ROCK-OLA

INSTRUCTION MANUAL

FOR

MODEL 1464 PHONOGRAPH

(120 SELECTION HI-FIDELITY)

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PHONOGRAPH CYCLE OF OPERATION

The phonograph cycle begins with the dropping of a coin which accumulates plays on the credit wheel in the accumulator assembly.

When a key switch button is pressed to make a selection, a credit is removed from the credit wheel in the accumulator assembly. The selector coil, and the scan control solenoid, located in the rear of the record magazine, are momentarily energized.

The momentarily energized selector coil moves a selection lever to the outer edge or "play" position on the selector. The selector has 120 levers, one for each record side, arranged in two parallel rows of 60 levers each. The levers for playing the even numbers are in the row toward the rear of the mechanism. The levers for playing the odd numbers are in the row toward the front.

The energized scan control solenoid allows the micro switch to close a circuit to the "start" relay in the power distribution panel, which turns on the turntable motor, amplifier, and magazine motor.

The standby position of the record magazine always remains in a "home" or "zero" position. When any selection is made, the record magazine and selector arm will always start in a counter clockwise direction. Since the selector arm rotates a carriage over 120 selection levers, the electrical circuit is such that in this direction the carriage will only select from the even selection row of 60 levers. At the end of this cycle the record magazine will reverse its rotation to a clockwise direction. The carriage now will only select the 60 odd numbered selection levers.

The manner in which these even and odd numbers are selected, is done by an electrical contact on the bottom of the carriage assembly which strikes the selected lever in its path.

This action closes a circuit to the "interlock relay trip coil;" thereby repositioning its associated contacts. This short-circuits the magazine armature and dynamically brakes the motor causing the magazine to stop. In addition, a circuit is closed to the grip motor which revolves the cam shaft, and causes the jaws of the grip arm to grasp the record.

At this point, micro switch No. 1, located to the left of and adjacent to the grip mechanism housing, is operated by a cam. This disconnects the magazine motor armature.

As the grip motor continues to operate, the grip arm removes the record from the record magazine and proceeds to place it on the turntable. A mechanical action is involved in the gripper arm which determines proper turning or positioning for either odd or even selections.

As the record is being placed on the turntable, No. 2 micro switch lever falls into the groove of the cam. This micro switch closes a circuit to the proper "selector lever cancel solenoid" located on top of the carriage assembly, and causes the spring plunger 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 spring plunger. 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 machine has reached the music cycle.

When the tone arm reaches the record cut-off groove, the tone arm switch closes the circuit to the "cancel relay coil." The cancel 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, which connects a circuit to the magazine motor armature and opens the cancel relay circuit. This in turn, disconnects power from the grip motor and short circuits it, causing the motor to stop. Since a circuit has been completed to the magazine motor, this action allows the record magazine to keep rotating even though no additional selections are registered. The cycling continues until the scan control micro switch lever is actuated to its original position.

At this point the circuit is broken to the "start relay" providing no additional selections are registered, allowing the contacts to open, making the turntable motor and amplifier inoperative. With all circuits now open, the record magazine is again in "home" or "zero" position which completes the mechanism cycle.

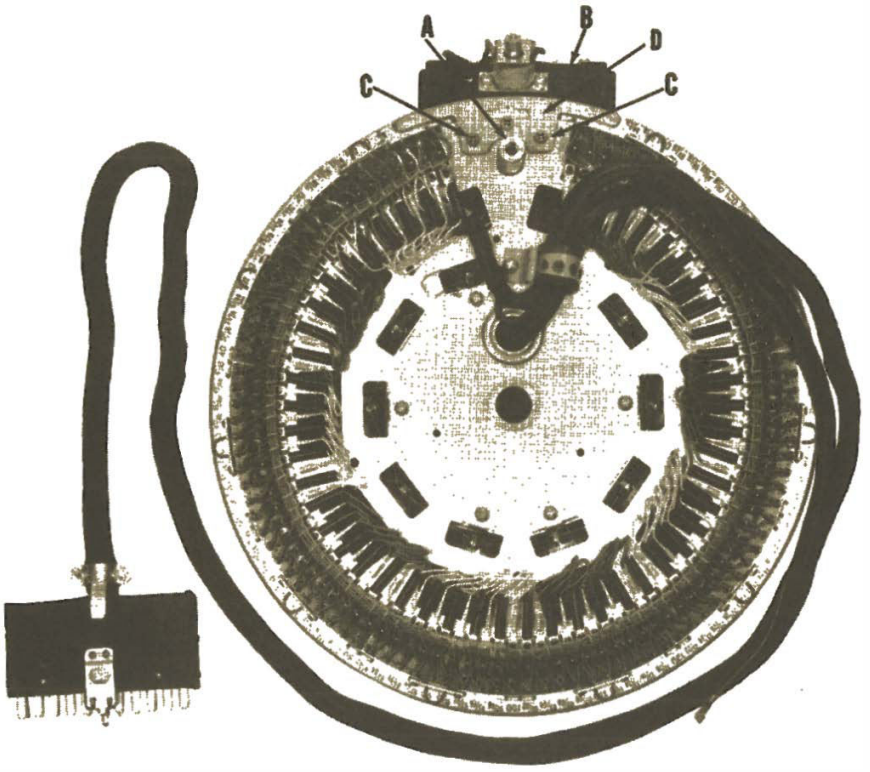


FIG. 1 SELECTOR UNIT

REMOVAL OF SELECTOR UNIT

The selector unit is suspended in the mechanism by a shaft inserted through the center of the selector unit, into a hollow shaft which supports the record magazine. The selector unit is positioned and kept from rotating by means of the shoulder bushing (A-Fig. 1) which is located at the upper right hand side behind the counter drive gear.

The procedure for removing the selector unit is outlined below:

1. Remove rear door from cabinet by turning the two butterfly nuts located on the inside of the cabinet and behind the record magazine.
2. Move the "service scan switch" on the control box to "SCAN" position and allow the magazine to rotate until record gripper arm is directly over the second record slot from the blanked out portion on the record magazine.
3. Unloosen the two allen set screws on shaft at rear of mechanism and adjacent to scan control assembly.
4. Now, continue to scan the record magazine until the gripper arm is centered directly over the blanked out area on the magazine. Move mechanism switch to "OFF" position.
5. At this point carriage assembly (B Fig. 1) should be directly opposite the selector rail segment (D Fig. 1). If it is not, by hand rotate the knurled end of the magazine motor armature until carriage is positioned properly.
6. Take out two screws holding selector rail segment (C Fig. 1) and slide out carriage assembly (B Fig. 1). Do not remove cable wiring from carriage assembly.
7. Remove selector retaining spring and mounting stud (A Fig. 1). Disengage selector cable from cable clamp.
8. Disconnect 18 position Jones Socket from control box. Remove 2 screws that clamp selector cable to the two braces that support the cam-out rail. Disconnect the 27 position Jones Socket on the other end of the selector cable that is connected to a Jones Plug on the lower right side of the front door.
9. From the rear of the mechanism, tap the internal shaft so that the shaft protrudes about 2" beyond the front turntable support bracket.
10. Place hand under selector unit for support, remove internal shaft, lower and remove selector.

To re-install selector unit, the reverse order of procedure should be used.

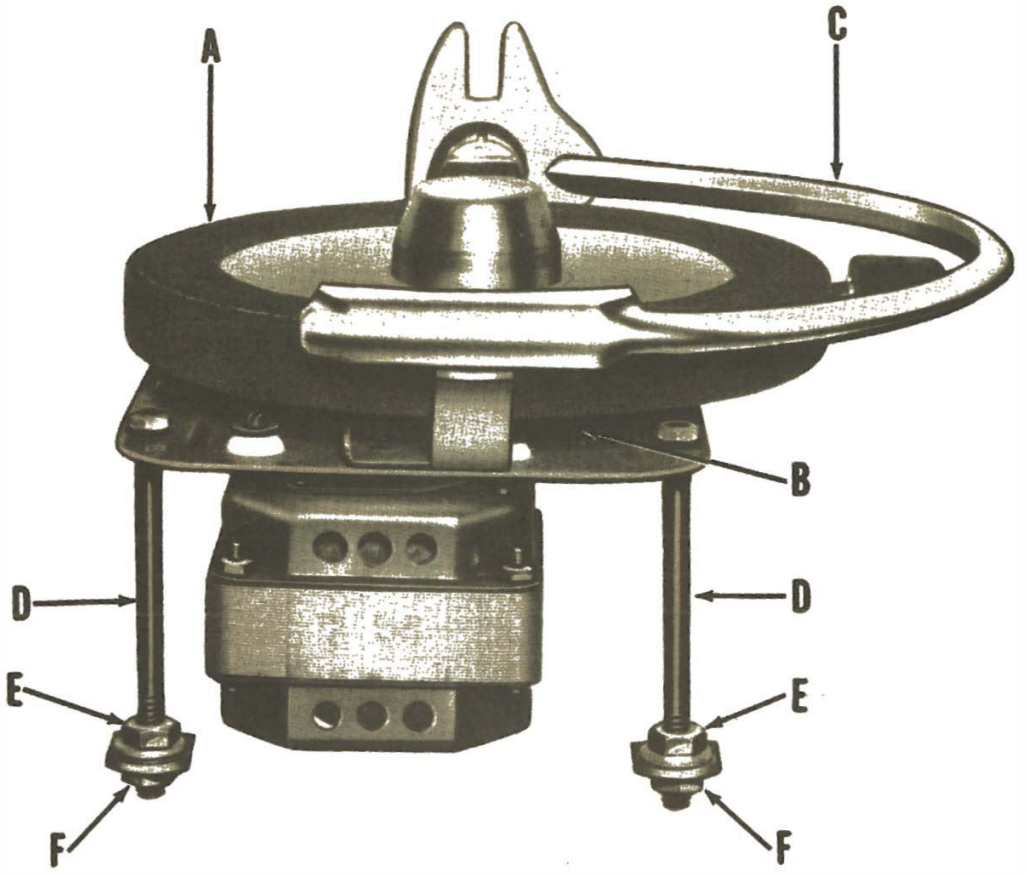


FIG. 3 TURNTABLE AND ASSOCIATED PARTS

TURNTABLE HEIGHT AND CENTERING

The turntable (A-Fig. 3) must be level and in proper alignment with the center line of the inner and outer gripper arm stings. With the gripper arm (C-Fig. 3) in play position over the turntable, the top surface of the outer and inner gripper arms will be 9/32 inch above the playing surface of the turntable for a 7 inch record. The turntable mounting plate can be raised or lowered by loosening the lower lock nuts (F-Fig. 3) on the support studs (D-Fig. 3) and turning the upper adjustment nuts (E-Fig. 3) up or down to satisfy this condition. After adjustment, secure lower lock nuts. Shim washers can be inserted at (B-Fig. 3) between the gripper housing sting and the mounting plate to level the turntable with respect to the inner and outer gripper castings. The position of the gripper arm stop can be adjusted by bending the stop up or down for gripper arm alignment.

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 observing the relationship of the turntable center locator to the center hole of the record. If adjustment is necessary, remove the turntable from the turntable motor by lifting it upward.

After the turntable has been removed, two plate mounting screws and two hex nuts which fasten the turntable motor to the mounting plate are visible. Loosen the screws and hex nuts 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. When replacing the turntable, make ce ain that the rubber covered idler wheel is seated properly under the drive wheel of the turntable.

