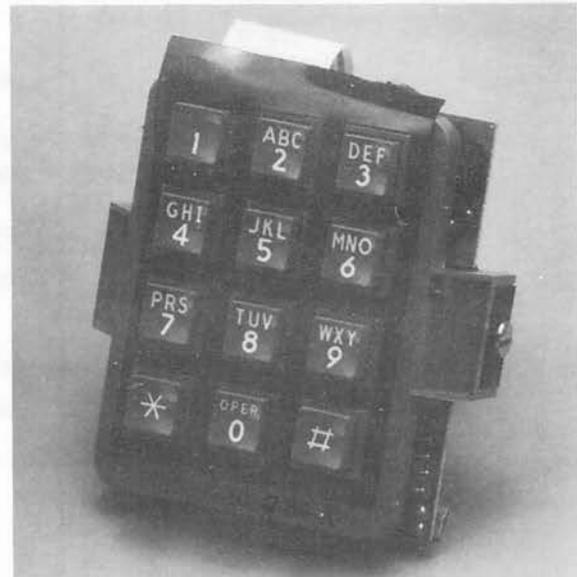# MODEL 186087 AUTO DIALER

1. INTRODUCTION

1.01 This document covers the Model 186087 auto dialer. (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 186087 auto dialer consists of a pushbutton keypad and a printed circuit board (PCB) that provide memory storage of dialed digits. The auto dialer is available as a 13-pushbutton keypad with an attached PCB, or as a 12-pushbutton keypad with an attached PCB and an externally-mounted AUTO DIAL pushbutton. The auto dialer provides storage for ten 16-digit numbers, redialing of the last-number-dialed (LND), automatic dialing of any stored number, and predialing.

AW 85-179

Figure 1: Model 186087 Auto Dialer

Note: The Model 186087 auto dialer only provides memory storage of telephone numbers. The auto dialer does not provide dual tone multifrequency (DTMF) or dial pulse (DP) dialing. The auto dialer must be used in conjunction with a DTMF or DP PCB.

2.02 The Model 186087 auto dialer uses either a 12-pushbutton or 13-pushbutton keypad. (See Figure 2.) Both keypads consist of a cover plate, 12 standard keys (0-9, *, and #), a silicone switchplate, and a contact PCB assembly. The 13-pushbutton keypad has an additional AUTO DIAL pushbutton, while the 12-pushbutton keypad is used with an externally-mounted AUTO DIAL pushbutton.

2.03 The auto dialer PCB consists of a microprocessor integrated circuit (IC), a Random Access Memory (RAM) IC, and other solid-state components. (See Figure 3.) The microprocessor controls the operation of the memory storage and provides LND storage while the RAM provides the storage of the 16-digit numbers. The other solid-state components aid the microprocessor in its operation.

