

(ZS) 197U SWITCH (SEE NOTE 803) (ZT) 197JU SWITCH (SEE NOTE 210)

FEATURE OR OPTION	PROVIDE	FIG. NO.	QUANTITY
SELECTION CIRCUIT	3 WIRE	1	1 PER CKT.
NO. 1 OFFICE	REQUIRED	2	1 PER CKT.
BUSY TONE ONLY	NOT REQUIRED	3	
NO. 2 OFFICES	REQUIRED	4	1 PER CKT.
WHEN USED WITH PHYS. CONTROLS	REQUIRED	5	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	NOT REQUIRED	6	
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	7	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	8	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	9	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	10	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	11	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	12	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	13	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	14	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	15	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	16	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	17	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	18	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	19	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	20	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	21	1 PER CKT.

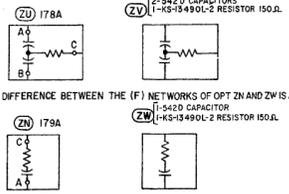
105 (A & M ONLY)

FEATURE OR OPTION	PROVIDE	FIG. NO.	QUANTITY
SELECTION CIRCUIT	3 WIRE	1	1 PER CKT.
NO. 1 OFFICE	REQUIRED	2	1 PER CKT.
BUSY TONE ONLY	NOT REQUIRED	3	
NO. 2 OFFICES	REQUIRED	4	1 PER CKT.
WHEN USED WITH PHYS. CONTROLS	REQUIRED	5	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	NOT REQUIRED	6	
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	7	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	8	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	9	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	10	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	11	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	12	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	13	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	14	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	15	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	16	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	17	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	18	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	19	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	20	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	21	1 PER CKT.

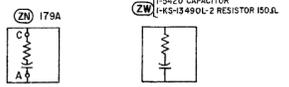
FEATURE OR OPTION	PROVIDE	FIG. NO.	QUANTITY
SELECTION CIRCUIT	3 WIRE	1	1 PER CKT.
NO. 1 OFFICE	REQUIRED	2	1 PER CKT.
BUSY TONE ONLY	NOT REQUIRED	3	
NO. 2 OFFICES	REQUIRED	4	1 PER CKT.
WHEN USED WITH PHYS. CONTROLS	REQUIRED	5	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	NOT REQUIRED	6	
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	7	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	8	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	9	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	10	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	11	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	12	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	13	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	14	1 PER CKT.
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WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	16	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	17	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	18	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	19	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	20	1 PER CKT.
WHEN THIS CKT IS USED AS A FIRST SELECTION AND AUTOMATIC PROCESSING OF THE BOH TONE ON CERTAIN LINES IS	REQUIRED	21	1 PER CKT.

106. "B" LEAD IS NOT REQUIRED WHEN ARRANGED TO WORK WITH NON-COMMON CONTROL TOUCH-TONE CALLING OR COMMON CONTROL EQUIPMENT.

107. THE DIFFERENCE BETWEEN THE (C) NETWORKS OF OPT ZU AND ZV IS AS FOLLOWS:



THE DIFFERENCE BETWEEN THE (F) NETWORKS OF OPT ZN AND ZW IS AS FOLLOWS:



CHANGES ON THIS SHEET	FIG. NO.	DESCRIPTION	USE IN CIRCUIT
1	1	...	...
2	2	...	...
3	3	...	...
4	4	...	...
5	5	...	...
6	6	...	...
7	7	...	...
8	8	...	...
9	9	...	...
10	10	...	...
11	11	...	...
12	12	...	...
13	13	...	...
14	14	...	...
15	15	...	...
16	16	...	...
17	17	...	...
18	18	...	...
19	19	...	...
20	20	...	...
21	21	...	...
22	22	...	...
23	23	...	...

FIG. 2 (A & M ONLY)

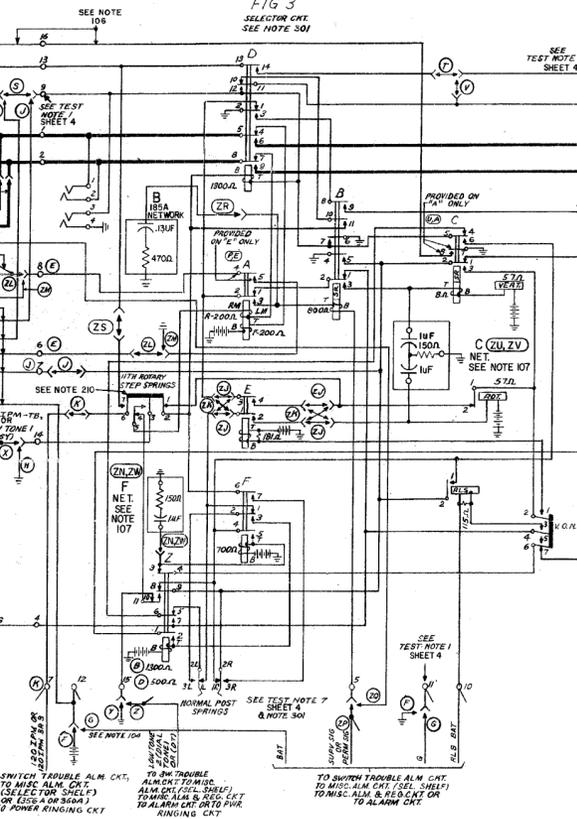
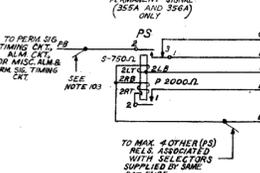
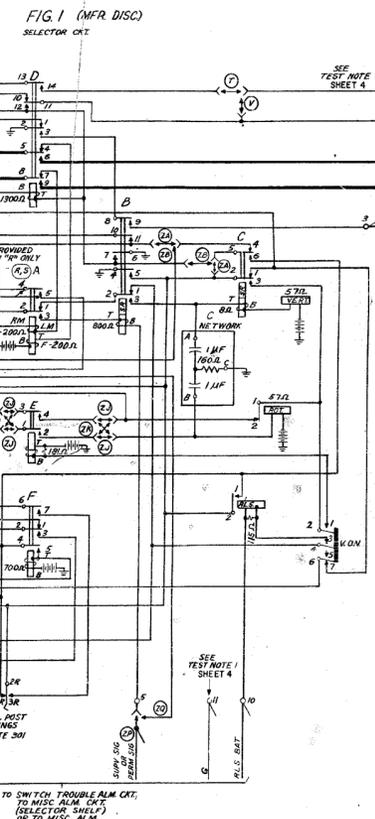
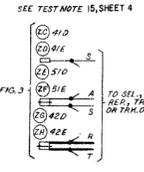


FIG. 4 BANK MULT 360A



103. IN NO. 355A, MULTIPLE TO MAXIMUM 9 OTHER SELECTORS IN NO. 355A MULTIPLE TO ALL OTHER SELECTORS PRIOR TO ISSUE 20, THE 2 MULTIPLED TO ALL OTHER SELECTORS.

104. IN NO. 356A OFFICE, USE WITH ASSOCIATED LINE FINDER FOR LOCAL FIRST SELECTORS.

45-52 V

WORKING LIMITS

45 V. MIN. PULSING FROM SUB. 48 V. MIN. PULSING FROM SUB.

TYPE OF DIAL	2.4 OR 5	7	2.4 OR 5	7
MAX EXT. CT. LOOP**	750 Ω	1200 Ω	1000 Ω	1500 Ω
MAX EXT. CT. LOOP**	800 Ω	1400 Ω	1100 Ω	1600 Ω
MIN. INS. RES.	1000 Ω	1500 Ω	1100 Ω	1500 Ω

** WHEN USING 1800 Ω LOOP-LEAK "S" IN PULSING TEST SET
 ** WHEN USING 1800 Ω LOOP-LEAK "A" IN PULSING TEST SET
 ** WHEN USING 1800 Ω LOOP-LEAK "M" IN PULSING TEST SET

INFORMATION NOTES:

101. FOR LEVELS REQUIRING REPEATED ABSORPTION UNTIL A LEVEL ARRANGED TO ABSORBANCE HAS BEEN DIALLED, ADJUST THE LEFT NORMAL POST SPRING TO OPERATE. FOR LEVELS REQUIRING BLOCKING UNTIL A LEVEL ARRANGED TO ABSORBANCE HAS BEEN DIALLED, ADJUST THE RIGHT NORMAL POST SPRING TO OPERATE. FOR LEVELS TO BE ARRANGED TO ABSORB ONLY ONCE, ADJUST THE LEFT AND RIGHT NORMAL POST SPRINGS TO OPERATE.

