

400-TYPE MOUNTINGS AND ASSOCIATED MODULAR-TYPE KEYS IDENTIFICATION

1. GENERAL

1.01 This section describes the 400 series key mountings. They are designed to permit flush mounting of modular-type illuminated button keys. This section also includes descriptions of the 6-button keys and other associated apparatus.

1.02 Station line concentration equipment is used to minimize the amount of cabling per position. The line circuits employed may be 6A or 1A1.

1.03 The key mountings may be installed in a furniture or shelf cutout provided by the customer. They may be mounted at any angle from the horizontal to almost vertical.

1.04 Each 400-type key mounting consists of a:

- Faceplate assembly
- Dust pan (frame base)
- Hinged metal framework
- Pivot bar
- Adjustable counterbalance

Note: These items are a complete unit. The keys and connecting blocks are not included. They must be ordered separately.

1.05 The following features may be provided with these mountings and associated equipment on a custom basis:

- Line pickup
- Hold
- Flash and recall
- Key signaling
- Common audible
- Emergency service in a power failure condition

1.06 The capacities and features of the larger mountings are shown in Table A. Smaller mountings will be covered in a later issue as they become available.

2. IDENTIFICATION AND ASSEMBLY OF PARTS

2.01 Faceplate assemblies: Table B lists the complete faceplate assemblies and piece part information. A complete assembly with five colored mats is included with each mounting. Fig. 1 shows a typical faceplate assembly offset to the right for illustration.

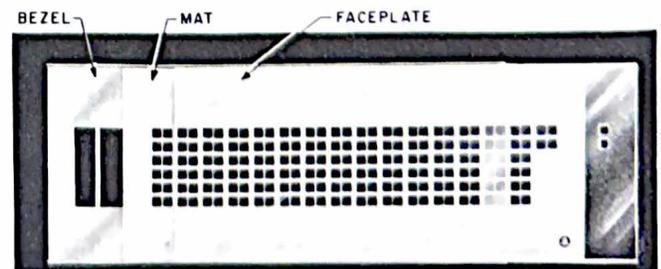


Fig. 1 — Typical Faceplate Assembly

TABLE A
EQUIPMENT AND FEATURES

Mounting	Modular Keys	Features Provided (See Notes 1 and 2)	Connecting Blocks Required
401A	1 — 621A 1 — 599A 4 — 598A	Flash, Release Hold, 5 Pickup 24 Pickup	1 — 63A
	1 — 621A 1 — 599B 4 — 598A	Flash, Release Hold, Transfer, Cutoff, 4 Pickup 24 Pickup	1 — 64A
	1 — 621A 5 — 598A	Flash, Release 30 Pickup	
402A	1 — 621A 1 — 599A 9 — 598A	Flash, Release Hold, 5 Pickup 54 Pickup	1 — 63A
	1 — 621A 1 — 599B 9 — 598A	Flash, Release Hold, Transfer, Cutoff, 4 Pickup 54 Pickup	2 — 64A
	1 — 621A 10 — 598A	Flash, Release 60 Pickup	
403A	1 — 622A 1 — 599A 14 — 598A	Flash, Release with Booster Solenoid Hold, 5 Pickup 84 Pickup	1 — 63A
	1 — 622A 1 — 599B 14 — 598A	Flash, Release with Booster Solenoid Hold, Transfer, Cutoff, 4 Pickup 84 Pickup	3 — 64A
	1 — 622A 15 — 598A	Flash, Release with Booster Solenoid 90 Pickup	
404A	1 — 622A 1 — 599A 19 — 598A	Flash, Release with Booster Solenoid Hold, 5 Pickup 114 Pickup	1 — 63A
	1 — 622A 1 — 599B 19 — 598A	Flash, Release with Booster Solenoid Hold, Transfer, Cutoff, 4 Pickup 114 Pickup	4 — 64A
	1 — 622A 20 — 598A	Flash, Release with Booster Solenoid 120 Pickup	

Note 1: The 105B apparatus blank may be used when a full complement of keys is not required.

Note 2: Buttons in the first key of each group of 30 lines may be converted to nonlocking signaling keys.

TABLE B
FACEPLATE ASSEMBLIES

Type Mounting	Complete Face plate Assembly	Face plate Only	Mats					Bezel
			Dull Gold	Blue	Green	Cream White	Silver	
401A	29A	P-12E294	P-12E295	P-12E296	P-12E297	P-12E298	P-12E299	P-12E293
402A	30A	P-12E305	P-12E306	P-12E307	P-12E308	P-12E309	P-12E310	P-12E304
403A	31A	P-12E274	P-12E286	P-12E287	P-12E288	P-12E289	P-12E290	P-12E277
404A	32A	P-12E313	P-12E314	P-12E315	P-12E316	P-12E317	P-12E318	P-12E319

