

BELL TELEPHONE LABORATORIES, INC.

STEP BY STEP SYSTEMS NO. I KEY SHEET

CONTENTS

PAGE	TITLE	PAGE
26,27	ALARM CKTS.	
14	"A" SWITCHBOARD NO. 15C (SEE RATING)	
23,36	CKTS. FOR CENT. OFF. OBS. (FACE EQPT.)	
24	CKTS. FOR USE IN ALL POSITIONS & FOR INCPT. & COMB. POSITION	
24	CKTS. FOR SPL. SERV. & RUR. POS.	
6,7,37	INC. & 2 WAY CKTS. (FACE EQUIPMENT)	
14	MONITORING POS.	
8,39	OUT. & MISC. CKTS. (FACE EQUIPMENT)	
29	SENDER, LINK & MISC. CKTS.	
38	AUTOMATIC NUMBER IDENTIFICATION CKTS	
	CIRCUITS INTERCONNECTING WITH:	
9	CABLE TEST DESK NO. 3	
29	LOCAL TEST CABINET NO. 3	
9	LOCAL TEST DESK NO. 14	
12	REPAIR SERVICE DESK NO. 2	
	EMERGENCY MANUAL CKTS.	
32	TYPE A	
33	TYPE B	
	FULL SELECTOR	
4,13	CONNECTOR AND TERMINATING CIRCUITS	
1,40	ORIGINATING CIRCUITS	
2,3,40	SELECTORS	
5	TOLL TRAIN	
2,28,35	TRUNK CKTS.	
31,43	INCPT. TRK. & TRK. FDR. CKTS.	
59 TO 70	INDEX	
17	JACK ASSIGNMENTS	
25	LONG LINES	
15,30,34,42	MISCELLANEOUS CIRCUITS	
16	PLUGGING UP FRAME	
45 TO 54	RANGE INFORMATION	
44	REMOTE CAMA CKTS	
	REPEATER CIRCUITS	
19	INCOMING	
18	OUTGOING	
	TANDEM OFFICE	
19,21	INCOMING REPEATERS	
18,20	OUTGOING REPEATERS	
55	RANGE CHART	
56	RANGE CHART TABLE	
20,21	TRUNK CIRCUITS	
10,11	TESTING CIRCUITS	
	TRAFFIC DESK	
22,41	SERVICE OBSERVING CKTS	
57,58	TRK CKTS, INC & OUT., CKT DETAILS	

FOR CURRENT DRAIN DATA SEE SD-31359-02
FOR EXPLANATION OF CONVENTIONS
SEE MASTER KEY SHEET SD-90250-01

REPLACING ES-262969 & ES-262975. REPLACED BY
SD-31377-01 FOR INF. DESK NO. 17MC, SD-90265-01 FOR
INF. DESK NO. 1. SD-90267-01 FOR INF. DESK NO. 2.

DWG. ISS.	C.D. ISSUE	DATE ISSUED	APPROVED
29	29	2-28-40	W.L.F. O.A.F.
30	30	12-16-40	W.L.F. O.A.F.
31	31	7-10-41	W.L.F. O.A.F.
32	32	10-1-41	W.L.F. O.A.F.
33	33	1-30-42	W.L.F. O.A.F.
34	34	6-12-42	W.L.F. O.A.F.
35	35	6-20-46	W.L.F. O.A.F.
36	36	12-6-48	A.J.B. I.
37	37	9-16-49	A.J.B. I.
38	38	4-15-53	E.E.G. B.P. F.C.R. E.W.O.
39	39	1-25-56	G.R.E. B.P. L.S.H. E.W.O.
40	40	8-3-59	CAS G.R.S. M.R. E.W.O.

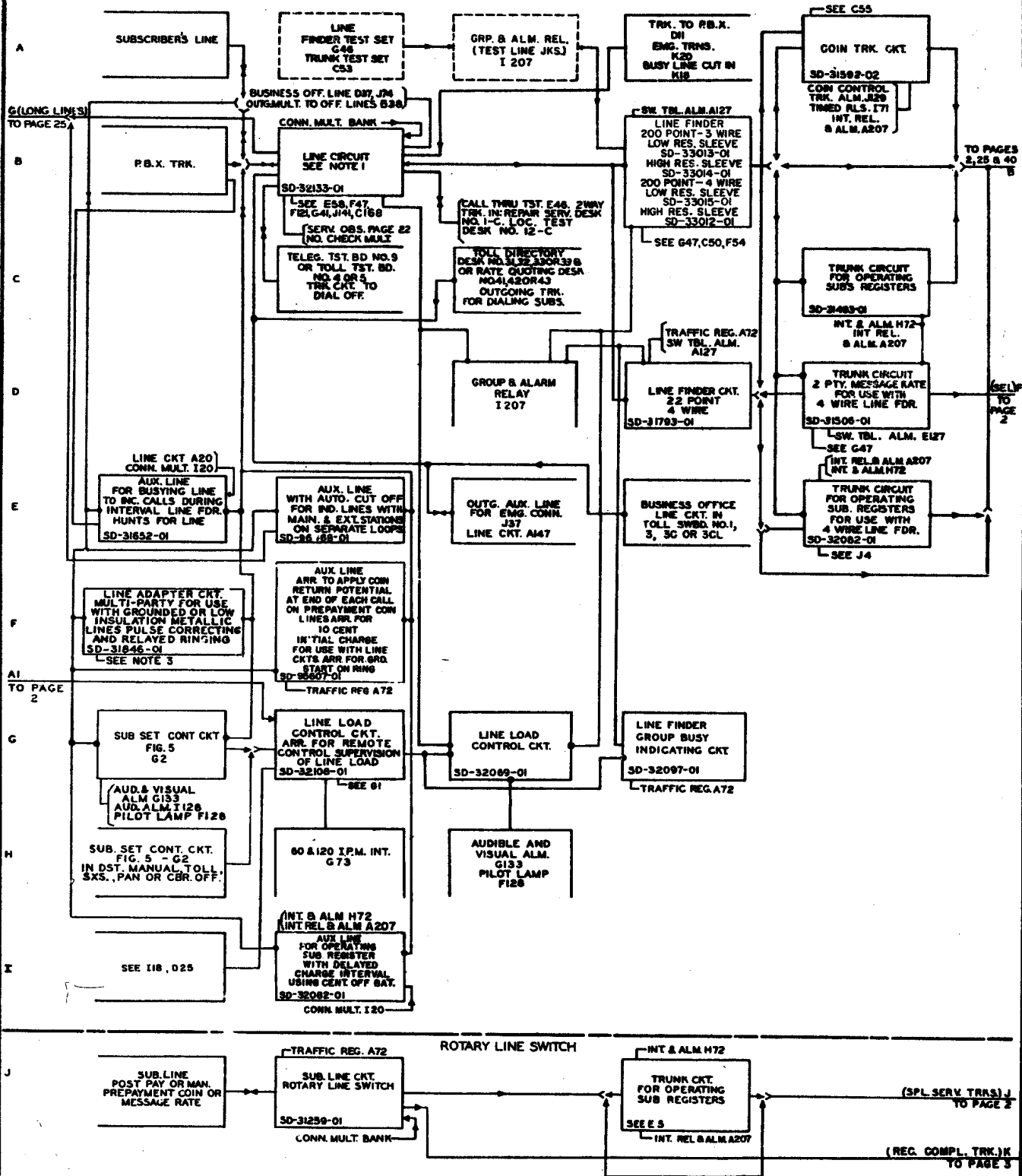
PRINTED IN U.S.A.

AT&TC
STANDARD

A & M ONLY FOR
SWBD NO. 15C

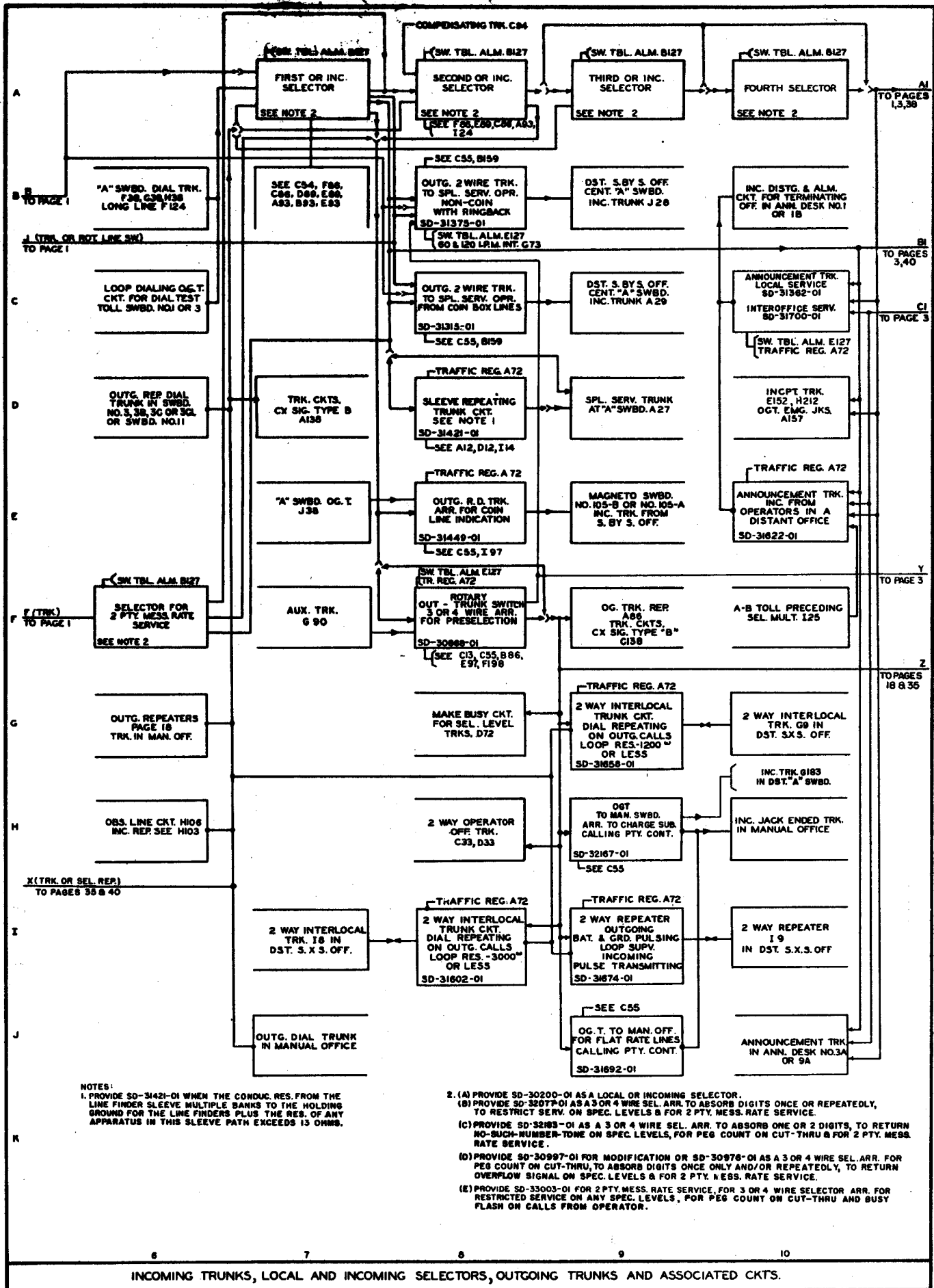
SD-31359-01

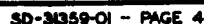
22,100 OR 200 POINT LINE FINDER CKTS.

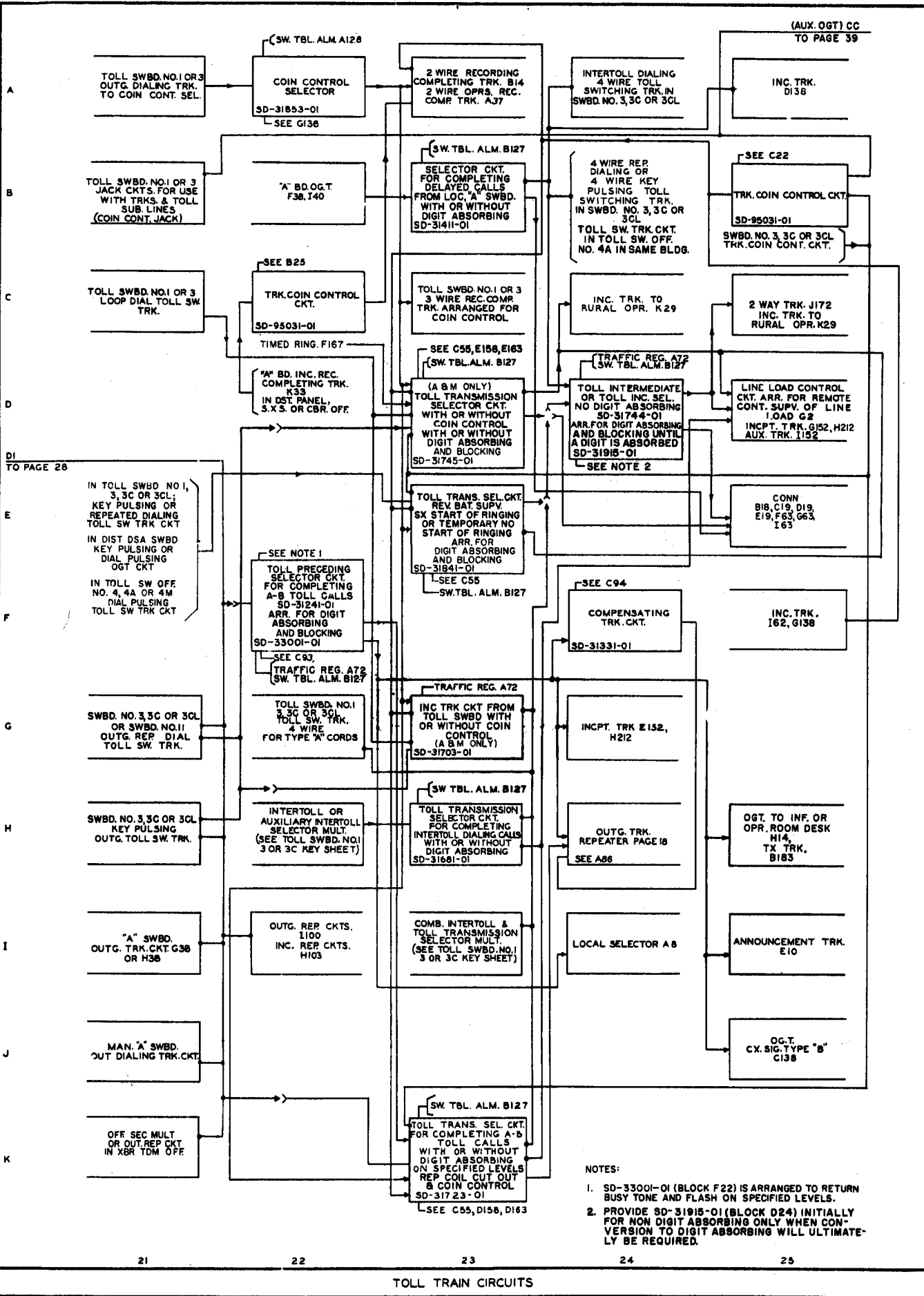


- NOTES:
1. WHEN USED WITH BUSINESS OFFICE LINE, TRUNK TO R.B.X. OR TOLL TRAFFIC DESKS, OMIT CONNECTION TO CONNECTOR MULTIPLE BANK.
 - 2.
 3. THIS CKT. SHALL BE USED ONLY WITH AC-DC RINGING LINES.

FULL SELECTOR ORIGINATING CIRCUITS







NOTES:

1. SD-33001-01 (BLOCK F22) IS ARRANGED TO RETURN BUSY TONE AND FLASH ON SPECIFIED LEVELS.
2. PROVIDE SD-31915-01 (BLOCK D24) INITIALLY FOR NON DIGIT ABSORBING ONLY WHEN CONVERSION TO DIGIT ABSORBING WILL ULTIMATELY BE REQUIRED.

21

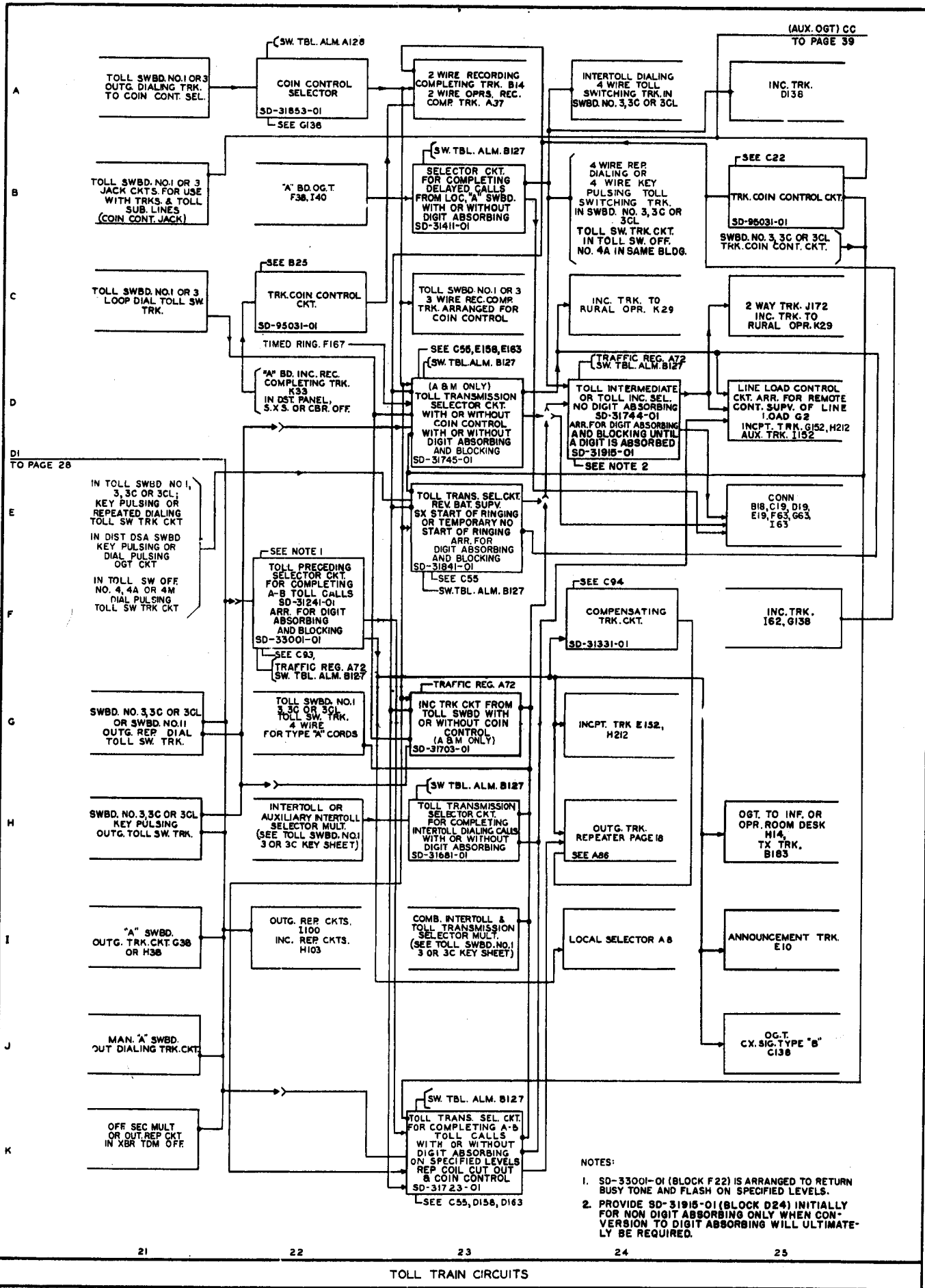
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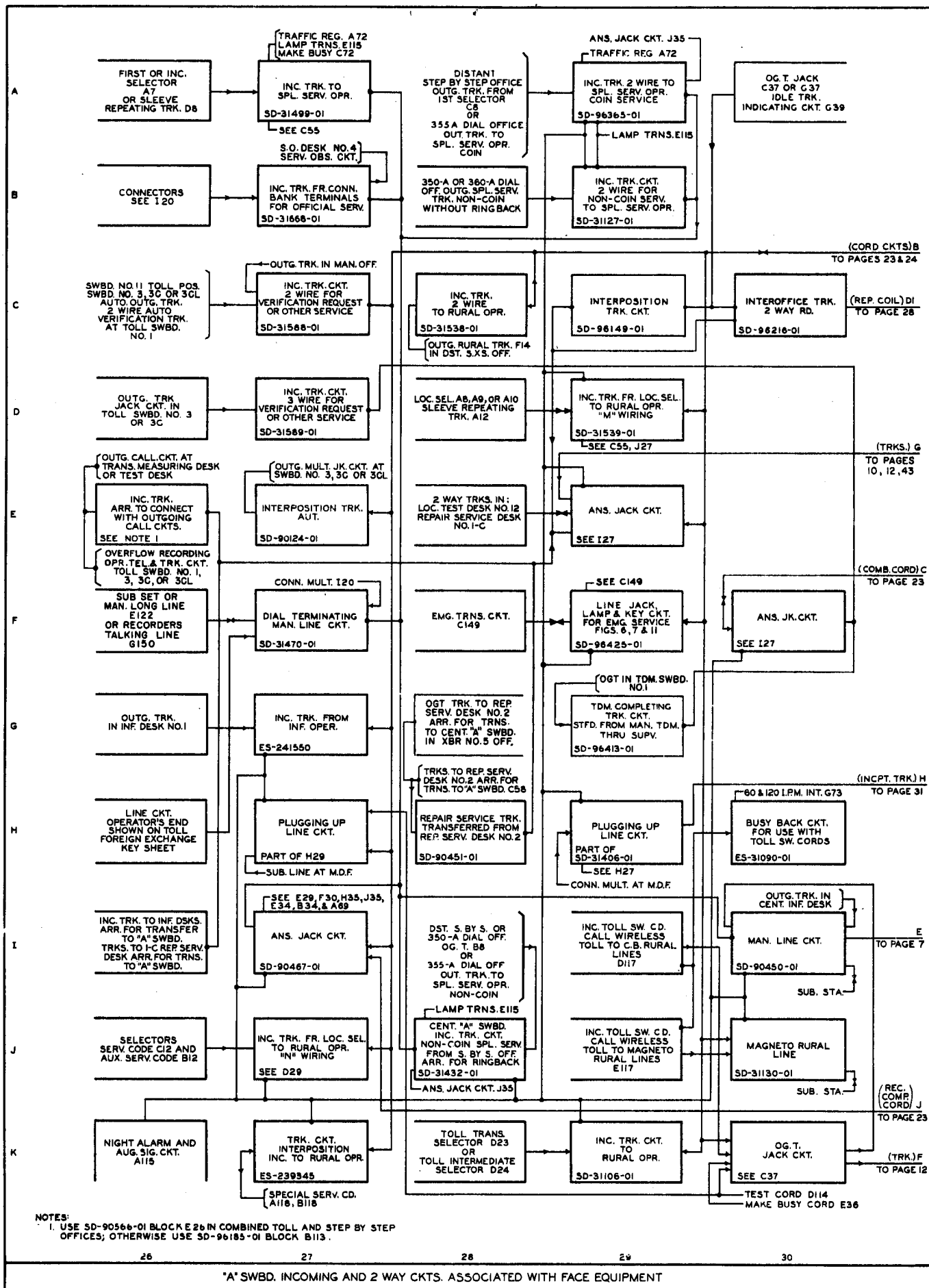
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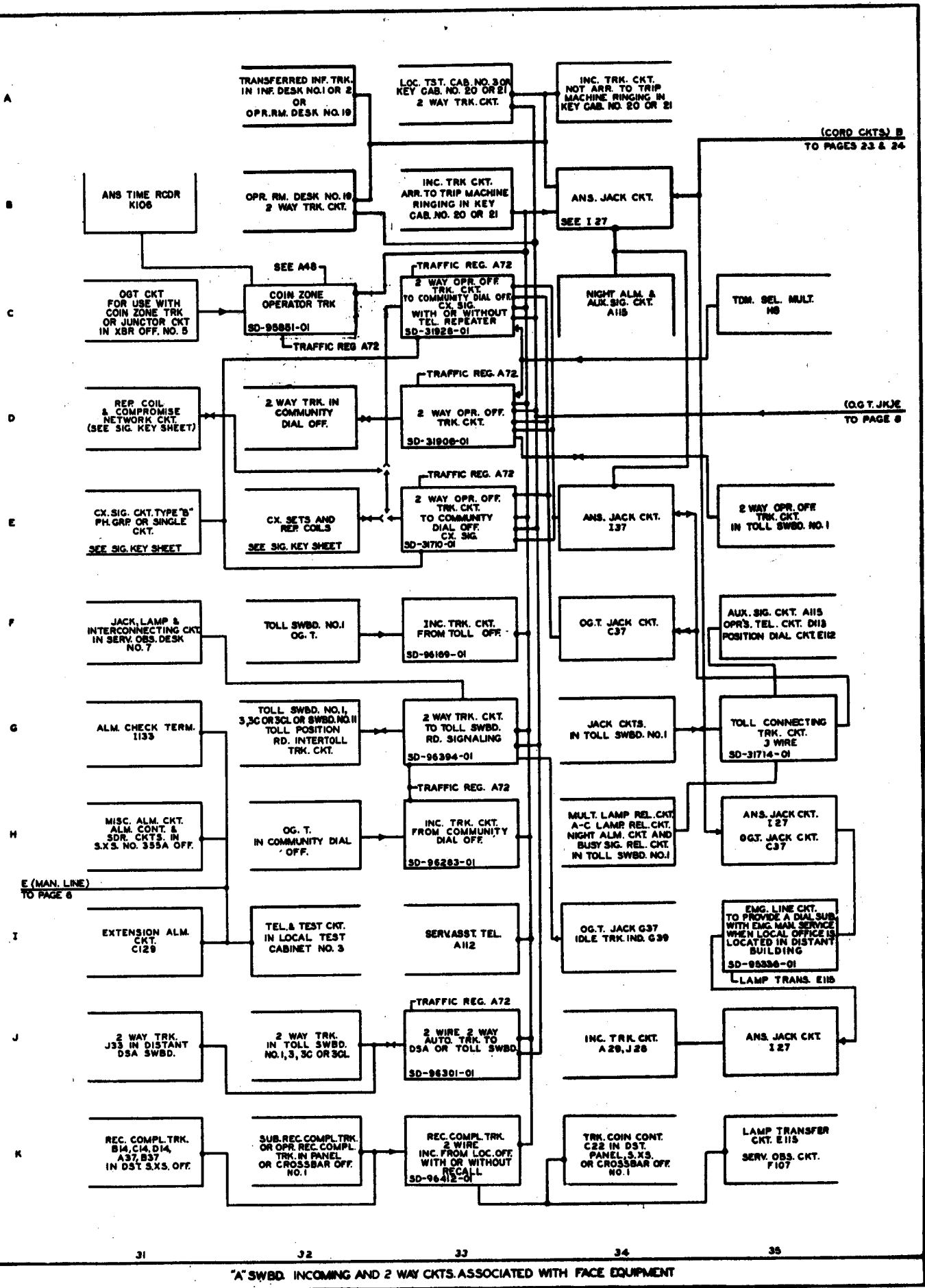
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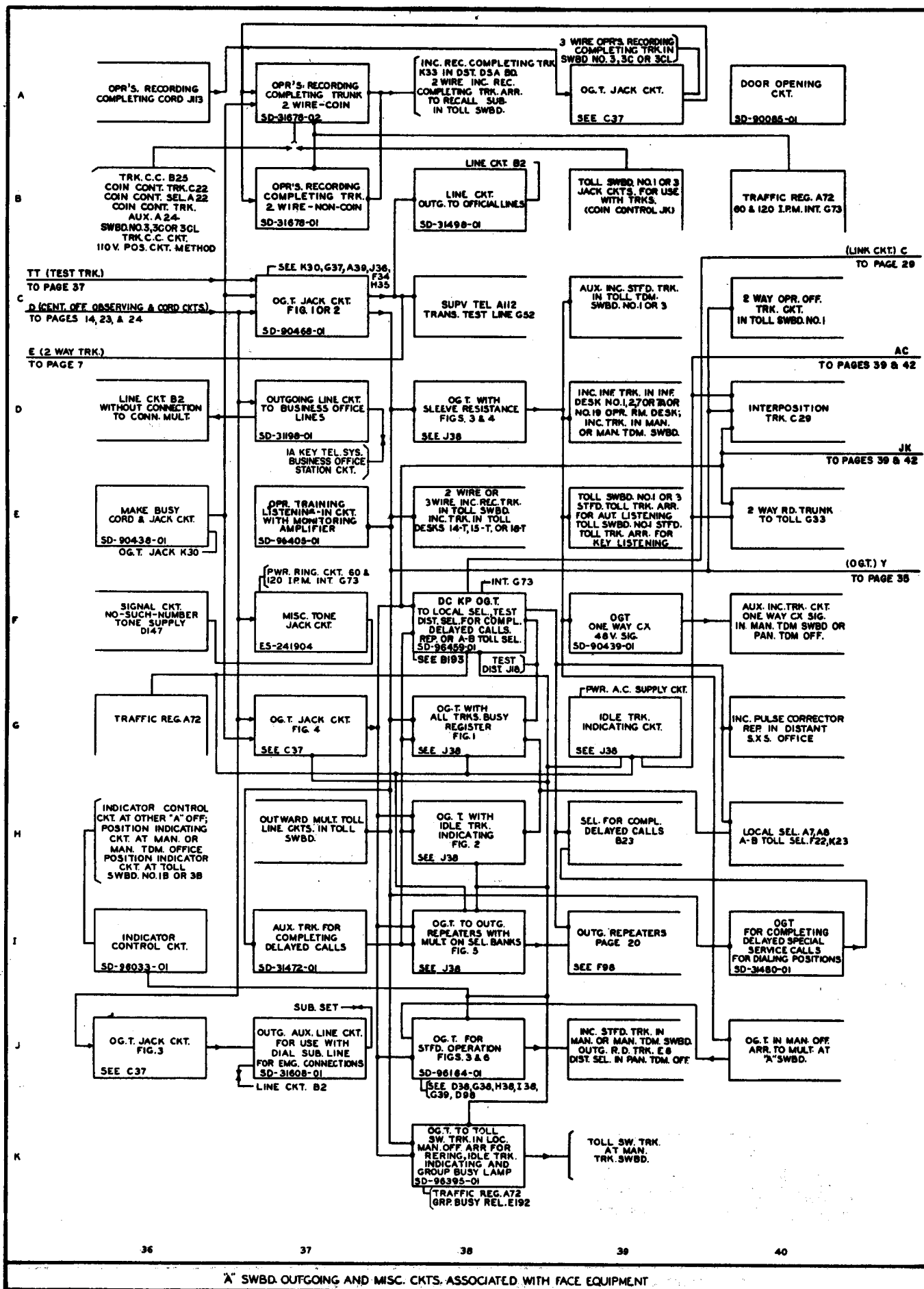
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TOLL TRAIN CIRCUITS

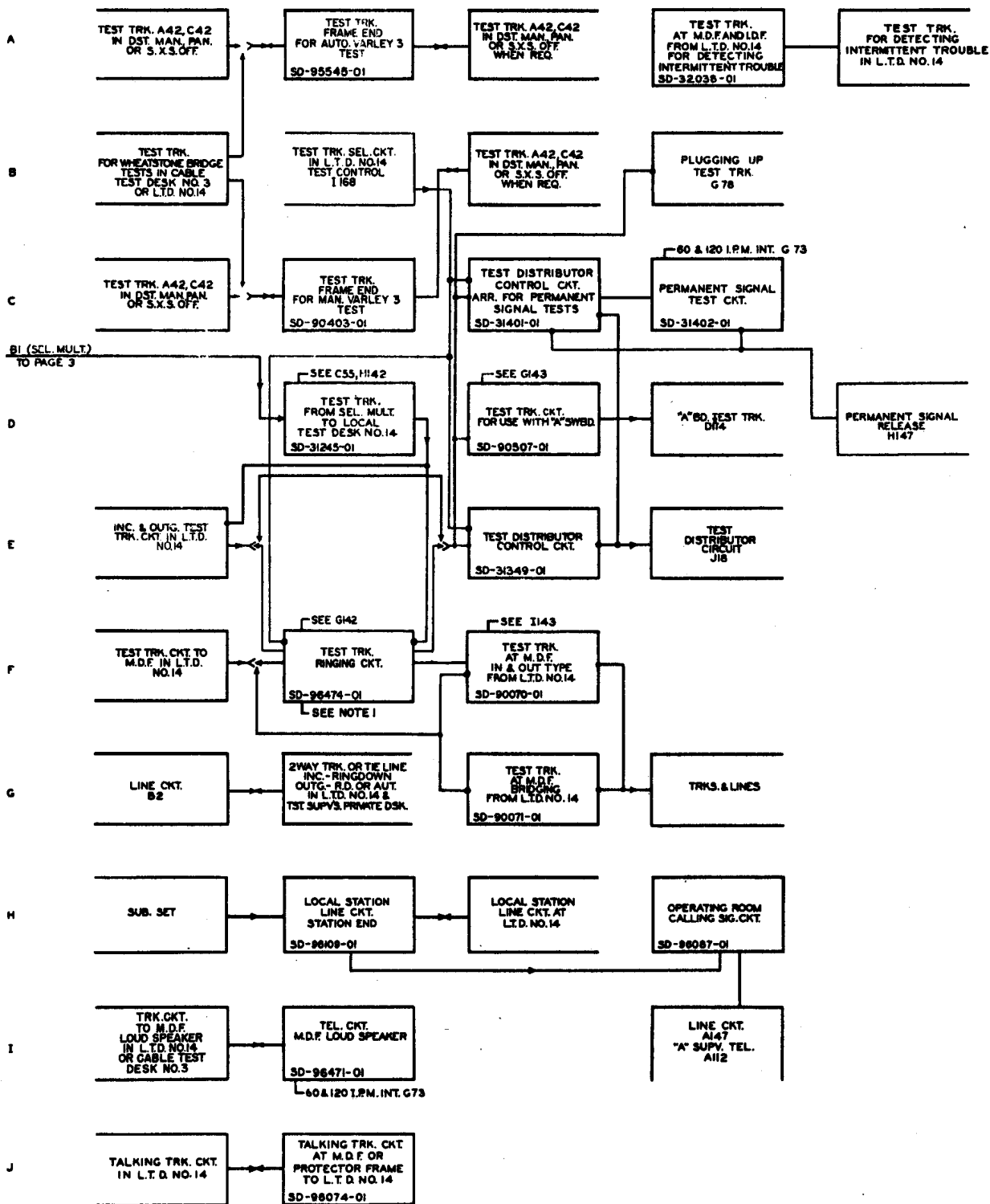








A SWBD. OUTGOING AND MISC. CKTS. ASSOCIATED WITH FACE EQUIPMENT



NOTES:

1. PROVIDE THE TEST TRK. RINGING CKT. F42 WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 300 OHMS IN SEMI-SELECTIVE OFFICES OR FULL SELECTIVE OFFICES IN WHICH ALL THE 4 P.TY. LINES ARE EQUIPPED WITH TUBE SETS AND WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 300 OHMS IN FULL SELECTIVE OFFICES IN WHICH SOME OF THE LINES HAVE RELAY SETS REGARDLESS OF THE LENGTH OF THE MAX. SUB. LOOP IN THE OFFICE.

