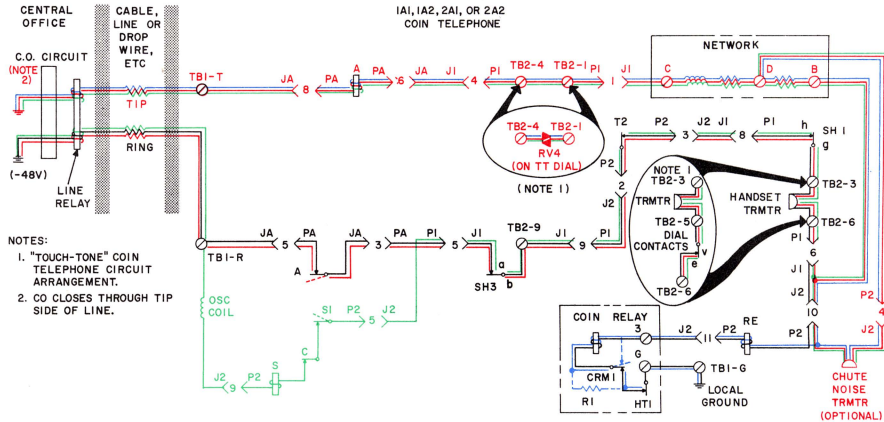


## COLOR FUNCTIONAL SCHEMATICS

### 1A/2A/1C/2C-TYPE COIN TELEPHONE SETS



#### LEGEND

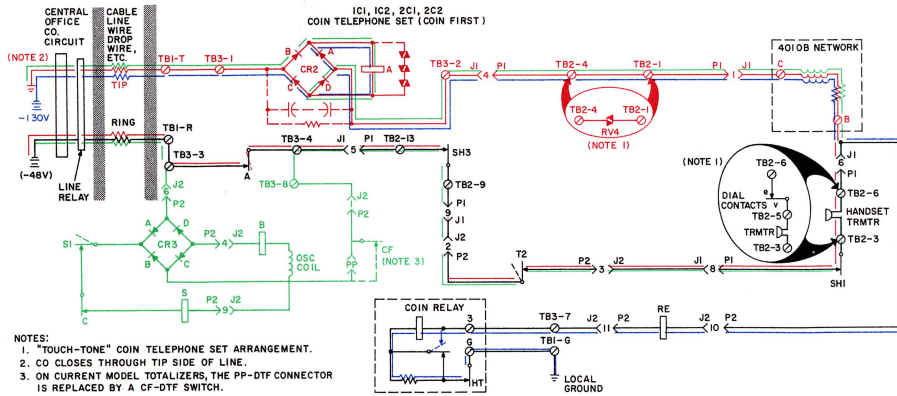
**CIRCUIT CONDITION:**

- Handset on switchhook
- T2 operated (coin deposited)
- HT1 (hopper trigger) operated

**CIRCUIT ACTION:**

1. **Black** — This circuit causes the tip side of line to be closed through to ground in the CO. Dial tone is placed on line but is ineffective. Current in this circuit (48V) is not sufficient to operate RE or coin relay.
2. **Red** — A relay operates, causing its normal contacts to open removing the short across the S (stepper) relay.
3. **Green** — (a) Operation of S relay causes its normally closed S1 contact to open. The S1 contact in opening causes the S relay to release, thus closing the S1 contact. This operating and releasing action of the S relay steps the totalizer 10 degrees back to normal each time it operates. (Each \$.05 amount deposited causes the totalizer to rotate 10 degrees.)  
 (b) When the totalizer has been stepped back to normal, T2 contact restores (opens its make contact, which in turn, opens the telephone circuit.)
4. **Blue** — (a) The CO, detecting the open telephone circuit, sends out negative 100 to 130 volts return battery to return the deposit.  
 (b) The RE relay in operating would normally restore the T1 contact. Since the initial rate was not deposited, the T1 was normal and the operated RE relay has no effect.  
 (c) The operated coin relay, closes its make contact causing the current to bypass the relay and flow through the resistor which was previously shorted. The short across the relay winding causes the relay to be slow release. The resistor, having approximately the same resistance as the coin relay winding, is placed in the circuit to protect contact HT when it restores, and to protect the resistance lamp in the central office circuit.  
 (d) As the coin relay releases, the HT contact opens placing the coin telephone set in its idle state.

