REFERENCE

AC- AND AD-TYPE TELEPHONE BASES WITH 220A, 1220A, AND 2220B HAND TELEPHONE SETS

1. GENERAL

1.01 This section provides identification, installation, maintenance, and connection information for the AC1, AC1P, AD1, and AD2 telephone bases and associated 220A, 1220A(MD), and 2220B hand telephone sets.

All AC1 and AD1 telephone bases manufactured prior to 10-1-72 and any base which is opened for any reason should be rewired as shown in Table A before proceeding with connections shown in other tables.

1.02 This section is reissued to:

- Add modular concept information, Fig. 5 through 7; 21 and 23 and Table C
- Add new graphics in appropriate figures
- Add new Fig. 10, 25 through 29
- Add information on 11A extender
- Add Table K, conversion for data applications
- Revise Tables D through I
- Add new D4BU mounting cord
- Include new cord lengths for H5AA and H5AD handset cords

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

2. IDENTIFICATION

2.01 The 220A, 1220A(MD), and 2220B hand telephone sets (Fig. 1 and 2) are components of the TRIMLINE® telephone set. The ringer, line switch, terminal board, and jacks for the handset and mounting cords are contained in the AC -or AD-type telephone base. A complete TRIMLINE telephone set includes the hand telephone set, telephone base, and cords.

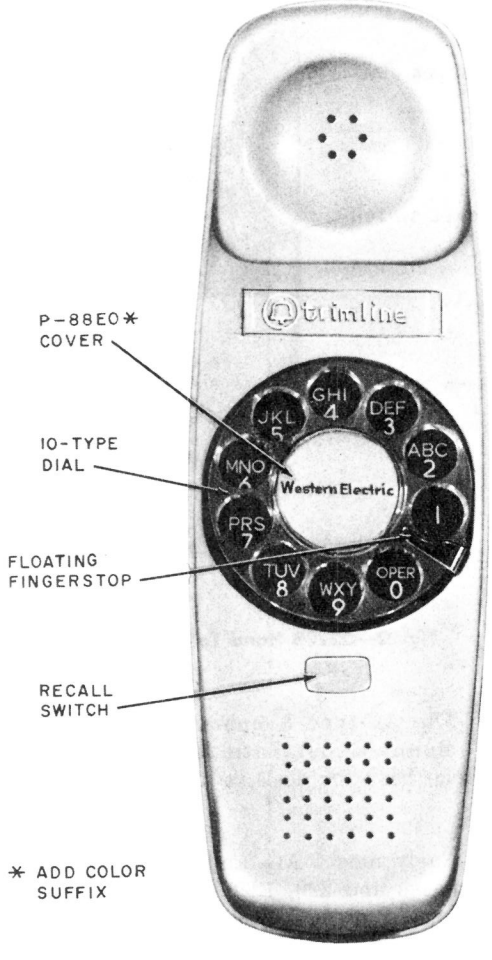

Fig. 1—220A Hand Telephone Set

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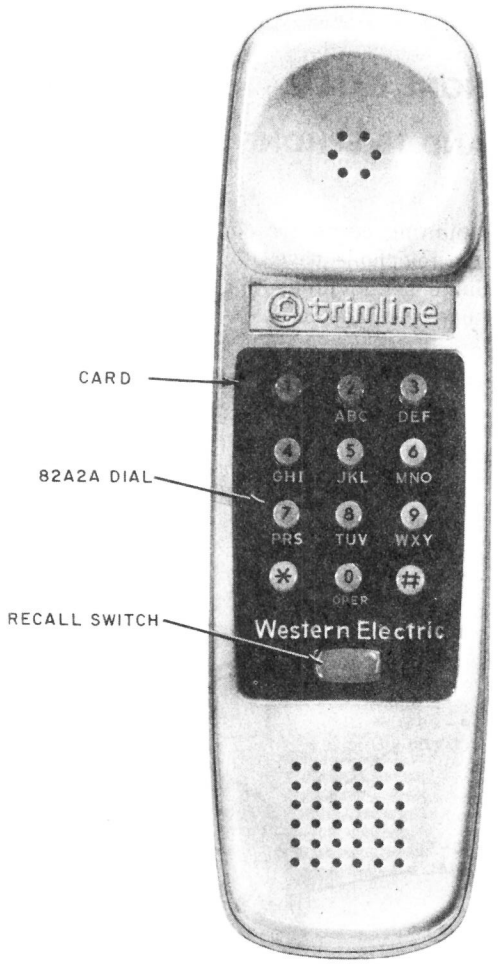


Fig. 2—2220B Hand Telephone Set

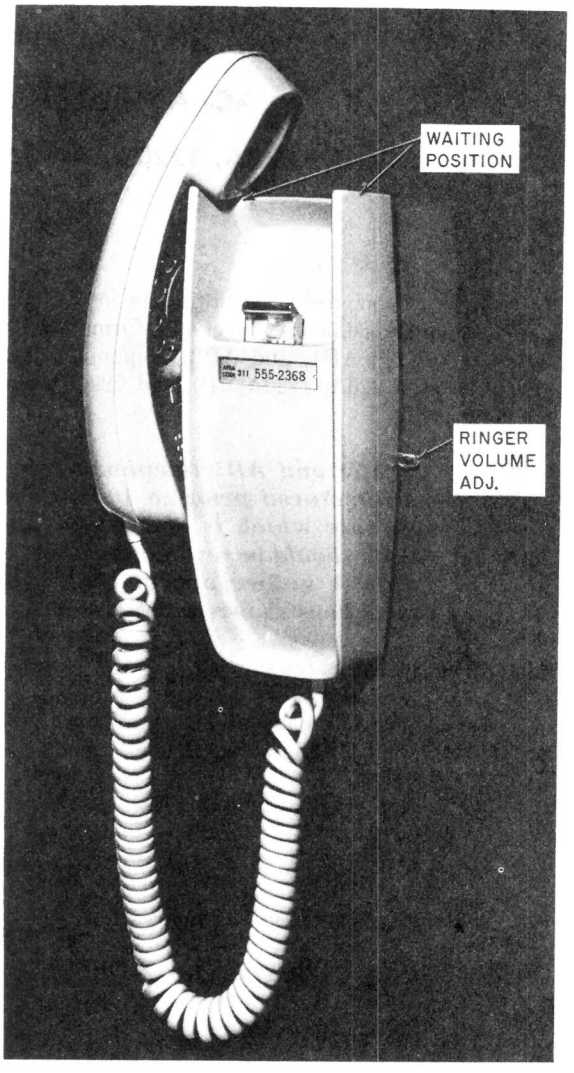


Fig. 3—Hand Telephone Set in Waiting Position on AC-Type Telephone Base

2.02 The AC-type telephone base is for wall mounted installations and the AD-type telephone base for desk installations (Fig. 3 and 4).

2.03 Early model AC- and AD-type telephone bases and 220- 1220-, and 2220-type hand telephone sets are equipped with jacks which accept the large (maxi) plugs for the H4DB, H5AA, or H5AD handset cords (AC- and AD-type bases) and D4BW, D5AL, or D5AN mounting cords (AD-type bases only). Refer to Fig. 5, 6, or 7 for connecting arrangement. Current AC1P (wall) bases are equipped with a 523A-type plug which plugs into a 630-type connecting block for easy removal if the customer moves or discontinues service. See Section 503-100-100 for additional information on the modular telephone concept.

Ordering Guide

2.04 ***Basic Telephone Sets and Components:***

- Set, Telephone, Hand 220A-*, 1220A-* (MD), 2220B-*

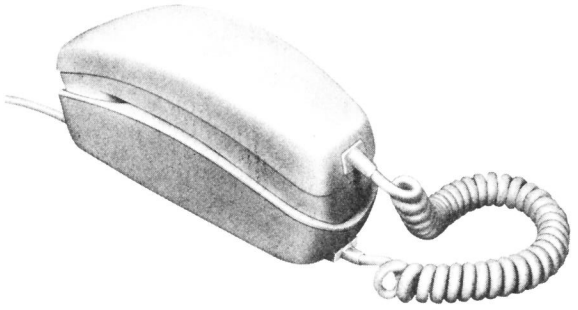


Fig. 4—AD-Type Telephone Base With a Hand Telephone Set

- Base, Telephone, AC1-* (complete)
- Base, Telephone, AC1M (Base less housing)
- Base, Telephone, AC1P-* (complete)
- Base, Telephone, AC1MP (Base less housing)
- Base, Telephone, AD1-* (complete)
- Base, Telephone, AD1M (Base less housing)
- Base, Telephone, AD2-* (complete)
- Base, Telephone, AD2M (Base less housing)
- Housing, AC1-*
- Housing, AD1-*

- Cord, Handset, H4DB-* (6 and 12 foot lengths)
- Cord, Handset H5AA-* (6 and 12 foot lengths) should normally be used when tip party identifying connections are required
- Cord, Handset, H5AD-* (6 foot length) equipped with Message Waiting Lamp.) optional (AC1, AD1, and AD2 base only)
- Cord, Mounting D4BU-* (7, 14, and 25 foot lengths)
- Cord, Mounting, D4BW-29 (7, 14, and 25 foot lengths)
- Cord, Mounting, D5AL-*, D5AN-* (D5AL-7, 14, and 25 foot lengths, D5AN-6 and 12 foot lengths) AD1 base.

*Refer to Table B for color suffix.

Note: A complete telephone set consists of a hand telephone set, base, handset cord, and mounting cord (if required), all of which must be ordered separately.

2.05 ***Associated Apparatus or Equipment (order separately):***

- 2012A transformer

2.06 ***Replaceable Components:***

- Lamp, 53B (replacement for all handsets)
- Lamp, 51B (current production sets)
- 840431001 Cover
- P-25E803 Number Card Retainer
- P-23F238 Light Seal Plate
- Form E5002A (number card)
- Cords, Handset, and Mounting (see 2.04)

2.07 ***Optional Apparatus (ordered separately):***

- P-90D231 Polarity Guard Assembly (1220A and 2220B only)
- 426N Diode for 4-party full selective or 8-party semiselective ringing, both type bases
- 11A Extender used in place of the 426N diode for 4-party full selective or 8-party semiselective ringing. Can be used with AC1, AC1M, AD1, and AD1M bases.

Design Features

2.08 ***220A, 1220A, and 2220B Hand Telephone Sets:***

- Illuminated dial

Note: Early production handsets will have the lamp in a vertical position, current

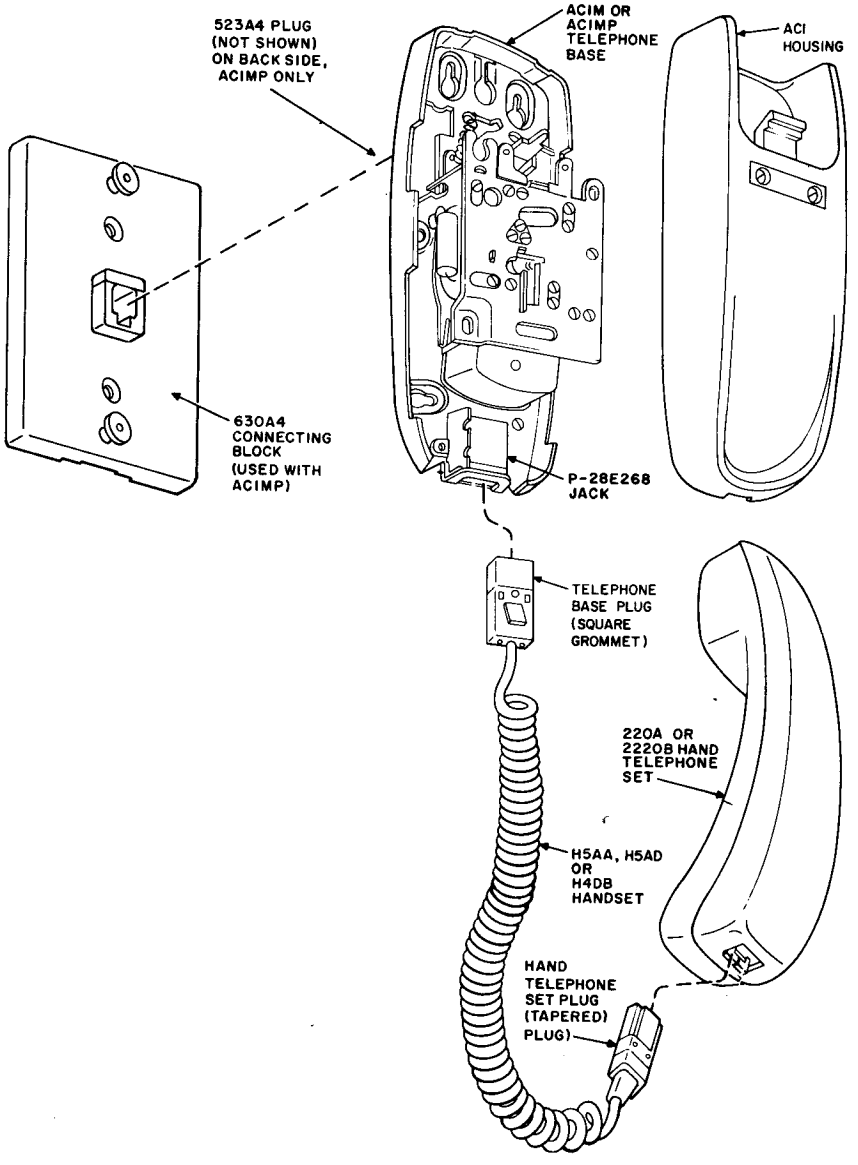


Fig. 5—AC1 or AC1P Telephone Base With 220A or 2220B Hand Telephone Set

production handsets have the lamp in horizontal position.

