

SD-31359-01

BELL TELEPHONE LABORATORIES, INC.

**STEP BY STEP SYSTEMS
NO. 1
KEY SHEET**

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

11-21-60
J.P.

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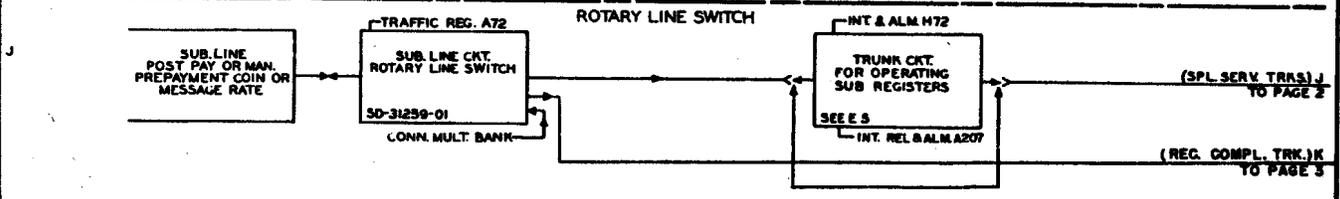
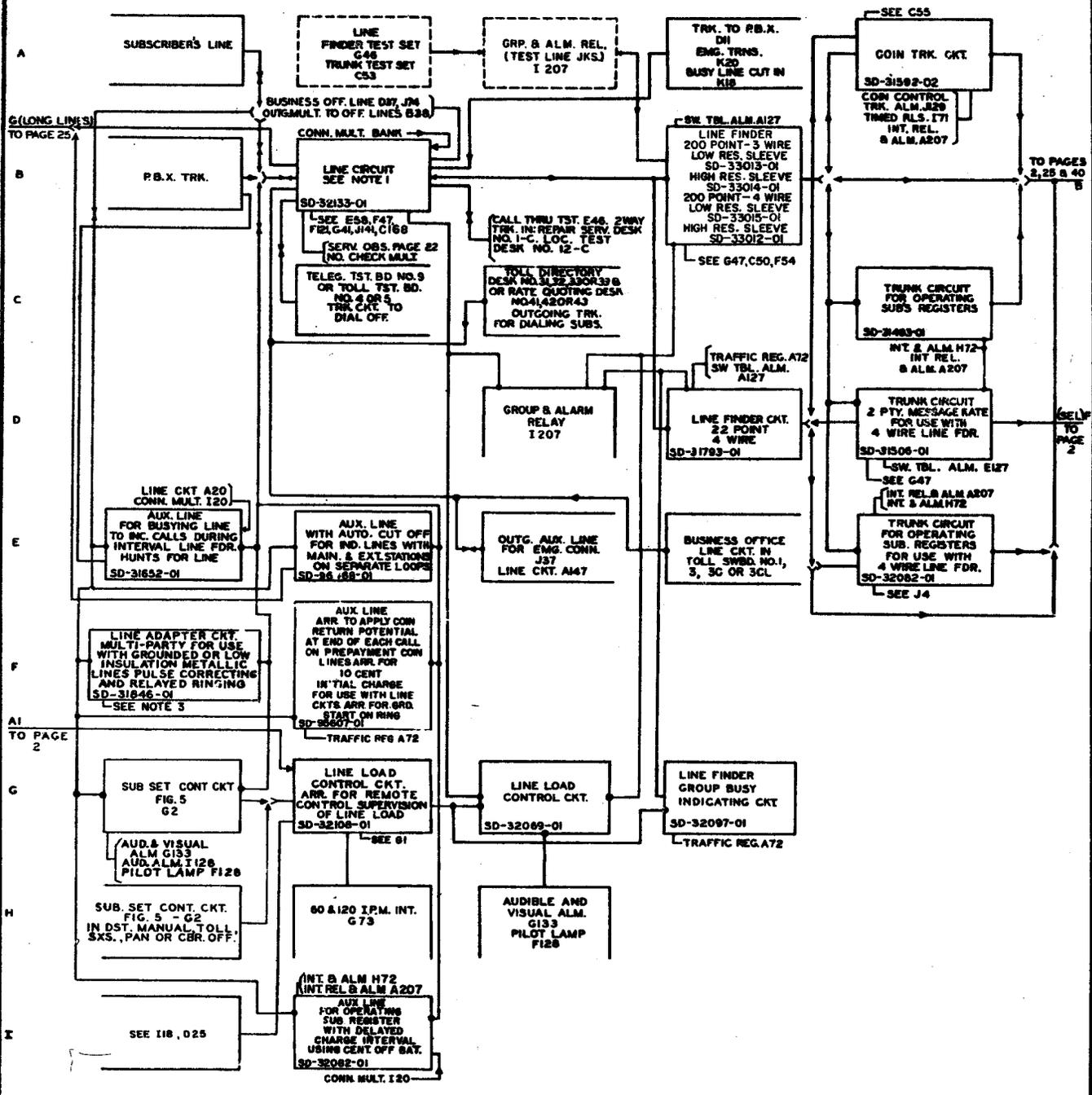
**AT&TC
STANDARD**
A & M ONLY FOR
SWBD NO. 15C

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.

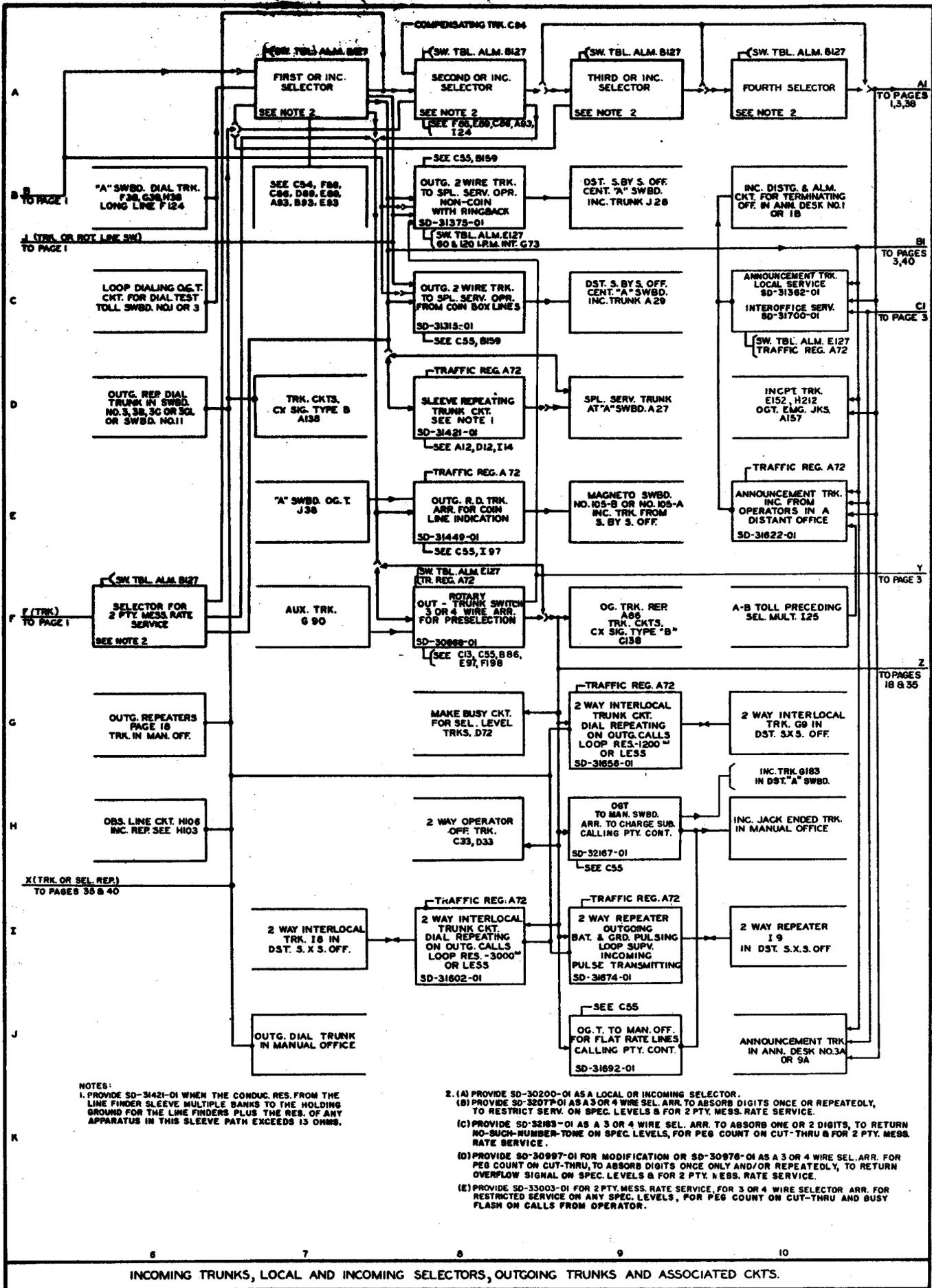
SD-31359-01

22,100 OR 200 POINT LINE FINDER CKTS.



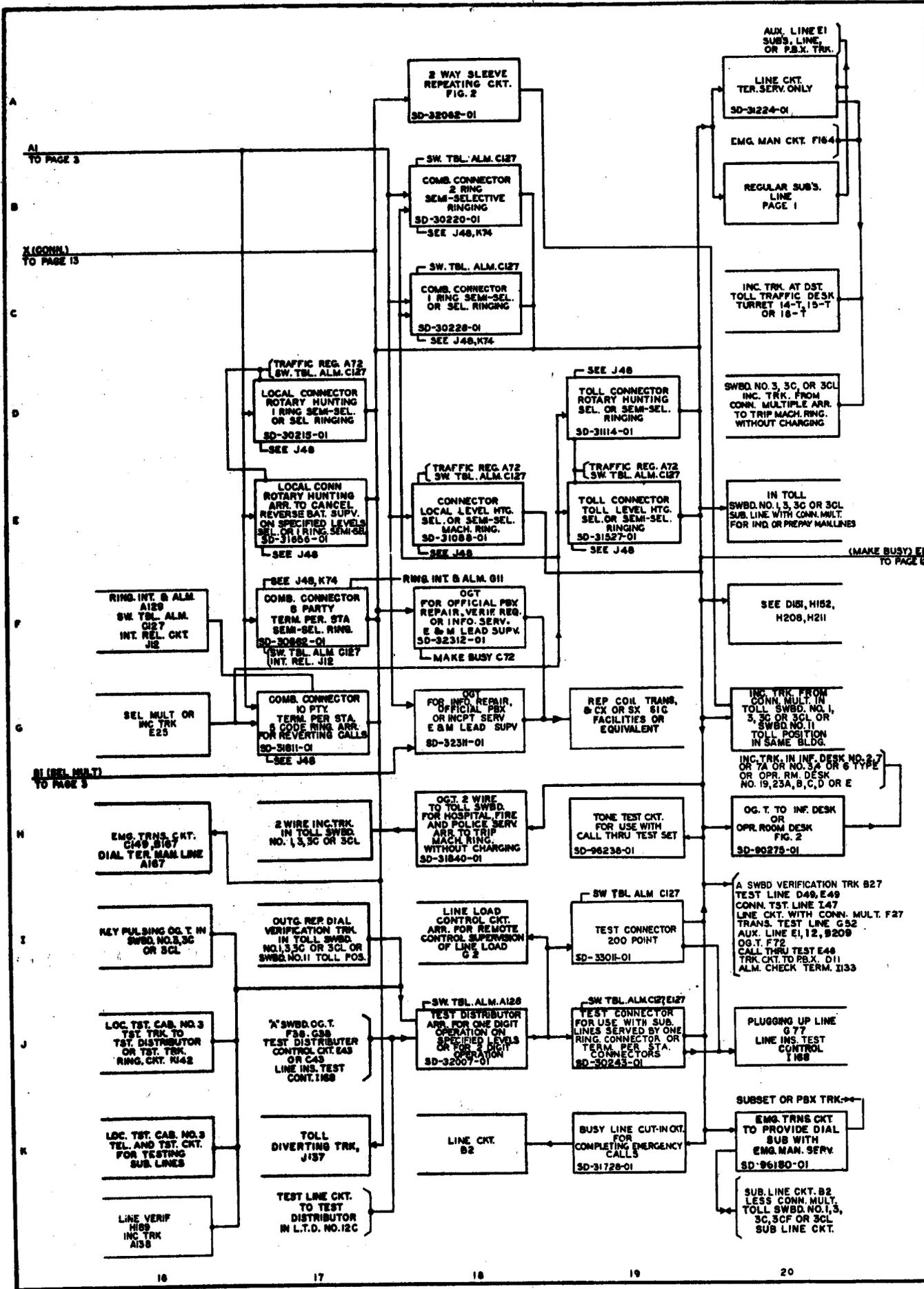
- NOTES:
1. WHEN USED WITH BUSINESS OFFICE LINE, TRUNK TO R.B.X. OR TOLL TRAFFIC DESKS, OMIT CONNECTION TO CONNECTOR MULTIPLE BANK.
 - 2.
 3. THIS CKT. SHALL BE USED ONLY WITH AC-DC RINGING LINES.

FULL SELECTOR ORIGINATING CIRCUITS



NOTES:
 1. PROVIDE SD-31421-01 WHEN THE CONDUCT. RES. FROM THE LINE FINDER SLEEVE MULTIPLE BANKS TO THE HOLDING GROUND FOR THE LINE FINDERS PLUS THE RES. OF ANY APPARATUS IN THIS SLEEVE PATH EXCEEDS 13 OHMS.

2. (A) PROVIDE SD-30200-01 AS A LOCAL OR INCOMING SELECTOR.
- (B) PROVIDE SD-32077-01 AS A 3 OR 4 WIRE SEL. ARR. TO ABSORB DIGITS ONCE OR REPEATEDLY, TO RESTRICT SERV. ON SPEC. LEVELS & FOR 2 PTY. MESS. RATE SERVICE.
- (C) PROVIDE SD-32183-01 AS A 3 OR 4 WIRE SEL. ARR. TO ABSORB ONE OR 2 DIGITS, TO RETURN NO-SUCH-NUMBER-TONE ON SPEC. LEVELS, FOR PEG COUNT ON CUT-THRU & FOR 2 PTY. MESS. RATE SERVICE.
- (D) PROVIDE SD-30997-01 FOR MODIFICATION OR SD-30976-01 AS A 3 OR 4 WIRE SEL. ARR. FOR PEG COUNT ON CUT-THRU, TO ABSORB DIGITS ONCE ONLY AND/OR REPEATEDLY, TO RETURN OVERFLOW SIGNAL ON SPEC. LEVELS & FOR 2 PTY. MESS. RATE SERVICE.
- (E) PROVIDE SD-33003-01 FOR 2 PTY. MESS. RATE SERVICE, FOR 3 OR 4 WIRE SELECTOR ARR. FOR RESTRICTED SERVICE ON ANY SPEC. LEVELS, FOR PEG COUNT ON CUT-THRU AND BUSY FLASH ON CALLS FROM OPERATOR.



A
AI
TO PAGE 3

B
X (CONN.)
TO PAGE 13

C

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E

F

G

HI (REL. MULT.)
TO PAGE 3

H

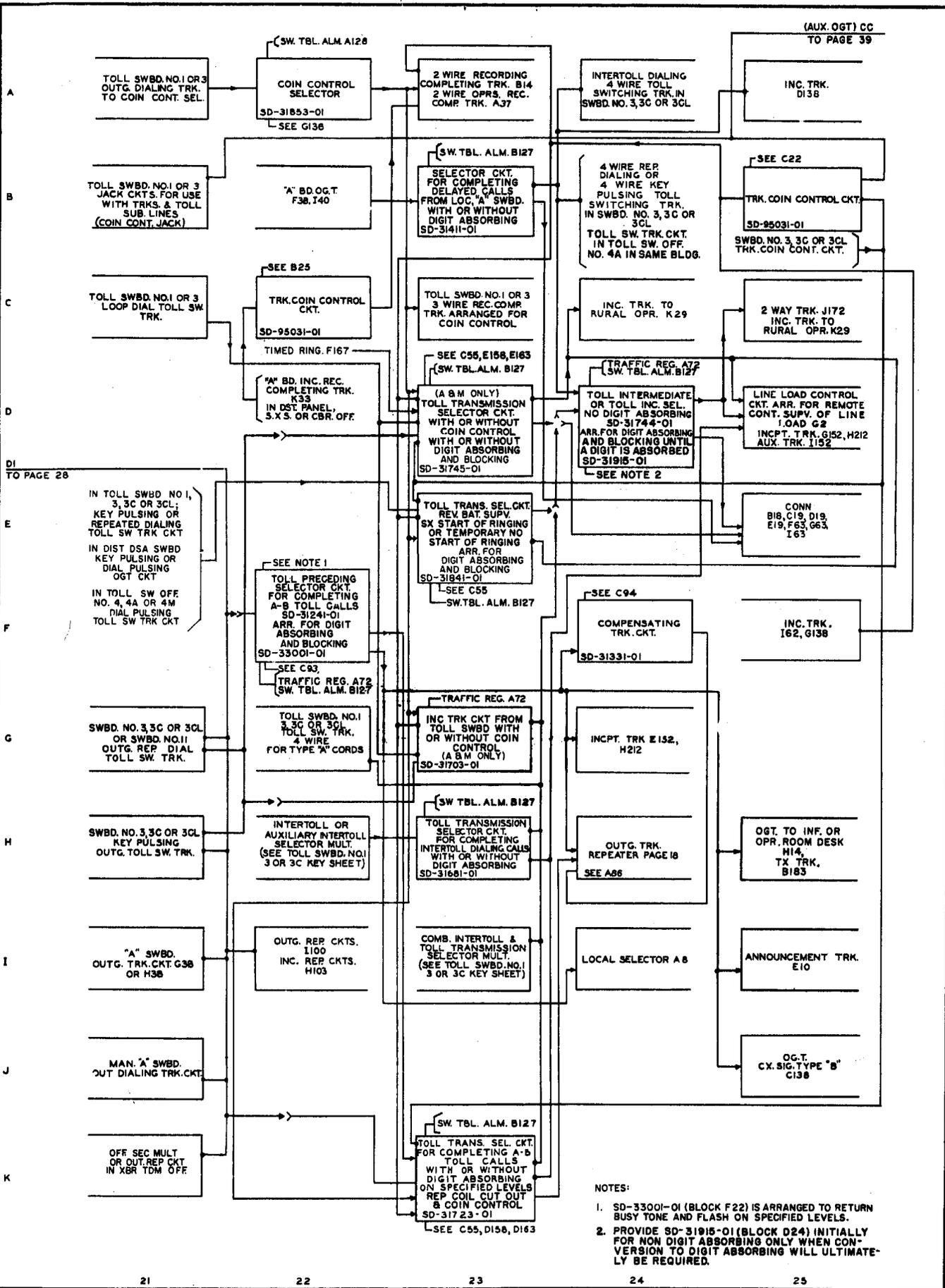
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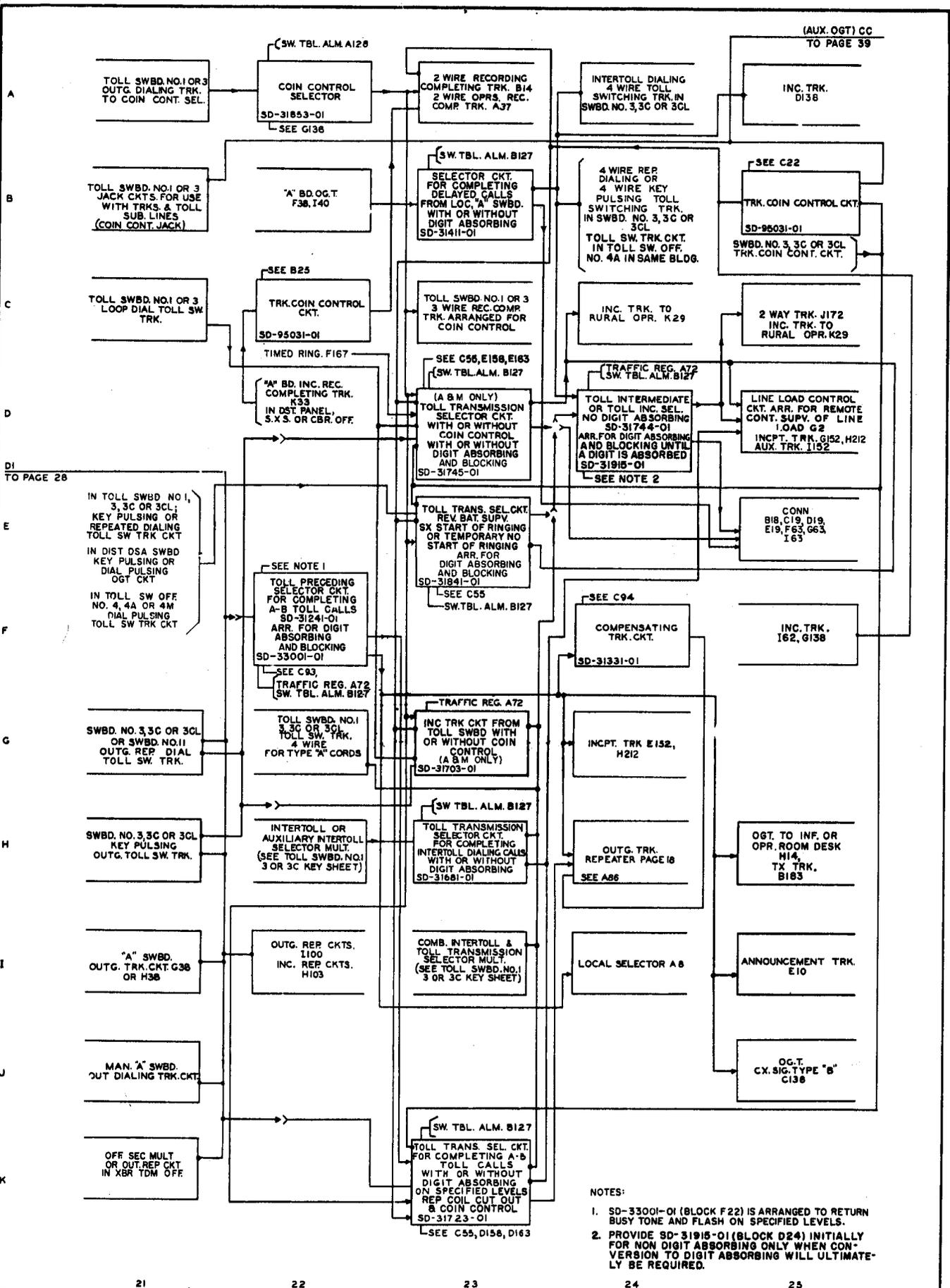
(MAKE BUSY) E1
TO PAGE 2

FULL SELECTOR TERMINATING CIRCUITS AND TEST TRAIN



- 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.

