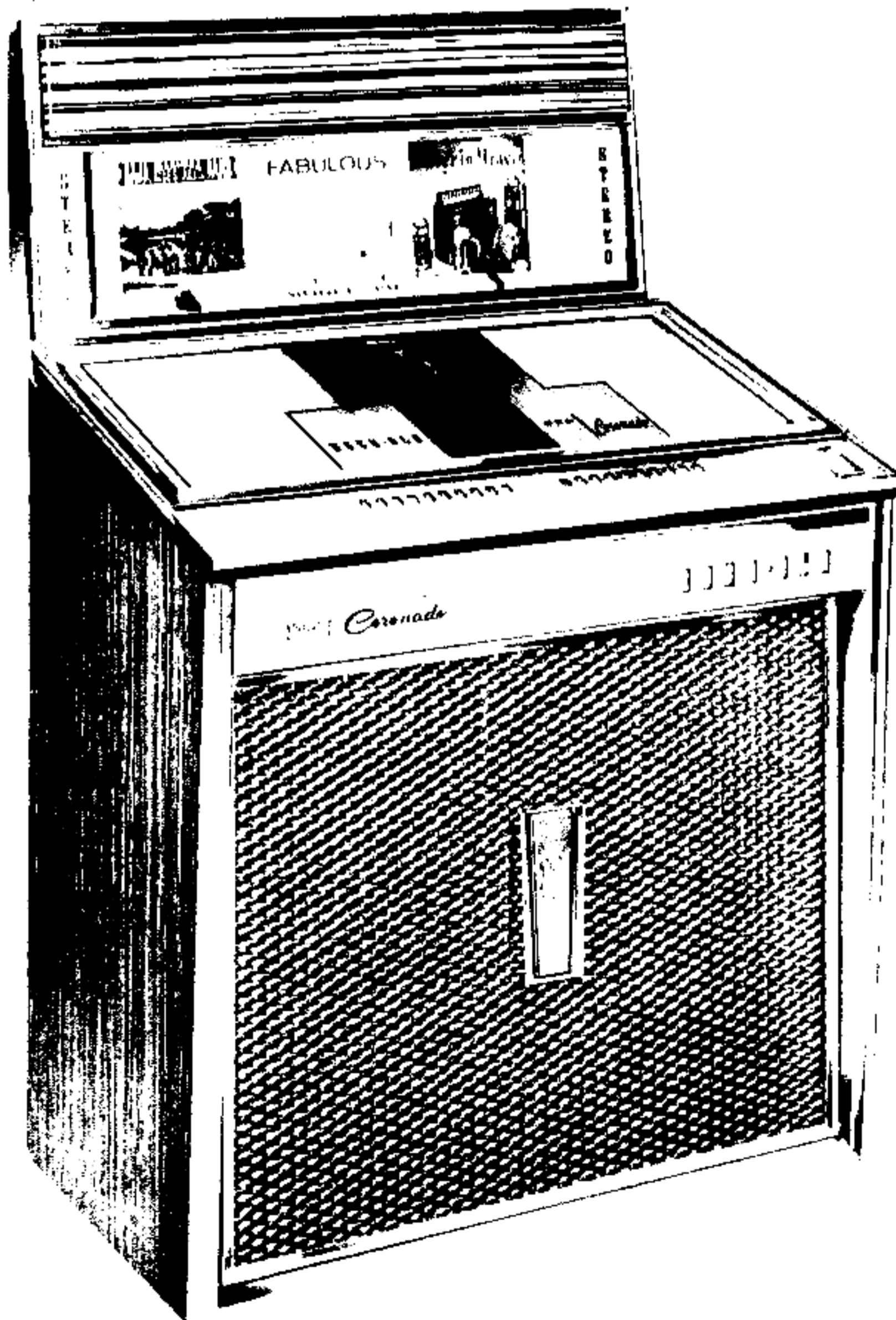
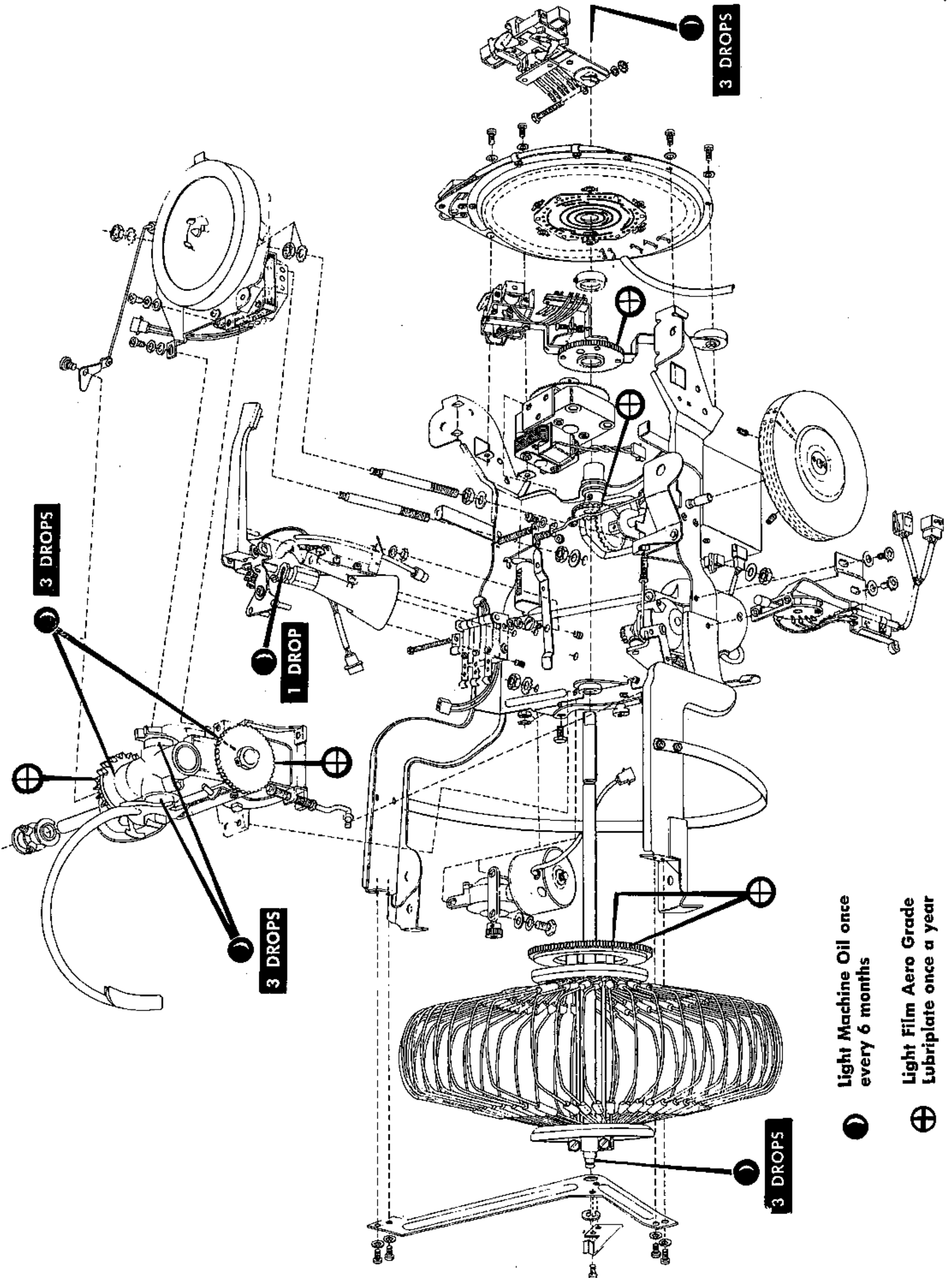




TABLE OF CONTENTS

	Page No.
PHONOGRAPH INSTALLATION	4
Loading of Records	5
Insertion of Title Strips	5
Credit System	6
Accumulator Pricing Adjustment	7
Phonograph Cycle of Operation	9
COMPONENTS — WHAT THEY DO	
Micro Switches, No. 1, No. 2 and No. 3	11
Tone Arm Switch	11
Play Control Relay	12
Gripper Reverse Relay	12
Interlock Relay	12
A-B Snap Switches	13
Pushbutton Latch and Lockbar Switches	25
Selector Assembly- and Write-In Carriage	14
Selector Assembly and Read-Out Carriage	15
Accumulator Assembly	22
Write-In Relay	23
Stop Relay	23
Accumulator Reset Coil	23
Attract Delay Relay (ADR)	23
33-1/3 and 45 RPM Intermix Record Speed Changer	50
ADJUSTMENTS	
Write-In Carriage	16
Read-Out Carriage	17
Micro Switches and Cam	18
Tone Arm	20
Turntable Height and Centering	21
Letter and Number Pushbutton Lock-Bars	25
REMOVAL OF SELECTOR	19
TROUBLE SHOOTING	
Album Check-Off Operation (Used with Album Play Kit # 1944)	28-36
Write-In Selection Operation	28-35
Read-Out Selection Operation	37-47
ELECTRICAL COIN COUNTER SCHEMATIC	48
Coin Counter Installation	50
SOUND SYSTEM	52
Amplifier Schematic	55



● Light Machine Oil once every 6 months

⊕ Light Film Aero Grade Lubriplate once a year



117 V. LINE CORD

Check your location's power line outlet before plugging in the phonograph. The outlet should meet the requirements stamped on the serial plate affixed to the rear of the phonograph cabinet.

POWER AND LIGHT SWITCH

The master line switch is located on the rear of the cabinet.

Up position - ON
Down position - OFF

This switch controls all the power to the mechanism, amplifier, and lights. Credits will not accumulate if coins are inserted when the master line switch is "OFF".

REJECT SWITCH

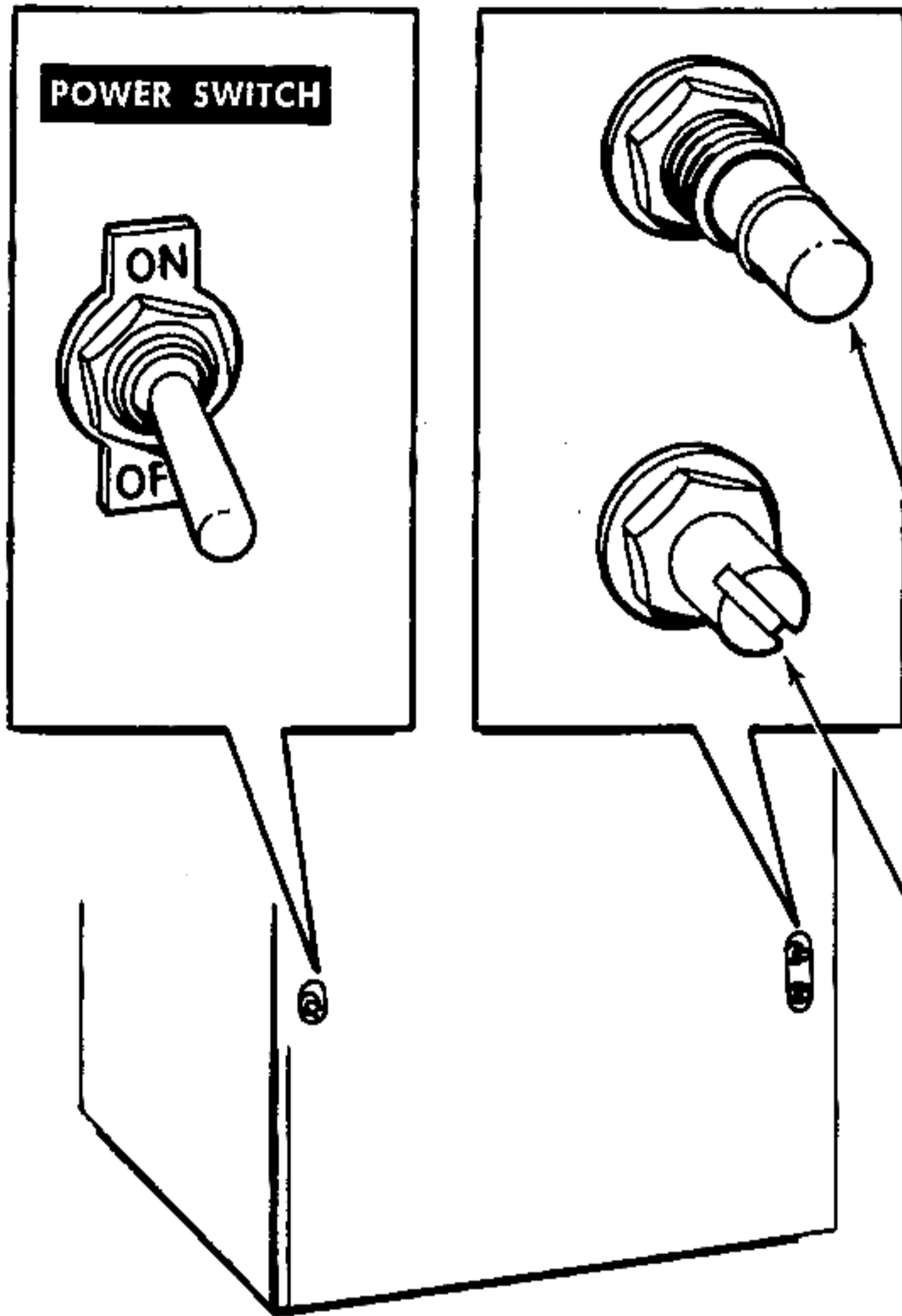
The reject switch is also located on the rear of the cabinet. To reject a record that is playing, depress this button momentarily.

VOLUME CONTROL

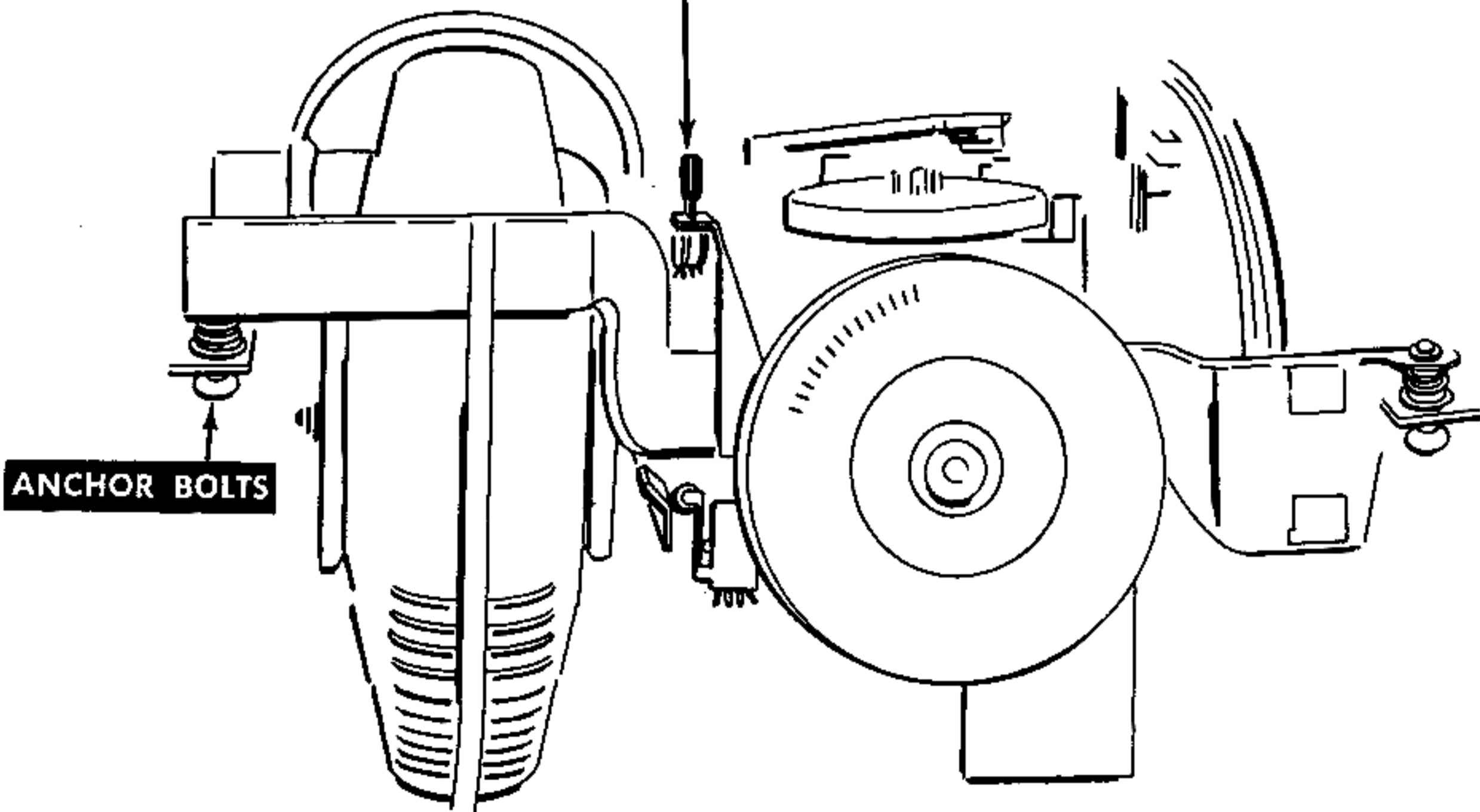
Volume is adjusted with the slotted shaft located directly below the reject switch.

MECHANISM ANCHOR BOLTS

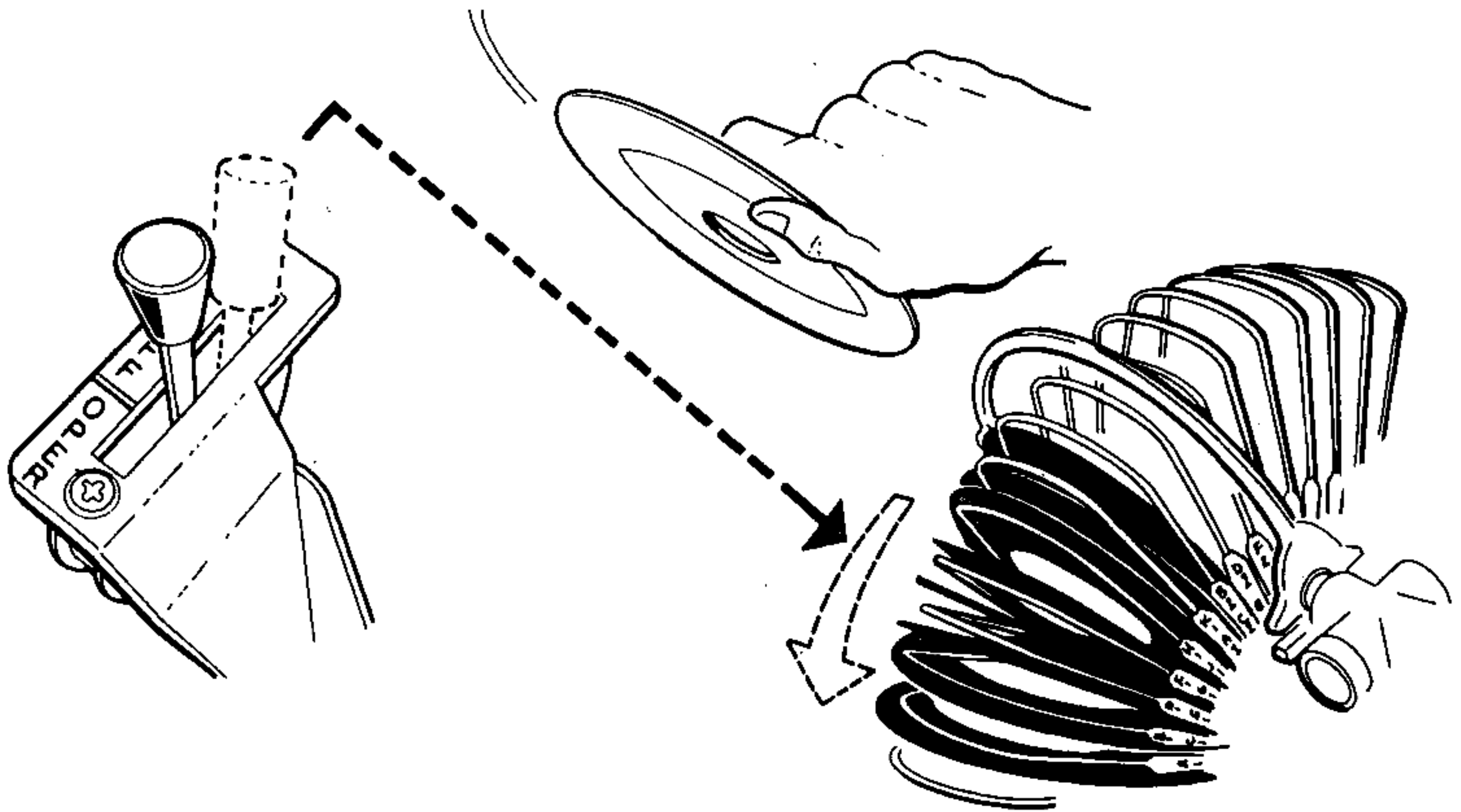
The four anchor bolts must be unscrewed to about 3/8" below their chassis seats before operating the phonograph.



SERVICE SCAN SWITCH



ANCHOR BOLTS



SERVICE SCAN SWITCH

The phono service scan switch may be used at any time to stop the mechanism at any point of its operation. When servicing is complete, the switch must be left in the "operate" position or the mechanism will not function.

Moving the service scan switch to the "scan" position causes the magazine to rotate. Releasing the switch will stop the magazine in any position convenient for insertion or removal of records.

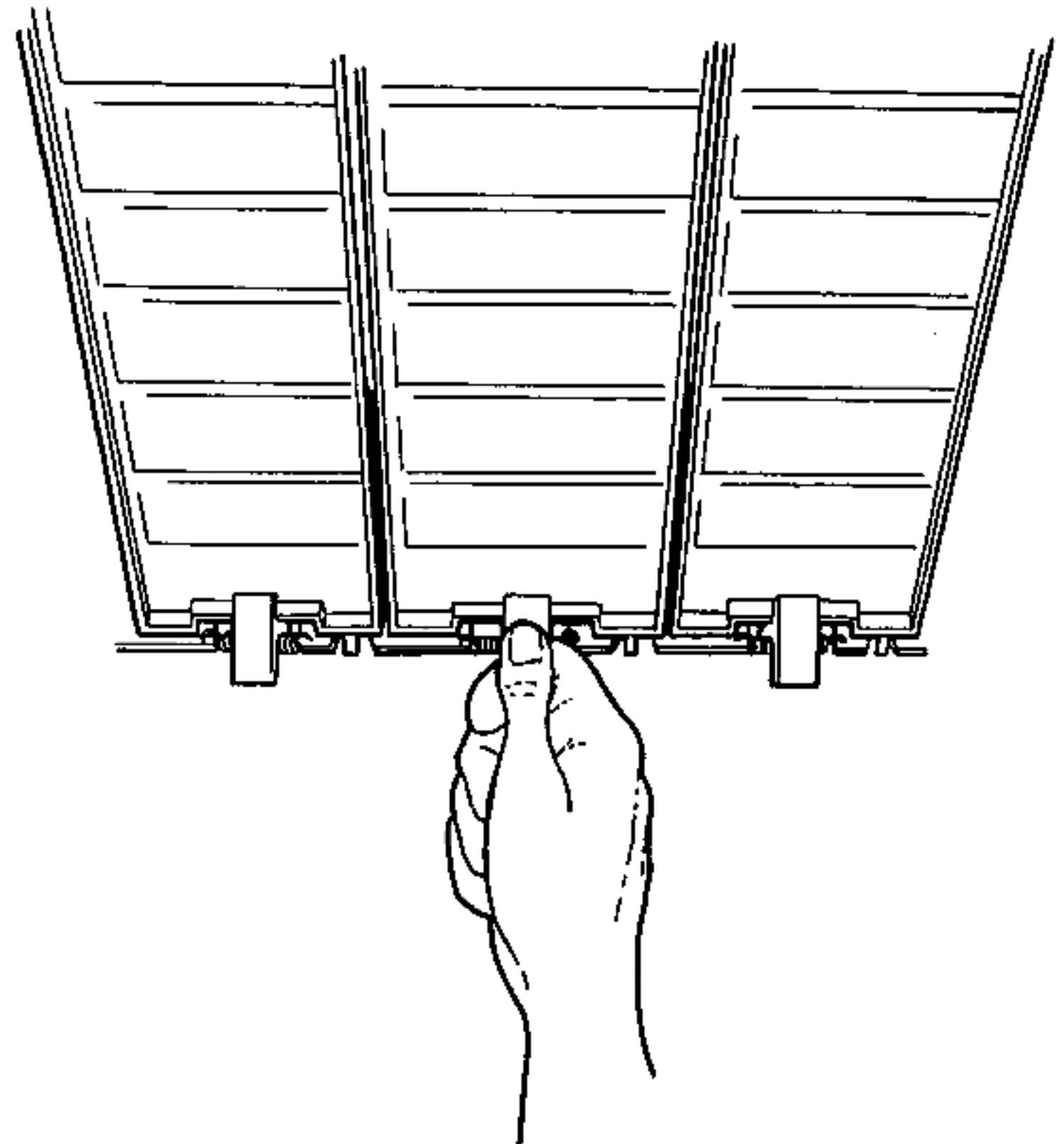
The process of loading the magazine involves scanning a short distance, inserting several records, scanning again, inserting more records, etc. Care must be taken, of course, to assure that the record locations match the title strip programming.

INSERTION OF TITLE STRIPS

Open the dome and lift out the program segments by pulling on the segment lugs. Each flat program segment is held in place by a wire spring.

Insert title strips into the program segments, and clip the segments back into place.

NOTE: Programming may be categorized. If categories are desired for Hits Tunes, Westerns, etc.



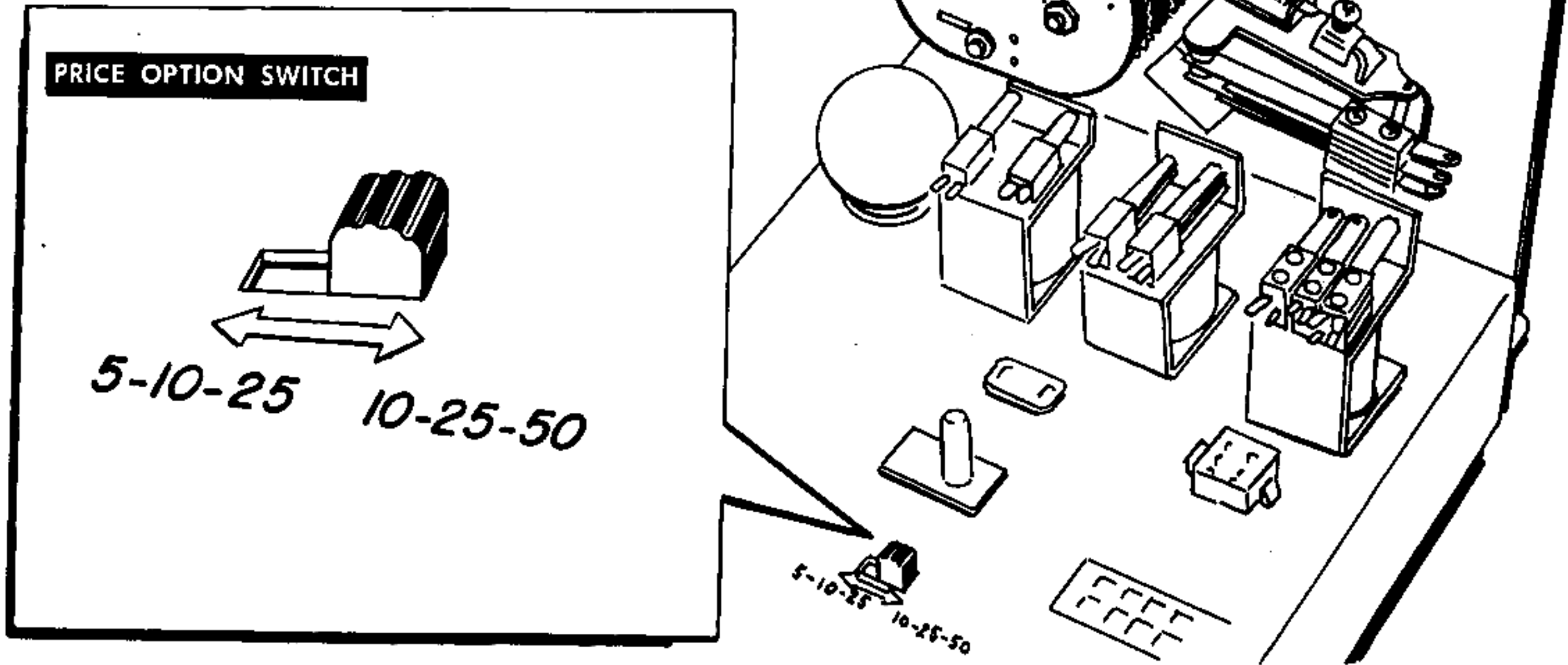


CREDIT SYSTEM

The credit system has a 4-coin rejector designed to operate on nickels, dimes, quarters and half-dollars. The Price Option Switch is preset to a 10¢ base, and the accumulator is adjusted so that each coin has the following credit value.

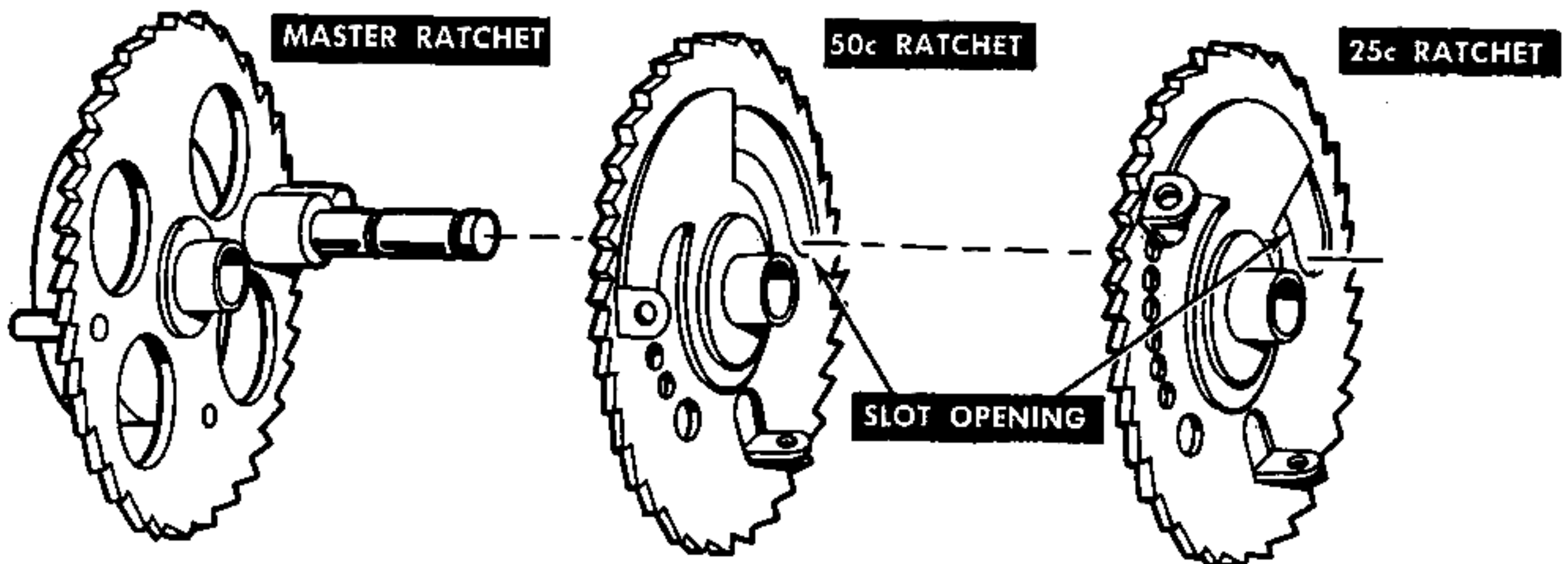
STANDARD PLAY RECORDS

- 1 Play - Dime or 2 nickels
- 3 Plays - Quarter
- 7 Plays - Half-dollar



In the operation of the credit system, it is the number of teeth added per coin that determines the number of credits accumulated on

the Master Ratchet. A 10¢ coin, or 2 nickels will advance the master ratchet one tooth, or one credit.

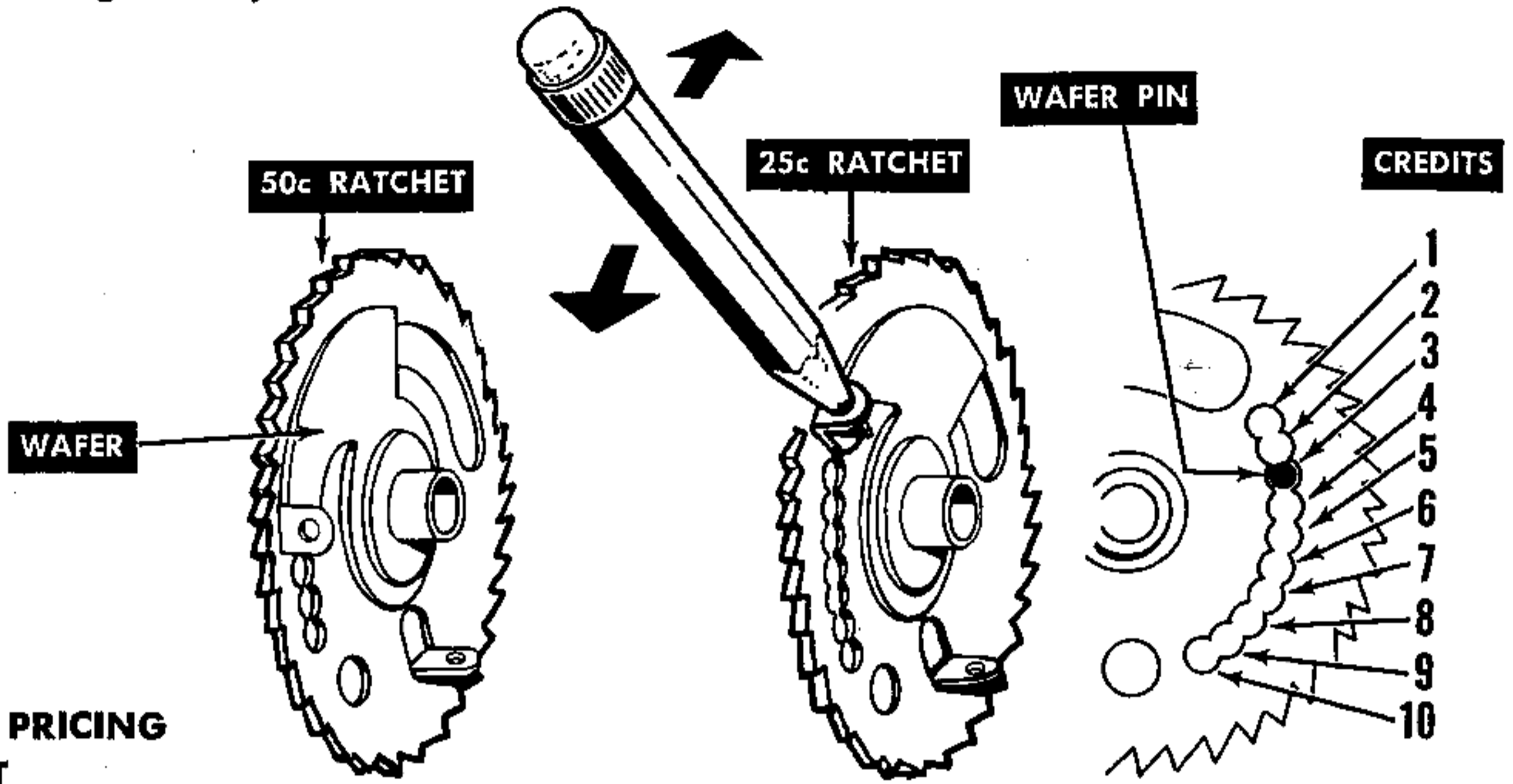


The 25¢ and 50¢ ratchet slot openings are adjusted to allow the master ratchet to advance 3 credits for a 25¢ coin and 7 credits for a 50¢ coin.

ACCUMULATOR PRICING ADJUSTMENTS

To change credit values for a quarter and half-dollar coin, adjust the center and outer ratchet by lifting the adjustable wafer with a

pointed tool, moving each wafer pin to a credit hole suitable for your requirements.



OPTIONAL PRICING EQUIPMENT

Some models are equipped with a special credit check-off system to allow for programming Album-type records to a 25¢ price level. Upon establishing 3 credits, the customer now has a choice of selecting 3 Standard selections or 1 Album selection.

The Album records may be programmed in any program section, in any sequence, in banks of 20 selections. The credit check-off for each program section is controlled by a switch arrangement mounted at the rear of the pushbutton assembly. This establishes circuits to remove 1 credit to a "Standard" setting, and 3 credits to a "Album" setting.

