SERVICE MANUAL

No. 4

SEEBURG

REMOTE CONTROL SYSTEMS

1. WALL-O-MATIC WIRELESS REMOTE CONTROL SYSTEM
2. DELUXE SELECT-O-MATIC 3 WIRE REMOTE CONTROL SYSTEM
3. SELECT-O-MATIC WIRED REMOTE CONTROL SYSTEM
4. WIRELESS REMOTE SOUND SYSTEM

as applied to

1941 SEEBURG SYMPHONOLAS

J. P. SEEBURG CORPORATION
1500 DAYTON STREET • CHICAGO, U. S. A.

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NOTICE

We reserve the right to make changes and improvements in our products, whenever we deem necessary, without notice and without retroactive action.

Prices in Parts Lists are per unit unless otherwise specified and are subject to change without notice.

1500
£92

FOREWORD

The success of the SEEBURG REMOTE CONTROL SYSTEMS and the SEEBURG WIRELESS REMOTE SPEAKER SYSTEM has been substantiated by the tremendous demand for equipment of this nature in the Automatic Music Industry.

Their success, however, depends upon satisfactory installation in the location. To make a satisfactory installation it is essential that a thorough knowledge be had of the components of the REMOTE CONTROL SYSTEM or of the WIRELESS REMOTE SOUND SYSTEM.

For this reason, this Service Manual has been compiled to assist the service engineer in making proper installations, and keeping the equipment in satisfactory working condition thereafter.

It is, therefore, imperative that this Service Manual be carefully read and understood by the service engineer, before making any attempts to install, or service, equipment of a SEEBURG REMOTE CONTROL SYSTEM or a SEEBURG WIRELESS REMOTE SOUND SYSTEM. This Manual should be a part of the service equipment for the service engineer since it will serve as a guide when making installations or repairs.

J. P. Seeburg Corporation maintains a nation-wide organization of field engineers to instruct and cooperate with your service department. You will find these men up-to-date on all information pertaining to service. In addition, a home service department is maintained to help you, and to furnish any technical information desired.

When requesting information by wire or letter relative to a Symphonola, please give Model and Serial number.

When ordering a part, it is especially important to give the name of the part and the part number as well as the Model and Serial Numbers of the Unit on which it is used.

Always give a full description of the problem at hand so that we may be better able to serve you.

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WALL-O-MATIC WIRELESS REMOTE CONTROL SYSTEM

INSTALLATION

A. GENERAL:

Before an attempt is made to install the Seeburg Wireless Remote Control System on any location, the AC line voltage should be measured under the most severe load conditions. This can be done by means of a voltmeter, either by the operator or by a representative of the local power company. If the line voltage is found to be below 100 volts, the local power company should be induced to raise the voltage. If higher voltages cannot be obtained, an auto transformer (Figure 62) should be used. This auto transformer can be obtained from the J. P. Seeburg Corporation.

The 230 volt line in every fuse box on any location should be bridged by a bridging condenser, #86056. The presence of bridging condensers, when properly attached to the location circuits, will never do any harm and will always improve the general performance and will insure positive operation of the wireless system. These condensers absorb no energy; therefore, the location wattmeter will record no additional power consumption.

A 300 volt AC voltmeter should be used in order to determine the two points in each box to which the two leads of the bridging condenser are to be connected. A condenser should be connected across the two points in every box that give a reading of over 200 volts on the voltmeter. These bridging condensers are available from the J. P. Seeburg Corporation. A condenser other than the type supplied by J. P. Seeburg (which is specifically made for this particular application) should never be used.

B. REMOTE CONTROL SYMPHONOLA (MODEL RC):

The installation notes given in the Symphonola Manual (Service Manual No. 1) also apply to the RC Model Symphonolas. In addition to the regular Symphonola installation procedure, it is necessary to adjust the sensitivity control on the Master Control Station as outlined in the Installation Rules which which accompany each instrument. Further instructions on the setting of this sensitivity control are given in Paragraphs "E" and "F" of this section.

C. ELECTRICAL SELECTOR SYMPHONOLA:

In order to convert 1941 Electrical Selector Model Symphonolas into Wireless Remote Control Symphonolas, it is necessary to add a Type SR-4 Selection Receiver to the instrument. The installation of a Selection Receiver in any 1941 Symphonola is thoroughly covered in the Selection Receiver Installation Manual. With the Selection Receiver properly installed, the

sensitivity control is adjusted in the manner described in the following paragraphs "E" and "F" and the Symphonola will be ready for operation.

D. REMOTE WIRELESS SELECTOR:

The installation of the Remote Wireless Selector is thoroughly covered in the Installation Pamphlets which accompany each Selector unit. Care must be taken to insure that the Wireless Selector is mounted level to insure satisfactory operation of the slug ejector unit. Care must also be taken to prevent distortion of the back plate when mounting the unit. This distortion may be caused by the wall being uneven, and may be prevented by the use of cardboard or wood shims placed between the back plate and the wall where necessary. After the unit has been securely mounted, the line cord should be plugged into the nearest 117 volt, 60 cycle, A. C. outlet.

After the Remote Control Symphonola has been installed, the operation of the Wireless Selector should be checked several times by inserting coins into the coin chute and noting if the proper selections are being rendered.

E. SETTING OF SENSITIVITY CONTROL:

It will very rarely be found that the same signal strength is obtained from all of the several Wireless Selectors plugged in at various outlets on a location. After the decision has been made as to where the Symphonola and all Wireless Selectors are to be located, they should be plugged in and a procedure followed as outlined below:

1. Turn on all the lights and electrical appliances that are generally on during the rush hours in the evening, as it is best to make all necessary adjustments when the power load on the location is the heaviest.

2. Set the Sensitivity Control at 4.

3. Arbitrarily assign each Wireless Selector a number, beginning with #1.

4. Make sure there are no pins pushed up in the solenoid drum in the Symphonola.

5. Select #1 selection on #1 Wireless Selector, and #2 selection on #2 Wireless Selector, and so on around.

6. By checking the solenoid drum you will be able to determine which, if any, of the Wireless Selectors fail to make the proper selections.

7. If every Wireless Selector registers the selection assigned to it, then it is an indication that the setting

of the Sensitivity Control is close to being correct. However, it is always good practice to set the control two or three points above the minimum setting required. In this case, a setting of six or seven would most likely be the best. A higher setting could probably be used with success, but there is no point in needlessly courting trouble from severe transients that might result in free plays.

8. If one or all of the Wireless Selectors fail to register their respective selections at the Symphonola, then a setting of Six (6) should be used and the above test repeated after first making sure that all pins are pushed down on the solenoid drum. As stated in this section, the setting should be increased two or three points above the minimum satisfactory operating point.

9. A great many locations will require higher settings than Six (6), and it will be found that no trouble will result from free plays except in very rare instances. However, when it becomes necessary to go much above a setting of Twelve (12) or Thirteen (13), then a sensitivity is being reached where intentional or unintentional transients may result in free plays.

F. SENSITIVITY SETTINGS ABOVE 12 OR 13;

If, by following the procedure outlined above in A and E, it is necessary to set the Sensitivity Control much above Twelve (12) or Thirteen (13), then it is an indication that there is poor radio frequency transmission over the location's wiring. It then becomes necessary to make an easier and shorter path for the radio frequency impulses. This is accomplished by the installation of a pair of Type 250 Couplers (Figure 61) obtainable from the J. P. Seeburg Corporation. One coupler should be plugged into an outlet at, or near the Symphonola, and the other coupler plugged into an outlet at or near the Wireless Selector or group of Wireless Selectors transmitting the weakest signals or impulses. A pair of wires is then run from one coupler to the other connecting the terminals of one with those of the other. No 60 Cycle Voltage will be found at the terminals of either coupler so that any kind or size of insulated wire can be used. A small size wire is preferable so that it can be made as inconspicuous as possible. (This wire need not be run in conduit.)

After the above mentioned coupler installation is completed, the procedure as outlined in Section "E" should again be gone through. It will be found that a much lower sensitivity setting will now suffice because the Wireless Selectors that were originally the weakest will now transmit the strongest signals. Furthermore, it will probably be found that all Wireless Selectors on the location will transmit

a much stronger signal. Where a setting of Fourteen (14) or higher might have been required without the couplers, a setting of Six (6) or Eight (8) may be found to be entirely sufficient.

On an extremely large location it may be necessary to use three couplers. In this case the terminals of all three should be connected in parallel. As stated before, one coupler should be used at or near the Symphonola, and in this case the other two couplers should be plugged in at, or near, the two different groups of Wireless Selectors transmitting the weakest signals.

G. USE OF DELUXE SELECT-O-MATIC WHEN GOOD R.F. TRANSMISSION CANNOT BE OBTAINED:

If a 1941 RC Model Symphonola is being used and it is not desirable to use the Type 250 couplers, it is possible to replace the Wireless Selector, or the group of Wireless Selectors, transmitting the weakest signals by a Three Wire Selector, or a group of Three Wire Selectors. If a Three Wire Selector is used, a three-wire cable, #12001, must be wired to the DeLuxe Select-O-Matic and must be plugged into either of the 3 contact sockets on the front of the Master Control Station panel. IN ANY SYMPHONOLA HAVING A 1941 MASTER CONTROL STATION, IT IS POSSIBLE TO USE BOTH WIRELESS AND THREE WIRE SELECTORS WITHOUT MAKING ANY CHANGES OR ADDITIONS TO THE SYMPHONOLA.

If both Wireless and Three Wire Selectors are used, the setting of the sensitivity control on the Master Control Station will be determined by the operation of the Wireless Selectors ONLY as outlined in Paragraph E above. The setting of the sensitivity control has no effect on the operation of the DeLuxe Select-O-Matic System.

FUNCTIONS OF WIRELESS REMOTE CONTROL COMPONENTS

A. REMOTE WIRELESS SELECTOR:

The primary function of the Wireless Selector is to enable the customer to make selections at a remote point from a Seeburg Symphonola. There are no wires leading directly from the Remote Wireless Selector to the Symphonola. Radio frequency impulse signals generated at the selector are transmitted over the 117 Volt, 60 Cycle A.C. circuits in the location. These radio frequency impulses are generated by means of an interrupted oscillator built into each selector. For details pertaining to the circuit and design, refer to Figures 12, 14, 17, and 20. Each selection requires a different number of impulses. Any number of selections up to 20 may be made without waiting for previously selected numbers to be played off at the Symphonola.

B. MASTER CONTROL STATION:

The Master Control Station contains the necessary components for operating the RC Symphonola in order to make possible remote selections. In addition to the selection receiver section, the Master Control Station contains the audio amplifier and is the source of power for all equipment located in the Symphonola cabinet. The functions of the sockets and switches on the Master Control Station are the same as on the amplifiers used in the standard 1941 Symphonolas and these functions are described in the Symphonola Manual (Service Manual No. 1, Pages 4 and 5).

The Selection Receiver section of the Master Control Station receives the RF impulses which are transmitted over the A.C. line from the Wireless Selector. These impulses make possible the operation of power relays to establish credit and selections at the Symphonola. The Selection Receiver section consists of a 250 KC radio frequency amplifier, a grid-control controlled Thyratron (Type 2051 tube) and a step switch assembly. The incoming radio frequency impulses transmitted from the remote selectors are received, amplified, rectified, and result in the control of the 2051 tube. The 2051 tube in turn controls the step relay of the step switch assembly. A train of rectified radio frequency impulses received through the 2051 gas tube produces a pulsating direct current which operates the step relay (Figure 11). The instrument is designed so that it requires a train of six impulses before #1 selection is made. Likewise, a train of seven impulses is required for #2 selection, etc.

The Selection Receiver has a sensitivity control which is used to vary the amplification of the radio frequency amplifier. This sensitivity control is shown in Figure 7, Item 20 and Figure 10, Item 20. Turning this control clockwise by means of a knurled knob increases the sensitivity. The setting of this control has been described in Paragraph E under "INSTALLATION".

C. SELECTION RECEIVER:

The Selection Receiver, Type SR-4, which is added to standard 1941 Symphonolas to convert them into Remote Control Symphonolas, functions in the same manner as the Selection Receiver Section of the Master Control Station.

D. SOLENOID DRUM:

When a selection is made, an impulse of current is transmitted through a contact on the step switch to a solenoid on the Solenoid Drum at the end of a train of radio frequency impulses received from a Wireless Selector. The number of the pin pushed up by a solenoid on the Solenoid Drum will correspond with the number of the selection made at the Wireless Selector. When this pin is in the "UP" position, the motor control relay is energized to close the motor circuit which starts and keeps the Symphonola mechanism running until the selection has been played off.

OPERATION AND MAINTENANCE

A. WALL-O-MATIC SELECTOR MODEL WS-2Z (5¢)

The operation of the Model WS-2Z Wall-O-Matic can be checked by dropping a nickel in the coin chute (Figure 13, Item 9). The nickel passes through the slug ejector (Figure 13, Item 30) and strikes the coin switch (Figure 13, Item 31), momentarily closing the contacts. When the coin switch contacts close, a coin controlled relay (Figure 13, Item 32) is momentarily energized and the relay armature is engaged by a relay trip lever (Figure 13, Item 25), keeping the contacts of a switch (Figure 12, Item M-11) on the coin controlled relay closed.

A selection can be made from the Wall-O-Matic Selector by pushing the desired selector button (Figure 13, Item 44) in all the way until the push rod (Figure 13, Item 61) engages a latch bar (Figure 13, Item 62). It is necessary that the latch bar engages the push rod so that the proper number of RF. impulses are transmitted. If the selector button fails to stay in when making a selection, the horizontal section over the latch bar release link (Figure 13, Item 59) should be adjusted by bending the end up or down until proper operation is effected.

When the selector button is pushed, the motor circuit is completed and the motor begins to rotate. As the motor rotates, the contactor arm (Figure 13, Item 35) makes contact with the contacts on the selector disc, and RF. impulses are transmitted over the A.C. line. When the contact arm has advanced 90 degrees from its normal rest position, a small cam (Figure 13, Item 22) at the right end of the motor transmission shaft causes the disengagement of the relay trip lever and the controlled relay armature. The motor is kept running by means of a motor carry-over switch (Figure 13, Item 56) after the switch on the coin controlled relay is opened. As the motor starts, a pawl on the vertical button release lever (Figure 13, Item 58) falls off a button release cam (Figure 13, Item 34) and the motor carry-over switch (Figure 13, Item 56) at the top of the Wall-O-Matic Selector is closed. When the operating cycle is completed, the button release cam raises the vertical button release lever causing the motor carry-over switch to be opened and thus stop the motor. This same action also operates the button release links (Figure 13, Item 59) to release the push button that was depressed. All control circuits are thus opened until another coin is deposited.

The relationship between the button release cam, the vertical button release lever, the button release links, and the latch bar on the push button switch assembly should be such that the push rod engaging tip of the latch bar should extend 1/32" below the push rod in the non-operating position. When

the latch bar is in this position, the pawl on the vertical button release lever should be about 1/16" to 3/32" from the stepping off position of the cam as indicated in Figure 13, Items 34 and 58.

There is a grounding switch (Figure 13, Item 49) under each push button switch assembly. This switch should make contact with the lower end of the latch bar when the push button switch assembly is in the non-operating position. When the latch bar is in the "UP" position during the time it is engaging a selector rod, there should be a 1/32" gap between the grounding switch and the latch bar.

The slugproof unit in the Model WS-2Z Wall-O-Matic Selector is a National 5¢ slug rejector. Access to the slugproof mechanism may be had by removing the push button assembly off the four mounting studs, and by removing the motor assembly from the back plate by means of three screws. Care should be taken not to move these components more than necessary to give the desired room for making repairs on the slugproof mechanism to eliminate unsoldering of connections.

Light is furnished for program illumination by means of eight #51 6-8 volt lamps. These lamps are mounted on the push button assembly brackets and are connected in parallel (Figure 12, Item M-9).

Very little attention will have to be given to the maintenance of the Wall-O-Matic Selector. The lubrication of the moving parts has been taken care of at the factory and no further lubrication will be necessary. Occasional cleaning of the contact arm and the contacts on the selector disc may be needed. These contacts can be cleaned with a piece of fine sandpaper or with some carbon tetrachloride. The program lights and the 70L7GT tube may need replacement after a period of time. The oscillator coil (Figure 13, Item 38) is tuned to exactly 250 KC and if for any reason the frequency alignment is disturbed, the coil should be re-aligned as described under "FREQUENCY ALIGNMENT" (Section G, Paragraph 3) in this section.

B. BAR-O-MATIC SELECTOR MODEL WB-1Z (5¢-10¢-25¢)

To test the unit for operation, deposit coin into the drop slot (Figure 22, Item 1). Nickels will operate the inside section of the coin switch (Figure 22, Item 8) when viewed from the back. The nickel switch directly operates the credit magnets (Figure 21, Item 33) and establishes one credit on the credit wheel (Figure 21, Item 36), which can store credit for twenty nickels. When one or more credits have been established the motor switch (Figure 21, Item 40) is closed and the unit may be operated by means of the selector buttons. Depres-

sing the selector button causes the motor to run and the selector contact arm to revolve and send out a series of R.F. impulses in a manner exactly the same as on the five cent Wall-O-Matic Model WS-2Z. One credit for each selection is cancelled by a credit cancel arm (Figure 21, Item 37) which is on on the motor shaft; for each cycle, the credit ratchet wheel is set back one notch. When the last credit has been cancelled the motor switch (Figure 21, Item 40) is opened and the motor is kept in operation by the motor carry-over switch (Figure 21, Item 28). This motor carry-over switch operates in the same manner as that of the five cent Wall-O-Matic Model WS-2Z. The R.F. impulses are coupled to the line by a condenser (Figure 22, Item 13) and a switch (Figure 21, Item 28). The coupling condenser is connected to the line only while the motor is in operation.

Depositing a dime in the drop slot will operate the center section of the coin switch (Figure 22, Item 8), and energize the 10¢ credit relay (Figure 21, Item 8). The relay has three sets of contacts; one set of contacts immediately starts the motor; another set of contacts keeps the relay energized; the third set of contacts connect a group of 3 contact rivets on the selector disc assembly to the credit magnets. On the relay armature, a bracket trips a cam release (Figure 21, Item 11) which opens a switch (Figure 21, Item 7) when the operation of the motor is caused by the 10¢ relay. The motor is started by the relay to establish credits. As the contact arm assembly rotates, making contact between the group of three contact rivets and the contact segment, the credit magnet receives three impulses and establishes three credits on the credit ratchet wheel. The credits are established in the first one third cycle of the motor; when the motor has made one third of its cycle the credit cancel cam (Figure 21, Item 37) opens a switch (Figure 21, Item 16) which breaks the maintaining circuit and allows the 10¢ relay to drop out. As the motor continues to operate due to the carry-over switch (Figure 21, Item 28) and completes its cycle, one credit is removed from the credit ratchet wheel, leaving two credits for each dime. At the end of the motor cycle the motor carry-over switch is opened and the switch (Figure 21, Item 7) is closed by resetting the cam release lever (Figure 21, Item 12). This switch (Figure 21, Item 7) opened the B+ circuit to the oscillator to prevent R.F. impulses from being transmitted during the credit establishing cycle. This switch remains closed when selections are being made.

Depositing a quarter in the drop slot will operate the outer section of the coin switch (Figure 22, Item 8), and energize the 25¢ credit relay (Figure 21, Item 15). This relay has three sets of contacts; one set of contacts immediately starts the motor; another set of contacts keeps the relay energized; the third set of contacts connect two groups of three

contact rivets each on the selector disc assembly to the credit magnets. The sequence of operations which take place during the 25¢ credit establishing cycle is the same as has been outlined previously for the 10¢ credit cycle, except that 6 impulses are received by the credit magnets, instead of three. Again as the motor completes its credit cycle, the cancel cam removes one credit from the credit ratchet wheel leaving five credits for each quarter.

After credits have been established for any coin and selections are made, one credit is removed from the credit ratchet wheel for each selection as outlined previously. When making a selection, the selector button should be pressed in firmly to allow the latch bar to engage the selector push rod. Failure to allow the selector push rod to be engaged by the latch bar will result in selection #20 being obtained. When more than one credit has been established and a selector button pressed, one selection will be made. The next selection can not be made unless the depressed button is allowed to return to its normal position. This is accomplished by means of an interlocking relay (Figure 21, Item Item 6) which is energized during each cycle by the contact arm assembly (Figure 21, Item 18) making contact between the contact segment and a single contact rivet on the selector disc assembly (Figure 21, Item 17). When the relay is energized the motor switch (Figure 21, Item 40) circuit is opened and the motor is kept in operation by the carry-over switch (Figure 21, Item 28) until it has completed its selection cycle, at which time the motor will stop even though the button is still depressed and there are still credits available. It will be necessary to release the selector button before another selection can be made. Releasing the button breaks the circuit to the interlocking relay (Figure 21, Item 6) causing it to fall out; when the relay falls out, the motor switch circuit is completed and another selection may be made. On earlier models this interlocking relay was not used and if the selector button was held in all the credits would be exhausted and only one selection would be obtained.

The coin drop slot has a red window which becomes illuminated each time the motor operates. While this light is on, no coins should be deposited. If a coin is deposited when the light is on a wrong selection may result and credits may be lost.

The grounding switch on each selector switch assembly operates in the same manner as the grounding switches on Wall-O-Matic Model WS-2Z.

The lubrication of all moving parts has been taken care of at the factory and no further lubrication should be neces-

sary. The selector contact arm assembly and the selector disc assembly (Figure 21, Items 17 and 18) may need occasional cleaning, which can be accomplished by the use of fine sandpaper and carbon-tetrachloride. The oscillator coil (Figure 22, Item 17) is tuned to exactly 250 K.C. and if for any reason the frequency alignment is disturbed, the coil should be re-aligned as described under "FREQUENCY ALIGNMENT" (Section G, Paragraph 4) in this section.

The slug rejector unit used in this model is a single 5¢-10¢-25¢ unit similar to the one used in the 1941 Symphonola. Reference can be made to Service Manual No. 2.

C. BAR-O-MATIC SELECTOR MODEL WB-5Z (5¢)

To test the unit for operation, deposit coins into the drop slot (Figure 19, Item 1). The nickels operate the coin switch (Figure 19, Item 8) and establish credits on the credit ratchet wheel (Figure 18, Item 31). The credit ratchet wheel can store credits for twenty nickels. When one or more credits have been established, the motor switch (Figure 18, Item 33) is closed and the unit may be operated by means of the selector button. Depressing the selector button causes the motor to run and the selector contact arm to revolve and send out a series of R.F. impulses in a manner exactly the same as on the five cent Wall-O-Matic Model WS-2Z. One credit for each selection is cancelled by a credit cancel arm (Figure 18, Item 32) which is on the motor shaft; for each cycle, the credit ratchet wheel is set back one notch. When the last credit has been cancelled, the last operation of the motor is maintained by the motor carry-over switch (Figure 18, Item 25). This motor carry-over switch operates in the same manner as that of the five cent Wall-O-Matic Model WS-2Z. The R.F. impulses are coupled to the line by a condenser (Figure 19, Item 12). The coupling condenser is connected to the line only while the motor is in operation. After credits have been established the operation is the same as previously outlined in Section B, Bar-O-Matic Selector Model WB-1Z, under "OPERATION AND MAINTENANCE".

The slug rejector unit used in this model is a standard 5¢ model similar to the one used in the five cent Wall-O-Matic Model WS-2Z.

D. WALL-O-MATIC SELECTOR MODEL WS-10Z (5¢-10¢-25¢)

To test the unit for operation, deposit coins in the same manner as previously outlined under Section B, Bar-O-Matic Selector Model WB-1Z under "OPERATION AND MAINTENANCE". Credits for nickels, dimes and quarters are established and selections made and credits cancelled in the same procedure as outlined for the Bar-O-Matic Selector Model WB-1Z. Many of the parts for the Wall-O-Matic WS-10Z and Bar-O-Matic WB-1Z are common.

Assembly views of the Wall-O-Matic Model WS-1OZ are shown in Figures 15 and 16.

The slug rejector unit is the same as that of the Bar-O-Matic Model WB-1Z. The lubrication of all moving parts has been taken care of at the factory and no further lubrication should be necessary. The selector contact arm assembly and the selector disc assembly (Figure 15, Items 3 and 4) may need occasional cleaning, which can be accomplished by the use of fine sandpaper or carbon-tetrachloride. The oscillator coil (Figure 15, Item 11) is tuned to exactly 250 KC and if for any reason the frequency alignment is disturbed, the coil should be re-aligned as described under "FREQUENCY ALIGNMENT" (Section G, Paragraph 4) in this section.

E. MASTER CONTROL STATION:

The Master Control Station is a composite unit embodying the Selection Receiver, A.F. Amplifier and Power Supply.

1. SELECTION RECEIVER SECTION: The step relay mechanism (Figure 7, Item 6) located in the Selection Receiver section is operated by the impulses transmitted over the A.C. line from the Wireless Selectors. If the unit fails to respond to the impulses of the Selectors, the Sensitivity Control (Figure 7, Item 20) should be adjusted. Turn this clockwise by means of the knurled knob to increase the sensitivity. The setting of this control should be such that the impulses should operate the Selection Receiver positively, but not too high a setting should be used in order to avoid operation of the unit by extraneous impulses or transients set up on the line. (Refer to Section E of INSTALLATION for detailed instructions on adjustment of Sensitivity Control). If the unit fails to respond to the impulses transmitted by the Selectors, and the Sensitivity Control is at maximum sensitivity, check the tubes in the unit with a standard tube tester. If the Selection Receiver still fails to operate, all voltages in the RF circuit and the power circuit should be checked.

   (a) RE-ALIGNMENT OF RF SYSTEM: Refer to "Frequency Alignment" (Section G, Paragraph 2) under "OPERATION AND MAINTENANCE".

   (b) FUSES: Unless proper fuse protection is maintained, there may be a possibility of a burned-out selection solenoid in the solenoid drum. The fuse for the Selection Solenoid (Figure 6, Item 11) should be obtained from the J. P. Seeburg Corporation. Replacement may be made simply by unfastening the fuse cover (Figure 6, Item 10), taking out the defective fuse and inserting a new one.

(c) WIRING CHECK: If some particular selection solenoid does not become energized after the step switch has operated, a check should be made of the wiring of that particular solenoid. Check the soldered connection to the rear of the particular contact in question on the step switch contactor plate, and the soldered connections to this particular solenoid in the drum. Examination of the selection solenoid contacts on the hold and release relays of the step switch assembly should be made for proper adjustments. Refer to detailed instructions on step relay operation (Figure 11).

2. AUDIO FREQUENCY AMPLIFIER: The audio frequency amplifier section of the Master Control Station is similar to the high fidelity amplifier used in the standard Symphonolas. The only difference is that it is combined with the rest of the equipment to make one complete unit serving the the RC Symphonola. The tone controls are mounted on the front of the Master Control Station sub-panel, and access may be had to them through the front door of the Symphonola cabinet.

3. POWER SUPPLY: The power supply for the components of the Master Control Station is derived from a single source with the exception of the power source for the selection receiver. The Selection Receiver section of the Master Control Station has an independent source of power from a transformer (Figure 6, Item 44). The 5Y3G tube (Figure 6, Item 41) is a source of direct current for the plate, screen and bias voltages for all the tubes of the Selection Receiver, with the exception of the 6X5GT, which is a rectifier tube. The 2051 tube (Figure 6, Item 38) obtains its control grid bias through a resistance (Figure 5, Item R-20) which enables operation when impulses are received through the RF system of the Selection Receiver. If proper bias for the 2051 is not effected, the tube will remain ignited and become damaged. The 6X5GT tube (Figure 6, Item 32) supplies direct current power for the hold and release relays (Figure 11). Direct current for these relays is necessary to effect a time delay action for successful operation of the step switch and relay assembly. This makes possible the excitation of the solenoids in the solenoid drum assembly.

4. FUSES: There are six fuses on the Master Control Station. All of the fuses are located on the front panel of the Master Control Station, and are accessible through the front door of the cabinet. The non-tamperable type fuse (Figure 6, Item 15; Figure 9, Item 15) located near the center of the panel is a 1 8/10 amp. fuse for the Sym-

phonola motor. The other two non-tamperable fuses (Figure 6, Item 4; Figure 9, Item 4) located near the left end of the sub-panel are 2 1/2 amp. fuses for the three wire remote control system. The double fuse receptacle (Figure 6, Item 10; Figure 9, Item 10) in the center of the panel contains a 2 1/2 amp. cartridge type light fuse (Figure 6, Item 12; Figure 9, Item 12) and a 1/2 amp. slo-blow cartridge type solenoid fuse (Figure 6, Item 11; Figure 9, Item 11). The cartridge type fuse in the single fuse receptacle (Figure 6, Item 6; Figure 9, Item 6) is a 2 1/2 amp. fuse protecting the amplifier power transformer (Figure 6, Item 45; Figure 9, Item 45). It is very important that a blown fuse be replaced with one of the correct value.

On the earlier Amplifiers and Master Control Stations, the motor fuse was a 2 1/2 amp. non-tamperable fuse. In order to obtain better protection on later models, the motor fuse was changed to a 1 8/10 amp. non-tamperable fuse. The same socket is used for the 1 8/10 amp. fuse, so the 2 1/2 amp. motor fuse on earlier models can be replaced by the 1 8/10 amp. fuse, #14195.

F. SELECTION RECEIVER, TYPE SR-4:

The operation of the Selection Receiver, Type SR-4, is similar to the Selection Receiver section of the Master Control Station and the same notes apply to the operation of the Type SR-4 Selection Receiver. The frequency alignment procedure given below for the Master Control Station also applies to the Selection Receiver.

G. FREQUENCY ALIGNMENT:

1. EQUIPMENT NECESSARY: In order to make an adjustment of of frequency alignment, it is necessary to have a signal generator of good quality and a suitable diode meter. The Engineering Department of the J. P. Seeburg Corporation has recommended a signal generator and a diode (microampere) meter shown in Figure 60, which should be used whenever adjustments of frequency alignment are made. The signal generator, as supplied, is intended for ordinary radio servicing and general alignment. It is supplied with an out-put cord which must be coupled to the 117 Volt, A.C. line in the proper manner. This out-put cord has an inner conductor, and a ground sheath or outer conductor. One end of this cord plugs into the signal generator under the knob titled "Attenuator". The other end of this cord has the inner and outer conductor separated. Each conductor should be connected to one terminal of an electrical outlet plug through a standard .1 MFD. bridging condenser. The signal can then be put

on the A.C. line by simply plugging the output cord of the generator into an electrical outlet. The diode meter should be a D.C. microammeter having a 500 microampere or a 1000 microampere scale. The diode meter should be connected to an ordinary telephone plug in such a manner so that the inside terminal is connected to the positive terminal of the diode meter.

2. ALIGNMENT OF SELECTION RECEIVER SECTION OF THE MASTER CONTROL STATION: To align the Selection Receiver section, first plug the diode meter into the jack (Figure 6, Item 37; Figure 9, Item 37) on the Master Control Station. This will indicate the presence and strength of the incoming signal, as well as the amplification of this signal. IMPORTANT: TAKE OUT THE 2051 THYRATRON TUBE OR IT WILL BE DAMAGED.

The output cord of the signal generator should be plugged to a wall receptacle through the proper coupling device, previously described. Carefully adjust the signal generator to the frequency desired. The standard alignment frequency is 250 KC. The Attenuator knobs on the signal generator, and the sensitivity control on the Selection Receiver, should be adjusted during re-alignment so that the diode current is at all times kept between 200 and 300 microamperes. This will permit more sensitivity and greater ease of alignment.

Before proceeding any further, it should be noticed that the R.F. Coil system of the Selection Receiver consists of three R.F. coils which are in shield cans. These coils are the input coil, which has two trimmer condensers, the interstage coil, which also has two trimmer condensers, and the diode coil, which has only one trimmer condenser. The interstage coil has a slide switch fastened to the shield can and when the Master Control Station leaves the factory, the switch is in a position marked "R".

WHEN THE RECEIVER IS TO BE RE-ALIGNED, THE SWITCH MUST BE MOVED TO THE OPPOSITE SIDE AND LEFT THERE UNTIL THE ENTIRE ALIGNMENT PROCEDURE IS COMPLETED.

With the switch moved to the opposite side of the "R" position, the five trimmer condensers previously mentioned are adjusted for maximum diode current by inserting a small screw driver in the top of the radio frequency coil cover and turning the trimmer condenser screw.

When all the trimmer condensers of the Selection Receiver have been adjusted for maximum diode current, the Selection Receiver is left untouched and the signal generator is removed

from the line. All the Wireless Selectors are then aligned to the Selection Receiver as a standard.

When all the Wireless Selectors have been aligned, the switch on the interstage coil of the Selection Receiver is switched back to the "R" position. DO NOT ADJUST ANY TRIMMER CONDENSERS WITH THE SWITCH IN THE "R" POSITION. With the switch in the "R" position, the Selection Receiver is ready for use.

3. ALIGNMENT OF WALL-O-MATIC SELECTORS (MODELS WS-2Z AND WS-10Z): The Selection Receiver should first be properly aligned as discussed above. The Wall-O-Matic Selector is then aligned, using the Selection Receiver as a standard. No signal generator is needed.

   Plug the Wall-O-Matic Selector into a wall outlet receptacle--preferably not the same receptacle to which the Symphonola is connected. Place a piece of cardboard or other insulating material between the contacts of the motor carry-over switch ONLY and establish a credit. With a small screw driver, short across the two lower bus bars of the push button switch. This will cause the motor to run. When the contactor arm of the impulser reaches any one of the contacts on the selector disc, stop the motor by removing the screw driver from the two bus bars. This supplies continuous plate current to the pentode section of the 70L7GT tube so that a continuous signal is sent out over the wires instead of impulses. In addition to this, on the Model WS-2Z Wall-O-Matic it is necessary to keep the armature of the coin-controlled relay latched with the relay trip lever in order to couple the oscillator to the line (Figure 13, Items 24 and 32).

   Reference to the circuit diagram (Figures 12 and 14) of the Wall-O-Matic Selectors is suggested for justifying these operations.

   The diode meter should be plugged into the Master Control Station; this will indicate the strength of the signal received. Maintain the total diode current between 200 and 300 microamperes by adjusting the sensitivity control. CAUTION: KEEP THE 2051 TUBE OUT OF THE SOCKET. The oscillator coil (Figure 13, Item 38; Figure 15, Item 11) is aligned by adjusting the screws of the trimmer condenser with a small screw driver so that the diode current of the Selection Receiver is at a maximum.

4. ALIGNMENT OF BAR-O-MATIC SELECTORS (MODELS WB-1Z AND WB-5Z): The Selection Receiver should first be properly aligned as previously discussed. The Bar-O-Matic Selec-

tor is then aligned, using the Selection Receiver as a standard. No signal generator is needed.

Plug the Bar-O-Matic Selector into a wall outlet receptacle--preferably not the same receptacle to which the Symphonola is connected. Make connections by means of clips as shown in Figure 63. When placing the upper clip as shown in Figure 63-B there will be a continuous supply of current to the plate of the pentode section of the 70L7GT tube so that a continuous signal is sent out over the wires instead of impulses. When placing the lower clip as shown in Figure 63-B, the oscillator coil will then be coupled to the line. When aligning the oscillator coil it is also necessary to remove one end of the jumper as shown in Figure 63-A. This is done to prevent the grounding switches from de-tuning the oscillator by grounding the cathode of the oscillator section of the 70L7GT tube. This jumper must be replaced when alignment has been completed. The diode meter should be plugged into the Master Control Station; this will indicate the strength of the signal received. Maintain the total diode current between 200 and 300 microamperes by adjusting the sensitivity control. CAUTION: KEEP THE 2051 TUBE OUT OF THE SOCKET. The oscillator coil (Figure 19, Item 16; Figure 22, Item 17) is aligned by adjusting the screws of the trimmer condenser with a small screw driver so that the diode current of the Selection Receiver is at a maximum.

5. ALIGNMENT WITHOUT SIGNAL GENERATOR: It is possible to make frequency alignment adjustments without the use of a signal generator in an emergency case. First, however, the service man should thoroughly understand the above procedure and methods. To re-align the Wireless Remote Control System, first align the Selection Receiver for maximum diode current with a continuous signal from a Wireless Selector. Then re-align all Wireless Selectors to the Selection Receiver in the manner previously described.

After alignment in this manner, the equipment in the location may be operating on some frequency slightly off from 250 KC. The exact frequency would be unknown, and can only be determined when a signal generator is used. Such equipment should not be used with other equipment in another location without aligning it with the frequency used on the new location.

SERVICE NOTES ON WIRELESS REMOTE CONTROL SYSTEM

The following Service Notes are given to enable the Serviceman to diagnose and correct faulty operation of a Wireless Remote Control System. Service Notes on the components of the System are given first and then in Section E, Service Notes on the System as a whole are given. In order to avoid needless repetition, rereference will be made to previous sections whenever a previous service note applies.

A. MASTER CONTROL STATION:

1. BLOWN FUSES: There are three fuses on the Master Control Station pertinent to satisfactory operation of the Remote Control components in the Symphonola. They are the solenoid fuse (Figure 6, Item 11; Figure 9, Item 11), the amplifier transformer fuse (Figure 6, Item 5; Figure 9, Item 5), and the Symphonola motor fuse (Figure 6, Item 15; Figure 9, Item 15). These fuses should be checked and if one is found to be defective, the cause for the burning out of the fuse should be determined and corrected before the fuse is replaced. A defective fuse should be replaced only with a fuse having exactly the same rating as the original fuse.

2. DEFECTIVE TUBES: Defective tubes in the Selection Receiver section of the Master Control Station will affect the operation of the Wireless Remote Control System. The two 6K7 tubes (Figure 6, Item 29; Figure 9, Item 29), the 6H6 tube (Figure 6, Item 36; Figure 9, Item 36), the 2051 tube, (Figure 6, Item 38; Figure 9, Item 38), the 6X5GT tube (Figure 6, Item 32; Figure 9, Item 32) and the 5Y3G tube (Figure 6, Item 41; Figure 9, Item 41) should be checked and replaced if found defective.

3. SETTING OF SENSITIVITY CONTROL: If the sensitivity control on the Master Control Station is not set properly, the Wireless Remote Selectors will not satisfactorily operate the step relay mechanism. If the sensitivity control is set too low, erratic operation of the step relay will result. If the sensitivity control is set too high, extraneous impulses from the A.C. line will operate the step relay which may cause a free selection or may cause a wrong selection. The proper setting of the sensitivity control should be determined by the procedure outlined under "SETTING OF SENSITIVITY CONTROL" (Paragraphs E and F) in the "INSTALLATION" section.

4. ADJUSTMENT OF STEP SWITCH: The relays in the step switch assembly on the Master Control Station should be adjusted so that the proper sequence of operation as described in Figure 11 will be effected at all times. As the rectified R.F. impulses reach the 2051 tube, the step relay coil, which is connected in series with the

plate of this tube, receives a pulsating direct current. The armature of the step relay is pulled in and released in step with the impulses. An operating pawl, which actuates a ratchet wheel on its downward stroke, is mounted on the armature of the step relay. The advance of this ratchet wheel step by step, advances the contactor arm over the contacts on the contactor plate. Each notch on the ratchet wheel corresponds to the advancement of the contactor arm over one contact. Thus, as the impulses come through, each impulse advances the ratchet wheel one notch and the contactor arm advances one contact.

Contacts "A" (Figure 11), which are also mounted on the step relay, are closed and opened with each impulse. These contacts complete the circuit for the hold relay and allow a pulsating direct current to pass through the hold relay coil. Due to the large copper slugs under the coil of the hold relay, the armature is held in during the series of impulses passing through the coil. These copper slugs produce a time delay effect which prevents the release of the armature when contacts "A" are opened between impulses, and the armature of the hold relay will only drop out when the series of impulses have ended. Adjustment of contacts "A" (Figure 11) should be such that they are closed long enough for the hold relay to receive a sufficient amount of energy from the 6X6GT tube. However, care should be taken so that these contacts do not remain closed, or the hold relay will be energized at all times.

When the hold relay is energized, contacts "B" (Figure 11) which are in the solenoid circuit, are opened and contacts "C" (Figure 11), which are in the release relay circuit are closed. The closing of contacts "C" energizes the release relay and closes contacts "D" (Figure 11), which short the main switch on the Master Control Station, and also closes contacts "E", which are in the solenoid circuit.

Contacts "B" and "E" should be adjusted so that contacts "B" on the hold relay will be closed before contacts "E" on the release relay are opened at the end of a series of impulses. Contacts "C" on the hold relay should be adjusted so that they are normally open and close during a series of impulses. Contacts "D" on the release relay also should be adjusted so that they are normally open and close during a series of impulses.

If the bakelite contactor plate is not in proper adjustment with respect to the contactor arm, the contactor arm may bridge two contacts instead of one, re-

sulting in two selections being made. This plate can be adjusted to its correct position by loosening the four screws which hold it and rotating the plate until the contactor arm makes contact in the center of each respective contact rivet.

If the contactor arm has too much lash as it advances step by step, it may strike the succeeding contact ahead of the one desired thus causing a double selection. This condition may be overcome by reducing the travel of the operating pawl on the step relay which operates the ratchet wheel. The pawl limiting stops may be adjusted by loosening four screws (see Figure 11) and shifting the stops until the desired operation is obtained. Care must be taken so that the stroke is not shortened too much, otherwise the ratchet pawl below the release relay will not engage the succeeding tooth on the ratchet wheel.

Adjustment of the step switch assembly should not be undertaken until all other causes for erratic operation of the step switch have been eliminated. A slow motor in the Wireless Selector, improper setting of the sensitivity control, lack of bridging condensers in the fuse boxes, poor tubes, or improper frequency alignment could cause erratic operation of the step switch assembly. These things should all be corrected before any adjustment of the step switch is attempted.

5. FREQUENCY ALIGNMENT: Poor frequency alignment of the Selection Receiver section of the Master Control Station will affect the operation of the Wireless Remote Control System. If frequency alignment is required, the procedure given under "FREQUENCY ALIGNMENT" (Section G, Paragraph 2) in the "OPERATION AND MAINTENANCE" section should be followed.

6. MISCELLANEOUS: In addition to the above service items, the Master Control Station is not likely to require any more service than a high quality radio receiver. Failure of component parts, such as condensers, etc., can be detected with the aid of ordinary radio service equipment such as is shown in Figure 60. Reference should be made to the Schematic Diagram of the Master Control Station (Figures 5 and 8) when the circuit is being checked for shorts, loose connections, etc.

B. MODEL WS-2Z WALL-O-MATIC SELECTOR:

1. DEFECTIVE TUBE: A defective 70L7GT tube (Figure 13, Item 47) in the Wall-O-Matic Selector will affect the operation of the Wireless Remote Control System. This tube can be checked on an ordinary radio tube tester and should be replaced if found defective.

2. DEFECTIVE COIN SWITCH OR COIN CONTROLLED RELAY: If a nickel is deposited in the Wall-O-Matic Selector and the armature of the coin controlled relay does not lift up to engage the relay trip lever, it may be due to the coin switch not making contact, or an open circuit in the relay coil or the connections to it. If the coin switch (Figure 13, Item 31) is not closing the circuit when a nickel actuates the spring arm, adjustment of the contact springs may be made with a spring bender. It is necessary to maintain a gap of about .022" between contacts.

The movement of the armature of the coin controlled relay should be such that there is definite engagement between it and the relay trip lever (Figure 13, Items 32 and 25). Care should be taken to see that there is considerable freedom of motion of the relay armature when it is in the "OFF" position; there should be no binding or friction between the armature and the relay trip lever.

After all electrical and mechanical adjustments have been made, it is absolutely necessary to be sure that the coin switch will not close, or the coin-controlled relay armature will not engage the relay trip lever when the Wall-O-Matic is bumped or pounded. It is very unlikely that this condition will exist when the unit is firmly mounted on the wall.

3. DEFECTIVE MOTOR OR MOTOR CONTROL CIRCUIT: If a selector button is not engaged by the latch bar of the selector switch mechanism when a selector button is pressed after inserting a coin, it is an indication of a stalled motor due to faulty connections or by binding. The motor circuit should be checked with the aid of a continuity meter; reference should be made to the schematic diagram, Figure 12.

If the motor has a tendency to bind, it may be due to the bevel gears behind the selector disc meshing too tightly. If the motor has a tendency to stop before completing its operating cycle, it may be due to low torque, or the thermostat in the motor may have broken the motor circuit because of a hot motor. If the motor stops due to the thermostat opening up, it should be allowed to cool sufficiently to enable satisfactory operation. If at any time the motor should happen to stop without completing a cycle, the Wall-O-Matic line cord plug should be pulled out of the wall outlet because the contactor arm may come to rest on one of the contacts of the selector disc; this would cause a continuous R.F. signal to be transmitted over the A.C. line which would keep the 2051 tube in the Master Control Station ignited. This would prevent other Wireless Selectors on the location from obtaining their respective selections.

A slow motor in the Wall-O-Matic Selector will cause erratic operation of the step switch assembly on the Master Control Station. Normal speed of the motor is between 21 and 25 R.P.M. If it is slower than 21 R.P.M. it is due to a faulty motor, or the frequency of the location's power supply being below 60 cycles per second.

If the motor itself is found to be defective, it should be replaced.

4. ADJUSTMENT OF MOTOR CARRY-OVER SWITCH: The motor carry-over switch (Figure 13, Item 56) is the switch nearest the latch bar release lever. This switch should be adjusted so that when the motor circuit is opened, the position of the pawl of the button release lever is about 1/16 to 3/32 of an inch from dropping off the straight side of the cam (Figure 13, Items 34 and 58). The stationary contact of this switch can be adjusted by bending it up or down with a spring bender until the desired stopping position of the cam is obtained. If the motor carry-over switch opens too late, the motor will run continuously, resulting in free selections being made.

5. IMPROPER MOUNTING OF WALL-O-MATIC SELECTOR: If the Wall-O-Matic is mounted on a wall not having a plain surface, it may cause the Wall-O-Matic to be distorted after it has been mounted rigidly. This distortion of the Wall-O-Matic may disrupt the adjustment of certain cams and levers to such a degree that pounding, or forcing the case in some particular direction, may cause the motor to start. The use of shims in the form of cardboard, or other material between the back plate and the wall, is recommended when mounting the unit on an irregular wall.

6. ADJUSTMENT OF LATCH BARS ON SELECTOR SWITCHES: If a selector button fails to stay in when a selection is made, the horizontal section, over the latch bar, of the button release link (Figure 13, Item 59) should be adjusted by bending the end up or down until proper operation is effected. The latch spring in the selector switch assembly should also be checked to see that it is in proper working order. A check should also be made to determine whether the button release cam (Figure 13, Item 34) is operating the vertical button release lever (Figure 13, Item 58) satisfactorily. The relationship between the button release cam, the vertical button release lever, the button release links, and the latch bars on the push button switch assembly should be such that the push rod engaging tip of the latch bar should extend 1/32" below the push rod in the non-operating position. Care should be taken to see that when the latch bar is in this position, the pawl on the vertical button release lever is about 1/16" to 3/32" from the

stepping off position of the cam as indicated in Figure 13, Items 34 and 58.

7. FREQUENCY ALIGNMENT: If the oscillator coil (Figure 13, Item 38) is not aligned to 250 KC, the operation of the Wall-O-Matic may be affected. If it is necessary to re-align the coil, the procedure outlined under "FREQUENCY ALIGNMENT" (Section G, Paragraph 3) in the "OPERATION AND MAINTENANCE" section should be followed.

8. POOR CONTACT BETWEEN THE CONTACTOR ARM AND CONTACTS OF THE SELECTOR DISC: If there is dirt on the ring or contacts of the selector disc (Figure 13, Item 8) or low contact pressure between the contactor arm (Figure 13, Item 40) and the contacts, wrong selections may be obtained. The contactor arm can be taken off and the arms bent downward so that when it is replaced, sufficient contact pressure will result. If the ring and the contacts on the selector disc are dirty, they may be cleaned by using a very fine grade of sandpaper or carbon-tetrachloride, care being taken to see that the disc is wiped clean after cleaning the contacts.

9. MISCELLANEOUS: In addition to the above service notes, faulty wiring will result in improper selections. If two or more wires are shorted behind the selector disc, or if any of the wires are disconnected or broken, or if the series circuit on the push button switch assembly is broken due to defective contacts on the push button switch assembly, a wrong selection may result. Defective wiring can be located with the aid of a continuity meter. Reference should be made to the Schematic Diagram, Figure 12, when defective wiring is being located.

C. BAR-O-MATIC SELECTOR MODEL WB-1Z AND WALL-O-MATIC SELECTOR MODEL WS-10Z:

1. ADJUSTMENT OF COIN SWITCH: Faulty adjustment of the 5¢ coin switch could result in either no credit or two credits being established for 5¢. If no credit is established it may be that the gap is too great or that the contacts are dirty. This gap should be set at approximately 3/64". If two credits are being established for 5¢ it may be due to the contacts being set too close which would cause the top contact to bounce and make contact twice. The 10¢ coin switch should be set with a gap of approximately 1/32". The lower contact spring should bear on the stud with sufficient pressure to hold the wire arm of the switch against the slug ejector. If the gap is too great, the coin will be lost. If the pressure of the lower contact spring is too great, it will result in the dime hanging up on the wire switch arm. If the pressure of the lower contact spring is too light or if the gap is too close, contact may be made

by jarring the unit. The coin may also hang up if the gap is set too close. The setting of the 25¢ switch should be the same as the 10¢ switch, except that greater return pressure may be exerted by the lower contact blade because of the greater weight of the 25¢ coin.

2. ADJUSTMENT OF CREDIT WHEEL ASSEMBLY: The escapement should engage the ratchet wheel by 1/32" to 3/64" when in the rest position and when held down by credit magnets. The escapement should clear the teeth of the ratchet wheel when traveling from the rest position to the pole faces of the credit magnets. If the escapement does not clear the teeth of the ratchet wheel while traveling from the rest position to the credit magnets, no credits will be stored. If the escapement fails to engage the ratchet wheel in the rest position or when held down by the credit magnets, too many credits may be stored or free plays may be had by jarring the unit.

3. CREDIT CANCEL CAM: The credit cancel cam is used to cancel a credit after each selection. This is done by engaging a tooth of the ratchet wheel every cycle of the motor. The use of the spring on the dog of this cam is to prevent the motor from binding if it is run while the ratchet wheel is against the stop. The credit cancel cam also operates the relay drop-out switch at 1/3 of the motor cycle. If this switch fails to open it will result in the motor running and credits being stored continuously. If it should open too soon or too late, improper credits will be stored.

4. ADJUSTMENTS OF CREDIT MAGNETS: The credit magnets should be adjusted so as to meet the brass pin on the arm of the escapement rather than the arm itself. Failure to do this will result in a delayed action of the escapement and also make adjustment of the escapement difficult.

5. ADJUSTMENT OF MOTOR SWITCH: When the ratchet wheel is away from the stop there should be approximately 35 grams pressure at the contacts. If these contacts are dirty or fail to make properly it will result in intermittent operation of the motor or the motor will fail to operate completely. If these contacts fail to open free selections could be obtained.

6. CREDIT RELAYS (10¢ and 25¢): There are three sets of contacts on both the 10¢ and 25¢ relay--they are as follows: Maintaining contacts, motor contacts, and credit contacts. The maintaining contacts are used to keep the relay down while credits are being stored. These contacts are in series with the drop out switch which has been discussed above. If the maintaining contacts fail to make, no credits will be stored. These contacts should be adjusted so as to make before the armature strikes the pole face of the magnet. If the

maintaining contacts remain closed, the motor will continue to run and credits will continue to be stored. The motor contacts are for the purpose of starting the motor so that credits are stored by means of the credit contacts on the contactor disc. If these contacts fail to make or are dirty it can be seen that no credits will be stored. The credit contacts on the 10¢ relay allow three impulses to be sent to the credit magnets by making use of just three of the credit contacts on the contactor disc and the credit contacts on the 25¢ relay allow six impulses to be sent to the credit magnets by making use of all six credit contacts on the contactor disc. Failure of these contacts would cause improper credits or no credits to be stored.

7. SELECTOR DISC AND CONTACTOR ARM ASSEMBLY: The selector disc and contactor arm serve a dual purpose by creating impulses for storing credits by means of six credit contacts on the contactor disc and by intermittently breaking the oscillator circuit so as to send out R.F. impulses over the line. If the contacts on the selector disc are not kept clean, the result will be intermittent operation causing more than one pin to be raised in the Symphonola for one cycle of the contactor arm. If the pressure of the credit contactor is too light the arm will bounce and may cause too many credits to be stored. If the credit contacts are dirty it can be seen that credits may be lost. Too light a pressure of the selector contactor arm may result in intermittent operation causing wrong selections or two or more selections for one credit.

8. ADJUSTMENT OF B+ SWITCH: The B+ switch is used to open the B+ of the oscillator circuit while credits are being established by means of the contactor disc. The reason for this is to prevent selections when either 10¢ or 25¢ is deposited. This switch is opened mechanically, when either the 10¢ relay or the 25¢ relay is energized, by means of a trip cam and is also reset mechanically by the cam arm release lever at the end of the motor cycle. The contact pressure at the contacts should be approximately 40 grams. If this contact is set too light it will result in intermittent operation which would cause wrong selections or too many selections for the amount of credit. If it doesn't close, no selections can be made. If this switch should fail to open when 10¢ or 25¢ is deposited, number 20 or any other button that is held down will be selected while the credits are being established.

9. ADJUSTMENT OF LINE CONDENSER SWITCH: The line condenser switch should open at the end of every cycle of the motor. This switch is operated by the cam release lever and is used to remove the oscillator coil from the line when no selections are being made. If there

is too much pressure at these contacts it may fail to open, causing the oscillator coil to remain on the line continuously which would effect the operation of otner Wireless Selectors. Too much pressure would also cause chattering of the motor by applying too much pressure on the cam release lever. The correct pressure is approximately 35 grams at the contacts. If this switch fails to close the result will be a very weak signal being sent out over the line.

10. INTERLOCK RELAY: This relay is not in the early models. It is used to prevent all credits which have been established from being cancelled if a button is held continuously. This relay is energized when the contactor arms normally used for establishing credits make contact with a stud at approximately 1/3 of the motor cycle. This stud is located on the contactor disc. If a button is held down or latched down when the contactor arm strikes the stud on the contactor disc, the relay will remain energized by the maintaining contacts on the relay, which are in a series circuit with the push buttons of the selector switch. As long as this relay stays energized the motor switch circuit will be broken, giving the effect of not having any credits established. This occurs because the normally closed contacts on the relay which are in series with the motor switch will remain open as long as a selector button is held down. If this relay should buzz it may be due to the slot of the magnet pole face not being at right angles to the armature. This can be corrected by loosening the mounting screw and turning the magnet. The contacts on this relay should not need adjustment.

