

STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT
ARRANGED FOR SS1 OR 600/1500-CYCLE
SELECTIVE SIGNALING, 20-CYCLE SIGNALING,
VOICE OR DC OUTGOING SIGNALING,
OR LOUDSPEAKER INCOMING SIGNALING

0. CHANGES

0.1 CHANGED AND ADDED FUNCTIONS

None.

0.2 CHANGES IN APPARATUS

Removed

Capacitor R, 2 uf, Fig. J
Capacitor R, 4 uf, Fig. S
Diode CR, 400A, Fig. 2
Diode CG, 400A, Fig. 8
Diode LC, 400A, Fig. 8

Replaced by

Capacitor R1, 2 uf, Fig. J
Capacitor R1, 4 uf, Fig. S
Diode CR, 420G, Fig. 2
Diode CG, 420G, Fig. 8
Diode LC, 420G, Fig. 8

0.3 CHANGES IN CIRCUIT REQUIREMENTS

(Not Associated with 0.2 Above)

None.

0.4 DESCRIPTION OF CIRCUIT CHANGES

(a) On a "No Record" basis:

- (1) Grounds are designated.
- (2) Cabling diagrams are revised.

(3) In Fig. 1, terminal designations are corrected from 5, 6, 7, 8 to 9, 10, 11, 12 at the T and R repeating coils, associated with leads R4 and R2 and with leads R3 and R1, respectively.

(b) Fig. W and wiring options "ZJ" and "ZK" are added to provide a feature of outgoing and/or incoming 20-cycle signaling on a metallic basis over a simplex of receive and transmit loops. Fig. W is simply a wiring figure.

(c) Circuit Notes 101 and 102 are changed to reflect (a)(1) and (b).

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DEPT 5333-R11M-PBF

SHEET INDEX

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	CIRCUIT NOTES 101 & 102	B1	1	2																
	CIRCUIT NOTES 102 TO END	B2	1	2																
	EQUIPMENT NOTES INFORMATION NOTES FIG. & OPTION TABLE KEY TOPS WORKING LIMITS	B3	1	2																
101	APPLN FOR SSI SEND & RCV WITH PRIVACY OR ON-PREM DIALING BETWEEN PBX POS & ONE OR TWO 4-W STA GRPS ON SAME PREM WITH SSI SEL SIG EQPT	B4	1	1																
102	TOP VIEW 60508 KEY																			
1	LINE CKT																			
2	FLASHING CKT FOR INC SIG	C1	1	2																
3	20-CYCLE OR DC OUT, SIG CKT																			
4	RINGING LP CKT																			
5	SEL SIG CODE REL	C2	1	2																
6	20-CYCLE RINGING CKT FOR INC SIG																			
7	INC RINGING AUX CKT																			
8	KEY TEL SET BUSY INDICATING CKT	C3	1	2																
23	RELAY CKT FOR SIMULTANEOUS SW OF THREE 4-WIRE PRIV LINES																			
24	20-CYCLE OUT, RINGING CONT CKT TO PROVIDE AUTO. RING SPURT WITH MANUAL RERING	C4	1	2																
9	FLT TO ELIM 600- & 1500-CYCLE TONES																			
10	4-W PRIV LINE TER FOR 1 TO 6 STA GRPS OF KEY TEL SETS	C5	1	2																
11	4-W PRIV LINE TER FOR PBX & 1 OR 2 STA GRPS OF KEY TEL SETS																			
14	SIDE-TONE CKT FOR KEY TEL SETS	C6	1	2																
12	20-CYCLE OR DC OUT, SIG CKT FOR KEY TEL SETS																			
13	20-CYCLE RINGING CKT FOR INC SIG TO KEY TEL SETS																			
25	DC CONT REL SET TO OPERATE SEPARATE BELL OR HORN																			
26	SIG CUTOFF KEY CKT	C7	1	2																
15	KEY CKT FOR SW TWO 4-WIRE PRIV LINES																			
16	KEY CKT FOR SW THREE 4-W PRIV LINES																			
19	SW INDICATOR LP																			
27	PBX TER CUTOFF CKT	C8	1	2																

DWG ISSUE	CD ISSUE	DATE ISSUED	DRAWN	APPROVED
1	1	6-19-62	GMB RMT DNC	RMT DNC
2D	1	APPROD 10-25-62	TNC RMT DNC	RMT DNC

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.

SUPPORTING INFORMATION

CATEGORY	NO.
EQUIPMENT DRAWINGS	J53036A J53036B J53036C

SD-69410-01

STATION SYSTEMS

4-WIRE PRIVATE LINE CIRCUIT

ARRANGED FOR SSI OR 600/1500-CYCLE
SELECTIVE SIGNALING, 20-CYCLE SIGNALING,
VOICE OR DC OUTGOING SIGNALING,
OR LOUDSPEAKER INCOMING SIGNALING

AT&T
STANDARD

SD-69410-01-A1

24 Sheets

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**DRAWING
ISSUE**

1	R.A.T DHC OLV
20	TNC DHC OLV

35

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CIRCUIT NOTES:

101. DESIG	AMP	POTENTIAL FUSED	ONE PER
A	2	24V SIG	FIG. 1 & ASSOC FIG. 2, 5, 7, 8, 17, & 23
A	1/2 HV	MACH RING	6 FIG. 6
B	2	24V SIG	FIG. 1 & ASSOC FIG. 3, 7, & 24
C	2	24V SIG	ALL FIG. 12, 13, 17 & 18 ASSOC WITH SAME LINE
D	1-1/3	14-26V SIG 32-46V SIG OR 44-52V SIG	(FUSE IN PBX) MAX. OF 21 FIG. 22
E	2	24V SIG	MAX. OF 30 FIG. 19
A		GRD	FIG. 1 & ASSOC FIG. 2, 17 & 23
B		GRD	FIG. 1 & ASSOC FIG. 5, 6, 7, 25, FIG. D, E, F, U, & V
C		GRD	ALL FIG. 13, 17, 18, 25, 27, FIG. D, E, F, G, H ASSOC WITH SAME LINE
D		GRD	MAX. OF 21 FIG. 22
E		GRD	MAX. OF 30 FIG. 19
F		GRD	FIG. 21
BATTERY SYMBOL		VOLTAGE RANGE	
-18		14-26V	
-24		20-26V	
-40		32-46V	
-48		44-52V	

102.

FEATURE OR OPTION		PROVIDE	
		FIG.	QUANTITY
4-WIRE LINE CKT FOR KEY EQPT NO. 102A OR SW SYS NO. 301 OR 302		1	1 PER LINE
OUT SIG ON XMT LOOP	VOICE CALLING	Z	
	20-CYCLE	M	
	DIAL SEL SIG TONE EQPT ON-PREM	SS1	
	600-1500 CYCLE	ZG	
INC LS SIG AT KEY EQPT NO. 102A OR SW SYS NO. 301 OR 302	REQD	X	
	NOT REQD	W	
REQD FOR SW SYS NO. 301		V	
REQD FOR KEY EQPT NO. 102A OR FOR SW SYS NO. 302		T	
REQD WHEN LINE ALSO HAS APPEARANCE AT 2- & 4-WIRE KEY TEL SET (SINGLE STA GROUP ONLY) SEE NOTE 10B		S	
FLASHING CKT FOR INC SIG		2	1 PER LINE
OUT. SIG CKT		3	1 PER LINE
OUT. SIG	20-CYCLE	R	
	DC	Q	
OUT. 20-CYCLE SIG VIA RCV LOOP		N	
RING. LAMP CKT		4	1 PER 4 LINES
INC DIAL SEL SIG CODE REL FOR KEY EQPT NO. 102 OR SW SYS NO. 301 OR NO. 302 POSITIONS		5	1 PER CODE
INC 20-CYCLE SIG CKT	LOCKED-IN SIG RETIRED WHEN ANS AT:	SW SYS OR KEY EQPT POS ONLY	H
		KEY TEL SET ONLY	G
		KEY TEL SET OR SW SYS OR KEY EQPT POS	F
INC 20-CYCLE SIG VIA	XMT LOOP	K	
	RCV LOOP	J	
INC RING. AUX CKT		7	1 PER LINE
KEY TEL SET BUSY INDICATING CKT		8	1 PER LINE

CIRCUIT NOTES: (CONT)

FEATURE OR OPTION		PROVIDE	
		FIG.	QUANTITY
NO SW CONT OR DC SIG, - WITH OTHER SIG VIA:	XMT LOOP	VOICE CALLING OUT	B
		OUT. DIAL SEL SIG TONE EQPT ON-PREM	
		20-CYCLE OUT. SIG	
	RCV LOOP	INC LS SIG	A
OUT. DC SW OR SIG		S F RCVR (SS1) ON-PREM	
		20-CYCLE OUTG SIG	
		ON METALLIC BASIS OVER SIMPLEX OF RCV & XMT LOOP	C
		ON GRD RETURN BASIS OVER SIMPLEX LEG OF XMT LOOP	D
OUT. DC SW & SIG		ON GRD RETURN BASIS OVER SIMPLEX LEG OF RCV LOOP	E
		ON GRD RETURN BASIS OVER SIMPLEX LEGS OF RCV & XMT LOOP	F
	XMT LOOP ASSOC WITH	FIG. 10 OR 11	G
	RCV LOOP ASSOC WITH	FIG. 10 OR 11	H
SS1 SEL SIG TONE EQPT AT TOLL OFF.		FIG. 1	J
		FIG. 10 OR 11	K
		FIG. 1	L
		FIG. 10 OR 11	M
OUT. & INC 20-CYCLE SIG TO PBX VIA COMPOSITE OF		FIG. 1	S
		FIG. 10 OR 11	T
	XMT LOOP	P	
	RCV LOOP	R	
FILTER REQD WHEN LS SIG IS USED ON LINE NETWORK WITH 800-1500 CYCLE SEL SIG		9	1 PER LINE
4-WIRE PRIV LINE TER FOR 1 TO 6 STA GRP OF KEY TEL SETS		10	1 PER LINE
4-WIRE PRIV LINE TER FOR PBX & 1 OR 2 STA GRP OF KEY TEL SETS		11	1 PER LINE
20-CYCLE OR DC OUT. SIG CKT FOR KEY TEL SETS		12	1 PER LINE
INC 20-CYCLE SIG CKT FOR KEY TEL SETS		13	1 PER LINE
SIDETONE CKT FOR KEY TEL SETS WHERE LINE ALSO HAS APPEARANCE AT PBX POS SEE FIG. 101	WITHOUT SS1 ON-PREM DIAL	1	E
	NO. OF STA GRPS	2	B
	WITH SS1 ON-PREM DIAL	1	A
		2	ZA
FOR SW CONT AT LOC OTHER THAN PBX	KEY CKT FOR SW TWO 4-WIRE PRIV LINES USING	LEVER-TYPE KEYS	15
	KEY CKT FOR SW THREE 4-WIRE PRIV LINES USING		16
	KEY CKT FOR SW TWO OR THREE 4-WIRE PRIV LINES USING	ILLUM PB-TYPES KEYS	17
	REL CKT FOR SIMULTANEOUS SW OF THREE 4-WIRE PRIV LINES ASSOC WITH SW INDICATOR LAMP	KT STAS	18
FOR SW CONT AT PBX		FIG. 1	23
	SW CKT FOR SW TWO 4-WIRE PRIV LINES	USING 498-TYPE KEY	20
	SW CKT FOR SW THREE 4-WIRE PRIV LINES	USING 552-TYPE KEY	21
FOR FIG. 22 IN			22
	14-26V PBX		ZD
	32-46V PBX		ZE
	44-52V PBX		ZF

(CONT ON SHEET B2)

DRAWING
ISSUE2D
TNC
DNC
DAYSTATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

SD-69410-01-B1

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EQUIPMENT NOTES:

201. A, B, E AND ZA APPARATUS SHOWN IN FIG. 14 SHALL BE ORDERED SEPARATELY AND MOUNTED IN EQUIPMENT UNIT ED-91929-01, G5 OR EQUIVALENT.
202. REPLACE WITH 52A LAMPS THE 51A LAMPS FURNISHED WITH THE 6050B KEY.

INFORMATION NOTES:

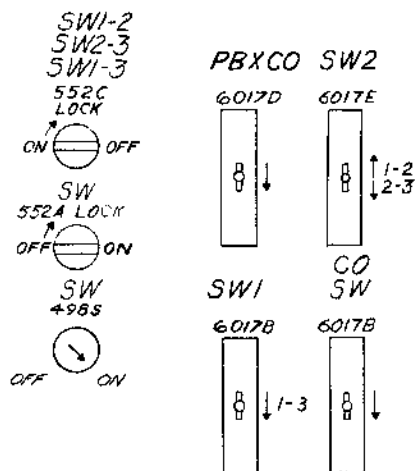
301. UNLESS OTHERWISE SPECIFIED:

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

DRAWING
ISSUE1 DHC
DLV20 DHC
DLV

WORKING LIMITS:

FIG. 6 AND 13: MAXIMUM EXTERNAL LOOP RESISTANCE -
SEE TEST NOTE 1 OF CIRCUIT REQUIREMENT TABLE FOR
EQUIVALENT DATUM.



