

## CIRCUIT EXPLANATION

**M**

LINE CIRCUIT FOR  
LINEFINDER UNITS  
H-85075-A

(Written specifically for circuit issue 1  
but may also apply to later issues. Refer  
to **H** print for appropriate **I** issue number.)

### GENERAL

This line circuit provides Linefinder access and has a balanced line relay for seizure of up to a 1700-ohm loop.

This line circuit has options provided that make it compatible with ground start PABX units. It provides paystation tone via lead CST used to identify this line with a Paystation. There are also message waiting options requiring Attendant control of outgoing calls, and Booster Battery Metering for pegcount. See FIG BD on sheet 3 of E-85075-A for a typical arrangement of equipment.

### FEATURES

- (a) Provides paystation tone.
- (b) May be used with PABX trunks that provide ground start.
- (c) Provides for booster battery metering.
- (d) Provides for message waiting service.

### CIRCUIT OPERATION

#### 1.00 Outgoing Call

#### 1.01 Seizure

#### 1.01.1 Loop ("A" and "B" wiring, FIG 1A & 2A)

When the calling party lifts the handset, a loop is closed across leads "-" and "+" (from line), closing #1L battery to #2L ground, respectively (see NOTE 51, H-85075-A). Relay

**E-85075-A****SHEET 1 TOTAL 5****AUTOMATIC ELECTRIC CO.**  
NORTH LAKE, ILLINOIS U.S.A.**SIZE**  
**A**4/68:jak  
Issue 1

WRITTEN BY

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APPROVED

4/23/68

ISSUE

1

DRAWING NO.

**E-85075-A**

PM 201 (12/66)

L operates, transfers lead CN from relay CO to ground identifying this line busy to the Connector Banks, grounds lead BB-CN (to Meter when required), connects lead C(F) and lead DT (FIG 4A) via lead CST (paystation tone) to relay CO (see NOTE 77, H-85075-A), and grounds lead ST.

Ground via lead ST starts Linefinder vertical stepping. When the linefinder finds the line, dial tone is returned via leads "-" and "+" (to Linefinder Banks), and ground is returned on lead C(F) closing relay CO. Relay CO operates, locks to its "X" contacts, connects lead DT (FIG 4A) via lead CST to lead C(F) if this is a paystation circuit (FIG 2A, see NOTE 52, H-85075-A), and opens #1 and #2L. Relay L restores, disconnects ground from lead ST, transfers lead CN from ground to lead C(F) grounds relay CO and lead CST (paystation tone) if this line circuit is associated with a coin-telephone. Desired number may now be dialed.

#### 1.01.2 PABX ("C" wiring, FIG 1A, 2A, or 3B)

The following operation is similar to that described in Section 1.01.1, the difference being the PABX party dials a predetermined digit to access a Trunk Circuit. The Trunk Circuit extends a ground via lead "-" (from line) closing #2 and #1L in series (see NOTE 76, H-85075-A).

When relay CO operates, lead T or LP is grounded (when used).

#### 1.01.3 Message Waiting ("B" and "D" wiring, FIG 3A)

The following operation is the same as that described in Section 1.01.1, except that #1L battery is extended through the subscriber loop and #2L to lead MW lighting a lamp at a Switchboard signaling an Attendant that a party wishes to place a call. Ground is then supplied by the Attendant via lead MW closing relay L.

When relay CO operates, lead T or LP is grounded when used.