Pricing combinations for Album and Standard records are preset to the following values:

Dime or	
two Nickels	1 Standard Play
Quarter	3 Standard Plays or
	1 Album Play
Half-Dollar	7 Standard Plays or
	2 Album Plays plus
	1 Standard Play

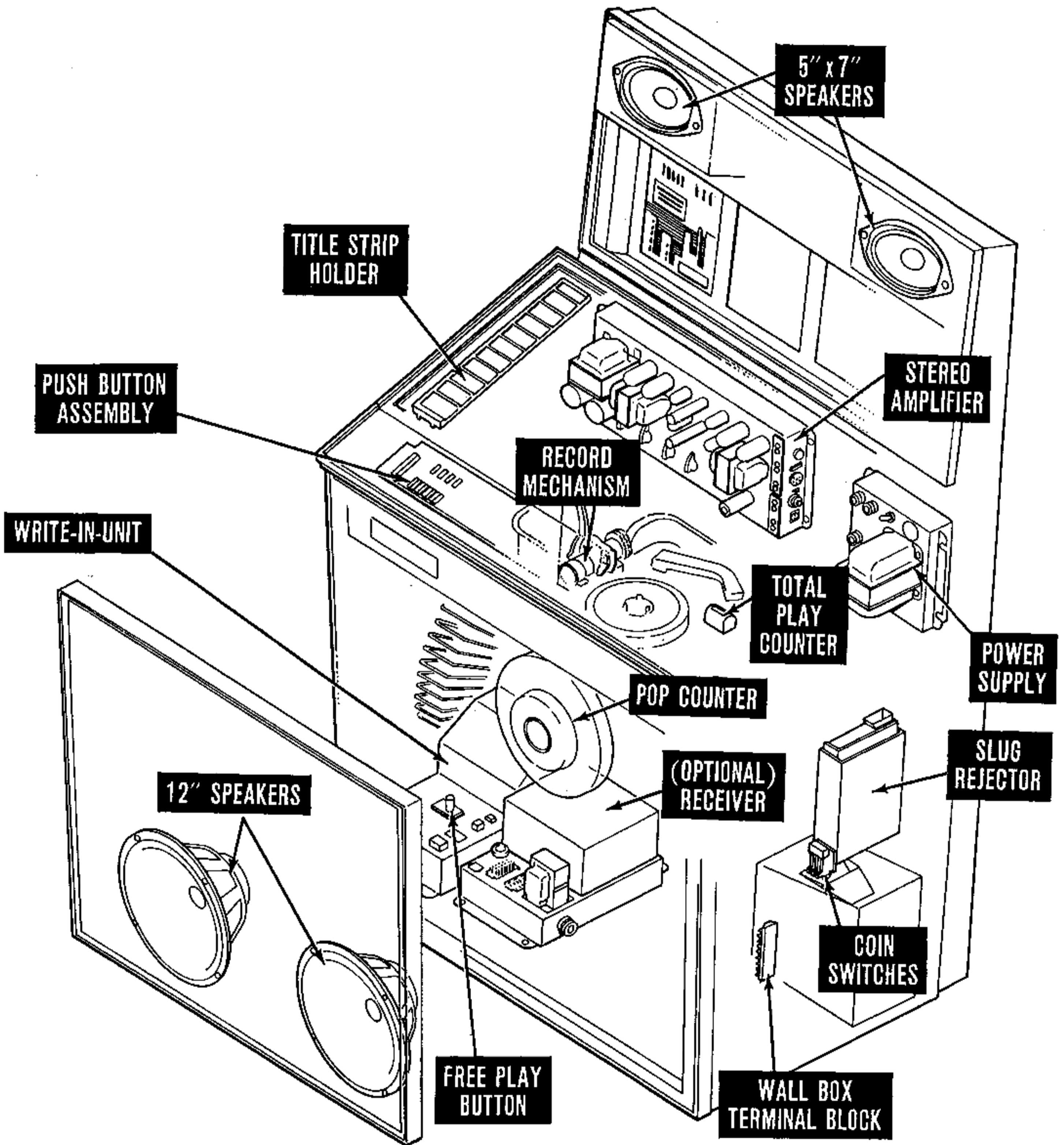
Pricing combinations can be adjusted to other values as illustrated above.

NOTE: The credit system can be modified to operate to a 5¢ base which excludes provisions for use of a half-dollar coin. Credit values can then be adjusted to suit your requirement.

Example: 1 Play - 1 Nickel
 2 Plays - 1 Dime
 6 Plays - 1 Quarter

To convert to a 5¢ base, move the Price Option Switch to 5-10-25 position. This sets up the accumulator to a 3-coin operation, changing the value of the master ratchet to 5¢, and the center ratchet from 50¢ to 10¢. The slot openings are then adjusted to the new credit values. The rejector must now be ad-

justed to reject half-dollar coins; the 5¢ toggle on the bottom of the rejector must be locked in a position to deflect all 5¢ coins to actuate the 5¢ coin switch. To lock the toggle into position, transpose the toggle pivot screw with the one above.



PHONOGRAPH CYCLE OF OPERATION

The phonograph cycle begins with the dropping of a coin which accumulates plays on the master ratchet wheel in the accumulator assembly. This allows a credit switch to close a circuit to the push button "LOCKING SOL-ENOID". Its purpose is to keep the depressed "NUMBER" and "LETTER" push buttons in

locked position during the sequence which will register a selection on the selector.

The selector consists of a circular slotted disc assembly. From these slots radiate 100 selector levers, one for each record side, arranged in two concentric rows of 50 levers

each. Levers for playing the "A" side of the record are the outer row, and the inner row registers the "B" side of the record. These selector levers extend from both sides of the selector and are pivoted so they can be toggled by two carriage assemblies which rotate around each selector side.

Adjacent to, and fastened to each carriage rotating arm is a bifurcated "WIPER ASSEMBLY" which is in contact with a printed circuit disc. The first selection sequence is referred to as the "WRITE-IN" sequence. The "locked" push buttons actuate switches allowing the "INNER" carriage and wiper assembly to rotate. The function of this wiper assembly is to locate selection circuits on the printed circuit disc that were prepared by the push buttons, and to brake the rotation of the carriage. Simultaneously, the circuit to the "LOCKBAR" solenoid is then opened releasing the locked push buttons, a credit is removed from the master ratchet and the associated blade switches that are actuated momentarily, energize the proper carriage solenoid.

The solenoid operates an arm which strikes a selector lever in its path, raising the opposite end, and in the path of the "OUTER" carriage. The movement of the lever allows a "WOBBLE PLATE" micro switch to close a circuit to the "PLAY CONTROL" relay in the power distribution panel, which turns on the turntable motor, amplifier and magazine motor.

Standby position of the record magazine always remains in a "home" or "zero" position. From this position, the magazine motor will always start the record magazine and selector arm in the counter-clockwise direction. This sequence of operation is referred to as the "READ-OUT" sequence.

Rotation of the magazine continues until a contact on the bottom of the carriage assembly strikes the selected lever in its path. This action closes a circuit to the "INTERLOCK RELAY TRIP COIL" thereby repositioning its associated contact, which will perform two functions simultaneously. It will create a short circuit on the magazine armature which will dynamically brake the motor causing the magazine to stop, and secondly, a circuit is closed to the gripper motor. This revolves the cam shaft and causes the jaws of the gripper arm to grasp the record and proceeds to place it on the turntable.

During the rotation of the magazine a mechanical action took place that determined the proper positioning of the record gripper for either the "A" or "B" side of the record.

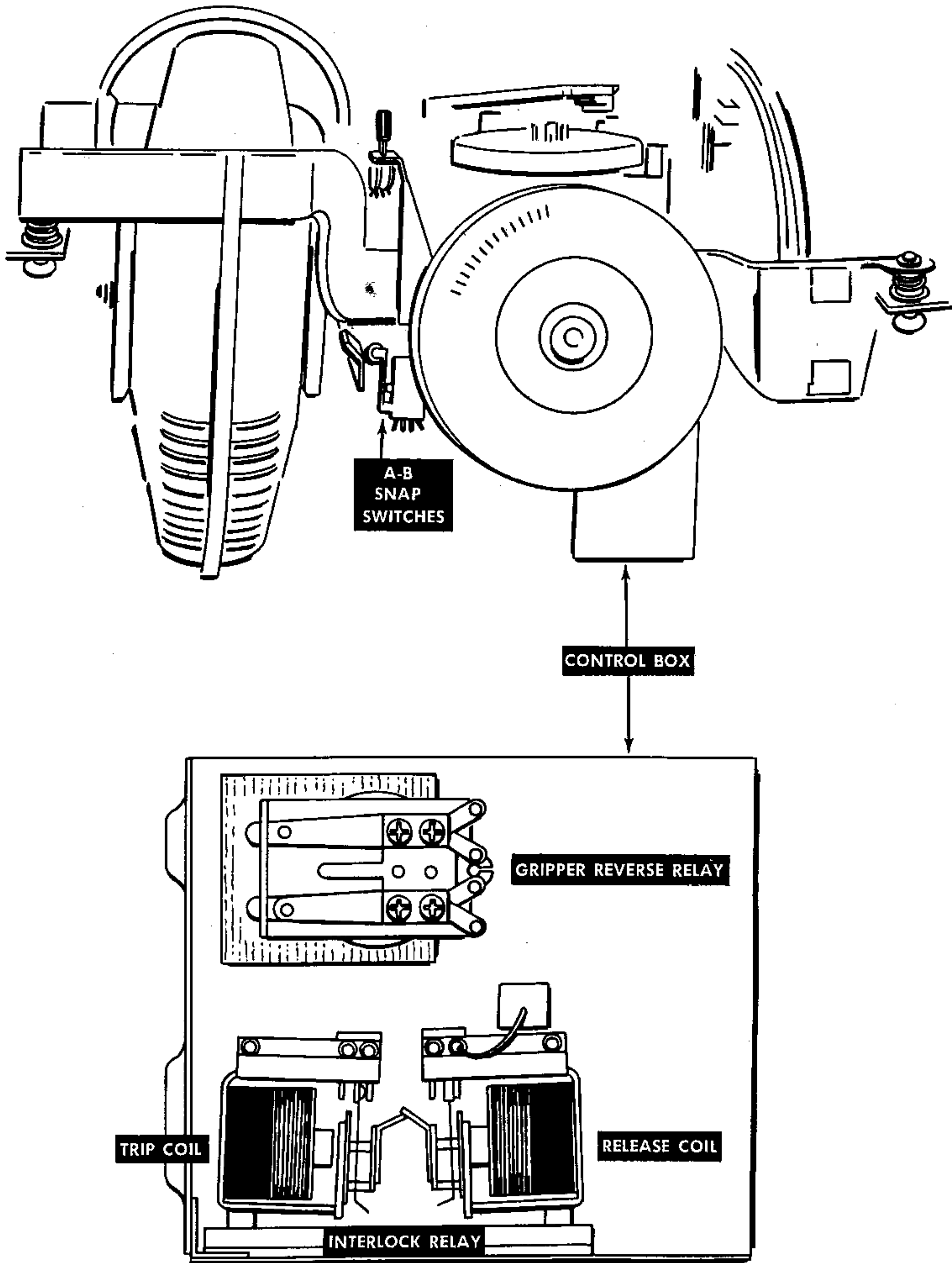
On the extreme end and to the right of the tone arm, the rotating cam operates the last micro switch, referred to as "NO. 1 MICRO". This disconnects the magazine motor armature.

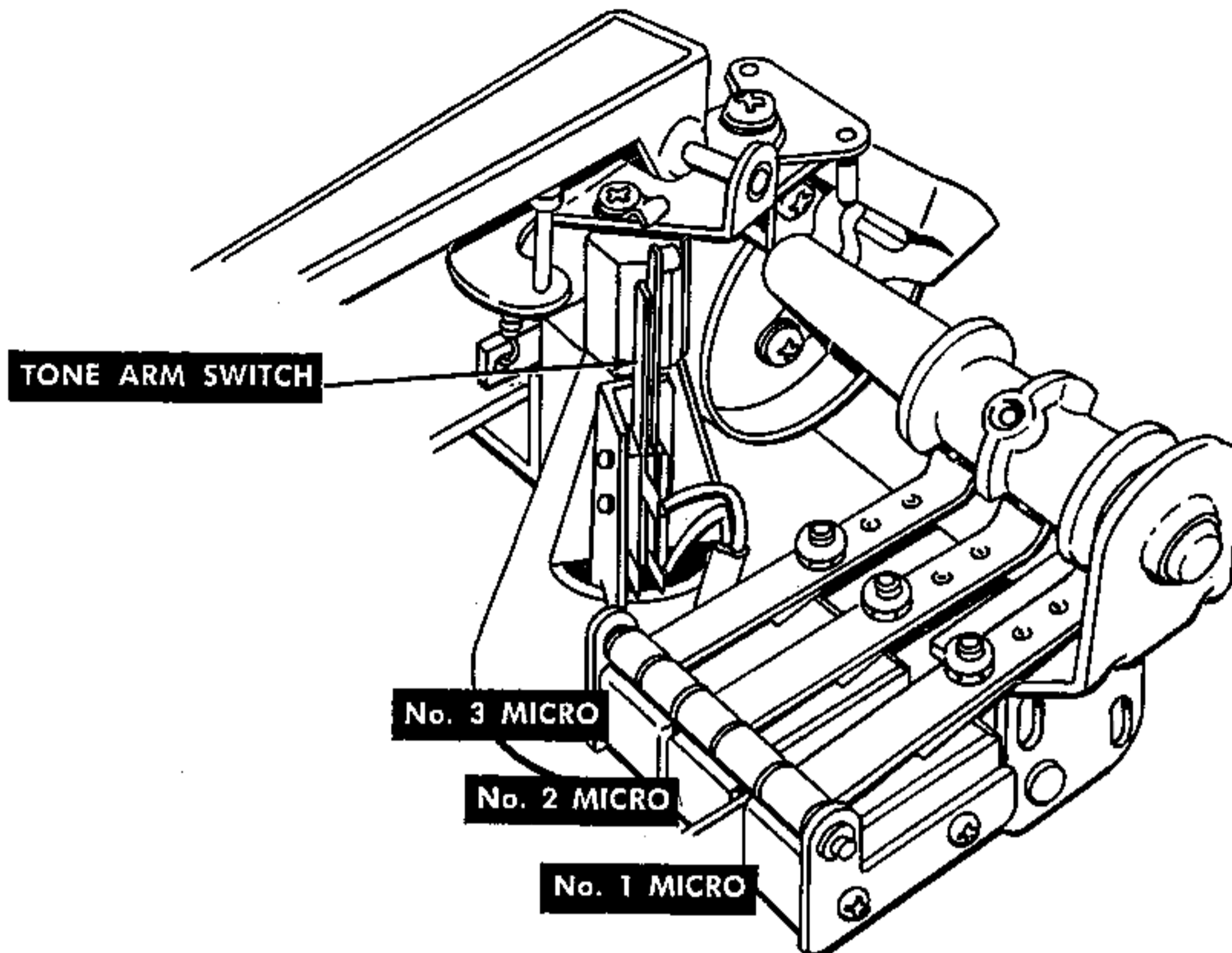
Then, the center or "NO. 2 MICRO" switch lever falls into the groove of the cam. This micro switch closes a circuit to the proper "SELECTOR LEVER RESET SOLENOID" located on the top of the carriage assembly and causes the solenoid lever to strike the selector lever, resetting it to its normal position. The solenoid continues to be energized until "NO. 3 MICRO" switch lever falls into the cam groove. This action opens the circuit to the energized solenoid, thus releasing the solenoid lever. In addition, the grip motor circuit is interrupted and a circuit to the "INTERLOCK RELAY RELEASE COIL" is completed. This releases the interlock relay to its original position, and places a short circuit across the grip motor armature, which causes it to stop.

During the above actions, the tone arm cam has placed the tone arm on the record, and the phonograph has reached the music cycle.

When the tone arm reaches the record cut-off groove, the tone arm switch closes the circuit to the "REVERSE RELAY COIL". The reverse relay contacts close the grip motor circuit in such a manner that its direction of rotation is reversed and consequently the grip jaws engage the record and the arm returns the record to the magazine.

As the grip jaws release the record, "NO. 1 MICRO" switch lever again is operated to its original position. This action disrupts the grip motor circuit allowing it to stop and starts the magazine motor. The record magazine continues to operate even though additional selections may not be registered and continues to do so until the selector "HOME" snap switch disrupts the "PLAY CONTROL" relay circuit (providing no additional selections are registered) allowing the contacts to open. This makes the magazine motor, turntable motor and amplifier inoperative. With all the circuits now open, the record magazine is again in "home" or "zero" position which completes the mechanism cycle.





No. 1 MICRO SWITCH (Safety Switch)

Machine in stand-by position, the No. 1 micro switch lever is seated in the cam groove. This sets up a circuit to operate the magazine motor when a selection is registered on the selector.

During the process of placing the record on the turntable, the rotating cam shaft operates this switch first. The transferred switch now has two functions;

1. Disconnects the magazine motor armature circuit to prevent this motor from operating during the gripper motor operation of placing the record on the turntable.
2. Connects a circuit to the Gripper Reverse Relay for a latter operating sequence.

No. 2 MICRO SWITCH

Further rotation of the cam shaft operates the No.2 micro switch next. This completes a circuit to one of the hammer coils on the

Read-Out Carriage, resetting the selector lever to its original position.

No. 3 MICRO SWITCH

As the tone arm feeds into the record, the No.3 micro switch operates last, closing a circuit to the Interlock Release Coil. This resets the interlock relay to its original position,

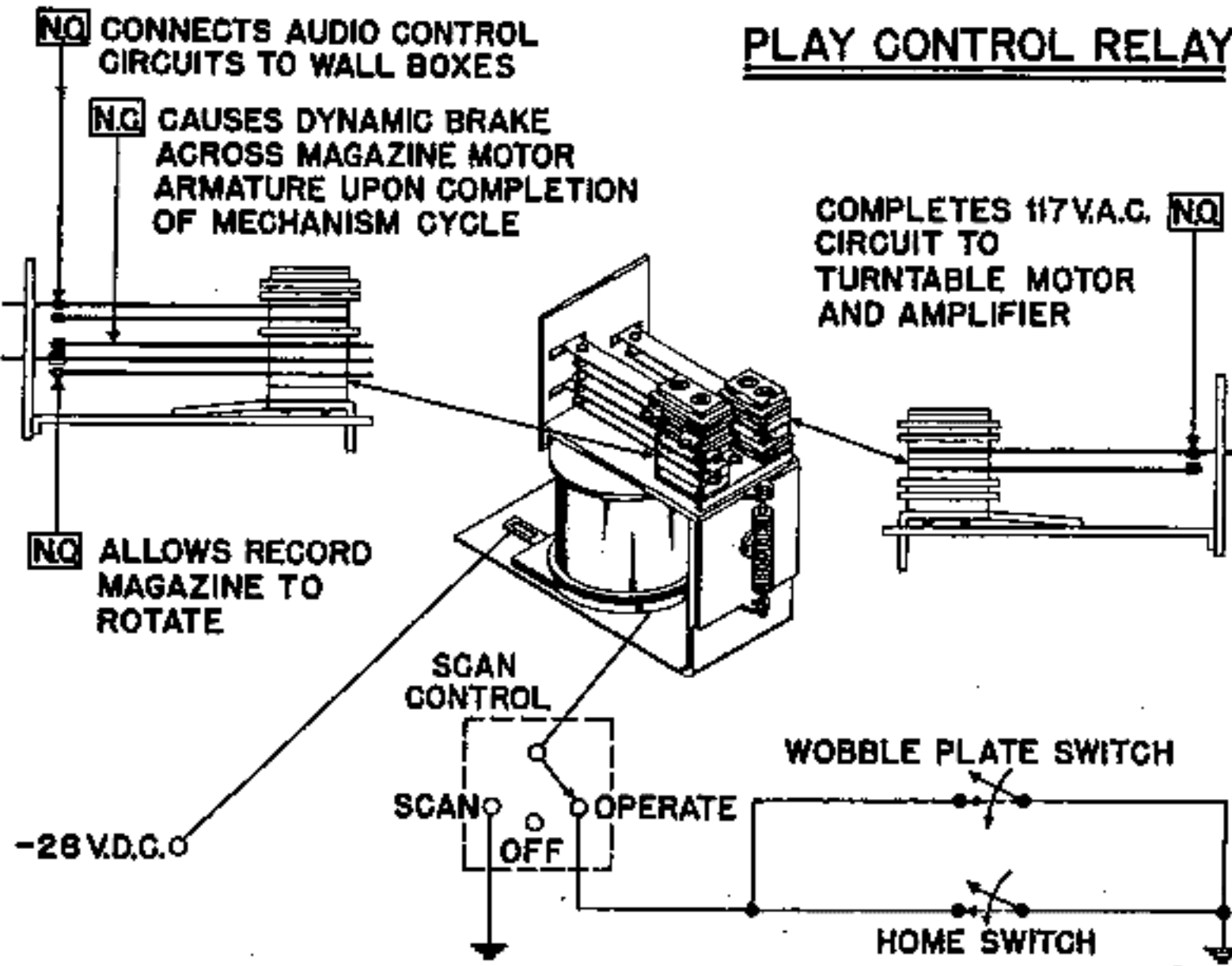
causing the carriage hammer coil to relax, and the gripper motor to dynamically brake. At this point, the 1st mechanism cycle is completed and the music cycle begins.

TONE ARM SWITCH

The tone arm switch closes when the tone arm reaches the record cut-off groove. This starts the record return cycle.



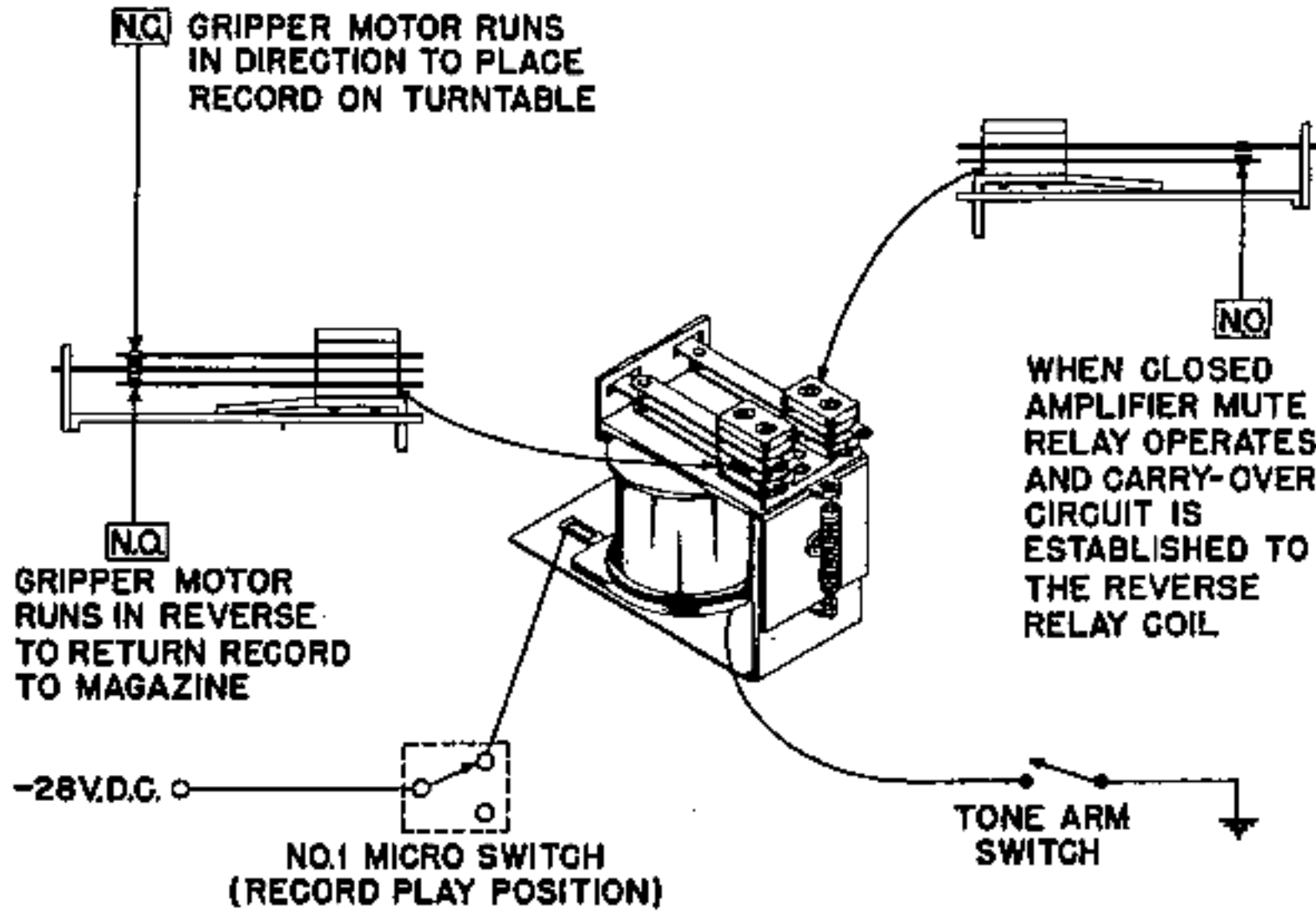
PLAY CONTROL RELAY



PLAY CONTROL RELAY

This relay is located in the Power Distribution Assembly. It becomes energized whenever a Selector Lever is moved into "play" position. The transferred contacts start the Magazine Motor, Turntable Motor and turn on the Amplifier.

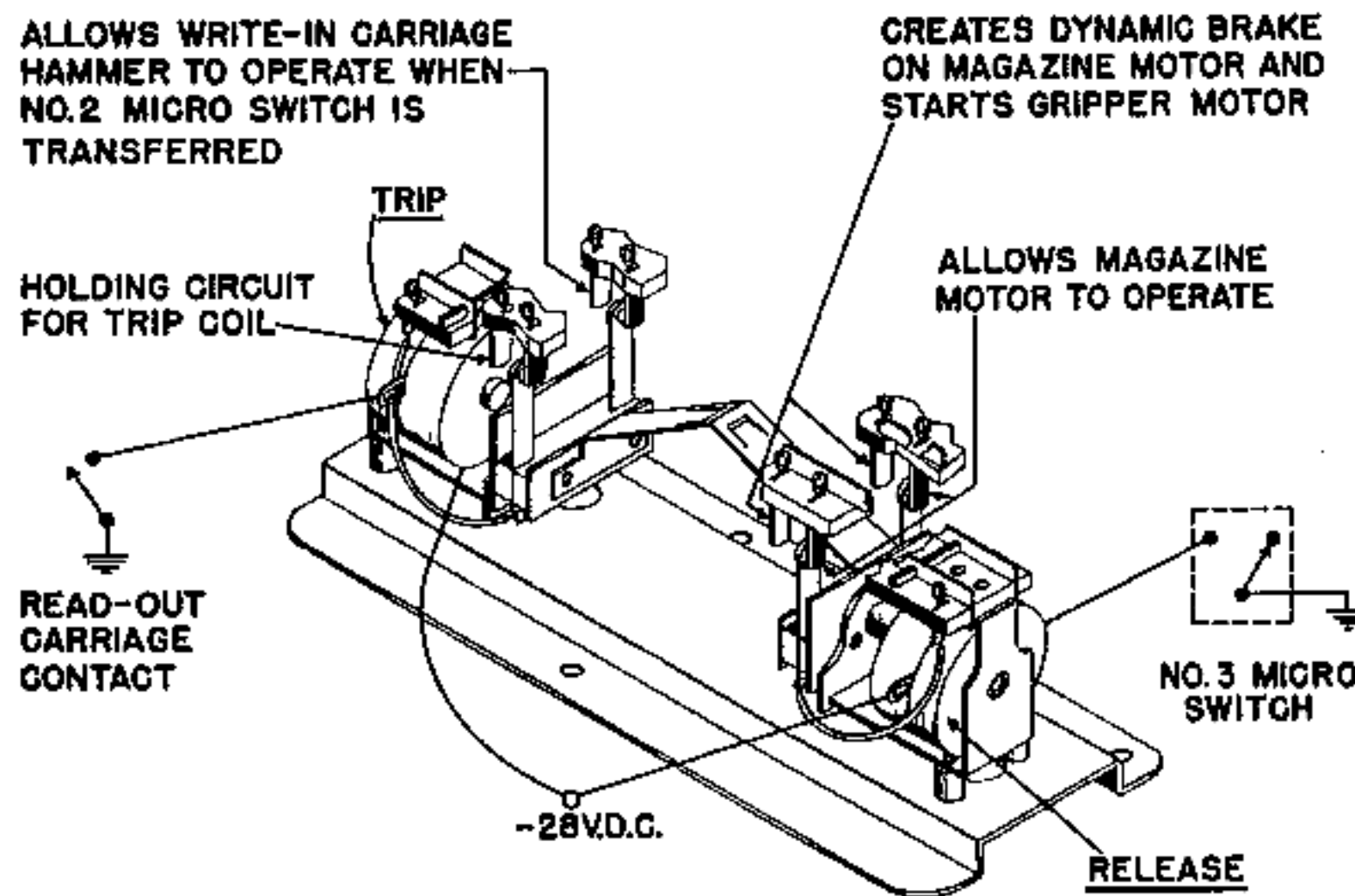
GRIPPER REVERSE RELAY



This relay is located in the Control Box. With no power on the coil, the Gripper Motor runs in the direction to place the record on the turntable. When the relay coil is energized by the tripping of the Tone Arm Switch, the transferred contacts reverse the direction of the Gripper Motor to return the record to the Magazine, mute the Amplifier and establishes a locking circuit for the relay coil.

GRIPPER REVERSE RELAY

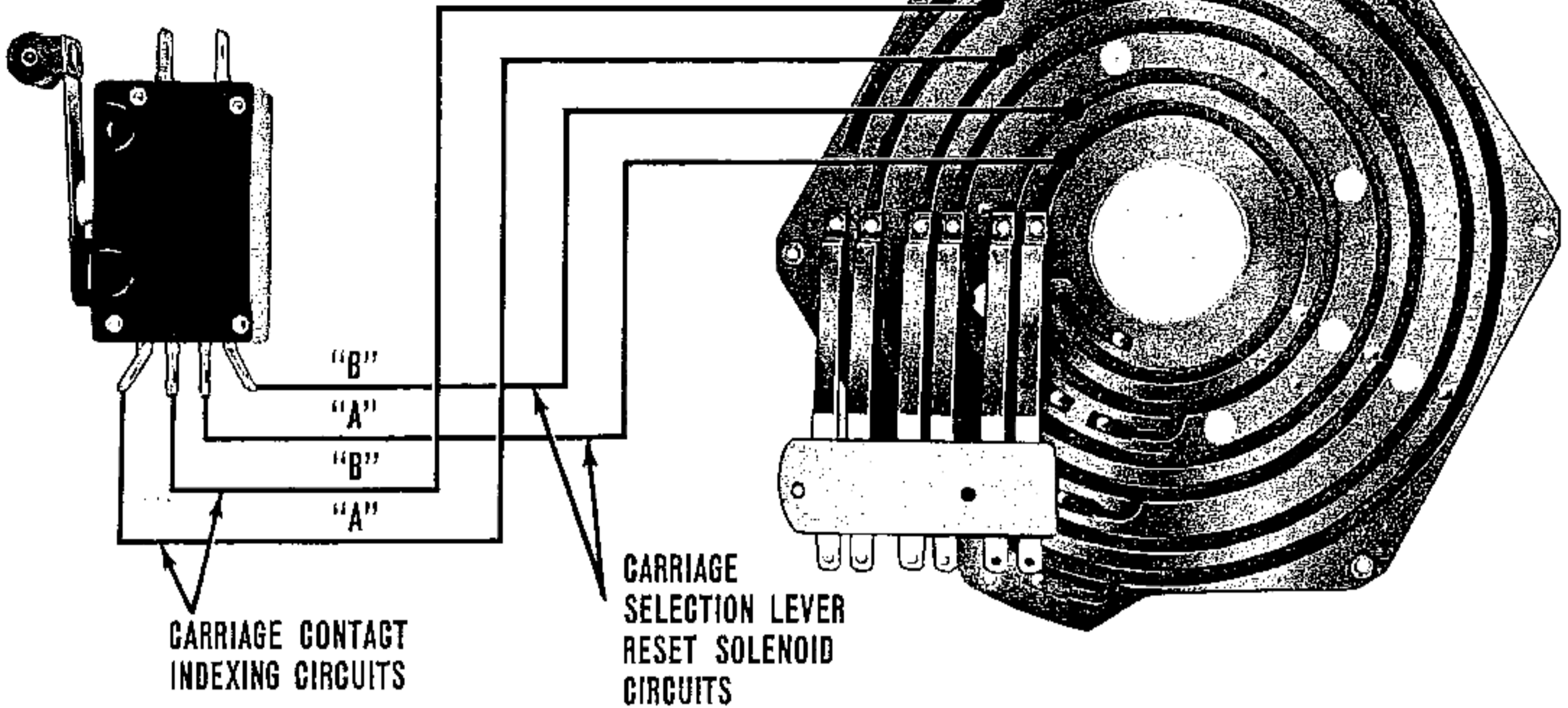
INTERLOCK RELAY



This relay is located in the Control Box, is a mechanical latching type, having two coils termed "trip" and "release". In normal position (prior to indexing), the "trip" armature is relaxed and the "release" armature is mechanically latched down with neither coil being energized. In this position the two contacts on the "trip" armature are open and the forward contacts on the "release" armature are closed and connect the D.C. power motor circuits. The "trip" operates when the Read-Out Carriage contact strikes a Selector Lever in "play" position. Interlock contacts transfer causing a dynamic brake on the Magazine Motor and applying power to the Gripper Motor. This device remains in this position until NO. 3 micro switch is operated at which time the "release" coil is energized. This short circuits the Gripper Motor causing it to stop. The Interlock Relay is now reset for the next selection cycle.

INTERLOCK RELAY

"A"—TOP SIDE OF RECORD
 "B"—BOTTOM SIDE OF RECORD



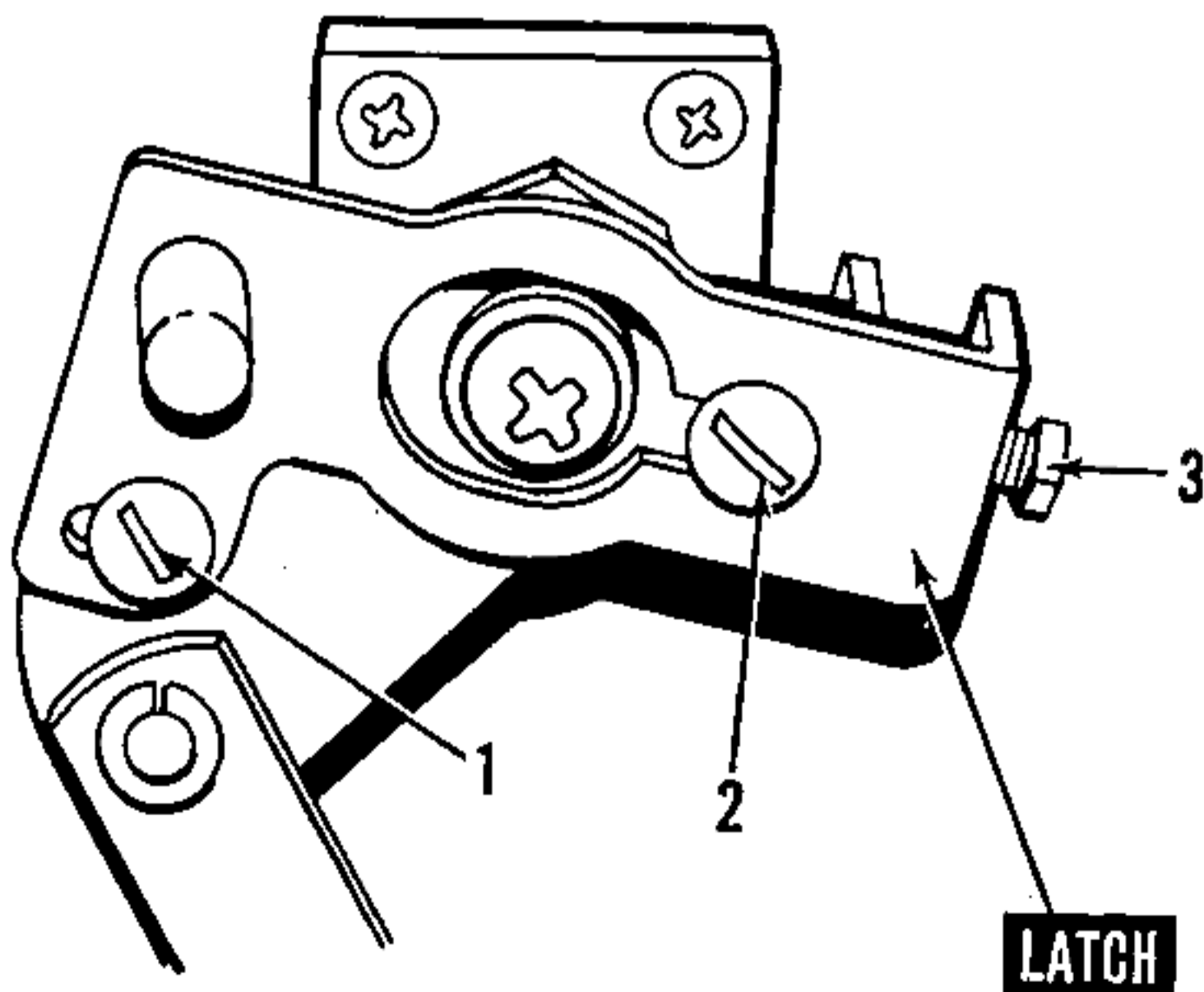
A-B SWITCHES

These switches connect circuits to the Read-Out printed circuit disc to allow indexing and to operate the proper carriage solenoid when the Gripper Arm is in the position to play the correct record side. The switches are actuated by an extended arm that moves up or down every 360 degree rotation

of the record magazine. When the arm is down, the switch roller is disengaged from the arm, thereby connecting circuits to the printed circuit disc to play the top side of the record. When arm is up, the switches are actuated, transferring circuits to play the bottom side of the record.

