

## **VOICE CONNECTING ARRANGEMENT CD6**

### **1. GENERAL**

**1.01** This section provides identification, installation, operation, maintenance, and connection information for the 108A interconnecting unit (IU) and associated 604-type panel, or 615A panel when used in Voice Connecting Arrangement (VCA) CD6.

**1.02** This section is reissued to:

- Add information on the 604C panel
- Include information on the 615A panel which replaces the 69G apparatus mounting
- Add use of the 142A test set.

**1.03** Refer to Sections 463-300-101 and 463-300-102 for information on the 604A and 604B/604C panels. Refer to Section 463-300-104 for information on the 615A panel. Refer to Section 463-300-109 for information on the KS-20944 protector.

**1.04** The size of the initial installation and the expected growth should be the determining factors in selecting the proper equipment. ♦ For one to six IUs, use the 615A panel. ♦ For 5 to 18 IUs, use the 604A-type panel. For 5 to 14 IUs, use the 604B/604C panels.

**1.05** If the customer wants a copy of the Technical Reference which covers this interface specification, the customer should contact the local Telephone Company Business Office or the Marketing Representative.

**1.06** This issue of the section is based on the following drawings:

SD-69611-01, Issue 3 (108A IU)

SD-1E200-01, Issue 2D (604A-Type Panel)

If this section is to be used with equipment or apparatus reflecting later issue(s) of the drawing(s), reference should be made to the SDs and CDs to determine the extent of the changes and the manner in which the section may be affected.

### **2. IDENTIFICATION**

#### **PURPOSE**

- To provide an interface between the attendant position of a customer-provided (CP) PBX and Bell System 2-wire, one-way incoming only, loop start CO lines.
- To provide network control signaling functions.
- To limit excessive transmission signal levels from customer-provided equipment (CPE) and provide protection for telephone company personnel against hazardous voltages.
- ♦ Insure longitudinal balance of facility between the customer premises and the CO. ♦

#### **APPLICATION**

- VCA CD6 connects a one-way incoming exchange trunk line to a CP PBX.

#### **ORDERING GUIDE**

- Unit, Interconnecting, 108A (Fig. 1, 2, and 3, one per CO line)

*Note:* 108A IU replaces 433A KTU (MD).

#### **Associated Apparatus (Order Separately)**

*Note:* If a 23-inch relay rack is not provided on customer premises, provide a 16C apparatus mounting, or equivalent, for the ♦615A panel ♦ or an ED-91180-72, Group 21 cabinet, or equivalent, for the 604-type panel.

- Panel, 604A1 (fuse panel only, no power unit; will mount up to eighteen 108A IUs)

or

- Panel, 604A2 (19C2 power unit and fuse panel, Fig. 1; will mount up to eighteen 108A IUs)

INSTALLATION  
SEQUENCE OF  
108A IUS

TRUNK NO.	POSITION NO.
1	1A
2	2A
3	4A
4	5A
5	7A
6	8A
7	10A
8	11A
9	13A
10	3A
11	6A
12	9A
13	12A
14	14A
15	10B
16	11B
17	13B
18	14B

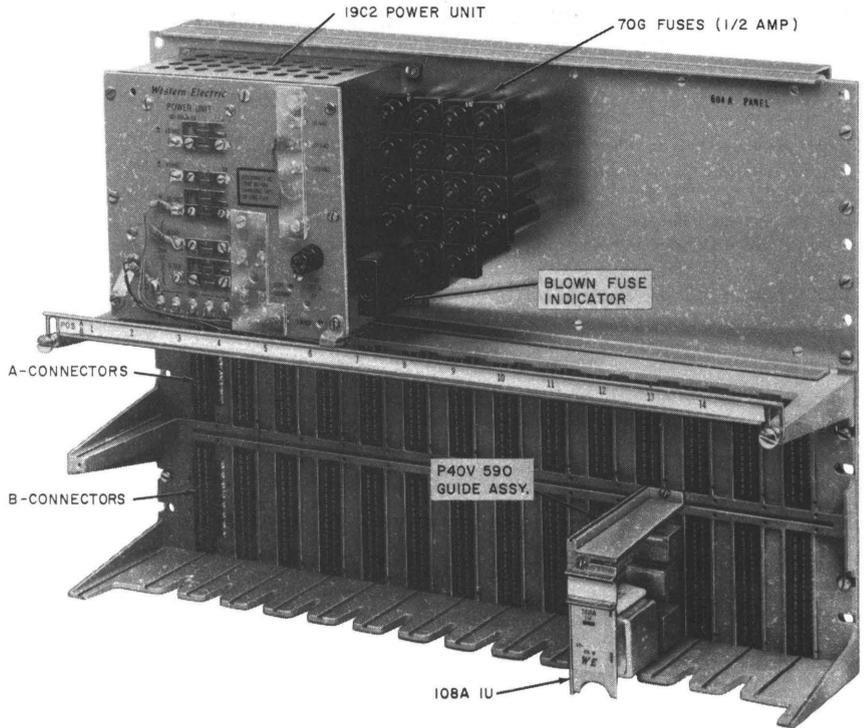


Fig. 1—108A Interconnecting Unit Mounted in 604A2 Panel

or

- Panel, 604B (fuse panel only, no power unit; will mount up to fourteen 108A IUs)

or

- Panel, 604C (fuse panel only, no power unit; will mount up to fourteen 108A IUs)

or

- Unit, Apparatus, 21A (required with 604C panel when supply voltage is -48V)

or

- Panel, 615A (fuse panel only, no power unit; will mount up to six 108A IUs)

- Guide, Assembly, P-40V590 (one per two 108A IUs)

- Bracket, 99B (one per three 615A panels)

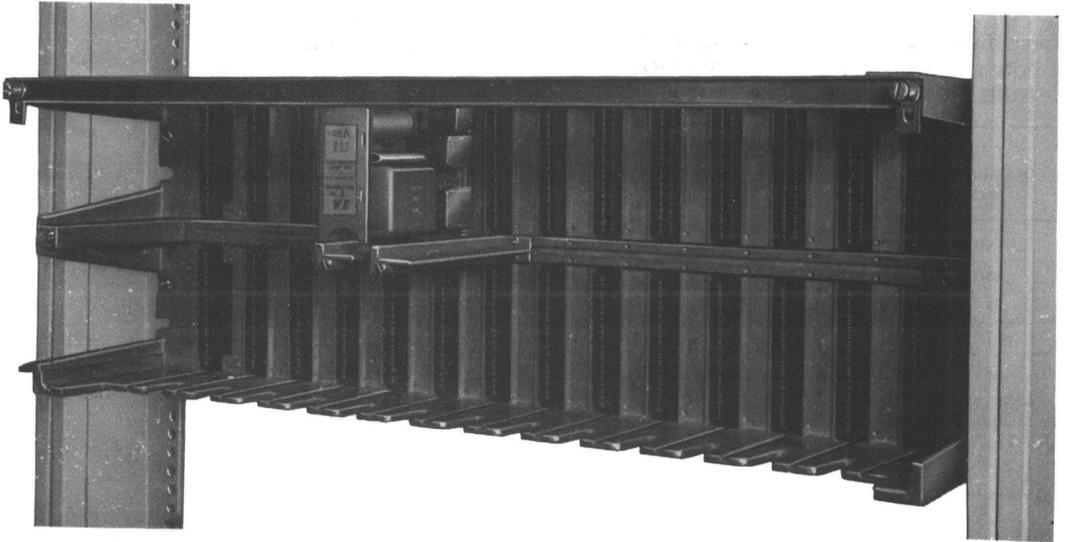
- Cable, A25B (see Table A for 604-type panel, one per 615A panel)

- Block, Connecting, 66M1-50 (as required, Fig. 4)

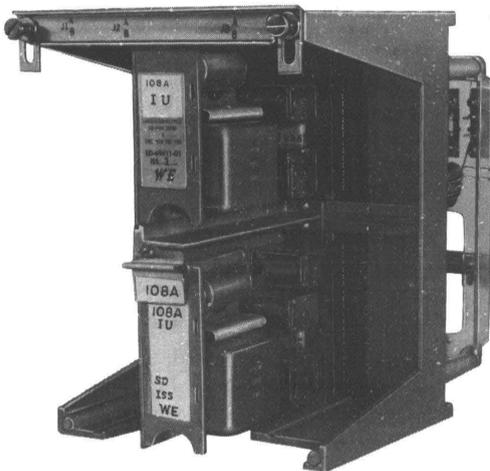
- Block, Connecting, 66B4-25 (as required)

**Note:** Other type blocks should not be used as they may not be compatible with 142A test set.

- Clip, Bridging, B (as required, Fig. 4)



**Fig. 2—108A Interconnecting Unit Mounted in 604B or 604C Panel**



**Fig. 3—108A Interconnecting Unit Mounted in 615A Panel**

- Cable, D inside wiring or equivalent (where required for the 615A panel)
- Unit, Power, 19C2 or equivalent (for 604A1 or 604B/604C when existing KTS power supply is insufficient)
- Cord, Power (for 19C2 power unit)

P-40J326 (1-1/2 ft)

P-40J327 (2 ft)

P-40J328 (4 ft)

P-40J329 (6 ft)

P-40J099 (12 ft)

**TABLE A**  
**OPTIONAL CABLE ARRANGEMENTS TO PROVIDE CONNECTIONS FOR FIVE PLUGS FOR 604A-TYPE PANEL OR FOUR PLUGS FOR 604B/604C PANEL**

CABLE DESIGNATION (NOTE)	MAXIMUM NO. OF CABLES REQUIRED					
	ARRANGEMENTS (SEE 3.03)					
	604A	604B	604A	604B	604A	604B
A25B	1	1	1	2	2	4
A50B			2	1		
A75A		1			1	
A100C	1					

*Note:* Arrangement of interconnecting units and local requirements will determine the size and maximum length of cable required.

**Overvoltage Protection (Optional)**

- KS-20944, L1 Protector (required when a CP dc power supply is used).

**Replaceable Components**

**604-Type Panel**

- Unit, Power, 19C2 (or equivalent, for 604A2 or 604B/604C panel)
- Fuses, 70G (1/2-ampere, 18 per 604A-type panel)
- Fuses, 70A (1-1/3 amperes, 3 per 604B/604C panels)
- Fuses, 70F (1/4-ampere, 13 per 604B/604C panels)
- Fuses, 70G (1/2-ampere, 2 per 604B/604C panels)
- Indicator, 17C-49 (for optional fuse alarm if required, 604B/604C panel only).

**615A Panel**

- Fuses, 24E (1/2-ampere, 8 per panel)

**DESIGN FEATURES**

**108A Interconnecting Unit**

- Components mounted on a 4-inch, 40-pin epoxy glass board
- One-way incoming (loop-start) CO trunk voice connecting arrangement
- Provides voice frequency coupling to CPE
- Provides dc isolation to CPE
- Approximate dimensions: 3-3/4 inches by 5-1/2 inches
- Requires 0.030 ampere maximum at 26 volts dc.

**3. INSTALLATION**

**69G Apparatus Mounting (Fig. 5 and 6)**

**3.01** The 69G apparatus mounting is not recommended for new installations. To provide additions to existing installations, refer to Fig. 5 and 6 for connections required. Separate fusing and -24 volt power are provided locally.

**604-Type Panel (Fig. 7 and Tables B, C, D, E, F)**

**3.02** The 604-type panel will mount on a standard relay rack or in an ED-91180-72, 18-plate equipment cabinet. Connect a separate ground wire to relay rack or cabinet.



*The 18-plate equipment cabinet will house two 604A-type or three 604-type panels or two 604-type panels with power unit when the drawing holder on the lower half of the equipment cabinet is removed.*

**3.03** Electrical connection is made to the 604-type panel through connector cables. Arrangement of the Amphenol plugs on the panel restricts the first plug to an A25B connector cable (to CO lines). Plugs 2 through 4 (604B/604C) or 2 through 5 (604A-type) are arranged to adapt to a choice of cable sizes (to CPE; see Table A).

