10-BUTTON, PUSHBUTTON DIAL, DESK TELEPHONES WITH BUILT-IN CALL ANNOUNCER GENERAL DESCRIPTION

CONTENTS PAGE

AW 82-466

Figure 1: 10-Button, Pushbutton Dial, Desk Telephone With Built-In Call Announcer

1. GENERAL DESCRIPTION

1.01 This document covers the 10-button, pushbutton dial, desk telephone with built-in call announcer.(See Figure 1.) A general description plus information peculiar to 10-button, pushbutton dial, desk telephones with built-in call announcer is included.

1.02 Whenever this section is reissued, reason for reissue will be listed in this paragraph.

1.03 For additional information, refer to Section 50-870-104, Replacement Parts, and to Section 50-870-105, Circuit Labels. For information on installation, maintenance, and components or equipment, consult related documents of the ITT Telephone Apparatus Practices Manual.

1.04 The Model 2870 desk telephones are 10-button, pushbutton dial, antisidetone type units that operate efficiently over a wide range of loop resistances and line impedances. These telephones are designed for use with key telephone systems, such as the ITT 1A2 System, where several telephones have access to the same lines, CO trunks, or intercom lines. All models are equipped with a mounting cord terminated in an Amphenol-type connector.

1.05 The Model 2870 desk telephones are identified by a code number stamped in ink on the bottom of the base plate. Refer to ordering information in Table A for an explanation of each code number.

1.06 Nine pushbutton keys on the telephone are used for line, trunk, or intercom lines. The red key on the far left is used as a hold key and allows any selected line or trunk to be placed in a hold condition. All remaining keys may be used as line keys or may be wired as either intercom lines or signal keys.

TABLE A

ORDERING INFORMATION – TELEPHONES

CODE NUMBERS

TELEPHONE CODE NUMBERS ARE FORMED IN SIX STEPS AS FOLLOWS:

870 15 O BA 42 M

(1) Type of Instrument (See Part 1)
(2) Color (See Part 2)
(3) Version (See Part 3)
(4) Ringer (See Part 4)
(5) Special Feature (See Part 5)
(6) Dial (See Part 6)

PART 1 TYPE OF INSTRUMENT

CODE	DESCRIPTION	COLOR OFFERED	VERSION OFFERED	RINGER OFFERED	FEATURE OFFERED	DIAL OFFERED
870	10-Button, Rotary Dial, Desk Telephone With Built-in Call Announcer	00, 05, 13, 15, 44, And 45 (Available On All Models)	O	BA	42, 46, 76	M

REFER TO INDIVIDUAL UNIT DESCRIPTION FOR COMPLETE DESCRIPTION OF FEATURE COMBINATIONS

PART 2 COLORS		PART 3 VERSIONS		PART 4 RINGERS		PART 5 SPECIAL FEATURES		PART 6 DIALS	
CODE	COLORS	CODE	VERSIONS	CODE	RINGERS	CODE	SPECIAL FEATURES	CODE	DIALS
00 05 13 15 44 45	Black Moss Green Beige White Light Ash Cocoa Brown	O	Conventional	BA	Straight Line	42 46 76	Standard Telephone 42 Combined With Operator Recall Button 42 Combined With Automatic Exclusion, And Release Button	M	Metropolitan

AW 82-437

1.07 A signal lamp beneath each of the nine line keys indicates status of the associated line. (See Table B.)

1.08 All 10-button desk telephones are equipped with a hookswitch restoration feature that restores any operated line key when the hookswitch is operated.

1.09 Variations in the Model 2870 series telephones are briefly described below. Circuit label drawings for these models are contained in Section 50-870-105.

MODEL 2870** ( ) 42

1.10 The Model 2870** ( ) 42 is a standard 10-button, pushbutton dial, desk type, key telephone equipped with a built-in call announcer. A set of contacts in the dial assembly disconnects the handsfree speaker during dialing; also, contacts in the hookswitch assembly provide on/off control of the handsfree equipment. The Model 2870** ( ) 42 is equipped with a 50-conductor mounting cord fitted with a 50-pin (25-pair) male connector.

MODEL 2870** ( ) 46

1.11 The Model 2870** ( ) 46 is the same as the Model 2870** ( ) 42 with the addition of an operator recall button. This button, containing normally closed contacts, can be used to recall the operator if the hookswitch restoration feature is used.