11. SELECTOR SWITCHES: This switch is the same as is used in the Wall-O-Matic Model WS-2Z.

12. OSCILLATOR CIRCUIT: This circuit is the same as is used in the Wall-O-Matic Model WS-2Z.

13. ADJUSTMENT OF MOTOR CARRY-OVER SWITCH: This switch is operated mechanically by the cam release lever at the end of every cycle of the motor. This switch is used to allow the motor to complete its cycle after the last credit has been cancelled or if a button should fail to latch properly. Care should be taken in the adjustment of this switch. It should be set to break when the cam on the motor shaft raises the cam release lever to within 1/16" to 3/32" from dropping off the flat side of said cam. If this switch should open too late, it may result in the motor running continuously. The contact pressure should be not less than 40 grams at the contacts.

D. BAR-O-MATIC SELECTOR MODEL WB-5Z:

1. ADJUSTMENT OF CREDIT WHEEL ASSEMBLY: The adjustment of this assembly is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 2 in this section.

2. ADJUSTMENT OF COIN SWITCH: This is the same switch that is used in the Model WS-2Z Wall-O-Matic. Refer to Section B, Paragraph 2 in this section.

3. CREDIT CANCEL CAM: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 3 in this section.

4. ADJUSTMENTS OF CREDIT MAGNETS: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 4 in this section.

5. ADJUSTMENT OF MOTOR SWITCH: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 5 in this section.

6. CONTACT ARM ASSEMBLY: This is the same as in the Model WS-2Z Wall-O-Matic. Refer to Section B, Paragraph 8 in this section.

7. SELECTOR SWITCHES: These are the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 11 in this section.

8. ADJUSTMENT OF MOTOR CARRY-OVER SWITCH: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 13 in this section.

9. ADJUSTMENT OF LINE CONDENSER SWITCH: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 9 in this section.

10. INTERLOCK RELAY: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 10 in this section.

11. OSCILLATOR CIRCUIT: This is the same as in the Model WB-1Z Bar-O-Matic. Refer to Section C, Paragraph 12 in this section.

E. SERVICE NOTES ON WIRELESS REMOTE CONTROL SYSTEM:

1. NICKEL DEPOSITED AT WIRELESS SELECTOR, BUTTON PRESSED BUT SYMPHONOLA WILL NOT PLAY.

a. BLOWN FUSES: The fuses in the circuits supplying power to the various units and the fuses on the Master Control Station should be checked. Reference should be made to Section A, Paragraph 1 under "SERVICE NOTES" for information regarding the fuses on the Master Control Station.

b. SENSITIVITY CONTROL SETTING ON MASTER CONTROL STATION: If the sensitivity control is set too low, the impulses sent from the Wireless Selectors will not operate the step relay mechanism. Refer to Sections E and F under "INSTALLATION" for the proper setting of the sensitivity control.

c. DEFECTIVE TUBES: The tubes affecting the operation of the Wireless Remote Control System (Section A, Paragraph 2; Section B, Paragraph 1 under "SERVICE NOTES") should be checked and replaced if found to be defective.

d. MISALIGNMENT: If the Wireless Remote Control System is not properly aligned, the Wireless Selector may not operate the step switch. Reference should be made to Paragraph G under "OPERATION AND MAINTENANCE" for the alignment procedure.

e. DEFECTIVE COIN SWITCH OR CREDIT RELAY IN WIRELESS SELECTOR: A defective coin switch or credit relay in the Wireless Selector will result in no selection being obtained when the selector button is pressed. Reference should be made to the following notes under "SERVICE NOTES": Section B, Paragraph 2; Section C, Paragraphs 1, 2, and 6; Section D, Paragraphs 1, 2, and 4.

f. DEFECTIVE SELECTOR MOTOR OR MOTOR CONTROL CIRCUIT: A defective motor or a defective motor control circuit in the wireless Selector may result in no selection being made. Reference should be made to the following notes under "SERVICE NOTES": Section B, Paragraph 3; Section C, Paragraphs 5 and 13; Section D, Paragraphs 5 and 8.

g. SOLENOID PLUNGER ON SOLENOID DRUM DOES NOT PUSH UP: If when a selection is made at the Wireless Selector and the Symphonola does not play, it may be due to a solenoid plunger not being pushed up because of a defective solenoid, or a bent selection pin, or a burr in the guide hole. Reference should be made to Paragraph B, page 30 in Service Manual No. 1.

h. SYMPHONOLA MOTOR CONTROL RELAY DOES NOT OPERATE PROPERLY: The failure of the Symphonola to play when a selection is made at a Wireless Selector may be due to faulty operation of the motor control relay in the Symphonola. Reference should be made to Paragraphs C and D, page 30 in Service Manual No. 1.

i. MOTOR CARRY-OVER SWITCH ON SYMPHONOLA OUT OF ADJUSTMENT: If a selection is made at a Wireless Selector and the Symphonola stops in the middle of the record changing cycle it may be due to improper adjustment of the Symphonola motor carry-over switch. If the carryover switch is not adjusted properly, the Symphonola motor will stop when the last selection pin is pushed down. Reference should be made to Section 9, page 24, in Service Manual No. 1 for the proper adjustment of the Symphonola motor carry-over switch.

j. DEFECTIVE SYMPHONOLA MECHANISM: If all of the remote control components are found satisfactory, the trouble may be due to mechanical misalignment of the Symphonola chassis. Necessary adjustment for the proper operation of the mechanism can be made by referring to Service Manual No. 1.

2. SYMPHONOLA PLAYS WHEN NO PARTICULAR SELECTIONS ARE BEING MADE AT THE WIRELESS SELECTORS:

a. SENSITIVITY CONTROL SET TOO HIGH: If the sensitivity control on the Master Control Station is set too high, any line surges or extraneous impulses on the A.C. line will cause the 2051 tube to send impulses through the step relay. If the impulses are of proper sequence and sufficient in number, they can cause the contactor arm of the step relay to advance high enough to establish a credit on the Symphonola. This condition can be eliminated by decreasing the setting of the sensitivity control. Reference should be made to Sections E and F under "INSTALLATION" for the proper setting of the sensitivity control.

b. EXTRANEOUS DISTURBANCES FROM ELECTRICAL APPLIANCES: A Type "A" Interference Eliminator (Figure 61) should be used on electrical appliances such as pin games, cash registers, drink mixers, etc., that may send out extraneous impulses over the line. The intensity of these impulses may be reduced considerably, or eliminated, by inserting the Interference Eliminator between the appliances and the wall outlet. This is done by plugging the

the line cord of the appliance into the receptacle of the Interference Eliminator and in turn, plugging the line cord of the Interference Eliminator into the wall outlet.

c. EXTRANEOUS DISTURBANCES FROM EXTERNAL SOURCES: Under certain conditions there may be disturbances in the form of extraneous impulses from sources outside of the location. If the Sensitivity Control does not minimize the effect of these disturbances, and all of the other steps as previously described have been taken, a B-2 line filter (Figure 62) must be installed between the power source for the location, and the location's terminal or junction box. This may be done by the operator, or his service man. In certain sections of the country where code requirements are enforced, this installation must be made by a licensed electrician.

d. INTERFERING REMOTE CONTROL EQUIPMENT: The Remote Wireless Selectors in a nearby location may be making selections on the RC Symphonola in the location encountering the trouble. Under these circumstances re-alignment of one of the Remote Control Systems in either of the locations will be necessary. One of the Remote Control Systems should be re-aligned so that at least 10 Kilocycles frequency separation will exist between them. This will prevent the 250 Kilocycle RF impulses from operating the Selection Receiver of the RC Symphonola in the nearby location. For frequency alignment particulars, refer to "Frequency Alignment" (Section G) under "OPERATION AND MAINTENANCE".

e. PIN STUCK IN THE "UP" POSITION IN THE SOLENOID DRUM: If a selection pin remains in the "UP" position in the solenoid drum assembly, the machine will continue to repeat the selection because the cancel relay cannot push the pin down. The pin may be stuck because it may be bent, or burrs and foreign particles in the hole may prevent it from coming down. This can be remedied in the manner previously described.

f. CANCEL ELECTROMAGNET ON SOLENOID DRUM NOT OPERATING: A selection pin may remain in the "UP" position due to a defective cancel relay or factors controlling the cancel relay. If the cancel relay will not operate, it may be due to the collector brushes of the solenoid drum, mounted on

the solenoid guide plate, not making contact with their respective rings on the selector disc of the solenoid drum. This may be taken care of by raising the selector plate and bending the brushes upward until sufficient contact pressure will be effected when the selector plate is put back into its normal position. The coil in the cancel relay may be defective due to a short, or a break in its winding. Check should also be made of the wiring and soldered connections for this circuit.

g. PLUNGER CONTACT SPRING ON SOLENOID DRUM SHORTED TO GROUND: The Motor Control relay in the Solenoid Drum is operated when the solenoid plunger makes contact with the plunger contact spring. This circuit is completed at this point because one side of the secondary of the 25-volt transformer, which supplies this power, is grounded. If any part of the plunger contact spring is touching the frame of the solenoid drum, the circuit for the relay will be completed and will allow the Symphonola to play continuously. This may be corrected by eliminating the grounded section of the plunger contact spring.

h. WIRES TO MOTOR CARRY-OVER SWITCH REVERSED: When the last selection pin is pushed down, the circuit for the Motor Control relay is completed through the Motor Carry-Over Switch. One side of this switch is connected to the low potential side of the Motor Control Relay coil and the other side is connected to the Solenoid Drum chassis. The Motor Carry-Over Switch is opened by means of the Selector Slide Connecting Rod and if the wiring to the switch has been reversed, the Motor Control Relay circuit will be completed through the Symphonola mechanism and the Symphonola will play continuously. To correct this condition, the wiring should be such that the long curved contact of the Motor Carry-Over Switch, which comes in contact with the Selector Slide Connecting Rod, is connected to the Solenoid Drum chassis and the other contact is connected to the Motor Control Relay coil.

i. MOTOR CONTROL RELAY DEFECTIVE, RESULTING IN ITS CONTACTS STAYING CLOSED: The bakelite piece on the armature of the motor control relay on the Solenoid Drum may have fallen off its spring support and failed to open the motor circuit. This may be corrected by simply replacing the bakelite piece on its proper support.

j. IMPROPER MOUNTING OF WALL-O-MATIC SELECTOR: If a Wall-O-Matic Selector is mounted on a wall not having a plain surface, the adjustment of certain cams and levers may be upset to such an extent that the selector motor may be started by pounding on the case. The use of shims in the form of cardboard, or other material between the backplate and the wall, is recommended when mounting the unit on an irregular wall.

k. IMPROPER ADJUSTMENT OF WIRELESS SELECTOR MOTOR CARRY-OVER SWITCH: If the motor carry-over switch on the Wireless Selector opens too late, the motor will run continuously, resulting in selections being made. Reference should be made to Section B, Paragraph 4, Section C, Paragraph 13, Section D, Paragraph 8, for the proper adjustment of the motor carry-over switch on the Wireless Selectors.

l. MECHANICAL ADJUSTMENTS OF SYMPHONOLA CHANGER: The mechanism of the Symphonola chassis may cause the phonograph to play when no particular selections are made. For corrections, reference should be made to Service Manual No. 1.

3. WRONG SELECTIONS OBTAINED WHEN SELECTING FROM A WIRELESS SELECTOR:

a. SENSITIVITY CONTROL SET TOO LOW: If the sensitivity control on the Master Control Station is set too low, erratic operation of the step switch assembly will result and a wrong selection will be obtained. Refer to Sections E and F under "INSTALLATION" for the proper setting of the sentitivity control.

b. IMPROPER ADJUSTMENT OF STEP RELAY ASSEMBLY: If the various switches and relays in the step relay assembly on the Master Control Station are not timed and adjusted properly, a wrong selection may result. Reference should be made to Section A, Paragraph 4 in this section for the adjustment of the step switch assembly.

c. WEAK OR DEFECTIVE TUBES: Weak or defective tubes in either the Wireless Selector or the Master Control Station may result in a wrong selection. All tubes affecting the operation of the Wireless Remote Control System should be checked and replaced if found defective.

d. SLOW MOTOR IN WIRELESS SELECTOR: A slow motor in the Wireless Selector will result in wrong selec-

tions. The normal speed of the motor is between 21 and 25 R.P.M. If the motor speed is slower than 21 R.P.M. erratic operation will result and the motor should be replaced if it is found to be faulty.

e. BUTTON NOT PUSHED IN FIRMLY WHEN SELECTION IS MADE: If a selector button is not pushed in firmly when a selection is made, the latch bar will not engage the push rod and the button will return to its original position, resulting in selection #20 being obtained.

f. DEFECTIVE WIRING IN WIRELESS SELECTOR: If two or more wires are shorted behind the selector disc, or if any of the wires are disconnected or broken, or if the series circuit on the push button switch assembly is broken due to defective contacts on the push button switch assembly, a wrong selection may result. Defective wiring can be located with the aid of a continuity meter and by referring to the schematic diagram.

4. CONTINUOUS REPETITION OF THE SAME SELECTION:

a. PIN STUCK IN THE "UP" POSITION IN THE SOLENOID DRUM: Repetition of a selection is effected when a selector pin is not pushed down by the selection cancel relay. Reference should be made to Service Manual No. 1 for corrections.

b. IMPROPER ADJUSTMENT OF MOTOR CARRY-OVER SWITCH IN WIRELESS SELECTOR: If the motor carry-over switch on the Wireless selector opens too late, the motor will run continuously resulting in selection #20 being continuously repeated unless a selector button is pressed. Reference should be made to Section B, Paragraph 4, Section C, Paragraph 13, Section D, Paragraph 8 for the proper adjustment.

c. SYMPHONOLA MECHANISM MISADJUSTMENT: If repetition of selections is due to other causes than the remote control system, a check should be made of the Symphonola mechanism. Corrective measures can be obtained from Service Manual No. 1.

5. ADDITIONAL SELECTIONS REGISTERED ON SOLENOID DRUM WHEN ONLY ONE SELECTION IS MADE AT WIRELESS SELECTOR.

a. SETTING OF SENSITIVITY CONTROL: If the sensitivity

control on the Master Control Station is set too low or too high, more than one selection may be obtained when a selection is made at a Wireless Selector. Refer to Sections E and F under "INSTALLATION" for the proper setting.

b. NO BRIDGING CONDENSER ACROSS 230 VOLT LINE IN FUSE BOX: The lack of bridging condensers in the fuse boxes may prevent signals of sufficient intensity to reach the Master Control Station and may result in erratic operation of the step switch assembly. The bridging condensers should be added to each fuse box as described in Section A under "INSTALLATION".

c. IMPROPERLY ADJUSTED STEP SWITCH ASSEMBLY: An improperly adjusted step switch assembly may result in two selections being obtained when only one selection is made at a Wireless Selector. Reference should be made to Section A, Paragraph 4 in this section for the proper adjustment of the step assembly.

d. SLOW MOTOR IN WIRELESS SELECTOR: A slow motor in a a Wireless Selector may result in additional selections. The motor should be replaced if its speed is less than 21 R.P.M.

e. POOR CONTACT ON SELECTOR DISC OF WIRELESS SELECTOR: If poor contact is being made between the contactor arm and the contacts of the selector disc, it may result in additional selections. Corrective measures are discussed in Section B, Paragraph 8 in this section.

f. IMPROPERLY ADJUSTED GROUNDING SWITCH ON WIRELESS SELECTOR SWITCH ASSEMBLY: If the grounding switch on the Selector switch assembly is not properly adjusted, it may be possible to obtain more than one selection from the Wireless Selector for each nickel deposited. These grounding switches should be adjusted so that they make contact with the lower end of the latch bars at all time except when the latch bar is in the "UP" position during the time it is engaging a selector rod. When the latch bar is in the "UP" position, there should be a 1/32" gap between the grounding switch and the latch bar.

DELUXE SELECT-O-MATIC THREE WIRE REMOTE CONTROL SYSTEM

INSTALLATION

A. GENERAL:

In general, the installation notes given for the Wireless Remote Control System will apply for the installation of a Three Wire Remote Control System and only the differences between the two systems will be covered in this section.

B. REMOTE THREE WIRE SELECTORS:

When all of the Three Wire Selectors have been mounted, a three-wire cable must be run from the Selector to the Symphonola. This three-wire cable, #12001, can be obtained from the J. P. Seeburg Corporation's Service Department. There are several important things to be observed when the three-wire cable is installed. UNDER NO CIRCUMSTANCES SHOULD THERE EVER BE MORE THAN SIX DELUXE SELECT-O-MATICS CONNECTED ON ONE CIRCUIT. The power source for the Deluxe Select-O-Matics is designed for six units, so that if more than six units are put on one circuit, the transformer may be damaged. The Master Control Stations in 1941 RC Symphonolas have two transformers, each for six Deluxe Select-O-Matics. It is best to distribute the load evenly between the two transformers. Thus, if eitht Three Wire Selectors are used, it is best to have four Selectors on each circuit. The three-wire cable should be concealed as much as possible to prevent tampering.

When the cable has been wired to the Deluxe Select-O-Matics, it is connected to a three-prong plug and this plug is plugged into either of the three contact sockets on the Master Control Station, or into the three contact socket on a Step Selector. The main switch of the Symphonola controls the power to the Deluxe Select-O-Matics. With the Symphonola switch in the "ON" position, the Three Wire Selectors will be ready for operation.

C. REMOTE CONTROL SYMPHONOLA (MODEL RC):

All 1941 Remote Control Symphonolas are designed so that no changes or additions are required to use the Symphonola in a three-wire installation. The cable from the Deluxe Select-O-Matics is plugged into the Master Control Station and the entire System will be ready for operation.

It should be noted here that the operation of the Three Wire Remote Control System is not affected by the setting of

the sensitivity control on the Master Control Station; however, it is best to turn the sensitivity control to zero so that extraneous R.F. impulses from the A.C. line will not operate the step switch. If both Wireless and Three Wire Selectors are used on the location, the setting of the sensitivity control will be determined by the operation of the Wireless Selectors only.

D. ELECTRICAL SELECTOR SYMPHONOLA:

In order to convert a 1941 Electrical Selector Symphonola into a Deluxe Select-O-Matic Three Wire Remote Control Symphonola, it is necessary to add a Type SS20-1 Step Selector to the Symphonola; Figure 42 shows a block wiring diagram of the Step Selector in standard 1941 Symphonolas. Up to six Deluxe Select-O-Matics may be used with the Step Selector. If more than six Three Wire Selectors are required, it is necessary to add a Type PS6-1Z Power Supply for each six additional Selectors required. The three wire cable from the Selectors is plugged into the Step Selector, and if a Power Supply is needed, the additional string of Three Wire Selectors is plugged into the Power Supply. The Symphonola main switch controls power to the entire System and with this switch in the "ON" position, the System will be ready for operation.

If a Type PS6-1Z Power Supply is to be used, the 9 prong plug (Figure 41, Item 5) should be plugged into the 9 prong socket on the Symphonola Amplifier. The 9 prong plug (Figure 38, Item 24) of the Step Selector, should then be plugged into the 9 prong socket (Figure 41, Item 12) on the Power Supply. When an additional Power Supply must be added, the Step Selector plug should be removed from the first Power Supply and the 9 prong plug of the second Power Supply should take its place. The 9 prong plug of the Step Selector should then be put into the 9 prong socket on the second power supply supply. This procedure must be repeated for every additional Power Supply that is added.

FUNCTIONS OF THREE WIRE REMOTE CONTROL COMPONENTS

A. REMOTE THREE WIRE SELECTORS:

The Deluxe Select-O-Matics obtain their power from the Symphonola through a 3 wire cable. At the Symphonola, one wire is connected to ground through a 1000 ohm resistor, another wire is connected to a 25 volt transformer, and the third wire is connected to the grid circuit of a 2051 tube. The wire connected to ground through a 1000 ohm resistor is common to both the 25 volt circuit and the 2051 grid circuit and will be designated as the common wire of the three wire cable.

The Three Wire Remote Selectors operate a step switch in the Symphonola by momentarily connecting the 2051 grid circuit wire of the three wire cable to the common wire. This is done by means of a selector disc plate assembly and a motor driven contactor arm. Circuit diagrams in Figures 26, 28, and 31 show the design of the Three Wire Selector circuit. The motor, lights, and all relays in the Three Wire Remote Selectos are operated by a 25 volt A.C. source in the Symphonolas.

B. MASTER CONTROL STATION:

The Master Control Stations in all 1941 RC Symphonolas contain the necessary components in order to make possible remote selections by means of the Three Wire Remote Control System. The Master Control Station has two 25 volt transformers (Figure 6, Item 40; Figure 9, Item 40) each of which is designed to supply power for not more than six Deluxe Select-O-Matics. Thus, a total of twelve Deluxe Select-O-Matics may be operated with a RC Symphonola without any additional equipment. If more than twelve Three Wire Selectors are to be used, a type PS6-1Z Power Supply must be added to the Symphonola for each additional six Three Wire Selectors. The 25 volt secondary of the power transformer is connected to a three contact socket (Figure 6, Item 3; Figure 9, Item 3) through a 2-1/2 amp. non-tamperable fuse (Figure 6, Item 4; Figure 9, Item 4).

The remote selections are made by means of a grid-controlled Thyratron, Type 2051 tube, and a step switch assembly on the Master Control Station. When the contactor arm of a Remote Selector comes in contact with a contact button on the selector disc assembly, the bias on the grid of the 2051 tube in the Master Control Station is reduced to zero. This causes the 2051 tube to conduct current which in turn operates the step switch. The operation of the step switch is the same as in the case of Wireless Remote Control. The

sensitivity control on the Master Control Station is not an integral part in the DeLuxe Select-O-Matic Remote Control System. However, the R.F. selection receiver section of the Master Control Station is still operative, so the sensitivity control should be set to zero to avoid having extraneous R.F. impulses on the A.C. line operate the step switch.

C. STEP SELECTOR:

When a standard 1941 Symphonola is to be used in a Three Wire Remote Control System, a Type SS20-1 Step Selector must be added to it. The Step Selector has a Type 2051 tube and a step switch which are operated in a manner similar to that described above under "MASTER CONTROL STATION".

The power for the Remote Selectors is obtained from a 25 volt transformer on the Symphonola Amplifier. The power is carried from the Amplifier to the Solenoid Drum through the Solenoid Drum Power Cord. From the Solenoid Drum, it is carried to the Step Selector through the interconnecting cable (Figure 38, Item 30). From the Step Selector, the power is distributed to the Remote Selectors through a 2-1/2 amp. fuse (Figure 38, Item 27) and a three contact socket (Figure 38, Item 28). UNDER NO CIRCUMSTANCES SHOULD MORE THAN SIX DELUXE SELECT-O-MATICS BE CONNECTED TO THE STEP SELECTOR. If more than six Three Wire Selectors are to be used, a type PS6-1Z Power Supply must be added.

D. POWER SUPPLY:

A Type PS6-1Z Power Supply must be used whenever more than twelve Three Wire Selectors are to be used with a Master Control Station or more than six Three Wire Selectors are to be used with a Step Selector. The PS6-1Z Power Supply has a 25 volt transformer (Figure 41, Item 2) which is designed to supply power for not more than six Three Wire Selectors. The power is distributed to the Selectors through a 2-1/2 amp. fuse (Figure 41, Item 7) and a three contact socket (Figure 41, Item 3).

OPERATION AND MAINTENANCE

A. GENERAL:

Many parts and the manner of their operation are common to both the Wireless and Three Wire Selectors. The following discussion on the operation and maintenance of the components of the Three Wire Remote Control System will cover the difference between the two Systems and reference will be made to previous sections whenever the same manner of operation is common to both types of equipment.

B. DELUXE SELECT-O-MATIC TYPE DS20-1Z (5¢)

The DeLuxe Select-O-Matic Type DS20-1Z is, to a large extent, similar to the Wireless Wall-O-Matic Selector Model WS-2Z. The difference is in the manner in which selections are made: instead of sending R.F. impulses, the bias on a 2051 tube is intermittently removed by the contact arm of the DeLuxe Select-O-Matic. The following parts and their manner of operation on the DeLuxe Select-O-Matic Type DS20-1Z are the same as on the Wall-O-Matic Model WS-2Z: slug rejector, coin switch, credit relay, motor carry-over switch and selector switches. Inasmuch as the DeLuxe Select-O-Matic is a wired type, the component parts required to generate the R.F. signal in the Wireless Selector types are not necessary.

The motor in the DeLuxe Select-O-Matic operates on 25 volts and drives the contact arm assembly in a manner similar to that of the Wireless Selectors. The contact arm assembly of the DeLuxe Select-O-Matic has a wider contact which maintains contact for a longer period. On the selector switches, the latch bar operates anti-cheat switches which are in series with the 2051 tube grid circuits. These switches are open when the unit is not operating and should close only when the latch bar is in the "UP" position. On each Selector switch, four program lights are wired in series with a 22 ohm resistor and are across the 25 volt supply. Should program lights require replacement, it is important that they be replaced only with a Mazda Type 51 bulb.

C. DELUXE SELECT-O-MATIC TYPE DS20-10Z (5¢-10¢-25¢) AND BAR-O-MATIC TYPE DSB-1Z (5¢-10¢-25¢)

The two units are to a large extent similiar to the Wireless Selector Models WS-10Z and WB-1Z. The following parts and their manner of operation on the 5¢-10¢-25¢ Three wire Selectors are the same as on the 5¢-10¢-25¢ Wireless Selectors: the slug rejector, coin switch, relays, motor, motor carry-over switch and selector switches. The manner of making selections, the anti-cheat switches, the outer contact on

the contact arm assembly, and the program lights are the same as on DeLuxe Select-O-Matic Type DS20-1Z.

D. MASTER CONTROL STATION:

The notes given under the Wireless Remote Control System on the "Operation and Maintenance" of the Master Control Station also apply when the Master Control Station is used in a Three Wire Remote Control System. However, it should be noted that if the Remote System is a Three Wire System only, the two 6K7 tubes and the 6H6 tube in the selection receiver section will not affect the operation of the Three Wire System. Also, it will not be necessary to check the alignment of the R.F. amplifier of the selection receiver section.

E. STEP SELECTOR AND POWER SUPPLY.

If the Step Selector fails to operate properly, it may be due to a faulty 2051 tube or poor adjustment of the step switch. The 2051 tube should be replaced if defective. Figure 39 should be referred to in order to check the operation of the step switch.

There are two fuses in the Step Selector. One fuse is a 2-1/2 amp. non-tamperable fuse (Figure 38, Item 27) which protects the 25 volt transformer on the Symphonola Amplifier. The other fuse (Figure 38, Item 32) is a 1/2 amp. slo-blow fuse which is in series with the solenoids on the Solenoid Drum.

The Type PS6-1Z Power Supply has a 2-1/2 ampere non-tamperable fuse (Figure 41, Item 7) which protects the transformer.

SERVICE NOTES ON DELUXE SELECT-O-MATIC THREE WIRE REMOTE CONTROL SYSTEM

A. GENERAL:

Many of the notes given for the servicing of a Wireless Remote Control System apply to the servicing of a Three Wire Remote Control System. In order to avoid needless repetition, reference will be made to the "SERVICE NOTES ON WIRELESS REMOTE CONTROL" wherever the same procedure applies to the Three Wire Remote Control System. In the event that the Three Wire Remote Selectors fail to establish the proper amount of credits at the remote Selectors themselves, reference should be made to the service notes on Wireless Selectors (Sections B and C under "SERVICE NOTES ON WIRELESS REMOTE CONTROL SYSTEM").

B. NICKEL DEPOSITED AT REMOTE THREE WIRE SELECTOR, BUTTON PRESSED BUT SYMPHONOLA WILL NOT PLAY:

1. NO POWER TO SYMPHONOLA: Turn on the main switch on the Master Control Station to determine whether the lights in the Symphonola produce the necessary illumination. If no illumination is effected, check the line cord and plug to determine whether a satisfactory connection is made to the wall outlet. If this does not eliminate the trouble, check the fuses and the circuit for that particular outlet. Make the check of the circuit with an A.C. Voltmeter to determine at what points power is available.

2. NO POWER TO THREE WIRE SELECTOR: If the Symphonola main switch is on and the Three Wire Selector lights produce no illumination, the three prong plug at the end of the three wire cable should be checked to see that it is properly plugged into the three contact socket in the Symphonola. The 2-1/2 amp. non-tamperable fuses on the Master Control Station (Figure 6, Item 4; Figure 9, Item 4), or on the Step Selector (Figure 38, Item 27) should be checked. If the fuses are good, it should be seen that they make good contact in the socket. If when the above procedure is followed and the Selectors still do not have power supplied to them, the wiring of the cable should be carefully checked. An A.C. voltmeter should be used to determine at what points power is available.

3. BLOWN FUSES: In addition to the fuses mentioned in the above paragraph, the following fuses should be checked. On the Master Control Station, the solenoid fuse (Figure 6, Item 11; Figure 9, Item 11), the amplifier transformer fuse (Figure 6, Item 5; Figure 9, Item 5) and the motor fuse (Figure 6, Item 15; Figure 9, Item 15) should be checked. When a Step Selector is used, the solenoid fuse (Figure 38, Item 32) and the Symphonola motor fuse which is on the amplifier should be checked.

4. CHECK TUBES AFFECTING OPERATION OF STEP SWITCH: On the Master Control Station the 6X5GT tube, the 5Y3G tube, and the 2051 tube affect the operation of the step switch. On the Step Selector the 5Y3G and the 2051 tubes affect the operation of the step switch. These tubes should be checked and replaced if found to be defective.

5. SHORT IN THREE WIRE CABLE: If the 2051 grid circuit wire in the three wire cable is shorted to the common wire at any point, the 2051 tube will be ignited as long as this condition exists and the Remote Selectors will be inoperative. A careful check of the wiring should be made in order to correct this situation.

6. ANTI-CHEAT SWITCH ON THREE WIRE SELECTOR IMPROPERLY ADJUSTED: If the anti-cheat switches, located at the end of the latch bars, on the selector switch assembly, are not adjusted properly, no selection will result when a selection is made. These switches are in series with the 2051 grid circuit and are open when the push button assembly is in the non-operating position. There should be a 1/32" gap between the switch contacts when they are open. The switch contacts should close only when the latch bar is in the "UP" position during the time it is engaging a selector rod. When the switches are closed, a contact pressure of 30 grams should be obtained when measured at the fibre bumper. Care should be taken to see that the contacts of these switches are kept clean and free of foreign matter.

7. MISCELLANEOUS: In addition to the above, the Symphonola may not play when a selection is made at a Three Wire Selector due to any of the following causes: Solenoid plunger on Solenoid Drum does not push up (Section E, Paragraph 1g); Symphonola motor control relay does operate properly (Section E, Paragraph 1h); Symphonola motor carry-over switch is out of adjustment (Section E, Paragraph 1i); defective coin switch or credit relay in the Three Wire Selector (Section E, Paragraph 1e); defective motor or motor control circuit in the Three Wire Selector (Section E, Paragraph 1f). All references are to the "SERVICE NOTES" section on Wireless Remote Control System.

C. SYMPHONOLA PLAYS WHEN NO PARTICULAR SELECTIONS ARE BEING MADE AT THE SELECTORS:

1. SENSITIVITY CONTROL SET TOO HIGH: If the sensitivity control on the Master Control Station is set too high, any line surges or extraneous impulses set up on the line will cause the 2051 tube to become ignited, thereby

sending impulses through the step relay. These impulses can be completely eliminated by setting the sensitivity control to zero.

2. MISCELLANEOUS: In addition to the above note, the Symphonola may play when no selections are being made at the Three Wire Selectors due to the following causes: A pin on the Solenoid Drum stuck in the "UP" position (Section E, Paragraph 2e); cancel electromagnet on Solenoid Drum not operating (Section E, Paragraph 2f); plunger contact spring on Solenoid Drum shorted to ground (Section E, Paragraph 2g); wires to motor carry-over switch on Symphonola reversed(Section E, Paragraph 2h); defective motor control relay (Section E, Paragraph 2i); improper mounting of DeLuxe Select-O-Matic (Section E, Paragraph 2j); improper adjustment of Three Wire Selector motor carry-over switch (Section E, Paragraph 2k); mechanical misadjustment of Symphonola changer (Section E, Paragraph 2e). All references are to the "SERVICE NOTES" section on Wireless Remote Control System.

D. WRONG SELECTIONS WHEN SELECTING FROM A REMOTR THREE WIRE SELECTOR:

Wrong selections may be obtained when selecting from a Remote Three Wire Selector due to the following causes: Improper adjustment of step relay assembly (Section E, Paragraph 3b); weak or defective tubes (Section B, Paragraph 4 in this section); slow motor in Three Wire Selector (Section E, Paragraph 3d); button not pushed in firmly when a selection is made (Section E, Paragraph 3e); defective wiring in Three Wire Selector (Section E, Paragraph 3f). References are to the "SERVICE NOTES" section on Wireless Remote Control unless otherwise noted.

E. CONTINUOUS REPETITION OF THE SAME SELECTION BEING PLAYED BY THE SYMPHONOLA:

A selection may be continuously repeated by the Symphonola due to the following causes: A pin may be stuck in the "UP" position in the Solenoid Drum (Section E, Paragraph 4a); improper adjustment of the motor carry-over switch of the Three Wire Selector (Section E, Paragraph 4b); misadjustment of the Symphonola mechanism (Section E, Paragraph 4c). All references are to the "SERVICE NOTES" section under Wireless Remote Control.

F. ADDITIONAL SELECTIONS REGISTERED ON SOLENOID DRUM WHEN ONLY ONE SELECTION IS BEING MADE FROM THE REMOTE THREE WIRE SELECTOR:

1. SENSITIVITY CONTROL SET TOO HIGH: If the sensitivity

control on the Master Control Station is set too high, a line surge or extraneous impulse may operate the step switch just as a selection had been completed and as the contactor arm of the step switch was returning to its rest position. This would cause an additional selection to be registered on the Solenoid Drum. To eliminate this situation, the sensitivity control should be set to zero.

2. ANTI-CHEAT SWITCH ON THREE WIRE SELECTOR IMPROPERLY ADJUSTED: If the anti-cheat switches on the botton of the selector switches are not properly adjusted, several selections may be made for one credit. Reference should be made to Section B, Paragraph 6 in this section for the proper adjustment.

3. MISCELLANEOUS: In addition to the above, additional selections may be registered on the Solenoid Drum when only one selection is made from the Three Wire Selector due to following causes: Improperly adjusted step switch assembly (Section E, Paragraph 5c); slow motor in Three Wire Selector (Section E, Paragraph 5d); poor contact on selector disc of Three Wire Selector (Section E, Paragraph 5e). References are to the "SERVICE NOTES" section on Wireless Remote Control.

SELECT-O-MATIC WIRED REMOTE CONTROL SYSTEM

I. INSTALLATION

A. SELECT-O-MATIC SELECTOR:

To mount the Select-O-Matic Selector, insert the key in the lock and rotate 90 degrees counter-clockwise. This will release the latching mechanism and allow the case to be taken off. It will be noted that there are three holes in the back mounting plate for mounting purposes. The upper two are slotted for fitting over screws that have already been driven into the wall at the proper points. The lower hole is for rigid mounting by means of a screw after the Select-O-Matic has been hung in place.

If the wall at the place where the Select-O-Matic is to be mounted is uneven, be sure to shim up the back at the proper points with cardboard before tightening the three mounting screws. Tightening these screws on an uneven wall will bend the mounting plate and may throw the Select-O-Matic out of adjustment.

After the Select-O-Matics are mounted in their respective locations, the cabling can be started. Use interconnecting cable, Seeburg Part No. 11655, which can be purchased in lengths to suit your requirements. At the Symphonola a cable plug, Seeburg Part No. 11203, is attached to the end of the cable. Connect conductor to plug in same order as on Select-O-Matic terminal strip. Plug fits into socket on wired adapter, type WA-1Z, or Power Supply, Type PS12-3Z.

Before connecting cable to the Select-O-Matic, remove the left program holder. This is easily accomplished by first lifting up the outer edge and then sliding holder out. The terminal strip is now exposed. Remove cable clamps in lower left hand corner, place cable in notch, and replace clamp. Cut cable off about 15" from top side of cable clamp, and remove outer braid and paper serving by means of a sharp knife. The conductors are now connected to their terminals, and it is recommended they be cabled up by some strong twine in a series of half hitches for neat appearance. The conductors are color coded and should be connected as follows:

1. Blue	9. Blue-brown	16. Green-brown
2. Orange	10. Blue-black	17. Green-black
3. Green	11. Orange-white	18. Brown-white
4. Brown	12. Orange-green	19. Brown-black
5. Black	13. Orange-brown	20. Black-white
6. Blue-white	14. Orange-black	C. Black-red
7. Blue-orange	15. Green-white	L. Red
8. Blue-green		

In case there are two cables when the Select-O-Matic is used as a junction box, there will be two conductors on each terminal, one coming in from each side of the terminal strip. Up to 12 Select-O-Matics can be used in parallel with a Wired Adapter. When it is desired to use more than 12 Select-O-Matics in a system, a Power Supply Type PS12-3Z must be used for each 12 boxes added.

B. WIRED ADAPTER:

When a Symphonola is to be used in a wired installation a Wired Adapter Type WA-1Z must be used to connect the Select-O-Matic cables to the Solenoid Drum and to provide means for connecting a Power Supply in the event more than 12 Select-O-Matics are to be used. Refer to Figure 51 for connections of the Adapter to the Solenoid Drum and the Power Supply to the Adapter. It should be noted the nine prong Power Supply plug and its cable are plugged into the nine prong socket on the amplifier panel.

II. FUNCTIONS OF SELECT-O-MATIC WIRED REMOTE CONTROL COMPONENTS

A. REMOTE SELECTOR:

The primary function of the Select-O-Matic selector is to enable a customer to make any number of selections at will at a remote point from the Symphonola. When the selector knob has been set to the desired selection number, the insertion of a nickel into the Select-O-Matic closes the coin switch momentarily completing a series circuit consisting of the coin switch, fuse, selector switch contacts, interrupter switch, interconnecting cable leads, power transformer secondary (26 v. a.c. source), counter relay, and a solenoid drum selection solenoid corresponding to chosen number. As the coin switch closes the selection solenoid and the counter relay are energized pushing up solenoid plunger and closing contacts of counter relay. This causes Symphonola to select and play the desired record.

B. WIRED ADAPTER:

The Wired Adapter serves to connect the Select-O-Matic selector cables to the Solenoid Drum. It makes possible also the addition of Power Supply units and accompanying sets of 12 extra Select-O-Matics.

C. POWER SUPPLY:

The Power Supply supplies power for twelve addition selectors and its cable is plugged into the outlet adjacent to the fuse on the Wired Adapter. The nine prong plug is plugged into the nine prong socket on the amplifier chassis. The selector cables from the additional Select-O-Matics are connected by

means of their plugs to the sockets provided for them in the Power Supply chassis.

Any additional Power Supply units are plugged into sockets provided on the preceding Power Supply.

III. OPERATION AND MAINTENANCE

A. SELECT-O-MATIC:

The Select-O-Matic should be kept neat and clean appearing. The program cards should be neatly typed and spotless in appearance. Occasional cleaning of the glass window is recommended to improve the appearance of the wall box.

The contacts of the coin switch (Figure 45, Item 8), the Interrupter Switch (Figure 45, Item 11), and the Selector Switch (Figure 45, Item 11) may need occasional cleaning with a a contact burnisher or carbon tetrachloride.

Lamp bulbs should be replaced at once when replacement becomes necessary. It is important that the same type bulbs be used in making replacements inasmuch as the current drains of the various types are not equal.

Be sure to use fuse No. 12224 (Figure 45, Item 6) in Select-O-Matic when replacement becomes necessary.

B. WIRED ADAPTER AND POWER SUPPLY:

The only attention required by the Wired Adapter or Power Supply is necessitated by fuse replacement. Before replacing fuses find cause for blowing of original fuses and correct it.

IV. SERVICE NOTES

NO RESULT WHEN SELECTION IS MADE FROM SELECT-O-MATIC:

If the wall box lights are working normally, the trouble will be found in the selector series circuit through the coin switch, the fuse, the selector switch, the interrupter contact, the selector cable, the adapter plugs and sockets, the counter relay, the selection solenoid, and the power transformer. If lamps in the wall boxes do not light check all 27 contact plugs for seating and check fuses in the Wired Adapter and Power Supply units.

INSTALLATION

A. TRANSMITTER:

A Type T-3Z Transmitter must be added to 1941 standard and RC model Symphonolas in order to obtain remote sound. The installation of the Transmitter in the cabinet is covered thoroughly in the T-3Z Transmitter Installation Manual. Figure 54 is a block wiring diagram showing the Transmitter in Standard Model Symphonolas and Figure 55 is a block wiring diagram showing the Transmitter in RC Models.

B. REMOTE RECEIVERS (REMOTE SPEAKERS OR SPEAKORGANS):

The Remote Speaker consists of a SEEBURG REMOTE RECEIVER (Figure 57) together with a speaker mounted in a wall type cabinet. These wall type cabinets are to be mounted to the wall by means of brackets and screws as furnished. All that remains to be done is to plug the line cord into the nearest electrical 117 Volt, 60 Cycle A.C. power outlet. THERE ARE NO OTHER WIRES TO CONNECT. Make sure that the "OFF-ON" Switch is in the "ON" position and the volume control (Figure 57, Item 6) is set sufficiently in a clockwise direction to give the desired volume output. There is also a Tone Control (Figure 57, Item 4) which is so designed that high notes are increased as the control is turned clockwise. After turning the instrument on, it should take about fifteen seconds before it becomes operable. This instrument should be left on continually so that it will be ready at all times to receive music from the Symphonola. A little experience will enable one to determine the best permanent settings for the controls.

Care should be taken in setting the tone control so as not to turn it too far in a counter-clockwise direction, because so many of the high frequencies will be taken out that it will be impossible to obtain sufficient apparent volume from the instrument. In addition, the tone quality will be much impaired by so doing.

The Remote Receiver is also equipped with a near-far switch, (Figure 57, Item 7). When placed in the position marked "far", the Remote Receiver is in its most sensitive condition and will respond to weak signals. It is strongly recommended that wherever possible the switch be left in the "near" position. The receiver with the switch in this position is less likely to respond to extraneous power line disturbances.

C. ELIMINATION OF HUM AND NOISE FROM SPEAKORGANS:

In order to get the most from the SpeakOrgan, any hum and noise that may be present should be reduced to a negligible

amount. This can be accomplished by following the procedure as outlined below:

1. Install a Seeburg Bridging Condenser across the 230 Volt line in every fuse box on location.

2. If hum and noise is still present, search the location for interference producing appliances. Offending appliances can be made entirely harmless by plugging the appliance into a Seeburg Interference Eliminator, Type 'A', and in turn plugging the Eliminator into the outlet (Figure 61).

3. Very often the installation of a pair of Type 250 Couplers will clear up an obstinate hum and noise situation on SpeakOrgans.

4. Set the Modulation Control on the Transmitter in the Symphonola between Five (5) and Six (6). Higher settings than Six (6) may cause sound distortion, and lower settings than Five (5) will introduce unnecessary hum. (NOTE: DO NOT USE THE MODULATION CONTROL AS A VOLUME CONTROL).

5. The near-far switch on the remote receiver should always be set in the "near" position unless it is absolutely necessary to set it in the "far" position. If the switch is set in the "far" position when it is not necessary to do so, the hum and noise present may be quite high.

FUNCTIONS OF WIRELESS REMOTE SOUND COMPONENTS

A. TRANSMITTER:

The Transmitter takes the audio frequency electrical energy from the pick-up in the Symphonola chassis, and superimposes it upon the radio frequency carrier which in turn is transmitted over the 117 volt, 60 cycle AC power line to the Remote Receivers. Figure 52 shows the schematic diagram of the Type T-3Z Transmitter.

The Transmitter consists essentially of an audio frequency amplifier, a modulator, an oscillator and a modulator amplifier. It is so designed that a high degree of modulation can be obtained with low distortion. A modulation control on the Transmitter sub-panel is used to regulate the degree of modulation.

In the amplifier section of a Master Control Station of a RC Symphonola, a system of chokes, condensers and controls are used to accentuate the bass notes in order to give a more pleasing over-all sound effect. A similar circuit is used in the Transmitter in order to obtain the same effect at the Remote Receivers. The circuit is so arranged that the Transmitter is turned on only while the phonograph is playing. When the Symphonola is not operating, the Transmitter is turned off, resulting in no radio frequency energy being transmitted.

B. REMOTE RECEIVER:

The Remote Receiver (Figure 57) is much like a conventional radio receiver. However, instead of picking up the signals from the air, it picks up the radio frequency signals from the 60 Cycle A.C. power line coming from the Transmitter in the Symphonola. It amplifies these signals and converts them into audio frequency power sufficient to operate a loud speaker. See Figure 56 for a complete shematic diagram of the Remote Receiver.

The circuit used in the Remote Receiver incorporates a feature known as automatic volume control which makes it unnecessary to readjust the volume when the receiver is plugged in at different locations. The Remote Receiver may be turned off by the location owner by means of the "OFF-ON" switch. The volume and tone may be adjusted to suit the taste of the customer by the controls for that purpose.

OPERATION AND MAINTENANCE

A. TRANSMITTER:

The only adjustment necessary on the Transmitter is the setting of the modulation control. The modulation control should be set as high as possible without producing modulation distortion of speech or music. If it is set too low, hum and noise may be present. The correct position depends upon depth of recording, needles, etc., but best results are generally obtained with a setting between 5 and 6. THE MODULATION CONTROL IS NOT TO BE USED AS A VOLUME CONTROL.

There is no more trouble likely to occur with the Transmitter than with a high quality radio receiver if properly handled. However, tubes have a limited life and may need replacement from time to time.

The Transmitter has been carefully aligned to 340 KC at the factory. If operation becomes poor, and the Transmitter needs to be serviced, it may need alignment. To do this, the instructions for FREQUENCY ALIGNMENT as discussed below should be followed.

B. REMOTE RECEIVERS:

In order that hum, noise and interference will not be objectionable when no record is being played, a muting relay (Figure 57, Item 8) is provided for shorting the grid circuit of the output tubes of the Remote Receiver when no carrier is being received from the Transmitter in the Symphonola. The muting relay should close at all times when there is no RF carrier, and open as soon as a strong RF signal is present. If it fails to open, the trouble may be due to a weak carrier being transmitted, or to a sticking armature.

The Remote Receiver is not likely to require more attention than a high quality radio receiver. However, tubes may become weak with age and need replacement. For other component parts of the Remote Receiver, further information may be obtained from the Schematic Diagram (Figure 56) or Remote Receiver Sub-panel Assembly (Figure 57). The Remote Receiver has been carefully aligned to 340 KC at the Factory. If it is being serviced, it may be necessary to realign it to the Transmitter. To do this, follow the instructions for "FREQUENCY ALIGNMENT" given below.

C. FREQUENCY ALIGNMENT:

1. EQUIPMENT NECESSARY: The same equipment needed for the frequency alignment of the Wireless Remote Control System is also necessary for the alignment of the Wireless Remote Sound System. This equipment has been described under Paragraph G in the "Operation and Maintenance" section of the Wireless Remote Control System.

2. ALIGNMENT OF REMOTE RECEIVER: The Remote Receiver should be aligned with a signal generator. To align, the diode meter should be plugged into the jack (Figure 57, Item 9) of the Remote Receiver. This will indicate the amplification and strength of the incoming signal, as well as proper alignment. The output cord of the signal generator should be plugged into a wall receptacle through the proper coupling device, and preferably not the same or adjacent receptacle to which the Remote Receiver is connected. Adjust the signal generator to the frequency desired. The standard alignment frequency is 340 KC. Align the Remote Receiver for maximum diode current by using a small screw driver to adjust the screws of the trimmer condensers of the first, second, and third radio frequency coils (Figure 57, Items 10, 11, and 12). There are a total of six trimmer condensers to adjust.

3. ALIGNMENT OF THE SOUND TRANSMITTER: To align the Sound Transmitter, plug the diode meter into the jack of the Remote Receiver, which has already been aligned to 340 KC with the aid of a signal generator. This will indicate the strength of the incoming signal.

Two steps are required in alignment. In the first step, align the oscillator coil (Figure 53, Item 7) by adjusting the screw of the trimmer condenser with a small screw driver to a point where maximum deflection is indicated on the diode meter. The second stip is to align the output coil (Figure 53, Item 4) for maximum output, or in other words, for maximum diode current in the Remote Receiver. This alignment is also made by adjusting the screw of the trimmer condensers of the output coil with a small screw driver.

4. ALIGNMENT WITHOUT SIGNAL GENERATOR: It is possible to make frequency alignment adjustment without the use of a signal generator in an emergency case. First, however, the service man should thoroughly understand the above procedure and methods. To re-align the Sound System, first align the Transmitter for maximum diode current, using one of the Remote Receivers as a standard. Then re-align all Remote Receivers to the Transmitter, using a diode meter as an indicator of perfect alignment.

After alignment in this manner, the equipment in the location may be operating on some frequency slightly off from 340 KC. The exact frequency would be unknown, and can only be determined when a signal generator is used. Such equipment should not be used with other equipment in another location without aligning it with the frequency used on the new location.

SERVICE NOTES ON WIRELESS REMOTE SOUND SYSTEM

A. MUSIC AT SYMPHONOLA AND OTHER REMOTE POINTS EXCEPT AT ONE SPEAKORGAN:

1. POWER SUPPLY: Make certain that the volume control of the SpeakOrgan is turned sufficiently clockwise, that the "OFF-ON" switch is on, and the line plug makes a good contact at the wall outlet. Check the 117 Volt power supply for a burned-out fuse.

2. NO BRIDGING CONDENSER ACROSS THE 230 VOLT LINE IN FUSE BOXES: The radio frequency carrier that carries the music to the SpeakOrgan may be too weak at the location of the SpeakOrgan in question. This may be due to this particular SpeakOrgan being plugged into an outlet whose circuit is through a fuse box having no bridging condenser. It is imperative that a bridging condenser be connected across the 230 volt line in the fuse box to enable the carrier signal to be transmitted to the units with sufficient intensity for satisfactory operation. If this condenser does not increase the signal strength of the transmitted signal to the SpeakOrgan in question, a pair of Type 250 Couplers may be used in the manner previously described.

3. REMOTE RECEIVER TUBE AND WIRING CHECK: Tubes may be defective in the Remote Receiver of the SpeakOrgan. They should be checked and replaced if found to be defective.

   Check the Remote Receiver for open or shorted circuits and defective parts, referring to the Schematic Diagram (Figure 56) as a guide. Regular radio service test equipment may be used for checking the chassis performance. Defective parts should be replaced with genuine Seeburg Replacement parts.

4. MUTING RELAY: The contacts of the Muting Relay (Figure 57, Item 8) may not open due to the following:

   (a) Radio frequency carrier strength from the Transmitter being too weak. Check fuse boxes to insure bridging condensers being installed, and if signal is still found to be too weak, install Type 250 Couplers.

   (b) A defective 6K7 radio frequency tube may cause so much current to flow through this relay that it may not allow contacts to open.

   (c) The line voltage may be so high that current through this relay will not allow the contacts to open.

(d) Sticky contacts may not allow relay to pull contacts apart.

5. FREQUENCY ALIGNMENT: The Remote Receiver used in the SpeakOrgan in question may be out of alignment with the Transmitter in the Symphonola. This may result in no music at all, or in a weak rendition of it. Refer to notes on "Frequency Alignment" under "OPERATION AND MAINTENANCE".

B. MUSIC AT SYMPHONOLA BUT NOT AT ANY SPEAKORGAN:

1. MODULATION CONTROL: The Modulation Control of the Transmitter (Figure 23, Item 18) may be turned off. Set it it, or near (6) for average installation. NOTE: THE MODULATION CONTROL IS NOT TO BE USED AS A VOLUME CONTROL UNDER ANY CIRCUMSTANCES.

2. TRANSMITTER TUBES AND CIRCUIT: Check to see if tubes in the Transmitter are on when the phonograph is in operation. Tubes should be checked by means of a tube tester and should be replaced if found defective. The Transmitter circuit diagram (Figure 52) should be referred to as a guide in checking for opens and shorts.

3. PICKUP JUNCTION: There may be a defect in the pickup input circuit to the Transmitter. Check with the Schematic Wiring Diagram of the Transmitter (Figure 52).

C. MUSIC OF INSUFFICIENT VOLUME AT SPEAKORGAN:

1. VOLUME AND MODULATION CONTROLS: The volume control on the Remote Receiver (Figure 57, Item 6) or the Modulation Control (Figure 53, Item 18) on the Transmitter may be set too low. The Modulation Control should be set near (6) for average conditions, and the volume on the Remote Speaker should be turned up until sufficient volume is obtained.

2. BRIDGING CONDENSERS IN FUSE BOXES: A bridging Condenser must be installed in every fuse box in the location to insure satisfactory operation. If Bridging Condensers have already been installed, a pair of Type 250 Couplers may be necessary to improve the transmission.

3. CHECK OF TRANSMITTER AND REMOTE RECEIVER TUBES: Check should be made of the tubes of both the Transmitter and the Remote Receiver by means of a standard tube tester.

4. FREQUENCY ALIGNMENT: The Transmitter and the Remote Receiver may not be aligned to the proper frequency. Refer to notes on "Frequency Alignment" under "OPERATION AND MAINTENANCE".

D. MUSIC AT ALL REMOTE POINTS BUT NOT AT SYMPHONOLA:

1. VOLUME CONTROL: The volume control on the Master Control Station at the rear of the Symphonola may be turned off. Check this by turnng the volume control in a clockwise direction.

2. SYMPHONOLA AUXILIARY EQUIPMENT: The amplifier section of the Master Control Station, and auxiliary equipment, such as volume control circuit and power supply, may be defective. Refer to the circuit diagram of the Master Control Station for corrective measures (Figure 5 and 8).

E. WHISTLES HEAR WHILE MUSIC IS BEING RENDERED AT SPEAKORGAN:

1. INTERFERING RADIO STATIONS: A government or airport radio station may be on, or near, the same frequency or wave length as that used by the Seeburg Remote Sound System. This system is aligned to 340 Kilocycles at the Factory. If the interfering radio station is closer than 10 Kilocycles in frequency to the frequency of the Seeburg Remote Speaker System, a background whistle may be heard. If this is the case, the Transmitter should be realigned to a new frequency in a direction away from the frequency of the interfering radio station. The new setting should be sufficiently far away in frequency to allow at least 10 Kilocycles frequency separation.

   After the Transmitter has been realigned to the new frequency, it is imperative that the Remote Receivers in the SpeakOrgans of the location be aligned to the same frequency that the Transmitter has been aligned to.

   For particulars regarding methods of frequency alignments, refer to "Frequency Alignment" under "OPERATION AND MAINTENANCE".

2. INTERFERING SYMPHONOLA TRANSMITTER: Another Transmitter in another Symphonola of a nearby location may be interfering. Under these circumstances, realignment of one of the Remote Speaker Systems will be necessary. One of these systems should be realigned so that at least 10 Kilocycles frequency separation will exist between them. For frequency alignment particulars refer to "Frequency Alignment" under"OPERATION AND MAINTENANCE".

