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STEP BY STEP SYSTEMS  
NO. 1, 350A OR 355A  
INTERCEPTING TRUNK CIRCUIT  
FROM CONNECTOR OR TOLL TRAIN  
SELECTOR MULTIPLE OR FROM  
AUXILIARY INTERCEPTING TRUNK FOR  
8 PTY TPL CONNECTOR MULTIPLE

CHANGES

B. Changes in Apparatus

<u>B.1 REMOVED</u>	<u>REPLACED BY</u>
420B(B) Diode, Q Option	446F(B) Diode

C. Changes in Circuit Requirements Other Than Those Caused by Changes in Apparatus

C.1 In the Block or Insulate column of the CR Table, testing information was added for the ST relay.

D. Description of Changes

D.1 Fig. 3 and options Q, N are rated Mfr Disc.

D.2 Fig. 4 is added to the circuit, superseding Fig. 3.

D.3 Option R is removed from the drawing without record to agree with WECO. information.

D.4 Information covering the above changes is added to Notes 109 and 112.

D.5 Note 110 is rated Mfr Disc. in conjunction with the addition of Note 112.

D.6 CAD Fig. 62 is revised, CAD Fig. 63 is rated Mfr Disc., and CAD Fig. 65 and 66 are added.

D.7 This circuit is rated A&M Only for No. 350A.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2363-WCB-RJJ

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SELECTOR MULTIPLE OR FROM  
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8 PTY. - T.P.L. CONNECTOR MULTIPLE

## CHANGES

## B. CHANGES IN APPARATUS

## B.1 Added

1 - 420B (B) Varistor - Fig. 3,  
Option Q

## D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Options S, T, and V are rated Mfr. Disc.
- D.2 Lead TS (R) option connecting to Fig. 3 is added in Fig. 1.
- D.3 Fig. 3 is added, showing (B) varistor as Q option. N option is shown for use when Q is not required.
- D.4 In Fig. 2, "or to Misc. Alm. Ckt. or Sw. Tbl. Alm. Ckt." is added to the connecting information for lead GRD.
- D.5 Lead "ICT1" in Fig. 1 formerly read "ICT or GRD."
- D.6 Lead "ICT1" in Fig. 2 formerly read "GRD."
- D.7 Circuit Notes 107 and 108 are rated Mfr. Disc.
- D.8 Circuit Notes 110 and 111 are added.
- D.9 Reference to Fig. 3 and Option R is added to Note 109 and Option Used table.

## 1. PURPOSE OF CIRCUIT

1.1 The circuit provides a means whereby the outgoing trunk for intercepting service to a central "A" switchboard may be connected to a connector terminal or to a toll train selector bank through a trunk finder.

## 2. WORKING LIMITS

2.1 The rated external resistance for the (ST) relay is 125 ohms. The rated external resistance for the (S) relay "Y" wiring is 125 ohms. The rated external resistance for the (CO) relay is 443 ohms.

## 3. FUNCTIONS

- 3.1 To ground the "G" lead to the trunk finder when seized in order to start a trunk finder hunting for this trunk.
- 3.2 To connect the winding of the (CO) relay to the "S" lead from the trunk finder to stop the finder on the proper terminal.
- 3.3 To prevent a reseizure of this trunk after the calling end is disconnected and the called end is still on the connection.
- 3.4 To prevent another trunk finder from seizing this trunk should the called end disconnect before the calling end.
- 3.5 To release the preceding selectors and switching trunk when the toll operator disconnects first.
- 3.6 To start the timing for automatic disconnect of called line and release of connector and to disable the timing feature on regular or trouble intercepted calls.

## 4. CONNECTING CIRCUITS

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

- 4.1 Trunk Finder Circuit - SD-31781-01\*
- 4.2 Connector Circuit - SD-30220-01\*
- 4.3 Emg. Trans. Circuit - SD-96425-01 and SD-95711-01
- 4.4 Call Through Test Set Circuit - SD-96063-01
- 4.5 Connector Test Line Circuit - SD-31653-01
- 4.6 Group and Alarm Relay Circuit - SD-32194-01
- 4.7 Switch Trouble Alarm Circuit - SD-32045-01

