Section 319A-000
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319A KEY SERVICE PANEL

CONTENTS

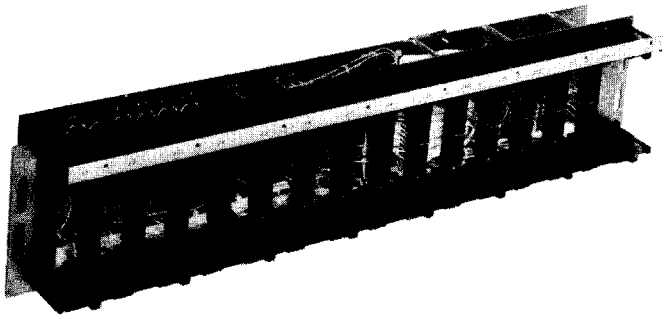


Fig. 1 SB319A Key Service Panel

1. GENERAL

1.1 This section provides general description and installation information for the San/Bar 319A Key Service Panel as shown in Figure 1. The SB319A provides mounting for up to 15 standard line cards such as the SB4000F or WE400. The SB319A is equivalent to the WE584 panel but with greater flexibility and capacity. The panel utilizes the SB6606A Solid State Interrupter (18-pin plug-in card) mounted in the end card position for the interrupter functions. The SB319A Panel also accepts the San/Bar 6608A Ringing Generator which plugs into an 18-pin card position. For maximum utilization of card positions, the SB319A may be strapped as a master panel that would mount the interrupter, ringing generator, and 13 line cards; and additional panels having the maximum of 15 line cards per panel with power distribution from the master panel.

1.2 Signal connections from the C.O. and to the telephone stations are through three standard telephone connectors on the rear of the unit with pin assignments identical to that of the WE584 panel. Power connections are to screw terminals located at the rear of the unit along with the power fusing. The panel mounts in a standard 23" rack.

1.3 In addition to mounting standard line cards, the SB319A Panel also mounts special cards such as the SB423A Manual Intercom card (equivalent to WE401), SB4200A Music-on-hold Line card, or the SB4100A Multi-station Control Line Card. The special signal inputs associated with the cards such as STC or music are interfaced through a telephone connector on the rear of the panel (avoiding special panel modification as with the WE584).

2. SPECIFICATIONS

2.1 List of Applicable Drawings

(a) Assembly Drawing No. ED-0319-000

(b) Schematic Diagram No. SD-0319-000 (Fig. 6).

(c) Bill of Material No. BM-0319-000

2.2 Electrical Characteristics

(a) Power Inputs

AB A-Battery, 24 VDC Input (talk voltage)
AG A-Battery, Ground
BB B-Battery, 24 VDC Input (signal voltage)
BG B-Battery, Ground
RB Ring Battery, 105 VAC Input (84-120 VAC, 20-30 Hz)
RG Ring Battery, Ground
LB Lamp Battery, 10 VAC Input
LG Lamp Battery, Ground

NOTE: RB, RG becomes the 105 VAC output when using the SB6608A Ring Generator in position 14.

(b) Interrupter Signals

RN Interrupted Ringing, 105 VAC
ST Interrupter Start
LF Lamp Flash, 10 VAC
LW Lamp Wink, 10 VAC

NOTE: When position 15 is strapped for interrupter, the RN, ST, LW, and LF terminals may be used to distribute to other panels. These terminals also serve as the interrupter input signals when the SB319A is strapped for line card in position 15.

(c) Special Inputs/Straps:

RG1 Ring Generator Strap (RG to RG1) used with SB6608A Ring Generator
MOH1 Music Input (for use with SB4200A Music-on-hold card) Pin 18
MOH2 Music Input (for use with SB4200A Music-on-hold card) Pin 3
AB1 A-Battery, Line 1, Pin 18
AG1 A-Ground, Line 1, Pin 3

NOTE: With option plug installed, Line 1 is wired for talk battery (for manual intercom). Lines 2-15 are wired for music-on-hold. To provide either music or talk battery to all 15 positions, strap AB1 to MOH1, AG1 to MOH2.

(d) Interrupter/Line Option:

INTR/LINE – Position 15 may be strapped for either an interrupter (using the SB6606A) or a line card. The unit is strapped at the factory for interrupter with 6 jumpers. To strap for line card, move the 6 jumpers to the lower set of terminals indicated on rear panel. (See Figures 2 and 3).

(e) Option Plug:

Unit comes from the factory with the Option Plug installed in connector J19. This provides busing of Pins 3 and 18 for lines 2-15 and connected to the MOH inputs. Line 1 is reserved for manual intercom. To gain access to the individual pins 3 and 18 of each line, remove Option Plug and install cable connector. Distribute cable to a feature block for interface to STC unit, music source, etc. (See installation section).

(f) Fusing:

F1-2 Amp	A-Battery (talk) 24 VDC Lines 1-15
F2-2 Amp	B-Battery (signal) 24 VDC Lines 1-15
F3-½ Amp	105 VAC Ringing Battery Lines 1-15
F4-5 Amp	10 VAC Lamp Battery Lines 8-15
F5-5 Amp	10 VAC Lamp Battery Lines 1-7
F6-5 Amp	Lamp Wink 10 VAC Lines 8-15
F7-5 Amp	Lamp Wink 10 VAC Lines 1-7
F8-5 Amp	Lamp Flash 10 VAC Lines 8-15
F9-5 Amp	Lamp Flash 10 VAC Lines 1-7

NOTE: Fusing to Position 15 is applicable only when strapped for line card use.

