SHEET INDEX

CONTENTS	SHEET NO.	ISSUE NO. 1	2	3	4	5	SHEET NO.
~~SHEET INDEX~~ SUPPORTING INFORMATION	A1	1	2	3	4	5	A1
APPARATUS INDEX	A2	1	2	2	2	5	A2
	A3	1	1	1	1	5	A3
	A4	1	2	2	2	2	A4
LEAD INDEX	A5	1	?	2	2	5	A5
LEAD INDEX, OPTION INDEX	A6		2	2	2	5	A6
FS 1 BATTERY DISTRIBUTION	B1	1	1	1	1	5	B1
FS 2 RINGING INVERTERS, MONITORS AND DISTRIBUTION	B2	1	1	1	1	1	B2
	B3	1	2	2	4	4	B3
FS 3 TONE GENERATORS	B4	1	2	2	2	5	B4
FS 4 TONE LOW VOLTAGE MONITORS	B5	1	1	3	3	3	B5
FS 5 TONE INTERRUPTION, TRANSFER AND DISTRIBUTION	B6	1	2	2	2	2	B6
	B7	1	2	2	2	2	B7
	B8	1	2	2	2	2	B8
FS 6 INTERRUFTION, CONTROL, ALARM & TRANSFER CIRCUIT	B9	1	1	1	1	5	B9
	B10	1	2	2	2	?	B10
FS 7 PRIVATE LINE CIRCUIT	B11					5	B11
PART OF APP. FIG 1	C1	1	2	3	3	5	C1
	C2	1	2	2	4	4	C2
PART OF APP. FIG 1, APP. FIG 2	C3	1	1	1	1	5	C3
NOTES: CIRCUIT INFORMATION	D1	1	2	2	4	5	D1
NOTES: EQUIPMENT CROSS CONNECTION INFO	D2	1	2	2	2	5	D2
CIRCUIT REQUIREMENTS TABLE	F1	1	1	1	1	5	F1
CAD 1, 2, 3	G1	1	1	1	1	1	G1
CAD 4, 5, 6	G2	1	2	2	2	2	G2
CAD 7	G3	1	2	2	2	2	G3
CAD 8, 9	G4	1	2	2	2	2	G4
CAD 10, 11	G5	1	2	2	2	2	G5
CAD 12, 13	G6		2	2	2	2	G6
CAD 14, 15	G7		2	2	2	2	G7
CAD 16, 17	G8		2	2	2	2	G8
CAD 18	G9		2	2	2	2	G9
	G10		2	2	2	2	G10
CAD 19	G11		2	2	2	2	G11
	G12		2	2	2	2	G12
CAD 20	G13		2	2	2	2	G13
CAD 21	G14		2	2	2	2	G14
CAD 22, 23, 24, 25, 26	G15		2	2	2	2	G15
CAD 27	G16					5	G16
BLOCK DIAGRAM	H1	1	2	2	2	5	H1
	H2	1	1	1	1	1	H2
CPS ED-82710-01 INRUSH CURRENT LIMIT	J1	1	1	[illegible]	1	1	J1

(Issue No. columns 6 through 50 are blank.)

SUPPORTING INFORMATION

CATEGORY	NO.
CIRCUIT PACK SCHEMATIC DRAWING	SD-82156-01
CIRCUIT PACK SCHEMATIC DRAWING	SD-81885-01
EQUIPMENT DRAWING	J87824A
MAINTENANCE SPEC	233-142-100
MANUFACTURING TESTING REQUIREMENTS	X78928
APPARATUS CODED CIRCUIT PACK	A1151
APPARATUS CODED CIRCUIT PACK	A1152
APPARATUS CODED CIRCUIT PACK	A1153
APPARATUS CODED CIRCUIT PACK	A1154

DWG ISSUE	CD ISSUE	DATE ISSUED		APPD	
1	1	3-15-76	EAM JEH	JP JWW FWS	WH
2A	1 APP1A	12-5-76	ADC JEH	JP JWW FWS	WH
3AR	1 APP2AR	11-24-76	JEH	JP JWW FWS	WH
4B	1 APP3B	8-4-78	JEH	MTE JWW RAS	WH
5B	1 APP 4B	9-17-80	ZGH FCR	MTE JWW	WH

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.

5B

1M99

POWER SYSTEMS

RINGING, TONE & SIGNALING CIRCUITS
881A RINGING, TONE & CADENCE SYSTEM FOR
NO. 3 ESS OFFICES

INPUTS: -48V dc, +48Vdc
OUTPUTS: (A): 105V (TAPS AT 86V & 97V) @ 20Hz
(B): 105V (TAPS AT 86V & 97V) @ 20Hz
(C): 105V (TAPS AT 86V) @ 20Hz
43.0VA MAX. PLANT RINGING CAPACITY
0.1VA PRECISE TONE CAPACITY (EACH TONE)
J87824

AT&TCO STANDARD

BELL TELEPHONE LABORATORIES INCORPORATED | 6S

SD-82255-01-A1

42 SHEETS

PRINTED IN U.S.A.

PART OF APPARATUS INDEX

DESIG	LOCATION FS	APP FIG.	EQPT
CIRCUIT PACK			
350-0	4B0	1	0-7-3L
350-1	4B6		0-7-4BR
440-0	4C0		0-7-5R
440-1	4C6		0-7-4GL
480-0	4D0		0-9-3L
480-1	4D6		0-9-4BR
620-0	4G0		0-9-5R
620-1	4F6		0-9-4GL
AR-0	4D2		0-9-12R
AR-1	4D7		0-9-4DL
ARLV-0	5D2		0-9-24R
ARLV-1	5D7		0-9-2BR
BT-0	4F2		0-7-16L
BT-1	4F7		0-7-36R
BTLV-0	5F2		0-11-24R
BTLV-1	5F7		0-11-2BR
HT-0	4E2		0-7-12R
HT-1	4E7		0-7-4DL
HTLV-0	5E2		0-11-20R
HTLV-1	5E7		0-11-32R
LVR-0	SH B5		0-9-18L
LVR-1	SH B5		0-9-32R
MT1-0	4C2		0-9-9L
MT1-1	4C7		0-9-43R
MTILV-0	5C2		0-7-24R
MTILV-1	5C7		0-7-2BR
TRAN-0	4A3		0-9-16L
TRAN-1	4A8		0-9-36R
TSR-1	6D1		0-11-3L
TSR-2	6F4		0-11-4R
TSR-3	6F6		0-11-6L
TSR-4	6F8		0-11-7R
TSR-5	8B1		0-11-9L
TSR-6	8B3		0-11-10R
TSR-7	8B6		0-11-12L
TSR-8	8B8		0-11-13R
TSR-9	8F1		0-11-15L
TSR-10	8F3		0-11-16R
TSR-11	8F6		0-11-34R
TSR-12	8F8	1	0-11-36L
TSR-13	11E1	2	0-11-37R
TT-0	4A2	1	0-7-9L
TT-1	4A7	1	0-7-43R
TTLV-0	5B2	1	0-7-20R
TTLV-1	5B7	1	0-7-32R

DESIG	LOCATION FS	APP FIG.	EQPT
RELAY			
AT0	2D6,2E7 2D7,2D5 10B5	1	
AT1	2H6,2D6 2H5,10B5		
AT2	3G3,3H3 10C5		
FA0	10E5 10F1 1E4		
FA1	10F5 10G1 1G4		
FA2	3H2,10A5		
GDO	4H2,4H1		
GD1	4G8,4G7		
GDT1	9E7,9E8 6B7		
GDT2	9F7,9F8 6C7,6C8		
GDT3	9G7,9G8 6A7,6B7 6C7		
IN10-0	2A2,9G1 9A3		
IN10-1	2E2,9C3 9H1		
IN10-01	10D5 7C7,7C8 9G3		
IN10-11	10C5 7C8,7C9 9G3		
IN60-0	10D5 10A0 10H1 10A2 9A3,7B2 7B3		
IN60-1	7B4, 7C3, 9C3, 10A1, 10A3, 10C5		
IN120-0	10D5 10B0 10B2 7B4,7B5 9B3		
IN120-1	10C4 10B1 10B3 9D3,7B6 7B5		
MCO	5F1,5E1 6B8,9C7 5D1,5C1 9C8,9C7 5B1,2D6		
MC1	5F7,3G4 5E7,6B8 9C7,5D7 5C7,9D7 5B7,2H6 9D8		
OA	7D4,7C4 7D5,7C6 7F6 10G5 10H2 9G8		
PO	10E2 10G1 10C9 10A8	1	

DESIG	LOCATION FS	APP FIG.	EQPT
RELAY (CONT)			
P1	10E2 10G1 10D9 10B8	1	
RTO-1	9F1,9E1 9D2,2C8 2C4,2A2 2B3,2B4 2A2,9D3		
RTO-2	7C6,7D5 9B0,7D2 7C2,7C1 7C0,6C4 6C3,9E2 9E3 10C1		
RTO-3	3C5,3F5 7E4 6C1,6C2 6C0,9F2 9F3 10C3 10B2 10H5	1	
RTO-4	11H2	2	

DESIG	LOCATION FS	APP FIG.	EQPT
RELAY, CONTACTOR			
CLO	1D3,1D2 1E1	1	
CL1	1F3,1F2 1G1		
PO1	1A2,1D1 10C8		
P11	1B2,1F1 10D8	1	

DESIG	LOCATION FS	APP FIG.	EQPT
COMPONENT ASSEMBLY			
CA1	1E2	1	
CA2	1G2	1	

DESIG	LOCATION FS	APP FIG.	EQPT
CAPACITOR			
C1	1D3	1	
C2	1G3	1	
C3	4H4	1	

DESIG	LOCATION FS	APP FIG.	EQPT
CONNECTOR, JACK			
DM1	2E1	1	
DM2	2D1	1	
DM3	2C1	1	
SP	1F8	1	
TEL A	1E8	1	
TEL B	1E8	1	

DESIG	LOCATION FS	APP FIG.	EQPT
DIODE			
AT0	2D5	1	
AT1	2H5		
AT2	3H2		
CLO	1E1		
CL1	1G1		
CR1	1D4		
CR2	1F4		
CR3	3G2		
CR4	10F1		
CR5	10G1		
FAOP	1E4		
FAOS	1E4		
FA1P	1G4		
FA1S	1H4		
FA2P	3H1		
FA2S	3H1		
GDO	4H1		
GD1	4G7		
GDT1	9E8		
GDT2	9F8		
GDT3	9G8		
IN10-0	9A3		
IN10-01	9G3		
IN10-1	9C3		
IN10-11	9G3		
IN60-0	9A3		
IN60-1	9C3		
IN120-0	9B3		
IN120-1	9D3		
MCO	9C8		
MC1	9D8		
OA	9G8		
PO	10A8		
PO1	10C8		
P1	10B8		
P11	10D8		
RTO-1	9D3		
RTO-2	9E3		
RTO-3	9F3	1	
RTO-4	11H1	2	

DESIG	LOCATION FS	APP FIG.	EQPT
FUSE			
105V±	3D2	1	
+ACDC	3B7		
-ACDC	3E7		
+SUP 97	3B2		
-SUP 97	3C2		
+SUP 105	3E2		
-SUP 105	3D2		
+TRP	3C7		
-TRP	3F7		
EML 105±	3F2		
GEN 1	3A2		
F1	1D3		
F2	1D4		
F3	1D4		
F4	1D4		
F5	1D4		
F6	1D4		
F7	1D5		
F8	1D5		
F9	1F3		
F10	1F4		
F11	1F4		
F12	1F4		
F13	1F4		
F14	1F4		
F15	1F5		
F16	1F5		
F17	1D6		
F18	1D6		
F19	1D6		
F20	1D6		
F21	1D7		
F22	1D7		
F23	1D7		
F24	1D7		
F25	1F6		
F26	1F6		
F27	1F6		
F28	1F6		
F29	1F7		
F30	1F7		
F31	1F7		
F32	1F7		
F33	1A4		
F34	1A4		
F35	1B4		
F36	1B4		
F37	1A4		
F38	1B4		
F39	1C4		
F40	1C4	1	

DESIG	LOCATION FS	APP FIG.	EQPT
INDUCTOR			
L1	1D2	1	
L2	1F2	1	

INDEX 5B

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-A2

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

SD-82255-01-A2

PART OF APPARATUS INDEX

DESIG	LOCATION FS	APP FIG.	EQPT
INVERTER			
INV 0	2A0	1	
INV 1	2A0	1	
KEY			
OFF-0	10E5	1	
	10A9	1	
	9D1	1	
S1 OFF-1	10F5	1	
	10B9	1	
	9E1	1	
NOR		1	
LAMP			
OOS-0	10E1	1	
OOS-1	10D1	1	
PWR OFF-0	10F1	1	
PWR OFF-1	10F1	1	

DESIG	LOCATION FS	APP FIG.	EQPT
RESISTOR			
R1	1B9	1	
R2	1C3		
R3	1C3		
R4	1D1		
R5	1E4		
R6	1E4		
R7	1F1		
R8	1F1		
R9	1G4		
R10	1H1		
R11	1H4		
R12	2D5		
R13	2D5		
R14	2H5		
R15	2H5		
R16	3B1		
R17	3C1		
R18	3C1		
R19	3B6		
R20	3E6		
R21	3D1		
R22	3E1		
R23	3E1		
R24	3F1		
R25	3G3		
R26	3H5		
R27	10A5		
R28	10B5		
R29	10C5		
R30	10C5		
R31	4B2		
R32	4C2		
R33	4D2		
R34	4F2		
R35	4G2		
R36	4H2		
R37	4H4		
R38	4B7		
R39	4C7		
R40	4D7		
R41	4E7		
R42	4F7		
R43	4H7		
R44	6E8		
R45	7E3		
R46	9A2		
R47	9A2		
R48	9B2		
R49	9C2		
R50	9C2		
R51	9D2		
R52	9E2		
R53	9E2		
R54	9F2		
R55	9F2		
R56	9F2		
R57	9F2		
R58	9G2		
R59	9H2		
R60	9B7		
R61	9C7		
R62	9C7		
R63	9D7		
R64	9D7		
R65	9E7		
R66	9E7		
R67	9F7		
R68	9F7		
R69	9G7		
R70	9G7		
R71	9G7		
R72	10C0		

DESIG	LOCATION FS	APP FIG.	EQPT
RESISTOR (CONT)			
R73	10C1	1	
R74	10C2	1	
R75	10C2	1	
R76	10G5	1	
R77	10G5	1	
R78	10D5	1	
R79	10D5	1	
R80	10E5	1	
R81	10F5	1	
R82	10F5	1	
R83	9E1	1	
R84	10H5	1	
R85	10E3	1	
R86	10E3	1	
R87	3D6	1	
R88	3G6	1	
R89	11H1	2	
R90	11H2	2	

DESIG	LOCATION FS	APP FIG.	EQPT

DESIG	LOCATION FS	APP FIG.	EQPT

DESIG	LOCATION FS	APP FIG.	EQPT

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-A3

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

SD-82255-01-A3

PART OF LEAD INDEX

DESIG	LOCATION FS	LOCATION CAD
1ST SUPERIMPOSED RINGING UNIT ON MISC FRAME		
+ACDC FUSE 1	3D9	20
+ACDC FUSE 2	3D9	20
+ACDC FUSE 3	3D9	20
+ACDC FUSE 4	3D9	20
+ACDC FUSE 5	3D9	20
+ACDC FUSE 6	3D9	20
-ACDC FUSE 18	3D9	18
-ACDC FUSE 19	3D9	18
-ACDC FUSE 20	3D9	18
-ACDC FUSE 21	3D9	18
-ACDC FUSE 22	3D9	18
-ACDC FUSE 23	3D9	18
RGRD	3D9	18
RGRD	3D9	19
RGRD	3D9	20
RGRD	3D9	21
+TRP FUSE 1	3D9	21
+TRP FUSE 2	3D9	21
+TRP FUSE 3	3D9	21
+TRP FUSE 4	3D9	21
+TRP FUSE 5	3D9	21
+TRP FUSE 6	3D9	21
-TRP FUSE 18	3D9	19
-TRP FUSE 19	3D9	19
-TRP FUSE 20	3D9	19
-TRP FUSE 21	3D9	19
-TRP FUSE 22	3D9	19
-TRP FUSE 23	3D9	19

DESIG	LOCATION FS	LOCATION CAD
3RD SUPERIMPOSED RINGING UNIT ON MISC FRAME		
+ACDC FUSE 15	3D9	20
+ACDC FUSE 16	3D9	20
+ACDC FUSE 17	3D9	20
+ACDC FUSE 18	3D9	20
+ACDC FUSE 19	3D9	20
+ACDC FUSE 20	3D9	20
-ACDC FUSE 70	3D9	18
-ACDC FUSE 71	3D9	18
-ACDC FUSE 72	3D9	18
-ACDC FUSE 73	3D9	18
-ACDC FUSE 74	3D9	18
-ACDC FUSE 75	3D9	18
RGRD	3D9	18
RGRD	3D9	19
RGRD	3D9	20
RGRD	3D9	21
+TRP FUSE 15	3D9	21
+TRP FUSE 16	3D9	21
+TRP FUSE 17	3D9	21
+TRP FUSE 18	3D9	21
+TRP FUSE 19	3D9	21
+TRP FUSE 20	3D9	21
-TRP FUSE 70	3D9	19
-TRP FUSE 71	3D9	19
-TRP FUSE 72	3D9	19
-TRP FUSE 73	3D9	19
-TRP FUSE 74	3D9	19
-TRP FUSE 75	3D9	19

DESIG	LOCATION FS	LOCATION CAD
CDPR/RR UNIT ON NETWORK FRAME 01		
-ACDC FUSE 1	3D9	18
-ACDC FUSE 2	3D9	18
-ACDC FUSE 3	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)3	6F2	8
R(TT)4	6F2	8
R(TT)5	6F2	8
R(TT)6	6F2	8
-TRP FUSE 1	3D9	19
-TRP FUSE 2	3D9	19
-TRP FUSE 3	3D9	19
T(TT)3	6F2	8
T(TT)4	6F2	8
T(TT)5	6F2	8
T(TT)6	6F2	8

DESIG	LOCATION FS	LOCATION CAD
CDPR/RR UNIT ON NETWORK FRAME 04		
-ACDC FUSE 13	3D9	18
-ACDC FUSE 14	3D9	18
-ACDC FUSE 15	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)15	6F5	8
R(TT)16	6F5	8
R(TT)17	6F5	8
R(TT)18	6F5	8
-TRP FUSE 13	3D9	19
-TRP FUSE 14	3D9	19
-TRP FUSE 15	3D9	19
T(TT)15	6F5	8
T(TT)16	6F5	8
T(TT)17	6F5	8
T(TT)18	6F5	8

DESIG	LOCATION FS	LOCATION CAD
CDPR/RR UNIT ON NETWORK FRAME 07		
-ACDC FUSE 37	3D9	18
-ACDC FUSE 38	3D9	18
-ACDC FUSE 39	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)27	6F7	9
R(TT)28	6F7	9
R(TT)29	6F7	9
R(TT)30	6F7	9
-TRP FUSE 37	3D9	19
-TRP FUSE 38	3D9	19
-TRP FUSE 39	3D9	19
T(TT)27	6F7	9
T(TT)28	6F7	9
T(TT)29	6F7	9
T(TT)30	6F7	9

DESIG	LOCATION FS	LOCATION CAD
CDPR/RR UNIT ON NETWORK FRAME 10		
-ACDC FUSE 46	3D9	18
-ACDC FUSE 47	3D9	18
-ACDC FUSF 48	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)37	6F9	10
R(TT)38	6F9	10
R(TT)43	6F7	10
R(TT)44	6F7	10
-TRP FUSE 46	3D9	19
-TRP FUSE 47	3D9	19
-TRP FUSE 48	3D9	19
T(TT)37	6F9	10
T(TT)38	6F9	10
T(TT)43	6F7	10
T(TT)44	6F7	10

DESIG	LOCATION FS	LOCATION CAD
CDPR/RR UNIT ON NETWORK FRAME 12		
-ACDC FUSE 52	3D9	18
-ACDC FUSE 53	3D9	18
-ACDC FUSE 54	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)63	8G7	15
R(TT)64	8G7	15
R(TT)65	8G7	15
R(TT)66	8G7	15
-TRP FUSE 52	3D9	19
-TRP FUSE 53	3D9	19
-TRP FUSE 54	3D9	19
T(TT)63	8G7	15
T(TT)64	8G7	15
T(TT)65	8G7	15
T(TT)66	8G7	15

CDPR/RR UNIT ON NETWORK FRAME 02		
-ACDC FUSE 7	3D9	18
-ACDC FUSE 8	3D9	18
-ACDC FUSE 9	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)1	6F2	8
R(TT)2	6F2	8
R(TT)7	6F0	8
R(TT)8	6F0	8
-TRP FUSE 7	3D9	19
-TRP FUSE 8	3D9	19
-TRP FUSE 9	3D9	19
T(TT)1	6F2	8
T(TT)2	6F2	8
T(TT)7	6F0	8
T(TT)8	6F0	8

CDPR/RR UNIT ON NETWORK FRAME 05		
-ACDC FUSE 31	3D9	18
-ACDC FUSE 32	3D9	18
-ACDC FUSE 33	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)13	6F5	9
R(TT)14	6F5	9
R(TT)19	6F3	9
R(TT)20	6F3	9
-TRP FUSE 31	3D9	19
-TRP FUSE 32	3D9	19
-TRP FUSE 33	3D9	19
T(TT)13	6F5	9
T(TT)14	6F5	9
T(TT)19	6F3	9
T(TT)20	6F3	9

CDPR/RR UNIT ON NETWORK FRAME 08		
-ACDC FUSE 40	3D9	18
-ACDC FUSE 41	3D9	18
-ACDC FUSE 42	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)25	6F7	9
R(TT)26	6F7	9
R(TT)31	6F5	9
R(TT)32	6F5	9
-TRP FUSE 40	3D9	19
-TRP FUSE 41	3D9	19
-TRP FUSE 42	3D9	19
T(TT)25	6F7	9
T(TT)26	6F7	9
T(TT)31	6F5	9
T(TT)32	6F5	9

CDPR/RR UNIT ON NETWORK FRAME 11		
-ACDC FUSE 49	3D9	18
-ACDC FUSE 50	3D9	18
-ACDC FUSE 51	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)45	6F7	10
R(TT)46	6F7	10
R(TT)47	6F7	10
R(TT)48	6F7	10
-TRP FUSE 49	3D9	19
-TRP FUSE 50	3D9	19
-TRP FUSE 51	3D9	19
T(TT)45	6F7	10
T(TT)46	6F7	10
T(TT)47	6F7	10
T(TT)48	6F7	10

-CDPR/RR UNIT ON NETWORK FRAME 13		
-ACDC FUSE 55	3D9	18
-ACDC FUSE 56	3D9	18
-ACDC FUSE 57	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)61	8G7	15
R(TT)62	8G7	15
R(TT)67	8G5	15
R(TT)68	8G7	15
-TRP FUSE 55	3D9	19
-TRP FUSE 56	3D9	19
-TRP FUSE 57	3D9	19
T(TT)61	8G7	15
T(TT)62	8G7	15
T(TT)67	8G5	15
T(TT)68	8G5	15

2ND SUPERIMPOSED RINGING UNIT ON MISC FRAME		
+ACDC FUSE 9	3D9	20
+ACDC FUSE 10	3D9	20
+ACDC FUSE 11	3D9	20
+ACDC FUSE 12	3D9	20
+ACDC FUSE 13	3D9	20
+ACDC FUSE 14	3D9	20
-ACDC FUSE 64	3D9	18
-ACDC FUSE 65	3D9	18
-ACDC FUSE 66	3D9	18
-ACDC FUSE 67	3D9	18
-ACDC FUSE 68	3D9	18
-ACDC FUSE 69	3D9	18
RGRD	3D9	18
RGRD	3D9	19
RGRD	3D9	20
RGRD	3D9	21
+TRP FUSE 9	3D9	21
+TRP FUSE 10	3D9	21
+TRP FUSE 11	3D9	21
+TRP FUSE 12	3D9	21
+TRP FUSE 13	3D9	21
+TRP FUSE 14	3D9	21
-TRP FUSE 64	3D9	19
-TRP FUSE 65	3D9	19
-TRP FUSE 66	3D9	19
-TRP FUSE 67	3D9	19
-TRP FUSE 68	3D9	19
-TRP FUSE 69	3D9	19

7A ANNOUNCEMENT MACHINE		
120-0A-1	7G5	6
120-0A-2	7G5	6
OAST	7F6	6
OAST-1	7F6	6

CDPR/RR UNIT ON NETWORK FRAME 03		
-ACDC FUSE 10	3D9	18
-ACDC FUSE 11	3D9	18
-ACDC FUSE 12	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)9	6F0	8
R(TT)10	6F0	8
R(TT)11	6F0	8
R(TT)12	6F0	8
-TRP FUSE 10	3D9	19
-TRP FUSE 11	3D9	19
-TRP FUSE 12	3D9	19
T(TT)9	6F0	8
T(TT)10	6F0	8
T(TT)11	6F0	8
T(TT)12	6F0	8

CDPR/RR UNIT ON NETWORK FRAME 06		
-ACDC FUSE 34	3D9	18
-ACDC FUSE 35	3D9	18
-ACDC FUSE 36	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)21	6F5	9
R(TT)22	6F5	9
R(TT)23	6F5	9
R(TT)24	6F5	9
-TRP FUSE 34	3D9	19
-TRP FUSE 35	3D9	19
-TRP FUSE 36	3D9	19
T(TT)21	6F5	9
T(TT)22	6F5	9
T(TT)23	6F5	9
T(TT)24	6F5	9

CDPR/RR UNIT ON NETWORK FRAME 09		
-ACDC FUSE 43	3D9	18
-ACDC FUSE 44	3D9	18
-ACDC FUSE 45	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT)36	6G9	10
R(TT)40	6G9	10
R(TT)41	6G9	10
R(TT)42	6G9	10
-TRP FUSE 43	3D9	19
-TRP FUSE 44	3D9	19
-TRP FUSE 45	3D9	19
T(TT)36	6G8	10
T(TT)40	6G8	10
T(TT)41	6G8	10
T(TT)42	6G8	10

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-A4

BELL TELEPHONE LABORATORIES INCORPORATED

68

DESIG	LOCATION FS	CAD
CDPR/RR UNIT NETWORK FRAME 44		
-ACDC FUSE 58	3D9	18
-ACDC FUSE 59	3D9	18
-ACDC FUSE 60	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT) 69	8G5	15
R(TT) 70	8G5	15
R(TT) 71	8G5	15
R(TT, 72	8G5	15
-TRP FUSE 58	3D9	19
-TRP FUSE 59	3D9	19
-TRP FUSE 60	3D9	19
T(TT) 69	8G5	15
T(TT) 70	8G5	15
T(TT) 71	8G5	15
T(TT) 72	8G5	15

DESIG	LOCATION FS	CAD
CDPR/RR UNIT (118) ON CONTROL FR 0		
-ACDC FUSE 25	3D9	18
-ACDC FUSE 26	3D9	18
-ACDC FUSE 27	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT) 49	8C2	11
R(TT) 50	8C2	11
R(TT) 55	8C0	11
R(TT) 56	8C0	11
-TRP FUSE 25	3D9	19
-TRP FUSE 26	3D9	19
-TRP FUSE 27	3D9	19
T(TT) 49	8C2	11
T(TT) 50	8C2	11
T(TT) 55	8C0	11
T(TT) 56	8C0	11

