101A AND 101B KEY EQUIPMENTS

CONNECTIONS

1.00 GENERAL

1.01 This section covers connections for 101-type key equipment, including relay units, key units, and associated equipment.

1.02 Connecting information for the key unit at the station end of a 1A1 key telephone system installation also is included. Refer to the C Sections covering 1A1 key telephone systems for connections for associated relay equipment.

1.03 A principal's station is one that can exclude other associated stations.

1.04 The prime answering feature or position pilot lamp provides a visible signal for an attendant who answers a selected line or group of lines.

1.05 Table A lists features and associated figures for connections of key units, relay units, and associated equipment. Table B lists options for Fig. 1 through 8.

TABLE A

101A AND 101B RELAY UNITS AND ASSOCIATED EQUIPMENT

Fig.	Unit	Item	Drawing
1	Originating key unit	J53005S and T key units	ED-69071-01 SD-69195-01
2	Supplementary key unit	J53005U and W key units	
3	Connections for terminals 1, 2, 3, and 4 on key units	Associated with Fig. 1 and 2	
4	Battery supply circuit and hold relay circuit	J53005AB, L1	ED-69063-01 SD-69195-01
5	Automatic cutoff circuit	J53005AA, L1 and L2	
6	Hold relay circuit	17B KTU	SD-69195-01
7	Telephone set equipment units	24A KTU 32A KTU Equipment units ED-91929-01, G11 and G21	
8	Signal circuit	17B KTU 31A KTU	
9	Line circuit or Ringdown tie line circuit	J53005P, L2	ED-69063-01 SD-69076-01
10		J53005P, L3	
11	Signal and intercommunicating circuit	J53005R, L1	ED-69063-01 SD-69078-01 SD-69121-01
12A	Intercommunicating circuit		
12B			
13	Automatic tie line circuit	J53005F, L1	ED-69063-01 SD-69080-01
14	Line circuit or Automatic tie line circuit	J53005N, L1	ED-69108-01 SD-69111-01
15		J53005N, L2	
16	Automatic line circuit	J53005M, L2 and L3	ED-69063-01 SD-69076-01
17	Secretarial line relay circuit (non-locked-in line signal)	J53005K, L1	ED-69064-01 SD-69081-01
18	Key unit used with secretarial line relay circuit	J53005S, T, U, or W	SD-69081-01
19	Secretarial line circuit (locked-in line signal)	J53005H, L1	ED-69063-01 SD-69079-01

TABLE B

OPTIONS

Feature or Option		Fig.	App or Wir
Battery supply circuit. (Provide when any line in the second group is used.) See Note 6.		4	
Telephone set equipment unit.		7	
Automatic cutoff circuit. (Provide when the attendant is to be cut off from a line multipled to a regular station when that regular station is in use or when tie lines to PBX are provided.) See Note 8.		5	
When hand telephone set is required.	Dial Areas	7	E
	Manual Areas		
Signaling circuit. (Provide when 1A1 key telephone system ringdown tie line or station line circuits are provided.)		8	
Hold relay circuit.		4	
		6	
When an operator's head telephone set can be connected to a CO or PBX line on which the total conductor loop to the CO or nearest long line circuit (including both station and CO conductor loops in case of PBX) is less than 300 ohms.		7	A or B
When *A* option is not required.			E
On orignating or supplementary key units (Fig. 1 and 2). See Note 6.	When lines in both groups are furnished, provide *V* option between the key associated with the last line of the first group and the key associated with the first line of the second group.	3	V
On originating or supplementary key units (Fig. 1 and 2). See Note 6.	When the line associated with the last key is in the same group as the line associated with the first key of a succeeding key unit.	3	T
On last key unit (Fig. 1 and 2). See Note 6.	When *V* and *Q* or *M* and *N* options are provided at a preceding key, and an intercommunicating line not associated with a key is provided.	3	T
When all lines are in the first group and intercommunicating line is provided but not associated with a key. See Note 6.		3	S
On originating key unit (Fig. 1). See Note 6.	When all lines provided are in the second group.	3	Q
	When lines in the first group only or in both first and second group are provided.	3	R
On supplementary key units (Fig. 2). See Note 6.	When the line associated with the first key is in the same group as the line associated with the last key of the preceding key unit.	3	R
	When the first key is associated with the first line of the second group.	3	M
On originating or supplementary key units (Fig. 1 and 2). See Note 6.	When the last key is associated with the last line of the first group.	3	N
When this circuit is used in new installations.		4 and 6	J
When this circuit is used for additions where:	Other stations are equipped with this circuit.	4 and 6	J
	Any other station is equipped with SD-69077-01 circuit.	4 and 6	F

2.00 NOTES FOR FIG. 1 THROUGH 19

Note 1: In each key unit, leads are provided from terminals 1 and 3 for *V* wiring and left dead-ended at the time of manufacture. These leads are long enough to reach any key in the unit and should be left that length when connected to the keys, the slack being sewed to the local cable.

Note 2: The *A* springs of the line keys at each attendant's position are used for a *chain contact* circuit starting at the telephone relay equipment, passing through the telephone subscriber set and to the first line key in the originating key unit, thence through the keys and, when specified, to the intercommunicating line circuit (the type without key).

Note 3: At the dividing point between line keys for *first group* and *second group* lines, the *PL* relay winding must be connected into the chain circuit. This is accomplished by means of the leads from the telephone circuit relay equipment to terminals 1 and 3 of the attendant's key units.

Note 4: The *PL* relay connection may be made between halves of any key, or between any two adjacent keys in a key box, using the dead-ended leads provided per Note 1, the location depending on where the division exists between *first group* and *second group* lines. The *PL* relay connections might also come between key boxes, or might precede the first key of the originating key box (when all lines are of the *second group*). For these last two conditions, the leads furnished dead-ended in the key boxes are not used, the *PL* relay connections being accomplished by straps from terminals 2 to 3 and from terminals 4 to 1 of the proper key units.

Note 5: If all the attendant's lines are per the *first group* and an intercommunicating line, without key, is required, the *PL* relay must be connected between the last line key and the intercommunicating line circuit using *S* wiring.

Note 6:

(a) Two groups of lines can connect to the line key circuit, the first requiring a bridge circuit, and the second requiring a battery feed circuit. In the first group are central office lines, PBX lines, secretarial lines, and automatic tie lines to PBX and line circuits of key telephone system 1A1. In the second group are ringdown tie lines, station lines, and automatic tie lines to other key equipment. Intercommunicating lines shall be in group 2 if other lines in group 2 are provided, otherwise the intercommunicating lines shall be in group 1.

(b) When lines in the first group are provided, they shall be connected immediately following the flash, ring, and hold key.

(c) Terminals 1 and 3 are provided only once per line key unit. See Notes 1, 2, 3, 4, and 5.

(d) When line circuits of key telephone system 1A1 are used with 101A key equipments, the lamp ground and signal grounds of the 1A1 system shall be the same as the ground of the key equipment.