102. TO SWITCH TROUBLE ALM. CKT. TO MISC. ALM. CKT. (SEL. SWEL) ON LISC. A OR 360A. TO SWITCH TROUBLE ALM. CKT. TO MISC. ALM. CKT. (SEL. SWEL) ON LISC. A OR 360A. TO SWITCH TROUBLE ALM. CKT. TO MISC. ALM. CKT. (SEL. SWEL) ON LISC. A OR 360A.

OPTIONS USED	FIG. NO.	QUANTITY
1	1	1 PER CKT.
2	2	1 PER CKT.
3	3	1 PER CKT.
4	4	1 PER CKT.
5	5	1 PER CKT.
6	6	1 PER CKT.
7	7	1 PER CKT.
8	8	1 PER CKT.
9	9	1 PER CKT.
10	10	1 PER CKT.
11	11	1 PER CKT.
12	12	1 PER CKT.
13	13	1 PER CKT.
14	14	1 PER CKT.
15	15	1 PER CKT.
16	16	1 PER CKT.
17	17	1 PER CKT.
18	18	1 PER CKT.
19	19	1 PER CKT.
20	20	1 PER CKT.
21	21	1 PER CKT.

FIG. NO.	QUANTITY	DESCRIPTION
1	1	...
2	1	...
3	1	...
4	1	...
5	1	...
6	1	...
7	1	...
8	1	...
9	1	...
10	1	...
11	1	...
12	1	...
13	1	...
14	1	...
15	1	...
16	1	...
17	1	...
18	1	...
19	1	...
20	1	...
21	1	...

226-537-500
 226-537-501
 226-537-502
 226-537-503
 226-537-504
 226-537-505
 226-537-506
 226-537-507
 226-537-508
 226-537-509
 226-537-510

MAINTENANCE BSPS

NO. 360A SD-31250-01
 NO. 356A SD-32149-01
 NO. 355A SD-31740-01
 NO. 350A SD-31564-01
 NO. 1 SD-31599-01

KEYSHEET INFO.

ED-30976-01
 EQUIPMENT INFO.

REPLACING SD-31964-01 AND SD-30972-01 FOR 356A

SD-30976-01

STEP BY STEP SYSTEMS 1099

NO. 1 350A, 355A, 356A OR 360A

3 OR 4 WIRE SELECTOR

ARRANGED FOR USE AS FIRST SELECTION AND TO RETURN OVERFLOW SIGNAL ON SPECIFIED LEVELS

NOT OR 350A

ARRANGED FOR USE AS FIRST SELECTION FOR 2 WIRE SERVICE

NO. 355A OR 356A

ARRANGED FOR TIMED RELEASE ON PERMANENT SIGNAL

(DA SEL) (TIMED RLS)

SD-30976-01

4 SHEETS

AT&T STANDARD

ARM ONLY

FOR 350A, 355A & 360A

R3

NOTICE - NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.

BELL TELEPHONE LABORATORIES, INC.

10-8200E-02

A
B
C
D
E
F
G
H

FIG. 65 (A&M ONLY)
(FOR FIG. 3)
NO. 356 A
FOR INC. SELECTOR ON LINE FRAMES
ONE PER SEL.

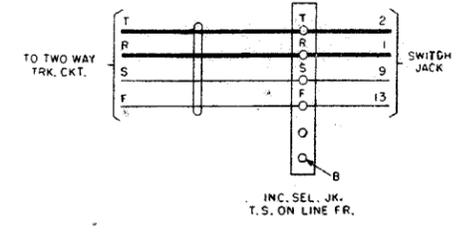


FIG. 66 (A&M ONLY)
(FOR FIG. 3)
NO. 356 A
FOR INC. SEL. ON R.R.
CONNECTED TO OPR. OFF. TRUNK.

