STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35E97
COIN CONTROL TRUNK CIRCUIT
USING 2 FREQUENCIES OVER TIP AND RING
FOR CALLS FROM SWITCHBOARD
USING LOCAL OR TOLL TRAIN

CHANGES

D. Description of Changes

D.1 CAD Fig. 5 is added.

D.2 SxS No. 360A, SD-31250-01, is removed from the supporting information.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5225-LCB
WECo DEPT 5152-EAA-WEA

STEP-BY-STEP SYSTEMS
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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit, with an associated Receiver Circuit, provides the distant operator with the means of controlling the disposal of coins and re-calling the party at the coin station.

2. GENERAL DESCRIPTION OF OPERATION

2.01 This circuit is directly associated with a Receiver Circuit and a Coin Connector, Toll Transmission Selector, or Toll Incoming Trunk Circuit that is arranged to function with the inband coin control and rering arrangement. This circuit and the receiver are situated between the switchboard trunk and any one of the associated circuits mentioned above. It is this location which affords control over the tip and ring to ensure proper reception of the ac inband frequency codes sent by the distant switchboard trunk.

SEIZURE

2.02 When one of the associated circuits is seized by a closure of its input loop, it will function to ground the sleeve and prepare for further operation. Sleeve ground causes control relay TD of this circuit to operate. Its operation prepares the circuit for certain circuit operations which are started by the operator when disposal of

coins or re-call of the coin station is required.

COIN RETURN OR COLLECT

2.03 After the call has been established, if the operator needs to dispose of the coins at the called coin station, the coin return or collect key is operated depending on what function is required. The operation of one of these keys causes the switchboard trunk to immediately send a momentary on-hook or wink signal. The wink serves to alert the circuit so that, at the conclusion of the wink when an 1100-Hz frequency (coin return signal) or a combination of 700- and 1100-Hz frequency (coin collect signal) codes are sent, the circuit will be in position to connect the Receiver Circuit to the transmission path for the reception of the ac inband frequency codes. The frequency codes are converted by the receiver into a dc signal which controls relays in this circuit. Once this circuit receives the information from the receiver, it functions to perform the operation the operator required by connecting coin return or collect potential to the called line over the tip and ring or the tip only with the ring open to dispose of the coins. Coin control potential is applied to the tip only when this circuit is arranged to work with coin station sets arranged for dial-tone-first operation to permit operation of the coin magnet by releasing the ground isolation relay. The application of coin potential is impressed on the called line until the operator releases the coin collect key or the expiration of the 900-ms minimum application of frequency codes, whichever is longer. When this key is released, the coin potential is removed; however, before the called line is restored to the talking condition, it is discharged for approximately 0.5 second.

RE-CALL OF THE CALLED STATION

2.04 To re-call the party at the coin station, the operator operates the ringing key. This causes the switchboard trunk to immediately send a momentary on-hook or wink signal to alert the circuit. The subsequent circuit operation is the same as that for a coin return or coin collect except that a 700-Hz frequency code is sent, resulting in the connection of continuous ringing to the called line. However, if the receiver at the coin station is on-hook, the circuit operation is different after the 700-Hz frequency code is received. This circuit will then function to open the C and S leads, opening the holding circuit of the distant connector ring trip relay. This relay releases and connects machine ringing to the line of the called station. Ringing continues until either the called station answers or disconnects the operator.

CIRCUIT GUARD FEATURES

2.05 This circuit has several guard features incorporated in it. These guard arrangements restore the transmission path in the event of a false wink, nonarrival of frequency codes, and failure of the +110 volt battery.

3. MAINTENANCE

RECEIVER TEST CORD

3.01 If some malfunction should develop, a preliminary test procedure using a receiver test cord can quickly determine whether the trouble is in an associated Receiver Circuit or some other circuit in the arrangement. To isolate the trouble, use the following procedure:

(a) Disconnect the associated Receiver Circuit from this circuit.

(b) Use test cord to connect this circuit to another Receiver Circuit on the same frame or any adjoining frame.

(c) If the malfunction is still present, assume that the trouble condition is caused by circuits other than the Receiver Circuit.