FIGURES AND OPTIONS ON THIS DWG		
CKT FIG.	APP OR WIRING	
1	A	Z
2	B	Y
3	C	
4	D	W
5	E	V
6	F	X
7	G	T
8	H	S
9	J	R
10	K	Q
11	L	
12	M	
13	P	N
14	R	M
15	S	
16	T	K
17	U	J
18	V	
19	W	H
20	G	
21	F	
22	E	
23		
24		
25	B	
26	A	
27	ZA	
	ZB	
	ZC	
	ZD	
	ZE	
	ZF	
	ZG	
	ZH	
	ZI	
	ZJ	

FIG. 101

APPLICATION FOR SSI SEND AND RECEIVE WITH PRIVACY OR ON-PREMISE DIALING
BETWEEN PBX POSITION AND ONE OR TWO 4-WIRE STATION GROUPS ON SAME
PREMISES WITH SSI SELECTIVE SIGNALING EQUIPMENT

DRAWING
ISSUE

1 RCD
DWC
PLV

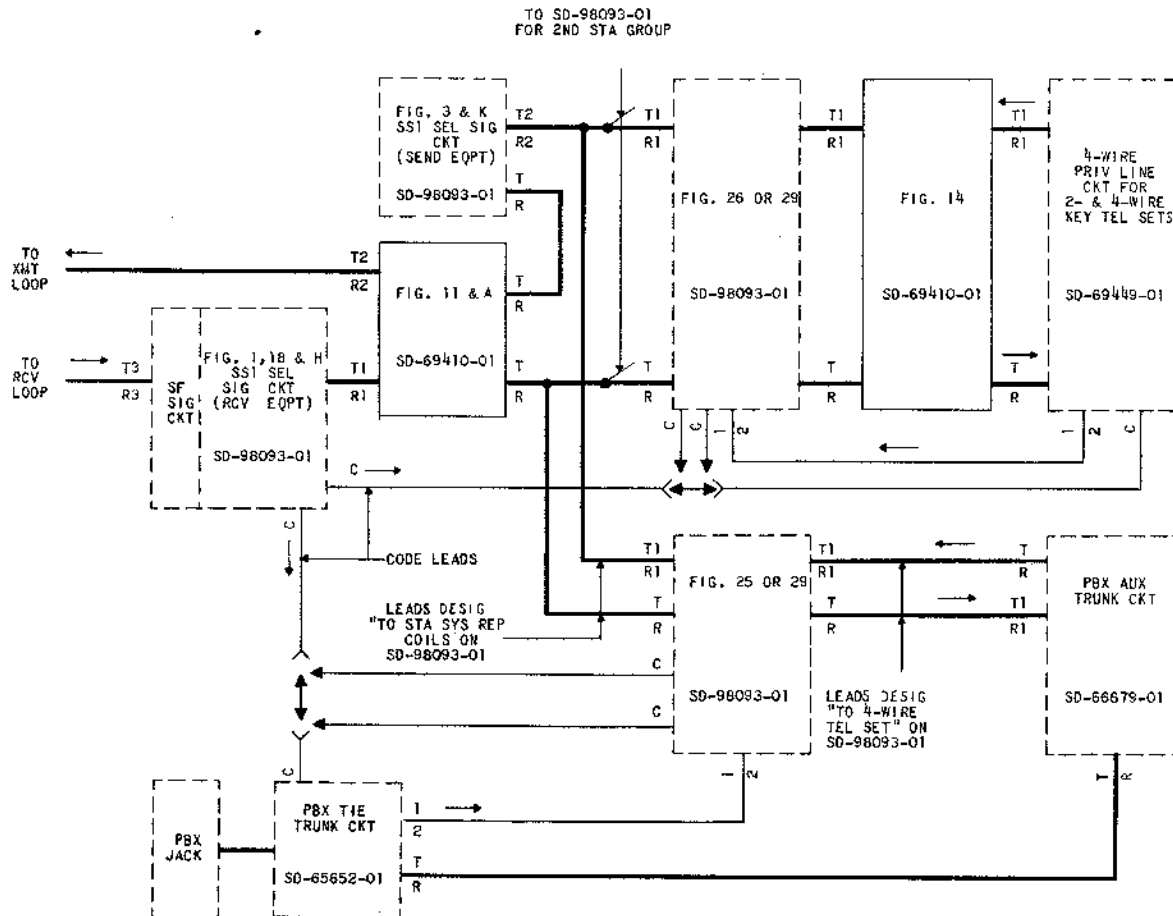
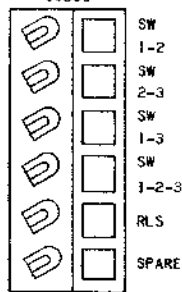


FIG. 102

TOPVIEW
6050B



LAMP
STRIP

STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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FIG. 1
LINE CKT

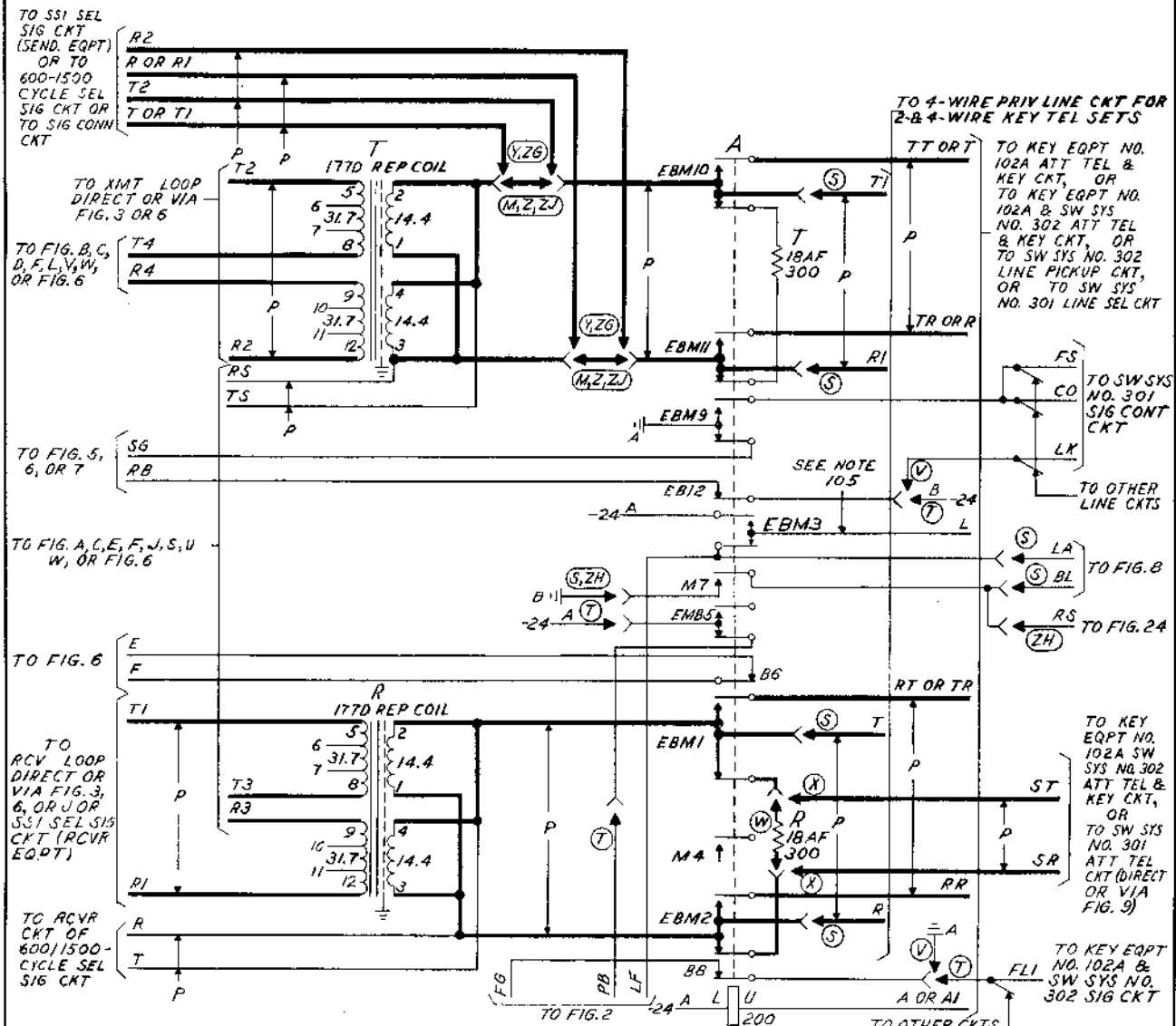
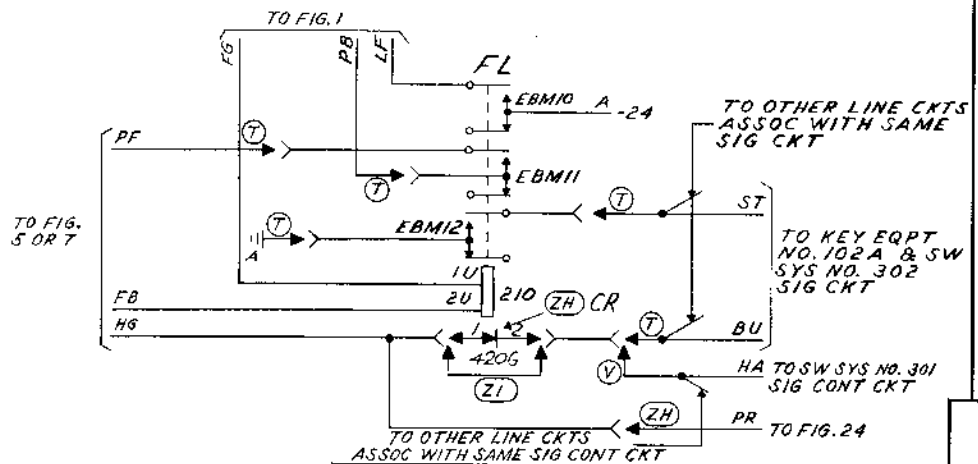


FIG. 2
FLASHING CKT FOR INCOMING SIGNALING



STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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DRAWING
ISSUE
1
67MB
DNC
REV
2D
TAC
DNC
REV