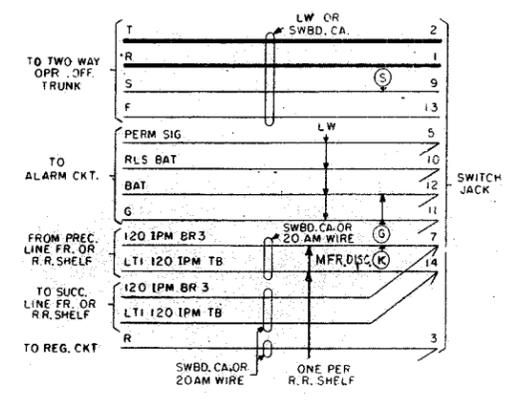
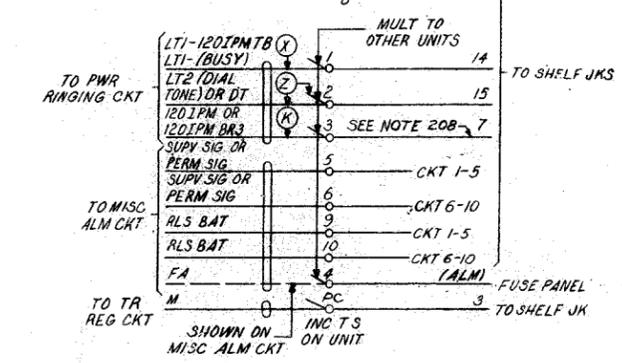
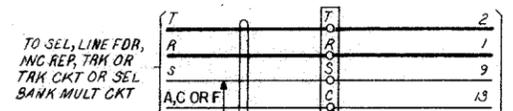
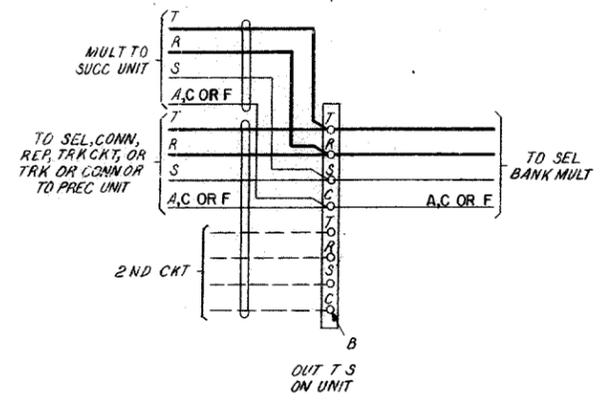


FIG. 67 (A&M ONLY)
(FOR FIGS. 3 & 4)
NO. 360 A



- 211.
- 212.
- 213. WHEN "ZY" OPTION IS REQUIRED A TERMINAL IS PROVIDED AT THE ASSOCIATED SELECTOR SHELF 344 TYPE JACK TO FACILITATE THE TRANSFER OF THE "S" LEAD FROM JACK SPRING 9 TO RECEIVER OFF-HOOK TONE CONN. CKT.

EQUIPMENT NOTES:

- 201. THE WIRING TO REGISTER CKTS. IN FIGS. 55 AND 56 IS BASED ON ONE REGISTER FOR ALL SELECTORS ON THE SAME SHELF. IN FIG. 55, SHELF STRAPS BETWEEN SWITCH JACK TERMINALS 3 OF SWITCH POSITIONS 5 AND 6 OR 15 AND 16 OR MISC. SHELF TERMINALS 32 AND 33 SHALL BE CUT, AND ADDITIONAL LEADS RUN TO THE DISTRIBUTING FRAME AS REQUIRED WHEN REGISTRATION ON A QUARTER OR HALF SHELF BASIS IS SPECIFIED. LEADS FROM DIFFERENT SHELVES SHALL BE CONNECTED TO THE SAME REGISTER CKT BY MULTIPLYING TOGETHER THE ASSOCIATED TERMINALS AT THE DISTRIBUTING FRAME. IN FIG. 56, SHELF STRAPS BETWEEN SWITCH JACK TERMINALS 3 AND MISC SHELF TERMINALS 32 AND 33 SHALL BE CUT, AND ADDITIONAL LEADS RUN TO REGISTER CKTS IN ACCORDANCE WITH JOB REQUIREMENTS TO PROVIDE REGISTERS FOR FROM 2 TO 4 GROUPS OF SELECTORS PER SHELF, 2 GROUPS MAXIMUM PER HALF SHELF. LEADS ON DIFFERENT SHELVES TO BE CONNECTED TO THE SAME REGISTER CKT SHALL BE MULTIPLIED BETWEEN SHELVES WITH LOOSE WIRING AS REQUIRED.
- 202. THE (PS) RELAYS PER FIG. 2 ARE LOCATED ON THE SHELF WITH THE MISC. EQUIPMENT IN 355A OFFICES OR AT THE BOTTOM OF THE LINE FRAME IN 356A OFFICES. ON NEW SHELVES, WIRING FROM THESE RELAYS TO THE SHELF JACKS AND MISC. T.S. ON THE SHELF SHALL BE FURNISHED IN THE SHOP AS REQUIRED. BATTERY SUPPLY TO THE (PS) RELS SHALL BE FURNISHED BY WIRING TO THE SHELF OR FRAME FUSE PANEL. WHEN THE (PS) RELAYS ARE REQUIRED IN CONJUNCTION WITH EXISTING OLD STYLE 355A SHELVES PER ED-30579-01 THEY SHALL BE MOUNTED ON A JOB BASIS ON THE NEAREST AVAILABLE RELAY RACK SPACE, 20 RELAYS FOR TWO SHELVES PER MOUNTING PLATE.
- 203. 11TH ROTARY STEP SPRINGS 6-7 PROVIDED ONLY ON SWITCHES MANUFACTURED ON OR AFTER FEB. 11, 1952. WHEN MODIFYING EXISTING SWITCHES PER FIG. 1 (NOT HAVING THESE SPRINGS) FOR BUSY FLASH TO OPERATORS, REPLACE THE EXISTING 11TH ROTARY STEP SPRINGS WITH SPRING ASSEMBLY, PER P-463573.
- 204. "P" & "D" OPTIONS MAY BE REUSED WHEN MODIFYING CKTS PER FIG. 1. "U" OPTION MAY BE REUSED WHEN LEAD "PM" IS NOT REQUIRED.
- 205. PRIOR TO ISS. 60, THE MULTIPLE OF LEADS "PA" & "PB" IN FIG. 57 "TO ALL OTHER SHELVES" WAS NOT RATED "A&M ONLY" AND THE "S" & "G" LEADS IN THIS FIG., AND FIGS. 58-64 WHERE NOT SHOWN.
- 206. ON A 20 CAPACITY SHELF WIRED PER FIG. 59, SWITCHES MAY BE GROUPED FOR TRAFFIC REGISTRATIONS, WHEN REQUIRED, ON A QUARTER, HALF OR FULL SHELF BASIS, OR ON THE BASIS OF MORE THAN ONE SHELF. WHEN GROUPED ON A HALF OR FULL SHELF BASIS THE M1, M2, M3 AND M4 TERMS AT THE DISTRIBUTING FRAME SHALL BE STRAPPED TOGETHER AND CROSS-CONNECTED TO THE TRAFFIC REGISTERS AS REQUIRED. FOR SWITCH GROUPS ARRANGED OVER MORE THAN ONE SHELF THE ASSOCIATED "M" LEADS OF THE DIFFERENT SHELVES SHALL BE MULTIPLIED TOGETHER AT THE DISTRIBUTING FRAME AND CROSS-CONNECTED TO THE TRAFFIC REGISTERS AS REQUIRED.
- 207. WHEN SELECTORS PER FIG. 3 ARE INSTALLED AS OPERATOR INCOMING SELECTORS ON EXISTING SHELVES WIRED WITH THE BUSY FLASH LEAD CONNECTED TO SHELF JACK TERMINALS 14, THIS LEAD SHALL BE DISCONNECTED FROM TERMINALS 14 AT THE POSITIONS OF THE ADDED SELECTORS AND CONNECTED TO TERMINALS 7 INSTEAD, AND BUSY TONE OR GROUND AS REQUIRED CONNECTED TO TERMINALS 14 AT THESE POSITIONS.
- 208. IF SELECTOR PER SD-30976-01 ARE TO BE MOUNTED ON EXISTING 360A OFFICE SHELVES HAVING THE 120 IPM BUSY FLASH LEAD CONNECTED WITH SHELF JACK TERMINALS NO. 6, THIS LEAD AT THE POSITIONS OCCUPIED BY THESE SELECTORS SHALL BE TRANSFERRED TO SHELF JACK TERMINALS NO. 7.
- 209. WHEN THIS UNIT IS USED AS A FIRST SELECTOR AND AUTOMATIC PROCESSING OF FIRST SELECTOR PERMANENT SIGNALS IS REQUIRED PER "ZQ" OPTION, CROSS CONNECTIONS ARE TO BE MADE AT EITHER THE VIDF, VDF OR CDF AS SHOWN ON THE RECEIVER OFF-HOOK TONE CONNECTING CIRCUIT, SD-33034-01.
- 210. 197EU SWITCH HAVING 7 SPRING PILE UP ON THE 11TH ROTARY STEP SPRING IS REPLACED WITH A 197JU SWITCH HAVING A 5 SPRING PILE UP. THIS CHANGE IS DUE TO BUSY FLASH BEING RATED MANUFACTURE DISCONTINUED.