TOLL TRAIN CIRCUITS



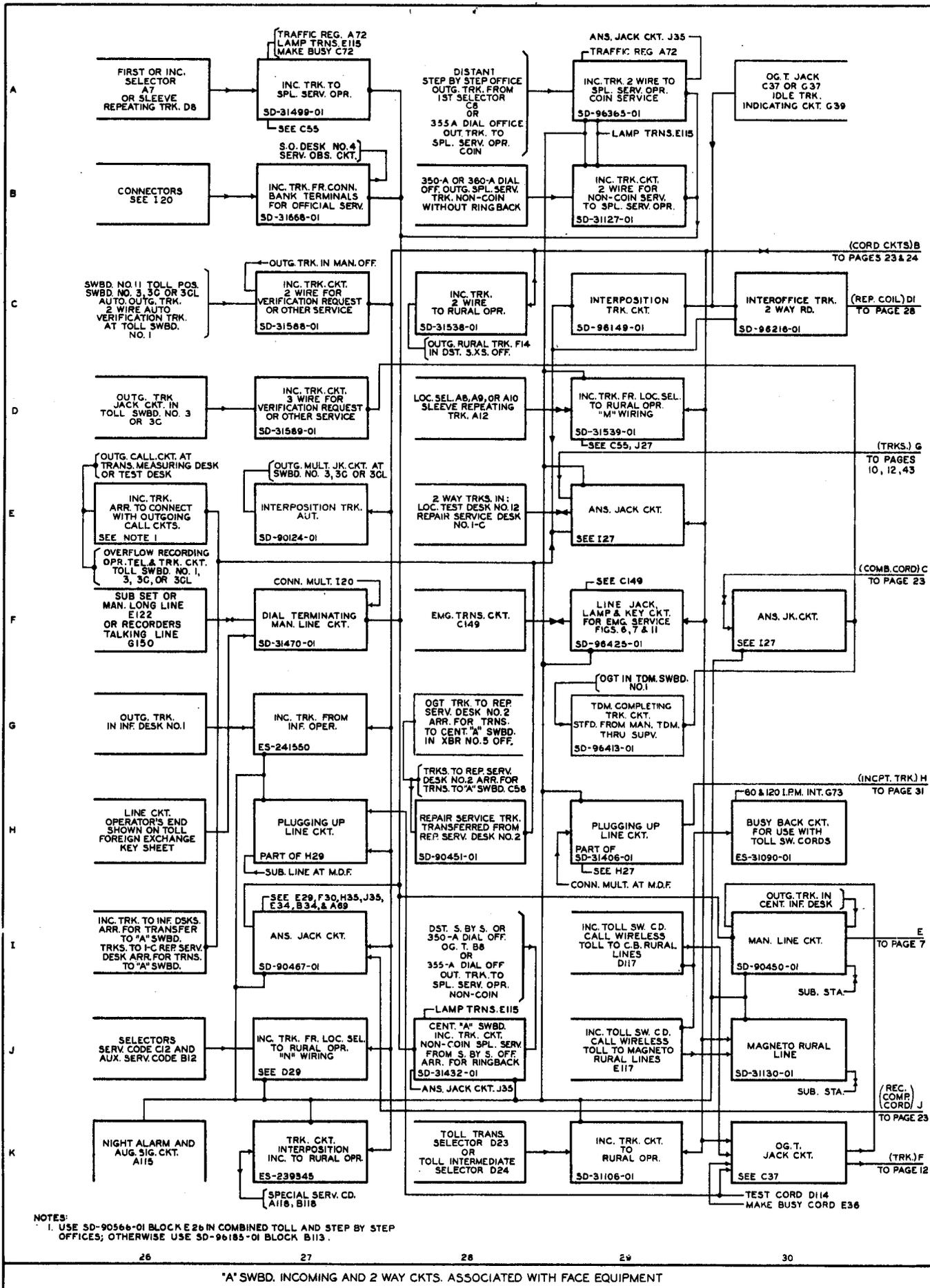
(AUX. OGT) CC
TO PAGE 39

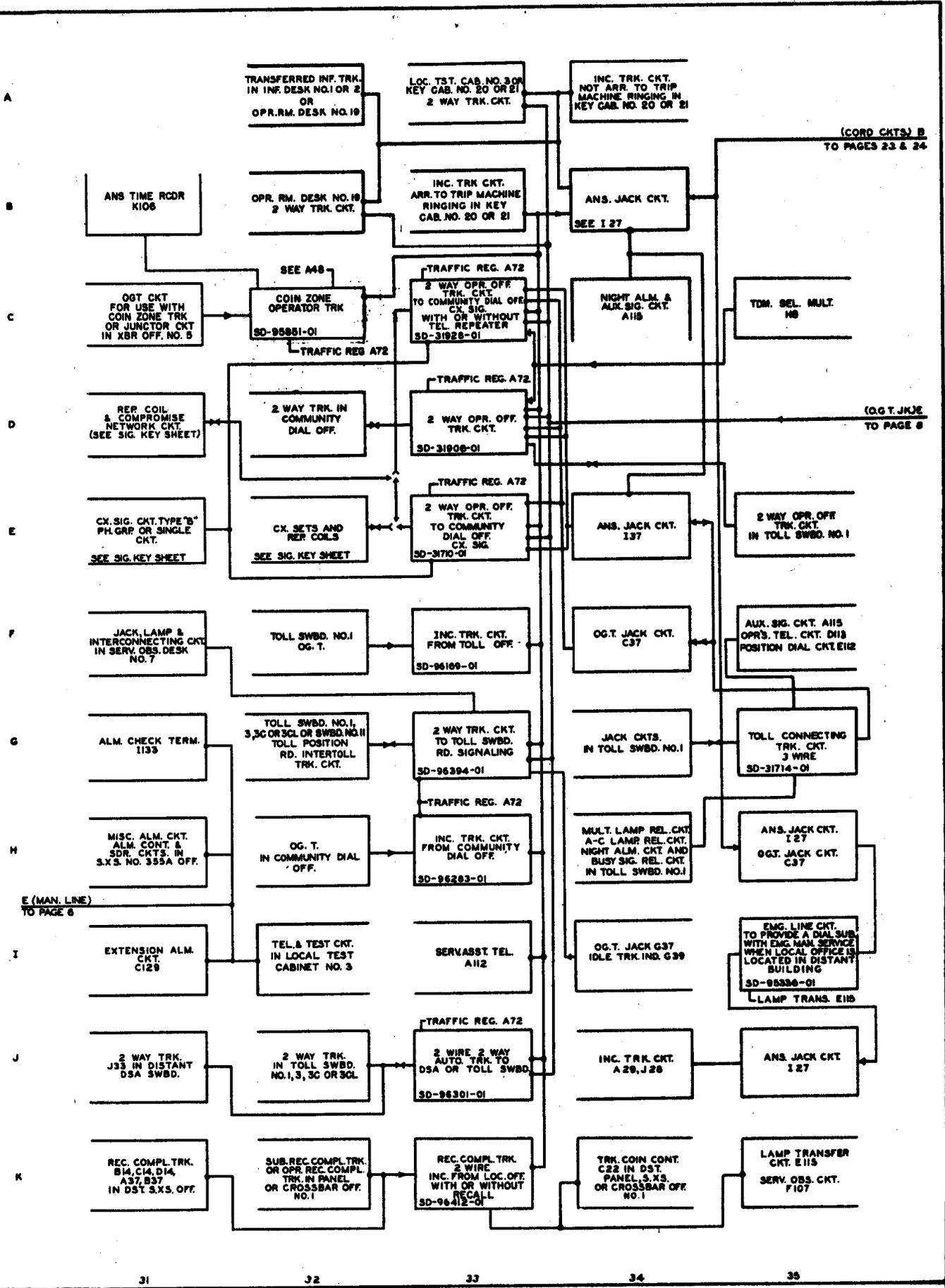
A
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TO PAGE 28

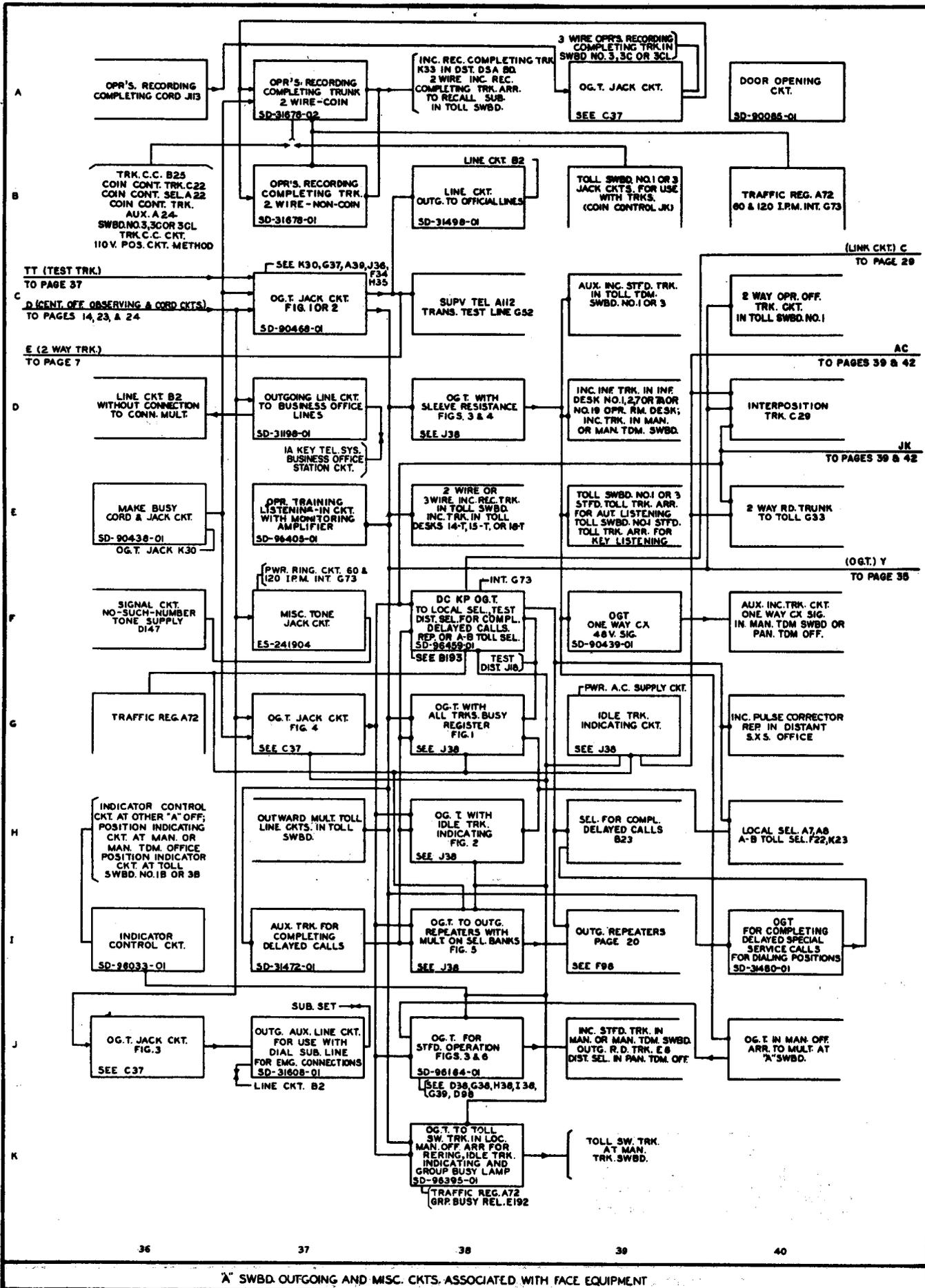
- NOTES:
- SD-33001-01 (BLOCK F 22) IS ARRANGED TO RETURN BUSY TONE AND FLASH ON SPECIFIED LEVELS.
 - PROVIDE SD-31915-01 (BLOCK D 24) INITIALLY FOR NON DIGIT ABSORBING ONLY WHEN CONVERSION TO DIGIT ABSORBING WILL ULTIMATELY BE REQUIRED.

21 22 23 24 25

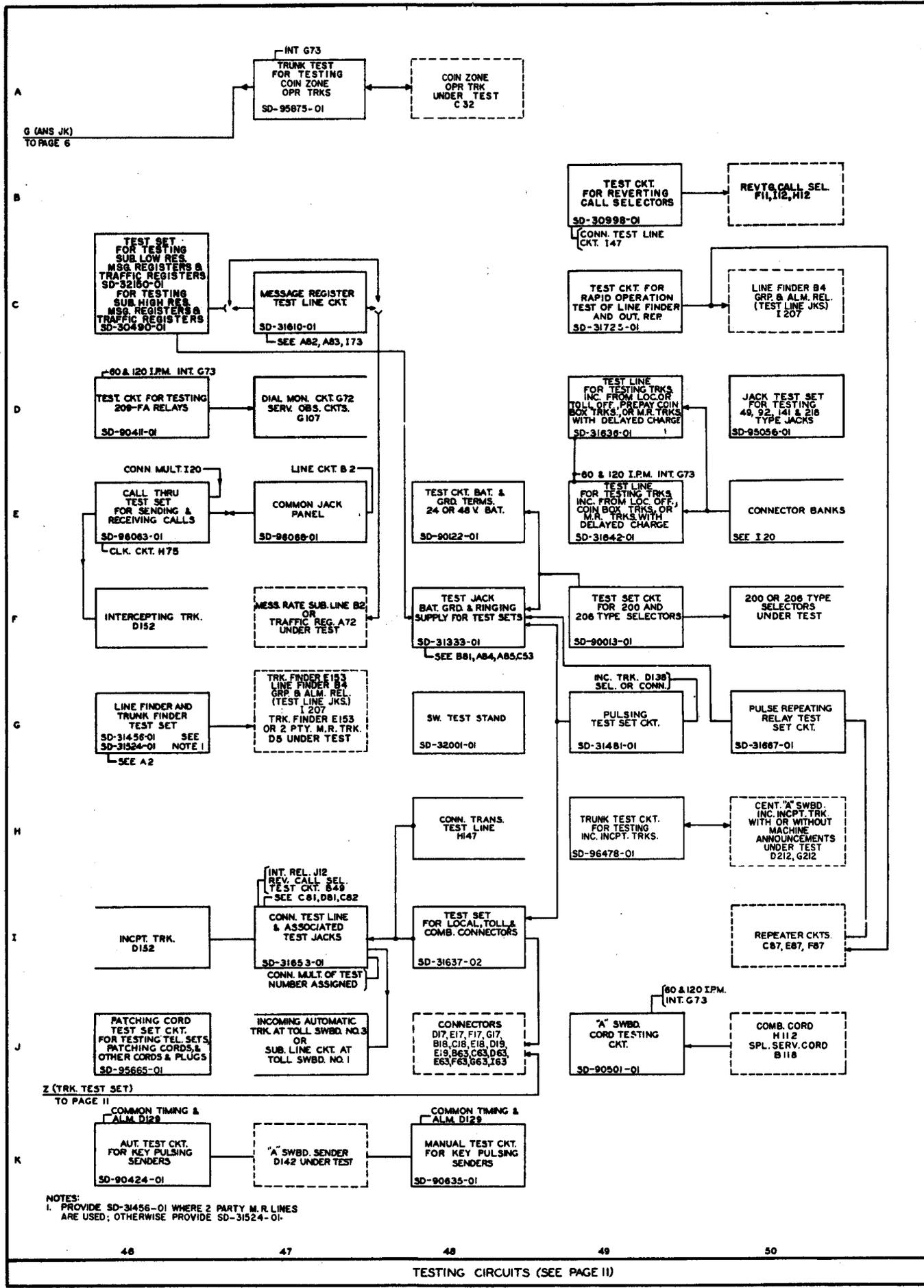




"A" SWBD. INCOMING AND 2 WAY CKTS. ASSOCIATED WITH FACE EQUIPMENT



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



G (ANS JK)
TO PAGE 6

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G

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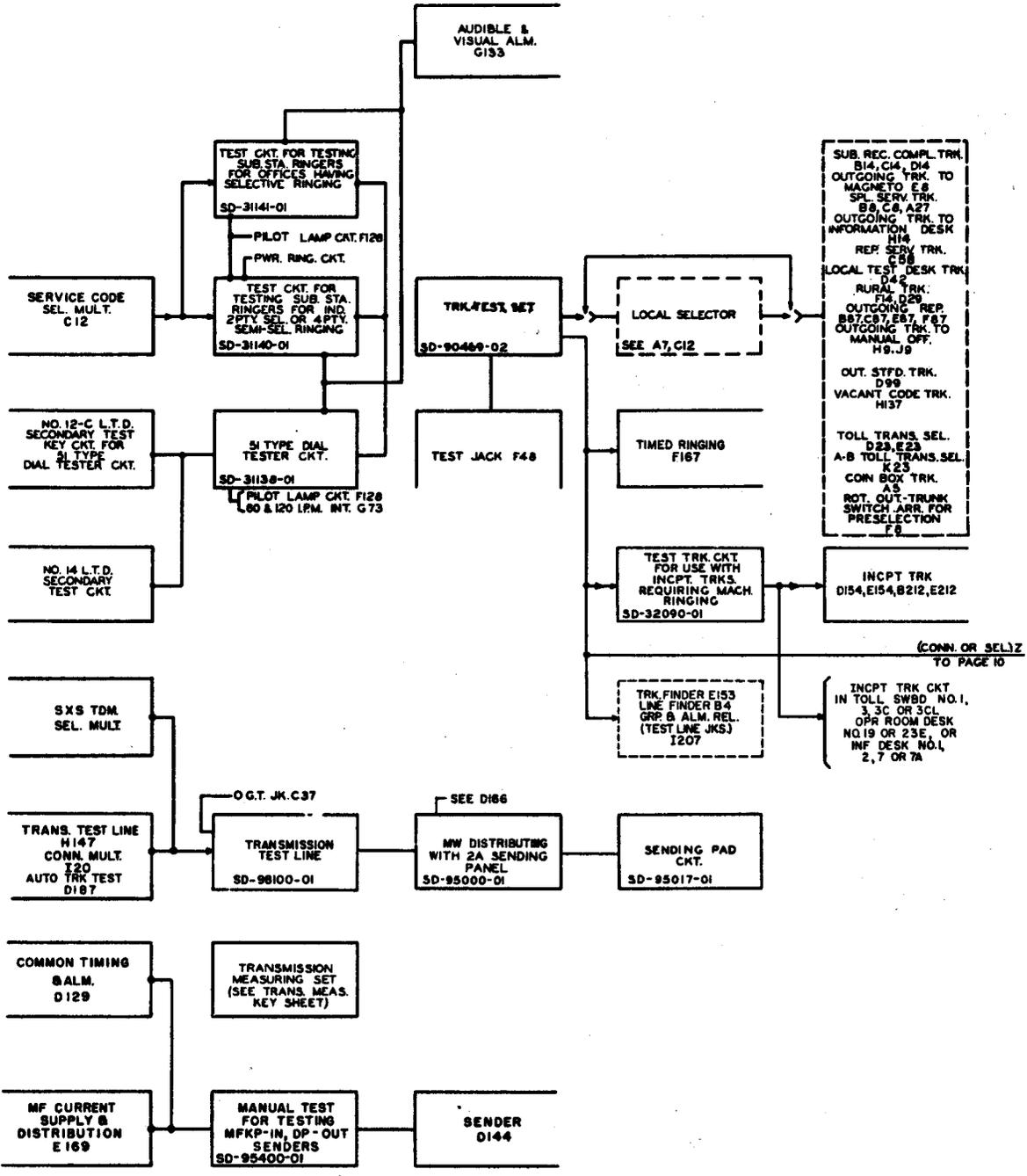
J

K

Z (TRK. TEST SET)
TO PAGE II

NOTES:
I. PROVIDE SD-34456-01 WHERE 2 PARTY M.R. LINES
ARE USED; OTHERWISE PROVIDE SD-31524-01.

A
B
C
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51

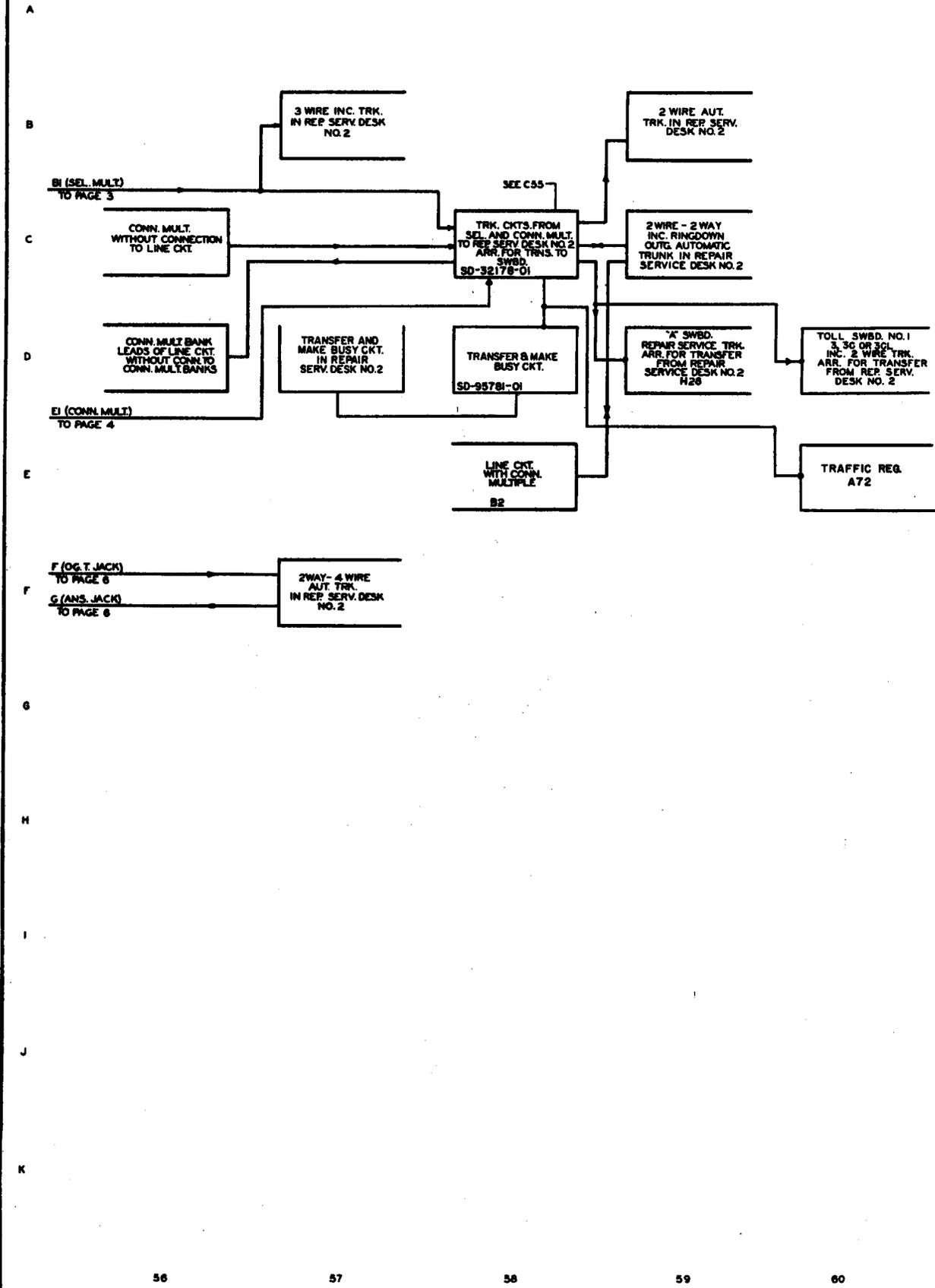
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CIRCUITS CONNECTING WITH REPAIR SERVICE DESK NO. 2



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CIRCUITS CONNECTING WITH REPAIR SERVICE DESK NO. 2

A

B

C

D

A1

TO PAGE 3

E

F

G

H

I

J

K

SEE J48
 LOCAL COHN
 200 PT MULTIPARTY
 AC-DC RING.
 TERM. PER STA
 ARR. FOR REV CALLS
 SD-33005-01

LOCAL COHN
 200 PT ROT. NTS
 MULTIPARTY
 AC-DC RING.
 TERM. PER STA
 ARR. FOR REV CALLS
 SD-33006-01

SEE J48 - SEE J48
 LOCAL COHN
 200 POINT MULTIPARTY
 SUP. RING.
 TERM. PER STA
 SD-33007-01

LOCAL COHN
 200 PT ROT. NTS
 MULTIPARTY
 SUP. RING.
 TERM. PER STA
 SD-33008-01

SEE J48 - SEE J48
 COMB. COHN
 200 POINT
 MULTIPARTY
 AC-DC RINGING
 TERM. PER STA
 ARR. FOR REV CALLS
 SD-33009-01

COMB. COHN
 200 PT MULTIPARTY
 SUP. RING.
 TERM. PER STA
 SD-33010-01
 SEE J48

SEE J48
 COMB. CONNECTOR
 ROTARY MOUNTING
 ONE RING
 WITH OR WITHOUT
 ARRANGEMENT
 TO CANCEL REV
 DAT. SUPY ON
 SPECIFIED LEVELS
 SD-33011-01

SW TBL ALM
 C127

(LINES & TRNS)X
 TO PAGE 4

INCPT. TRK
 N212

TOLL INT SEL
 D24
 TOLL TRANS SEL
 D23, E23
 A-B TOLL TRANS SEL
 K23
 "A" SD COMPL SEL
 B23

61

62

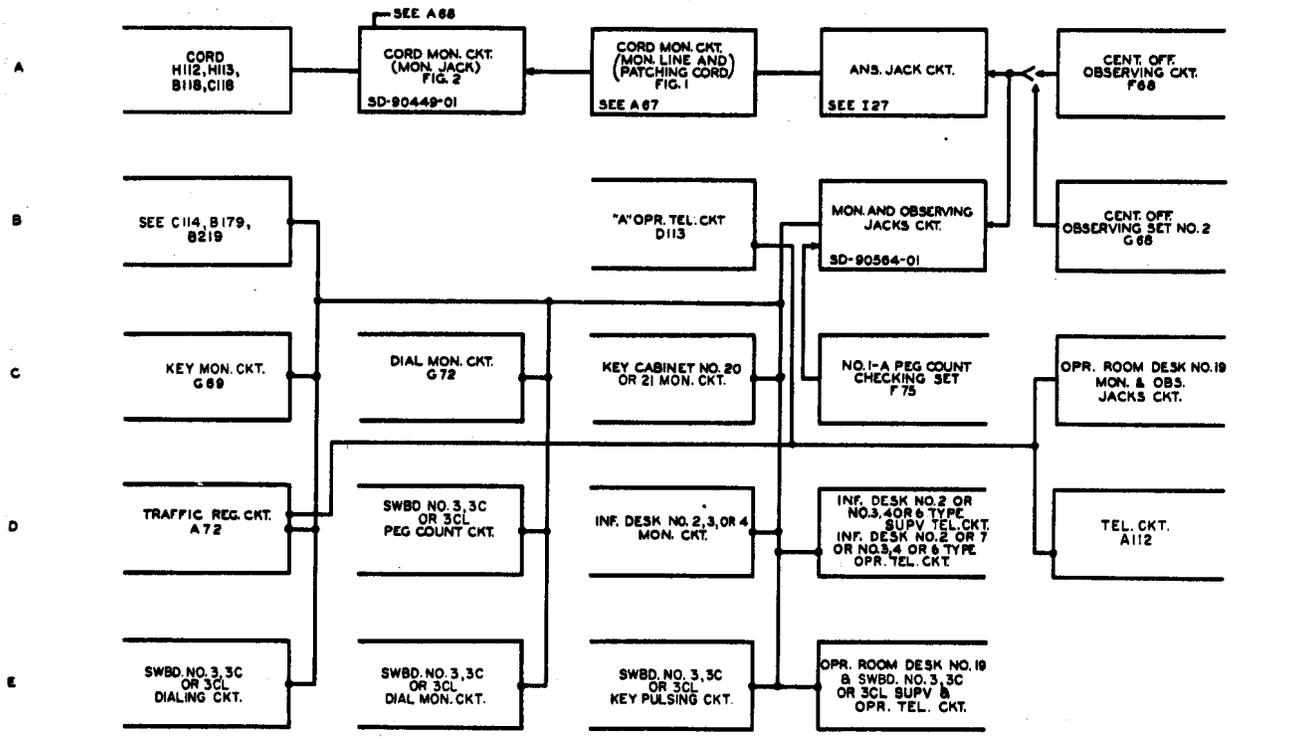
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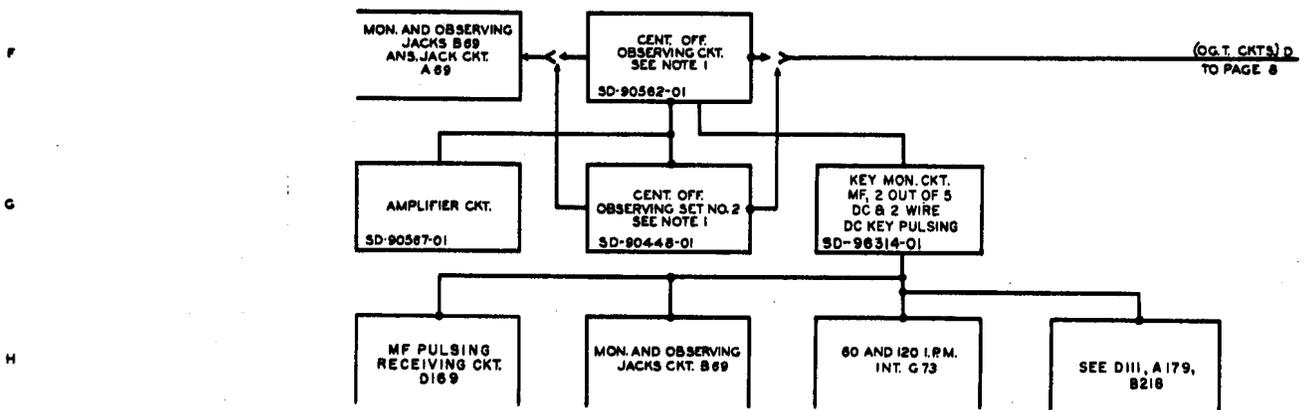
65

FULL SELECTOR TERMINATING CIRCUITS

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.

