

WIRING DIAGRAMS

for

WURLITZER

1500

Model AND 1550

PHONOGRAPH

LIST OF ILLUSTRATIONS

(WIRING DIAGRAMS)

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Model 227 - 228 Auxiliary Amplifiers
Schematic Diagram Model 5204 Wall Box - 7 Wire 5-10-25¢ 24V. 60 Cy.
Schematic Diagram - Automatic Level Control.
Wiring Diagram - Adapter Box

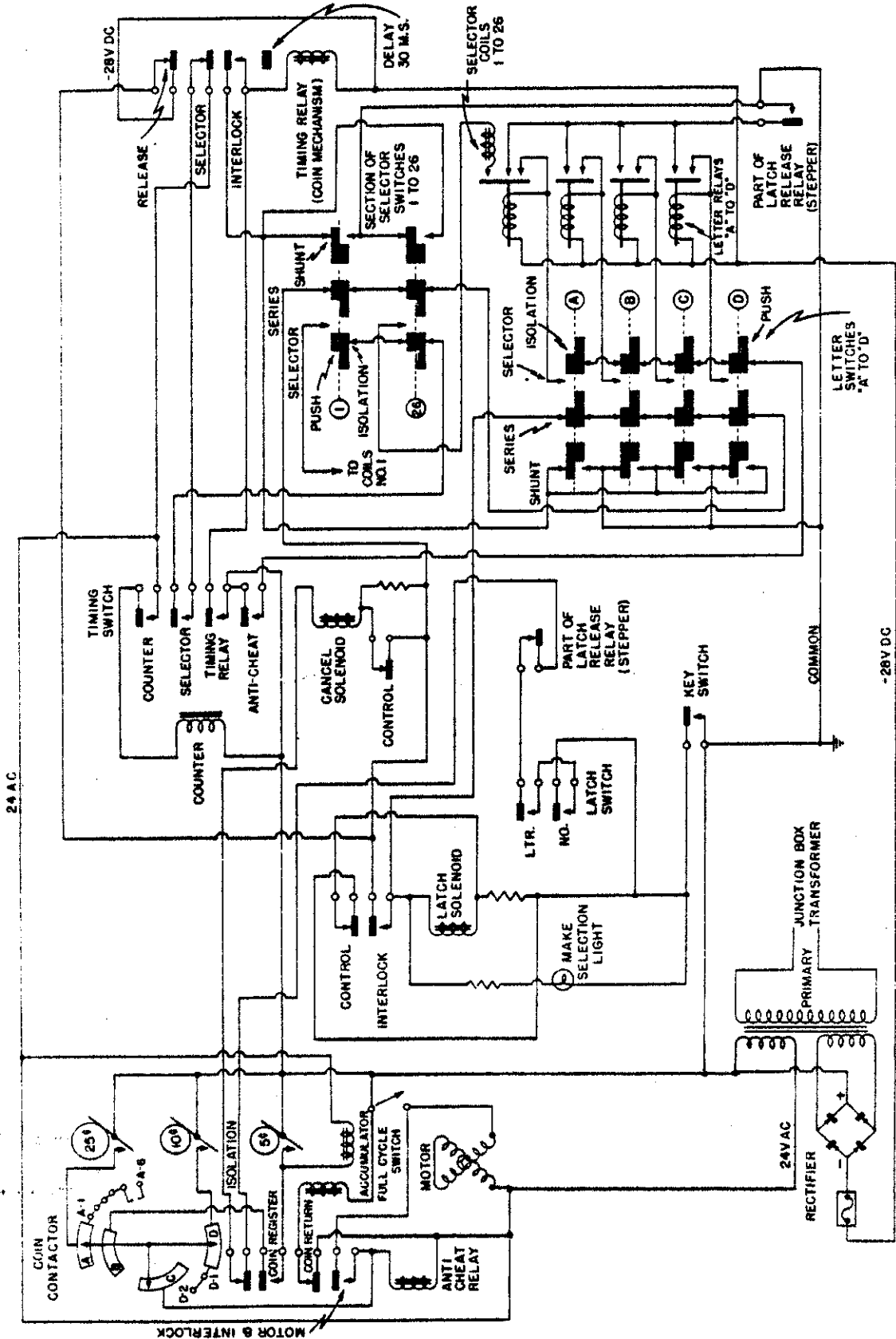


Fig. 1 - Electric Selector System, Phonograph at Rest

FIGURE 1

ELECTRIC SELECTOR SYSTEM, PHONOGRAPH AT REST

With the phonograph plugged into a proper outlet and with the line switch "on", a circuit is completed (shown in red) through the normally closed coin return contacts of the anti-cheat relay to the coin return coil to provide coin acceptance.

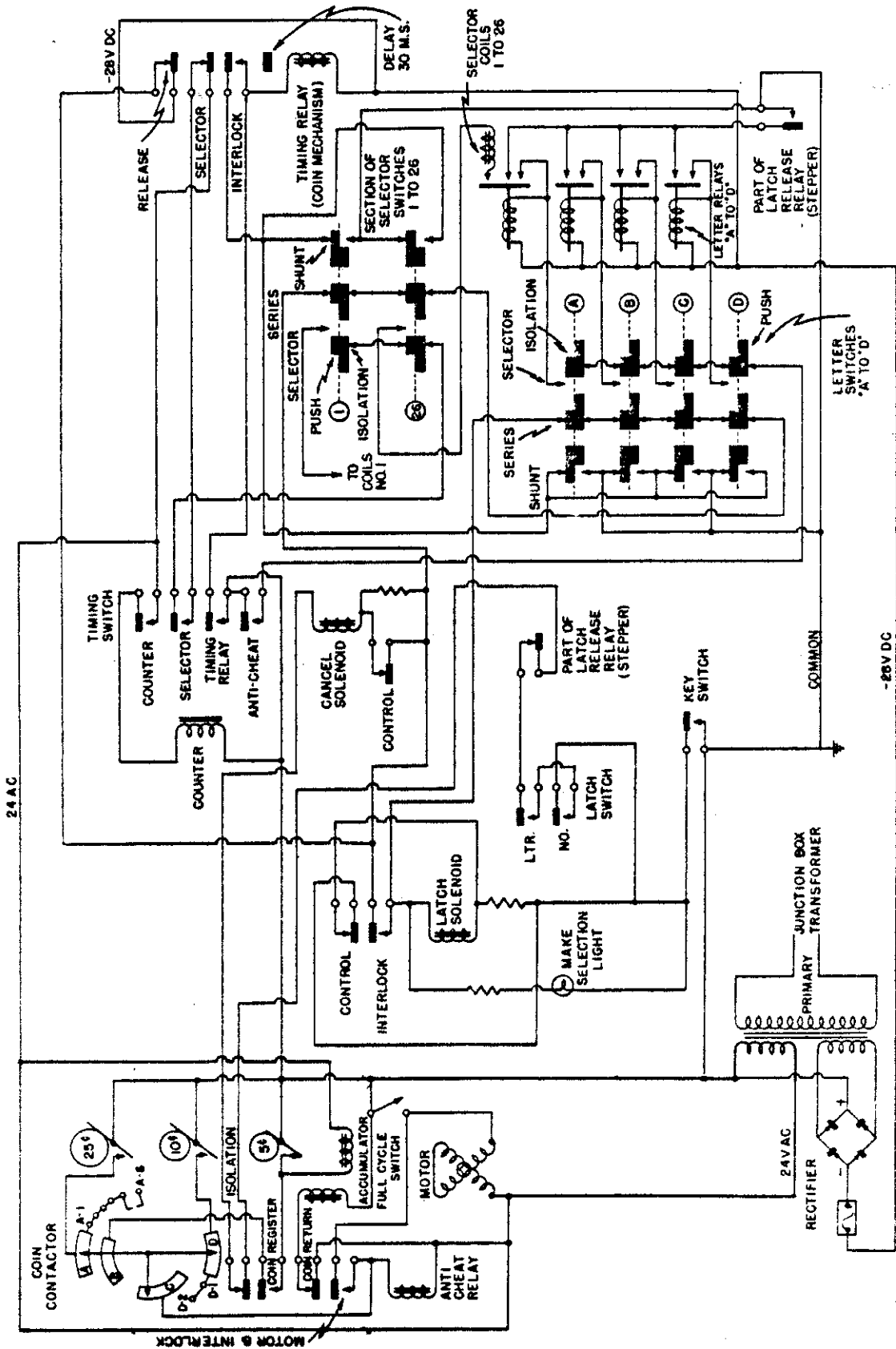


FIGURE 2

ELECTRIC SELECTOR SYSTEM, FIVE CENT COIN REGISTRATION

A five cent coin deposited, closes the five cent coin switch and completes an A.C. circuit (shown in solid red) which energizes the accumulator coil. This one impulse of the accumulator allows the ratchet wheel to escape one tooth, mechanically closing the key switch and setting up a credit of one play. The coin drops through the coin switch, and into the cash box.