SECTION II - DETAILED DESCRIPTION

1. SEIZURE (SC1)

1.01 When one of the associated circuits is seized by a closure of its input loop, it will function to ground sleeve lead S and prepare for further operation. The grounded sleeve lead holds the preceding train and operates TD. The operation of TD with options W and X connects OH1 to lead OH.

1.02 If this circuit is associated with a Toll Transmission Selector Circuit, option X is required. This option consists of a guard arrangement which protects the circuit from false operation. Its guard characteristics are explained more fully in 5.08. When the Toll Transmission Selector Circuit is seized, it grounds the sleeve lead S and operates TD as previously described. It also permits X1 to operate from sleeve ground. X1 operated prepares the X operate circuit. X monitors the X lead after C operates and will then operate when X is grounded. Its operation will be expanded more fully under coin disposal.

BUSY CONDITION (SC2)

1.03 If, while the operator is dialing the subscriber station, a trunk- or line-busy condition is encountered, the associated circuit will function to send a 60- or 120-ipm flashing indication to the operator. If the associated circuit is a connector, then there

is no operation in this circuit under a busy condition. However, if the associated circuit is a Toll Transmission Selector Circuit or a Toll Incoming Trunk Circuit, it is necessary to guard the X lead of this circuit from false alerting signals resulting from the 60- or 120-ipm busy indication. The guard arrangement which guards the X lead and its operation are explained in detail in 5.08.

1.04 When the operator disconnects after receiving the busy indication, the associated circuit functions to remove sleeve ground. This causes TD and the X option relay X1 to release and the circuit is now normal.

CALLED PARTY ANSWER (SC3)

1.05 When this circuit is associated with a connector, the only operation that takes place in this circuit on subscriber answer is the operation of OH1. Its operation notifies this circuit that the subscriber is off-hook. However, when the circuit is associated with a Toll Transmission Selector or a Toll Incoming Trunk Circuit, a guard arrangement which protects the circuit from false X lead indications on a trunk- or line-busy condition is permitted to function when the called party answers. It is necessary to remove this guard arrangement before other circuit functions can be performed.

1.06 When the called station answers, lead OH will become grounded by the associated circuit. OH1 will respond to this ground by operating; it in turn operates BF which prepares the timing circuit. The operation of OH1 activates the gas tube timer by:

(a) Removing the short circuit across capacitor T.

(b) Connecting -48 volt battery from the winding of T to the cathode of gas tube T.

(c) Connecting resistor T2 to the series arrangement of resistors T and T1.

1.07 Capacitor T charges through resistors T2, T, and T1 to a voltage equal to the firing point of the tube control gap. The time required for this charging is 0.750 to 1.2 seconds. At the expiration of the timing interval, the gas tube fires and operates T through current limiting resistor C.

1.08 The operation of T locks under control of OH1, extinguishes gas tube T, and operates C.

1.09 The operation of C locks to ground on the sleeve lead, closes the X lead to either D with option W or X with option X, and releases OH1.

1.10 The release of OH1 releases relays T and BF and short-circuits resistor T2 and capacitor T.

1.11 This circuit is now ready to perform circuit functions that are controlled by the operator.

2. COIN COLLECT (SC4)

2.01 Operation of the coin collect key by the operator will cause the switchboard trunk circuit to send a 70- to 130-ms on-hook signal or wink. The line relay of the associated switch or trunk will respond by releasing at the beginning of the wink interval and ground lead X.

2.02 Lead X grounded operates D directly with option Y or W and locks to sleeve ground, or operates X with X option, which releases X1 by shuntdown. With X operated and X1 released, a path is made to operate D, which locks to sleeve ground. Lead X also directly grounds or causes one side of TR to be grounded to prevent its operation when D and BF operate.

2.03 The operation of D prepares a path for the operation of TR, operates BF, and prepares the OH operate path. If the called party is off-hook, lead OH will be grounded operating OH. OH serves as a memory relay; its operation indicates that the called party is off-hook.

2.04 The operation of OH:

(a) Locks under control of D and, later in the circuit operation, TR.

(b) With option Z, reverses battery and ground of inductor A to the contacts of TR.

