

## STATION DIAL—43A

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FOREMAN 04...  
FOREMAN 05...  
FOREMAN 06...  
FOREMAN 07...  
FOREMAN 08...  
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FOREMAN 99...  
FOREMAN 100...

**1.01** This section contains identification, installation, operation, connections, and maintenance information on the 43A dial.

**1.02** This section is reissued to revise Note 1, Fig. 5 and 6, and 2.04 and 4.04.

**1.03** The 43A dial (Fig. 1) is an automatic preset rotary dial for use where a single telephone number is repeatedly dialed. It can be used on either rotary or TOUCH-TONE® central office lines.

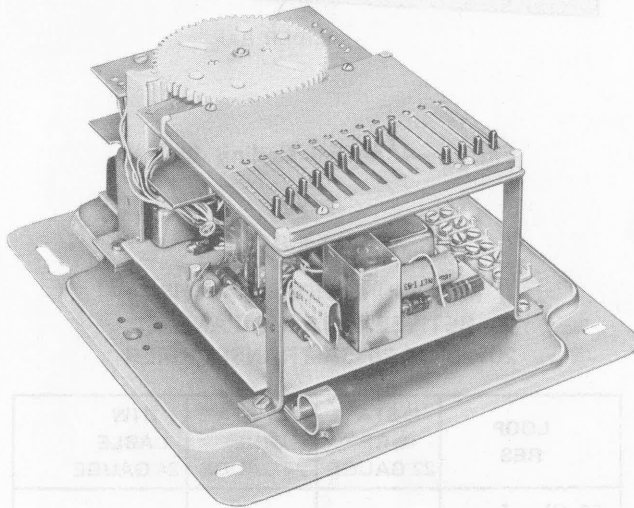


Fig. 1—43A Dial, Without 814775573 (P-47G557) Cover

**1.04** It can be used with most standard telephone sets. In the restricted mode the dialing function can be started by a momentary contact closure provided by a nonlocking button or key (call button) or by installing a 1A350 tone detector, ordered separately, which will start the dial automatically when precise dial tone is present.

For additional information on the 1A350 tone detector, refer to Section 501-166-100. If dialing is not started by the call button or tone detector within 8 to 15 seconds, an internal timer will initiate dialing. In the unrestricted mode a momentary contact closure is required to start the dial.

## 2. IDENTIFICATION

### Ordering Guide

#### 2.01 Basic Dial:

- Dial, 43A

#### 2.02 Replaceable Components:

- 814775573 (P-47G557) Cover

#### 2.03 Associated Apparatus or Equipment (ordered separately):

- Backboard (See Table A)
- Transformer, 2012B or equivalent.

TABLE A  
BACKBOARDS FOR MOUNTING DIAL  
ON WALL

BACKBOARD	COLOR	NO. OF DIALS MOUNTED
KS-5796L1	Black	1
KS-5796L2		2
KS-5796L3		3
KS-5796L7	Olive Gray	1
KS-5796L8		2
KS-5796L9		3

## NOTICE

Not for use or disclosure outside the  
Bell System except under written agreement

## 2.04 Optional Apparatus or Equipment (ordered separately):

- Detector, Tone, 1A350
- Transformer, 2075A or equivalent (required when using 1A350 tone detector) see Table B and 3.02
- Diode, 419A (polarity guard)
- Ringer, E or F Type (required when dials are multipled).

### Design Features

## 2.05 The 43A dial permits:

- Slide switch programming with readout of telephone number (Fig. 2). Up to a maximum of 14 digits may be programmed.
- Programming stops after first, second, or third digits (Table C).
- Restricted or unrestricted dialing.
- Multiplying of dials (unrestricted mode only).
- Use with most single line or key telephone sets.

**2.06** The dialer as factory wired (restricted mode) prevents manual dialing from the associated telephone set, line switch, or use of coupled TOUCH-TONE signals into the telephone set transmitter. Incoming calls cannot be received in this mode.

**2.07** Wiring options are provided (unrestricted mode) to permit manual dialing from the associated telephone set and the reception of incoming calls.

**2.08** The 43A dial as furnished from the factory (restricted mode) requires a call button or 1A350 tone detector (use tone detector only with precise dial tone) to start the dialing function after reception of dial tone. The 43A dial may be equipped with both 1A350 tone detector and call button if required. The call button can be furnished from the associated telephone set, if so equipped, or from an external key. The dials internal timer

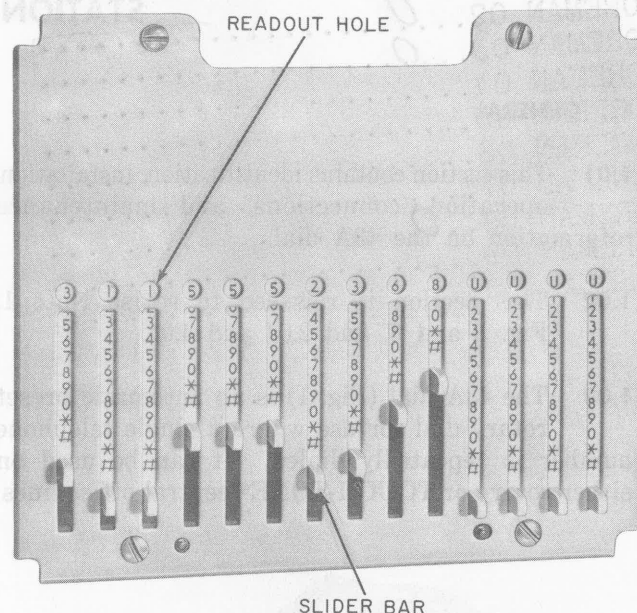


Fig. 2—43A Dial Coding Board

### TABLE B

#### MAXIMUM LOOP LENGTHS BETWEEN 43A DIAL AND 2012B OR 2075A TRANSFORMER

LOOP RES	D-ST WIRE 22 GAUGE	JKT STA WIRE 20 GAUGE	D1W CABLE 24 GAUGE
50 Ohm Loop WO 1A350 Tone Detector (2012B Trnsf)	1470 Ft.	960 Ft.	940 Ft.
20 Ohm Loop With 1A350 Tone Detector (2075A Trnsf)	580 Ft.	380 Ft.	370 Ft.

(8 to 15 seconds) may also be used to start the dial (restricted mode only).