FIG. 3
20-CYCLE OR DC OUTGOING SIGNALING CKT
SEE NOTE 106

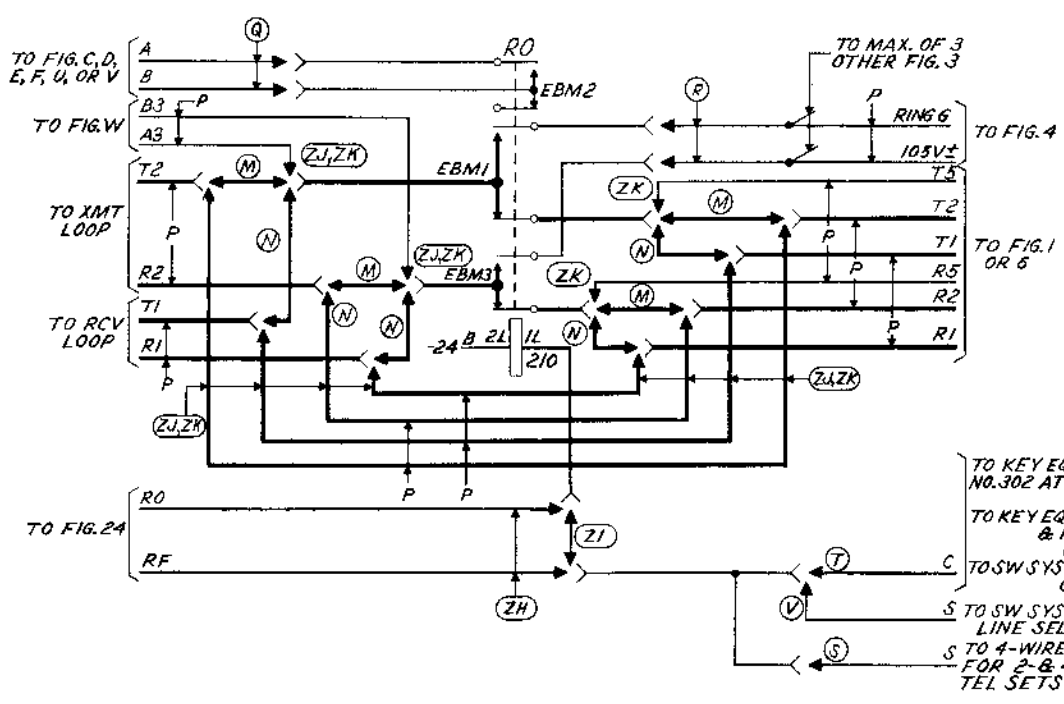


FIG. 4
RINGING LAMP CKT

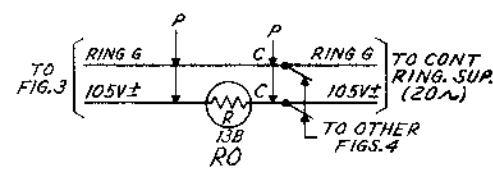


FIG. 5
SELECTIVE SIGNALING CODE RELAY

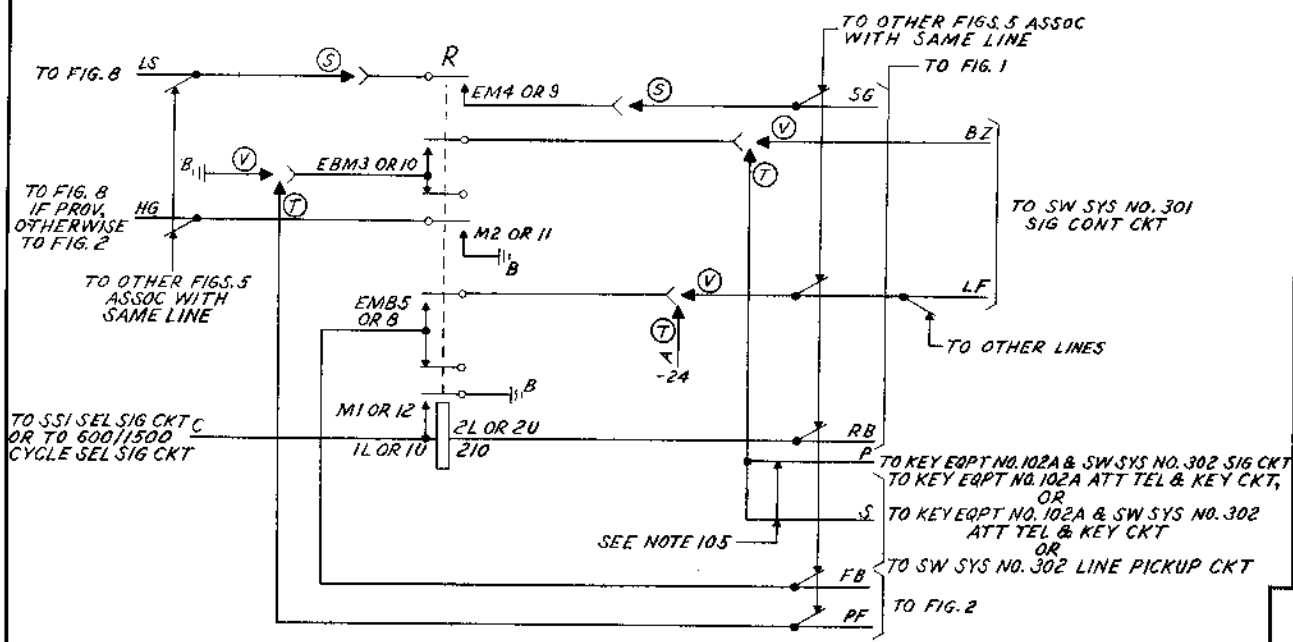


FIG. 8
KEY TELEPHONE SET
BUSY INDICATING CKT

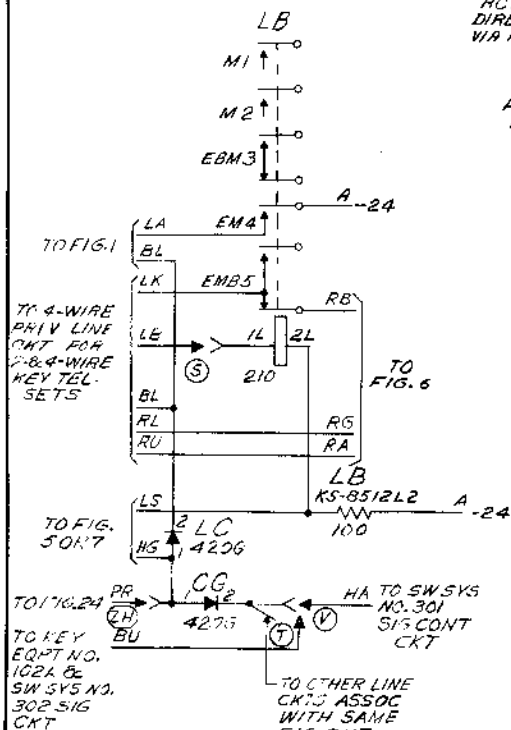


FIG. 5
20-CYCLE RINGING CRT
FOR INCOMING SIGNALING

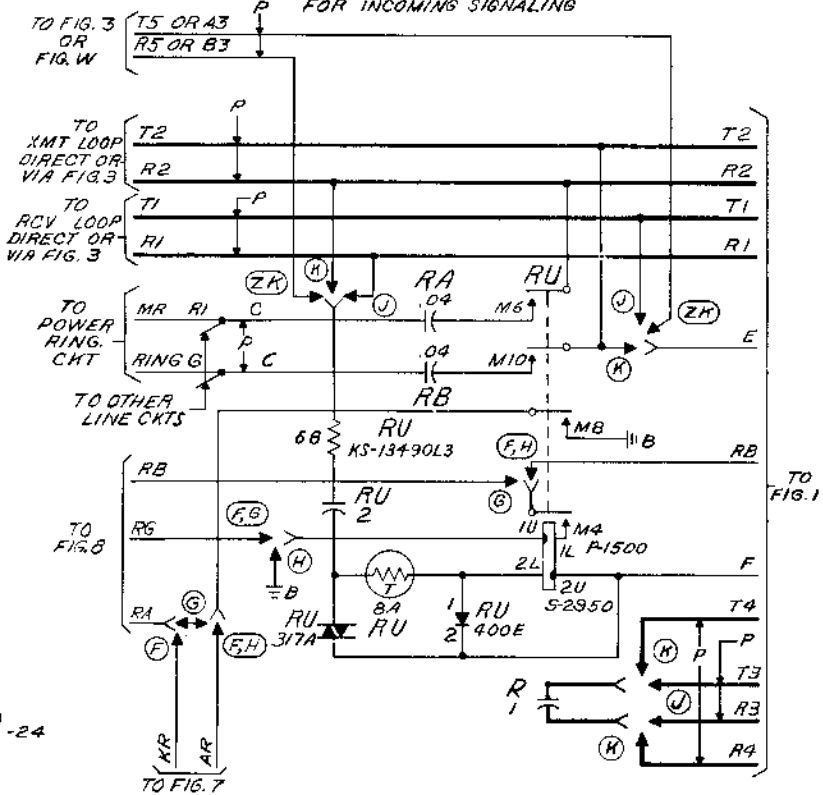
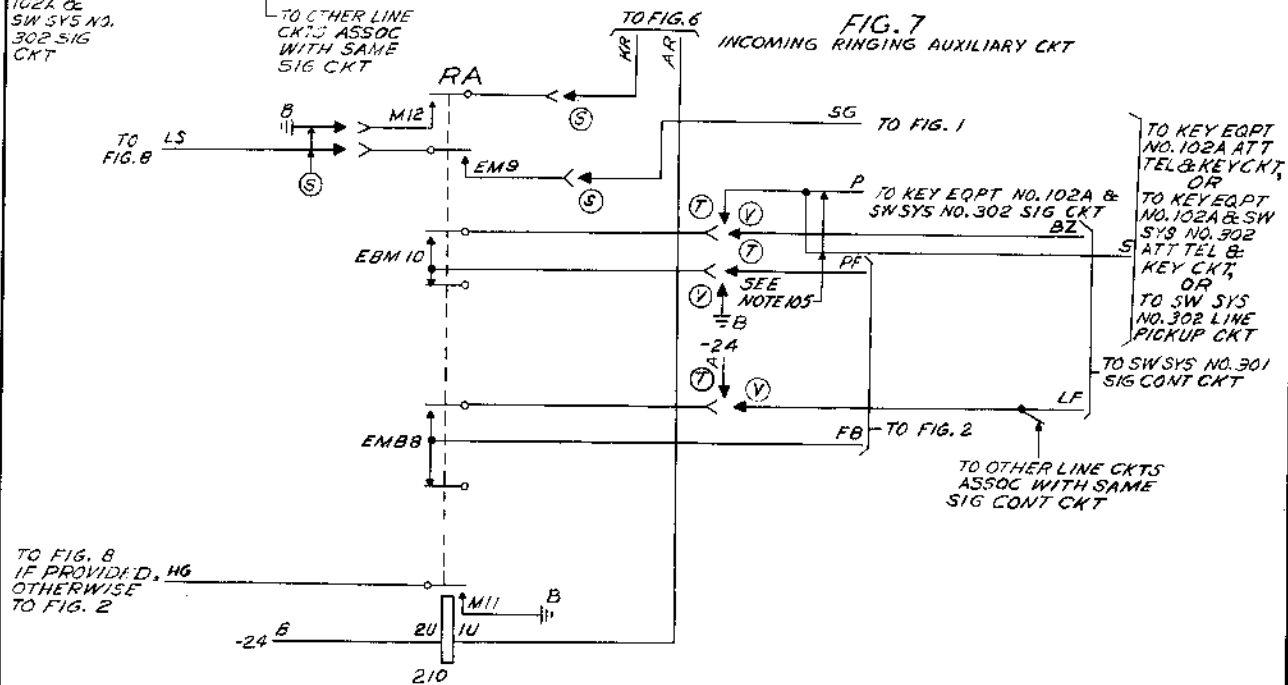


FIG. 7
INCOMING RINGING AUXILIARY CKT



STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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FIG. 23
RELAY CKT FOR SIMULTANEOUS
SWITCHING OF THREE 4-WIRE PRIVATE LINES

