

**2872A1M OR 2872A2M TELEPHONE SET
(TOUCH-A-MATIC® AUTOMATIC DIALER)**

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NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

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1. GENERAL

1.01 This section contains identification, installation, connections, operation, and maintenance information on the 2872A1M (MD) or 2872A2M telephone set (TOUCH-A-MATIC service) (Fig. 1).

1.02 This section is reissued to:

- Show 2872A1M telephone set (MD)

- Revise Fig. 1 through 5, 7 through 12, and 14
- Revise Tables A through G, J, and N
- Add Fig. 13
- Show 2872A1 faceplate MD
- Add Tables K, L, and M
- Eliminate connection information for 82A connecting block
- Add D-180818 Kit of Parts (Record Disable and Dial Intermix Features)
- Add reference for use of station head telephone adapters.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

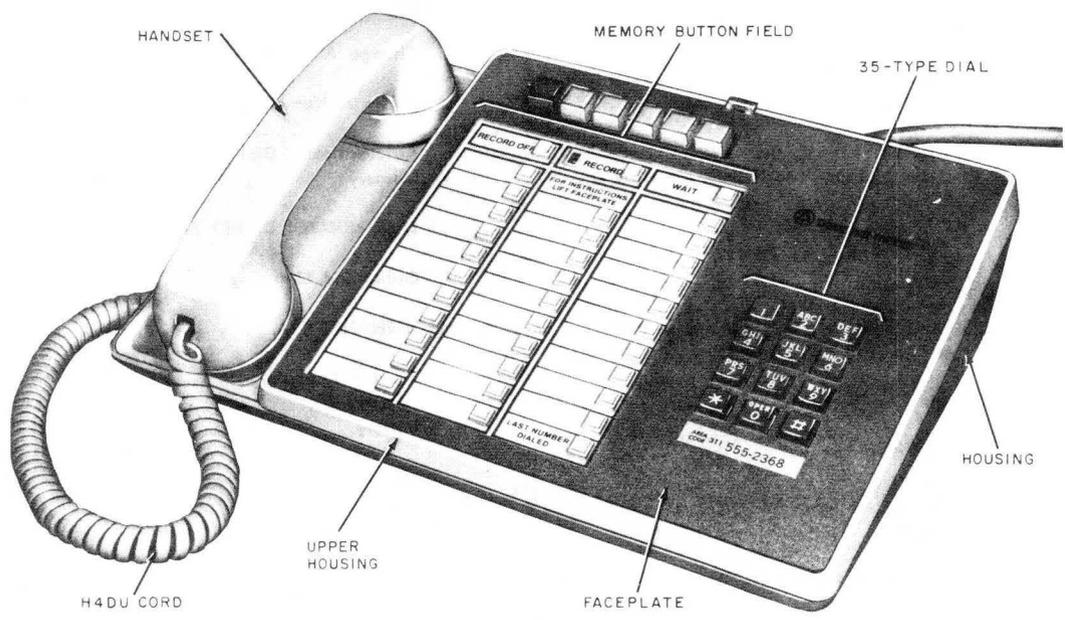


Fig. 1—2872A1M (MD) or 282A2M Telephone Set

1.03 The 2872A1M or 2872A2M telephone set is factory-wired for use with 1A1, 1A2, or 6A key telephone systems (KTS). They may be converted (Table J) for use with 1A KTS.

1.04 The telephone sets are available in the following colors:

- Black (-03)
- Green (-51)
- White (-58)
- Lt. Beige (-60).

1.05 The 2872A1 (MD) faceplate is available in only the satin-silver (-87) color.

1.06 The 2872B1 decorative faceplates are available in the following colors:

- Teak Woodgrain (-108)
- Walnut Woodgrain (-109)
- Matte Aluminum (-122).

2. IDENTIFICATION

2.01 The 2872A1M or 2872A2M telephone set provides all standard features of a 6-button key telephone set plus (manual) TOUCH-TONE® dialing, automatic dialing of 31 frequently called numbers, and a LAST NUMBER DIALED *scratch pad* memory.

2.02 The 2872A2M telephone set differs from the 2872A1M set only in the battery circuit. The 2872A2M set has a battery interlock circuit that prevents the set from dialing automatically if the battery is not plugged in. Also, the 2872A2M telephone set utilizes a newly coded battery (KS-20390L4) which can not be used in the 2872A1M set.

2.03 *Design Features:*

- Modular key telephone set
- Integrated circuit RC TOUCH-TONE oscillator
- Integrated circuit memory

- Surge protector
- Polarity guard (removable for dry circuit application)
- Common audible ringing
- Buzzer
- Busy lamp diode
- Line pickup buttons convertible to nonlocking signal buttons
- Memory buttons from which to select preprogrammed telephone numbers for automatic dialing
- Capability to record and automatically dial 31 telephone numbers of up to 15 digits each
- Last number manually dialed memory
- Plug-in battery
- Capability to pause for subsequent dial tones during automatic dialing (WAIT input)
- End-to-end signaling for data application.

2.04 *Optional Features (Refer to Table A):*

- Speakerphone—either 3B or 4A speakerphone systems may be added to stations
- Dial Tone Detector—automatically starts dialer when precise TOUCH-TONE dial tone (350 Hz and 440 Hz) is present.
- One-Touch Calling, (requires both dial tone detector and speakerphone)—depressing one memory button will automatically turn on speakerphone, detect dial tone, and dial complete number.

Note: All dial tones encountered in the process of placing a call must be precise TOUCH-TONE dial tone if the call is to be completed automatically.

- Record Disable—turns off the recording feature to prevent accidental erasures of previously stored numbers

SECTION 503-603-101

- Dial Intermix—same as record disable feature plus.

(a) Allows digits dialed from manual dial and from memory to be intermixed without having to depress the RECORD OFF button (see 5.07).

(b) Disables the LAST NUMBER DIALED feature.

- Station Busy Lamp (busy lamp diode wired in set)
- Head Telephone Set
- 2/4-Wire Service
- Add-On-Conference
- Exclusion (multiline)
- "I" Hold
- Signaling
- Bridged Ringing
- Restricted Dialing
- Amplifying Handset
- Decorative Faceplate
- Head telephone set operation.

2.05 *All options are implemented by:*

- Wiring changes in the telephone set
- Installation of appropriate additional items.

2.06 *Ordering Guide.*

(a) The 2872A2M telephone set is a modular type telephone set and may be ordered complete and ready to install as:

- Set, Telephone, 2872A2M-*

*Add appropriate color suffix (1.04 or 1.06).

(b) *Ordered Separately.*

- Unit, Power, 95B1 or 95B2 (required for operation of the automatic dialing feature).

Note: A 95B-type power unit is required for each telephone set.

(c) The 2872A2M set is comprised of the following component parts:

- Housing, 870A1-*
- Housing, Upper, 870A1U-* (used only with 2872B1 faceplate)
- Faceplate, 2872B1-122 (matte aluminum)
- Handset, G15A-*
- Cord, Handset, H4DU-*
- Base, Telephone Set, 2872A2M (includes the following):

Dial, 35AG3A

Key, 635BT5

Collar, 812365039 (P-23F503)

Ringer, P1B

Network, 425K (MD) or 4228-type

Buzzer, KS-20419L1

Cord, Mounting, D50BB-87

Battery, KS-20390L2 [may be used in either 2872A1M (MD) or 2872A2M sets]

Battery, KS-20390L4 (2872A2M sets only)

Jack, Handset, 616B

Memory, 2870B

Power Supply Printed Wiring Board (PSB) Assembly, 840393581 (2872AM base)

Power Supply Printed Wiring Board (PSB) Assembly, 841382658 (2872A2M base)

Directory Sheet Set, 840393672

TABLE A
OPTIONS

OPTION		ADDITIONAL ITEMS REQUIRED	CONNECTION PER	
			FIGURE	TABLE
Speakerphone*	4A	108-type Loudspeaker	11	D,E
		680-type Transmitter	11	D,E
		82B Connecting Block	11	D,E
		85B1 Power Unit	11	D,E
		D-180492 Kit of Parts	8(C)	B-E
	3B	760A Loudspeaker	10	B,C
		666B Transmitter	10	B,C
		55-Type Control Unit	10	B,C
		2012B Transformer	10	B,C
		149B Adapter		B,C
		D-180492 Kit of Parts	8(C)	B-E
One-Touch Calling	D-180493 Kit of Parts	8(D,E)	C,E	
	Speakerphone	8(B)		
Dial Tone Detector	D-180493 Kit of Parts	8(D)	C,E,F	
Station Busy Lamp		9		
"I" Hold		9		
Signaling			H	
Exclusion (Multiline)		9		
Add-On-Conference		9		
Amplifying Handset	G6-, G7-, or G8-Type Handset	8(H)		
2/4 Wire Service*	D-180494 Kit of Parts	12	G	
Dry Circuit (without Polarity Guard)		8(B)		
1A Key Service			J	
Restricted Dialing	446F Diode, Capacitor (>.5MF)	13		
Bridged Ringing			K,L	
Record Disable	D-180818 Kit of Parts (See Note)		M	
Dial Intermix				
Decorative Faceplate	2872B1-108 (Teak Woodgrain)†			
	2872B1-109 (Walnut Woodgrain)†			
Head Telephone Set Operation	Plantronics Jack Set Model JS180-1 or JS180-2		Tables provided for Plantronics Jack Set	
	Desired Head Telephone Set			

*D-kits for 2/4-wire service and speakerphone are designed to mount in the same place in the set. If both services are to be provided simultaneously, consult your Telco engineer.

†An 870A1U- upper housing may be required (6.11).

Note: If set is equipped with the 2870A memory, a 2870B memory will also be required.

Booklet, Instruction, Subscriber, SIB-2455B

(d) **Optional Apparatus (order as required):**

- Kit of Parts, D-180492 (must be used for speakerphone service)
- Kit of Parts, D-180493 (Dial Tone Detector and One-Touch Calling switch)
- Kit of Parts, D-180494 (for conversion to 4-wire service)
- Kit of Parts, D-180818 (Record Disable and Dial Intermix)

Note: This kit of parts may be used only with sets equipped with a 2870B memory

- Faceplate, 2872B1-*

Note: If set is equipped with 2872A1-87 faceplate, then an upper housing (870A1U-*) of the appropriate color must also be ordered.

- Set, Head Telephone [using Plantronics Jackset Model JS180-1 (2 foot cord) or JS180-02 (7 foot cord)].

*Add appropriate color suffix (1.04 or 1.06).

2.07 Operating Features (Fig. 2).

- Dial (TOUCH-TONE dial).
- Line key (635BT5), 6-button key. Hold with five line pickup buttons which are convertible to nonlocking. An additional momentary contact (logic reset switch) is attached to the Hold side of the key to reset the logic circuit anytime a key button is depressed.
- 32-button array of low force, low travel nonlocking memory buttons arranged in three columns. Left and right columns have eleven buttons, center column has ten buttons.
- LAST NUMBER DIALED button located in lower right corner of memory array, when momentarily depressed, automatically redials the last number manually dialed.
- RECORD button (nonlocking), when momentarily depressed, lights the RECORD lamp and

enables the memory circuits to store telephone numbers.

- RECORD OFF button (nonlocking), when momentarily depressed extinguishes the RECORD lamp, indicating that the dialer is switched out of the record mode.
- WAIT button (nonlocking), when momentarily depressed during recording operation, enters a code into memory to initiate a halt in the automatic dialing sequence [used where access digit(s) required].

3. INSTALLATION

STANDARD INSTALLATION

3.01 Make all wiring changes and telephone set modifications (Table A) before external connections are made to the set (4.01).

Caution: *Do not plug in either battery or power unit until all connections and modifications are completed. Take extreme care not to damage the exposed components, circuit, etc. when the set is opened.*

3.02 The set is shipped from the factory with the battery disconnected. After all wiring changes and modifications have been completed, connect the battery (Fig. 6) by tilting the set up, and inserting the battery plug into the mating jack.

Note: Write date of installation on label provided on battery.

3.03 Install the 95B-type power unit within 150 feet (24 gauge conductors) of the telephone set and plug into an ac outlet not controlled by a switch (continuous ac power is required). A retaining clamp (841050818) will be shipped with the 95B-type power unit and should be mounted to the ac receptacle to hold power unit securely and prevent accidental loss of power. The power unit may be located at the equipment end of the cable or run directly into the telephone set by conductors separate from the mounting cord and connected to PSB terminals 30 and 31. Refer to applicable tables and Fig. 7 for particular type of installation. When separate power conductors are used, disconnect, insulate, and store the (BL-V) and (V-BL) mounting cord leads from PSB terminals 30 and 31.

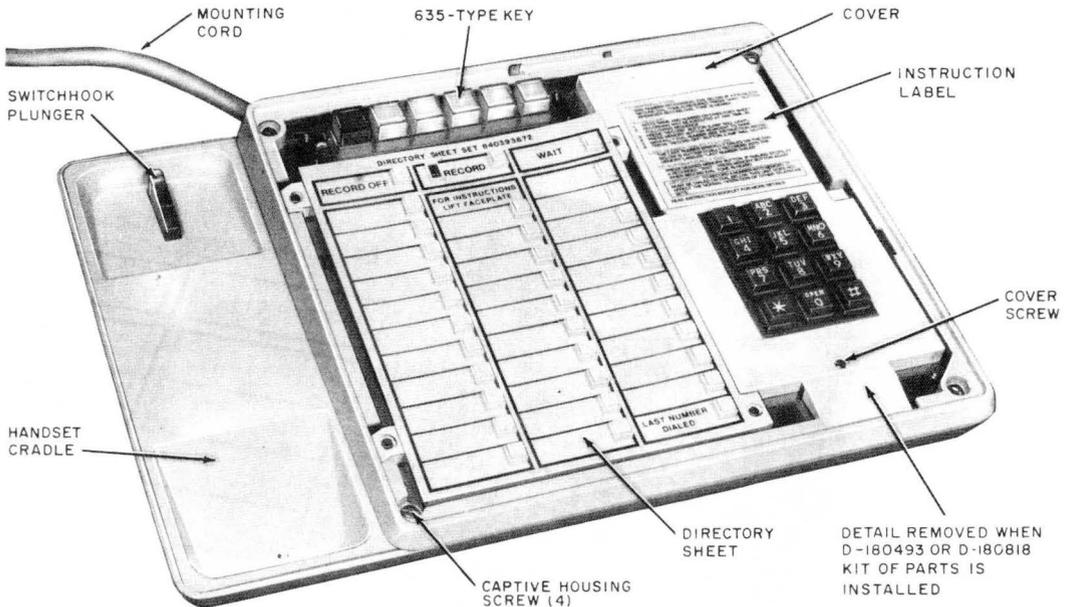


Fig. 2—2872A2M Telephone Set—Faceplate and Handset Removed

Danger: Securely attach retaining clamp to ac outlet using outlet cover screw **BEFORE** attempting to install 95B-type power unit. When removing power unit, always unplug it completely from the outlet **BEFORE** attempting to remove the retaining clamp. This will prevent the possibility of a loosened retainer clamp or metallic outlet cover making contact with the ac prongs of the power unit when partially withdrawn from outlet. Do not use 841050818 or similar retaining clamps on outlets where the cover mounting screw holds the duplex outlet in the box.