Fig. 2 - Electric Selector System, Five Cent Coin Registration

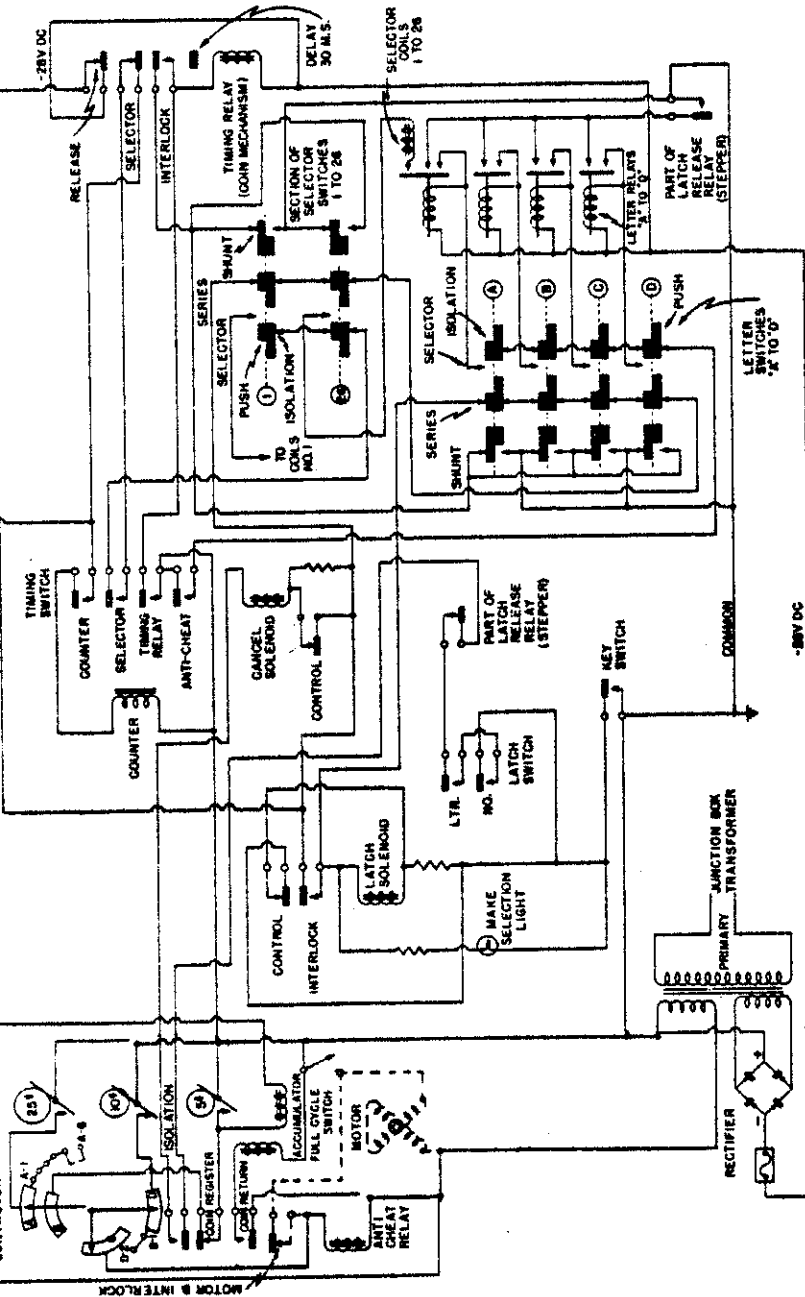


Fig. 3 - Electric Selector System, Ten or Twenty-Five Cent Coin Registration, Motor Starting Circuit, and Coin Return Circuit

FIGURE 3

ELECTRIC SELECTOR SYSTEM, TEN OR TWENTY-FIVE CENT COIN REGISTRATION, MOTOR STARTING CIRCUIT, AND COIN RETURN CIRCUIT

Ten or Twenty-Five Cent Coin Registration

A 10 or 25 cent coin deposited, is held on the coin switch until the motor completes part of its cycle, thus registering a number of credits in accordance with the denomination of the coin. As the coin closes the coin switch, a circuit (shown in solid red) is completed to energize the anti-cheat relay, from the 24V transformer winding, through the coil of the anti-cheat relay, through patch "C" and patch "A" or "D" of the coin contactor, and through the 10 or 25 cent coin switch, to the common side of the 24V transformer winding.

Motor Starting Circuit

The anti-cheat relay action closes its normally open coin register contacts; opens its

normally closed coin return contacts; opens its normally closed isolation contacts; and closes its normally open interlock and motor starting contacts. The motor starting circuit (shown in dotted red lines) flows from the 24 volt transformer winding through the motor, through the interlock contacts, through common patch "C", through patch "D" or "A" of the coin contactor, to the 10¢ or 25¢ coin switch respectively and to the common of the 24 volt transformer winding. The interlock circuit of the anti-cheat relay is in parallel with the motor and follows the same course.

Coin Return Circuit (See Fig. 1)

Opening of the coin return contacts interrupts the coin return circuit (shown in Fig. 1) and allows the arm and pin assembly to retract under its spring loading. The three pins on the arm intercept coins in their three respective paths of travel through the slug rejector and cause coin return during the cycle of registration. The normally closed isolation contacts of the anti-cheat relay open to prevent use of the cancel solenoid circuit while coin registration is in progress. Therefore no selections may be made at the phonograph during the registration cycle.

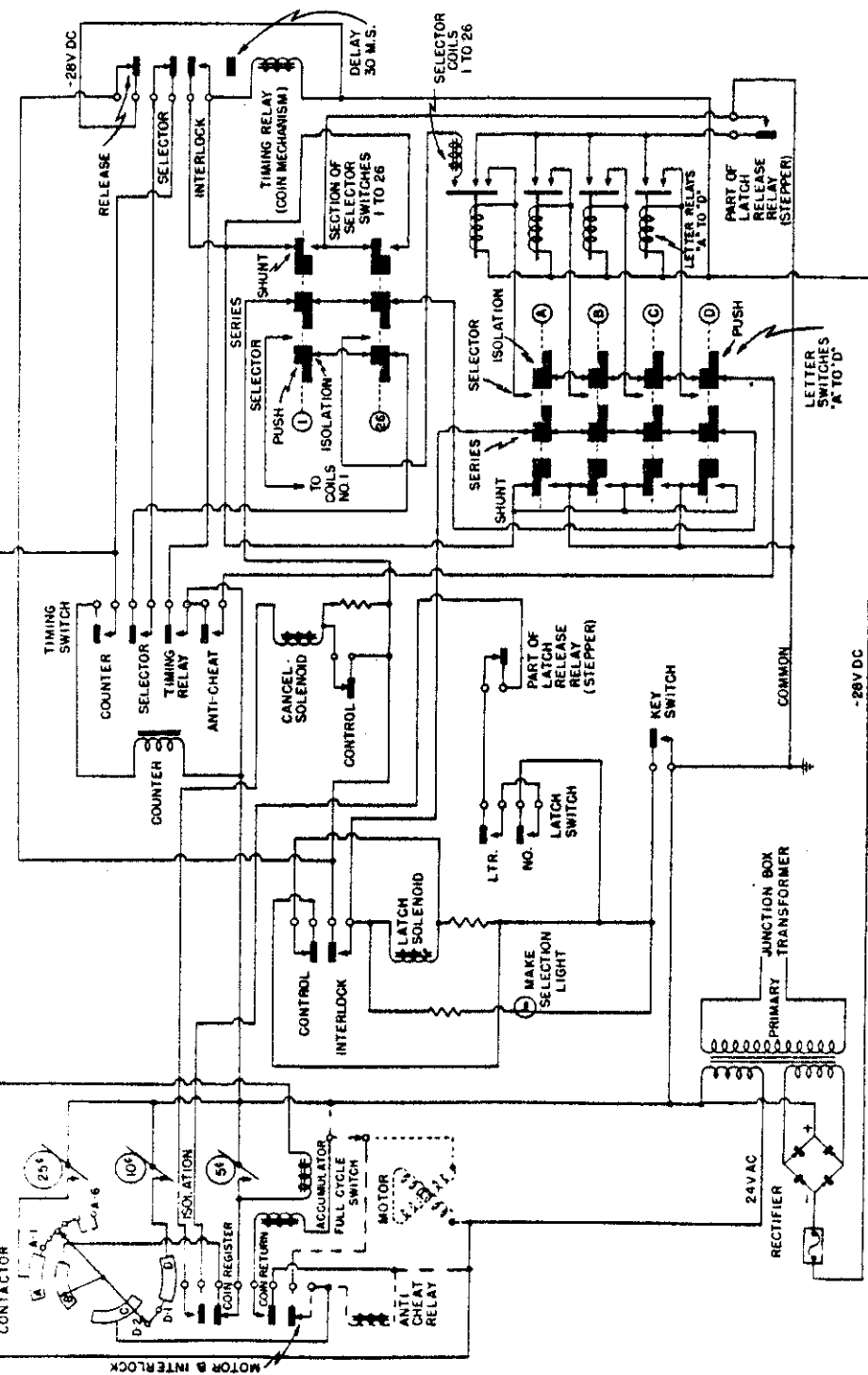


Fig. 4 - Electric Selector System, Functions of the Accumulator Circuit, The Full Cycle Switch, and the Isolation Contacts

FIGURE 4
ELECTRIC SELECTOR SYSTEM, FUNCTIONS OF THE ACCUMULATOR CIRCUIT,
THE FULL CYCLE SWITCH, AND THE ISOLATION CONTACTS

Accumulator Circuit

Closing of the normally open coin register contacts of the anti-cheat relay prepares a circuit (shown in solid red) to the accumulator for credit impulses. The starting of the motor (Fig. 3) moves the three point contact arm of the coin contactor to contact "D" and patch "B", thus providing an impulse to the accumulator. The second impulse occurs when the three point arm of the coin contactor rotates to contact "B" and patch "B". If a 25¢ coin were deposited, five such impulses would occur through the common patch "B" and A1, A2, A3, A4 and A5.

Full Cycle Circuit

As the three point contact arm of the coin contactor rotates away from patch "C" (as

Isolation Contacts

The isolation contacts of the anti-cheat relay are provided to avoid possible loss of credits by delaying photograph selection action until coin registration has completed its cycle.

shown in Fig. 3) the motor can no longer operate from this source of power supply. However the full cycle switch is mechanically closed at about 30° of rotation, by the full cycle cam on the contactor drive shaft, providing a different motor circuit (shown in red dotted line) from the 24 volt secondary winding of the transformer through the motor and through the full cycle switch to the common side of the 24 volt supply. At 210° of rotation, the coin gate is mechanically opened by another cam on the coin contactor drive shaft. Here the coin is released from the coin switch to drop into the cash box. Also the accumulator circuit (shown in solid red) and the motor starting circuit (shown in Fig. 3) are opened preparatory to further coin acceptance. At 335° of rotation, the full cycle switch is released to stop the motor with the contactor on patches "C" and "D". This releases the interlock circuit (shown in Fig. 3) of the anti-cheat relay. At this phase further coins may be accepted on selections may be made.

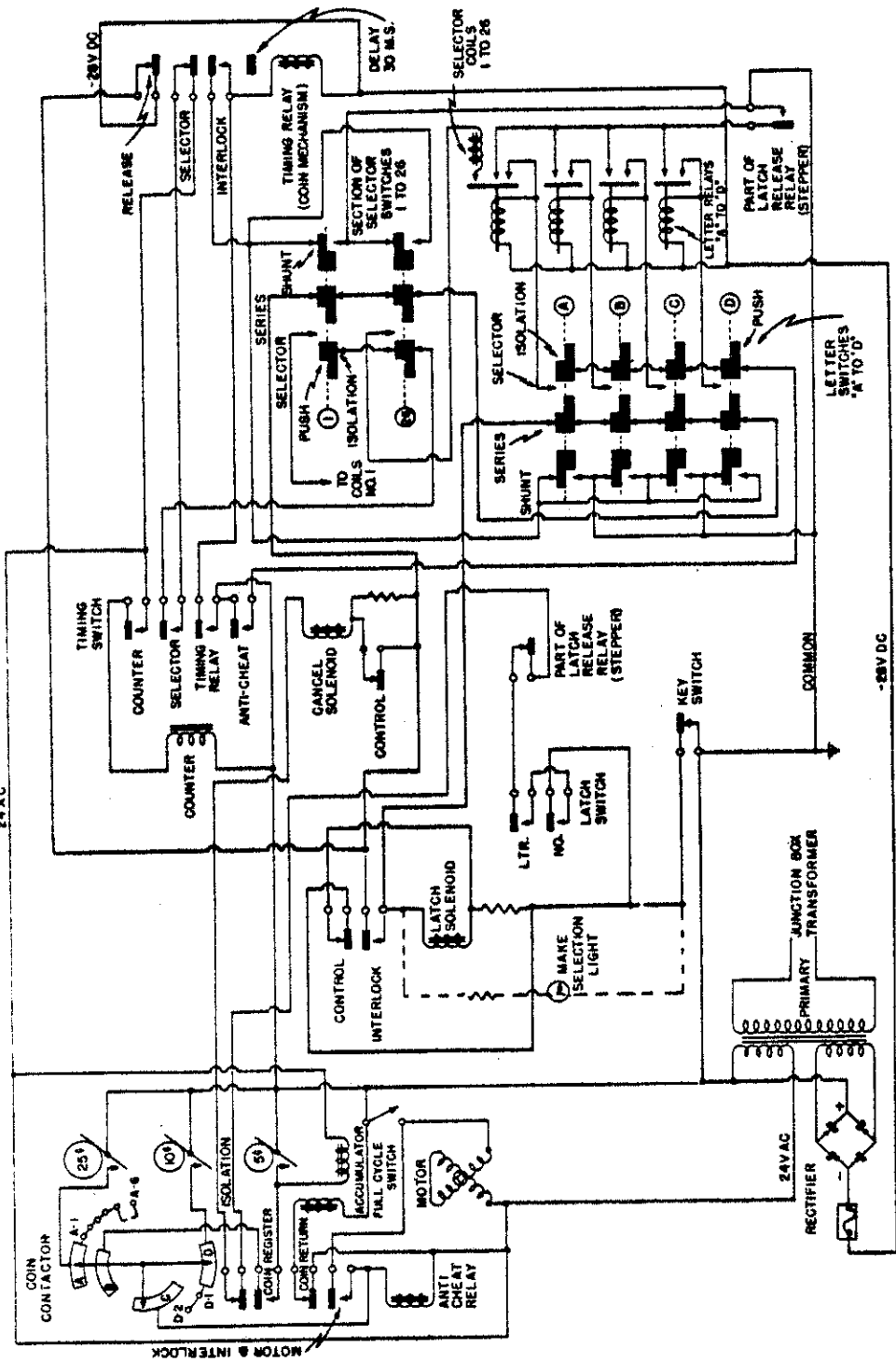


Fig. 5 - Electric Selector System, Key Switch Circuit, Make Selection Light Circuit, and Functions of the Latch Solenoid

Make Selection Light Circuit

The make selection light circuit (shown in red dash) being connected in parallel with the latch solenoid is energized, through its protective resistor, by the same (D.C.) direct current circuit that energizes the latch solenoid.

Functions of the Latch Solenoid

As the latch solenoid operates, it closes its normally open interlock contacts, opens its normally closed control contacts, and engages the holding latches for both the letter and number "selector switches". When the holding latch of either or both letter and number switches engages a depressed selector switch, either or both the "letter latch switch" and the "number latch switch" are closed respectively. These latch switches are in series and do not close until the holding latch has engaged the corresponding selector switch.

FIGURE 5

ELECTRIC SELECTOR SYSTEM, KEY SWITCH CIRCUIT, MAKE SELECTION LIGHT CIRCUIT, AND FUNCTIONS OF THE LATCH SOLENOID

Key Switch Circuit

At the first half escapement of the accumulator ratchet wheel, the key switch is mechanically closed, providing 28 volts (D.C.) direct current for the initial energy to the latch solenoid. The circuit (shown in solid red) flows from the negative side of the rectifier, through the normally closed release contacts of the timing relay, through the series switch banks of both the number and letter "selector switches", through the coil of the latch solenoid, through its normally closed control contacts, and through the key switch to the (positive) common side of the rectifier.