**3.04** Terminate the stub end of connector cable No. 1 on a 66B4-25 connecting block for the CO lines.

**3.05** Terminate the stub end of connector cables 2, 3, 4 (604B/604C) and 5 (604A-type) at

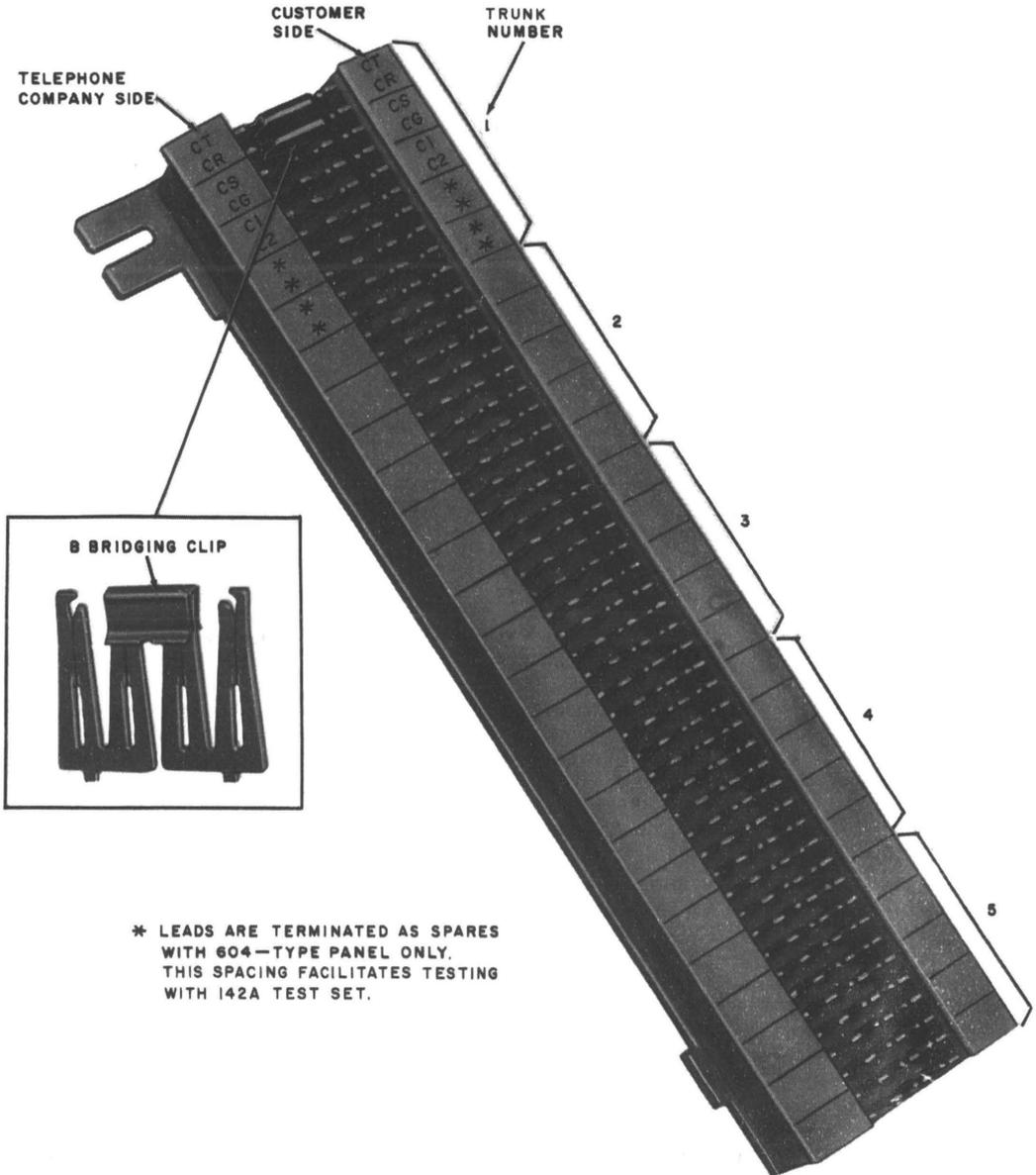
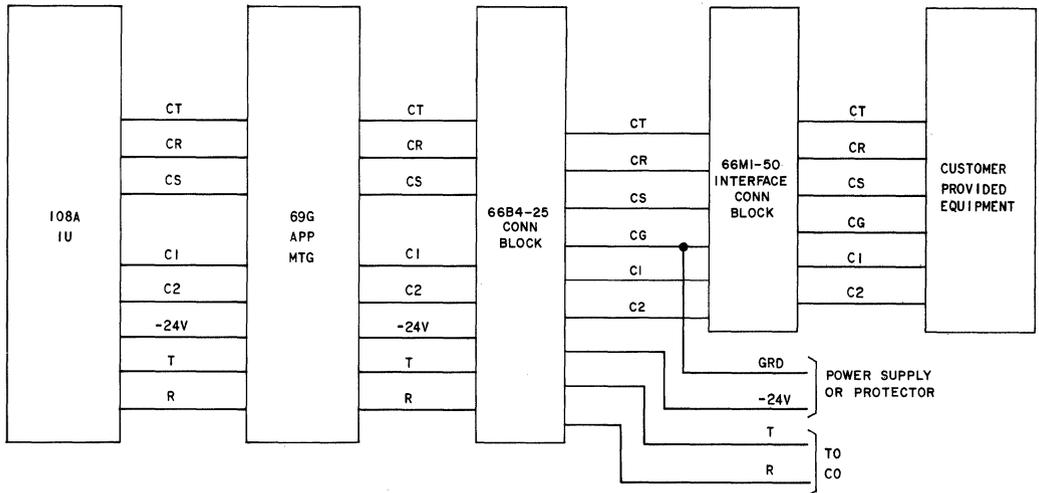


Fig. 4—66M1-50 Interface Connecting Block For Use With 604-Type Panel



**Fig. 5—Block Diagram—108A Interconnecting Unit With 69G Apparatus Mounting**

the telephone company side on 66M1-50 interface connecting blocks following the wiring plan shown in Fig. 4 and Tables B, C, D, E, and F. (Stencil lead designations on fanning strip, Fig. 4.)

**3.06** The customer must provide a separately fused 15-ampere, 105- to 130-volt, 60-Hz outlet for each panel within reach of available power cords (see Ordering Guide for cord lengths). The outlet should not be under control of a wall switch.

**3.07** When using an external power supply (604A1 or 604B panel only) connect to fuse panel on rear of panel as shown in Fig. 7 and Table I (use 16-gauge or equivalent twisted pair). Refer to the appropriate section in Division 518 for proper grounding of power plants. Proper grounding of equipment and power unit is important to prevent damage from power line surges.

**615A Panel (Fig. 8 and Tables G, H, and I)**

**3.08** Install the 615A panel on a 23-inch relay rack or in a 16C apparatus mounting using

the 99B bracket. Remove the center mounting bar from the 16C apparatus mounting to avoid cover interference. The bracket holds up to three 615A panels. Each 615A panel holds up to six 108A IUs, three in the upper (A-position) connectors and three in the lower (B-position) connectors. When less than six 108A IUs are required, the sequence of installation of the required IUs should be in alphanumeric order of the card holding connectors (J1A, J2A, J3A, J1B, etc).

**3.09** Connection of the CO lines is made to the 615A panel on the 66T1 connecting block as shown in Table G. 24-volt power and ground terminations are also made on the 66T1 block as shown in Table I.

**3.10** Connection from the CPE is made to the 615A panel through a single A25B cable to an Amphenol plug on the panel as shown in Table H. Terminate the stub end of the A25B cable on the telephone company side of a 66M1-50 interface connecting block. Stencil lead designations on the fanning strip (Fig. 10).

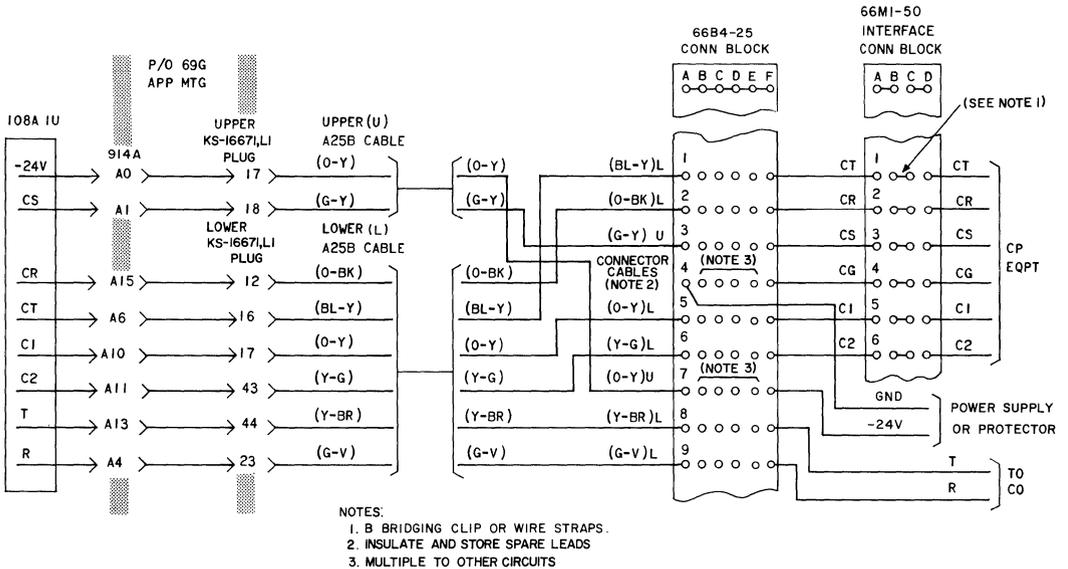


Fig. 6—Connection Diagram for 69G Apparatus Mounting

3.11 Connect a frame ground wire to the 16C apparatus mounting on relay rack. Refer to the appropriate section in Division 518 for proper grounding. Proper grounding of equipment and power unit is important to prevent damage from power line surges.⚡

108A Interconnecting Unit (Fig. 1 or 2)



*To protect the electrical components of 108A IUs, remove fuses associated with that particular circuit before installing or replacing a unit. See Table J, K, or L.*

3.12 When installing the 108A IU, position the board in the guide grooves of the P-40V590 guide assembly and the panel and slide the IU in until it is properly seated and electrically connected to the connector.

