

35 ELECTRICAL SERVICE UNIT

GENERAL DESCRIPTION AND PRINCIPLES OF OPERATION

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1. GENERAL

- 1.01 This section has been generally revised to include recent engineering information and to add late 35 equipment.
- 1.02 The 35 electrical service unit serves as an area of concentration for the wiring of 35-type apparatus and provides mounting facilities for various electrical assemblies and components.
- 1.03 The operational facilities provided by the electrical service unit vary, depending upon the number and complexity of functions performed by the set.
- 1.04 Complete operation of an electrical service unit requires connections with other components of a set with which it is used. Additional information concerning the support

functions of the unit may be found in sections discussing specific components and complete sets. Only independent features in the electrical service unit are discussed in this section, under principles of operation.

1.05 The electrical service units discussed in this section are used in the following sets:

- (a) 35 Receive Only (RO) Set.
- (b) 35 Keyboard Send-Receive (KSR) Set.
- (c) 35 Automatic Send-Receive (ASR) Set.
- (d) 35 Receive Only Typing Reperforator (ROTR) Set.

2. DESCRIPTION (See Figures 1, 2, and 3)

2.01 The electrical service unit consists, basically, of a rectangular, metal chassis (or container) and a number of mounting plate assemblies. Each mounting plate assembly consists of a functional group of components. They are mounted on the chassis and are interconnected, as required, with strapping.

2.02 Some of the features that may be mounted on the unit are listed below:

- (a) A copylight transformer to supply power to the set's copylights.
- (b) A copylight receptacle.
- (c) A convenience receptacle.
- (d) Fuses for protection of the main power and other circuits.
- (e) A power and signal line terminal board.
- (f) A line-local relay to provide switching to either on-line or independent, local operation.
- (g) A main terminal board to provide a wiring field for connection of cable assemblies to the electrical service unit.