Note 7: When line circuits of key telephone system 1A1 are provided, the associated *hold* lamp shall be removed and the *line and busy* lamp shall be the type called for in indicators of the 1A1 key telephone system installation. When used with the central office or PBX line circuit for joint use, hold lamps need not be removed.

Note 8: The automatic cutoff feature shall not be provided when line circuits of key telephone system 1A1 are provided.

Note 9: Not more than two 24A KTU shall be mounted in one 105 apparatus box, with one unit mounted at the top and one at the bottom.

Note 10: The 17B KTU and the 31A KTU shall be mounted in the same 105 apparatus box, adjacent to each other.

Note 11: Fig. 8 is used to prevent locking of the ring-out relay in ringdown tie line circuits and station line circuits of 1A1 systems if the attendant should operate the flash and ring key to the hold position while attempting to signal.

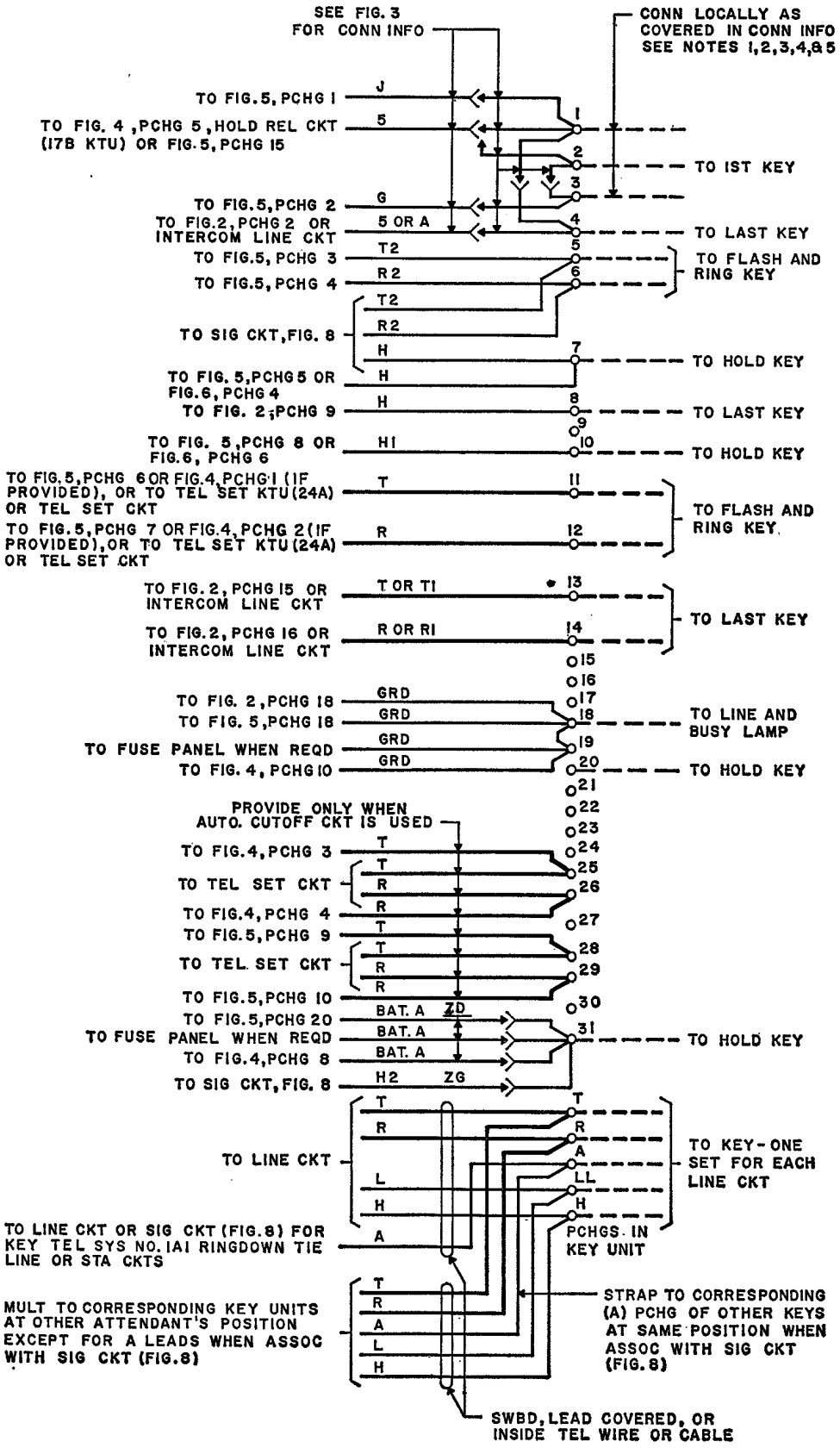


Fig. 1 — Originating Key Unit

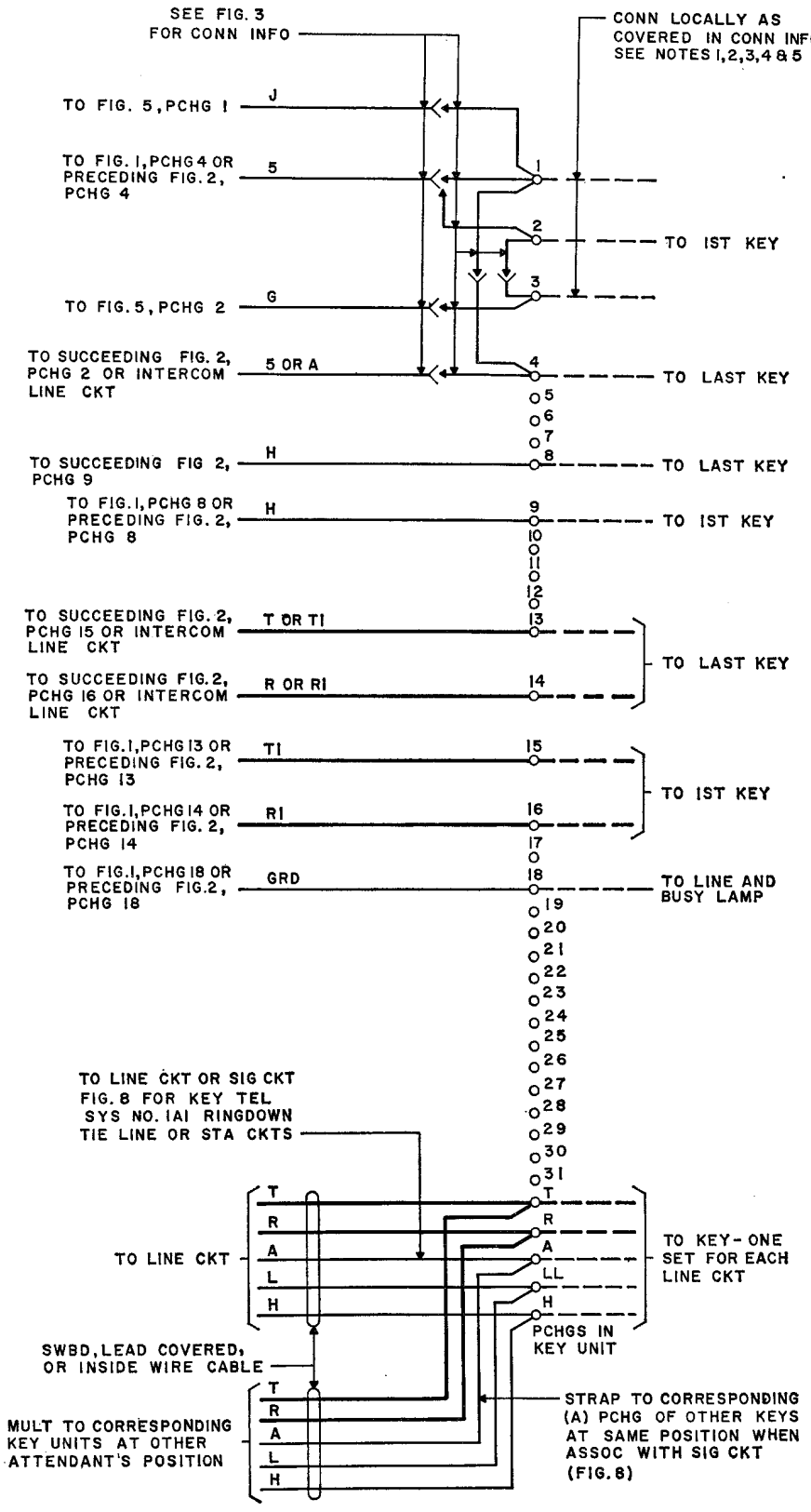


Fig. 2 — Supplementary Key Unit

FIG. 3A
ALL FIRST GROUP IN ORIG UNIT

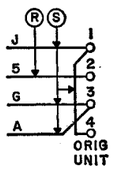


FIG. 3B
ALL SECOND GROUP IN ORIG UNIT

