

TELECARTS

DESCRIPTION, INSTALLATION, OPERATION

AND MAINTENANCE

1. GENERAL

1.01 This section covers description, installation, operation and maintenance of Telecart equipment which is used to furnish portable public telephone service.

1.02 This section is reissued to include the information contained in Section C42.950, Issue A and the Addendum to Section C42.950, Issue A and to make other changes necessary to bring this section up to date.

2. DESCRIPTION

2.01 The Telecart is a portable public telephone unit consisting of a table type wagon equipped with a handset type coin collector, a thirty foot rubber-covered cord, a hold key and associated electrical equipment.

2.02 Equipment located external to the Telecart includes multiple line jacks, a holding circuit and a ringer. The coin line terminates in the line jacks which are distributed at suitable locations. The external ringer is provided at a convenient central location.

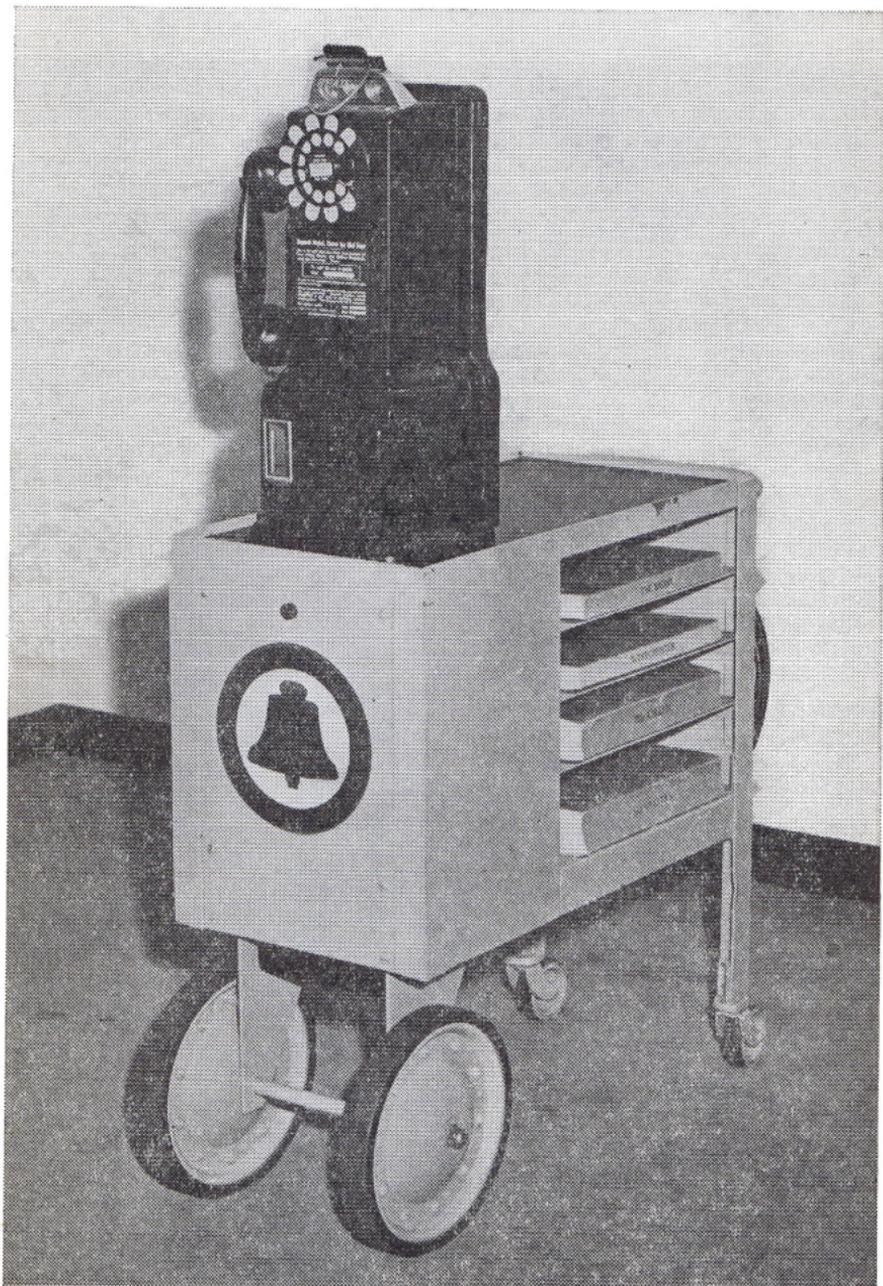
2.03 Calls may be answered or originated from any jack location and it is possible to transfer the Telecart from one jack location to another while a central office connection is held.

