

INTERPHONE SYSTEMS—2A (FARM)

CONNECTIONS AND MODIFICATIONS

1. GENERAL

1.01 This section covers the connection of station apparatus and the modification of telephone sets used with the 2A FARM INTERPHONE. It is reissued to:

- Change title.
- Include information on the 712B telephone set.
- Include information on the TOUCH-TONE telephone set.

1.02 Because of the limitations of the amplifier, the maximum number of telephone sets equipped with loudspeakers which may be connected to this system is as follows:

Monitor station	1 or 2
Remote stations	2 or 3
<hr style="width: 20%; margin: 0 auto;"/>	
Total telephones	4

1.03 The maximum number of loudspeaker units which may be connected to the system is as follows:

Indoor type (759B)	1 or 2
Indoor type (760A)	1 to 5
Outdoor type (KS-16846, List 1)	1 to 3
<hr style="width: 20%; margin: 0 auto;"/>	
Total loudspeakers	6



Point out to the customer that the area near a monitor station lacks secrecy. A remote station handset with push-to-talk key not operated can monitor this area. A cutoff key may be required.

1.04 A G5KR hand set must be ordered as a separate item and substituted for the original handset at each telephone set. This substitution is made in the field.

1.05 Locate the 54A control unit as close as practicable to the monitor station.



Leads connected to the DC terminal should not be exposed. If, however, they are exposed, the control unit must be protected from lightning or power surges applied to the connecting cables. A 70-ohm resistor, in addition to normal protection, must be connected in series with the DC terminal at the control unit.

2. CONNECTIONS AND SCHEMATICS

2.01 Connections and schematics are shown as follows:

	Telephone Set	Connection Figure	Schematic Figure
Monitor Station using 759B Loudspeaker	511C/D	1	15
	558C/D	3	17
	711B	5	19
	712B	7	21
	1511D	9	23
	1558D	11	25
	1712B	13	27
Remote Station using 760A Loudspeaker	511C/D	2	16
	558C/D	4	18
	711B	6	20
	712B	8	22
	1511D	10	24
	1558D	12	26
	1712B	14	28
Loudspeaker-Only Location		29	
Line and Ringer		30	
Polarized Ringing using 687B Sub Sets		31	
54A Control Unit			32

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2.02 When controlled by a 687B subscriber set, the E1B ringer may be used on the following services:

- 4-party selective.
- 8-party semiselective.

3. MODIFICATIONS

3.01 Telephone set modifications are shown in Tables A, B, C, D, E, F, and G.

**TABLE A
511C/D TELEPHONE SET MODIFICATION**

Feature	Wire or Lead	From Term.	To Term.
Hold Key	BL	E1	1
	W	E2	2
	G-Y	2	*
	R-Y	1	*
Switch-hook	S	10	E2
	(BR) [S-G]	9	E1
	(Y) [S-W]	7	E1
Push-to-Talk G5KR Hand Set	BK		10
	BK		7
	W		R
	W		GN
	R		R
	R		B

**TABLE B
558C/D TELEPHONE SET MODIFICATION**

Feature	Wire or Lead	From Term.	To Term.
Hold Key	W	6	2
	G-Y	6	*
	BL	5	1
	R-Y	5	*
Switch-hook	S	10	E2
	(BR) [S-G]	9	E1
	(Y) [S-W]	9	E1
Push-to-Talk G5KR Hand Set	BK		10
	BK		7
	W		R
	W		GN
	R		R
	R		B

759B Loudspeaker

3.02 The volume control on the 759B loudspeaker, as furnished, is a 100-ohm potentiometer. If this does not lower the audio output sufficiently, a 1000-ohm P-25E020 potentiometer may be substituted. The customer should be forewarned that volume of the microphone will be relatively reduced in hands-free operation at a modified station. This occurs even though loudspeaker volume is high and is due to the volume control being shunted over the SA lead. To overcome this, the customer must increase the volume at the modified station.

3.03 To modify the 759B loudspeaker volume control, remove S-BK lead from terminal 7. Substitute the P-25E020 potentiometer, reusing same knob, and terminate the two leads. The present potentiometer is marked 100 ohms and the new one 1000 ohms.

Monitor Station

3.04 When secrecy is desired at the monitor station, a key may be installed to open the lead from terminal 7 of 759B loudspeaker and C of 54A control unit. This will eliminate remote station users from listening on handset when push-to-talk key is not operated and hearing all noises in the vicinity of monitor station. It also cuts off monitoring of all remote station areas.

**TABLE C
711B TELEPHONE SET MODIFICATION**

Feature	Wire or Lead	From Term.	To Term.
Hold Key	BL(2)	E1	1
	W	E2	2
	G-Y	2	*
	R-Y	1	*
Switch-hook	S	10	E2
	(BR) [S-BR]	9	E1
	(Y) [S-Y]	7	E1
Push-to-Talk G5KR Hand Set	BK		10
	BK		7
	W		R
	W		GN
	R		R
	R		B

TABLE D
712B TELEPHONE SET MODIFICATION

Feature	Wire or Lead	From Term.	To Term.
Switchhook	S	L2	9
664C Transmitter	Remove	From	Set
Push-To-Talk G5KR Hand Set	BK		10
	BK		7
	W		R
	W		GN
	R		R
	R		B

TABLE E
1511D TELEPHONE SET MODIFICATION

Feature	Wire or Lead	From Term.	To Term.
Switchhook	(BR) [S-G]	9	E1
	(Y) [S-W]	7	E1
	S	11	E2
Hold Key	(BK) [G-Y]	2	*
	(Y) [R-Y]	1	*
	W	E2	2
	BL	E1	1
G5KR Hand Set	BK		11
	BK		7
	W		13
	W		GN
	R		14
	R		B

* Insulate and store.

† Lamp terminal board.

() Indicates current color code.

[] Indicates MD color code.

3.05 Any remote station can voice call the monitor area over the SA lead by depressing the push-to-talk key even though monitor 759B loudspeaker is modified.

TABLE F
1558D TELEPHONE SET MODIFICATION

Feature	Wire or Lead	From Term.	To Term.
Switchhook	BR	G	7
	S	14	13
Hold Key	BK	2	*
	W	E2	2
	BR	E1	1
G5KR Hand Set	Y	E1	*
	BK		8
	BK		14
	W		GN
	W		10
	R		B
	R		11

TABLE G
1712B TELEPHONE SET MODIFICATION

Feature	Wire or Lead	From Term.	To Term.
Switchhook	S	L1	9
664C Transmitter	Remove	From	Set
G5KR Hand Set	BK		7
	BK		10
	W		GN
	W		5†
	R		B
	R		6†

4. GENERAL OPERATIONAL DESCRIPTION

4.01 The monitor station is the central part of the 2A FARM INTERPHONE. It monitors all sounds in the vicinity of the remote microphone

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loudspeaker locations. There is a volume control at the monitor location to regulate the output volume. This control is shunted out over the SA lead when anyone at remote station calls over the handset to the monitor location.

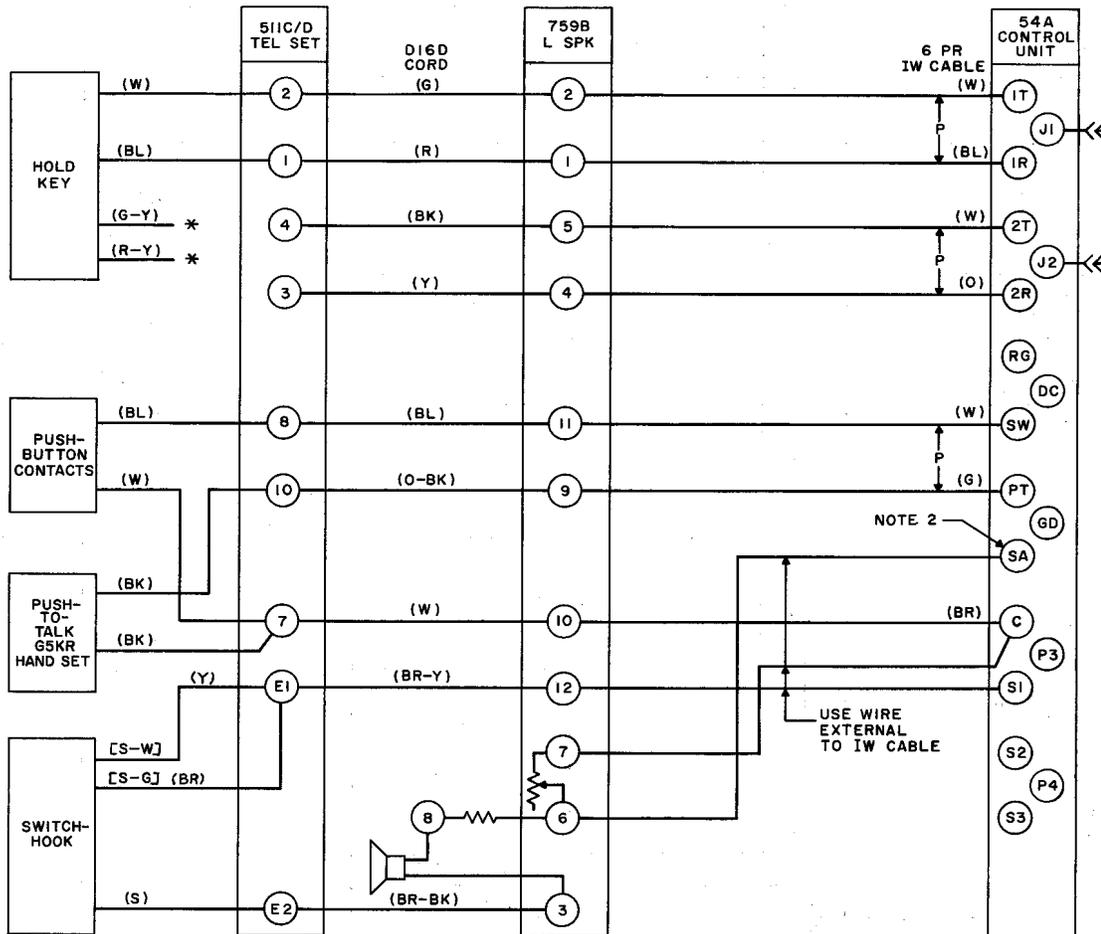
4.02 All remote loudspeakers are bridged at the 54A control unit on the primary winding of the T1 transformer.

4.03 The quieting relay, K1B, is operated when any two locations are talking handset-to-handset on intercom, and either of the stations momentarily depresses the quieting pushbutton. The relay locks up under control of the handsets. In operating, this relay opens the input leads to the amplifier and keeps all sounds out of the loudspeakers.

4.04 The push-to-talk K1A relay is operated from any location where the line key is in the intercom position and the handset push-to-talk button is depressed. This station is on the input of the amplifier as long as the button is held operated. The amplifier is reversed and all loudspeakers will be on the output at this time.

4.05 The K2 battery feed relay operates when any handset is off the hook and the turn key turned to intercom. This causes the monitor loudspeaker to bridge the input of the preamplifier. In 4.04 the reverse is explained: all loudspeakers are on the output when a handset push-to-talk button is operated.

4.06 Tone ringing from the central office line is a reproduction of central office ringing over the loudspeakers. A strap between J1 and J2 must be placed. Then contacts of the E1B ringer will operate the K3 or ring relay. Only a one-wire takeoff from the ring of the line is necessary for the amplifier input. Direct ringing current does not reach any part of the amplifier.



Note 1: Place strap when tone signaling is required at monitor station.

Note 2: Connect to SA terminal only for the first monitor station. Connect no other wires at this terminal.

Note 3: Ringer connections are shown in Fig. 30 and 31.

Note 4: Use separate external wiring for loudspeaker leads at monitor station.

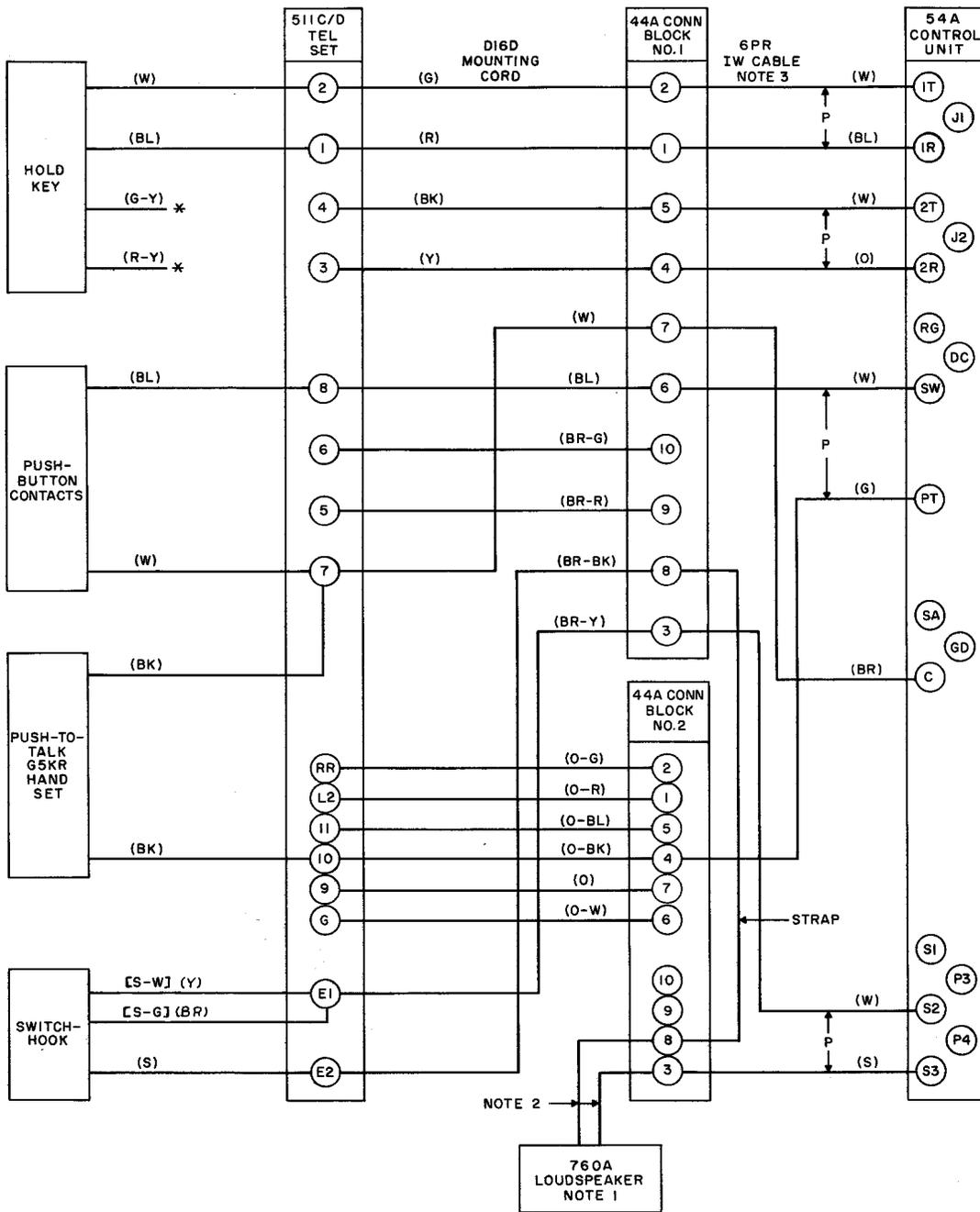
Note 5: Insulate and store all unused cord conductors at terminal block of 759B loudspeaker.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 1 – Monitor Station using 511C/D Telephone Set and 759B Loudspeaker



Note 1: KS-16846, List 1 outdoor loudspeaker may be substituted at remote station locations.