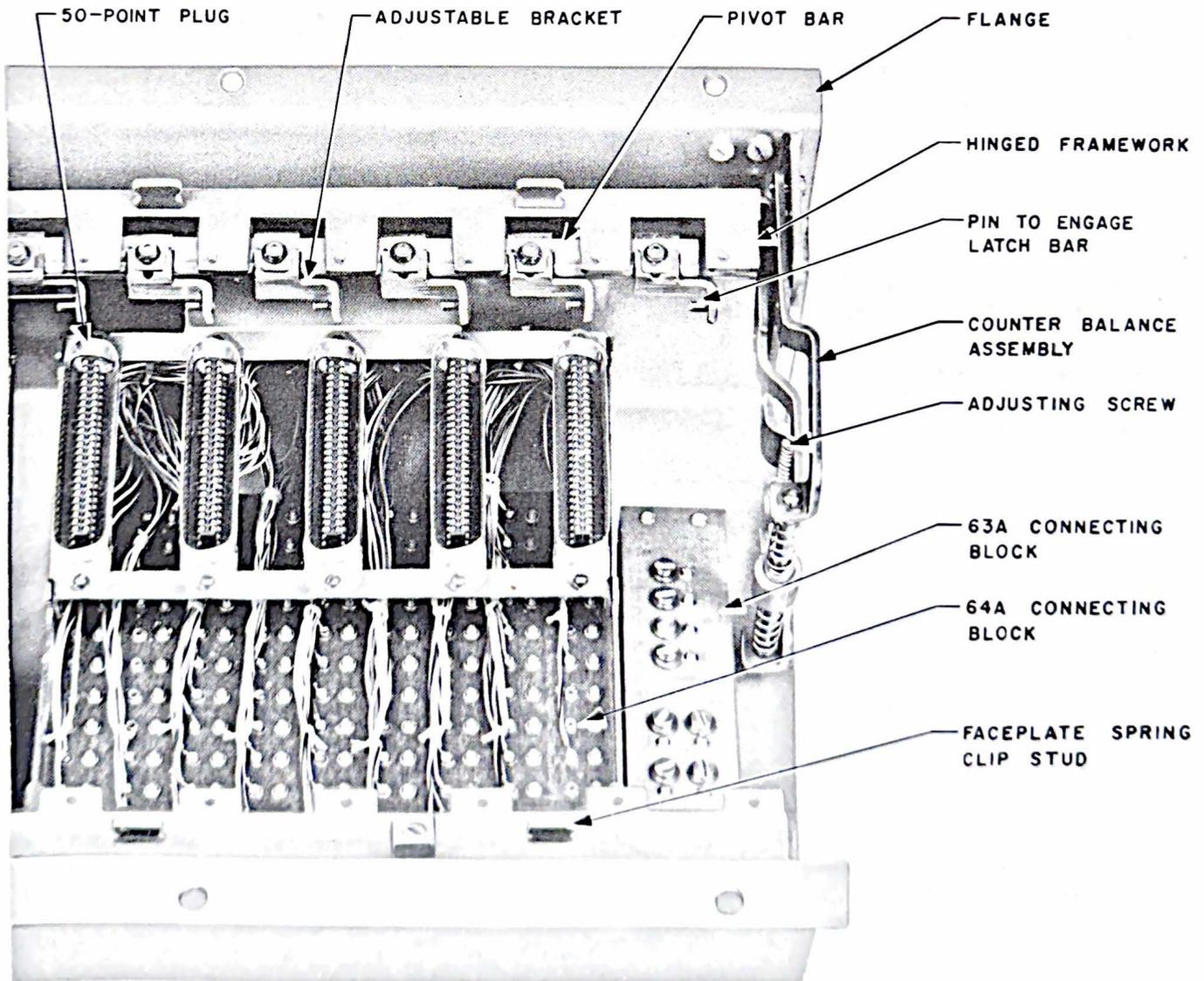
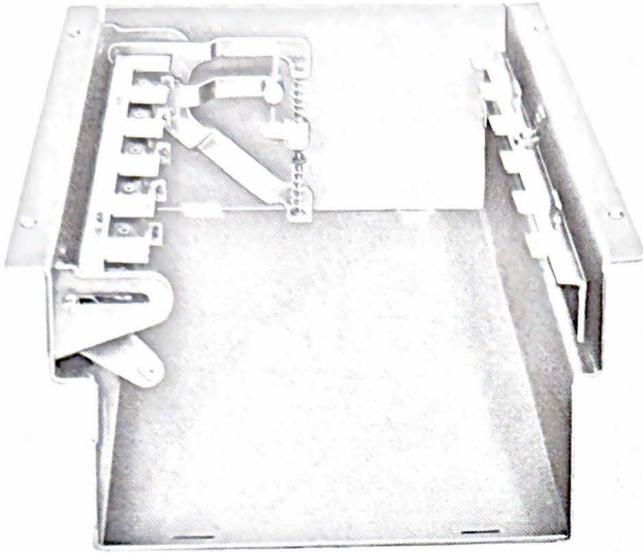


Fig. 2 - Details of Typical Mounting Assembly



**Fig. 3 — Typical Dust Pan (Frame Base)
Hinged Framework**

2.02 Dust pan (frame base) and hinged framework: The dust pan is assembled from three steel stampings. It supports the hinged framework. The flanges rest on the supporting surface at the edges of the cutout. Holes are provided in the flanges for fastening the unit to the supporting surface (Fig. 3). The hinged framework is drilled and tapped to receive the key mounting screws. It also supports the 64-type connecting blocks. Fig. 2 shows the assembly of the framework.

2.03 Pivot bar: The pivot bar provides mechanical linkage between keys. The operation of a line button in any key will release any operated button in the other keys. The pivot bar is supported by brackets at the ends. Adjustable details connect the pivot bar to each key latch bar. The details are secured by Allen-type setscrews and lockwashers (see Fig. 2).

2.04 The adjustable counterbalance is designed to provide spring tension on the pivot bar. It compensates for the different numbers of keys used with these mountings and ensures satisfactory operation in all possible mounting positions.

2.05 Fig. 4 shows the 400-type mounting in the open position.

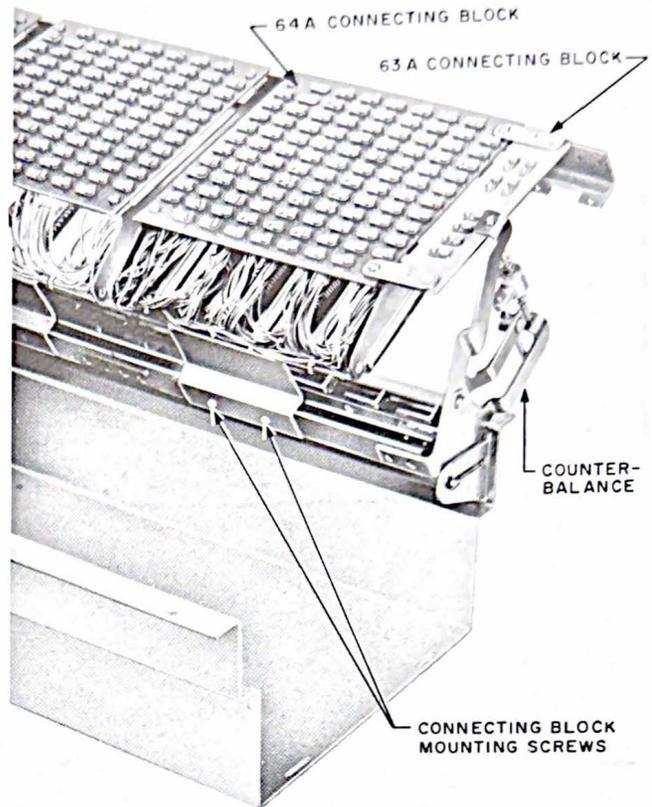


Fig. 4 — 400-Type Mounting, Open Position

3. 401A KEY MOUNTING

3.01 Fig. 5 shows a typical 401A key mounting with keys in place.

3.02 The 401A key mounting accommodates six modular-type keys. The growth is from right to left.

- One 621A key may be mounted in the first key position to provide:
 - a. Mechanical release of any previously operated key button.
 - b. Flashing (operator recall) on established connections.
 - c. Nonilluminated buttons.
- One 599A key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.
 - b. 5-line pickup keys.
 - c. Illuminated buttons.