←
TO LOOSEN

→
TO TIGHTEN



CABINET DOME ADJUSTMENT

The cabinet dome is held secure by an adjustable latch on each cabinet side and operated from a single lock. If adjustment is necessary loosen screws NO. 1 and NO. 2. Adjust latch in the direction as shown above. Set screw NO. 3 must always be bottomed to the lower bracket after latch adjustment is made.

To observe proper dome latching clearance, remove the end program holders for viewing.



SELECTOR ASSEMBLY AND WRITE-IN CARRIAGE

SELECTOR ASSEMBLY

This assembly carries a hundred selector levers, each of which represents a given musical selection. The outer lever of each set of two represents the top side of the record; the lower lever, the bottom side.

When a customer makes a selection, circuits are connected to the printed circuit disc to pin point a specific record selection. On the disc are fifty contacts in the outer ring, each contact representing one record. The next ring is a band, broken into five segments,

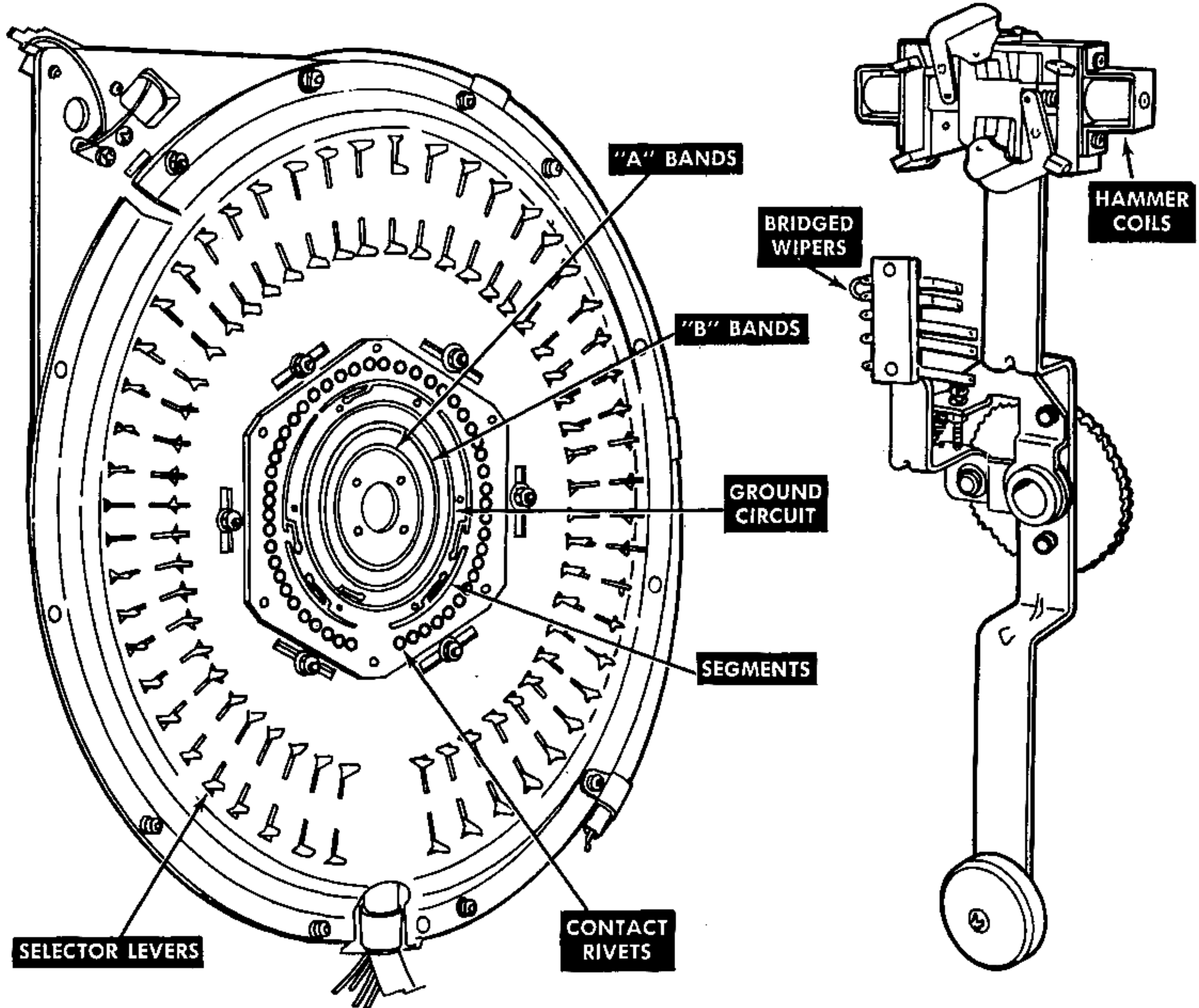
each segment isolating with its ten contacts. The third band is a common ground circuit for the carriage hammer coils. The two innermost bands relate to the side of the record: "A", the top side; and "B", the bottom.

Now, when a letter button is pressed, as "A", a circuit is connected to the first contact of each segment. The pressing of a number button, as "1", designates the segment and selects the proper band to play the correct record side.

WRITE-IN CARRIAGE ASSEMBLY

The write-in carriage assembly is rotated by a motor, which allows the contact wipers to make contact with the rivets and bands on the printed circuit disc. When the carriage wipers reach the "live" contact

and segment, a dynamic brake is applied to the carriage motor stopping the rotation of the carriage. A hammer coil then operates, moving a selector lever into play position.



SELECTOR ASSEMBLY AND READ-OUT CARRIAGE

SELECTOR ASSEMBLY

The movement of a selector lever into play position operates a Wobble Plate Switch. The operation of this switch turns on the turntable

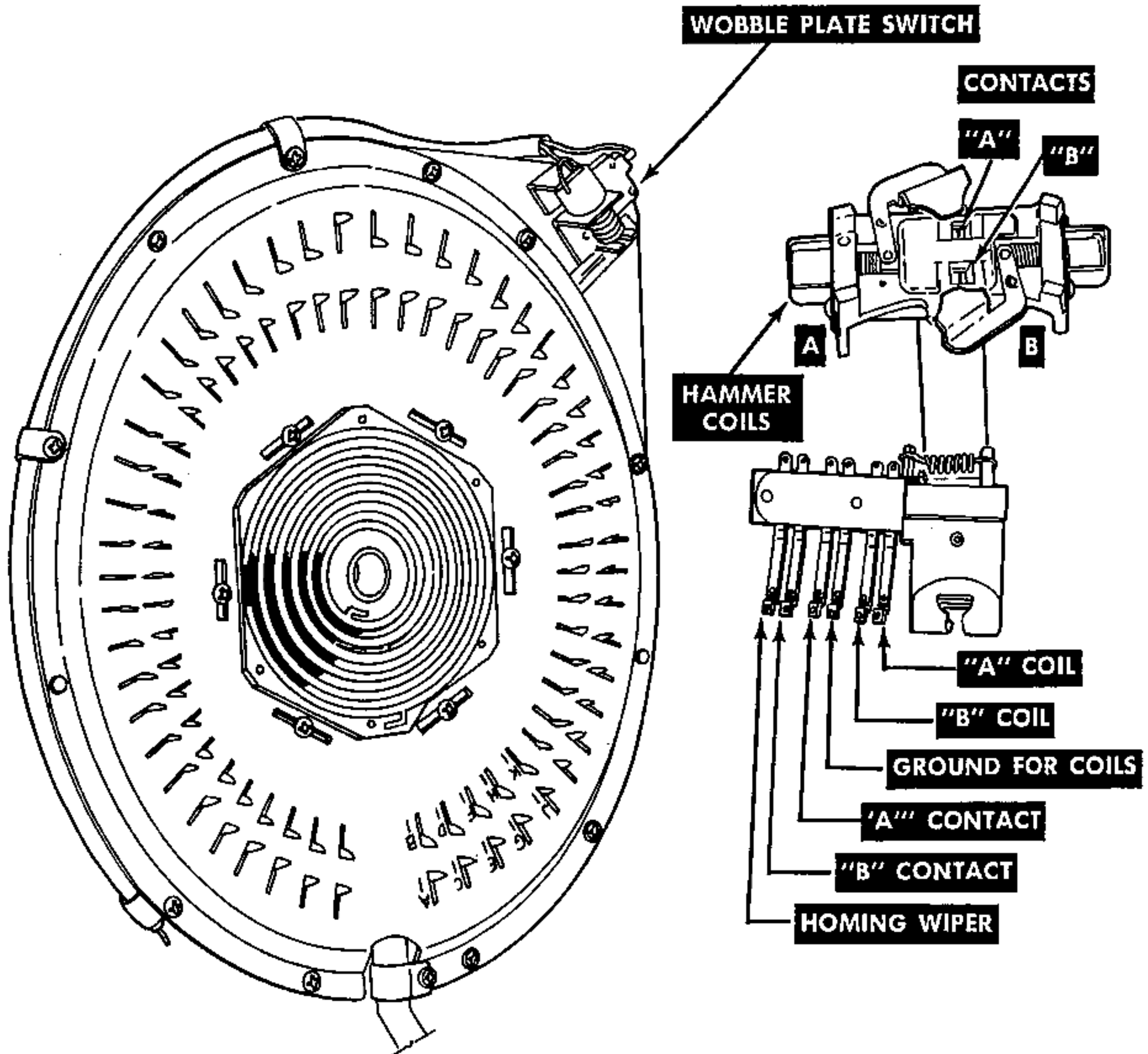
motor, amplifier and magazine motor. This starts the rotation of the record magazine and read-out carriage.

READ-OUT CARRIAGE ASSEMBLY

As the carriage rotates, two contacts look for any selector lever in play position. When one of these contacts strikes a lever, a closed circuit will result only if the machine is physically ready to pick out and play the correct record side. When the mechanism has readied the conditions for the physical transfer of the correct selection to the turntable, the striking of the selector lever by the carriage contact dynamically brakes the rotation of the magazine motor, stopping the record magazine and read-out carriage. During the placing of the

record on the turntable, the carriage hammer resets the selector lever to its original position.

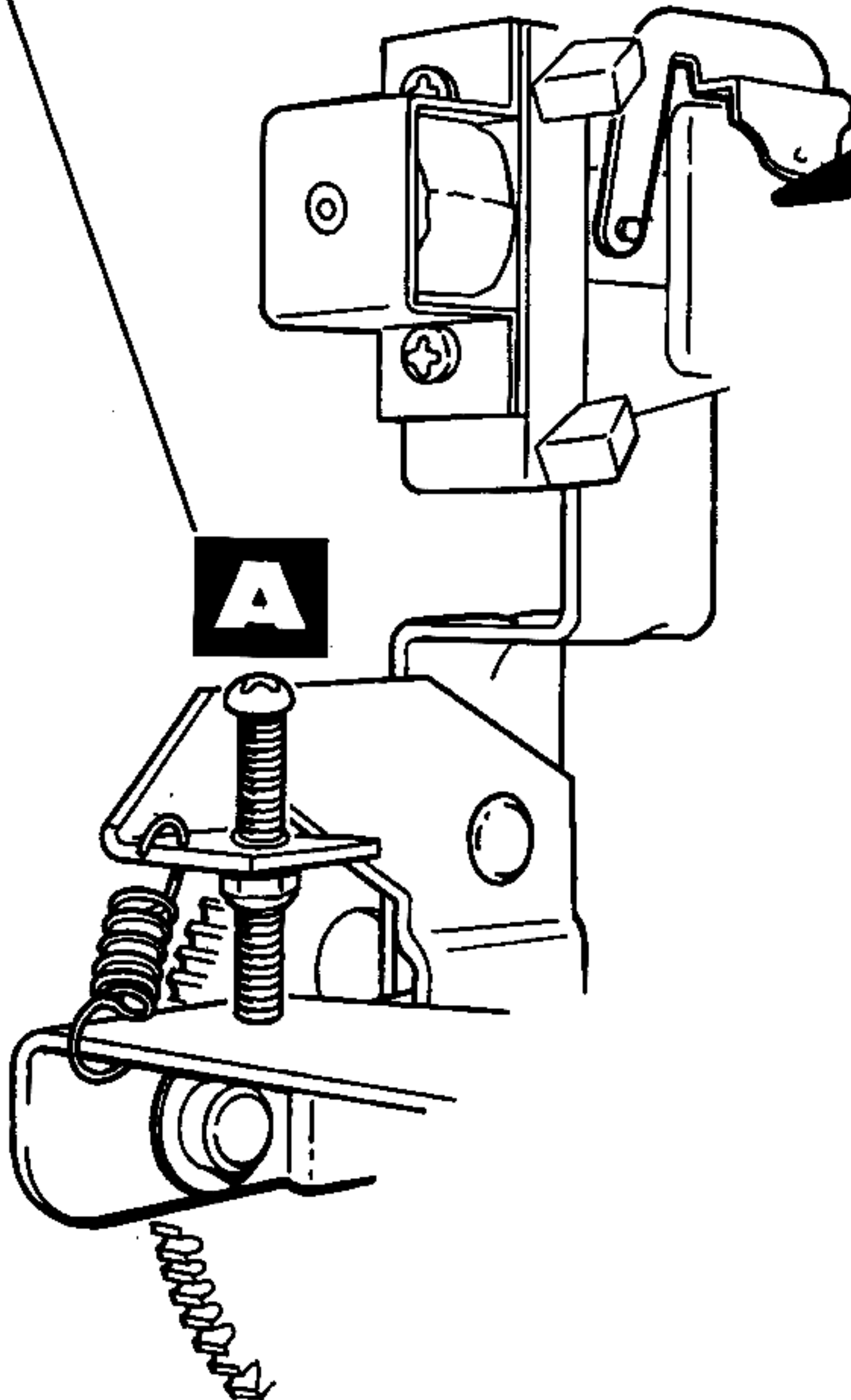
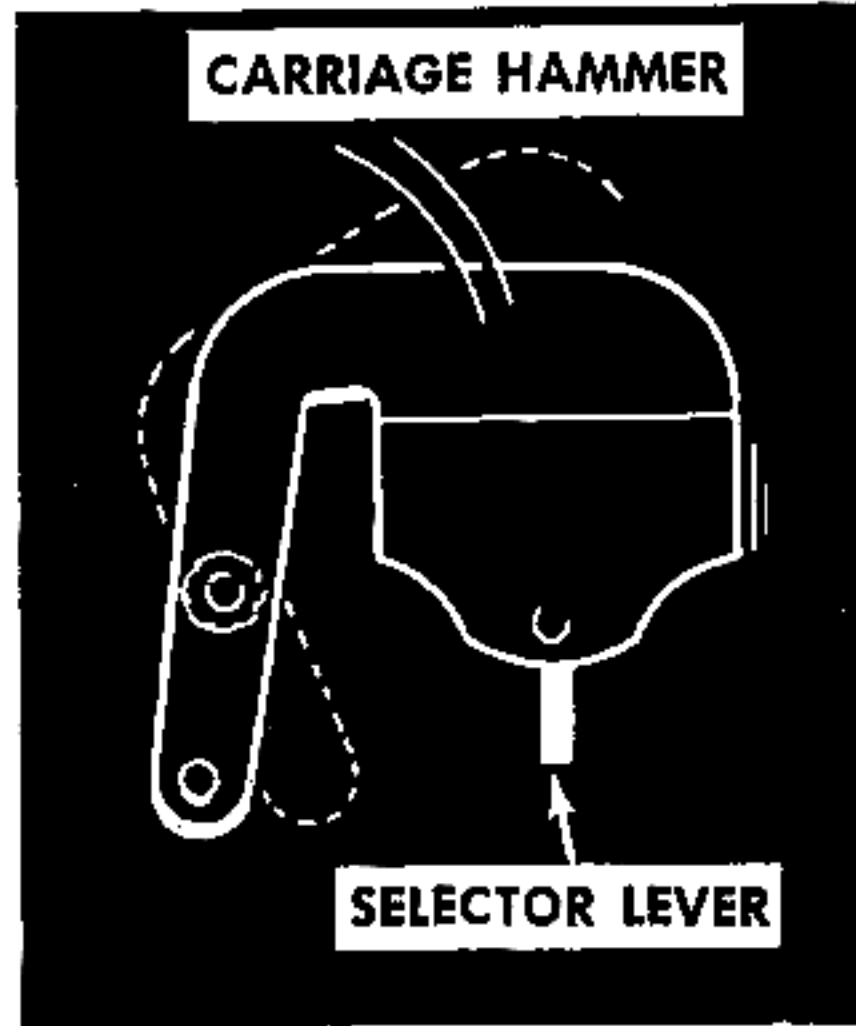
Upon completion of the music cycle, the magazine motor starts again and rotates the record magazine and read-out carriage until they reach a zero position. At this point the homing wiper enters the ring opening, the mechanism circuits are disconnected making the turntable motor, amplifier, and magazine motor inoperative which completes the selection cycle.



NEW POSITION OF
HAMMER WITH RESPECT
TO SELECTOR LEVER

MOVING SCREW "IN"

MOVING SCREW "OUT"



WRITE-IN CARRIAGE ADJUSTMENT

Rotation of the Write-In Carriage Assembly is stopped when the Contact Wipers locate a selection circuit. At this point, the carriage hammer strikes the selector lever in its path and moves it into play position. The carriage with its set of two coil "hammers" is adjusted to be centered over their respective selector levers when this operation takes place.

Should adjustment be necessary, follow the outlined procedure:

1. Select A-6...Shut off the mechanism power when the record magazine starts to rotate.
2. Observe the centering position of the carriage hammer in relation to the selector lever A-6.
3. Move adjustment screw "A" as illustrated to compensate for mis-alignment with respect to center.
4. Re-check adjustment by making additional selections as C-6, E-6 and G-6.

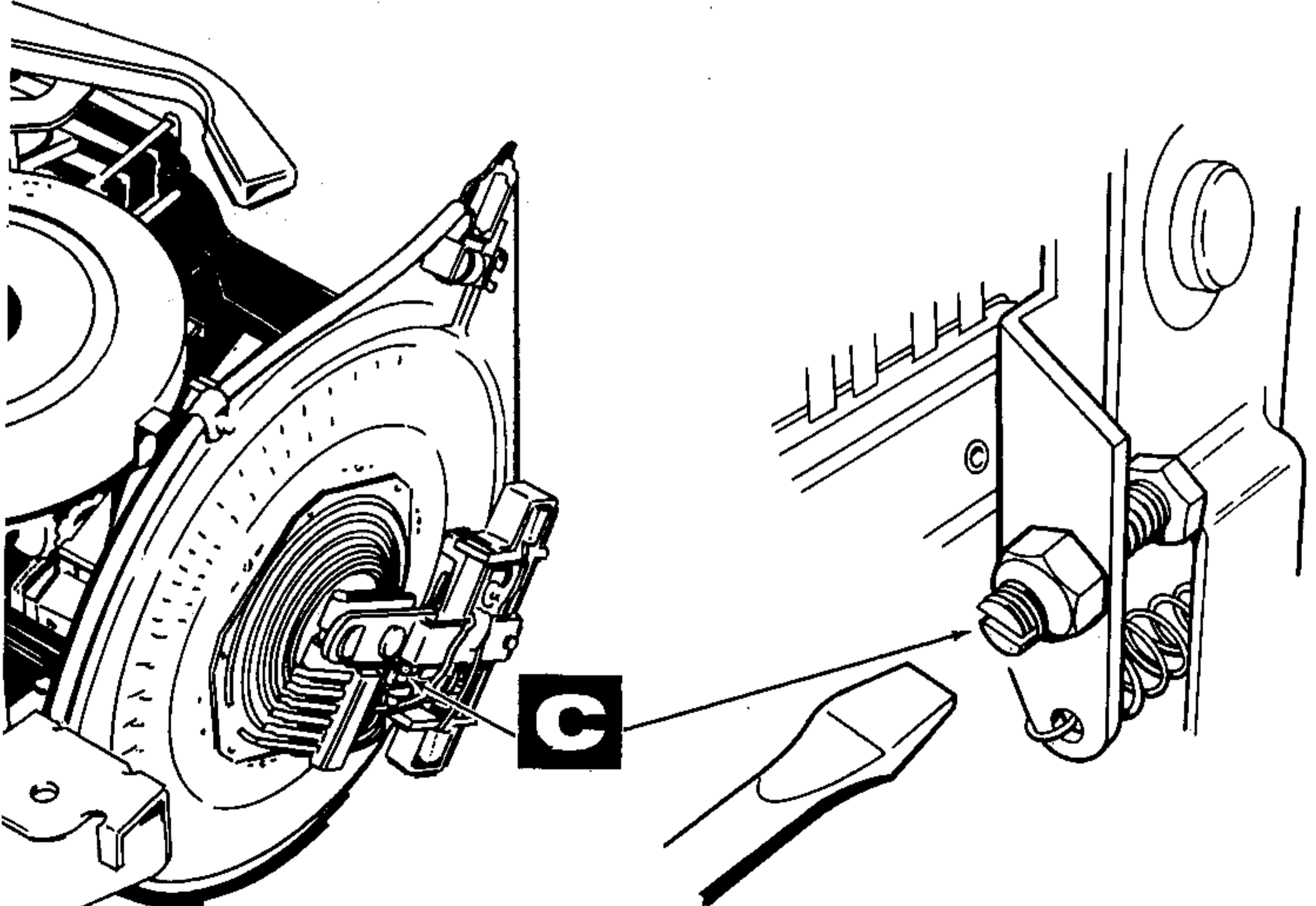
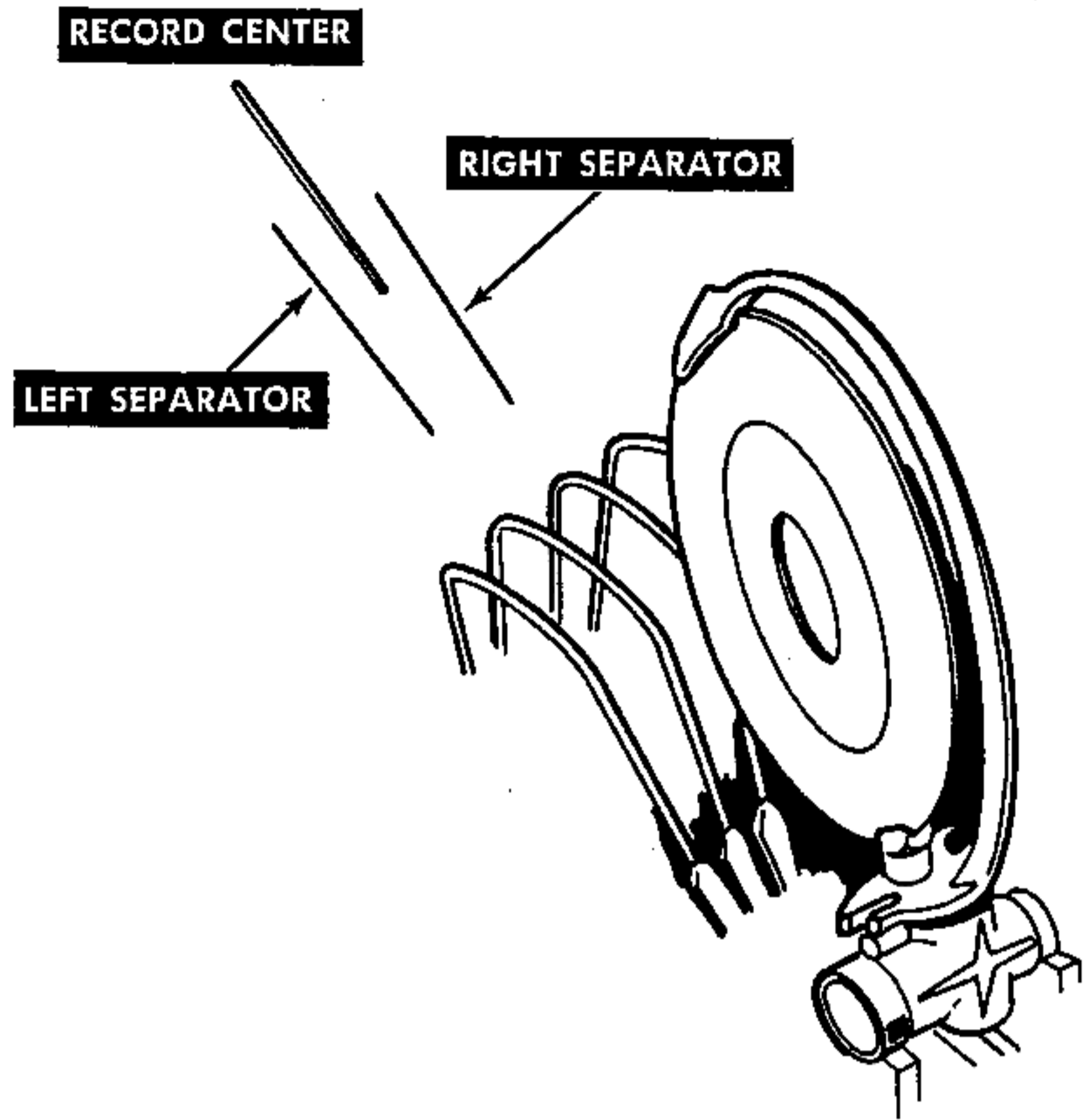
READ-OUT CARRIAGE ADJUSTMENT

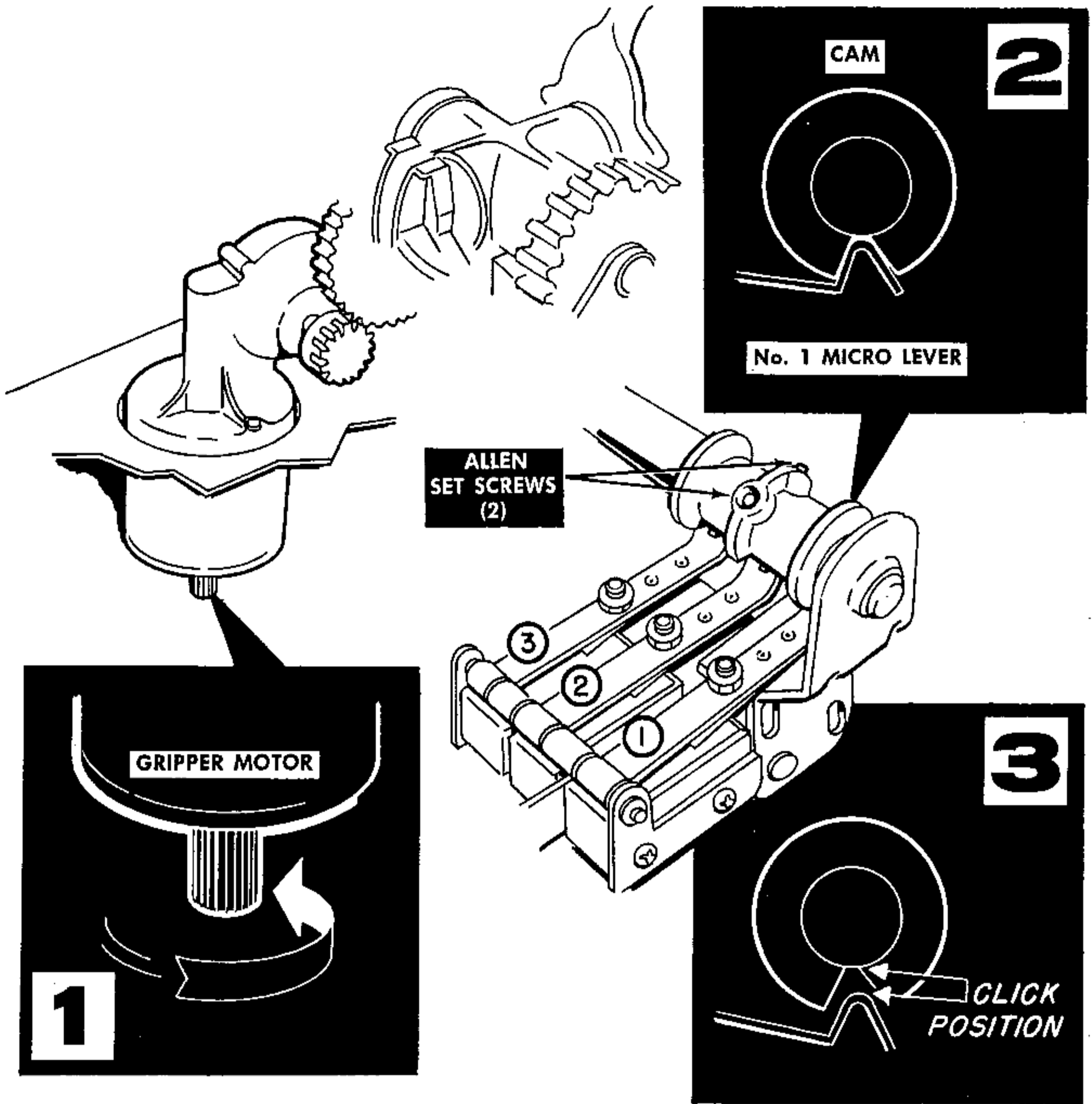
The striking of a selector lever by the read-out carriage contact, dynamically brakes the rotation of the record magazine. At this point, the record must be in pick-up position to be removed by the gripper arm jaws.

Should adjustment be necessary, select A-1 and allow record to be placed on the turntable. Then, follow the outlined procedure:

1. Cancel the record...As it starts to enter the record slot, shut-off the mechanism power. Note the record alignment between the left and right separator with respect to center.
2. Make adjustment with screw "C"... Right turn, the record alignment will be advanced to the right; left turn, to the left.

Recheck record alignment with record selections C-1 and E-1.





MICRO SWITCH AND CAM ADJUSTMENT

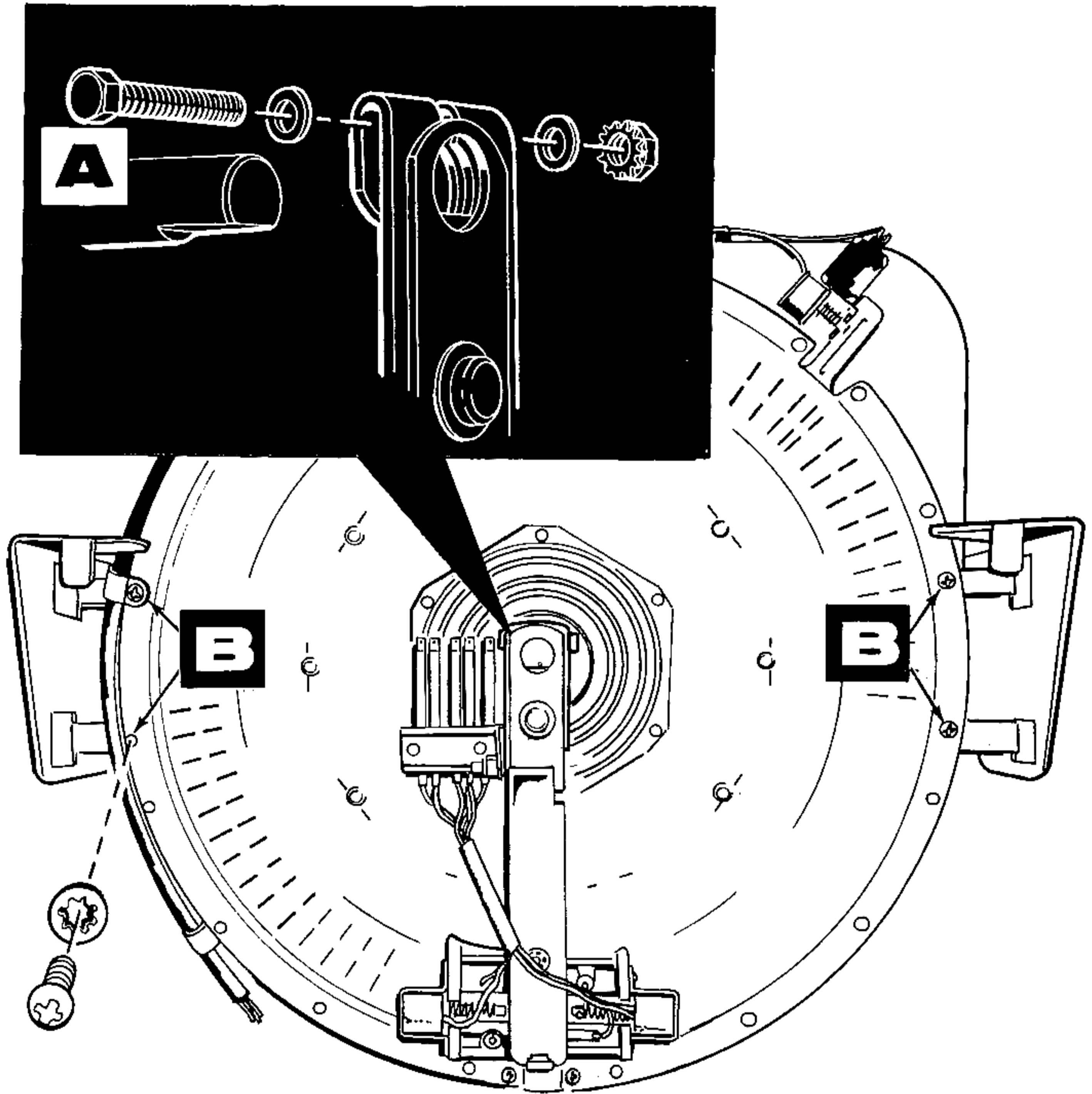
Cycle of the record mechanism is controlled by the operation of three micro switches actuated in the proper sequence by a rotating cam shaft.

To adjust, phonograph must be in stand-by position (gripper arm over record magazine), and the service scan switch moved to "off".

1. Rotate the knurled end of the gripper motor shaft counterclockwise until a jam occurs.

2. The No. 1 switch lever must remain seated in the bottom of the cam groove. If it is cammed out, loosen the two cam set screws and rotate the cam until the proper position is obtained.

3. The micro switch "make" and "break" should occur in the center of the cam dip. The switch lever has a set screw arrangement for adjustment purposes. This adjustment prevails for the three micro switches.



SELECTOR REMOVAL

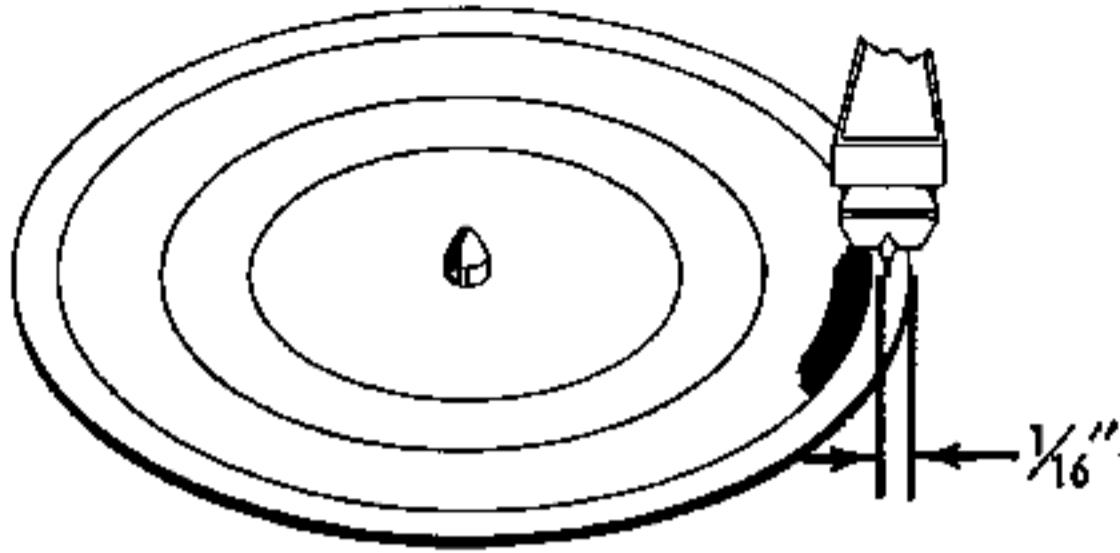
To remove selector assembly from the mechanism, remove lock nut, two washers and carriage bolt "A" from the Read-Out Carriage Assembly. Pull off the carriage assembly from the shaft and set aside.

Disconnect the selector cable at the Jones Plug and Socket connection. Remove the four selector mechanism chassis mounting screws "B". Selector is now free for removal.

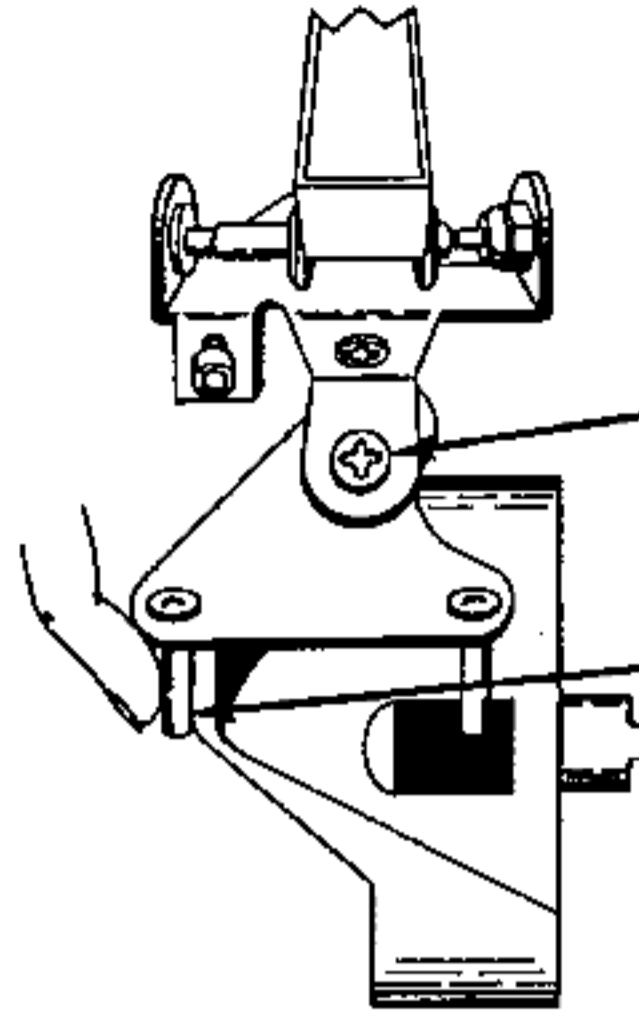


TOE ARM ADJUSTMENTS

NEEDLE SET-DOWN



Stop mechanism just before needle lands on record. Needle must be at least 1/16" in from record edge.