Note 2: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire as appropriate.

Note 3: In order that the mounting cord conductors may

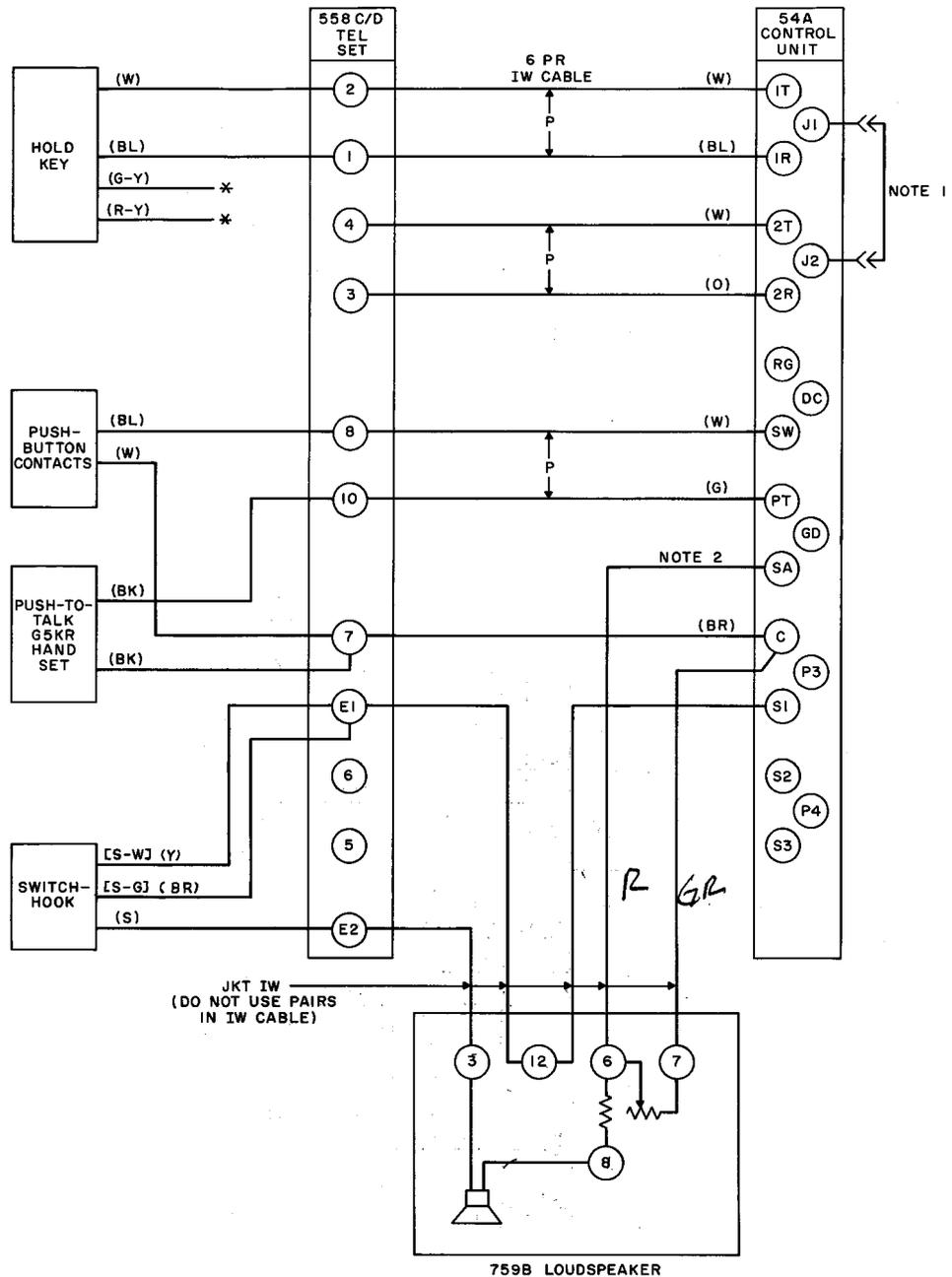
be terminated on the proper terminals at the connecting block, the IW cable is cut down in a nonstandard sequence.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 2 — Remote Station using 511C/D Telephone Set with 760A Loudspeaker, Connections



Note 1: Place strap when tone signaling is required at monitor station.

Note 2: Connect wire to SA terminal only for the first monitor station. Connect no other wires at this terminal.

Note 3: Ringer connections are shown in Fig. 30 and 31.

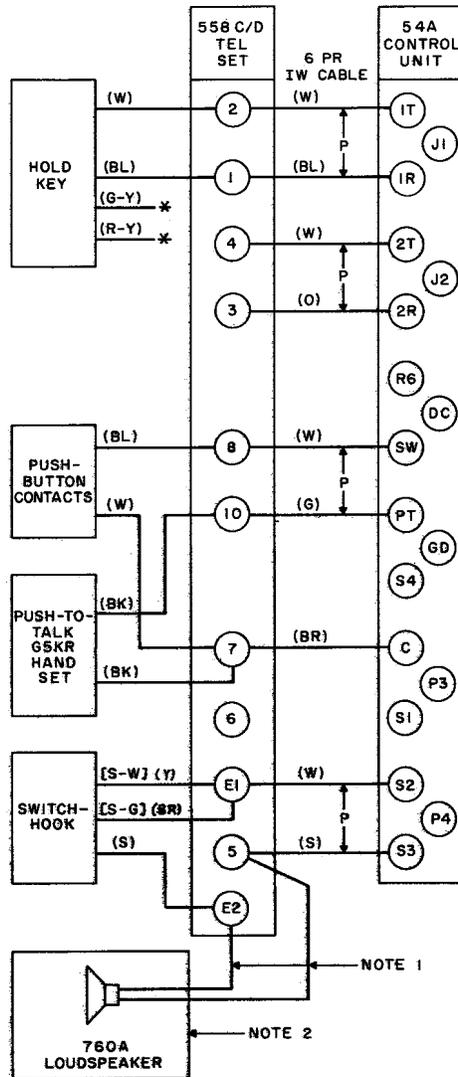
Note 4: Use separate external wiring for loudspeaker leads at monitor station.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 3 – Monitor Station using 558C/D Telephone Set with 759B Loudspeaker, Connections



Note 1: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire, as appropriate.

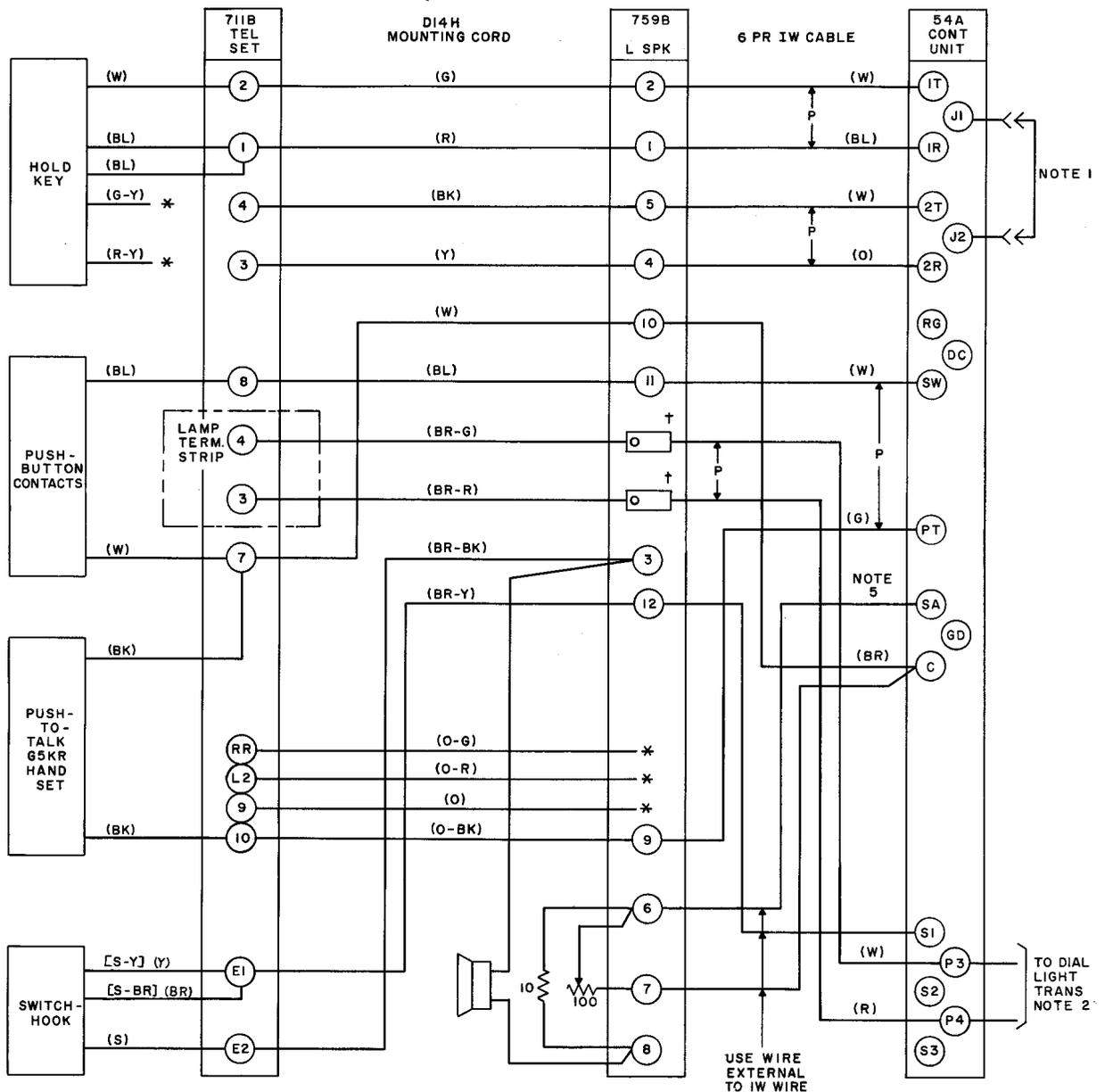
Note 2: The KS-14846, List 1 outdoor loudspeaker may be substituted at remote station locations.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 4 — Remote Station using 558C/D Telephone Set with 760A Loudspeaker, Connections



Note 1: Place strap when tone signaling is required at monitor station.

Note 2: One transformer required per dial light. If lead exceeds 150 feet of IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 711B telephone set.

Note 3: Ringer connections are shown in Fig. 30 and 31.

Note 4: Use separate external wiring for loudspeaker leads at monitor station.

Note 5: Connect to SA terminal only for the first monitor station. Connect no other wires at this terminal.

* Insulate and store.

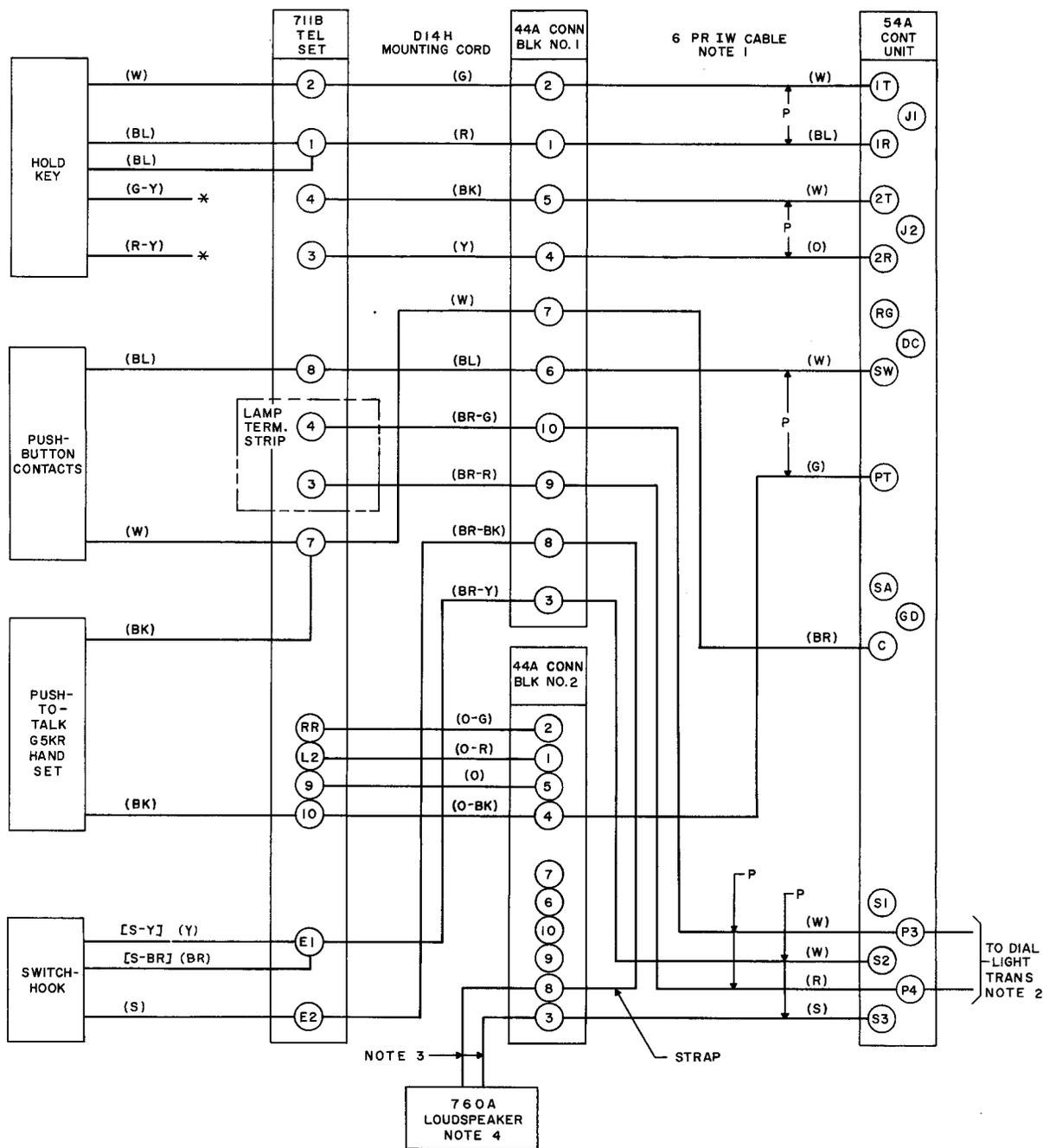
† Use D-161488 connector.

() Indicates current color code.

[] Indicates MD color code.

Fig. 5 – Monitor Station using 711B Telephone Set with 759B Loudspeaker, Connections

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Note 1: In order that the mounting cord conductors may be terminated on the proper terminals at the connecting block, the IW cable is cut down in a nonstandard sequence.

Note 2: One transformer required per dial light. If lead exceeds 150 feet of IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 711B telephone set.

Note 3: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire, as appropriate.

