

PLEASE NOTE:

FOREMAN 02
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2211- AND 2212-TYPE HAND TELEPHONE SETS

REFERENCE

GENERAL

1.01 This section provides identification, installation, maintenance, and connection information for the 2211L(MD), 2211P(MD), and 2212L(MD) (TOUCH-TONE® dial) hand telephone sets.

1.02 This section is reissued to:

- Add G3A6-03 handset
- Add Fig. 1, 11 through 13
- Add Tables G, H, and I
- Revise Tables A, B, and C

1.03 Information for the 2212L was formerly contained in Sections 502-302-105 and 502-321-402.

1.04 Connection information for the 2211-type sets was formerly contained in Section 502-321-401.

2. IDENTIFICATION

Ordering Guide

2.01 Basic Hang-up Type Hand Telephone Sets:

- Set, Telephone, Hand, 2211L-03
- Set, Telephone, Hand, 2211P-03
- Set, Telephone, Hand, 2212L-03

Note: These sets are available in black (-03) only.

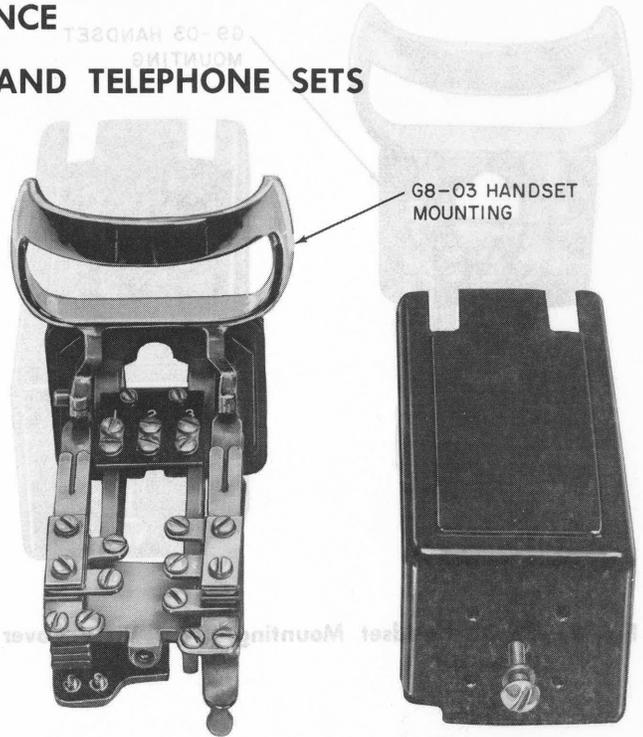


Fig. 1—G8-03 Handset Mounting, Front View Cover Removed

2.02 Replaceable components are listed in Table A.

2.03 Associated Apparatus:

- Set, Subscriber, 685A—Refer to Table B.
- Set, Subscriber, 686A—Refer to Table B.

2.04 These sets are primarily designed for wall or desk mounting, can be used on CO and PBX lines, or with 1A1 or 1A2 key telephone systems. Only the 2211P set can be used with the 3-type or 4A speakerphone system.

2.05 Refer to Table B for associated apparatus required for specific type or class of service.

NOTICE

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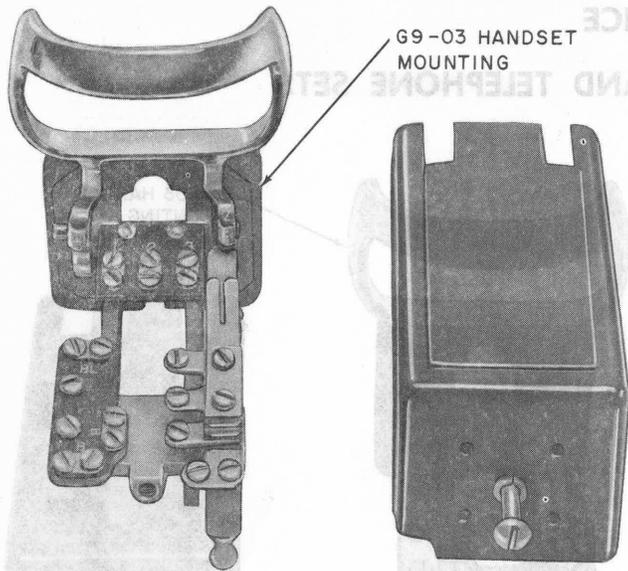


Fig. 2—G9-03 Handset Mounting, Front View Cover Removed

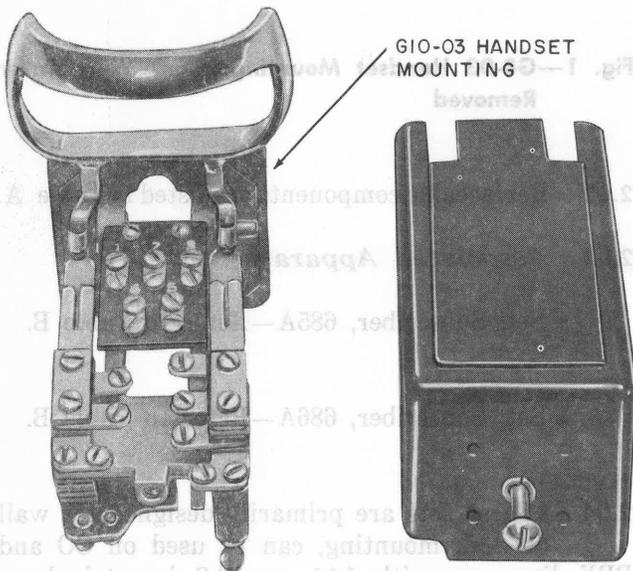


Fig. 3—G10-03 Handset Mounting, Front View Cover Removed

3. INSTALLATION

Fastening Station Sets

3.01 Telephone sets, subscriber sets, and associated station apparatus should be fastened securely

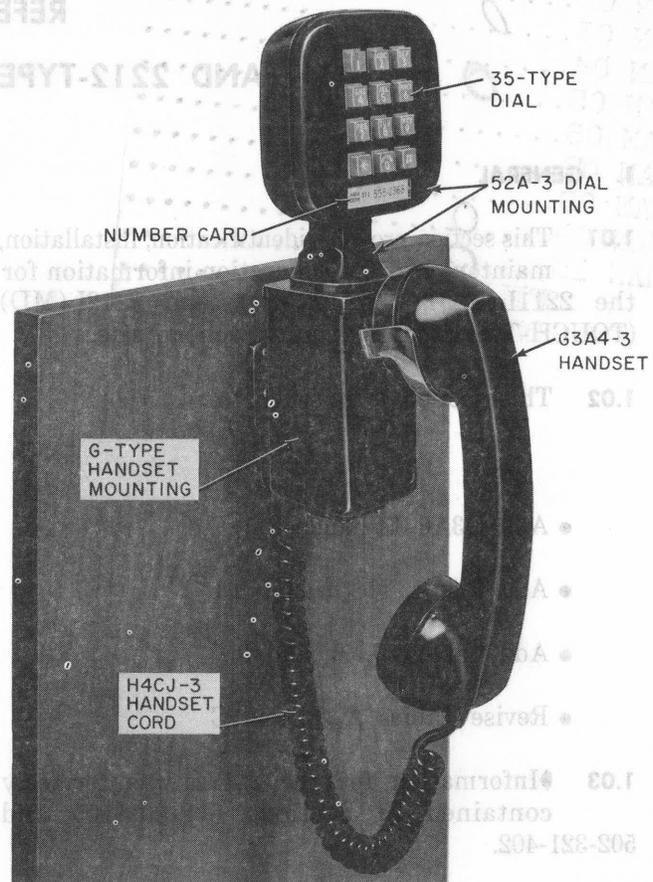


Fig. 4—2211- and 2212-Type Hand Telephone Set

◆ TABLE A ◆

COMBINATION OF APPARATUS

HAND TEL SET	HAND-SET	REPLACEABLE COMPONENTS			
		HAND-SET MTG	DIAL	DIAL MTG	HAND-SET CORD
2211L	G3A4 or G3A6	G9	35Y3A		
2211P		G10	35C3A	52A	H4CJ
2212L		G8	35Y3A		

to a substantial mounting surface. Refer to Table C for recommended fasteners.

3.02 Where wire is not concealed at subscriber set or wall set, a fastener should be placed approximately 2 inches from the set.