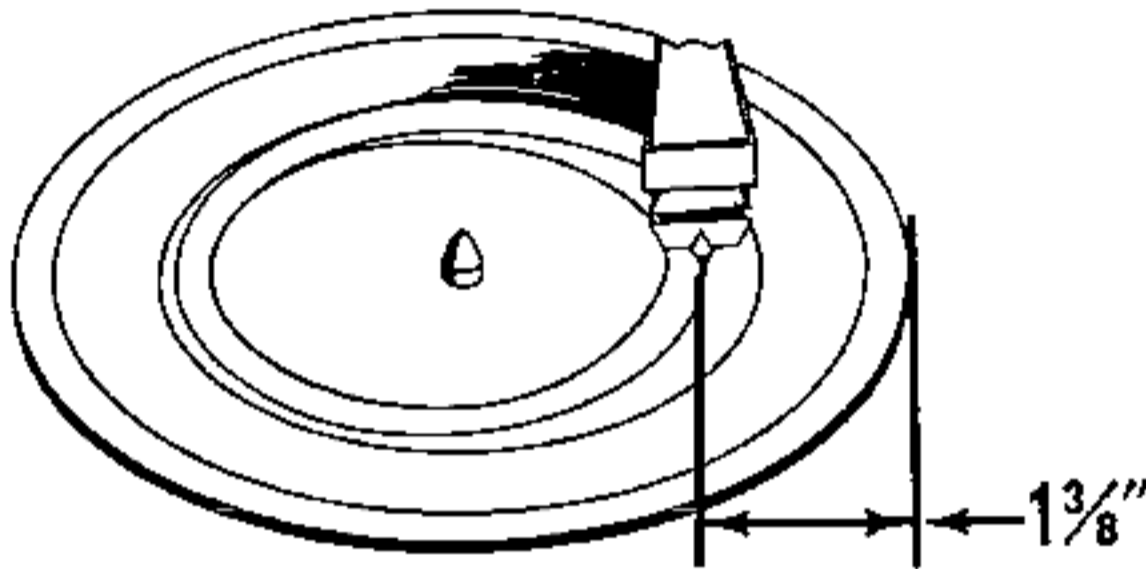


TO ADJUST:

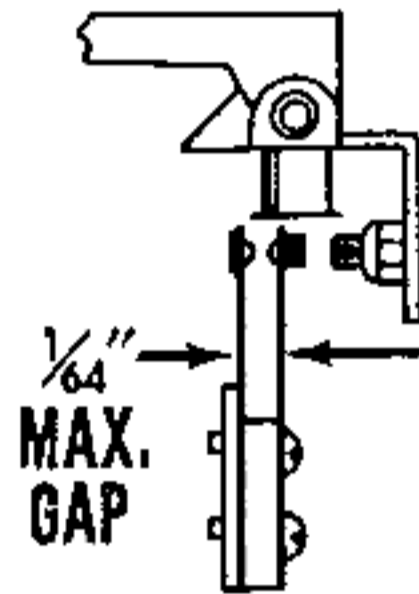
Loosen screw

Hold outer pin guide against cam and move Tone Arm "in" or "out". After adjustment retighten screw.

RECORD CUT-OFF



Cut-off position is 1-3/8" from record edge.

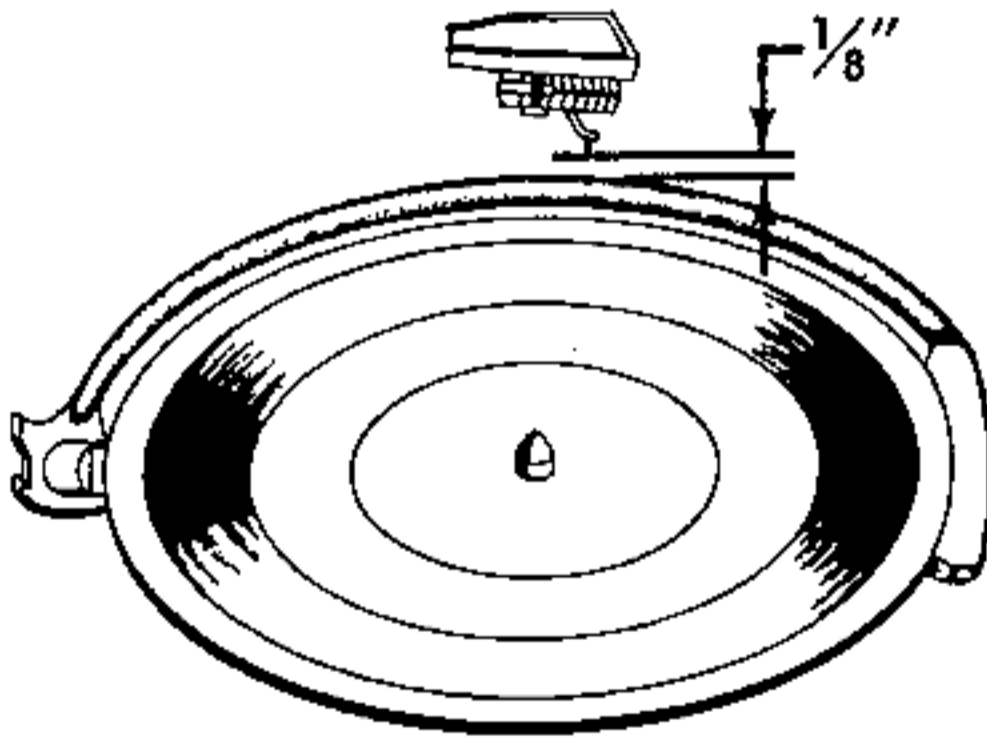


TO ADJUST:

Move adjustment screw to obtain proper adjustment.

1/64" MAX. GAP

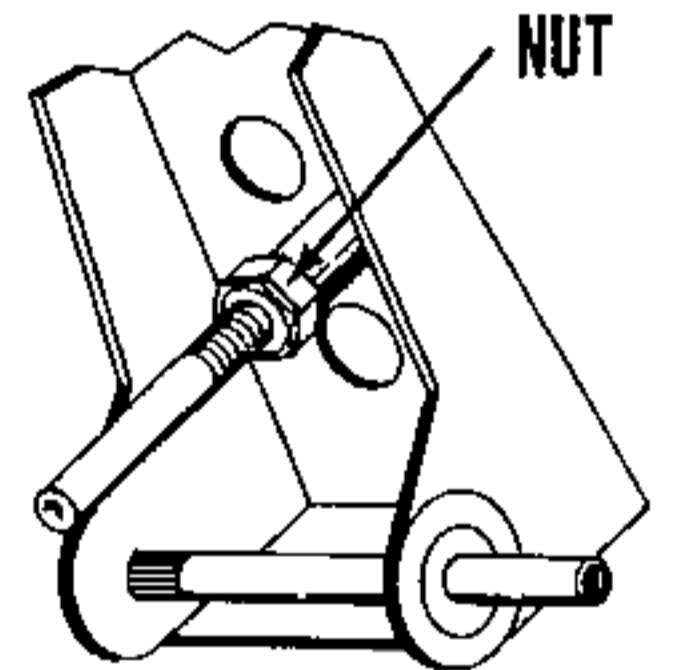
NEEDLE CLEARANCE ABOVE GRIPPER ARM



On even numbered selections the tone arm needle passes over the bow of the gripper arm. Needle clearance must be 1/8".

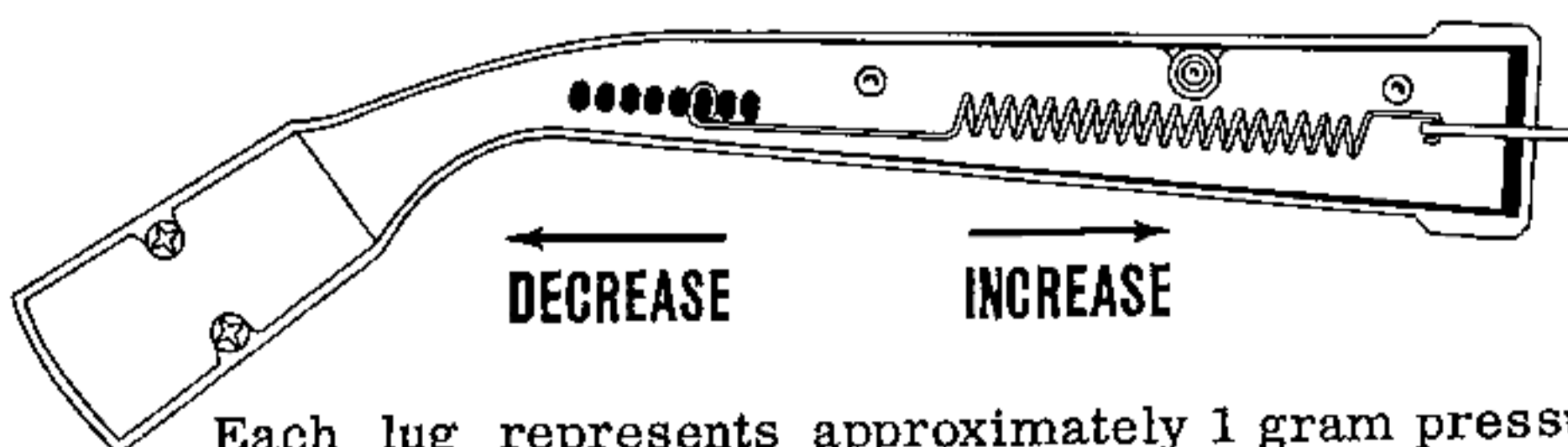
TO ADJUST:

Loosen nut. Move adjustment screw "in" or "out". Re-tighten screw after adjustment made.

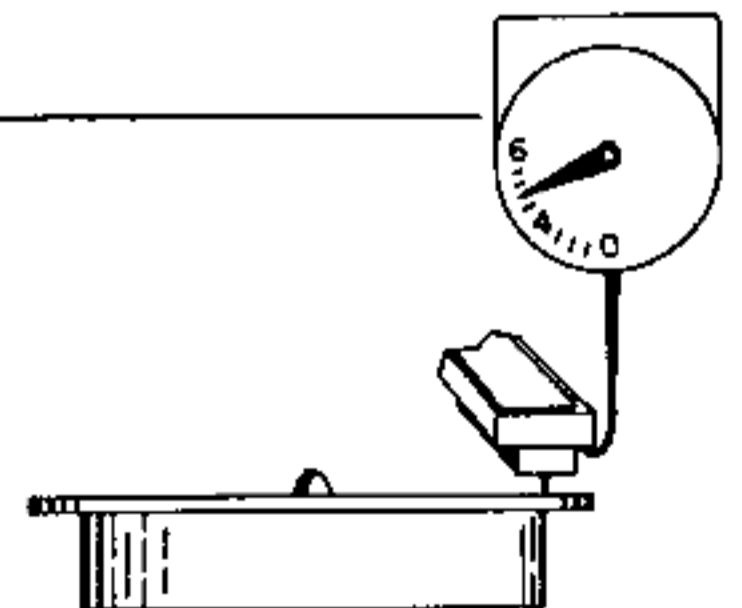


NUT

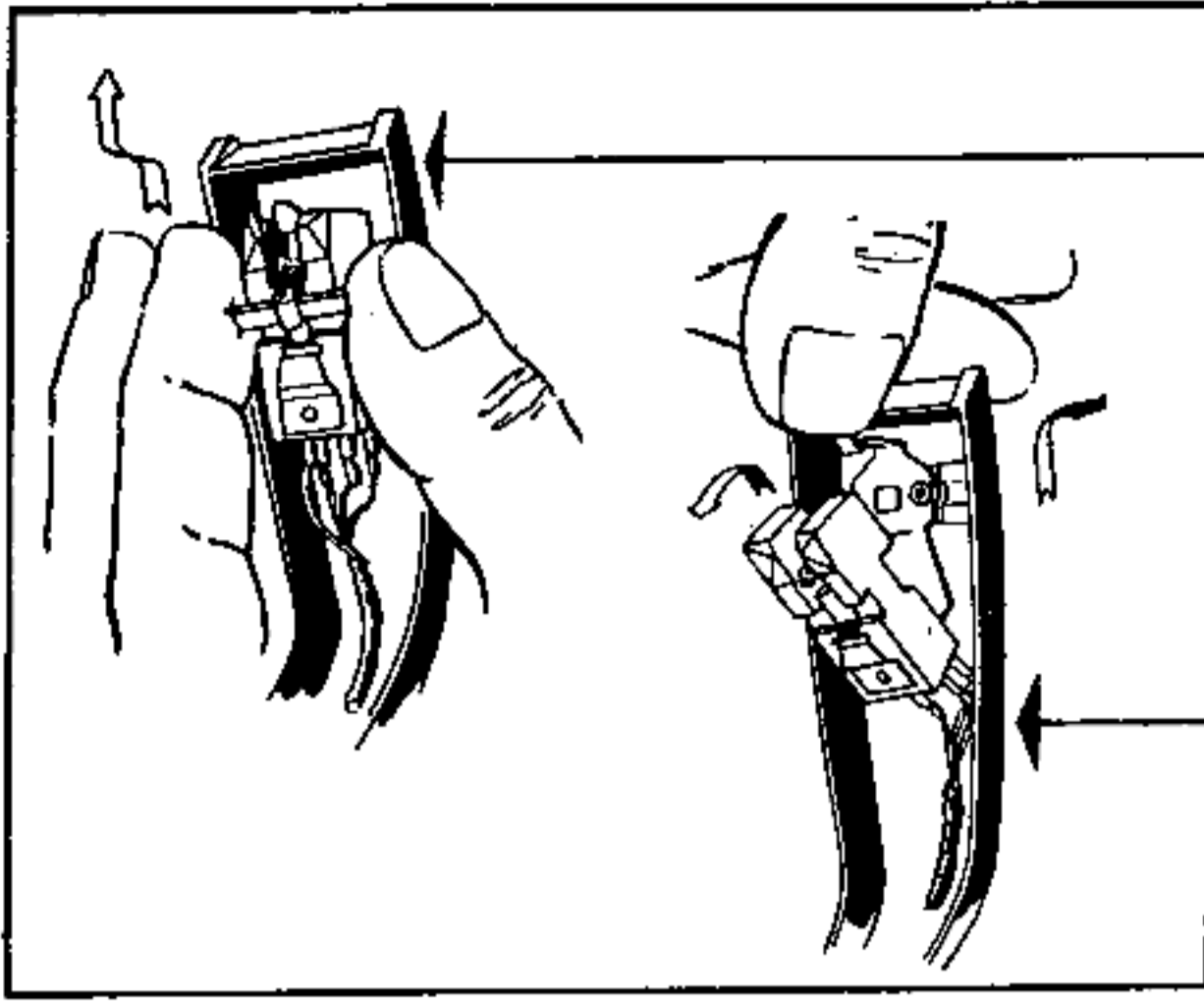
TOE ARM GRAM PRESSURE ADJUSTMENT STYLUS PRESSURE SHOULD BE 4 TO 6 GRAMS



Each lug represents approximately 1 gram pressure.



Needle pressure reading is taken at the point of contact of the needle on the record.



REMOVAL OF STYLUS FROM CARTRIDGE

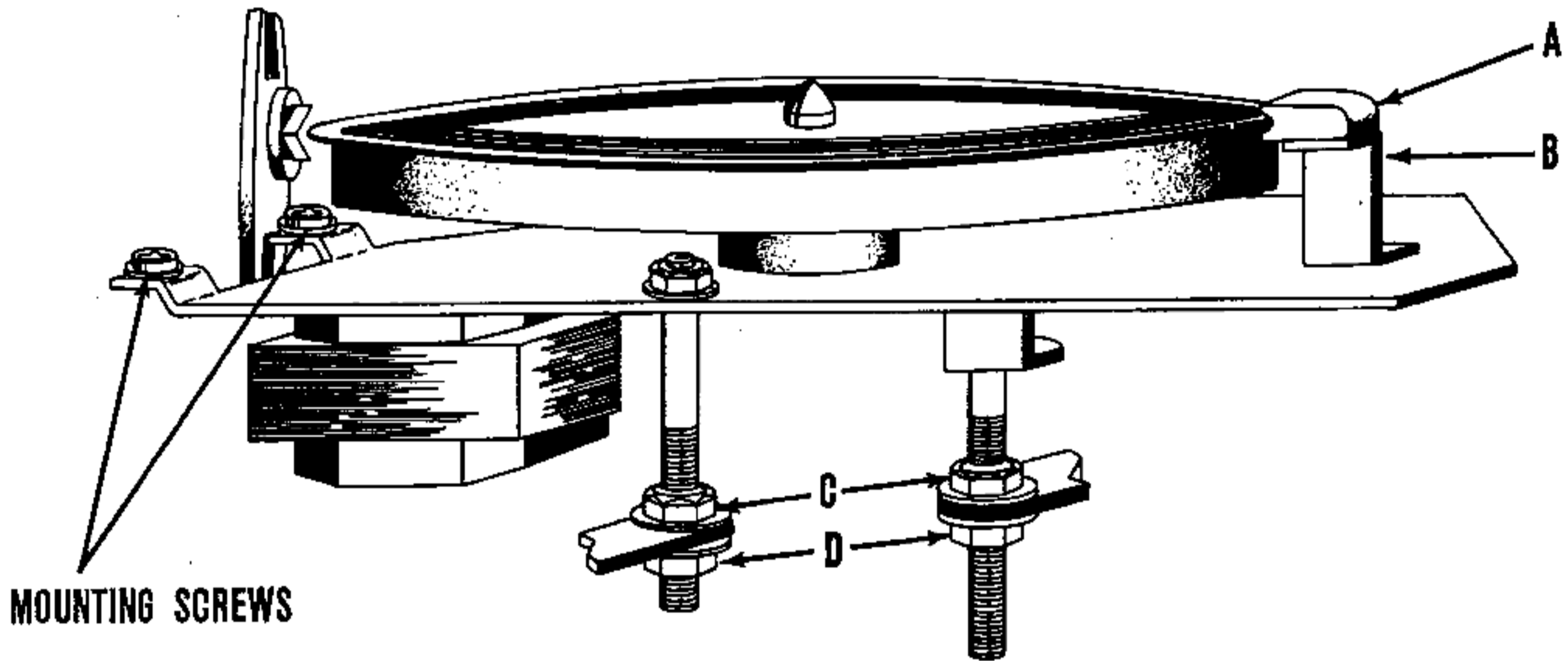
Raise tone arm. Grasp the stylus handles and pull upward. The stylus will snap out from under a flat spring that holds it firmly in position.

In re-assembling reverse the procedure making sure that stylus shaft is seated in the saddle.

REMOVAL OF CARTRIDGE FROM TONE ARM

Remove stylus from cartridge. Depress "cartridge holder clip" which allows cartridge to snap out.

To re-assemble, insert the rear end of the cartridge locator into the bracket slot and snap into position.



TURNTABLE HEIGHT AND CENTERING

TURNTABLE HEIGHT

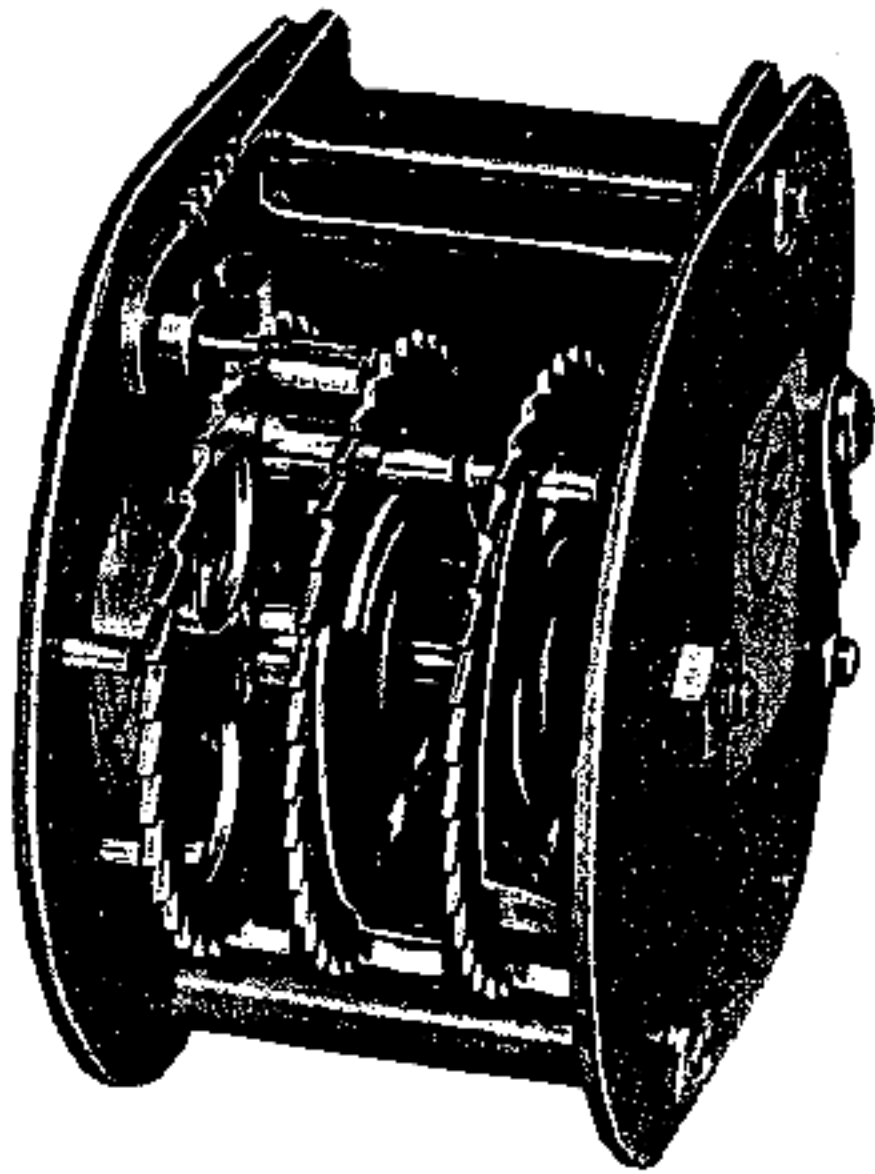
The height of the turntable is predetermined when the turntable mounting plate is positioned and fastened by two mounting screws to the gripper housing casting. Then, before tightening the hex lock nuts (C & D) make sure that the mounting plate is perfectly level.

Allow the gripper arm (A) to place a record on the turntable. In this playing position, the record edge must be either slightly below or even with the "V" or center line of the outer gripper arm. If condition needs correction, the gripper arm stop (B) can be adjusted by bending the stop up or down for proper alignment. In making the necessary correction, make sure there is at least 1/8 inch up and down play between gripper arm and gripper stop (A & B). If this condition does not exist,

it means that the turntable mounting plate is not level.

TURNTABLE CENTERING

To center a record over the turntable center locator, allow the gripper arm to lift a record from the record magazine. Before the record is placed on the turntable, move the mechanism service switch to "OFF" position. By rotating the gripper motor armature manually, lower the record to the turntable, and carefully observe the relationship of the turntable center locator to the center hole of the record. If adjustment is necessary, unloosen the two mounting screws and the two hex nuts (D), and shift the turntable plate in the direction necessary for perfect alignment. Then tighten the screws and nuts carefully so that the mounting plate does not shift out of position.

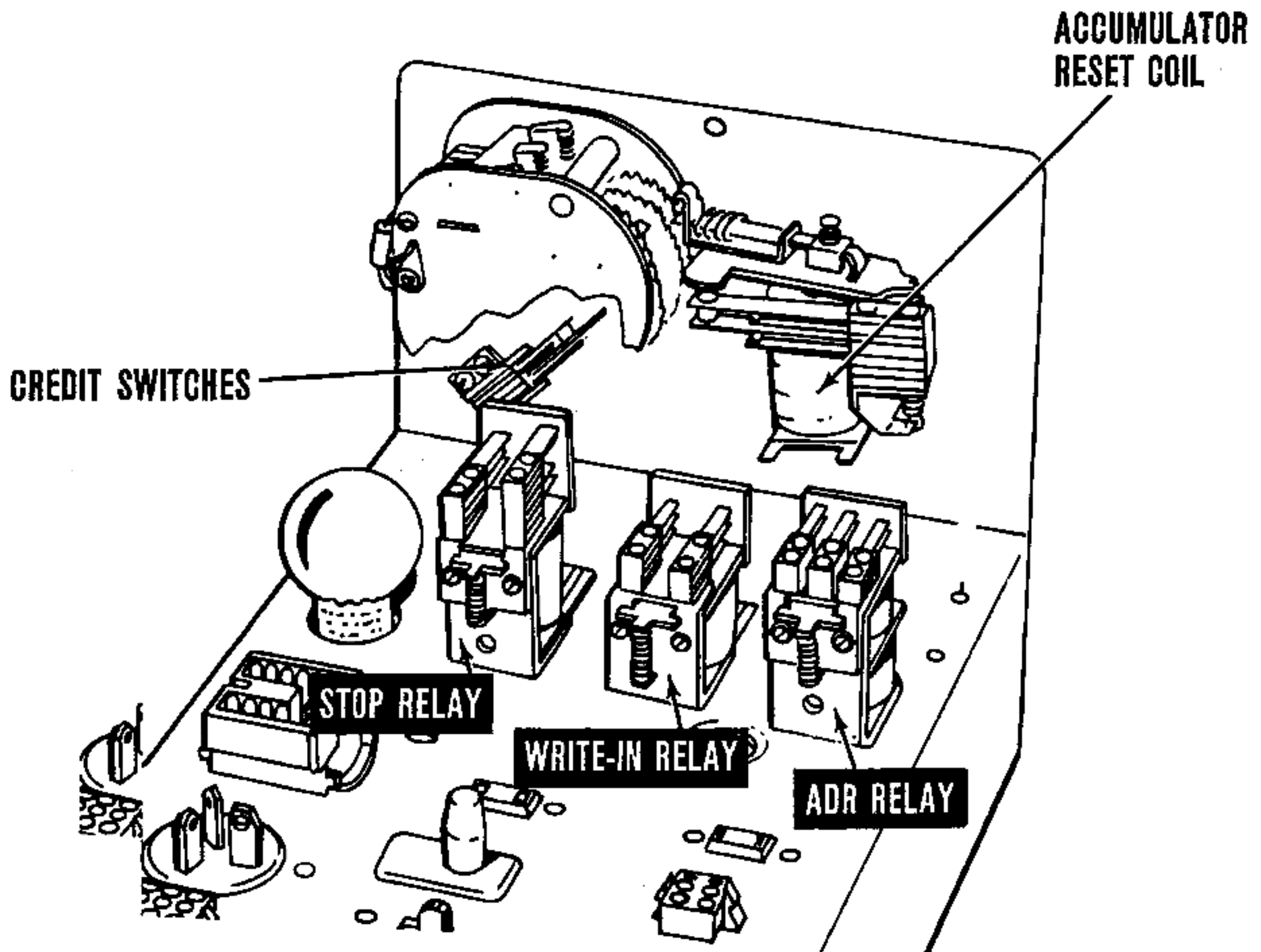


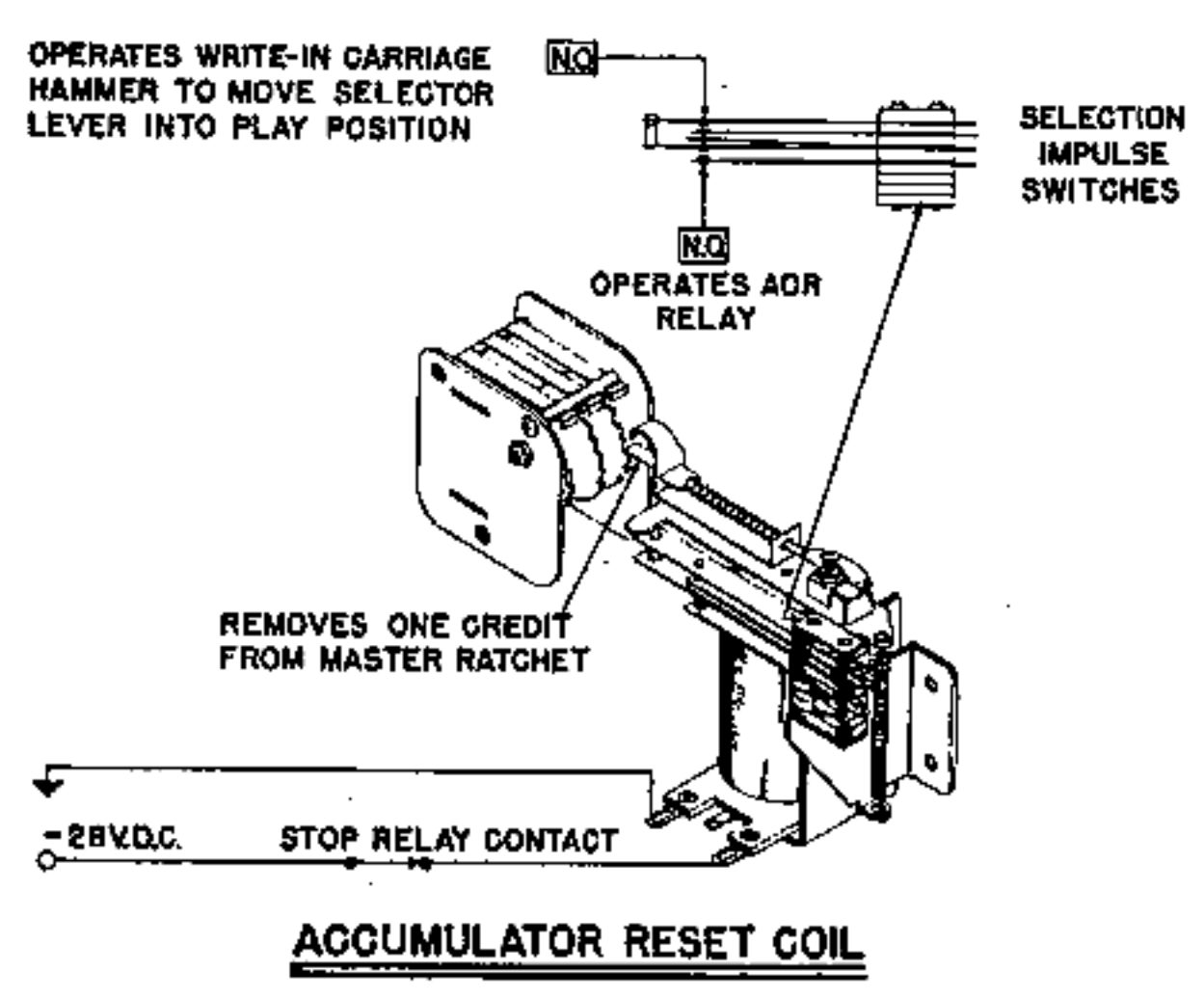
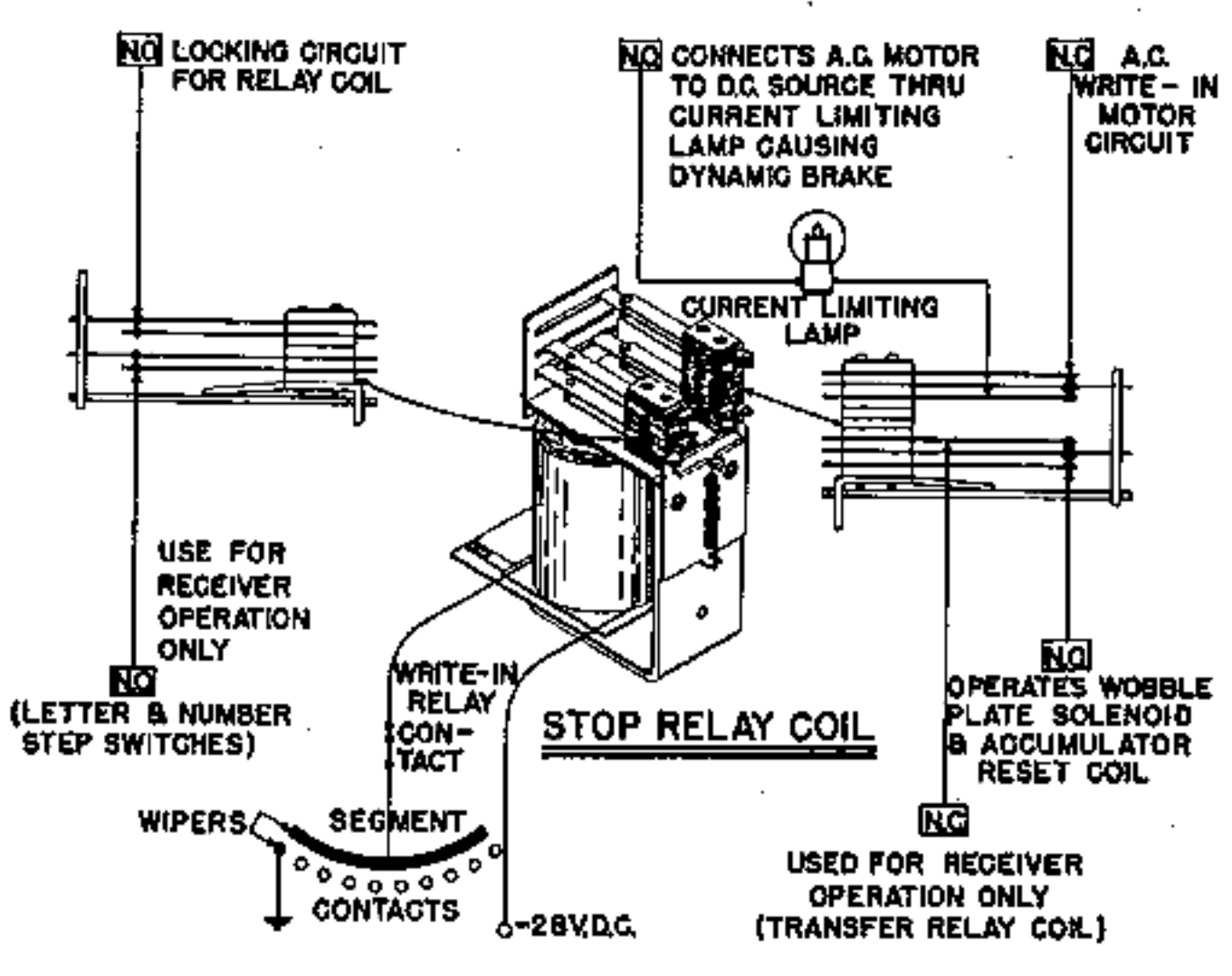
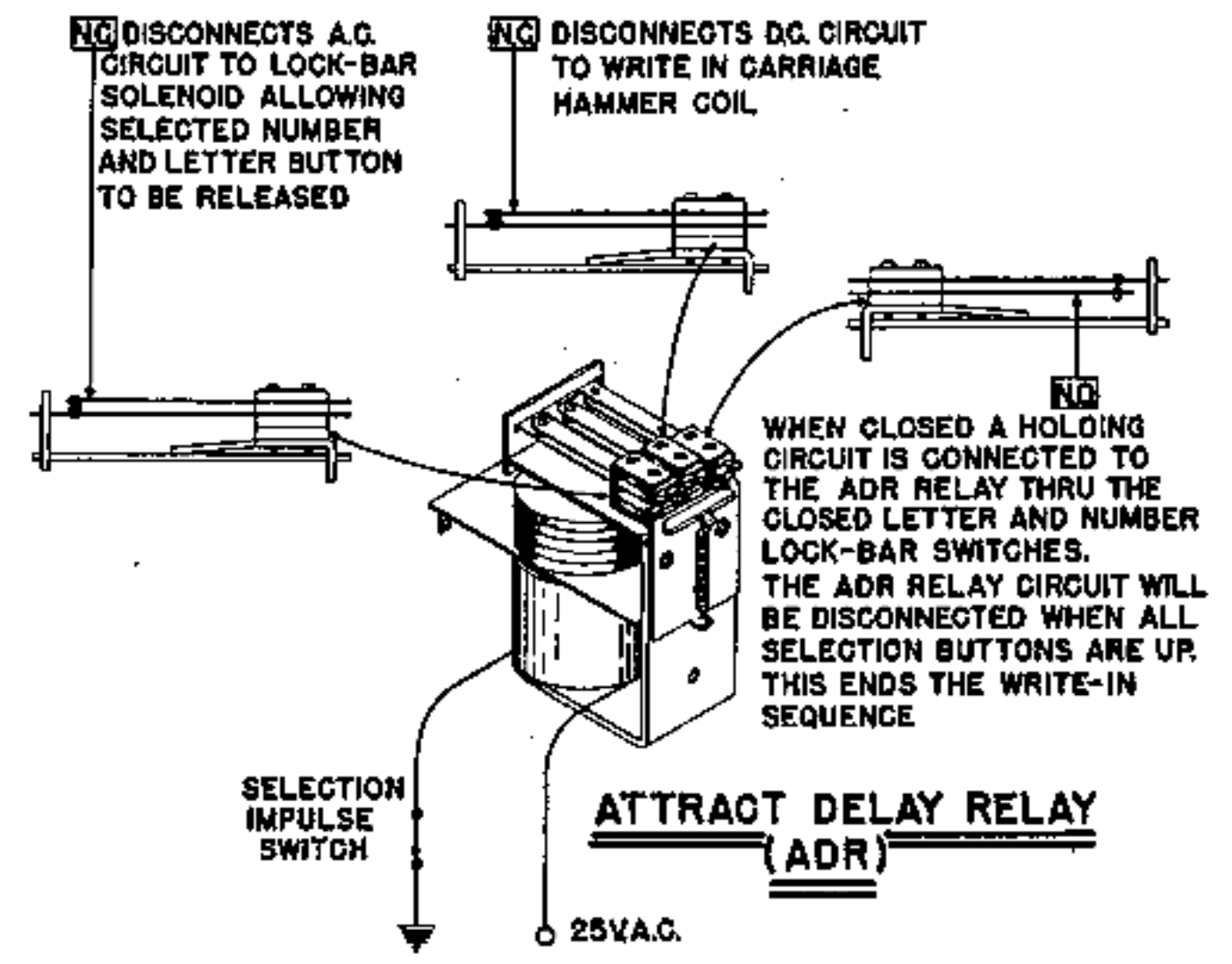
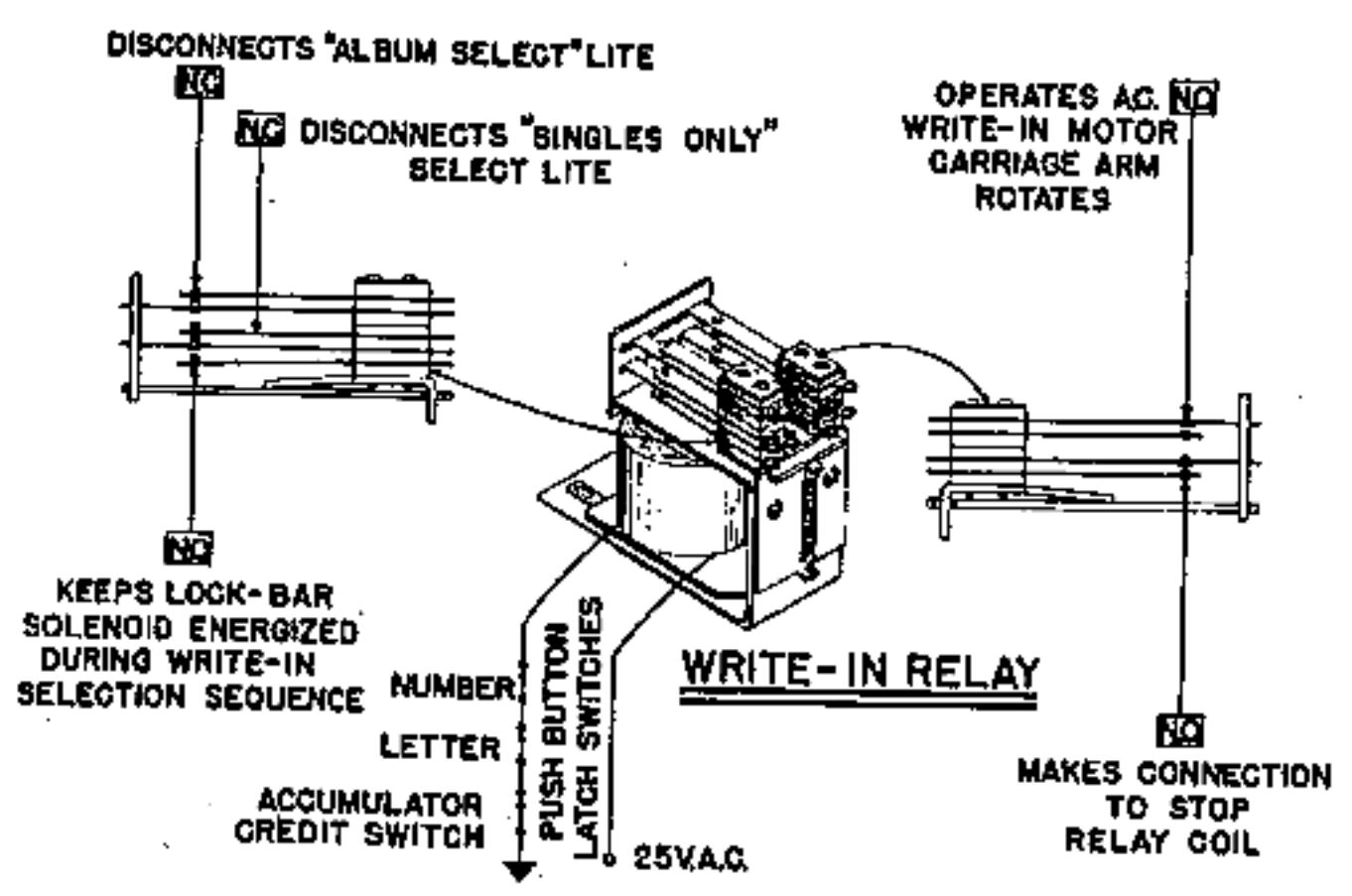
ACCUMULATOR ASSEMBLY