MODEL 2870** ( ) 76

1.12 The Model 2870** ( ) 76 is the same as the Model 2870** ( ) 42 with the addition of an automatic exclusion (privacy) circuit with a release

TABLE B

LINE KEY SIGNALS

CONDITION	LAMP INDICATION
Idle	Lamp Extinguished
Busy	Lamp Lit
Hold	Lamp Winking
Call Incoming	Lamp Flashing

AW 81-96

button. This release button contains normally open contacts. Where this feature is used, all telephones in the key system must contain the exclusion circuit and a release button.

2. INSTALLATION

2.01 Since these telephones are equipped with a connector-terminated mounting cord, installation consists of inserting the connector into the jack at the station connecting block and pressing to engage. For specific wiring information, refer to the appropriate circuit label in Section 50-870-105. Cable connections for 10-button telephones with built-in call announcer for feature codes 42 and 46 are listed in Table C. Cable connections for 10-button telephones with built-in call announcer for feature code 76 are listed in Table D. For general installation information and installation of repair parts, refer to the applicable section of the ITT Telephone Apparatus Practices Manual..

3. MAINTENANCE

3.01 For general maintenance information, refer to the maintenance section of the ITT Telephone Apparatus Practices Manual. For a pictorial view and parts list, refer to Section 50-870-104.

4. BUTTON CONVERSIONS

4.01 Any line key may be converted to signaling mode by removing the slotted head pin from the plunger shank. The slotted head pin is removed by turning clockwise. (On earlier models of the 10-button telephone the pin is removed by turning counterclockwise.)

5. BUZZER INSTALLATION

5.01 A buzzer may be installed as the signaling device of a telephone receiving an intercom call. The buzzer may be either installed on the dial mounting bracket or mounted externally. For telephones with feature codes 42, 46, and 76, buzzer leads are connected to lamp ground leads (provided the proper station cross-connections are made). Buzzers selected for this use should operate at 18 VAC, 60 Hz. (See Figure 2.)

5.02 A buzzer may also be used in place of the ringer. A 105 VAC buzzer must be provided. The ringer leads are removed and replaced by the buzzer leads.

6. DESIGNATION TABS

6.01 Designation tabs are included with each telephone. These tabs are installed by removing the cap from each key, placing the tab in the cap, and reinstalling the cap. The caps are removed by squeezing the sides and lifting. Note that locking surfaces are located on each of the caps and keys. These locking surfaces must properly align when reinstalling.

7. GROUNDING PUSHBUTTON

7.01 Modifications are made to line 9 of the telephone if a grounding pushbutton is required. A grounding pushbutton is required in some PABX applications for transferring calls, originating calls during a power failure, or other special functions. To convert line 9 to a grounding pushbutton, the following modifications should be made:

(a) Modify button to non-locking operation by removing interlock pin from the line 9 plunger.

(b) Ground is provided on the WH-SL (A1) lead by the key system. (No cross-connect is necessary for the lead.)

(c) Cross-connect from the SL-WH lead to the PABX connection for the desired function.

TABLE C

CABLE CONNECTIONS FOR 10-BUTTON

TELEPHONES WITH BUILT-IN CALL ANNOUNCER

(FEATURE CODES 42 AND 46)

LINES 1 THROUGH 5				LINES 6 THROUGH 9			
TELEPHONE TERMINAL	LEAD COLOR	LEAD DESIG.	CONNECTOR TERMINAL	TELEPHONE TERMINAL	LEAD COLOR	LEAD DESIG.	CONNECTOR TERMINAL
Line 1 (Blue Plug)	WH-BL	T	26	Line 6 (White Plug)	YL-BL	T	41
	BL-WH	R	1		BL-YL	R	16
	WH-OR	A	27		BN-BK	A or S	14
	WH-GN	LG	28		YL-GN	LG	43
	GN-WH	L	3		GN-YL	L	18
Line 2 (Orange Plug)	WH-BN	T	29	Line 7 (Red Plug)	YL-BN	T	44
	BN-WH	R	4		BN-YL	R	19
	WH-SL	A or S	30		BL-BK	A or S	11
	RD-BL	LG	31		VI-BL	CA-24(VT)	46
	BL-RD	L	6		BL-VI	L	21
Line 3 (Green Plug)	RD-OR	T	32	Line 8 (Black Plug)	VI-OR	T	47
	OR-RD	R	7		OR-VI	R	22
	RD-GN	A or S	33		GN-RD	A or S	8
	RD-BN	LG	34		VI-BN	CA RST	49
	BN-RD	L	9		BN-VI	L, P4 or 1T	24
Line 4 (Ivory Plug)	RD-SL	T	35	Line 9 (Yellow Plug)	VI-SL	T	50
	SL-RD	R	10		SL-VI	R	25
	BK-BL	A or S	36		SL-WH	A or S	5
	BK-OR	LG	37		VI-GN	CA SIG	48
	OR-BK	L	12		GN-VI	L or R1	23
Line 5 (Slate Plug)	BK-GN	T	38	10	OR-WH	A1	2
	GN-BK	R	13	G	YL-SL	B or B1	45
	BK-BN	A or S	39	A	SL-YL	R or R1	20
	BK-SL	LG	40	27	YL-OR	CA GND	42
	SL-BK	L	15	6	OR-YL	SG, LK or Spare	17