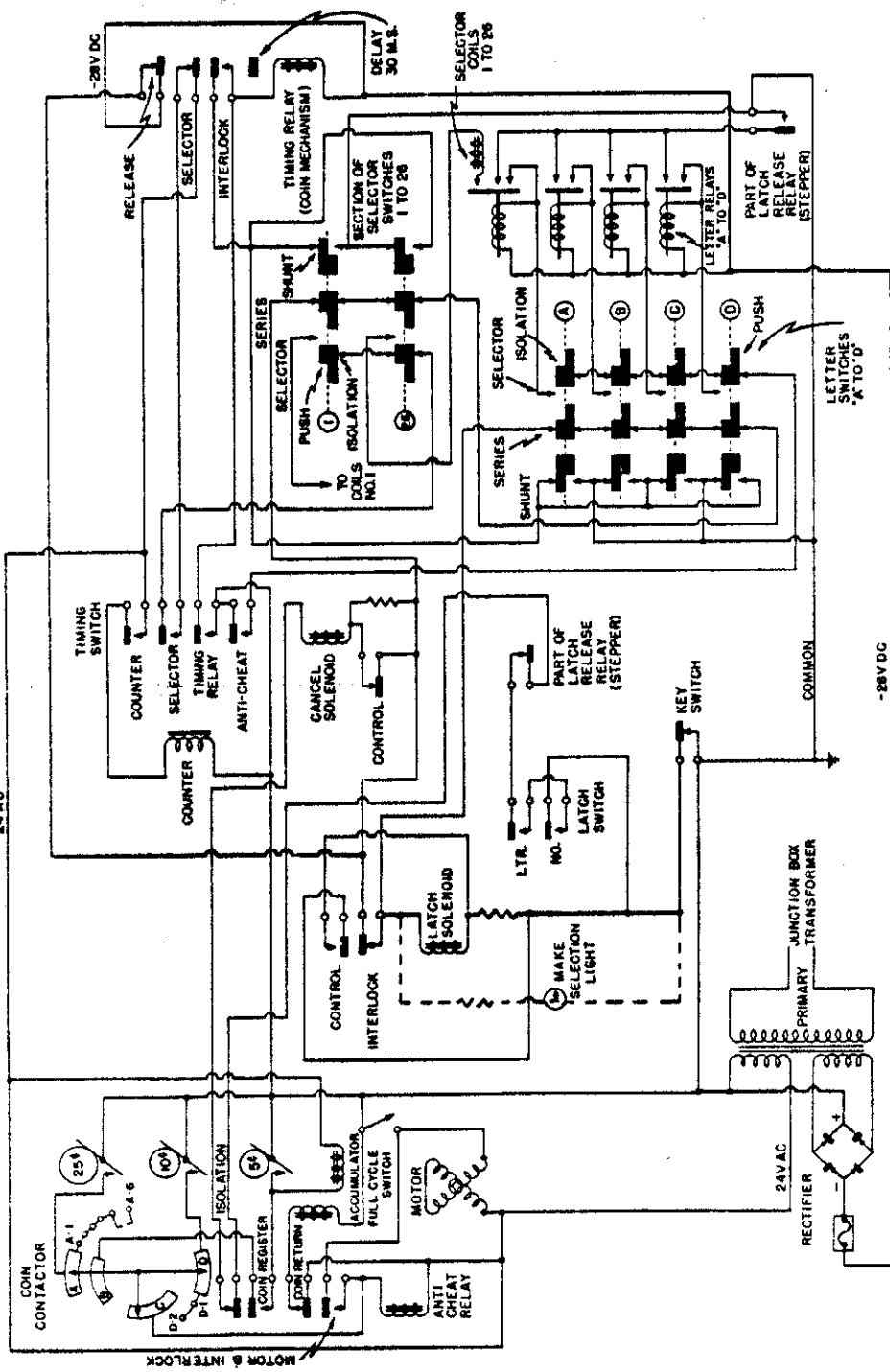


FIGURE 6
ELECTRIC SELECTOR SYSTEM, LATCH SOLENOID INTERLOCK AND CURRENT CONTROL CIRCUIT. FUNCTION OF THE SERIES SWITCH BANKS

The opening of the control contacts and the closing of the interlock contacts of the latch solenoid illuminates the route through the series switch banks (shown in Fig. 5) and provides the controlled D.C. interlock circuit (shown in solid red) from the negative side of the rectifier, through the normally closed release contacts of the timing relay, through the interlock contacts of the latch solenoid, through the coil and control resistor of the latch solenoid, and through the key switch to the positive (common) side of the rectifier.

The make selection light circuit (shown again in red dash) is also transferred to the interlock circuit of the latch solenoid.

Make Selection Light Circuit

Fig. 6 - Electric Selector System, Latch Solenoid Interlock and Current Control Circuit. Function of the Series Switch Banks

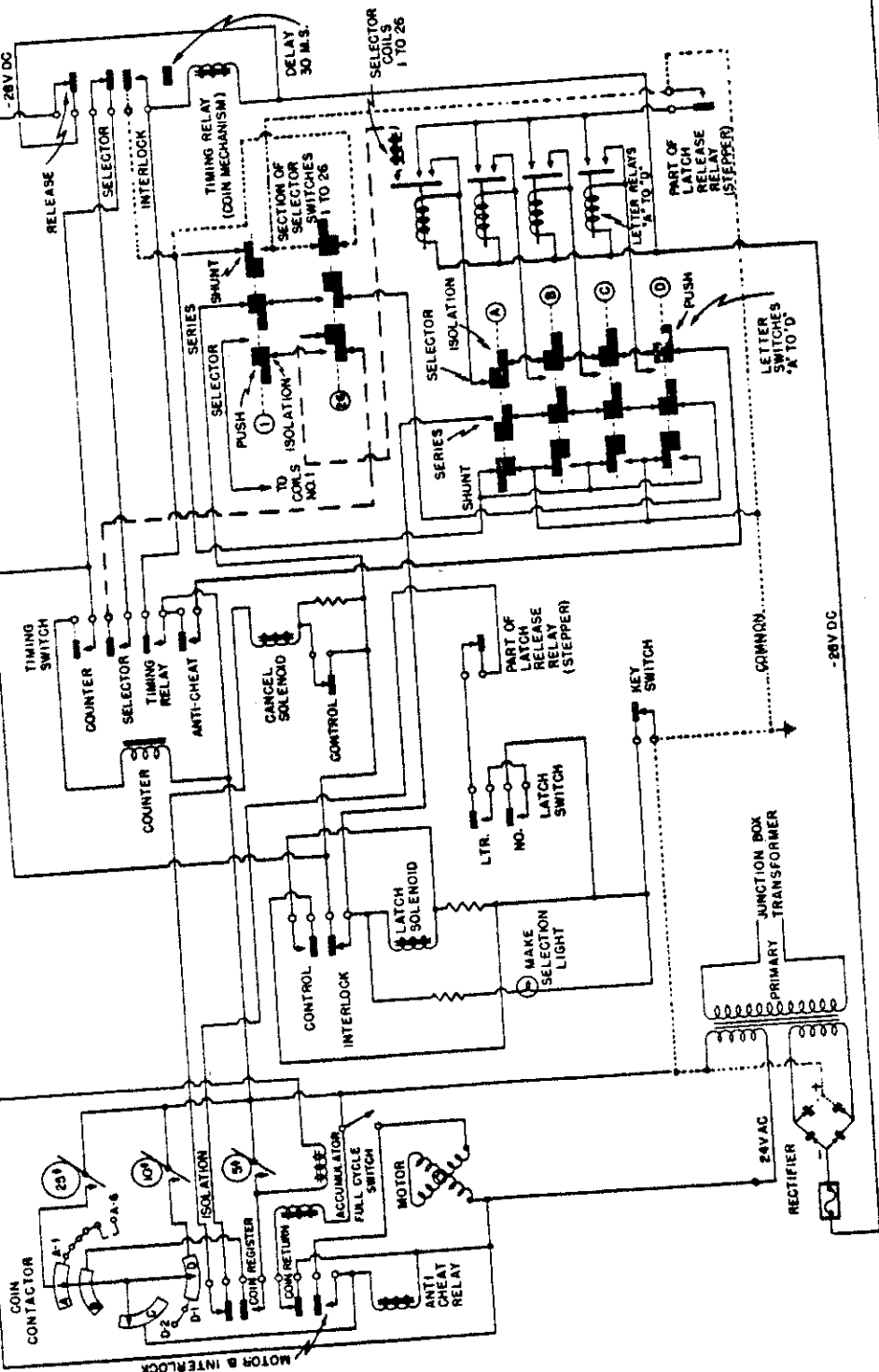


Fig. 7 - Electric Selector System, Function of Letter Selector Switches and Number Selector Switches

FIGURE 7
ELECTRIC SELECTOR SYSTEM, FUNCTION OF LETTER
SELECTOR SWITCHES AND NUMBER SELECTOR SWITCHES

Preparatory Selector Circuits

When a number button, 1 to 26, is pressed, its isolation switch opens to disconnect all switches in that bank beyond the number selected, its selector switch closes to include the selector coil in a section of the preparatory selector circuit (shown in red dot) from one of the interlock contacts of the timing relay, through the shunt side of the timing relay interlock circuit is prepared from one of the interlock contacts of the timing relay, through the shunt unit of the letter switch to the positive (common) side of the rectifier (not traced in color).

the initial circuit of the latch solenoid (shown in Fig. 5) from producing oscillation. In a similar manner, a section of the selector circuit for the letter relays "A" to "D" (shown in solid red) is prepared when a letter button is pressed, indicated from the negative side of the rectifier, through the coil of the letter relay, through the selector bank of the letter switches, to an anti-cheat contact of the timing switch. Also a section of the timing relay interlock circuit is prepared from one of the interlock contacts of the timing relay, through the shunt unit of the letter switch to the positive (common) side of the rectifier (not traced in color).