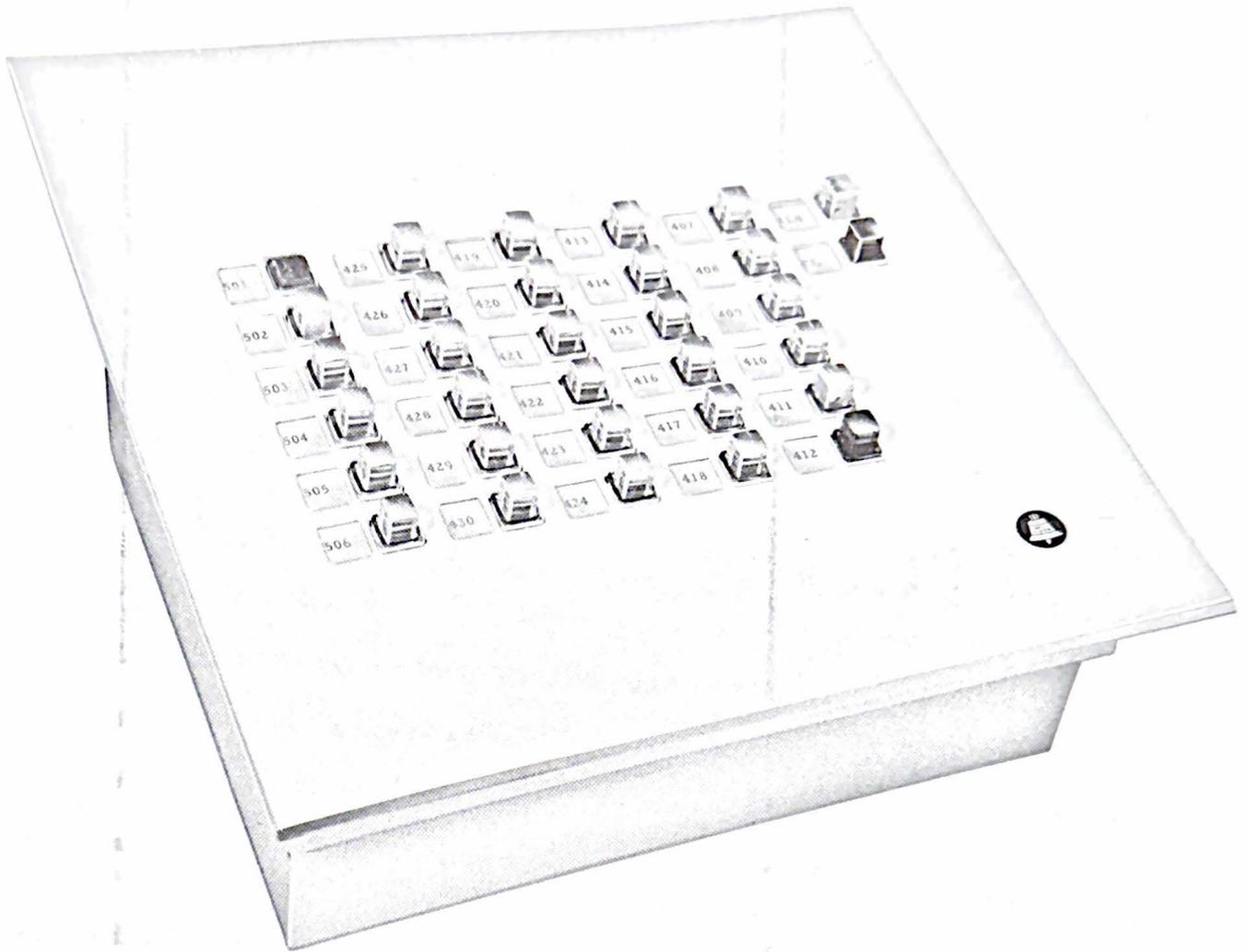


Fig. 5 — 401A Key Mounting

- d. Signaling (five keys convertible to non-locking).
 - One 599B key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.
 - b. 4-line pickup keys.
 - c. Illuminated buttons.
 - d. Signaling (four keys convertible to non-locking).
 - e. Cutoff or transfer of ringer, buzzer, or a line (turn-button key).
 - Four 598A keys may be mounted in key positions 3 to 6 to provide:
 - a. 24-line pickup keys.
 - b. Illuminated buttons.
- 3.03** A 598A key may be used in the second key position to provide an additional line pickup key when holding is not required.
- 3.04** The 105B apparatus blank may be used when a full complement of keys is not required.