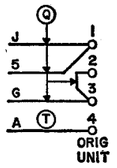


FIG. 3C
FIRST AND SECOND GROUP
IN ORIG UNIT

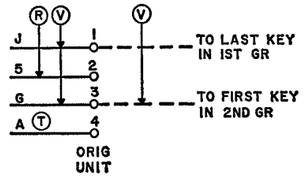


FIG. 3D
ALL FIRST GROUP IN ORIG
AND SUPPLEMENTARY UNITS

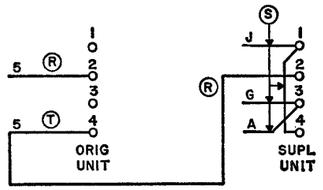


FIG. 3E
ALL SECOND GROUP IN ORIG
AND SUPPLEMENTARY UNITS

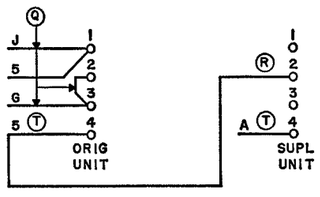


FIG. 3F
FIRST AND SECOND GROUP IN ORIG UNIT AND
SECOND GROUP IN SUPPLEMENTARY UNIT

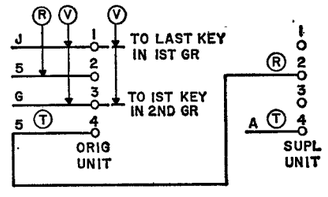


FIG. 3G
FIRST GROUP IN ORIG UNIT
SECOND GROUP IN
SUPPLEMENTARY UNITS

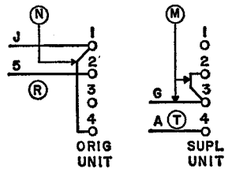


FIG. 3H
FIRST GROUP IN ORIG UNIT
FIRST AND SECOND GROUPS
IN SUPPLEMENTARY UNITS

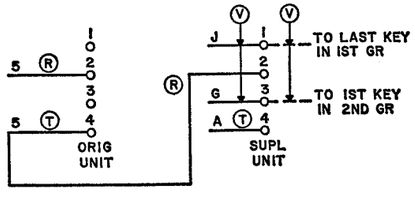


FIG. 3I
ALL FIRST GROUP IN ORIG
AND SUPPLEMENTARY UNITS

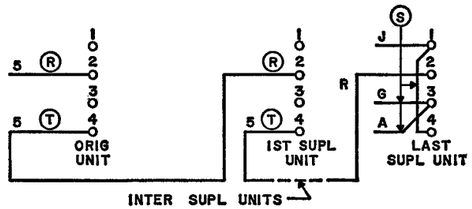


FIG. 3J
FIRST GROUP IN ORIG UNIT, SECOND
GROUP IN SUPPLEMENTARY UNITS

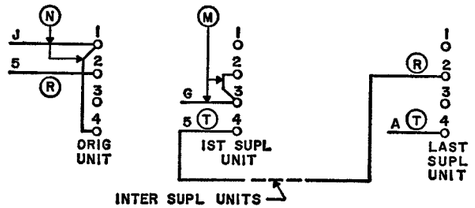


FIG. 3K
SECOND GROUP IN ORIG
AND SUPPLEMENTARY UNITS

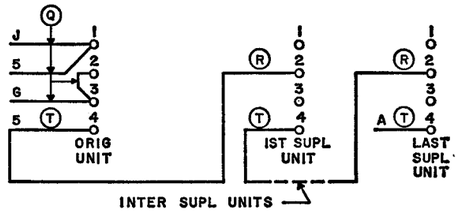


FIG. 3L
FIRST GROUP IN ORIG AND NEXT SUCCEEDING SUPPLEMENTARY UNITS
FIRST AND SECOND GROUP IN NEXT SUCCEEDING SUPPLEMENTARY UNITS
SECOND GROUP IN SUCCEEDING SUPPLEMENTARY UNITS