F. DISTORTION--QUALITY OF MUSIC GOOD AT SYMPHONOLA BUT POOR AT SPEAKORGAN:

1. MODULATION CONTROL: The Modulation Control (Figure 53, Item 18) may be set too high. It should be set somewhere near (6) for an average record. NOTE: DO NOT TRY TO CONTROL VOLUME BY MEANS OF THE MODULATION CONTROL.

2. VOLUME CONTROL: The Volume Control on the SpeakOrgan may be set too high. The volume output of the particular Remote Receiver should not exceed 6 to 8 Watts. If it does, the output system of the Remote Receiver will be overloaded and distortion will result.

3. TUBE CHECK: Tubes may be defective in either the Transmitter or Remote Receiver, or both. They should be checked and replaced if found defective.

G. SPEAKORGAN NOISY WHEN SYMPHONOLA IS NOT IN OPERATION:

1. MUTING RELAY: The Muting Relay (Figure 57, Item 8) of the Remote Receiver probably does not function properly. Whenever the Symphonola is not in operation the Transmitter is supposed to be turned off. This means that no radio frequency carrier is being transmitted over the power line to the Remote Receiver. Under this condition, the automatic volume control so adjusts the circuit that the sensitivity of the Remote Receiver is at maximum. When this occurs, the plate current drawn by the two 6K7 radio frequency amplifier tubes is at a maximum. This high current keeps the armature of the Muting Relay mentioned above pulled down, resulting in the contacts of this relay being closed. When these contacts are closed, the grid of the output tubes (6V6GT) of the Remote Receiver are shorted, resulting in no sound output from the speaker. If it were not for the shorting of the grids of these output tubes, all kinds of extraneous noises would be coming from the Remote Speaker. Due to this fact, as stated above, the radio frequency amplifier is adjusted automatically to its maximum sensitivity by the automatic volume control. If, through some misadjustment or defect, these contacts fail to close when no carrier is being transmitted from the Symphonola Transmitter, then the noise mentioned above will be present. If the contacts do not make proper contact, they may need cleaning and polishing. If the contacts do not close the trouble may be due to the following:

   a - Defective or weak 6K7 radio frequency amplifier tube.

   b - Line voltage too low.

   c - Spring tension too great on Muting Relay.

   d - Defective circuits, such as shorts or opens.

2. CIRCUIT CHECK: Parts or components of the Remote Receiver may need servicing or replacement.

H. HUM AND NOISE TOO LOUD DURING PROGRAM FROM SPEAKORGAN:

1. MODULATION CONTROL: The Modulation Control may be set too low. If this condition exists, in order to get enough volume from the Remote Speaker, it will be necessary to turn the Volume Control higher than normal, resulting in hum and noise. Adjust Modulation Control to about (6) -- (at least not below 5), which is the correct setting for the average record and needle.

2. HUM PRODUCING APPLIANCES: Appliances on location may be producing hum and noises. The interfering appliance can be isolated from the power line by means of a Seeburg Type "A" Interference Eliminator (Figure 61). Plug the interfering device into the Interference Eliminator, and then plug the Interference Eliminator into the desired outlet. This will reduce or eliminate the interference from these hum-producing appliances. An AC-DC radio set is a particularly good hum-producer, as are other appliances such as toasters, soldering irons, electric drink mixers, etc. Occasionally you will find that a defective light bulb will also give hum. These hum-producing appliances can be traced by taking them off the line one at a time and listening to the hum with the Transmitter turned on, but with the pick-up lifted off the record and the volume control on the Remote Receiver set at a normal position.

3. HUM EXTERNAL FROM PREMISES: Hum may be produced at a point external from the premises and transmitted into the location over the power line and through the house meter. This type of hum or interference can be eliminated by means of a Seeburg Type B-2 Line Filter (Figure 62). This must be installed between the house meter and the distribution board on the premises. In some cities it will be necessary to call in the local electrician to make the installation.

4. OTHER CAUSES OF HUM: Defective tubes, or defective electrolytic condensers in either the Transmitter or Remote Receiver may also cause hum and noise. Check all of the circuit constants of both units by referring to their respective Schematic Diagrams. Regular radio service equipment can be used for checking circuit constants.

If other than a SEEBURG wired remote speaker, having a self-contained power supply for the field excitation, is used on the location, it may be a source of hum in the Remote Receivers. The hum can be eliminated by using a Seeburg Type "A" Interference Eliminator. The line cord from the self-contained power supply should be plugged into the Interference Eliminator and the line cord from the Interference Eliminator should be plugged into the desired outlet. AN INTERFERENCE ELIMINATOR IS NOT NEEDED WITH A SEEBURG WIRED REMOTE SPEAKER.

ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	F-1369	- 16 Ft. Line Cord.	1	$ .85
2	F-7867	- Triple Outlet	1	.15
3	MCS25-5	- Master Control Station (for Model 8800 only)	1	76.50
3	MCS25-1	- Master Control Station (for Model 9800 only)	1	76.50
4	F-9024	- 15" Electrodynamic Speaker (for Model 8800 only).	1	11.00
4	F-9624	- 15" Electrodynamic Speaker (for Model 9800 only).	1	16.50
5	F-6624-A	- Tone Arm Assembly	1	8.00
6	F-6005-A	- Pickup Shorting Switch.	1	.15
7	F-7529	- Shielded Input Lead and Plug.	1	.65
8	SD20-7Z	- Solenoid Drum Assembly.	1	25.00
9	F-7413	- 4 Prong Plug.	1	.20
10	11137	- Selection Cancel Switch	1	.25
11	F-3203	- Motor Carryover Switch.	1	.35
12	F-8827	- 6 Prong Plug.	1	.20
13	F-6001	- Coin Switch	5	.10
14	12020	- 27 Prong Plug	1	1.00
15	12021	- 27 Wire Cable	1	1.50
16	12026	- 27 Prong Female Plug.	1	1.00
17	RB-6Z	- Relay Box	1	12.50
18	SA-6Z	- Electrical Selector Switch Assembly . .	1	15.00
19	F-1090	- Symphonola Motor (110 V. 60 Cycle). . .	1	17.00
20	F-7813	- Lighting Transformer.	1	5.25
21	F-8882	- Cylinder Motor.	1	3.50
22	F-7814	- Light Socket.	28	.10
23	F-7817	- #81 Mazda Lamps	35	.10
24	F-7810	- Light Socket.	7	.10
25	F-7816	- #87 Mazda Lamps	2	.15
26	F-8972	- Service Light Switch.	1	.25
27	F-8896	- 2 Prong Polarized Plug.	1	.30
28	12015	- 3 Prong Plug.	2	.30
29	12001	- 3 Wire Cable.	per ft.	.06

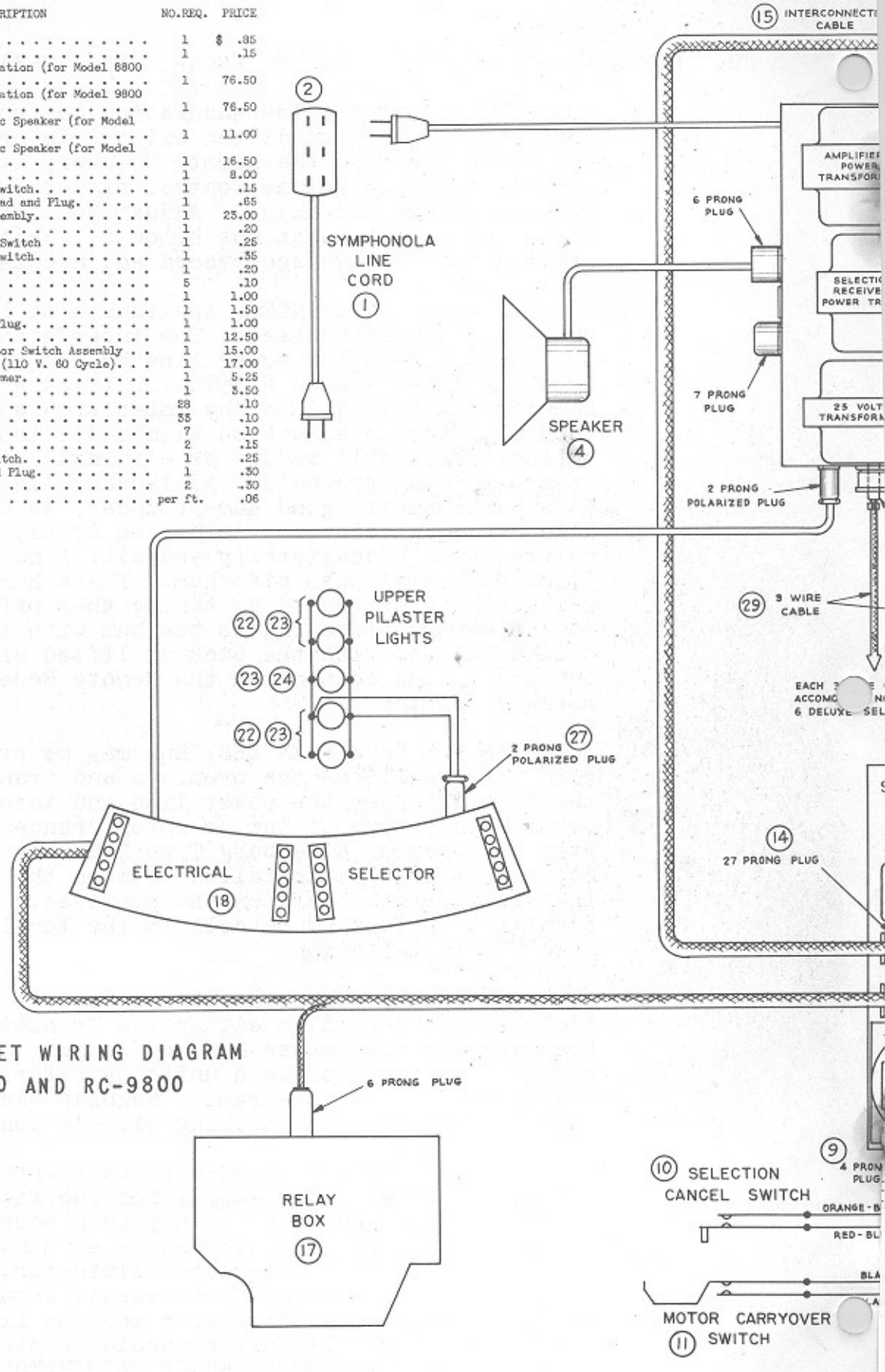


FIG. 1 - CABINET WIRING DIAGRAM FOR RC-8800 AND RC-9800

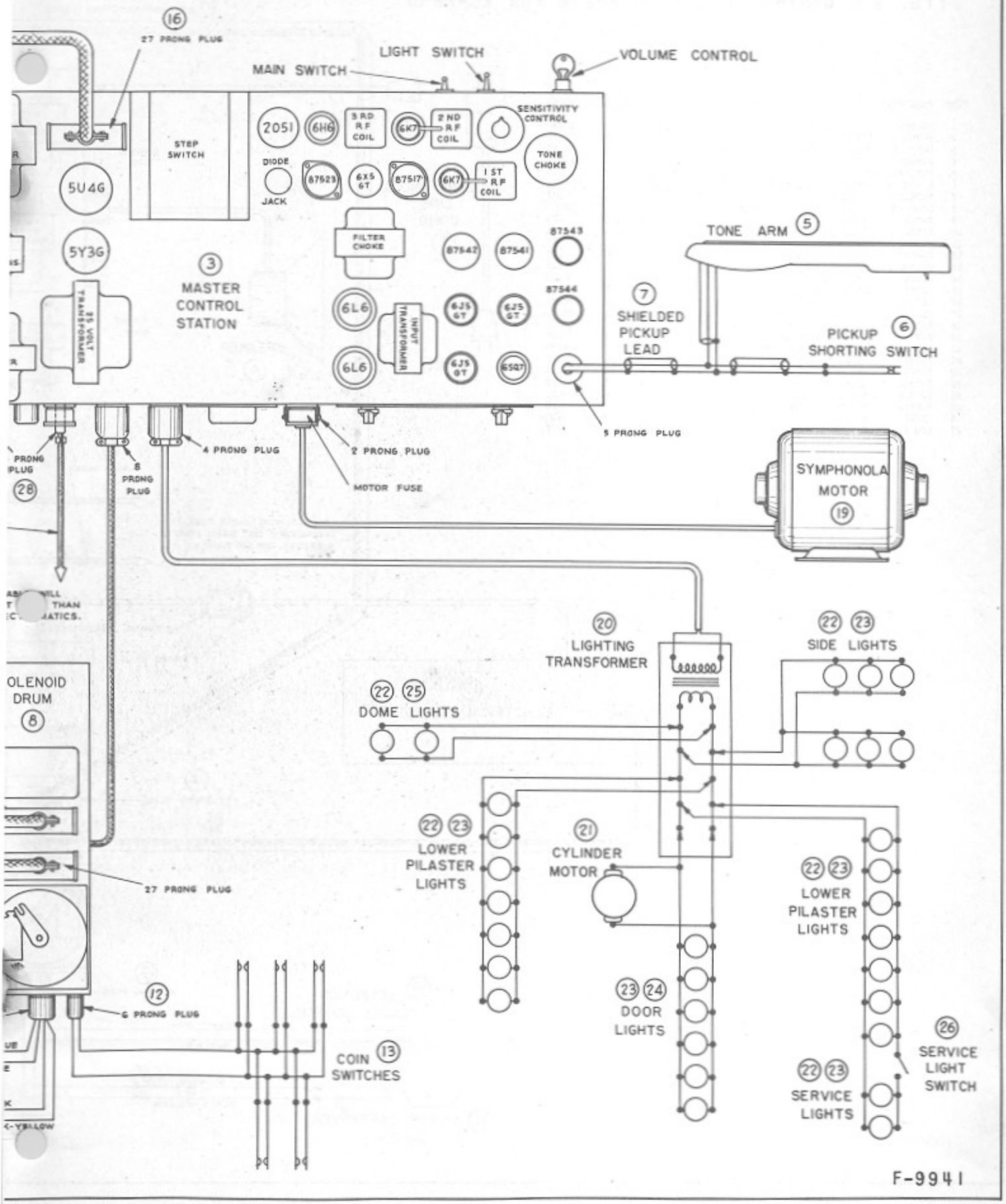
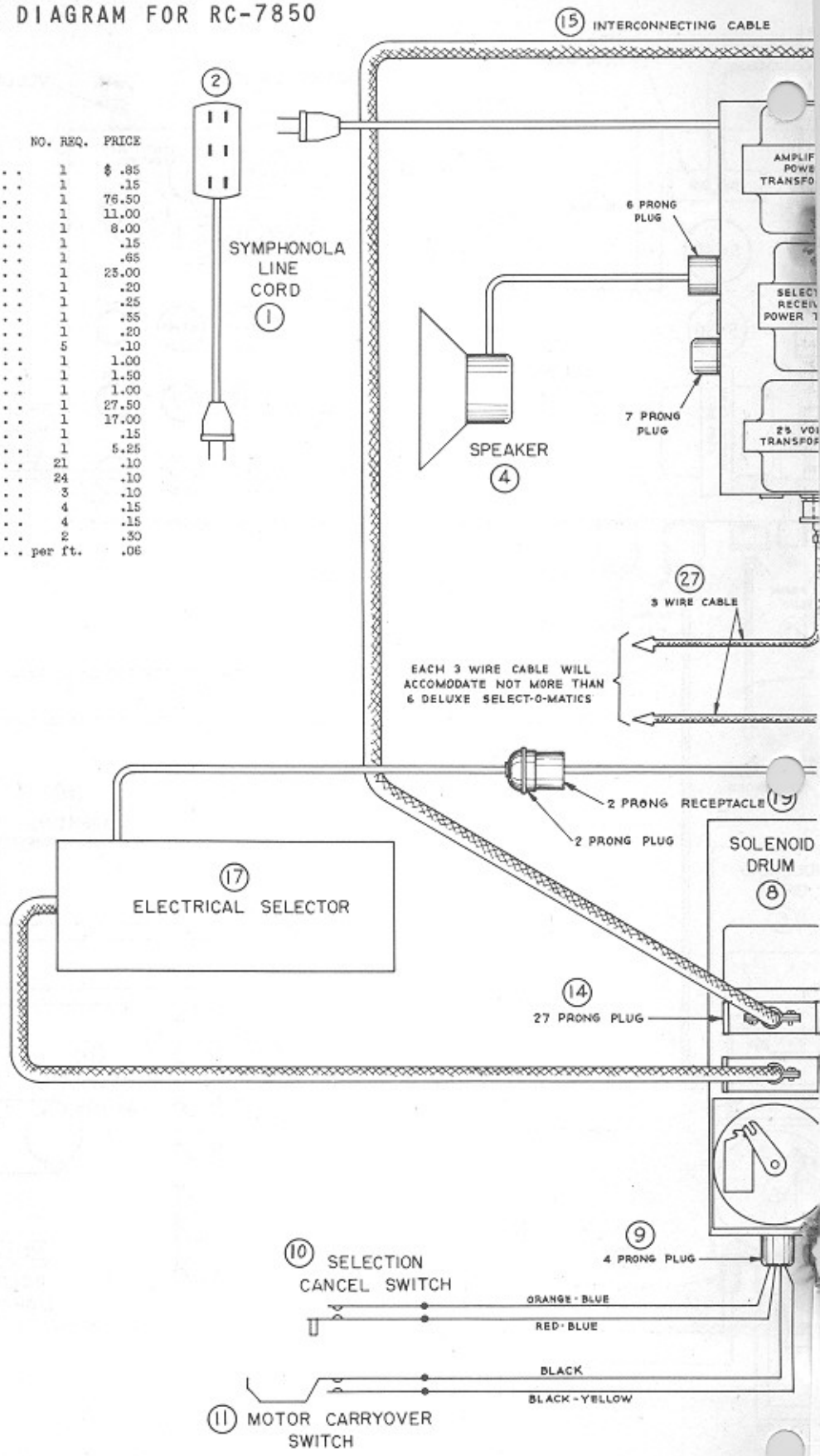

16
27 PRONG PLUG
MAIN SWITCH
LIGHT SWITCH
VOLUME CONTROL
STEP SWITCH
2051
6H6
3 RD RF COIL
6K7
2 ND RF COIL
SENSITIVITY CONTROL
TONE CHOKE
DIODE JACK
87523
6X5 GT
87517
6K7
1 ST RF COIL
5U4G
5Y3G
FILTER CHOKE
87542
87541
87543
87544
3
MASTER CONTROL STATION
25 VOLT TRANSFORMER
6L6
6L6
INPUT TRANSFORMER
6J5 GT
6J5 GT
6J5 GT
6SQ7
TONE ARM 5
7
SHIELDED PICKUP LEAD
PICKUP SHORTING SWITCH 6
5 PRONG PLUG
4 PRONG PLUG
2 PRONG PLUG
MOTOR FUSE
8 PRONG PLUG
28
SYMPHONOLA MOTOR 19
20
LIGHTING TRANSFORMER
22 23
SIDE LIGHTS
22 25
DOME LIGHTS
22 23
LOWER PILASTER LIGHTS
21
CYLINDER MOTOR
22 23
LOWER PILASTER LIGHTS
23 24
DOOR LIGHTS
26
SERVICE LIGHT SWITCH
22 23
SERVICE LIGHTS
OLENOID DRUM 8
27 PRONG PLUG
12
6 PRONG PLUG
COIN 13 SWITCHES
F-9941

FIG. 2 - CABINET WIRING DIAGRAM FOR RC-7850

ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	F-1369	- 16 Ft. Line Cord.	1	$ .85
2	F-7867	- Triple Outlet	1	.15
3	MCS25-S	- Master Control Station.	1	76.50
4	F-8024	- 15" Dynamic Speaker	1	11.00
5	F-6624-A	- Tone Arm Assembly	1	8.00
6	F-6005-A	- Pickup Shorting Switch.	1	.15
7	F-7411	- Shielded Pickup Lead and Plug	1	.65
8	SD20-7Z	- Solenoid Drum Assembly.	1	25.00
9	F-7415	- 4 Prong Plug.	1	.20
10	11137	- Selection Cancel Switch	1	.25
11	F-3203	- Motor Carryover Switch.	1	.35
12	F-8827	- 6 Prong Plug.	1	.20
13	F-6001-A	- Coin Switch	5	.10
14	12020	- 27 Prong Plug	1	1.00
15	12021	- 27 Wire Cable	1	1.50
16	12026	- 27 Prong Female Plug.	1	1.00
17	ES-5	- Electrical Selector Assembly.	1	27.50
18	F-1090	- Symphonola Motor (110 V. 60 Cycle).	1	17.00
19	F-7842	- 2 Prong Receptacle.	1	.15
20	F-7813	- Lighting Transformer.	1	5.25
21	F-7814	- Light Socket.	21	.10
22	F-7817	- #81 Mazda Lamp.	24	.10
23	F-7810	- Light Socket.	3	.10
24	F-7815	- Light Socket.	4	.15
25	F-7816	- #87 Mazda Lamp.	4	.15
26	12015	- 3 Prong Plug.	2	.30
27	12001	- 3 Wire Cable.	per ft.	.06



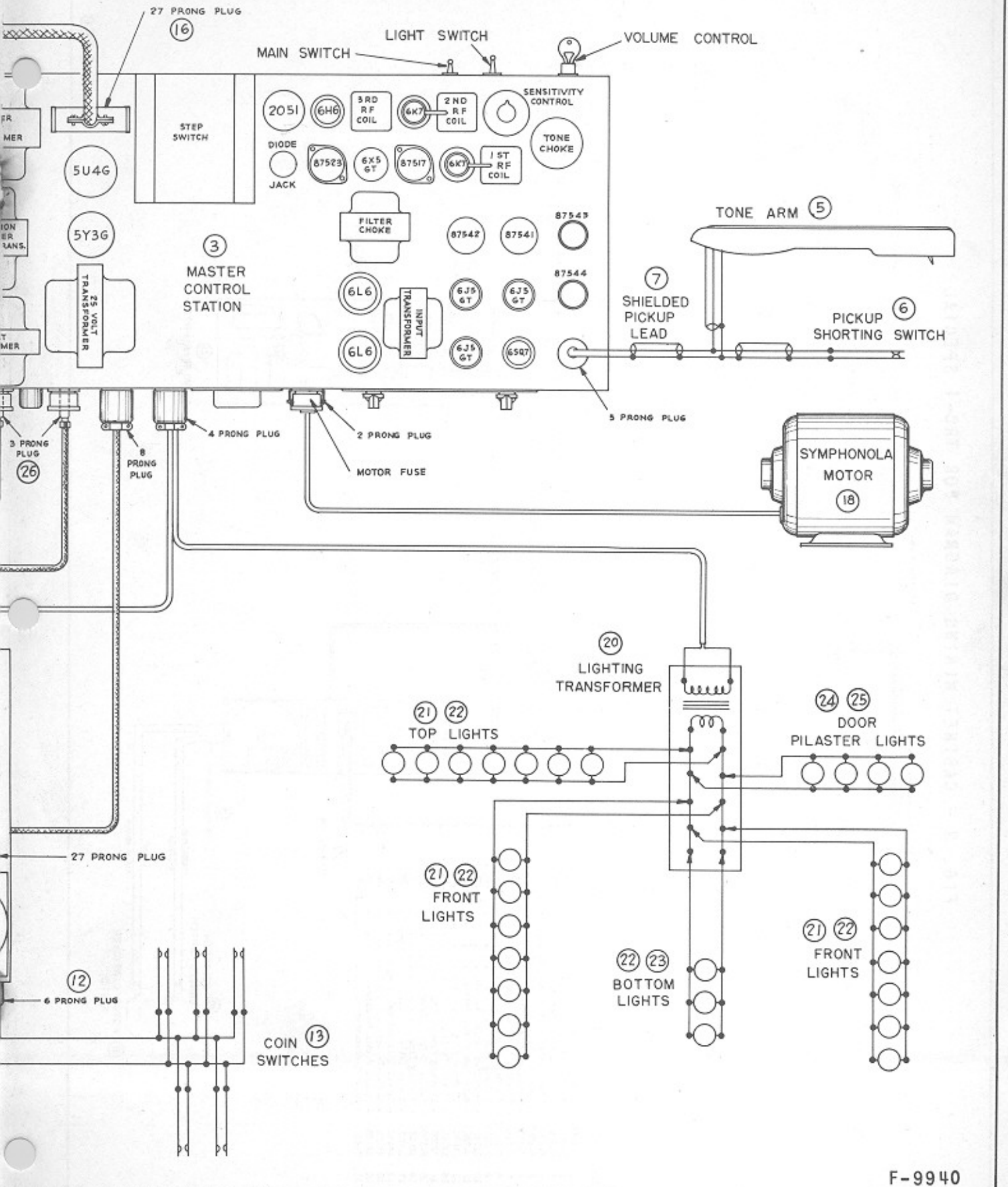
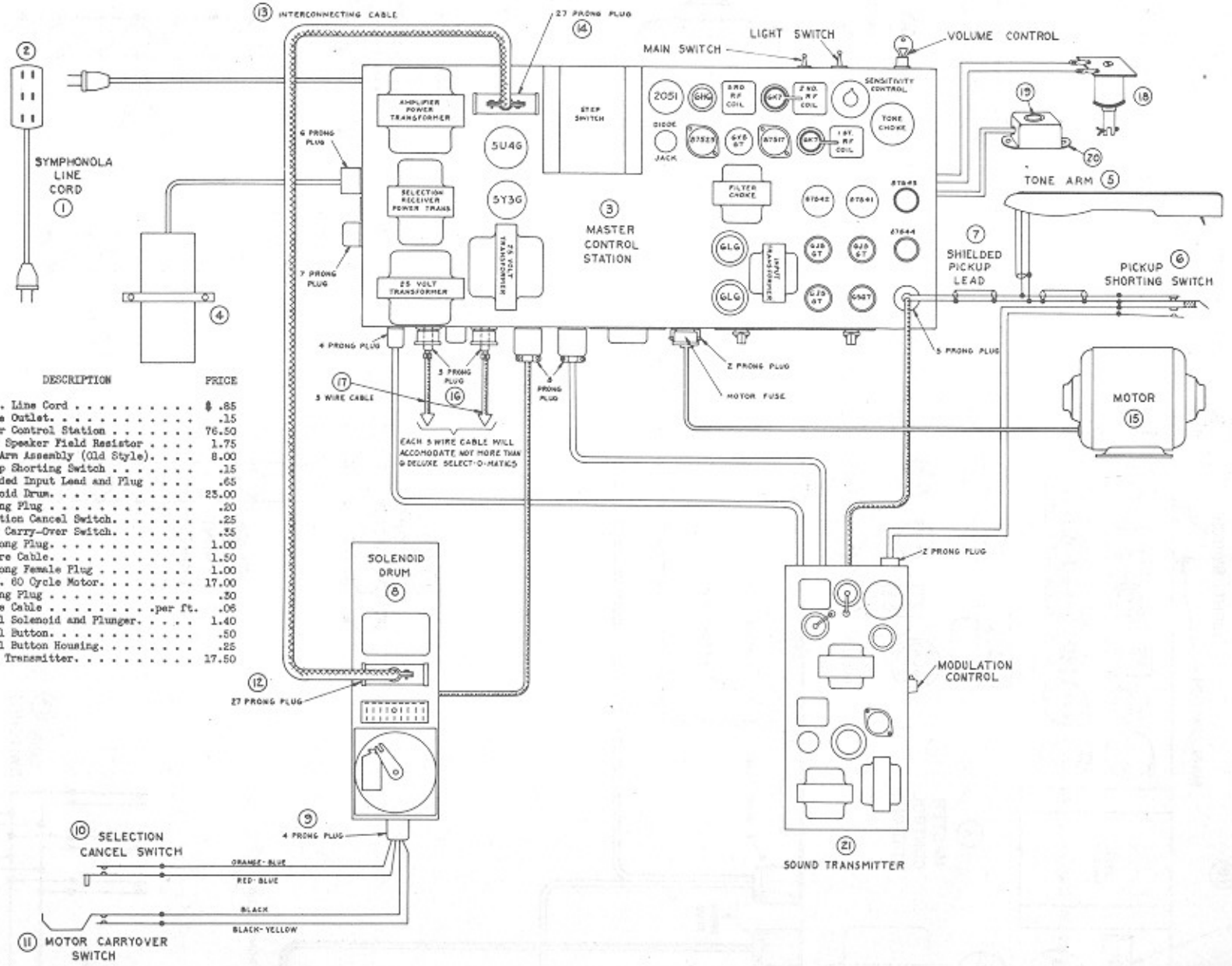
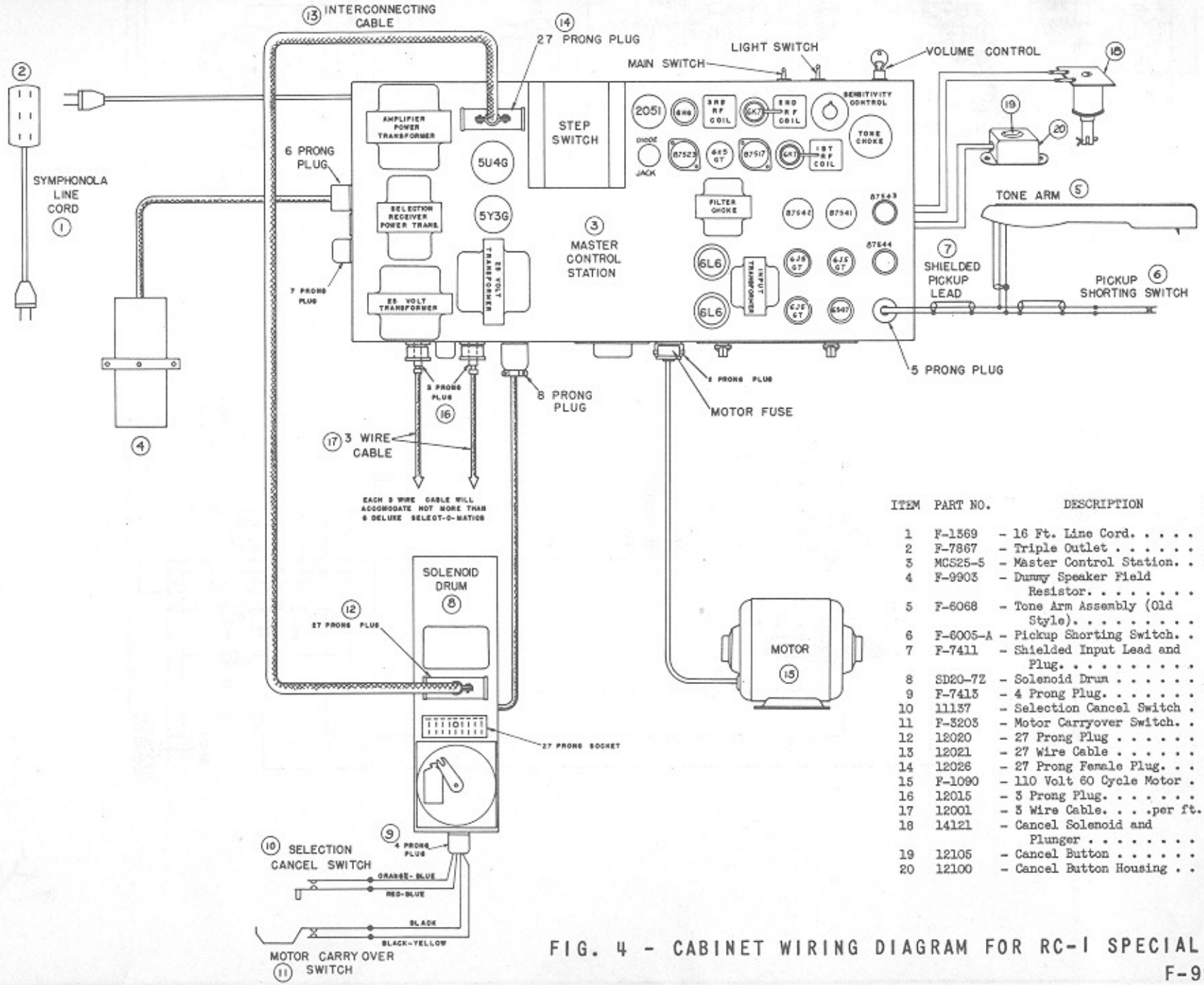

27 PRONG PLUG
16
MAIN SWITCH
LIGHT SWITCH
VOLUME CONTROL
STEP SWITCH
2051
6H6
3RD RF COIL
6K7
2ND RF COIL
SENSITIVITY CONTROL
TONE CHOKE
DIODE JACK
87523
6X5 GT
87517
6K7
1ST RF COIL
5U4G
5Y3G
FILTER CHOKE
87542
87541
87543
87544
3 MASTER CONTROL STATION
25 VOLT TRANSFORMER
6L6
6L6
INPUT TRANSFORMER
6J5 GT
6J5 GT
6J5 GT
6SQ7
TONE ARM 5
7 SHIELDED PICKUP LEAD
6 PICKUP SHORTING SWITCH
5 PRONG PLUG
3 PRONG PLUG 26
8 PRONG PLUG
4 PRONG PLUG
2 PRONG PLUG
MOTOR FUSE
SYMPHONOLA MOTOR 18
20 LIGHTING TRANSFORMER
21 22 TOP LIGHTS
24 25 DOOR PILASTER LIGHTS
27 PRONG PLUG
21 22 FRONT LIGHTS
22 23 BOTTOM LIGHTS
21 22 FRONT LIGHTS
12
6 PRONG PLUG
COIN 13 SWITCHES
F-9940

FIG. 3 - CABINET WIRING DIAGRAM FOR TRC-I SPECIAL



ITEM	PART NO.	DESCRIPTION	PRICE
1	F-1569	- 16 Ft. Line Cord	$ .85
2	F-7869	- Triple Outlet.	.15
3	MCS25-5	- Master Control Station	76.50
4	F-9903	- Dummy Speaker Field Resistor	1.75
5	F-6068	- Tone Arm Assembly (Old Style).	8.00
6	F-5204	- Pickup Shorting Switch	.15
7	F-7411	- Shielded Input Lead and Plug	.65
8	SD20-72	- Solenoid Drum.	23.00
9	F-7415	- 4 Prong Plug	.20
10	11157	- Selection Cancel Switch.	.25
11	F-5205	- Motor Carry-Over Switch.	.35
12	12020	- 27 Prong Plug.	1.00
13	12021	- 27 Wire Cable.	1.50
14	12026	- 27 Prong Female Plug	1.00
15	F-1090	- 110 V. 60 Cycle Motor.	17.00
16	12015	- 5 Prong Plug	.30
17	12001	- 5 Wire Cable .per ft.	.06
18	14121	- Cancel Solenoid and Plunger.	1.40
19	12105	- Cancel Button.	.50
20	12100	- Cancel Button Housing.	.25
21	T-32	- Sound Transmitter.	17.50

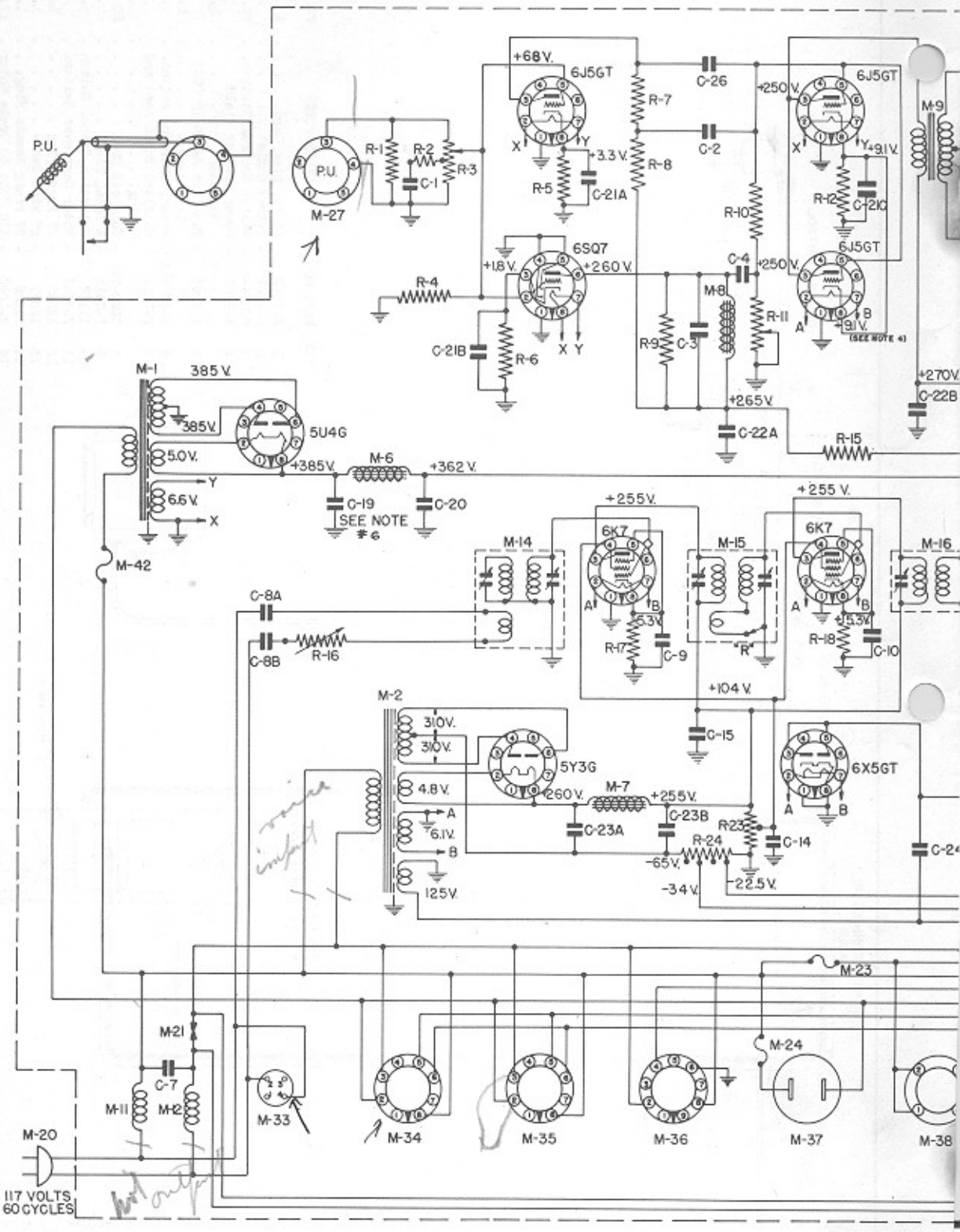
F-9960



ITEM	PART NO.	DESCRIPTION	PRICE
1	F-1369	- 16 Ft. Line Cord.	$ .85
2	F-7867	- Triple Outlet	.15
3	MCS25-5	- Master Control Station. .	76.50
4	F-9903	- Dummy Speaker Field Resistor.	1.75
5	F-6068	- Tone Arm Assembly (Old Style).	8.00
6	F-6005-A	- Pickup Shorting Switch. .	.15
7	F-7411	- Shielded Input Lead and Plug.	.65
8	SD20-7Z	- Solenoid Drum	25.00
9	F-7413	- 4 Prong Plug.	.20
10	11137	- Selection Cancel Switch .	.25
11	F-5203	- Motor Carryover Switch. .	.35
12	12020	- 27 Prong Plug	1.00
13	12021	- 27 Wire Cable	1.50
14	12026	- 27 Prong Female Plug. . .	1.00
15	F-1090	- 110 Volt 60 Cycle Motor .	17.00
16	12015	- 3 Prong Plug.	.30
17	12001	- 3 Wire Cable. . . .per ft.	.06
18	14121	- Cancel Solenoid and Plunger	1.40
19	12105	- Cancel Button	.50
20	12100	- Cancel Button Housing . .	.25

FIG. 4 - CABINET WIRING DIAGRAM FOR RC-I SPECIAL

F-9961


P.U.
M-27
R-1
R-2
R-3
C-1
+68 V.
6J5GT
R-5
C-21A
3.3 V.
R-7
R-8
C-26
C-2
+250 V.
6J5GT
+91 V.
R-12
C-21C
M-9
R-10
6SQ7
+1.8 V.
+260 V.
R-4
C-21B
R-6
C-4
+250 V.
6J5GT
M-8
R-11
R-9
C-3
+91 V.
(SEE NOTE 4)
+270 V.
C-22B
+265 V.
C-22A
R-15
M-1
385 V.
385 V.
5U4G
5.0 V.
6.6 V.
+385 V.
M-6
+362 V.
C-19
SEE NOTE #6
C-20
M-42
+255 V.
6K7
M-14
M-15
+255 V.
6K7
M-16
C-8A
C-8B
R-16
R-17
C-9
5.3 V.
R-18
C-10
+104 V.
M-2
3.10 V.
3.10 V.
5Y3G
4.8 V.
6.1 V.
125 V.
260 V.
M-7
+255 V.
C-23A
C-23B
R-23
R-24
C-14
C-15
6X5GT
-65 V.
-34 V.
22.5 V.
M-23
M-21
C-7
M-11
M-12
M-33
M-34
M-35
M-36
M-24
M-37
M-38
M-20
117 VOLTS
60 CYCLES

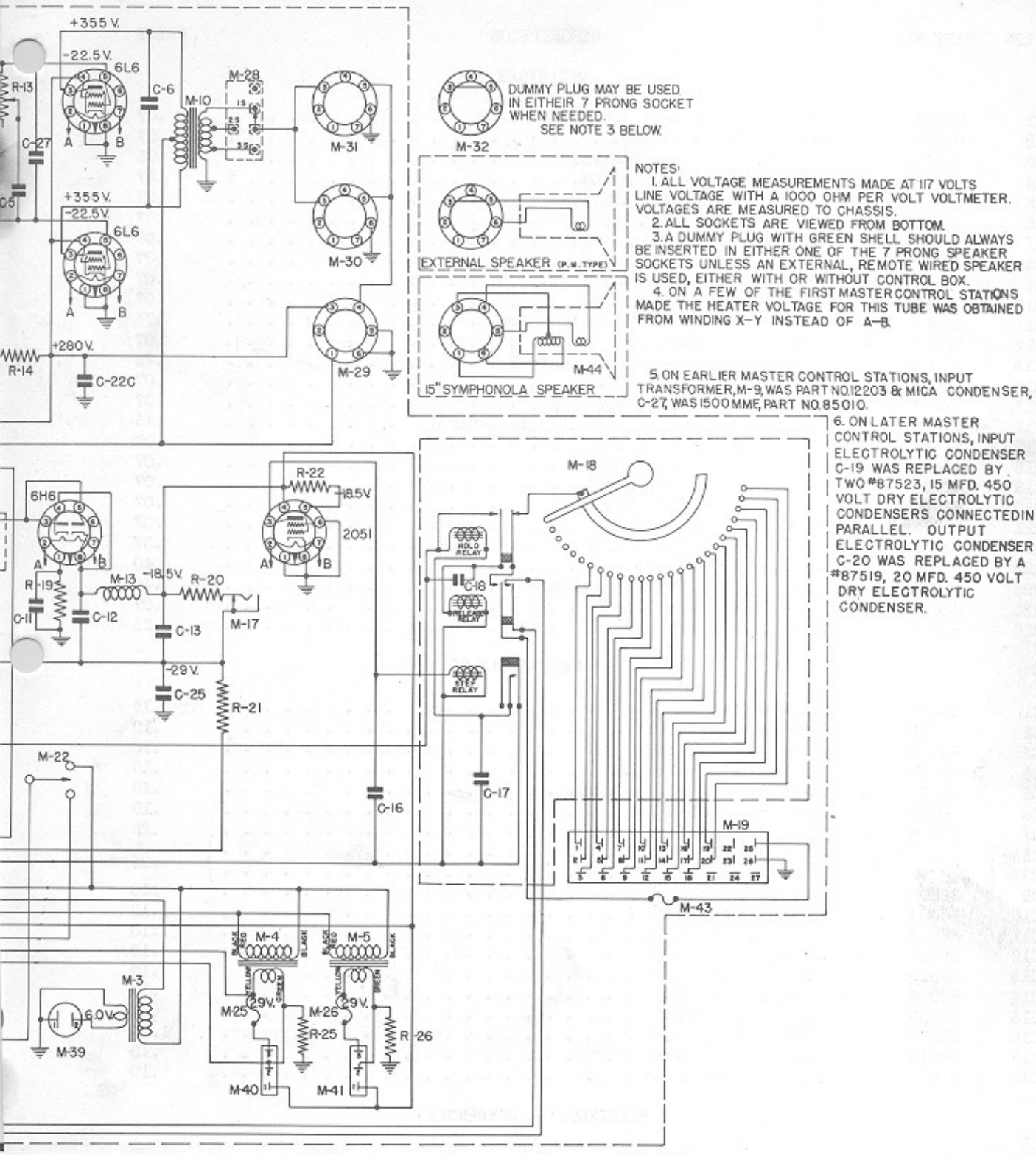


FIG. 5 - SCHEMATIC DIAGRAM FOR MCS25-1 MASTER CONTROL STATION

F-9942

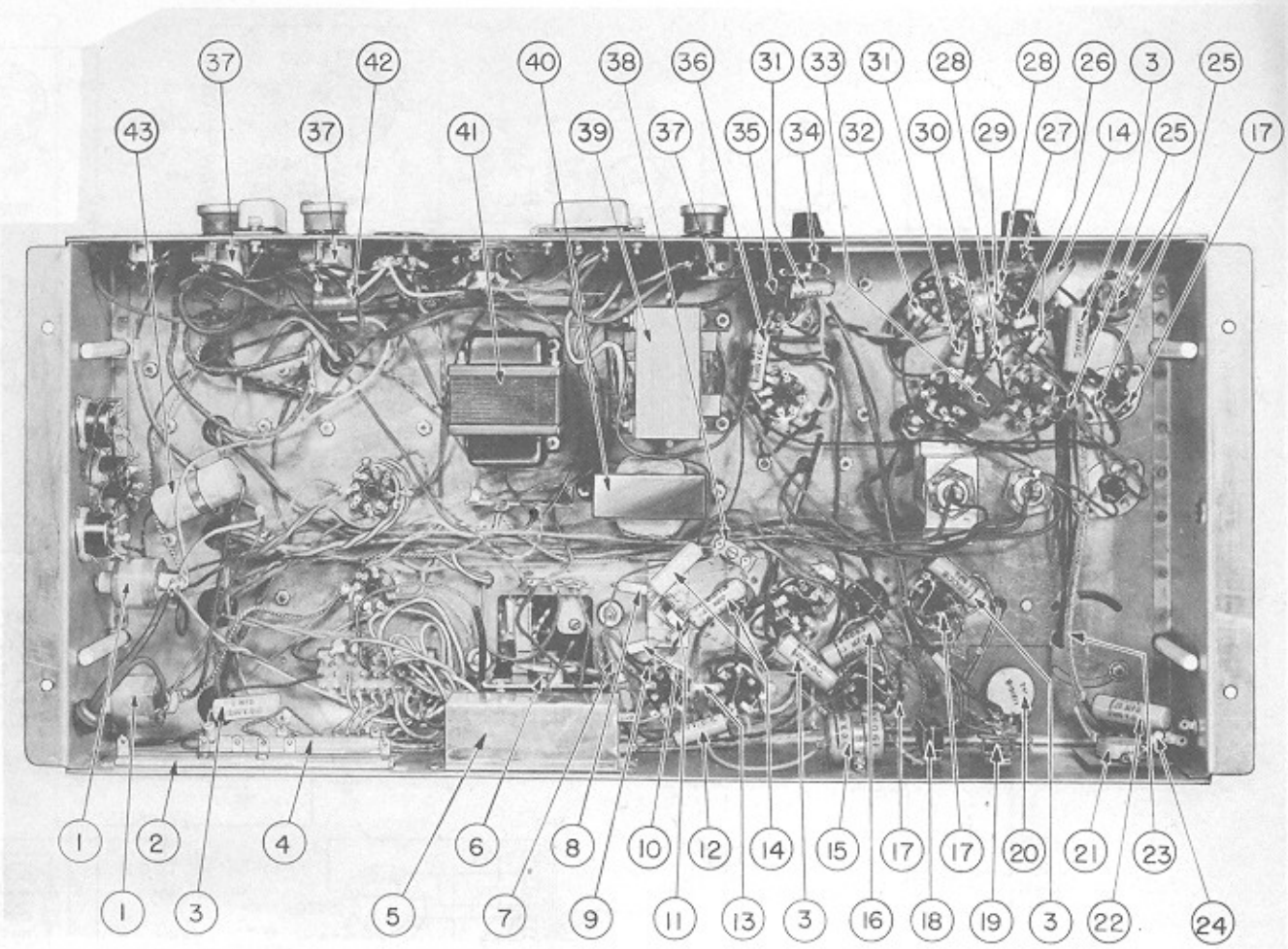
FIG. 5 - SCHEMATIC DIAGRAM OF TYPE MCS25-1 MASTER CONTROL STATION

ITEM	PART NO.		DESCRIPTION	PRICE
			RESISTORS	
R1	82433	-	5,600 Ohms 1/2 Watt 10%.	$ .07
R2	82482	-	500 Ohms 1/2 Watt 10%.	.07
R3	F-3076	-	16,000 Ohms Volume Control	.75
R4	82448	-	100,000 Ohms 1/2 Watt 10%.	.07
R5	82433	-	5,600 Ohms 1/2 Watt 10%.	.07
R6	82428	-	2,200 Ohms 1/2 Watt 10%.	.07
R7	82443	-	39,000 Ohms 1/2 Watt 10%	.07
R8	82452	-	220,000 Ohms 1/2 Watt 10%.	.07
R9	82448	-	100,000 Ohms 1/2 Watt 10%.	.07
R10	82443	-	39,000 Ohms 1/2 Watt 10%	.07
R11	10039	-	100,000 Ohms Variable Bass Control	.75
R12	82423	-	820 Ohms 1/2 Watt 10%.	.07
R13	10688	-	1 Megohm Variable Treble Control	.75
R14	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R15	82433	-	5,600 Ohms 1/2 Watt 10%	.07
R16	11315	-	40,000 Ohms Variable Sensitivity Control	.75
R17	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R18	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R19	82134	-	4.7 Megohms 1/2 Watt 20%	.07
R20	82450	-	150,000 Ohms 1/2 Watt 10%.	.07
R21	82442	-	33,000 Ohms 1/2 Watt 10%	.07
R22	82436	-	10,000 Ohms 1/2 Watt 10%	.07
R23	11300	-	Candohm 2380-3260 Ohms	.40
R24	12200	-	Candohm 400-127-88-88-492 Ohms	.40
R25	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R26	81006	-	1,000 Ohms 5 Watt 10%.	.25
			PAPER CONDENSERS	
C1	86043	-	.25 Mfd. 200 Volts	.15
C2	86031	-	.02 Mfd. 400 Volts	.10
C3	86008	-	.1 Mfd. 200 Volts.	.10
C4	86013	-	.05 Mfd. 400 Volts	.10
C5	86031	-	.02 Mfd. 400 Volts	.10
C6	86069	-	..005 Mfd. 1000 Volts	.10
C7	86062	-	.5 Mfd. 600 Volts.	.25
C8A	86061	-	.05 Mfd. 600 Volts	.25
C8B		-	.05 Mfd. 600 Volts	
C9	86008	-	.1 Mfd. 200 Volts.	.10
C10	86008	-	.1 Mfd. 200 Volts.	.10
C11	86009	-	.05 Mfd. 200 Volts	.10
C12	86013	-	.05 Mfd. 400 Volts	.10
C13	86013	-	.05 Mfd. 400 Volts	.10
C14	86008	-	.1 Mfd. 200 Volts.	.10
C15	86003	-	.1 Mfd. 400 Volts.	.10
C16	11076	-	5 Mfd. 300 Volts	1.25
C17	86015	-	.01 Mfd. 600 Volts	.10
C18	86015	-	.01 Mfd. 600 Volts	.10
			ELECTROLYTIC CONDENSERS	
C19	87542	-	16 Mfd. 475 Volts Wet.	1.00
C20	87541	-	16 Mfd. 475 Volts Wet.	1.00
C21A	87543	-	20 Mfd. 25 Volts Dry	.40
C21B		-	20 Mfd. 25 Volts Dry	
C21C		-	20 Mfd. 25 Volts Dry	
C22A	87544	-	20 Mfd. 300 Volts Dry.	.40
C22B		-	20 Mfd. 300 Volts Dry.	
C22C		-	20 Mfd. 300 Volts Dry.	