Note: The 95B-type power unit must be located no closer than 1-1/2 feet from the telephone set in order to prevent a noise problem.

3.04 The station number card retainer 812558039 (P-25E803) snaps into the faceplate below the dial.

3.05 The directory sheets (Fig. 2) fit over the buttons of the memory and are held in place by the faceplate. Additional sheets are available in the directory sheet set, 840393672.

3.06 To designate the buttons of the 635-type 6-button key.

- (1) Use Form 5837 tabs.
- (2) Squeeze the sides of the key button caps gently and remove.
- (3) Insert the tabs.
- (4) Replace the caps so that small bumps on side of caps fit into small holes on sides of buttons.

Installation Check Procedure

3.07 Check telephone set installation per the following tests (refer to Part 5 for operation). In case of failure, refer to Trouble Analysis, Table N.

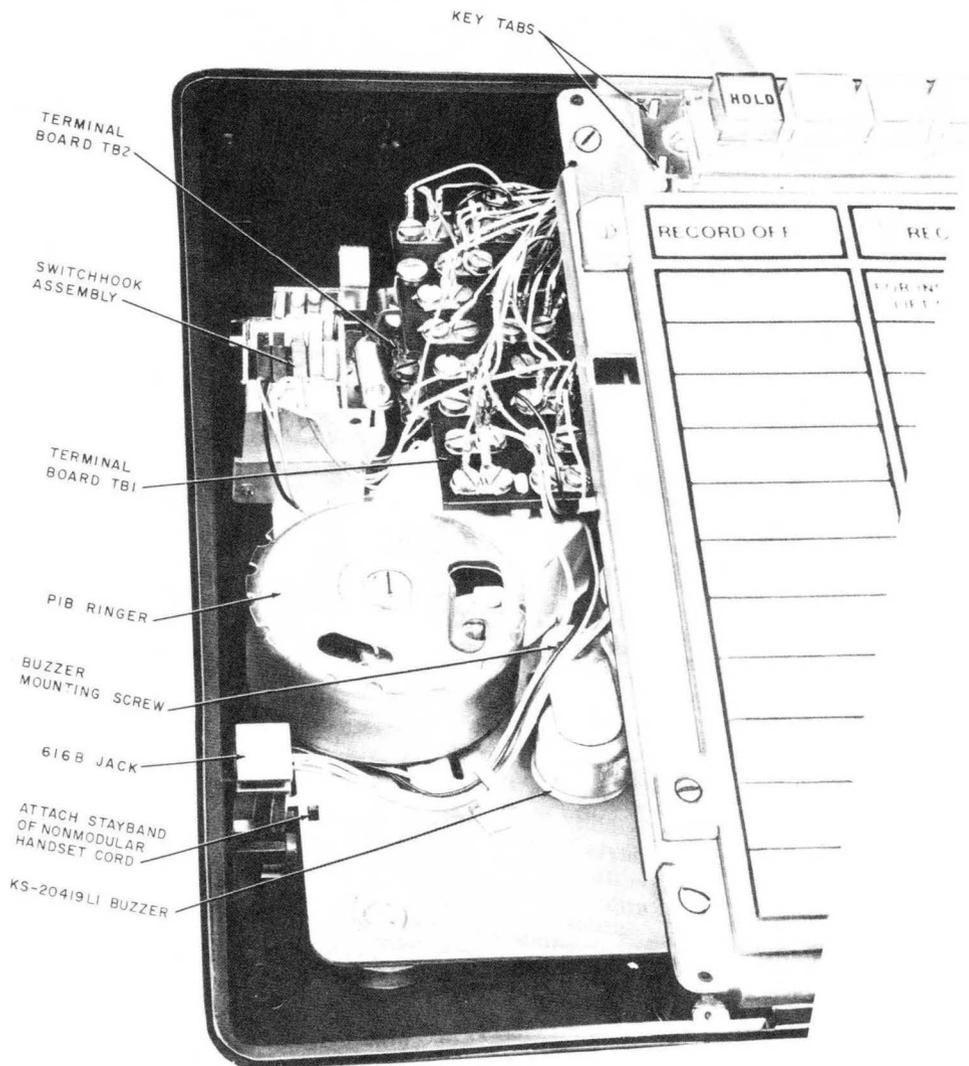


Fig. 3—2872A2M Telephone Set With Faceplate, Handset, and Handset Cradle Removed

- (1) Disconnect the power unit and manually dial a known telephone number to check that the telephone operates correctly in the absence of commercial power.
- (2) Reconnect the power unit to ac outlet.
- (3) With handset on-hook, record digits 1 through 0 into consecutive memory locations, storing one digit per memory. Fill all memory locations except LAST NUMBER DIALED and location immediately above it [5.01 (4) through (7)].
- (4) Manually dial CO dial test and ringer circuit and simultaneously record into memory location immediately above LAST NUMBER DIALED button [5.01 (4) through (7)]. After depressing RECORD OFF button, and when dial test circuit is ready, test dial frequencies by manually dialing digits 1 through 0 into the test circuit.
- (5) Momentarily hang up handset and automatically dial the test circuit number recorded in Step (4) by depressing button immediately above LAST NUMBER DIALED button and proceed as follows.
 - (a) Depress LAST NUMBER DIALED button. Digits 1 through 0 will be automatically dialed into test circuit. Verify that correct signal is returned from test circuit.
 - (b) Momentarily depress the memory buttons used in Step (3) in the same sequence in which the digits were recorded. Verify that correct signal is returned from test circuit after each series of numbers.
- (6) Momentarily disconnect the power unit (for 5 to 10 seconds). After reconnecting power unit, depress a memory button of a memory location used in Step (3), to verify retention of memory.
- (6) Dial the appropriate code for ring-back to test the ringer.
- (7) Check operation of the logic reset switch by pressing the RECORD button (RECORD lamp will come on) and subsequently pressing an unoperated line button. The RECORD lamp must go out.
- (8) If equipped with one-touch calling option (D-180493 Kit of Parts and speakerphone), and with set in on-hook condition, depress the memory button used in Step (4). The speakerphone should turn on, dial tone should be detected, and the stored number should be automatically dialed.

OPTIONAL APPARATUS INSTALLATION

D-180492 Kit of Parts (With Speakerphone)

3.08 To install.

- (1) Proceed as described in 3.16.
- (2) Make connections per the appropriate Tables, B through E.
- (3) Mount the kit assembly to the chassis with the screws provided (Fig. 4). Beveled corner of printed wiring board (PWB) should be located at lower right corner.

D-180493 Kit of Parts (Dial Tone Detector and One-Touch Calling Switch)

3.09 To install.

- (1) Remove the housing (3.21), and access PSB terminal board (3.17).
- (2) Insert the board assembly from the back of the set and locate as shown in Fig. 4, such that the two tabs on the board assembly fit into the slots in the bottom of the chassis.
- (3) Lock the board into position by inserting the self-threading screw through the right side of the chassis.
- (4) Mount the one-touch calling switch below the dial with the two screws provided.

Note: If switch for D-180818 Kit of Parts is already present, the one-touch calling switch can not be installed. The PSB terminal where the switch leads should be connected (Table



The battery and the power unit must be connected a minimum of five minutes before doing Step (c).

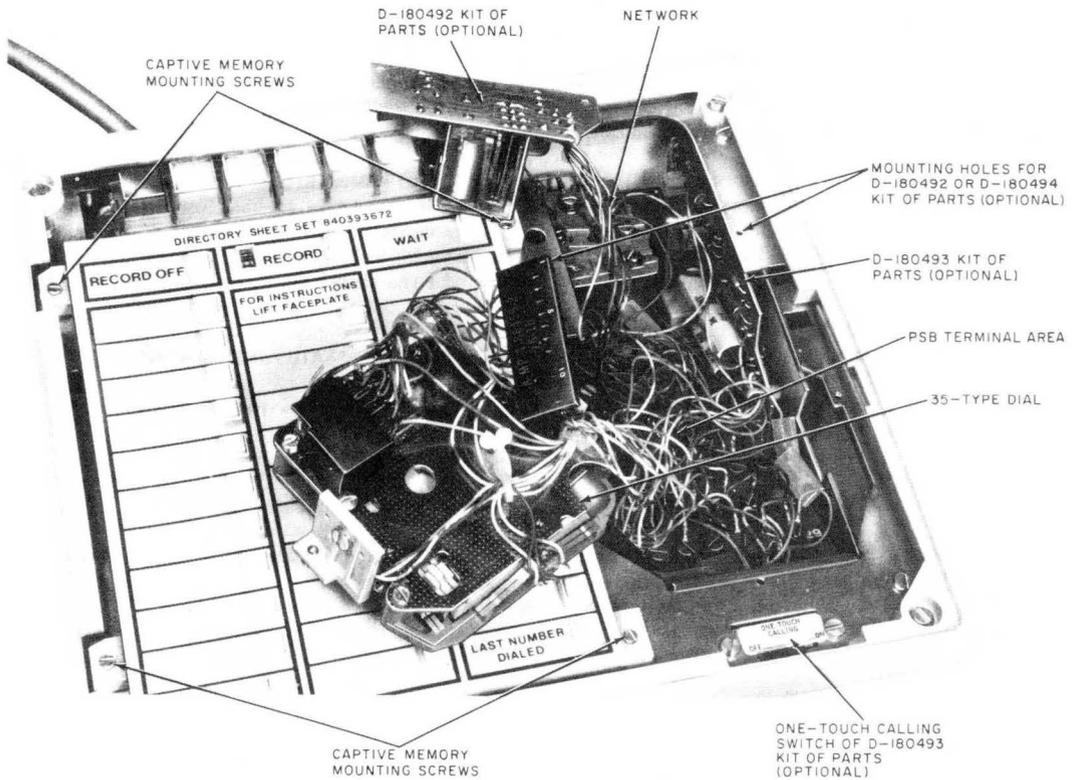


Fig. 4—2872A2M Telephone Set—Dial Removed To Show Terminal Area

C or E) shall be strapped together. (The one-touch calling option cannot be turned off by the subscriber.)

- (5) Make connections per Table C, E, or F.
- (6) Break off the detail at the bottom of the cover (Fig. 2) and trim edge as required.
- (7) Verify correct operation of the option.
- (8) Reassemble set.

D-180494 Kit of Parts (2/4-Wire Service)

3.10 To install.

- (1) Proceed as described in 3.17.

- (2) Make connections per Table G.

- (3) Mount the kit assembly to the chassis with the screws provided (Fig. 4).

D-180818 Kit of Parts (Record Disable and Dial Intermix Features)

3.11 To install.

- (1) Remove faceplate (3.19).
- (2) Loosen the captive screw at the bottom of the cover around the dial and remove the cover.
- (3) Disengage the four captive memory mounting screws (Fig. 4).

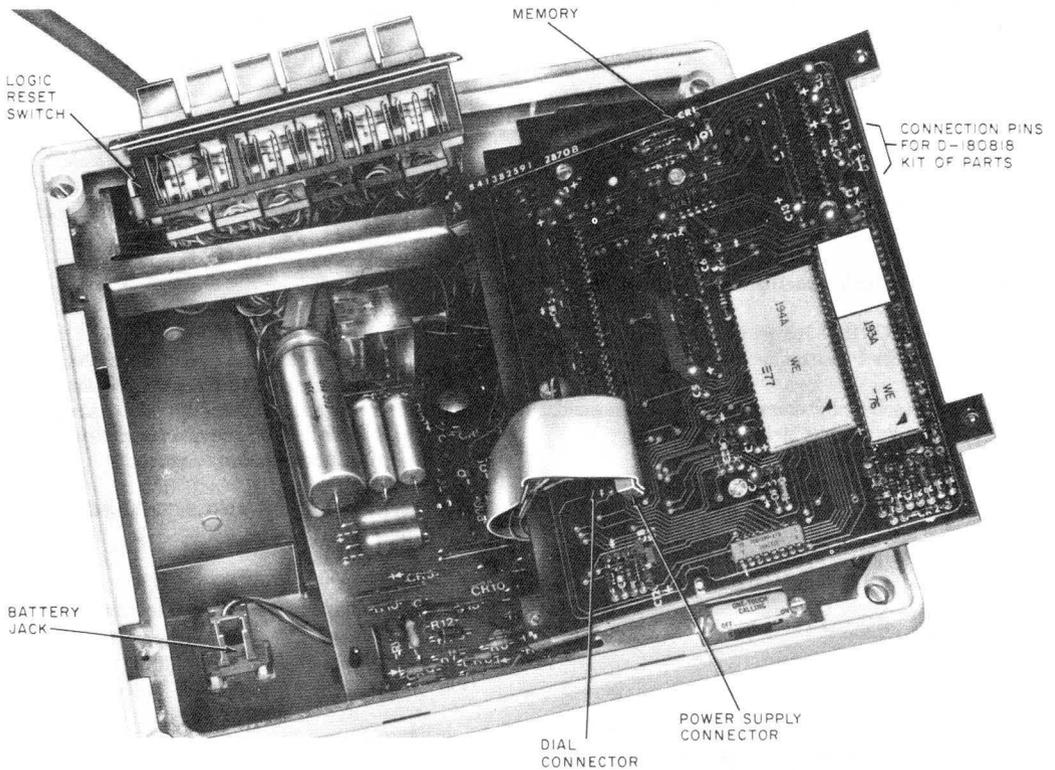


Fig. 5—2872A2M Telephone Set, Internal View, Overall

- (4) Disengage the two captive dial mounting screws and move dial aside.
- (5) Rotate left edge of the memory upward as shown by Fig. 5.