2.3 Physical Characteristics

(a) Overall Dimensions:
4-3/8"H x 23"W x 4-3/4"D

(b) Rear Mounting Depth:
2-3/4" max. from mounting surface, including allowance for cabling.

(c) Front Mounting Depth:
5-1/2" max. from mounting surface, including allowance for cards.

(d) Mounting Holes:
Two vertically slotted mounting holes on each side, 22-5/16" apart

(e) Card Cage:
Equipped with 15 standard .150" center 18-pin connectors for 4" plug-in cards (actual card height is 3-1/2"). A single locking bar provides card holddown.

(f) Signal Connectors:
Standard 50-pin telephone connectors provide the interface for the signal functions. The connectors are mounted in the rear of the panel for standard multihead cable such as an A65A or A75A type.

(g) Power Connections:
Screw terminals located on the rear panel of the unit.

(h) Fuse Mounting:
Standard WER-type fuses mounted on the rear panel of the unit using a slotted hex head screw.

(i) Weight:
4 lbs. without cards.

3. INSPECTION

Inspect the unit thoroughly as soon as possible after delivery. Visually inspect for broken and loose wires, or chassis damage. If any part of the unit has been damaged in transit, report the extent of damage to the transportation company immediately.

4. MOUNTING

The SB319A Key Service Panel is designed for standard 23" rack or apparatus mounting fixtures such as the WE16C wall mount apparatus fixture. The panel has mounting flanges with two slotted holes in each side. The slotted holes allow maximum flexibility in positioning of the unit up or down relative to other panels. Because of the unit's light weight, only four mounting screws are needed and may be positioned anywhere in the slots.

The cable interface is designed for rear panel entry from the right side. If installing in a hinged apparatus mounting, the equipment gate should swing out to the right for ease of cable entry. A cable tie is provided for securing the cable.

5. INSTALLER CONNECTIONS

5.1 Line Cards (SB4000F)

The SB319A is strapped (from the factory) for mounting up to 14 standard line cards (SB4000F, WE400, or equivalent). Position 15 is strapped to accept the SB6606 Solid State Interrupter. No additional or special wiring is required for installation. For additional information on the operating characteristics of the SB4000F, refer to CD-4000-000.

In high density installations where maximum line card capacity is required, position 15 may be strapped for line card use (see Fig. 3). By moving the six straps normally used for the interrupter option, a maximum line capacity of 15 per panel is possible. Depending on the current loads, 2 or 3 additional panels may be strapped for maximum line capacity with power and interrupter signals distributed from the master SB319A panel. See Section 5.4 for power distribution.

NOTE: TO AVOID POSSIBLE CARD DAMAGE, VERIFY THAT THE SB319A STRAPS HAVE BEEN MOVED TO THE LINE POSITION BEFORE INSTALLING A LINE CARD IN POSITION 15.

5.2 Solid State Interrupter (SB6606A)

The SB319A comes factory strapped for use with the SB6606A Interrupter. The interrupter plugs into card position 15. Necessary fusing and signal distribution is prewired with the addition of six straps (22 AWG bus wire) located on the rear panel. (See Fig. 2 for strap information).

No additional installer strapping is required on the SB319A to use the SB6606A Interrupter.

If the SB6606A is to be used for heavy duty operation, the interrupter must be strapped for additional input/output pins. Refer to CD-6600-000 for information on the interrupter strap options and load capacity. The SB319A panel wiring is capable of handling the heavy-duty interrupter. For interrupter signal distribution to other panels, refer to Section 5.4.

5.3 Ringing Generator (SB6608A)

The SB319A is wired so that the SB6608A Ring Generator (105 VAC) may be optionally used in card position 14. The generator is used in lieu of an external ringing supply and its output may be distributed through the rear terminals to other panels (see section 5.4). To use the SB319A panel with the SB6608A strap RG to RG1 with bus wire (see Fig.2). For additional information on the SB6608A, refer to CD-6608-000.

5.4 Power Distribution

Power input to the SB319A Panel is through screw terminals located on the rear panel. These screw terminals also serve as the interrupter and ringing generator outputs for distribution to other panels. Section 2.2 provides reference designation definition for these terminals. Make connections to the screw terminals using 22 AWG min. wire and route through the wire guides provided.

The power distribution for the panel provides four independent grounds (talk battery ground-AG, Signal battery ground-BG, Lamp Ground-LG, and Ring Ground-RG). The BG (A1), LG and RG (B1) grounds are also distributed to the station apparatus for each line through the rear telephone connectors. The grounds may be left isolated or commoned at the screw terminals.

To use one SB319A Panel as a master panel with interrupter (or ringing generator), distribute power and interrupter signals to other panels (with line cards only — see section 5.1) by connecting between panels the common labeled terminals. For example, the lamp wink function, LW, from the master panel would be distributed by "daisy-chaining" all the LW-terminals of the panels including the master panel. Make similar connections for the remaining terminals (see Figure 4). (Note: The LB, LG, LW, and the LF functions are provided with two terminals for handling heavy current loads. If 22 AWG wire is used, two wires should be used per function — one to each terminal).