FIG. 5 - SCHEMATIC DIAGRAM OF TYPE MCS25-1 MASTER CONTROL STATION - Continued

ITEM	PART NO.		DESCRIPTION	PRICE
C23A C23B	87517	- -	20 Mfd. 450 Volts Dry. 20 Mfd. 450 Volts Dry.	$ .65
C24	87523	-	15 Mfd. 450 Volts Dry.	.45
C25	87521	-	10 Mfd. 50 Volts Dry	.25
			MICA CONDENSERS	
C26	85016	-	.002 Mfd. 2000 Mmf. 10%.	.20
C27	85022	-	.0025 Mfd. 2500 Mmf. 10%	.20
			MISCELLANEOUS	
M1	12204	-	Power Transformer.	4.50
M2	12202	-	Power Transformer.	3.50
M3	12213	-	6 Volt Transformer	2.50
M4	12211	-	25 Volt Transformer.	2.85
M5	12211	-	25 Volt Transformer.	2.85
M6	12223	-	Filter Choke	1.50
M7	11306	-	Filter Choke	1.25
M8	12065	-	Bass Choke Assembly.	1.25
M9	12226	-	Input Transformer.	1.75
M10	12058	-	Output Transformer	2.25
M11	10841	-	R.F. Choke	.35
M12	10841	-	R.F. Choke	.35
M13	10843	-	R.F. Choke	.25
M14	30191	-	1st (Input) R.F. Transformer Assembly.	.75
M15	30192	-	2nd (Interstage) R.F. Transformer Assembly	.85
M16	30193	-	3rd (Diode) R.F. Transformer Assembly.	.75
M17	11188	-	Diode Jack	.35
M18	50128	-	Step Switch Assembly	10.50
M19	12022	-	27 Contact Male Socket	1.00
M20	F-1369	-	16 Ft. Line Cord and Plug.	.85
M20	12077	-	2 Ft. Line Cord and Plug	.25
M21	F-1349	-	Main Switch.	.35
M22	12051	-	Light Switch	.45
M23	F-7846	-	2-1/2 Amp. Light Fuse.	.10
M24	14195	-	1.8 Amp. Non-tamperable Motor Fuse	.25
M25	14173	-	2.5 Amp. Non-tamperable Fuse	.25
M26	14173	-	2.5 Amp. Non-tamperable Fuse	.25
M27	84203	-	Pickup Socket.	.10
M28	12216	-	Speaker Matching Panel	.20
M29	84201	-	Socket for Symphonola Speaker.	.10
M30	84200	-	Socket for Wired Remote Speaker.	.15
M31	84200	-	Socket for Wired Remote Speaker.	.15
M32	11367	-	Dummy Plug (Green Shell)	.25
M33	12032	-	Socket for Transmitter Output.	.15
M34	84248	-	Socket for Power to Transmitter.	.10
M35	84248	-	Socket for Power to Solenoid Drum.	.10
M36	84244	-	Socket for Power to Remote Control Equipment	.10
M37	11401	-	Motor Receptacle	.20
M38	84222	-	Socket for Lighting Transformer.	.10
M39	F-8897	-	Socket for Electrical Selector Lights.	.15
M40	12006	-	Socket for 6 DeLuxe Select-O-Matics.	.15
M41	12006	-	Socket for 6 DeLuxe Select-O-Matics.	.15
M42	F-7846	-	2-1/2 Amp. Amplifier Fuse.	.10
M43	12224	-	1/2 Amp. Solenoid Fuse	.15
M44	F-9824	-	15" Symphonola Speaker	16.50

FIG. 7 - BOTTOM VIEW OF TYPE MCS25-1 MASTER CONTROL STATION



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	10841	- R. F. Choke.	2	$ .35
2	12200	- 400-127-88-88-492 Ohm Candohm Resistor	1	.40
3	86008	- .1 Mfd. 200 Volt Paper Condenser	4	.10
4	11300	- 2380-3260 Ohm Candohm Resistor	1	.40
5	11076	- 5 Mfd. 300 Volt Paper Condenser	1	1.25
6	50128	- Step Switch Assembly	1	10.50
7	87521	- 10 Mfd. 50 Volt Dry Electrolytic Condenser.	1	.25
8	82442	- 33,000 Ohm 1/2 Watt 10% Resistor	1	.07
9	82436	- 10,000 Ohm 1/2 Watt 10% Resistor	1	.07
10	82450	- 150,000 Ohms 1/2 Watt 10% Resistor	1	.07
11	11188	- Diode Jack	1	.35
12	86009	- .05 Mfd. 200 Volt Paper Condenser	1	.10
13	82134	- 4.7 Megohm 1/2 Watt 20% Resistor	1	.07
14	86013	- .05 Mfd. 400 Volt Paper Condenser	3	.10
15	86061	- Dual .05 Mfd. 600 Volt Paper Condenser.	1	.25
16	86003	- .1 Mfd. 400 Volt Paper Condenser	1	.10
17	82424	- 1000 Ohm 1/2 Watt 10% Resistor	4	.07
18	F-1349	- Main Switch.	1	.35
19	12031	- Light Switch	1	.45
20	11315	- Sensitivity Control.	1	.75
21	F-3076	- Volume Control	1	.75
22	86043	- .25 Mfd. 200 Volt Paper Condenser	1	.15
23	12201	- Shielded Volume Control Lead .	1	.10
24	82482	- 500 Ohm 1/2 Watt 10% Resistor.	1	.07
25	82433	- 5,600 Ohm 1/2 Watt 10% Resistor	3	.07
26	82448	- 100,000 Ohm 1/2 Watt 10% Resistor	2	.07
27	10039	- Bass Control	1	.75
28	82443	- 39,000 Ohm 1/2 Watt 10% Resistor	2	.07
29	82428	- 2200 Ohm 1/2 Watt 10% Resistor	1	.07
30	82452	- 220,000 Ohm 1/2 Watt 10% Resistor	1	.07
31	86031	- .02 Mfd. 400 Volt Paper Condenser	2	.10
32	82423	- 820 Ohm 1/2 Watt 10% Resistor.	1	.07
33	85016	- .002 Mfd. 10% Mica Condenser .	1	.20
34	10688	- Treble Control	1	.75
35	85022	- .0025 Mfd. 10% Mica Condenser.	1	.20
36	86069	- .005 Mfd. 1000 Volt Paper Condenser	1	.10
37	14175	- Fuse Receptacle.	3	.40
38	10843	- R.F. Choke	1	.25
39	12058	- Output Transformer	1	2.25
40	11306	- Filter Choke	1	1.25
41	12213	- 6 Volt Transformer	1	2.50
42	81006	- 1000 Ohm 5 Watt 10% Resistor .	1	.25
43	86062	- .5 Mfd. 600 Volt Paper Condenser	1	.25

FIG. 8 - SCHEMATIC DIAGRAM OF TYPE MCS25-5 MASTER CONTROL STATION

ITEM	PART NO.		DESCRIPTION	PRICE
			RESISTORS	
R1	82433	-	5,600 Ohms 1/2 Watt 10%.	$ .07
R2	82482	-	500 Ohms 1/2 Watt 10%.	.07
R3	F-3076	-	16,000 Ohm Volume Control.	.75
R4	82613	-	24,000 Ohms 1/2 Watt 5%.	.10
R5	82606	-	75,000 Ohms 1/2 Watt 5%.	.10
R6	82433	-	5,600 Ohms 1/2 Watt 10%.	.07
R7	82428	-	2,200 Ohms 1/2 Watt 10%.	.07
R8	82443	-	39,000 Ohms 1/2 Watt 10%	.07
R9	82443	-	39,000 Ohms 1/2 Watt 10%	.07
R10	82443	-	39,000 Ohms 1/2 Watt 10%	.07
R11	10039	-	100,000 Ohms Variable Bass Control	.75
R12	82423	-	820 Ohms 1/2 Watt 10%.	.07
R13	10688	-	1 Megohm Variable Treble Control	.75
R14	82424	-	1000 Ohms 1/2 Watt 10%	.07
R15	82433	-	5,600 Ohms 1/2 Watt 10%.	.07
R16	81039	-	20 Ohms 5 Watts 10% Wire Wound	.20
R17	81041	-	11,000 Ohms 10 Watts 10% Wire Wound.	.25
R18	81040	-	2,000 Ohms 10 Watts 10% Wire Wound	.25
R19	11315	-	40,000 Ohms Variable Sensitivity Control	.75
R20	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R21	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R22	82134	-	4.7 Megohms 1/2 Watt 10%	.07
R23	82450	-	150,000 Ohms 1/2 Watt 10%.	.07
R24	82442	-	33,000 Ohms 1/2 Watt 10%	.07
R25	82536	-	10,000 Ohms 1/2 Watt 10%	.07
R26	11300	-	Candohm 2380-3260 Ohms	.40
R27	12200	-	Candohm 400-127-88-88-492 Ohms	.40
R28	82424	-	1,000 Ohms 1/2 Watt 10%.	.07
R29	81006	-	1,000 Ohms 5 Watts 10%	.25
			PAPER CONDENSERS	
C1	86043	-	.25 Mfd. 200 Volts	.15
C2	86031	-	.02 Mfd. 400 Volts	.10
C3	86008	-	.1 Mfd. 200 Volts.	.10
C4	86013	-	.05 Mfd. 400 Volts	.10
C5	86031	-	.02 Mfd. 400 Volts	.10
C6	86070	-	.01 Mfd. 1000 Volts.	.10
C7	86062	-	.5 Mfd. 600 Volts.	.25
C8A C8B	86061	- -	.05 Mfd. 600 Volts .05 Mfd. 600 Volts	.25
C9	86008	-	.1 Mfd. 200 Volts.	.10
C10	86008	-	.1 Mfd. 200 Volts.	.10
C11	86009	-	.05 Mfd. 200 Volts	.10
C12	86013	-	.05 Mfd. 400 Volts	.10
C13	86013	-	.05 Mfd. 400 Volts	.10
C14	86008	-	.1 Mfd. 200 Volts.	.10
C15	86003	-	.1 Mfd. 400 Volts.	.10
C16	11076	-	5 Mfd. 300 Volts	1.25
C17	86015	-	.01 Mfd. 600 Volts	.10
C18	86015	-	.01 Mfd. 600 Volts	.10
			ELECTROLYTIC CONDENSERS	
C19	87542	-	16 Mfd. 475 Volts Wet.	1.00
C20	87541	-	16 Mfd. 475 Volts Wet.	1.00

ITEM	PART NO.		DESCRIPTION	PRICE
C21A		-	20 Mfd. 25 Volts Dry	$
C21B	87543	-	20 Mfd. 25 Volts Dry	.40
C21C		-	20 Mfd. 25 Volts Dry	
C22A		-	20 Mfd. 300 Volts Dry.	
C22B	87544	-	20 Mfd. 300 Volts Dry.	.40
C22C		-	20 Mfd. 300 Volts Dry.	
C23A	87517	-	20 Mfd. 450 Volts Dry.	
C23B		-	20 Mfd. 450 Volts Dry.	.65
C24	87523	-	15 Mfd. 450 Volts Dry.	.45
C25	87521	-	10 Mfd. 50 Volts Dry	.25

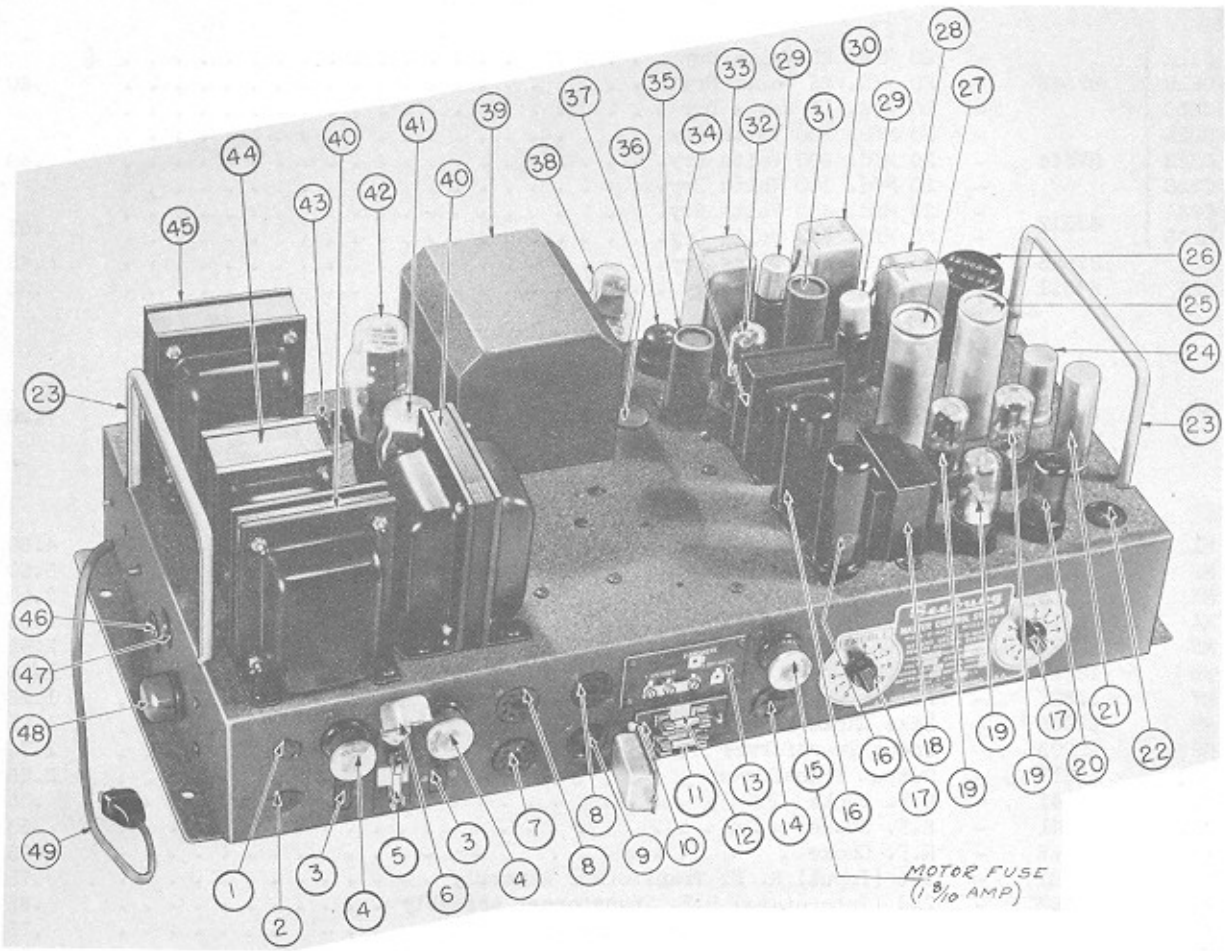
MICA CONDENSERS

C26	85010	-	.0015 Mfd. (1500 MMF) 10%	.20

MISCELLANEOUS

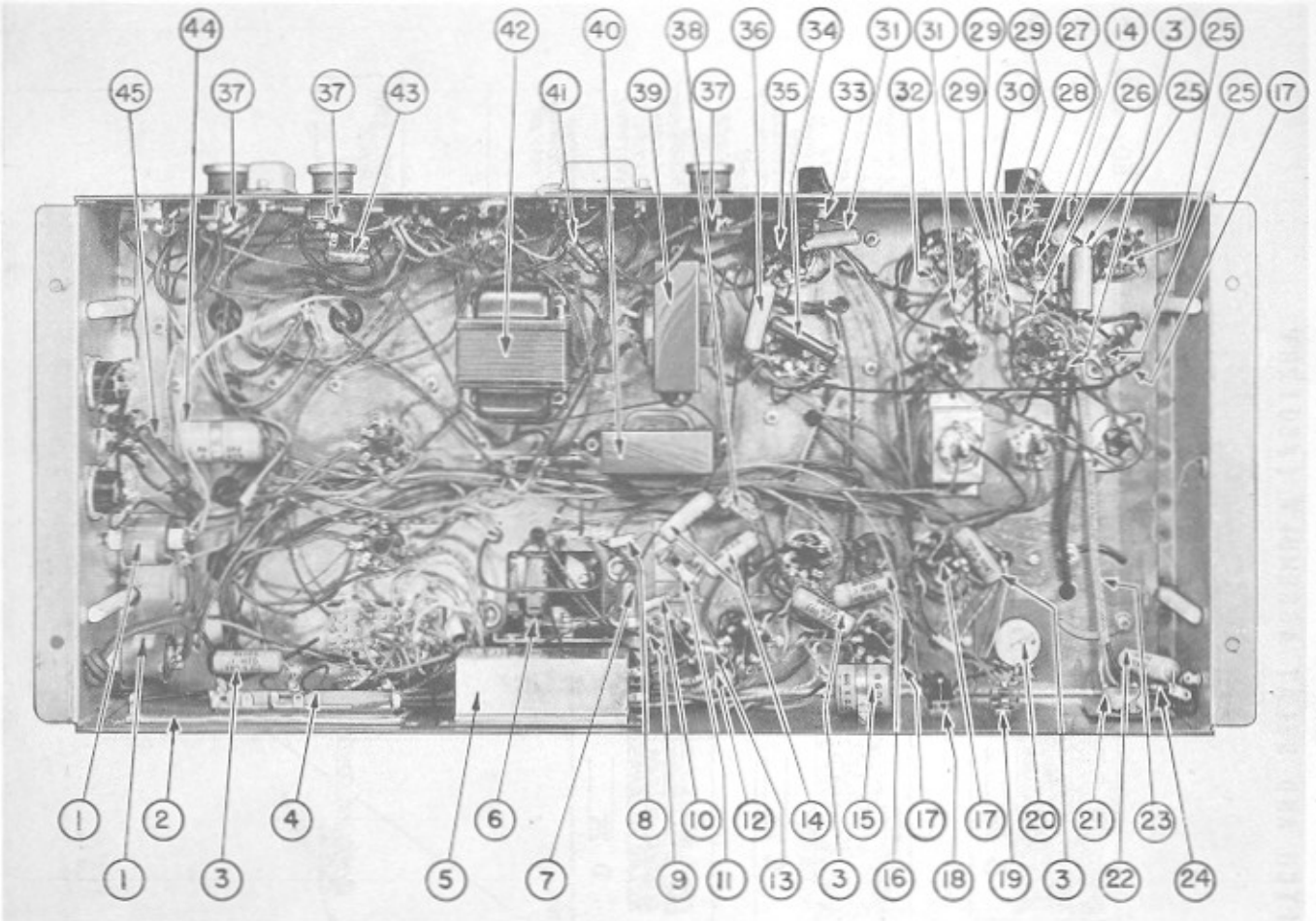
M1	12204	-	Amplifier Power Transformer.	4.50
M2	12202	-	Selection Receiver Power Transformer	3.50
M3	12213	-	6 Volt Transformer	2.50
M4	12211	-	25 Volt Transformer.	2.85
M5	12211	-	25 Volt Transformer.	2.85
M6	12223	-	Filter Choke	1.50
M7	11306	-	Filter Choke	1.25
M8	12065	-	Bass Choke Assembly.	1.25
M9	12203	-	Input Transformer.	1.75
M10	12217	-	Output Transformer	2.25
M11	10841	-	R.F. Choke	.35
M12	10841	-	R.F. Choke	.35
M13	10843	-	R.F. Choke	.25
M14	30191	-	1st (Input) R. F. Transformer Assembly	.75
M15	30192	-	2nd (Interstage) R.F. Transformer Assembly	.85
M16	30193	-	3rd (Diode) R.F. Transformer	.75
M17	11188	-	Diode Jack	.35
M18	50128	-	Step Switch Assembly	10.50
M19	12022	-	27 Contact Male Socket	1.00
M20	F-1369	-	16 Ft. Line Cord and Plug.	.85
M20	12077	-	2 Ft. Power Cord and Plug.	.25
M21	F-1349	-	Main Switch.	.35
M22	12031	-	Light Switch	.45
M23	F-7846	-	2-1/2 Amp. Light Fuse.	.10
M24	14195	-	1.8 Amp. Non-Tamperable Motor Fuse	.25
M25	14173	-	2.5 Amp. Non-Tamperable Fuse	.25
M26	14173	-	2.5 Amp. Non-Tamperable Fuse	.25
M27	84203	-	Pickup Socket	.10
M28	12216	-	Speaker Matching Panel	.20
M29	84201	-	Socket for Symphonola Speaker.	.10
M30	84200	-	Socket for Wired Remote Speaker.	.15
M31	84200	-	Socket for Wired Remote Speaker.	.15
M32	11367	-	Dummy Plug (Green Shell)	.25
M33	12032	-	Socket for Transmitter Output.	.15
M34	84248	-	Socket for Power to Transmitter.	.10
M35	84248	-	Socket for Power to Solenoid Drum.	.10
M36	84244	-	Socket for Power to Remote Control Equipment	.10
M37	11401	-	Motor Receptacle	.20
M38	84222	-	Socket for Lighting Transformer.	.10
M39	F-8897	-	Socket for Electrical Selector Lights.	.15
M40	12006	-	Socket for 6 DeLuxe Select-O-Matics.	.15
M41	12006	-	Socket for 6 DeLuxe Select-O-Matics.	.15
M42	F-7846	-	2-1/2 Amp. Amplifier Fuse.	.10
M43	12224	-	1/2 Amp. Solenoid Fuse	.15
M44	F-9024	-	15" Symphonola Speaker	11.00

FIG. 9 - FRONT VIEW OF TYPE MCS25-5 MASTER CONTROL STATION



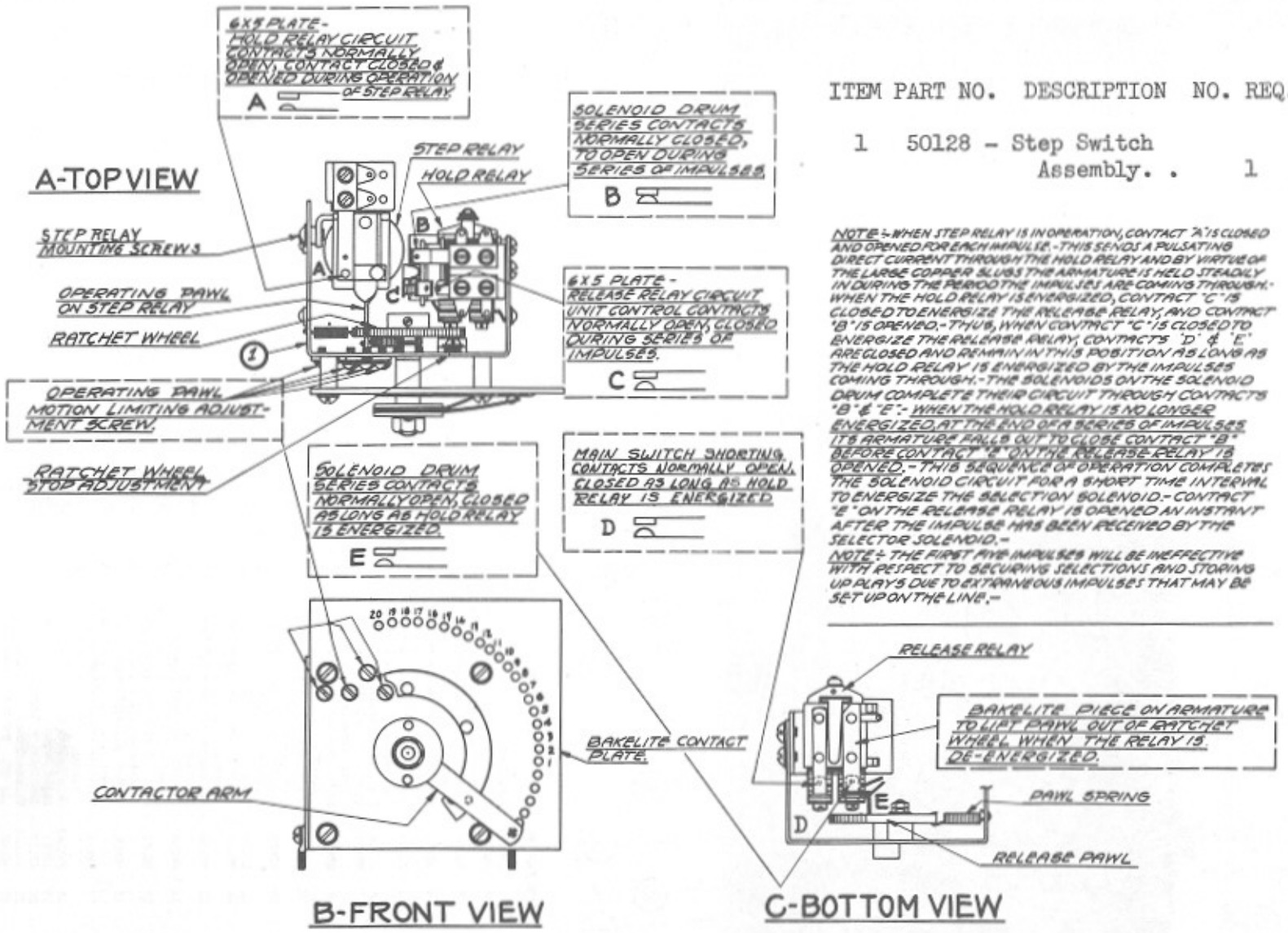
ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	12052	- Small 4 Contact Socket	1	$ .15
2	F-8897	- Small Polarized 2 Contact Socket	1	.15
3	12006	- 3 Contact Socket	2	.15
4	14173	- 2-1/2 Amp. Non-Tamperable Fuse	2	.25
5	F-7846	- 2-1/2 Amp. Power Transformer Fuse	1	.10
6	12030	- Single Fuse Receptacle	1	.25
7	84244	- 9 Contact Socket	1	.10
8	84248	- Octal Socket	2	.10
9	84222	- 4 Contact Socket	1	.10
10	11466	- Double Fuse Receptacle	1	.65
11	12224	- 1/2 Amp. Slow Blow Fuse. . . .	1	.15
12	F-7846	- 2-1/2 Amp. Light Fuse.	1	.10
13	12216	- Speaker Matching Panel	1	.20
14	11401	- 2 Prong Receptacle	1	.20
15	14195	- 1-8/10 Amp. Motor Fuse	1	.25
16		- Type 6L6 Tube.	2	1.29
17	10056	- Control Knob	2	.10
18	12203	- Input Transformer.	1	1.75
19		- Type 6J5GT Tube.	3	.68
20		- Type 6SQ7 Tube	1	.64
21	87544	- Triple 20 Mfd. 300 Volt Dry Electrolytic Condenser . . .	1	.40
22	84203	- 5 Contact Pickup Socket. . . .	1	.10
23	12206	- Sub-Panel Handle	2	.45
24	87543	- Triple 20 Mfd. 25 Volt Dry Electrolytic Condenser . . .	1	.40
25	87541	- 16 Mfd. 475 Volt Wet Electro-lytic Condenser.	1	1.00
26	12065	- Bass Choke	1	$ 1.25
27	87542	- 16 Mfd. 475 Volt Wet Electro-lytic Condenser.	1	1.00
28	30191	- 1st R.F. Transformer	1	.75
29		- Type 6K7 Tube.	2	.72
30	30192	- 2nd R.F. Transformer	1	.95
31	87517	- Dual 20 Mfd. 450 Volt Dry Electrolytic Condenser . . .	1	.65
32		- Type 6X5GT Tube.	1	.72
33	30193	- 3rd R.F. Transformer	1	.75
34	12223	- Filter Choke	1	1.50
35	87523	- 15 Mfd. 450 Volt Dry Electro-lytic Condenser.	1	.45
36		- Type 6H6 Tube.	1	.72
37	S-21490	- Diode Jack Plug Button	1	.10
38		- Type "2051" Tube	1	2.10
39	12205	- Step Switch Cover.	1	.60
40	12211	- 25 Volt Transformer.	2	2.85
41		- Type 5Y3G Tube	1	.44
42		- Type 5U4G Tube	1	.64
43	12022	- 27 Prong Male Socket	1	1.00
44	12202	- Selection Receiver Power Transformer	1	3.50
45	12204	- Amplifier Power Transformer. .	1	4.50
46	84201	- 6 Contact Speaker Socket . . .	1	.10
47	84200	- 7 Contact Speaker Socket . . .	2	.15
48	11367	- Dummy Plug (Green Shell) . . .	1	.25
49	12077	- 2 Ft. Power Cord and Plug. . .	1	.25

FIG. 10 - BOTTOM VIEW OF TYPE MCS25-5 MASTER CONTROL STATION



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	10841	- R.F. Choke.	2	$ .35
2	12200	- 400-127-68-68-492 Ohm Candohm Resistor.	1	.60
3	86008	- .1 Mfd. 200 Volt Paper Condenser.	4	.10
4	11500	- 2380-3260 Ohm Candohm Resistor.	1	.40
5	11076	- 5 Mfd. 300 Volt Paper Condenser.	1	1.25
6	50128	- Step Switch Assembly.	1	10.50
7	87521	- 10 Mfd. 50 Volt Dry Electolytic Condenser	1	.25
8	82442	- 33,000 Ohm 1/2 Watt 10% Resistor.	1	.07
9	82436	- 10,000 Ohm 1/2 Watt 10% Resistor.	1	.07
10	82450	- 150,000 Ohm 1/2 Watt 10% Resistor.	1	.07
11	11188	- Diode Jack.	1	.35
12	86009	- .05 Mfd. 200 Volt Paper Condenser.	1	.10
13	82134	- 4.7 Megohm 1/2 Watt 20% Resistor.	1	.07
14	86013	- .02 Mfd. 400 Volt Paper Condenser.	5	.10
15	86061	- Dual .05 Mfd. 600 Volt Paper Condenser	1	.25
16	86003	- .1 Mfd. 400 Volt Paper Condenser.	1	.10
17	82424	- 1000 Ohm 1/2 Watt 10% Resistor.	4	.07
18	F-1349	- Main Switch	1	.35
19	12051	- Light Switch.	1	.65
20	11315	- Sensitivity Control	1	.75
21	F-3076	- Volume Control.	1	.75
22	86043	- .25 Mfd. 200 Volt Paper Condenser.	1	.15
23	12201	- Shielded Volume Control Lead.	1	$ .10
24	82462	- 500 Ohm 1/2 Watt 10% Resistor	1	.07
25	82433	- 5,600 Ohm 1/2 Watt 10% Resistor.	3	.07
26	82615	- 24,000 Ohm 1/2 Watt 5% Resistor.	1	.10
27	82606	- 75,000 Ohm 1/2 Watt 5% Resistor.	1	.10
28	10059	- Bass Control.	1	.75
29	82445	- 39,000 Ohm 1/2 Watt 10% Resistor.	3	.07
30	82428	- 2,200 Ohm 1/2 Watt 10% Resistor.	1	.07
31	86031	- .02 Mfd. 400 Volt Paper Condenser.	2	.10
32	82423	- 820 Ohm 1/2 Watt 10% Resistor	1	.07
33	10688	- Treble Control.	1	.75
34	81041	- 11,000 Ohm 10 Watt 10% Wire Wound Resistor.	1	.25
35	85010	- .0015 Mfd. 10% Mica Condenser	1	.20
36	86070	- .01 Mfd. 1000 Volt Paper Condenser	1	.10
37	14175	- Fuse Receptacle	3	.40
38	10843	- R.F. Choke.	1	.25
39	12217	- Output Transformer.	1	2.25
40	11306	- Filter Choke.	1	1.25
41	81039	- 20 Ohm 5 Watt 10% Wire Wound Resistor.	1	.20
42	12213	- 6 Volt Transformer.	1	2.50
43	81006	- 1000 Ohm 5 Watt 10% Wire Wound Resistor.	1	.25
44	86062	- .5 Mfd. 600 Volt Paper Condenser.	1	.25
45	81040	- 2,000 Ohm 10 Watt 10% Wire Wound Resistor.	1	.25

FIG. 11 - STEP SWITCH AND RELAY ASSEMBLY (#50128)



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	50128	- Step Switch Assembly. .	1	$10.50

NOTE:- WHEN STEP RELAY IS IN OPERATION, CONTACT "A" IS CLOSED AND OPENED FOR EACH IMPULSE.- THIS SENDS A PULSATING DIRECT CURRENT THROUGH THE HOLD RELAY AND BY VIRTUE OF THE LARGE COPPER SLUGS THE ARMATURE IS HELD STEADILY IN DURING THE PERIOD THE IMPULSES ARE COMING THROUGH.- WHEN THE HOLD RELAY IS ENERGIZED, CONTACT "C" IS CLOSED TO ENERGIZE THE RELEASE RELAY, AND CONTACT "B" IS OPENED.- THUS, WHEN CONTACT "C" IS CLOSED TO ENERGIZE THE RELEASE RELAY, CONTACTS "D" & "E" ARE CLOSED AND REMAIN IN THIS POSITION AS LONG AS THE HOLD RELAY IS ENERGIZED BY THE IMPULSES COMING THROUGH.- THE SOLENOIDS ON THE SOLENOID DRUM COMPLETE THEIR CIRCUIT THROUGH CONTACTS "B" & "E".- WHEN THE HOLD RELAY IS NO LONGER ENERGIZED, AT THE END OF A SERIES OF IMPULSES ITS ARMATURE FALLS OUT TO CLOSE CONTACT "B" BEFORE CONTACT "E" ON THE RELEASE RELAY IS OPENED.- THIS SEQUENCE OF OPERATION COMPLETES THE SOLENOID CIRCUIT FOR A SHORT TIME INTERVAL TO ENERGIZE THE SELECTION SOLENOID.- CONTACT "E" ON THE RELEASE RELAY IS OPENED AN INSTANT AFTER THE IMPULSE HAS BEEN RECEIVED BY THE SELECTOR SOLENOID.-

NOTE:- THE FIRST FIVE IMPULSES WILL BE INEFFECTIVE WITH RESPECT TO SECURING SELECTIONS AND STOPPING UP PLAYS DUE TO EXTRANEOUS IMPULSES THAT MAY BE SET UP ON THE LINE.-

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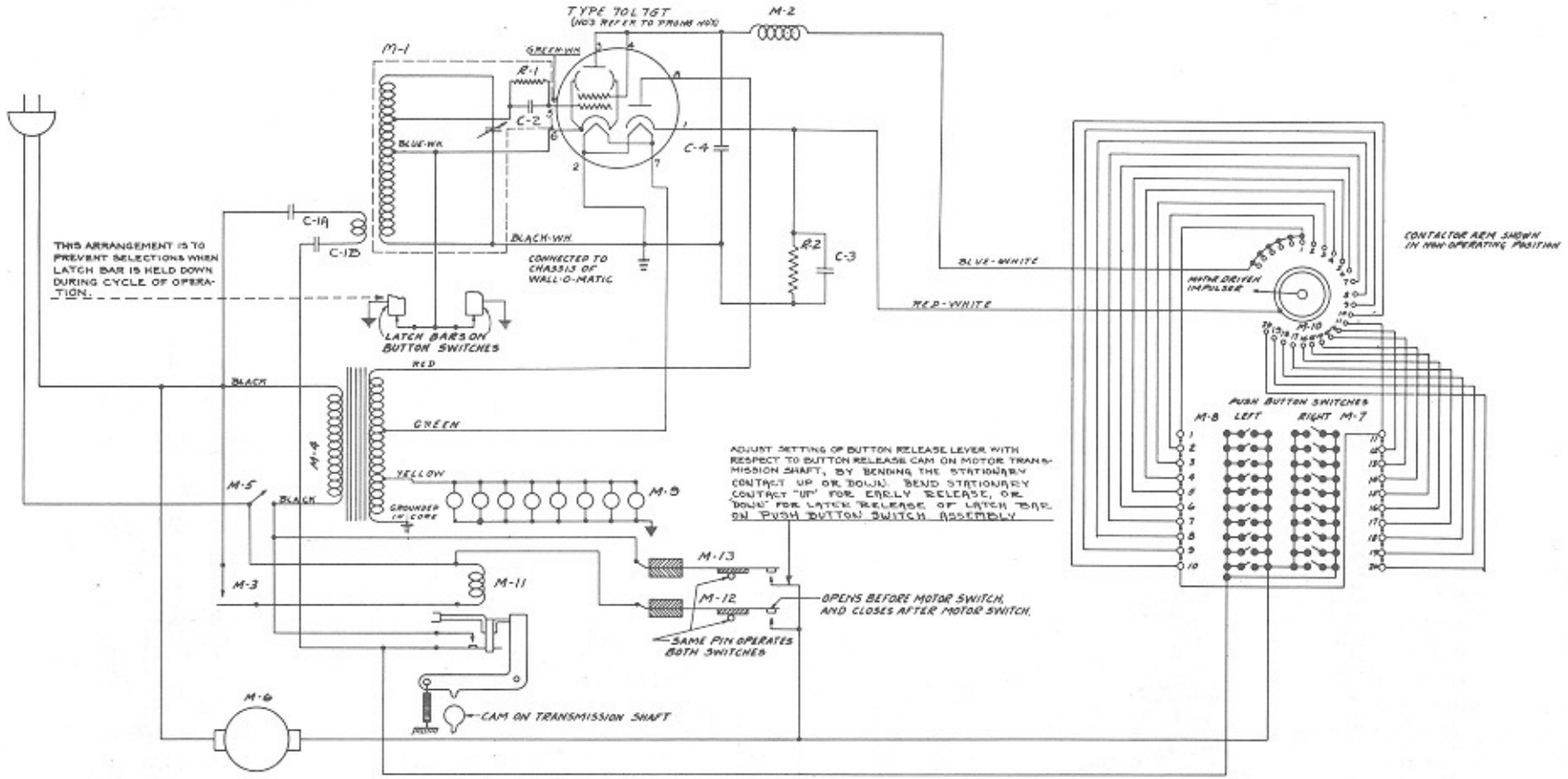
FIG. 12 - SCHEMATIC DIAGRAM OF MODEL WS-2Z WALL-O-MATIC (5¢)



ITEM	PART NO.	DESCRIPTION	PRICE
		RESISTORS	
R1	82438	- 15,000 Ohms 1/2 Watt 10%	$ .07
R2	82706	- 39,000 Ohms 1 Watt 10%.	.10
		CONDENSERS	
C1A	86059	- .05 Mfd. 900 V. Tubular Condenser	.35
C1B	86059	- .05 Mfd. 900 V. Tubular Condenser	.35
C2	85008	- .0005 Mfd. Mica Condenser. . . .	.20
C3	87518	- 12 Mfd. 250 V. Lytic.	.35
C4	86013	- .05 Mfd. 400 V. Tub. Condenser .	.10
		MISCELLANEOUS	
M1	13129	- Oscillator Coil. .	1.25
M2	S21261	- R.F. Choke	.15
M3	14087	- Coin Switch. . . .	.45
M4	13056	- Transformer. . . .	1.35
M5	10961	- Main Switch. . . .	.35
M6	13043	- Motor Assembly . .	5.00
M7	13089	- Selector Switch Right.	2.25
M8	13090	- Selector Switch Left	2.25
M9	10242	- Lamps - Mazda #51.	.08
M10	13005	- Selector Plate Assembly	.75
M11	13141	- Coin Relay Assembly	1.40
M12	13111	- Shorting Switch. .	.15
M13	13110	- Motor Switch . . .	.20

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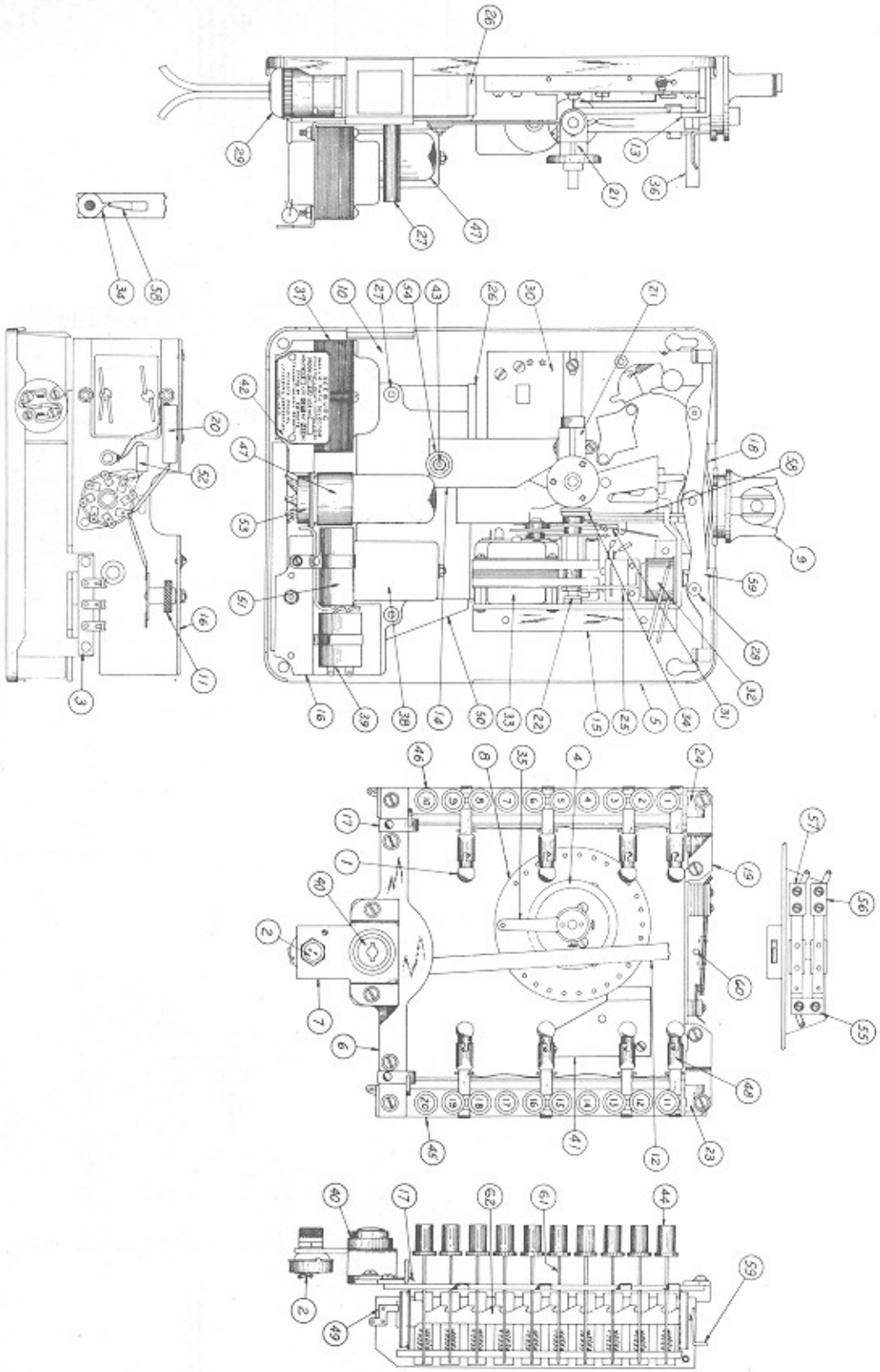

FIG. 13 - ASSEMBLY VIEWS OF MODEL WS-2Z WALL-O-MATIC (5¢)

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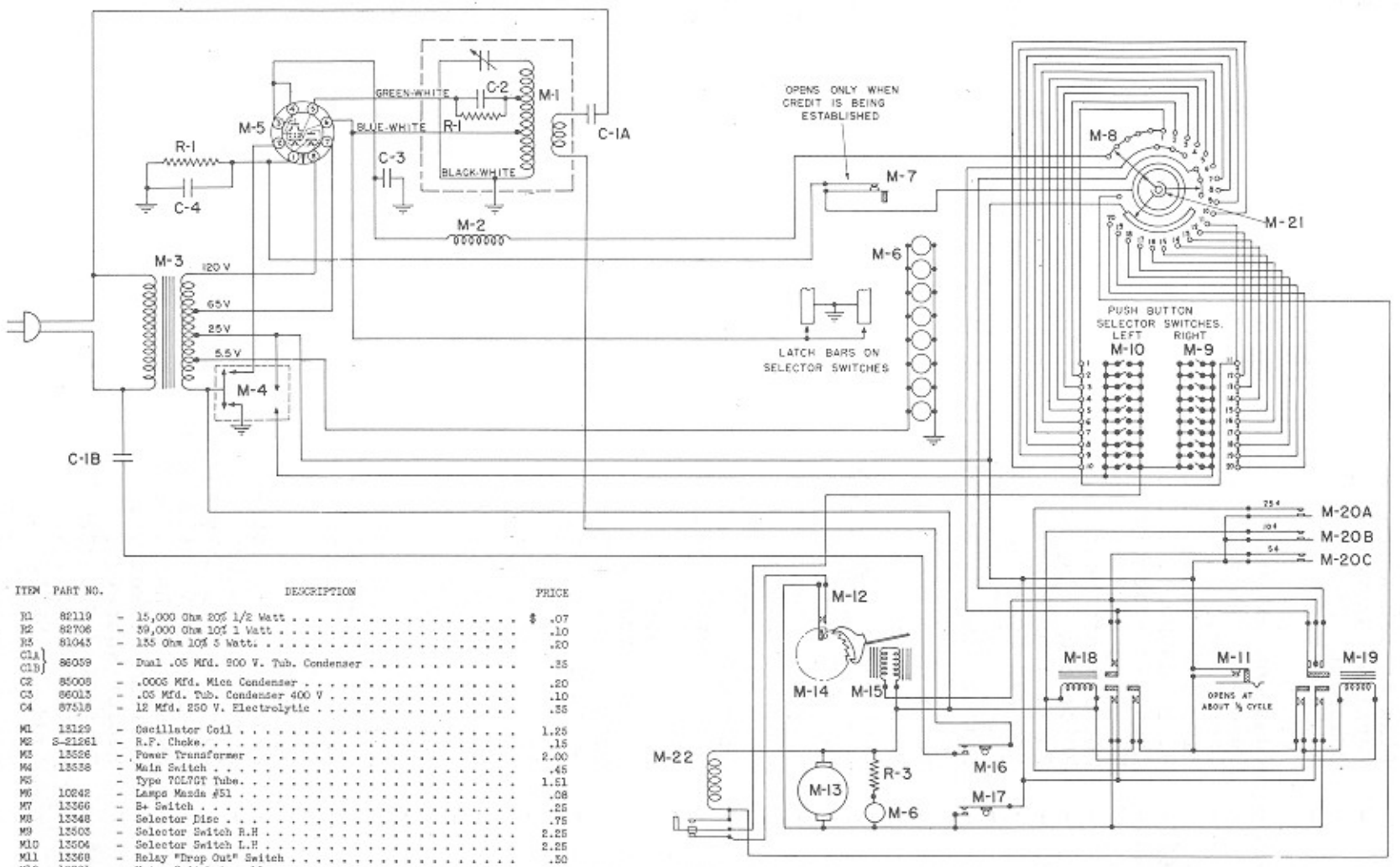
ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	10242	-	Program Lights 6-8 V. #51.	8	$ .08
2	10961	-	Line Switch Assembly	1	.35
3	11044	-	Terminal Strip (3Lug)	1	.10
4	11254	-	Collector Ring	1	.15
5	13804	-	Back Plate Assembly.	1	3.00
6	13003	-	Switch Support Bracket (Bottom). . . .	1	.15
7	13004	-	Lock and Switch Bracket.	1	.15
8	13005	-	Selector Plate Assembly.	1	.75
9	13006	-	Drop Slot.	1	.75
10	13007	-	Slug Receptacle.	1	.35
11	S-21261	-	R. F. Choke.	1	.15
12	13808-A	-	Lock Bar Assembly.	1	.50
13	13010	-	Mounting Stud Bracket.	1	.15
14	13011	-	Motor Shaft Mounting Bracket	1	.25
15	13012	-	Motor and Relay Mtg. Bracket	1	.25
16	13017	-	Oscillator Panel	1	.25
17	13018	-	Program Holder Spring.	2	.10
18	13021	-	Slug Ejector Arm	1	.15
19	13106	-	Switch Support Bracket (Top)	1	.35
20	86013	-	.05 MFD 400 Volt Tub. Cond	1	.10
21	13805	-	Bevel Gear Box Assembly.	1	.45
22	13029	-	Relay Trip Cam	3	.15
23	13031	-	Program Holder Spring (Right).	1	.10
24	13032	-	Program Holder Spring (Left)	1	.10
25	13033	-	Relay Trip Lever	1	.10
26	13026	-	Slug Receptacle Cover.	1	.10
27	13036	-	Selector Switch Mtg. Stud (Lower). . .	2	.10
28	13037	-	Selector Switch Mtg, Stud (Upper Right)	1	.10
29	13038	-	Line Cord Plug and Socket Assembly . .	1	.50
30	13039	-	Slug Ejector Mechanism Assembly (5¢) .	1	4.50
31	14087	-	Coin Switch.	1	.45
32	13141	-	Relay Assembly	1	1.40
33	13802	-	Motor Assembly	1	5.00
34	13803	-	Button Release Lever Cam Assembly. . .	1	.15
35	13050	-	Contact Wiper Arm Assembly	1	.50
36	13052	-	Switch Mtg. Stud (Upper Left).	1	.15
37	13056	-	Transformer.	1	1.35
38	13129	-	Oscillator Coil Assembly	1	1.25
39	86059	-	Dual .05 MFD 900 V. A. C. Tub. Cond. .	1	.35
40	13065	-	Lock Assembly.	1	.75
41	14089	-	Relay Shield (Front)	1	.10
42	13078	-	Chassis Name Plate	1	.10
43	13081	-	Bevel Gear Box Strap Stud.	1	.10
44	13084	-	Selection Switch Button.	21	.10
45	13089	-	Selection Switch (Right)	1	2.25
46	13090	-	Selection Switch (Left).	1	2.25
47		-	Type 70L7GT Tube	1	1.51
48	13101	-	Program Light Socket	8	.05
49		-	Grounding Switch (Part of Item 45 & 46)	2	
50	13800-A	-	Coin Box Assembly.	1	.75
51	87518	-	12 MFD 250 V Lytic Cond.	1	.35
52	82706	-	39,000 OHM Resistor 10% 1 Watt	1	.07
53	84220	-	8 Prong Socket	1	.15
54	13114	-	Rubber Washer.	2	.05
55	13112-A	-	Contact Blade Assembly	1	.25
56	13110	-	Motor Switch	1	.20
57	13111	-	Shorting Switch.	1	.15
58	13016	-	Button Release Lever	1	.15
59	13019	-	Button Release Link.	1	.15
60	13107	-	Button Release Lever Pin	1	.05
61		-	Push Rod (Part of Item 45 and 46). . .		
62		-	Latch Bar (Part of Item 45 and 46) . .		

