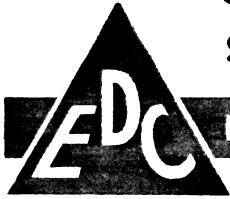


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EXCLUSIVE WURLITZER DISTRIBUTORS

SERVICE NOTES ON THE 2140 BAR BOX AND THE 212 MASTER UNIT

The following "SERVICE NOTES ON THE 2140 BAR BOX AND THE 212 MASTER UNIT" have been compiled to aid the Serviceman to render more efficient service.

In writing these notes we have assumed that the wiring between the boxes and the master unit is of the approved type and is correctly connected. Also, we have assumed that the impulse receiver and the impulse stepper are functioning properly.

We suggest that the Serviceman learn the name and location and function of the relays, contact arms and switches. The location of these units and also the method of numbering the contacts of the relays are covered fully in the diagrams.

It is very important for the Serviceman to understand the purpose and operation of the Coin Overflow Cutoff Switch. The Coin Overflow Cutoff Switch is a safety device on the Bar Box. The purpose of this switch is to disconnect a box from the remainder of the boxes when a coin hangs and keeps a coin switch closed longer than necessary. When a coin holds a coin switch closed longer than necessary, the coil of the Coin Overflow Cutoff Switch will energize and the contacts of this assembly will open and remain latched in an open position. When these contacts are latched open, the lights will go out and that box only will register no credits.

To restore a box to service after the Coin Overflow Cutoff Switch has operated, first it is necessary to restore the coin switch to its normal open position. Then the latch on the contact assembly of the Coin Overflow Cutoff Switch is released, allowing the contacts to return to a closed position.

The 212 Master Unit is fused with a 2 ampere Buss fuse and a 3.2 ampere Slo-Blow fuse. The location of these fuses is marked at the fuse posts on the Master Unit. It is very important that the fuses are of the right size and are in the right fuse posts. Shorts in the cable and in the terminals of the Bar Box Relay and between the Bar Box Covers and the light sockets cause most fuse trouble. However, defective 6V6 and 6X5 tubes in the Master Unit may cause fuse trouble.

When a coin is deposited in a Bar Box, the Bar Box Relay should energize and remain energized until all credits are played off. (See Fig. #2.)

If, when coins are deposited in one box and the Bar Box Relay of that box fails to operate, other boxes connected to the same Master Unit function correctly, then;

- CHECK: Bar Box Terminals #13, #14 & #16;
- CHECK: Contacts #1 & #2 Coin Overflow Cutoff Switch. (See Fig. #2.)
- CHECK: Contacts #7, #8 & #9 Bar Box Relay. (See Fig. #2.)
- CHECK: Coin Switches and Coin Gates.
- CHECK: Re-set of Coin Overflow Cutoff Switch. (See Fig. #2.)
- NOTE: Coin Gates should hold coin and keep coin Switch closed until credits are registered.

If Bar Box Relays in all boxes fail to operate when coins are deposited, then:

- CHECK: Fuses.
- CHECK: Terminals #9, #13, #14 & #16 on Master Unit.
- Check: Key Switch #1. (See Fig. #4.)

When the Bar Box Relay energizes and holds, the Set Up Relay (See Fig. #3.) should energize and hold and start the motor and close the Key Switches #1 & #2 (See Fig. #4.) The proper number of credits should be registered on the Accumulator Assembly. (See Fig. #4.)

If the Set Up Relay fails to operate when coins are deposited in one box and the Bar Box Relay of that box operates, when other boxes connected to the same Master Unit register coins correctly, then:

- CHECK: Bar Box Terminal #8.

