

BELL SYSTEM PRACTICES
Station Installation and Maintenance

SECTION C32.537
Issue 3, April, 1954
AT&T Co Standard

500 SERIES TELEPHONE SETS

(500 AND 501 TYPE)

INSTALLATION

1. GENERAL

1.01 This section covers the installation procedures for the 500 series telephone sets listed below:

500 Type

500A/B	500C/D	500E/F
500H	500J/K	500L/M

501 Type

501A/B	501C/D
501F	501J/K

1.02 Information is also included regarding the biasing spring setting, permanent silencing of extension station ringers, ringer cut-off feature, interference from radio broadcasting stations, conversion of sets for manual service, and the use of 500 series sets in noisy locations.

1.03 The section is reissued to include information on the 500E, F, H, L, and M telephone sets and the 501F telephone set.

1.04 Due to extensive changes in this section, marginal arrows have been omitted.

2. LOCATING

2.01 In locating the telephone set, be guided by the subscribers' wishes and the requirements covered in the section titled, "Subscriber and Telephone Sets For Indoor Locations, Installation," (C31.145). Consideration should be given to such items as signal audibility, protection from the elements, accessibility, hazard to user, etc.

2.02 If the subscribers' wishes cannot be followed, explain the reason therefore. If **satisfactory arrangements cannot be made, consult your supervisor before proceeding with the work.**

3. RINGER

3.01 **Biassing Spring Setting:** The proper biassing spring settings for the class of service furnished are shown in Table A. If the spring is not in specified notch, shift to correct notch. The notch nearest the fixed gong is the high tension notch. The biassing spring may be shifted to either notch by using the end of the finger. Care should be taken to prevent bending of the spring.

Caution: Do not use any tools to relocate the biassing spring.

Table A

Class of Service	Biassing Spring Notch
Bridged Ringing Services	
Individual Line and PBX Stations (Except as stated in Note 1)	High (See Note 3)
Nonselective Party Lines	Low
Grounded Ringing Services	
2-party Flat and Message Rate	High (See Note 3)
4-party Semiselective (Except as stated in Note 2)	High (See Note 3)
Divided Code Ringing	Low
4-party Selective } (C3A)	High
8-party Semiselective } (C4A)	Low (See Note 4)

Note 1: When **three** or more ringers are bridged across the line, the biassing spring should be in the **low** notch on all ringers.

Note 2: Where **five** ringers are connected between the same side of line and ground, the biassing spring should be in the **low** notch on all ringers on that side of line.

Note 3: However, ringers in nontube-type telephone sets which are not ringing properly may have the biassing spring placed in the low tension notch to increase the sensitivity of the ringer.

Note 4: If the ringer buzzes on short loop installations when the party of opposite polarity is being called, place the biasing spring in the **high** tension notch. If it still buzzes or fails to ring, replace the ringer.

3.02 **Permanent Silencing of Ringers:** To permanently silence station ringers in the 500- and 501-type telephone sets, transfer ringer leads at terminal on network to correspond with the wiring changes indicated in bold face type and associated notes.

- (a) For bridged, ring party, tip party of flat rate except flat and message rate services covered below:

Type of Set	Ringer Leads			
	Red	Black	Slate	Slate-Red
500A/B	K	K	E	E
500C/D	L2	K	K	A
500E/F	L2	K	K	A
500H	L2	K	K	A
500J/K	K	K	E	E

- (b) For tip party of 2-party dial message rate and flat rate automatic message accounting and zone registration:

Type of Set	Ringer Leads			
	Red	Black	Slate	Slate-Red
500B*	K	G	M	E
500D*	K	G	B	K
500K*	K	G	M	E

*Transfer slate switch lead from **L2** to **A** terminal on network.

- (c) For tip party of 2-party flat rate automatic ticketing:

Type of Set	Ringer Leads			
	Red	Black	Slate	Slate-Red
500B*	M	E	K	G
500D*	B	K	K	G
500K*	M	E	K	G

*Transfer slate switch lead from **L2** to **A** terminal on network.

- (d) For 4-party selective and 8-party semiselective services:
 (1) For (−) and (+) ring- and tip-party stations:

Type of Set	Ringer Leads (C3A)	
	Red	Black
501A/B	E	E
501C/D	K	K
501J/K	E	E

- (2) For (−) ring- and (−) tip-party stations:

Type of Set	Ringer Leads (C4A)			
	Red	Black	Slate	Red-Slate
501A/B	K	K	K	A
501C/D	K	K	A	K
501F	K	K	A	K
501J/K	K	K	K	A

- (3) For (+) ring- and (+) tip-party stations:

Type of Set	Ringer Leads (C4A)			
	Red	Black	Slate	Red-Slate
501A/B	A	K	K	K
501C/D	K	K	A	K
501F	K	K	A	K
501J/K	A	K	K	K

4. RINGER CUT-OFF FEATURE

4.01 If ringer cut-off feature is to be provided, the stop adjacent to the detent spring on the ringer volume control must be bent away so that it does not engage the stop on the rim of the ringer frame immediately behind the movable gong. This allows the cam section of the movable gong mounting to engage the stop rod and prevent movement of the armature and clapper (see Figs. 1, 2a, and 2b). Instruct subscriber to turn wheel as far to the right (away from loud position) as it will go to provide ringer cut-off.

Note: Ringer cut-off feature should not be provided unless authorized by service order or local regulations.

Approx. location of Jaws of Long-Nose Pliers, when bending Stop Tab up or down.

Bend in this area only

Do not attempt to bend Tab at this point.

Detent Spring

Stop Tab on Detent Spring

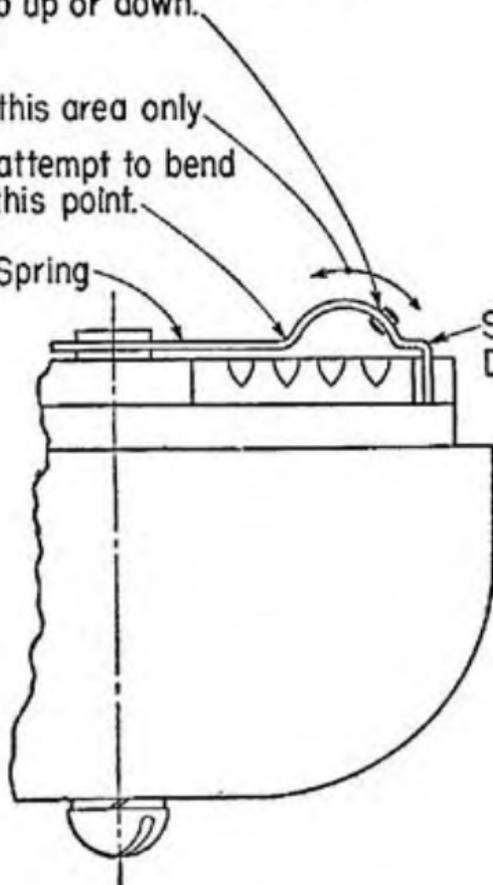


Fig. 1

Caution: In bending the stop spring, use care not to bend any portion of the adjacent detent spring.