3.13 Make certain designation strip holder is properly positioned to hold the 108A IUs in place.

3.14 Refer to Fig. 1 for installation sequence of 108A IU in the 604-type panel. The suggested sequence is established to activate circuits in the order they appear at the customer interface. On current production of the 604B and the 604C panels, the **trunk** number is shown on the designation strip. On earlier production of the 604B, the **position** number is shown.

KS-20944 Protector

3.15 When power is supplied by a CP dc power source, protection is required. The KS-20944 protector must be mounted externally and wired to the fuse panel on rear of 604 panel (Fig. 7) or ⚡615A panel (Fig. 8).⚡

3.16 Connect as shown in Fig. 11 following local wiring instructions. The customer must connect his power supply to the red (GRD) and black (-V) 14-gauge wires extending from the unit.

**Warning:** Voltage is present on the number 1 terminal of the three circuit breakers.

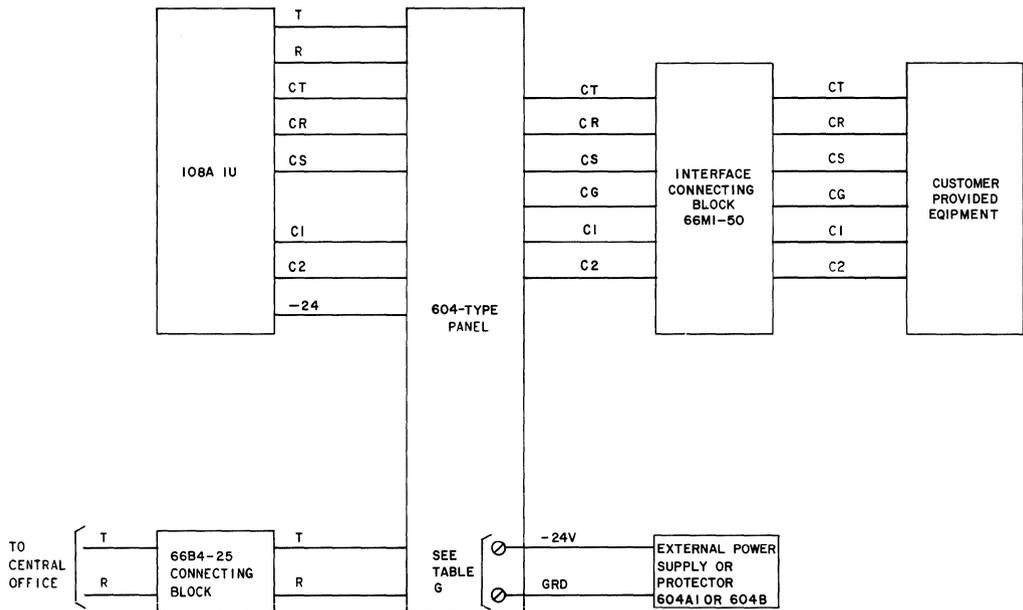


Fig. 7—Block Diagram—108A Interconnecting Unit With 604-Type Panel

**Caution:** Check for correct polarity and ground before closing switch.

#### 4. OPERATION

##### A. 108A Interconnecting Unit (Fig. 9)

###### Incoming Call

**4.01** When the CO seizes this circuit, ringing current supplied over the tip and ring operates relay R in the bridge ring detector circuit. The R relay operates and releases in unison with the ringing cycle and provides a contact closure on C1 and C2 leads to the CPE. When the customer answers, the CPE provides a contact closure between the CS, CG leads. The resulting ground on the CS lead causes S relay to operate. S relay operated trips the ringing, removes the ringing bridge, and establishes a talking path.

###### Disconnect

**4.02** When the CPE goes to the on-hook condition, the closure is opened between CG and CS

leads. This removes the ground on the CS lead releasing the slow release S relay. When S relay is released, the talking path to the CO is opened and the ringing bridge is placed across the tip and ring enabling the circuit to receive another incoming call.

##### B. KS-20944 Protector (Fig. 11)

**4.03** When the CPE dc power supply is used to operate the Bell System equipment, power protection is required. The KS-20944 protector is used to protect telephone company personnel from hazardous voltages but will not protect the equipment from component failures (separate fuses are required for 108A IUs). The KS-20944 circuit breakers can be used as a switch to disconnect dc power when working on interconnecting circuits.

**4.04** The KS-20944 protector consists of a dc voltage-operated circuit breaker in series with a parallel resistor-diode combination connected across the line and two dc current-operated circuit breakers connected in each side of the line. The contacts on the breakers are connected in series

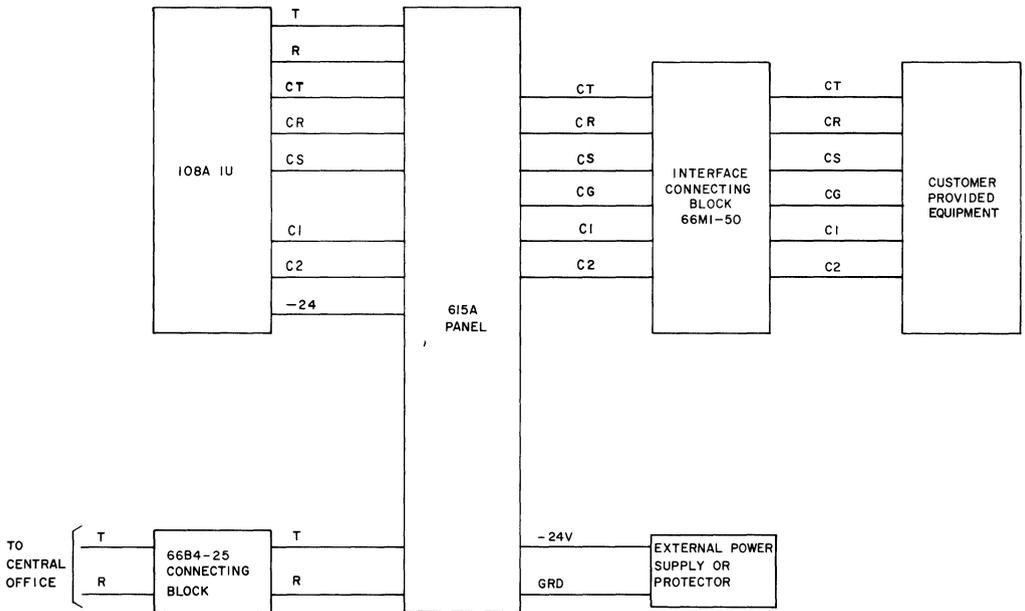


Fig. 8—Block Diagram—108A Interconnecting Unit With 615A Panel

with their own coil and their toggles are mechanically coupled together. When any breaker is operated, the line will be opened. The circuit breakers must be manually reset after tripping. The breakers will not reset if the fault persists.

**4.05** The KS-20944, List 1 protector is designed to trip in 25 milliseconds (maximum) on 38 volts dc, on 18.75 amperes dc, on reversed polarity, or over 18V ac, and on incorrect power supply ground.

## 5. MAINTENANCE

**5.01** When trouble is reported, check for blown fuses, loose or broken connections, and verify that the CO pair is good. Perform a test of the 108A IU.

### A. Using 1013A Hand Test Set and 81A Test Set

**5.02** Prepare the circuit under test as follows:

- Open the six leads to CPE by removing the B bridging clips (or wire straps) at the 66M1-50 interface block.