Note: If set is equipped with a 2870A Memory, replace it with 2870B Memory and carefully pack and return the old memory according to local procedures.

- (6) Mount switch below dial using the two screws provided.

Note: If the one-touch calling switch (D-180493 Kit of Parts) has been provided, it must be removed. The PSB terminals where the switch leads were connected (Table C or E) must be

strapped together. (The one-touch calling option can no longer be turned off by the subscriber.)

- (7) Connect switch lead connectors to post terminals on memory board per Table K.
- (8) With feature switch in OFF position, verify that set operates in normal manner:
 - Numbers can be recorded into memory
 - Numbers can be changed
 - Numbers can be deleted from memory.
- (9) Set feature switch to ON position and verify feature provided.

- Record disable feature, only.
 - (a) RECORD lamp will not light when RECORD button is depressed.
 - (b) No telephone numbers can be recorded, changed, or deleted in memory.
 - (c) LAST NUMBER DIALED feature is operative.
 - Record disable and dial intermix features.
 - (a) RECORD lamp will not light when record button is depressed.
 - (b) No telephone numbers can be recorded, changed, or deleted in memory.
 - (c) LAST NUMBER DIALED feature is disabled.
 - (d) Manually and automatically dialed digits may be intermixed (5.07).
- (10) Reassemble set.

Single-line Service

3.12 The 2870A2M TOUCH-A-MATIC telephone set is available from the factory as a single line set. However, with the addition of a 2870B1 faceplate, the 2872A1M and 2872A2M telephone sets may be converted to single line service as follows.

- (1) Remove the faceplate, key collar, and all buttons of the 635-type key.
- (2) Gain access to terminal area (3.17).
- (3) Remove the cradle (3.20).
- (4) Make correction per Table L.
- (5) Reassemble set and install a 2870B1 faceplate of the appropriate color.

Note: If set was originally equipped with a 2872A1-87 faceplate, refer to 6.11.

Head Telephone Set

3.13 To install.

- (1) Remove housing (3.21).
- (2) Access PSB terminal area (3.17).
- (3) Remove cradle (3.20).
- (4) Thread jack set cord through hole in rear of housing and make connections per appropriate table provided for Plantronics Jackset.
- (5) Reassemble telephone set.
- (6) Insert head telephone set plug into jackset.



Other optional components may be used such as SPOKESMAN® loudspeaker sets, etc. Refer to the appropriate section for connection information for these components.

COMPONENT LOCATION AND ACCESS INFORMATION

Location of Components

3.14 The components are located in three areas as follows.

- (a) Under the handset cradle (Fig. 3):
 - Buzzer
 - Ringer
 - Switchhook assembly
 - Handset jack
 - Terminal boards (TB1 and TB2).
- (b) Under the faceplate, inside the set (Fig. 4 and 5):
 - Battery jack (Fig. 5)
 - Power supply (PSB) terminal area (Fig. 4)
 - Network (Fig. 4)
 - Options (Fig. 4):
 - D-180492 (relay kit for speakerphone)
 - D-180493 (dial tone detector and one-touch calling switch kit)

D-180494 (2/4-wire relay kit)

D-180818 (record disable and dial intermix feature switch)

(c) Bottom of telephone set (Fig. 6).

- Battery.

Mounting Cord

3.15 The D50BB-87 mounting cord is amphenol ended at the equipment end and equipped

with 508-type plugs for terminating on the back of the 635-type key module at the telephone set end. The conductors terminated in the 508-type plugs provide the major line service requirements. Spade-tipped conductors are provided for auxiliary control functions or options and are terminated directly on associated equipment, terminal boards, or stored.

Note: Sets manufactured prior to fourth quarter 1976 were equipped with D50AM-87 mounting cords. The major difference in the cords is that TIP and RING contact strips

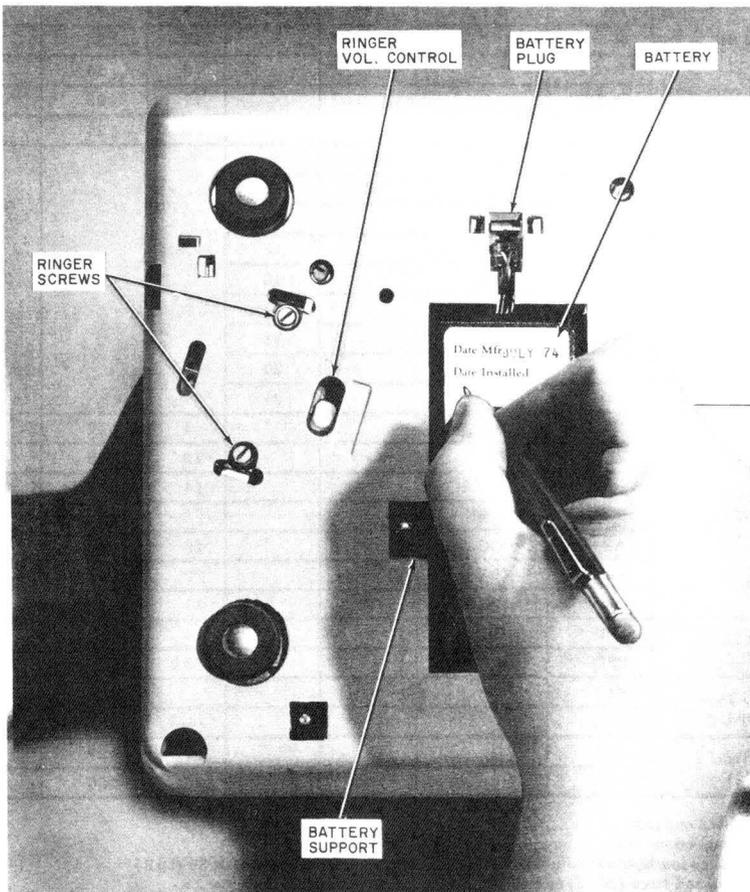


Fig. 6—2872A1M or 2872A2M Telephone Set, Bottom View

TABLE B

CONNECTIONS – 2872A1M OR 2872A2M TELEPHONE SET WITH 3B SPEAKERPHONE

APPARATUS	LEAD		TEL. SET (NOTE 1)		CONNECT		
	DESIG	COLOR			FROM		TO
			CONT UNIT (NOTE 3)		1498 ADPT (D10R CORD)		
			FROM	TO PSB TERM.	55A	55B	TERM.
Tel Set	T1	V-G	*	2	19	1	8A
	R1	G-V	*	11	28	10	7A
	A1				12	2	A1
	AG	V-S	*	F†	5	11	12A
	LK	S-V	*	17	11	35	11A
	R or R1				18	34	1B
	R or R1				9	25	1A
	B or B1				17	33	2B
	B or B1				8	24	2A
	Strap	BK	PSB10	*			
Strap	BK	PSB20	*				
D-180492 Kit of Parts	CE	BL-BK		10			
	B+	BK-BL		15			
	SHa	R-BL		16			
	LK	BL-R		17			
	SHi	G-W		18			
	PFR	BL-V		20			
666B TRMTR (T7A Cord)	VDD	W-G		21			
	M1	S-BK			4	7	
	P1	BL-R			13	8	
	-15V	BK-S			14	16	
	S	O-BK			3	18	
	A1	Y-O			29	19	
760A LSPK (R2FK Cord)	F1	G-Y			2	17	
	LK	BK-O			11	35	
95B-Type Pwr-Unit	SP1	G			34	20	
	SP2	R			33‡	29‡	
2012B Trnsf (Note 2)	AC1						3B §
	AC2						4B §
2012B Trnsf (Note 2)	AC1				27	27	
	AC2				36	36	

* Insulated and stored.

† Terminal on network.

‡ To reduce loudspeaker volume, move SP2 lead to terminal 24 (55A) or 30 (55B)

§ Insulate and store (BL-V) and (V-BL) leads in connector cable.

Notes:

1. Plug telephone set mounting cord into 149B adapter.
2. Both power unit and 2012B transformer must be connected for speakerphone operation.
3. When 55A control unit is used, it must be in the type modified for TOUCH-TONE, and strap terminals 20 and 21 (55A) or 4 and 5 (55B).

TABLE C

**CONNECTIONS – 2872A1M OR 2872A2M TELEPHONE SET WITH
ONE-TOUCH CALLING USING 3B SPEAKERPHONE**

APPARATUS	LEAD		TEL SET (NOTE 1)		CONNECT		
	DESIG	COLOR			FROM		TO
			CONT UNIT (NOTE 5)		149B ADPT (D10R CORD)		
			FROM	TO PSB TERM.	55A	55B	TERM.
Tel Set	T1	V-G	*	2	19	1	8A
	R1	G-V	*	11	28	10	7A
	A1				12	2	A1
	AG	V-S	*	F†	5	11	12A
	LK	S-V	*	17	11	35	11A
	SPO	O-V	*	34	3	18	5B
	R or R1				18	34	1B
	R or R1				9	25	1A
	B or B1				17	33	2B
B or B1				8	24	2A	
D-180493 Kit of Parts (Note 4)	Input	G-R		2			
	PB	O-BK		9			
	Input	G-R		11			
	LK	Y-G		17			
	DT	O-Y		19			
	VDD	R-O		21			
	DR	Y-O		24			
	PL	O-R		25			
	DTT	BL-Y		26			
	SPR	Y-BL		27			
	COM	BK-O		29			
	SPO	G-Y		34			
Switch	S			28			
	S			29			
D-180492 Kit of Parts (Note 2)	CE	BL-BK		10			
	B+	BK-BL		15			
	SHa	R-BL		16			
	LK	BL-R		17			
	SHi	G-W		18			
	PFR	BL-V		20			
VDD	W-G		21				

TABLE C (Cont)

**CONNECTIONS — 2872A1M OR 2872A2M TELEPHONE SET WITH
ONE-TOUCH CALLING USING 3B SPEAKERPHONE**

APPARATUS	LEAD		TEL SET (NOTE 1)		CONNECT		
					FROM		TO
	DESIG	COLOR			CONT UNIT (NOTE 5)		149B ADPT (D10R CORD)
			FROM	TO PSB TERM.			
666B TRMTR (T7A Cord)	M1	S-BK			4	7	
	P1	BL-R			13	8	
	-15 V	BK-S			11	16	
	S	O-BK			3	18	
	A1	Y-O			29	19	
	F1	G-Y			2	17	
	LK	BK-O			11	35	
760A Lspk (R2FK Cord)	SP1	G			34	20	
	SP2	R			33‡	29‡	
95B-Type Pwr Unit	AC1						3B §
	AC2						4B §
2012B Trnsf (Note 3)	AC1				27	27	
	AC2				36	36	

* Insulated and stored

† Terminal on network

‡ To reduce loudspeaker volume, move SP2 lead to terminal 24 (55A) or 30 (55B)

§ Insulate and store (BL-V) and (V-BL) leads in connector cable.

Notes:

1. Plug telephone set mounting cord into 149B adapter.
2. When installing the D-180492 Kit of Parts, disconnect (BK) strap from PSB terminal 10, insulate and store; disconnect (BK) lead from PSB terminal 20; insulate and store.
3. Both power unit and 2012B transformer must be connected for speakerphone operation.
4. When installing the D-180493 Kit of Parts, remove (BK) strap leads from PSB terminals 19, 26, and 29, insulate and store.
5. When 55A control unit is used, it must be the type modified for TOUCH-TONE, and strap terminals 20 and 21 (55A) or 4 and 5 (55B).

were required with the D50AM-87, whereas individual conductors of the D50BB-87 connect to the TIP and RING contacts of the 635-type key.

Network Terminals

3.16 For access to the network terminals.

- (1) Remove the faceplate (3.19).
- (2) Loosen the captive cover screw at the bottom of the white cover around the dial (Fig. 2).

(3) Remove the cover.

(4) To replace the cover, the three tabs of the cover (one at the top center and one at each side just above the dial) must be aligned with holes in the chassis before the screw is refastened. Failure to do this will result in improper seating of the faceplate.

Power Supply (PSB), Terminals

3.17 To access the terminal field on the power supply board, proceed as follows.

- (1) Remove the faceplate (3.19).
- (2) Loosen the captive cover screw at the bottom of the white cover around the dial (Fig. 2).
- (3) Remove the cover.
- (4) Loosen the two captive screws that hold the dial in place.

Note: On sets with metal dial brackets, the screws will have to be removed.

- (5) Gently raise the dial and disconnect 12 position plug from terminal board.
- (6) Rotate dial over onto the memory.
- (7) To reassemble; reverse procedure.
- (8) To replace the cover, the three tabs of the cover (one at the top center and one at each side just above the dial) must be aligned with holes in the chassis before the screw is refastened. Failure to do this will result in improper seating of the faceplate.

Line Key Removal

3.18 To remove, use the following procedure.

- (1) Remove faceplate (3.19).
- (2) Push the key toward the rear of the set to unlock it from the tabs.
- (3) Raise the metal plate of the key just above the tabs and move the key toward the left, then raise the right end of the key until it clears the chassis of the set.

Caution: *Do not damage contact strips which protrude from bottom right side of key or logic reset switch attached on HOLD side of key. (These contact strips will only be found on sets equipped with D50AM-87 mounting cords.)*

- (4) Lift the key completely out of the set.
- (5) Replace key by reverse procedure.

Faceplate Removal

3.19 Removal will differ depending on faceplate provided.

- (a) The 2872B1 faceplate is held in place by a spring clip attached to the 870A1U upper housing. To disengage the faceplate, lift up the tab which protrudes from the center of the back edge of the faceplate.