41

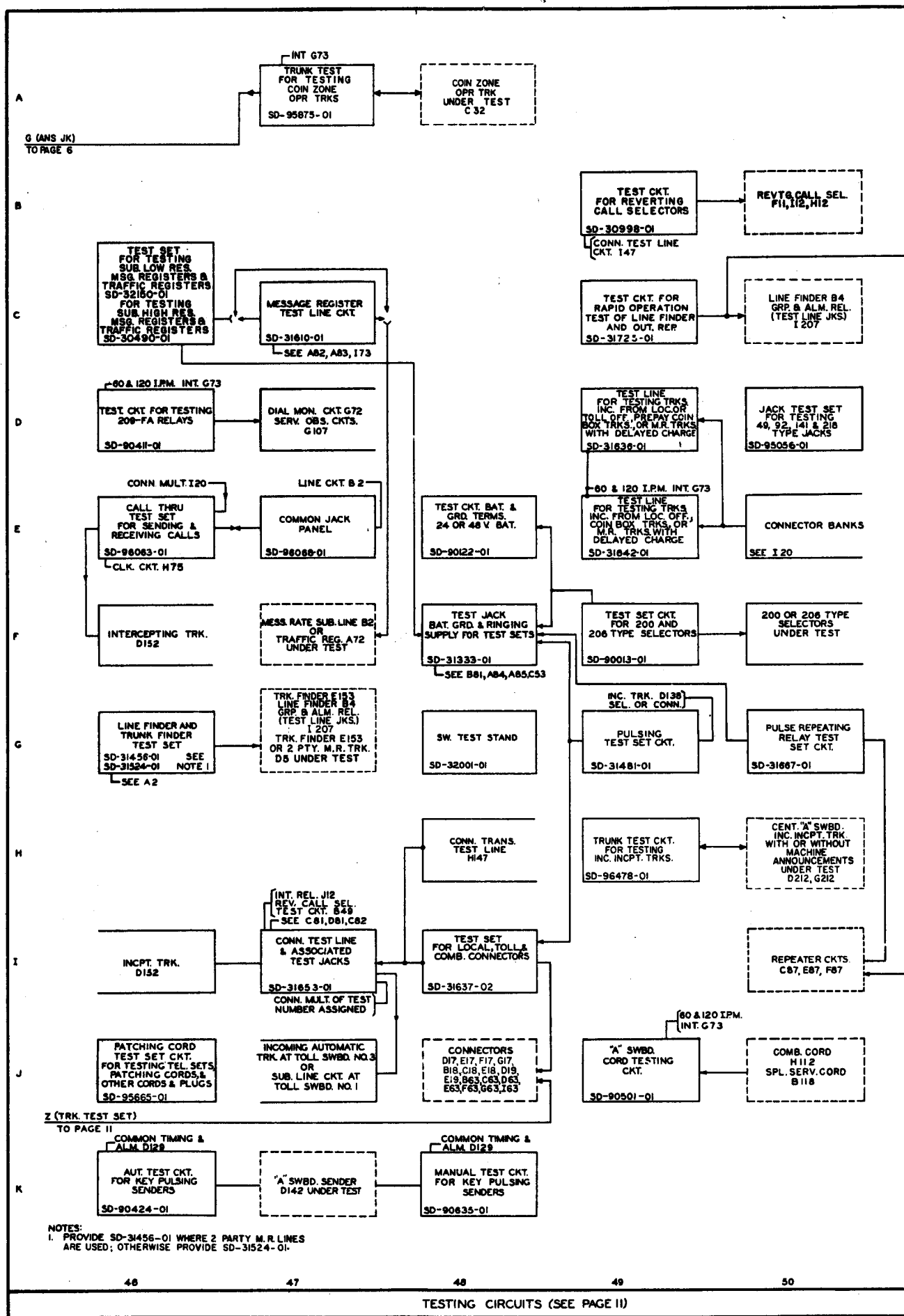
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43

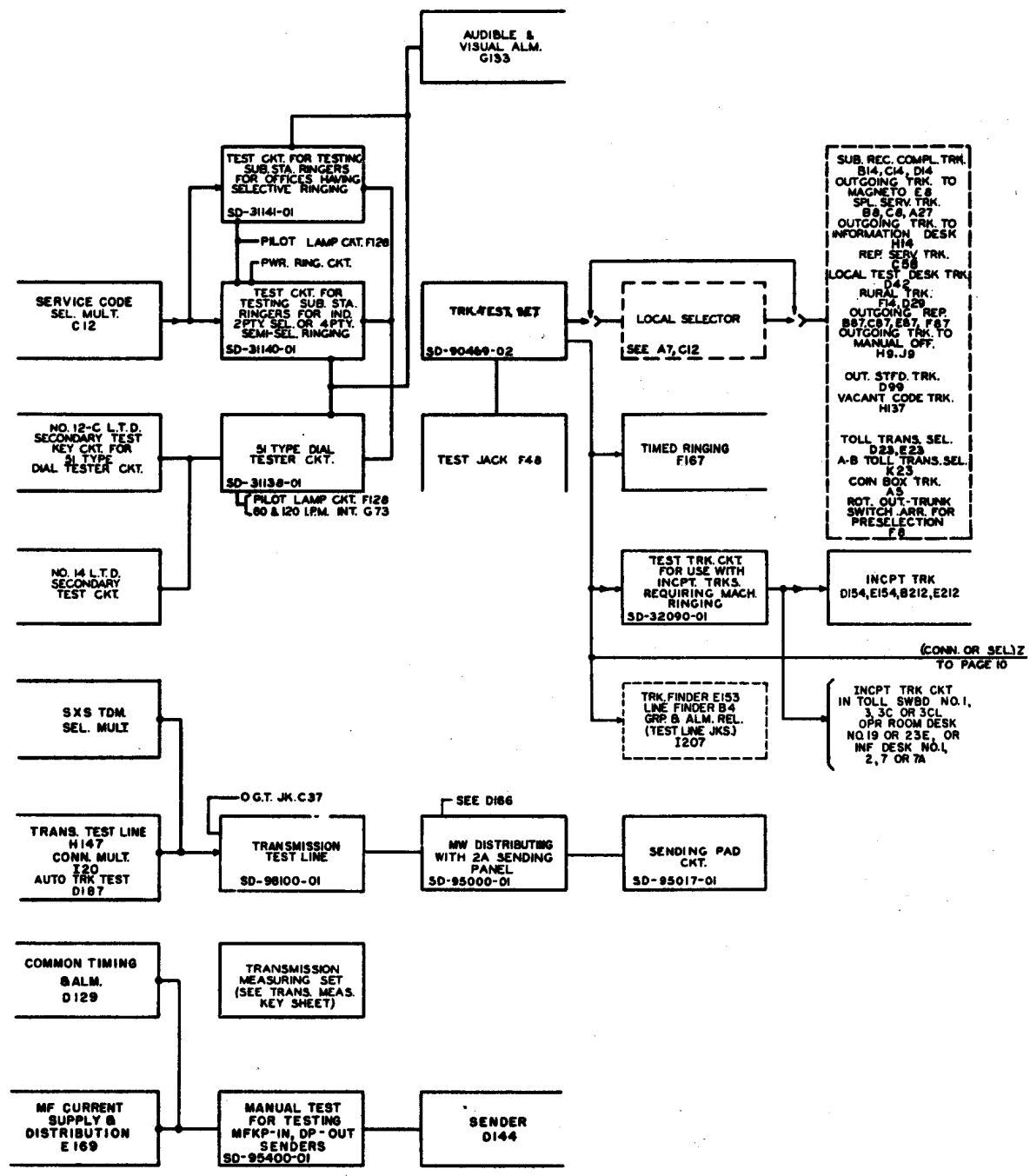
44

45

CKTS. CONNECTING WITH LOCAL TEST DESK NO. 14 AND CABLE TEST DESK NO. 3



A
B
C
D
E
F
G
H
I
J



CIRCUITS CONNECTING WITH REPAIR SERVICE DESK NO.2

A

B

C

D

E

F

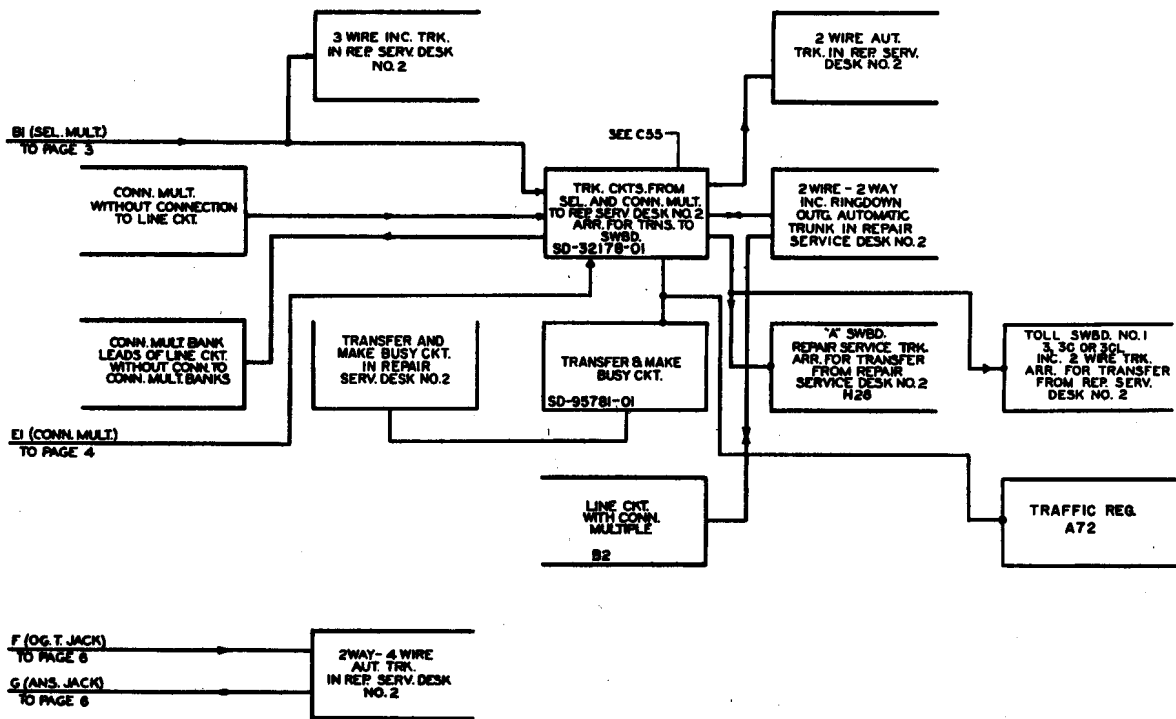
G

H

I

J

K



56

57

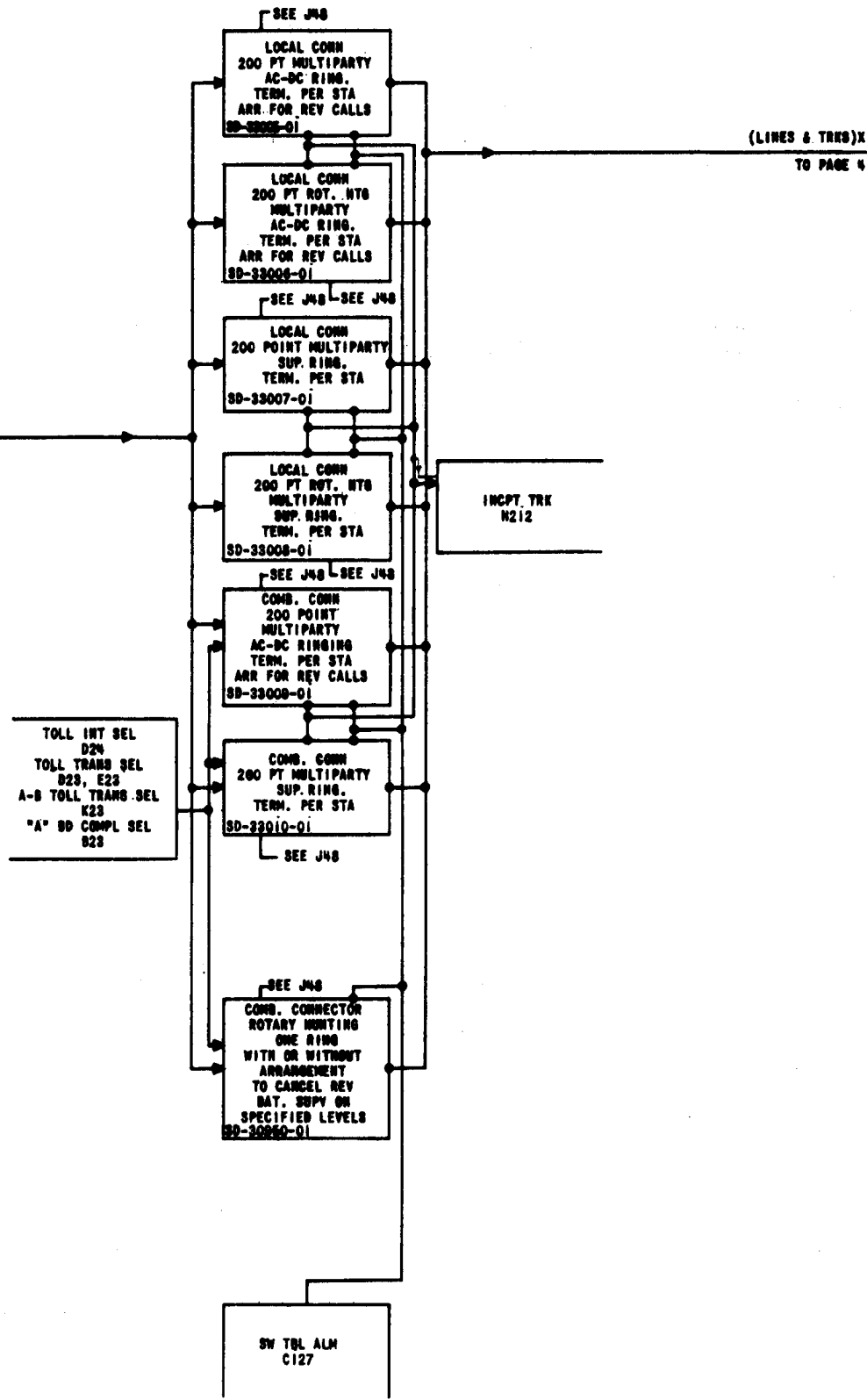
58

59

60

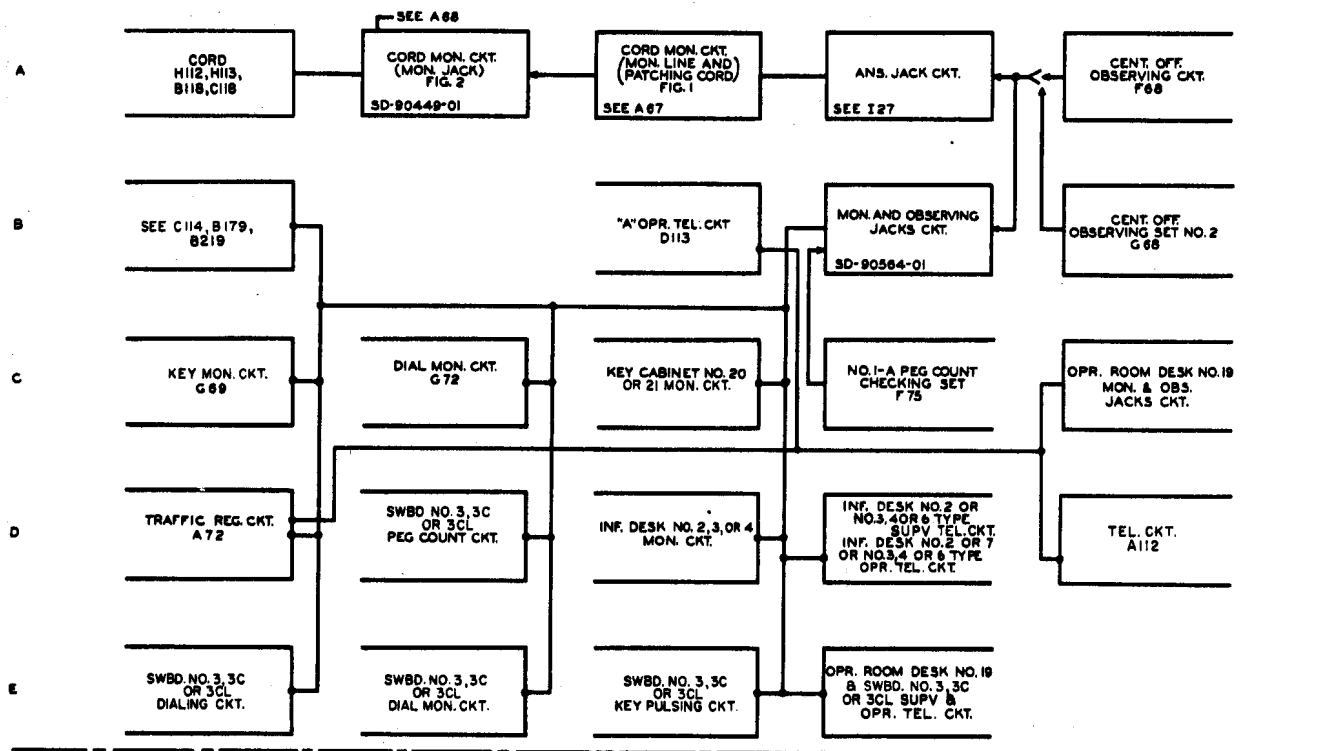
A
B
C
D
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G
H
I
J
K

AI
TO PAGE 3

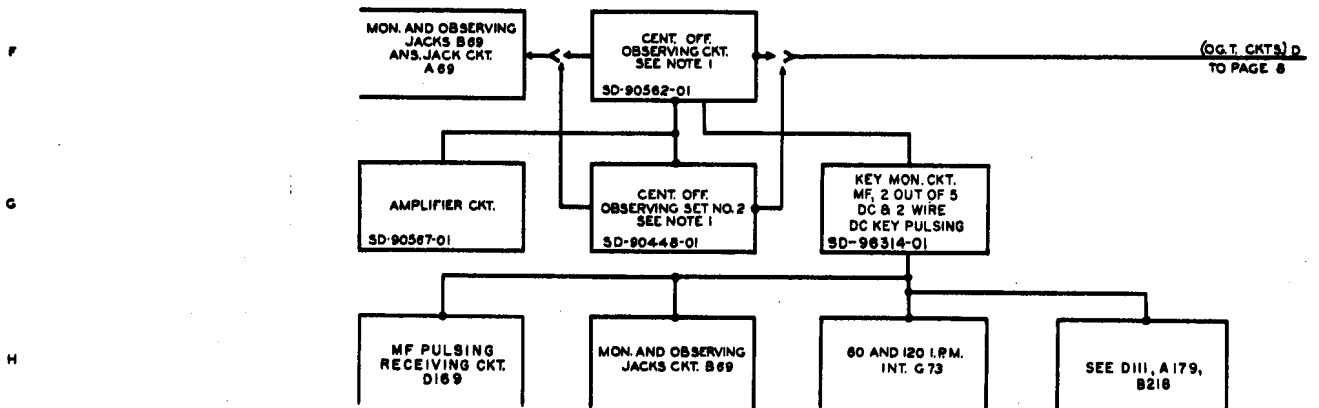


61 62 63 64 65

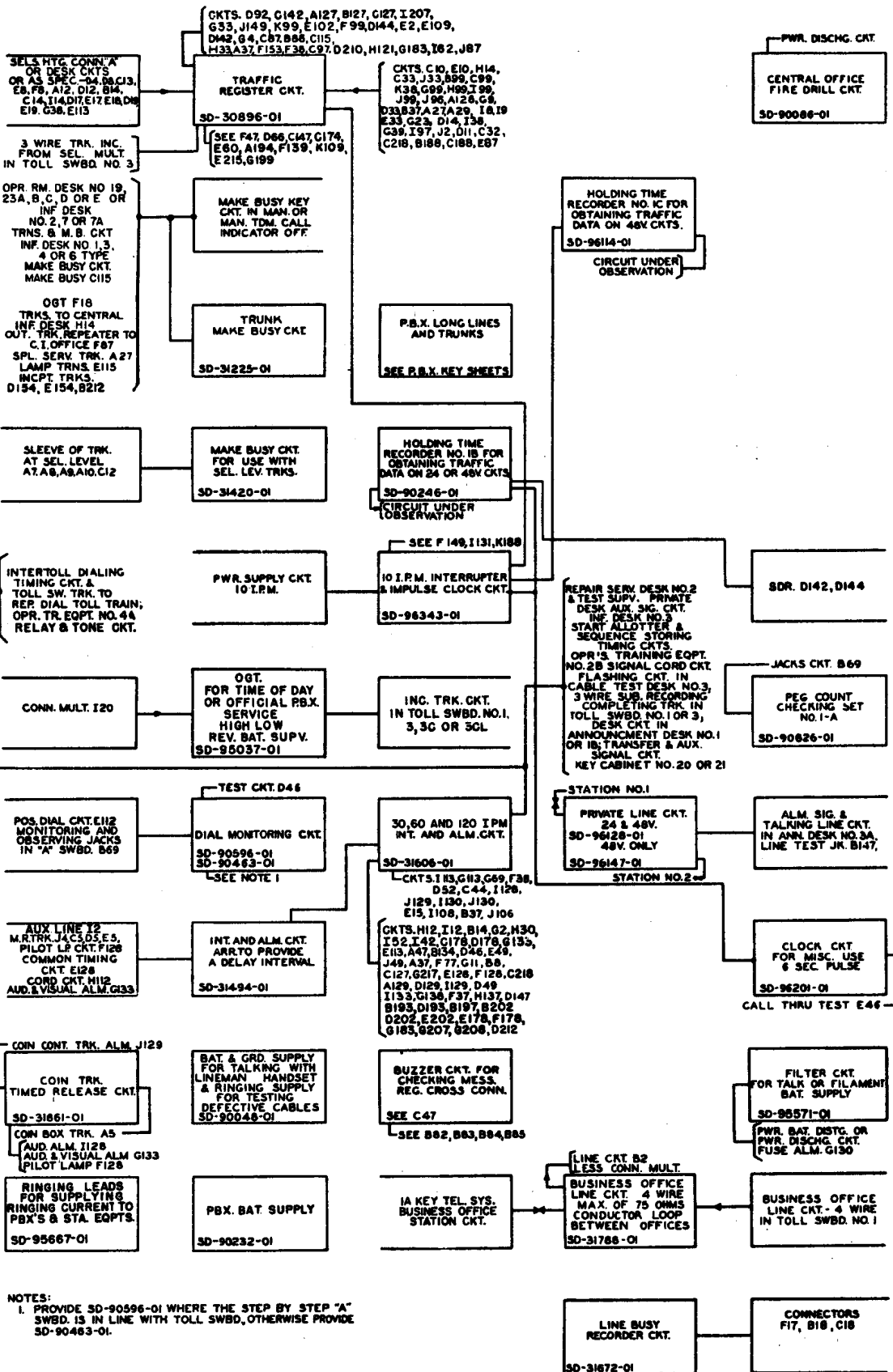
CENT. OFF. OBSERVING CKTS. AT "A" SWBD. (FACE EQPT)

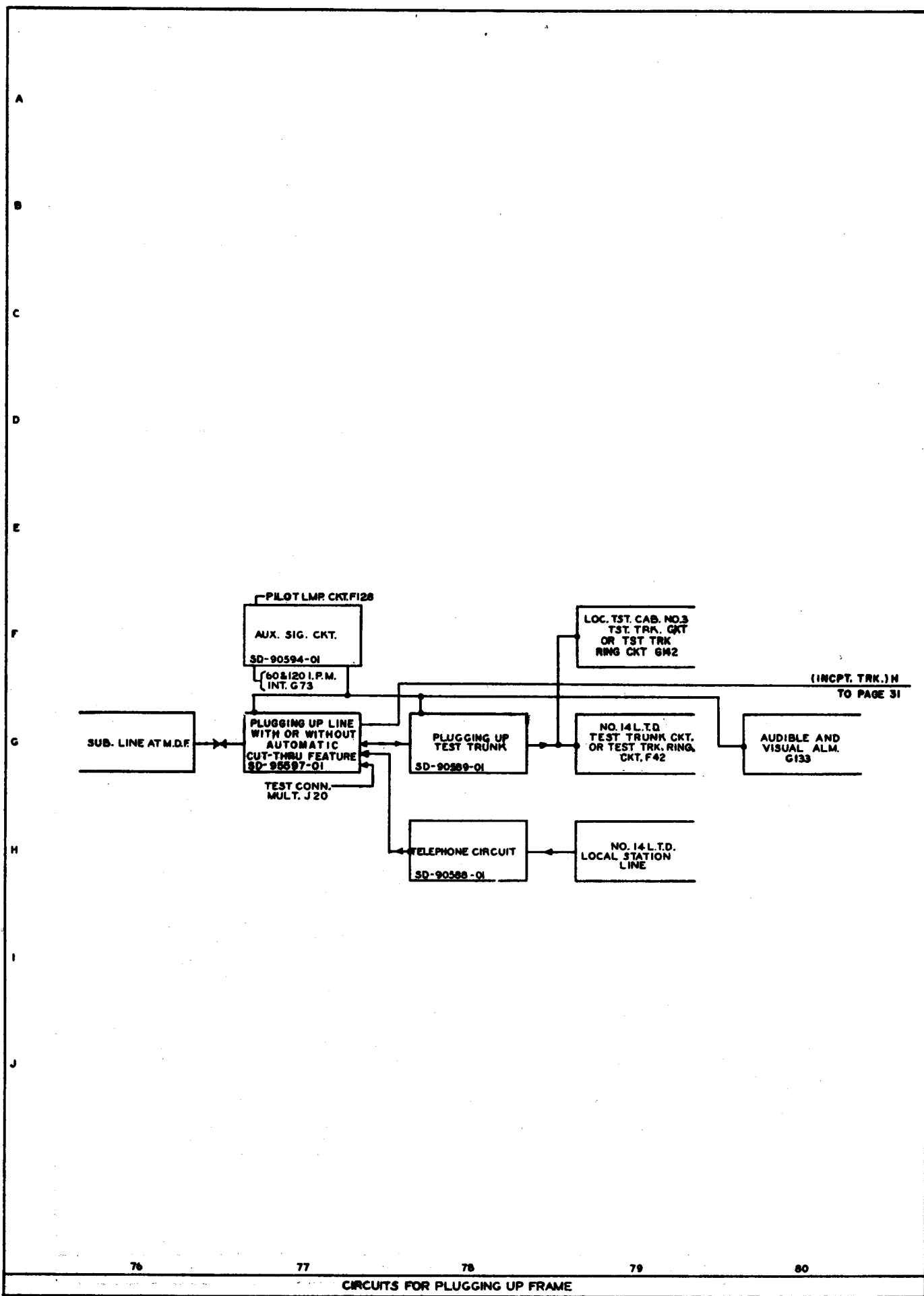


"A" SWBD. MON. POS.



NOTES:
1. USE SD-90562-01 FOR KEY PULSING "A" SWBD. IN WHICH THERE ARE NO TOLL POSITIONS.
USE SD-90448-01 FOR COMBINED KEY PULSING TOLL AND "A" SWBD. AND FOR DIALING SWBD.