- Equipped with a recall switch

- 840431001 type cover or number card and associated retainer can be used to conceal housing screws and lamp

Note: Hand telephone sets may be found in the field with a number card and number card retainer or cover used to conceal the screws in the handset. Current production sets will have the number card and number card retainer in the base since this is a more convenient location for the customer. It may be changed to the hand telephone set if desired by the customer.

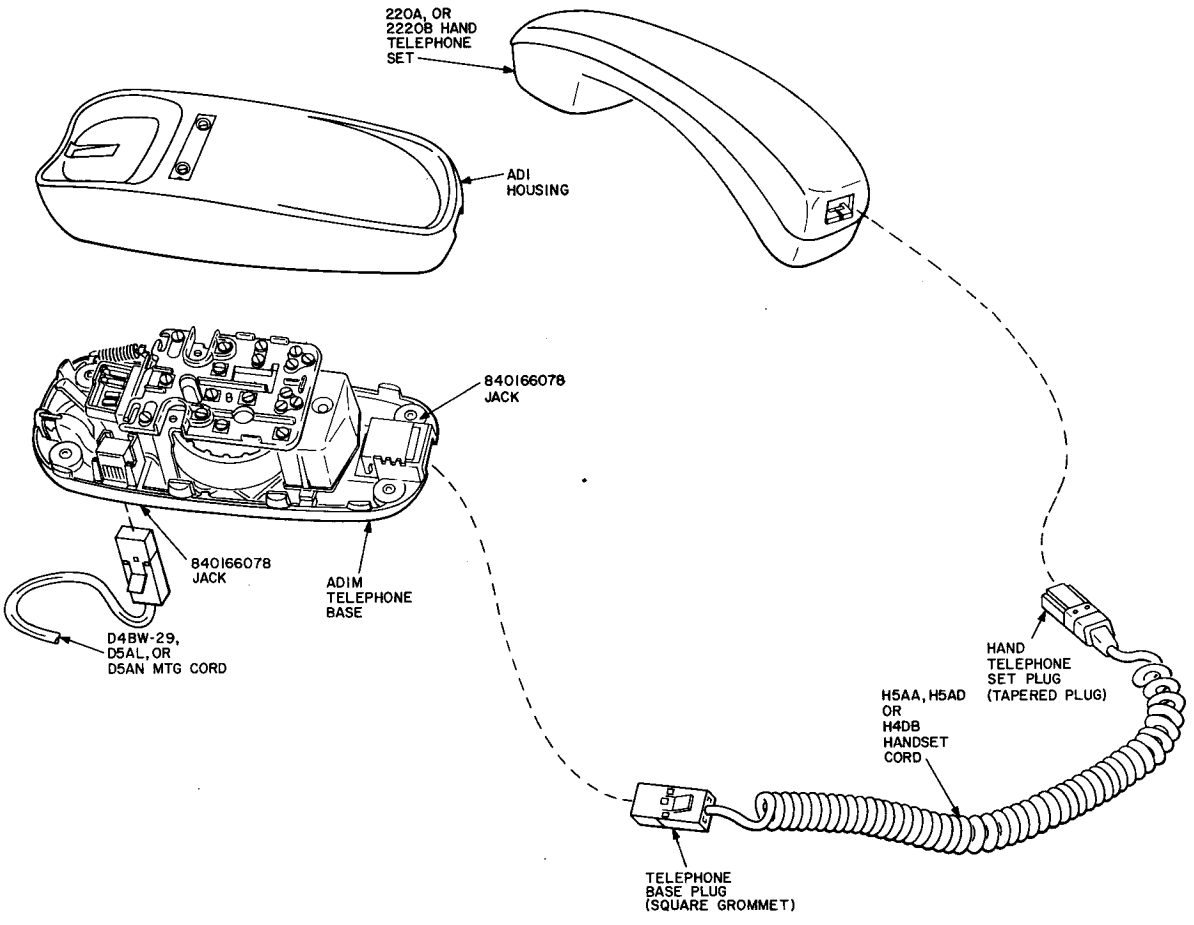


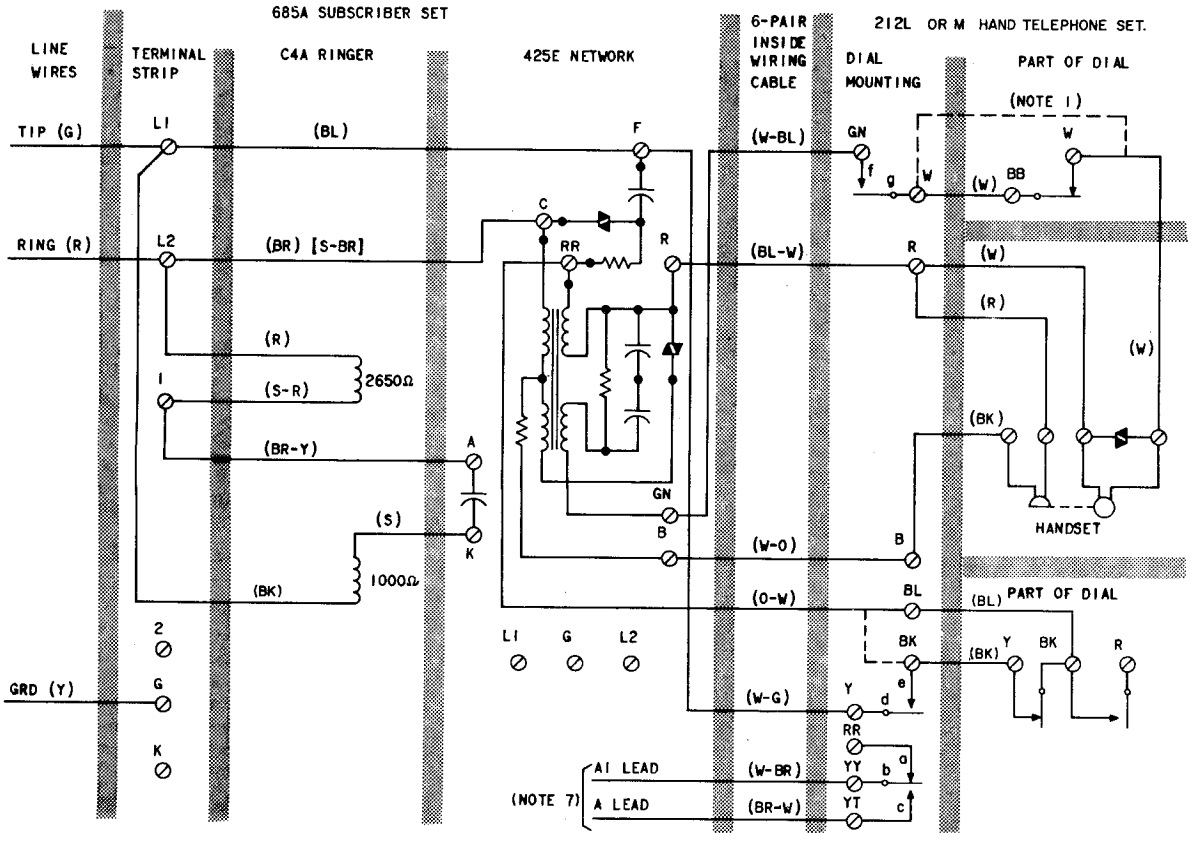
Fig. 6—AD1 Telephone Base With 220A or 2220B Hand Telephone Set

- Equipped with jack (Fig. 8) to accommodate a plug ended handset cord (Fig. 9)
- Current AC-type bases are equipped with a new line switch coded 840394076 switch and bracket assembly (Fig. 10).

2.09 ***AC- and AD-Type Telephone Bases:***

- Factory-wired for individual or bridged service, see Tables D and E for other classes of service
- Adjustable ringer volume control
- AC1 and AC1M (for vertical permanent mounting)—jack equipped to receive plug-ended handset cord
- AC1P and AC1MP (for vertical portable mounting)—jack equipped to receive plug-ended handset cord
- AD-type (for horizontal mounting)—jack equipped to receive plug-ended handset and mounting cords
- Space provided on bases for number card and associated number card retainer (Fig. 11)
- AC-type telephone base provides waiting position for handset without going to on-hook position (Fig. 3).

2.10 The hand telephone set with base can be used on CO or PBX lines or can be modified for use with 1A1, 1A2, or 6A key telephone systems.



NOTES:

1. DOTTED LINES SHOW MANUAL SET CONNECTIONS.
2. ON EARLIER SETS (BL) STRAP MUST BE MOVED FROM RR TO F OF NETWORK.
3. ON EARLIER SETS (BR) [S-BR] MUST BE MOVED FROM 2 TO L2 OF TERMINAL STRIP.
4. CONNECTIONS SHOWN ARE FOR BRIDGED RINGING, REFER TO TABLE D FOR ALL SERVICES PROVIDED.
5. LINE SWITCH CONTACTS b AND c MAKE FIRST, CONTACTS f AND g MAKE LAST.
6. TO SILENCE RINGER PERMANENTLY CONNECT (R) AND (BK) RINGER LEADS TO K OF TERMINAL STRIP.
7. EXTEND A AND AI LEADS TO KEY TELEPHONE UNIT IF REQUIRED.

( ) CURRENT COLOR CODE

[ ] MD COLOR CODE

Fig. 5—Connections for 212L and 212M Hand Telephone Sets Used with 685A Subscriber Set, Bridged Ringing

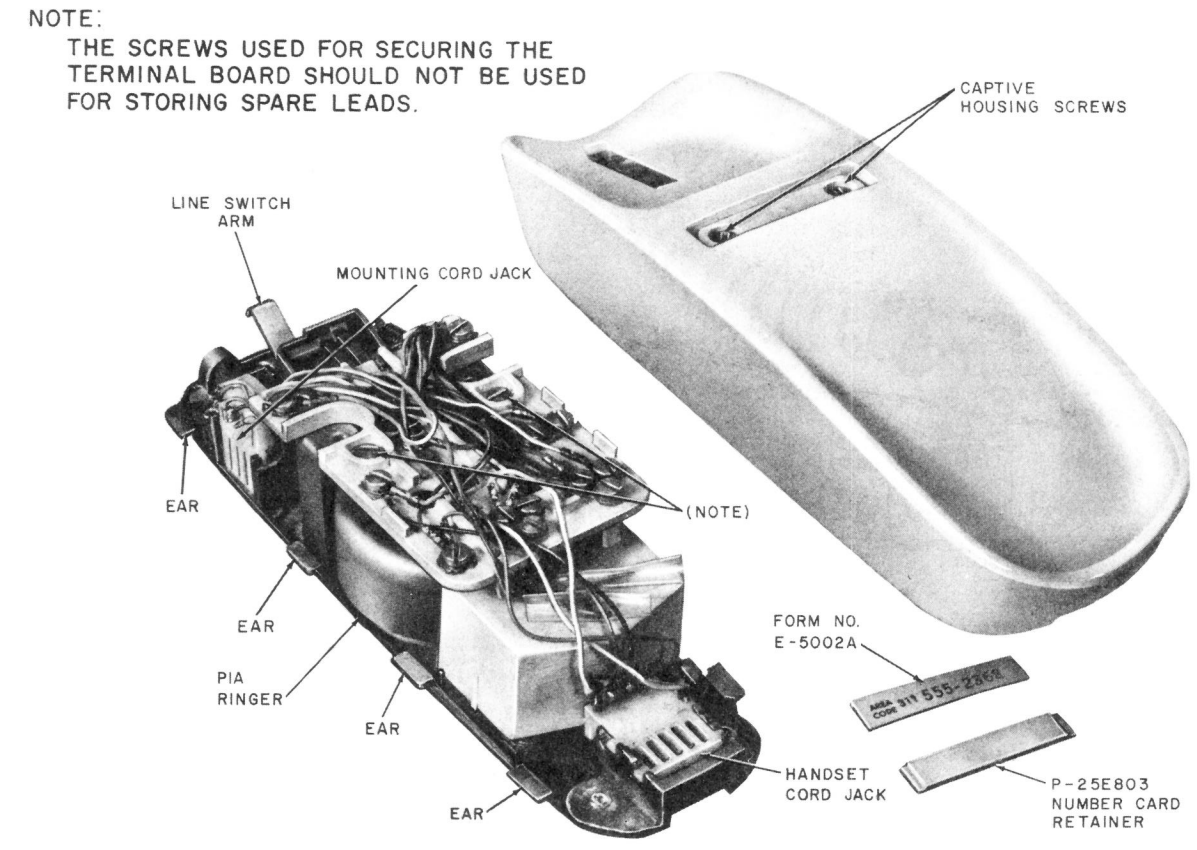


Fig. 8—Interior of AD1 Telephone Base

3. INSTALLATION

3.01 When planning the installation of a hand telephone set together with its companion base, consider the following:

- Safety for yourself, customer, and maintenance personnel
- Location—desk, table, wall, etc.
- Availability of power outlet for hand telephone set dial light transformer
- Space requirements
- General appearance of installation.

