COIN COLLECTORS

MULTI-SLOT, POSTPAYMENT TYPES COMMUNITY DIAL OFFICE SERVICE CONVERSIONS FOR 10¢ OPERATION

Contents

1. GENERAL

1.01 This section covers the procedures and requirements for converting 5¢ community dial postpayment multi-slot coin collectors to operate on a 10¢ initial charge basis. The conversions covered herein are for use at stations having anti-sidetone circuits only. Table 1 below lists the old code numbers and the new code numbers to which the coin collectors can be converted for common battery service. The old and new codes for local battery service are covered in Part 8.

TABLE 1

COMMON BATTERY TYPES (C.D.O.)

U.S. & Canadian Coins	U.S. Coins
Old Code	New Code
150U, W, 163A, B	158E
150U, W, 163A, B	158G
163C, D	168E
163C, D	168G
183E, F	193E
183G, H	193G

Note: These new codes include the 1A coin receptacle rail, the 10G lock, the transmitter and the receiver with cord or hand set with cord, the dial (and apparatus blank on 193 type), the dial adapter, and the number plate. Coin collectors with code letter E should have the 147A number plate, and with code letter G, the 147B number plate.

1.02 The coin chutes in the converted coin collectors shall be equipped with cutover clips P-339098 or P-339881 (3/8" wide) which adapt the coin collectors for use in 5¢ service. If P-339881 is used, it shall be tensioned so as to hold the electromagnet arm in the fully-operated position and it shall be located adjacent to the right gate bearing lug. Where a coin chute is to be used in an area operating on a 5¢ basis, a nickel deflector P-16A317 shall also be provided.

1.03 The converted coin collectors listed in Table 1 shall be connected in accordance with the diagrams for their respective codes shown in Section C64.246, and shall be corded as indicated in Section C42.106.

1.04 In some cases due to limiting loop conditions, it is necessary to temporarily short-circuit the electromagnet or to provide local battery talking arrangements. When electromagnet and condenser terminals are to be short-circuited, strap clip P-338903 shall be used as called for in Section C42.106. Local battery talking arrangements are covered in Part 8 of this section.

1.05 These coin collectors, when used on party line service, have certain line and ringer limitations which are covered in Section C64.246 for connections.

2. GAUGES AND TOOLS

2.01 The following gauges and tools will be required by the workmen, if all the types listed herein are to be converted.

126B Gauge (thickness gauge)

167A Gauge (for checking housing play)

3/32", 1/8", 11/64", 13/64", and 1/4" Drills or equivalent rod stock (gauges for gong spacing)

63 Tool (open end wrench) See Note

129B Tool (open end wrench) See Note

332 Tool (for adjusting switchhook arm)

376A Tool (dental mirror)

466A Tool (for adjusting contact springs)

529A Tool (for retaining coins during tests)

617A Tool (blocking wedge)

D-178854 Tool (gong guard bender)

D-178855 Tool (gong guard clippers)

F-50029 Tool (gong guard cut-off gauge)

RS-9080 Tool Kit for Coin Gauge 10¢ Slot Expansion consisting of:

- Vise Assembly—Details 1 to 6
  - Detail 1—Vise
  - Detail 2—Base Plate
  - Detail 3—No. 10—32 x 5/8" long F.H.I.M.S. (3 required)
  - Detail 4—No. 10—32 x 3/4" Phillips Fil. H.M.S. furnished with vise (4 required)
  - Detail 5—Vise Jaw, Movable
  - Detail 6—Vise Jaw, Stationary
- Drive Rod for bronze coin gauges equipped with Drift and Release Nut—Details 7, 9 and 11
  - Detail 7—Drive Rod Assembly for bronze coin gauges. P-242931 Fil. Hd. cap screws furnished as part of the assembly for mounting the drift
  - Detail 9—Drive Rod Release Nut
  - Detail 11—Drift for bronze coin gauge—10¢ slot
- Drive Rod for stainless steel coin gauges equipped with Drift and Release Nut—Details 8, 9 and 12
  - Detail 8—Drive Rod Assembly for stainless steel coin gauges. P-242931 Fil. Hd. cap screws furnished as part of the assembly for mounting the drift.
  - Detail 9—Drive Rod Release Nut
  - Detail 12—Drift for stainless steel coin gauge—10¢ slot
- Release Handle Assembly—Detail 10
- Soft Nylon-faced 10-ounce Hammer—Detail 13
- Guide Plate Assembly—Detail 14
- Wedge for stainless steel coin gauge, 25¢ slot—Detail 15
- Wedge for stainless steel coin gauge, 5¢ slot—Detail 16
- Soft Graphite Lubricating Stick or equivalent—Detail 17
- Rubber Base Pad for Base Plate—Detail 18
- Fine Triangular India Stone or equivalent—Detail 19
- No. 276 Tool—Detail 20
- Screw-holding Screwdriver—Detail 21

RS-9081 Gauge for 10¢ Slot

RS-9082 Gauge for 5¢ Slot

RS-14582 Tools (for bending return chute for clearance)
Detail No. 1 with light finish (for return chute .045" thick, generally on cast iron upper housings)
Detail No. 2 with dark finish (for return chute .056" thick, generally on pressed steel upper housings)
RS-14583 Tool (for straightening return chute)
Detail No. 1 with light finish (for return chute .045" thick, generally on cast iron upper housings)
Detail No. 2 with dark finish (for return chute .056" thick, generally on pressed steel upper housings)
RS-14584 Tool (for adjusting chute mounting lug)
KS-14421 Flashlight Test Set
KS-2423 Cleaning Cloth or equivalent
No. 5 Sash Brush (for cleaning)
6" Mill-Bastard File
No. 1-1/2 Carborundum (emery) cloth
No. 2B or Softer Lead Pencil
Pipe Cleaners
Mineral Spirits

Note: Commercial type 1/4" by 5/16" box end wrench and 3/8" offset type of box end wrench may be used in place of the 63 and 129B tools.

3. CONVERSION SUPPLIES

3.01 **158E or G**

1. P-340044 Coin Chute*
2. P-339611 Switchhook Assembly
3. P-476703 Strap Wire (Red-white 5-1/2" long)
4. P-339764 Dial Cord Clamp

3.02 **168E or G**

1. P-340044 Coin Chute*
2. P-347673 Switchhook Arm Assembly
3. P-338905 Hex. H.M. Screw
4. P-476703 Strap Wire (Red-white 5-1/2" long)
5. P-339764 Dial Cord Clamp

3.03 **193E or G**

1. P-340042 Coin Chutes**
2. P-347673 Switchhook Arm Assembly
3. P-338905 Hex. H.M. Screw
4. P-347660 Guide Bracket

5. P-476703 Strap Wire (Red-white 5-1/2" long)
6. 452A or B Condenser
7. P-347181 Mounting Clip
8. P-339764 Dial Cord Clamp
9. P-338910 Cord Clip (For 1 Signal Transmitter Type)
10. P-174062 Gong
11. P-340459 Washer (For 1 Signal Transmitter Type)
12. P-251945 Induction Coil Mounting Plate

*The P-340044 coin chute includes electromagnet with P-339098 or P-339881 cutover clip, 452A or B condenser mounted on chute, nickel deflector P-16A317, and three P-339521 mounting screws. This coin chute can be assembled from P-340042 by mounting condenser on chute with P-347186 bracket or P-16A340 bracket assembly, P-387666 lockwasher, and P-210851 screw. On 168 type collectors bracket assembly P-16A340 only shall be used. If condenser is to be added to any chute in the field, positioning of the condenser and arrangement of the leads shall be in accordance with Addendum C42.138.

**The P-340042 coin chute includes electromagnet with P-339098 or P-339881 cutover clip, nickel deflector P-16A317 and three P-339521 mounting screws.

Additional Supplies

3.04 The following may be required in addition to the supplies listed above under certain conditions described in this section.