Note: The 2872B1 faceplate is not a direct replacement for the 2872A1-87 faceplate. An 870A1U upper housing is also required with the 2872B1 faceplate (see 6.11).

- (b) The 2872A1-87 faceplate is held in place by two snaps bonded to the faceplate and aligned to fit holes in the chassis. To remove the faceplate, grasp it by any convenient edges and lift.

Handset Cradle Removal

3.20 To remove the handset cradle from the housing, proceed as follows.

- (1) Remove the faceplate (3.19), and place the handset aside.
- (2) Remove upper housing, if provided, [3.21(b)].
- (3) Disengage the captive cradle screws located in the two tabs on the cradle (Fig. 2).
- (4) Lift the cradle, by pulling up on the plunger, and remove.
- (5) Replace the handset cradle by sliding it sideways to engage the clips with the mating tabs in the side of the housing.

Caution: *The plunger must be held from the top side of the cradle as it is slid into position to prevent damage to the switchhook arm.*

- (6) Refasten the captive cradle screws.

Housing Removal

3.21 To remove, proceed as follows.

- (a) **Lower housing.**

- (1) Unplug the handset cord, at the telephone set end and remove handset.
- (2) Remove the faceplate (3.19).
- (3) Remove the handset cradle (3.20).

Caution: Attempting to remove the housing without removing the handset cradle may damage the switchhook arm.

- (4) Disengage the four captive housing screws (Fig. 2) located in each corner of the upper housing.
- (5) Separate the housing from the telephone set base.
- (6) Feed mounting cord through hole in bottom of housing as housing is removed.
- (7) Before replacing the housing, lift the set to check that the shoulders of the battery jack are against the two tabs on the chassis. Misalignment may cause the bottom of the housing to bow.
- (8) When replacing the housing, keep the handset jack from being trapped between the housing and the chassis.

(b) **Upper housing.**

- (1) Remove the faceplate (3.19).
- (2) Disengage the captive housing screws located in each corner of the upper housing (Fig. 2). This will release the lower housing.
- (3) Pull the upper housing away from the chassis as each housing screw is backed out. This will separate the upper housing from the chassis.
- (4) If necessary, thread screws out of housing.
- (5) To reassemble, reverse procedure.

4. CONNECTIONS

- 4.01 Telephone set connections are shown in Fig. 8 and Table I.

Caution: Some conductor assignments are not standard (Table I).

- 4.02 Refer to Table A for connection reference for all options.
- 4.03 A partial functional schematic is shown on Fig. 14.

5. OPERATION

Record A Number Into Memory

- 5.01 To record.

- (1) Remove the faceplate (3.19).
- (2) Write or type the desired name and telephone number for a selected memory button on the associated position of the directory sheet.
- (3) Replace the directory sheet and faceplate.
- (4) Depress the RECORD button. The RECORD lamp adjacent to the RECORD button will light. (A number can be called and recorded simultaneously by lifting handset before depressing the RECORD button.)

Note: If set is equipped with the D-180818 Kit of Parts, switch must be placed in the OFF position.

- (5) Depress the specific memory button adjacent to the desired telephone number listed on the directory sheet.
- (6) Manually dial the desired telephone number. If an access code and pause for second dial tone is required.
 - (a) Dial the access digit(s) for the outside line.
 - (b) Push the WAIT button when the RECORD lamp relights. (The WAIT entry counts as one digit.)
 - (c) Dial the telephone number.

Note: A number up to 15 digits in length may be recorded. The RECORD lamp will go out momentarily as each digit is dialed. If exactly 15 digits are recorded, the RECORD

lamp will go out and stay out, indicating that the dialer has been reset. If a memory button has not been depressed, the RECORD lamp will go out when the first digit is dialed and recording operation will be voided.

- (7) Depress the RECORD OFF button if less than 15 digits are recorded. The RECORD lamp will go out. The dialer will be reset. The number is now stored in the selected memory. The dialer will also be reset by a switchhook, line key, or speakerphone operation.

Change A Number In Memory

Note: If set is equipped with a D-180818 Kit of Parts, switch must be in OFF position.

- 5.02** Whenever a new number is recorded in a previously used memory position, it will automatically replace the previously stored number.

Delete A Number From Memory

Note: If set is equipped with a D-180818 Kit of Parts, switch must be in OFF position.

- 5.03** Complete the following operations in succession.

- (1) Depress the RECORD button.
- (2) Depress the memory button corresponding to the name and number to be deleted.
- (3) Depress the RECORD OFF button.

Automatically Dial A Number From Memory

- 5.04** To automatically dial a number.

- (a) For factory-wired sets go off-hook, listen for dial tone, and depress the desired memory button. If WAIT input has been recorded, automatic dialing will stop. When second dial tone is heard, depress memory button again to complete automatic dialing.
- (b) For sets equipped with the dial tone detector only, go off-hook, listen for dial tone, and depress the desired memory button.
- (c) For sets equipped with the one-touch calling option (with speakerphone and dial tone detector), simply depress the memory button.

LAST NUMBER DIALED Feature

Note: If set is equipped with a D-180818 Kit of Parts, and dial intermix feature is provided, switch must be in OFF position.

- 5.05** The TOUCH-A-MATIC telephone set automatically records into the LAST NUMBER DIALED position (Fig. 1) any number dialed using the standard telephone dial. Each number in the LAST NUMBER DIALED position is automatically replaced by the next number manually dialed. Although the unit is recording, the RECORD lamp does not light at any time during this operation.

- 5.06** Operation of LAST NUMBER DIALED feature.

- (a) With no access digit(s) required.
 - (1) Go off-hook.
 - (2) Listen for dial tone.
 - (3) Manually dial telephone number.
 - (4) To redial same number automatically.
 - (a) For factory-wired sets, go off-hook, listen for dial tone and depress LAST NUMBER DIALED button.
 - (b) For sets equipped with the dial tone detector only, go off-hook, listen for dial tone, and depress the LAST NUMBER DIALED button.
 - (c) For sets equipped with the one-touch calling option (with speakerphone and dial tone detector), simply depress the LAST NUMBER DIALED button.
- (b) When an access code and pause for second dial tone is required.
 - (1) Go off-hook.
 - (2) Listen for dial tone.
 - (3) Dial access digit(s).
 - (4) Depress WAIT button, after second dial tone is heard.

- (5) Manually dial telephone number.
- (6) To redial same number automatically.
 - (a) For factory-wired sets, go off-hook, listen for dial tone and depress LAST NUMBER DIALED button. Automatic dialing will stop at the recorded WAIT input. When second dial tone is heard, depress LAST NUMBER DIALED button again to complete automatic dialing.
 - (b) For sets equipped with the dial tone detector only, go off-hook, listen for dial tone, and depress LAST NUMBER DIALED button.
 - (c) For sets equipped with the one-touch calling option (with speakerphone and dial tone detector), simply depress the LAST NUMBER DIALED button.

End-to-End Signaling

5.07 For end-to-end signaling (such as data transmission) this set has the capability to intermix manual and automatic dialing. This can be accomplished if the following procedures are observed.

Note: If the telephone set is to be used for end-to-end signaling, V option (with polarity guard) shall be used, (Fig. 8B).

- (1) If the telephone set is equipped with the one-touch calling option the initial number must be dialed automatically (even if the one-touch calling switch is in the OFF position). This allows the dial tone detector to complete its function and then additional numbers may be dialed automatically or manually.
 - (a) **Standard Operation:** If, at any time, information is keyed in manually, the RECORD OFF button must be depressed before another number can be dialed from memory. (The RECORD lamp will not light at any time but depressing the RECORD OFF button will remove the set from the "last number dialed" mode and allow additional automatic dialing.)
 - (b) **Dial Intermix (D-180818 Kit of Parts):** With the switch in the ON

position, manually and automatically dialed digits may be intermixed as desired. Operation of the RECORD OFF button is not required.

Note: In this mode, the RECORD button and the LAST NUMBER DIALED feature are inoperative.

6. MAINTENANCE

6.01 In case of power failure, the automatic dialing feature cannot be used. The battery retains the number associated with each of the memory buttons for at least 24 hours. If power loss exceeds 24 hours, the numbers may have to be rerecorded.

Trouble Analysis

6.02 When trouble is encountered, the subsequent procedure should be followed.

- (1) Confirm improper operation either as a basic telephone set or as an automatic dialer (Part 5).
- (2) Check for improper connections.
- (3) Refer to Table N, and the following paragraphs.
- (4) If removal of set is required, proceed as follows.
 - (a) Disconnect telephone set.
 - (b) Unplug battery.
 - (c) Place battery plug sideways into housing slot below battery jack and tape into place.

Caution: Failure to restrain plug can result in plug damage necessitating battery replacement.

Battery

6.03 The KS-20390L2 and L4 batteries are not completely interchangeable. The List 2 battery may be used in both sets but the List 4 battery should only be used in the 2872A2M telephone set. Either battery has an expected life of about 4 years. It can be replaced without loss of memory provided that commercial ac power to

the set is continuously maintained. To replace the battery, proceed as follows (Fig. 6).

- (1) Tilt the front of the set up.
- (2) Unplug the battery.
- (3) Loosen captive screw on the battery support.
- (4) Remove battery support.
- (5) Remove battery.
- (6) Install new battery.
- (7) When battery has been connected at least five minutes, check memory retention by momentarily disconnecting ac power and then automatically dialing a known telephone number.

Memory

6.04 The memory may be replaced in the following manner.

Note: Removal of the memory results in loss of stored telephone numbers.

- (1) Remove the faceplate (3.19).
- (2) Loosen the four captive memory mounting screws (Fig. 4).
- (3) Rotate the left edge of the memory upward as shown in Fig. 5.
- (4) Disengage the two connectors by pulling on them perpendicular to the printed wiring board.
- (5) Replace the memory by engaging the dial connector first. The dial connectors are keyed, one position is filled and should fit over the vacant position in the row of pins. The flat power supply cable should not be twisted. It should form a loop as shown in Fig. 5 when connected to the board.
- (6) Reassemble set.
- (7) Test per 3.07.

Dial

6.05 To replace.

- (1) Proceed per 3.17.
- (2) Loosen the four captive mounting screws of the memory (Fig. 4).
- (3) Gently raise the left side of the memory and rotate to position shown in Fig. 5. This will expose 10-position dial connector.

Caution: *Do not remove the power supply connector in the process of changing the dial, since this will result in complete loss of stored telephone numbers.*

- (4) Carefully disengage the dial connector by pulling on it perpendicular to the printed wiring board.
- (5) Lift the dial out.
- (6) To replace a new dial, reverse the previous steps. The connectors are keyed to orient them relative to the pins. Observe the correct orientation and do not force the connection.

6-Button Line Key

6.06 To replace.

- (1) Remove key per 3.18.
- (2) Access PSB terminal area per 3.17.
- (3) Disconnect logic reset leads from PSB terminals 14 and 29.
- (4) Remove the 508-type plugs and (if provided) the two contact strips from the back of the key.
- (5) Install new key.
- (6) Reassemble the set.
- (7) Test for operation of the logic reset switch [3.07(7)].

Ringer

6.07 To replace.

- (1) Remove the faceplate (3.19) and place handset aside.
- (2) Remove upper housing, if provided, [3.21(b)].
- (3) Remove the cradle (3.20).
- (4) Disconnect the ringer leads (Fig. 8I).
- (5) Tilt the front of the set up.
- (6) Unfasten ringer mounting screws (Fig. 6).
- (7) Remove ringer.
- (8) Replace new ringer and assemble in reverse order. The leads should be routed as shown in Fig. 3 to prevent contact with the gong and subsequent damping of the ringer output. Dial ringback code to test ringer.
- (9) Reassemble set.

Buzzer

6.08 To replace the buzzer.

- (1) Remove the faceplate (3.19), and place handset aside.
- (2) Remove upper housing, if provided, [3.21(b)].
- (3) Remove the cradle (3.20).
- (4) Remove the buzzer mounting screw.
- (5) Remove the mounting screw and spacer for TB1 (Fig. 3).
- (6) Move board TB1 to gain access to the appropriate terminals on TB2.
- (7) Remove appropriate leads (Fig. 8H).
- (8) Reassemble. When replacing TB1, locate its tabs in the slots of the chassis before refastening the TB1 mounting screw.

Handset Jack

6.09 To replace the 616B handst jack.

- (1) Remove the faceplate (3.19), and place handset aside.
- (2) Remove upper housing, if provided, [3.21(b)].
- (3) Remove the cradle (3.20).
- (4) Remove the mounting screw and spacer for TB1 (Fig. 3).
- (5) Move board TB1 to gain access to the appropriate terminals on TB2.
- (6) Disconnect the appropriate leads (Fig. 8H), and remove jack.
- (7) Reassemble. When replacing TB2, locate its tabs in the slots of the chassis before refastening the TB1 mounting screw.

Handset

6.10 A defective G15A handset may be replaced or changed to a modular amplifying handset (G6BM, G7BM, or G8BM) by unplugging the H4DU cord and inserting it into the new handset. To replace the G15A handset with a nonmodular amplifying handset (G6B, G7B, or G8B) proceed as follows.

- (1) Unplug H4DU handset cord at telephone set end.
- (2) Remove faceplate (3.19), and place handset aside.
- (3) Remove upper housing, if provided, [3.21(b)].
- (4) Remove handset cradle (3.20).
- (5) Disconnect 616B handset jack (6.09). (Jack may be removed or stored just to right of ringer.)
- (6) Insert spade-tipped end of handset cord through hole in the side of the housing.
- (7) Attach stayboard hook to bottom of chassis (Fig. 3).

- (8) Route leads as shown in Fig. 3.
- (9) Make connections (Fig. 8H).
- (10) Reassemble set.

Faceplate

6.11 To replace a 2872A1-87 faceplate with a 2872B1 faceplate.

- (1) Remove the 2872A1-87 faceplate by lifting up at any of its edges.
- (2) Remove the four captive housing screws (Fig. 2) from the chassis.
- (3) Use the four housing screws to mount the 870A1U upper housing to the chassis and

870A1 housing. The three parts should be held tightly together as the screws are driven.

