RINGERS—C-TYPE
MAINTENANCE

1. GENERAL

1.01 This section contains procedures, methods, and requirements recommended for maintenance of C-type ringers.

1.02 This section is reissued to:

- Revise Fig. 1.
- Provide information and to add Fig. 4 on the handset cord retainer.
- Provide information on the 64A gong.

1.03 Except for slight physical changes, the C4A ringer (Fig. 1) is similar to the C2A (MD) and C3A (MD) ringers which it replaces.

(a) The C4A ringer has a straight armature hinge of phosphor bronze, a portion of which projects into the airgap to act as a stopplate; and the armature has a single stop pin located on opposite side.

(b) The C3A (MD) ringer has only two leads and no magnetic shunt.

(c) Early manufactured C2A (MD) ringers have a Z-shaped armature hinge and a stop pin on each side of armature. Later development led to the straight hinge on C2A (MD) ringer.

1.04 Development of network-type wall telephone sets and network-type subscriber sets made it necessary to change the frame of C4A ringer (Fig. 3). This change provides clearance for volume-adjusting arm.

1.05 Current models of the C4A ringer are equipped with a handset cord retainer (boss) for use with 500- and 501-type telephone sets (Fig. 4). The free handset cord conductors should be placed under this boss, or under the frame of the ringer on those sets without a boss.

1.06 Gongs, resonators, volume control wheel, and cord tips are not furnished on C5A ringer.

2. MAINTENANCE

2.01 Armature of C2A (MD) and C4A ringers, when manually displaced, shall restore to nonoperate side of airgap, with bias spring in low notch and volume control wheel in high position. Should armature fail to restore, replace ringer.

2.02 Armature of C3A (MD) ringer, when manually displaced, shall restore to nonoperate side of airgap, with bias spring in ***high*** notch and volume control wheel in high position. Should armature fail to restore, replace ringer.

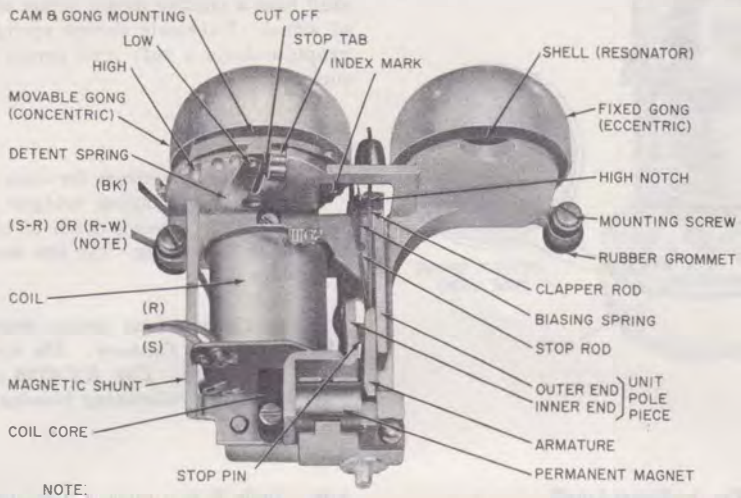
Caution: Never bend bias spring or stop rod or adjust armature clearance.

2.03 With ringer lying flat (as mounted in 500-type set) or mounted veritically (gongs down, as in 685-type subscriber set mounted on wall), armature in nonoperated position, and volume control wheel in low position, the clapper shall clear movable gong by a minimum 1/64 inch, maximum 1/32 inch. If this requirement is outside its limits, ringer should be replaced. Clearance between clapper and fixed gong shall be 1/64 inch. Fixed gong may be repositioned to meet this clearance. Both these clearances may be gauged visually.

Volume Control

2.04 Volume control wheel may be adjusted for ringer cutoff when requested by customer or in accordance with local instructions.

When ringer cutoff feature is requested, bend stop tap up and out to clear stop on ringer frame (see Fig. 5 and 6).



