

CIRCUIT NOTES:

DESIG.	AMP.	POTENTIAL FUSED	ONE PER
1	1/2	48 V. TALK.	CIRCUIT
2	1/2	CONT. RING.	10 CKTS.
3	1/2	SUP + AUD	10 FIGS. E
4	1/2	SUP + AUD	10 FIGS. E

* NOT REQUIRED IN 356A OFFICE

FEATURE OR OPTION	PROVIDE
GROUNDING LINES	X, FIG. A
METALLIC LINES	BRIDGED RING. FIG. A DIVIDED RING. FIG. B
COMB. GROUNDING & METALLIC LINES	SEE WORKING LIMITS
METALLIC SECTION ADJACENT TO OFFICE	Y, FIG. A
NO. 5 CROSSBAR	Z, FIG. B

103. FOR GROUNDING LINE SERVICE, GROUND "T" LINE AT POLE BOX EXCEPT WHEN "W" OPTION IS USED.

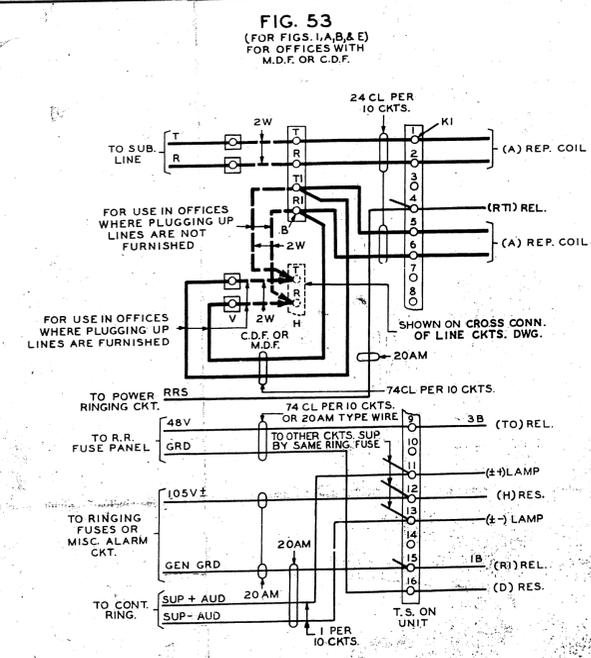
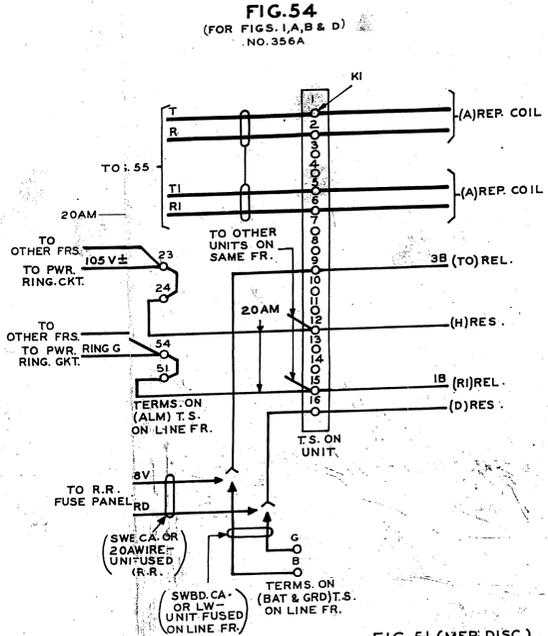
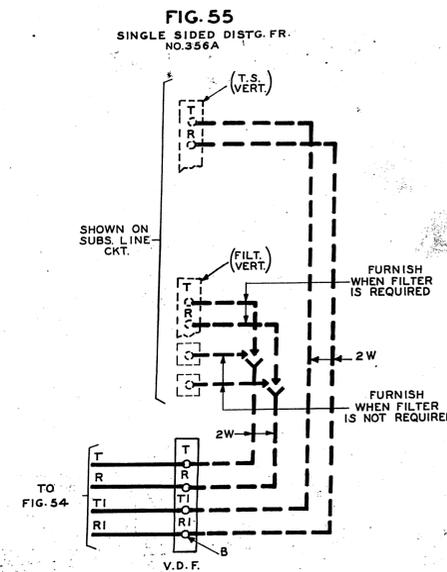
104. PROVIDE REPEATING COILS IN ACCORDANCE WITH THE FOLLOWING TABLE