KS-13490-L2 Resistor 22 (or 20) ohms, 1/2 watt (See 8.03)

D-176927 Spacer Plate (See note and 5.01)

P-338903 Strap Clip (See 1.04)

New Instruction Card (See 5.12)

61R Filter (Includes P-129732 mounting screw (See 5.07(d))

31A Varistor (See 6.10)

37A Varistor (See 6.10)

Note: Spacer plate shall be of the type having only two mounting holes.

Spare Parts

3.05 It is recommended that the following parts be carried as spares due to possible loss or need for replacement.

P-108139 Switchhook Pin Set Screw

P-111524 Switchhook Pin (for 158 Type)
P-111542 5¢ Gong Mounting Nut (for cast iron housing)
P-122061 Induction Coil Plate Mounting Screw
P-174062 5¢ Gong (for 193 Type)
P-240420 Dial Mounting Screw
P-242854 Gate Operating Arm Mounting Screw
P-242934 or P-111550 Gong (for 158 or 168 Type)
P-242947 25¢ Cathedral Gong (for 158 or 168 Types or 193 Type with 1 signal transmitter)
P-243215 5¢ Gong Washer (for 158 or 168 Type)
P-243229 25¢ Gong Mounting Hex. Screw
P-297412 Card Frame Screw
P-297767 Cord Clamp (for 193 Type)
P-297872 Spacer Washer (for 168 or 193-Type switchhook)
P-299453 Induction Coil Mounting Screw
P-299458 Round Head Screw (for cord clamp 193 Type)
P-338905 Hex. Head Screw (for 168 or 193-type switchhook)
P-338910 Cord Clip (for 193 Type)
P-338937 Transfer Spring Mounting Screw
P-339098 (or P-339881) Cutover Clip
P-339521 Coin Chute Mounting Screw
P-339752 25¢ Cathedral Gong (for 193 Type with 2 signal transmitters and chute mounted type signal assembly)
P-340459 Washer (for 193 Type with 1 signal transmitter)
P-347226 Gate Operating Arm (for 158 Type)
P-347673 Switchhook Arm Assembly (for 168 or 193 Type)
P-349486 or KS-7994 Relay Shield (See note)
P-371761 Switchhook (for 193 Type)
P-478251 5¢ Gong Mounting Hex. Screw (for pressed steel housing)
P-251945 Induction Coil Mounting Plate
P-16A317 Nickel Deflector
P-16A340 Bracket Assembly for 452 Type Condenser
No. 1208 Shakeproof Lockwasher (for 168 or 193-Type switchhook)

Note: Clamp P-340526 furnished with relay shield P-349486.

4. PRELIMINARY TESTS

4.01 Before starting the conversion operations make the following preliminary tests:

(a) Remove receiver or hand set from switchhook. Dial tone shall be heard.

(b) If dial tone is heard, dial a digit (except 1). Dial tone should stop.

4.02 Test for grounds in the coin collector wiring or power on the booth lining.

4.03 If the coin collector does not meet the above tests, look for trouble at the station in accordance with Section C42.129.

5. UPPER HOUSING

Caution—193 Type—Due to the small clearance between the electromagnet and the induction coil, extra care should be exercised when removing and assembling the upper housing on the backplate. Also, when raising and lowering the hanging-type gong signal assembly in the upper housing, care shall be exercised to prevent dislocating the wire-type cover holder on the electromagnet.

5.01 **Check of Upper Housing Play:** The assembled coin collector shall be checked for upper housing vertical play and shall have the D-176927 spacer plate added, if required, as follows:

(a) **On 158 Types:** With the upper housing locked in position, take up all play downward, and check gap between the top of the upper housing and the flange of the backplate using a 167A gauge as shown in Fig. 1, View B. Gauge, to be considered as entering, should slide freely between the surfaces of the gap for the full width of the housing.

(1) If the .035″ end of the gauge does not enter freely, do not use a spacer plate.

(2) If the .035″ end of the gauge enters freely, assemble a spacer plate with the turned-over portion down.

(3) If the .060″ end of the gauge enters freely but with less than 1/32″ play, assemble a spacer plate with the turned-over portion up.

(4) If the .060″ end of the gauge enters freely with 1/32″ or more play (judged visually and by feel), assemble two spacer plates. One with the turned-over portion down adjacent to the housing and the other with the turned-over portion up on top of the first plate.

(b) **On 168 and 193 Types:** With the upper housing locked in position, take up all play upward, check the gap between the upper and lower housings as shown in Fig. 1, View A, and if the .035" end of the gauge slides freely for the entire length of the gap at the sides and front, then check the gap between the top of the upper housing and the flange of the backplate as shown in Fig. 1, View B, with play taken up downward to determine the spacer plates to be added as described above.

(c) Assemble the spacer plate to the upper housing by means of the two rear slotless screws using a 129B tool or equivalent 1/4" wrench. Slide the plate under the card holder or patent number plate, if present. Longer screws are furnished with the spacer plate, for use if required.

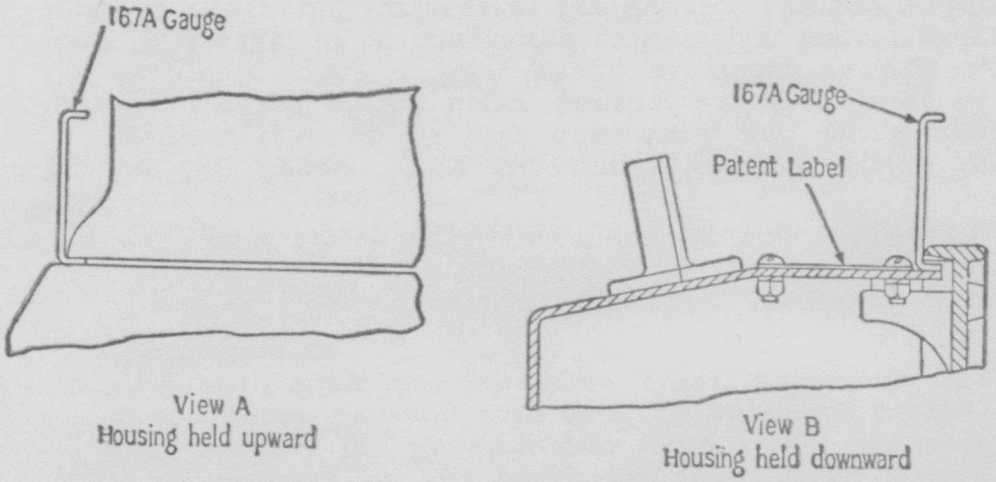

Fig. 1—Gauging of Upper Housing Play

5.02 **Preliminary Operations:** Remove the upper housing from the coin collector and modify it as follows:

(a) Remove the 61F filter, if present.

(b) Remove the lead coin chute and place it in a satchel or container.

(c) Remove the nickel gong and washer.

Note: Gong and washer from 150 and 161 types are to be reused. Gong and washer from 183 type are to be returned to Storeroom.

(d) Arrange the dial cord as shown in Fig. 1 of Section C42.106 using cord clamp P-339764.

(e) Remove all felt (if present) from the coin return chute and the gong guard. The surface of the gong guard after cutting (described below) for a distance of 1-1/4″ from the lower end, and the upper surface of the coin return chute from a point along the chute 1-1/2″ from where it joins with the left inner side of the housing (judged visually) down into the throat of the return chute shall be smooth and free from all remnants of felt and adhesive. Use emery cloth to smooth these surfaces.

5.03 **Coin Return Chute**

(a) **On Cast Iron-type Housings:** If the coin return chute is bent upward, it shall be rebent to the flat position using the RS-14583 tool. A ripple and a slight upward lip, due to the previous bend, is permissible. The angle between the flat portion of the underside of the return chute and the front of the housing shall be 90 degrees or slightly more (judged visually). Upper end of the return chute need not be flattened (if bent) to a point 2-1/2″ downward along the return chute from the side of the upper housing (judged visually). Following operations may be done at the same time as this operation.

