

ISSUE NO.

SUPPORTING INFORMATION

SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

DWG ISSUE	CD ISSUE	DATE ISSUED	DESIGNER	APPROV
1	1	10-29-64	RDL LL	JER RHW POB
2A	2A	7-13-65	RUG LDM	JER RHW QES
3A	2A APP 1A	1-26-66	SUM GB	JER RHW POB
4A	2A APP 2A	1-26-66	SUM GB	JER RHW POB
5B	2A APP 3B	1-26-66	SUM GB	JER RHW POB
6A	3A	6-13-66	SFL LL	JER RHW POB
7A	3A APP 1A	6-13-66	SFL LL	JER RHW POB
8B	4B	8-14-67	GA LL	JER RHW POB
9A	4B APP 1A	8-14-67	GA LL	JER RHW POB
10B	4B APP 2B	8-24-69	DC GRT	JER RHW POB
110	4B APP 3D	6-16-71	ROZ PJS	KRF LGB EWS
120	5D	2-19-73	ROZ WAG	KRF LGB EWS
13B	5D APP 1B	9-28-73	RMN ECM	KRF LGB EWS
140	5D APP 2D	6-27-75	PJS HEH	KRF LGB EWS
15AR	6AR	8-20-76	SAK EWS	KRF LGB EWS

NOTICE-NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.

ISSUE
15AR

SD-99308-01

IN99

COMMON SYSTEMS

AT&T
STANDARD

FAR END TEST TRUNK
OR LINE CIRCUIT

FOR REMOTE TESTING
FROM LOCAL TEST DESK

(TST TRK OR L)

SD-99308-01-A1
17 SHEETS

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

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APPARATUS INDEX

DESIG	LOCATION		
	FS	APP FIG.	EQPT
RELAYS			
ANS	1E6	1	
CH	1H1	1	
DT	1H2	1	
NC	1G6	1	
NCI	1G2	1	
RD	2D6	1	
RST	1E6	1	
RSTI	1D4	1	
RTR	1C2	1	
RTT	1B2	1	
SD	1B4	1	
TM1	1H6	1	
TR1	4B7	1	
TR2	4B7	1	

CAPACITORS			
C1	1D2, 1F1	1	
C2	1D3, 1E3	1	
C3	1G5	1	
C4	1G5	1	
C5	1G5	1	
C6	1G5	1	
C7	1G3	1	
C8	1H5	1	
C9	1E2, 1F2	1	
C10	1D1, 1E1	1	

CIRCUIT PACK			
DDT	1H2	1	
OTO	1A6	1	
TMR	1H5	1	

CONNECTORS			
J1	2B1, 2B5	1	
J2	2G0	1	

DIAL			
DIAL	2A3	1	

DESIG	LOCATION		
	FS	APP FIG.	EQPT
LAMP			
RT	1B0	1	CA1

RESISTORS			
R1	1B0	1	
R2	1D0	1	
R3	1H4	1	
R4	1B2	1	
R5	1H7	1	
R6	1H3	1	
RT	1B0	1	CA1

TRANSFORMER			
TRNSF	2F1	1	

TUBE, ELECTRON			
RTR	1C2	1	
RTT	1A1	1	

UNIT, POWER			
AC	2B1	1	

LEAD INDEX

DESIG	LOCATION	
	FS	CAO
CONNECTOR MULTIPLE (SXS)		
R	1A0	2B1
S	1A0	2B1
T	1A0	2B1

FINAL SELECTOR CKT (GCO PANEL)		
R	1A0	2B1
S	1A0	2B1
T	1A0	2B1

FINAL SELECTOR CKT (GCO PANEL)		
R	1A0	2B1
S	1A0	2B1
T	1A0	2B1

REMOTE TESTING CKT FAR-END		
ANS	1F7	1B0
DIS	1D7	1B0
E OR E(N)	1E7	1B0
NC	1G7	1B0
ON	1F7	1B0
ONI	1H7	1B0
R OR RI	1G7	1B0
RS	1E7	1B0
T OR TI	1G7	1B0

INTERRUPTER CKT (CSBR1.5 & PANEL)		
LBT	1F0	1D0
ST	1F0	1D0
BT3	1F0	1D0

LINE, LINE LINK, AND MARKER CONN. CONT CKT (CSBR5)		
R	1A0	2B0
T	1B0	2B0

LINE SWITCHING CKT (NO. 1 ESS)		
R	1A0	2A1
T	1A0	2A1

LINE AND/OR TRUNK SWITCHING CKT (NO. 2 ESS)		
R	1A0	2A1
T	1A0	2A1

RINGING AND TONE CIRCUIT (NO. 2 ESS)		
R(BT 60)	1E0	1F0
T(BT 60)	1E0	1F0

DESIG	LOCATION	
	FS	CAO
SUBSCRIBER LINE (CSBR1, 5, PANEL SXS)		
R	1G0	2B1
T	1G0	2B1

SUBSCRIBER LINE, LINE LINK AND CONTROLLER CKT (CSBR1)		
R	1A0	2B1
T	1A0	2B1

TEST TRUNK FOR INCOMING REMOTE TESTING		
A	1A2	1C0
B	1A2	1C0
C	1A3	1C0
RSI	1D7	1C0

TONE DISTRIBUTING CKT (NO. 1 ESS)		
R(LT60)	1E0	1F0
T(LT60)	1E0	1F0

TONE SUPPLY CKT (SXS)		
LT1-60 IPM-BT	1E0	1E0
LT4-60 IPM-BR4	1E0	1E0
LT5-60 IPM-BR2	1E0	1E0
BT2-60 IPM	1E0	1E0

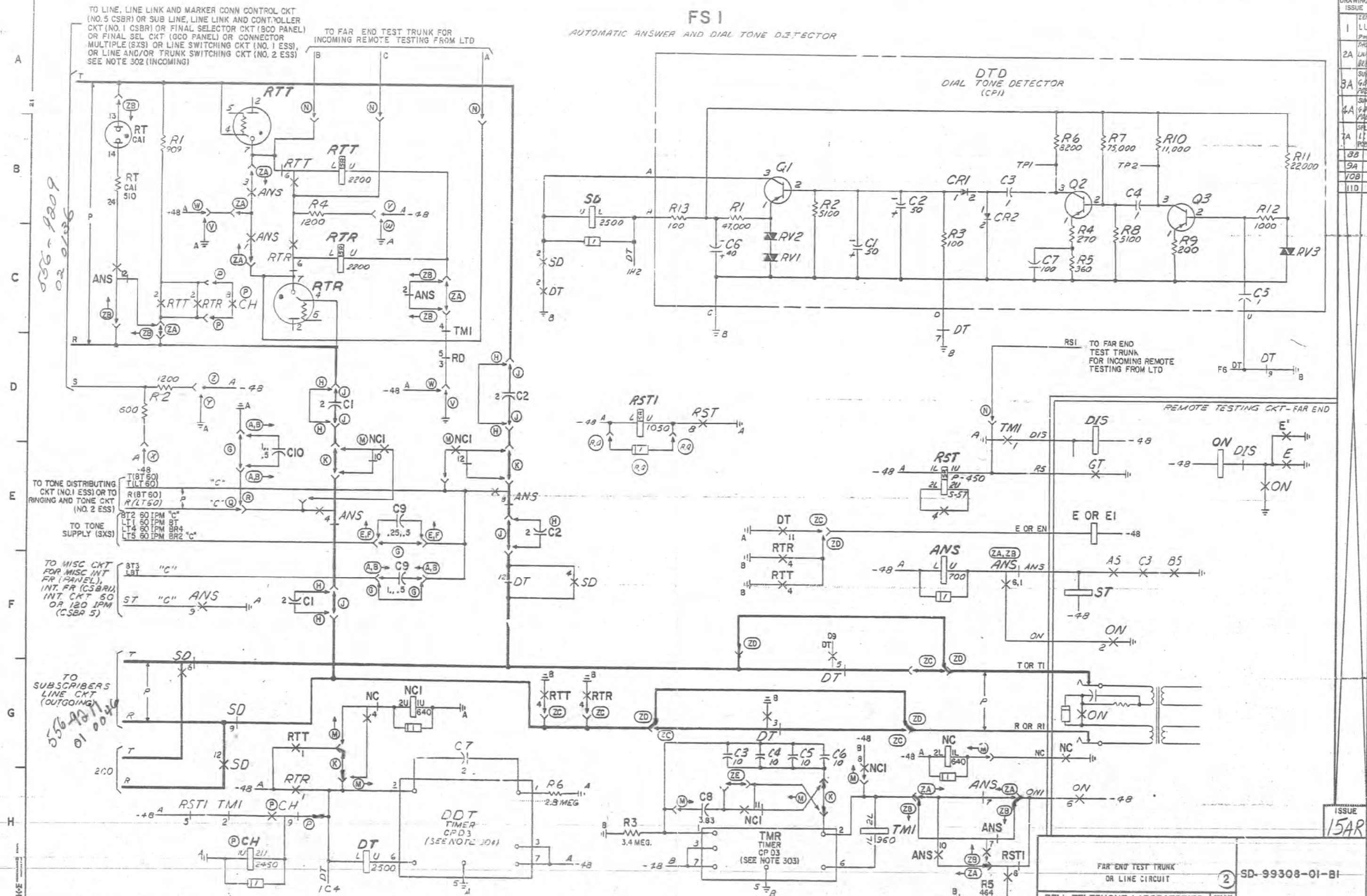
OPTION INDEX

APP OR WIR	LOC
Z	1D1
Y	1D1
X	1E0
W	1D3, 1B2, 1B1
V	1D3, 1B2, 1B1
T	APP FIG. 1, 2F1
S	APP FIG. 1, 2F1
R	1D4, 1E1
Q	1D4, 1E1
P	APP FIG. 1, 1C1, 1H2
N	1A2, 1A3, 1D7
M	APP FIG. 1, 1G7
K	1E2, 1E3, 1G2, 1H6
J	APP FIG. 1, 1E3, 1F2
H	APP FIG. 1
G	1E1, 1E2, 1F2
F	APP FIG. 1, 1E2
E	APP FIG. 1, 1E2
B	APP FIG. 1, 1D1, 1E1, 1F2
A	APP FIG. 1, 1D1, 1E1, 1F2
ZA	APP FIG. 1, 1C0, 1C3
ZB	APP FIG. 1
ZC	APP FIG. 1, 1E5, 1F5, 1G3, 1G4, 1G6
ZD	APP FIG. 1, 1E6, 1F5, 1F6, 1G4, 1G6
ZE	1H5