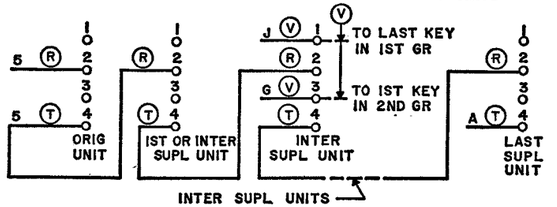


FIG. 3M
FIRST AND SECOND GROUP IN ORIG UNIT
SECOND GROUP IN SUPPLEMENTARY UNITS

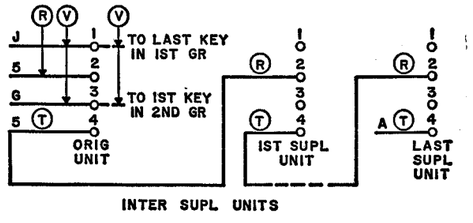


FIG. 3N
FIRST GROUP IN ORIG AND NEXT SUCCEEDING SUPPLEMENTARY UNITS
SECOND GROUP IN SUCCEEDING SUPPLEMENTARY UNITS

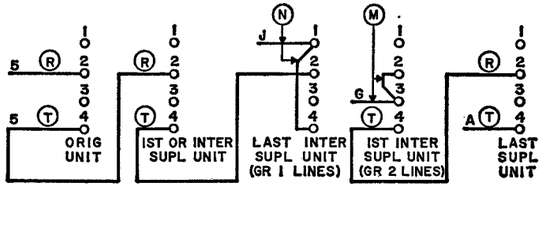
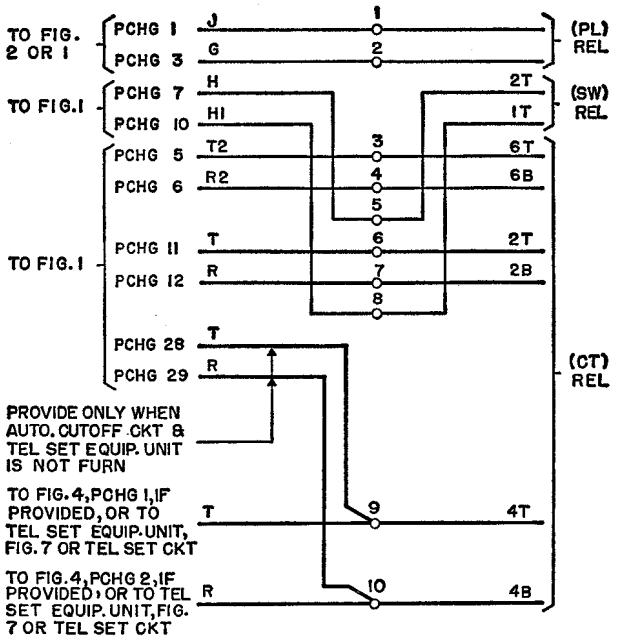


Fig. 3—Connections to Terminals 1, 2, 3, and 4 For Various Line Combinations of First and Second Groups and Intercommunicating Line Without Key (See Notes 1, 2, 3, 4, 5, and 6.)



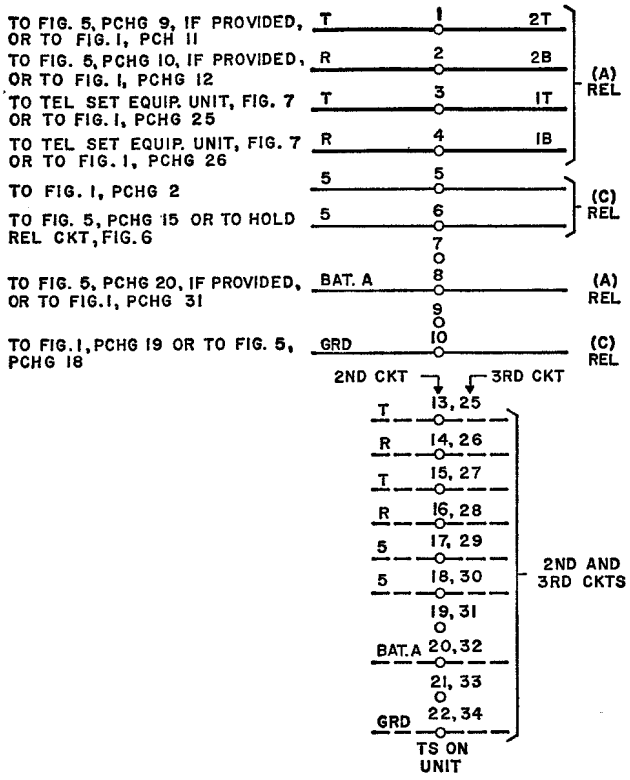
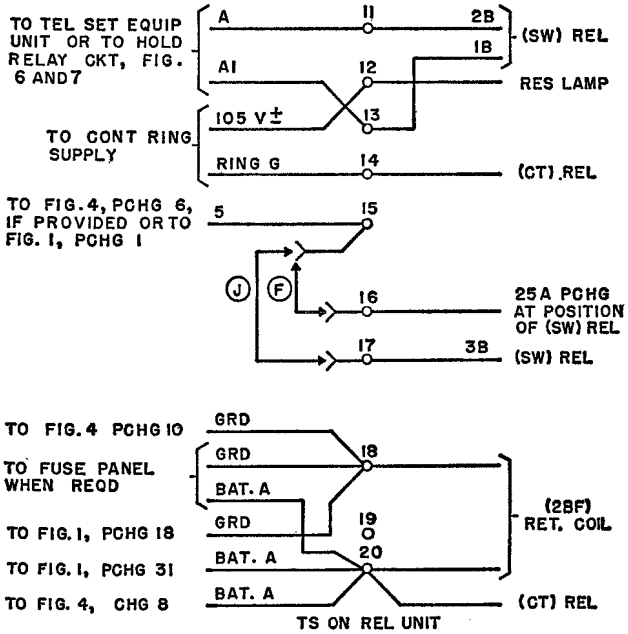


Fig. 5 — Automatic Cutoff Circuit



J53005AQ,R,1.

