

## REFERENCE

### 500A/B, 500C/D, 500J/K, 554A/B, 554F, AND 556A/B TELEPHONE SETS

#### 1. GENERAL

**1.01** This section provides identification, installation, maintenance, and connection information for general purpose telephone sets previously contained in Sections 502-510-100, 502-510-400, 502-510-401, 502-510-404, and 502-510-410 which are hereby canceled.

**1.02** Code numbers such as 500C/D cover both manual and dial versions, respectively, of the same type telephone set to permit converting to either type without changing the code number stamped on the base. The letter **R** was added to the code number at one time to indicate the set was equipped with a retractile handset cord.

#### 2. IDENTIFICATION

**2.01** The 500-, 501-, 554-, and 556-type telephone sets are single line sets for use in common battery areas, manual or dial.

**2.02** 501-type telephone sets are identical to a similarly coded 500-type set except for the addition of a 3-element, cold-cathode, gas-filled tube, coded 426A.

**2.03** 554A/B, F, and 556A/B are standard, wall mounted telephone sets. The 556A/B is the same as the 554A/B except for the addition of a 426A tube.

**2.04** The 554F is factory equipped with a 9-foot handset cord.

**2.05** The 554-type sets are suitable for A lead control with wiring modifications.

**2.06** All parts of the set enclosed by the housing mount on the metal base. The network and line switch are riveted to the base and are not replaceable. Table A list components of these sets.

**2.07** These sets are available in all standard colors as indicated in Section 500-120-100. Components available in color include the dial or apparatus blank, handset, mounting cord, and housing. Components other than the housing must have the code completed by adding the desired color suffix. The housing P- number must have the desired color suffix substituted for its last two digits.

#### 3. INSTALLATION

##### Housing

**3.01** 500- and 501-type sets - housings are secured to the base by two P-44E734 captive screws.

**3.02** 554- and 556-type sets - designed as handset hanger (Fig. 2).

##### 3.03 Removal:

- (1) Push inward on tab of snap fastener (Fig.3) located in handset cord slot.
- (2) Lift lower part of housing outward, releasing snap fastener, and disengaging latch opening assembly (Fig. 3).

##### 3.04 Replacement:

- (1) Slip housing over handset hook and dial and engage latch spring assembly (Fig. 4).
- (2) Press firmly on lower part of housing to engage snap fastener and catch.

##### Mounting Wall Sets

**3.05** Several holes are provided in the baseplate for more flexibility in mounting to minimize backboard use.

**3.06** Early production sets have a base plate which does not provide the proper hole arrangement for fastening directly to conduit outlet

**TABLE A**  
**TELEPHONE SET COMPONENT PARTS**

SET	CODE	COMPONENT											
		DIAL	APP BLK§§	NET.	RINGER	HANDSET	MTG CORD	ELECTRON TUBE	HOUSING ASSY				
500	A/B*	9C‡	95C	425A**	C4A‡‡	G1A or G3A	D3BN	426A	P-80D200				
	C/D			425E††									
	J/K*			425A									
501	A/B*			425A**	C4A§					G1A or G3A	D3BN	426A	P-80F400
	C/D			425E††									
	J/K*			425A									
554	A/B, F†	9C‡	95C	425E††	C4A	D3BN	426A	P-80F400					
556	A/B			425E††	C4A								

\* MD

† 554F factory equipped with 9-foot handset cord

‡ Replaces 7C or 7D dial

§ Early models had C3A ringer

\*\* Includes 311A equalizer

†† Replaces 425B network

‡‡ Early models had C2A ringer

§§ Replaces 95A or 95B apparatus blank



Fig. 1—500B, D, K, or 501B, D, K Telephone Set

boxes, 157A adapter, 63A or KS-19407L1 prewire brackets.

**3.07** Refer to Division 463 information on fasteners suitable for mounting wall-type sets directly to wall surfaces.

#### Mounting Cords



*Spade tips or skinned wires should contact only the terminal to which the connection is made. Electrical contact with the metal tab of the network housing may cause the exposed dial finger stop or handset hook on wall sets to become energized with ringing voltage or dc line voltage.*

**3.08** Dress cord leads to avoid interference with moving parts and ringer gongs.



Fig. 2—554- or 556-Type Telephone Set, Handset Rest Position

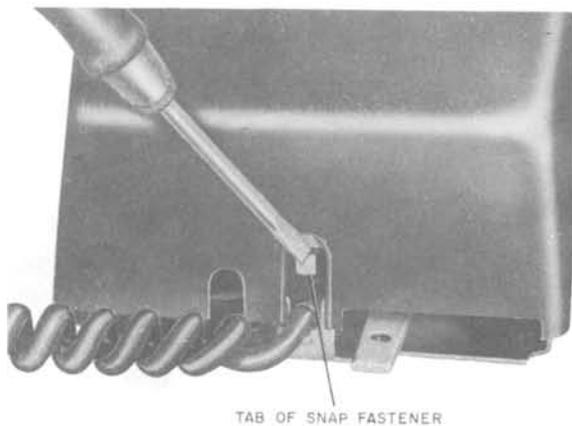


Fig. 3—Wall Telephone Set Housing Removal



Fig. 4—Replacing Wall Telephone Set Housing

3.09 To install 9-, 13-, and 25-foot length mounting cords (3- or 4- conductor only):

- (1) Remove ringer mounting screw (Fig. 5).
- (2) Insert cord stay under ringer frame.
- (3) Reinsert mounting screw.
- (4) Position cord grommet so that cord is protected where it enters set.

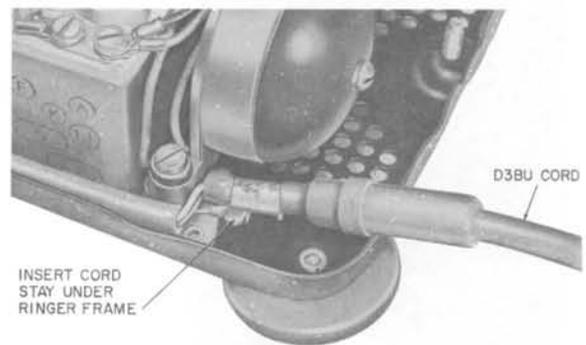


Fig. 5—Installing Extra Length Cord

**Apparatus Blanks**

3.10 *95A (MD)*: Used only on sets with three-point dial mountings (Fig. 6).