NOTES:

1. All lamp ground leads are common.
2. The designation S indicates that the lead provides an individual signal ground

AW 82-505

TABLE D

CABLE CONNECTIONS FOR 10-BUTTON

TELEPHONES WITH BUILT-IN CALL ANNOUNCER

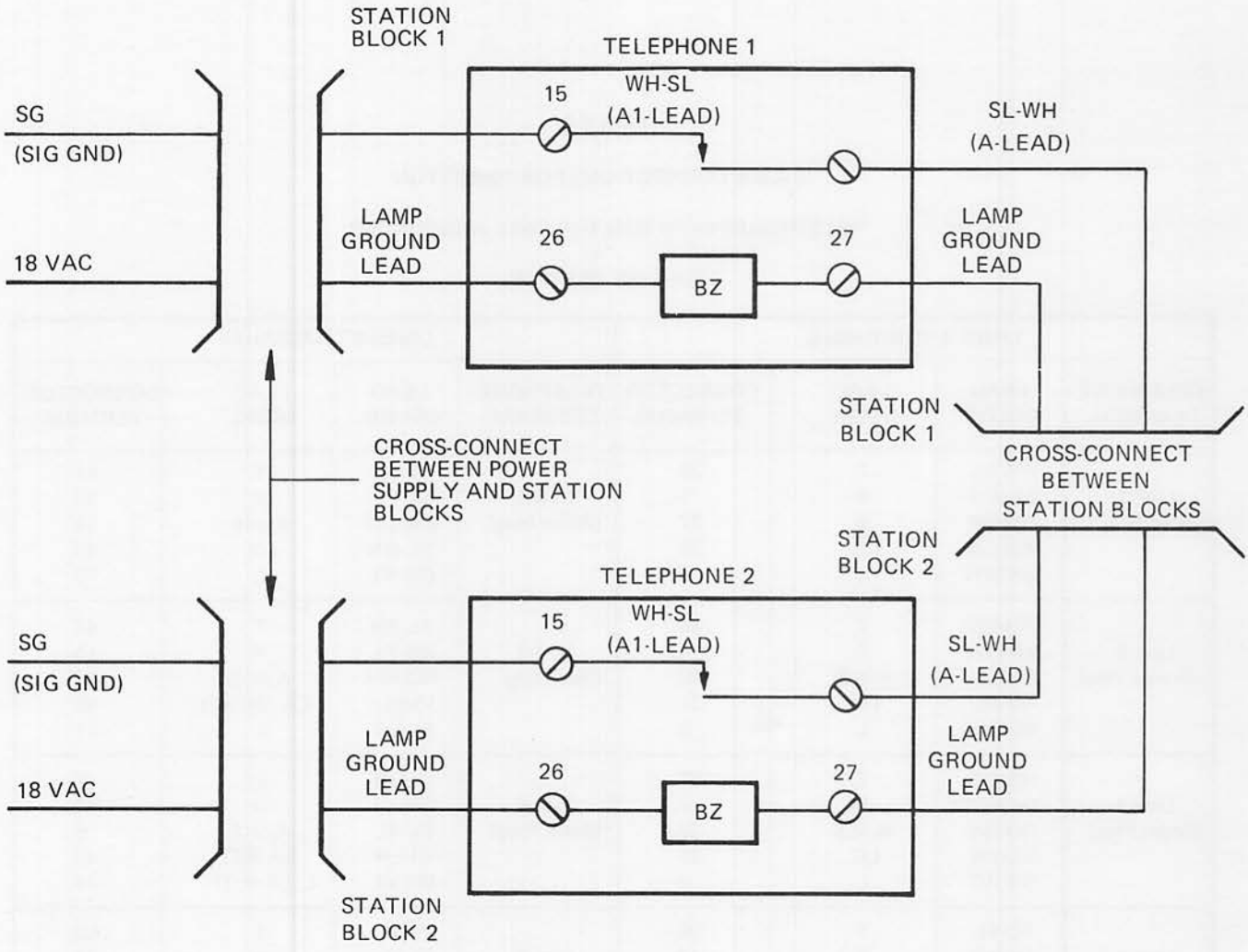
(FEATURE CODE 76)