**Fig. 1—Call Abandoned With Less Than Initial Rate Deposited (Deposit Refunded)—1A/2A-Type**



**LEGEND**

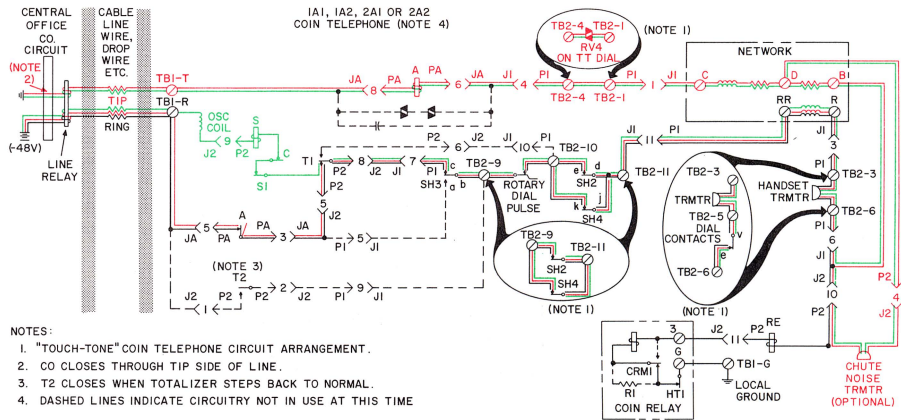
**CIRCUIT CONDITION:**

- Handset on switchhook
- T2 operated (coin deposited)
- HT1 (hopper trigger) operated

**CIRCUIT ACTION:**

1. **Black** — This circuit causes the tip side of line to be closed through to ground in the CO. Dial tone is placed on line but is ineffective. Current in this circuit (48V) is not sufficient to operate RE or coin relay.
2. **Red** — A relay operates, causing its normal contacts to open removing the short across the S (stepper) relay
3. **Green** — (a) Operation of S relay causes its normally closed S1 contact to open. The S1 contact in opening causes the S relay to release, thus closing S1 contact. This operating and releasing action of the S relay steps the totalizer 10 degrees back to normal each time it operates. (Each \$.05 amount deposited causes the totalizer to rotate 10 degrees.)  
(b) When the totalizer has been stepped back to normal, T2 contact restores, (opens its make contact, which in turn, opens the telephone circuit.)
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(d) As the coin relay releases, the HT contact opens, placing the coin telephone set in its idle state.

**Fig. 2—Call Abandoned With Less Than Initial Rate Deposited (Deposit Refunded)—1C/2C-Type (CF)**



**LEGEND**

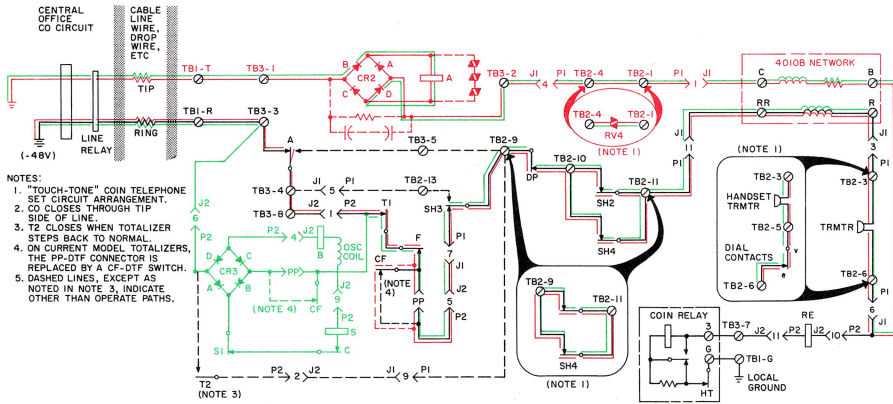
**CIRCUIT CONDITION:**

- Outgoing call
- Handset off-hook (SH1, SH2, SH3, SH4 operated)
- T2 operated (coin deposited)
- T1 operated (initial rate deposited)
- HT (hopper trigger) operated

**CIRCUIT ACTION:**

1. **Black** — This circuit causes the tip side of line to be closed through to ground in the CO. Dial tone is placed on line. Current in this circuit (48V) is not sufficient to operate RE or coin relay.
2. **Red** — A relay operates causing its normal contact to open which removes the short across the S (stepper) relay.
3. **Green** — (a) Operation of S relay causes its normally closed S1 contact to open. The S1 contact in opening causes the S relay to release thus closing the S1 contact. This operating and releasing action of the S relay steps the totalizer 10 degrees back each time it operates.  
 (b) When the totalizer has stepped back to normal the T2 contact restores and places the telephone circuit in its dialing and talking state.