(c) Prepares various paths that are important during rering, which is explained in the rering sequence.

2.05 The operation of relay BF:

(a) Connects battery to lead B to the Receiver Circuit energizing it early in the call to bring it to a stabilized state.

(b) Prepares the gas tube timer for subsequent operation.

(c) Closes secondary winding of D to make it slow to release.

(d) Partially completes the operating paths of TR, CC, and RR.

2.06 At the end of the on-hook signal or wink interval, the line relay of the associated circuit reoperates, which ungrounds lead X and a combination of 700- and 1100-Hz frequency codes are transmitted to this circuit.

2.07 Lead X ungrounded: with option Y or W, permits TR to operate or, with option X, releases X which permits X1 to reoperate and TR to operate.

2.08 The operation of TR:

(a) Locks under control of T and BF to sleeve ground.

(b) Completes an alternate holding path for BF and OH, if it is operated.

(c) Connects the Receiver Circuit to the tip and ring to receive the frequency codes.

(d) With option Z, holds the associated circuit by placing a resistance bridge across the tip and ring and connecting battery and ground through inductor A to the tip and ring towards the switchboard to prevent a false on-hook indication if the called party is off-hook.

(e) With option W, places a resistance bridge across leads A and B to hold the supervisory relay of the associated circuit to prevent a false on-hook indication if the called party is off-hook.

(f) Removes the short across capacitor T.

(g) Connects -48 volt battery through T and to the cathode of tube T.

2.09 The gas tube timer is now activated. The timer functions to restore the transmission path to normal if tones do not arrive after a timing interval of 385 to 720 ms. This operation is explained in detail in 5.08 through 5.12.

2.10 The frequency codes are transmitted by the switchboard trunk at the end of the wink. However, they are subject to a possible delay of up to 300 ms in arriving at the Receiver Circuit if certain types of transmission equipment are used in the transmission path. The gas tube timing arrangement takes this possible delay into consideration by having a minimum operating time of 385 ms.

2.11 The transmitted combination of 700- and 1100-Hz frequency codes causes the Receiver Circuit to function. The receiver converts the tones into dc signals which operate F1 and F2 of this circuit. Either F1 or F2 will recycle the gas tube timer by opening the operate path of T and reshorting capacitor T and will release TD. TD releases in 32 to 65 ms; it is designed to be slightly slow in releasing to provide time for the Receiver Circuit to stabilize preventing a possible false operation of CC or RR.

2.12 The operation of F1 and F2 connects coin collect potential to the contacts of CC. However, F2 alone prevents RR from operating F2, provides a locking path for F1, and permits CC to operate when TD releases.

2.13 The operation of CC locks under control of T and BF to sleeve ground, releases D, completes a parallel holding path for TR, and connects sleeve ground to lead H. In that case, it causes the connecting circuit to connect the called line to this circuit over leads RA and TA. The operation of CC also connects coin collect potential to leads RA and TA (option R) or to lead TA only with lead RA open (option Q). Option Q is provided for use with coin station sets arranged for dial-tone-first operation to permit operation of the coin magnet by releasing the ground isolation relay.

2.14 The application of coin collect potential continues until the operator releases the coin collect key or the expiration of the minimum application of frequency codes, whichever is longer.

2.15 At the end of the coin collect interval, the switchboard trunk functions to remove the frequency codes that are being sent to the Receiver Circuit. The receiver functions by removing ground from leads P1 and P2. F2 will then release and, in turn, release F1 by opening its locking path. This procedure of release prevents a possible momentary connection of coin return potential to the line should F1 be faster in releasing than F2.

2.16 The release of F1 and F2:

(a) Removes coin collect potential from the called station.

(b) Permits the TA and RA leads (option R) or the TA lead only (option Q) to be discharged by the D and K resistor-capacitor network until release of relay CC.

(c) Allows TD to reoperate to sleeve ground.

(d) Starts the gas tube timing arrangement by unshorting capacitor T and connecting -48 volt battery from T to the cathode of tube T.

2.17 After F1 or F2 releases and removes the discharge path from capacitor T, it then slowly charges through resistors T and T1 to a voltage equal to the firing point of the tube control gap. When this voltage is reached after an interval of 385 to 720 ms, the tube fires and operates T through current limiting resistor C.