DESIG	LOCATION FS	CAD
COIN CONTROL TONE AND REC ANNUNC AND REMOTE REC ANNUNC CKT OR OTHER TONE APPLICATION CKT		
R(BT) 1	8G4	22
R(BT) 2	8G4	22
R(BT) 3	8G4	22
R(BT) 4	8G4	22
R(BT) 5	8H4	22
R(BT) 6	8H4	22
R(BT60) 1	8G2	25
R(BT60) 2	8G2	25
R(BT60) 3	8G2	25
R(BT60) 4	8G2	25
R(BT60) 5	8G2	25
R(BT60) 6	8G2	25
R(BT60) 7	8G0	25
R(BT60) 8	8G0	25
R(BT60) 9	8G0	25
R(BT60) 10	8G0	25
R(BT60) 11	8G0	25
R(BT60) 12	8G0	25
R(BT60) 13	8G2	25
R(BT60) 14	8G2	25
R(BT60) 15	8G2	25
R(BT60) 16	8G2	25
R(BT60) 17	8G2	25
R(BT60) 18	8G2	25
R(HT) 4	8C5	26
R(HT) 5	8C5	26
R(HT) 6	8C5	26
R(HT) 7	8C7	26
R(HT) 8	8C7	26
R(HT) 9	8B7	26
R(HT) 10	8B7	26
R(HT) 11	8B7	26
R(HT) 12	8B7	26
R(MT1)1	8C4	23
R(MT1)2	8C4	23
R(MT1) 3	8C4	23
R(MT1) 4	8C4	23
R(MT1) 5	8C4	23
R(MT1) 6	8C4	23
R(MT1) 7	8C3	23
R(MT1) 8	8C3	23
R(MT1) 9	8C3	23
R(MT1) 10	8C3	23
R(MT1) 11	8C3	23
R(ROH) 1	8C9	24
R(ROH) 2	8C9	24
R(ROH) 3	8C9	24
R(ROH) 4	8C9	24
R(ROH) 5	8C9	24
R(ROH) 7	8C7	24
R(ROH) 8	8C7	24
R(ROH) 9	8B7	24
R(ROH) 10	8B7	24
R(ROH) 11	8B7	24
R(ROH) 12	8B7	24
T(BT) 1	8G4	22
T(BT) 2	8G4	22
T(BT) 3	8G4	22
T(BT) 4	8G4	22
T(BT) 5	8H4	22
T(BT) 6	8H4	22

DESIG	LOCATION FS	CAD
COIN CONTROL TONE AND REC ANNUNC AND REMOTE REC ANNUNC CKT OR OTHER TONE APPLICATION CKT		
T(BT60) 1	8G2	25
T(BT60) 2	8G2	25
T(BT60) 3	8G2	25
T(BT60) 4	8G2	25
T(BT60) 5	8G2	25
T(BT60) 6	8G2	25
T(BT60) 7	8G0	25
T(BT60) 8	8G0	25
T(BT60) 9	8G0	25
T(BT60) 10	8G0	25
T(BT60) 11	8G0	25
T(BT60) 12	8G0	25
T(BT60) 13	8G2	25
T(BT60) 14	8G2	25
T(BT60) 15	8G0	25
T(BT60) 16	8G0	25
T(BT60) 17	8G0	25
T(BT60) 18	8G0	25
T(HT) 4	8C5	26
T(HT) 5	8C5	26
T(HT) 6	8C5	26
T(HT) 7	8C7	26
T(HT) 8	8C7	26
T(HT) 9	8B7	26
T(HT) 10	8B7	26
T(HT) 11	8B7	26
T(HT) 12	8B7	26
T(MT1) 1	8C4	23
T(MT1) 2	8C4	23
T(MT1) 3	8C4	23
T(MT1) 4	8C4	23
T(MT1) 5	8C4	23
T(MT1) 6	8C4	23
T(MT1) 7	8C3	23
T(MT1) 8	8C3	23
T(MT1) 9	8C3	23
T(MT1) 10	8C3	23
T(MT1) 11	8C3	23
T(ROH) 1	8C9	24
T(ROH) 2	8C9	24
T(ROH) 3	8C9	24
T(ROH) 4	8C9	24
T(ROH) 5	8C9	24
T(ROH) 7	8C7	24
T(ROH) 8	8C7	24
T(ROH) 9	8B7	24
T(ROH) 10	8B7	24
T(ROH) 11	8B7	24
T(ROH) 12	8B7	24

DESIG	LOCATION FS	CAD
DISTRIBUTOR CKT		
A0	9C0	7
A1	9C0	7
B0	9C0	7
B1	9C0	7
C0	9C0	7
C1	9C0	7
D0	9E5	7
D1	9C0	7
E0	9E5	7
F0	9E5	7
G0	9E5	7
G1	9E5	7
H0	9E5	7
K0	10E3	7
K1	10E3	7

DESIG	LOCATION FS	CAD
JUNCTOR UNIT ON NETWORK FRAME 01		
AR(10)-R0	7F8	6
AR(10)-R1	7F8	6
AR(10)-T0	7F8	6
AR(10)-T1	7F8	6
BT(120)-R0	7F8	6
BT(120)-R1	7F8	6
BT(120)-T0	7F8	6
BT(120)-T1	7F8	6
TRFR	7F8	6

DESIG	LOCATION FS	CAD
PERIPHERAL TEST UNIT ON TEST FRAME		
60A-2	10D1	7
60B-2	10D1	7
120A-2	10D1	7
120B-2	10D1	7
GEN 1 FUSE 1		17
RGRD		17
R(HT) 1	8C5	13
R(HT) 2	8C5	13
R(HT) 3	8C5	13
R(MT1) 12	8C2	12
R(ROH) 6	8C9	13
R(TT) 33	6G5	10
R(TT) 34	6G5	10
R(TT) 35	6G5	10
T(HT) 1	8C5	13
T(HT) 2	8C5	13
T(HT) 3	8C5	13
T(MT1) 12	8C2	12
T(ROH) 6	8C9	13
T(TT) 33	6E5	10
T(TT) 34	6E5	10
T(TT) 35	6E5	10

DESIG	LOCATION FS	CAD
CDPR/RR UNIT ON NETWORK FRAME 15		
-ACDC FUSE 61	3D9	18
-ACDC FUSE 62	3D9	18
-ACDC FUSE 63	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT) 75	8G9	15
R(TT) 76	8G9	15
R(TT) 77	8G9	15
R(TT) 78	8G9	15
-TRP FUSE 61	3D9	19
-TRP FUSE 62	3D9	19
-TRP FUSE 63	3D9	19
T(TT) 75	8F9	15
T(TT) 76	8F9	15
T(TT) 77	8F9	15
T(TT) 78	8F9	15

DESIG	LOCATION FS	CAD
CDPR/RR UNIT (122) ON CONTROL FRAME 0		
-ACDC FUSE 28	3D9	18
-ACDC FUSE 29	3D9	18
-ACDC FUSE 30	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT) 57	8C0	11
R(TT) 58	8C0	11
R(TT) 59	8C0	11
R(TT) 60	8C0	11
-TRP FUSE 28	3D9	19
-TRP FUSE 29	3D9	19
-TRP FUSE 30	3D9	19
T(TT) 57	8C0	11
T(TT) 58	8C0	11
T(TT) 59	8C0	11
T(TT) 60	8C0	11

DESIG	LOCATION FS	CAD
DLL AND RINGING CIRCUITS		
105V±	3D3	17
+ACDC	3A8	17
-ACDC	3A8	17
RGRD	3D3	17
RGRD	3A8	17
+SUP 97	3D3	17
-SUP 97	3D3	17
+SUP 105	3D3	17
-SUP 105	3D3	17
+TRP	3A8	17
-TRP	3A8	17

DESIG	LOCATION FS	CAD
MISC FRAME LINE SET		
R	1E9	6
R1	1E9	6
T	1E9	6
T1	1E9	6

DESIG	LOCATION FS	CAD
MISC POWER FRAME CKT		
+48A (RTPA)	1A1	2
+48B (RTPB)	1B1	2
+48V RTN A	1A1	2
+48V RTN B	1B1	2

DESIG	LOCATION FS	CAD
POWER DIST FRAME		
-48A	1E0	1
-48V RTN A	1E0	1
-48B	1E0	1
-48V RTN B	1E0	1

DESIG	LOCATION FS	CAD
CDPR/RR UNIT (014) ON CONTROL FR 0		
-ACDC FUSE 4	3D9	18
-ACDC FUSE 5	3D9	18
-ACDC FUSE 6	3D9	18
RGRD	3D9	18
RGRD	3D9	19
R(TT) 51	8C2	11
R(TT) 52	8C2	11
R(TT) 53	8C2	11
R(TT) 54	8C2	11
-TRP FUSE 4	3D9	19
-TRP FUSE 5	3D9	19
-TRP FUSE 6	3D9	19
T(TT) 51	8C2	11
T(TT) 52	8C2	11
T(TT) 53	8C2	11
T(TT) 54	8C2	11

DESIG	LOCATION FS	CAD
CIRCUITS REQUIRING INTERRUPTED RINGING		
GEN 1	3A3	17
RGRD	3A3	17

DESIG	LOCATION FS	CAD
EML CIRCUITS		
EML 105±	3F4	17
R GPD	3F4	17

DESIG	LOCATION FS	CAD
OTHER SPARE JACKS		
T-SP	1F9	6
R-SP	1F9	6
S-SP	1F9	6

DESIG	LOCATION FS	CAD
PRIVATE LINE CIRCUIT		
R(AR)1	11F3	27
R(AR)2	11F3	27
R(AR)3	11F3	27
R(AR)4	11G3	27
R(AR)5	11G3	27
R(AR)6	11G3	27
R(AR)7	11F0	27
R(AR)8	11F0	27
R(AR)9	11F0	27
R(AR)10	11G0	27
R(AR)11	11G0	27
R(AR)12	11G0	27
T(AR)1	11F3	27
T(AR)2	11E3	27
T(AR)3	11E3	27
T(AR)4	11E3	27
T(AR)5	11E3	27
T(AR)6	11E3	27
T(AR)7	11F0	27
T(AR)8	11E0	27
T(AR)9	11E0	27
T(AR)10	11E0	27
T(AR)11	11E0	27
T(AR)12	11E0	27

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

BELL TELEPHONE LABORATORIES INCORPORATED

SD-82255-01-A5

PART OF LEAD INDEX

DESIG	LOCATION	
	FS	CAD
SCANNER		
SC(01)H	10E4	5
SC(01)L	10E4	5
SC(02)H	10E4	5
SC(02)L	10E4	5
SC(03)H	10E4	5
SC(03)L	10E4	5
SC(04)H	10E4	5
SC(04)L	10E4	5
SC(05)H	5D5	4
SC(05)L	5D5	4
SC(06)H	5D5	4
SC(06)L	5D5	4
SC(07)H	5D5	4
SC(07)L	5D5	4
SC(08)H	5D5	4
SC(08)L	5D5	4
SC(09)H	5D5	4
SC(09)L	5D5	4
SC(10)H	5D9	5
SC(10)L	5D9	5
SC(11)H	5D9	5
SC(11)L	5D9	5
SC(12)H	5D9	5
SC(12)L	5D9	5
SC(13)H	5D9	5
SC(13)L	5D9	5
SC(14)H	5D9	5
SC(14)L	5D9	5
SC(15)H	9B8	4
SC(15)L	9B8	4
SC(16)H	10E4	4
SC(16)L	10E4	4
SC(17)H	10E4	4
SC(17)L	10E4	4
SC(18)H	10E4	4
SC(18)L	10E4	4
SC(19)H	10E4	4
SC(19)L	10E4	4
SC(20)H	10E4	4
SC(20)L	10E4	4
SC(21)H	10E4	4
SC(21)L	10E4	4
SC(22)H	10E4	4
SC(22)L	10E4	4
SC(23)H	4H3	4
SC(23)L	4H3	4
SC(24)H	4H9	5
SC(24)L	4H9	5
SC(25)H	10E4	5
SC(25)L	10E4	5

OPTION INDEX			
APP OR WRG	RATED ON ISSUE	REF NOTES	LOCATION
Z			11B1,11B2,11B3, 11C2,11E1,11H0, 11H1,11H2, APP FIG. 2

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

BELL TELEPHONE LABORATORIES INCORPORATED

SD-82255-01-A6

6S

FS 1
BATTERY DISTRIBUTION

CONV 0 184A SD-92341-01
RTPA 1 1/3 AMP
+48A
+48V RTN A
P, 22 GA
P01 6×4
1H3 SEE NOTE 1
22 GA

CONV 1 184A SD-92341-01
RTPB 1 1/3 AMP
+48B
+48V RTN B
P, 22 GA
P11 6×4
1H3 SEE NOTE 1
22 GA

MISC PWR FRAME CKT SD-3H905-01

RTN A — RTN 1H3 SEE NOTE 1 — 22 GA
F33 3/4 AMP — F33 2D2, 3C5
F34 3/4 AMP — F34 1A8
F37 180 mA
F38
F35 3/4 AMP — F35 2N2, 3D5
F36 3/4 AMP
F39
F40
RTN B — RTN 1H3 SEE NOTE 1 — 22 GA

1A4 F34 (+48) → (+48
1F7 F30 (-48) → (-48
1H3 SEE NOTE 1 RTN → (GRD
R1 12.1K Ω → (MRB

RTA 15 AMP
-48A
GRD A
-48V RTN A
D2, 12 GA
P01
14GA
CL0 3×5
R4 10.7
14GA
L1 .005Ω
CL0 6×4
C1 6500
RTN
1H3 SEE NOTE 1
14GA
R2 1K Ω
R3 1K Ω
14GA

F1 2 AMP 280
F2 2 AMP 355
F3 2 AMP 242
F4 2 AMP 481, 401, 421, 441
F5 2 AMP 403, 423, 443
F6 2 AMP 440
F7 2 AMP 321, 341, 301, 361
F8 2 AMP 363

RTN A
R5 1K Ω
FAOP
FAO P-1175 S-1025 FAOS
14GA
R6 1K Ω

CA1 ED-82710-01
Q1
Q2
R1 5110
R2 187
CR1 CR2
CL0 1200

POWER DIST FRAME

14GA

F17 2 AMP 308
F18 2 AMP 341, 321, 301, 361
F19 2 AMP 343, 323, 303, 363
F20 2 AMP 440
F21 2 AMP 360, 340
F22 2 AMP 320, 300, 360
F23 2 AMP 342
F24 2 AMP 302

14GA
RTN A
14GA

TO OTHER TEL JACKS
P
TEL A: 2, 1 — TI, T
TEL B: 2, 1 — RI, R
TO MISC FRAME LINE SET

SP: 3, 2, 1 — T-SP, R-SP, S-SP
TO OTHER SPARE JACKS
TO OTHER SPARE JACKS IN SAME AISLE

RTB 15 AMP
-48B
GRD B
-48V RTN B
D2, 12 GA
P11
14GA
CL1 3×5
R9 10.7
14GA
L2 .006Ω
CL1 6×4
C2 6500
14GA
R7 200
R10 200

F9 2 AMP 240
F10 2 AMP 260
F11 2 AMP 220
F12 2 AMP 200
F13 2 AMP 280
F14 2 AMP 460
F15 2 AMP 480
F16 2 AMP 440

RTN B
R9 1K Ω
FAIP
FAI P-1173 S-1023 FAIS
14GA
R11 1K Ω

CA2 ED-82710-01
Q1
Q2
R1 5110
R2 187
CR1 CR2
CL1 1200

F25 2 AMP 363
F26 2 AMP 343
F27 2 AMP 323
F28 2 AMP 303
F29 2 AMP 383
F30 2 AMP 340
F31 2 AMP 320
F32 2 AMP 300

14GA
RTN B
14GA

D1
D1
D1
D1

GROUND BAR (SEE NOTE 106)

1A2, 1B2, 1A4, 1C4, 1A8, 1E3, 2C2, 2D7, 2H2, 2H7, 3B2, 3B7, 3C2, 3D2, 3D7, 3E2, 3E7, 3F2, 3G4, 3G7, 3H3, 3H4, 4A17, 4M1, 4N6, 5B4, 5C4, 5D6, 5F4, 5G4, 6B5, 7F3, 10A5, 10B5, 10C6, 10D5, 10E5, 10F5, 10G5, 10H3, 11H0, 9F0, 9H0, 9H6, 9B8

NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

SD-82253-01-BI

BELL TELEPHONE LABORATORIES INCORPORATED

SHEET SIZE 6S

SD-82253-01-BI

PART OF FS 2

RINGING INVERTERS, MONITORS AND DISTRIBUTION

INVERTER
INV 0
SD-82258-01

TB2

9 86V(A) 22GA
5 86V(B)
6 97V(B)
10 97V(A)
7 105V(B)
11 105V(A)
3 105V(C)
1 0(C)
4 0(B)
8 0(A)

TB1
P, 16GA
IC4 SEE NOTES 104 & 202
RTN A.
F1(-48)

IC4 (-48V)F11 IF4
IN10-0
RTO-1

DM3 RTN IH3 SEE NOTE 1
DM2 F33 (+48) IA4
DM1 F2 (-48) IC4

22GA

INVERTER
INV 1
SD-82258-01

TB2

9 86V(A)
5 86V(B)
6 97V(B)
10 97V(A)
7 105V(B)
11 105V(A)
3 105V(C)
4 0(B)(+48) F35 IB4
8 0(A)(-48) F10 IF4
1 0(C) RTN IH3 SEE NOTE 1

TB1
P, 16GA
IF4 SEE NOTES 104 & 202
RTN B
F9(-48)

IF4 (-48V)F11 IF4
IN10-1

22GA

CR1 ATO L U 1050 R12 6810 MCO RTN IH3 SEE NOTE 1
R13 301 ATO ATI

CR2 ATI L U 1050 R14 6810 MCI RTN IH3 SEE NOTE 1
R15 301 ATI

1 3A0
5 3E5
4 3B5
2
3
9 3D0
6

RTO-1 22GA 7
22GA 8
ATO 2
22GA
22GA
ATO 4

NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 1

RINGING, TONE & SIGNALING CIRCUITS

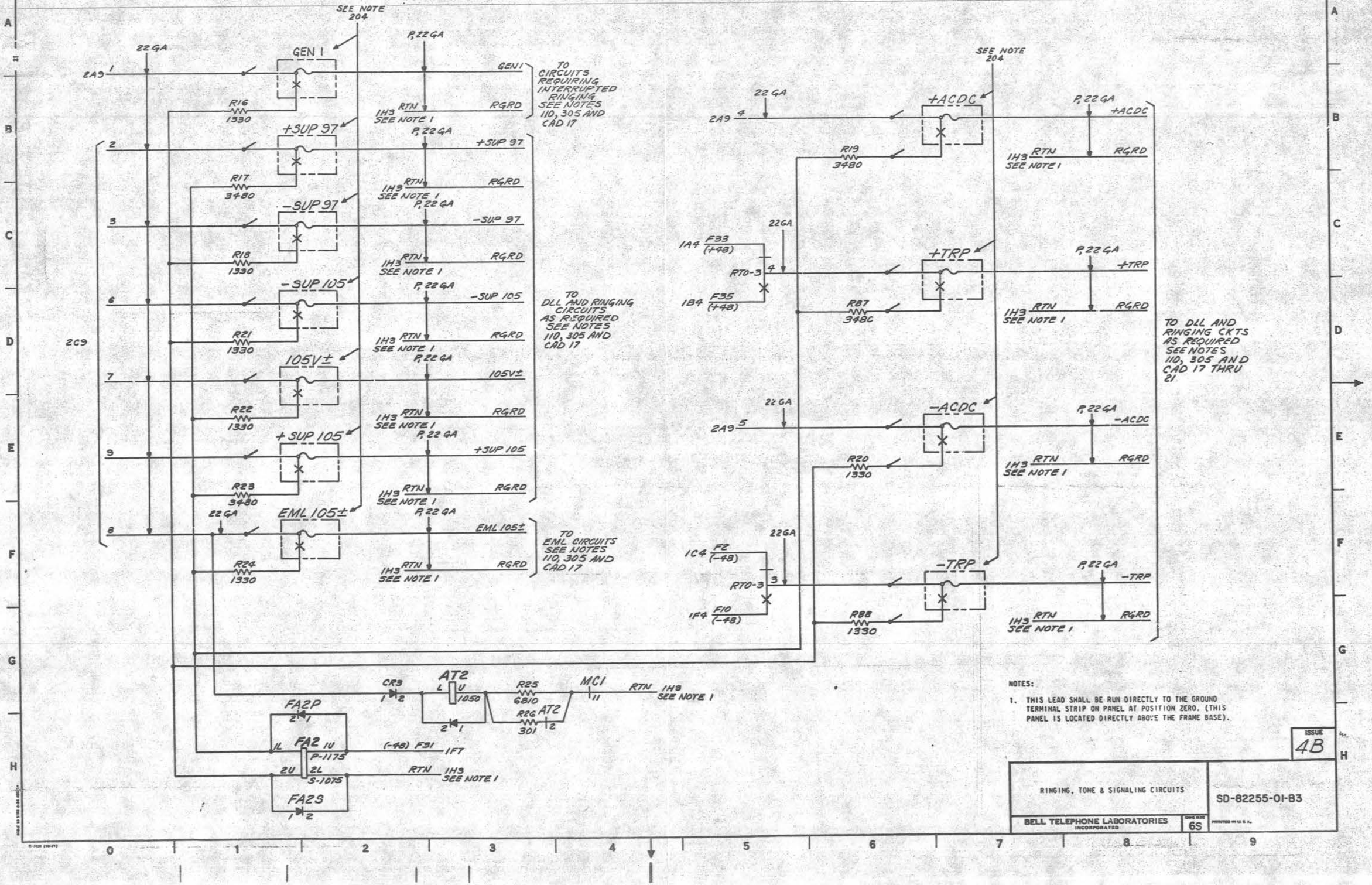
SD-82255-01-82

BELL TELEPHONE LABORATORIES INCORPORATED

6S

SD-82255-01-82

PART OF FS 2
RINGING INVERTERS, MONITORS AND DISTRIBUTION



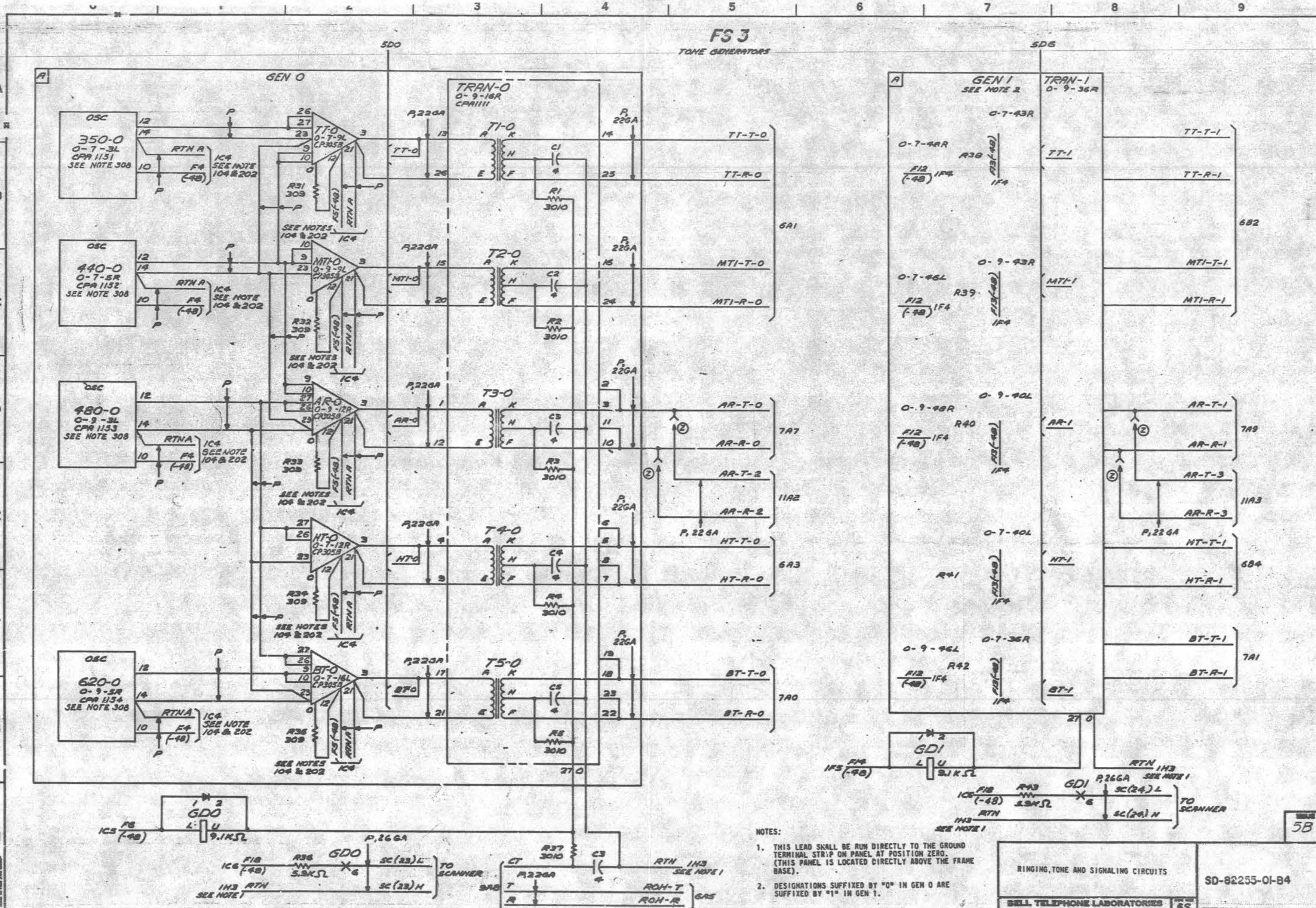
NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 4B

RINGING, TONE & SIGNALING CIRCUITS	SD-82255-01-83
BELL TELEPHONE LABORATORIES INCORPORATED	SIZE 6S

SD-82255-01-83



NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).
2. DESIGNATIONS SUFFIXED BY "0" IN GEN 0 ARE SUFFIXED BY "1" IN GEN 1.