**Fig. 3—Initial Rate Deposited—Origination State—1A/2A-Type**



LEGEND

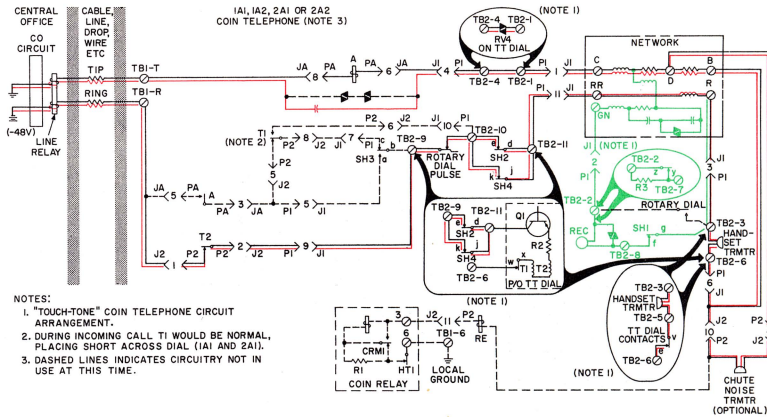
CIRCUIT CONDITION:

- Outgoing call
- Handset off-hook (SH1, SH2, SH3, SH4 operated)
- T2 operated (coin deposited)
- T1 operated (initial rate deposited)
- HT (hopper trigger) operated

CIRCUIT ACTION:

1. **Black** — This circuit causes the tip side of line to be closed through to ground in the CO. Dial tone is placed on line. Current in this circuit (48V) is not sufficient to operate RE or coin relay.
2. **Red** — A relay operates causing its normal contact to open which removes the short across the S (stepper) relay.
3. **Green** — (a) Operation of S relay causes its normally closed S1 contact to open. The S1 contact in opening causes the S relay to release thus closing the S1 contact. This operating and releasing action of the S relay steps the totalizer 10 degrees back each time it operates.  
 (b) When the totalizer has stepped back to normal the T2 contact restores and places the telephone circuit in its dialing and talking state.

Fig. 4—Initial Rate Deposited—Origination State—1C/2C-Type (CF)



**LEGEND**

**CIRCUIT CONDITION:**

- Outgoing call
- Handset off-hook
- Dial tone present
- T1 operated
- T2 returned to normal

**CIRCUIT ACTION:**

**1. Black — Dialing —**

Dialing path of rotary dial coin telephone set differs from TOUCH-TONE set (see Note 1 and insets). TOUCH-TONE dial contacts V, E open and disconnect transmitter from network during dialing; contacts W, X close and connect the dial oscillator to the network in place of the transmitter.

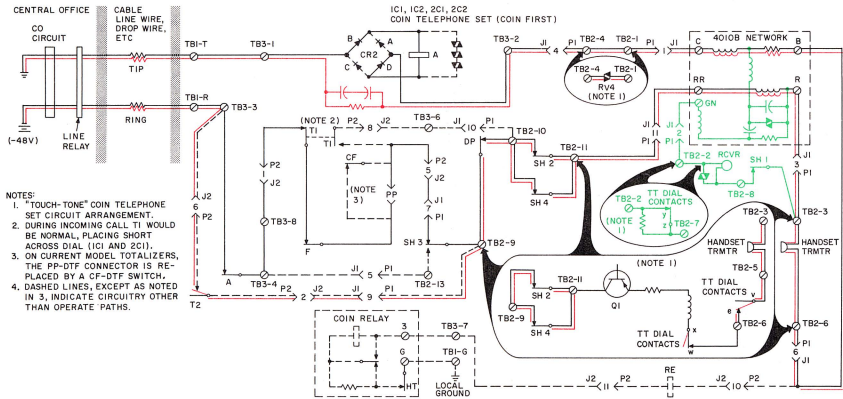
**2. Red — Talking —**

TOUCH-TONE dial contacts V, E close, and W, X open during the talking state (see insets). The coin signal transmitter detects the sound of coins dropping through the chute.

