STEP BY STEP SYSTEMS
NO. 1, 350A, 355A OR 360A
CODE SELECTOR CIRCUIT
ARRANGED TO ABSORB DIGITS REPEATEDLY
AND TO RESTRICT SERVICE
UNTIL A DIGIT IS ABSORBED

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

This circuit is for use as a service code selector for completing calls to service trunks per prearranged codes.

In addition, it has the ability to feedback a local or CAMA completion signal to an associated auxiliary trunk which has the capability of selecting one of the two seized connections and releasing the unwanted connection.

2. GENERAL METHOD OF OPERATION

This circuit is seized by the closure of its input loop and is stepped to the desired level by the subscriber's dial pulses. If the dialed level is arranged for digit absorbtion, the selector shaft will restore to normal and the (F) will operate. The connection is held over the closed loop which holds the (A) relay. This is possible because the (D) has not cut through. If the dialed level is not arranged for digit absorbtion, the circuit will restrict by hunting to the 11th rotary position.

If a local completion signal is sent to the auxiliary trunk, the auxiliary trunk will complete the call to this circuit and initiate the release of the CAMA connection. The local completion signal will be sent only if a digit has been absorbed or if the 11th rotary springs have been operated.

If a CAMA completion signal is sent to the auxiliary trunk, the auxiliary trunk will complete the call to CAMA and initiate the release of this circuit. When a CAMA completion signal is sent, the level dialed is not arranged to absorb digits and this circuit will tend to restrict. However, before the circuit can hunt to the 11th rotary position the (A) is released causing the (C) and vertical magnet to operate and halt the hunting action. The (B) then releases operating the release magnet which restores the circuit to normal.

SECTION II - DETAILED DESCRIPTION

1. SEIZURE

When this circuit is seized, (A) operates over loop closure operating (B).

(B) connects ground to the incoming "S" lead to hold the preceding circuits, closes a path for operating (C) and the VERT magnet, prepares a circuit for grounding the "LC" lead through the 11th rotary step springs and for grounding the "CC" lead, prepares a circuit for operating (F) and the traffic register.

2. VERTICAL STEPPING

The (A) follows subscriber dial pulses directly or as repeated by the auxiliary trunk circuit. Each time the (A) releases, ground on its back contact operates the VERT magnet in series with (C) causing the selector to step vertically to the level corresponding to the digit dialed. (C) operates on the first release of (A) but remains operated during dialing of a digit since it is slow to release. (C) operates (E) through the VON springs which operate as soon as the selector takes the first vertical step.

3. DIGIT ABSORBING

3.1 Normal Post Spring Adjustment

Levels on which it is required to absorb a digit shall have the "L" normal post spring adjusted to operate.

3.2 Absorbing Repeatedly

When the selector reaches the level dialed and (C) releases, ground from the RLS magnet contact is connected through the (E), (F), the operated "L" normal post springs and VON springs to operate the RLS magnet. The RLS magnet locks to its own and VON contacts. The operation of the RLS magnet restores the selector shaft to normal and the RLS magnet contacts open the ROT magnet operate path and close a path to operate (F). When the selector shaft has restored to normal, the VON springs open and release (E) and the RLS magnet. (F) operated, locks to (B), grounds the "LC" lead and closes a path to operate the RLS magnet again if the next digit dialed operates the "L" normal post spring. If the next digit dialed does not operate the "L" normal post springs, the ROT magnet operates when (C) releases.

3.3 Restricted Service

If any digit dialed by the subscriber steps this selector to a level not arranged for absorbing the digit, the ROT magnet will operate when the (C) releases at the termination of the dialed digit. Because (F) is not operated, ground is connected to the outgoing "S" lead which will cause the selector wipers to rotate to the 11th rotary position as described in Paragraph 5. Operation of the 11th rotary step springs will return a busy tone to the calling subscriber and send a local completion signal to the auxiliary trunk over the "LC" lead to initiate the release of the CAMA connection.

4. SIGNALLING THE AUXILIARY TRUNK

4.1 Local Completion Signal

When the selector is stepped to a digit absorbing level, (F) operates grounding the "LC" lead which signals the auxiliary trunk. The auxiliary trunk is also signaled over the "LC" lead when the 11th rotary step springs are operated as described in Paragraph 3.3. In both instances the auxiliary trunk completes the call to this circuit and initiates the release of the CAMA connection.

4.2 CAMA Completion Signal

4.21 Normal Post Spring Adjustment

Levels on which it is required to furnish a CAMA completion signal to the auxiliary trunk shall have the "R" normal post spring adjusted to operate.

4.22 Operation

When the call is to be completed to the CAMA office, the selector is stepped to a nondigit absorbing level. When (C) releases ground is connected through the operated "R" normal post springs to the "CC" lead. This sends a CAMA completion signal to the auxiliary trunk. The auxiliary trunk completes the CAMA connection and initiates the release of this circuit. Since the digit is not absorbed this circuit will tend to restrict as described in Paragraph 3.3 except that before this circuit can hunt to the 11th rotary position the (A) releases operating the (C) and vertical magnet which stops the hunting action. The (B) then releases releasing (C) and closes the RLS magnet path restoring the selector to normal.