The accumulator assembly is designed to accumulate any number of credits up to 26 plays maximum. After a coin strikes one of the four coin switches located below the slug rejector, a D.C. circuit is completed to the proper electro magnet. During the short period the electro remains energized, the

corresponding armature ratchet detent and the ratchet escapement armature are drawn to the pole-piece of the electric magnet. The corresponding ratchet detent locks the hub and ratchet assembly, and releases the escapement armature stud.

This sequence is repeated for every coin dropped. The circuit is such that both the 5¢ and 10¢ coin switch operate the master ratchet. The 50¢ switch operates the center ratchet and the 25¢ coin switch operates the outer ratchet. The stud which is staked to the master ratchet extends through the center ratchet ratchet discs. It will be noted that the openings in these two ratchets are adjustable. These openings determine the amount of plays that can be accumulated on the master ratchet wheel. Various incentive coin combinations can be made by making the necessary adjustments. (See page 7 for instructions.) The price option switch merely accommodates a proper circuit for the usage of a 50¢ coin. The Accumulator in conjunction with 4 relays and a Current Limiting Lamp, mounted on the top side of the Write-in Unit, function in the 1st selection sequence to register a selection on the Selector. The sequence of operation is as follows:





select position by the energized Lock-Bar Solenoid. Circuits are connected to the Selector, and at the same time the locked push-buttons close two Latch Switches causing the Write-In Relay to operate.

WRITE-IN RELAY

The transferred relay contacts operate the selector Write-In Motor. This allows the Carriage and Wiper assembly to rotate around the selector hunting for connected selector circuits. When located, the Stop Relay operates.

STOP RELAY

The transferred relay contacts connect the A.C. Write-In Motor to a D.C. source thru the Current Limiting Lamp causing the motor to brake, and the Accumulator Reset Coil operates.

ACCUMULATOR RESET COIL

The energized Accumulator Reset Coil closes two Impulse Switches. One, operates the Carriage Solenoid, moving a Selector Lever to "play" position, and the other operates the ADR Relay. Simultaneously, the accumulator reset coil armature engages a tooth on the master ratchet cancelling one credit.

ATTRACT-DELAY RELAY (ADR)

The energized ADR Relay will return all Write-In mechanism circuits to machine standby providing no additional credits are established on the Master Ratchet. If all credits are not removed, the Lock-Bar Solenoid will remain energized.

Rotation of the Master Ratchet allows two Credit Switches to close causing the push-button Lock-Bar Solenoid to energize and Select lamp to lite. Upon making a selection, the Letter and Number button is locked into



CYCLE CAM SWITCH

CHECK-OFF MOTOR

ALBUM CHECK-OFF SYSTEM

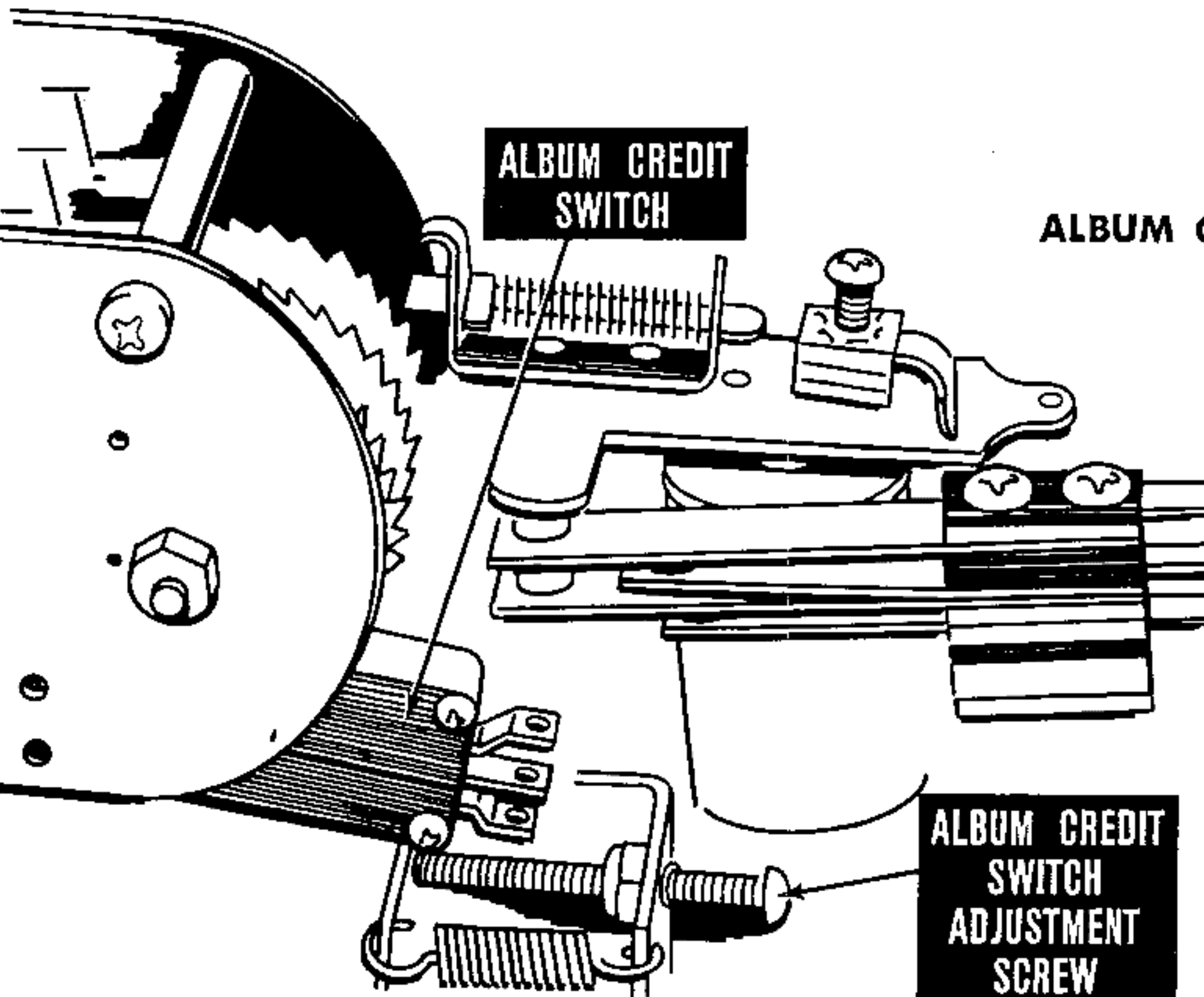
(For electrical operation see Sequence Diagrams number 1 thru number 6, starting with page 28.)

PULSE CAM SWITCHES

ALBUM CREDIT SYSTEM
OPTIONAL FOR THIS MODEL

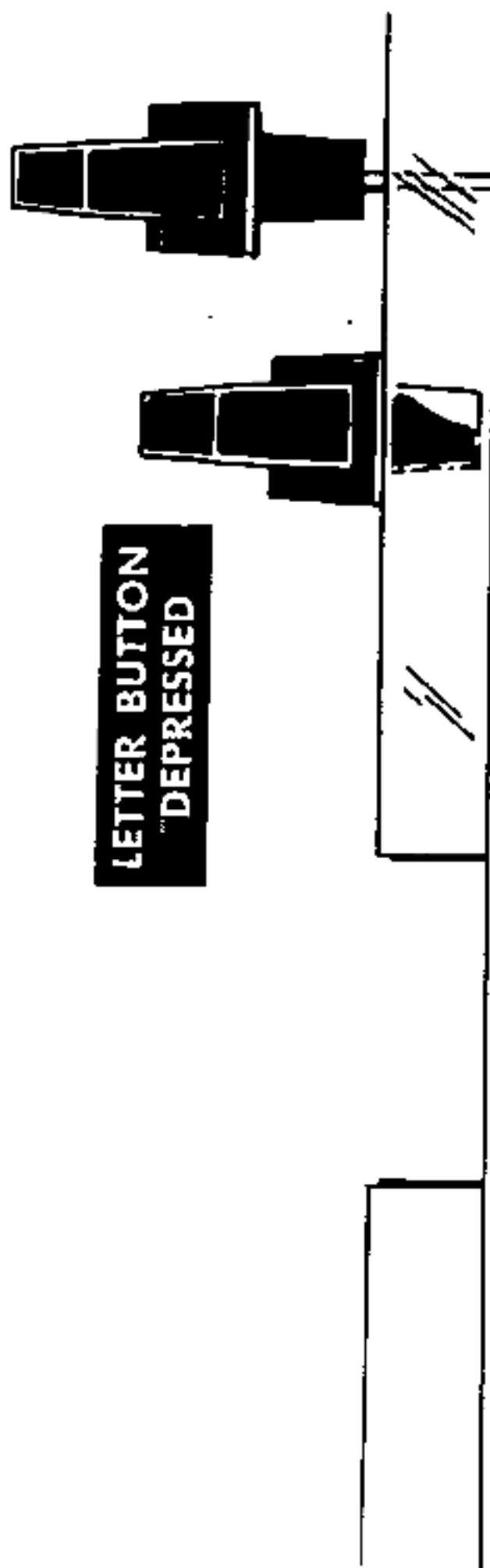
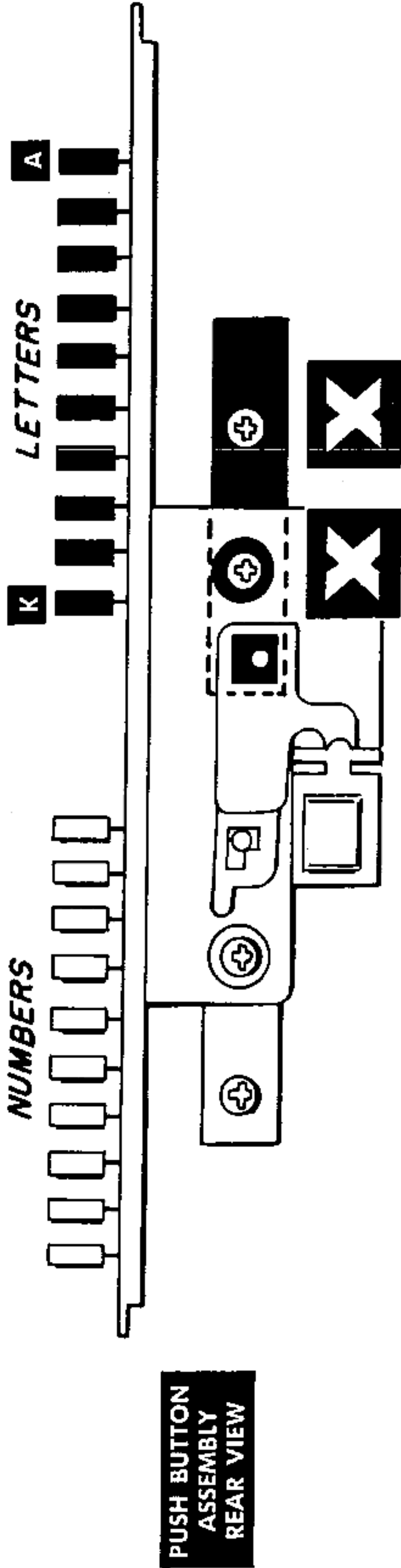
CYCLE CAM SWITCH

CHECK-OFF RELAY



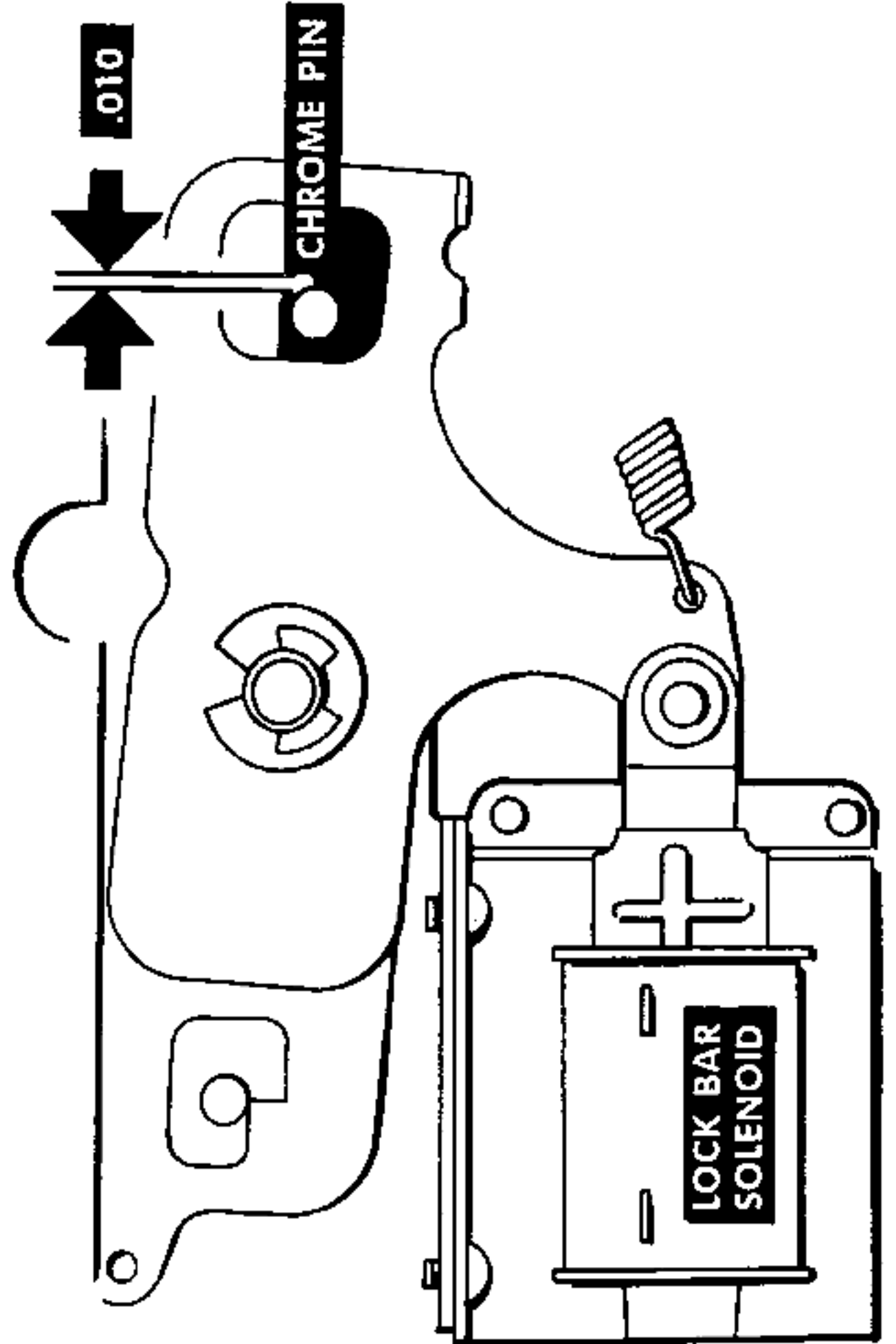
ALBUM CREDIT SWITCH ADJUSTMENT

NOTE: Adjustment is made so that the switch will "click" between the 2nd and 3rd tooth when 3 or more credits are registered. Likewise when the credits are removed the switch must operate between the 3rd and 2nd tooth.



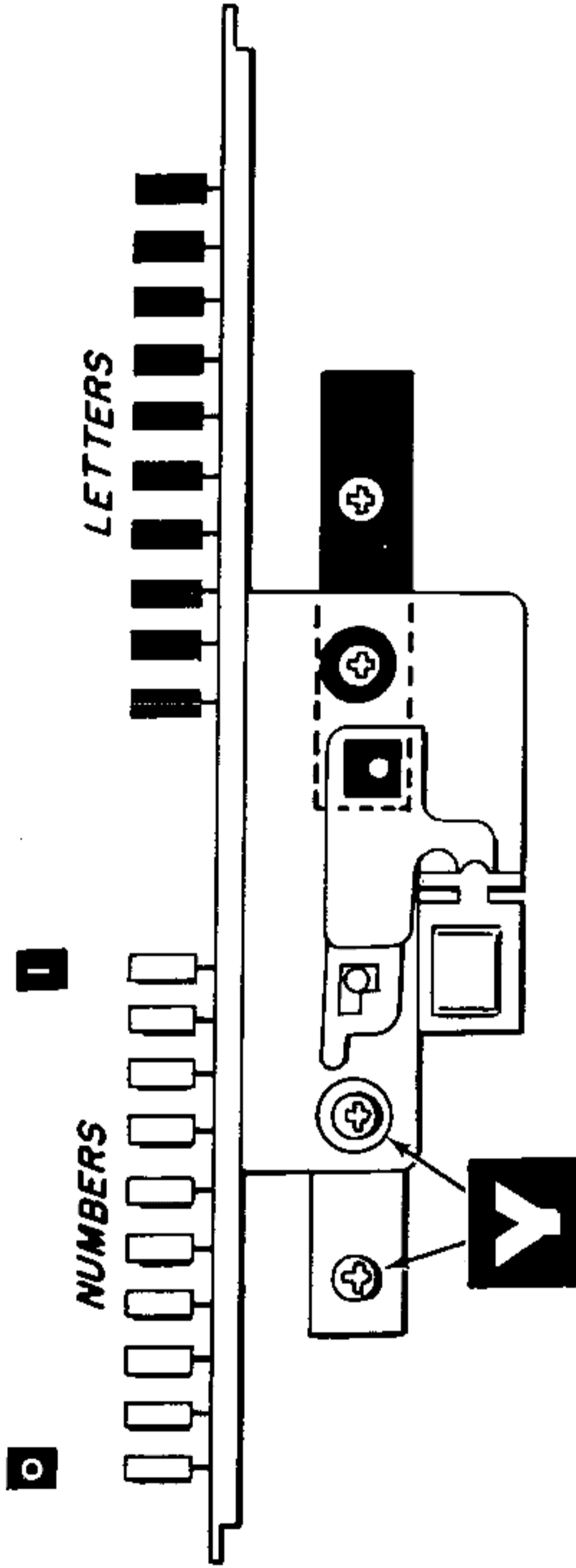
LETTER BUTTON LOCKING ADJUSTMENT

The Letter and Number pushbutton lock bars must be in proper adjustment for locking action to take place during the Write-In selection sequence.

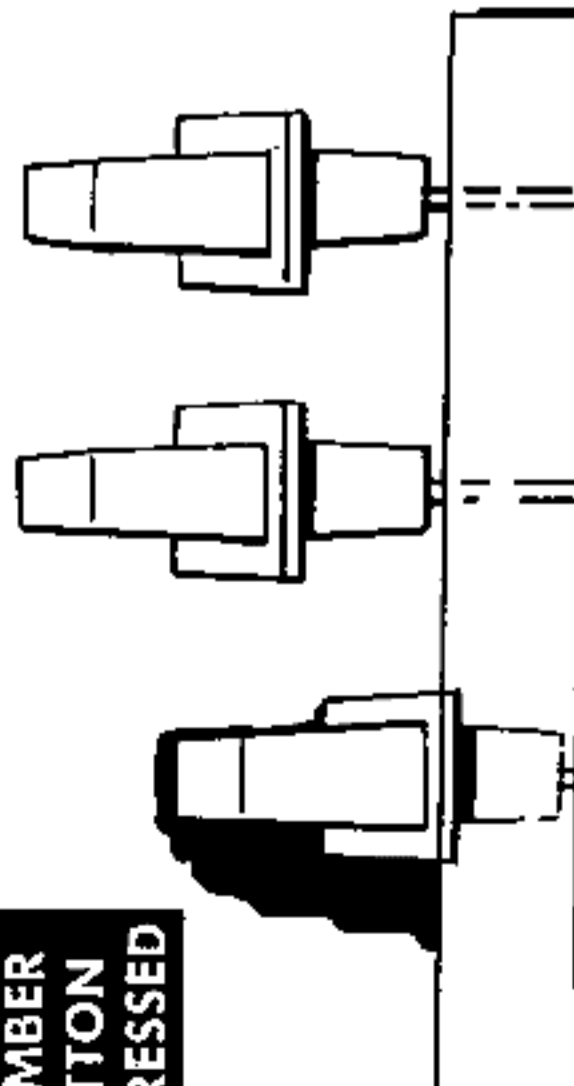


Should adjustment be necessary, proceed in the following manner:

1. With an energized solenoid and Letter "A" pressed in fully, loosen two screws "X" and adjust the letter lock bar bracket for .010 overtravel between the rocker bar cam and the chrome pin.
2. Check overtravel adjustment to Letter pushbutton "K", it may be necessary to refine the adjustment.

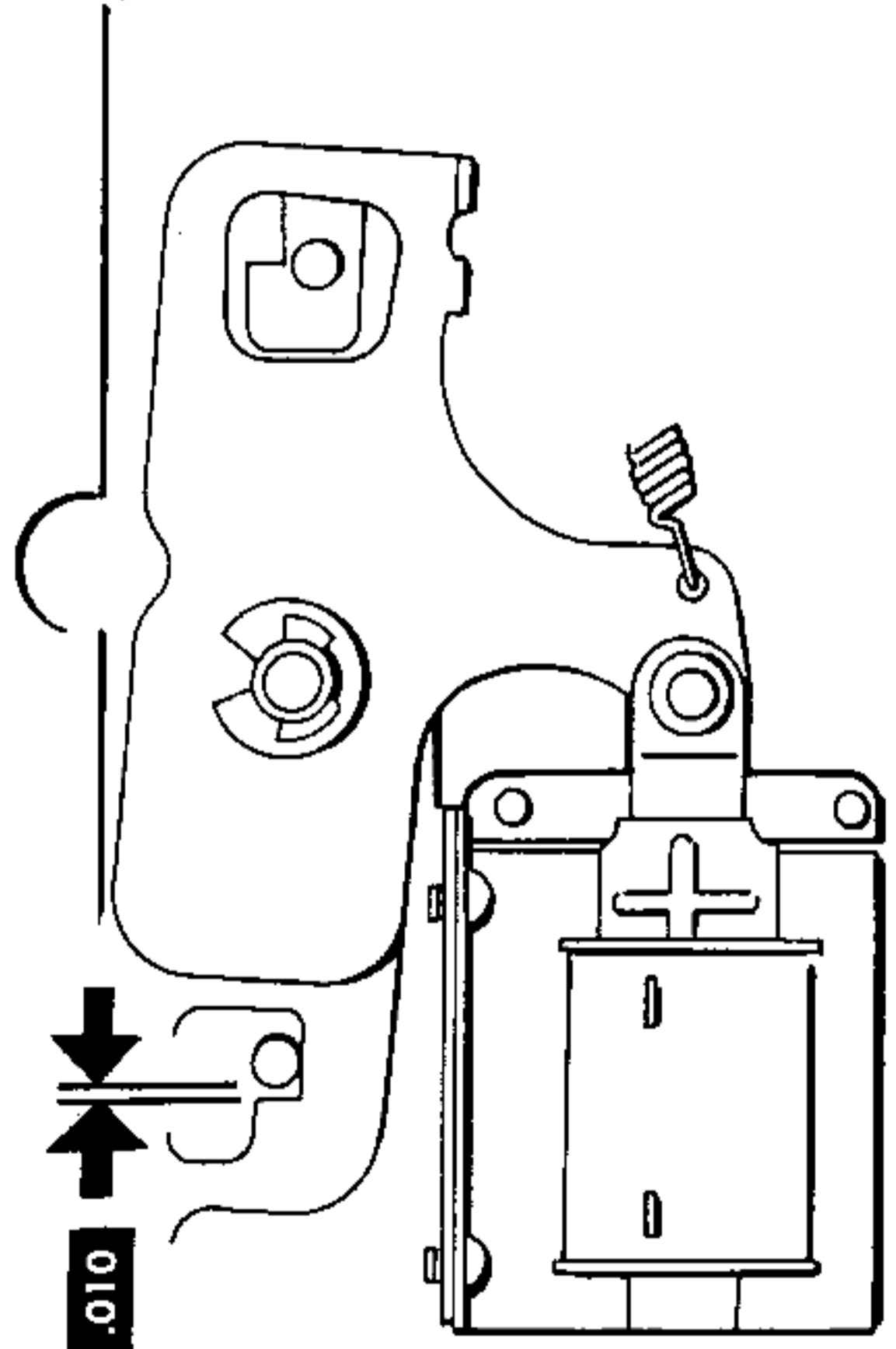


**NUMBER
BUTTON
DEPRESSED**



NUMBER BUTTON LOCKING ADJUSTMENT

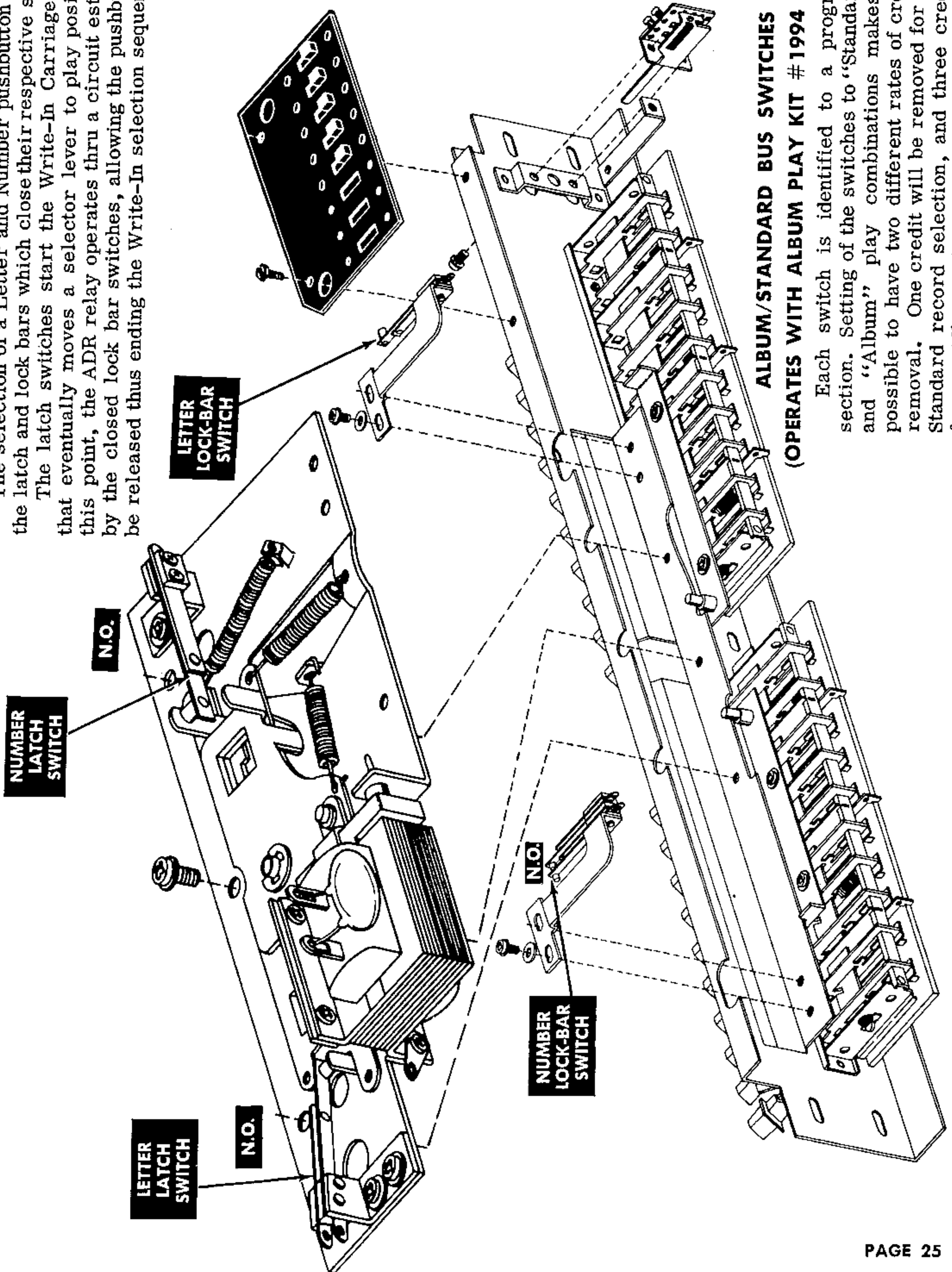
Repeat the same procedure for the Number pushbuttons, except loosen screws "Y", and check overtravel adjustments to Number pushbuttons No. 1 and No. 0.



LATCH AND LOCK BAR SWITCHES

The selection of a Letter and Number pushbutton operates the latch and lock bars which close their respective switches.

The latch switches start the Write-In Carriage rotation that eventually moves a selector lever to play position. At this point, the ADR relay operates thru a circuit established by the closed lock bar switches, allowing the pushbuttons to be released thus ending the Write-In selection sequence.



ALBUM/STANDARD BUS SWITCHES (OPERATES WITH ALBUM PLAY KIT #1994 ONLY)

Each switch is identified to a program section. Setting of the switches to "Standard" and "Album" play combinations makes it possible to have two different rates of credit removal. One credit will be removed for any Standard record selection, and three credits for any Album selection.

SEQUENCE

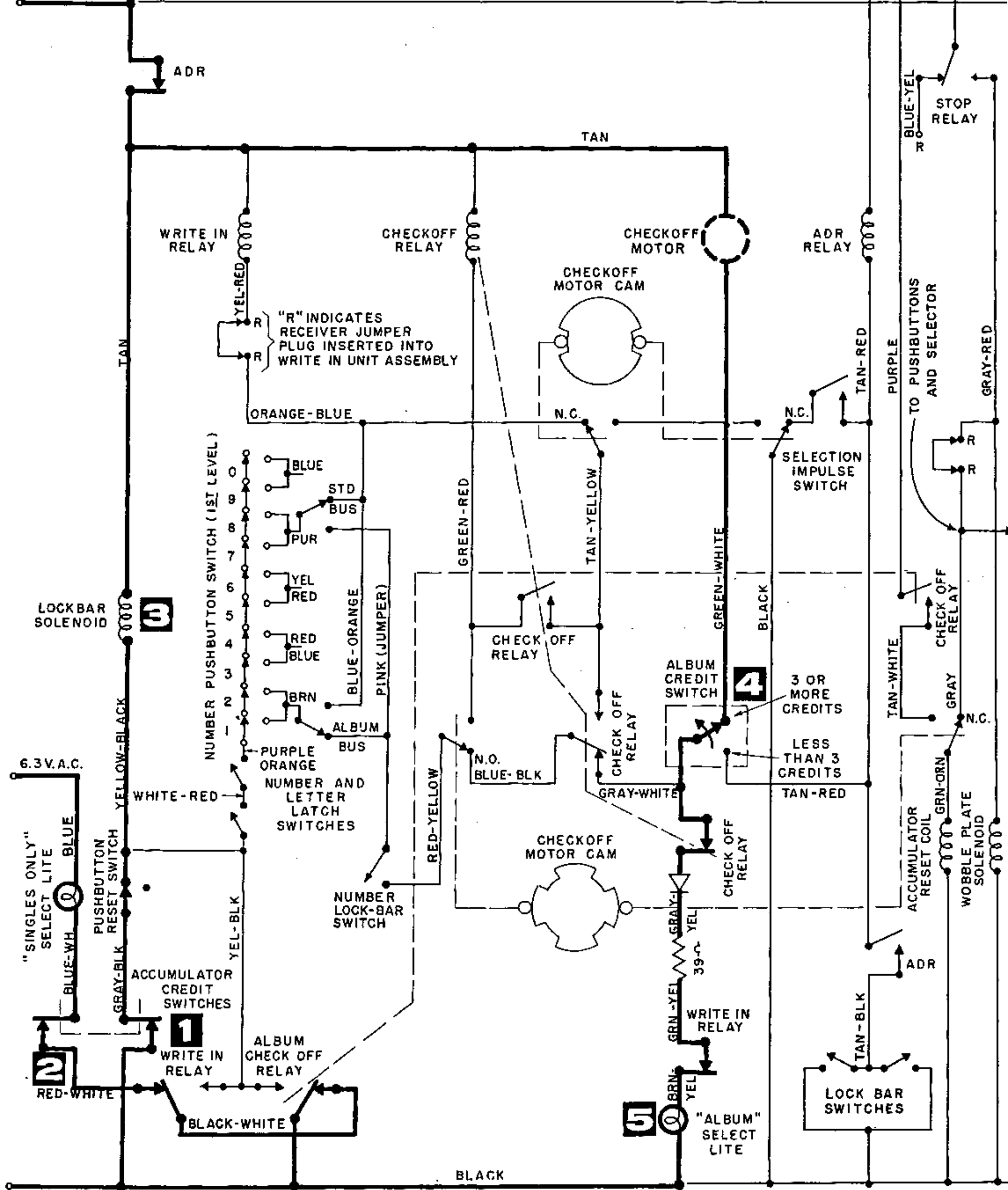
DIAGRAMS

- 28 V. D. C.