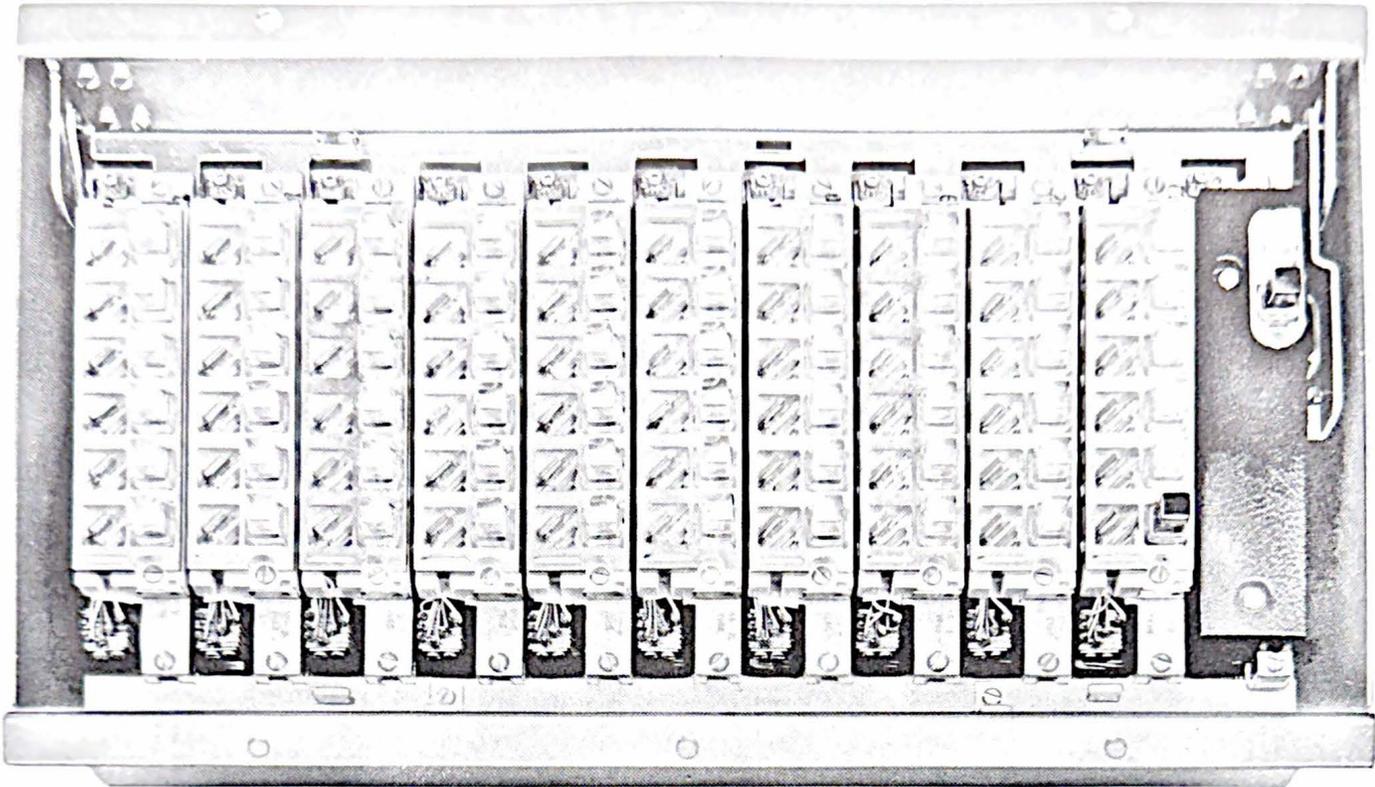


Fig. 6 — 402A Key Mounting, Faceplate Removed

4. 402A KEY MOUNTING

4.01 Fig. 6 shows a typical 402A key mounting with keys in place.

4.02 The 402A key mounting accommodates 11 modular-type keys. The growth is from right to left.

- One 621A key may be mounted in the first key position to provide:
 - a. Mechanical release of any previously operated key button.
 - b. Flashing (operator recall) on established connections.
 - c. Nonilluminated buttons.
- One 599A key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.
 - b. 5-line pickup keys.
- One 599B key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.
 - b. 4-line pickup keys.
 - c. Illuminated buttons.
 - d. Signaling (four keys convertible to non-locking).
 - e. Cutoff or transfer of ringer, buzzer, or a line (turn-button key).
- Nine 598A keys may be mounted in key positions 3 to 11 to provide:
 - a. 54-line pickup keys.
 - b. Illuminated buttons.

4.03 A 598A key may be used in second key position to provide an additional line pickup key when holding is not required.

4.04 Keys in the 598A key in key position 7 may also be converted to nonlocking signaling keys.

4.05 The 105B apparatus blank may be used when a full complement of keys is not required.

5. 403A KEY MOUNTING

5.01 Fig. 7 shows a typical 403A key mounting with keys in place.

5.02 The 403A key mounting accommodates 16 modular-type key units. The growth is from right to left.

- One 622A key may be mounted in the 1st key position to provide:
 - a. Electromechanical release of any previously operated key button.
 - b. Flashing (operator recall) on established connections.
 - c. Nonilluminated buttons.
- One 599A key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie line, etc.
 - b. 5-line pickup keys.
 - c. Illuminated buttons.
 - d. Signaling (five keys convertible to nonlocking).
- One 599B key may be mounted in the second key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.
 - b. 4-line pickup keys.
 - c. Illuminated buttons.
 - d. Signaling (four keys convertible to nonlocking).
 - e. Cutoff or transfer of ringer, buzzer, or a line (turn-button key).
- Fourteen 598A keys may be mounted in key positions 3 to 16 to provide:
 - a. 84-line pickup keys.
 - b. Illuminated buttons.

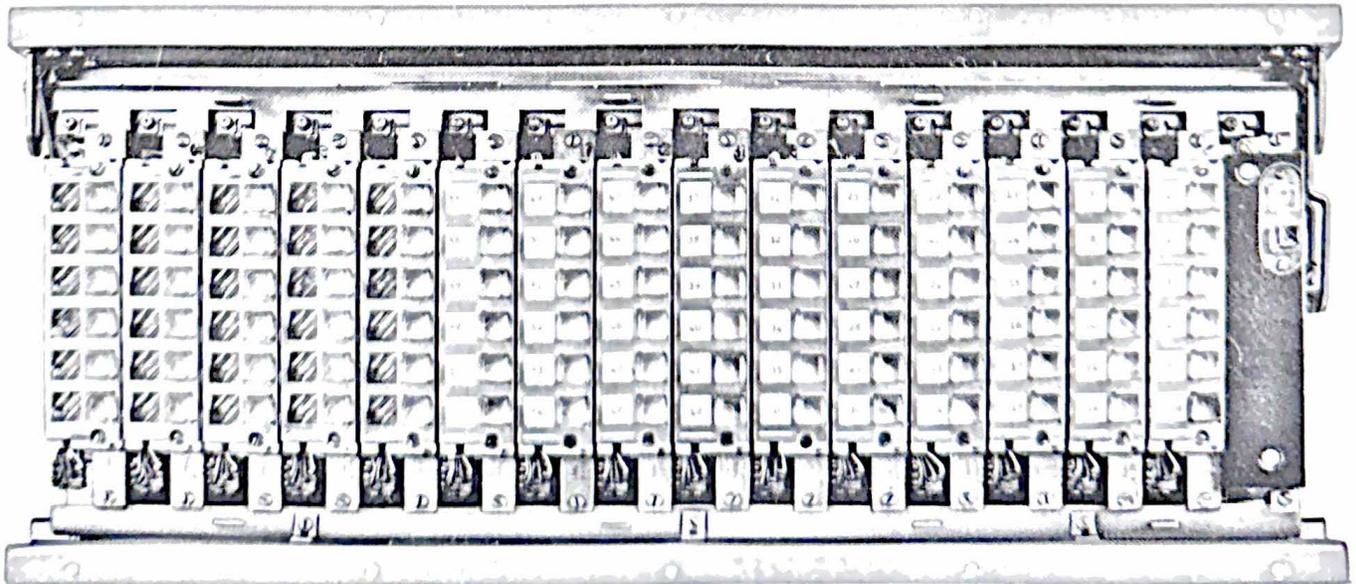


Fig. 7 — 403A Key Mounting, Faceplate Removed

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5.03 A 598A key may be used in the second key position to provide an additional line pickup key when holding is not required.