5.5 C.O. and Station Connections

The signals from the C.O. and to the station apparatus are interfaced through the three telephone connectors (J16-18) located on the rear panel. The panel will accept standard telephone cables such as the A75A-type multihead cable. Pin assignments at the connectors are the same as the WE584 panel. The cables are intended for distribution to 66-type connecting blocks using standard practice termination following the normal color codes. Table I gives pin assignments and where the signals will appear at these feature blocks.

5.6 Music-On-Hold (SB4200A)

The SB319A Panel is designed to accommodate the SB4200A Music-on-Hold Line Card. Music input to the SB4200A is through Pins 3 and 18 of each card. With the Option Plug installed, Pins 3 and 18 are bussed on lines 2 through 15 and appear at the MOH terminals in the rear panel. Connect an isolated twisted pair of wires from the music source to these terminals. Since Pins 3 and 18 are not used on a standard line card (SB4000F or WE400, the SB4200A card may be mixed with the SB4000F cards in the same panel. For additional information on the SB4200A, refer to CD-4200-000.

The SB319A Panel is normally wired such that position 1 may be used for manual intercom. Since the manual intercom card (SB423A) requires talk battery (AB, AG) on Pins 3 and 18, this position is not included in the Option Plug bussing. However, if MOH is desired for position 1 also, simply strap MOH1 to AB1, MOH2 to AG1 as shown in Fig. 3. Connect the music source as before. The talk battery connections to the panel must be removed.

For applications where the individual music inputs of each card must be interfaced, the Option Plug must be removed as described in Section 5.10.

5.7 Manual Intercom (SB423A)

The SB319A Panel is wired so that Position 1 will also accommodate manual intercom when required. No strapping is required on the SB319A. Pins 3 and 18 required for talk battery are prewired to the fused AB, AG input terminals on the rear panel. Therefore, Position 1 may be used for a manual intercom circuit by supplying talk battery to the terminals. Talk battery does not normally distribute to any other positions with or without Option Plug installed.

If talk battery is desired to all positions, strap AB1 to MOH1, AG1 to MOH2 as shown in Figure 3. Disconnect the music source. The manual intercom card may now be installed in any position. Connect the talk battery supply as before. For more information on the SB423A, refer to CD-0423-000.

For special installations where it is desired to have more than one manual intercom card (SB423A, WE401, or equivalent) per panel mixed with special feature line cards that also use pins 3 and 18, remove the Option Plug from the 319A and install a cable for distribution to a feature block as described in section 5.10. The individual pins 3 and 18 of all 15 positions will appear at the feature block as given in Table II.

Connect the power supply talk battery output to the 319A terminals (AG, AB) at the rear of the panel. This will provide a fused talk battery to pins 3 and 18 of position 1 which will also appear at the feature block. To provide a fused talk battery to other positions, simply strap at the feature block from pins 3 and 18 of position 1 to the other pins 3 and 18 desired.

Using the above procedure, any combination of manual intercom cards may be mixed with special feature line cards such as music-on-hold, (SB4200A) or off-premise extension (SB4100A). For installations where pins 3 and 18 are used for intercom talk battery only, and not for any other features, the talk battery may be distributed to all 15 positions with the Option Plug installed and two straps added to the rear panel as shown in figure 3.

5.8 STC Interface

Where STC-type interface is required, it may be necessary to interface Pin 3 or 18 (such as with the SB4000F which utilizes Pin 3 for STC). Remove the Option Plug and install a cable for distribution as described in Section 5.10. No panel modification is required.

5.9 Multistation Line Card (SB4100A)

The SB319A Panel is wired so that the SB4100A cards may be installed without panel modification. The SB4100A utilizes Pin 18 as a special signal lead (AER) that is cross connected between SB4100A's. To interface Pin 18, remove Option Plug and install a cable for distribution as described in Section 5.10. Refer to CD-4100-000 for additional information on the SB4100A.

5.10 Option Plug (ED-0319-000)

The Option Plug for the SB319A Panel is supplied with the unit and is installed in the rear panel telephone connector J19. For normal installations, the Option Plug will remain installed. The Option Plug provides a bus of Pins 3 and 18 for positions 2 through 15. This allows ease of music distribution for these positions, or for special applications as described in above sections. For special installations where it is necessary to interface Pin 3 or 18 of the individual lines, the Option Plug is removed (e.g. a mixture of SB4200A MOH cards and SB4000F line cards using STC). Install a standard A25B-type telephone cable and distribute to a 66-type connecting block. Refer to Table II for pin assignments and where leads appear at the feature block. By cross connecting at this distribution block, it is possible to achieve MOH, STC, manual intercom, etc. with any combination of card positions in the same panel.

6. TESTING

6.1 If trouble is encountered with the SB319A Key Service Panel installation, check that all installer connections or strapping options have been made properly. Also check the power connections and fuses. Refer to the individual circuit descriptions for testing of the cards. Other than fuses, the SB319A contains no electrical components that are normally considered subject to failure. However, possible wire breakage or poor wire terminations may be verified using normal continuity checking procedures with a standard multimeter (Simpson 236 or equivalent).

