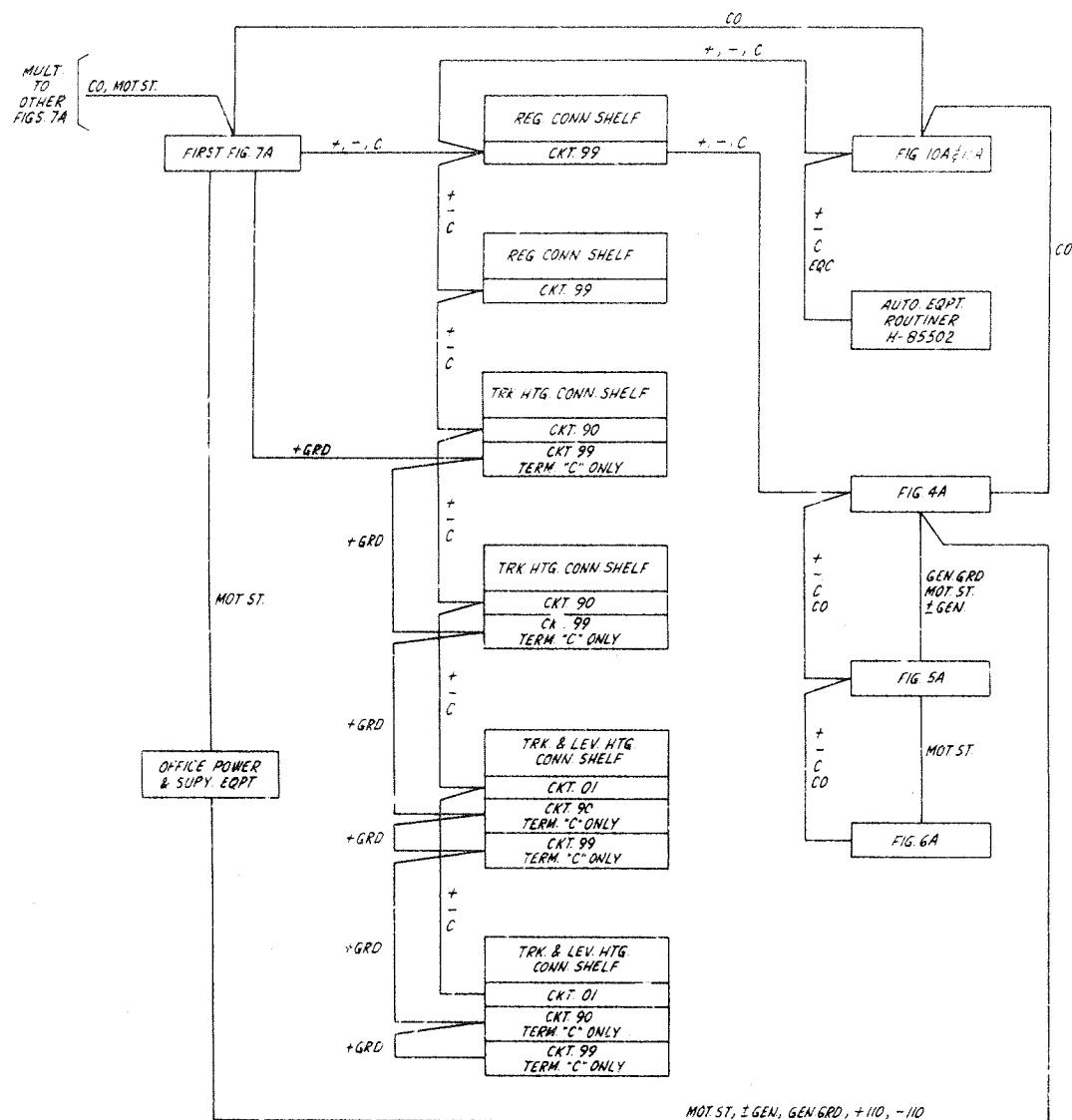


FIG. AA
TYPICAL EXCH. CONNECTIONS
(FOR REFERENCE ONLY)



ENGINEERING NOTES (CONTD.):