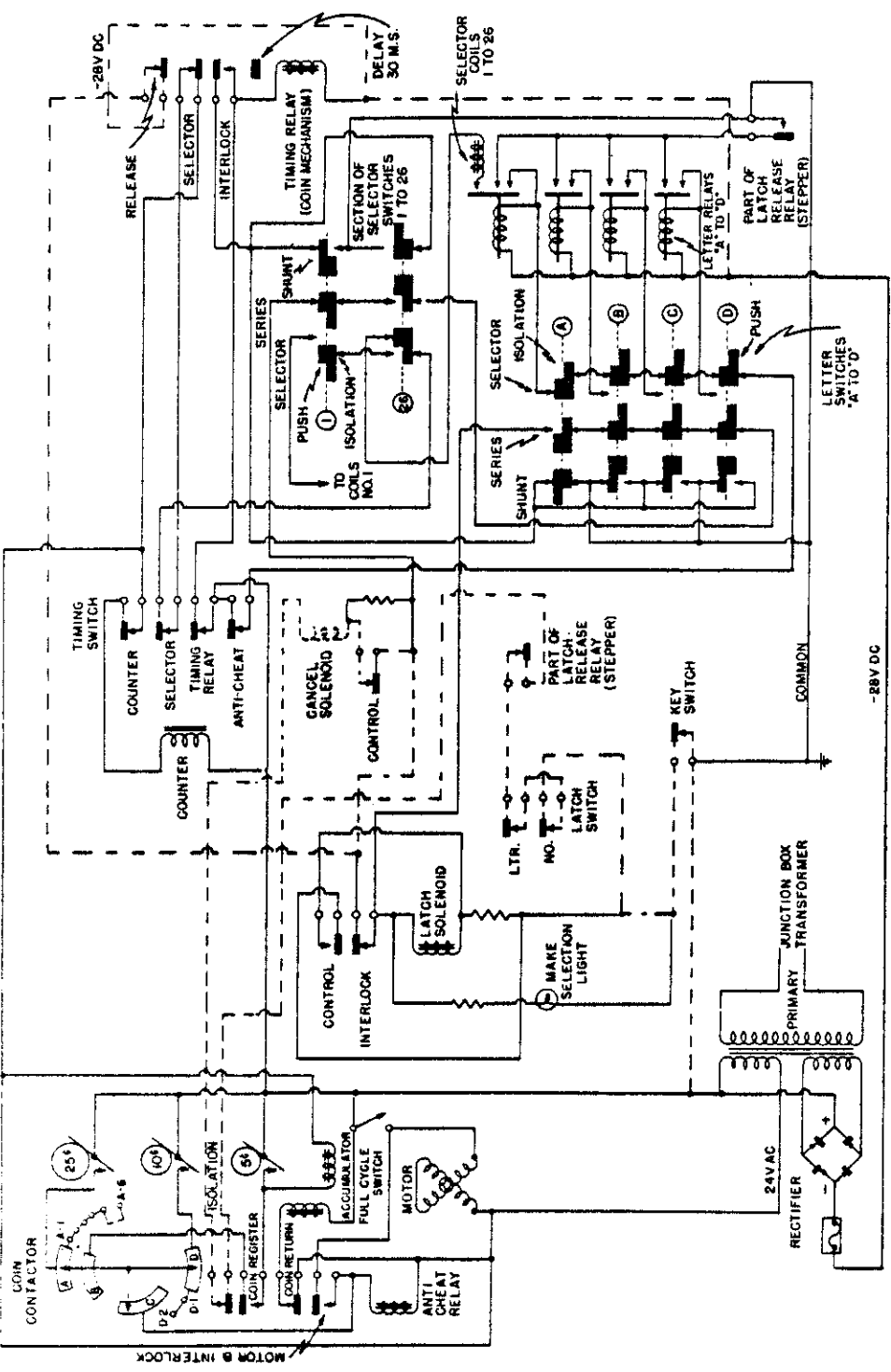


FIGURE 8

ELECTRIC SELECTOR SYSTEM, CANCEL SOLENOID INITIAL CIRCUIT, FUNCTION OF THE CANCEL SOLENOID, AND LETTER RELAY CIRCUIT

Cancel Solenoid Initial Circuit

Due to the construction of the latching mechanism and the latch switches, either the letter or number latch switch may precede or they may operate at the same time according to how the selector buttons are manipulated. However, when both the letter and number latch switches are closed, the cancel solenoid initial circuit (shown in red dash) is completed from the negative side of the rectifier, through the normally closed release contacts of the timing relay, through the normally closed control contacts of the cancel solenoid through the coil of the cancel solenoid, through the normally closed isolation contacts of the anti-cheat relay, through the normally closed stepper contacts

(or jumper), through both the letter and number latch switches, and through the key switch to the positive (common) side of the rectifier.

Function of the Cancel Solenoid

As the cancel solenoid reaches the end of its travel, the timing switch and the control switch are actuated. The control switch is opened; the anti-cheat contacts, the selector contacts, the counter contacts, and the timing relay contacts of the timing switch are closed.

Letter Relay Circuit

Closing of the anti-cheat contacts completes the letter relay circuit (shown in solid red) from the negative side of the rectifier, through the coil of the letter relay, through the selector switch bank of the letter switches, through the anti-cheat contacts of the timing switch, to the positive (common) side of the rectifier.

Fig. 8 - Electric Selector System, Cancel Solenoid Initial Circuit, Function of the Cancel Solenoid, and Letter Relay Circuit

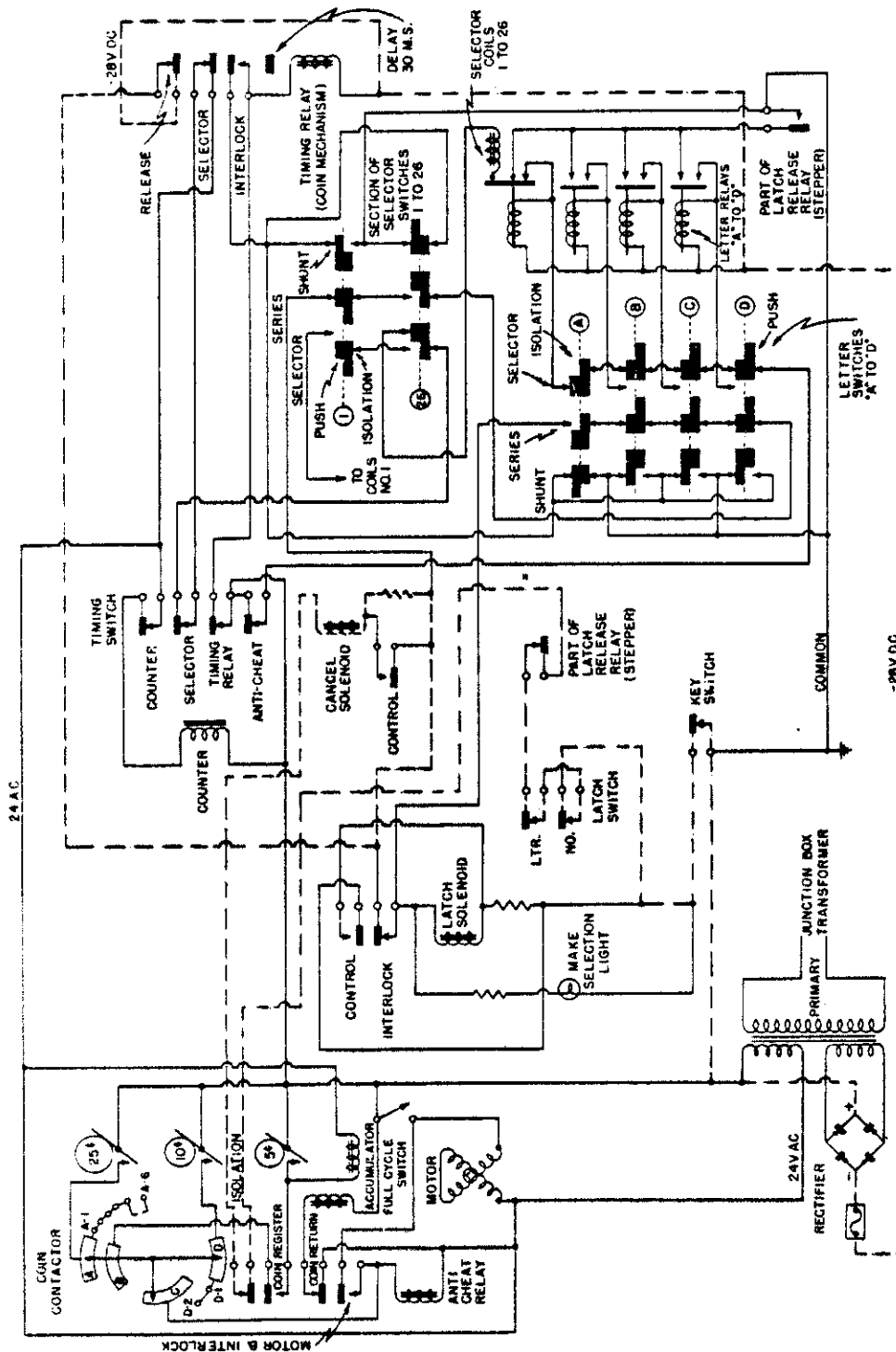


Fig. 9 - Electric Selector System, Cancel Solenoid Control and Interlock Circuit, Function of the Letter Relays, Selector Circuit