◆ TABLE B ◆

**ASSOCIATED APPARATUS
BY CLASS OF SERVICE**

CLASS OF SERVICE	SUBSCRIBER SET
Individual Lines 2-Party Flat Rate 2-Party Message Rate (Ring Party Only) 4-Party Semiselective Multiparty Divided Code Regular PBX Stations 750A and 755A Keyless Stations 1A1 and 1A2 Key Telephone Systems	685A
4-Party Full Selection 8-Party Semiselective	686A

Note: No message rate or tip-party identification can be provided for tip-party station.

Subscriber Sets

3.03 In cases where subscriber set and hang-up type hand telephone set are separated, the following should be observed:

- (a) Signal must be heard satisfactorily in area served by talking set.
- (b) To provide adequate transmission to prevent crosstalk, maximum distance between subscriber set and hang-up type hand telephone set is 30 feet.

3.04 Whenever possible, hang-up type hand telephone sets should be mounted on walls with handset cradle to right or left of mounting. Dial should be mounted parallel to wall. This arrangement will reduce the possibility of handset being knocked from the cradle.

3.05 When installing hang-up type set on desks or tables, handset normally should line up with front of desk or table. This will reduce the chance of accidentally knocking handset off the cradle. A 33A auxiliary bracket is used when a G-type mounting is attached to a desk or table where the top overhangs more than 1-1/2 inches (Fig. 5).

3.06 When required, use a 164-type backboard for mounting hang-up type hand telephone sets. Fasten backboard to mounting surface as shown in appropriate section in Division 463. Where no backboard is used, fasten mounting bracket to mounting surface with four screws of the type specified in Table C.

3.07 Dial should be adjusted to the most suitable position for the customer.

3.08 The 52A dial mounting used with G-type handset mounting is arranged so dial may be rotated. Dial is locked in one of 12 positions at 30-degree intervals, by means of notches in base of dial mounting. Notches engage two studs at the top of handset mounting. Dial may be rotated as follows:

- (1) Loosen dial positioning screw.
- (2) Lift dial slightly and revolve to the desired position.
- (3) Lower dial into place.
- (4) Retighten dial positioning screw.

3.09 The 52A dial mounting may also be tilted as much as 45 degrees backward in 15 degree intervals. Dial is tilted as follows:

- (1) Loosen dial positioning screw.
- (2) Raise dial and tilt to desired angle.
- (3) Lower dial into place.
- (4) Retighten dial positioning screw.

Station Wire and Mounting Cords

3.10 When terminating wire inside a hang-up type hand telephone set, leave sufficient slack to enable line switch assembly to be reassembled in housing.

4. MAINTENANCE

4.01 Maintenance should be limited to the items listed as replaceable components and to cleaning and adjusting contacts.

◆ TABLE C ◆

FASTENERS USED FOR MOUNTING STATION APPARATUS

MOUNTING SURFACE	NUMBER OF FASTENERS (NOTE 1)		SIZE AND TYPE OF FASTENERS
	200 SERIES HANG-UP TYPE TEL SETS	SUB. SETS	
	818076036 (P-80G603) 33A BRACKETS	685A OR 686A	
Hardwood (including Wooden Backboards)	4	2	1-1/4 in., No. 8 PH or FH tapping screws
Softwood	4	4	1-1/2 in., No. 8 PH or FH tapping screws
Plaster on Wood Lath	4	4	2-in., No. 8 PH or FH tapping screws (Note 3)
Side of Wood-paneled Desk (place fastener in framing around panel when possible)	4	3	See type of wood surface above.
Metal Desks	4	2	1-in., No. 8 PH or FH tapping screws
Plaster on Masonry or Plaster Block	4	4	2-in., No. 8 PH or FH tapping screws No. 10 plastic anchor
Masonry	4	4	1-1/2 in., No. 8 PH or FH tapping screws No. 10 plastic anchor
Sheetrock, Beaver, or Similar Composition Board	4	4	Wall screw anchor
Solid Metal	4	2	10-24 x 1 in., FH bright machine screws
Plaster on Metal Lath; Plaster on Plaster Board	4	2 (Note 2)	Wall screw anchor or 2-in., No. 8 PH or FH tapping wood screw (Note 3)
Metal Sheath on Solid Wood	4	4	1-1/2 in., No. 8 PH or FH tapping screws
Metal Sheath over Furring on Brick	4	4	1-1/4 in., No. 8 PH or FH tapping screws
Metal Sheath over Furring or Plaster on Lath	4	4	1-1/2 or 2-in., No. 8 PH or FH tapping screws

Notes:

1. Where two fasteners are specified, place fasteners diagonally opposite each other, locate one fastener near the handset cord.
2. Additional fasteners may be required for secure mounting.
3. When mounting on plasterboard, plaster on lath, etc. fasteners must be embedded in stud at least 1 inch.

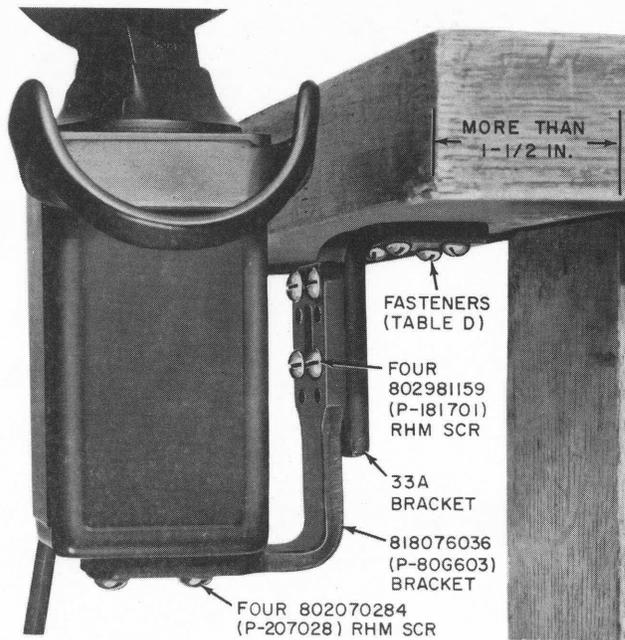


Fig. 5—Installed With 33A Auxiliary Bracket

4.02 On G-type mounting, the operating stud shall not touch the operating springs when the line switch is in its extreme upward position.

4.03 All contact springs shall have perceptible follow. In case of mounting having twin contacts, both contacts on the same spring shall make at approximately the same time.

4.04 To clean contacts, burnish with the 265C tool having a clean blade.

4.05 Binding of line switch may be caused by either a bent line switch or bent pin. If this trouble is encountered, replace the set.

4.06 Maintenance of the 35-type TOUCH-TONE dial is not recommended and it should be replaced.

(1) To remove faceplate, remove screw at the top of dial mounting, release tab and remove faceplate (Fig. 4).

(2) Replace dial.

(3) To restore faceplate, insert the two tabs on bottom of faceplate in notches and replace screw removed in (1).

4.07 Refer to Division 501 for maintenance of ringers and handsets, and Division 502 for maintenance of subscriber sets.

5. CONNECTIONS

5.01 Polarity guard (Fig. 6) is optional and must be ordered separately. Polarity guard is intended for use when specified by local instructions for end-to-end signaling installations. Refer to Table D for connections.

