MODEL 63 PUSHBUTTON DIAL

AW 85-178

Figure 1: Model 63 Pushbutton Dial

1. INTRODUCTION

1.01 This document covers the Model 63 push-button dial. (See Figure 1.) A general description as well as information on removal, disassembly, replacement parts, assembly, installation, and adjustments is included.

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

1.03 For information concerning telephones that this dial is used in, refer to the appropriate section in Volume 1 of the ITT Telephone Apparatus Practices Manual.

2. GENERAL DESCRIPTION

2.01 The Model 63 pushbutton dial is a 12-pushbutton Tel-Pulse dial that uses a pulse generator integrated circuit (IC) and a silicone switch plate. The dial features include last-number-redial and a modular assembly design that allows convenient replacement of a keypad or printed circuit board (PCB). The dial is referred to as Tel-Pulse because it produces digit outpulsing similar to the outpulsing produced by a rotary dial. The dial also features polarity guard.

2.02 The Model 63 pushbutton dial consists of a pushbutton keypad assembly and a pulse-generating printed circuit board (PCB). The PCB mounts on the keypad assembly at an eight-pin connector with two retaining screws. The two assemblies separate easily for replacement.

2.03 The pushbutton keypad assembly consists of a cover plate, 12 pushbuttons, a silicone switch plate, and a contact PCB assembly. The keypad includes an electrostatic shield that protects the pulse-generating PCB from static electricity.

2.04 The pulse-generating PCB consists of a pulse generator IC and various other solid-state components. The pulse generator IC provides a pulse for each unit of the digit that the pressed key represents (e.g., pressing pushbutton 4 would produce four pulses). Dials are factory-strapped for 10 pulses per second, nominal, and a pulse ratio with a break period of 60% of the pulse duration. The other solid-state devices, along with the IC, provide handset receiver and transmitter muting and polarity-guard.

2.05 When a pushbutton is pressed, the pulse-generating PCB mutes the handset and outpulses a number of pulses corresponding to the

number dialed. If the digits are entered faster than they are outpulsed, each digit will be separated with an interdigital pause. The digit that the pressed key represents is stored in the pulse generator IC. The IC retains up to 20 digits for the redial feature. After the last digit has been outpulsed, the handset is unmuted.

2.06 To redial the last-number-dialed, go off-hook and press the redial key (#). The last numbers entered on the keypad will be outpulsed. The last-number-dialed will be retained by the dial until any key on the keypad is pressed.