5.04 Keys in the 598A keys in key positions 7 and 12 may also be converted to nonlocking signaling keys.

5.05 The 105B apparatus blank may be used when a full complement of keys is not required.

6. 404A KEY MOUNTING

6.01 Fig. 8 shows a typical 404A key mounting with keys in place.

6.02 The 404A key mounting accommodates 21 modular-type keys. The growth is from right to left.

- One 622A key may be mounted in the 11th key position to provide:
 - a. Electromechanical release of any previously operated key button.
 - b. Flashing (operator recall) on established connections.
 - c. Nonilluminated buttons.
- One 599A key may be mounted in the first key position to provide:
 - a. Holding on central office, PBX, tie lines, etc.

b. 5-line pickup keys.

c. Illuminated buttons.

d. Signaling (five keys convertible to nonlocking).

- One 599B key may be mounted in the first key position to provide:

a. Holding on central office, PBX, tie lines, etc.

b. 4-line pickup keys.

c. Illuminated buttons.

d. Signaling (four keys convertible to nonlocking).

e. Cutoff or transfer of ringer, buzzer, or a line (turn-button key).

- Nineteen 598A keys may be mounted in key position 2 through 10 and 12 through 21 to provide:

a. 114-line pickup keys.

b. Illuminated buttons.

6.03 A 598A key may be used in the first key position to provide an additional line pickup key when holding is not required.

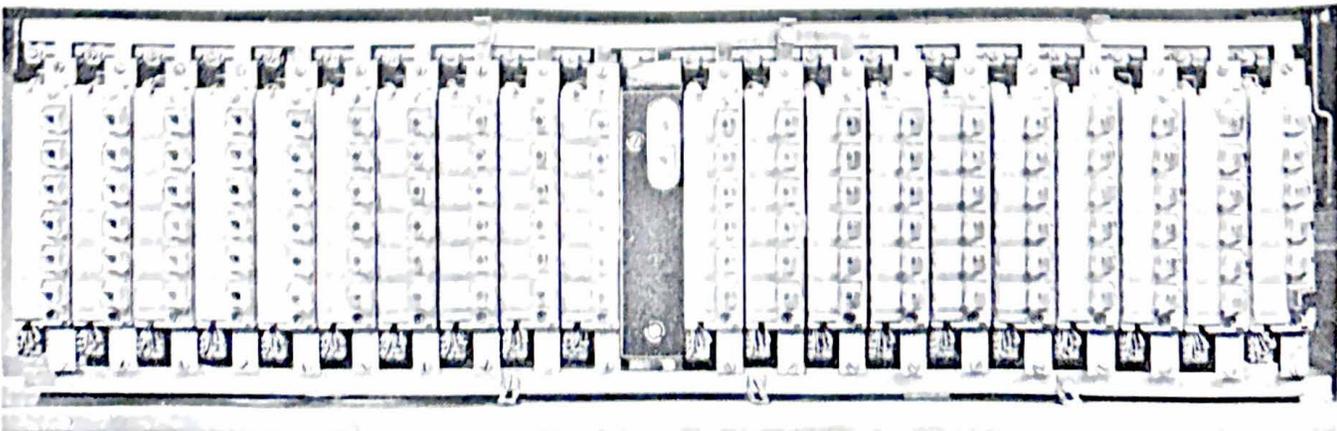


Fig. 8 — 404A Key Mounting, Faceplate Removed

6.04 Keys in the 598A keys in key positions 6, 12, and 17 may also be converted to non-locking signaling keys.

6.05 The 105B apparatus blank may be used when a full complement of keys is not required.

7. KEYS

7.01 The 598A key (see Fig. 9) consists of six convertible locking-type buttons and lamps for illuminating each button and its adjacent designation area. The buttons may be converted from locking to nonlocking for signal use by removing the P-10E837 screws as necessary. (When keys are converted to nonlocking, use the P-11E977 insulating details to insulate the two contacts adjacent to the key plunger.) All buttons are interlocked mechanically so that operation of a pickup button will release any previously operated button. A chaining switch consisting of three normally closed contacts electrically interconnects adjacent keys. The chaining switch operates when

any pickup button is depressed. Wiring is terminated in a 50-point connector.

7.02 The 599A key (see Fig. 10) is the same design as the 598A with the following exceptions:

- A hold feature is provided by means of a red nonlocking button in the sixth position. (Hold button can be illuminated.)
- Five remaining buttons are convertible from locking to nonlocking.

7.03 The 599B key (see Fig. 11) is the same design as the 599A key with the following exceptions:

- A turn-button in the first position provides cutoff feature, transfer, etc. (If the spacer in the button assembly is removed, depressing the turnbutton will release any previously operated button.)
- Four remaining buttons are convertible from locking to nonlocking.