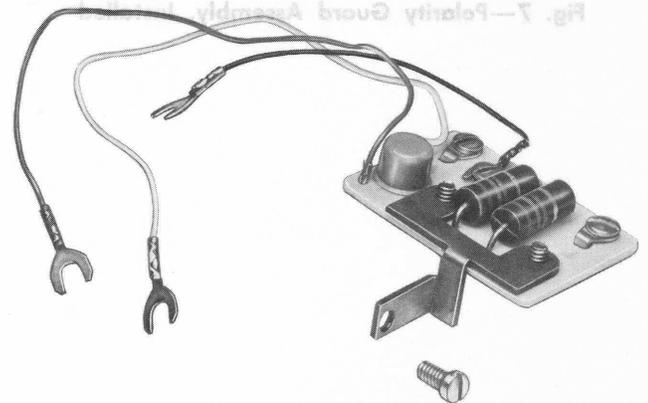


Fig. 6—840359400 Polarity Guard Assembly

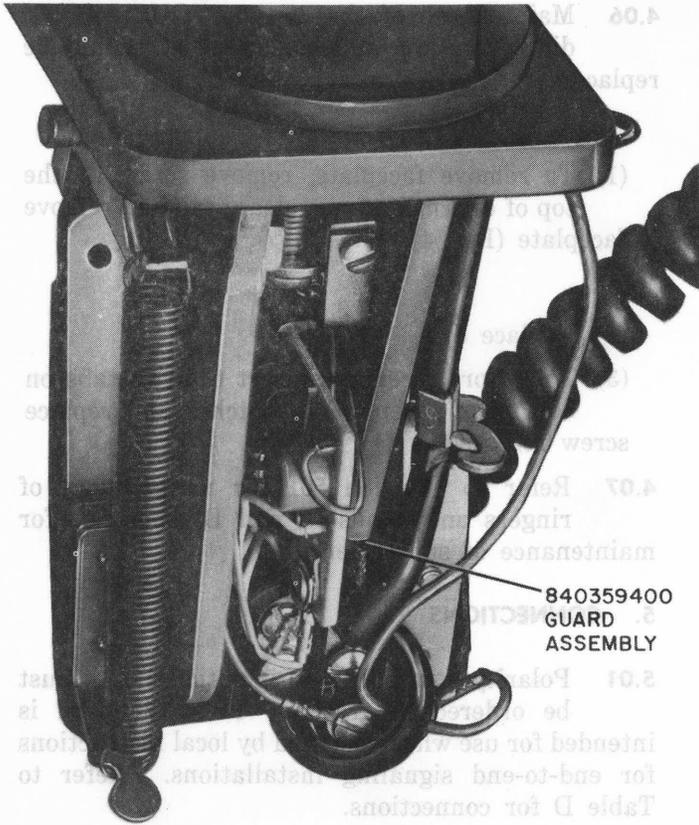


Fig. 7—Polarity Guard Assembly, Installed

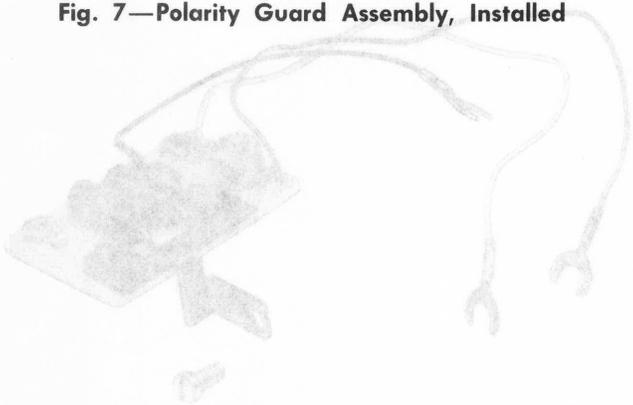


Fig. 6—840359400 Polarity Guard Assembly

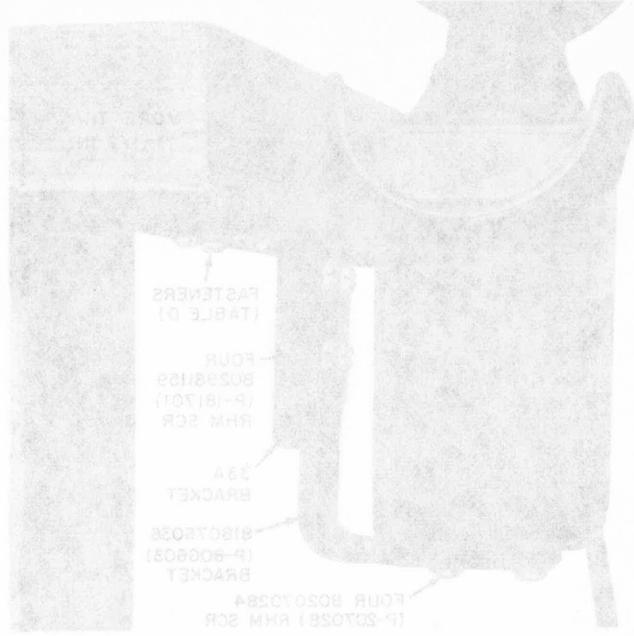


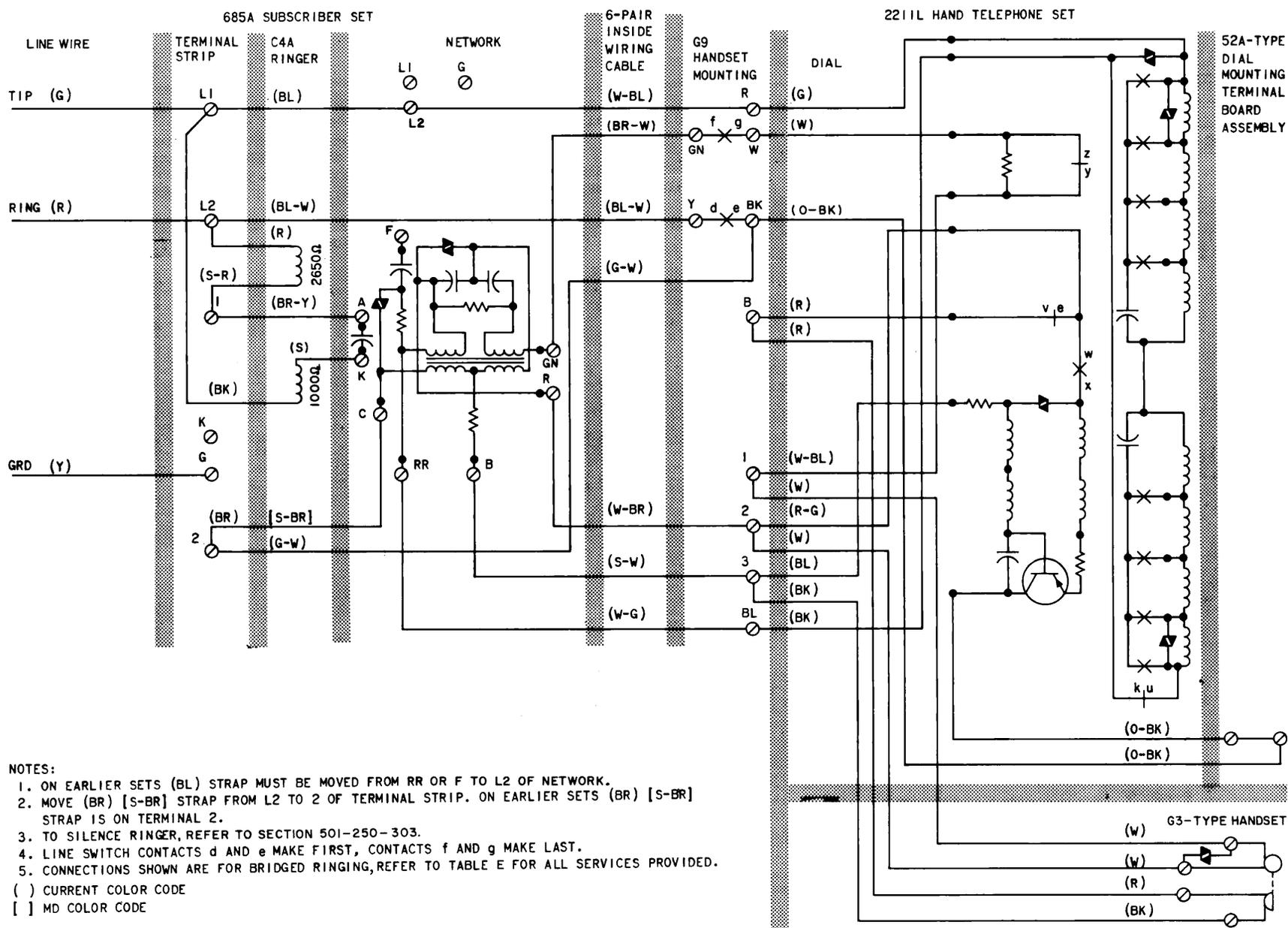
Fig. 5—Installed With 33A Auxiliary Bracket

4.02 On G-type mounting, the operating stud shall not touch the operating springs when the line switch is in its extreme upward position.

4.03 All contact springs shall have perceptible follow in case of mounting having twin contacts, both contacts on the same spring shall make at approximately the same time.