Note: This operation is intended to reduce the possibility of nickels dropping between the coin chute and the return chute.

(b) **On All Steel Upper Housings (W. E. Co. Type) Except Steel Type Having Lower Coin Chute Mounting Lug as Part of Coin Return Chute:** The upper edge of the coin return chute shall be bent upward 90 degrees or more with one of the RS-14582 tools. Detail No. 1 shall be used on cast iron-type housings (return chute .045″ thick) and detail No. 2 shall be used on pressed steel-type housings having lower coin chute mounting lug attached to the side of the housing (return chute .056″ thick). The RS-14582 tools, detail 1 or 2 (as required), should be inserted on the upper edge of the return chute, the full depth of the slot in the tool with the stop lug on the tool against the side of the housing. On return chutes that are already bent and on pressed steel non-hand set types, place the tool so as to provide the bend in the location indicated in Fig. 2. Hold the lower portion of the return chute with the RS-14583 tool, detail 1 or detail 2 (as required), or equivalent, while bending with the above tools.

Note: Requirements in (b) and (c) are intended to elminate interference between the 25¢ runway of the coin chute and the coin return chute, and to permit interchangeability of the coin chutes.

(c) **On Steel Type Having Lower Coin Chute Mounting Lug as Part of Coin Return Chute (Gray Co. Type):** The lower coin chute mounting lug shall be positioned so that the coin return chute and the coin chute (when assembled) will clear by 1/32″ to 1/16″ (judged visually). Excessive clearance on these housings will promote coin chute misalignment with the coin gauge and failure to return coins due to dropping between the coin chute and the coin return chute. The RS-14584 tool or long-nose pliers may be used to adjust this lug.

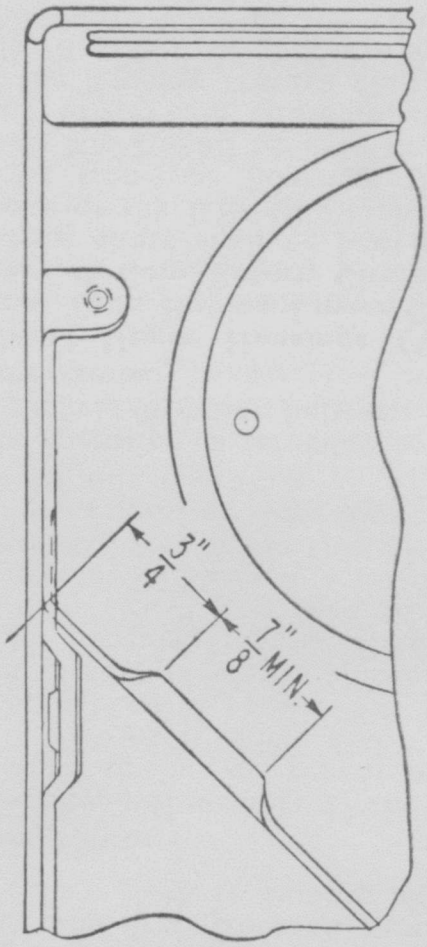

Fig. 2—Bend in Coin Return Chute to Clear Coin Chute

5.04 **Gong Guard**

(a) **On Cast Iron-type Housings:** Prior to operations listed below, the vertical portion of the gong guard shall be flat and at right angles to the front of the housing; and

the rear edge of the guard and the rear edge of the coin return chute shall be in the same plane (judged visually). Flatten the gong guard and bend the guard at the upper horizontal portion with long-nose pliers, if necessary.

(1) **On Cast Iron Type and on Steel Type Having Lower Coin Chute Mounting Lug as Part of Coin Return Chute (Gray Co. Type):** Scribe a cut-off line on the gong guard using the F-50029 tool (cut-off gauge). Place the tool with the locating pin (on tool) engaging the upper right coin chute mounting hole and the triangular plate (on tool) resting against the face of the gong guard with the pointed end of the plate (on tool) against the front of the housing. Mark the gong guard along the lower edge of the plate (on tool) with a white pencil or the tip of a screwdriver or equivalent.

(2) **On Cast Iron Type and on Steel Type Having Lower Coin Chute Mounting Lug as Part of Coin Return Chute (Gray Co. Type):** Cut off the end of the gong guard along the scribe line so as to leave the line, using D-178855 tool (gong guard clippers). Snip off maximum 1/16" of the sharp point from the guard, using D-178855 tool or diagonal cutters.

(b) **On Steel Type (W. E. Co. Type) Having Lower Coin Chute Mounting Lug Attached to Side of Housing:** Gong guard shall not be cut.

(1) Remove all burrs and sharp corners from the cut portion of the gong guard, using a file. Slightly round or chamfer the lower cut edge of the gong guard facing the left side of the housing (viewed from rear).

(2) **Brush out thoroughly,** all loose particles and filings.

(3) Bend the gong guard, using a D-178854 tool (guard bender). Place the upper housing with the front downward and the bottom edge toward the craftsman. Hold the tool by the flat handle and place the roller in the upper position. Place the tool into the housing so that the gong guard (in housing) is between the roller and the drum (on tool), and the upper right locating pin (on tool) enters the upper right coin chute mounting hole (in housing). Locate the tool so that the lower locating pin (on tool) enters the lower coin chute mounting hole (in housing) and that tool seats against the three coin chute mounting lugs (in housing). Securely fasten the tool in place with the thumbscrew (furnished with tool) in the upper left coin

chute mounting hole (in housing). Insert the round lever (furnished with tool) into the hole in the upper end of the shaft (on tool). Use the left hand to hold the side of the housing with the thumb resting on the flat handle (on tool) to prevent the housing from turning and the tool from rising off the lower lug during the bending operation. With the right hand, move the lever to the lower stop position, pressing downward at the same time so that the tool will not rise off the upper right lug. Make the bend with one continuous motion.

5.05 **Coin Signal Gong Installation**

(a) **On 158 and 168 (Non-hand Set) Types:** Reassemble the round nickel gong and washer previously removed.

(1) **On Cast Iron Type and Steel Type Having Lower Coin Chute Mounting Lug as Part of Coin Return Chute (Gray Co. Type):** Place the washer between the gong and the side of the housing. If the washer is cupped, the cupped side of the washer shall be placed against the gong.

(2) **On Steel Type (W. E. Co. Type) Having Lower Coin Chute Mounting Lug Attached to Side of Housing:** Place the washer inside of the gong.

(b) **On 193 (Hand Set) Types:** Assemble the oval gong P-174062 (designated by a round green dot). On types having one signal transmitter, assemble the washer P-340459 (.016″ thick) between the gong and the bracket. Securely fasten the gong so that the prick-punch mark (under green dot) is within 1/8″ of a plane which passes through the center of the gong and is at right angles to the face of the bracket (judged visually). On types having two signal transmitters, no washer is required and the requirement may be considered met when prick-punch mark is in line with the three nearest bracket screws within the width of the screwheads as judged visually.

(c) **On 193 Type:** There shall be a clearance of minimum 1/64″ between the top of the gong and the signal assembly mounting bracket (judged visually). File the bracket to provide this clearance when necessary or refer the housing or the coin collector for replacement.

(d) **On 193 Type Having One Signal Transmitter:** Anchor the gong signal transmitter leads by means of the cord clip P-338910 as shown in Fig. 13 of Section C42.106. To facilitate assembly of the cord clip, preform leads by a right angle twist, with the tip of long-nose pliers, at the

top and bottom edges of the bracket where the leads are to be held by the clip.

(e) **On 193 Type:** Install the guide bracket P-347660 as shown in Fig. 13 of Section C42.106.

(f) **On 168 Type:** The condenser mounting bracket shall be of the type equipped with a guide for the gate operating arm. If not, replace the bracket by P-16A350 bracket assembly.