**2.09** For those installations which have precise dial tone available, the 1A350 tone detector can be used in place of a call button to automatically start the 43A dial. This detector responds to the 350 Hz component of precise dial tone after about one second and simulates a contact closure to the

**TABLE C**  
**43A DIAL OPTIONS**

OPTION	43A DIAL SPADE-TIPPED LEADS (TERMINALS ON DIAL)					
	BR	BK	BL	V	S	S-R
Restricted Dialing	4	8				
Unrestricted Dialing	8	4				
No Dialing Stops			3	3		
Stop After 1st Digit			8	3		
Stop After 2nd Digit†			3	8		
Stop After 3rd Digit			3	8		
Stop After 1st and 2nd Digit†			8	8		
Stop After 1st and 3rd Digit			8	8		
Short Loop (under 400 ohms total)					*	
Long Loop (over 400 ohms total)					2	
Ringing Start Protection						2

\* Insulated and stored.

† Put 3rd slider switch in "U" position for stops after 2nd digit.

dial. (The detector will not respond to conventional dial tone.) When used with this detector, the 43A dials should be used in the restricted mode of operation only.

**2.10** When associated with a key telephone set the dial can be used on all the lines terminated in that set. When associated with a particular line, the dial can be used by all the telephones sharing that line (dedicated preset line) on the key telephone system.

**2.11** Since no handset receiver shorting circuit is provided during automatic dialing, it is recommended that only those sets equipped with a varistor across the receiver (G- or K-type handset or equivalent) be used.

### 3. INSTALLATION

**3.01** The 43A dial is housed in a 105C apparatus box equipped with an 814775573 (P-47G557)

cover or equivalent and can be wall mounted using backboard (Table A) or rack mounted using the vertical and horizontal mounting holes which are spaced 5-7/8 inches and 6-1/16 inches apart, respectively. It should be placed at an indoor location which is inaccessible to the public but available for maintenance purposes.

**3.02** For proper operation, this dial requires between 17 and 28 volts ac, 60 Hz power at the terminals while dialing. A 2012B transformer or equivalent power source is required for each dial installed. The loop length between the 2012B transformer power source and dial must be within the limitations of Table B which is based on a maximum loop resistance of 50 ohms. With a 1A350 tone detector, a 2075A transformer or equivalent must be used with maximum loop resistance of 20 ohms between dial and 2075A transformer.



*Ensure that the power source is connected to an ac outlet not under control of a switch.*

**3.03** The call button, if required, should be located within a 150 ohm loop from the dial.

**3.04** When connecting the dial into a key telephone system on a dedicated line, the key telephone set intended for use with the dial should have two unused line buttons, one to pick up the preset line and one converted to signaling for use as the call button unless dial is equipped with a tone detector in which case a call button is not required.

**3.05** The 1A350 tone detector circuit board is added to the basic 43A dial in the position shown in Fig. 3. Use brackets and mounting screws furnished with detector to fasten board as described in detailed instruction sheet packed with each detector. Table D gives spade-tipped lead connections. References to a call button may be disregarded when the 1A350 tone detector is used unless both are desired.

**3.06** The 43A dial is not affected by battery-ground reversals. However, when a polarity guard is required to allow end-to-end signaling from the associated telephone set, or when the 43A dial is followed by 53A dials in a multiple installation, install a 419A polarity guard external to the 43A dial as shown in Fig. 10. Use inside wire to make

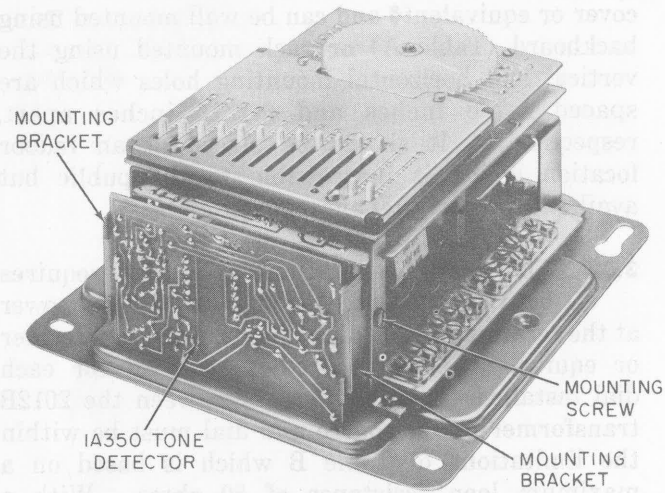


Fig. 3—1A350 Tone Detector, Installed

◆ TABLE D ◆  
1A350 TONE DETECTOR  
CONNECTIONS

WIRE OR LEAD FROM	COLOR	CONNECT TO DIAL TERM. BD
1A350 Tone Detector (Ordered Separately)	W	†
	G	2
	R	7
	BK	6
Strap	BL	*
	—	6 ↔ 9

\*Insulate and store.

†Connect to insulated and stored (V-G) lead of 43A dial using D-161488 connector.

the necessary circuit connections between the polarity guard and central office line.

**3.07** Multiple 43A dials may be connected when the customer desires to dial more than one number. Refer to Fig. 10 for installation layout and necessary wiring arrangements.



*At unattended public locations, the station number card on the associated telephone set should use number assignments in accordance with Section 682-000-012, entitled Numbering and Identifying Special Services*

*and Channels, unless otherwise specified by local instructions.*

### Programming a Telephone Number

**3.08** Set coding board slide switches (Fig. 2) as follows:

- (1) Position each slide switch, reading from left to right until the desired telephone number appears in readout holes located above slide switches on coding board.
- (2) All unused digits must be programmed in the **U** position.

**Note:** In order for the 43A dial to cycle to the TALK position before the switching equipment completes the connections and rings the called party the last digit of a short number should be programmed later in the call cycle, i.e. the 14th position.

- (3) If stops after the first, second, or third digit are to be included, refer to Table C for dial wiring changes to be made.

**3.09** To check installation of dial in the restricted mode which requires a call button to start dialing:

- (1) Remove handset from the associated telephone set. Dial tone should be present.
- (2) Verify that dial tone cannot be broken by manipulation of line switch of associated telephone set.
- (3) Actuate call button, verify that preset number programmed on the coding board is automatically dialed. After called station answers, conversation should be possible.

- (4) Replace associated telephone handset on hook.