- (4) Place the two tabs located along the lower edge of the 2872B1 faceplate in the notches in the lower side of the 870A1U-type upper housing.

- (5) Lower the faceplate to rest on the memory. The spring clip located at the top center of the upper housing should retain the faceplate.

Speakerphone

6.12 For maintenance information on the 3B or 4A speakerphone systems, refer to Section 512-620-100 or 512-700-100, respectively.

6.13 For speakerphone connections use appropriate Tables, B through E.

TABLE D

**CONNECTIONS – 2872A1M OR 2872A2M TELEPHONE SET WITH
4A SPEAKERPHONE, USING 82B CONNECTING BLOCK**

APPARATUS	LEAD		TEL SET		82B CONN BLK (NOTE 1)	CONN CABLE AT KEY EQUIP	
	DESIG	COLOR	FROM	TO PSB TERM.		COLOR	TO
Tel Set	T1	V-G	*	2	(Note 2)		
	R1	G-V	*	11			
	A1						
	AG	V-S	*	F†			
	LK	S-V	*	17			
	Strap	BK	PSB-10	*			
	Strap	BK	PSB-20	*			
D-180492 Kit of Parts	CE	BL-BK		10			
	B+	BK-BL		15			
	SHa	R-BL		16			
	LK	BL-R		17			
	SHi	G-W		18			
	PFR	BL-V		20			
	VDD	W-G		21			
85B1 Power Unit (Note 3)						BR-V	*
	AC1	BK			AC1		
	AC2	Y			AC2	V-BR	*
95B-Type Power Unit (Note 3)						BL-V	*
	AC1	R			21		
	AC2	G			46	V-BL	*

* Insulated and stored.

† Terminal on network.

Notes:

1. Plug mounting cords of telephone set, 108A loudspeaker, and 660A transmitter into 82B connecting block. Install option plug in ringer cutoff mode.
2. For 1A1 or 1A2 KTS, connect link between 2 and A1. For 1A KTS, connect link between 19 and A1.
3. Both power units must be connected for speakerphone operation.

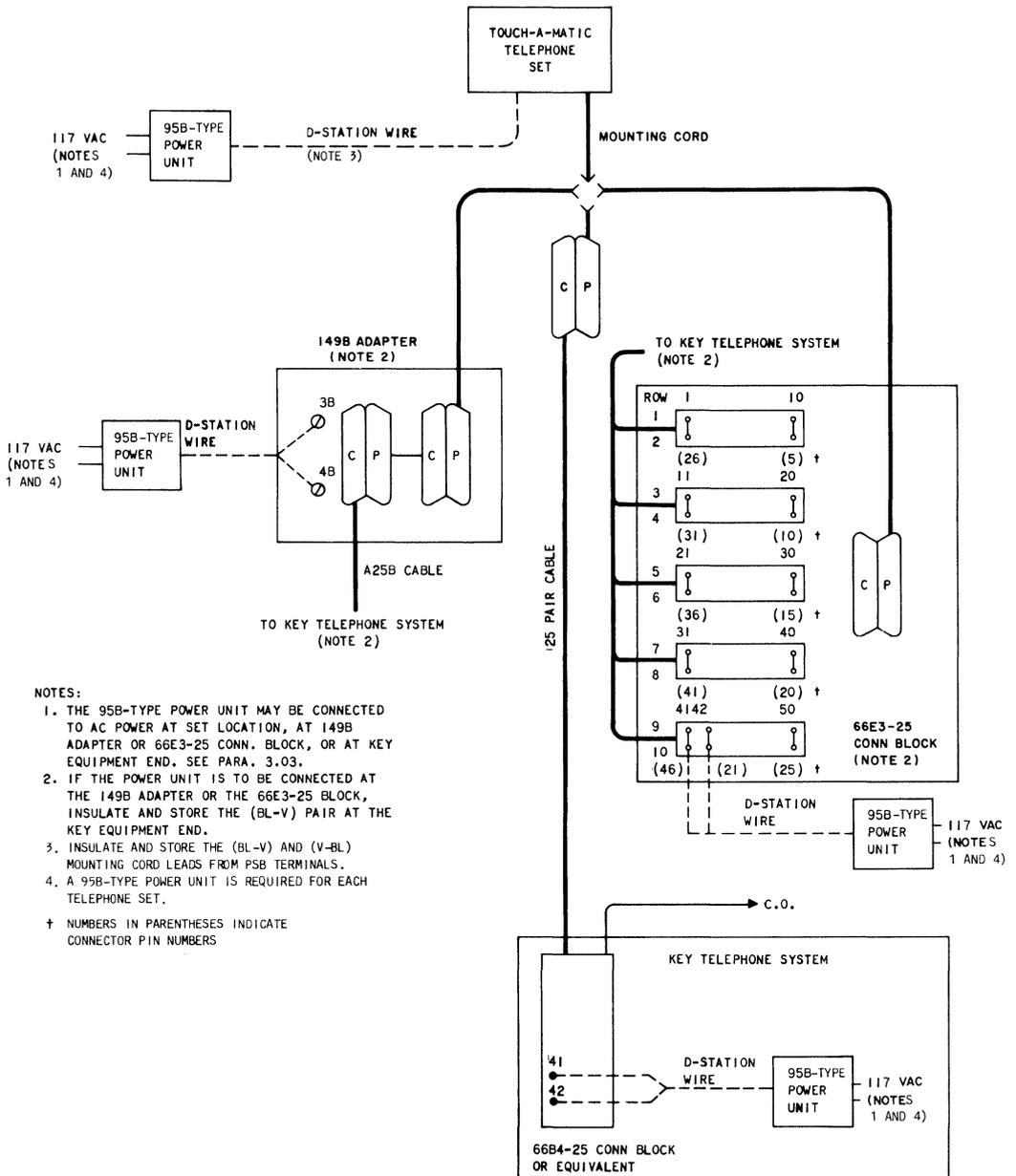


Fig. 7—2872A1M or 2872A2M Telephone Set, Alternate Power Connection Methods

TABLE E

**CONNECTIONS – 2872A1M OR 2872A2M TELEPHONE SET WITH
ONE-TOUCH CALLING USING 4A SPEAKERPHONE**

APPARATUS	LEAD		TEL SET		82B CONN. BLK (NOTE 1)	CONN CABLE AT KEY EQUIP.	
	DESIG	COLOR	FROM	TO PSB TERM.		COLOR	TO
Tel Set	T1	V-G	*	2	(Note 2)		
	R1	G-V	*	11			
	A1						
	AG	V-S	*	F†			
	LK	S-V	*	17			
	SPO	O-V	*	34	Strap 10 to 35	O-V	*
D-180493 Kit of Parts (Note 4)	Input	G-R		2			
	PB	O-BK		9			
	Input	G-R		11			
	LK	Y-G		17			
	DT	O-Y		19			
	VDD	R-O		21			
	DR	Y-O		24			
	PL	O-R		25			
	DTT	BL-Y		26			
	SPR	Y-BL		27			
	COM	BK-O		29			
	SPO	G-Y		34			
	SWITCH	S		28			
S			29				
D-180492 Kit of Parts (Note 3)	CE	BL-BK		10			
	B+	BK-BL		15			
	SHa	R-BL		16			
	LK	BL-R		17			
	SHi	G-W		18			
	PFR	BL-V		20			
	VDD	W-G		21			
85B1 Power Unit (Note 5)	AC1				AC1	BR-V	*
		BK					
	AC2	Y			AC2	V-BR	*

TABLE E (Cont)

**CONNECTIONS – 2872A1M OR 2872A2M TELEPHONE SET WITH
ONE-TOUCH CALLING USING 4A SPEAKERPHONE**

APPARATUS	LEAD		TEL SET		82B CONN. BLK (NOTE 1)	CONN CABLE AT KEY EQUIP.	
	DESIG	COLOR	FROM	TO PSB TERM.		COLOR	TO
95B-Type Power Unit (Note 5)	AC1					BL-V	*
		R			21		
	AC2					V-BL	*
		G				46	

* Insulated and stored.

† Terminal on network.

Notes:

1. Plug mounting cords of telephone set, 108A loudspeaker, and 680A transmitter into 82B connecting block. Install option plug in ringer cutoff mode.
2. For 1A1 or 1A2 KTS, connect link between 2 and A1. For 1A KTS, connect link between 19 and A1.
3. When installing D-180492 Kit of Parts, disconnect (BK) strap from PSB-10, insulate and store; disconnect (BK) lead from PSB-20, insulate and store.
4. Remove (BK) lead from PSB terminals 19, 26, and 29; insulate and store.
5. Both power units must be connected for speakerphone operation.

TABLE F
CONNECTIONS – 2872A1M OR 2872A2M
TELEPHONE SET WITH DIAL TONE
DETECTOR (NOTE)

APPARATUS	LEAD		TEL SET		
	DESIG	COLOR	FROM	TO PSB TERM	
Tel Set	Strap	BK	19	*	
	Strap	BK	26	*	
D-180493 Kit of Parts	Input	G-R		2	
	PB	O-BK		9	
	Input	G-R		11	
	LK	Y-G		*	
	DT	O-Y		19	
	VDD	R-O		21	
	DR	Y-O		24	
	PL	O-R		25	
	DTT	BL-Y		26	
	SPR	Y-BL		*	
	COM	BK-O		29	
	SPO	G-Y		*	
	Switch	S			*
		†	S		*

* Insulated and stored.

† Switch is not required when speakerphone is not provided.

Note: May be used for applications where first dial tone is not precise (350 Hz and 440 Hz) but all subsequent dial tones must be precise if number is to be dialed automatically.

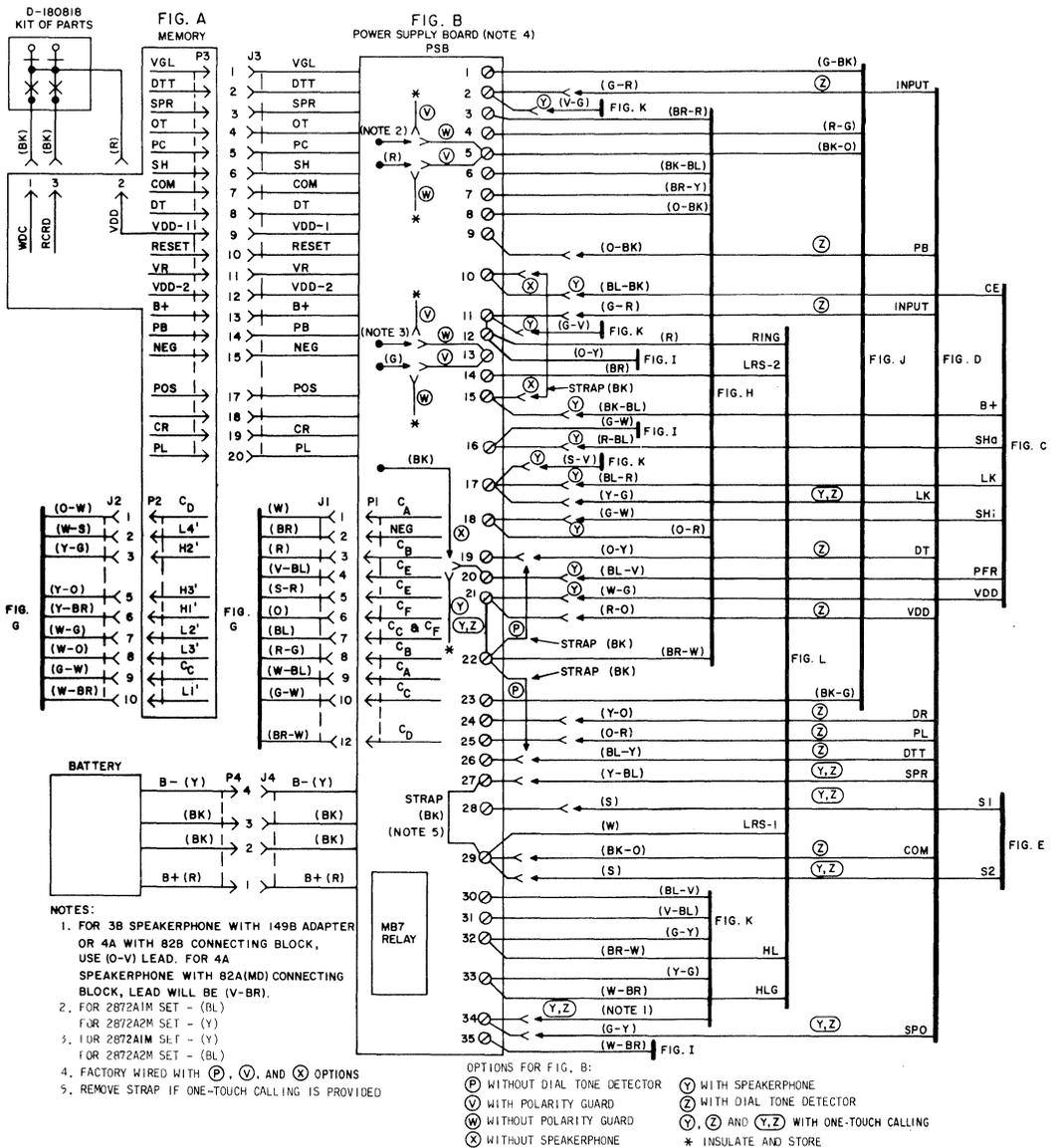


Fig. 8—2872A1M or 2872A2M Telephone Set, Connections (Sheet 1 of 5)

