RINGERS

C4 AND C5 TYPES

REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the C4- and C5-type ringers.

1.02 Reference shall be made to Section 020-010-711 covering general requirements and definitions for additional information necessary for the proper application of the requirements listed herein.

1.03 One application of lubricant for the purpose of this section is the amount of lubricant retained on the end of a piece of No. 22 bare tinned copper wire after being dipped into KS-14774, List 1 lubricating grease to a depth of 3/8 inch and slowly removed without touching the container.

1.04 One dip of lubricant for the purpose of this section is the amount of lubricant retained on the KS-14162 brush after being dipped into KS-14774, List 2G lubricating grease to a depth of 3/8 inch, and the tip of the brush lightly stroked on the edge of the container to remove any surplus.

1.05 Unoperated Position of Armature: An armature is said to be in the unoperated position when it is resting against the outer end of the pole piece.

*1.06 Asterisk: Requirements are marked with an asterisk (*) when to check for them would necessitate the dismantling or dismounting of apparatus, or would affect the adjustment involved or other adjustments. No check need be made for these requirements unless the apparatus or part is made accessible for other reasons or its performance indicates that such a check is advisable.

2. REQUIREMENTS

2.01 Cleaning: The inner and outer ends of the pole piece, the armature, the stop pin, and the magnet shall be cleaned when necessary in accordance with approved procedures.

2.02 Lubrication

Note: Ringers identified by a white stripe are those that have been lubricated and do not require relubrication unless the lubricant is removed during cleaning.

(a) The following part shall be adequately lubricated with KS-14774, List 1 lubricating grease. When lubrication is necessary, the lubricant shall be applied as follows.

(1) Fig. 1(A) - One application to the end of the stop pin.

(b) The following parts shall be adequately lubricated with KS-14774, List 2G lubricating grease. When lubrication is necessary, the lubricant shall be applied as follows.

(1) Fig. 1(B) - One dip to each end of the clapper ball at the clapper rod.

(2) Fig. 1(C) - One dip to the curved surface of the clapper ball.