Fig. 4 — Battery Supply Circuit and Hold Relay Circuit

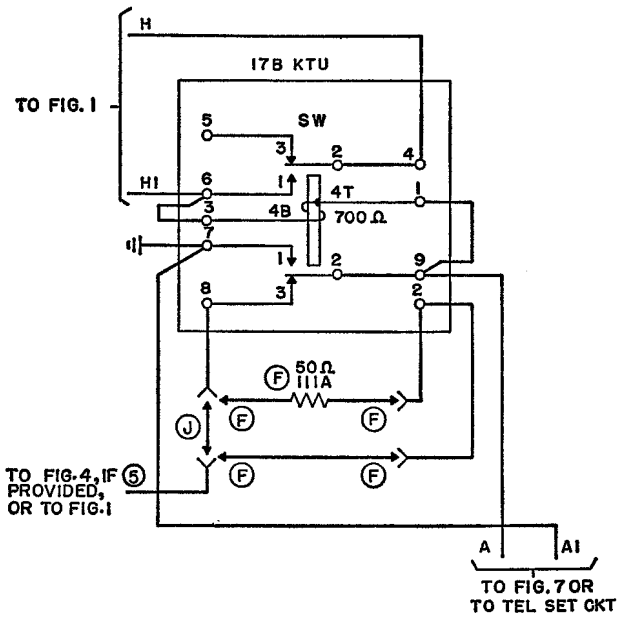


Fig. 6 — Hold Relay Circuit

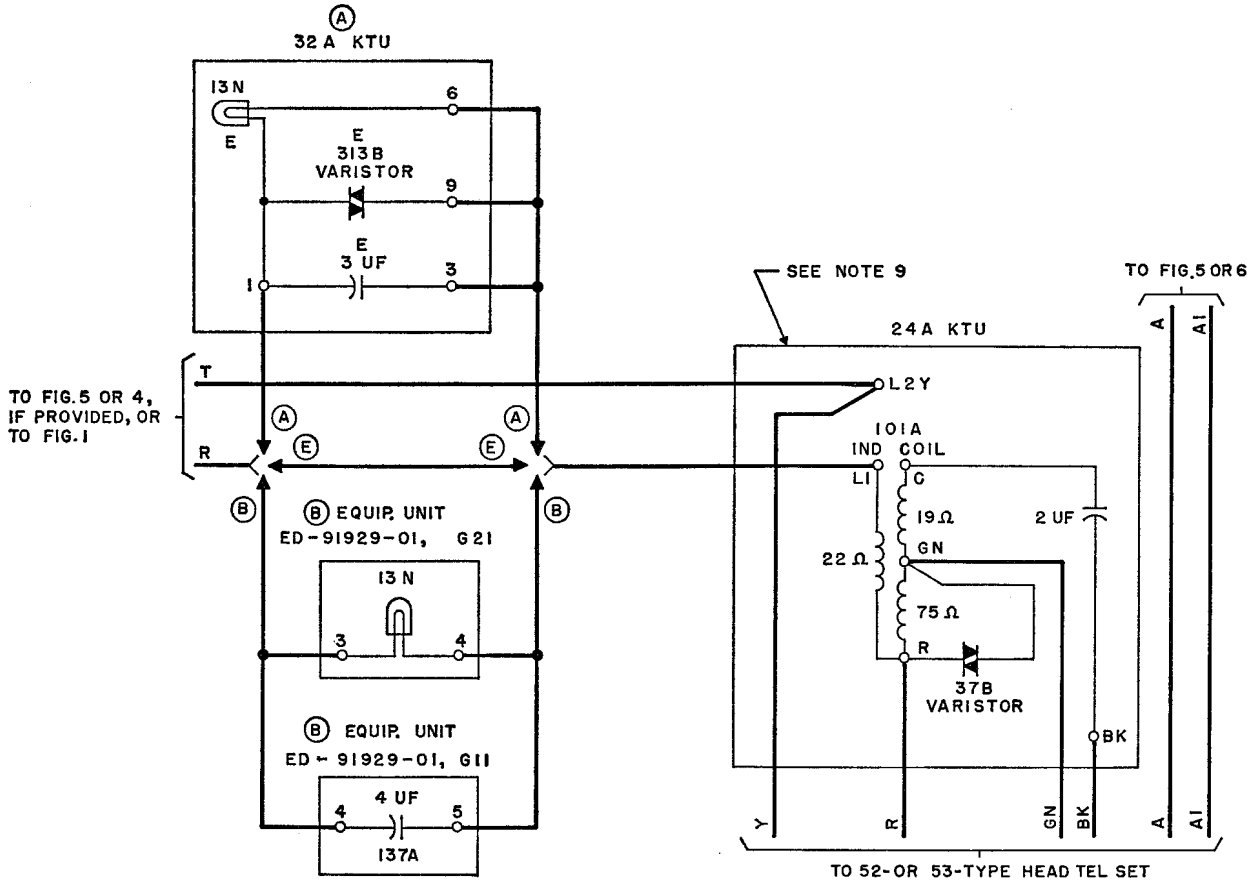


Fig. 7 — Telephone Set Equipment Units

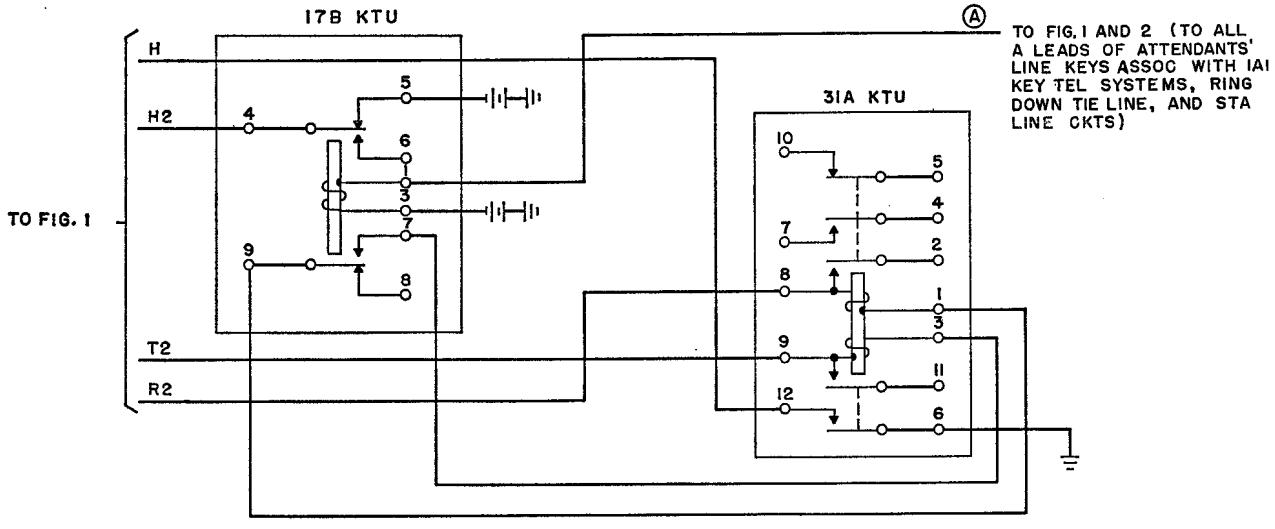
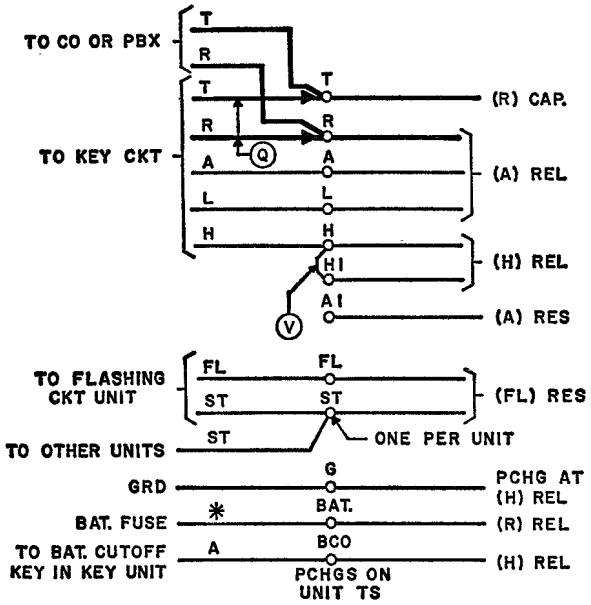


