

SIZE	A	E- 580294	SHEET 1	TOTAL 6
			AUTOMATIC ELECTRIC CO. NORTHLAKE, ILLINOIS U.S.A.	
Changed Sections 2.00 and 3.02 3/72: am O'Connell 270 C. O'Connell Issue 7				

CIRCUIT EXPLANATION

M

LOCAL OR INC 2-5 SELECTOR
WITH CROSS-CONN FIELD
BATTERY SEARCHING
RESTRICTED-SERVICE OPTION
ROUTINER ACCESS
H-580294

(Written specifically for circuit issue 23,
but may also apply to later issues. Refer
to H print for appropriate E issue number.)

FEATURES

- (a) Optional restricted service
- (b) Dial and busy tone
- (c) Digit absorbing (2-5) with cross-connections for full universal numbering
- (d) Routiner access option
- (e) Peg count on switch-through

CIRCUIT OPERATION

1.00 Seizure (Operated: VON springs)

1.01 ("F" and "T" wiring)

This circuit is marked idle to preceding equipment by resistance (#2C) battery connected to lead C via key BUSY KEY. When seized, a loop is closed across leads "+" and "-", closing relay A. Relay A operates and closes B. Relay B operates, grounds lead C to mark this circuit busy to other equipment, connects ground to lead SUPY and closes #2C. Relay C operates, and connects lead DIAL TONE & GRD via #2A to lead "+".

1.02 ("P" and "T" wiring)

This circuit is marked idle to preceding equipment by absence of ground on lead C. When seized, a loop is closed across leads "+" and "-", closing relay A. Relay A oper-

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ates and closes relay B and #2C. Relay B operates, grounds lead C to mark this circuit busy to other equipment and connects ground to lead SUPY. Relay C operates, and connects lead DIAL TONE & GRD via #2A to lead "+".

2.00 Vertical Stepping (Operated: Relays A, B, C; VON springs)

Relay A follows the dial pulses and, when restored, closes #1C and the VERT magnet in series and opens relay B. The VERT magnet operates under the control of A and steps the wipers to the desired level. Relays B and C remain operated during pulsing due to their slow-to-release characteristics. On the first vertical step, the VON springs restore, open #2C, and close E. Relay E operates and locks.

After the last dial pulse, relay A re-operates, closes relay B, and opens #1C and the VERT magnet. After its slow-to-release interval, relay C restores and disconnects lead DIAL TONE & GRD from lead "+".

3.00 Digit Absorbing (Operated: Relays A, B, C and E)

3.01 Single Digit Cut-In (Use lead CI)

When single digit cut-in is to take place on the dialed level, lead CI is wired to the vertical bank contact associated with that level. At the completion of the digit, relay C restores, and closes #1 and #2D in series via the vertical bank contact of the dialed level. Relay D operates to its "X" contacts, locks, connects resistance (#1F) ground to wiper C and closes the ROT magnet.

3.02 Digit Absorbed Once Only (Use Lead A)

When a digit is to be absorbed once only, with cut-in to take place on any succeeding digit, lead A is wired to the vertical bank contact of the dialed level. When relay C restores at the completion of the digit, #2D is closed via the vertical bank contact of the dialed level.

Relay D operates to its "X" contacts, short-circuits #1D, and closes the RLS magnet. The RLS magnet operates, locks, short-circuits #1Z and releases the switch shaft. When the switch shaft returns to normal, the VON springs operate, close #2C, remove the short-circuit from #1D, open relay E and the RLS magnet and remove the short circuit from #1Z, closing #1Z and magnet RLS in series.

Relay C operates and transfers lead "+" from resistance (#2A) ground to lead DIAL TONE & GRD. Relay Z operates to its "X" contacts, locks, operates fully, transfers lead "+" from lead DIAL TONE & GRD to resistance (#2A) ground and may change the type of digit absorption used as outlined in NOTE 53 of H-580294. Magnet RLS restores.

Relay D operates completely with both windings in series, locks, and connects resistance (#1F) ground to wiper C. Relay E restores.

The next digit steps the switch shaft vertically as described in Section 2.00. However, relay D is now operated and locked, so that when relay C restores at the end of pulsing, ground is connected to the ROT magnet (See Section 4.00).

3.03 Digit Absorbed Repeatedly (Use lead AR)

When a digit is to be absorbed repeatedly, lead AR is wired to the vertical bank contact associated with the particular digit absorbing level. When relay C restores at the completion of the digit, a circuit is closed via the vertical bank contact of the dialed level to the RLS magnet, except as noted below. The RLS magnet operates, locks, opens the ROT magnet, and releases the switch shaft. When the switch shaft returns to normal, the VON springs operate, open the RLS magnet and relay E, and close #2C and relay Z as described in Section 3.02. Relay Z operates to its "X" contacts, locks, operates fully, and may change the type of digit absorption used as outlined in NOTE 53 of H-580294.