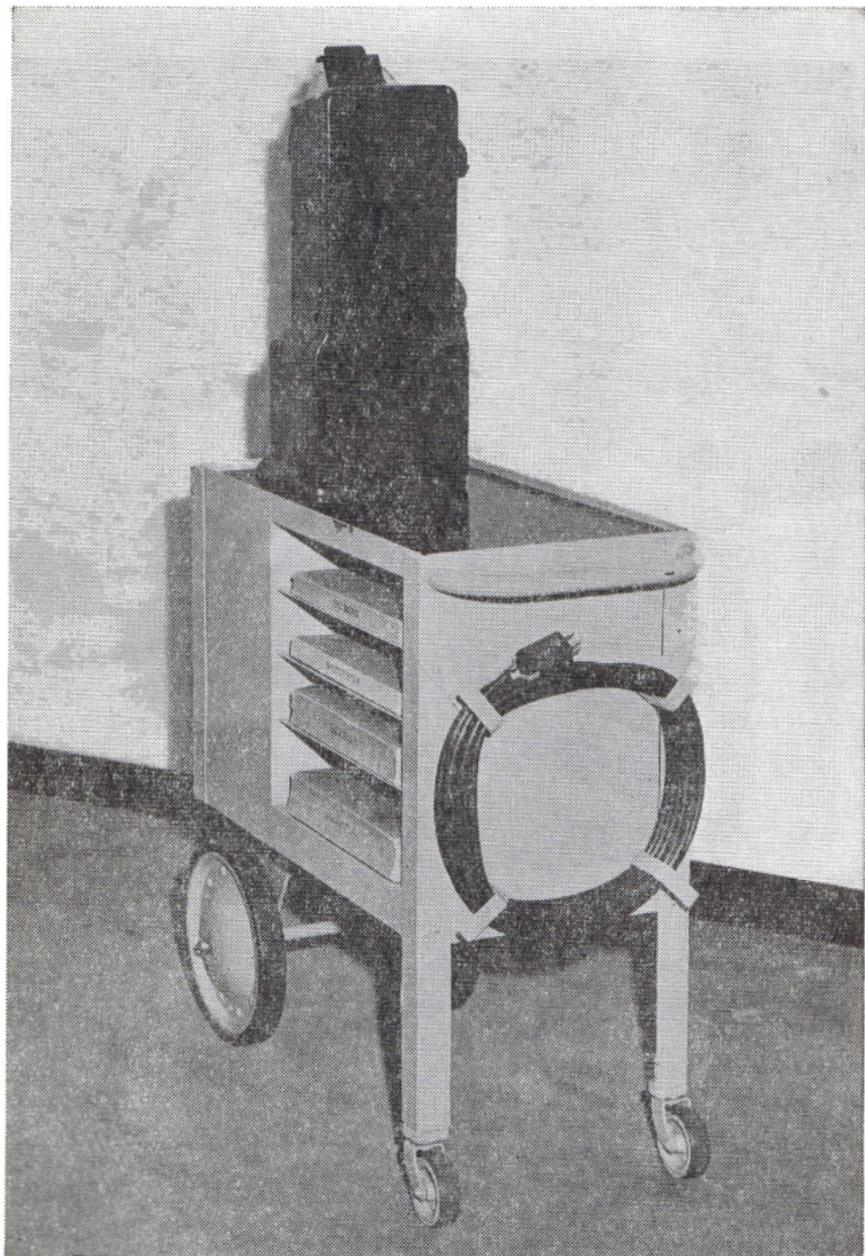
2.04 Incoming calls are answered by plugging in the Telecart and removing the handset from the switchhook. Calls may be originated by depositing the proper coins and waiting for dial tone, however, **UNDER NO CIRCUMSTANCES** should a coin be deposited before the Telecart is plugged in.