FIGURE 9

ELECTRIC SELECTOR SYSTEM, CANCEL SOLENOID CONTROL AND INTERLOCK CIRCUIT, FUNCTION OF THE LETTER RELAYS, SELECTOR CIRCUIT

Cancel Solenoid Function

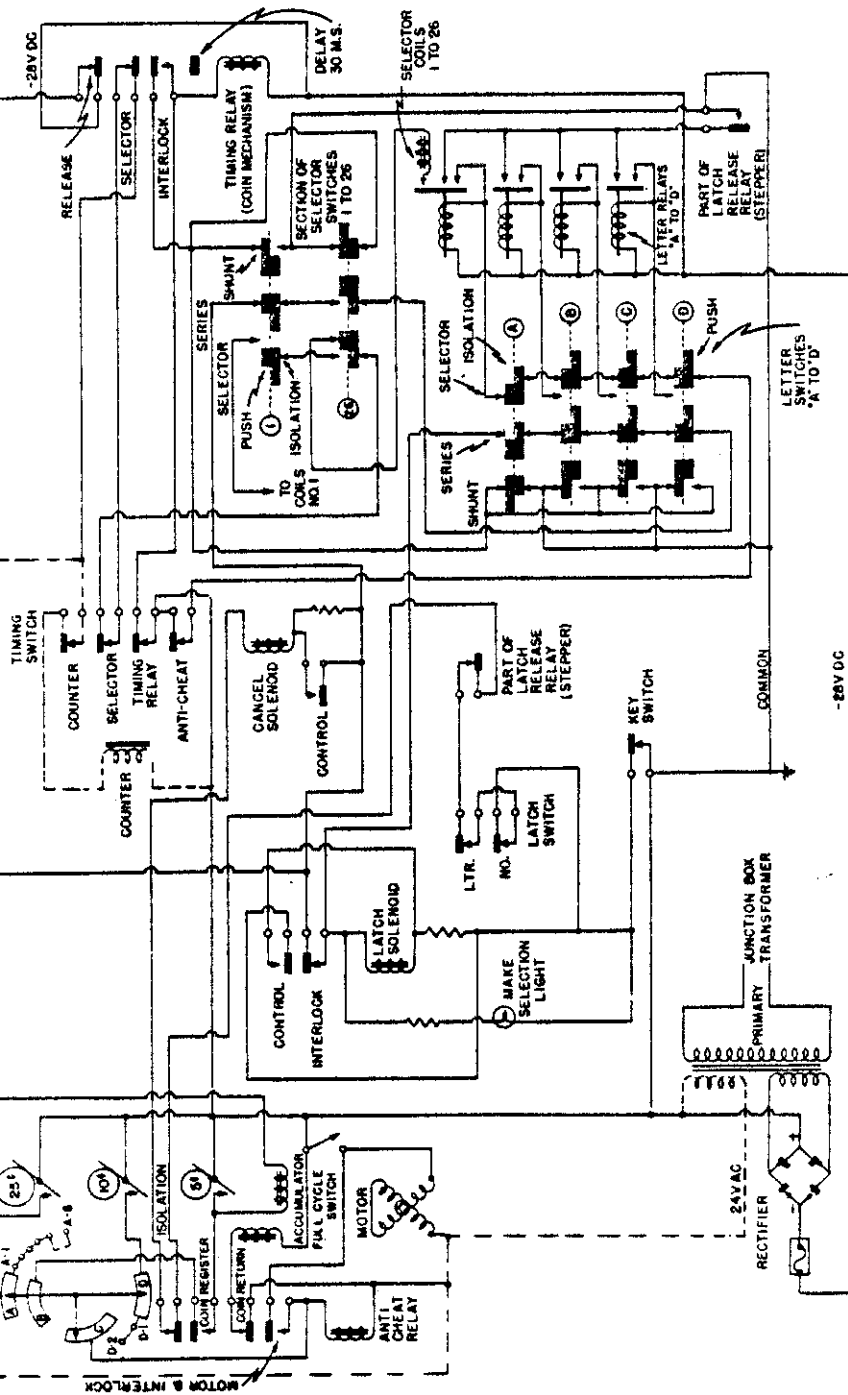
When the control contacts of the cancel solenoid are opened, they provide a controlled interlock circuit for the cancel solenoid (shown in red dash) from the negative side of the rectifier, through the normally closed release contacts of the timing relay, through the control resistor and the coil of the cancel solenoid, through the normally closed isolation contacts of the anti-cheat relay, through the normally closed stepper contacts (or jumper), through the letter and number latch switches, and through the key switch to the positive (common) side of the rectifier.

Selector Circuit

Letter Relays "A" to "D"

Energizing a letter relay moves its contact switch to provide a common contact for the 26 selector coils of one of the four letter groups, A, B, C, or D as selected.

As the selector contacts of the timing switch close, one of the 104 selector coils will be energized (shown in solid red). Then the circuit follows a path from the 24V A.C. side of the transformer winding through the normally closed selector contacts of the timing relay, the normally open selector contacts of the timing switch, the selector switch bank of the number switches, the selector coil, the letter relay contact switch, the selector switch bank of the letter switches, the anti-cheat contacts of the timing switch to the common side of the 24V transformer winding.



Anti-Cheat Circuit

The anti-cheat contacts of the timing switch provide a part of the selector circuit (shown in Fig. 9). These contacts provide anti-cheat features when wall boxes are in use, by isolating a section of the phonograph selector circuit during a wall box selection phase.

Timing Relay Circuit

The normally open "timing relay contacts" of the timing switch close to energize the timing relay coil (shown in solid red) from the negative side of the rectifier, through the coil of the timing relay, through the normally open "timing relay contacts" of the timing switch, to the positive (common) side of the rectifier. The timing relay will have its operation delayed for 20 milliseconds to allow sufficient time for a complete A.C. cycle to accomplish the electrical selection operation.

FIGURE 10
ELECTRIC SELECTOR SYSTEM, COUNTER CONTACTS, ANTI-CHEAT CIRCUIT,
AND TIMING RELAY CIRCUIT

Counter Circuit

The normally open counter contacts of the timing switch have (used as indicated in Fig. 9) to complete a 24 V circuit (shown in red dash) from the 24V A.C. winding of the transformer through the counter contacts of the timing switch and through the counter coil to the common or ground side of the transformer winding.

Fig. 10 - Electric Selector System, Counter Contacts, Anti-Cheat Circuit, and Timing Relay Circuit