2.18 The operation of T:

(a) Locks to its own contact under control of TR.

(b) Extinguishes the tube by removing its battery from the cathode.

(c) Opens one of the holding paths of TR putting TR under control of CC.

(d) Releases CC.

2.19 The release of CC removes sleeve ground from lead H and releases TR.

2.20 The release of TR:

(a) Releases OH if it operated prior to the coin collect operation.

(b) Disconnects the Receiver Circuit from the tip and ring.

(c) Restores the transmission path to normal.

(d) Releases T.

(e) Releases BF.

(f) Places a short across capacitor T.

2.21 The circuit is now normal; the only relays operated are TD and, depending on which option is furnished, X1 and C.

3. COIN RETURN (SC4)

3.01 The coin return operation functions as does coin collect with the following exceptions:

(a) The coin return key is operated instead of the coin collect key.

(b) At the end of the wink interval, the switchboard trunk functions to send an 1100-Hz frequency instead of the combination of 700- and 1100-Hz frequency codes.

(c) When the frequency code reaches the Receiver Circuit, it causes the operation of F2 only.

(d) F2 will permit CC to operate when TD releases. With these relays operated, coin return potential is impressed on the called line instead of coin collect potential.

4. RE-CALLING THE CALLED STATION

4.01 Since certain phases of this operation are very similar to the coin collect sequence, the operation up to the time the Receiver Circuit is activated by the frequency code will be treated briefly. The coin collect sequence should be referred to if a more detailed description is required.

4.02 Operation of the rering key will cause the switchboard trunk circuit to function sending a 70- to 130-ms on-hook signal or wink. D operates at the beginning of the wink interval from ground on lead X, and TR operates at the end of the wink to sleeve ground. TR starts the tube timer and connects the Receiver Circuit to the tip and ring to receive a 700-Hz frequency code that is sent at the end of the wink. The frequency code actuates the Receiver Circuit which, in turn, operates F1. F1 recycles the tube timer by shorting capacitor T, prepares the operate path of RR, and releases TD. RR operates when TD releases.

4.03 At this point in the circuit operation, RR will start one of two operations depending upon whether or not the called party is off- or on-hook.

CALLED PARTY OFF-HOOK (SC5)

4.04 When the called party is off-hook, OH operates from ground on lead OH after D operates. OH prepares certain circuit conditions so that when RR operates the correct type of rering sequence is performed.

4.05 The operation of RR:

(a) Locks to sleeve ground under control of T and BF.

(b) Releases D.

(c) Completes a parallel holding path for TR.

(d) Grounds lead MS or RM ST to start the ringing machine.

(e) Connects sleeve ground to lead H which causes the connecting circuit to connect the called line to this circuit over leads RA and TA.

(f) Connects continuous ringing potential to lead RA and ground to lead TA which, during rering, has access to the called line.

4.06 The application of continuous ringing potential is impressed on the called line until the operator releases the ringing key or until the expiration of the minimum application of the frequency code, whichever is longer.

4.07 At the end of the rering interval, the switchboard trunk functions to remove the 700-Hz frequency code that is being sent to the Receiver Circuit. The receiver functions by releasing F1.

4.08 The release of F1:

(a) Removes continuous ringing potential from the called line.

(b) Permits the line to be discharged till RR releases.

(c) Permits TD to reoperate to sleeve ground.

(d) Removes the discharge path from capacitor T permitting it to charge through resistor T. After an interval of 160 to 295 ms, the tube fires and operates T which starts the release of this circuit.

4.09 The operation of T:

(a) Locks to its own contact under control of TR.

(b) Extinguishes the tube.

(c) Opens one of the holding paths of TR putting TR under control of RR.

(d) Releases RR.

4.10 The release of RR removes sleeve ground from lead H and releases TR.

4.11 The release of TR:

(a) Releases OH.

(b) Disconnects the receiver from the tip and ring.

(c) Restores the transmission path to normal.

(d) Removes the short placed across the tip and ring or leads A and B.

(e) Releases T.

(f) Releases BF.

(g) Places a short across capacitor T.