To transfer the Telecart from one jack location to another after a central office connection has been made, use the following procedure:

- a. Operate the hold key which protrudes from the front panel of the Telecart.
- b. Hang up the handset.
- c. Release the hold key.
- d. Disconnect the plug.
- e. Transfer the Telecart to the desired location and reconnect the plug.
- f. Remove the handset from the switchhook and resume the conversation.

2.05 Directory facilities are provided in the form of four horizontal shelf compartments accessible from the left side of the Telecart. All compartments are 11-1/2" wide and 9" deep. The lower three compartments and the upper compartment measure, respectively, 3 inches and 4 inches in the vertical direction.





3. INSTALLATION AND EQUIPMENT

3.01 Telecards shall be ordered as follows:

Quantity—Telecards per GS-E-69182

This order will include the following equipment:

1—ED-90595 table type wagon modified

1—191 G coin collector

1—139A backboard

1—Y87 relay

1—UA39 relay

1—6000 ohm ($\pm 5\%$), 5 watt radio type resistance

4—General Electric mercury switches (#2-52KRO)

1—26-C-2 amperite thermo delay relay

1—531A subset

1—44A connecting block

1—42A connecting block

1—92A non-locking key

3—KS-7889 dry cells

32 ft. of 4 conductor tirectex cable equipped with:

1—P-404-CCT Jones Plug

3.02 The Plant Equipment Engineer shall be responsible for the location and mounting of the line circuit. This equipment must be ordered separately and includes the following:

1—531A subset or equivalent

1—1A key telephone unit

1—8A key telephone unit equipped with a B-1159 relay

1—8B key telephone unit equipped with a U-6016 relay

1—8B key telephone unit equipped with a U-280 relay

3.03 The details for mounting the line jacks are given in Drawing GS-E-69184. This drawing covers both the S404AB and S2404AB Jones sockets and also gives the specification for the modified face plates to which these jacks are fastened. The S2404AB socket is preferable for standard installations, but, as indicated on the drawing, the S404AB may be substituted. These sockets and the necessary cable shall be provided by the Telephone Company. The conduit and outlet boxes shall be provided by the customer. Depending upon local conditions, either the Telephone Company or the customer shall

provide the modified face plates. Orders for line jacks shall be worded as follows:

Quantity—S2404AB or S404AB Jones Sockets
per GS-E-69184.

The illustration below shows a typical installation of the S2404AB Jones Socket.

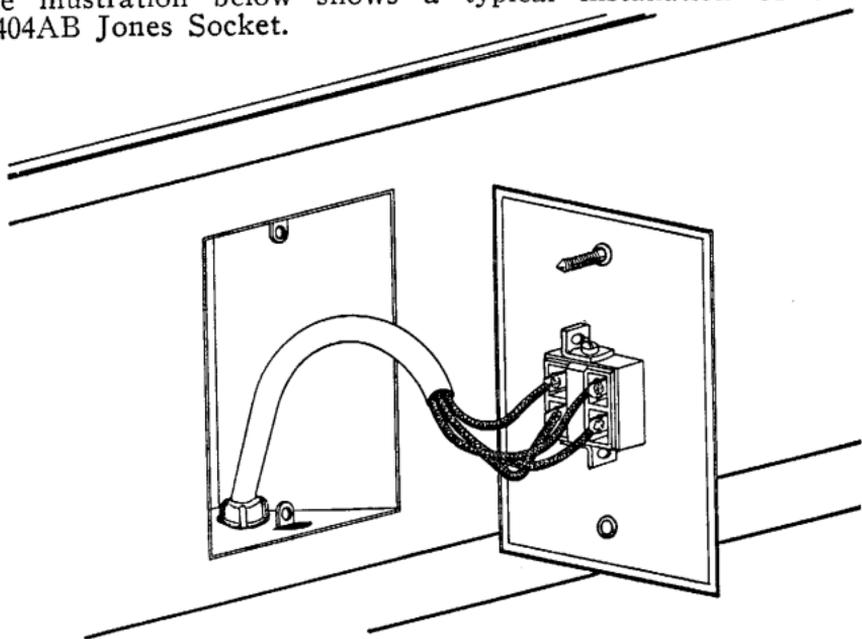


Fig. 1

3.04 The following drawings cover construction details and circuits:

| | |
|---------------------------------|------------------------------|
| Telecart Assembly and Details | —GS-E-69182 Parts 1, 2, 3 |
| Telecart Circuit Schematic | —GS-S-69182 Parts 1, 2, 3 |
| Telecart Wiring | —GS-T-69182 Parts 1, 2 |
| Telecart Line Circuit Schematic | —GS-S-69183 |
| Telecart Jack Outlets | —GS-E-69184 |

3.05 When telecarts are tipped or tilted in certain directions, they are vulnerable to fraudulent operation. In order to prevent this a special applique circuit has been designed and installed in all telecarts. This circuit is activated by mercury switches as described in paragraph 4.06. The location of these switches and the mounting details are illustrated in Figure 2.

