10

PBX SYSTEMS NO. 701A,701B,701PK,711A,711B,711PK OR 740E INCOMING FIRST SELECTOR CIRCUIT ARRANGED FOR OPERATION WITH DIAL REPEATING TIE TRUNKS OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

B. Changes in Apparatus

B.1 Added

MS Diode, 446F, Option ZQ

D. Description of Changes

D.1 Option ZQ is added to provide wiring and apparatus required to ground lead MS to the Power Ringing Circuit to provide dial tone when option ZG is specified.

D.2 Note 102 is modified to reflect this change.

D.3 Option H is rerated to A&M Only to expedite field modification of normal post springs.

D.4 Note 104 is modified to reflect this change.

D.5 Terminal 5 of switchjack shown on FS1 and Fig. 59 is changed to read 4 on a No-Record basis to agree with manufacturing information.

D.6 Fig. 73 is added to provide lead OL for the 701A and 711A PBX on an A&M Only basis.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5152HW-JLF-LKJ

DEPT 5337-RVL

PBX SYSTEMS
NO. 701A, 701B, 701PK, 711A, 711B, 711PK, OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

A. Changed and Added Functions

A.1 This circuit is capable of canceling the capability of an incoming trunk to signal an attendant during night operation if the trunk provides a night closing ground to this circuit.

D. Description of Changes

D.1 Option ZD is designated and rated Manufacture Discontinued and options ZE, ZF, and ZG are added and rated Standard to provide optional dial tone.

D.2 Option ZH is designated and rated Manufacture Discontinued and option ZI is added and rated Standard to provide a change of switch code. The new switch code 197JN replaces switch code 197AF, and provides for a standard set of normal post springs and normal post cam assembly which were previously supplied on an optional basis.

D.3 Option H is rated Manufacture Discontinued and is replaced by new options ZI and ZK.

D.4 Option E is rated Manufacture Discontinued and is replaced by new option ZL.

D.5 Option M is rated Manufacture Discontinued and is replaced by new option ZJ.

D.6 Options ZM, ZN, ZO and ZP are added to provide optional apparatus and wiring required when this circuit is used with an incoming trunk circuit providing a night closing ground to this circuit. Options ZM and ZP are rated A&M and options ZN and ZO are rated Standard.

D.7 The rating is changed to A&M Only for the 740E PBX.

D.8 Notes 109, 112, and 303 are rated Manufacture Discontinued.

D.9 Note 302 is rated A&M Only.

D.10 Notes 114, 115, 116, 117 and 304 are added.

F. Changes in Description of Operation

F.1 After paragraph 9., in SECTION II, add the following and renumber subsequent paragraphs accordingly:

10. DIVERSION WITH NIGHT CLOSING

With options ZN and ZO or ZM and ZP, the incoming trunk provides a night closing ground to this circuit on lead OL. When the attendant level is reached, the left front normal post springs are actuated. With ground on lead OL (day operation) relay Z operates and grounds lead O to the incoming trunk which causes the attendant to be signaled. With no ground on lead OL (night operation) the actuation of the normal post springs does not operate relay Z and lead O is not grounded. The attendant will not be signaled and the call will be treated as an inward dialed call by the incoming trunk circuit.

F.2 In SECTION III, 4. CONNECTING CIRCUITS, add:

4.12 Two-Way Trunk Circuit - SD-5E028-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

(WECo 5120HW-JLF-LKJ)
DEPT 5337-RVL

PBX SYSTEMS
NO. 701A,701B,701PK,711A,711B,711PK OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

D. Description of Changes

D.1 Notes 102 and 104 are revised.

D.2 Wiring ZB is designated and wiring ZC is added to provide the all paths busy tone at 60 ipm or 120 ipm.

D.3 Connecting information for Rotary Out Trunk Switch (ROTS) circuits is added.

