

BELL TELEPHONE LABORATORIES, INC.

CROSSBAR SYSTEMS NO. 5 KEY SHEET

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GENERAL DESCRIPTION FOR NO. 5 CROSSBAR SYSTEM
IS SHOWN IN BSP SECTION 971.501.01

FOR CURRENT DRAIN DATA
SEE SD-25760-02

FOR EXPLANATION OF CONVENTIONS
SEE MASTER KEY SHEET SD-90250-01

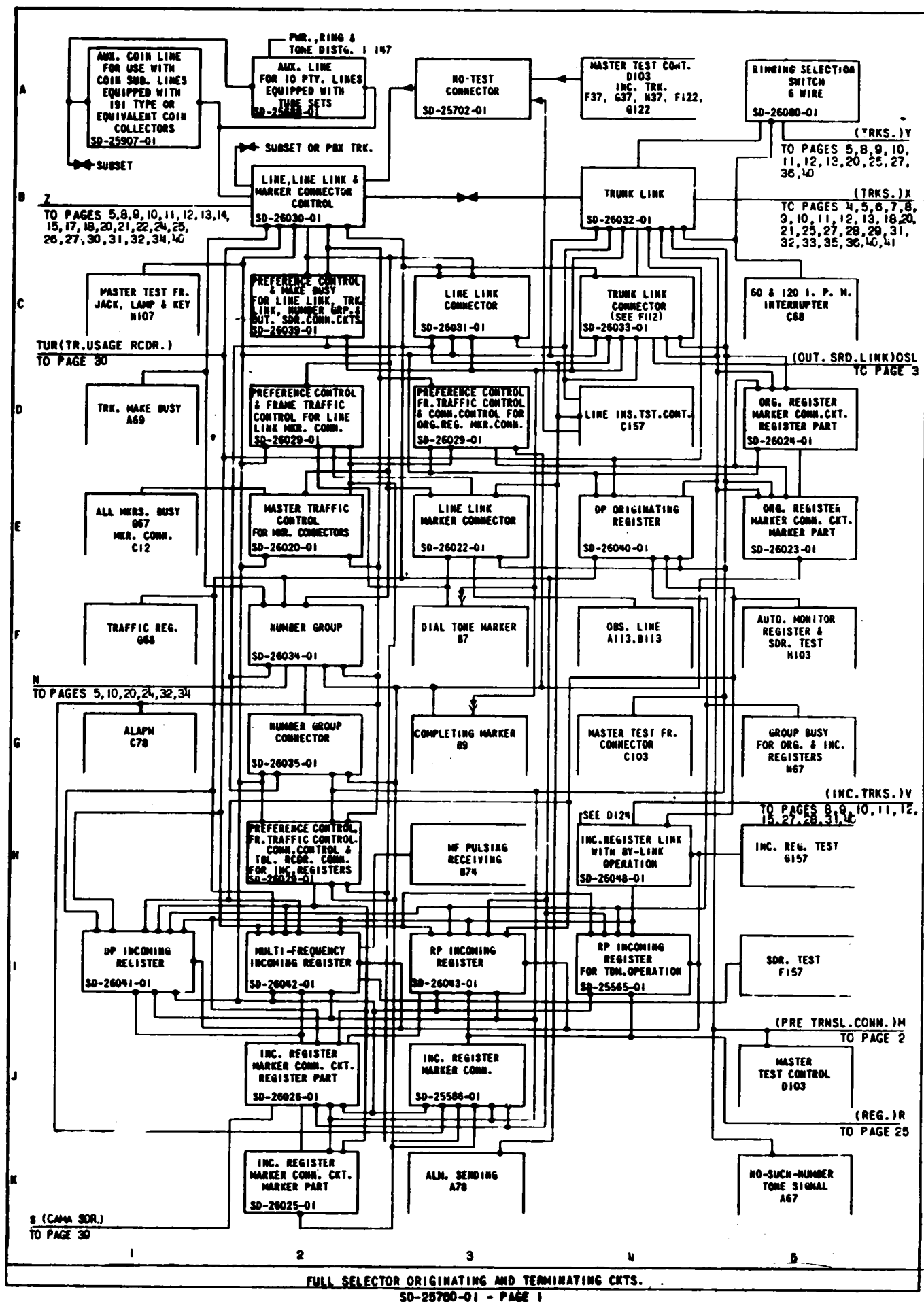
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10	10	7-11-58	S. V. S. L. H. E.	S. W. E. W. D.

F. C.

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AT & TCO
STANDARD

SD-25760-01



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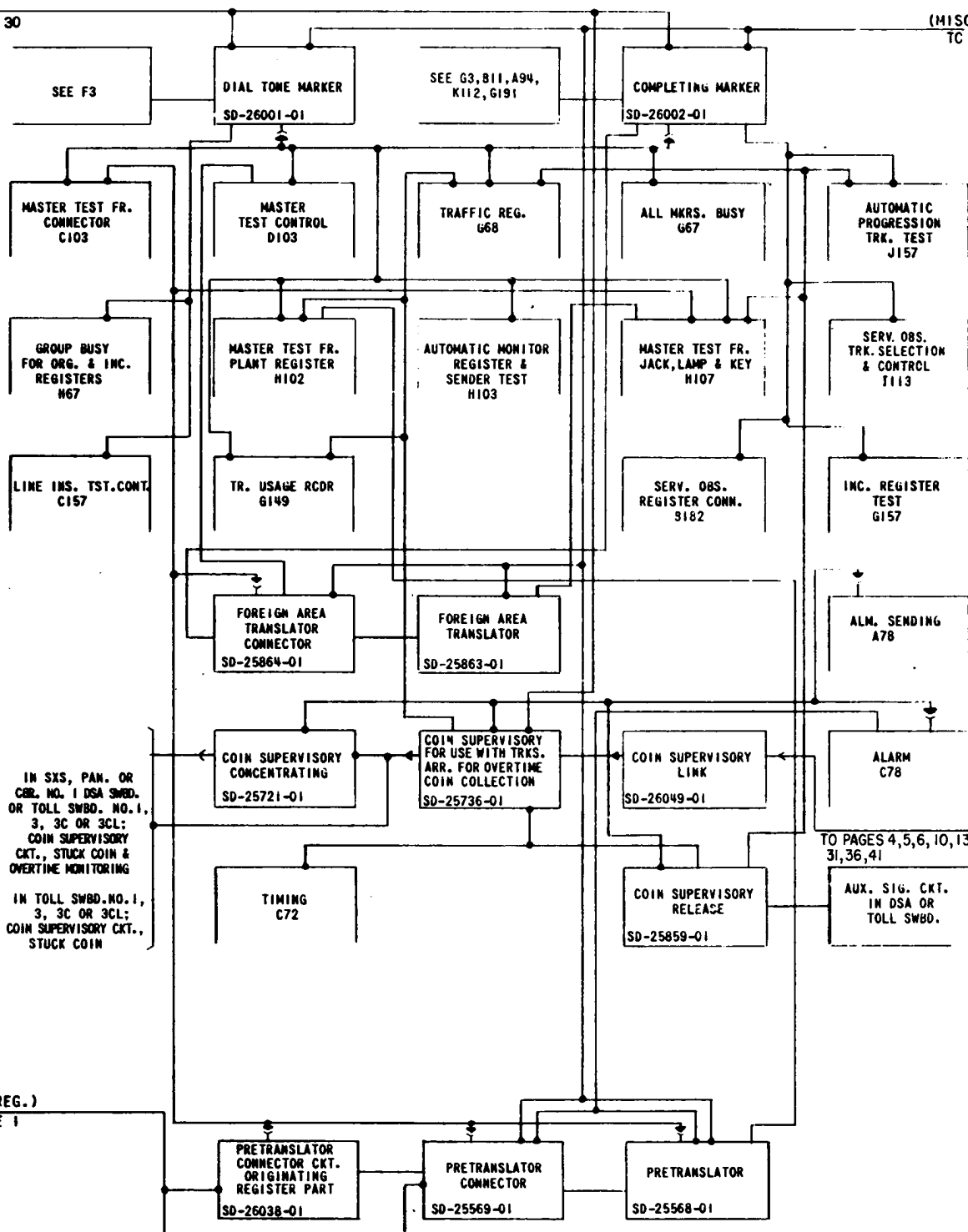
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FULL SELECTOR ORIGINATING AND TERMINATING CKTS.

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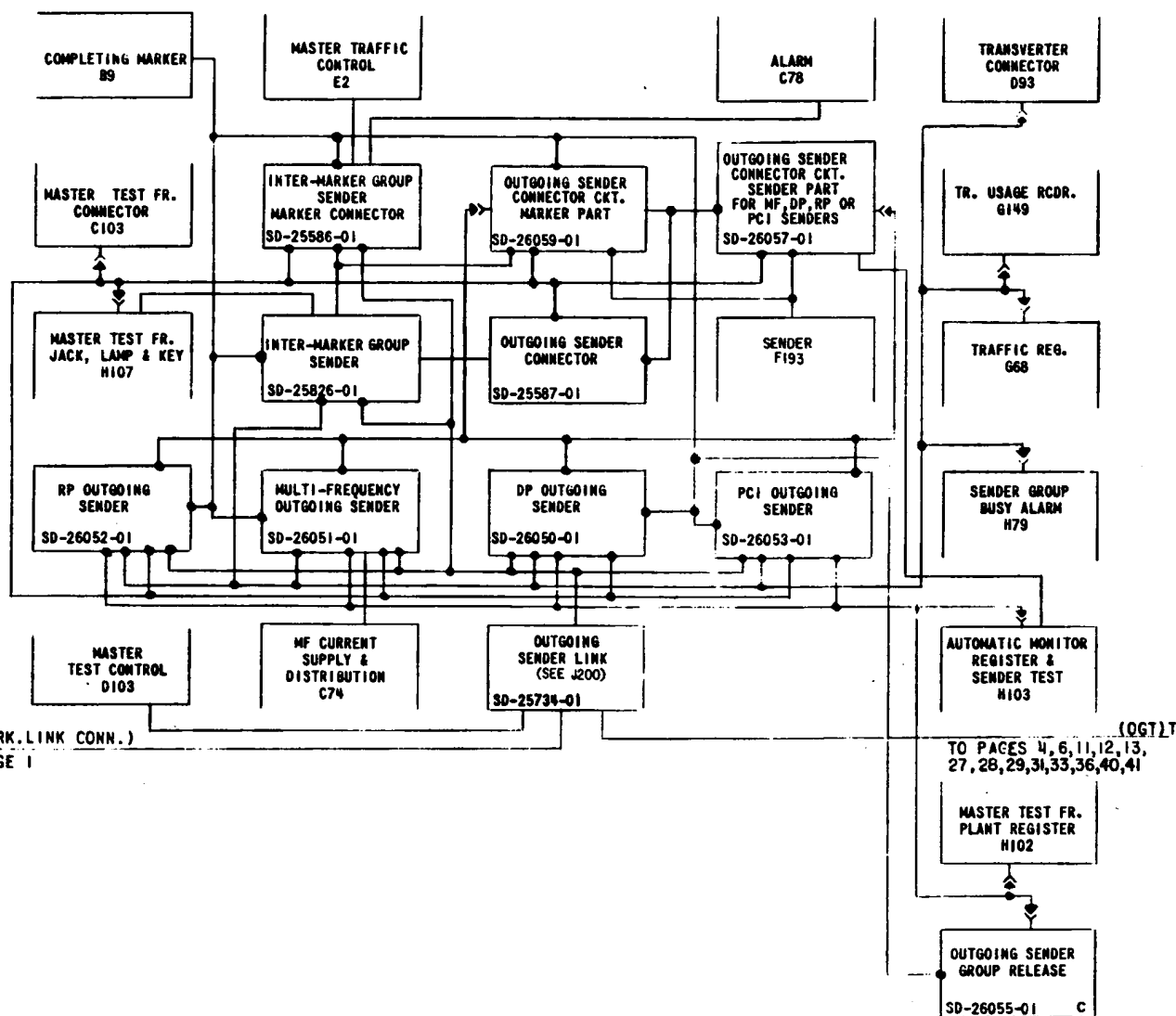
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OSL (TRK. LINK CONN.)
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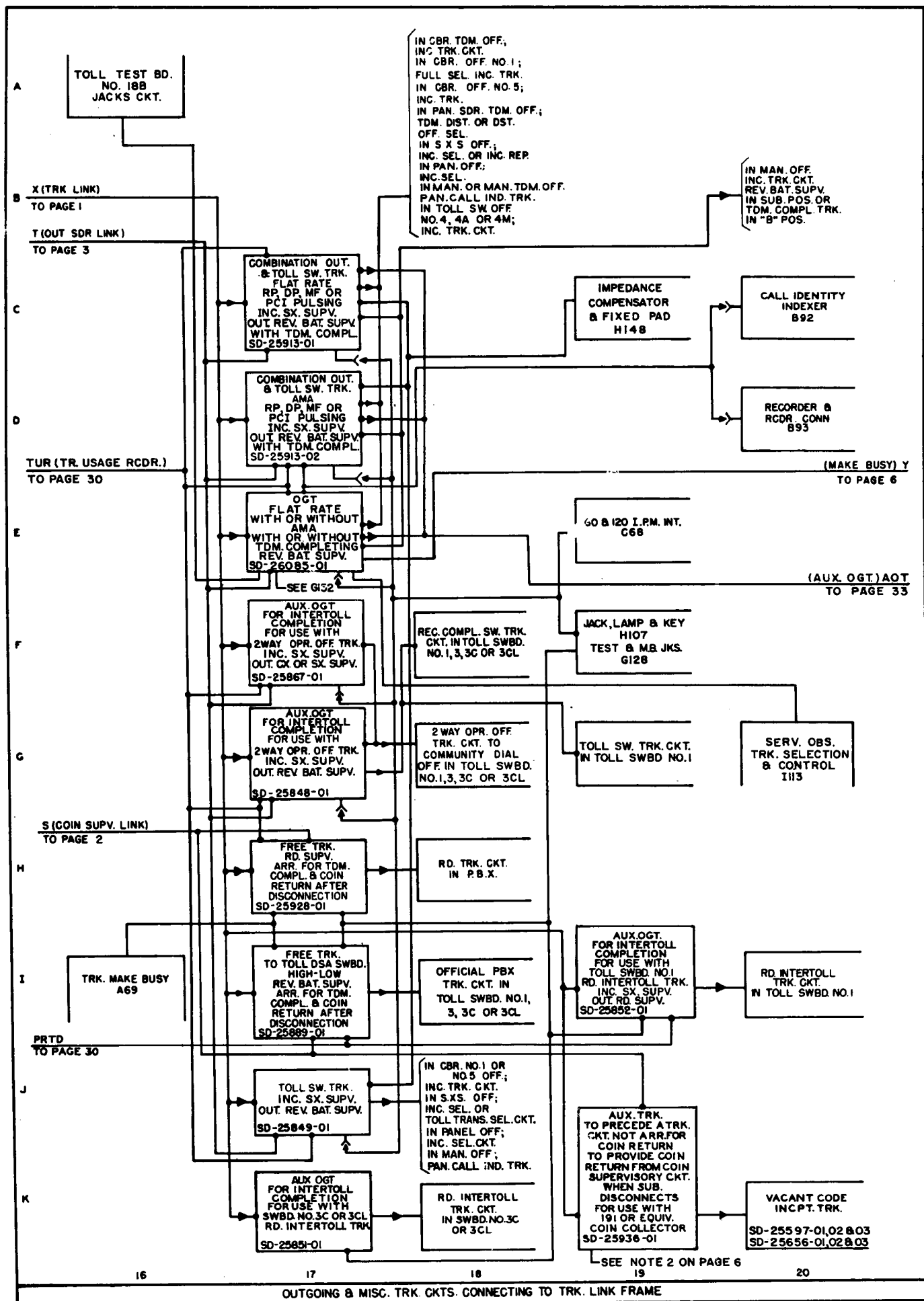
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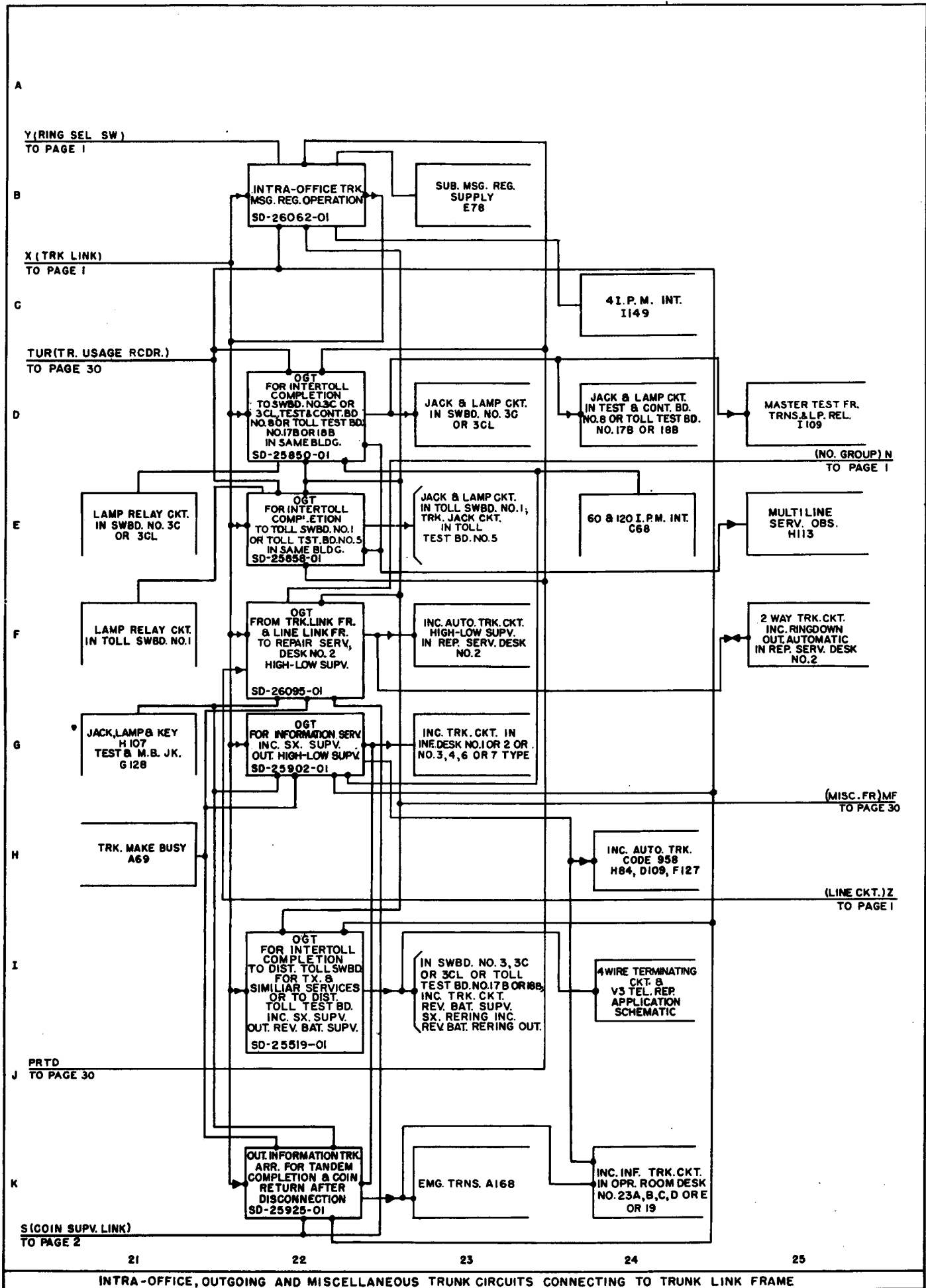
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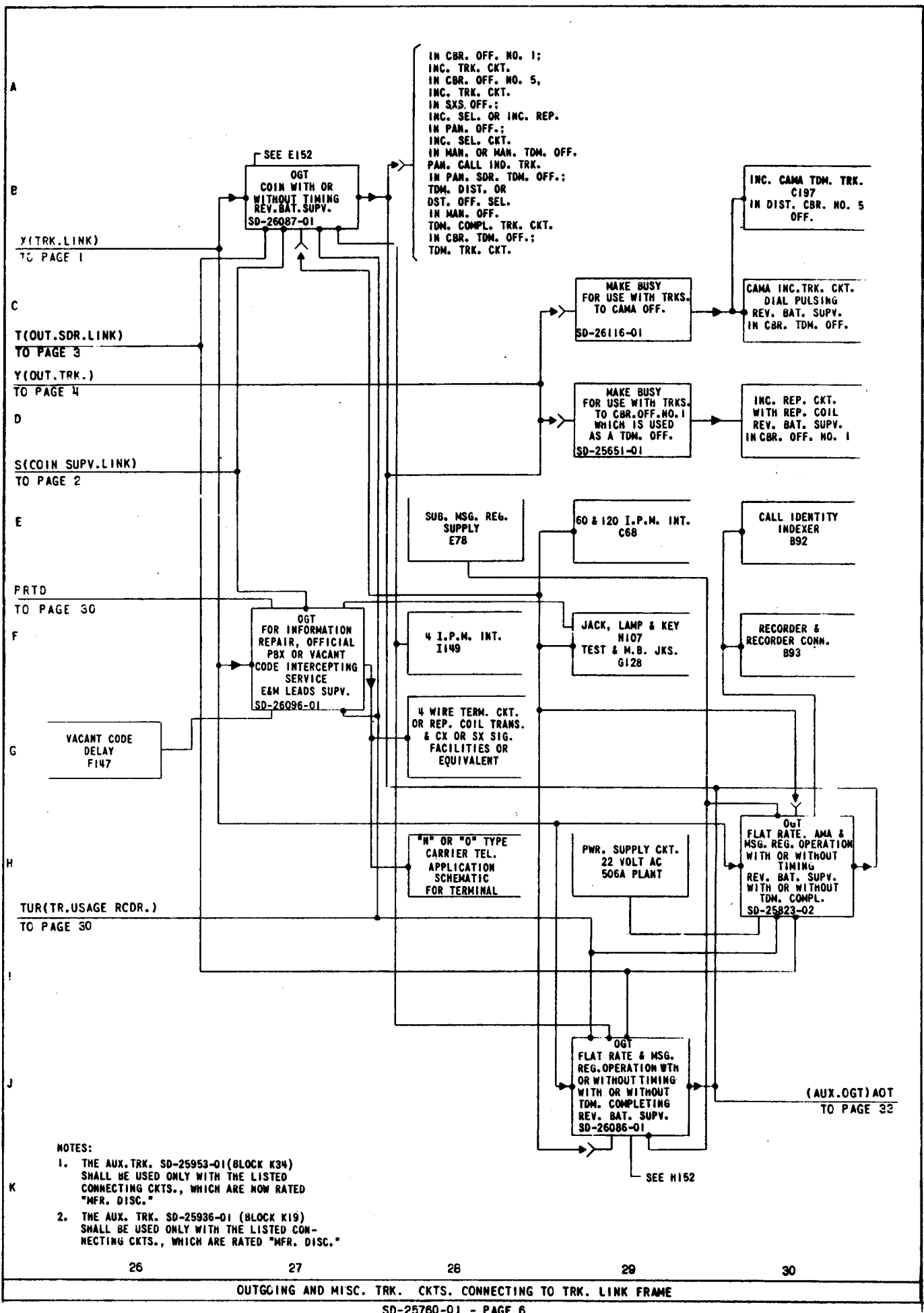
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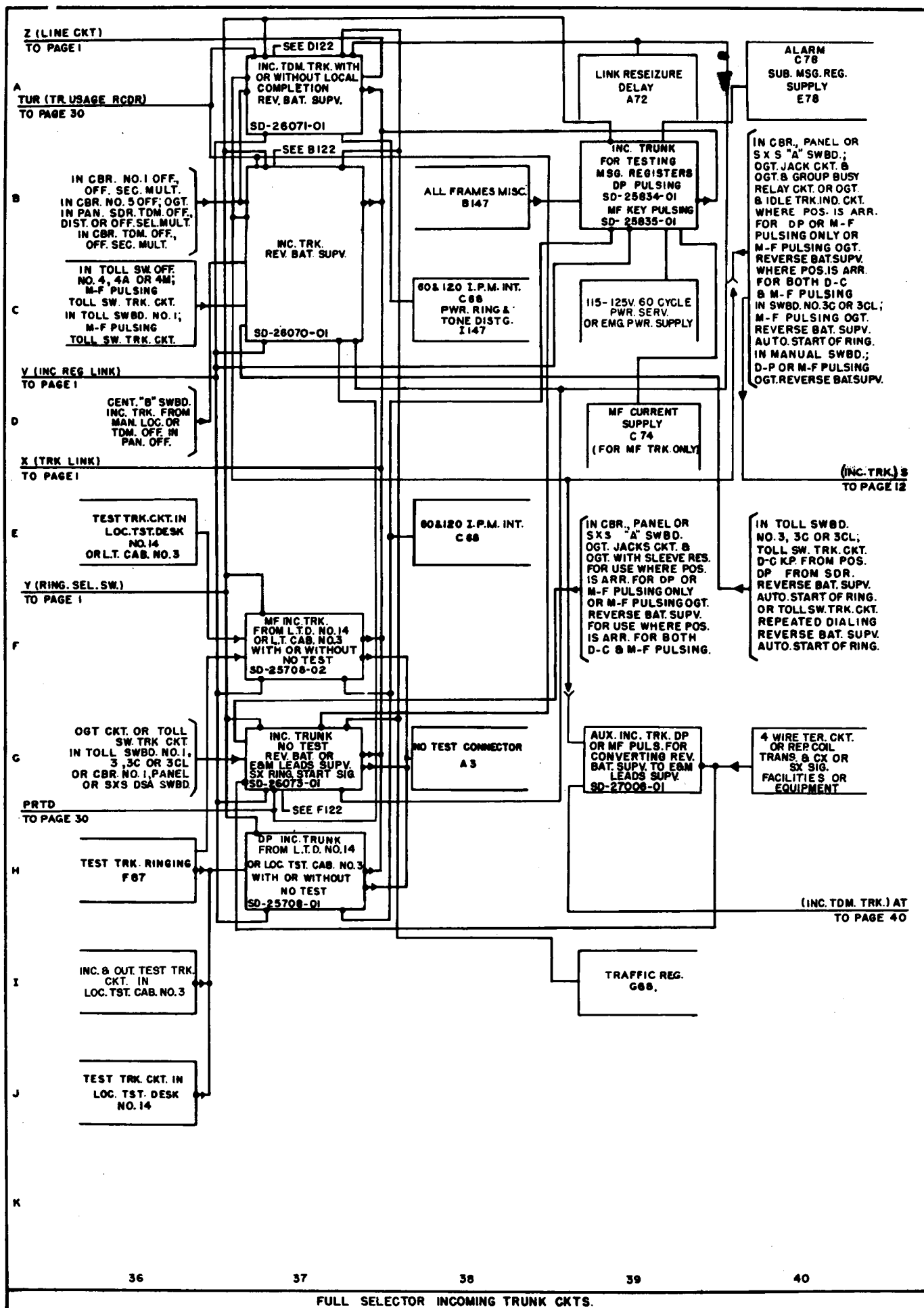
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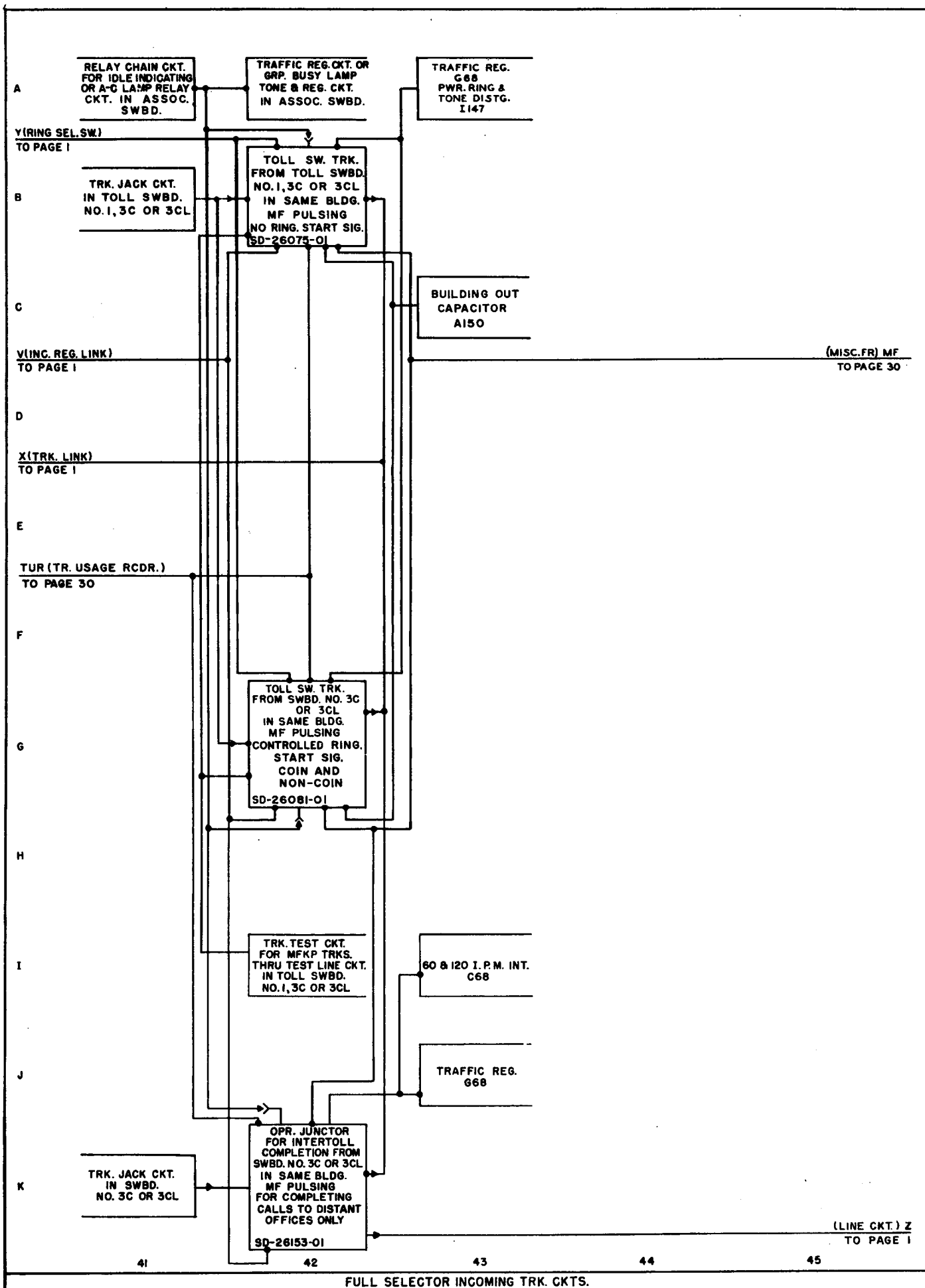
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Y (RING SEL. SW.)
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V (INC. REG. LINK)
TO PAGE 1

Z (LINE CKT.)
TO PAGE 1

X (TRK. LINK)
TO PAGE 1

S (COIN SUPV. LINK)
TO PAGE 2

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

IN CBR. KEY PLSG.
CENT. "A" SWBD.;
RP. PULSING OGT
REV. BAT. SUPV.
SX RING START SIG.
WITH OR WITHOUT
COIN CONTROL
IN CBR. PAN. OR
SXS "A" SWBD.;
D.R. PULSING OGT
REV. BAT. SUPV.
SX. CONT. RING.
WITH OR WITHOUT
COIN CONTROL
IN TOLL SWBD. NO. 1
3,3C OR 3CL;
MF PULSING OGT
REV. BAT. SUPV.
SX. CONT. RING.
IN PAN. OFF.
CENT. "B" SWBD.
INC. TRK. FROM
LONG DISTANCE OFF.
IN TOLL SWBD. NO. 1,
3,3C OR 3CL;
TOLL SW. TRK. CKT.
REV. BAT. SUPV.