**CHECK: Contacts #7 & #8 on Bar Box Relay.
(See Fig. #2.)**

If the Set Up Relay (See Fig. #3) fails to operate from any Bar Box when Bar Box Relays (See Fig. #2) operate correctly, then:

**CHECK: Master Unit terminal #8.
CHECK: Release Switch. (See Fig. #5.)
CHECK: Trip Switch. (See Fig. #5.)
CHECK: Contacts #9, #10, #11, #7, & #8 on Set Up Relay.
(See Fig. #3.)**

If the Set Up Relay (See Fig. #3) operates, but the motor will not run, then:

**CHECK: Contacts #7 & #8 on Set Up Relay (See Fig. #3.)
CHECK: Motor Full Cycle Switch. (See Fig. #5.)**

If the Set Up Relay (See Fig. #3) operates and the motor runs, but coins deposited in one box will not register when coins deposited in other boxes register correctly, then:

**CHECK: Coin Gates of defective box.
CHECK: Contacts #7 & #8 on Bar Box Relay. (See Fig. #2.)
CHECK: Bar Box Terminal #9.**

If the Set Up Relay (See Fig. #3) operates and the motor runs, but no credits are registered from any box, then:

**CHECK: Terminal #8 on Master Unit.
CHECK: Mechanical action of Accumulator Assembly
(See Fig. #5).**

If coins register, but Coin Overflow Cutoff Switch (See Fig. #3) operates and lights go out in box and box becomes inactive, then:

**CHECK: Mechanical action of Coin Gates.
CHECK: Shorts in terminals of Bar Box Relay (See Fig. #2).
CHECK: Shorts in terminals of Coin Overflow Cutoff Switch. (See Fig. #2.)
CHECK: Coin Switches.**

When coins are deposited and credits registered on the accumulator assembly (See Fig. #5) and the Key Switches (See Fig. #5) are closed and a Selector Button on the Bar Box is

pressed, the Selector Button Relay (See Fig. #3) should energize and remain energized while the motor completes one cycle.

If the Selector Button Relay fails to energize when a selection is made from one Bar Box, but will energize when selections are made from other boxes connected to the same Master Unit, then:

- CHECK:** Bar Box Terminals #9 & #12
- CHECK:** Contacts #1, #2, #5, #6 on Bar Box Relay (See Fig.#2)
- CHECK:** Selector Button Switches on Bar Box.

If the Selector Button Relay (See Fig. #3) fails to operate when selections are made from any Bar Box, then:

- CHECK:** Contacts #1 & #2 on Set Up Relay (See Fig. #3.)
- CHECK:** Contacts #9, #10 & #11 on Selector Button Relay (See Fig. #3)
- CHECK:** Contacts #2 & #3 on Cycle Relay (See Fig. #4)
- CHECK:** Terminal #12 on Master Unit.
- CHECK:** Key Switches #1 & #2 (See Fig. #4)

If the Selector Button Relay (See Fig. #3) operates but the motor will not start, then:

- CHECK:** Contacts #7 & #8 on Selector Button Relay.

When a selection is made from a Bar Box the motor in the Master Unit runs and the Starting Relay (See Fig. #3) should energize at some part of the motor cycle, depending on the numbers selected. The Starting Relay is operated by 24 Volts D.C. Supplied by the selenium rectifier.

If the Starting Relay fails to operate when Selections are made from one Bar Box, but will operate when Selections are made from other Bar Boxes connected to the same Master Unit, then:

- CHECK:** Contacts #3 & #4 on Bar Box Relay. (See Fig. #2)
- CHECK:** Terminals #3, #7, #8, #17, #10 & #11 on Bar Box.
- CHECK:** Bar Box Contact Plate and Rotor Assembly at left end of Rotary Program holder.
- CHECK:** Proper stop position of Rotary Program Holder.
- CHECK:** Selector Button Switches.

If the Starting Relay (See Fig. #3) fails to operate when selections are made from any Bar Box, then:

- CHECK:** Terminals #3, #7, #8, #10, #11, #18 & #17 on Master Unit.

CHECK: Contacts #1 & #2 on Starting Relay.

CHECK: Contacts #1 & #2 on Cutoff Relay. (See Fig. #3)

After the Start Relay has energized, but before the motor has completed one cycle, the Cutoff Relay (See Fig. #3) should energize. When the Cutoff Relay energizes, the Start Relay should release.

NOTE: During that part of the motor cycle when the Start Relay is energized, impulses should be sent from the Transmitter in the Master Unit to the impulse Receiver in the phonograph.

If the Cutoff Relay (See Fig. #3) fails to energize when selections are made from one Bar Box, but will energize when selections are made from other Bar Boxes connected to the same Master Unit, then:

CHECK: Bar Box Terminals #2, #3, #4 & #5.