4.04 To clean contacts, burish with the 285C tool having a clean blade.

4.05 Binding of line switch may be caused by either a bent line switch or bent pin. If this trouble is encountered, replace the set.



NOTES:

1. ON EARLIER SETS (BL) STRAP MUST BE MOVED FROM RR OR F TO L2 OF NETWORK.
 2. MOVE (BR) [S-BR] STRAP FROM L2 TO 2 OF TERMINAL STRIP. ON EARLIER SETS (BR) [S-BR] STRAP IS ON TERMINAL 2.
 3. TO SILENCE RINGER, REFER TO SECTION 501-250-303.
 4. LINE SWITCH CONTACTS d AND e MAKE FIRST, CONTACTS f AND g MAKE LAST.
 5. CONNECTIONS SHOWN ARE FOR BRIDGED RINGING, REFER TO TABLE E FOR ALL SERVICES PROVIDED.
- () CURRENT COLOR CODE
 [] MD COLOR CODE

Fig. 8—Connections for 2211L Hand Telephone Set Used With Modified 685A Subscribed Set, Bridged Ringing

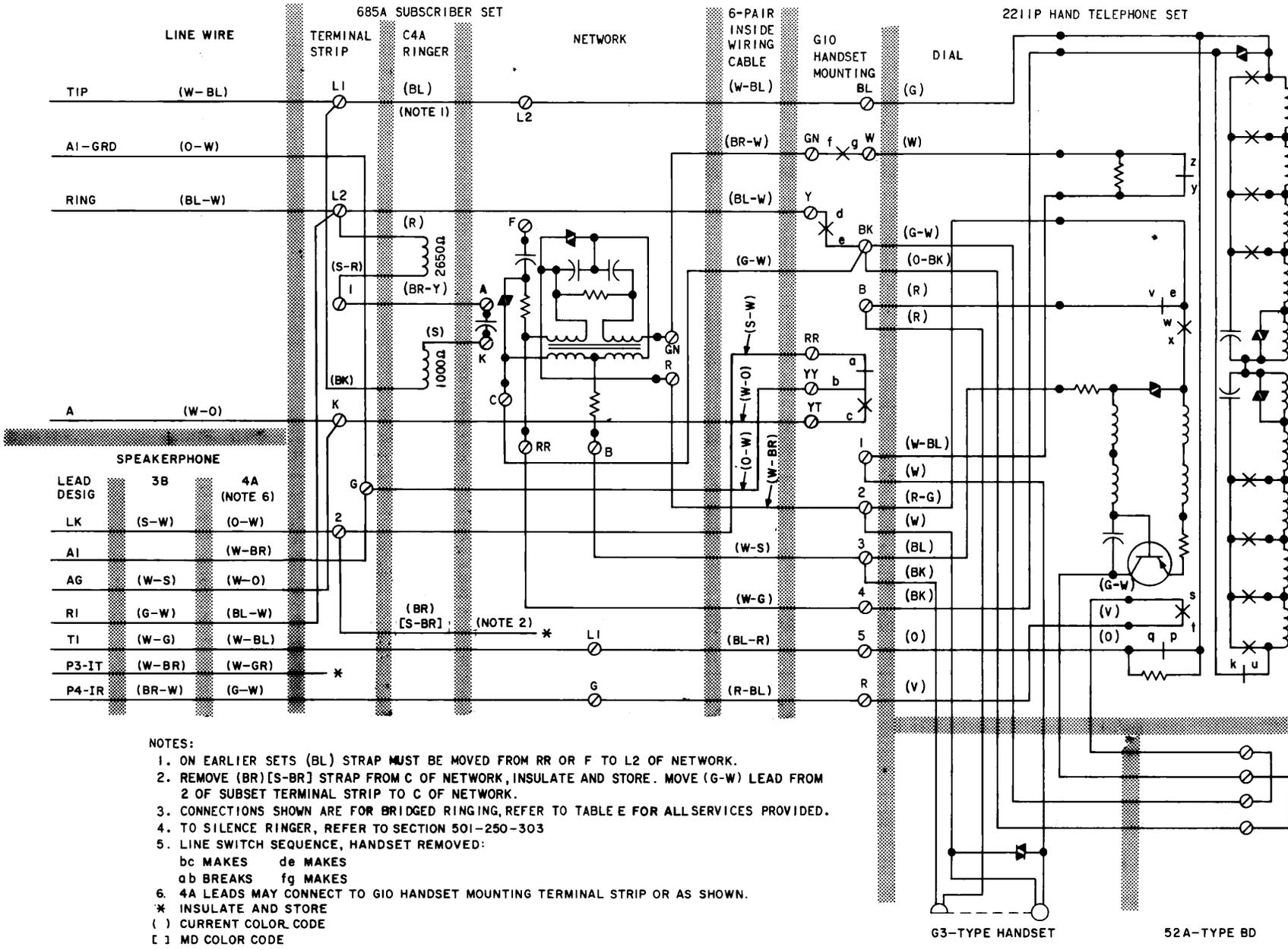
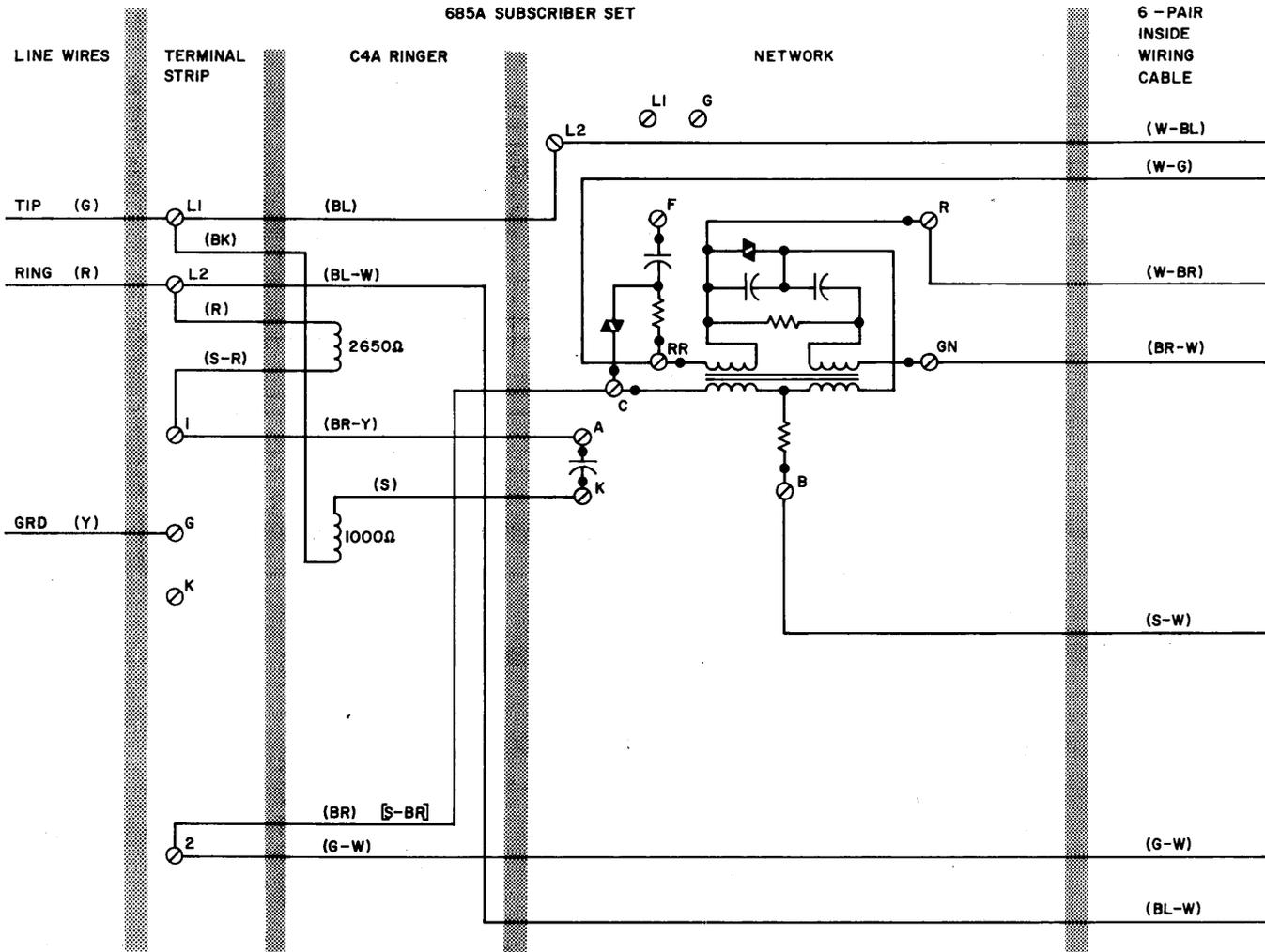