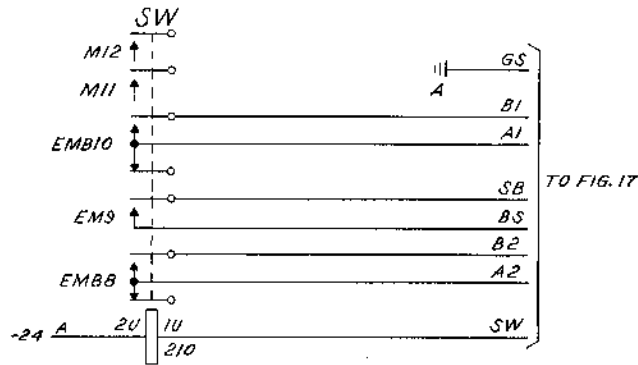


FIG. 24
20-CYCLE OUTGOING RINGING CONTROL CKT TO PROVIDE
AUTOMATIC RING SPURT WITH MANUAL RERING

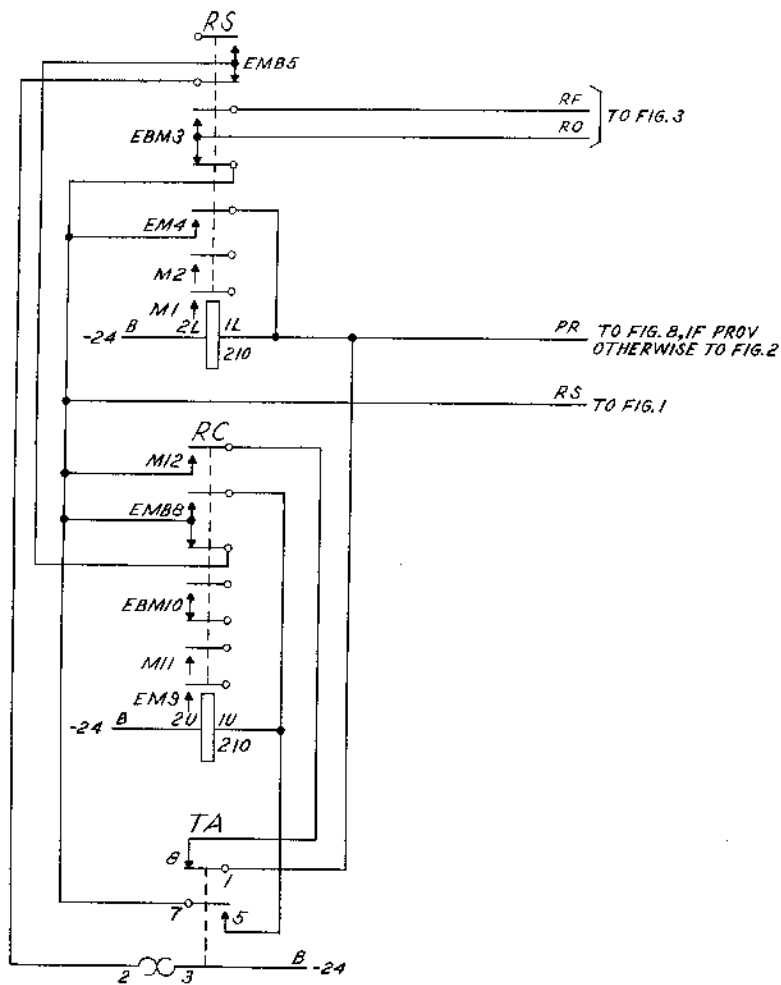


FIG. 9
FILTER TO ELIMINATE
600 AND 1500-CYCLE TONES

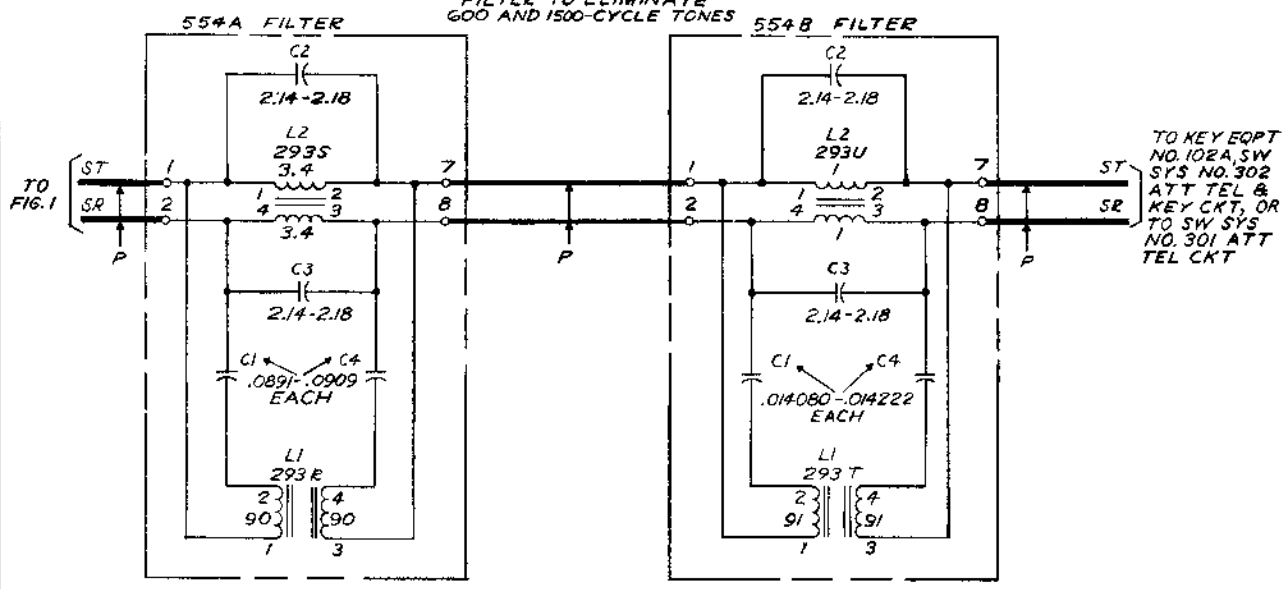
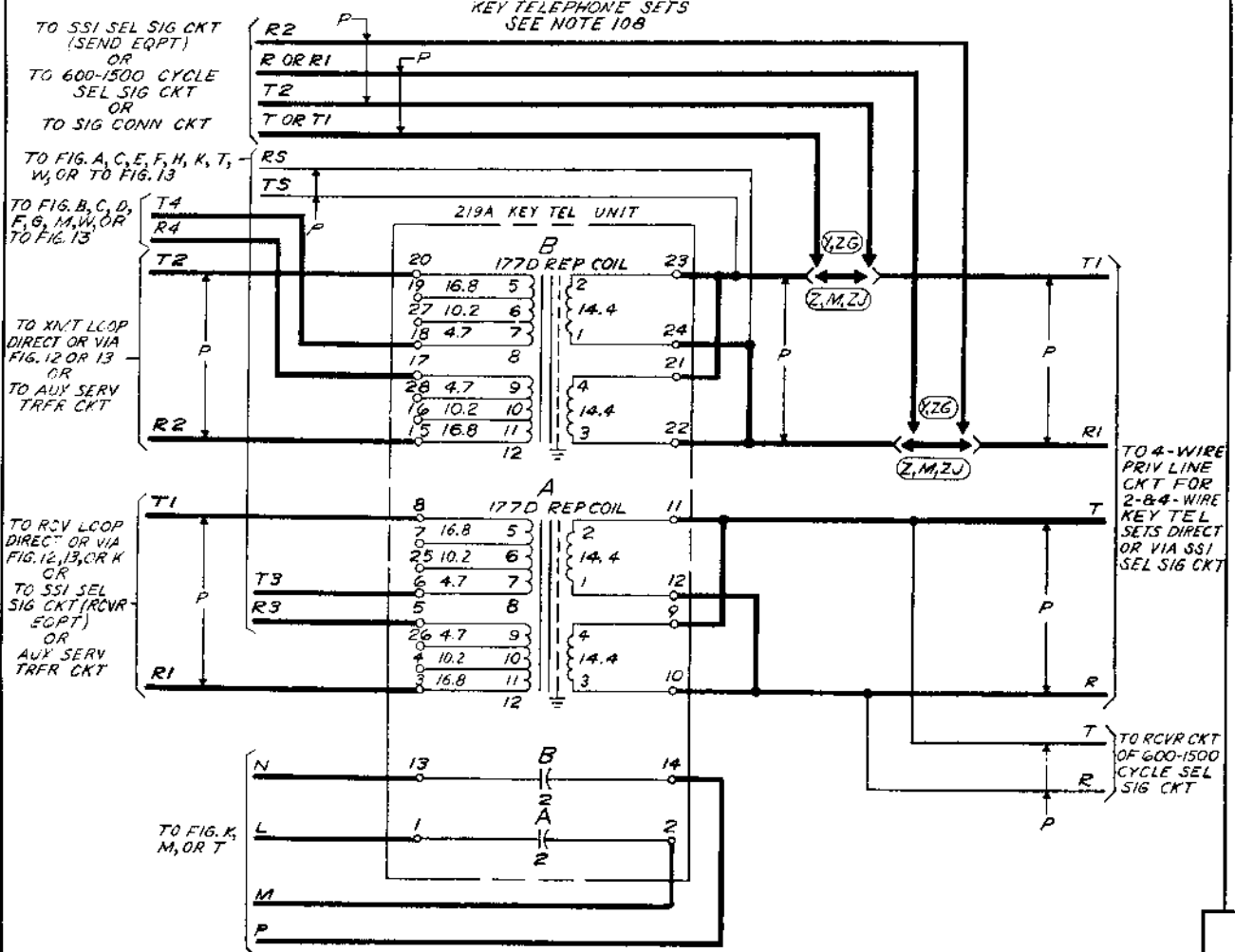


FIG. 10
4-WIRE PRIVATE LINE TERMINATION
FOR 1 TO 6 STATION GROUPS OF
KEY TELEPHONE SETS
SEE NOTE 108



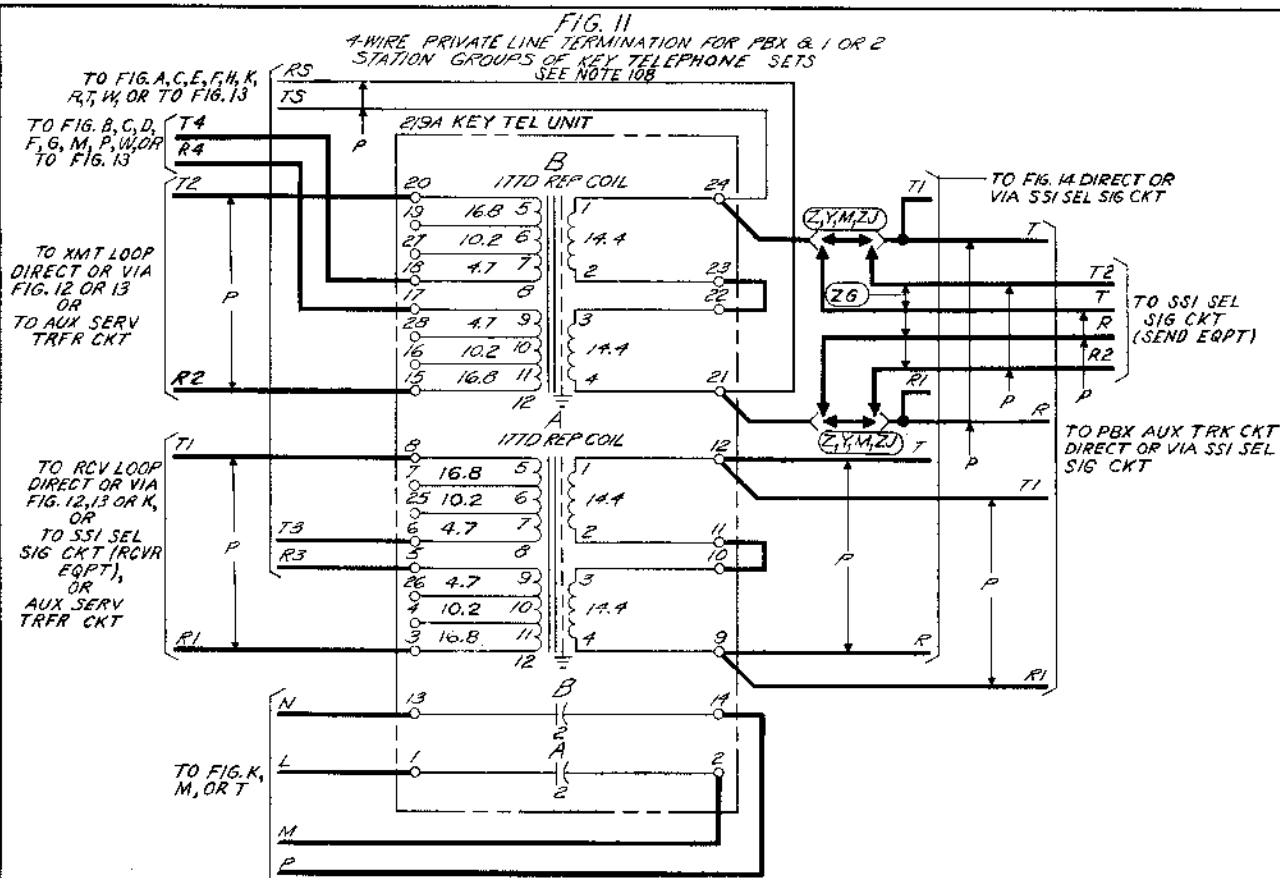
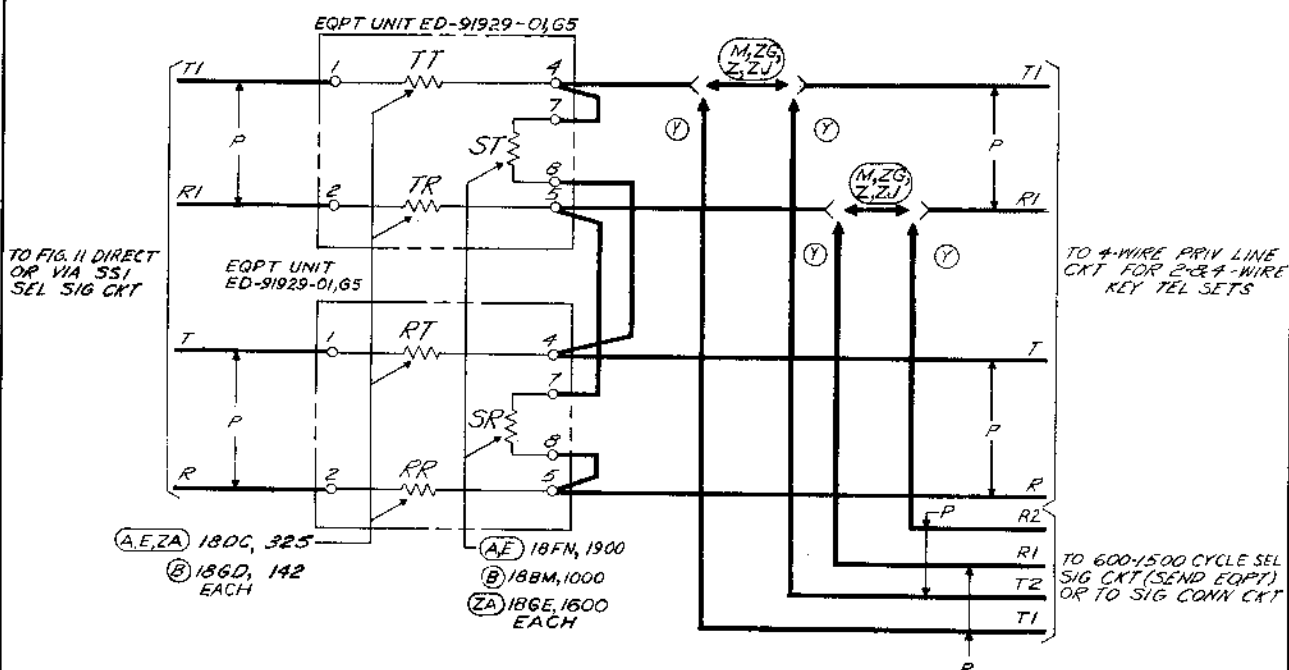