F. Changes in Description of Operation

F.1 In PART IV - CONNECTING CIRCUITS

Add:

4.10 Rotary Out Trunk Switch Circuit - SD-30868-01.

4.11 Rotary Out Trunk Switch Circuit - SD-30891-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

(WECo 2120HW-AEK-JGW)
DEPT 5337-LAH

PBX SYSTEMS
NO. 701A, 701B, 701PK, 711A, 711B, 711PK OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

D. Description of Circuit Changes

D.1 Notes 102 and 104 are revised and note 113 is added.

D.2 Lead P connecting to automatic number identification circuit is added to provide a continuous metallic path for the identification pulses. Lead P is required where this circuit is associated with a tie trunk having access to central office or CCSA equipment and automatic number identification feature is provided.

D.3 Cabling Figures 59 and K are revised.

F. Changes in Description of Operation

F.1 In PART IV - CONNECTING CIRCUITS,

Add:

4.9 Automatic Number Identification Circuit - SD-1E007-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

(WECo 7760HW-RLS-JGW)
DEPT 5337-RAV

AH

PBX SYSTEMS
NO. 701A, 701B, 701PK, 711A, 711B, 711PK OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded	Superseded By
B Relay 248D - B Option	B Relay 248B - A Option

D. DESCRIPTION OF CHANGES

D.1 Option A is added to gain an additional make contact on the B relay. This contact is wired into the operate path of the Rot. Mag. to prevent the Rot. Mag. from operating when the switch is releasing.

D.2 Designation of Figs. M,N,P,Q, and U is changed to become Figs. 68 to 72 to agree with current method of Fig. Designation.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 5336-DJG-FNR-CG

AH
LD

PBX SYSTEMS NO. 701A, 701B, 701PK, 711A, 711B, OR 711PK INCOMING FIRST SELECTOR CIRCUIT ARRANGED FOR OPERATION WITH DIAL REPEATING TIE TRUNKS OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Added Figs. M,N,P,Q and U for use with 701PK PBX.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 5336-DJG-FNR-A28

PBX SYSTEMS
NO. 701A, 701B, 711A, 711B, OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Fig. 1, the right normal post spring was formerly shown incorrectly as having only a make contact.

D.2 Information Note 303 is changed to correct the piece part number of the normal post spring assembly from P15A430 to P15A432.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2242-WVS-PWS-MS

AH

PBX SYSTEMS
NO. 701A, 701B, 711A, 711B OR 740E
INCOMING FIRST SELECTOR CIRCUIT
ARRANGED FOR OPERATION WITH
DIAL REPEATING TIE TRUNKS
OR INCOMING TRUNKS FOR INWARD DIALING

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 The function is added - to provide for disabling the transfer feature in direct inward dial trunks when a level associated with attendant trunk circuits is reached.

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Under the test clip data for the E relay, ground was shown connected to 4 (VON) in the CONN GRD column. The 4 was removed and test Note 15 was added. This change is required to reflect the addition of the F and G options added on a previous issue.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Option "E" is added to provide for disabling the transfer feature used in direct inward dial trunks when a level associated with attendant trunk circuits is reached.

D.2 Circuit Note 112 was added and Notes 102 and 104 and the Option Used table were changed to show reference to Option "E".

D.3 Circuit Notes 102 and 109 were reworded.

D.4 Incoming trunk circuit is added as connecting information to the T, R, S and O leads.

D.5 The following was added to the title "Or Incoming Trunks For Inward Dialing".

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used in a dial system PBX for connecting calls from repeating tie lines or direct inward dial trunks to the attendant or to a station through switches.