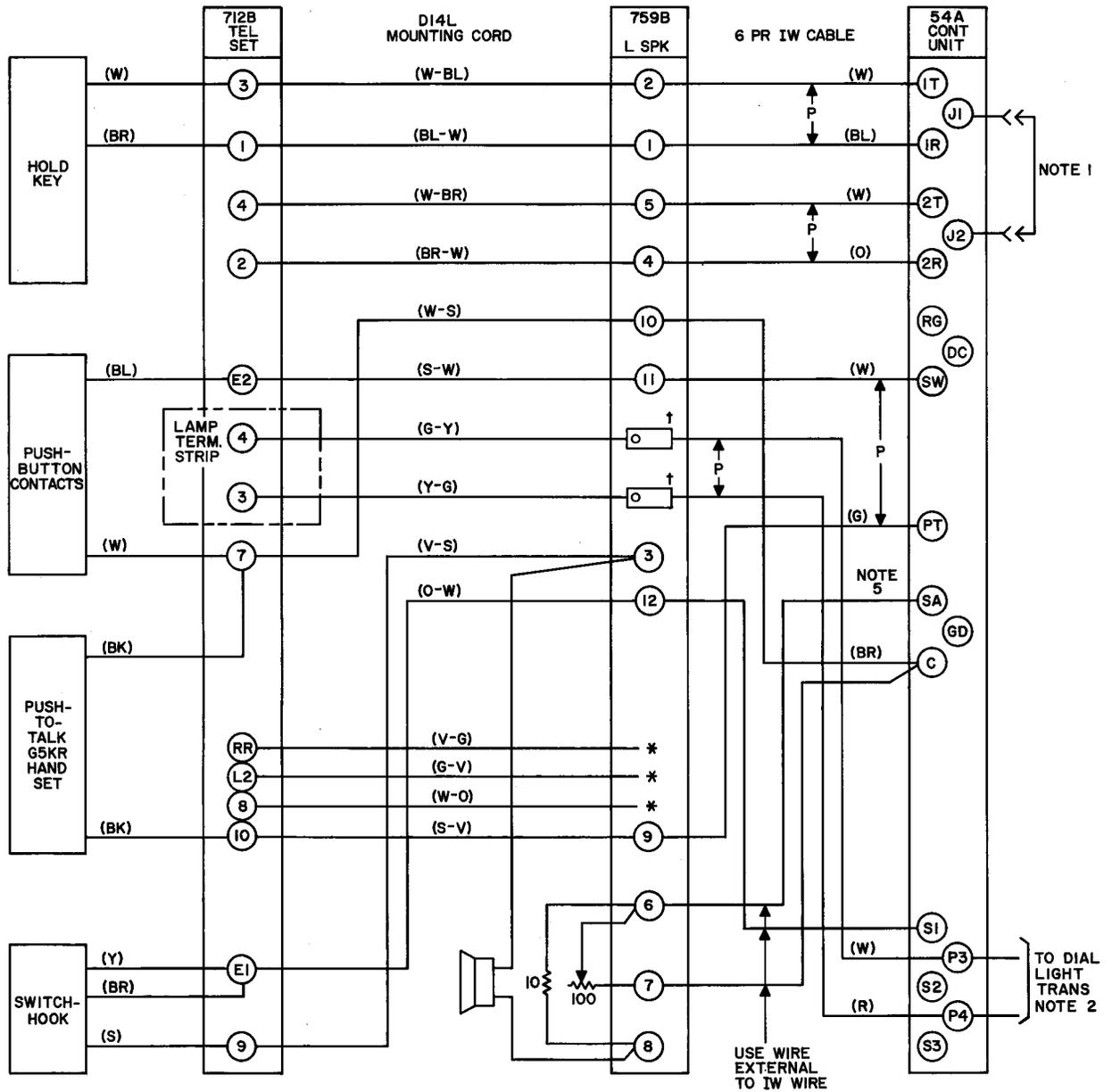
Note 4: KS-16846, List 1 outdoor loudspeaker may be substituted at remote station locations.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 6 — Remote Station using 711B Telephone Set with 760A Loudspeaker, Connections



Note 1: Place strap when tone signaling is required at monitor station.

Note 2: One transformer required per dial light. If lead exceeds 150 feet of IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 712B telephone set.

Note 3: Ringer connections are shown in Fig. 30 and 31.

Note 4: Use separate external wiring for loudspeaker leads at monitor station.

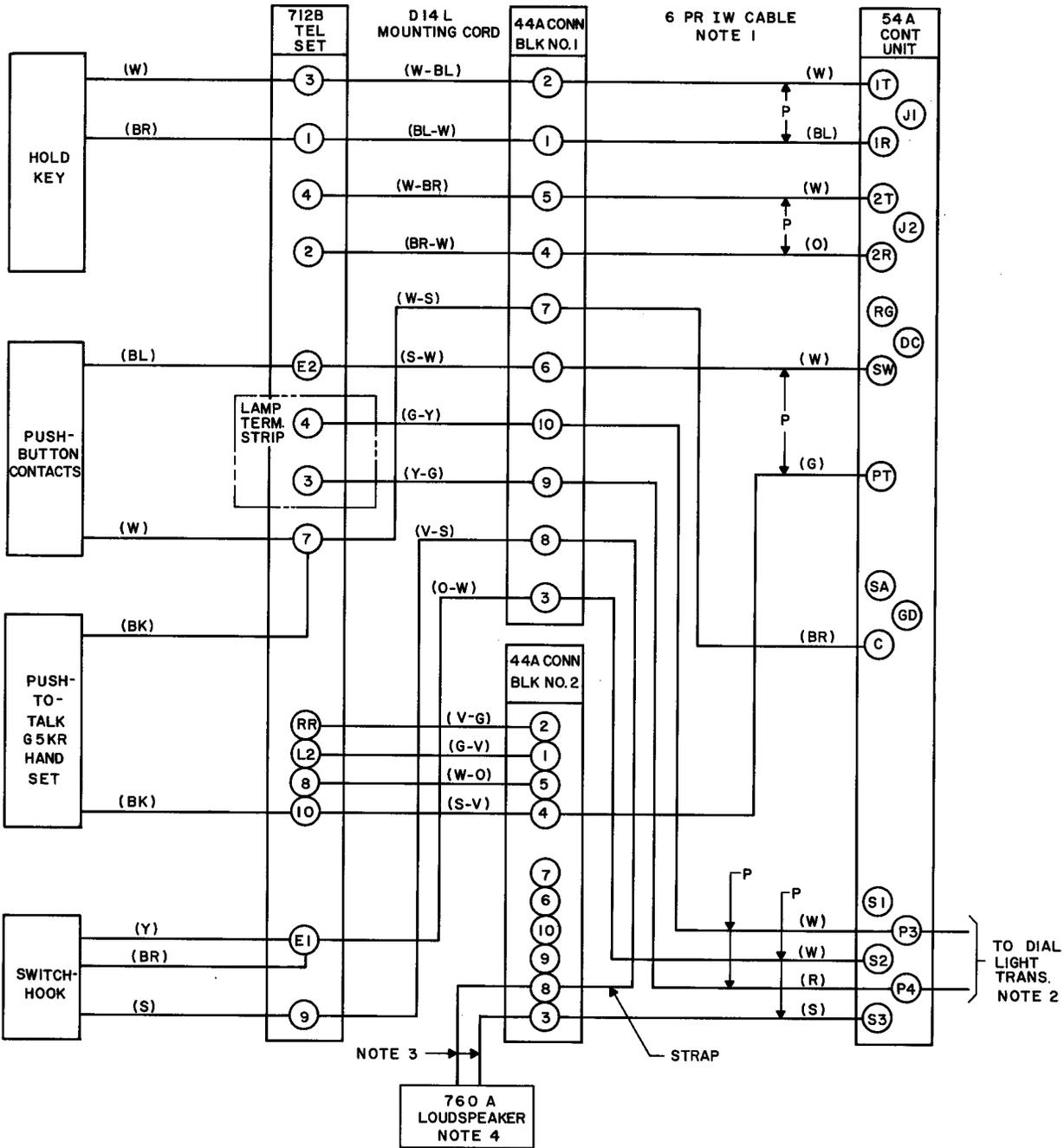
Note 5: Connect to SA terminal only for the first monitor station. Connect no other wires at this terminal.

* Insulate and store.

† Use D-161488 connector.

Fig. 7 – Monitor Station using 712B Telephone Set with 759B Loudspeaker, Connections

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Note 1: In order that the mounting cord conductors may be terminated on the proper terminals at the connecting block, the IW cable is cut down in a nonstandard sequence.

Note 2: One transformer required per dial light. If lead exceeds 150 feet of IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 712B telephone set.

Note 3: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire as appropriate.

Note 4: KS-16846, List 1 outdoor loudspeaker may be substituted at remote station locations.

Fig. 8 — Remote Stations using 712B Telephone Set with 760A Loudspeaker, Connections

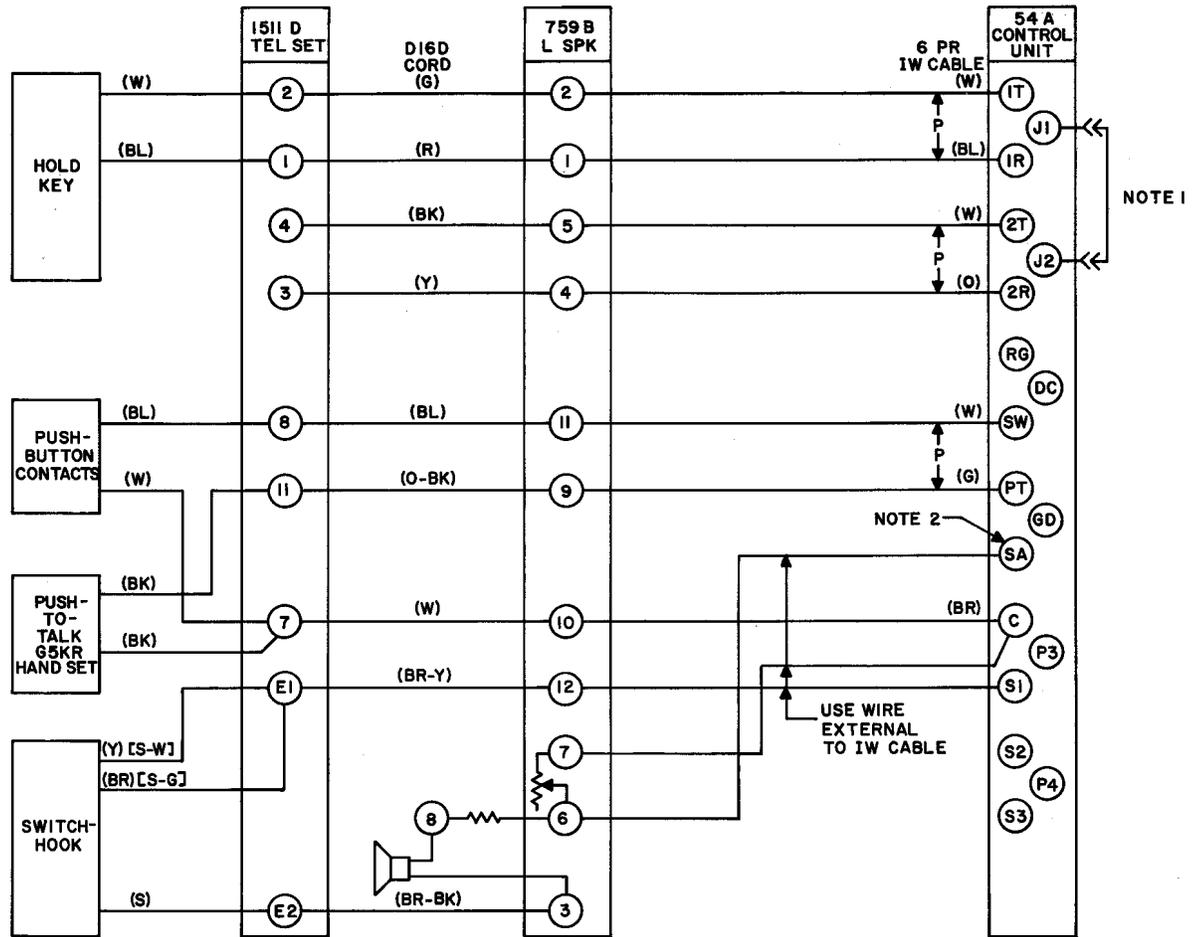
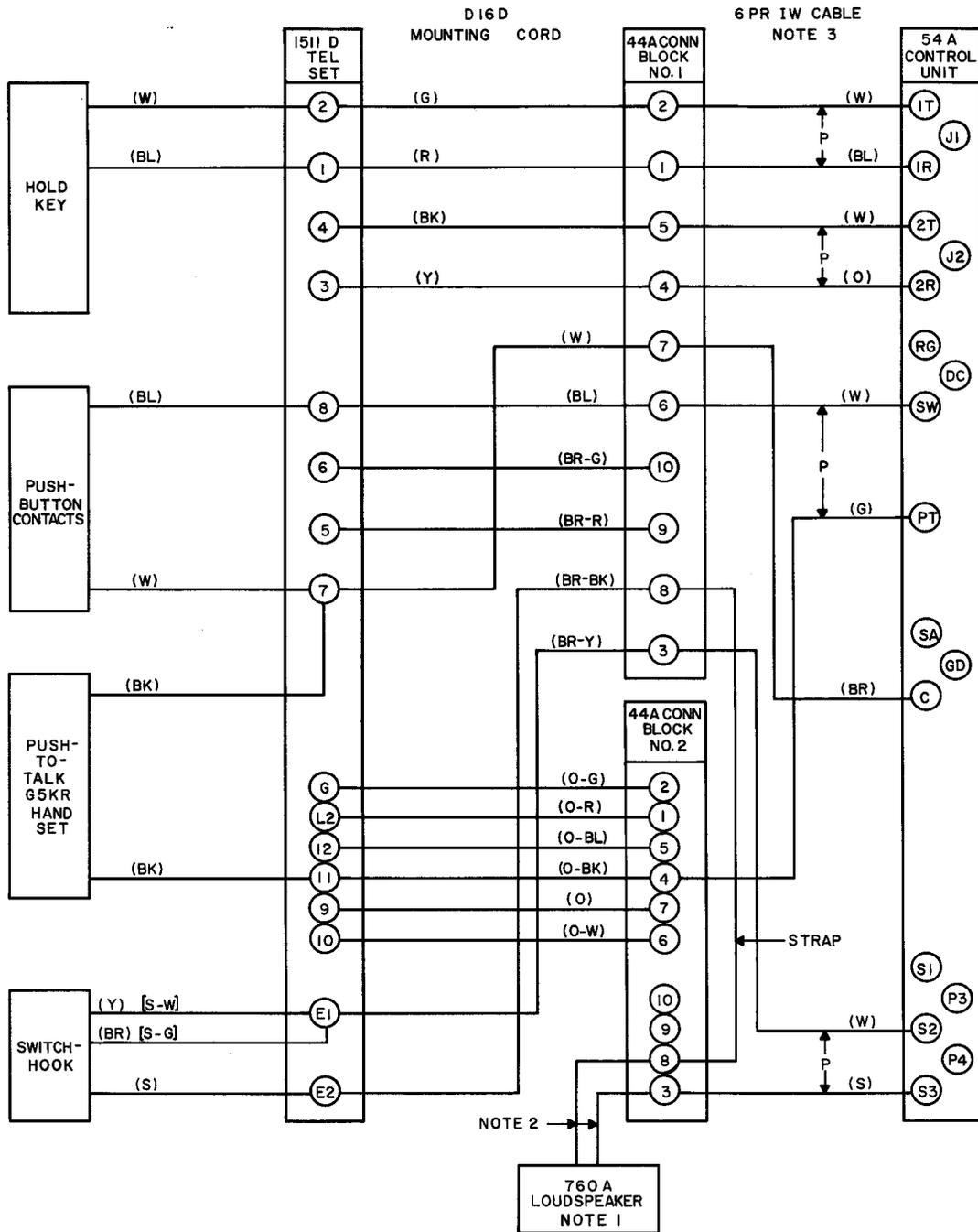


Fig. 9 — Monitor Station using 1511D Telephone Set with 759B Loudspeaker, Connections

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Note 1: KS-16846,L1 outdoor loudspeaker may be substituted at remote station locations.