FIG. 14
SIDE-TONE CKT FOR KEY
TELEPHONE SETS
SEE NOTE 201



STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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FIG. 13
20-CYCLE RINGING CKT FOR INCOMING
SIGNALING TO KEY TELEPHONE SETS

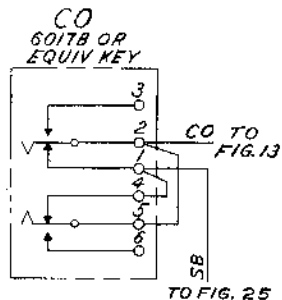
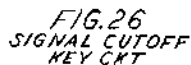


FIG. 25
DC CONTROLLED RELAY SET
TO OPERATE SEPARATE
BELL OR HORN

TO FIG. 13, 26, OR TO 4-WIRE
PRIV LINE CKT. FOR 2- &
4-WIRE KEY TEL SETS

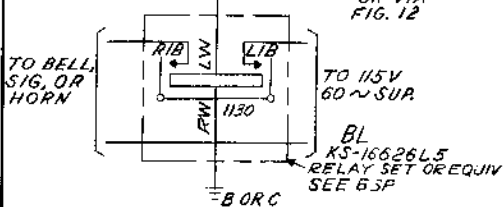
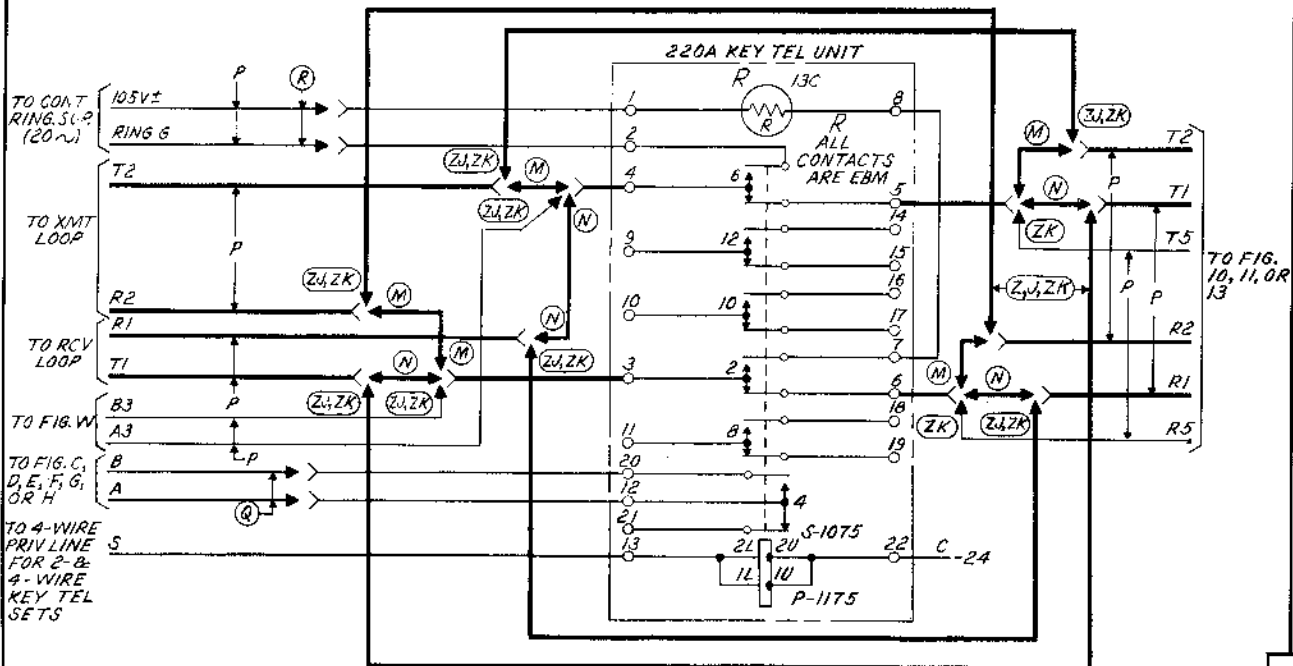


FIG. 12
20-CYCLE OR DC OUTGOING SIGNALING CKT
FOR KEY TELEPHONE SETS
SEE NOTE 106



STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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FIG. 15
KEY CKT FOR
SWITCHING TWO 4-WIRE PRIVATE LINES
USING LEVER TYPE KEYS