**RINGING CURRENT
SUPPLY JACK**

FIG. 2
JACK DESIG. (±) OR (GEN)
SEE F48

BUZZER CIRCUIT
FOR TESTING MESSAGE
REGISTER CROSS-CONN
AT I.D.F.
FIG. 4
JACK DESIG.(BUZ 2)
SEE 173

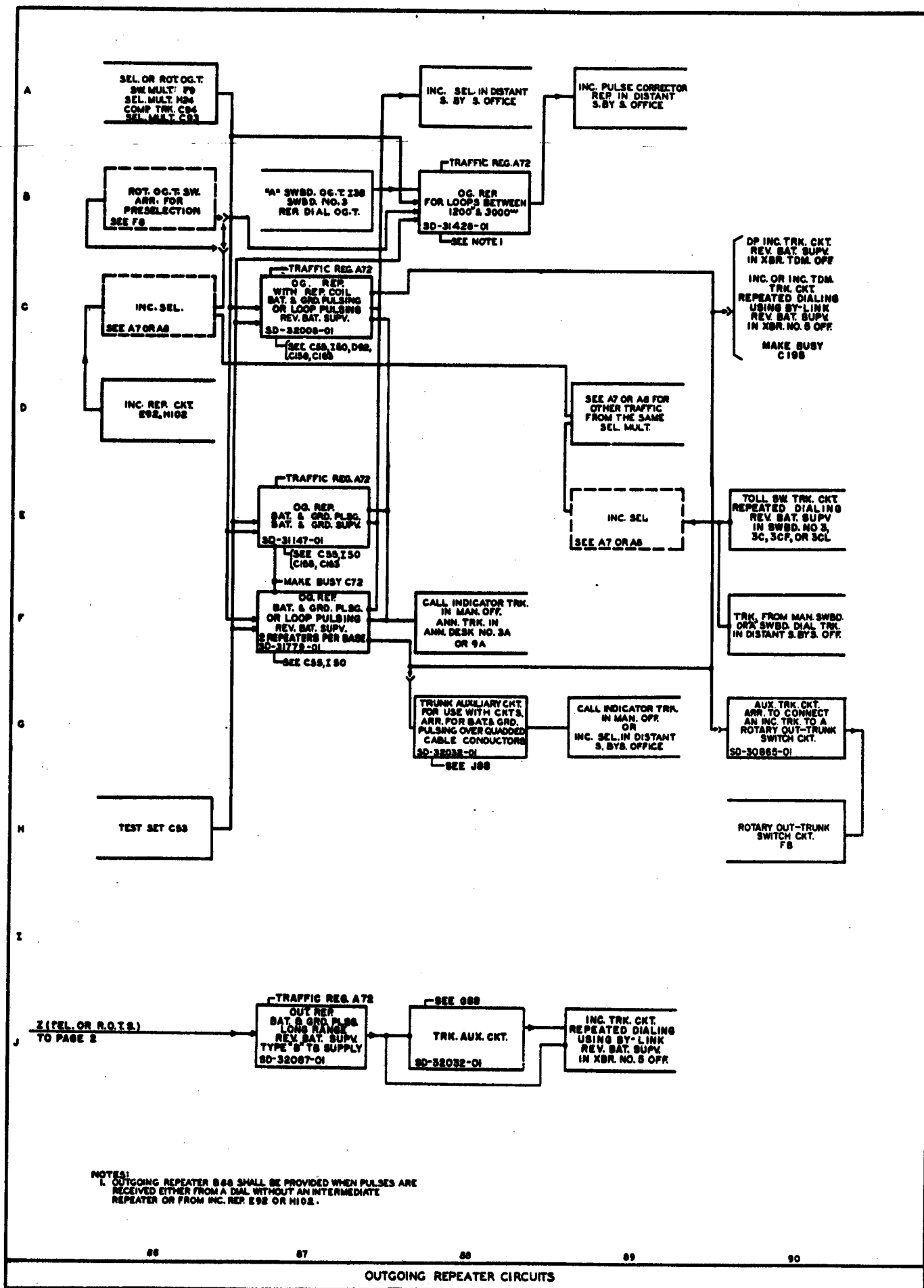
TEST LINE JACKS
8 PARTY SEMI-SEL.
CONN. RING TEST
JACK
FIG. 3, 4 OR 5
JACKS DESIG. (8 PTY)
SEE 147

SWITCHMAN TALKING
LINE
FIG. 10
JACK DESIG.(8)
SEE H147

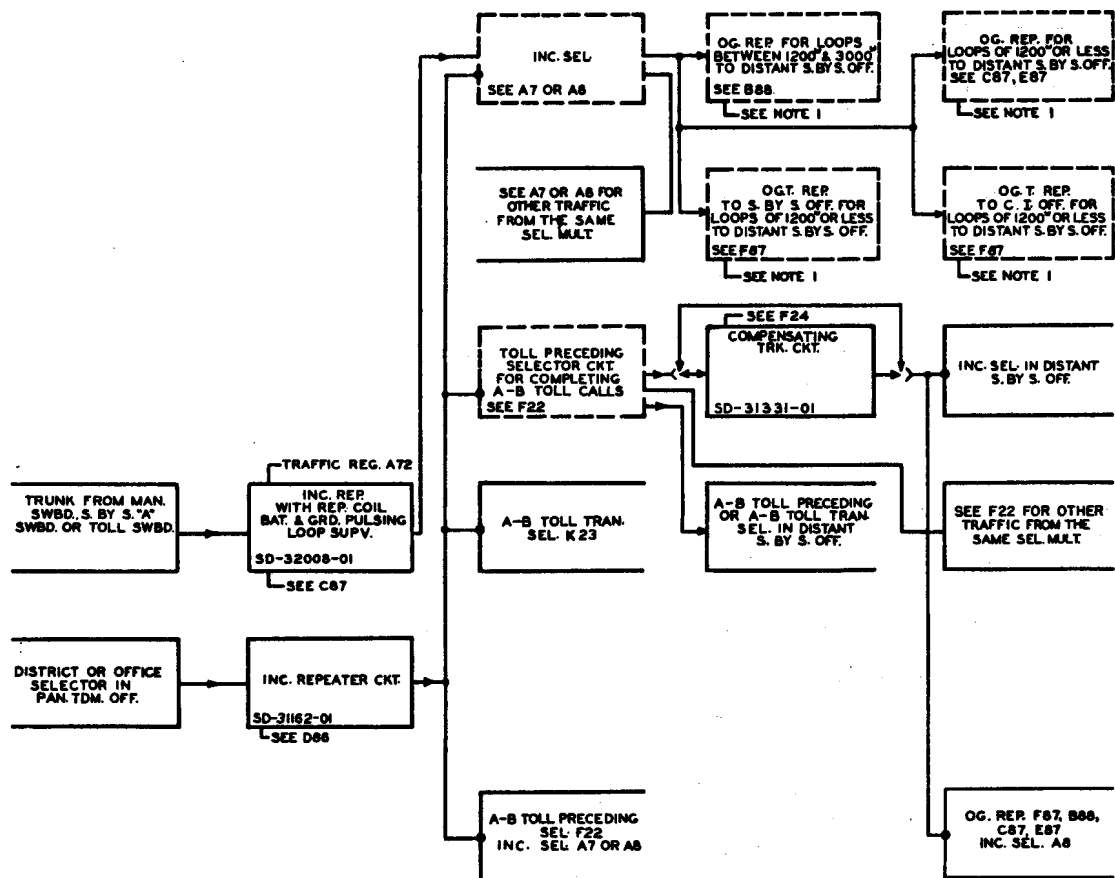
SWITCHMAN TALKING
LINE
FIG. 2 OR 5
JACKS A.E. INC. TYPE
SEE H147

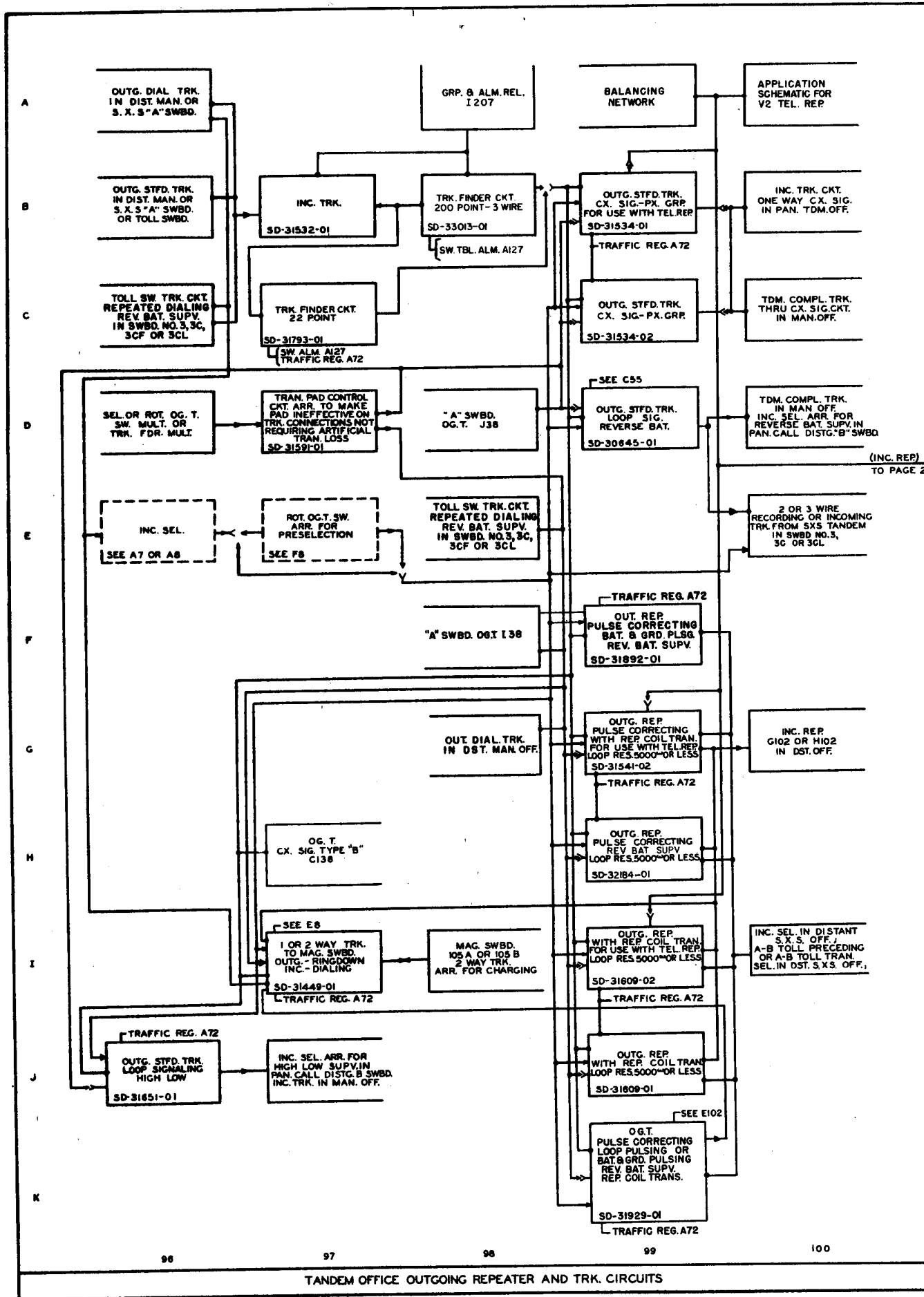
JACK ASSIGNMENT TABLE

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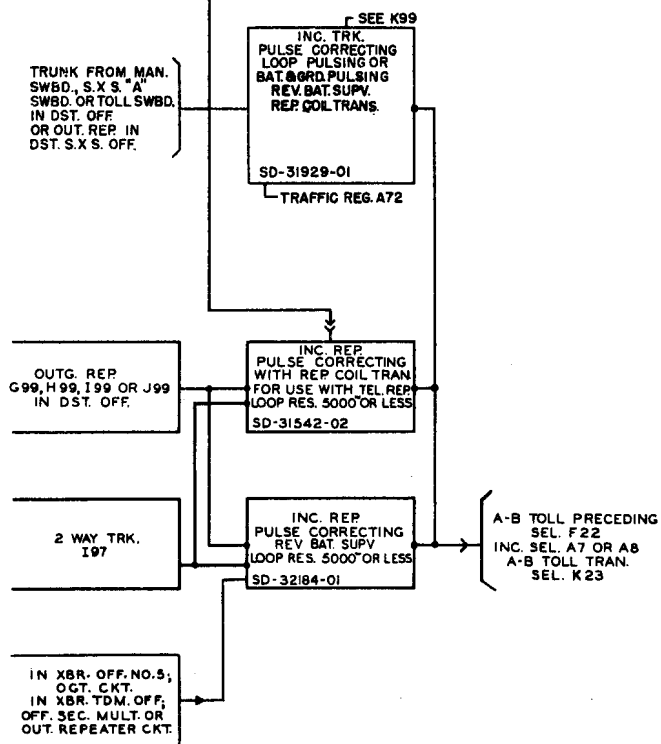
OUTGOING REPEATER CIRCUITS





(INC. REP.)
TO PAGE 2

F (TEL REP)
TO PAGE 20



101

102

103

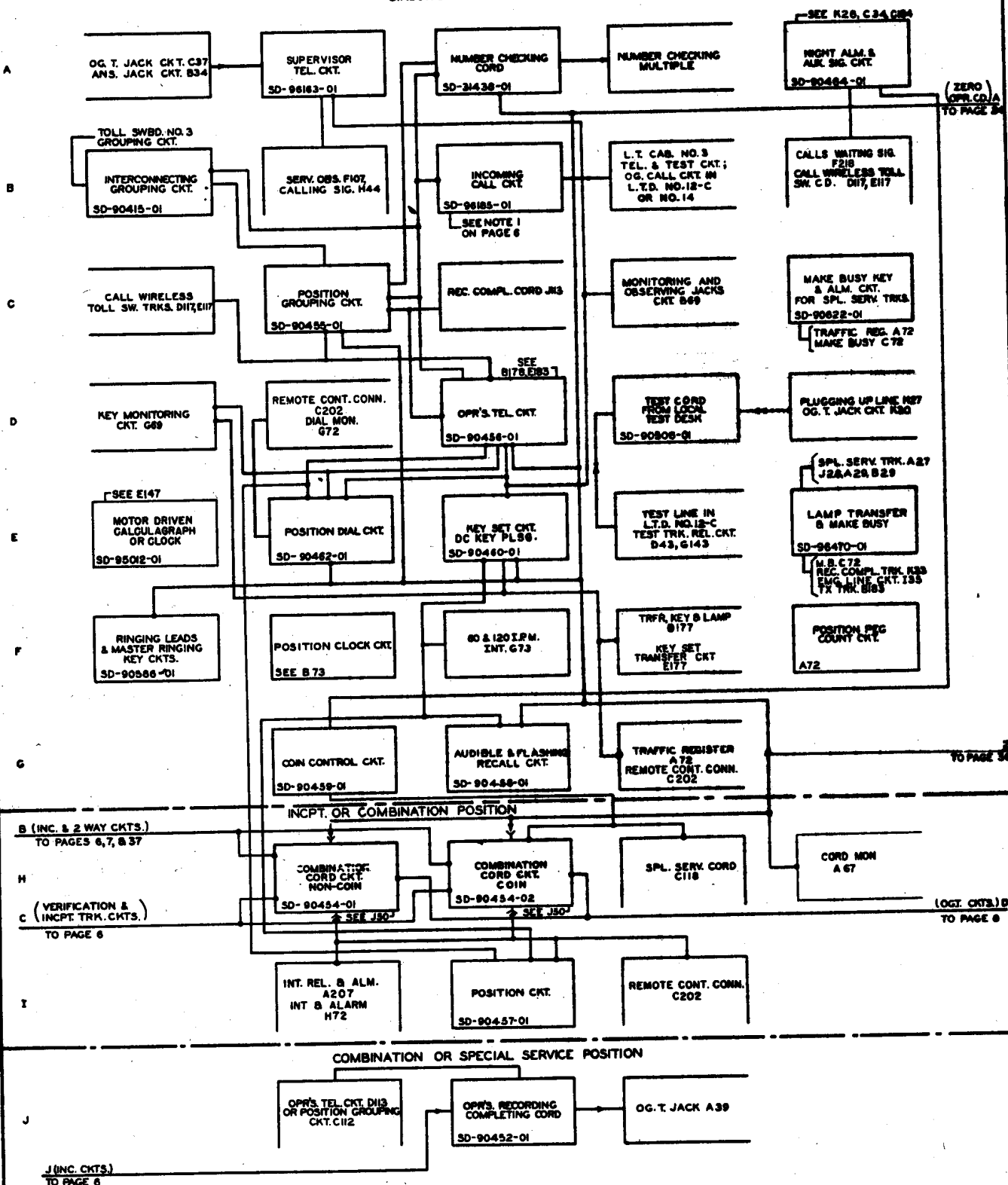
104

105

TANDEM OFFICE INCOMING REPEATER AND TRK. CIRCUITS



CIRCUITS FOR USE IN ALL POSITIONS



A (POS. CKTS.)
TO PAGE 23

B (INC. AND 2 WAY CKTS.)
TO PAGES 6, 7 & 37

(OGT. CKTS.) D
TO PAGE 8

B

C

INTERPOSITION TRK.
K27SPL. SERV. CORD
NON-COIN

SD-90453-01

SEE J50

COIN CONTROL CKT.
G112SPL. SERV. CORD
COIN

SD-90453-02

SEE J50

REMOTE CONT. CONN.
C202

RURAL FEATURES IN SPL. SERV. POS.

D

SWBD. NO. 3, 3C OR 3CL
OG. TOLL. SW. TRK.
TOLL. SWBD. NO. 1
OG.T. JK. CKT.INC. TOLL. SW. C.D.
CALL WIRELESS
FOR C.B. RURAL
LINES

SD-90476-01

MANUAL LINE
CKT. J30 THRU
OG.T. CKT.
K30

E

TOLL. SWBD. NO. 1,
3, 3C OR 3CL
OG.T. SW. TRUNKINC. TOLL. SW. CORD
CALL WIRELESS
FOR MAGNETO RURAL
LINES

SD-90574-01

MAGNETO RURAL
LINE J30

F

AUX. SIG. AND NIGHT
ALM. CKT. A115OPR'S TEL. CKT. D113
OR POS. GROUPING
CKT. C112BUSY BACK
CKT. H30

G

H

I

J

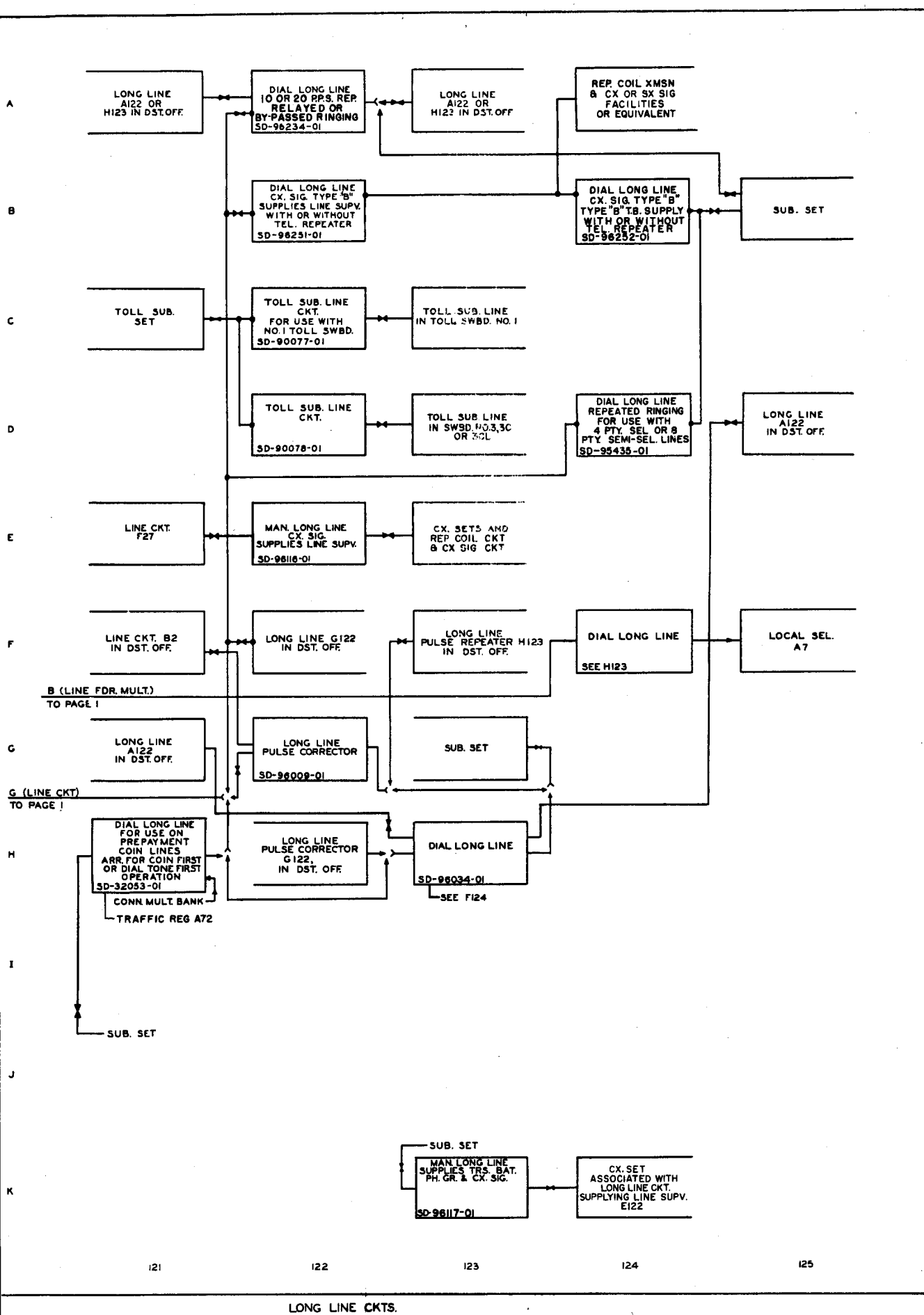
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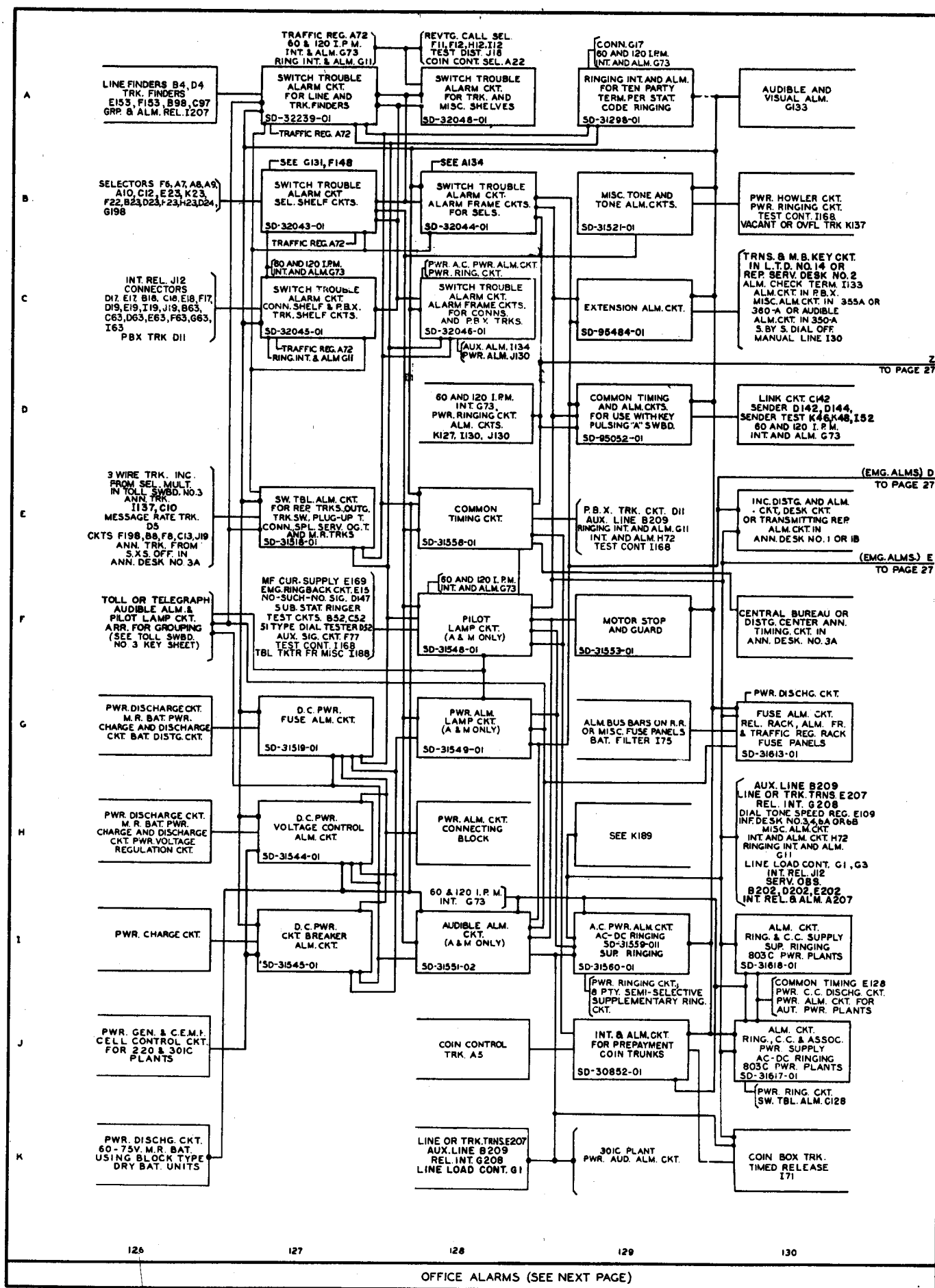
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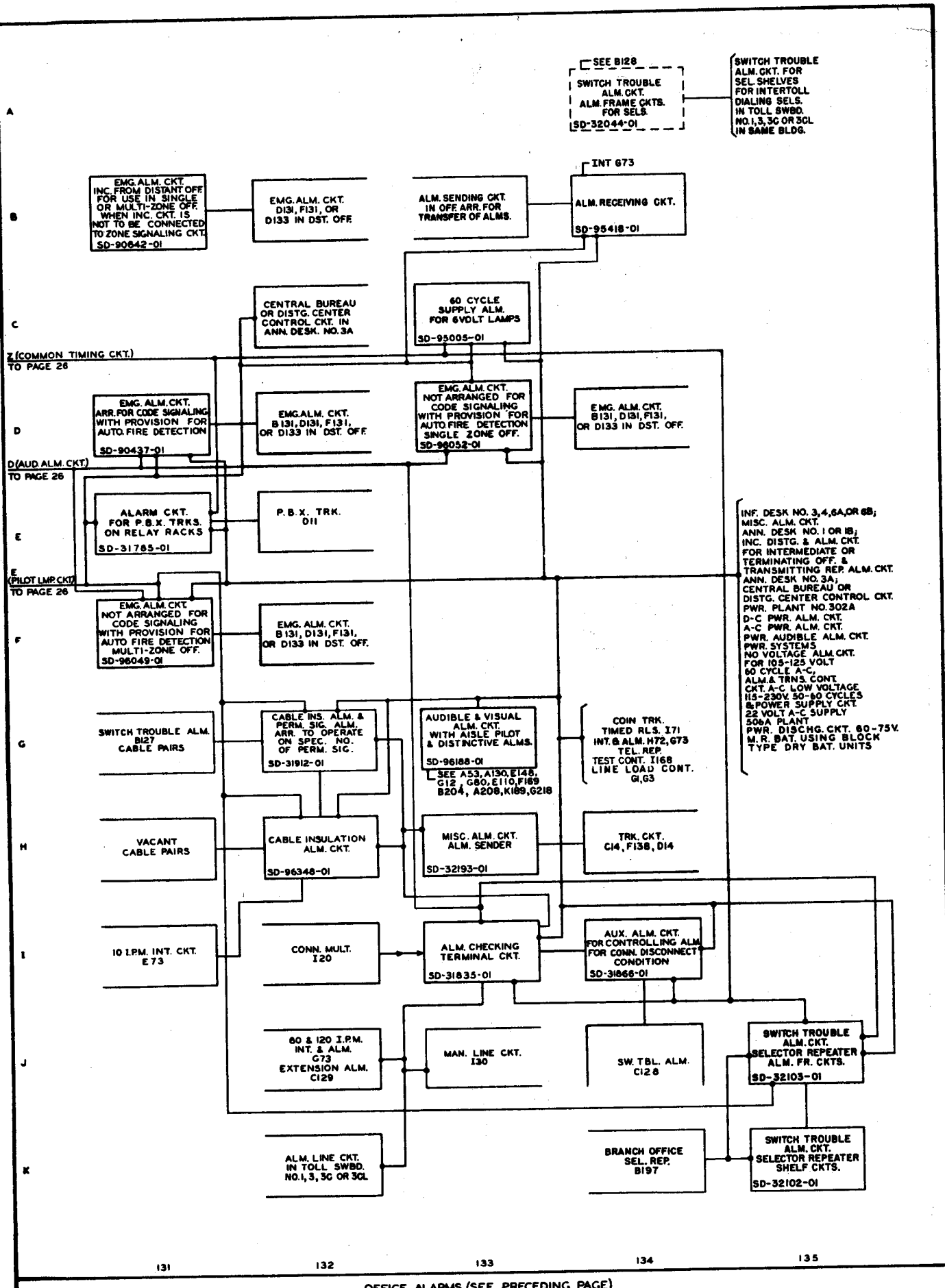
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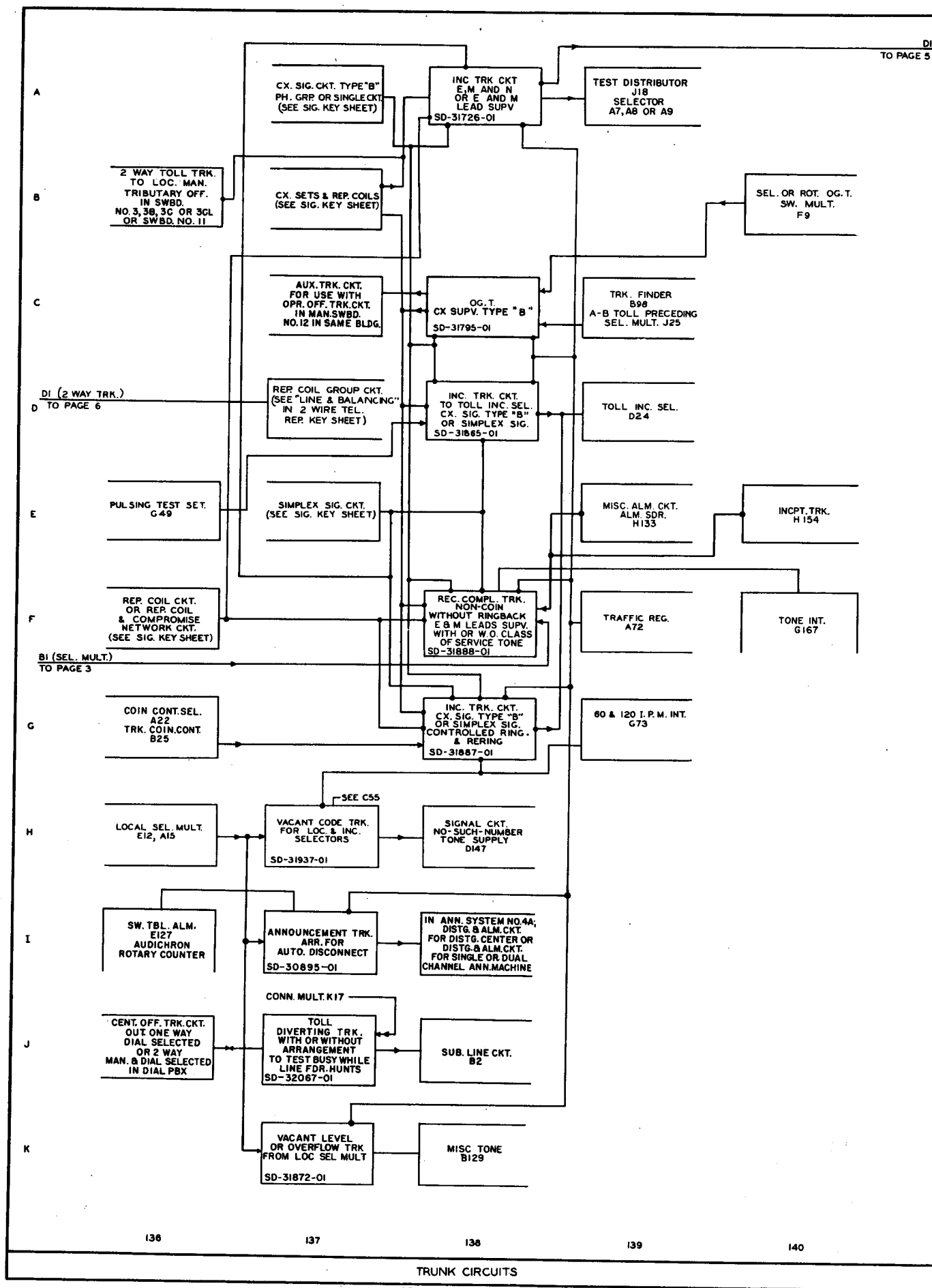
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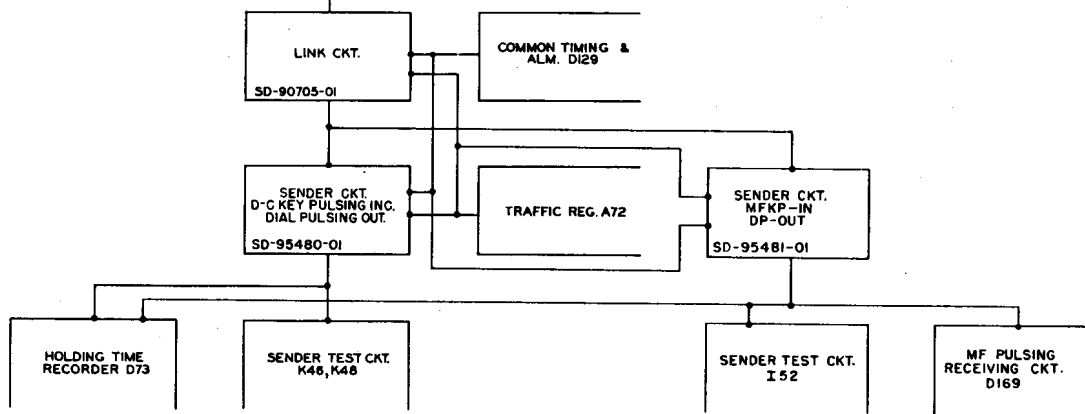


OFFICE ALARMS (SEE PRECEDING PAGE)

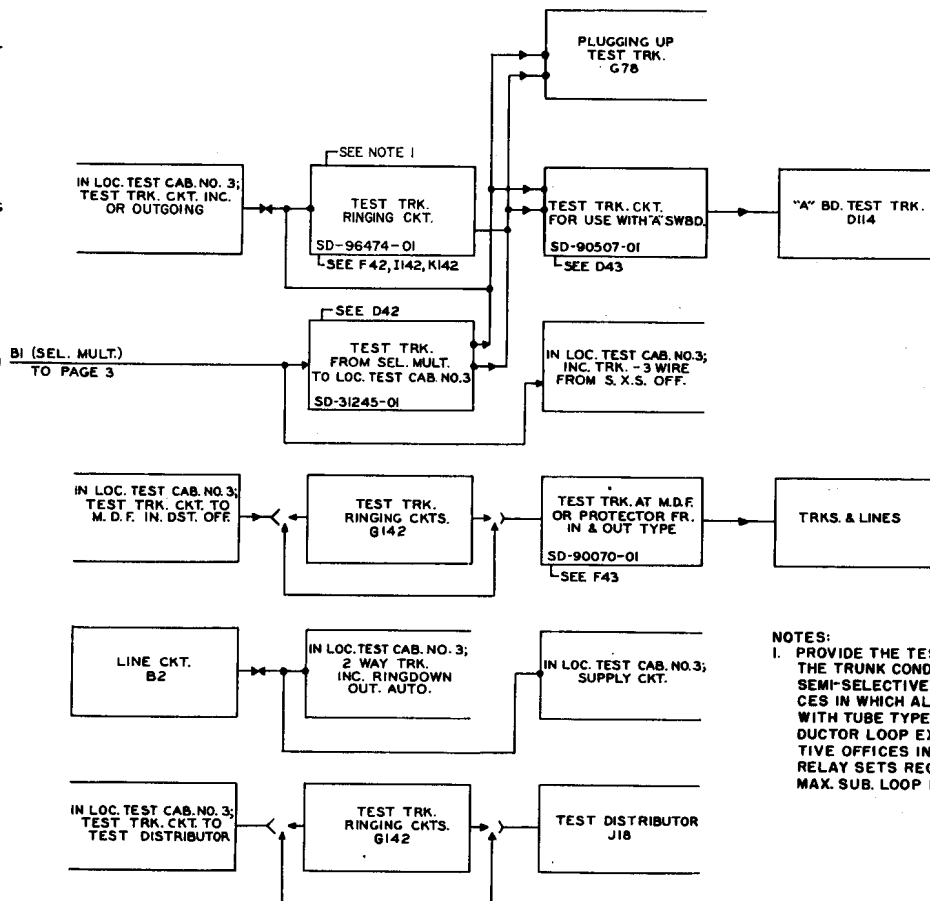


"A" SWBD. SDR., LINK AND MISC. CKTS.