Note 2: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire, as appropriate.

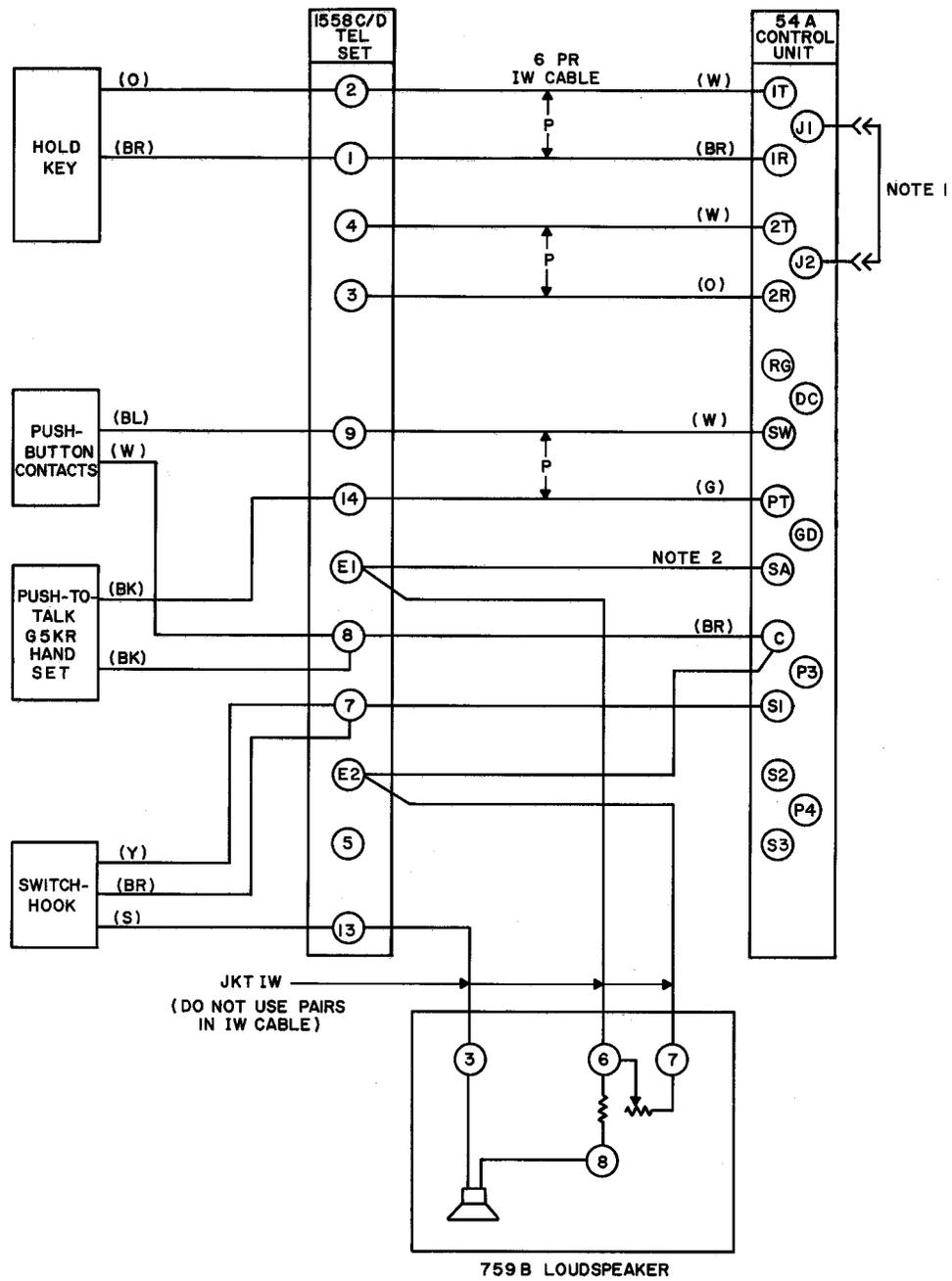
Note 3: In order that the mounting cord conductors may

be terminated on the proper terminals at the connecting block, the IW cable is cut down in a nonstandard sequence.

() Indicates current color code.

[] Indicates MD color code.

Fig. 10 – Remote Station using 1511D Telephone Set with 760A Loudspeaker, Connections



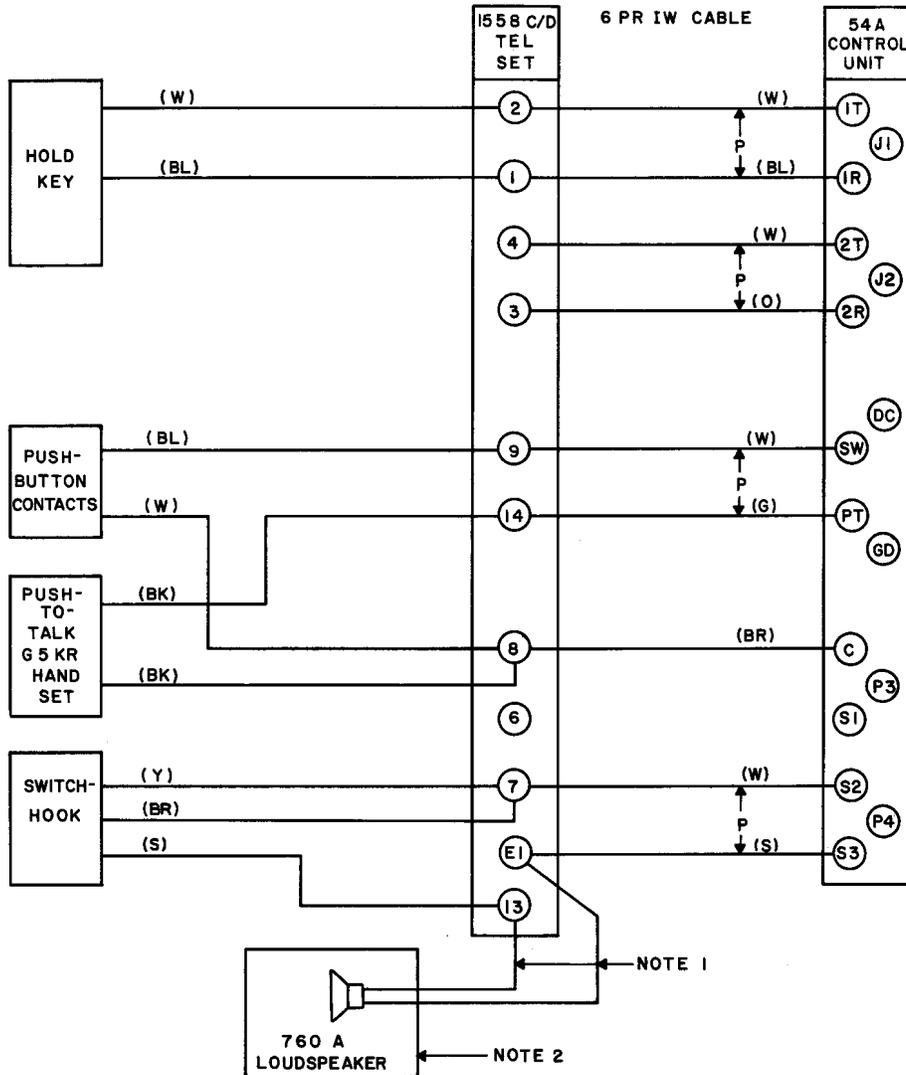
Note 1: Place strap when tone signaling is required at monitor station.

Note 2: Connect wire to SA terminal only for the first monitor station. Connect no other wires at this terminal.

Note 3: Ringer connections are shown in Fig. 30 and 31.

Note 4: Use separate external wiring for loudspeaker leads at monitor station.

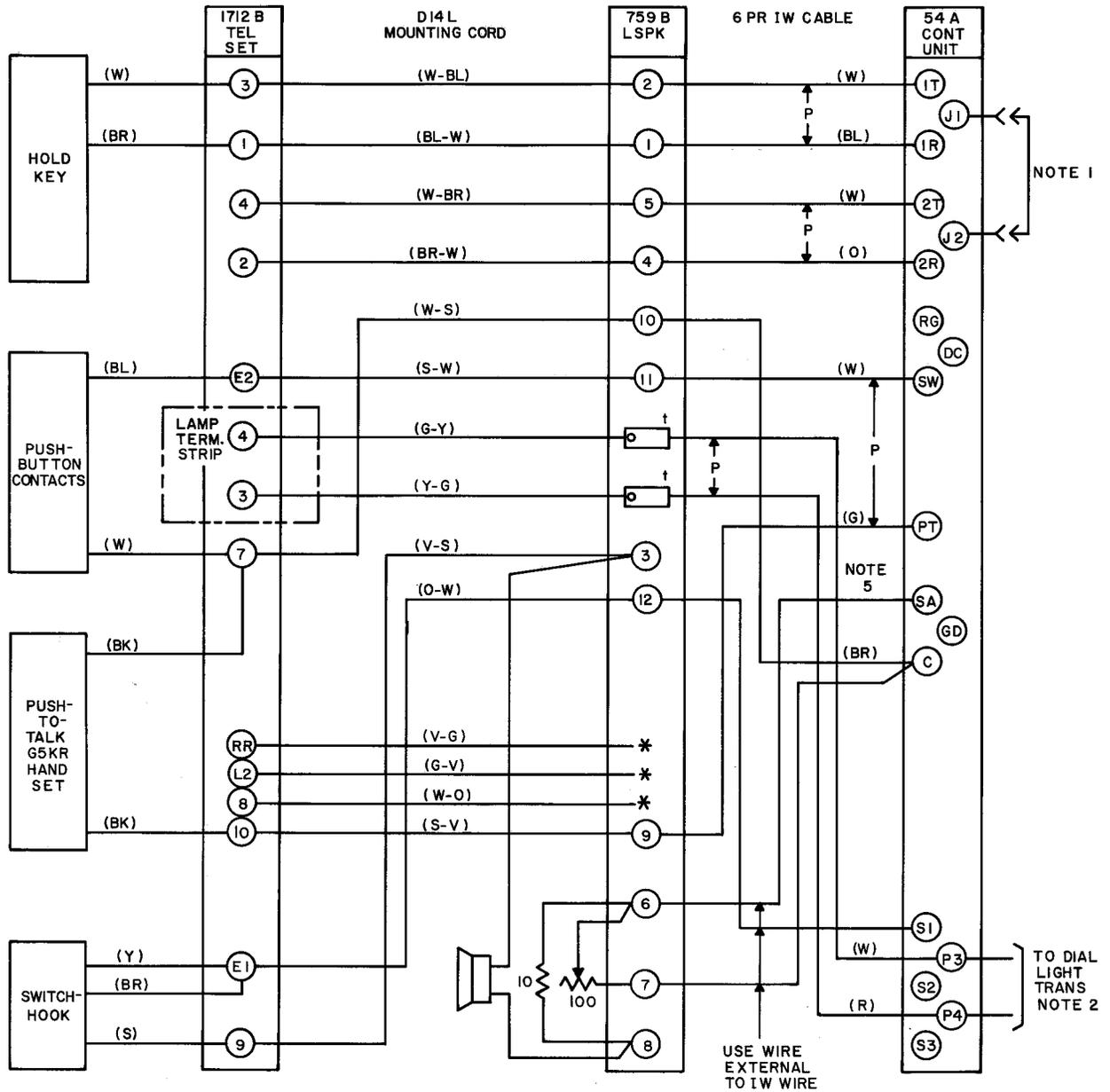
Fig. 11 – Monitor Station using 1558D Telephone Set with 759B Loudspeaker, Connections



Note 1: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire, as appropriate.

Note 2: KS-14846, List 1 outdoor loudspeaker may be substituted at remote station locations.

Fig. 12 — Remote Station using 1558D Telephone Set with 760A Loudspeaker, Connections



Note 1: Place strap when tone signaling is required at monitor station.

Note 2: One transformer required per dial light. If lead exceeds 150 feet of IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 1712B telephone set.

Note 3: Ringer connections are shown in Fig. 30 and 31.

Note 4: Use separate external wiring for loudspeaker leads at monitor station.

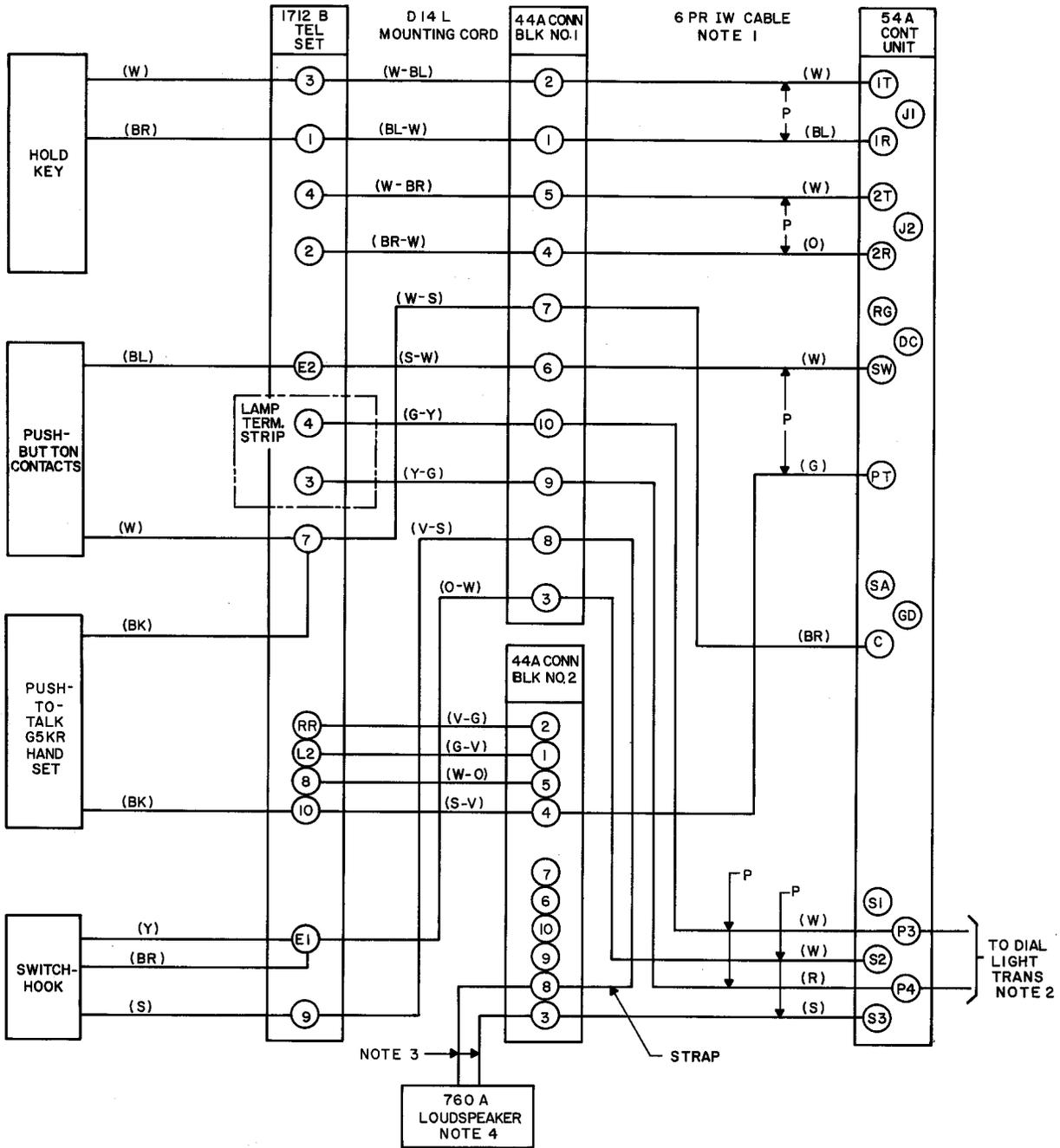
Note 5: Connect to SA terminal only for the first monitor station. Connect no other wires at this terminal.