- Supply talk battery by connecting a 500-ohm resistor from the -24 volt supply to terminal CR and ground to terminal CT (make all connections on the telephone company side of the interface block). A 2A KTU or 31A KTU may be used for battery feed instead of the resistor. Refer to Section 518-112-421 for KTU connections.

- Connect a 1013A hand test set (or equivalent) across terminals CT and CR.

- Connect a strap to terminal CS (to be used later to strap CS and CG).

- Connect an 81A or KS-16990, List 1 test set across terminals C1 and C2.

**5.03 Transmission and Ringing Test:** Ask the test desk to ring the CO line associated with the 108A IU under test. The 81A (or equivalent) test set between terminals C1 and C2 should follow ringing. Answer the call by strapping terminals CS and CG and verify satisfactory transmission.

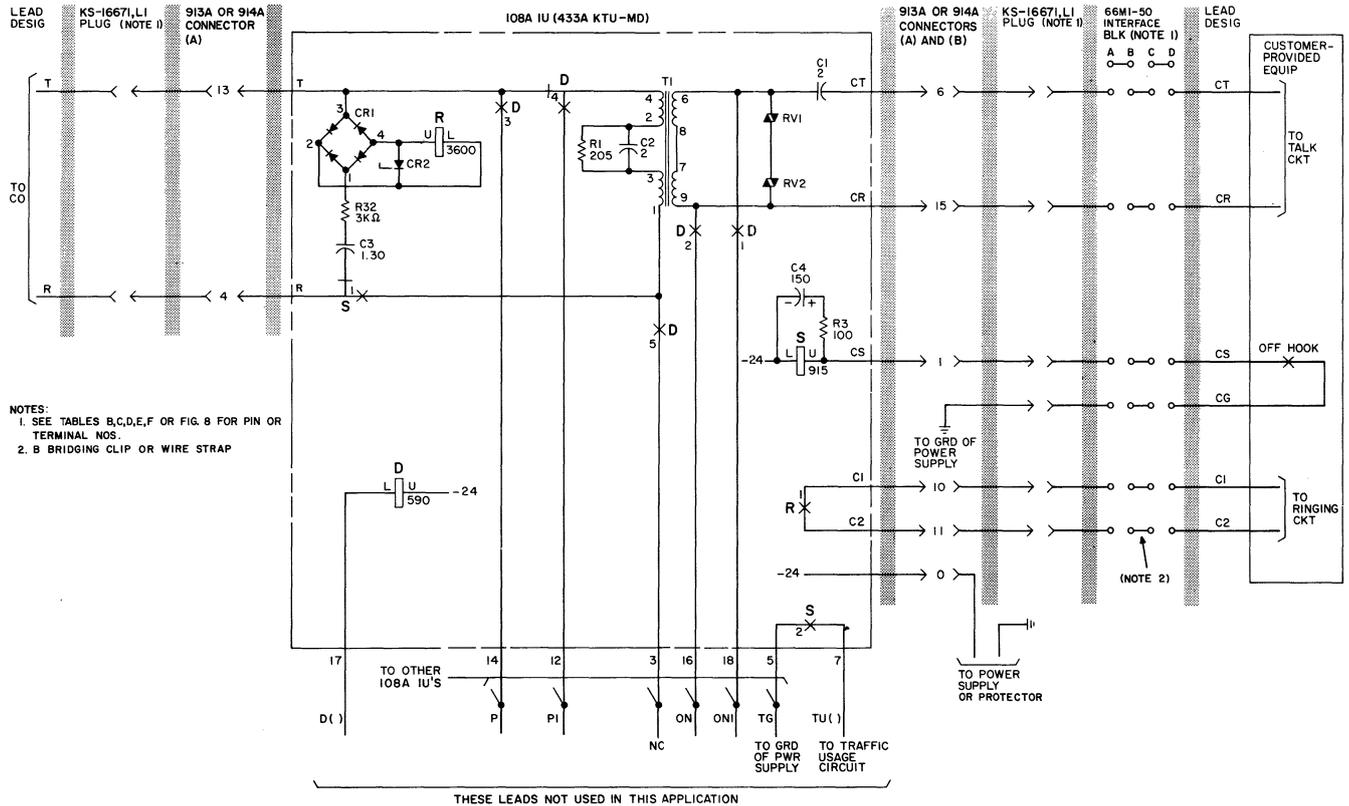


Fig. 9—Schematic Diagram—108A Interconnecting Unit

**B. Using the 142A Test Set (Fig. 12)****5.04** Prepare the circuit under test as follows:

- (a) Disconnect the CPE by removing the B bridging clips or wire straps at the interface block.
- (b) Connect the test set interface cord to the terminals on the telephone company side of the block as shown in Fig. 12. The cord required is determined by the type of block provided to terminate the interface.
- (c) Connect the leads from the 2-conductor power cord to -24 volts and ground as shown in Fig. 12. This voltage should be obtained from the same source used to power the IU under test. The PWR lamp on the test set should light.
- (d) Connect a 1013A hand test set to the HNDST terminals on the test set. Set the MON-TALK switch on the hand test set to MON position.
- (e) On the 142A test set, set the CS-CG LOOP switch to the 100-ohm position.

**5.05** After circuit preparation, proceed as follows:

- (1) Operate switch on 1013A hand test set to the TALK position. The S relay in the 142A test set will operate, lighting the CS lamp and providing a ground path on the CG lead through the 100-ohm resistor on the CS-CG LOOP switch. Ground on the CS lead causes the S relay in the IU to operate and seize the CO trunk. Since this is a one-way incoming service, dial tone should not be heard in the hand test set. Return the hand test set switch to MON position.
- (2) Dial the local test desk using another line and request that an incoming call be placed on the trunk under test.
- (3) When the trunk is seized by the incoming call from the test desk and ringing is applied to the trunk, the C- lamp lights and follows the ringing cycle.
- (4) Operate the hand test set switch to TALK. The C- lamp should extinguish and the CS lamp light indicating ringing has been tripped

and the call answered. The trunk should now be cut through the IU, and satisfactory transmission may be judged by using the hand test set. If the CS lamp lights but ringing is not tripped, change the CS-CG LOOP switch to the 18-ohm position. If ringing is now tripped, IU operation may be considered marginal or it may indicate the CS-CG loop is of too high resistance.

- (5) Have the test desk release the trunk. Operate the hand test set switch to MON. The CS lamp should be extinguished and the IU should be in the idle condition.

**5.06** When all testing is complete, remove power and interface cords. Connect the CPE by restoring B bridging clips or wire straps at interface connecting block.



**Never replace an interconnecting unit without first removing the fuse for that particular circuit. See the applicable table in Part 6.**

**5.07** When trouble is suspected in the 108A IU, exchange it with another unit known to be functioning properly. Tag and place the defective IU in blister pack and return it for repair.



**Do not attempt any tests or repairs to the customer-provided equipment.**

**5.08** When in the repairman's judgment the trouble is located in the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge billing can be initiated as outlined in BSP 660-101-312 entitled Maintenance of Service Charge on Service With Customer-Provided Equipment (CPE).

**6. CONNECTIONS**

**6.01** For connection information using the 69G apparatus mounting, refer to Fig. 5 and 6.

**6.02** For connection information using the 604A-type panel, refer to Fig. 4, 7, and Tables B, C, D, E, F, and I.

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**6.03** For connection information using the 604B/604C panels, refer to Fig. 4, 7, and Tables B, C, D, E, and I.