NOTE:
(SR) ON C2A (MD) AND C4A RINGERS; (R-W) ON C5A RINGER

Fig. 1—C4A Ringer

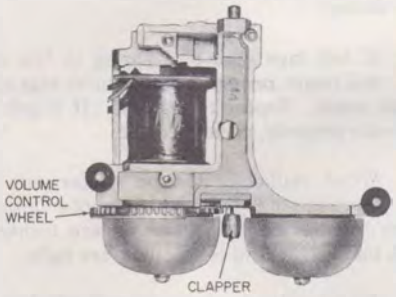


Fig. 2—C4A Ringer (Back View)

Fig. 3—C4A Ringer Frame Design

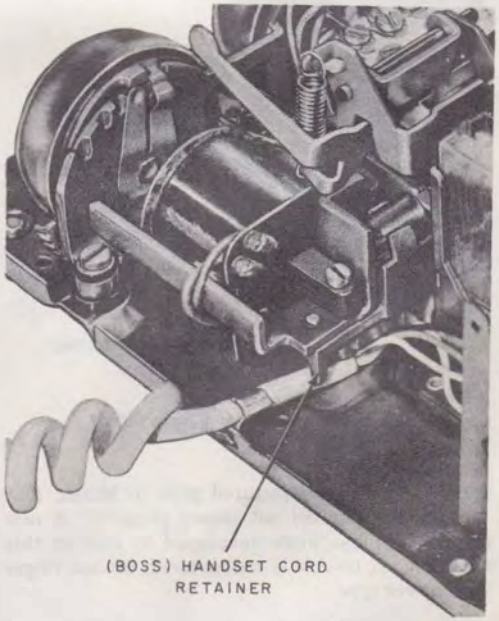


Fig. 4—Handset Cord Retainer

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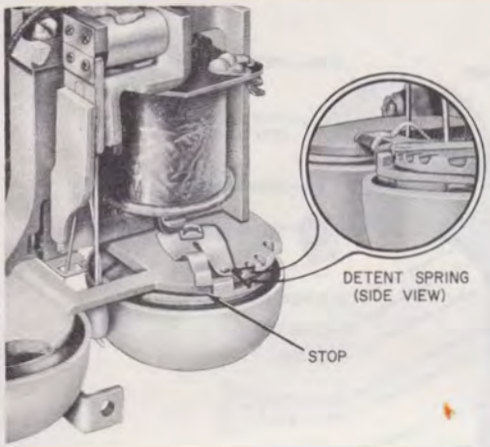

Fig. 5—Ringer Cutoff

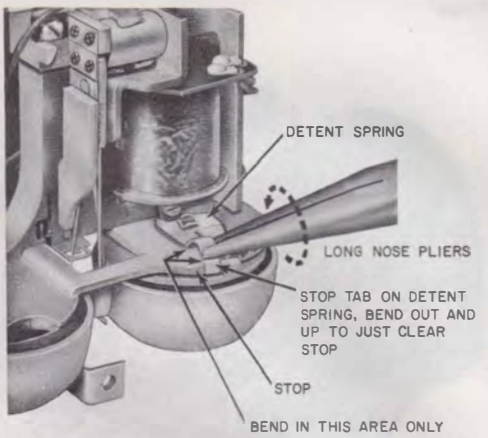

Fig. 6—Procedure for Ringer Cutoff

2.05 Ringers manufactured prior to March, 1962 reportedly did not silence properly. A new cam design has been developed to correct this situation. If trouble is encountered, replace ringer with newer type.

2.06 The volume control wheel shall operate smoothly over entire range. Detent spring shall have a positive detent action at each position of wheel. Lubricate detent spring by rubbing graphite from a soft lead pencil onto bearing surface.

Bias Spring Position

2.07 Bias spring settings for class of service and number of ringing bridges are shown in Table A. High tension notch of bias bracket is adjacent to fixed gong. The low notch is adjacent to movable gong.

Correct bias spring tension has been set at factory. Do not bend bias spring. Use KS-6320 orange stick when relocating biasing spring.

Inspection

2.08 Table B is a guide for requirements, tests, and procedures for C-type ringers when they are placed in service and on maintenance visits.

2.09 After completing work, test ringer according to local instructions. Check for bell tap while dialing.

2.10 If bell taps with bias spring in low notch and ringer ***properly poled,*** move bias spring to high notch. Repeat ringer test. If ringer fails to operate properly, change ringer.

2.11 When replacing C-type ringer, see that locating pin is inserted into rubber grommet before captive mounting screws are tightened. Check that ringer lead connections are tight.

2.12 When replacing ringer in wall telephone set or subscriber set, equipped with a network, a C4A ringer equipped with later model frame ***must be used.***

Distinctive Tones

2.13 A series of distinctive-tone gongs are available for field use at installations involving customers with impaired hearing, and where, due to closely spaced telephone sets, it is necessary to arrange for distinctive ringing signals.