**3.10** To check installation of dial in the restricted mode which is equipped with 1A350 tone detector:

- (1) Remove handset from the associated telephone set.
- (2) Dialing should automatically start within 2 seconds after dial tone is heard. Verify



that the number programmed on the coding board is correctly dialed. After called station answers conversation should be possible.

- (3) Replace associated telephone handset on hook.
  - (4) Refer to instruction sheet packed with tone detector for additional details of operation.
- 3.11** To check installation of dial in the unrestricted mode:
- (1) ♦ Remove handset from the associated telephone set. Dial tone should be present. ♦
  - (2) Verify that dial tone can be broken by dialing a digit on the dial of the associated telephone set.
  - (3) Restore handset momentarily to obtain dial tone again.
  - (4) ♦ Actuate call button, verify that preset number programmed on the coding board is automatically dialed. After called station answers, conversation should be possible.
  - (5) Replace associated telephone handset on hook. ♦

#### 4. OPERATION

##### ***Restricted Mode (Single Dial Installation, Fig. 10 or 11)***

- 4.01** The dial responds to an off-hook condition of the associated telephone set, steps off home position, seizes the preset line, and isolates the telephone set from the line.
- 4.02** After the 43A dial seizes the present line, operation of the line switch and/or dial will have no effect during dialing of the preset number. When the call button or 1A350 tone detector is operated, the preset dialer will proceed through the programmed numbers and all unused positions to the talk position, unless interrupted by a programmed stop. If stops are programmed for a second or third dial tone the 1A350 tone detector will automatically resume the dialing cycle (only if dial tones are precise dial tones). If a tone detector is not provided or the dial tone is not a precise dial tone then another momentary closure of the call button is required. If the call button or 1A350

tone detector is not operated within 8 to 15 seconds an internal timer will start the dial. At the talk position the telephone transmitter circuit is restored. After completion of a call, going on-hook at the associated telephone set causes the dial to step to the home position.



***Manual dialing from the associated telephone set is not possible on the preset line when the 43A dial is in the restricted mode, nor can incoming calls be received, therefore the telephone set ringer should be silenced.***

**4.03** When the telephone set ringer is connected for some reason (such as testing) refer to Table C (Ringing Start Protection) for wiring connections required to prevent relay K4 from operating on ringing current.

**4.04** ♦ If a call is abandoned by placing the handset on-hook after the dialing sequence has been started, but has not been completed, the dialer will continue to:

- (a) Dial the programmed number.
- (b) Proceed through all unused positions.
- (c) Step to the talk position, and
- (d) After a delay of 600 to 700 milliseconds will step to the home position. The line will not be released until the dial steps off the talk position. In the event that a stop is wired in to the dialer and the call is abandoned before the stop is reached, the dialer internal timer will eventually restart the dial and the preceding events will occur. ♦

##### ***Unrestricted Mode (Single Dial Installation, Fig. 10 or 11)***

- 4.05** This mode permits both automatic (preset) and normal dialing from the associated telephone set and the reception of incoming calls. Even if the preset dial is disabled, i.e. loss of ac power, the station can manually dial. See Table C for required wiring connections.
- 4.06** In this mode, when the associated telephone set goes off-hook, the loop is closed from

the central office. It is therefore possible to dial either manually or automatically.

**4.07** If the dial is started by a contact closure, it will seize the line, dial the preset number and return the line to the associated telephone set.

***Restricted Mode (Multiple Dial Installations, Option D, Fig. 10)***

**4.08** The first dial responds to an off-hook condition of the associated telephone set, steps off home position seizes the line, effectively isolating the remaining preset dial(s) and the associated telephone set from the line.

**4.09** After the first preset dial seizes the line, operation of the telephone line switch and/or dial will have no affect during dialing of the first preset number. When the call button or 1A350 tone detector associated with the first dial is operated, the preset dialer will proceed through the programmed numbers and all unused digits to the talk position, unless interrupted by a programmed stop. If the call button or 1A350 tone detector is not operated within 8 to 15 seconds an internal timer will start the dial. At the talk position the telephone set is reconnected to the line.

**4.10** The remaining preset dial(s), 53A only, may be used for end-to-end signaling purposes by operating the appropriate call button(s).

**4.11** The TOUCH-TONE dial in the associated telephone set (if so equipped) may also be used for end-to-end signaling after the first preset dial (43A or 53A) completes its call. When the remaining preset dial(s) is started by a momentary closure of its call button the digits programmed on the coding board will be automatically dialed. During the dialing cycle the associated telephone set will be isolated from the line. When the preset dial completes its dialing cycle it will stop in the home position and restore the associated telephone set to the line.

**4.12** Going on-hook at the associated telephone set will reset the first preset dial to the home position.

***Unrestricted Mode (Multiple Dial Installation, Option C, Fig. 10)***

**4.13** This mode permits automatic dialing from any of the preset dials in the series and normal dialing from the associated telephone set.

**4.14** When the associated telephone set goes off-hook the loop is closed from the central office. Any one of the preset dials may be started by operating its call button. The preset dial will start from the home position, dial the number programmed on its coding board and return to the home position.

**5. CONNECTION INDEX**

Table C—43A Dial options

Table D—1A350 Tone Detector Connections

Fig. 5—43A Dial, Restricted Mode, Used With Desk-Type Telephone Set

Fig. 6—43A Dial, Unrestricted Mode, Used With Wall-Type Telephone Set

Fig. 7—43A Dial, Unrestricted Dialing on Any Line in Key Telephone Set

Fig. 8—43A Dial, Dialing on Preset Dial Line at Key Telephone Set or Extensions

Fig. 9—43A Dial, Transfer Between Restricted and Unrestricted Mode

Fig. 10—Multiple 43A Dial Connections

Fig. 11—43A Dial Connections, Factory Wired

**6. MAINTENANCE**

**6.01** Maintenance is limited to checking wiring for secure and correct connections or replacement of the 1A350 Tone Detector. ***Do not attempt any maintenance to the dial mechanism.***



***Ensure that the power source is connected to an ac outlet not under control of a switch.***

- 6.02 Verify that the correct number is programmed on the coding board.
- 6.03 When the 43A dial is equipped with a 1A350 tone detector, after it seizes the CO line, it should detect dial tone for approximately one

second and automatically start the dial. If the time is greater than two seconds, the 1A350 tone detector is not operating properly and should be replaced or the dial tone being presented is not a precise dial tone.





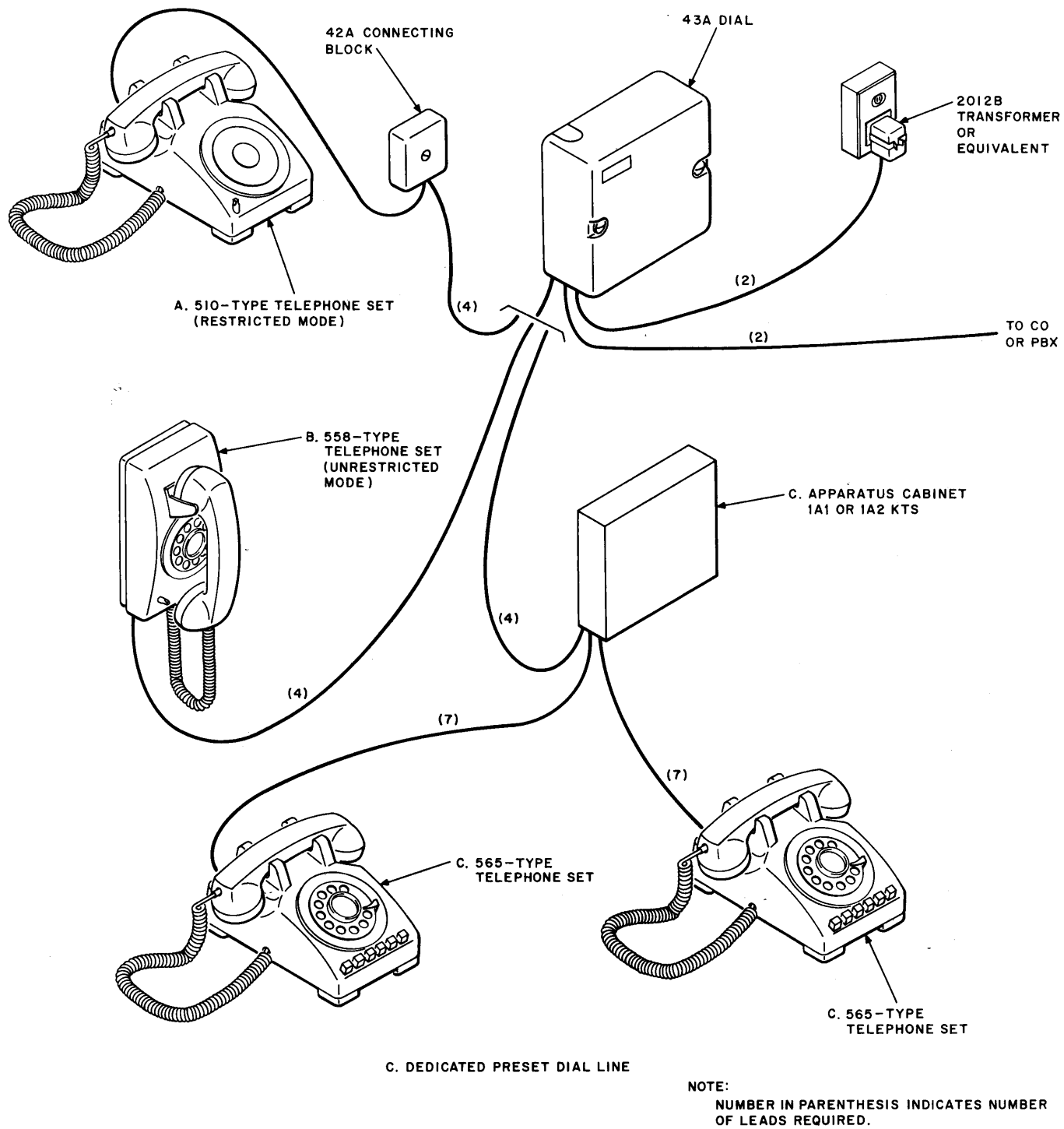
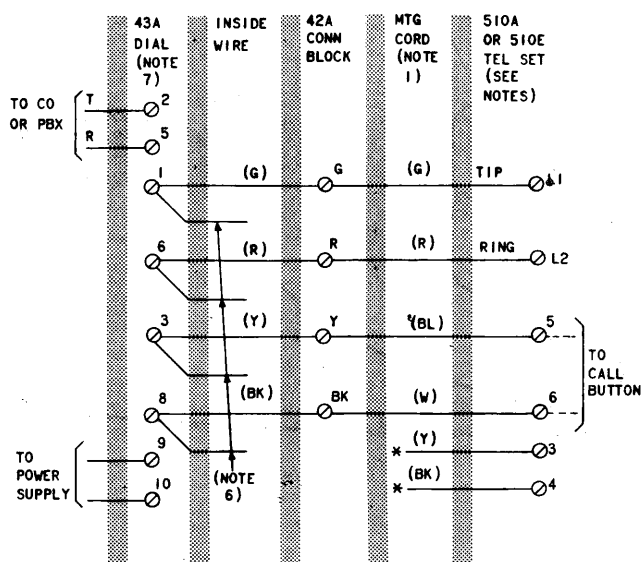


Fig. 4—Typical Installation Layouts, 43A Dial

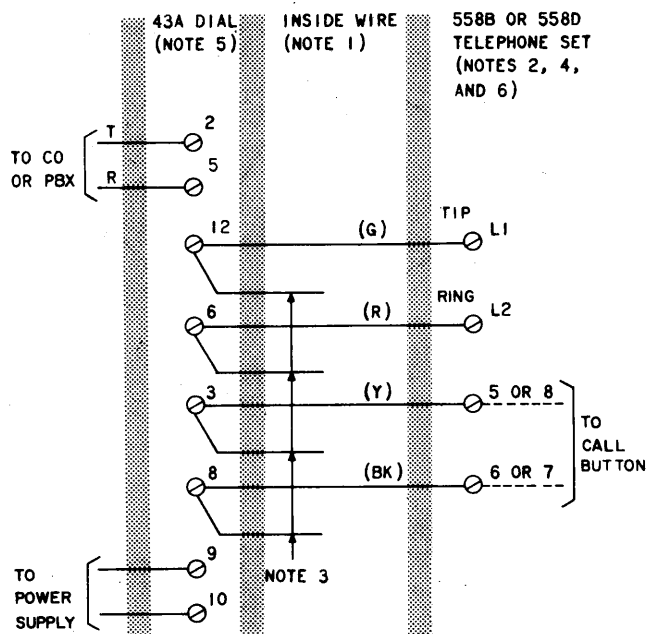
# SECTION 501-165-101



## NOTES:

1. CONNECTIONS SHOWN ARE FOR DESK TYPE SETS. IF WALL SET IS USED, OMIT CONNECTING BLOCK AND RUN IW DIRECTLY TO TELEPHONE SET.
  2. IF DIAL EQUIPPED SET IS USED, REMOVE DIAL AND REPLACE WITH A 95-TYPE APPARATUS BLANK. MOVE (W) [S-W] LINE SWITCH LEAD FROM F TO RR ON NETWORK. (SEE NOTE 8.)
  3. MOVE (G) AND (R) MOUNTING CORD LEADS FROM TERMINAL 1 AND 2 TO L1 AND L2 OF NETWORK RESPECTIVELY. (SEE NOTE 8.)
  4. USE PUSHBUTTON PORTION OF TURN-PUSHBUTTON AS 43A DIAL CALL BUTTON.
  5. IF INCOMING CALLS ARE NOT TO BE RECEIVED AT TELEPHONE SET, DISCONNECT, INSULATE AND STORE (R) RINGER LEAD.
  6. TO EXTENSION STATIONS HAVING ACCESS TO 43A DIAL.
  7. WIRE 43A DIAL FOR FOLLOWING OPTIONS PER TABLE C:
    - RESTRICTED MODE
    - RINGING START PROTECTION
    - OTHER OPTIONS AS REQUIRED
  8. CONNECTIONS SHOWN CIRCUMVENT TURN KEY. WHERE REQUIRED THE PRESET DIAL LINE CAN BE CONNECTED TO TERMINALS 1 AND 2 AND A SECOND LINE TO 3 AND 4.
- \* INSULATE AND STORE.  
 ( ) CURRENT COLOR CODE.  
 [ ] MD COLOR CODE.

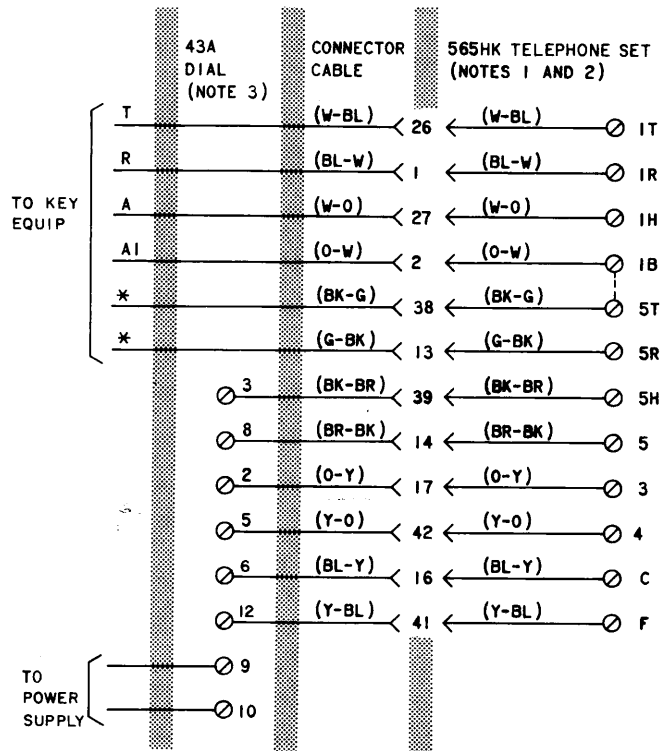
Fig. 5—43A Dial, Restricted Mode, Used With Desk-Type Telephone Set



## NOTES:

1. CONNECTIONS SHOWN ARE FOR WALL TELEPHONE SETS. IF DESK TYPE SETS ARE USED, USE 42A CONNECTING BLOCK TO BRIDGE IW TO MOUNTING CORD.
2. IF INCOMING CALLS ARE NOT TO BE RECEIVED AT TELEPHONE SET, DISCONNECT, INSULATE AND STORE (R) RINGER LEAD.
3. TO EXTENSION STATIONS HAVING ACCESS TO 43A DIAL.
4. USE PUSHBUTTON PORTION OF TURN-PUSHBUTTON AS 43A DIAL CALL BUTTON.
5. WIRE 43A DIAL FOR FOLLOWING OPTIONS PER TABLE C:
  - UNRESTRICTED DIALING
  - OTHER OPTIONS AS REQUIRED
6. CONNECTIONS SHOWN CIRCUMVENT THE TURN KEY. WHERE DESIRED THE PRESET LINE CAN BE CONNECTED TO TERMINALS 1 AND 2 AND A SECOND LINE TO 3 AND 4.

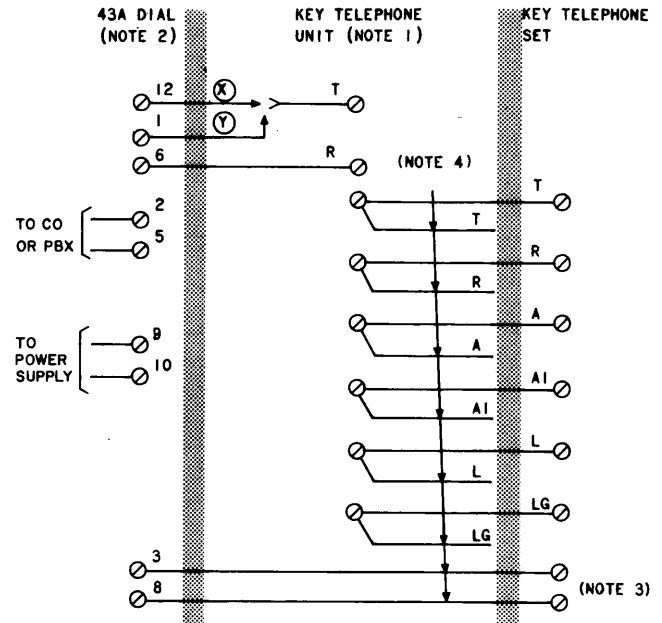
Fig. 6—43A Dial, Unrestricted Mode Used With Wall-Type Telephone Set



