C-TYPE RINGERS
MAINTENANCE

Contents

1. GENERAL

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

1.02 This section is reissued to include the following:

(a) A new series of gongs to be used for tone distinctiveness purposes.

(b) A table which may be used as a guide when inspecting C-type ringers.

(c) A general revision and rearrangement of the material and information contained in Issue 1, of this practice.

1.03 Due to extensive changes made, marginal arrows have been omitted.

C-type Ringers

1.04 Figs. 1 and 1a illustrate a C2A ringer which is similar in appearance to the C3A and C4A (universal) ringers except for slight physical changes.

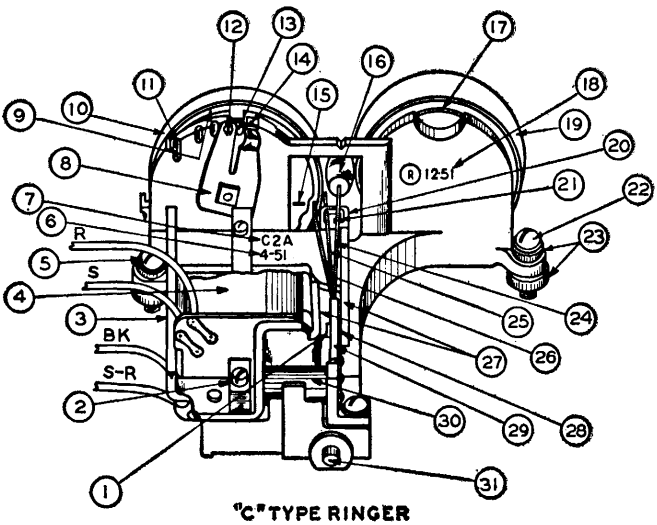

Fig. 1

Note: Number details, see Fig. 1.

1—Stop Pin
2—Coil Core
3—Magnetic Shunt
4—Core
5—Mounting Screw
6—Date
7—Code
8—Detent Spring
9—Cam and Gong Mounting
10—Movable Gong
11—High
12—Low
13—Cut-Off
14—Stop-Tab
15—Index Mark
16—Clapper
17—Shell Resonator
18—Repair Date and Symbol
19—Fixed Gong
20—Biasing Spring Anchor Bracket
21—High Notch
22—Mounting Screw
23—Rubber Grommet
24—Clapper Rod
25—Biasing Spring
26—Stop Rod
27—Outer End, Inner End } Unit Pole Piece
28—Stop Pin (On "C2" Only)
29—Armature
30—Permanent Magnet
31—Locating Pin

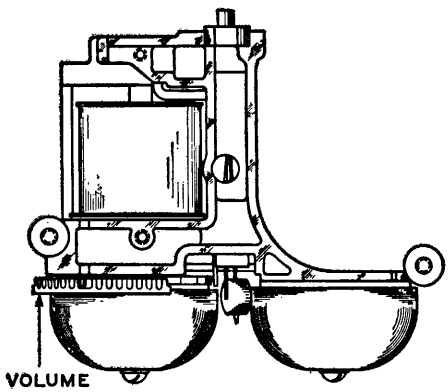

Fig. 1a

(a) Early manufactured C2A ringers have a "Z" type armature hinge and a stop pin on each side of the armature, see Fig. 2.

(b) Later manufactured C2A ringers are the same except that the armature hinge is straight as shown in Fig. 1.

(c) C3A ringers have only two leads and no magnetic shunt.

(d) C4A ringers have a straight armature hinge of phosphor bronze, a portion of which projects into the airgap to act as a stop plate, and the armature has a single stop pin located on the opposite side.

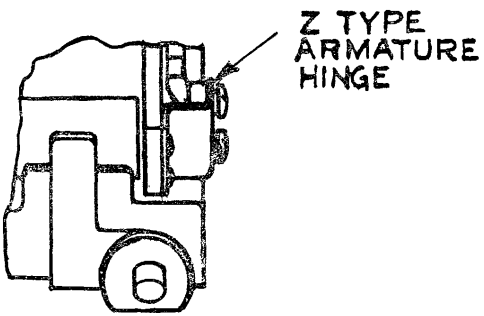

Fig. 2

2. INSPECTION

2.01 The following table is recommended as a guide for the requirements, tests, and procedures to be followed for C-type ringers on maintenance and inspection visits.