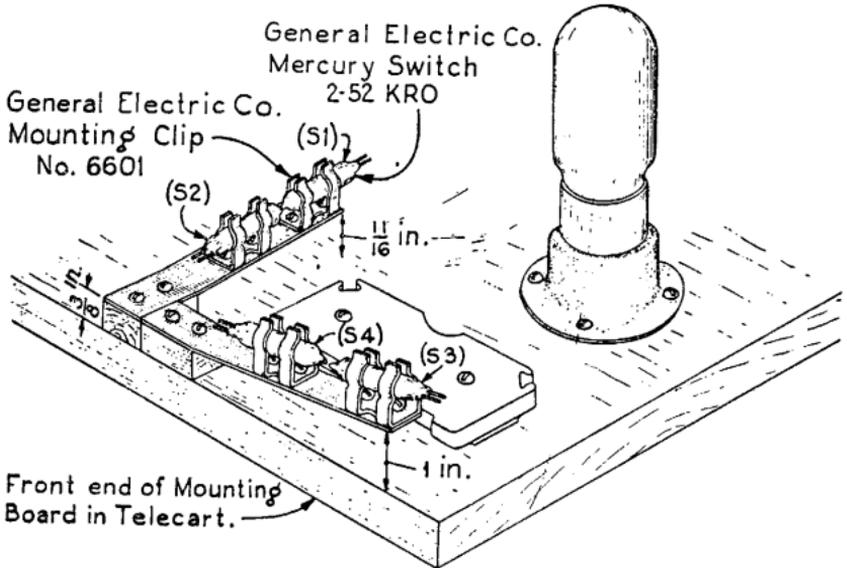


Fig. 2

3.06 In order to provide the "dial shorting" feature, see paragraph 4.05, a special P347224 housing contact is provided. The method of mounting this contact is illustrated in figure 3.

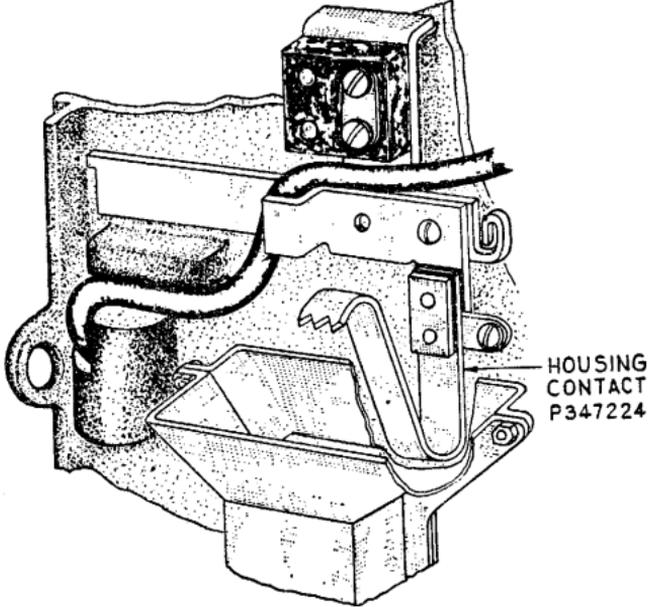


Fig. 3

4. CIRCUIT OPERATION

4.01 **Answering or originating a Central Office call:** Incoming calls operates both the external ringer in the line circuit and the ringer in the Telecart, if it is connected. When the Telecart is connected the call is answered in the usual manner, by removing the receiver from the switchhook. With the Telecart connected the (M) relay is operated in series with the non-operated (B) marginal relay and a ground is placed on the windings of the coin relay. Depositing the proper coins operates the coin trigger contacts and the ground through the coin relay windings is connected to the tip of the line thus signalling the central office and permitting the origination of a call.