1.2 To control a 2-DB transmission pad in the four-wire terminating circuit associated with the tie trunk circuit.

2. WORKING LIMITS

2.1 Max. ext. ckt. loop 406 ohms.
Min. insulation res. 20,000 ohms.

3. FUNCTIONS

3.01 To ground the motor start lead when the switch is off normal.

3.02 To respond to dial pulses and step the switch to the desired level of the multiple.

3.03 To automatically select an idle trunk to the succeeding switch.

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

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

3.06 To furnish a momentary grounded pulse to the traffic register circuit.

3.07 To provide restriction to any level or levels without affecting any higher number levels.

3.08 To divert calls from any level or levels to an attendant by grounding the O lead.

3.09 To provide a resistance ground on to the O lead to control a transmission pad.

3.10 To provide for disabling the transfer feature in direct inward dial trunks when an attendant trunk level is reached by removing ground from the O lead.

4. CONNECTING CIRCUITS

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

4.1 Second Selector Circuit - SD-66010-01.

4.2 Connector Circuit - SD-66144-01*.

4.3 Tie Trunk Circuit - SD-65718-01*.

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

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

4.6 Power Ringing Circuit - SD-81337-01*.

4.7 Four Wire Terminating Set and Pad Control Circuit - SD-65789-01.

4.8 Incoming Trunk Circuit - SD-65792-01.

*Typical

DESCRIPTION OF OPERATION

5. SELECTION

When the associated trunk circuit is seized, either a loop is connected to the T and R leads, or a ground is connected to the R lead, causing the A relay to operate. Relay A operated, causes relay B to operate which (a) opens the operating path of the release magnet, (b) prepares an operating path for the C relay and the vertical magnet, (c) grounds the incoming S lead and (d) prepares a path for grounding the traffic register PC lead.

The circuit is now prepared to receive the digit that will step the selector to the desired level. The A relay will follow the pulses. On the first release of the A relay, the C relay and the vertical magnet will operate. The C relay will hold over the succeeding pulses and will release after the complete digit has been received. The vertical magnet will follow the A relay and cause the shaft to step to the desired level. The release of the A relay also opens the operating path of the B relay but this relay is designed to hold over pulses.

On the first vertical step of the shaft the vertical off normal springs operate which (a) grounds the motor start lead thus starting the ringing machine, (b) prepares the release magnet circuit and (c) closes the operating path of the E relay thus preparing the circuit for trunk hunting.

6. TRUNK HUNTING

After the digit has been received, the C relay releases opening the operating path of the E relay and closing the operating path of the rotary magnet. The E relay, however, remains operated under the control of springs associated with the rotary magnet. Operation of the rotary magnet steps the brushes on to the first set of terminals in the multiple bank and opens the holding path of the E relay causing it to release. The release of the E relay de-energizes the rotary magnet. If the first trunk is busy, the sleeve brush will be grounded. This ground will short the D relay (which is in series with the E relay) thus preventing it from operating and it also causes the E relay to reoperate. Operation of the E relay causes the rotary magnet to operate which causes the brushes to advance to the second set of terminals and also to release the E relay. This process will continue until an idle trunk is found as indicated by absence of ground on the sleeve brush.

Absence of ground on the sleeve brush permits the D relay to operate in series with the E relay but the E relay is marginal and does not operate. Operation of the D relay (a) closes the incoming T and R leads through to the outgoing T and R brushes (b) releases the A relay (c) releases the B relay (d) connects the incoming sleeve lead to the sleeve brush (e) grounds the PC lead and (f) transfers the connection of the brush sleeve from the outer end, B, of its winding to its inner end, T.

The release of the B relay removes the ground from the PC lead. Thus a ground is supplied on to the PC lead for the release time of the B relay. The release of the B relay also removes the ground used for holding the D relay operated. However, before the slow release B relay releases, ground is supplied on the sleeve brush by the succeeding circuit. Thus the D relay will remain locked up from ground supplied by the succeeding circuit and battery supplied through the E relay. Incidentally, this ground is also connected to the incoming S lead thus holding a relay operated in the preceeding circuit.