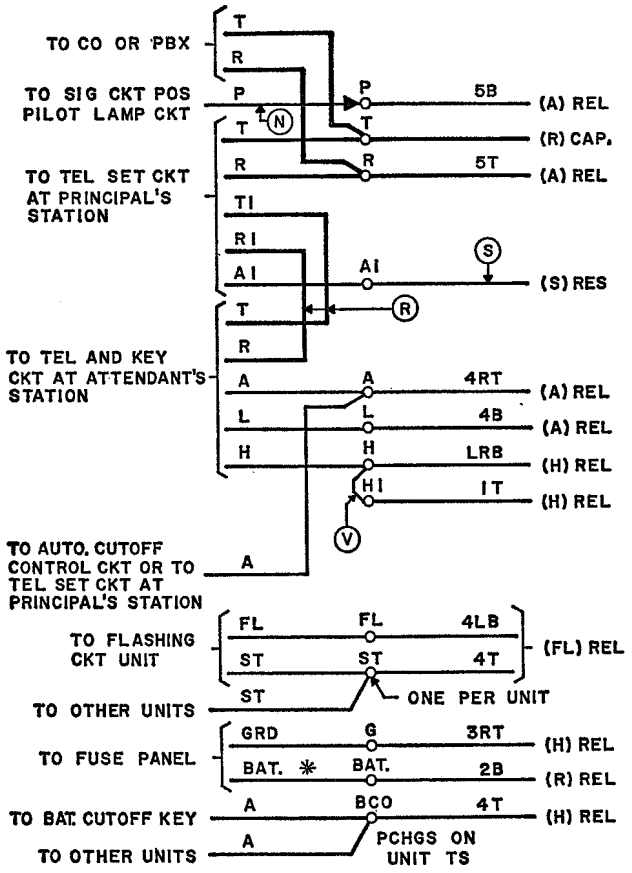
Fig. 8 — Signal Circuit (One Per Attendant) (See Notes 10 and 11.)

Feature or Option for Fig. 9 and 10		Equip.	App or Wiring
When this CKT terminates at	12 or less tel and key CKT positions		V
When the attendant's station	Can be cut off automatically by the principal's station	A1 Relay	S
	Cannot be cut off automatically by the principal's station		S
When there is a connection to a principal's station and the attendant's station can be cut off by the exclusion key in the principal's tel set			R
When there is no connection to a principal's station or when there is a connection to a principal's station where the attendant's station cannot be cut off by the exclusion key in the principal's tel set			Q
When connection to position pilot lamp is required			N



* One 2-amp fuse per two circuits.

Fig. 9 — Line or Ringdown Tie Line Circuit (For Use When There Is No Connection to the Principal's Station)



* One 2-amp fuse per two circuits.

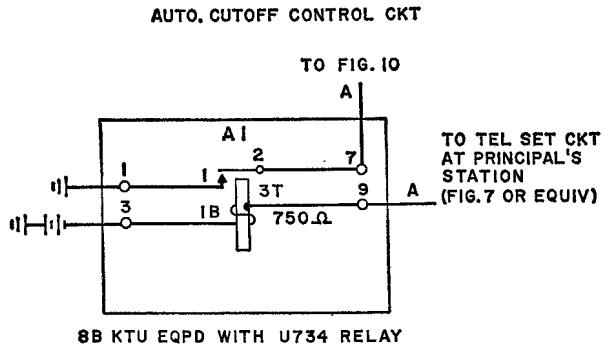
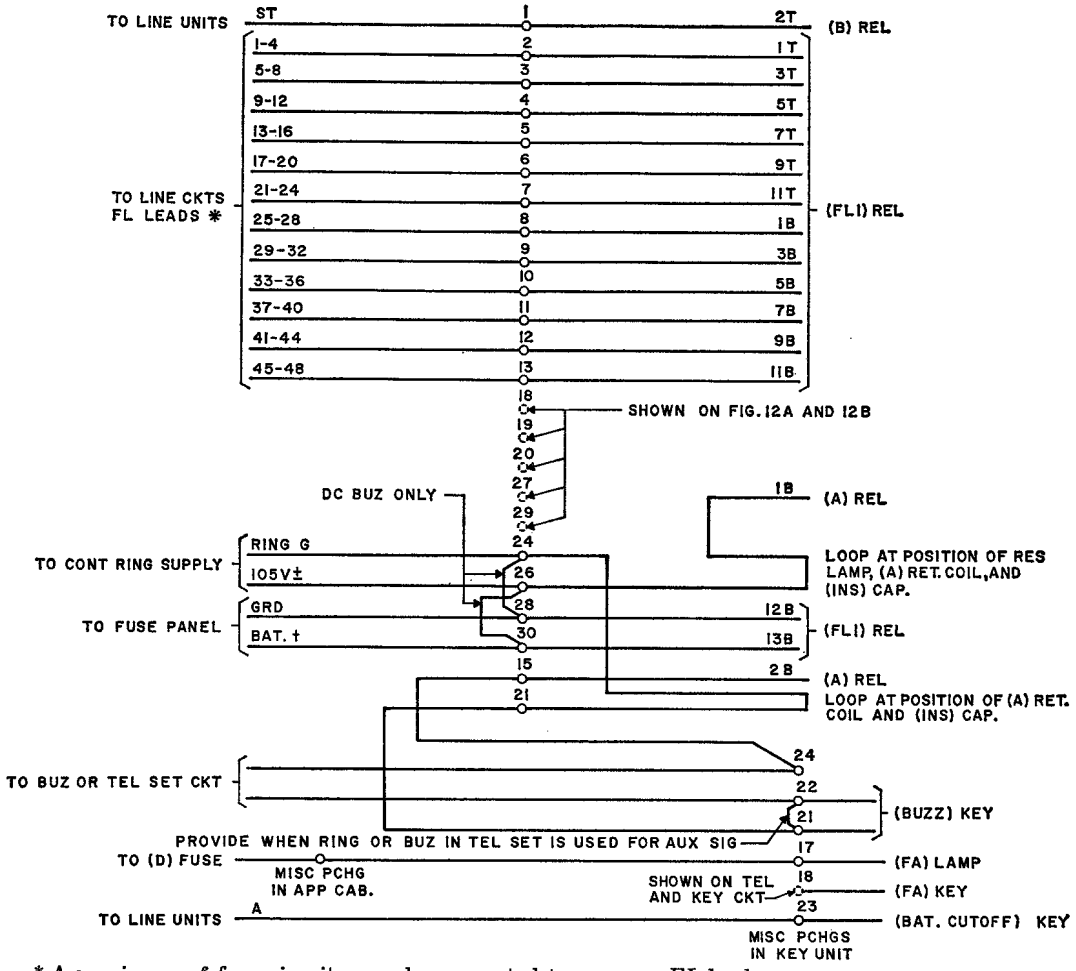
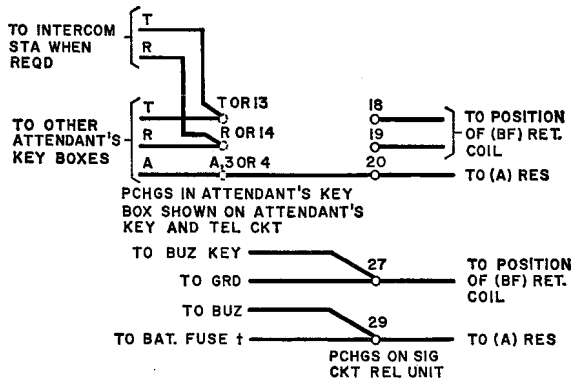


Fig. 10 — Line or Ringdown Tie Line Circuit (For Use When There Is a Connection to the Principal's Station — Prime Answering Feature Provided)



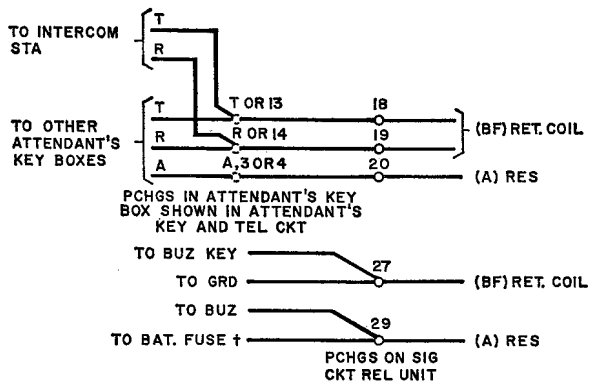
* A maximum of four circuits may be connected to any one *FL* lead.
† Provide one 2-amp fuse per circuit.