\*Typical

## DESCRIPTION OF OPERATION

## 5. SEIZURE

## 5.1 With "X" Option

When this circuit is seized relay (ST) operates from direct ground or from ground through the 125 ohm winding of the connector cut-thru relay. This in turn connects ground to the "G" lead from a break on (CO) with W option or from the sleeve through varistor (A) with V options to the trunk finder circuit and closes the windings of the (CO) relay in multiple on the "S" lead to the trunk finder. The ground on the "G" lead starts the trunk finder for this trunk. When the finder reaches this trunk, battery through the (CO) relay windings stops the finder and operates the (CO) relay. The (CO) relay in operating removes ground from the "G" lead to prevent other finders from starting for this trunk, opens the operating path for the (ST) relay releasing it, closes a locking path for itself upon the release of the (ST) relay and partially closes the connection between the incoming and outgoing sleeve leads. The release of the (ST) relay completes the connection between the two sleeve leads and the (CO) relay locks through the secondary winding of (ST) relay to the sleeve. The (ST) relay is slow in releasing to delay the connection between the sleeves until the trunk finder is unaffected by ground on the sleeve.

## 5.2 With "Y" Option

When this circuit is seized the (S) relay operates from direct ground or from ground through the 125 ohm winding of the connector circuit cut-thru relay. The (S) relay operated operates the (ST) relay which connects ground to the "G" lead to the trunk finder circuit and closes the windings of the (CO) relay in multiple on the "S" lead to the trunk finder. When the finder reaches this trunk battery through the (CO) relay winding stops the finder and operates the (CO) relay. The (CO) relay in operating removed ground from the "G" lead to prevent other finders from starting for this trunk, opens the operating path for the (ST) relay releasing it and partially closes the connection between the sleeve from the trunk finder and ground at the (S) relay contacts. The release of the (ST) relay completes the connection and the (CO) relay holds through the secondary winding of the (ST) relay to both the line finder sleeve and to ground on the make contacts of the (S) relay. The (ST) relay is slow in releasing to delay the connection between the trunk finder sleeve and ground on the (S) relay until the trunk finder is unaffected by ground on the sleeve.

## 6. RELEASE

## 6.1 With "X" Option

Relay (CO) remains operated until ground is removed from both sleeve leads. This prevents a reseizure should the calling end disconnect first and prevents the false seizure by another trunk finder should the called end disconnect first. Upon the release of the (CO) relay the circuit is restored to normal.

## 6.2 With "Y" Option

If the calling operator disconnects first the (S) relay releases and closes the operating path through its break contacts for the (SB) relay. At this time the (CO) relay is held operated from ground on the trunk finder sleeve. The (SB) relay operated opens the operating path for the (S) relay and closes ground to the sleeve to prevent false seizure. The (S) relay is slow to release to permit an open condition on the sleeve for a sufficient length of time before ground is reapplied by the (SB) relay to permit the preceding selectors and switching trunks to release. If the called operator disconnects first the (CO) relay is held operated from ground at the contacts of the (S) relay and holds ground on the sleeve to the trunk finder to prevent seizure by another trunk finder. When the called operator disconnects the (CO) relay releases and the circuit restores to normal.

## 7. AUTOMATIC DISCONNECT OF CONNECTORS ON CALLING PARTY HOLDS

7.1 When connectors are arranged to automatically disconnect on calling party holds after a predetermined time and the connector group is furnished with intercept trunks, the timing for disconnect is under control of the intercept trunks and trunks arranged to trip ringing without charging.

## 7.2 Options S, T and V

If the intercept trunks are idle when the calling party fails to replace his receiver on hook after the called party disconnects, a timing circuit is started from ground on the A jack Fig. 2 if plugging up lines are provided or from ground through a break on the CO relay when plugging up lines are not provided, over "ICT" lead to "Misc. Alm. Ckt. or Switch Trouble Alarm Ckt." through a thermal relay to the connector or to a thermal relay in the connector directly. After a predetermined interval, the connector is released and returned to normal.

On regular or trouble intercept calls, the timing circuit is disabled since the CO relay is operated.

7.3 Fig. 3 and Options Q, R, W and X or Options N, R, W and X.

If the intercept trunks are idle when the calling party fails to replace his receiver on hook after the called party disconnects, a timing circuit is started from ground on the (A) jack if plugging up lines are provided or from ground in the "Misc. Alm. Ckt. or Switch Trouble Alarm Ckt." if plugging up lines are not provided.

If the intercept trunks are busy when the calling party fails to replace his receiver on hook after the called party disconnects, the timing circuit is disabled. Ground from the S lead over lead TS through the B varistor with Q Option or directly to the "Misc. Alm. Ckt. or Switch Trouble Alm. Ckt." with N option operates a relay to open the timing circuit.

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DEPT. 2363-MKD-FBB-JB