LINES 1 THROUGH 5				LINES 6 THROUGH 9			
TELEPHONE TERMINAL	LEAD COLOR	LEAD DESIG.	CONNECTOR TERMINAL	TELEPHONE TERMINAL	LEAD COLOR	LEAD DESIG.	CONNECTOR TERMINAL
Line 1 (Blue Plug)	WH-BL	T	26	Line 6 (White Plug)	YL-BL	T	41
	BL-WH	R	1		BL-YL	R	16
	WH-OR	A	27		WH-RD	A or S	14
	WH-GN	LG	28		YL-GN	LG	43
	GN-WH	L	3		GN-YL	L	18
Line 2 (Orange Plug)	WH-BN	T	29	Line 7 (Red Plug)	YL-BN	T	44
	BN-WH	R	4		BN-YL	R	19
	WH-SL	A or S	30		RD-WH	A or S	11
	RD-BL	LG	31		VI-BL	CA -24(VT)	46
	BL-RD	L	6		BL-VI	L	21
Line 3 (Green Plug)	RD-OR	T	32	Line 8 (Black Plug)	VI-OR	T	47
	OR-RD	R	7		OR-VI	R	22
	RD-GN	A or S	33		BL-SL	A or S	8
	RD-BN	LG	34		VI-BN	CA RST	49
	BN-RD	L	9		BN-VI	L, P4 or 1T	24
Line 4 (Ivory Plug)	RD-SL	T	35	Line 9 (Yellow Plug)	VI-SL	T	50
	SL-RD	R	10		SL-VI	R	25
	BK-BL	A or S	36		SL-BL	A or S	5
	BK-OR	LG	37		VI-GN	CA SIG	48
	OR-BK	L	12		GN-VI	L or R1	23
Line 5 (Slate Plug)	BK-GN	T	38	10	OR-WH	A1	2
	GN-BK	R	13	G	YL-SL	B or B1	45
	BK-BN	A or S	39	A	SL-YL	R or R1	20
	BK-SL	LG	40	27	YL-OR	CA GND	42
	SL-BK	L	15	17	OR-YL	-24	17

NOTES:

1. All lamp ground leads are common.
2. The designation S indicates that the lead provides an individual signal ground.

AW 82-506



NOTES:

1. THE ARRANGEMENT SHOWN IS USING LINE 9 AS AN EXAMPLE. IF ANOTHER LINE IS USED, SUBSTITUTE THE APPROPRIATE A1 AND A-LEADS FOR THAT LINE.
2. IN THE 10-BUTTON TELEPHONE, GROUND IS CONNECTED TO TERMINAL 15 (WH-SL LEAD). NO CROSS-CONNECT IS NECESSARY FOR THIS LEAD.

AW 82-508

Figure 2: Circuit Diagram For Signal Buzzer

8. DISABLING HOOKSWITCH RESTORATION

8.01 The hookswitch restoration feature used in multibutton telephones allows a station user to preselect a line key and then remove the handset to initiate a call. When the handset is returned to the cradle or the hookswitch is operated (hookswitch flash), the line key will be restored. To disable the hookswitch restoration feature, the following steps are taken:

(a) Remove telephone faceplate.

(b) Remove plastic trip arm by pulling up at the point directly above its mounting shaft.

(c) Remove torsion spring by sliding it off the mounting shaft.

(d) Reinstall telephone faceplate.

8.02 To enable the hookswitch restoration feature, the following steps are taken: (See Figure 3.)

(a) Remove telephone faceplate.

(b) Install torsion spring by sliding it onto the mounting shaft and hooking one end between the mounting shaft and the hookswitch operating arm.

(c) Install plastic trip arm by placing the notch in the trip arm on the end of the torsion spring (opposite the end hooked behind the operating arm) and pressing the trip arm onto the mounting shaft.

(d) When the hookswitch is operated, the plastic trip arm should engage with the latch arm.

(e) Reinstall telephone faceplate.