IN SXS OFF IN SAME
BLDG. LOC. SEL.
BANK MULT. IN
DIST. SXS OFF; OUT.
REP. CKT.; AUX. TRK.
CKT. FOR USE WITH
CKTS. ARR. FOR BAT.
& GRD. PULSING
OVER QUADDED
CABLE
CONDUCTORS OR
AMA OGT. CKT.

SEE I122

SEE H122

INC. TRK.
R.P. D.P. OR MFP.
REV. BAT. OR
E & M LEADS SUPV.
SX OR SINGLE FREQ.
RING START SIG.
COIN CONT. OVER
SEPARATE SINGLE
TRK. CONDUCTOR OR
SINGLE OR
2 FREQUENCIES
SD-26063-01

INC. TRK.
R.P. D.P. OR MFP.
REV. BAT. SUPV.
OR E & M LEADS SUPV.
CONTROLLED RING.
SD-26074-01

INC. TRK.
REPEATED DIALING
USING BY-LINK
REV. BAT. SUPV.
WITH OR WITHOUT
TDM. COMPLETING
SD-26077-01

TRAFFIC REG.
G68
PWR. RING &
TONE DISTG.
I147

CENTRAL "A" SWBD.
COIN CONTROL CKT.
IN PAN. OR CBR.
NO. 1 OFF

TOLL SWBD. NO. 1
TRK. JACK CKT.
(COIN CONT. JK.)

TRK. COIN CONT. CKT.
POSITION METHOD
OF COIN CONT.
IN TOLL SWBD.
NO. 1 OR 3

ELECTRON TUBE
RECEIVER
H147

LINK RESEIZURE
DELAY
A72

INCPT. TRK.
FOR USE WITH
ANNOUNCEMENT MACH.
ANN. SYSTEM NO. 7A
SD-26121-01

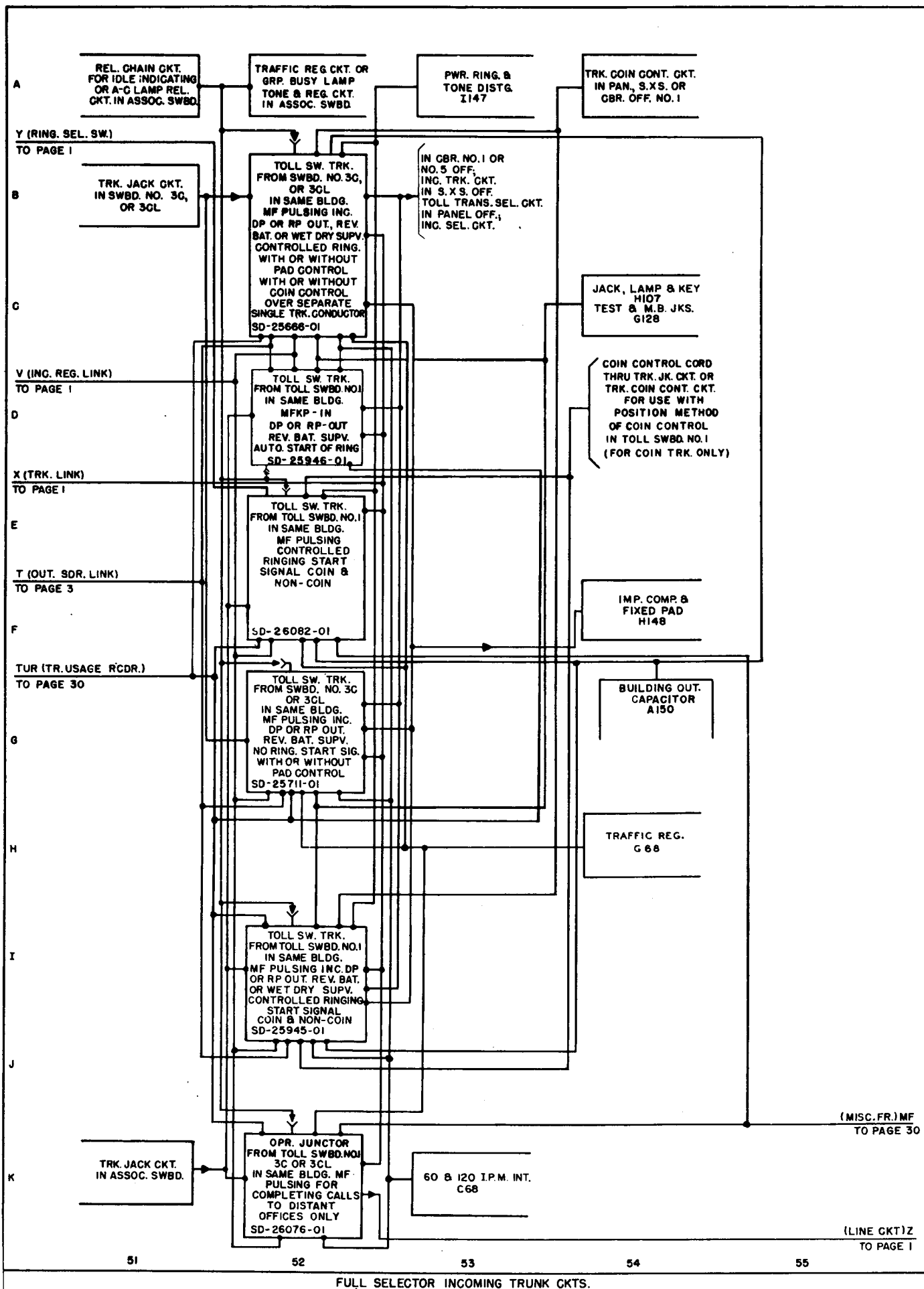
2AA TEL.
ANSWERING SET

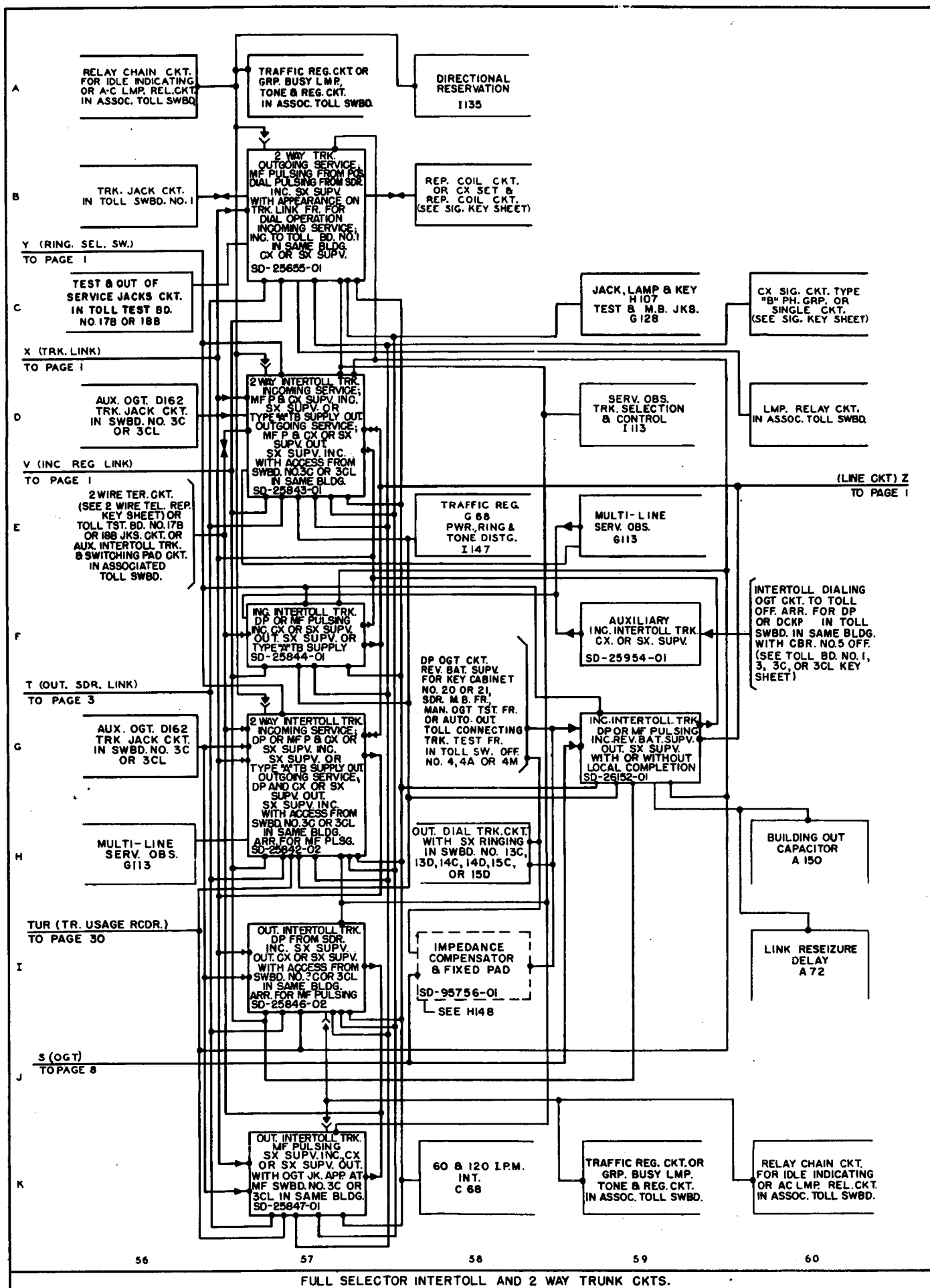
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ALARM
C78

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FULL SELECTOR INTERTOLL AND 2 WAY TRUNK CKTS.

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T(OUT.SDR.LINK)

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K

INTER-MARKER GROUP
TRK., FLAT RATE
SUB. TO SUB.
SD-26140-01

INTER-MARKER GROUP
TRK., FLAT RATE &
AMA
SUB. TO SUB.
SD-26141-01

INTER-MARKER GROUP
TRK., FOR COIN LINES
WITH OR WITHOUT
TIMING
SUB. TO SUB.
SD-26142-01

4 I.P.M. INT.
I149

INTER-MARKER GROUP
TRK., FLAT RATE
WITH OR WITHOUT AMA
REV. BAT. OR
SX SUPV. OUT.
SUB. TO TRK.
SD-26145-01

INTER-MARKER GROUP
TRK. FLAT RATE &
MSG.REG. OPERATION
SUB. TO SUB.
SD-25839-02

INTER-MARKER GROUP
TRK., REV. BAT.
OR SX. SUPV.,
TRK. TO SUB.
SD-26143-01

SEE J152
INTER-MARKER GROUP
TRK., FOR COIN LINES
WITH OR WITHOUT
TIMING
REV. BAT. SUPV.
SUB. TO TRK.
SD-26147-01

INTER-MARKER GROUP
TRK., FLAT RATE &
MSG.REG. OPERATION
WITH OR WITHOUT TMS.
REV. BAT. SUPV.
SUB. TO TRK.
SD-25836-01

CALL IDENTITY
INDEXER
892

RECORDER &
RECORDER CUMM.
893

(LINE CKT.)Z
TO PAGE 1

SERV. OBS.
TRK. SELECTION
& CONTROL
I113

60 & 120 I.P.M. INT.
C68

MSG. REG. PWR.
SUPPLY
E78

PWR. SUPPLY CKT.
22 VOLT AC
506A PLANT

61

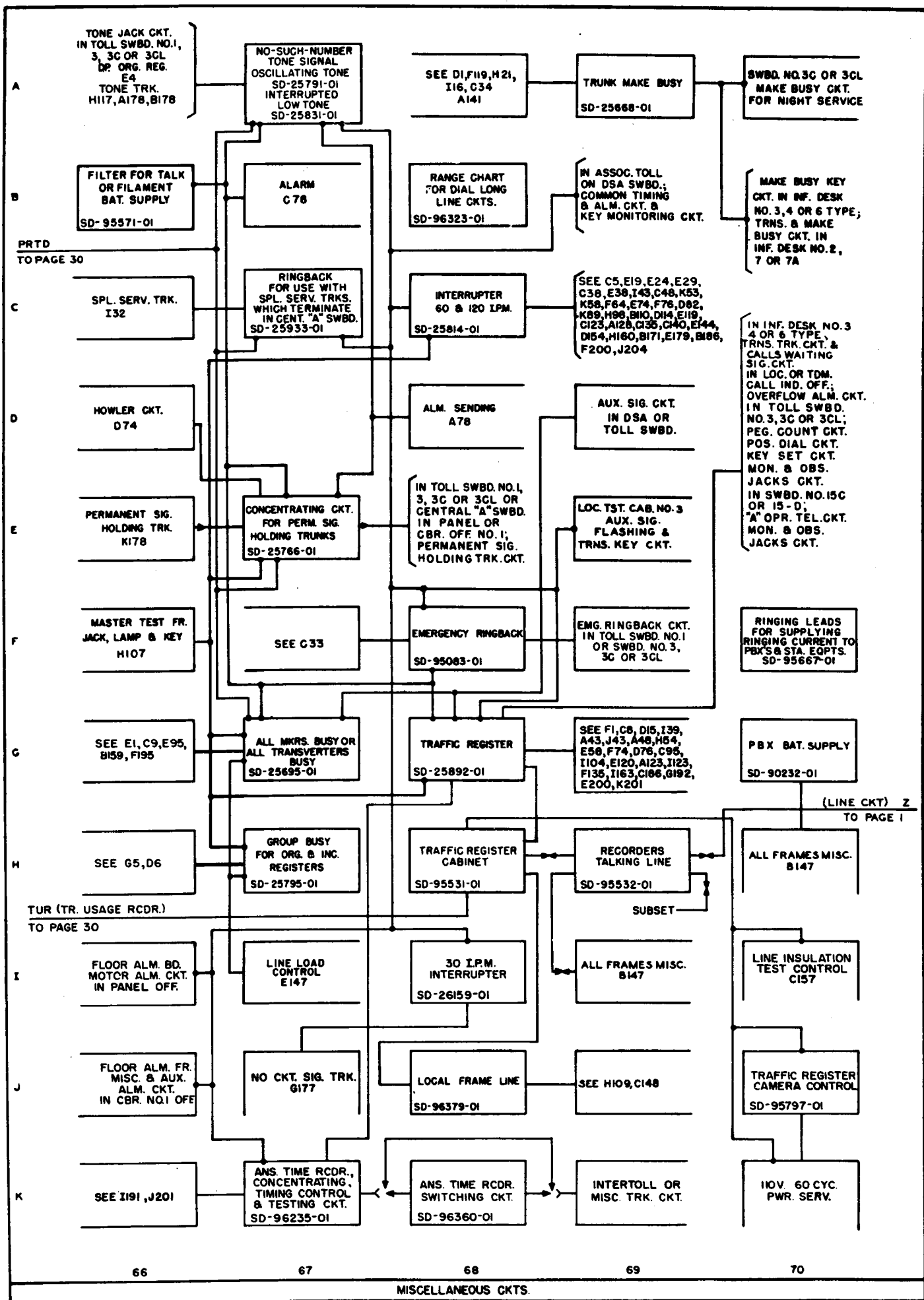
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63

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FULL SELECTOR INTER-MARKER GROUP TRUNK CKTS.



V (INC. REG. LINK)
TO PAGE 1

A

INC. ANN. TRK.
B133, C153
TRK. TEST
E103

LINK RESEIZURE
DELAY
SD-26072-01

LOG. TEST DESK NO. 14
PRI. & SEC. TEST CKT.

AUTO. MON.
REG. & SDR. TEST
H103

MF PULSING
RECEIVER ADJUSTING
SD-95664-01

B

COIN SUPV. RELEASE
H9

INC. TRK.
A37, B37, D47, G59

LOC. TEST CAB. NO. 3
HOWLER CONN. CKT.

MULTI-FREQUENCY
PULSING
RECEIVING CIRCUIT
SD-95536-01

SEE H3, E156,
F191

C

PERM. SIG.
HOLDING TRK.
K178

TIMING CKT.
FOR PERM. SIG.
HOLDING & ANN.
TRKS. & COIN
SUPV. RELEASE
SD-25870-01

CONCENTRATING CKT.
FOR PERM. SIG.
HOLD TRKS.
E67

MF CURRENT
SUPPLY &
DISTRIBUTION
SD-95391-01

SEE F12, D39, B96
F115, H126, H157, B181,
D190

PRTD
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D

FLASHING CKT.
SD-95725-01

AUX. SIG.
C63, B109, A127

HOWLER CKT.
SD-95773-01

PWR. RINGING CKT.

E

IN ANN. SYS. NO. 3A,
ANN. DISTRIBUTING &
ANN. CONT. CKTS.
AT DISTG. CENTER
IN TOLL. SW OFF
NO. 4, 4A OR 4M;
ALARM CKT. FOR USE
WITH TROUBLE TRACING
SEL. CKTS.

SUBSET
M.D.F. TEST JK. CKT.
FOR PRIVATE LINES
SD-96261-01

STA. NO. 1
PRIVATE LINE CKT.
SD-96147-01

60 & 120 I.P.M. INT.
C68
VOLTMETER TEST
C107

FILAMENT
SUPPLY CKT.
WITH EMERGENCY
TRANSFER
SD-95676-01

STA. NO. 2

(LINE CKT.) Z
TO PAGE 1

F

PWR. SUPPLY CKT.
10 I.P.M.

10 I.P.M. INTERRUPTER
& PULSE CLOCK CKT.
SD-96343-01

SUB. MSG. REG.
FOR IND. OR 2 PTY.
LINES
SD-25770-01
SEE E78

TRAFFIC REG.
G68

G

POSITION CLOCK
CKT. IN DST. OFF.

CLOCK CKT.
FOR MISC. USE
SD-96201-01

CALL THRU
TEST SET
C98

OPERATING ROOM
CALLING SIGNAL
SD-96087-01

DIAL TONE SPEED
REGISTER
SD-96403-01

H

CABLE INSULATION
ALM.
H77

TEST TRK. & SEL.
J99

LINE CKT. WITH
VISUAL SIG.
D188

DIAL TONE SPEED
INDICATING
SD-96419-01

I

SUB. LINE AT M.D.F.

PLUGGING UP LINE
WITH
AUTO. CUT THRU
SD-25741-01

MASTER TEST FR.
JACK, LAMP & KEY
H107

SUB. LINE

SUPV. CALL
A190

J

ALARM
C78

BAT. & GRD. SUPPLY
FOR TALKING
AT M.D.F.
SD-90048-01

LINE OR TRK.
TRANSFER CKT.
FOR RESTORING SERV.
ON AN EMG. BASIS
SD-95690-01

SUB. LINE CKT.
THRU LINE OR TRK.
TRNS. CKT. J74
IN DST. OFF.

K

OGT TO
DISTANT OFF

RECTIFIER CKT.
130V. BAT. SUPPLY
(SEE PWR. KEY
SHEET)

INC. TRK. CKT.
THRU LINE OR TRK.
TRNS. CKT. J74
IN DST. OFF.