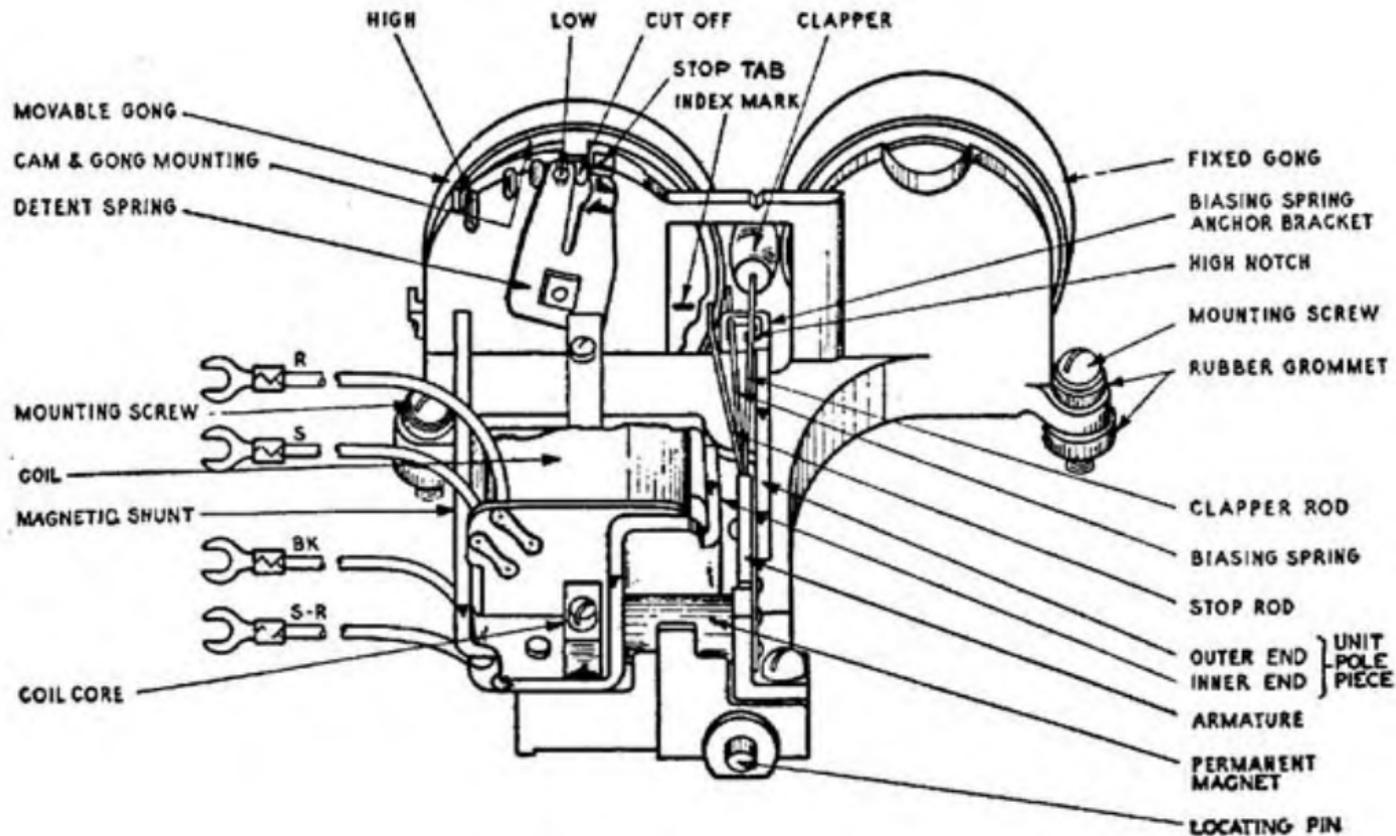


Fig. 2a—Typical "C" Type Ringer

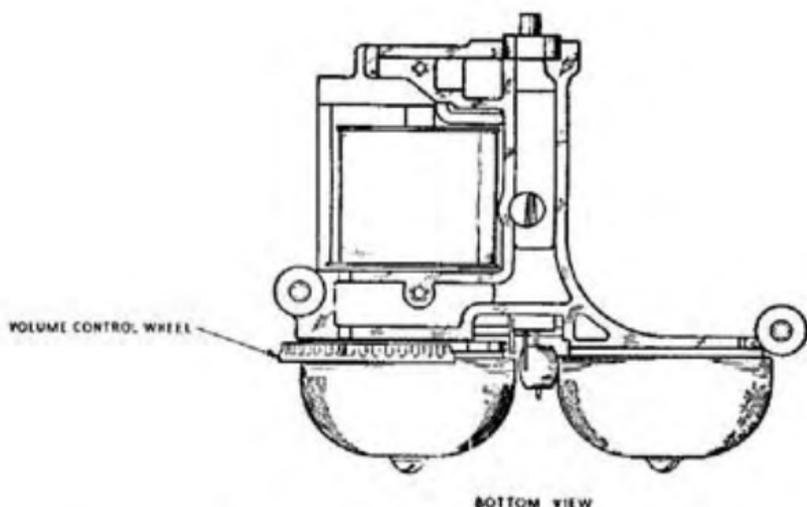


Fig. 2b—Typical "C" Type Ringer

5. TESTS

5.01 **Station Testing:** Upon completion of the installation, make tests in accordance with the section in the C60 Division, covering tests with the test desk or in accordance with local practices.

5.02 Make ringing and bell tapping tests by dialing proper test code or calling test desk. If ringer fails to ring satisfactorily or bell taps when the biasing spring is in the notch specified in Table A, proceed as follows:

- (1) Check line and ringer connections.
- (2) If connections are satisfactory and high bias tension is specified, replace ringer.
- (3) If low bias tension is specified, shift biasing spring to high notch and retest for ring and bell tap. If ringer fails or bell taps, replace ringer.

5.03 Show the subscriber how to pick up and hold the telephone set with the handset in place on the mounting, and how to move the ringer volume control adjustment wheel. Obtain a ringback and let subscriber listen to the different volume levels and make the selection.

Note: There should be a definite reduction in volume when the volume control is moved away from the "loud" position. If no change occurs check gong mounting screws for tightness.

5.04 Give instruction card (P-348114) to subscriber. If subscriber is not present, leave instruction card just under the front feet of the set where it will be readily seen. In the latter case, leave the control wheel in the position which seems best for the premises.

6. RADIO SIGNAL DEMODULATION SUPPRESSION

6.01 When interference from radio broadcasting is experienced, e.g., in the proximity of a radio transmitting station, a 0.02-mf capacitor (KS-13814-L7) should be added as indicated in 6.02.

6.02 The 0.02-mf capacitor (KS-13814-L7) should be added to the set in the field when conditions require and should be connected as follows:

500A and B 501A and B	Across terminals L and RW of 311A equalizer and placed against side of equalizer nearest switch.
500J and K 501J and K	Across terminals L2 and GN of network and placed against side of network nearest the ringer.
500C, D, E, F, H, L, and M 501C and D 501F	Across terminals F and L2 of network and placed between end of network and ringer gong. In some cases an additional 0.02-mf capacitor across terminals R and RR and placed against side of network nearest the ringer is necessary.

6.03 Connect the bare wires of the capacitor under the terminal screws and cover the exposed portion of the bare wire with tape or tubular insulation. In 500A/B and 501A/B sets a 6-40 by 1/4-inch BHM screw (P-294615) or an unused screw from the network will be required to connect the capacitor to the "L" terminal of the 311A equalizer.

6.04 The capacitor should be located so that it will not interfere with the operation of the set.

7. CONVERSION FOR MANUAL SERVICE

7.01 To convert the 500 series sets for manual service, remove the dial and dial leads, place a 95A-3 apparatus blank, and make the wiring change indicated in the following table for the particular type of set.

Type of Set	Wiring Changes
500B 501B	Transfer Slate-Brown switch lead to RR terminal on network.
500D 501D	Transfer Slate-White switch lead to RR terminal on network.
500F	Strap terminal on plunger switch to RR terminal on network.
500K 501K	Transfer Slate-Brown switch lead to RR terminal on network.
500M	Transfer Green lead from F to RR terminal on network.

8. POWER SUPPLY ARRANGEMENTS FOR 500H ILLUMINATED DIAL SET

8.01 For the 500H illuminated dial set, a 6- to 8-volt ac or dc power supply must be provided to light the dial lamp (GE #46 MAZDA). The dial lamp lights when the handset is removed from switchhook.

8.02 The KS-15675-L1 transformer, connected to a 105- to 125-volt ac supply receptacle will provide for ac operation. Where possible, the installer should avoid the use of power receptacles that are under the control of a switch. If suitable ac supply is not available, dc operation may be obtained by using dry cell batteries or other 6- to 8-volt dc supply.

8.03 The KS-15675-L1 transformer must be mounted near the power supply outlet as it is equipped with an 18-inch cord. It may be mounted on a baseboard or other suitable surface by using two No. 4 R.H. blue wood screws (see Fig. 3). Where appearance is a prime consideration the transformer may be located in a basement, furnace room, or other accessible location, provided the wiring limitations covered in 8.04 are not exceeded.

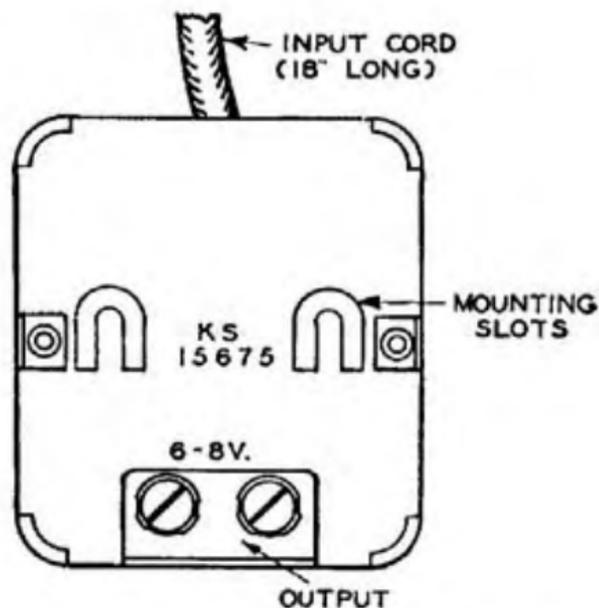


Fig. 3—KS-15675 Transformer (Rear View)

8.04 A 2-conductor wire should be provided for the 6- to 8-volt output supply to the connecting block. The 44A-type connecting block (or equivalent) is required for connecting line wires and power supply wires to the telephone set mounting cord. For proper operating efficiency the length of wire between the transformer and the connecting block should not exceed 25 feet, using 20 gauge JKT wire.

9. NOISY LOCATIONS

9.01 The use of 500-type equalized telephone sets is recommended in noisy locations such as generator rooms in power plants, loading ramps at air fields, etc. In locations where noise is extremely severe a 500-type equalized telephone set, equipped with a KS-13491-L1, 1-watt, 39-ohm resistor connected across the transmitter circuit should be used. This transmitter shunt decreases transmitting efficiency and therefore reduces sidetone noise. The loss of transmission is compensated for by the natural tendency to raise the voice in noisy locations.

9.02 The KS-13491-L1 resistor should be connected in the 500 series sets as shown below:

Type of Set	Connections
500A/B	Between B and RW terminals on Equalizer
500J/K	Between B and RW terminals on Term. Strip
500C/D 500E/F 500H 500L/M	Between R and B terminals on the network

9.03 No mounting arrangements are required since the resistor leads furnish adequate support.