

**MODEL 37 PUSHBUTTON DIAL**

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**1. INTRODUCTION**

**1.01** This document covers the Model 37 pushbutton 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, reasons for reissue will be listed in this paragraph.

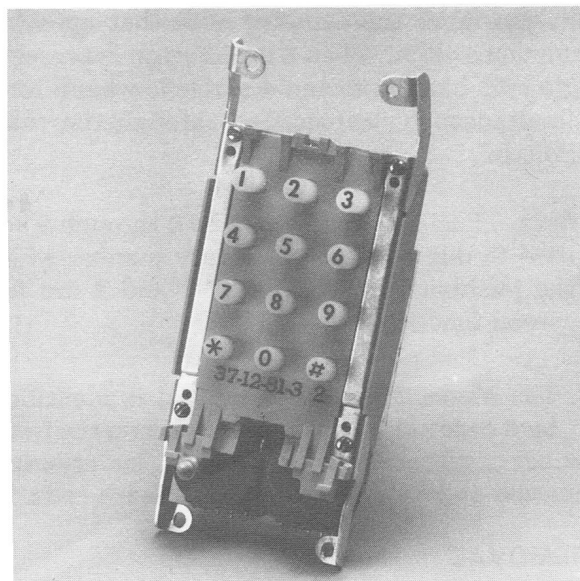
**1.03** For information concerning telephones that this dial is used in, refer to the appropriate section in Volume 1 of the ITT Telephone Apparatus Practices Manual.

**2. GENERAL DESCRIPTION**

**2.01** The Model 37 pushbutton dial is a 12-pushbutton Tel-Touch dial with off-white translucent plastic pushbuttons that are illuminated by a light guide in the Trendline telephone handset. The dial is referred to as Tel-Touch because it produces dual tone multifrequency (DTMF) signals.

*Note:* This dial can only be used when the associated central office equipment is arranged for DTMF signaling.

**2.02** The Model 37 pushbutton dial consists of a pushbutton assembly, base plate assembly, tone-generating printed circuit board (PCB), and miscellaneous components.



AW 85-171

**Figure 1: Model 37 Pushbutton Dial**

**2.03** The pushbutton assembly consists of a cover plate, 12 pushbuttons, three vertical cranks, four horizontal cranks, and a frame which is mounted to the base plate assembly with four screws. (See Figure 2.) Seven contact springs, which are also mounted to the baseplate, contact with the cranks. The tone-generating PCB is soldered to the base plate assembly at the contact spring terminals.

**2.04** The tone-generating PCB consists of two tuned-circuit oscillators and a common switch. The oscillator circuits, powered by the line voltage, produce a specific pair of frequencies. The common switch mutes the receiver, breaks the transmitter circuit, and connects the DTMF signal to the line.

**2.05** The miscellaneous components of the Model 37 pushbutton dial consist of two brackets, a shield, an actuator slide, a common switch cover, and screws.

**2.06** Pressing a pushbutton rotates one of the horizontal (row) cranks and one of the vertical (column) cranks. The vertical cranks operate contact

springs connected to the high-band coil, and the horizontal cranks operate contact springs connected to the low-band coil. (See Figure 3.) The horizontal cranks also move the actuator slide that operates the common switch. When a pushbutton is pressed, a single high-band tone and a single low-band tone are simultaneously transmitted through the common switch.

**Note:** Pushbuttons numbered 0 through 9 are used to dial a desired directory number while the pushbuttons designated \* and # are for special functions.

**2.07** The Model 37 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.

### 3. REMOVAL

**3.01** To remove the dial from the telephone handset, proceed as follows. (Refer to Figure 4 throughout the procedure.)