FIG. 14 - SCHEMATIC DIAGRAM OF MODEL WS-10Z WALL-O-MATIC (5¢-10¢-25¢)



ITEM	PART NO.		DESCRIPTION	PRICE
R1	82119	-	15,000 Ohm 20% 1/2 Watt	$ .07
R2	82706	-	39,000 Ohm 10% 1 Watt	.10
R3	81043	-	135 Ohm 10% 5 Watt.	.20
C1A, C1B	86059	-	Dual .05 Mfd. 900 V. Tub. Condenser	.35
C2	85008	-	.0005 Mfd. Mica Condenser	.20
C3	86013	-	.05 Mfd. Tub. Condenser 400 V	.10
C4	87518	-	12 Mfd. 250 V. Electrolytic	.35
M1	13129	-	Oscillator Coil	1.25
M2	S-21261	-	R.F. Choke.	.15
M3	13526	-	Power Transformer	2.00
M4	13538	-	Main Switch	.45
M5		-	Type 70LT6T Tube.	1.51
M6	10242	-	Lamps Mazda #51	.08
M7	13366	-	B+ Switch	.25
M8	13348	-	Selector Disc	.75
M9	13503	-	Selector Switch R.H	2.25
M10	13504	-	Selector Switch L.H	2.25
M11	13368	-	Relay "Drop Out" Switch	.50
M12	13361	-	Motor Switch Assembly	.25
M13	13338	-	Motor Assembly.	5.00
M14	13466A	-	Ratchet Wheel Assembly.	.60
M14	F-3851	-	Credit Magnet Coils (1 Pair).	1.00
M16	13110	-	Shorting Switch	.20
M17	13110	-	Motor Carry-Over Switch	.20
M18	13377	-	10¢ Coin Relay.	1.80
M19	13378	-	25¢ Coin Relay.	1.85
M20A, M20B, M20C	13524	-	Coin Switch Assembly.	1.25
M21	13547	-	Contact Arm Assembly.	.75
M22	13594	-	Interlocking Relay.	1.75

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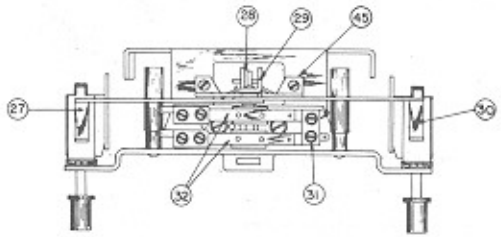
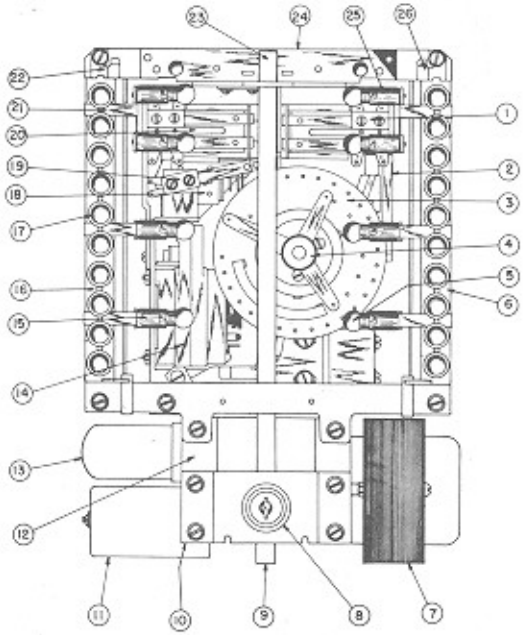
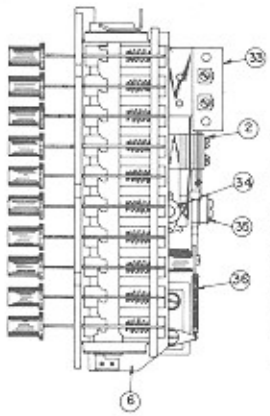
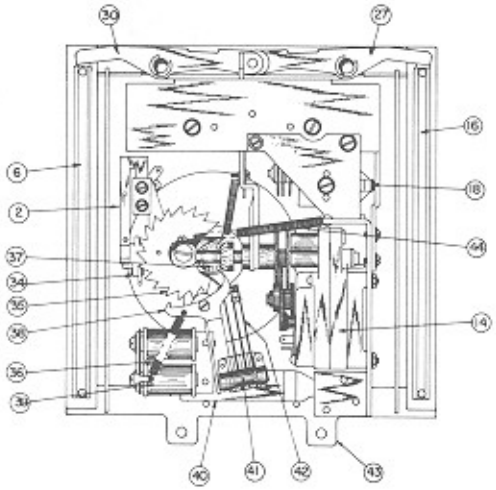
FIG. 15 - CREDIT AND SWITCH ASSEMBLY FOR MODEL WS-10Z WALL-O-MATIC (5¢-10¢-25¢)





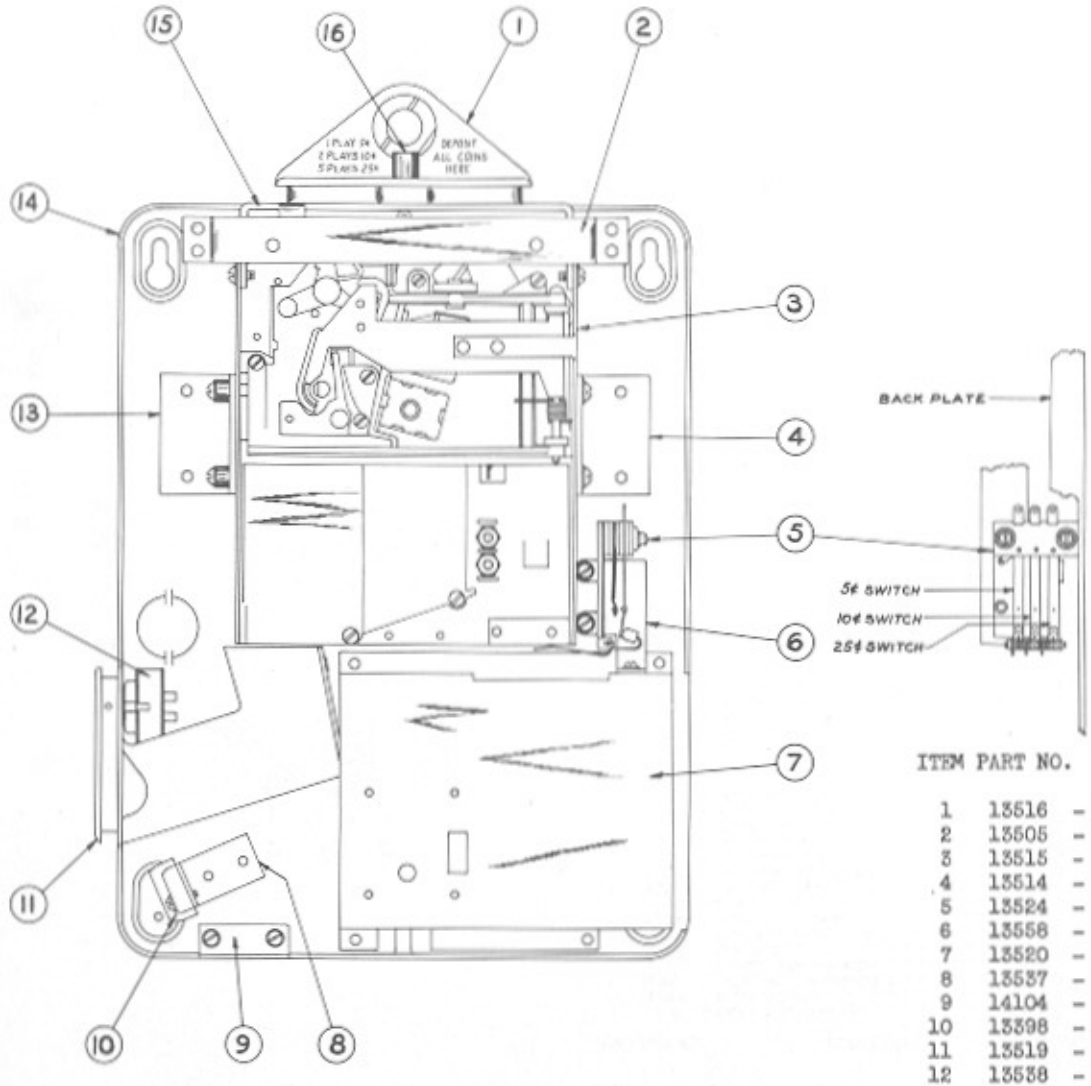




ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	13578	- Relay (25¢ Credit)	1	$ 1.95
2	13568	- Relay Switch	1	.30
3	13607-A	- Selector Disc Assembly	1	.75
4	13547	- Contact Arm Assembly	1	.75
5	10242	- Lamp G.E. #51	8	.08
6	13505	- Selector Switch (R.H.)	1	2.25
7	13526	- Power Transformer	1	2.00
8	13065	- Lock Assembly	1	.75
9	13509	- Lock Bar (Short)	1	.10
10	13512	- Lock Mounting Bracket	1	.15
11	13129	- Oscillator Coil	1	1.25
12	13525	- Oscillator Panel	1	.25
13		- 70L7GT Tube	1	1.51
14	13538	- Motor	1	5.00
15	13101	- Lamp Socket	4	.05
16	13504	- Selector Switch (L.H.)	1	2.25
17	13084	- Selector Buttons	20	.10
18	13594	- Relay (Interlock)	1	1.75
19	13566	- B+ Switch	1	.25
20	13577	- Relay (10¢ Credit)	1	1.90
21	13545	- Dual Lamp Socket (L.H.)	1	.10
22	13532	- Program Holder Clip (L.H.)	1	.10
23	13508	- Lock Bar (Long)	1	.15

ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
24	13506	- Cross Bar (Top)	1	$ .25
25	13542	- Dual Lamp Socket (R.H.)	1	.10
26	13031	- Program Holder Clip (R.H.)	1	.10
27	13020	- Button Release Lever (L.H.)	1	.15
28	13606-A	- Cam Trip Assembly	1	.45
29	12893-A	- Cam Assembly Release Lever	1	.15
30	13019	- Button Release Lever (R.H.)	1	.15
31	13380	- Contact Blade Assembly	1	.15
32	13110	- Switch	2	.20
33	13608	- Terminal Strip Assembly	1	.25
34	13494	- Cancel Cam Assembly	1	.25
35	13466-A	- Ratchet Wheel Assembly	1	.60
36	F-9465	- Escapement Spring	1	.05
37	13028	- Bevel Gears	2	.10
38	13560	- Ratchet Escapement	1	.10
39	F-3851	- Credit Magnets (1 Pair)	1	1.00
40	13544	- Selector Disc and Rear Bracket	1	.50
41	81045	- Resistor (135 Ohm 5 Watt 10%) (Wire Wound)	1	.20
42	13561	- Motor Switch	1	.25
43	13507	- Cross Bar (Lower)	1	.25
44	F-9425	- Ratchet Return Spring	1	.05
45	13477	- Guide Bracket	1	.10

FIG. 16 - BACK PLATE ASSEMBLY FOR TYPE WS-10Z WALL-O-MATIC SELECTOR (5¢-10¢-25¢)



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	13516	- Coin Drop Slot.	1	$ .75
2	13505	- Switch Stud Bracket	1	.10
3	13515	- Slug Ejector Unit	1	10.50
4	13514	- Slug Ejector Mounting Bracket . . .	1	.10
5	13524	- Coin Switch Assembly.	1	1.25
6	13558	- Coin Switch Bracket	1	.10
7	13520	- Coin Box Guide.	1	.15
8	13537	- Terminal Strip Bracket.	1	.10
9	14104	- Bottom Hole Cover	1	.10
10	13398	- Terminal Strip.	1	.25
11	13519	- Slug Return Cup	1	.75
12	13538	- Main Switch "OFF-ON".	1	.45
13	13563	- Slug Ejector Mounting Bracket . . .	1	.10
14	13513	- Back Plate Assembly	1	3.00
15	13557	- Drop Slot Mounting Bracket.	1	.15
16	13084	- Scavenger Button.	1	.10

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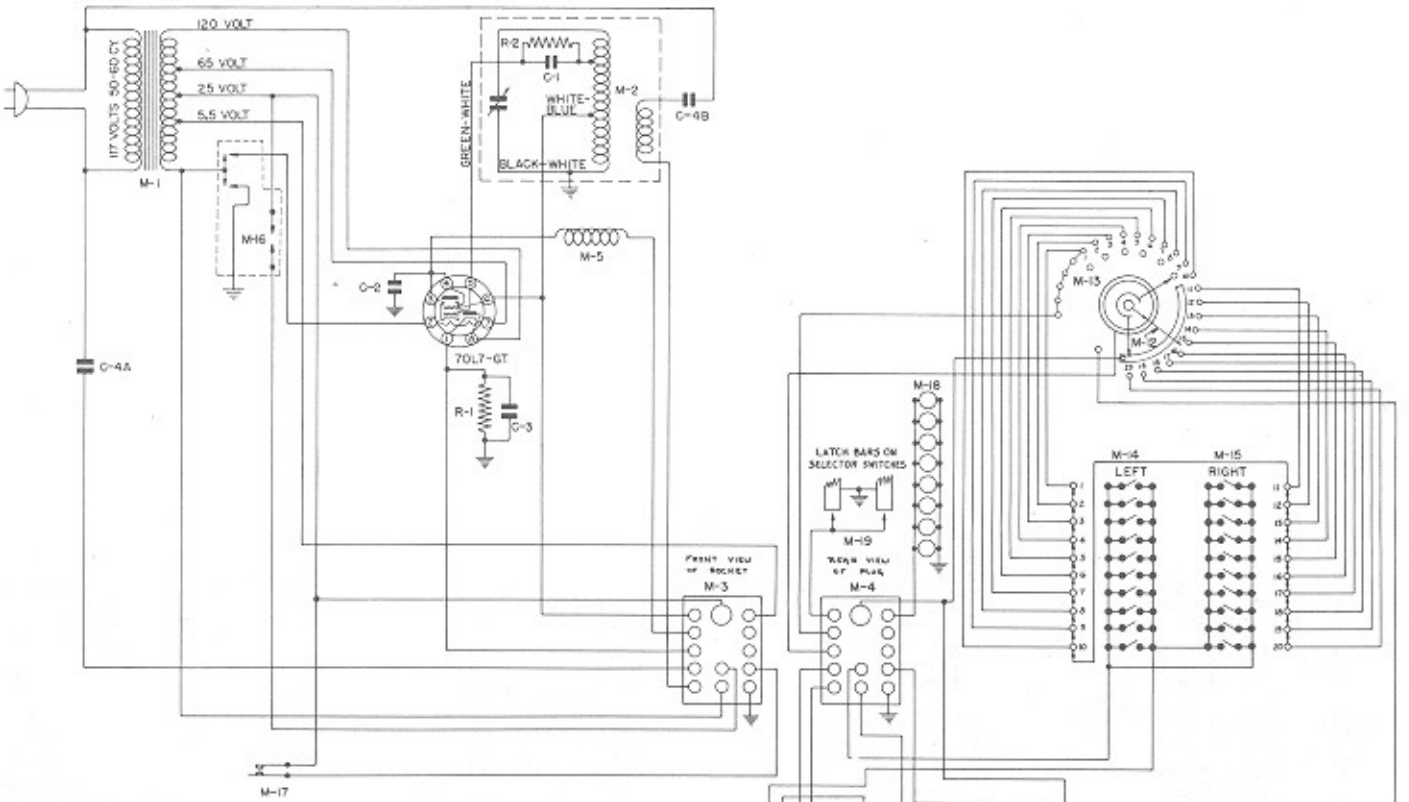
FIG. 17 - SCHEMATIC DIAGRAM OF MODEL WB-5Z BAR-O-MATIC (5¢)



ITEM	PART NO.	DESCRIPTION	PRICE
M1	13294	- Power Transformer.	$2.00
M2	13295	- Oscillator Coil Assembly	1.25
M3	13297	- Socket (13 Contact).	.20
M4	13384	- Plug (13 Contact).	.15
M5	13296	- R.F. Choke	.25
M6	13338	- Motor.	5.00
M7	F-3851	- Credit Magnet Coils (1 Pair)	1.00
M8	13486-A	- Credit Ratchet Wheel Assembly.	.60
M9	13361	- Motor Switch	.25
M10	13110	- Switch	.20
M11	13110	- Switch	.20
M12	13347	- Contact Arm Assembly	1.00
M13	13348	- Selector Disc Assembly	.75
M14	13331	- Selector Switch Assembly L.H	2.40
M15	13330	- Selector Switch Assembly R.H	2.40
M16	13538	- Main Switch Off-On.	$ .45
M17	14087	- Coin Switch	.50
M18	10242	- G.E. Lamps #51.	.08
M19		- Latch Bar Switches.	
M20	13594	- Interlocking Relay.	1.75
R1	82706	- 39,000 Ohm Resistor 1 Watt.	.10
R2	82438	- 15,000 Ohm Resistor 1/2 Watt.	
		(In Oscillator Coil Assembly)	.07
C1	85008	- Mica Condenser .0005 Mfd.	.20
		(In Oscillator Coil Assembly)	.20
C2	86013	- Tubular Condenser .05 Mfd. 400 Volt	.10
C3	87518	- Elect. Condenser 12 Mfd. 250 Volt	.55
C4A, C4B	86059	- Dual .05 Condenser.	.55

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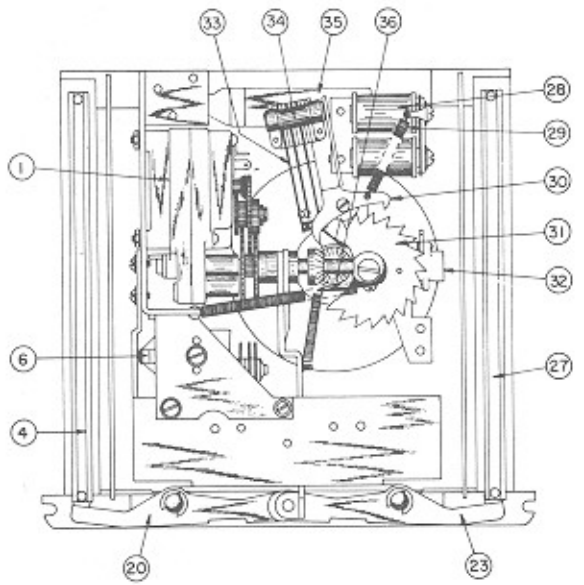
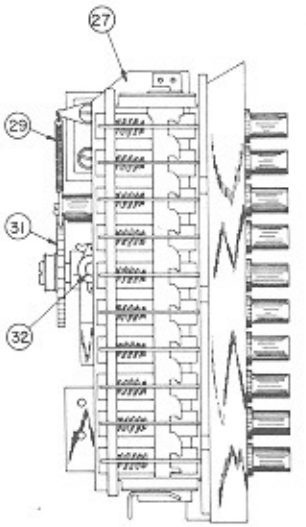
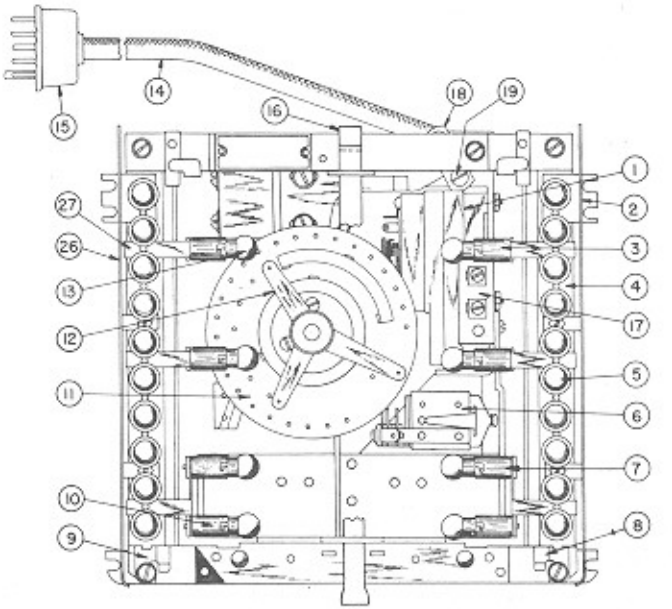
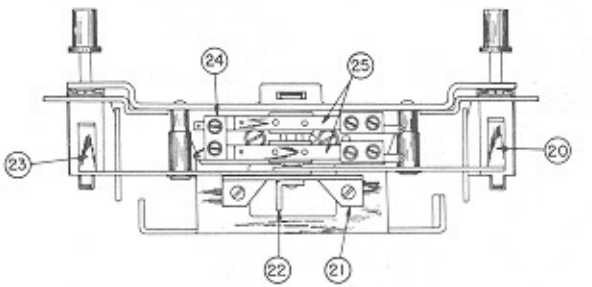
FIG. 18 - CREDIT AND SWITCH ASSEMBLY FOR MODEL WB-5Z BAR-O-MATIC (5¢)









ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	13558	- Motor	1	$ 5.00
2	13565	- Light Shield (R.H.) Metal Case Only	1	.10
3	13101	- Lamp Socket Assembly	4	.05
4	13550	- Selector Switch (R.H.)	1	2.40
5	13552	- Push Buttons	20	Each .10
6	13594	- Relay (Interlock)	1	1.75
7	13542	- Dual Lamp Socket Assembly (R.H.)	1	.10
8	13051	- Program Holder Clip (R.H.)	1	.10
9	13052	- Program Holder Clip (L.H.)	1	.10
10	13543	- Dual Lamp Socket Assembly (L.H.)	1	.10
11	13607	- Selector Disc Assembly	1	.75
12	13547	- Contact Arm Assembly	1	1.00
13	10242	- Lamp G.E. #51	8	.08
14	13583	- Cable	1	.75
15	13584	- Plug	1	.15
16	13456-A	- Lock Bar	1	.20
17	13608	- Terminal Strip Assembly	1	.25

ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
18	13542	- Spring	1	$ .10
19	13541	- Shoulder Screw	2	.10
20	13019	- Button Release Lever (R.H.)	1	.15
21	13477	- Guide Bracket	1	.10
22	13563	- Cam Arm Release Lever	1	.10
23	13020	- Button Release Lever (L.H.)	1	.15
24	13580	- Switch Rest	1	.15
25	13110	- Switch	2	.20
26	13566	- Light Shield (L.H.) Metal Case Only	1	.10
27	13551	- Selector Switch (L.H.)	1	2.40
28	F-3851	- Magnets (1 Pair)	1	1.00
29	F-9465	- Escapement Spring	1	.05
50	13560	- Ratchet Escapement	1	.10
51	13466-A	- Ratchet Wheel Assembly	1	.60
52	13494	- Cancel Cam Assembly	1	.25
53	13561	- Motor Switch	1	.25
54	81043	- Resistor 135 OHM 5 Watt (Wire Wound)	1	.20
55	13544	- Selector Disc and Gear Bracket	1	.50
56	13028	- Bevel Gears	2	.10

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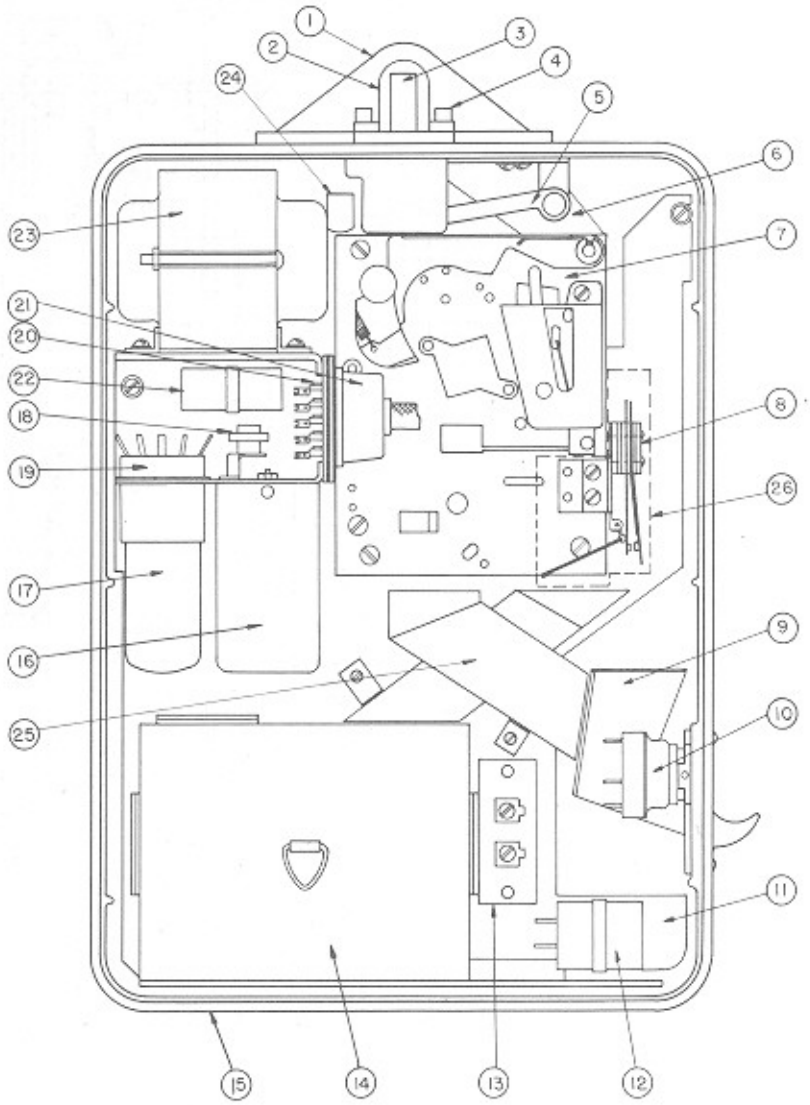
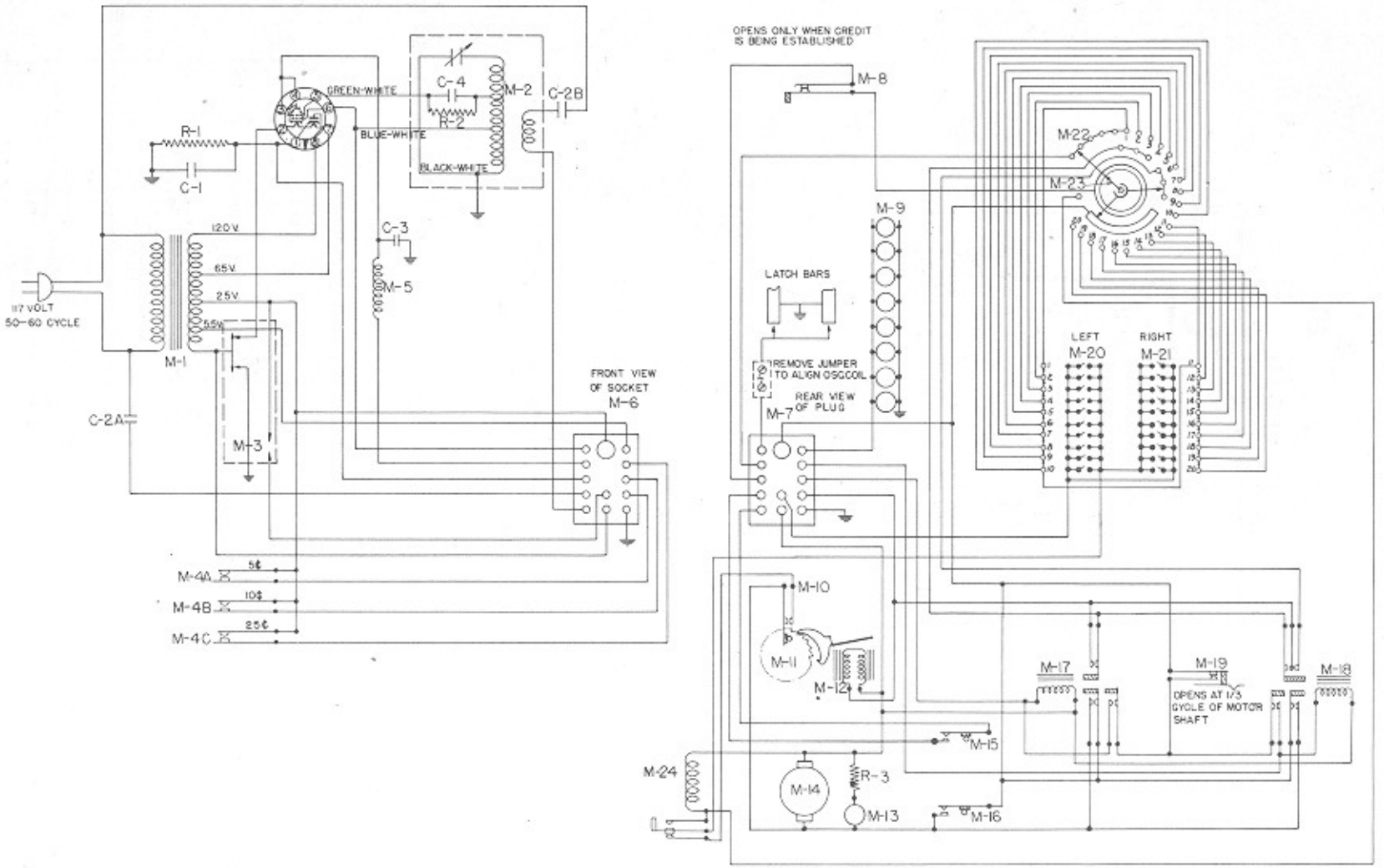
FIG. 19 - REAR VIEW OF MODEL WB-5Z BAR-O-MATIC (5¢)



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	13480	- Coin Drop Slot. .	1	$ .75
2	13308	- Lamp Cover. . . .	1	.25
3	13314	- Scavenger Button.	1	.10
4	71248	- Socket Screw Fil. Head.	2	for .05
5	13600-A	- Scavenger Lever Assembly. . . .	1	.15
6	13310-A	- Coin Chute Assembly	1	.20
7	13039	- Slug Ejector Unit	1	4.50
8	14087	- Coin Switch . . .	1	.50
9	13597-A	- Slug Return Cup Assembly. . . .	1	.75
10	13538	- Switch "OFF" - "ON".	1	.45
11	13399	- Line Cord Bracket	1	.10
12	86059	- Line Condenser. .	1	.35
13	13599-A	- Terminal Strip Assembly. . . .	1	.25
14	13393	- Cash Box.	1	.75
15	13601-A	- Case (Metal)(Sold Complete Only).	1	$10.50
15	13601-A	- Case (Bakelite) .	1	5.75
16	13295	- Oscillator Coil Assembly. . . .	1	1.25
17		- 70L7GT Tube . . .	1	1.51
18	13296	- R.F. Choke. . . .	1	.25
19	84220	- Tube Socket . . .	1	.10
20	13297	- Socket.	1	.20
21	13385	- Plug.	1	.10
22	87518	- Elect. Cond. 12 Mfd. 250 Volt .	1	.35
23	13294	- Power Transformer	1	2.00
24	13470	- Escutcheon Release Lever. . .	1	.15
25	13598-A	- Coin and Slug Chute Assembly .	1	.55
26	13587-A	- Coin Switch Shield	1	.10

F-9975

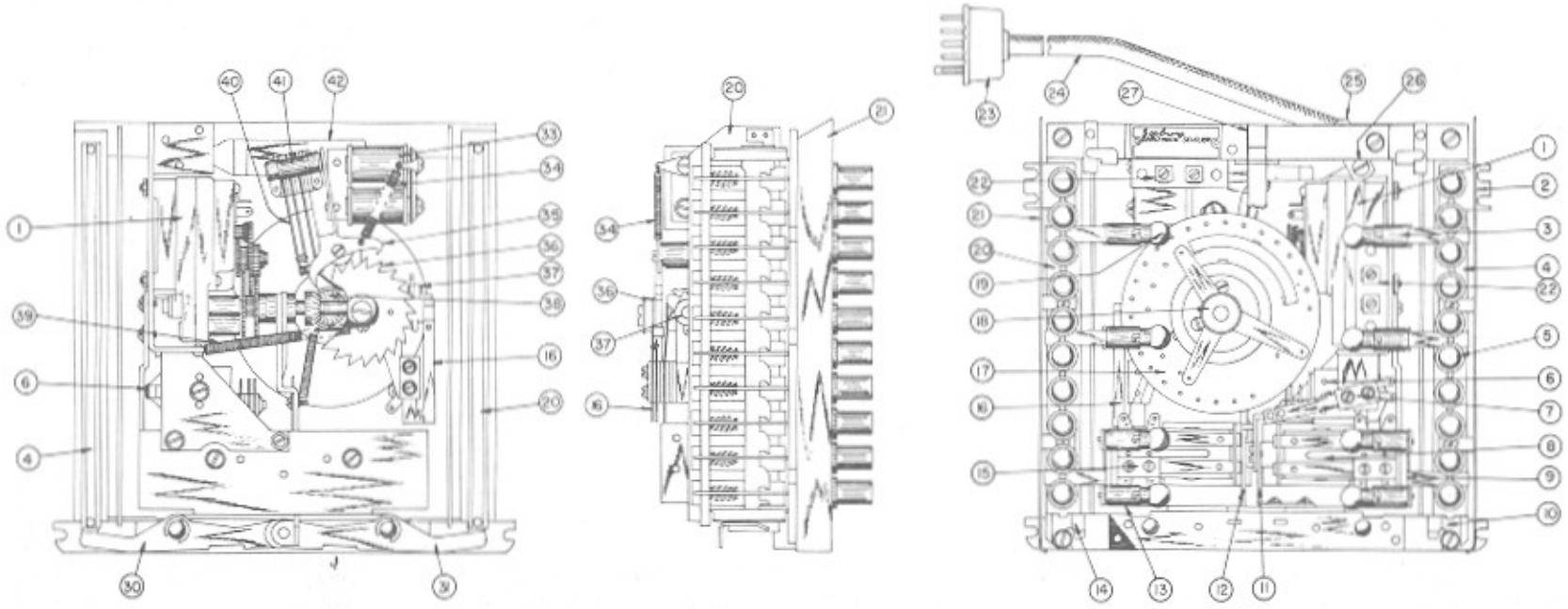
FIG. 20 - SCHEMATIC DIAGRAM OF MODEL WB-IZ BAR-O-MATIC (5¢-10¢-25¢)



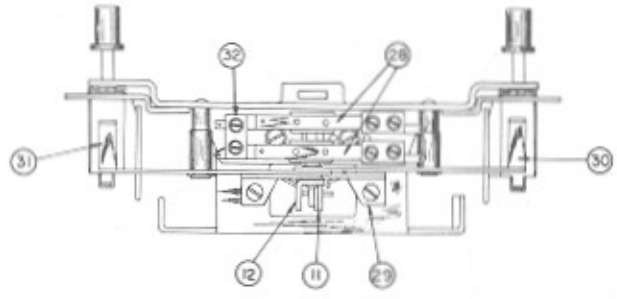
F-9958

ITEM	PART NO.		DESCRIPTION	PRICE
M1	13294	-	Power Transformer.	$2.00
M2	13295	-	Oscillator Coil Assembly	1.25
M3	13538	-	Switch	.45
M4A, M4B, M4C	13298	-	Coin Switch Assembly	1.25
M5	13296	-	R.F. Choke	.25
M6	13297	-	Socket (13 Contact).	.20
M7	13384	-	Plug (13 Contact).	.15
M8	13366	-	Switch Bi Circuit.	.25
M9	10242	-	Lamps G.E. #51	.08
M10	13361	-	Motor Switch	.25
M11	13355	-	Credit Ratchet Wheel	.60
M12	F-3851	-	Credit Magnet Coils (1 Pair)	1.00
M13	10242	-	Lamp G.E. #51 ("Wait" Light)	.08
M14	13338	-	Motor.	5.00
M15	13110	-	Switch	.20
M16	13110	-	Switch	.20
M17	13377	-	Relay (10¢ Credit)	1.90
M18	13378	-	Relay (25¢ Credit)	1.95
M19	13368	-	Relay Switch	.30
M20	13331	-	Selector Switch Assembly L.H	2.40
M21	13330	-	Selector Switch Assembly R.H	2.40
M22	13348	-	Selector Disc Assembly	.75
M23	13347	-	Contact Arm Assembly	1.00
M24	13594	-	Interlocking Relay	1.75
C1	87518	-	12 Mfd. 250 V. Electrolytic Condenser.	.35
C2A, C2B	86059	-	Dual .05 Mfd. 400 V. Condenser	.35
C3	86013	-	.05 Mfd. 400 Volt Condenser.	.10
C4	85008	-	Mica Condenser .005 Mfd. (In Oscillator Coil Assembly)	.20
R1	82706	-	Resistor 39,000 Ohm 1 Watt	.10
R2	82438	-	Resistor 15,000 Ohm 1/2 Watt (In Oscillator Coil Assembly)	.07
R3	81043	-	Resistor 135 Ohm Wire Wound.	.20

FIG. 21 - CREDIT AND SWITCH ASSEMBLY FOR MODEL WB-IZ BAR-O-MATIC (5¢, 10¢, 25¢)



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	13338	Motor.	1	$5.00
2	13565	Light Shield (R.H.) (Metal Case Only) . .	1	.10
3	13101	Lamp Socket Assembly . . .	1	.05
4	13330	Selector Switch (R.H.)	1	2.40
5	13332	Push Button (Set of 20)	1 Each	.10
6	13594	Relay (Interlock).	1	1.75
7	13566	Switch	1	.25
8	13577	Relay Assembly (10¢ Credit) .	1	1.90
9	13542	Dual Lamp Socket Assembly (R.H.)	1	.10
10	13031	Program Holder Cup (R.H.) . .	1	.10
11	13606-A	Cam Trip Assembly.	1	.45
12	13363	Cam Arm Release Lever.	1	.15
13	13543	Dual Lamp Socket Assembly (L.H.)	1	.10
14	13032	Program Holder Clip (L.H.). .	1	.10
15	13378	Relay Assembly 25¢ Credit . .	1	1.95
16	13568	Switch (Relay Drop Out). . .	1	$ .50
17	13607-A	Selector Disc Assembly . . .	1	.75
18	13547	Contact Arm Assembly	1	1.00
19	10242	Lamp (G.E. #51). .	8	.08
20	13331	Selector Switch (L.H.) . . .	1	2.40
21	13666	Light Shield (L.H.) (Metal Case Only) . .	1	.10
22	13608-A	Terminal Strip Assembly . . .	2	.25
23	13584	Plug 13 Contact.	1	.15
24	13585	Cable.	1	.75
25	13542	Spring	1	.10
26	13541	Shoulder Screw .	2	.10
27	13456-A	Lock Bar Assembly.	1	.20
28	13110	Switch	2	.20
29	13477	Guide Bracket. .	1	.10
30	13019	Button Release Lever (R.H.)..	1	.15
31	13020	Button Release Lever (L.H.)..	1	.15
32	13380	Switch Rest . . .	1	.15
33	F-3851	Magnets (1 Pair)	1	1.00
34	F-9465	Escapement Spring	1	.05



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
35	13560	Ratchet Escapement	1	$ .10
36	13466-A	Ratchet Wheel Assembly.	1	.60
37	14494	Cancel Cam Assembly	1	.25
38	13029	Bevel Gears . . .	2	.10
39	F-9425	Ratchet Spring. .	1	.05
40	13561	Motor Switch. . .	1	.25
41	01045	Resistor 135 OHM 5 Watt (Wire Wound).	1	.20
42	13544	Selector Disc and Gear Bracket. .	1	.50

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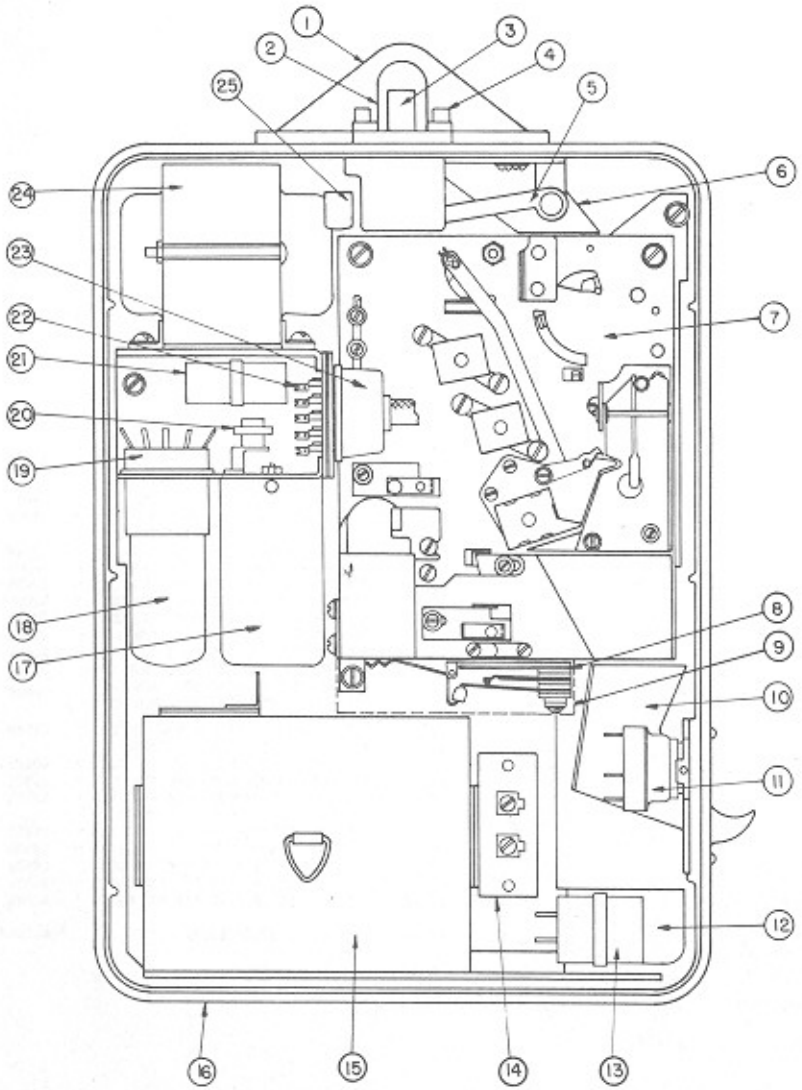
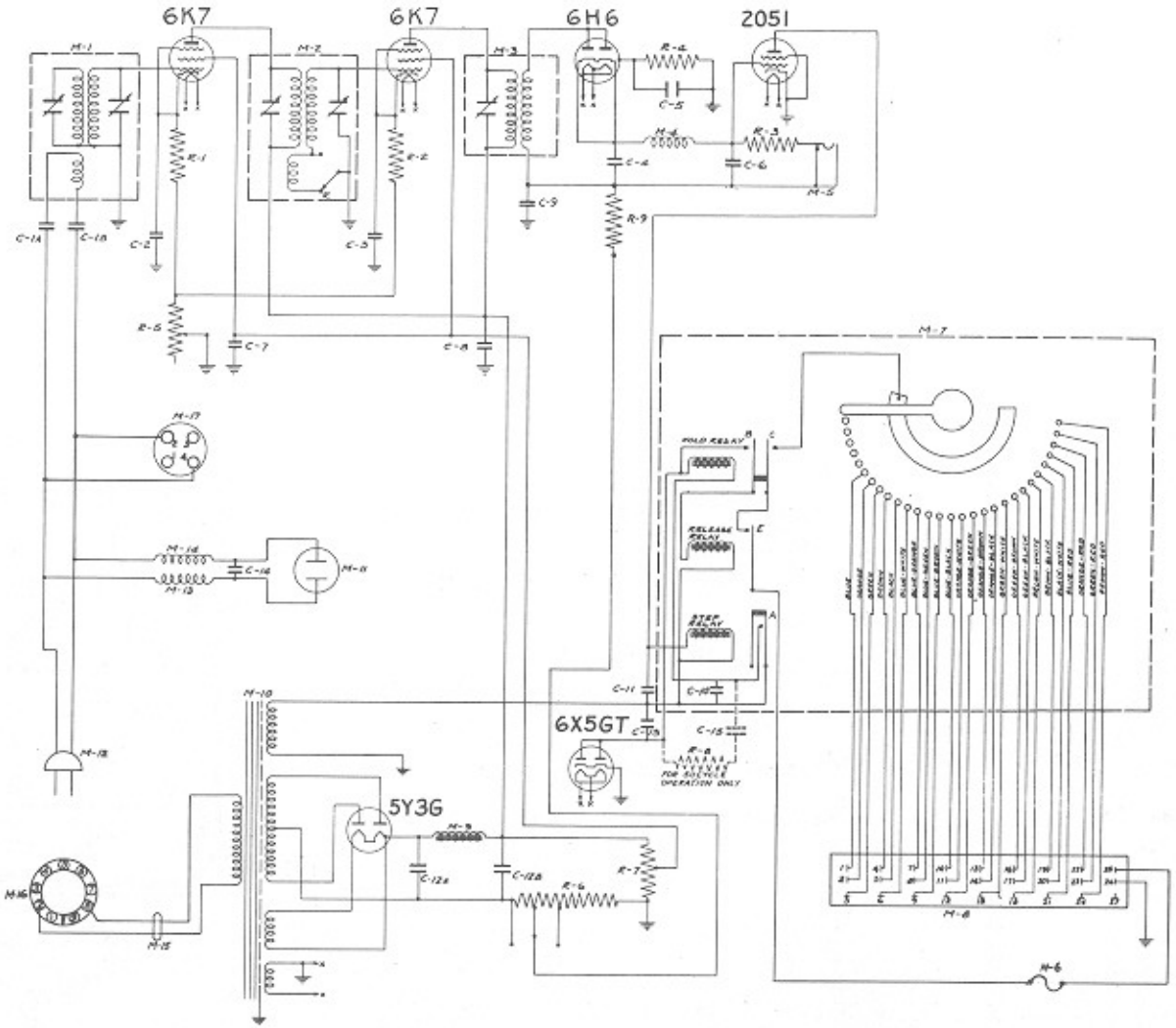
FIG. 22 - REAR VIEW OF MODEL WB-IZ BAR-O-MATIC (5¢-10¢-25¢)



ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	13307	-	Coin Drop Slot.	1	$ .75
2	13308	-	Lamp Cover.	1	.25
3	13314	-	Scavenger Button.	1	.10
4	71248	-	Socket Screw Fil. Head.	2	For .05
5	13600-A	-	Scavenger Lever Assembly.	1	.15
6	13310-A	-	Coin Chute Assembly	1	.20
7	13515	-	Slug Ejector...	1	10.50
8	13298	-	Coin Switch	1	1.25
9	13343	-	Switch Cover.	1	.10
10	13492-A	-	Slug Return Cup Assembly.	1	.75
11	13538	-	Switch "OFF" - "ON"	1	.45
12	13399	-	Line Cord Bracket	1	.10
13	86059	-	Line Condenser.	1	.35
14	13599-A	-	Terminal Strip Assembly	1	.25
15	13393	-	Cash Box.	1	.75
16	13601-A	-	Case (Metal) (Sold Complete Only) . .	1	10.50
	13601-A	-	Case (Bakelite)	1	5.75
17	13295	-	Oscillator Coil	1	1.25
18		-	70L7GT Tube	1	1.51
19	84220	-	Tube Socket	1	.15
20	13296	-	R.F. Choke.	1	.25
21	87518	-	Elect. Cond. 12 MFD. 250 Volt	1	.35
22	13297	-	Socket.	1	.20
23	13385	-	Plug.	1	.10
24	13294	-	Transformer	1	2.00
25	13470	-	Escutcheon Release Lever.	1	.15

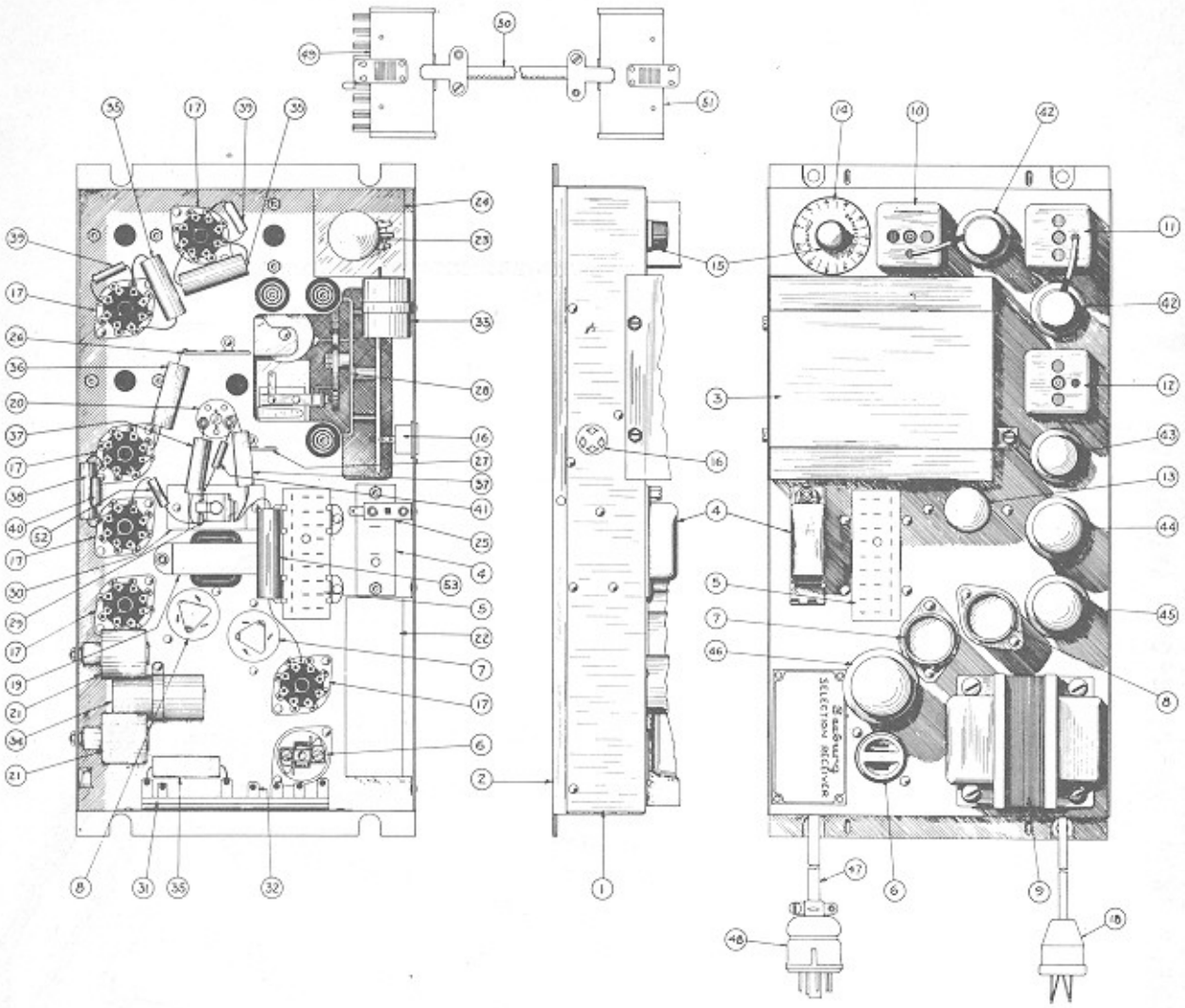
FIG. 23 - SCHEMATIC DIAGRAM OF TYPE SR-4 SELECTION RECEIVER

ITEM	PART NO.	DESCRIPTION	PRICE
R1	82426	- 1500 Ohm 1/2 Watt ± 10%.	$ .07
R2	82426	- 1500 Ohm 1/2 Watt ± 10%.	.07
R3	82450	- 150,000 Ohm 1/2 Watt ± 10%	.07
R4	82468	- 4.7 Meg. Ohm 1/2 Watt ± 10%. . . .	.07
R5	11515	- 40,000 Ohm Variable Sensitivity Control.	.75
R6	11392	- Candohn 790-132-132 Ohms ± 10% . .	.25
R7	10833	- Candohn 5200-4000 Ohms ± 10% . . .	.40
R8	82106	- 220 Ohm 1/2 Watt ± 20% (Wire Wound)	.07
R9	82442	- 33,000 Ohm 1/2 Watt ± 10%.	.07
C1A, C1B	86061	- .05 Mfd. 600 Volt Tub. Condenser. - .05 Mfd. 600 Volt Tub. Condenser.	.25
C2	86008	- .1 Mfd. 200 Volt Tub. Condenser. .	.10
C3	86008	- .1 Mfd. 200 Volt Tub. Condenser. .	.10
C4	86015	- .05 Mfd. 400 Volt Tub. Condenser .	.10
C5	86009	- .05 Mfd. 200 Volt Tub. Condenser .	.10
C6	86015	- .05 Mfd. 400 Volt Tub. Condenser .	.10
C7	86008	- .1 Mfd. 200 Volt Tub. Condenser. .	.10
C8	86003	- .1 Mfd. 400 Volt Tub. Condenser. .	.10
C9	87521	- 10 Mfd. 50 Volt Electrolytic Condenser.	.25
C10	86015	- .01 Mfd. 600 Volt Tub. Condenser .	.10
C11	11076	- 5.0 Mfd. 300 Volt Paper Condenser.	1.25
C12A, C12B	87517	- 20.0 Mfd. 450 Volt Electrolytic Condenser. . . . . - 20.0 Mfd. 450 Volt Electrolytic Condenser.	.65
C13	87525	- 15.0 Mfd. 450 Volt Electrolytic Condenser.	.45
C14	86062	- .5 Mfd. 400 Volt Tubular Condenser	.25
C15	87529	- 10.0 Mfd. 300 Volt Non-polarized Condenser.	.40
M1	30202	- 1st R.F. (Input) Transformer . . .	.75
M2	30203	- 2nd R.F. (Interstate) Transformer.	.85
M3	30204	- 3rd R.F. (Diode) Transformer . . .	.75
M4	10845	- R.F. Choke	.25
M5	11188	- Jack	.35
M6	12224	- 1/2 Amp. Solenoid Fuse	.15
M7	50142	- Stepswitch Assembly.	10.50
M8	12022	- 27 Prong Male Socket	1.00
M9	10840	- Filter Choke	.60
M10	12185	- Power Transformer.	2.75
M11	11401	- 2 Prong Receptacle	.20
M12	P-1369	- Line Cord.	.85
M13	10841	- R.F. Choke	.35
M14	10841	- R.F. Choke	.35
M15	11474	- Line Cord.	.15
M16	12004	- 9 Prong Plug	.25
M17	12032	- Small 4 Contact Socket	.15



F-9950

FIG. 24 - TYPE SR-4 SELECTION RECEIVER SUB-PANEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
1	12182	- Sub Panel.	1	$ 1.25
2	50144	- Bottom Plate	1	.75
3	50138	- Step Switch Cover.	1	.60
4	12030	- Fuse Block Assembly.	1	.20
5	12022	- 27 Contact Male Socket	1	1.00
6	11401	- 2 Prong Receptacle	1	.20
7	87517	- 20-20 Mfd. 450 V. Electrolytic Cond.	1	.65
8	87523	- 15 Mfd. 450 V. Electrolytic Cond	1	.45
9	12185	- Power Transformer.	1	2.75
10	30202	- 1st R.F. Transformer Shield.	1	.75
11	30203	- 2nd R.F. Transformer and Shield.	1	.85
12	30204	- 3rd R.F. Transformer and Shield.	1	.75
13	S-21490	- Plug Button.	1	.10
14	11313	- Sensitivity Control Escutcheon	1	.15
15	11020	- Sensitivity Control Knob	1	.10
16	12032	- 4 Prong Socket	1	.15
17	84220	- 8 Prong Socket Octal	6	ea. .15
18	F-1369	- Line Cord and Plug	1	.85
19	10840	- Filter Choke	1	.60
20	10843	- R.F. Choke	1	.25
21	10841	- R.F. Choke	2	ea. .35
22	11076	- 5.0 Mfd. 300 V. Condenser.	1	1.25
23	11315	- Sensitivity Control.	1	.75
24	11423	- Sensitivity Control Insulator.	1	.10
25	11465	- Terminal Strip - 1 Lug	1	.10
26	10837	- Terminal Strip - 3 Lug	1	.10
27	10062	- Terminal Strip - 1 Lug	1	.10

ITEM	PART NO.	DESCRIPTION	NO.REQ.	PRICE
28	50142	- Step Switch Assembly.	1	$10.50
29	11188	- Jack.	1	.35
30	11484	- Jack Bracket.	1	.10
31	10833	- Candohm Resistor.	1	.40
32	11392	- Candohm Resistor.	1	.25
33	86061	- Dual - .05 Mfd. 600 V. Tubular Cond .	1	.25
34	86062	- Dual .5 Mfd. 400 V. Tubular Cond. . .	1	.25
35	86008	- .1 Mfd. 200 Volt Tubular Cond	3	ea. .10
36	86003	- .1 Mfd. 400 Volt Tubular Cond	1	.10
37	86013	- .05 Mfd. 400 Volt Tubular Cond.	2	ea. .10
38	86009	- .05 Mfd. 200 Volt Tubular Cond.	1	.10
39	82426	- 1500 Ohm 1/2 Watt Resistor + 10%.	2	ea. .07
40	82468	- 4.7 Megohm 1/2 Watt Resistor + 10%.	1	.07
41	82450	- 150,000 Ohm 1/2 Watt Resistor + 10% .	1	.07
42		- Type 6K7 Tube	2	ea. .72
43		- Type 6H6 Tube	1	.72
44		- Type 2051 Tube.	1	2.10
45		- Type 6X5GT Tube	1	.72
46		- Type 5Y3G Tube.	1	.44
47	11474	- Power Cord.	1	.15
48	12004	- 9 Prong Plug.	1	.25
49	12020	- 27 Prong Male Plug.	1	1.00
50	12021	- 27 Wire Cable	1	1.50
51	12026	- 27 Prong Female Plug.	1	1.00
52	82442	- 33,000 Ohm 1/2 Watt Resistor + 10%.	1	.07
53	87521	- 10 Mfd. 50 V. Electrolytic Cond	1	.25

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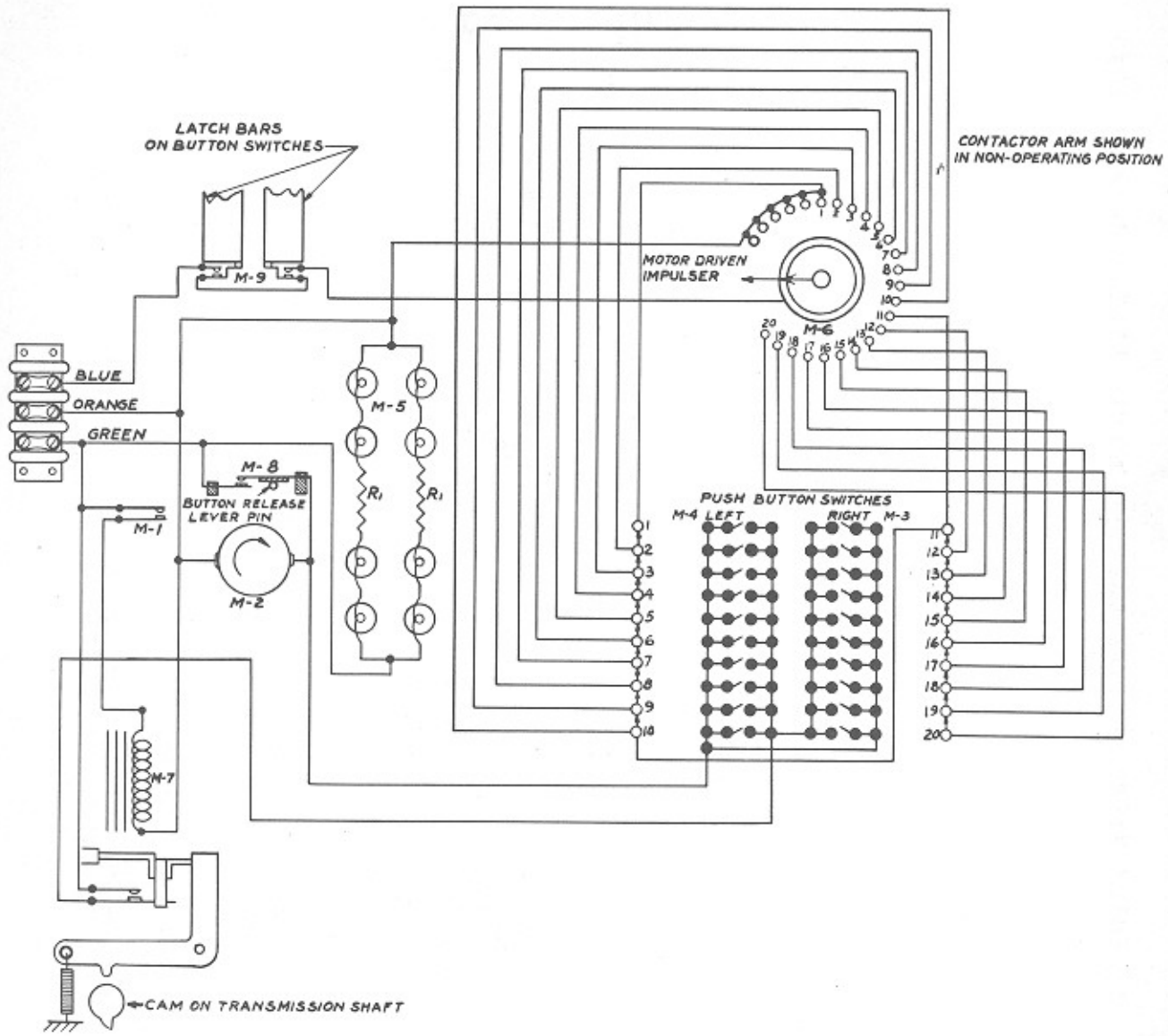
FIG. 25 - BLOCK WIRING DIAGRAM OF TYPE SR-4 SELECTION RECEIVER IN MODELS 7800, 7850, 8800, AND 9800