SECTION 502-501-101

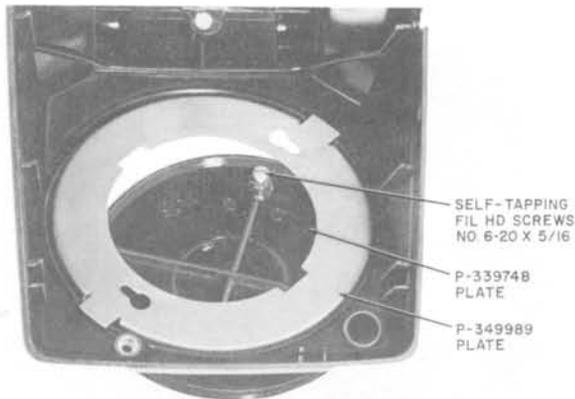


Fig. 6—500-Type Telephone Set With 95A Apparatus Blank

3.11 95B:

- Can be used in all sets (Fig. 7 and 8)
- Bracket must be inverted in wall sets

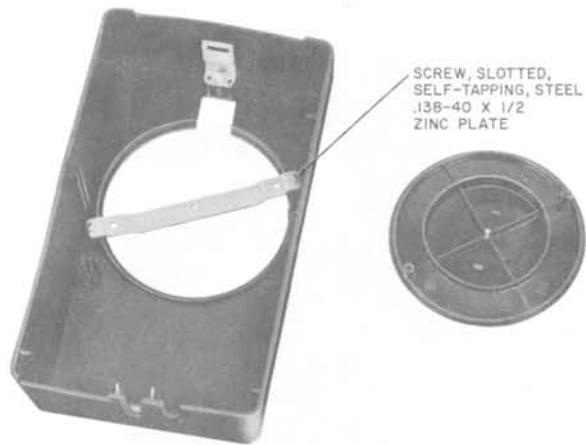


Fig. 8—554- or 556-Type Telephone Set With 95B Apparatus Blank, Interior

3.12 95C:

- Same external appearance as 95B
- Place P-298106 card retainer group containing station number card on apparatus blank (Fig. 9)
- Current production can be used on two or three point dial mountings. Order models cannot be used with three point mountings.

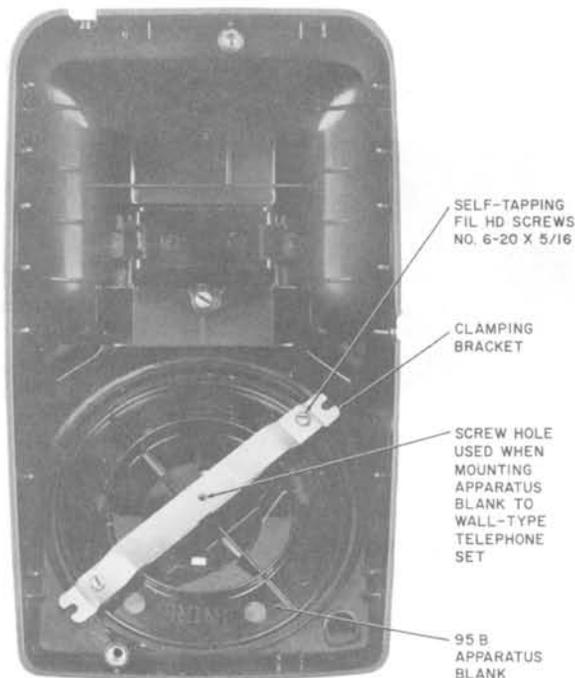


Fig. 7—500- and 501-Type Telephone Set With 95B Apparatus Blank, Interior

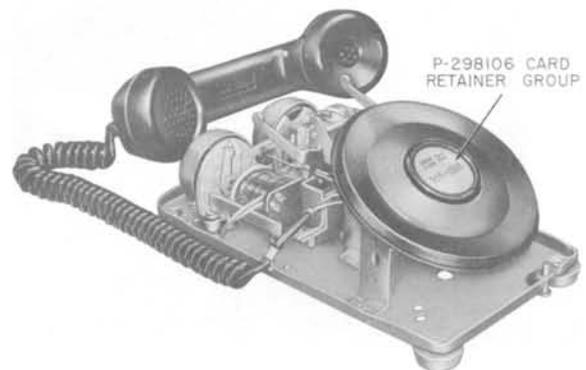


Fig. 9—95C Apparatus Blank on Dial Mounting Bracket in 500- or 501-Type Telephone Set

**Ringer**

- 3.13** Mounted to base with two P-43A456 washer head mounting screws in rubber grommets.
- 3.14** Ringer off position can be provided, when authorized locally, by bending back ringer stop spring to provide a fifth position (OFF) on the ringer volume control.

**Handsets**

- 3.15** The G1- or G3-type handsets in these sets may be replaced by a G6AR (MD) or G6B handset for impaired hearing, a G7AR for weak speech, or a G8A (MD) or G8B for noisy locations. Refer to section covering these handsets.

**4. MAINTENANCE**

- 4.01** Inspect exterior and interior of the sets for obvious defects such as loose, displaced, or broken parts. Check also for obstruction of moving parts or the presence of foreign matter that may interfere with the proper operation of the set.
- 4.02** Check line and ground terminations before determining trouble causes from Table B.

**Electron Tube**

- 4.03** 425A, 4-element tube may be substituted for 426A, to care for cases of excessive power induction. See section entitled Inductive Noise for additional information concerning inductive interference.
- 4.04** For negative stations in offices without ANI, (R) lead from 426A tube may be connected to G if ringer operation is marginal.

- 4.05** Tube assembly is held to base of set with single screw (Fig. 11).

**Mechanical Maintenance**

- 4.06** Plungers should move freely throughout entire travel without binding or squeaking (Fig. 12).
- Clean with KS-2423 cloth moistened with KS-7860 petroleum spirits and lubricate bearing surfaces with a No. 2 or softer graphite pencil (Fig. 13 and 14).
  - Replace housing if plungers do not move freely after cleaning and lubricating.

- 4.07** Operating Bracket Switch Assembly: Should function throughout entire travel without binding or squeaking. Clean bosses on operating bracket arms, spring anchor points, operating bracket, and shaft bearing points with KS-2423 cloth moistened in KS-7860 petroleum spirits and lubricate bearing surfaces with a No. 2 or softer graphic pencil (Fig. 13 and 14).

**4.08** Switch Contacts**Line Switch**

- (1) Remove line switch cover by depressing slides between thumb and index finger and tilting cover up and away from mounting.
- (2) Clean contacts with 265C tool.

**Other Components**

- 4.09** For maintenance of handsets, dials, and ringers refer to the sections covering these components.

**TABLE B**  
**TROUBLES, PROBABLE CAUSES, AND CORRECTIVE MEASURES**

TROUBLE	PROBABLE CAUSE	CORRECTIVE MEASURE
Bell Does Not Ring	Ringer disconnected or incorrectly wired in set.	Connect correctly.
	Volume control wheel in cut-off position.	Move control wheel to ring position.
	Open winding.	Replace ringer.
	Metal particles in armature gap.	Remove with Scotch tape or approved equivalent.
	Open tube.	Short-circuit yellow and black tube leads. If ringer operates when ringing voltage of correct polarity is applied, replace tube.
Bell Too Loud	Volume control wheel in wrong position.	Move control wheel to softer position and advise customer on proper use.
Bell Too Soft	Volume control wheel in wrong position	Move control wheel to louder position and advise customer on proper use.
	Set on sound-absorbent material.	Place set on hard surface.
	Cord touching gong.	Dress cord properly.
Bell Taps While Dialing or Operating Switch	Incorrect wiring.	Check mounting cord and ringer connections.
	Loose gong.	Tighten screw as required.
Bell Rings When Other Party Is Called: Cross Ring or False Ring	Incorrect wiring.	Check mounting cord and ringer connections.
	Biasing tension too low.	Place bias spring in high tension notch. If ringer still cross-rings, replace ringer.
Bell Keeps Ringing When Handset Is Removed	Open handset cord or dial pulse contacts.	Replace handset cord or dial.
	Defective network or open set wiring.	Replace set.
	Line contacts on switch do not close.	Check switch cover and ears. Ears should fit into notches.
No Dial Tone or Set Dead	Open mounting cord or handset cord.	Replace cord.
	Defective receiver unit or varistor shorted.	Replace receiver unit.
	Dial pulse contacts open or off-normal shunt contacts closed.	Replace dial.

TABLE B (Cont)

## TROUBLES, PROBABLE CAUSES, AND CORRECTIVE MEASURES

TROUBLE	PROBABLE CAUSE	CORRECTIVE MEASURE
No Dial Tone or Set Dead	Open induction coil.	Replace telephone set.
	Switch contacts do not operate.	Check switch cover for proper installation.
Cannot Break Dial Tone	Dial pulse contacts do not open.	Replace dial.
	Dial filter capacitor shorted.	Replace telephone set.
Loud Clicks While Dialing	Dial off-normal shunt contacts do not close.	Replace dial.
Cannot Hear	Open or shorted receiver unit or handset cord.	Replace receiver unit or handset cord.
	Dial off-normal shunt contacts closed.	Replace dial.
	Open induction coil or network.	Replace telephone set.
	Switch receiver contacts do not open.	Check switch cover for interference.
Cannot Be Heard	Defective transmitter or open handset cord.	Replace transmitter or handset cord.
High Sidetone	Defective sidetone balancing network.	Replace telephone set.
Dial Lamp Does Not Light	Lamp burned out.	Replace lamp.
	Transformer plug is out of receptacle.	Replace plug.
	Defective transformer.	Replace transformer.
	No power at ac receptacle.	Check with customer for possible blown fuse or for a power-control switch.