* Insulate and store.

† Use D-161488 connector.

Fig. 13 – Monitor Station using 1712B Telephone Set with 759B Loudspeaker, Connections

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Note 1: In order that the mounting cord conductors may be terminated on the proper terminals at the connecting block, the IW cable is cut down in a nonstandard sequence.

Note 2: One transformer required per dial light. If lead exceeds 150 feet IW or drop wire or 100 feet of multiple drop wire, locate transformer nearer to 1712B telephone set.

Note 3: Use R2FK cord furnished with 760A loudspeaker or paired JKT inside wire, as appropriate.

Note 4: KS-16846, List 1 outdoor loudspeaker may be substituted at remote station locations.

Fig. 14 – Remote Station using 1712B Telephone Set with 760A Loudspeaker, Connections

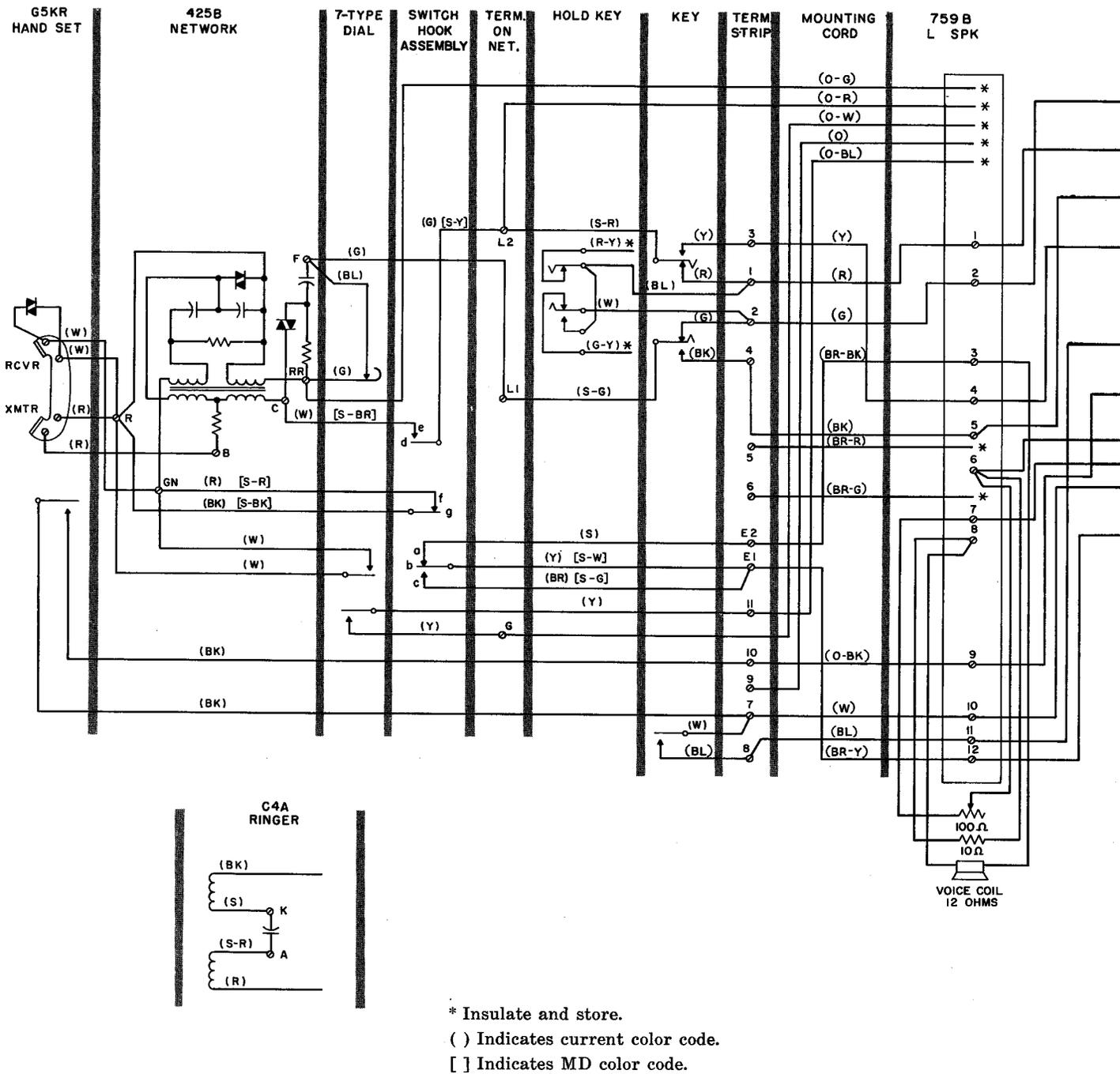
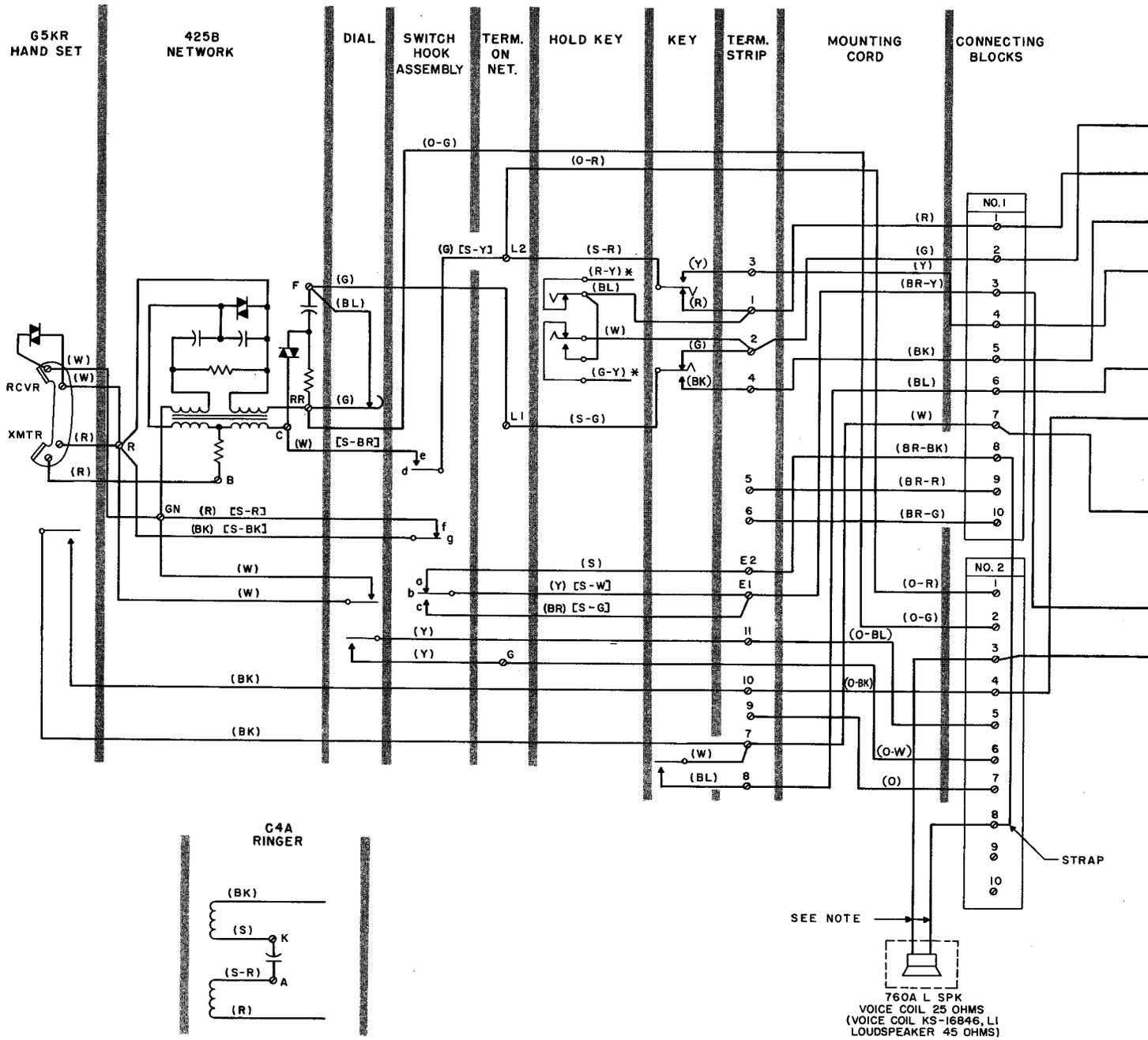


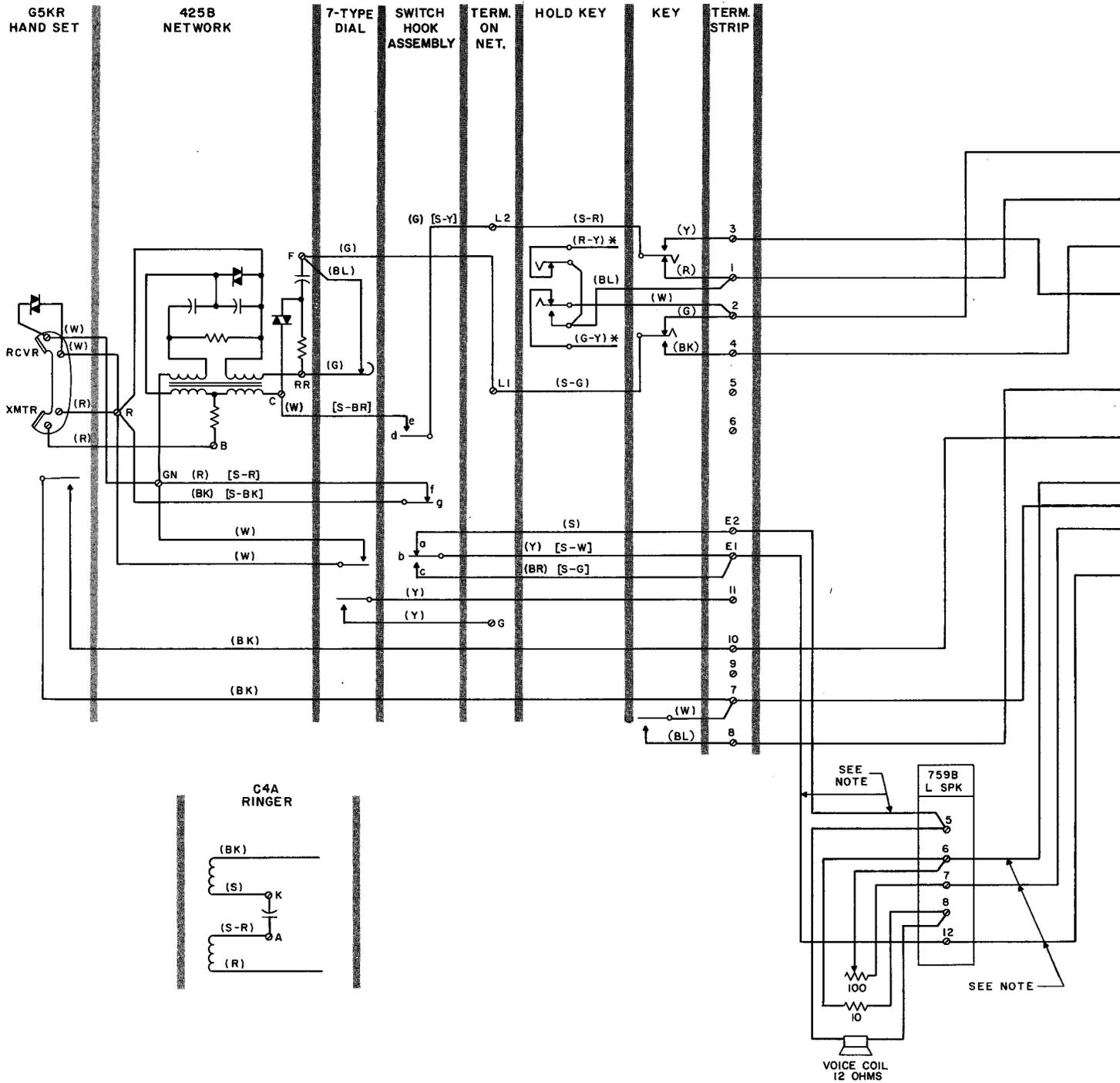
Fig. 15 - Monitor Station using 511C/D Telephone Set with 759B Loudspeaker, Schematic



Note: For 760A loudspeaker use R2FK cord provided with speaker or paired JKT wire, as appropriate. For KS-16846, List 1 loudspeaker, use paired JKT wire or drop wire, as appropriate.

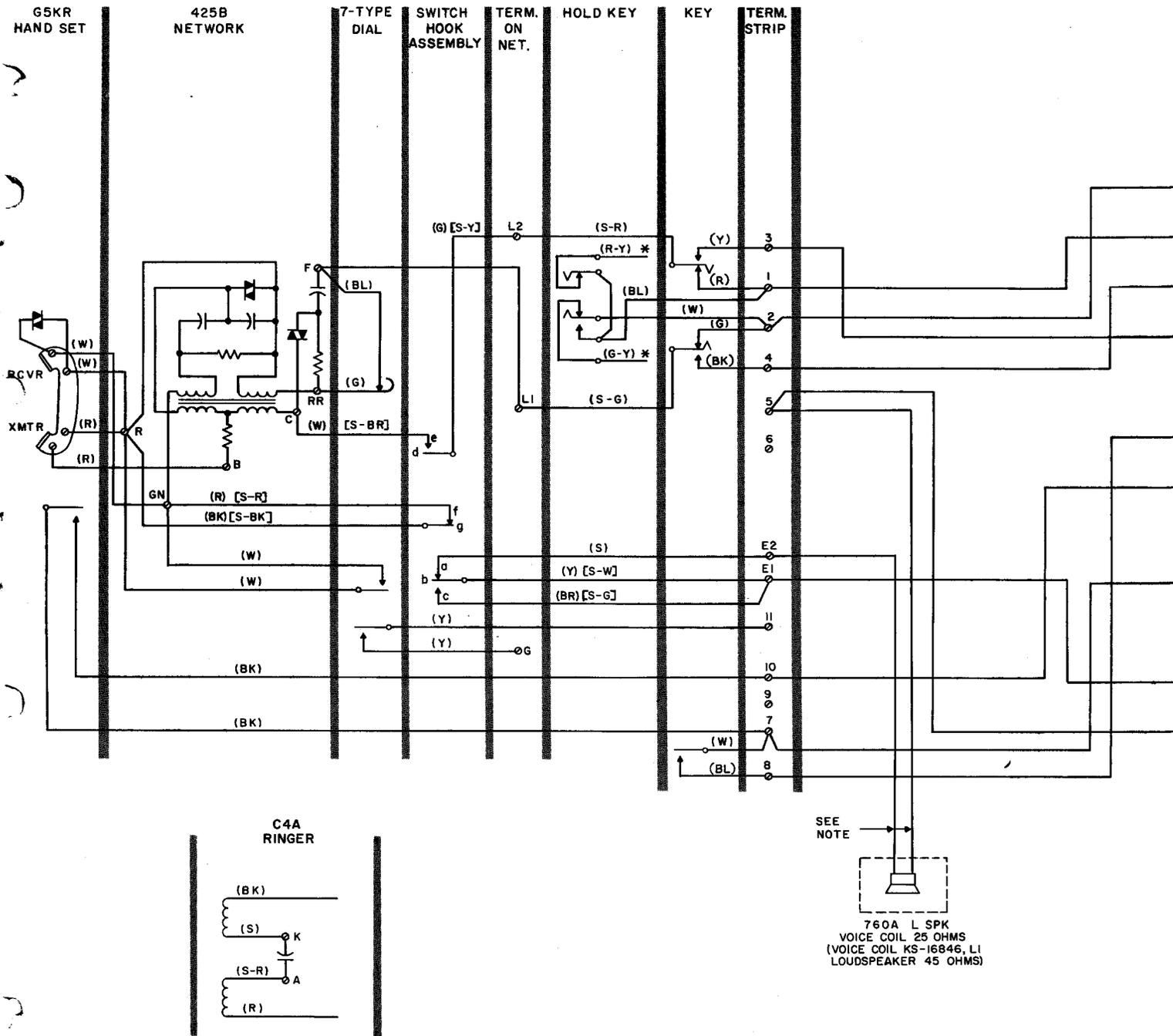
- * Insulate and store.
- () Indicates current color code.
- [] Indicates MD color code.