LINE IMPEDANCE AT 1000 CYCLES	APP. CODE	IMP. RATIO	WDG. RES.	TERMINAL CONNECTIONS
ALL	U	94T	1.5 TO 1	14" 6.3" 2 1 6 5 4 3 8 7 2 1 6 5
IMPEDANCE	T	94T	1.5 TO 1	14" 6.3" 4 3 8 7 2 1 6 5

* FOR IMPEDANCE DATA, SEE MASTER KEY SHEET

105. RECORD OF FIGURES, WIRING, AND APPARATUS CHANGES

CHANGED ON ISS.	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN.	SEE NOTE	USE IN CIRCUIT
3-D	T, U, OR V	V	104	T, U, V
3-D	W	NONE	102	W
3-D	FIG. CORD	FIG. C		C
3-D	S	NONE		S
5-D	Q OR R	R	Q	R
7-D	FIG. E	FIG. A OR B	102	A, B, E
9-D		"NONE"	108	K
10-B				
11-D	M OR J	J	M	J
12-D	N OR P	P	N	P
15D	RELAYS		J20	J25



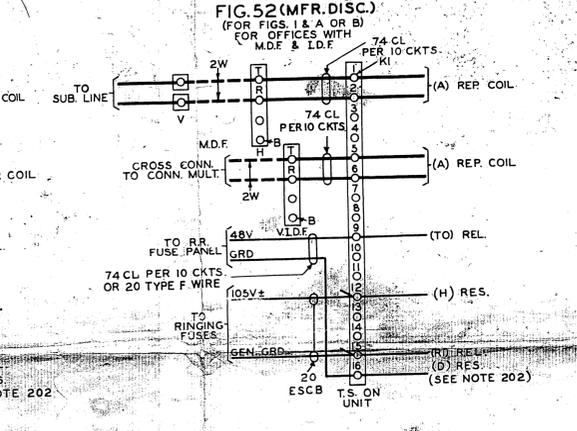
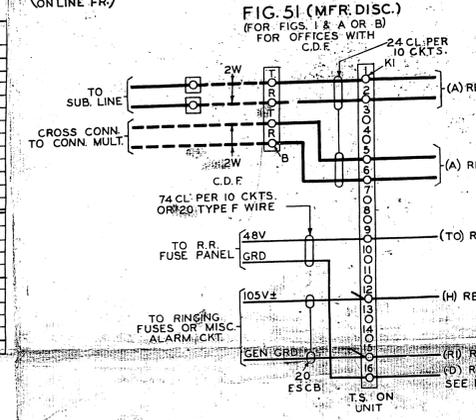
TRANSMISSION TEST REQUIREMENTS (1000 CYCLE LOSS BETWEEN 600" LINES)

REP. COIL	OPTIONS	LOSS
94N	X, Y, OR Z	1.1
94T	X, Y, OR Z	1.3

ALLOWABLE INDIVIDUAL APPARATUS LOSSES

APPARATUS	DESIG.	CODE	MAX. LOSS	MIN. LOSS	REMARKS
CONDENSER	A	4M.F.	20.9	17.3	
CONDENSER	B	2M.F.	14.5	11.5	
REP. COIL	A	94N	0.8		
REP. COIL	A	94T	1.1		
RET. COIL	A	85G	0.5		

* INDICATES APPARATUS FOR WHICH IND. LOSSES ARE NOT REQUIRED.



WORKING LIMITS:

WITH FIG. D OR FIG. C WITH "S" OPTION	WIRING	GROUND RETURN LINES		METALLIC LINE	
		W	X	AC-DC RINGING SHORT LOOPS	LONG LOOPS
	MAX. EXT. CKT. LOOP	1500"	1500"	1500"	1400"
	MIN. INS. RESISTANCE	3000"	3500"	2700"	2700"
	MAX. EARTH POTENTIAL	± 6 V.	± 16 V.	± 6 V.	± 16 V.

EQUIPMENT NOTES:

201. MOUNT 239 TYPE RELAY (A) OF FIG. 1 ON 3" CENTERS VERTICALLY AND HORIZONTALLY WITH RESPECT TO ALL APPARATUS EXCEPT THAT NO RESTRICTIONS ARE REQUIRED WHEN MOUNTING THIS RELAY ADJACENT TO B, C, OTHER 231 OR 239 TYPE RELAYS, 54 TYPE RET. COILS, CONDENSERS, AND OTHER NON-INDUCTIVE APPARATUS.