6.2 The SB319A is warranted for a period of two years from date of purchase.

CIRCUIT					CABLE TERMINATIONS 66-TYPE CONNECTING BLOCK		319 PANEL J16,17,18 CONNECTOR
BLOCK A BLU/WHT BINDER	BLOCK B ORG/WHT BINDER	BLOCK C GRN/WHT BINDER	FUNCTION	LEAD DESIGN	ROW	WIRE COLOR	PIN
LINE 1	LINE 6	LINE 11	CO	T	1	WHT/BLU	26
				R	2	BLU/WHT	1
			STATION	T	3	WHT/ORG	27
				R	4	ORG/WHT	2
				A	5	WHT/GRN	28
				A1	6	GRN/WHT	3
				LG	7	WHT/BRN	29
				L	8	BRN/WHT	4
				B1	9	WHT/GRY	30
				R1	10	GRY/WHT	5
LINE 2	LINE 7	LINE 12	CO	T	11	RED/BLU	31
				R	12	BLU/RED	6
			STATION	T	13	RED/ORG	32
				R	14	ORG/RED	7
				A	15	RED/GRN	33
				A1	16	GRN/RED	8
				LG	17	RED/BRN	34
				L	18	BRN/RED	9
				B1	19	RED/GRY	35
				R1	20	GRY/RED	10
LINE 3	LINE 8	LINE 13	CO	T	21	BLK/BLU	36
				R	22	BLU/BLK	11
			STATION	T	23	BLK/ORG	37
				R	24	ORG/BLK	12
				A	25	BLK/GRN	38
				A1	26	GRN/BLK	13
				LG	27	BLK/BRN	39
				L	28	BRN/BLK	14
				B1	29	BLK/GRY	40
				R1	30	GRY/BLK	15
LINE 4	LINE 9	LINE 14	CO	T	31	YEL/BLU	41
				R	32	BLU/YEL	16
			STATION	T	33	YEL/ORG	42
				R	34	ORG/YEL	17
				A	35	YEL/GRN	43
				A1	36	GRN/YEL	18
				LG	37	YEL/BRN	44
				L	38	BRN/YEL	19
				B1	39	YEL/GRY	45
				R1	40	GRY/YEL	20
LINE 5	LINE 10	LINE 15	CO	T	41	VIO/BLU	46
				R	42	BLU/VIO	21
			STATION	T	43	VIO/ORG	47
				R	44	ORG/VIO	22
				A	45	VIO/GRN	48
				A1	46	GRN/VIO	23
				LG	47	VIO/BRN	49
				L	48	BRN/VIO	24
				B1	49	VIO/GRY	50
				R1	50	GRY/VIO	25

NOTE: Lines 14 and 15 applicable if 319A Panel is strapped for maximum line capability. B1, R1 designation is equivalent to RG, RC.

TABLE I. CO AND STATION CONNECTIONS

CIRCUIT		CABLE TERMINATIONS 66-TYPE CONNECTING BLOCK		319 PANEL J19 CONNECTOR
LINE	LEAD DESIG.	ROW	WIRE COLOR	PIN
1	3 18	1 2	WHT/BLU BLU/WHT	26 1
2	3 18	3 4	WHT/ORG ORG/WHT	27 2
3	3 18	5 6	WHT/GRN GRN/WHT	28 3
4	3 18	7 8	WHT/BRN BRN/WHT	29 4
5	3 18	9 10	WHT/GRY GRY/WHT	30 5
6	3 18	11 12	RED/BLU BLU/RED	31 6
7	3 18	13 14	RED/ORG ORG/RED	32 7
8	3 18	15 16	RED/GRN GRN/RED	33 8
9	3 18	17 18	RED/BRN BRN/RED	34 9
10	3 18	19 20	RED/GRY GRY/RED	35 10
11	3 18	21 22	BLK/BLU BLU/BLK	36 11
12	3 18	23 24	BLK/ORG ORG/BLK	37 12
13	3 18	25 26	BLK/GRN GRN/BLK	38 13
14	3 18	27 28	BLK/BRN BRN/BLK	39 14
15	3 18	29 30	BLK/GRY GRY/BLK	40 15
	MOH2 MOH1	31 32	YEL/BLU BLU/YEL	41 16
SPARES		33 34	YEL/ORG ORG/YEL	42 17
		35 36	YEL/GRN GRN/YEL	43 18
		37 38	YEL/BRN BRN/YEL	44 19
		39 40	YEL/GRY GRY/YEL	45 20
		41 42	VIO/BLU BLU/VIO	46 21
		43 44	VIO/ORG ORG/VIO	47 22
		45 46	VIO/GRN GRN/VIO	48 23
		47 48	VIO/BRN BRN/VIO	49 24
		49 50	VIO/GRY GRY/VIO	50 25

TABLE II. OPTION PLUG CONNECTIONS

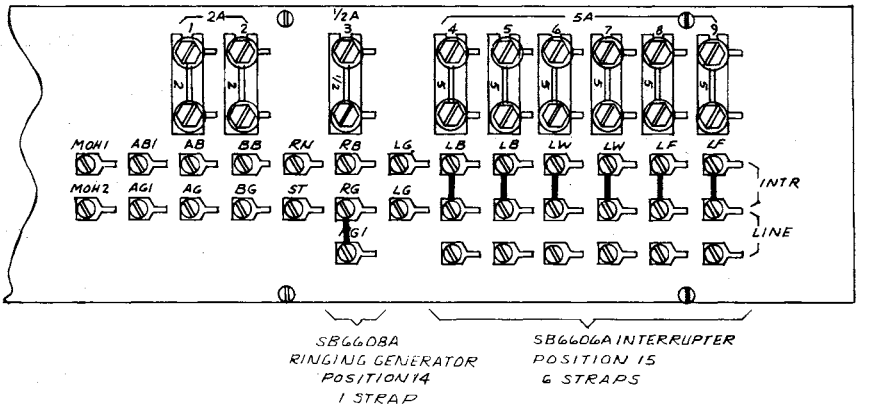

2A
1/2A
5A
MOH1
ABI
AB
BB
RN
RB
LG
LB
LB
LW
LW
LF
LF
MOH2
AGI
AG
BG
ST
RG
LG
RGI
INTR
LINE
SB6606BA
RINGING GENERATOR
POSITION 14
1 STRAP
SB6606A INTERRUPTER
POSITION 15
6 STRAPS

