

RINGERS—D TYPE  
MAINTENANCE

1. GENERAL

1.01 This practice contains information and maintenance procedures of the D-type ringers.

1.02 The 136 compact ringer is a double wound coil, single gong, straight line, biased type of unit equipped with a mechanical volume control and assembled on a die-cast metal base with a molded plastic cover. (See Figure 1) The 138 ringer is identical except for the addition of a gas tube and the use of a large cover. In combination with the type 137 frequency selective ringer these units provide a complete range which meet the requirements of every need for a compact telephone line main or extension ringer. Screw terminals are provided for all lead connections. (See Figure 3) The base casting is fitted with four shock absorbing rubber feet through which the mounting screws are inserted.

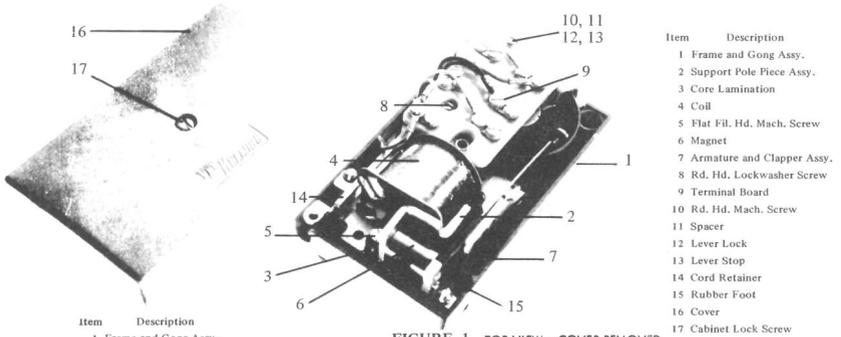


FIGURE 1 TOP VIEW - COVER REMOVED

- | Item | Description                     |
|------|---------------------------------|
| 1    | Frame and Gong Assy.            |
| 2    | Slide Plate & Lamination Assy.  |
| 3    | Binding Hd. Flat Washer Screw   |
| 4    | Eccentric Washer                |
| 5    | Coil                            |
| 6    | Shunt Bar                       |
| 7    | Magnet                          |
| 8    | Clamping Plate                  |
| 9    | Rnd. Hd. Lockwasher Screw       |
| 10   | Armature                        |
| 11   | Weight                          |
| 12   | Clapper Assy.                   |
| 13   | Grommet                         |
| 14   | Rnd. Hd. Lockwasher Screw       |
| 15   | Terminal Board                  |
| 16   | Rd. Hd. Mach. Screw             |
| 17   | Cord Retainer                   |
| 18   | Flat Fil. