

## BELL SYSTEM PRACTICES

Station Installation  
and Maintenance

## SUPPLEMENTARY

ADDENDUM C32.535

Issue A, 10-15-53-N

T. P. T. & T. Co.

### 500 TYPE TELEPHONE SETS

#### 1. GENERAL

1.01 This Supplementary Addendum, which supplements Section C32.535, issue 2 and Addendum, issue C is issued to provide temporary information on several new 500 series telephone sets which are available. This Supplementary Addendum should be retained with subsequent issues of the section until notice is given covering its cancellation or reissue.

1.02 Paragraphs 1.05, 2.19, 2.20, 2.21 and 2.22 and Figures 3, 4 and 5 are added.

1.05 Several types of low demand 500 series sets have been made available, i.e.: 500E-3 and 500F-3, 500L-3 and 500M-3, 502A-3 and 502B-3 and 511A-3 and 511B-3. A brief description of each type is given below and circuits of three of the new sets are reproduced.

#### 2. DESCRIPTION AND USE

2.19 The 500E-3 (manual) and 500F-3 (dial) sets will replace 302AA and AC sets respectively. These sets are equipped with a left-hand plunger switch to minimize interference, when the hand set is removed at one of the stations on the line when the line is already in use. When the hand set is first removed a low loss a-c bridge, including the receiver and dial filter, is placed across the line. If the line is not already in use, the subscriber pulls up the plunger switch which closes the talking and dialing circuits. Since demands for 302AA (manual) telephone sets have been at levels which do not appear sufficient to warrant the manufacture of comparable 500E-3 (manual) sets,

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500E-3 sets will be available only by conversion.

Use of this type of set is limited to Public Emergency Reporting Service Stations.

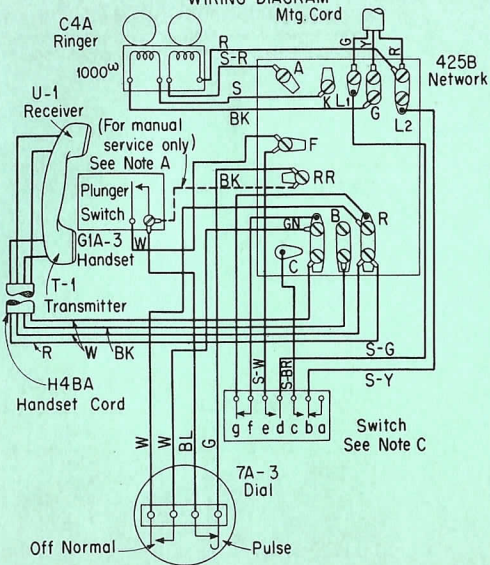
2.20 The 500L-3 (manual) and 500M-3 (dial) telephone sets do not replace any apparatus. These sets are similar to the 500C-3 and 500D-3 telephone sets except for an added terminal strip and a different switchhook circuit arrangement. These changes provide for separate talking and ringing circuits for use with 1A Telephone Answering Sets, 2B Key Telephone Systems and 507A and 507B P.B.X. attendant stations. They also permit the use of additional ringing bridges in specific instances when needed where a local ringing source is available. The 500L-3 (manual) set will be obtainable only by conversion.

2.21 The 502A-3 (manual) and 502B-3 (dial) telephone sets are similar in appearance to the 500C-3 and 500D-3 telephone sets except that they have been provided with the exclusion feature which permits the user to cut off an extension station to assure added privacy. This is brought about by a (left-hand) switchhook plunger. These sets are for use in 1A and 1A1 Key Telephone Systems where exclusion service is desired and also at attendants' positions. They will replace 402A and 402C telephone sets. Connection and circuit schematic information concerning these sets will be covered in SD-69209-01.

2.22 The 511A-3 (manual) and 511B-3 (dial) telephone sets are similar to the 510-type set, except that in addition to the single combination turn and pushbutton key, which permits the pickup of two lines plus the signaling feature, they are also provided with the switchhook plunger exclusion feature. They are intended for use in 1A Key Telephone Systems and will replace 410CA, CC, 411AA, AC, CA and CC Telephone sets. Connection and circuit schematic information for these telephone sets has been covered in SD-69208-01. Since the demand for manual sets of the

402, 410 and 411 types has not appeared to be of such proportions as to justify the manufacture of equivalent types in the 500 series and also because conversion to manual types can readily be made, both in the field and shop, the 502A-3 and 511A-3 telephone sets will be available only through conversion.

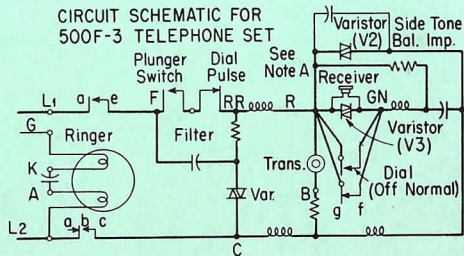
# 500E-3 & 500F-3 TELEPHONE SET WIRING DIAGRAM



## Notes:

A. 500E-3 (For Manual Service) same as 500F-3 except replace dial with apparatus blank and strap terminal on plunger switch to (RR) terminal on network with black lead as shown.

B. When the handset is removed, contact, *gf*, breaks last.



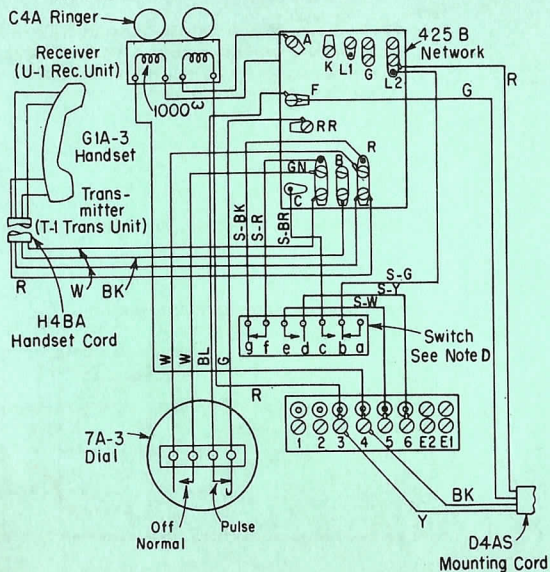
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Figure 3



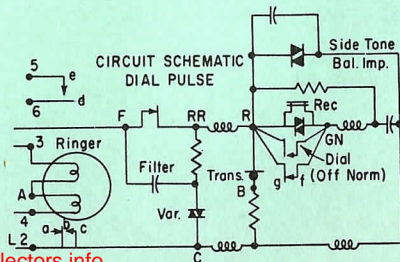
# 500 M-3 TELEPHONE SET

## WIRING DIAGRAM FOR 500 M-3 TELEPHONE SET



### Notes:

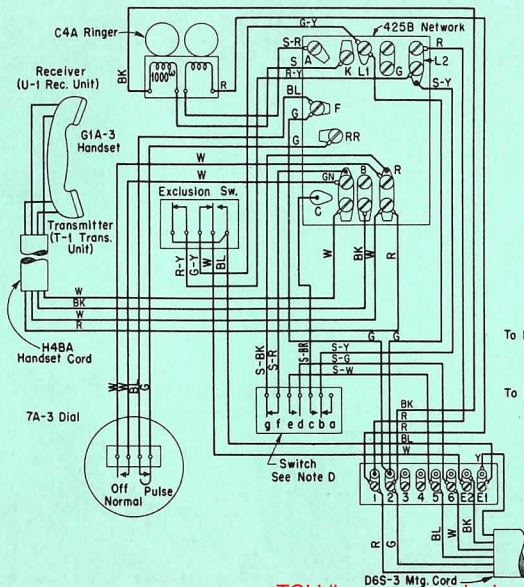
- A. For manual service: (500 L-3) same as 500 M-3 except replace dial with apparatus blank and transfer green lead from (F) to (RR) terminal on network.
- B. When ringer condenser is required in series with ringer, transfer slate ringer lead to (K) terminal on network.
- C. Contact sequence:  
 Removing handset - 1. de closes before cb  
                           2. fg opens  
 Restoring handset - 1. fg closes  
                           2. cb opens before de



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Figure 4

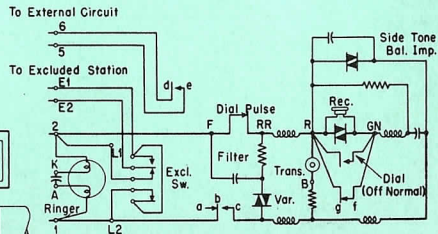
WIRING DIAGRAM FOR 502B-3 TELEPHONE SET



## Notes:

- A. 502 A-3 (For Manual Service) Same as 502B-3 except replace dial with 95A-3 Apparatus Blank and transfer Green lead from (F) to (RR) terminal on network.
- B. To permanently silence ringer:  
Transfer Black ringer lead to (K) terminal on network.
- C. Ringer Cut-off control by customer:  
Bend stop next to defent on ringer volume control so that it completely clears the rim of the ringer frame. This provides a further position on volume control which prevents armature movement.
- D. Contact sequence:  
Removing Handset
  1. de closes before cb
  2. fg opens
 Restoring Handset
  1. fg closes
  2. cb opens before de

CIRCUIT SCHEMATIC FOR 502B-3 TELEPHONE SET



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Issue D, 8-15-54-N  
T. P. T. & T. Co.

TELEPHONE SETS  
500-TYPE  
FOR USE IN NOISY LOCATIONS

1. GENERAL

1.01 This addendum, which supplements Section C32.535, is issued to specify the use of 500-type sets in very noisy locations.

This addendum should be retained with subsequent issues of the section until notice is given covering its cancellation or reissue.

1.02 Paragraph 3.08 and 3.09 are added.

3. USE

3.08 The 500-type telephone sets, without modification, have been found to perform satisfactorily in locations with a high noise level where other type telephone sets are considered to be unsatisfactory. It is therefore recommended that they be applied for use in such locations in lieu of push-to-listen or other similar arrangements. In locations with an extremely high noise level, in the order of 90 to 100 db, the 500-type telephone sets may be modified in

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accordance with paragraph 3.09 of this addendum to provide the additional attenuation required under extreme noise conditions. The modified set shall not be used, however, unless the unmodified set is incapable of satisfactory performance under a specific noise condition.

3.09 To increase the attenuation of the 500-type telephone sets for use in extremely noisy locations, connect an Allen Bradley type GB, 39 ohm, 1 watt, or equivalent type, resistor across the B and RW terminals of the equalizer, or to terminals B and R for the sets with 425-B networks. This resistor may be ordered as follows:

(Qty) Resistor - Allen Bradley type GB, 39 ohm, 1 watt or equivalent.



### AT&T Co Standard

**2.02 Mounting and Housing:** All parts enclosed by the housing, including the dial or apparatus blank, line switch (switchhook), and cording, are mounted on the metal base. The plungers are part of the housing assembly. The housing can easily be replaced and is fastened to the base with two special, roundhead, captive machine screws. Three-conductor, neoprene-jacketed mounting cords are standard with all 500- and 501-type sets except the 500H (6-conductor) and 500L/M (4-conductor).

**2.03 Network:** The code number of the network (425A or 425B) and the terminal designations are cast in the surface of the terminal block which covers the network case and are also stamped on the side of the case. Circuit elements inside the network case are mounted on the underside of the terminal block. This includes a filter which not only suppresses dial pulsing interference with radio, but increases the life of the pulsing contacts. The network shall not be replaced in the field.

**2.04 Transmission Equalization:** Equalizers are required in 500 series telephone sets used near central offices or as "on premise" PBX stations. Zoning practices provide specific information on their use. Telephone sets are equipped for equalization as follows:

(a) Sets coded 500A/B and 501A/B have 311A equalizers and 425A networks.

(b) Sets coded 500J/K and 501J/K **do not** have equalizers.

(c) All other 500 series sets have 425B networks which contain the necessary apparatus for equalization.