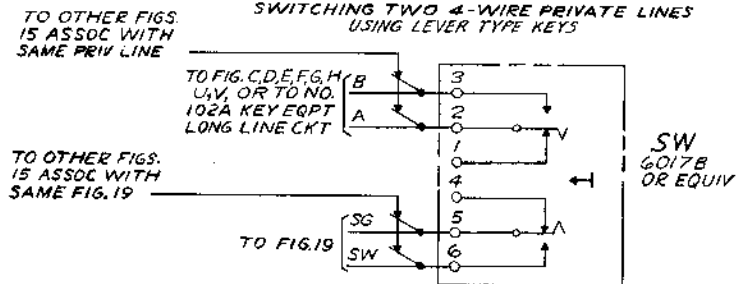


FIG. 16
KEY CKT FOR
SWITCHING THREE 4-WIRE PRIVATE LINES
USING LEVER-TYPE KEYS

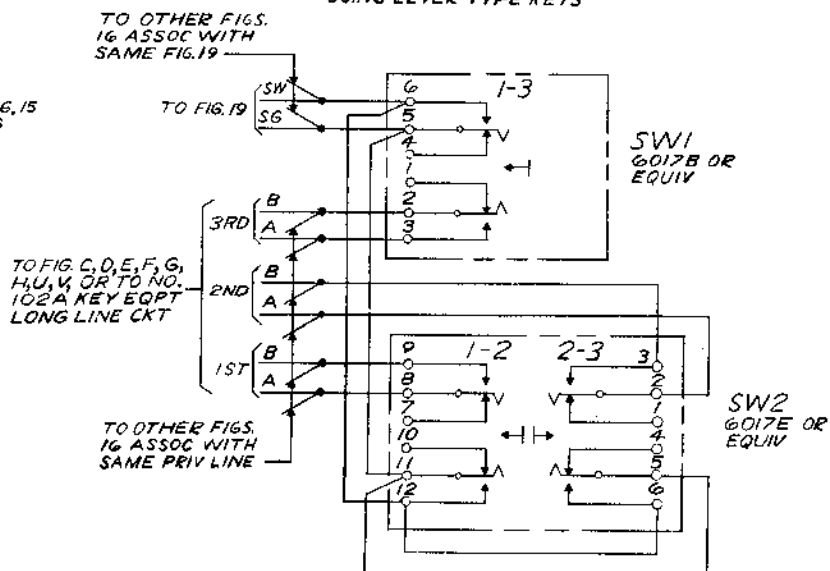


FIG. 19
SWITCH INDICATOR LAMP

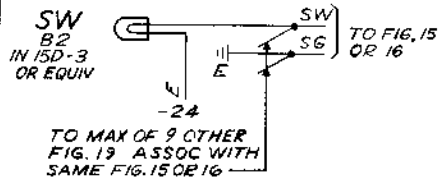


FIG. 27
PBX TERMINATION CUTOFF CKT

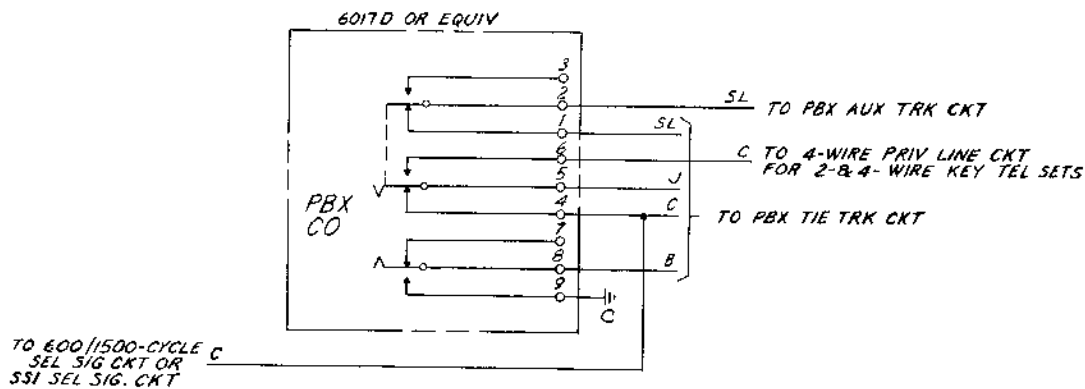


FIG. 18
RELAY SWITCHING CKT
FOR SIMULTANEOUS SWITCHING
OF THREE 4-WIRE PRIVATE LINES

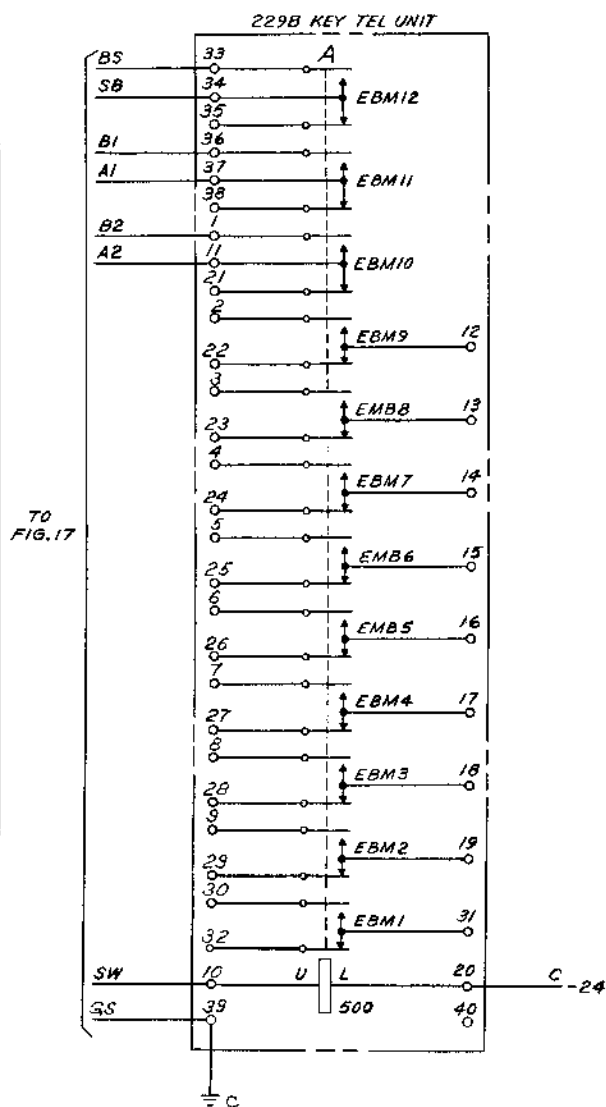


FIG. 21
SWITCHING KEYS AT PBX
FOR SWITCHING THREE
4-WIRE PRIVATE LINES

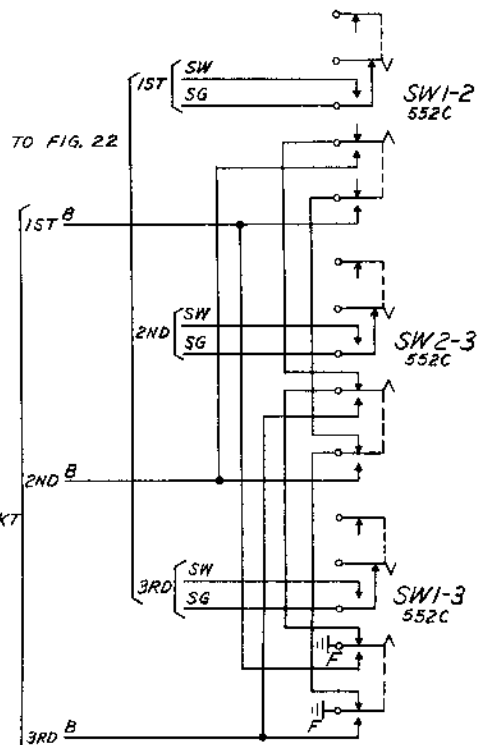


FIG. 20
SWITCHING KEY AT PBX
FOR SWITCHING TWO
4-WIRE PRIVATE LINES

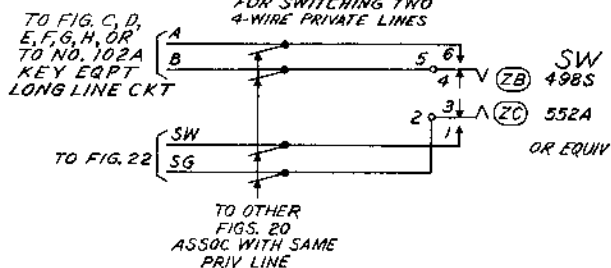


FIG. 22
SWITCH LAMP
AT PBX

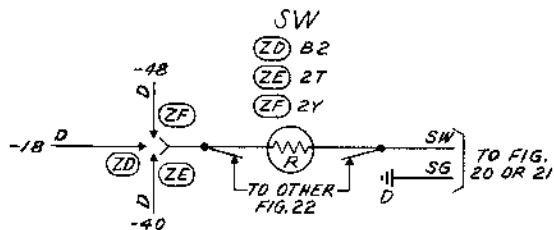
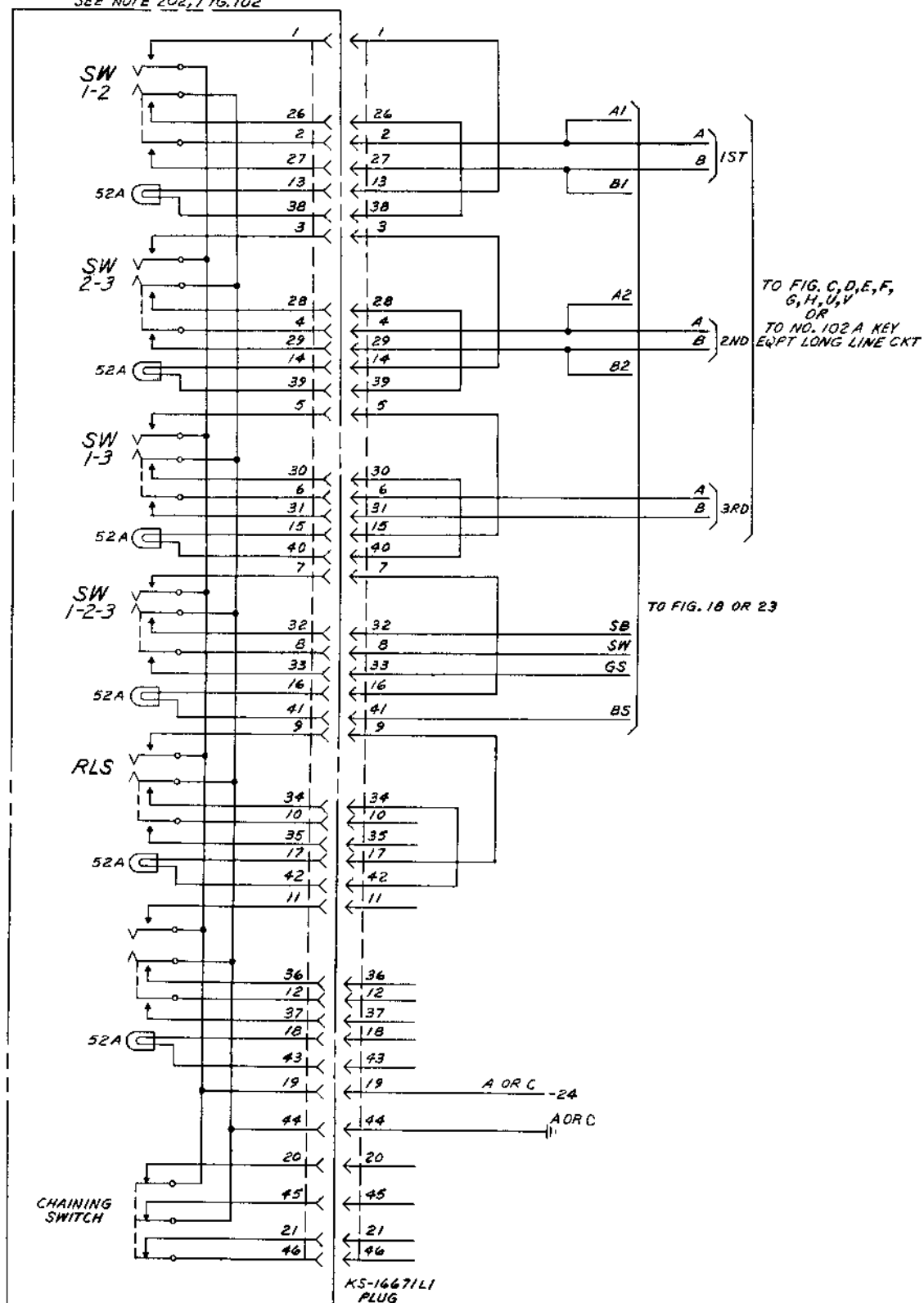