F-6407

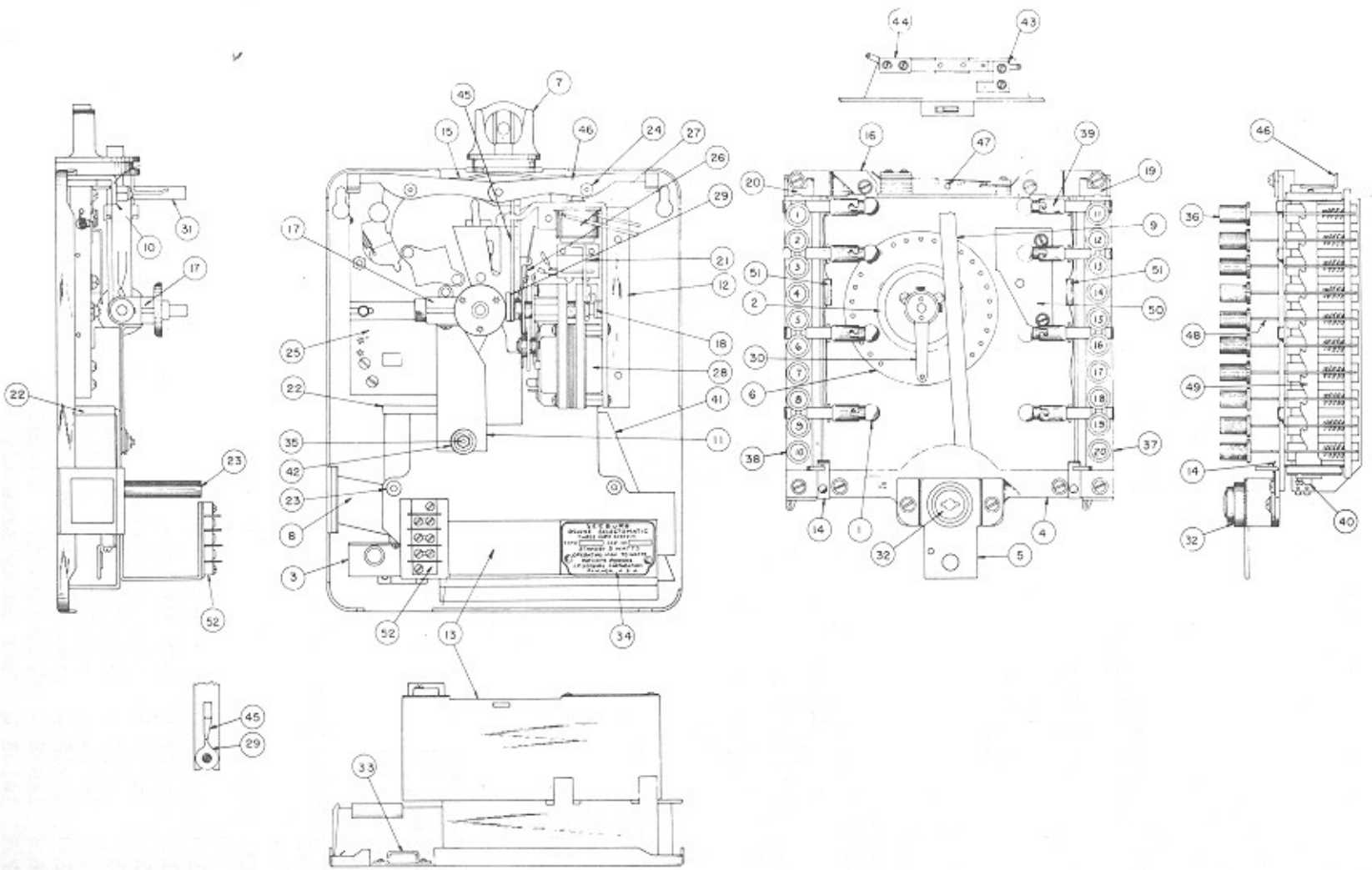
FIG. 26 - SCHEMATIC DIAGRAM OF TYPE DS20-IZ DELUXE SELECT-O-MATIC (5¢)



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
R1	82718 -	22 Ohm 20% 1 Watt.	2	$ .15
M1	14087 -	Coin Switch.	1	.45
M2	14108 -	Motor Assembly	1	5.00
M3	14109 -	Selector Switch (R.H.)	1	2.25
M4	14110 -	Selector Switch (L.H.)	1	2.25
M5	10242 -	Lamps #51 Mazda.	8	.08
M6	13848 -	Selector Disc Assembly	1	.75
M7	14103 -	Coin Relay Assembly.	1	1.25
M8	13110 -	Motor Switch	1	.20
M9	-	"Open" Switch (on M-3 and M-4)		

F-9893

FIG. 27 - ASSEMBLY VIEWS OF TYPE DS20-IZ DELUXE SELECT-O-MATIC (5¢)

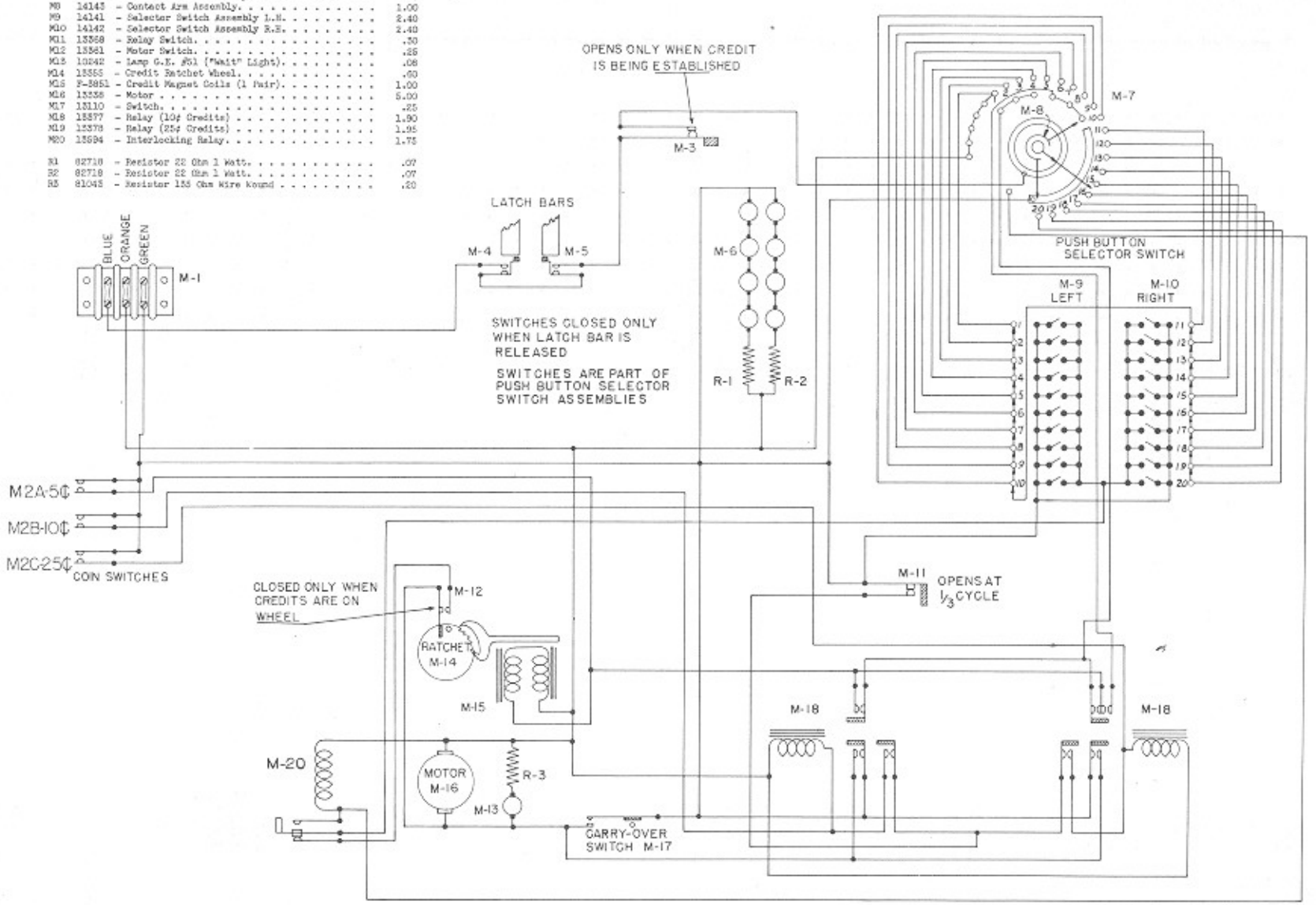


F-9974

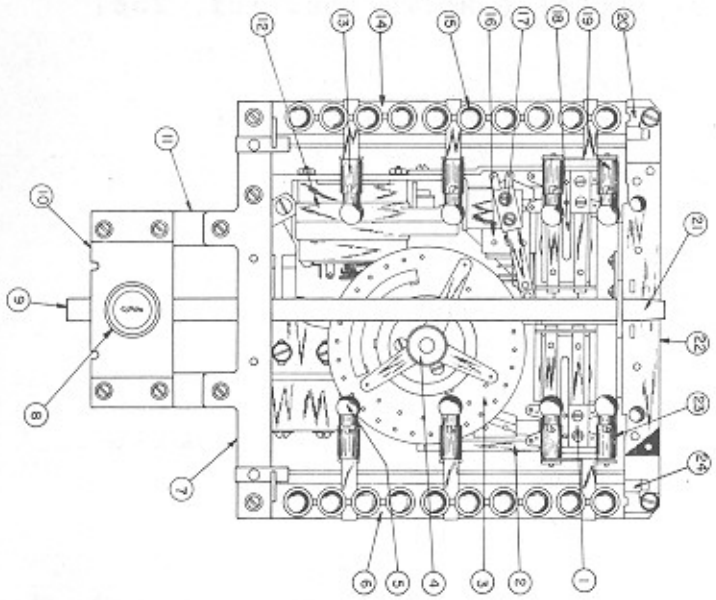
ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	10242	-	Program Lights 6 - 8 V. #51.	8	$ .08
2	11254	-	Collector Ring	1	.15
3	14081	-	Strain Relief Bracket.	1	.10
4	13003	-	Switch Support Bracket (Bottom).	1	.15
5	13004	-	Lock Bracket	1	.15
6	13005	-	Selector Plate Assembly.	1	.75
7	13006	-	Drop Slot.	1	.75
8	13007	-	Slug Receptacle.	1	.35
9	13808-A	-	Lock Bar Assembly.	1	.50
10	13010	-	Mounting Stud Bracket.	1	.15
11	13011	-	Motor Shaft Mounting Bracket	1	.25
12	13012	-	Motor and Relay Mounting Bracket	1	.25
13	14102	-	Lock Latch Bracket	1	.10
14	13018	-	Program Holder Spring.	2	.10
15	13021	-	Slug Ejector Arm	1	.15
16	13106	-	Switch Support Bracket (Top)	1	.35
17	13805	-	Bevel Gear Box Assembly.	1	.45
18	13029	-	Relay Trip Cam	3	.15
19	13031	-	Program Holder Spring (Right).	1	.10
20	13032	-	Program Holder Spring (Left)	1	.10
21	13033	-	Relay Trip Lever	1	.10
22	13026	-	Slug Receptacle Cover.	1	.10
23	13036	-	Selector Switch Mtg. Stud (Lower).	2	.10
24	13037	-	Selector Switch Mtg. Stud (Upper Right).	1	.10
25	13039	-	Slug Ejector Mechanism Assembly (5¢)	1	4.50
26	14087	-	Coin Switch.	1	.45
27	14103	-	Relay Assembly	1	1.25
28	14108	-	Motor Assembly	1	5.00
29	13803	-	Button Release Lever Cam Assembly.	1	.15
30	14118	-	Contact Wiper Arm Assembly	1	.50
31	13052	-	Switch Mtg. Stud (Upper Left).	1	.15
32	13065	-	Lock Assembly.	1	.75
33	14107	-	Cable Clamp.	1	.10
34	14116	-	Chassis Name Plate	1	.10
35	13081	-	Bevel Gear Box Strap Stud.	1	.10
36	13084	-	Selection Switch Button.	21	.10
37	14109	-	Selection Switch (Right)	1	2.25
38	14110	-	Selection Switch (Left).	1	2.25
39	13101	-	Program Light Socket	8	.05
40		-	Grounding Switch (Part of Item 37 and 38).	2	
41	13800-A	-	Coin Box Assembly.	1	.75
42	13114	-	Rubber Washer.	2	.05
43	13112-A	-	Contact Blade Assembly	1	.25
44	13110	-	Motor Switch	1	.20
45	13016	-	Button Release Lever	1	.15
46	13019	-	Button Release Link.	1	.15
47	13017	-	Button Release Pin	1	.05
48		-	Push Rod (Part of Item 37 and 38).		
49		-	Latch Bar (Part of Item 37 and 38)		
50	14089	-	Relay Shield (Front)	1	.10
51	82718	-	22 OHM, 1 Watt Resistor 20%.	2	.15
52	14105	-	3 Lug Terminal Strip	1	.10

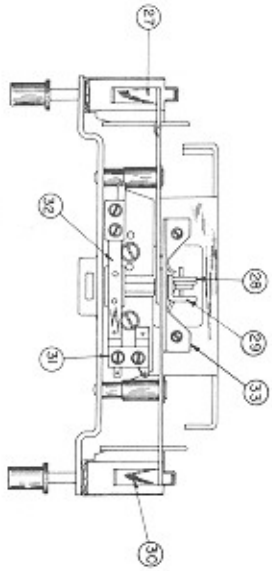
ITEM	PART NO.	DESCRIPTION	PRICE
M1	14105	- Terminal Strip.	$ .25
M2A, M2B, M2C	13524	- Coin Switch	1.25
M3	13566	- Switch Be Circuit	.25
M4		- Switch (on Selector Switch Assembly)	
M5		- Switch (on Selector Switch Assembly)	
M6	10242	- Lamps G.E. #51.	.08
M7	13437	- Selector Disc Assembly.	.75
M8	14143	- Contact Arm Assembly.	1.00
M9	14141	- Selector Switch Assembly L.H.	2.40
M10	14142	- Selector Switch Assembly R.H.	2.40
M11	13568	- Relay Switch.	.30
M12	13561	- Motor Switch.	.25
M13	10242	- Lamp G.E. #51 ("Wait" Light).	.08
M14	13565	- Credit Ratchet Wheel.	.60
M15	F-3851	- Credit Magnet Coils (1 Pair).	1.00
M16	13538	- Motor	5.00
M17	13110	- Switch.	.25
M18	13577	- Relay (10¢ Credits)	1.90
M19	13578	- Relay (25¢ Credits)	1.95
M20	13594	- Interlocking Relay.	1.75
R1	82710	- Resistor 22 Ohm 1 Watt.	.07
R2	82710	- Resistor 22 Ohm 1 Watt.	.07
R3	81045	- Resistor 155 Ohm Wire Wound	.20

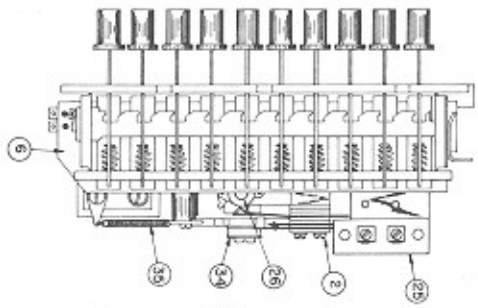
FIG. 28 - SCHEMATIC DIAGRAM OF TYPE DS20-10Z DELUXE SELECT-O-MATIC (5¢, 10¢, 25¢)

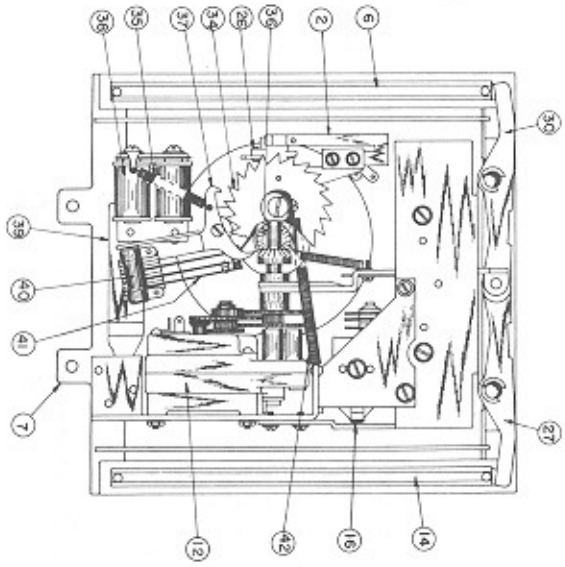


F-9959









ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	13378	- Relay (25¢ Credit).	1	$1.95
2	13368	- Relay Switch.	1	.30
3	13607-A-	Selector Disc Assembly. . . .	1	.75
4	13347	- Contact Arm Assembly. . . .	1	1.00
5	10242	- Lamp G.E. #51	8	.08
6	14142	- Selector Switch (R.H.). . . .	1	2.25
7	13507	- Cross Bar (Lower)	1	.25
8	13065	- Lock Assembly	1	.75
9	13509	- Lock Bar (Short).	1	.10
10	13512	- Lock Mounting Bracket	1	.15
11	13525	- Mounting Panel.	1	.25
12	13338	- Motor	1	5.00
13	14117	- Lamp Socket	4	.05
14	14141	- Selector Switch (R.H.). . . .	1	2.25
15	13094	- Selector Buttons.	20	.10
16	13394	- Relay (Interlock)	1	1.75
17	13366	- Switch.	1	.25
18	13377	- Relay (10¢ Credit).	1	1.90
19	14139	- Dual Socket Assembly (L.H.) .	1	.10
20	13052	- Program Holder Clip (L.H.). .	1	.10
21	13508	- Lock Bar (Long)	1	.15
22	13506	- Cross Bar (Top)	1	.25
23	14140	- Dual Socket Assembly (R.H.) .	1	.10
24	13051	- Program Holder Clip (R.H.). .	1	.10
25	13608	- Terminal Strip Assembly . . .	1	.25
26	13494	- Cancel Cam Assembly	1	.25
27	13020	- Button Release Lever (L.H.) .	1	.15
28	13606-A-	Cam Trip Assembly	1	.45
29	13593-A-	Cam Arm Release Lever	1	.15
30	13019	- Button Release Lever (R.H.) .	1	.15
31	13380	- Contact Blade Assembly. . . .	1	.15
32	13110	- Switch.	1	.20
33	13477	- Guide Bracket	1	.10
34	13466-A-	Ratchet Wheel Assembly. . . .	1	.60
35	F-9465	- Escapement Spring	1	.05
36	13028	- Bevel Gears	2	.10
37	13360	- Ratchet Escapement.	1	.10
38	F-3851	- Credit Magnets (1 Pair) . . .	1	1.00
39	13544	- Selector Disc and Rear Bracket	1	.50
40	81043	- Resistor (135 OHM) 5 Watt (Wire Wound).	1	.20
41	13361	- Motor Switch.	1	.25
42	F-9425	- Ratchet Return Spring	1	.05

FIG. 29 - CREDIT AND SWITCH ASSEMBLY
FOR TYPE DS20-10Z DELUXE SELECT-O-MATIC (5¢, 10¢, 25¢)

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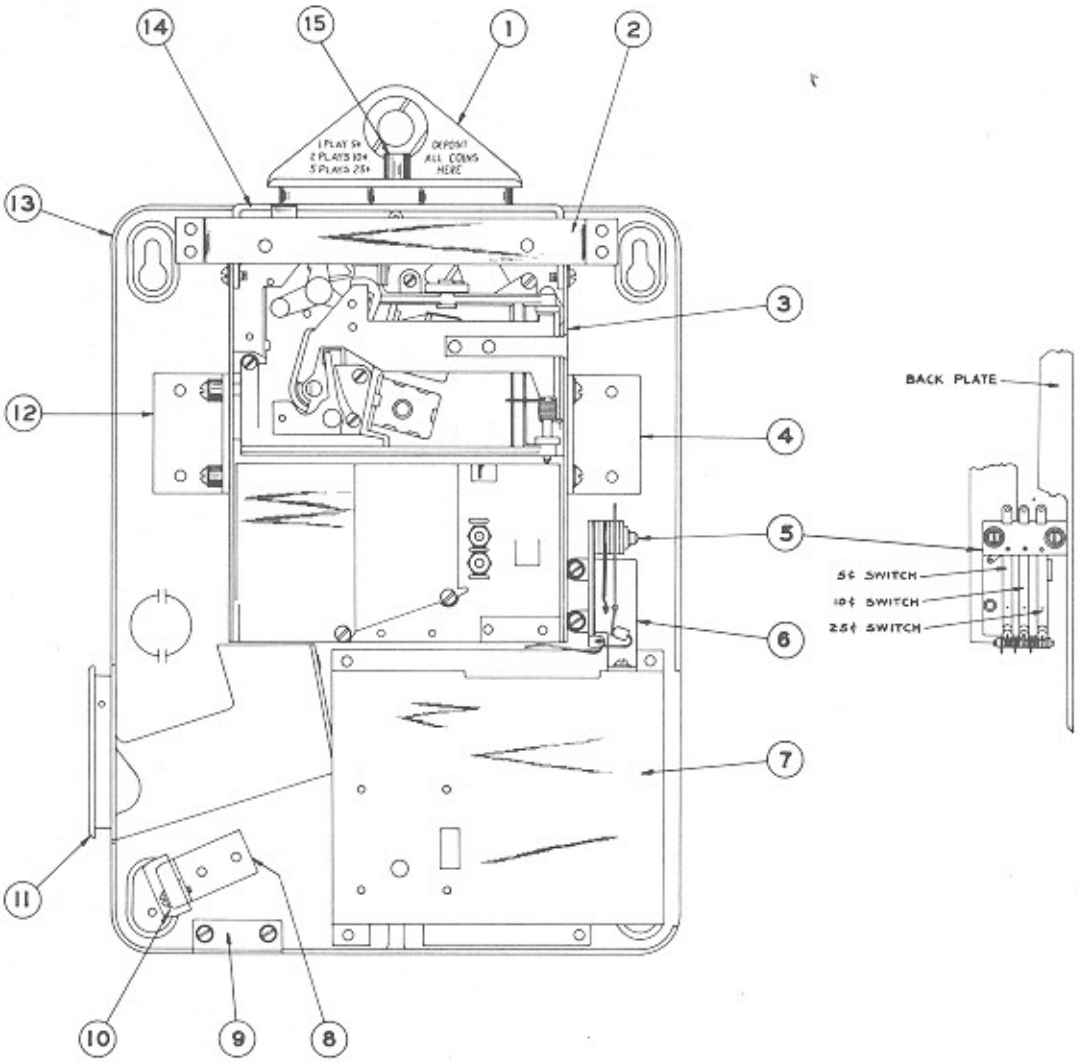
FIG. 30 - BACK PLATE ASSEMBLY FOR TYPE DS20-10Z DELUXE SELECT-O-MATIC (5¢, 10¢, 25¢)



ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	13516	-	Coin Drop Slot.	1	.75
2	13505	-	Switch Stud Bracket	1	.10
3	13515	-	Slug Ejector Unit	1	10.50
4	13514	-	Slug Ejector Mtg. Bracket	1	.10
5	13524	-	Coin Switch Assembly.	1	1.25
6	13558	-	Coin Switch Bracket	1	.10
7	13520	-	Coin Box Guide.	1	.15
8	14134	-	Terminal Strip Bracket.	1	.10
9	14104	-	Bottom Hole Cover	1	.10
10	14105	-	Terminal Strip.	1	.25
11	13519	-	Slug Return Cup	1	.75
12	13563	-	Slug Ejector Mtg. Bracket	1	.10
13	13513	-	Back Plate.	1	3.00
14	13557	-	Drop Slot Mtg. Bracket.	1	.15
15	13084	-	Scavenger Button.	1	.10

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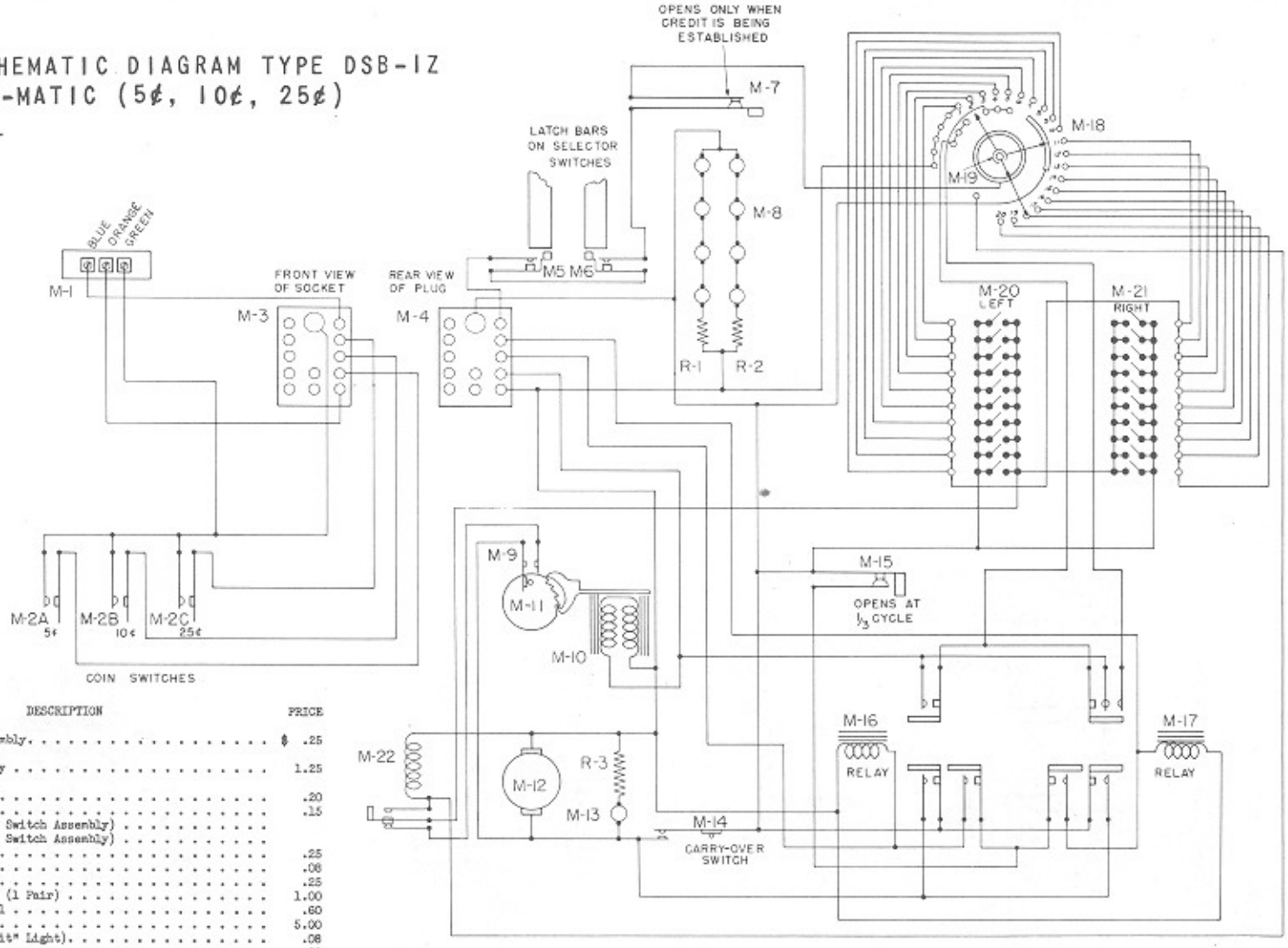
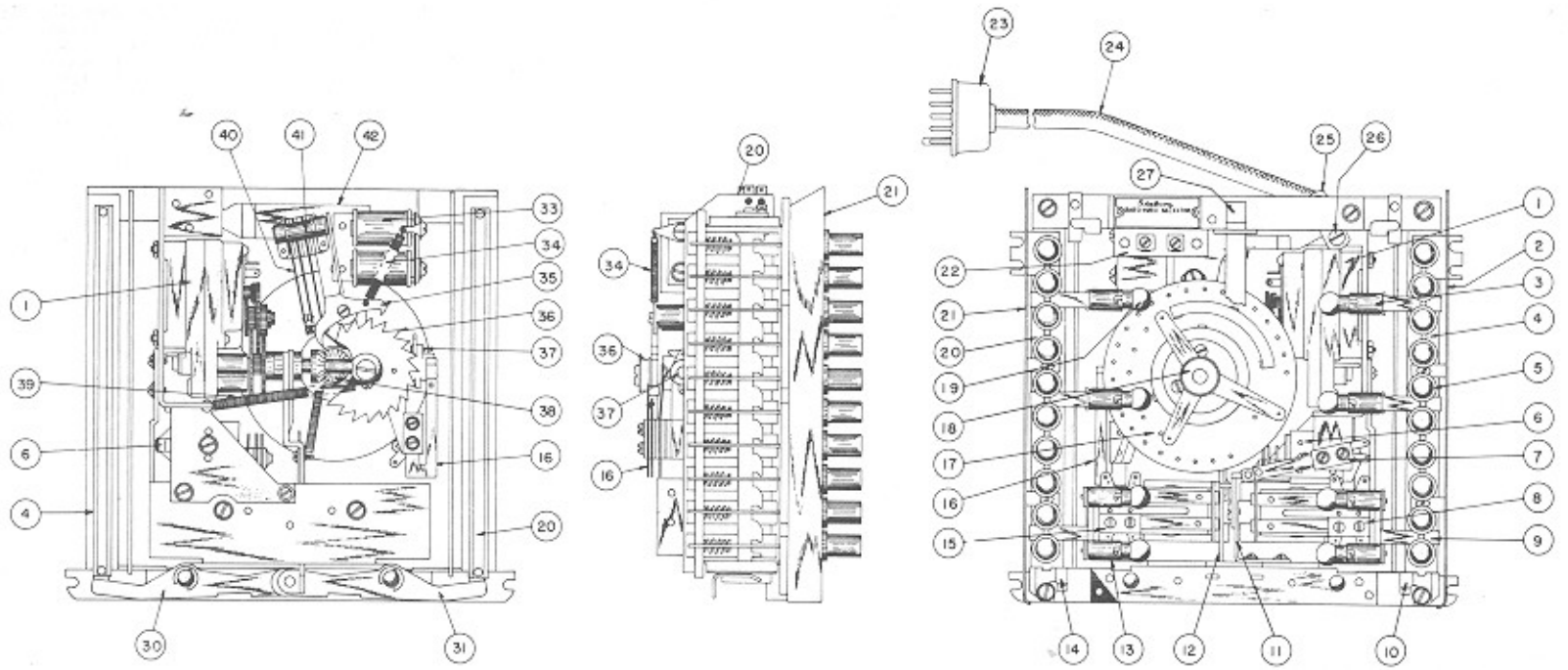
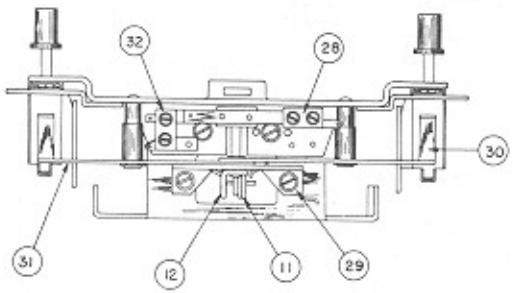
FIG. 31 - SCHEMATIC DIAGRAM TYPE DSB-IZ BAR-O-MATIC (5¢, 10¢, 25¢)



ITEM	PART NO.	DESCRIPTION	PRICE
M1	14233	- Terminal Strip Assembly.	$ .25
M2A, M2B, M2C	15298	- Coin Switch Assembly	1.25
M3	15297	- Socket (13 Contact).	.20
M4	15384	- Plug (13 Contact).	.15
M5		- Switch (on Selector Switch Assembly)	
M6		- Switch (on Selector Switch Assembly)	
M7	13366	- Switch (B+).	.25
M8	10242	- Lamps (G.E. #51)	.08
M9	13361	- Motor Switch	.25
M10	P-3851	- Credit Magnet Coils (1 Pair)	1.00
M11	13465	- Credit Ratchet Wheel	.60
M12	13338	- Motor.	5.00
M13	10242	- Lamp G. E. #51 ("Wait" Light).	.08
M14	13110	- Carry-Over Switch.	.20
M15	13368	- Relay Switch	.30
M16	13377	- Relay 10¢ Credit	1.90
M17	13378	- Relay 25¢ Credit	1.95
M18	13607	- Selector Disc Assembly	.75
M19	14143	- Contact Arm Assembly	1.00
M20	14227	- Selector Switch Assembly L.H	2.40
M21	14226	- Selector Switch Assembly R.H	2.40
M22	13594	- Interlocking Relay	1.75
R1	82718	- Resistor 22 Ohms 1 Watt.	.07
R2	82718	- Resistor 22 Ohms 1 Watt.	.07
R3	81043	- Resistor 155 Ohms 5 Watt Wire Wound.	.20

FIG. 32 - CREDIT & SWITCH ASSEMBLY FOR TYPE DSB-IZ BAR-O-MATIC (5¢-10¢-25¢)





ITEM	PART NO.			NO. REQ.	PRICE
1	13338	-	Motor.	1	$5.00
2	13565	-	Light Shield (R.H.) (Metal Case Only)	1	.10
3	14117	-	Lamp Socket Assembly	4	.05
4	14226	-	Selector Switch (R.H.)	1	2.40
5	13332	-	Push Button (Set of 20). . . .		each .10
6	13594	-	Relay (Interlock).	1	1.75
7	13566	-	Switch	1	.25
8	13577	-	Relay Assembly - 10¢ Credit. .	1	1.90
9	14140	-	Dual Lamp Socket Assembly (R.H.)	1	.10
10	13031	-	Program Holder Clip (R.H.) . .	1	.10
11	13606-A	-	Cam Trip Assembly.	1	.45
12	13563	-	Cam Arm Release Lever.	1	.15
13	14139	-	Dual Lamp Socket Assembly (L.H.)	1	.10
14	13032	-	Program Holder Clip (L.H.) . .	1	.10
15	13578	-	Relay Assembly 25¢ Credit. . .	1	1.95
16	13568	-	Switch (Relay Drop Out). . . .	1	.30
17	13607-A	-	Selector Disc Assembly	1	.75
18	14143	-	Contact Arm Assembly	1	1.00
19	10242	-	Lamp (G.E. #51).	9	.08
20	14227	-	Selector Switch (L.H.)	1	2.40
21	13566	-	Light Shield (Metal Case Only)	1	.10

ITEM	PART NO.			NO. REQ.	PRICE
22	13608-A	-	Terminal Strip Assembly. . .	1	$ .25
23	13384	-	Plug (13 Contact).	1	.15
24	13385	-	Cable	1	.75
25	13342	-	Spring	1	.10
26	13341	-	Shoulder Screw	2	.10
27	13456-A	-	Lockbar Assembly	1	.20
28	13110	-	Switch	1	.20
29	13477	-	Guide Bracket.	1	.10
30	13018	-	Button Release Lever (R.H.).	1	.15
31	13020	-	Button Release Lever (L.H.).	1	.15
32	13380	-	Switch Rest.	1	.15
33	F-3851	-	Magnets (1 Pair)	1	1.00
34	F-3465	-	Escapement Spring.	1	.05
35	13360	-	Ratchet Escapement	1	.10
36	13466-A	-	Ratchet Wheel Assembly . . .	1	.60
37	13494	-	Cancel Cam Assembly.	1	.25
38	13028	-	Bevel Gears.	2	.10
29	F-9425	-	Ratchet Spring	1	.05
40	13561	-	Motor Switch	1	.25
41	81043	-	Resistor 135 OHM 5 Watt (Wire Wound)	1	.20
42	13344	-	Selector Disc and Gear Bracket.	1	.50

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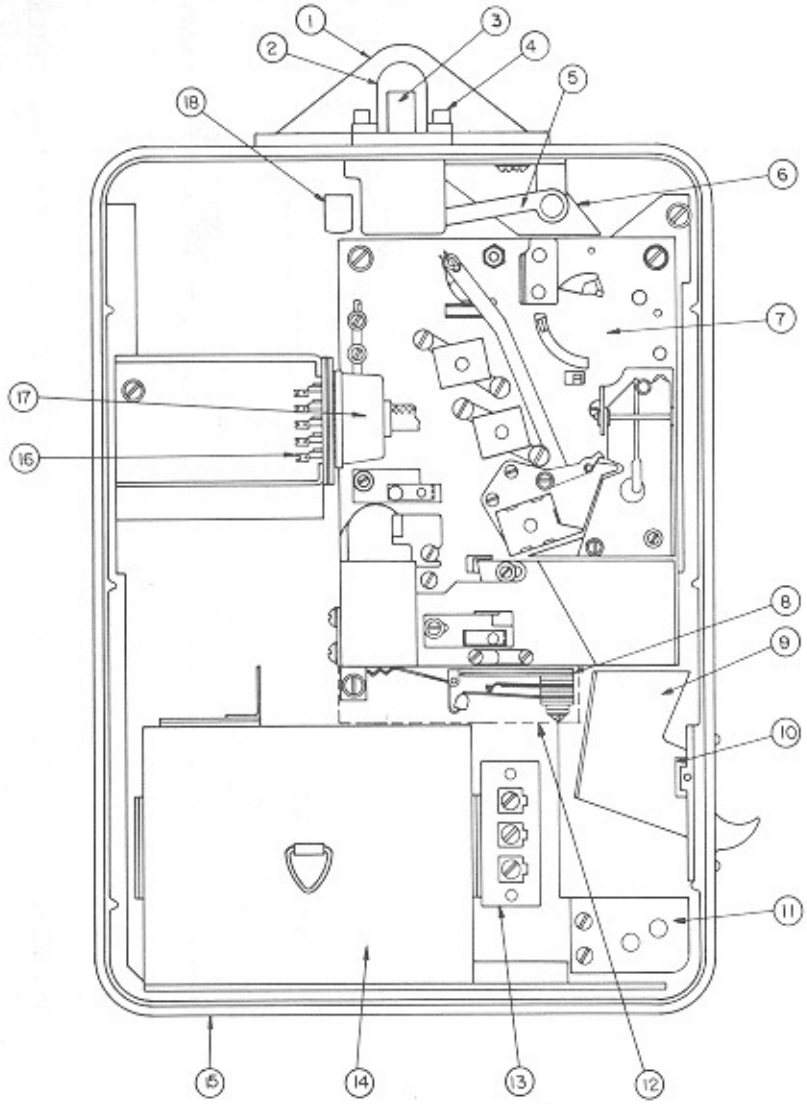
FIG. 33 - REAR VIEW OF TYPE DSB-IZ BAR-O-MATIC (5¢-10¢-25¢)



ITEM	PART NO.		DESCRIPTION	NO. REQ.		PRICE
1	13307	-	Coin Drop Slot.	1		$ .75
2	13308	-	Lamp Cover.	1		.25
3	13314	-	Scavenger Button.	1		.10
4	71248	-	Socket Screw Fil. Head.	2	For	.05
5	13600-A	-	Scavenger Lever Assembly.	1		.15
6	13310-A	-	Coin Chute Assembly	1		.20
7	13515	-	Slug Ejector Unit	1		10.50
8	13298	-	Coin Switch	1		1.25
9	13604-A	-	Slug Return Cup Assembly.	1		.75
10	14138	-	Plug.	1		.10
11	14107	-	Cable Bracket	1		.10
12	13443	-	Switch Cover.	1		.10
13	14233	-	Terminal Strip Assembly	1		.25
14	13393	-	Cash Box.	1		.75
15	13601-A	-	Case (Metal) (Sold Complete Only)	1		10.50
15	13601-A	-	Case (Bakelite)	1		5.75
16	13297	-	Socket.	1		.20
17	13385	-	Plug.	1		.10
18	13470	-	Escutcheon Release Lever.	1		.15

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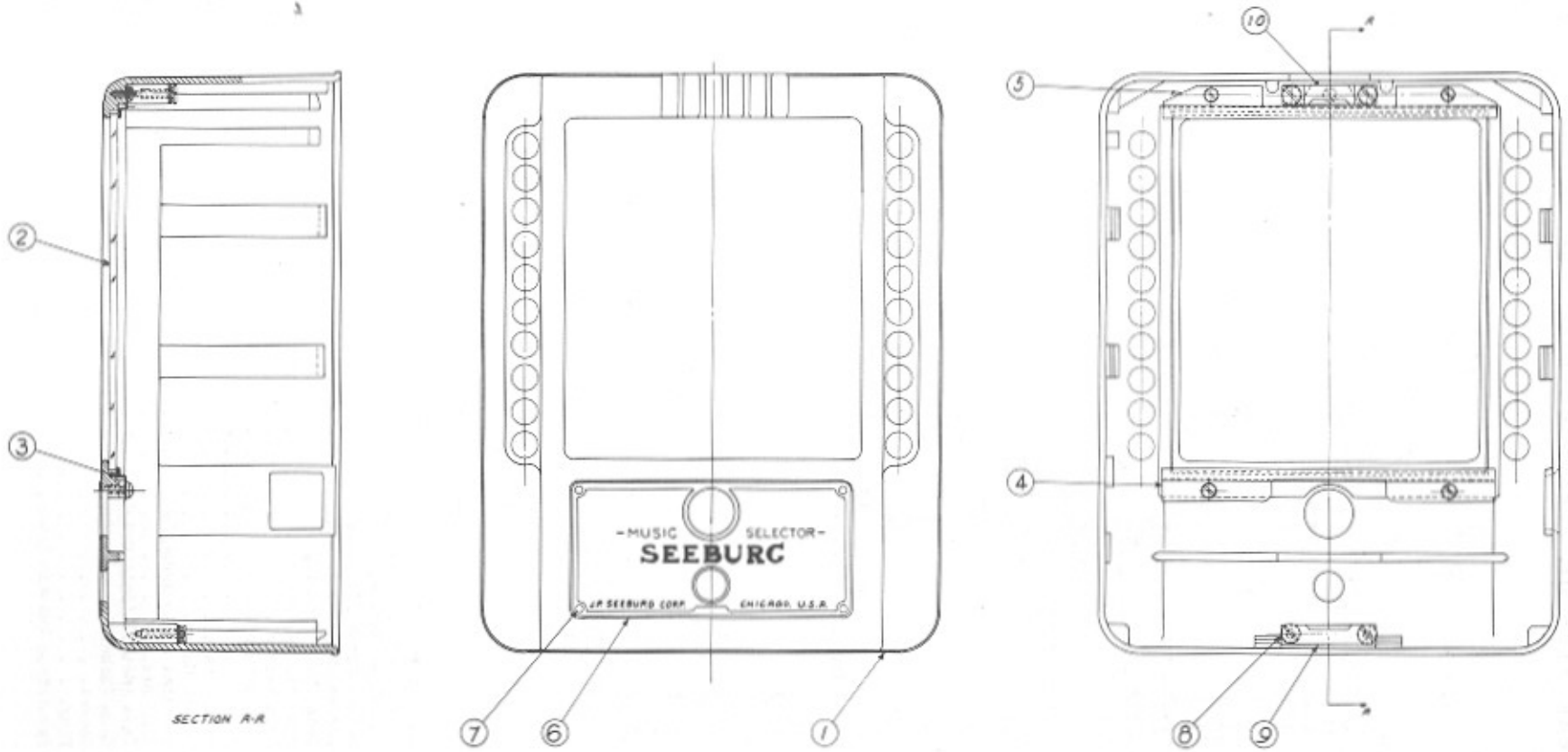
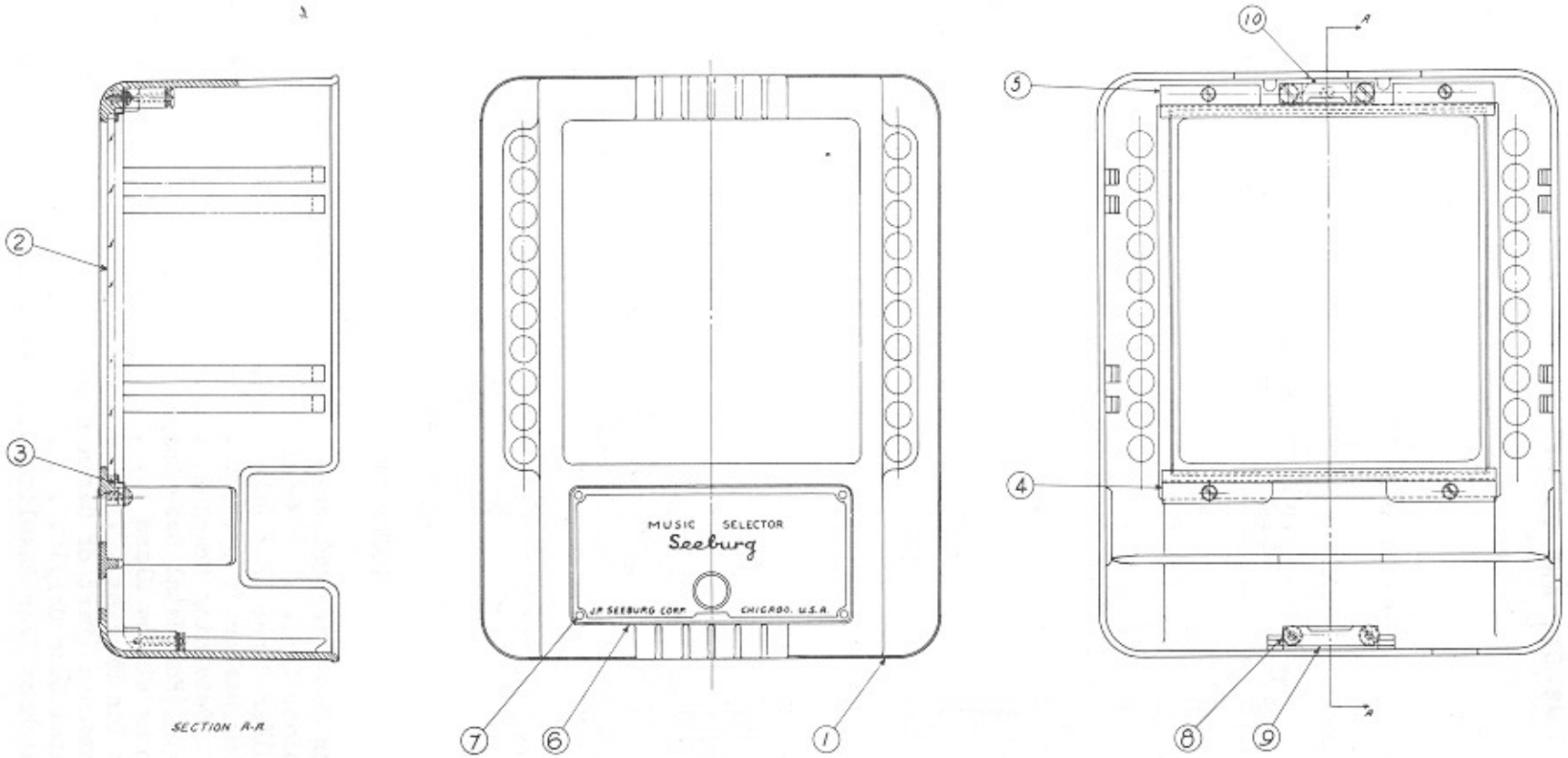
FIG. 34 - VIEWS OF CASE FOR TYPES WS-2Z AND DS20-IZ SELECTORS



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	13000	- Housing.	1	$1.35
2	13068	- Program Glass.	1	.25
3		- 1/4" x 1/8" Thick Sponge Rubber	2	Per Ft.10
4	13070	- Program Window Retaining Strip.	1	.10
5	13071	- Program Window Retaining Strip.	1	.10
6	13077	- Name Plate for Type "WS-2Z" Wall-O-Matic	1	$ .30
6	14101	- Name Plate for Type DS20-1Z DeLuxe Select-O-Matic. .	1	.30
7	80046	- Drive Screw.	6	For .10
8	13080	- Shoulder Screw	4	Each .05
9	13023	- Lock Bar Stop.	1	.10
10	13097	- Lock Bar Stop.	1	.10

F-9962

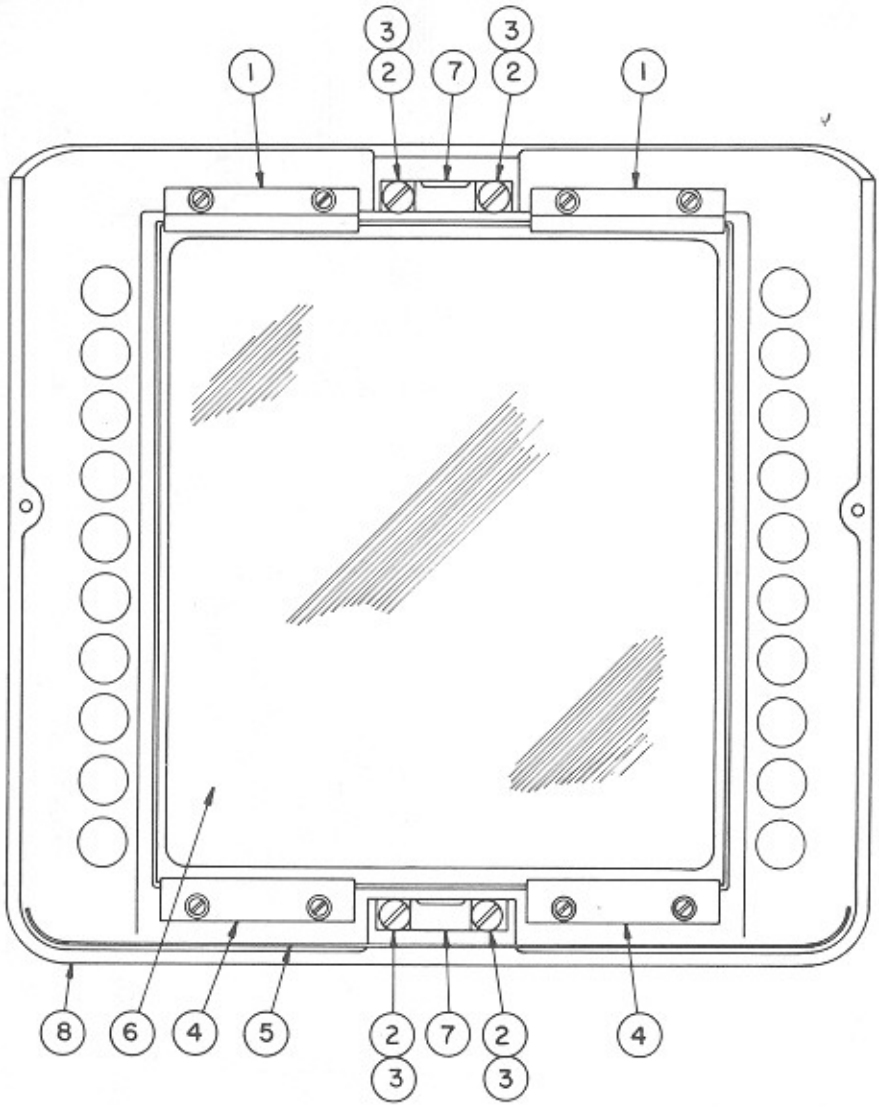
FIG. 35 - VIEWS OF CASE FOR TYPES WS-1OZ AND DS20-1OZ SELECTORS



ITEM	PART NO.		DESCRIPTION	NO. REQ.		PRICE
1	13500	-	Housing.	1		$ 1.75
2	13068	-	Program Glass.	1		.25
3		-	1/4" x 1/8" Sponge Rubber.	Per Feet		.10
4	13070	-	Program Window Retaining Strip	1		.10
5	13071	-	Program Window Retaining Strip	1		.10
6	13502	-	Name Plate for Model WS-1OZ Selector	1		.30
6	14132	-	Name Plate for Type DS20-1OZ Selector.	1		.30
7	80041	-	Drive Screw.	4	For	.10
8	13080	-	Shoulder Screw	4		.05
9	13023	-	Lock Bar Stop.	1		.10
10	13531	-	Lock Bar Stop.	1		.10

F-9970

FIG. 36 - ESCUTCHEON FOR TYPES WB-IZ, WB-5Z, AND DSB-IZ BAR-O-MATICS



REAR VIEW

ITEM	PART NO.		DESCRIPTION	NO.REQ.	PRICE
1	13317	-	Glass Retaining Bracket.	2	$ .10
2	13460	-	Shoulder Screw (For Metal Case Only)	4	.05
2	13320	-	Shoulder Screw (For Bakelite Case Only). . . .	4	.05
3	13092	-	Spring Washer.	4	for .10
4	13316	-	Glass Retaining Bracket.	2	.10
5	13567	-	Shield (For Metal Case Only)	1	.15
6	13068	-	Program Window Glass	1	.25
7	13319	-	Lock Bar Bracket	2	.10
8		-	Escutcheon (Part of Cabinet Assembly) (For Metal Case Only)	1	
8	13452	-	Escutcheon (For Bakelite Case Only).	1	1.25

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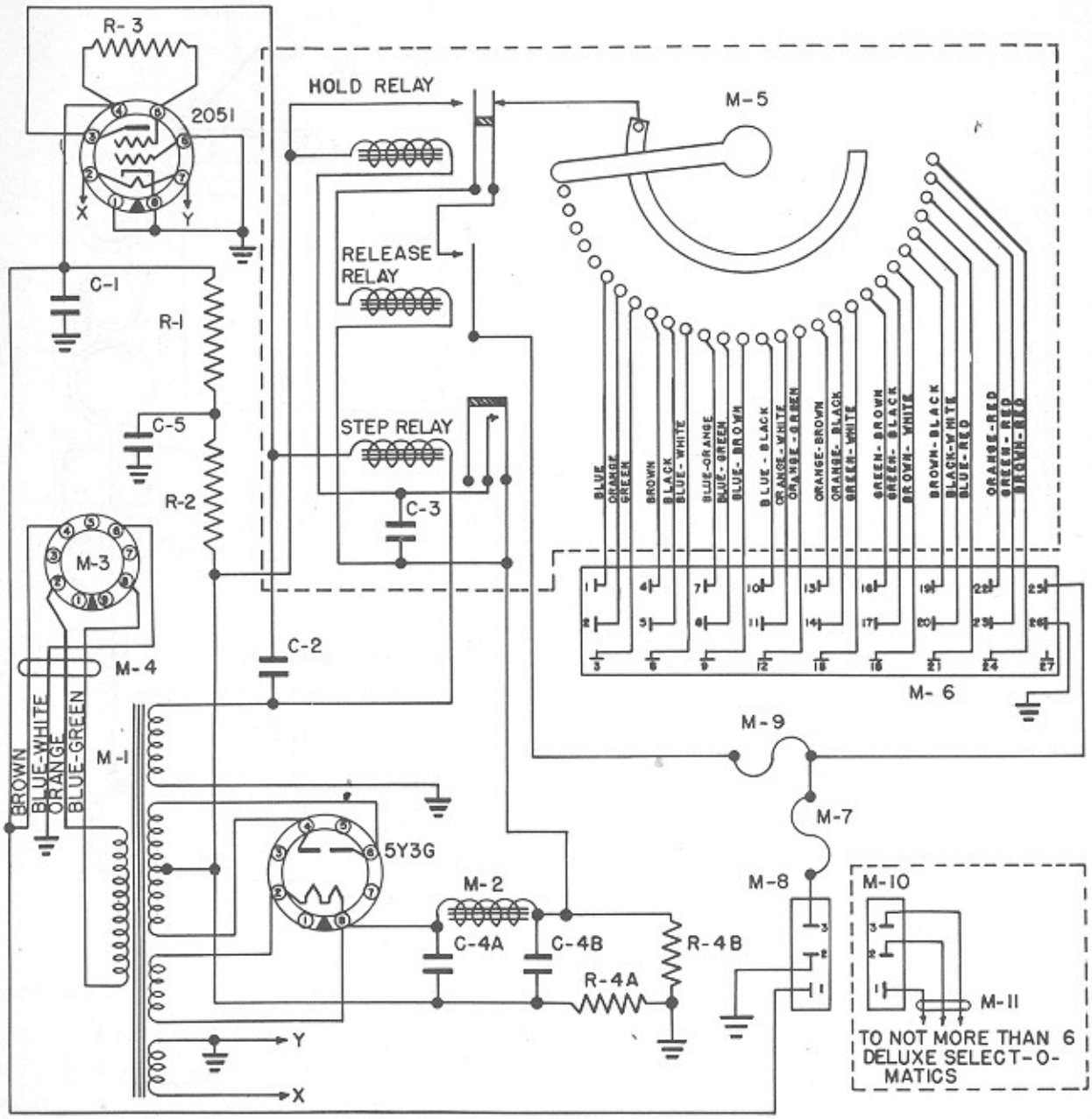
FIG. 37 - SCHEMATIC DIAGRAM OF TYPE SS20-I STEP SELECTOR