5.06 **Spreading of 10¢ Coin Gauge Slot** (when requested by the Telephone Company): After removal of the upper housing, remove the coin chute and the 1B card holder, if present.

(a) On upper housings equipped with swing-type gong assemblies, remove the gong assembly mounting screws and remove the coin chute mounting screws before raising the gong assembly. Raise the gong assembly and take out the coin chute.

(b) Use the 276 tool to remove the nuts fastening the 1B card holder, when present. Remove the card holder and refasten the gong assembly bracket with two of the mounting screws and nuts to avoid damage to the wires.

(c) With the housing upright, attach the vise to the coin gauge and sight through the hole in the base plate to insure that the projections on the stationary jaw enter the 5¢ and 25¢ openings in the gauge before tightening. See Fig. 3.

(d) Tighten vise securely.

Caution: Leave it so until all operations are completed and the drifts are withdrawn.

(e) Turn the housing and vise over.

(f) Place foot firmly on the base plate and hold it there in order to avoid shifting of the assembly while driving in the wedges and the drift and particularly when withdrawing the drift.

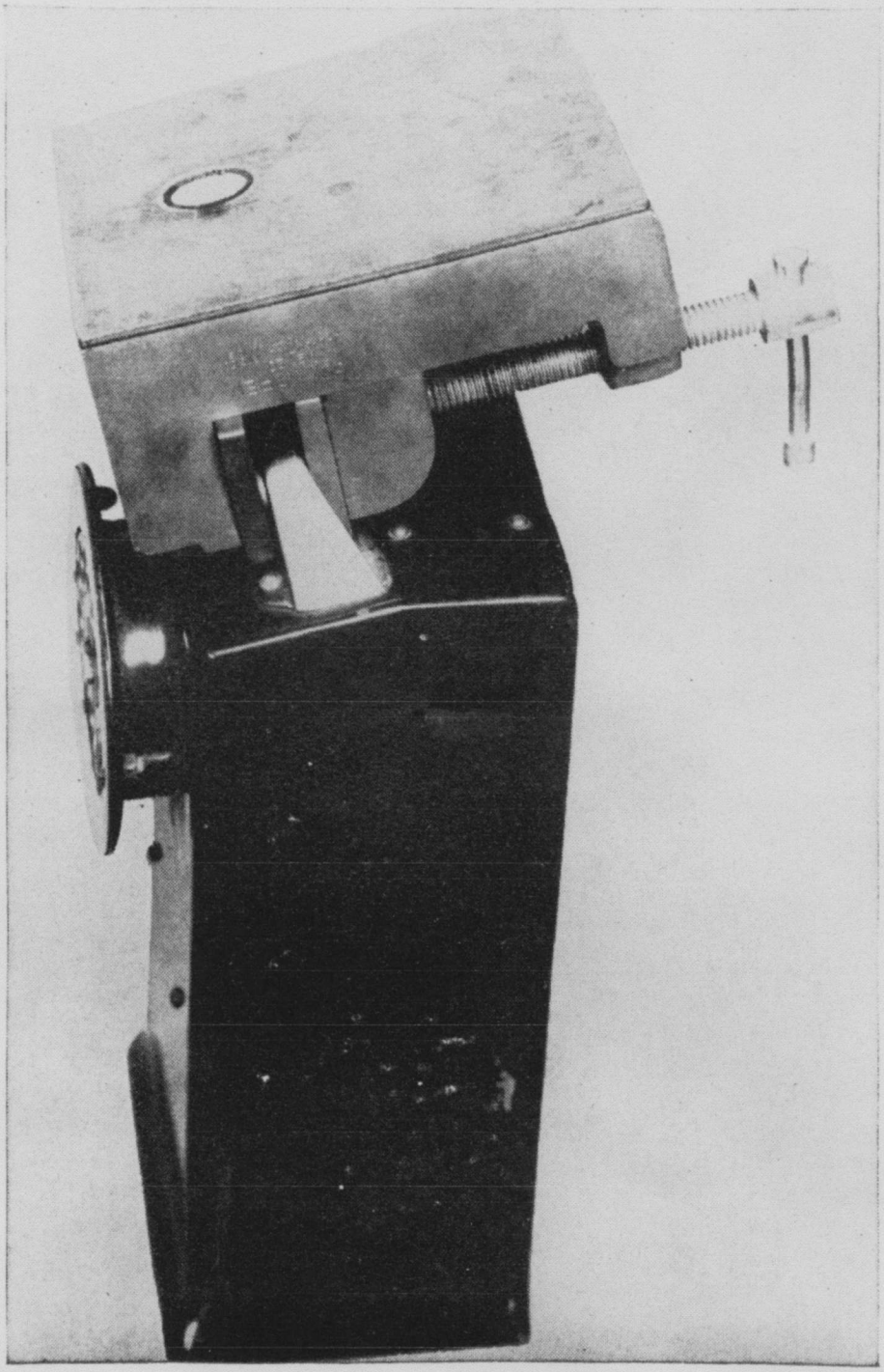

Fig. 3

(g) On stainless steel gauges only, with the gong assembly up in its normal position, insert the wedges in the 25¢ and 5¢ slots with the numbered sides toward the open side of the housing. Insert the small end of the release handle in the hole near the top of the 25¢ wedge. Drive in the wedge to full depth by using hammer to tap release handle. Drive in the 5¢ wedge in a similar manner.

(h) Rub the lubricating stick on a piece of cloth and wipe the blade of the drift on it. Lubricate the under side and the threads of the release nut with the lubricating stick to facilitate withdrawing drift.

(i) Insert the drive rod equipped with the proper drift and release nut in the 10¢ slot with the designation toward the open back of the housing. Use the drift marked with an "S" for stainless steel gauges, and the drift marked with a "B" for bronze gauges.

(j) Place the guide plate on the open end of the housing making sure that the tongue of the guide engages the lock bolt. Insert the end of the drift in the slot and run back the release nut about 1-1/4" above the top of the guide plate. During the driving procedure, the release nut should never be against the guide plate.

(k) Drive the drift into the 10¢ slot by striking the top of the release nut until the shoulder on the drift is seated against the gauge.

(l) Remove the drift by inserting the release handle in the hole in the release nut and turning clockwise against the guide plate. See Fig. 4. Check that the drift is completely out of the slot in the gauge before removing the drive rod and guide plate.

Note: In order to reduce the possibility of scoring the gauge and breaking the drift on subsequent use, the faces of the drift shall be inspected for the adherence of metal particles after the drive rod has been removed. Such metal particles shall be removed using the India stone or equivalent in a lengthwise direction (never crosswise). Care shall be taken to see that the particles only are removed and that the shape and size of the drift are altered as little as possible when polishing the faces.