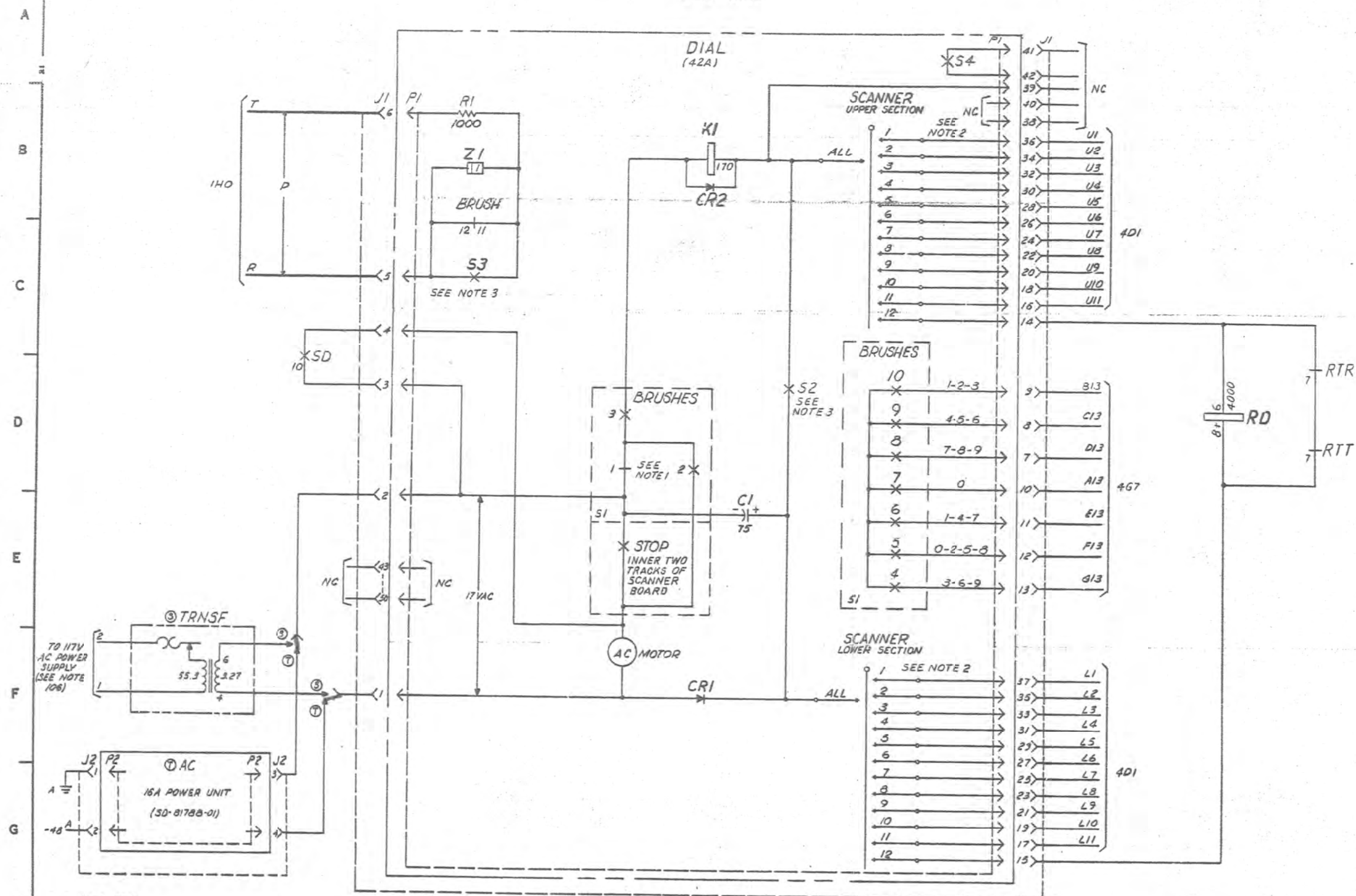
DRAWING
ISSUE

1
2A
3A
4A
5B
7A
8A
10B
11D

ISSUE
15AR



FS 2 42A DIAL



SHEET NOTES:

- BRUSH 1 MAKES CONTINUOUS CONTACT WITH PRINTED CIRCUIT PATH; THIS CONTACT NEVER BREAKS.
- IN THE HOME POSITION, CONTACT 1 OF THE SCANNER UPPER AND LOWER SECTIONS ARE NORMALLY CLOSED.
- CONTACTS 52 AND 53 ARE CLOSED UNDER CONTROL OF RELAY K1.

SD-99308-01-B2

FAR END TEST TRUNK
OR LINE CIRCUIT

2

SD-99308-01-B2

BELL TELEPHONE LABORATORIES

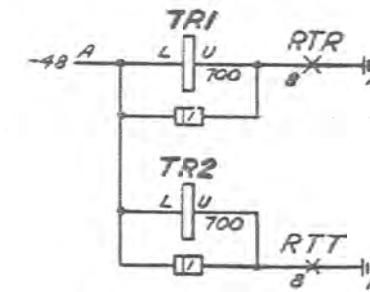
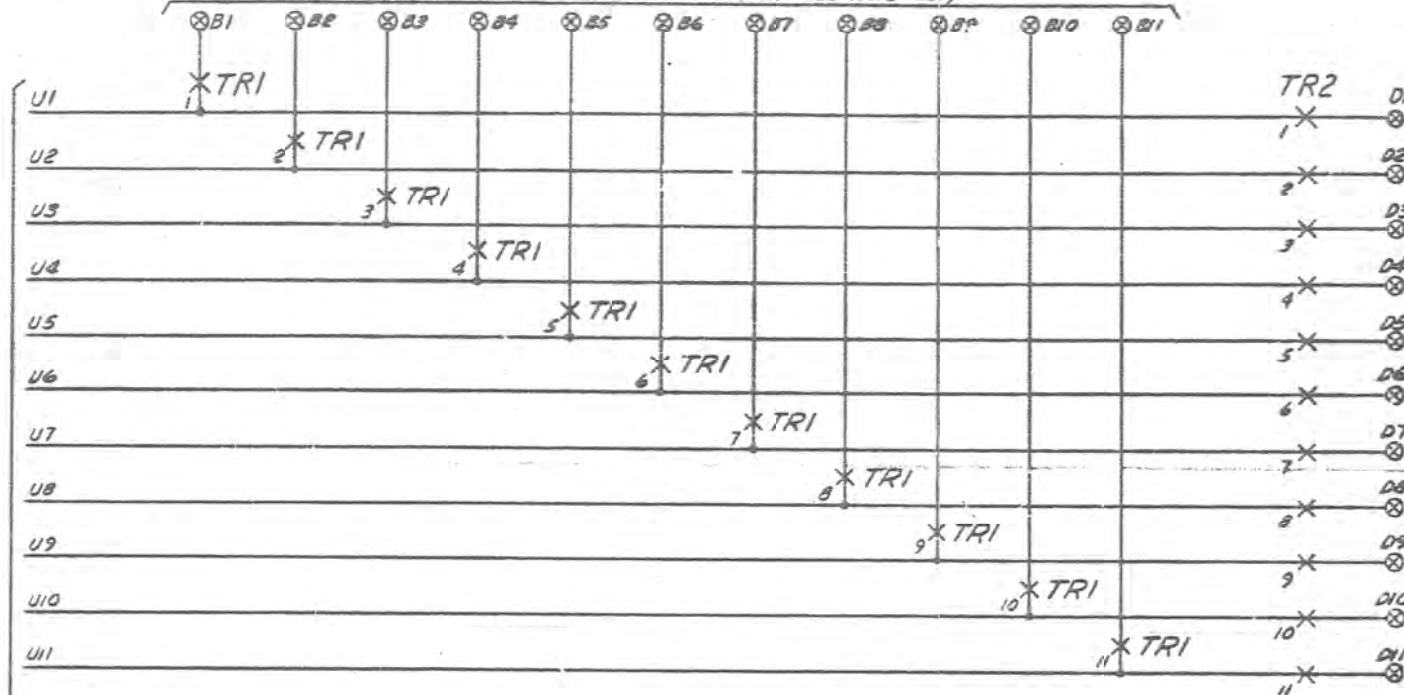
8

H

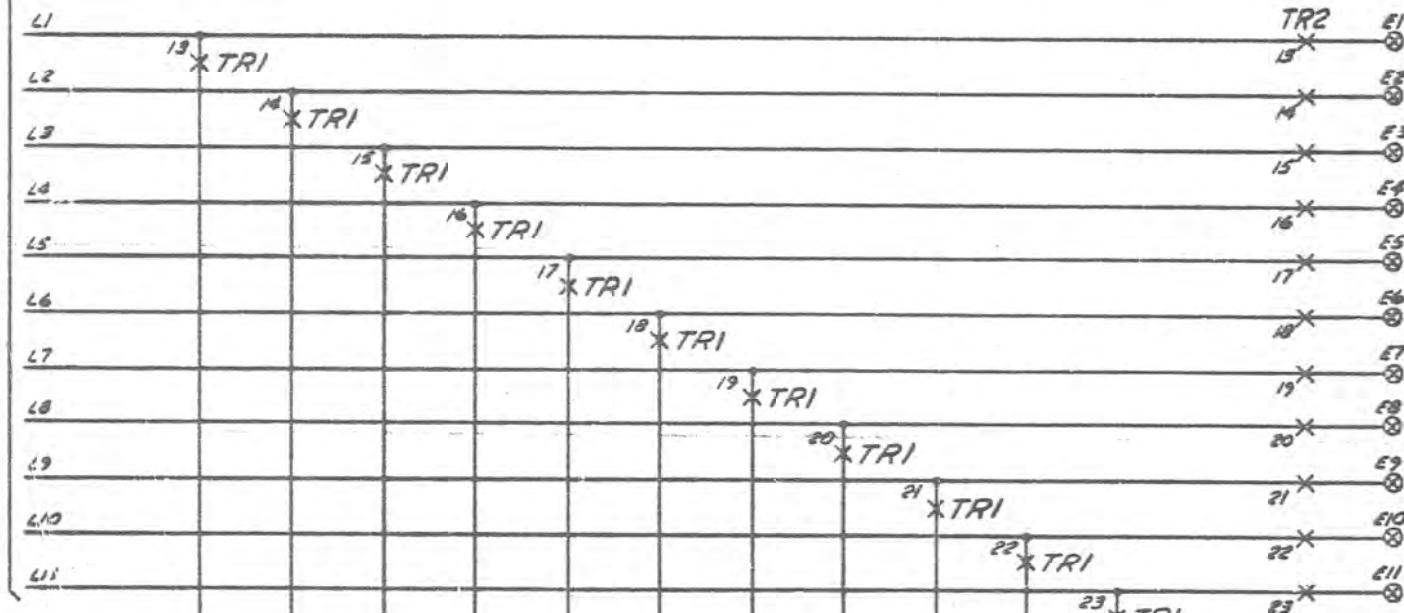
DRAWING	ISSUE
1	LL
2A	LL
5B	LL
6A	LL
7A	LL
8B	LL