8.03 Whenever the hookswitch restoration feature is disabled, it may become necessary to shorten or lengthen the spring connected to the operating arm to insure proper hookswitch operation. Proper operation requires the cradle to be fully depressed by the weight of the handset and return to the full up position when the handset is off-hook.

8.04 Earlier models of multibutton telephones may not provide the preselect function with the hookswitch restoration feature. These models include an adjustment screw on the latch arm rather than the plastic trip arm or torsion spring. To disable hookswitch restoration in these telephones, the following steps are taken:

(a) Remove telephone faceplate and housing.

(b) Turn the screw in the latch arm approximately five turns counterclockwise.

(c) Reinstall telephone faceplate and housing.

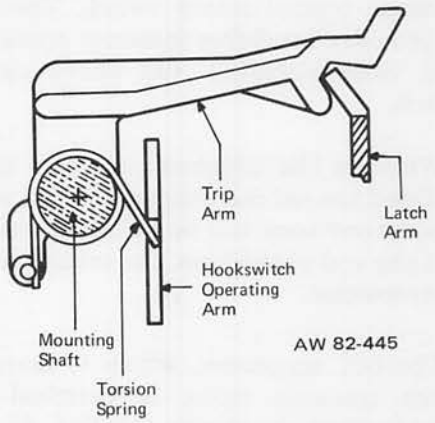


Figure 3: Installation of Trip Arm and Torsion Spring

9. BUSY LAMP CONNECTIONS

9.01 Busy lamp connections vary depending on the type of key system being used. Modifications for the 10-button desk telephones with feature codes 42 and 46 should be as follows:

(a) Remove GN-WH lead from terminal 22 and connect to terminal 16 on the telephone terminal board.

(b) Connect one 1N4004 diode between terminals 22 and 16 on the terminal board, and connect another 1N4004 diode between terminals 22 and 28 on the terminal board as shown in Figure 4.

(c) Connect a lamp ground lead to terminal 28 of the terminal board (provided proper station cross-connections are made).

9.02 Modifications for the 10-button desk telephones with feature code 76 should be as follows: (Refer to Figure 5.)

(a) Connect one 1N4004 diode from terminal 22 to terminal 28 on the telephone terminal board as shown in Figure 5.

(b) Connect a lamp ground lead to terminal 28 on the telephone terminal board (provided proper station cross-connections are made).

10. BUILT-IN CALL ANNOUNCER

10.01 All model 2870 telephones are equipped with an LED indicator, a selection switch, and a volume control rotary switch. The call announcer provides handsfree intercom operation for tone and voice signaling, call announcing, and answerback.

10.02 When an idle telephone intercom has been dialed the red call announcer LED will light and a one-second tone will be heard by the calling party. At the end of the tone, the calling party can begin conversation.

10.03 The call announcer, which is normally in the transmit mode, is switched to the receive mode when the station is called. At the end of each received signal or message, the call announcer returns to the transmit mode. The called party can then answerback handsfree through the call announcer.

10.04 A private/normal switch, is located above the speaker grill. The normal position of the switch allows handsfree answerback operation. When the switch is in the private position the answerback (transmit) circuit is turned off preventing the calling party from overhearing conversation near the signaled call announcer.

10.05 A volume control switch is located under the right side of the telephone, and can be adjusted for the desired listening level of the call announcer.

10.06 Lifting the telephone handset automatically disconnects the call announcer circuit and allows normal handset operation.