2.07 The redial feature on the dial allows a pause to be entered between any digits entered on the keypad. The pause suspends outpulsing during redialing until the redial button (#) is pressed again. Up to ten pauses can be inserted between any two digits dialed. To enter a pause, press the redial pushbutton (#) during dialing where the pause(s) are to occur. When the redial feature is activated by pressing the redial key (#), the dial outpulses digits until it encounters a pause; the dial will cease outpulsing until the redial key is pressed again. The redial key must be pressed once for each pause.
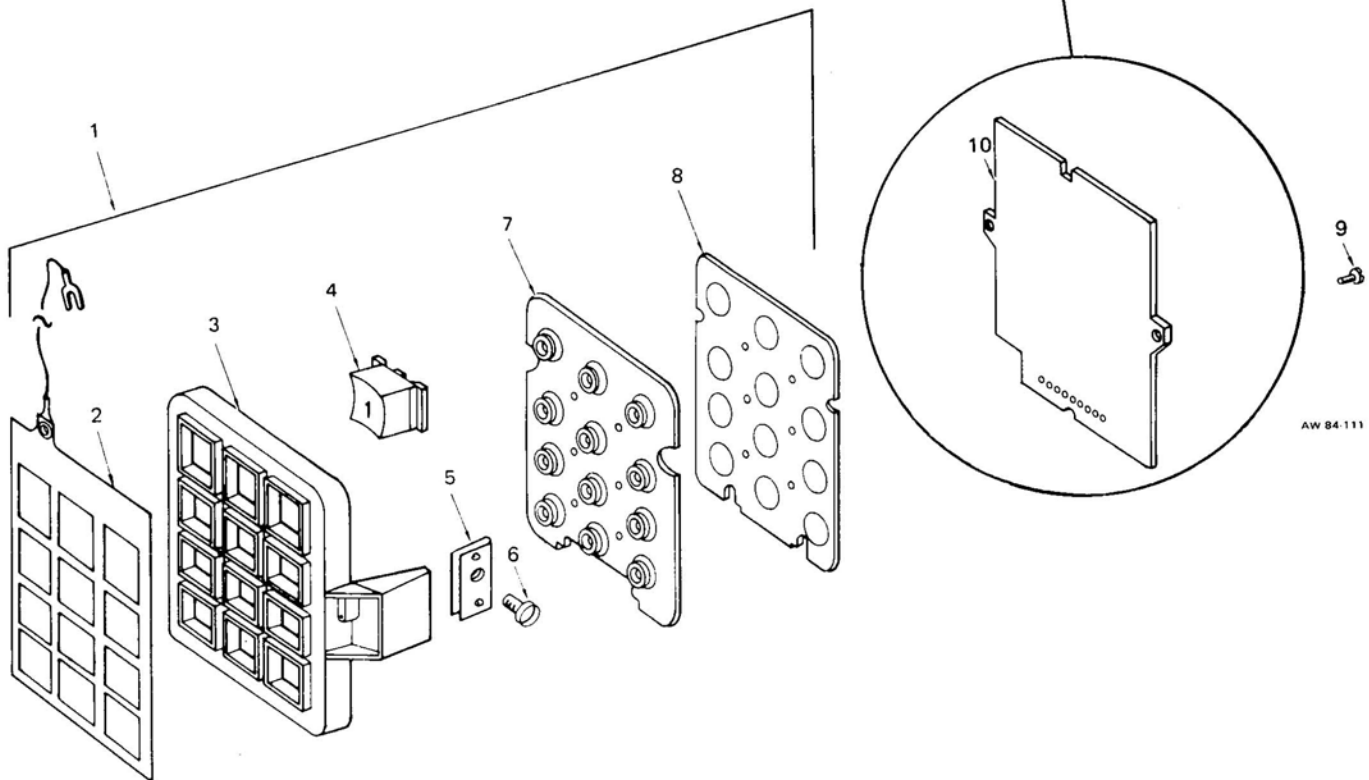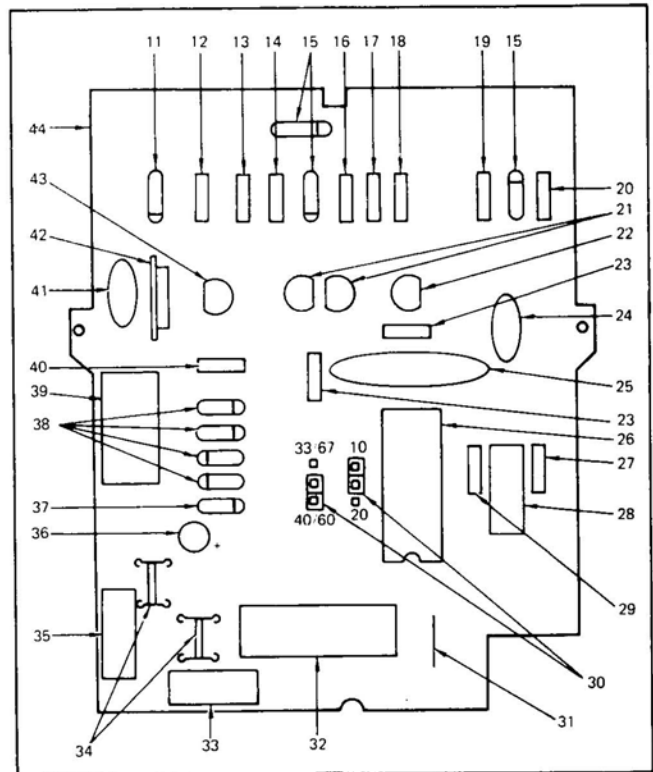

Figure 2: Model 63 Pushbutton Dial, Exploded View

Note: Pushbuttons 0 through 9 are used to dial a desired number, while pushbutton * is not used and # is used for last-number-redial only.