3.02 The plastic housing of these bases are secured by captive housing screws located behind the number card and number card retainer. When necessary to remove the housing from either base assembly use a KS-16750 type releaser or equivalent to remove the number card retainer (Fig. 11). ***Be careful not to insert the tip of the releaser too deep or mar the base housing. Under no circumstances should a screwdriver be used.*** Loosen the two captive screws, which are now exposed, and lift the housing off.

To replace the housing on the AC- or AD-type base lift and hold the line switch plunger while housing is placed on the backplate. Release plunger so it will rest properly on the line switch arm of the base assembly. Tighten the captive housing screws and replace

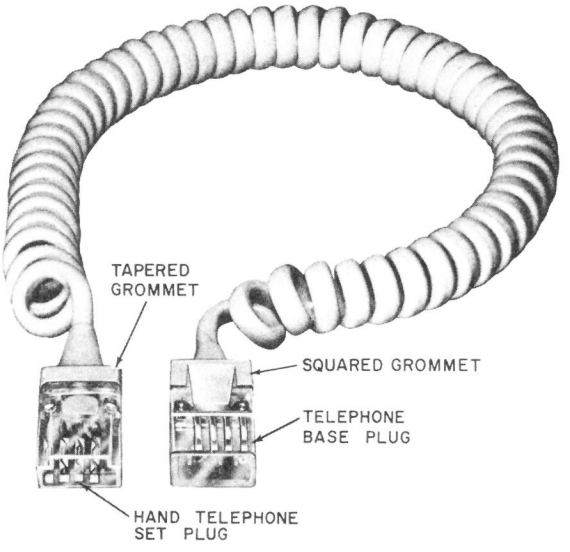


Fig. 9—H4DB Handset Cord

the number card and number card retainer.

3.03 The AC1 or AC1M telephone bases may be mounted directly to a firm vertical surface. If necessary, use a 155-type adapter or 182-type backboard. Refer to appropriate section in Division 463 for additional information on adapters and backboards.

3.04 When inside wire to the AC1 or AC1M (wall) telephone base is exposed, terminate the line and dial light transformer wiring at a common bridging point, such as a 42A connecting block. Run one quad station wire from the connecting block to the telephone base. If the transformer is located at some remote location, run quad directly to the telephone base instead of the connecting block. Wiring may enter from the opening at the bottom, top, or through the backplate of the base.

3.05 In cases where an inside wire is already in place through a wall, an exposed wire run may be necessary between the dial light transformer and the base.

Polarity guards for 1220A and 2220B should only be installed when instructed by local administrative practices or procedures for end-to-end signaling

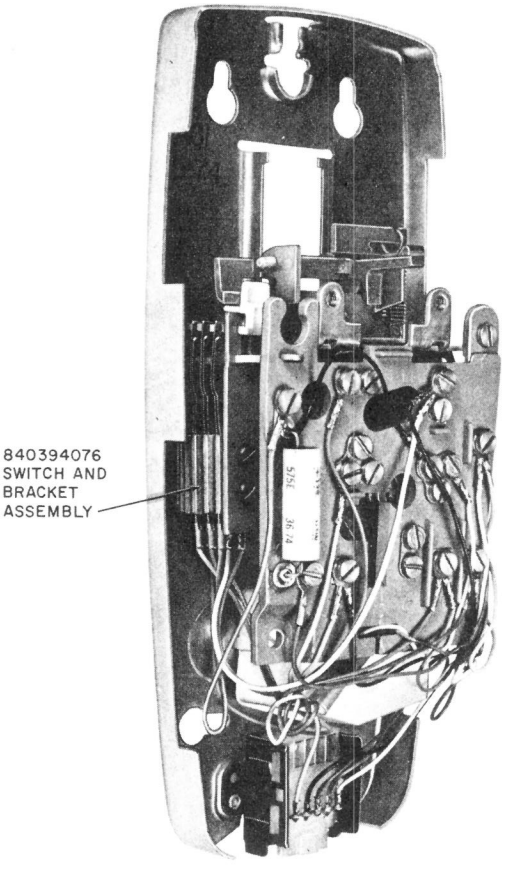


Fig. 10—Interior View of AC-Type Telephone Base

purposes when battery and ground reversals are encountered (Fig. 12).

3.06 The AC1P and AC1MP telephone bases are equipped with a 523A-type plug which allows the base to be plugged into a previously installed 630A-type connecting block. With this type installation the customer can unplug the base from the connecting block if the telephone set is to be removed from service.

3.07 On the AD1 or AD1M base, insert the plug end of the D4BW and D5AL (Fig. 13) or D5AN mounting cord into the jack located on the underside of the AD1 base assembly. ***Make sure that the spring clip of the plug snaps into place to secure the plug.*** Lay the cord in the cord channel and slide the cord retainer (early

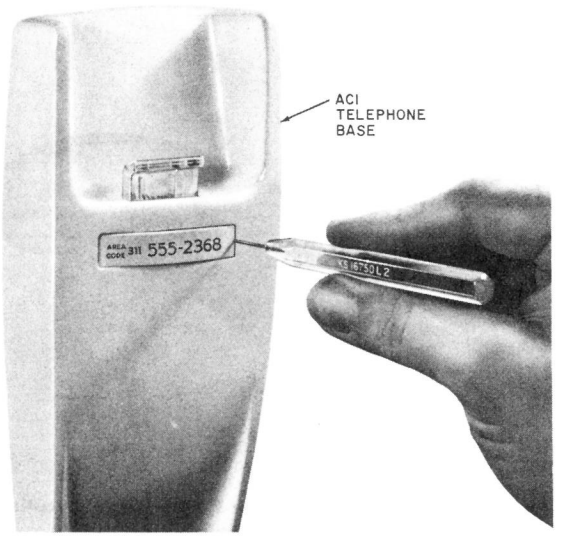


Fig. 11—Removing Number Plate Retainer

model) over the cord. Place cord under stationary retainer on current models.

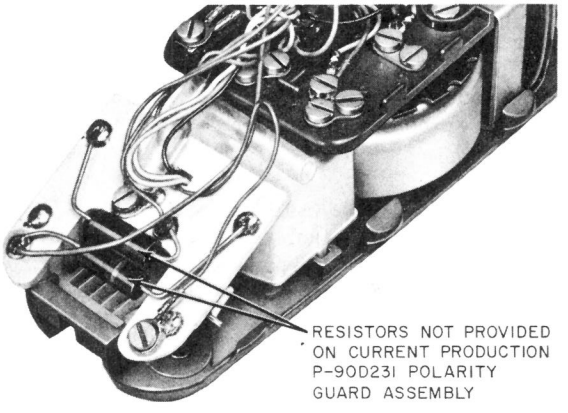


Fig. 12—P-90D231 Polarity Guard Assembly, Installed

3.08 On the AD2 or AD2M base, connect the D4BU mounting cord by inserting either plug end of the cord into the jack located on the underside of the base assembly. ***Make sure plug snaps into place to secure the plug.*** Place cord under stationary retainer.

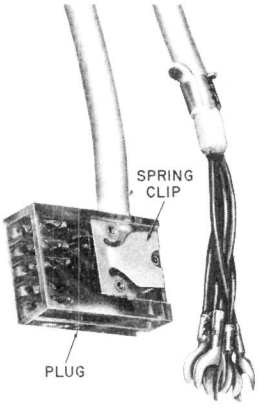


Fig. 13—D5AL Mounting Cord

3.09 On both desk and wall bases, connect the hand telephone set to the base by plugging an H4DB or H5AA (tip party identifying ground) handset cord in the jacks on each component.

3.10 If tip party identification is required, an H5AA cord must be used. Check under 840431001 cover of early production sets to see that screw used in tip party identification switch is tightened down. The absence of a screw or screw hole, in the identification switch position (Fig. 14) indicates that the connection has been made in the network at the factory.

3.11 If message waiting lamp feature is required, an H5AD handset cord must be used (Fig. 15) the lamp equipped end of the cord plugs into the hand telephone set. See Tables H and I when used with 1A1, 1A2, and 6A KTS.

THINK ***When using push-in-lock type plugs make sure the contacts are in proper position to make electrical connection with the mating contacts, and that the plug is placed in the proper receptacle. Either error will cause circuitry problems and extreme difficulty in removing the plug.***

3.12 Where a single dial light is involved, use a 2012A transformer. Select a 105-120 volt ac receptacle not controlled by a switch, use a 2A clamp to secure transformer to the outlet if

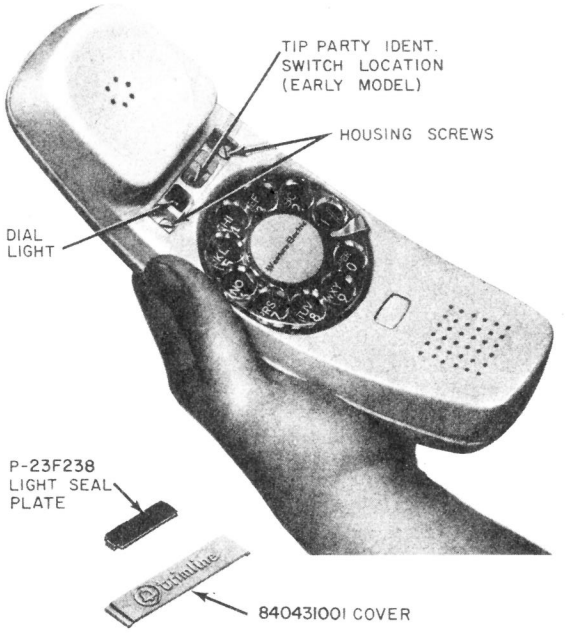


Fig. 14—220A Hand Telephone Set Cover and Light Seal Removed

transformer is not a current production model having fold-blade prongs. Where two or more dial light sets are installed, refer to the section on station transformers for use with multiple installations.

DO NOT USE 2012B TRANSFORMER. The illumination of the dial diminishes with increased cord lengths. In installations where the illumination is considered inadequate, replace 51B or 53B lamps with 51A or 53A lamps, respectively, provided the lamp power is supplied by a 2012A transformer and the combined length of mounting and handset cords exceed 15 feet. Refer to Part 5 Maintenance, for dial lamp replacement.

3.13 For proper illumination of the dial the length of the wire between the transformer and telephone set should not exceed 250 feet of inside wire.

3.14 When the hand telephone set is used in conjunction with a key telephone system, the dial lamp can be powered from the 10-volt tap of a 101G or equivalent power supply of the key system. If a 10-volt power supply is used, replace 51B or 53B lamps with 51A or 53A lamps, respectively.