Fig. 11 — Signal and Intercommunicating Circuit



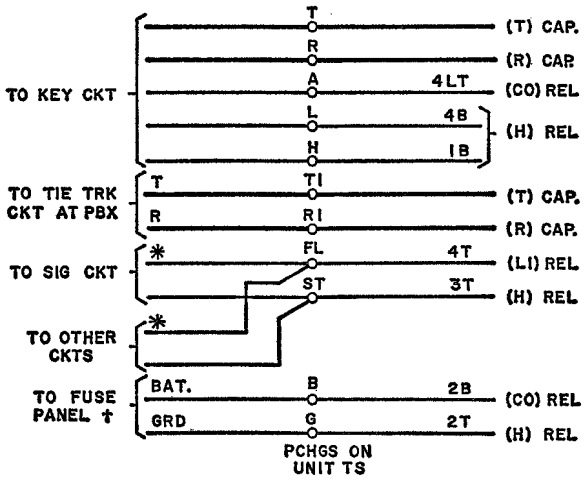
† Provide one 2-amp fuse per circuit.

Fig. 12A — Intercommunicating Line Circuit (Provides a Means for Connecting Two Attendants' Telephone Sets or an Attendant's Telephone Set and an Intercommunicating Station)



† Provide one 2-amp fuse per circuit.

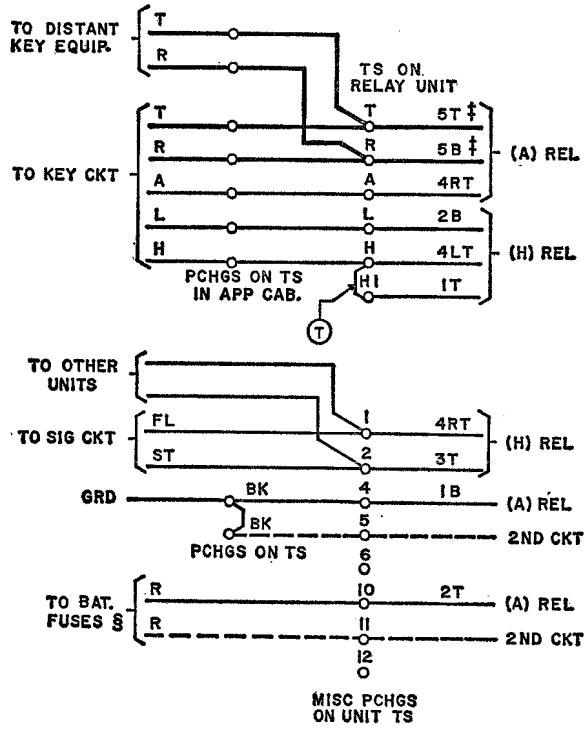
Fig. 12B — Intercommunicating Line Circuit (Provides the BF Relay Circuit for the Battery Supply When Using Two or More Intercommunicating Stations)



* Provide one *FL* lead for the automatic tie lines.

† Provide one 2-amp fuse per circuit.

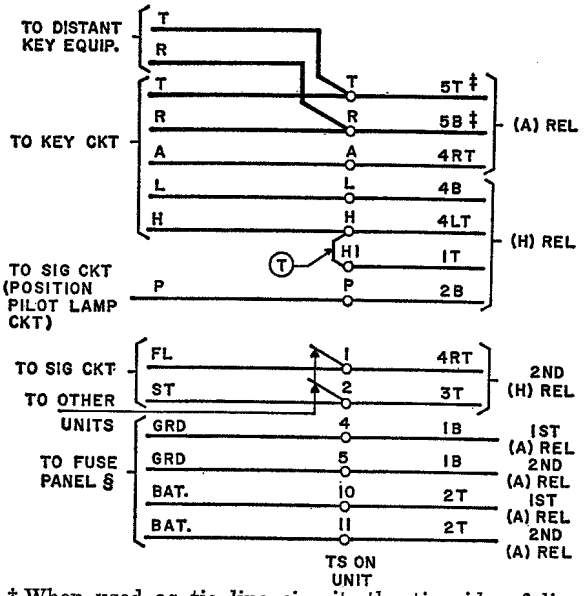
Fig. 13 — Automatic Tie Line Unit



‡ When used as tie line circuit, the tip side of line terminates on 5B of *A* relay and the ring on 5T of *A* relay. Also, on rear of *L* relay, remove wires from 1M and 3M and strap the two lugs together. Place ground strap on 3B of *A* relay.

§ Provide one 2-amp fuse per line or tie line circuit.

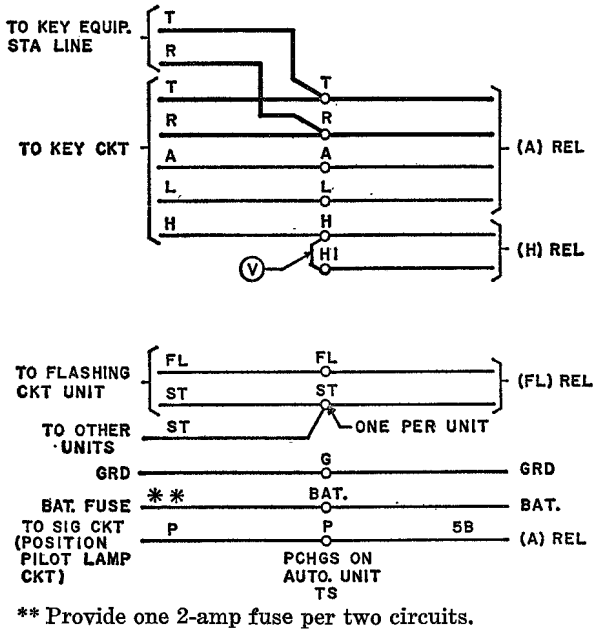
Fig. 14 — Line or Automatic Tie Line Circuit (Position Pilot Lamp Not Required)



‡ When used as tie line circuit, the tip side of line terminates on 5B of *A* relay and the ring on 5T of *A* relay. Also, on rear of *L* relay, remove wires from 1M and 3M and strap the two lugs together. Place ground strap on 3B of *A* relay.

