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PBX SYSTEMS
NO. 701A, 701B, 701PK, 711A, 711B, 711PK OR 740E
FIRST SELECTOR CIRCUIT
ARRANGED FOR RESTRICTED SERVICE

CHANGES

D. Description of Changes

D.1 Figure 1 is modified to provide connecting information for rotary out trunk switch circuits.

D.2 CAD figures 51, 55, L, 61, 62, 74 and 75 are modified to provide connecting information for rotary out trunk switch circuits.

F. Changes in CD Sections

F.1 Add the following circuits to part 4, CONNECTING CIRCUITS:

4.13 Rotary Out Trunk Switch Circuit - SD-30868-01

4.14 Rotary Out Trunk Switch Circuit - SD-30891-01

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(WECo 2120HW-RLS-WHK)
DEPT. 5337-LAH

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PBX SYSTEMS
NO. 701A,701B,701PK,711A,711B,711PK OR 740E
FIRST SELECTOR CIRCUIT
ARRANGED FOR RESTRICTED SERVICE

CHANGES

D. Description of Changes

D.1 Connecting information for Converter Trunk Circuit SD-65853-01 is added.

D.2 Notes 102 and 104 corrected to reflect changes.

D.3 Notes 111 and 212 are added.

D.4 CADs 78 to 83 are added.

F. Changes in CD Sections

F.1 Paragraph 4 under CONNECTING CIRCUITS add:

4.13 Converter Trunk Circuit - SD-65853-01.

F.2 Paragraph 5, change the third sentence to read: Relay B operated, grounds the sleeve, thus holding the line finder in its operated position, or the line finder and converter trunk in case the PBX is equipped for common group TOUCH-TONE calling. The B relay also opens the release magnet circuit, prepares a circuit for the vertical magnet, and supplies a ground to the permanent signal lead PS.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5332-JJH-HFH

PBX SYSTEMS
NO. 701A, 701B, 701PK, 711A, 711B, 711PK OR 740E
FIRST SELECTOR CIRCUIT
ARRANGED FOR RESTRICTED SERVICE

CHANGES

D. DESCRIPTION OF CHANGES

D.1 Title and Notes are revised to change reference to 701C and 711C PBX Systems, to read 701PK and 711PK respectively.

D.2 Cabling Figures 69 to 77 are revised.

D.3 Equipment Notes 210 and 211 are revised.

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DEPT. 5336-JJH-EvdL-RL

PBX SYSTEMS
NO. 701A, 701B, 701C, 711A, 711B, 711C OR 740E
FIRST SELECTOR CIRCUIT
ARRANGED FOR RESTRICTED SERVICE

CHANGES

D. DESCRIPTION OF CHANGES

D.1 Title and Note 101 are changed to add reference to 701C and 711C PBX Systems.

D.2 Fig. 2 is revised.

D.3 Equipment Information is revised to add J58842A.

D.4 Cabling Figures 69 to 77 are added.

D.5 Equipment Notes 209, 210 and 211 are added.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 5336-JJH-EvdL-RL

PBX SYSTEMS
NO. 701A, 701B, 711A, 711B OR 740E
FIRST SELECTOR CIRCUIT
ARRANGED FOR RESTRICTED SERVICE

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 To provide for two different classes of service restriction; whereby one group of lines may be denied access to a certain specified level or levels, and another group of lines may be denied access to another specified level or levels. Some of these restricted levels may be common to both groups.

B. CHANGES IN APPARATUS

B.1 Added

Normal Post Spring Assembly
P252931 (Option "G")

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Figure 1, Option "H" is designated and Option "G" is added. Normal post springs furnished with Option "H" permit one grade of service restriction while those furnished with Option "G" permit two grades of service restriction.

D.2 Circuit Notes 102, 104 and Options Used table are revised to include Options "G" and "H".

D.3 Circuit Note 107 read, "The normal post springs shall be adjusted to make on any level or levels upon which restriction is required."

D.4 Circuit Note 110 added.

D.5 Equipment Notes 206, 207, and 208 added for use with "G" Option.

D.6 Cabling diagram information Figure 57 revised and Figure 68 added to show method of making busy unused selector positions on the 740E PBX. Figures 56, 59 and K revised to include "G" option terminal.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used in a dial system PBX to establish a connection from a calling subscriber's line to a selector, selector-connector or trunk circuit.

2. WORKING LIMITS

2.1 Maximum external circuit loop 750 ohms* 850 ohms** 1000 ohms***

*When using 1000 ohms loop - leak "B" in pulsing test set.

**When using 1200 ohms loop - leak "A" in pulsing test set.

***When using 248 or modified 222 type (B) position relay on switches and 1400 ohm loop - leak "A" in pulsing test set.

2.2 Minimum station line insulation resistance 15,000 ohms.

3. FUNCTIONS

3.1 To provide dial tone to the calling station when this circuit is seized.

3.2 To provide a permanent signal when this circuit has been seized and the dial is not operated within a predetermined length of time.

3.3 To respond to dial pulses and step the brushes to the desired level in the selector multiple.

3.4 To automatically select an idle trunk in the selector multiple.

3.5 To hold the circuit to the brushes open until an idle trunk is selected.

3.6 To furnish an audible busy signal to the calling station when all trunks are busy.

3.7 To furnish an audible busy signal to the calling station, if the latter is a restricted line and attempts to dial a trunk on a restricted level.

3.8 To provide means for peg count registration.

3.9 To provide for two different classes of service restriction; whereby one group of lines may be denied access to a certain specified level or levels, and another group of lines may be denied access to another specified level or levels. Some of these restricted levels may be common to both groups.