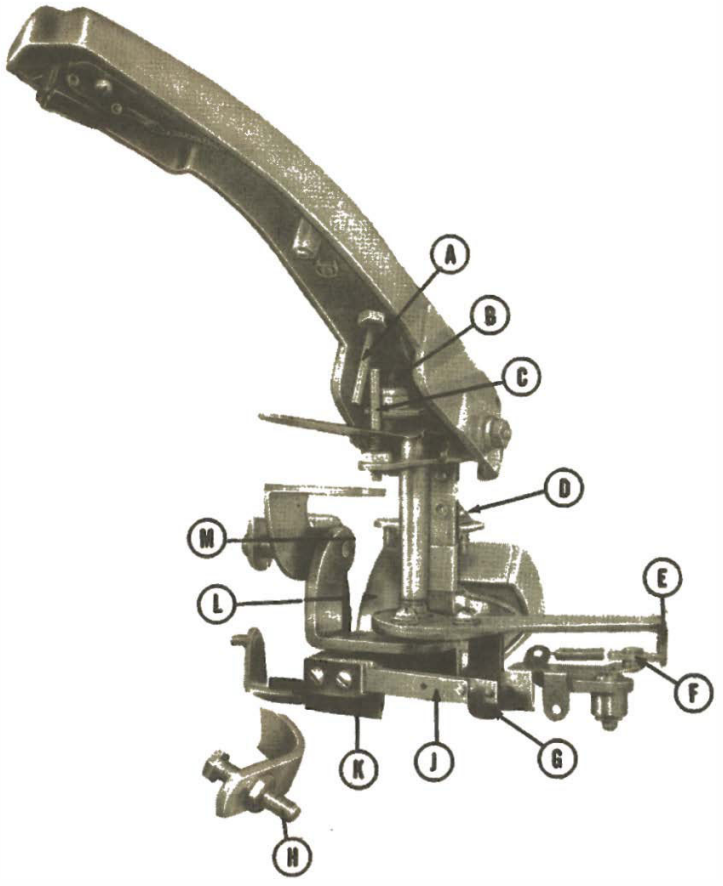


FIG. 4 TONE ARM ASSOCIATED PARTS

TONE ARM ADJUSTMENTS

The "set down" position of the needle on a 7-inch record is 3/32 inch from the edge of the record. To obtain this position, cycle the mechanism and allow the tone arm to "set" on the record. Hold the inside cam plate stop pin (M-Fig. 4) against inside of tone arm cam (L-Fig. 4). Loosen screw at (D-Fig. 4) and move tone arm so that needle rests 3/32 inch from edge of record. Then carefully tighten screw (D-Fig. 4).

The record "cut-off position" is 2-1/32 inches from the center of the record hole toward the outer edge of the record. The bracket at (G-Fig. 4) can be bent to actuate the tone arm switch (J-Fig. 4) when needle reaches the cut-off position. The trip dog (F-Fig. 4) is a safety device to prevent re-playing the same record by jarring the tone arm back across the record. The trip dog (F-Fig. 4) should release from bracket (E-Fig. 4) slightly before the needle reaches the record cut-off position. Bracket (K-Fig. 4) on which the tone arm switch is mounted can be bent to obtain this condition.

The needle pressure on the record is eight grams. When adjusting for needle pressure, turn adjusting screw (B-Fig. 4) accessible through the top of the tone arm, "clock-wise" to reduce needle pressure. Needle pressure readings must be taken at the point of contact of the needle on the record.

The tone arm height must be adjusted so that the needle just touches the flocking on the turntable as the tone arm moves across it. Loosen nut which lock adjustment screw (C-Fig. 4). Turn screw "in" to increase height and "out" to decrease the height of the needle with respect to the flocking on the turntable.

There should be at least 3/16 inch to 1/4 inch clearance between the tone arm needle and the bow of the gripper arm as the tone arm passes over the gripper arm to "set down" position on the record. Adjustment screw (A-Fig. 4) can be turned "in" to decrease the clearance and "out" to increase the clearance between the gripper arm and the needle. Select even numbered record before making adjustments.

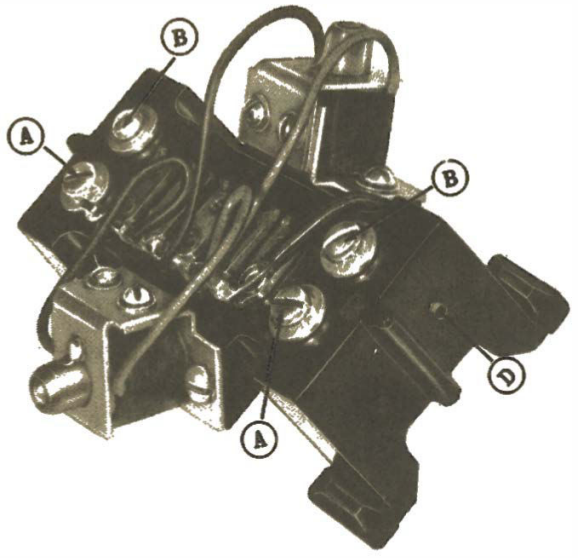


FIG. 5

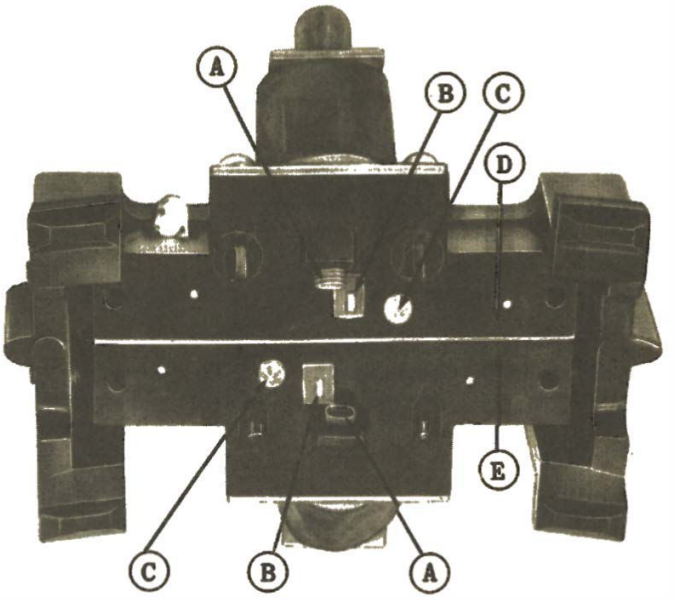


FIG. 6

CARRIAGE ASSEMBLY

CARRIAGE ASSEMBLY ADJUSTMENTS

The functions of the carriage assembly are: 1 - to search for a selector lever in "play" position, and upon locating the lever, stop the record magazine; thereby 2 - Aligning or "indexing" the proper record with respect to the gripper arm. 3 - Return the selector lever from "play" position to normal position in the selector unit.

The carriage assembly is rotated over the selector unit by means of the selector arm, and held in position at each end by adjusting screws (H-Fig. 4). The rotation of the carriage is stopped when the proper contact (B-Fig. 6) in the carriage is grounded by a selector lever in "play" position. The respective cancel solenoid plungers (A-Fig. 6) operate whenever the "No. 2 micro switch" drops into the cam. The spacer pins (C-Fig. 6) merely serve to keep the selector levers in position by lightly pressing against them as the carriage assembly moves over the selector unit. The carriage contact blocks (D-Fig. 6) and (E-Fig. 6) can be individually adjusted so that the rotation of the record magazine can be stopped in proper relation to the inner gripper arm when either an "odd" or "even" numbered record is selected. In order to move the carriage contact blocks, it is necessary to loosen mounting screws (A or B-Fig. 5) and one allen head set screw (D-Fig. 5). The allen head set screw is used for fine adjustment of the contact block, by turning it "in" or "out" depending upon the direction necessary for adjustment. Only one allen adjustment screw (D-Fig. 5) is visible. Another allen adjustment screw for contact block (D-Fig. 6) is located at the diagonal corner, near mounting screw (A-Fig. 5). After adjustment, the two contact block mounting screws (A-B-Fig. 5) must be tightened.

To check proper carriage adjustment, move the mechanism power switch to "OFF" position. Select numbers from one to six in the blue area. Move the power switch to "ON" position which will allow the number 2 blue record to be selected. After the record is placed on the turntable, cancel the record by merely moving the tone arm towards the center of the record. Just before the record enters the spacing between the two record separators, shut the power with the "ON" and "OFF" switch. Observe if the record is entering the magazine well centered.

If the record is not in perfect alignment, make the necessary adjustments on carriage block with adjustment screws (B) and (D) in (Fig. 5). Recheck alignment on records 4 and 6 blue. During the interim, it may be necessary to improve on the adjustment until the desired alignment is made.

Do the same on records 5, 3 and 1 in the blue area.

As a final check, select records 19 and 20 in the yellow area. It may be necessary to compensate for the difference between either 2 blue and 20 yellow or 1 blue and 19 yellow.

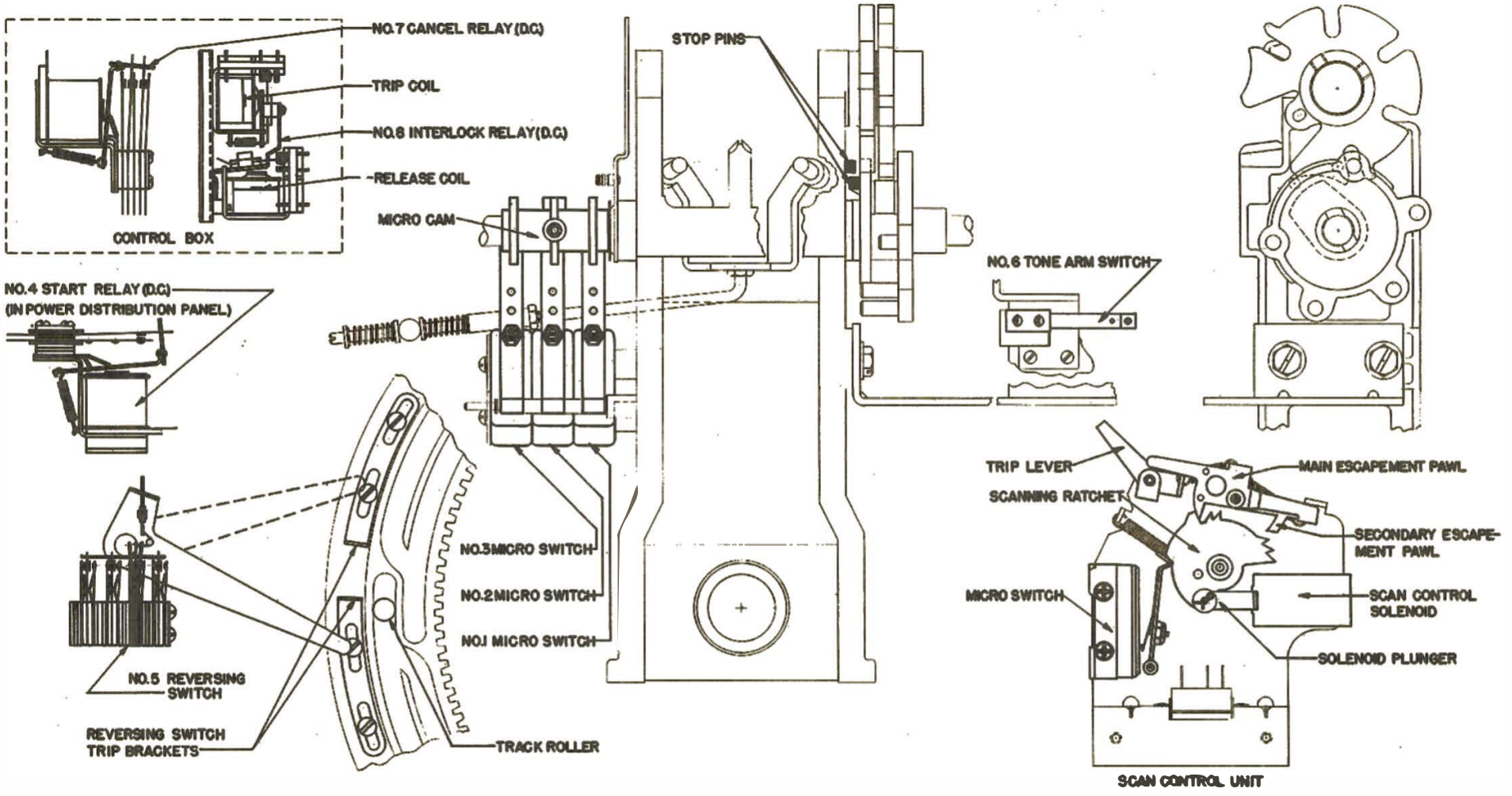


FIG. 7 PICTORIAL DIAGRAM OF MECHANISM AND ASSOCIATED PARTS

NO. 1 MICRO SWITCH

DESCRIPTION OF OPERATION

This is a "SPDT" micro switch. When the mechanism is in the home position the No. 1 micro switch lever is positioned in the cam groove. After the record maga ine indexes and the grip arm begins to remove a record from the maga ine, the switch disconnects the maga-ine motor armature.