2.08 The polarity guard circuit provides protection against improper connection of the Tip and Ring leads to the telephone. The IC on the pulse-generating PCB must have a specific supply voltage polarity to transmit pulses. In instances where the Tip and Ring leads may be reversed or unidentifiable at the station, the polarity guard circuit ensures pulse transmission regardless of line polarity.

2.09 The Model 63 pushbutton dial is identified by a code number stamped in ink on the front of the cover plate. Refer to Table A for ordering information and for an explanation of each code. Variations of the Model 63 dial are briefly described in the following paragraphs.

MODEL 006300-OPG

2.10 The Model 006300-OPG pushbutton dial is a standard Tel-Pulse design for use in various telephones where electronic dial pulse service is desired. This dial is equipped with metropolitan-style pushbuttons displaying both letters and numerals. The dial is also equipped with polarity guard that allows dialing regardless of line polarity.

MODEL 006300-OPD

2.11 The Model 006300-OPD pushbutton dial is the same as the Model 006300-OPG pushbutton dial except it is equipped with regular-style pushbuttons displaying numerals only.

3. REMOVAL

3.01 To remove the dial from the telephone, proceed as follows:

(a) Remove the telephone faceplate if required.

(b) Remove the telephone housing.

> *Warning: The Model 63 pushbutton dial contains static-sensitive components. Personnel handling the dial must have knowledge of proper handling techniques.*

(c) Remove the dial by loosening the screw on the side of each dial mounting bracket, lifting the dial from the mounting brackets, and disconnecting the dial leads.

4. DISASSEMBLY

4.01 To disassemble the Model 63 pushbutton dial, remove the two screws on the pulse-generating PCB and pull the PCB from the keypad assembly. This is the lowest level of disassembly suggested for the Model 63 pushbutton dial. Further disassembly of the PCB requires removal of components. Further disassembly of the keypad requires removal of the plastic stakes that hold the assembly together.

5. REPLACEMENT PARTS

5.01 Replacement parts for the Model 63 pushbutton dial are listed in Table B.

6. ASSEMBLY

6.01 To assemble the Model 63 pushbutton dial, connect the pulse-generating PCB to the keypad at the eight-pin terminal connector and install the two retaining screws.

7. INSTALLATION

7.01 To install the dial, proceed as follows:

(a) Ensure that the electrostatic shield is in place on the dial prior to installation.

(b) Connect the dial leads; refer to the circuit label for the telephone being assembled.

(c) Mount the dial in the dial mounting brackets and tighten the screws.

(d) Install the telephone housing.

(e) Install the telephone faceplate if removed.

8. ADJUSTMENTS

8.01 The Model 63 pushbutton dial has two shorting plugs that are factory-installed to provide 10 pulses per second outpulsing and a 60% break period of pulse duration. These values may be altered to 20 pulses per second and 67% break period by repositioning the two respective shorting plugs. (See Figure 2.)

TABLE A

ORDERING INFORMATION

CODE NUMBERS
DIAL CODE NUMBERS ARE FORMED IN TWO STEPS AS FOLLOWS:

006300   OPG

(1) Dial Model Number ───────────────
     (See Part 1)

(2) Dial Style ───────────────
     (See Part 2)