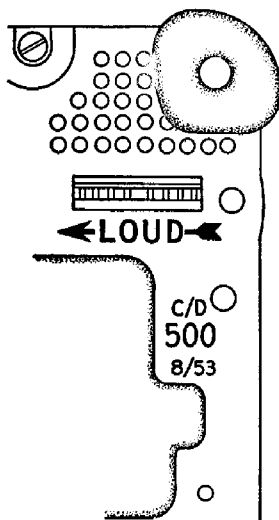
**2.05 Dial:** All 500 series dial telephone sets are equipped with 7-type dials:

**2.06 Ringer:** Early 500-type sets used C2A ringers and 501-type sets used C3A ringers. These ringers are not interchangeable. The C4A ringer can be used with either 500- or 501-type telephone sets. C-type ringers are high impedance and their sound output is several db higher than the B-type ringer. The subscriber may adjust the volume to one of four levels by rotating a notched wheel in the base of the set. If authorized by a service order or other local instructions, the stop that normally prevents ringer cutoff may be bent by the installer, as described in Section C32.537, 500 Series Telephone Sets, (500 and 501 Type), Installation. This will allow the user to completely silence the bell.

**2.07 Handset:** G1A handsets are standard with all telephone sets in the 500 series. Neoprene-jacketed, 4-conductor

handset cords are furnished. Retractable cords are available with proper authorization.

2.08 **Manual and Dial Set Coding:** The type of telephone set and date of assembly is stamped with aluminum lacquer on the base of the set approximately as shown in Fig. 2.



**Fig. 2—Base of 500 Series Sets**

Code numbers such as 500C/D cover both manual and dial versions of a particular type set. When necessary to specify manual or dial, use the appropriate code letter shown in Table A.

**Table A**

500-Type Sets		501-Type Sets	
Manual	Dial	Manual	Dial
A	B	A	B
C	D	C	D
E	F		F
	H	J	K
J	K		
L	M		

**Note:** Early 500J/K and 501J/K sets were coded 500T and 501T respectively.

### 3. USE

3.01 **General-Purpose Telephone Sets:** Telephone sets coded 500A/B and 500C/D are general-purpose sets for use with manual or dial common battery service on individual lines, including PBX and 1A key stations which require tip and ring only, or for any party-line service with nonpolarized ringing.

3.02 **Tube Sets:** Each telephone set coded 501A/B or 501C/D is furnished with a cold cathode gas-filled tube as part of its ringing circuit. They are primarily for use with polarized ringing service (4-party selective or 8-party semiselective). The 501J/K is for the same purpose where equalization is not required.

Note: Tube sets may be used with 4-party semiselective or divided code ringing for the purpose of reducing inductive interference as covered in Section C63.271, Line and Ringer Connections to Reduce Induction.

3.03 **Special Purpose Sets:** The following paragraphs cover the description and uses of special purpose sets coded 500 or 501.



Fig. 3—500F Telephone Set Showing Plunger Switch and Instruction



3.04 **500E/F:** This set is used for party-line service with nonpolarized ringing. It should not be used as tip party on a service which requires tip-party identification. The 500E/F is equipped with a plunger switch and wired to avoid interference with another party-line user's dialing or talking when the handset is lifted to place a call. Only a low-loss receiver circuit is bridged across the line with normal operation of the line switch (switchhook) contacts. When it is found that the line is not busy, pulling up the left plunger operates the plunger switch and cuts in the talking and dialing circuit elements. (See Fig. 3.) A call can then be placed or answered. Replacing the handset restores the switch automatically. The 500E/F replaces 302AA (Manual) and 302AC (Dial) telephone sets.

3.05 **501F:** Where polarized ringing is used, this set provides the same feature as the 500F. It replaces the 306G telephone set. (See Note in 3.02.)

3.06 **500H:** This set is equipped with a lucite dial finger wheel, a lamp which illuminates the dial, and a 6-conductor mounting cord. (See Fig. 4.) The lamp circuit is closed through the line switch (switchhook) contacts when the handset is lifted from its cradle. The light goes out when the handset is replaced. An auxiliary 6- to 8-volt ac or dc power source for the lamp circuit is required. Due to its wiring arrangement, the 500H cannot be used as tip party on message rate, automatic ticketing, AMA, or zone registration services. Its use otherwise is the same as the 500C/D.



Fig. 4—500H Telephone Set With Illuminated Dial

3.07 **500L/M:** This set is to be used at installations which require that the ringer circuit be brought out separately through the mounting cord. Examples are 1A-type telephone answering sets, 507-type PBX attendants' stations, certain 2B key telephone system stations, etc. A 4-conductor mounting cord and an additional terminal strip are provided. With the above exceptions, other parts of 500L/M telephone sets are the same as the 500C/D. Manual sets (500L) are available only by conversion.