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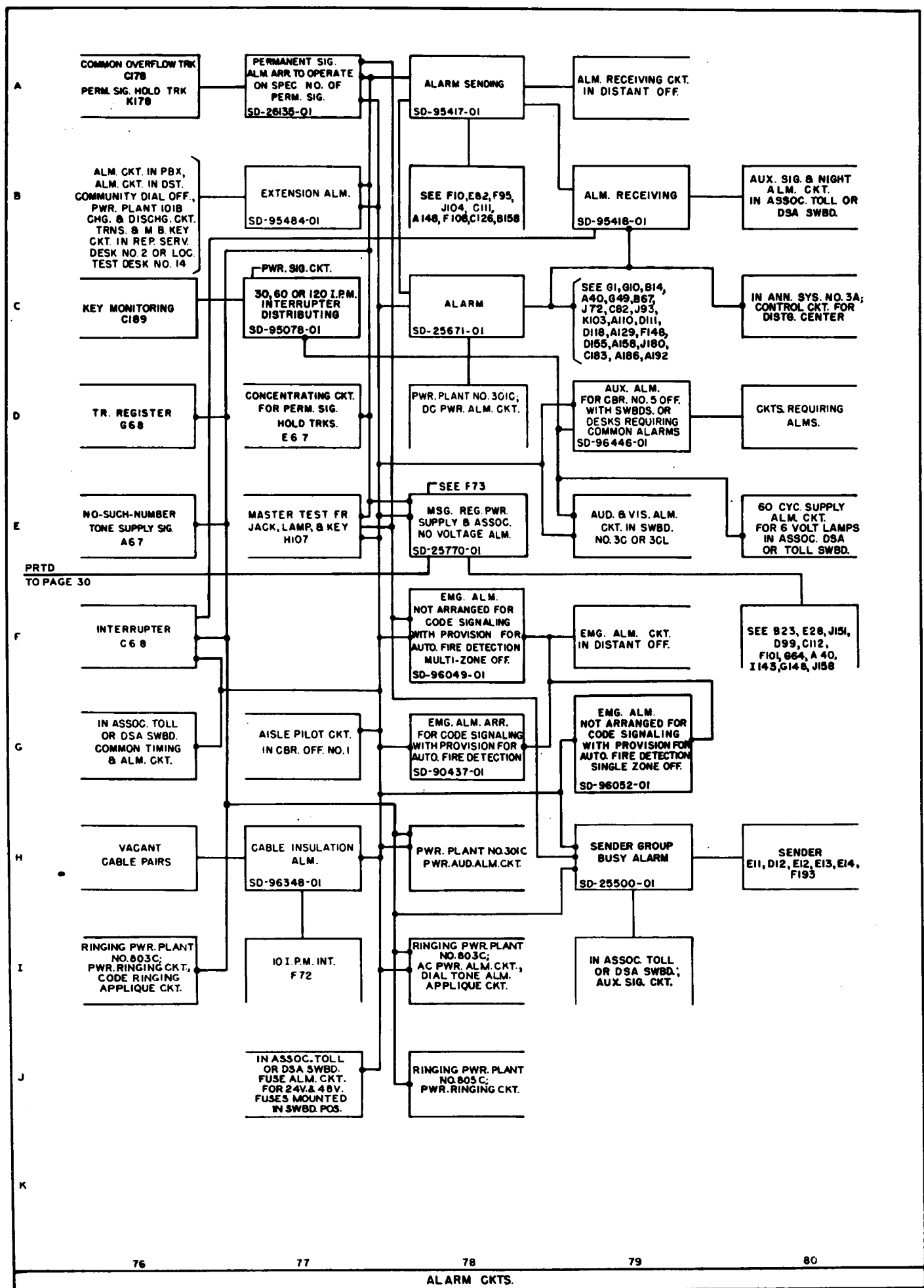
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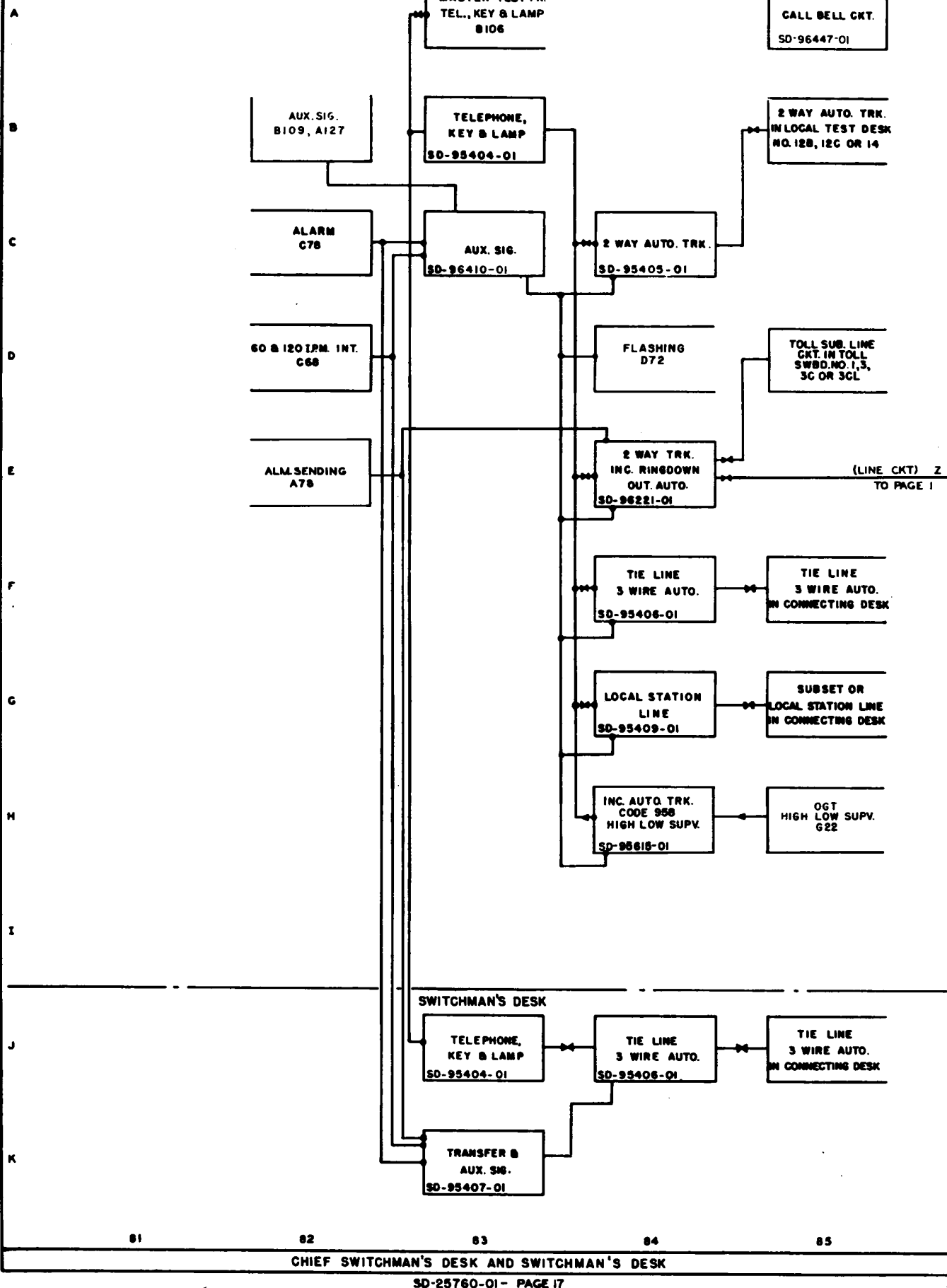
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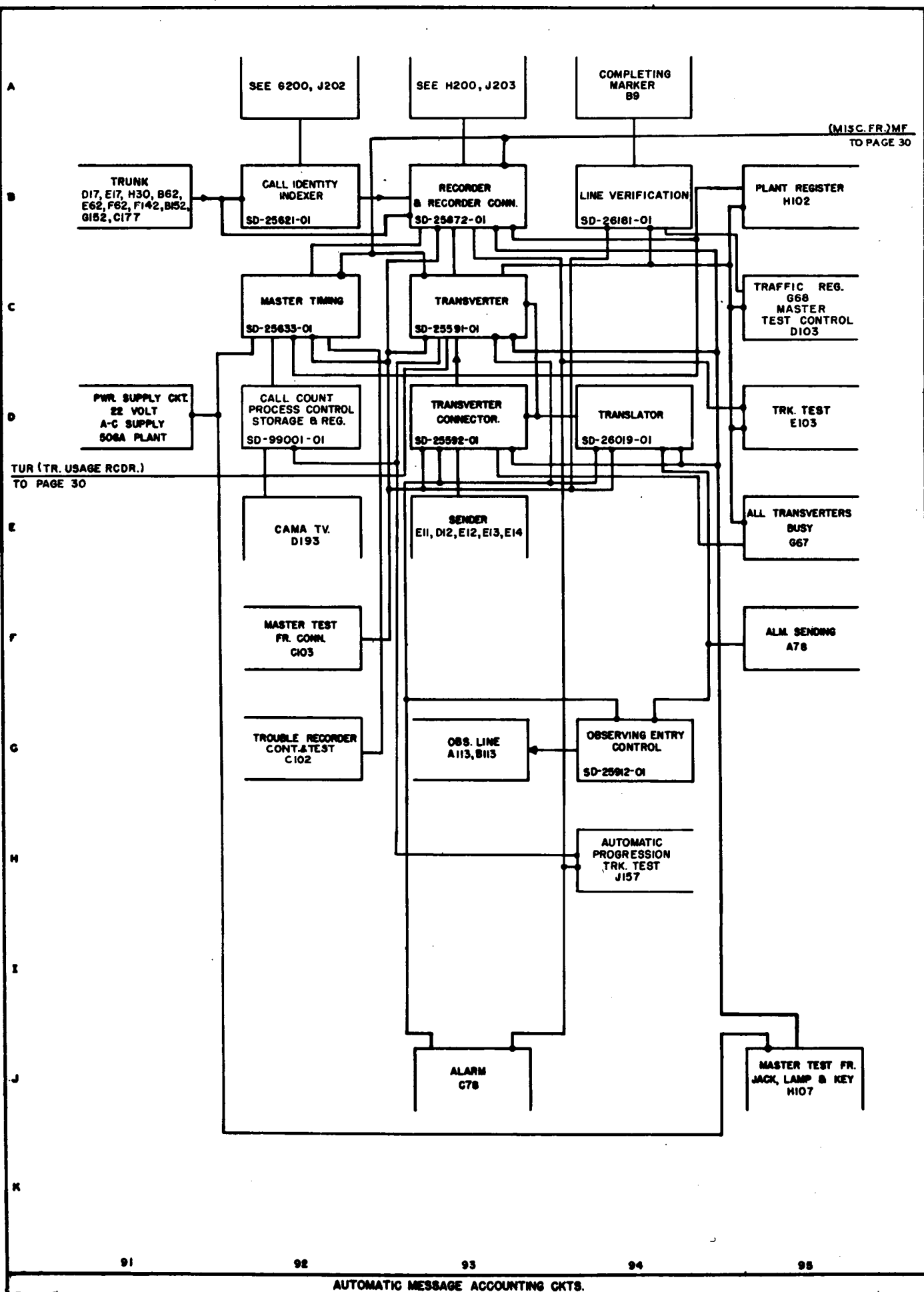
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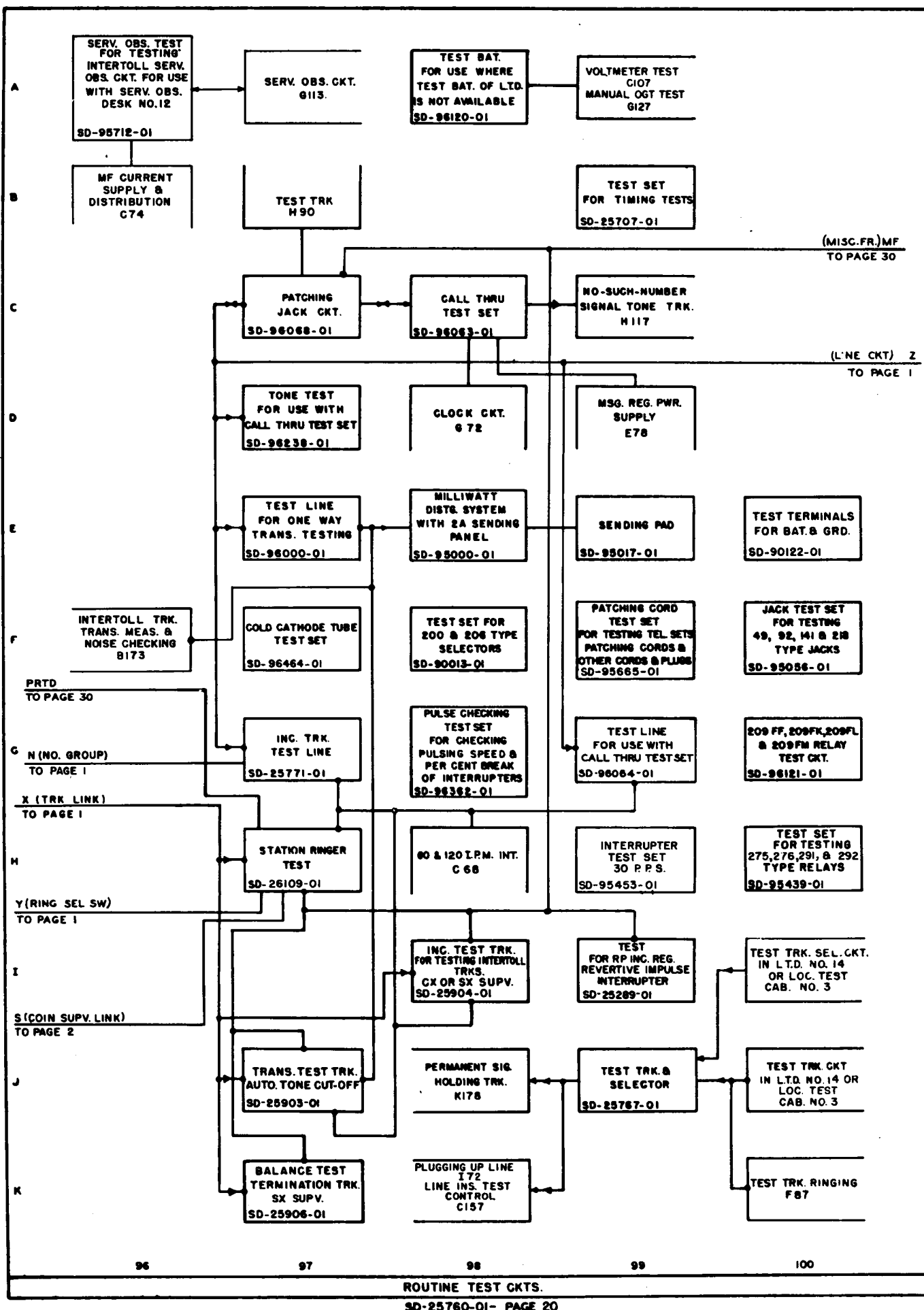
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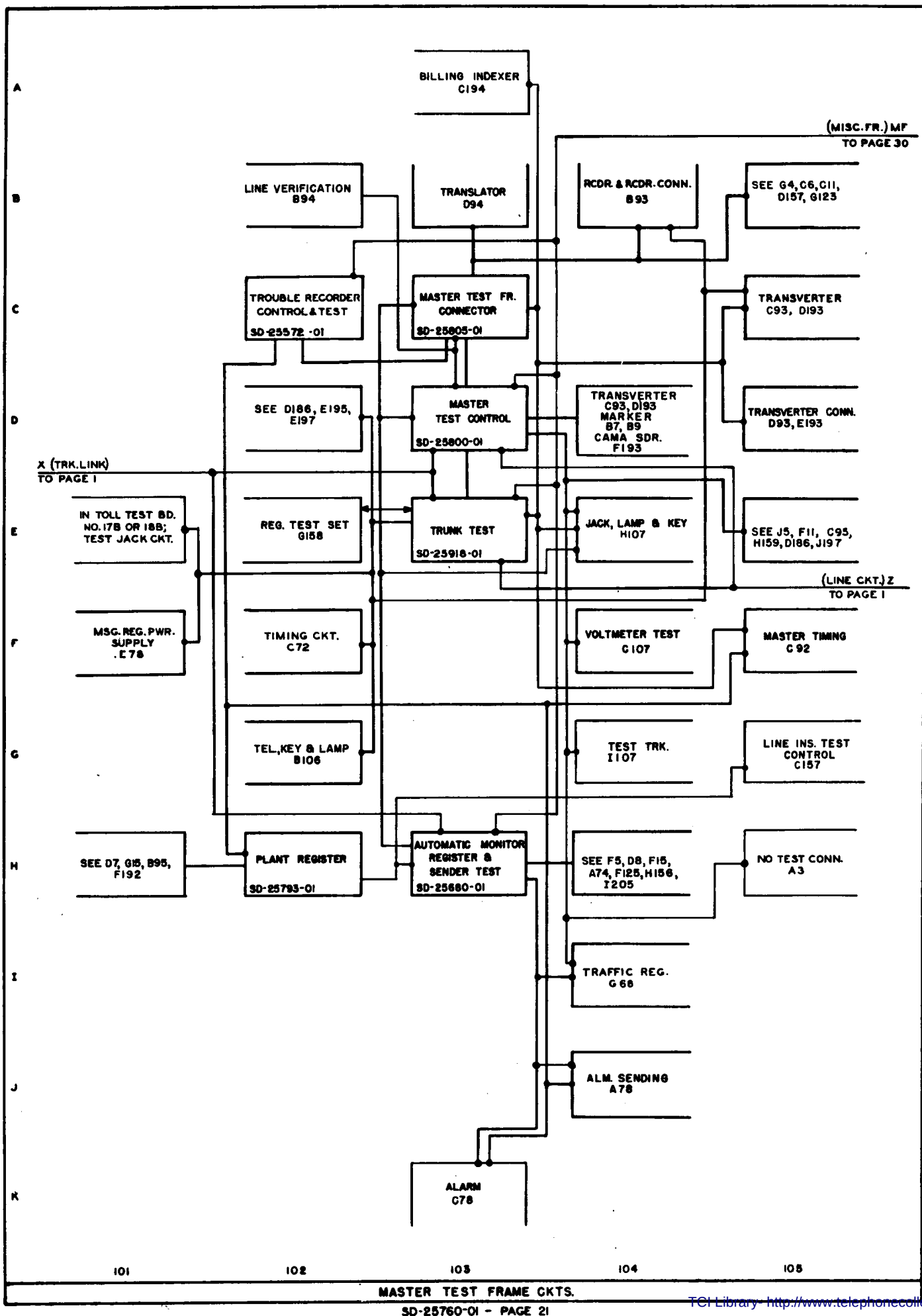