Fig. 16 – Remote Station using 511C/D Telephone Set with 760A Loudspeaker, Schematic



Note: Use wire external to IW cable.
 () Indicates current color code.
 [] Indicates MD color code.

Fig. 17 – Monitor Station using 558C/D Telephone Set with 759B Loudspeaker, Schematic



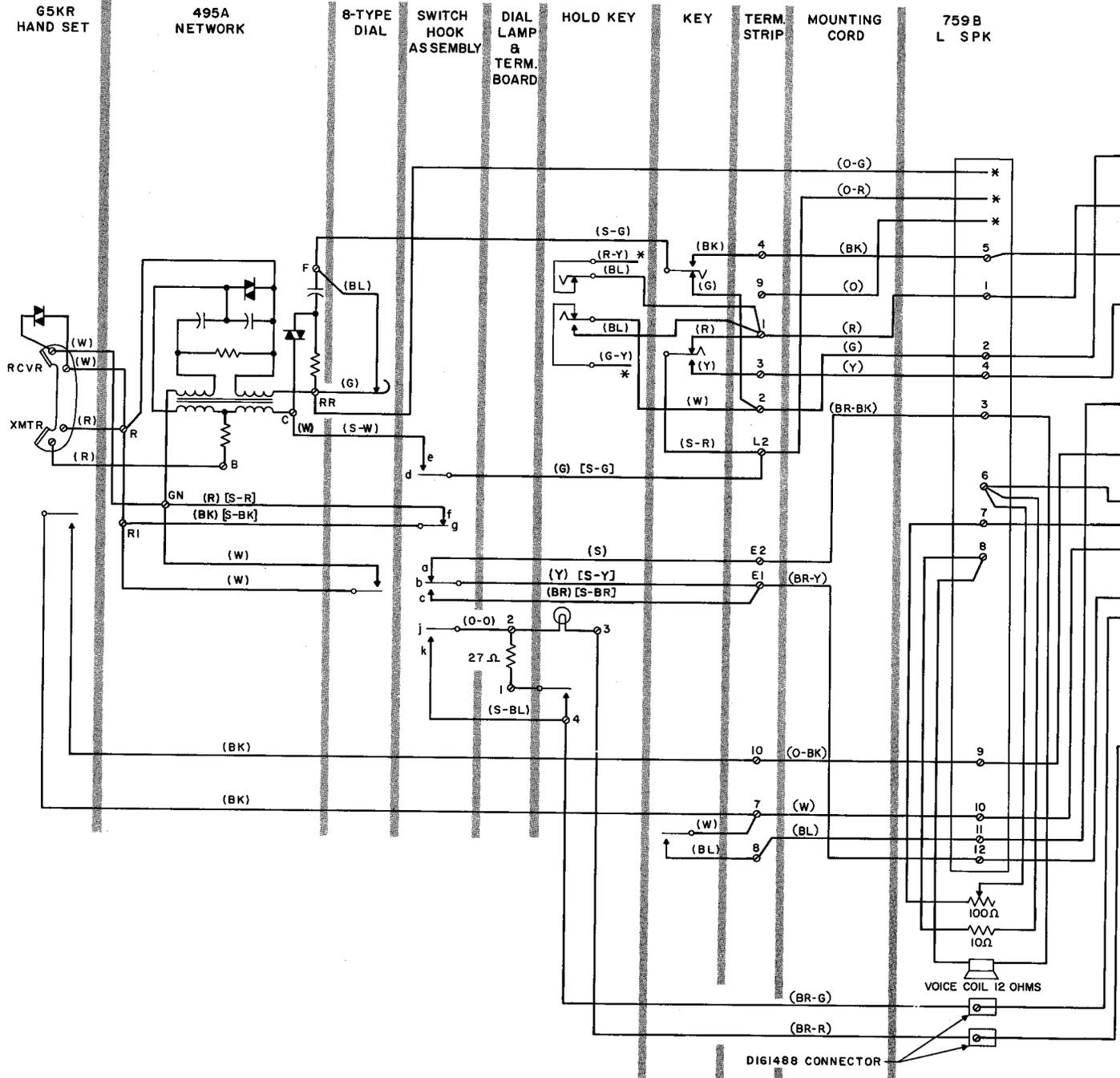
Note: For 760A loudspeaker use R2FK cord provided with speaker or paired JKT wire, as appropriate. For KS-16846, List 1 loudspeaker use paired JKT wire or drop wire, as appropriate.

* Insulate and store.

() Indicates current color code.

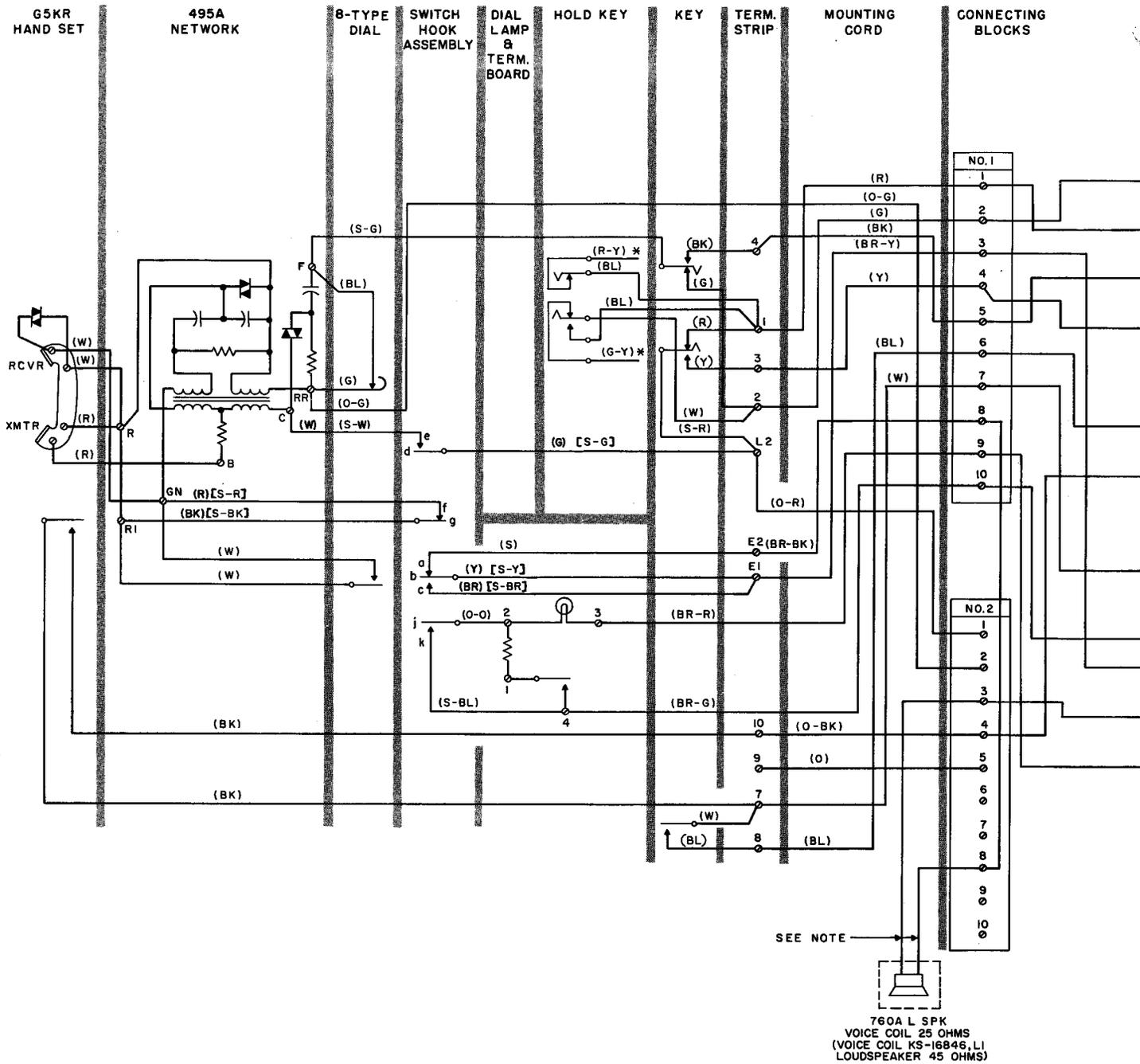
[] Indicates MD color code.

Fig. 18 – Remote Station using 558C/D Telephone Set with 760A Loudspeaker, Schematic



* Insulate and store.
 () Indicates current color code.
 [] Indicates MD color code.

Fig. 19 — Monitor Station using 711B Telephone Set with 759B Loudspeaker, Schematic



Note: For 760A loudspeaker use R2FK cord provided with speaker or paired JKT wire, as appropriate. For KS-16846, List 1 loudspeaker use paired JKT wire or drop wire, as appropriate.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

Fig. 20 – Remote Station using 711B Telephone Set with 760A Loudspeaker, Schematic

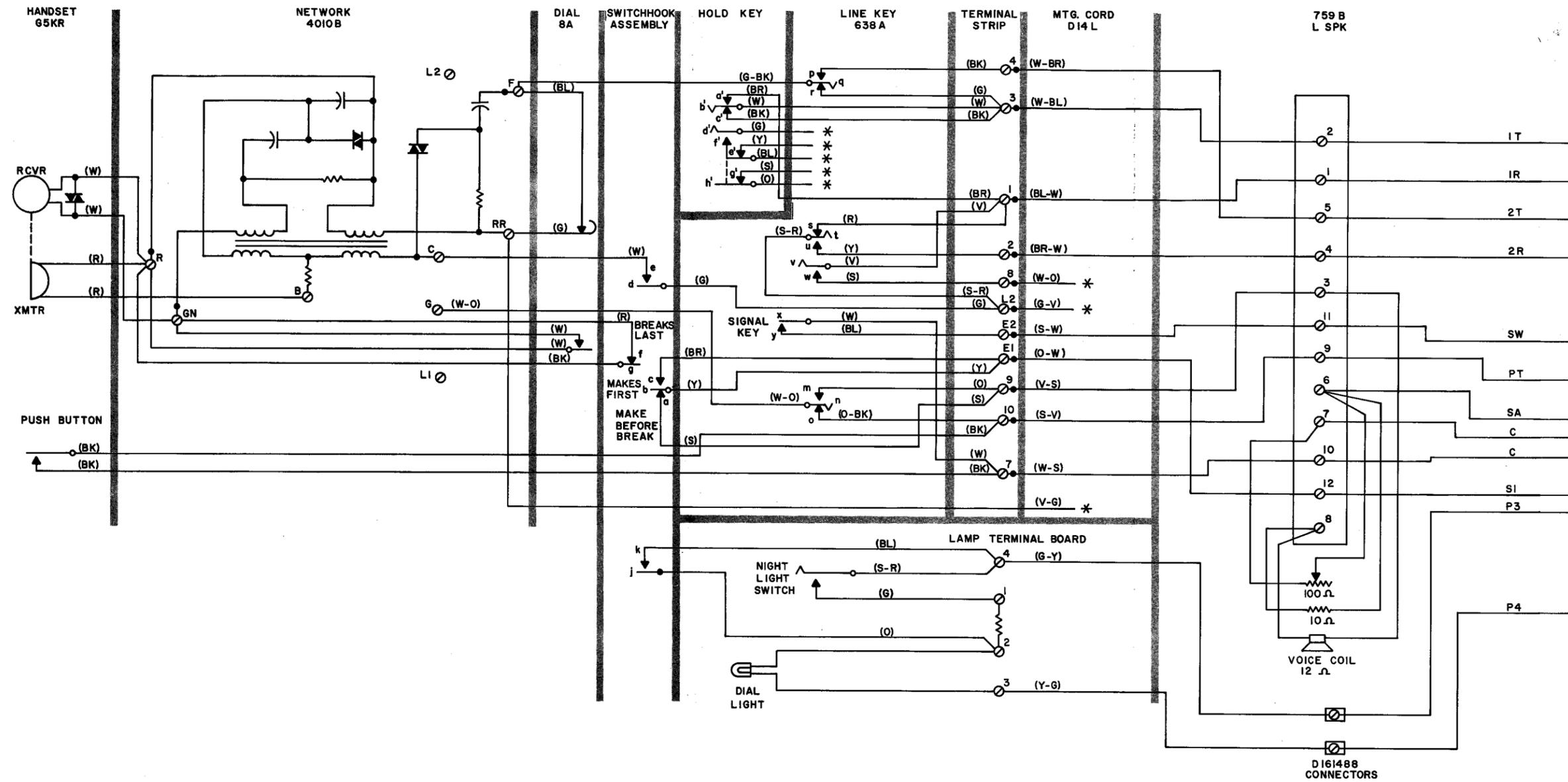


Fig. 21 — Monitor Station using 712B Telephone Set with 759B Loudspeaker, Schematic