**3. Green — Listening —**

- (a) The listening (secondary) circuit receives its energy through inductive coupling from the primary induction coil windings.
- (b) Rotary dial off-normal contacts short out the receiver during dialing.
- (c) TOUCH-TONE dial contacts Y, Z remove the shunt across level limiting resistor R3 to reduce oscillator sidetone during dialing.

**Fig. 5—Dialing, Talking, and Listening Circuits—1A/2A-Type**



**LEGEND**

**CIRCUIT CONDITION:**

- Outgoing call
- Handset off-hook
- Dial tone present
- T1 operated
- T2 returned to normal

**CIRCUIT ACTION:**

**1. Black — Dialing —**

Dialing path of rotary dial coin telephone set differs from TOUCH-TONE set (see Note 1 and insets). TOUCH-TONE dial contacts V, E open and disconnect transmitter from network during dialing; contacts W, X close and connect the dial oscillator to the network in place of the transmitter.

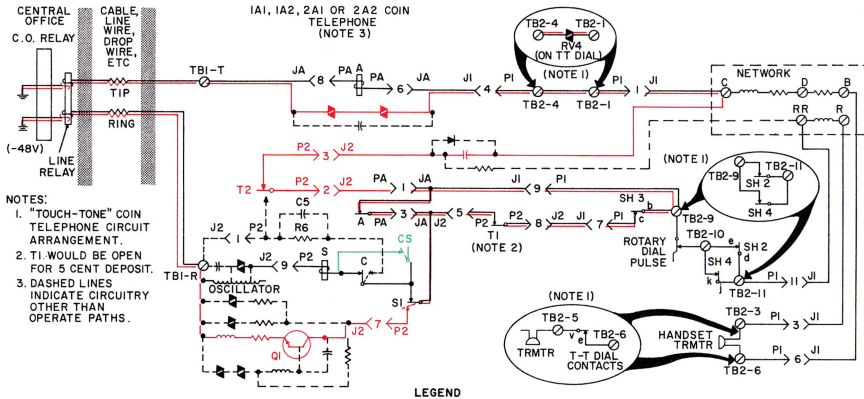
**2. Red — Talking —**

TOUCH-TONE dial contacts V, E, close, and W, X open during the talking state (see insets).

**3. Green — Listening —**

- (a) The listening (secondary) circuit receives its energy through inductive coupling from the primary induction coin windings.
- (b) Rotary dial off-normal contacts short out the receiver during dialing.
- (c) TOUCH-TONE dial contacts Y, Z remove the shunt across level limiting resistor R3 to reduce oscillator sidetone during dialing.

**Fig. 6—Dialing, Talking, and Listening Circuits—1C/2C-Type (CF)**



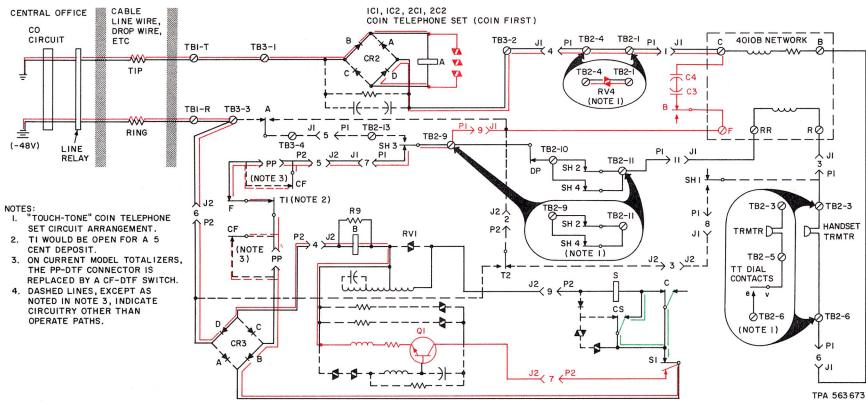
**CIRCUIT CONDITION:**

- Nickel, Dime, or Quarter deposit requested by operator
- T2 operated as result of deposited coin
- C and CS contacts normal for nickel or dime deposit
- C and CS contacts operated for quarter deposit