4.02 **Holding a central office connection to permit transfer of the Telecart:** When a central office connection has been established the (L) relay in the ring side of the line is operated but performs no useful function at this time. The (M) relay is also operated as described in paragraph 4.01. All other relays are unoperated. Operation of the non-locking hold key short circuits the 1800 ohms winding of the (M) relay by connecting its 85 ohm winding to ground. The (M) relay remains operated but its decreased resistance permits current flow sufficient to operate the (B) marginal relay. Operation of the (B) relay opens the short circuit across the winding of the (H1) relay permitting it to operate. The (H1) relay operated causes the (F) relay to operate which in turn places the primary of the (H) relay in parallel with the (L) relay which is subsequently disconnected. The (H) relay then operates placing a holding bridge, consisting of its 140 ohm quaternary and 15.5 ohm tertiary windings in series, across the line. The (H1) and (F) relays release when the receiver is hung up. The (H) relay does not release because its tertiary winding functions to lock it in its operated position. When the hold key is subsequently released the (B) relay releases. The Telecart may then be disconnected and transferred.

4.03 **Releasing the Holding Bridge:** After the Telecart has been plugged in at the new location, the handset is removed from the switchhook and the (L) relay is operated by the resulting current flow. Operation of the (L) relay short circuits the tertiary winding, restoring the (H) relay to its unoperated position, thus removing the holding bridge.

4.04 **Automatic Collection of Coins:** A special circuit is provided to collect deposits in the event that the plug is removed from the jack before a normal collection can be made. When the plug is disconnected, the (M) relay releases and closes a series path from the negative terminal of the

135 volt battery supply through the winding and normally closed contacts of the amperite thermo delay relay, the back contact of the (M) relay, the windings and coin trigger contacts of the coin relay and back to the positive side of the battery supply. The coin relay then operates to collect whatever coins have been deposited. After a period of approximately one second the contacts of the thermo delay relay open. This releases the coin relay, which in turn opens the coin contacts. The contacts of the thermo delay relay again close after a short interval, but no further action takes place since the circuit is open at the coin contacts.

4.05 **The D-96590 Coin Relay:** The D-96590 coin relay is equipped with a spring assembly which has a normally closed contact. This contact and the P347224 special housing contact comprise a series circuit which shunts the dial pulsing contacts making them inoperative until a coin is deposited operating the coin trigger contacts.

4.06 **Operation of the Mercury Switch Applique Circuit:** The four mercury switches S1, S2, S3 and S4 are mounted in pairs as illustrated in figure 2 such that each pair operates independently. When the Telecart is level, switches S2 and S4 are closed while switches S1 and S3 are open. If the Telecart is tipped in excess of 12° to the right, as viewed facing the coin collector, switch S3 closes and switch S4 opens. Switches S1 and S2 remain unaffected. If the Telecart is tipped in excess of 7°, by elevating the large wheels with the small wheels acting as the pivot point, switch S1 closes and switch S2 opens while switches S3 and S4 remain unaffected. Tipping the Telecart in other directions has no effect upon the circuit.

Should either set of mercury switches operate as described above, the (SR) relay will operate provided the (M) relay is operated which will be the case whenever the Telecart is connected to the line. Operation of the (SR) relay opens the tip and ring of the line, closes the coin relay through to negative battery and closes a lockup path to positive battery. Thus when a coin, deposited while the Telecart is tipped, strikes and operates the coin trigger contacts, it will be collected immediately. Furthermore, since the line is open at the contacts of the (SR) relay, neither the gong transmitter signals nor the grounded tip indication are transmitted to the central office. When the Telecart is returned to the level plane, switches S2 and S4 will close shorting the (SR) relay which, after the short delay will release thus restoring the circuit to normal. The lockup path and switches S2 and S4 combine to give the SR relay a slower release characteristic than could otherwise be obtained since the energy in its winding must be

dissipated through S2 and S4 before the (SR) relay will release. This slow release characteristic makes it impossible to restore the Telecart to the level plane, after depositing a coin, quickly enough to prevent the automatic collection from taking place.

5. MAINTENANCE

5.01 The automatic collect circuit, the UA39 relay, the Y87 relay and the mercury switches are located in the compartment between the front panel and the center partition of the Telecart. This compartment is locked by means of a 10G upper housing lock mounted in the front panel. The guard to prevent tipping of the Telecart will lower sufficiently, when the three mounting screws are removed, to permit removal of the front panel without completely removing the guard.