C (OUTG & INC. TRKS)
TO PAGES 8 & 39



CKTS. CONNECTING WITH LOCAL TEST CABINET NO. 3



NOTES:

1. PROVIDE THE TEST TRUNK RINGING CKT. G142 WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 300 OHMS IN SEMI-SELECTIVE OFFICES OR FULL SELECTIVE OFFICES IN WHICH ALL THE 4 PTY. LINES ARE EQUIPPED WITH TUBE TYPE SETS, AND WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 200 OHMS IN FULL SELECTIVE OFFICES IN WHICH SOME OF THE LINES HAVE RELAY SETS REGARDLESS OF THE LENGTH OF THE MAX. SUB. LOOP IN THE OFFICE.

141

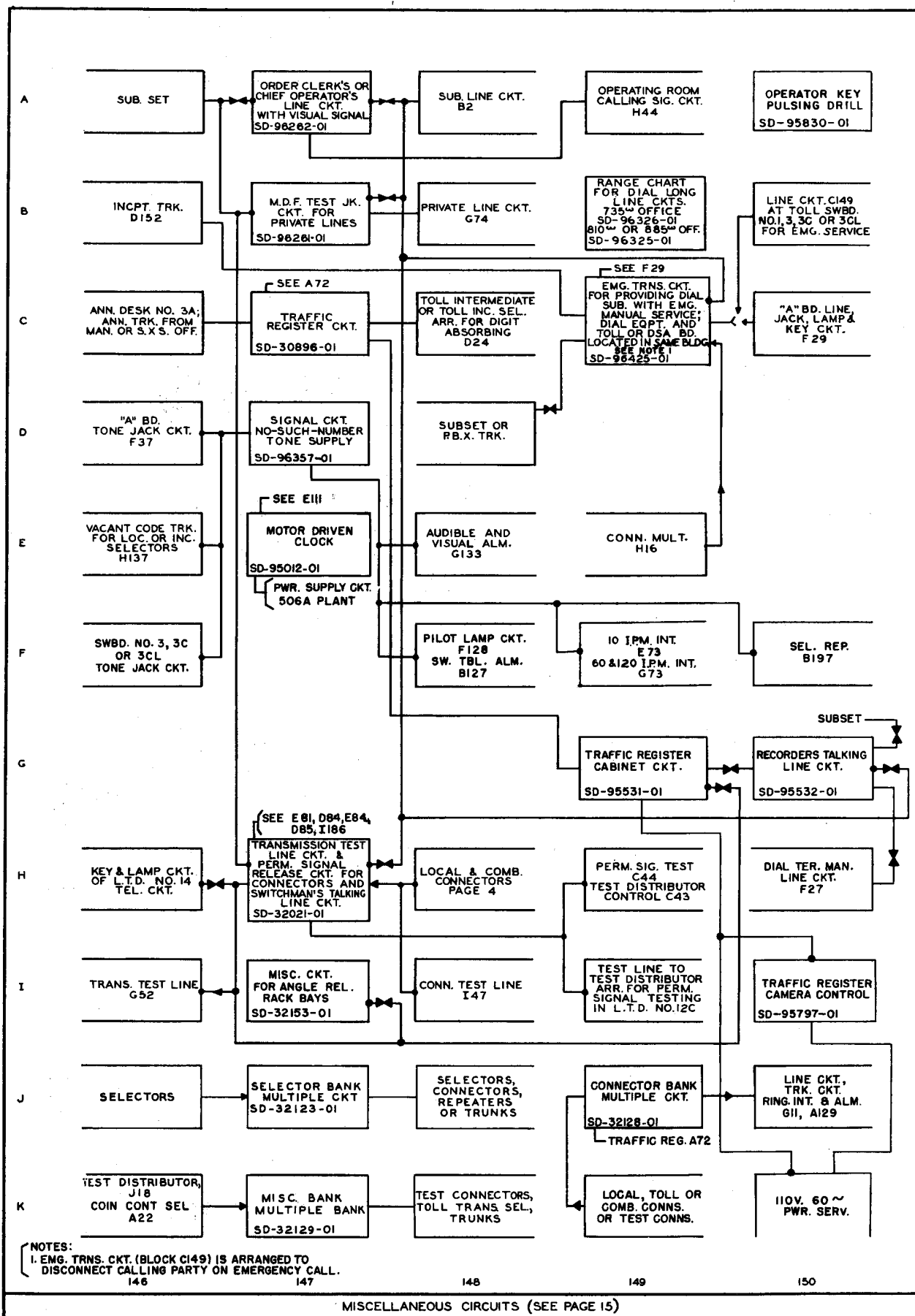
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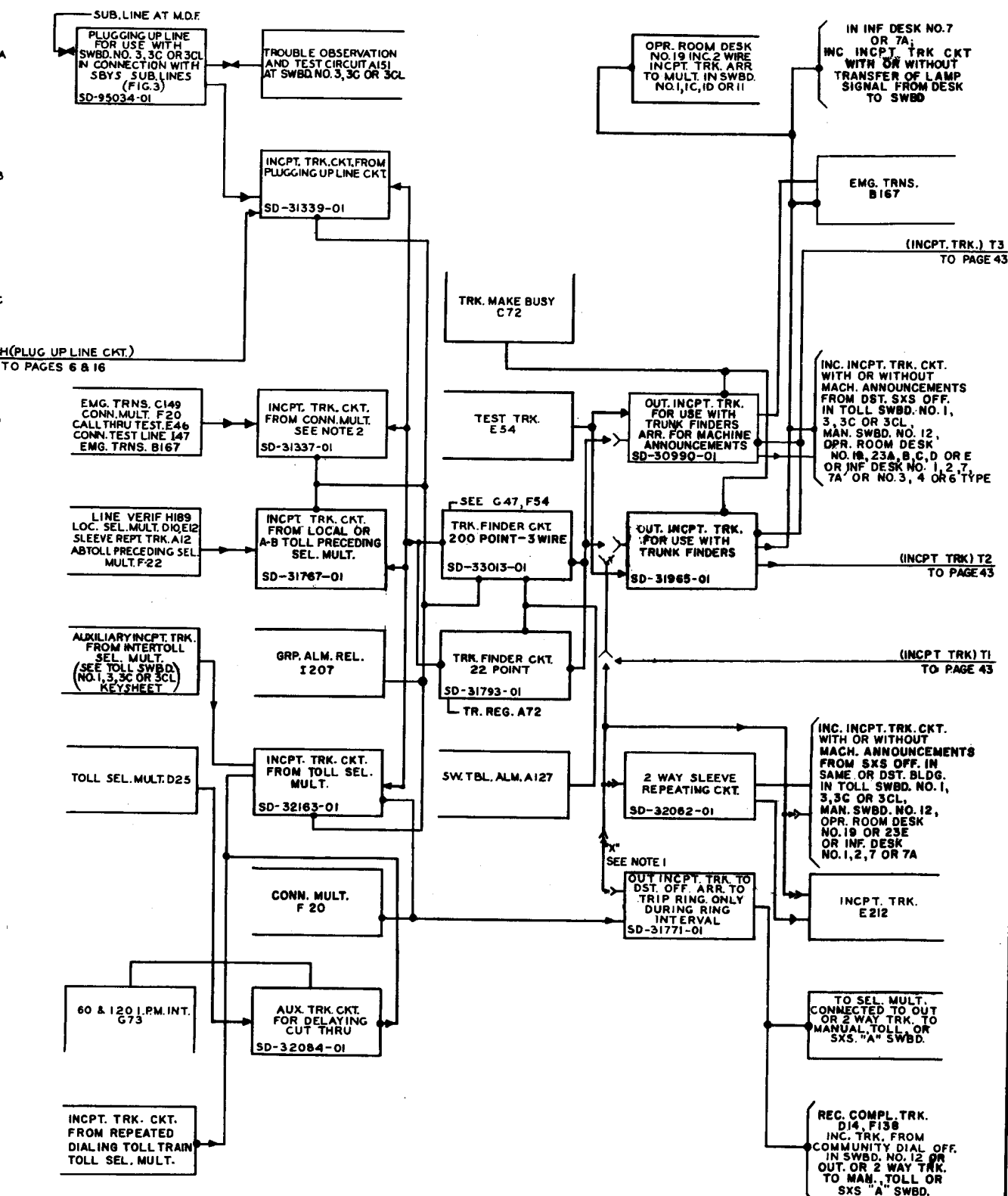
143

144

145

"A" SWBD. SDR., LINK AND MISC. CKTS. AND CKTS. CONNECTING WITH LOCAL TEST CABINET NO. 3

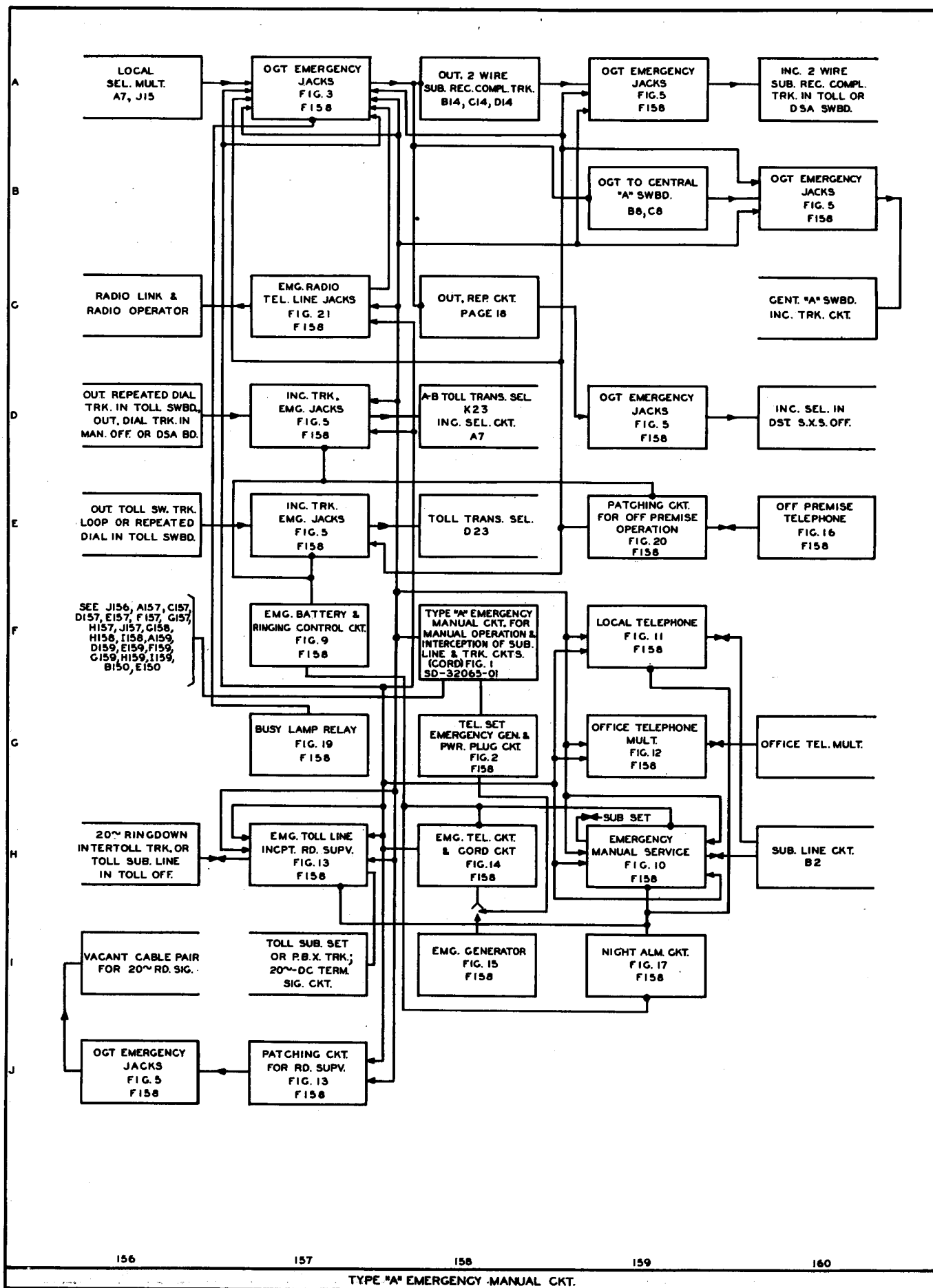




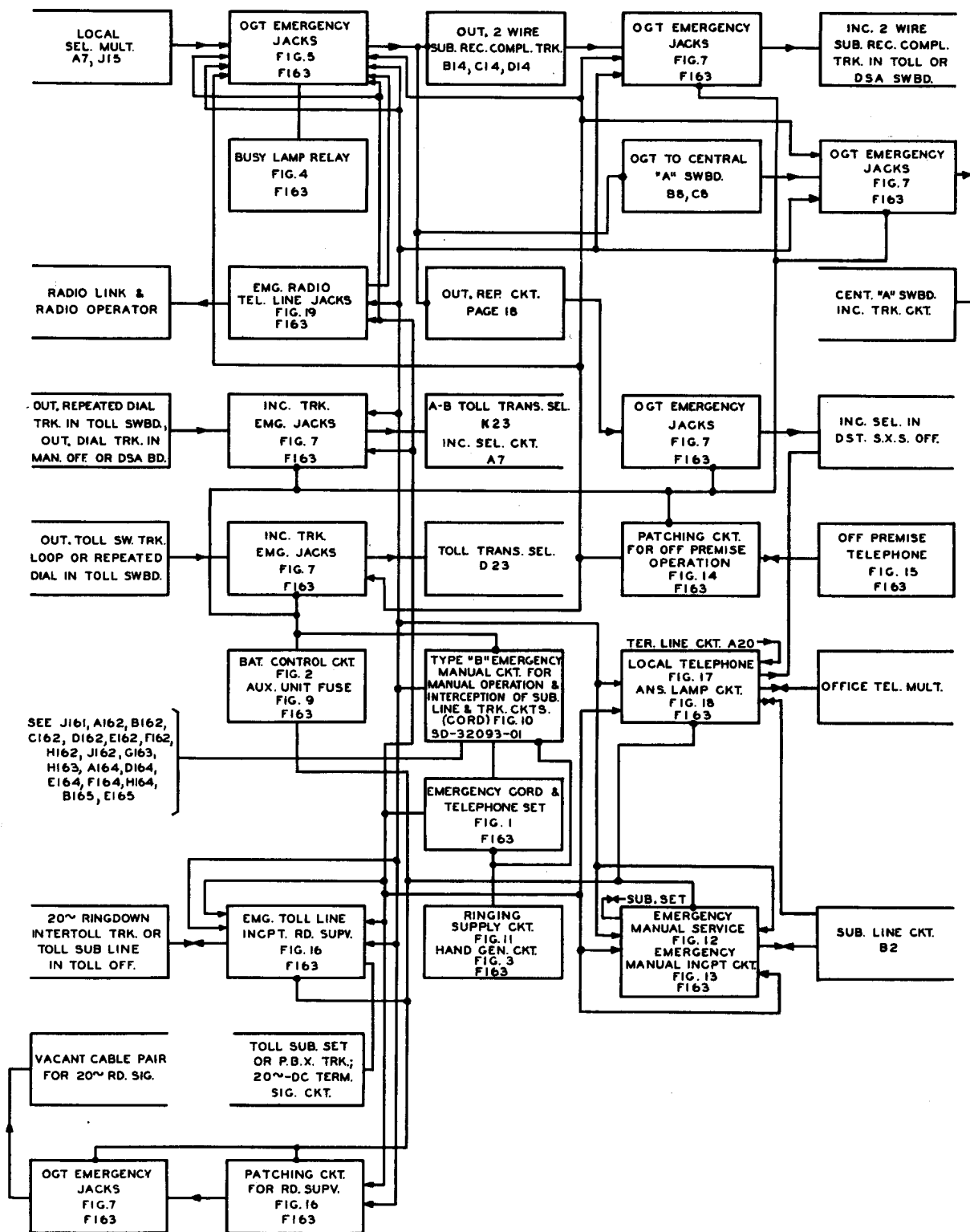
NOTES:

1. CONNECTION "X" MAY BE PROVIDED ONLY WHEN SD-31339-01 (BLOCK B152) IS NOT USED.

2. PROVIDE SD-31337-01 (BLOCK D152) WHERE INTERCEPTING OF AN INDIVIDUAL OR VACATED PARTY LINE SERVED BY T.P.S. CONNECTORS OR A PARTICULAR STATION ON A PARTY LINE SERVED BY A T.P.S. CONNECTOR IS REQUIRED.



TYPE "A" EMERGENCY-MANUAL CKT.



161

162

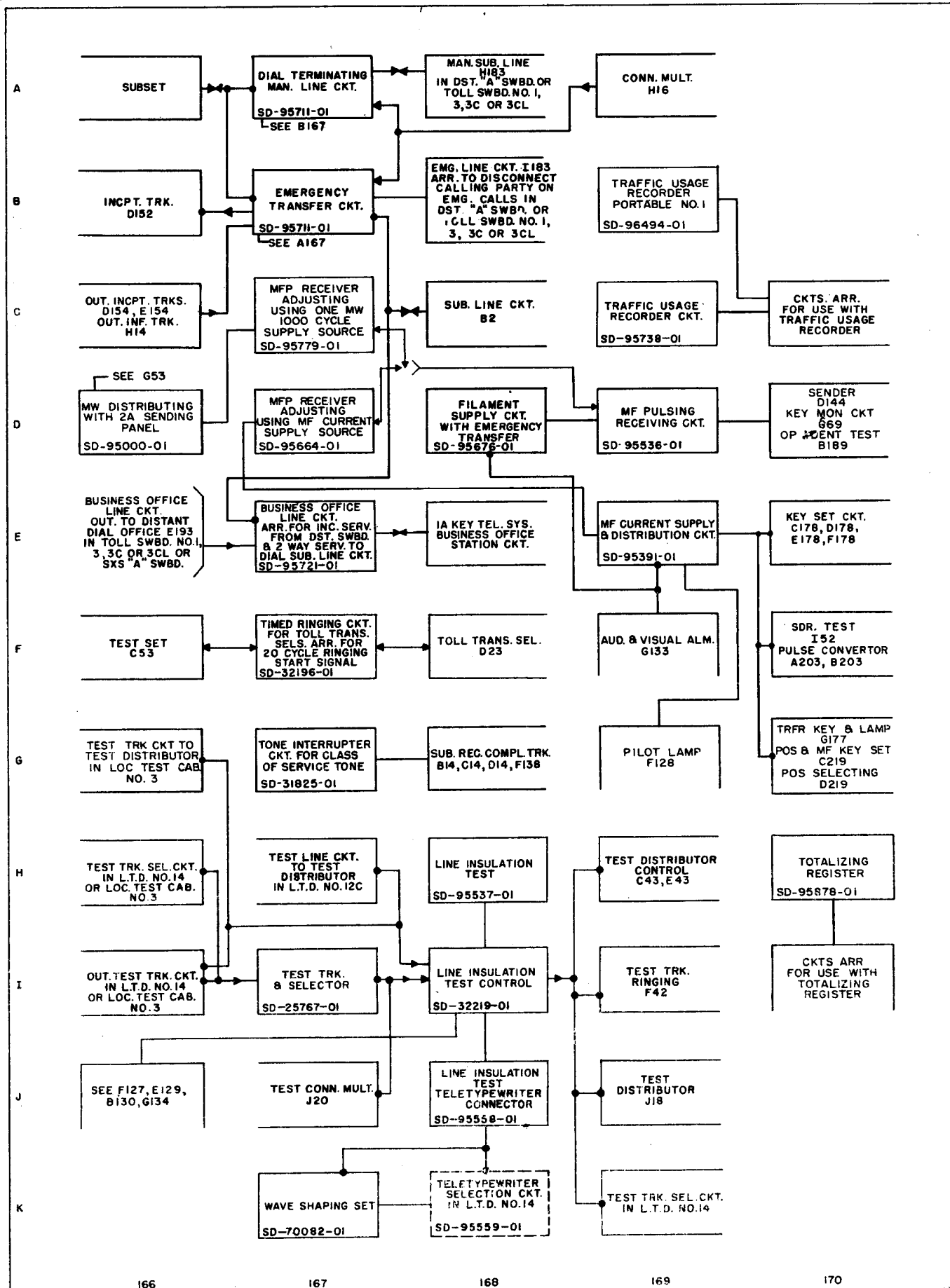
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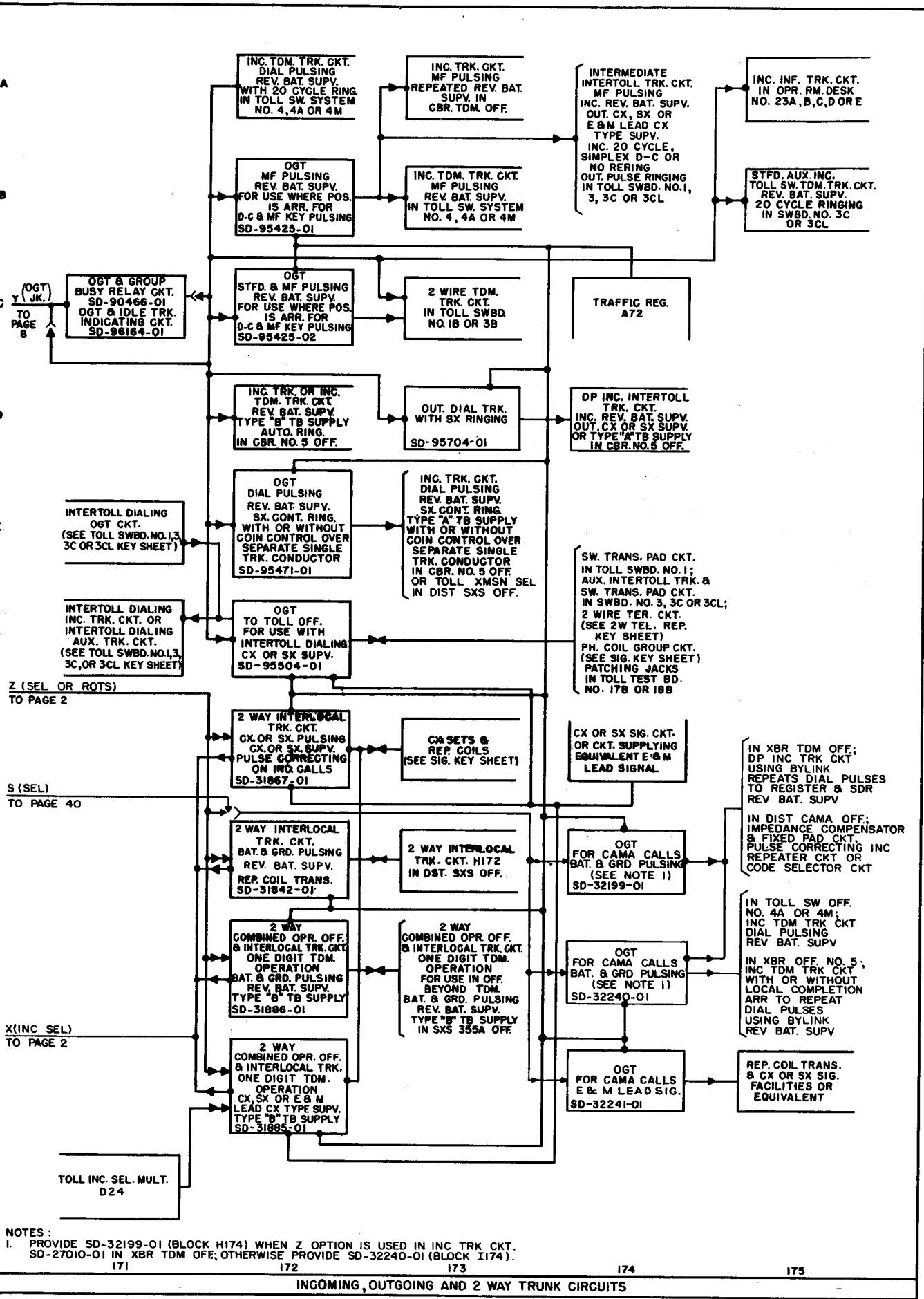
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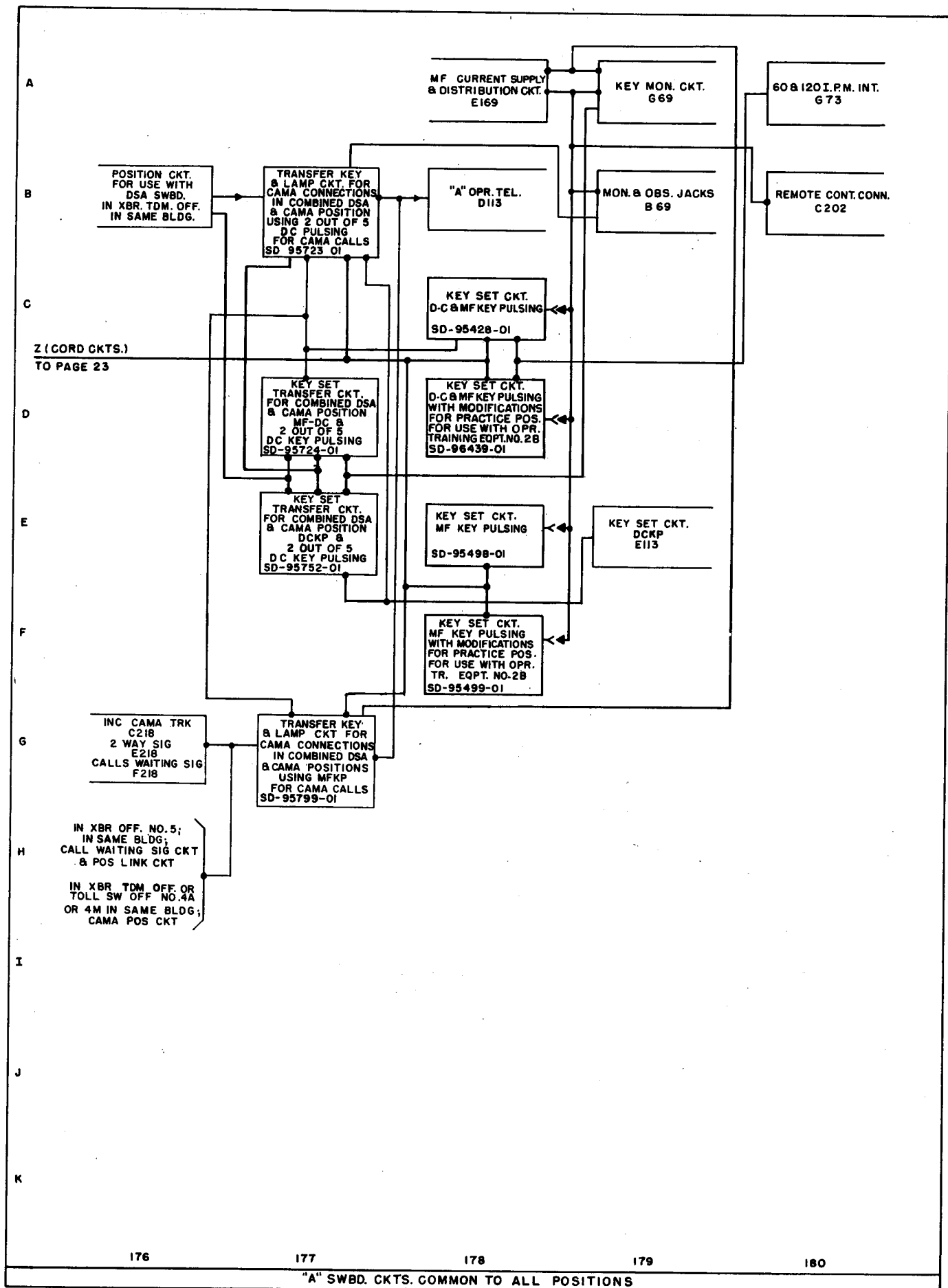
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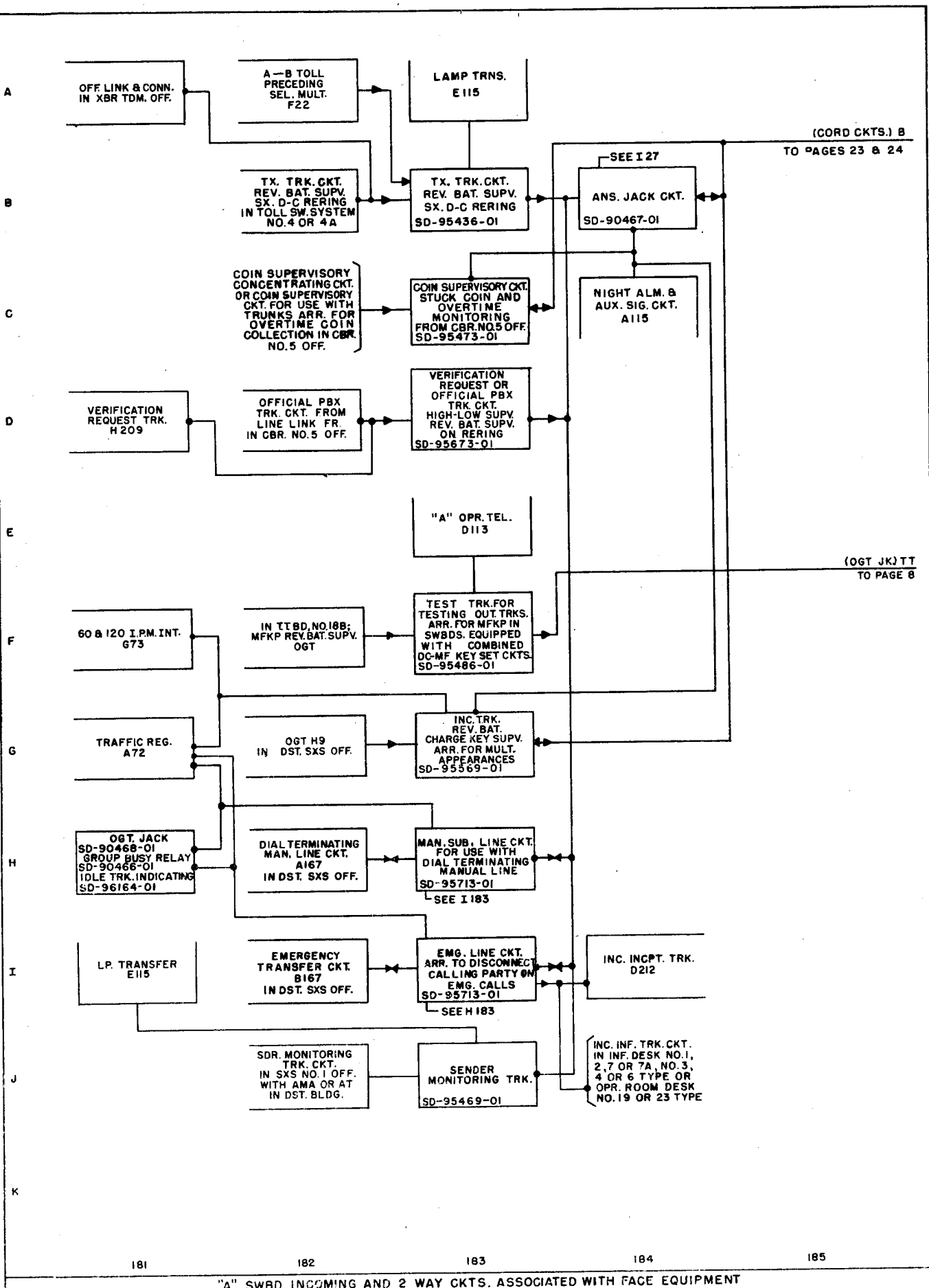
TYPE "B" EMERGENCY MANUAL CKT.