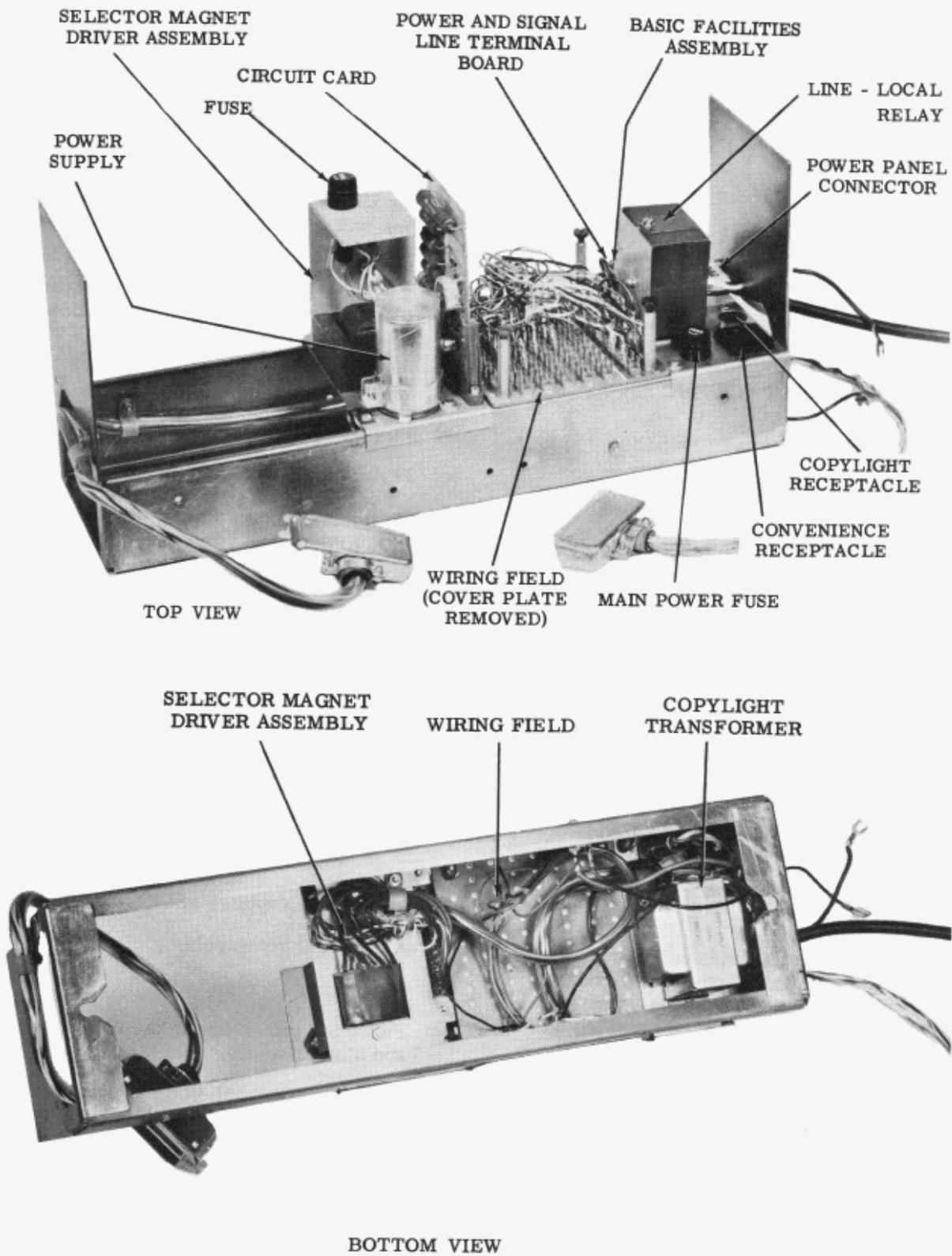


Figure 1 - Typical Electrical Service Unit for 35 KSR Set

- (h) A motor control relay for remote control of the set's motor.
- (i) A main power on-off switch.
- (j) Ground strapping.
- (k) Cable assemblies, as required, for inter-connection with other components of the set. The set's power cord may also be included.
- (l) A selector magnet driver assembly, which includes a power supply and a transistorized selector magnet driver circuit card. The selector magnet driver amplifies the 20 milliamperes incoming line signal to 500 milliamperes for operation of the receiving circuit selector magnets. More than one assembly may be installed to accommodate the receiving circuits of a set. For example, in a ASR set, two assemblies may be used: one for the typing unit, the other for a reperforator.
- (m) A signal regenerator circuit to improve the output of the keyboard signal generator.
- (n) A tape feed out relay to pulse a reperforator's tape feed out magnet.
- (o) A reperforator control relay to blind a typing reperforator's selector magnets to line signals.
- (p) An automatic turn around traffic control circuit card and disabling switch.
- (q) A relay plate assembly consisting of a non-contention (NTC) relay and three mode switch relays (MSK, MSR, and MSP). The NTC relay functions to prevent the sending station's answer-back from operating when transmitting a WRU code. The mode switch relays operate in conjunction with the automatic mode switch control assembly. This assembly is available without the mode switch relays.
- (r) Control panel and cable assemblies, typically consisting of two panels and cabling. One panel may support the mode and other pushbutton controls, the other the end of line indicator lamp. In some electrical service units, only the cabling to the external controls panels is provided.

2.03 The electrical service unit used with standard (dc) sets is wired to provide half duplex signal line operation. The unit may be wired (optional) to obtain full duplex operation, which permits receiving messages and transmitting them at the same time without interference between the two signals. This is accomplished by electrically separating the sending and receiving loops of the set by making wiring changes in the electrical service unit and connecting the loops to the appropriate duplex signal lines.

3. PRINCIPLES OF OPERATION

GENERAL

3.01 Since the major function of the electrical service unit is to provide support for circuit facilities, most of the operating principles are integrated into the sections which discuss related component and set operation.