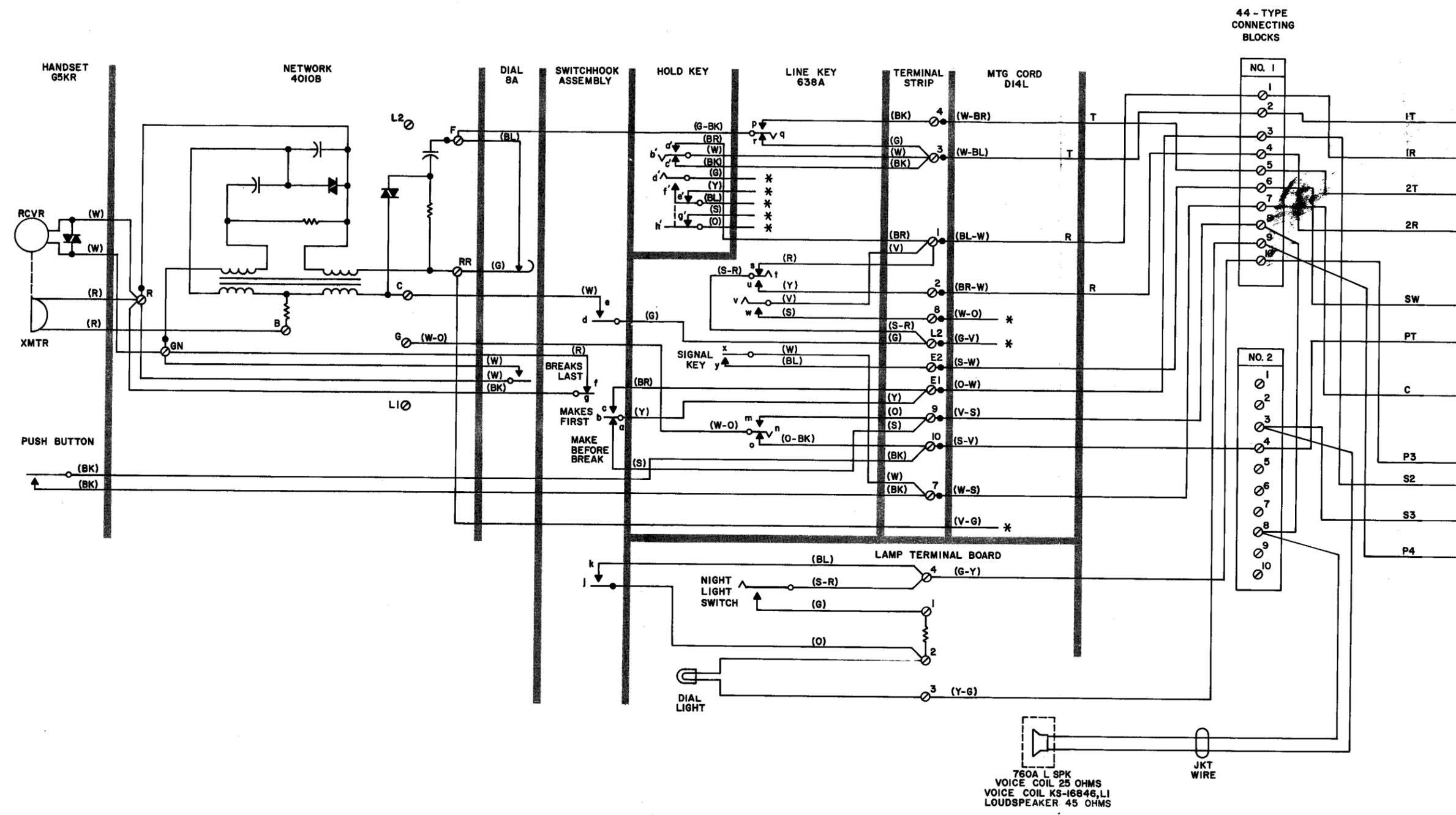
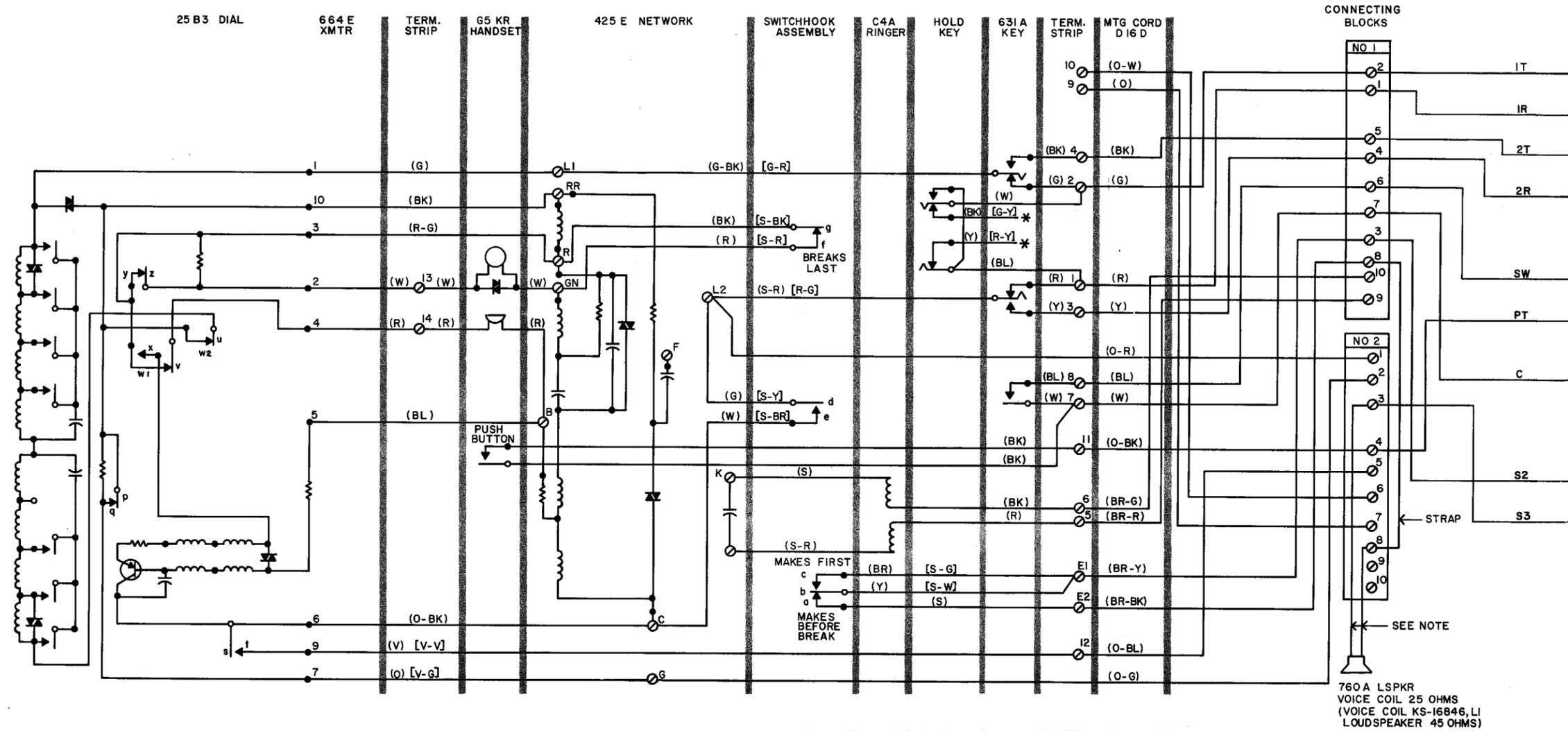


Fig. 22 — Remote Station using 712B Telephone Set with 760A Loudspeaker, Schematic



Note: For 760A loudspeaker use R2FK cord provided with speaker or paired JKT wire, as appropriate. For KS-16846, List 1 loudspeaker use paired JKT wire or drop wire, as appropriate.

* Insulate and store.

() Indicates current color code.

[] Indicates MD color code.

760A LSPKR
VOICE COIL 25 OHMS
(VOICE COIL KS-16846, LI
LOUDSPEAKER 45 OHMS)

Fig. 24 — Remote Station using 1511D Telephone Set with 760A Loudspeaker, Schematic

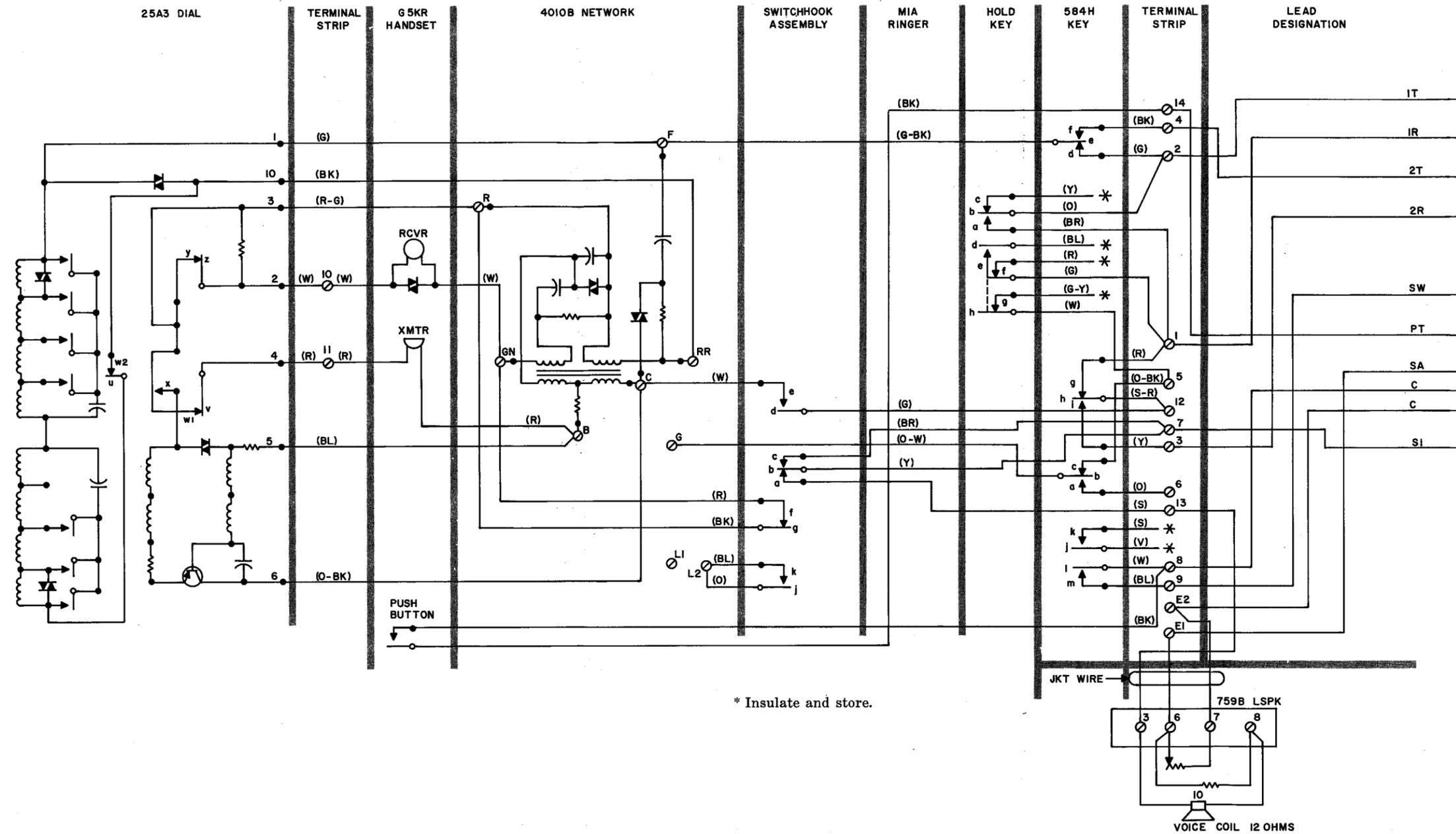


Fig. 25 — Monitor Station using 1558D Telephone Set with 759B Loudspeaker, Schematic