FS 3 DIALING TRANSFER AND TELEPHONE NUMBER CROSSCONNECT

CROSS CONNECTIONS FOR 1ST TELEPHONE NUMBER (SEE NOTE 401)



CROSS CONNECTIONS FOR
2ND TELEPHONE NUMBER
(SEE NOTE 401)



B13	B13
C13	C13
D13	D13
A13	A13
E13	E13
F13	F13
G13	G13

CROSS CONNECTIONS FOR
1ST AND 2ND TELEPHONE
NUMBERS
(SEE NOTE 401)

CROSS CONNECTIONS FOR 1ST TELEPHONE NUMBER (SEE NOTE 401)

FAR END TEST TRUNK
OR LINE CIRCUIT

SD-99308-01-B4

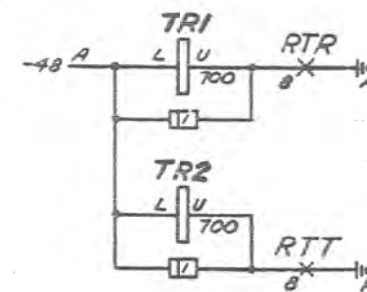
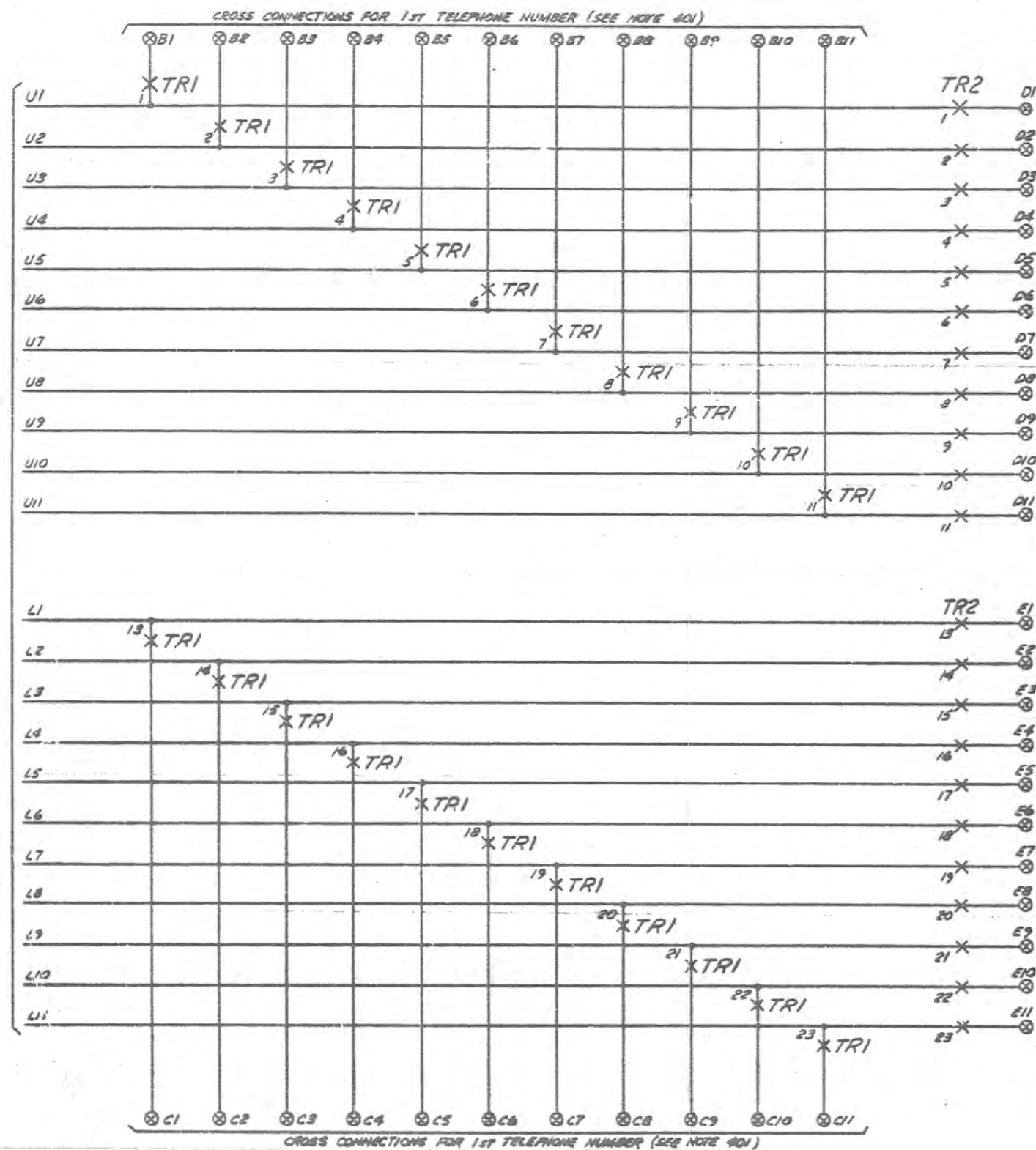
BELL TELEPHONE LABORATORIES

65

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FS 3 DIALING TRANSFER AND TELEPHONE NUMBER CROSSCONNECT



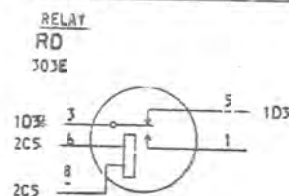
206

B13	B13
C13	C13
D13	D13
A13	A13
E13	E13
F13	F13
G13	G13

CROSS CONNECTIONS FOR 1ST AND 2ND TELEPHONE NUMBERS (SEE NOTE 401)

APP FIG. 1

DESIGN CODE		ANS AF111		ANS AJS16		DT AF64		NC AK22		NC1 AG22		RST AG22		RST1 AG11		RTR AG6		RTT AG6		SD AF9		DESIGN CODE	
OPTION		ZA		ZB		M		M														OPTION	
CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC
12	EM			EBM	IC0	EMB	IF3			EBM	IE3	B				EMB		EME					
11	M			EMB		M	IE5			EBM	IE5									EM	IG1		12
10	M	1H6		EBM		M				EBM	IE2	B		M		EBM		EBM					11
9	M	1F1		EMB	IF1	BM	IC9			EMB										M	2C1		10
8	EBM	IE3		EBM	IE3	M				EMB	IG6	M	IG5	EBM		EBM	188	EBM	4C8				9
7	B	1H7		BM	1H7	BM	IG6							B		B	2C6	B	2C6				8
6	EMB	1F7		EBM		EMB				BM				EBM	1H7	EMB	1C1	EMB	1B1				7
5	M			BM		BM	IG5	EMB				B	1H5							EBM	1F1		6
4	EBM	IE2		EBM	IE2	M	EMB	IG2		M	IE6	M		EBM	Q	EBM	Q			EBM	1F4		5
3	M	1G1		EMB		BM	IG5	EMB															4
2	M			EBM	IC2	M	IC4	EBM				B				EBM	1C1	EBM	1C1				3
1	M	IC1		EMB	IF7	M		EBM												M	1C4		2
CON		IE6		IF5		1H2		IG6		IG2		IE6		1D4		M	1H1	M	1G1				1
																M	1C2		1B2				
																					1B4		CON

[illegible]CAPACITOR.

DESIG	LOC	CODE
(H) C1	1F1	439A
(J) C1	1D2	439A
(H) C2	1E3	439A
(J) C2	1D3	439A
C3	1G5	574B
C4	1G5	574B
C5	1G5	574B
C6	1G5	574B
C7	1G3	579A
(M) C8	1H5	535JM
C9	1F2	(A) 1/2 439H
	1E2, 1F2	(B, F) 1/2 441C
	1E2	(E) 441D
C10	1D1	(A) 1/2 439H
	1E1	(B) 1/2 441C

CIRCUIT PACK

DESIG	LOC	CODE
DDT	1H2	CP-D3
DTD	1A6	ED-99434 (CPS1)
TMR	1H5	CP-D3

CONNECTOR

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
J1	2B1, 2B5	KS-19162.L2
J2	2G0	KS-8586.L5

DIAL

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
DIAL	203	470

NETWORK

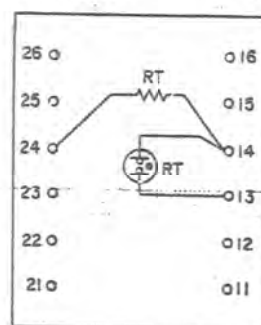
DESIG	LOC	CODE
(Z,A,Z) ANS	1F6	
(P) CH	1H1	
(M) NC	1G6	
(M) NCI	1G2	
(Q,R) RST1	1D4	185A
SD	1C4	
TRI	4B7	
TR2	4C7	

RELAY		
DESIGN	TR1	TR2
CODE	AJ 202	AJ 202
OPT		
24		
23	4G5	4G6
22	4G5	4G6
21	4G4	4G6
20	4G4	4G6
19	4F4	4F6
18	4F3	4F6
17	4F3	4F6
16	4F3	4F6
15	4E2	4E6
14	4E2	4E6
13	4E2	4E6
12		
11	4D5	4D6
10	4D5	4D6
9	4D4	4D6
8	4C4	4D6
7	4C4	4C6
6	4C3	4C6
5	4C3	4C
4	4B1	4C6
3	4B2	4B6
2	4B2	4B6
1	4B2	4B6
COIL	4B7	4B7

RESISTOR

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
R1	1B0	KS-14603, L3C, 909
R2	1D0	19JN
R3	1H4	145A, 3.4 MEG
R4	1B2	18BJ
R5	1H7	KS-14603, L2A, 464
R6	1H3	145A, 2.8 MEG

(ZB) COMPONENT ASSEMBLY
278A TS E/W

LAMP

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
RT	180	GE5AHB

RESISTORS

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
RT	180	KS-13492, LI, 510

UNIT POWER

DESIG	LOC	CODE
(T) AC	2G1	16A

DRAWING ISSUE	
1	Rev LL Pos
2A	Rev LNA DRS
3A	Rev G 5 PO
4A	Rev G 6 PO
5B	Rev G 6 PO
6A	Rev L PO
7A	Rev L PO
8B	
9A	
10B	
11D	

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
A*	1-1/3	-46 SIG	APP FIG. 1
B*	1-1/3	-48 SIG	APP FIG. 1
A		GRD	APP FIG. 1
B		GRD	APP FIG. 1
LT	1-1/3	LT4,5 OR 6	CKT IN SXS NO. 1 OR 550A OFFICE
*BATTERY LEADS SHALL BE PAIRED TO THE FUSE PANEL WITH SIMILARLY DESIGNATED GROUND LEADS			
BATTERY SYMBOL		VOLTAGE RANGE	
-48		42.75 TO 52.5	

102.