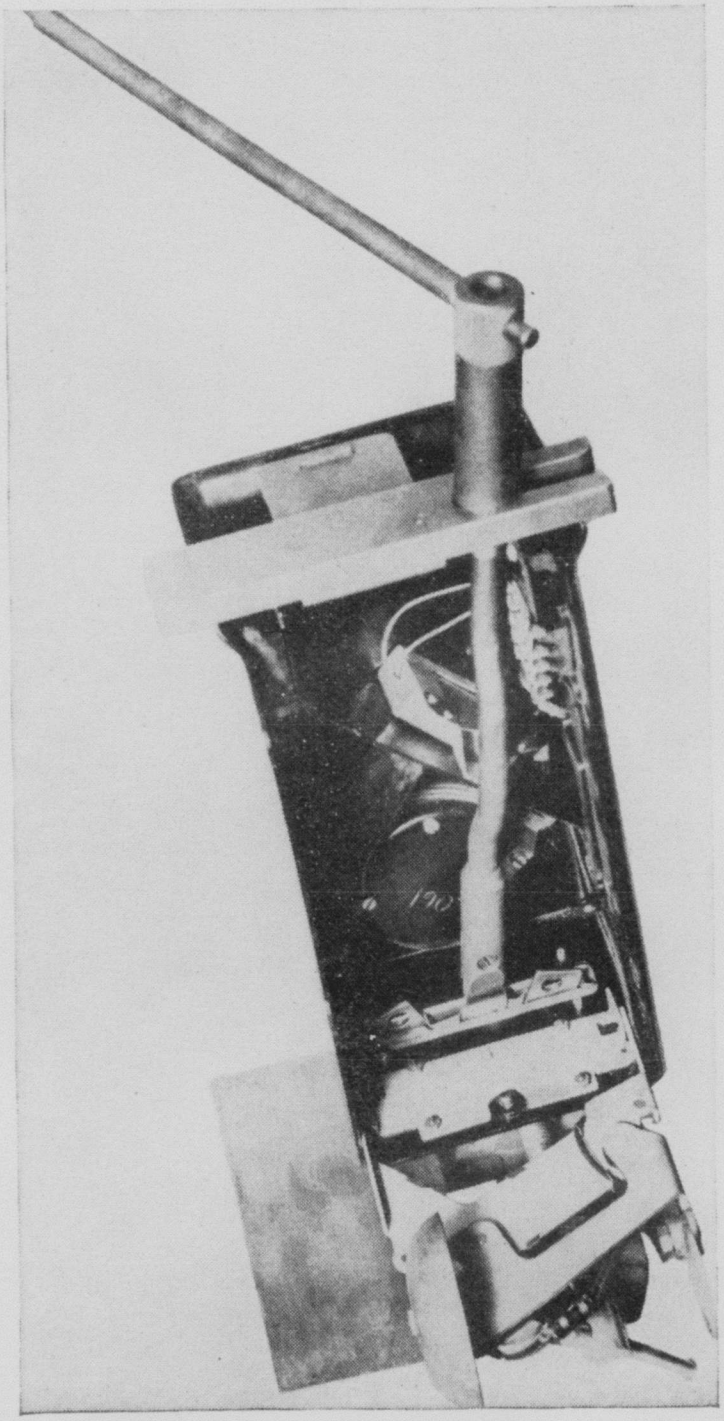

Fig. 4

(m) Remove the wedges from the stainless steel gauges by inserting the release handle in the hole and using it as a lever.

Note: Screwdriver blade may be used as a fulcrum to facilitate withdrawing the wedges and also to avoid damage to the mounting screws of the gong assembly bracket.

(n) Loosen the vise and remove the upper housing.

5.07 **Coin Chute, Condenser, and Filter Installation**

(a) **On 193 Type:** Assemble the 452A or B condenser in the P-347181 clip and mount the assembly in accordance with Addendum C42.138.

(b) Assemble the appropriate coin chute for the code of the coin collector. Flared type coin chute shall be used with a coin gauge that is spread per 5.06. If the coin chute is for use in a 5¢ Area and is not equipped with a nickel deflector, assemble P-16A317 as shown in Fig. 5. Three P-339521 coin chute mounting screws should be turned down using screw-holding screwdriver until the shoulders set against the mounting lugs.

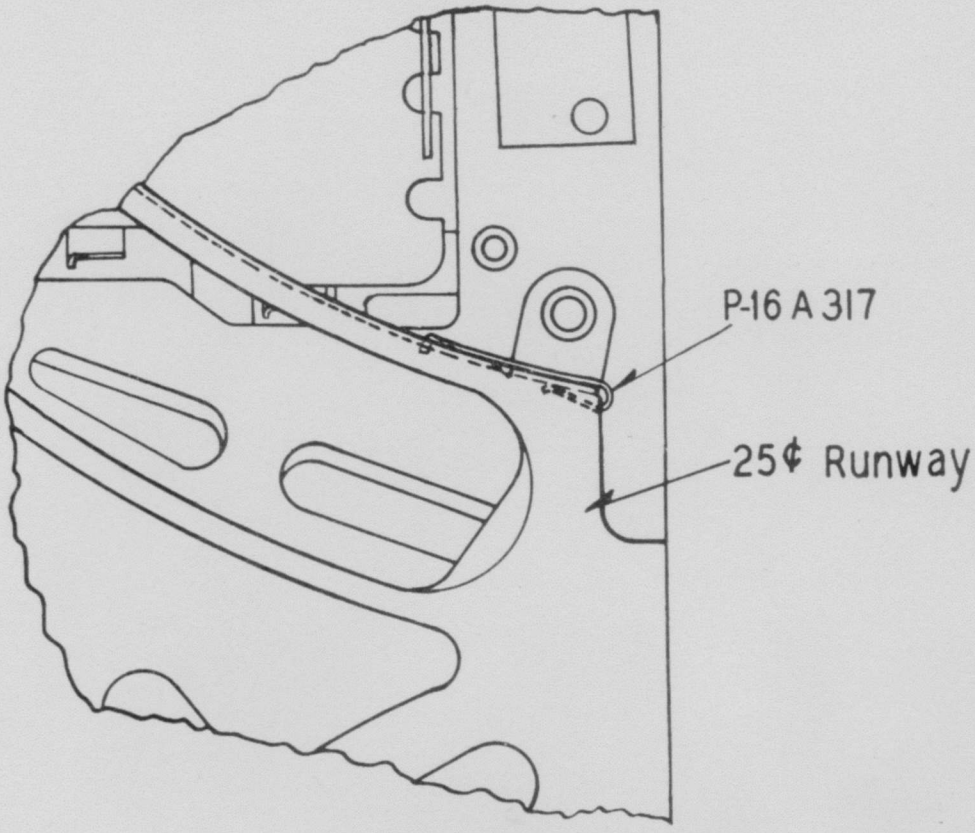

Fig. 5—Location of Nickel Deflector

(1) **On Cast Iron Types:** Check visually that the upper left corner of the coin chute clears the corner of the housing (viewed from rear). Remove the corner of the coin chute, when necessary, using a file.

(2) **On 193 Type:** Check that the cord tips on the BK housing terminal clear the lower left corner of the coin chute. Position the cord tips as required.

(3) **On 193 Type:** Check that the stop shelf (to prevent tampering) on the top rear of the coin chute is not distorted. If necessary, adjust the stop shelf with long-nose pliers so that it is straight across the coin chute and lies close to the coin chute backplate.

(c) **On 193 Type:** Fasten the gong signal assembly in place. Check that there is a minimum 1/32" clearance between the gong assembly bracket and the bottom of the electromagnet (judged visually). File the bracket, if necessary, or refer the housing or coin collector for replacement.

(d) Assemble a 61R filter using the screw P-129732 furnished with the filter in the hole provided in the coin chute and located below the lower chute mounting hole. Dress the dial cord below the terminal plate of the filter. Position the filter, so it **will not touch** the cord shelf or the coin chute mounting lug in the cast iron housing, or so it will not touch the 452A or B condenser mounting clip in the 193-type housings. If in doubt, place scotch electrical tape or equivalent on the filter to avoid electrical contact.

Check of Coin Chute Alignment and Gong Signal Adjustment

5.08 With the upper housing in a vertical position (but not on backplate) and with a cutover clip in place, the coin chute alignment shall be as noted below. Coins used for testing should not be worn (i.e., rim shall be distinct).

(a) Deposit an RS-9082 test disc or a nickel in the 5¢ slot of the coin gauge. The disc or coin shall pass freely from the gauge into the coin chute. It shall strike the gong, emitting a clear signal, and exit from chute. If the chute is not equipped with a cutover clip, the disc or coin will stop at the first latch. In which case, open the gate to recover the disc or coin.

(b) Deposit an RS-9081 test disc in the 10¢ slot of the coin gauge spread per 5.06. Use dime for unmodified coin gauge. The disc or coin shall pass freely from the gauge

into the coin chute and shall strike the gong twice, emitting two clear signals, and exit from the chute.