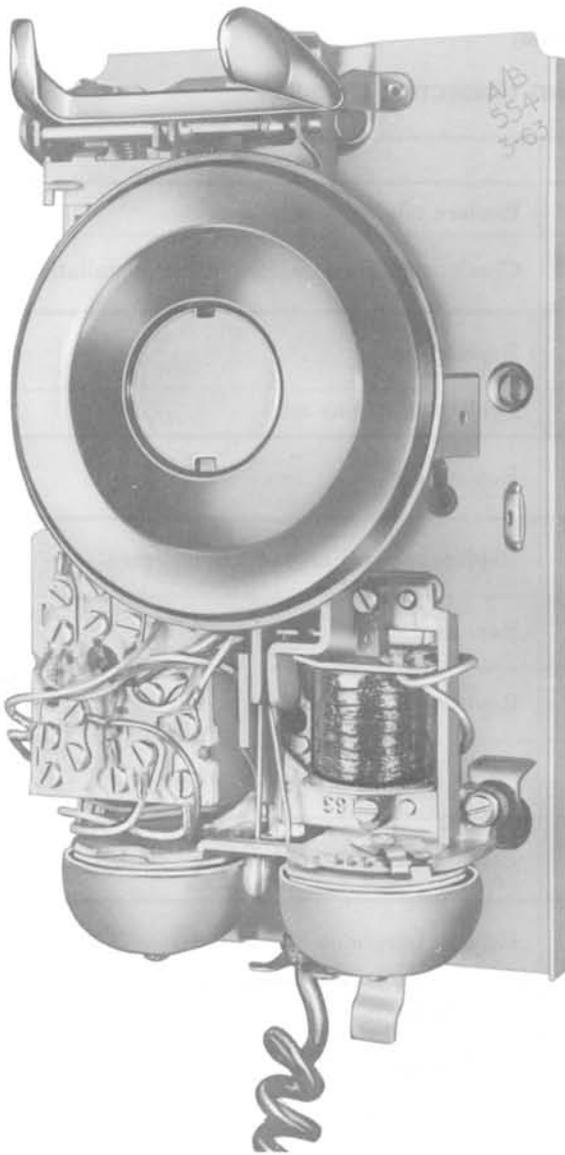


Fig. 10—95C Apparatus Blank on Dial Mounting Bracket in 554A/B Telephone Set

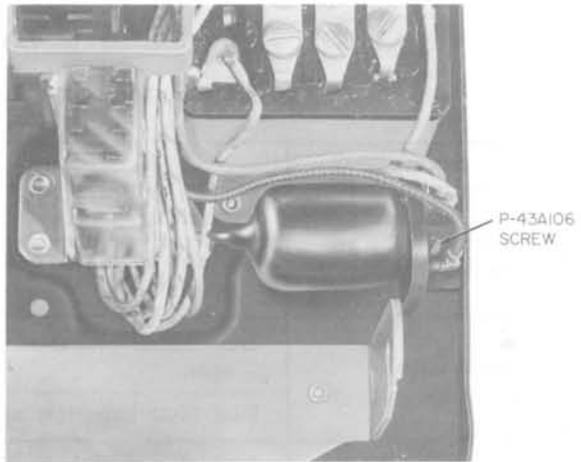


Fig. 11—501-Type Telephone Set, Tube Assembly



Fig. 12—Removing Handhold Cover

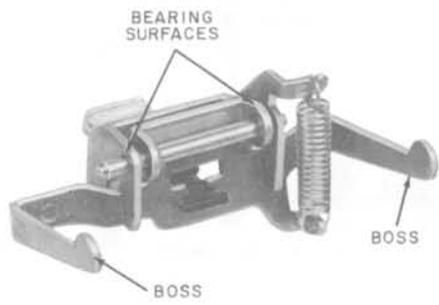


Fig. 13—Operating Bracket Switch Assembly, 500- and 501-Type Telephone Sets

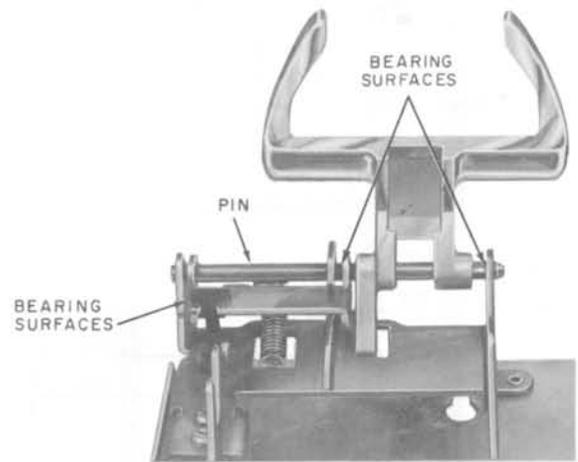
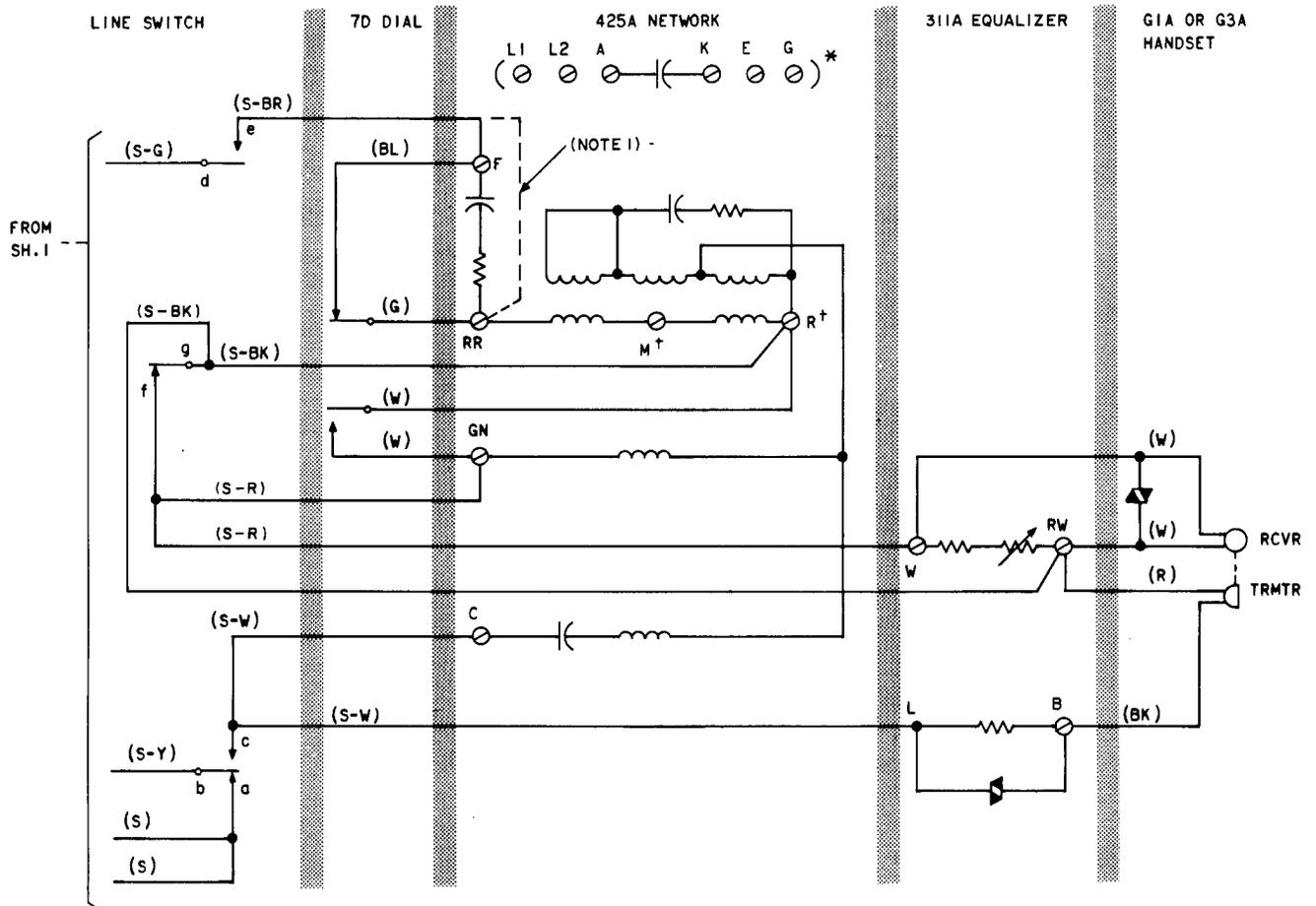


Fig. 14—Handset Hook Assembly 554- and 556-Type Telephone Sets