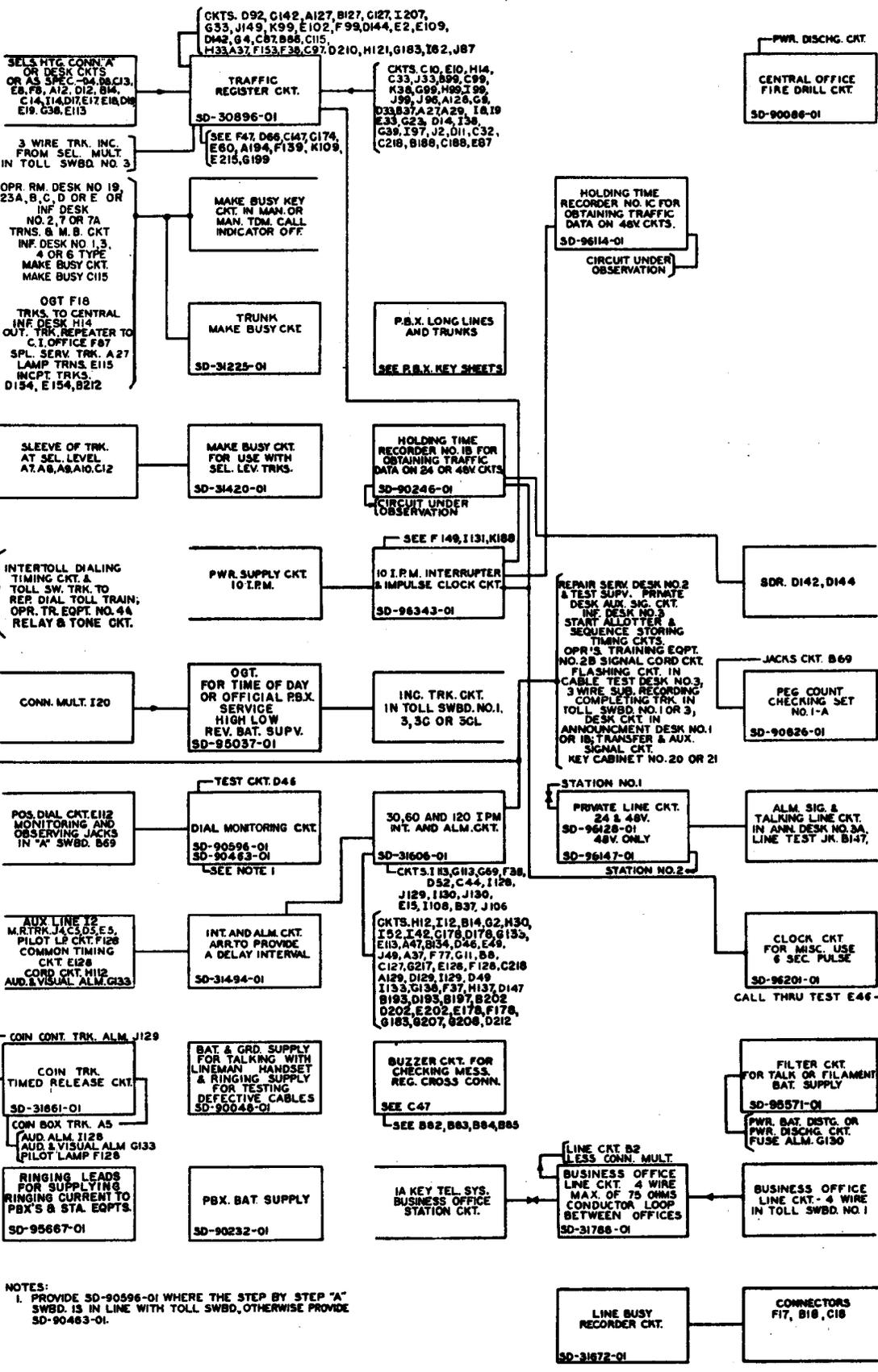
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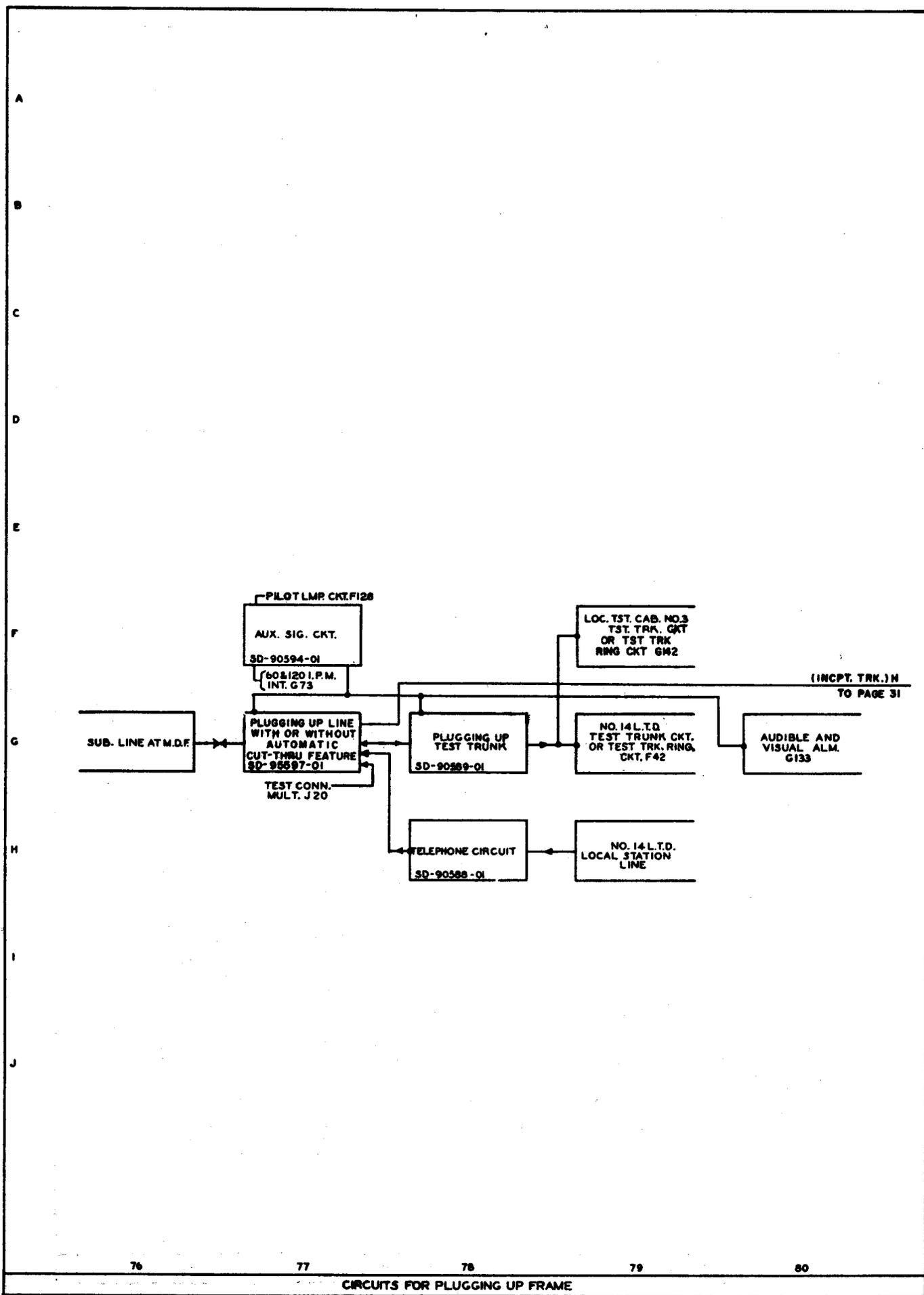
68

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70



NOTES:
 1. PROVIDE SD-90596-01 WHERE THE STEP BY STEP "A" SWBD. IS IN LINE WITH TOLL SWBD, OTHERWISE PROVIDE SD-90483-01.



76

77

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A
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TEST LINE JACKS
FOR TESTING
MESSAGE REGISTERS
FIG. 5
JACKS DESIG. (T) & (TI)
SEE C 47

TEST LINE JACKS
FOR TESTING
MESSAGE REGISTERS
FIG. 8B
JACKS DESIG. (T) & (HS)
SEE C 47

48V. BATTERY JACK
FIG. 1
JACK DESIG. (48V)
SEE F 48

RINGING CURRENT
SUPPLY JACK
FIG. 2
JACK DESIG. (S) OR (GEN)
SEE F 48

64V. BATTERY JACK
FIG. 3
JACK DESIG. (64V)
SEE F 48

BUZZER CIRCUIT
FOR TESTING MESSAGE
REGISTER CROSS-CONN.
AT I.D.F.
FIG. 1 (V.I.D.F.)
JACK DESIG. (BUZ 1)
SEE I 73

BUZZER CIRCUIT
FOR TESTING MESSAGE
REGISTER CROSS-CONN.
AT I.D.F.
FIG. 1 (H.I.D.F.)
JACK DESIG. (BUZ 2)
SEE I 73

BUZZER CIRCUIT
FOR TESTING MESSAGE
REGISTER CROSS-CONN.
AT I.D.F.
FIG. 2 (V.I.D.F.)
JACK DESIG. (BUZ 2)
SEE I 73

BUZZER CIRCUIT
FOR TESTING MESSAGE
REGISTER CROSS-CONN.
AT I.D.F.
FIG. 4
JACK DESIG. (BUZ 2)
SEE I 73

TEST LINE JACKS
CONNECTOR TEST
JACKS
FIG. 2
JACKS DESIG. (3) & (4)
SEE I 47

TEST LINE JACKS
& PARTY SEMI-SEL.
CONN. RING TEST
JACK
FIG. 3, 4 OR 5
JACKS DESIG. (6 PTY)
SEE I 47

TEST LINE JACKS
FOR USE WITH LEVEL
HUNTING CONNECTORS
FIG. 6
JACKS DESIG. (3) & (4)
SEE I 47

SWITCHMAN TALKING
LINE
FIG. 2
JACKS A.E. INC. TYPE
SEE H 147

SWITCHMAN TALKING
LINE
FIG. 10
JACK DESIG. (6)
SEE H 1-7

SWITCHMAN TALKING
LINE
FIG. 7
JACKS DESIG. (A) & (B)
SEE H 147

SWITCHMAN TALKING
LINE
FIG. 2 OR 3
JACKS A.E. INC. TYPE
SEE H 147

JACK ASSIGNMENT TABLE

FRAME OR RACK	JACK DESIGNATION AND BLOCK NUMBER															
	A	B	T	TI	3 OR GEN	48V.	64V.	BUZ1	BUZ2	HS	3	4	6	6PTY	A.E. INC. TYPE	
LINE FINDER FRAME						A84									D84	
LOCAL SELECTOR FRAME						A84										
SPECIAL SERVICE SELECTOR FRAME						A84									D84	
TOLL SELECTOR FRAME						A84									D84	
TOLL TRANSMISSION SELECTOR FRAME					A85	A84							D05		D84	
CONNECTOR FRAME						A84					C81 AND D81	C81 AND D81		C82	E84	
MISCELLANEOUS FRAME						A84							D85		D84	
REPEATER FRAME						A84									D84	
COIN BOX TRUNK RELAY RACK						A84									D84	
MESSAGE REGISTER RACK	E81	E81	A83	A83		A84	B81		B88	A83						
TRAFFIC REGISTER RACK	E81	E81														
INTERMEDIATE DISTRIBUTING FRAME	E81	E81	A82	A82		A84	B81	B82	B83 AND B84							
TRUNK FINDER FRAME						A84										
MISCELLANEOUS RELAY RACK						A84										

81

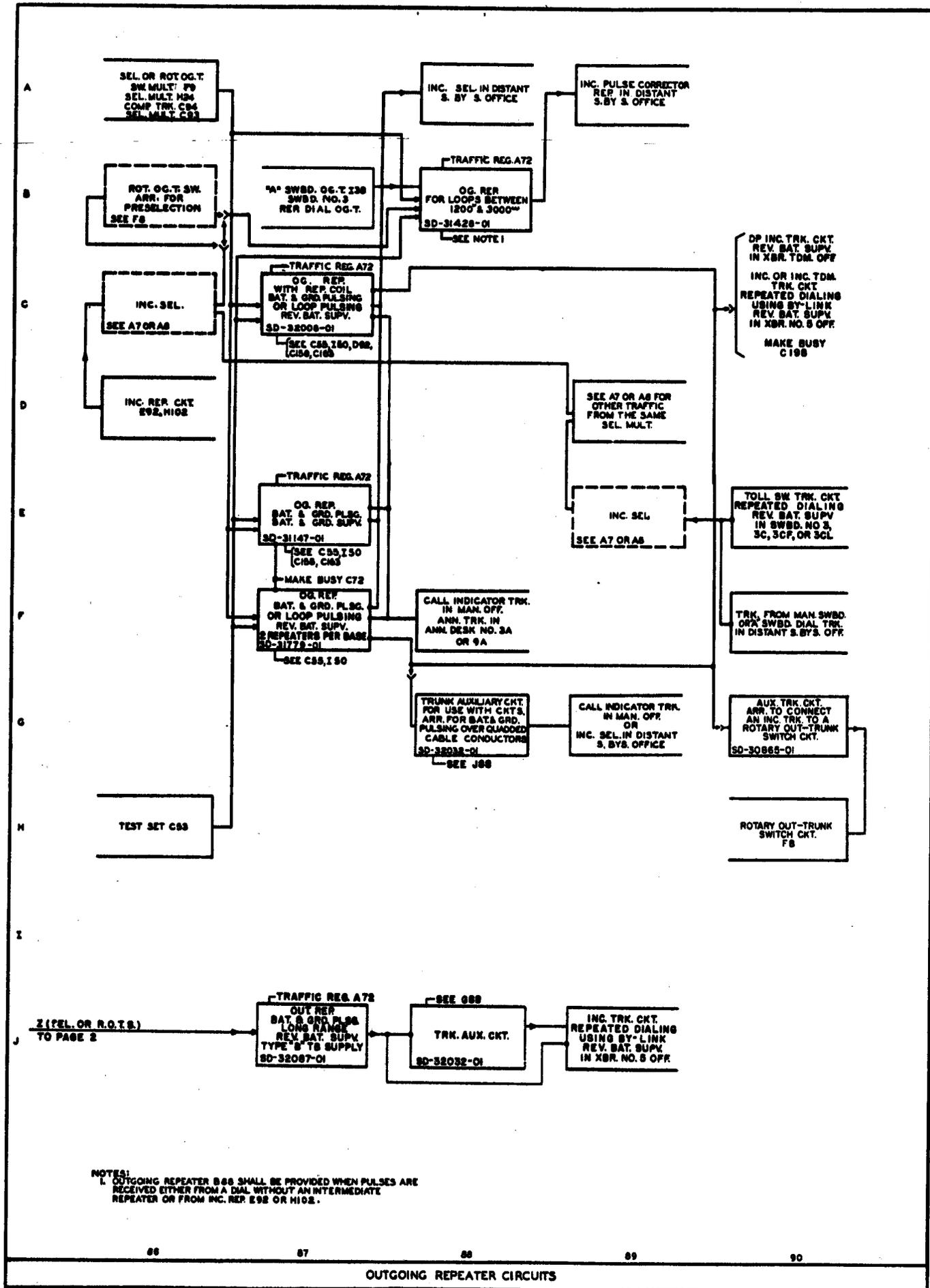
82

83

84

85

JACK ASSIGNMENTS AND LOCATION FOR TEST AND TALKING LINE JACKS

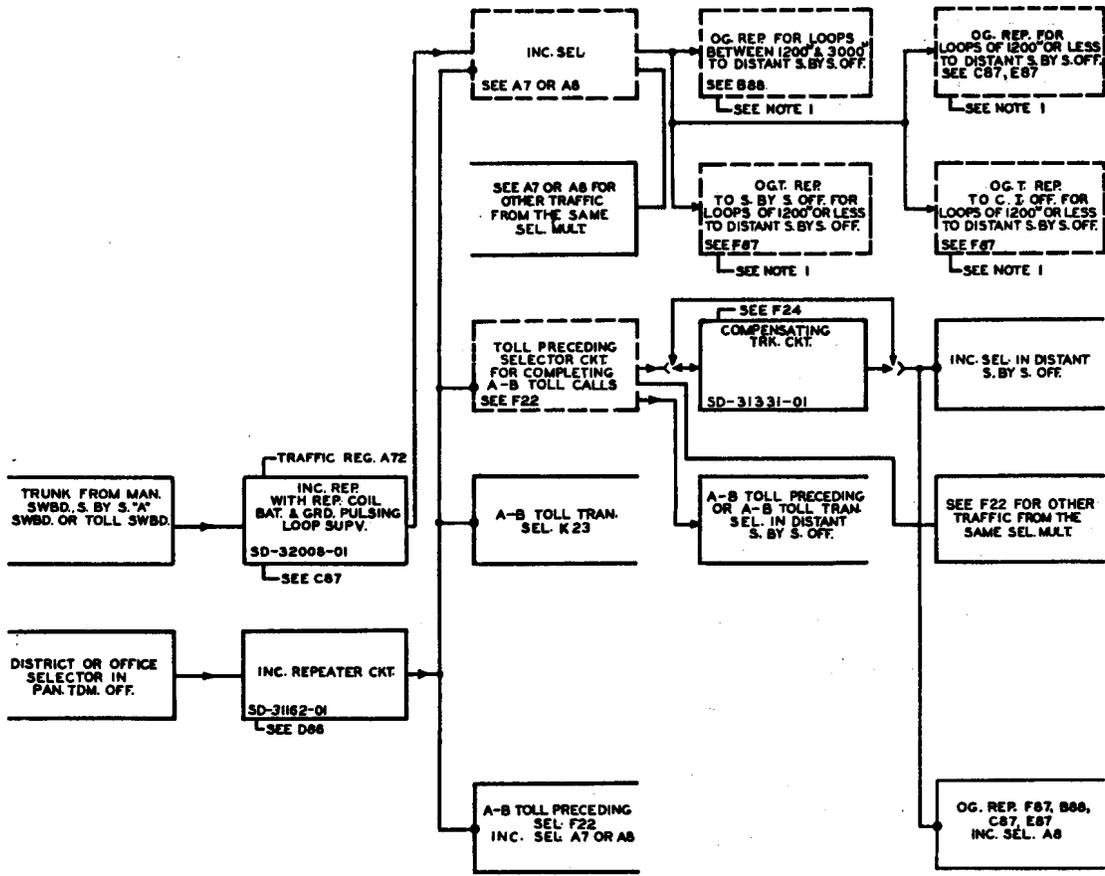


Z (REL. OR R.O.T.S.)
TO PAGE 2

NOTES:
1. OUTGOING REPEATER B 66 SHALL BE PROVIDED WHEN PULSES ARE RECEIVED EITHER FROM A DIAL WITHOUT AN INTERMEDIATE REPEATER OR FROM INC. REP. E 98 OR H 102.

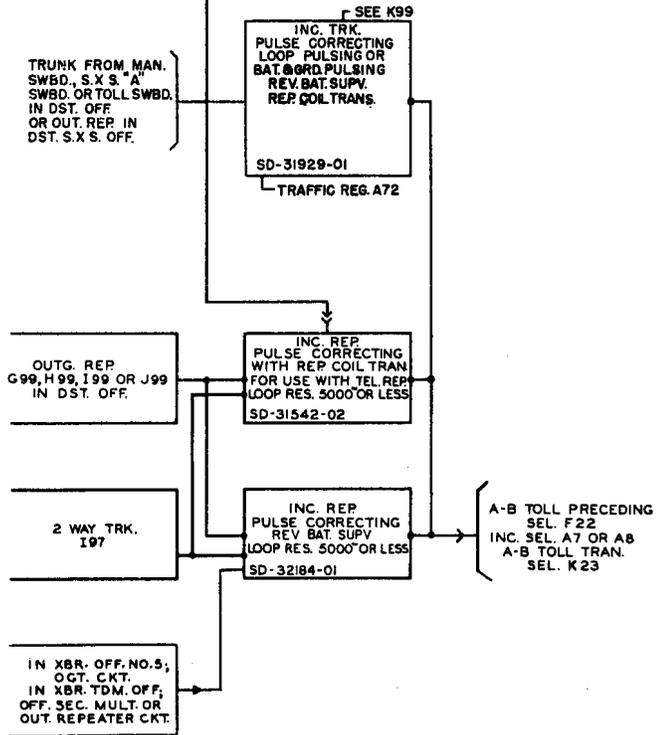
OUTGOING REPEATER CIRCUITS

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NOTES:
1. THESE OUTGOING REPEATERS ARE FURNISHED BECAUSE OF OTHER TRAFFIC FROM THE SAME SELECTOR MULTIPLE.