Fig. 10—Connections for 2211P Hand Telephone Set Used With Modified 685A Subscriber Set, Bridged Ringing With Speakerphone

SECTION 502-302-101



NOTES:

1. CONNECTIONS SHOWN ARE FOR BRIDGED RINGING, REFER TO TABLE G FOR ALL SERVICES PROVIDED.
 2. ON EARLIER SETS (BL) STRAP MUST BE MOVED FROM TERMINAL RR OR F TO L2 OF NETWORK.
 3. MOVE (BR) [S-BR] STRAP FROM L2 TO 2 OF TERMINAL STRIP. ON EARLIER SETS (BR) [S-BR] STRAP IS ON TERMINAL 2.
 4. TO SILENCE RINGER REFER TO SECTION 501-250-303.
 5. EXTEND A AND AI LEADS TO THE KEY TELEPHONE UNIT, IF REQUIRED.
 6. LINE SWITCH SEQUENCE, HANDSET REMOVED.
 - bc MAKES
 - ab BREAKS
 - de MAKES
 - fg MAKES
- () CURRENT COLOR CODE.
 [] MD COLOR CODE.

Fig. 11—Connections for 2212L Hand Telephone Set Used With Modified 685A Subscriber Set, Bridged Ringing (Sheet 1 of 2)

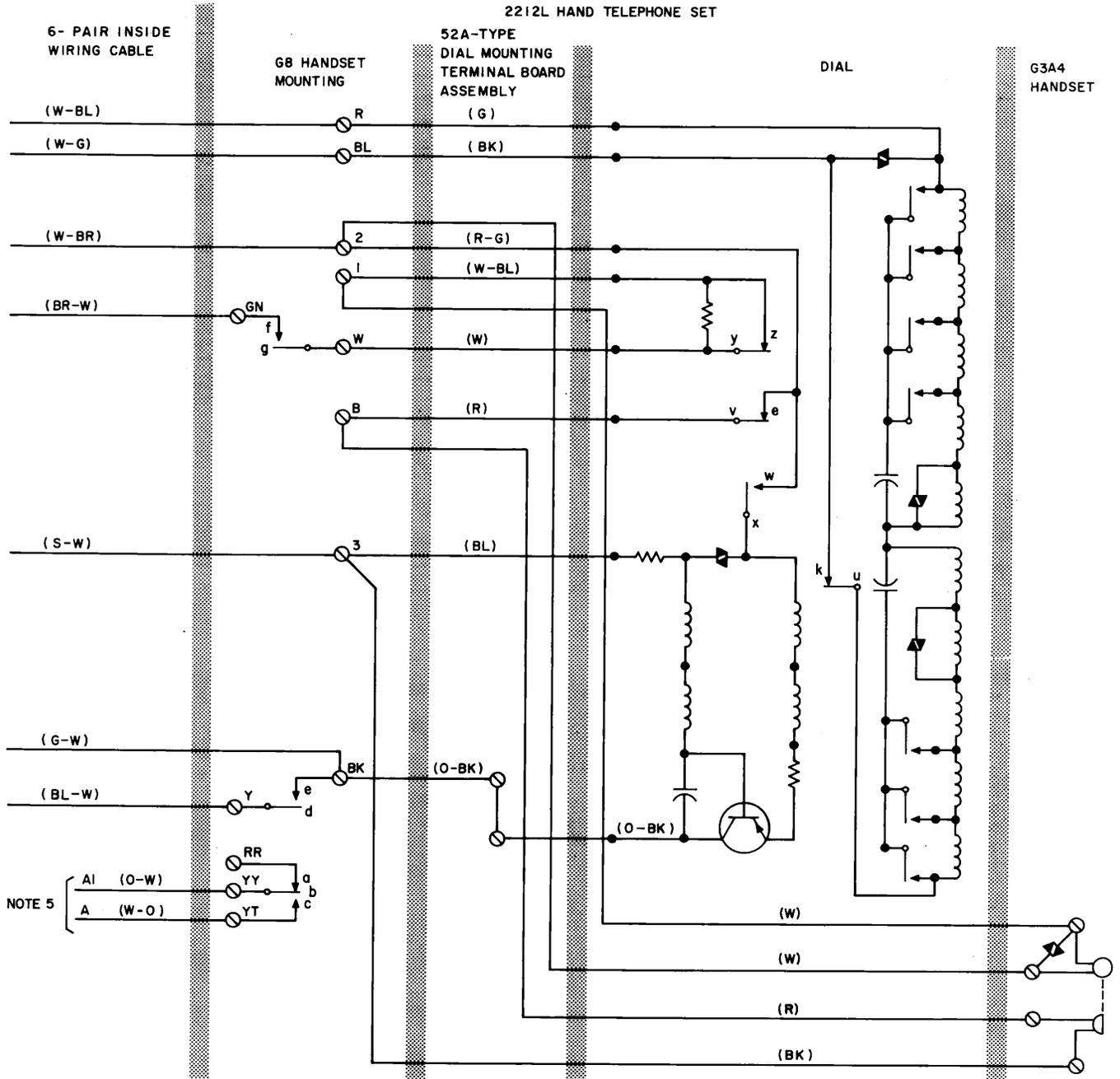
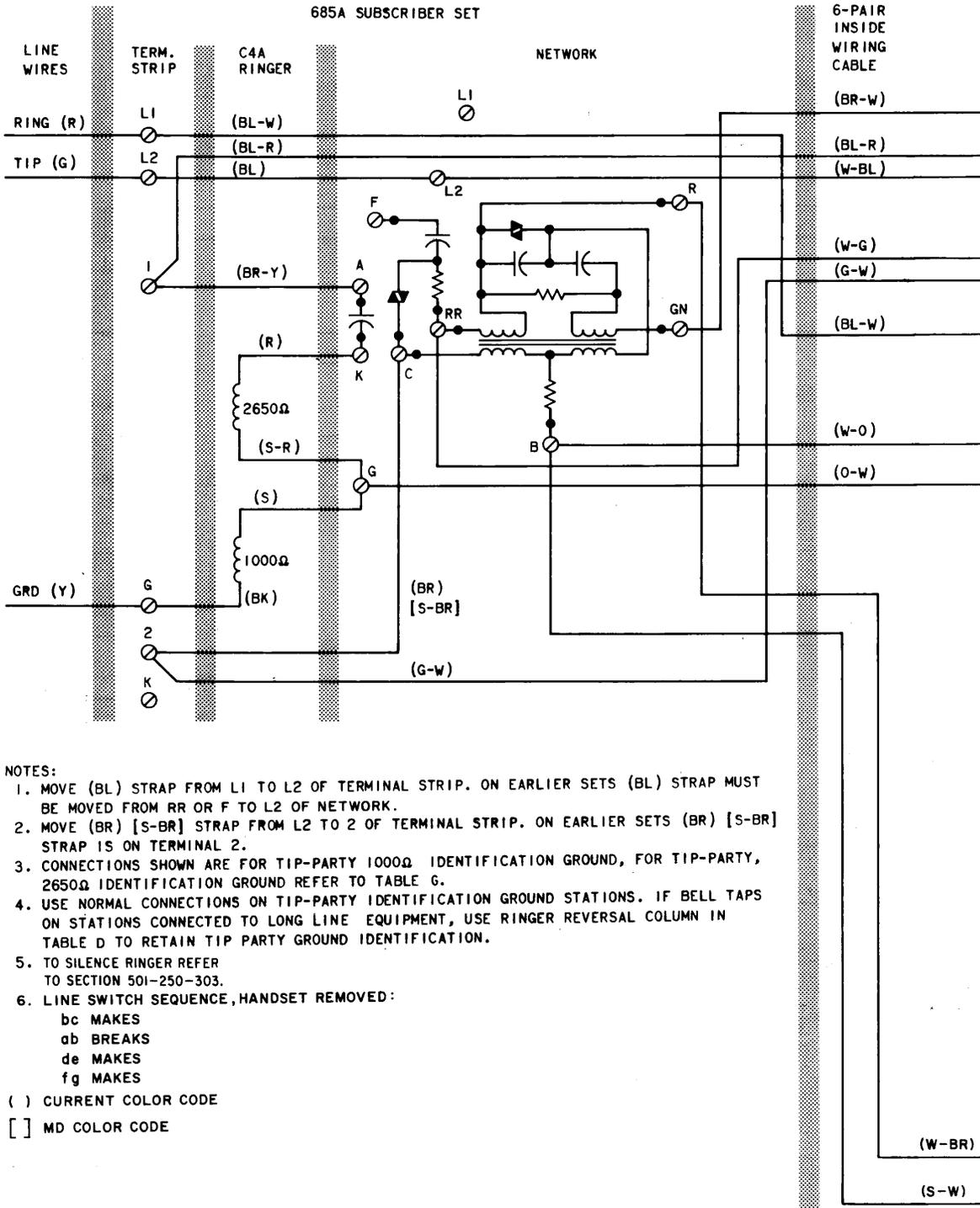