4.12 The circuit is now normal. The only relays operated are TD and, depending on which option is furnished, X1 and C.

CALLED PARTY ON-HOOK (SC6)

4.13 When the called party is on-hook, OH will be normal. OH not operated prepares certain circuit conditions so that, when RR operates, the correct type of rering sequence is performed.

4.14 The operation of RR:

(a) Locks to the sleeve ground under control of T and BF.

(b) Releases D.

(c) Completes a parallel holding path for TR.

(d) Opens the S and C lead connection releasing the ring trip relay of the connector which, in turn, connects machine ringing to the called line.

(e) Connects the C lead to a make-contact of T.

(f) Removes the discharge path from capacitor T permitting it to charge through resistor T. After an interval of 160 to 295 ms, the tube fires and operates T. The timer is started by RR to ensure the full release of the ring trip relay before the S and C leads are reconnected.

4.15 The operation of T:

(a) Locks to its own contact under control of TR.

(b) Extinguishes the tube.

(c) Opens one of the holding paths of TR putting TR under control of RR.

(d) Reconnects the S and C leads to provide a locking path for the ring trip relay of the connector when it operates to trip ringing.

4.16 The circuit operation proceeds no further until the operator restores the rering key to normal or, if the key has been restored, until the minimum 900-ms application of tone ends. When the key is restored or the minimum application ends, whichever is longer, the switchboard trunk functions to remove the 700-Hz frequency code that is being sent to the Receiver Circuit. The receiver functions by releasing F1.

4.17 The release of F1 permits TD to reoperate and releases RR.

4.18 The release of RR transfers the control of lead C from a T make to an RR break and releases TR.

4.19 The release of TR:

(a) Disconnects the receiver from the tip and ring.

(b) Restores the transmission path to normal.

(c) Removes the short placed across the tip and ring if Z option was required.

(d) Releases T.

(e) Releases BF.

(f) Places a short across capacitor T.

4.20 The circuit is now normal; the only relays operated are TD and, depending on which option is furnished, X1 and C. Ringing of the called station continues under control of the connector until the called party answers or the operator disconnects.

5. CIRCUIT GUARDS

5.01 This circuit has several guard arrangements incorporated in it. These guard arrangements function to protect this circuit

from false on-hook signals, nonarrival of frequency codes, +110 volt battery supply failure, and false X lead indications.

FALSE ON-HOOK SIGNAL AND NONARRIVAL OF FREQUENCY CODES

5.02 A false on-hook signal or wink refers to a signal which falsely alerts this circuit. Under this condition, no frequency codes or tones are sent at the end of the wink. A false wink occasionally occurs while the connection is established and is caused by equipment in the transmission path.

5.03 Another condition very similar to a false wink is a legitimate wink with an absence of tones. The tones that are sent at the end of the wink are lost or delayed by equipment in the transmission path.

5.04 Either of these conditions occurs rarely. However, when one occurs it is imperative that the alerted circuit and the transmission path be restored to normal as soon as possible.

5.05 When this circuit is alerted by a wink, it has no way of knowing whether the wink is false or legitimate. Therefore, at the end of the wink when TR operates in addition to connecting the Receiver Circuit to the transmission path, it starts the gas tube timing arrangement which, if permitted to time out, will restore this circuit to normal. TR starts the action by removing the discharge path from capacitor T. The capacitor then charges through resistors T and T1 to a voltage equal to the firing point of the tube control gap. The time required for this charging, which results in the tube firing, is 385 to 720 ms. If the tones do not arrive before the expiration of the timing interval, the tube is permitted to fire operating T. T will in turn extinguish the tube, lock under control of TR, and release TR. TR released restores the transmission path to normal by disconnecting the Receiver Circuit and releases T.

+110 VOLT BATTERY SUPPLY FAILURE

5.06 Since +110 volt battery is required to operate gas tube T and this circuit would lock up and remain out of service should the tube fail to function, a guard arrangement is used to restore this circuit and the transmission path in the event of such an occurrence. BF serves this purpose, since it requires a +110 volt battery to operate.