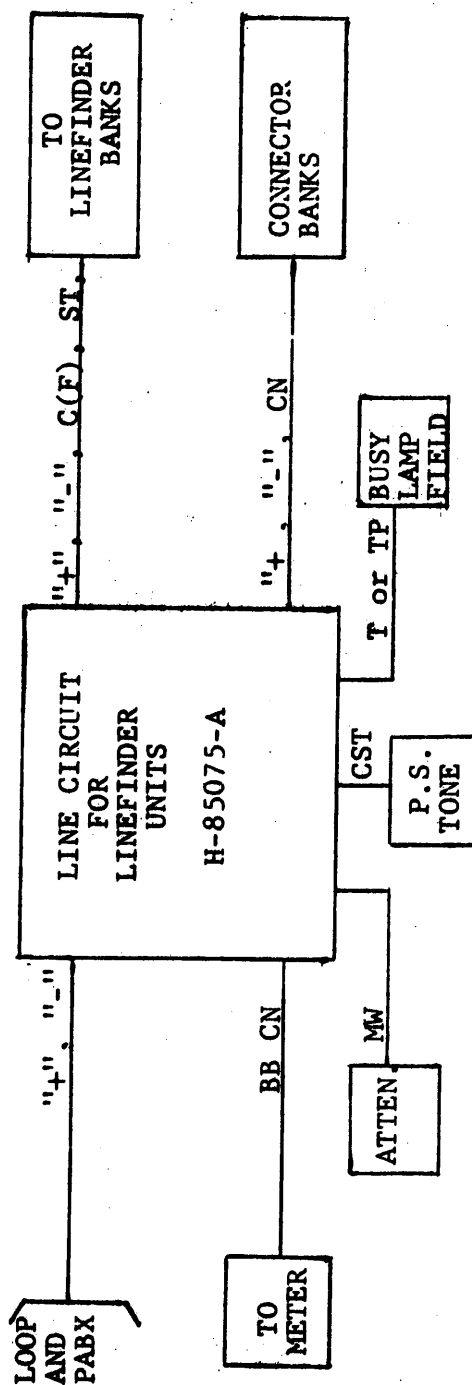
#### 1.02 Release (Operated: Relay CO)

##### 1.02.1 Calling Party Hangs Up

When the calling party disconnects first, the loop across leads "+" and "-" (from line) is opened causing ground to be removed from lead C(F) opening relay CO. Relay CO restores, connects relay L across leads "+" and "-", disconnects lead CST from lead C(F) (FIG 2A), and removes ground from lead T or TP when used (FIG 3A and 3B).

FIG BD

A TYPICAL ARRANGEMENT OF EQUIPMENT



NOTE: LETTERS AND SYMBOLS OUTSIDE OF  
BLOCKS REFER TO LEAD DESIGNATIONS

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### 1.02.2 Called Party Hangs Up

When the called party disconnects first, this circuit is not affected until the calling party disconnects.

The following operation is the same as that described in Section 1.02.1.

### 2.00 Incoming Call

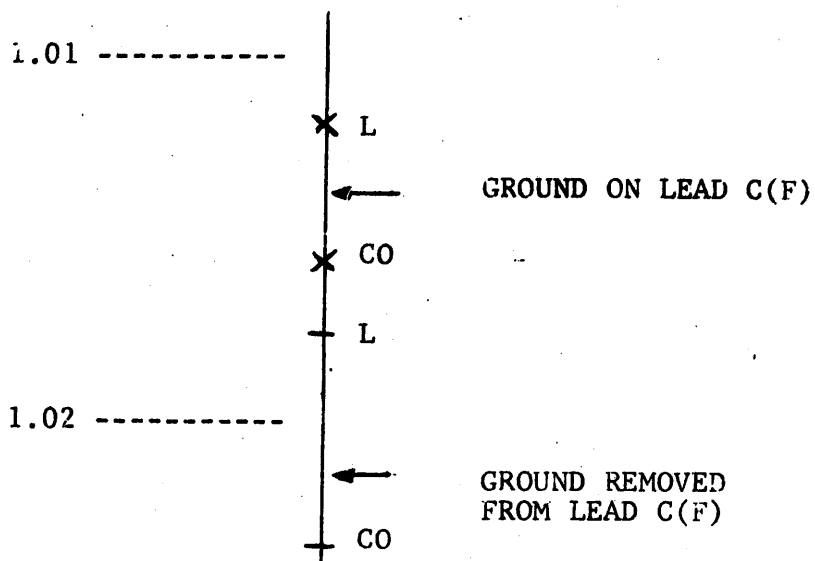
#### 2.01 Seizure

When this line is called from Connector Banks, lead CN is grounded closing relay CO. Relay CO operates, and disconnects #1L and #2L from leads "-" and "+", respectively.