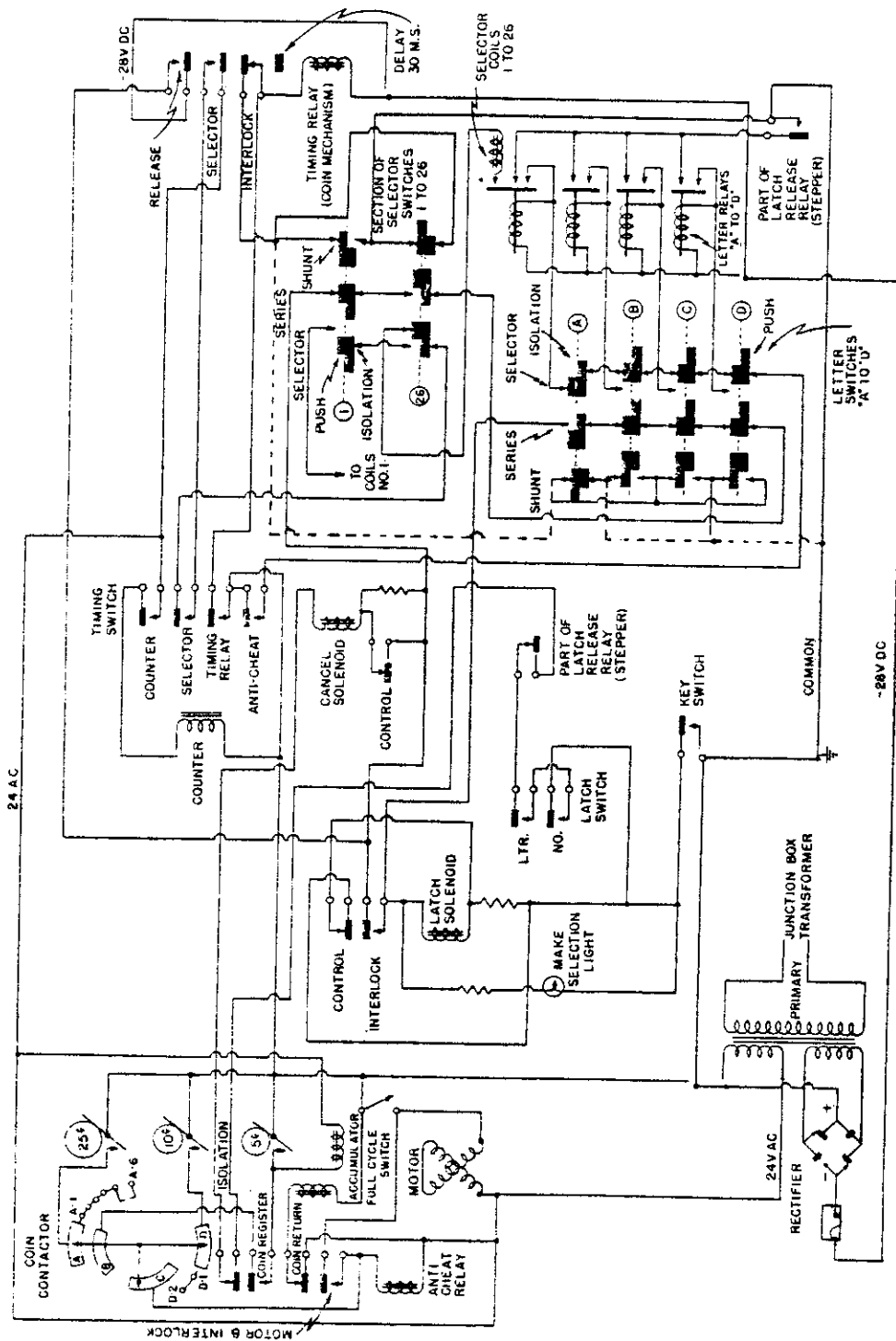


Fig. 11 - Electric Selector System, Function of the Timing Relay and Interlock Circuit

FIGURE 11

ELECTRIC SELECTOR SYSTEM, FUNCTION OF THE TIMING RELAY AND INTERLOCK CIRCUIT

Function of Timing Relay

As the timing relay operates, its normally open interlock contacts close to complete the D.C. interlock circuit prepared in Fig. 7 (shown in solid red and red dash in this figure) from the negative side of the rectifier, through the timing relay coil, the timing relay interlock contacts, and one or both of the selector switch shunt sections, to the positive (common) side of the rectifier.

The normally closed release contacts of the timing relay open to release the latch solenoid (Figs. 5 & 6), and the cancel solenoid (Figs. 8 & 9). The selector contacts

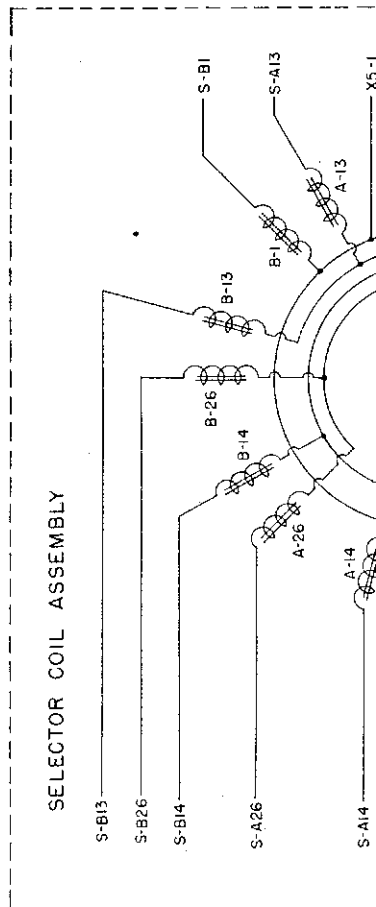
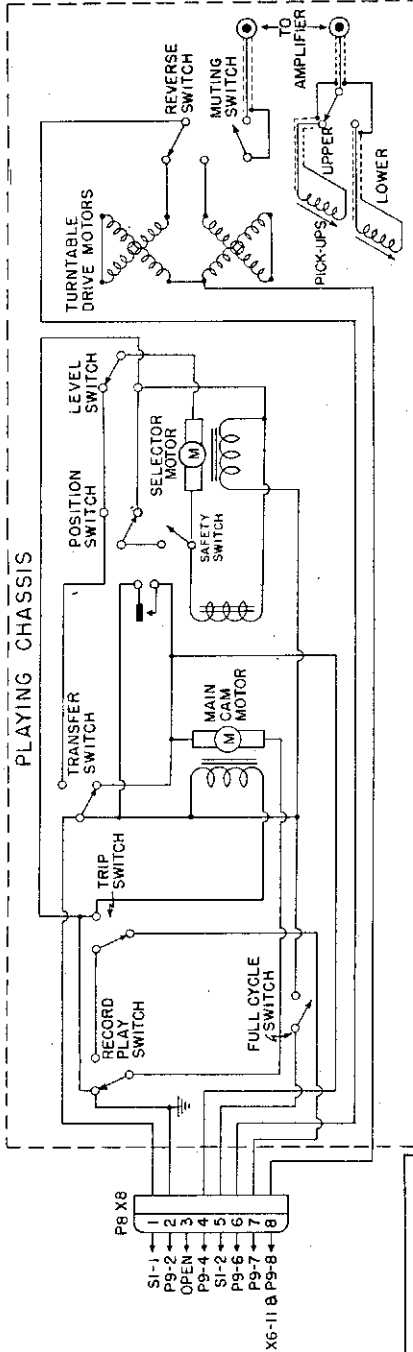
of the timing relay open to terminate the selection circuit shown in Fig. 9. As the latch solenoid is released, the spring loaded letter and number latches return allowing the latch switches to open, thus terminating the circuit of the letter relays A, B, C, or D shown in Fig. 8.

When the cancel solenoid retracts under spring loading, the cancel lever and pawl assembly engages a tooth of the accumulator ratchet wheel and retards the wheel one tooth, cancelling off one credit.