FEATURE OR OPTION		PROVIDE	
		FIG.	QUANTITY
TEST TRUNK OR LINE CKT WITH NON-DEDICATED FACILITIES	CROSSBAR	R,A,H	ONE PER CKT
	CSBR PRECISE TONE	R,B,H	
	SXS	R,Z,F,H	
	SXS PRECISE TONE	Z,E,H	
	PANEL GCO	Y,R,B,H	
	PANEL BCO	X,R,B,H	
CENTRAL OFFICE RINGING SUPPLY	GROUND	Q,J	ONE PER CKT
	MACHINE RINGING	W	
	RINGING WITH -48 DC COMPONENT	V	
DIAL MOTOR TO BE POWERED BY (SEE NOTES 105, 106 & 107)	COMMERCIAL 117V AC	S	ONE PER CKT
	CENTRAL OFFICE BATTERY	T	
NIGHT TEST COVERAGE	REQUIRED	M,ZE	SEE NOTE 402 & TEST NOTE 10 SH. FI
	NOT REQUIRED	K	
CALL COMPLETION OF ASSISTANCE CALLS FROM CRAFTSMAN TO LTD VIA DDD FACILITIES		N	
OUTGOING SUB-SCRIBER LINE CKT REQUIRES	RING GROUND START	ZC	
	CONTINUOUS LOOP START	ZD	

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCES IN OHMS	CAPACITANCE IN UF
1	470	0.11

104.

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	
				STD	A&M MD
98			102, 107	R,Q	
108	P	NONE		P	
120	N	NONE	102	N	
	K OR M	K	102, 402	K,M	
	J OR H	J	102	J,H	
	A,B,E,F OR G	G	102	A,B,E,F	G
	ZA OR ZB	ZA		ZB	ZA
138	ZC OR ZD	ZC	102	ZC, ZD	
140	ZE	NONE	305, 402	ZE	

CIRCUIT NOTES: (CONT)

105. TO PERMIT TESTING DURING PERIODS OF POWER FAILURES AND WHERE RAPID TRANSFER TO EMERGENCY AC POWER IS NOT AVAILABLE, CONSIDERATION SHOULD BE GIVEN TO USING CENTRAL OFFICE -48V BATTERY WITH T OPTION (1&4 POWER UNIT).
106. (TRANSF) TRANSFORMER REQUIRES 5 WATTS. IT IS SELF PROTECTED AND CONSIDERATION SHOULD BE GIVEN TO CONNECTING TO POWER DISTRIBUTION FACILITIES THAT ARE PROTECTED BY EMERGENCY AC POWER.
107. IN ESS OFFICES, T OPTION SHALL BE PROVIDED FOR POWERING THE DIAL MOTOR.

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS) OR - (MINUS) ARE IN VOLTS.
302. THIS EQUIPMENT SHALL BE ASSIGNED A SUBSCRIBER LINE APPEARANCE ARRANGED FOR INWARD SERVICE ONLY.
303. THE TIMING CYCLE OF (TMR) TIMER MAY BE CHECKED USING A WATCH, BY MANUALLY OPERATING (ON) RELAY IN 50-99311-01 AND OBSERVING THAT (TM1) RELAY OPERATES WITHIN 85-115 SECONDS.
304. THE TIMING CYCLE OF THE (DOT) TIMER MAY BE CHECKED USING A WATCH, BY MANUALLY OPERATING (RTT) RELAY AND OBSERVING THAT (DT) RELAY OPERATES IN APPROXIMATELY 6 SECONDS.
305. WHEN NIGHT TEST COVERAGE FEATURE (OPTIONS M,ZE) IS PROVIDED, THE ALTERNATE TIMING CYCLE OF (TMR) TIMER MAY BE CHECKED USING A WATCH, BLOCK RELAY (NCI) OPERATED AND OBSERVE THAT (TM1) RELAY OPERATES IN APPROXIMATELY 11.5 SECONDS.

DRAWING	ISSUE
1	1
2A	2
3A	3
5B	4
8B	5
10B	6
110	7

ISSUE
15ARFAR END TEST TRUNK
OR LINE CIRCUIT

2

SD-99308-01-D1

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

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CROSS-CONNECTION INFORMATION:

401.

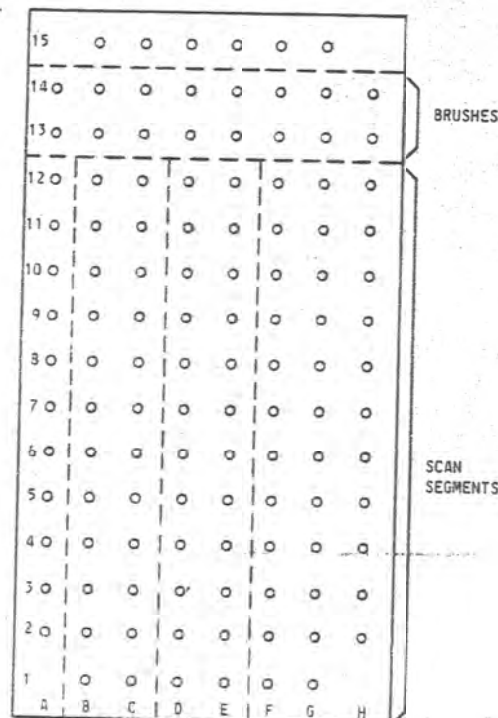


FIG. 1
UNIT 'S FOR 42A DIAL

INSTRUCTIONS FOR WIRING

I. TO CONNECT 1ST TELEPHONE NUMBER.

- WRITE 1ST TELEPHONE NUMBER IN COLUMNS MARKED "1ST TELEPHONE NUMBER DIGIT" OF BOTH UPPER AND LOWER SCAN BLOCKS, PUTTING THE LAST DIGIT OF THE TELEPHONE NUMBER NEXT TO TERMINAL B11 AND C11 AND THE FIRST DIGIT NEXT TO TERMINAL B5 OR C5 FOR A 7-DIGIT TELEPHONE NUMBER OR NEXT TO TERMINAL B2 OR C2 FOR A 10-DIGIT TELEPHONE NUMBER.
- MATCH THE 1ST TELEPHONE NUMBER DIGITS (OF THE UPPER SCAN BLOCK) TO IDENTICAL DIGITS OF THE UPPER BRUSH BLOCK AND WIRE THEIR ASSOCIATED TERMINALS TOGETHER.
- MATCH THE 1ST TELEPHONE NUMBER DIGITS (OF THE LOWER SCAN BLOCK) TO IDENTICAL DIGITS OF THE LOWER BRUSH BLOCKS AND WIRE THEIR ASSOCIATED TERMINALS TOGETHER.
- WIRE ALL UNUSED TERMINALS OF THE UPPER SCAN BLOCK TOGETHER. WIRE ALL UNUSED TERMINALS OF THE LOWER SCAN BLOCK TOGETHER. WIRE THESE TWO GROUPS TOGETHER.

II. TO CONNECT 2ND TELEPHONE NUMBER.

- REPEAT STEPS A, B, C, AND D ABOVE USING TERMINALS D1 THROUGH D11 AND E1 THROUGH E11.

III. EXAMPLE

ASSUME THE TELEPHONE NUMBER 949-2261.

- WRITE TELEPHONE NUMBER IN UPPER AND LOWER SCAN BLOCKS (NUMBERS IN BRACKETS).
- MATCH 1ST TELEPHONE NUMBER DIGITS UPPER SCAN BLOCK TO UPPER BRUSH BLOCK.

WIRE:

B5 TO D13
B6 TO C13
B7 TO D13
B8 TO B13
B9 TO B13
B10 TO C13
B11 TO B13

NOTE THAT THESE WIRES CAN BE MULTIPLED TOGETHER.

1ST TELEPHONE NUMBER
(RING PARTY)

TERM	1ST TELEPHONE NUMBER DIGIT	TELEPHONE NUMBER EXAMPLE STEP A	DIGIT	TERM
B1		1	1	B13
B2		2	2	B13
B3		2A	3	B13
B4		4	4	C13
B5	[9]	9	5	C13
B6	[4]	4	6	C13
B7	[9]	9A	7	D13
B8	[2]	2	8	D13
B9	[2]	2A	9	D13
B10	[6]	6	0	A13
B11	[1]	1		

UPPER SCAN BLOCK

TERM	1ST TELEPHONE NUMBER DIGIT			DIGIT	TERM
C1				1	E13
C2				2	F13
C3				2A	G13
C4				4	E13
C5	[9]	9	MATCH STEP C	5	F13
C6	[4]	4		6	G13
C7	[9]	9A		7	E13
C8	[2]	2		8	F13
C9	[2]	2A		9	G13
C10	[6]	6		9A	F13
C11	[1]	1			

LOWER SCAN BLOCK

LOWER BRUSH
BLOCK2ND TELEPHONE NUMBER
(TIP PARTY)

2ND TELEPHONE NUMBER DIGIT	TERM
	D1
	D2
	D3
	D4
	D5
	D6
	D7
	D8
	D9
	D10
	D11

UPPER SCAN BLOCK

2ND TELEPHONE NUMBER DIGIT	TERM
	E1
	E2
	E3
	E4
	E5
	E6
	E7
	E8
	E9
	E10
	E11

LOWER SCAN BLOCK

EXAMPLE (CONT)

- MATCH 1ST TELEPHONE NUMBER DIGITS LOWER SCAN BLOCK TO LOWER BRUSH BLOCK F.

WIRE:

C5 TO G13
C6 TO E13
C7 TO G13
C8 TO F13
C9 TO F13
C10 TO G13
C11 TO E13

- WIRE UNUSED TERMINALS TOGETHER.

WIRE:

B1 TO B2 TO
B3 TO B4 TO
C1 TO C2 TO
C3 TO C4

402. THE REGULAR TEST CENTER SHALL DIAL THE RING SIDE TELEPHONE NUMBER FOR ACTIVATION OF THIS CIRCUIT AND THE FIRST TELEPHONE NUMBER PROGRAMED FOR THE AUTOMATIC DIALER SHALL BE THAT OF THE REGULAR TEST CENTER. THE NIGHT COVERING OFFICE SHALL BE ASSOCIATED WITH THE INCOMING TIP SIDE TELEPHONE NUMBER AND THE SECOND TELEPHONE NUMBER OF THE AUTOMATIC DIALER.