(c) Deposit a quarter. It shall pass similarly and shall strike its gong, emitting a clear signal, and exit from the chute. Check that the quarter does not override the top of the gong (see (h)). Also, deposit a nickel in the quarter slot of the coin gauge. It shall pass freely from the gauge into the coin chute and shall pass into the coin return chute.

(d) If the coins do not enter the chute, check to see that the chute is properly positioned on its lugs and that the screws are tight. On pressed steel type, the upper chute mounting lugs may be straightened with pliers or a suitable tool, if distorted.

(e) In case of a failure in any of the above, insure that the screws are tight. If there is still a failure, try another chute. If the test discs or coins still fail to enter the chute with the second chute, refer upper housing or coin collector for replacement.

Caution: Do not use washers to obtain coin chute alignment.

(f) If the nickel or dime misses or emits a poor signal, check the spacing between the nearest edge of the gong and the coin chute in a horizontal plane. Spacing shall meet the following requirements. Drills or rod stock shall be used to check the requirements.

Oval Gong

193 (Hand Set) Types

	Minimum	Maximum
At top of gong	1/8″	1/4″
At bottom of gong	1/8″	13/64″

Round Gong

158, 168 (Non-hand Set) Types

At top of gong	3/32″	1/4″
At bottom of gong	3/32″	11/64″

(g) Bending the gong slightly while mounted securely, using a screwdriver as a lever between the housing and gong, is permissible.

(1) **On 193 Type with One Signal Transmitter:** When bending the gong, wedge a screwdriver or equivalent between the gong mounting bracket and the housing on the side opposite the gong.

(2) **On 158, 168 (Non-hand Set) Types:** If spacing is less than specified above, turn the gong around to a different position or place the washer inside of the gong instead of between the gong and housing. If the washer is inside of the gong and the spacing is greater than specified above, place the washer between the gong and housing.

(3) **On 193 (Hand Set) Types:** If spacing is not met, loosen the signal assembly mounting screws, take up play in the desired direction, and retighten the screws. Turning the oval gong 1/8″ in either direction, as covered in 5.05(b), is permissible.

(h) If the quarter overrides the gong or a clear signal is not produced, adjust the 25¢ gong by bending the gong wire close to the support with long-nose pliers. Gong wire shall not be loose in its support and shall not touch the gong mounting bracket. The horizontal separation between the top turn of the quarter gong and the coin chute shall be between 1/16″ and 3/16″ (judge visually using 1/8″ drill or rod stock as guide), and the top of the gong adjacent to the coin channel shall be between 2-3/16″ and 2-3/8″ above the edge of the coin chute directly below the bottom chute mounting screw. If the gong is adjusted, recheck (c) with a quarter.

Note: This requirement may be considered met if a quarter in the bottom portion of the coin channel, when moved up into contact with the gong, touches the third turn of the gong wire from the top. Use an orange stick or equivalent to stop the quarter (deposited in usual manner) and to move the quarter against the gong.

(i) Housing, in which the clearness of a coin signal is doubtful, shall be checked in accordance with 7.15.

Wiring Modification (Upper Housing)

5.09 Upper housings originally produced for 50, 150, and 161-type coin collectors have been used interchangeably. The corresponding housing contact terminal designations are as follows:

50 type	W	Y	YY	BB	BK-YY
150, 161 type	W	Y	BK-YY	BB-YY	5

Some 150-type coin collectors were produced omitting terminal 5.

150U, 150W, 163A, 163B to 158E or 158G
163C, 163D to 168E or 168G

5.10 The modifications in connections are as follows:

(a) Transfer the black lead of the dial cord from the BK-YY contact terminal to the E terminal on the coin chute. Also, connect the black lead of the 61R filter and one 452A or B condenser lead to the E terminal.

(b) Connect the A terminal on the coin chute to the BK-YY contact terminal, using a red-white strap wire. Also, connect the other 452A or B condenser lead to the A terminal.

(c) Connect the yellow lead of the dial cord and the yellow lead of the filter to the filter bracket terminal.

(d) Connect the red lead of the filter to the Y contact terminal.

183E, 183G to 193E or 193G

5.11 The modifications in the connections are as follows:

(a) Transfer the brown gong transmitter lead from the BKX contact terminal to the A terminal on the coin chute. Also, connect one 452A or B condenser lead to the A terminal.

(b) Connect the E terminal on the coin chute to the BKX contact terminal using a red-white strap wire. Also, connect the other 452A or B condenser lead to the E terminal.

(c) Connect the yellow lead of the dial cord and the yellow lead of the filter to the filter bracket terminal.

(d) Connect the red lead of the filter to the Y contact terminal.

Instruction Card

5.12 Check that the instruction card is the proper new type. Replace if necessary.

6. BACKPLATE ASSEMBLY

Induction Coil and Wiring
183 Type to 193 Type

6.01 Induction coil shall be mounted with the core side downward.

(a) If the induction coil has the core upward, replace the coil mounting plate by P-251945.

(b) Before assembling the coil and the plate, bend the plate near the center (adjacent to coil mounting lug) to give it a minimum 1/16" bow toward the backplate when assembled. Use long-nose pliers to make the bend.

(c) Fasten the coil (using screw P-299453) and the coil mounting plate (using screws P-122061) with all play taken up toward the left.

6.02 Wiring to the induction coil shall be as follows:

(a) Wiring to the induction coil shall be dressed as shown in Fig. 17 of Section C42.106. (For connections, see Section C64.246.)

(b) If the wiring is dressed adjacent to the switchhook springs and under the spring operating end of the switchhook arm (old method of dressing conductors), it should be changed when the switchhook arm is being replaced as noted in 6.04 (b) and (c). Wires shall be dressed under the switchhook shaft and the open end of the cable clamp shall extend toward the right bearing lug. The hand set cord lead going to the induction coil may be under the clamp or may be wound under other wires adjacent to the clamp (as shown). Arrange the conductors so that they will not be between the gate operating arm and the induction coil, and will not interfere with the operation of the switchhook shaft or switchhook arm.

Switchhook Assembly

150 Type, 161A, 161B to 158 Type

6.03 Replace the switchhook as follows:

(a) Remove the switchhook by loosening the set screw and sliding the pin to the right. Use long-nose pliers to slide the pin, if necessary. If the pin is bent or the bearing surfaces are marred or rusted, replace with a new P-111524 pin.

(b) Clean the switchhook pin with a cloth using mineral spirits, if necessary. Lubricate the switchhook pin at the bearing surfaces. To lubricate, rub the lead of a soft pencil or equivalent on the bearing surfaces so as to deposit as continuous a coating as practicable. Also, clean the switchhook bearing surfaces on the backplate with a cloth using mineral spirits and a pipe cleaner if necessary, and lubricate the bearing sides of the lugs in the same manner as the pin.

(c) Assemble the switchhook assembly P-339611 as shown in Fig. 4, 5, or 6 of Section C42.106. In assembly, the pin should not touch the end of the hole in the switchhook (judged by feel). Be sure that the set screw for the

pin and the mounting screws for the gate operating arm are tight. If the switchhook does not operate freely, correct the trouble or replace the switchhook.

163C, 163D, and 183 Types to 168 and 193 Types

6.04 Replace the switchhook arm and change the dressing of wires as follows:

(a) Place the 617A tool between the switchhook operating spring and the backplate so as to release the spring pressure against the switchhook arm. Make a mental note of the relative position of the insulator stud on the switchhook arm assembly with respect to the operating spring in the switchhook spring pile-up for use in item (e) below. This will facilitate making the switchhook spring adjustments in 6.05.

Caution: In placing the blocking tool, care should be exercised to prevent damage to the contact springs.

(b) Remove the switchhook arm by removing the hexagonal head screw at the end of the shaft, using a 63 tool or an equivalent 5/16″ wrench. If there is a spacer washer between the switchhook arm and the bearing lug on the backplate, it should be retained for reassembly in (e) following. Also, see 6.02.