DRAWING ISSUE
20B
21B
HW
A
B
C
D
E
F
G
H
ISSUE
23B
HW
H

SD-30976-01-3

3 OR 4 WIRE SELECTOR ② SD-30976-01-3
BELL TELEPHONE LABORATORIES INCORPORATED 6S PRINTED IN U.S.A.

CIRCUIT REQUIREMENTS															DRAWING ISSUE					
APPARATUS				MECH REQ			CIRCUIT PREPARATION				DIRECT CURRENT FLOW REQ		TIME REQ		21B					
DESIG	CODE	OPT.	FIG.	RESID	BSP FIG.	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA		TEST SET PREP	SEE TEST NOTE	TEST WDG	TEST FOR		AFTER SOAK MA	TEST MA	READJ MA	TEST MSEC	READJ MSEC
MAGNETS																				
	197 EU SWITCH	ZS	1,3									7								
	197JU SWITCH	ZT	1,3									7								
RELAYS																				
A	221A	S	1	7-11	726		8		7(D)	4(D)	M	2/3/4	R/F	0	FS	15.1	14.8			
		P	3					(B) NO	7(D)	4(D)	M	4	R/F	NO	FS	13.9	14.4			
									TST JK2	TST JK1	M	2/3/5	R/F	0	FS	15.1	14.8			
									TST JK2	TST JK1	M	5	R/F	NO	FS	13.9	14.4			
A	221P	R	1	7-11	727		8		7(D)	4(D)	M	2/4/6	R/F	0	FS	15.1	14.8			
		E	3					(B) NO	7(D)	4(D)	M	4	R/F	NO	FS	13.9	14.4			
									TST JK2	TST JK1	M	2/5/6	R/F	0	FS	15.1	14.8			
									TST JK2	TST JK1	M	5	R/F	NO	FS	13.9	14.4			
B	248G		1,3	1.5-4	517		27	1(A)	3(A)	GRD	8		0	FS	10.5	10				
									3(A)	GRD	8		NO	FS	8.5	9				
									TST JK1	TST JK2	V-BR	9/10	H							333
				MIN. 1.5				1(A)	TST JK1	TST JK2	V-BR	10	R							750
									3(A)	GRD	10		NO	FS	8.5	9				500
C	221EF		1	S-4	164		13	(VON) NO	3(B)	GRD	8		0	500	90	85				
	221EF	U	3	S-4	164		13		3(B)	GRD	8		NO	500	62	69				
	221FL	A	3	S-4	191		13		TST JK1	TST JK2	V-M	10/11	H							100
								(VERT) NO	TST JK1	TST JK2	V-M	10	R							155
									3(B)	GRD	10		NO	500	62	69				140
D	222KC		1,3	-4	385		15		2(11TH ROT)		BAT	12		0	FS	27	25.5			
									2(11TH ROT)		BAT	12/13		NO	FS	20.5	22			
									2(11TH ROT)		BAT	12/14		NO	FS	12	12.7			
E	221NL		1,3	7-9	700		16	(C)0 (C)0	1(VON) 1(VON)	GRD GRD	2		0	FS	105	100				
													NO	FS	85	90				
F	222EG		1	4-9	17		12		3(Z)	GRD	2/21/19		0	FS	11.8	11.3				
									3(Z)	GRD	19		NO	FS	7.9	8.3				
			1,3	6-8					3(Z)	GRD	2/21/20		0	FS	14.9	14.1				
									3(Z)	GRD	20		NO	FS	10	10.5				
PS	R453		2		14/1	H	35		RT(PS)	GRD	24	P	0		13.8	13.0				
									LB(PS)	GRD		S	0		28.5					
Z	225U		1	S-4	702 MOD		33	(C)0 7(VON)	3(F)	GRD	16/23/22		0	FS	39	37				
		D	3						3(F)	GRD	22		NO	FS	30	31.5				
									3(F)	GRD	17/22		0	FS	70.5	67				
									3(F)	GRD	18/22		NO	FS	50.5	53.5				
Z	225Y	B	3	S-4	702		29	(C)0 7(VON)	3(F)	GRD	16/23/22		0	FS	13.7	13				
									3(F)	GRD	22		NO	FS	10.4	11				
									3(F)	GRD	17/22		0	FS	26.5	25				
									3(F)	GRD	18/22		NO	FS	19.5	21				