403.

T, R, E, TI, RI, E(N) LEAD CONNECTIONS TO SD-99311-01			
REGULAR SERVICE (NON-NIGHT TEST COVERAGE)	WITHOUT INCOMING REMOTE TESTING	SEE BD 3A	T, R, E
	WITH INCOMING REMOTE TESTING	SEE BD 3B	T, R, E
NIGHT TEST COVERAGE WITH	DAY & NIGHT OFFICES NON - DEDICATED	SEE BD 3A	T, R, E
	DAY & NIGHT OFFICES NON - DEDICATED & WITH INCOMING REMOTE TESTING	SEE BD 3B	T, R, E
	DAY OFFICE DEDICATED & NIGHT OFFICE NON - DEDICATED	SEE BD 4A	TI, RI, E(N)
	DAY OFFICE DEDICATED & NIGHT OFFICE NON - DEDICATED & WITH INCOMING REMOTE TESTING	SEE BD 4B	TI, RI, E(N)

DRAWING
ISSUE
2A
5B
5A
3A
10B

ISSUE
12D

FAR END TEST TRUNK
OR LINE CIRCUIT

2

SD-99308-01-02

BELL TELEPHONE LABORATORIES
INCORPORATED

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SC1
INCOMING SEIZURE (NO NIGHT TEST COVERAGE)LTD DIALS NUMBER
TO SEIZE FAR END
TEST TRUNK OR LINE CKTNON-DEDICATED
FACILITIESINCOMING CALL ARRIVES AT
FAR END CENTRAL OFFICECALLED PARTY IS A
TIP PARTY NUMBER
CENTRAL OFFICE RINGING
APPLIED TO TIP SIDE
CALLED NUMBER IS A
RING PARTY NUMBER
CENTRAL OFFICE RINGING
APPLIED TO RING SIDE

XRTT (TUBE)

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

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XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

XRTT

SC2

END OF DIALING

LAST DIGIT OUTPULSED
BY DIALER
(17TH SEGMENT - 7 DIGIT CALL)END OF DIALING
(12TH SEGMENT)

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

XRD

SC4

CIRCUIT CALLED WHILE BUSY

2ND CALL
RECEIVEDRTT OR RTR
KEPT FROM
OPERATING
BY ANS RELAYBUSY TONE
APPLIED TO
INCOMING LINE**SC5**
DISCONNECTDISCONNECT SIGNAL
SENT FROM LTD TO
THE REMOTE TEST CKT - FAR END

ON (RTC-FE)

ANS

BUSY TONE
OFF INCOMING LINECIRCUIT
NORMAL**SC3**

CALL COMPLETION

CALL ORIGINATED BY
DIALER COMPLETES TO
LTD INITIATING
SEIZURETESTER
ANSWERSTESTER
FAILS TO ANSWER
HIS CALL

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

XANS

SC6NO TONE
DISCONNECT

TO SC3, 1532

XON (RTC-FE)

RSTI

TMP TIMER
RESTARTED

TO SC3, 1540

PILOT OR ORDER TONE
RECEIVED AT REMOTE
TEST CKT - FAR END

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

XGT (RTC-FE)

PILOT OR ORDER TONE
NOT RECEIVED AT REMOTE
TEST CKT - FAR END

85-115 SEC

TO SC3, 1531

FAR END TEST TRUNK
OR LINE CIRCUIT

SD-99308-01-EI

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INCORPORATED

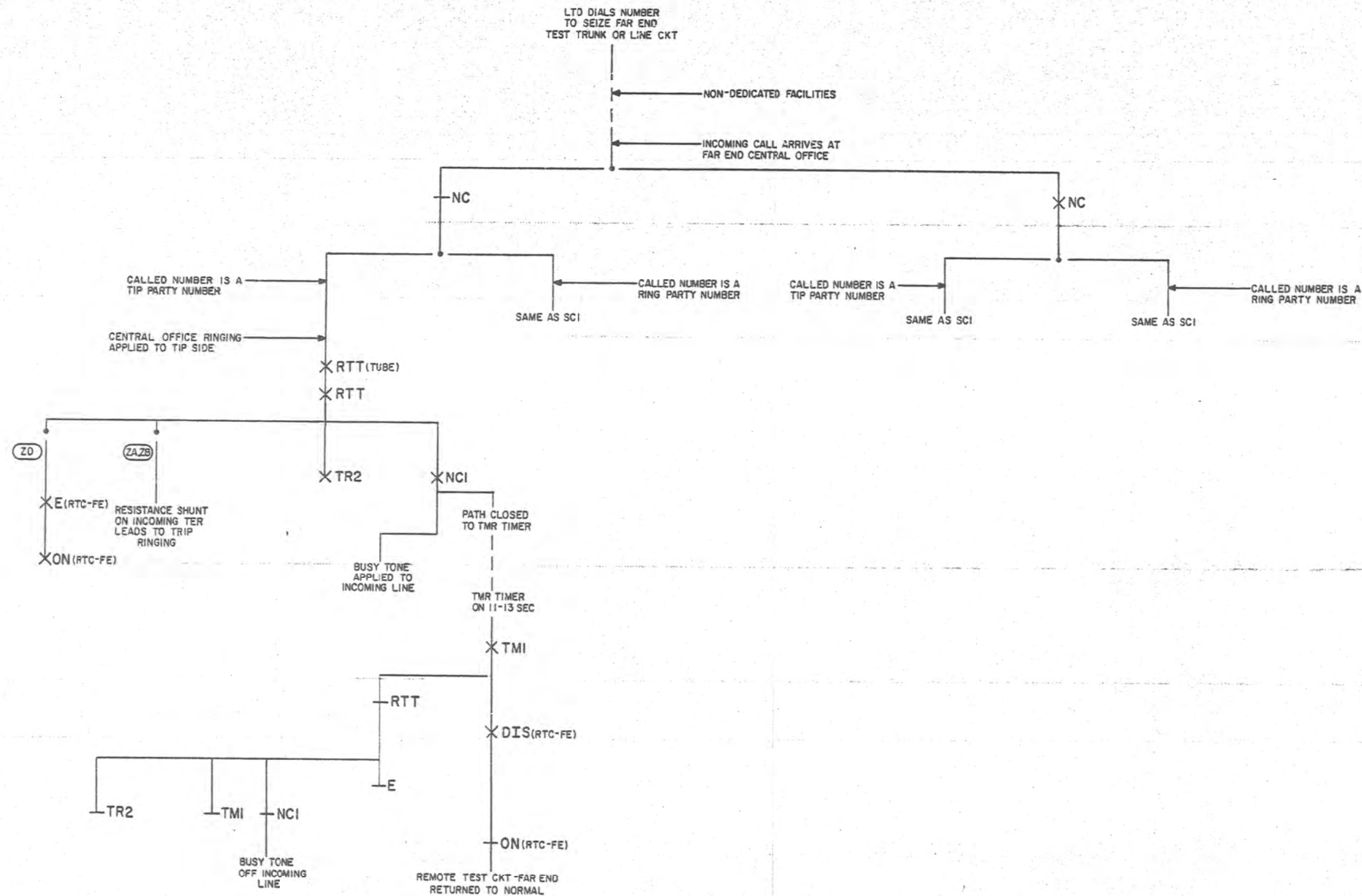
DATE

65

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SC7

INCOMING SEIZURE WITH NIGHT TEST COVERAGE (OPTIONS M,ZE)



FAR END TEST TRUNK OR LINE CIRCUIT		2		SD-99308-01-E2	
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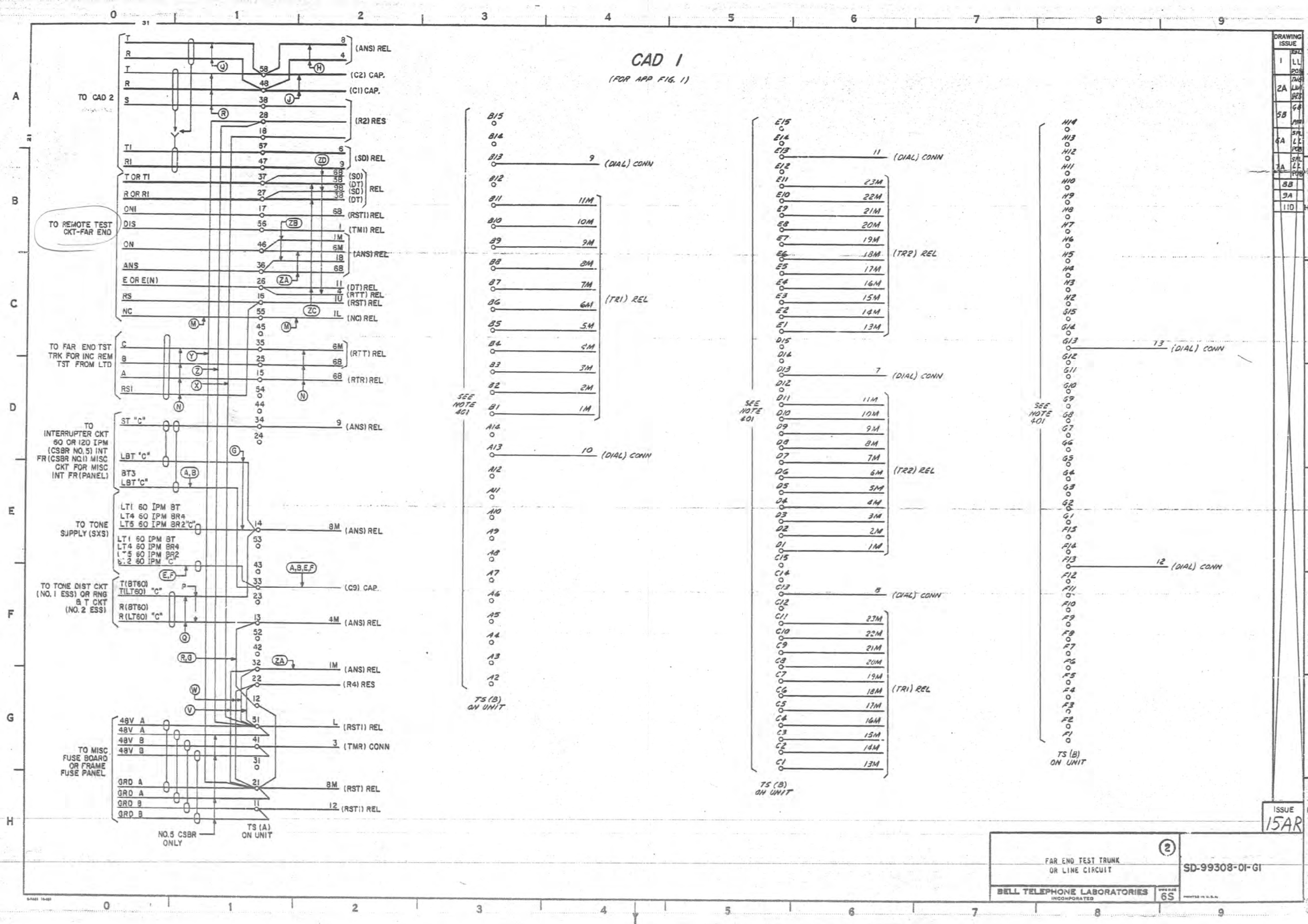
ISSUE 15AR