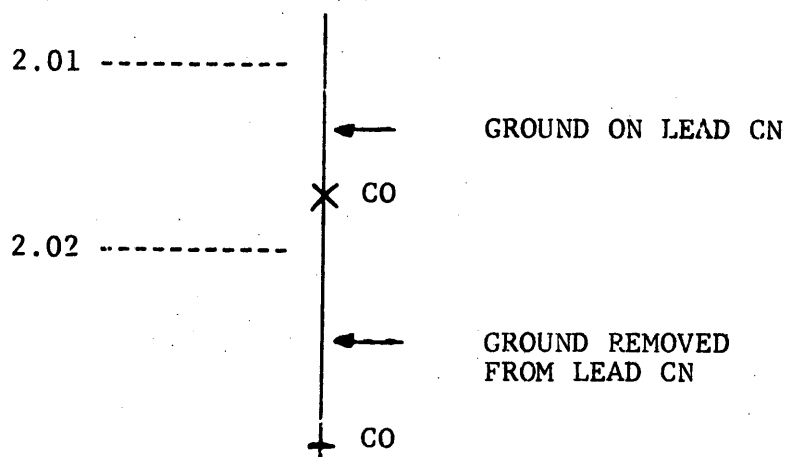
Ringling will now take place via leads "+" and "-" (from connector banks) to lead "+" and "-" (from line), respectively.

#### 2.02 Release (Operated: Relay CO)

Both parties must disconnect on an incoming call to restore this circuit. When both parties have disconnected, ground is removed from lead CN opening relay CO. Relay CO restores and connects leads "+" and "-" to relay L. This circuit is now at normal.