**6.04** For connection information using 615A panel, refer to Fig. 8, 10, Tables G, H, and I.

**6.05** For connection information using the KS-20944, List 1 protector, refer to Fig. 11.



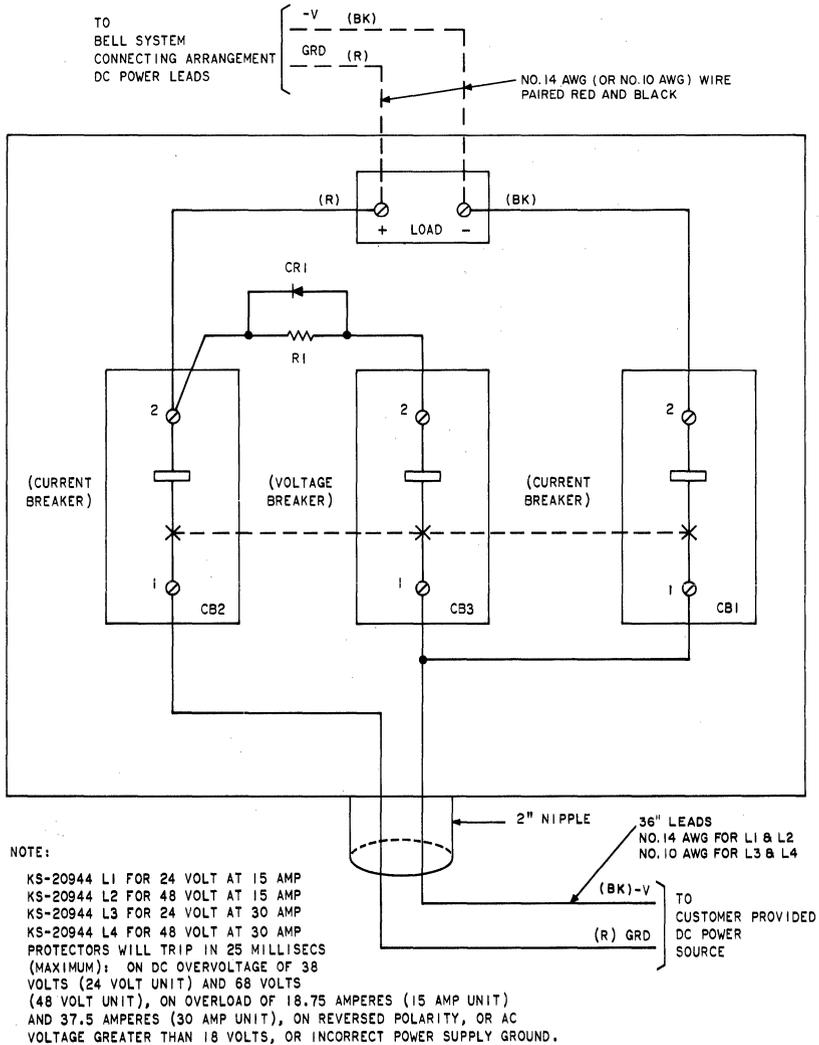


Fig. 11—Schematic Diagram—KS-20944 Protector

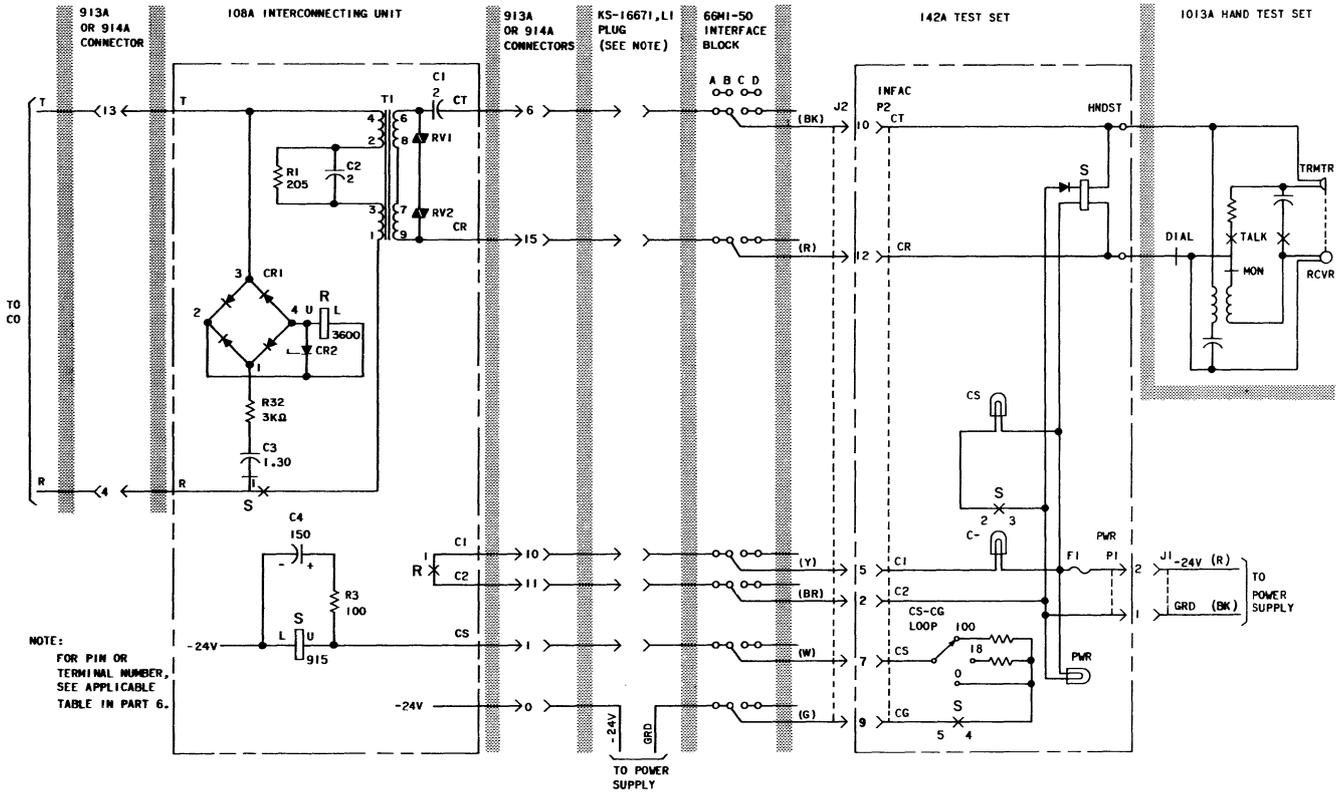


Fig. 12—Testing 108A Interconnecting Unit With 142A Test Set

**TABLE B**  
**CONNECTIONS FOR PLUG NO. 1—604-TYPE PANEL**

TRUNK NO.	LEAD DESIG*	CONN PIN NO.	A25B CONN CABLE COLOR	66B4-25 CONN BLK ROW NO.	POS. IN 604-TYPE PANEL
1	T	26	W-BL	1	1A
	R	1	BL-W	2	
2	T	27	W-O	3	2A
	R	2	O-W	4	
3	T	28	W-G	5	4A
	R	3	G-W	6	
4	T	29	W-BR	7	5A
	R	4	BR-W	8	
5	T	30	W-S	9	7A
	R	5	S-W	10	
6	T	31	R-BL	11	8A
	R	6	BL-R	12	
7	T	32	R-O	13	10A
	R	7	O-R	14	
8	T	33	R-G	15	11A
	R	8	G-R	16	
9	T	34	R-BR	17	13A
	R	9	BR-R	18	
10	T	35	R-S	19	3A
	R	10	S-R	20	
11	T	36	BK-BL	21	6A
	R	11	BL-BK	22	
12	T	37	BK-O	23	9A
	R	12	O-BK	24	
13	T	38	BK-G	25	12A
	R	13	G-BK	26	
14	T	39	BK-BR	27	14A
	R	14	BR-BK	28	
15	T	40	BK-S	29	†10B
	R	15	S-BK	30	
16	T	41	Y-BL	31	†11B
	R	16	BL-Y	32	
17	T	42	Y-O	33	†12B
	R	17	O-Y	34	
18	T	43	Y-G	35	†14B
	R	18	G-Y	36	
SPARE	SPARE	44	Y-BR	37	
		19	BR-Y	38	
		45	Y-S	39	
		20	S-Y	40	
		46	V-BL	41	
		21	BL-V	42	
		47	V-O	43	
		22	O-V	44	
		48	V-G	45	
		23	G-V	46	
		49	V-BR	47	
		24	BR-V	48	
		50	V-S	49	
		25	S-V	50	

\* Stencil lead designations on fanning strip.

