

## 30-BUTTON, ROTARY DIAL, DESK TELEPHONES GENERAL DESCRIPTION

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Figure 1: 30-Button, Rotary Dial, Desk Telephone

### 1. GENERAL DESCRIPTION

**1.01** This document covers the 30-button, rotary dial, desk telephone. (See Figure 1.) A general description plus information peculiar to 30-button, rotary dial, desk telephones 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 50-861-101, Replacement Parts, and to Section 50-861-102, 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 861 desk telephones are 30-button, rotary 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 three Amphenol-type connectors.

**1.05** The Model 861 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** Twenty-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:										
(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				
861	30-Button, Rotary Dial, Desk Telephone	00, 05, 13, 15, 44, And 45 (Available On All Models)	O	BA, LR	56, 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	Black	O	Conventional	LR	Less Ringer	56	Standard Telephone Equipped To Operate W/External Speakerphone (Includes Operator Recall Button, And Headset Jack W/Switch)	M	Metropolitan (Letters & Numerals)	
05	Moss Green			BA	Straight Line	76	Standard Telephone Equipped To Operate W/External Speakerphone (Includes Automatic Exclusion And Release Button, And Headset Jack W/Switch)			
13	Beige									
15	White									
44	Light Ash									
45	Cocoa Brown									

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

**1.08** All 30-button telephones are equipped with a hookswitch restoration feature that restores any operated line key when the hookswitch is operated. These telephones include an operator headset jack with an ON/OFF switch.

*Note:* When using the operator headset the hookswitch restoration feature must be disabled as shown in paragraph 9.

**1.09** Variations in the Model 861 series telephones are briefly described below. Circuit label drawings for these models are contained in Section 50-861-102.

**MODEL 861\*\* ( ) 56**

**1.10** The Model 861\*\* ( ) 56 is a standard 30-button, rotary dial, desk type, key telephone equipped to operate with an external speakerphone for handsfree operation. 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. An operator recall button, containing normally closed contacts, is provided with this telephone to recall the operator if the hookswitch restoration feature is used. This model telephone also includes an operator headset jack with an ON/OFF switch. The Model 861\*\* ( ) 56 is equipped with a 150-conductor mounting cord fitted with three 50-pin (25-pair) male connectors.

TABLE B  
LINE KEY SIGNALS

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

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## MODEL 861\*\* ( ) 76

**1.11** The Model 861\*\* ( ) 76 is a standard 30-button, rotary dial, desk type, key telephone equipped to operate with an external speakerphone for handsfree operation. 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. This telephone also has an automatic exclusion (privacy) circuit with a release 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. Also included with this telephone is an operator headset jack with an ON/OFF switch. The Model 861 \*\* ( ) 76 is equipped with a 150-conductor mounting cord fitted with three 50-pin (25-pair) male connectors.

## 2. INSTALLATION

**2.01** Since these telephones are equipped with a connector-terminated mounting cord, installation consists of inserting the connectors into the jacks at the station connecting block and pressing to engage. For specific wiring information, refer to the appropriate circuit label in Section 50-861-102. Cable connections for 30-button telephones with feature code 56 are listed in Table C. Cable connections for 30-button telephones with feature code 76 that differ from those listed in Table C 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 50-861-101.

## 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 30-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 code 56, buzzer leads must be connected to the OR-YL and YL-OR leads inside the telephone. These leads are spare and can be found taped and stored inside the telephone. For telephones with feature code 76, a lamp ground lead is used instead of the OR-YL lead (provided the proper station cross-connections are made). Buzzers selected for this use must 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

TABLE C  
CABLE CONNECTIONS FOR 30-BUTTON  
TELEPHONES  
(FEATURE CODE 56)

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

## NOTES:

1. All lamp ground leads are common.
2. The YL-OR and OR-YL leads are spare leads and are taped and stored inside the telephone.
3. The designation S indicates that the lead provides an individual signal ground.