## NOTES:

1. CONNECTIONS SHOWN ARE FOR 565HK TELEPHONE SET. SPEAKERPHONE CANNOT BE USED WHEN 43A DIAL IS CONNECTED IN THIS CONFIGURATION. IF OTHER TYPE SETS ARE USED, TERMINAL POINTS AND CONDUCTORS MAY VARY.
2. MODIFY 565HK AS FOLLOWS:
  - (A) MOVE (G) KEY STRAP FROM F TO 3
  - (B) MOVE (W) LINE SWITCH LEAD FROM C TO 4
  - (C) MOVE (BR-BK) KEY STRAP FROM X TO 5. ALSO CONNECT STORED (BR-BK) MOUNTING CORD LEAD TO 5.
  - (D) MOVE (BL-Y) MOUNTING CORD LEAD FROM 1 TO C
  - (E) MOVE (Y-BL) MOUNTING CORD LEAD FROM 2 TO F
3. WIRE 43A DIAL FOR FOLLOWING OPTIONS PER TABLE C:
  - (A) UNRESTRICTED MODE
  - (B) OTHER OPTIONS AS REQUIRED
- \* INSULATE AND STORE, CONVERT 5TH LINE BUTTON AS CALL BUTTON.

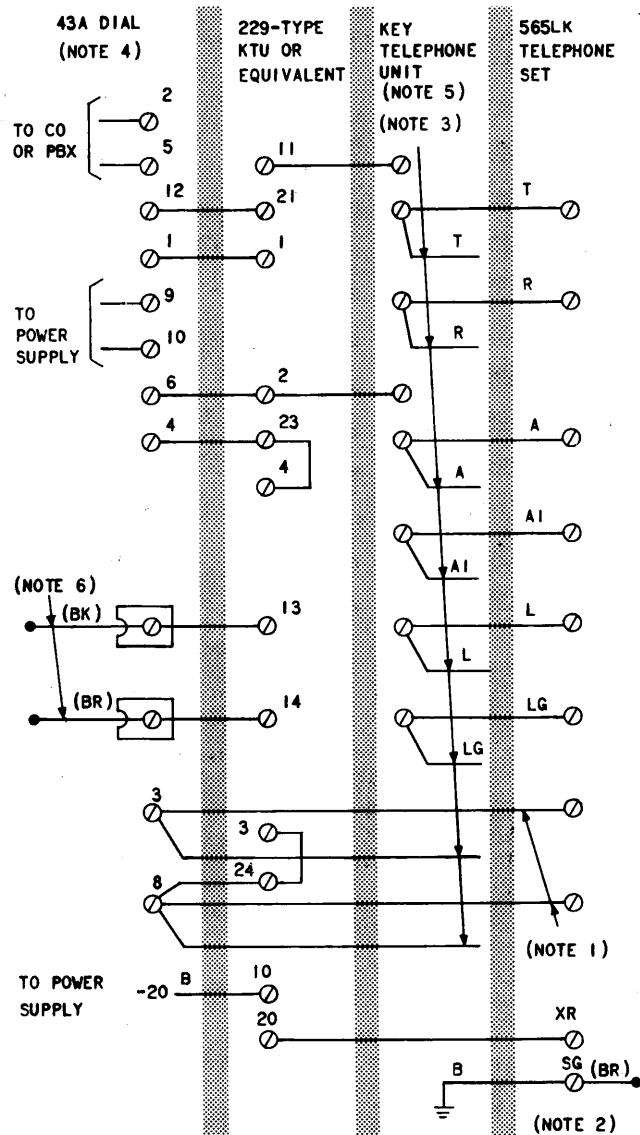
Fig. 7—43A Dial, Unrestricted Mode Dialing on Any Line in Key Telephone Set



## NOTES:

1. CONNECT OUTPUT OF 43A DIAL TO INCOMING CO OR PBX LINE TERMINALS OF KTU LINE CIRCUIT ASSIGNED TO PRESET LINE. STATION CONNECTIONS ARE MADE IN THE NORMAL MANNER.
  2. WIRE 43A DIAL FOR FOLLOWING OPTIONS PER TABLE C:
    - (X) UNRESTRICTED OR (Y) RESTRICTED MODE
    - RINGING START PROTECTION
    - OTHER OPTIONS AS REQUIRED
  3. TO CONVERTED PICKUP KEY OR PUSHBUTTON USED AS CALL BUTTON.
  4. MULTIPLE ALL STATIONS HAVING ACCESS TO PRESET DIAL LINE ON STATION SIDE OF KTU.
- (X) UNRESTRICTED MODE  
(Y) RESTRICTED MODE