PURPLE

25 V. A. C.

WHITE





**SEQUENCE NO. 1 • 25c COIN REGISTERED
(ALBUM SELECTION EXAMPLE)**

When a ALBUM SELECTION is entered the selection system is held in abeyance for a short time to allow for the removal of two credits from the ACCUMULATOR. This is accomplished thru a CHECK OFF arrangement that operates on a ALBUM SELECTION ONLY. The last credit is removed during the normal selection cycle. Electrical sequences from NO. 1 thru NO. 6 deal with the operation of an album play selection.

A 25¢ coin will register three (3) 10¢ selections on the ACCUMULATOR MASTER RATCHET (circuit not shown), allowing the ALBUM CREDIT SWITCH NO. 4 to transfer and CREDIT SWITCHES NO. 1 and NO. 2 to close. CREDIT SWITCH NO. 1 energizes the LOCKBAR SOLENOID NO. 3 to allow the PUSHBUTTONS to latch when depressed. CREDIT SWITCH NO. 2 completes a circuit to the "SINGLE PLAY ONLY" lite. Whenever 3 or more credits are established, the ALBUM CREDIT SWITCH NO. 4 is actuated by the MASTER RATCHET connecting a circuit to the "ALBUM" lite. The customer now has a choice of selecting three (3) standard records or one (1) album side.

**SEQUENCE NO. 7 • COIN REGISTERED
(STANDARD SELECTION EXAMPLE)**

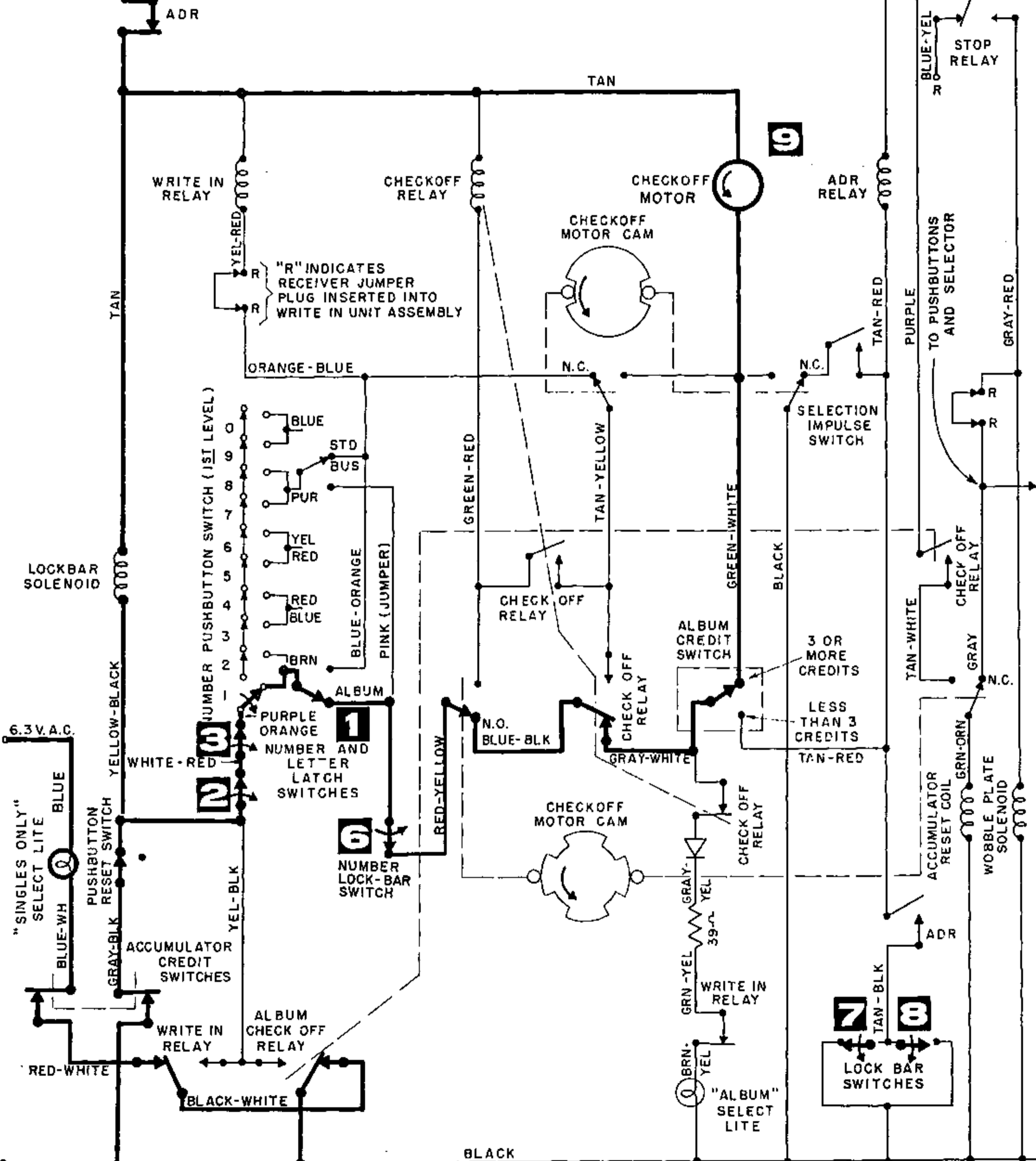
The pulse from the COIN SWITCH operates the ACCUMULATOR MASTER RATCHET (this circuit not shown) closing ACCUMULATOR CREDIT SWITCHES NO. 1 and NO. 2. SWITCH NO. 2 connects a circuit to the "SINGLE PLAY ONLY" lite. SWITCH NO. 1 energizes LOCKBAR SOLENOID NO. 3 to allow PUSHBUTTONS to latch when depressed.

-28 V. D. C.

PURPLE

25 V. A. C.

WHITE



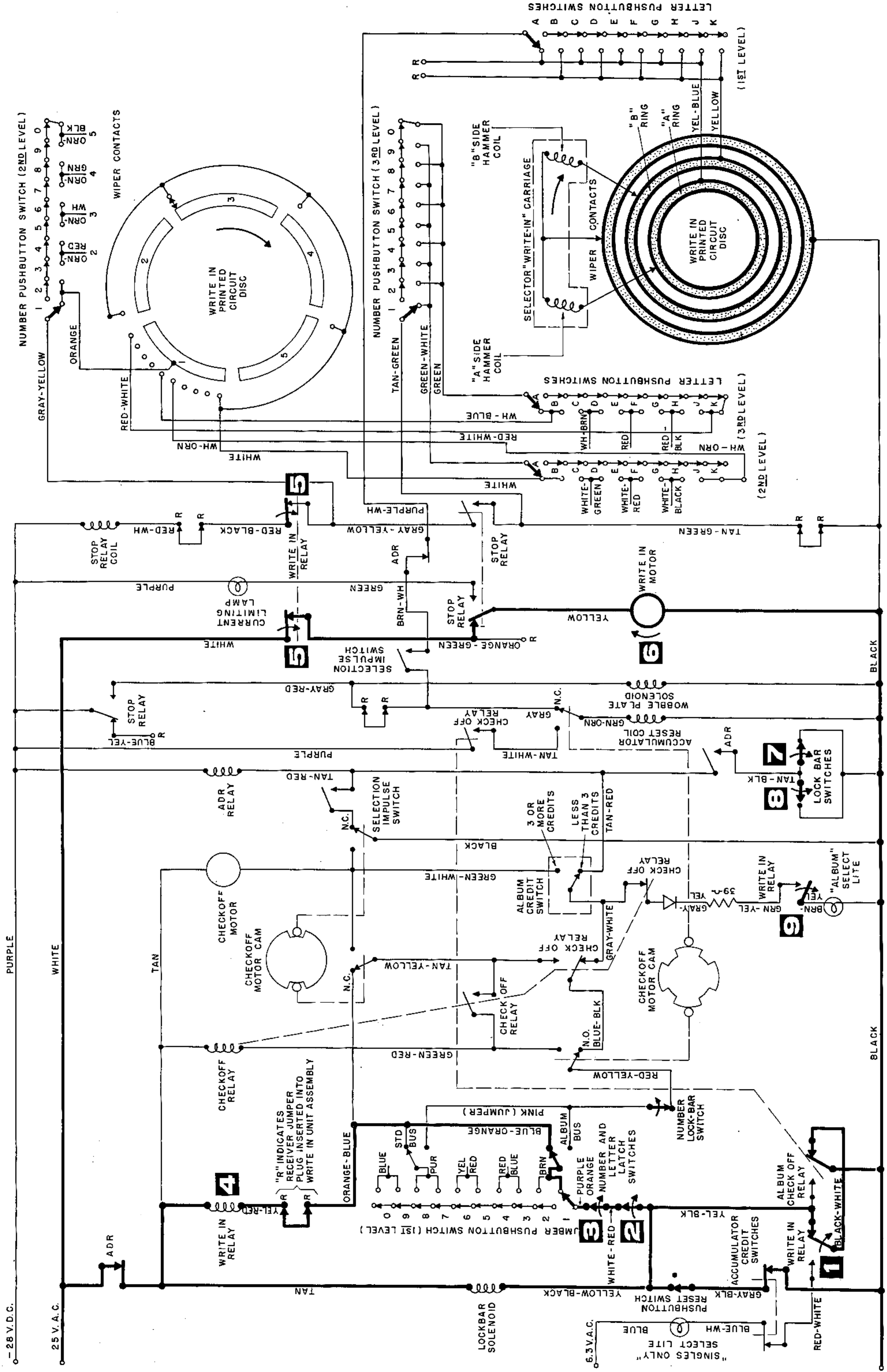


SEQUENCE NO. 2 • ALBUM SELECTION MADE

NOTE: In this example the NO. 1 pushbutton section "ALBUM BUS SWITCH" NO. 1 has been transferred to accommodate 20 album sides. Selection A-1 is made. (Letter pushbutton circuit not shown.) The movement of the PUSHBUTTON LOCK BARS close switches NO. 6, NO. 7 and NO. 8 and the solenoid allows the LATCHES to close switches NO. 2 and NO. 3. Switches NO. 2 and NO. 3 complete a circuit to the CHECKOFF MOTOR NO. 9 thru switch NO. 6 which starts to rotate and simultaneously places a short circuit around the "ALBUM" select lite which now goes out. The purpose of switches NO. 7 and NO. 8 is explained in a later sequence.

SEQUENCE NO. 8 • WRITE-IN RELAY OPERATES, WRITE-IN MOTOR RUNS

Selection A-1 shown. The movement of the PUSHBUTTONS LATCH and LOCKBARS close switches NO. 2, NO. 3, NO. 7 and NO. 8. 25V. A.C. flows thru NO. 2 and NO. 3 energizing the WRITE-IN RELAY NO. 4. (In the event an ALBUM SELECTION has been registered, the WRITE-IN RELAY circuit is disconnected until the ACCUMULATOR CHECKOFF CYCLE is completed. Then the WRITE-IN RELAY will energize and the subsequent sequences will take place.) The energized WRITE-IN RELAY contacts NO. 1 and NO. 5 transfer. Contact NO. 1 disconnects the "SINGLES ONLY" select lite and bypasses the PUSHBUTTON RESET SWITCH, Contact NO. 5 completes a circuit to the WRITE-IN MOTOR NO. 6 which begins to rotate.



-28 V.D.C.

25 V.A.C.

6.3 V.A.C.

PURPLE

WHITE

TAN

ORANGE-BLUE

BLUE

YEL

RED

BRN

PURPLE

ORANGE

STN

BLU

ORNG

YEL

RED

BLU

RED

ORNG

PUR

BLU

ORNG

STN

BLU

ORNG

PUR

GRAY-YELLOW

ORANGE

RED-WHITE

WHITE

WH-ORN

RED-WHITE

ORANGE

GRAY-YELLOW

STOP RELAY COIL

RED-BLACK

RED-WH

PURPLE

WRITE IN RELAY

STOP RELAY

BRN-WH

GREEN

GRAY-YELLOW

PURPLE-WH

STOP RELAY

ORANGE-GREEN

WHITE

WH-ORN

RED

WH-ORN

BLACK

WHITE

RED

WH-ORN

BLACK

WHITE

GREEN

WH-ORN

LOCKBAR SOLENOID

YELLOW-BLACK

PUSHBUTTON SWITCH

GRAY-BLK

ACCUMULATOR CREDIT SWITCHES

WRITE IN RELAY

ALBUM CHECK OFF RELAY

BLACK-WHITE

RED-WHITE

"SINGLES ONLY" SELECT LITE

BLUE-WH

39.5 YEL

GRAY-YEL

BRN

WRITE IN RELAY

"ALBUM" SELECT LITE

ALBUM CHECK OFF RELAY

NUMBER LOCK-BAR SWITCH

RED-YELLOW

N.O.

BLUE-BLK

GRAY-WHITE

CHECK OFF RELAY

GRAY-YEL

ALBUM CREDIT SWITCH

CHECK OFF RELAY

GRAY-WHITE

WOBBLE PLATE SOLENOID

GRAY-ORN

RESET COIL

ACCUMULATOR

BLACK

STOP RELAY

BLUE-YEL

STOP RELAY

GRAY-RED

SELECTION IMPULSE SWITCH

PURPLE

ADR RELAY

CHECKOFF MOTOR

CHECKOFF MOTOR CAM

3 OR MORE CREDITS

LESS THAN 3 CREDITS

TAN-RED

BLACK

GREEN-WHITE

GRAY

RESET COIL

WOBBLE PLATE SOLENOID

GRAY

STOP RELAY

ORANGE-GREEN

YELLOW

WRITE IN MOTOR

TAN-GREEN

STOP RELAY

WHITE

WH-ORN

RED

WH-ORN

BLACK

WHITE

GREEN

WH-ORN

GRAY-YELLOW

ORANGE

RED-WHITE

WHITE

WH-ORN

RED-WHITE

ORANGE

GRAY-YELLOW

STOP RELAY COIL

RED-BLACK

RED-WH

PURPLE

WRITE IN RELAY

STOP RELAY

BRN-WH

GREEN

GRAY-YELLOW

PURPLE-WH

STOP RELAY

ORANGE-GREEN

WHITE

WH-ORN

RED

WH-ORN

BLACK

WHITE

RED

WH-ORN

BLACK

WHITE

GREEN

WH-ORN

LOCKBAR SOLENOID

YELLOW-BLACK

PUSHBUTTON SWITCH

GRAY-BLK

ACCUMULATOR CREDIT SWITCHES

WRITE IN RELAY

ALBUM CHECK OFF RELAY

BLACK-WHITE

RED-WHITE

"SINGLES ONLY" SELECT LITE

BLUE-WH

39.5 YEL

GRAY-YEL

BRN

WRITE IN RELAY

"ALBUM" SELECT LITE

ALBUM CHECK OFF RELAY

NUMBER LOCK-BAR SWITCH

RED-YELLOW

N.O.

BLUE-BLK

GRAY-WHITE

CHECK OFF RELAY

GRAY-YEL

ALBUM CREDIT SWITCH

CHECK OFF RELAY

GRAY-WHITE

WOBBLE PLATE SOLENOID

GRAY-ORN

RESET COIL

ACCUMULATOR

BLACK

GRAY-YELLOW

ORANGE

RED-WHITE

WHITE

WH-ORN

RED-WHITE

ORANGE

GRAY-YELLOW

STOP RELAY COIL

RED-BLACK

RED-WH

PURPLE

WRITE IN RELAY

STOP RELAY

BRN-WH

GREEN

GRAY-YELLOW

PURPLE-WH

STOP RELAY

ORANGE-GREEN

WHITE

WH-ORN

RED

WH-ORN

BLACK

WHITE

RED

WH-ORN

BLACK

WHITE

GREEN

WH-ORN

LOCKBAR SOLENOID

YELLOW-BLACK

PUSHBUTTON SWITCH

GRAY-BLK

ACCUMULATOR CREDIT SWITCHES

WRITE IN RELAY

ALBUM CHECK OFF RELAY

BLACK-WHITE

RED-WHITE

"SINGLES ONLY" SELECT LITE

BLUE-WH

39.5 YEL

GRAY-YEL

BRN

WRITE IN RELAY

"ALBUM" SELECT LITE

ALBUM CHECK OFF RELAY

NUMBER LOCK-BAR SWITCH

RED-YELLOW

N.O.

BLUE-BLK

GRAY-WHITE

CHECK OFF RELAY

GRAY-YEL

ALBUM CREDIT SWITCH

CHECK OFF RELAY

GRAY-WHITE

WOBBLE PLATE SOLENOID

GRAY-ORN

RESET COIL

ACCUMULATOR

BLACK

GRAY-YELLOW

ORANGE

RED-WHITE

WHITE

WH-ORN

RED-WHITE

ORANGE

GRAY-YELLOW

STOP RELAY COIL

RED-BLACK

RED-WH

PURPLE

WRITE IN RELAY

STOP RELAY

BRN-WH

GREEN

GRAY-YELLOW

PURPLE-WH

STOP RELAY

ORANGE-GREEN

WHITE

WH-ORN

RED

WH-ORN

BLACK

WHITE

RED

WH-ORN

BLACK

WHITE

GREEN

WH-ORN

LOCKBAR SOLENOID

YELLOW-BLACK

PUSHBUTTON SWITCH

GRAY-BLK

ACCUMULATOR CREDIT SWITCHES

WRITE IN RELAY

ALBUM CHECK OFF RELAY

BLACK-WHITE

RED-WHITE

"SINGLES ONLY" SELECT LITE

BLUE-WH

39.5 YEL

GRAY-YEL

BRN

WRITE IN RELAY

"ALBUM" SELECT LITE

ALBUM CHECK OFF RELAY

NUMBER LOCK-BAR SWITCH

RED-YELLOW

N.O.

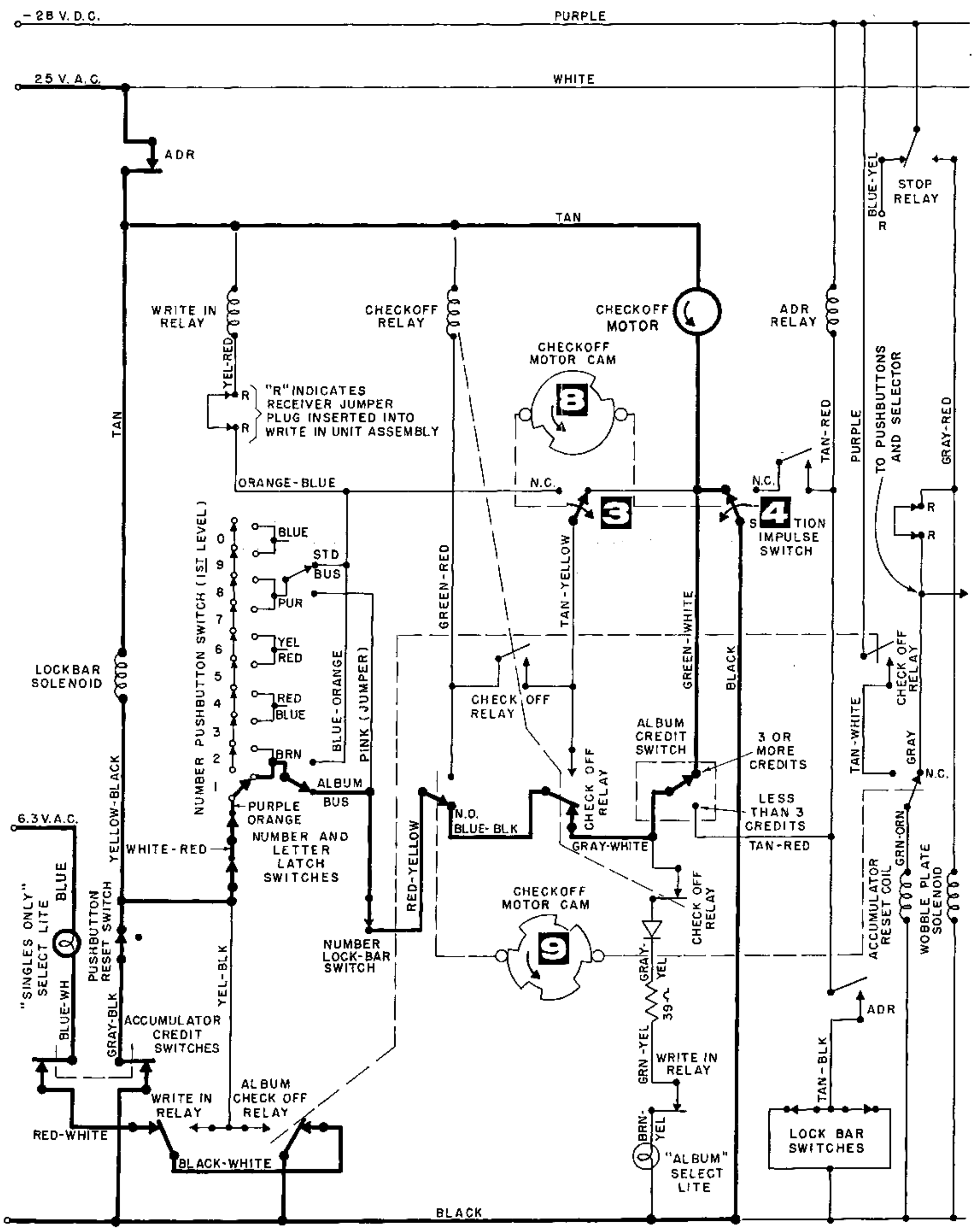
BLUE-BLK

GRAY-WHITE

CHECK OFF RELAY

GRAY-YEL

ALBUM CREDIT SWITCH





SEQUENCE NO. 3 • CHECKOFF MOTOR RUNS

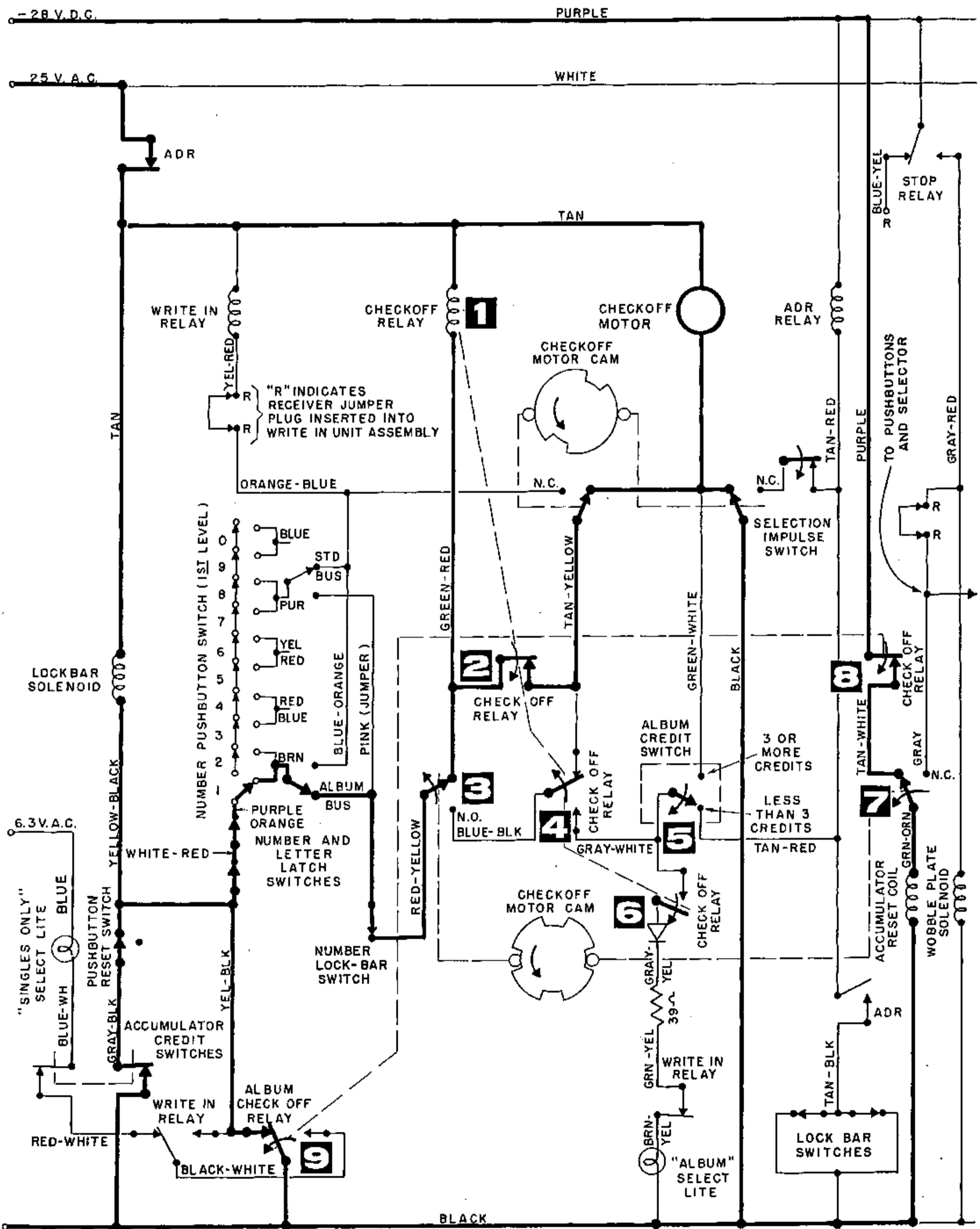
The motor rotates CHECKOFF MOTOR CAMS NO. 8 and NO. 9. Cam NO. 8 transfers switches NO. 3 and NO. 4. Switch NO. 4 connects "motor carryover" circuit to the CHECKOFF MOTOR.

SEQUENCE NO. 9 • WRITE-IN CARRIAGES SCAN AND INDEX

The SELECTOR WRITE-IN MOTOR NO. 6 rotates an arm that has a CARRIAGE (NO. 2) attached on one end. The carriage has an associated set of WIPERS or BRUSHES (NO. 1) that make connection with various contacts and segments on the printed circuit disc as the arm rotates.

The write-in sequences are best explained by an example: in this case SELECTION A-1 is illustrated. The closing of PUSHBUTTON NO. 1 makes a connection to PRINTED CIRCUIT DISC "SEGMENT" NO. 1; likewise the closing of PUSHBUTTON 'A' makes a connection thru the 3rd level number pushbutton to a series of five contacts which are internally connected in the selector. The rotating carriage-wiper assembly scans until a bridging "bar" across two individual wipers locate a "live" contact rivet and segment. This completes a circuit to the STOP RELAY COIL NO. 3.

The energized STOP RELAY contacts NO. 4, NO. 5 and NO. 7 transfer. Contact NO. 5 disconnects the A.C. power source to the WRITE-IN MOTOR and connects it to a D.C. source thru the CURRENT LIMITING LAMP NO. 8. This action brakes the motor, stopping the rotation of the carriage assemblies. Contact NO. 7 connects a holding circuit to the STOP RELAY COIL NO. 3.





SEQUENCE NO. 4 • CHECKOFF RELAY OPERATES, ONE CREDIT REMOVED FROM THE ACCUMULATOR

The second CHECKOFF MOTOR CAM now transfers switches NO. 3 and NO. 7. These two switches will each be pulsed twice during 180 degree rotation of the motor cam. On the first transfer of switch NO. 3, CHECKOFF RELAY NO. 1 is energized. Relay contacts NOS. 2, 6, 8, and 9 transfer.

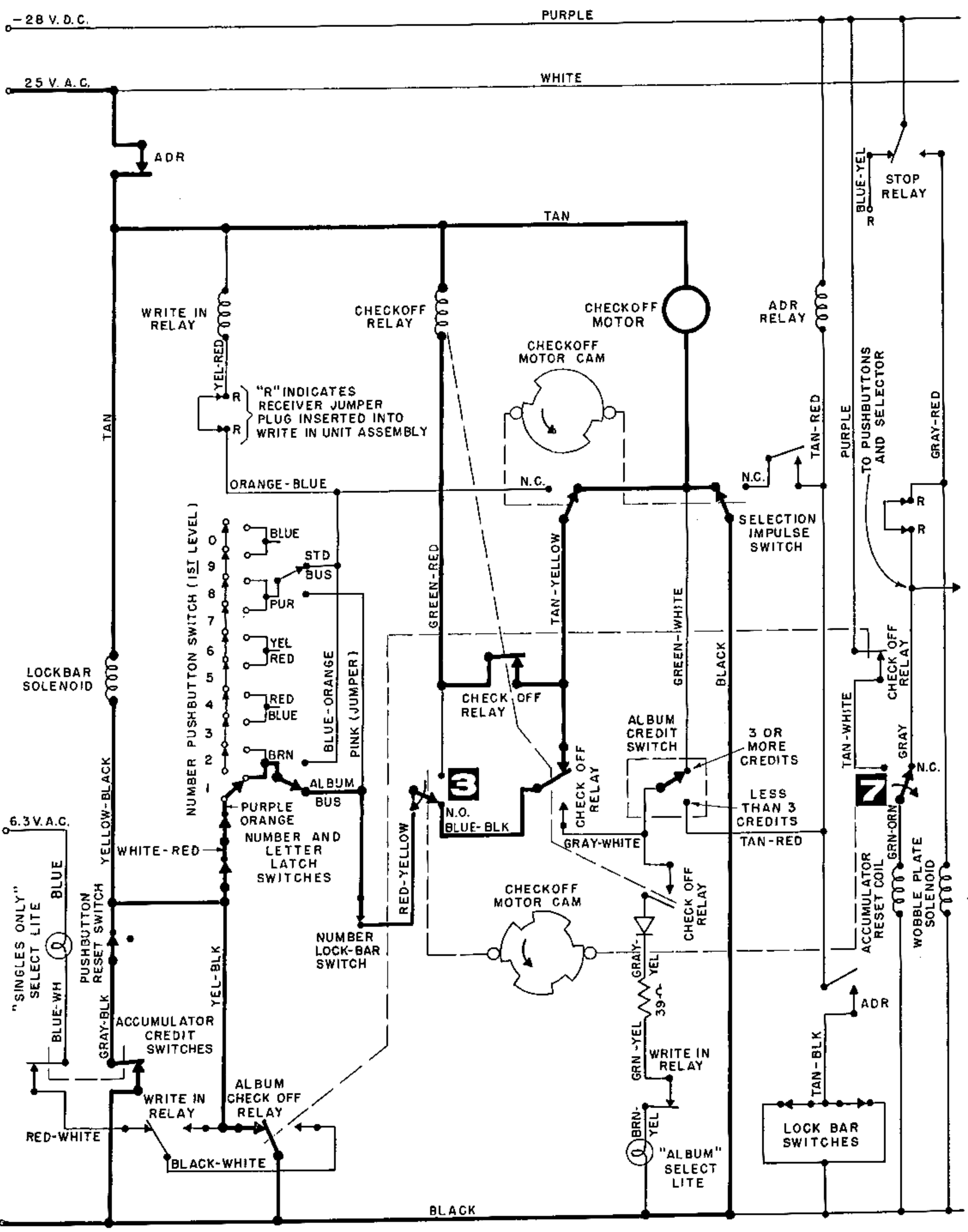
Contact NO. 2 completes a holding circuit to the CHECKOFF RELAY NO. 1 as shown. The checkoff relay will now remain energized until the last credit is removed from the ACCUMULATOR and a selection is registered on the SELECTOR.

Contact NO. 7 pulses the ACCUMULATOR RESET COIL thru the checkoff relay contact NO. 8 removing one credit from the MASTER RATCHET which may or may not return the ALBUM CREDIT SWITCH NO. 5 to "less than three credits" position. (Example shows switch returning.)

Contact NO. 9 closes a circuit to the LOCKBAR SOLENOID around the PUSHBUTTON RESET SWITCH which now becomes inoperative.

SEQUENCE NO. 10 • SELECTION LEVER REGISTERED

The transferred STOP RELAY contact NO. 4 connects circuits to the ACCUMULATOR RESET COIL NO. 5 and SELECTOR WOBBLE PLATE SOLENOID NO. 6. The ACCUMULATOR RESET COIL armature closes a ganged section of two SELECTION IMPULSE SWITCHES NO. 1 and NO. 2 and removes one credit from the ACCUMULATOR. Contact NO. 1 completes a circuit to the WRITE-IN CARRIAGE SOLENOID NO. 3 causing the SELECTOR LEVER to be moved into play position. Contact NO. 2 connects a circuit to the ATTRACT DELAY RELAY (ADR). Although the circuit is completed to this relay the construction is such that "pull-in" is delayed for 1/20 of a second.





**SEQUENCE NO. 5 • SECOND CREDIT REMOVED FROM
THE ACCUMULATOR**

At the completion of the next pulse to the ACCUMULATOR RESET COIL, THE SECOND CREDIT IS REMOVED and contacts NO. 3 and NO. 7 are returned to their normal position.

**SEQUENCE NO. 11 • COMPLETION OF FIRST
SELECTION SEQUENCE**

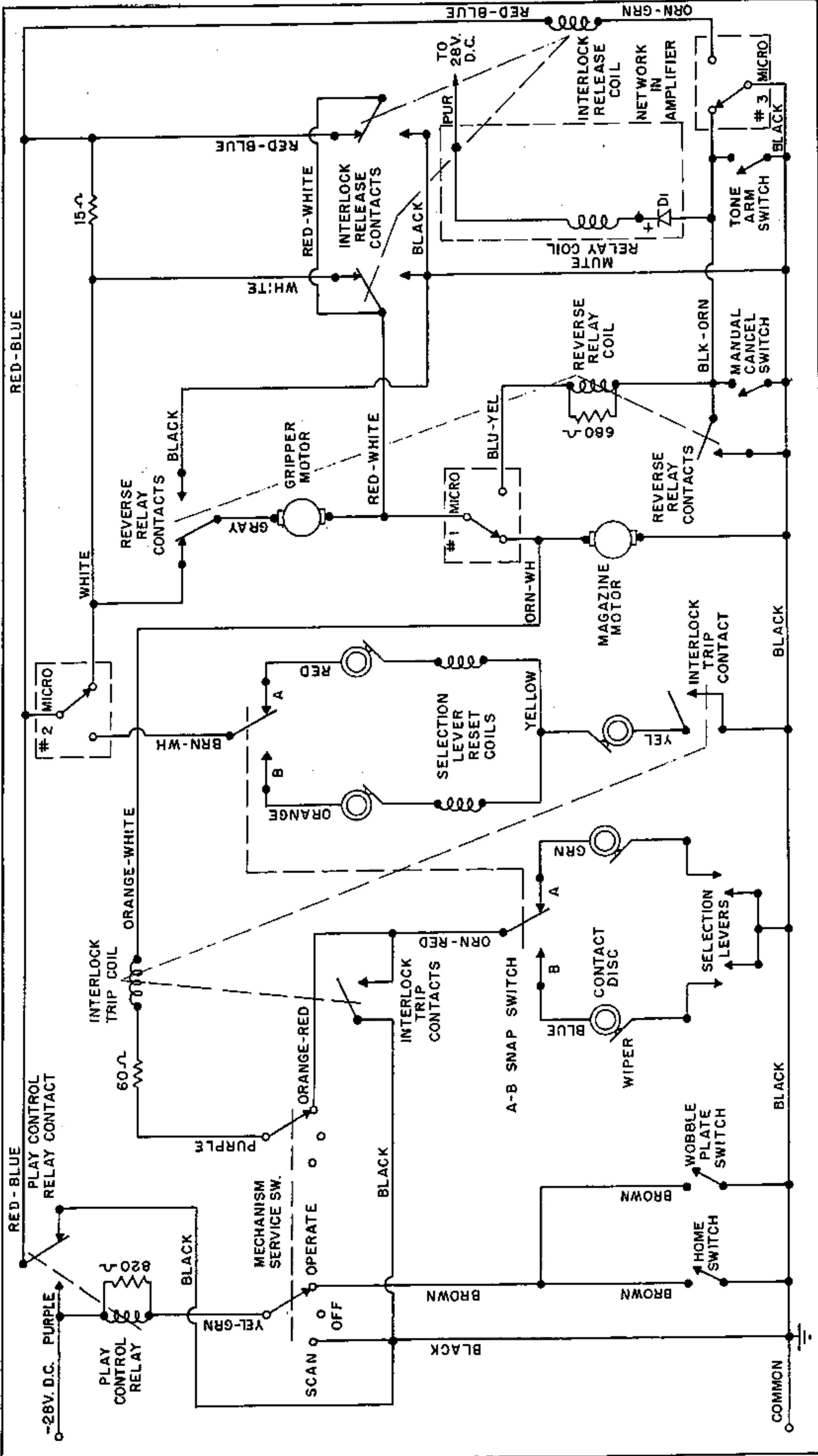
The ADR RELAY NO. 2 now energized transfers switches NO. 1, NO. 3 and NO. 4. The "lock-up" action of switches NO. 7 and NO. 8 is such that the ADR RELAY cannot de-energize until every PUSHBUTTON is released. Not until all PUSHBUTTONS are released, all the circuit switches and relays return to machine standby condition and ready for the next selection if the ACCUMULATOR SWITCHES are still closed.