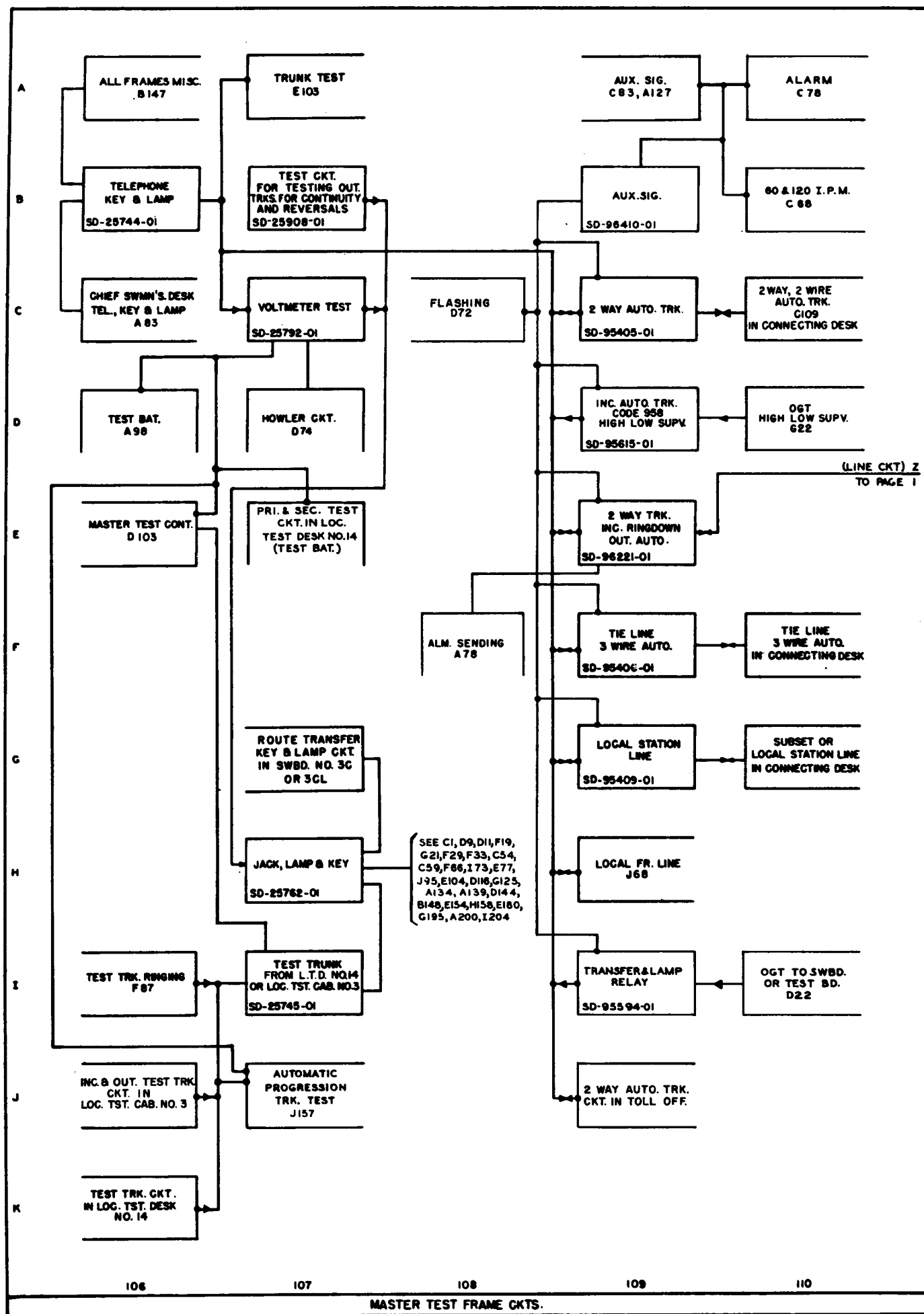
CHIEF SWITCHMAN'S DESK

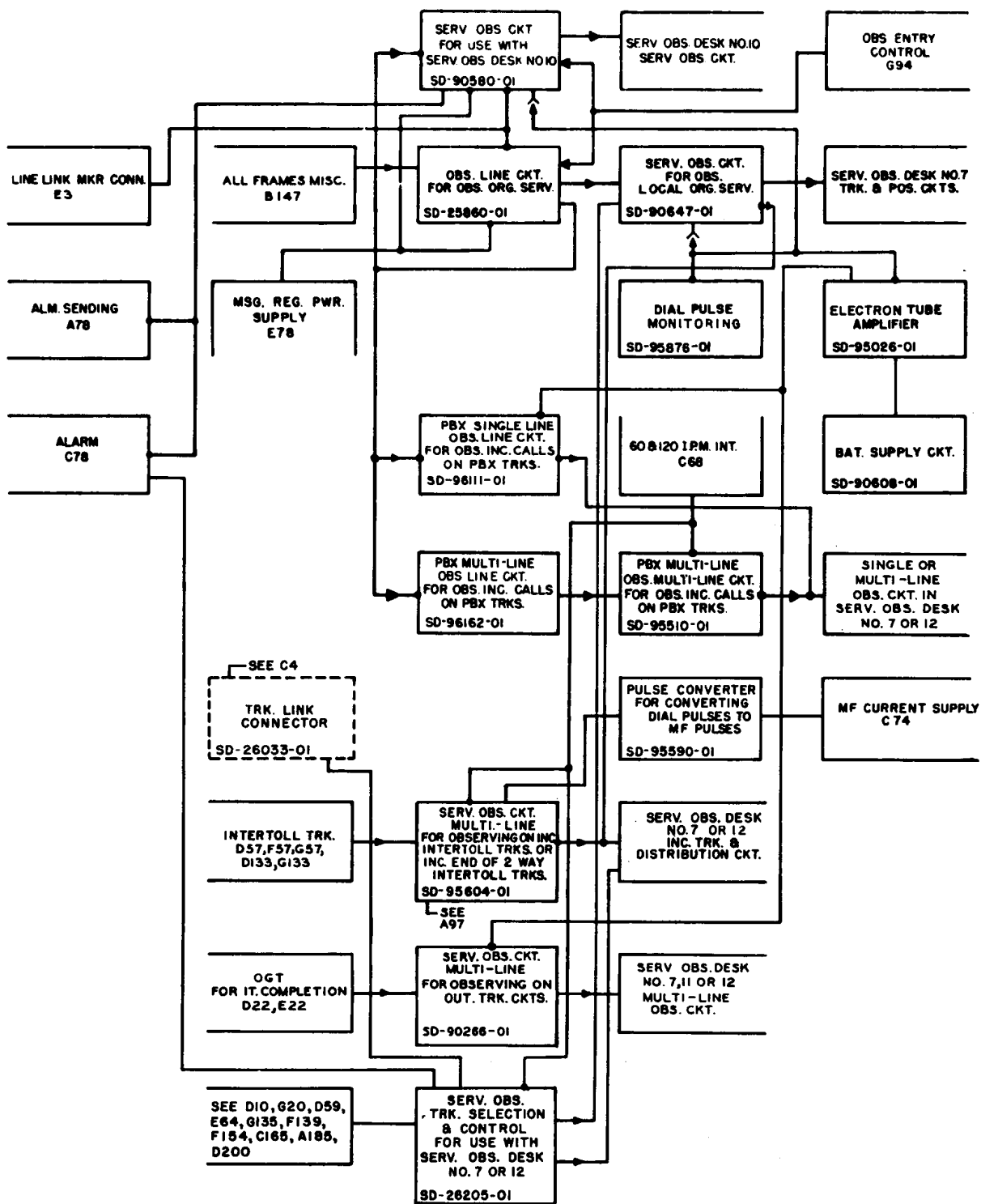


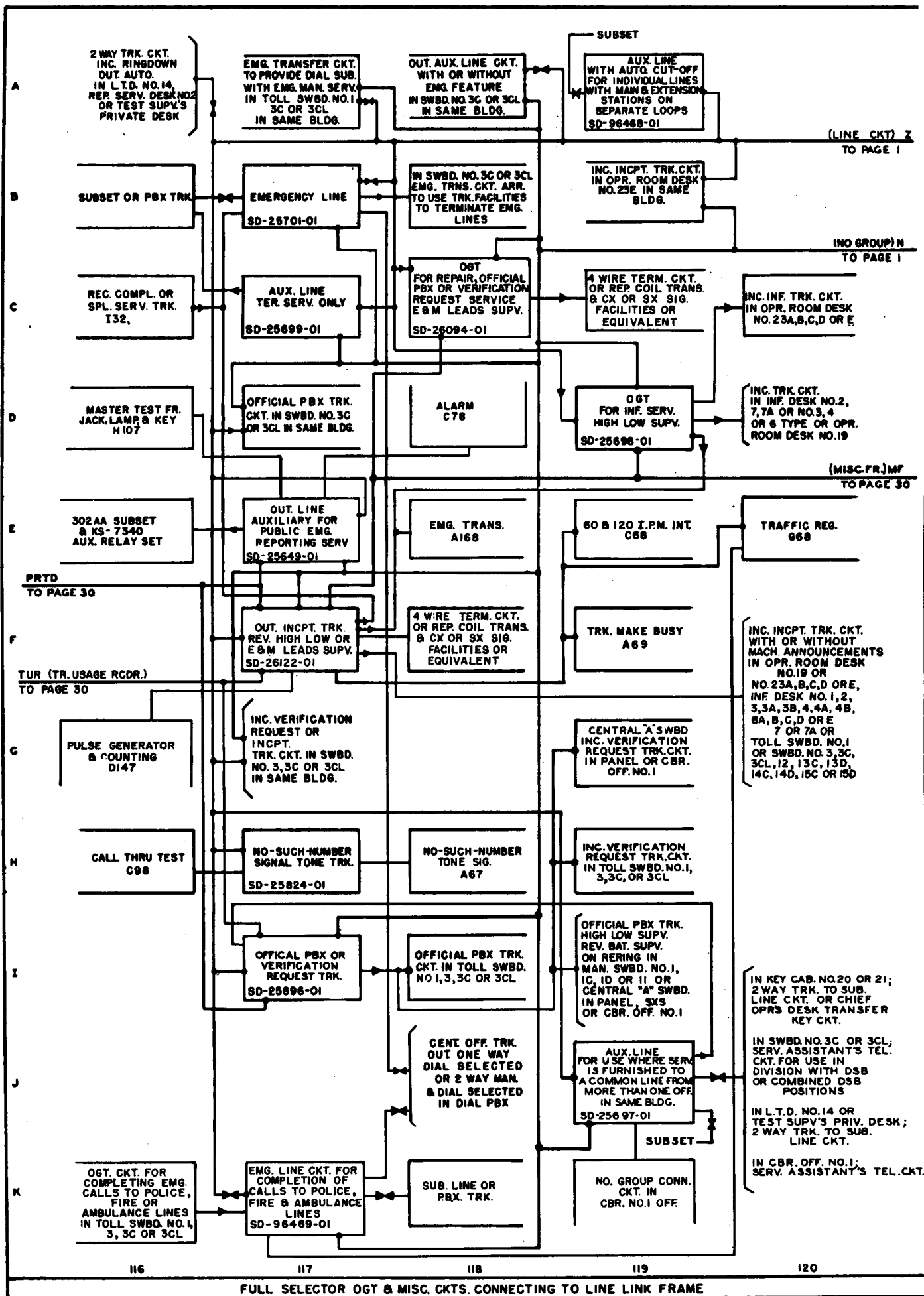












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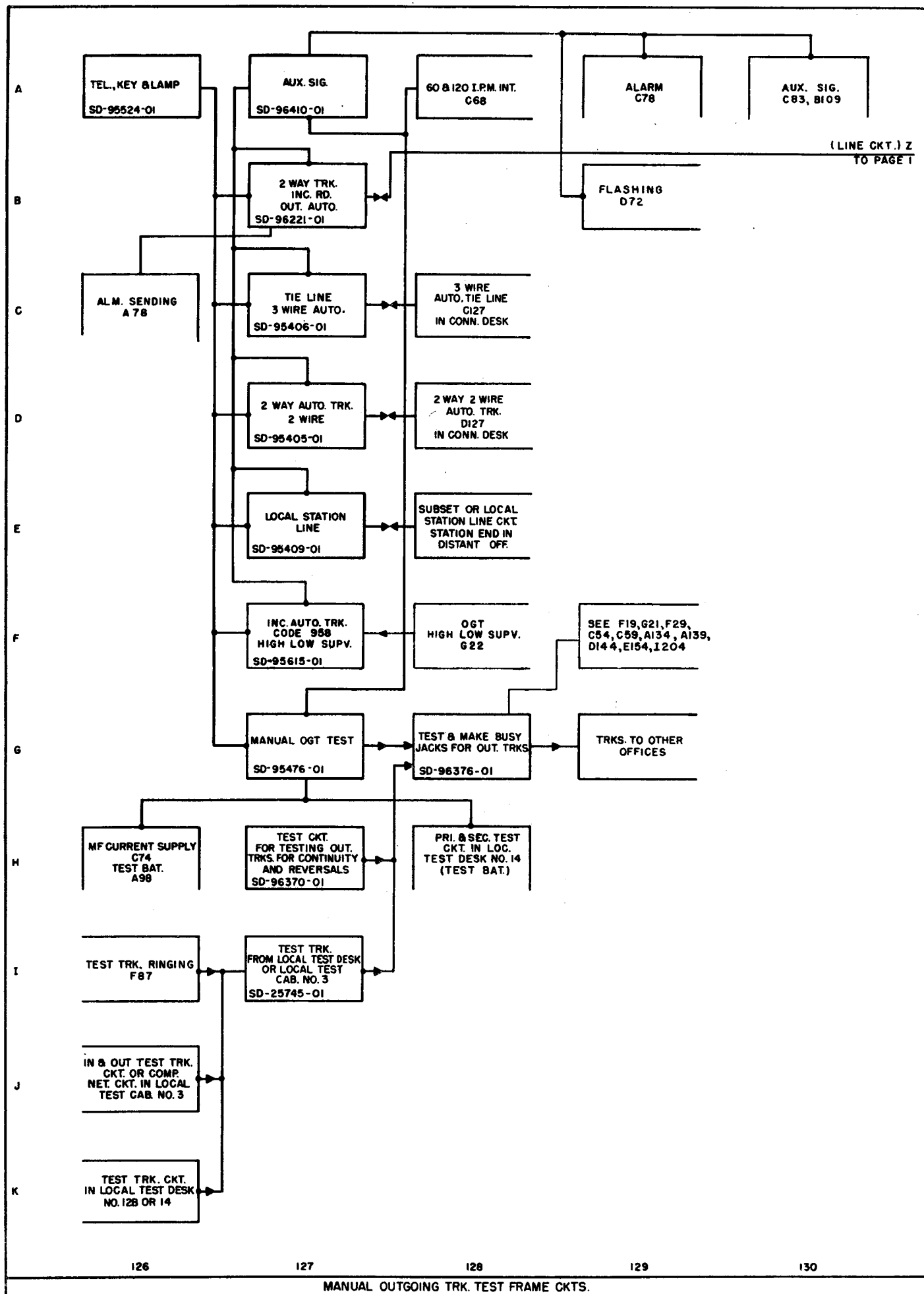
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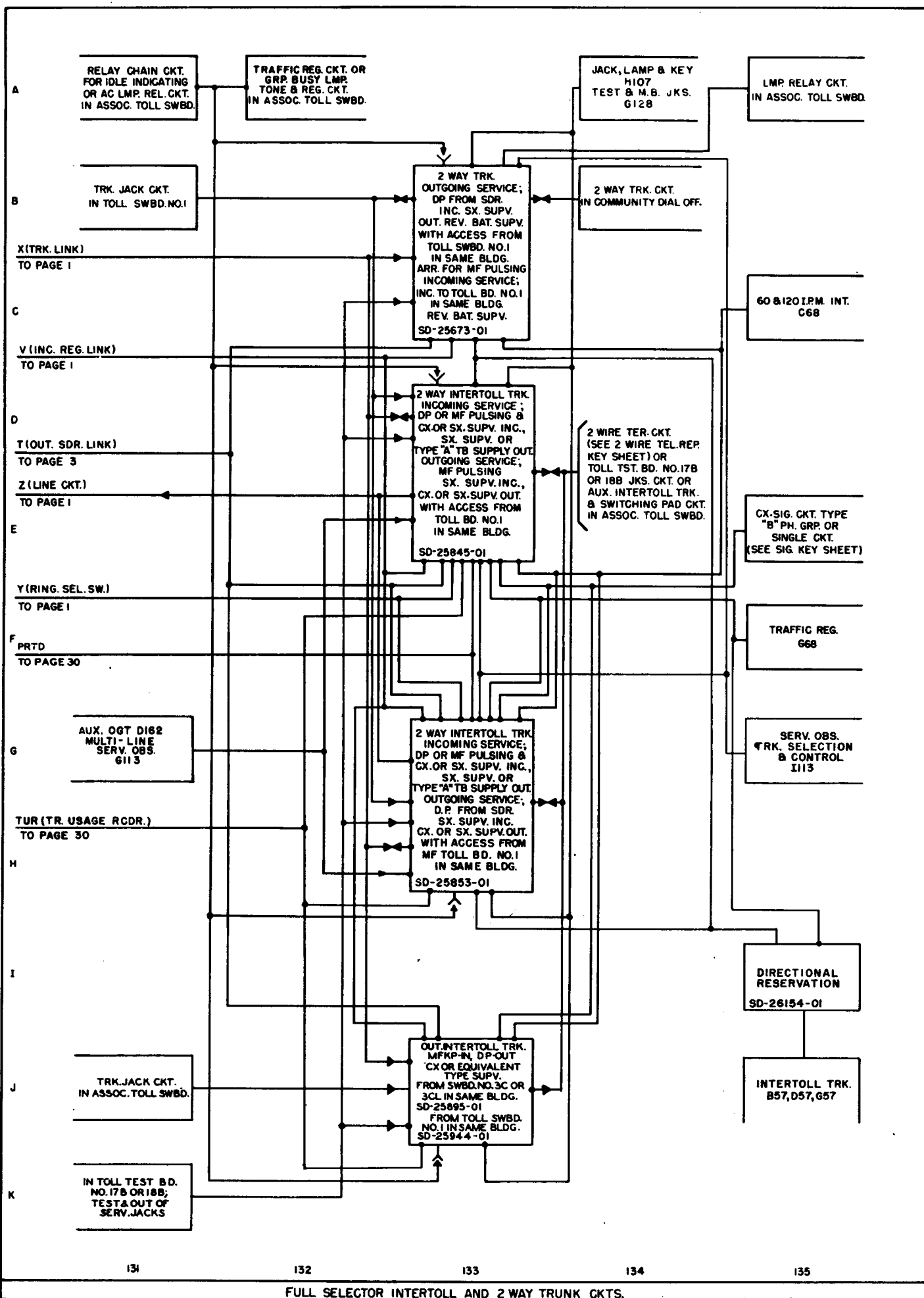
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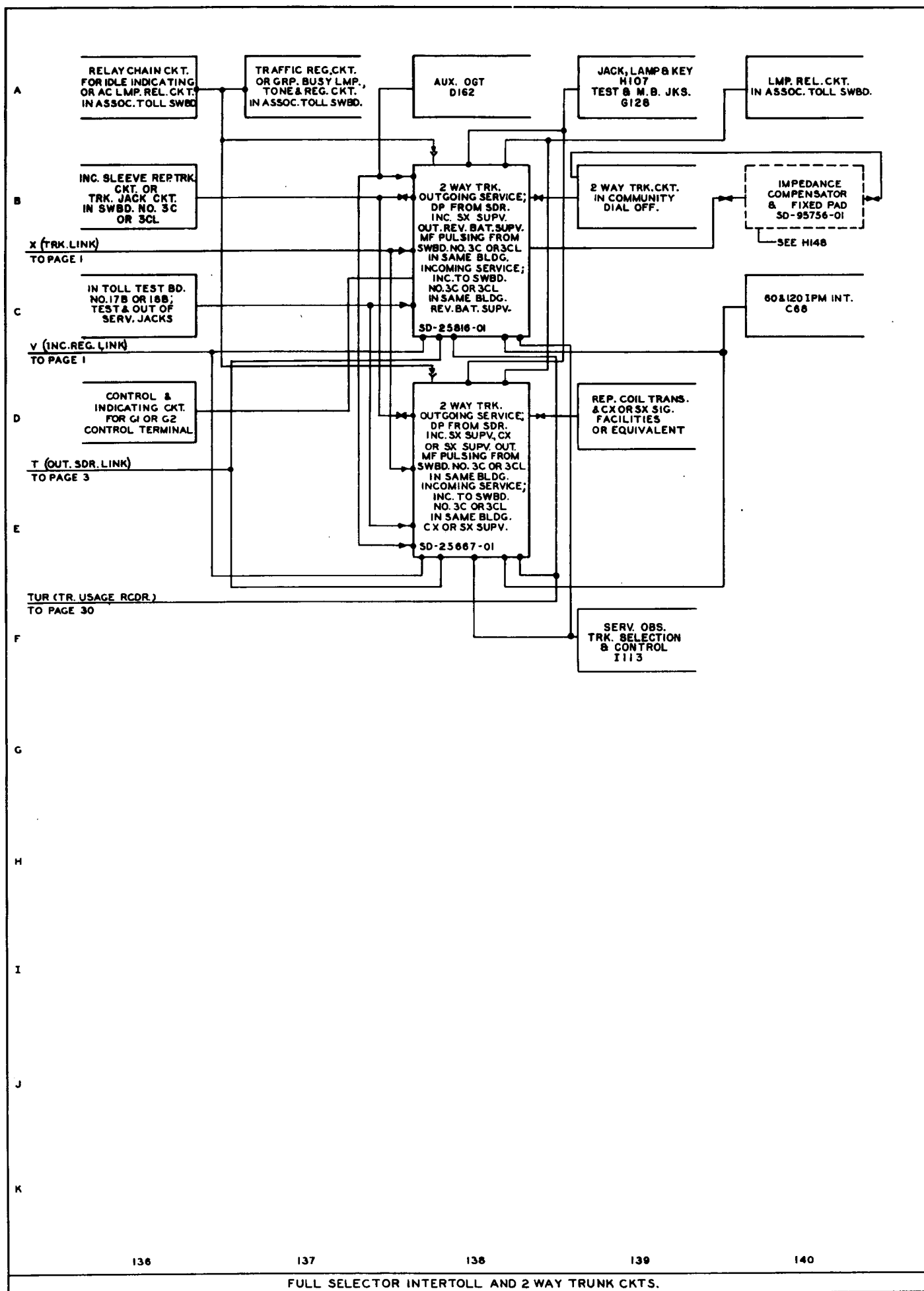
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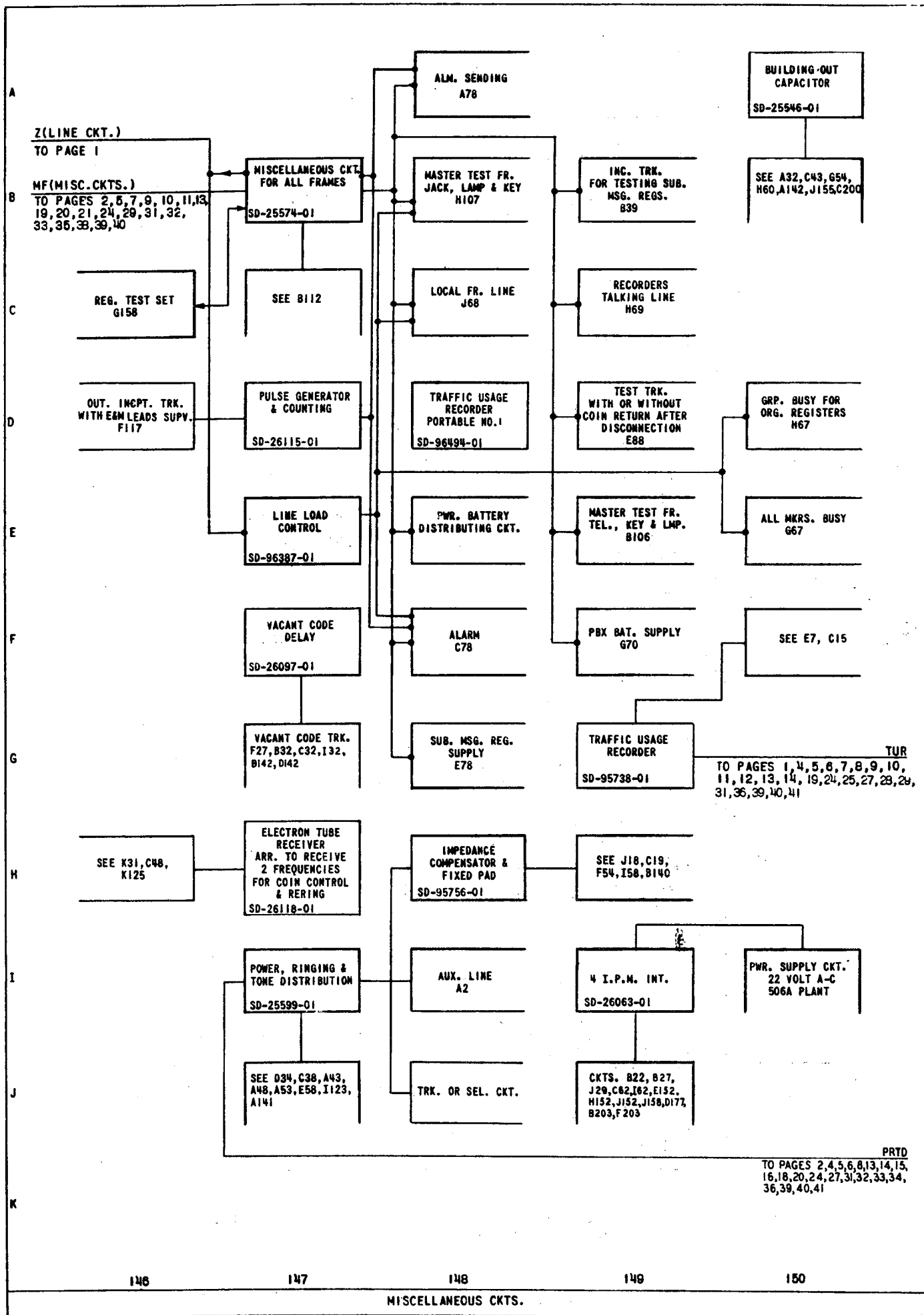
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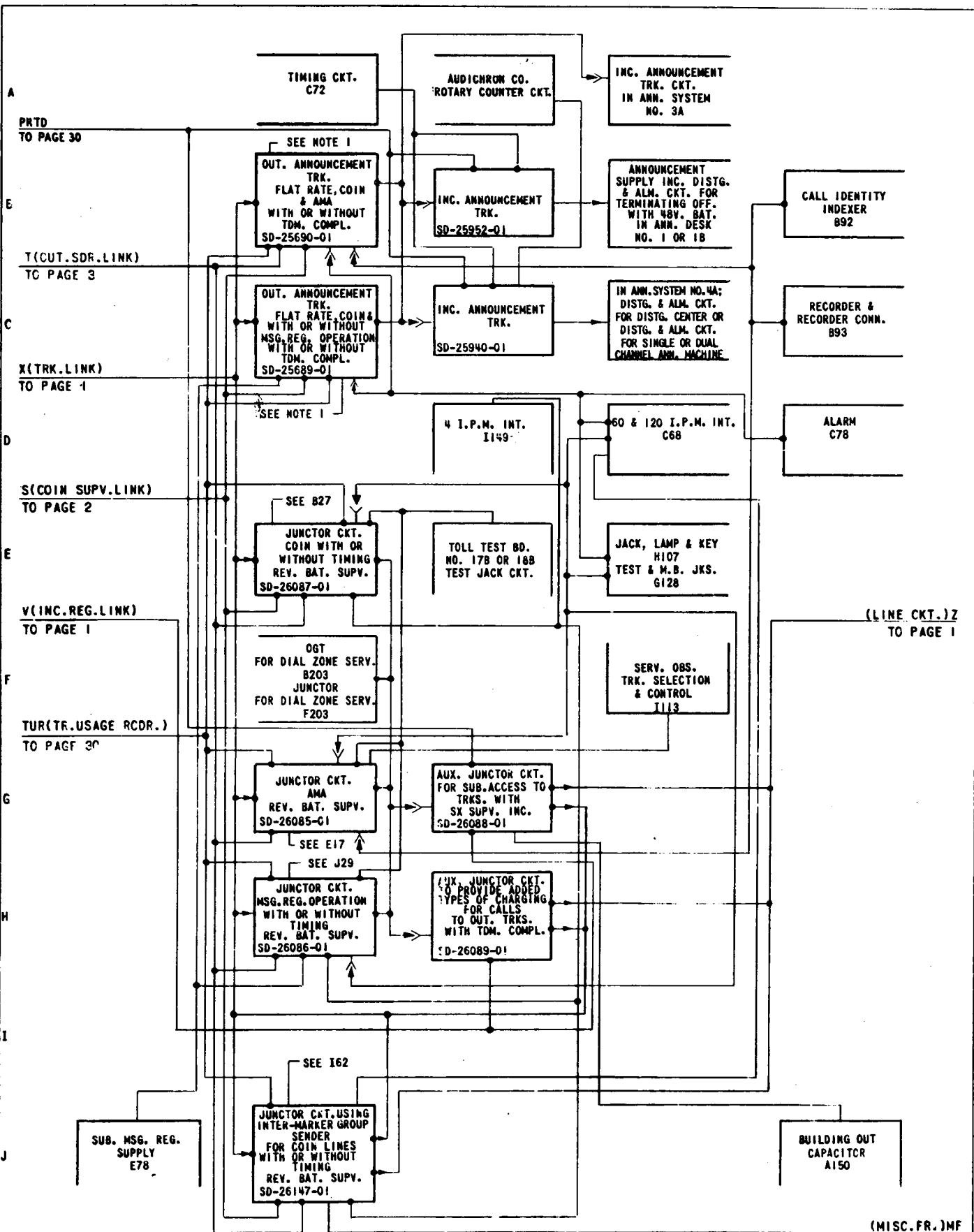


MANUAL OUTGOING TRK. TEST FRAME CKTS.