SD-99308-01-E2

SD-99308-01															CIRCUIT REQUIREMENTS															DRAWING	
FAR END TEST TRUNK OR LINE CIRCUIT (TST TRK OR L)															ISSUE																
APPARATUS				MECH REQ			CIRCUIT PREPARATION			TEST SET		SEE		DIRECT CURRENT FLOW REQ				REMARKS													
DESIG	CODE	OPT.	FIG.	BSP FIG.	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA		TEST SET PREP	TEST NOTE	TEST WDG	TEST FOR	AFTER SOAK MA	TEST MA	READJ MA															
								CONN BAT.	CONN GRD																						
RELAYS																															
ANS	AF111	ZA	1	270			6(ANS)		U(ANS)	GRD			0		45	40.5															
ANS	AJ516	ZB	1	299			6(ANS)		U(ANS)	GRD			0		41	39.0															
CH	1/2AK3	P	1	204			8(CH), 9(CH)	2U(CH)		BAT			0		9.2	8.7	MTD WITH (TM1)														
DT	AF64		1	219			11(DT), 7(DT)	L(DT)	U(DT)	B/G	1.7		0		11.8	10.6															
NC	1/2AK22	M	1	216					IL(NC)	GRD	8		0		27.5	26.0	MOUNTED WITH (NCI)														
NCI	1/2AK22	M	1	216				2U(NCI)		BAT			0		27.5	26.0	MOUNTED WITH (NC)														
RD	303E		1	1				S(RD)		BAT	1,2,3		0	6	2.1	2															
RST	AG22		1	568					1U(RST)	GRD	6	P	0	FS	36	34															
													H		5.6	5.3															
													R		3.5	4.2															
													S	0	45	42.5															
RST1	AG11		1	233					U(RST1)	GRD			0	FS	17.5	16.5															
													H		2.3	2.1															
													R		.4	.7															
RTR	AG6		1	239B			6(RTR)		L(RTR)	GRD			0	18	9.3	8.8	W OPTION														
							(DT)NO						H		1.6	1.5															
													R		.8	1.0															
							6(RTR)		L(RTR)	BAT.			0	18	9.3	8.8	V OPTION														
							(DT)NO						H		1.6	1.5															
													R		.8	1.0															
RTT	AG6		1	239B			6(RTT)		L(RTT)	GRD			0	18	9.3	8.8	W OPTION														
							(DT)NO						H		1.6	1.5															
													R		.8	1.0															
							6(RTT)		L(RTT)	BAT.			0	18	9.3	8.8	V OPTION														
							(DT)NO						H		1.6	1.5															
													R		.8	1.0															
SD	AF9		1	213			9(SD)		U(SD)	GRD	1		0		9.1	8.2															
TM1	1/2AK8		1	204			1(TM1)	2L(TM1)	1L(TM1)	B/G	4		0		18	16	MTD WITH (CH)														
TR1	AJ202		1	500					U(TR1)	GRD			0		42	40.5															
TR2	AJ202		1	500					U(TR2)	GRD			0		42	40.5															
ELECTRON TUBES																															
RTR	353A		1								5						SEE BSP														
RTT	353A		1								5						SEE BSP														
TIMING REQ																															
DOT			1								11																				
TMR			1								9,10																				
TEST NOTES:																															
1. REMOVE CPS-1 BEFORE MAKING TEST.																															
2. APPLY SOAK ONLY BEFORE OPERATE REQUIREMENT.																															
3. USE LAMP AT 3/5 (RD) RELAY TO INDICATE CONTACT CLOSURE.																															
4. REMOVE (TMR) TIMER (CP-03) BEFORE MAKING TEST.																															
5. USE COLO CATHODE TEST SET. CONN BK TO PIN 5 AND WH TO PIN 7 OF TUBE TO BE TESTED.																															
6. ARMATURE BACK TENSION MAXIMUM 80 GRAMS READJUST, 85 GRAMS TEST.																															
7. REMOVE (DOT) TIMER (CP-03) BEFORE MAKING TEST.																															
8. RELAY (NCI) IN SD-99311-01 NON-OPERATED.																															
9. APPLY -48V BATTERY TO 2L (TM1) AND OBSERVE THAT RELAY (TM1) OPERATES IN 85-115 SECONDS, USING A STOP-WATCH, SWEEP-SECOND WATCH OR EQUIVALENT.																															
10. BLOCK RELAY (NCI), IF PROVIDED, AND OBSERVE THAT RELAY (TM1) OPERATES IN 11-13 SECONDS.																															
11. APPLY -48V BATTERY TO L (DT) AND OBSERVE THAT RELAY (DT) OPERATES IN 5-7 SECONDS.																															
353A SO ION/AG DROP (20MA)																															
MIN. VOLTS 62 52																															
MAX. VOLTS 89 74																															
FAR END TEST TRUNK OR LINE CIRCUIT																															
SD-99308-01-FI																															
BELL TELEPHONE LABORATORIES INCORPORATED																															
PRINTED IN U.S.A.																															

SD-99308-01-FI

DRAWING
ISSUE
1
2A
3A
4A
7A
10B
11DISSUE
15ARFAR-END TEST-TRUNK
OR LINE CIRCUIT
SD-99308-01-FI
BELL TELEPHONE LABORATORIES
INCORPORATED
63
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CROSS CONN TO LINE SW
CKT (NO. 1 ESS) OR L AND/OR
TRK SW CKT (NO. 2 ESS)

TO CROSS COIN-LINE LINK AND MARKER COIN-
CONT CKT (NO. 5 CSBR) OR SUB-LINE, LINE
LINK AND CONTROLLER CKT (NO. 1 CSBR) OR
FINAL SEL CKT (BCO PANEL) OR FINAL SEL
CKT (BCO PANEL) OR COIN MULTIPLE (SKS)
(SEE NOTE 302)

CROSS CONN TO SUB LINE
CKT

E OR H
DF AS
SPEC

TO CAD. I

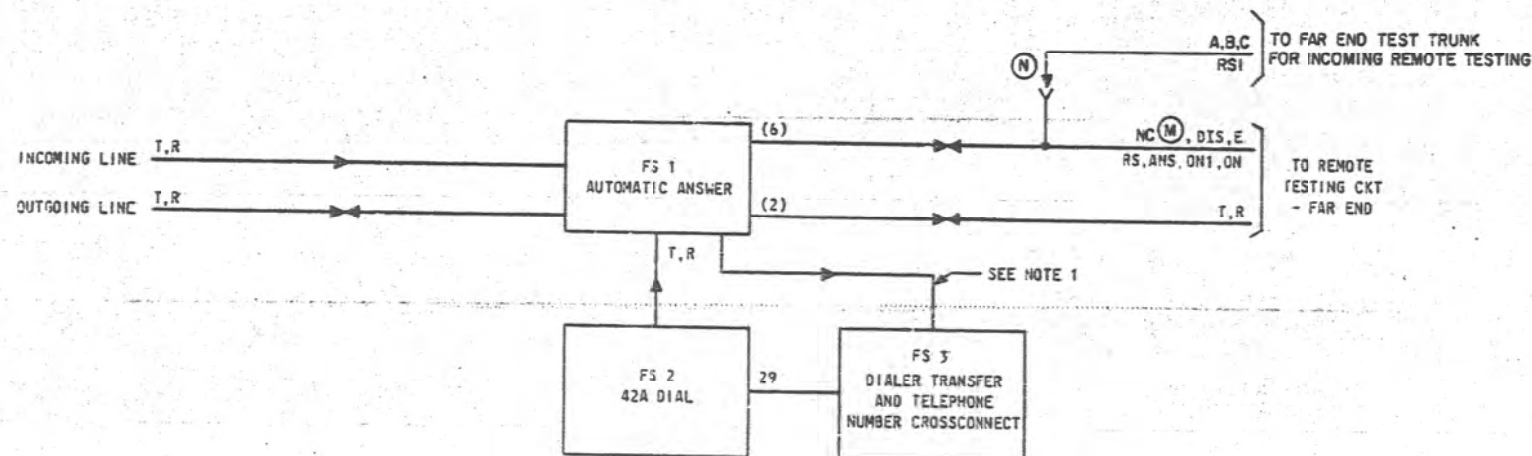
SD-99308-01-62

FAR END TEST TRUNK
OR LINE CIRCUIT

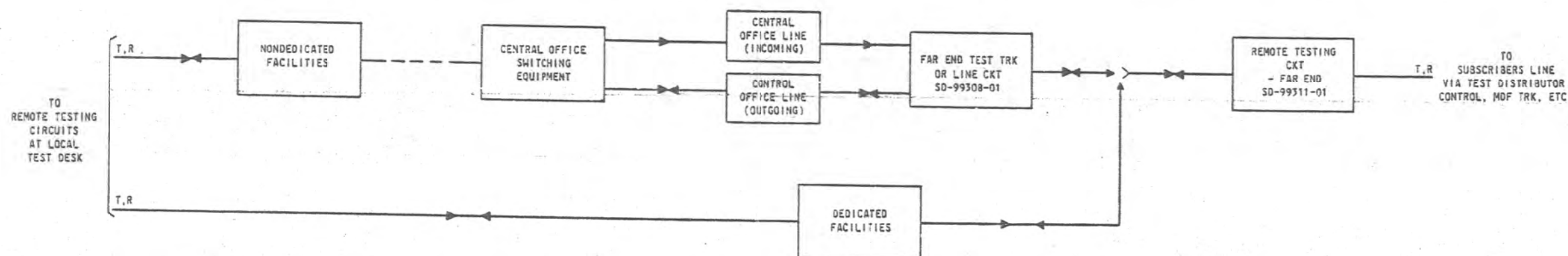
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SD-99308-01-G2