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TABLE D  
SPECIAL CABLE CONNECTIONS FOR  
30-BUTTON TELEPHONES (FEATURE CODE 76)

TELEPHONE TERMINAL	LEAD COLOR	LEAD DESIG.	CONNECTOR TERMINAL
Line 26 (Red Plug)	WH-RD	A or S	11
Line 27 (Black Plug)	RD-WH	A or S	8
Line 28 (Yellow Plug)	BL-SL	A or S	5
Line 29 (Violet Plug)	SL-BL	A or S	2
17	OR-YL	-24 VDC	17

## NOTE:

1. This table lists those connections that differ from the connections for feature code 56 telephones shown in Table C.

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

## 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.

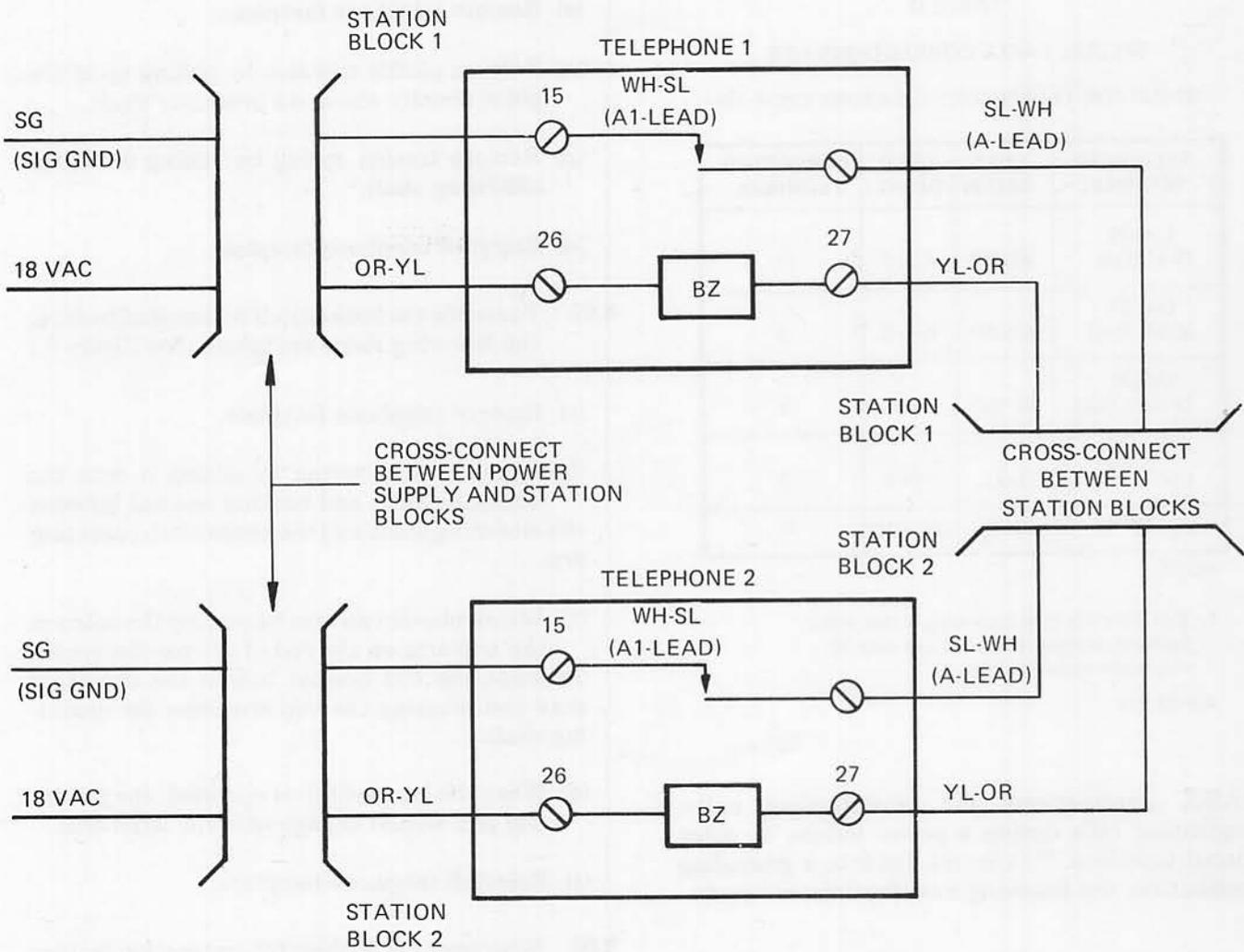
**8.02** To enable the hookswitch restoration feature, the following steps are taken: (See Figure 3.)

- (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.



NOTES:

1. THE ARRANGEMENT SHOWN IS USING LINE 9 OF A TELEPHONE WITH FEATURE CODE 56 AS AN EXAMPLE. IF ANOTHER LINE IS USED, SUBSTITUTE THE APPROPRIATE A1 AND A-LEADS FOR THAT LINE.
2. IN THE 30-BUTTON TELEPHONE, GROUND IS CONNECTED TO TERMINAL 15 (WH-SL LEAD). NO CROSS-CONNECT IS NECESSARY FOR THIS LEAD.
3. FOR TELEPHONES WITH FEATURE CODE 76, A LAMP GROUND LEAD IS USED INSTEAD OF THE OR-YL LEAD (PROVIDED THE PROPER STATION CROSS-CONNECTIONS ARE MADE).