5.07 If the +110 volt battery supply should fail before or during any phase of the call, BF will not operate or it will release. BF will thus permit the transmission path to remain intact or cause the circuit to restore to normal depending on the condition of the call. BF achieves this by controlling the operate and locking path of TR.

FALSE X LEAD INDICATIONS

5.08 When this circuit is associated with a circuit that repeats pulses and trunk- or line-busy indications and responds to subscriber flashing, it is necessary to guard lead X of this circuit while one of the above mentioned conditions is in effect. These conditions occurring in the associated circuit produce side effects which would appear as a legitimate alerting signal on lead X, falsely preparing the circuit for the reception of tones. To prevent false operation of this circuit from such X lead indications, two guard arrangements are used and their explanation follows.

A. Guarding Lead X Against Trunk- or Line-Busy Conditions (SC2)

5.09 When either a trunk- or line-busy condition is encountered by the operator when dialing a subscriber station, the flashing indication taking place in the associated circuit produced by 60 or 120 ipm causes false alerting signals to appear on lead X. To prevent false operation of this circuit, a guard arrangement consisting of relays OH1 and C is used.

5.10 OH1 is tied to lead OH and will operate when this lead is grounded. This lead becomes grounded when the called subscriber is off-hook and when a trunk- or line-busy condition is encountered by the operator when dialing the called station. When the called station answers, ground remains on lead OH until the called station goes on-hook. However, on a trunk- or line-busy condition, 60- or 120-ipm ground appears on lead OH until the operator disconnects. When ground appears on lead OH, OH1 will operate. OH1 operates BF and together they start the gas tube timing circuit. If the ground on lead OH is continuous indicating the subscriber is off-hook, the gas tube timer will be permitted to time out after an interval of 0.750 to 1.2 seconds and will cause C to operate in turn, completing the X lead. However, if the ground on lead OH is a 60- or 120-ipm ground, OH1 and BF will follow the interruptions and, by virtue of their sequence, they will continuously start the gas tube timer at the beginning of the ground pulse and recycle the timer at the end of each pulse. The gas tube timer will not time out and the X lead will remain open during busy conditions.

B. Guarding Lead X Against Subscriber Flashing Indications

5.11 When the called station flashes the operator, the flashing indications taking place in the associated circuit cause false alerting signals to appear on lead X. To prevent false operation of this circuit, a guard arrangement consisting of relays X1 and X is used.

5.12 Relay X1 operates early in the call when sleeve lead X becomes grounded. With C

operated, X1 connects relay X to lead X. Relay X is now ready to monitor lead X. When the called party flashes the operator, lead X will become grounded momentarily and will attempt to operate X. If the ground indication is long enough to operate X, it will in turn start the release of X1 by shuntdown. However, these false ground indications on lead X are of such short duration that the combined operate time of X and release time of X1 will absorb the ground indication before it can be repeated. This circuit will not be falsely alerted during subscriber flashing.

6. DISCONNECT (SC7)

6.01 When the operator disconnects, the tip and ring are opened to the associated circuit which releases its line relay. The line relay released starts the release of associated relays within the circuit and grounds lead X. This circuit responds by operating D which operates BF. When the associated circuit fully releases, ground is removed from sleeve lead S, which releases D, TD, BR, and, depending on what option is furnished, X1 and C.

7. OPERATION IN A NO. 35E97 OFFICE

7.01 When this circuit is used in a 35E97 office, some lead designations differ from those used in this description as indicated on the circuit drawing. With this exception, the circuit operation is identical to that described.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 The battery voltage shall be -45 volts minimum, -52 volts maximum.

1.02 Coin disposal voltages shall be:

CC+: +100 to +120 volts

CC-: -100 to -120 volts

1.03 Ringing voltages shall be 90 to 130 volts ac.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

BF	Battery Failure
C	Control
CC	Coin Control
D	Detecting
F1, F2	Frequency
OH	Off-Hook
OH1	Off-Hook 1
RR	Rering
T	Timer
TD	Time Delay
TR	Transfer
X	X Lead Monitor
X1	Relay X Auxiliary

2.02 Lamps

CC	Coin Collect
CR	Coin Return
R	Ringing

3. FUNCTIONS

3.01 To provide means for connecting the Receiver Circuit to the transmission path for receiving the ac inband frequency codes.