- 63-PRIOR TO ISSUE 6, "C" WIRING WAS PART OF CIRCUIT AND "D" WIRING (APPARATUS) WAS NOT SHOWN. BEGINNING WITH ISSUE 6, "D" WIRING & APPARATUS SUPERSEDES "C" WIRING.
- 64-PRIOR TO ISSUE 7, "F" WIRING & APPARATUS WAS NOT SHOWN AND "E" WIRING WAS PART OF THE CIRCUIT. BEGINNING WITH ISSUE 7, "F" WIRING & APPARATUS SUPERSEDES "E" WIRING. "F" IN PARENTHESES ("F") INDICATES DESIGNATION REVISION ONLY.
- 65-BEGINNING WITH ISSUE 7 AND PRIOR TO ISSUE 9, RESISTOR R19 ("F" APP) WAS 1500 OHMS. BEGINNING WITH ISSUE 9, R19 ("F" APP) IS TO BE 500 OHMS.
- 66-BEGINNING WITH ISSUE 12, FIGURES 15A, 16A & 17A WERE FIGURES A, C & D RESPECTIVELY, AS THEY ARE PROVIDED WITH THE TEST SET.
- 67-PRIOR TO ISSUE 12, FIGURE 10A HAND TEST TEL. ADAPTER CORD WAS NOT SHOWN AND IS PROVIDED WITH THE TEST SET.

FIG. 19A
ADAPTER CORDS

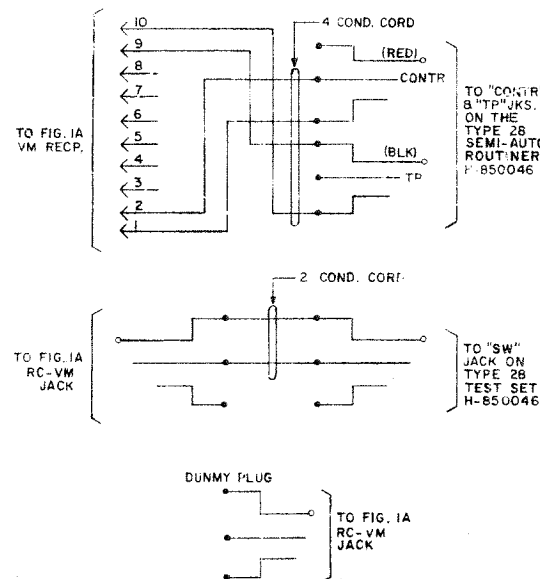


TABLE AB
TABULATED TRIP & FALSE TRIP VALUES
(FOR REFERENCE ONLY)
(NOTE 53)

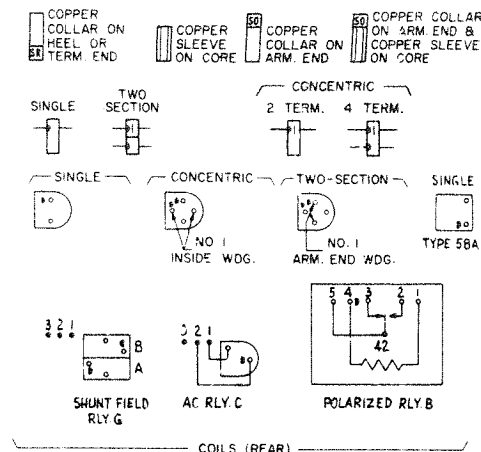
RINGING SCHEME (1200 OHM LOOP OPERATION)	TEST CONDITION	READJUST VALUE	TEST VALUE
BATTERY CONNECTED GENERATOR (TRIP BAT. 48.5-50V.)	FALSE TRIP	2100	2300
	TRIP	1800	1600
SUPERIMPOSED RINGING (TRIP BAT. 48.5-50V.)	FALSE TRIP	2000	2200
	TRIP	1800	1600
GROUND CONNECTED GENERATOR (TRIP BAT. 48.5-50V.) 25W PROTECTIVE LAMP	FALSE TRIP	2300	2500
	TRIP	1800	1600

ASSOCIATED DRAWINGS		
DRAWING NO.	ISS	DESCRIPTION
AH-85919-A	6	ADJUSTMENT
E-85919-A	3	EXPLANATION

ENGINEERING NOTES:

- 51-CALLING CORD PER FIGURE 10A IS ALWAYS SUPPLIED FOR TESTING LOCAL SWITCHES, COMBINATION CONNECTORS, AND MOST TOLL TRANSMISSION SELECTORS. WHEN TESTING TOLL FEATURES OF COMBINATION CONNECTORS, INSERT SWITCH TEST PLUG WITH TOP DOWN IN LOWER SWITCH JACKS.
- 52-ENGINEER SHALL SPECIFY CALLING CORD PER FIGURE B WHEN REQUIRED FOR TESTING INTERTOLL TRANSMISSION SELECTORS, TOLL CONNECTORS AND OTHER SWITCHES HAVING THAT TEST JACK ARRANGEMENT.
- 53-TEST SET IS NORMALLY WIRED WITH STRAPS "B" AND "S". ENGINEER TO INSTRUCT CUTTING OF STRAPS AS FOLLOWS:
A - FOR BATTERY CONNECTED GENERATOR, 1200 OHM LOOP, CUT STRAP "B".
B - FOR SUPERIMPOSED RINGING, 1200 OHM LOOP, CUT STRAP "S".
C - FOR GROUND CONNECTED GENERATOR, 1200 OHM LOOP, 25-WATT PROTECTIVE LAMP, CUT STRAPS "B" & "S".
(SEE TABLE AB FOR TABULATED TEST VALUES).
- 54-CONDUCT "FALSE TRIP" AND "ANSWER" TESTS ONLY DURING SILENT INTERVAL OF RINGING CYCLE.
- 55-THIS TEST EQUIPMENT IS DESIGNED TO APPLY PROPER MARGINAL TESTS WHEN THE CIRCUIT UNDER TEST AND THE TEST EQUIPMENT HAVE AN APPLIED VOLTAGE OF 48.5 TO 50 VOLTS. IF FOR SOME REASON THE POWER PLANT IS OPERATED AT MORE THAN 50 VOLTS, THE BATTERY VOLTAGE SHOULD BE REDUCED AND MAINTAINED WITHIN THE REQUIRED LIMITS WHILE THE TESTS ARE BEING MADE.
- 56-IN OFFICES ARRANGED FOR 1200 OHM LOOP OPERATION IT IS POSSIBLE THAT A RING-TRIP RELAY MAY BE WITHIN ITS READJUST ELECTRICAL AND MECHANICAL REQUIREMENTS AND FAIL WHEN THIS TEST CIRCUITS TRIP OR FALSE TRIP TEST IS APPLIED. IN SUCH CASES THE "READJUST" KEY ON THIS UNIT SHOULD BE OPERATED AND USED FOR READJUSTING SUCH RING-TRIP RELAYS AS DO NOT MEET THE TEST VALUES PROVIDED BY THIS CIRCUIT.
- 57-ALL CONNECTORS IN ONE OFFICE SHOULD USE THE SAME FALSE TRIP VALUE IN THE TEST SET EVEN IF THE CONNECTORS ARE DESIGNED FOR DIFFERENT RINGING SCHEMES. FOR EXAMPLE, CONNECTORS INTENDED FOR BATTERY CONNECTED GENERATOR MAY BE USED FOR SINGLE AND TWO PARTY LINES IN SUPERIMPOSED RINGING OFFICES. THE FALSE TRIP VALUE WHICH IS MOST SEVERE (THE ONE FOR SUPERIMPOSED RINGING IN THIS CASE) SHOULD BE USED IN THE TEST SET FOR TESTING (AND READJUSTING IF NECESSARY) THE RING-TRIP RELAYS OF ALL THE CONNECTORS.
- 58-WHEN TESTING SUPERIMPOSED RINGING CONNECTORS (SUCH AS H-580196 OR EQUIVALENT) WHERE A PRE-TRIP AND TRIP RELAY IS PROVIDED, CAUTION SHOULD BE EMPLOYED ON THE PART OF THE TEST SET OPERATOR. SEE E-85919-A FOR SPECIFIC TESTING INFORMATION. CONNECTORS WITH TWO TRIP RELAYS (SUCH AS H-580061 OR H-580069 AND EQUIVALENT) REQUIRE DIFFERENT PROCEDURES FOR THE VARIOUS WIRING OPTIONS. SEE E-85919-A.
- 59-WHEN THE RING-TRIP RELAY IN THE CONNECTOR OPERATES, IT CONNECTS THE BACK-BRIDGE RELAY TO THE TRIPPING RESISTANCE. WHEN THE TRIPPING RESISTANCE IS 1600 OHMS, THE BACK-BRIDGE RELAY SHOULD OPERATE IMMEDIATELY. WHEN THE TRIP RESISTANCE IS 1800 OHMS, THE BACK-BRIDGE RELAY MAY OR MAY NOT OPERATE. IF IT DOES NOT, REDUCE THE RESISTANCE TO 1600 OHMS BY RESTORING THE "READJUST" KEY. THE BACK-BRIDGE RELAY SHOULD NOW OPERATE.
- 60-WHEN USED WITH W.E. CO. PULSING TEST SET J-34717-A OR A.E. CO. TYPE 28 SEMI-AUTOMATIC ROUTINER H-850046, USE CONNECTING CORDS SPECIFIED ON CIRCUIT H-850222-A.
- 61-PRIOR TO ISSUE 3, "X" WIRING WAS PART OF CIRCUIT AND "Y" WIRING WAS NOT SHOWN. "Y" WIRING SUPERSEDES "X" WIRING ON ALL FUTURE ORDERS.
- 62-PRIOR TO ISSUE 5, "A" WIRING AND APPARATUS IN FIG 10 WAS PART OF CIRCUIT AND FIGURE 10A AND "B" WIRING AND APPARATUS WAS NOT SHOWN. WHEN CUTOFF RELAY FOR TEST LINE IS REQUIRED, FIGURE 10A "A" WIRING AND APPARATUS IS TO BE SPECIFIED. WHEN REMOTE DISCONNECT OF TEST LINE IS REQUIRED, FIGURE 10A "B" WIRING AND APPARATUS IS TO BE SPECIFIED.