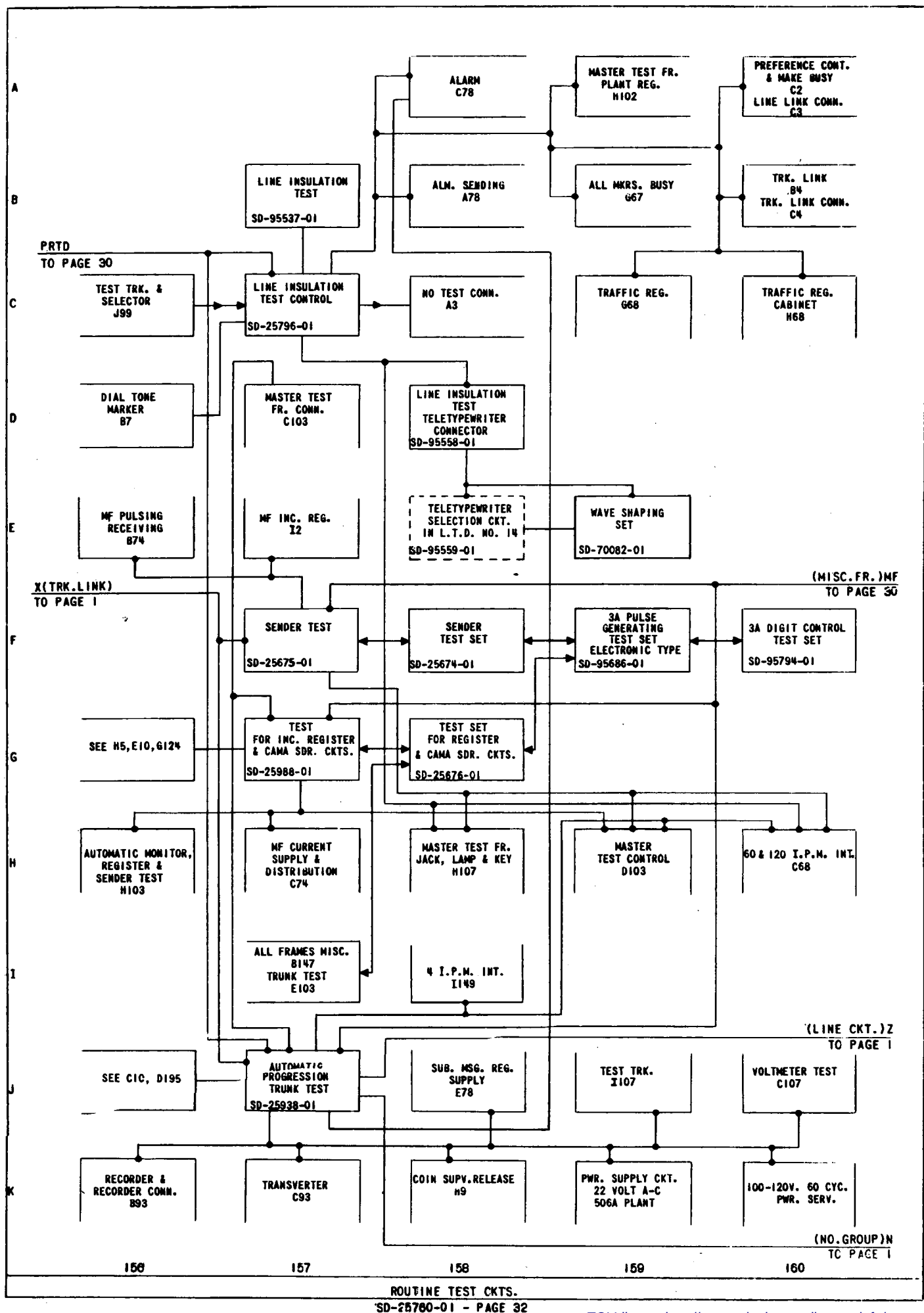


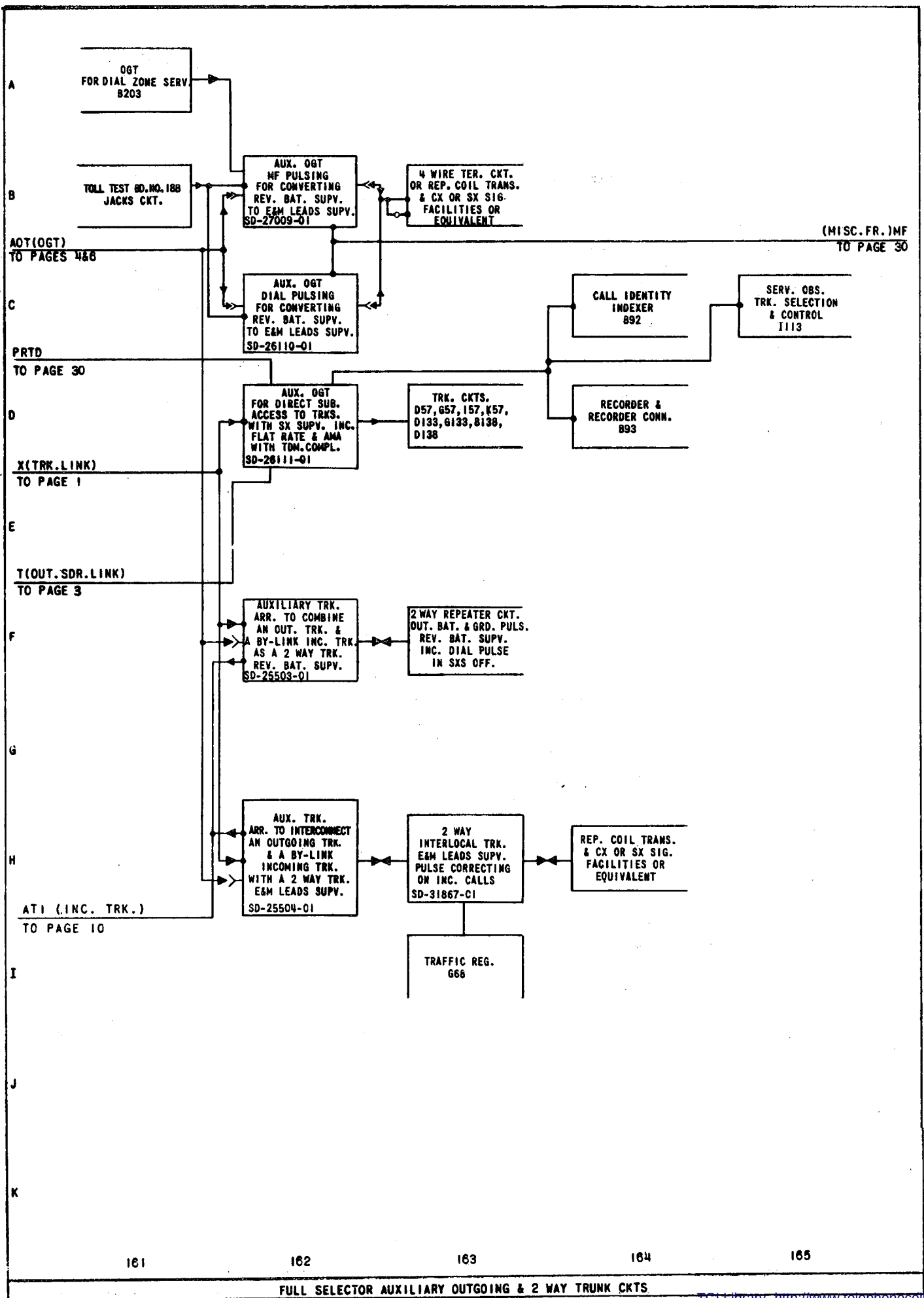


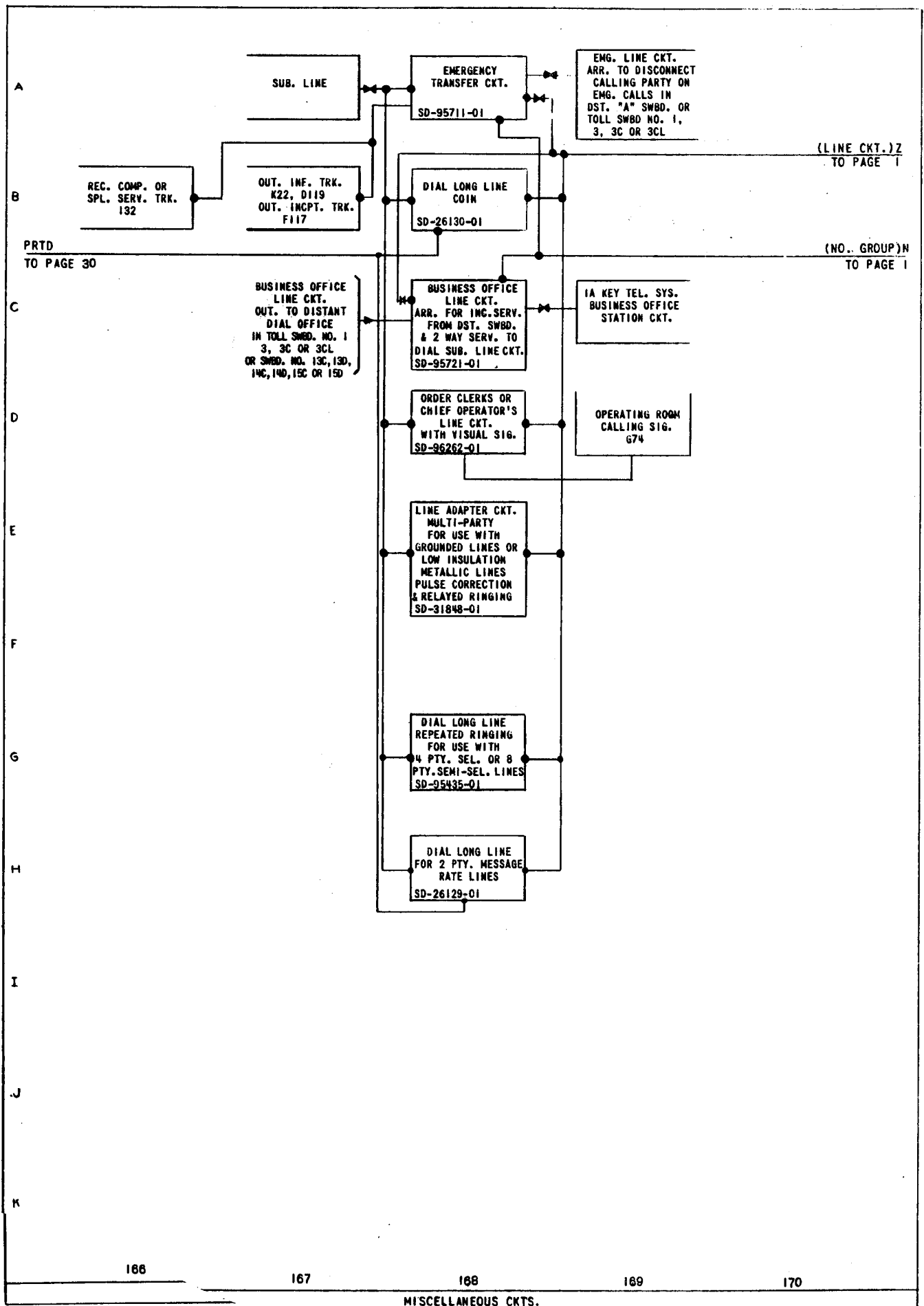


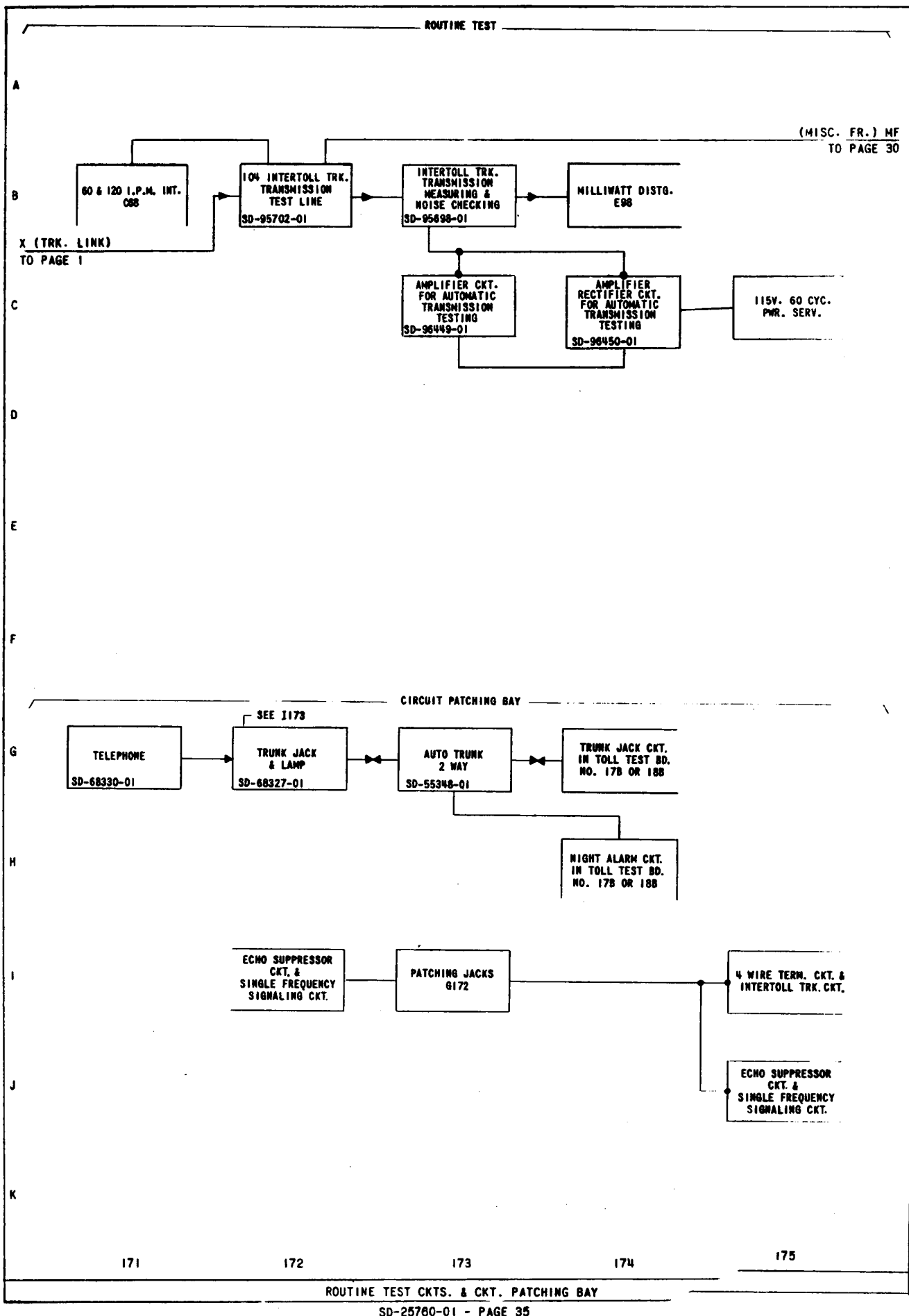
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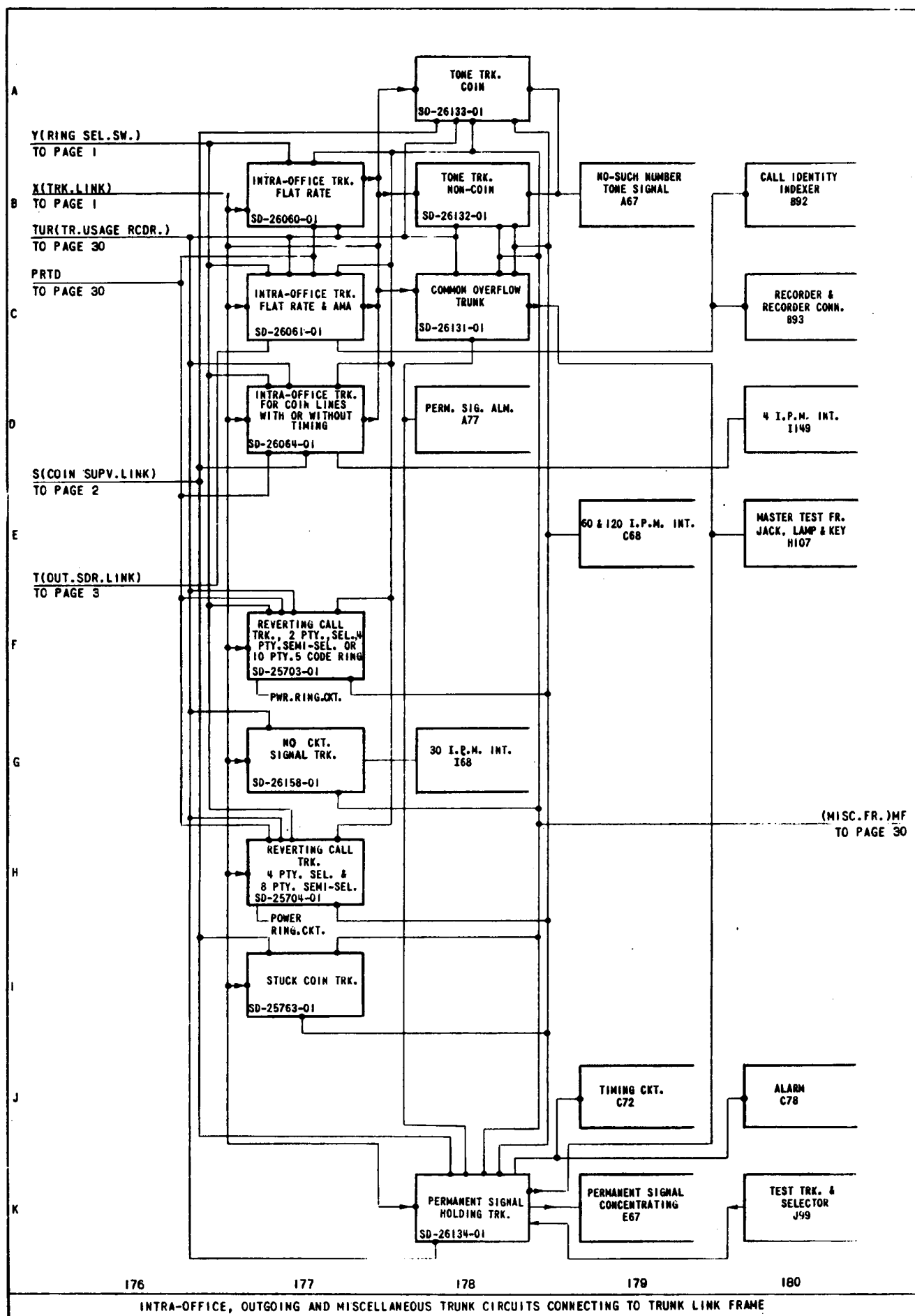
- SD-25690-01 (BLOCK B152) & SD-25689-01 (BLOCK C152) CONNECT TO SD-25952-01 (BLOCK E153) OR SD-25940-01 (BLOCK C153) IN SAME OR DISTANT CROSSBAR NO. 5 OFFICE.

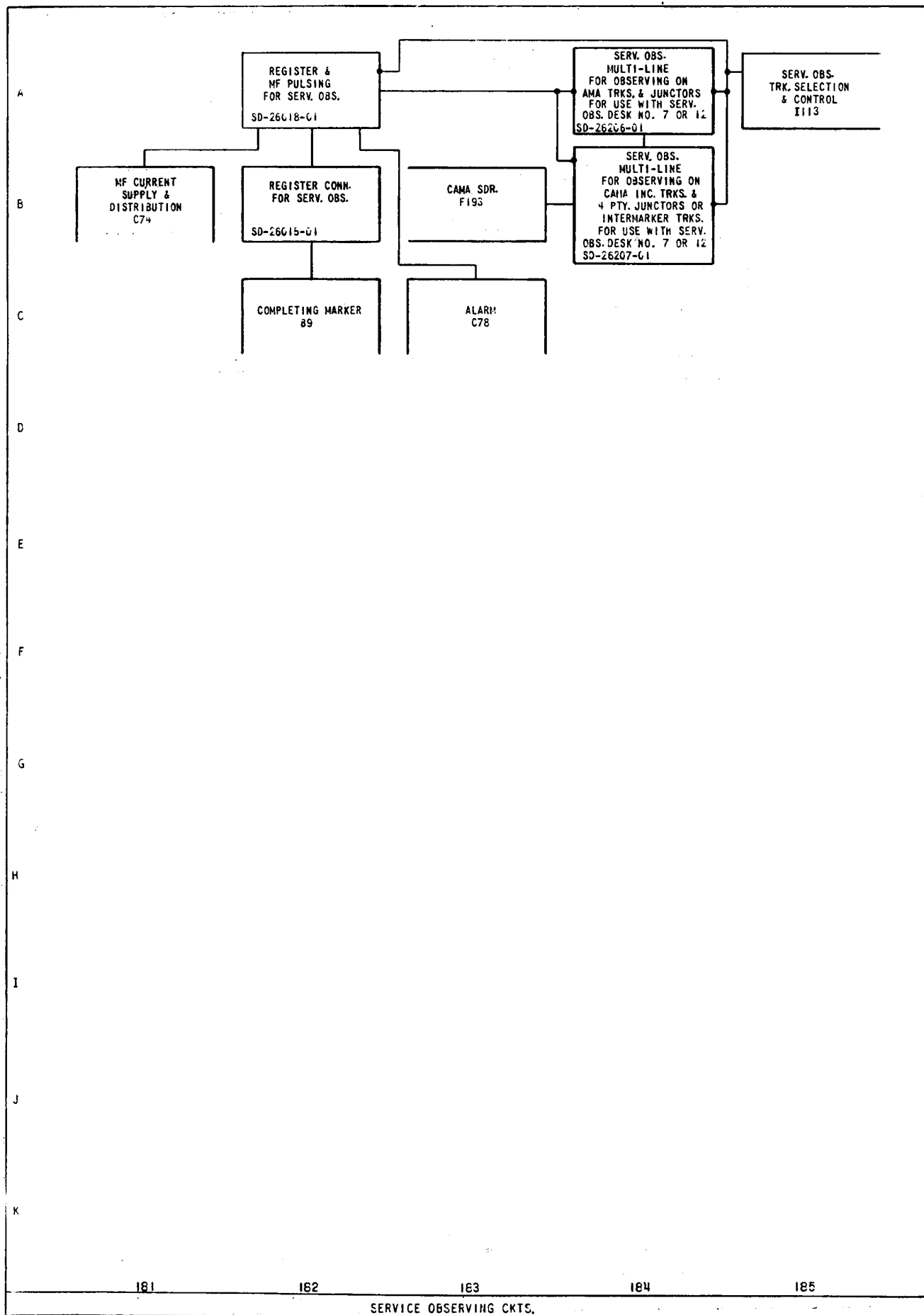






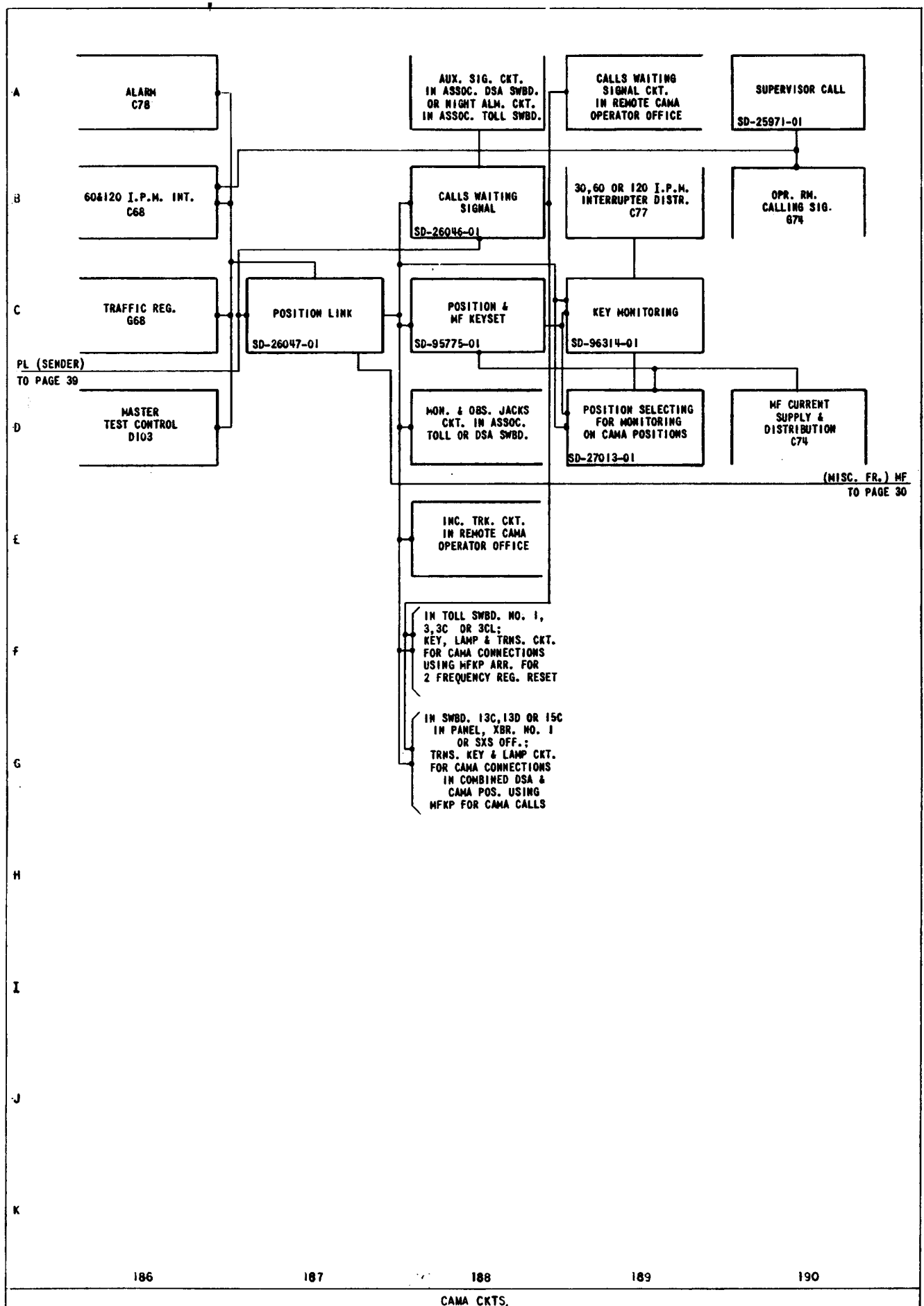


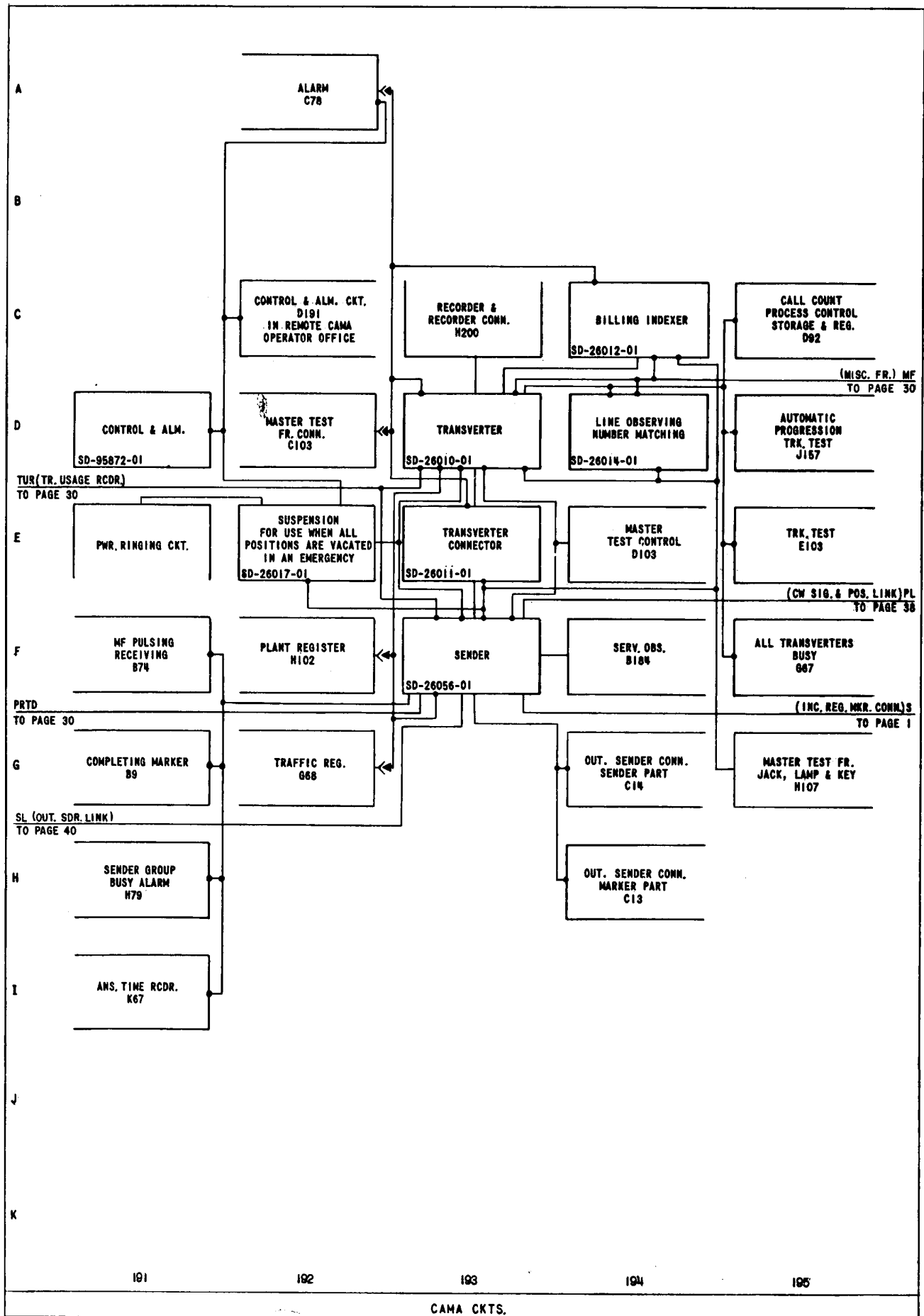


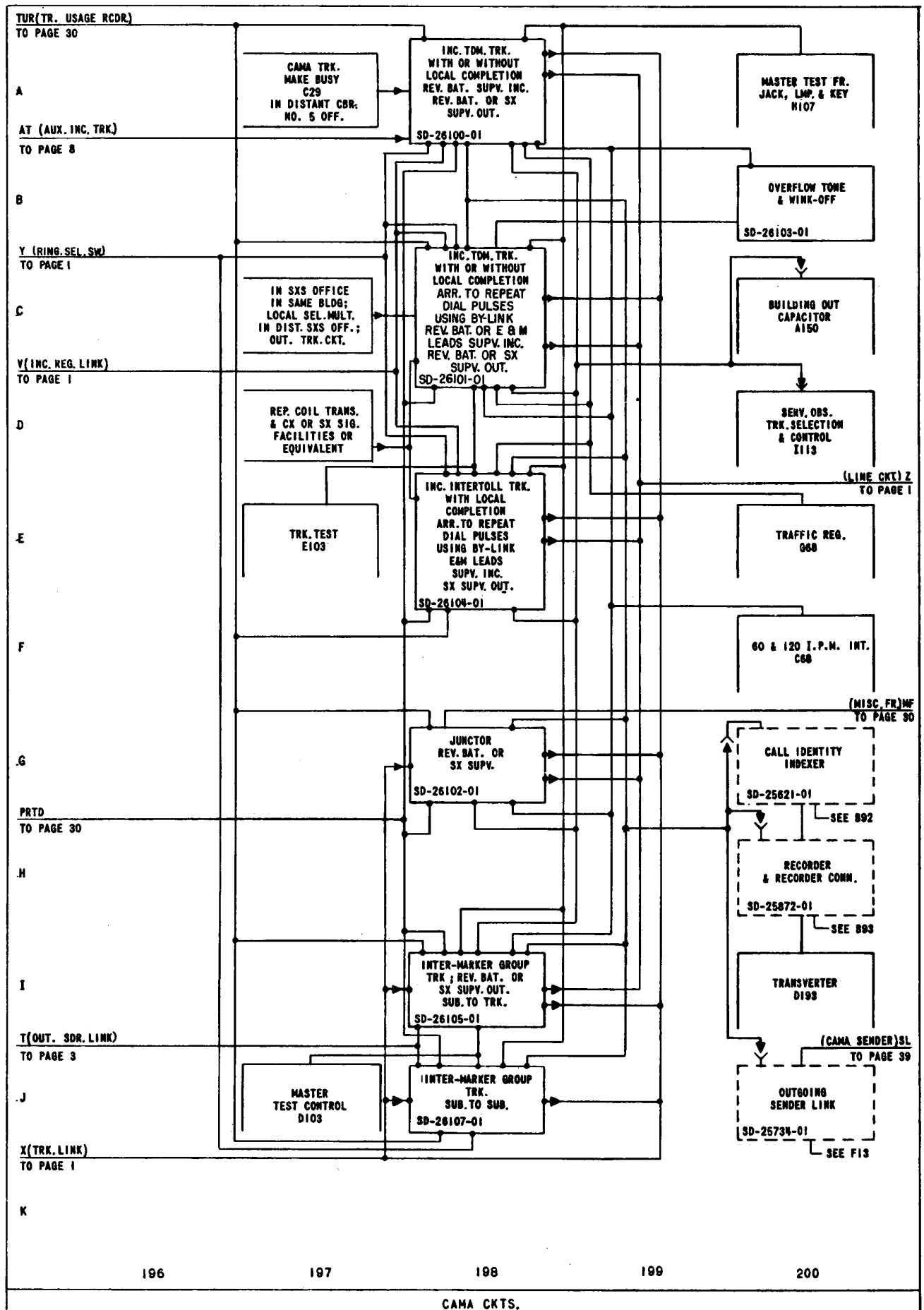


SERVICE OBSERVING CKTS.

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K

OUT. TRK.
FOR DIAL COIN
ZONE SERV.
SD-26078-01

JUNCTOR
FOR DIAL COIN
ZONE SERV.
SD-26078-01

AUX. JUNCTOR
G153, H153

OUT. TRK.
FOR USE WITH
COIN ZONE TRK.
OR JUNCTOR CKT.
SD-26117-01

IN CBR. OFF. NO. 1;
INC. TRK. CKT.
IN CBR. OFF. NO. 8,
INC. TRK. CKT.
IN SIX OFF.;
INC. SEL. OR INC. REP.
IN PAN. OFF.;
INC. SEL. CKT.
IN MAN. OR MAN. TDM. OFF.
PAN. CALL IND. TRK.
IN PAN. SDR. TDM. OFF.;
TDM. DIST. OR
DST. OFF. SEL.
IN MAN. OFF.
TDM. COMPL. TRK. CKT.
IN CBR. TDM. OFF.;
TDM. TRK. CKT.

AUX. OBT
B162

ANS. JACK CKT.
IN DSA BD.
IN DIAL OFF.

JACK & LAMP CKT.
IN TOLL SWBD. NO. 1,
3C OR 3CL

IN TOLL SWBD. NO. 1,
3C, 3CL OR DSA SWBD.
IN DIAL OFF.;
COIN ZONE OPR.
TRK. CKT.

ES TEL. REP.
BAT. SUPPLY &
CONNECTING CKTS.
SD-95161-01

TOLL SWBD. NO. 1
TRK. JACK CKT.
(COIN CONT. JK.)

LAMP RELAY CKT.
IN TOLL SWBD. NO. 1,
3C OR 3CL

IN TOLL TEST BD.
NO. 178 OR 188;
TEST JACK CKT.

JACK, LAMP & KEY
H107
TEST & M.B. JACKS
G128

AUTOMATIC MONITOR
REGISTER &
SENDER TEST
H103

ANS. TIME RCDR.
K67

CALL IDENTITY
INDEXER
B92

RECORDER &
RECORDER CONN.
B93

60 & 120 I.P.M. INT.
C68

4 I.P.M. INT.
I149

TRAFFIC REG.
G68

201

202

203

204

205

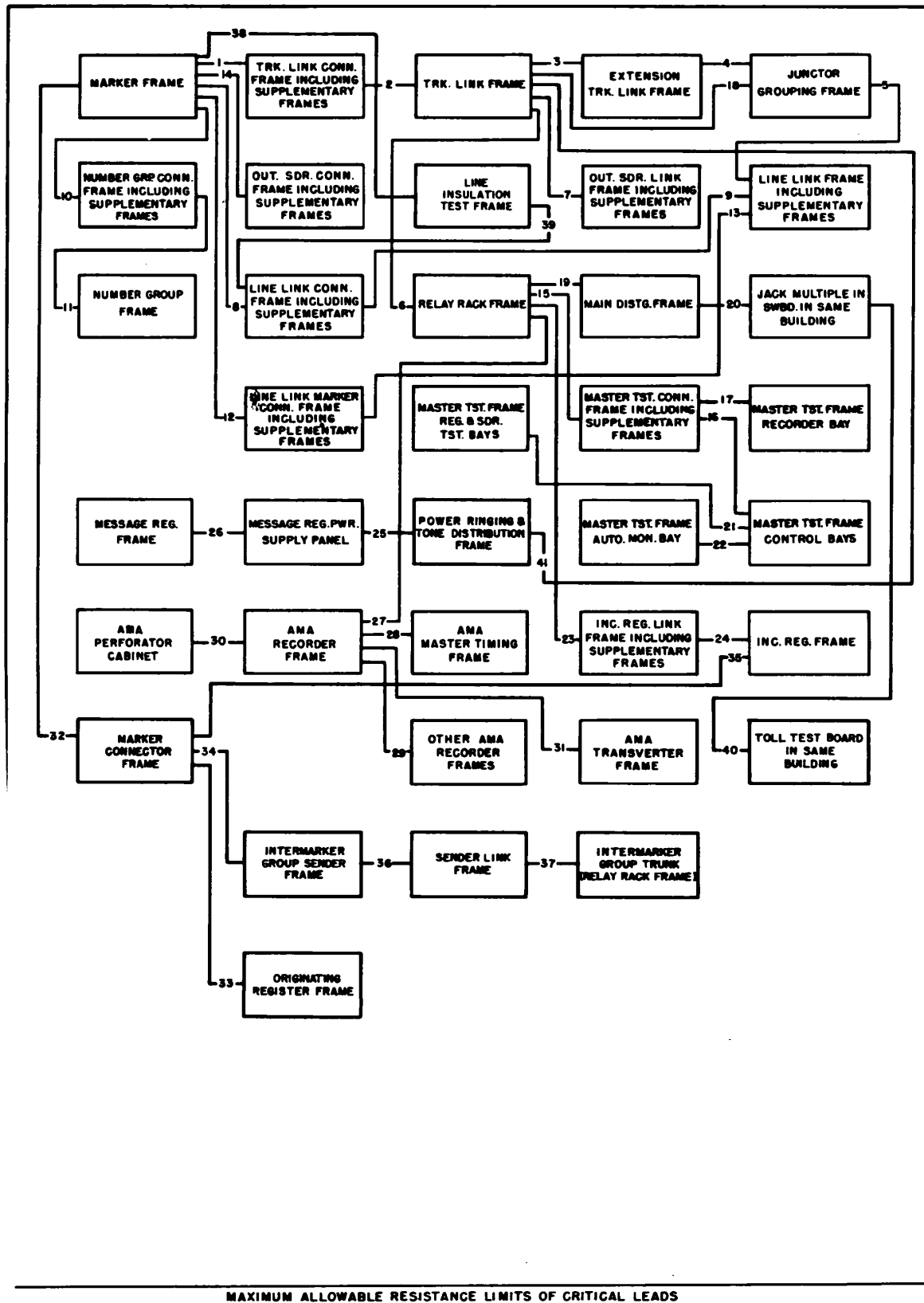
DIAL COIN ZONE CKTS.

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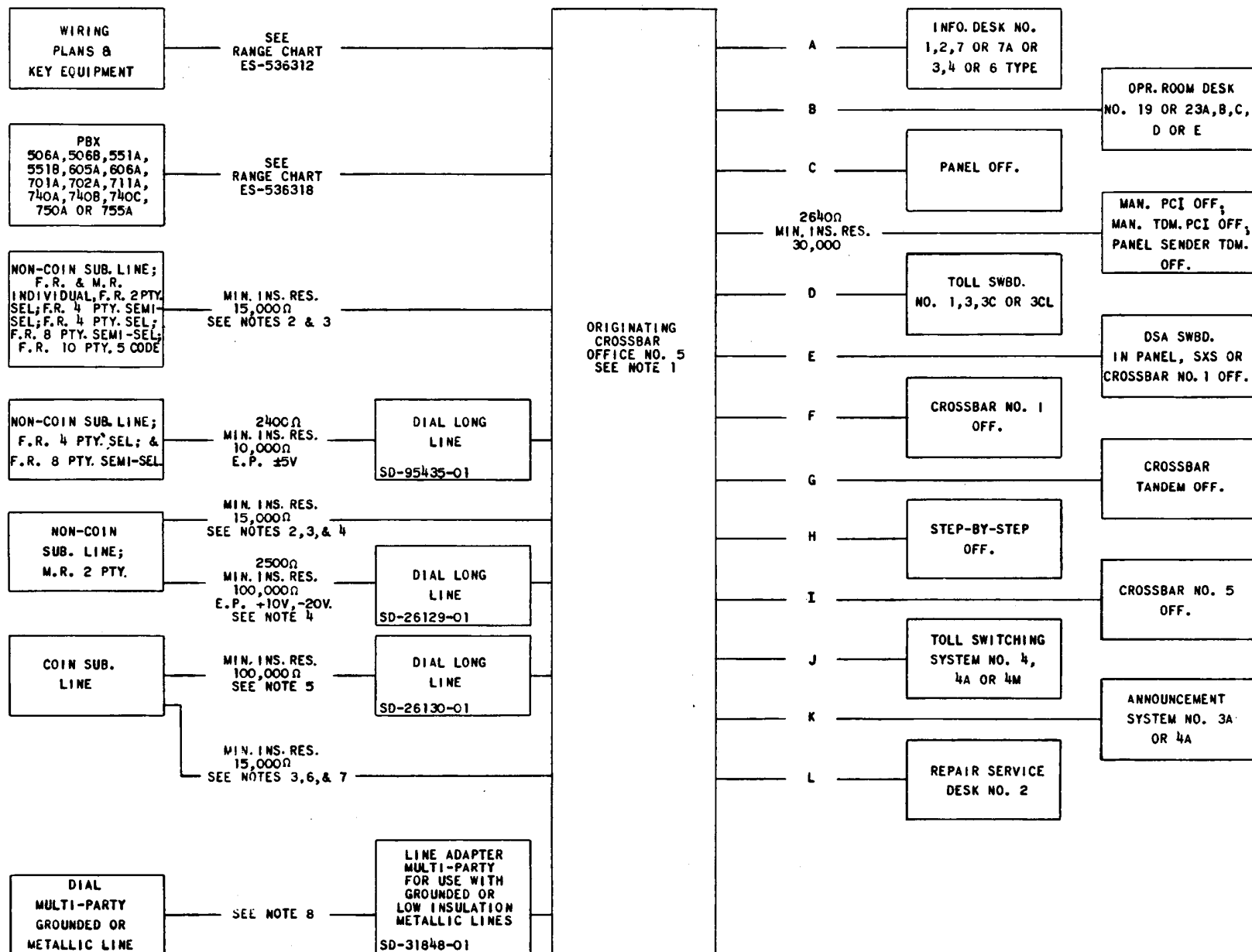
1. THE FOLLOWING TABLE COVERS THE DESIGNATIONS OF CRITICAL LEADS AND THEIR MAXIMUM ALLOWABLE RESISTANCE LIMITS BETWEEN VARIOUS FRAMES, RELAY RACKS AND CABINETS TO INSURE SATISFACTORY OPERATION OF THE ASSOCIATED CIRCUITS MOUNTED THEREON. THE LEADS ARE NUMBERED ON THE CHART FOR USE AS A REFERENCE FOR THE LEAD DESIGNATIONS IN THE TABLE. THE RESISTANCE LIMITS INCLUDE THE SWITCHBOARD CABLE STRIPPERS AND THE MULTIPLE OF THE LEADS ON THE SUPPLEMENTARY FRAMES.