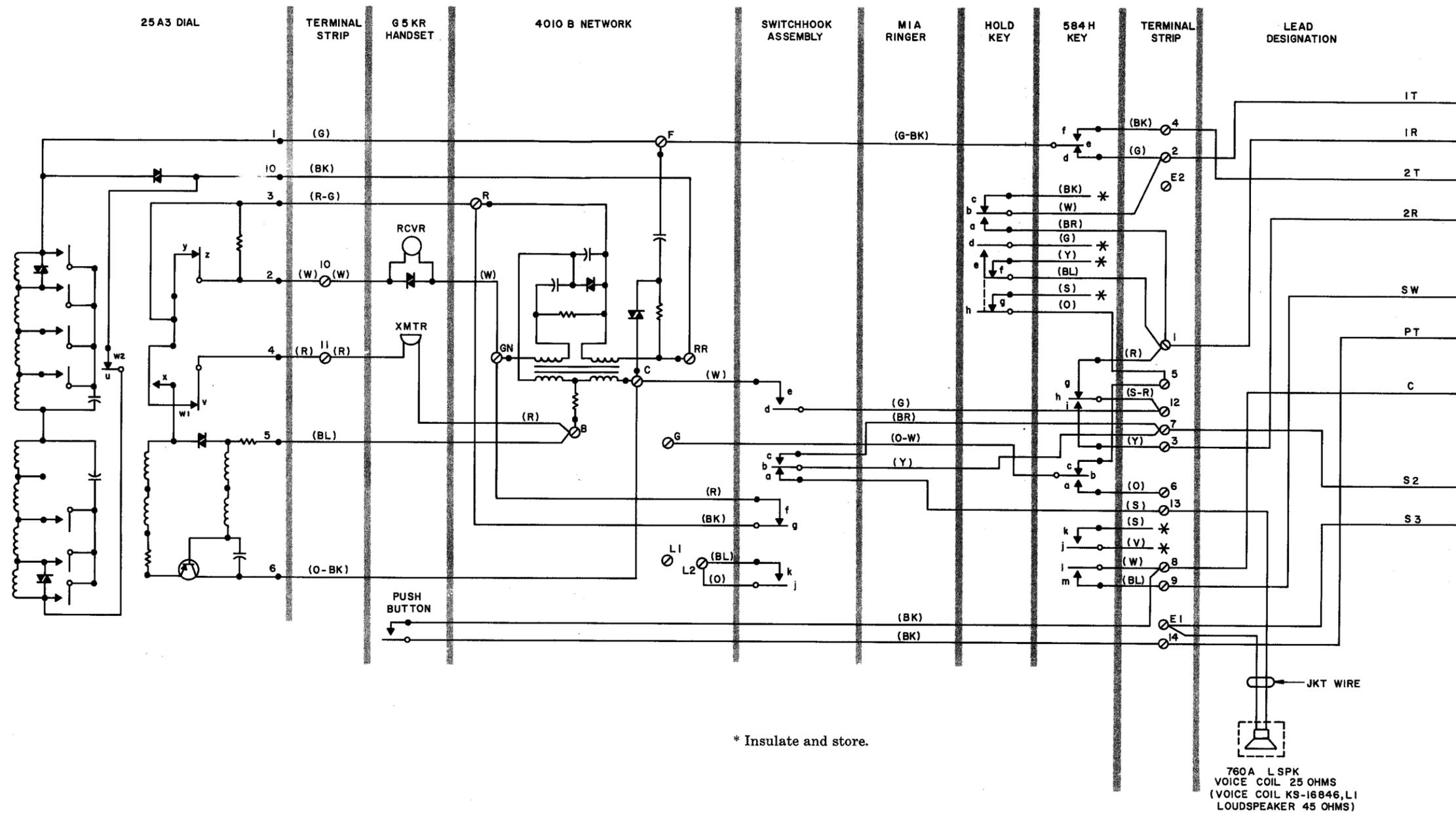
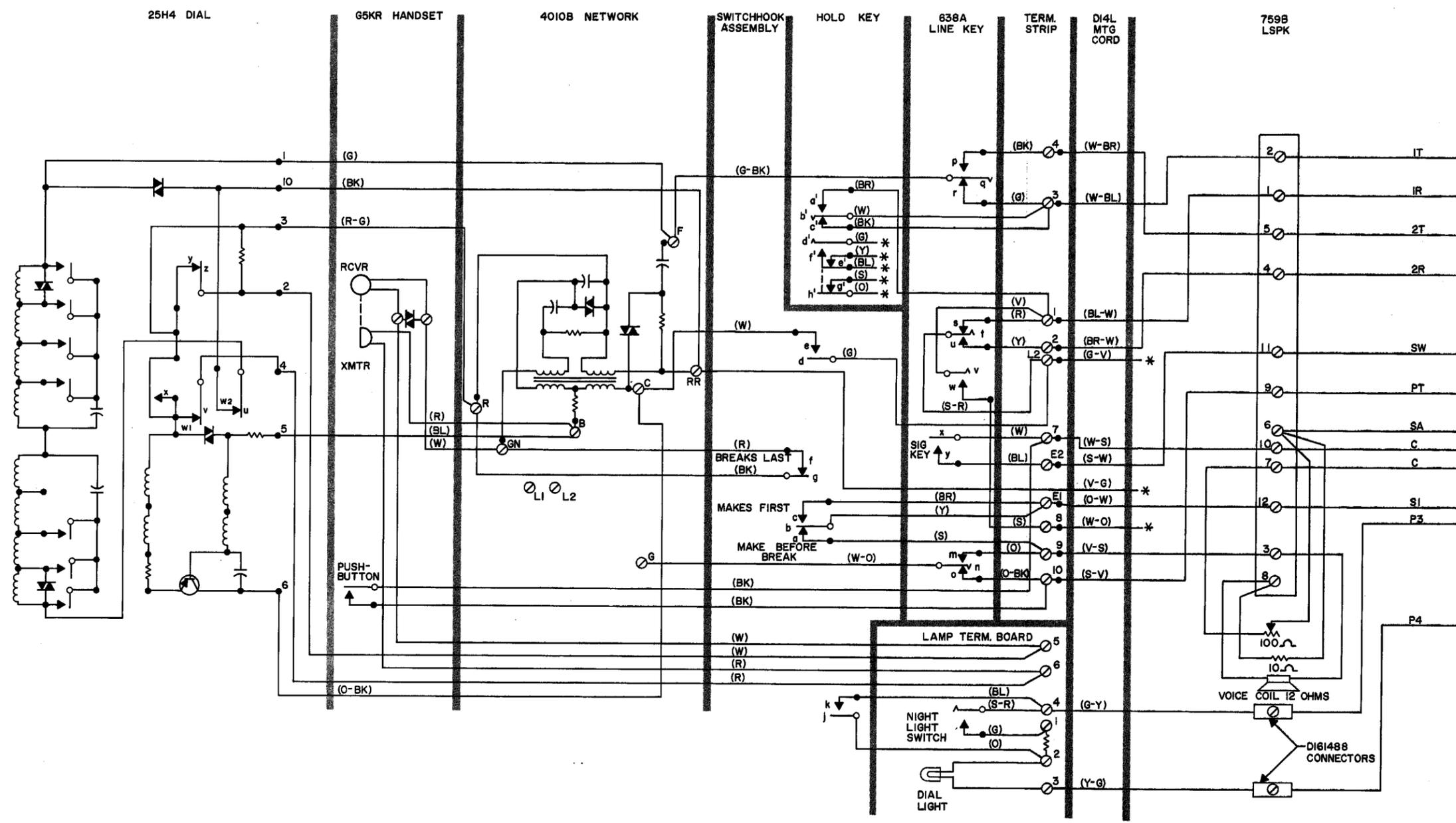
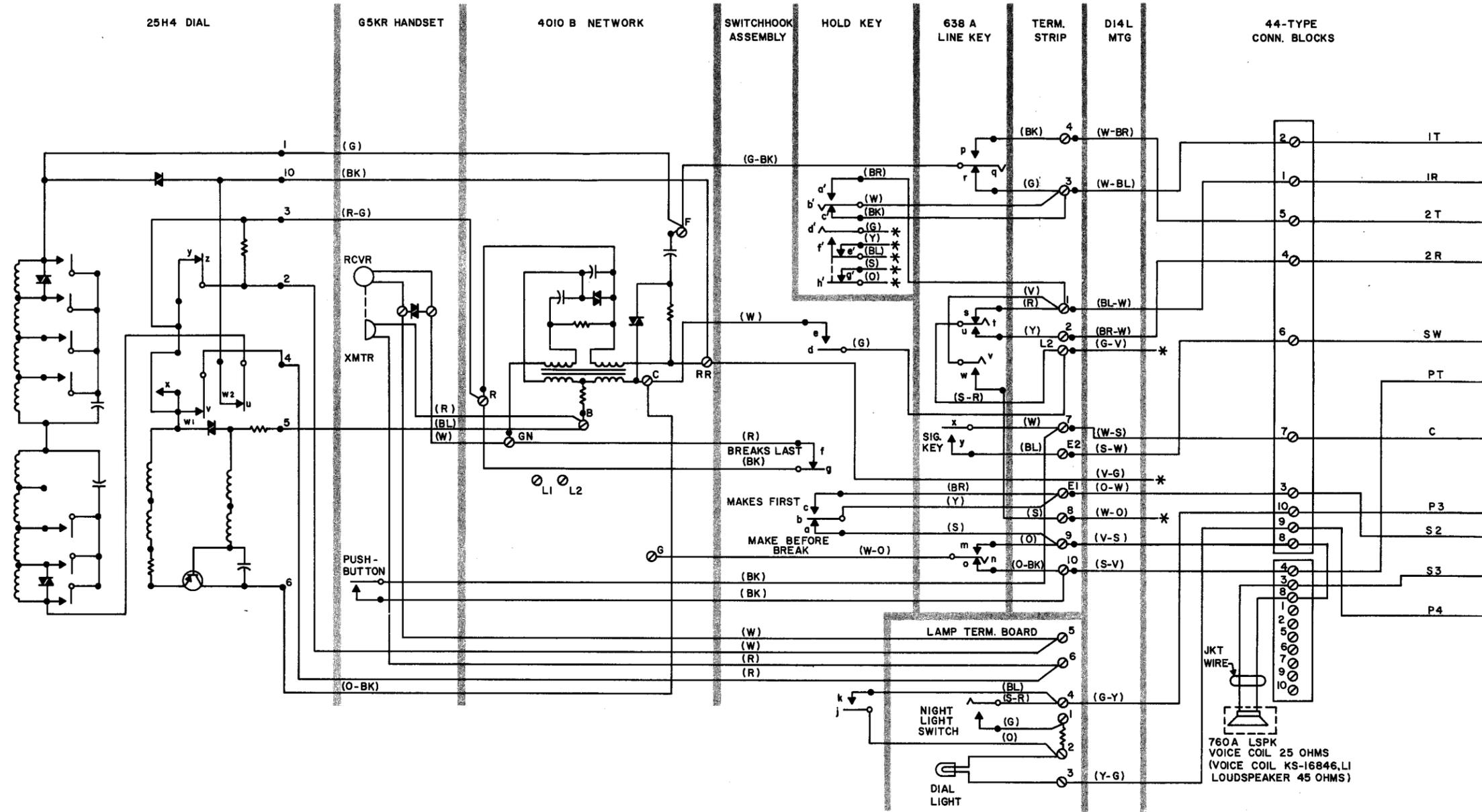


Fig. 26 — Remote Station using 1558D Telephone Set with 760A Loudspeaker, Schematic



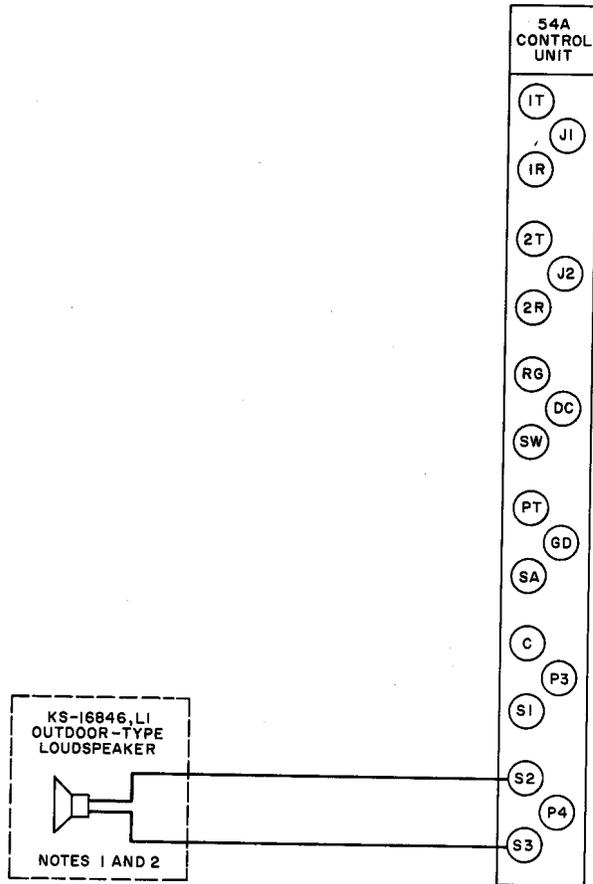
* Insulate and store.

Fig. 27 - Monitor Station using 1712B Telephone Set with 759B Loudspeaker, Schematic



* Insulate and store.

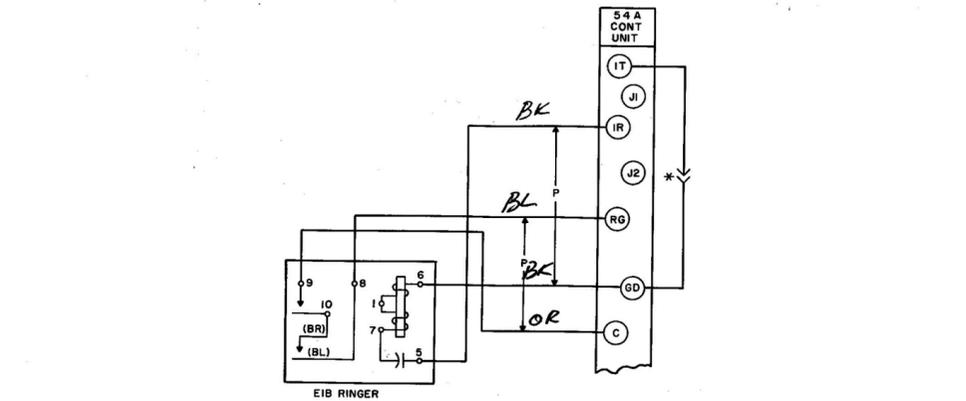
Fig. 28 — Remote Station using 1712B Telephone Set with 760A Loudspeaker, Schematic



Note 1: Maximum of five remote loudspeaker units per system. No more than three of the outdoor type.

Note 2: The 760A loudspeaker may be substituted at indoor locations.

Fig. 29 — Connections for Remote Loudspeaker-Only Locations

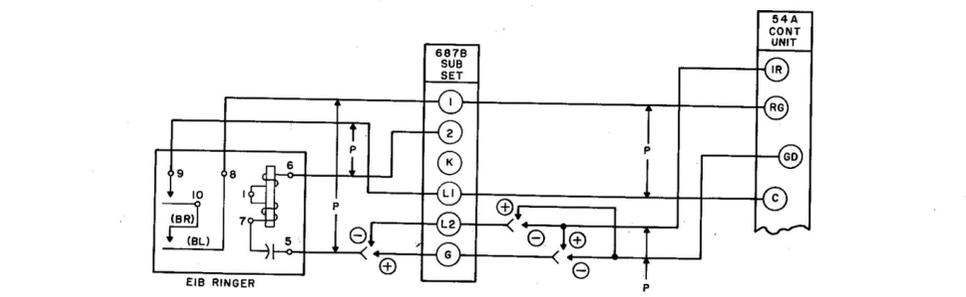


CO LINE CONNECTIONS (NOTES 1, 2, AND 3)

Class of Service	R	T	G
Ind or Bridged	1R	1T	*
Ring Party	1R	1T	GD
Tip Party	1T	1R	GD

Note 1: Wire the E1B ringer directly to the 54A control unit. Use a quad JKT inside wire for this connection.
Note 2: Terminate the CO line directly to the 54A control unit.
Note 3: Tip party identification is not provided with the E1B ringer.
 * Do not connect the ground wire at the 54A control unit. Place strap from terminals 1T to GD for individual or bridged ringers.

Fig. 30 - Line and Ringer Connections

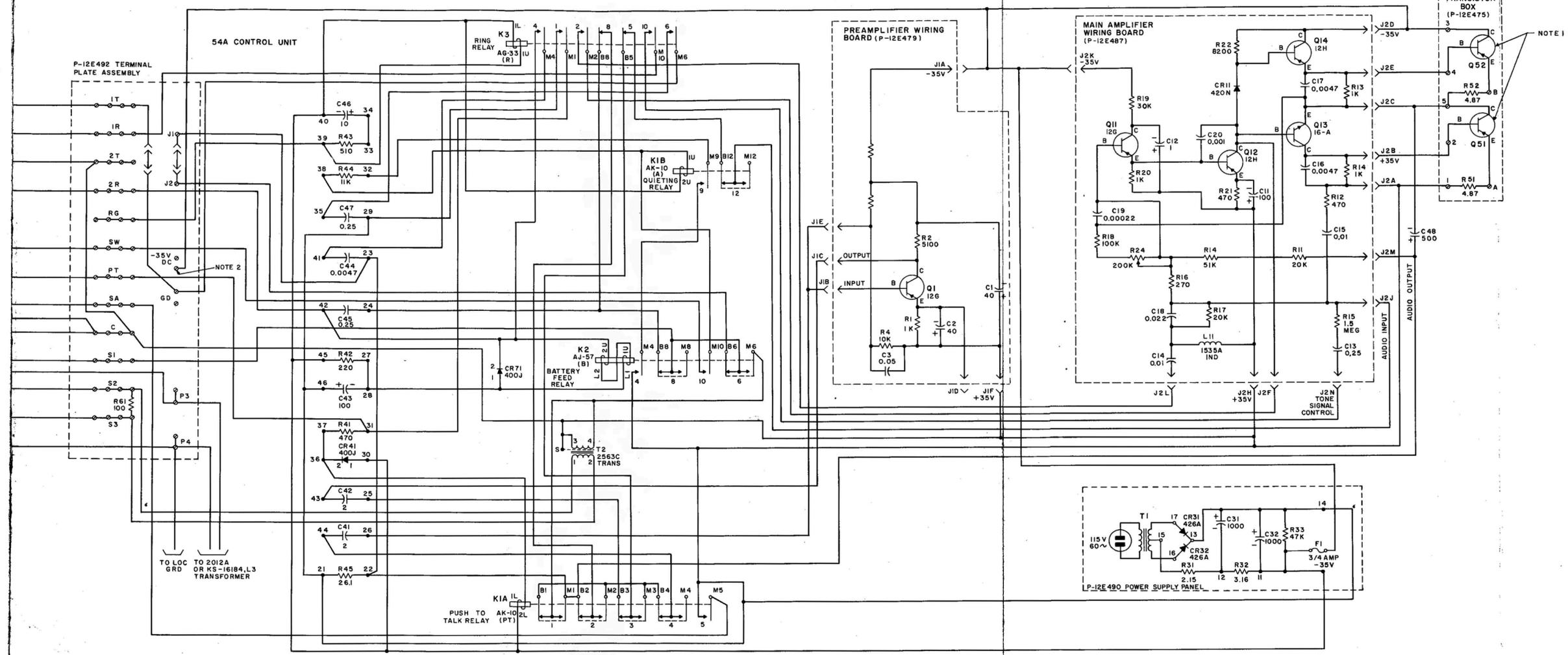


CO LINE CONNECTIONS (NOTES 1 AND 2)

Class of Service	R	T	G
All Pos and Neg Ring Parties	1R	1T	GD
All Pos and Neg Tip Parties	1T	1R	GD

Note 1: To modify wiring in the 687B subscriber set, move BR-BL wire from terminal 1 to terminal L2 for all positive tip and ring parties, and to terminal G for all negative tip and ring parties.
Note 2: Terminate the CO line directly to the 54A control unit.
 ⊖ Wiring for tip and ring negative parties.
 ⊕ Wiring for tip and ring positive parties.

Fig. 31 - Connections for Polarized Ringing using 687B Subscriber Set



Note 1: Q51 and Q52 are a matched pair of germanium P-N-P alloy junction transistors. This matched pair is coded KS-16843, List 1. Both must be replaced if either fails.
Note 2: Leads connected to the DC terminal should not be exposed. If, however, they are exposed in addition to normal protection, a 70-ohm resistor must be connected in series with the DC terminal at the control unit to prevent damage to the control unit in the event a lightning or power surge is applied to the connecting cable.

Fig. 32 - 54A Control Unit
 Fig. 30 and 31