

APP'D.	DR.	CK.	SIZE	SHEET	TOTAL
			H-610050-B	A	1
AUTOMATIC ELECTRIC COMPANY NORTILAKE, ILL., U.S.A. O GEROA, ILL., U.S.A. O WAUKESHA, WISC., U.S.A. O					

ISSUE 1
4-5-66

1217

EXPLANATION
OF
OUTGOING TRUNK CKT. TO
CAMA OFFICE E & M SIG.
OPTIONAL ELECTRONIC
PULSE CORR. & SWITCHABLE
2DB PAD
H-610050-B

FEATURES

1. Provides for E & M signaling.
2. Provides for idle line termination.
3. Busy back via ground on lead E.
4. Forced release of calling subscriber.
5. Provides for pad control (Optional).
6. Provides for pulse correction via Electronic Pulse Corrector, H-850079 or equivalent (Optional).
7. Test Facilities.

GENERAL

This trunk circuit is arranged for E & M signaling which employs leads E and M. Trunk signals are sent via lead M and received via lead E. In the "normal" state, direct ground is connected to lead M ("NC" or "PC" wiring). In the

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"seized" state, battery is connected to lead M via lainp L ("NC" or "PC" wiring). Note that with this type of signaling ground is permanently connected to lead M via resistor R4. Lead E is grounded when the distant lead M is in the "seized" state and is open when the distant lead M is in the "normal" state.

OPERATION

1. Seizure (FIGS 1A-4A)

Resistance (#2G) battery on lead C marks this circuit idle to the preceding equipment. When seized, a loop to A is closed via leads "+" and "-" and diode CR2 or via leads "+" and "-", #1D ("PD" wiring & APP - see TABLE A) and diode CR2. Relay A operates, transfers lead M from its "normal" to its "seized" state ("NC" wiring) or grounds terminal IN ("PC" wiring - see TABLE A), removes ground from lead ATB and closes B. Relay D operates to its "X" contacts ("PD" wiring & APP). Relay B operates, closes #2D ("PD" wiring & APP), grounds lead C to mark this circuit busy to the preceding equipment and closes H ("NC" wiring) or grounds terminal GRD and closes E ("PC" wiring & APP). Relay D ("PD" wiring & APP), operates fully, short circuits its #1 winding, and inserts the 2DB pad ("PD" wiring & APP) between leads R and T and leads "-" and "+", respectively. Relay E operates and transfers lead M from its "normal" to its "seized" state ("PC" wiring & APP). When terminals IN and GRD of "PC" APP are grounded, the ELECTRONIC PULSE CORRECTOR (H-850079 OR EQUIV) connects terminal OUT 2

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FX-8500-2 (11-63)

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to terminal OUT 1 closing H ("PC" wiring & APP). Relay H operates, locks, disconnects lead C from #2G and removes the idle line termination from across leads "+" and "-"

2. Repeating Pulses (Operated: Relays A, B, H and possibly E and/or D)

Relay A follows the dial pulses and when at normal opens B, closes C and removes ground from terminal IN ("PC" wiring & APP) causing the ELECTRONIC PULSE CORRECTOR (H-850079 OR EQUIV) to disconnect terminal OUT 2 from terminal OUT 1 opening E or transfers lead M from its "seized" to its "normal" state ("NC" wiring). Relay E restores and transfers lead M from its "seized" to its "normal" state ("PC" wiring). Relay C operates, transfers lead R from lead "-" to lead "+" via resistor R2 ("NP" wiring) or via the 2DB pad and resistor R2 ("PD" wiring & APP), and connects resistor R1 across leads "+" and "-" via capacitor C1. Relays B and C remain operated during pulsing due to their slow-to-release characteristics. At the end of pulsing, the loop to A is closed via leads "+" and "-" closing #1 and #2A via diode CR2. Relay A operates, closes B, opens C, removes ground from lead "-" via diode CR1 and resistor R3, and transfers lead M from its "normal" to its "seized" state ("NC" wiring) or grounds terminal IN ("PC" wiring & APP). Ground on terminal IN and terminal GRD causes the ELECTRONIC PULSE CORRECTOR (H-850079 OR EQUIV) to connect terminal OUT 2 to terminal OUT 1 closing E. Relay E operates and transfers lead M from its "normal"