RINGING, TONE AND SIGNALING CIRCUITS

SD-82255-01-B4

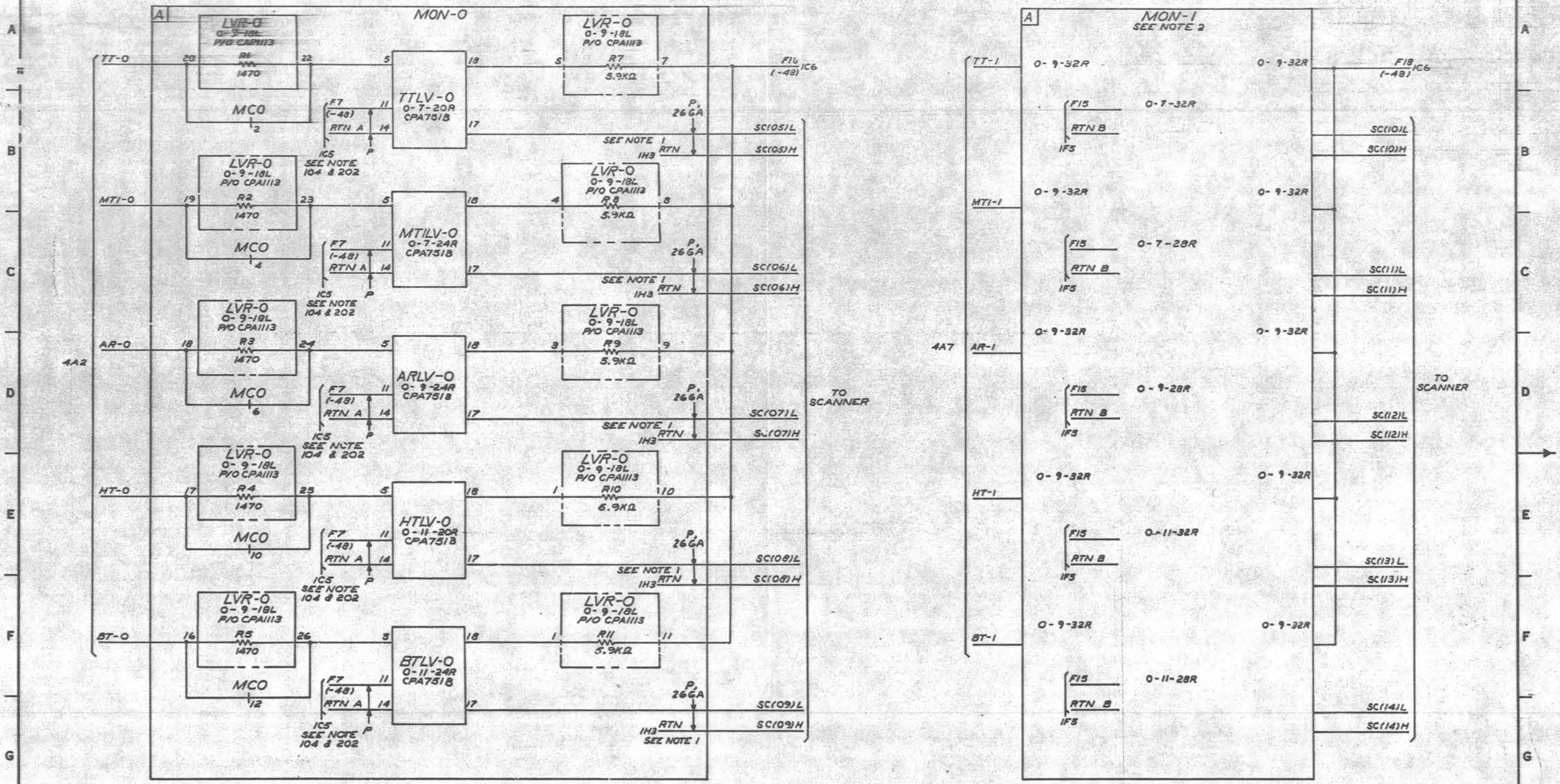
BELL TELEPHONE LABORATORIES

ISSUE 5B

SD-82255-01-B4

FS 4

TONE LOW VOLTAGE MONITORS



NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).
2. DESIGNATIONS SUFFIXED BY 0 IN MON-0 ARE SUFFIXED BY 1 IN MON-1.

ISSUE 3AR

RINGING, TONE AND SIGNALING CIRCUITS

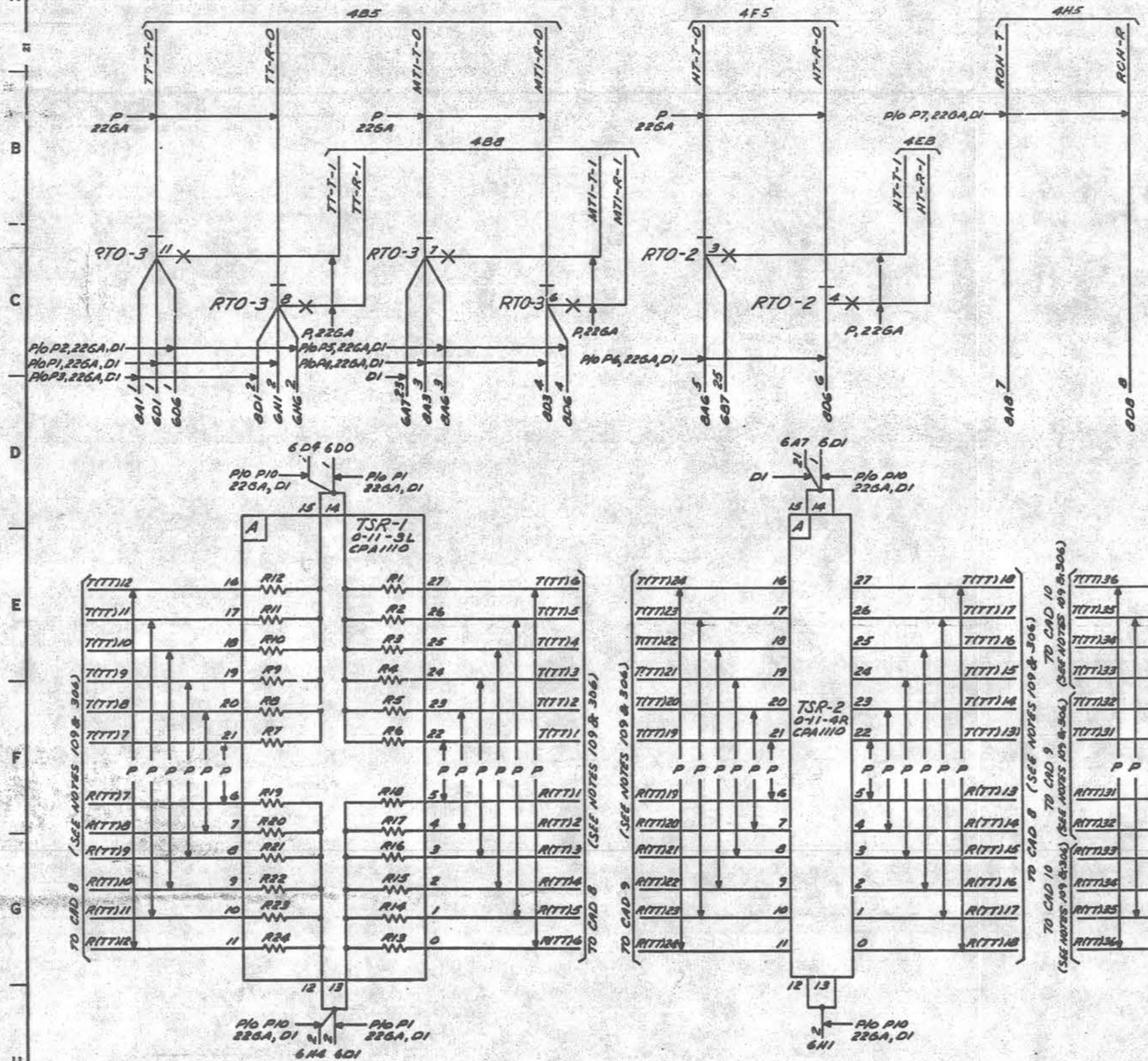
SD-82255-01-85

BELL TELEPHONE LABORATORIES INCORPORATED 6S

SD-82255-01-85

PART OF FS 5

TONE INTERRUPTION, TRANSFER AND DISTRIBUTION



NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-86

BELL TELEPHONE LABORATORIES INCORPORATED

6S

SD-82255-01-86

PART OF FS 5

TONE INTERRUPTION, TRANSFER AND DISTRIBUTION

4F5 — BT-T-0, BT-R-0
4F8 — BT-T-1, BT-R-1
4D5 — AR-T-0, AR-R-0
4D8 — AR-T-1, AR-R-1

P, 22GA
RTO-2
IN60-0
IN60-1
IN120-0
IN120-1
IN10-01
IN10-11
OA
D1
6C7
6C8
6C9
P/O P9, 22GA D1
P/O P8, 22GA D1
P, 22GA D1
8E3
8H3
8E1
8H1
R45 10
RTO-3
RTN
TRFR
1H3
SEE NOTE 1
BT(120)-TO
BT(120)-RO
BT(120)-T1
BT(120)-R1
AR(10)-TO
AR(10)-RO
AR(10)-T1
AR(10)-R1
TO JUNCTOR UNIT ON NETWORK FRAME 01
120-0A-1
120-0A-2
0AST
0AST1
TO 7A ANNOUNCEMENT MACHINE

NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-B7

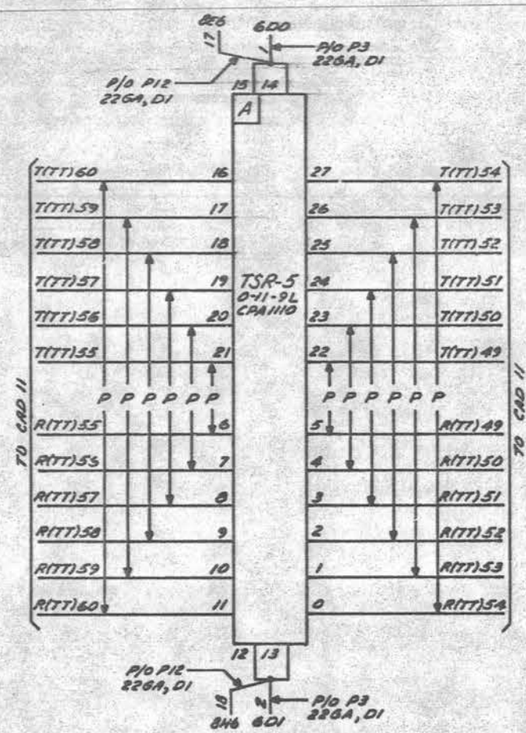
BELL TELEPHONE LABORATORIES INCORPORATED

6S

SD-82255-01-B7

PART OF FS 5

TONE INTERRUPTION, TRANSFER AND DISTRIBUTION (SEE NOTES 109 & 306)



RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-88

ISSUE 2A

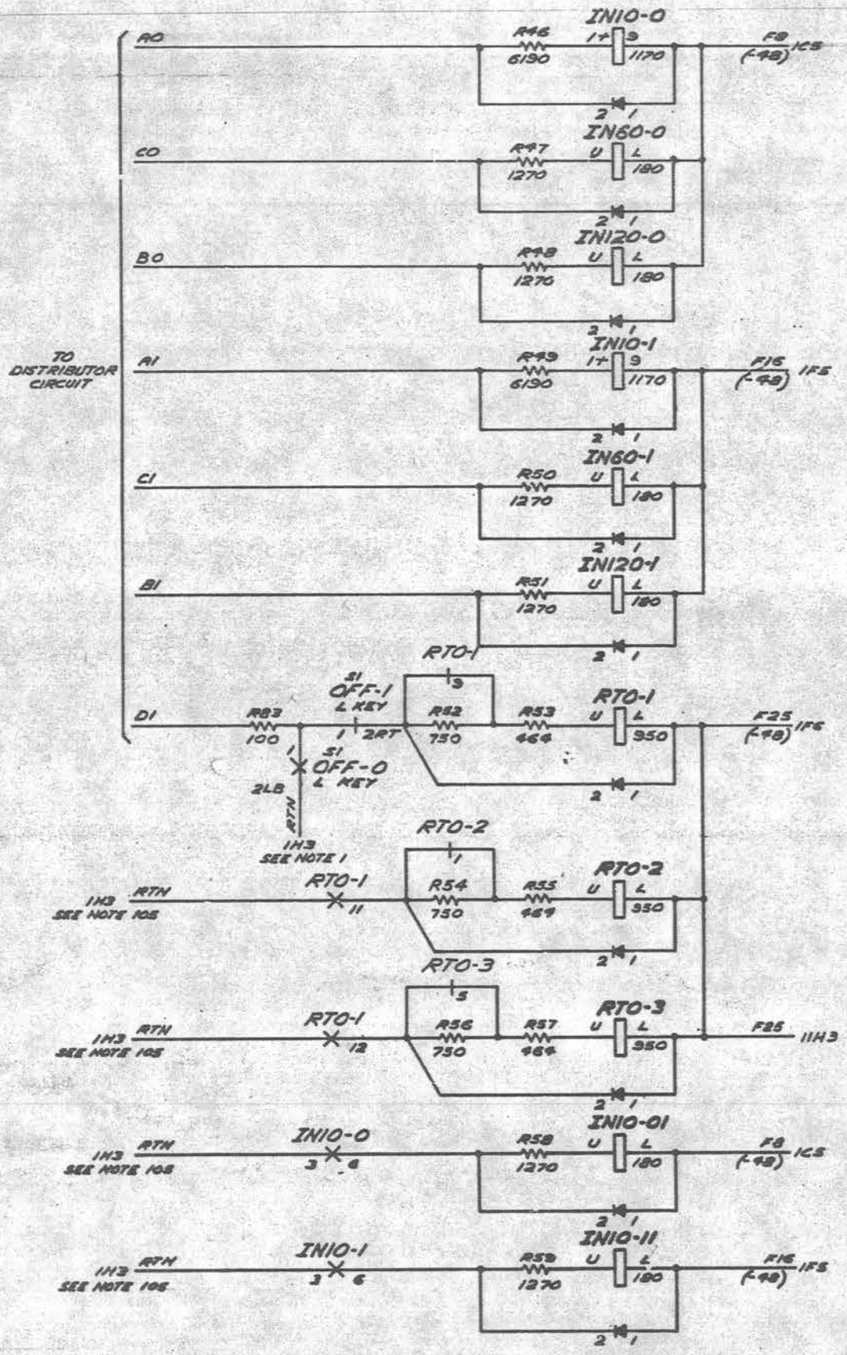
BELL TELEPHONE LABORATORIES INCORPORATED

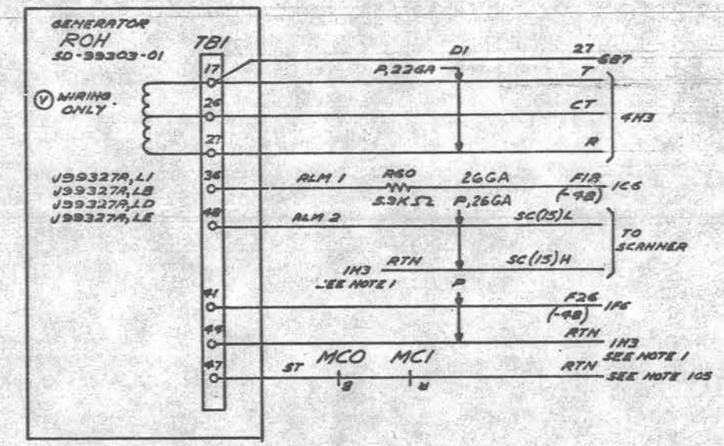
SIZE 6S

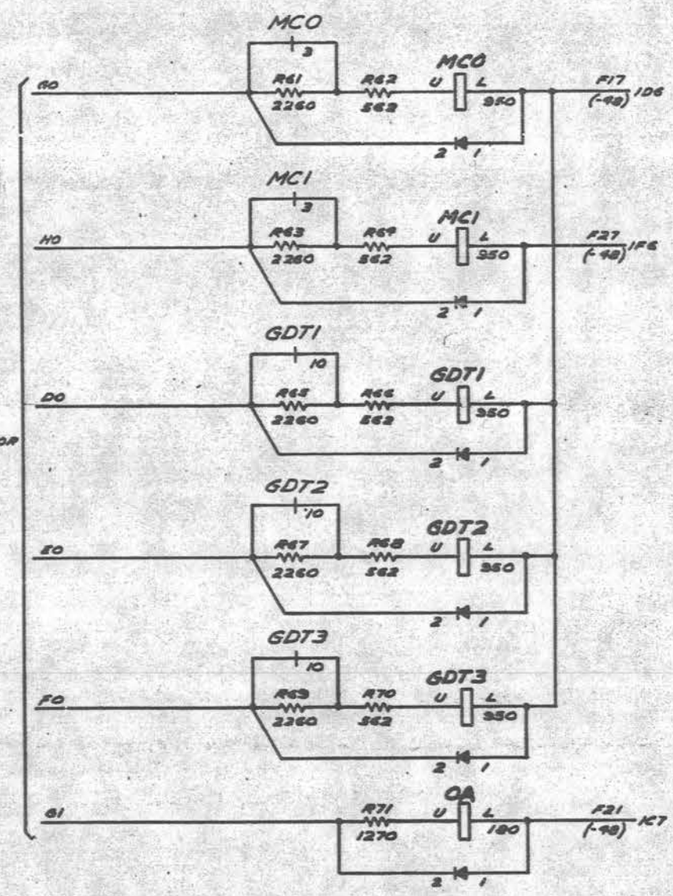
SD-82255-01-88

PART OF FS 6

INTERRUPTION, CONTROL, ALARM & TRANSFER CIRCUIT







NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

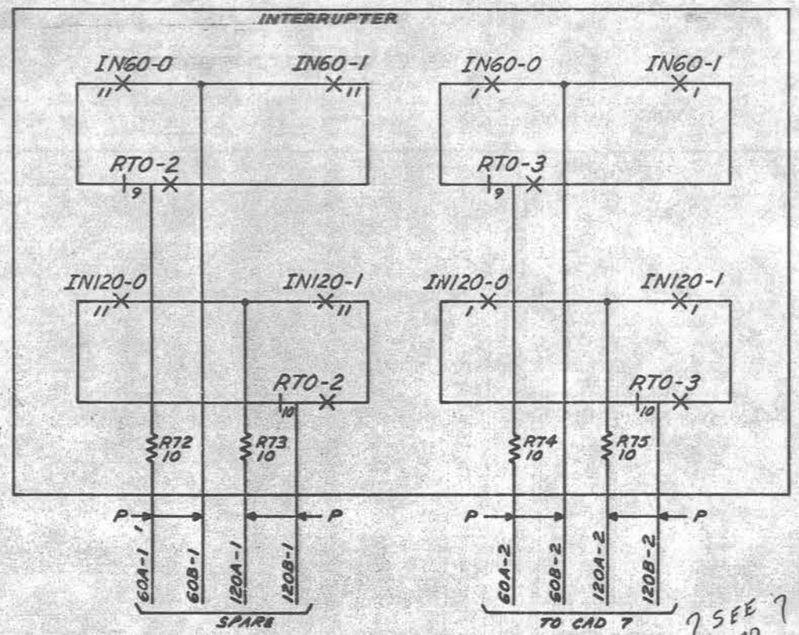
BELL TELEPHONE LABORATORIES INCORPORATED

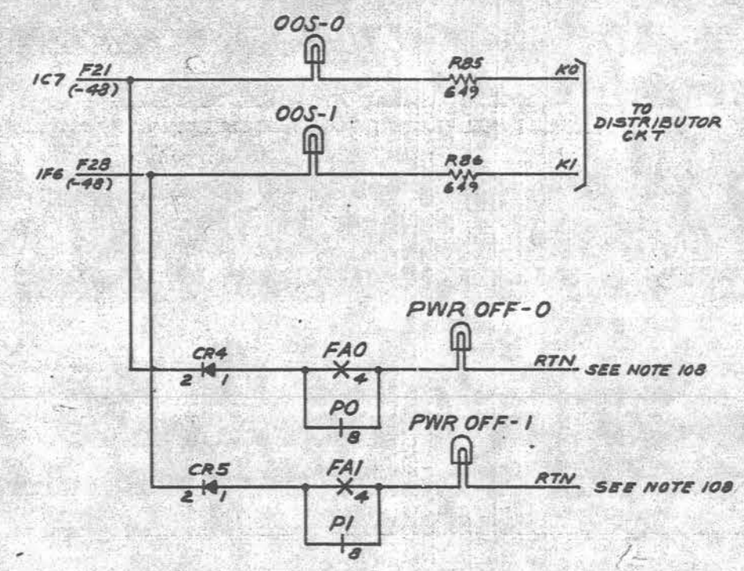
SIZE 6S

SD-82255-01-89

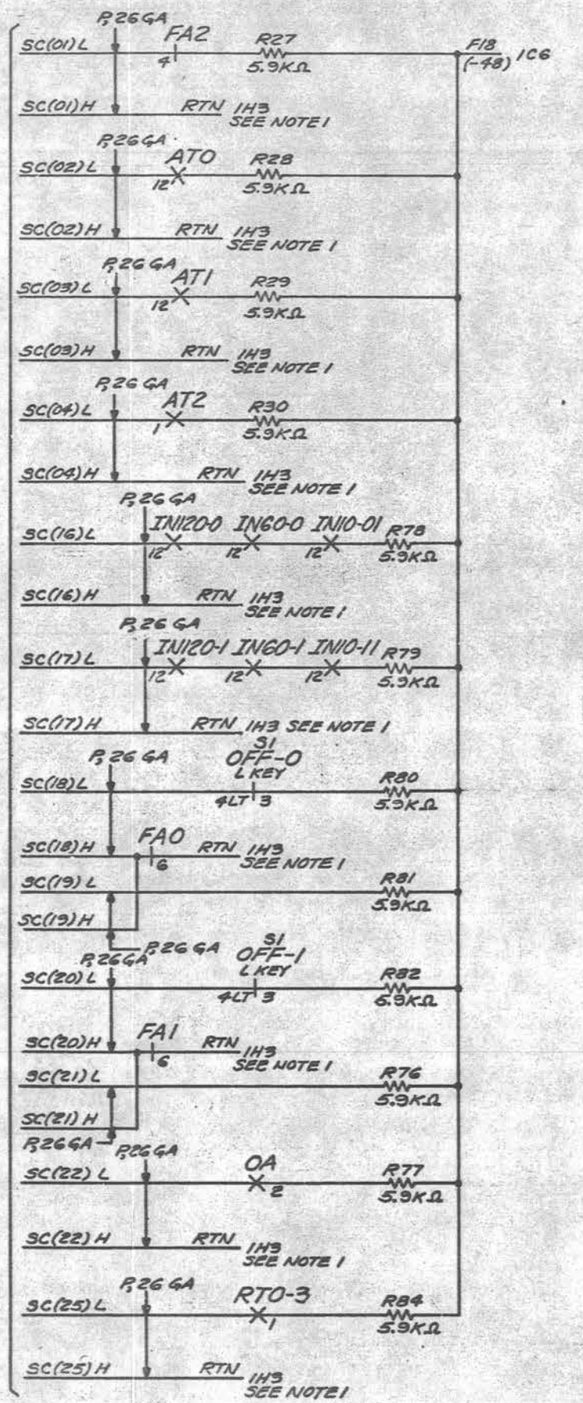
SD-82255-01-89

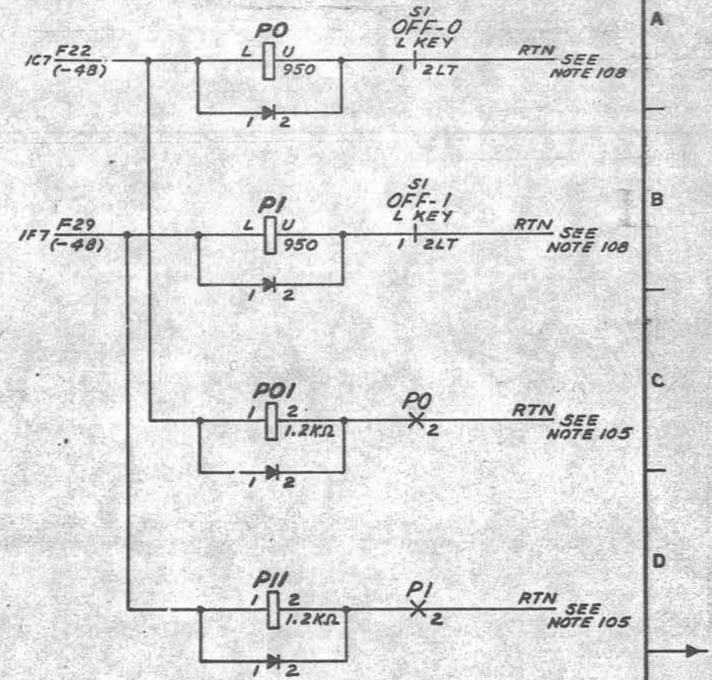
PART OF FS 6
INTERRUPTION, CONTROL, ALARM & TRANSFER CIRCUIT





TO SCANNER





NOTES:

1. THIS LEAD SHALL BE RUN DIRECTLY TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO. (THIS PANEL IS LOCATED DIRECTLY ABOVE THE FRAME BASE).