† 604A-type only. Not on 604B and 604C.

**TABLE C**  
**CONNECTIONS FOR PLUG NO. 2—604-TYPE PANEL**

TRUNK NO.	LEAD DESIG*	CONN PIN NO.	CONN CABLE COLOR	66M1-50 CONN BLK ROW NO.	POS. IN 604-TYPE PANEL
1	CT	26	W-BL	1	1 A
	CR	1	BL-W	2	
	CS	27	W-O	3	
	CG	2	O-W	4	
	C1	28	W-G	5	
	C2	3	G-W	6	
	SPARE	29	W-BR	7†	
	SPARE	4	BR-W	8†	
	SPARE	30	W-S	9†	
	SPARE	5	S-W	10†	
2	CT	31	R-BL	11	2 A
	CR	6	BL-R	12	
	CS	32	R-O	13	
	CG	7	O-R	14	
	C1	33	R-G	15	
	C2	8	G-R	16	
	SPARE	34	R-BR	17†	
	SPARE	9	BR-R	18†	
	SPARE	35	R-S	19†	
	SPARE	10	S-R	20†	
3	CT	36	BK-BL	21	4 A
	CR	11	BL-BK	22	
	CS	37	BK-O	23	
	CG	12	O-BK	24	
	C1	38	BK-G	25	
	C2	13	G-BK	26	
	SPARE	39	BK-BR	27†	
	SPARE	14	BR-BK	28†	
	SPARE	40	BK-S	29†	
	SPARE	15	S-BK	30†	
4	CT	41	Y-BL	31	5 A
	CR	16	BL-Y	32	
	CS	42	Y-O	33	
	CG	17	O-Y	34	
	C1	43	Y-G	35	
	C2	18	G-Y	36	
	SPARE	44	Y-BR	37†	
	SPARE	19	BR-Y	38†	
	SPARE	45	Y-S	39†	
	SPARE	20	S-Y	40†	
5	CT	46	V-BL	41	7 A
	CR	21	BL-V	42	
	CS	47	V-O	43	
	CG	22	O-V	44	
	C1	48	V-G	45	
	C2	23	G-V	46	
	SPARE	49	V-BR	47†	
	SPARE	24	BR-V	48†	
	SPARE	50	V-S	49†	
	SPARE	25	S-V	50†	

\* Stencil lead designations on fanning strip.

† Stencil as spare. No customer-provided conductors should be terminated on these binding posts.

TABLE D

## CONNECTIONS FOR PLUG NO. 3—604-TYPE PANEL

TRUNK NO.	LEAD DESIGN*	CONN PIN NO.	CONN CABLE COLOR	66M1-50 CONN BLK ROW NO.	POS. IN 604-TYPE PANEL
6	CT	26	W-BL	1	8 A
	CR	1	BL-W	2	
	CS	27	W-O	3	
	CG	2	O-W	4	
	C1	28	W-G	5	
	C2	3	G-W	6	
	SPARE	29	W-BR	7†	
	SPARE	4	BR-W	8†	
	SPARE	30	W-S	9†	
7	CT	31	R-BL	11	10 A
	CR	6	BL-R	12	
	CS	32	R-O	13	
	CG	7	O-R	14	
	C1	33	R-G	15	
	C2	8	G-R	16	
	SPARE	34	R-BR	17†	
	SPARE	9	BR-R	18†	
	SPARE	35	R-S	18†	
8	CT	36	BK-BL	21	11 A
	CR	11	BL-BK	22	
	CS	37	BK-O	23	
	CG	12	O-BK	24	
	C1	38	BK-G	25	
	C2	13	G-BK	26	
	SPARE	39	BK-BR	27†	
	SPARE	14	BR-BK	28†	
	SPARE	40	BK-S	29†	
9	CT	41	Y-BL	31	13 A
	CR	16	BL-Y	32	
	CS	42	Y-O	33	
	CG	17	O-Y	34	
	C1	43	Y-G	35	
	C2	18	G-Y	36	
	SPARE	44	Y-BR	37†	
	SPARE	19	BR-Y	38†	
	SPARE	45	Y-S	39†	
SPARE	↑	46	V-BL	41	
	↓	21	BL-V	42	
		47	V-O	43	
		22	O-V	44	
		48	V-G	45	
		23	G-V	46	
		49	V-BR	47	
		24	BR-V	48	
		50	V-S	49	
- 24V	FAL1‡	49	V-BR	47	F2(FA)
GRD	G1‡	24	BR-V	48	TS1(15)
- 48V	FAL2‡	50	V-S	49	F16(FA)
GRD	G2‡	25	S-V	50	TS1(16)

\* Stencil lead designations on fanning strip.

† Stencil as spare. No customer-provided conductors should be terminated on these binding posts.

‡ Optional attendant fuse alarm indicator on 604B panel only.

**TABLE E**  
**CONNECTIONS FOR PLUG NO. 4—604-TYPE PANEL**

TRUNK NO.	LEAD DESIG*	CONN PIN NO.	CONN CABLE COLOR	66M1-50 CONN BLK ROW NO.	POS. IN 604-TYPE PANEL
10	CT	26	W-BL	1	3 A
	CR	1	BL-W	2	
	CS	27	W-O	3	
	CG	2	O-W	4	
	C1	28	W-G	5	
	C2	3	G-W	6	
	SPARE	29	W-BR	7†	
	SPARE	4	BR-W	8†	
	SPARE	30	W-S	9†	
11	CT	31	R-BL	11	6 A
	CR	6	BL-R	12	
	CS	32	R-O	13	
	CG	7	O-R	14	
	C1	33	R-G	15	
	C2	8	G-R	16	
	SPARE	34	R-BR	17†	
	SPARE	9	BR-R	18†	
	SPARE	35	R-S	19†	
12	CT	36	BK-BL	21	9 A
	CR	11	BL-BK	22	
	CS	37	BK-O	23	
	CG	12	O-BK	24	
	C1	38	BK-G	25	
	C2	13	G-BK	26	
	SPARE	39	BK-BR	27†	
	SPARE	14	BR-BK	28†	
	SPARE	40	BK-S	29†	
13	CT	41	Y-BL	31	12 A
	CR	16	BL-Y	32	
	CS	42	Y-O	33	
	CG	17	O-Y	34	
	C1	43	Y-G	35	
	C2	18	G-Y	36	
	SPARE	44	Y-BR	37†	
	SPARE	19	BR-Y	38†	
	SPARE	45	Y-S	39†	
14	CT	20	S-Y	40†	14 A
	CR	46	V-BL	41	
	CR	21	BL-V	42	
	CS	47	V-O	43	
	CG	22	O-V	44	
	C1	48	V-G	45	
	C2	23	G-V	46	
	SPARE	49	V-BR	47†	
	SPARE	24	BR-V	48†	
SPARE	50	V-S	49†		
SPARE	25	S-V	50†		

\* Stencil lead designations on fanning strip.