**CIRCUIT ACTION:**

1. **Black** — Oscillator charging circuit and S relay operating path for nickel or dime deposit. The circuit is shown for dime deposit. Nickel deposit circuit would be the same, except T1 contact would be normal (open) instead of closed as shown.
2. **Black and Green** — Oscillator charging circuit and S relay operating path for quarter deposit. CS contact operates when totalizer rotates 45°, enabling charging of the S relay before C contact restores. This enables a faster readout of the oscillator circuit.
3. **Red** — Oscillator readout (tone signal) path. Contact S1 transfers the current flow from the totalizer to the transistor. Current flow is increased and decreased due to the changing polarity on the emitter and base of the transistor caused by the transformer action of the tank circuit. This produces tone signal heard by operator during operate and release stepping of S relay. The signal bypasses the network through the T2 contacts and the AC shorting capacitor.

**Fig. 7—Coin Signal Tone Circuit—1A/2A-Type**



LEGEND

CIRCUIT CONDITION:

- Nickel, Dime, or Quarter deposit requested by operator
- T2 operated as result of deposited coin
- C and CS contacts normal for nickel or dime deposit
- C and CS contacts operated for quarter deposit

CIRCUIT ACTION:

1. **Black** — Oscillator charging circuit and S relay operating path for nickel or dime deposit. The circuit is shown for dime deposit. Nickel deposit circuit would be the same, except T1 contact would be normal (open) instead of closed as shown.
2. **Black and Green** — Oscillator charging circuit and S relay operating path for quarter deposit. CS contact operates when totalizer rotates 45°, enabling charging of the S relay before C contact restores. This enables a faster readout of the oscillator circuit.
3. **Red** — Oscillator readout (tone signal) path. Contact S1 transfers the current flow from the totalizer to the transistor. Current flow is increased and decreased due to the changing polarity of the emitter and base of the transistor caused by the transformer action of the tank circuit. This produces tone signal heard by operator during operate and release stepping of S relay. The signal bypasses the network through the B relay contacts and the AC shorting capacitors.

Fig. 8—Coin Signal Tone Circuit—1C/2C-Type (CF)

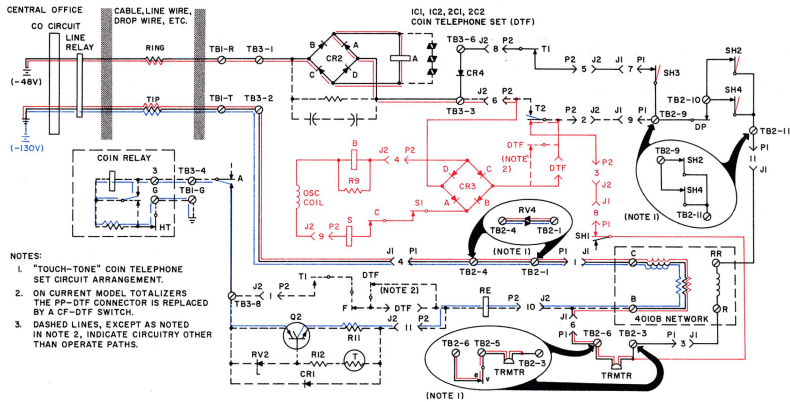


Fig. 9—Call Abandoned With Less Than Initial Rate Deposited (Deposit Refunded)—1C/2C-Type (DTF)