CAM ADJUSTMENT

With the phonograph in "standby" position, (grip arm over record magazine) move the "service scan switch" on the control box to "off" position. Rotate the knurled end of the grip motor clockwise, until the two stop pins (Fig. 7) meet. Then loosen the two allen set screws which fasten the micro cam to the cam shaft.

Hold the micro cam firmly against the counter actuating arm adjacent to the gripper housing, and rotate the micro cam until the No. 1 micro switch lever enters the cam groove. Press the micro switch lever into the bottom of the cam groove, and tighten the two allen set screws on the micro cam. Then, adjust the No. 1 micro switch to "make" in the center of the drop off portion of the cam.

To re-check the adjustment, move the service scan switch to the "operate" position. Make a selection and allow the record to be in the music cycle. Then, turn the service scan switch to "off" position. You should now be able to rotate the knurled end of the grip motor armature in a counter clockwise direction for at least two full revolutions before the two stop pins meet.

Cancel the record, and allow the record magazine to scan a short distance. Again, move the service scan switch to "off" position. If the No. 1 micro switch has been properly adjusted, you will be able to rotate the knurled end of the grip motor armature in a clockwise direction for at least two full turns before the stop pins meet.

NO. 2 MICRO SWITCH

DESCRIPTION OF OPERATION

Also a "SPDT" switch, which is termed "micro switch No. 2." The function of this switch when actuated, is to close a circuit to the proper carriage "selector lever reset solenoid."

NO. 3 MICRO SWITCH

DESCRIPTION OF OPERATION

This is a "SPDT" switch, termed "micro switch No. 3". Prior to the completion of the 1st half cycle of gripper cam shaft, the micro switch lever falls into the cam groove, closing a circuit to the "interlock release coil." This allows all contacts on the interlock assembly to return to their normal position. The above action short circuits and dynamically brakes the gripper motor. Current remains on the interlock release coil throughout the music cycle. On the return cycle, the "micro" lever is moved to the outer portion of the cam. This completes a secondary circuit to the "cancel relay" which prevents the relay from unlocking in the event main power fails momentarily, line plug is accidentally pulled from outlet, etc.

When the lever rests in the cam groove, a slight "click" should be heard in the center of the drop off portion of the cam as the lever is moved manually. This lever has a set screw and lock nut arrangement for adjustment purposes. This adjustment prevails for the three micro switches.

NO. 4 STARTING RELAY (DIRECT CURRENT)

DESCRIPTION OF OPERATION

This relay is located in the Power Distribution Panel and is called the "starting relay." This relay is composed of two contacts. When the coil is energized by a selection, one contact will close the circuit to the turntable motor and the primary windings of the amplifier transformer. The second contact operates the maga ine motor.

NO. 5 REVERSING SWITCH

DESCRIPTION OF OPERATION

This is a 4 "PDT" switch which is used to reverse the polarity of the magazine motor armature current, and to transfer the indexing and cancel solenoid circuits for odd or even selections.

An actuating arm extends from the switch into the path of two adjustable trip brackets protruding from the front of the magazine casting. At the end of its cycle in a clockwise direction, one of the trip brackets moves the actuating arm "up"; thereby causing the magazine to rotate in a counter-clockwise direction. The opposite action applies at the end of the counter-clockwise rotation.

ADJUSTMENT

1. The clearance between the switch actuating arm and the end of the arm guide slot shall be equal for both operating positions of the switch. This is obtained by loosening the two screws holding the switch bracket to the mechanism chassis, and moving the switch assembly to the right or left.

2. Adjust the 2 trip brackets on the magazine so that the magazine reverses its direction of rotation as the center of the blank separator balance plate is exactly under the gripper arm. Check to see that this occurs while scanning the magazine back and forth.

NO. 6 TONE ARM SWITCH

When the tone arm has reached the record cut-off groove, the tone arm switch is actuated completing the circuit to the grip motor through the cancel relay contacts.

ADJUSTMENT

With the needle in "set down" position on the record (3/32 inch from edge of record) adjustment bracket (G-Fig. 4) should just touch the fibre stud on the back of the tone arm switch (J-Fig. 4). Air gap between switch contacts should be about .020. When tone arm needle reaches "cut-off" position (2 1/32 inches from center of record) trip dog (F-Fig. 4) should release slightly before tone arm switch contacts (J-Fig. 4) make.

NO. 7 CANCEL RELAY (DIRECT CURRENT)

This relay which is in the control box has one "SPDT", one "SPNC", and one "SPNO" contacts. In the relaxed position, this relay closes a circuit to the grip motor, causing the grip arm to position a record on the turntable. The "SPNC" contacts serve to open the mute section during the first cycle of the mechanism. When energized by the tone arm switch, all co acts are repositioned so that now the "SPDT" contact reverses the direction of the grip motor allowing the record to be returned to the magazine. The "SPNC" contacts close the mute section and the "SPNO" contact now closed, serve to lock the cancel relay circuit.

NO. 8 INTERLOCK RELAY (DIRECT CURRENT)

DESCRIPTION OF OPERATION

This relay, also located in the control box is a mechanically latching type, having two coils which are termed the "Trip" and "Release" coils. The "Trip" armature has two single throw contacts, and the release armature has two sets of double-throw contacts which are connected in parallel to insure positive operation, should one set become dirty or fail to function.

In the normal position, (Prior to Indexing), the trip armature is relaxed and the release armature is mechanically latched down by an arm extending from the trip armature; 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 condition the power motor circuits. he action of the device is as follows:

1. Carriage Indexing contacts strike a registered selector key and momentarily energize the interlock trip coil.

2. Trip armature operates, closing its two contacts which provide a locking circuit to the trip coil and also conditions a circuit for the proper "selector lever cancel solenoid."

3. As the trip armature completes its stroke, the release armature relaxes, thereby repositioning its contacts and mechanically latching down the trip armature. he release armature contacts short-circuit the magazine motor armature and apply power to the grip motor. his action results in the grip arm removing the record from the magazine and placing it on the turntable.

4. The device remains in this position until "micro switch No. 3" operates, at which time the release coil is energized.

5. The release armature operates, placing its contacts in the forward position. his short circuits the grip motor, causing it to stop.

6. After the release armature completes its stroke the trip armature relaxes, mechanically latching down the release armature, and opening its two contacts.

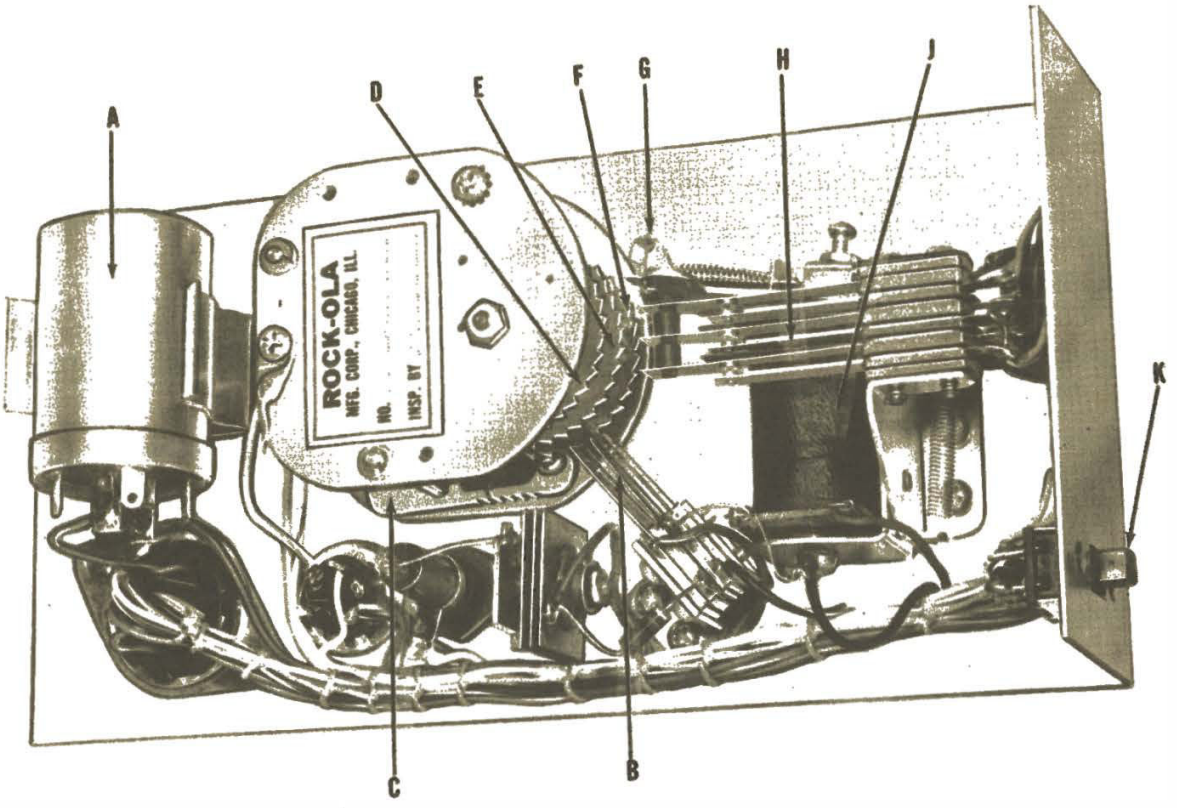


FIG. 8

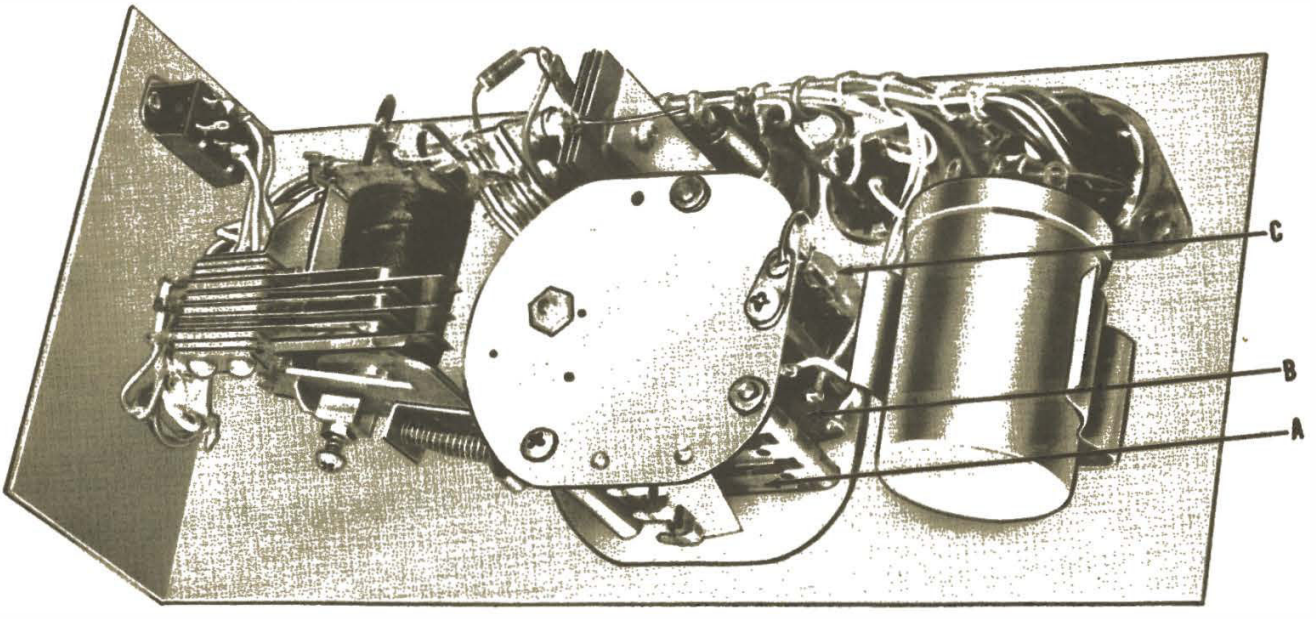


FIG. 9
ACCUMULATOR ASSEMBLY

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 three coin switches located below the slug rejector, a D.C. circuit is completed to the proper electro magnet (B-Fig. 9). During the short period the electro magnet remains energized, the corresponding armature ratchet detent (A-Fig. 9) and the ratchet escapement armature (C-Fig. 8) are drawn to the pole-piece of the electro magnet. The corresponding ratchet detent locks the ratchet and hub assembly, and releases the escapement armature stud.

This sequence is repeated for every coin dropped. The 5¢ coin switch lever operates the master ratchet, 10¢ coin switch lever the center ratchet (E-Fig. 8), and the 25¢ coin switch lever operates the outer ratchet (D-Fig. 8). The stud which is riveted to the master ratchet extends through the center and outer ratchet discs. It will be noted that the openings in these two ratchets are adjustable. Various incentive coin combinations can be made by making the necessary adjustments. (See Installation manual for instructions.)

The price option switch (K-Fig. 8) when used with the MODEL 1946-50¢ REJECTOR UNIT KIT, merely accommodates a proper circuit for its usage. (See schematic diagram of selection system.)

As the master ratchet rotates, the stud which was holding the control switch (B-Fig. 8) open, is rotated away from the control switch, and allows it to close. The top blades complete the circuit from the D.C. supply, through the reset contacts of the front door selection switches, to the 300 MFD. section of the electrolytic capacitor (A-Fig. 8). This charge on the electrolytic capacitor is dissipated in energizing the reset coil (J-Fig. 8) when a selector button is pressed. The gram pressure of the two top blades of the control switch is 35 to 40 grams, and the air gap is .015. The circuit to the "Select" light is completed when the two lower blades of the control switch close. The gram pressure of these blades is 10 to 15 grams, with a visible air gap between the blades.

When the reset coil (J-Fig. 8) is energized, the reset armature is pulled against the pole-piece of the reset coil. The reset pawl (G-Fig. 8) engages the master ratchet (F-Fig. 8) and moves the master ratchet back one tooth. The reset coil assembly (J-Fig. 8) must be adjusted, so that the reset pawl engages the master ratchet tooth approximately one-half of the tooth depth, and the stud on the ratchet escapement armature (C-Fig. 8) has about one-third of one tooth-length overtravel.

As the reset coil armature moves against the pole piece of the coil it closes the ganged section of three impulse switches (H-Fig. 8). In closing, the middle section of the switch should close slightly before the right section of the switch. The circuit through the middle section of the switch is completed through the program selection switches to a particular commoning relay coil in the selector unit assembly. The right section of the switch also completes a circuit through the program selection switches to a particular selector coil also in the selector unit assembly, corresponding to the selection made. The left section of the impulse switches close a circuit to the scan control coil, allowing the magazine to scan. At the same time, the reset pawl (G-Fig. 8) moves the master ratchet back one tooth, and cancels one credit. When the last credit is cancelled the stud which is riveted to the master ratchet opens both sections of the control switch (B-Fig. 8) and breaks the circuit to the program selection switches, the selector unit assembly, and the "Select light."

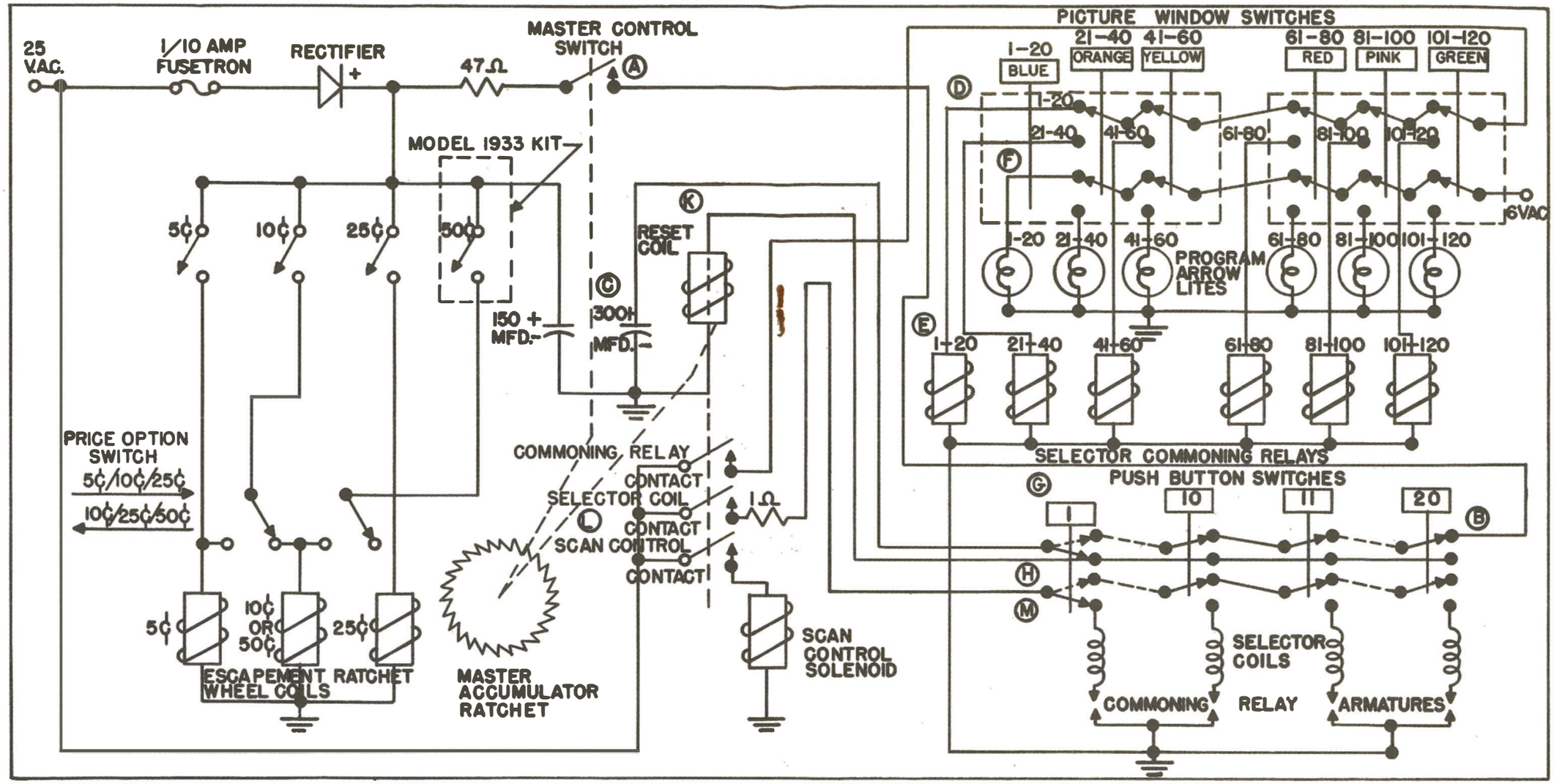


FIG. 10

SCHEMATIC DIAGRAM OF SELECTION SYSTEM

When a deposited coin strikes either the 5¢ - 10¢ or 25¢ coin switch lever located below the slug rejector, a D. C. circuit is completed to the corresponding electro magnet coil in the accumulator, releasing the master ratchet wheel. (The above schematic diagram also includes an additional 50¢ coin section which is optional and is included in the 50¢ Kit-Model 1946 rejector unit.) As the ratchet wheel rotates, the stud which was holding the control switch open, is rotated away from the control switch, allowing it to close at (A). A circuit is completed from the D. C. supply through the top level of the push button switch at (B) to the 300 mfd. section of the electrolytic capacitor at (C).

In order for a proper selection to be made, a picture window switch must be pressed first. In the case of the above diagram the blue switch, selections from 1-20 is depressed. It will be noted that the rest of the switches being in the normal position allow a circuit at (D) to ready

SCHEMATIC DIAGRAM OF SELECTION SYSTEM

the selector commoning relay at (E).

The bottom level of this switch (F) merely lights up the proper program light.

Note that the circuits for balance of the program window switches merely control circuits for the proper commoning relay and program arrow lights.

Next, a push button switch is pressed to make the proper selection. In the diagram at (G) we s w the No. 1 push button depressed. Contact (H) operates reset coil (K) which momentarily closes the three contacts at (L). Twenty-five V.A.C. is allowed to flow through these contacts which will energize commoning relay (E) operating the commoning relay armature which will energize the No. 1 selector coil through contact (M).

This sequence of operation prevails until the last play is removed from the master accumulator ratchet, which will open the circuit to the push button switches through master control switch (A).

HIGH FIDELITY AMPLIFIER MODEL 1464

OUTPUT: - 10 watts (sine wave input) at 2% distortion.

TUBES: - 2 - 12AU7 and 2 - 6BQ5 tubes.