F (TEL REP)
TO PAGE 20



101

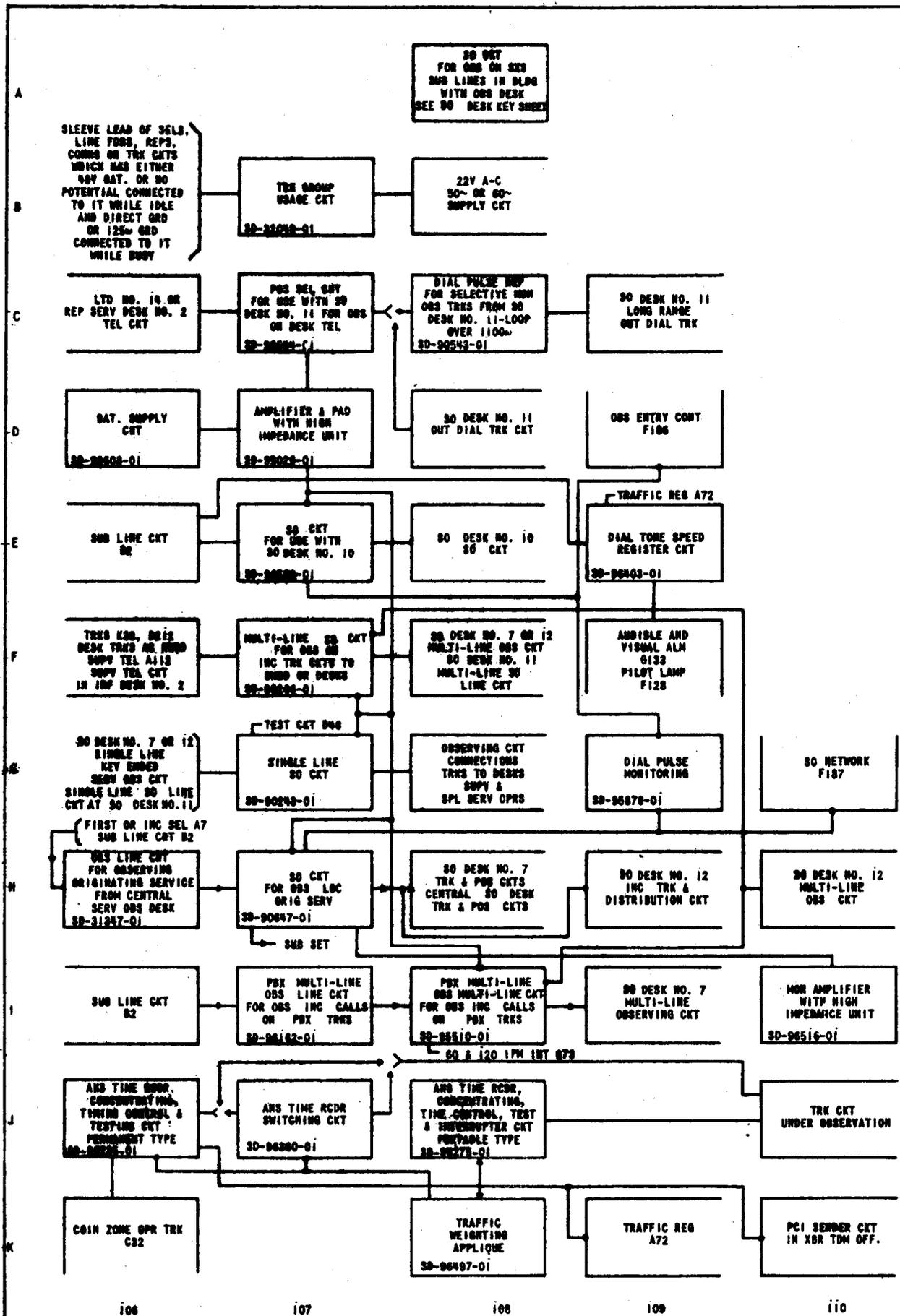
102

103

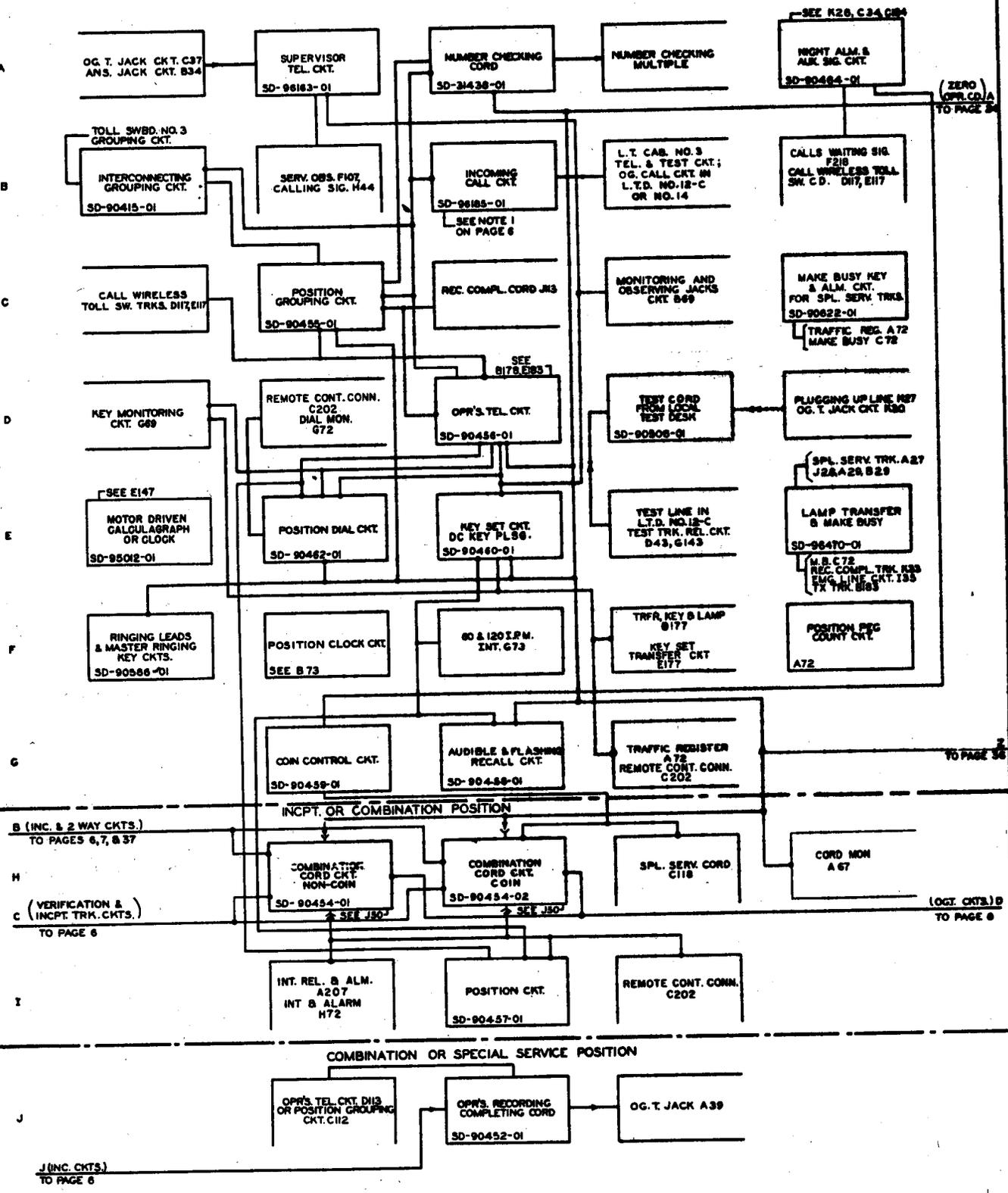
104

105

TANDEM OFFICE INCOMING REPEATER AND TRK. CIRCUITS



CIRCUITS FOR USE IN ALL POSITIONS

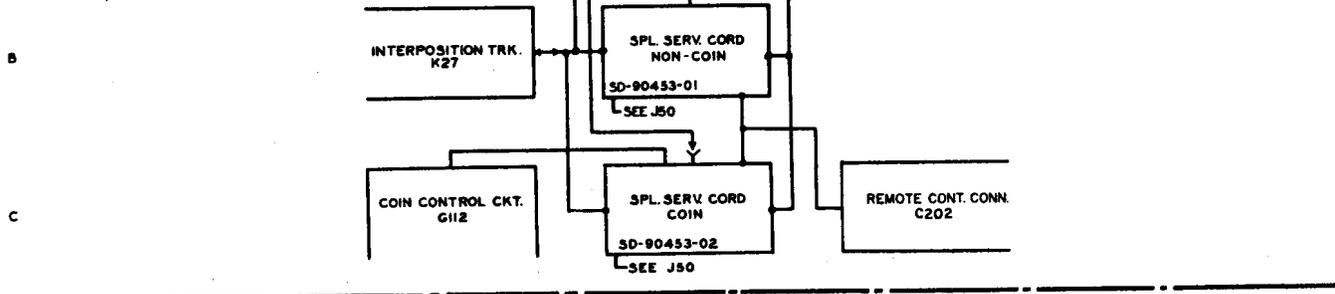


A SWBD. CKTS. FOR USE IN ALL POSITIONS AND CKTS. FOR INCPT. & COMBINATION POSITION

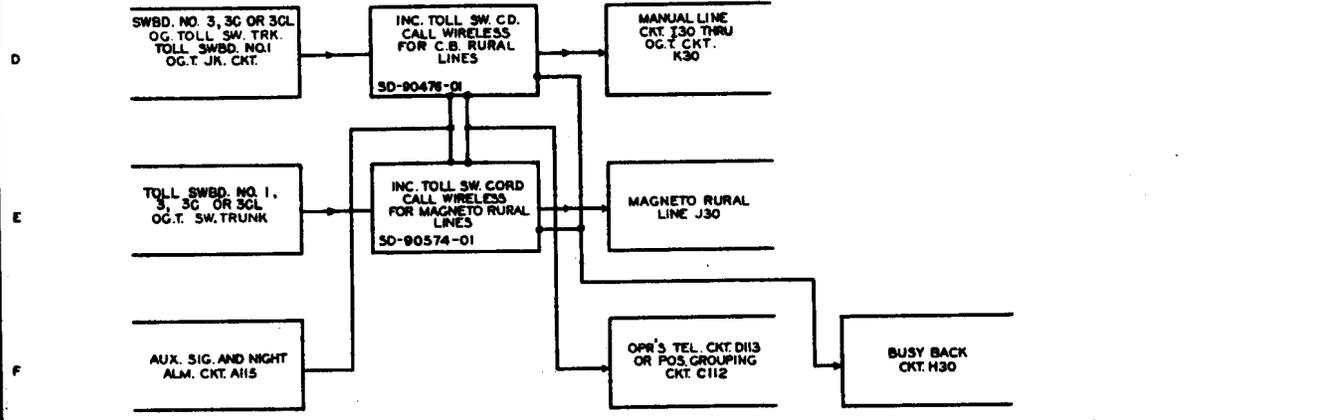
A (POS. CKTS.)
TO PAGE 23

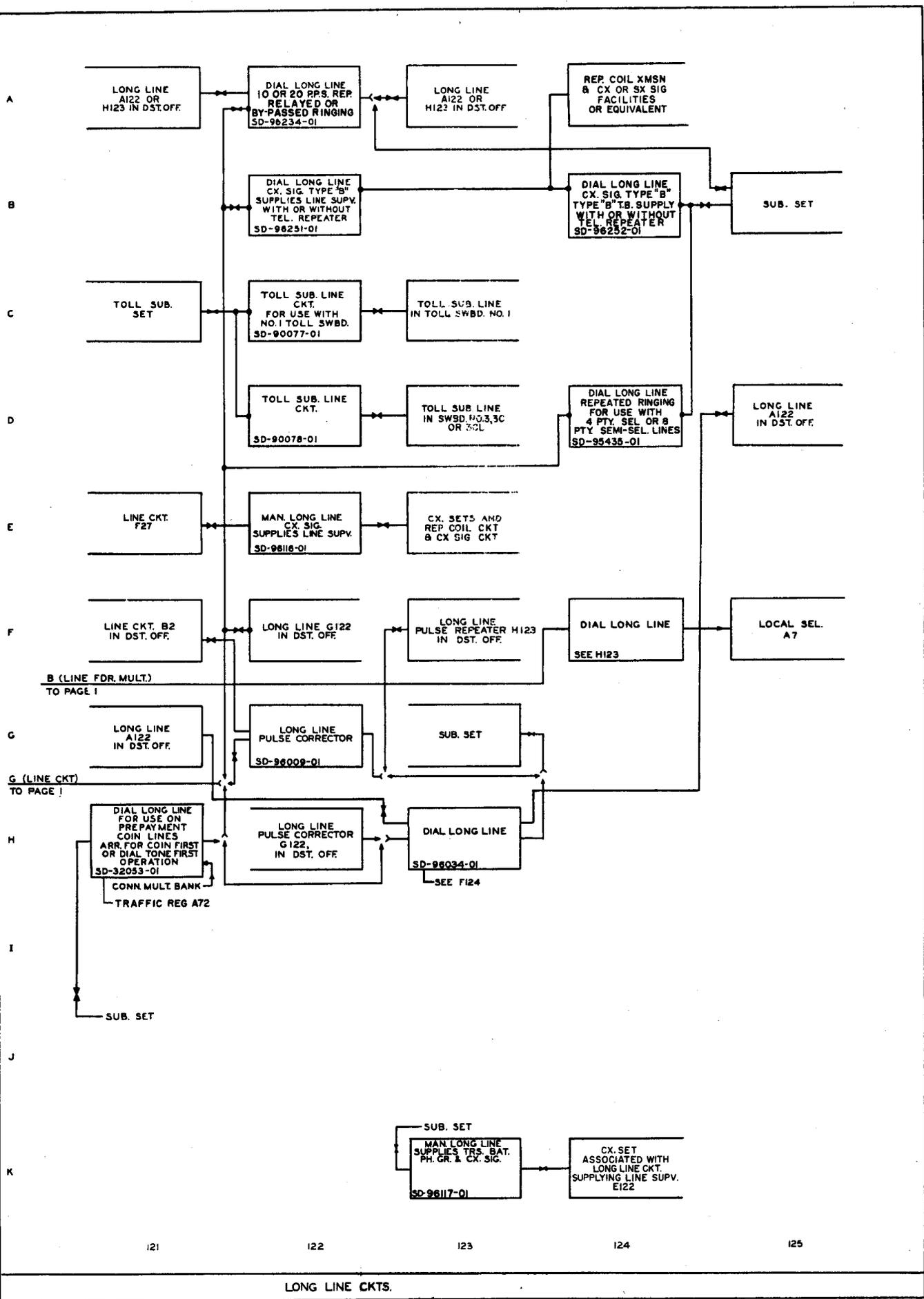
B (INC. AND 2 WAY CKTS.)
TO PAGES 6, 7 & 37

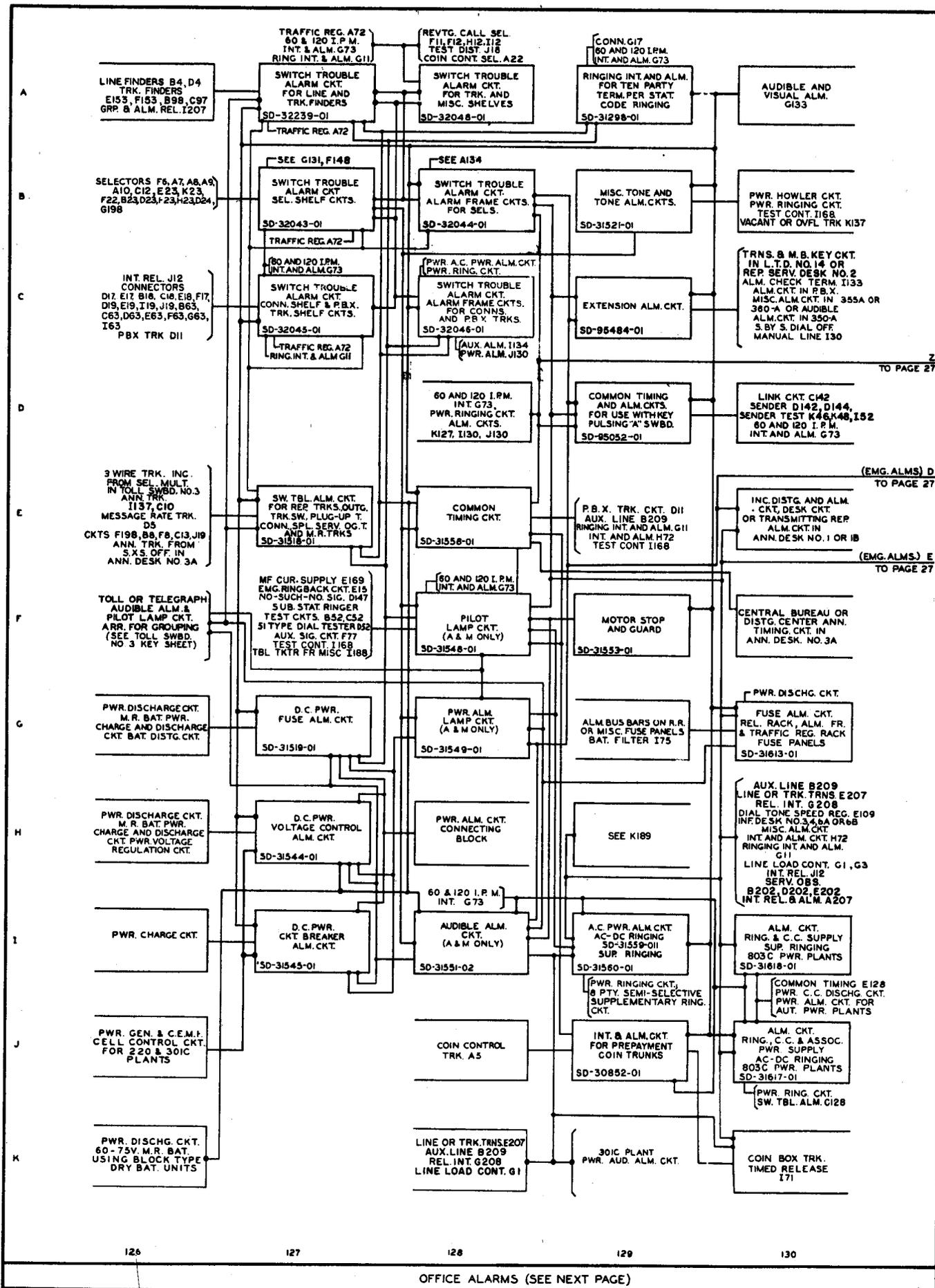
(OGT. CKTS.) D
TO PAGE 8



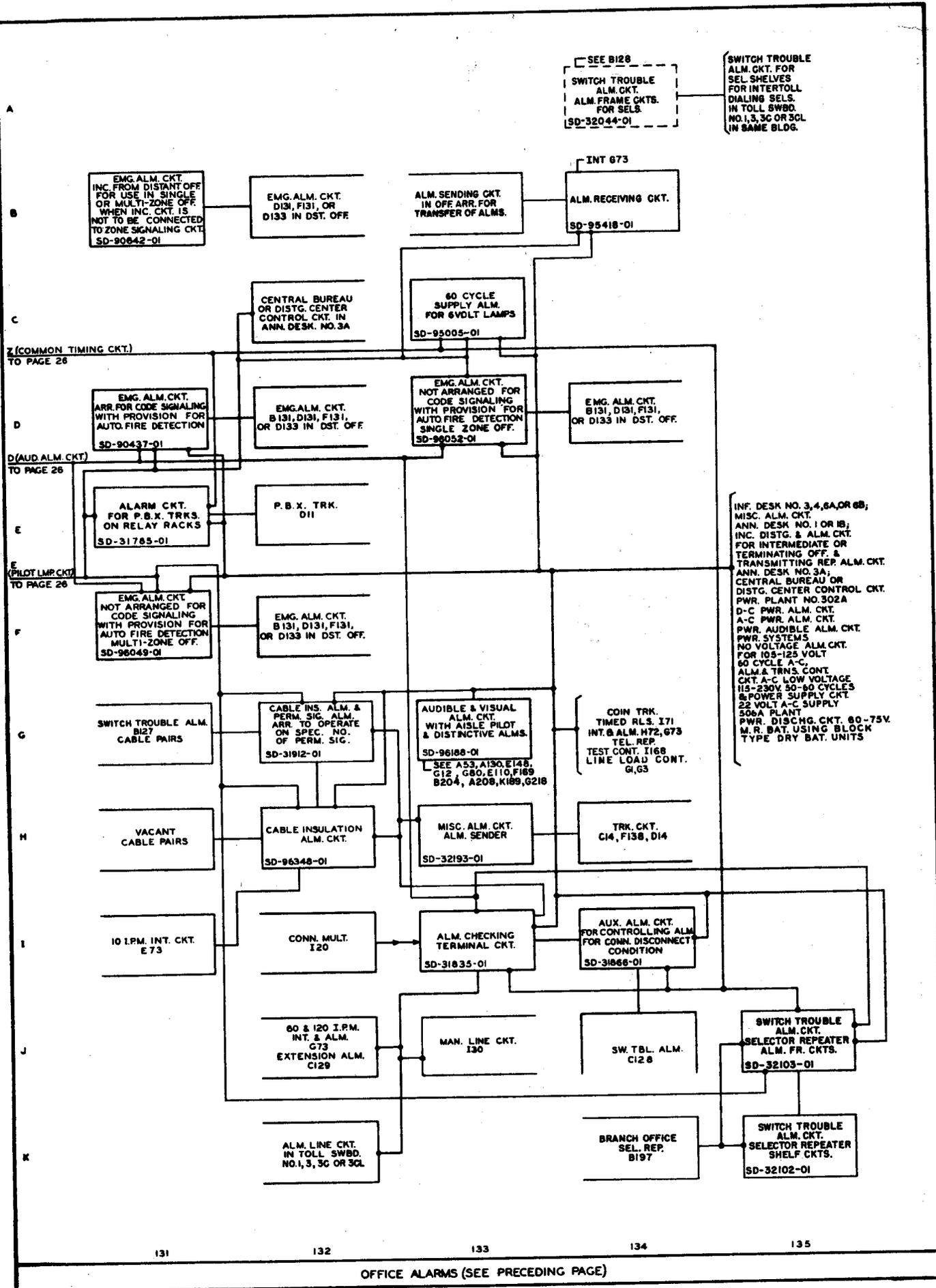
RURAL FEATURES IN SPL. SERV. POS.







TO PAGE 27
 (EMG. ALMS) D
 TO PAGE 27
 (EMG. ALMS) E
 TO PAGE 27



SEE B128
SWITCH TROUBLE
ALM. CKT. FOR
SEL. FRAME CKTS.
FOR SELS.
SD-32044-01

SWITCH TROUBLE
ALM. CKT. FOR
SEL. SHELVES
FOR INTERTOLL
DIALING SELS.
IN TOLL SWBD.
NO. 1, 3, 3C OR 3CL
IN SAME BLDG.

INT 673
ALM. RECEIVING CKT.
SD-95418-01

ALM. SENDING CKT.
IN OFF ARR. FOR
TRANSFER OF ALMS.

EMG. ALM. CKT.
D131, F131, OR
D133 IN DST. OFF

EMG. ALM. CKT.
INC. FROM DISTANT OFF
FOR USE IN SINGLE
OR MULTI-ZONE OFF.
WHEN INC. CKT. IS
NOT TO BE CONNECTED
TO ZONE SIGNALING CKT.
SD-90842-01

60 CYCLE
SUPPLY ALM.
FOR 6VOLT LAMPS
SD-95005-01

CENTRAL BUREAU
OR DISTG. CENTER
CONTROL CKT. IN
ANN. DESK. NO. 3A

EMG. ALM. CKT.
B131, D131, F131,
OR D133 IN DST. OFF.

EMG. ALM. CKT.
NOT ARRANGED FOR
CODE SIGNALING
WITH PROVISION FOR
AUTO FIRE DETECTION
SINGLE ZONE OFF.
SD-90052-01

EMG. ALM. CKT.
B131, D131, F131,
OR D133 IN DST. OFF.

EMG. ALM. CKT.
ARR. FOR CODE SIGNALING
WITH PROVISION FOR
AUTO FIRE DETECTION
SD-90437-01

INF. DESK NO. 3, 4, 6A, OR 6B;
MISC. ALM. CKT.
ANN. DESK NO. 1 OR 1B;
INC. DISTG. & ALM. CKT.
FOR INTERMEDIATE OR
TERMINATING OFF. &
TRANSMITTING REP. ALM. CKT.
ANN. DESK NO. 3A;
CENTRAL BUREAU OR
DISTG. CENTER CONTROL CKT.
PWR. PLANT NO. 302A
D-C PWR. ALM. CKT.
A-C PWR. ALM. CKT.
PWR. AUDIBLE ALM. CKT.
PWR. SYSTEMS
NO VOLTAGE ALM. CKT.
FOR 105-125 VOLT
60 CYCLE A-C;
ALM. & TRNS. CONT.
CKT. A-C LOW VOLTAGE
115-230V 50-60 CYCLES
& POWER SUPPLY CKT.
22 VOLT A-C SUPPLY
500A PLANT
PWR. DISCHG. CKT. 60-75V.
M.R. BAT. USING BLOCK
TYPE DRY BAT. UNITS

COIN TRK.
TIMED RLS. I71
INT. & ALM. H72, G73
TEL. REP.
TEST CONT. I168
LINE LOAD CONT.
G1, G3

AUDIBLE & VISUAL
ALM. CKT.
WITH AISLE PILOT
& DISTINCTIVE ALMS.
SD-96188-01
SEE A53, A130, E148,
G12, G80, E110, F189,
B204, A208, K189, G218

CABLE INS. ALM. &
PERM. SIG. ALM.
ARR. TO OPERATE
ON SPEC. NO.
OF PERM. SIG.
SD-31912-01

SWITCH TROUBLE ALM.
B127
CABLE PAIRS

TRK. CKT.
C14, F138, D14

MISC. ALM. CKT.
ALM. SENDER
SD-32193-01

CABLE INSULATION
ALM. CKT.
SD-96348-01

VACANT
CABLE PAIRS

AUX. ALM. CKT.
FOR CONTROLLING ALM.
FOR CONN. DISCONNECT
CONDITION
SD-31866-01

ALM. CHECKING
TERMINAL CKT.
SD-31835-01

CONN. MULT.
I20

10 I.P.M. INT. CKT.
E 73

SWITCH TROUBLE
ALM. CKT.
SELECTOR REPEATER
ALM. FR. CKTS.
SD-32103-01

SW. TBL. ALM.
C128

MAN. LINE CKT.
I30

60 & 120 I.P.M.
INT. & ALM.
G73
EXTENSION ALM.
C129

SWITCH TROUBLE
ALM. CKT.
SELECTOR REPEATER
SHELF CKTS.
SD-32102-01

BRANCH OFFICE
SEL. REP.
B197

ALM. LINE CKT.
IN TOLL SWBD.
NO. 1, 3, 3C OR 3CL

131

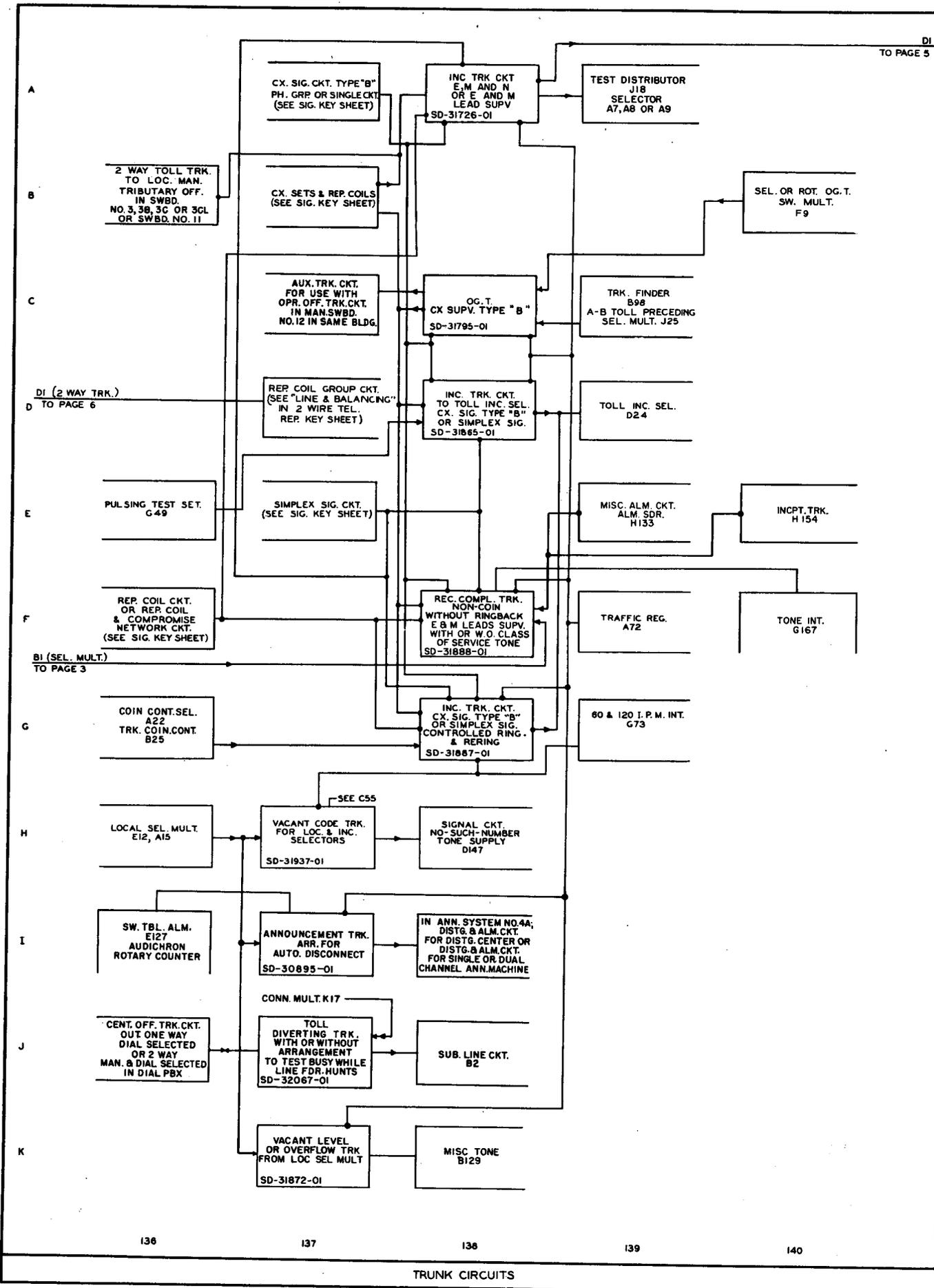
132

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135

OFFICE ALARMS (SEE PRECEDING PAGE)