LEAD NO.	LEAD DESIGNATIONS	RESISTANCE (OHMS)	SEE NOTE
1 + 2 + 3 + 4 + 5	T & R	31.46	1 (A)
1 + 2 + 3	JO-9, LHO-9, & BST	20	
1 + 2 + 6	RS O-9	25	
1 + 2 + 7	SS O-9	25	
8 + 9 OR 38 + 39 + 9	LH O-4	10	
	LB	15	
	LL O-9	15.35	
	VGB O-13, HGO-9, BS, CS O-29 & SMO-9	15	
10 + 11	WL, WG, WF, FTO-3, FVO-9, VGOO-13, HGO-9, RCOI-15, & VFO-4	8	
12 + 13	VGA O-13	15	
14	XS & XSMA	15	
15 + 16	NTLH	10	
17	SO-8	1	
4 + 5	S	5.34	
3	S	6.66	
6	S	8	
18 + 5	S	12	
19 + 20 + 40	S	10	
21	ALL LEADS	8	
22	ALL LEADS	8	
23 + 24	D	10	
25	MRS TP & MRS RP	1	
26	MRS R & MRS T	1	
27	RC	10	
	DJ & CH	9	
28	RL & RNT	5	
29	BT	6	
28 + 30	PAM & PA	10	
30 + 31	PAM & PA	10	
28 + 30	FO-7, EO-7, DO-7, CO-7, BO-7 & AO-2	30	
30 + 31	FO-7, EO-7, DO-7, CO-7, BO-7, & AO-2	30	
32 + 35 OR 32 + 34 OR 32 + 33	XII, II, LT, TT, FVD, OA, OB, PHC, THC, RO, INC, TAN, TOL, PCR, PCD, PCDI, OR	20	
32 + 37	T, R, D	10	
41	MRS-RP, MRS-TP	5	

(A) THIS IS NOT A RESISTANCE LIMIT BUT A CAPACITY LIMIT. THE LIMIT IS 31.46 OHMS OF CABLE AND FOR 1,2,3,4,OR 5 NO INDIVIDUAL RUN MAY EXCEED 18.29 OHMS OF CABLE.



MAXIMUM ALLOWABLE RESISTANCE LIMITS OF CRITICAL LEADS



LOOP DESIG.	CKT. TITLE	SD- DWG. NO.	OHMS MAX. EXT. CKT. LOOP			OHMS MAX. CONDUCTOR LOOP			OHMS MIN. INS. RES.	SEE NOTE	NO. OF MILES OF CABLE NOT TO EXCEED	REMARKS
			PLSG.	SUPV.	RING.	PLSG.	SUPV.	RING.				
A	OUT. INFO. TRK.	25698-01		3350			2995		30,000	14		
				3350			2550		30,000	42		
				3350			2200		30,000	43		
		25902-01		2550			2195		30,000	14		
				2550			2520		30,000	42		
				2550			2325		30,000	43		
		25925-01		NONE			1920		30,000	14		
				NONE			3030		30,000	42		
				NONE			4050		30,000	43		INDUCTOR ONLY USED
	OUT. INCPT. TRK.	26122-01		3525			2910		30,000	44,45		
	VACANT CODE INCPT. TRK.	26090-01		3615			3000		30,000	44,45		
		26091-01		3615			3000		30,000	44,45		
B	OUT. INFO. TRK.	25968-01		3350			2550		30,000	46,49		
				3350			3120		30,000	47,48		
		25902-01		2550			2520		30,000	46,49		
				2550			2320		30,000	47,48		
		25925-01		NONE			3030		30,000	46		
				NONE			4450		30,000	48		
				NONE			6450		30,000	49		INDUCTOR ONLY USED
	VACANT CODE INCPT. TRK.	26090-01		3615			3000		30,000	10,11		
		26091-01		3615			3000		30,000	10,11		
	OUT. INCPT. TRK.	26122-01		3525			2910		30,000	10,11		
C	OUTGOING TRK.	26085-01 (TYPICAL)					1300		30,000	38	12	RP PULSING
				8000			2010		30,000	39	20	
							1640		30,000	40	14	
							2700		30,000	41	24	
D	OFFICIAL PBX OR VERIFICATION REQUEST TRK.	25696-01		3000			2690		30,000	12,25		
	REC. COMPL. TRK.	25923-01 25923-02 25923-03 25923-04		3740			2945		60,000	13,15		
		26090-01		3615			2875		60,000	13,17		
		26091-01		3615			2875		60,000	13,15,16		
	COIN SUPERVISORY	25736-01		6000			3540		30,000	18,19, 20,21		RANGE IS FOR EACH PAIR OF CONDUCTORS MAX. E.P. ±20V.
	CONCENTRATING FOR PERM. SIG. HOLDING TRKS.	25766-01		6490			3000		30,000	22,23, 24		MAX. E.P. ±20V.
	FREE TRK.	25889-01		3200			2890			12,25		
	EMG. TRANSFER	95711-01		3250			2940		30,000	26		
E	SPECIAL SERV. TRK.	26090-01		3615			3000		30,000	27		
		26091-01		3615			3000		30,000	29		
	CONCENTRATING FOR PERM. SIG. HOLDING TRKS.	25766-01		6490			3000		30,000	22,32		MAX. E.P. ±20V.
	EMG. TRANSFER	95711-01		3000			2715		30,000	33		
	COIN SUPERVISORY	25736-01		6000			3540		30,000	34		RANGE IS FOR EACH PAIR OF CONDUCTORS MAX. E.P. ±20V.
	OFFICIAL PBX OR VERIFICATION REQUEST TRK.	25696-01		3000			2715		30,000	35		
F	OUTGOING TRK.	26085-01 (TYPICAL)		8000			2900		30,000	36	32	RP PULSING
	RP SENDER	26052-01		3300								
	OUTGOING TRK.	26085-01 (TYPICAL)		8000			5105		30,000	36	40	MF PULSING
	MF SENDER	26051-01		6400								
RANGE CHART TABLE - ORIGINATING OFFICE END												

LOOP DESIG.	CKT. TITLE	SD- DWG. NO.	OHMS MAX. EXT. CKT. LOOP			OHMS MAX. CONDUCTOR LOOP			OHMS MIN. INS. RES.	SEE NOTE	NO. OF MILES OF CABLE NOT TO EXCEED ANY LOADING	REMARKS	
			PLSG	SUPW	RING	PLSG	SUPW	RING					
G	OUTGOING TRK.	26085-01 (TYPICAL)		8000			2885			30,000	50	34	DP PULSING
	DP SENDER	26050-01	6400										
	OUTGOING TRK.	26085-01 (TYPICAL)		8000			4705			60,000	50	40	MF PULSING
	MF SENDER	26051-01	6400										
	OUTGOING TRK.	26085-01 (TYPICAL)		8000			2640			60,000	51		PCI PULSING
	PCI SENDER	26053-01	5850										
H	OUTGOING TRK.	26085-01 (TYPICAL)		8000			1200	1200		30,000	52		LOOP PULSING
				8000			1900	1900		30,000		BAT. & GRD. PULSING	
				8000			3000	3000		30,000		8-11 P.P.S.	
				8000			1200	1200		30,000			
				8000									
	DP SENDER	26050-01	6400	8000			2000	2000		30,000	55		
I	OUTGOING TRK.	26085-01 (TYPICAL)		8000			5520			30,000	56	60	MF PULSING
	MF SENDER	26051-01	6400										
J	OUTGOING TRK.	26085-01 (TYPICAL)		8000			3975			30,000	37		
	MF SENDER	26051-01	6400										
K	OUT. ANNOUNCEMENT TRK.	25689-01 25690-01		5500			4340			30,000	30, 31		
L	OUTGOING TRK.	26095-01		3500			2990			30,000	28		

RANGE CHART TABLE - ORIGINATING OFFICE END

NOTES:

1. ALL INTEROFFICE LOOP VALUES ON THE CHART INCLUDE THE RES. OF THE OUTSIDE CABLING, THE CENTRAL OFFICE WIRING AND THE HEAT COILS. THE RES. OF THE CENTRAL OFFICE APPARATUS IS NOT INCLUDED. FOR COIN AND NON-COIN LINES, VALUES ARE SHOWN IN TERMS OF CONDUCTOR LOOP BETWEEN THE CENTRAL OFFICE LINE CIRCUIT AND THE STATION APPARATUS, ALLOWING FOR A MAXIMUM OF 200 OHMS IN THE STATION APPARATUS IN ALL CASES EXCEPT FOR THE 191 COIN COLLECTOR, FOR WHICH A MAXIMUM OF 300 OHMS IS ALLOWED.
2. MAXIMUM 2UF BRIDGED CAPACITY FOR INDIVIDUAL NON-COIN LINES, MAXIMUM 2UF CAPACITY ON EITHER SIDE OF THE LINE TO GROUND FOR 2 PARTY SELECTIVE AND 4 PARTY SEMISELECTIVE LINES, MAXIMUM 2.5 UF CAPACITY FOR 10 PARTY 5 CODE RINGING LINES AND 4 PARTY SELECTIVE AND 8 PARTY SEMISELECTIVE LINES.
3. THE MAXIMUM CONDUCTOR LOOP RESISTANCE FOR SUBSCRIBER LINES IN SUPERIMPOSED AND AC-DC RINGING OFFICES USING THE AJ47 TRIP RELAY AND THE EA44 AND/OR EA36 LINE RELAYS WITH MINIMUM OFFICE VOLTAGES OF 45V. AND 48V. IS AS FOLLOWS: RANGE INFORMATION FOR OFFICES USING OTHER THAN THE AJ47 TRIP RELAY AND THE EA44 AND/OR EA36 LINE RELAYS ARE SHOWN IN BSP AA442.030. FOR GENERAL PRINCIPLES AND METHODS IN DETERMINATION OF RANGES FOR INTEROFFICE TRUNKS SEE BSP AA400.801.

MIN. BAT.	LINE RELAY	ALL NONCOIN LINES- EXCEPT PBX LINES AND TIP PARTY OF 2-PARTY LINES HAVING STATION IDENTIFICATION		TIP PARTY OF 2-PARTY LINES HAVING STATION IDENTIFICATION				COIN LINES-5-CENT INITIAL DEPOSIT TYPE COIN COLLECTOR (GROUND START) (SEE NOTE 9)		COIN LINES-10-CENT INITIAL DEPOSIT TYPE COIN COLLECTOR (GROUND START) (SEE NOTE 9)		EARTH POT. $\pm$ (VOLTS)	TYPE OF RINGING
				1000-OHM STATION		3640-OHM STATION							
				MAX. COND. LOOP (OHMS)		MAX. COND. LOOP (OHMS)		MAX. COND. LOOP (OHMS)		MAX. COND. LOOP (OHMS)			
		RINGING	SILENT	RINGING	SILENT	RINGING	SILENT	RINGING	SILENT	RINGING	SILENT		
45	EA36 (SEC.WDG.ONLY)	1250	1250	1250	1250	1250	1250	1250	1250	1150	1150	0	SUPER-IMPOSED
				1250	1250	1250	1250	1250	1250	1150	1150	5	
				1250	1250	1250	1250	1250	1200	1110	1110	10	
	EA44 OR EA36 (PRI.& SEC. WDGS.) IN SERIES	1400	1420	1400	1420	1400	1420	1400	1420	1300	1320	0	
				1400	1420	1400	1420	1340	1340	1300	1300	5	
				1400	1420	1400	1420	1200	1200	1110	1110	10	
48	EA36 (SEC.WDG.ONLY)	1380	1380	1380	1380	1380	1380	1380	1380	1280	1280	0	
				1380	1380	1380	1380	1340	1340	1280	1280	5	
				1380	1380	1380	1380	1200	1200	1200	1200	10	
	EA44 OR EA36 (PRI.& SEC.WDGS.) IN SERIES	1400	1540	1400	1540	1400	1540	1400	1490	1300	1440	0	
				1400	1540	1400	1540	1340	1340	1300	1340	5	
				1400	1540	1400	1540	1200	1200	1200	1200	10	
45	EA36 (SEC.WDG.ONLY)	1250	1250	1250	1250	1250	1250	1250	1250	1150	1150	0	
				1250	1250	1250	1250	1250	1250	1150	1150	5	
				1250	1250	1250	1250	1200	1200	1110	1110	10	
	EA44 OR EA36 (PRI.& SEC.WDGS.) IN SERIES	1520	1420	1450	1420	1500	1420	1450	1420	1320	1320	0	
				1440	1420	1480	1420	1340	1340	1300	1300	5	
				1420	1420	1470	1420	1200	1200	1110	1110	10	
48	EA36 (SEC.WDG.ONLY)	1380	1380	1380	1380	1380	1380	1380	1380	1280	1280	0	
				1380	1380	1380	1380	1340	1340	1280	1280	5	
				1380	1380	1380	1380	1200	1200	1200	1200	10	
	EA44 OR EA36 (PRI.& SEC.WDGS.) IN SERIES	1640	1540	1600	1540	1640	1540	1490	1490	1470	1440	0	
				1590	1540	1630	1540	1340	1340	1340	1340	5	
				1570	1540	1620	1540	1200	1200	1200	1200	10	

4. MAXIMUM ALLOWABLE RESISTANCE OF RINGER IN TIP PARTY SUBSCRIBER SET FOR IDENTIFICATION PURPOSES IS 1100 OHMS. IN OFFICES WHERE TIP STATION IDENTIFICATION IS MADE WITH A 3640-OHM RINGER RESISTANCE IT WILL BE NECESSARY TO USE THE 1100-OHM RINGER RESISTANCE ON LINES ASSOCIATED WITH THE LONG LINE CIRCUIT.
5. THE CONDUCTOR LOOP RESISTANCE WITH AND WITHOUT THE S36 RELAY AT COIN STATION IS AS FOLLOWS:

EARTH POTENTIAL (VOLTS) $\pm$	WITH S36 RELAY	MAX. LOOP RES. (OHMS)	MIN. LOOP RES. (OHMS)
0	YES	3000	1200
	NO	1900	
5	YES	2800	
	NO	1750	
10	YES	2600	
	NO	1600	
15	YES	2400	
	NO	1440	
20	YES	2200	
	NO	1290	

NOTES: (CONT.)

6. THE RANGE SHOWN FOR COIN SUBSCRIBER LINE USING OTHER THAN THE 10-CENT INITIAL DEPOSIT TYPE COIN COLLECTOR ALSO APPLIES TO SIDE TONE COIN COLLECTOR WITH ANTI-SIDE TONE SUBSET WHICH HAS 3UF BRIDGED ACROSS THE LINE AT ALL TIMES.

7. FOR COIN TEST THE LIMITS ARE AS FOLLOWS:

CONDUCTOR LOOP	MIN. INS. RES.	MIN. COIN VOLTAGE	EARTH POTENTIAL	SUBSET RES.
1450 Ω	10,000 Ω	125V.	$\pm 10V.$	200 Ω
1420 Ω	10,000 Ω	125V.	$\pm 10V.$	300 Ω

8. THE SUBSCRIBER LOOP RANGE SHALL NOT EXCEED THE VALUES SHOWN IN TABLES A & B BELOW.

TABLE A			
GROUND RETURN LINES	SUB. LOOP RANGE	MIN. INS. RES.	E.P.
	1200 Ω	3000 Ω	$\pm 6V.$
	1200 Ω	3500 Ω	$\pm 16V.$

TABLE B				
METALLIC LINES	SUB. LOOP RANGE	MIN. INS. RES.		E.P.
		WIRE TO WIRE	EITHER WIRE TO GRD.	
	1200 Ω	2700 Ω	1600 Ω	$\pm 6V.$
	1100 Ω	2700 Ω	1900 Ω	$\pm 16V.$
	1700 Ω	3900 Ω	2200 Ω	$\pm 6V.$
	1600 Ω	3900 Ω	2600 Ω	$\pm 16V.$
	2100 Ω	10,000 Ω	10,000 Ω	$\pm 5V.$

9. COIN RANGES ARE BASED ON A MINIMUM 125-VOLT COIN BATTERY. IN OFFICES WHERE THE COIN POTENTIAL IS OTHER THAN 125 VOLTS MINIMUM, THE RANGE CAN BE COMPUTED BY APPLYING THE FOLLOWING FORMULA.

CONDUCTOR LOOP (OHMS)

$$= R_{LK} \times \frac{2[(V-63)-E.P.]}{.065 \times R_{LK} + 63} - 305$$

WHERE V = COIN CONTROL VOLTAGE

E.P. = + OR - EARTH POTENTIAL

R_{LK} = MIN. INSULATION RESISTANCE

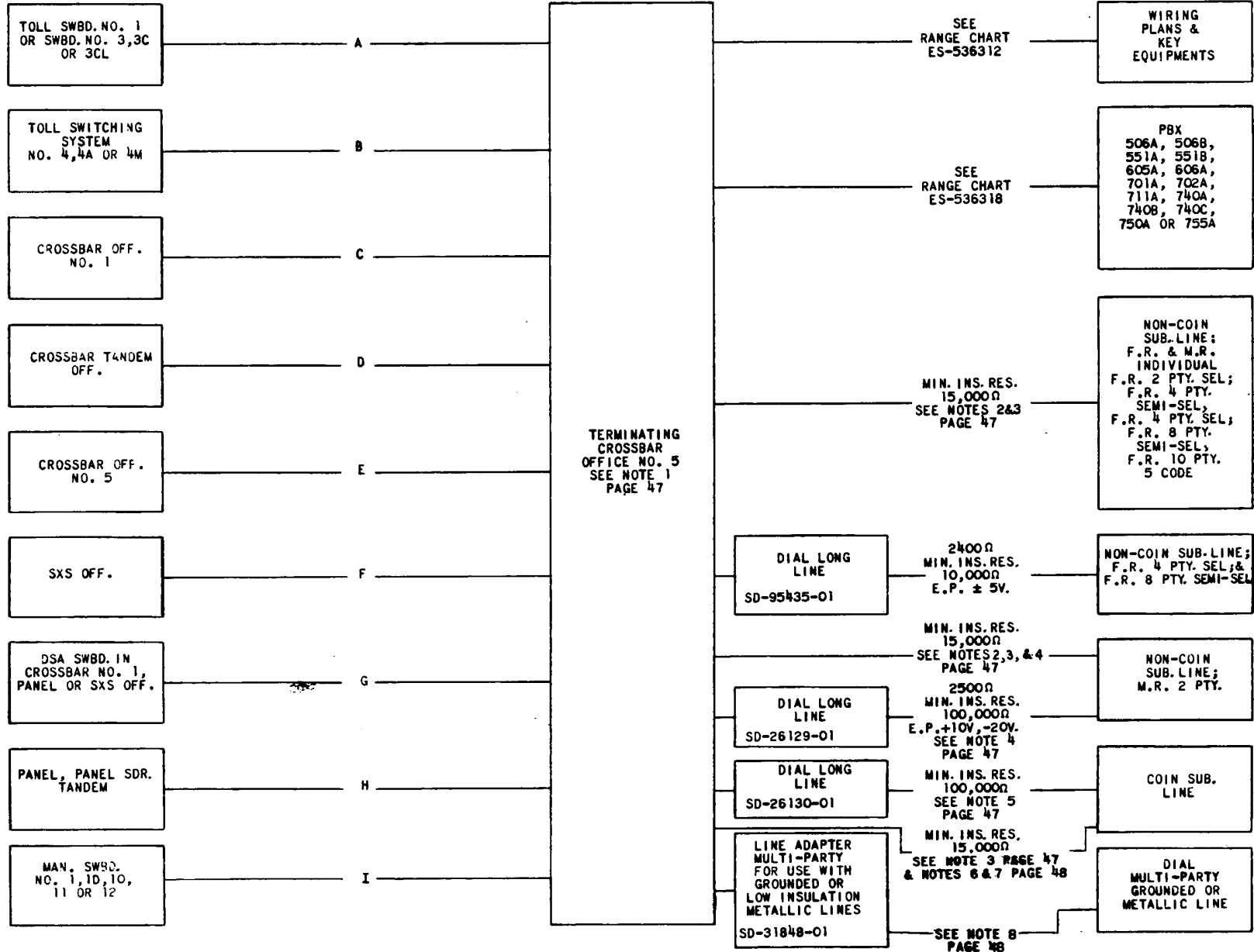
TO OBTAIN EXTERNAL CIRCUIT LOOP, ADD 200 OHMS FOR LINES WITH THE 5-CENT INITIAL DEPOSIT TYPE COIN COLLECTOR AND 300 OHMS FOR LINES WITH THE 10-CENT INITIAL DEPOSIT TYPE COIN COLLECTOR.

- WHEN DISTANT TRUNK SD-95789-01 IS USED IN OPERATING ROOM DESK NO. 19 OR 23E.
- WHEN DISTANT TRUNK SD-95740-01 IS USED IN OPERATING ROOM DESK NO. 23A, B, C OR D.
- WHEN DISTANT TRUNK SD-55778-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
- WHEN DISTANT TRUNK SD-55873-01 IS USED IN TOLL SWITCHBOARD NO. 1.
- WHEN DISTANT TRUNK SD-90434-01 IS USED IN INFORMATION DESK NO. 1.
- WHEN DISTANT TRUNK SD-56127-01 IS USED IN SWITCHBOARD NO. 3.
- WHEN DISTANT TRUNK SD-55875-01 IS USED IN SWITCHBOARD NO. 3C OR 3CL.
- WHEN DISTANT TRUNK SD-55872-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
- THE 6,000 Ω VALUE APPLIES TO EACH TRUNK CONDUCTOR.
- WHEN DISTANT TRUNK SD-56032-01 IS USED IN SWITCHBOARD NO. 3C OR 3CL.
- WHEN DISTANT TRUNK SD-55844-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
- WHEN DISTANT TRUNK SD-56123-01 IS USED IN TOLL SWITCHBOARD NO. 1.
- THE 6490 Ω VALUE APPLIES TO EACH TRUNK CONDUCTOR.
- WHEN DISTANT TRUNK SD-56119-01 IS USED IN TOLL SWITCHBOARD NO. 1.
- WHEN DISTANT TRUNK SD-55889-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
- WHEN DISTANT TRUNK SD-56241-01 IS USED IN TOLL SWITCHBOARD NO. 1.

RANGE CHART NOTES - ORIGINATING OFFICE END

NOTES: (CONT.)

26. WHEN DISTANT TRUNK SD-95713-01 IS USED IN TOLL SWITCHBOARD NO. 1, 3, 3C OR 3CL.
27. WHEN DISTANT TRUNK SD-95745-01 IS USED IN DSA SWITCHBOARD.
28. WHEN DISTANT TRUNK SD-95782-01 IS USED AT REPAIR SERVICE DESK NO. 2.
29. WHEN DISTANT TRUNK SD-96365-01 IS USED IN DSA SWITCHBOARD.
30. WHEN DISTANT TRUNK SD-25940-01 IS USED AT ANNOUNCEMENT SYSTEM NO. 4A.
31. WHEN DISTANT TRUNK SD-95777-01 IS USED AT ANNOUNCEMENT SYSTEM NO. 3A.
32. WHEN DISTANT TRUNK SD-95474-01 IS USED IN DSA SWITCHBOARD.
33. WHEN DISTANT TRUNK SD-95713-01 IS USED IN DSA SWITCHBOARD.
34. WHEN DISTANT TRUNK SD-95473-01 IS USED IN DSA SWITCHBOARD.
35. WHEN DISTANT TRUNK SD-95673-01 IS USED IN DSA SWITCHBOARD.
36. WHEN DISTANT TRUNK SD-26204-01 IS USED IN CROSSBAR NO. 1 OFFICE.
37. WHEN DISTANT TRUNK SD-68358-01 IS USED IN TOLL SWITCHING SYSTEM NO. 4A OR SD-68331-01 IS USED IN TOLL SWITCHING SYSTEM NO. 4 OR 4M.
38. WHEN TERMINATING PANEL OFFICE IS GROUND CUTOFF TYPE AND REPEATING INCOMING SELECTORS ARE NOT USED.
39. WHEN TERMINATING PANEL OFFICE IS GROUND CUTOFF TYPE AND REPEATING INCOMING SELECTORS ARE USED.
40. WHEN TERMINATING PANEL OFFICE IS BATTERY CUTOFF TYPE AND INCOMING SELECTOR IS EQUIPPED WITH R132 RELAY.
41. WHEN TERMINATING PANEL OFFICE IS BATTERY CUTOFF TYPE AND INCOMING SELECTOR IS EQUIPPED WITH N3 RELAY.
42. WHEN DISTANT TRUNK SD-90527-01 IS USED IN INFORMATION DESK NO. 2, 7 OR 7A.
43. WHEN DISTANT TRUNK SD-96355-01 IS USED IN INFORMATION DESK NO. 3, 4 OR 6 TYPE.
44. WHEN DISTANT TRUNK SD-95789-01 IS USED IN INFORMATION DESK NO. 1, 2, 7 OR 7A.
45. WHEN DISTANT TRUNK SD-95740-01 OR SD-95426-01 IS USED IN INFORMATION DESK NO. 3, 4 OR 6 TYPE.
46. WHEN DISTANT TRUNK SD-90527-01 IS USED IN OPERATING ROOM DESK NO. 19.
47. WHEN DISTANT TRUNK SD-95585-01 IS USED IN OPERATING ROOM DESK NO. 23E.
48. WHEN DISTANT TRUNK SD-95513-01 IS USED IN OPERATING ROOM DESK NO. 23A, B, C OR D.
49. WHEN DISTANT TRUNK SD-95580-01 IS USED IN OPERATING ROOM DESK NO. 23E.
50. WHEN DISTANT TRUNK SD-25887-01 IS USED IN CROSSBAR TANDEM OFFICE.
51. WHEN DISTANT TRUNK SD-25520-01 OR SD-25956-01 IS USED AT CROSSBAR TANDEM OFFICE.
52. WHEN DISTANT TRUNK SD-30200-01 (TYPICAL) IS USED AT SXS OFFICE.
53. WHEN DISTANT TRUNK SD-31648-01 IS USED AT SXS OFFICE.
54. WHEN DISTANT TRUNK SD-31841-01 IS USED AT SXS OFFICE WITH 221 FAE PULSING RELAY.
55. WHEN DISTANT TRUNK SD-31841-01 IS USED AT SXS OFFICE WITH 221 FAF PULSING RELAY.
56. WHEN DISTANT TRUNK SD-26070-01 (TYPICAL) IS USED AT CROSSBAR NO. 5 OFFICE.