Fig. 11—Connections for 2212L Hand Telephone Set Used With Modified 685A Subscriber Set, Bridged Ringing (Sheet 2 of 2)



NOTES:

1. MOVE (BL) STRAP FROM L1 TO L2 OF TERMINAL STRIP. ON EARLIER SETS (BL) STRAP MUST BE MOVED FROM RR OR F TO L2 OF NETWORK.
2. MOVE (BR) [S-BR] STRAP FROM L2 TO 2 OF TERMINAL STRIP. ON EARLIER SETS (BR) [S-BR] STRAP IS ON TERMINAL 2.
3. CONNECTIONS SHOWN ARE FOR TIP-PARTY 1000Ω IDENTIFICATION GROUND, FOR TIP-PARTY, 2650Ω IDENTIFICATION GROUND REFER TO TABLE G.
4. USE NORMAL CONNECTIONS ON TIP-PARTY IDENTIFICATION GROUND STATIONS. IF BELL TAPS ON STATIONS CONNECTED TO LONG LINE EQUIPMENT, USE RINGER REVERSAL COLUMN IN TABLE D TO RETAIN TIP PARTY GROUND IDENTIFICATION.
5. TO SILENCE RINGER REFER TO SECTION 501-250-303.
6. LINE SWITCH SEQUENCE, HANDSET REMOVED:
 - bc MAKES
 - ab BREAKS
 - de MAKES
 - fg MAKES

() CURRENT COLOR CODE

[] MD COLOR CODE

Fig. 12—Connections for 2212L Hand Telephone Set Used With Modified 685A Subscriber Set Tip-Party Identification (Sheet 1 of 2)

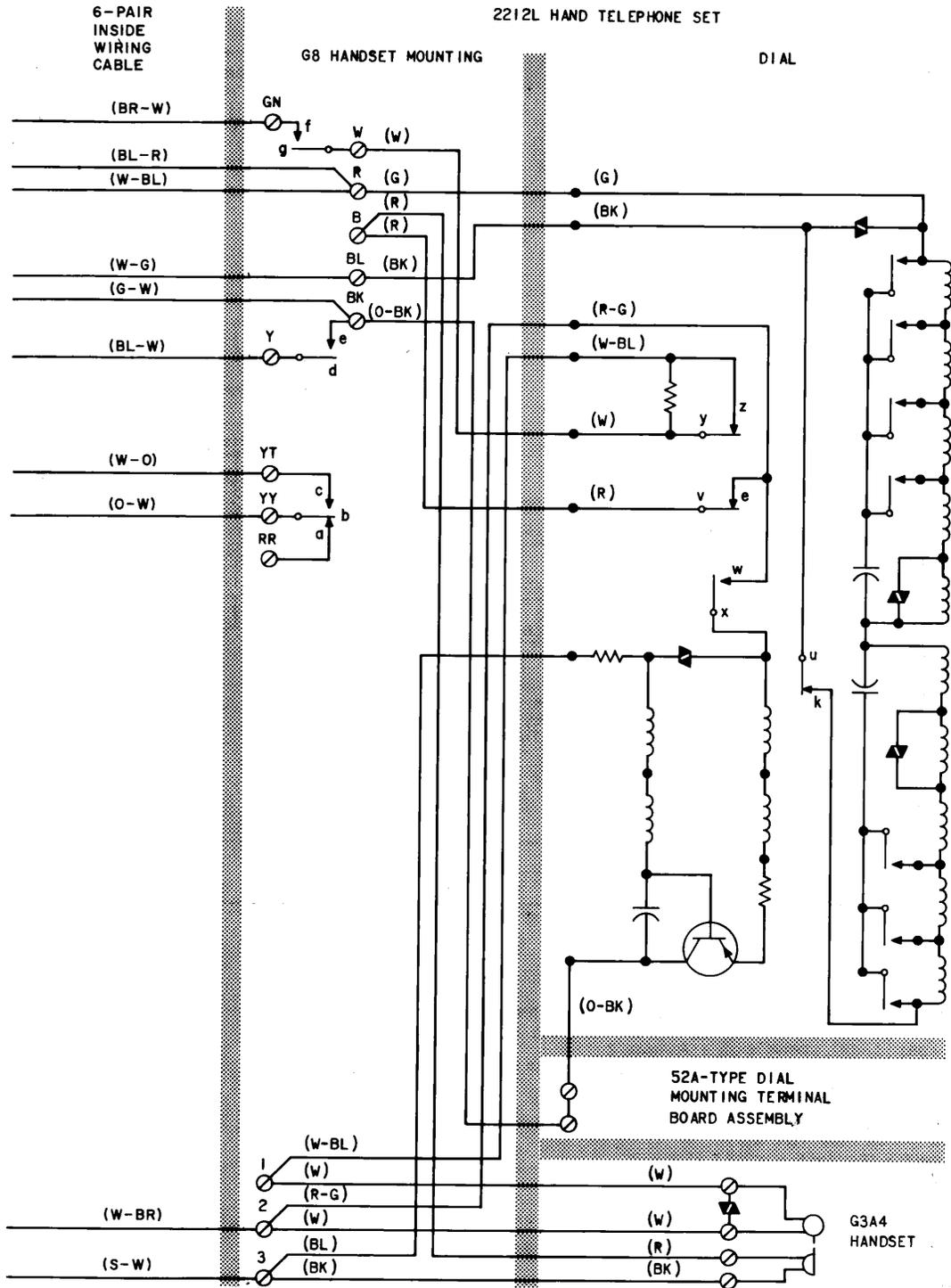
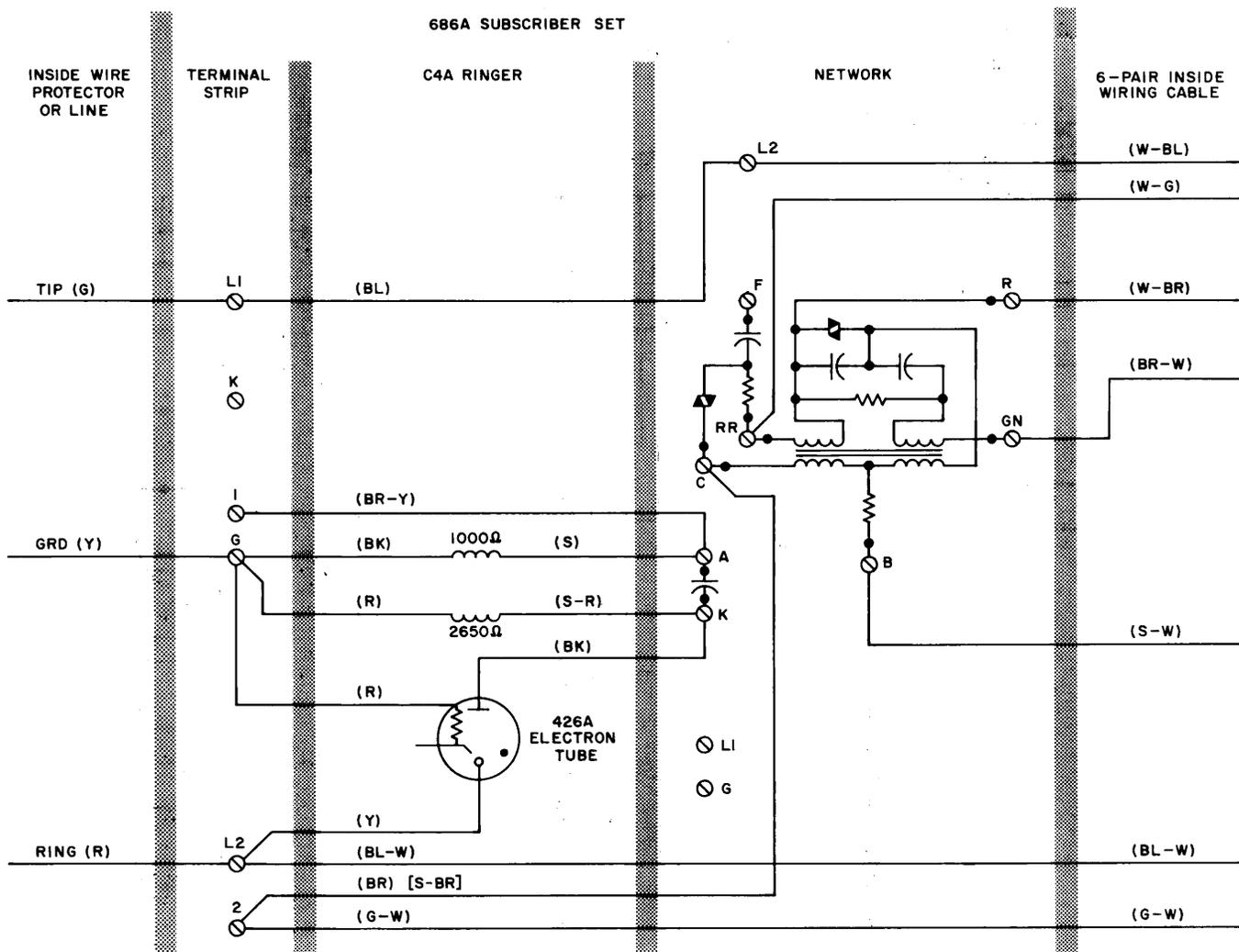