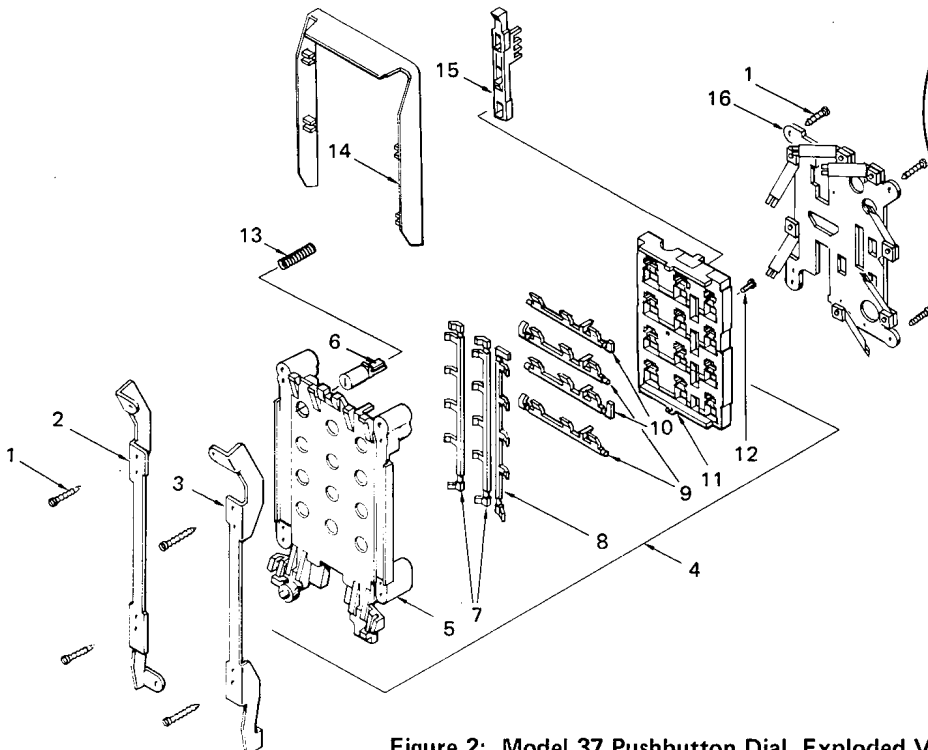
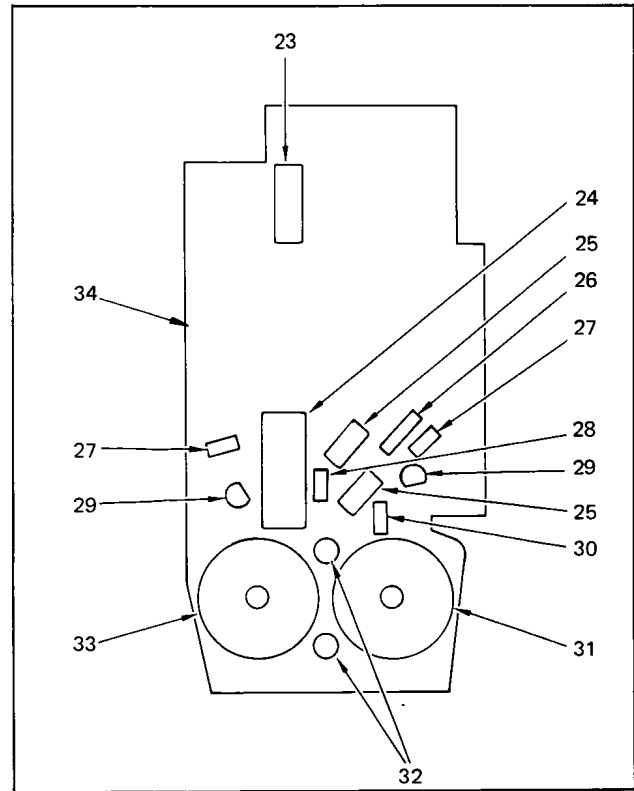