5. TRUNK HUNTING

When the (C) releases at the termination of the dialed digit and the call is to a service trunk, the ROT magnet will operate through the "L" normal post spring. The ROT magnet causes the selector wipers to rotate to the first bank terminal. The ROT magnet contacts permit (E) to release which in turn opens the ROT magnet operate path. The "S" wiper is now in contact with the first multiple bank terminal and if this is grounded because of a busy condition, (E) reoperates causing the ROT magnet to operate and rotate the wipers to the next terminal. This automatic rotation will continue until an idle or nongrounded "S" terminal is found, or if all trunks on this level are busy the switch steps to the 11th rotary position and busy tone is applied to the calling line as described in Paragraph 3.3.

6. SEIZING THE IDLE TRUNK

When an idle "S" terminal is found, (D) operates in series with (E) when the ROT magnet releases since it is no longer short circuited by the ground through the "S" wiper. (E) does not operate due to the high resistance of the (D) in series with it, (D) disconnects the "T" and "R" leads from (A), cuts the "T", "R" and "S" leads and "A" or "C" lead when furnished, through to the circuit beyond and grounds the "M" lead to operate a peg count register. The release of (A) allows (B) to release. (B) releasing removes the ground from the "M" lead, prepares a path for operating the RLS magnet and allows (F) to release. The (F) released removes ground from the "LC" lead. (D) is held operated by ground from the succeeding circuit.

7. ALL TRUNKS BUSY AND RELEASE PRIOR TO CUT THROUGH

When all trunks in a group are busy the selector wipers will pass off the bank terminals and operate the 11th rotary step springs. This causes busy tone to be returned to the calling station and prevents the (D) from operating thereby keeping this circuit under control of (A). When the calling subscriber disconnects, (A) releases releasing (B) and in turn energizing the RLS magnet and restoring the selector to normal. The selector will release in this manner on a calling subscriber disconnect at any time prior to seizure of a service trunk.

8. RELEASE AFTER CUT THROUGH

As mentioned in Paragraph 6, (D) is held from the succeeding trunk after an idle trunk is seized. When the calling subscriber disconnects, ground is removed from the (D) winding by the trunk beyond allowing (D) to release. The release of (D) energizes the RLS magnet which restores the selector to normal.

SECTION III - REFERENCE DATA

1. FUNCTIONS

1.01 To ground the sleeve lead to the preceding circuit when the selector is seized.

1.02 To step the switch vertically under control of subscriber dial pulses.

1.03 To release from any level arranged for absorbing repeatedly each time the level is dialed.

1.04 To restrict service on all levels until a digit has been absorbed.

1.05 To select an idle trunk automatically.

1.06 To connect an "all trunks busy" tone to the calling subscriber when all the trunks in a group dialed are busy.

1.07 To extend the "T", "R" and "S" leads and "A" or "C" lead when furnished, to the selected idle trunk.

1.08 To restore to normal upon calling party disconnect.

1.09 To operate a peg count register whenever an idle trunk is selected.

1.10 To give a local or CAMA completion signal to the auxiliary trunk circuit as an indication whether the call is to be completed in the local office or the CAMA office.

2. WORKING LIMITS

2.1 Limits are for single office areas. For multioffice areas, and for operator pulsing, see keysheets.

	45V. Min.			48V. Min.		
	Pulsing from Sub.			Pulsing from Sub.		
Type of Dial	2, 4 or 5	6	7	2, 4 or 5	6	7
Max. Ext. Ckt. Loop*	750ω	1200ω	1100ω	890ω	1500ω	1400ω
Max. Ext. Ckt. Loop**	850ω	1400ω	1300ω	1000ω	1500ω	1500ω
Max. Ext. Ckt. Loop***	1000ω	1400ω	1400ω	1115ω	1500ω	1500ω
Min. Ins. Res.		15,000ω			15,000ω	

*When using 1000ω loop - Leak B in pulsing test set.

**When using 1200ω loop - Leak A in pulsing test set.

***When using 1400ω loop - Leak A in pulsing test set.

3. CONNECTING CIRCUITS

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

		No. 1 or 350A	355A	360A
3.01	Auxiliary Trunk Circuit	SD-32281-01	SD-32281-01	SD-32281-01
3.02	Selector Bank Multiple Circuit	SD-32123-01	SD-32123-01	
3.03	Local Selector Circuit			SD-30200-02*
3.04	Switch Trouble Alarm Circuit	SD-32043-01		
3.05	Miscellaneous Alarm Circuit (Selectors)		SD-32043-01	SD-31209-01
3.06	Power Ringing Circuit			SD-80416-01*
3.07	Traffic Register Circuit	SD-30896-01*		SD-31265-01
3.08	Miscellaneous Alarm Circuit (Registers)		SD-31976-01	
3.09	Reverting Call Selector Circuit	SD-30978-01*	SD-30978-01*	SD-31556-01*
3.10	Subscriber Recording Completing Trunk Circuit	SD-32168-01*	SD-32168-01*	SD-31233-01*
3.11	Information Trunk Circuit	SD-32170-01*	SD-32170-01*	SD-32170-01*

*Typical

SECTION IV - REASONS FOR REISSUE

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-AH-FBB-AE