Fig. 12—Connections for 2212L Hand Telephone Set Used With Modified 685A Subscriber Set Tip-Party Identification (Sheet 2 of 2)

SECTION 502-302-101



NOTES:

1. ON EARLIER SETS (BL) STRAP MUST BE MOVED FROM RR OR F TO L2 OF NETWORK.
 2. MOVE (BR) [S-BR] STRAP FROM L2 TO 2 OF TERMINAL STRIP. ON EARLIER SETS (BR) [S-BR] STRAP IS ON TERMINAL 2.
 3. MOVE (Y) TUBE LEAD FROM L2 TO LI OF TERMINAL STRIP FOR TIP PARTY SERVICE.
 4. TO SILENCE RINGER REFER TO SECTION 501-250-303.
 5. FOR ADDITIONAL INFORMATION CONCERNING INDUCTIVE INTERFERENCE, REFER TO SECTION ON INDUCTIVE NOISE.
 6. LINE SWITCH SEQUENCE, HANDSET REMOVED:
 - bc MAKES
 - ab BREAKS
 - de MAKES
 - fg MAKES
 7. CONNECTIONS SHOWN ARE FOR (-) RING PARTY, REFER TO TABLE H FOR ALL SERVICES PROVIDED.
- () CURRENT COLOR CODE.
 [] MD COLOR CODE.

Fig. 13—Connections for 2212L Hand Telephone Set Used With Modified 686A Subscriber Set, (-) Ring Party (Sheet 1 of 2)

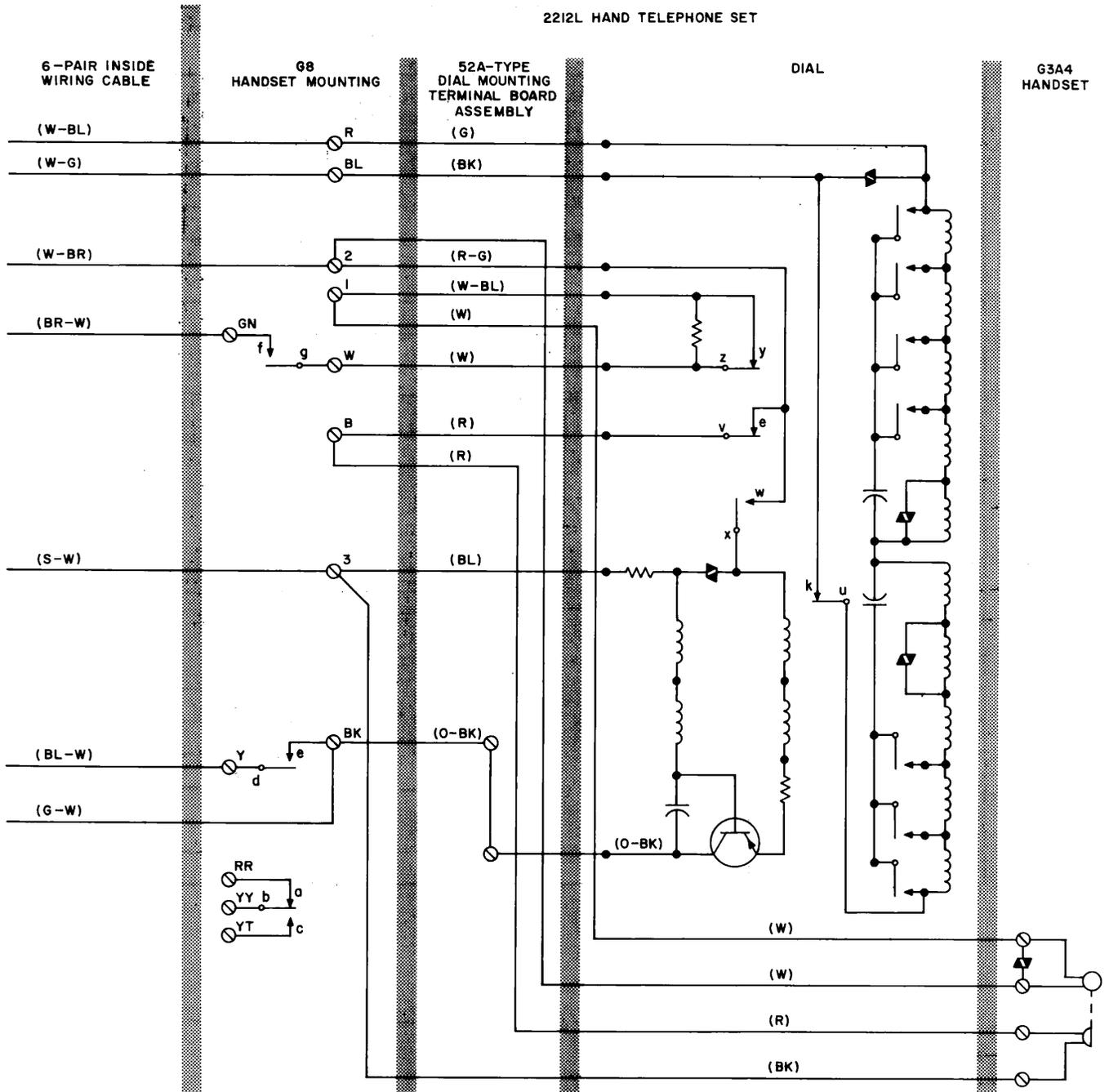


Fig. 13—Connections for 2212L Hand Telephone Set Used With Modified 686A Subscriber Set, (-) Ring Party (Sheet 2 of 2)

◆ TABLE D ◆

840359400 POLARITY GUARD CONNECTIONS

TEL SET	WIRE OR LEAD	COLOR	REMOVE FROM	CONNECT TO	CONNECT TO	
			HANDSET MTG	POLARITY GUARD	HANDSET MTG	
2211L	Inside Wiring	G-W	BK	V	B	
2211P						
2212L						
2211L	Dial Strap	O-BK	BK	V	B	
2211P						
2212L						
2211L	Dial	BK	BL	T		
2211P			4			
2212L			BL			
2211L	Handset	R	B	V		
2211P		R				
2212L		R				
2211L	Polarity Guard	S			BK	
2211P					G	BL
2212L						4
2211L		W				BL
2211P					B	
2212L					V	