LOOP DESIG	CKT TITLE	SD- DWG NO.	OHMS MAX EXT CKT LOOP				OHMS MAX CONDUCTOR LOOP				OHMS MIN INS RES	SEE NOTE	NO. OF MILES OF CABLE NOT TO EXCEED ANY LOADING	REMARKS
			PLSG	SUPV	RING		PLSG	SUPV	RING					
A	INCOMING TRK	26083-01 OR 26074-01 (TYPICAL)		6000				4480			30,000	1,9	60	MF PULSING
				6000				3810			30,000	2,10		DP PULSING
				6000			3950				30,000	36,11		REPEATED DIALING
				6000			4135				30,000	5,7		RP PULSING
				3115			2900				30,000	34,6,8		
B	INCOMING TRK	26070-01 (TYPICAL)		6400			3925				30,000	12	42	DP PULSING
				6400				5825			30,000	12,13	60	MF PULSING
C	INCOMING TRK	26070-01 (TYPICAL)		3115			2900				30,000	14	32	RP PULSING
D	INCOMING TRK	26070-01 (TYPICAL)		3115			2900				30,000	15	32	RP PULSING
				6400			4000				30,000	15	42	DP PULSING
				6400				5470			30,000	15	60	MF PULSING
E	INCOMING TRK	26070-01 (TYPICAL)		6400				5520			30,000	16	60	MF PULSING
F	INCOMING TRK USING BY-LINK	26077-01		2410			2400	2400			30,000	19		
				2410			2000	2120			30,000	17		WHEN BAT. & GRD PULSING IS USED
				2410			2000	2090			30,000	18		
				4465			4200	4125			30,000	20,23		
				4465			4095	4465			30,000	21,22,25		
G	INCOMING TRK	26083-01 OR 26074-01 (TYPICAL) 26070-01 (TYPICAL)		6400				3810			30,000	27	60	MF PULSING
				3115			2900				30,000	24	32	RP PULSING
				6400			3885				30,000	25	42	DP PULSING
				6400				5785			30,000	26	60	MF PULSING
				6400			3885				30,000	28	42	DP PULSING
H	INCOMING TRK	26070-01 (TYPICAL)		3115			2900				30,000	33,34	32	RP PULSING
I	INCOMING TRK	26070-01 (TYPICAL)		6400				4120			30,000	29	42	DP PULSING
				6400				5990			30,000	30,31	60	IMP TRANS
				6400				6060			30,000	30,32		REP COIL TRANS

RANGE CHART TABLE - TERMINATING OFFICE END

NOTES:

1. WHEN DISTANT TRUNK SD-64404-01 IS USED IN TOLL SWITCHBOARD NO. 1.
2. WHEN DISTANT TRUNK SD-56144-01 IS USED IN TOLL SWITCHBOARD NO. 1.
3. WHEN DISTANT TRUNK SD-56128-01 IS USED IN TOLL SWITCHBOARD NO. 1.
4. WHEN DISTANT TRUNK SD-56246-01 IS USED IN TOLL SWITCHBOARD NO. 1.
5. WHEN DISTANT TRUNK SD-64898-01 IS USED IN TOLL SWITCHBOARD NO. 1.
6. WHEN DISTANT TRUNK SD-55291-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
7. WHEN DISTANT TRUNK SD-55346-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
8. WHEN DISTANT TRUNK SD-56245-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
9. WHEN DISTANT TRUNK SD-55224-01 IS USED IN SWITCHBOARD NO. 3.
10. WHEN DISTANT TRUNK SD-55879-01 IS USED IN SWITCHBOARD NO. 3C OR 3CL.
11. WHEN DISTANT TRUNK SD-56105-01 IS USED IN SWITCHBOARD NO. 3, 3C OR 3CL.
12. WHEN DISTANT TRUNK SD-68242-01 IS USED IN TOLL SWITCHING SYSTEM NO. 4A.
13. WHEN DISTANT TRUNK SD-68325-01 IS USED IN TOLL SWITCHING SYSTEM NO. 4 OR 4M.
14. WHEN DISTANT TRUNK SD-26201-01 (TYPICAL) IS USED IN CROSSBAR OFFICE NO. 1.
15. WHEN DISTANT TRUNK SD-25887-01 IS USED IN CROSSBAR TANDEM OFFICE.
16. WHEN DISTANT TRUNK SD-26085-01 (TYPICAL) IS USED IN CROSSBAR NO. 5 OFFICE.
17. WHEN DISTANT TRUNK SD-31779-01 IS USED IN SXS OFFICE.
18. WHEN DISTANT TRUNK SD-32008-01 IS USED IN SXS OFFICE.
19. WHEN DISTANT TRUNK SD-31142-01 IS USED IN SXS OFFICE.
20. WHEN DISTANT TRUNK SD-32087-01 IS USED IN SXS OFFICE.
21. WHEN DISTANT TRUNK SD-32204-01 IS USED IN SXS OFFICE.
22. WHEN DISTANT TRUNK SD-31949-01 IS USED IN SXS OFFICE.
23. WHERE THE ENTIRE LENGTH OF THE CABLE IS 19 GAUGE, THE MAXIMUM MILES OF CABLE IS 32; IN ALL OTHER CASES THE MAXIMUM MILES OF CABLE IS 24.
24. WHEN DISTANT TRUNK SD-25446-01 (TYPICAL) IS USED IN DSA SWITCHBOARD.
25. WHEN DISTANT TRUNK SD-95471-01 (TYPICAL) IS USED IN DSA SWITCHBOARD.
26. WHEN DISTANT TRUNK SD-95425-01 (TYPICAL) IS USED IN DSA SWITCHBOARD.
27. WHEN DISTANT TRUNK SD-95566-01 (TYPICAL) IS USED IN DSA SWITCHBOARD.
28. WHEN DISTANT TRUNK SD-96164-01 IS USED IN DSA SWITCHBOARD.
29. WHEN DISTANT TRUNK SD-14192-01 OR SD-14193-01 IS USED IN MANUAL SWITCHBOARD NO. 1, 1D, 1O OR 11.
30. WHEN DISTANT TRUNK SD-15193-01 IS USED IN MANUAL SWITCHBOARD NO. 12.
31. WHEN DISTANT TRUNK SD-12570-01 IS USED IN MANUAL SWITCHBOARD NO. 1, 1D OR 11.
32. WHEN DISTANT TRUNK SD-12999-01 IS USED IN MANUAL SWITCHBOARD NO. 1, 1D OR 11.
33. WHEN DISTANT TRUNK SD-21627-01 (TYPICAL) IS USED IN PANEL OFFICE.
34. WHEN DISTANT TRUNK SD-21143-01 (TYPICAL) IS USED IN PANEL SENDER TANDEM OFFICE.

TABLE I

INCOMING TRUNK CIRCUITS												
KIND OF PULSING FROM ORG. OFF.	KIND OF SUPV.	LOCATION OF TYPICAL CKTS. ON KEY SHEET	ORG. OFF. (SEE NOTE 1)	START PULSING SIG. FROM CBR. NO. 5 OFF. (SEE NOTE 2)	KIND OF RING START SIG.	POLARITY OF INCOMING LEADS LOOKING INTO INCOMING TRUNK						SEE NOTE
						LEADS	NORMAL	INC. REG. SEIZED	INC. REG. READY TO RECEIVE PULSING	AWTG. ANSWER (ON HOOK)	ANSWER (OFF HOOK)	
RP	REV. BAT.	A37, B37, G37	TOLL DSA, TOLL, PAN., PAN. SDR. TDM., CBR. NO. 1, CBR. NO. 5 OR CBR. TDM.	NONE	NONE	T	BAT.	BAT.	BAT.	BAT.	GRD.	
						R	GRD.	GRD.	GRD.	GRD.	BAT.	
		B47, D47	TOLL DSA OR TOLL SWBD.	NONE	SX	T	BAT.	BAT.	BAT.	BAT.	GRD.	
						R	GRD.	GRD.	GRD.	GRD.	BAT.	
DP (NOTE 4)	REV. BAT.	A37, B37, G37	TOLL DSA, TOLL OR MAN. SWBD.	DELAY DIAL	NONE	T	BAT.	BAT.	GRD.	GRD.	BAT.	3
						R	GRD.	GRD.	BAT.	BAT.	GRD.	
			DSA SWBD.	DELAY DIAL	NONE	T	GRD.	GRD.	BAT.	BAT.	GRD.	
						R	BAT.	BAT.	GRD.	GRD.	BAT.	
			CBR. TDM. OFF. FOR SX5 AREAS ONLY OR CBR. NO. 5 OFF.	WINK	NONE	T	GRD.	BAT.	GRD.	GRD.	BAT.	
						R	BAT.	GRD.	BAT.	BAT.	GRD.	
		G47	CBR. TDM. OFF. FOR CBR. & PANEL AREAS WITH OR WITHOUT SOME SX5 OFFICES OR PAN. SENDER TDM. OFF.	WINK	NONE	T	BAT.	GRD.	BAT.	BAT.	GRD.	
						R	GRD.	BAT.	GRD.	GRD.	BAT.	
		B47, D47	SX5 (BY LINK OPERATION)	NONE	NONE	T	GRD.	GRD.	GRD.	GRD.	BAT.	
						R	BAT.	BAT.	BAT.	BAT.	GRD.	
			TOLL DSA OR TOLL SWBD.	DELAY DIAL	SX	T	BAT.	BAT.	GRD.	GRD.	BAT.	3, 6
						R	GRD.	GRD.	BAT.	BAT.	GRD.	
			DSA SWBD.	DELAY DIAL	SX	T	GRD.	GRD.	BAT.	BAT.	GRD.	
						R	BAT.	BAT.	GRD.	GRD.	BAT.	
MF	REV. BAT.	A37, B37, G37	TOLL DSA, TOLL OR MAN. SWBD.	DELAY DIAL	NONE	T	BAT.	BAT.	GRD.	GRD.	BAT.	3
						R	GRD.	GRD.	BAT.	BAT.	GRD.	
			DSA SWBD.	DELAY DIAL	NONE	T	GRD.	GRD.	BAT.	BAT.	GRD.	
						R	BAT.	BAT.	GRD.	GRD.	BAT.	
			CBR. NO. 5 OFF.	WINK	NONE	T	GRD.	BAT.	GRD.	GRD.	BAT.	
						R	BAT.	GRD.	BAT.	BAT.	GRD.	
		B37	TOLL DSA, TOLL OR TOLL SW. OFF. NO. 4 OR 4A	DELAY DIAL	NONE	T	BAT.	BAT.	GRD.	GRD.	BAT.	3
						R	GRD.	GRD.	BAT.	BAT.	GRD.	
		B47, D47	TOLL DSA OR TOLL SWBD.	DELAY DIAL	SX	T	BAT.	BAT.	GRD.	GRD.	BAT.	3
						R	GRD.	GRD.	BAT.	BAT.	GRD.	
NONE (STFD.)	REV. BAT.	B122, D122	MAN. OR MAN. TDM. SWBD.	NONE	NONE	T	GRD.	-	-	GRD.	BAT.	
						R	BAT.	-	-	BAT.	GRD.	
		F122, H122	TOLL DSA OR TOLL SWBD.	NONE	SX	T	GRD.	-	-	GRD.	BAT.	
						R	BAT.	-	-	BAT.	GRD.	
		B121	MAN. SWBD. (AUX. CONVERTS REV. BAT. SUPV. TO HIGH-LOW SUPV.)	NONE	NONE	T	HIGH RES. BRIDGE	-	-	HIGH RES. BRIDGE	LOW RES. BRIDGE	
						R	BAT.	-	-	BAT.	GRD.	

TABLE 2

OUTGOING TRUNK CIRCUITS											
KIND OF PULSING FROM CBR. NO. 5 OFF.	KIND OF SUPV.	LOCATION OF TYPICAL CKTS. ON KEY SHEET	TER. OFF.	START PULSING SIG. FROM TER. OFF. (SEE NOTE 2)	POLARITY OF OUTGOING LEADS TO TERMINATING OFFICE AT VERTICAL MAIN DISTG. FRAME						
					LEADS	NORMAL	CBR. NO. 5 SDR. AWTG. SIG. TO START PULSING	CBR. NO. 5 SDR. STARTS PULSING	AWAITING ANSWER ON (HOOK)	ANSWER OFF (HOOK)	SEE NOTE
RP	REV. BAT.	E17 B27,J29, H30	PANEL, CBR. NO. 1 OR CBR. NO. 5	NONE	T	BAT.	BAT.	BAT.	BAT.	GRD.	
					R	GRD.	GRD.	GRD.	GRD.	BAT.	
DP (SEE NOTE 5)	REV. BAT.	E17 B27,J29, H30	SXS OR SXS CALL IND.	NONE	T	GRD.	GRD.	GRD.	GRD.	BAT.	
					R	BAT.	BAT.	BAT.	BAT.	GRD.	
			CBR. TDM.	WINK	T	GRD.	BAT.	GRD.	GRD.	BAT.	
					R	BAT.	GRD.	BAT.	BAT.	GRD.	
PCI	REV. BAT.	E17 B27,J29, H30	PCI MAN. OR MAN. TDM. OFFICE OR PANEL SENDER TDM. OFFICE	NONE	T	BAT.	BAT.	DRY	BAT.	GRD.	
					R	GRD.	GRD.	DRY	GRD.	BAT.	
MF	REV. BAT.	E17 B27,J29, H30	CBR. NO. 1, CBR. NO. 5 OR CBR. TDM.	WINK	T	GRD.	BAT.	GRD.	GRD.	BAT.	
					R	BAT.	GRD.	BAT.	BAT.	GRD.	
NONE (STFD. OR AUTO.)	REV. BAT.	E17 B27,J29, H30	MANUAL	NONE	T	GRD.	—	—	GRD.	BAT.	
					R	BAT.	—	—	BAT.	GRD.	

NOTES:

1. "TOLL DSA" IS A TOLL SWITCHBOARD POSITION WHICH MAY HANDLE DSA TRAFFIC ONLY OR BOTH TOLL AND DSA TRAFFIC.
2. FOR "DELAY DIAL" OPERATION ON INCOMING CALLS THE NORMAL TRUNK POLARITY IS A STOP PULSING SIGNAL AND THE REGISTER REVERSES THE TRUNK POLARITY WHEN READY TO RECEIVE PULSING. FOR "WINK" OPERATION ON INCOMING CALLS THE NORMAL TRUNK POLARITY IS A START PULSING SIGNAL WHICH IS MOMENTARILY REVERSED THEN FOLLOWED BY THE NORMAL TRUNK POLARITY WHEN THE REGISTER IS READY TO RECEIVE PULSING. FOR "WINK" OPERATION ON OUTGOING CALLS THE NORMAL TRUNK POLARITY OF THE SENDER OR REGISTER IN THE TERMINATING OFFICE IS A START PULSING SIGNAL WHICH IS MOMENTARILY REVERSED THEN FOLLOWED BY THE NORMAL POLARITY WHEN READY TO RECEIVE PULSES FROM THE CROSSBAR NO. 5 OFFICE.
3. THE POLARITY OF THE TIP AND RING LEADS AS SHOWN IS THE PREFERRED POLARITY BUT MAY BE REVERSED WHEN IT IS REQUIRED BY THE CONNECTING CIRCUIT.
4. THE CROSSBAR NO. 5 INC. REGISTERS WILL RECEIVE 20 P.P.S. WITH INTERDIGITAL TIMING OF 0.28 SEC. MINIMUM OR 10 P.P.S. WITH INTERDIGITAL TIMING OF 0.4 SEC. MINIMUM.
5. THE CROSSBAR NO. 5 OUT DIAL PULSE SENDERS WILL TRANSMIT 20 P.P.S. WITH INTERDIGITAL TIMING OF 0.28 SEC. OR 10 P.P.S. WITH INTERDIGITAL TIMING OF 0.53 SEC.
6. A SEPARATE SINGLE TRUNK CONDUCTOR CONNECTION TO TRUNK CIRCUIT 3D-28083-01 (BLOCK B47) IS REQUIRED FOR DISPOSAL OF COINS.

General

The tables on pages 53 and 54 show the principal operating features of a Crossbar No. 5 office from the point of view of interoffice operation and is intended primarily to facilitate the selection of options in the connecting circuits in other offices.

For example, assume that a No. 3CL switchboard operator is to complete calls to coin subscriber lines in the crossbar office using DC key pulsing and that SD-56105-01 outgoing trunk circuit arranged for reverse battery supervision and simplex or no ringing start signal which functions with SD-95480-01 sender circuit arranged to receive DC key pulses and transmit dial pulses is selected for the circuit from the No. 3CL switchboard. Reference to the feature and option tables on these drawings shows that it is necessary to select certain options for the circuits to work with the crossbar office.

Table 1 shows the types of signals that the crossbar office receives and the options required in the connecting circuits at the originating office to function with the crossbar office.

Referring to table 1, it is shown that the incoming trunk circuit arranged for reverse battery supervision in block B47 (SD-26083-01) will function with the outgoing trunk circuit SD-56105-01. If SD-26083-01 is used, this trunk:

1. Transmits "delay dial" start pulsing signal to the toll office.
2. Requires simplex ringing start signal.
3. Requires coin control over separate single trunk conductor.
4. Will receive 10 or 20 dial pulses per second.
5. Controls originating end by trunk polarity as follows:
 - a. Battery on tip, ground on ring - trunk is normal.
 - b. Battery on tip, ground on ring - incoming register seized.
 - c. Ground on tip, battery on ring - incoming register ready to receive pulses.
 - d. Ground on tip, battery on ring - awaiting answer (on-hook).
 - e. Battery on tip, ground on ring - called party answers (off-hook).

The following options will then be required on the circuits in the toll office.

1. Option "Q" of the sender circuit if 20 P.P.S. is used or no option if 10 P.P.S. is used as shown in the feature or option table.
2. Figure A and options AB and A (class A or B) or B (class C or D) of the sender circuit to delay outpulsing until the incoming register in the crossbar office is ready to receive the pulses as shown in the feature or option table.
3. Figures 7 and 8 of the outgoing trunk circuit for simplex ringing start signal as shown in the feature or option table.
4. Figure 4 and option H of the outgoing trunk circuit if pad control is required since simplex ringing start signal is used as shown in the feature or option table.
5. Figure 5 and option E of the outgoing trunk circuit for coin control with pad control or figures 5 and 6 and option E for coin control without pad control as shown in the feature or option table.
6. No other options are necessary on the outgoing trunk circuit to satisfy the trunk polarity of the incoming trunk circuit in the crossbar office as shown in the feature or option table.

Table 2 shows the types of outgoing trunk circuits which may be used to complete calls to other offices.

For example, assume that the crossbar office is to complete calls to a step-by-step office via the outgoing trunk circuit in block E17 (SD-26085-01).

Referring to table 2, it is shown that this outgoing trunk circuit:

1. Is arranged for dial pulsing required by the step-by-step office.
2. Requires no start pulsing signal.
3. Functions under control of trunk polarity as follows:
 - a. Ground on tip, battery on ring - trunk is normal.
 - b. Ground on tip, battery on ring - crossbar sender starts pulsing.

- c. Ground on tip, battery on ring - awaiting answer (on-hook).
- d. Battery on tip, ground on ring - called party answers (off-hook).

Assume that SD-30200-01 incoming selector circuit and SD-30201-01 local

connector circuit are selected for the local train at the step-by-step office. Reference to the feature or option tables on these drawings shows that no options are required to provide the features required by the outgoing trunk circuit in the crossbar office.

ADAPTER			BUSY		
Line, Multi-Party, for Use with Grounded Lines or Low Insulation Metallic Lines, Pulse Correcting & Relayed Ringing	SD-31848-01	E168	All Markers or All Transverters Group, for Org. & Inc. Registers	SD-25695-01	G67
ADJUSTING			CABINET		
MF Pulsing Receiver	SD-95664-01	A75	Traffic Register	SD-95531-01	H68
ALARM			CALL		
Sdr. Grp. Busy	SD-25500-01	H79	CAMA Supervisor	SD-25971-01	A190
Office	SD-25671-01	C78	CAPACITOR		
Msg. Reg. Pwr. Supply	SD-25770-01	E78	Building Out	SD-25546-01	A150
No Voltage			CLOCK		
Perm. Sig., Arr. to Operate on Spec. No. of Perm. Signals	SD-26135-01	A77	Misc. Use	SD-96201-01	G72
Emg., Arr. for Code Signaling with Auto. Fire Detection	SD-90437-01	G78	10 I.P.M. Impulse	SD-96343-01	F72
Extension	SD-95484-01	B77	CONCENTRATING		
CAMA, for Use with Suspension Ckt.	SD-95872-01	D191	Coin Supervisory For Perm. Sig. Holding Trks.	SD-25721-01	G7
Emg., Not Arr. for Code Signaling with Provision for Auto. Fire Detection for Use in Multi-Zone Off.	SD-96049-01	F78		SD-25766-01	E67
Emg., Not Arr. for Code Signaling with Provision for Auto. Fire Detection for Use in Single Zone Off.	SD-96052-01	G79	CONNECTOR		
Cable Insulation	SD-96348-01	H77	Pretranslator	SD-25569-01	J8
Aux., for Cbr. No. 5 Off. with Swbds. or Desks Requiring Common Alarms	SD-96446-01	D79	Inc. Reg. Marker	SD-25586-01	J3
ALARM RECEIVING			Inter-Marker-Group	SD-25586-01	C12
	SD-95418-01	B79	Sender Marker		
ALARM SENDING			Out. Sender	SD-25587-01	D13
	SD-95417-01	A78	Transverter	SD-25592-01	D93
AMPLIFIER			Recorder	SD-25872-01	B93
Electron Tube	SD-95026-01	C115	No Test	SD-25702-01	A3
For Auto. Trans. Testing	SD-96449-01	C173	Master Test Frame	SD-25805-01	C103
AMPLIFIER-RECTIFIER			Foreign Area	SD-25864-01	F7
For Auto. Trans. Testing	SD-96450-01	C174	Translator		
BATTERY SUPPLY			CAMA Transverter	SD-26011-01	E193
Amplifier	SD-90608-01	D115	Register, for Serv. Obs.	SD-26015-01	E182
BELL			Line Link Mkr.	SD-26022-01	E3
Chief Swmn's. Call	SD-96447-01	A85	Org. Reg. Mkr., Mkr. Part	SD-26023-01	E5
			Org. Reg. Mkr., Reg. Part	SD-26024-01	D5
			Inc. Reg. Mkr., Mkr. Part	SD-26025-01	K2
			Inc. Reg. Mkr., Reg. Part	SD-26026-01	J2
			Tbl. Rcdr., for Inc. Registers	SD-26029-01	H2
			Line Link	SD-26031-01	C3
			Trunk Link	SD-26033-01	C4
			Number Group	SD-26035-01	G2
			Pretranslator, Org. Reg. Part	SD-26038-01	J7
			Out. Sender, Sender Part for MF, DP, RP or PCI Senders	SD-26057-01	C14
			Out. Sender, Mkr. Part	SD-26059-01	C13
			Line Insulation Test Teletypewriter	SD-95558-01	D158

CONTROL			HOWLER	SD-95773-01	D74
Trouble Recorder	SD-25572-01	C102	INDEXER		
Line Insulation Test	SD-25796-01	C157	Call Identity	SD-25621-01	B92
Master Test	SD-25800-01	D103	CAMA, Billing	SD-26012-01	C194
Observing Entry, for Use in AMA Offices	SD-25912-01	G94	INDICATING		
Master Traffic, for Mkr. Connectors	SD-26020-01	E2	Dial Tone Speed	SD-96419-01	H75
Preference, Frame Traffic & Conn., for Org. Reg. Mkr. Conn.	SD-26029-01	D3	INTERRUPTER		
Preference, Frame Traffic & Conn., for Inc. Registers	SD-26029-01	H2	60 & 120 I.P.M.	SD-25814-01	C68
Preference & Frame Traffic, for Line Link Mkr. Conn.	SD-26029-01	D2	4 I.P.M.	SD-26063-01	I149
Marker Connector	SD-26030-01	B2	30 I.P.M.	SD-26159-01	I62
Preference, for Line Link, Trk. Link, No. Group & Out. Sdr. Conn. Ckts.	SD-26039-01	C2	JACK		
Traffic Reg. Camera CAMA, for Use with Suspension Ckt.	SD-95797-01	J70	Patching	SD-96068-01	C97
Line Load	SD-95872-01	D191	M.D.F. Test, for Private Lines	SD-96261-01	E72
	SD-96387-01	E147	Test & M.B. for Out. Trks.	SD-96376-01	G128
CONVERTER			JACK & LAMP		
Pulse, for Converting Dial Pulses to MF Pulses for Use with Intertoll Type Serv. Obs. Ckts.	SD-95590-01	F114	Ckt. Patching Bay	SD-68327-01	G172, I173
CUT-OFF			JACK, LAMP AND KEY	SD-25762-01	H107
Trans. Test Trk. Auto. Tone	SD-25903-01	J97	JUNCTOR		
DELAY			Operator, from Toll Swbd. No. 1, 3C or 3CL in Same Bldg., MFP, for Completing Calls to Dst. Offices Only	SD-26076-01	K52
Link Reseizure Vacant Code	SD-26072-01	A72	For Dial Coin Zone Serv.	SD-26078-01	F203
	SD-26097-01	F147	AMA, Rev. Bat. Supv. Msg. Reg. Operation, with or without Timing, Rev. Bat. Supv.	SD-26085-01	G152
DISTRIBUTING			Coin, with or without Timing, Rev. Bat. Supv.	SD-26086-01	H152
30, 60 or 120 IPM Int.	SD-95078-01	C77	Aux., for Sub. Access to Trks. with SX Supv. Inc.	SD-26087-01	E152
DISTRIBUTION			Aux., to Provide Added Types of Charging for Calls to Out. Trks. with Tdm. Compl.	SD-26088-01	G153
Power, Ring. and Tone	SD-25599-01	I147	CAMA, Rev. Bat. or SX Supv.	SD-26089-01	H153
FILTER			Using Inter-Mkr.-Grp. Sdr., for Coin Lines, with or without Timing, Rev. Bat. Supv.	SD-26102-01	G198
For Talk or Filament Bat. Supply	SD-95571-01	B66	Operator, For Intertoll Completion	SD-26147-01	J152
FLASHING			From Swbd. No. 3C or 3CL in Same Bldg., MF Puls. For Completing Calls to Dist. Offices Only	SD-26153-01	K42
GENERATOR					
Pulse, & Counting for Use with Incpt. Trks. Using E&M Leads Supv.	SD-26115-01	D147			

KEYSET			Aux., With Automatic Cut-Off For Ind. Lines with Main & Extension Stations On Separate Loops	SD-96468-01	A119
CAMA Pos. & MF	SD-95775-01	C188	Eng., for Completion of Calls to Police, Fire & Ambulance Lines	SD-96469-01	K117
LEADS			LINE VERIFICATION	SD-26181-01	B94
Ringling, for Supplying Ring Current to PBX's and Sta. Equipments	SD-95667-01	F70	LINK		
LINE (Also see "Tie Line")			Out Sender Line	SD-25734-01	F13
Out. Auxiliary, for Public Emergency Reporting Service	SD-25649-01	E117	Trunk	SD-26030-01	B2
Aux., for 10 Pty. Lines Equipped with Tube Sets	SD-25688-01	A2	CAMA Position Inc. Reg., with By-Link Operation	SD-26032-01	B4
Aux., for Use Where Serv. is Furnished to a Common Line from More Than One Off. in Same Bldg.	SD-25697-01	J119	Coin Supervisory	SD-26047-01	C187
Aux. for Terminating Service Only	SD-25699-01	C117		SD-26048-01	H4
Emergency Plugging Up, With Auto. Cut Through Inc. Trk. Test	SD-25701-01	E117	LONG LINE		
Aux. Coin, for Use with Coin Sub. Lines Equipped with 191 Type or Equivalent Coin Collector	SD-25741-01	I72	Dial, for other Long Lines Ckts. Shown only on Range Chart Dwg.	SD-96323-01	C68
Dial	SD-25771-01	G97	MAKE BUSY		
Dial Long, for 2 Pty. Message Rate Lines	SD-25907-01	A1	For Use with Trks. to Xbr. Off. No. 1 which is Used as a Tandem Office	SD-25651-01	D29
Dial Long, Coin Local Station	SD-26030-01	B2	Trunk	SD-25668-01	A69
Dial Long, Repeated Ring. for Use with 4 Party Selective or 8 Part Semi-Selective Lines	SD-26129-01	E168	For Line Link, Trk. Link, No. Group & Out. Sdr. Conn. Ckts.	SD-26039-01	C2
Recorders Talking 104 It. Trk. Trans. Test	SD-26130-01	B168	For Use with Trks. to CAMA Office	SD-26116-01	C29
Business Office, Arr. for Inc. Serv. from Dst. Swbd. 2 Way Serv. to Dial Sub. Line Ckt.	SD-95409-01	G84, G109, E127, G168	MARKER		
Transmission Test, One Way	SD-95435-01	G168	Dial Tone Completing	SD-26001-01	B7
Test, For Use with Call Through Test Set	SD-95532-01	H69		SD-26002-01	B9
P.B.X. Single Line Obs., for Obs. Inc. Calls on P.B.X. Trks. Private	SD-95702-01	B172	MATCHING		
Order Clerks or Chief Opr.'s, with Visual Sig.	SD-95721-01	C168	CAMA Line Observing Number	SD-26014-01	D194
Local Frame	SD-96000-01	E97	MEASURING		
	SD-96064-01	G99	It. Trk. Trans., & Noise Checking	SD-95698-01	B173
	SD-96111-01	D113	MISC. FOR ALL FRAMES	SD-25574-01	B147
	SD-96147-01	E73	MONITORING		
	SD-96262-01	D168	CAMA Key Dial Pulse, for Use with Serv. Obs. Ckts.	SD-96314-01	C189
	SD-96379-01	J68		SD-95876-01	C114
			NUMBER GROUP	SD-26034-01	F2

OBSERVING

Obs. Line Org. Serv.	SD-25860-01	B113
Obs.		
Serv., Multi-Line,	SD-26206-01	A184
for Obs. On AMA Trk.		
& Junctor Ckts., for		
Use with Serv. Obs.		
Desk No. 7 or 12		
Serv., Multi-Line,	SD-26207-01	B184
for Obs. on CAMA		
Inc. Trks. & 4 Party		
Junctors or Inter-		
marker Trks., for		
Use with Serv. Obs.		
Desk No. 7 or 12		
Serv., Multi-Line	SD-90266-01	H113
for Obs. Out. Trk.		
Ckts.		
Serv. Obs. for Use	SD-90580-01	A113
with Serv. Obs.		
Desk. No. 10		
Serv. Obs. for	SD-90647-01	B114
Local Org. Service		
PEX Multi-Line Obs.	SD-95510-01	E114
Multi-Line		
Multi-Line Serv., for	SD-95604-01	G113
Observing on Inc.		
Intertoll Trks. or		
Inc. End of 2 Way		
Intertoll Trks.		
for Use with Serv.		
Obs. Desk No. 7 or 12		
PEX Multi-Line Obs.	SD-96162-01	E113
Line		

PAD

Impedance Compensator	SD-95756-01	H148
& Fixed Pad		

PRETRANSLATOR

SD-25568-01	J9
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PULSING

MF, for Serv. Obs.	SD-26018-01	A182
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RECEIVER

Electron Tube, Arr.	SD-26118-01	H147
to Rec. 2 Fre-		
quencies for Coin		
Control & Rering		

RECEIVING

Multi-Frequency	SD-95536-01	B74
Pulsing		

RECORDER

Trouble	SD-25572-01	C102
Auto. Mess. Account-	SD-25872-01	B93
ing		
Traffic Usage	SD-95738-01	G149
Ans. Time, Concen-	SD-96235-01	K67
trating, Timing		
Control & Testing		
Traffic Usage,	SD-96494-01	D148
Portable No. 1		

REGISTER

RP Inc., for Tandem	SD-25565-01	I4
Operation		
Sub. Message, for Ind.	SD-25770-01	F73
or 2 Pty Lines		
Plant	SD-25793-01	H102
"B" Swbd. RP, Ter.	SD-25794-01	E124
Off. Part, for Use		
with Central "B"		
Swbd.		
Traffic	SD-25892-01	G68
For Serv. Obs.	SD-26018-01	A182
Dial Puls., Originat-	SD-26040-01	E4
ing		
Dial Pulsing Inc.	SD-26041-01	I1
Multi-Frequency Inc.	SD-26042-01	I2
Revertive Pulsing Inc.	SD-26043-01	I3
Dial Tone Speed	SD-96403-01	G75
Call Count Process	SD-99001-01	D92
Control		

RELEASE

Coin Supervisory	SD-25859-01	H9
Out. Sdr. Grp.	SD-26055-01	H15

RESERVATION

Directional, for Use	SD-26154-01	I135
with 2 Way Inter-		
toll Trk. Ckts.		