CHECK: Contacts #3, #4 on Bar Box Relay. (See Fig. #2)

CHECK: Selector Button Switches.

If the Cutoff Relay (See Fig. #3) will not energize from any Bar Box, then:

CHECK: Terminals #3, #4 & #5 on Master Unit.

If more than one credit is registered on one Bar Box and a Selector Button is pressed and by holding the selector button pressed all credits are played off, then:

CHECK: Contacts #1 & #2 on Cycle Relay (See Fig. #4).

If no wireless impulses are sent from the transmitter in the Master Unit to the Receiver in the Phonograph, then:

CHECK: 6V6 and 6X5 tubes in Master Unit

CHECK: Pulsing Switch. (See Fig. #5)

**CHECK: Contacts #1 & #2 Selector Button Relay
(See Fig. #3)**

CHECK: Contacts #1 & #2 Starting Relay (See Fig. #3)

CHECK: Contacts #3 & #4 Cutoff Relay. (See Fig. #3)

**CHECK: Contacts #5 & #6 Selector Button Relay
(See Fig. #3)**

**THE OPERATION AND SERVICE OF THE
IMPULSE RECEIVER AND THE IMPULSE STEPPER
ARE COVERED FULLY IN THE WURLITZER SERVICE MANUAL**

L.W.Peteet

FIG. #1.....TYPICAL RELAY

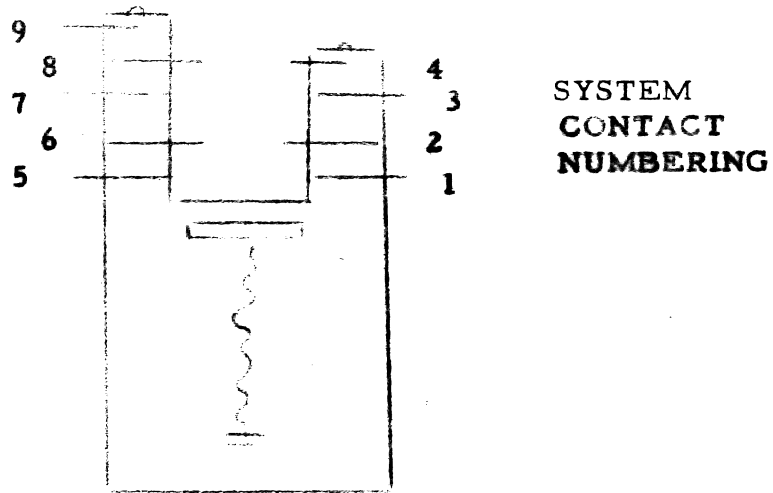


FIG. #2.....BAR BOX, TOP VIEW

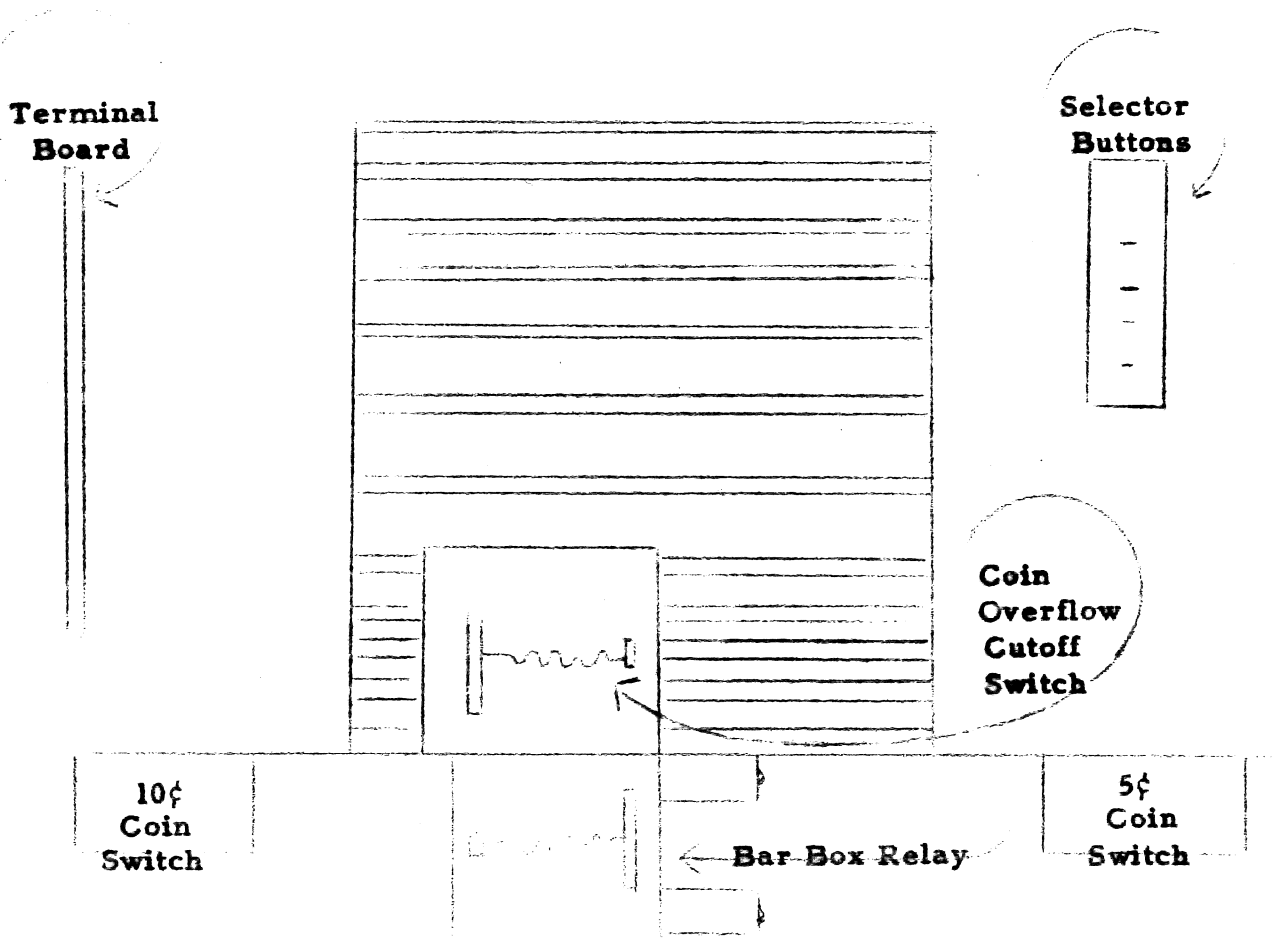


FIG. #3

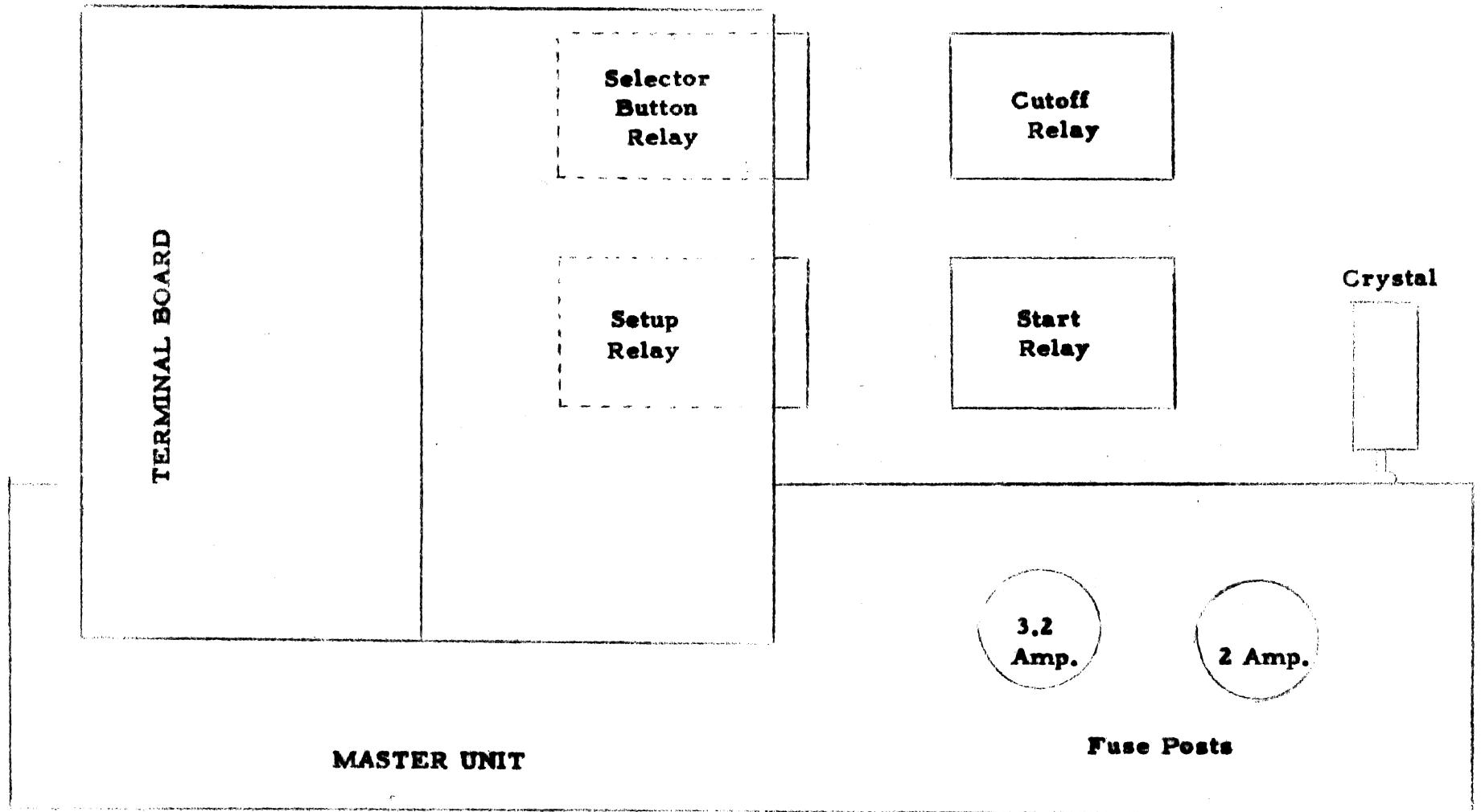


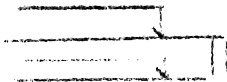
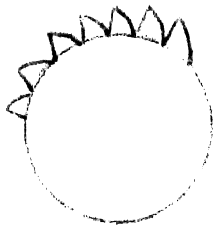
FIG. #4