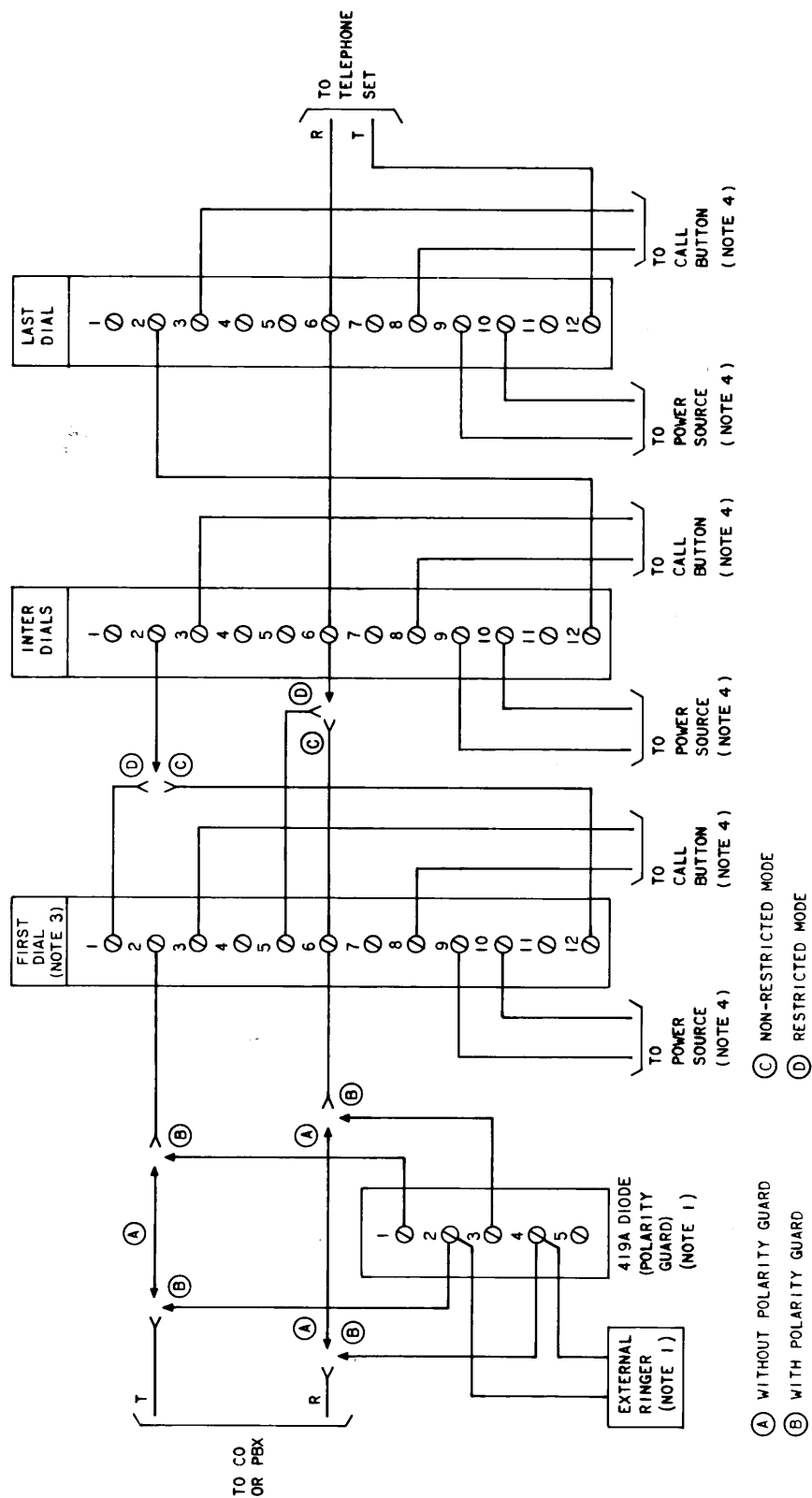
Fig. 8—43A Dial, Dialing on Preset Dial Line at Key Telephone Set Extensions



NOTES:

1. TO CONVERTED PICKUP BUTTON USED AS CALL BUTTON.
2. MOVE (BR) TURNBUTTON LEAD FROM 2R TO SG AT TERMINAL STRIP. CONNECT SG GRD AT EQUIPMENT.
3. TO EXTENSION STATION USED FOR RESTRICTED MODE. SET MUST BE WIRED FOR A LEAD CONTROL.
4. WIRE 43A DIAL FOR FOLLOWING OPTIONS PER TABLE C:
  - RINGING START PROTECTION
  - OTHER OPTIONS AS REQUIRED
5. LINE CIRCUIT OF CO OR PBX LINE ASSIGNED TO PRESET LINE.
6. (BK) LEAD IS CONNECTED TO TERMINAL 8 AND (BR) LEAD TO TERMINAL 4 OF DIAL, PROVIDE D-161488 CONNECTORS TO EXTEND LEAD TO KTU.

Fig. 9—43A Dial, Transfer Between Restricted and Unrestricted Mode



- NOTES:
- FOR END-TO-END SIGNALING APPLICATIONS, INSTALL A 419A DIODE (ORDERED SEPARATELY) OPTION B, MAKE CONNECTIONS USING INSIDE WIRE. IF INCOMING CALLS ARE TO BE RECEIVED RINGER ACROSS THE LINE AHEAD OF THE POLARITY GUARD.
  - FOR UNRESTRICTED DIALING, OPTION C, CONNECT THE DIALS AS SHOWN IN TABLE C. 43A AND 53A DIALS MAY BE MIXED AT RANDOM (NOTE 4).
  - FOR RESTRICTED DIALING, OPTION D, MAY BE USED WITH THE FOLLOWING RESTRICTIONS:
    - ONLY THE FIRST DIAL IN THE SERIES MAY BE OPERATED IN THE RESTRICTED MODE.
    - THE FIRST DIAL MAY BE 43A OR 53A DIAL, ALL OTHER DIALS MUST BE 53A.
  - THE NUMBER PROGRAMMED ON THE FIRST DIAL MUST ALWAYS BE THE FIRST NUMBER TO BE DIALED AFTER GOING OFF HOOK.
  - INCOMING CALLS MAY NOT BE RECEIVED, PARA. 4.02.
  - THE 1A350 TONE DETECTOR MAY BE USED IN THE FIRST DIAL INSTEAD OF A CALL BUTTON.
  - CALL BUTTON AND POWER SOURCE CONNECTIONS SHOWN ARE FOR 43A DIAL ONLY. REFER TO SECTION 501-165-110 FOR 53A DIAL CONNECTIONS.