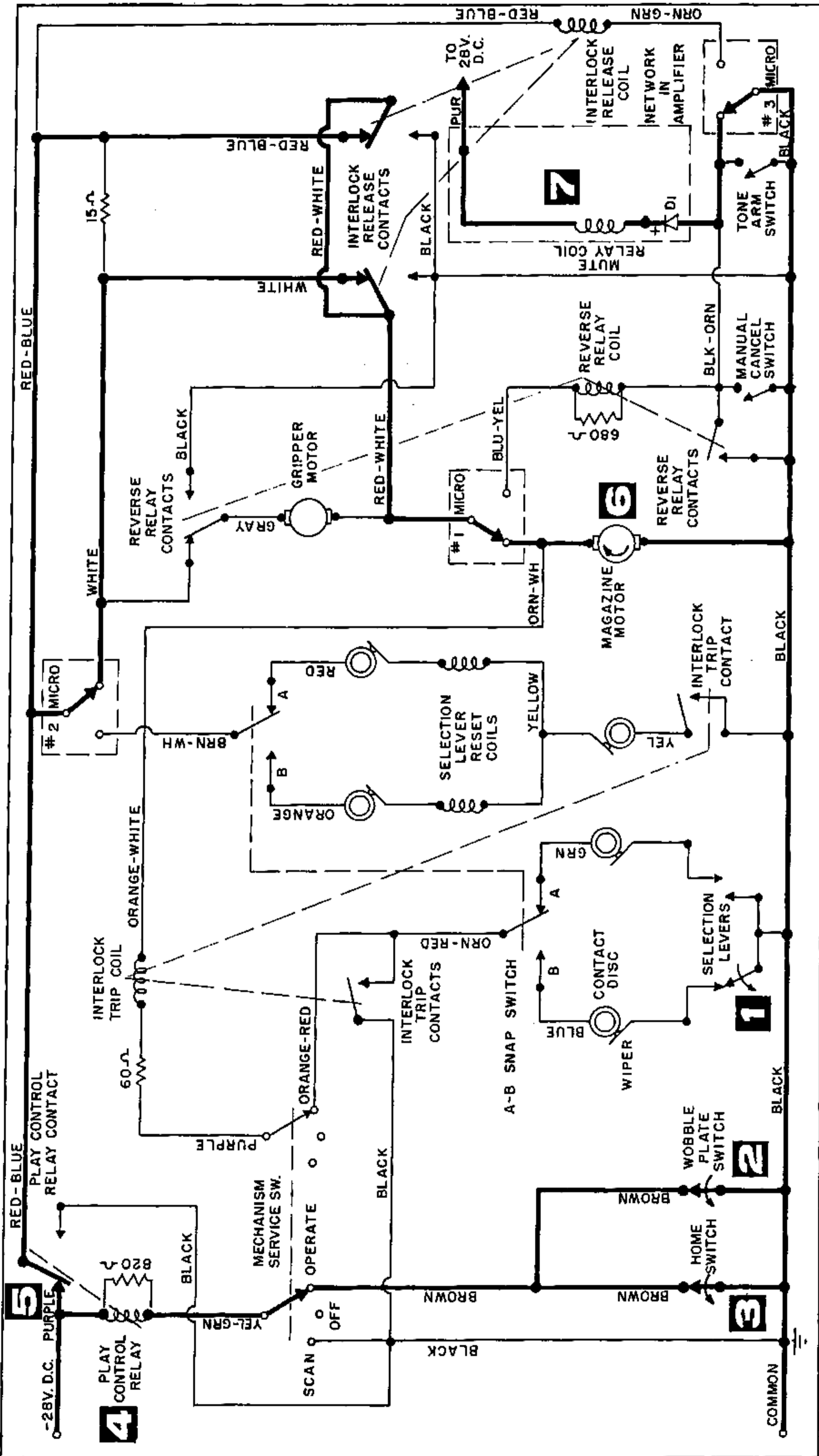
SEQUENCE NO. 6 • ALBUM CHECKOFF CYCLE COMPLETED

The album cycle is completed when the CHECKOFF MOTOR CAM NO. 8 returns cam switches NO. 2 and NO. 3 to their normal position thus completing a cam cycle of 180 degrees.

The transferred NO. 3 switch now completes a circuit to the WRITE-IN RELAY NO. 4 and from this point on, the selection cycle is identical with that of a "STANDARD SELECTION" starting with SEQUENCE NO.8.



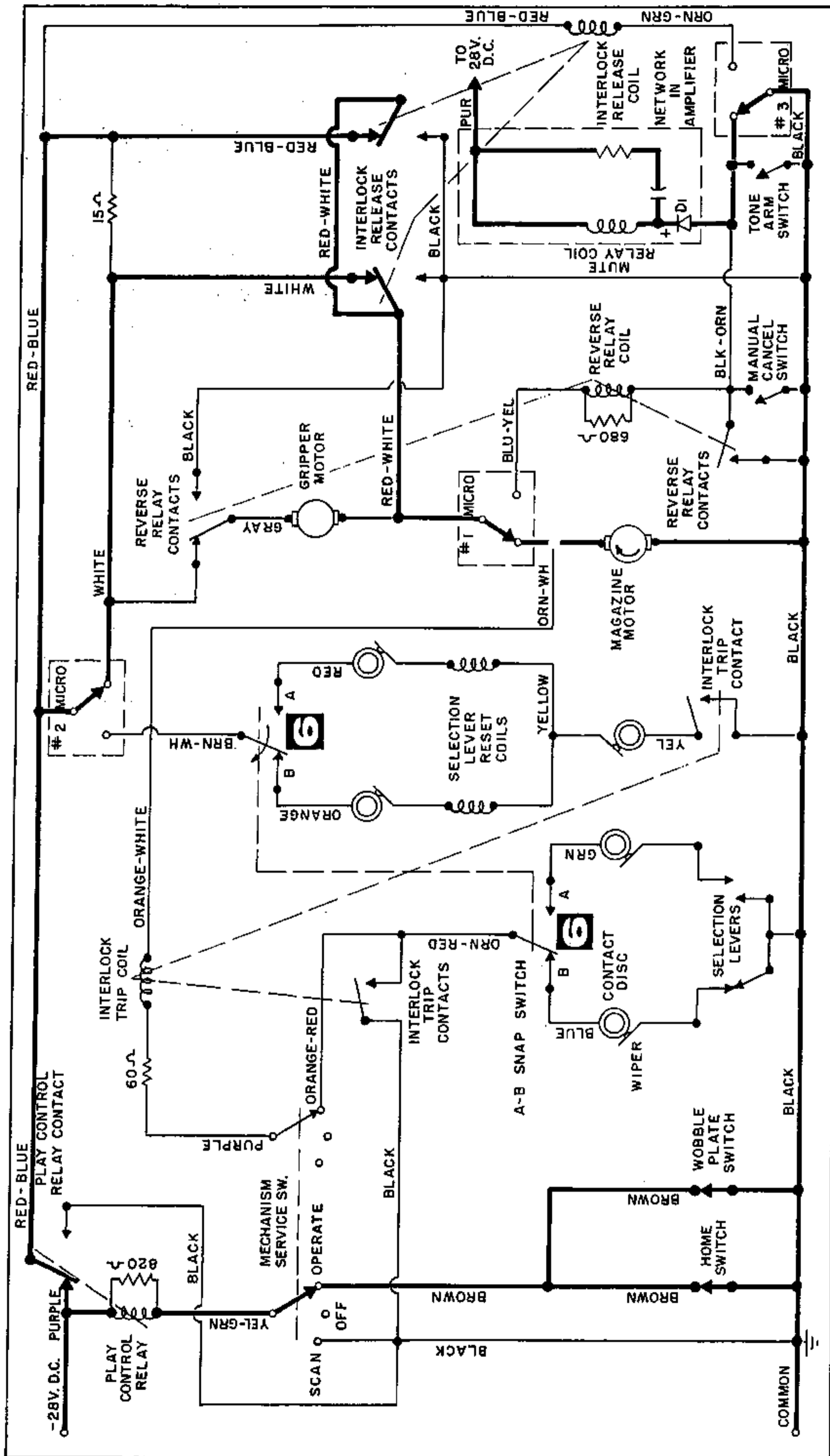
SEQUENCE NO. 1 • POWER ON—NO SELECTIONS REGISTERED



SEQUENCE NO. 2 - SELECTION REGISTERED

Tripping of any SELECTION LEVER (1) to the play position completes a circuit to the PLAY CONTROL RELAY (4) via the WOBBLE PLATE SWITCH (2). Relay operates, starting AMPLIFIER and TURNTABLE MOTOR (circuit not shown)

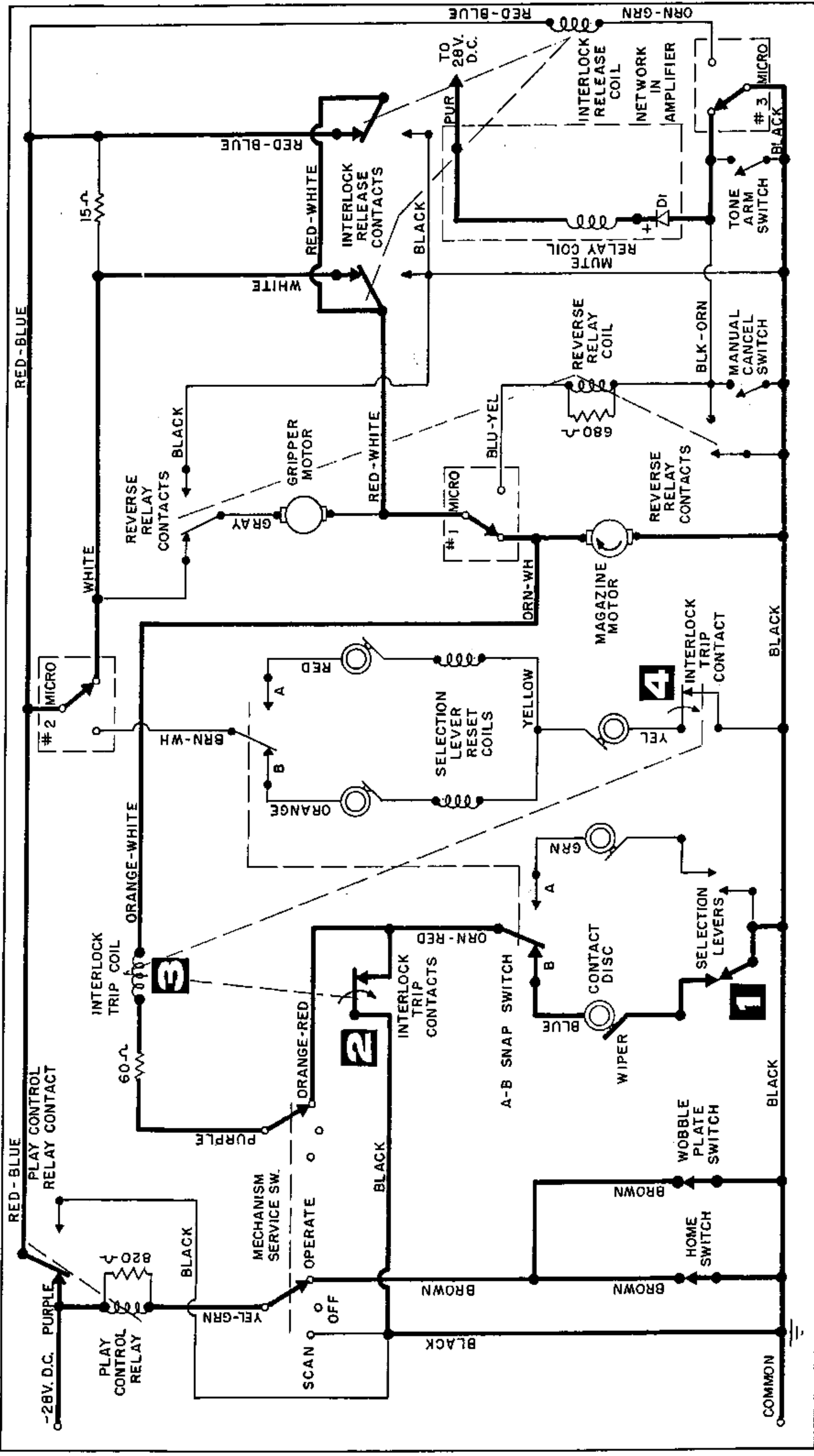
and contact (5) closes circuits to the MAGAZINE MOTOR (6) and MUTE RELAY (7). Magazine begins to rotate; HOME SWITCH (3) closes.



SEQUENCE NO. 3 · A-B SNAP SWITCHES OPERATE

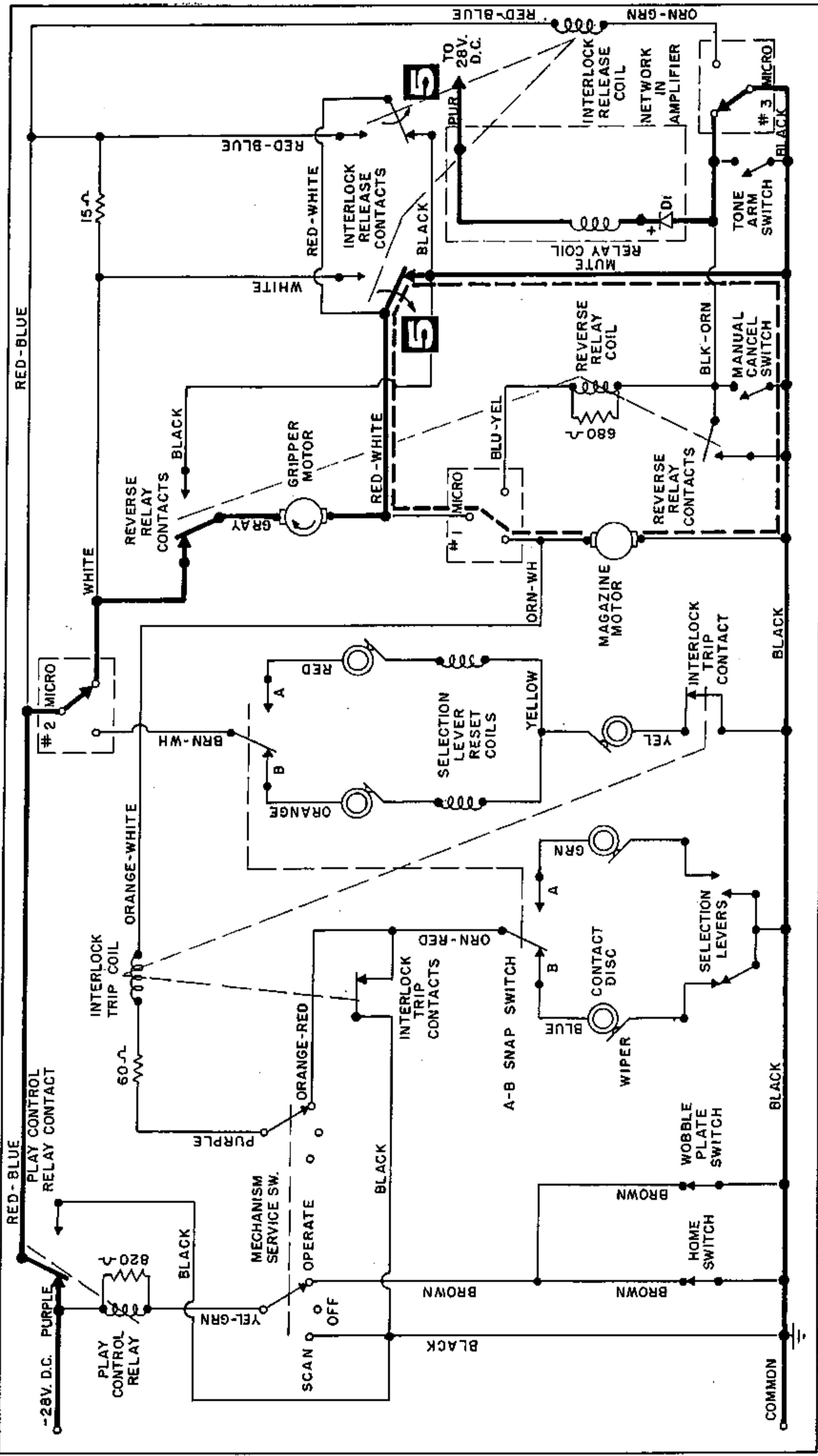
Depending on the last "homed" position of the Magazine, the A-B SNAP SWITCHES will select either the A or B side of the record depending upon which comes up first. As the MAGAZINE cycles and falls to locate an A side selection, the

SNAP SWITCHES then connect circuits for the B selections (6), through a mechanical action that is caused by the cycling of the RECORD MAGAZINE.



SEQUENCE NO. 4 • CARRIAGE TRIPS INTERLOCK RELAY

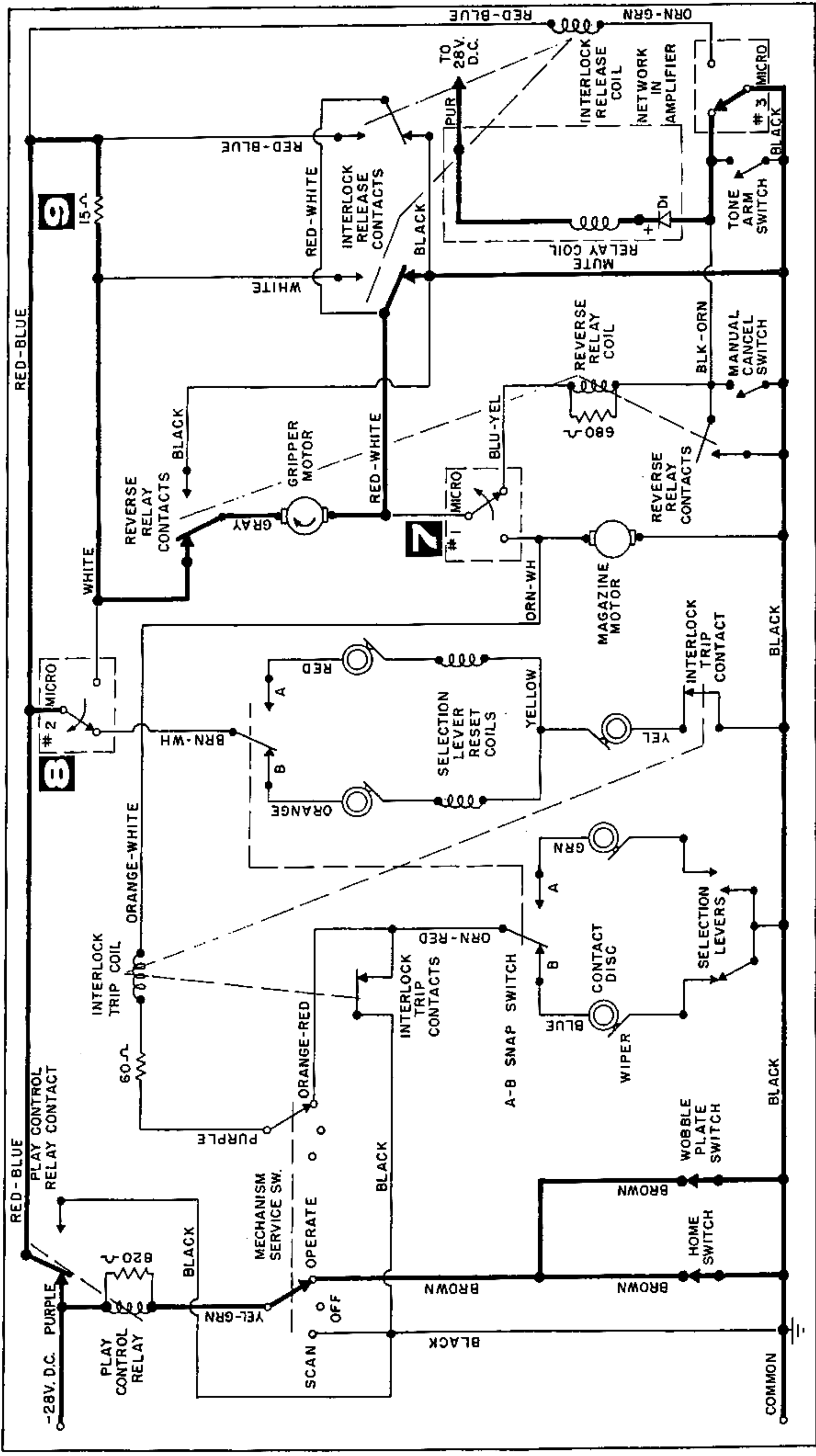
The proper A-B circuits now established, the CARRIAGE INDEXING CONTACT strikes the SELECTION LEVER (1), thereby completing the circuit to the INTERLOCK 'TRIP' COIL (3). The INTERLOCK operates, closing contacts (2) and (4). Contact (2) provides a holding circuit to the INTERLOCK 'TRIP' COIL, and contact (4) makes a connection to the SELECTION LEVER RESET COILS for use in a later sequence.



SEQUENCE NO. 5 • RECORD INDEXED

As the trip armature of the interlock completes its stroke, the release armature relaxes, transferring contacts (5). This short-circuits the MAGAZINE MOTOR ARMATURE (dotted lines), dynamically braking the magazine and bring-

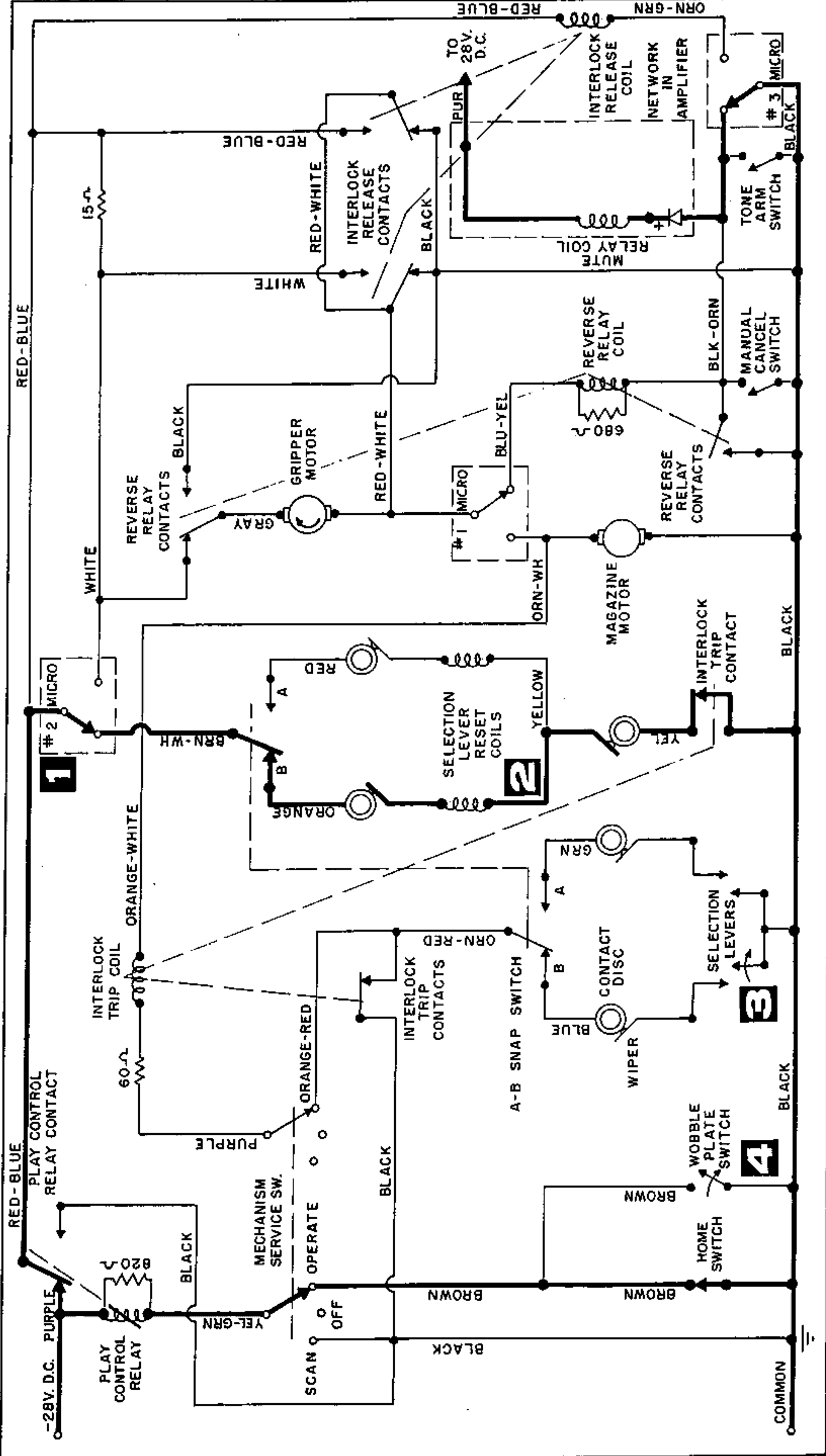
ing it to a quick stop. A circuit is simultaneously completed to the GRIPPER MOTOR through contact (5); this causes the gripper jaws to grasp the record.



SEQUENCE NO. 6 GRIPPER MOTOR SLOWING CYCLE

Prior to the gripper jaws engaging the record, the MICRO SWITCH CAM CLUSTER operates the NO. 1 MICRO SWITCH (7) thereby disconnecting the MAGAZINE MOTOR. The GRIPPER MOTOR continues to operate and places the

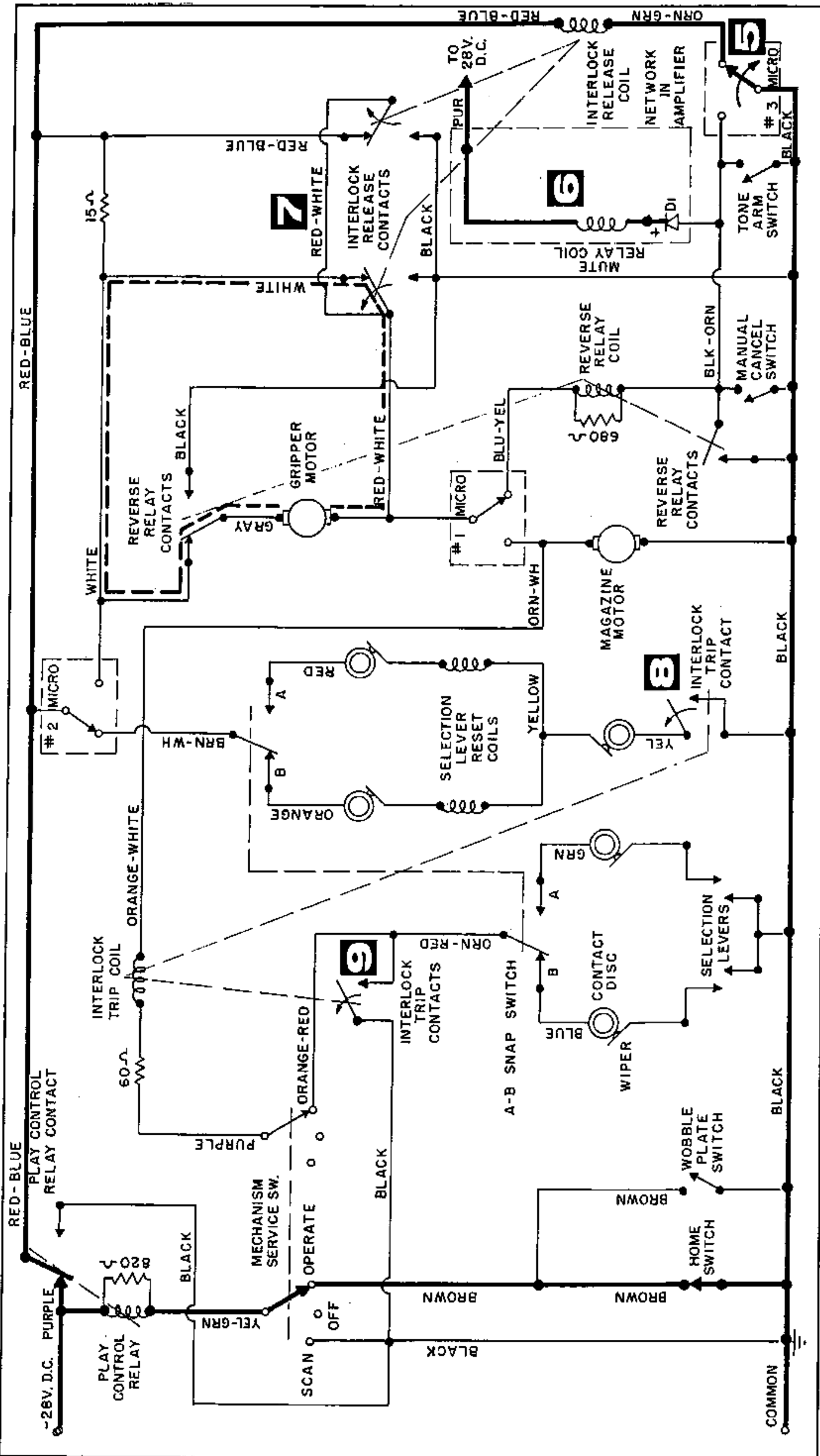
record on the TURNTABLE. At this point, the NO. 2 MICRO SWITCH (8) operates allowing the GRIPPER MOTOR circuit to be completed through the 15 OHM RESISTOR (9) thereby slowing the speed of the motor.



SEQUENCE NO. 7 • SELECTION LEVER RESET

The NO.2 MICRO SWITCH (1) now transferred, completes a circuit to the SELECTION LEVER RESET COIL (2) which causes a lever to reset the selector lever to its normal position (3). If no other selections are registered, the WOBBLE

PLATE SWITCH (4) returns to OFF position. The PLAY CONTROL RELAY is now held in by the mechanism HOME SWITCH.

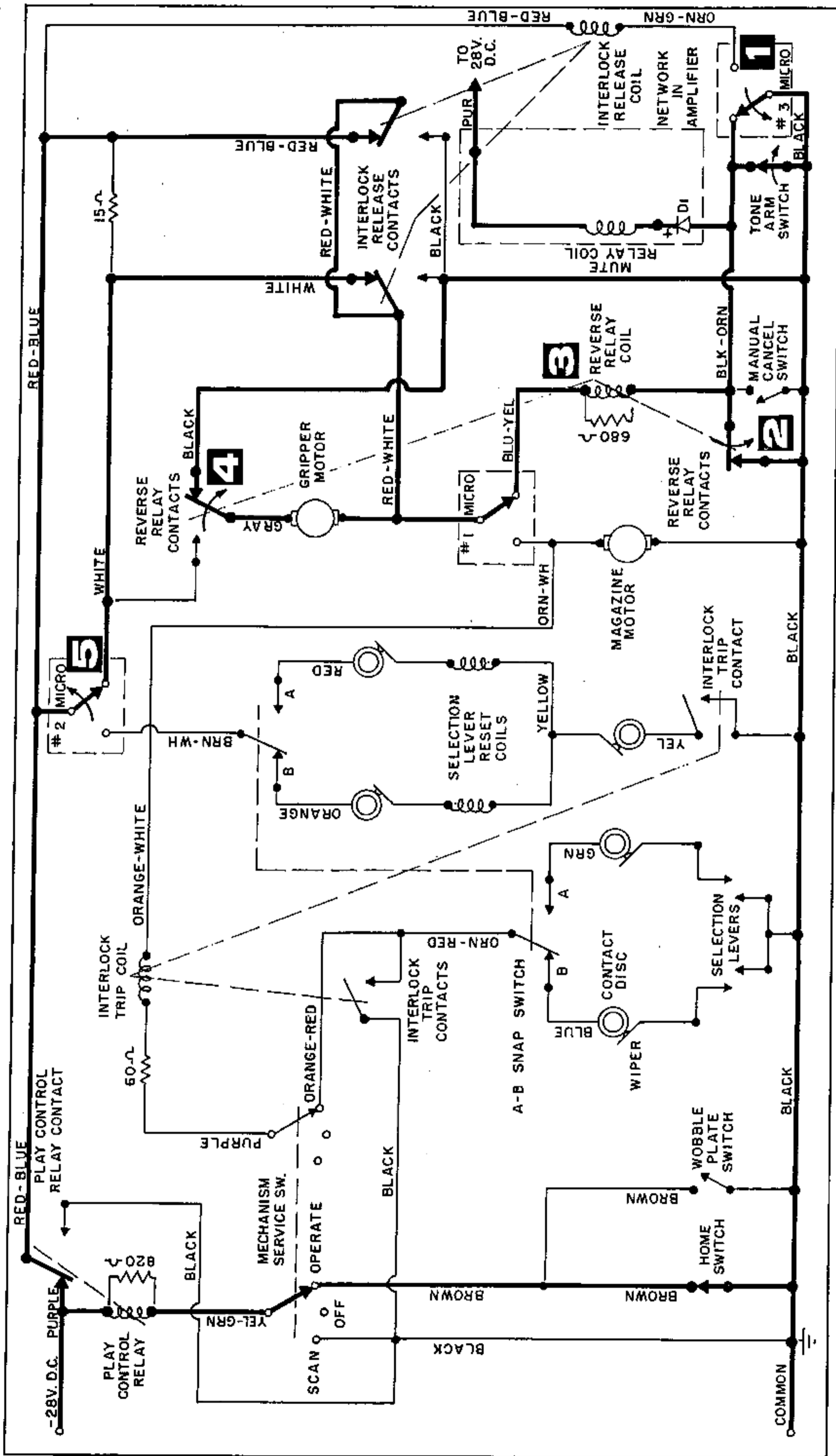


SEQUENCE NO. 8 • RECORD TRANSFER CYCLE COMPLETED--GRIPPER MOTOR STOPS

Continued operation of the GRIPPER MOTOR opens the grip arm jaws, and allows the TONE ARM to be placed on the record. At this point the NO.3 MICRO SWITCH (5) is operated completing a circuit to the INTERLOCK 'RELEASE' COIL. The energized release coil armature transfers contact (7) to their original position. This places a short circuit across the GRIPPER MOTOR, dynamically braking it and stopping the grip mechanism. As the INTERLOCK 'RELEASE' ARMATURE completes its stroke, the INTERLOCK 'TRIP' ARMATURE relaxes, opening contacts (8) and (9).

The opening of contact (8) breaks the circuit to the SELECTION LEVER RESET COIL.

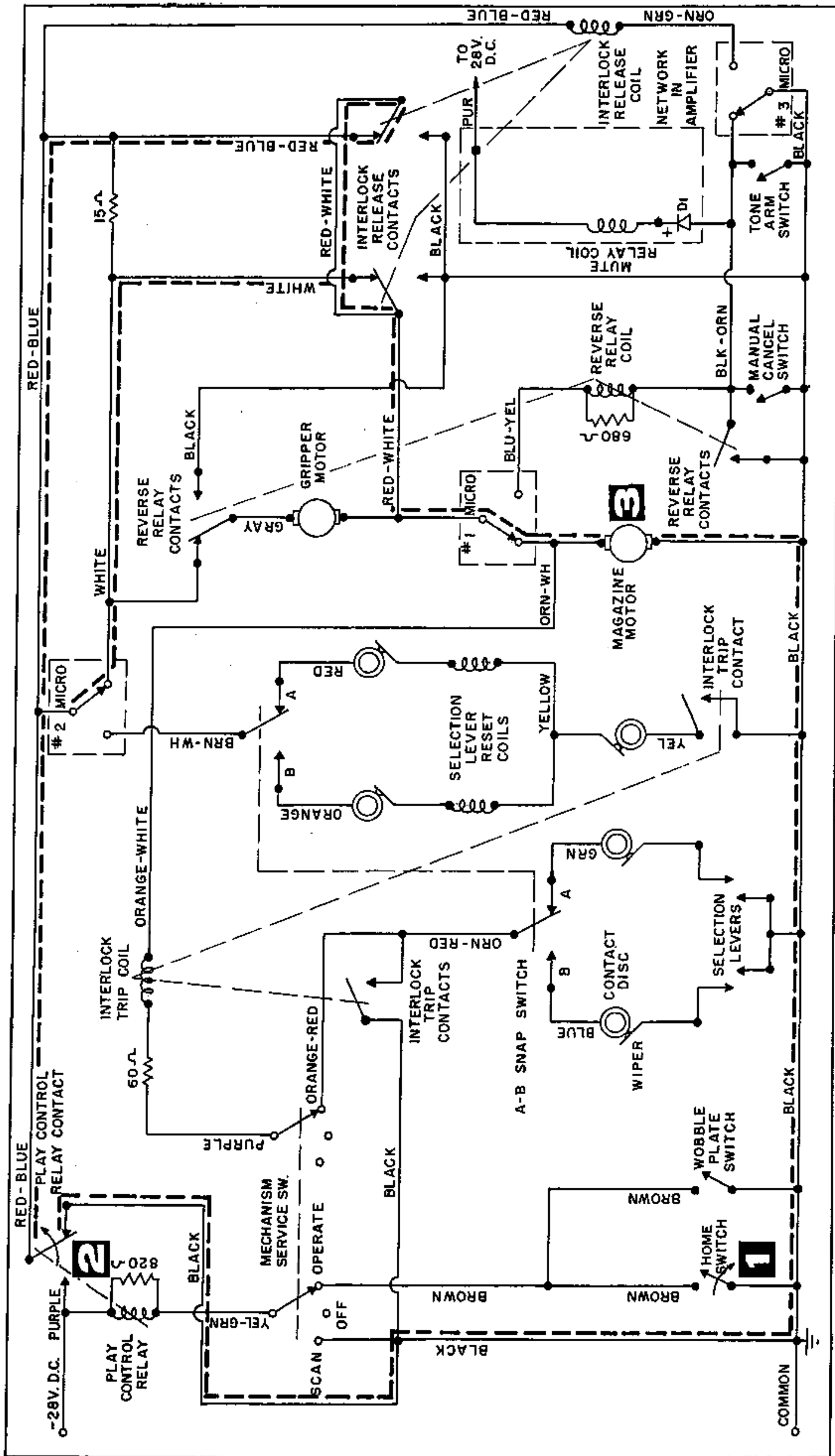
The resistor-capacitor network across the MUTE RELAY COIL at (6), keeps the coil energized for a short time even though the circuit is disconnected at (5). This additional time delay mutes the amplifier during the TONE ARM sit down and entry into the first record groove, thus eliminating undesirable noises.