2.14 This series is comprised of two gongs normally installed on C-type ringers plus six additional gongs. Table C shows seven distinctive

TABLE A

BIAS SPRING POSITION

CLASS OF SERVICE	BIAS SPRING NOTCH
Bridge Ringing Services	
Individual Line and PBX Stations*	High
Nonselective Party Lines	Low
Grounded Ringing Services	
2-party Flat and Message Rate	High
4-party Semiselective†	High
4-party Selective	High, C3A Ringer
8-party Semiselective	Low, C4A Ringer
Divided Code	Low

* When three or more ringers are bridged across line and operation is not satisfactory, bias spring may be placed in low notch on all ringers. If condition is not corrected, change ringer.

† Where five ringers are connected between same side of line and ground and operation is not satisfactory, bias spring may be placed in low notch on all ringers on that side of line. If condition is not corrected, change ringer.

tone pairs which can be assembled with eight gongs.

Even numbered gongs 52A, 54A, etc, have concentric mounting holes and are to be mounted on movable mounting post. The odd numbered gongs 53A, 55A, etc, have eccentric mounting holes and are installed on fixed mounting post.

2.17 For additional stations repeat columns 1 to 6, in order, for columns 7 to 12, etc. Also, rows 1 to 4 may be repeated for rows 5 to 8, etc.

Should telephone sets be in staggered array, assume that locations are in line and proceed according to pattern. In any case, start with row 1 or column 1.

2.18 All gongs in this series may be mounted over resonator shells without mechanical interference, with exception of the 59A gong. The resonator shell must be removed from fixed post before 59A gong is installed. Should ringer have a staked resonator, insert screwdriver in post opening and pry resonator off.

2.19 When 59A gong is replaced by 55A gong, a removable resonator shall be installed. When replaced by 53A or 57A gong, installation of resonator is not necessary.

2.20 Where noise level is higher than average, resulting in customer dissatisfaction because of difficulty in hearing telephone ring, gong pairs 5, 6, or 7 may be used to overcome this condition (Table C).

2.21 Where there are three or more ringers at an installation, use the three gong pairs in 2.20 in sequence: pair 6, 5, 7; then 7, 6, 5; repeating sequence as many times as necessary.

2.22 For impaired hearing, it is recommended that either gong pair 4 or 5 be selected as first choice.

TABLE B

C-TYPE RINGER TESTS AND REQUIREMENTS

SUBJECT	REMARKS
Volume Control Wheel	See 2.04, 2.05 and 2.06.
Bias Spring	See 2.07 and Table A.
Ringer	1. Leads dressed properly and connections tight. 2. Positioned properly; mounting screws tight. 3. Clean (see section entitled Ringers, General Maintenance and Ringing Tests). 4. Gong mounting screws tight and clapper to gong clearance in accordance with 2.03. 5. Ringer shall produce a steady ring on at least one gong when volume control wheel is in low notch and on both gongs as wheel is advanced to high notch.
Airgap	With volume control wheel in high notch, displace armature manually toward inner pole piece; check for stop pins and see that they make contact with adjacent pole pieces. If stop pins are missing, replace ringer (C4A ringer has only one stop pin). If stop pins are present but fail to make contact, determine cause. Remove dirt if found (see section entitled Ringers, General Maintenance and Ringing Tests). If stop rod is deformed, replace ringer.

TABLE C

DISTINCTIVE GONGS

GONG PAIR DESIGNATION NUMBER	MOUNTED ON			
	CAM		FIXED POST	
	CODE	FREQ*	CODE	FREQ*
1	52A	805	53A	1015
2	54A	1280	53A	1015
3 (Standard Gongs)	54A	1280	55A	1610
4	56A	2025	55A	1610
5	56A	2025	57A	2555
6	58A	3220	57A	2555
7	58A	3220	59A	4060

* Nominal frequency in cycles per second.

◗ *Note:* The 64A plastic gong may be used to replace the 54A and 55A gongs on a C4A ringer that is mounted in a 687A subscriber set. When this substitution is made, clapper-to-gong clearance may need to be readjusted so as to permit the ringer to meet its operating requirements.◖

TABLE D

GONG DISTRIBUTION PATTERN

ROW	STATION LOCATION					
	1	2	3	4	5	6
	GONG PAIRS					
1	3	7	4	2	5	6
2	2	5	6	3	7	4
3	3	4	7	2	5	6
4	2	6	5	3	7	4

Note: Pair 1 of Table C may be substituted for pair 7 except where room noise is above normal.