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

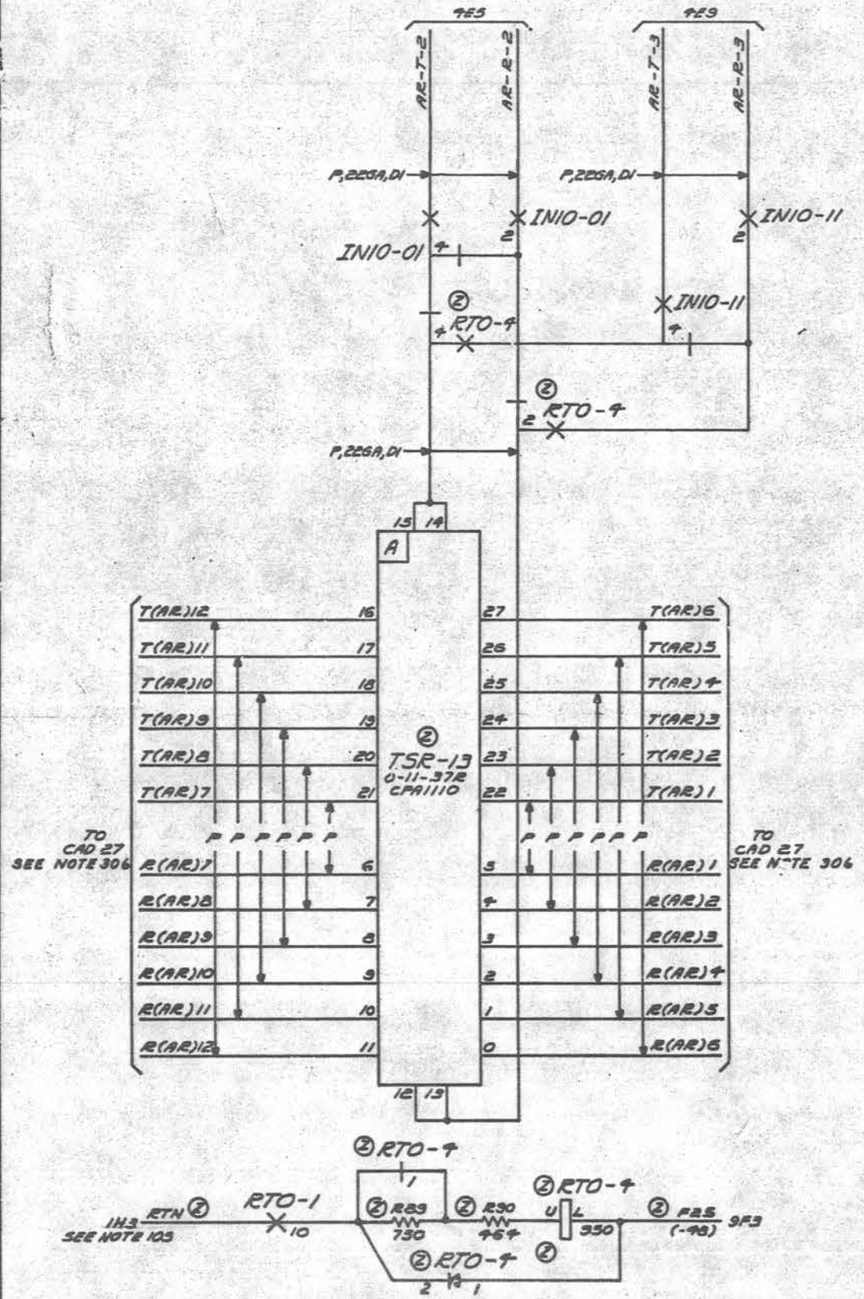
SD-82255-01-B10

BELL TELEPHONE LABORATORIES INCORPORATED 6S

SD-82255-01-B10

FS 7

TONE SPLITTING RESISTORS
FOR PRIVATE LINE CIRCUIT



RINGING, TONE AND SIGNALING CIRCUITS		DWG SIZE 63	ISSUE 5B
BELL LABORATORIES	SD- 82255-01		-811

PART OF APP FIG.1

CIRCUIT PACK

EQPT LOC	0-9-12R	0-9-40L	0-7-16L	0-7-36R	0-7-12R	0-7-40L	0-9-9L	0-9-43R	0-7-9L	0-7-43R	0-9-24R	0-9-28R	0-11-24R	0-11-28R	0-11-20R	0-11-32R	EQPT LOC
DESIG	AR-0	AR-1	BT-0	BT-1	HT-0	HT-1	MT1-0	MT1-1	TT-0	TT-1	ARLV-0	ARLV-1	BTLV-0	BTLV-1	HTLV-0	HTLV-1	DESIG
CODE	305B	305B	305B	305B	305B	305B	305B	305B	305B	305B	A751B	A751B	A751B	A751B	A751B	A751B	CODE
OPTION																	OPTION
ELEM IDENT																	ELEM IDENT
TERM. FS LOC	3-4D2	3-4D7	3-4F2	3-4F7	3-4E2	3-4E7	3-4C2	3-4C7	3-4A2	3-4A7	18-5D2	18-5D7	18-5F2	18-5F7	18-5E2	18-5E7	TERM. FS LOC

CIRCUIT PACK

SEE NOTE 308

EQPT LOC	0-7-24P	0-7-28R	0-7-20R	0-7-32R	0-7-3L	0-7-48R	0-7-5R	0-7-46L	0-9-3L	0-9-48R	0-9-5R	0-9-46L	0-9-16L	0-9-36R	0-9-18L	0-9-32R	EQPT LOC
DESIG	MTILV-0	MTILV-1	TTLV-0	TTLV-1	350-0	350-1	440-0	440-1	480-0	480-1	620-0	620-1	TRAN-0	TRAN-1	LVR-0	LVR-1	DESIG
CODE	A751B	A751B	A751B	A751B	A1151	A1151	A1152	A1152	A1153	A1153	A1154	A1154	A1111	A1111	A1113	A1113	CODE
OPTION																	OPTION
ELEM IDENT																	ELEM IDENT
TERM. FS LOC	18-5C2	18-5C7	18-582	18-587	12-480	12-486	12-4C0	12-4C6	12-4D0	12-4D6	12-4G0	12-4F6	25-484	25-488	22-5A1	22-5A7	TERM. FS LOC
															23-581	23-587	TERM. FS LOC
															24-5D1	24-5D7	TERM. FS LOC
															25-5E1	25-5E7	TERM. FS LOC
															26-5F1	26-5F7	TERM. FS LOC
															7-5A4	7-5A8	TERM. FS LOC
															8-584	8-588	TERM. FS LOC
															9-5D4	9-5D8	TERM. FS LOC
															10-5E4	10-5E8	TERM. FS LOC
															11-5F4	11-5F8	TERM. FS LOC

CIRCUIT PACK

EQPT LOC	0-11-3L	0-11-4R	0-11-6L	0-11-7R	0-11-9L	0-11-10R	0-11-12L	0-11-13R	0-11-15L	0-11-16R	0-11-34R	0-11-36L	EQPT LOC
DESIG	TSR-1	TSR-2	TSR-3	TSR-4	TSR-5	TSR-6	TSR-7	TSR-8	TSR-9	TSR-10	TSR-11	TSR-12	DESIG
CODE	A1110	A1110	A1110	A1110	A1110	A1110	A1110	A1110	A1110	A1110	A1110	A1110	CODE
OPTION													OPTION
ELEM IDENT													ELEM IDENT
TERM. FS LOC	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	TERM. FS LOC

RELAY

DESIG	AT0		AT1		AT2		FA0		FA1		FA2		GDO		GD1		GDT1		GDT2		GDT3		IN10-01		DESIG
CODE	AG34		AG34		AG34		AF73		AF73		AF73		AJ108		AJ108		AJ3		AJ3		AJ3		AJ18		CODE
OPTION																									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	M	10B4	M	10B4	M												EMB		EMB		EMB		M	10B5	12
11	M		M		M												BM		BM		BM		M		11
10	EBM	2D6	EBM	2H6	EBM		EBM		EBM		EBM						EBM	9E7	EBM	9F7	EBM	9G7	EBM	7C7	10
9																	M		M		M				9
8	EBM		EBM		EBM		EBM		EBM		EBM		M		M		EBM		EBM	6C8	EBM	6B7	EBM	7C8	8
7																							B		7
6	EBM		EBM		EBM		EBM	10D4	EBM	10E4	EBM		M	4H2	M	4G8	EMB		EMB		EMB		EMB		6
5																	M		M		M				5
4	EBM	2E7	EBM		EBM		EBM	10F1	EBM	10G1	EBM	10A4					EBM		EBM	6C7	EBM	6A7	EBM	11C1	4
3																	BM		BM		BM				3
2	EBM	2D7	EBM	2D6	EBM	3H5											EBM	6B7	EBM	6A7	EBM	6C7	M	11C2	2
1	M		M		M	10C5											BM		BM	6C8	BM		M		1
COIL		2D5		2H5		3G4		1E4		1G4		3H2		4H1		4G7		9E8		9F8		9G8		9G3	COIL

DESIG	IN10-11		IN60-0		IN60-1		IN120-0		IN120-1		MC0		MC1		OA		PO		P1		RTO-1		RTO-2		DESIG
CODE	AJ18		AJ18		AJ18		AJ18		AJ18		AJ3		AJ3		AJ18		AJ3		AJ3		AJ39		AJ39		CODE
OPTION																									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	M	10C5	M	10B5	M	10C5	M	10B4	M	10C4	EMB	9F1	EMB	9F7	M	7F6	EMB		EMB		EBM	9F1	EBM	7C5	12
11	M		M	10A0	M	10A1	M	10B0	M	10B1	BM		BM	3G5	M		BM		BM		EBM	9E1	EBM	7D5	11
10	EBM	7C8	EBM	7B2	EBM	7C3	EBM	7B4	EBM	7C5	EBM	5E1	EBM	5E7	EBM	7D4	EBM		EBM		EBM	11H1	EBM	10C1	10
9											M	6B8	M	6B8			M		M		EBM	9D2	EBM	10B8	9
8	EBM	7C9	EBM	7B2	EBM	7B4	EBM	7B5	EBM	7B6	EBM	9C7	EBM	9C7	EBM	7C4	EBM	10G1	EBM	10G1	EBM	2C8	EBM	7D2	8
7	B		B		B		B		B						B						EBM	2C4	EBM	7C2	7
6	EBM		EBM		EBM		EBM		EBM		EMB	5D1	EMB	5D7	EBM	7D5	EMB		EMB		EBM	2A3	EBM	7C0	6
5											M	6C8	M	6C9			M		M		EBM	2B3	EBM	7C0	5
4	EBM	11C2	EBM		EBM		EBM		EBM		EBM	5C1	EBM	5C7	EBM	7C6	EBM		EBM		EBM	2B4	EBM	6C3	4
3											BM	9C7	BM	9D7			BM		BM		EBM	2B4	EBM	6C3	3
2	M	11C3	M		M		M		M		EBM	5B1	EBM	5B7	M	10F5	EBM	10C9	EBM	10D9	EBM	2B4	EBM		2
1	M		M	10A2	M	10A3	M	10B2	M	10B3	BM	2D6	BM	2H6	M		BM		BM		EBM	2A3	EBM	9E2	1
COIL		9G3		9A3		9C3		9B3		9D3		9C8		9D8		9G8		10A8		10B8		9D3		9E3	COIL

RELAY

DESIG	RTO-3																DESIG
CODE	AJ39																CODE
OPTION																	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	EBM	7F4																							12
11	EBM	6C0																							11
10	EBM	10C3																							10
9	EBM	10B2																							9
8	EBM	6C1																							8
7	EBM	6C1																							7
6	EBM	6C2																							6
5	EBM	9F2																							5
4	EBM	3C5																							4
3	EBM	3F5																							3
2	EBM																								2
1	EBM	10G5																							1
COIL		9F3																							COIL

NOTES:

1. EXTERNAL TERMINAL CONNECTIONS TO THE INDIVIDUAL RESISTORS ON EACH CIRCUIT PACK ARE SHOWN IN FS 5 AND CADS 8 THRU 16.

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-CI

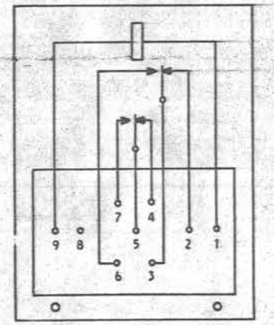
BELL TELEPHONE LABORATORIES INCORPORATED

SD-82255-01-CI

PART OF APP FIG. 1

RELAY

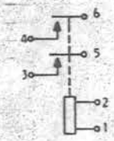
316W



DESIG	IN10-0	IN10-1
OPTION		
TERM.	LOC	LOC
9	9A3	9C3
8		
7	2A3	2E3
6	9G1	9H1
5	2A3	2E3
4	2A3	2E3
3	9G1	9H1
2		
1	9A3	9C3

RELAY, CONTACTOR

KS-21401,L1



CLO	CLI	POI	PII
1D3	1F3	1A2	1B2
1D2	1F2	1D1	1F1
1E1	1G1	10C8	10D8

CAPACITOR

DESIG	LOC	CODE
C1	1D3	KS-19262,L .6500
C2	1G3	KS-19262,L .6500
C3	4H4	542G, 4

CONNECTOR, JACK

DESIG	LOC	CODE
DM1	2E1	303A
DM2	2D1	303A
DM3	2C1	303A
SP	1F8	238C
TEL A	1C8	223C
TEL B	1C8	223C

COMPONENT ASSEMBLY

DESIG	LOC	CODE
CA1	1G2	ED-82710-01
CA2	1G2	ED-82710-01

DIODE

DESIG	LOC	CODE
AT0	2D5	~~446F~~ 533F
AT1	2H5	~~446F~~ 533F
AT2	3G4	~~446F~~ 533F
CL0	1E1	~~446A~~ 533G
CL1	1G1	~~446A~~ 533G
CR1	1D4	~~426A~~
CR2	1F4	~~426A~~
CR3	3G4	~~426A~~ 913B
CR4	10F1	~~426A~~
CR5	10G1	~~426A~~
FA0P	1E4	~~446A~~ 533G
FA0S	1E4	~~446A~~ 533G
FA1P	1G4	~~446A~~ 533G
FA1S	1H4	~~446A~~ 533G
FA2P	3G2	~~446F~~ 533F
FA2S	3H2	~~446F~~ 533F
GD0	4H1	~~446A~~ 533G
GD1	4G7	~~446A~~ 533G
GDT1	9E8	~~446A~~ 533G
GDT2	9F8	~~446A~~ 533G
GDT3	9G8	~~446A~~ 533G
IN10-0	9A3	~~446A~~ 533G
IN10-01	9G3	~~446A~~ 533G
IN10-1	9C3	~~446A~~ 533G
IN10-11	9G3	~~446A~~ 533G
IN60-0	9A3	~~446A~~ 533G
IN60-1	9C3	~~446A~~ 533G
IN120-0	9B3	~~446A~~ 533G
IN120-1	9D3	~~446A~~ 533G
MC0	9C8	~~446A~~ 533G
MC1	9D8	~~446A~~ 533G
OA	9G8	~~446A~~ 533G
P0	10A8	~~446A~~ 533G
P01	10C8	~~446A~~ 533G
P1	10B8	~~446A~~ 533G
P11	10D8	~~446A~~ 533G
RTG-1	9D3	~~446A~~ 533G
RTG-2	9E3	~~446A~~ 533G
RTG-3	9F3	~~446A~~ 533G

FUSE

DESIG	LOC	CODE
[8] 105V±	3D2	THESE FUSE CODES ARE 70- TYPE AND ARE SPECIFIED BY NO.3 ESS SYSTEM SEE NOTES 110, 204 & 305
[24] +ACDC	3C6	
[80] -ACDC	3E7	
[16] EML105±	3F2	
[8] GEN 1	3A2	
[16] +SUP 105	3E2	
[12] -SUP 105	3D2	
[10] +SUP 97	3B2	
[24] +TRP	3D7	
[80] -TRP	3G7	
[10] -SUP 97	3C2	
F1	1D3	70D
F2	1D4	70B
F3	1D4	70B
F4	1D4	70H
F5	1D4	70H
F6	1D4	70G
F7	1D5	70A
F8	1D5	70A
F9	1F3	70D
F10	1F4	70B
F11	1F4	70B
F12	1F4	70H
F13	1F4	70H
F14	1F4	70G
F15	1F5	70A
F16	1F5	70A
F17	1D6	70A
F18	1D6	70A
F19	1D6	SPARE
F20	1D6	SPARE
F21	1D7	70A
F22	1D7	70A
F23	1D7	SPARE
F24	1D7	SPARE
F25	1F6	70A
F26	1F6	70A
F27	1F6	70A
F28	1F6	70A
F29	1F7	70A
F30	1F7	70A
F31	1F7	70A
F32	1F7	SPARE
F33	1A4	70H
F34	1A4	70E
F35	1B4	70H
F36	1B4	SPARE
F37	1A4	SPARE
F38	1B4	SPARE
F39	1C4	SPARE
F40	1C4	SPARE

GENERATOR

OPTION	DESIG	LOC	CODE
V	ROH	9A6	J99327A, L1, LB, LD, LE

INDUCTOR

DESIG	LOC	CODE
L1	1D2	1038A
L2	1F2	1038A

INVERTER

DESIG	LOC	CODE
INV 0	2AQ	J87415,L1
INV 1	2EQ	

JACK

SEE CONNECTOR

ISSUE 4B

RINGING, TONE & SIGNALING CIRCUITS

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

SD-82255-01-C2

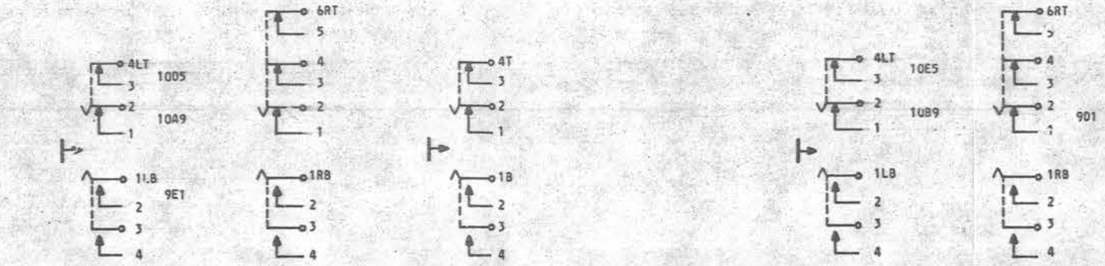
SD-82255-01-C2

PART OF APP FIG. 1

KEY
[1] KS-19223, L12

S1

OFF-0 | NOR | OFF-I



APP FIG. 2

CIRCUIT PACK

EQPT LOC	0-11-37R	
DESIG	TSR-13	
CODE	A111C	
OPTION		
ELEM IDENT		
TERM. FS LOC	18-11E1	

RELAY

DESIG	RTO-4					
CODE	AJ39					
OPTION						
X	CONT ARR	LOC				
12	EBM					
11	EBM					
10	EBM					
9	EBM					
8	EBM					
7	EBM					
6	EBM					
5	EBM					
4	EBM	11C2				
3	EBM					
2	EBM	11D2				
1	EBM	11H1				
COIL	X	11H2				

DIODE

DESIG	LOC	CODE
RTO-4	11H1	5336

RESISTOR

DESIG	LOC	CODE
R89	11H1	KS-20289,L6C,750
R90	11H2	KS-20289,L6C,464

PART OF APP FIG 1

LAMP

DESIG	LOC	CODE
OOS-0	10E1	A3
OOS-1	10E1	A3
PWR OFF-0	10F1	M1,RED
PWR OFF-1	10G1	M1,RED

RESISTOR

DESIG	LOC	CODE
R1	1B9	KS-20289,L6C,12.1KΩ
R2	1C3	KS-8512, L4C,1KΩ
R3	1C3	KS-8512, L4C,1KΩ
R4	1D1	KS-8512, L4C,10.7
R5	1E4	KS-8512,L4C,1KΩ
R6	1E4	KS-8512,L4C,1KΩ
R7	1F1	KS-8512,L8C,200
R8	1F1	KS-8512,L4C,10.7
R9	1G4	KS-8512,L4C,1KΩ
R10	1H1	KS-8512,L8C,200
R11	1H4	KS-8512,L4C,1KΩ
R12	2D5	KS-20289,L6C,6810
R13	2D5	KS-8512,L4C,301
R14	2H5	KS-20289,L6C,6810
R15	2H5	KS-8512,L4C,301
R16	3A2	KS-8512,L4C,1330
R17	3B2	KS-8512,L3C,3480
R18	3C2	KS-8512,L4C,1330
R19	3C2	KS-8512,L3C,3480
R20	3D2	KS-8512,L4C,1330
R21	3E2	KS-8512,L4C,1330
R22	3F2	KS-8512,L4C,1330
R23	3F2	KS-8512,L3C,3480
R24	3G2	KS-8512,L4C,1330
R25	3G5	KS-20289,L6C,6810
R26	3H5	KS-8512,L4C,301
R27	10A5	KS-20289,L6C,5.9KΩ
R28	10A5	KS-20289,L6C,5.9KΩ
R29	10B5	KS-20289,L6C,5.9KΩ
R30	10C5	KS-20289,L6C,5.9KΩ
R31	4B2	KS-8512,L3C,309
R32	4C2	KS-8512,L3C,309
R33	4D2	KS-8512,L3C,309
R34	4F2	KS-8512,L3C,309
R35	4G2	KS-8512,L3C,309
R36	4H2	KS-20289,L6C,5.9KΩ
R37	4H4	KS-20289,L6C,3010
R38	4B7	KS-8512,L3C,309
R39	4C7	KS-8512,L3C,309
R40	4D7	KS-8512,L3C,309

RESISTOR (CONT)

DESIG	LOC	CODE
R41	4E7	KS-8512,L3C,309
R42	4F7	KS-8512,L3C,309
R43	4H7	KS-20289,L6C,5.9KΩ
R44	6E8	KS-20810,L1A,4990
R45	7E3	KS-20289,L6C,10
R46	9A2	KS-20289,L6C,6190
R47	9A2	KS-14603,L1C,1270
R48	9B2	KS-14603,L1C,1270
R49	9C2	KS-20289,L6C,6190
R50	9C2	KS-14603,L1C,1270
R51	9D2	KS-14603,L1C,1270
R52	9E2	KS-20289,L6C,750
R53	9E2	KS-20289,L6C,464
R54	9F2	KS-20269,L6C,750
R55	9F2	KS-20289,L6C,464
R56	9F2	KS-20289,L6C,750
R57	9F2	KS-20289,L6C,464
R58	9G2	KS-14603,L1C,1270
R59	9H2	KS-14603,L1C,1270
R60	9B7	KS-20289,L6C,5.9KΩ
R61	9C7	KS-20289,L6C,2260
R62	9C7	KS-20810,L1A,562
R63	9D7	KS-20289,L6C,2260
R64	9D7	KS-20810,L1A,562
R65	9E7	KS-20289,L6C,2260
R66	9E7	KS-20810,L1A,562
R67	9F7	KS-20289,L6C,2260
R68	9F7	KS-20810,L1A,562
R69	9G7	KS-20289,L6C,2260
R70	9G7	KS-20810,L1A,562
R71	9G7	KS-14603,L1C,1270
R72	10C0	KS-20289,L6C,10
R73	10C1	KS-20289,L6C,10
R74	10C2	KS-20289,L6C,10
R75	10C2	KS-20289,L6C,10
R76	10F5	KS-20289,L6C,5.9KΩ
R77	10F5	KS-20289,L6C,5.9KΩ
R78	10B5	KS-20289,L6C,5.9KΩ
R79	10C5	KS-20289,L6C,5.9KΩ
R80	10D5	KS-20289,L6C,5.9KΩ

RESISTOR (CONT)

DESIG	LOC	CODE
R81	10E5	KS-20289,L6C,5.9KΩ
R82	10E5	KS-20289,L6C,5.9KΩ
R83	9E1	KS-20289,L6C,100
R84	10G5	KS-20289,L6C,5.9KΩ
R85	10H5	KS-20289,L6C,649
R86	10H5	KS-20289,L6C,649
R87	3D6	KS-8512,L3C,3480
R88	3G6	KS-8512,L4C,1330
R89	11H1	KS-20289,L6C,750
R90	11H2	KS-20289,L6C,464

SD-82255-01-C3

SHEET 5B

RINGING, TONE AND SIGNALING CIRCUITS

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

SD-82255-01-C3

CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
RTA	15	-48V	CKT
RTB	15	-48V	CKT
GRD A		GRD	CKT
GRD B		GRD	CKT

BATTERY SYMBOL: -48A, -48B

VOLTAGE RANGE: -42.75V TO -53.50V

102.

FEATURE OR OPTION	PROVIDE APP FIG.	PROVIDE APP OR WRG	PROVIDE QUANTITY
RINGING, TONE & CADENCE SYSTEM	1		1
TONE SPLITTING RESISTORS FOR PRIVATE LINE CIRCUIT	2	2	1

CIRCUIT NOTES: (CONT)

103.

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	
4B	DIODES		*	533G		446A	
				533F		446F	
				813B		426A	
	NOTE			204			
5B	Z	NONE		Z			

* NONRECORD OPTION

104. LEADS DESIGNATED "RTN A" OR "RTN B" SHALL BE CONNECTED TO THE GROUND BUS OF THE APPROPRIATE FUSE BLOCK.

105. UNLESS OTHERWISE NOTED, ALL RELAYS MOUNTED IN A ROW (HORIZONTAL LINE-UP) REQUIRING A "RTN" CONNECTION (EITHER FROM THE COILS OR CONTACTS) MAY HAVE THESE "RTN" CONNECTIONS LOOPED. HOWEVER, THE END RELAYS IN THE ROW REQUIRING A "RTN" MUST HAVE THE "RTN" TERMINALS CONNECTED DIRECTLY TO THE GROUND BAR ON PANEL AT POSITION ZERO.

106. THE GROUND BAR IS LOCATED ON A TWO-INCH PANEL DIRECTLY ABOVE THE FRAME BASE AT POSITION ZERO. ON THIS BAR ARE LOCATED A TERMINAL STRIP FOR WIRE-WRAPPED CONNECTIONS AND A LUG ARRANGEMENT FOR BOLTED CONNECTIONS. THIS BAR CONSTITUTES THE ELECTRICAL OR CIRCUIT GROUND PLANE FOR THE PLANT. ALL GROUND RETURN LEADS SHALL BE RUN TO THIS BAR UNLESS OTHERWISE DESIGNATED. THE BAY FRAMEWORK IS "EARTH" OR FRAME GROUND AND IS ELECTRICALLY ISOLATED FROM THIS BAR AND ALL EQUIPMENT IN THE PLANT.

107. WHEN THE dc VOLTAGE APPLIED AT THE INPUT TO THE PLANT IS BETWEEN -42.75V AND -53.50V, THE MAXIMUM CURRENT DRAIN FOR EITHER SIDE A OR SIDE B WILL NOT EXCEED 4.5 AMPERES.

108. UNLESS OTHERWISE NOTED, ALL "RTN" CONNECTIONS REQUIRED ON THE CONTROL PANEL MAY BE LOOPED TOGETHER. HOWEVER, ONE "RTN" LEAD SHALL BE RUN DIRECTLY TO THE GROUND BAR ON PANEL AT POSITION ZERO.

109. ALL WIRES FROM OUTPUT TERMINALS OF A1110 CIRCUIT PACK TO TERMINAL STRIPS AT TOP OF RINGING & TONE PLANT SHALL BE 26GA BW WIRE.

110. THE "RTN" LEAD ASSOCIATED WITH EACH OUTPUT PAIR FOR A DESIGNATED RINGING OUTPUT GROUP IS TAKEN FROM THE GROUND BAR AT THE RESPECTIVE FUSE BLOCK. EACH "RTN" LEAD IS PAIRED WITH ITS ASSOCIATED RINGING OUTPUT LEAD DIRECTLY AT THE FUSE BLOCK. FOR EACH FUSE BLOCK, A SINGLE "RTN" LEAD IS RUN FROM THE GROUND BAR ON THE FUSE BLOCK TO THE GROUND TERMINAL STRIP ON PANEL AT POSITION ZERO.

EQUIPMENT NOTES:

201. ALL LEADS SHALL BE 24GA, BW SOLID OR STRANDED WIRE UNLESS OTHERWISE SPECIFIED. LEADS DESIGNATED 14GA AND 16GA SHALL BE KS-13385 STRANDED WIRE. LEADS DESIGNATED 12GA SHALL BE KS-19300,L2 STRANDED WIRE.

202. THESE LEADS SHALL BE TWISTED AND PAIRED AND RUN DIRECTLY TO FUSE BLOCKS WITH NO LOOPING.

203. THE GROUND BUS ON ALL FUSE BLOCKS SHALL BE ELECTRICALLY INSULATED FROM THE FRAME.

204. THIS PLANT IS EQUIPPED WITH 70 TYPE FUSE HOLDERS. FUSES MAY BE FURNISHED ON A JOB BASIS. THE MAXIMUM SIMULTANEOUS DEMAND FOR RINGING BY CONNECTING CIRCUITS SHALL NOT EXCEED 43 VOLT-AMPERES, I.E., THE RATED CAPACITY OF THE INVERTER.

CAUTION: FUSES WITH A CURRENT RATING IN EXCESS OF THE RINGING INVERTER OUTPUT CURRENT CAN CAUSE A COMPLETE LOSS OF RINGING TO AN OFFICE. THE TABLE BELOW LISTS THE MAXIMUM RATING OF THE RINGING DISTRIBUTION FUSES THAT WILL INSURE BLOWING OF THE FUSE. SEE NOTES 110 AND 305.

RINGING DISTRIBUTION FUSES - MAXIMUM RATINGS

CONNECTING CIRCUITS	DESIGNATIONS	MAX FUSE* RATINGS (AMPERE)
CIRCUITS REQUIRING INTERRUPTED RINGING	GEN1	0.50
DLL AND RINGING CIRCUITS AS REQUIRED	+ SUP 97	0.50
	- SUP 97	0.50
	- SUP 105	0.25
	105V±	0.25
	+ SUP 105	0.25
EML CIRCUITS	EML 105±	0.25
DLL AND RINGING CIRCUITS AS REQUIRED	+ AC-DC	0.50
	+ TRP	0.50
	- AC-DC	0.50
	- TRP	0.75

* SMALLER CAPACITY FUSE SHOULD BE USED IF A CONNECTING CIRCUIT PERMITS

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. INTERRUPTION TIMING
THE BASIC INTERRUPTER TIMING FUNCTIONS REQUIRED IN THIS PLANT ARE GENERATED BY NO. 3 ESS SYSTEM CONTROL. THESE INTERRUPTIONS ARE OBTAINED IN THE PLANT BY WIRE-SPRING AND MERCURY FOLLOWER RELAYS WHICH ARE "SLAVED" TO THE BASIC INTERRUPTER SIGNALS FROM NO. 3 ESS SYSTEM.