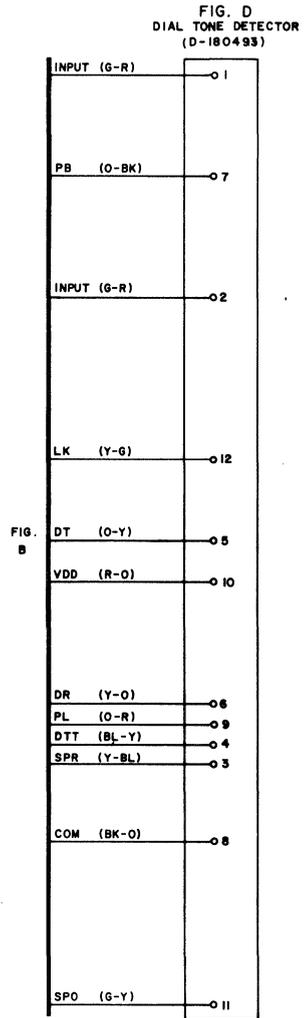
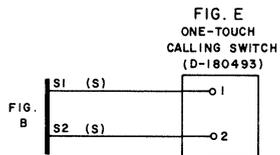
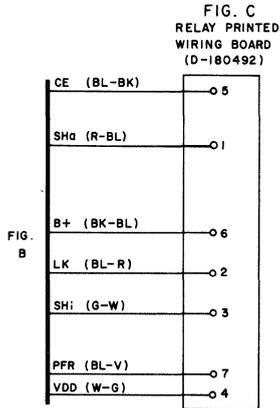


Fig. 8—2872A1M or 2872A2M Telephone Set, Connections (Sheet 2 of 5)

FIG. F
SWITCHHOOK

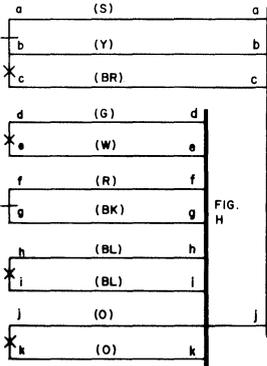


FIG. G
DIAL
COMMON SWITCH

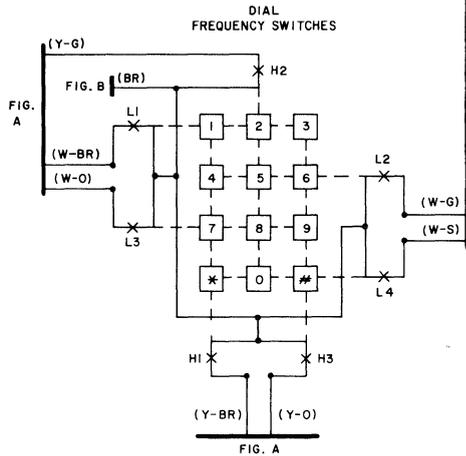
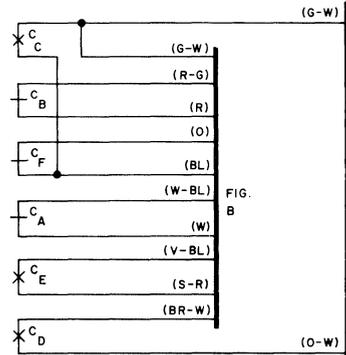


Fig. 8—2872A1M or 2872A2M Telephone Set, Connections (Sheet 3 of 5)

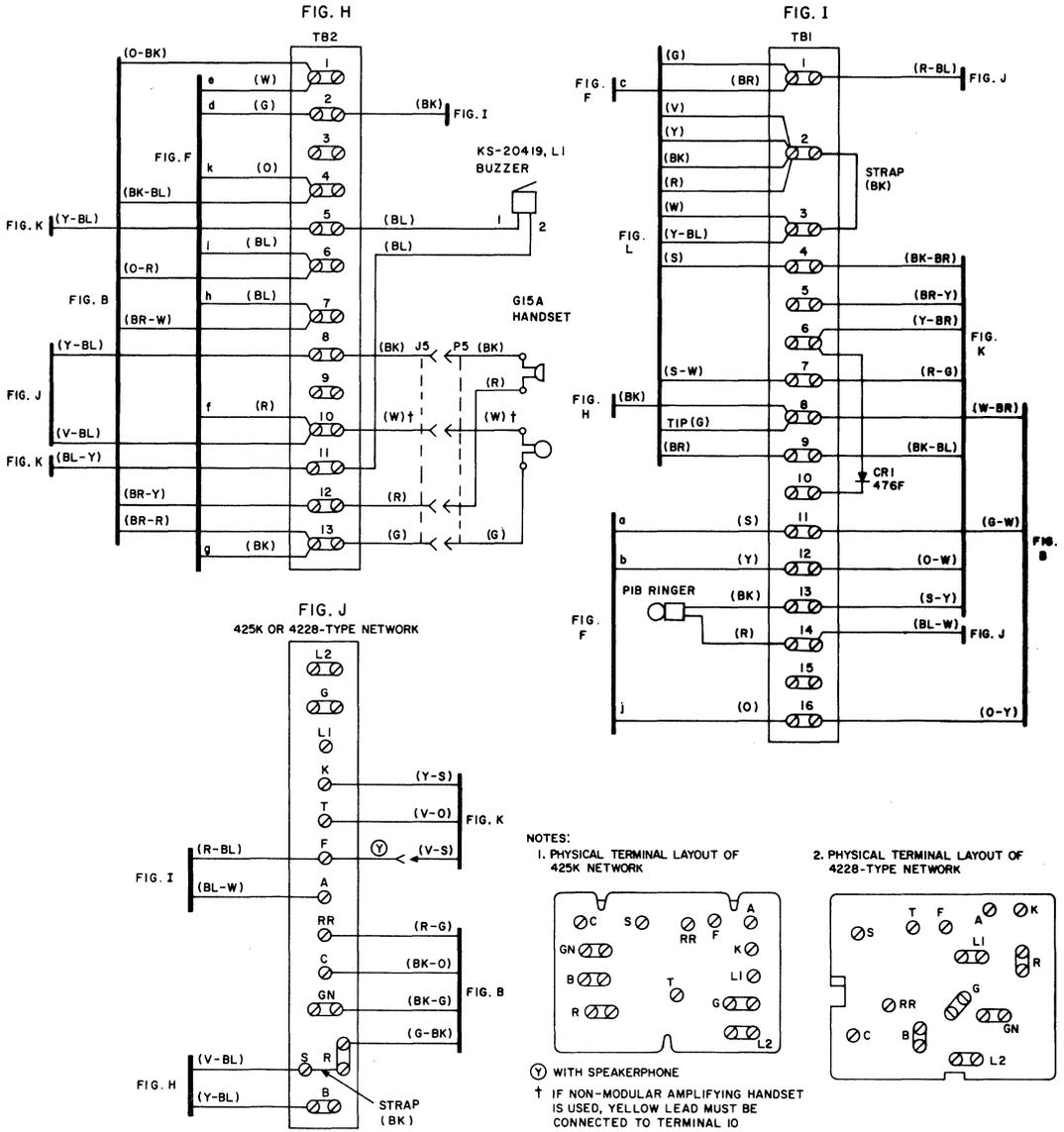
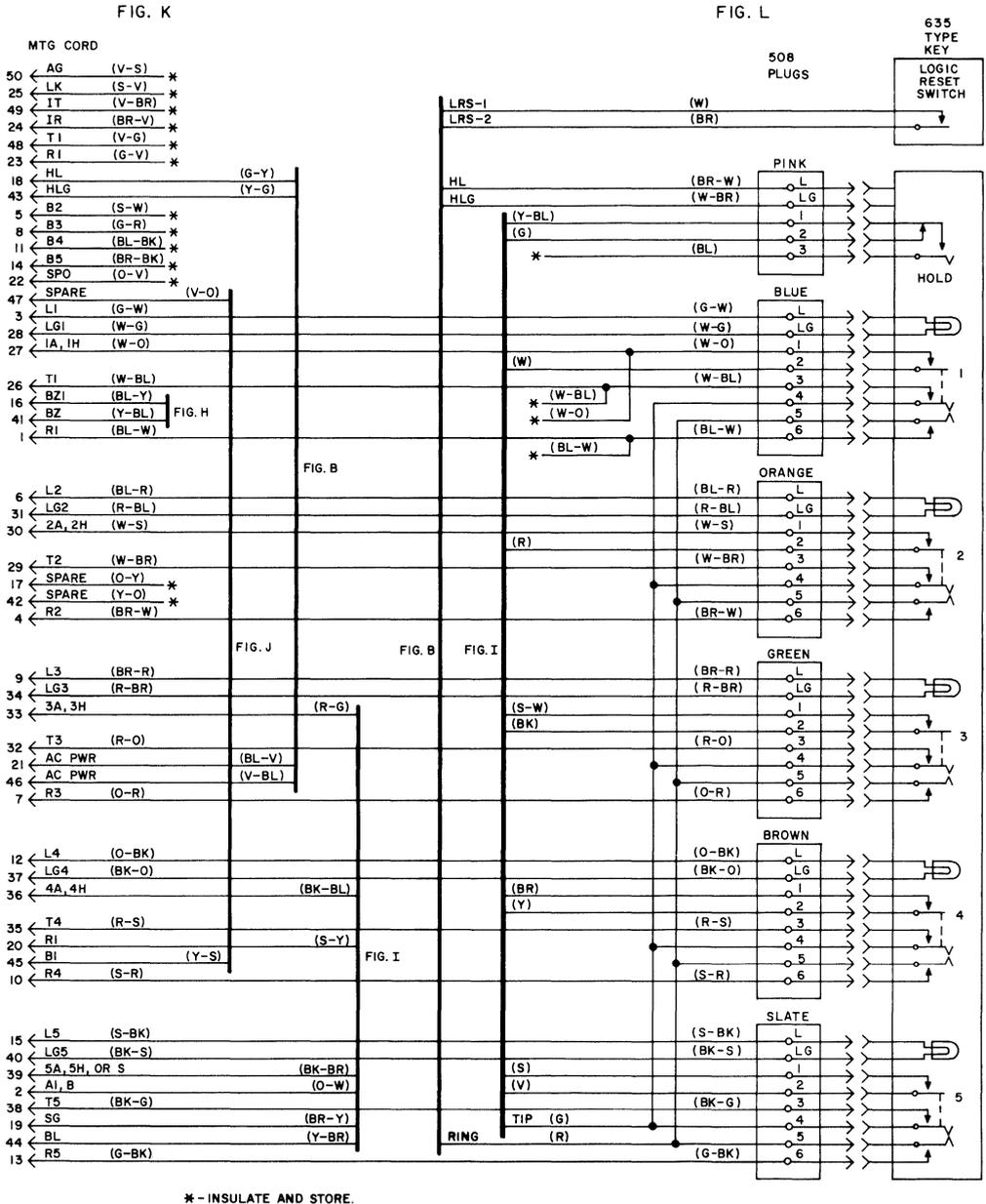


Fig. 8—2872A1M or 2872A2M Telephone Set, Connections (Sheet 4 of 5)



* - INSULATE AND STORE.

Fig. 8—2872A1M or 2872A2M Telephone Set, Connections (Sheet 5 of 5)

TABLE G
CONNECTIONS FOR 2/4-WIRE SERVICE

APPARATUS	LEAD COLOR	REMOVE FROM	CONNECT TO
Tel Set	BK-G	Net. GN	Net. L1
	BK	Net. R	*
	BR-V	*	PSB-17
	V-BR	*	PSB-34
D-180494 Kit of Parts	V		Net. T
	S		Net. F
	BR		PSB-3
	Y-BR		Net. L1
	BL-R		Net. GN
	G-BK		PSB-17
	R-BR		Net. R
	R-O		Net. S
BL-Y		PSB-34	

* Insulated and Stored.

TABLE H
CONVERSION OF KEYS FOR SIGNALING

SELECTIVE SIGNALING							
508 PLUG	COLOR:	BLUE	ORANGE	GREEN	BROWN	SLATE	
	PIN NO:	2	2	2	2	2	1
	LEAD COLOR:	W	R	BK	Y	V	S
Key Functions †	HPPPPP	TB1-3	TB1-2	TB1-2	TB1-2	TB1-2	TB1-4
	HPPPPS	TB1-3	TB1-2	TB1-2	TB1-2	TB1-5	TB1-4
	HPPSSS	TB1-3	TB1-2	TB1-2	TB1-5	TB1-5	TB1-4
	HPPSSS	TB1-3	TB1-2	TB1-5	TB1-5	TB1-5	TB1-4
COMMON SIGNALING (SEE NOTE)							
508 PLUG	COLOR:	BLUE	ORANGE	GREEN	BROWN	SLATE	
	PIN NO:	2	2	2	2	2	1
	LEAD COLOR:	W	R	BK	Y	V	S
Key Functions †	HPPP*P*S	TB1-3	TB1-3	TB1-2	TB1-2	TB1-2	TB1-3
	HPP*P*P*S	TB1-3	TB1-2	TB1-2	TB1-2	TB1-2	TB1-3

Note: Remove (BK) strap between TB1-2 and TB1-3.

* These arrangements use line switch controlled ground for common signal key, used with private or intercommunicating lines. Common signal should be used to operate a common signal relay. Do not wire directly to a buzzer.

† Remove pins to make key nonlocking when used for signaling.