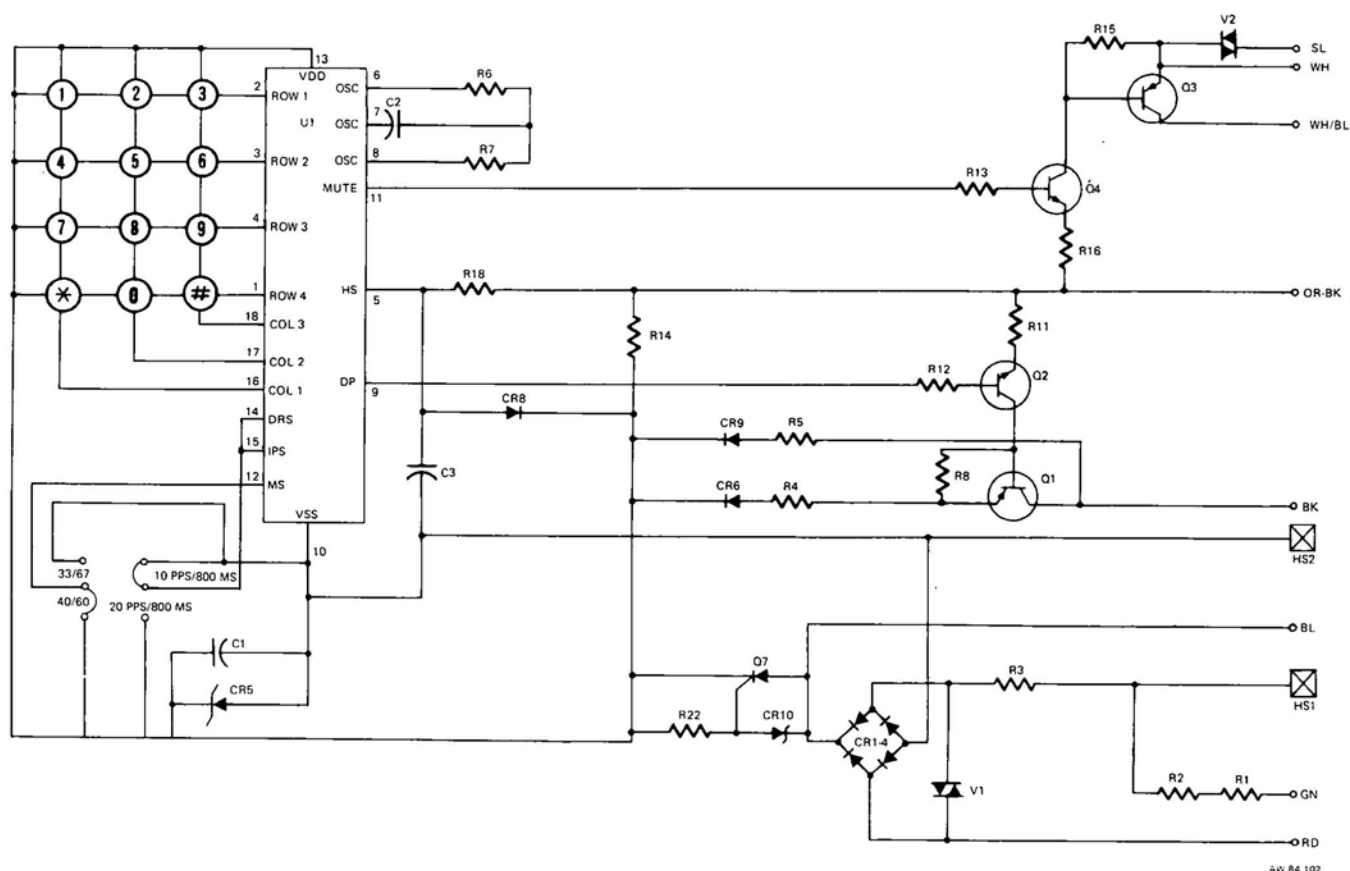| PART 1 DIAL MODEL NUMBER		PART 2 DIAL STYLE	
CODE	DESCRIPTION	CODE	DESCRIPTION
006300	Model 63 Pushbutton Dial	OPG	Metropolitan (Letters And Numerals) With Polarity Guard
		OPD	Regular (Numerals Only) With Polarity Guard

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Figure 3: Model 63 Pushbutton Dial, Schematic