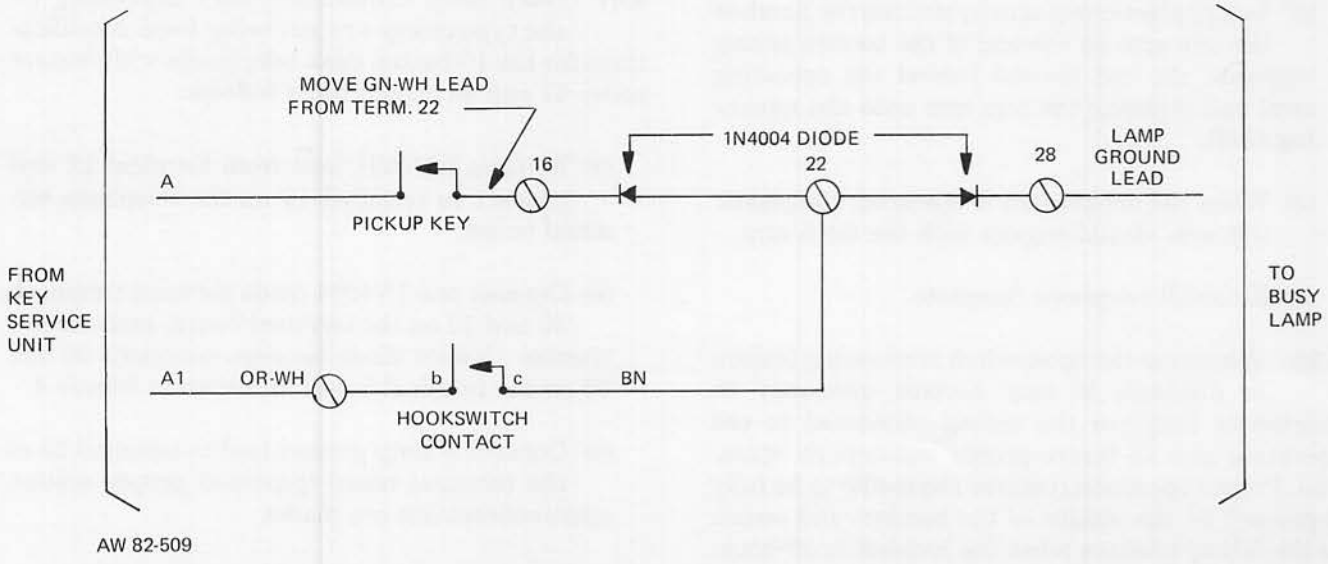


Figure 4: Busy Lamp Connections For 10-Button Telephones with Feature Codes 42 and 46

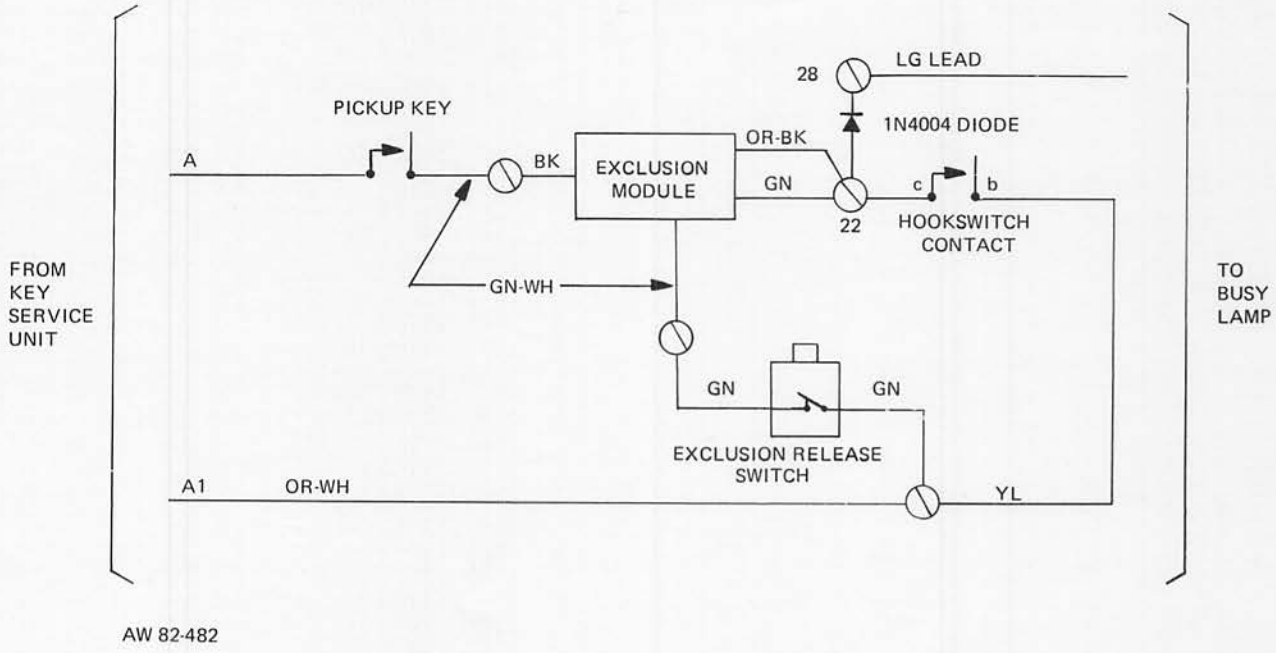


Figure 5: Busy Lamp Connections For 10-Button Telephones with Feature Code 76