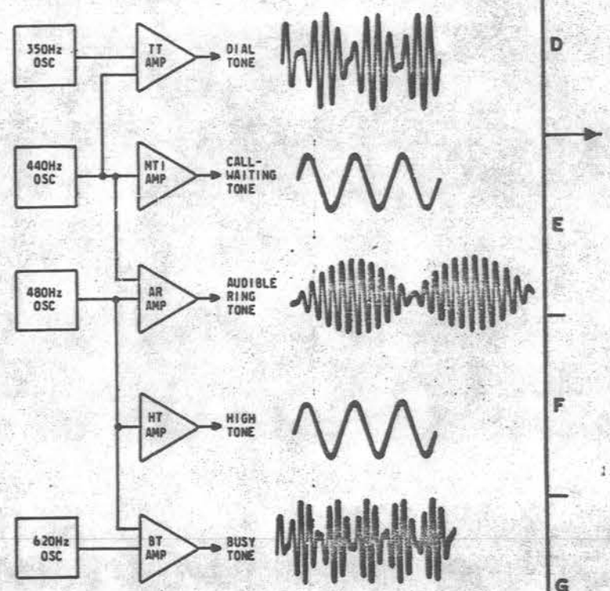
THE BASIC INTERRUPTION RATES PROVIDED ARE:

(1) 10 IPM (2 SECONDS ON AND 4 SECONDS OFF) TO PROVIDE ONE OUTPUT OF CODE 1 AC-DC RINGING AND TO PROVIDE INTERRUPTED AUDIBLE-RING TONE.

(2) 60 IPM (0.5 SECONDS ON AND 0.5 SECONDS OFF) FOR INTERRUPTED BUSY TONE, CALL SIGNALING AND MAINTENANCE PURPOSES.

(3) 120 IPM (0.25 SECONDS ON AND 0.25 SECONDS OFF) FOR INTERRUPTED BUSY TONE, CALL SIGNALING AND MAINTENANCE PURPOSES.

303. TONE WAVEFORMS



SD-82255-01-DI

5B

RINGING, TONE AND SIGNALING CIRCUIT

SD-82255-01-DI

BELL TELEPHONE LABORATORIES INCORPORATED

6S

INFORMATION NOTES: (CONT)

304.

HIGHEST RES, CAP. AND DIODE USED ON THIS DRAWING		
R88	C5	CR5
NOT USED		

305. THE QUANTITY OF RINGING DISTRIBUTION OUTPUT FUSES WHICH IS PROVIDED ON THE BASIC PLANT FOR EACH CODED RINGING OUTPUT IS SHOWN ON SHEET C2 OF THIS DRAWING.

306. (a) THE TONE-SPLITTING RESISTORS ARE PROVIDED ON CIRCUIT PACKS (CP'S) CODED A1110. A MAXIMUM OF 12 OUTPUT ("TIP" & "RING") PAIRS MAY BE OBTAINED PER PACK. WHEN MORE THAN 12 OUTPUT-PAIRS ARE REQUIRED, THE CP'S MAY BE MULTIPLIED, EXCEPT FOR PRIVATE LINE CIRCUIT.

(b) THE QUANTITY OF TONE-SPLITTING RESISTOR PAIRS PROVIDED ON THE BASIC PLANT FOR EACH TONE IS SHOWN BELOW. ADDITIONAL SPLITTING RESISTOR PAIRS (CPA1110) MUST BE FURNISHED AS REQUIRED ON A GROWTH BASIS. FOR CONSISTENCY, WHEN ADDITIONAL SPLITTING RESISTORS ARE REQUIRED RESISTOR PAIRS SHOULD BE CHOSEN IN ACCORDANCE WITH THE PATTERN INDICATED ON SHEETS B6 & B8 ON THIS DRAWING.

TONE DESIGNATION	NO. OF "TIP" & "RING" PAIRS	CP DESIG & LOCATION IN FRAME
T(TT) & R(TT)	84	TSR-1, 0-11-3L TSR-2, 0-11-4R TSR-3, 0-11-6L TSR-4, 0-11-7R TSR-5, 0-11-9L TSR-11, 0-11-34R TSR-12, 0-11-36L
T(MT1) & R(MT1)	12	TSR-6, 0-11-10R
T(HT) & R(HT)	12	TSR-7, 0-11-12L
T(ROH) & R(ROH)	12	TSR-8,0-11-13R
T(BT-60) & R(BT-60)	18	TSR-9,0-11-15L TSR-10, 0-11-16R
T(BT) & R(BT)	6	TSR-10, 0-11-16R
T(AR) & R(AR)	12	TSR-13, 0-11-37R

(c) THE TONE-SPLITTING RESISTORS FOR BT(120) & AR(10 IPM) ARE NOT LOCATED ON THE PLANT, BUT ARE PROVIDED INSTEAD ON NO. 5 ESS NETWORK FRAME.

(d) THE A1110 CIRCUIT PACKS ARE INTERCHANGEABLE WITHIN THE PLANT SINCE ONLY THE 905B CONNECTOR WIRING MAY DIFFER FOR EACH SET OF TONE OUTPUTS.

(e) THE TONE-SPLITTING RESISTORS (CP,TSR-13) FOR THE PRIVATE LINE CIRCUIT ARE LOCATED ON THE PLANT.

(f) TOTAL DEMAND FOR EACH TONE BY ALL CONNECTING CIRCUITS SHALL NOT EXCEED 0.1 VOLT-AMPERE.

INFORMATION NOTES: (CONT)

307. THE FOLLOWING TRUTH-TABLE ILLUSTRATES CONDITIONS REQUIRED ON GROUND-DETECTION TEST RELAYS AND MARGINAL-CHECK RELAYS IN ORDER TO SIMULATE A 5000 OHM GROUND ON EACH TONE OUTPUT. IN THIS TABLE, "1" DENOTES RELAY IS OPERATED AND "0" DENOTES RELAY IS NON-OPERATED. THIS TABLE ALSO ILLUSTRATES WHICH GROUND-DETECTION RELAY (GDO OR GD1) IS OPERATED WHEN EACH ROW OF THE TRUTH-TABLE IS MET.

* TONE OUTPUT BEING CHECKED WHEN CLOSED-PATH EXISTS FOR 5000 OHM GROUND CROSS	STATES OF RELAYS SUCH THAT CLOSED PATH WILL BE PROVIDED					GROUND-DETECTION RELAY WHICH IS OPERATED
	MC0	MC1	GDT1	GDT2	GDT3	
AR(10)-T0	0	1	0	0	0	GDO
AR(10)-T1	1	0	0	0	0	GD1
BT-60	0	1	0	0	1	GD1
BT-60	1	0	0	0	1	GDO
BT(120)-T0	0	1	0	1	0	GD1
BT(120)-T1	1	0	0	1	0	GDO
BT	0	1	0	1	1	GD1
BT	1	0	0	1	1	GDO
HT	0	1	1	0	0	GD1
HT	1	0	1	0	0	GDO
MT1	0	1	1	1	0	GD1
MT1	1	0	1	1	0	GDO
ROH	0	1	1	0	1	GDO
ROH	1	0	1	0	1	GDO
TT	0	1	1	1	1	GD1
TT	1	0	1	1	1	GDO

* THE RESTRICTION HERE IS THAT EITHER MC0 OR MC1 IS OPERATED, BUT NOT BOTH SIMULTANEOUSLY.

308. THE A1151 CIRCUIT PACK IS ELECTRICALLY AND MECHANICALLY INTERCHANGEABLE WITH THE A980 CIRCUIT PACK. THE A1151 IS A NEWLY ISSUED (10/75) APPARATUS CODE AND IS INTENDED TO DIRECTLY REPLACE THE A980 CODE, WHICH IS BEING RATED MANUFACTURE DISCONTINUED. UNTIL THE A1151 BECOMES AVAILABLE ON A PRODUCTION BASIS, HOWEVER, THE A980 MAY BE USED. THE SAME ANALOGY HOLDS TRUE FOR THE REMAINING THREE CIRCUIT PACK CODE PAIRS A1152 & A981, A1153 & A982 AND A1154 & A983.

CROSS CONNECTION INFORMATION:

401. THE ASSIGNMENT OF SCAN POINTS [SC(XX)L, SC(XX)H] IS SHOWN IN "MASTER SCAN MATRIX", SD-3H140-01.

402. THE ASSIGNMENT OF DISTRIBUTOR POINTS [A0,A1,B0,B1,ETC] IS SHOWN IN "DISTRIBUTE POINT CIRCUIT", SD-3H150-01.

403. INFORMATION FOR CONNECTING CIRCUITS, WHICH IS SHOWN IN DOUBLE BOXES ON ALL CAD FIGURES IN THIS SD DRAWING IS CONTAINED IN CCED-3H100-30. THEREFORE, THIS INFORMATION NEED NOT BE REPRODUCED IN ITS ENTIRETY ON WE STANDARD "T" DRAWINGS ASSOCIATED WITH THE RINGING & TONE PLANT.

SD-82255-01-D2

ISSUE 5D

RINGING, TONE AND SIGNALING CIRCUITS

SD-82255-01-D2

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

CIRCUIT REQUIREMENTS

APPARATUS					MECH REQT			CIRCUIT PREPARATION			TEST SET PREP	SEE TEST NOTE	DIRECT CURRENT FLOW REQT					REMARKS
DESIG	CODE	OPT	FIG.		BSP FIG.	CONT PRES	ARM TRVL	BLOCK OR INSULATE	TEST CLIP DATA				TEST WDG	TEST FOR	AFTER OPTG MA	TEST MA	READJ MA	
									CONN BAT.	CONN GRD								
RELAYS																		
ATO	AG34		1		3078			(MCO)NO	L(ATO)	U(ATO)	B/G	1,3,6		O	36	17.9	17.0	
														H		3.0	2.8	
														R		1.7	1.8	
AT1	AG34		1		3078			(MC1)NO	L(AT1)	U(AT1)	B/G	2,6		O	36	17.9	17.0	
														H		3.0	2.8	
														R		1.7	1.8	
AT2	AG34		1		3078			(MC1)NO	L(AT2)	U(AT2)	B/G	6		O	36	17.9	17.0	
														H		3.0	2.8	
														R		1.7	1.8	
CLO	KS-21401 L1		1					(PO1)NO	1(CLO)	2(CLO)	B/G	1,4,6		O		36V		
CL1	KS-21401 L1		1					(P11)NO	1(CL1)	2(CL1)	B/G	2,4,6		O		36V		
FA	AF73		1		203				1L(FAO)	1U(FAO)	+B/G	1,6	P	O		15.2	14.5	
									2U(FAO)	2L(FAO)	B/G	1,4	S	O		16.3	15.5	
FA1	AF73		1		203				1L(FA1)	1U(FA1)	+B/G	2,6	P	O		15.2	14.5	
									2U(FAO)	2L(FAO)	B/G	1,4	S	O		16.3	15.5	
FA2	AF73		1		203					1L(FA2)	GRD	6	P	O		15.2	14.5	
									2U(FAO)	2L(FAO)	B/G	4	S	O		16.3	15.5	
GDO	AJ108		1		2					U(GDO)	GRD	4		O		2.2	2.1	
GD1	AJ108		1		2					U(GD1)	GRD	4		O		2.2	2.1	
GDT1	AJ3		1		226			(MCO)NO		U(GDT1)	GRD	4		O		17.9	17.0	
								(MC1)NO						H		8.6	8.1	
GDT2	AJ3		1		226			(MCO)NO		U(GDT2)	GRD	4		O		17.9	17.0	
								(MC1)NO						H		8.6	8.1	
GDT3	AJ3		1		226			(MCO)NO		U(GDT3)	GRD	4		O		17.9	17.0	
								(MC1)NO						H		8.6	8.1	
IN10-0	316W		1									1.5						
IN10-01	AJ18		1		263					U(IN10-01)	GRD	2,4		O		27.8	26.5	
IN10-1	316W		1									2,5						
IN10-11	AJ18		1		263					U(IN10-11)	GRD	1,4		O		27.8	26.5	
IN60-0	AJ18		1		263					U(IN60-0)	GRD	2,4		O		27.8	26.5	
IN60-1	AJ18		1		263					U(IN60-1)	GRD	1,4		O		27.8	26.5	
IN120-0	AJ18		1		263					U(IN120-0)	GRD	2,4		O		27.8	26.5	
IN120-1	AJ18		1		263					U(IN120-1)	GRD	1,4		O		27.8	26.5	
MCO	AJ3		1		226					U(MCO)	GRD	4		O		17.9	17.0	
														H		8.6	8.1	
MC1	AJ3		1		226					U(MC1)	GRD	4		O		17.9	17.0	
														H		8.6	8.1	
OA	AJ18		1		263					U(OA)	GRD	4		O		27.8	26.5	
PO	AJ3		1		226			(PO1)NO		U(PO)	GRD	1		O		17.9	17.0	
														H		8.6	8.1	
PO1	KS-21401 L1		1					(PO)NO	1(PO1)	2(PO1)	B/G	1,4,6		O		36V		

CIRCUIT REQUIREMENTS

APPARATUS					MECH REQT			CIRCUIT PREPARATION			TEST SET PREP	SEE TEST NOTE	DIRECT CURRENT FLOW REQT					REMARKS
DESIG	CODE	OPT	FIG.		BSP FIG.	CONT PRES	ARM TRVL	BLOCK OR INSULATE	TEST CLIP DATA				TEST WDG	TEST FOR	AFTER OPTG MA	TEST MA	READJ MA	
									CONN BAT.	CONN GRD								
P1	AJ3		1		226			(P11)NO		U(P1)	GRD	2		O		17.9	17.0	
														H		8.6	8.0	
P11	KS-20401 L1							(P1)NO	1(P11)	2(P11)	B/G	2,4,6		O		36V		
RTO-1	AJ39		1		220					U(RTO-1)	GRD	4		O		18.4	17.5	
														NO		8.1	8.5	
RTO-2	AJ39		1		220					U(RTO-2)	GRD	4		O		18.4	17.5	
														NO		8.1	8.5	
RTO-3	AJ39		1		220					U(RTO-3)	GRD	4		O		18.4	17.5	
														NO		8.1	8.5	
RTO-4	AJ39		2		220					U(RTO-4)	GRD	7		O		18.4	17.5	
														NO		8.1	8.5	

TEST NOTES:

1. TRANSFER PLANT TO "1" SIDE AND TURN OFF POWER TO "O" SIDE BY DEPRESSING (OFF-O) KEY.
2. TRANSFER PLANT TO "O" SIDE AND TURN OFF POWER TO "1" SIDE BY DEPRESSING (OFF-1) KEY.
3. DISCONNECT WIRES FROM CONTACTS 2M & 4M OF (ATO) RELAY. PLACE SHORT ACROSS CONTACTS 4F & 4B AND ANOTHER SHORT ACROSS CONTACTS 2F & 2B OF (ATO) RELAY.
4. REMOVE LEAD FROM "L1" TERMINAL.
5. RELAY NOT ADJUSTABLE, REPLACE IN EVENT OF MALFUNCTION.
6. REMOVE LEAD FROM "L" TERMINAL.
7. DISCONNECT (ANODE) TERM.1 OF THE (RTO-4) DIODE. BLOCK (RTO-1) N.O. INSULATE 1B(RTO-4) RELAY.

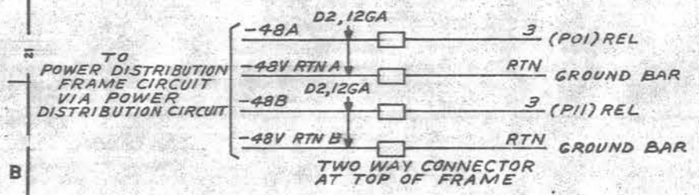
ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS (2) SD-62255-01-F1

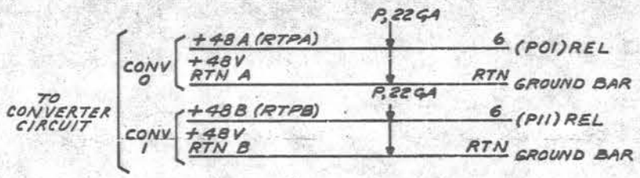
BELL TELEPHONE LABORATORIES INCORPORATED 6S

SD-62255-01-F1

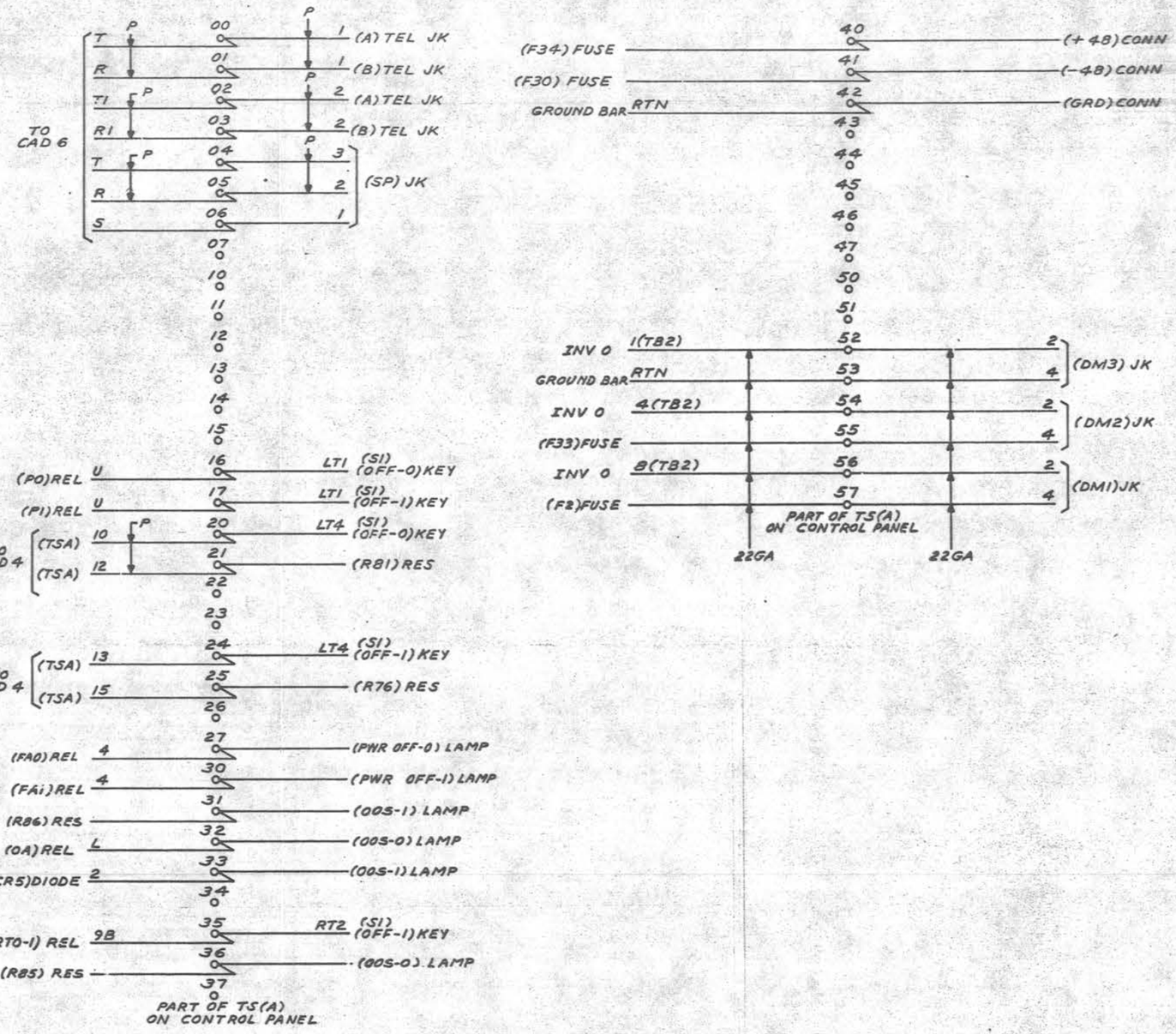
CAD 1



CAD 2



CAD 3



SD-82255-01-GI

ISSUE 7

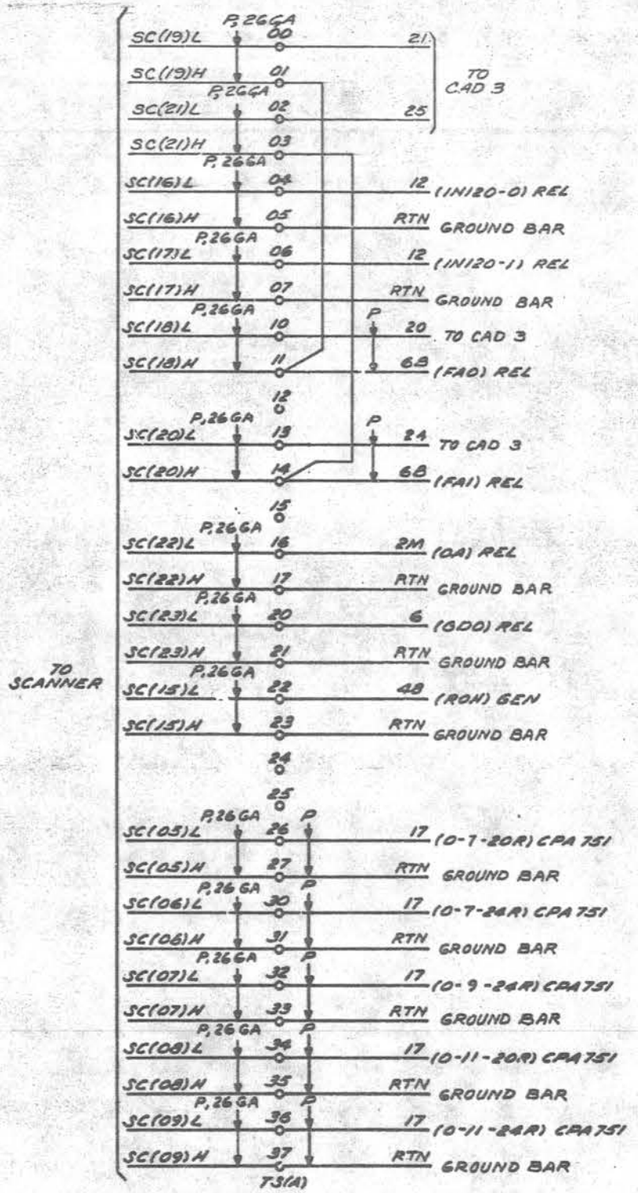
RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-GI

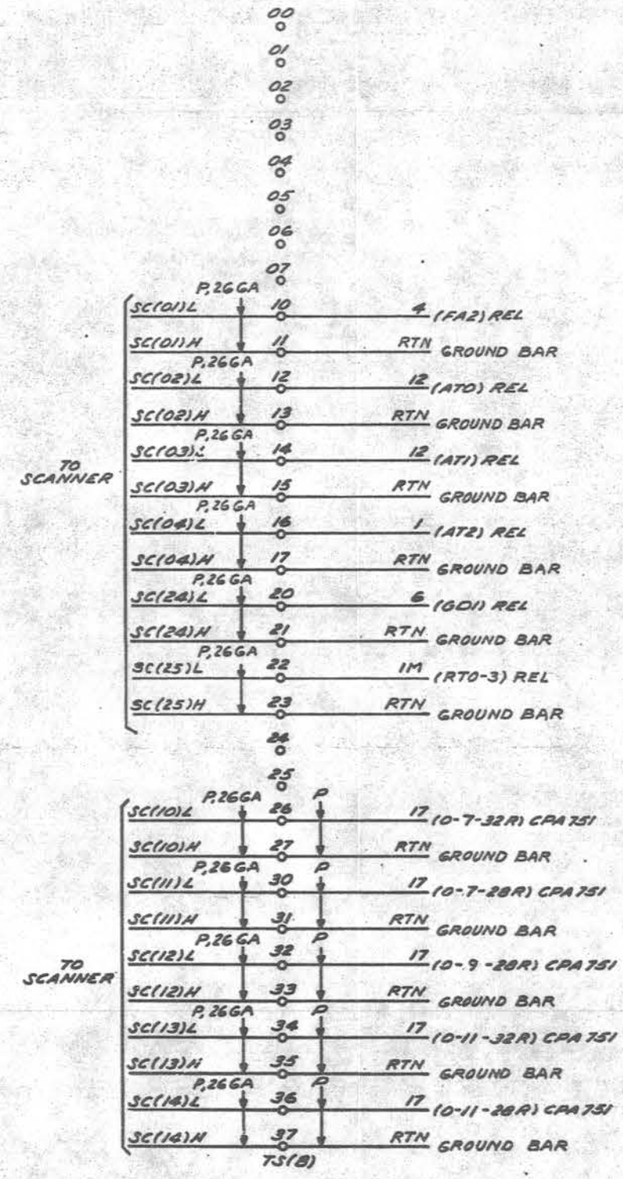
BELL TELEPHONE LABORATORIES INCORPORATED