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TABLE B

REPLACEMENT PARTS LIST

INDEX NO	PART NUMBER	DESCRIPTION	QUANTITY USED	
		Model 63 Pushbutton Dial	63/0PG	63/0PD
1	184475-105	Keypad Assembly	1	—
1	184475-106	Keypad Assembly	—	1
2	186129-102	Shield, Electrostatic	1	1
3	184477-101	Plate, Cover	1	1
4	184476-101	Pushbutton, 1, Metropolitan	1	—
4	184476-113	Pushbutton, 1, Regular	—	1
	184476-102	Pushbutton, 2, Metropolitan	1	—
	184476-114	Pushbutton, 2, Regular	—	1
	184476-103	Pushbutton, 3, Metropolitan	1	—
	184476-115	Pushbutton, 3, Regular	—	1
	184476-104	Pushbutton, 4, Metropolitan	1	—
	184476-116	Pushbutton, 4, Regular	—	1
	184476-105	Pushbutton, 5, Metropolitan	1	—
	184476-117	Pushbutton, 5, Regular	—	1
	184476-106	Pushbutton, 6, Metropolitan	1	—
	184476-118	Pushbutton, 6, Regular	—	1
	184476-107	Pushbutton, 7, Metropolitan	1	—
	184476-119	Pushbutton, 7, Regular	—	1
	184476-108	Pushbutton, 8, Metropolitan	1	—
	184476-120	Pushbutton, 8, Regular	—	1
	184476-109	Pushbutton, 9, Metropolitan	1	—
	184476-121	Pushbutton, 9, Regular	—	1
	184476-111	Pushbutton, 0, Metropolitan	1	—
	184476-122	Pushbutton, 0, Regular	—	1
	184476-110	Pushbutton, *	1	1
	184476-112	Pushbutton, #	1	1
5	184479-101	U-Nut	2	2
6	075487-102	Screw, Dial Mounting	2	2
7	184478-101	Switchplate, Silicone	1	1
8	184484-103	PC Board Assembly	1	1
9	095971-104	Screw, PC Board Mounting	2	2

TABLE B

REPLACEMENT PARTS LIST (Cont)

INDEX NO	PART NUMBER	DESCRIPTION	QUANTITY USED	
		Model 63 Pushbutton Dial	63/0PG	63/0PD
10	186238-101	PC Board, Pulse-Generating	1	1
11	183611-177	Diode, Zener, 120 VDC, 1 W, CR10	1	1
12	181789-152	Resistor, 33 K, R8	1	1
13	181789-148	Resistor, 15 K, R5	1	1
14	181789-162	Resistor, 220 K, R4	1	1
15	180656-102	Diode, 1N4148, CR6, CR8, CR9	3	3
16	181789-121	Resistor, 100 Ohm, R11	1	1
17	181789-129	Resistor, 470 Ohm, R16	1	1
18	181789-158	Resistor, 100 K, R15	1	1
19	181789-166	Resistor, 470 K, R14	1	1
20	181789-154	Resistor, 47 K, R18	1	1
21	185326-101	Transistor, 2N5551, Q2, Q4	2	2
22	185327-101	Transistor, 2N5401, Q3	1	1
23	181789-149	Resistor, 18 K, R12, R13	2	2
24	095655-101	Varistor, V2	1	1
25	182135-107	Capacitor, 0.1 MFD, 25 VDC, C3	1	1
26	185324-101	IC, S2560, U1	1	1
27	181789-169	Resistor, 1 M, R6	1	1
28	182314-101	Capacitor, 560 PFD, 60 V, C2	1	1
29	181789-164	Resistor, 330 K, R7	1	1
30	183299-101	Shorting Plug	2	2
31	184489-101	Strap Wire	1	1
32	184652-101	Connector, Bottom Entry, J1	1	1
33	062948-102	Resistor, 22 M, ½ W, ±5%, R1	1	1
34	187948-101	Terminal, 2-Position	2	2
35	062948-800	Resistor, 30 M, ½ W, ±5%, R2	1	1
36	182130-130	Capacitor, 47 MFD, 6 VDC, C1	1	1
37	181011-107	Diode, Zener, 1N4622, CR5	1	1
38	180658-101	Diode, 1N4004, CR1, CR2, CR3, CR4	4	4
39	062948-401	Resistor, 12 Ohm, 1 W, R3	1	1
40	181789-109	Resistor, 10 Ohm, R22	1	1
41	184672-103	Varistor, V1	1	1
42	182821-102	SCR, S4006, 400 VDC, Q7	1	1
43	185327-102	Transistor, MPS-A92, Q1	1	1
44	186237-101	PC Board, Drilled	1	1

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NOTES:

1. All resistors are ¼ W, ±5% unless otherwise specified.
2. All capacitor values are in microfarads (MFD) or picofarads (PFD).