2.04 When a pushbutton is pressed on the keypad, a single keypad contact provides a row and column input to the auto dialer PCB. The PCB interprets the pressed pushbutton as an AUTO DIAL,
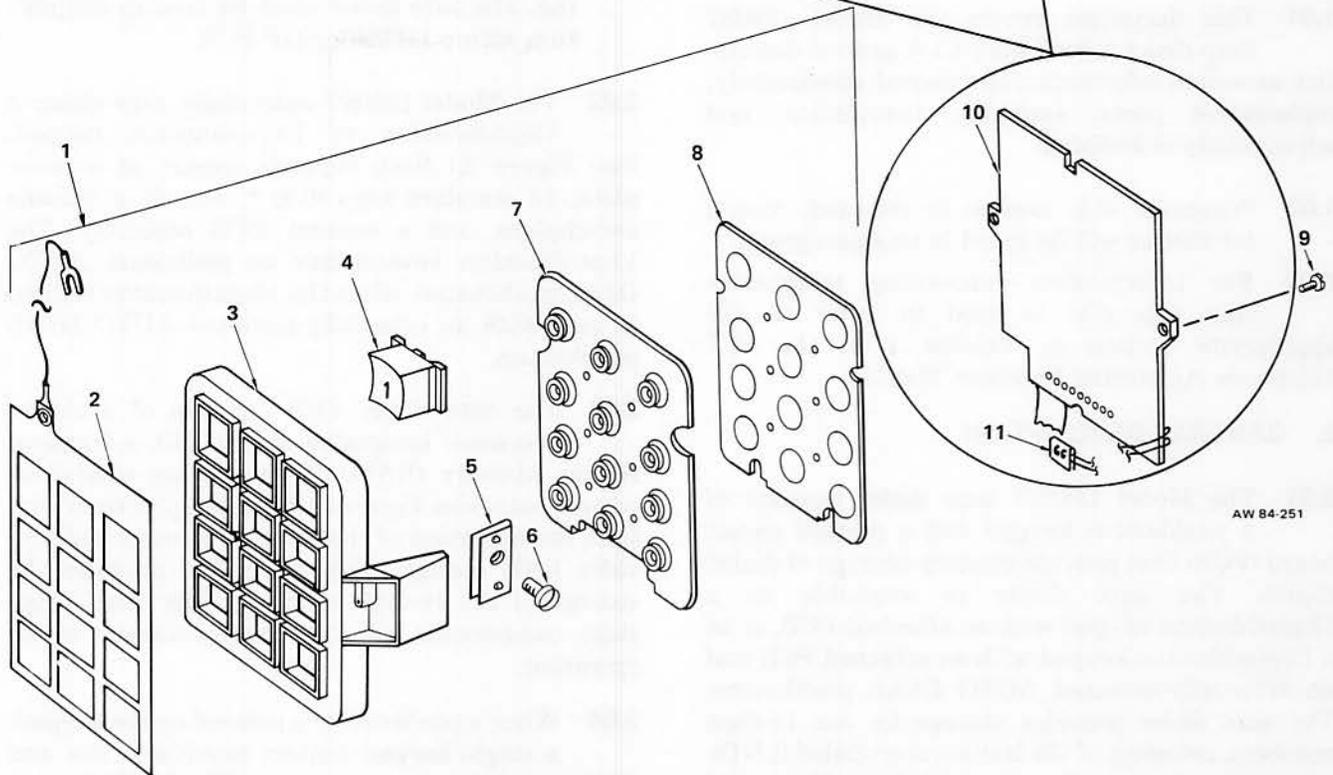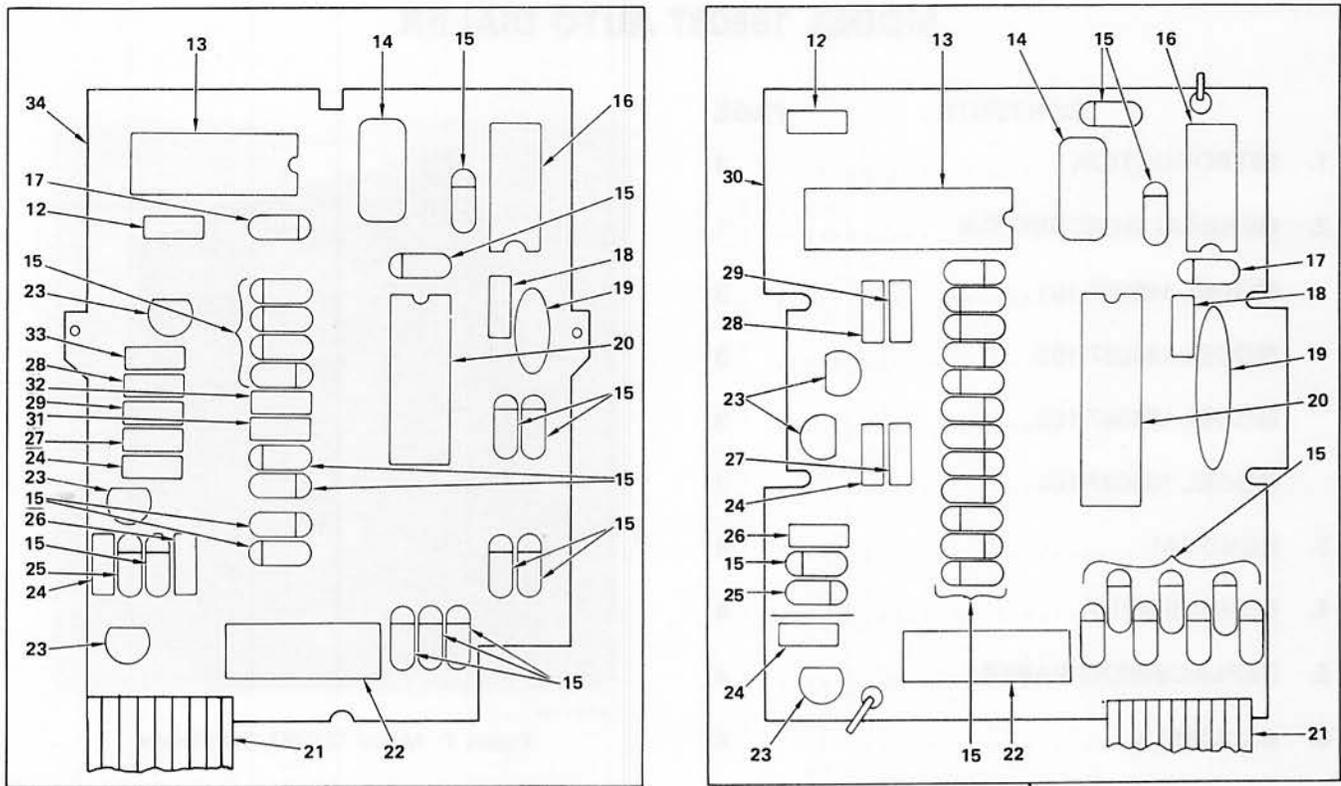
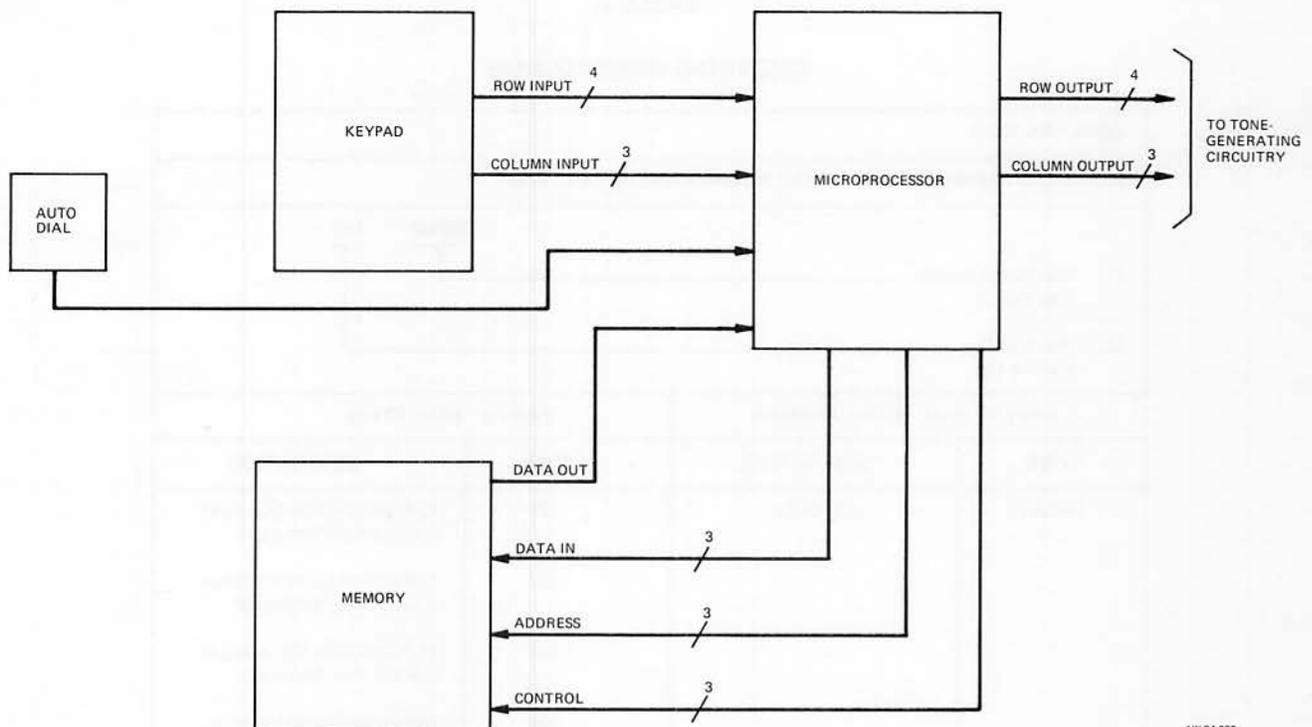Figure 2: Model 186087 Auto Dialer, Exploded View