FIG. 17
KEY CKT FOR SWITCHING TWO OR
THREE 4-WIRE PRIVATE LINES USING
ILLUMINATED PUSHBUTTONS

6050B KEY OR EQUIV
SEE NOTE 202, FIG. 102



DRAWING
ISSUE

1
2D

STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUIT

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FIG. A
SEE NOTE 107

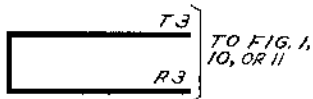


FIG. B

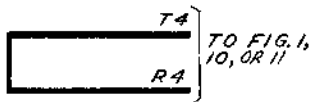


FIG. C

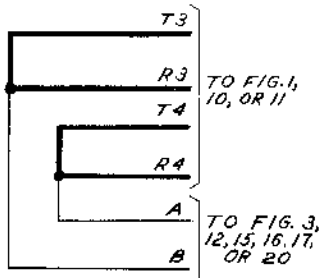


FIG. D

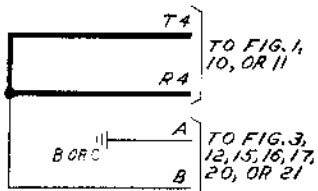


FIG. E

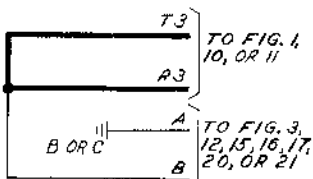


FIG. F

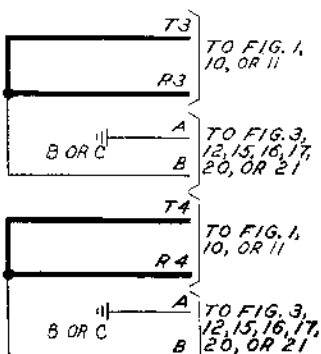


FIG. G

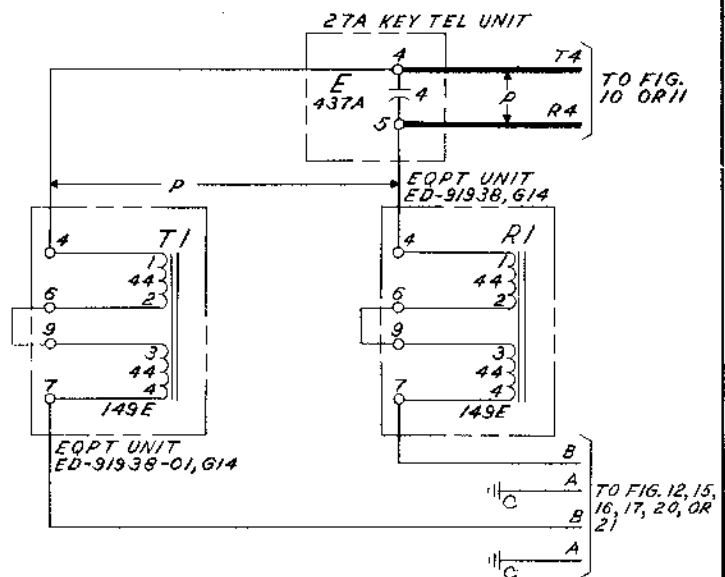


FIG. H

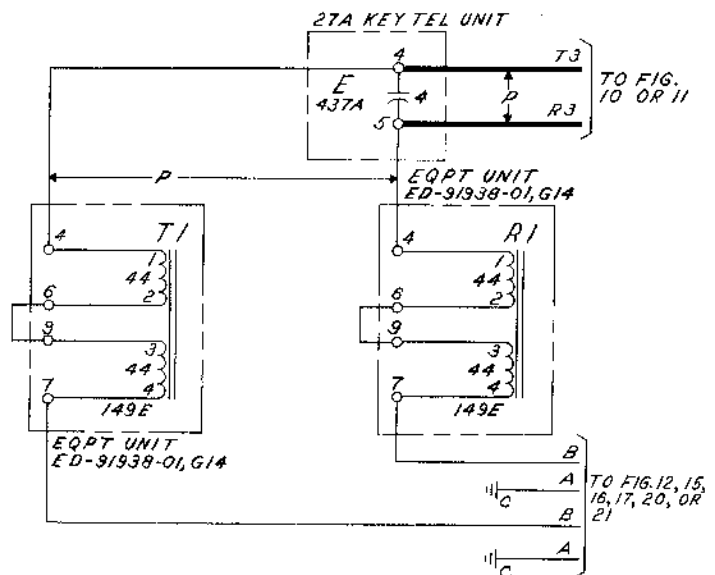


FIG. J

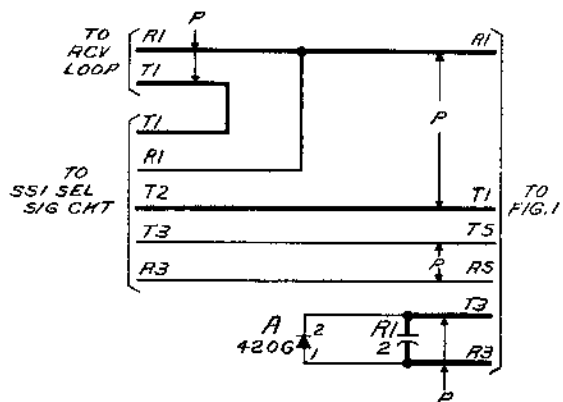


FIG. T

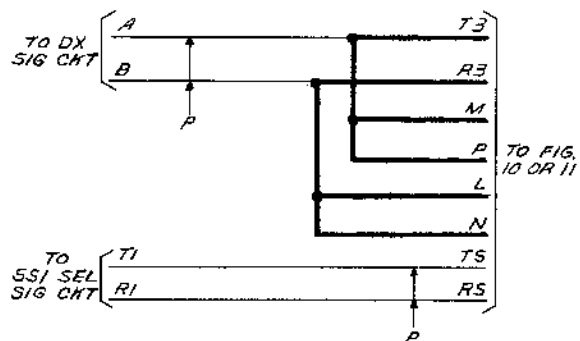


FIG. K

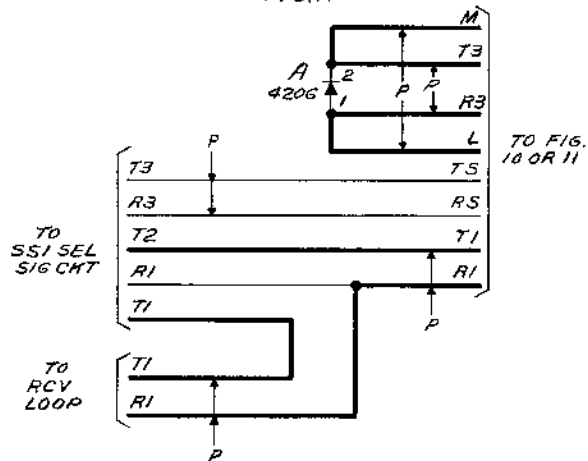


FIG. L

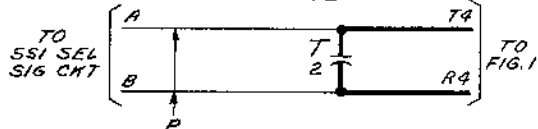


FIG. M

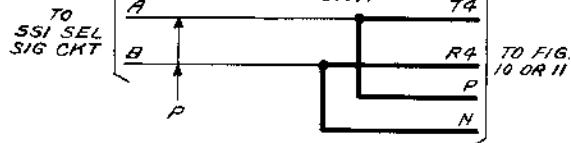


FIG. S

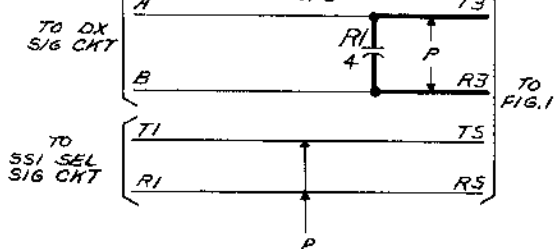


FIG. P

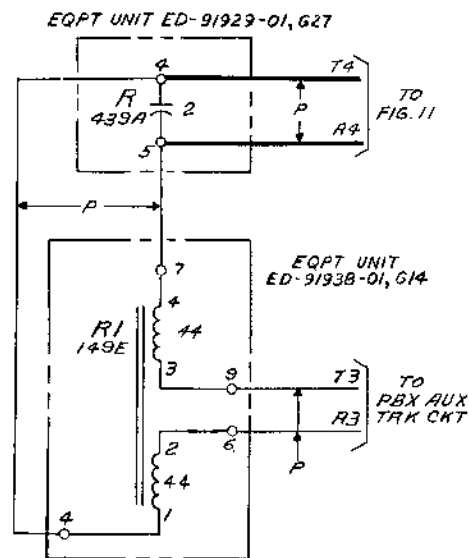
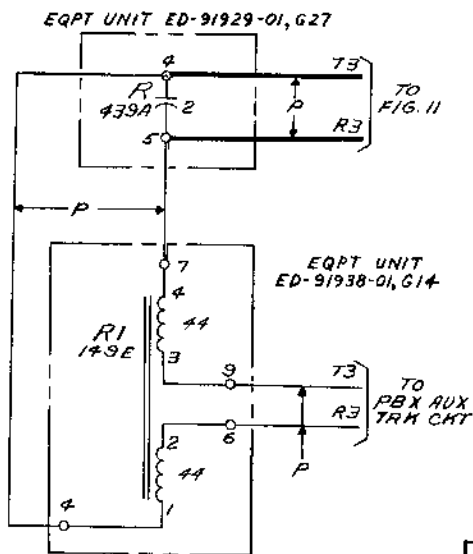


FIG. R



STATION SYSTEMS

4-WIRE PRIVATE LINE CIRCUIT

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FIG. U

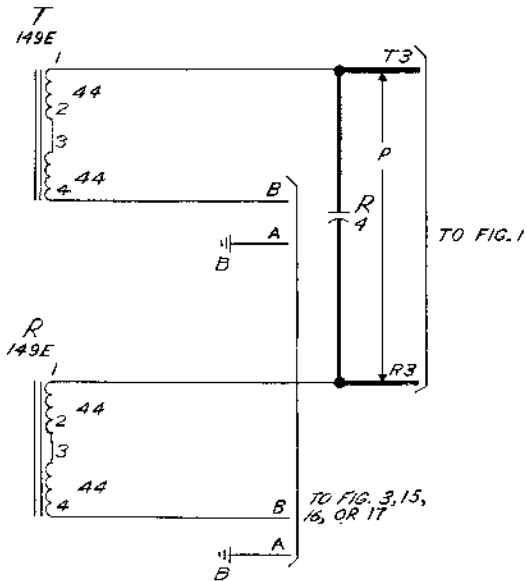


FIG. V

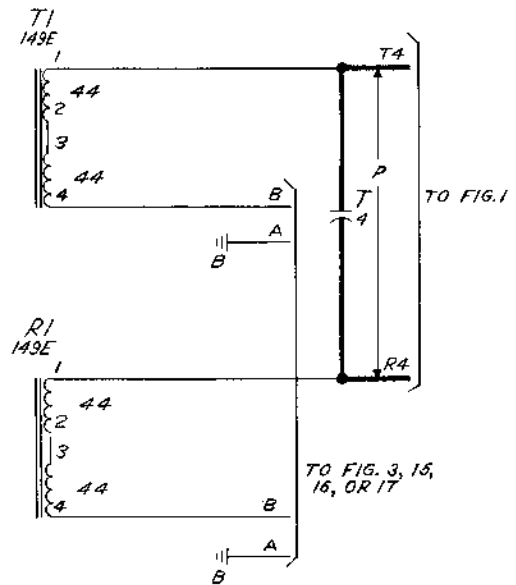
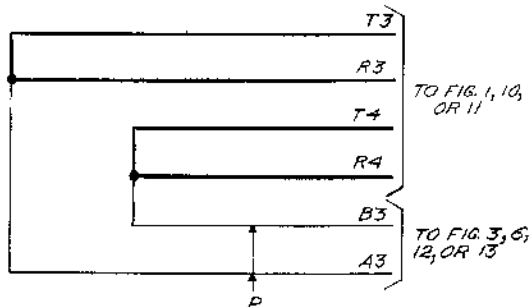


FIG. W



CIRCUIT REQUIREMENTS

DRAWING

ISSUE

1

DNC

DLV

2D

DNC

DLV

APPARATUS				FIG.	MECH REQ			CIRCUIT PREPARATION				TEST SET PREP	SEE TEST NOTE	DIRECT CURRENT FLOW REQ					REMARKS
DESIG	CODE	OPT	BSP FIG.		CONT PRESS.	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA		TEST WDG	TEST FOR			AFTER SOAK MA.	TEST MA.	READJ MA.			
								CONN BAT.	CONN GRD										
RELAYS																			
A	AJ93		1	278					U(A)	GRD			0		48.0	45.5			
XS-16626																			
BL	L5		25								4		0						
FL	AK19		2	214			5(A)	2U(FL)	1U(FL)	B/G			0		43.5	41.0	MTD WITH (RO) REL.		
LB	AK17		8	212					1L(LB)	GRD			0		43.5	41.0	MTD WITH (RA) REL.		
R	AK17		5	212			12(A)	2L(R)	1L(R)	B/G			0		43.5	41.0	FOR ODD NO. CKT. ON UNIT		
R	AK17		5	212			12(A)	2U(R)	1U(R)	B/G			0		43.5	41.0	FOR EVEN NO. CKT. ON UNIT		
RA	AK17		7	212					1U(RA)	GRD			0		43.5	41.0	MTD WITH (LB) REL.		
RC	AK17		24	212					1U(RC)	GRD			0		43.5	41.0	MTD WITH (RS) REL.		
RO	AK19		3	214					1L(RO)	GRD			0		43.5	41.0	MTD WITH (FL) REL.		
RS	AK17		24	212					1L(RS)	GRD			0		43.5	41.0	MTD WITH (RC) REL.		
RU	AJ48		6	3			12(A),5(LB)	1L(RU)	1U(RU)	B/G	2	P	0		8.5	8.0			
							12(A),5(LB)	1L(RU)	1U(RU)	B/G	2	P	NO		6.9	6.5			
											1	S	0		AC	AC			
SW	AK32		23	210					1U(SW)	GRD			0		43.5	41.0	MTD WITH SPARE REL.		
TA XS-16615																			
L15				24							3								
2298 KTU																			
A	AJ43		18	249					U(A)	GRD			0		24.5	23.0			
220A KTU																			
R	AF123		12	217					2U(R)	GRD		P/S	0		19.0	18.0	PAR. AID.		
251A KTU																			
RU	AJ48		13	3				1L(RU)	1U(RU)	B/G	2.5	P	0		8.5	8.0			
								1L(RU)	1U(RU)	B/G	2.5	P	NO		6.9	6.5			
											1	S	0		AC	AC			

TEST NOTES:

- TEST AND READJ. (RU) RELAY BY APPLYING MIN 95V (20-CYCLE) RING SUPPLY IN SERIES WITH A 138 RESISTANCE LAMP OR EQUIVALENT AND A 7000 OHM RESISTOR AT THE LINE TERMINALS WITH THE LINE OPEN TOWARD THE DISTANT END.
- ARM. BACK TENSION MIN. 20 GRAMS READJ, 15 GRAMS TEST
- (TA) THERMAL RELAY IS FACTORY SET FOR OVERALL TIME OF 1.8 SEC (MIN) TO 2.5 SEC (MAX) WITH A MIN COOLING TIME OF 1 SEC ON 26 VOLTS (+0.5, -0).
- SHALL OPERATE RELIABLY WHEN MINIMUM OF 14 VOLTS DC IS APPLIED ACROSS WINDING.
- REMOVE UNSOLDERED WIRE AT TERM 19.