3.02 The wiring diagram for the electrical service unit is incorporated into the schematics which appear in the appropriate section for each 35 set (i.e., RO, KSR, and ASR). The ROTR wiring diagrams are included in the teletypewriter set to which it is connected.

SELECTOR MAGNET DRIVER

3.03 The selector magnet driver assembly is a two stage transistorized amplifier capable of switching high output currents (0.500 ampere) at very closely controlled input current levels. The output of the driver is adjustable to 0.500 ampere output, but may change slightly due to normal supply voltage and component variations. It includes a power supply and a transistorized selector magnet driver card. The driver assembly amplifies the 20 milliamperes incoming line signal to 0.500 ampere for operation of the typing unit selector magnets. For a more detailed description of operation see the applicable section.

LINE-LOCAL RELAY

3.04 The line-local relay is used to switch a set to either on-line or local operation. It is used in standard sets (dc) and is controlled by the rotary type power switch. With the power switch in the ON position, the local-line relay is energized (by power derived from the selector magnet driver power supply (3.03)), and its contacts connect the set's receiving circuit in series with the external signal line.

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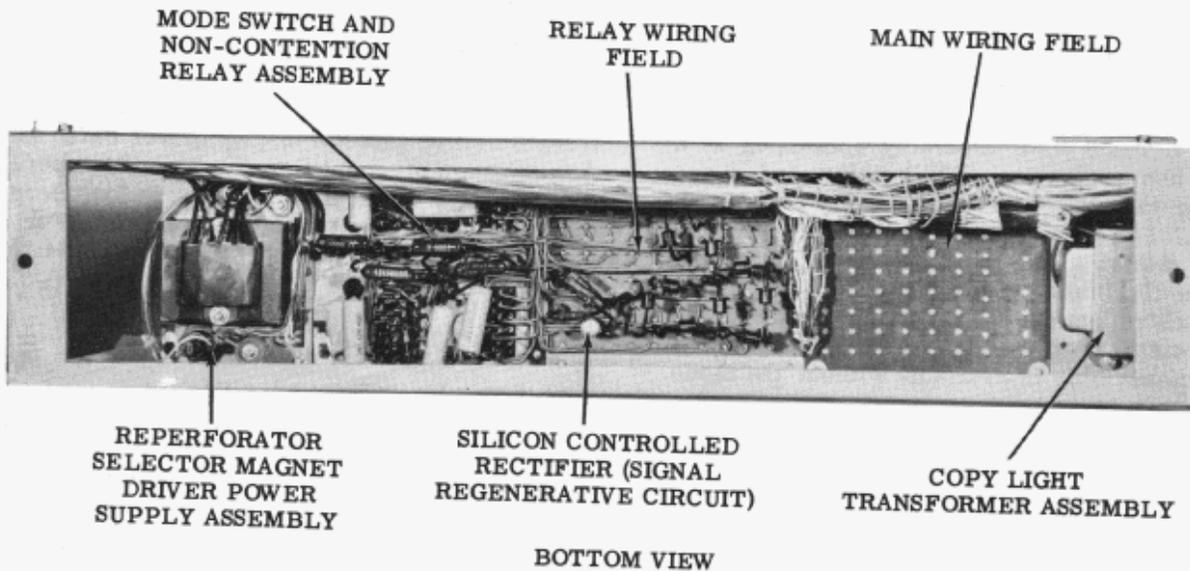
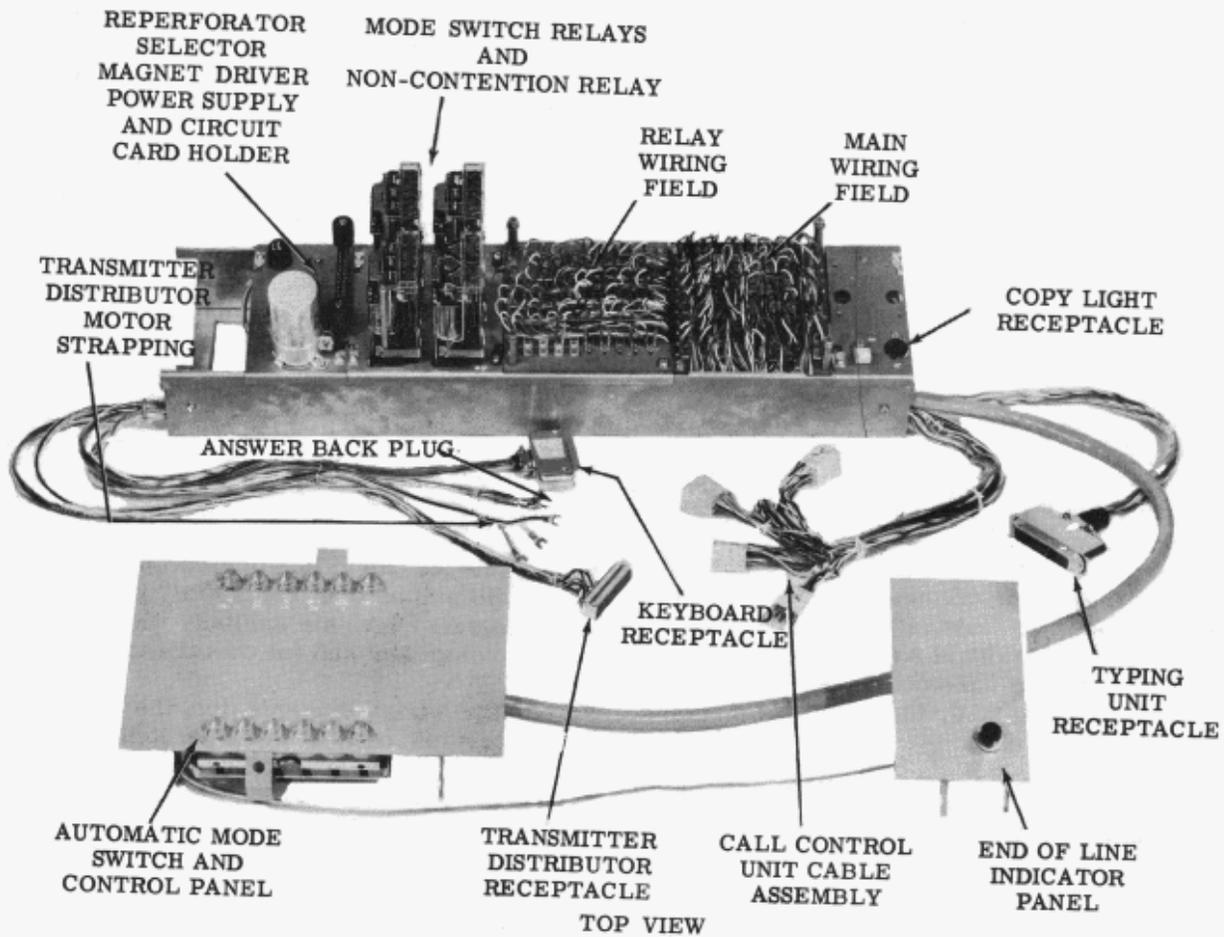