(c) Slide the switchhook toward the left and clean the shaft with a cloth using mineral spirits if necessary. If the hand set switchhook (on 193 type) shows wear of the stop surfaces, 1/32″ deep or more (judge visually), replace the switchhook with P-371761 or refer the coin collector for replacement. With a soft pencil, lubricate the bearing surfaces of the switchhook shaft as described above for the switchhook pin. Also, clean the switchhook bearing lugs on the backplate with a cloth using mineral spirits and a pipe cleaner if necessary, and lubricate the bearing sides of the lugs in the same manner as the shaft.

(d) Assemble the switchhook arm P-347673 to the end of the switchhook shaft using hexagon head machine screw P-338905 and No. 1208 Shakeproof lockwasher, as shown in Fig. 10 or 17 of Section C42.106. If the spacer washer was previously provided or if the end play of the switchhook shaft is more than 1/32″, be sure to assemble a spacer washer between the switchhook arm and the bearing lug. Screw P-338905 has a guide tip and will facilitate assembling operation. Also, reassembly may be facilitated by holding the hook and the gate operating arm of P-347673 together with thumb and finger or a heavy type (3″ long by 1/8″ or 1/4″ wide) rubber band while assembling the screw. This will leave the left hand free to hold the

switchhook arm while assembling the screw with the right hand. Make sure that the arm engages the end of shaft properly before tightening.

(e) Adjust the new switchhook arm to the position of the original arm before removal, as noted in (a) above. Use the 332 tool to adjust the arm, and hold the mounting surface of the arm with the long-nose pliers to avoid distortion.

(f) Remove the blocking tool and rubber band, if used.

Switchhook Contact Spring Adjustments

6.05 The following switchhook contact spring adjustments shall be met in conjunction with the gate operating arm adjustment in 6.07 and 6.08, and the switchhook operation in 6.09. Use a 376A tool or equivalent dental mirror to look at the contact spring adjustments from the sides.

(a) **Sequence:** The sequence of the contacting springs shall be as indicated in the connection diagrams. Springs may be adjusted with a 466A tool to meet requirements. Make all bends close to the spring pile-up to prevent bowing.

(b) **Follow:** Contacts shall have a 1/64″ follow when operated (judged by eye). Adjust by bending the tension spring with a 466A tool. If the tension spring is associated with the stop spring, the wide slot of the 466A tool shall be used to bend both springs simultaneously.

If the spring pile-up is retightened for any reason, the following shall be met:

(c) **Alignment:** Contacts shall line up so that, in case of springs having point and disc contacts, contact point falls wholly within the circumference of the opposing contact disc; and in case of springs having bar contacts, the full width of the contacting surface of each contact falls wholly within the length of the other mating contact. If they fail on the 158 type, loosen the pile-up screws and move the springs to meet the requirements. If they fail on the 168 type or the 193 type, refer the coin collector for replacement.

If the spring pile-up is retightened or if the contact springs are adjusted, the following shall be met:

(d) **Separation:** Separation between all mating contacts when open shall be .025″ minimum in case of the point and disc contacts, .016″ minimum in case of the bar contacts. Check with the 126B gauge. Adjust the contact springs with the 466A tool as required.

(e) **Clearance:** Clearance between the springs **not intended** to make contact and between the rear spring and **the** backplate shall be 1/32" minimum (judged by eye). Adjust the springs with the 466A tool as required.

Coin Chute Insulation

6.06 In order to check the gate operating arm adjustment, the coin chute shall not make contact with the housings or the backplate, when the coin collector is completely assembled. To check this, use the KS-14421 flashlight test set as follows:

(a) Before placing the upper housing on the backplate assembly, hold the gate on the coin chute in the fully-opened position by means of a rubber band (medium 3" long) or equivalent.

(1) **On 193 Type:** Place one end of the rubber band over the gate lever, stretch the band under the gong signal assembly bracket and place the other end of the band over the lower right corner of the coin chute. The band shall not obstruct the coin runway. Use a wire to facilitate fishing the band under the bracket.

(2) **On 158 and 168 Types:** Place one end of a rubber band over the gate lever and the other end of the band around the condenser.

(b) Place the flashlight test set on the coin gauge by means of the mounting clip on the test set so as to obtain good electrical contact.

(c) Insert the probe of the test set through the 5¢ or the 25¢ coin slot in the coin gauge so that the probe makes contact with the coin chute but does not make contact with the coin gauge. The lamp in the test set shall not light.

(d) If the lamp lights, there is a ground between the coin chute and the upper housing. Check the following points where contact is likely to occur.

(1) At the quarter channel of the coin chute adjacent to the 25¢ gong and the coin return chute. See 5.03(b).

(2) On 193 type, at the cord tips on the BK housing terminal and the lower left corner of the coin chute. See 5.07(b).

(3) On 193 type, at the lower end of the electromagnet core on the coin chute and the gong signal assembly bracket (hanging type). See 5.07(c).

(4) On cast iron type, at the upper left corner of the coin chute and the inside corner of the housing. See 5.07(b).

(5) At the 61R filter on the coin chute and the condenser mounting clip of the 193 type, and the coin chute mounting lug or the cast cord shelf of the cast iron type. See 5.07(d).

(e) If the coin chute does not make contact with the upper housing, assemble the upper housing on the backplate assembly and lock in place. Make sure that the test set and its probe have not been disturbed from conditions in item (c) above.

(f) The lamp in the test set shall not light when the switchhook is in the up position.

Note: This test ordinarily applies only on coin collectors having an induction coil on the backplate.

(g) On 193 type, if the lamp lights, ground may be between the electromagnet frame and the induction coil core or the induction coil mounting lug on the coil mounting plate. Check 6.01(b) and (c).

If the lamp still lights with the switchhook in the up position, replace the coin chute and repeat the tests.

(h) If ground is noted during the ground tests of the collector wiring, it may be between the stop shelf on the coin shelf and soldering connection (coil to terminal) of the induction coil. See 5.07(b).

Gate Operating Arm Adjustment

6.07 With the upper housing in place, with the gate on the coin chute independently held in the fully-open position and with the switchhook in the down position the gate operating arm of the switchhook assembly shall be in contact with the roller on the gate lever of the coin chute. This requirement shall be determined electrically with the KS-14421 flashlight test set as follows:

(a) With the coin collector arranged with a rubber band on the gate lever and the test set in place as at completion of 6.06, operate the switchhook to the down position. Lamp in the test set shall light.

(b) If the lamp does not light, remove the upper housing and adjust the gate operating arm on the switchhook downward (approximately 1/16"). When adjusting the arm, make the bend close to the support with long-nose pliers. Reassemble the upper housing and check the adjustment. Repeat the adjustment if necessary. Also see 6.08(c).

Note: Contact between the gate operating arm and the roller, before the switchhook is in the down position, is permissible. However, if contact is made much before the fully-down position of the switchhook, the switchhook operation requirements may be more difficult to meet.

6.08 With the upper housing in place, with the gate on the coin chute fully closed and with the switchhook in the up position, there shall be no contact between the gate operating arm of the switchhook assembly and the roller on the gate lever of the coin chute. This requirement shall be determined electrically with the KS-14421 flashlight test set as follows:

(a) Remove the upper housing and remove the rubber band, thus allowing the gate to close fully. Reassemble the upper housing.

(b) With the switchhook in the up position and with the test set in position as noted above, the lamp in the test set shall not light.

(c) If the lamp lights, remove the upper housing and adjust the gate operating arm on the switchhook upward (approximately 1/16″). On 191 type, wires to the induction coil shall not be in the path of the arm and the end of the arm shall clear the induction coil by a minimum 1/16″ when the switchhook is in the up position. Repeat the adjustment if necessary. If the arm cannot be adjusted to meet this requirement in conjunction with 6.07(b), replace the switchhook or refer the coin collector for replacement.

(d) Remove the test set.