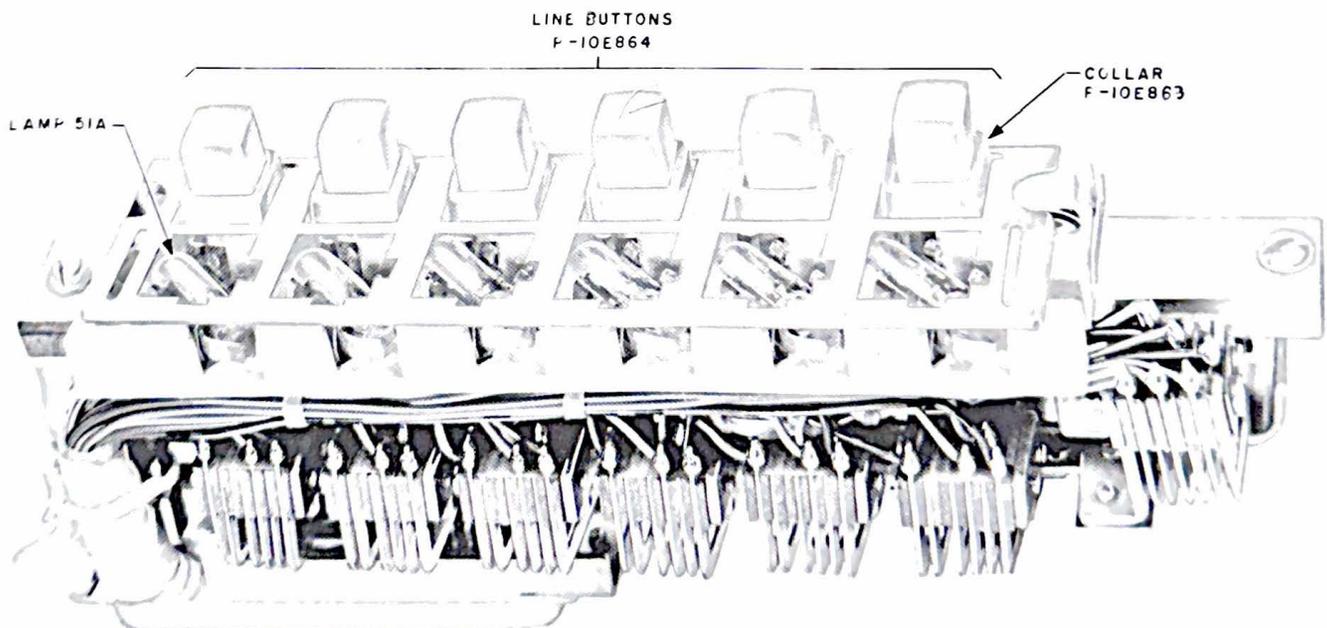


Fig. 9 - 598A Key

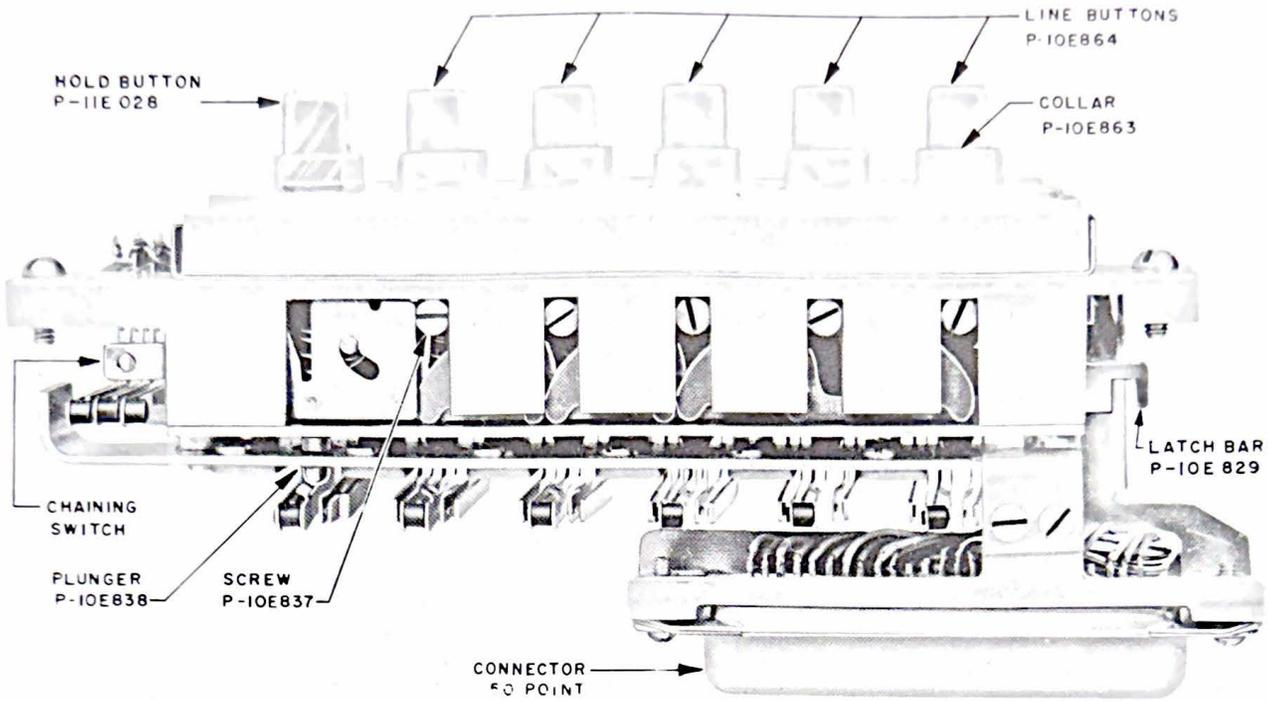


Fig. 10 - 599A Key

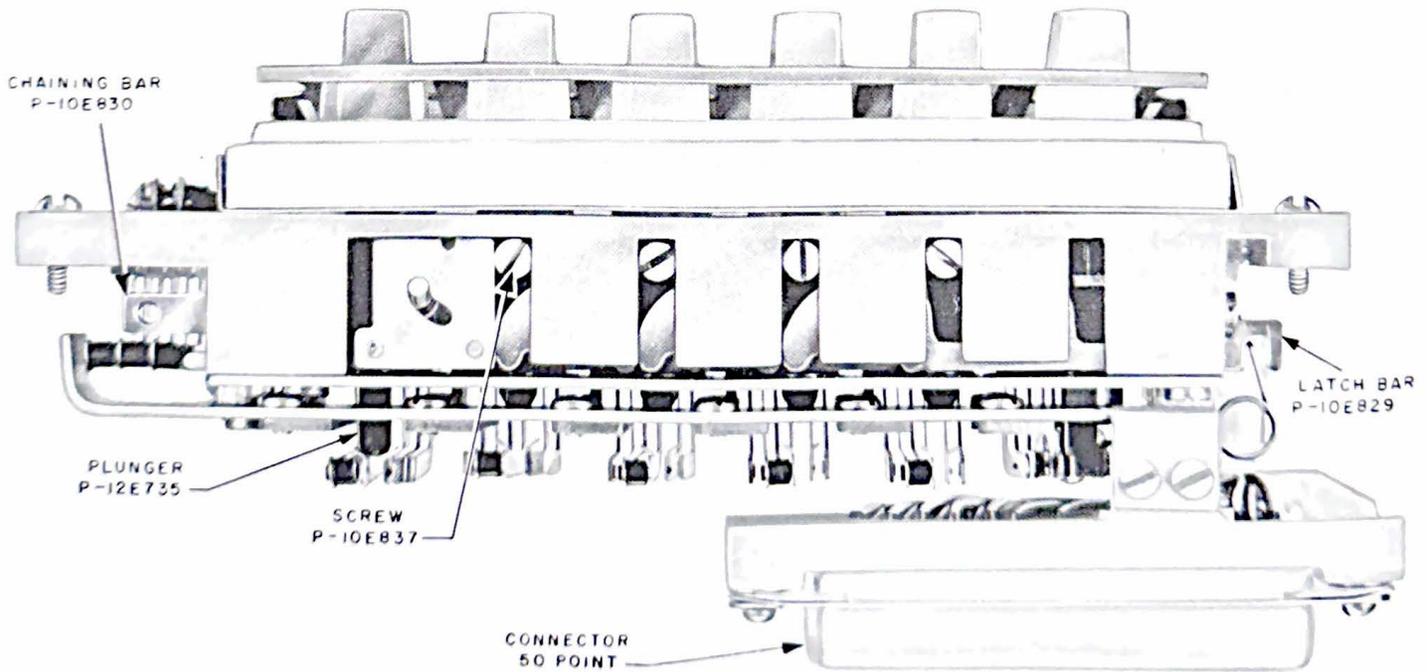


Fig. 11 - 599B Key

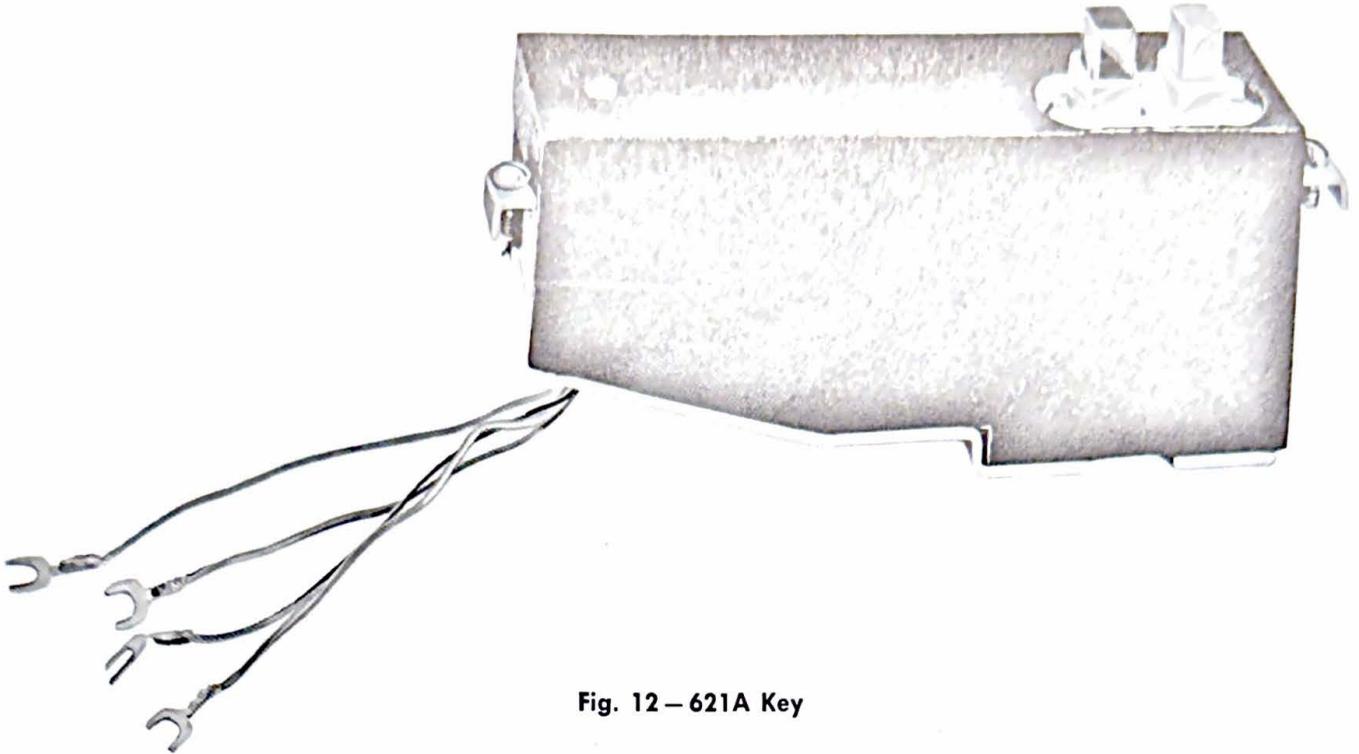


Fig. 12 - 621A Key

7.04 The 621A key (see Fig. 12) is a flash and release key. The flash key has make-before-break contacts. It shunts the receiver circuit and opens the line for operator recall. The release key physically actuates the pivot bar to release any operated key in the field.

7.05 The 622A key (see Fig. 13) is the same basic design as the 621A with these exceptions: a solenoid, Micro Switch, and 500MF capacitor have been added. They provide electro-mechanical boosting to the pivot bar on the release operation.