4. CONNECTING CIRCUITS

When this circuit is listed on a key-sheet the connecting information thereon is to be followed.

4.01 Connector Circuit - SD-66144-01*.

4.02 Second Selector Circuit - SD-66010-01.

4.03 Line and Trunk Finder Circuit - SD-65901-01*.

4.04 Intercepting Trunk Circuit - SD-66716-01*.

4.05 Reverting Call Selector Circuit - SD-66315-01.

4.06 Reverting Call Trunk Circuit - SD-66502-01.

4.07 Miscellaneous Alarm Circuit - SD-65761-01*.

4.08 Central Office Trunk Circuit - SD-65657-01.

4.09 Attendant Trunk Circuit - SD-66717-01*.

4.10 2 Digit Rotary Hunting Selector - SD-66302-01.

4.11 Traffic Register Circuit - SD-65774-01*.

4.12 Tie Trunk Circuit - SD-65531-01*.

*Typical Circuit

DESCRIPTION OF OPERATION

5. SEIZURE

When this circuit is seized, relay (A) operates over the station loop. Relay (A) operated, operates relay (B). Relay (B) operated, grounds the sleeve, thus holding the line finder in its operated position, opens the release magnet circuit, prepares a circuit for the vertical magnet, and supplies ground to the permanent signal lead (PS). This ground will cause an alarm to be sounded if the selector was seized by a permanently grounded line, or if the station fails to dial after a predetermined interval. Dial tone is now furnished through relay (A) to the station to indicate that the selector is prepared to receive dial pulses.

6. SELECTION

6.1 Stepping

When the dial at the calling station is moved off-normal and released, the circuit through the (A) relay is intermittently opened and closed causing the (A) relay to operate and release in unison with these impulses. Each time the (A) relay releases, ground from its back contact operates the vertical magnet (VERT) in series with the (C) relay, causing the switch to step in a vertical direction to the level corresponding to the number dialed. Relays (B) and (C) remain operated during the pulsing of a digit because of their slow release feature. On the first vertical step, the vertical off-normal (VON) springs operate to partially prepare the release magnet circuit and to operate the (E) relay. When the dial restores to normal, relay (A) remains operated and relay (C) releases, to open the vertical magnet circuit and prepare the circuit for rotary stepping. The rotary magnet now operates to step the shaft and brushes around to the first set of terminals in the multiple bank. Relay (E) now releases.

6.2 Finding Idle Trunk

If the first trunk is busy, a ground from the "S" terminal shunts the winding of relay (D), which is in series with the winding of relay (E), preventing relay (D) from operating, but reoperating relay (E). On the operation of relay (E), the rotary magnet is again energized and the shaft steps to the next set of terminals. This sequence continues until an idle sleeve terminal is reached. When an idle terminal is reached, the ground which shunted relay (D) is no longer present and relay (D) operates to ground through a make contact on relay (B). Relay (E) is in series with this path, but fails to reoperate under these conditions. Relay (D) operated, closes the talking pair and sleeve lead through the circuit, releases relay (A), and places ground on the sleeve to serve as a busy condition on the sleeve terminal in the multiple bank.

6.3 All Trunks Busy

When the switch shaft steps to a level in which all the trunks are busy, the brushes step across to the eleventh rotary position, and the eleventh rotary springs operate. Busy tone is now supplied through the springs to the calling station over the tip side of the line. The operation of these springs also opens a circuit which prevents the operation of relay (D). The switch will remain in this position until the receiver at the calling station is replaced on the switchhook. If the station continues to hold the connection, after a predetermined interval, a permanent alarm in the miscellaneous alarm circuit will operate.

7. RELEASE

When the holding ground is removed from the sleeve lead, relay (D) releases. When relay (D) has released, the release magnet is energized from battery supplied

through an auxiliary relay in the miscellaneous alarm circuit. The operation of the release magnet allows the switch to return to normal. When the switch has returned to its normal position, the release magnet circuit is opened by contacts of the vertical off-normal springs.

8. RESTRICTED SERVICE

The contacts of the normal post springs are adjusted to make when the selector is dialed to a level, or levels, upon which restriction is required. When this condition occurs, ground is passed through the springs to the sleeve lead "S" of this circuit causing the selector to step to its eleventh rotary position and apply busy tone to the calling station, as described in paragraph 6.3. This "restricted" ground, designated "RS" or "RS1", is supplied to the normal post springs from the line finder. "RS" ground is supplied by the line finder "Z" relay which is operated by ground furnished from a station line that has been arranged for restricted service. "RS1" ground is supplied by normal post springs in the line finder which operate when the line finder is seized by a station line that is located on a restricted level of the bank multiple. With "H" option, only "RS" ground is available at the normal post springs. With "G" option, "RS" ground is carried through to the 1L-2L springs and, in addition, another set of springs, 1R-2R, is provided to carry "RS1" ground. These additional springs may thus be adjusted to operate on either the same or entirely different restricted levels from that of the 1L-2L springs and, hence, permit the selector to be used for two classes of restricted service.

9. CONTACT PROTECTION

One 1 mf capacitor and 150 or 200 ohm resistance is used in this circuit for the purpose of absorbing inductive spark at the contacts of relay (A) caused by the breaking of the current in the vertical magnet. The other 1 mf capacitor connected to the same 150 or 200 ohm resistance absorbs inductive spark at the contacts of the (E) relay caused by breaking the current in the rotary magnet.

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