Figure 2: Model 37 Pushbutton Dial, Exploded View

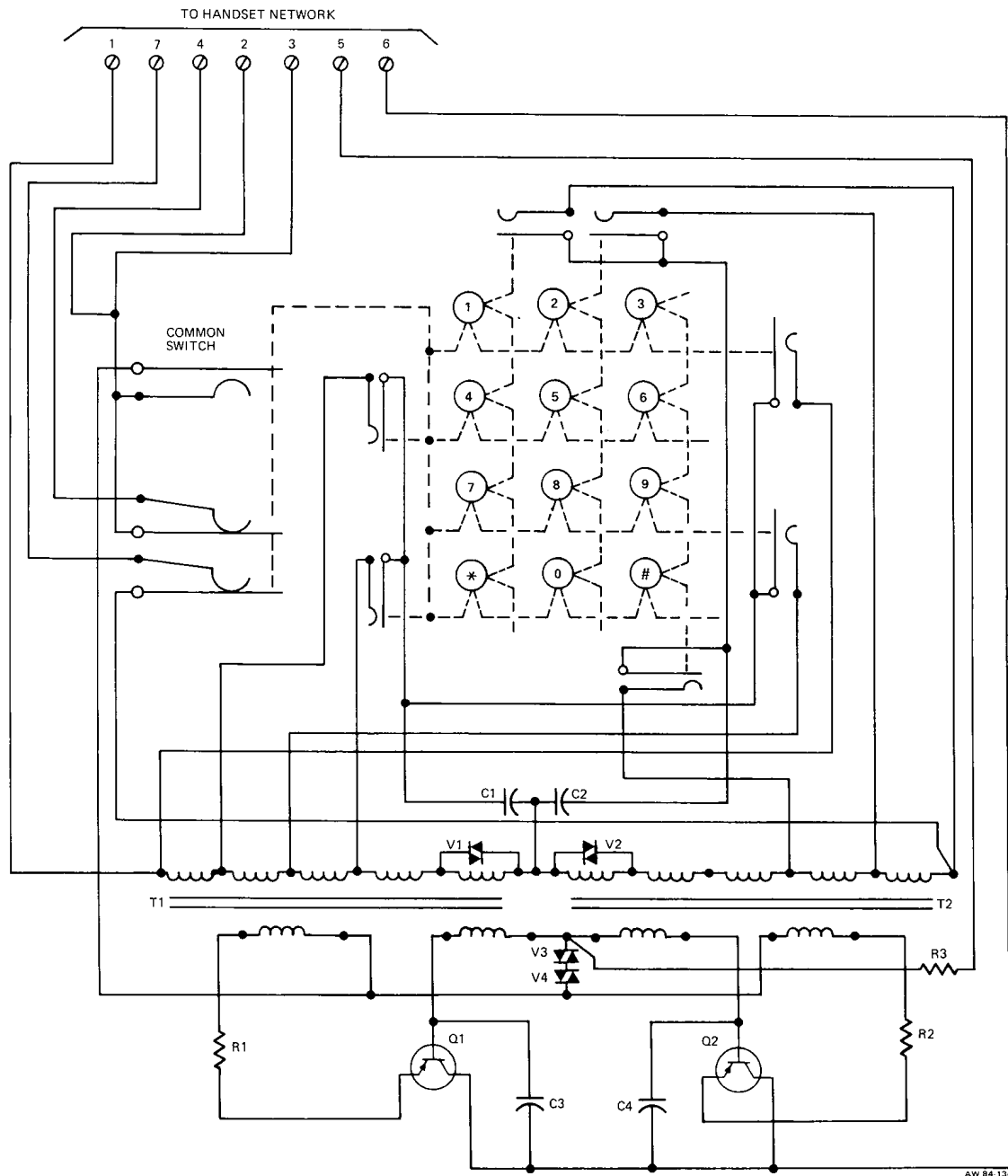


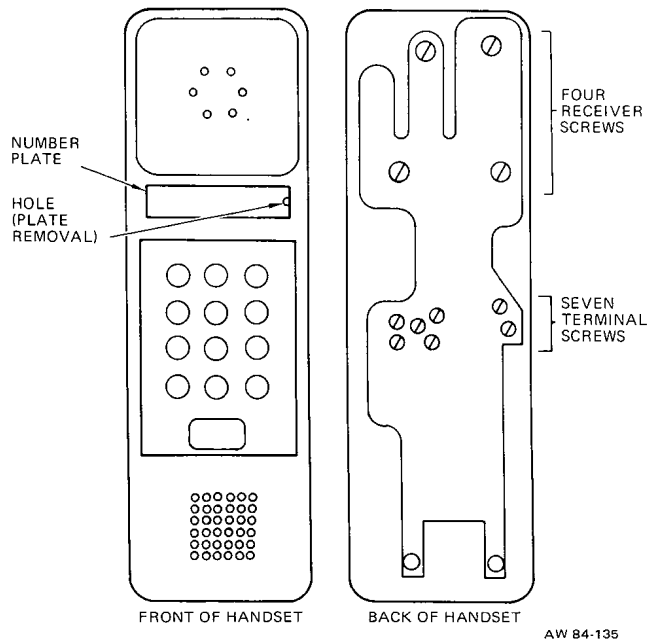
Figure 3: Model 37 Pushbutton Dial, Schematic

- (a) Remove the number card retainer, number card, and light shield from the handset of the Trendline telephone. Insert a paperclip into the hole to pry them loose.
- (b) Remove the screws located behind the number card retainer that secures the back of the handset.
- (c) Remove the back of the handset.
- (d) Remove the seven terminal screws that connect the flexprint network to the dial and the four screws that connect the flexprint network to the receiver.
- (e) Bend the flexprint network back to expose the four dial mounting screws.
- (f) Remove the four dial mounting screws.
- (g) Lift the pushbutton dial from the handset.