202. PRIOR TO ISSUE 3-D, THE GRD. LEAD ON TERMINAL 16 WAS SHOWN TO (T) RELAY.

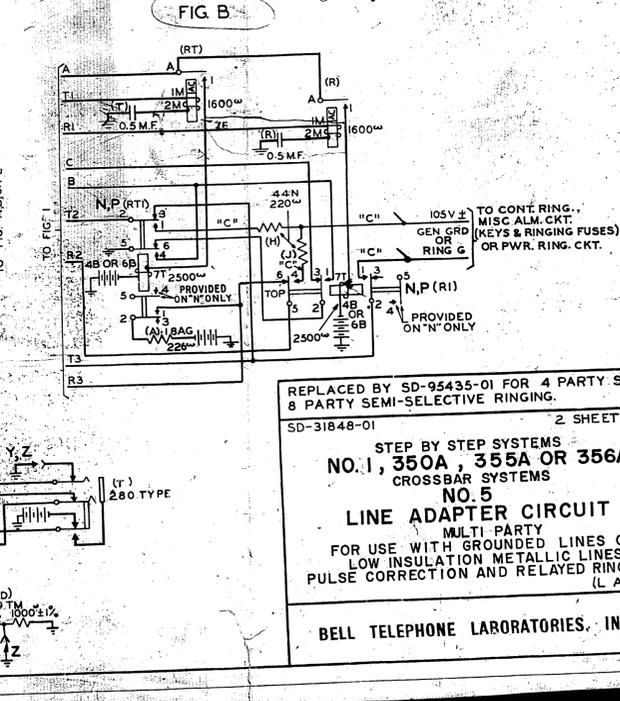
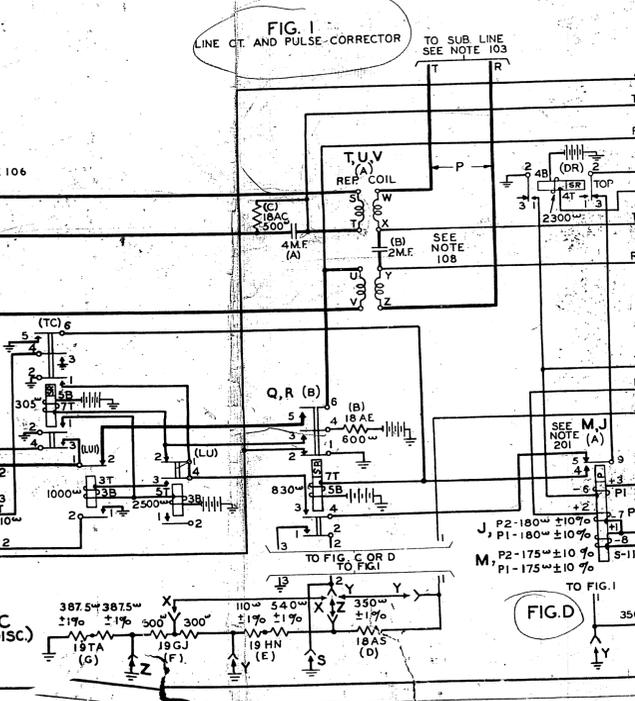
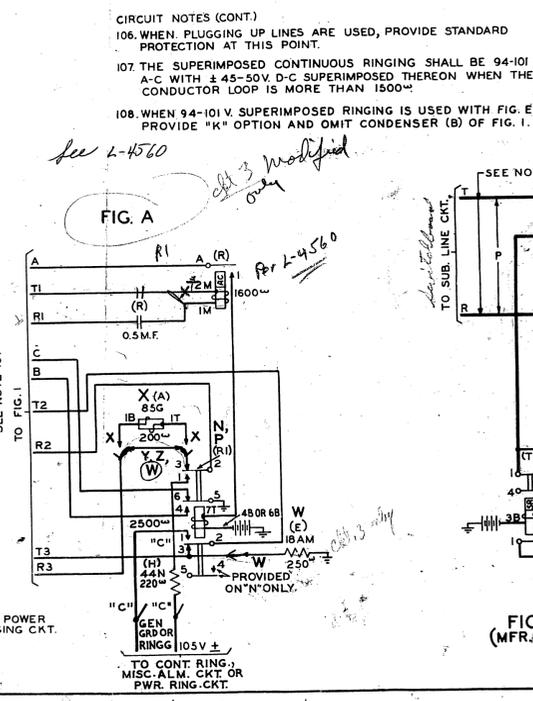
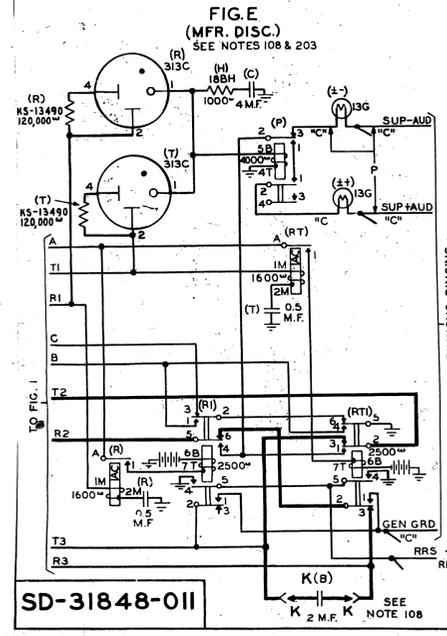
203. MOUNT VACUUM TUBES IN 33-27-A PER K5-7741 VACUUM TUBE SOCKETS.