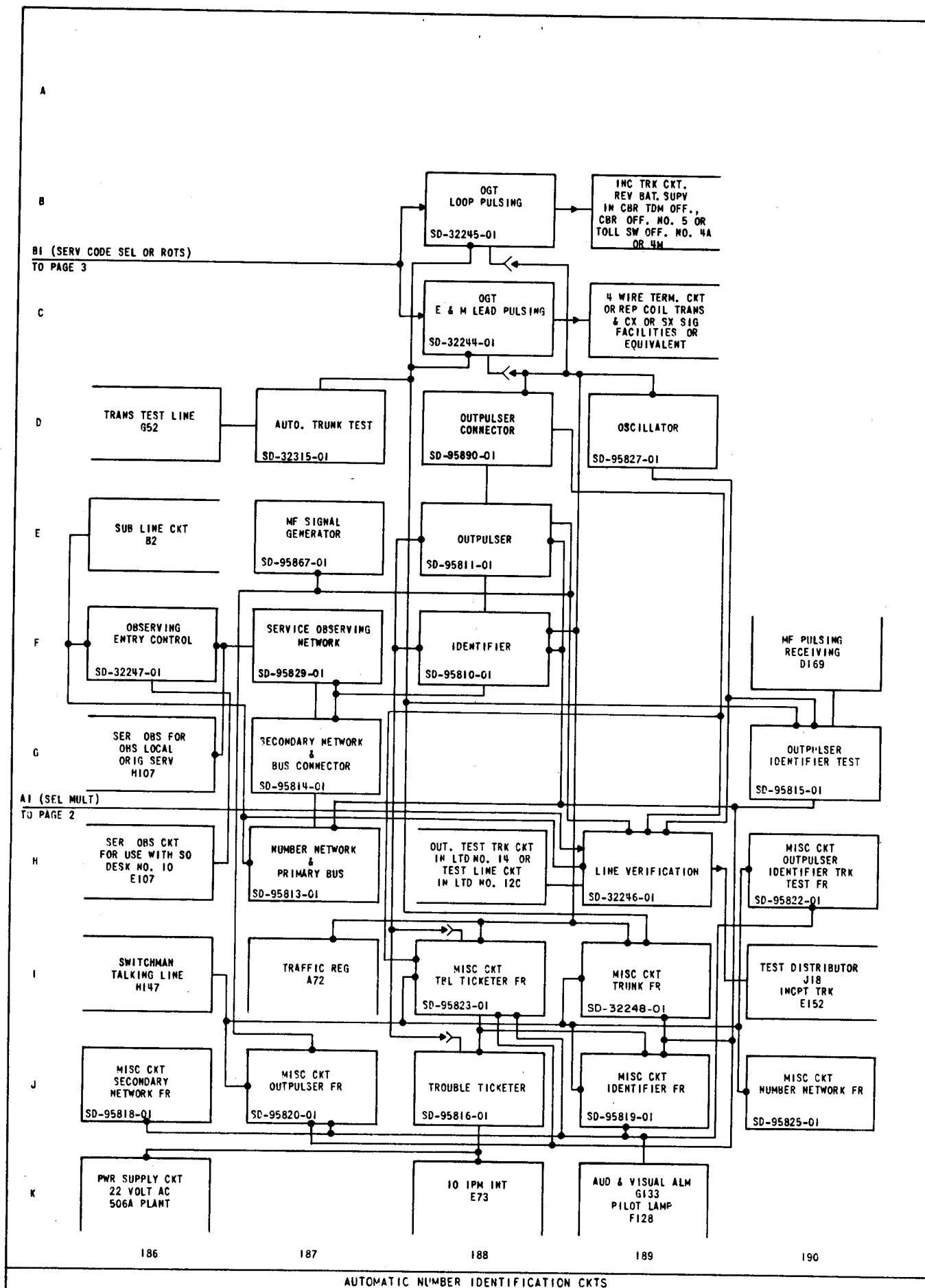
SD-31359-01 PAGE 33











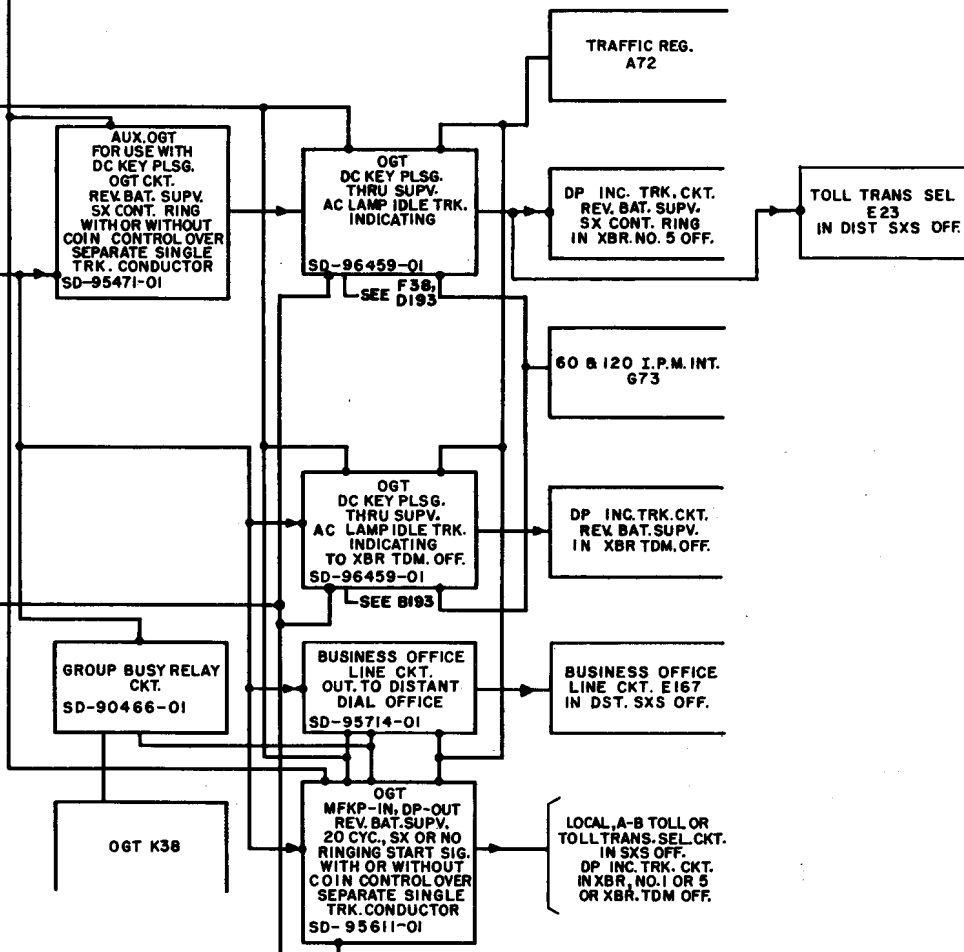
CC (TRK. COIN CKT.)
TO PAGE 5

AC (IDLE TRK. IND.)
TO PAGE 8

JK (OGT. JK.)
TO PAGE 8

C (LINK CKT.)
TO PAGE 29

A
B
C
D
E
F
G
H
I
J
K



191

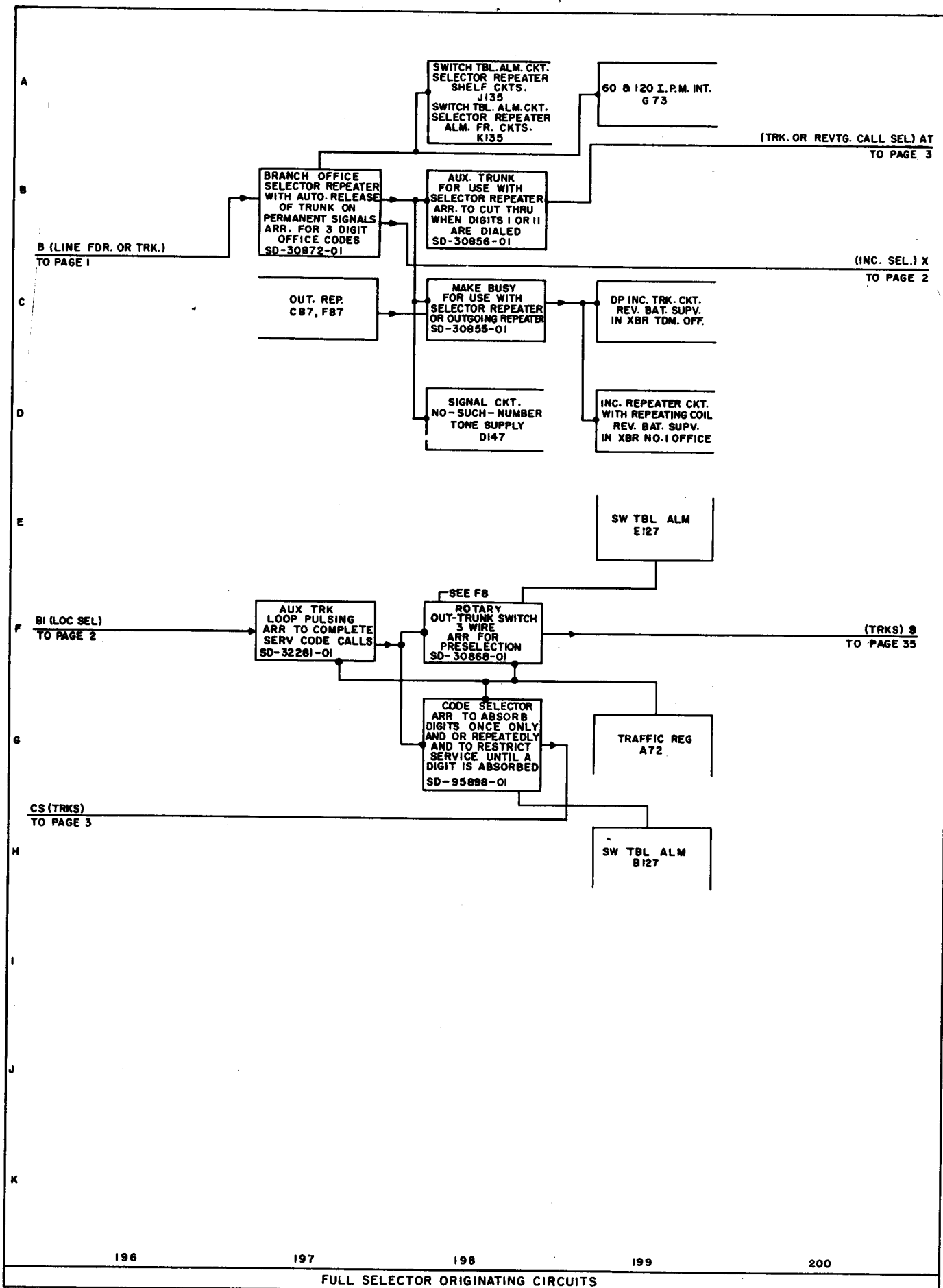
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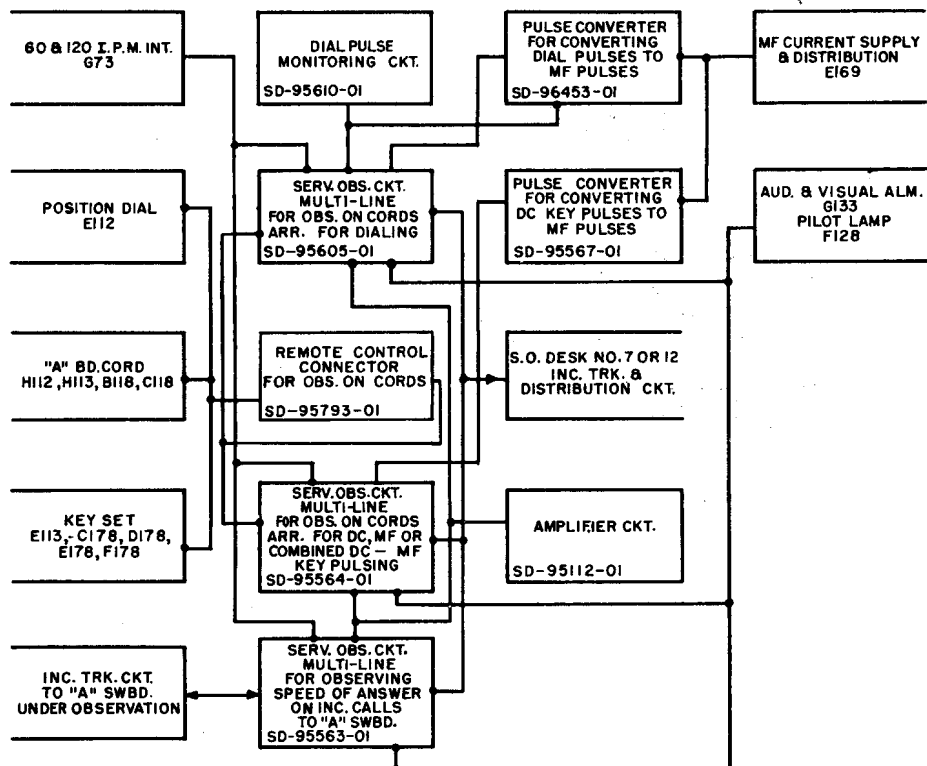
193

194

195

"A" SWBD. OUT. AND MISC. CKTS. ASSOCIATED WITH FACE EQUIPMENT





201

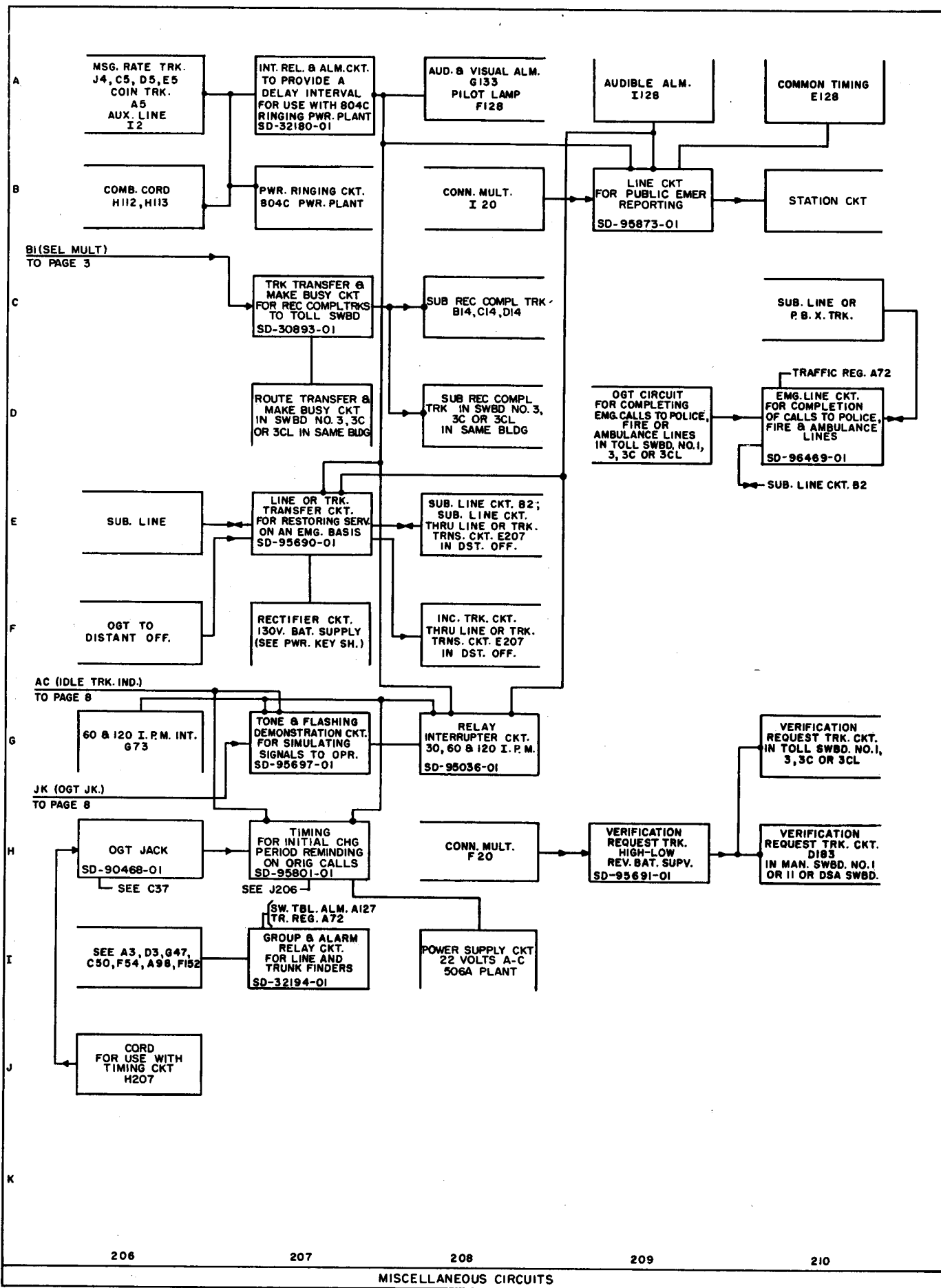
202

203

204

205

SERVICE OBSERVING CKTS.



G (ANS. JK.)
TO PAGE 6

A TEST TRK
E54

MAKE BUSY
C72

TI (TRK. FDR.)
TO PAGE 31

B T2 (OUT. INCPT. TRK.)
TO PAGE 31

C T3 (OUT. INCPT. TRK.)
TO PAGE 31

D

E

F

G

H

I

J

K

211

212

213

214

215

INTERCEPTING TRUNK AND TRUNK FINDER CIRCUITS

SD-31359-01 PAGE 43

INC. INCPT. TRK.
ARR. TO TRIP
RINGING IN TRK.
FOR USE WITH TRK.
FINDERS & INF. DESK
NO. 3, 4 OR 6 TYPE
IN SAME BLDG.
ARR. FOR USE WITH
LOCAL "A" SWBD.
SD-30817-01 C

INC. TRK. CKT.
FOR INCPT. SERV.
IN INF. DESK
NO. 3, 4 OR 6 TYPE

INC. INCPT. TRK.
FROM DST. SXS OFF.
TO INF. DESK NO. 3,
4 OR 6 TYPE
ARR. FOR USE WITH
CENT. "A" SWBD.
SD-30816-01

SEE H50
CENT. "A" SWBD.
INC. INCPT. TRK.
REGULAR & TBL.
WITH OR WITHOUT
MACHINE
ANNOUNCEMENTS
SD-95789-01

IN ANN. SYS. NO. 6A;
DISTG. & ALM. CKT.
AT DISTG. CENTER OR
DISTG. & ALM. CKT.
& CONTROL CKT.
FOR ANN. MACH.
AT CENTRAL BUREAU

LOCAL "A" SWBD.
INC. INCPT. TRK.
REGULAR & TBL.
WITH OR WITHOUT
MACHINE
ANNOUNCEMENTS
FOR USE WITH
TRK. FINDERS
IN SAME OR
DISTANT BLDG.
SD-95796-01

60 & 120 I.P.M. INT.
G73

TRAFFIC REG.
A72

EMG. LINE
I183

2 WAY
SLEEVE REP
G154
TEST TRK
E54

SERV. OBS. CKT.
F107

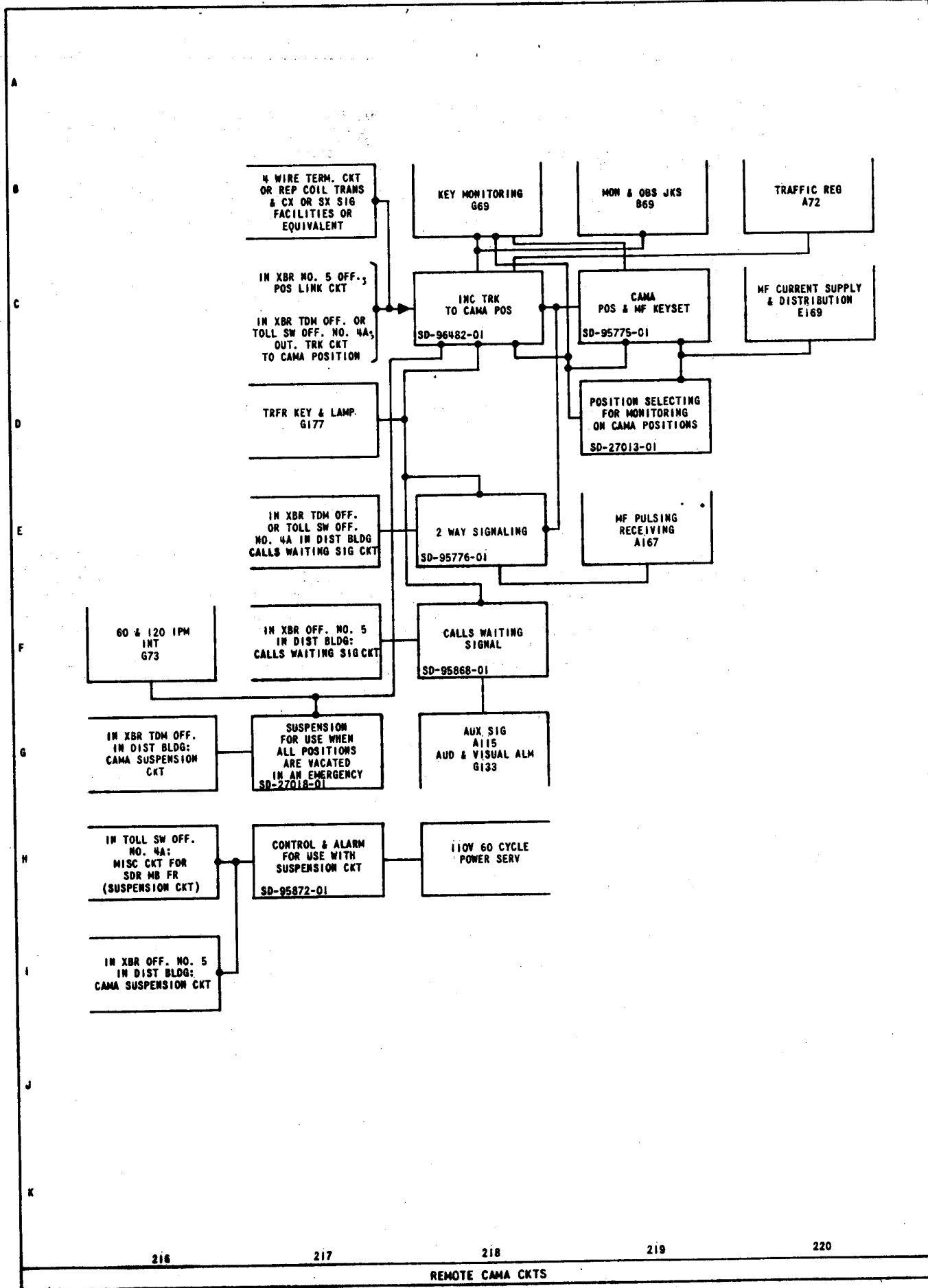
REP COIL XMSN
& CX OR SX SIG
FACILITIES OR
EQUIVALENT

SEE H50
INC. INCPT. TRK.
REGULAR OR
REGULAR & TBL.
ARR. FOR MACHINE
ANNOUNCEMENTS
E & M LEAD SUPV
SD-96488-01

INCPT. TRK.
FROM CONNECTOR
TERMINALS OR
SELECTOR LEVELS
FOR USE WITH
AN ANNOUNCEMENT
MACHINE
ANN. SYSTEM NO. 7A
SD-32202-01

2AA TEL.
ANSWERING SET

LOC. SEL. MULT.
D10
AB TOLL PRECEDING
SEL. MULT.
G24
TOLL SEL. MULT.
D25
CONN. MULT.
F20, E64



NOTES:

1. FOR LINES WHERE THERE IS NO DC PATH TO GROUND AT THE STATION.

(A) THE 935 OR 735 OHM RANGE CAN BE OBTAINED IN AC-DC, SUPERIMPOSED 42A, SUPERIMPOSED TUBE, INVERTED 42A OR A MIXTURE OF SUPERIMPOSED TUBE AND INVERTED 42A DISTRICTS. THE 885 OHM RANGE CAN BE OBTAINED ONLY IN AC-DC, SUPERIMPOSED TUBE, INVERTED 42A OR A MIXTURE OF SUPERIMPOSED TUBE AND INVERTED 42A DISTRICTS. THE 1000 OR HIGHER OHM RANGE CAN BE OBTAINED ONLY IN AC-DC OR SUPERIMPOSED TUBE DISTRICTS. FOR RANGES EXCEEDING 635 OHMS IT IS ASSUMED THAT THE INFORMATION SHOWN ON THE DRAWINGS FOR EXTENDED RANGES ARE EMPLOYED.

(B) VALUES IN THE FOLLOWING TABLES ARE SHOWN IN TERMS OF CONDUCTOR LOOP BETWEEN THE CENTRAL OFFICE LINE CKT. AND THE STATION RESISTANCE. A MAXIMUM OF 115 OHMS IS ALLOWED IN THE STATION RESISTANCE IN CONDUCTOR LOOPS UP TO 1000 OHMS. WHERE EXTERNAL CKT. RESISTANCE IS IN EXCESS OF 1115 OHMS (1000 OHM CONDUCTOR LOOP + 115 OHMS STATION RES.), THE ADDITIONAL EXTERNAL CKT. RESISTANCE OVER 1115 OHMS IS CONSIDERED AS A PART OF THE STATION RESISTANCE UP TO 200 OHMS STATION RESISTANCE. AFTER THE STATION RES. HAS REACHED 200 OHMS, FURTHER INCREASES IN THE EXTERNAL CKT. LOOP WILL BE CONSIDERED AS AVAILABLE FOR INCREASING THE CONDUCTOR LOOP.

1.1 SINGLE CENTER AREAS

THE SUBSCRIBER CONDUCTOR LOOP RANGE FOR ANY SINGLE OFFICE AREA WITH THE DIFFERENT TYPES OF DIALS AND CENTRAL OFFICE VOLTAGES OF 45-50 AND 48-50 IS AS FOLLOWS: IT IS ASSUMED THAT LEAK "B" IS USED WITH THE 1000 OHM LOOP PULSING TEST AND LEAK "A" WITH THE 1200 AND 1400 OHM LOOP PULSING TESTS AND THAT A SWITCH WILL REQUIRE A 248 TYPE OR THE EQUIVALENT, OR A 222 TYPE MODIFIED WITH A 1:1 RATIO ARMATURE "B" FUNCTIONAL RELAY FOR THE 1400 OHM LOOP PULSING TEST.

LOOP TEST (OHMS)	CENT. OFF. VOLTAGE	SUB. CONDUCTOR LOOP (OHMS)		
		5 OR EARLIER TYPE DIAL	6-TYPE DIAL	7-TYPE DIAL
1000	45-50	635	1000	900
1000	48-50	735	1300	1200
1200	45-50	735	1200	1100
1200	48-50	885	1300	1300
1400	45-50	885	1200	1200
1400	48-50	1000	1300	1300

1.2 MULTI-CENTER AREAS

THE SUBSCRIBER CONDUCTOR LOOP RANGE FOR ANY OFFICE IN A MULTI-OFFICE AREA IS DETERMINED BY THE TYPE OF DIAL USED, THE PULSING TESTS USED FOR MAINTENANCE IN ALL OFFICES REACHED WITHOUT USING PULSE CORRECTING REPEATERS, THE TYPES OF OUTGOING REPEATERS, THE CENTRAL OFFICE BATTERY REGULATION AND IN SOME CASES THE EARTH POTENTIAL BETWEEN OFFICES. THE TABLES FOLLOWING SHOW THE SUB. CONDUCTOR LOOP RANGES OBTAINABLE IN THE ORIGINATING OFFICE WITH 5 OR EARLIER TYPE, 6 OR 7-TYPE DIALS FOR VARIOUS COMBINATIONS OF LOOP TESTS, BATTERY VOLTAGES, AND REPEATERS IN THE ORIGINATING AND TERMINATING OFFICE. IN THE TABLES IT IS ASSUMED LEAK "B" IS USED WITH THE 1000 OHM LOOP PULSING TEST AND LEAK "A" WITH THE 1200 OR 1400 OHM LOOP PULSING TESTS AND THAT A SWITCH WILL REQUIRE A 248 TYPE OR THE EQUIVALENT, OR A 222 TYPE MODIFIED WITH A 1:1 RATIO ARMATURE "B" FUNCTIONAL RELAY FOR THE 1400 OHM LOOP PULSING TEST.