RINGBACK

For use with Spl.	SD-25933-01	C67
Serv. Trks. which		
Terminate in Cent.		
"A" Swbd.		
Emergency	SD-95083-01	F68

RINGING

Test Trk.	SD-96474-01	F87
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SELECTION

Serv. Obs. Trk., &	SD-26205-01	I113
Control, for Use		
With Serv. Obs.		
Desk No. 7 or 12		

SELECTING

Position, for Monitor-	SD-27013-01	D189
ing on CAMA Positions		

SELECTOR

Test Trk.	SD-25767-01	J99
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SENDER

Inter-Marker Group	SD-25826-01	D12
DP Out.	SD-26050-01	E13
MF Pulsing Out.	SD-26051-01	E12
RP Out.	SD-26052-01	E11
PCI Out.	SD-26053-01	E14
CAMA	SD-26056-01	F193

SET			Swmn. & Chief Swmn's Desk	SD-95404-01	B83, J83
Wave Shaping	SD-70082-01	E159	Man. OGT Test Fr.	SD-95524-01	A126
SIGNAL			TEST		
No-Such-Number Tone, Oscillating Tone	SD-25791-01	A67	For Revertive Impulse Interrupter Used with RP Inc. Reg. Ckt.	SD-25289-01	I99
No-Such-Number Tone, Interrupted Low Tone	SD-25831-01	A67	Tbl. Recorder	SD-25572-01	C102
CAMA Calls Waiting	SD-26046-01	B188	Sender	SD-25675-01	F157
Opr. Room Calling	SD-96087-01	G74	Auto. Monitor, Reg. & Sdr.	SD-25680-01	H103
Chief Switchman's Desk Aux.	SD-96410-01	C83	Voltmeter	SD-25792-01	C107
Master Test Fr. Aux.	SD-96410-01	B109	Master Test Fr., for Testing Out. Trks. for Continuity and Reversals	SD-25908-01	B107
Man. OGT Test Fr. Aux.	SD-96410-01	A127			
STORAGE			Master Test Fr., Trunk	SD-25918-01	E103
Call Count Process Control	SD-99001-01	D92	Auto. Progression Trk.	SD-25938-01	J157
SUPERVISORY			Inc. Reg. & CAMA Sender	SD-25988-01	G157
Coin, for Use with Trks. Arr. for Overtime Collection	SD-25736-01	G8	Station Ringer	SD-26109-01	H97
			Bat. & Grd. Test Terminals	SD-90122-01	E100
			2A Sending Panel Trans.	SD-95000-01	E98
SUPPLY			Sending Pad Trans.	SD-95017-01	E99
Message Reg. Pwr.	SD-25770-01	E78	Man. OGT Test Fr.	SD-95476-01	G127
M.D.F. Bat. & Grd.	SD-90048-01	J73	Man. OGT		
P.B.X. Battery	SD-90232-01	G70	Line Insulation	SD-95537-01	B157
M.F. Current & Distribution	SD-95391-01	C74	Serv. Obs., for Testing It. Serv. Obs. Ckt., for Use with Serv. Obs. Desk	SD-95712-01	A96
Filament, with Emg. Transfer for MF Signaling Receiving Ckts.	SD-95676-01	E75	No. 7 or 12		
			Test Bat., for Use Where L.T.D. Bat. Is Not Available	SD-96120-01	A98
SUSPENSION			209FF, 209FK, 209FC and 209FM Relay	SD-96121-01	G100
CAMA, for Use When All Positions are Vacated in an Emergency	SD-26017-01	E192	Tone, for Use with Call Through Test Set	SD-96238-01	D97
			Man. OGT Test Fr. Test, for Testing Out. Trks. for Continuity & Reversals	SD-96370-01	H127
SWITCH			TEST SET		
Ringing Selection, 6 Wire	SD-26080-01	A5	Sender	SD-25674-01	F158
SWITCHING			Reg. & CAMA Sender	SD-25676-01	G158
Ans. Time Recorder	SD-96360-01	K68	For Timing Test	SD-25707-01	B99
TELEPHONE			206 Type Selector	SD-90013-01	F98
Ckt. Patching Bay	SD-68330-01	G171	Jack, for Testing 49, 92, 141 & 218 Type	SD-95056-01	F100
M.D.F. Loudspeaker for Use with L.T.D. No. 14 or Cable Test Desk No. 3	SD-96471-01	J89	For Testing 275, 276, 291 and 292 Type Relays	SD-95439-01	H100
TELEPHONE, KEY & LAMP			Patching Cord	SD-95665-01	F99
Master Test Fr.	SD-25744-01	B106	3A Pulse Generating, Electronic Type	SD-95686-01	F159
			3A Digit Control	SD-95794-01	F160
			Call Through	SD-96063-01	C98
			Pulse Checking	SD-96362-01	G98
			Cold Cathode Tube	SD-96464-01	F97

TIE LINE			Flat Rate & AMA, Sub. to Sub.	SD-26141-01	B62
3 Wire Auto.	SD-95406-01	F84, J84, F109, C127	For Coin Lines, with or without Timing, Sub. to Sub.	SD-26142-01	C62
TIMING			Rev. Bat. or SX Supv., Trk. to Sub.	SD-26143-01	G62
AMA Master	SD-25633-01	C92	Flat Rate, with or without AMA, Rev.	SD-26145-01	E62
For Perm.Sig. Holding	SD-25870-01	C72	Bat. or SX Supv.		
Trks. & Announcement			Out., Sub. to Trk.		
Trks. & Coin Supv.			For Coin Lines, with or without Timing,	SD-26147-01	I62
Release			Rev. Bat. Supv., Sub. to Trk.		
TONE			<u>Incoming</u>		
Overflow, & Wink- Off for Use with CAMA By-Link Trk. Ckts.	SD-26103-01	B200	Aux., Stfd., Arr. to Convert Rev.	SD-25025-01	B121
TRANSFER			Bat. Supv. to High- Low Supv.		
Line or Trk., for Restoring Service on an Emg. Basis	SD-95690-01	J74	Toll Sw., from Swbd.	SD-25666-01	B52
	SD-95711-01	A168	No. 3C or 3CL in Same Bldg., MFP Inc., DP or RP Out., Rev.		
TRANSFER & AUX. SIG.	SD-95407-01	K83	Bat. or Wet Dry Supv., Controlled		
TRANSFER & LAMP RELAY	SD-95594-01	I109	Ring., With or With- out Coin Control over Separate Single Trk. Conductor		
TRANSLATOR			DP, from Loc. Test	SD-25708-01	H37
Foreign Area	SD-25863-01	F8	Desk No. 14, or		
AMA	SD-26019-01	D94	Loc. Tst. Cabinet		
TRANSVERTER			No. 3, with or without No. Test		
AMA	SD-25591-01	C93	MF, from Loc. Test	SD-25708-02	F37
CAMA	SD-26010-01	D193	Desk No. 14, or		
TRUNK			Loc. Tst. Cab.No.		
<u>Intra-Office</u>			3 With or Without No Test		
Flat Rate	SD-26060-01	B177	Stfd., from Loc.	SD-25708-03	G122
Flat Rate & AMA	SD-26061-01	C177	Test Desk No. 14, or Loc. Test Cab.		
Msg. Reg. Operation	SD-26062-01	B22	No. 3 With or Without No Test		
For Coin Lines, with or without Timing	SD-26064-01	D177	Toll Sw., from	SD-25711-01	G52
<u>Inter-Marker-Group</u>			Swbd. No. 3C or 3CL in Same Bldg., MF Plsg. Inc., DP or RP Plsg. Out., Rev. Bat. Supv., No Ring. Start Signal With or Without Pad Con- trol		
Flat Rate & Msg.	SD-25836-01	K62	DP, for Testing	SD-25834-01	B39
Reg. Operation, with or without Timing,			Sub. Msg. Registers		
Rev. Bat. Supv., Sub. to Trk.			MF, for Testing	SD-25835-01	B39
Flat Rate & Msg.	SD-25839-02	F62	Sub. Msg. Registers		
Reg. Operation, Sub. to Sub.			Intertoll, DP or	SD-25844-01	F57
CAMA, Rev. Bat. or SX Supv. Out., Sub. to Trk.	SD-26105-01	I198	MFP, Inc. CX or SX Supv., Out. SX Supv. or TYPE "A" TB Supply		
CAMA, Sub. to Sub.	SD-26107-01	J198	Announcement, for	SD-25940-01	C153
Flat Rate, Sub. to Sub.	SD-26140-01	A62	Use with Ann. Sys. No. 4A		

TRUNK (Cont'd)

Incoming (Cont'd)

Toll Sw., from Toll Swbd. No. 1 in Same Bldg., MF Pulsing Inc., DP or RP Pulsing Out., Rev. Bat. or Wet Dry Supv., Controlled Ring. Start Sig., Coin and Noncoin	SD-25945-01	I52
Toll Sw., from Toll Swbd. No. 1 in Same Bldg., MFKP-In, DP or RP-Out, Rev. Bat. Supv., Auto. Start of Ringing	SD-25946-01	D52
Announcement, for Use with Ann. Sys. No. 1 or 1B	SD-25952-01	B153
Aux. Inc. Intertoll, CX or SX Supv.	SD-25954-01	F59
Rev. Bat. Supv.	SD-26070-01	B37, B122
Tdm., with or without Local Completion, Rev. Bat. Supv.	SD-26071-01	A37, D122
No Test, SX Ring. Start Signal, Rev. Bat. or E&M Leads Supv.	SD-26073-01	G37, F122
RP, DP or MF Pulsing, Rev. Bat. Supv. or E&M Leads Supv., Controlled Ringing	SD-26074-01	D47, H122
Toll Sw., from Toll Swbd. No. 1, 3C or 3CL in Same Bldg., MFP, No Ringing Start Signal	SD-26075-01	B42
Rep. Dial. Using By-Link, Rev. Bat. Supv., with or without Tdm. Compl.	SD-26077-01	G47
Toll Sw., from Swbd. No. 3C or 3CL in Same Bldg., MF Pulsing, Controlled Ring. Start Sig., Coin and Noncoin	SD-26081-01	G42
Toll Sw., from Toll Swbd. No. 1 in Same Bldg., MF Pulsing, Controlled Ring. Start Sig., Coin and Noncoin	SD-26082-01	E52
RP, DP, MFP or Stfd., Rev. Bat. or E&M Leads Supv., SX or Single Freq. Ring. Start Signal, Coin Control over Separate Single Trk. Conductor or Single or 2 Frequencies	SD-26083-01	B47, I122

CAMA Tdm., with or without Local Completion, Rev. Bat. Supv. Inc., Rev. Bat. or SX Supv. Out.	SD-26100-01	A198
CAMA Tdm., with or without Local Completion, Arr. to Repeat Dial Pulses Using By-Link, Rev. Bat. or E&M Leads Supv. Inc., Rev. Bat. or SX Supv. Out.	SD-26101-01	C198
CAMA Intertoll, with Local Completion, Arr. to Repeat Dial Pulses Using By-Link, E&M Leads Supv. Inc., SX Supv. Out.	SD-26104-01	E198
Incpt. From Trk. Link Fr. and/or Line Link Fr., for use with Ann. Machine, Ann. Sys. No. 7A	SD-26121-01	E48
Intertoll, DP or MF Puls., Inc. Rev. Bat. Supv., Out. SX Supv. with or without Local Completion	SD-26152-01	G59
Aux., DP or MF Pulsing, for Converting Rev. Bat. Supv. to E&M Leads Supv.	SD-27008-01	G39
Mtce. Desk Auto., Code 958, High Low Supv.	SD-95615-01	H84, D109, F127

Outgoing

For Intertoll Completion to Dst. Toll Swbd. for TX & Similar Services or to Dst. Toll Test Board, Inc. SX Supv., Out. Rev. Bat. Supv.	SD-25519-01	I22
Flat Rate, Coin & Msg. Reg. Operation, with or without Tdm. Compl., Rev. Bat. Supv.	SD-25578-02	H142
Announcement, Flat Rate, Coin and With or Without Msg. Reg. Opr. and With or Without Tdm. Compl.	SD-25689-01	C152

TRUNK (Cont'd)

Outgoing (Cont'd)

Announcement, Flat Rate, Coin and AMA With or Without Tdm. Compl.	SD-25690-01	B152
Official P.B.X. or Verification Request For Information Serv. from Line Link Fr., High-Low Supv.	SD-25696-01	I117
Flat Rate, Coin & AMA, With or Without Tdm. Compl., Rev. Bat. Supv.	SD-25698-01	D119
Flat Rate, AMA & Msg. Operation With or Without Timing, Rev. Bat. Supv., With or Without Tdm. Completing	SD-25739-02	F142
Intertoll, DP from Sdr., Inc. SX Supv., Out. CX or SX Supv., With Access From Swbd. No. 3C or 3CL in Same Bldg. Arr. for MF Plsg.	SD-25823-02	H30
Intertoll, MFP & SX Supv. Inc., CX or SX Supv. Out., With OGT Jack Appearance at MF Swbd. No. 3C or 3CL in Same Bldg.	SD-25846-02	I57
Aux., for Intertoll Compl. for Use with Toll Swbd. No. 1, 3, 3C or 3CL 2 Way Opr. Off. Trk., Inc. SX Supv., Out. Rev. Bat. Supv.	SD-25847-01	K57
Toll Sw., RP, DP, MFP, or PCI, Inc. SX Supv., Out. Rev. Bat. Supv.	SD-25848-01	G17
Intertoll Compl. to Swbd. No. 3C or 3CL, Test & Cont. Bd. No. 8, or Toll Test Bd. No. 17B or 18B in Same Bldg., Inc. SX Supv.	SD-25849-01	J17
Aux., for Intertoll Compl. for Use With Swbd. No. 3C or 3CL Rd. Intertoll Trk., Inc. SX Supv., Out. RD. Supv.	SD-25850-01	D22
Aux., for Intertoll Compl. for Use with Toll Swbd. No. 1 Rd. Intertoll Trk., Inc. SX Supv., Out. RD. Supv.	SD-25851-01	K17
	SD-25852-01	I19

Intertoll Compl. to Toll Swbd. No. 1 or Toll Test Bd. No. 5 in Same Bldg., Inc. SX Supv.	SD-25858-01	E22
Aux., for Intertoll Compl. for Use With Toll Swbd. No. 1, 3, 3C or 3CL 2 Way Opr. Off. Trk., Inc. SX Supv., Out., CX or SX Supv.	SD-25867-01	F17
Free, to Toll DSA Swbd., High-Low Rev. Bat. Supv., Arr. for Tdm. Completing & Coin Return after Disconnection	SD-25889-01	I17
Intertoll, MFKP - In, DP - Out, CX or Equiv. Type Supv., from Swbd. No. 3C or 3CL in Same Bldg.	SD-25895-01	J133
For Inf. Service, Inc. SX Supv., Out. High-Low Supv.	SD-25902-01	G22
Combination Out. & Toll Sw., Flat Rate, RP, DP, MF or PCI Pulsing, Inc. SX Supv., Out. Rev. Bat. Supv., with Tdm. Compl.	SD-25913-01	C17
Combination Out. & Toll Sw., AMA, RP, DP, MF or PCI Pulsing, Inc. SX Supv., Out. Rev. Bat. Supv., with Tdm. Compl.	SD-25913-02	D17
Rec. Completing, High-Low Supv., Arr. for Coin Control Over Separate Single Trk. Conductor	SD-25923-01	E32
Rec. Completing, High-Low Supv., Arr. for Coin Control Over Separate Single Trk. Conductor & for Class of Service Tone	SD-25923-02	G32
Rec. Compl., High-Low Supv., Arr. for Coin Control Over Separate Single Trk. Conductor and Auto. Return of Initial Coin, or Vacant Code Incpt., with Auto. Return of Initial Coin	SD-25923-03	E31
Rec. Compl., High-Low Supv., Coin Control over Separate Conductor, Arr. for Class of	SD-25923-04	G31

Serv. Tone and Auto. Return of Initial Coin			Rec. Compl. or Vacant Code Incpt., to Toll Swbd. No. 1, 3C or 3CL in Same Bldg., Coin	SD-26093-01	B142
Inf. from Trk. Link Frame Arr. for Tdm. Completion & Coin Return after Disconnection	SD-25925-01	K22	From Line Link Fr. for Repair, Of- ficial PEX or Verification Re- quest Serv., E&M Leads Supv.	SD-26094-01	C118
Free, Ringdown Supv., Arr. for Tdm. Com- pleting & Coin Return after Dis- connection	SD-25928-01	H17	From Trk. Link Fr. & Line Link Fr. to Repair Serv. Desk No. 2, High- Low Supv.	SD-26095-01	F22
Aux., to Precede a Trk. Ckt. Not Arr. for Coin Return, to provide Coin Return from Coin Supv. Ckt. when Sub. Disconnects, for Use with 191 Type or Equivalent Coin Collector	SD-25936-01	K19	From Trk. Link Fr. for Info., Re- pair, Official PEX or Vacant Code Incpt. Serv., E&M Leads Supv.	SD-26096-01	F27
Intertoll, MFKP - In, DP - Out, CX or Equiv. Type Supv. from Toll Swbd. No. 1 in Same Bldg.	SD-25944-01	J133	Rec. Compl., Spl. Serv. or Vacant Code Incpt., E&M Leads Supv., with or without Class of Service Tone, Noncoin	SD-26098-01	D142
Aux., to Precede Coin Spl. Serv. or Rec. Compl. Trk., to Apply Coin Return Potential when Opr. Ans. or when Sub. Disconnects before Opr. Ans., for Use with 191 or Equiva- lent Coin Collector	SD-25953-01	K34	Rec. Compl. Spl. Serv. or Vacant Code Incpt., E&M Leads Supv., Coin with or without Noncoin	SD-26099-01	K32
For Dial Coin Zone Serv.	SD-26078-01	B203	Intercepting, from Trk. Link Fr. to Operator or Ann. System No. 6A, Rev. High-Low Supv.	SD-26108-01	J142
Flat Rate, with or without AMA, with or without Tdm. Compl., Rev. Bat. Supv.	SD-26085-01	E17	Aux., DP, for Converting Rev. Bat. Supv. to E&M Leads Supv.	SD-26110-01	C162
Flat Rate & Msg. Reg. Operation, with or without Timing, with or without Tdm. Compl., Rev. Bat. Supv.	SD-26086-01	J29	Aux., for Direct Sub. Access to Trks. with SX Supv. Inc., Flat Rate & AMA with Tdm. Compl.	SD-26111-01	D162
Coin, with or with- out Timing, Rev. Bat. Supv.	SD-26087-01	B27	For Use with Coin Zone Trk. or Junctur Ckt.	SD-26117-01	G204
Rec. Compl., Spl. Serv. or Vacant Code Incpt., High- Low Supv., Noncoin	SD-26090-01	I32	Intercepting, Rev. High-Low or E&M Leads Supv.	SD-26122-01	F117
Rec. Compl., Spl. Serv. or Vacant Code Incpt., High- Low Supv., Coin Control over Tip and Ring	SD-26091-01	C32	Aux., MFP, for Converting Rev. Bat. Supv. to E&M Leads Supv.	SD-27009-01	B162
Rec. Compl. or Vacant Code Incpt., to Toll Swbd. No. 1, 3C or 3CL in Same Bldg., Noncoin	SD-26092-01	B32			
			<u>Overflow</u>		
			Common	SD-26131-01	C178
			<u>Permanent Signal</u> <u>Holding</u>	SD-26134-01	K178

TRUNK (Cont'd)

Reverting Call

2 Pty., 4 Pty. SD-25703-01 F177
Semi-Sel. or 10
Pty. 5 Code
4 Pty. Sel. & 8 SD-25704-01 H177
Pty. Semi-Sel.

Stuck Coin

SD-25763-01 I177

Tone

No-Such-Number SD-25824-01 H117
Signal
Noncoin SD-26132-01 B178
Coin SD-26133-01 A178

2 Way

Aux., Arr. to Com- SD-25503-01 F162
bine an Out.Trk.
& a By-Link Inc.
Trk. as a 2 Way
Trk., Rev. Bat.
Supv.
Aux., Arr. to SD-25504-01 H162
Interconnect an
Out. Trk. & a
By-Link Inc.
Trk. with a 2
Way Trk., E&M
Leads Supv.
Out. Service; MFP SD-25655-01 B57
From Pos., DP
from Sdr., Inc.
SX Supv. With
Appearance on
Trk. Link Frame
for Dial Opera-
tion-Inc. Serv.;
Inc. to Toll
Swbd. No. 1 in
Same Bldg., CX
or SX Supv.
Out. Serv.; DP SD-25667-01 E138
from Sdr., Inc.
SX Supv., Out.
CX or SX Supv.,
MFP from Swbd.
No. 3C or 3CL in
Same Bldg. -
Inc. Serv.; Inc.
to Swbd. No.
3C or 3CL in
Same Bldg. CX
or SX Supv.
Intertoll, Out. SD-25673-01 C133
Serv.; DP from
Sender, Inc.
SX Supv., Out.
Rev. Bat. Supv.,
With Access from
Toll Swbd. No. 1
in Same Bldg. Arr.
for MF Pulsing -
Inc. Serv.; Inc.
to Toll Swbd.
No. 1 in Same Bldg.,
Rev. Bat. Supv.

Out. Serv.; DP from SD-25816-01 C138
Sender, SX Supv.
Inc., Rev. Bat. Supv.
Out.; MFP from Swbd.
No. 3C or 3CL in
Same Bldg. - Inc.
Serv.; Inc. to Swbd.
No. 3C or 3CL in
Same Bldg. Rev. Bat.
Supv.
Intertoll, Inc. Serv. SD-25842-02 G57
DP or MFP & CX or
SX Supv. Inc., SX
Supv. or Type "A"
TB Supply Out. -
Outgoing Service;
DP & CX or SX
Supv. Out., SX
Supv. Inc., With
Access from Swbd.
No. 3C or 3CL in
Same Bldg. Arr.
for MF Pulsing
Intertoll, Inc. SD-25843-01 D57
Serv.; MFP & CX
Supv. Inc., SX
Supv. or Type "A"
TB Supply Out -
Outgoing Service;
MFP & CX or SX
Supv. Out., SX
Supv. Inc. With
Access From Swbd.
No. 3C or 3CL in
Same Bldg.
Intertoll, Inc. SD-25845-01 D133
Serv.; DP or MF
Pulsing and CX or
SX Supv. Inc., SX
Supv. or Type "A"
TB Supply Out.
Outgoing Service;
MF Pulsing, SX Supv.
Inc., CX or SX Supv.
Out., with Access
from Toll Swbd. No.
1 in Same Bldg.
Intertoll, Inc. Serv.; SD-25853-01 H133
DP or MFP & CX or SX
Supv. Inc., SX Supv.
or Type "A" TB Sup-
ply Out.-Outgoing
Service; DP Pulsing
from Sdr., SX Supv.
Inc., CX or SX Supv.
Out. with Access from
MF Toll Swbd. No. 1
in Same Bldg.
Interlocal, E&M Leads SD-31867-01 H163
Supv., Pulse cor-
recting on Inc. Calls
Auto., Ckt. Patching SD-55348-01 G173
Bay
Mtce. Desks 2 Way SD-95405-01 C84
Auto. to Swbd. or
Desk C109,
D127
Mtce. Desks 2 Way SD-96221-01 E84,
Inc. Ringdown, E109
Out. Auto. B127

TRUNK (Cont'd)

Miscellaneous

Test, to Loc. Test Desk No. 14 or Loc. Test Cabinet No. 3 from Trk. Link Frame With or With- out Coin Return after Disconnection	SD-25665-01	E88
Test, from L.T.D. No. 14 or Local Test Cabinet No. 3	SD-25745-01	I107, I127
Inc. Test, for Test- ing Intertoll Trks., CX or SX Supv.	SD-25904-01	I98
Balance Test Termi- nation, SX Supv.	SD-25906-01	K97
Test from Loc. Test Desk No. 14 for Detecting Inter- mittent Trouble	SD-26113-01	H90
No Ckt. Signal	SD-26158-01	G177

Test, at M.D.F. or Protector Frame, In and Out Type, from L.T.D. No. 14 or Loc Test Cab. No. 3	SD-90070-01	H88
Test, at M.D.F. Bridging From L.T.D. No. 14	J-90071-01	G88
Test, Frame End from Cable Test Desk No. 3 or L.T.D. No. 14 Arr. for Man. Varley 3 Test	SD-90403-01	C87
Test, Frame End from Cable Test Desk No. 3 or L.T.D. No. 14 Arr. for Auto. Varley 3 Test	SD-95545-01	A87
Talking, at M.D.F. or Protector Frame to L.T.D. No. 14	SD-96074-01	F90