6S

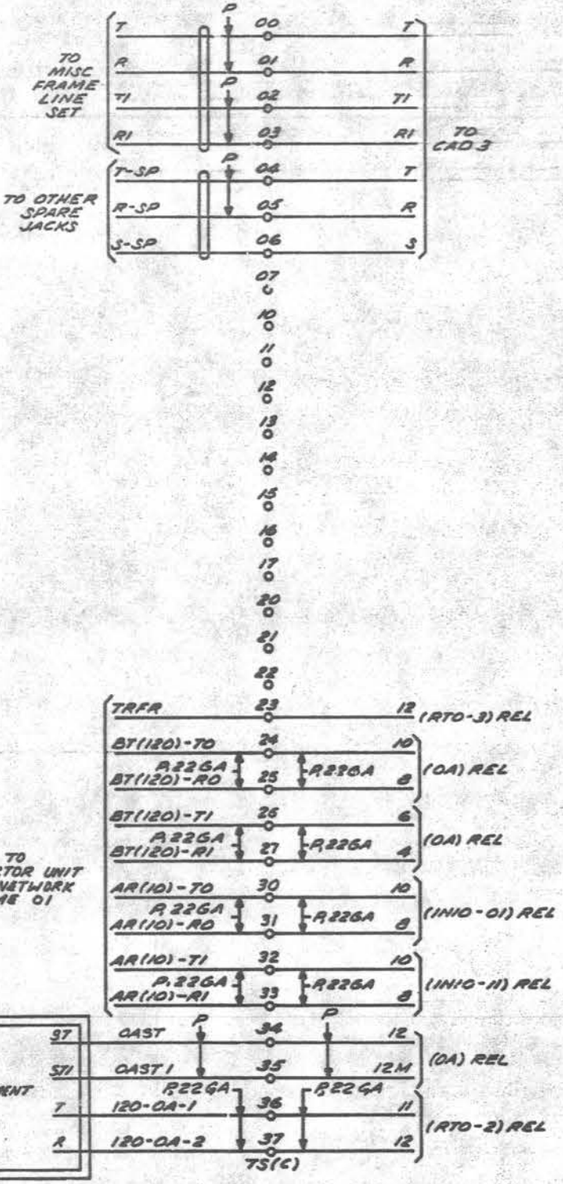
CAD 4



CAD 5



CAD 6



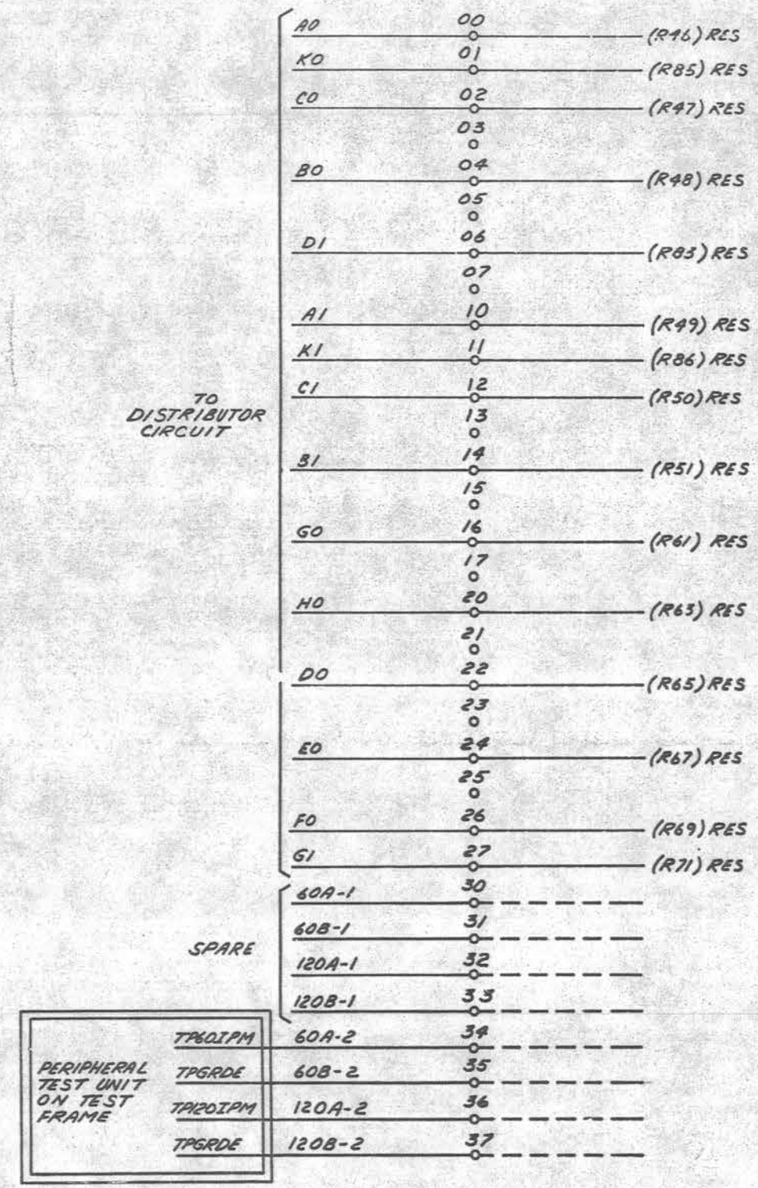
ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-02

BELL TELEPHONE LABORATORIES INCORPORATED 6S

SD-82255-01-02



ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-63

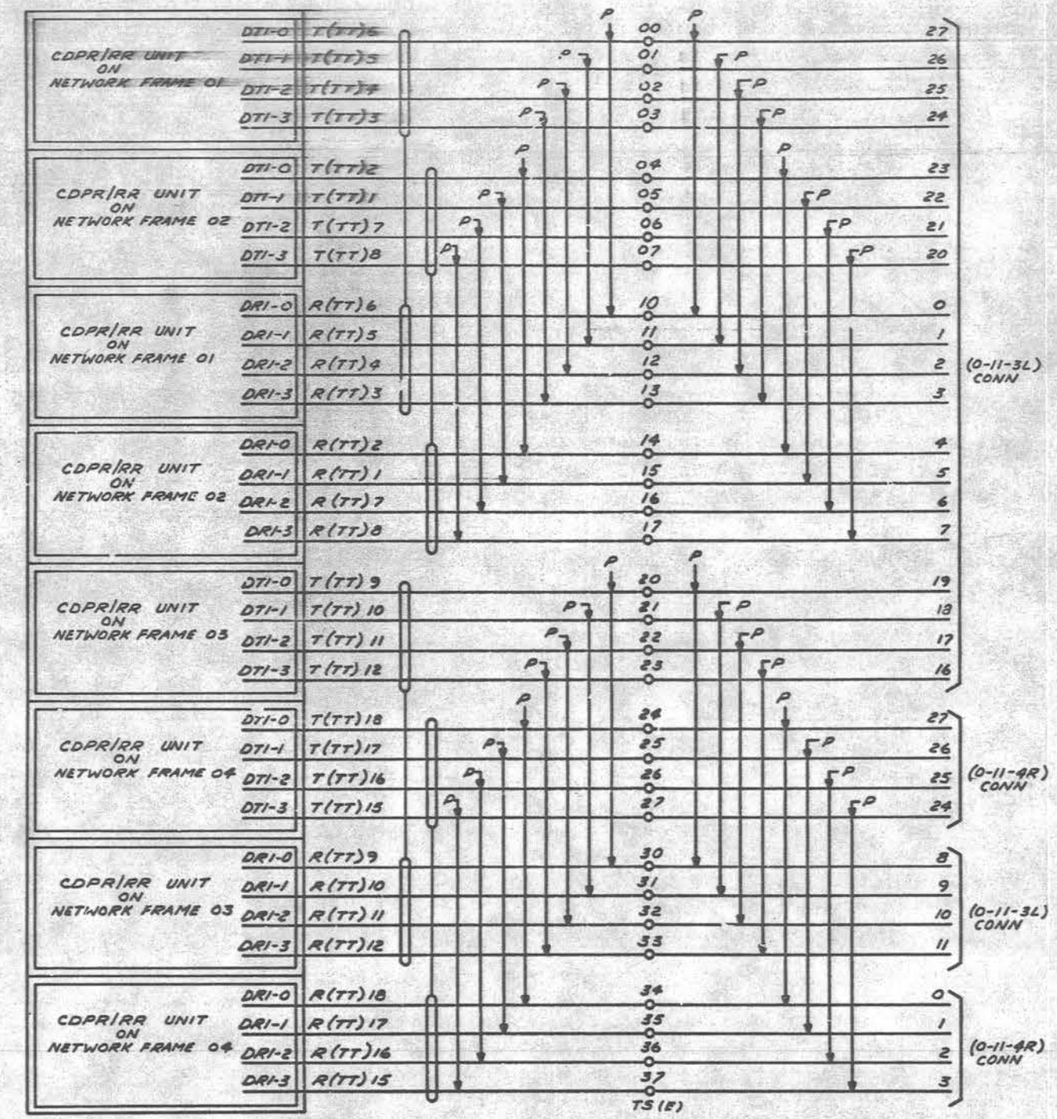
BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

CAD 8

SEE NOTES 109 & 903

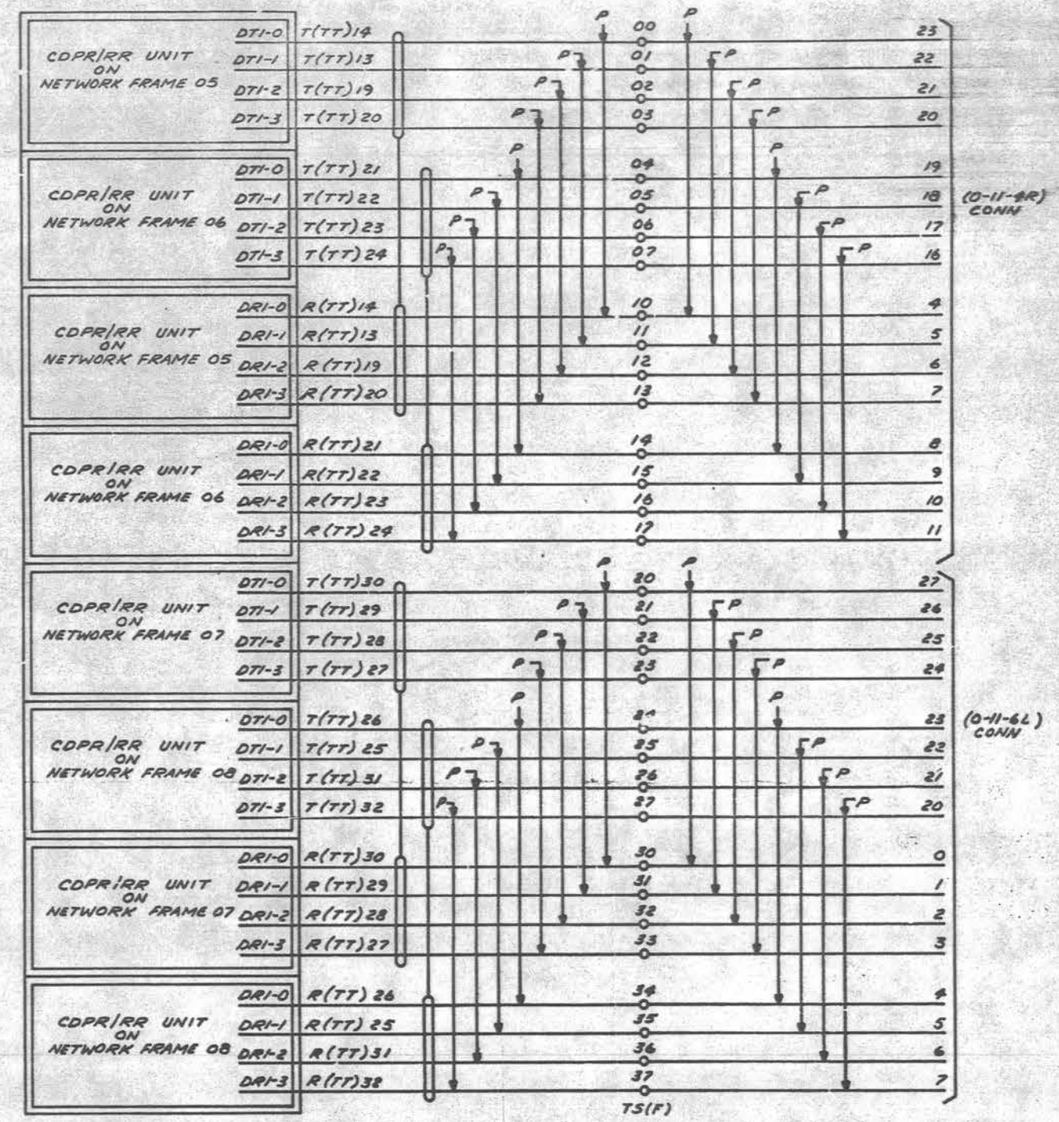
CDPR/RR UNIT ON NETWORK FRAME 01	DTI-0	T(TT)6
	DTI-1	T(TT)5
	DTI-2	T(TT)4
	DTI-3	T(TT)3
CDPR/RR UNIT ON NETWORK FRAME 02	DTI-0	T(TT)2
	DTI-1	T(TT)1
	DTI-2	T(TT)7
	DTI-3	T(TT)8
CDPR/RR UNIT ON NETWORK FRAME 01	DRI-0	R(TT)6
	DRI-1	R(TT)5
	DRI-2	R(TT)4
	DRI-3	R(TT)3
CDPR/RR UNIT ON NETWORK FRAME 02	DRI-0	R(TT)2
	DRI-1	R(TT)1
	DRI-2	R(TT)7
	DRI-3	R(TT)8
CDPR/RR UNIT ON NETWORK FRAME 03	DTI-0	T(TT)9
	DTI-1	T(TT)10
	DTI-2	T(TT)11
	DTI-3	T(TT)12
CDPR/RR UNIT ON NETWORK FRAME 04	DTI-0	T(TT)18
	DTI-1	T(TT)17
	DTI-2	T(TT)16
	DTI-3	T(TT)15
CDPR/RR UNIT ON NETWORK FRAME 03	DRI-0	R(TT)9
	DRI-1	R(TT)10
	DRI-2	R(TT)11
	DRI-3	R(TT)12
CDPR/RR UNIT ON NETWORK FRAME 04	DRI-0	R(TT)18
	DRI-1	R(TT)17
	DRI-2	R(TT)16
	DRI-3	R(TT)15



CAD 9

SEE NOTES 109 & 903

CDPR/RR UNIT ON NETWORK FRAME 05	DTI-0	T(TT)14
	DTI-1	T(TT)13
	DTI-2	T(TT)19
	DTI-3	T(TT)20
CDPR/RR UNIT ON NETWORK FRAME 06	DTI-0	T(TT)21
	DTI-1	T(TT)22
	DTI-2	T(TT)23
	DTI-3	T(TT)24
CDPR/RR UNIT ON NETWORK FRAME 05	DRI-0	R(TT)14
	DRI-1	R(TT)13
	DRI-2	R(TT)19
	DRI-3	R(TT)20
CDPR/RR UNIT ON NETWORK FRAME 06	DRI-0	R(TT)21
	DRI-1	R(TT)22
	DRI-2	R(TT)23
	DRI-3	R(TT)24
CDPR/RR UNIT ON NETWORK FRAME 07	DTI-0	T(TT)30
	DTI-1	T(TT)29
	DTI-2	T(TT)28
	DTI-3	T(TT)27
CDPR/RR UNIT ON NETWORK FRAME 08	DTI-0	T(TT)26
	DTI-1	T(TT)25
	DTI-2	T(TT)31
	DTI-3	T(TT)32
CDPR/RR UNIT ON NETWORK FRAME 07	DRI-0	R(TT)30
	DRI-1	R(TT)29
	DRI-2	R(TT)28
	DRI-3	R(TT)27
CDPR/RR UNIT ON NETWORK FRAME 08	DRI-0	R(TT)26
	DRI-1	R(TT)25
	DRI-2	R(TT)31
	DRI-3	R(TT)32



ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-G4

BELL TELEPHONE LABORATORIES INCORPORATED 6S

CAD 10

SEE NOTES 109 & 403

PERIPHERAL TEST UNIT ON TEST FRAME	ITRTT00	T(TT)33	00	19
	ITRTT01	T(TT)34	01	18
	SRTTT	T(TT)35	02	17
	DTI-0	T(TT)36	03	16
CDPR/RR UNIT ON NETWORK FRAME 09	DTI-1	T(TT)42	04	27
	DTI-2	T(TT)41	05	26
	DTI-3	T(TT)40	06	25
	SPARE	T(TT)39	07	24
PERIPHERAL TEST UNIT ON TEST FRAME	ITRTR00	R(TT)33	10	8
	ITRTR01	R(TT)34	11	9
	SRRTT	R(TT)35	12	10
	DRI-0	R(TT)36	13	11
CDPR/RR UNIT ON NETWORK FRAME 09	DRI-1	R(TT)42	14	0
	DRI-2	R(TT)41	15	1
	DRI-3	R(TT)40	16	2
	SPARE	R(TT)39	17	3
CDPR/RR UNIT ON NETWORK FRAME 10	DTI-0	T(TT)38	20	23
	DTI-1	T(TT)37	21	22
	DTI-2	T(TT)43	22	21
	DTI-3	T(TT)44	23	20
CDPR/RR UNIT ON NETWORK FRAME 11	DTI-0	T(TT)45	24	19
	DTI-1	T(TT)46	25	18
	DTI-2	T(TT)47	26	17
	DTI-3	T(TT)48	27	16
CDPR/RR UNIT ON NETWORK FRAME 10	DRI-0	R(TT)38	30	6
	DRI-1	R(TT)37	31	5
	DRI-2	R(TT)43	32	4
	DRI-3	R(TT)44	33	7
CDPR/RR UNIT ON NETWORK FRAME 11	DRI-0	R(TT)45	34	8
	DRI-1	R(TT)46	35	9
	DRI-2	R(TT)47	36	10
	DRI-3	R(TT)48	37	11

(C-11-6L) CONN

(0-11-7R) CONN

(0-11-6L) CONN

(0-11-7R) CONN

TS(G)

CAD 11

SEE NOTES 109 & 403

CDPR/RR UNIT(014) ON CONTROL FRAME 0	DTI-0	T(TT)54	00	27
	DTI-1	T(TT)53	01	26
	DTI-2	T(TT)52	02	25
	DTI-3	T(TT)51	03	24
CDPR/RR UNIT(118) ON CONTROL FRAME 0	DTI-0	T(TT)50	04	23
	DTI-1	T(TT)49	05	22
	DTI-2	T(TT)55	06	21
	DTI-3	T(TT)56	07	20
CDPR/RR UNIT(014) ON CONTROL FRAME 0	DRI-0	R(TT)54	10	0
	DRI-1	R(TT)53	11	1
	DRI-2	R(TT)52	12	2
	DRI-3	R(TT)51	13	3
CDPR/RR UNIT(118) ON CONTROL FRAME 0	DRI-0	R(TT)50	14	4
	DRI-1	R(TT)49	15	5
	DRI-2	R(TT)55	16	6
	DRI-3	R(TT)56	17	7
CDPR/RR UNIT(122) ON CONTROL FRAME 0	DTI-0	T(TT)57	20	19
	DTI-1	T(TT)58	21	18
	DTI-2	T(TT)59	22	17
	DTI-3	T(TT)60	23	16
TO CAD 22		T(BT)4	24	29
		T(BT)3	25	28
		T(BT)2	26	23
		T(BT)1	27	22
CDPR/RR UNIT(122) ON CONTROL FRAME 0	DRI-0	R(TT)57	30	8
	DRI-1	R(TT)58	31	9
	DRI-2	R(TT)59	32	10
	DRI-3	R(TT)60	33	11
TO CAD 22		R(BT)4	34	2
		R(BT)3	35	3
		R(BT)2	36	4
		R(BT)1	37	5

(0-11-9L) CONN

(0-11-16R) CONN

(0-11-9L) CONN

(0-11-16R) CONN

TS(H)