Relay E and magnet RLS restore and relay C re-operates. The next digit steps the switch vertically as described in Section 2.00.

NOTE: If a digit which is normally absorbed repeatedly (AR) is dialed after a digit which is to be absorbed once only (A), the AR digit will not be absorbed since relay D has operated and locked, following the (A) digit, and prepared a circuit to step the ROT magnet on any subsequent digit (See Section 3.02).

4.00 Rotary Stepping (Operated: Relays A, B, D, E, and possibly Z)

At the completion of vertical stepping, ground is connected to the ROT magnet by one of the methods described in

Section 3.00. The ROT magnet steps the wipers to the first bank contacts and opens relay E. Idle trunks are marked by resistance battery on the associated C bank contact. If ground is found on the C bank contact, the associated trunk is busy and relay F does not operate. The release of relay E opens the ROT magnet, which restores and closes E. Relay E re-operates and closes the ROT magnet, which re-operates, opens relay E, and steps the wipers to the next bank contact. This relay-interrupted stepping continues until either an idle trunk is found or the eleventh rotary step is taken (all-trunk-busy).

5.00 Switch-Through (Operated: Relays A, B, D, E, and possibly Z)

When the wipers encounter an idle trunk, #1F is closed by resistance battery on wiper C. Relay E restores since it is opened by the ROT magnet and opens the ROT magnet. The ROT magnet restores and closes #1F. Relay F operates to its "X" contacts, and closes #2F. Relay F operates completely, locks, connects leads "+" and "-" to wipers "+" and "-", grounds lead TONE START, connects wiper C to lead C, transfers ground from lead SUPY to lead PEG COUNT to register the switch-through, opens relays A, D, and Z, and connects wiper EC to lead EC.

The succeeding switches when seized, return ground over wiper C, short-circuiting #1F. The ROT magnet does not operate in series with relay F.

Relay A restores and opens relay B. Relay B restores after its slow-release interval, and disconnects ground from lead PEG COUNT. Relay Z restores. Relay D restores and removes the short circuit from #1F.

If this switch is used in a Type B SATT system, Figure DD is employed. This will prevent false operation of relay F should positive detector battery from a SATT System Ticketer be encountered on lead C.

6.00 All-Trunks-Busy Condition (Operated: Relays A, B, D, E, and possibly Z)

When all trunks are busy, the CAM SPGS operate on the eleventh rotary step. Operation of the CAM SPGS opens relay E and connects lead BUSY TONE & GRD to lead "+" via #2A.

NOTE: Springs 1 and 2 of relay E insure that a full "pulse" is delivered to the ROT magnet for the 11th step. Once E restores it cannot re-operate because of the open CAM SPGS, and rotary stepping ends.

All trunks-busy condition can be registered by connecting high resistance battery-connected meters to the eleventh step C bank contact which operates from ground via #1F. However, relay F does not operate. This switch is held until the preceding equipment is released and opens the loop circuit to A. Relay A restores and opens B. Relay B restores, after its slow-to-release interval, and disconnects lead SUPY, opens relays Z and D, and closes the RLS magnet. Relays Z and D restore. The RLS magnet operates and releases the switch shaft. When the switch shaft returns to normal, the VON springs operate and open the RLS magnet. The RLS magnet restores.

7.00 Blocked Levels (Operated: Relays A, B, C, E, and possibly Z)

It is desirable to block access to certain levels and return BUSY TONE to the calling party. When these levels are dialed before a preliminary digit has been absorbed, the LT NP SPGS, operate. When C restores after vertical stepping, ground is connected to the ROT magnet via the LT NP SPGS. Rotary stepping is as described in Section 4.00 until the eleventh rotary step has been taken. Switch-through cannot take place since relay D has not operated and #1F is open. Subsequent operation is as described in Section 6.00.

8.00 Restricted Service (Operated: Relays A, B, C, E, and possibly Z)

The RT NP SPGS operate on these levels which are to be restricted to switches in groups which project ground forward on lead EC (FIGURE RS). Ground on lead EC short-circuits #1F and prevents its operation. As a result, the wipers are rotated to the eleventh step as described in Section 6.00.

9.00 Release (Operated: Relay F)

When the last switch in the train is released by the opening of the line loop, ground is removed from wiper C, opening #2F. Relay F restores, disconnects wiper EC from lead EC, closes the RLS magnet, disconnects wiper C from lead C, grounds lead C to guard this circuit during

release and connects leads "+" and "-" to wipers "+" and "-", respectively. The RLS magnet operates and releases the switch shaft. The switch shaft restores, opens the RLS magnet and removes ground from lead C marking this circuit idle. The RLS magnet restores. This switch is now at normal.