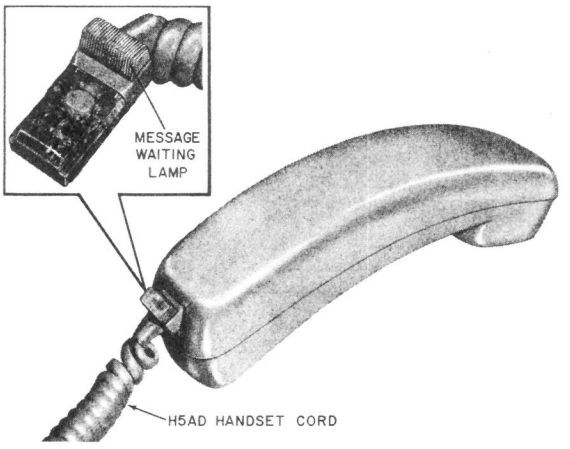


Fig. 15—H5AD Handset Cord (Message Waiting Lamp)

3.15 Ringing and/or identification ground, where required, is common to the lamp circuit. Damage to the transformer may result if there is sufficient ground potential difference between power and telephone grounds. Refer to appropriate section on bonding to power grounds in Division 460.

3.16 A 426N diode can be used with the AC1 or AD1 base assembly when connecting for a 4-party full selective or 8-party semiselective ringing. The two leads from the diode are designated No. 1 and No. 2. Lead No. 1 extends from the flanged (gold) base of the diode; lead No. 2 extends from the housing tip of the diode. Place the diode in the opening provided in the terminal board (Fig. 16). Dress the leads to the appropriate terminal board terminals, refer to Table E for connections.

3.17 An 11A extender may be used in place of the 426N diode for ringing range extension and ringer isolation when connected for 4-party full selective or 8-party semiselective ringing. The 11A extender can be used with AC1, AC1M, AC2, AC2M, AD1, and AD1M telephone set bases. See Section 501-322-101 for installation and connection information on the 11A extender.

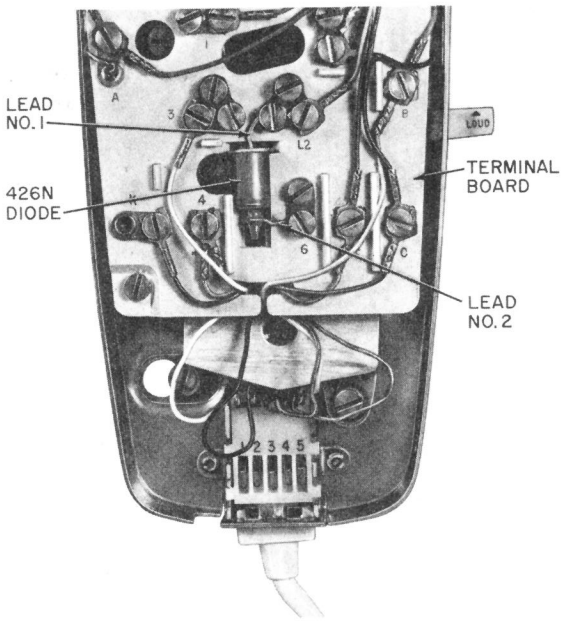


Fig. 16—Typical Installation of 426N Diode in Both AC1 and AD1 Bases

Note: A minimum of five conductors is required between the extender and telephone base.

3.18 Where extreme noise induction conditions exist, the 426N diode will not be used. Instead, a cold-cathode tube or a ringer isolator installed on a 74A connecting block may be used. See section on inductive noise for connection information.

Note: If tip party identifying ground is provided, a sixth conductor between the 74A connecting block and the telephone set is required.

3.19 For portable installations of the AD1 or AD1M telephone base, terminate the line and transformer wiring to 550A jacks or equivalent. Connect the spade-tipped leads of the D4BW, D5AL, or D5AN mounting cord to a 505A plug. Connect other end of mounting cord to AD1 base in normal manner.

On 2-party tip stations requiring ground identification, be sure that the jacks and plugs are installed in accordance with the section on jacks and plugs.

4. OPERATION

4.01 Instruct the customer on the necessary operating features.

4.02 ***Recall Switch (Fig. 1).*** Point out recall switch and explain advantages of switch. Example: If a person receives busy tone at conclusion of dialing a number, he may depress the recall switch for a few seconds; then release. Dial tone will again be heard. This is done in place of depressing line switch plunger on the telephone base.

Caution: If the recall switch is depressed during conversation or dialing, central office equipment may be disconnected.

4.03 ***"Floating" Finger Stop 220-Type only:*** Demonstrate moveable finger stop by dialing a digit. Then depress recall switch.

Note: When demonstrating finger stop, be guided by local instructions in choosing digits to dial. Some digits (i.e., 1 or 9) may be used as special access numbers for services such as DDD in ANI offices.

4.04 To prevent dialing errors, every digit dialed requires rotation of fingerwheel until finger is stopped by the moveable finger stop (220-type only).

4.05 To prevent dialing errors when TOUCH-TONE® dial is used, depress one button at a time (1220A or 2220B only).

4.06 Demonstrate the ringer volume control. Caution the customer about ringer cutoff if the screw is removed to provide this feature.

5. MAINTENANCE

5.01 Maintenance of the AC- and AD-type telephone bases is limited to changing the position of the ringer bias spring and replacement of defective components as listed in 2.06.

5.02 To change the tension of the bias spring and ringer cutoff feature of the P1A ringer, refer to Section 501-259-101 for procedures.

5.03 In areas where RF suppression is required, replace the hand telephone set with a set that has been modified by the local distributing

house. Modified sets wil be stamped ***"RE Suppressed See Section 500-150-100".*** Stamp is located adjacent to handset cord jack where the set code is stamped.

5.04 Field maintenance of the hand telephone sets is limited to the following:

- Dial lamp
- P-25E803 number card retainer
- P-23F238 light seal plate
- Form E5002A number card
- Handset cords
- Mounting cords
- 840431001 cover

5.05 To replace a dial lamp in the TRIMLINE hand telephone set, remove cover or number card retainer, and light-seal plate. Current production hand telephone sets have the lamp in a horizontal position, and a KS-6320 orange stick can be used to remove the lamp (Fig. 17). ***Exercise caution to prevent the lamp from flying out of the socket in a dangerous manner.*** In early production hand telephone sets use a 553A tool to remove the lamp from its vertical position (Fig. 18).

Note: Lamps carried for maintenance reasons should be of the 53B-type since both early and current production handsets accommodate this type.

5.06 To replace a plug ended H4DB, H5AA, or H5AD handset cord (Fig. 19) or D4BW, D5AL, or D5AN mounting cord (Fig. 20) use a KS-16750 type releaser. ***Do not use a screwdriver.*** Insert tool in space provided and hold releaser similar to using a paring knife to apply pressure on the spring clip. When spring clip has been depressed, pull plug out of jack. The plug end of the D4BU cord can be removed from a jack by depressing the locking tab and pulling plug out.

If transmission troubles are experienced or the dial is inoperative, replace the hand telephone set.

Fig. 17—Removing Dial Lamp From Current Production Hand Telephone Sets

5.07 To test hand telephone set procede as follows:

(a) Make sure all connections are correct and secure.

(b) Listen to set receiver for presence of dial tone.

(1) If dial tone is heard, dial any digit or digits prescribed by local instructions to break dial tone. If dial tone can be broken, depress and release recall button.

(2) If dial tone is not heard, in set receiver, connect dial hand test set at connecting block. If dial tone is heard with hand test set, remove the handset cord at the hand telephone set and move the test set leads to the (G) and (R) conductors at the cord plug. If dial tone is heard, replace the hand telephone set. If dial tone is not heard, test both handset cord and telephone set base.

(c) To prove a base is wired for individual or bridged service:

(1) Dial ring back number (do not secure ring from local test desk).

(2) Fully depress recall button.

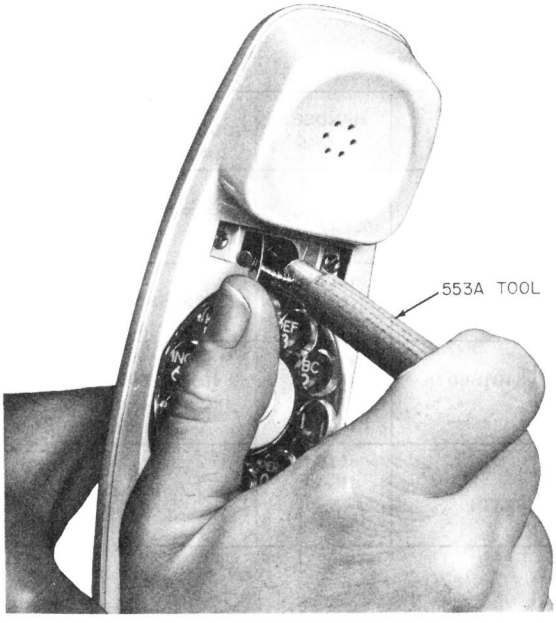


Fig. 18—Removing Dial Lamp in Early Production Hand Telephone Sets

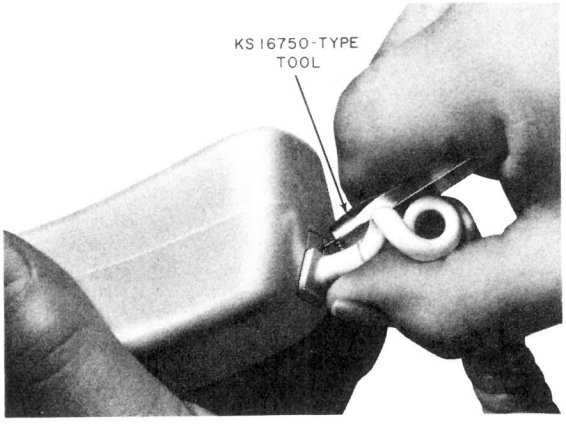


Fig. 19—Removing Handset Cord From the Hand Telephone Set

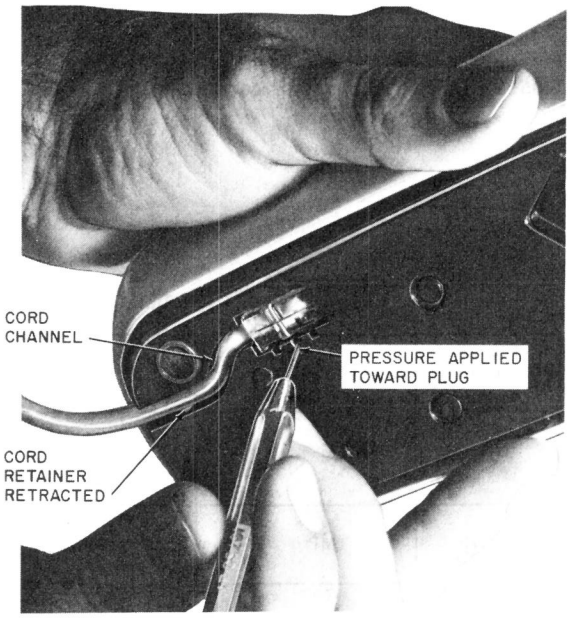
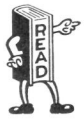


Fig. 20—Removing Mounting Cord From AD1 Telephone Base

(3) If the ringer operates, the base is wired for individual or bridged ringing.

6. CONNECTIONS



When making any wiring changes in the bases, do not use screws securing terminal board as a bridging point or for storing leads (Fig. 8).

6.01 Dial restriction of a TOUCH-TONE dial equipped telephone set is controlled by the polarity applied to the dial. Reverse tip and ring to restrict dial, and leave the dial in the handset. Check that ringer connections have not been affected by line reversal.

Note: Dial restriction cannot be provided on a TOUCH-TONE telephone set where local instruction specify using a polarity guard.

6.02 If the rotary dial of the 220A hand telephone set is to be restricted, return it to the service center for the necessary wiring modification.