TABLE I
MOUNTING CORD AND 508 PLUG CONNECTIONS

AMPHENOL PLUG			INSIDE TELEPHONE SET						
DESIG	PIN NO.	COLOR	MTG CD TERMINATIONS			SPADE TIP CONDUCTORS FROM 508 PLUGS.			
			SPADE TIP COND. IN MTG. CD	508 PLUGS		PLUG COLOR	PLUG PIN NO.	COLOR	TERM.
				COLOR	PIN NO.				
R(1)	1	BL-W		BL	6	BL	6	BL-W	*
T(1)	26	W-BL		BL	3	BL	3	W-BL	*
A1	2	O-W	TB1-12			BL	2	W	TB1-3
A(1)	27	W-O		BL	1	BL	1	W-O	*
L(1)	3	G-W		BL	L				
LG(1)	28	W-G		BL	LG				
R(2)	4	BR-W		O	6				
T(2)	29	W-BR		O	3				
B(2)	5	S-W	*			O	2	R	TB1-2
A(2)	30	W-S		O	1				
L(2)	6	BL-R		O	L				
LG(2)	31	R-BL		O	LG				
R(3)	7	O-R		G	6				
T(3)	32	R-O		G	3				
B(3)	8	G-R	*			G	2	BK	TB1-2
A(3)	33	R-G	TB1-7			G	1	S-W	TB1-7
L(3)	9	BR-R		G	L				
LG(3)	34	R-BR		G	LG				
R(4)	10	S-R		BR	6				
T(4)	35	R-S		BR	3				
B(4)	11	BL-BK	*			BR	2	Y	TB1-2
A(4)	36	BK-BL	TB1-9			BR	1	BR	TB1-9
L(4)	12	O-BK		BR	L				
LG(4)	37	BK-O		BR	LG				
R(5)	13	G-BK		S	6				
T(5)	38	BK-G		S	3				
B(5)	14	BR-BK	*			S	2	V	TB1-2
A(5)	39	BK-BR	TB1-4			S	1	S	TB1-4
L(5)	15	S-BK		S	L				
LG(5)	40	BK-S		S	LG				
BZ1	16§	BL-Y	TB2-11						
BZ	41§	Y-BL	TB2-5						

**TABLE I (CONT)
MOUNTING CORD AND 508 PLUG CONNECTIONS**

AMPHENOL PLUG			INSIDE TELEPHONE SET						
DESIG	PIN NO.	COLOR	MTG CD TERMINATIONS			SPADE TIP CONDUCTORS FROM 508 PLUGS.			
			SPADE TIP COND. IN MTG. CD	508 PLUGS		PLUG COLOR	PLUG PIN NO.	COLOR	TERM.
				COLOR	PIN NO.				
Spare	17	O-Y	*						
Spare	42	Y-O	*						
HL	18	G-Y	PSB-32						
HLG	43	Y-G	PSB-33						
SG	19	BR-Y	TB1-5						
BL	44	Y-BR	TB1-6						
R or R1	20	S-Y	TB1-13						
B or B1	45	Y-S	Net. K						
AC1†	21§	BL-V	PSB-30						
AC2†	46§	V-BL	PSB-31						
SPO‡	22§	O-V	*						
Spare	47	V-O	Net. T						
R1‡	23	G-V	*						
T1‡	48	V-G	*						
IR‡	24	BR-V	*						
IT‡	49	V-BR	*						
LK‡	25	S-V	*						
AG‡	50	V-S	*						
Tip						S	4	G	TB1-8
Ring						S	5	R	PSB-12
						Pink	HL	BR-W	PSB-32
						Pink	HLG	W-BR	PSB-33
						Pink	3	BL	*
						Pink	2	G	TB1-1
						Pink	1	Y-BL	TB1-3

* Insulate and store.

† 95B1 Power Unit (Touch-A-Matic Power Supply)

‡ Designations for speakerphone options. Refer to Tables B through E.

§ Nonstandard pin numbers.

TABLE J
TO CONVERT THE 2872A1M OR 2872A2M
TELEPHONE SET FROM 1A1, 1A2, TO
1A OPERATION (SEE NOTE)

LEAD DESIG	COLOR	FROM (1A1, 1A2)	TO (1A)
SHb	Y	TB1-12	TB1-5
HOLD	Y-BL	TB1-3	TB1-16
HOLD	BL	* (Pink 508 Plug)	TB1-3
HQLD	G	TB1-1	Net. L2
RING	R	PSB-12	Net. L2
SHc †	BR	TB1-1	TB1-6
Net. F ‡	R-BL	TB1-1	TB1-6

* Insulated and stored.

† Only required when busy-lamp option is provided.

‡ Only required when both busy-lamp and speakerphone options are provided.

Note: Tables B through G provide speakerphone connections for 1A1 and 1A2 KTS. The same tables apply for 1A KTS

TABLE K

CONNECTIONS FOR D-180818
KIT OF PARTS

D-KIT SWITCH LEADS		TERMINAL POSTS FOR SWITCH LEAD CONNECTORS	
DESIG.	COLOR (NOTE 1)	RECORD DISABLE ONLY	RECORD DISABLE AND DIAL INTERMIX FEATURE (NOTE 2)
WDC	BK †	*	1
VDD	R	2	2
RCRD	BK	3	3

* Insulate and store.

† Single pin connector.

Notes:

1. These are connectors attached to the switch leads. A single pin connector with a (BK) lead and a double pin connector with a (R) and (BK) lead.
2. When this option is provided the LAST NUMBER DIALED (LND) feature is disabled and the 32nd memory may be used just as any other memory.

TABLE L

CONNECTIONS FOR CONVERSION
TO SINGLE LINE SERVICE WITH
BRIDGED RINGING

LEAD		CONNECT	
DESIG.	COLOR	FROM	TO
Tip	W-BL	(1PU-3)*	TB1-8
Ring	BL-W	(1PU-6)*	TB1-16
B1	Y-S	Net. K	*
Strap	BK	Net. K	PSB-35
R1	S-Y	TB1-13	*
Strap	BK	TB1-13	TB1-16
A-Lead	W-O	(1PU-1)*	TB1-1
Hold	Y-BL	TB1-3	*
LRS-2	BR	PSB-14	*

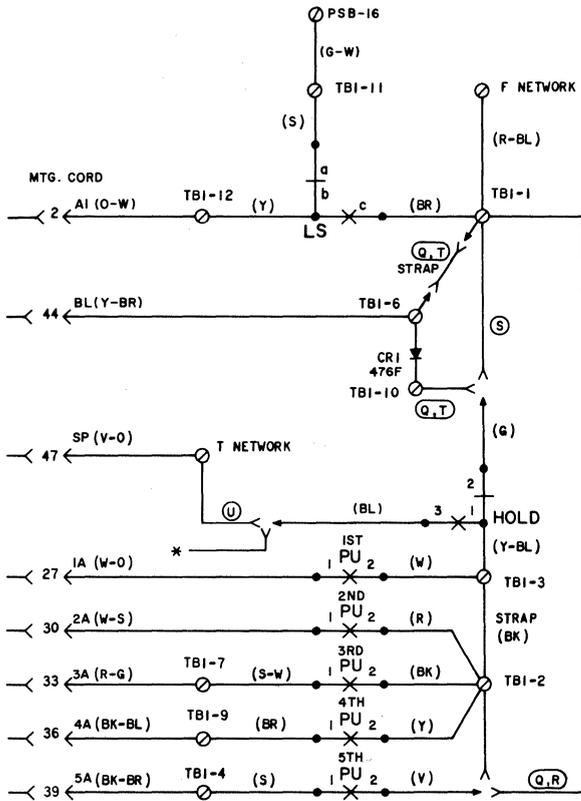
* Insulated and stored.

TABLE M

CONVERSION TO BRIDGED
RINGING ON FIRST LINE WITH
6-BUTTON KEY SERVICE

LEAD		CONNECT	
DESIG.	COLOR	FROM	TO
Tip	W-BL	(1PU-3)*	TB1-15
Ring	BL-W	(1PU-6)*	TB1-13
B1	Y-S	Net. K	*
Strap	BK	Net. K	TB1-15
R1	W-Y	TB1-13	*

* Insulated and stored.



- * INSULATE AND STORE
- (Q) FOR ADD-ON CONFERENCING, CONVERT THE 5TH P.U. TO NONLOCKING (REMOVE PIN)
- (R) FOR MULTILINE EXCLUSION, CONVERT THE 5TH P.U. TO NONLOCKING (REMOVE PIN)
- (S) WITHOUT STATION BUSY LAMP
- (T) WITH STATION BUSY LAMP
- (U) "1" HOLD OPTION

Fig. 9—"1" Hold, Exclusion, Station Busy Lamp, and Add-On Conferencing—1A1 and 1A2 KTS (Showing 5th Key Modified)

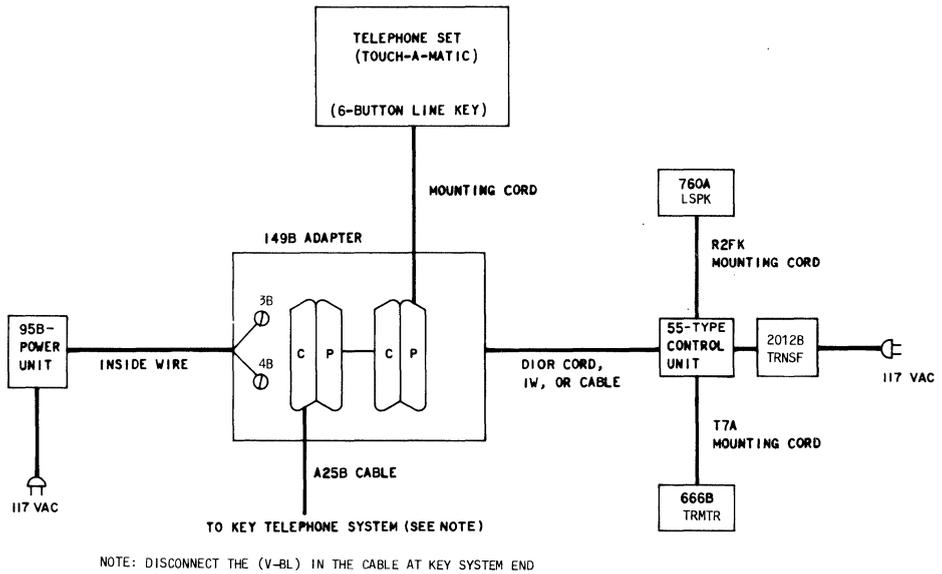
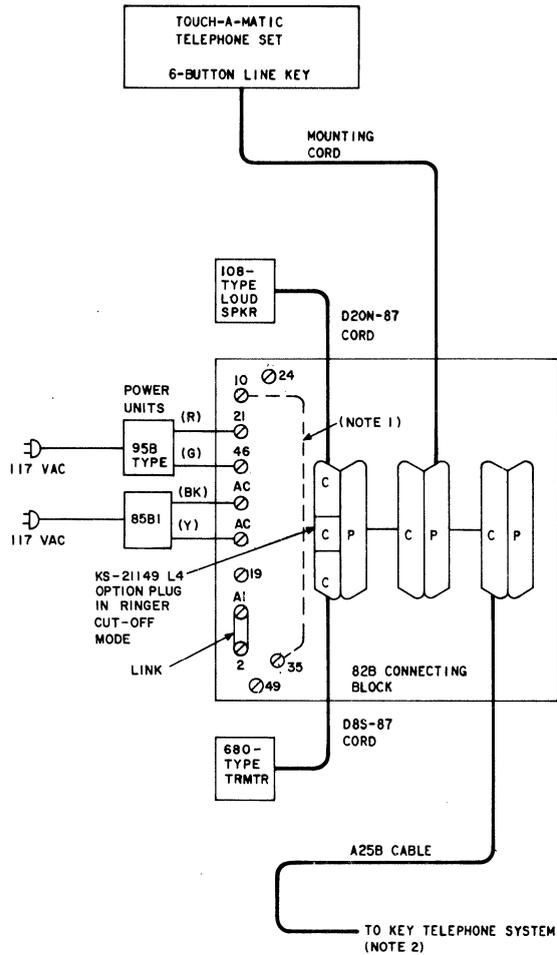


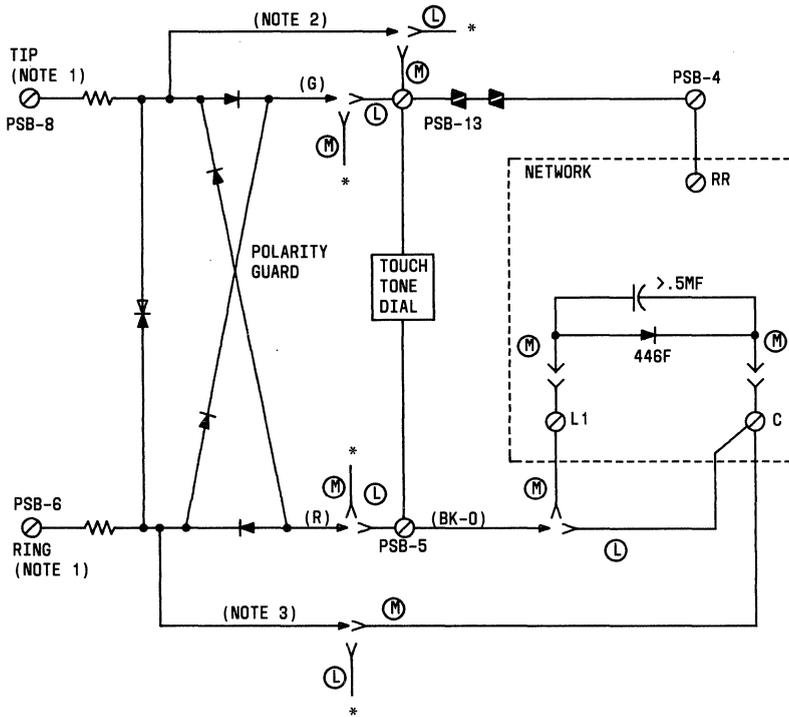
Fig. 10—Block Diagram—2872A1M or 2872A2M Telephone Set Using 3B Speakerphone



NOTES:

1. STRAP NECESSARY ONLY IF SET IS ALSO EQUIPPED WITH DIAL TONE DETECTOR TO PROVIDE ONE-TOUCH CALLING OPTION.
2. IF POWER IS PROVIDED THROUGH KEY CABLE, USE (BR-V) PAIR FOR 85-TYPE POWER UNIT AND STRAP 24 TO AC1 AND 49 TO AC2 ON 82B CONNECTING BLOCK.