TABLE A  
ORDERING INFORMATION

CODE NUMBERS			
DIAL CODE NUMBERS ARE FORMED IN TWO STEPS AS FOLLOWS:			
		003700	000
(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
003700	Model 37 Pushbutton Dial	000	Regular (Numerals Only) For Trendline Telephones

AW 84 908



AW 84-135

Figure 4: Trendline Handset

4. DISASSEMBLY

4.01 To disassemble the dial, proceed as follows:

- (a) Place the dial face down on a holding fixture. (See Figure 5.)
- (b) Remove the four screws that hold the base plate assembly to the pushbutton cover.

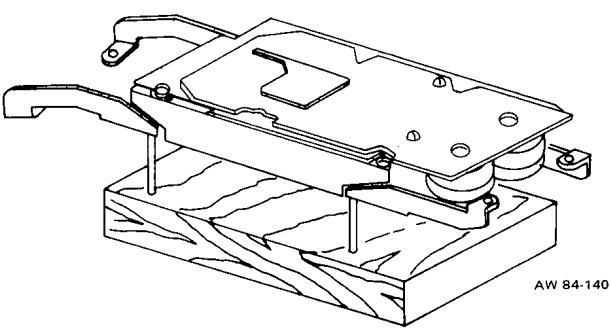


Figure 5: Holding Fixture

- (c) Lift the base plate assembly (with the circuit board) from the cover plate.
- (d) Lift the actuator slide and the screws from the cover plate. Remove the frame.
- (e) Remove the cranks, springs, and pushbuttons from the cover plate as required.

*Note:* Further component removal requires desoldering components and is beyond the scope of this section.

5. REPLACEMENT PARTS

5.01 Replacement parts for the Model 37 pushbutton dial are listed in Table B.

TABLE B  
REPLACEMENT PARTS LIST

INDEX NO	PART NUMBER	DESCRIPTION	QUANTITY USED
		<b>Model 37 Pushbutton Dial</b>	<b>37/000</b>
1	182457-102	Screw (Dial Bracket And Mounting Plate Attaching)	8
2	180431-101	Bracket, Dial	1
3	180432-101	Bracket, Dial	1
4	180449-101	Pushbutton Assembly	1
5	180453-101	Plate, Cover	1
6	180355-101	Pushbutton (1)	1
	180355-102	Pushbutton (2)	1
	180355-103	Pushbutton (3)	1
	180355-104	Pushbutton (4)	1
	180355-105	Pushbutton (5)	1
	180355-106	Pushbutton (6)	1
	180355-107	Pushbutton (7)	1
	180355-108	Pushbutton (8)	1
	180355-109	Pushbutton (9)	1
	180355-110	Pushbutton (0)	1
	180355-111	Pushbutton (*)	1
	180355-112	Pushbutton (#)	1
7	180439-101	Crank, Vertical (Center And Left Side)	2
8	180440-101	Crank, Vertical (Right Side)	1
9	180438-101	Crank, Horizontal (2nd And 4th From Top)	2
10	180437-101	Crank, Horizontal (1st And 3rd From Top)	2
11	180454-101	Frame	1
12	095971-103	Screw (Frame Attaching)	1
13	180354-101	Spring	12
14	180433-101	Shield	1
15	180408-101	Slide, Actuator	1
16	180450-101	Base Plate Assembly	1
17	180339-101	Spacer	3
18	180344-101	Screw (PCB Mounting)	3
19	180413-101	Common Switch Assembly	1
20	180407-101	Cover, Common Switch	1
21	180345-101	Screw (Common Switch Attaching)	1
22	180448-101	Printed Circuit Board, Tone-Generating	1
23	181608-119	Capacitor, 0.044 MFD, C2	1
24	181608-118	Capacitor, 0.054 MFD, C1	1
25	095853-102	Varistor, V3 And V4	2
26	181789-132	Resistor, 820 Ohm, R3	1
27	180464-101	Capacitor, 4700 PFD, C3 And C4	2
28	180463-118	Resistor, 75 Ohm, R2	1
29	180488-101	Transistor, PNP, MPS 404A, Q1 And Q2	2
30	180463-114	Resistor, 68 Ohm, R1	1
31	180416-101	Transformer, T1 (Low-Band)	1
32	095853-101	Varistor, V1 And V2	2
33	180416-102	Transformer, T2 (High-Band)	1
34	180441-101	Board Printed Wiring	1
35	185661-101	Insulator Spacer (Not Shown)	1
36	180435-102	Flex Circuit And Terminals (Not Shown)	1

AW 84-907

NOTE: All capacitor values are in microfarads (MFD) or picofarads (PFD).