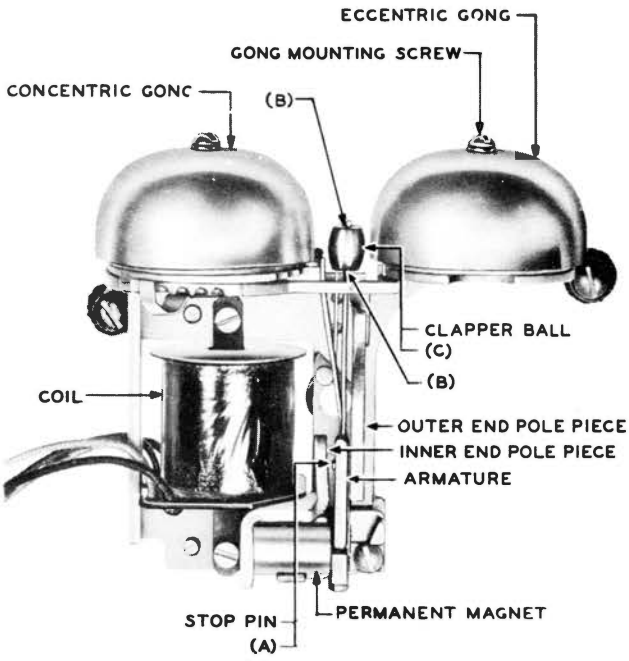

Fig. 1 - Points of Lubrication

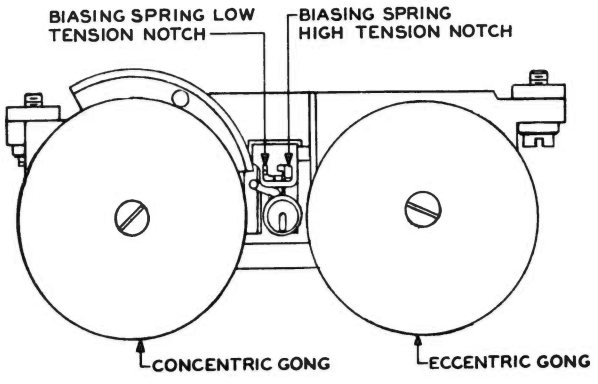

Fig. 2 - Biasing Spring Setting C4A Ringer Illustrated

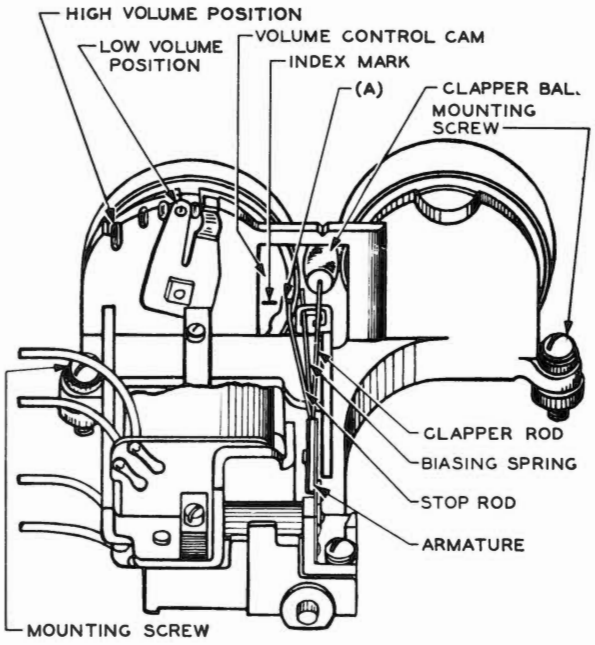

Fig. 3 - Clearance Between Stop Rod and Volume Control Cam

2.03 Record of Lubrication: The ringers lubricated in the field shall be marked.

2.04 Clearance Between Stop Rod and Volume Control Cam

(a) Fig. 3(A) - With the armature in the unoperated position, the volume control cam in the low volume position, and the biasing spring in the low tension notch, the clearance between the stop rod and the adjacent cam surface shall be

Max 0.030 inch

Use the No. 92J gauge.

(b) With the ringer in position as specified in (a) above, and viewed from below the gongs, the stop rod shall be in approximate alignment with the index mark on the back of the volume control cam.

Gauge by eye.

2.05 Restoration of Armature: The armature shall restore against the outer pole piece, after it has been manually operated toward the inner pole piece, with the volume control cam in the high volume position and the biasing spring in the low tension notch.

To check this requirement manually operate the armature to the inner pole piece and release it. Observe that it returns to the outer pole piece.

*2.06 Armature Airgap: With the armature in the unoperated position, the volume control cam in the high volume position and the biasing spring in the low tension notch, the airgap between the stop pin and the inner pole piece shall be

Min 0.030 inch
Max 0.040 inch

Use the No. 92J and 92L gauges.

To check the requirement, insert the gauge into the airgap with the blade resting flat on the inner pole piece. The minimum airgap requirement is met if the No. 92J gauge enters easily, and the maximum requirement is met if the No. 92L gauge does not enter without forcing.

2.07 Clearance Between Clapper Ball and Eccentric Gong: With the volume control cam in the low volume position, and with the armature operated manually until the clapper ball touches the concentric gong, the clearance between the clapper ball and the eccentric gong shall be

Min 0.035 inch
Max 0.060 inch

Use the No. 132L and 132AJ gauges.

2.08 Clearance Between Clapper Ball and Gongs: With the ringer in a horizontal position, the volume control cam in the low volume position, the armature in the unoperated position, and the biasing spring in the low tension notch, there shall be perceptible clearance between either gong and the clapper ball, hanging freely on the clapper rod.

Gauge by eye.

2.09 Alignment of Clapper Ball and Gongs: When viewed from the top of the gongs, the center of the clapper ball shall be in approximate alignment with the center of the gong mounting screws.

Gauge by eye.

2.10 Tightness of Gong Mounting Screws and Lockwashers: The mounting screws and lockwashers shall be sufficiently tight to maintain the gongs in their position.

2.11 Electrical Requirements: The ringer shall give a good clear ring when it is connected in the circuit in which it is to be used.

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges, and Materials

Code or Spec. No.	Description
Tools	
KS-14162 (2 required)	Brush
R-1021	1/2-inch Flat Brush or
-	Devoe and Raynolds Co.
-	Sash Brush, No. 4
-	6-1/2-inch P-long-nose Pliers
-	3-inch Cabinet Screwdriver
-	4-inch Regular Screwdriver
Gauges	
92J	Thickness Gauge
92L	Thickness Gauge
132L	Thickness Gauge
132AJ	Thickness Gauge
Materials	
KS-7188	Bell Seal Bond Paper or Approved Cleaning Paper
KS-7433	White Multiple Marking Paint
KS-14774, L1	Lubricating Grease
KS-14774, L2G	Lubricating Grease
-	Hardwood Toothpicks, flat at one end pointed at the other
-	No. 22 Bare Tinned Copper Wire

3.002 When necessary to remove the C4A ringer from its mounting, loosen the terminal screws with the 4-inch regular screwdriver and remove the leads. Remove the ringer by turning the mounting screws sufficiently to free it from its base using the 4-inch regular screwdriver. Remount the ringer in the reverse order and tighten the mounting and terminal screws securely.

3.003 When necessary to remove a C4A ringer, forming part of the No. 687A subscriber set, remove the cover of the subscriber set using the 4-inch regular screwdriver. Loosen the terminal screws with the 4-inch regular screwdriver and remove the leads. Remove the ringer by turning the mounting screws sufficiently to free it from its base using the 4-inch regular screwdriver. When removing the ringer from the subscriber set, make certain not to bend or break the projecting tang on the volume control arm of the subscriber set which is inserted within the hole of the outer portion of the volume control cam. Remount the ringer in the reverse order, making certain that the locating pin of the ringer is inserted into the rubber grommet of the subscriber set. Tighten the mounting and terminal screws securely.