ITEM	PART NO.	DESCRIPTION	PRICE
		PAPER CONDENSERS	
C1	86013	- .05 Mfd. 400 Volts	$ .10
C2	11076	- 5 Mfd. 300 Volts	1.25
C3	86015	- .01 Mfd. 600 Volts	.10
		ELECTROLYTIC CONDENSERS	
C4A, C4B	87517	- 20 Mfd. 450 Volts Dry. - 20 Mfd. 450 Volts Dry.	.65
C5	87521	- 10 Mfd. 50 Volts Dry	.25
		RESISTORS	
R1	82442	- 33,000 Ohms 1/2 Watt 10%	.07
R2	82442	- 33,000 Ohms 1/2 Watt 10%	.07
R3	82454	- 330,000 Ohms 1/2 Watt 10%	.07
R4A, R4B	12007	- 500 Ohms Wire Wound 10%. - 4750 Ohms Wire Wound 10%	$ .45
		MISCELLANEOUS	
M1	12002	- Power Transformer	2.25
M2	10840	- Filter Choke	.60
M3	12004	- 9 Prong Plug	.25
M4	12003	- Power Cable	.35
M5	50142	- Step Switch Assembly	10.50
M6	12022	- 27 Prong Male Socket	1.00
M7	14173	- 2.5 Amp. Non-tamperable Fuse	.25
M8	12006	- 3 Prong Socket	.15
M9	12224	- 1/2 Amp. Solenoid Fuse	.15
M10	12015	- 3 Prong Plug	.30
M11	12001	- 3 Wire Cable .per ft.	.06

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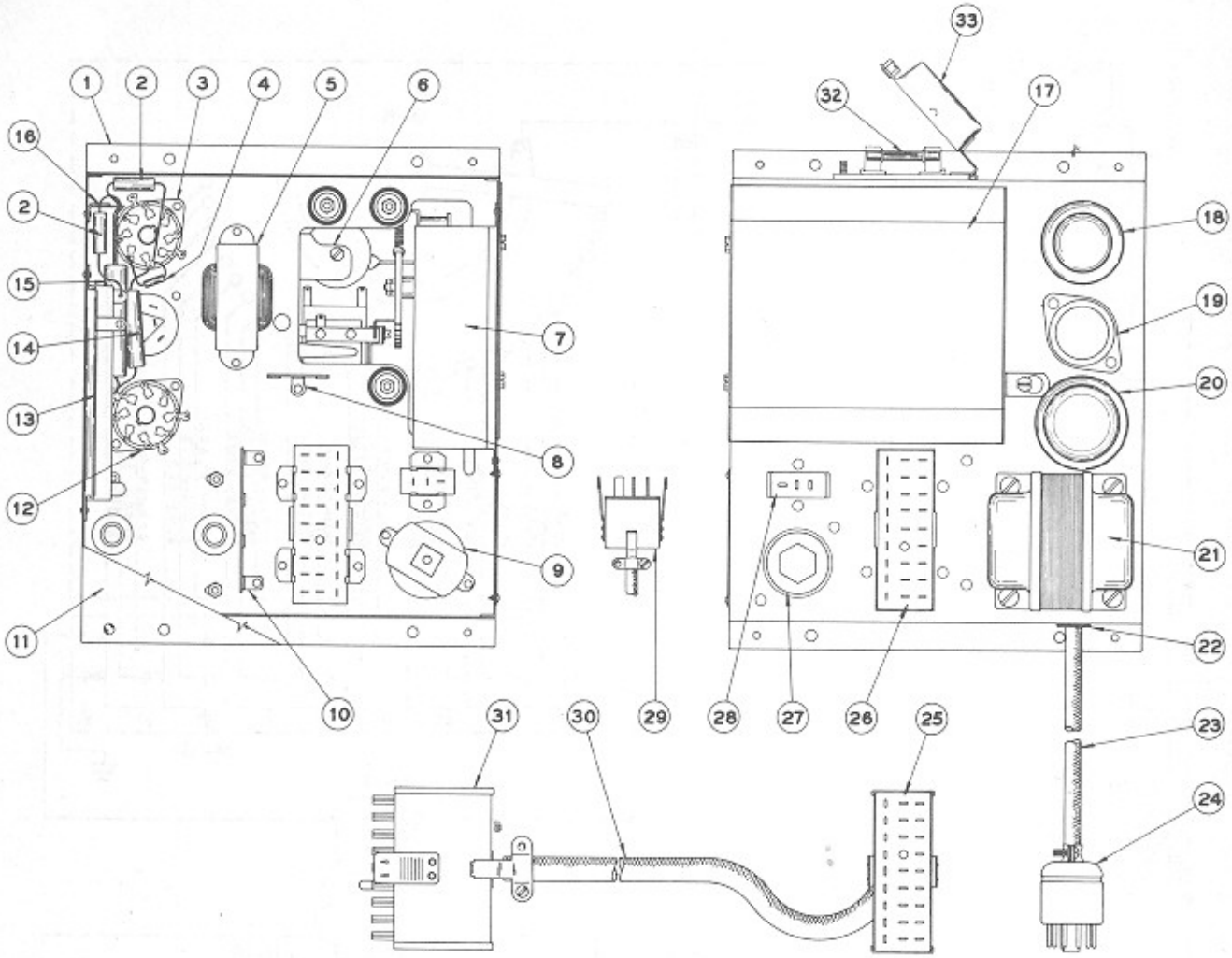
FIG. 38 - TYPE SS20-I STEP SELECTOR SUB-PANEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	12000	- Sub Panel.	1	1.25
2	82442	- 33,000 OHM. 1/2 Watt 10% Resistor.	2	.07
3	84233	- "2051" Tube Socket	1	.10
4	82454	- 330,000 OHM 1/2 Watt 10% Resistor	1	.07
5	10840	- Filter Choke	1	.60
6	50142	- Step Switch Assembly	1	10.50
7	11076	- 5 MFD. 300 Volt Paper Condenser.	1	1.25
8	10070	- Terminal Strip (2 Lug)	1	.10
9	14175	- Non-Tamperable Fuse Socket . . .	1	.40
10	10503	- Terminal Strip (2 Lug)	1	.10
11	12012	- Botton Plate	1	.30
12	84237	- "5Y3G" Tube Socket	1	.10
13	12007	- Candohm Resistor (500-4750 OHMS).	1	.45
14	86015	- .05 MFD. 400 Volt Paper Condenser	1	.10
15	87521	- 10 MFD. 50 Volt Dry Electrolytic Cond	1	.25
16	10062	- Terminal Strip (1 Lug).	1	.10
17	50138	- Step Switch Cover	1	.60
18		- Type 2051 Tube.	1	2.10
19	87517	- Dual 20 MFD. 450 Volt Electrolytic Cond.	1	.65
20		- Type 5Y3G Tube.	1	.44
21	12002	- Power Transformer	1	2.25
22	12061	- Cord Lock	2	For .10
23	12003	- Power Cord.	1	.35
24	12004	- 9 Prong Plug.	1	.25
25	12026	- 27 Contact Female Plug.	1	1.00
26	12022	- 27 Prong Male Socket.	1	1.00
27	14173	- 2.5 AMP Non-Tamperable Fuse . . .	1	.25
28	12006	- 3 Contact Socket.	1	.15
29	12015	- 3 Prong Plug.	1	.30
30	12021	- Unit Connecting Cable	1	1.50
31	12020	- 27 Prong Plug	1	1.00
32	12224	- 1/2 AMP Solenoid Fuse	1	.15
33	12030	- Fuse Receptacle	1	.25

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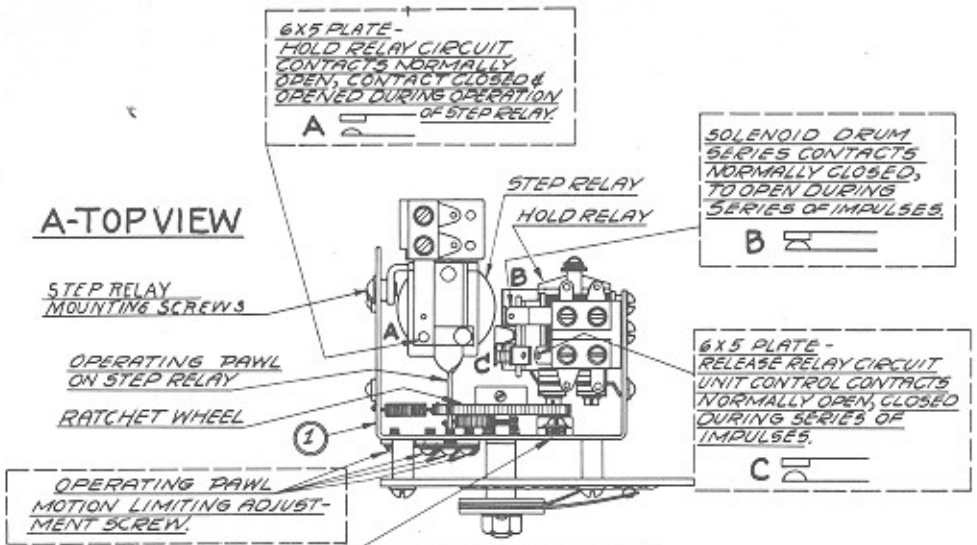
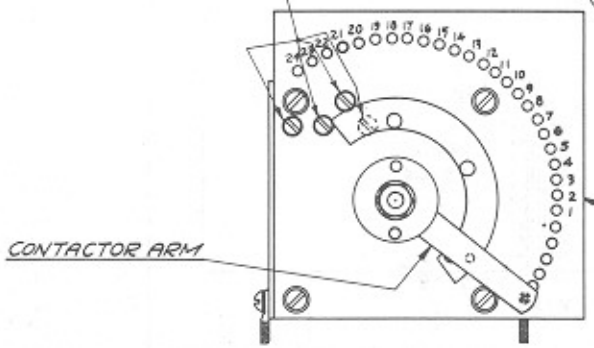
FIG. 39 - STEP SWITCH AND RELAY ASSEMBLY (#50142)



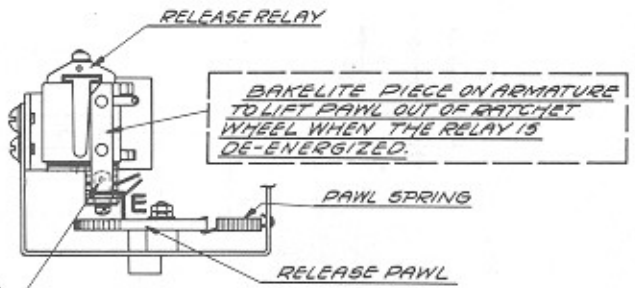
ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	50142	- Step Switch Assembly. .	1	$10.50

NOTE :- WHEN STEP RELAY IS IN OPERATION, CONTACT "A" IS CLOSED AND OPENED FOR EACH IMPULSE - THIS SENDS A PULSATING DIRECT CURRENT THROUGH THE HOLD RELAY AND BY VIRTUE OF THE LARGE COPPER SLUGS THE ARMATURE IS HELD STEADILY IN DURING THE PERIOD THE IMPULSES ARE COMING THROUGH.- WHEN THE HOLD RELAY IS ENERGIZED, CONTACT "C" IS CLOSED TO ENERGIZE THE RELEASE RELAY, AND CONTACT "B" IS OPENED.- THUS, WHEN CONTACT "C" IS CLOSED TO ENERGIZE THE RELEASE RELAY, CONTACTS "E" ARE CLOSED AND REMAIN IN THIS POSITION AS LONG AS THE HOLD RELAY IS ENERGIZED BY THE IMPULSES COMING THROUGH.- THE SOLENOIDS ON THE SOLENOID DRUM COMPLETE THEIR CIRCUIT THROUGH CONTACTS "B" & "E".- WHEN THE HOLD RELAY IS NO LONGER ENERGIZED, AT THE END OF A SERIES OF IMPULSES ITS ARMATURE FALLS OUT TO CLOSE CONTACT "B" BEFORE CONTACT "E" ON THE RELEASE RELAY IS OPENED.- THIS SEQUENCE OF OPERATION COMPLETES THE SOLENOID CIRCUIT FOR A SHORT TIME INTERVAL TO ENERGIZE THE SELECTION SOLENOID.- CONTACT "E" ON THE RELEASE RELAY IS OPENED AN INSTANT AFTER THE IMPULSE HAS BEEN RECEIVED BY THE SELECTOR SOLENOID.-

NOTE :- THE FIRST FIVE IMPULSES WILL BE INEFFECTIVE WITH RESPECT TO SECURING SELECTIONS AND STORING UP PLAYS DUE TO EXTRANEOUS IMPULSES THAT MAY BE SET UP ON THE LINE.-



B-FRONT VIEW



C-BOTTOM VIEW

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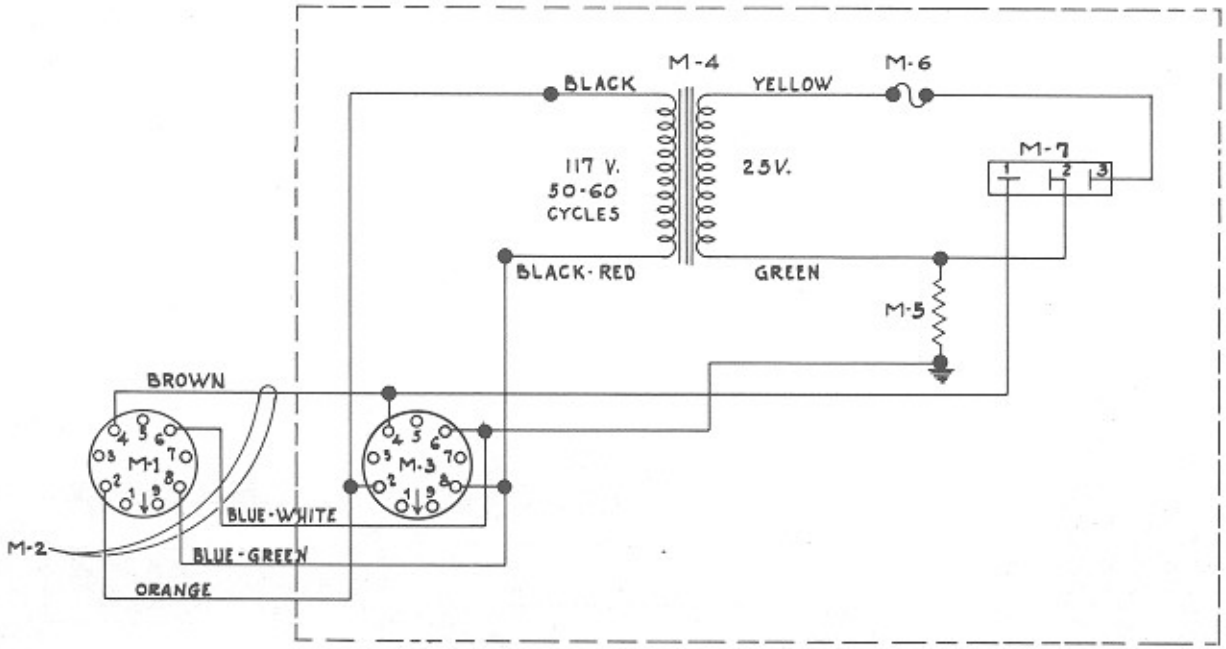
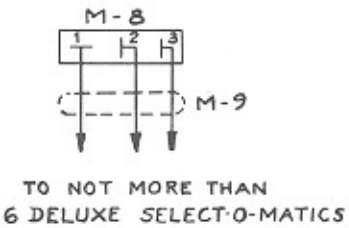
FIG. 40 - SCHEMATIC DIAGRAM OF TYPE PS6-IZ POWER SUPPLY

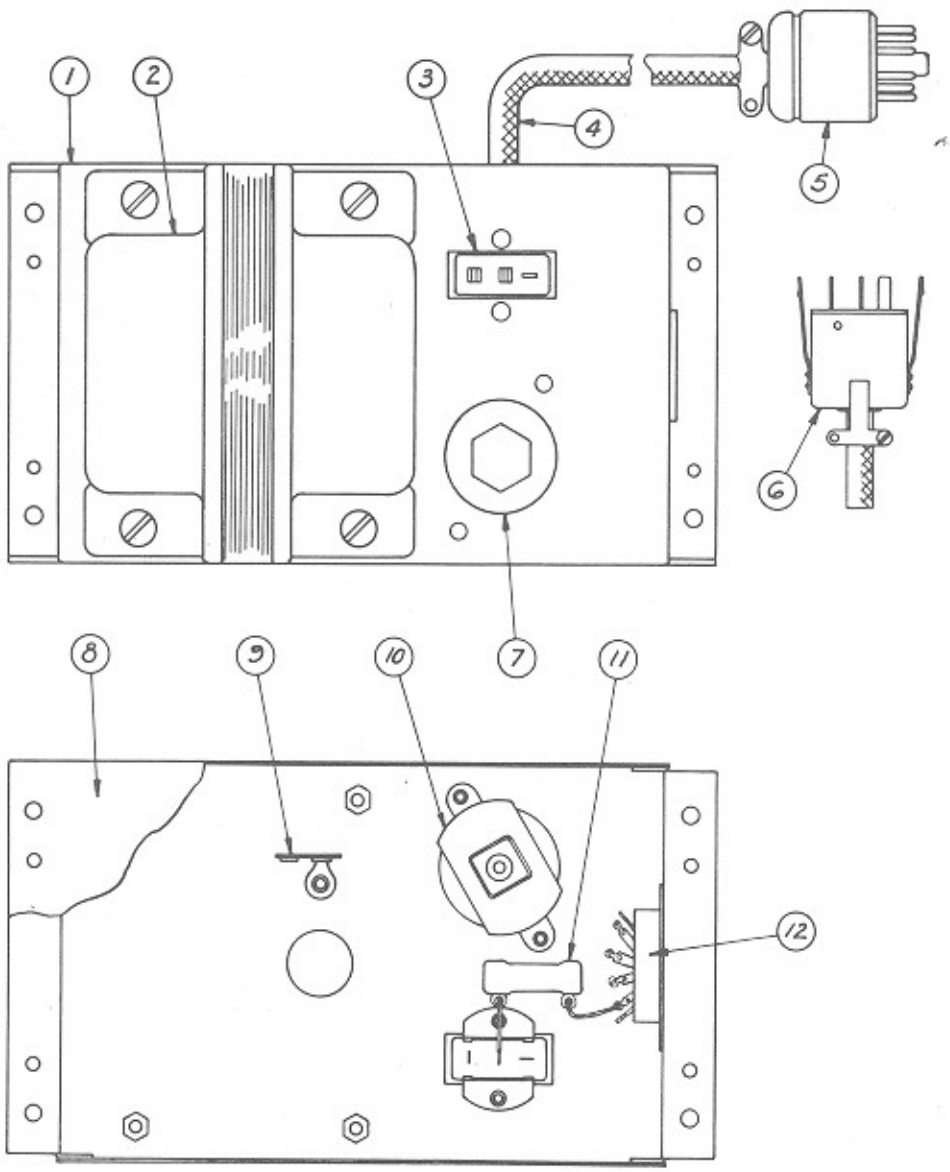




ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	12004	-	9 Prong Plug	1	$ .25
2	12003	-	Power Cable.	1	.35
3	84244	-	Socket for Power to Step Selector.	1	.10
4	11213	-	Power Transformer.	1	2.75
5	81006	-	1000 Ohm 5 Watts 10% Wire Wound Resistor . .	1	.25
6	14173	-	2.5 Amp. Non-tamperable Fuse	1	.25
7	12006	-	Socket for 6 DeLuxe Select-O-Matics.	1	.15
8	12015	-	Plug for 3 Wire Cable.	1	.30
9	12001	-	3 Wire Cable	per ft.	.06

F-9890

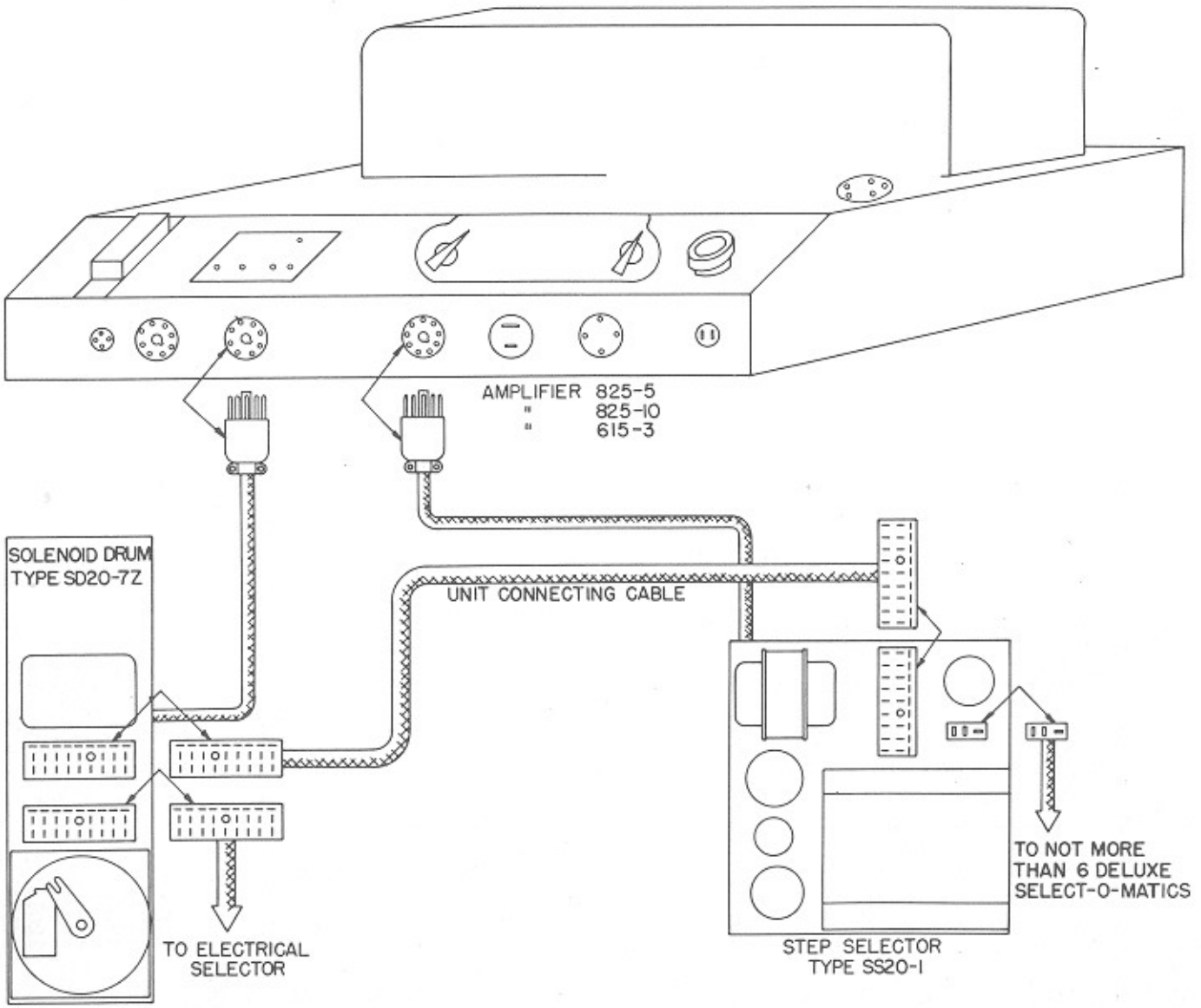
FIG. 41 - TYPE PS6-IZ POWER SUPPLY SUB-PANEL ASSEMBLY



ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	14200	-	Sub-Panel.	1	$ .85
2	11213	-	Power Transformer.	1	2.75
3	12006	-	3 Contact Socket	1	.15
4	12003	-	Power Cable.	1	.35
5	12004	-	9 Prong Plug	1	.25
6	12015	-	3 Prong Plug	1	.30
7	14173	-	2.5 Amp. Non-Tamperable Fuse	1	.25
8	14201	-	Bottom Plate	1	.30
9	10062	-	Terminal Strip (1 Lug)	1	.10
10	14175	-	Non-Tamperable Fuse Socket	1	.40
11	81006	-	1000 OHM 5 Watt 10% Wire Wound Resistor.	1	.25
12	84244	-	9 Prong Socket	1	.10

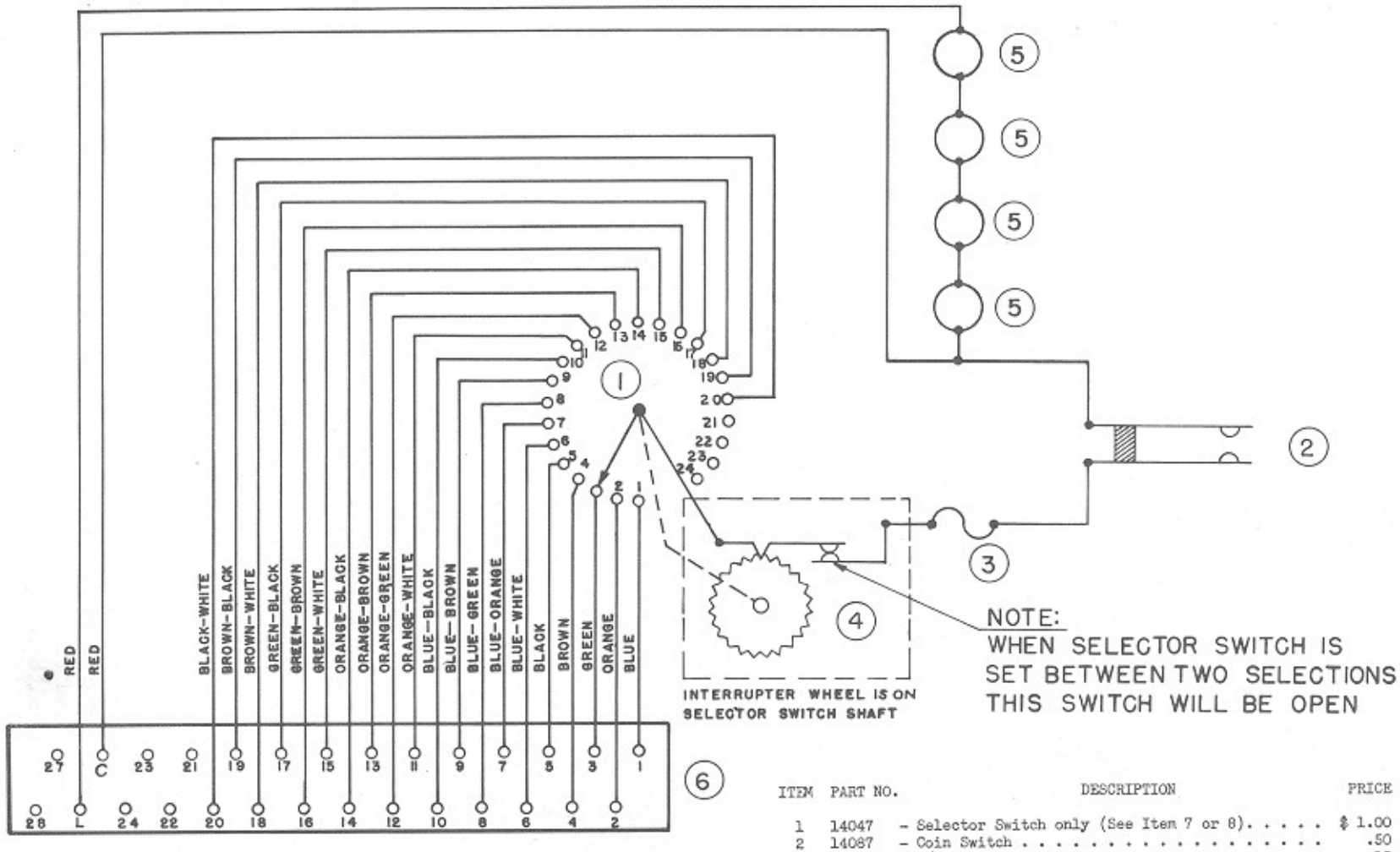
F-9968

FIG. 42 - BLOCK WIRING DIAGRAM OF TYPE SS20-1 STEP SELECTOR IN MODELS 7800, 7850, 8800, AND 9800



F-9957

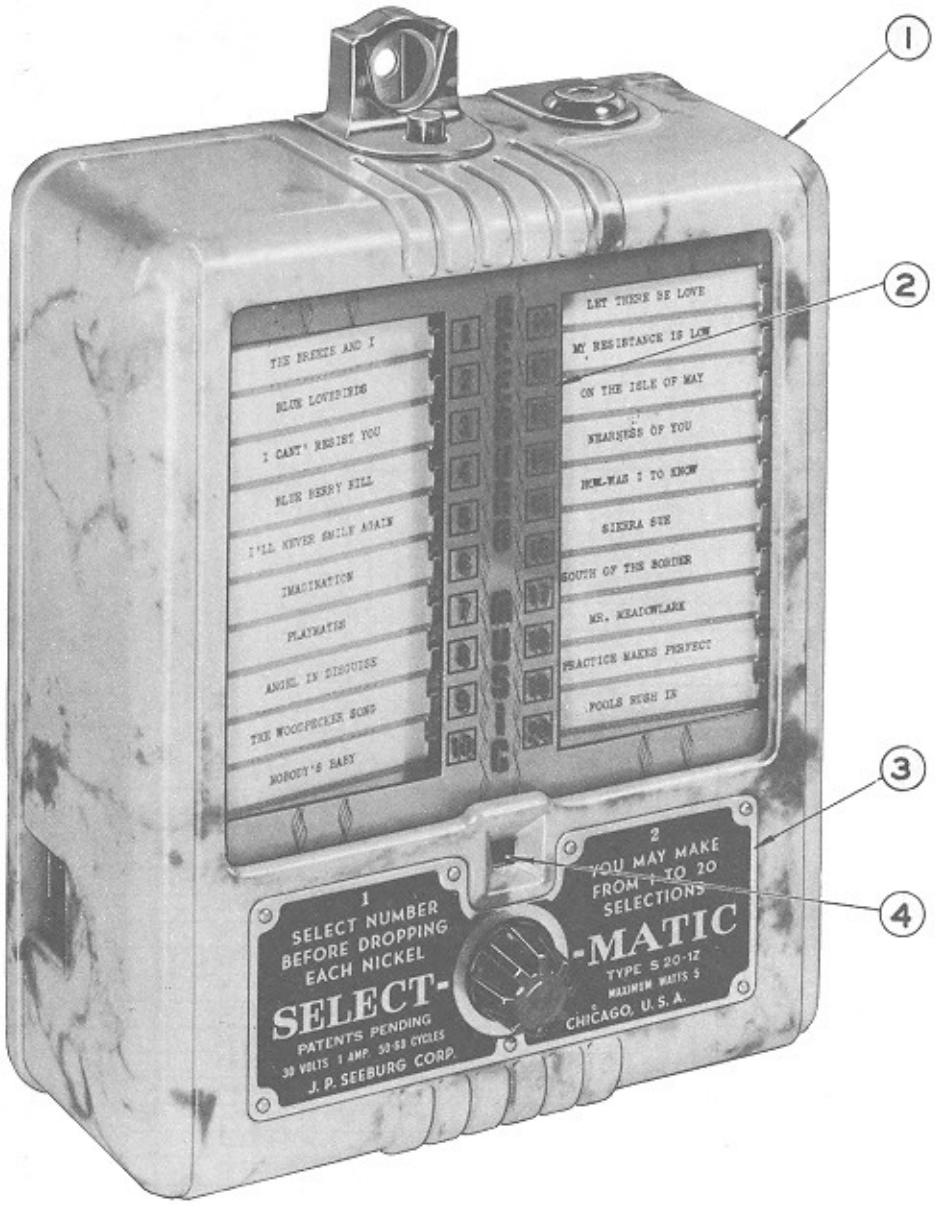
FIG. 43 - SCHEMATIC DIAGRAM OF TYPE S20-IZ SELECT-O-MATIC



ITEM	PART NO.	DESCRIPTION	PRICE
1	14047	- Selector Switch only (See Item 7 or 8).	$ 1.00
2	14087	- Coin Switch	.50
3	12224	- 1/2 Amp. Solenoid Fuse.	.15
4	14086	- Interrupter Switch Assembly only (See Item 7 or 8)	.75
5	10242	- #51 Mazda Lamp.	.08
6	14072-A	- Terminal Strip Assembly	.40
7	14145-A	- Selector Switch Assembly complete with Interrupter Switch.	1.75
8	14146-A	- Selector and Interrupter Switch complete wired to Terminal Strip	2.50

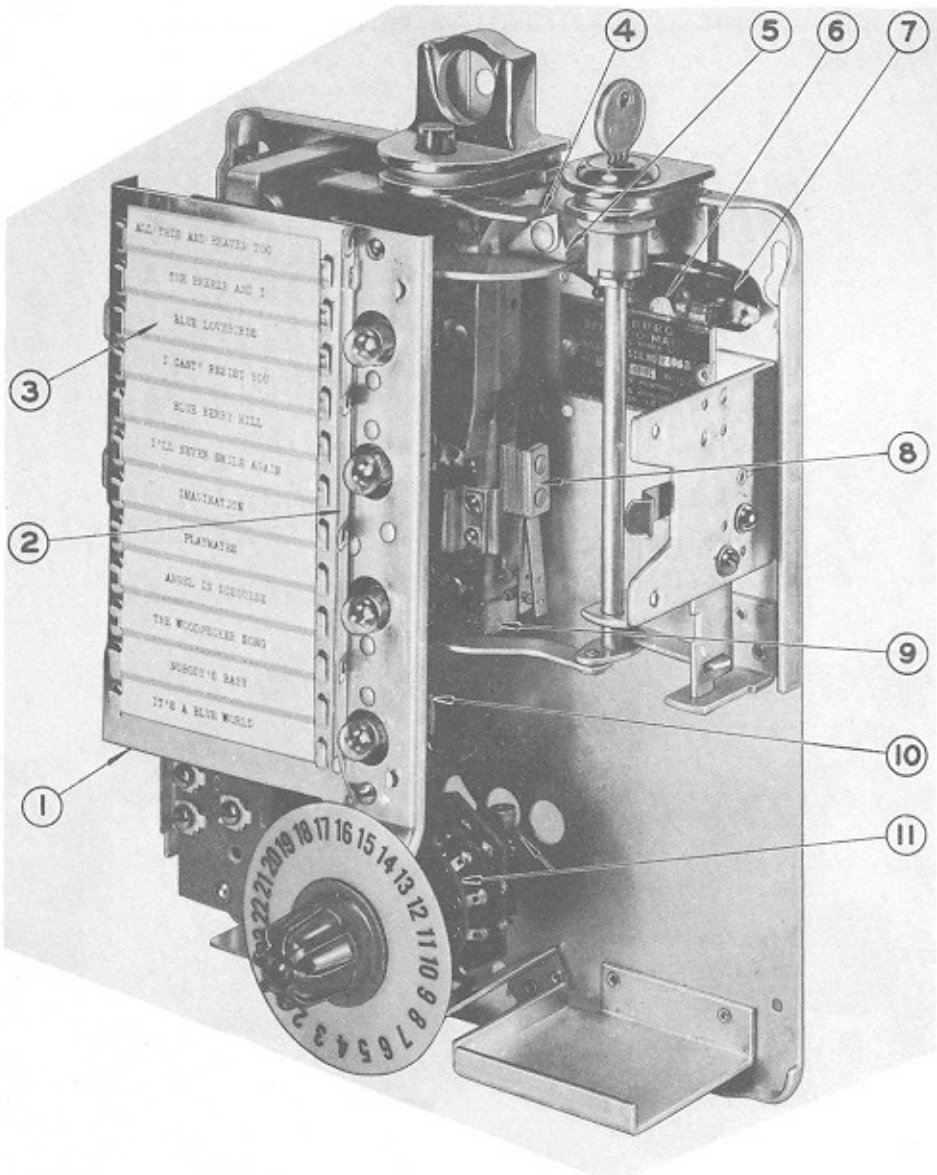
F-9952

FIG. 44 - FRONT VIEW OF TYPE S20-IZ SELECT-O-MATIC



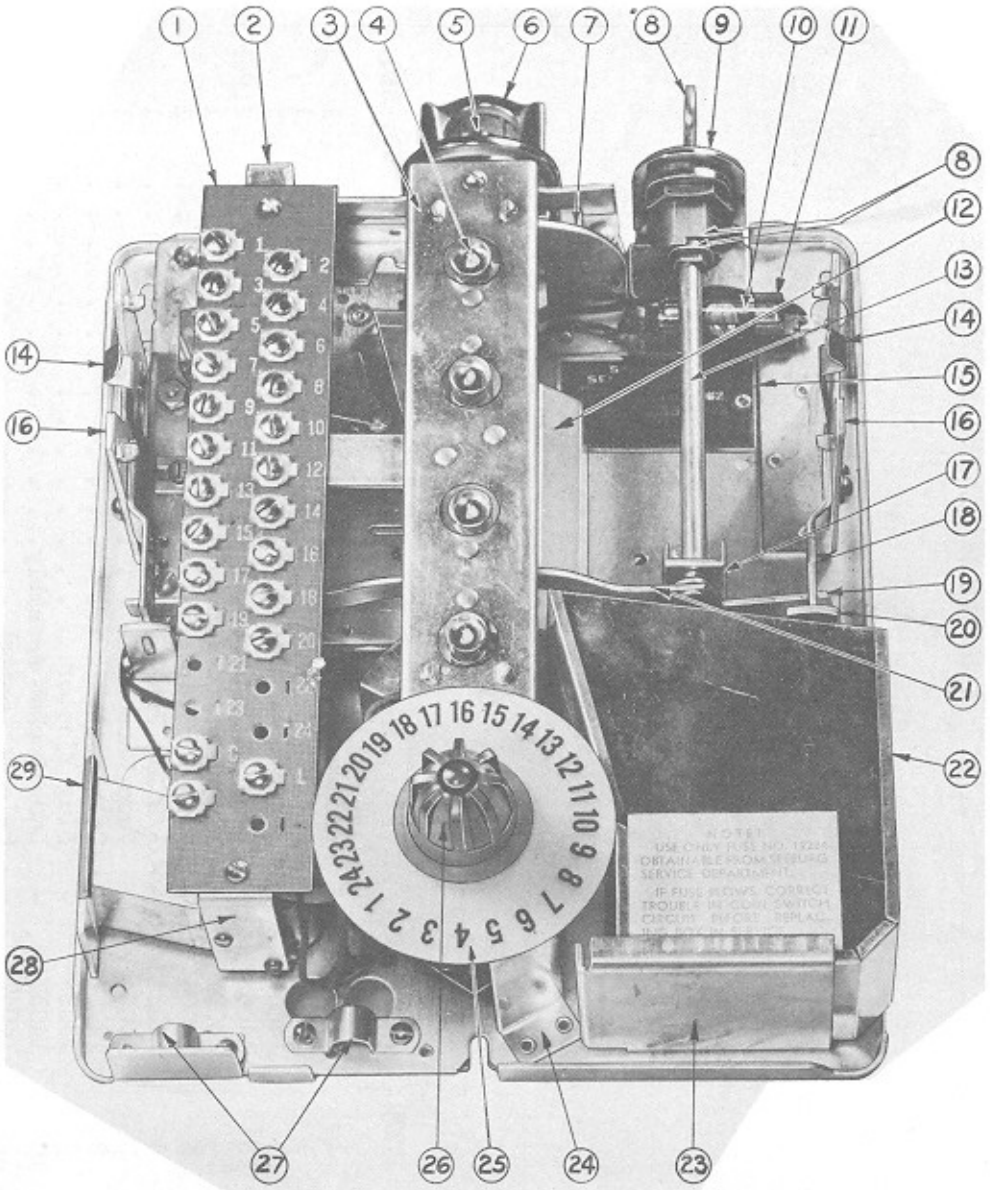
ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	14000	-	Housing.	1	$1.25
2	14050	-	Program Window Glass	1	.50
3	14026	-	Name Plate	1	.35
4	14009	-	Dial Window.	1	.10

FIG. 45 - TYPE S20-IZ SELECT-O-MATIC
WITH HOUSING, COIN BOX, AND RIGHT PROGRAM HOLDER REMOVED



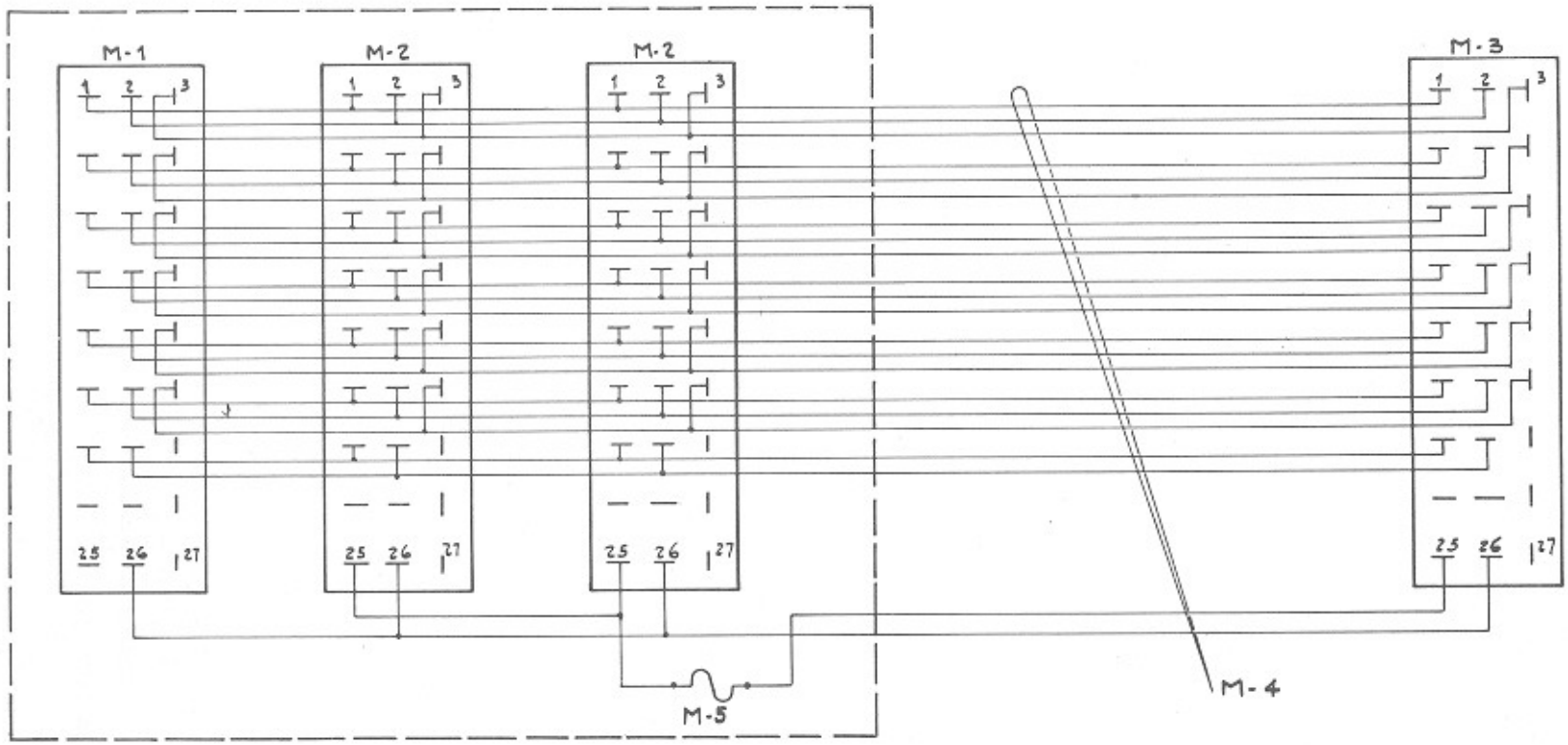
ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	14063-A	-	Program Card Holder Assembly L.H.	1	.35
1	14062-A	-	Program Card Holder Assembly R.H.	1	.35
2	14007	-	Diffusion Strip	1	.25
3	14065	-	Program Strip (Die Cut).	2(Per Doz.)	.35
4	13021	-	Slug Ejector Arm.	1	.15
5	14008	-	Slug Ejector Arm Bracket.	1	.10
6	12224	-	1/2 Amp Fuse.	1	.15
7	14094	-	Fuse Receptacle	1	.25
8	14087	-	Coin Switch	1	.45
9	13039	-	Slug Ejector	1	4.50
10	14038	-	Lamp Socket Assembly.	4	.10
11	14047	-	Selector Switch	1	.90

FIG. 46 - TYPE S20-IZ SELECT-O-MATIC WITH HOUSING AND PROGRAM HOLDERS REMOVED



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	14057-A	Terminal Strip Assembly. . . .	1	$ .25
2	14020	Terminal Strip Bracket Upper .	1	.10
3	14061-A	Light Holder Assembly.	1	1.00
4	10242	#51 Lamps.	4	.08
5	10926	Reject Button.	1	.10
6	13006	5¢ Drop Slot	1	.75
7	14002	Light Holder Bracket--Upper. .	1	.10
8	14042	Lock, Keys and Knurled Pin . .	1	.75
9	14031	Lock Mounting Bracket.	1	.15
10	12224	2-1/2 Amp Fuse	1	.10
11	14094	Fuse Receptacle.	1	.25
12	14092	Coin Switch Shield	1	.10
13	14060-A	Lock Shaft Assembly.	1	.15
14	14029	Program Holder Clip Spring . .	2	.10
15	14035	Chassis Name Plate	1	.10
16	14014	Program Holder Support	2	.10
17	14022	Lock Shaft Bracket	1	.10
18	14003	Lock Latch Guide	2	.10
19	14005	Short Arm.	1	.10
20	14033	Lock Latch Guide Support . . .	2	.10
21	14011	Long Arm	1	.10
22	14017-A	Coin Box Assembly.	1	.35
23	14010	Coin Box Bracket	1	.10
24	14012	Selector Switch Bracket. . . .	1	.10
25	14064-A	Dial and Bushing Assembly. . .	1	.25
26	14001	Selector Knob.	1	.15
27	11171	Wire Clamp	2	.10
28	14021	Lower Terminal Strip Bracket .	1	.10
29	13007	Slug Receptacle.	1	.35

FIG. 47 - SCHEMATIC DIAGRAM OF TYPE WA-IZ WIRED ADAPTER



ITEM	PART NO.		DESCRIPTION	NO. USED	PRICE
1	12017	-	27 Prong Socket - Special.	1	$ 1.00
2	11202	-	27 Prong Socket.	2	1.00
3	12020	-	27 Prong Plug.	1	1.00
4	14213	-	Selection and Power Cable.	1	1.50
5	14173	-	2.5 Amp. Non-tamperable Fuse	1	.25

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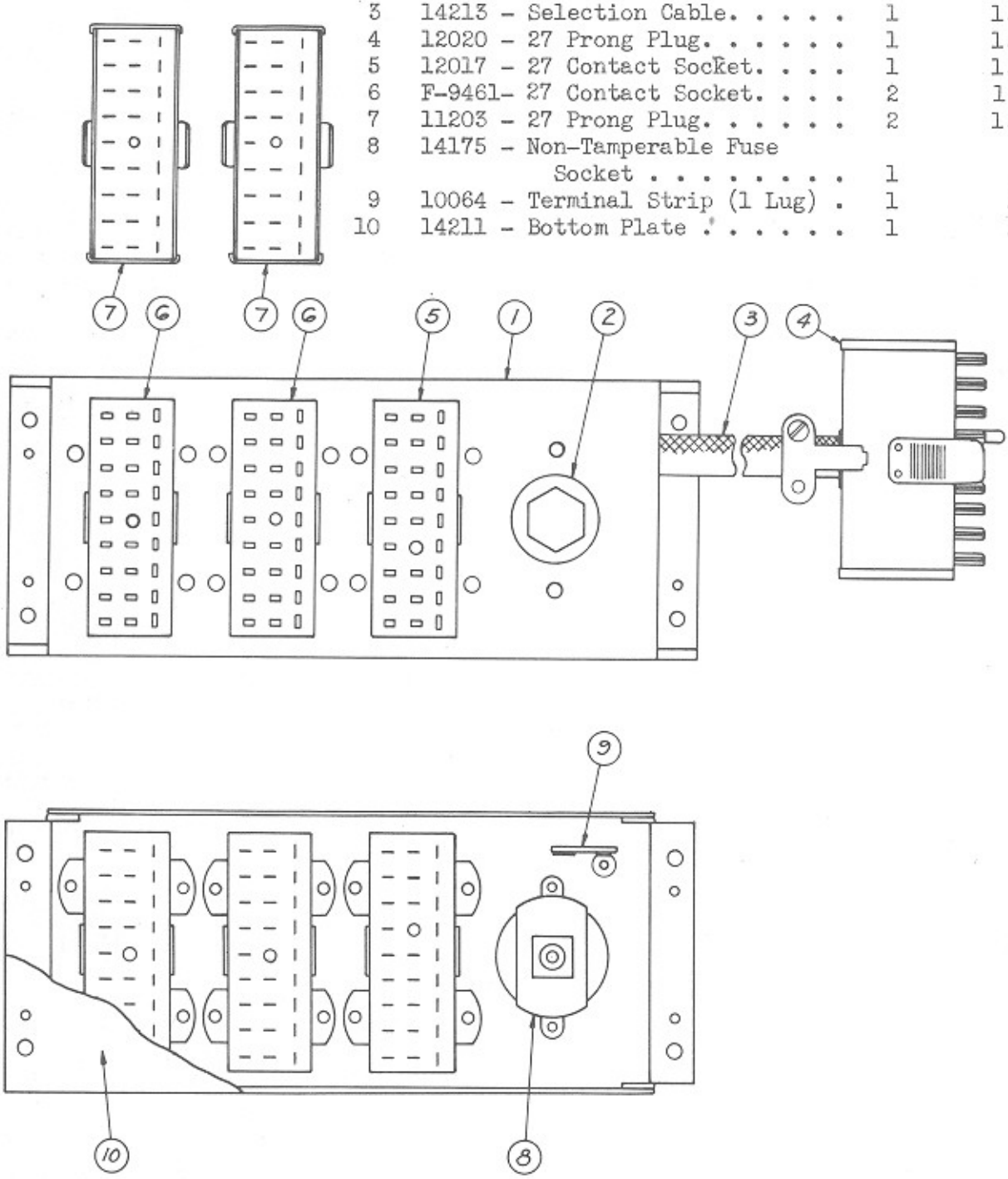
FIG. 48- TYPE WA-IZ WIRED ADAPTER SUB-PANEL ASSEMBLY

ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	14210	- Sub-Panel.	1	$ .85
2	14173	- 2-1/2 Amp Non-Tamperable Fuse	1	.25
3	14213	- Selection Cable.	1	1.50
4	12020	- 27 Prong Plug.	1	1.00
5	12017	- 27 Contact Socket. . . .	1	1.00
6	F-9461	- 27 Contact Socket. . . .	2	1.00
7	11203	- 27 Prong Plug.	2	1.00
8	14175	- Non-Tamperable Fuse Socket	1	.40
9	10064	- Terminal Strip (1 Lug) .	1	.10
10	14211	- Bottom Plate	1	.30