TABLE A

Subject	Remarks
1. Volume Control Wheel	Review 3.01, 3.02, and 3.03.
2. Biasing Spring	In correct notch, see 5.01, and not bent.
3. Ringer	(a) Leads dressed properly and connections tight (b) Positioned properly and mounting screws tight (c) Clean, see C31.204, 2.01 (d) Gong mounting screws tight and the clapper to gong clearance in accordance with 3.01 (e) The ringer shall produce a steady ring on at least one gong when volume control wheel is in the low position and on both gongs as the control wheel is advanced to a higher position.
4. Airgap	With volume control wheel in maximum position, displace armature manually toward inner pole piece, inspect for stop pins and check that they make contact with their adjacent pole pieces. If stop pins are missing, replace the ringer. (C4A ringer has only one stop pin.) If stop pins are present but fail to make contact with their adjacent pole faces, determine cause. Remove dirt if found. If stop rod is deformed replace the ringer.

Caution:

1. **Do not bend biasing spring, stop rod, or adjust armature clearance.**

2. **Replace the ringer under the following conditions:**

   (a) If the armature of C2A or C4A ringers when manually displaced fails to restore to the nonoperated side of the airgap, with the biasing spring in the low notch and the volume control wheel in high position.

   (b) If the armature of the C3A ringer, when manually displaced, fails to restore to the nonoperated side of the airgap with the biasing spring in the high notch and the volume control wheel in a high position.

Clapper to Gong Clearance

2.02 With the ringer mounted horizontally, the armature in a nonoperate position and the volume control wheel in the low volume position there shall be a minimum 1/64 inch and maximum 1/32 inch clearance between the clapper ball and the movable gong. With the armature in a nonoperate position, the clearance between the clapper ball and the fixed gong shall be 1/64 inch. The fixed gong may be repositioned. Judge distances by eye. If clearances cannot be obtained, replace the ringer.

3. VOLUME CONTROL

3.01 The volume control wheel shall operate smoothly over the entire range of its operation, and the detent spring shall have a positive dent action at each position of the wheel. If necessary, the detent spring may be lubricated by applying graphite from a soft lead pencil to the bearing surface over which the detent operates, see Fig. 3.

3.02 The stop tab, when properly adjusted, shall prevent the volume control wheel from being moved to the ringer cutoff position. If necessary, the stop tab may be adjusted so that it comes to a definite stop against the stop on the frame with the ringer in the low-sound volume position. For adjustment procedure, see Fig. 3.

3.03 If the ringer cut-off position is desired, the stop tab shall be bent up so that it does not engage the stop on the rim of the frame, see Fig. 3.

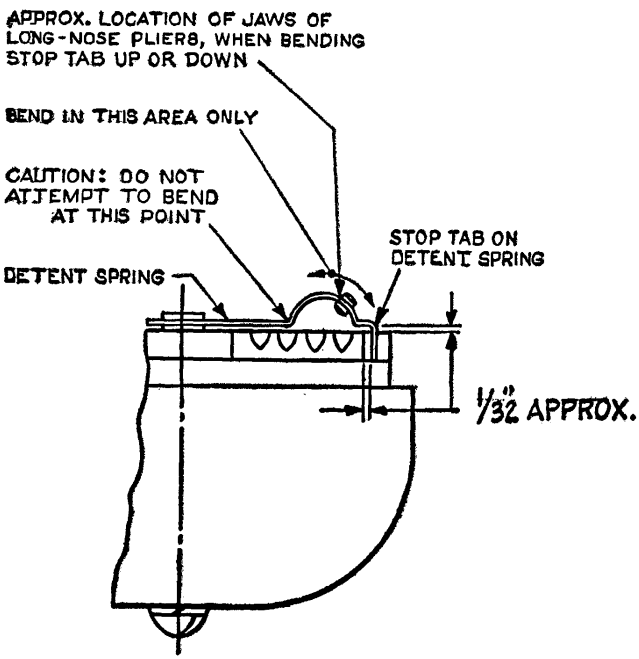

Fig. 3

4. DISTINCTIVE-TONE GONGS AND INSTALLATION

4.01 A new series of distinctive-tone gongs are now available for field use at installations where due to closely spaced telephone sets equipped with C-type ringers it is necessary to arrange for distinctive ringing signals.

4.02 The series is comprised of the two gongs normally installed on the C-type ringer and six additional gongs. The following table shows the seven distinctive tone pairs which can be assembled with the eight gongs.

TABLE B

Pair Designation Number	Mtd. on Cam*		Mtd. on Fixed Post**	
	Code	Freq.†	Code	Freq.
1	52A	805	53A	1015
2	54A	1280	53A	1015
3 (Std. 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

*Gongs have concentric mounting holes, installed on movable post.

**Gongs have eccentric mounting holes, installed on fixed post.

†Nominal fundamental frequency in cps.