3.02 To provide for controlling the disposal of coins at the called coin station if the receiver is on- or off-hook.

3.03 To provide for re-calling the called party with continuous ringing voltage when the called party receiver is off-hook.

3.04 To provide for releasing the connector ring trip relay to start machine ringing for re-calling the called party if the receiver is on-hook.

3.05 To start and stop the source of machine ringing supply.

3.06 To provide means for holding the called party during coin disposal and rering intervals.

3.07 To provide means for restoring the transmission path to normal in the event of a false start.

3.08 To provide means for restoring the transmission path to normal if the +110 volt battery or fuse should fail.

3.09 To disconnect when the operator disconnects.

3.10 To provide a socket to allow a plug-type connection to the Receiver Circuit.

3.11 To optionally provide for operation with coin station sets arranged for dial-tone-first operation.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a keysheet, the connecting information shown thereon is to be followed.

(a) 4-Wire Terminating Circuit, No. 1 or 350A and 355A - SD-96463-01.

(b) Coin Connector Circuit, No. 1 or 350A, 355A, 360A, and 35E97 - SD-33022-01.

(c) Composite Sets and Repeat Coil Circuit, No. 1 or 350A and 355A - SD-95004-01.

(d) Miscellaneous Alarm Circuit, No. 355A - SD-31974-01.

(e) Power Ringing Circuit, No. 1 or 350A and 355A, and 35E97 - SD-80885-01 (typical); 360A - SD-30416-01 (typical).

(f) Power Shelf Terminal Block Circuit - H62707 (Automatic Electric Company Drawing - typical).

(g) Receiver Circuit, No. 1 or 350A and 355A, 360A, and 35E97 - SD-95956-01.

(h) Repeat Coil and Compromise Network Circuit, No. 1 or 350A and 355A - SD-95015-01.

(i) Selector Bank Multiple Circuit, No. 1 or 350A, 355A, and 35E97 - SD-32123-01.

(j) Toll Incoming Trunk Circuit, No. 1 or 350A and 355A - SD-31887-01.

(k) Toll Transmission Selector Circuit, No. 1 or 350A and 355A - SD-31841-01.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This trunk shall be capable of performing all the service functions specified in the circuit description and meeting all the requirements of the Circuit Requirements Table.

6. TAKING EQUIPMENT OUT OF SERVICE

TEST JACK

6.01 Test jack T is provided for monitoring purposes and for making this and the associated switch or trunk busy.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5223-VJA-MR

SECTION IV - REASONS FOR REISSUE

A. Changed and Added Functions

A.1 To provide for operation with coin station sets arranged for dial-tone-first operation.

B. Changes in Apparatus

B.1 In App Fig. 1:

Superseded	Superseded By
E Resistor, 145A, 1000 Ohms	E Resistor, 221A, 1000 Ohms
F Resistor, 145A, 249 Ohms	F Resistor, 221A, 249 Ohms
T Resistor, 145A, 0.165 Megohm	T Resistor, 221A, 0.165 Megohm
T1 Resistor, 145A, 0.234 Megohm	T1 Resistor, 221A, 0.234 Megohm
T2 Resistor, 145A, 0.412 Megohm, Options W, X	T2 Resistor, 221A, 0.412 Megohm, Options W, X

D. Description of Changes

D.1 FS1 is changed to provide coin control over the tip lead only with the ring lead open (option Q) for use with coin station sets arranged for dial-tone-first operation. Existing wiring, which provides for coin control over the tip and ring, is shown as option R.

D.2 The resistors listed in B.1 are changed from 145A type to 221A type because 145A-type resistors in the 1-ohm to 2.1-megohm range are rated Mfr Disc.

D.3 Circuit Note 102 is changed to reflect the addition of options Q and R.

D.4 Circuit Note 104 is changed to reflect the addition of options Q and R and the 145A and 221A resistors.

D.5 Circuit Notes 105 and 106 are added.

D.6 The rating of this circuit is changed from AT&TCo Standard - A&M Only for 360A and 35E97 to AT&TCo Standard - A&M Only for 350A, 360A, and 35E97.