Fig. 2

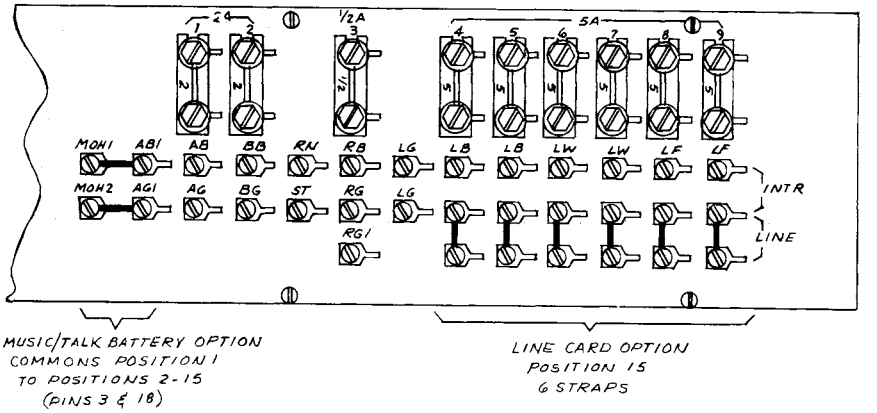

2A
1/2A
5A
MOH1
ABI
AB
BB
RN
RB
LG
LB
LB
LW
LW
LF
LF
MOH2
AGI
AG
BG
ST
RG
LG
RGI
INTR
LINE
MUSIC/TALK BATTERY OPTION
COMMONS POSITION 1
TO POSITIONS 2-15
(PINS 3 & 18)
LINE CARD OPTION
POSITION 15
6 STRAPS