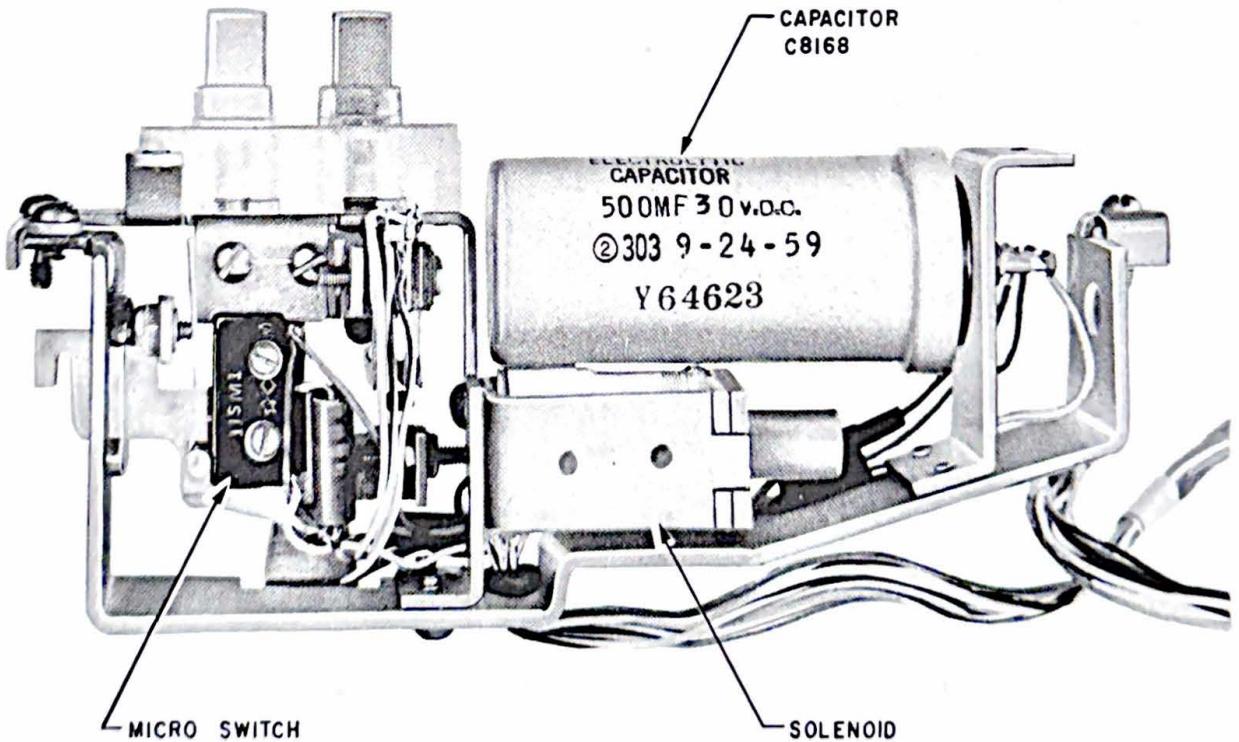


Fig. 13 - 622A Key

8. CONNECTING BLOCKS

8.01 The 63A connecting block is a phenol fibre block equipped with seven double eyelet screw terminals. Each double eyelet has one screw on each side of the board. This block mounts on a 64A connecting block with two machine screws. The leads from a 621A or 622A key terminate on this block. (See Fig. 3, 4, and 14.)

8.02 The 64A connecting block is a wired assembly consisting of a phenol fibre block equipped with 104 screw and solder terminals (93 of which are wired), five 50-point plugs, and a steel mounting frame. The connecting blocks provide mechanical support for the keys and electrical interconnecting points between groups of keys. One block is *required* for each group of five keys. (See Fig. 3, 4, and 14.)

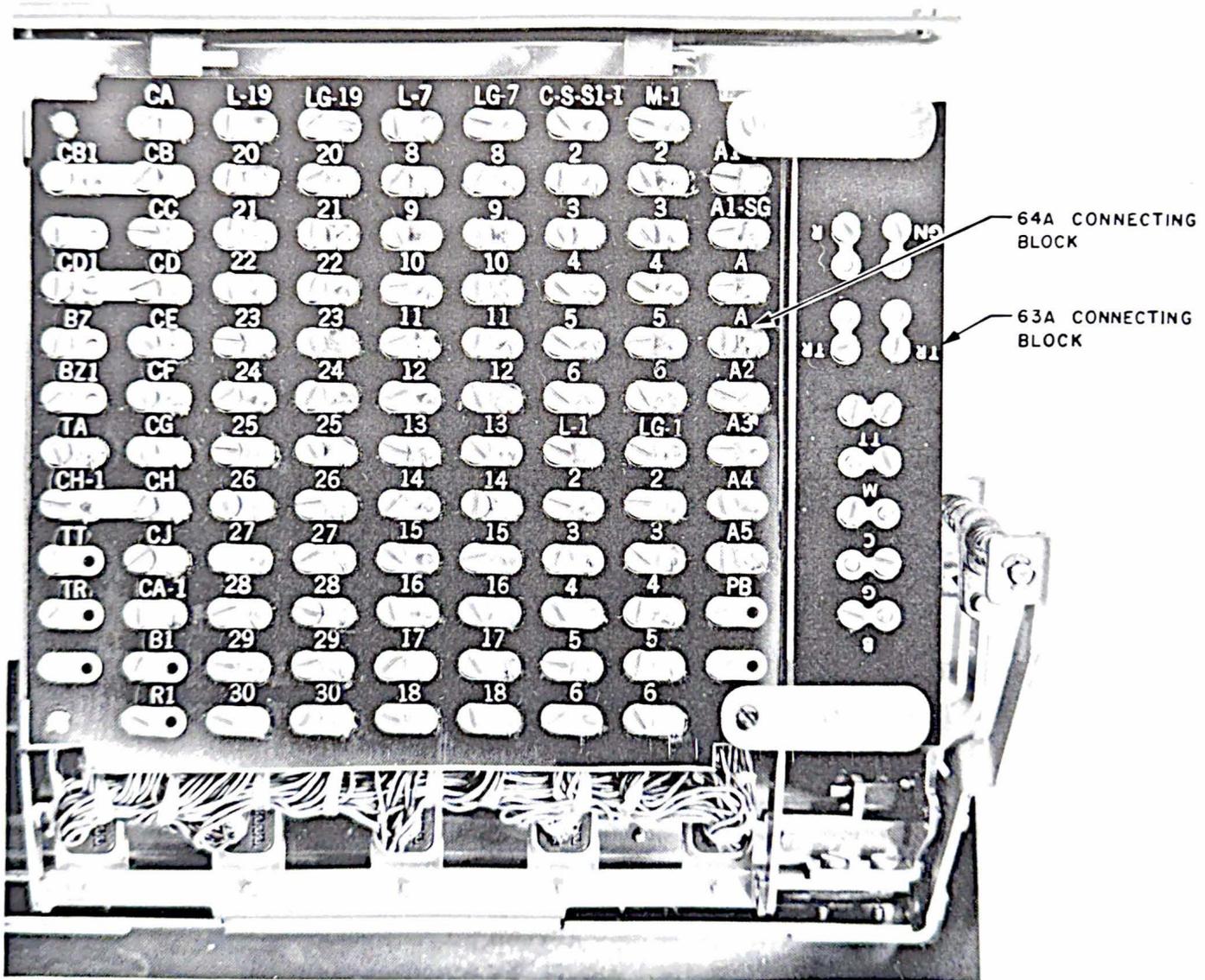


Fig. 14 - 63A Connecting Block, 64A Connecting Block

9. TELEPHONE SET EQUIPMENT

9.01 Table C lists telephone set equipment that may be selected on a custom basis:

TABLE C
TELEPHONE SET EQUIPMENT

Tel Set	Hand Set	Head Set	Rcvr Unit	Xmtr Unit	Sub Set	Dial	Mtg Dial	Jacks	Mtg Jack	Ringer
500L	G1A		U1	T1						C4A
500M	G1A		U1	T1		7D				C4A
212L	G1A		U1	T1	685A	6A				C4A
	G3CR		U2*	T1	688A	6E	6044B3	215A 223A	237A	E2A
		52C	HC4*	N1	688A	6E	6044B3	215A 223A	237A	E2A
		53AR	HC4*	N1	688A	6E	6044B3	215A 223A	237A	E2A

* The high-impedance receivers are required when the 688A subscriber set is used.