7. RELEASE

When the calling party disconnects, ground is removed from the sleeve brush causing the D relay to release. Release of the D relay connects a ground through contacts of the A and B relays and VON springs to the RLS magnet causing it to operate. Operation of the release magnet allows the switch shaft to return to normal. When the switch is normal, the VON contacts open thus de-energizing the RLS magnet.

8. ALL TRUNKS BUSY

When the switch steps to a trunk level in which all the trunks are busy, the brushes are stepped to the eleventh rotary position and the eleventh rotary step cam springs operate. The operation of these springs connects the "trunks busy" tone supplied over the "TB" lead to the tip side of the line through the "R" winding of the A relay. Operation of the eleventh rotary springs also opens the operating path of the D relay.

When the calling party hangs up, the A relay releases causing the B relay to

release. The release of the B relay causes the E relay to release and also causes the release magnet to become energized. The switch will return to normal as previously described.

9. DIVERSION

The diversion feature is used to divert a call to an attendant when certain selector levels are reached by tie trunks. When a tie trunk reaches a level from which it is to be diverted, normal post springs are actuated connecting a ground on to the O lead, which will cause a relay in the tie trunk circuit to operate. The operation of the tie trunk relay causes a lamp to light at the attendant's position. When the tie trunk circuit opens the tip and ring conductors, the selector will return to normal.

This feature is actuated by the normal post springs of the various options as follows:

With "N" option, the normal post springs, 1 and 2, may be adjusted to close on any level arranged to route calls to an attendant. The springs must also be adjusted to close on all higher numbered levels which will cause calls to these levels to be routed to the attendant.

With "M" option the left normal post springs, 1L-2L-3L, may be adjusted to operate on any level or levels arranged to route calls to the attendant.

With "H" option the left front normal springs, 1LF-2LF-3LF may be adjusted to operate on any level or levels arranged to route calls to the attendant.

10. RESTRICTION

The restriction feature is used to prevent a tie trunk from reaching certain restricted levels. It does not cause the call to be routed to an attendant but it causes the selector to return a "trunks busy" tone to the tie trunks. When a tie trunk reaches a level from which it is to be restricted, normal post springs are actuated causing the sleeve brush to be grounded. This causes the selector to step to its eleventh rotary position and a trunk busy tone is applied to the tie trunk as described in paragraph 8 for "All Trunks Busy".

With "M" option, the right normal post springs, 1R and 2R, may be adjusted to close on any level or levels to be restricted from use by tie trunks.

With "H" option, the right front normal post springs, 2RF and 3RF, may be adjusted to close on any level or levels to be restricted from use by tie trunks.

11. TRANSMISSION PAD CONTROL

This feature is used to control the transmission pad in a four wire terminating circuit associated with a tie trunk circuit. With "H" option, the right rear normal post springs, 1RR and 2RR, may be adjusted to close on specified levels. Closure of these springs causes ground to be connected to the A resistor which is connected to the O lead. This resistance ground causes a relay in the four wire terminating set to operate which in turn will cause the transmission pad to be removed.

12. DISABLING TRANSFER IN DIRECT INWARD DIAL TRUNKS

This feature is used to disable a transfer feature in trunks arranged for direct inward dial traffic. With "E" option, ground is normally connected to the O lead through the left normal post springs, 2L and 1L. These springs are adjusted to open on any level or levels associated with attendant trunk circuits. When these springs open, the ground is removed from the O lead thus disabling the transfer feature in the associated inward dial trunk circuit.

13. CONTACT PROTECTION

One 1 M.F. capacitor in series with a 200 ohms resistor is used in this circuit for the purpose of protecting the contacts of the A relay which break the current to the vertical magnet. The other 1 M.F. capacitor is used to protect the contacts of the E relay which break the current to the rotary magnet.

14. TEST JACK

The test jack provides a means for making routine tests and making the selector busy.

15. ALARMS

If the selector fails to release when the release magnet is energized, an auxiliary relay in the miscellaneous alarm circuit, which is in series with the RB lead, operates and after a timed interval, causes an alarm to operate.