Cycle
Relay

Rectifier

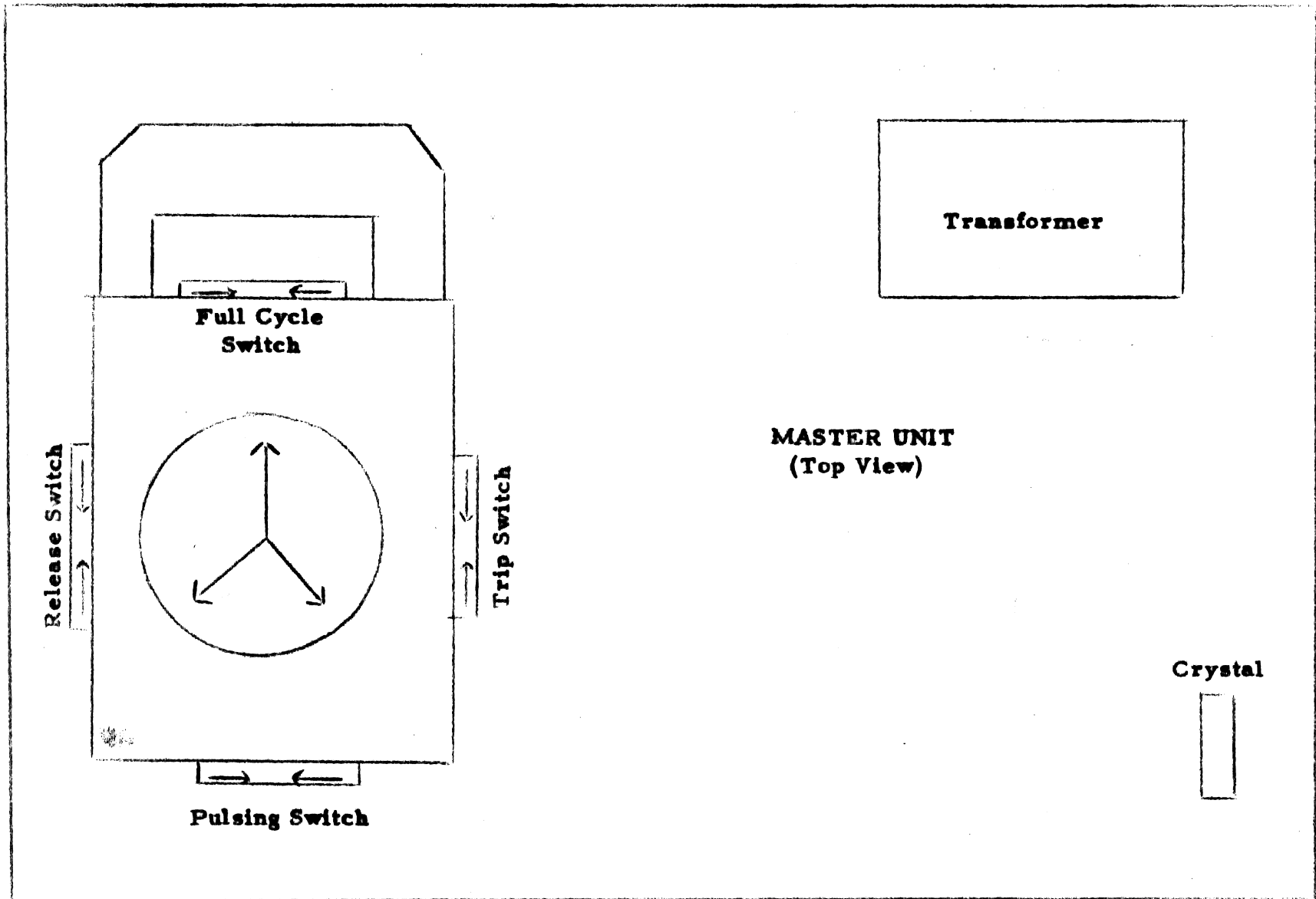
MASTER UNIT
(Bottom View)

Accumulator Assy.



← Key Switches #1 & #2

FIG. #5



35-9

COLOR CODE FOR INTERCONNECTING CABLE

<u>TERMINAL NUMBER</u>	<u>WIRE BODY COLOR</u>	<u>TRACER COLOR</u>	<u>CIRCUIT</u>
1	Yellow	Red	D.C. to latching solenoid
2	Yellow	Green	3,7,11,15,19,23 Cutoff Pulse
3	Red	-----	D.C.Common for Starting & Cutoff Pulse & latching solenoid
4	Pink	-----	2,6,10,14,18,22 Cutoff Pulse
5	Yellow	-----	1,5,9,13,17,21 Cutoff Pulse
6	Orange	-----	1 - 4 Starting Pulse
7	Gray	-----	5 - 8 Starting Pulse
8	Purple	-----	Accumulation common & Coin Overflow Trip
9	Tan	-----	Bar Box Relay Interlock
10	Brown	-----	17 - 20 Starting Pulse
11	Dark Green	-----	21 - 24 Starting Pulse
12	Light Green	-----	Selector Button Relay Actuating Circuit
13	Black	Green	5¢ Accumulation
14	Black	Orange	10¢ Accumulation
15	Black	-----	Coin Gate Solenoid
16	White	-----	Common Ground A.C.
17	Light Blue	-----	13 - 16 Starting Pulse
18	Black	Red	9 - 12 Starting Pulse
19	Orange	Black	Program Lights
	Dark Blue	-----	Spare
	Yellow	Black	Spare

This color code should be followed in interconnecting 2140 Bar Boxes and Master Unit, since the various wires in the cable are of different sizes, to accommodate different current carrying requirements, and the use of other than the wires called for in certain circuits might affect the correct functioning of the installation with long runs of cable.