6.03 Refer to Tables F and G or Fig. 25 through 29 for connections when used with 1A1, 1A2, and 6A KTS.

6.04 Refer to Tables H and I for connections to add message waiting lamp feature.

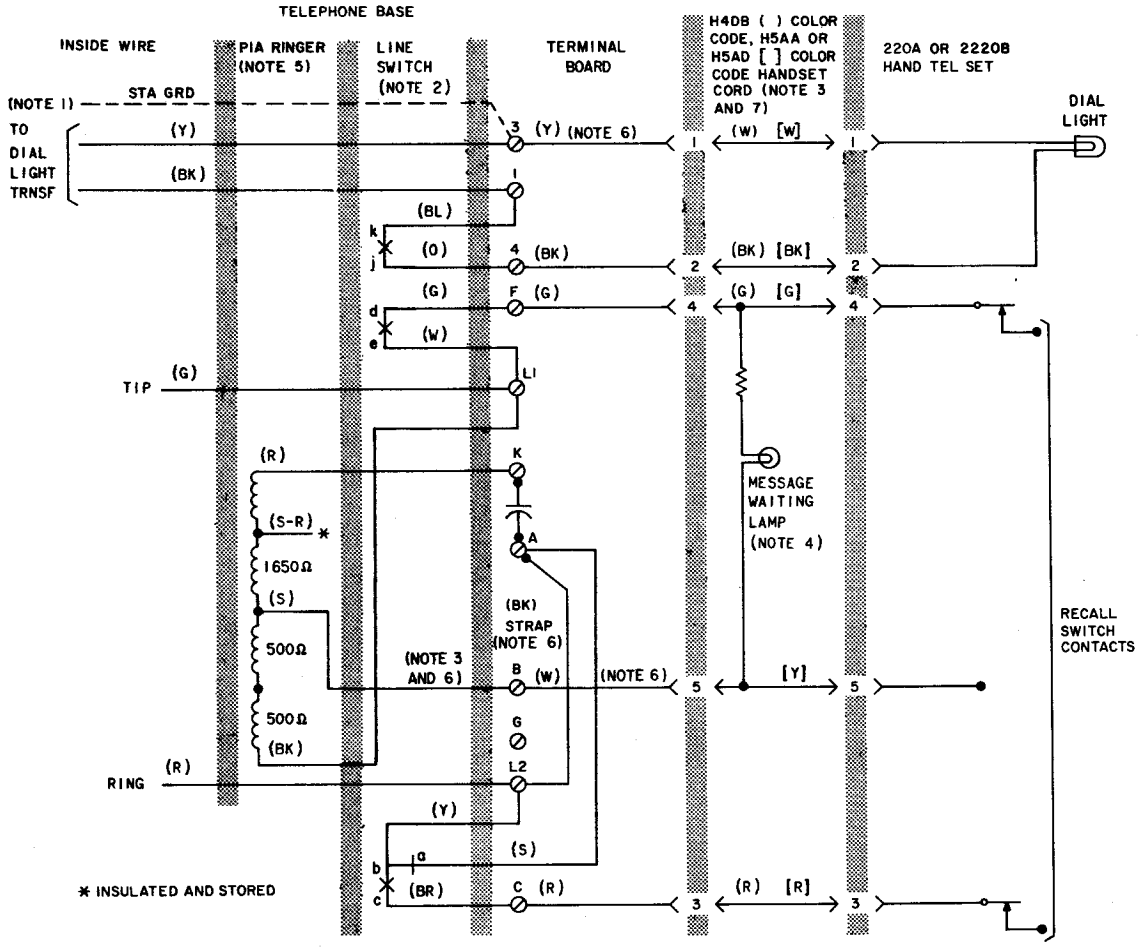
6.05 Refer to Table J for connections if a polarity guard is provided.

6.06 Refer to Table K for connections used in data application.

TABLE C

TRIMLINE TELEPHONE SET COMPONENTS

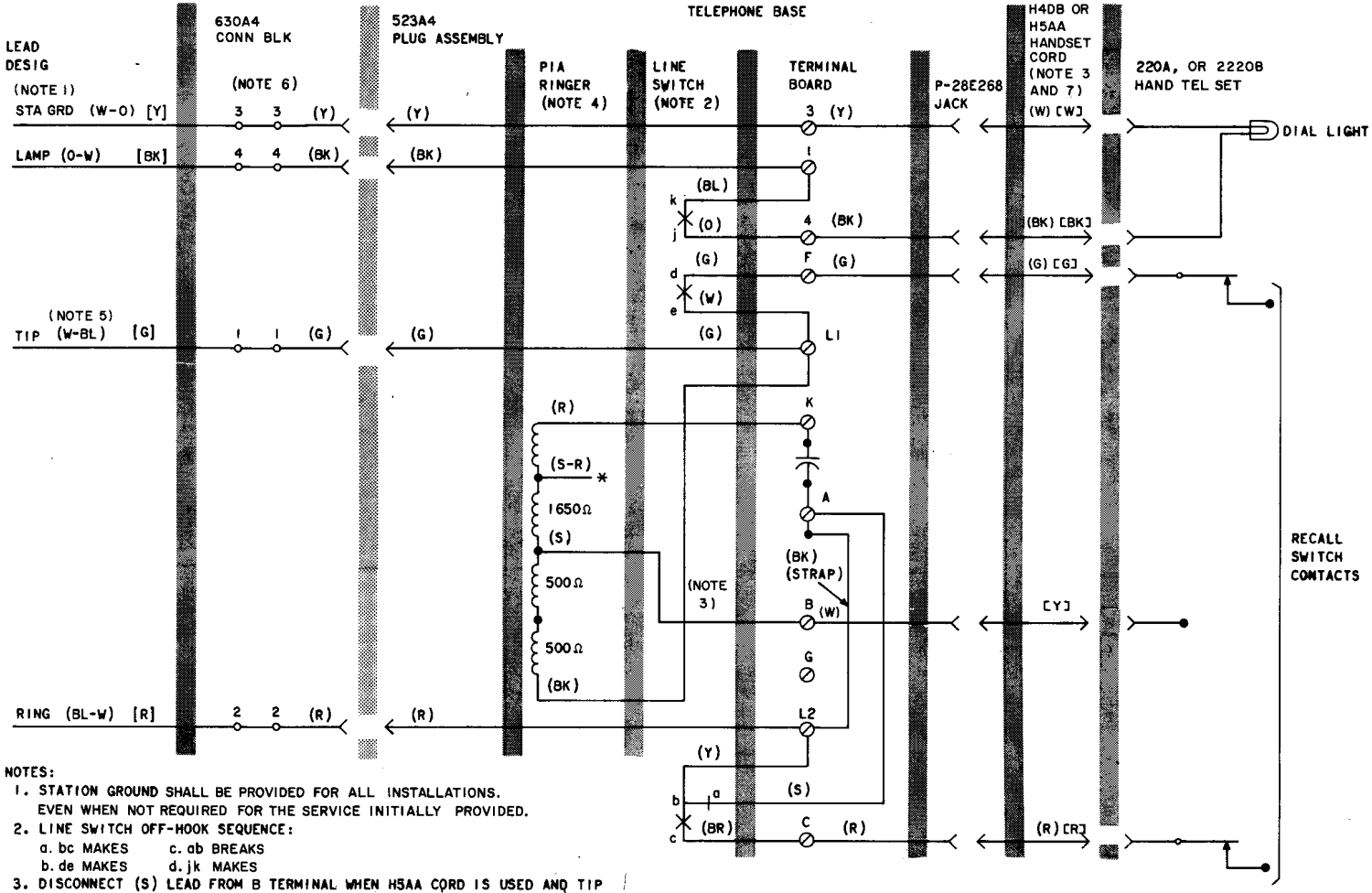
TEL SET BASE (WITH HOUSING)	TEL SET BASE (WITHOUT HOUSING)	FIG. REF	PLUG ASSY	CONN BLOCK	MTG CORD	MTG CORD JACK IN BASE	HANDSET CORD	HANDSET CORD JACK IN BASE	HAND TEL SET
AC1	AC1M	5					H4DB, H5AA, or H5AD	P-28E268	220A or 2220B
AC1P	AC1MP	5	523A4	630A4			H4DB or H5AA	P-28E268	220A or 2220B
AD1	AD1M	6			D4BW-29, D5AL or D5AN	840166078	H4DB, H5AA, or H5AD	840166078	220A or 2220B
AD2	AD2M	7			D4BU	623T4	H4D4, H5AA, or H5AD	840166078	220A or 2220B



NOTES:

1. STATION GROUND SHALL BE PROVIDED FOR ALL INSTALLATIONS; EVEN WHEN NOT REQUIRED FOR THE SERVICE INITIALLY PROVIDED.
2. LINE SWITCH OFF-HOOK SEQUENCE:
   a. bc CLOSES c. ab OPENS
   b. de CLOSES d. jk CLOSES
3. DISCONNECT (S) LEAD FROM TERMINAL B WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
4. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
5. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
6. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION ON WIRING ARRANGEMENT AND LEAD COLORS OF ACI BASES MANUFACTURED PRIOR TO 10-1-72.
7. H4DB HANDSET CORD SHALL BE USED FOR INDIV. OR BRIDGED RINGING, RING PARTY, AND TIP PARTY WITHOUT IDENT. GRD.

Fig. 21—Schematic of AC1 Telephone Base With 220A or 2220B Hand Telephone Set (Current Model)

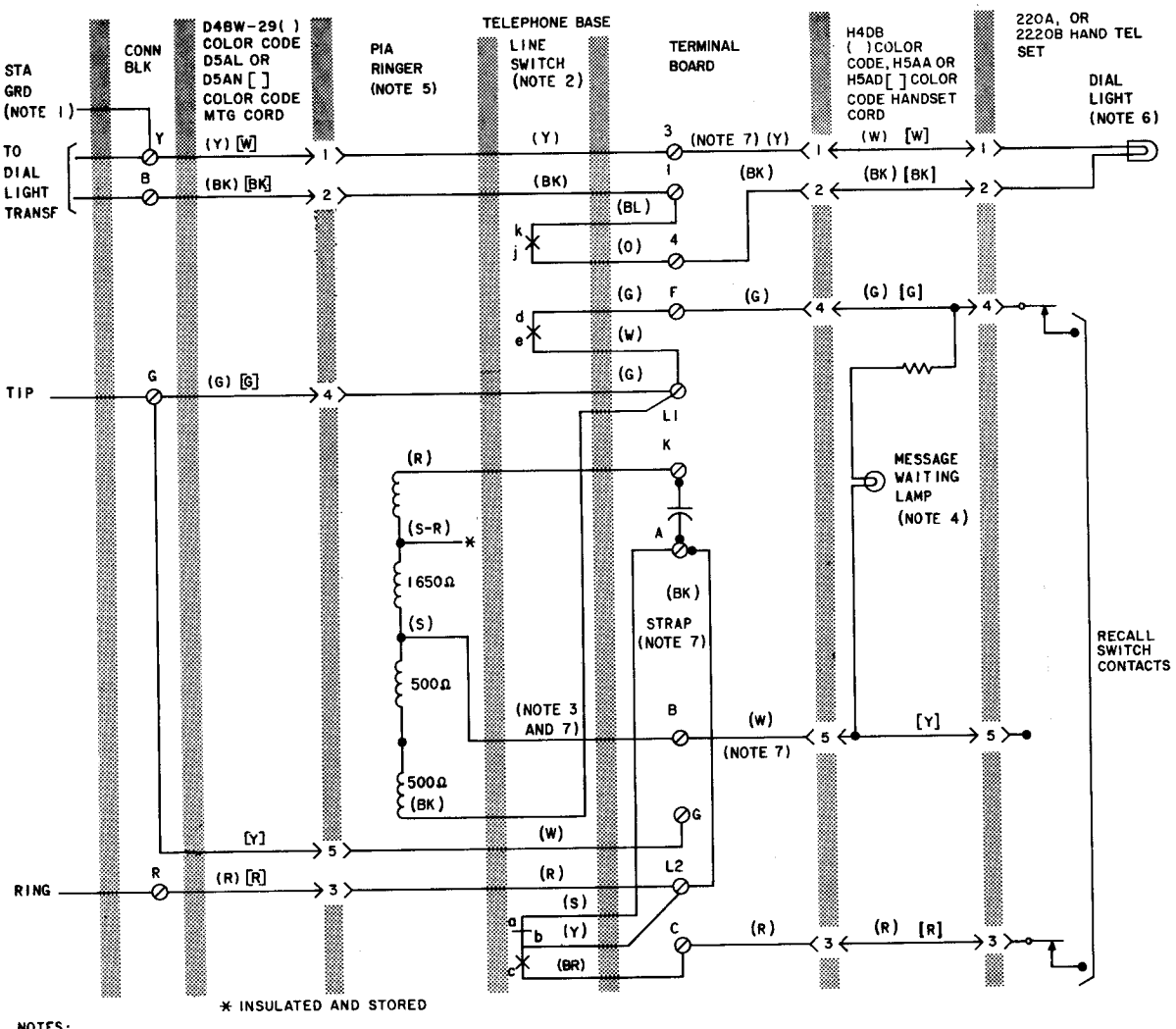


NOTES:

1. STATION GROUND SHALL BE PROVIDED FOR ALL INSTALLATIONS. EVEN WHEN NOT REQUIRED FOR THE SERVICE INITIALLY PROVIDED.
2. LINE SWITCH OFF-HOOK SEQUENCE:
   a. bc MAKES c. ab BREAKS
   b. de MAKES d. jk MAKES
3. DISCONNECT (S) LEAD FROM B TERMINAL WHEN H5AA CORD IS USED AND TIP IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
4. SET WIRED FOR BRIDGED RINGING. FOR OTHER CLASSES OF SERVICE REFER TO RINGER CONNECTION TABLE.
5. ( ) INSIDE WIRE COLOR CODE, [ ] "D" STATION WIRE COLOR CODE.
6. QUICK CONNECT TERMINALS 630A6 CONNECTING BLOCK.
7. H4DB HANDSET CORD SHALL BE USED FOR INDIV. OR BRIDGED RINGING, RING PARTY, AND TIP PARTY WITHOUT IDENT. GRD.