Fig. 3

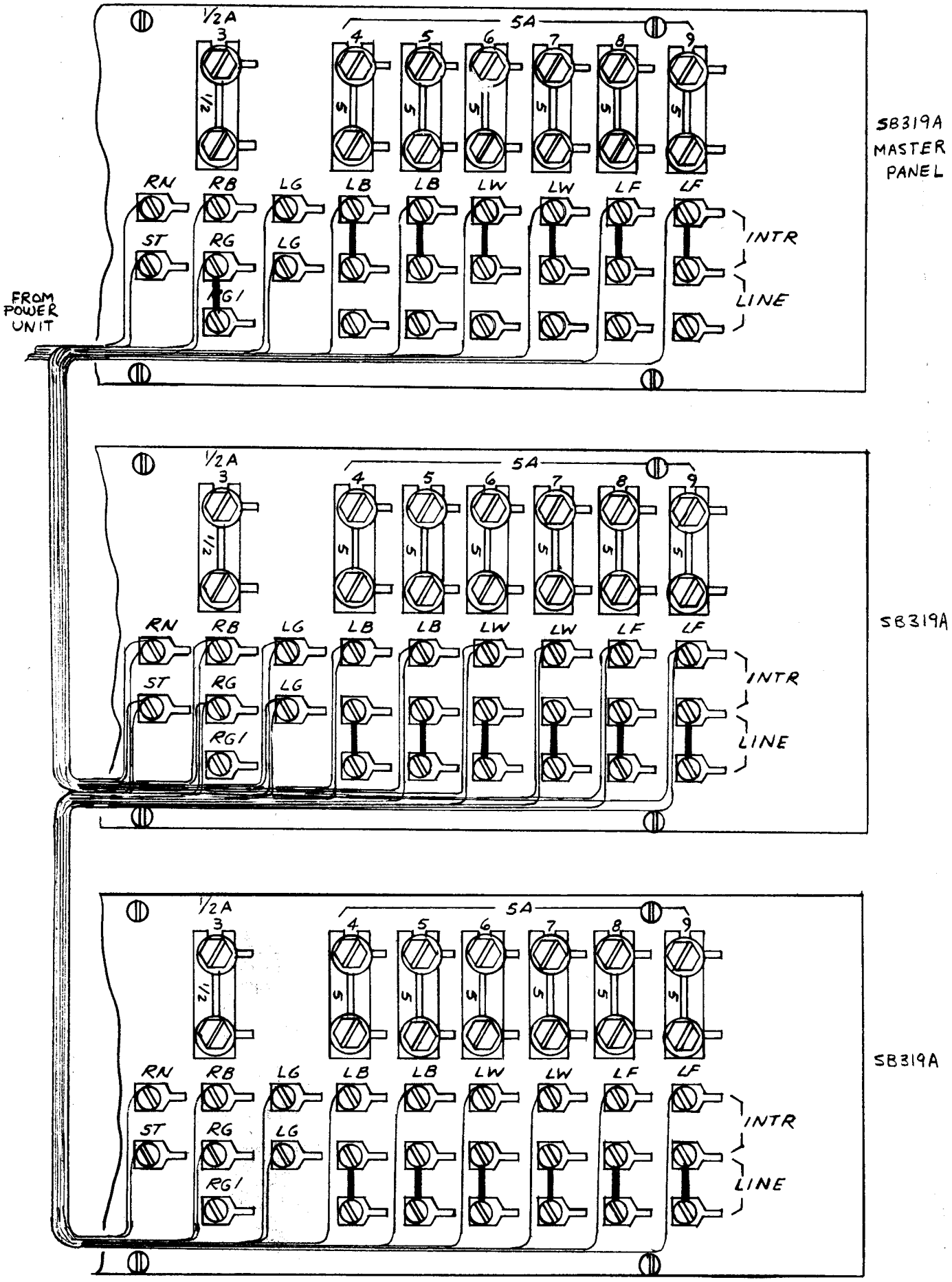

½A
3
5A
4
5
6
7
8
9
½
S
RN
RB
LG
LB
LB
LW
LW
LF
LF
ST
RG
LG
RG1
INTR
LINE
FROM POWER UNIT
SB319A MASTER PANEL
SB319A
SB319A