BD 1 FS BLOCK DIAGRAM



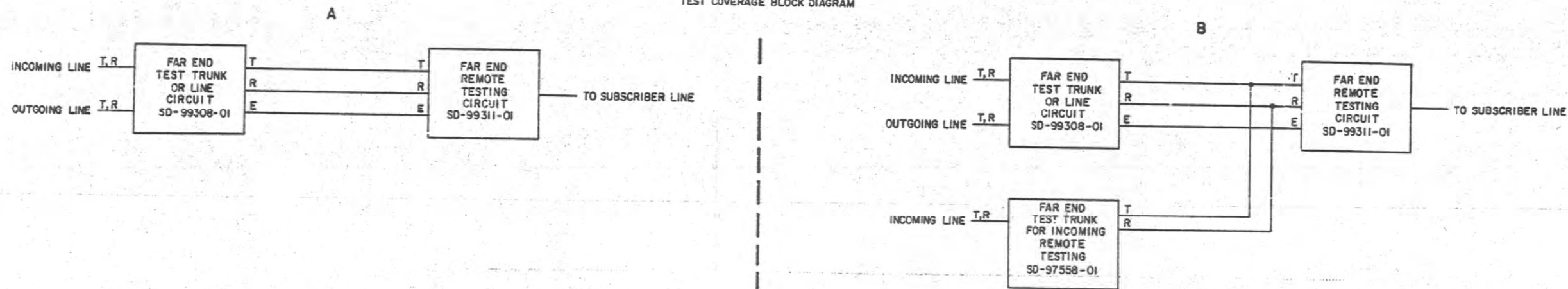
BD 2 SYSTEM BLOCK DIAGRAM



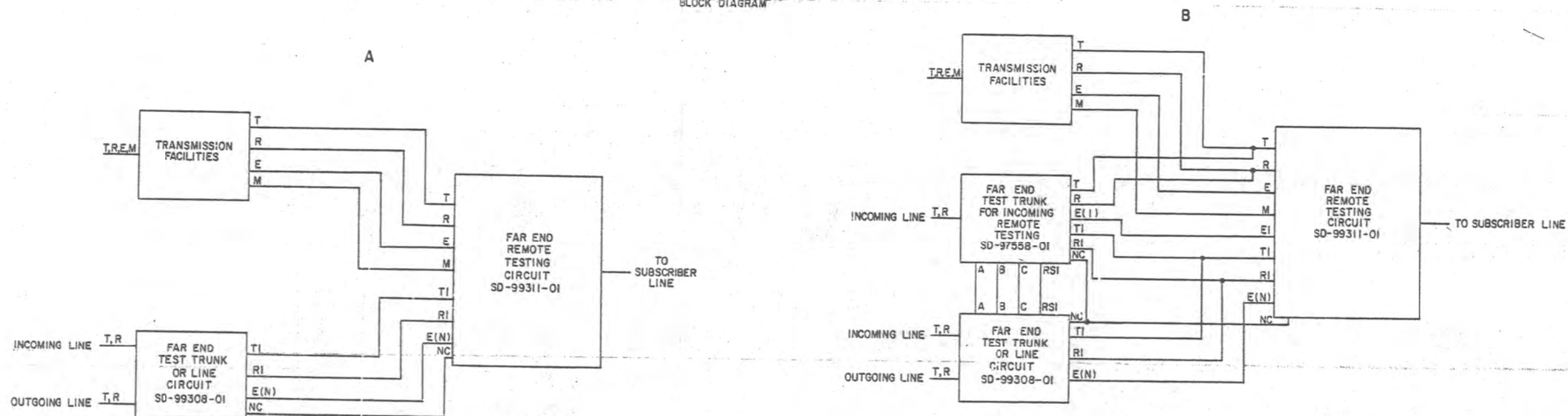
SHEET NOTES:
1. NO DIRECT LEAD, BUT CONTROLLED VIA RELAYS.

SD-99308-01-HI

BD 3
REGULAR SERVICE AND NIGHT
TEST COVERAGE BLOCK DIAGRAM



BD 4
NIGHT TEST COVERAGE
BLOCK DIAGRAM



SD-99308-01-H2

ISSUE
15AR

FAR END TEST TRUNK OR LINE CIRCUIT		SD-99308-01-H2
BELL TELEPHONE LABORATORIES INCORPORATED		6S PRINTED IN U.S.A.

COMPONENT LIST

CAPACITOR

DESIG	CODE
C1	KS-14504
C2	
C3	KS-14338
C4	
C5	
C6	KS-16390, L3
C7	6023

DIODE

DESIG	CODE
CR1	458A
CR2	458A

RESISTOR

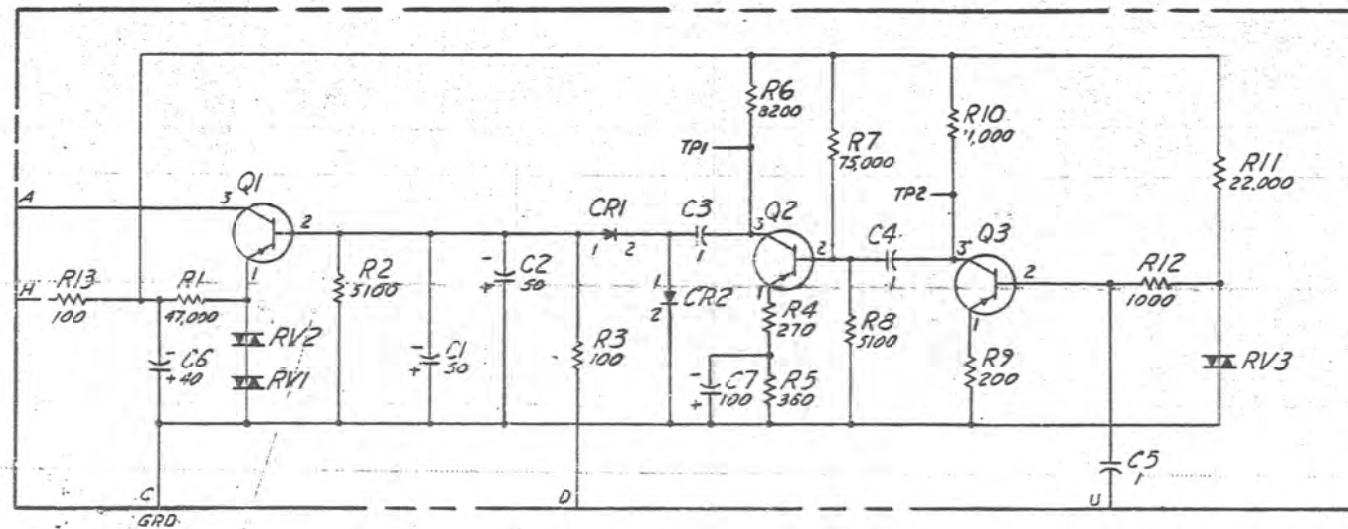
DESIG	CODE
R1	KS-13490L1, 47,000
R2	5100
R3	100
R4	270
R5	360
R6	3200
R7	75,000
R8	5100
R9	200
R10	11,000
R11	22,000
R12	1000
R13	KS-13490, L1, 100

TRANSISTOR

DESIG	CODE
Q1	12N
Q2	
Q3	

VARISTOR

DESIG	CODE
RV1	1000
RV2	1000
RV3	1000

CPS 1
DIAL TONE DETECTOR

CIRCUIT DESCRIPTION

THE DIAL TONE DETECTOR IS COMPOSED OF TWO STAGES OF AMPLIFICATION, A RECTIFIER, AND A DRIVER STAGE. WITH -48V APPLIED TO TERMINAL "H" AND NO INPUT TO TERMINAL "U" THE VOLTAGE AT TP2 IS APPROXIMATELY -26V DC, THE VOLTAGE AT TP1 IS APPROXIMATELY -15V DC, AND THE VOLTAGE AT TERMINAL "A" WHEN CONNECTED THROUGH A 2500 OHM RELAY (OR EQUIVALENT) TO -48V DC IS -48V DC. WITH A SINE WAVE OF 400 HZ AT 200 MV PEAK-TO-PEAK APPLIED TO TERMINAL "U", THE SIGNAL AT TP2 IS APPROXIMATELY 2V AC PEAK-TO-PEAK AND THE SIGNAL AT TP1 IS APPROXIMATELY 6V AC PEAK-TO-PEAK. CAPACITORS C1 AND C2 CHARGE THROUGH CR1 DURING THE NEGATIVE SWINGS OF COLLECTOR Q2 UNTIL THE CHARGE IS SUFFICIENT TO OVERCOME THE BIAS, DUE TO RV1 AND RV2, ON Q1. Q1 WHEN OPERATED WILL OPERATE THE RELAY CONNECTED TO TERMINAL "A". Q1 WILL REMAIN OPERATED UNTIL THE INPUT SIGNAL IS REMOVED FROM TERMINAL "U". Q1 OPERATES IN APPROXIMATELY 400 MS FROM APPLICATION ON THE INPUT SIGNAL AT "U".

MANUFACTURING REFERENCES

CATEGORY	NUMBER
CIRCUIT PACK CODE	ED-99434-()
ASSEMBLY DRAWING	ED-99434-()
MANUFACTURING TEST REQUIREMENTS	
CONNECTOR ON FRAME	KS-19331L1

SYMBOL
NONE

NOTES:

1. UNLESS OTHERWISE SPECIFIED:

RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN MICROFARADS.
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.

FAR END TEST TRUNK
OR LINE CIRCUITBELL TELEPHONE LABORATORIES
INCORPORATED

2

6S

SD-99308-01-J1

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INPUT/OUTPUT

THIS INFORMATION IS INCLUDED IN THE CIRCUIT DESCRIPTION.

CIRCUIT DESCRIPTION

THIS CIRCUIT IN CONJUNCTION WITH A START CONTACT, AN EXTERNAL RESISTOR AND AN OUTPUT RELAY PROVIDES A VARIABLE TIME INTERVAL BETWEEN INPUT AND OUTPUT. THERE ARE THREE BASIC MODES OF OPERATION WHICH CAN BE CALLED THE MAKE CONTACT START, THE BREAK CONTACT START, AND THE EARLY BREAK MAKE START.

1. MAKE CONTACT START

THE CIRCUIT PACK EXTERNAL CONNECTIONS ARE AS FOLLOWS: TERMINAL 1 CONNECTS THROUGH THE TIMING RESISTANCE (R) TO GROUND; TERMINAL 2 CONNECTS TO THE MAKE PORTION OF THE START CONTACT WITH ITS FIXED PORTION CONNECTED TO -48V; TERMINAL 2 ALSO CONNECTS TO ONE TERMINAL OF THE OUTPUT RELAY WITH ITS OTHER TERMINAL CONNECTED TO TERMINAL 6; TERMINALS 3 AND 7 CONNECT TO -48V BATTERY; TERMINAL 4 IS VACANT; TERMINAL 5 IS GROUND.