* INSULATED AND STORED

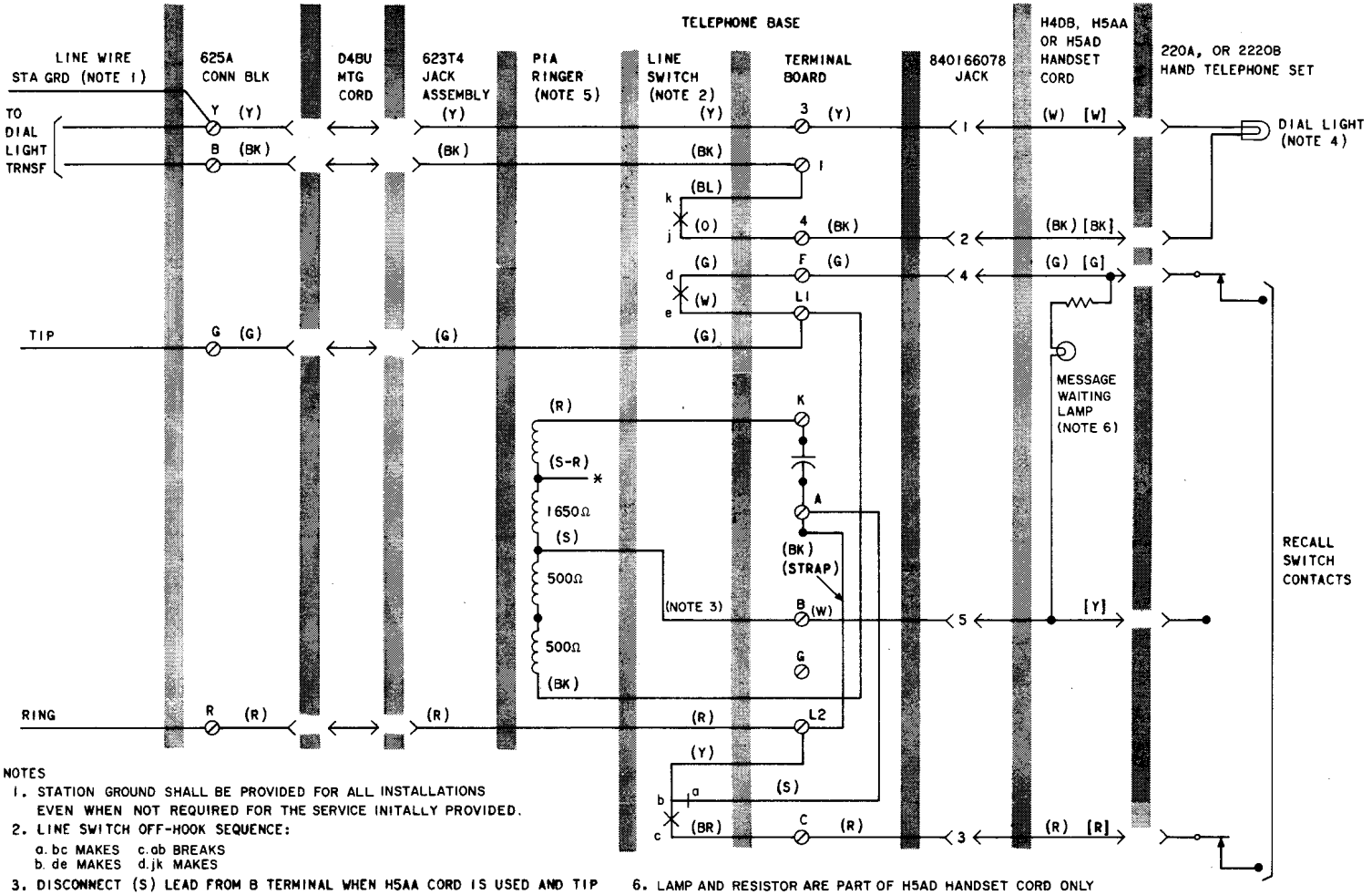
Fig. 22—Schematic of AC1P Telephone Base With 220A or 2220B Hand Telephone Set



NOTES:

1. STATION GROUND SHALL BE PROVIDED FOR ALL INSTALLATIONS; EVEN WHEN NOT REQUIRED FOR THE SERVICE INITIALLY PROVIDED.
2. LINE SWITCH OFF-HOOK SEQUENCE:
   a. bc CLOSES c. ab OPENS
   b. de CLOSES d. jk CLOSES
3. DISCONNECT (S) LEAD FROM TERMINAL B WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED, INSULATE AND STORE.
4. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
5. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
6. CHANGE TO 53A LAMP IF COMBINED LENGTH OF HAND TELEPHONE SET CORD AND (AD1 BASE) MOUNTING CORD EXCEEDS 15 FEET.
7. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION OR WIRING ARRANGEMENT AND LEAD COLORS OF AD1 BASES MANUFACTURED PRIOR TO 10-1-72.

Fig. 23—Schematic of AD1 Telephone Base With 220A or 2220B Hand Telephone Set (Current Model)

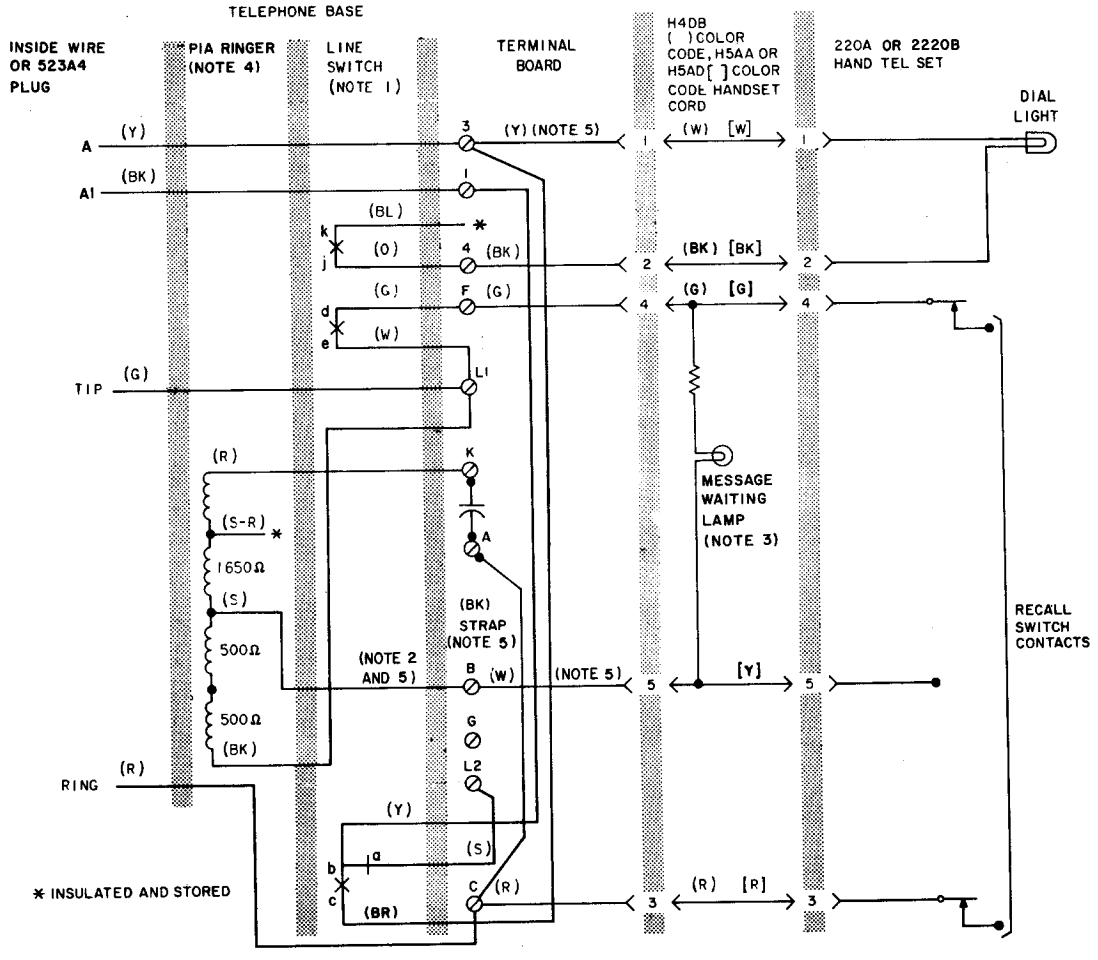


NOTES

1. STATION GROUND SHALL BE PROVIDED FOR ALL INSTALLATIONS EVEN WHEN NOT REQUIRED FOR THE SERVICE INITALLY PROVIDED.
2. LINE SWITCH OFF-HOOK SEQUENCE:
   a. bc MAKES c. ab BREAKS
   b. de MAKES d. jk MAKES
3. DISCONNECT (S) LEAD FROM B TERMINAL WHEN H5AA CORD IS USED AND TIP IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
4. CHANGE TO 53A LAMP IF COMBINED LENGTH OF HAND TELEPHONE SET CORD AND (AD2 BASE) MOUNTING CORD EXCEEDS 15 FEET.
5. FACTORY-WIRED FOR BRIDGED RINGING. FOR OTHER CLASSES OF SERVICE REFER TO RINGER CONNECTION TABLE.
6. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.