† Stencil as spare. No customer-provided conductors should be terminated on these binding posts.

**TABLE F**  
**CONNECTIONS FOR PLUG NO. 5—604A TYPE PANEL ONLY**

TRUNK NO.	LEAD DESIG*	CONN. PIN NO.	CONN CABLE COLOR	66M1-50 CONN BLK ROW NO.	POS. IN 604A PANEL
15	CT	26	W-BL	1	10 B
	CR	1	BL-W	2	
	CS	27	W-O	3	
	CG	2	O-W	4	
	C1	28	W-G	5	
	C2	3	G-W	6	
16	CT	29	W-BR	7	11 B
	CR	4	BR-W	8	
	CS	30	W-S	9	
	CG	5	S-W	10	
	C1	31	R-BL	11	
	C2	6	BL-R	12	
17	CT	32	R-O	13	13 B
	CR	7	O-R	14	
	CS	33	R-G	15	
	CG	8	G-R	16	
	C1	34	R-BR	17	
	C2	9	BR-R	18	
18	CT	35	R-S	19	14 B
	CR	10	S-R	20	
	CS	36	BK-BL	21	
	CG	11	BL-BK	22	
	C1	37	BK-O	23	
	C2	12	O-BK	24	

\* Stencil lead designations on fanning strip.

→ TABLE G ←  
**CONNECTIONS FOR CENTRAL OFFICE TRUNKS —**  
**615A PANEL**

TRUNK NUMBER	LEAD DESIG.	66T1 CONN. BLOCK	TO 913 OR 914	
			CONN.	PIN
1	T	1A	J1A	13
	R	2A	J1A	4
2	T	3A	J2A	13
	R	4A	J2A	4
3	T	5A	J3A	13
	R	6A	J3A	4
4	T	7A	J1B	13
	R	8A	J1B	4
5	T	9A	J2B	13
	R	10A	J2B	4
6	T	11A	J3B	13
	R	12A	J3B	4
		13A	SPARE	
		14A	SPARE	

## → TABLE H ←

## CONNECTIONS FOR PLUG P1 – 615A PANEL

LEAD DESIG.	PLUG P1 PIN NO.	LEAD COLOR	615A PANEL		
			JACK	PIN	66T1 BLK
CT	26	W-BL	J1A	6	1B
CR	1	BL-W		15	2B
CS	27	W-O		1	
CG	2	O-W			12C
C1	28	W-G		10	
C2	3	G-W		11	
SPARE	29	W-BR		14	
SPARE	4	BR-W		19	
SPARE	30	W-S		7	
SPARE	5	S-W		16	
CT	31	R-BL		J2A	6
CR	6	BL-R	15		4B
CS	32	R-O	1		
CG	7	O-R			13C
C1	33	R-G	10		
C2	8	G-R	11		
SPARE	34	R-BR	14		
SPARE	9	BR-R	19		
SPARE	35	R-S	7		
SPARE	10	S-R	16		
CT	36	BK-BL	J3A	6	5B
CR	11	BL-BK		15	6B
CS	37	BK-O		1	
CG	12	O-BK			14C
C1	38	BK-G		10	
C2	13	G-BK		11	
SPARE	39	BK-BR		14	
SPARE	14	BR-BK		19	
SPARE	40	BK-S		7	
SPARE	15	S-BK		16	

→ TABLE H (Cont) ←

LEAD DESIG.	PLUG P1 PIN NO.	LEAD COLOR	615A PANEL		
			JACK	PIN	66T1 BLK
CT	41	Y-BL	J1B	6	7B
CR	16	BL-Y		15	8B
CS	42	Y-O		1	
CG	17	O-Y			12D
C1	43	Y-G		10	
C2	18	G-Y		11	
CT	44	Y-BR	J2B	6	9B
CR	19	BR-Y		15	10B
CS	45	Y-S		1	
CG	20	S-Y			13D
C1	46	V-BL		10	
C2	21	BL-V		11	
CT	47	V-O	J3B	6	11B
CR	22	O-V		15	12B
CS	48	V-G		1	
CG	23	G-V			14D
C1	49	V-BR		10	
C2	24	BR-V		11	
SPARE	50	V-S			
SPARE	25	S-V			

→ TABLE I ←

## POWER CONNECTIONS

INPUT VOLTAGE	69G APP MTG (NOTE 1)	604A1 PANEL (NOTE 2)	604B/604C PANEL (NOTE 3)	615A PANEL (NOTE 4)
-24V	7	14	Input -24V	D2
-48V	—	—	Input -48V	—
GRD	4	13	Input -GRD	D4

*Notes:*

1. Terminals on 66B4-25 connecting block, connect as shown in Fig. 7.
2. Terminals on terminal strip TSA on rear of 604A1 panel.
3. Terminals on rear of 604B/604C panel are stamped as shown. Position option straps for -24V or -48V.
4. Terminals on 66T1 connecting block. Use 20 gauge wire, strip leads before putting into 66-type terminals. Power may be distributed to subsequent panels by multiplying succeeding panels from terminals C2 and C4 (multiple a maximum of three panels).

◆ TABLE J ◆

## 604A-TYPE PANEL FUSE ASSIGNMENT

VOLTAGE	FUSE NO.*	PANEL POSITION
-24V	F1	J1A
	F2	J2A
	F3	J3A
	F4	J4A
	F5	J5A
	F6	J6A
	F7	J7A
	F8	J8A
	F9	J9A
	F10	J10A
	F11	J11A
	F12	J12A
	F13	J13A
	F14	J14A
	F15	J10B
	F16	J11B
	F17	J13B
	F18	J14B

\* Fuses are 70G 1/2-ampere.

**TABLE K**  
**604B OR 604C PANEL FUSE ASSIGNMENT**

TABLE

VOLTAGE	FUSE NO.	PANEL POSITION
$\pm 105\text{V}$ (Note)	F1*	J1A thru J14A
-24V	F2*	J1A
	F3*	J2A
	F4*	J3A
	F5*	J4A
	F6*	J5A
	F7*	J6A
	F8*	J7A
	F9*	J8A
	F10*	J9A
	F11*	J10A
	F12*	J11A
	F13*	J12A
	F14†	J13A
	F15†	J14A
-48V (Note)	F16‡	J1A thru J5A
	F17‡	J6A thru J10A
	F18‡	J11A thru J14A

**Note:**  $\pm 105\text{V}$  and  $-48\text{V}$  not used in this application.

\* 70F Fuse 1/4 Ampere.

† 70G Fuse 1/2 Ampere.

‡ 70A Fuse 1-1/3 Ampere.

→ TABLE L ←

**615A PANEL FUSE ASSIGNMENT**

VOLTAGE	FUSE NO.*	PANEL POSITION
-24V	F1	J1A
	F2	J2A
	F3	J3A
-48V†	F4	J1B
	F5	J2B
	F6	J3B
$\pm 105\text{V}$ †	F7	J1A, J2A, J3A
SPARE	F8	

\* 24E Fuse 1/2 Ampere.

† Not used in this application.