Figure 2 - Typical Electrical Service Unit for 35 ASR Set

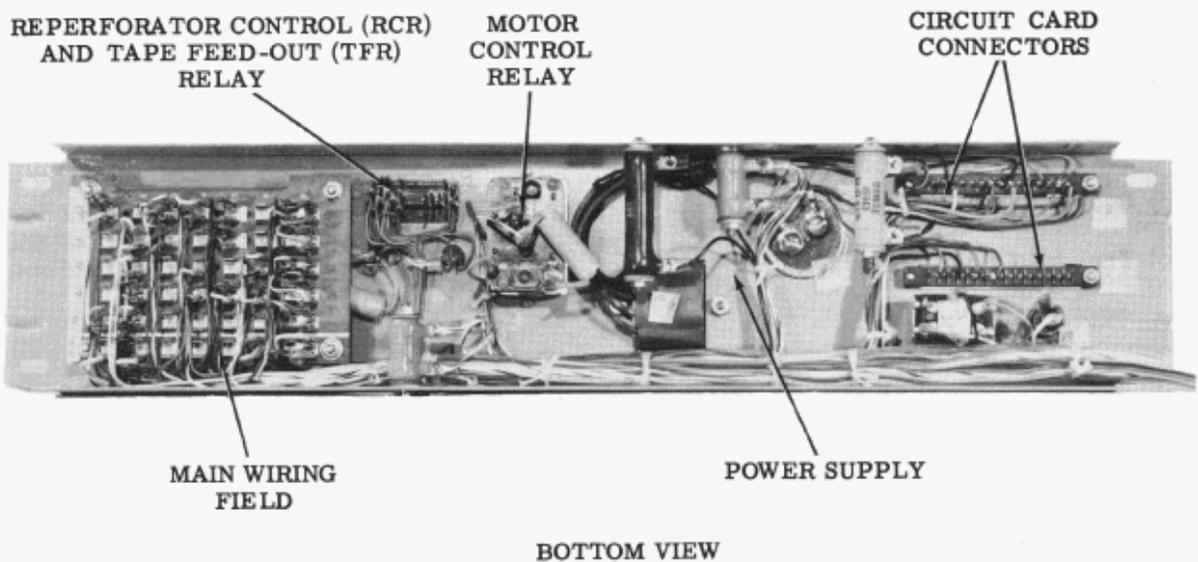
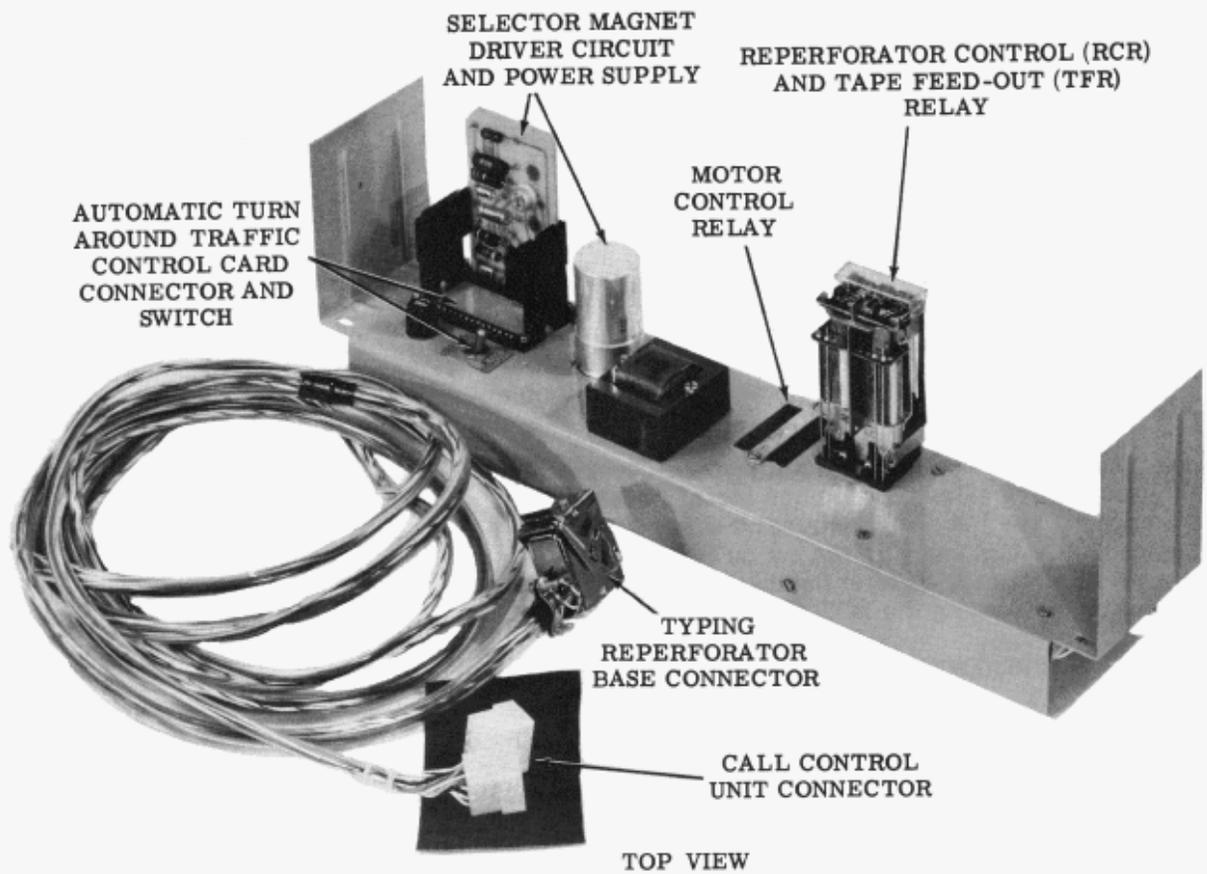