Fig. 11—Block Diagram—2872A1M or 2872A2M Telephone Set Using 4A Speakerphone



* INSULATED AND STORED

(L) WITHOUT RESTRICTED DIALING (FACTORY WIRED)

(M) WITH RESTRICTED DIALING

NOTES:

1. REVERSE POLARITY ON TIP AND RING LEADS ON ALL LINES WITH RESTRICTED DIALING
2. FOR 2872A1M SET - (Y)
FOR 2872A2M SET - (BL)
3. FOR 2872A1M SET - (BL)
FOR 2872A2M SET - (Y)

Fig. 13—2872A1M or 2872A2M Telephone Set, Connections for Restricted Dialing Option

TABLE N
TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
1	Dead set on all lines	Line lamp does not come on when handset is taken off-hook	Mounting cord improperly inserted at equipment end	Check cord insertion and connections
		Line lamp comes on when handset is taken off-hook	Bad connection between handset and telephone set	1. Check handset cord connections 2. Check handset jack connections
			Defective receiver	Check handset
			Unknown	Replace telephone set*
		Dial tone is not present when speakerphone is on	Open tip or ring lead at line key	Check leads and connections from contact strips
Dial tone is present when speakerphone is on	Defective switchhook d-e or j-k contacts	Replace telephone set*		
2	Cannot transmit or receive when off-hook using handset	Line lamp comes on	Handset cord improperly inserted into handset or jack in telephone set	Check handset cord and/or handset
		Dial tone present, but sidetone absent. No audible TOUCH-TONE [®] signal	12-pin connector or dial not properly inserted on pins on power supply board	1. Check connector insertion 2. Replace dial
			Defective 616B jack	Replace 616B jack
			Defective network	Replace telephone set*
3	Cannot manually dial when off-hook	Clicking sounds or damped TOUCH-TONE signals heard when dial buttons are depressed Cannot hang up set.	Bridged set off-hook	Place bridged set on-hook
		No audible TOUCH-TONE signal present	20-pin power supply connector not properly inserted on pins on memory PWB	Check connector insertion
			Dial connectors not properly inserted	1. Check connector insertion 2. Replace dial
			Defective memory PWB	Replace memory
			Unknown	Replace telephone set*
Some TOUCH-TONE dial frequencies incorrect	Static discharge damage	1. Consult Telco engineer for proper grounding procedure 2. Replace memory		
4	Cannot manually dial some digits when off-hook		Open or loose leads to dial contacts	Check for proper insertion of leads into 10-position dial connector
			Defective frequency contacts on dial	Replace dial

*Refer to 6.02 (4).

TABLE N (Cont)

TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION	
4 (cont'd)			Defective memory PWB	Replace memory.	
			Unknown	Replace telephone set*	
5	Cannot manually dial off-hook for ac power failure condition	Can manually dial off-hook with ac power	Open strap lead between screw terminals 10 and 15 on PSB	Repair or replace strap lead	
			Open path on PSB	Replace telephone set*	
6	RECORD lamp does not function properly	RECORD lamp does not turn on when RECORD button is depressed or RECORD lamp is on and cannot be turned off	Battery not plugged in, or defective	Plug in or replace battery	
			RECORD lamp does not turn on when RECORD button is depressed	AC power not present	Check for commercial power
				Switch of D-180818 Kit of Parts in ON position	Change switch position to OFF
				AC power unit not plugged in or defective	Check or replace power unit (should read 13.4 to 18 VAC across screw terminals 30 and 31 on PSB)
				Open in IW	Check IW and connection
				Memory, RECORD OFF, or WAIT button stuck down	Clear stuck button
				Defective lamp or lamp driver circuit	Replace memory
				Defective logic reset switch on line key	Replace line key
				Static discharge damage	1. Consult your Telco engineer for proper grounding procedures 2. Replace memory
				Unknown	Replace telephone set*
				Lamp turns off when any memory button is depressed or Lamp does not momentarily turn off when a dial button is depressed	Defective logic
Unknown	Replace telephone set*				
7	Cannot record into memory	RECORD lamp momentarily flashes when RECORD button is depressed	Stuck RECORD OFF button	Check RECORD OFF button	
			Wait contacts closed even when WAIT button is not depressed	1. Check WAIT button 2. Replace memory	

*Refer to 6.02 (4).

TABLE N (Cont)

TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
8	Cannot record properly into the 31 memory positions or into the LAST NUMBER DIALED position	Warble tones heard when automatically dialing. Get "cannot complete" intercept for automatic or manual dialing	WAIT contacts closed even when WAIT button is not depressed	Replace memory
			Switch of D-180818 Kit of Parts in ON position	Change switch position to OFF
		Party is reached when number is recorded as it is manually dialed. However, when number is subsequently dialed from memory, party is not reached – wrong number is dialed from memory	Incorrect dial contact sequence	Replace dial
			Defective logic	Replace memory
			Open circuit on PSB	Replace telephone set*
9	Cannot dial properly from memory		Did not record properly	1. Record per 5.01 2. See No. 7
		MB7 relay does not operate (no clicking sound heard) when memory button is depressed. No audible TOUCH-TONE signal present	Battery not plugged in (2872A2M tel set)	Plug battery in
			Memory not securely mounted	Tighten memory mounting screws
			Open circuit in power path	Check for proper strap lead connections on PSB. See Fig. 8 [B]
			Defective logic	Replace memory
			Defective switch-hook h-i contacts	Replace telephone set*
			MB7 relay operates (clicking sound heard) but holds for less than 0.1 second for a 15 digit number	Incorrect dial sequence
		No audible TOUCH-TONE signal present		
		Audible gap in train of digits being dialed		
		Digits dialed too rapidly (fast dialer)	Noise on ac power line (2872A1M)	1. Minimize wire length between 95B1 power unit and telephone set. 2. Insert 145A filter between 95B1 power unit and commercial power outlet
			Defective power supply PWB assembly (2872A2M)	Replace telephone set*

*Refer to 6.02 (4).

TABLE N (Cont)

TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
9 (cont'd)		No digits or random digits in memory	AC power outage for 24 hours or longer	Reestablish ac power and rerecord numbers into memory
			Disconnected or defective battery	1. Plug in the battery 2. Allow the battery to be charged for a minimum of 5 minutes. Then momentarily remove the 95B1 power unit from the ac power outlet and reinsert 3. If previously stored numbers are not dialed from memory, replace the battery 4. Repeat procedure
			Defective power supply circuit	Replace telephone set*
		No digits or all the same digits in random memory locations	Defective memory	Replace memory
		Two or more memory locations have some digits which are usually different from originally recorded digits	Static discharge damage	1. Consult your Telco engineer for proper grounding procedures 2. Replace memory
		Automatically dials through a "wait" after pausing momentarily at the "wait" space on a train of recorded digits	Defective WAIT contacts or defective circuit components	1. Replace memory 2. Replace dial tone detector PWB assembly of D-180493 Kit of Parts (if option is provided).
10	Cannot manually dial off-hook for ac power failure condition (Wired for speakerphone option)	With a strap lead between screw terminals 10 and 15 on PSB, can manually dial off-hook for ac power failure condition	Defective circuit or connections on D-180492 Kit of Parts	1. Check connections per Table B, C, D, or E 2. Replace D-180492 Kit of Parts
11	Cannot turn speakerphone on when ON button is depressed (Wired for speakerphone option)	Speakerphone indicator lamp does not turn on, but line lamp is lit.	Handset off-hook	Place handset on-hook
		No dial tone heard, but indicator lamp turns on	Line button not depressed	Depress line button
		Speakerphone indicator lamp does not turn on and neither does line lamp	Improper connections or defective 85B1 power unit	1. Check connections per Table B, C, D, or E 2. Check for commercial power 3. Check that 85B1 power unit is plugged into commercial ac power outlet 4. Check or replace 85B1 power unit (should read 18 to 25 VAC across secondary screw terminals)

*Refer to 6.02 (4).

TABLE N (Cont)

TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
11 (cont'd)		Speakerphone indicator lamp does not turn on but line lamp lights	Improper connections or defective 95B-Type power unit	1. Check connections 2. Check or replace power unit (should read 13.4 to 18 VAC across screw terminals 30 and 31 on PSB)
		With temporary strap lead added between power supply screw terminals 16 and 17, speakerphone turns on when ON button is depressed	Defective 327A relay, MA3 relay or connecting leads on D-180492 Kit of Parts	Replace D-180492 Kit of Parts
		When temporary strap lead added between screw terminals 11 and 12 on TB1, speakerphone turns on when ON button is depressed	Defective switchhook a-b contacts or connecting lead to PSB	1. Check (G-W) harness lead between screw terminal 11 on TB1 and terminal 16 on PSB 2. Replace telephone set*
			Defective speakerphone	See appropriate speakerphone BSP
12	Cannot turn speakerphone off when handset is lifted off-hook (Wired for speakerphone option)	Speakerphone turns off when OFF button is depressed but turns back on when OFF button is released	Short circuit between screw terminals 11 and 12 on TB1	Clear short
			Defective switchhook a-b contacts	Replace telephone set*
13	RECORD lamp does not turn off when speakerphone ON button is depressed (Wired for speakerphone option)	Speakerphone indicator lamp does not turn on. Line lamp is lit	Handset off-hook	Place handset on-hook
		With temporary strap lead added between screw terminals 16 and 17 on power supply, speakerphone turns on when ON button is depressed and RECORD lamp goes off	LK relay circuit defective on D-180492 Kit of Parts	Replace D-180492 Kit of Parts
		Operation of RECORD OFF button or line key buttons turns RECORD lamp off	Defective switchhook h-i contacts	Replace telephone set*
14	Cannot break dial tone when dialing with speakerphone on (Wired for speakerphone option)	Cannot manually dial when off-hook	Refer to trouble number 3	Refer to trouble number 3
		When dial button is depressed, audible level of TOUCH-TONE signal is high on speakerphone	Defective muting circuit on PSB	Replace telephone set*
15	Cannot hear tones when dialing with speakerphone on (Wired for speakerphone option)	With the speakerphone ON button depressed, the audible tone level is normal	Physical spacing between speakerphone loudspeaker and transmitter units is too close	See appropriate speakerphone BSP for proper placement of units
		Normal conversational level on speakerphone	Defective muting circuit on PSB	Replace telephone set*

*Refer to 6.02 (4).

TABLE N (Cont)
TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
16	Cannot turn speakerphone off (Wired for one-touch option)	Speakerphone turns off when OFF button is depressed but turns on when OFF button is released	Black strap lead to PSB-27 was not insulated and stored	Remove the strap lead
		Speakerphone turns off and stays off when (Y-BL) lead is disconnected from terminal 27 on PSB and OFF button is depressed	Defective output logic level from memory PWB	Replace memory
		Speakerphone turns off when handset is taken off-hook but turns on when handset is placed on-hook	Defective circuit on D-180493 Kit of Parts	Replace dial tone detector board assembly of D-180493 Kit of Parts
17	Speakerphone does not turn on when a memory button is momentarily depressed in the automatic dialing mode (Wired for one-touch option)	MB7 relay does not operate (no click heard) when memory button is depressed	Battery not plugged in (2872A2M set)	Plug battery in
			3B speakerphone: V-BR lead connected to PSB-34	Insulate and store V-BR lead, and connect O-V lead to PSB-34
			4A speakerphone installed using 82A connecting block	Change to 82B connecting block
			4A speakerphone with 82B block: strap not placed on 82B block	Add strap from terminal 10 to 35 in 82B block
		With temporary strap between screw terminals 28 and 29 on PSB, speakerphone turns on when a memory button is depressed	One-touch calling switch turned off or defective	1. Turn one-touch calling switch on 2. Replace one-touch calling switch assembly of D-180493 Kit of Parts
			Defective dial tone detector D-180493 Kit of Parts	Replace dial tone detector PWB assembly of D-180493 Kit of Parts
		With temporary strap between screw terminals 17 and 34 on PSB, speakerphone turns on when a memory button is depressed.	Defective connections between dial tone detector and PSB	Check (Y-G) and (G-Y) leads to PSB terminals 17 and 34, respectively
Defective dial tone detector D-180493 Kit of Parts	Replace dial tone detector PWB assembly of D-180493 Kit of Parts			
18	Delay time between depression of a memory button and initiation of automatic dialing exceeds 3 seconds (Wired for one-touch option)		Defective timing circuit	1. Replace memory 2. Replace dial tone detector PWB assembly of D-180493 Kit of Parts

*Refer to 6.02 (4).

TABLE N (Cont)

TROUBLE ANALYSIS – 2872A1M OR 2872A2M

TROUBLE NUMBER	FAILURE	ADDITIONAL SYMPTOM	POSSIBLE CAUSE	REMEDIAL ACTION
19	Speakerphone turns on but set does not automatically dial when memory button is depressed (Wired for one-touch option)		Black strap leads were not lifted from PSB terminals 19 and 26 when option was wired	Insulate and store strap leads.
		Set dials when screw terminals 26 and 29 on PSB are temporarily shorted	Precise dial tone not present	1. Check CO line for presence of precise dial tone (350 Hz and 440 Hz) 2. If correct dial tone is present, replace dial tone detector PWB assembly of D-180493 Kit of Parts
		Set does not dial from memory when screw terminals 26 and 29 on PSB are temporarily shorted	Defective logic	Replace memory
20	Automatic dialing commences for no apparent reason (wired for one-touch option)		Static discharge damage	1. Consult your Telco engineer for proper grounding procedures 2. Replace memory
21	Calls not completed if handset is quickly taken off-hook while automatically dialing on a speakerphone	Automatic dialing is terminated before all digits are dialed	Marginal switchhook sequence between a-b and h-i contacts	Remove handset more slowly from handset cradle
22	Set dials automatically but does not wait for dial tone (Wired for one-touch calling)		Noise on line	1. Add .05 μ f capacitor between PSB-21 and PSB-26 2. Remove above capacitor and add resistor (10K Ω -50K Ω) in series with (G-R) dial tone detector input lead.
23	Cannot dial properly from memory when on handset (Wired with dial tone detector option)	MB7 relay does not operate (no click heard) when memory button is depressed.	Battery not plugged in (2872A2M tel set)	Plug battery in
			Precise TOUCH-TONE [®] dial tone may not be present	Make sure precise (350 Hz and 440 Hz) dial tone is present
			Memory not securely mounted	Tighten memory mounting screws
			Improper installation of dial tone detector, D-180493	Check connections for D-180493 installation
		Same as above — Addition of strap lead between PSB terminals 26 and 29 does not correct problem	Improper connection to or defective memory	1. Check connector cable 2. Replace memory
		Addition of strap lead between PSB terminals 26 and 29 corrects problem	Defective memory	Replace memory
			Defective dial tone detector	Replace D-180493 dial tone detector
Unknown	Replace telephone set*			

*Refer to 6.02 (4).