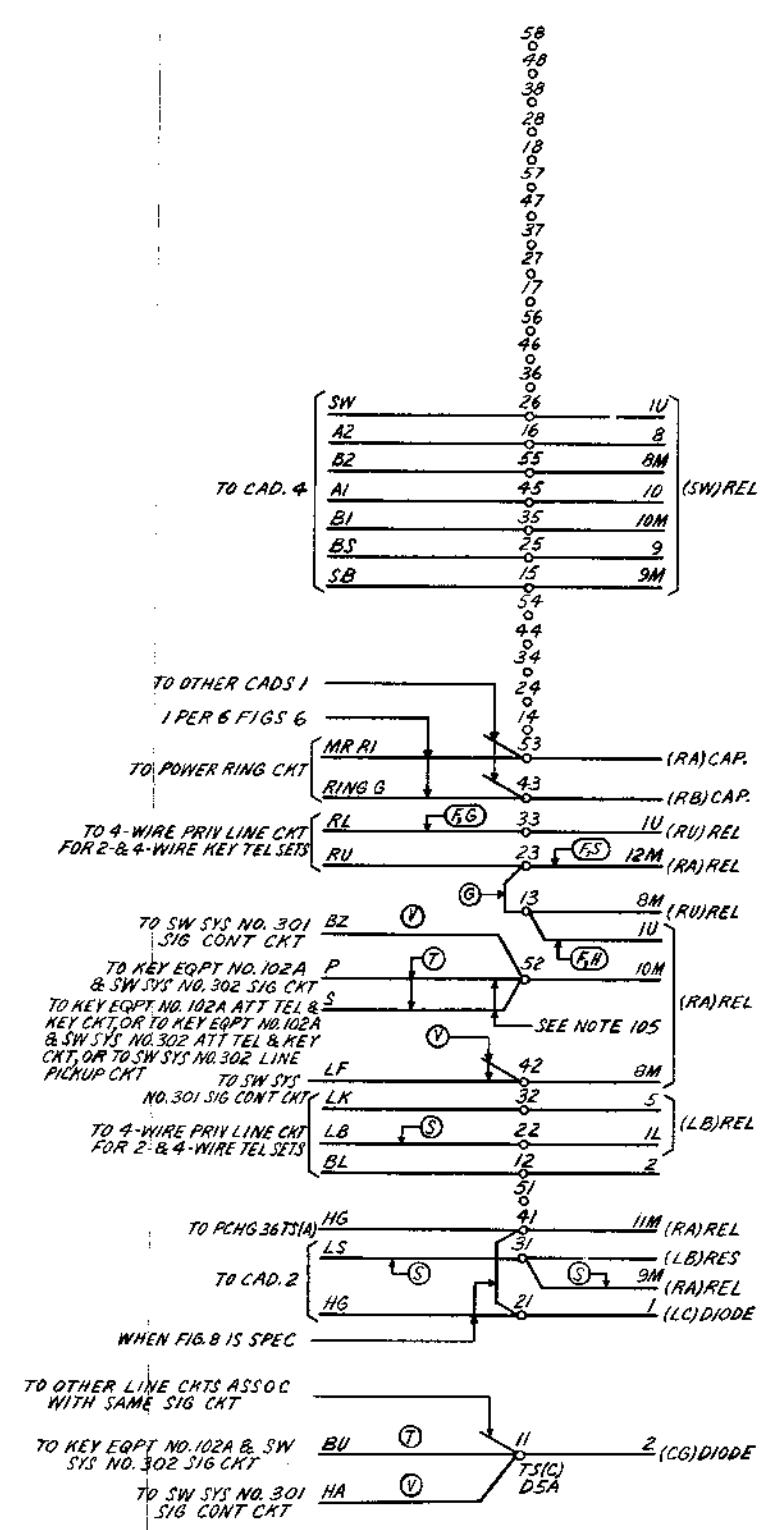
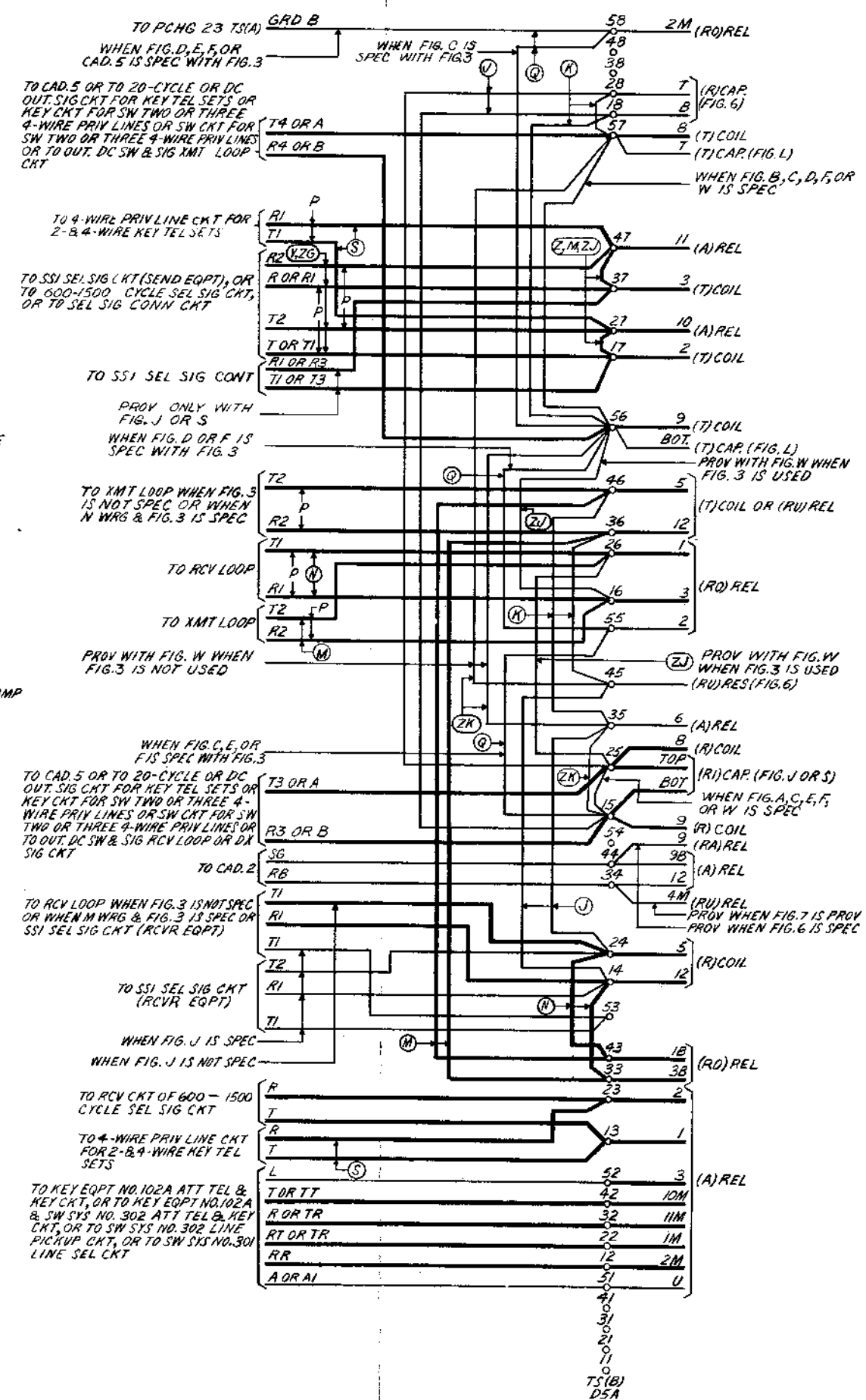
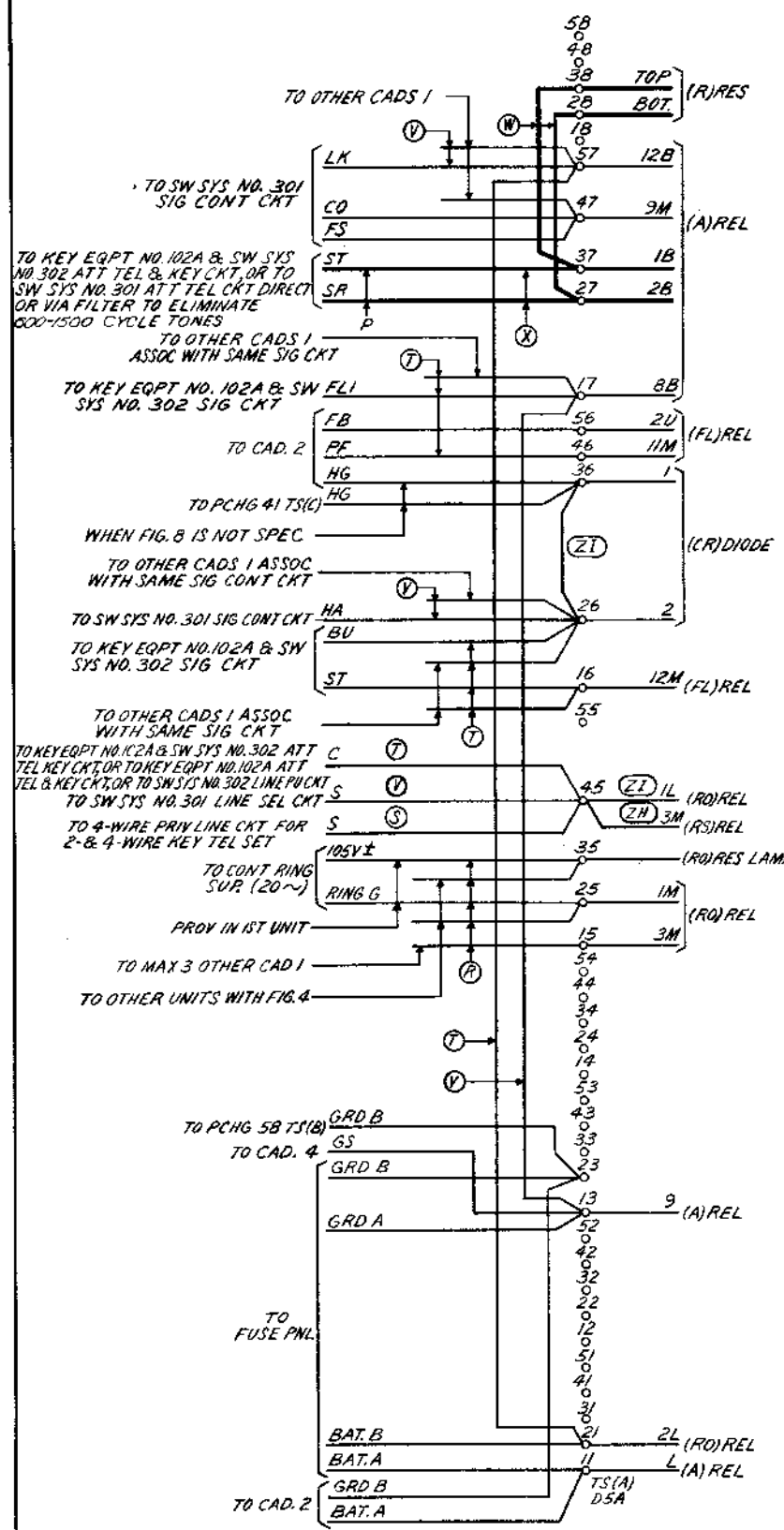
STATION SYSTEMS

4-WIRE PRIVATE LINE CIRCUIT

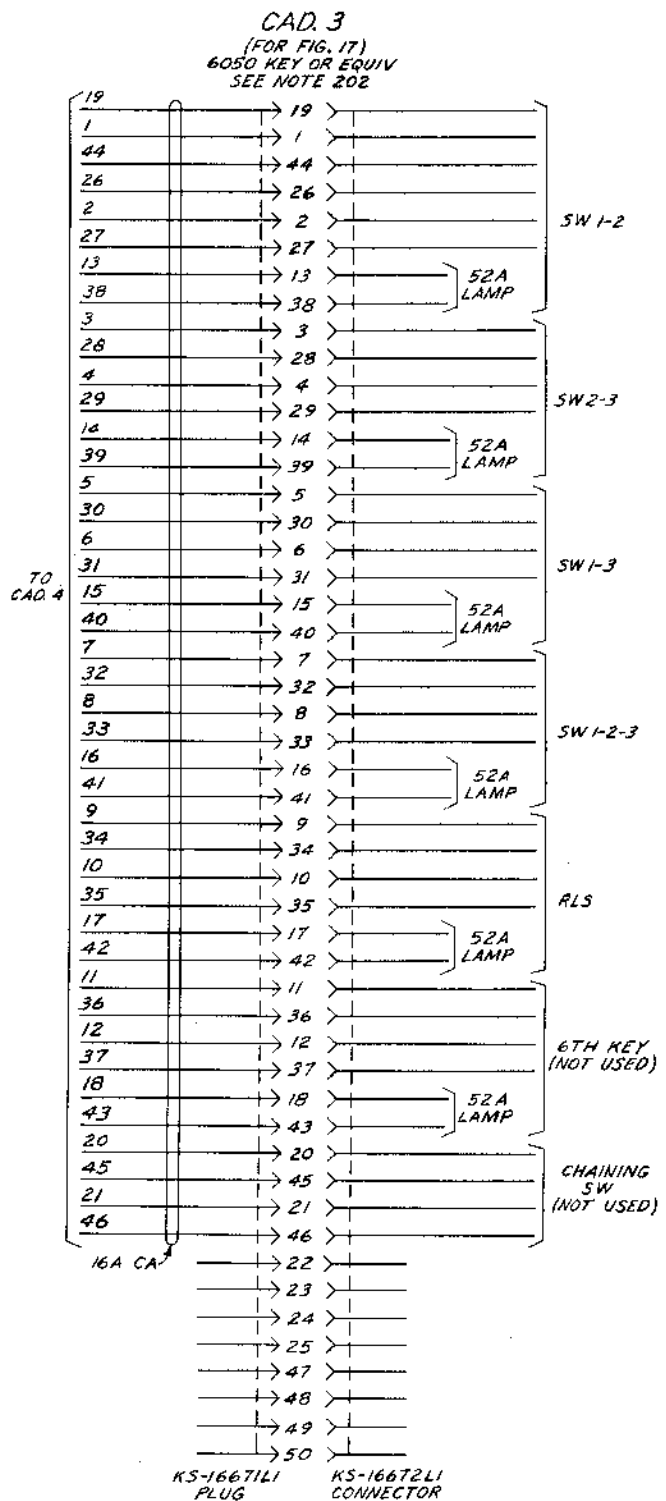
SD-69410-01-D1

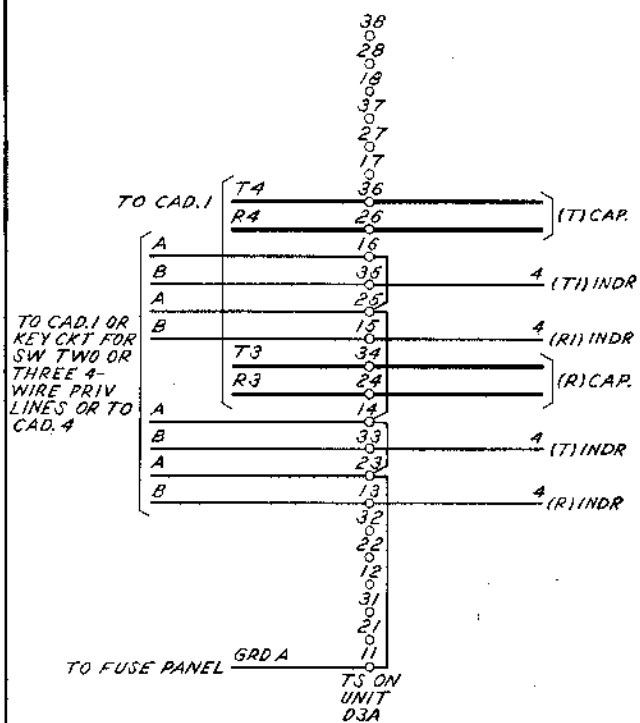
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CAD. 5
(FOR FIG. U, V)STATION SYSTEMS
4-WIRE PRIVATE LINE CIRCUITBELL TELEPHONE LABORATORIES
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