136

137

138

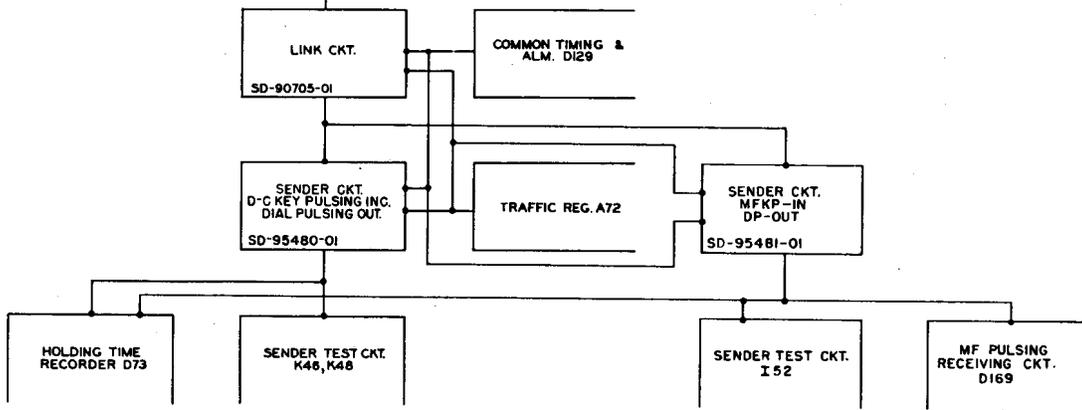
139

140

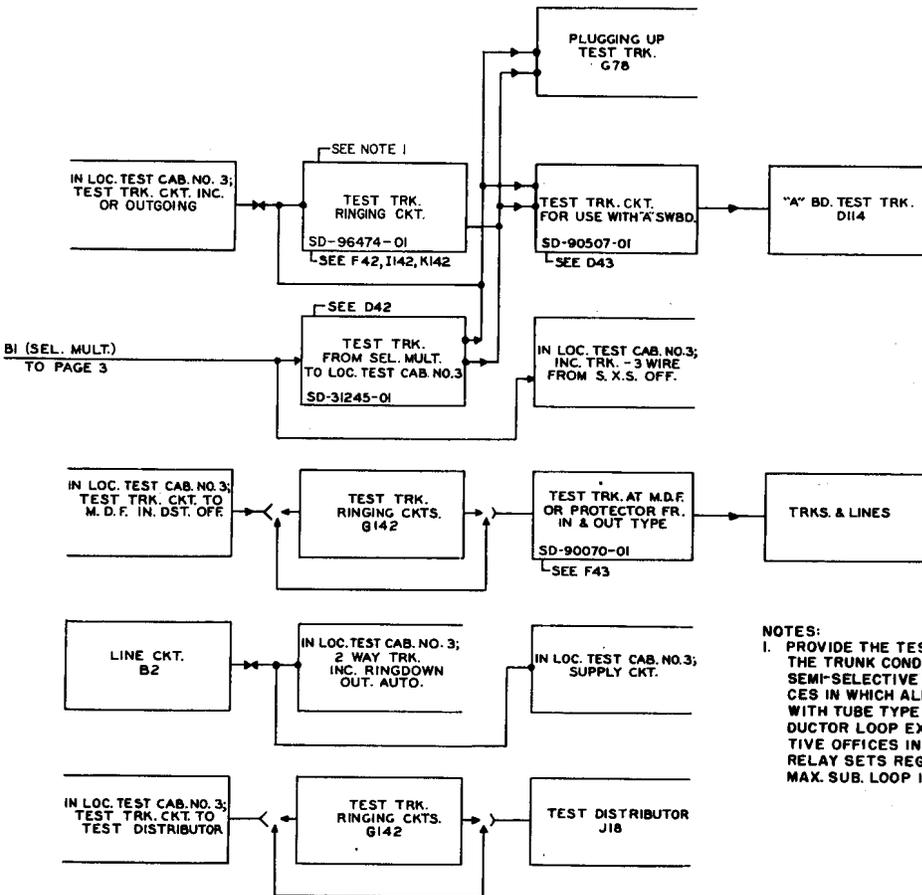
TRUNK CIRCUITS

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

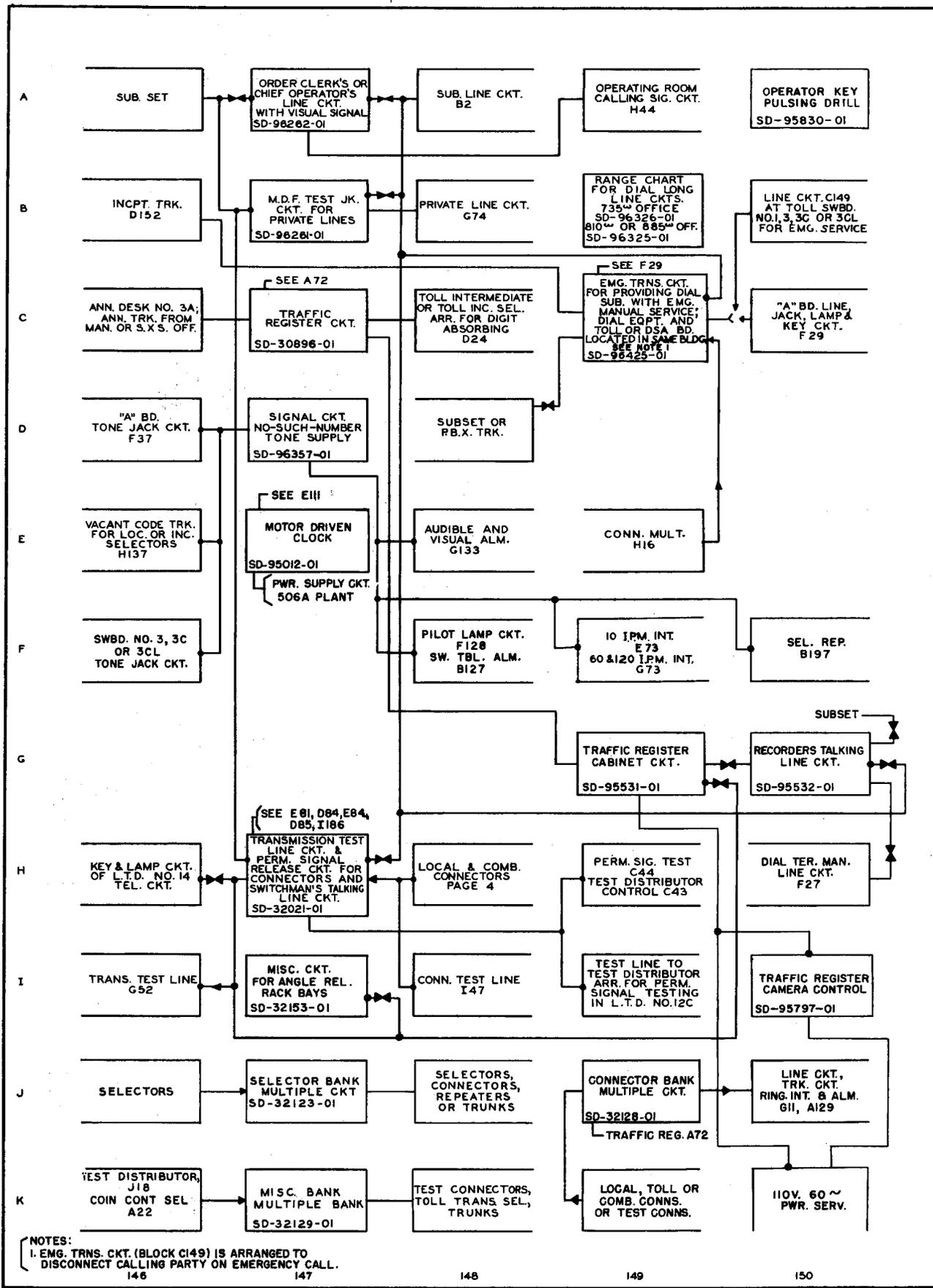
C (OUTG & INC TRKS)
TO PAGES 8 & 39



CKTS. CONNECTING WITH LOCAL TEST CABINET NO. 3

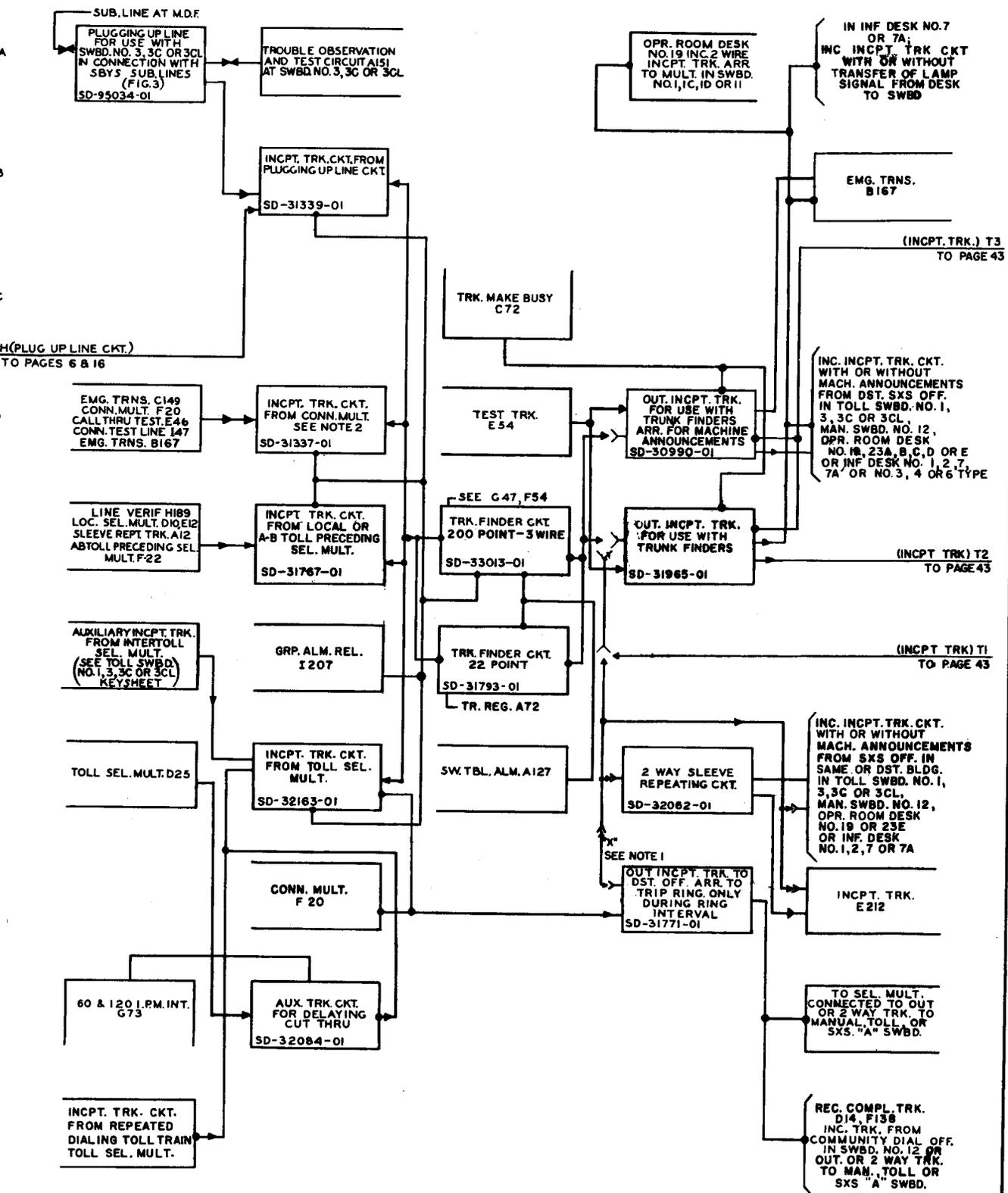


NOTES:
1. PROVIDE THE TEST TRUNK RINGING CKT. G142 WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 300 OHMS IN SEMI-SELECTIVE OFFICES OR FULL SELECTIVE OFFICES IN WHICH ALL THE 4 PTY. LINES ARE EQUIPPED WITH TUBE TYPE SETS, AND WHEN THE TRUNK CONDUCTOR LOOP EXCEEDS 200 OHMS IN FULL SELECTIVE OFFICES IN WHICH SOME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



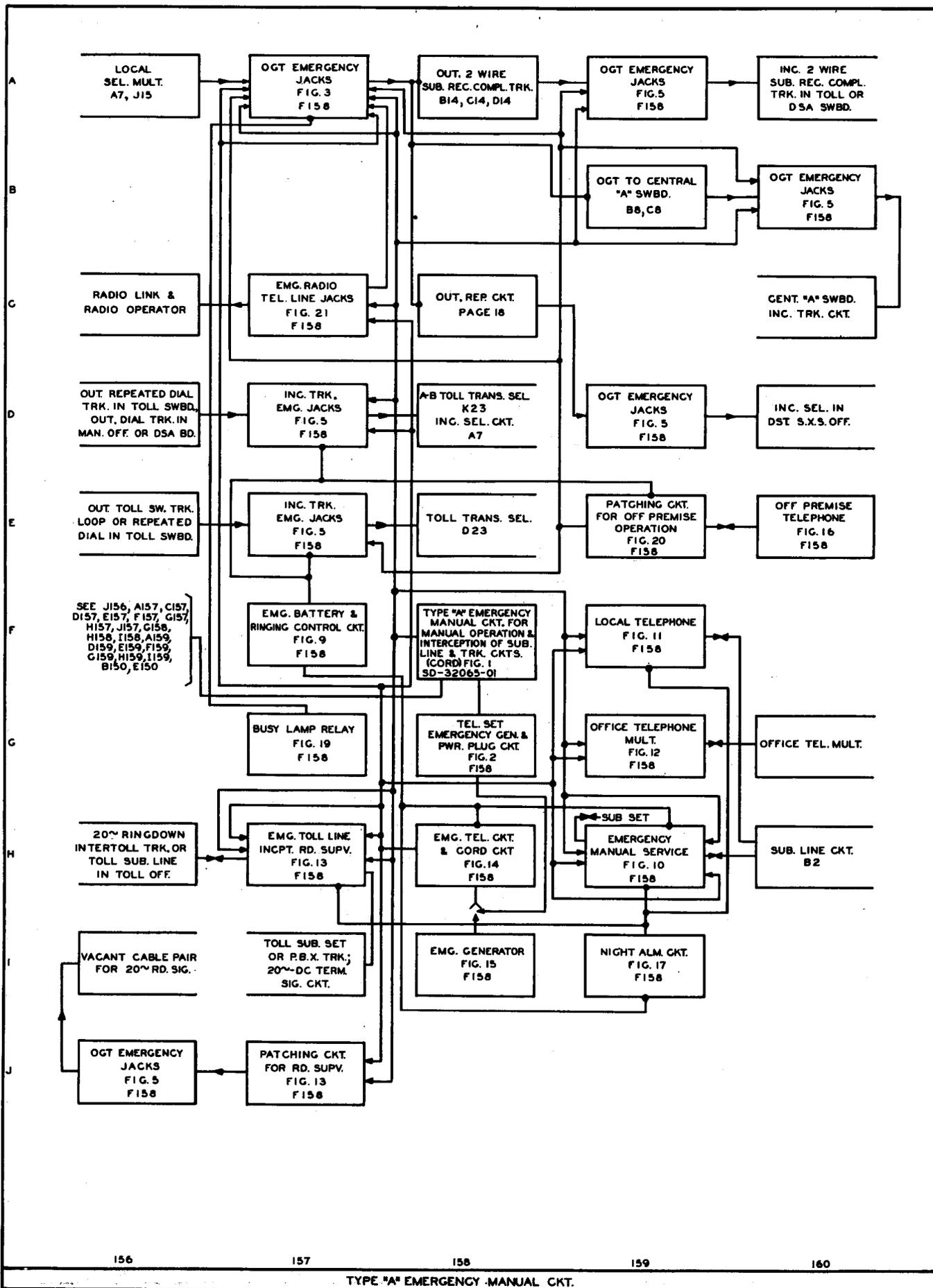
NOTES:
 1. EMG. TRNS. CKT. (BLOCK C149) IS ARRANGED TO DISCONNECT CALLING PARTY ON EMERGENCY CALL.
 146 147 148 149 150

MISCELLANEOUS CIRCUITS (SEE PAGE 15)



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.



156

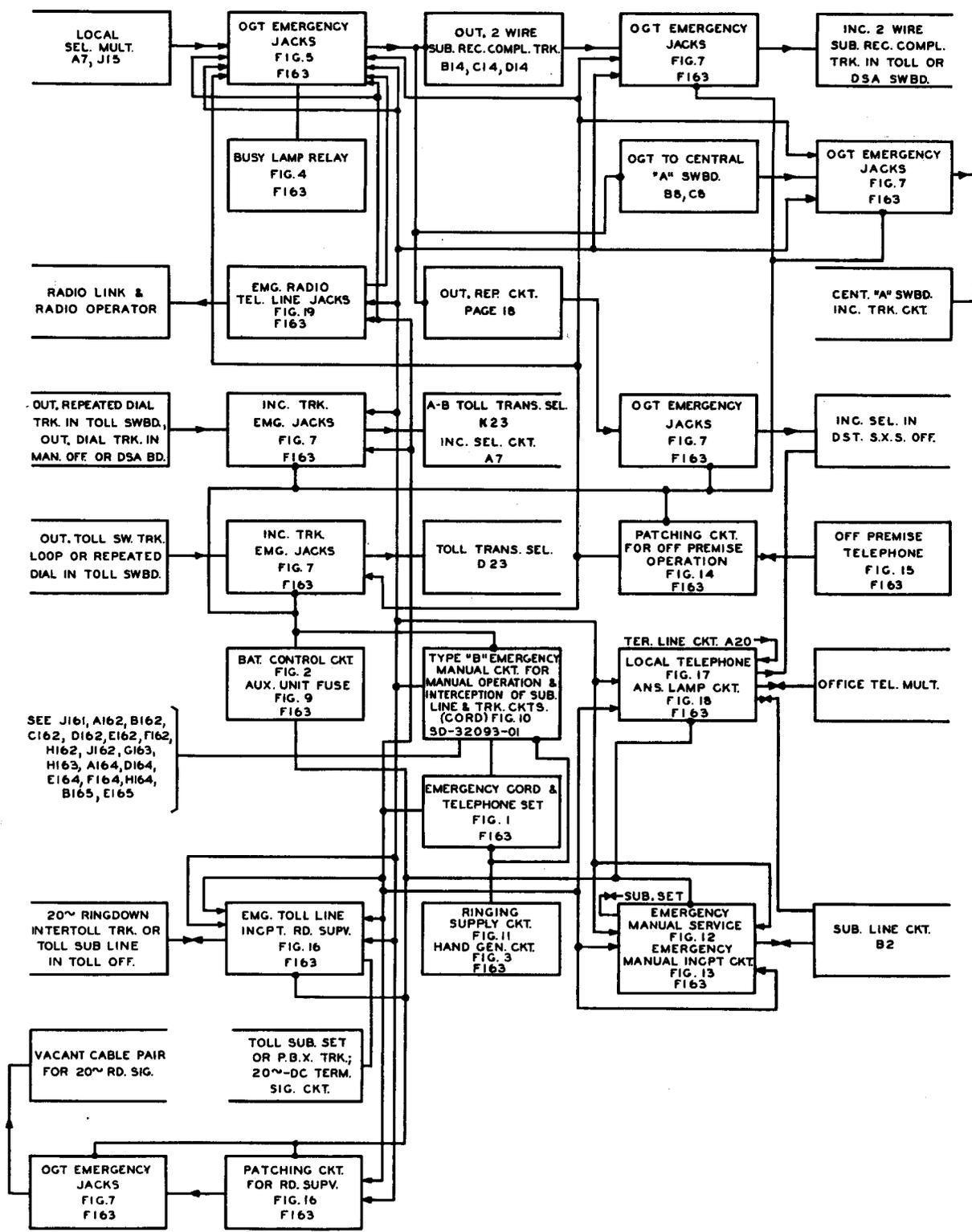
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159

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TYPE 'A' EMERGENCY MANUAL CKT.



161

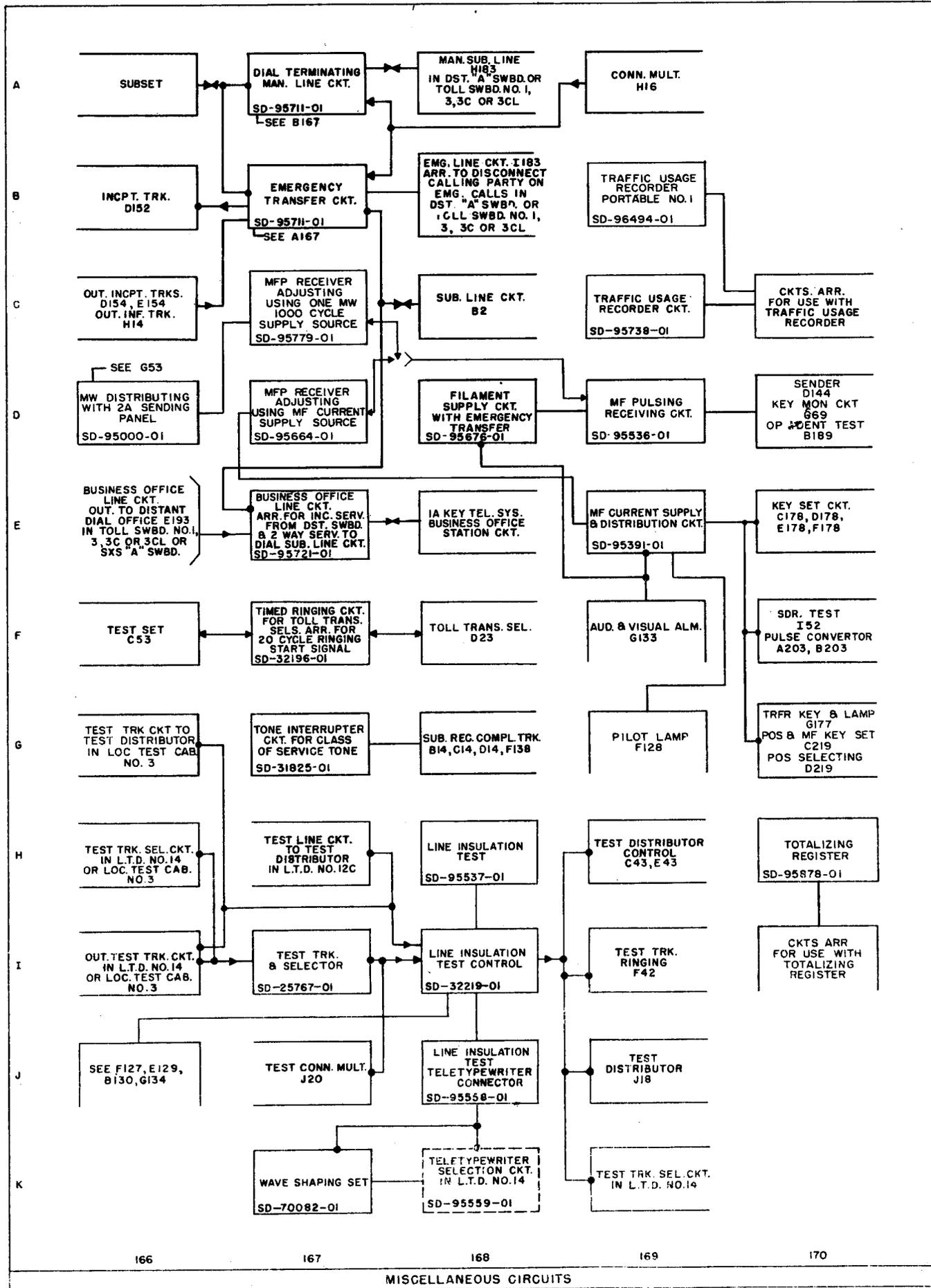
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163

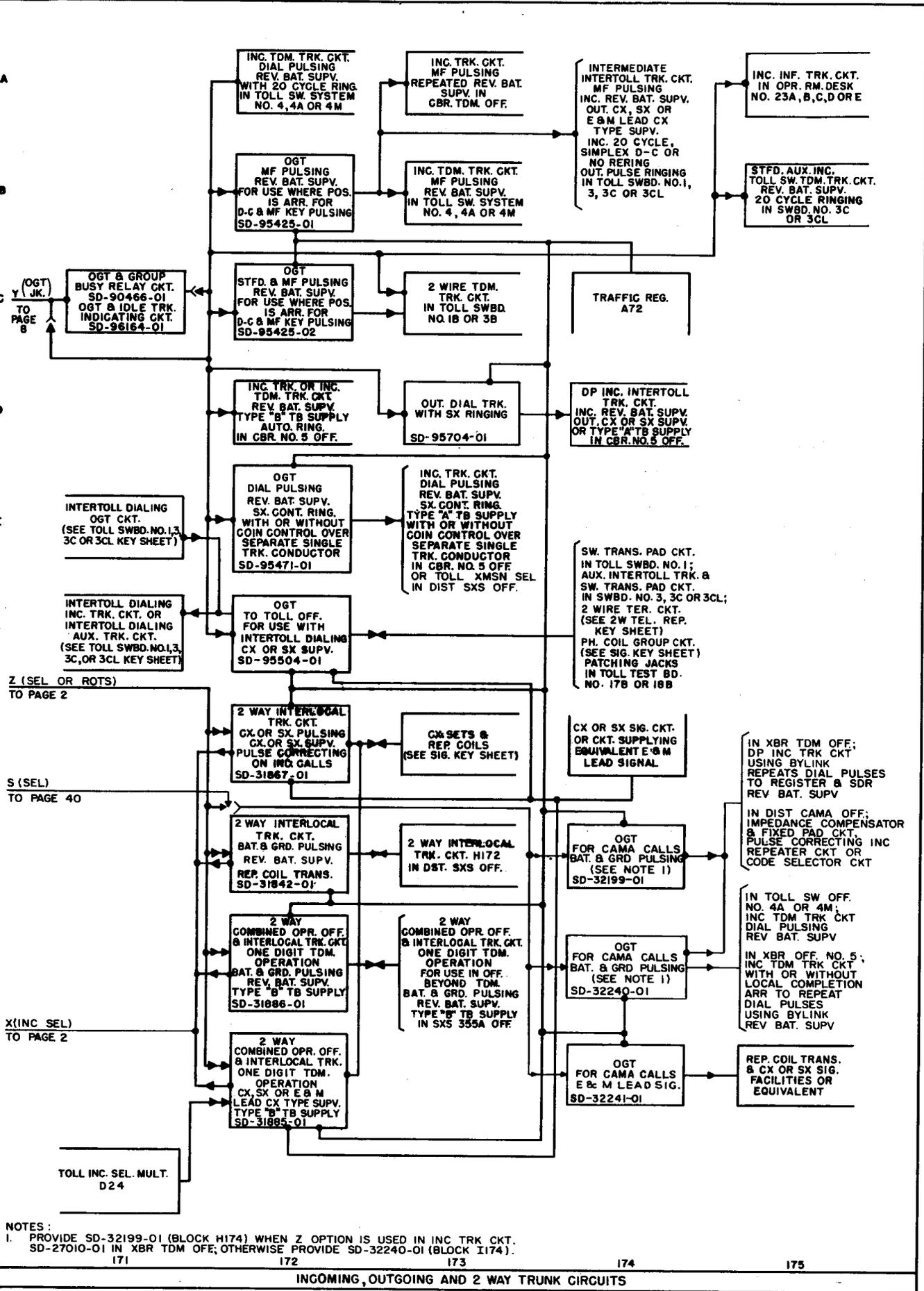
164

165

TYPE "B" EMERGENCY MANUAL CKT.