Fig. 4

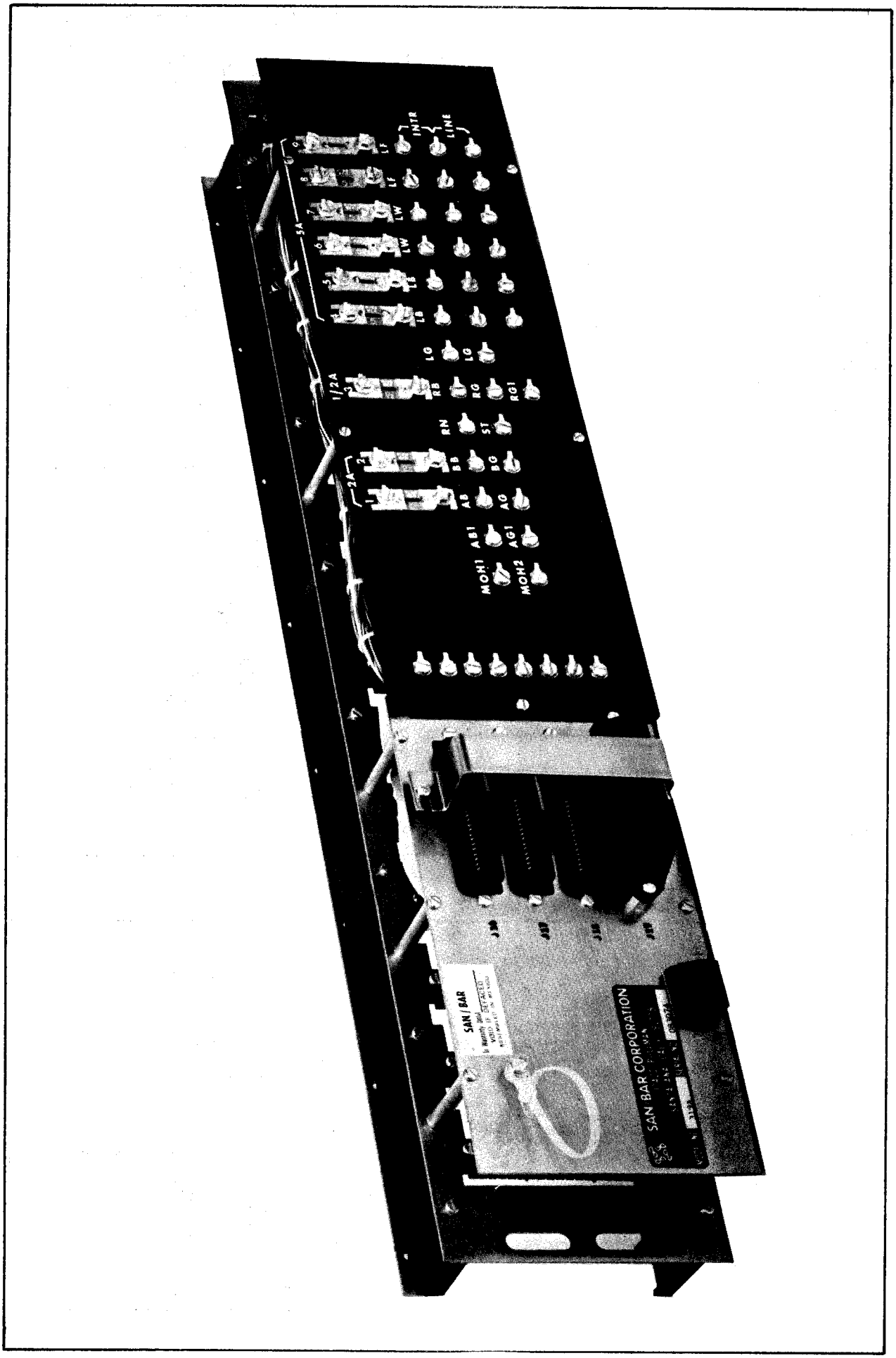

INTR
LINE
SA
LW
LW
LG
LG
1/2A
RB
RG
RG1
RN
ST
2A
AB
AG
AG1
MOH1
MOH2
SAN BAR CORPORATION

Fig. 5

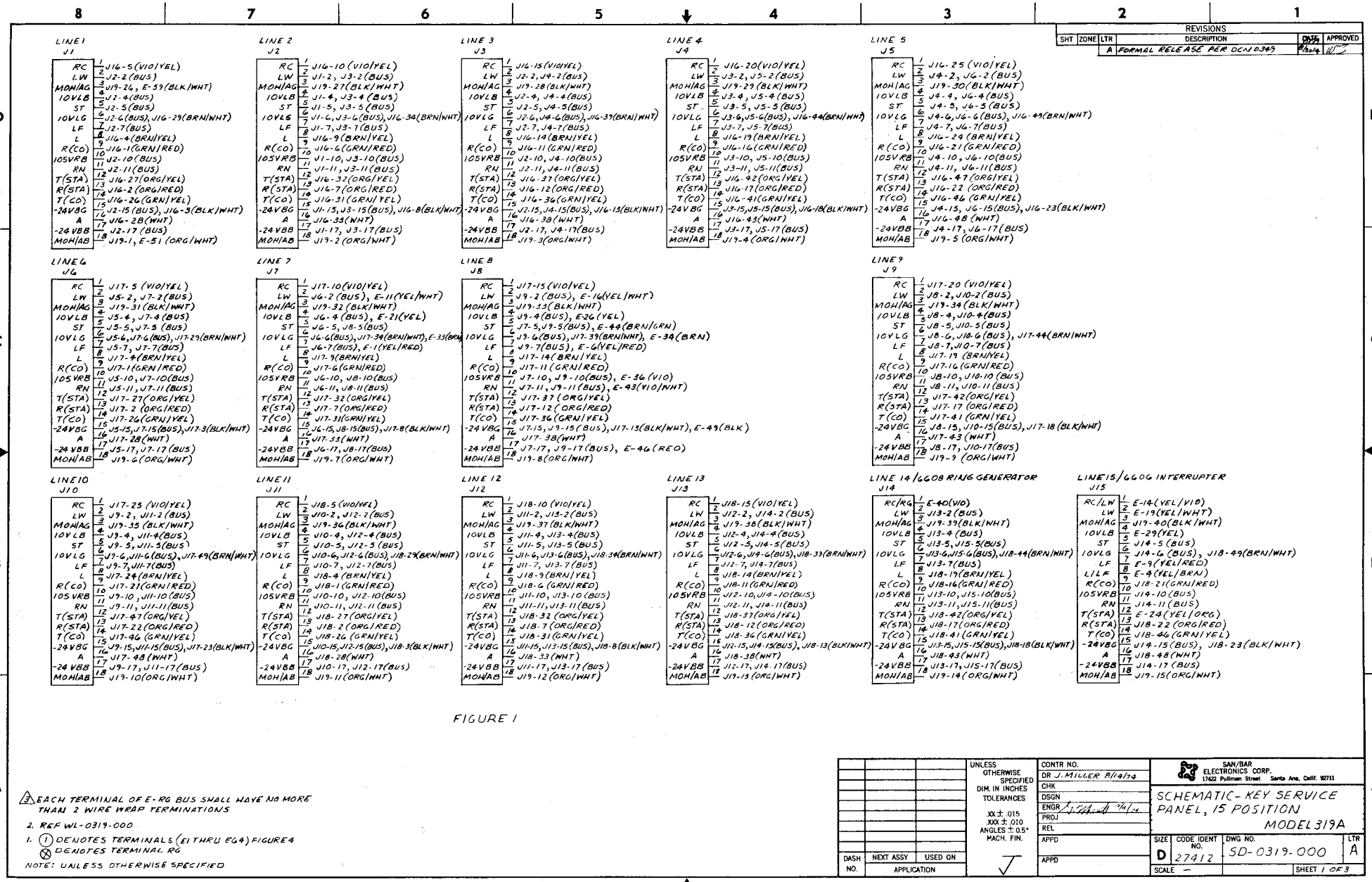
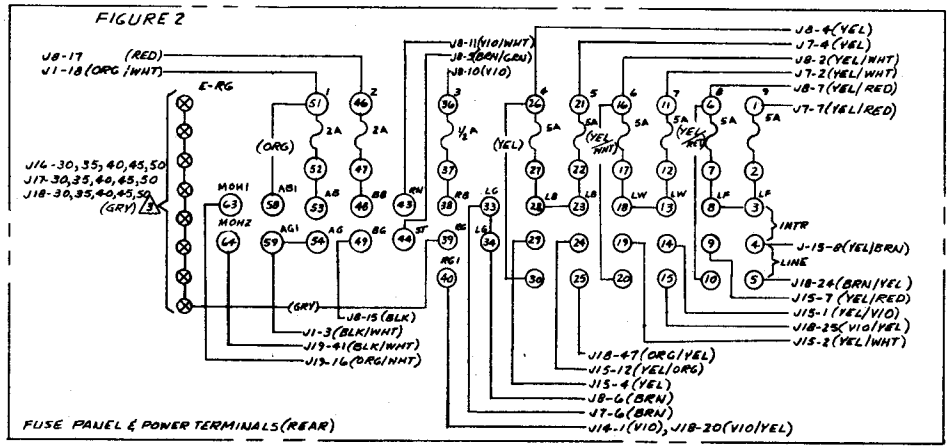