WITH THE START CONTACT NORMAL, TRANSISTORS (Q1), (Q2) AND (Q3) ARE FORWARD BIASED AND IN THEIR "ON" STATE. EVEN THOUGH (Q3) IS ON, THE OUTPUT RELAY CANNOT OPERATE BECAUSE ITS OPERATE PATH CONTAINS THE NORMAL START CONTACT.

WHEN THE START CONTACT CLOSES, THE TERMINAL 2 SIDE OF CAPACITOR (C1) WHICH WAS GROUND POTENTIAL CHANGES TO -48V CAUSING THE POTENTIAL AT THE TERMINAL 1 SIDE OF (C1) TO CHANGE FROM APPROXIMATELY -46V TO -94V. THIS REVERSE BIASES (Q1) WHICH CAUSES (Q2) AND (Q3) TO TURN OFF. THE OPERATE PATH OF THE OUTPUT RELAY IS NOW ESTABLISHED BUT SINCE (Q3) IS OFF THE RELAY DOES NOT OPERATE.

CAPACITOR (C1) STARTS DISCHARGING TOWARDS GROUND THROUGH THE EXTERNAL CHARGING RESISTOR. WHEN TERMINAL 1 REACHES APPROXIMATELY -46V, TRANSISTORS (Q1) AND (Q2) AND DIODE (CR2) ARE FORWARD BIASED SUFFICIENTLY TO CONDUCT. THIS CAUSES (Q3) TO TURN ON, OPERATING THE OUTPUT RELAY.

WHEN THE START CONTACT IS OPENED THE TERMINAL 2 SIDE OF (C1) STARTS TO CHARGE FROM -48V TO GROUND AND THE OUTPUT RELAY RELEASES BECAUSE ITS OPERATE PATH IS OPENED BY THE OPEN START CONTACT. THE CHARGING PATH IS THROUGH (R1), (R3), AND THE FORWARD BIASED JUNCTIONS OF (Q1), (CR2) AND (Q2). THE CIRCUIT IS NOW COMPLETELY RECYCLED AND READY FOR ANOTHER START SIGNAL. THE TIME INTERVAL BETWEEN THE START SIGNAL AND THE TIME WHEN THE OUTPUT RELAY STARTS TO OPERATE IS $t = 0.715RC \pm 5\%$ WHEN $\pm 1\%$ COMPONENTS ARE USED AS R AND C. THE MAXIMUM VALUE OF (R) IS 4.33 MEG. CAPACITANCE CAN BE ADDED FOR ADDITIONAL TIME BY CONNECTING CAPACITORS BETWEEN TERMINALS 1 AND 2.

2. BREAK CONTACT START

THE CIRCUIT PACK EXTERNAL CONNECTIONS ARE AS FOLLOWS: TERMINAL 1 CONNECTS TO THE BREAK PORTION OF THE START CONTACT WITH ITS FIXED PORTION CONNECTED TO -48V; TERMINAL 1 ALSO CONNECTS THROUGH THE TIMING RESISTANCE (R) TO GROUND; TERMINAL 2 CONNECTS TO TERMINAL 3; TERMINAL 5 CONNECTS TO A -24V VOLTAGE DIVIDER; TERMINAL 4 IS VACANT; TERMINAL 5 IS GROUND; TERMINAL 6 CONNECTS TO ONE TERMINAL OF THE OUTPUT RELAY WITH THE OTHER TERMINAL CONNECTED TO -48V. TERMINAL 7 CONNECTS TO -48V BATTERY.

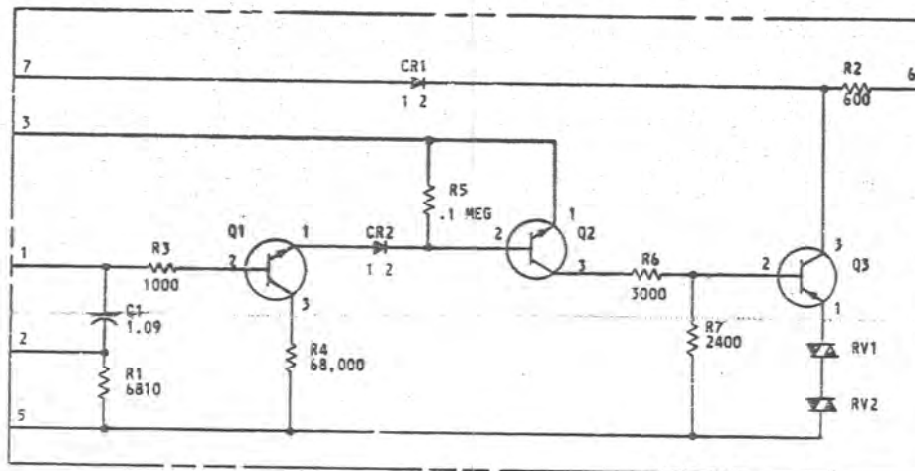
WITH THE START CONTACT NORMAL, (Q1) IS REVERSE BIASED KEEPING (Q2) AND (Q3) OFF. THE OUTPUT RELAY IS THEREFORE, NORMAL.

WHEN THE START CONTACT IS OPENED, THE TERMINAL 1 SIDE OF (C1) WHICH WAS AT -48V STARTS TO DISCHARGE TOWARDS GROUND THROUGH THE EXTERNAL TIMING RESISTOR (R) AND THE EQUIVALENT SOURCE RESISTANCE OF THE -24V VOLTAGE DIVIDER. (Q1), (CR2), (Q2) AND (Q3) START TO CONDUCT WHEN THE TERMINAL 1 SIDE OF (C1) REACHES APPROXIMATELY -22V. AS CURRENT FLOWS INTO THE EQUIVALENT SOURCE RESISTANCE OF THE DIVIDER AT TERMINAL 3, THAT POINT BECAME MORE POSITIVE WHEN -24V. THIS CHANGE IS REFLECTED THROUGH (C1), TURNING (Q1) ON QUICKLY BY MEANS OF POSITIVE FEEDBACK. THE OUTPUT RELAY OPERATES WHEN (Q3) SATURATES.

WHEN THE START CONTACT CLOSES, (C1) DISCHARGES THROUGH THE EQUIVALENT RESISTANCE OF THE VOLTAGE DIVIDER, BACK BIASES (Q1) WHICH TURNS OFF (Q2), (Q3) AND RELEASES THE OUTPUT RELAY. AFTER THE TERMINAL 2 SIDE OF (C1) RETURNS TO -24V, THE CIRCUIT IS COMPLETELY RECYCLED AND READY FOR ANOTHER START SIGNAL.

THE TIME INTERVAL BETWEEN THE START SIGNAL AND THE TIME WHEN THE OUTPUT RELAY STARTS TO OPERATE IS $t = 0.775RC \pm 5\%$ WHEN $\pm 1\%$ COMPONENTS ARE USED AS R AND C. THE MAXIMUM SIZE R USED IS DEPENDENT ON THE RESISTANCE VALUE OF THE VOLTAGE DIVIDER, BUT IN GENERAL IS ABOUT 1.93 MEG IF THE VOLTAGE DIVIDER USES RESISTORS OF LESS THAN 400 OHMS RESISTANCE. CAPACITANCE CAN BE ADDED TO INCREASE THE TIME INTERVAL AS IN THE MAKE CONTACT START.

CPS D3 TIMER



CIRCUIT DESCRIPTION (CONT)

3. EARLY BREAK MAKE START

THE CIRCUIT PACK EXTERNAL CONNECTIONS ARE AS FOLLOWS: TERMINAL 1 CONNECTS THROUGH THE TIMING RESISTANCE (R) TO GROUND; TERMINAL 1 ALSO CONNECTS TO THE BREAK PORTION OF THE START CONTACT WITH ITS FIXED PORTION CONNECTED TO -48V; TERMINAL 2 CONNECTS TO THE MAKE PORTION OF THE START CONTACT; TERMINAL 2 ALSO CONNECTS TO ONE TERMINAL OF THE OUTPUT RELAY WITH ITS OTHER TERMINAL CONNECTED TO TERMINAL 6; TERMINALS 3 AND 7 CONNECT TO -48V BATTERY; TERMINAL 4 IS VACANT; TERMINAL 5 IS GROUND.

WITH THE START CONTACT NORMAL, TRANSISTOR (Q1) IS REVERSE BIASED AND TRANSISTORS (Q2) AND (Q3) ARE IN THE OFF STATE.

WHEN THE START CONTACT CLOSES, THE TERMINAL 2 SIDE OF CAPACITOR (C1), WHICH WAS AT GROUND POTENTIAL, CHANGES TO -48V CAUSING THE POTENTIAL AT THE TERMINAL 1 SIDE OF (C1) TO CHANGE FROM -48V TO -96V. CAPACITOR (C1) STARTS DISCHARGING TOWARDS GROUND THROUGH THE EXTERNAL CHARGING RESISTOR. WHEN TERMINAL 1 REACHES APPROXIMATELY -46V, TRANSISTORS (Q1) AND (Q2) AND DIODE (CR2) ARE FORWARD BIASED SUFFICIENTLY TO CONDUCT. THIS CAUSES TRANSISTOR (Q3) TO TURN ON, OPERATING THE OUTPUT RELAY.

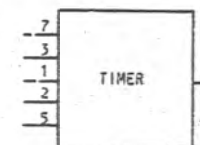
WHEN THE START CONTACT IS OPENED THE TERMINAL 2 SIDE OF (C1) STARTS TO CHARGE FROM -48V TO GROUND AND THE OUTPUT RELAY RELEASES BECAUSE ITS OPERATE PATH IS OPENED BY THE OPEN START CONTACT. THE CHARGING PATH IS THROUGH THE CLOSED BACK PORTION OF THE START CONTACT TO -48V.

THE CIRCUIT IS NOW COMPLETELY RECYCLED AND READY FOR ANOTHER START SIGNAL. THE TIME INTERVAL BETWEEN THE START SIGNAL AND THE TIME WHEN THE OUTPUT RELAY STARTS TO OPERATE IS $t = 0.736 RC \pm 5\%$ WHEN $\pm 1\%$ COMPONENTS ARE USED AS R AND C. THE MAXIMUM VALUE OF (R) IS 4.33 MEG. CAPACITANCE CAN BE ADDED FOR ADDITIONAL TIME BY CONNECTING CAPACITORS BETWEEN TERMINALS 1 AND 2.

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-32371-01
CIRCUIT PACK CODE	D3
CONNECTOR ON FRAME	910A

SYMBOL



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.

FAR END TEST TRUNK
OR LINE CIRCUIT

BELL TELEPHONE LABORATORIES
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