BLOCK DIAGRAM

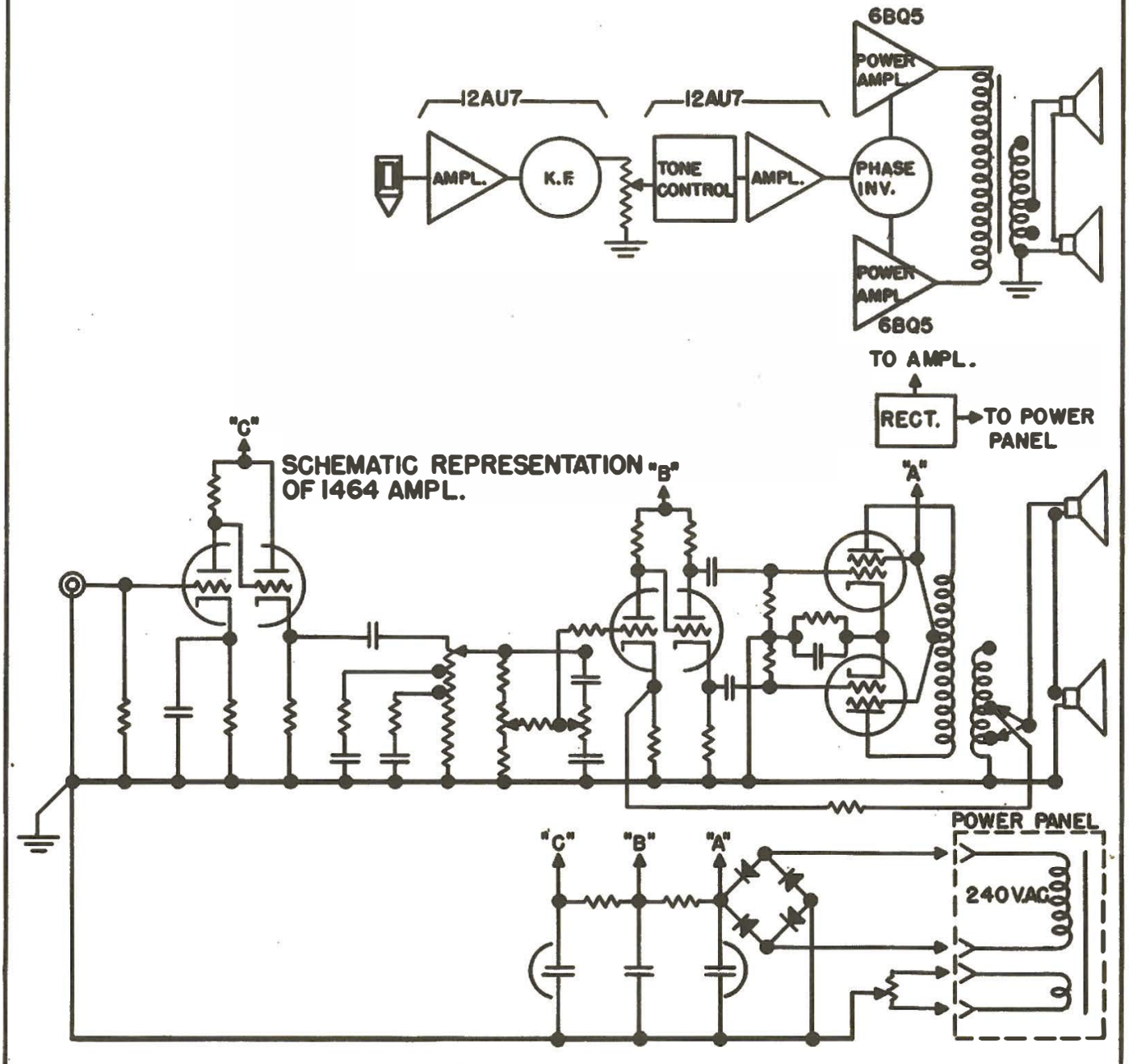


FIG. 11

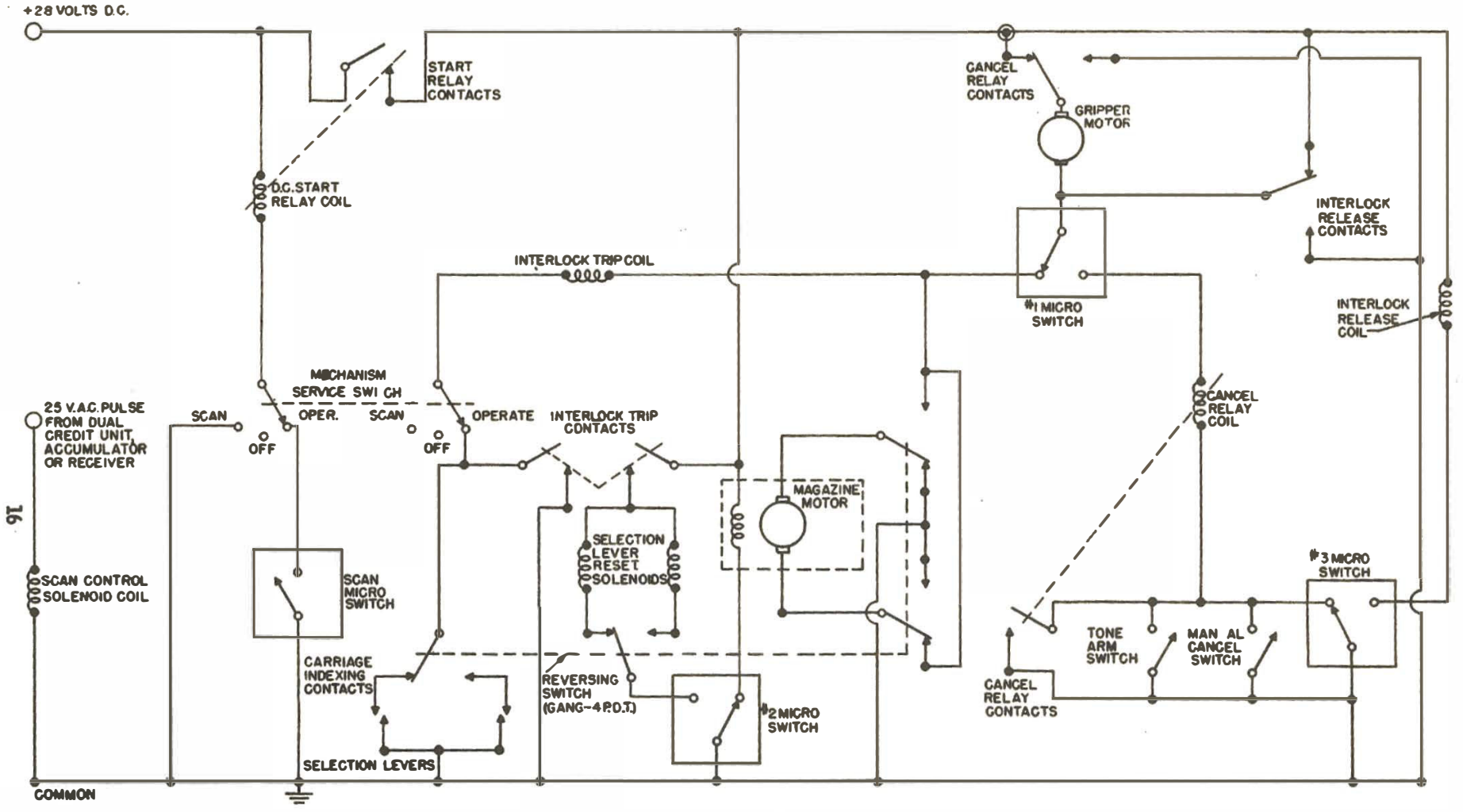
1. The Astatic Type 51-1J ceramic pickup cartridge is used. This pickup provides the following advantages:

    1. High compliance.
    2. Low distortion.
    3. Replaceable sapphire needle.
    4. Uniform frequency response.

2. The amplifier makes use of 4 tubes and 1 selenium power rectifier.

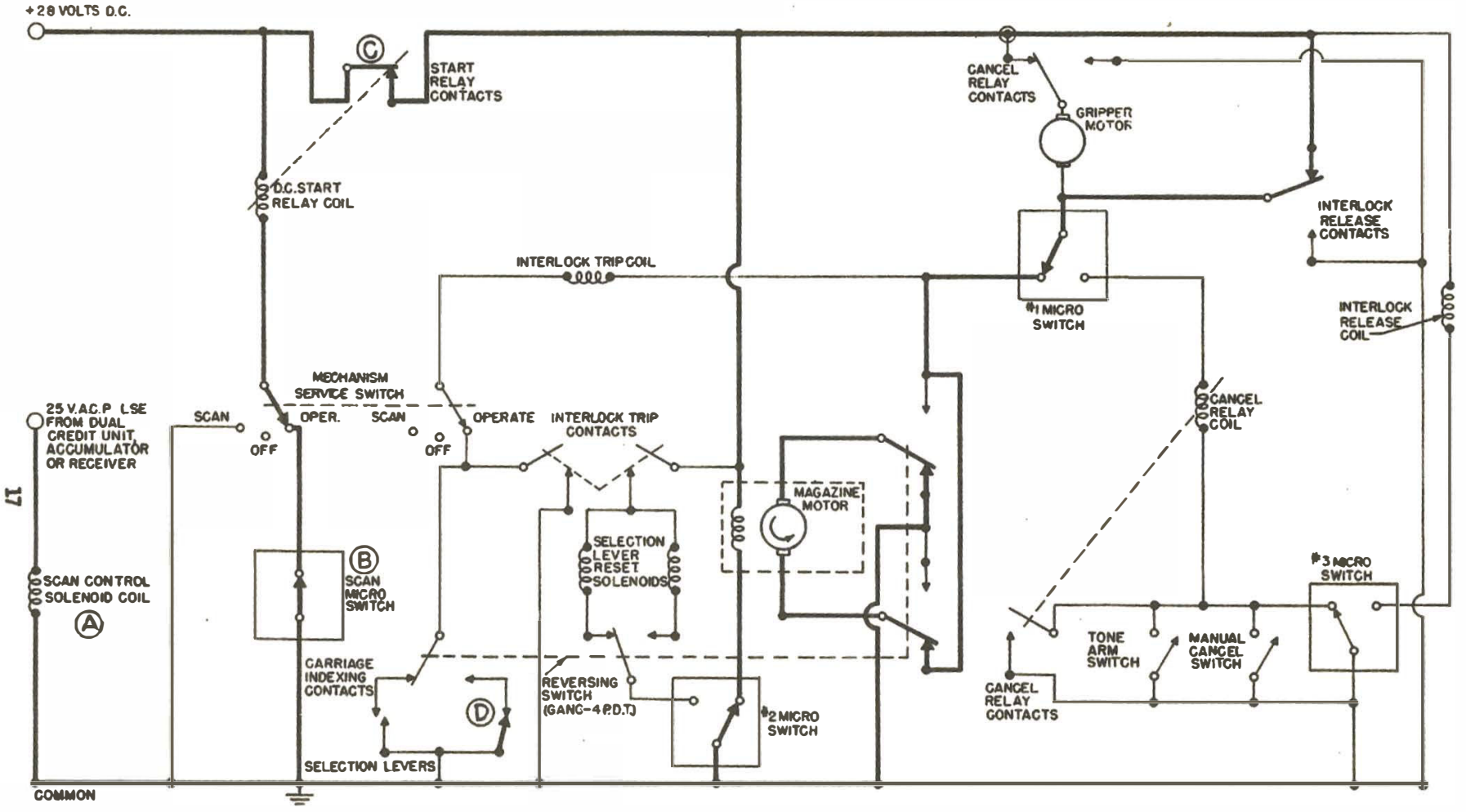
3. Two 8 inch wide response speakers are provided. Additional speaker may be used.

4. This unit has been designed to provide for the use of remote volume control.



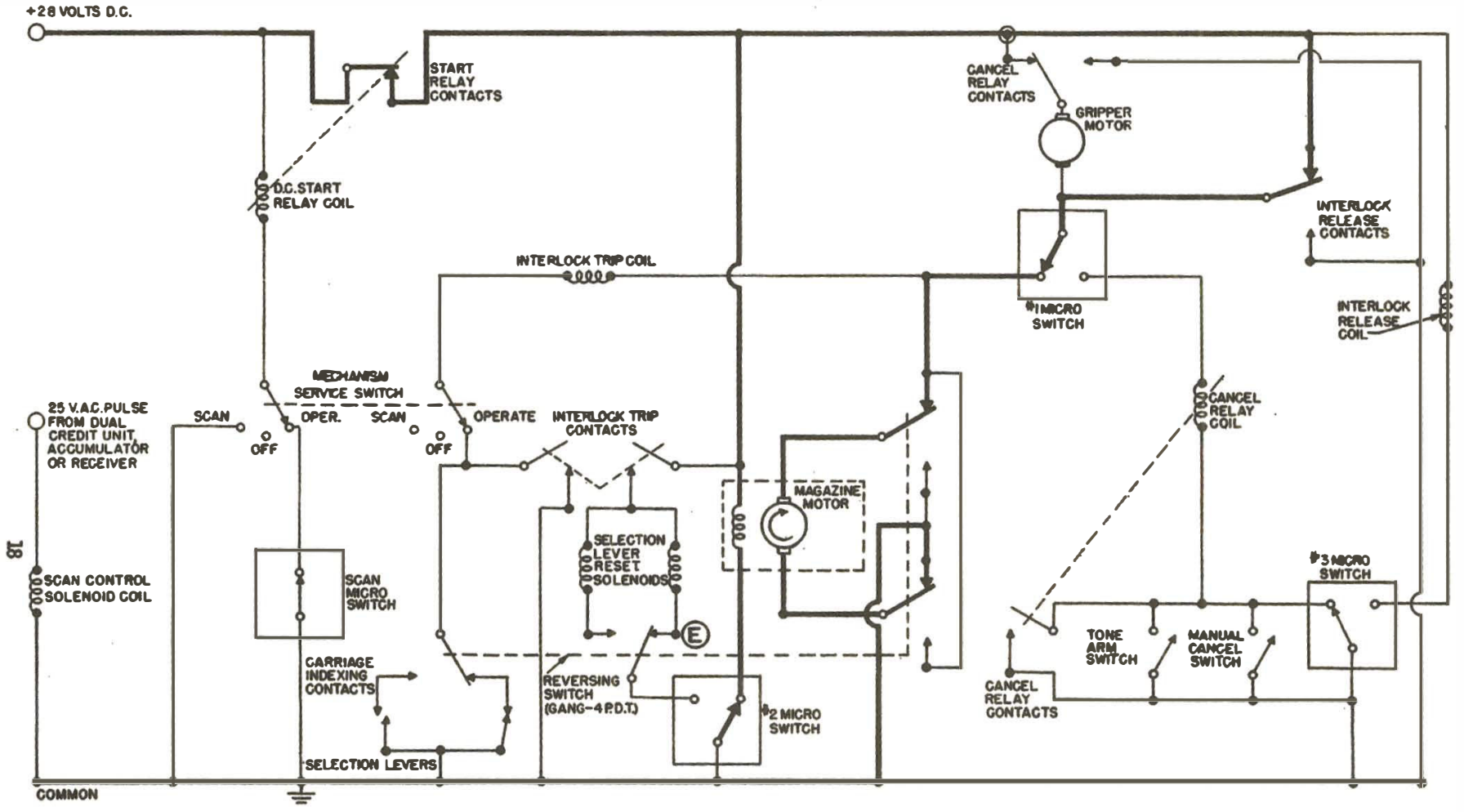
Sequence No. 1 POWER ON - NO SELECTIONS REGISTERED