NOTES:

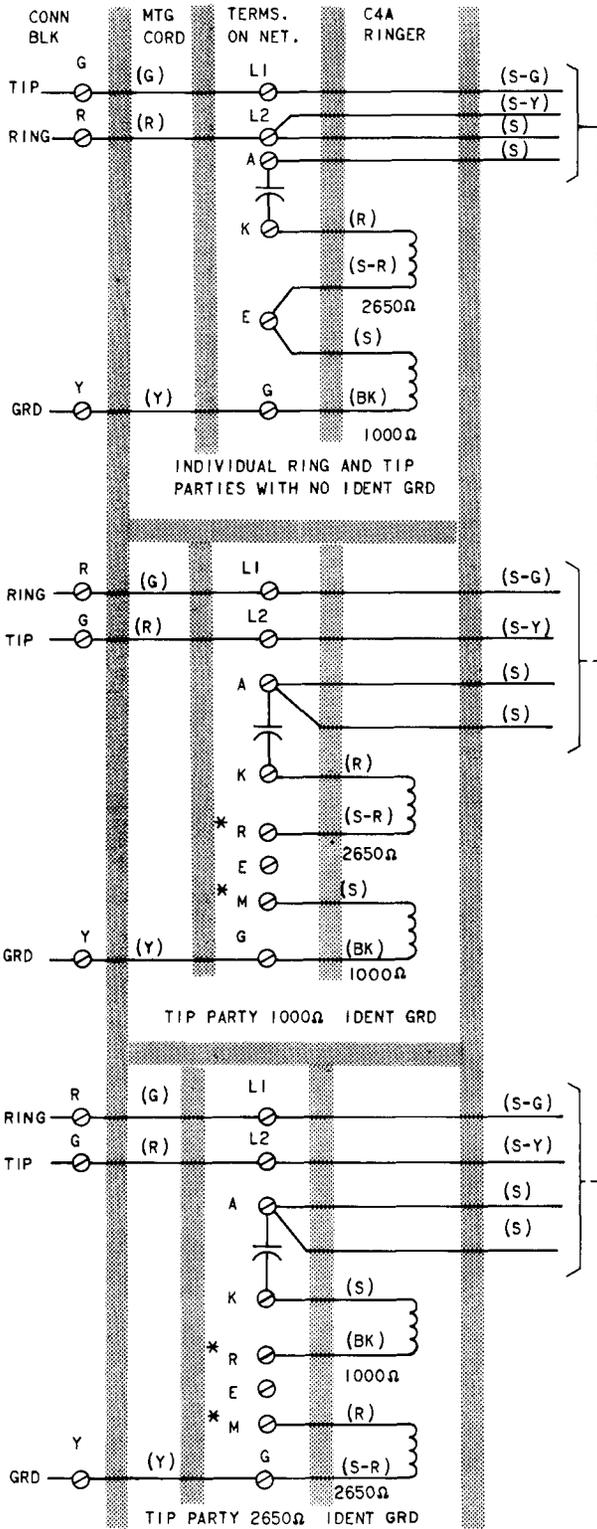
1. FOR MANUAL SERVICE, MOVE (S-BR) LEAD FROM F TO RR TERMINAL.
2. 500 A/B SET FACTORY-WIRED FOR RING PARTY.  
501 A/B SET FACTORY-WIRED FOR NEGATIVE RING PARTY.  
SEE TABLE C FOR CLASSES OF SERVICE NOT SHOWN.
3. LINE SWITCH OFF-HOOK SEQUENCE:
  - (1) bc CLOSES
  - (2) de CLOSES
  - (3) ab OPENS
  - (4) fg OPENS

† SAME TERMINALS MAY APPEAR ON RINGER CONNECTION.

Fig. 15—500A/B and 501A/B Telephone Sets, Connections (Sheet 2 of 2)