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FX-2800-A (11-50)

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to its "seized" state ("PC" wiring). After its slow-to-release interval, C restores, connects lead R to lead "-" ("NP" wiring) or connects lead R to lead "-" via "PD" wiring & APP, disconnects resistor R2 from across leads T and R and disconnects resistor R1 and capacitor C1 from across leads "+" and "-".

When the called party answers, ground returned via lead E closes #1G. After its slow-to-operate interval, G operates and closes #1F. Relay F operates and locks via #2F. Conversation may now commence.

3. Release (Operated: Relays A, B, H, G, F and possibly E and/or D)

3.1 Calling Party Disconnects First

When the calling party disconnects, the loop via leads "-" and "+" is opened, opening 81 and #2A. Relay A restores, opens B and #2F, and transfers lead M from its "seized" to its "normal" state ("NC" wiring) or removes ground from terminal IN ("PC" wiring & APP) causing the ELECTRONIC PULSE CORRECTOR (H-850079 OR EQUIV) to disconnect leads IN and GRD ("PC" wiring & APP) opening E. Relay E restores and transfers lead M from its "seized" to its "normal" state ("PC" wiring). After its slow-to-release interval, B restores, opens #1F and #2D ("PD" wiring & APP), grounds lead PC for a peg count registration, removes ground from lead C to release the preceding equipment and opens H. Relay F restores. Relay D restores, removes the short-circuit from its #1 winding ("PD" wiring) and shunts the 2DB

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FX-1800-2 (11-43)

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DATE:	CK.	A	SHEET 5 TOTAL 6
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pad between leads "-" and "+" and leads R and T, respectively, ('PD' wiring & APP). After its slow-to-release interval, H restores, grounds lead C to mark this trunk busy to preceding equipment, removes ground from lead PC and connects the idle line termination across leads "-" and "+".

When the called party disconnects, ground is removed from lead E opening #1G. Relay G restores, transfers lead C from ground to resistance (#2G) battery to mark this trunk idle to preceding equipment and grounds lead ATB. This circuit is now at normal.

3.2 Called Party Disconnects First

When the called party disconnects first, and the calling party fails to disconnect within a predetermined interval, ground is removed from lead E opening #1G. Relay G restores, removes ground from lead C to release the preceding equipment and opens #1F. When the preceding equipment releases, the loop via leads "-" and "+" is opened, opening #1 and #2A. The subsequent operation is similar to Section 3.1 except that G has already restored.

4. Testing Facilities

To measure the percent break of A on outgoing calls FROM **SELECTOR ACCESS** [(PAD) or (NO, PAD)] using a Pulse Repeating Test Set, the testman inserts an eight conductor plug into springs 1-8 of the TST JK, and operates keys

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FX-20-2 (11-5)

APPRO. 11-14-66	SIZE	E-610050-B
R. H. Rote	A	SHEET 6 TOTAL 6
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BSY KEY and OPT KEY. The operation of the BSY KEY removes ground from lead ATB and grounds lead C to mark this circuit busy to preceding equipment. The operation of the OPT KEY prevents pulses from being sent out via lead M by transferring ground from lead M to spring 6 of the TST JK ("PC" or "NC" wiring) and by removing battery from "PC" or "NC" wiring via lamp L. Pulses are introduced to A via springs 1 and 2 of the TST JK when no pad is used or via springs 7 and 8 of the TST JK ("PD" APP). Relay A follows the pulses and the repeated pulses are measured at springs 5 and 6 of the TST JK.

To mark this circuit busy to preceding equipment the testman operates the BSY KEY removing ground from lead ATB and grounding lead C or he inserts a shorting plug into springs 3 and 4 of the TST JK to ground lead C.

(2) RGS:jaw

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FX-3500-1 (11-63)