CIRCUIT NOTES (CONT.)

106. WHEN PLUGGING UP LINES ARE USED, PROVIDE STANDARD PROTECTION AT THIS POINT.

107. THE SUPERIMPOSED CONTINUOUS RINGING SHALL BE 94-101 V A-C WITH ± 45-50V D-C SUPERIMPOSED THEREON WHEN THE CONDUCTOR LOOP IS MORE THAN 1500".

108. WHEN 94-101 V. SUPERIMPOSED RINGING IS USED WITH FIG. E, PROVIDE "K" OPTION AND OMIT CONDENSER (B) OF FIG. 1.



REPLACED BY SD-95435-01 FOR 4 PARTY SELECTIVE AND 8 PARTY SEMI-SELECTIVE RINGING.

SD-31848-01 2 SHEETS

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A OR 356A
CROSSBAR SYSTEMS
NO. 5
LINE ADAPTER CIRCUIT
FOR USE WITH MULTI PARTY
LOW INSULATION RINGING LINES
PULSE CORRECTION AND RELAYED RINGING (L ADPT)

BELL TELEPHONE LABORATORIES, INC.

SD-31848-011

ISS.	ISS.	ISS.	ISS.	ISS.	ISS.
1	2-A	2-A	3-D	3-A	3-A
4-D	4-D	5-D	5-D	6-D	3-D
7-D	4-D	8-D	4-D	9-D	4-D
10-B	4-D	10-B	4-D	10-B	4-D

ISS.	ISS.	ISS.	ISS.	ISS.	ISS.
11-D	4-D	12-D	4-D	13-D	4-D
14-B	4-D	15-D	4-D	16-D	4-D
17-D	4-D	18-D	4-D	19-D	4-D
20-D	4-D	21-D	4-D	22-D	4-D

ISS.	ISS.	ISS.	ISS.	ISS.	ISS.
23-D	4-D	24-D	4-D	25-D	4-D
26-D	4-D	27-D	4-D	28-D	4-D
29-D	4-D	30-D	4-D	31-D	4-D
32-D	4-D	33-D	4-D	34-D	4-D

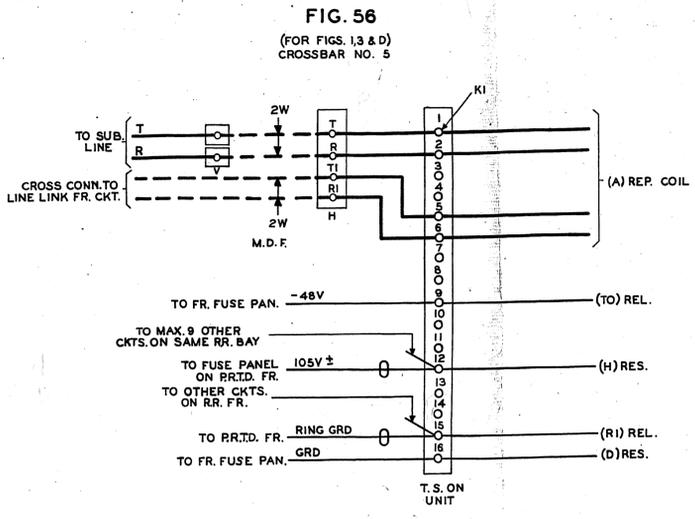
ED-31054-01
ED-31848-01
EQUIPMENT INFO

AT&T CO. STANDARD

PRINTED IN U.S.A.