Figure 3: Model 186087 Auto Dialer, Block Diagram

control (* or #), or number (0-9) key, and operates in accordance with the sequence of keys pressed. Refer to the appropriate document containing the station operating instructions.

2.05 The output of the auto dialer is transmitted to a DTMF or DP PCB. This output is a row and column signal in the same format as the standard keypad output. This enables the auto dialer to be used in place of a standard keypad.

2.06 Operations that are controlled by the microprocessor are storage, LND, and predialing. The storage feature allows a number to be stored directly or as LND while the handset is on-hook. Predialing allows a number to be entered while the handset is on-hook, and then dialed automatically by going off-hook, selecting a line (if required), and pressing the AUTO DIAL pushbutton twice.

2.07 The auto dialer allows for a pause to be entered between any two digits entered on the keypad. The pause suspends dialing until the redial pushbutton (#) is pressed. Up to eight pauses can be inserted.

2.08 The Model 186087 auto dialer 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 186087 auto dialer are briefly discussed in the following paragraphs.

MODEL 186087-101

2.09 The Model 186087-101 auto dialer has a 12-pushbutton keypad with metropolitan-style pushbuttons displaying both letters and numerals. The auto dialer is designed to be used with an external AUTO DIAL pushbutton in single-line telephones.

MODEL 186087-102

2.10 The Model 186087-102 auto dialer is the same as the Model 186087-101 auto dialer except it is used in multibutton electronic telephone subsets with the ITT System 3100.

MODEL 186087-103

2.11 The Model 186087-103 auto dialer has a 13-pushbutton keypad with metropolitan-style pushbuttons displaying both letters and numerals. The 13th pushbutton is an AUTO DIAL pushbutton, used in multibutton electronic telephone subsets with the ITT EKS-801.

MODEL 186087-104

2.12 The Model 186087-104 auto dialer is the same as the Model 186087-103 auto dialer except it is used in multibutton electronic telephone subsets with the ITT System 3100.

TABLE A

ORDERING INFORMATION

CODE NUMBERS				
DIAL CODE NUMBERS ARE FORMED IN TWO STEPS AS FOLLOWS:				
(1) Dial Model Number (See Part 1) 186087 (2) Dial Style (See Part 2) 101				
PART 1 DIAL MODEL NUMBER		PART 2 DIAL STYLE		
CODE	DESCRIPTION	CODE	DESCRIPTION	
186087	Auto Dialer	101	12-Pushbutton Metropolitan (Letters And Numerals)	
		102	12-Pushbutton Metropolitan (Letters And Numerals)	
		103	13-Pushbutton Metropolitan (Letters And Numerals)	
		104	13-Pushbutton Metropolitan (Letters And Numerals)	

AW 84-947

3. REMOVAL

3.01 To remove the Model 186087 auto dialer from the telephone, proceed as follows:

(a) Remove the telephone faceplate if required.

(b) Remove the telephone housing.

(c) Remove the auto dialer by loosening the screw on the side of each mounting bracket, and disconnecting the auto dialer leads.

Warning: The Model 186087 auto dialer contains static-sensitive components. Personnel handling the auto dialer must have knowledge of proper handling techniques.

4. DISASSEMBLY

4.01 To disassemble the auto dialer, remove the two screws on the tone-generating PCB and pull the PCB from the keypad assembly. This is the lowest level of disassembly suggested for the Model 186087 auto dialer. Further disassembly of the PCB requires removal of components. Further disassembly of the keypad requires removal of plastic stakes that hold the assembly together.

5. REPLACEMENT PARTS

5.01 Replacement parts for the Model 186087 auto dialer are listed in Table B.

6. ASSEMBLY

6.01 To assemble the Model 186087 auto dialer, connect the auto dialer PCB to the keypad at the eight-pin connector and install the two retaining screws.

7. INSTALLATION

7.01 To install the Model 186087 auto dialer, proceed as follows:

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

(b) Connect the auto dialer leads. Refer to the circuit label for the telephone being assembled.

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

(d) Install the telephone housing.

(e) Install the telephone faceplate if removed.