- TEST NOTES:
- JACK SPRINGS 9 & 11 SHALL MAKE CONTACT WHEN SPRING IS REMOVED.
 - ARMATURE NEED NOT TOUCH CORE.
 - TEST: CONTACT SEPARATION MIN 3. CONTACT FOLLOW SPRINGS 2-3 MIN 8.
 - WHEN USED AS AN INC SEL WITHOUT REP, BLOCK (D) REL OPERATED.
 - FOR USE EXCEPT FOR INC SEL WITHOUT AN INC REP.
 - TEST: CONTACT SEPARATION MIN 3. CONTACT FOLLOW SPRINGS 2-3 & 4-5 MIN 8.
 - APPLY THE FOLLOWING ADJUSTMENTS WHEN THE SW HAS THE RIGHT NORMAL POST CAM OPERATED ON THE FIRST LEVEL.
 - (A) RIGHT NORMAL POST SPG CONT PRESSURE THE CONT PRESSURE OF NO.2 SPG AGAINST NO.1 SPG SHALL BE MIN 35 GRAMS.
 - (B) RELATION OF RIGHT NORMAL POST CAM TO ROLLER: WITH THE PLAY BETWEEN THE CAM & THE NORMAL POST TAKEN UP, THE ROLLER MAY CONT THE CAM BUT IN NO CASE SHALL THE CLEARANCE BETWEEN THE CAM AND THE ROLLER EXCEED .005". ALL OTHER REQ IN BSP A477.002 ARE APPLICABLE.
 - (C) THESE ABOVE REQUIREMENTS ARE WAIVED WHEN THE LEFT NORMAL POST CAM, IN ADDITION TO THE RIGHT, IS ALSO OPERATED ON THE FIRST LEVEL. IN THIS CASE THE MINIMUM CONTACT PRESSURE SHALL NOT BE LESS THAN 20 GRAMS FOR EACH SIDE.
 - FOR USE WHEN TIMING REQ ARE NOT APPLIED.
 - TEST HOLD: USE 1400Ω LOOP IN PULSING TST SET.
 - FOR USE WHEN TIMING REQ ARE APPLIED.
 - TEST HOLD: USE LEAK "A" IN PULSING TEST SET.
 - SHORT CKT TEST JK SPRINGS 3-4.
 - CONTACTS 1-2 MAY BREAK.
 - NO CONTACT MAY BREAK.
 - THE UPPER WIPER IS NORMALLY ADJUSTED AS A TWO COND WIPER FOR 4 WIRE OPERATION. WHERE 3 WIRE OPERATION IS SPEC THE UPPER WIPER SHALL BE ADJUSTED AS A SINGLE COND WIPER.
 - FOR SPRINGS 1 & 2 ONLY.
 - FOR WHOLE COMBINATION.
 - CONTACTS 1-2 MAY MAKE & 3-4, 5-6 MAY BREAK.
 - ADJUSTMENT "A".
 - ADJUSTMENT "B".
 - ADJUSTMENT "A" RATED "MFR DISC." REPLACED BY ADJUSTMENT "B" ON ISS 3B.
 - SPRGS 1 & 2 SHALL MAKE BEFORE SPRG 1 STRIKES BUSHING ON SPRG 4.
 - SPRG COMBINATION THE SAME AS BSP FIG. 702 EXCEPT ARM. TRVL 33-29, CONTACTS 1 & 2 TO MAKE 27-25, & 3 & 4 TO BREAK 19-15.
 - INSULATE 1B (PS) WITH "J" OR "R" OPTION.

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DRAWING ISSUE
20B
21B

ISSUE
23B

SD-
BELL TELEPHONE LABORATORIES
INCORPORATED
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3 OR 4 WIRE SELECTOR
BELL TELEPHONE LABORATORIES
INCORPORATED
6S
PRINTED IN U.S.A.
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