SYMBOLS



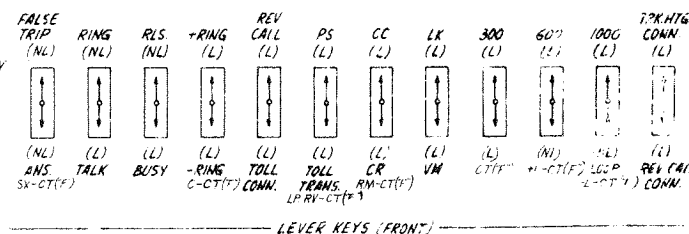
MANUFACTURING NOTES:

- CONTACTS "X" OPERATE FIRST.
- ADJUST RESIDUAL SCREW OF RELAY R-10 PROVIDE 190-220 MILLISECOND RELEASE TIME.
- L DENOTES LOCKING. NL DENOTES NO LOCKING.
- PRIOR TO ISSUE 8, RELAY CO. (FIG 10A & FIG 10A) SPRINGS 5B-6B WERE ST-ET, AND OPERATED ST-CT WERE 5B-6B.
- WITH ISSUE 13 FIGURE 7A IS RATED 1.5M AND FIGURE 19A BECOMES STANDARD.

TABLE AC

OUR FIG	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A	19A
4A																			
5A																			
6A																			
7A																			
8A																			
9A																			
10A																			
11A																			
12A																			
13A																			
14A																			
15A																			
16A																			
17A																			
18A																			
19A																			

10-3-62
M.Z.



DESIGNED AUTO. REC. 1-13-62 J.P. JALITS		DR. J.V. 9-20-62		TYPE 28A SWITCH TESTER PORTABLE ROUTINE TEST SET CKT. FOR TESTING LOCAL TOLL AND COMB. CONN. TOLL TRANS. SWS. PAY STATION REPEATERS REV. CALL SWS.	
APPROVED M.L. DONALDSON 9-26-62		INDEX 48 10-8-62		H-85919-A	
SCALE: DO NOT SCALE OFF THIS DRAWING FOR DIMENSIONS NOT SHOWN		DATE: 9-20-62		SHEET 1 OF 3	
AUTOMATIC ELECTRIC COMPANY MORTHLAKE, ILL., U.S.A.					