1.21 45 VOLTS IN ORIGINATING OFFICE WITH OUTGOING REPEATERS ADJUSTED TO 44 TO 80 OR 45 TO 80 PER CENT BREAK, AND EARTH POTENTIAL WITH RESPECT TO THE TERMINATING OFF. NOT EXCEEDING + 20, -8 VOLTS FOR REPEATERS OF THE BATTERY AND GROUND PULSING TYPE.

ORG. OFF. LOOP TEST (OHMS)	TERMINATING OFF.		ORG. SUB. CONDUCTOR LOOP (OHMS)			SEE NOTE
	LOOP TEST (OHMS)	CENT. OFF. VOLTAGE	5 OR EARLIER TYPE DIAL	6-TYPE DIAL	7-TYPE DIAL	
1000	1000	45-50	635	1000	900	2,3
	1200	OR				
	OR	48-50				
	1400					
1200	1000	45-50	635	1100	900	2,3
	1000	48-50	735	1200	1100	
	1200	45-50	735	1200	1100	3
	OR	OR				
1400	1400	48-50				2,3
	1000	45-50	635	1100	900	
	1200	45-50	735	1200	1100	
	1000	48-50	735	1200	1200	
	1200	48-50	885	1200	1200	
	1400	45-50	885	1200	1200	
	OR	48-50				

NOTES (CONT.)

1.22 48 VOLTS IN ORIGINATING OFFICE WITH OUTGOING REPEATERS ADJUSTED TO 48 TO 80 OR 45 TO 80 PER CENT BREAK, AND EARTH POTENTIAL WITH RESPECT TO THE TERMINATING OFFICE NOT EXCEEDING + 20, -8 VOLTS FOR REPEATERS OF THE BATTERY AND GROUND PULSING TYPE.

ORG. OFF. LOOP TEST (OHMS)	TERMINATING OFF.		ORG. SUB. CONDUCTOR LOOP (OHMS)			SEE NOTE
	LOOP TEST (OHMS)	CENT. OFF. VOLTAGE	5 OR EARLIER TYPE DIAL	6-TYPE DIAL	7-TYPE DIAL	
1000	1000	45-50	635	1000	900	2
	1200	45-50	735	1300	1100	
	1400	45-50	735	1300	1200	
	1000	48-50	735	1300	1200	
	1200	OR				
	1400					
1200	1000	45-50	635	1100	900	2
	1200	45-50	735	1300	1100	
	1000	48-50	735	1300	1200	
	1400	45-50	885	1300	1300	
	1200	48-50	885	1300	1300	
	1400	OR				
1400	1000	45-50	635	1100	900	2
	1200	45-50	735	1300	1100	
	1000	48-50	735	1300	1200	
	1200	48-50	885	1300	1300	
	1400	45-50	885	1300	1300	
	1400	48-50	1000	1300	1300	

1.23 45 VOLTS IN ORIGINATING OFFICE WITH BATTERY AND GROUND PULSING TYPE OUTGOING REPEATERS ADJUSTED TO 48 TO 78 PER CENT BREAK AND EARTH POTENTIAL WITH RESPECT TO THE TERMINATING OFFICE NOT EXCEEDING + 20, -6 VOLTS. WHEN THE REPEATERS ARE REQUIRED TO OPERATE WITH HIGHER EARTH POTENTIALS NOT EXCEEDING ± 20 VOLTS, THE SUB. LOOP RANGE VALUES ARE THE SAME AS SHOWN IN NOTE 1.21.

ORG. OFF. LOOP TEST (OHMS)	TERMINATING OFF.		ORG. SUB. CONDUCTOR LOOP (OHMS)			SEE NOTE
	LOOP TEST (OHMS)	CENT. OFF. VOLTAGE	5 OR EARLIER TYPE DIAL	6-TYPE DIAL	7-TYPE DIAL	
1000	1000	45-50	635	1000	900	2,3
	1200	OR				
	OR	48-50				
	1400					
1200	1000	45-50	735	1200	1100	3
	1200	OR				
	OR	48-50				
	1400					
1400	1000	45-50	735	1200	1100	3
	1000	48-50	885	1200	1200	
	1200	45-50	885	1200	1200	
	OR	OR				
	1400	48-50				

NOTES (CONT.)

- 1.24 48 VOLTS IN ORIGINATING OFFICE WITH BATTERY AND GROUND PULSING TYPE OUTGOING REPEATERS ADJUSTED TO 48 TO 78 PER CENT BREAK AND EARTH POTENTIAL WITH RESPECT TO THE TERMINATING OFFICE NOT EXCEEDING +20, -6 VOLTS. WHEN THE REPEATERS ARE REQUIRED TO OPERATE WITH HIGHER EARTH POTENTIALS NOT EXCEEDING ± 20 VOLTS, THE SUBSCRIBER LOOP RANGE VALUES ARE THE SAME AS SHOWN IN NOTE 1.22.

ORG. OFF. LOOP TEST (OHMS)	TERMINATING OFF.		ORG. SUB. CONDUCTOR LOOP (OHMS)		
	LOOP TEST (OHMS)	CENT. OFF. VOLTAGE	5 OR EARLIER TYPE DIAL	6-TYPE DIAL	7-TYPE DIAL
1000	1000	45-50	735	1300	1100
	1000	48-50	735	1300	1200
	1200	45-50	735	1300	1200
	OR	OR			
	1400	48-50			
1200	1000	45-50	735	1300	1100
	1000	48-50	885	1300	1300
	1200	45-50	885	1300	1300
	OR	OR			
	1400	48-50			
1400	1000	45-50	735	1300	1100
	1000	48-50	885	1300	1300
	1200	45-50	885	1300	1300
	1400	45-50	1000	1300	1300
	1200	48-50	1000	1300	1300
	OR				
	1400				

1.25 PULSE CORRECTING REPEATERS

IF THE OUTGOING REPEATER IS A PULSE CORRECTING TYPE OR IF AN INCOMING REPEATER OF THE PULSE CORRECTING TYPE IS USED AT THE TERMINATING OFFICE, THE ORIGINATING SUBSCRIBER PULSING LOOP RANGES ARE THE SAME AS THOSE LISTED IN NOTE 1.1 FOR SINGLE CENTER AREAS.

2. A SWITCH WHICH JUST PASSES THE 1000 OHM LOOP MAY FAIL AT 45 VOLTS ON 635 OHM LOOPS, WHEN USING A 5 OR EARLIER TYPE DIAL.
3. RANGES SHOWN FOR 45-50 VOLTS IN BOTH ORIGINATING AND TERMINATING OFFICES ARE BASED ON THE ASSUMPTION THAT IF THE VOLTAGE DROPS TO 45 VOLTS IN ONE OFFICE, THE VOLTAGE IN THE OTHER OFFICE WILL BE 48-50 VOLTS AT THE EQUIPMENT.
4. FOR LINES HAVING A DC PATH TO GROUND AT THE STATION

4.1 COIN AND 2 PARTY LINES

VALUES ARE SHOWN IN TERMS OF CONDUCTOR LOOP BETWEEN THE CENTRAL OFFICE LINE CKT. AND THE STATION RESISTANCE ALLOWING FOR A MAXIMUM OF 115 OHMS IN ALL CASES EXCEPT FOR THE 191 COIN COLLECTOR, FOR WHICH A MAXIMUM OF 215 OHMS IS ALLOWED.

4.11 DIAL COIN LINES IN A 635 OHM RANGE OFFICE

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED -10V. AND +12 V. THE CONDUCTOR LOOP SHALL NOT EXCEED THE VALUE OBTAINED FROM THE FOLLOWING FORMULA AND IN NO CASE SHALL THIS VALUE EXCEED 635 OHMS. THE VALUE 1865 ASSUMES THE USE OF THE 12L OR 13L RESISTANCE LAMPS IN THE COIN CONTROL CIRCUITS. WHERE THE 12E OR 13E RESISTANCE LAMPS ARE USED IN THE COIN CONTROL CKTS. USE THE VALUE 2065 INSTEAD OF 1865.

$$\text{CONDUCTOR LOOP (OHMS)} = 28 (V-E.P.) - 1865$$

WHERE V = COIN CONTROL VOLTAGE
E.P. = + OR - EARTH POTENTIAL

4.12 DIAL COIN LINES IN A 735 OHM RANGE OFFICE

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED ± 10 VOLTS. THE CENTRAL OFFICE VOLTAGE LIMITS SHALL BE 47.5 TO 50 VOLTS. THE CONDUCTOR LOOP SHALL BE OBTAINED FROM THE FORMULA IN NOTE 4.11 AND IN NO CASE SHALL THIS VALUE EXCEED 735 OHMS.

4.13 DIAL COIN LINES IN A 885, 1000 OR OVER 1000 OHM RANGE OFFICE

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED ± 6 VOLTS. THE CENTRAL OFFICE VOLTAGE LIMITS SHALL BE 47.5 TO 50 VOLTS. THE CONDUCTOR LOOP SHALL BE OBTAINED FROM THE FORMULA IN NOTE 4.11 AND IN NO CASE SHALL THIS VALUE EXCEED 885 OHMS.

4.14 MANUAL COIN LINES

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED ± 20 VOLTS. THE CONDUCTOR LOOP SHALL BE OBTAINED FROM THE FORMULA IN NOTE 4.11 BUT IN NO CASE SHALL THIS VALUE EXCEED THE VALUE BELOW FOR THE TYPE OF DISTRICT AND OHM RANGE OFFICE.

TYPE OF DISTRICT	CONDUCTOR LOOP (OHMS)	OHM RANGE OFFICE
SUP. 42A	785	635 OR 735
AC-DC	915	635, 735 OR 885
INVERTED 42A & TUBE	925	635, 735 OR 885
AC-DC OR TUBE	1000	1000
AC-DC OR TUBE	1200	1200
AC-DC OR TUBE	1300	1300

NOTES (CONT)

4.15 2 PARTY MESSAGE RATE LINES

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED +6, -16 VOLTS. THE CONDUCTOR LOOP (OHMS) WITH THE DIFFERENT LINE RELAYS AND CENTRAL OFFICE VOLTAGES OF 45-50 AND 48-50 VOLTS IS AS FOLLOWS: IN NO CASE SHALL THE VALUE EXCEED THE OHM RANGE OFFICE.

R013, R1316 AND R1885 LINE RELAYS			
45V		48V	
EARTH POTENTIAL		EARTH POTENTIAL	
0	+6	0	+6
1135	1100	1260	1200

EAS LINE RELAY			
45V		48V	
EARTH POTENTIAL		EARTH POTENTIAL	
0	+6	0	+6
1060	1000	1175	1100

4.16 2 PARTY FLAT RATE FOR AUTOMATIC TICKETING

THE EARTH POTENTIAL LIMITS SHALL NOT EXCEED +6, -20 VOLTS. THE CONDUCTOR LOOP (OHMS) WITH THE DIFFERENT LINE RELAYS AND CENTRAL OFFICE VOLTAGES OF 45-50 AND 48-50 VOLTS IS AS FOLLOWS: IN NO CASE SHALL THE VALUE EXCEED THE OHM RANGE OFFICE.

	R013, R1316 AND R1885 LINE RELAYS			
	45V		48V	
TYPE TELEPHONE SET	EARTH POTENTIAL		EARTH POTENTIAL	
	0	+6	0	+6
500	1200	1180	1300	1300
OTHER THAN 500	1200	1200	1300	1300

	EAS LINE RELAY			
	45V		48V	
TYPE TELEPHONE SET	EARTH POTENTIAL		EARTH POTENTIAL	
	0	+6	0	+6
500	1180	1140	1300	1270
OTHER THAN 500	1200	1180	1300	1300

5.

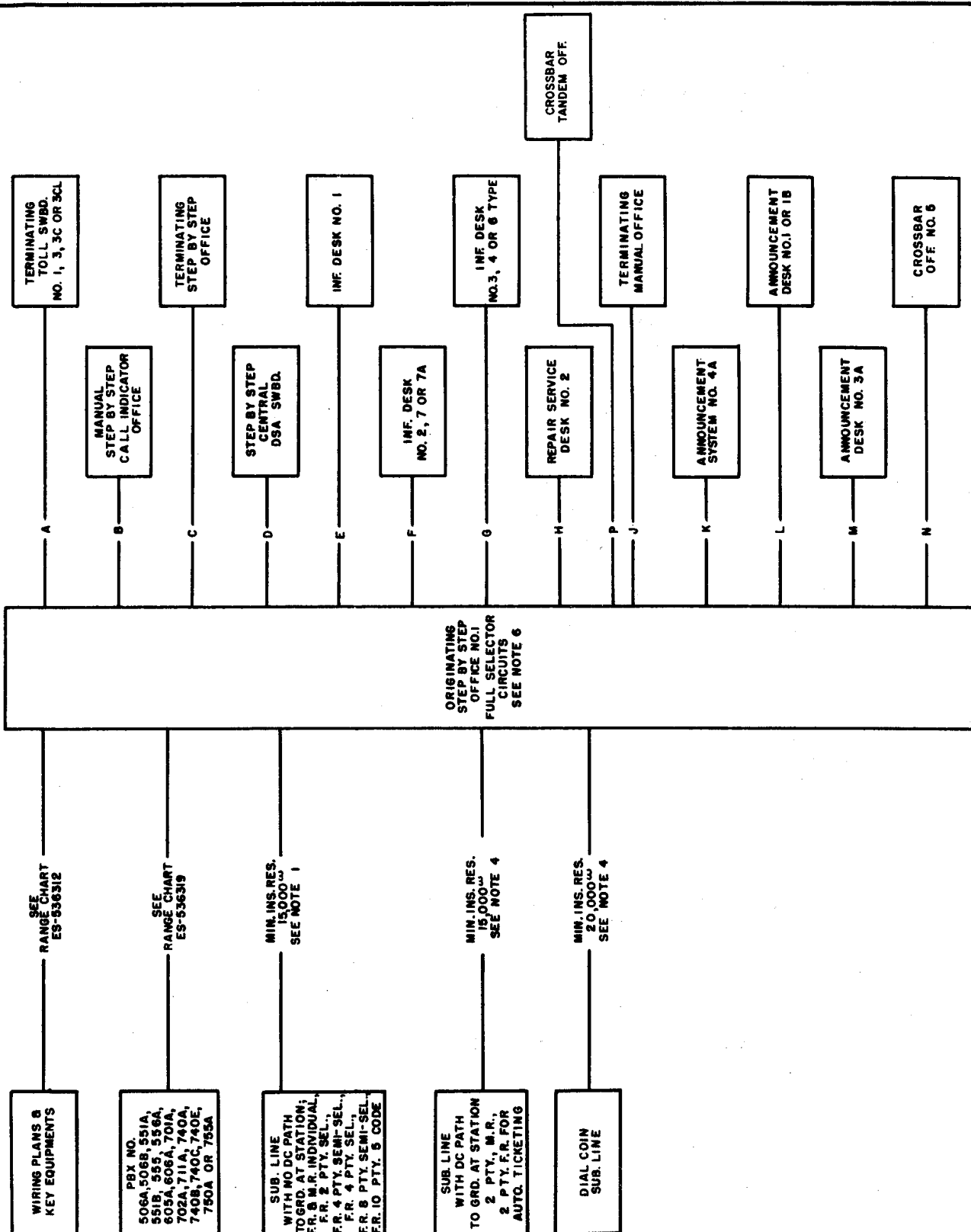
6. ALL INTEROFFICE CONDUCTOR LOOP VALUES SHOWN ON THE RANGE CHART INCLUDE THE RESISTANCE OF THE OUTSIDE CABLING, THE CENTRAL OFFICE WIRING AND THE HEAT COILS. THE RESISTANCE OF THE CENTRAL OFFICE APPARATUS IS NOT INCLUDED. WHERE DIFFERENT CODED REP. COILS ARE IN A CKT, THE REP COIL WITH THE HIGHEST WINDING RES VALUES WAS CHOSEN IN ESTIMATING THE RANGE: USE OF REP COIL WITH LOWER WDG RES VALUES INCREASES THE ESTIMATED RANGE BY THE DIFFERENCE IN THE RES VALUES.

7. WHERE THE ENTIRE LENGTH OF THE CABLE IS 19 GAUGE, THE MAX MILES OF CABLE IS 22: IN ALL OTHER CASES THE MAX MILES OF CABLE IS 24.

8. THE CONDUCTOR LOOP SHALL NOT EXCEED THE VALUE BELOW FOR THE TYPE OF DISTRICT AND OHM RANGE OFFICE.

TYPE OF DISTRICT	CONDUCTOR LOOP(OHMS)	OHM RANGE OFFICE
SUP 42A	785	635 OR 735
AC-DC	915	635, 735 OR 885
INVERTED 42A & TUBE	925	635, 735 OR 835
AC-DC OR TUBE	1000	1000
AC-DC OR TUBE	1200	1200
AC-DC OR TUBE	1300	1300

9. THIS RANGE SHALL NOT INCLUDE MORE THAN 30 MILES OF CABLE.

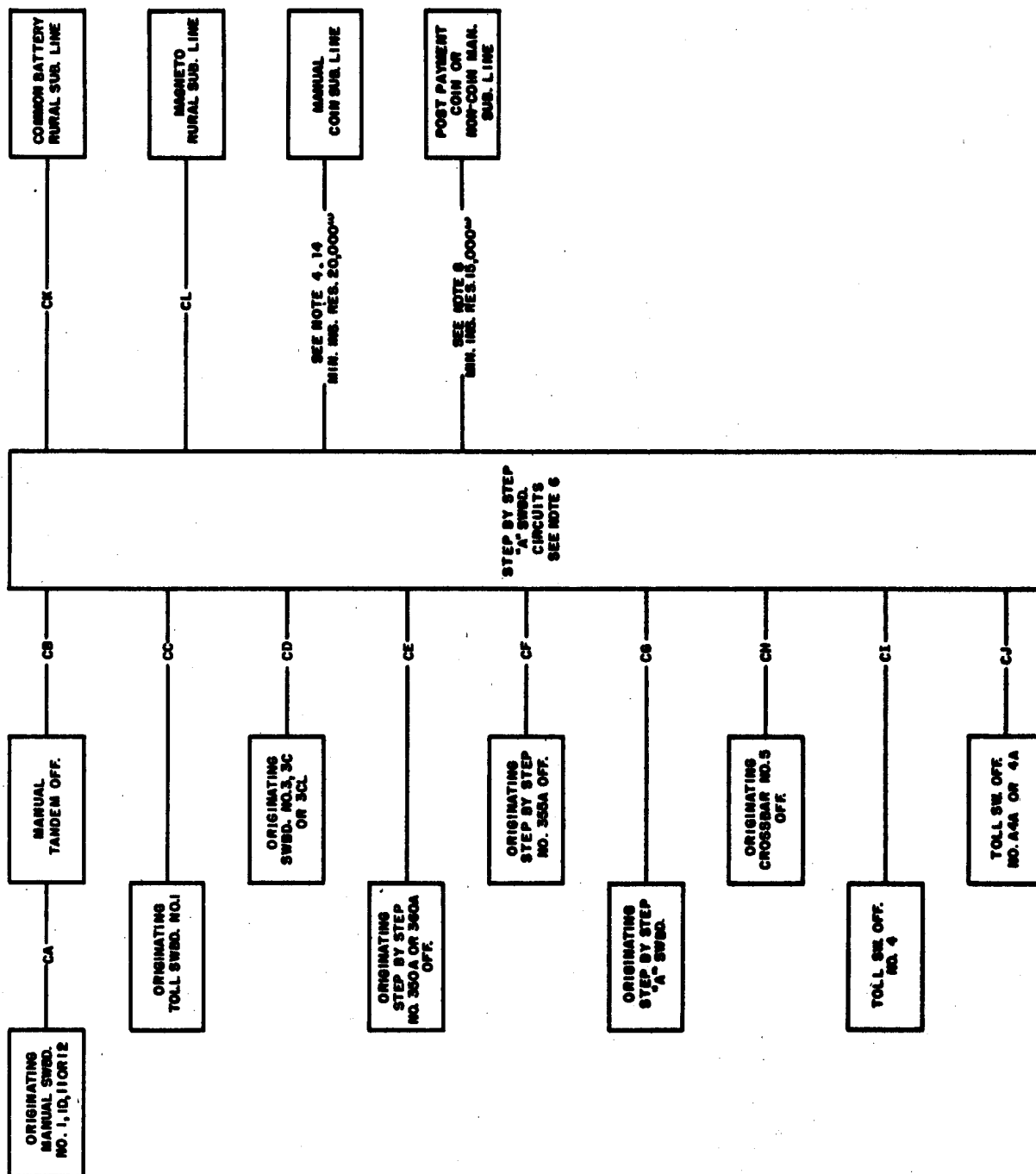


RANGE CHART

LOOP DESIG.	SXS NO. I OFF. CKT.	SD- DWG. NO.	OHMS MAX. EXT. CKT. LOOP			OHMS MAX. CONDUCTOR LOOP			OHMS MIN. INS. RES.	SEE NOTE	REMARKS
			PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.			
A	SUB. REC. COMPL. TRK., COIN	32168-01		2475			2315	2500	30,000		DST. OFF. RING. VOLTAGE SHALL BE MIN. 95V. IN SERIES WITH 13 TYPE RES. LAMP
	SUB. REC. COMPL. TRK., NON-COIN WITH RECALL	32136-01		3050			2890	2500	30,000		DST. OFF. RING. VOLTAGE SHALL BE MIN. 95V. IN SERIES WITH 13 TYPE RES. LAMP
	SUB. REC. COMPL. TRK., NON-COIN WITHOUT RECALL	31925-01		5500			3410		30,000		
	OUT. INCPT. TRK.	31965-01		3550			3000		30,000		40-56V. AT DST. OFF.
B	OUT. REP. BAT. & GRD. PLSG., LOOP SUPV.	31779-01		2560			2000	1840	30,000		45-50V. AT DST. OFF.
	OUT. REP. BAT. & GRD. PLSG., BAT. & GRD. SUPV.	31147-01					2400	2400	30,000		45-50V. AT DST. OFF.
C	OUT. REP. BAT. & GRD. PLSG. LOOP SUPV., CONDENSER TRANS.	31779-01		2560			2000	1985	30,000		
	OUT. REP. BAT. & GRD. PLSG., BAT. & GRD. SUPV.	31147-01					2400	2400	30,000		
	OUT. REP. PULSE CORRECTOR	32184-01	5000	6800			5000	5000		9	DIAL SPEED 8-11 P.P.S.
	OUT. REP. BAT. & GRD. PLSG., LOOP SUPV., REP. COIL TRANS.	32008-01		2530			2000	1900	30,000		
D	OUT. SPL. SERV. TRK., COIN	31315-01		3600			3000		30,000		40-56V. AT DST. OFF.
	OUT. SPL. SERV. TRK., NON-COIN	31375-01		3550			3000		30,000		40-56V. AT DST. OFF.
	OUT. INCPT. TRK.	31965-01		3550			3000		30,000		40-56V. AT DST. OFF.
	OUT. TRK. TO RURAL OPR.	31540-01		3550			3000		30,000		40-56V. AT DST. OFF.
	OUT. REP. SERV. TRK.	32178-01		4650			3000		30,000		
E	OUT. INF. TRK.	32170-01		3500			1850		30,000		
F	OUT. INF. TRK.	32170-01		3500			2550		30,000		
G	OUT. INF. TRK.	32170-01		3500			2200		30,000		
H	OUT. REP. SERV. TRK.	32178-01		4650			2900		30,000		(B) REL. LIMIT
				4990			2855		30,000		(MB) REL. LIMIT
J	OGT TO MAN. SWBD. NO. I, IC, ID OR II ARR. TO CHARGE SUB.	32167-01		4125			3245		30,000		
	OGT TO MAN. SWBD. NO. I, IC, ID OR II NOT ARR. TO CHARGE SUB.	31692-01		NONE			3300				RETARDATION COIL ONLY USED
	OGT TO SWBD. NO. 12 ARR. TO CHARGE SUB. - CONDENSER TRANS.	32167-01		4125			2235		30,000		
	OGT TO SWBD. NO. 12 ARR. TO CHARGE SUB. - REP. COIL TRANS.	32167-01		4125			2190		30,000		
K	OUT. ANNOUNCEMENT TRK. - ANN. SYS. DWG. SD-95546-01	30895-01		4450 EACH PAIR			3785 EACH PAIR		30,000		LIMITS APPLY TO SD-95546-01
L	OUT. ANNOUNCEMENT TRK. - ANN. DESK DWG. SD-90260-01	31362-01		6700			4580		30,000		LIMITS APPLY TO SD-90260-01
M	OUT. REP. BAT. & GRD. PLSG., LOOP SUPV. - ANN. DESK IN DST. OFF.	31779-01		2560			1935		30,000		
	SEL. - ANN. DESK DWGS. SD-96268-01 & SD-96249-01 IN SAME BLDG.	30200-01		4450			3265		30,000		LIMITS APPLY TO SD-96249-01
N	OUT. REP. BAT. & GRD. PLSG., LOOP SUPV.	31779-01		2560			2000	2120	30,000		
		32008-01		2530			2000	2090	30,000		
	OUT. REP. BAT. & GRD. PLSG., BAT. & GRD. SUPV.	31147-01					2400	2400	30,000		
	OUT. REP. BAT. & GRD. PLSG., LONG RANGE REV. BAT. SUPV.	32087-01		8000			4200	4125	30,000	7	
P	OUT. REP	31779-01									RANGES ARE SHOWN ON SD-25435-01 XBR TDM OFF. KEY SHEET
		32008-01									
	SEL REP & TRK MB	30872-01									
		30855-01									
	OUT. TRK	32199-01									
		32240-01									
		32241-01									

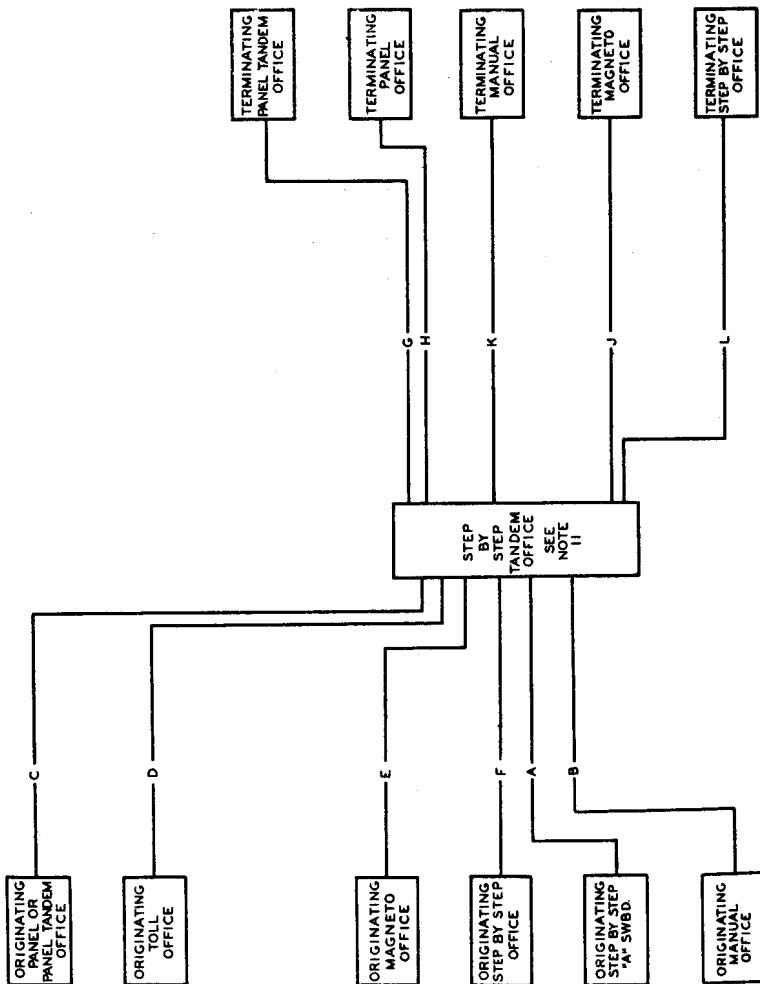
RANGE CHART TABLE

LOOP DESIG.	SXS NO. 1 OFF. CKT.		SD- DWG. NO.	OHMS. MAX. EXT. CKT. LOOP			OHMS. MAX. CONDUCTOR LOOP			MIN. INS. RES. OHMS	SEE NOTE NO.	REMARKS
				PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.			
AA	INC. LOCAL SEL.		30200-01 (TYPICAL)		2400		1200	1200		30,000		
	INC. PULSE CORRECTOR REP.		32184-01	5000			5000	5000		30,000	9	8-11 P.P.S.
AB	TOLL TRANS. SEL., WET DRY SUPV.		31745-01				1200	1200	1200	30,000		DST. OFF. RINGING VOLTAGE SHALL BE MIN. 75V. IN SERIES WITH A 13 TYPE RES. LAMP
	TOLL TRANS. SEL., REV. BAT. SUPV. WITH 221 FAE PLGG. REL.		31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLGG. REL.		31841-01				2000	2000		30,000		
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAE PLGG. REL.		31241-01 OR 31723-01		2100 OR 2200		1200	1200		30,000		2100 APPLIES TO SD-31241-01 & 2200 TO SD-31723-01
	A-B TOLL PRECEDING SEL. WITH 221 FAC OR A-B TOLL TRANS. SEL. WITH 221 FAF PLGG. REL.		31241-01 OR 31723-01		2690		2000	2000		30,000		
	TEST DISTRIBUTOR		32007-01		2750		2000	2000		30,000		
	INC. LOC. SEL.		30200-01		2400		1200	1200		30,000		
	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLGG. & LOOP SUPV. WITH REP. COIL TRANS.		30200-01 (TYPICAL)		2400		1900	1900		30,000		
AC	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLGG. WITH CONDENSER TRANS.		30200-01 (TYPICAL)		2400		1985	1985		30,000		
	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLGG. & BAT. & GRD. SUPV.		30200-01 (TYPICAL)				2400	2400		30,000		
	INC. PULSE CORRECTOR REP. FROM OUT. PULSE CORRECTOR REP.		32184-01	5000			5000	5000		30,000	9	8-11 P.P.S.
	INC. LOC. SEL. LOOP PLGG. BAT. & GRD. PLGG.		30200-01 (TYPICAL)		2400		1200	1200		30,000		
AD	INC. PULSE CORRECTOR REP.		32184-01	5000			5000	5000		30,000	9	8-11 P.P.S.
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAE PLGG. REL.		31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLGG. REL.		31841-01				2000	2000		30,000		
	INC. LOC. SEL., LOOP PLGG.		30200-01 (TYPICAL)		2400		1200	1200		30,000		
AE	INC. LOC. SEL., BAT. & GRD. PLGG.		30200-01 (TYPICAL)		2400		1910	1910		30,000		
	INC. PULSE CORRECTOR REP., LOOP PLGG.		32184-01	5000			5000	5000		30,000	9	
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAE PLGG. REL.		31241-01 OR 31723-01		2100 OR 2200		1200	1200		30,000		2100 APPLIES TO SD-31241-01 & 2200 TO SD-31723-01
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAF PLGG. REL.		31241-01 OR 31723-01		2690		2000	2000		30,000		
	TEST DISTRIBUTOR		32007-01		2750		2000	2000		30,000		
	INC. PULSE CORRECTOR REP.		32184-01	5000			5000	5000		30,000	9	8-11 P.P.S.
AF	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAE PLGG. REL.		31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLGG. REL.		31841-01				2000	2000		30,000		
	INC. LOC. SEL.		30200-01 (TYPICAL)		2400		1200	1200		30,000		
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAE PULS REL		31241-01 OR 31723-01		2100 OR 2200		1200	1200		30,000		2100 APPLIES TO SD-31241-01 & 2200 TO SD-31723-01
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAF PULS REL		31241-01 OR 31723-01		2690		2000	2000		30,000		



RANGE CHART

LOOP DESIG.	SXS NO. I OFF. CKT.	SD- DWG. NO.	OHMS MAX. EXT. CKT. LOOP			OHMS MAX. CONDUCTOR LOOP			MIN. INS. RES. OHMS	SEE NOTE NO.	REMARKS
			PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.			
CA+CB	INC. TDM. COMPL. TRK. - CONDENSER TRANS.	96413-01		6550			5310		60,000		
	INC. TDM. COMPL. TRK. - REP. COIL TRANS.	96413-01		6550			5370		60,000		
CC	CALL WIRELESS TOLL SW. CORD FOR MAGNETO RURAL LINES	90574-01		3100			1510		30,000		
	CALL WIRELESS TOLL SW. CORD FOR COMMON BAT. RURAL LINES	90476-01		2900			2655		30,000		
	INC. TRK. - 24V. SIG.	96169-01		1250			1000		30,000		
	INC. TRK. - 48V. SIG.	96169-01		3050			2600		30,000		
	INC. VERIFICATION REQUEST TRK.	31566-01		1480			1070		30,000		
CD	CALL WIRELESS TOLL SW. CORD FOR MAGNETO RURAL LINES	90574-01		3100			1510		30,000		
	CALL WIRELESS TOLL SW. CORD FOR COMMON BAT. RURAL LINES	90476-01		2900			2755		30,000		
	INC. VERIFICATION REQUEST TRK. - 24V. SIG.	31566-01		1480			1255		30,000		
	INC. VERIFICATION REQUEST - 48V. SIG.	31566-01		3000			2410		30,000		
CE	INC. TRK. FROM COMMUNITY DIAL OFF.	96283-01		4800			1975		30,000		
CF	INC. TRK. FROM COMMUNITY DIAL OFF.	96283-01		4800			4210		30,000		
CG	OPR. REC. COMPL. TRK.	96412-01		3000			1255		30,000		
CH	OFFICIAL PBX TRK.	96673-01		5150			2750		30,000		
CI	TX TRK.	96436-01		5800			3930		30,000		
CJ	TX TRK.	96436-01		5800			5225		30,000		
CK	COMMON BAT. RURAL LINE	90480-01		3100			1160		10,000		
CL	MAG. RURAL LINE - 8, 1600 OHM RINGERS WITH 3 BAR GEN.	31130-01					800		10,000		
	MAG. RURAL LINE - 20, 2500 OHM RINGERS WITH 5 BAR GEN.	31130-01					2000		10,000		
	MAG. RURAL LINE - 16, 2500 OHM RINGERS WITH 5 BAR GEN.	31130-01					2500		10,000		



TANDEM OFFICE RANGE CHART

NOTES:

1. ALL INTEROFFICE LOOP VALUES GIVEN ON THIS DRAWING INCLUDE ONLY THE INSIDE CABLE AND OFFICE WIRING. THE RANGE OF THE APPARATUS AT THE CENTRAL OFFICE IS NOT INCLUDED.
2. WHEN PULSING INTO INC. SEL. WITHOUT OUTGOING REPEATER.
- 3.
- 4.
5. WHEN THRU SUPERVISION IS PROVIDED BY THE CIRCUITS.
6. WHEN REPEATED SUPERVISION IS PROVIDED BY THE CIRCUITS.
7. WHEN PULSING INTO PULSE CORRECTING REPEATER.
- 8.
- 9.
- 10.
11. ON TANDEM OPERATION OF REPEATERS, ALL SWITCHES AND REPEATERS SHALL MEET LEAK "A" AND EITHER THE 1200 OR 1400 " LOOP PULSING TESTS.
12. WHEN BAT. TO GRD. PULSING AND LOOP SUPERVISION REPEATER IS USED IN ORIGINATING OFFICE.
13. WHEN LOOP PULSING AND LOOP SUPERVISION REPEATER IS USED IN ORIGINATING OFFICE.
14. WHEN BAT. TO GRD. PULSING AND BAT. TO GRD. SUPERVISION REPEATER IS USED IN ORIGINATING OFFICE.
15. THIS RANGE VALUE SHALL BE USED ONLY WITH NON-PULSE-CORRECTING REPEATER AT THE TANDEM OFFICE.
16. WHEN BAT. TO GRD. PULSING AND LOOP SUPERVISION REPEATER IS USED IN TANDEM OFFICE.
17. WHEN BAT. TO GRD. PULSING AND BAT. TO GRD. SUPERVISION REPEATER IS USED IN TANDEM OFFICE.
18. WHEN LOOP PULSING AND LOOP SUPERVISION REPEATER IS USED IN TANDEM OFFICE.