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Figure 2: Circuit Diagram For Signal Buzzer

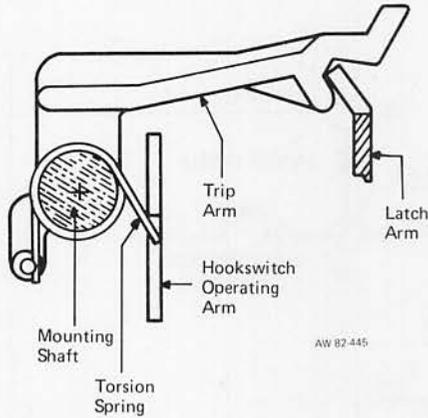


Figure 3: Installation of Trip Arm and Torsion Spring

## 9. BUSY LAMP CONNECTIONS

**9.01** Busy lamp connections vary depending on the type of key system being used. Modifications for the 30-button telephones with feature code 56 should be as follows: (Refer to Figure 4.)

- (a) Remove the GN-WH lead from terminal 13 and connect to terminal 35 on the telephone terminal board.
- (b) Connect one 1N4004 diode between terminals 13 and 35 on the terminal board, and connect another 1N4004 diode between terminals 13 and 28 on the terminal board as shown in Figure 4.
- (c) Connect OR-YL mounting cord lead to terminal 28 of terminal board.

**9.02** Modifications for the 30-button telephones with feature code 76 should be as follows: (Refer to Figure 5.)

- (a) Connect one 1N4004 diode from terminal 13 to terminal 28 on telephone terminal board as shown in Figure 5.
- (b) Connect any "LG" lamp ground lead to terminal 28 on the telephone terminal board. (Proper station cross-connections must be made to allow the use of an LG lead.)

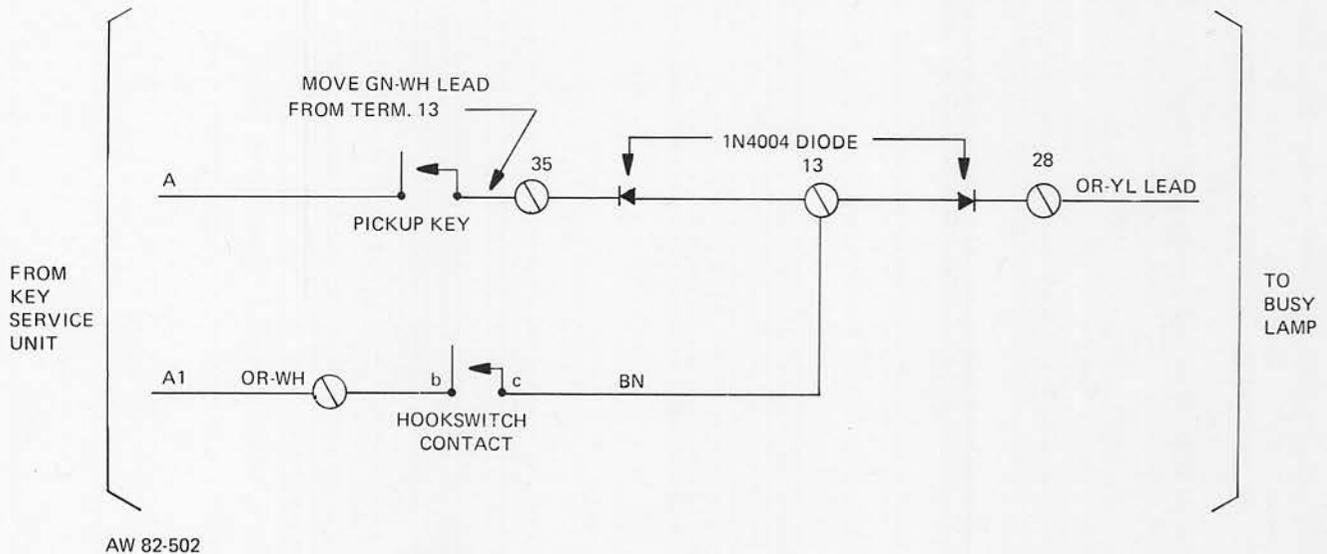


Figure 4: Busy Lamp Connections For 30-Button Telephones with Feature Code 56