* INSULATED AND STORED
( ) COLOR CODE H4DB CORD
[ ] COLOR CODE H5AA OR H5AD CORD

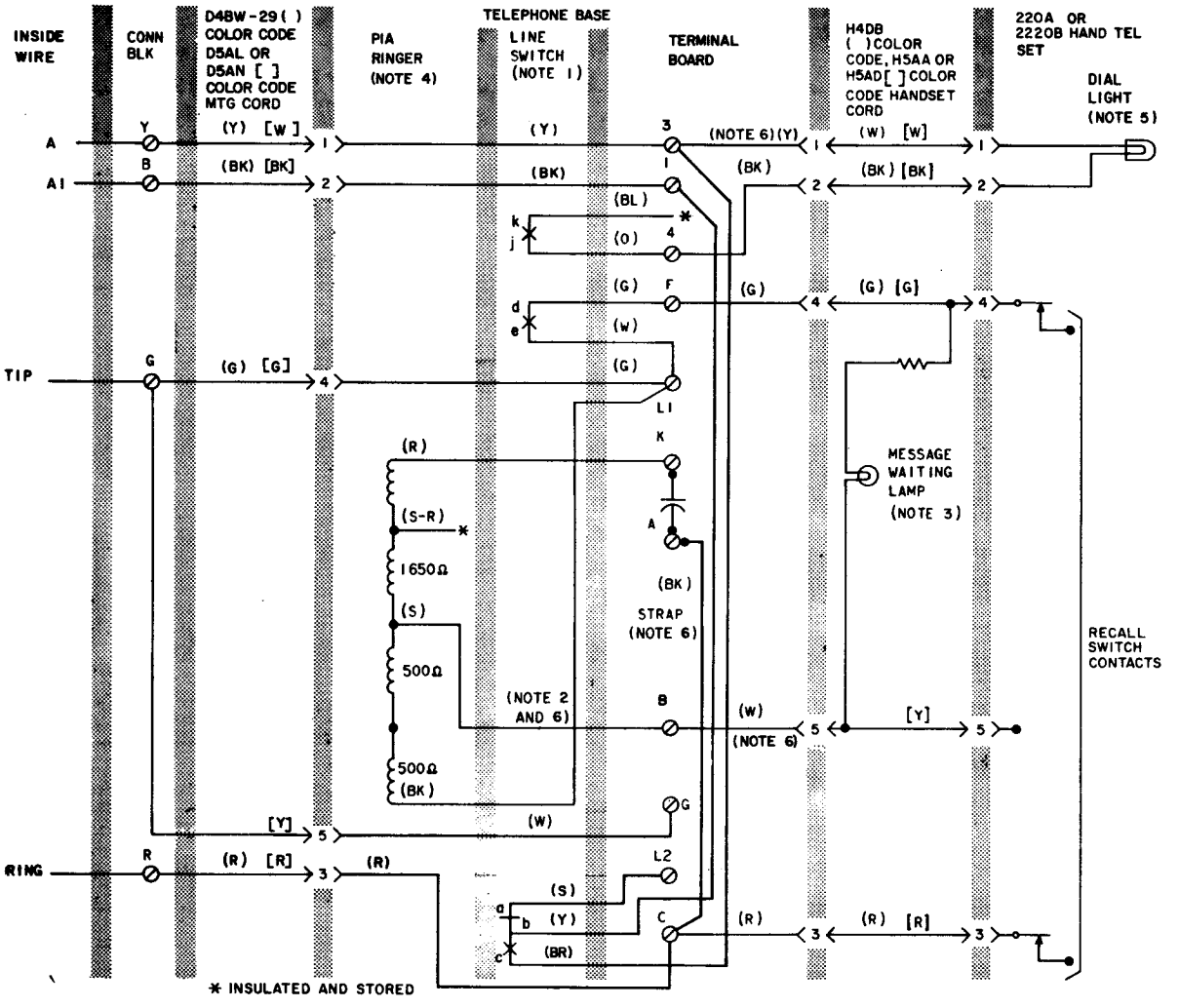
Fig. 24—Schematic of AD2 or AD2M Telephone Base With 220A or 2220B Hand Telephone Set



NOTES:

1. LINE SWITCH OFF-HOOK SEQUENCE:
   A. bc CLOSES C. ab OPENS
   B. de CLOSES D. jk CLOSES
2. DISCONNECT (S) LEAD FROM TERMINAL B WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
3. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
4. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
5. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION ON WIRING ARRANGEMENT AND LEAD COLORS OF ACI BASES MANUFACTURED PRIOR TO 10-1-72.

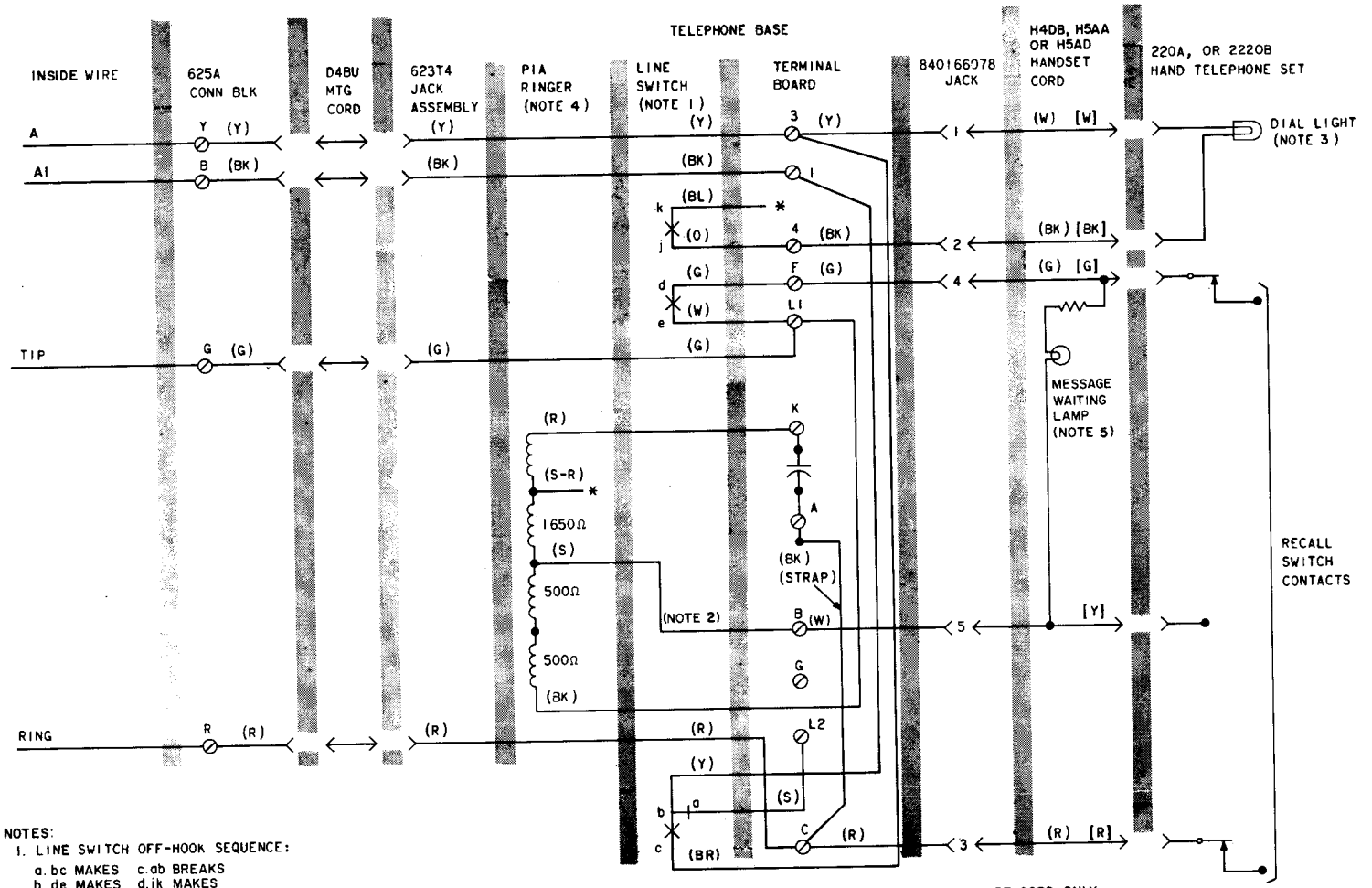
Fig. 25—Schematic of AC1, AC1M, AC1P, or AC1MP Telephone Base Wired for 1A1, 1A2, or 6A KTS Without Dial Light



NOTES:

1. LINE SWITCH OFF-HOOK SEQUENCE:
   A. bc CLOSES C. ab OPENS
   B. de CLOSES D. jk CLOSES
2. DISCONNECT (S) LEAD FROM TERMINAL 8 WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED, INSULATE AND STORE.
3. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
4. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
5. CHANGE TO 53A LAMP IF COMBINED LENGTH OF HAND TELEPHONE SET CORD AND (AD1 BASE) MOUNTING CORD EXCEEDS 15 FEET.
6. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION OR WIRING ARRANGEMENT AND LEAD COLORS OF AD1 BASES MANUFACTURED PRIOR TO 10-1-72.

Fig. 26—Schematic of AD1 or AD1M Telephone Base Wired for 1A1, 1A2, or 6A KTS Without Dial Light

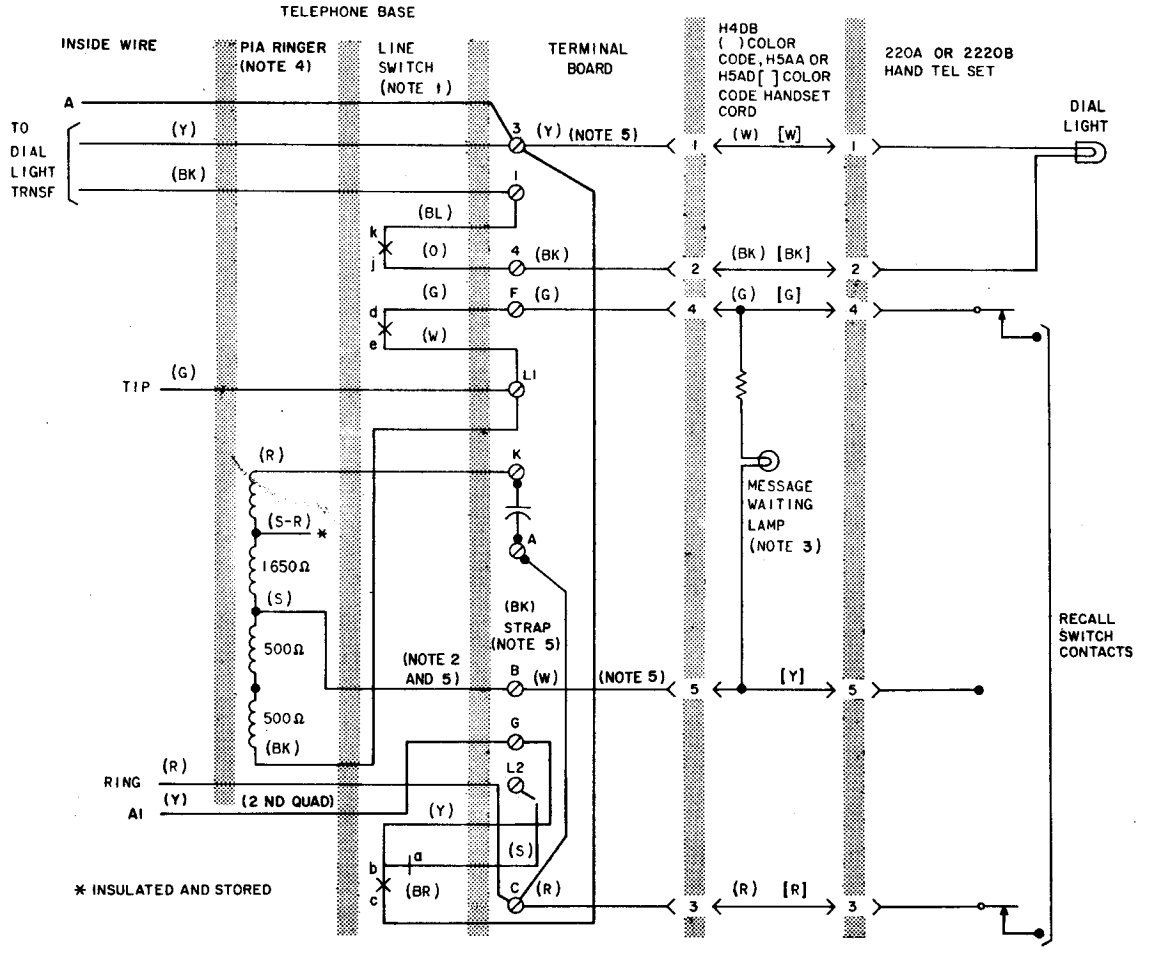


NOTES:

1. LINE SWITCH OFF-HOOK SEQUENCE:
   a. bc MAKES c. ab BREAKS
   b. de MAKES d. jk MAKES
2. DISCONNECT (S) LEAD FROM B TERMINAL WHEN H5AA CORD IS USED AND TIP IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
3. CHANGE TO 53A LAMP IF COMBINED LENGTH OF HAND TELEPHONE SET CORD AND (AD2 BASE) MOUNTING CORD EXCEEDS 15 FEET.
4. FACTORY-WIRED FOR BRIDGED RINGING. FOR OTHER CLASSES OF SERVICE REFER TO RINGER CONNECTION TABLE.
5. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.