## 6. ASSEMBLY

6.01 To assemble the dial, proceed as follows:

- (a) Place the cover plate face down on a holding fixture. (See Figure 5.)
- (b) Place the pushbuttons in the proper holes of the cover plate. Position the holding fixture so that the opening at the bottom of the dial cover is toward the assembler. Starting with the pushbutton for the numeral 1 in the upper right-hand corner, progress from right to left and from top to bottom: 1, 2, 3, 4, 5, 6, 7, 8, 9, \*, 0, and #.
- (c) Place the vertical (column) cranks in position. The arms of the cranks ride on the flanges of the pushbuttons. (See Figure 6.)
- (d) Place the horizontal (row) cranks in position in the cover plate. The arms that contact the actuator slide must be to the assembler's left and must point upward. The round section of each crank must ride in the appropriate slots. (See Figure 6.)

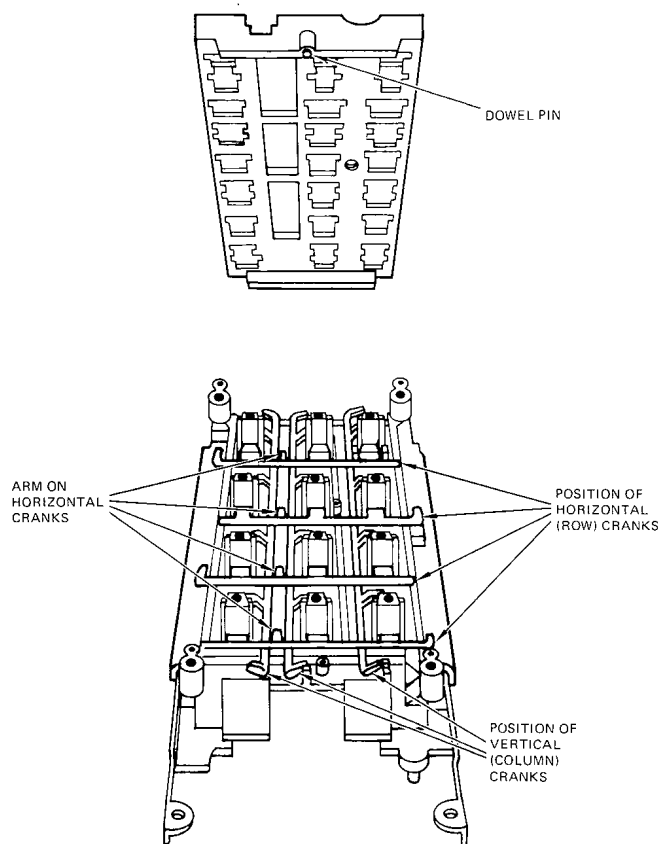


Figure 6: Relative Position of Cranks

- (e) Place the frame over the assembled parts so that the dowel pin of the frame inserts into the dowel hole of the cover plate. Install the screws to secure the frame to the cover plate.
- (f) Place one spring into position on each pushbutton.
- (g) Place the actuator slide in the slot on the frame so that the arms of the four horizontal (row) cranks slide the actuator when a button is pressed.
- (h) Position the mounting plate and printed circuit board group over the assembled parts. Ensure that the teeth of the actuator slide mesh properly with the springs of the contact spring assembly. The top tooth goes above the top spring. The third tooth contacts the second spring and the fourth tooth contacts the third spring.
- (j) Secure the mounting plate to the cover plate using four screws.
- (k) Install the common spring cover and secure it into place using a single screw.

## 7. INSTALLATION

7.01 To install the dial inside the Trendline telephone, proceed as follows:

- (a) With the flexprint network of the telephone handset bent back, install the dial into the handset.
- (b) Secure the dial by installing the four bracket screws.
- (c) Position the network in place and mount it to the handset receiver using four screws.
- (d) Install the seven terminal screws. (See Figure 4.)
- (e) Place the back of the handset in place.
- (f) Secure the back of the handset by installing the two screws in the front of the dial where the number plate is to be installed.
- (g) Install the number card retainer, number card, and light shield.