SD-31848-01 3 PAGES										CIRCUIT REQUIREMENTS										DWG. ISS.
LINE ADAPTER CKT. (L ADPT)																				
APPARATUS			MECH. REQ.			CIRCUIT PREPARATION				TEST SET			DIRECT CURRENT FLOW REQ.				REMARKS			
DESIG.	CODE	FEATURE OR OPTION	CT. FIG.	RATING	BSP FIG.	CONT. PRESS.	ARM. TRVL.	BLOCK OR INSULATE	TEST CLIP DATA	TEST SET PREP.	SEE TEST NOTE NO.	TEST WDG.	TEST FOR	AFTER SOAK	TEST	READ.				
									CONN. BAT.	CONN. GRD.	NO.	NO.	MA	MA	MA					
RELAYS A	239GN OR 260R	J	I	M.D.	A				(T)JK-S	(T)JK-T	B/G	1	P1/P2	0	-20	1	0.5			
									(T)JK-S	(T)JK-T	B/G	1	P1/P2	NO	-20	O.C.	0.3			
									(T)JK-R	(T)JK-S	B/G		S	0		2				
									(T)JK-S	(T)JK-T	B/G	1	P1/P2	0	-26	1.3	0.6			
									(T)JK-S	(T)JK-T	B/G	1	P1/P2	NO	-26	O.C.	0.4			
								(T)JK-R	(T)JK-S	B/G		S	0							USE WITH FIG. A & "W" OPTION
B	Y96	R	I	M.D.	120/190	SPL	SPL	(TC)NO												ARM. TRAVEL 23
								3T(DR)	T(B)	GRD	2/3	0	FS	19	18					
									T(B)	GRD	3	H	FS	2.5	2.3					
									T(B)	GRD	3	R	FS	1	1.3					
B	Y259	Q	I		200/190	SPL	SPL	(TC)NO												ARM. TRAVEL 23
								3T(DR)	T(B)	GRD	2/3	0	FS	20.5	19.5					
									T(B)	GRD	3	H	FS	2.7	2.5					
									T(B)	GRD	3	R	FS	1.2	1.5					
DR	Y166		I		175/175	H	47		T(DR)	GRD	3	0	FS	11.5	10.9					
									T(DR)	GRD	3	H	FS	1.4	1.3					
									T(DR)	GRD	3	R	FS	0.5	0.6					
LU	U6079		I		110/101	H	35	IT(LU)	T(LU)	GRD		0		7.1	6.8					
								IT(LU)	T(LU)	GRD		NO		5.8	6.1					
LUI	U6085		I		144/101	H	35	(LU)0	T(LUI)	GRD	3	0		9.6	9.1					
								(LU)0	T(LUI)	GRD	3	R		1.2	1.3					

TEST NOTES:
 1. WHEN FIG. A IS USED, INSULATE 3T & 3B(RI) AND CONNECT 3T & 3B TOGETHER. WHEN FIG. B IS USED, INSULATE 6T(RI) AND 3T(RT) AND CONNECT 6T(RI) AND 3T(RT) TOGETHER.
 2. CONTACT PRESSURE, IT-2T, MIN. 10 GRAMS READ, 8 GRAMS TEST. FRONT CONTACT MAKE GAUGE INSERTED BETWEEN ARMATURE & CORE READ, 6-TEST, 4 MIN. STUD GAP, SPRING IT, PERCEPTIBLE ONLY (OMIT GAUGE).
 3. ADJACENT RELAYS SHALL NOT BE ENERGIZED. SEE BSP.