SEQUENCE NO. 9 • MUSIC CYCLE ENDED

As record play is ended, the tone arm moves into the cutoff groove and operates the TONE ARM SWITCH (1). This completes circuits to the AMPLIFIER MUTE RELAY, and to the REVERSE RELAY COIL (3). This serves to close contact (2) and transfer contact (4). Contact (2) serves as a locking circuit for the REVERSE RELAY COIL, contact (4) completes the gripper motor circuit in such a manner that its direction

of rotation is reversed, closing the grip jaws on the record. At this point, NO.3 MICRO SWITCH is operated, closing a holding circuit to the REVERSE RELAY COIL in parallel with the locking contact (2). As the gripper proceeds to return the record to the magazine, NO.2 MICRO SWITCH (5) is operated by the MICRO SWITCH CAM CLUSTER.



SEQUENCE NO. 11 - SCAN CYCLE COMPLETED

The rotation of the magazine is completed when the "Home-ing" wiper (1) on the printed circuit disc enters the ring opening. This breaks the circuit to the PLAY CONTROL RELAY which opens the AMPLIFIER and TURNTABLE

circuits and transfers contact (2). This results in a short circuit across the MAGAZINE MOTOR armature (3) and dynamically breaks the magazine, thus bringing it to a quick stop. This completes the mechanism cycle.

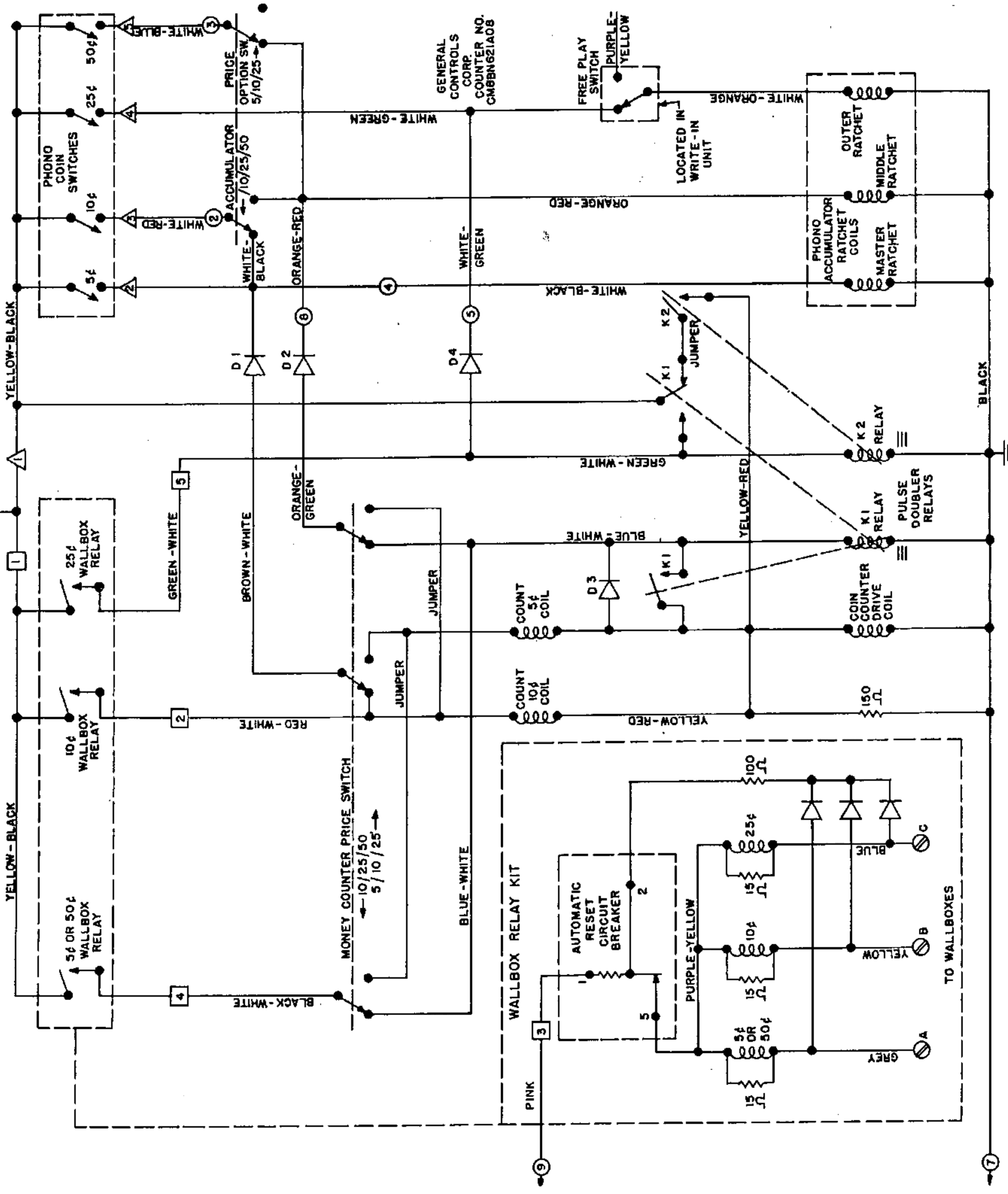
U.S. AND CANADIAN MONEY COUNTER KIT - NO. 1989

(PART NO. 38744)



- 9 MATE-N-LOK (RED) TO WRITE-IN UNIT
 - 6 AMP-LOK (WHITE) TO WALLBOX
 - △ 5 WIRE CABLE TERMINAL STRIP TO COIN SWITCH
- NOTE: REJECTOR NICKEL TOGGLE TO BE USED ON 10/25/50 PRICE OPTION

-28 VOLTS D.C. (SEPARATE POWER SUPPLY) YELLOW-BLACK



GENERAL CONTROLS CORP. COUNTER NO. CMBBN621A08

FREE PLAY SWITCH PURPLE-YELLOW

LOCATED IN WRITE-IN UNIT

PHONO ACCUMULATOR RATCHET COILS
OUTER RATCHET
MIDDLE RATCHET
MASTER RATCHET

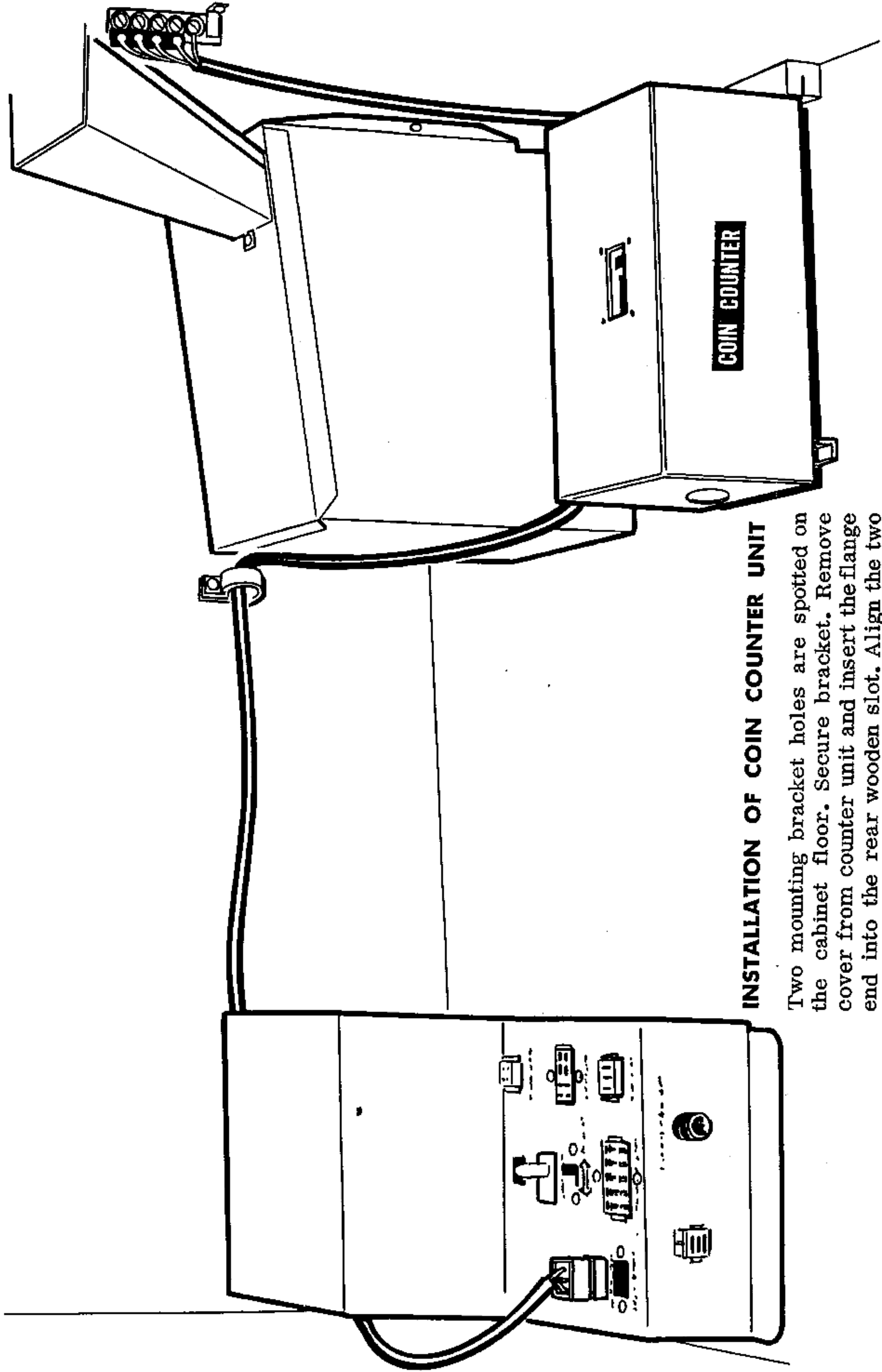
PULSE DOUBLER RELAYS
K1 RELAY
K2 RELAY

WALLBOX RELAY KIT

AUTOMATIC RESET CIRCUIT BREAKER

PURPLE-YELLOW

TO WALLBOXES



INSTALLATION OF COIN COUNTER UNIT

Two mounting bracket holes are spotted on the cabinet floor. Secure bracket. Remove cover from counter unit and insert the flange end into the rear wooden slot. Align the two front screw holes and fasten with screws provided.

IMPORTANT: Remove original coin cable assembly from cabinet and install counter unit cables as shown.



33-1/3 - 45 RPM RECORD INTERMIX CYCLE OF OPERATION

The turntable utilizes one constant speed 4-pole motor with only a shaft variance to accommodate 45 and 33 1/3 R.P.M. speeds. This is accomplished by a simple mechanical operation.

Turntable speed sensors are held in constant 45 R.P.M. position by three spring retained ball bearings. The 45 R.P.M. hub is also locked by the ball bearings and held in position by the sensors.

When a 33 1/3 R.P.M. record comes in contact with the turntable sensors, it triggers a ball bearing action allowing a rapid and simultaneous drop of the 45 R.P.M. hub and sensor. The sensor ring (the bottom section of the sensors) operates the sensor lever which unlocks the idler cam lever.

The drive rod driven by the rotating gripper gear allows the moving slide bar to engage the sensor lever pin and operate the idler cam lever and idler cam.

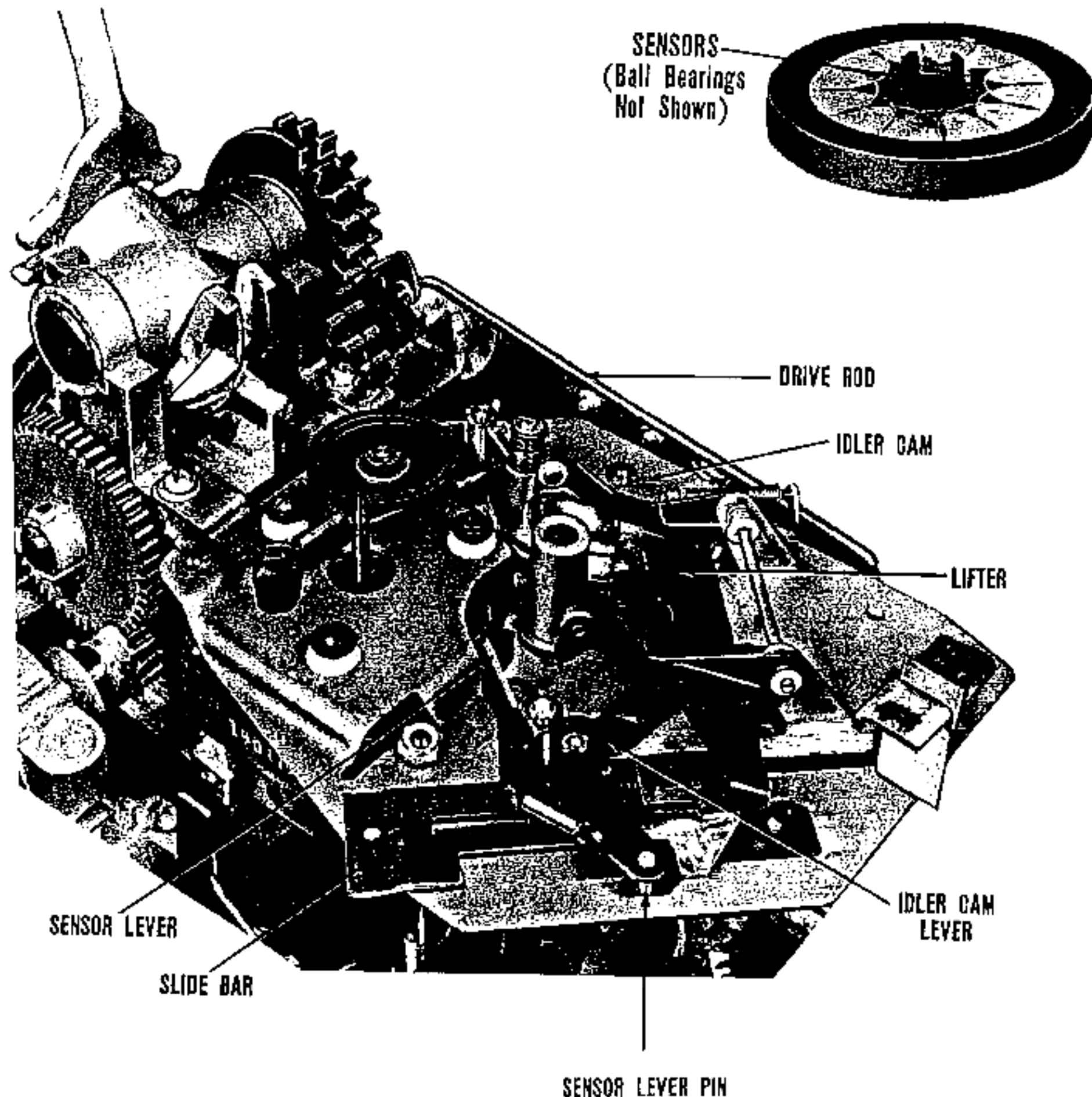
The moving idler cam in one rapid motion will:

1. Swing idler wheel away from the 45 R.P.M. motor drive shaft and turntable.
2. Raise idler wheel.
3. Return idler wheel against the 33 1/3 R.P.M. speed portion of the motor drive shaft and also turntable.

Upon completion of the music cycle the rotating gripper gear releases the drive rod tension allowing a lifter to raise the sensing fingers and 45 R.P.M. hub to their original position.

The lifter mechanism remains in a raised position and lowers just prior to record coming in contact with turntable.

CAUTION: DO NOT ATTEMPT TO LOWER THE TURNTABLE SENSORS DURING MACHINE STAND-BY AS THIS MAY MISALIGN THE CAMMING ACTION.



AMPLIFIER

SECTION



AMPLIFIER—VOLUME CONTROL

The amplifier in this machine is a dual purpose Stereophonic-Monaural amplifier. It may be used monaurally and stereophonically through the machine speakers and remote speakers.

1. There are several controls on the amplifier, and volume control, some of which require explanation.

A. The "Bass" and "Treble" controls are quite ordinary, and should be set to give the desired type of sound.

B. The "Stereo-Monaural" switch directs the amplifier output in the following ways:

STEREO position: This position connects machine and remote speakers for stereo application.

MONAURAL position: This position combines the stereo channels into one and directs this output to the machine and/or remote speakers.

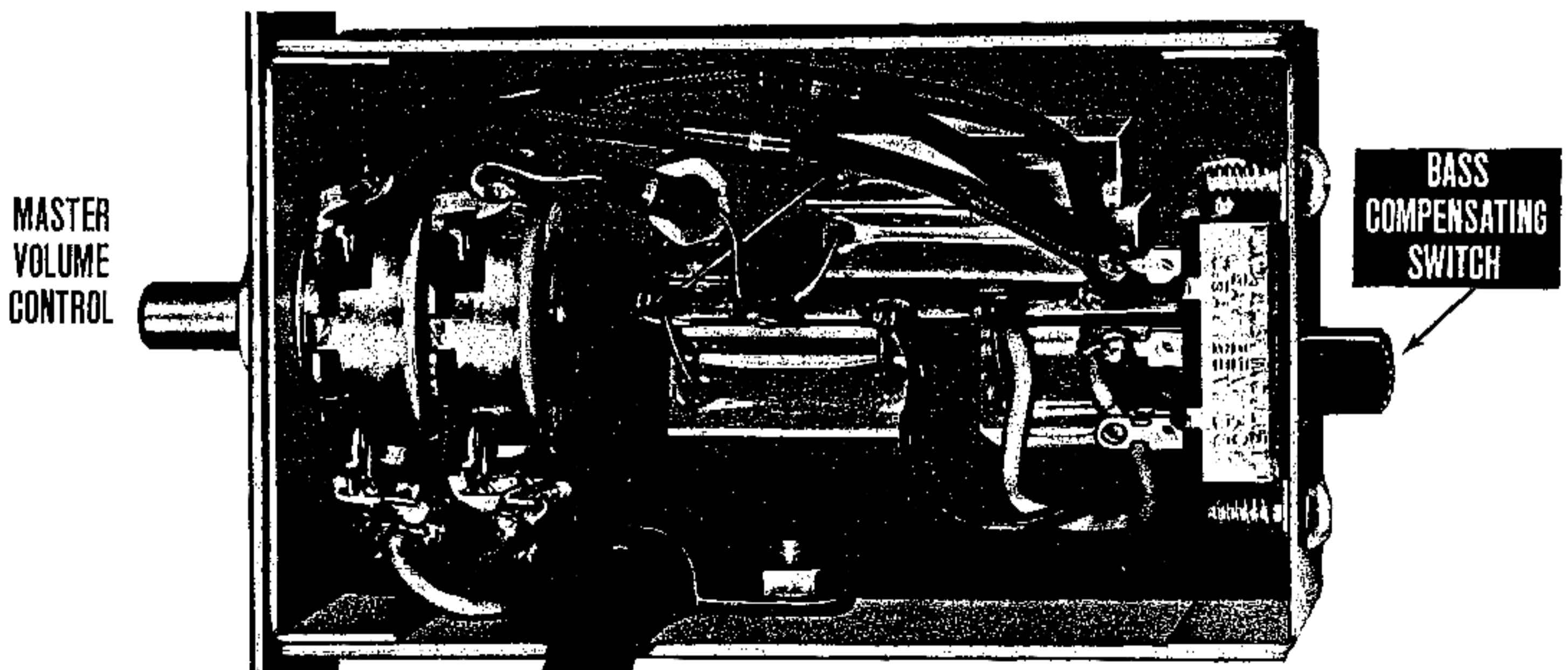
C. AVC (Automatic Volume Control) switch should be set to "On" position for normal operation. The "Test" position is for servicing of amplifier only.

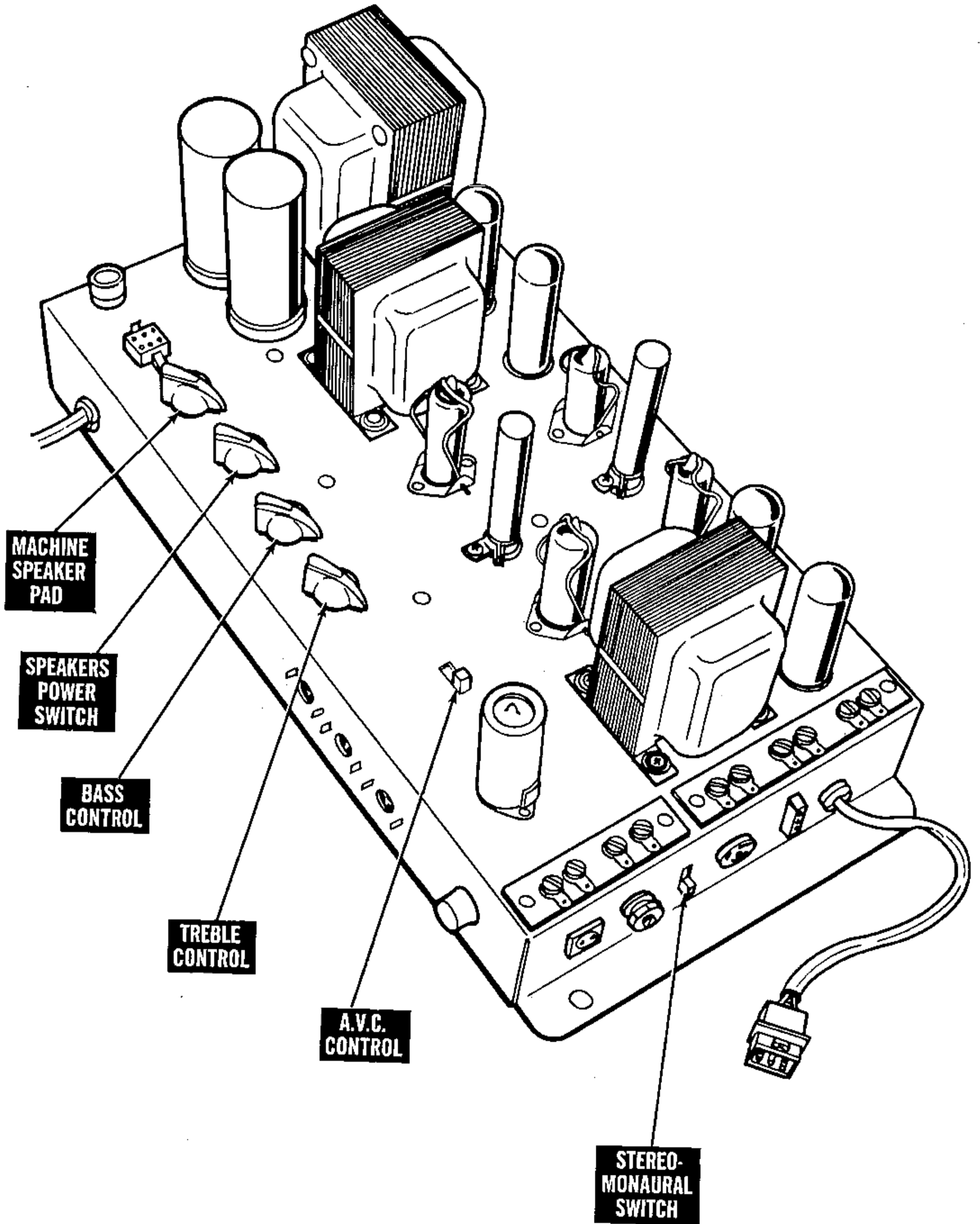
D. Speakers Power Switch: This switch controls the distribution of power, and serves to match impedances between the machine speakers and remote speakers. If only the machine speakers are to be used, this switch should be in the "20 W" position.

A description of this switch, and its uses with stereo and remote speakers, is contained in the chart found on the next page.

E. Machine Speaker Pad: This control serves as a separate control for machine speakers only.

F. Low Volume Bass - "On-Off" Switch: The master volume control is provided with a bass compensating switch, and when set to "On", increases the bass response at all levels below maximum setting of the Volume Control.







SPEAKER INSTALLATION GUIDE

The audio amplifier in this phonograph is a dual purpose type and can be used as a "Stereo" or "Monaural" sound system. In either application, the method of impedance matching will remain the same. As it will be impossible to cite all conceivable speaker installations, the following will illustrate only the typical. The best results will be obtained and the amplifier protected if the few rules under discussion will be followed.

1. The same number of speakers of the same rating must be connected to each channel to maintain proper balance.
2. All low impedance speakers (4 ohm, 8 ohm, 16 ohm) must be connected to the 16 ohm terminal source. **DO NOT CONNECT TO THE 70-VOLT LINE TERMINALS.**
3. Speakers with matching transformers must always be connected to the 70-volt line terminal source.

POWER SWITCH POSITIONS

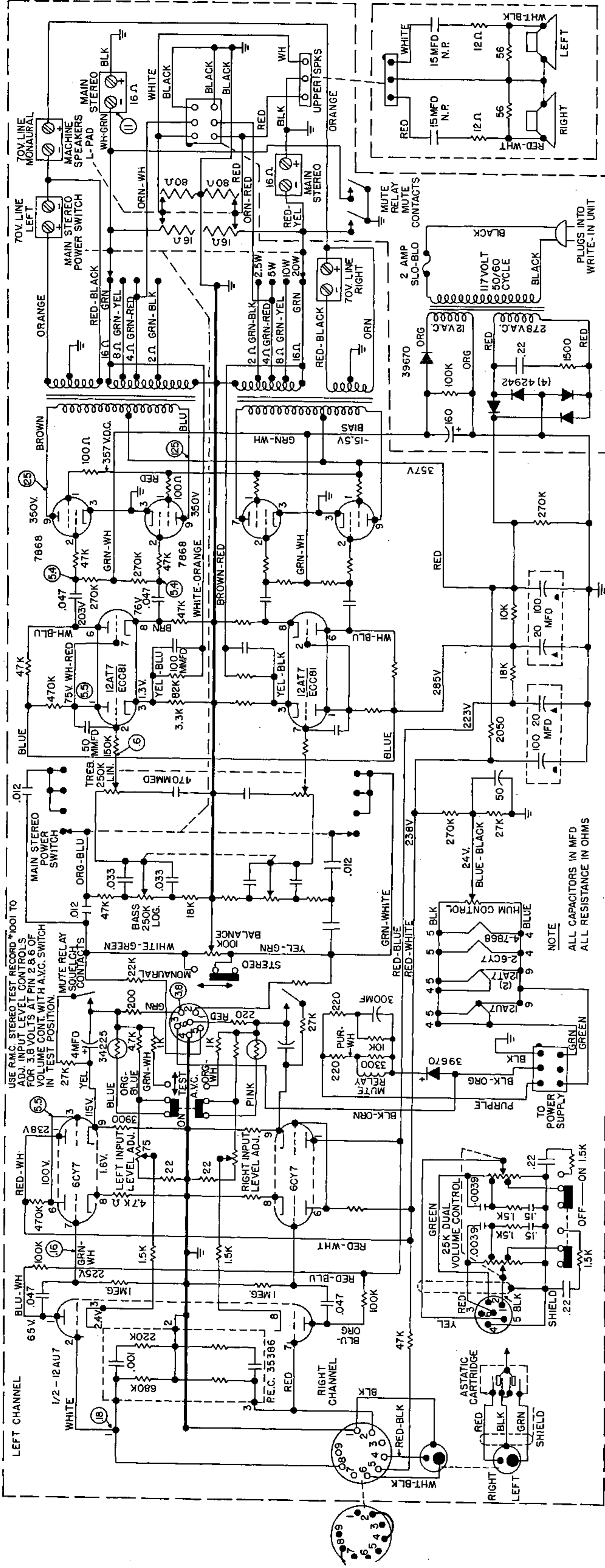
1. When no additional speakers are used, the Power Switch should be in the 20 Watt position; this represents an impedance of 16 ohms which is a match for the phonograph speakers for best performance.
2. When connecting speakers with matching transformers and each speaker, or group of speakers with varying power output is to be considered, add the watt position of each speaker in one channel. Set the Power Switch to a watt position which when added to the watt power of the speakers, the total does not exceed 25 watts per channel.

Example: 3 speakers are to be connected to each channel. Consider each channel as one unit. Two of the speakers are to be set to a power output of 6 watts and the last speaker to 2 watts.

The total power output required is 14 watts. Adjust the Power Switch to the 10 watt position. The total power requirement for the entire system when added is 24 watts. This does not exceed the power capabilities of the amplifier.

When using low impedance speakers, use the following chart for proper impedance matching.

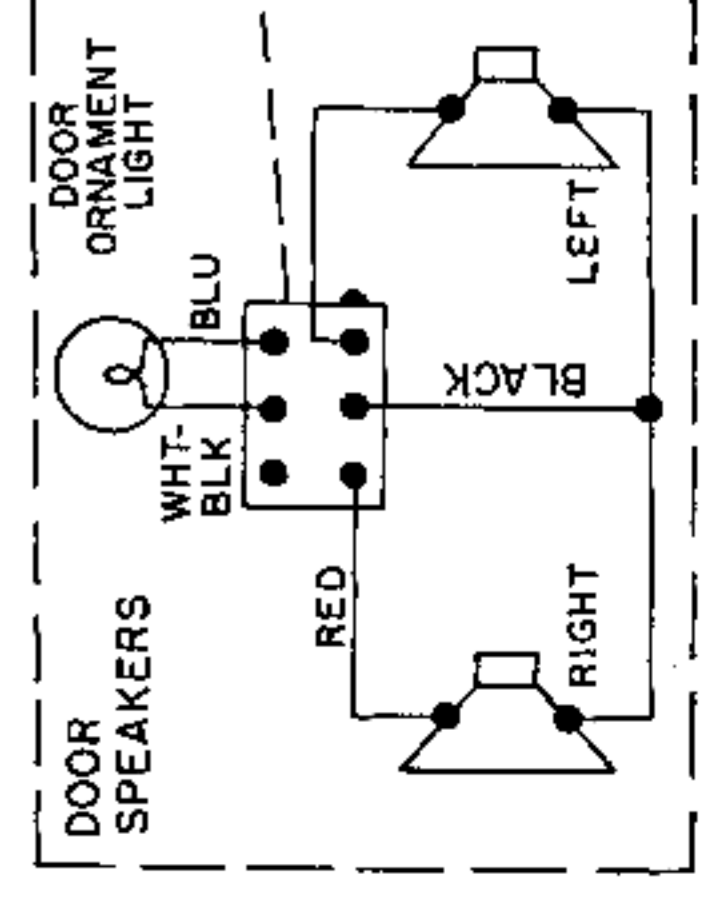
Impedance	Power Switch Position	16 ohm speakers	8 ohm speakers	16 ohm & 8 ohm
16 ohm	20 Watt position. (Machine speakers only)			
8 ohm	10 Watt	1-16 ohm	1-8 ohm	
4 ohm	5 Watt	3-16 ohm	2-8 ohm	1-16 ohm 1- 8 ohm
2 ohm	2.5 Watt	7-16 ohm	3-8 ohm	1-16 ohm 3- 8 ohm
				2-16 ohm 2- 8 ohm
				3-16 ohm 2- 8 ohm
				4-16 ohm 1- 8 ohm
NOTE: Never leave the Power Switch in the 20 Watt position when external speakers are used.				



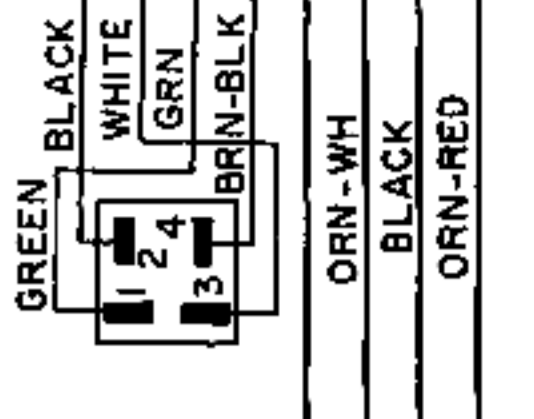
(OO) INDICATES SIGNAL VOLTS WITH .18 VOLTS 1000 CPS INPUT. MAX. VOLUME AND TONE CONTROLS. MAIN SPEAKERS POWER SWITCH IN 20 WATT POSITION AND TWO 16 OHM LOADS CONNECTED TO LEFT AND RIGHT MAIN STEREO OUTPUT. A.V.C. SWITCH IN TEST POSITION. ALL OTHER VOLTAGES SHOWN ARE D.C. UNLESS OTHERWISE INDICATED.

LOW VOLUME BASS SWITCH

TO WRITE-IN UNIT (GREEN)



RECEIVER PLUG



WALL BOX AUDIO CONTROL CIRCUIT

BROWN-WHITE

ORANGE-WHITE

BLACK

ORN-RED

WHITE

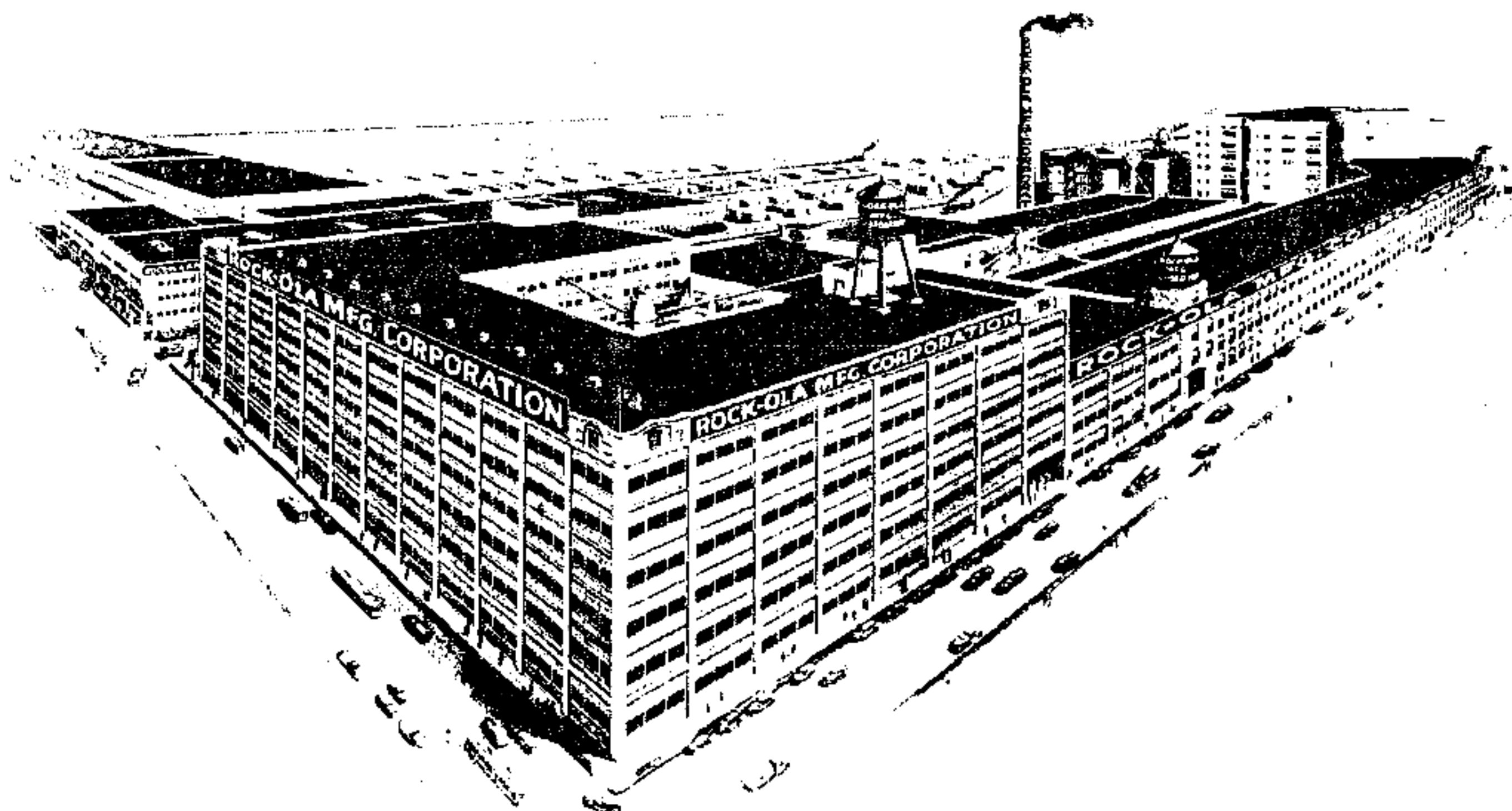
RED

BLACK

LEFT
RIGHT

THE HOME OF QUALITY BUILT PRODUCTS FOR GREATER PROFITS

The Rock-Ola factory in Chicago is the largest factory of its kind in the world devoted to the production of Coin Operated Equipment. It consists of a ground area of three and one-half city blocks with 23 buildings and a floor area of more than one-half million square feet.



**ALWAYS INSIST ON GENUINE ROCK-OLA SERVICE PARTS
AVAILABLE AT YOUR ROCK-OLA DISTRIBUTOR**

ROCK-OLA MANUFACTURING CORPORATION

800 NORTH KEDZIE AVENUE • CHICAGO 51, ILLINOIS