SECTION 502-501-101

500J/K



501J/K

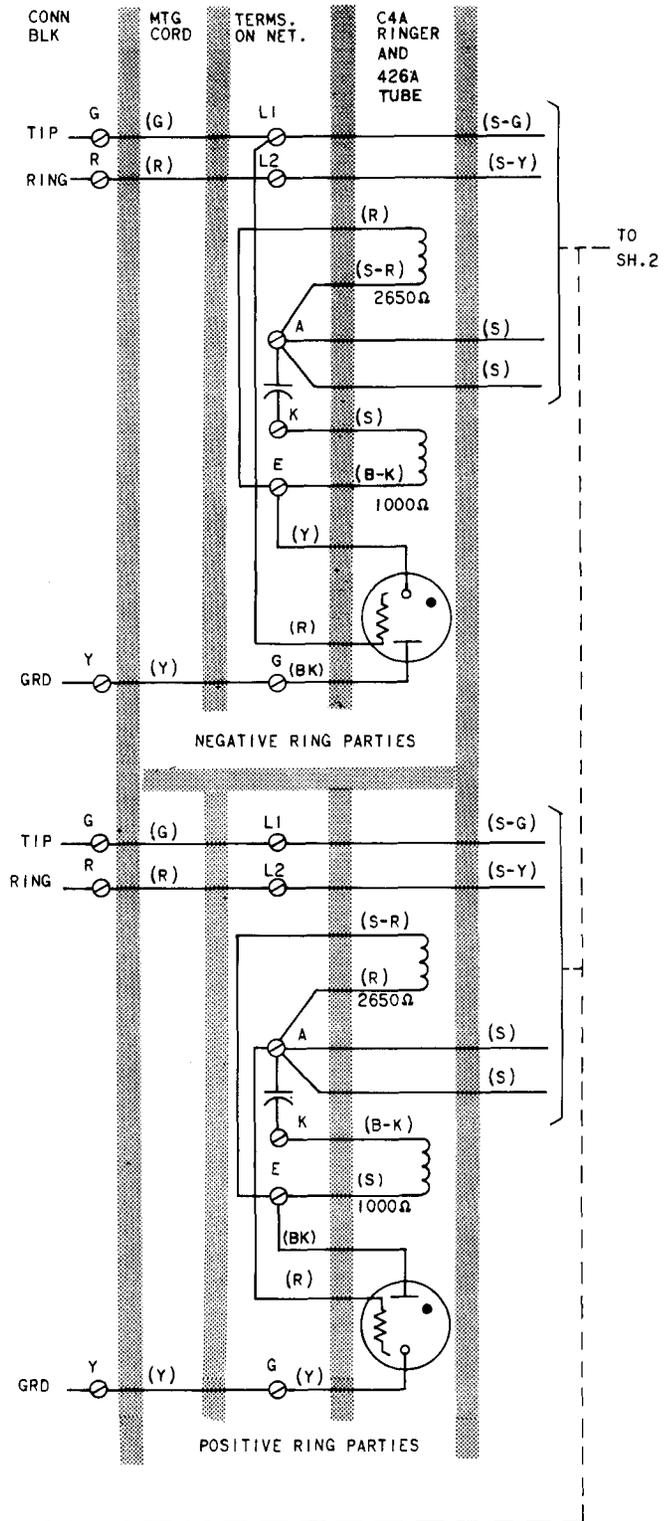
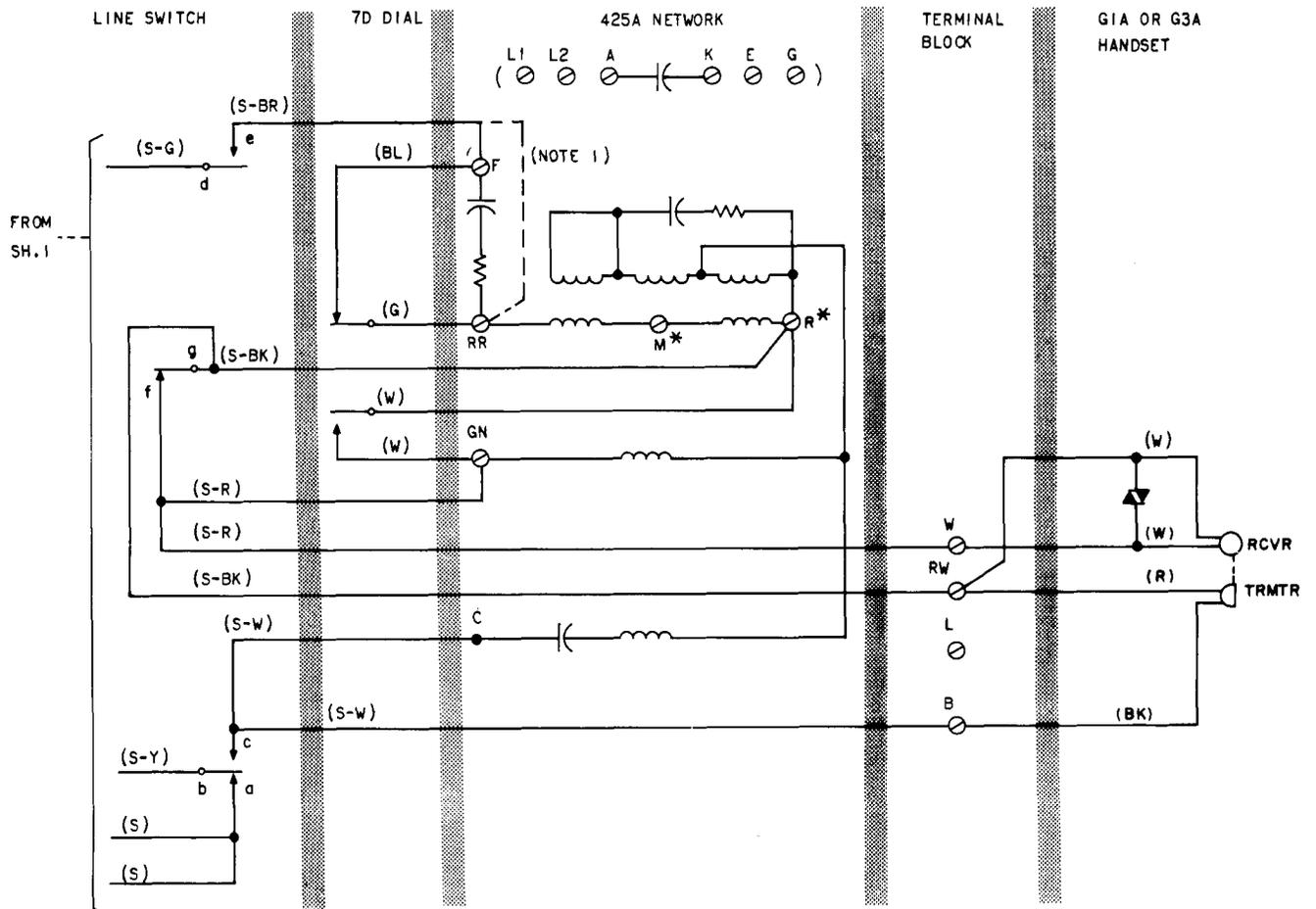


Fig. 16—500J/K and 501J/K Telephone Sets, Connections (Sheet 1 of 2)