Grip arm over magazine.



Sequence No. 2 SELECTION REGISTERED

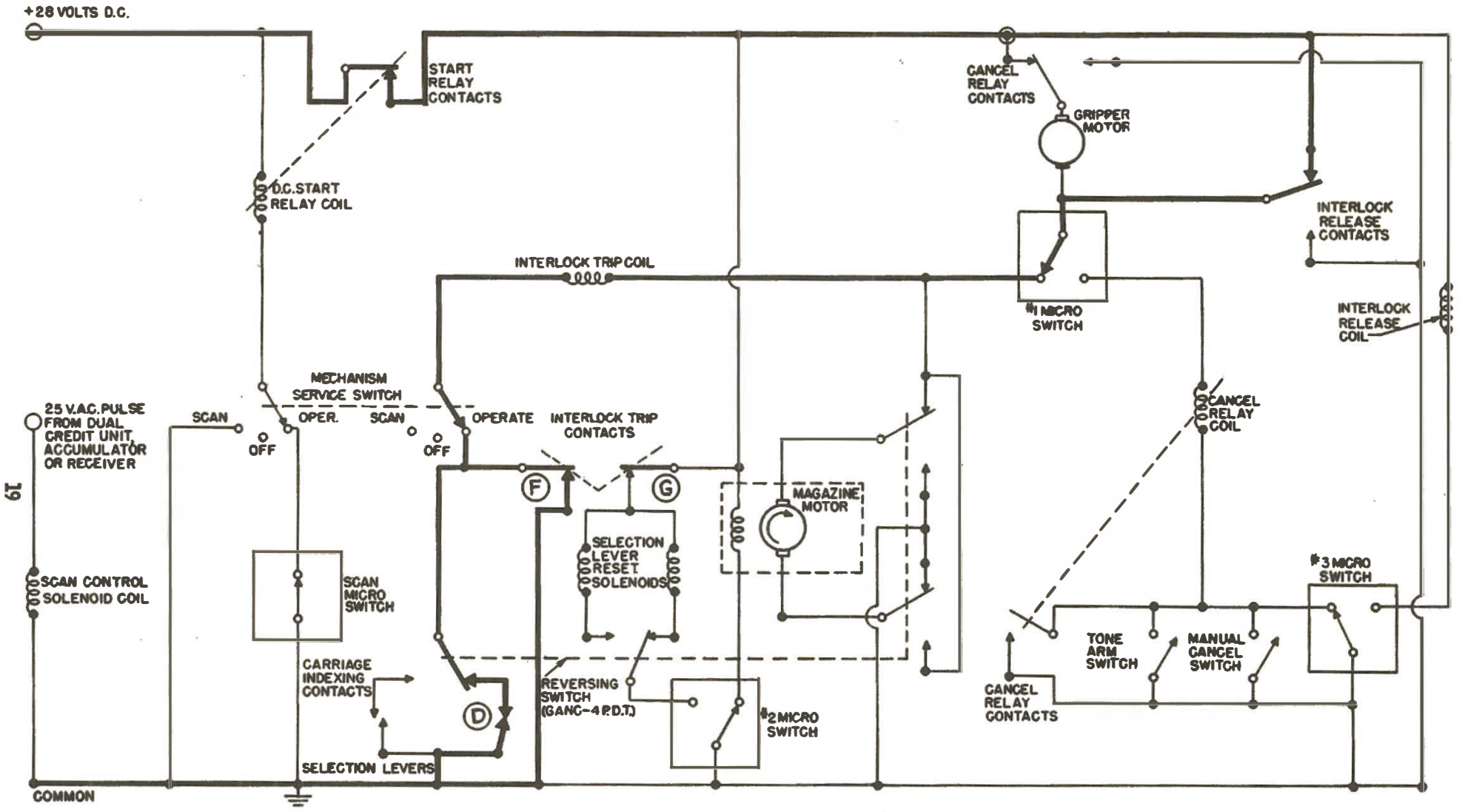
The "Scan control solenoid" (A) is momentarily energized by a pulse from the dual credit unit, accumulator or receiver unit, actuating the scan control ratchet. This operates the "Scan micro switch" (B) completing the circuit to the DC "Start relay". Relay operates, starting amplifier and turntable motor (circuit not shown) and contact "C" closes circuit to magazine motor. Record magazine begins to rotate. Simultaneously, selector coil is energized, causing selector lever (D) to move to "play" position.



Sequence No. 3 MAGAZINE REVERSES

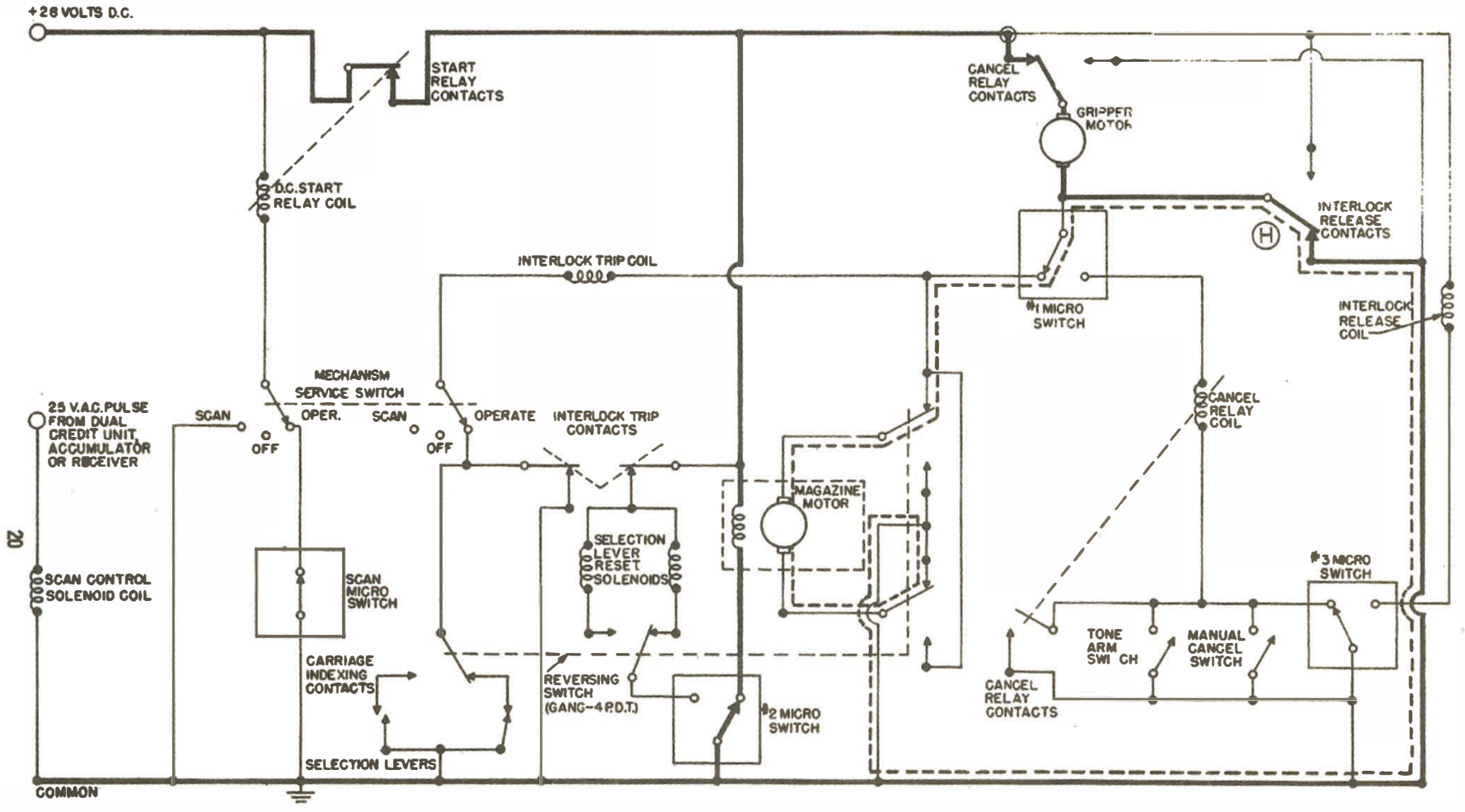
Depending upon the previous stopped position and the particular selection now registered, it may be necessary for the magazine to reverse its direction of rotation. This occurs when the magazine "trip brackets" operate the "Reversing switch". (Dotted lines indicate the 4 reversing switch sections).

This reverses the direction of the current through the magazine motor and armature and causes the magazine to rotate in the opposite direction. Additional contacts on the reversing switch automatically connect the proper indexing contact and "Selection lever reset solenoid" (E) for odd or even selections, depending on the direction of rotation of the magazine.



Sequence No. 4 CARRIAGE TRIPS INTERLOCK RELAY

The selector carriage, moving with the record magazine, causes the indexing contact to strike the "Selection lever" (D), thereby completing the circuit to the interlock trip coil. The interlock operates, closing contacts (F) and (G). Contact (F) provides a parallel circuit for positive locking of the "Interlock trip coil", and contact (G) conditions a circuit to the "Selection lever reset solenoids" for use in a later sequence.