MISCELLANEOUS CIRCUITS



NOTES:
 1. PROVIDE SD-32199-01 (BLOCK H174) WHEN Z OPTION IS USED IN INC TRK CKT. SD-27010-01 IN XBR TDM OFF; OTHERWISE PROVIDE SD-32240-01 (BLOCK I174).

171

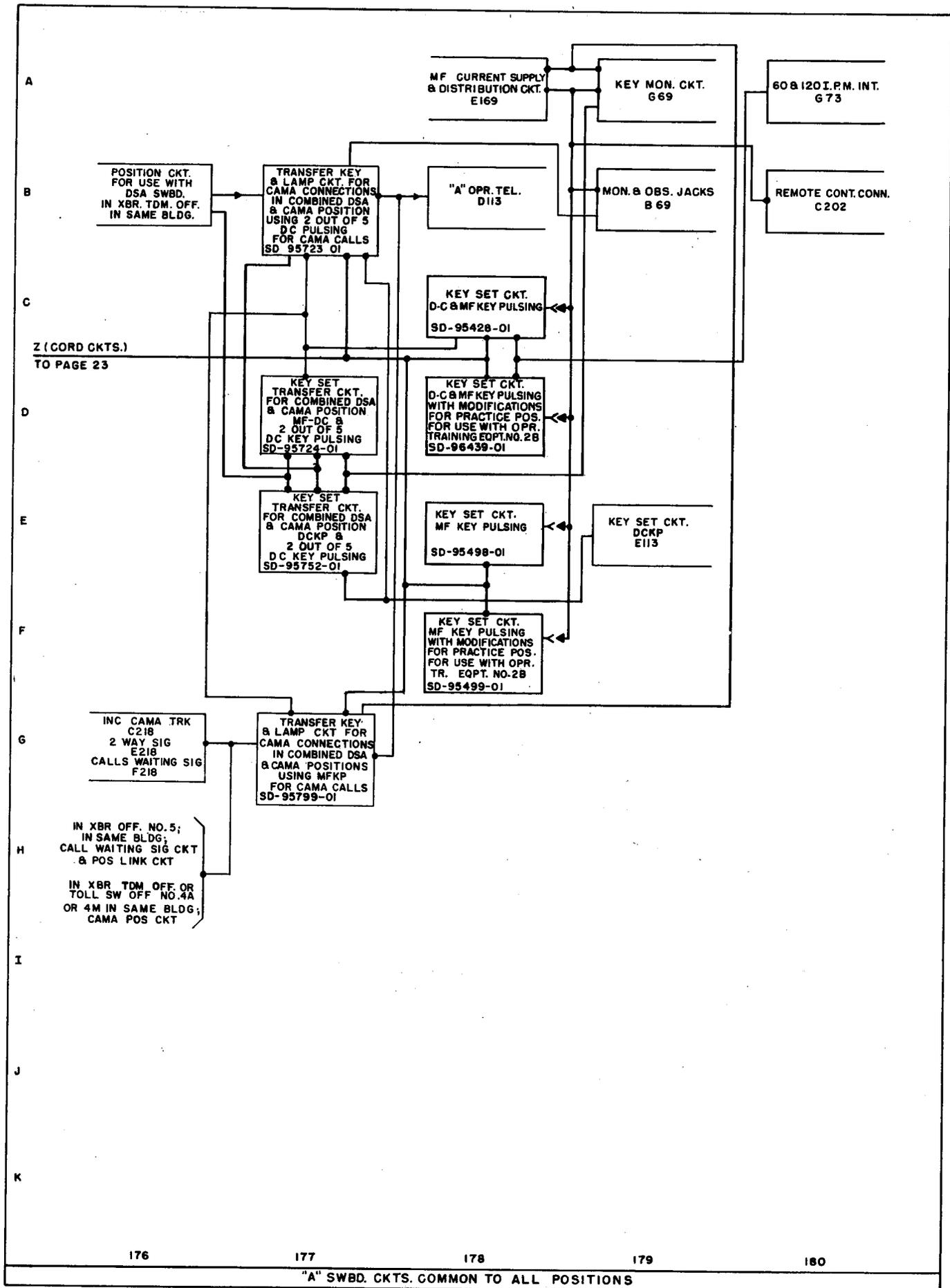
172

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174

175

INCOMING, OUTGOING AND 2 WAY TRUNK CIRCUITS



176

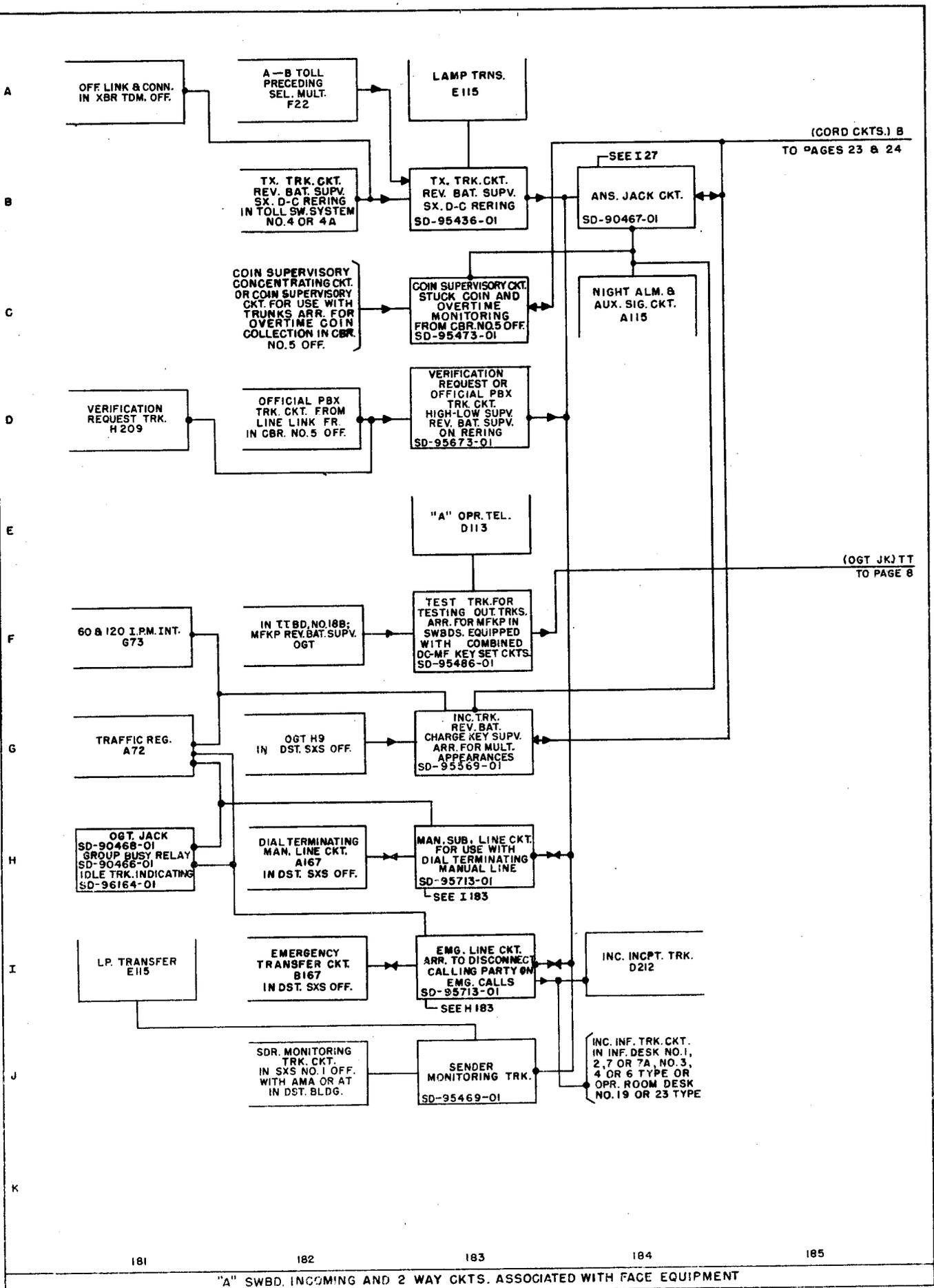
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180

"A" SWBD. CKTS. COMMON TO ALL POSITIONS



181

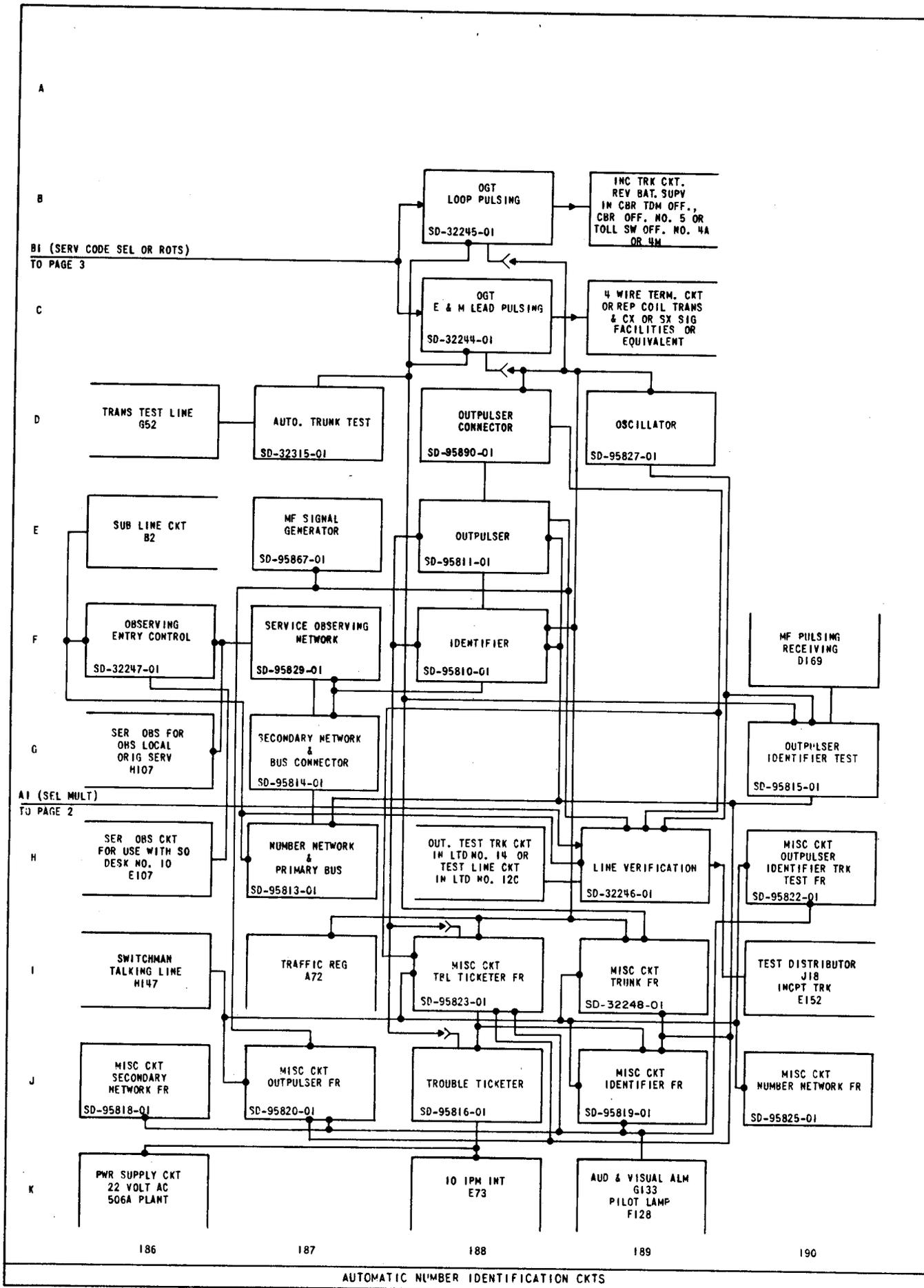
182

183

184

185

"A" SWBD. INCOMING AND 2 WAY CKTS. ASSOCIATED WITH FACE EQUIPMENT



A

B

C

D

E

F

G

AI (SEL MULT)

TO PAGE 2

H

I

J

K

OGT
LOOP PULSING
SD-32245-01

INC TRK CKT.
REV BAT. SUPV
IN CBR TDM OFF.,
CBR OFF. NO. 5 OR
TOLL SW OFF. NO. 4A
OR 4M

OGT
E & M LEAD PULSING
SD-32244-01

4 WIRE TERM. CKT
OR REP COIL TRANS
& CX OR SX SIG
FACILITIES OR
EQUIVALENT

TRANS TEST LINE
G52

AUTO. TRUNK TEST
SD-32315-01

OUTPULSER
CONNECTOR
SD-95890-01

OSCILLATOR
SD-95827-01

SUB LINE CKT
B2

MF SIGNAL
GENERATOR
SD-95867-01

OUTPULSER
SD-95811-01

OBSERVING
ENTRY CONTROL
SD-32247-01

SERVICE OBSERVING
NETWORK
SD-95829-01

IDENTIFIER
SD-95810-01

MF PULSING
RECEIVING
D169

SER OBS FOR
OHS LOCAL
ORIG SERV
H107

SECONDARY NETWORK
&
BUS CONNECTOR
SD-95814-01

OUTPULSER
IDENTIFIER TEST
SD-95815-01

SER OBS CKT
FOR USE WITH SO
DESK NO. 10
E107

NUMBER NETWORK
&
PRIMARY BUS
SD-95813-01

OUT. TEST TRK CKT
IN LTD NO. 14 OR
TEST LINE CKT
IN LTD NO. 12C

LINE VERIFICATION
SD-32246-01

MISC CKT
OUTPULSER
IDENTIFIER TRK
TEST FR
SD-95822-01

SWITCHMAN
TALKING LINE
H147

TRAFFIC REG
A72

MISC CKT
TEL TICKETER FR
SD-95823-01

MISC CKT
TRUNK FR
SD-32248-01

TEST DISTRIBUTOR
J18
INCPT TRK
E152

MISC CKT
SECONDARY
NETWORK FR
SD-95818-01

MISC CKT
OUTPULSER FR
SD-95820-01

TROUBLE TICKETER
SD-95816-01

MISC CKT
IDENTIFIER FR
SD-95819-01

MISC CKT
NUMBER NETWORK FR
SD-95825-01

PWR SUPPLY CKT
22 VOLT AC
506A PLANT

10 IPM INT
E73

AUD & VISUAL ALM
G133
PILOT LAMP
F128

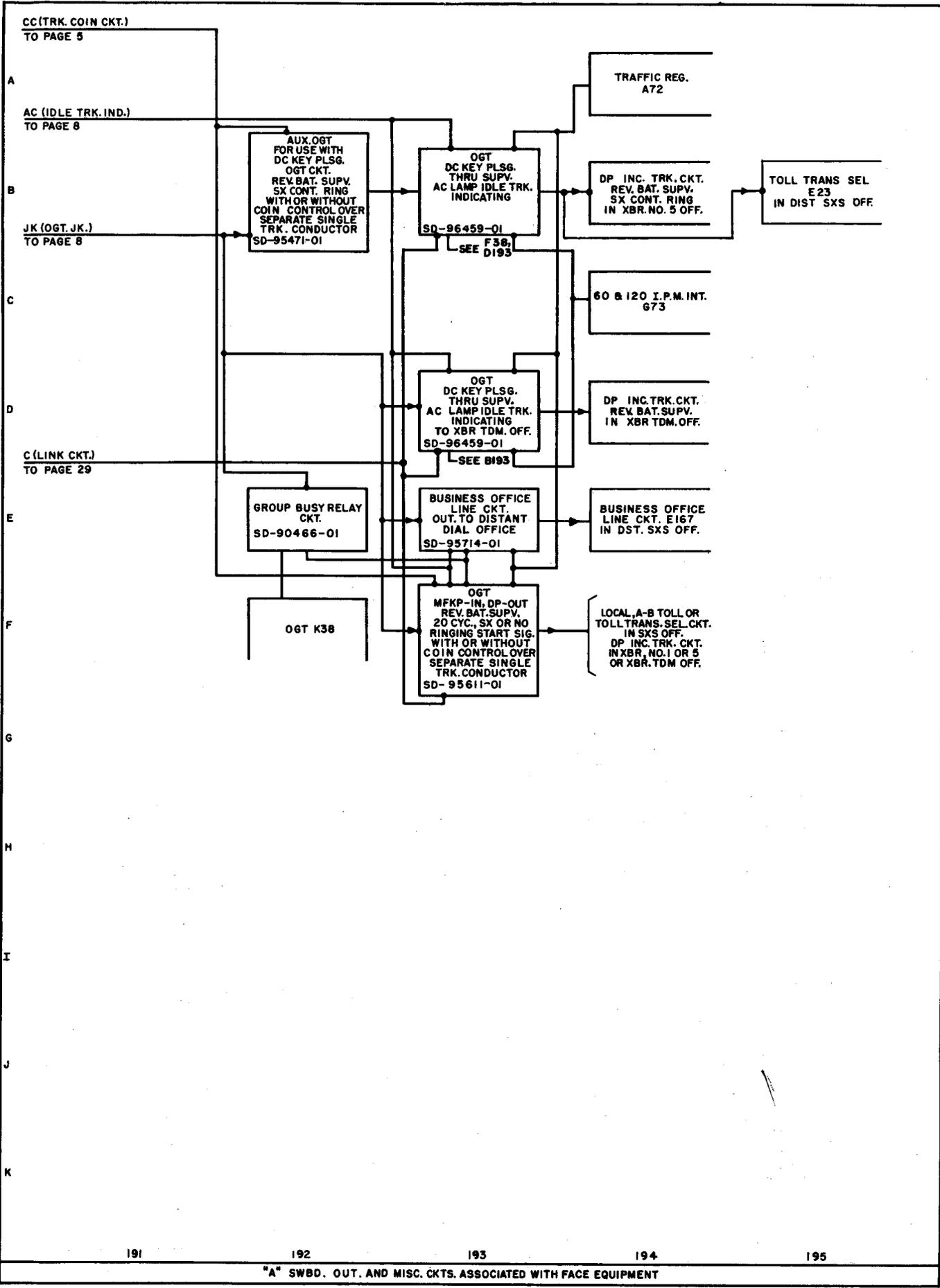
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191

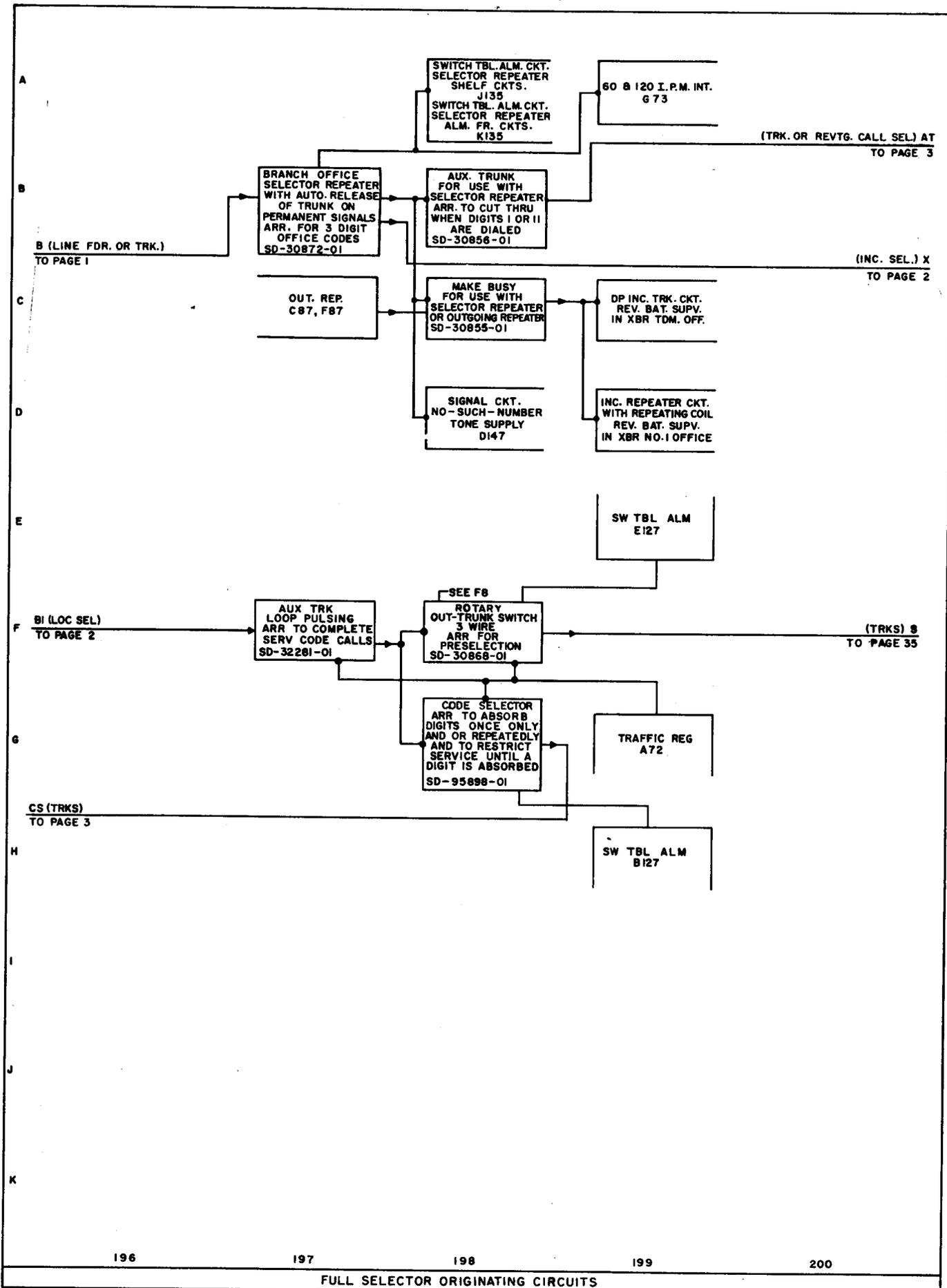
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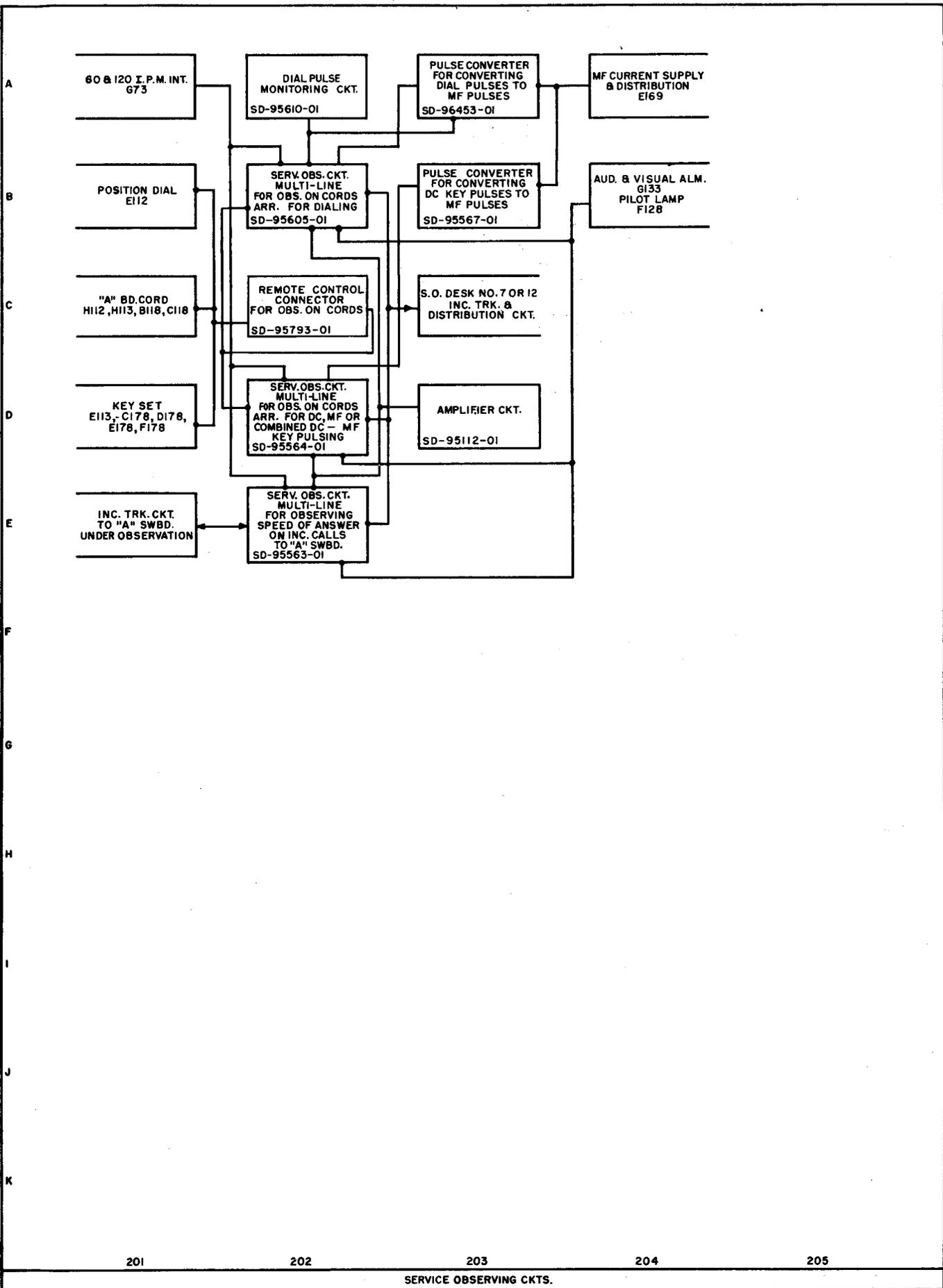
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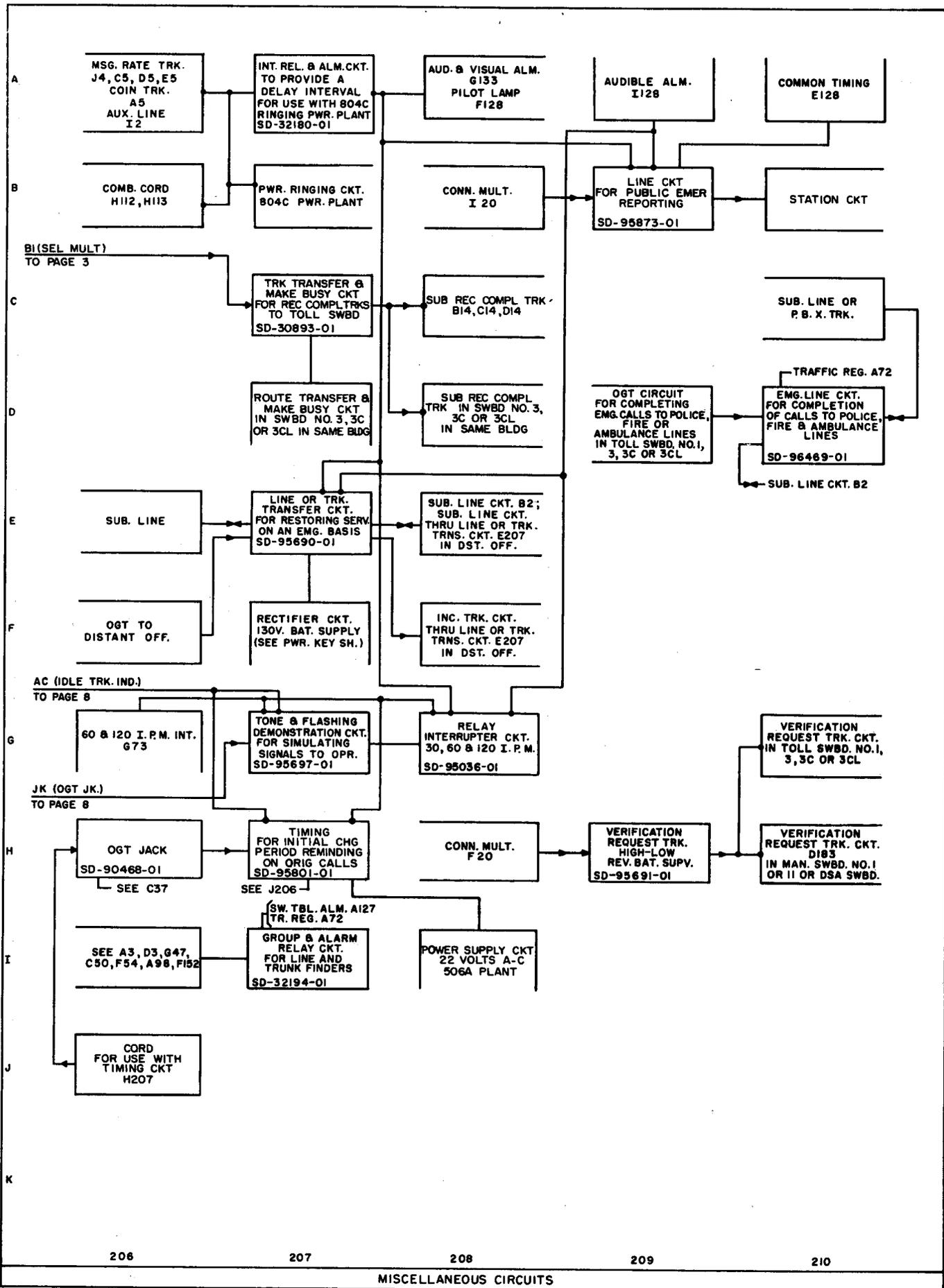
194