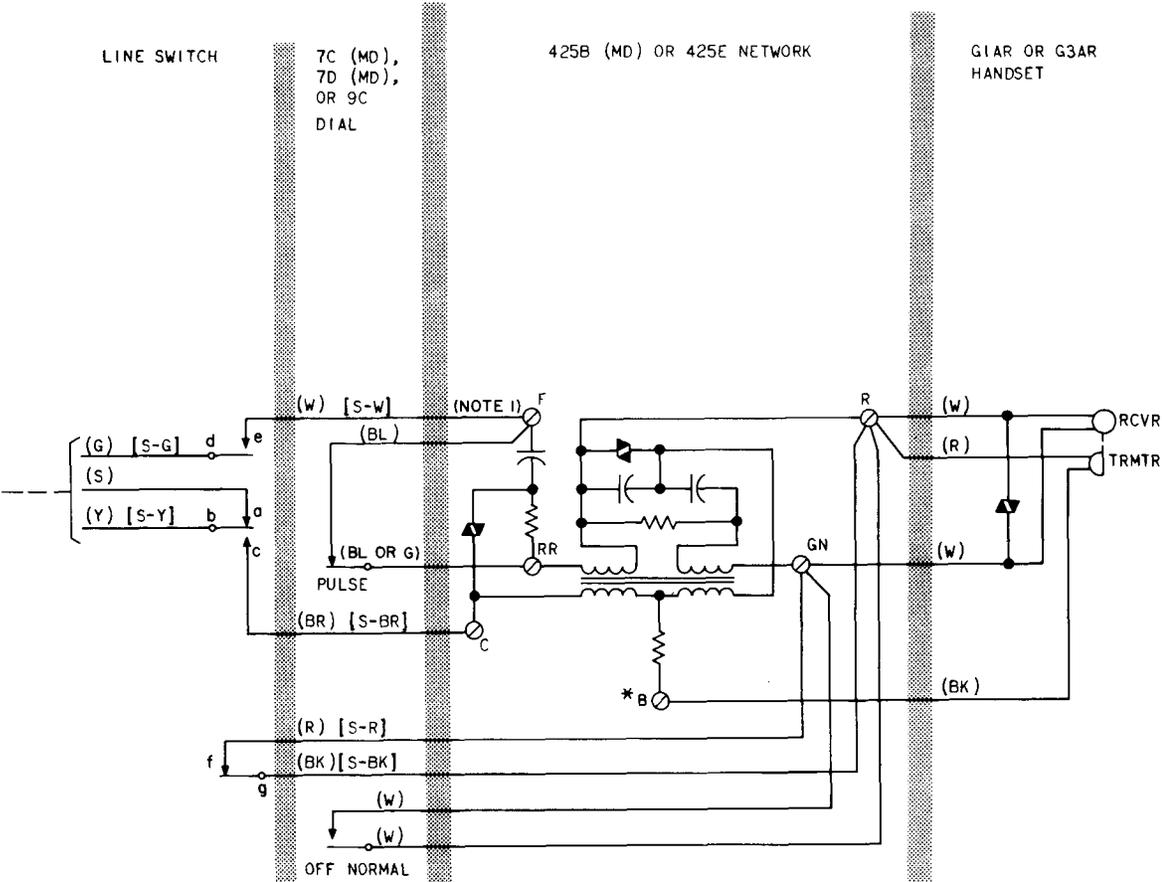
NOTE:

1. (S-BR) SWITCH LEAD IS CONNECTED TO F TERMINAL IN DIAL SETS AND TO RR TERMINAL IN MANUAL SETS.
2. 500 J/K SET FACTORY-WIRED FOR RING PARTY.  
501 J/K SET FACTORY-WIRED FOR NEGATIVE RING PARTY  
SEE TABLE C FOR CLASSES OF SERVICE NOT SHOWN.
3. LINE SWITCH OFF-HOOK SEQUENCE:
  - (1) bc CLOSES
  - (2) de CLOSES
  - (3) ab OPENS
  - (4) fg OPENS

\* SAME TERMINALS MAY APPEAR ON RINGER CONNECTION.

Fig. 16—500J/K and 501J/K Telephone Sets, Connections (Sheet 2 of 2)





- NOTES:
1. FOR MANUAL SERVICE, MOVE (w) [S-w] LEAD FROM F TO RR TERMINAL.
  2. 500 C/D FACTORY WIRED FOR RING PARTY. 501 C/D FACTORY WIRED FOR NEGATIVE RING PARTY. SEE TABLE D FOR CLASSES OF SERVICE NOT SHOWN.
  3. LINE SWITCH OFF HOOK SEQUENCE:
 

(1) bc CLOSES	(3) ab OPENS
(2) de CLOSES	(4) fg OPENS
- \* SAME TERMINAL MAY APPEAR IN RINGER CONNECTIONS.  
 ( ) CURRENT COLOR CODE  
 [ ] MD COLOR CODE

Fig. 17—500C/D and 501C/D Telephone Sets, Connections (Sheet 2 of 2)

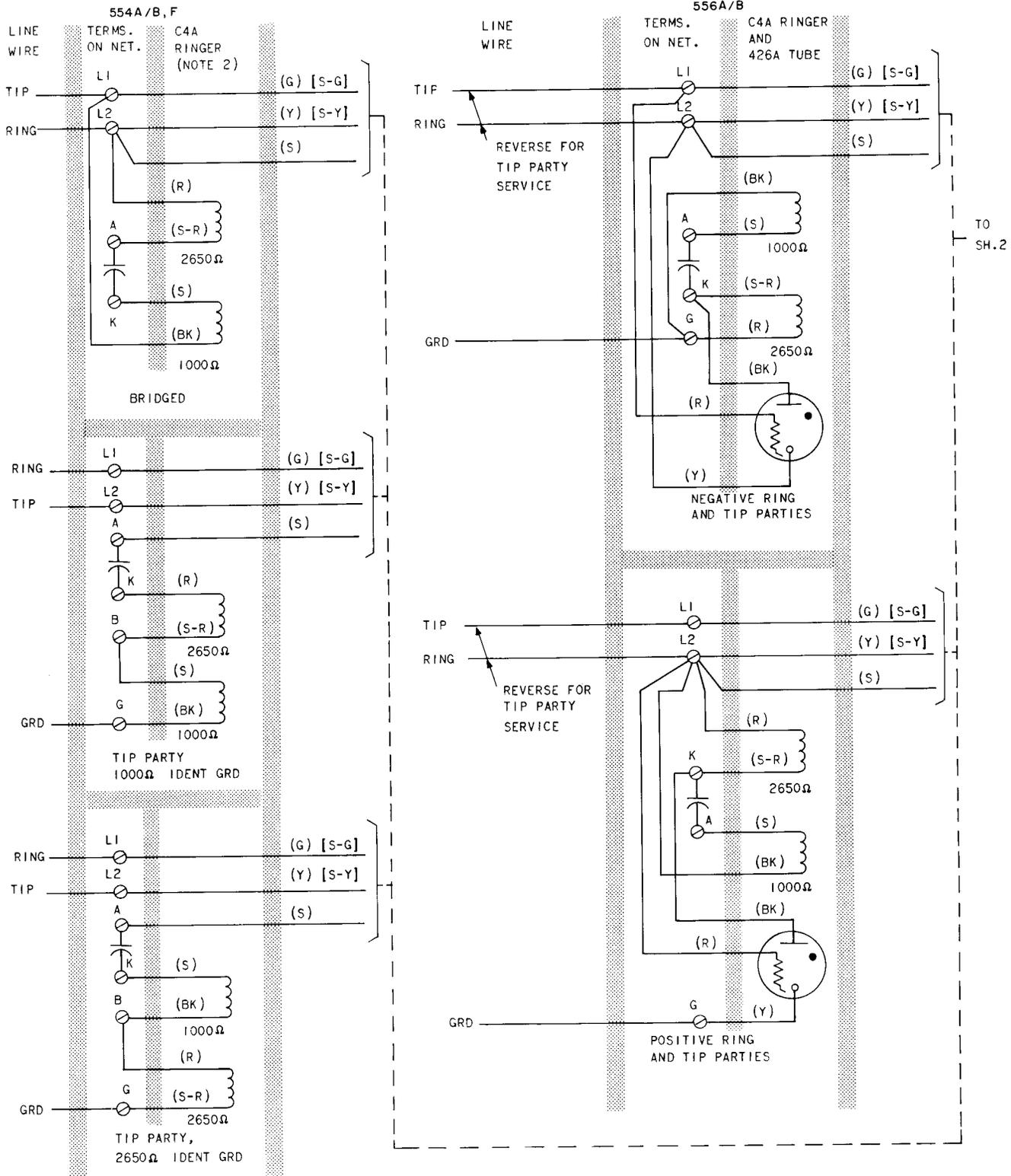
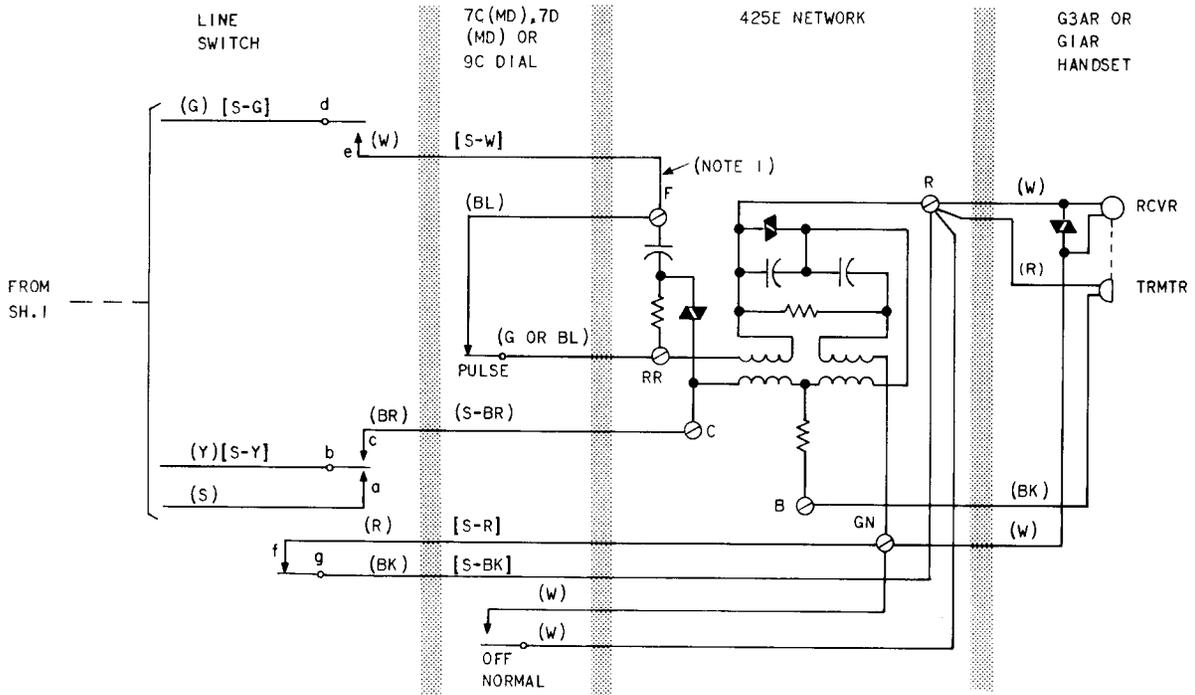