5.02 A table of circuit requirements is given on page 15. For maintenance of the 191G Coin Collector refer to the proper "C" Section of Bell System Practices.

5.03 Batteries shall be checked periodically by connecting a KS-8089 battery gauge in series with a 265 ohm resistance (63AL or 19FN) across each 46.5 volt block. If, after 5 seconds, the gauge indicates below 5% for any of the batteries, all batteries shall be replaced. Use the following procedure when replacing batteries:

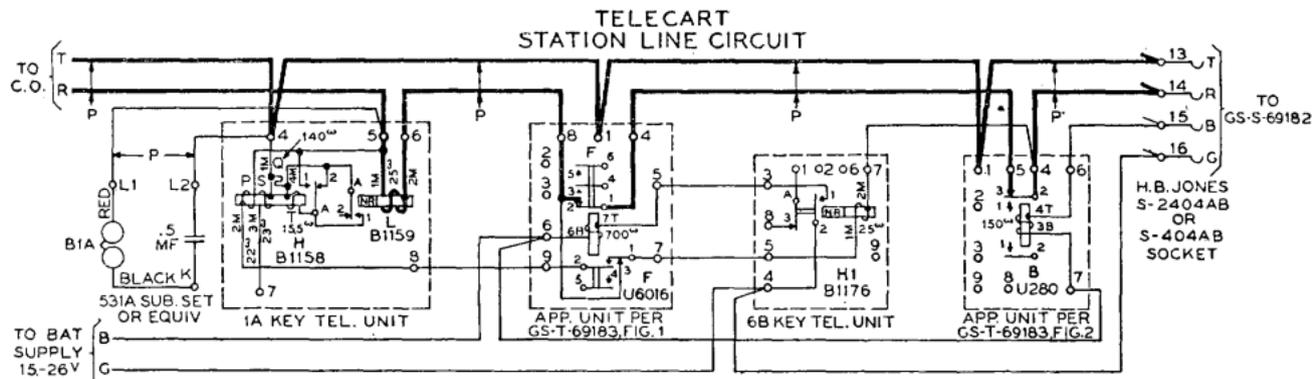
- a. Disconnect battery leads by removing the 1A bridging connectors.
- b. Remove wing-nuts and metal retaining strap.
- c. Replace the used batteries.
- d. Replace retaining strap and tighten wing-nuts until batteries are secured. Care must be exercised since over tightening may crack the battery casings.
- e. Bring the stop-nuts to bear against the rear of the metal retaining strap.
- f. Connect the new batteries in the proper polarity with 1A bridging connectors and test the automatic collect circuit.
- g. Place tape over the 1A bridging connectors to insulate them.

5.04 In order to test the Automatic Collect Circuit use the following procedure:

1. With the Telecart disconnected from the line and the upper housing removed, operate the coin trigger contacts. The coin relay should operate.

2. Remove the front panel and block the (M) relay operated. Tilt the Telecart in a direction which will cause one set of mercury switches (S1, S2) or (S3, S4) to operate. Operate the coin trigger contacts. The coin relay should operate. Repeat this test, tilting the Telecart in a direction which will cause the other set of mercury switches to operate.