LOOP DESIG.	LOOP RES. NOT TO EXCEED	MIN. INS. RES.	SEZ. NOTE NO.	REMARKS
A	1200 "	30000 "	2	
A	5000 "	30000 "	7	
B	1800 "	30000 "	9	WHEN DIALING INTO INC. SEL.
B	5000 "	30000 "	7	
C	4843 "	30000 "		LOOP SIGNALING
D	1200 "	30000 "		WHEN DIALING INTO INC. SEL.
D	5000 "	30000 "	7	
E	1200 "	30000 "		WHEN DIALING INTO INC. SEL.
E	5000 "	30000 "	7	
F	1800 "	30000 "	12	WHEN PULSING INTO INC. SEL.
F	5000 "	30000 "	13	WHEN PULSING INTO INC. SEL.
F	5000 "	30000 "	7	
F	2400 "	30000 "	14,15	
G	8200 "	30000 "		CX. SIGNALING - STFD. - E.P. 62V 2
H	4480 "	30000 "	6	48V STFD. REVERSE BAT.
D+H	4800 "	30000 "	5	48V STFD. REVERSE BAT.
F+H	4800 "	30000 "	5	48V STFD. REVERSE BAT.
H	1805 "	30000 "		48V STFD. HIGH LOW
J	3000 "	30000 "		
K	8200 "	30000 "		48V CX. SIGNALING - STFD. - E.P. 62V 2
K	3000 "	30000 "		38V CX. SIGNALING - STFD. - E.P. 37V 2
K	420 "	30000 "	6	24V STFD. - REVERSE BAT.
K	5195 "	30000 "	6	38V STFD. - REVERSE BAT.
K	5760 "	30000 "	6	48V STFD. - REVERSE BAT.
K	3045 "	30000 "	5	24V STFD. - REVERSE BAT.
K	3900 "	30000 "	5	38V STFD. - REVERSE BAT.
K	4800 "	30000 "	5	48V STFD. - REVERSE BAT.
K	1505 "	30000 "		48V STFD. - HIGH LOW
L	2000 "	30000 "	16	WHEN PULSING INTO INC. SEL.
L	2400 "	30000 "	17	WHEN PULSING INTO INC. SEL.
L	1200 "	30000 "	18	WHEN PULSING INTO INC. SEL.
L	5000 "	30000 "	7	

TANDEM OFFICE RANGE CHART TABLE

SWITCH TRAINS FOR COMPLETING CALLS FROM OTHER OFFICES									
FACILITIES FOR COMPLETING CALLS	LOCATION OF TYPICAL CKTS. IN SWITCH TRAIN ON KEY SHEET	INC. TIP & RING LEADS	TRUNK NORMAL	KIND OF RING START SIGNAL	AWTG. SUB. ANS.	RECEIVER OFF HOOK	KIND OF SUPV.	TRANSMITTER BATTERY SUPPLY TYPE	SEE NOTE
LOCAL TRAIN	INC. SEL. A7	T	GRD.	NONE	GRD.	BAT.	REV. BAT.	B	5
	COMB. CONN. C18	R	BAT.		BAT.	GRD.			
A-B TOLL TRAIN	A-B TOLL PRECEDING SEL. F22	T	GRD.	NONE	GRD.	BAT.	REV. BAT.	A	5
	A-B TOLL TRANS. SEL. K23 TOLL INTERMEDIATE SEL. D24 COMB. CONN. C18	R	BAT.		BAT.	GRD.			
LOOP DIALING TOLL TRAIN (WET-DRY SUPERVISION)	TOLL TRANS. SEL. D23	T	GRD.	20 CYCLE	BAT.	DRY	WET-DRY	A	4,5
	TOLL INTERMEDIATE SEL. D24 COMB. CONN. C18	R	BAT.		GRD.	DRY			
LOOP DIALING TOLL TRAIN (REV. BAT. SUPERVISION)	TOLL TRANS. SEL. E23	T	GRD.	SIMPLEX OR NONE	GRD.	BAT.	REV. BAT.	A	1,4,5
	TOLL INTERMEDIATE SEL. D24 COMB. CONN. C18	R	BAT.		BAT.	GRD.			
TEST TRAIN OR VERIFICATION TRAIN	TEST DISTRIBUTOR J18 TEST CONN. J19	LINE T	GRD.	NONE	GRD.	GRD.	NONE	NONE	3,5
		LINE R	BAT.		BAT.	BAT.			
		TEST T	DRY	NONE	DRY	DRY	BRIDGED	X	2
		TEST R	DRY		DRY	DRY			
OUTGOING REPEATER OR TRUNK CIRCUITS									
REP. OR TRK. CKT.	LOCATION OF TYPICAL CKT. ON KEY SHEET	OUT. TIP & RING LEADS			AWTG. SUB. ANS. FROM DST. OFF.	RECEIVER OFF HOOK FROM DST. OFF.	KIND OF SUPV.		SEE NOTE
OUT. REP.	C87, F87	T			GRD.	BAT.	REV. BAT.		
		R			BAT.	GRD.			

NOTES:

- THIS TOLL TRAIN MAY ALSO BE USED FOR AUTOMATIC START OF RINGING ON SEIZURE OF AN IDLE LINE UNDER WHICH CONDITION NO RINGING SIGNAL IS REQUIRED.
- RINGING OF THE SUBSCRIBER IS UNDER MANUAL CONTROL OF RINGING KEY BY TESTMAN ONLY. TRANSMITTER BATTERY IS FURNISHED FROM THE TEST DESK OR LOCAL TEST CABINET ONLY.
- WHEN THE CALLED LINE IS BUSY, THE TRUNK NORMAL POLARITY IS REVERSED AND THE TALKING CKT. IS CLOSED. WHEN THE CALLED LINE IS IDLE, THE TALKING CKT. IS CLOSED BUT THE TRK. NORMAL POLARITY IS NOT REVERSED.
- A SEPARATE SINGLE TRUNK CONDUCTOR CONNECTING TO TRUNK COIN CONTROL CKT. (BLOCK 825) IS REQUIRED WHEN THE 110 V. POSITION CKT. METHOD IS USED IN THE TOLL OFFICE FOR DISPOSAL OF COINS. OTHERWISE 2 TRUNK CONDUCTORS CONNECTING TO COIN CONTROL SELECTOR (BLOCK A82) IS REQUIRED FOR DISPOSAL OF COINS.
- PULSES INTO THE STEP-BY-STEP SWITCHES SHALL BE BETWEEN THE LIMITS OF 8-11 PULSES PER SECOND. THE INTERDIGITAL TIMING SHALL BE 0.8 SECOND BETWEEN DIGITS FOR TRUNK SELECTION AND A MINIMUM OF 0.4 SECOND FOR THE DIGITS PULSED INTO THE CONNECTOR.

TRK. CKTS., INCOMING & OUTGOING CKT. DETAILS

General

The table on the preceding page shows the principal operating features of a step-by-step office from the viewpoint of interoffice operation and is intended primarily to facilitate the selection of options in the connecting circuits in other offices. These features are listed by types of circuits and are stated in terms of the functional names of circuit options. These options in turn indicate what kinds of circuits are required in the connecting offices and what options are required in these circuits. Heretofore this information was shown only on the circuit drawings and circuit descriptions of the particular circuits involved. This kind of information will facilitate the general understanding of interoffice operation. It will be particularly useful on engineering new jobs and additions which connect with step-by-step because it eliminates much of the need of examining details on numerous circuits and in circuit descriptions.

Let it be assumed, for example, that SD-55346-01, switchboard No. 3CL toll switching trunk circuit arranged for repeated dialing, is used to complete calls to subscribers in the step-by-step office requiring the following features.

1. Simplex start of ringing.
2. Rering of the called line with receiver off-hook.
3. Coin control with positive coin battery used for coin collect.

Referring to the table on the key sheet, it is shown that the following features or options are furnished by the toll transmission selector circuit SD-31841-01 in the step-by-step office.

1. Ground on tip and battery on ring when trunk is normal.
2. Simplex start of ringing or none.
3. Rering or no rering of the called line with receiver off-hook.
4. Ground on tip and battery on ring for awaiting subscriber answer signal.
5. Battery on tip and ground on ring for receiver off-hook.

6. Reverse battery supervision

7. Type "A" TB supply.

8. No coin control or coin control over separate single trunk conductor where the disposal of coins is controlled without dialing or over 2 conductors where dialing of 2 digits into the coin control selector is employed.

Referring to the drawing title and feature and option table on SD-55346-01 toll switching trunk circuit, it is shown that:

1. No option is furnished for polarity of T and R leads when circuit is normal since this required feature is not shown in the feature or option table.
2. Figure E is furnished for simplex start of ringing as covered in the feature and option table.
3. No option is furnished for rering of the called line with receiver off-hook since this required feature is not shown in the feature and option table.
4. No option is furnished for polarity of T and R leads for awaiting subscriber answer signal since this required feature is not shown in the feature and option table.
5. No option is furnished for polarity of T and R leads for receiver off-hook since this required feature is not shown in the feature and option table.
6. Figure C is furnished for reverse battery supervision without start dial signal or Figure J is furnished for reverse battery supervision with start dial signal, as covered in the feature and option table.
7. No option is furnished for coin control over separate single trunk conductor as the drawing title indicates that the circuit is arranged for this feature. The use of positive coin battery for coin collect is covered on the switchboard No. 3CL position circuit SD-64738-01.

ADAPTER	Multi-Party Line For use with Grounded or Low Insulation Metallic Lines - Pulse Correcting and Relayed Ringing	SD-31848-01 F1	30, 60 & 120 I.P.M. Relay, to Provide a Delay Interval, for Use with 804C Ring- ing Pwr. Plant	SD-31606-01 G73
			Miscellaneous Alarm Sender For Use with Suspension Ckt.	SD-32180-01 A207
ADJUSTING	MF Pulsing Receiver, Using MF Current Supply Source	SD-95644-01 D167	Motor Stop and Guard Permanent Signal - Arr. to Operate on Spec. Number of Perm. Signals	SD-32193-01 H133
			Power - D-C Fuse Voltage Control Ckt. Breaker	SD-95872-01 H217 SD-31553-01 F129
	MF Pulsing Receiver, Using One Milliwatt 1000 Cycle Supply Source	SD-95779-01 C167	Power - A-C AC-DC Ring. Sup. Ring. 60 Cycle Supply for 6V Lamps	SD-31912-01 G132
			Power Plant - 803C AC-DC Ring. & C.C. Supply Sup. Ring. & C.C. Supply Switchboard	SD-31519-01 G127 SD-31544-01 H127 SD-31545-01 I127
ALARMS	Audible & Visual Pilot Lamp Power Alm. Lamp Audible	SD-31548-01 F128 SD-31549-01 G128 SD-31551-02 I128	60 Cycle Supply for 6V Lamps	SD-31559-01 I129 SD-31560-01 I129
			Power Plant - 803C AC-DC Ring. & C.C. Supply Sup. Ring. & C.C. Supply Switchboard	SD-95005-01 C133
	Aud. & Visual with Aisle Pilot and Distinctive Alms.	SD-96188-01 G133	"A" Bd. Night "A" Bd. Key Pulsing Switch Trouble Rep., Trks., Out. Trk. Sw., Plug Up Trk. Conn., Spl. Serv. O.G.T., and M.R. Trks.	SD-31617-01 J130 SD-31618-01 I130
			Sel. Shelf Ckts. Alm. Frame Ckts. for Selectors Conn. Shelf & PEX Trk. Shelf Ckts. Alm. Frame Ckts. for Conns. & PEX Trks. For Trk. & Misc. Shelves Sel. Rep. Shelf Ckts. Alm. Frame Ckts. for Sel. Repeaters Line Fdr. & Trk. Fdr.	SD-90464-01 A115 SD-95052-01 D129
Auxiliary	For Controlling Alm. for Conn. Discon- nect Condition	SD-31866-01 I134	Tone	SD-31516-01 E127 SD-32043-01 B127
			Trunk Prepayment Coin Trks. For P.B.X. Trks. on Relay Racks Special Service Trk.	SD-32044-01 B128 SD-32045-01 C127
Cable Insulation	Cable Insulation	SD-31912-01 G132 SD-96348-01 H132	Line Fdr. & Trk. Fdr.	SD-32046-01 C127
				SD-32048-01 A128
Checking Terminal (also see Terminal)	Checking Terminal (also see Terminal)	SD-31835-01 I133		SD-32102-01 K135
				SD-32103-01 J135 SD-32239-01 A127
Emergency	Code Sig. & Auto. Fire Detection Inc. from Dist. Off Where Inc. Ckt. is not to be Connected to Zone Sig. Ckt. Emer.	SD-90437-01 D131 SD-90642-01 B131		SD-31521-01 B129
Auto. Fire Detection	48V Multi Zone Auto. Fire Detection 48V Single Zone Emer.	SD-96049-01 F131 SD-96052-01 D133		
Extension, for	Receiving Alm. Indications Over Separate Cable Pair from Distant Office or PBX	SD-95484-01 C129		
Fuse	Relay Rack, Alarm Frame and Traffic Register Rack	SD-31613-01 G130		
Interrupter	Code Ringing - 10 Pty. TPS Ringing - 8 Pty. Semi-Sel. Arr. to Provide a Delay Interval	SD-31298-01 A129 SD-31336-01 G11 SD-31494-01 G72		

APPLIQUE Traffic Weighting, for Use with Ans. Time Recorders	SD-96497-01 K108	Local, 200 Point, Rot. Hunting, Multi- Party, AC-DC Ringing, Term. per Station, Arr. for Reverting Calls.	SD-33006-01 C63
BANK MULTIPLE Selector Connector Miscellaneous	SD-32123-01 J147 SD-32128-01 J149 SD-32129-01 K147	Local, 200 Point, Multi-party, Super- imposed Ringing, Term. per Station	SD-33007-01 D63
BATTERY SUPPLY Bat. & Grd. at M.D.F. PBX Amplifier	SD-90048-01 I72 SD-90232-01 J72 SD-90608-01 D106	Local, 200 Point, Rot. Hunting, Multiparty Superimposed Ringing, Term. per Station	SD-33008-01 E63
BUSY BACK "A" Bd. Toll Sw. Cord	ES-31090-01 H30	Comb., 200 Point, Multiparty, AC-DC Ringing, Term. per Station, Arr. for Reverting Calls	SD-33009-01 F63
BUSY LINE CUT-IN	SD-31728-01 K19	Comb., 200 Point, Multiparty, Super- imposed Ringing, Term. per Station	SD-33010-01 G63 SD-33011-01 I19
BUZZER M.R. Crossconnections Checking	SD-31610-01 I73	200 Point Test Line Insulation Test Teletypewriter Remote Control, for Use with S.O. Desk No. 7 or 12 for Observing on Cords Outputser, for ANI	SD-95558-01 J168 SD-95793-01 C202 SD-95890-01 D188
CABINET Traffic Register	SD-95531-01 G149	CONTROL Test Distributor Permanent Signal Test Transmission Pad Line Load Line Load Arr. for Remote Control and Supervision of Line Load	SD-31349-01 E43 SD-31401-01 C43 SD-31591-01 D97 SD-32069-01 G3
CALCULAGRAPH Motor Driven	SD-95012-01 E111	Line Insulation Test Obs. Entry, for ANI "A" Board Coin Trunk Coin	SD-32108-01 G2 SD-32219-01 I168 SD-32247-01 F186 SD-90459-01 G112 SD-95031-01 C22, B25
CALL "A" Bd. Inc. from L.T.D.	SD-96185-01 B113	Traffic Reg. Camera For Use with Suspension Ckt. "A" Board Indicator	SD-95797-01 I150 SD-95872-01 H217 SD-96033-01 I36
CLOCK Motor Driven	SD-95012-01 E111, E147	CONVERTER Pulse, for Converting DC Key Pulses to MF Pulses Dial Pulses to MF Pulses	SD-95567-01 B203 SD-96453-01 A203
Misc. Use 10 I.P.M. Impulse	SD-96201-01 H75 SD-96343-01 E73	CORD "A" Board No. Checking "A" Board Make Busy "A" Board Rec. Com- pleting "A" Board Spl. Serv. Non-Coin "A" Board Spl. Serv. Coin "A" Board Combination Non-Coin	SD-31438-01 A113 SD-90438-01 E36 SD-90452-01 J113 SD-90453-01 B118 SD-90453-02 C118 SD-90454-01 H112
CONNECTOR Local Rotary Hunting 2 Ring Combination 1 Ring Combination Test, for Testing Sub. Lines and for Veri- fication Request Service 8 Pty. Terminal per Station Combination 1 Ring Comb. Rotary Hunting with or without Arrangement to Cancel Rev. Bat. Supv. on Specified Levels Local Level Hunting Toll Rotary Hunting Toll Level Hunting Loc. Rot. Htg. Arr. to Cancel Rev. Bat. Supv. on Spec. Levels 10 Pty. Terminal per Sta. Comb., 5 Code Ringing, Arr. for Reverting Calls and Calling Pty. Control Local, 200 Point, Multiparty, AC-DC Ringing, Term. per Sta., Arr. for Reverting Calls	SD-30215-01 D17 SD-30220-01 B18 SD-30228-01 C18 SD-30243-01 J19 SD-30862-01 F17 SD-30950-01 I63 SD-31088-01 E18 SD-31114-01 D19 SD-31527-01 E19 SD-31656-01 E17 SD-31811-01 G17 SD-33005-01 B63		

CORD (Cont'd.)

"A" Board Combination Coin	SD-90454-02 H113
"A" Board Call Wire-less Toll Switching for C.B. Rural Lines	SD-90476-01 D117
"A" Board Test, from Loc. Test Desk	SD-90506-01 D114
"A" Board - Call Wire-less Toll Switching for Magneto Rural Lines	SD-90574-01 E117
DEMONSTRATION	
Tone & Flashing, for Simulating Signals to Operators	SD-95697-01 G207
DIAL	
"A" Board Position	SD-90462-01 E112
DISTRIBUTOR	
Test	SD-32007-01 J18
DOOR OPENING	
	SD-90085-01 A40
DRILL	
Operator Key Pulsing	SD-95830-01 A150
FILTER	
Talk or Filament Bat. Supply	SD-95571-01 I75
FINDER	
22 Point Line and Trunk, 4 Wire	D4, C97, SD-31793-01 F153
200 Point Line, 4 Wire, Arr. to Operate with High Res. Sleeve	SD-33012-01 B4
200 Point Line or Trk., 3 Wire, Arr. to Operate with Low Res. Sleeve	SD-33013-01 B4, B98, E153
200 Point Line, 3 Wire Arr. to Operate with High Res. Sleeve	SD-33014-01 B4
200 Point Line, 4 Wire, Arr. to Operate with Low Res. Sleeve	SD-33015-01 B4
FIRE DRILL	
	SD-90086-01 A75
GENERATOR	
MF Signal, for Supplying the 6 Frequencies Required for MF Pulsing	SD-95867-01 E187
GROUPING	
"A" Board, Interconnecting with No. 3 Toll	SD-90415-01 B111
"A" Board Position	SD-90455-01 C112
IDENTIFIER	
For ANI	SD-95810-01 F188
INDICATING	
Line Finder Group Busy	SD-32097-01 G4

INTERRUPTER

Ringling and Alarm for 10 Pty. Term. per Station Code Ringling	SD-31298-01 A129
8 Pty. Semi-Sel. Ringling	SD-31336-01 G11
Arranged to Provide a Delay Interval	SD-31494-01 H72
Reverting Call Semi-Sel.	SD-31501-01 J11
Reverting Call Sel.	SD-31557-01 I11
30, 60, & 120 I.P.M. Tone, for Class of Service Tone	SD-31606-01 G73
Relay, for Furnishing 30, 60 & 120 I.P.M. 10 I.P.M.	SD-31825-01 G167
	SD-95036-01 G208
	SD-96343-01 E73

JACK

"A" Board Misc. Tone Bat., Grd. & Ringling Supply Test	ES-241904 F37
Connector Test	SD-31333-01 F48
"A" Board Make Busy	SD-31653-01 I47
"A" Board Answering	SD-90438-01 E36
"A" Board Out. Trk.	SD-90467-01 I27
Monitoring & Observing Common Panel	SD-90468-01 C37
M.D.F. Test - For Private Lines	SD-90564-01 B69
	SD-96068-01 E47
	SD-96261-01 B147

KEY

Reverting Call Semi-Sel. Transfer	SD-31501-01 J11
Reverting Call Sel. Transfer	SD-31557-01 I11
"A" Board Master Ringling	SD-90586-01 F111
"A" Board Spl. Serv. Trk. Make Busy	SD-90622-01 C115

KEY SET

DC Key Puls.	SD-90460-01 E113
DC & MF Key Puls.	SD-95428-01 C178
MF Key Puls.	SD-95498-01 E178
MF Key Puls, with Modifications for Practice Pos. for Use with Opr. Training Equip. No. 2B	SD-95499-01 F178
Position and MF, for CAMA	SD-95775-01 C219
DC & MF Puls. with Modifications for Practice Pos. for Use with Opr. Tng. Equip. No. 2B	SD-96439-01 D178

LAMP

Pilot	SD-31548-01 F128
Power Alarm	SD-31549-01 G128

LEADS

"A" Board Ringling	SD-90586-01 F111
Ringling, to PBX's & Sta. Equip.	SD-95667-01 J71

LINE (Also See Long Line)

"A" Board Magneto Rural	SD-31130-01 J30
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LINE (Cont'd.)

"A" Board Business Office
Terminating Service Rotary Line Switch
"A" Board Plugging Up Dial Terminating Manual
"A" Board Official
"A" Bd. Aux. for Emer. Connections
Message Register Test Loc. or Toll Inc., Coin Box or M.R. Trk. Test
Loc. Inc., Coin Box or M.R. Trk. Test
Busy Line Fdr.
During Hunting Aux. Connector Test
Business Office, 4 Wire to Toll Swbd. No. 1
Transmission Test and Swmn. Talking for Connectors
Aux. - for Operating Sub. Reg. with Delayed Charge Interval Using Cent. Off. Battery
Dial Sub.
Toll Sub. - For Use with No. 1 Toll Swbd.
Toll Sub., for use with Swbd. No. 3, 3C or 3CL
"A" Board Man. Plugging Up - For Use with No. 3, 3C or 3CL Swbd. in Connection with S. By S. Sub. Lines
Emergency Recorder Talking
Plugging Up, with or without Auto. Cut-thru Feature for Plugging Up Fr.
Aux. - Arr. to Apply Coin Return Potential At End of Each Call On Prepayment Coin Lines Arr. for 10 Cent Initial Charge for Use with Line Ckt. Arr. for Ground Start on Ring
Dial Terminating Manual, for Use with Central Swbd.
Man. Sub. for Use with Dial Terminating Manual Line Ckt. in Dist. Off.
Cent. Swbd. Emer., Arr. to Disconnect Calling Pty. on Emer. Calls
"A" Swbd. Business Off. Out. to Dist. Dial Office

SD-31198-01 D37
SD-31224-01 A20
SD-31259-01 J2
SD-31406-01 H29
SD-31470-01 F27
SD-31498-01 B38
SD-31608-01 J37
SD-31610-01 C47
SD-31636-01 D49
SD-31642-01 E49
SD-31652-01 E1
SD-31653-01 I47
SD-31788-01 J74
SD-32021-01 H147
SD-32082-01 I2
SD-32133-01 B2
SD-90077-01 C122
SD-90078-01 D122
SD-90450-01 I30
SD-95034-01 A151
SD-95336-01 I35
SD-95532-01 G150
SD-95597-01 G77
SD-95607-01 F2
SD-95711-01 A167
SD-95713-01 H183
SD-95713-01 I183
SD-95714-01 E193

Business Off., Arr. for Inc. Serv. from Dist. Swbd. and 2 Way Serv. to Sub. Line Ckt. For Public Emergency Reporting
Local Station - Station End
Private 24 & 48 V. Private 48V Only
Order Clerk or Chief Operator with Visual Line Signal
Aux. with Auto. Cut Off - Main & Extension Stations on Separate Loops Emerg., for Completion of Calls to Police, Fire & Ambulance Lines
Transmission Test
LINE VERIFICATION for ANI
LINK
"A" Board
LISTENING-IN
Opr. Training, with Monitoring Amplifier
LONG LINE
Dial - For Use on Pre-payment Coin Lines
Dial, Repeated Ring., for Use with 4 Pty. Sel. or 8 Pty. Semi-Sel. Lines
Pulse Correcting By Pass or Repeated Ringing
Manual - CX Sig. - Supplies Line Supv.
Manual - Ph. Grp. with CX Sig. 48V offices
Supplies Xmtr. Bat. Dial, 10 or 20 PPS
Repeating, Relayed or By-Passed Ringing
Dial, CX Sig. Type B
Supplies Line Supv. Dial - CX Sig. Type B with Type "B" T.B. Supply
MAKE BUSY
For Use With Sel. Rep. For Rec. Compl. Trks. to Toll Swbd.
Trunk
Trk. - For Trks. from Selector Levels
For Use with Trks. to Rep. Serv. Desk No. 2
For "A" Bd.
MANUAL
Type "A" Emergency
Type "B" Emergency

SD-95721-01 E167
SD-95873-01 B209
SD-96109-01 H42
SD-96128-01 G74
SD-96147-01 G74
SD-96262-01 A147
SD-96468-01 E2
SD-96469-01 D210
SD-98100-01 G52
SD-32246-01 H189
SD-90705-01 C142
SD-96405-01 E37
SD-32053-01 H121
SD-95435-01 D124
SD-96009-01 G122
SD-96034-01 H123
SD-96116-01 E122
SD-96117-01 K123
SD-96234-01 A122
SD-96251-01 B122
SD-96252-01 B124
SD-30855-01 C198
SD-30893-01 C207
SD-31225-01 C72
SD-31420-01 D72
SD-95781-01 D58
SD-96470-01 E115
SD-32065-01 F158
SD-32093-01 F163

MISCELLANEOUS

For Angle Rel. Rack
Bays

SD-32153-01 I147

MISCELLANEOUS FRAME

Trunk Fr., for ANI
Sec. Network Fr.,
for ANI
Identifier Fr., for
ANI
Outputser Fr., for
ANI
Outputser-Identifier
Trk. Test Fr., for
ANI
Tbl. Ticketer Fr.,
for ANI
Number Network Fr.,
for ANI

SD-32248-01 I189
SD-95818-01 J186
SD-95819-01 J189
SD-95820-01 J187
SD-95822-01 H190
SD-95823-01 I188
SD-95825-01 J190

MONITORING

Cent. Off. Observing
Cord
Dial, Local
Dial, Local & Toll
Dial Pulse, for Use
with S.O. Ckts.
Connecting to S.O.
Desk No. 7 and 12
Dial Pulse
"A" Swbd. Key

SD-90449-01 A67
SD-90463-01 G72
SD-90596-01 G72
SD-95610-01 A202
SD-95876-01 G109
SD-96314-01 G69

NETWORK

Number, & Primary
Bus, for ANI
Secondary, & Bus
Connector, for ANI
Serv. Obs., for ANI

SD-95813-01 H187
SD-95814-01 G187
SD-95829-01 F187

OBSERVING

Obs. Line - Orig. Serv.
Obs.
Single Line Serv. Obs.
Multi-Line Serv. Obs.
for Trks. Arr. for
Obs. on Inc. Trk.
Ckts. to Swbd. or
Desks
Cent. Off. Obs. Set
No. 2
Dial Pulse Rep. for
Selective Mon. Obs.
Trks. from S.O. Desk
No. 11
Pos. Sel. for Obs.
on Desk Tel. from
S.O. Desk No. 11
Dial Pulse Amplifier
Cent. Off. Obs.
S.O. for use with S.O.
Desk No. 10
S.O. Ckt. for Loc.
Orig. Serv.
PBX Multi-Line Obs.
Multi-Line
Multi-Line, for Obs.
Speed of Answer on
Inc. Calls to "A"
Swbd., for Use with
S.O. Desk

SD-31347-01 H106
SD-90243-01 G107
SD-90266-01 F107
SD-90448-01 G68
SD-90543-01 C108
SD-90544-01 G107
SD-90558-01 G109
SD-90562-01 F68
SD-90580-01 E107
SD-90647-01 H107
SD-95510-01 I108
SD-95563-01 E202

Multi-Line, for Obs.
on Cords Arr. for
DC, MF or Combined
DC-MF Key Puls.