Fig. 6
Page 1 of 3



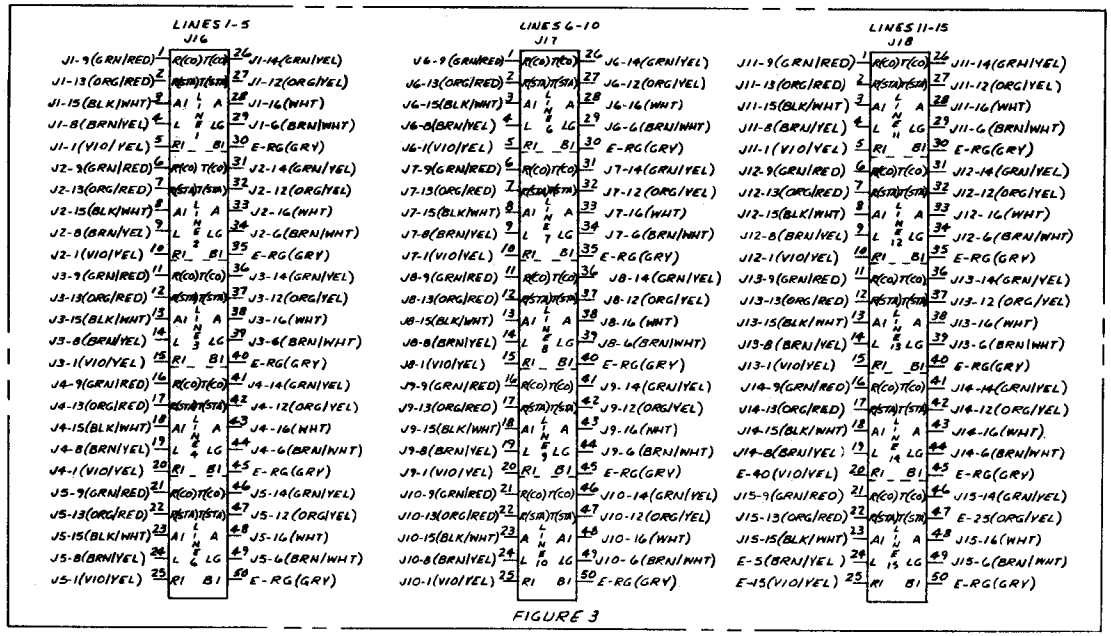
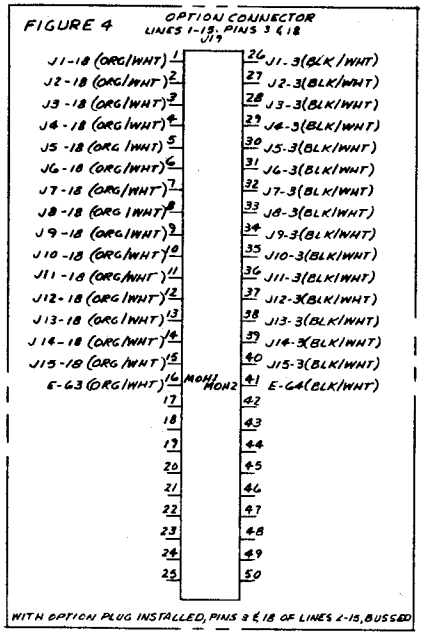


FIGURE 3



REVISIONS

SHT	ZONE	LTR	DESCRIPTION	DATE	APPROVED
		A	SEE SH 1		

DASH NO.	NEXT ASSY APPLICATION	USED ON	

UNLESS OTHERWISE SPECIFIED
DIM. IN INCHES
TOLERANCES
XX ± .015
XXX ± .010
ANGLES ± 0.5°
MACH. FIN.

CONTR NO.	
DR J. MILLER 6/24/74	
CHK	
DSGN	
ENGR J. Miller 6/24/74	
PROJ	
REL	
APPD	
APPD	

SAN/BAR ELECTRONICS CORP.
17422 Fullerton Street Santa Ana, Calif. 92711

SCHEMATIC-KEY SERVICE PANEL, 15 POSITION
MODEL 319A

SIZE	CODE IDENT NO.	DWG NO.	LTR
D	27412	SD-0319-000	A

SCALE | SHEET 2 OF 3

REVISIONS				
SHT	ZONE	LTR	DESCRIPTION	DATE / APPROVED
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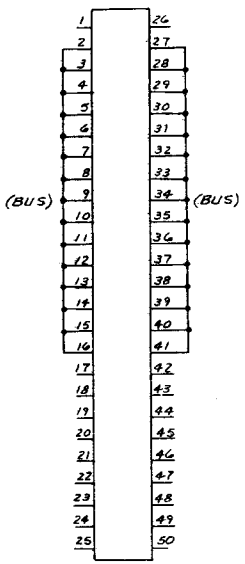
FIGURE 5
OPTION PLUG
ED-0319-100
P19



DASH NO.	NEXT ASSY	USED ON
	APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIM. IN INCHES
TOLERANCES
.XX ± .015
.XXX ± .010
ANGLES ± 0.5°
MACH. FIN. √

CONTR NO.
DR J. MILLER 8/14/74
CHK
DSGN
ENGR 9/4/74
PROJ
REL
APPD
APPD

SAN/BAR ELECTRONICS CORP.
17422 Pullman Street Santa Ana, Calif. 92711

SCHEMATIC-KEY SERVICE PANEL, 15 POSITION
MODEL 319A

SIZE	CODE IDENT NO.	DWG NO.	LTR
D	27412	SD-0319-000	A

SCALE —
SHEET 3 OF 3

Fig. 6
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