SD-31848-01 (3 PAGES) PAGE 2										CIRCUIT REQUIREMENTS										DWG. ISS.
LINE ADAPTER CKT. (L ADPT)																				
APPARATUS			MECH. REQ.			CIRCUIT PREPARATION				TEST SET			DIRECT CURRENT FLOW REQ.				REMARKS			
DESIG.	CODE	FEATURE OR OPTION	CT. FIG.	RATING	BSP FIG.	CONT. PRESS.	ARM. TRVL.	BLOCK OR INSULATE	TEST CLIP DATA	TEST SET PREP.	SEE TEST NOTE NO.	TEST WDG.	TEST FOR	AFTER SOAK	TEST	READ.				
									CONN. BAT.	CONN. GRD.	NO.	NO.	MA	MA	MA					
P	U908		E		132/111	H	47		B(H)	BAT		0			6.1	5.8				
R	J25		A						3 REP COIL	6T(B)	AC	1	0		AC	AC				
	J20								1M(R)	2M(R)	B/G	2	NO		3.8	4.1				
R	J25		B						6T(B)		AC	1	0		AC	AC				
	J20								1M(R)	2M(R)	B/G	2	NO		3.8	4.1				
R	J25		E						6T(B)		AC	1/3	0		AC	AC				
	J20								1M(R)	2M(R)	B/G	2	NO		3.8	4.1				
RI	U371	P	A	M.D.	121/132	H	50		T(RI)	GRD		0		11.9	11.3					
RI	U108	N	A		121/108	H	50		T(RI)	GRD		0		10.1	9.6					
RI	U371	P	B	M.D.	121/132	H	50		T(RI)	GRD		0		11.9	11.3					
RI	U108	N	B		121/108	H	50		T(RI)	GRD		0		10.8	9.6					
RI	U108		E		121/108	H	50		T(RI)	GRD		0		10.1	9.6					
RT	J25		B						1M(RT)		AC	1	0		AC	AC				
	J20								1M(RT)	2M(RT)	B/G	2	NO		3.8	4.1				
RT	J25		E						1M(RT)		AC	1/4	0		AC	AC				
	J20								1M(RT)	2M(RT)	B/G	2	NO		3.8	4.1				
RTI	U371	P	B	M.D.	121/132	H	50		T(RTI)	GRD		0		11.9	11.3					
RTI	U108	N	B		121/108	H	50		T(RTI)	GRD		0		10.8	9.6					
RTI	U108		E		121/108	H	50		T(RTI)	GRD		0		10.1	9.6					

TEST NOTES:
 1. TEST AND READJUST THE (R) AND (RT) RELAYS SEPARATELY FOR OPERATION ON 90-150V. 1020-1380 R.F.M. RING SUPPLY BY BLOCKING OPERATED RELAY (CO) IN THE SUBSCRIBER LINE CKT. AND CONNECTING RING CURRENT THRU A NO. 13C OR EQUIVALENT RES. LAMP AND 1000Ω. NON-INDUCTIVE RES. TO THE POINT INDICATED IN THE "CONN. BAT." COLUMN WITH THE NON-INDUCTIVE RES. SHORT CIRCUITED, THE RELAY SHOULD ALSO OPERATE WITHOUT APPRECIABLE CHATTER.
 2. BLOCK (CO) RELAY OF ASSOCIATED SUBSCRIBER LINE CKT. OPERATED.
 3. REMOVE TUBE (R) FROM SOCKET.
 4. REMOVE TUBE (T) FROM SOCKET.

SD-31848-01 (3 PAGES) PAGE 3										CIRCUIT REQUIREMENTS										DWG. ISS.
LINE ADAPTER CKT. (L ADPT)																				
APPARATUS			MECH. REQ.			CIRCUIT PREPARATION				TEST SET			DIRECT CURRENT FLOW REQ.				REMARKS			
DESIG.	CODE	FEATURE OR OPTION	CT. FIG.	RATING	BSP FIG.	CONT. PRESS.	ARM. TRVL.	BLOCK OR INSULATE	TEST CLIP DATA	TEST SET PREP.	SEE TEST NOTE NO.	TEST WDG.	TEST FOR	AFTER SOAK	TEST	READ.				
									CONN. BAT.	CONN. GRD.	NO.	NO.	MA	MA	MA					
TC	U920		I		123/111	H	SPL		T(TC)	GRD	1,2	0	FS	33	32		ARM. TRAVEL MIN. 26 MAX. 29			
									T(TC)	GRD	1,2	H	FS	23	22.5					
									T(TC)	GRD	1,2	R	FS	16	16.5					
TO	U919		I		191/144	H	SPL		T(TO)	GRD	1	0		59	56		ARM. TRAVEL MIN. 32 MAX. 35			
									T(TO)	GRD	1	NO		37	36					
									T(TO)	GRD	1	H		33.5	32.5					
									T(TO)	GRD	1	R		19.5	20					

TEST NOTES:
 1. ADJACENT RELAYS SHALL NOT BE ENERGIZED. SEE BSP.
 2. PRIOR TO ISSUE 16D, SOAK WAS NOT SPECIFIED.

NO. 1,350A, 355A OR 356A
 NO. 5
 LINE ADAPTER CIRCUIT

2 SHEETS, SHEET 2
 SD-31848-012
 R

BELL TELEPHONE LABORATORIES, INC.

SIO-8481E-02

DWG. ISS.
 11-D
 12-D
 13-D
 14 B
 15 D
 16 D