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

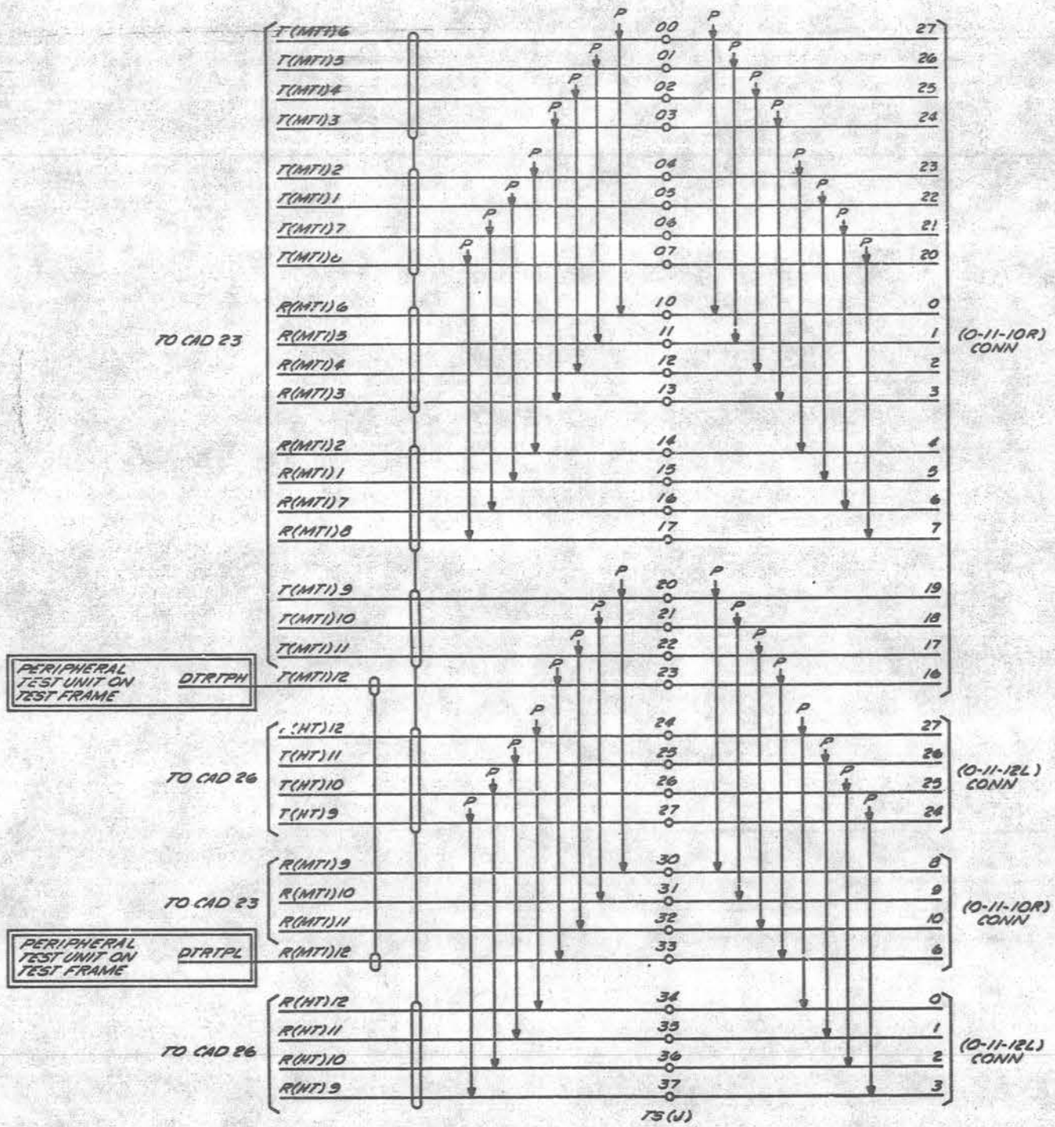
SD-82255-01-G5

BELL TELEPHONE LABORATORIES INCORPORATED

CHNG NOTE 6S

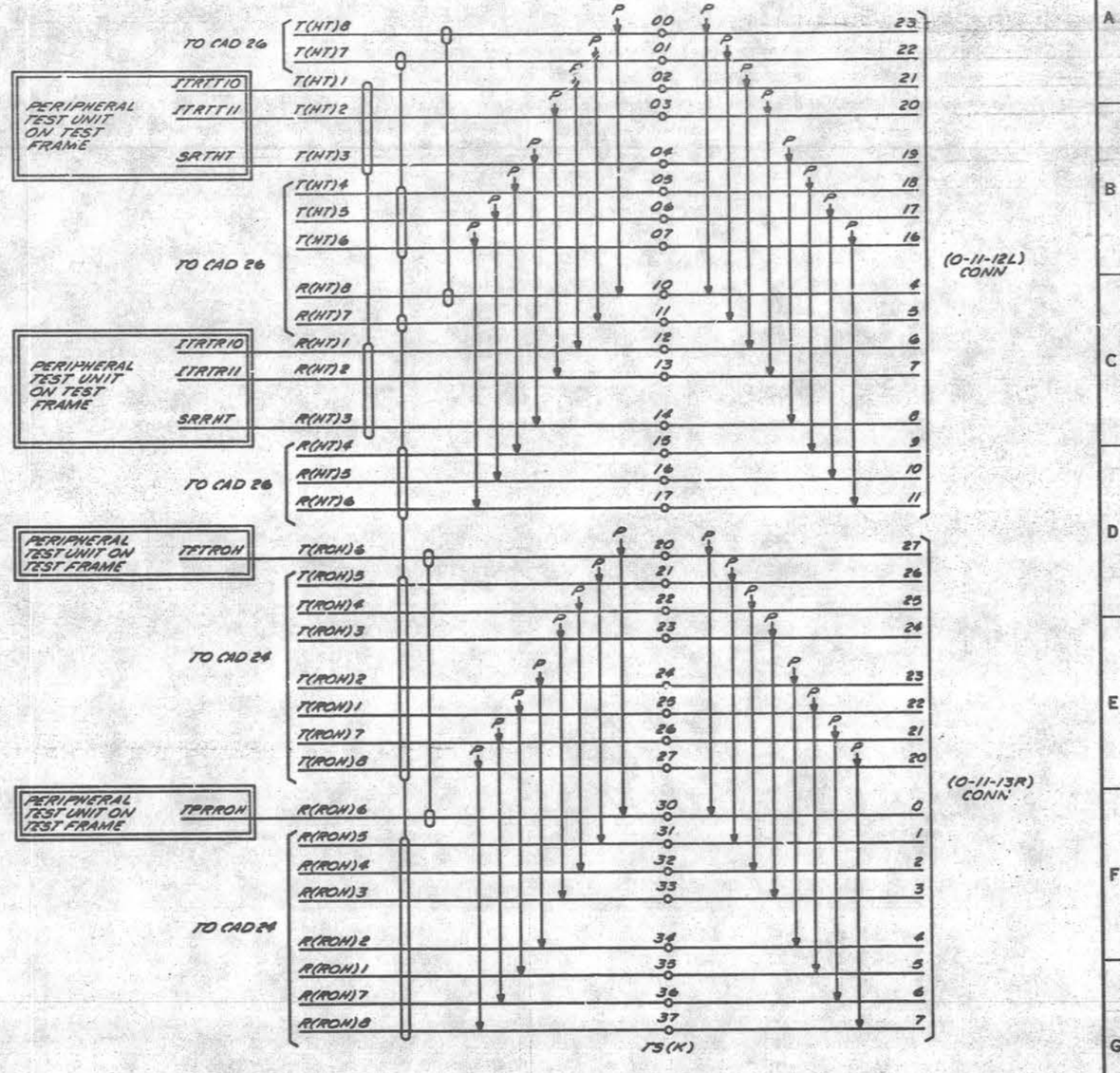
CAD 12

SEE NOTES 109 & 403



CAD 13

SEE NOTES 109 & 403

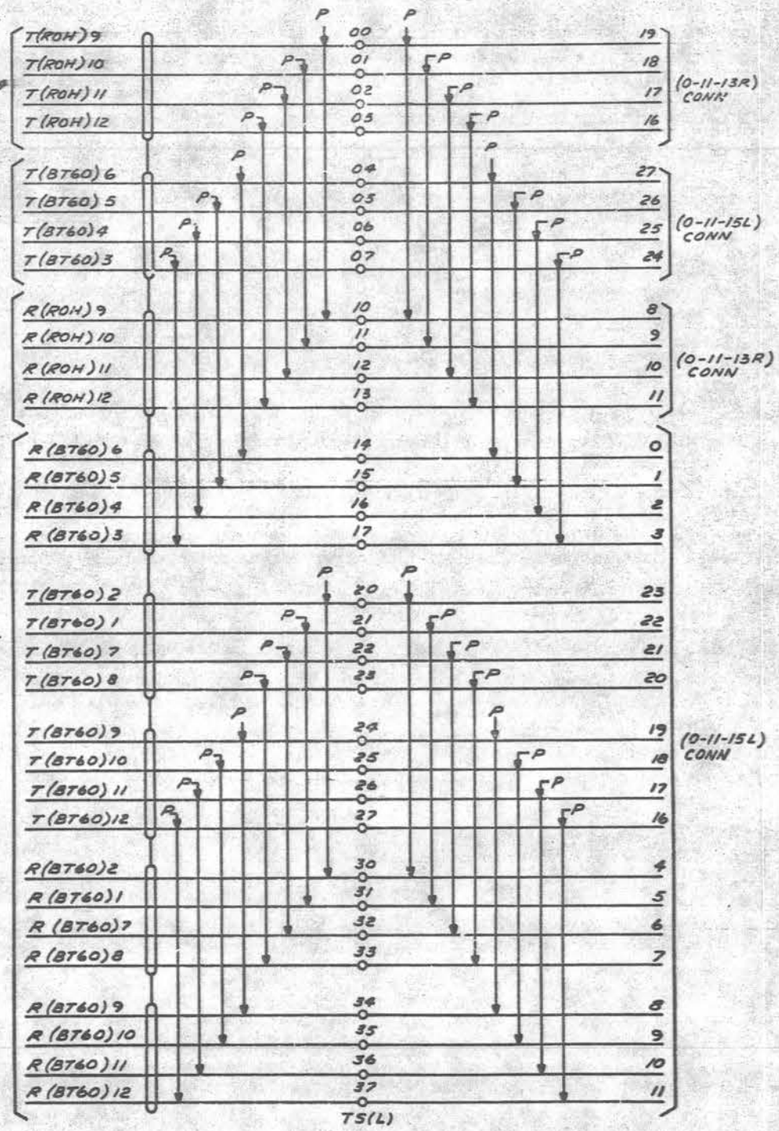


ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS	SD-82255-01-G6
BELL TELEPHONE LABORATORIES INCORPORATED	SIZE 6S

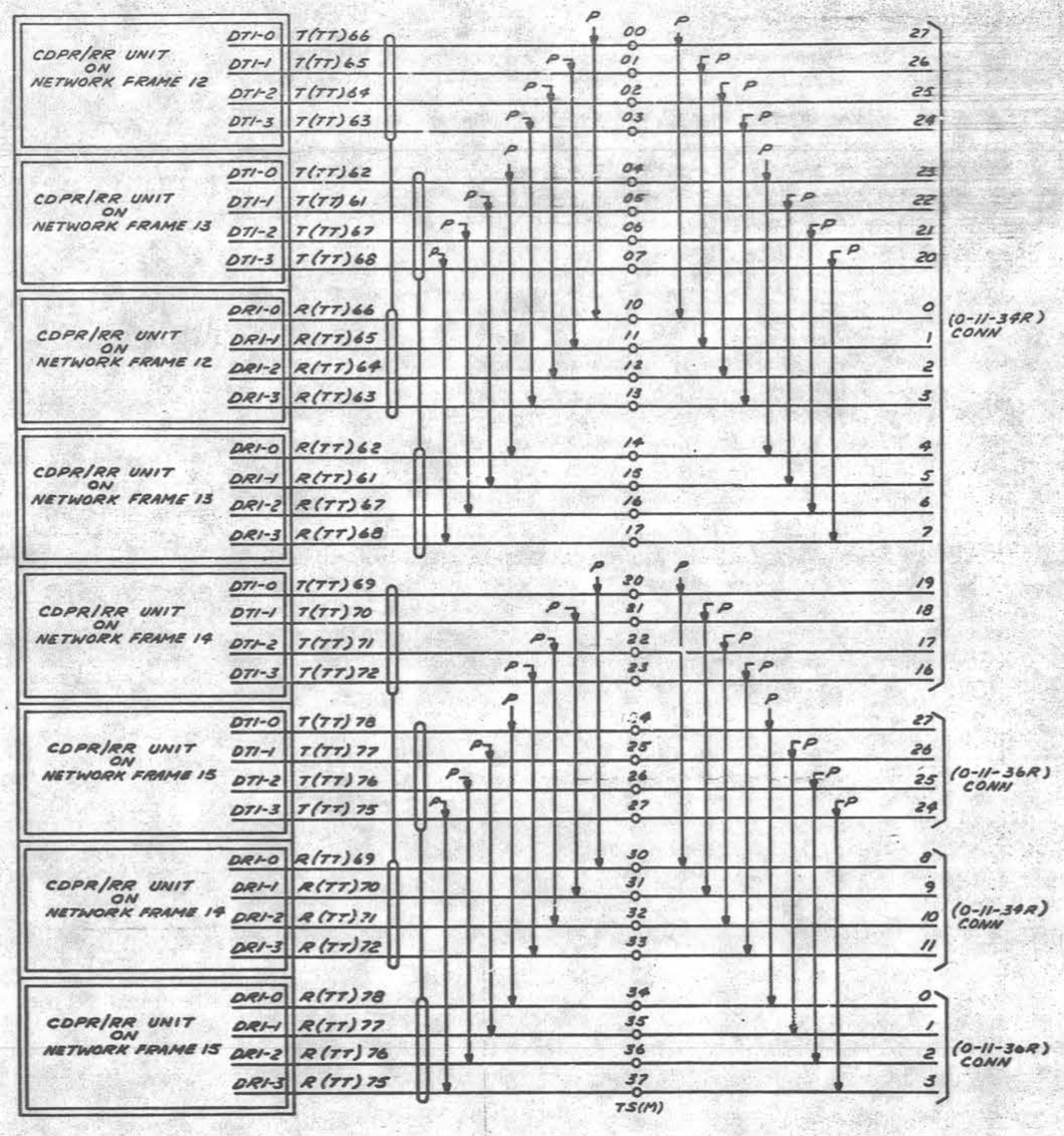
CAD 14

SEE NOTE 109



CAD 15

SEE NOTE 109 & 403



ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-G7

BELL TELEPHONE LABORATORIES INCORPORATED

6S

CAD 16

SEE NOTE 109

SPARE	T(TT)74	00	23	
	T(TT)73	01	22	
	T(TT)79	02	21	
	T(TT)80	03	20	
	T(TT)81	04	19	
	T(TT)82	05	18	
	T(TT)83	06	17	
	T(TT)84	07	16	(0-11-36R) CONN
	R(TT)74	10	4	
	R(TT)73	11	5	
	R(TT)79	12	6	
	R(TT)80	13	7	
	R(TT)81	14	8	
	R(TT)82	15	9	
	R(TT)83	16	10	
	R(TT)84	17	11	
TO CAD 22	T(BT)6	20	27	
	T(BT)5	21	26	
	T(BT60)18	22	16	
	T(BT60)17	23	17	
TO CAD 25	T(BT60)16	24	18	
	T(BT60)15	25	19	
	T(BT60)14	26	20	
	T(BT60)13	27	21	(0-11-16R) CONN
TO CAD 22	R(BT)6	30	0	
	R(BT)5	31	1	
	R(BT60)18	32	11	
	R(BT60)17	33	10	
TO CAD 25	R(BT60)16	34	9	
	R(BT60)15	35	8	
	R(BT60)14	36	7	
	R(BT60)13	37	6	

TS(N)

CAD 17

SEE NOTE 110

TO CIRCUITS REQUIRING INTERRUPTED RINGING	GEN1	P,26GA	(GEN1) FUSES 2 THRU 8
	RGRD	RTN	GROUND BAR
	+ SUP 97	P,26GA	(+ SUP 97) FUSE
	RGRD	RTN	GROUND BAR
	- SUP 97	P,26GA	(- SUP 97) FUSE
	RGRD	RTN	GROUND BAR
	- SUP 105	P,26GA	(- SUP 105) FUSE
	RGRD	RTN	GROUND BAR
TO DLL AND RINGING CIRCUITS AS REQUIRED	105V±	P,26GA	(105V±) FUSE
	RGRD	RTN	GROUND BAR
	+ SUP 105	P,26GA	(+ SUP 105) FUSE
	RGRD	RTN	GROUND BAR
	+TRP	P,26GA	(+TRP) FUSE
	RGRD	RTN	GROUND BAR
	-TRP	P,26GA	(-TRP) FUSE
	RGRD	RTN	GROUND BAR
	+ACDC	P,26GA	(+ACDC) FUSE
	RGRD	RTN	GROUND BAR
	-ACDC	P,26GA	(-ACDC) FUSE
	RGRD	RTN	GROUND BAR
TO EML CIRCUITS	EML 105±	P,26GA	(EML 105±) FUSE
	RGRD	RTN	GROUND BAR
PERIPHERAL TEST UNIT ON TEST FRAME	TPB04	P,26GA	(GEN 1) FUSE 1
	TPB05	RTN	GROUND BAR

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-G8

BELL TELEPHONE LABORATORIES INCORPORATED

6S

PART OF CAD 18

SEE NOTE #03

CDPR/RR UNIT ON NETWORK FRAME 01
- -ACDC 0 → -ACDC FUSE 1
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 2
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 3
- RGRD → RGRD

CDPR/RR UNIT (04) ON CONTROL FRAME 0
- -ACDC 0 → -ACDC FUSE 4
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 5
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 6
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 02
- -ACDC 0 → -ACDC FUSE 7
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 8
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 9
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 03
- -ACDC 0 → -ACDC FUSE 10
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 11
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 12
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 04
- -ACDC 0 → -ACDC FUSE 13
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 14
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 15
- RGRD → RGRD

SPARE
- → -ACDC FUSE 16
- → RGRD
- → -ACDC FUSE 17
- → RGRD

1ST SUPERIMPOSED RINGING UNIT ON MISC FRAME
- -ACDC 0 → -ACDC FUSE 18
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 19
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 20
- RGRD → RGRD
- -ACDC 3 → -ACDC FUSE 21
- RGRD → RGRD
- -ACDC 4 → -ACDC FUSE 22
- RGRD → RGRD
- -ACDC 5 → -ACDC FUSE 23
- RGRD → RGRD

SPARE
- → -ACDC FUSE 24
- → RGRD

CDPR/RR UNIT (118) ON CONTROL FRAME 0
- -ACDC 0 → -ACDC FUSE 25
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 26
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 27
- RGRD → RGRD

CDPR/RR UNIT (122) ON CONTROL FRAME 0
- -ACDC 0 → -ACDC FUSE 28
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 29
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 30
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 05
- -ACDC 0 → -ACDC FUSE 31
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 32
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 33
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 06
- -ACDC 0 → -ACDC FUSE 34
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 35
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 36
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 07
- -ACDC 0 → -ACDC FUSE 37
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 38
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 39
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 08
- -ACDC 0 → -ACDC FUSE 40
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 41
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 42
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 09
- -ACDC 0 → -ACDC FUSE 43
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 44
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 45
- RGRD → RGRD

CDPR/RR UNIT ON NETWORK FRAME 10
- -ACDC 0 → -ACDC FUSE 46
- RGRD → RGRD
- -ACDC 1 → -ACDC FUSE 47
- RGRD → RGRD
- -ACDC 2 → -ACDC FUSE 48
- RGRD → RGRD

NOTES:

1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS	SD-82255-01-G9
BELL TELEPHONE LABORATORIES INCORPORATED	SIZE 6S

P/O CAD 18
SEE NOTE 403

CDPR/RR UNIT ON NETWORK FRAME 11

-ACDC0	-ACDC FUSE 49
RGRD	RGRD
-ACDC1	-ACDC FUSE 50
RGRD	RGRD
-ACDC2	-ACDC FUSE 51
RGRD	RGRD

CDPR/RR UNIT ON NETWORK FRAME 12

-ACDC0	-ACDC FUSE 52
RGRD	RGRD
-ACDC1	-ACDC FUSE 53
RGRD	RGRD
-ACDC2	-ACDC FUSE 54
RGRD	RGRD

CDPR/RR UNIT ON NETWORK FRAME 13

-ACDC0	-ACDC FUSE 55
RGRD	RGRD
-ACDC1	-ACDC FUSE 56
RGRD	RGRD
-ACDC2	-ACDC FUSE 57
RGRD	RGRD

CDPR/RR UNIT ON NETWORK FRAME 14

-ACDC0	-ACDC FUSE 58
RGRD	RGRD
-ACDC1	-ACDC FUSE 59
RGRD	RGRD
-ACDC2	-ACDC FUSE 60
RGRD	RGRD

CDPR/RR UNIT ON NETWORK FRAME 15

-ACDC0	-ACDC FUSE 61
RGRD	RGRD
-ACDC1	-ACDC FUSE 62
RGRD	RGRD
-ACDC2	-ACDC FUSE 63
RGRD	RGRD

2ND SUPERIMPOSED RINGING UNIT ON MISC FRAME

-ACDC0	-ACDC FUSE 64
RGRD	RGRD
-ACDC1	-ACDC FUSE 65
RGRD	RGRD
-ACDC2	-ACDC FUSE 66
RGRD	RGRD
-ACDC3	-ACDC FUSE 67
RGRD	RGRD
-ACDC4	-ACDC FUSE 68
RGRD	RGRD
-ACDC5	-ACDC FUSE 69
RGRD	RGRD

3RD SUPERIMPOSED RINGING UNIT ON MISC FRAME

-ACDC0	-ACDC FUSE 70
RGRD	RGRD
-ACDC1	-ACDC FUSE 71
RGRD	RGRD
-ACDC2	-ACDC FUSE 72
RGRD	RGRD
-ACDC3	-ACDC FUSE 73
RGRD	RGRD
-ACDC4	-ACDC FUSE 74
RGRD	RGRD
-ACDC5	-ACDC FUSE 75
RGRD	RGRD

SPARE

	-ACDC FUSE 76
	RGRD
	-ACDC FUSE 77
	RGRD
	-ACDC FUSE 78
	RGRD
	-ACDC FUSE 79
	RGRD
	-ACDC FUSE 80
	RGRD

NOTES:
1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

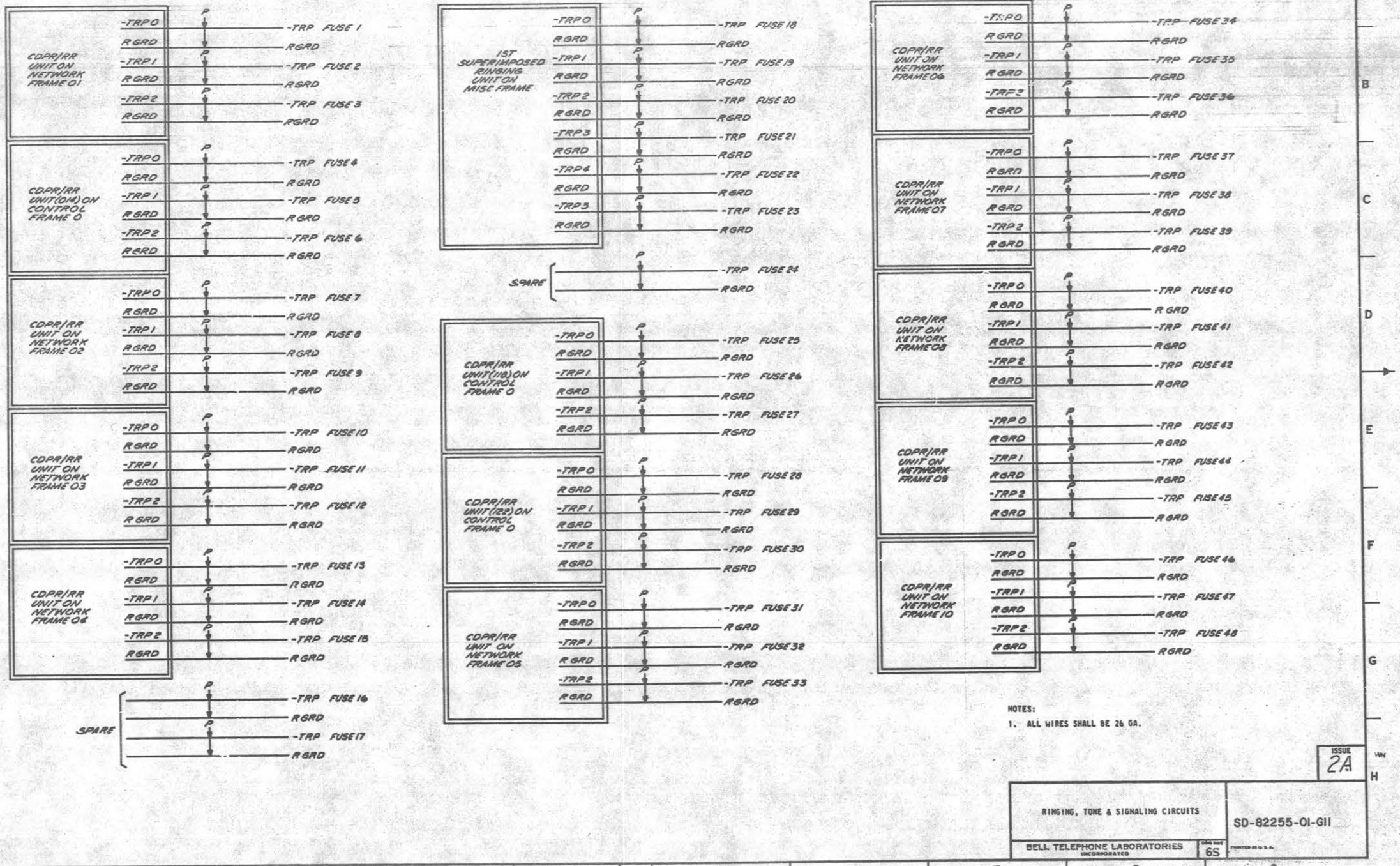
SD-82255-01-GIO

BELL TELEPHONE LABORATORIES INCORPORATED

6S

P/O CAD 19

SEE NOTE 403



NOTES:

1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS	SD-82255-01-GII
BELL TELEPHONE LABORATORIES INCORPORATED	SIZE 6S

P/O CAD 19

SEE NOTE 403

CDPR/RR UNIT ON NETWORK FRAME 11

-TRP 0	P	-TRP FUSE 49
R GRD		R GRD
-TRP 1	P	-TRP FUSE 50
R GRD		R GRD
-TRP 2	P	-TRP FUSE 51
R GRD		R GRD

CDPR/RR UNIT ON NETWORK FRAME 12

-TRP 0	P	-TRP FUSE 52
R GRD		R GRD
-TRP 1	P	-TRP FUSE 53
R GRD		R GRD
-TRP 2	P	-TRP FUSE 54
R GRD		R GRD

CDPR/RR UNIT ON NETWORK FRAME 13

-TRP 0	P	-TRP FUSE 55
R GRD		R GRD
-TRP 1	P	-TRP FUSE 56
R GRD		R GRD
-TRP 2	P	-TRP FUSE 57
R GRD		R GRD

CDPR/RR UNIT ON NETWORK FRAME 14

-TRP 0	P	-TRP FUSE 58
R GRD		R GRD
-TRP 1	P	-TRP FUSE 59
R GRD		R GRD
-TRP 2	P	-TRP FUSE 60
R GRD		R GRD

CDPR/RR UNIT ON NETWORK FRAME 15

-TRP 0	P	-TRP FUSE 61
R GRD		R GRD
-TRP 1	P	-TRP FUSE 62
R GRD		R GRD
-TRP 2	P	-TRP FUSE 63
R GRD		R GRD

2ND SUPERIMPOSED RINGING UNIT ON MISC FRAME

-TRP 0	P	-TRP FUSE 64
R GRD		R GRD
-TRP 1	P	-TRP FUSE 65
R GRD		R GRD
-TRP 2	P	-TRP FUSE 66
R GRD		R GRD
-TRP 3	P	-TRP FUSE 67
R GRD		R GRD
-TRP 4	P	-TRP FUSE 68
R GRD		R GRD
-TRP 5	P	-TRP FUSE 69
R GRD		R GRD

3RD SUPERIMPOSED RINGING UNIT ON MISC FRAME

-TRP 0	P	-TRP FUSE 70
R GRD		R GRD
-TRP 1	P	-TRP FUSE 71
R GRD		R GRD
-TRP 2	P	-TRP FUSE 72
R GRD		R GRD
-TRP 3	P	-TRP FUSE 73
R GRD		R GRD
-TRP 4	P	-TRP FUSE 74
R GRD		R GRD
-TRP 5	P	-TRP FUSE 75
R GRD		R GRD

SPARE

	P	-TRP FUSE 76
R GRD		R GRD
	P	-TRP FUSE 77
R GRD		R GRD
	P	-TRP FUSE 78
R GRD		R GRD
	P	-TRP FUSE 79
R GRD		R GRD
	P	-TRP FUSE 80
R GRD		R GRD

NOTES:

1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

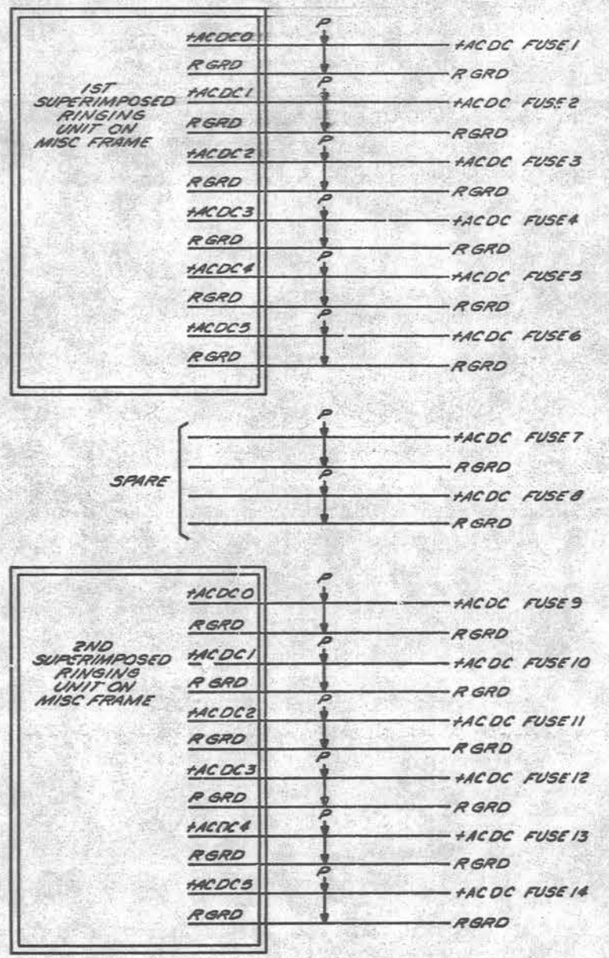
RINGING, TONE & SIGNALING CIRCUITS

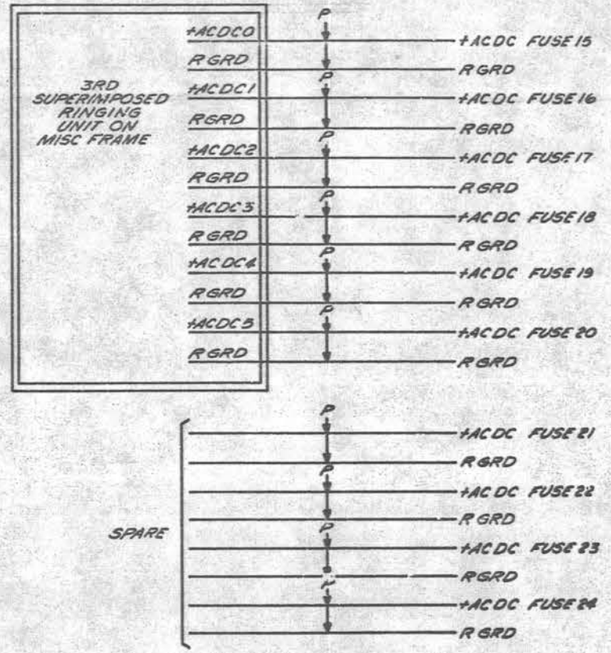
SD-82255-01-GI2

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

CAD20
SEE NOTE 403





NOTES:
1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

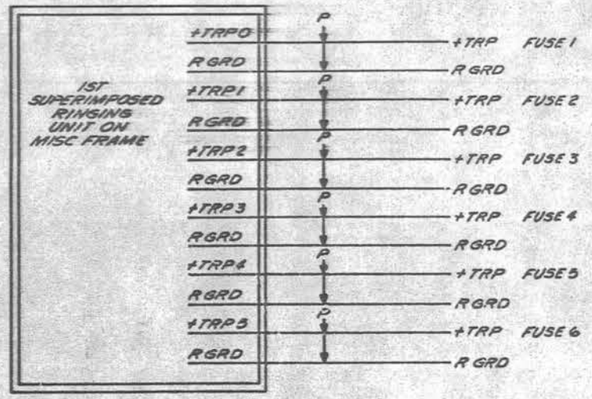
RINGING, TONE & SIGNALING CIRCUITS

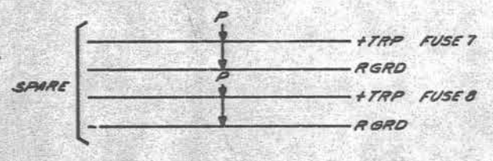
SD-82255-01-G13

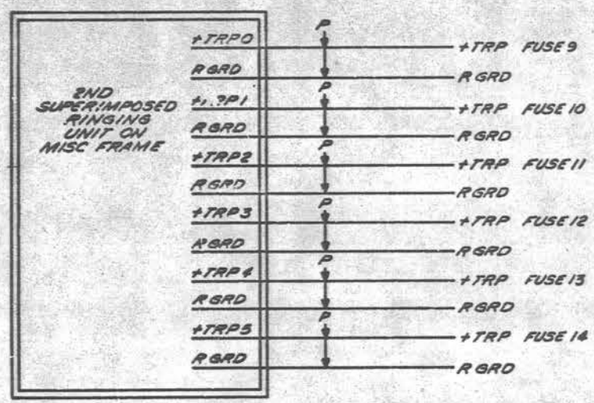
BELL TELEPHONE LABORATORIES INCORPORATED

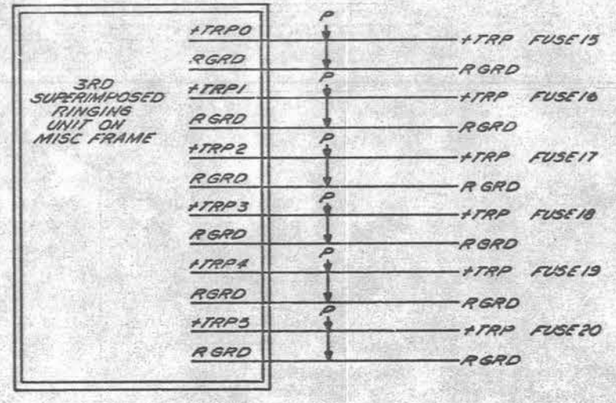
6S

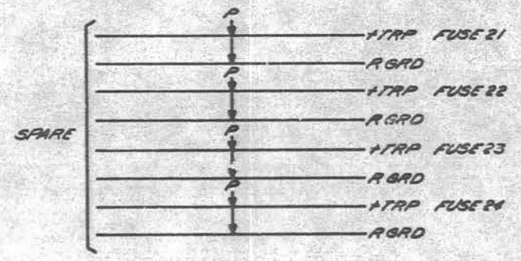
CAD 21
SEE NOTE 403











NOTES:
1. ALL WIRES SHALL BE 26 GA.