Figure 3 - Typical Electrical Service Unit for 35 ROTR Set

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3.05 With the power switch in the OFF position, the external signal line is shunted but the selector magnets in the set's receiving circuit are held energized by the de-energized line-local relay.

3.06 With the power switch in the ON LINE position, the signal generating and monitoring circuits of the set are connected into the signal line.

3.07 With the power switch in the LOC (local) position, the set may be operated for tape preparation purposes, etc.

ELECTRICAL MOTOR CONTROL

3.08 This feature permits a set's motor to be controlled externally via the signal line. So equipped, the set may operate unattended. The sending station can turn the set on by sending a break or turn it off after the data has been transmitted by sending the EOT code.

MOTOR CONTROL RELAY

3.09 The motor control relay is energized by the closing of the OR/AN relay contacts in the ASR or KSR set (a local key in these sets is also provided to energize this relay). The motor control relay is held operated until the motor hold contact on the feed out mechanism of the typing reperforator breaks at the end of the feed out cycle.

REPERFORATOR CONTROL RELAY

3.10 The reperforator control relay (RCR) has five sets of contacts used for the following functions:

- (a) Selector magnet driver control.
- (b) RCR relay locking.
- (c) Tape feed relay control.

(d) Feed out magnet control.

(e) ROTR on lamp (in ASR) control.

The relay is energized by the closing of the R1 on contact in the ASR or KSR stunt box, or the ROTR on key on the ASR control panel. The RCR relay is held energized by one of its own contacts, which is in series with the R1 off contact in the ASR or KSR stunt box.

3.11 The selector magnet driver control contact is normally closed, and shunts the signal line to the selector magnet driver, binding it to any signal. When the RCR relay is energized, the selector magnet driver will respond to the incoming signal.

AUTOMATIC TURN AROUND CONTROL

3.12 The purpose of the automatic turn around traffic control (ATATC) is to blind the typing reperforator selector magnet driver to locally (ASR or KSR set) generated traffic, while allowing incoming traffic through. An all traffic switch is provided to disable the ATATC.

TAPE FEED OUT CONTROL RELAY

3.13 The tape feed out control relay (TFR) is controlled by the reperforator control relay (RCR), and operates when the RCR relay operates. When the RCR relay releases, the TFR does not release immediately, but will release approximately 65 milliseconds later (slow release).

3.14 A make contact on the TFR relay and a break contact on the RCR relay are wired in series with the tape feed out magnet on the typing reperforator. When both relays are operated, the RCR contact is opened and the TFR contact is closed. When the RCR relay releases, the RCR contact closes and the TFR contact remains closed for 65 milliseconds (slow release). This allows the tape feed out magnet to be energized and to initiate tape feed out.