◆ TABLE E ◆

2211-TYPE CONNECTIONS—USING 685A SUBSCRIBER SET

WIRE OR LEAD	COLOR	G10 HANDSET MOUNTING	685A SUBSET		
			BRIDGED	RING PARTY	TIP PARTY NO IDENT GROUND
6-Pair Wiring Cable. Local Wiring Between Handset Mounting and Subset	BR-W	GN	GN*	GN*	GN*
	W-BR	2	R*	R*	R*
	S-W	RR	B* 2‡	B* 2‡	B* 2‡
	BL-W	Y	L2	L2	L2
	W-BL	BL	L2*	L2*	L2*
	G-W	BK	2 C*‡	2 C*‡	2 C*‡
	W-G	4	RR*	RR*	RR*
	W-O‡	YT	K	K	K
	O-W‡	YY	G	G	G
Ringer Leads §	R		L2	L2	L1
	BK		L1	G	G
	S		K*	K*	K*
	S-R		1	1	1
Straps Net. to Term. Strip	BR†		2-C* Insulate and Store‡	2-C* Insulate and Store‡	2-C*
	BL		L1-L2*	L1-L2*	L1-L2*
	BR-Y		1-A*	1-A*	1-A*
Line Wires	Ring	R or BL-W	L2	L2	L2
	Tip	G or W-BL	L1	L1	L1
	Grd or A1	Y or O-W	G	G	G
	A	W-O	K	K	K

* Network terminal, undesignated terminals are on subset terminal strip.

† S-BR strap used on earliest production subscriber sets.

‡ 2211P only.

§ To silence ringer, refer to Section 501-250-303.

Note: For complete wiring connections to hand telephone set; refer to Fig. 10.

◆ TABLE F ◆

2211-TYPE CONNECTIONS – USING 686A SUBSCRIBER SET

WIRE OR LEAD	COLOR	G9 HANDSET MOUNTING	686A SUBSCRIBER SET			
			NEGATIVE (-) PARTIES		POSITIVE (+) PARTIES	
			RING STATION 1 AND 5	TIP STATION 2 AND 6	RING STATION 3 AND 7	TIP STATION 4 AND 8
6-Pair Inside Wiring Cable. Local Wiring Between Handset Mounting and Subset.	BR-W	GN	GN*	GN*	GN*	GN*
	W-BR	2	R*	R*	R*	R*
	S-W	3	B*	B*	B*	B*
	BL-W	Y	L2	L2	L2	L2
	G-W	BK	2	2	2	2
	W-BL	R	L2*	L2*	L2*	L2*
	W-G	BL	RR*	RR*	RR*	RR*
Straps — Net. to Term. Strip	BR† or S-BR		2-C*	2-C*	2-C*	2-C*
	BR-Y		1-A*	1-A*	1-A*	1-A*
	BL		L1-L2*	L1-L2*	L1-L2*	L1-L2*
Ringer Lead‡	S		A*	A*	A*	A*
	BK		G	G	L2	L1
	R		G	G	L2	L1
	S-R		K*	K*	K*	K*
426A Tube Lead (3-Element)	BK		K*	K*	K*	K*
	Y		L2	L1	G	G
	R		G	G	L2	L1
Inside Wire from Protector or Line	R		L2	L2	L2	L2
	G		L1	L1	L1	L1
	Y		G	G	G	G

* Network terminal.

† S-BR strap used on earlier production subscriber sets.

‡ To silence ringer, refer to Section 501-250-303.

Note: For complete wiring connections to hand telephone set; refer to Fig. 9.

◆ TABLE G ◆

2212-TYPE CONNECTIONS – USING 685A SUBSCRIBER SET

WIRE OR LEAD	COLOR	G8 HANDSET MOUNTING	685A SUBSCRIBER SET						
			BRIDGED	RING PARTY	TIP PARTY NO IDENT GROUND	TIP PARTY IDENT GROUND			
						NORMAL CONN		RINGER REVERSAL WHEN CONN TO LL EQUIP.	
						1000Ω	2650Ω	1000Ω	2650Ω
6-Pair Inside Wiring Cable Local Wiring Between Handset Mounting and Subset.	BR-W	GN	GN*	GN*	GN*	GN*	GN*	GN*	GN*
	W-BR	2	R*	R*	R*	R*	R*	R*	R*
	S-W	3	B*	B*	B*	B*	B*	B*	B*
	BL-W	Y	L2	L2	L2	L1	L1	L1	L1
	W-BL	R	L2*	L2*	L2*	L2*	L2*	L2*	L2*
	G-W	BK	2	2	2	2	2	2	2
	W-G	BL	RR*	RR*	RR*	RR*	RR*	RR*	RR*
	BL-R					1	1	1	1
	W-O	YT				B*	B*	B*	B*
	O-W	YY				G*	G*	G*	G*
Ringer Leads‡	R		L2	L2	L1	K*	G*	G*	G*
	BK		L1	G	G	G	G*	G*	K*
	S		K*	K*	K*	G*	K*	G	G*
	S-R		1	1	1	G*	G	K*	G*
Straps – Net. to Term. Strip	BR† or S-BR		2-C*	2-C*	2-C*	2-C*	2-C*	2-C*	2-C*
	BL		L1-L2*	L1-L2*	L1-L2*	L2-L2*	L2-L2*	L2-L2*	L2-L2*
	BR-Y		1-A*	1-A*	1-A*	1-A*	1-A*	1-A*	1-A*
Line Wires Ring Tip GRD	R		L2	L2	L2	L1	L1	L1	L1
	G		L1	L1	L1	L2	L2	L2	L2
	Y		G	G	G	G	G	G	G

* Network terminal.

† S-BR strap used on earlier production subscriber sets.

‡ To silence ringer, refer to Section 501-250-303.

Note: For complete wiring connections to hand telephone set see Fig. 11 and 12.

◆ TABLE H ◆

2212-TYPE CONNECTIONS – USING 686A SUBSCRIBER SET

WIRE OR LEAD	COLOR	G8 HANDSET MOUNTING	686A SUBSCRIBER SET			
			NEGATIVE (-) PARTIES		POSITIVE (+) PARTIES	
			RING 1 AND 5	TIP 2 AND 6	RING STATION 3 AND 7	TIP STATION 4 AND 8
Local Wiring (Note)	BR-W	GN	GN*	GN*	GN*	GN*
	W-BR	2	R*	R*	R*	R*
	S-W	3	B*	B*	B*	B*
	BL-W	Y	L2	L2	L2	L2
	G-W	BK	2	2	2	2
	W-BL	R	L2*	L2*	L2*	L2*
	W-G	BL	RR*	RR*	RR*	RR*
Straps – Net. to Term. Strip	BR†		2-C*	2-C*	2-C*	2-C*
	BR-Y		1-A*	1-A*	1-A*	1-A*
	BL		L1-L2*	L1-L2*	L1-L2*	L1-L2*
Ringer Lead‡	S		A*	A*	A*	A*
	BK		G	G	L2	L1
	R		G	G	L2	L1
	S-R		K*	K*	K*	K*
426A Tube Lead (3-element)	BK		K*	K*	K*	K*
	Y		L2	L1	G	G
	R		G	G	L2	L1
Inside Wire from Protector or Line	R		L2	L2	L2	L2
	G		L1	L1	L1	L1
	Y		G	G	G	G

* Network terminal.

† S-BR strap used on earlier production subscriber sets.

‡ To silence ringer refer to Section 501-250-303.

Note: For complete wiring connections to hand telephone set see Fig. 13.

◆ TABLE I ◆

2211P – 3B OR 4A
SPEAKERPHONE CONNECTIONS

WIRE OR LEAD	COLOR		SUBSCRIBER SET		G10 HANDSET MOUNTING TERM. STRIP
	3B	4A	TERM. STRIP	NET.	
LK	S-W		2		
		O-W			RR
AG	W-S		K		
		W-O			YT
R1	G-W		L2		
		BL-W			Y
T1	W-G			L1	
		W-BL			5
P3 IT	W-BR*				
		W-G*			
P4 IR	BR-W			G	
		G-W			R
A1					
		W-BR			YY

* Insulate and store.