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PBX SYSTEMS
NO. 701A, 701B, 711A OR 711B
SECOND SELECTOR CIRCUIT

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit is used to add another digit to the station or trunk code.

2. GENERAL DESCRIPTION OF OPERATION

2.01 After a first selector seizes this circuit, the next customer-dialed digit steps the shaft and wipers to the level corresponding to the digit dialed. The switch then hunts across that level to find the first available trunk or connector switch.

SECTION II - DETAILED DESCRIPTION

1. SEIZURE

1.01 When a first selector seizes this circuit, relay A operates. Relay A operated operates relay B.

1.02 Relay B operated:

(a) Grounds lead S to hold switchtrain.

(b) Opens the release magnet circuit.

(c) Prepares the circuit for operation of the vertical magnet.

(d) With option J grounds lead TMS to the 1A traffic measurement system, or with Fig. 4 grounds lead TR to the traffic usage recorder circuit.

2. VERTICAL STEPPING

2.01 At each interruption of the dialed digit relay A releases and reoperates. Each release of relay A operates the vertical magnet in series with relay C. Relay C operates on the first release of relay A.

2.02 Relays B and C are slow to release and remain operated during dial pulsing.

2.03 The vertical magnet steps the shaft and wipers to the desired level corresponding to the digit dialed. On the first vertical step the VON springs close.

2.04 VON springs operated:

(a) Operates relay E.

(b) Partially closes the release magnet circuit.

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2.05 At the end of dial pulsing relay A and B remain operated and relay C releases.

3. ROTARY HUNTING

3.01 Relay E remains operated under control of the rotary magnet when relay C releases. Relay C released operates the rotary magnet.

3.02 Rotary magnet operated:

(a) Steps the shaft and wipers to the first terminals in the bank.

(b) Releases relay E.

3.03 Relay E released opens the rotary magnet circuit and allows relay D to test the state of the trunk on the bank terminals.

3.04 If the trunk on the bank terminals is busy, the S terminal will be grounded.

3.05 Ground on the S terminal shunts relay D preventing it from operating, but because relays D and E are in series relay E reoperates.

3.06 Relay E operated operates the rotary magnet causing the shaft and wipers to step to the next set of terminals in the bank.

3.07 Relay E again releases and allows relay D to test the terminals. This sequence of operation is continued until a set of terminals with an idle trunk is found or the shaft and wipers step across all terminals on the level.

3.08 When an idle trunk is found, bank terminal S will not be grounded and relay D will operate in series with relay E but relay E being marginal does not operate.

3.09 If all the trunks in the level are busy, the shaft and wipers are stepped to the eleventh rotary step and the eleventh rotary step springs operate.

3.10 Eleventh rotary step springs operated:

(a) Open a circuit to prevent relay D from operating.

(b) Transfers the rear winding of relay A from ground to lead TB.

3.11 Lead TB supplies a ground on which is superimposed 60-IPM busy tone or 120-IPM reorder tone. The busy tone or reorder tone is connected through the rear winding of relay A to the calling station and remains connected until the calling station disconnects.

4. CUTTING THROUGH TO THE IDLE TRUNK

4.01 Relay D operating when an idle trunk is found:

(a) Closes through leads T, R, and S to the next switch or trunk.

(b) Releases relay A.

(c) Opens an operate path for relay E.

(d) Locks itself to lead S under control of the trunk or succeeding switch.

4.02 Relay A released releases relay B. Relay B, which is slow to release, prepares the release magnet circuit and removes ground from lead S.

4.03 When ground is removed from lead S by relay B, this switch, the preceding switches, and relay D are held operated by a ground supplied by the succeeding switch or trunk.

5. RELEASE

5.01 This circuit is held by a ground on lead S which holds relay D operated. When this ground is removed relay D releases.

5.02 Relay D released operates the release magnet. The release magnet operated causes the shaft and wipers to release and return to normal.

5.03 When the shaft and wipers return to normal the VON spring releases. When the VON spring releases the release magnet releases and the switch is now normal.

6. TEST JACK

6.01 The test jack allows routine and other tests to be made on this circuit.

7. CONTACT PROTECTION

7.01 A network consisting of capacitors C1 and C2 and resistor R is used to absorb the spark at the contacts of relay A caused by vertical stepping and the contacts of relay E caused by rotary hunting.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 Maximum external circuit loop:

750 ohms* 850 ohms** 1000 ohms***

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

** When using 1200 ohms - 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

1.02 Minimum station line insulation resistance - 15,000 ohms

1.03 Voltage limits: 44-52 volts

2. FUNCTIONAL DESIGNATIONS

None.

3. FUNCTIONS

3.01 To respond to dial pulses and step the shaft and wipers to the desired level.

3.02 To automatically select an idle trunk.

3.03 To hold the circuit to the wipers open until an idle trunk is selected.

3.04 To furnish an audible busy tone or reorder tone to the calling station when all trunks are busy.

3.05 To connect the tip and ring of the connector back to the first selector and remove battery and ground feed.

3.06 To return to normal when ground is removed from the sleeve lead.

4. CONNECTING CIRCUITS

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

(a) Connector Circuit - SD-66144-01*

(b) First Selector Circuit - SD-66359-01*

(c) Power Ringing Circuit - SD-81337-01*

(d) Miscellaneous Alarm Circuit - SD-65761-02*

(e) Dial Conference Circuit - SD-66461-01

(f) Tie Trunk Circuit - SD-65718-02*

(g) Tie Trunk Simulator Circuit - SD-69336-01

(h) Traffic Measurement System 1A - SD-3B200-01*

* Typical

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This switch shall be capable of performing all the service functions specified herein and meeting all the requirements of the Circuit Requirements tables.

6. TAKING EQUIPMENT OUT OF SERVICE

6.01 This switch may be made busy by shorting together springs 3 and 4 of the test jack. In the event the removal of the switch is necessary, closure of jack springs 9 and 11 make the switch position busy.

SECTION IV - REASONS FOR REISSUE

B. Changes in Apparatus

B.1

Superseded	Superseded by
A network, 178A, option Y	C1 and C2 capacitors, 542D and R resistor, KS-13490,L2, 150 ohms, option K
A diode, 420G, Fig. 3 and option M	A diode, 446F, Fig. 4

D. Description of Changes

D.1 Option Y is rated Mfr Disc. Option K is added and rated Standard to change the 178A network A to two 542D capacitors, C1 and C2, and a KS-13490,L2, 150-ohm resistor R.

D.2 Option J is added and is specified when connection to Traffic Measurement System No. 1A is required.

D.3 Option G is designated and option F is added. Option G is specified when an all paths busy at 60 IPM is required while option F is specified when a signal at 120 IPM is required.

D.4 Fig. 3 and option M are rated Mfr Disc. Fig. 4 is added to change the code of diode A from 420G to 446F. Fig. 4 is rated Special and specified when connection to the traffic usage recorder is required.

D.5 Circuit Notes 102 and 104 are updated to reflect the above changes.

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