Fig. 10—Multiple 43A Dial Connections

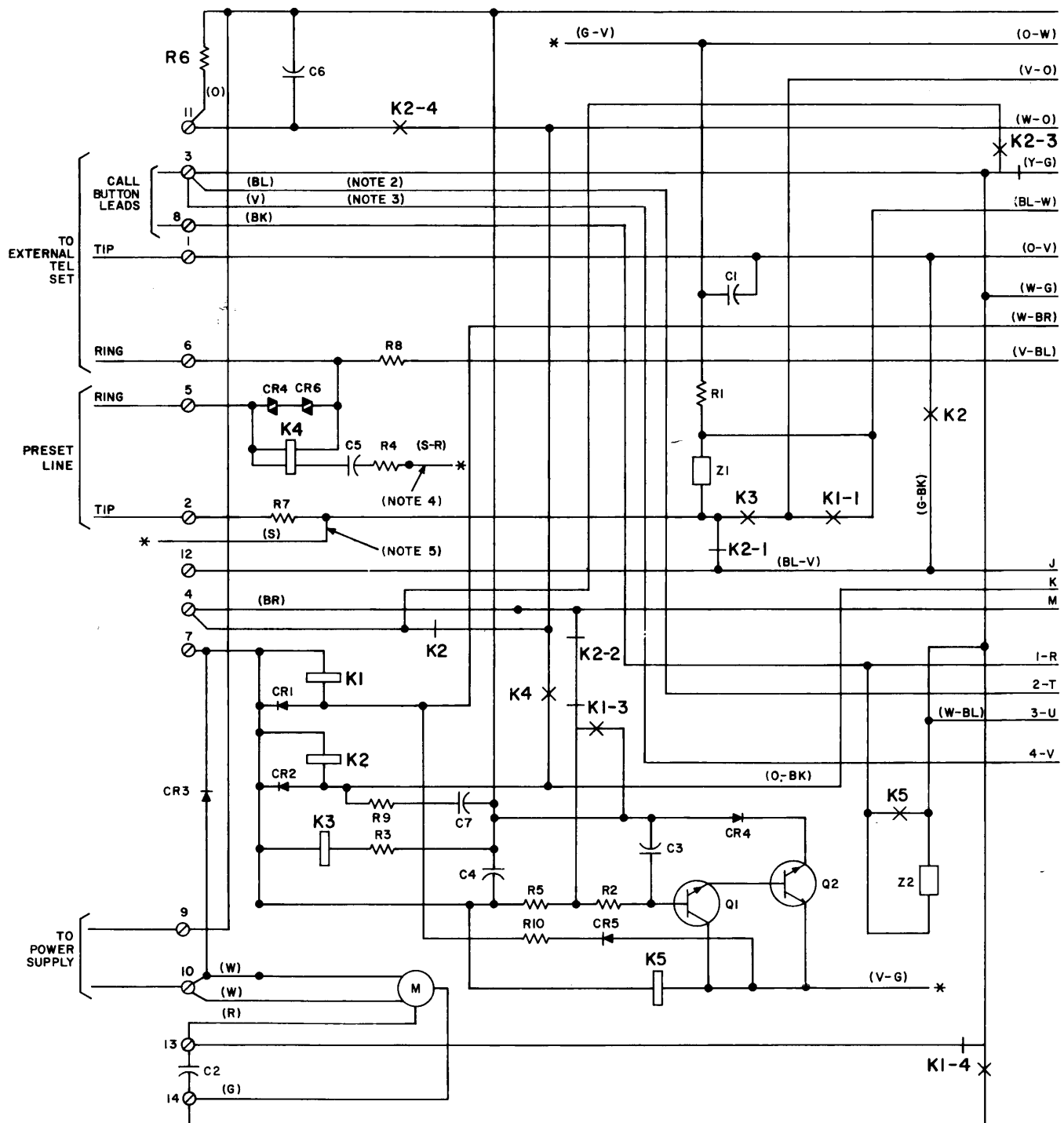


Fig. 11—43A Dial Connections, Factory Wired (Sheet 1 of 2)



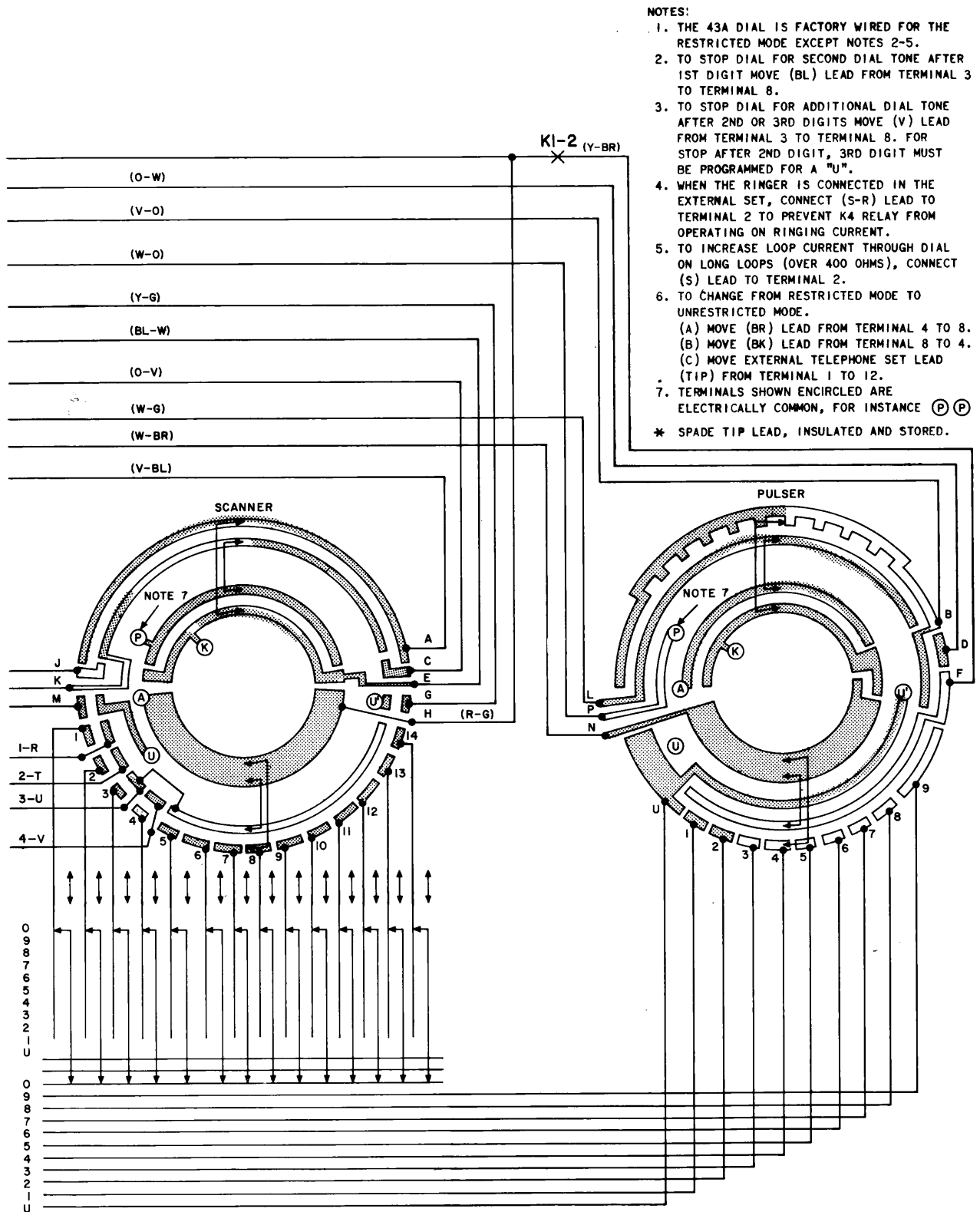


Fig. 11—43A Dial Connections, Factory Wired (Sheet 2 of 2)