Switchhook Operation

6.09 Switchhook shall operate freely (without binding or squeaking and without interference with the upper housing), throughout its entire travel. When the receiver or hand set is slowly lifted from the switchhook, the switchhook shall move upward and come to a positive stop against the coin collector backplate. When the receiver or hand set is slowly lowered into place onto the switchhook, it shall cause the switchhook to move downward and come to a positive stop against the coin collector backplate.

Note: The statement "come to a positive stop against the coin collector backplate" does not mean that extra movement (such as taking up play in the bearings) cannot be obtained by exerting extra force on the switchhook.

(a) If the switchhook binds, squeaks, or interferes with the housing, correct the condition when possible or replace the switchhook or refer the coin collector for replacement. (Lubricate the spring operating stud with a soft lead pencil, if necessary.)

(b) If the switchhook fails to meet the operation requirements, the gate operating arm, the switchhook arm, or the switchhook contact springs may require closer adjustments. When adjustments are being made with the upper housing removed from the coin collector, the downward operation should be favored, since the gate operating arm absorbs some of the receiver or hand set weight when the upper housing is assembled.

Varistors

6.10 Check that the 37A varistor and the 31A varistor are present and connected as indicated in the connection diagrams. If not present, add varistors as necessary.

Backplate and Station Wiring

Caution: Receiver or hand set cord or other conductors shall be arranged so that they do not lie between the equalizing spring or any of the contact springs and the backplate.

6.11 The line wires may be terminated at associated terminals or spare terminals in the coin collectors instead of as indicated on the connections shown in Section C64.246.

Note: When the line wires are terminated at the collector and the L1 terminal is not designated, one of the T-T terminals or other unused terminal may be employed.

150, 163, 183 Types to 158, 168, 193 Types

6.12 No wiring changes are required on the backplate and the subscriber sets or between them.

Code Number

6.13 Change the code number on the front of the backplate to agree with the new code number of the converted coin collector. Use crayon, label or equivalent in accordance with local instructions.

7. FINAL TESTS AND CHECKS

7.01 Check that the cutover clip P-339098 or P-339881 is in the proper position as shown on Fig. 3 or 16 of Section C42.106, and that nickel deflector P-16A317 is present as shown in Fig. 5. See 1.02.

Test for Housing Crossed with Wiring
Test for Ground or Power on Booth
Noise and Cutouts

7.02 Check for crosses between the housing and wiring, for grounds, for power on the booth, and for noise and cutouts in accordance with local practices or Section C42.129.

Ringing Test

7.03 Make ringer test. See Section C31.205.

Passing Coin Trap Contacts

7.04 Check the operation of the passing coin trap contacts. See Section C64.224, Paragraph 3.01.

Refund of Coins (as 5¢ Collector)

7.05 Insert the 529A tool in the top of the coin hopper to retain the coins used in the tests.

7.06 With the receiver or hand set on the switchhook, deposit a nickel. Nickel should drop into the coin return. Test shall be made five times and the nickel shall return each time.

(a) In case of **a single failure** of the nickel to return (nickels reaching the 529A tool are not considered failures), **make the test five additional times.** If no failures occur on the repeat test, requirement may be considered met.

(b) If repeated failures occur, recheck conditions of the coin return chute Paragraph 5.03, the gong guard Paragraph 5.04, the gate operating arm adjustment Paragraph 6.07, and the switchhook operation Paragraph 6.09. Check that the nickel deflector P-16A317 is seated in position as shown in Fig. 5. If failures still occur, replace the coin chute or refer the coin collector for replacement.

(c) If coins stick in the chute or if the gate on the chute does not operate freely, replace the coin chute and repeat all tests.

7.07 Deposit a nickel with the receiver or hand set off the switchhook. Coin should pass through the chute striking the gong, and should reach the 529A tool in the hopper.

(a) **If the nickel falls into "Coin Return",** check the gate operating arm adjustment Paragraph 6.08 and the switchhook operation Paragraph 6.09. If the nickel still fails

to reach the tool, replace the coin chute and repeat the tests.

(b) If the coin does not pass through the chute, remove the upper housing. Check that the cutover clip is present and properly adjusted in accordance with 1.02 and repeat the tests. If the nickel still sticks in the chute, replace the coin chute and repeat all tests.

7.08 Deposit a dime. Receiver or hand set may be on or off the hook. Coin should pass through the chute striking the gong twice and should reach the 529A tool in the hopper.

7.09 Deposit a quarter with the receiver or hand set on the hook. Coin should not pass through the chute. When the receiver or hand set is taken off the hook, the coin should continue its passage through the chute striking its gong and should reach the 529A tool in hopper.

Return of Coins (as 10¢ Collector)

7.10 Insert the 529A tool in the top of the coin hopper to retain the coins used in the tests.

7.11 Remove the cutover clip and position the electromagnet arm so that the end is **out** of the coin chute. If the electromagnet is short-circuited (i.e.: strap clip P-338903 across the A and E terminals on the coin chute), also remove the short-circuiting strap clip.

7.12 With the upper housing locked in place and the receiver or hand set off the switchhook, deposit a nickel. Lower the switchhook slowly. Coin should drop into the coin return, before the switchhook reaches the down position. Test shall be made five times and the nickel shall return each time. The requirements and procedures are the same as in 7.06(a), (b), and (c).

7.13 With the receiver or hand set off the switchhook, dial the operator, and when the operator answers, deposit a nickel. The coin should pass through the chute, striking the gong, and should reach the 529A tool in the hopper.

(a) If the test is met, it indicates that the electromagnet and the line wires are connected correctly.

(b) If the nickel does not pass through the coin chute as indicated by striking the gong, deposit another nickel, and if the coins pass through the coin chute and strike the gong, it indicates that the first nickel stopped in the coin chute at the first latch. Check the wiring of the electromagnet in accordance with the connection diagram in Section C64.246. If the collector is wired correctly, reverse the line connections to the collector and repeat the tests.

(c) Clear other troubles in the same manner as covered in 7.07(a) and (b), disregarding reference to cutover clip in 7.07(b).

7.14 If the test in 7.13 is met, when operator answers request, call back as in a delayed call. Answer the call and repeat the test with a nickel. Have the operator make this test over both the local and toll connectors if both are available. Test should meet the same conditions as in 7.13 and 7.13(a).

(a) If the nickel stops at the first latch in the coin chute and the wiring in and to the collector is correct as checked in 7.13(b), refer the station for central office check or proceed in accordance with local instructions.

Note: This test does not check the operation of the electromagnet to put the arm in the coin chute, such as occurs on battery reversal when the called party answers on a local call. A test for this condition is under consideration.

Supplementary Gong Signal Tests

7.15 If the coin signal obtained from any upper housing was doubtful when checked in accordance with 5.08, the quality of the coin signal shall be checked with the operator or the test desk.

8. LOCAL BATTERY STATIONS

8.01 The local battery station arrangement should be used only when called for on the other. When required, the recommendations and limitations covered in the connection sections should be followed.

8.02 The following is a list of the old codes and the corresponding new codes for local battery talking, common battery signaling coin collectors.

Table 2

Local Battery Talking, Common Battery Signaling Types

U.S. & Canadian Coins	U.S. Coins
Old Code	New Code
150U, W, 163A, B	158EL
150U, W, 163A, B	158GL
163C, D	168EL
163C, D	168GL
183E, F	193EL
183G, H	193GL

8.03 Conversions and tests for the above coin collectors are the same as for the common battery type except they will require changes in the wiring, readjustment of the switch-hook contacts, and the addition of a KS-13490-L2, 22 (or 20) ohms, 1/2 watt resistor. Cut off the excess length of the lead wire on the added resistor as indicated in View A of Figs. 3, 9, and 13 of Section C42.106. Resistor may be per List 3. Connect the coin collectors as shown in Section C64.249 for their respective codes, and dress the cords and conductors as indicated in Section C42.106.