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







G (ANS. JK.)
TO PAGE 6

TEST TRK
E54

MAKE BUSY
C72

T1 (TRK. FDR.)
TO PAGE 31

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

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

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

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

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

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

EMG. LINE
I183

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

2 WAY
SLEEVE REP
G154
TEST TRK
E54

SERV. OBS. CKT.
F107

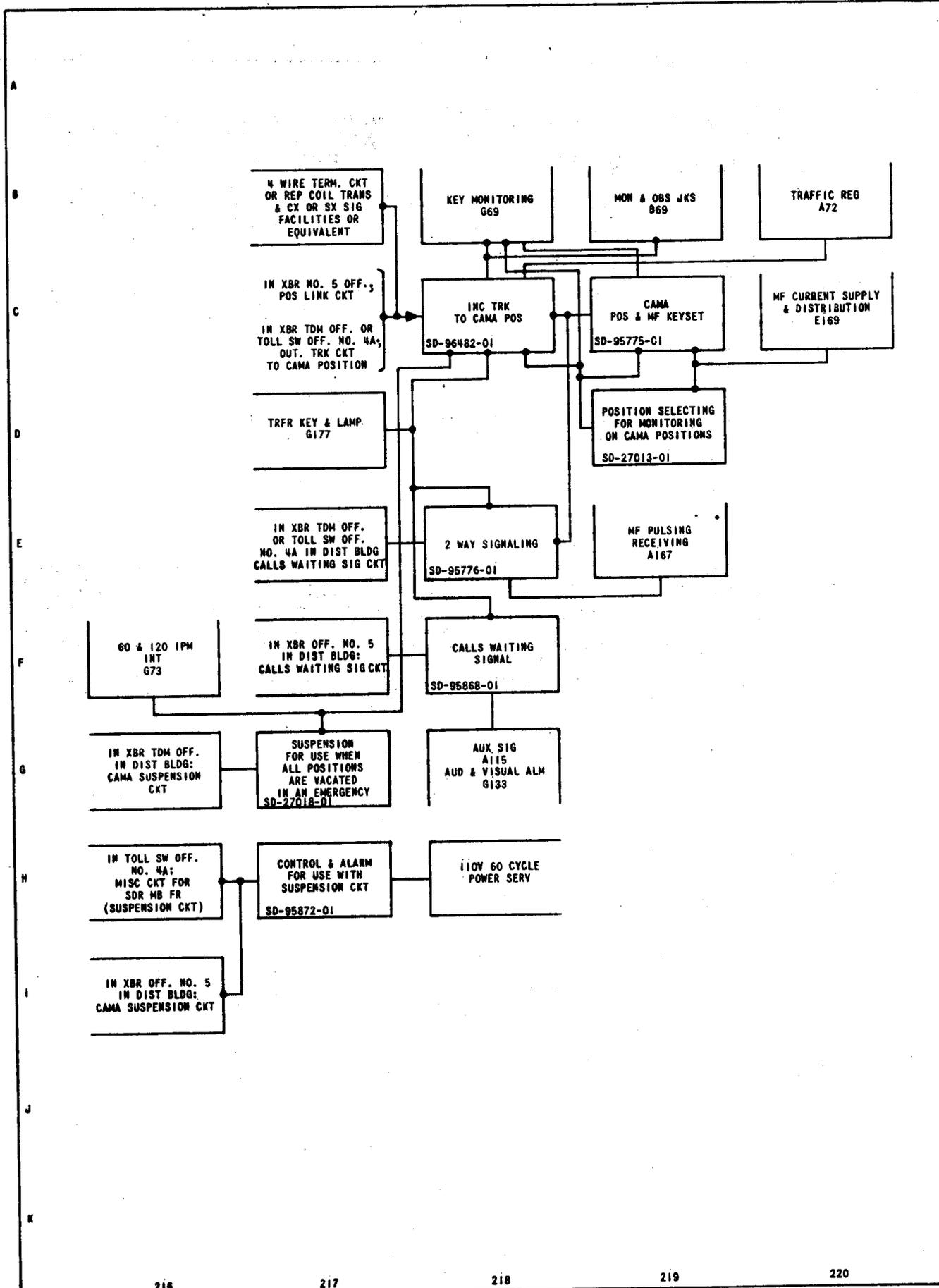
REP COIL XMSN
& CX OR SX SIG
FACILITIES OR
EQUIVALENT

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

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

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



216

217

218

219

220

REMOTE CMA CKTS

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	735	1200	1100	2,3
	1000	48-50				
	1200	45-50				
	OR	OR				
	1400	48-50				
1400	1000	45-50	885	1200	1200	3
	1200	45-50				
	1000	48-50				
	1200	48-50				
	1200	48-50				
	1400	45-50				
	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	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 1400	48-50				
1200	1000	45-50	735	1200	1100	3
	1200	OR				
	OR 1400	48-50				
1400	1000	45-50	735	1200	1100	3
	1000	48-50	885	1200	1200	
	1200	45-50	885	1200	1200	
	OR 1400	OR 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. LOOP TEST (OHMS) VOLTAGE		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.

R913, R1316 AND R1885 LINE RELAYS

<u>45V</u>		<u>48V</u>	
<u>EARTH POTENTIAL</u>		<u>EARTH POTENTIAL</u>	
0	+6	0	+6
1135	1100	1260	1200

EAS LINE RELAY

<u>45V</u>		<u>48V</u>	
<u>EARTH POTENTIAL</u>		<u>EARTH POTENTIAL</u>	
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.

R913, R1316 AND R1885 LINE RELAYS

<u>TYPE TELEPHONE SET</u>	<u>45V</u>		<u>48V</u>	
	<u>EARTH POTENTIAL</u>		<u>EARTH POTENTIAL</u>	
	0	+6	0	+6
500	1200	1190	1300	1300
OTHER THAN 500	1200	1200	1300	1300

EAS LINE RELAY

<u>TYPE TELEPHONE SET</u>	<u>45V</u>		<u>48V</u>	
	<u>EARTH POTENTIAL</u>		<u>EARTH POTENTIAL</u>	
	0	+6	0	+6
500	1180	1140	1300	1270
OTHER THAN 500	1200	1180	1300	1300

5.

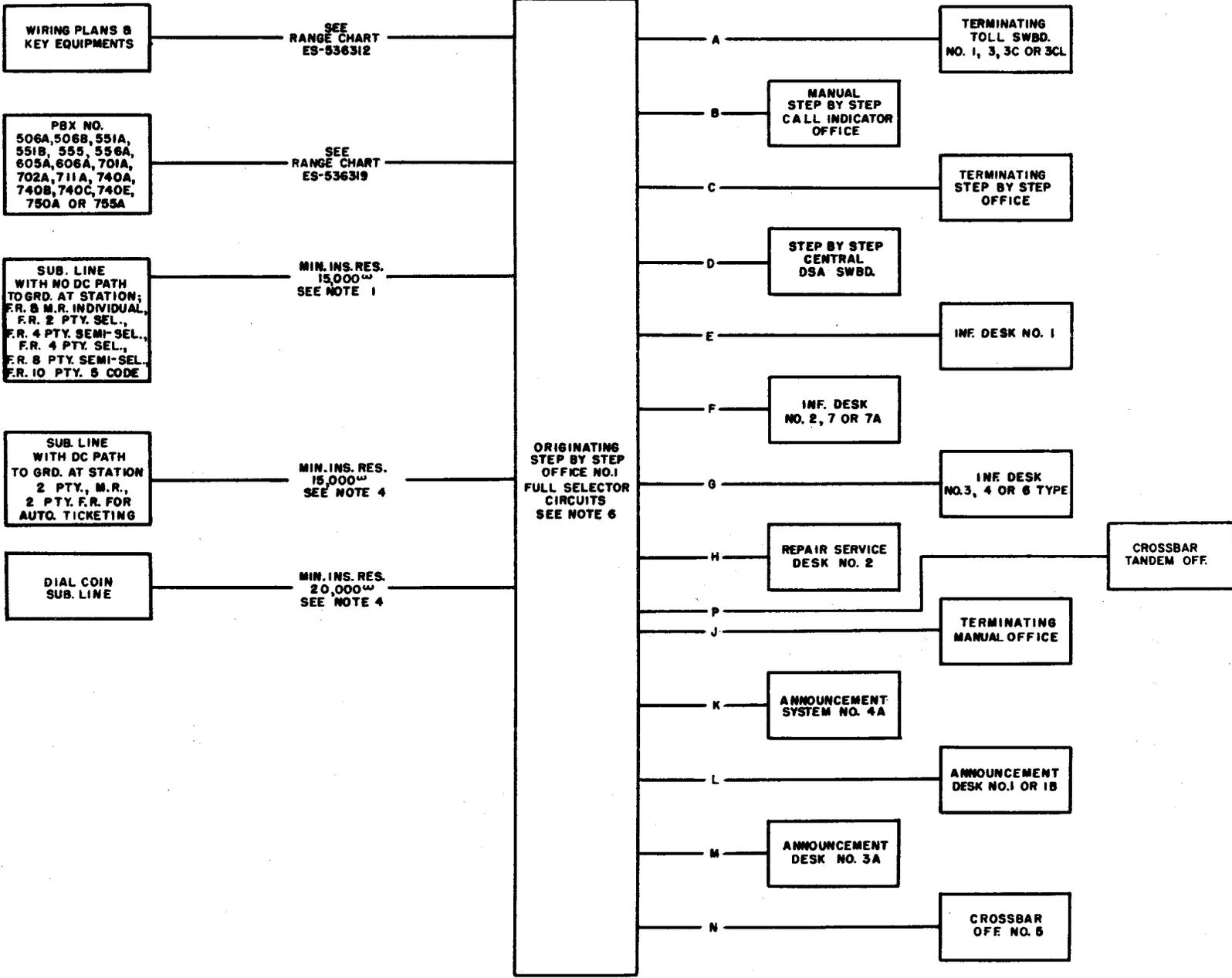
6. ALL INTEROFFICE CONDUCTOR LOOP VALUES SHOWN ON THE RANGE CHART INCLUDE THE RESISTANCE OF THE OUTSIDE CABLING, THE CENTRAL OFFICE WIRING AND THE HEAT COILS. THE RESISTANCE OF THE CENTRAL OFFICE APPARATUS IS NOT INCLUDED. WHERE DIFFERENT CODED REP. COILS ARE IN A CKT, THE REP COIL WITH THE HIGHEST WINDING 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.

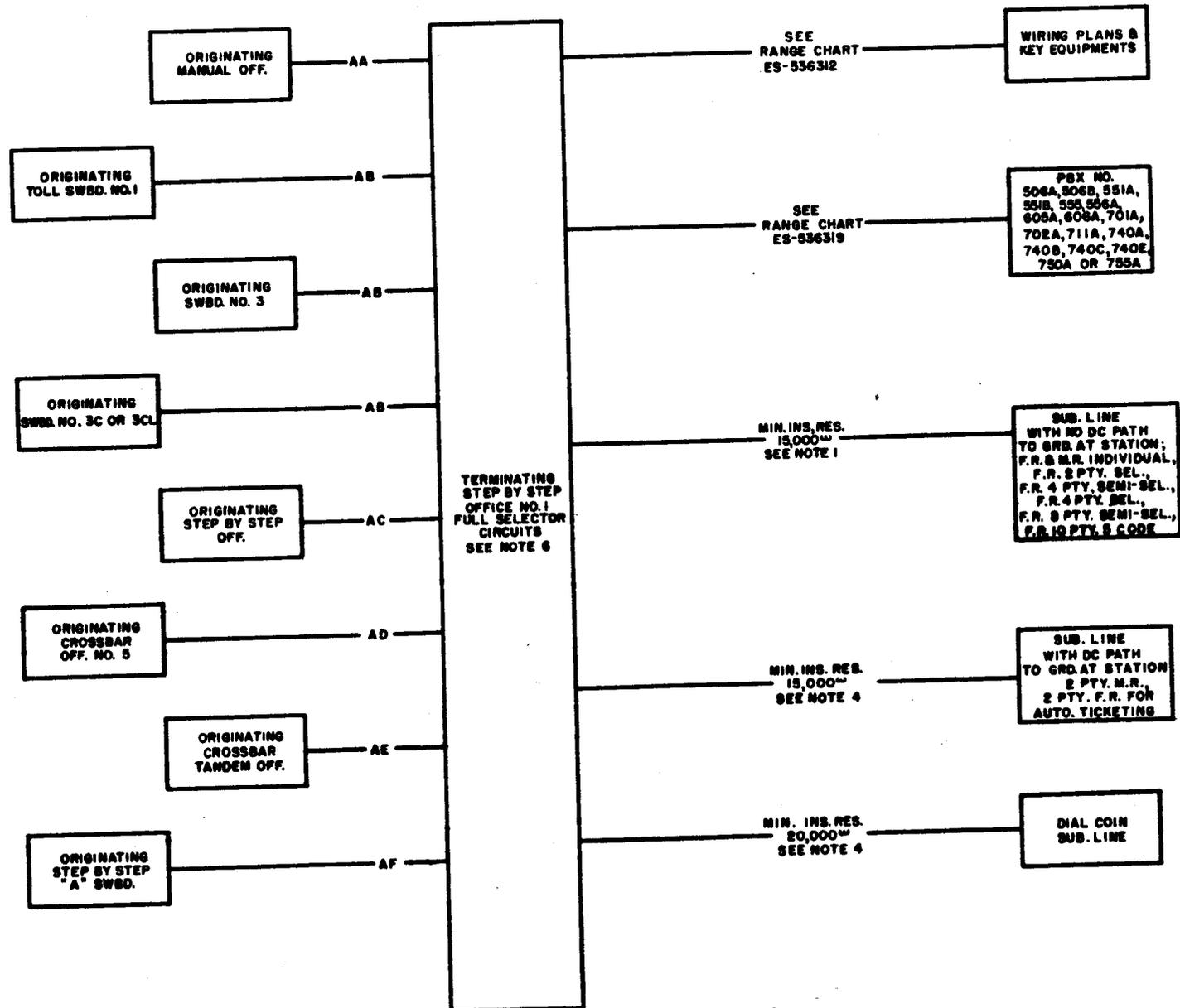
<u>TYPE OF DISTRICT</u>	<u>CONDUCTOR LOOP(OHMS)</u>	<u>OHM RANGE OFFICE</u>
SUP 42A	785	635 OR 735
AC-DC	915	635,735 OR 885
INVERTED 42A & TUBE	925	635,735 OR 835
AC-DC OR TUBE	1000	1000
AC-DC OR TUBE	1200	1200
AC-DC OR TUBE	1300	1300

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



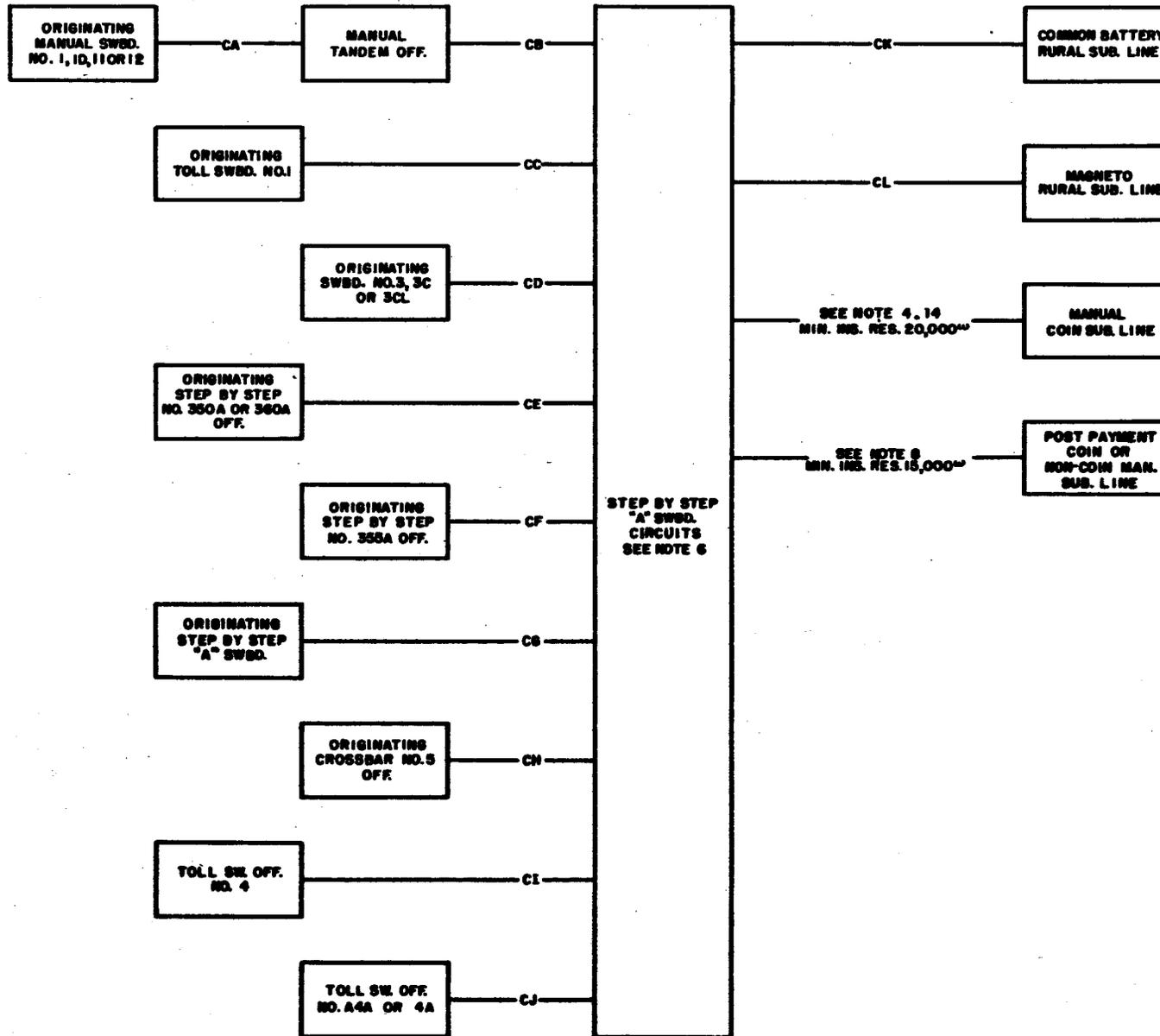
LOOP DESIG.	SXS NO. OFF. CKT.	SD- DWG. NO.	OHMS MAX. EXT. CKT. LOOP			OHMS MAX. CONDUCTOR LOOP			OHMS MIN. INS. RES.	SEE NOTE	REMARKS
			PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.			
A	SUB. REC. COMPL. TRK., COIN	32168-01		2475			2315	2500	30,000		DST. OFF. RING. VOLTAGE SHALL BE MIN. 95V. IN SERIES WITH 13 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. INCP. 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. INCP. 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	SEL REP & TRK MB	31779-01									RANGES ARE SHOWN ON SD-25435-01 XBR TDM OFF. KEY SHEET
		32008-01									
		30872-01									
		30855-01									
		32199-01									
OUT. TRK	32240-01										
	32241-01										

RANGE CHART TABLE

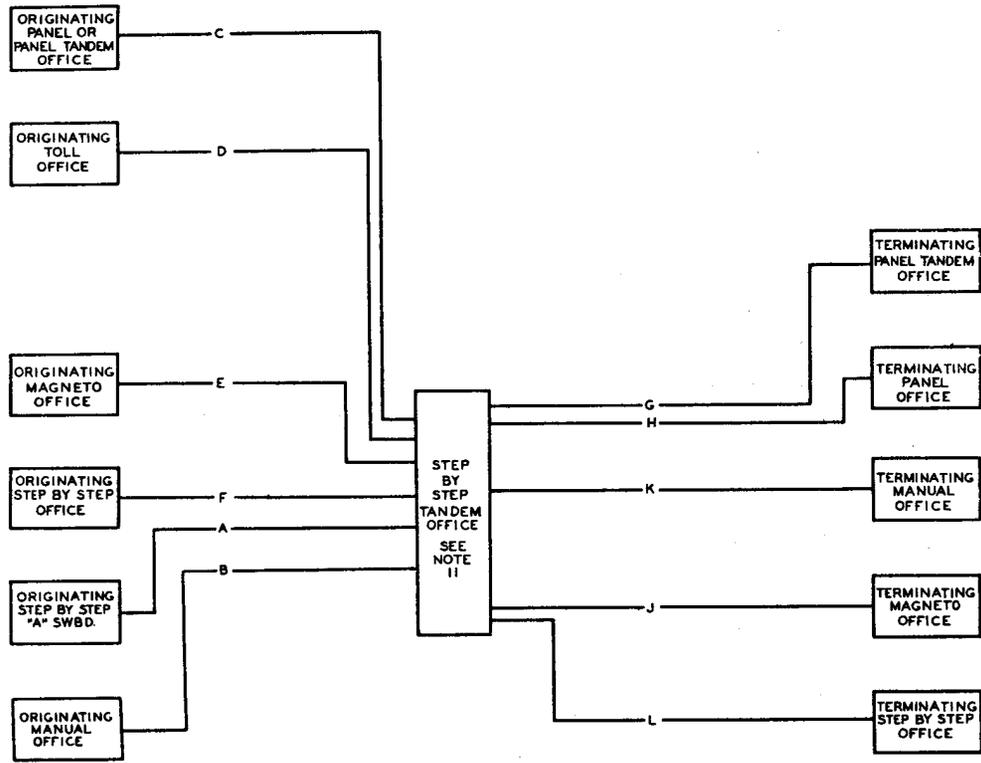


LOOP DESIG.	SXS NO. OFF. CKT.	SD- DWG. NO.	OHMS. MAX. EXT. CKT. LOOP			OHMS. MAX. CONDUCTOR LOOP			MIN. INS. RES. OHMS	SEE NOTE NO.	REMARKS
			PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.			
AA	INC. LOCAL SEL.	30200-01 (TYPICAL)		2400		1200	1200		30,000		
	INC. PULSE CORRECTOR REP.	32184-01	5000			5000	5000		30,000	9	8-11 P.P.S.
AB	TOLL TRANS. SEL., WET DRY SUPV.	31748-01				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 PLSG. REL.	31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLSG. REL.	31841-01				2000	2000		30,000		
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAE PLSG. 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 PLSG. 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		
AC	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLSG. & LOOP SUPV. WITH REP. COIL TRANS.	30200-01 (TYPICAL)		2400		1900	1900		30,000		
	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLSG. WITH CONDENSER TRANS.	30200-01 (TYPICAL)		2400		1985	1985		30,000		
	LOC. SEL. INC. FROM OUT. REP. ARR. FOR BAT. & GRD. PLSG. & 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.
AD	INC. LOC. SEL. LOOP PLSG.	30200-01 (TYPICAL)		2400		1200	1200		30,000		
	BAT. & GRD. PLSG.	(TYPICAL)		2400		1900	1900		30,000		
	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 PLSG. REL.	31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLSG. REL.	31841-01				2000	2000		30,000		
AE	INC. LOC. SEL., LOOP PLSG.	30200-01 (TYPICAL)		2400		1200	1200		30,000		
	INC. LOC. SEL., BAT. & GRD. PLSG.	30200-01 (TYPICAL)		2400		1910	1910		30,000		
	INC. PULSE CORRECTOR REP., LOOP PLSG.	32184-01	5000			5000	3000		30,000	9	
	A-B TOLL PRECEDING OR TOLL TRANS. SEL. WITH 221 FAE PLSG. 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 PLSG. REL.	31241-01 OR 31723-01		2690		2000	2000		30,000		
AF	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.
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAE PLSG. REL.	31841-01				1200	1200		30,000		
	TOLL TRANS. SEL., REV. BAT. SUPV., WITH 221 FAF PLSG. 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 TABLE