SEQUENCE CHARTSOUTGOING CALLSC 1

THE CIRCUIT IS NOW AT NORMAL

INCOMING CALL

THE CIRCUIT IS NOW AT NORMAL

ISSUE

1

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8-1-68

10-9-69

ISS: 2

ISS: 3

200-10-18

200-10-18

AH-85075-A

*	DESCRIPTION	MFG. ADJ.	FIELD G.S.P.	EXPLANATION OF TERMS
*	GENERAL REQUIREMENTS	100	230-005-703	- * DENOTES APPLICABLE ADJUSTMENTS.
*	SW. TEST & SH. JKS., ETC.	101	040-500-706	- #1 - INSIDE OR ARMATURE END WINDING.
*	CLASS A & Z	110	040-500-502	- #2 - OUTSIDE OR HEEL END WINDING.
*	B	300	040-500-502	- S.L.A. - SHORT LEVER ARMATURE.
*	C	301	040-500-502	S.R. - SLOW TO RELEASE. S.O. - SLOW TO OPERATE.
*	W	784	040-500-102	A.C. - ALTERNATING CURRENT.
	TYPE 10 A.C.	118	040-501-702	O - OPERATE. N.O. - NON-OPERATE. H - HOLD.
	TYPE 59 CODEL UNIT	783	040-500-501	R - RELEASE. O.C. - OPEN CIRCUIT.
	V. O. N.	120		RESID. - RESIDUAL ADJUSTMENT VALUE.
	CUP & SHAFT SPGS.	121		- TEST VALUES ARE FOR INSPECTION ONLY.
	CAM SPGS.	122		- READJ. VALUES ARE FOR ADJUSTING ONLY.
	NORMAL POST	123		- CURRENT IS SHOWN IN AMPERES.
	RLSE. SPGS.	124		- POS. - TEST WITH POSITIVE BAT. THRU RESIST. OF TEST SET.
	R. O. N.	126	230-005-703	- NEG. - TEST WITH NEGATIVE BAT. THRU RESIST. OF TEST SET.
	VERT. MECH.	130		- RELAYS ARRANGED FOR WIRE WRAP CONNECTIONS HAVE
	DOGS	131		PREFIX GR OR GT. THIS ADJUSTMENT APPLIES IN EITHER CASE.
	ROT. MECH.	132		
	RLSE. MECH.	133		- NOTES -
	SHAFTS, WIPERS, ETC.	135	230-007-708	1 - TEST WITH BOTH WINDINGS IN SERIES.
	MINOR SW.	136		2 - #1 WINDING TO OPERATE #1 SPRING ONLY.
	1K & 1.2 K LOOP	144	230-200-504	3 - SPRINGS NEED ONLY MAKE CONTACT ON OPERATE TESTS.
	TESTING SX PULSED SWS.	145		4 - BOTH TESTS MADE ON #1 WINDING.
	TIMING SWITCHES & RLYS.	146		#1 TEST IS FOR #1 SPRING ONLY.
	44 ROT. SW.	163	230-007-706	5 - CONNECT RESISTANCE ACROSS TEST JACKS 1 & 2.
	45 " "	162	230-007-705	6 - SHORT LEVER ARM. RESIDUAL MIN. .0015", MAX. .004".
	SHUNT FIELD RELAY	175	040-500-706	
	280 POLAR RLY.	201	040-401-701	
	KEYS	753	032-305-700	
	SWITCHBOARD JACKS	754	032-320-700	
				SWITCH STAND ROT. SWITCH TEST POSITION
				LINE CIRCUITS FOR LINEFINDER UNITS
	AUTOMATIC ELECTRIC COMPANY NORTHLAKE, ILLINOIS, U.S.A.	ENG.: YEAE	APP'D.: YEAE	REF. G.S.P. - 108-104-102
		CIRCUIT OR SWITCH ADJUSTMENT		CKT.: H-85075-A 2 SHEETS 1 AH-85075-A

8-1-68 10-9-69  
ISS: 3

AH-85075-A

RELAYS	SPRING GAUGING	TEST FOR:		RESIST. AT SOV.		CURRENT		TESTING INSTRUCTIONS
		NO. 1	NO. 2	READJ.	TEST	READJ.	TEST	
CO FIG. 1 D-555187-A D-284778-A #1-1200 Ω	.003D RESID.							#1 TEST IS FOR SPG. #1 ONLY. INS. SPGS. 1 & 2 OF RLY. L. POS. TO SPG. 1 OF RLY. L.
	.036	0	NO	5550	5200	.0074	.0078	
	.030	0	NO	6300	6900	.0067	.0062	
	.012	0	NO	2400	2100	.0139	.0152	
L FIGS. 1-3 D-555182-A D-284706-B #1-530 Ω #2-530 Ω	.006D RESID.							#1 TEST IS FOR SPG. #1 ONLY. INS. SPGS. 1 & 2 OF RLY. L. POS. TO SPG. 1 OF RLY. L.
	.030	0	NO	2300	2100	.0149	.0158	
	.018	0	NO	2700	3000	.0132	.0123	
	.012	0	NO					
CO FIGS. 2&3 D-555188-A D-284778-A #1-1200 Ω	.003D RESID.							#1 TEST IS FOR SPG. #1 ONLY. INS. SPGS. 1 & 2 OF RLY. L. POS. TO SPG. 1 OF RLY. L.
	.046	0	NO	4750	4300	.0084	.0091	
	.036	0	NO	5300	5950	.0077	.0070	
	.018	0	NO	1650	1400	.0175	.0192	
	.012	0	NO	2100	2400	.0152	.0139	#1 TEST IS FOR SPG. #1 ONLY. INS. SPGS. 1 & 2 OF RLY. L. POS. TO SPG. 1 OF RLY. L.
								#1 TEST IS FOR SPG. #1 ONLY. INS. SPGS. 1 & 2 OF RLY. L. POS. TO SPG. 1 OF RLY. L.
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