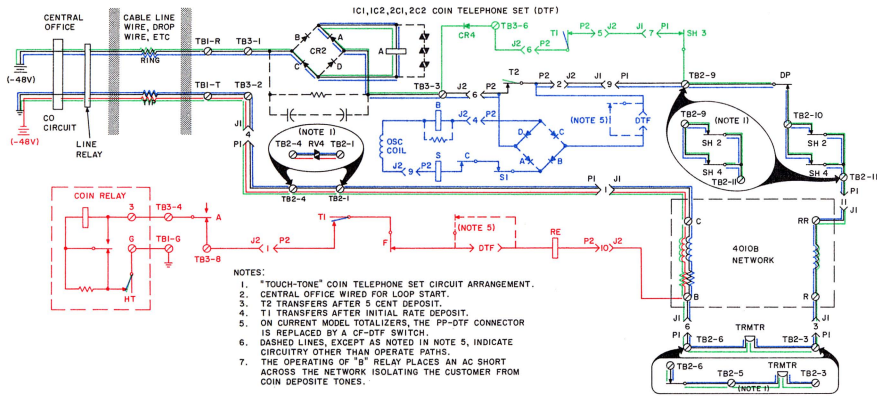
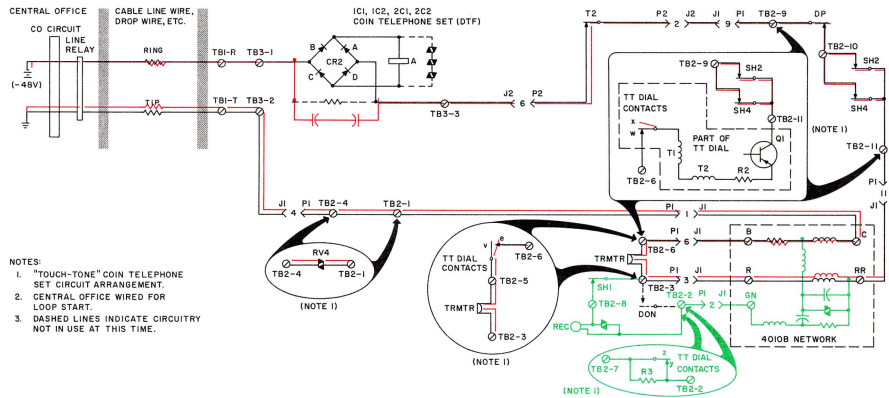


Fig. 10—Standby, Ground Test for Initial Rate Deposit, 5-Cent Deposit, and Initial Rate Deposit—1C/2C-Type (DTF)



### LEGEND

#### CIRCUIT CONDITION:

- Outgoing call
- Handset off-hook
- Dial tone present
- T1 operated
- T2 returned to normal

#### CIRCUIT ACTION:

##### 1. Black — Dialing —

Dialing path of rotary dial coin telephone set differs from TOUCH-TONE set (see Note 1 and insets). TOUCH-TONE dial contacts V, E open and disconnect transmitter from network during dialing; contacts W, X close and connect the dial oscillator to the network in place of the transmitter.

##### 2. Red — Talking —

TOUCH-TONE dial contacts V, E close, and W, X open during the talking state (see insets).

##### 3. Green — Listening —

- The listening (secondary) circuit receives its energy through inductive coupling from the primary induction coil windings.
- Rotary dial off-normal contacts short out the receiver during dialing.
- TOUCH-TONE dial contacts Y, Z remove the shunt across level limiting resistor R3 to reduce oscillator sidetone during dialing.

Fig. 11—Dialing, Talking, and Listening Circuits—1C/2C-Type (DTF)

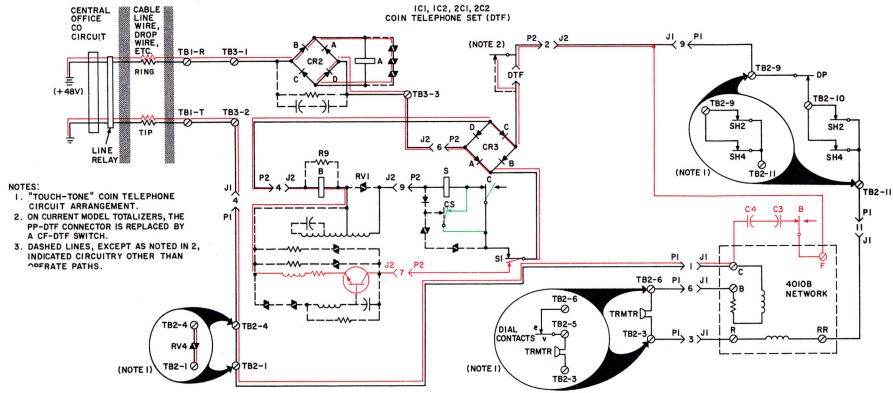


Fig. 12—Coin Signal Tone Circuit—1C/2C-Type (DTF)