4.03 Where two or more ringers require distinctive signals, select one of the pairs listed in Table B. Use the gongs with which the telephone sets are furnished (standard pair 3) as far as practicable.

4.04 At new installations where not more than 18 stations are installed in closely adjoining locations and all the sets are the 500 type, follow the pattern in Table C when mounting gong pairs.

TABLE C

Row	Column					
	1	2	3	4	5	6
	Pairs	Pairs	Pairs	Pairs	Pairs	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 1: Repeat columns 1 to 6 in order, if required, for columns 7 to 12, etc.

Note 2: Repeat rows 1 to 4 in order for rows 5 to 8, etc.

Note 3: If the installation to be treated is a staggard array, assume the locations are in line and proceed according to pattern. In any case start with row 1 or column 1.

Note 4: Pair 1 of Table B may be substituted for pair 7 except where room noise is above normal.

Installation of the 59A Gong

4.05 All the gongs in the series may be mounted over the resonator shells without mechanical interference with the exception of the 59A gong.

4.06 When the 59A gong is installed, it will be necessary to follow one of the following procedures.

(a) If the ringer has a staked resonator, insert a screwdriver in the port opening and pry off.

(b) If the ringer has a removable resonator, the gong, washer, and resonator shall be removed.

Replacement of the 59A Gong

4.07 It will be necessary to replace the ringer if the 59A gong has to be replaced by any other type gong, if the resonator had been previously staked. Where the ringer was equipped with a detachable resonator, the resonator, washer, and new gong shall be assembled on the gong post in their proper order.

Distinctive-tone Gongs for Use at Noisy Locations

4.08 Where noise level is higher than average resulting in subscriber dissatisfaction because of difficulty in hearing his telephone ring, the following chart may be used to select gong pairs to aid in overcoming the condition. Incidental to their use in noisy locations they will be useful at single installations to improve audibility of the signal.

Note: Locations where loud-ringing bells, auxiliary signals, etc., are installed should be avoided.

TABLE D

Pair Designation Number	Mtd. on Cam		Mtd. on Fixed Post	
	Code	Freq.	Code	Freq.
5	56A	2505	57A	2555
6	58A	3220	57A	2555
7	58A	3220	59A	4060

Installation of Three Ringers

4.09 Where there are three ringers at the installation use three pairs shown in Table D (4.08) otherwise install as follows: (repeating sequence as many times as necessary).

TABLE E

Row	Column		
	1	2	3
	Pairs	Pairs	Pairs
1	6	5	7
2	7	6	5

Impaired Hearing

4.10 It is recommended that either gong pair No. 4 or 5 listed in Table B be selected as the first choice for an impaired hearing case.

5. BIASING SPRING POSITION

5.01 The recommended biasing spring setting for the class of service furnished and the number of ringing bridges are shown in Table F. The high-tension notch of the bias bracket is adjacent to the fixed gong: the low notch is adjacent to the movable gong.

Caution: Do not bend biasing spring and do not use any tools to relocate.

TABLE F

Class of Service	Biasing Spring Notch
Bridge Ringing Services	
Individual Line and PBX Stations Except as Stated in Note 1	High
Nonselective Party Lines (Note 3)	Low
Grounded Ringing Services	
2-Party Flat and Message Rate	High
4-Party Semiselective Except as Stated in Note 2	High
4-Party Selective 8-Party Semiselective	High—C3A Ringer Low —C4A Ringer
Divided Code Ringing (Note 3)	Low

Note 1: When three or more ringers are bridged across the line, and operation is not satisfactory the biasing spring may be placed in the **low** notch on all ringers. If condition is not corrected, change the ringer.

Note 2: Where five ringers are connected between the same side of the line and ground, and operation is not satisfactory the biasing spring may be placed in the **low** notch on all ringers on that side of the line. If condition is not corrected, change the ringer.

Note 3: If the ringer buzzes on short loop installations when the party of opposite polarity on the same side of the line is being called, place the biasing spring in the high-tension notch. If the ringer still buzzes or fails to ring, replace it.

6. MISCELLANEOUS

601. After completing work operations, obtain a ring for the ringing test as outlined in Section C31.204, Ringers and Loud Ringing Bells—General Maintenance and Ringing Tests, or in accordance with local instruction. Observe during the dialing that the bell does not tap.

6.02 If bell tapping is encountered with biasing spring in the low notch and the ringer is poled properly, move biasing spring to the high notch. Repeat ringer test and if ringer fails to operate properly, change the ringer.

Replacement of Ringer

6.03 When replacing any C-type ringer, make certain that the locating pin is inserted into the rubber grommet before the captive mounting screws are tightened and that the lead connections are tight.