* INSULATED AND STORED
( ) COLOR CODE H4DB CORD
[ ] COLOR CODE H5AA OR H5AD CORD

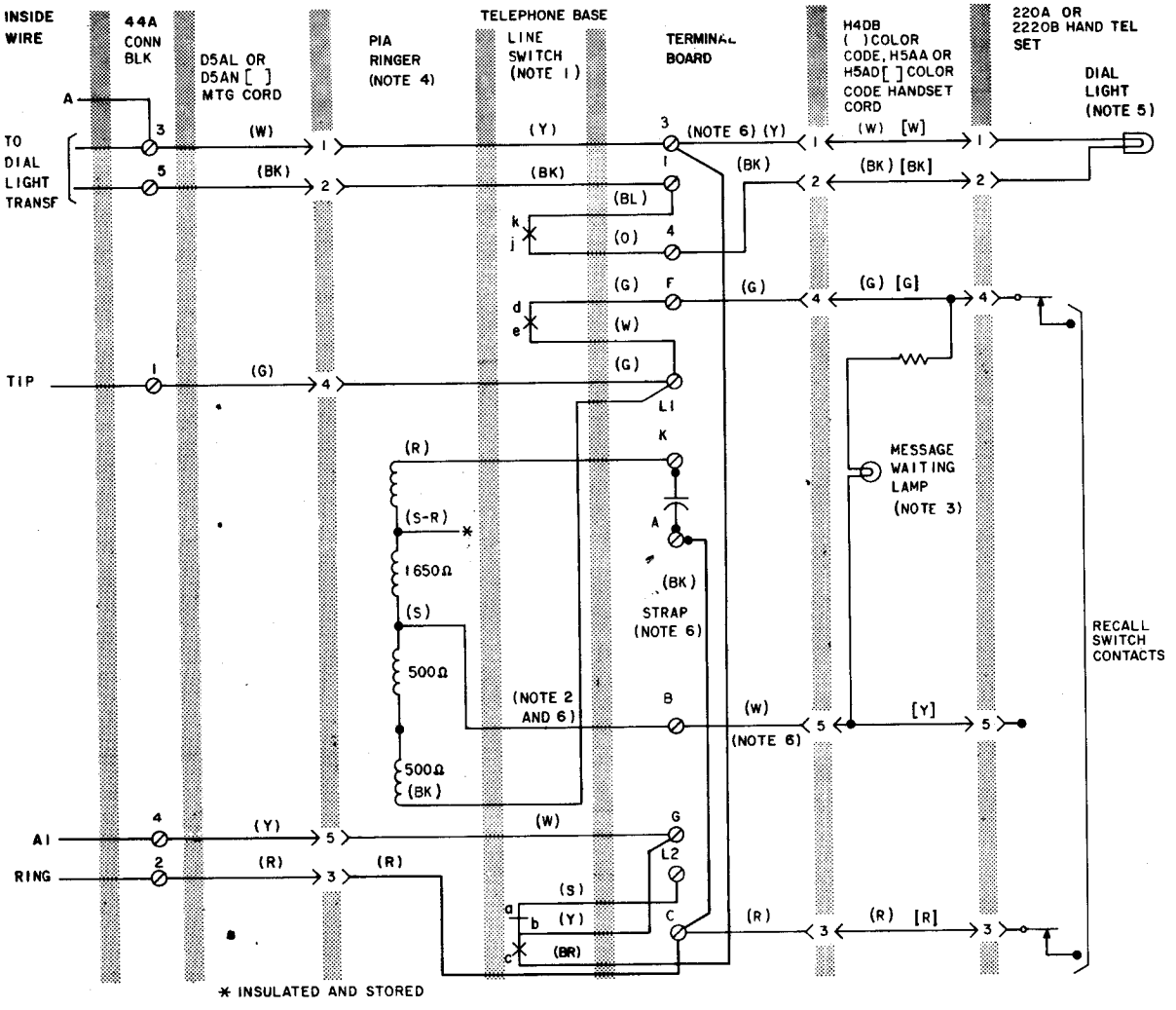
Fig. 27—Schematic of AD2 or AD2M Telephone Base Wired for 1A1, 1A2, or 6A KTS Without Dial Light



NOTES:

1. LINE SWITCH OFF-HOOK SEQUENCE:
   A. bc CLOSES C. ab OPENS
   B. de CLOSES D. jk CLOSES
2. DISCONNECT (S) LEAD FROM TERMINAL B WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED. INSULATE AND STORE.
3. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
4. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
5. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION ON WIRING ARRANGEMENT AND LEAD COLORS OF AC1 BASES MANUFACTURED PRIOR TO 10-1-72.

Fig. 28—Schematic of AC1 or AC1M Telephone Base Wired for 1A1, 1A2, or 6A KTS With Dial Light



NOTES:

1. LINE SWITCH OFF-HOOK SEQUENCE:
   A. bc CLOSES C. ab OPENS
   B. de CLOSES D. jk CLOSES
2. DISCONNECT (S) LEAD FROM TERMINAL B WHEN H5AA HANDSET CORD IS USED AND TIP PARTY IDENTIFYING GROUND IS NOT PROVIDED, INSULATE AND STORE.
3. LAMP AND RESISTOR ARE PART OF H5AD HANDSET CORD ONLY (MESSAGE WAITING LAMP FEATURE). [Y] LEAD IS NOT TERMINATED IN HANDSET CORD PLUG.
4. SET WIRED FOR INDIVIDUAL OR BRIDGED SERVICE, FOR ALL OTHER PARTY SERVICE REFER TO RINGER CONNECTION TABLE.
5. CHANGE TO 53A LAMP IF COMBINED LENGTH OF HAND TELEPHONE SET CORD AND (AD1 BASE) MOUNTING CORD EXCEEDS 15 FEET.
6. REFER TO READ IN 1.01 AND TABLE A FOR ADDITIONAL INFORMATION OR WIRING ARRANGEMENT AND LEAD COLORS OF AD1 BASES MANUFACTURED PRIOR TO 10-1-72.

Fig. 29—Schematic of AD1 or AD1M Telephone Base Wired for 1A1, 1A2, or 6A KTS With Dial Light

TABLE D

TELEPHONE BASE CONNECTIONS FOR INDIVIDUAL AND 2-PARTY SERVICE (SEE READ IN 1.01)

WIRE OR LEAD		COLOR	INDIV OR BRIDGED (NOTE 1)	RING PARTY (NOTE 1)	TIP PARTY	
					NO IDENT GRD (NOTE 1)	WITH IDENT GRD
Inside Wire (AC-Type Only) (Note 3 and 4)	Ring	R	L2	L2	L1	[illegible] L1
	Tip	G	L1	L1	L2	[illegible] L2
	TRNSF	Y	3	3	3	3
	TRNSF	BK	1	1	1	1
Mtg Cord Jack Leads at Term. Board (AD-Type Only)	Ring	R	L2	L2	L1	L1
	Tip	G	L1	L1	L2	L2
	TRNSF	Y[W]	3	3	3	3
	TRNSF	BK	1	1	1	1
Ringer (Notes 1 and 2)		BK	L1	3	3	3
Handset Cord Jack Leads (1220A, 2220B only)		R	C	C	F	F
		G	F	F	C	C
Strap From A		BK	L2	L2	L2	A

Notes:

1. Disconnect, insulate and store (S) or (BL) lead from terminal B when H5AA handset cord is used and tip party identifying ground is not provided.

   Caution: Do not store spade tipped leads under terminal board mounting screws.

2. To permanently silence ringer, move (R) ringer lead from terminal K; insulate and store.

3. Inside wire will be run directly to terminal board for AC1 or AC1M base.

4. Inside wire will run to 630A4 connecting block for AC1P AC1MP base.

[ ] early model bases.

TABLE E

CONNECTIONS FOR 4-PARTY FULL SELECTIVE OR 8-PARTY SEMISELECTIVE RINGING USING 426N DIODE (SEE READ IN 1.01)

WIRE OR LEAD		LEADS OR COLOR	–RING	–TIP	+RING	+TIP
Inside Wire at Conn Block	Ring	R	R	R	R	R
	Tip	G	G	G	G	G
	TRNSF	Y	Y	Y	Y	Y
	TRNSF	BK	B	B	B	B
Mtg Cord at Conn Block (AD-Type Only)	Ring	R	R	R	R	R
	Tip	G	G	G	G	G
	TRNSF	Y[W]	Y	Y	Y	Y
	TRNSF	BK	B	B	B	B
Inside Wire or Mtg Cord At Term. Board	Ring	R	L2	L2	L2	L2
	Tip	G	L1	L1	L1	L1
	TRNSF	Y[W]	3	3	3	3
	TRNSF	BK	1	1	1	1
426N Diode*		(1)	L2	L1	3	3
		(2)	G	G	G	G
Ringer		R	3	3	L2	L1
		BK	K	K	K	K
		S	B	B	B	B
		S-R	G	G	G	G
Strap from A		BK	3	3	L2	L1
Line Switch		S	†	†	†	†

[ ] early model bases

* (1) Flanged (Gold) base

(2) Knob end (housing tip)

† Insulate and store.

Caution: Do not store spade tipped leads under terminal board mounting screws.

TABLE F

CONVERSION FOR 1A1, 1A2, AND 6A KTS
WITHOUT DIAL LIGHT
(SEE NOTES FIG. 25, 26, AND 27)
(SEE READ IN 1.01)

WIRE OR LEAD	COLOR	TERMINAL BOARD	
		REMOVE FROM	CONNECT TO
Line Switch	BR	C	3
	S	A	L2
	Y	L2	1
	BL	1	*
Inside Wire, 523A4 Plug, 623T4 Jack, or Mtg Cord Jack Lead	R	L2	C
Strap from A	BK	L2	C

Caution: Do not store spade tipped leads under terminal board mounting screws.

Notes:

1. Install D4BU, D4BW-29, D5AL, or D5AN mounting cord (AD-type base).
2. Quad inside wire or 523A4 plug (AC-type base).

* Insulate and store.

TABLE G

CONVERSION FOR 1A1, 1A2, AND 6A KTS
WITH DIAL LIGHT
(SEE NOTES FIG. 28 AND 29)
(SEE READ IN 1.01)

WIRE OR LEAD	COLOR	TERMINAL BOARD	
		REMOVE FROM	CONNECT TO
Line Switch	BR	C	3
	S	A	L2
	Y	L2	G
Inside Wire or Mtg Cord Jack Lead (Note 2)	R	L2	C
Strap from A	BK	L2	C

Notes:

1. Install D5AL or D5AN mounting cord (AD1 or AD1M base only).
2. AC1 or AC1M base only.

TABLE H

CONNECTIONS FOR MESSAGE WAITING LAMP AND DIAL LIGHT FEATURES (1A1, 1A2, AND 6A KTS), SEE NOTES (SEE READ IN 1.01)

WIRE OR LEAD	COLOR	TERMINAL BOARD	
		REMOVE FROM	CONNECT TO
Inside Wire or Mtg Cord Jack Leads	G	L1	C
	R	L2	L1
Handset Cord Jack Leads	G	F	C
	W[Y]	B	L1
	R	C	F
Line Switch	BR	C	3
	Y	L2	G
	S	A	L2
Ringer	BK	L1	C
Strap From A	BK	L2	L1

Notes:

1. Install D5AL or D5AN mounting cord. (AD1 or AD1M base only).
2. Install H5AD handset cord AD1 or AD1M base only.
3. AC1 or AC1M base only.

[ ] Early bases

TABLE I

CONNECTIONS FOR MESSAGE WAITING LAMP AND DIAL LIGHT FEATURES NONKEY SYSTEM USE, SEE NOTES (SEE READ IN 1.01)

WIRE OR LEAD	COLOR	TERMINAL BOARD	
		REMOVE FROM	CONNECT TO
Handset Cord Jack Leads	G	F	L1
	W[Y]	B	L2

Notes:

1. Install D4BU, D4BW-29, D5AL, or D5AN mounting cord (AD-type).
2. Install H5AD handset cord AD1, AD1M, AD2, or AD2M base only.
3. Quad inside wire or 523A4 plug (AC-type base).

[ ] Early bases

◆ TABLE J ◆

P-90D231 POLARITY GUARD ASSEMBLY CONNECTIONS (AC- OR AD-TYPE) TELEPHONE BASE AND 1220A OR 2220B HAND TELEPHONE SET (SEE READ IN 1.01)

WIRE OR LEAD	COLOR	REMOVE FROM	CONNECT TO	
		TERM. BOARD	POLARITY GUARD ASSY	TERM. BOARD
Handset Cord Jack	R	C	Term. C	
	G	F	Term. F	
Polarity Guard Assembly	R			C
	G			F

Note: For use when specified by local instructions for end-to-end signaling installation. See Fig. 11 for typical installation.

◆ TABLE K ◆

CONVERSION FOR DATA APPLICATIONS (SEE READ IN 1.01)

WIRE OR LEAD	COLOR	TERMINAL BOARD	
		REMOVE FROM	CONNECT TO
Inside Wire or Mtg. Cord Jack Lead at Term. Board	Y [W]	3	4

[ ] Early Bases

Note: Dial light cannot be provided with this service.