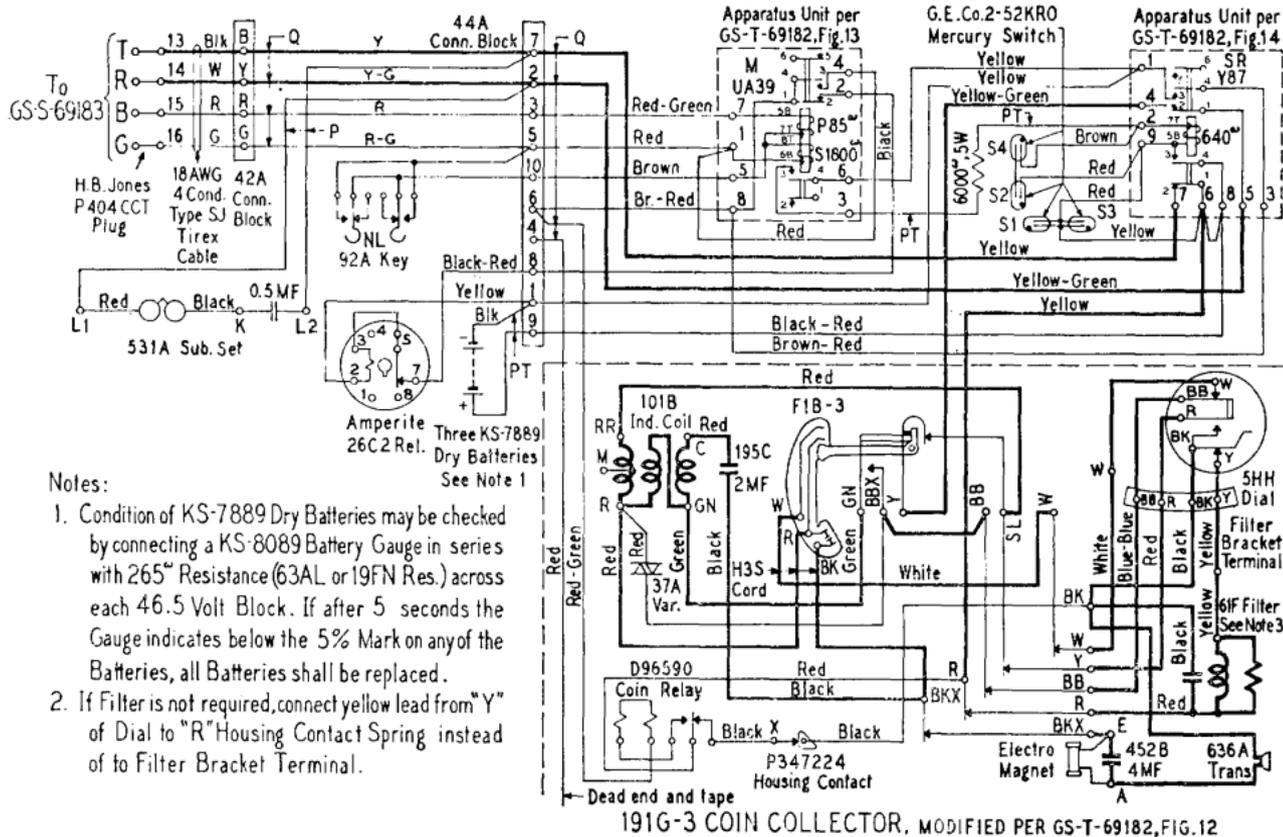
In addition each Telecart should be checked to insure that the mercury switches are mounted in the proper plane. The pitch of the flat metal strip on which the switches are mounted can be checked by measuring the vertical distance between the ends of the strip and comparing with the correct dimension given in figure 2. When required, the pitch can be adjusted by increasing or decreasing the bend of the metal strip.



| CIRCUIT REQUIREMENTS | | | | | | | | | | | CR | |
|----------------------|------------|----------------------|----------------|-----------|----------|------|--------------------------|----------|--------------|------------|---------|--|
| APPARATUS | MECH. REQ. | CIRCUIT PREPARATION | TEST CLIP DATA | | TEST SET | SEE | DIRECT CURRENT FLOW REQ. | | MILLIAMPERES | | REMARKS | TEST NOTES |
| DES. CODE | BSP FIG | CONT. ARM PRESS TRVL | BLOCK OR INSUL | CONN BAT | CONN GRD | PREP | NOTE | TEST WDG | TEST FOR | AFTER SOAK | | |
| 1A-KTU | | | | | | | | | | | | 51. ADJUST FRONT CONTACT AND SEPARATION AS CLOSE TO THE MIN. .005" AS POSSIBLE. TENSION RELAY SO THAT IT FAILS TO OPERATE ON THE READJUST OPR. CURRENT AND THEN BACK OFF THE ADJUSTING SCREW UNTIL THE RELAY WILL OPERATE. |
| H B1058 | 14 | 30 | | TERM. 5 | TERM. 8 | M | 51 | P | O | 20 | 19 | |
| | | | | TERM. 5 | TERM. 8 | M | | P | NO | 13.4 | 14.1 | |
| | | | | TERM. 5 | TERM. 8 | M | | P | R | 9.3 | 9.8 | |
| | | | | TERM. 7 | TERM. 4 | M | | S | O | 20 | | |
| | | | | 2(H) 1(L) | TERM. 4 | M | | T | O | 20 | | |
| L B1059 | 14 | 30 | | TERM. 4 | TERM. 6 | M | | | O | 8.7 | 8.2 | |
| | | | | TERM. 4 | TERM. 6 | M | | | R | 3.9 | 4.1 | |
| 6B-KTU | | | | | | | | | | | | |
| HI B1176 | 9 | 30 | | TERM. 5 | TERM. 6 | M | | | O | 20.5 | 19.5 | |
| | | | | TERM. 5 | TERM. 6 | M | | | NO | 13.8 | 14.6 | |
| F U6016 | 120/30 | 44 | | | TERM. 5 | G | | | O | 18 | 17.5 | |
| B U280 | 132/101 | 47 | | | TERM. 6 | G | | | O | 47 | 45 | |