Fig. 18—554A/B, F and 556A/B Telephone Sets, Connections (Sheet 1 of 2)



NOTES:

1. FOR MANUAL SERVICE, MOVE (W) [S-W] LEAD FROM F TO RR TERMINAL.
  2. 554A/B, F IS FACTORY WIRED FOR BRIDGED SERVICE, 556A/B IS FACTORY WIRED FOR NEGATIVE RING PARTY, FOR CLASSES OF SERVICE NOT SHOWN, REFER TO TABLE E.
  3. LINE SWITCH OFF-HOOK SEQUENCE:
    - (1) bc CLOSES (3) ab OPENS
    - (2) de CLOSES (4) fg OPENS
- ( ) CURRENT COLOR CODE  
 [ ] MD COLOR CODE

Fig. 18—554A/B, F and 556A/B Telephone Sets, Connections (Sheet 2 of 2)

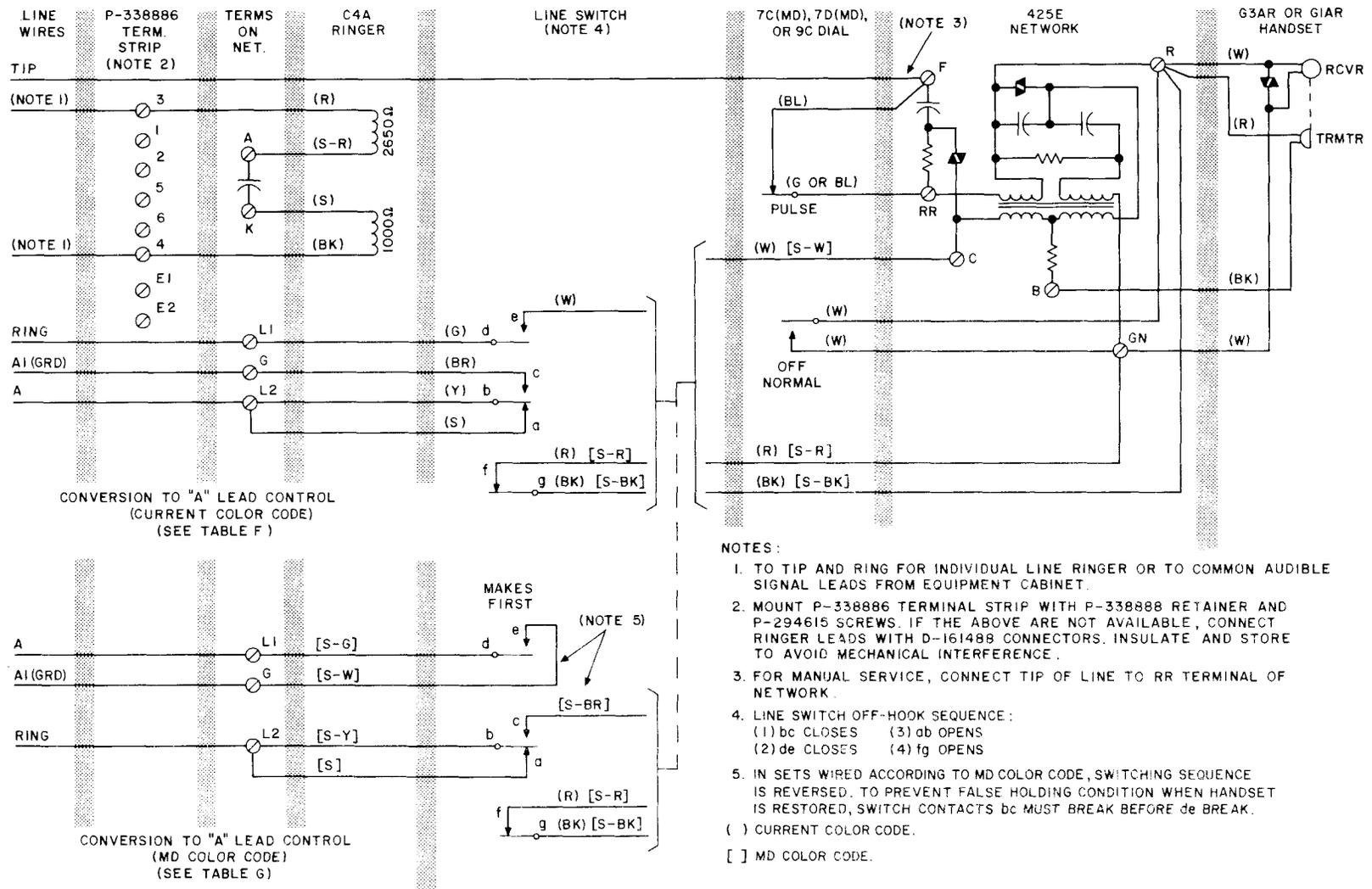


Fig. 19—554A/B and F Telephone Sets, Modification for "A" Lead Control

**TABLE C**  
**LINE, RINGER, AND TUBE CONNECTIONS FOR 500A/B, J/K, AND 501A/B, J/K TELEPHONE SETS**

WIRE OR LEAD	COLOR	INDIV OR BRIDGED	RING PARTY	TIP PARTY NO IDENT GRD	TIP PARTY IDENT GROUND				NEGATIVE (-) PARTIES		POSITIVE (+) PARTIES	
					NORMAL CONNECTIONS		RINGER REV. WHEN CONN TO I.L. EQUIP.		RING (1-5)	TIP (2-6)	RING (3-7)	TIP (4-8)
					1000Ω	2650Ω	1000Ω	2650Ω				
Ringer Leads	R	K	K	K	K	M	R	G	E	E	A	A
	BK	G	G	G	G	R	M	K	E	E	K	K
	S	E	E	E	M	K	G	R	K	K	E	E
	S-R	E	E	E	R	G	K	M	A	A	E	E
Line Switch	S	L2-A	L2-A	L2-A	A	A	A	A	A	A	A	A
426A Tube (3-Element)	R								L1 or G	L1 or G	A	A
	BK								G	G	E	E
	Y								E	E	G	G
Mtg Cord in Set	R	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
	G	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	Y	G	G	G	G	G	G	G	G	G	G	G
Mtg Cord at Conn Blk	R	R	R	G	G	G	G	G	R	G	R	G
	G	G	G	R	R	R	R	R	G	R	G	R
	Y	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line Wire at Conn Blk	Ring	R	R	R	R	R	R	R	R	R	R	R
	Tip	G	G	G	G	G	G	G	G	G	G	G
	Grd	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: To silence ringer permanently:

- (a) For all classes except tip party identification, connect (Y) mounting cord to same terminal as (R) mounting cord lead at connecting block.
- (b) Tip party identification:
  - For 1000Ω ground remove (R) from K of network and insulate and store on unused terminal.
  - For 2650Ω ground remove (S) from K of network and insulate and store on unused terminal.

**TABLE D**  
**500C/D AND 501C/D TELEPHONE SET LINE, RINGER, AND TUBE CONNECTIONS**

WIRE OR LEAD	COLOR	INDIV OR BRIDGED	RING PARTY	TIP PARTY NO IDENT GRD	TIP PARTY IDENT GRD				NEGATIVE (-) PARTIES		POSITIVE (+) PARTIES	
					NORMAL CONN		RINGER REV WHEN CONN TO L.L. EQUIP.		RING (1-5)	TIP (2-6)	RING (3-7)	TIP (4-8)
					1000Ω	2650Ω	1000Ω	2650Ω				
Ringer Leads	R	L2	L2	L2	K	B	B	G	G	G	L2	L2
	BK	G	G	G	G	B	B	K	G	G	L2	L2
	S	K	K	K	B	K	G	B	A	A	A	A
	S-R	A	A	A	B	G	K	B	K	K	K	K
Line Switch Lead	S	L2	L2	L2	A	A	A	A	L2	L2	L2	L2
426A Tube (3-element)	R BK Y								L1 or G K L2	L1 or G K L2	L2 K G	L2 K G
Mtg Cord in Set	R	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
	G	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1
	Y	G	G	G	G	G	G	G	G	G	G	G
Mtg Cord at Conn Block	R	R	R	G	G	G	G	G	R	G	R	G
	G	G	G	R	R	R	R	R	G	R	G	R
	Y	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line Wire at Conn Block	Ring	R	R	R	R	R	R	R	R	R	R	R
	Tip	G	G	G	G	G	G	G	G	G	G	G
	Grd	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: To silence ringer permanently:

- For all classes of service except tip party identification, connect (Y) mounting cord to same terminal as (R) mounting cord lead at connecting block.
- For tip party with 1000 ohms identification ground; remove (R) ringer from K of network and insulate and store on unused terminal.
- For tip party with 2650 ohms identification ground; remove the (S) ringer lead from K of network and insulate and store on unused terminal.
- For the 501C/D telephone set connect (Y) mounting cord lead to same terminal as (R) mounting cord lead at the connecting block.

**TABLE E**  
**554A/B, F AND 556A/B TELEPHONE SETS LINE, RINGER, AND TUBE CONNECTIONS**

WIRE OR LEAD	COLOR	INDIVIDUAL OR BRIDGED	RING PARTY	TIP PARTY NO IDENT GRD	TIP PARTY IDENT GROUND				NEGATIVE (-) PARTIES		POSITIVE (+) PARTIES		
					NORMAL CONNECTIONS		RINGER REV. WHEN CONN TO L.L. EQUIP†		RING	TIP	RING	TIP	
					1000Ω	2650Ω	1000Ω	2650Ω	(3-5)	(2-6)	(3-7)	(4-8)	
Ringer Leads	R	L2	L2	L2	K	B	B	G	G	G	L2	L2	
	BK	L1	G	G	G	B	B	K	G	G	L2	L2	
	S	K	K	K	B	K	G	B	A	A	A	A	
	S-R	A	A	A	B	G	K	B	K	K	K	K	
Line Switch	S	L2	L2	L2	A	A	A	A					
426A Tube (3-Element)	R								L1 or G	L1 or G	L2	L2	
	BK								K	K	K	K	
	Y								L2	L2	G	G	
Line Wire in Set	Ring Tip Grd	R	L2	L2	L1	L1	L1	L1	L1	L2	L1	L2	L1
		G	L1	L1	L2	L2	L2	L2	L2	L1	L2	L1	L2
		Y	G*	G	G	G	G	G	G	G	G	G	G

\* No ground required

Note: To silence ringer:

- (a) For the 554A/B and F telephone sets for all classes of service except tip party grd. identification, connect (S) and (BK) ringer leads on K terminal of 424E network.
- (b) For tip party with 1000Ω identification ground, remove the (R) ringer lead from K of network and insulate and store or connect to spare terminal.
- (c) For tip party with 2650Ω identification ground, remove the (S) ringer lead from K of network and insulate and store or connect to spare terminal.
- (d) For the 556A/B telephone set, connect (R) and (BK) ringer leads to K terminal of network.

**TABLE F**  
**554A/B AND F TELEPHONE SETS**  
**MODIFICATION FOR**  
**"A" LEAD CONTROL**  
**CURRENT COLOR CODE**

WIRE OR LEAD	REMOVE FROM NET.	CONNECT TO	
		NET.	TERM. STRIP
Line Switch	W BR	F C	C G
Ringer Leads	R BK	L2 G	3 4
Line Wire in Set	Ring Tip "A" Lead		L1 F L2

**TABLE G**  
**554A/B TELEPHONE SET**  
**MODIFICATIONS FOR**  
**"A" LEAD CONTROL**  
**MD COLOR CORE**

WIRE OR LEAD	REMOVE FROM NET.	CONNECT TO	
		NET.	TERM. STRIP
Line Switch	[S-W]	F	G
Ringer Leads	(R) (BK)	L2 L1	3 4
Line Wire in Set	Ring Tip "A" Lead		L2 F L1

( ) Current color code

[ ] MD color code.