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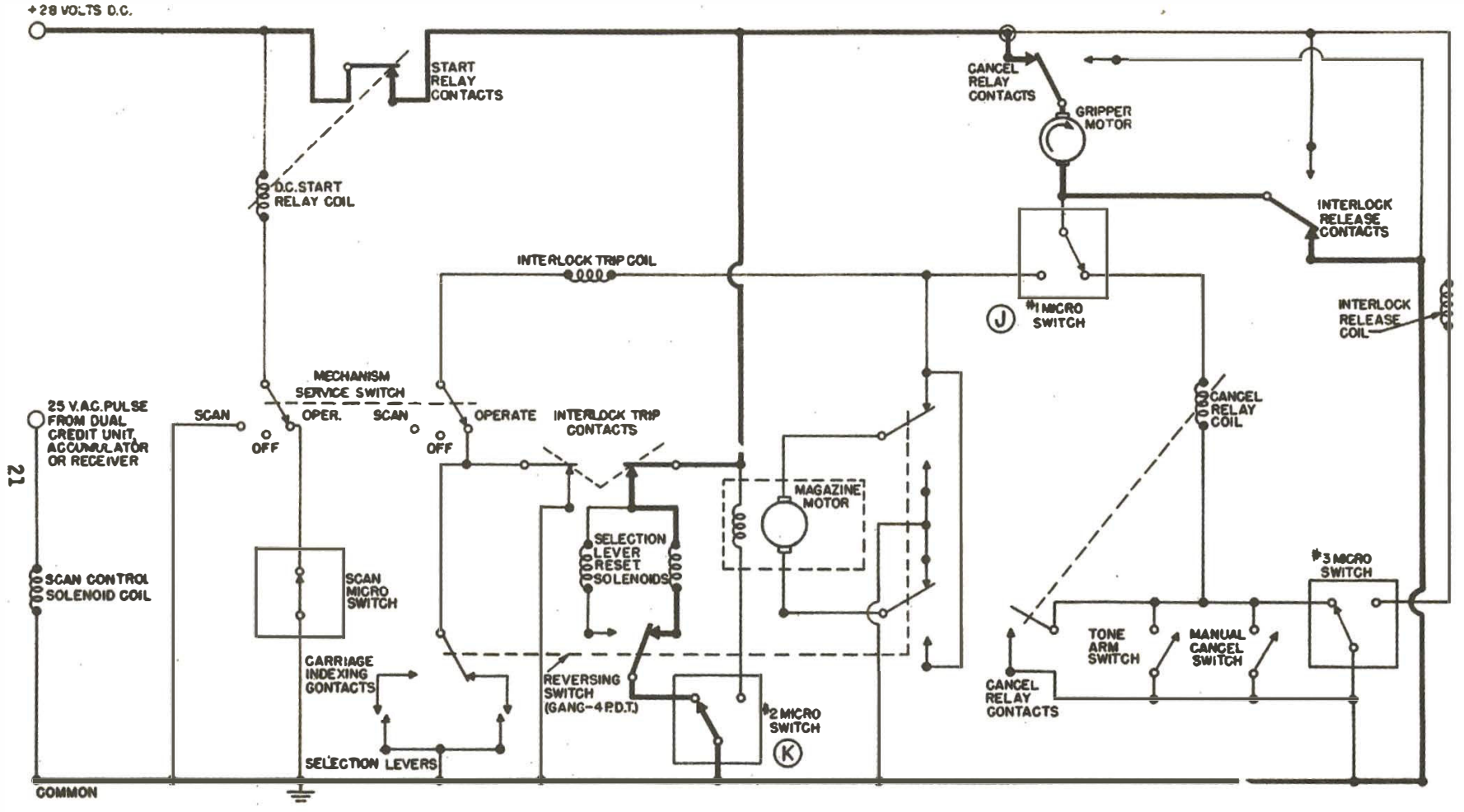
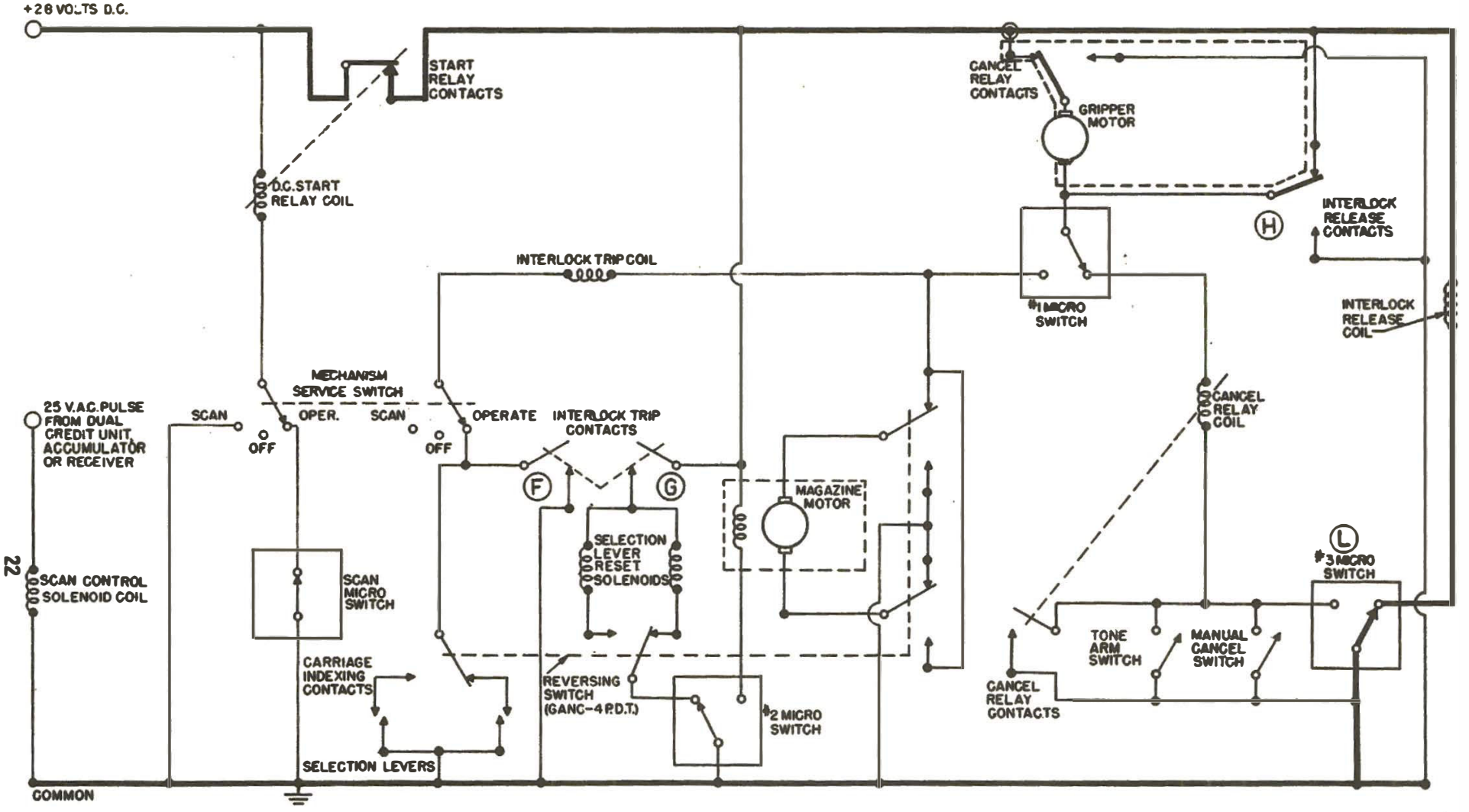
Sequence No. 5 RECORD INDEXED

As the trip armature of the interlock completes its stroke, the release armature relaxes, repositioning contact (H). This short circuits the magazine motor armature (dotted lines), dynamically braking the magazine and bringing it to a quick stop. A circuit is simultaneously completed to the gripper motor thru the contact (H), causing it to engage the indexed record.



Sequence No. 6 SELECTION LEVER RESET

Just prior to the grip jaws engaging the record, the "micro switch cam cluster" operates the "No. 1 micro switch" (J) which is closest to the gripper housing, thereby disconnecting the magazine motor armature. The gripper motor continues to operate and places the record on the turntable. At this point, the "No. 2 micro switch" (K) (which is the center micro switch) operates and closes the circuit to the proper "Selection lever reset solenoid". This causes a spring plunger to push the registered selection lever to its normal position.

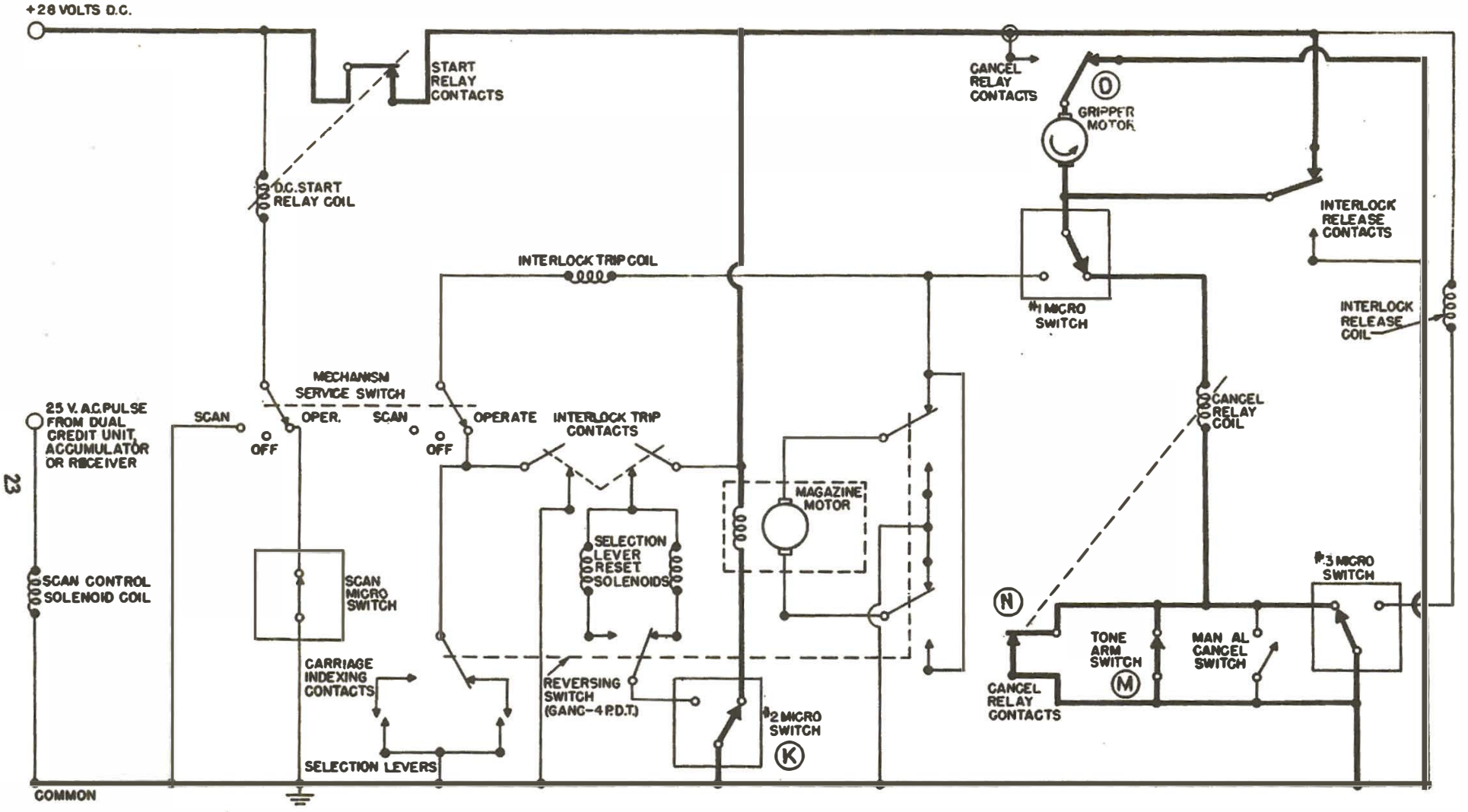


Sequence No. 7 RECORD TRANSFER CYCLE COMPLETED. GRIP MOTOR STOPS.

Continued operation of the gripper motor opens the grip arm jaws and places the tone arm into the record entry groove. At this point, the "micro switch cam cluster" operates the "No. 3 micro switch" (which is farthest away from the gripper housing) completing a circuit to the "Interlock release coil"

The energized "interlock release armature" places contact (H) in its 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 (F) and (G). The opening of contact (G) breaks the circuit to the "Selection lever reset solenoid".