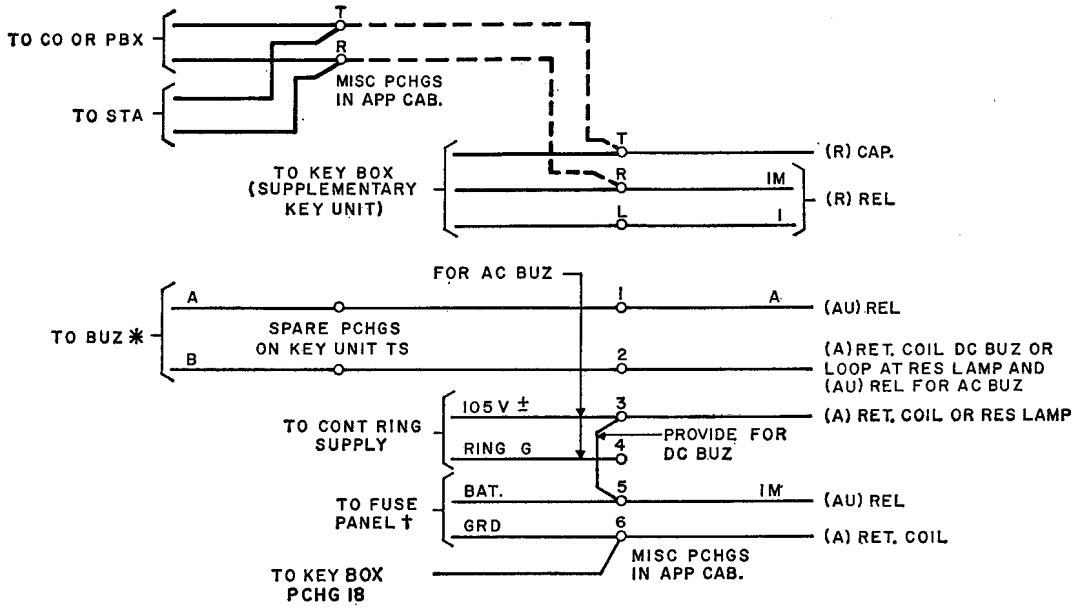
§ Provide one 2-amp fuse per line or tie line circuit.

Fig. 15 — Line or Automatic Tie Line Circuit (Position Pilot Lamp Required)



** Provide one 2-amp fuse per two circuits.

Fig. 16 — Automatic Line Unit



* When the 4C buzzer is used with AC, disconnect strap between armature and winding terminal of the buzzer coil.

† Provide one 2-amp fuse per circuit.

Fig. 17 — Secretarial Line Relay (Nonlocked-in Line Signal)

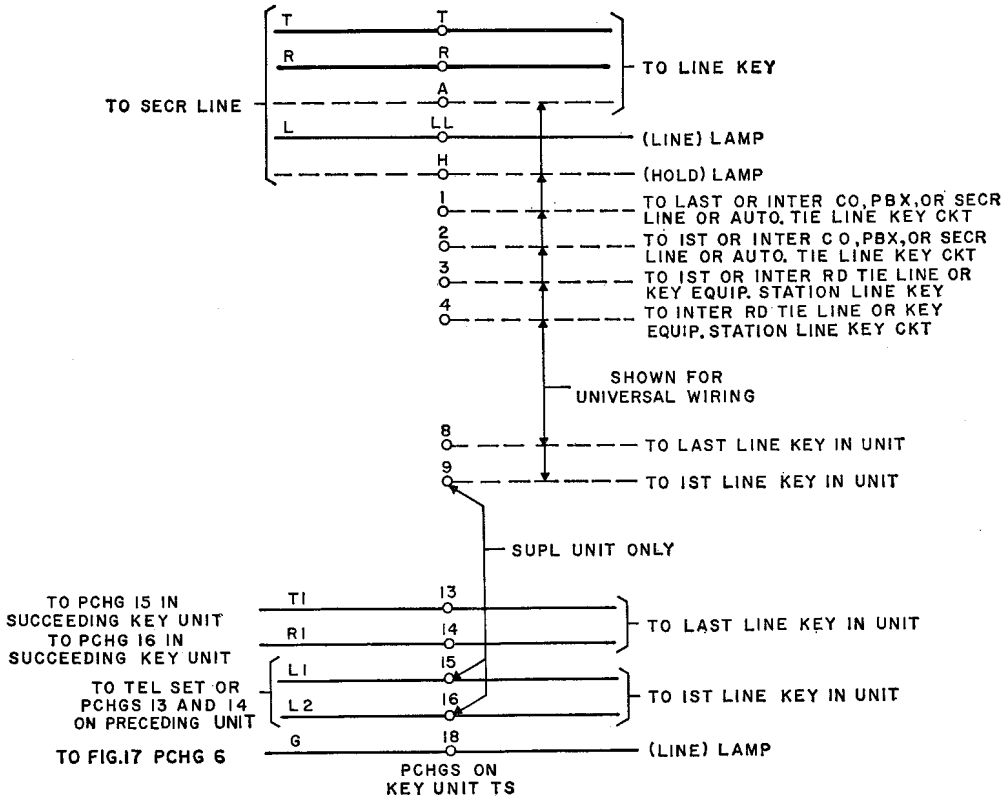
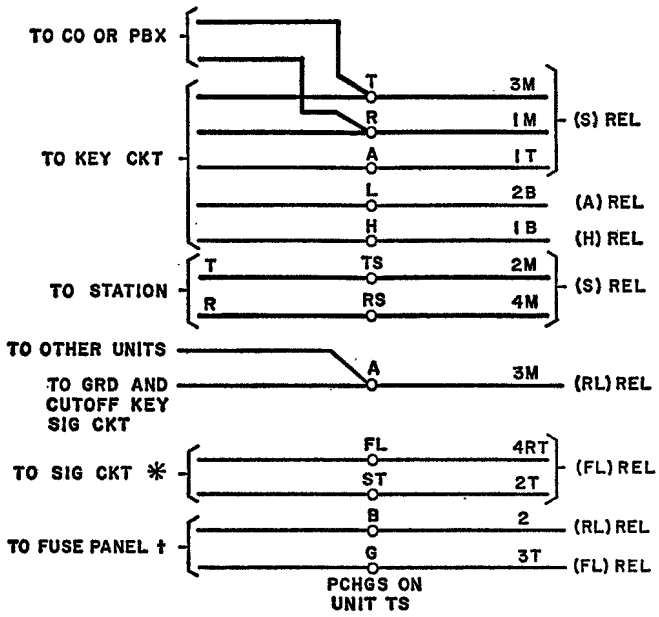


Fig. 18 — Key Unit Used With Secretarial Line Relay (Nonlocked-in Line Signal)



* Provide one FL lead to the signaling circuit per two (FL) relays.

† Provide one 2-amp fuse per two circuits.

Fig. 19—Secretarial Line Circuit (Locked-in Line Signal)