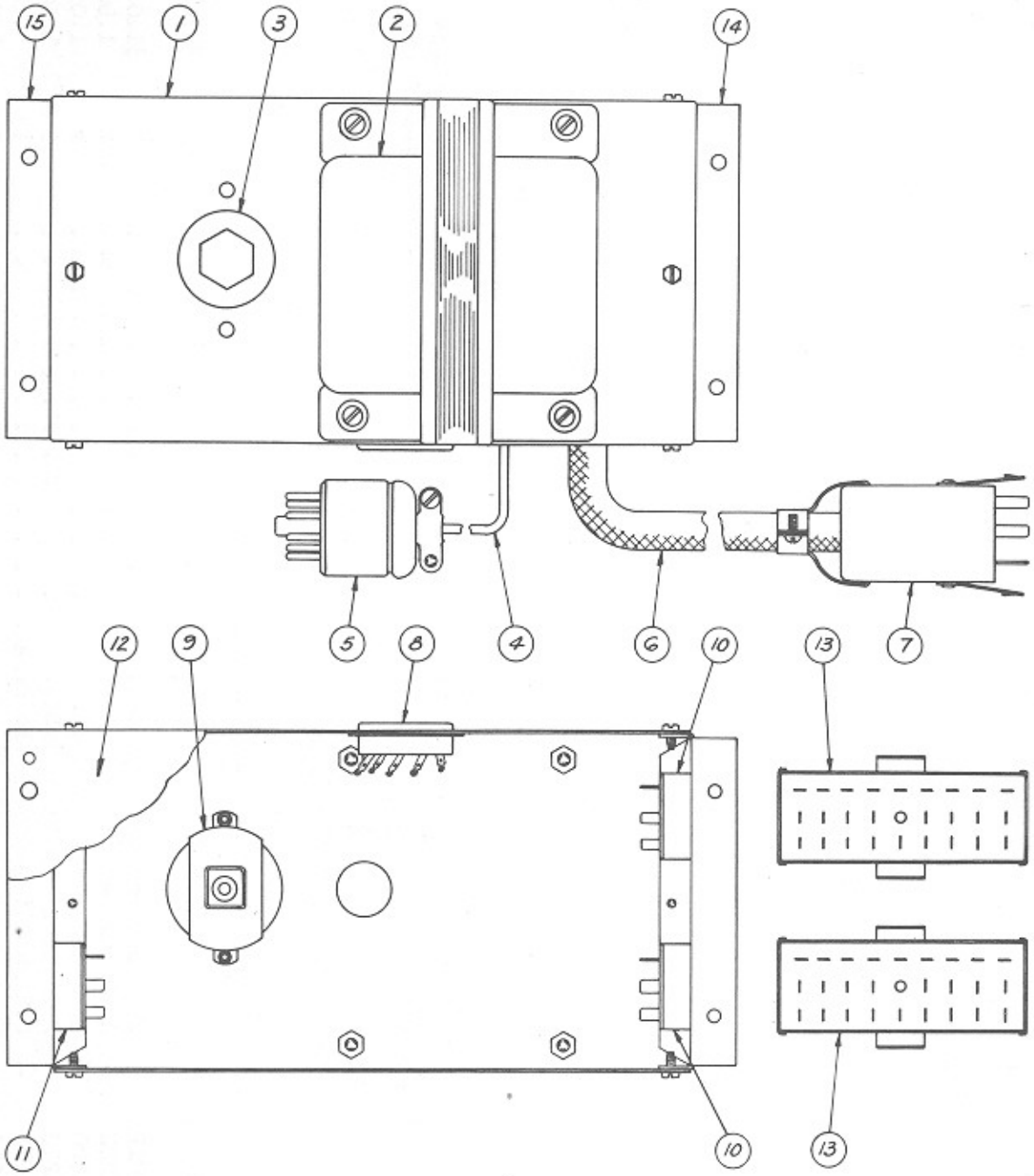
F-9965

FIG. 49 - SCHEMATIC DIAGRAM OF TYPE PSI2-3Z POWER SUPPLY

ITEM	PART NO.	DESCRIPTION	NO REQ.	PRICE
1	12017	- 27 Prong Socket - Special.	1	$1.00
2	11202	- 27 Prong Socket.	2	1.00
3	12020	- 27 Prong Plug.	1	1.00
4	14213	- Selection and Power Cable.	1	1.50
5	14173	- 2.5 Amp. Non-tamperable Fuse	1	.25
6	11213	- Power Transformer.	1	2.75
7	84244	- 9 Prong Socket	1	.10
8	12004	- 9 Prong Plug	1	.25

F-9889

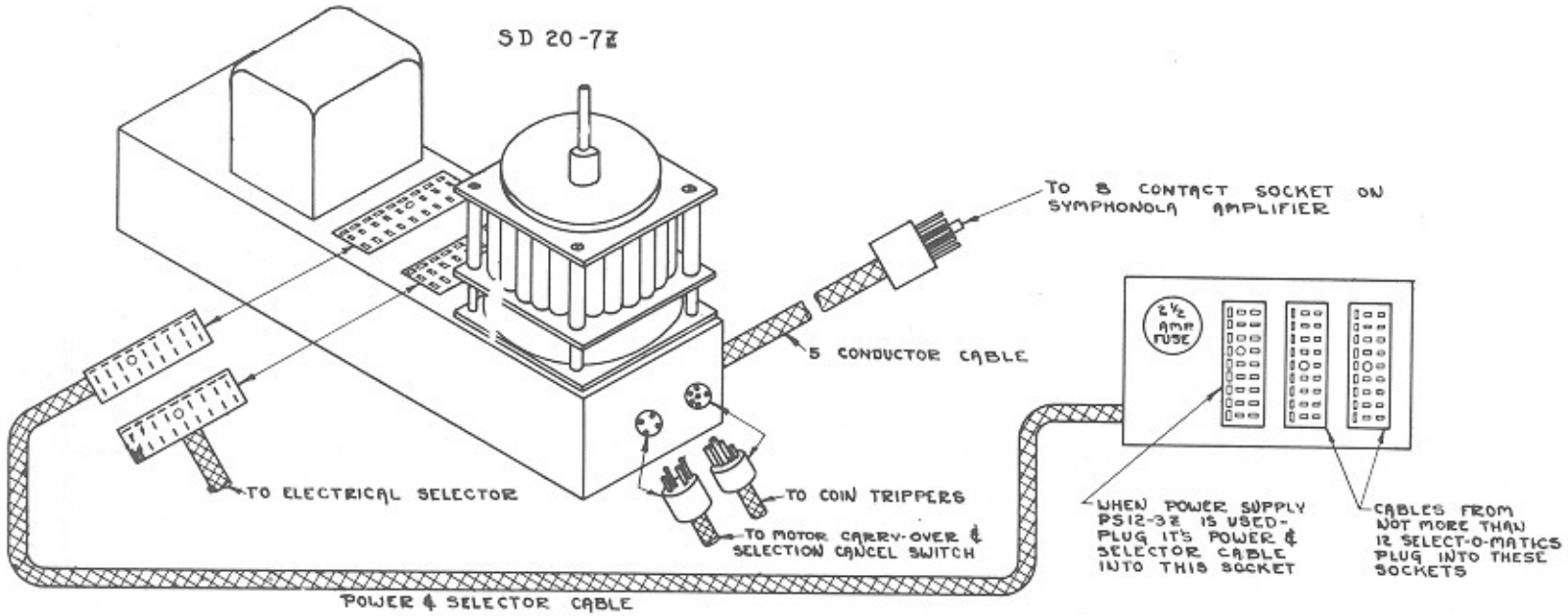
FIG. 50- TYPE PSI2-3Z POWER SUPPLY SUB-PANEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	14168	Sub-Panel.	1	$ .75
2	11213	Power Transformer. .	1	2.75
3	14173	2-1/2 Amp Non-Tamperable Fuse.	1	.25
4	11761	Power Cord	1	.25
5	12004	9 Prong Plug	1	.25
6	14213	Selection Cable. . .	1	1.50
7	12020	27 Prong Plug. . . .	1	1.00
8	84244	9 Contact Socket . .	1	.10
9	14175	Non-Tamperable Fuse Socket.	1	$ .40
10	F-9461	27 Contact Socket .	2 Each	1.00
11	12017	27 Contact Socket .	1	1.00
12	14167	Bottom Plate. . . .	1	.30
13	11203	27 Prong Plug . . .	2 Each	1.00
14	14177	Sub-Panel End Plate	1	.10
15	14178	Sub-Panel End Plate	1	.10

F-9964

FIG. 51 - BLOCK WIRING DIAGRAM OF TYPE WA-IZ WIRED ADAPTER IN MODELS 7800, 7850 8800, AND 9800



F-9955

FIG. 52 - SCHEMATIC DIAGRAM OF TYPE T-3Z TRANSMITTER

ITEM	PART NO.	DESCRIPTION	PRICE
		RESISTORS	
R1	11010	- 250,000 Ohm Variable Modulation Control.	$ .75
R2	82427	- 1800 Ohm 1/2 Watt ± 10% . .	.07
R3	82444	- 47,000 Ohm 1/2 Watt ± 10% .	.07
R4	82421	- 560 Ohm 1/2 Watt ± 10% . .	.07
R5	82441	- 27,000 Ohm 1/2 Watt ± 10% .	.07
R6	82444	- 47,000 Ohm 1/2 Watt ± 10% .	.07
R7	82444	- 47,000 Ohm 1/2 Watt ± 10% .	.07
R8	82436	- 10,000 Ohm 1/2 Watt ± 10% .	.07
R9	11008	- Gandohm 1800-8888 Ohms. . .	.50
R10	11009	- Gandohm 900 Ohms.	.20
		CONDENSERS	
C1A C1B	87512	- 20 Mfd. 25 V. Lytic . . . . . - 20 Mfd. 25 V. Lytic	.75

ITEM	PART NO.	DESCRIPTION	PRICE
C2	80020	- .015 Mfd. 600 V. Tubular. .	$ .10
C3	86018	- .05 Mfd. 400 V. Tubular . .	.10
C4	85015	- .00005 Mfd. (500 Mmf.) Mica 10%	.20
C5	85006	- .002 (2000 Mmf.) 10% . . .	.20
C6	85006	- .002 Mfd. (2000 Mmf.) 10% .	.20
C7A	86078	- .10 Mfd. 600 V. Tubular . .	.40
C7B			
C8	87519	- 20 Mfd. 450 V. Lytic. . . .	.90
C9A	87520	- 20 Mfd. 450 V. Lytic. . . .	1.00
C9B		- 30 Mfd. 300 V. Lytic. . . .	
C10	87521	- 10 Mfd. 50 V. Lytic	.25
		MISCELLANEOUS	
M1	11007	- Base Choke Assembly	1.25
M2	11006	- Modulation Transformer. . .	1.50

ITEM	PART NO.	DESCRIPTION	PRICE
M3	80148	- Oscillator Coil Assembly. .	$ .75
M4	80179	- Output Coil Assembly. . . .	1.00
M5	11012	- R.F. Choke.	.75
M6	11022	- Power Transformer	2.25
M7	11007	- Filter Choke.	1.25
M8	11469	- Input Leads.	.30
M9	12023	- Input Adapter Plug and Socket Assembly	.30
M10	12028	- 9 Prong Plug.	.25
M11	12116	- Power Cord.	.20
M12	11758	- 4 Prong Plug.	.25
M13	12126	- Output Cord	.20
M14	12027	- 2 Prong Socket.	.10
M15	F-8095	- 2 Prong Plug.	.10
M16	F-8094	- Pickup Shorting Switch. . .	.25

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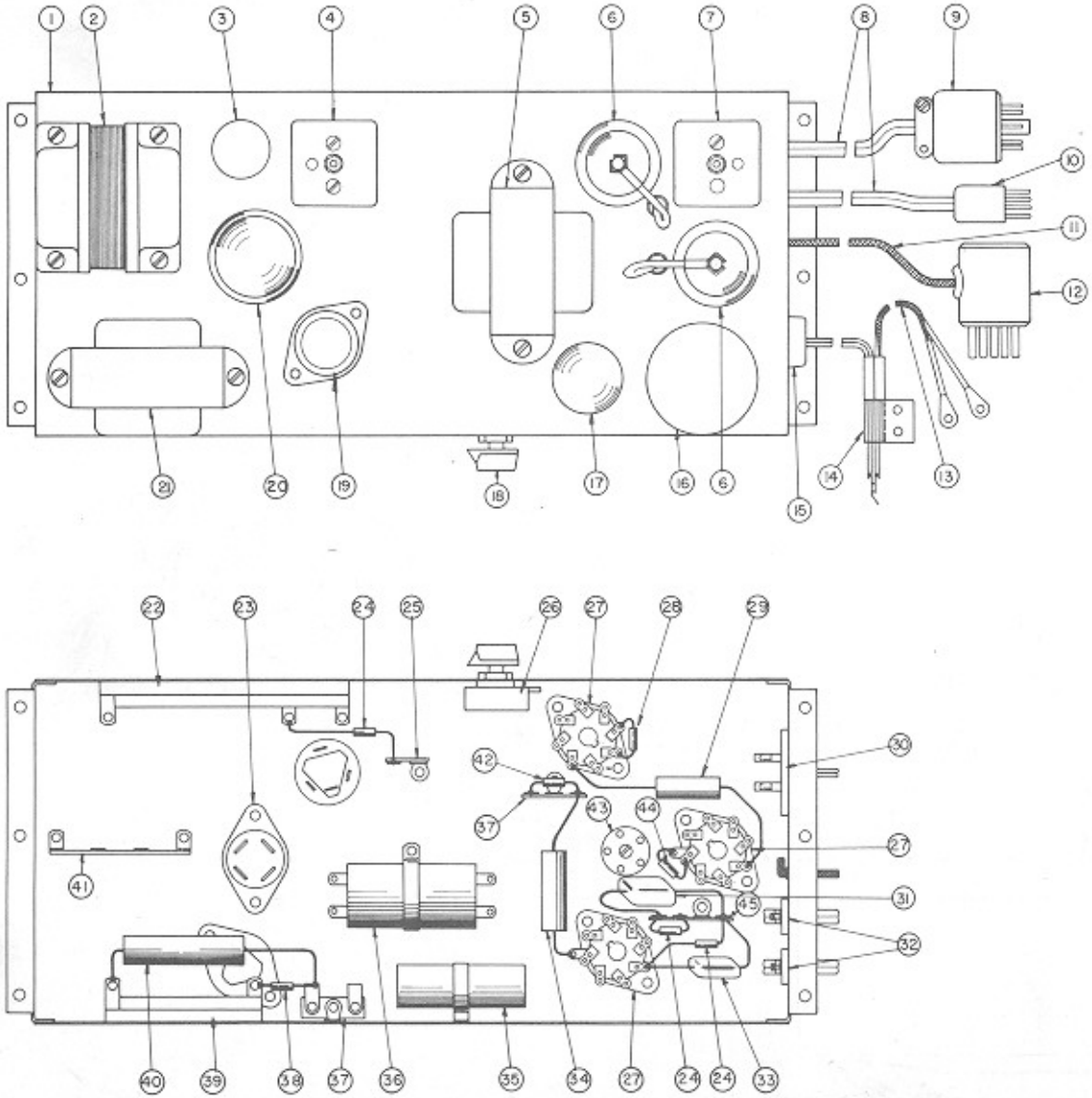
FIG. 53 - TYPE T-3Z TRANSMITTER SUB-PANEL ASSEMBLY



ITEM	PART NO.		DESCRIPTION	NO. REQ.	PRICE
1	12127	-	Sub-Panel.	1	$ 1.75
2	11022	-	Power Transformer.	1	2.25
3	87520	-	20-30- MFD 450-300- Volt Electrolytic Condenser	1	1.00
4	30179	-	Output Coil Assembly	1	1.00
5	11006	-	Modulation Transformer	1	1.50
6		-	Type 6F8G Tube	2	.89
7	30148	-	Oscillator Coil Assembly	1	.75
8	12126	-	Power Cord	2	.20
9	12028	-	6 Prong Plug	1	.25
10	11758	-	4 Prong Plug	1	.25
11	11469	-	Input Lead	1	.30
12	12023	-	5 Prong Plug and Socket.	1	.30
13	F-3052	-	Shielded Lead.	1	.15
14	F-3204	-	Pickup Shorting Switch	1	.25
15	F-3205	-	2 Prong Plug	1	.10
16	11072	-	Tone Choke	1	1.25
17		-	Type 6J5GT Tube.	1	.68
18	11020	-	Modulation Control Knob.	1	.10
19	87519	-	20 MFD 450 Volts Electrolytic Condenser.	1	.60
20		-	Type 80 Tube	1	.43
21	11007	-	Filter Choke	1	1.25
22	11006	-	Candohm 1900-8335 OHMS	1	.50
23	84222	-	4 Prong Tube Socket.	1	.15
24	82444	-	47,000 OHM, 1/2 Watt 10% Resistor.	3	.07
25	10062	-	Terminal Strip (1 Lug)	1	.10
26	11010	-	Modulation Control	1	.75
27	84220	-	Octal Tube Socket.	3	.10
28	82427	-	1800 OHM 1/2 Watt 10% Resistor.. .	1	.07
29	86026	-	.015 MFD 400 Volt Tubular Condenser	1	.10
30	12027	-	2 Prong Socket	1	.10
31	85006	-	.001 MFD Mica Condenser.	1	.20
32	14172	-	Cord Lock...	2	.10
33	85013	-	.005 MFD Mica Condenser.	1	.20
34	86013	-	.05 MFD 400 V. Tubular Condenser .	1	.10
35	87512	-	Dual 30 MFD 25 Volt Electrolytic Condenser.	1	.75
36	86072	-	Dual .1 MFD 600 Volt Tubular Condenser.	1	.30
37	10070	-	Terminal Strip (2 Lug)	2	.10
38	82436	-	10,000 OHM 1/2 Watt 10% Resistor .	1	.07
39	11009	-	Candohm 700 OHMS	1	.20
40	87521	-	10 MFD 50 Volt Electrolytic Condenser.	1	.25
41	10303	-	Terminal Strip (2 Lug)	1	.10
42	82441	-	27,000 OHM 1/2 Watt 10% Resistor .	1	.07
43	11012	-	R.F. Choke	1	.35
44	82421	-	560 OHM 1/2 Watt 10% Resistor. . .	1	.07
45	10837	-	Terminal Strip (3 Lug)	1	.10

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FIG. 54 - BLOCK WIRING DIAGRAM OF TYPE T-32 TRANSMITTER IN MODELS 7800, 7850, 8800, AND 9800

F-6405

FIG. 55 - BLOCK WIRING DIAGRAM OF TYPE T-3Z TRANSMITTER IN MODELS RC-7850, RC-8800, AND RC-9800

F-6406

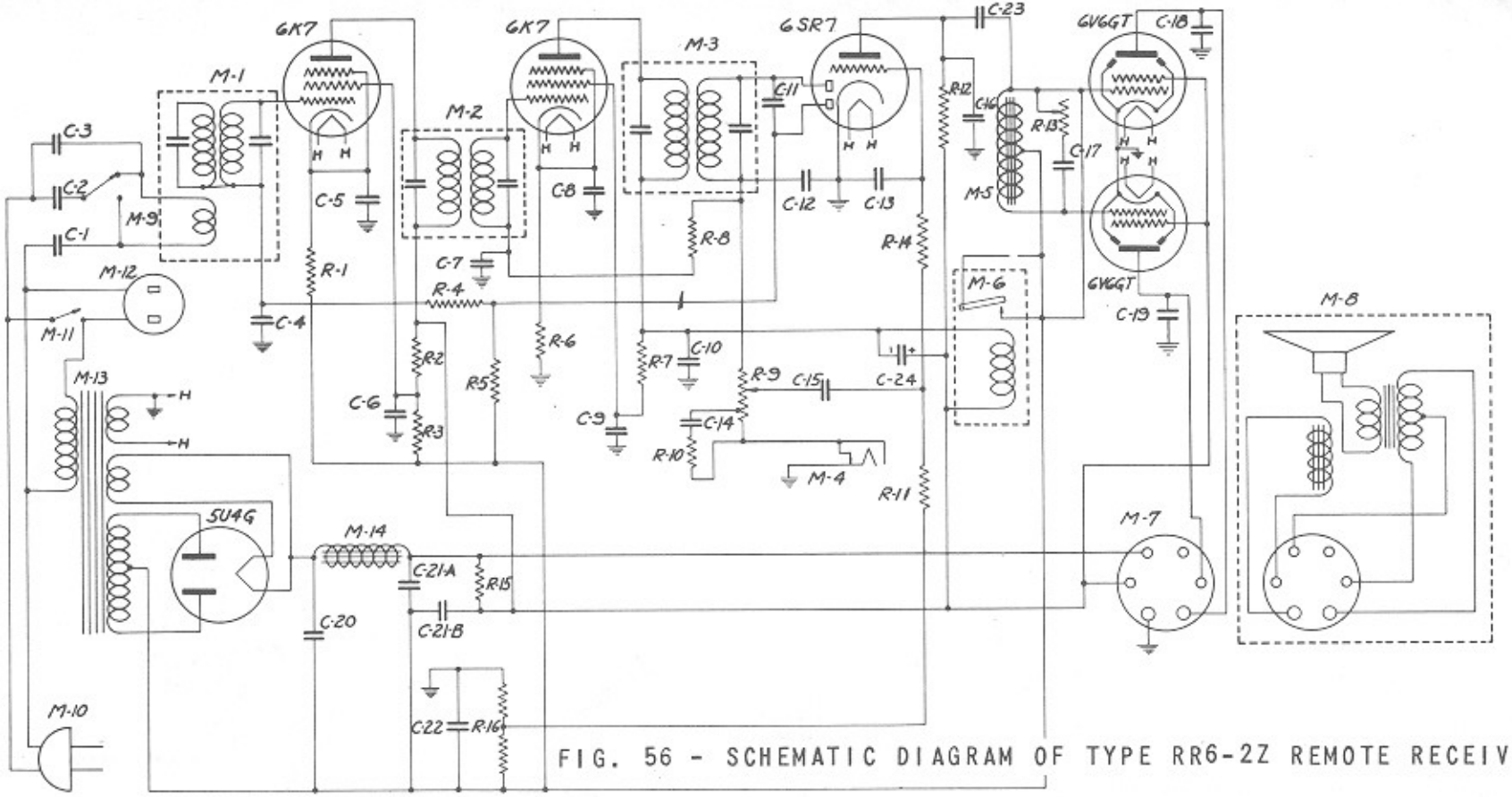

FIG. 56 - SCHEMATIC DIAGRAM OF TYPE RR6-2Z REMOTE RECEIVER

ITEM	PART NO.	DESCRIPTION	PRICE
		RESISTORS	
R1	82417	- 270 Ohm 1/2 Watt ± 10% . .	$ .07
R2	82706	- 39,000 Ohm 1 Watt ± 10%. .	.10
R3	82444	- 47,000 Ohm 1 Watt ± 10%. .	.10
R4	82460	- 1 Meg. Ohm 1 Watt ± 10%. .	.10
R5	82460	- 1 Meg. Ohm. 1 Watt ± 10% .	.10
R6	82417	- 270 Ohm 1 Watt ± 10% . . .	.10
R7	82445	- 56,000 Ohm 1 Watt ± 10%. .	.10
R8	82460	- 1 Meg. Ohm 1 Watt ± 10%. .	.10
R9	11152	- 250,000 Ohm Volume Control	.75
R10	82440	- 22,000 Ohm 1/2 Watt ± 10%.	.07
R11	82460	- 1 Meg. Ohm 1/2 Watt ± 10%.	.07
R12	82442	- 33,000 Ohm 1/2 Watt ± 10%.	.07
R13	11406	- 1 Meg. Ohm Tone Control. .	.50
R14	82444	- 47,000 Ohm 1/2 Watt ± 10%.	.07
R15	11398	- 135 Ohm Candohm.	.15
R16	11402	- 105 Ohm Candohm.	.20
		CONDENSERS	
C1	86045	- .1 Mfd. 600 Volt Tubular .	.10
C2	86045	- .1 Mfd. 600 Volt Tubular .	.10
C3	86038	- .005 Mfd. 600 Volt Tub . .	$ .10
C4	86009	- .05 Mfd. 200 Volt.	.10
C5	86009	- .05 Mfd. 200 Volt Tubular.	.10
C6	86013	- .05 Mfd. 400 Volt Tubular.	.10
C7	86017	- .2 Mfd. 200 Volt Tubular .	.10
C8	86009	- .05 Mfd. 200 Volt Tubular.	.10
C9	86013	- .05 Mfd. 400 Volt Tubular.	.10
C10	86003	- .1 Mfd. 400 Volt Tubular .	.10
C11	85017	- .003 Mfd. Mica	.20
C12	85000	- .0001 Mfd. Mica.	.10
C13	85000	- .0001 Mfd. Mica.	.10
C14	86031	- .02 Mfd. 400 Volt Tubular.	.10
C15	86000	- .01 Mfd. 400 Volt Tubular.	.10
C16	85010	- .0015 Mfd. Mica.	.20
C17	86000	- .01 Mfd. 400 Volt Tubular.	.10
C18	85010	- .0015 Mfd. Mica.	.20
C19	85010	- .0015 Mfd. Mica.	.20
C20	87534	- 50 Mfd. 350 Volt Electrolytic.	.65
C21A, C21B	87535	- 50 Mfd. 350 Volt Electrolytic . . . . . - 50 Mfd. 350 Volt Electrolytic	.75
C22	87536	- 200 Mfd. 25 Volt Electrolytic	.40
C23	86052	- .2 Mfd. 400 Volt Tubular .	$ .10
C24	87539	- 100 Mfd. 50 Volt Electrolytic.	.25
		MISCELLANEOUS	
M1	80185	- 1st R.F. Coil and Shield Assembly	.75
M2	80184	- 2nd R.F. Coil and Shield Assembly	.75
M3	80185	- 3rd R.F. Coil and Shield Assembly	.75
M4	11188	- Jack	.35
M5	11400	- Audio Input Choke.	1.00
M6	11403	- Relay and Bracket.	2.00
M7	84201	- Speaker Socket	.10
M8	11399	- 12" Speaker.	6.00
M9	11409	- Near-Far Switch.	.15
M10	F-1369	- Line Cord and Plug Assembly.	.85
M11	11445	- Off-On Switch and Lead Assembly	.30
M12	11401	- Two Prong Receptacle . . .	.20
M13	11397	- Power Transformer.	3.25
M14	11396	- Filter Choke	1.25

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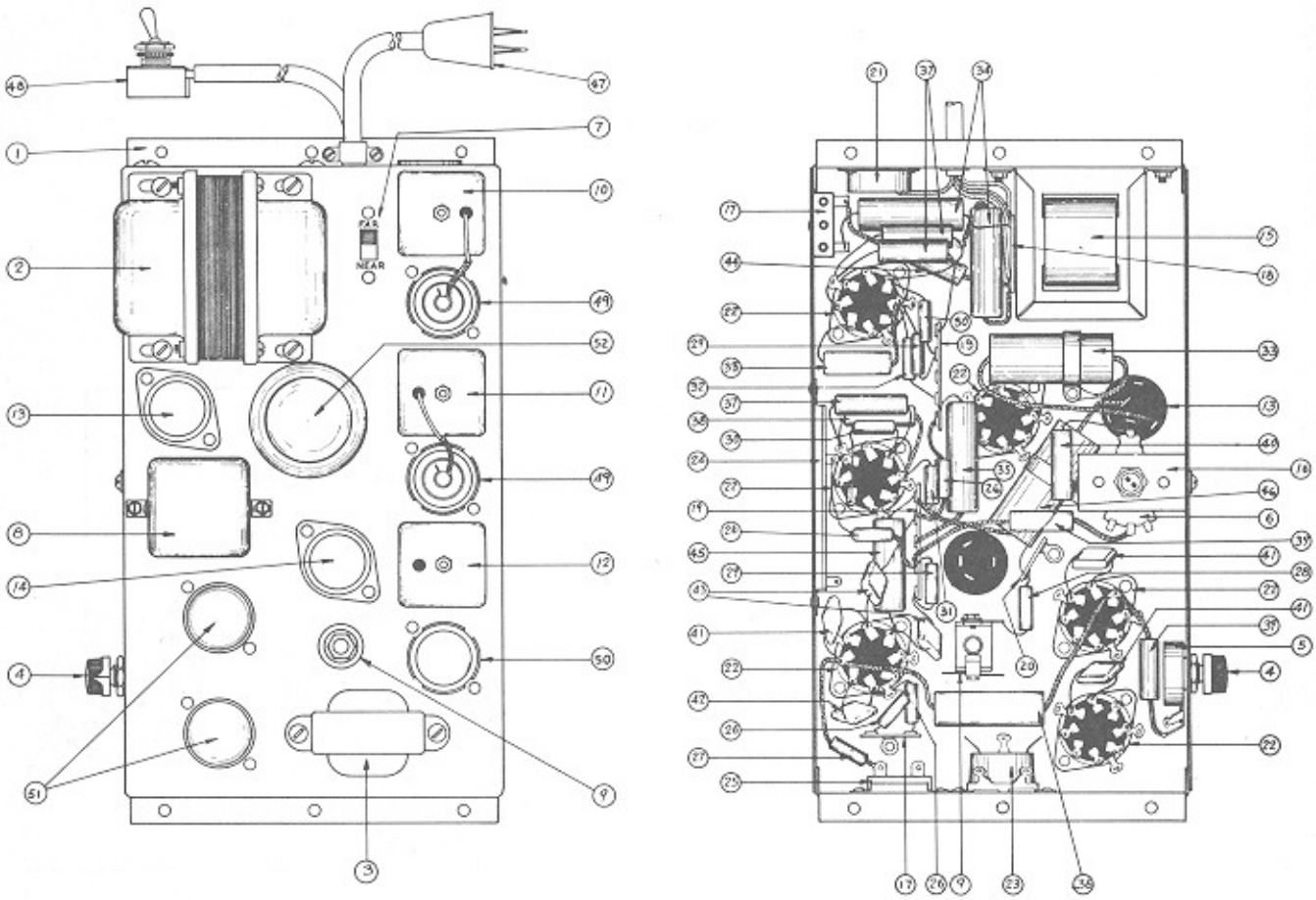
FIG. 57 - TYPE RR6-2Z REMOTE RECEIVER SUB-PANEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION	NO. REQ.	PRICE
1	50159	- Sub-Panel.	1	$2.00
2	11597	- Power Transformer. . .	1	3.25
3	11400	- Audio Input Choke. . .	1	1.00
4	11020	- Tone Control Knob. . .	1	.10
5	11406	- Tone Control	1	.50
6	11152	- Volume Control	1	.75
7	11409	- Near-Far Switch. . . .	1	.15
8	11403	- Muting Relay	1	2.00
9	11188	- Jack	1	.55
10	50183	- 1st Coil and Shield Assembly	1	.75
11	50184	- 2nd Coil and Shield Assembly	1	.75
12	50185	- 3rd Coil and Shield Assembly	1	.75
13	87555	- 30-30 MFD 350-300 Volt Electrolytic Cond. .	1	.75
14	87554	- 50 MFD 350 Volt Electrolytic Cond. .	1	.65
15	11596	- Filter Choke	1	1.25
16	11408	- Volume Control Bracket	1	.15
17	10070	- Terminal Strip (2 Lug)	2	.10
18	11560	- Terminal Strip (2 Lug)	1	.10
19	10080	- Terminal Strip (5 Lug)	2	.10
20	10062	- Terminal Strip (1 Lug)	1	.10
21	11401	- Receptacle	1	.20
22	84220	- 8 Prong Tube Socket. . (Octal).	6	.15
23	84201	- 6 Prong Speaker Socket	1	.10
24	11402	- Candohm Resistor . . .	1	.20
25	11398	- Candohm Resistor . . .	1	.15
26	82460	- Resistor - 1 Megohm 1/2 Watt - 10%	4	.07
27	82442	- Resistor - 33,000 OHM 1/2 Watt - 10% . . .	1	.07
28	82440	- Resistor - 22,000 OHM 1/2 Watt - 10% . . .	1	.07
29	82444	- Resistor - 47,000 OHM 1/2 Watt - 10% . . .	2	.07
30	82417	- Resistor - 270 OHM 1/2 Watt - 10%	2	.07
51	82445	- Resistor - 56,000 OHM 1/2 Watt - 10% . . .	1	$ .07
52	82706	- Resistor 33,000 OHM 1 Watt - 10%	1	.10
53	87535	- Electrolytic Cond. 200 MFD 25 Volt	1	.40
54	86045	- Paper Condenser .1 MFD 600 Volt.	2	.10
35	86017	- Paper Condenser .2 MFD 200 Volt.	1	.10
36	86052	- Paper Condenser .2 MFD 400 Volt.	1	.10
37	86009	- Paper Condenser .05 MFD 200 Volt.	3	.10
38	86013	- Paper Condenser .05 MFD 400 Volt.	2	.10
39	86000	- Paper Condenser .01 MFD 400 Volt.	2	.10
40	86031	- Paper Condenser .02 MFD 400 Volt.	1	.10
41	85010	- Mica Condenser .0015 MFD 20%	3	.20
42	85017	- Mica Condenser .005 MFD 20%	1	.20
43	85000	- Mica Condenser .0001 MFD 20%	2	.10
44	86038	- Paper Condenser .005 MFD 600 Volt.	1	.10
45	86003	- Paper Condenser .1 MFD 400 Volt.	1	.10
46	87539	- Electrolytic Cond. 100 MFD 50 Volt	1	.55
47	F-1569-	Line Cord and Plug. . .	1	.85
48	11443	- Off-On Switch and Lead Assembly.	1	.50
49		- Type 6X7 Tube	2	.72
50		- Type 6SR7 Tube.	1	.72
51		- Type 6V6GT Tube	2	.72
52		- Type 5U4G Tube.	1	.64

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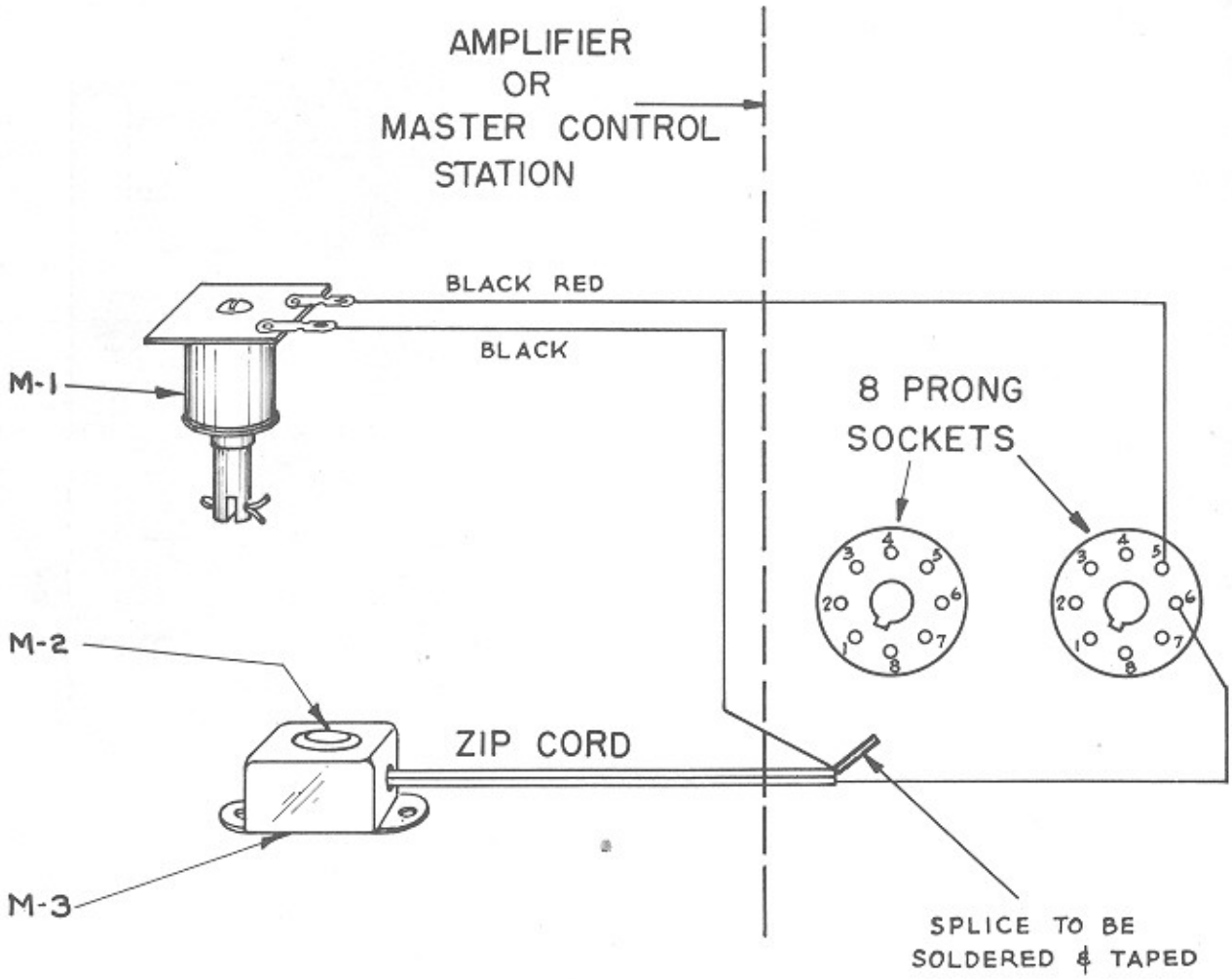
FIG. 58 - BLOCK WIRING DIAGRAM OF TYPE C-5Z REMOTE SELECTION CANCEL KIT IN 1941 SYMPHONOLAS



ITEM	PART NO.		DESCRIPTION	PRICE
M1	14121	-	Cancel Solenoid and Plunger	$ 1.40
M2	12105	-	Cancel Button	.50
M3	12100	-	Cancel Button Housing	.25

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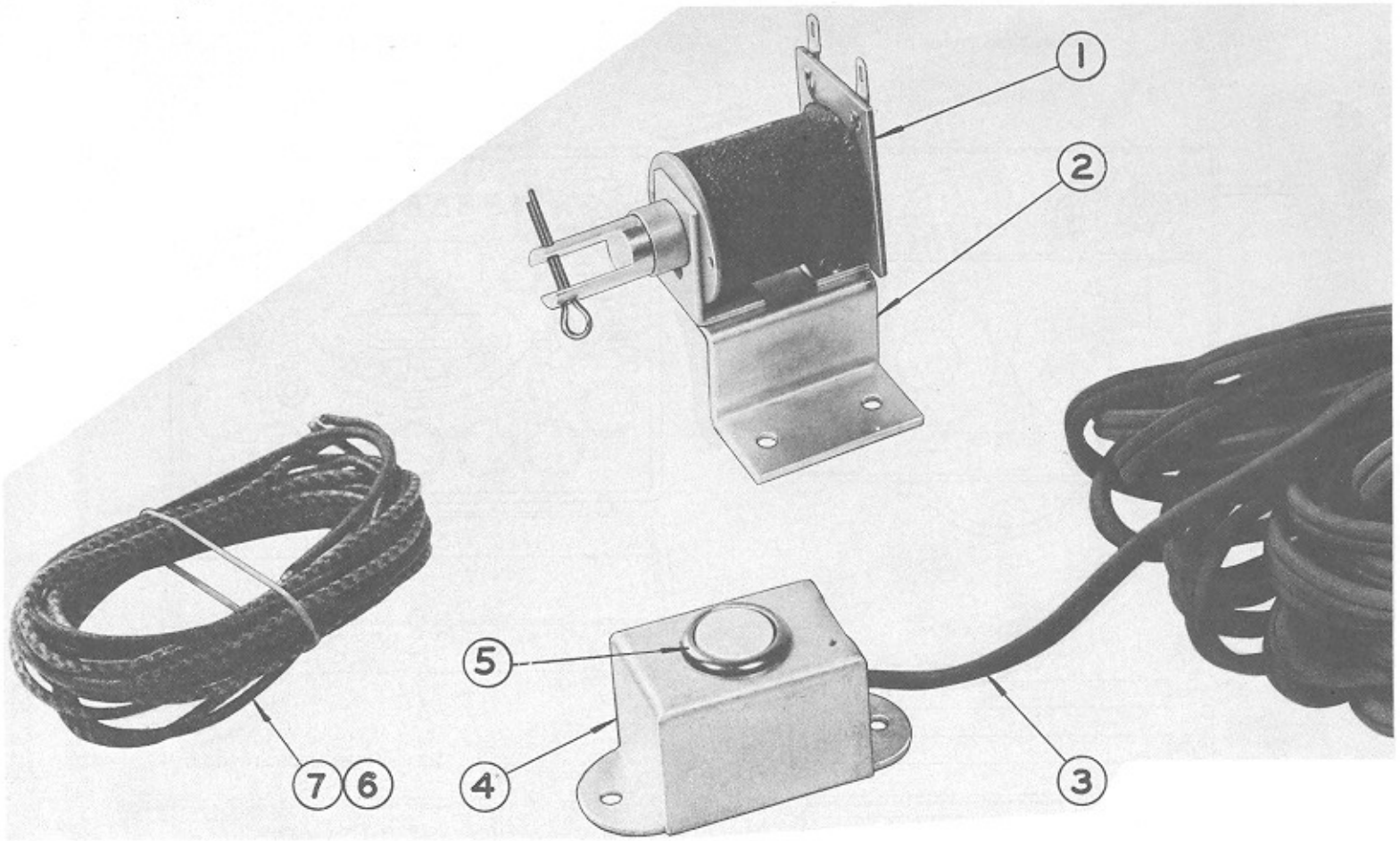


FIG. 59 - TYPE C-5Z REMOTE SELECTION CANCEL KIT

ITEM	PART NO.		DESCRIPTION		PRICE
1	14121	-	Record Cancel Solenoid.		$1.40
2	14120	-	Solenoid Bracket.		.15
3		-	#18 Brown Rubber Zip Cord	Per ft.	.04
4	12100	-	Record Cancel Button Housing.		.25
5	12105	-	Record Cancel Button.		.50
6		-	#20 Black Stranded Wire	Per ft.	.02
7		-	#20 Black-Red Stranded Wire	Per ft.	.02

FIG. 60 - TEST EQUIPMENT

FIG. 61 - TYPE "A" INTERFERENCE ELIMINATOR AND TYPE 250 COUPLER

FIG. 62 - AUTO TRANSFORMER AND TYPE B-2 LINE FILTER

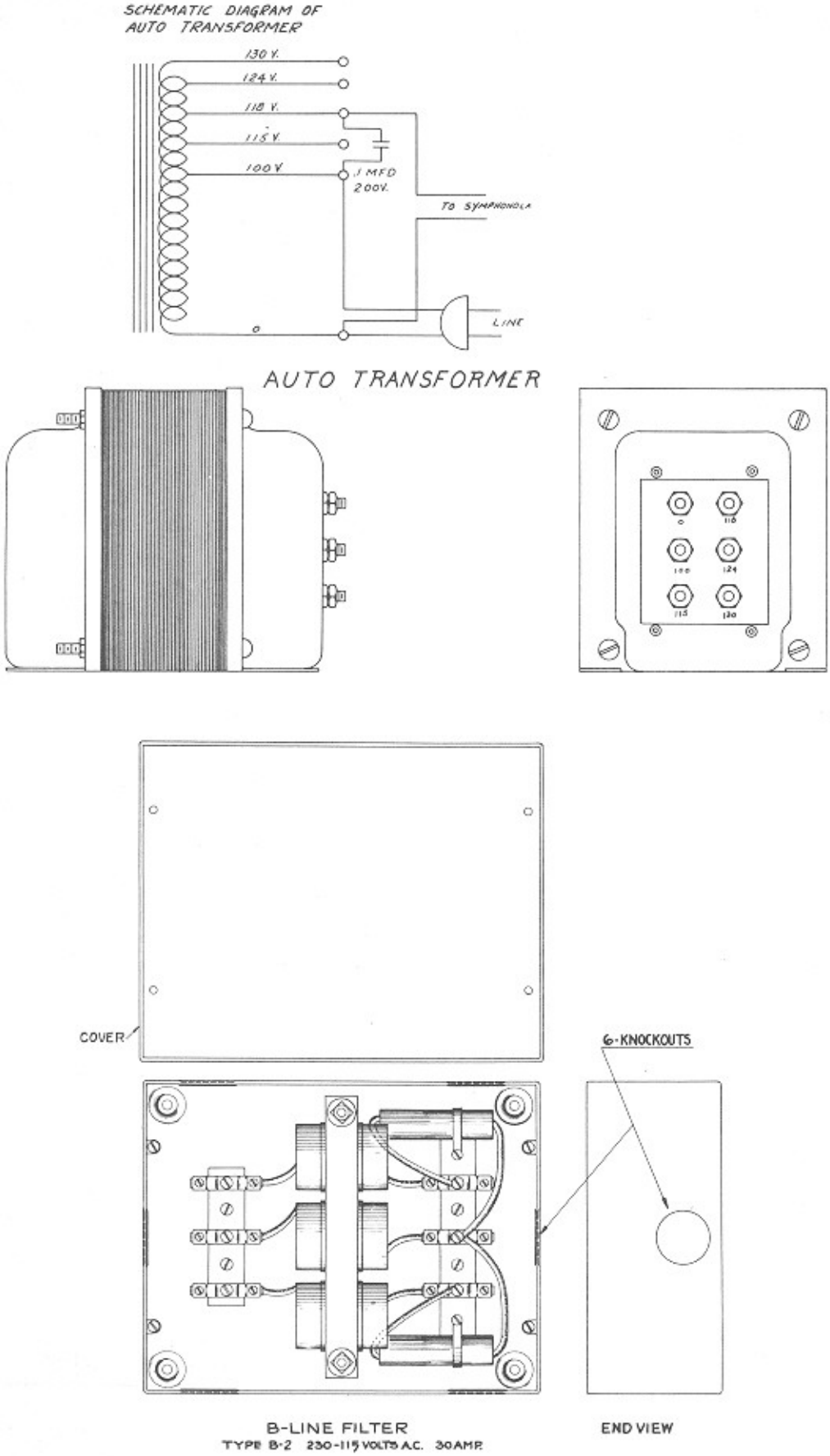
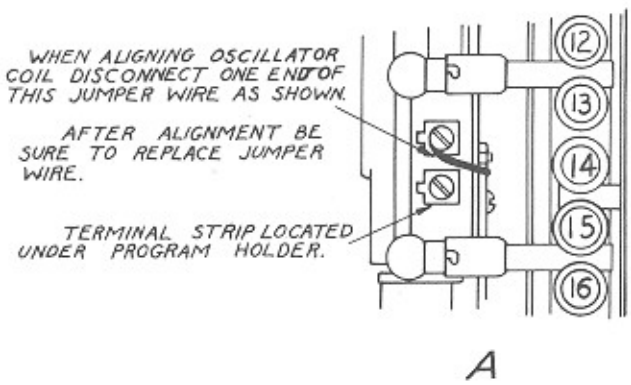
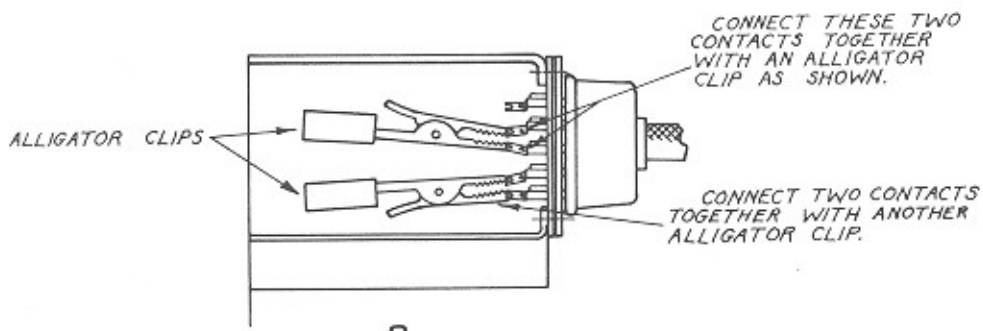


FIG. 63 - SKETCH SHOWING ALIGNMENT PROCEDURE ON BAR-O-MATIC



A



B

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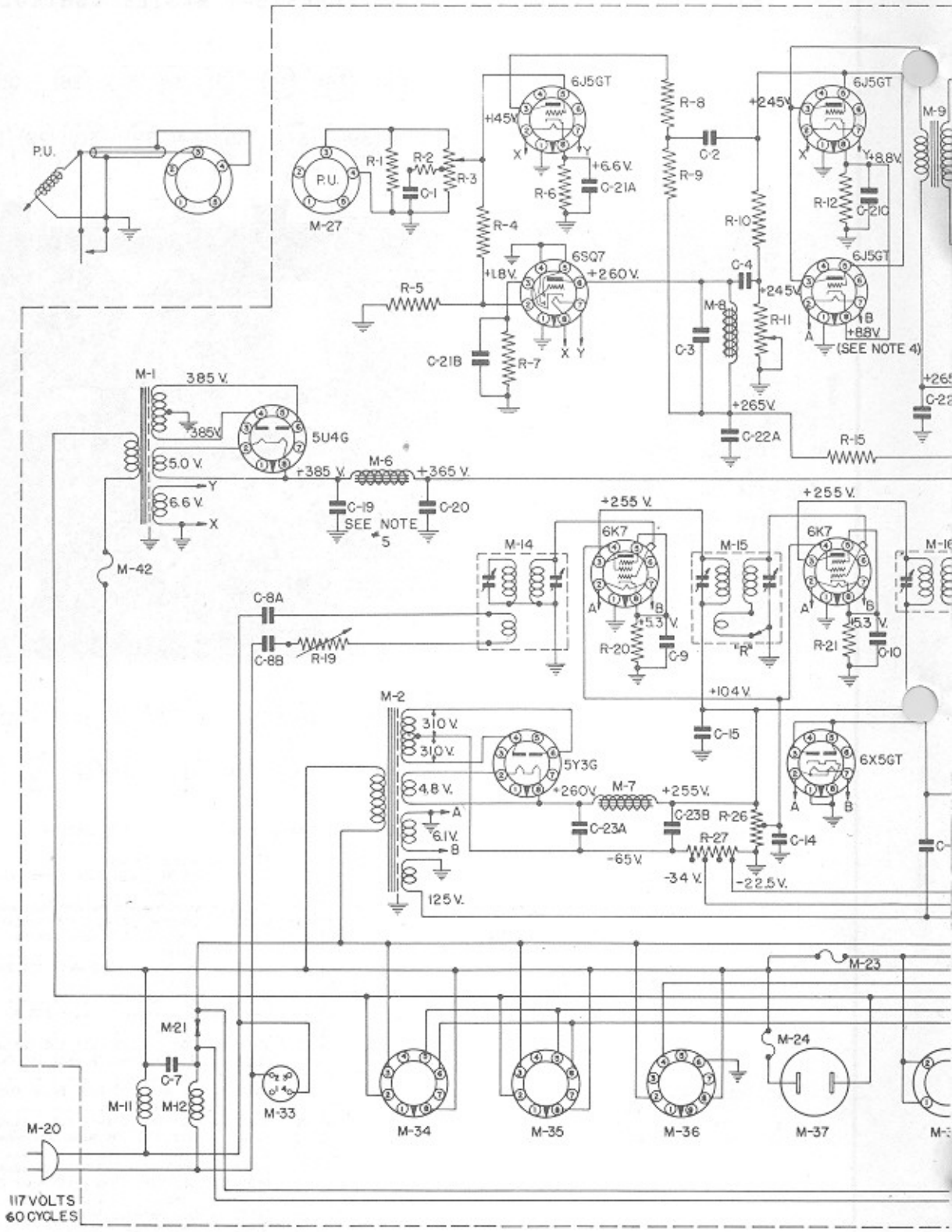
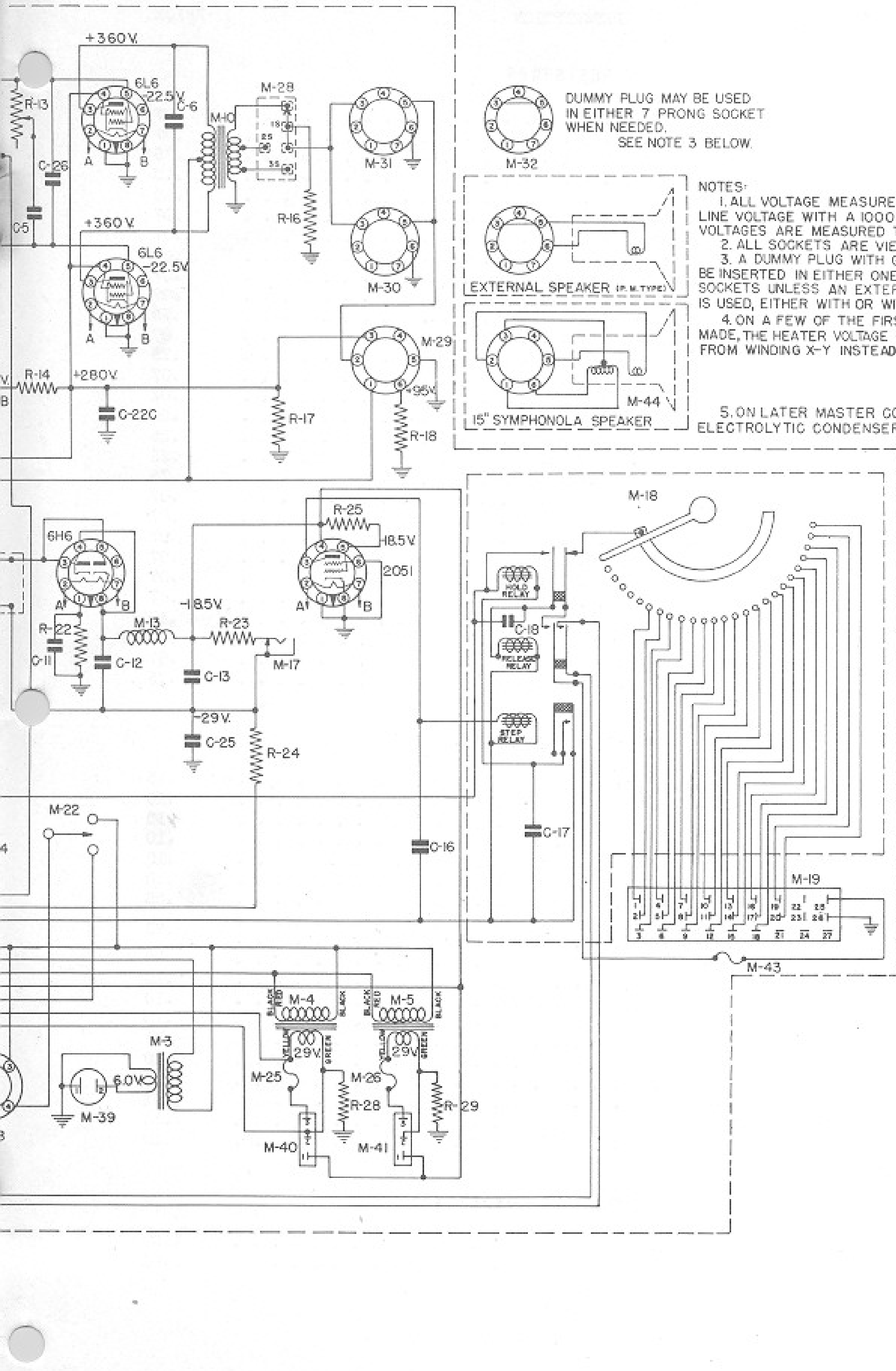


FIG. 8 - SCHEMATIC DIAGRAM FOR MCS25-5 MASTER CONTROL STATION



NOTES:

1. ALL VOLTAGE MEASUREMENTS MADE AT 117 VOLTS LINE VOLTAGE WITH A 1000 OHM PER VOLT VOLTMETER. VOLTAGES ARE MEASURED TO CHASSIS.

2. ALL SOCKETS ARE VIEWED FROM BOTTOM.

3. A DUMMY PLUG WITH GREEN SHELL SHOULD ALWAYS BE INSERTED IN EITHER ONE OF THE 7 PRONG SPEAKER SOCKETS UNLESS AN EXTERNAL, REMOTE WIRED SPEAKER IS USED, EITHER WITH OR WITHOUT CONTROL BOX.

4. ON A FEW OF THE FIRST MASTER CONTROL STATIONS MADE, THE HEATER VOLTAGE FOR THIS TUBE WAS OBTAINED FROM WINDING X-Y INSTEAD OF A-B.

5. ON LATER MASTER CONTROL STATIONS, INPUT ELECTROLYTIC CONDENSER C-19, WAS REPLACED BY TWO #87523, 15 MFD. 450 VOLT DRY ELECTROLYTIC CONDENSERS CONNECTED IN PARALLEL. OUTPUT ELECTROLYTIC CONDENSER C-20 WAS REPLACED BY A #87519, 20 MFD. 450 VOLT DRY ELECTROLYTIC CONDENSER.

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