Interlock Circuit

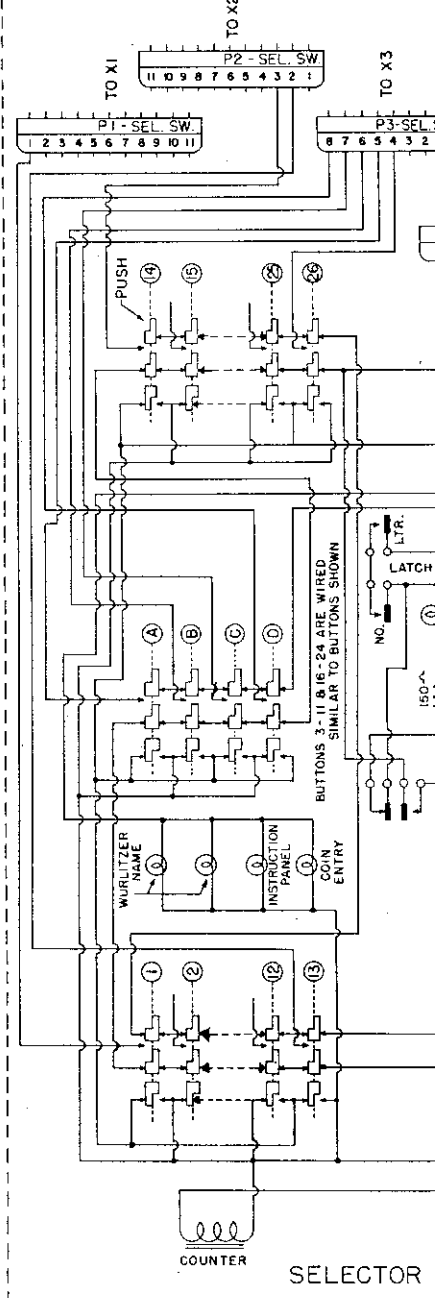
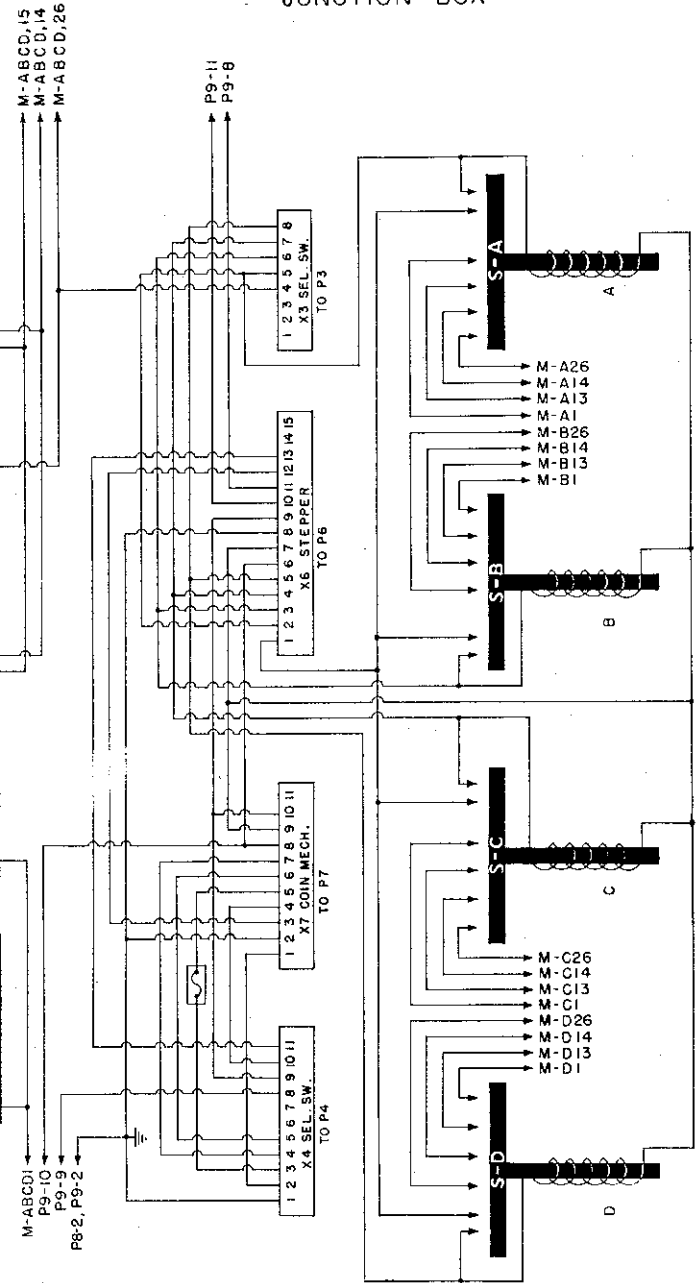
The timing relay interlock circuit (shown in solid red) will be maintained as long as either any of the selector switch buttons or the letter switch buttons are held down.

As the latch solenoid is released, these buttons will normally return to their original position and again provide the circuits shown in Figs. 5 & 6 if the key switch is closed, or the circuit shown in Fig. 1 if the key switch is open.



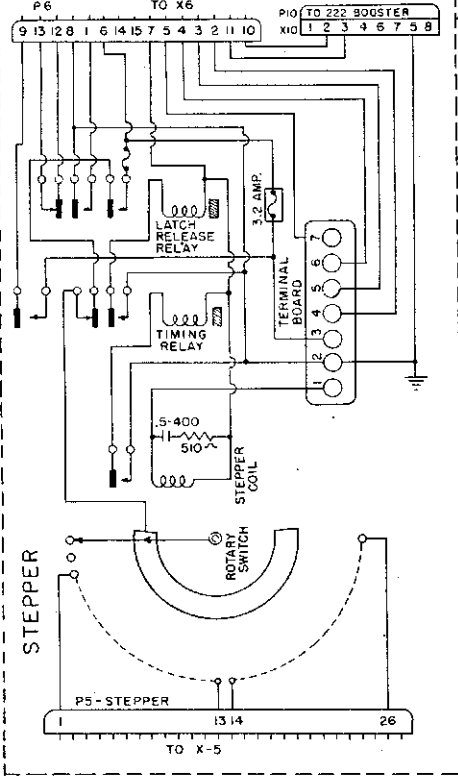
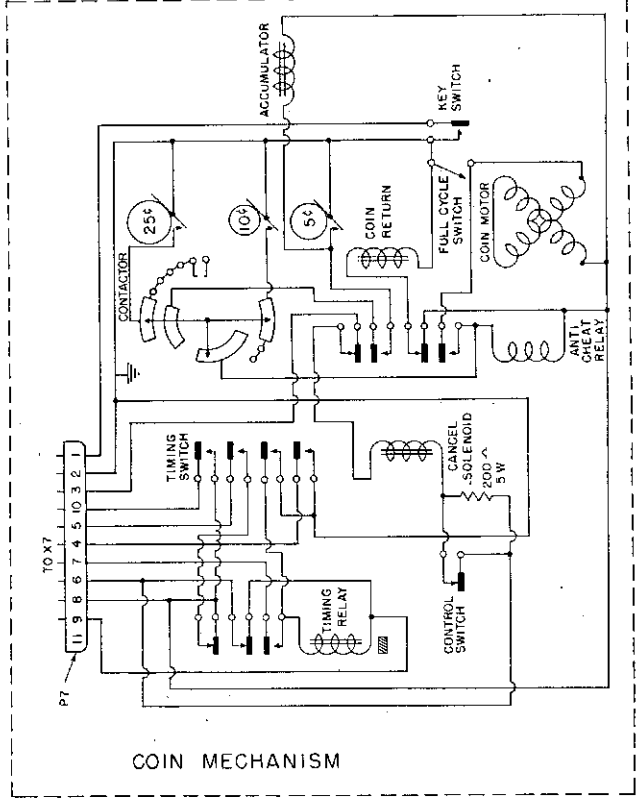
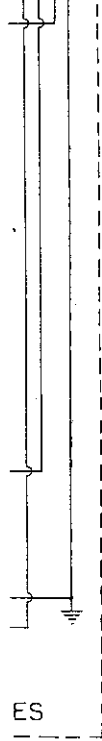
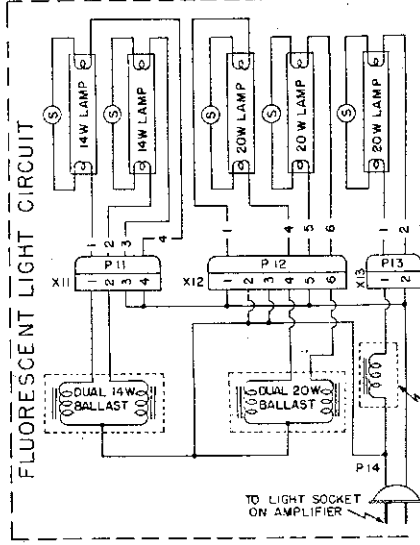
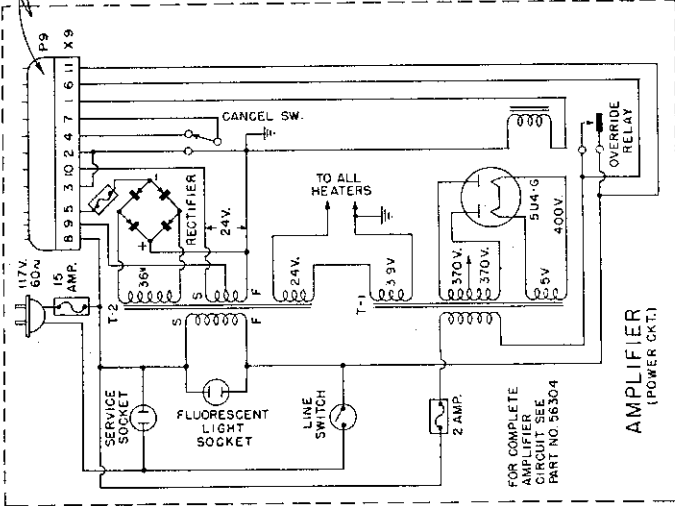
INTER-CONNECTING CABLES ARE
 SOCKET NUMBERS TO TRACE CHASSIS
 CODE: M- MAGNET, RELAY OR SOLENOID
 P - PLUG (MALE)
 S - SWITCH OR CONTACTS
 X - SOCKET OR PLUG (FEMALE)
 T - TERMINAL BOARD
 NOTE: JUMPER X6-12 & 13 WHEN

JUNCTION BOX



SELECTOR

- 1 - S1-1
- 2 - P8-2
- 3 - OPEN
- 4 - P8-4
- 5 - S1-2
- 6 - P8-6
- 7 - P8-7
- 8 - X3-11 & P8-8
- 9 - X4-8
- 10 - X7-8
- 11 - X6-10



PART NO. 570