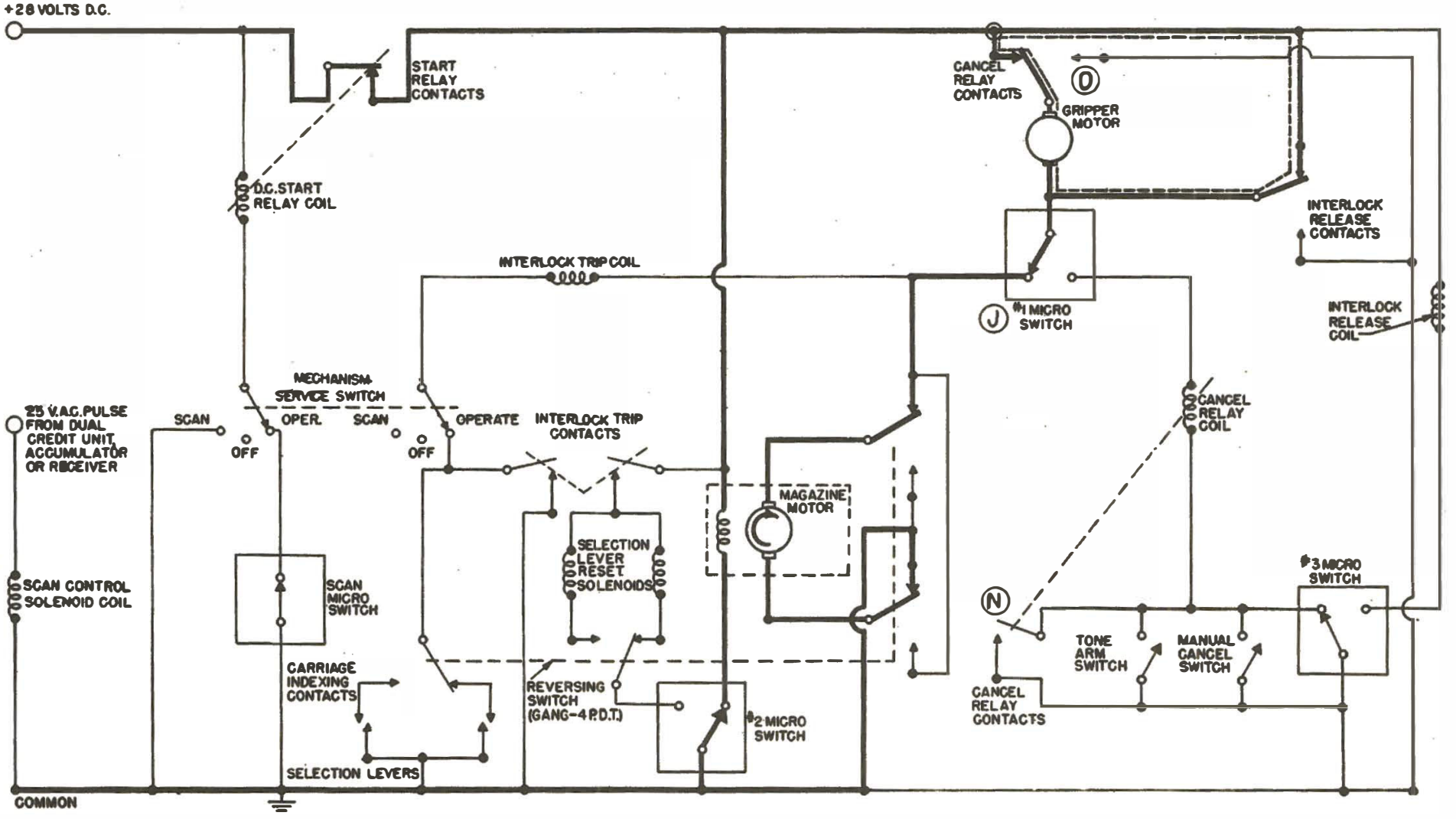
The music cycle now begins.



Sequence No. 8 MUSIC CYCLE ENDED

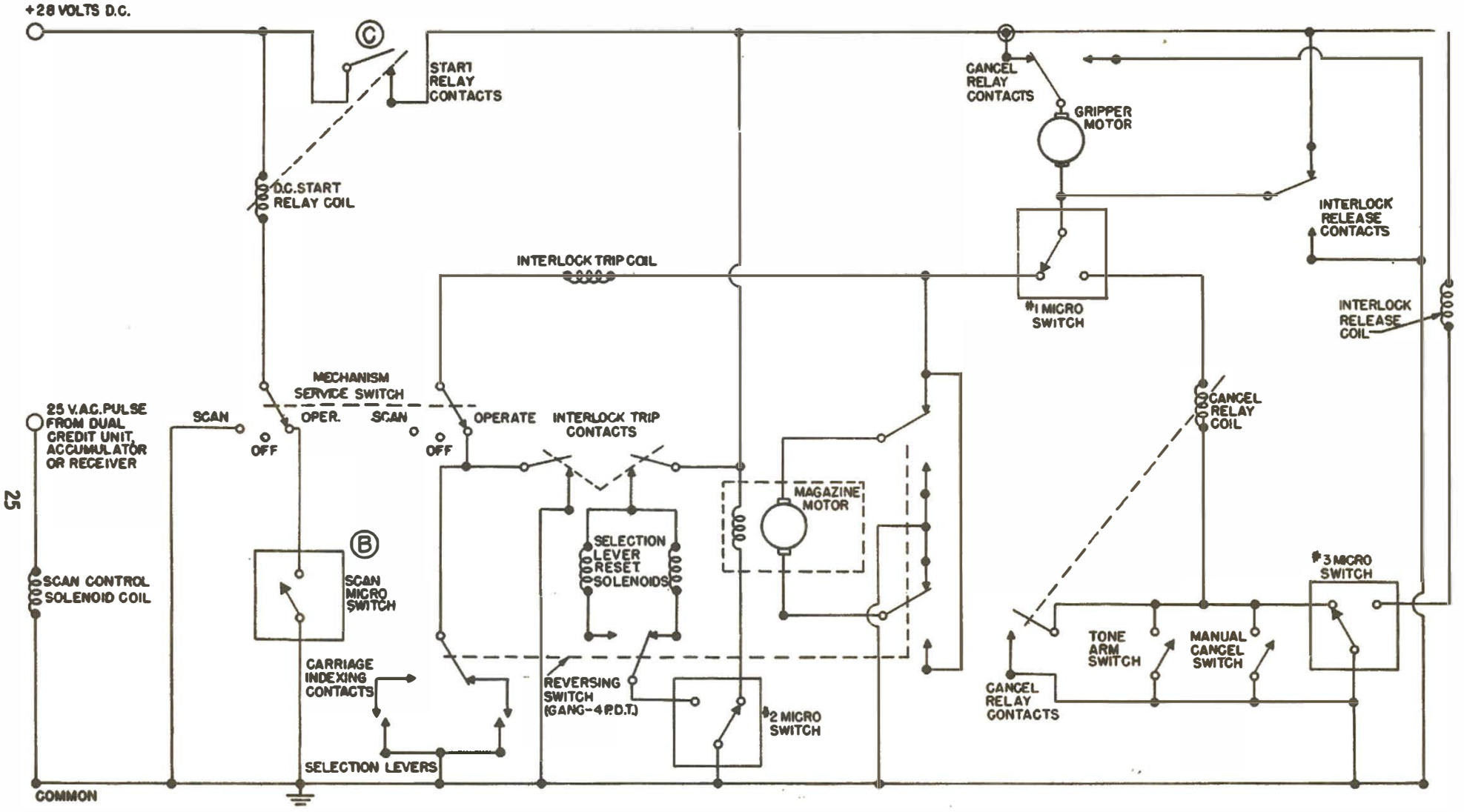
As record play is ended, the tone arm moves into the cut-off groove and operates the tone arm switch (M). This completes a circuit to the "Cancel relay", thereby closing contact (N) and repositioning contact (O). Contact (N) serves as a locking contact for the "Cancel relay coil" to provide for momentary energizing. Contact (O) 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 by the Micro switch cam cluster", and places a holding circuit to the "Cancel relay coil" in parallel with the locking contact (N). As the gripper proceeds to return the record to the magazine, "No. 2 micro switch" (K) is operated by the Micro switch cam cluster" completing a circuit to the field of the "Magazine motor".



Sequence No. 9 RECORD RETURNED TO MAGAZINE

As the grip arm jaws begin to release the record in the magazine, the continued operation of the camshaft operates the "No. 1 micro switch" (J). This opens the circuit to the "Cancel relay", repositioning contact (O) and causes "Cancel relay contact" (N) to relax. The repositioning of contact (O) places a short circuit on the gripper motor. Simultaneously, a circuit is completed to the magazine motor armature through the "No. 1 micro switch" (J), which causes the record magazine to rotate.



Sequence No. 10 SCAN CYCLE COMPLETED

Each time the record magazine reaches "zero" position after rotating in a clockwise direction, it resets the "scan control ratchet" one tooth. The second rotation of the magazine in the cloc wise direction, will reset the "scan mechanism" and allow the "Scan micro switch" (B) to open, breaking the circuit to the "Start relay". This opens contact (C) thus shutting off power to the D.C. motors and also opens the amplifier and turnta le circuits.

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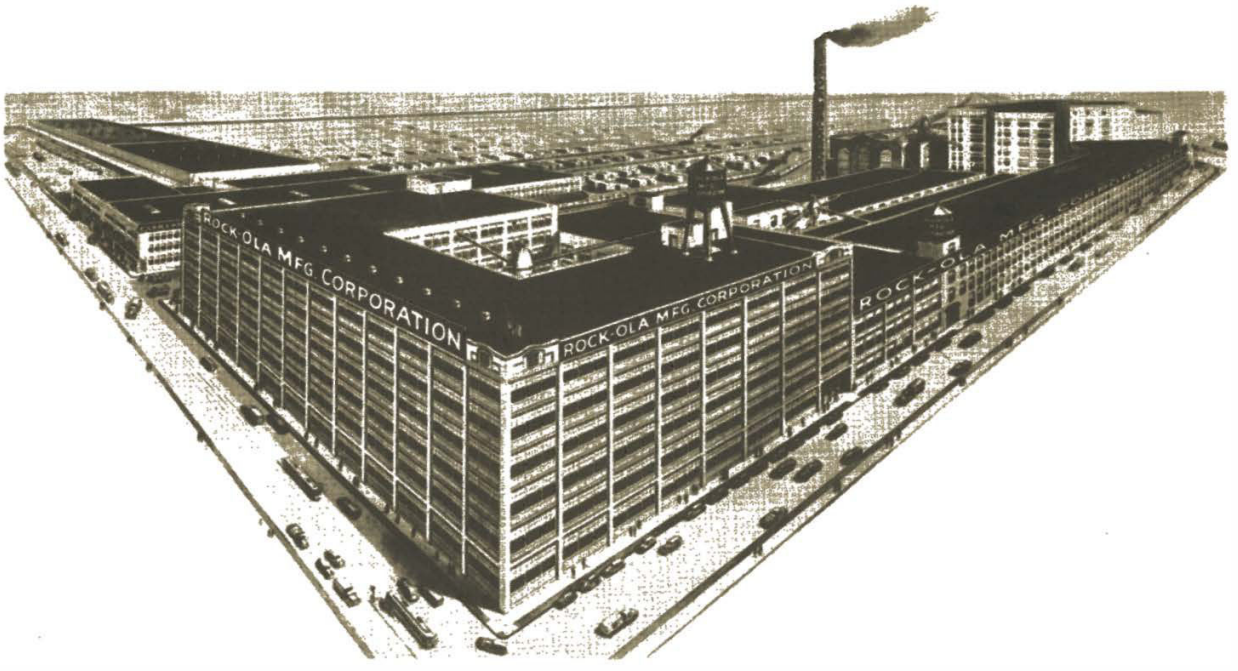

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