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			2800		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			1235		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		



NOTES:

1. ALL INTEROFFICE LOOP VALUES GIVEN ON THIS DRAWING INCLUDE ONLY THE RESISTANCE OF OUTSIDE CABLING AND OFFICE WIRING AND THE HEAT COILS. THE RESISTANCE 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^W OR 1400^W 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.	SEE NOTE NO.	REMARKS
A	1800 ^W	30000 ^W	2	
A	5000 ^W	30000 ^W	7	
B	1200 ^W	30000 ^W	9	WHEN DIALING INTO INC. SEL.
B	5000 ^W	30000 ^W	7	
C	4845 ^W	30000 ^W		LOOP SIGNALING
D	1200 ^W	30000 ^W		WHEN DIALING INTO INC. SEL.
D	5000 ^W	30000 ^W	7	
E	1200 ^W	30000 ^W		WHEN DIALING INTO INC. SEL.
E	5000 ^W	30000 ^W	7	
F	1800 ^W	30000 ^W	12	WHEN PULSING INTO INC. SEL.
F	1000 ^W	30000 ^W	13	WHEN PULSING INTO INC. SEL.
F	5000 ^W	30000 ^W	7	
F	2400 ^W	30000 ^W	14,18	
G	8200 ^W	30000 ^W		CX. SIGNALING - STFD. - E.P. 62V. ±
H	4480 ^W	30000 ^W	8	48V. STFD. REVERSE BAT.
D+H	4900 ^W	30000 ^W	8	48V. STFD. REVERSE BAT.
F+H	4900 ^W	30000 ^W	5	48V. STFD. REVERSE BAT.
H	1805 ^W	30000 ^W		48V. STFD. HIGH LOW
J	3000 ^W	30000 ^W		
K	8200 ^W	30000 ^W		48V. CX. SIGNALING - STFD. - E.P. 62V. ±
K	3000 ^W	30000 ^W		38V. CX. SIGNALING - STFD. - E.P. 37V. ±
K	4210 ^W	30000 ^W	6	24V. STFD. - REVERSE BAT.
K	5155 ^W	30000 ^W	6	38V. STFD. - REVERSE BAT.
K	5760 ^W	30000 ^W	6	48V. STFD. - REVERSE BAT.
K	3045 ^W	30000 ^W	5	24V. STFD. - REVERSE BAT.
K	3800 ^W	30000 ^W	5	38V. STFD. - REVERSE BAT.
K	4800 ^W	30000 ^W	5	48V. STFD. - REVERSE BAT.
K	1505 ^W	30000 ^W		48V. STFD. - HIGH LOW
L	2000 ^W	30000 ^W	16	WHEN PULSING INTO INC. SEL.
L	2400 ^W	30000 ^W	17	WHEN PULSING INTO INC. SEL.
L	1200 ^W	30000 ^W	18	WHEN PULSING INTO INC. SEL.
L	5000 ^W	30000 ^W	7	

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 J16 TEST CONN. J18	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 822) 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			30, 60 & 120 I.P.M.		SD-31606-01 G73
For use with Grounded			Relay, to Provide a		
or Low Insulation			Delay Interval, for		
Metallic Lines - Pulse			Use with 804C Ring-		
Correcting and Relayed			ing Pwr. Plant		SD-32180-01 A207
Ringings	SD-31848-01 F1		Miscellaneous		
			Alarm Sender		SD-32193-01 H133
			For Use with		
ADJUSTING			Suspension Ckt.		SD-95872-01 H217
MF Pulsing Receiver,			Motor Stop and Guard		SD-31553-01 F129
Using MF Current			Permanent Signal -		
Supply Source	SD-95644-01 D167		Arr. to Operate on		
MF Pulsing Receiver,			Spec. Number of		
Using One Milliwatt			Perm. Signals		SD-31912-01 G132
1000 Cycle Supply			Power - D-C		
Source	SD-95779-01 C167		Fuse		SD-31519-01 G127
			Voltage Control		SD-31544-01 H127
			Ckt. Breaker		SD-31545-01 I127
ALARMS			Power - A-C		
Audible & Visual			AC-DC Ring.		SD-31559-01 I129
Pilot Lamp	SD-31548-01 F128		Sup. Ring.		SD-31560-01 I129
Power Alm. Lamp	SD-31549-01 G128		60 Cycle Supply for		
Audible	SD-31551-02 I128		6V Lamps		SD-95005-01 C133
Aud. & Visual with			Power Plant - 803C		
Aisle Pilot and			AC-DC Ring. & C.C.		
Distinctive Alms.	SD-96188-01 G133		Supply		SD-31617-01 J130
			Sup. Ring. & C.C.		
Auxiliary			Supply		SD-31618-01 I130
For Controlling Alm.			Switchboard		
for Conn. Discon-			"A" Bd. Night		SD-90464-01 A115
nect Condition	SD-31866-01 I134		"A" Bd. Key Pulsing		SD-95052-01 D129
			Switch Trouble		
Cable Insulation			Rep., Trks., Out.		
	SD-31912-01 G132		Trk. Sw., Plug Up		
Cable Insulation			Trk. Conn., Spl.		
	SD-96348-01 H132		Serv. O.G.T., and		
Checking Terminal			M.R. Trks.		SD-31516-01 E127
(also see Terminal)	SD-31835-01 I133		Sel. Shelf Ckts.		SD-32043-01 B127
			Alm. Frame Ckts.		
Emergency			for Selectors		SD-32044-01 B128
Code Sig. & Auto.			Conn. Shelf & PEX		
Fire Detection	SD-90437-01 D131		Trk. Shelf Ckts.		SD-32045-01 C127
Inc. from Dist.			Alm. Frame Ckts. for		
Off Where Inc.			Conns. & PEX		SD-32046-01 C127
Ckt. is not to be			Trks.		
Connected to Zone			For Trk. & Misc.		SD-32048-01 A128
Sig. Ckt. Emer.	SD-90642-01 B131		Shelves		
Auto. Fire Detection			Sel. Rep. Shelf		SD-32102-01 K135
48V Multi Zone	SD-96049-01 F131		Ckts.		
Auto. Fire Detection			Alm. Frame Ckts.		SD-32103-01 J135
48V Single Zone			for Sel. Repeaters		SD-32239-01 A127
Emer.	SD-96052-01 D133		Line Fdr. & Trk. Fdr.		
			Tone		SD-31521-01 B129
Extension, for			Trunk		
Receiving Alm.			Prepayment Coin Trks.		SD-30852-01 J129
Indications Over			For P.B.X. Trks. on		
Separate Cable Pair			Relay Racks		SD-31785-01 E131
from Distant Office			Special Service Trk.		SD-90622-01 G115
or PBX	SD-95484-01 C129				SD-95418-01 B134
			ALARM RECEIVING		
Fuse			AMPLIFIER		
Relay Rack, Alarm			Cent. Off. Observing		SD-90567-01 G67
Frame and Traffic			Amplifier & Pad, with		
Register Rack	SD-31613-01 G130		High Impedance Unit		SD-95026-01 D107
			For Use with S.O. Ckts.		
Interrupter			Connecting to S.O.		
Code Ringing - 10			Desk No. 7 or 12		SD-95112-01 D203
Pty. TPS	SD-31298-01 A129		Monitoring, with High		
Ringling - 8 Pty.			Impedance Unit		SD-96516-01 I110
Semi-Sel.	SD-31336-01 G11				
Arr. to Provide a					
Delay Interval	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	SD-32123-01 J147	Local, 200 Point, Multi-party, Super- imposed Ringing, Term. per Station	SD-33007-01 D63
Connector	SD-32128-01 J149	Local, 200 Point, Rot. Hunting, Multiparty Superimposed Ringing, Term. per Station	SD-33008-01 E63
Miscellaneous	SD-32129-01 K147	Comb., 200 Point, Multiparty, AC-DC Ringing, Term. per Station, Arr. for Reverting Calls	SD-33009-01 F63
BATTERY SUPPLY Bat. & Grd. at M.D.F.	SD-90048-01 I72	Comb., 200 Point, Multiparty, Super- imposed Ringing, Term. per Station	SD-33010-01 G63
PBX	SD-90232-01 J72	200 Point Test	SD-33011-01 I19
Amplifier	SD-90608-01 D106	Line Insulation Test Teletypewriter Remote Control, for Use with S.O. Desk No. 7 or 12 for Observing on Cords	SD-95793-01 C202 SD-95890-01 D188
BUSY BACK "A" Bd. Toll Sw. Cord	ES-31090-01 H30	Outputpulser, for ANI	
BUSY LINE CUT-IN	SD-31728-01 K19	CONTROL	
BUZZER M.R. Crossconnections Checking	SD-31610-01 I73	Test Distributor	SD-31349-01 E43
CABINET Traffic Register	SD-95531-01 G149	Permanent Signal Test	SD-31401-01 C43
CALCULAGRAPH Motor Driven	SD-95012-01 E111	Transmission Pad	SD-31591-01 D97
CALL "A" Bd. Inc. from L.T.D.	SD-96185-01 B113	Line Load	SD-32069-01 G3
CLOCK Motor Driven	SD-95012-01 E111, E147	Line Load Arr. for Remote Control and Supervision of Line Load	SD-32108-01 G2
Misc. Use 10 I.P.M. Impulse	SD-96201-01 H75 SD-96343-01 E73	Line Insulation Test	SD-32219-01 I168
CONNECTOR Local Rotary Hunting	SD-30215-01 D17	Obs. Entry, for ANI	SD-32247-01 F186
2 Ring Combination	SD-30220-01 B18	"A" Board Coin	SD-90459-01 G112
1 Ring Combination	SD-30228-01 C18	Trunk Coin	SD-95031-01 C22, B25
Test, for Testing Sub. Lines and for Veri- fication Request Service	SD-30243-01 J19	Traffic Reg. Camera For Use with Suspension Ckt.	SD-95797-01 I150
8 Pty. Terminal per Station Combination	SD-30862-01 F17	"A" Board Indicator	SD-95872-01 H217 SD-96033-01 I36
1 Ring Comb. Rotary Hunting with or without Arrangement to Cancel Rev. Bat. Supv. on Specified Levels	SD-30950-01 I63 SD-31088-01 E18 SD-31114-01 D19 SD-31527-01 E19	CONVERTER Pulse, for Converting DC Key Pulses to MF Pulses	SD-95567-01 B203
Local Level Hunting		Dial Pulses to MF Pulses	SD-96453-01 A203
Toll Rotary Hunting			
Toll Level Hunting			
Loc. Rot. Htg. Arr. to Cancel Rev. Bat. Supv. on Spec. Levels	SD-31656-01 E17	CORD	
10 Pty. Terminal per Sta. Comb., 5 Code Ringing, Arr. for Reverting Calls and Calling Pty. Control	SD-31811-01 G17	"A" Board No. Checking	SD-31438-01 A113
Local, 200 Point, Multiparty, AC-DC Ringing, Term. per Sta., Arr. for Reverting Calls	SD-33005-01 B63	"A" Board Make Busy	SD-90438-01 E36
		"A" Board Rec. Com- pleting	SD-90452-01 J113
		"A" Board Spl. Serv. Non-Coin	SD-90453-01 B118
		"A" Board Spl. Serv. Coin	SD-90453-02 C118
		"A" Board Combination Non-Coin	SD-90454-01 H112

CORD (Cont'd.)

"A" Board Combination Coin SD-90454-02 H113
 "A" Board Call Wireless 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 Wireless 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 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

LINE (Cont'd.)

"A" Board Business Office	SD-31198-01 D37	Business Off., Arr. for Inc. Serv. from Dist. Swbd. and 2 Way Serv. to Sub. Line Ckt.	SD-95721-01 E167
Terminating Service Rotary Line Switch	SD-31224-01 A20	For Public Emergency Reporting	SD-95873-01 B209
"A" Board Plugging Up Dial Terminating Manual	SD-31406-01 H29	Local Station - Station End	SD-96109-01 H42
"A" Board Official	SD-31470-01 F27	Private 24 & 48 V.	SD-96128-01 G74
"A" Bd. Aux. for Emer. Connections	SD-31498-01 B38	Private 48V Only	SD-96147-01 G74
Message Register Test	SD-31608-01 J37	Order Clerk or Chief Operator with Visual Line Signal	SD-96262-01 A147
Loc. or Toll Inc., Coin Box or M.R. Trk. Test	SD-31610-01 C47	Aux. with Auto. Cut Off - Main & Extension Stations on Separate Loops	SD-96468-01 E2
Loc. Inc., Coin Box or M.R. Trk. Test	SD-31636-01 D49	Emerg., for Completion of Calls to Police, Fire & Ambulance Lines	SD-96469-01 D210
Busy Line Pdr.	SD-31642-01 E49	Transmission Test	SD-98100-01 G52
During Hunting Aux. Connector Test	SD-31652-01 E1	LINE VERIFICATION for ANI	SD-32246-01 H189
Business Office, 4 Wire to Toll Swbd. No. 1	SD-31653-01 I47	LINK	
Transmission Test and Swmn. Talking for Connectors	SD-31788-01 J74	"A" Board	SD-90705-01 C142
Aux. - for Operating Sub. Reg. with Delayed Charge Interval Using Cent. Off. Battery	SD-32021-01 H147	LISTENING-IN	
Dial Sub.	SD-32082-01 I2	Opr. Training, with Monitoring Amplifier	SD-96405-01 E37
Toll Sub. - For Use with No. 1 Toll Swbd.	SD-32133-01 B2	LONG LINE	
Toll Sub., for use with Swbd. No. 3, 3C or 3CL	SD-90077-01 C122	Dial - For Use on Pre-payment Coin Lines	SD-32053-01 H121
"A" Board Man. Plugging Up - For Use with No. 3, 3C or 3CL Swbd. in Connection with S. By S. Sub. Lines	SD-90078-01 D122	Dial, Repeated Ring., for Use with 4 Pty. Sel. or 8 Pty. Semi-Sel. Lines	SD-95435-01 D124
Emergency Recorder Talking	SD-90450-01 I30	Pulse Correcting	SD-96009-01 G122
Plugging Up, with or without Auto. Cut-thru Feature for Plugging Up Fr.	SD-95034-01 A151	By Pass or Repeated Ringing	SD-96034-01 H123
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	SD-95336-01 I35	Manual - CX Sig. - Supplies Line Supv.	SD-96116-01 E122
Dial Terminating Manual, for Use with Central Swbd.	SD-95532-01 G150	Manual - Ph. Grp. with CX Sig. 48V offices	SD-96117-01 K123
Man. Sub. for Use with Dial Terminating Manual Line Ckt. in Dist. Off.	SD-95597-01 G77	Supplies Xmtr. Bat. Dial, 10 or 20 PPS Repeating, Relayed or By-Passed Ringing	SD-96234-01 A122
Cent. Swbd. Emer., Arr. to Disconnect Calling. Pty. on Emer. Calls	SD-95607-01 F2	Dial, CX Sig. Type B Supplies Line Supv.	SD-96251-01 B122
"A" Swbd. Business Off. Out. to Dist. Dial Office	SD-95711-01 A167	Dial - CX Sig. Type B with Type "B" T.B. Supply	SD-96252-01 B124
	SD-95713-01 H183	MAKE BUSY	
	SD-95713-01 I183	For Use With Sel. Rep. For Rec. Compl. Trks. to Toll Swbd.	SD-30855-01 C198
	SD-95714-01 E193	Trunk	SD-30893-01 C207
		Trk. - For Trks. from Selector Levels	SD-31225-01 C72
		For Use with Trks. to Rep. Serv. Desk No. 2	SD-31420-01 D72
		For "A" Bd.	SD-95781-01 D58
		MANUAL	SD-96470-01 E115
		Type "A" Emergency	SD-32065-01 F158
		Type "B" Emergency	SD-32093-01 F163

MISCELLANEOUS

For Angle Rel. Rack
Bays

SD-32153-01 I147

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

SD-95564-01 D202

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

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

OUTPUTSER
For ANI

SD-95811-01 E188

POSITION
"A" Board

SD-90457-01 I113

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

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

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 C107
SD-90558-01 G109
SD-90562-01 F68
SD-90580-01 E107
SD-90647-01 H107
SD-95510-01 I108
SD-95563-01 E202

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 CAMA 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
 C12
 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			
MFKP-In, DP-Out		SD-95400-01	I52
Senders		SD-95537-01	H168
Line Insulation			
Outpulser-Identifler,		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		SD-30490-01	C46
Reg.			
Line Finder & Trk.		SD-31456-01	G46
Finder		SD-31481-01	G49
Pulsing			
Line Finder & Trk.		SD-31524-01	G46
Finder			
For Local, Toll & Com-		SD-31637-02	I48
bination Connectors		SD-31667-01	G50
Pulse Repeating Relay			
Rapid Operation Line		SD-31725-01	C49
Finder & Out. Rep.			
For Testing Sub. Low			
Res. Msg. Registers		SD-32150-01	C46
& Traffic Registers		SD-90013-01	F49
206 Type Selector			
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
TO NE			
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			
SXS "A" Swbd.			
Lamp		SD-96425-01	F29, C149
		SD-96470-01	G90
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
Compensating SD-95471-01 B192
SD-31331-01 F24,
C94

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

Inc. to "A" Swbd. from
Inf. Desk No. 1
Toll Sel. Mult. to
Rural Opr. ES-241550 G27
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
SD-96169-01 F33
SD-96283-01 H33

Toll Swbd. No. 1
Community Dial Off.
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"
or Simplex Sig. SD-31865-01 D138

To Toll Inc. Sel. -
CX Sig. Type "B"
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
SD-31337-01 D152
SD-31339-01 B152
SD-31767-01 E152

Conn. Mult.
Plugging Up Line
Loc. Sel. Mult.
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
Toll Sel. Mult. SD-31965-01 E154
SD-32163-01 G152

TRUNKS (Cont'd.)

From Conn. Terminals or Sel. Levels for Use with Announcement Machine, Announcement 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		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
"A" Bd. - Between Spl. Serv. & Rural Oprs.	SD-239345 K27	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
Auto. Between "A" Bd. & No. 3, 3C or 3CL Swbd.	SD-90124-01 E27	Dial, with SX Ringing to XBR No. 5 Off.	SD-95704-01 D173
"A" Swbd.	SD-96149-01 C29	From "A" Swbd. - with Idle Trk. Indicating	SD-96164-01 J38
Message Register		DCKP to Local Sel., Test Distributor, Selector for Compl. Delayed Calls, Rep. or A-B Toll Sel.	SD-96459-01 F38
For Use with 100 or 200 Pt. Line Fdr.	SD-31493-01 C5	DCKP, Thru Supv., to XBR No. 5 Off.	SD-96459-01 B193
2 Pty. for Use with 4 Wire Line Fdr.	SD-31506-01 D5	DCKP, Thru Supv., to XBR Tdm. Off.	SD-96459-01 D193
For Use with 4 Wire Line Fdr.	SD-32082-01 E5	Out. to Information Desk	
Out. to Cent. "A" Swbd. 2 Wire		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 Spl. Serv. Opr. from Coin Box Lines	SD-31315-01 C8	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
To Spl. Serv. Opr. from Non-Coin Lines - with Ringback	SD-31375-01 B8	No. 1, 2, 7 or 7A or Opr. Room Desk No. 19 from "A" Swbd. - with Sleeve Resistance	SD-96164-01 J38
To Rural Opr. Arr. for Holding	SD-31540-01 F14	Out. to Manual Office Stfd. - Loop Sig.	
From Incpt. Trk. Fdr. Verification Request, High-Low Rev.	SD-31965-01 E154	Rev. Bat.	SD-30645-01 D99
Bat. Supv.	SD-95691-01 H209	Stfd. - CX Sig. - Ph. Grp. - Tel. Rep. to Man. Tdm. Off.	SD-31534-01 B99
Out. to SXS "B" Swbd. from "A" Swbd., One Way CX 48V Sig.	SD-90439-01 F39	Stfd. - CX Sig. - Ph. Grp. - To Man. Tdm. Off.	SD-31534-01 C99
Out. to Full Selector Offices		Stfd. - High-Low Loop Sig.	SD-31651-01 J96
From Dialing "A" Posi- tions for Completing Delayed Calls	SD-31480-01 I40	For Flat Rate Lines From Sel. Mult.	SD-31692-01 J9
From Sel. Mult. with Mult. at Swbd. - CX Signaling, Type "B"	SD-31795-01 C138	Arr. to Charge Sub., and Calling Party Control	SD-32167-01 H9
Pulse Correcting, Loop Puls. or Bat. & Grd. Puls., Rev. Bat. Supv., Rep. Coil Transmission	SD-31929-01 K99		
For CAMA Calls, Bat. & Grd. Pulsing	SD-32199-01 H174		
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	Rec. Compl., Non-Coin, without Ringback, E&M Lead Supv., with or without Class of Service Tone	SD-31888-01 F138
Verification Request, High-Low Rev. Bat. Supv.	SD-95691-01 H209	Sub. Rec. Compl., High-Low Supv., Non-Coin, Not Arr. to Recall Sub. and for Class of Service Tone	SD-31925-01 D14
Stfd. - with Idle Trk. Indicating to Man. or Man. Tdm.	SD-96164-01 J38	Rec. Compl., High- Low Supv., Non-Coin, Arr. to Recall Sub. and for Class of Service Tone	SD-32136-01 C14
To Toll Sw. Trk. Arr. for Rering, Idle Trk. Indicating and Grp. Busy Lamp	SD-96395-01 K38	Sub. Rec. Compl., High-Low Supv., Coin, Arr. for Class of Service Tone	SD-32168-01 B14
Out. to Magneto Office, Ringdown, Arr. for Coin Line Indi- cation	SD-31449-01 E8	For Official PBX or Repair Serv. from Sel. Mult., E&M Lead Supv.	SD-32311-01 G18
Out. to Opr. Room Desk No. 23A, B, C or D 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
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
Out. to Panel Office Stfd. - Loop Sig. - Rev. Bat. - To Panel "B" Bd.	SD-30645-01 D99	Arr. for SF Operation, MF Puls. & Rev. Bat. Supv. for use where Pos. is Arr. for DC & MF Puls.	SD-95425-02 C172
Stfd. - CX Sig. - Ph. Grp. - Tel. Rep. - To Panel Sdr. Tdm. Off.	SD-31534-01 B99	For Use with Intertoll Dialing, CX or SX Supv.	SD-95504-01 F172
Stfd. - CX Sig. - Ph. Grp. to Panel Sdr. Tdm. Off.	SD-31534-02 C99	Verification Request, High-Low Rev. Bat. Supv.	SD-95691-01 H209
Stfd., High-Low Loop Sig. - To Panel "B" Bd.	SD-31651-01 J96	Stfd. - with Idle Trk. Indicating	SD-96164-01 J38
From "A" Swbd. 1 Way CX 48V Sig.	SD-90439-01 F39	Sender Monitoring Sleeve Repeating Talking at MDF or Protector Frame to LTD No. 14	SD-95469-01 J183 SD-31421-01 D8
From "A" Swbd. to Dist. Sel. in Panel Tdm. Off.	SD-96164-01 J38	Test	
Out. to PBX from Sel. Mult. with Connector Mult.	SD-31757-01 D11	From Loc. Sel. Mult. to LTD No. 14	SD-31245-01 D42
Out. to Repair Service Desk No. 2 From Sel. & Conn. Mult. Arr. for Trfr. to Swbd.	SD-32178-01 C58	From Loc. Sel. Mult. to Loc. Tst. Cab. No. 3	SD-31245-01 H142
From Sel. Mult., E&M Lead Supv.	SD-32311-01 G18	Inc. from LTD No. 14 to MDF & IDF for Detecting Inter- mittent Trouble	SD-32038-01 A44
From Conn. Mult. E&M Lead Supv.	SD-32312-01 F18	For Use with Incpt. Trk. Ckts. Requir- ing Mach. Ring.	SD-32090-01 E54
Out. to Toll Swbd. 2 Wire from "A" Bd. for Opr. Rec. Completing Serv. (Non-Coin)	SD-31678-01 B37	From LTD No. 14 to MDF or Protector Fr. for Testing Trks. & Lines - In & Out Type	SD-90070-01 F43
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		

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 Operator Off. to Community 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	Interlocal - CX or SX Puls., CX or SX Supv., Arr. for Pulse Correcting on Inc. Calls	SD-31867-01 G172
Plugging Up Frame	SD-90589-01 G78	Combined Opr. Office & Interlocal, One Digit Tdm. Operation, Bat. & Grd. Puls., Rev. Bat. Supv., Type "B" TB Supply	SD-31886-01 I172
"A" Board Test Trk., from Toll Test Bd. No. 18B for Testing 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. Operation, CX, SX or E and M Lead CX Type Supv., Type "B" TB Supply	SD-31885-01 J172
Test, Frame End from Cable Test Desk No. 3 or LTD No. 14 Arr. for Auto. Varley 3 Test	SD-95545-01 A42	"A" Bd. 2 Way Operator Off. to Community Dial Off.	SD-31906-01 D33
Talking at MDF or Protector Frame to LTD No. 14	SD-96074-01 J42	"A" Bd. 2 Way Operator Off. with Tandem Sel. Mult. to Community Dial Off. - CX Sig. Type B - with or without Tel. Rep.	SD-31928-01 C33
Toll Diverting, for Dial Selected PBX Trks. with or without Arrangement to Test Busy While Line Finder Hunts	SD-32067-01 J137	Ringdown Interoffice 2 Wire Auto. to DSA or Toll Swbd.	SD-96216-01 C30
2 Way To Mag. Swbd. Out. Ringdown - Inc. Dialing	SD-31449-01 I97	Ringdown to Toll Swbd.	SD-96301-01 J33
Interlocal - Dial Repeating on Out. Calls - Loop Res. 3000 Ohms Max.	SD-31602-01 I8		SD-96394-01 G33

USAGE
Trunk Group

SD-32049-01 B107

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