SD-95564-01 D202

Multi-Line, for Obs.
on Cords Arr. for
Dialing for Use
with S.O. Desk
PBX Multi-Line Obs.
Line

SD-95605-01 B202
SD-96162-01 I107

OSCILLATOR
For ANI

SD-95827-01 D189

OUTPULSER
For ANI

SD-95811-01 E188

POSITION
"A" Board

SD-90457-01 I113

RANGE CHART

For Dial Long Line
Ckts. for Use in
Connection with 810
or 885 Ohm Off.
For Dial Long Line
Ckts. for Use in
Connection with 735
Ohm. Off.

SD-96325-01 B149
SD-96326-01 B149

RECALL
Aud. & Flashing

SD-90458-01 G113

RECEIVING
MF Pulsing

SD-95536-01 D169

RECORDER
Line Busy
Holding Time No. 1B
Traffic Usage
Holding Time No. 1C
Permanent Type Ans.
Time
Ans. Time, Concentrat-
ing, Time Control,
Test & Int.
Traffic Usage,
Portable No. 1

SD-31672-01 K74
SD-90246-01 D73
SD-95738-01 C169
SD-96114-01 B74
SD-96235-01 J106
SD-96275-01 J108
SD-96494-01 B169

REGISTER
Traffic
Totalizing
Dial Tone Speed

SD-30896-01 A72
SD-95878-01 H169
SD-96403-01 E109

RELAY

Interrupter, for Term.
per Station 8 and 10
Pty. Connectors and
8 Pty. Revtg. Call
Selectors
Interrupter, to Provide
a Delay Interval, for
Use with 804C Ringing
Pwr. Plant
Group and Alarm, for
Line and Trunk Finders
Group Busy

SD-32135-01 J12
SD-32180-01 A207
SD-32194-01 I207
SD-90466-01 C171

RELEASE			
Coin Trk. Timed	SD-31861-01	I71	
Perm. Sig., for			
Connectors	SD-32021-01	H147	
REPEATING (Also See Trk.,			
Sleeve Repeating)			
Sleeve - 2 Way	SD-32062-01	A18, G154	
REPEATER (Also See Sel.			
Rep.)			
Incoming			
From Panel Sdr. Tdm.			
Off.	SD-31162-01	E92	
From Dist. SXS Off.,			
Pulse Correcting,			
Rep. Coil Xmsn.,			
Tel. Rep.	SD-31542-02	G102	
With Rep. Coil -			
Bat. and Grd.			
Pulsing - Loop			
Supv.	SD-32008-01	D92	
Pulse Correcting, Rev.			
Bat. Supv., Loop			
Res. 5000 Ohms or			
Less	SD-32184-01	H102	
Outgoing			
To SXS or C.I. Off.			
Bat. & Grd. Puls. -			
Bat. & Grd. Supv.	SD-31147-01	E87	
To SXS - Loop Res.			
1200 Ohms to 3000			
Ohms	SD-31428-01	B88	
To SXS - Pulse Cor-			
recting - Rep.			
Coil Xmsn.	SD-31541-02	G99	
To SXS - Rep. Coil			
Xmsn.	SD-31609-01	J99	
To SXS - Rep. Coil			
Xmsn. - Tel. Rep.	SD-31609-02	I99	
Bat. & Grd. Puls. or			
Loop Puls., Rev.			
Bat. Supv., 2 Re-			
peaters per Base	SD-31779-01	F87	
To SXS Off., Pulse			
Correcting, Rev.			
Bat. Supv.	SD-31892-01	F99	
With Rep. Coil, Bat.			
& Grd. Puls. or			
Loop Puls., Rev.			
Bat. Supv.	SD-32008-01	C87	
To XBR No. 5 Off.,			
Bat. & Grd. Puls.,			
Long Range Supv.,			
Type "B" TB Supply	SD-32087-01	J87	
Pulse Correcting, Rev.			
Bat. Supv., Loop			
Res. 5000 Ohms or			
Less	SD-32184-01	H99	
2 Way			
Out. Bat. and Grd.			
Pulsing, Loop			
Supv., Inc. Pulse			
Transmitting	SD-31674-01	I9	
RINGBACK			
Emergency	SD-95083-01	E15	
RINGING			
Timed, for Toll			
Transmission Sel.			
Arr. for 20 Cycle			
Ringing Start Signal	SD-32196-01	F167	
Test Trunk	SD-96474-01	F42, G142	
SELECTING			
Position, for Mon.			
on CMA Positions	SD-27013-01	D219	
SELECTOR			
With Test Trunk, from			
Loc. Test Desk No. 14			
or Loc. Test Cab.			
No. 3	SD-25767-01	I167	
Local or Incoming	SD-30200-01	A7	
3 or 4 Wire, Arr. for			
Peg Count on Cut-			
Thru, to Absorb			
Digits Once Only and/			
or Repeatedly, to			
Return Overflow Signal			
on Specified Levels			
and for 2 Party Mes-			
sage Rate Service	SD-30976-01	F6	
Reverting Call, 8 Pty.			
Semi-Sel. and/or			
4 Pty. Sel. Serv. Arr.			
for 2 Digit Operation	SD-30978-01	F11	
3 or 4 Wire, Arr. for			
Peg Count on Cut-Thru,			
to Absorb Digits Once			
Only and/or Repeatedly,			
to Return Overflow Sig-			
nal on Specified Levels			
and for 2 Party Message			
Rate Service for Modi-			
fication of Existing			
Equip.	SD-30997-01	F6	
A-B Toll Preceding	SD-31241-01	F22	
"A" Board Completing,			
with or without			
Digit Absorbing	SD-31411-01	B23	
Reverting Call,			
4 Pty. Sel. Ring.	SD-31556-01	H12	
Reverting Call, 2 Pty.			
Sel. or 4 Pty Semi-			
Sel.	SD-31647-01	I12	
Toll Transmission for			
Completing Intertoll			
Dialing Calls with or			
without Digit Absorb-			
ing	SD-31681-01	H23	
A-B Toll Transmission			
with or without Digit			
Abs. on Specified			
Levels, Rep. Coil Cut			
Out & Coin Control	SD-31723-01	K23	
Toll Intermediate or			
Inc.	SD-31744-01	D24	
Toll Transmission, with			
or without Coin Con-			
trol, with or without			
Digit Absorbing &			
Blocking	SD-31745-01	D23	

SELECTOR (Cont'd.)

Toll Transmission, Rev.
 Bat. Supv., Simplex
 Start of Ringing or
 Temporary Auto. Start
 of Ringing, Type "A"
 TB Supply, with or
 without Coin Control,
 Arr. for Digit Absorb-
 ing & Blocking SD-31841-01 E23
 Coin Control SD-31853-01 A22

Toll Intermediate or
 Inc. - Arr. for Digit
 Absorbing & Blocking
 Until a Digit is
 Absorbed SD-31915-01 D24

3 or 4 Wire, Arr. to
 Absorb Digits Once
 or Repeatedly, to
 Restrict Serv. on
 Specified Levels &
 for 2 Pty. Message
 Rate Serv. SD-32077-01 A7,
 A8,
 A9

Service Code SD-32077-01 C12

3 or 4 Wire, Arr.
 to Absorb One or 2
 Digits, to Return No-
 Such-Number-Tone on
 Specified Levels, for
 Peg Count on Cut-Thru
 and for 2 Party Message
 Rate Service SD-32183-01 F6

Toll Preceding, for Com-
 pleting A-B Toll Calls,
 Arr. for Digit Absorb-
 ing & Blocking & to
 Return Busy Tone &
 Flash on Specified
 Levels SD-33001-01 F22

Local, Inc. or 2 Pty.
 Message Rate, 3 or 4
 Wire, Arr. to Restrict
 Service Over Any Speci-
 fied Levels, for Peg
 Count on Cut-Thru and
 Busy Flash on Calls from
 Operator SD-33003-01 A9

Code, Arr. to Absorb
 Digits Once Only and/
 or Repeatedly, and to
 Restrict Service until
 a Digit is Absorbed SD-95898-01 D98

SELECTOR REPEATER

Branch Off., with Auto.
 Release of Trk. on
 Perm. Sig., Arr. for
 3 Digit Off. Code SD-30872-01 B197

SENDER

"A" Board, DC Key
 Puls. Inc., Dial
 Puls. Outgoing SD-95480-01 D142
 MFKP-In, DP-Out SD-95481-01 D144

SERVICE OBSERVING (See Observing)

SET
 Wave Shaping SD-70082-01 K167
 No. 1A Peg Count
 Checking SD-90626-01 F75

SIGNAL
 "A" Board Aux. SD-90464-01 A115
 Plugging Up Frame Aux. SD-90594-01 F77
 Operating Room Calling SD-96087-01 H44
 No-Such-Number Tone
 Supply SD-96357-01 D147
 Calls Waiting, for
 CAMA SD-95868-01 F218

SIGNALING
 2 Way, for CAMA SD-95776-01 E218

SUPERVISORY
 Stuck Coin & Overtime
 Monitoring SD-95473-01 C183

SUPPLY
 Bat., Grd. & Ringing
 at M.D.F. SD-90048-01 I72
 MF Current SD-95391-01 E169
 Filament, with Emer.
 Transfer SD-95676-01 D168

SUSPENSION
 For Use When all
 Positions are
 Vacated in an
 Emer., for CAMA SD-27018-01 G217

SWITCH
 Rotary Out. Trk.,
 3 or 4 Wire Arr. F8,
 for Preselection SD-30868-01 F198

SWITCHING
 Ans. Time Rcdr. SD-96360-01 J107

TELEPHONE
 "A" Operator's SD-90456-01 D113
 Plugging Up Frame SD-90588-01 H78
 "A" Supervisor SD-96163-01 A112
 M.D.F. Loud Speaker SD-96471-01 I42

TERMINAL
 Alm. Checking SD-31835-01 I133

TEST
 For Reverting Call Sel. SD-30998-01 B49
 51 Type Dial SD-31138-01 D52
 Station Ringer - Semi-
 Sel. SD-31140-01 C52
 Station Ringer - Sel.
 Ringing SD-31141-01 B52
 Permanent Sig. SD-31402-01 C44
 Auto. Trk., for ANI SD-32315-01 D187
 Bat. & Grd. Terminals SD-90122-01 E48
 209FA Relay SD-90411-01 D46
 Key Pulsing Sender Auto. SD-90424-01 K46
 "A" Cord SD-90501-01 J49
 Key Pulsing Sender
 Manual SD-90635-01 K48

TEST (Cont'd.)			
2A Sending Panel		SD-95000-01	G53
Transmission			
Sending Pad Trans-		SD-95017-01	G54
mission			
Manual, for Testing			
MF KP-In, DP-Out		SD-95400-01	I52
Senders		SD-95537-01	H168
Line Insulation			
Outpulser-Identifier,		SD-95815-01	G190
for ANI			
Trk., for Testing Coin		SD-95875-01	A47
Zone Opr. Trk. Ckts.			
Tone - For Use with		SD-96238-01	H19
Call Thru Test Set			
Trk., for Testing Inc.		SD-96478-01	H49
Incpt. Trk. Ckts.			
TEST SET			
Sub. M.R. & Traffic			
Reg.		SD-30490-01	C46
Line Finder & Trk.			
Finder		SD-31456-01	G46
Pulsing		SD-31481-01	G49
Line Finder & Trk.			
Finder		SD-31524-01	G46
For Local, Toll & Com-			
bination Connectors		SD-31637-02	I48
Pulse Repeating Relay		SD-31667-01	G50
Rapid Operation Line			
Finder & Out. Rep.		SD-31725-01	C49
For Testing Sub. Low			
Res. Msg. Registers			
& Traffic Registers		SD-32150-01	C46
206 Type Selector		SD-90013-01	F49
Sub. Rec. Compl. Trk.,			
Out. Trks. from Sel.,			
Coin Trks., Line			
Finders, Selectors,			
Connectors, Out. Re-			
peaters and Rotary			
Out-Trunk Switch		SD-90469-02	C53
Jack - For Testing 49,			
92, 141 & 218 Type			
Jacks		SD-95056-01	D50
Patching Cord		SD-95665-01	J46
Call Thru		SD-96063-01	E46
TEST STAND			
Switch		SD-32001-01	G48
TIMING			
Common		SD-31558-01	E128
Key Pulsing "A" Common		SD-95052-01	D129
For Initial Charge			
Period Reminding on			
Originating Calls		SD-95801-01	H207
TONE			
Miscellaneous		SD-31521-01	B129
TRANSFER			
Trk., for Rec. Compl.			
Trks. to Toll Swbd.		SD-30893-01	C207
Line or Trk., for			
Restoring Service			
on an Emer. Basis		SD-95690-01	E207
Emergency, for Use with			
Central Swbd.		SD-95711-01	B167
Key Set, for Combined			
DSA & CAMA Pos.,			
MF-DC and 2 Out of			
5 DC Key Pulsing			
SD-95724-01 D177			
Key Set, for Combined			
DSA & CAMA Pos., DC			
KP and 2 Out of 5 DC			
Key Pulsing			
SD-95752-01 E177			
For Use with Trks. to			
Rep. Serv. Desk No. 2			
SD-95781-01 D58			
Emergency - To Provide			
Dial Sub. with Emer.			
Manual Service			
SD-96180-01 K20			
Emergency - Provides a			
Dial Sub. with Emer.			
Man. Serv. When Loc.			
Off. is located in			
same Bldg. as Toll or			
SD-96425-01 C149			
SD-96470-01 G90			
SXS "A" Swbd.			
Lamp			
TRANSFER KEY & LAMP			
For CAMA Connections in			
Combined DSA and CAMA			
Position Using 2 Out			
of 5 DC Key Pulsing			
for CAMA Calls			
SD-95723-01 B177			
For CAMA Connections in			
Combined DSA & CAMA			
Positions Using MF Key			
Pulsing for CAMA Calls			
SD-95799-01 G117			
TROUBLE TICKETER			
For ANI			
SD-95816-01 J188			
TRUNKS			
Announcement			
From Sel. Mult., Arr.			
for Auto. Disconnect			
for Use with Ann.			
System No. 4A			
SD-30895-01 I137			
For Local Office			
SD-31362-01 C10			
Inc. from Operators			
in a Distant Office			
SD-31622-01 E10			
For Interoffice			
Service			
SD-31700-01 K10			
Auxiliary			
For Use with Sel. Rep.,			
Arr. to Cut Thru When			
Digit 1 or Digits 11			
are Dialed			
SD-30856-01 B198			
Arr. to Connect an			
Inc. Trk. to a Rotary			
Out Trunk Switch			
SD-30865-01 G90			
For Completing De-			
layed Calls from			
"A" Swbd.			
SD-31472-01 I37			
For Use with Ckts.			
Arr. for Bat. &			
Grd. Pulsing Over			
Quadded Cable			
Conductors			
SD-32032-01 G88			
For Use Between Toll			
Sel. Mult. & Incpt.			
Trk. Ckt. for De-			
laying Cut-Thru			
SD-32084-01 I152			
Loop Pulsing, Arr. to			
Complete Service			
Code Calls			
SD-32281-01 F197			

TRUNKS (Cont'd.)

"A" Swbd. OGT, for
Use with DC Key
Puls. OGT, Rev.
Bat. Supv., SX
Cont. Ring., with
or without Coin
Control Over Sepa-
rate Single Trk.
Conductor SD-95471-01 B192
Compensating SD-31331-01 F24,
C94

Coin, for Use Preced-
ing First Selector SD-31592-02 A5
Coin Control SD-95031-01 B25

Inc. to "A" Swbd. from
Inf. Desk No. 1 ES-241550 G27
Toll Sel. Mult. to
Rural Opr. SD-31106-01 K29
350A or 360A Dial
Off. to Spl.
Serv. Oper. SD-31127-01 B29

SXS Off. to Cent.
"A" Bd. Opr. Non-
Coin with Ringback SD-31432-01 J28
Loc. Sel. Mult. to
Spl. Serv. Opr. SD-31499-01 A27
SXS Off. to Rural
Opr. - 2 Wire SD-31538-01 C28
Local Sel. to Rural
Opr. SD-31539-01 D29
Toll for Verification
Request or Other
Serv. - 2 Wire SD-31588-01 C27
Toll for Verification
Request or Other
Serv. - 3 Wire SD-31589-01 D27
Conn. Mult. for
Official Serv. SD-31668-01 B27
Rep. Serv. Desk No. 2
for Trks. Trans-
ferred SD-90451-01 H28
Transmission Measur-
ing Desk or Test
Desk - Arr. to Con-
nect with Outg.
Call Ckts. SD-90566-01 E26
Toll Off. to TX Pos.
Arr. for Rev. Bat.
Supv. & SX DC
Rering SD-95436-01 B183
Dist. SXS Off., Rev.
Bat. Charge Key
Supv., Arr. for
Mult. Appearances SD-95569-01 G183
Crossbar No. 5 Off.
for Verification
Request or Official
PBX Serv., High-Low
Supv., Rev. Bat.
Supv. on Rering SD-95673-01 D183
Coin Zone Operator,
from Xbr. Off. No.
5 SD-95851-01 C32
Toll Swbd. No. 1 SD-96169-01 F33
Community Dial Off. SD-96283-01 H33
SXS-Off. to Cent.
"A" Opr. Coin 2
Wire SD-96365-01 A29

Local Off. for Rec.
Compl. Serv., with
or without Recall SD-96412-01 K33
Man. Tdm. Off. for
Stfd. Tdm. Com-
pleting SD-96413-01 G29
SD-96482-01 C218
Inc. to CAMA Position
Inc. to Dial Equipment
From Magneto Off. to
Local Selector SD-31449-01 I97
From Toll Swbd. with
or without Coin
Control SD-31703-01 G23
E, M & N or E&M Lead
Supervision SD-31726-01 A138
To Toll Inc. Sel. -
CX Sig. Type "B" SD-31865-01 D138
or Simplex Sig.
To Toll Inc. Sel. -
CX Sig. Type "B" SD-31887-01 G138
or Simplex Sig. -
Controlled Ring. &
Rering - Coin
Control SD-31887-01 G138
Pulse Correcting, Loop
Puls. or Bat. & Grd.
Puls., Rev. Bat.
Supv., Rep. Coil
Transmission SD-31929-01 E102
Inc. to SXS Tandem from
Distant Man. or SXS
"A" Swbd. or Toll
Swbd. SD-31532-01 B97
Intercepting
Inc., from Dist. SXS
Off. to Info. Desk
No. 3, 4 or 6 Type,
Arr. for Use with
Cent. "A" Swbd. SD-30816-01 C212
Inc. Arr. to Trip
Ringing in Trk.,
for Use with Trk.
Finders & Info.
Desk No. 3, 4 or 6
Type in same Bldg.,
Arr. for Use with
Local "A" Swbd. SD-30817-01 B212
Out., for Use with
Trk. Fdrs. Arr. for
Machine Announce-
ments SD-30990-01 D154
Conn. Mult. SD-31337-01 D152
Plugging Up Line SD-31339-01 B152
Loc. Sel. Mult. SD-31767-01 E152
Out. to Distant Off.
Arr. to Trip Ring-
ing Only During
Ringing Interval SD-31771-01 H154
Vacant Level or Over-
flow from Local Sel.
Mult. SD-31872-01 K137
Vacant Code, for
Local & Inc.
Selectors SD-31937-01 H137
Out., for Use with
Trk. Finders SD-31965-01 E154
Toll Sel. Mult. SD-32163-01 G152

TRUNKS (Cont'd.)

From Conn. Terminals or Sel. Levels for Use with Announce- ment Machine, An- nouncement Sys. No. 7A	SD-32202-01 H212	E&M Lead Pulsing, for ANI	SD-32244-01 C188
Central "A" Bd. Inc., Regular and Trouble, with or without Machine Announce- ments	SD-95789-01 D212	Loop Pulsing, for ANI	SD-32245-01 B188
Local "A" Bd. Inc., Regular and Trouble, with or without Machine Announce- ments, for Use with Trk. Finders in same or Dist. Bldg.	SD-95796-01 E212	MF Puls., Rev. Bat. Supv., for Use Where Pos. is Arr. for DC and MF Puls.	SD-95425-01 B172
Interposition "A" Bd. - Between Spl. Serv. & Rural Oprs.	SD-239345 K27	Dial Puls., Rev. Bat. Supv., 20 Cycle or SX Start of Ringing, with or without Coin Control over Separate Single Trk. Con- ductor	SD-95471-01 E172
Auto. Between "A" Bd. & No. 3, 3C or 3CL Swbd.	SD-90124-01 E27	MPKP-In, DP-Out, Rev. Bat. Supv. 20 Cycle, SX or No. Ring. Start Sig., with or without Coin Control over Separate Single Trk. Conductor	SD-95611-01 F193
"A" Swbd.	SD-96149-01 C29	Dial, with SX Ringing to XBR No. 5 Off.	SD-95704-01 D173
Message Register For Use with 100 or 200 Pt. Line Fdr.	SD-31493-01 C5	From "A" Swbd. - with Idle Trk. Indicating	SD-96164-01 J38
2 Pty. for Use with 4 Wire Line Fdr.	SD-31506-01 D5	DCKP to Local Sel., Test Distributor, Selector for Compl. Delayed Calls, Rep. or A-B Toll Sel.	SD-96459-01 F38
For Use with 4 Wire Line Fdr.	SD-32082-01 E5	DCKP, Thru Supv., to XBR No. 5 Off.	SD-96459-01 B193
Out. to Cent. "A" Swbd. 2 Wire		DCKP, Thru Supv., to XBR Tdm. Off.	SD-96459-01 D193
To Spl. Serv. Opr. from Coin Box Lines	SD-31315-01 C8	Out. to Information Desk	
To Spl. Serv. Opr. from Non-Coin Lines - with Ringback	SD-31375-01 B8	No. 1, 2, 7 or 7A, 3, 4 or 6 Type or Opr. Room Desk No. 19 or 23 Type from Sel. Mult., with or without High-Low Supv.	SD-32170-01 H14
To Rural Opr. Arr. for Holding	SD-31540-01 F14	No. 2, 7 or 7A or No. 3, 4, 6 or 23 Type or to Opr. Room Desk No. 19 from Conn. Mult.	SD-90275-01 H20
From Incpt. Trk. Fdr. Verification Request, High-Low Rev. Bat. Supv.	SD-31965-01 E154	No. 1, 2, 7 or 7A or Opr. Room Desk No. 19 from "A" Swbd. - with Sleeve Resistance	SD-96164-01 J38
Out. to SXS "B" Swbd. from "A" Swbd., One Way CX 48V Sig.	SD-95691-01 H209	Out. to Manual Office Stfd. - Loop Sig. Rev. Bat.	SD-30645-01 D99
Out. to Full Selector Offices	SD-90439-01 F39	Stfd. - CX Sig. - Ph. Grp. - Tel. Rep. to Man. Tdm. Off.	SD-31534-01 B99
From Dialing "A" Posi- tions for Completing Delayed Calls	SD-31480-01 I40	Stfd. - CX Sig. - Ph. Grp. - To Man. Tdm. Off. Stfd. - High-Low Loop Sig.	SD-31534-01 C99
From Sel. Mult. with Mult. at Swbd. - CX Signaling, Type "B"	SD-31795-01 C138	For Flat Rate Lines From Sel. Mult.	SD-31651-01 J96
Pulse Correcting, Loop Puls. or Bat. & Grd. Puls., Rev. Bat. Supv., Rep.	SD-31929-01 K99	Arr. to Charge Sub., and Calling Party Control	SD-31692-01 J9
Coil Transmission For CAMA Calls, Bat. & Grd. Pulsing	SD-32199-01 H174		SD-32167-01 H9
For CAMA Calls, Bat. & Grd. Pulsing	SD-32240-01 I174		
For CAMA Calls, E&M Lead Signaling	SD-32241-01 J174		

TRUNKS (Cont'd.)

To Man. Tdm. from
"A" Bd. 1 Way CX
48V Sig. SD-90439-01 F39
Verification Request,
High-Low Rev.
Bat. Supv. SD-95691-01 H209
Stfd. - with Idle
Trk. Indicating to
Man. or Man. Tdm. SD-96164-01 J38
To Toll Sw. Trk. Arr.
for Rering, Idle
Trk. Indicating and
Grp. Busy Lamp SD-96395-01 K38
Out. to Magneto Office,
Ringdown, Arr. for
Coin Line Indi-
cation SD-31449-01 E8
Out. to Opr. Room Desk
No. 23A, B, C or D
From Sel. Mult.,
E&M Lead Supv. SD-32311-01 G18
From Conn. Mult.,
E&M Lead Supv. SD-32312-01 F18
Out. to Panel Office
Stfd. - Loop Sig. -
Rev. Bat. - To Panel
"B" Bd. SD-30645-01 D99
Stfd. - CX Sig. -
Ph. Grp. - Tel.
Rep. - To Panel
Sdr. Tdm. Off. SD-31534-01 B99
Stfd. - CX Sig. -
Ph. Grp. to Panel
Sdr. Tdm. Off. SD-31534-02 C99
Stfd., High-Low Loop
Sig. - To Panel
"B" Bd. SD-31651-01 J96
From "A" Swbd.
1 Way CX 48V Sig. SD-90439-01 F39
From "A" Swbd. to
Dist. Sel. in
Panel Tdm. Off. SD-96164-01 J38
Out. to PBX from Sel.
Mult. with Connector
Mult. SD-31757-01 D11
Out. to Repair Service
Desk No. 2
From Sel. & Conn.
Mult. Arr. for
Trfr. to Swbd. SD-32178-01 C58
From Sel. Mult.,
E&M Lead Supv. SD-32311-01 G18
From Conn. Mult.,
E&M Lead Supv. SD-32312-01 F18
Out. to Toll Swbd.
2 Wire from "A" Bd.
for Opr. Rec.
Completing Serv.
(Non-Coin) SD-31678-01 B37
2 Wire from "A" Bd.
for Opr. Rec.
Completing Serv.
(Coin) SD-31678-02 A37
2 Wire from Overflow
Conn. Terminals
for Hospital, Fire
& Police Serv. Arr.
to Trip Mach. Ring.
without Charging SD-31840-01 H18

Rec. Compl., Non-Coin,
without Ringback,
E&M Lead Supv.,
with or without
Class of Service
Tone SD-31888-01 F138
Sub. Rec. Compl.,
High-Low Supv.,
Non-Coin, Not
Arr. to Recall
Sub. and for
Class of Service
Tone SD-31925-01 D14
Rec. Compl., High-
Low Supv., Non-Coin,
Arr. to Recall Sub.
and for Class of
Service Tone SD-32136-01 C14
Sub. Rec. Compl.,
High-Low Supv.,
Coin, Arr. for
Class of Service
Tone SD-32168-01 B14
For Official PBX or
Repair Serv. from
Sel. Mult., E&M
Lead Supv. SD-32311-01 G18
For Official PBX,
Verification Request
or Repair Serv. from
Conn. Mult., E&M
Lead Supv. SD-32312-01 F18
Time of Day or
Official PBX High-
Low Rev. Bat. Supv. SD-95037-01 F72
Arr. for SF Operation,
MF Puls. & Rev. Bat.
Supv. for use where
Pos. is Arr. for DC
& MF Puls. SD-95425-02 C172
For Use with Intertoll
Dialing, CX or SX
Supv. SD-95504-01 F172
Verification Request,
High-Low Rev. Bat.
Supv. SD-95691-01 H209
Stfd. - with Idle
Trk. Indicating SD-96164-01 J38
Sender Monitoring SD-95469-01 J183
Sleeve Repeating SD-31421-01 D8
Talking at MDF or
Protector Frame
to LTD No. 14 SD-96074-01 J42
Test
From Loc. Sel.
Mult. to LTD
No. 14 SD-31245-01 D42
From Loc. Sel.
Mult. to Loc.
Tst. Cab. No. 3 SD-31245-01 H142
Inc. from LTD No. 14
to MDF & IDF for
Detecting Inter-
mittent Trouble SD-32038-01 A44
For Use with Incpt.
Trk. Ckts. Requir-
ing Mach. Ring. SD-32090-01 E54
From LTD No. 14 to MDF
or Protector Fr. for
Testing Trks. & Lines -
In & Out Type SD-90070-01 F43

TRUNKS (Cont'd.)

From Loc. Test Cab. No. 3 to MDF or Protector Fr. for Testing Trks. & Lines - In & Out Type	SD-90070-01 I143	Interlocal - Dial Repeating on Out. Calls - Loop Res. 1200 Ohms Max.	SD-31658-01 G9
From LTD No. 14 to MDF for Testing Trks. & Lines - Bridging	SD-90071-01 G43	"A" Bd. 2 Way Opera- tor Off. to Com- munity Dial Off. CX Sig.	SD-31710-01 E33
Test, Frame End from Cable Test Desk No. 3 or LTD No. 14 Arr. for Man. Varley 3 Test	SD-90403-01 C42	Toll Connecting - 3 Wire - For Use with Toll Swbd. No. 1	SD-31714-01 G35
"A" Board Test Trk. from LTD No. 14	SD-90507-01 D43	Interlocal, Bat. & Grd. Puls., Rev. Bat. Supv., Rep. Coil Transmission	SD-31842-01 H172
"A" Board Test Trk. from Loc. Test Cab. No. 3	SD-90507-01 G143 SD-90589-01 G78	Interlocal - CX or SX Puls., CX or SX Supv., Arr. for Pulse Correcting on Inc. Calls	SD-31867-01 G172
Plugging Up Frame "A" Board Test Trk., from Toll Test Bd. No. 18B for Test- ing Out. Trks. Arr. for MF Key Puls. in Swbds. Equipped with Combined DC-MF Key Set Ckts.	SD-95486-01 F183	Combined Opr. Office & Interlocal, One Digit Tdm. Opera- tion, Bat. & Grd. Puls., Rev. Bat. Supv., Type "B" TB Supply	SD-31886-01 I172
Test, Frame End from Cable Test Desk No. 3 or LTD No. 14 Arr. for Auto. Varley 3 Test	SD-95545-01 A42	Combined Opr. Office & Interlocal, One Digit Tdm. Opera- tion, CX, SX or E and M Lead CX Type Supv., Type "B" TB Supply	SD-31885-01 J172
Talking at MDF or Protector Frame to LTD No. 14	SD-96074-01 J42	"A" Bd. 2 Way Operator Off. to Community Dial Off.	SD-31906-01 D33
Toll Diverting, for Dial Selected PBX Trks. with or with- out Arrangement to Test Busy While Line Finder Hunts	SD-32067-01 J137	"A" Bd. 2 Way Opera- tor Off. with Tandem Sel. Mult. to Community Dial Off. - CX Sig. Type B - with or without Tel. Rep.	SD-31928-01 C33 SD-96216-01 C30
2 Way To Mag. Swbd. Out. Ringdown - Inc. Dialing	SD-31449-01 I97	Ringdown Interoffice 2 Wire Auto. to DSA or Toll Swbd.	SD-96301-01 J33 SD-96394-01 G33
Interlocal - Dial Repeating on Out. Calls - Loop Res. 3000 Ohms Max.	SD-31602-01 I8	Ringdown to Toll Swbd.	
		USAGE Trunk Group	SD-32049-01 B107