Fig. 4—Station Line Circuit

TELECARD CIRCUIT



Notes:

1. Condition of KS-7889 Dry Batteries may be checked by connecting a KS-8089 Battery Gauge in series with 265 Ω Resistance (63AL or 19FN Res.) across each 46.5 Volt Block. If after 5 seconds the Gauge indicates below the 5% Mark on any of the Batteries, all Batteries shall be replaced.
2. If Filter is not required, connect yellow lead from "Y" of Dial to "R" Housing Contact Spring instead of to Filter Bracket Terminal.

Fig. 5—Telecard Circuit

| GS-S-69182.PART 3 | | | | | | | | | | | | | CIRCUIT REQUIREMENTS | | | | | | CR |
|--|-------|-----------|--------------|-----------|----------|-------------------|----------------|-------------|------------|------------|---------------|------------------|--------------------------|----------|------------|---------------------------------|--|--|---------|
| TELECARD CIRCUIT | | | | | | | | | | | | | | | | | | | |
| APPARATUS | | MECH. REQ | | | | CIRCUIT | | PREPARATION | | | TEST SET PREP | SEE TEST NOTE NO | DIRECT CURRENT FLOW REQ. | | | | | | REMARKS |
| DESIG. | CODE | BSP FIG. | CONT. PRESS. | ARM TRVL. | SHOWN ON | BLOCK OR INSULATE | TEST CLIP DATA | | CONN. BAT. | CONN. GRD. | | | TEST WDG. | TEST FOR | MILLIAMPS. | | | | |
| APP. UNIT PER GS-T-69182, FIG. 13 | | | | | | | | | | | | | AFTER SOAK | TEST | READ | | | | |
| M | UA39 | 120/110 | | 35 | PART 1 | | | TERM. 1 | G | | 51 | P/S | O | 6.2 | 5.9 | REMOVE GROUND LEAD FROM TERM. 1 | | | |
| | | | | | | | | TERM. 5 | G | | | P | O | 34.5 | 33.0 | | | | |
| APP. UNIT PER GS-T-69182, FIG. 14 | | | | | | | | | | | | | | | | | | | |
| SR | Y87 | 120/188 | | 30 | PART 1 | | | TERM. 2 | | TERM. 9 | M | | O | 17.0 | 15.5 | REMOVE LEADS FROM TERM. 2 | | | |
| | | | | | | | | TERM. 2 | | TERM. 9 | M | | R | 0.85 | 1.0 | | | | |
| APP. UNIT PER GS-T-69182, FIG. 3 MTC. ONLY | | | | | | | | | | | | | | | | | | | |
| M | E6192 | | | | PART 2 | | | TERM. 7 | | TERM. 5 | M | | P | O | 40 | 38 | | | |
| | | | | | | | | TERM. 5 | | TERM. 1 | M | | S | O | 11 | 10 | | | |
| APP. UNIT PER GS-T-69182, FIG. 4 MTC. ONLY | | | | | | | | | | | | | | | | | | | |
| LL | S36 | | | | PART 2 | | | TERM. 4 | | TERM. 1 | B/G | | O | 47 | 44.5 | | | | |
| | | | | | | | | | | | | | NO | 37.5 | 39.5 | | | | |

TEST NOTES:

51. P/S INDICATES PRIMARY AND SECONDARY IN SERIES AIDING.

Fig. 7—Circuit Requirements

TELECARDS
DESCRIPTION, INSTALLATION, OPERATION
AND MAINTENANCE