3.004 When necessary to remove the C5A ringer from its mounting, unsolder the leads from the terminals. Remove the ringer from the bracket by turning the mounting screws sufficiently to free it from its base using the 4-inch regular screwdriver. If difficulty is encountered in removing the ringer due to the interference of adjacent apparatus, remove the ringer bracket unit using the 4-inch regular screwdriver to remove the mounting screws. Remount the ringer in the reverse order and tighten the mounting screws securely.

3.005 Do not remove the permanent magnet from the ringer when making any of the adjustments specified herein, as this has a tendency to alter its magnetic characteristics.

3.006 Do not attempt to tighten the screw that secures the armature assembly to the frame.

3.01 Cleaning (Rq 2.01)

(1) To facilitate cleaning, rotate the volume control cam to the high volume position.

(2) Clean the ringer assembly by brushing it off with the No. 4 sash brush or the R-1021 flat brush.

(3) Clean the end of the magnet adjacent to the armature and the adjacent portion of the armature by brushing with the No. 4 sash brush or the R-1021 flat brush in the direction away from the gongs.

(4) Clean the surfaces between the inner pole piece and the armature by brushing with the No. 4 sash brush or the R-1021 flat brush in the direction toward the gongs.

(5) Clean the point of contact between the armature stop pin and the inner pole piece by inserting a piece of KS-7188 Bell Seal bond or other approved cleaning paper between the stop pin and inner pole piece, and withdrawing the paper while pressing the armature against the inner pole piece. Repeat until a clean paper shows no sign of dirt.

(6) Clean the points of contact between the outer pole piece and the armature by operating the armature manually and inserting the KS-7188 Bell Seal bond or other

approved cleaning paper between the reed of the armature and the outer pole piece, starting at the hinge of the armature, releasing the armature, and withdrawing the paper in the direction toward the gongs. Repeat until a clean paper shows no sign of dirt.

Caution: Exercise extreme care to prevent distortion of the thin reed which is part of the armature hinge lying between the armature and the outer pole piece.

(7) If lubricant is removed by the cleaning process, relubricate the gong as described in 3.02.

3.02 Lubrication (Rq 2.02)

(1) General: Before lubricating, remove the ringer from its mounting as covered in 3.002, 3.003, or 3.004. When lubricating, hold the ringer in the palm of the hand in a horizontal position with the clapper rod uppermost.

(2) Stop Pin: Remove any foreign matter between the stop pin and the inner pole piece with the flat end of a toothpick, then make one application of KS-14774, List 1 lubricating grease to the end of the pin with the end of the No. 22 wire.

(3) Clapper Ball at Clapper Rod: Apply one dip of KS-14774, List 2G lubricating grease to each end of the clapper ball at the clapper rod with the KS-14162 brush.

(4) Surface of Clapper Ball: With the thumb, move the clapper rod toward the inner pole piece and hold it in a position halfway between the gongs. Apply one dip of KS-14774, List 2G lubricating grease to the entire curved surface of the clapper ball with KS-14162 brush.

3.03 Record of Lubrication (Rq 2.03)

(1) Apply a white stripe approximately 1/16 inch wide by 1/4 inch long to the flat surface of the frame under the eccentric gong. Use the KS-7433 white multiple marking paint applied with a KS-14162 brush.

3.04 Clearance Between Stop Rod and Volume Control Cam (Rq 2.04)

(1) To adjust for clearance between the stop rod and volume control cam, grasp the stop rod with the P-long-nose pliers approximately in the center and adjust it as required.

3.05 Restoration of Armature (Rq 2.05)
3.06 Armature Airgap (Rq 2.06)

(1) Remove any foreign matter from the surfaces of the armature and the inner and outer pole piece ends as covered in 3.01.

(2) If the requirement is still not met and the clapper rod and/or stop rod is bent, adjust it using the P-long-nose pliers, taking care that requirement 2.04 is still met.

(3) If the requirements still are not met, refer the matter to the supervisor.

3.07 Clearance Between Clapper Ball and Eccentric Gong (Rq 2.07)

(1) With the 3-inch cabinet screwdriver, loosen the eccentric gong mounting screw, rotate the gong to reposition it as required, and retighten the screws.

3.08 Clearance Between Clapper Ball and Gongs (Rq 2.08)
3.09 Alignment of Clapper Ball and Gongs (Rq 2.09)

(1) With the P-long-nose pliers, grasp the clapper rod approximately in the center and bend it as required.

3.10 Tightness of Gong Mounting Screws and Lockwashers (Rq 2.10)

(1) If the mounting screws are loose, tighten them with a 3-inch cabinet screwdriver. Recheck requirement 2.07.

3.11 Electrical Requirements (Rq 2.11)

(1) To readjust the ringer, place the biasing spring in the high tension notch and move the volume control cam from one position to another until the proper loudness is obtained. The loudness should increase noticeably as the volume control cam is rotated from the low volume position to the high volume position.