TABLE B

REPLACEMENT PARTS LIST

INDEX NO	PART NUMBER	DESCRIPTION	QUANTITY USED			
		Model 186087 Auto Dialer	101	102	103	104
1	184475-105	Keypad Assembly	1	1	—	—
1	184500-101	Keypad Assembly	—	—	1	1
2	186129-102	Shield, Electrostatic	1	1	—	—
2	186129-103	Shield, Electrostatic	—	—	1	1
3	184477-101	Plate, Cover	1	1	—	—
3	184491-102	Plate, Cover	—	—	1	1
4	184476-101	Button (1)	1	1	1	1
	184476-102	Button (2)	1	1	1	1
	184476-103	Button (3)	1	1	1	1
	184476-104	Button (4)	1	1	1	1
	184476-105	Button (5)	1	1	1	1
	184476-106	Button (6)	1	1	1	1
	184476-107	Button (7)	1	1	1	1
	184476-108	Button (8)	1	1	1	1
	184476-109	Button (9)	1	1	1	1
	184476-110	Button (*)	1	1	1	1
	184476-111	Button (0)	1	1	1	1
	184476-112	Button (#)	1	1	1	1
	184476-133	Button, AUTO DIAL (Not Shown)	—	—	1	1
5	184479-101	U-Nut	2	2	2	2
6	075487-102	Screw, Dial Mounting	2	2	2	2
7	184478-101	Switchplate, Silicone	1	1	1	1
8	184484-103	PCB Assembly	1	1	—	—
8	184499-101	PCB Assembly	—	—	1	1
9	095971-104	Screw, PCB Mounting	2	2	2	2
10	186071-101	PCB Assembly, Auto Dialer	1	—	—	—
	186071-102	PCB Assembly, Auto Dialer	—	1	—	—
	601844-536 -001	PCB Assembly, Auto Dialer	—	—	1	—
	601844-536 -002	PCB Assembly, Auto Dialer	—	—	—	1
11	184113-101	Battery Clip Assembly	1	1	1	1
12	181789-158	Resistor, 100 K, 1/4 W, ±5%, R3	1	1	1	1
13	185354-101	IC, 256 X 4 RAM, U2	1	1	1	1
14	181819-104	Capacitor, 10 MFD, 15 V, C2	1	1	1	1
15	180656-102	Diode, 1N4148, CR1-14, CR16, CR19-25	22	22	—	—
15	180656-102	Diode, 1N4148, CR1-10, CR12, CR14-20	—	—	18	18
16	185353-101	IC, CMOS Binary Counter, U3	1	1	1	1
17	184751-101	Diode, Schottky, CR15	1	1	—	—
17	184751-101	Diode, Schottky, CR11	—	—	1	1
18	181179-273	Resistor, 35.7 K, 0.1 W, ±1%, R5	1	1	—	—
18	180951-206	Resistor, 35.7 K, 0.1 W, ±1%, R5	—	—	1	1
19	182135-111	Capacitor, 470 PFD, C1	1	1	1	1
20	185355-102	IC, CMOS Microprocessor, U1	1	1	1	1
21	184313-102	Cable, Flat Ribbon	1	1	1	1
22	184652-101	Connector	1	1	1	1
23	182076-101	Transistor, Special 5484, Q1-Q3	3	3	3	3

TABLE B

REPLACEMENT PARTS LIST (Cont)

INDEX NO	PART NUMBER	DESCRIPTION	QUANTITY USED			
		Model 186087 Auto Dialer	101	102	103	104
24	181789-162	Resistor, 220 K, 1/4 W, ±5%, R4, R8	2	2	2	2
25	182137-101	Diode, Zener, 1N5232A, CR17	1	1	—	—
25	182137-101	Diode, Zener, 1N5232A, CR13	—	—	1	1
26	181789-150	Resistor, 22 K, 1/4 W, ±5%, R6	1	1	1	1
27	181789-156	Resistor, 68 K, 1/4 W, ±5%, R7	1	1	1	1
28	181789-154	Resistor, 47 K, 1/4 W, ±5%, R2	1	1	1	1
29	181789-149	Resistor, 18 K, 1/4 W, ±5%, R1	1	1	1	1
30	186070-101	PC Board, Drilled	1	1	—	—
31	180464-112	Capacitor, 0.1 MFD, 50 V, C3	—	—	1	1
32	181789-155	Resistor, 56 K, 1/4 W, ±5%, R9	—	—	1	1
33	180464-118	Capacitor, 0.01 MFD, C4	—	—	1	1
34	651844-536 -001	PC Board, Drilled	—	—	1	1

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

AW 84-948