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

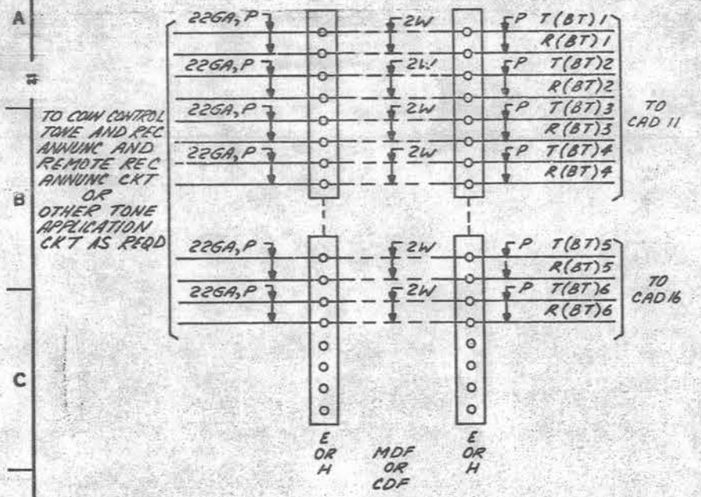
BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S

SD-82255-01-G14

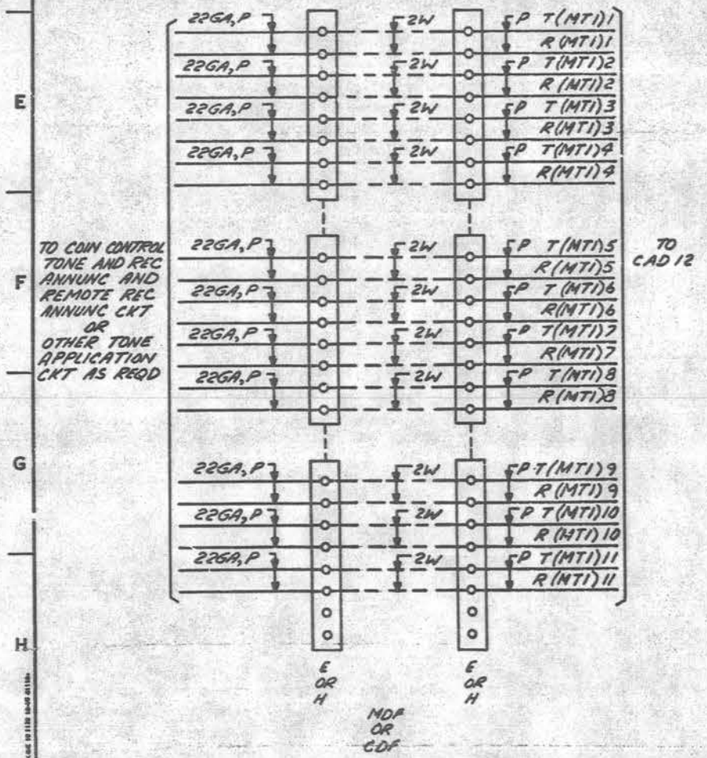
CAD 22

SEE NOTE 403



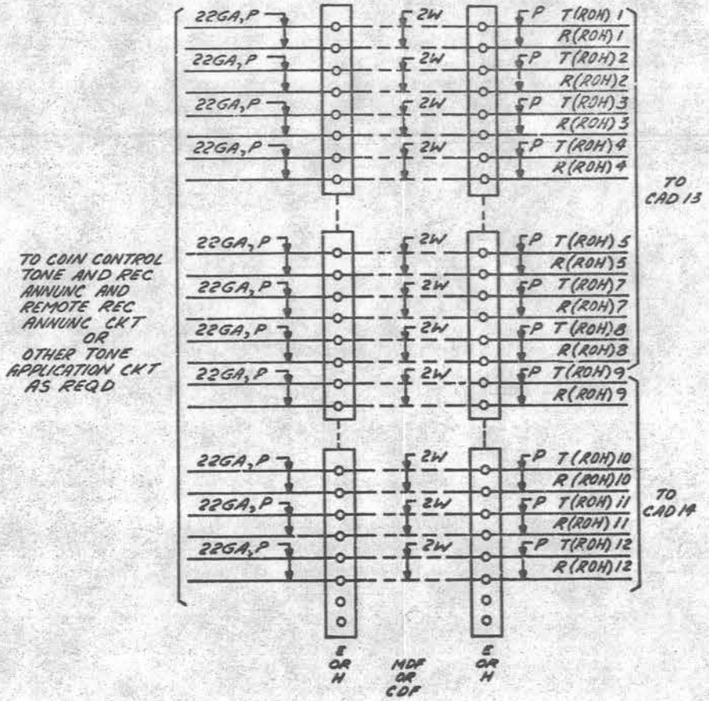
CAD 23

SEE NOTE 403



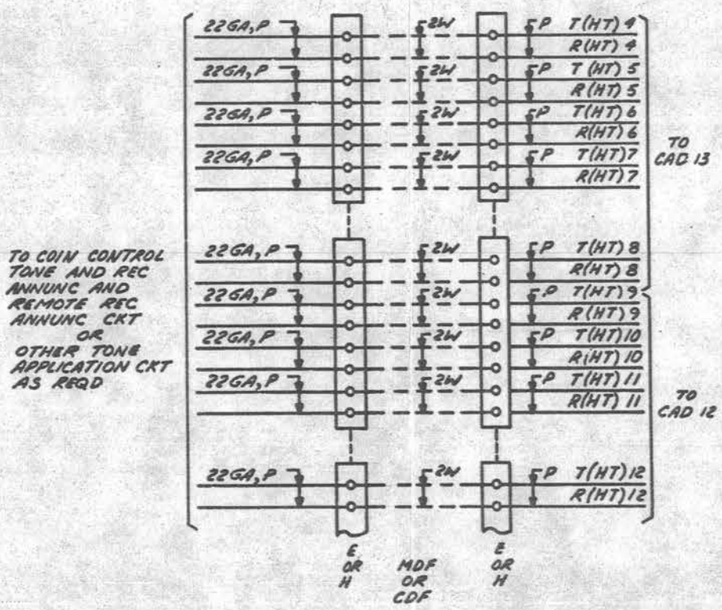
CAD 24

SEE NOTE 403



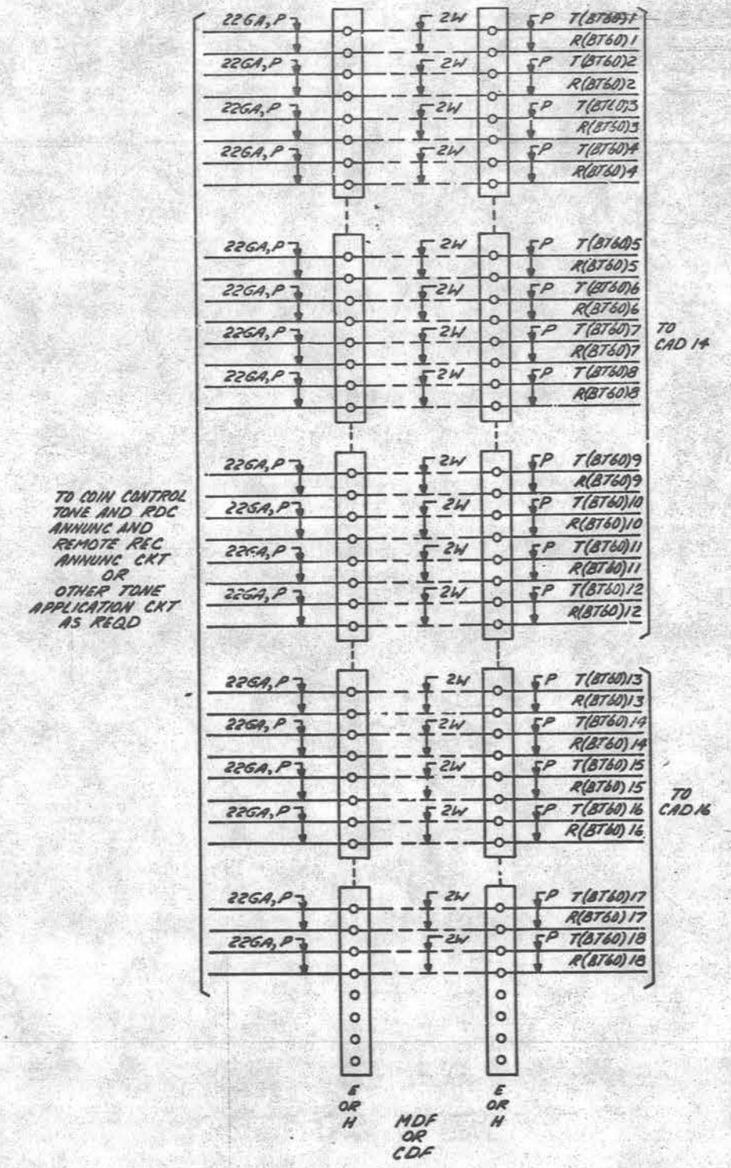
CAD 26

SEE NOTE 403



CAD 25

SEE NOTE 403



NOTES:

1. UNLESS OTHERWISE SHOWN, ALL WIRES SHALL BE 26 GA.

ISSUE 2A

RINGING, TONE & SIGNALING CIRCUITS

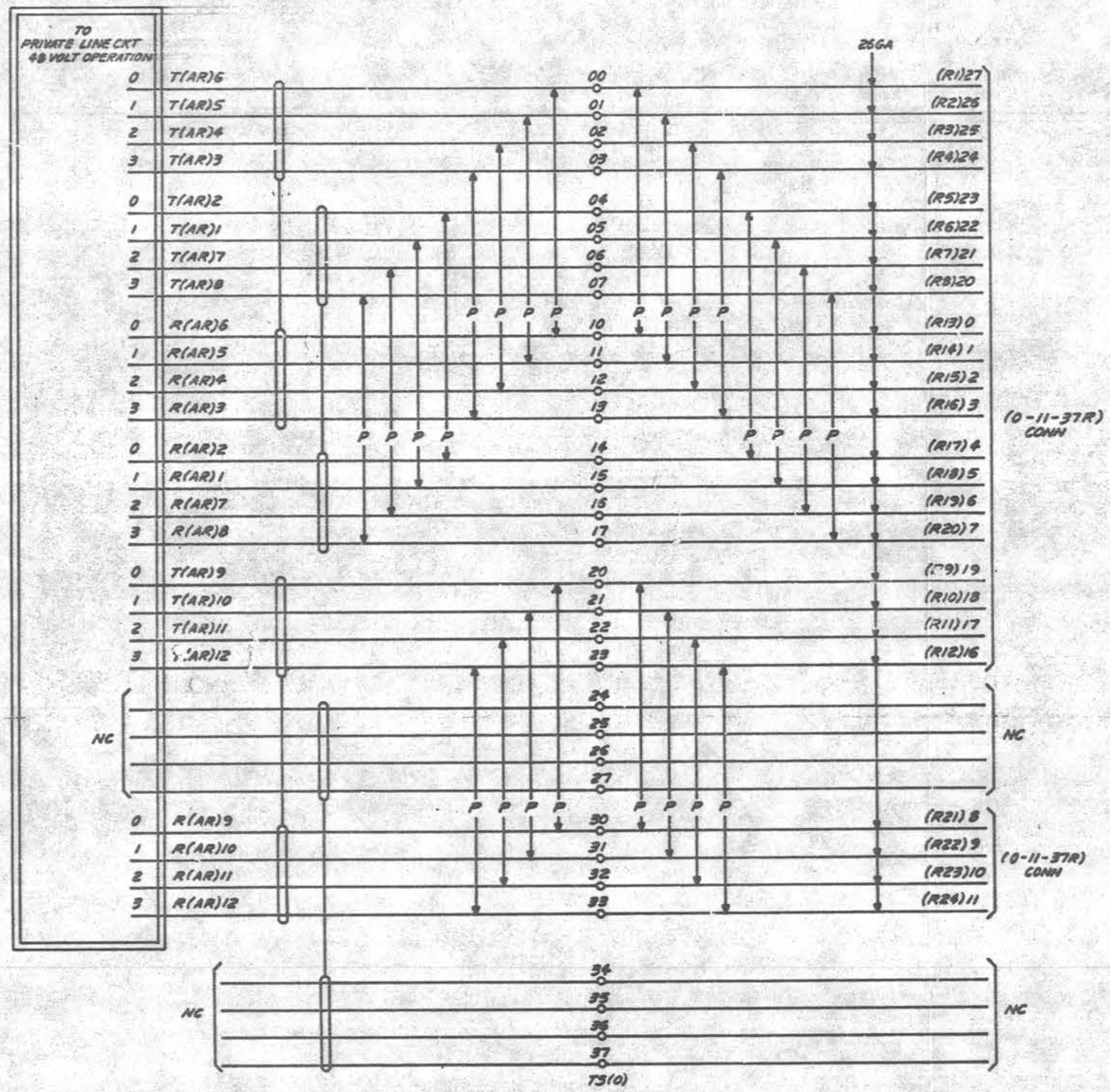
SD-82255-01-GIS

BELL TELEPHONE LABORATORIES INCORPORATED

6S

CAD 27

SEE NOTES 109 AND 403



RINGING, TONE AND SIGNALING CIRCUITS		DWG. SIZE 6S	ISSUE 5B
BELL LABORATORIES	SD-62255-01-		G16

PART OF BD I

SIDE 0

TONE OSCILLATORS: 350 HZ, 440 HZ, 480 HZ, 620 HZ

TONE AMPLIFIERS: TT, MT1, AR, HT, BT

TONE TRANSFORMERS: TT, MT1, AR, HT, BT

GROUND DETECTION MONITOR

SC(23) TO SCANNER

RGH GENERATOR — SC(15) TO SCANNER

TONE-SPLITTING RESISTORS & DISTRIBUTION

ROH, BT-60 IPM, TT, MT1, AR-, HT, BT

TO TONE APPLICATION CIRCUITS

AR-(10IPM) PRIVATE LINE CKT

P01

(+ 1V, D -DC, C -1V)

-48V BAT

INPUT FILTER & INRUSH CUR LIMITING

CLO

PLANT DISTRIBUTION FUSES & MANUAL ON-OFF CONTROL

INTRA-PLANT POWER DISTRIBUTION FUSE ALARM

OA -48V, OB +48V, OC RTN

20HZ INVERTER

P/O 10IPM INT

RINGING VOLTAGE MONITOR

TONE MONITORS: BT MON, HT MON, AR MON, MT1 MON, TT MON

INT OUTPUTS

P/O 10 IPM 60 IPM, 120 IPM INT SLAVE RELAYS

TRFR AR(10IPM) BT(120IPM)

TO JUNCTOR UNIT ON NETWORK FRAME

TONE-TRANSFER CKT

SPARE

GROUND-DETECTION CHECK

FRGH JUNCTOR UNIT ON NETWORK FRAME

BT-120 IPM, AR-10 IPM

OAST, 120-OA TO 7A ANNOUNCEMENT MACHINE

SC(18), SC(19), SC(01) TO SCANNER

105A, 105B, 97A, 97B, 86B, 86A

DM3, DM2, DM1 TO RINGING DEMAND METER

SC(02), SC(09), SC(08), SC(07), SC(06), SC(05), SC(16) TO SCANNER

AD, BD, CD TO DISTRIBUTOR CKT

60IPM, 120IPM TO PERIPHERAL TEST UNIT ON TEST FRAME

OVERLOAD ANNOUNCEMENT TRANSFER

SC(22) TO SCANNER

G1 TO DISTRIBUTOR CKT

D1

SC(25) TO SCANNER

RINGING TRANSFER CIRCUIT

AUTONOMOUS CONTROL

CONTROL PANEL: MANUAL PWR KEYS, PWR STATUS LAMPS, TEST JACKS

K0, K1 TO DISTRIBUTOR CKT

RINGING FUSE ALARMS

RINGING DISTRIBUTION FUSES

ENL 105±, +SUP 105, -SUP 105, +SUP 97, -SUP 97, +ACDC, -ACDC, GEN 1, +TRP, -TRP

TO RINGING-OUTPUT DISTRIBUTION

OUTPUT BUS & ENL RINGING VOLTAGE MONITOR SC(04) TO SCANNER

TO RINGING MON

TO ROH GEN

TO TONE MON

MONITOR MARGINAL-CHECK CKTS

TO GROUND-DETECTION CHECK

D0, E0, F0, G0, H0 TO DISTRIBUTOR CKT

SIDE 1

+48V DC-DC CONV

-48V BAT

P11 CL1

SC(24) TO SCANNER

A1, B1, C1 TO DISTRIBUTOR CKT

SC(20), SC(21), SC(17), SC(14), SC(13), SC(12), SC(11), SC(10), SC(03) TO SCANNER

ISSUE 5B

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-HI

BELL TELEPHONE LABORATORIES INCORPORATED

6S

SD-82255-01-HI

NOTES:

1. ALL "SC(XX)" DESIGNATIONS SHOWN (EACH COMPRISES A PAIR OF LEADS) ARE SCAN POINTS WHICH CONVEY INFORMATION TO SYSTEM CONTROL ON THE STATUS OF VARIOUS UNITS IN RINGING AND TONE PLANT. EACH SCAN POINT COMPRISES A SERIES CONNECTION OF BATTERY, GROUND, A 5.9KΩ RESISTOR AND A RELAY CONTACT IN THE PLANT WHICH MAY BE EITHER OF THE "MAKE" OR BREAK VARIETY. THIS PATH IS BROKEN AND TWO LEADS GO TO THE NO. 3 ESS SYSTEM. THE SYSTEM INTERFACE IS COMPLETED BY A LOOP CLOSURE TO DETERMINE THE STATE OF THE RELAY IN THE PLANT. A FAULT CONDITION IN THE PLANT IS THEN INDICATED TO THE SYSTEM BY AN OPEN OR CLOSED LOOP AT THE SCAN POINT.

   (A) A SCAN POINT ASSOCIATED WITH A TONE MONITOR [SC(05) - (09), (10) - (14)] IS NORMALLY OPEN AND WILL PROVIDE A CLOSURE WHEN THE TONE OUTPUT VOLTAGE HAS DROPPED BY AT LEAST 3dB BELOW THE NORMAL LEVEL.

   (B) A SCAN POINT ASSOCIATED WITH A RINGING MONITOR [SC(02) - (04)] IS NORMALLY CLOSED AND WILL PROVIDE AN OPEN WHEN A NO-VOLTAGE CONDITION EXISTS AT THE RINGING GENERATOR OR RINGING BUS OUTPUT.

   (C) A SCAN POINT ASSOCIATED WITH AN INTRAPLANT DISTRIBUTION FUSE OR A RINGING OUTPUT DISTRIBUTION FUSE [SC(19) AND (21), (01) RESPECTIVELY] IS NORMALLY CLOSED AND WILL PROVIDE AN OPEN WHEN AN INTRAPLANT dc DISTRIBUTION FUSE BLOWS OR A RINGING DISTRIBUTION OUTPUT FUSE BLOWS.

   (D) A SCAN POINT ASSOCIATED WITH THE TONE GROUND DETECTION CIRCUIT [SC(23), (24)] IS NORMALLY OPEN AND WILL PROVIDE A CLOSURE WHENEVER A 5000 OHM (OR LESS) IMPEDANCE-TO-GROUND OCCURS ON ANY TONE.

   (E) THE SCAN POINT ASSOCIATED WITH KOH TONE [SC(15)] IS NORMALLY OPEN AND PROVIDES A CLOSURE IF KOH TONE IS LOST.

   (F) A CLOSURE IS PROVIDED ON THE INTERRUPTER SCAN POINT [SC(16) FOR "0" SIDE AND SC(17) FOR "1" SIDE] WHENEVER THE RESPECTIVE INTERRUPTER RELAYS ARE OPERATING.

   (G) A SCAN POINT TO INDICATE "POWER-OFF" FUNCTION [SC(18) FOR "0" SIDE AND SC(20) FOR "1" SIDE] IS NORMALLY CLOSED AND PROVIDES AN OPEN WHEN: (1) MANUAL OFF-0 KEY OR FUSE ALARM RELAY FA0 IS OPERATED [SC(18)], (2) MANUAL OFF-1 KEY OR FUSE ALARM RELAY FA1 IS OPERATED [SC(20)].

   (H) A SCAN POINT [SC(22)] PROVIDES A CLOSURE WHENEVER THE OVERLOAD ANNOUNCEMENT CIRCUIT BECOMES OPERATIVE. THIS SCAN POINT IS NORMALLY OPEN.

   (I) A SCAN POINT [SC(25)] PROVIDES A CLOSURE WHEN SIDE "1" IS ON-LINE AND AN OPEN WHEN SIDE "0" IS ON-LINE.

2. ALL POINTS TO DISTRIBUTOR CIRCUIT (A0 THROUGH H0, K0 AND A1 THROUGH H1, K1) ARE SIGNAL DISTRIBUTOR POINTS (EACH COMPRISES A SINGLE LEAD) WHICH CONVEY COMMANDS FROM SYSTEM CONTROL TO THE RINGING AND TONE PLANT. EACH DISTRIBUTOR POINT IS CONNECTED TO ONE END OF A RELAY COIL. THE OTHER END OF THE RELAY COIL IS CONNECTED TO BATTERY IN THE PLANT. TO OPERATE A PARTICULAR DISTRIBUTE RELAY, A GROUND IS PROVIDED TO THE ASSOCIATED DISTRIBUTE POINT BY THE SYSTEM.

   THE SIGNAL DISTRIBUTOR POINTS AND THEIR FUNCTIONS ARE AS FOLLOWS:

DISTRIBUTOR POINT	FUNCTION
A0	OPERATES 10IPM INTERRUPTER RELAY FOR "0" SIDE.
A1	OPERATES 10IPM INTERRUPTER RELAY FOR "1" SIDE.
B0	OPERATES 120IPM INTERRUPTER RELAY FOR "0" SIDE.
B1	OPERATES 120IPM INTERRUPTER RELAY FOR "1" SIDE.
C0	OPERATES 60IPM INTERRUPTER RELAY FOR "0" SIDE.
C1	OPERATES 60IPM INTERRUPTER RELAY FOR "1" SIDE.
D0	OPERATES SELECTIVE MONITOR MARGINAL-CHECK CKTS.
E0	OPERATES SELECTIVE MONITOR MARGINAL-CHECK CKTS.
F0	OPERATES SELECTIVE MONITOR MARGINAL-CHECK CKTS.
G0	OPERATES SELECTIVE MONITOR MARGINAL-CHECK CKTS.
H0	OPERATES SELECTIVE MONITOR MARGINAL-CHECK CKTS.
D1	OPERATES RTO-1, 2, 3 RELAYS WHICH TRANSFER LOADS TO "1" SIDE OF PLANT.
G1	OPERATES "OA" RELAY WHICH MAKES OVERLOAD ANNOUNCEMENT CKT. OPERATIVE.
K0	OPERATES OOS-0 LAMP WHICH INDICATES POWER IS OFF TO "0" SIDE.
K1	OPERATES OOS-1 LAMP WHICH INDICATES POWER IS OFF TO "1" SIDE.

ISSUE 1

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-H2

BELL TELEPHONE LABORATORIES INCORPORATED — DWG SIZE 6S — PRINTED IN U.S.A.

SD-82255-01-H2

COMPONENT ASSEMBLY (CA1 & CA2)

ED-82710-01
INRUSH CURRENT LIMIT

SUPPORTING INFORMATION

CATEGORY	NO.
CIRCUIT PACK CODE AND ASSEMBLY DRAWING	ED-82710-01

COMPONENT LIST

DIODE

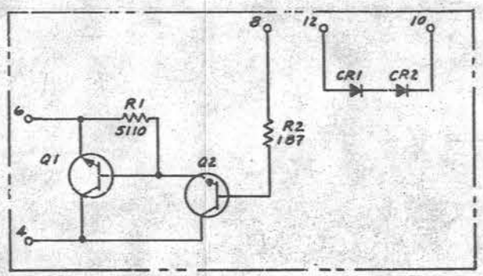
DESIG	CODE
CR1	426A
CR2	426A

RESISTOR

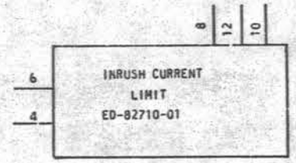
DESIG	CODE
R1	KS-20289,L6C,5110
R2	KS-20289,L6C,187

TRANSISTOR

DESIG	CODE
Q1	KS-20180,L2
Q2	KS-20180,L2



SYMBOL



CIRCUIT DESCRIPTION

THIS CIRCUIT PACK, WHEN USED IN CONJUNCTION WITH EXTERNAL CIRCUITRY, PROVIDES THE CONTROL NECESSARY TO LIMIT INRUSH CURRENT INTO THE RINGING, TONE AND CADENCE SYSTEM FOR #3 ESS (PTC #3) UPON INITIAL APPLICATION OF dc POWER TO THIS SYSTEM. AN ILLUSTRATION OF ITS USE MAY BE FOUND ON FS1 (SHEET 01) OF SD-82253-01. AS USED IN RTC #3, THE FOLLOWING CONNECTIONS ARE EXTERNALLY MADE TO THE CIRCUIT PACK. (THIS WILL BE USED TO ILLUSTRATE OPERATION OF THE CIRCUIT.) THE INPUT FILTER INDUCTOR IS CONNECTED ACROSS TERMINALS 12 AND 10. A PARALLEL COMBINATION OF INPUT-CURRENT SENSING RESISTOR AND MAKE-CONTACT OF A RELAY IS CONNECTED ACROSS TERMINALS 6 AND 8. THE ASSOCIATED RELAY COIL IS CONNECTED ACROSS TERMINALS 6 AND 4. THE OPERATION OF THE CIRCUIT IS AS FOLLOWS. WHEN BATTERY VOLTAGE IS INITIALLY APPLIED TO THE SYSTEM, THE COMPLETE VOLTAGE IS IMPRESSED ACROSS THE CURRENT SENSING RESISTOR. (AN INPUT FILTER CAPACITOR IS ALSO PRESENT, BUT, INSTANTANEOUSLY THE CAPACITOR VOLTAGE IS ZERO.) WHEN THIS OCCURS, BASE DRIVE IS PROVIDED THROUGH RESISTOR R2 TO TURN ON TRANSISTOR Q2, WHICH IN TURN DRIVES TRANSISTOR Q1 ON. SINCE Q1 IS CONNECTED ACROSS THE RELAY COIL, THE VERY LOW VALUE OF $V_{CE,Q1}$ (APPROXIMATELY 1 VOLT) WILL HOLD THE RELAY COIL DEENERGIZED. THEREFORE, THIS RELAY REMAINS OFF AND THE INPUT CURRENT IS LIMITED BY THE VALUE OF THE SENSING RESISTOR. SIMULTANEOUSLY, THE INPUT FILTER CAPACITOR IS CHARGING TO THE BATTERY VOLTAGE. AS THE CAPACITOR CONTINUES TO CHARGE, THE VOLTAGE ACROSS THE SENSE RESISTOR BECOMES CORRESPONDINGLY LOWER. AS THE CAPACITOR BECOMES FULLY CHARGED, THE VOLTAGE ACROSS THE SENSE RESISTOR DECREASES TO A POINT WHERE BASE-DRIVE TO TRANSISTOR Q2 IS LOST. WHEN THIS OCCURS, TRANSISTORS Q2 AND Q1 ARE TURNED OFF AND THE RELAY IS CORRESPONDINGLY TURNED ON. THE MAKE-CONTACT THEN SHORTS OUT THE SENSE RESISTOR AND THIS ACTION ENSURES THAT TRANSISTORS Q2 AND Q1 REMAIN OFF. DIODES CR1 AND CR2 SERVE AS FLYBACK DIODES TO PREVENT LARGE VOLTAGE TRANSIENTS FROM OCCURRING WHEN THE FILTER COIL BECOMES DEENERGIZED.

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.

ISSUE 1

RINGING, TONE & SIGNALING CIRCUITS

SD-82255-01-J1

BELL TELEPHONE LABORATORIES INCORPORATED

SD-82255-01-J1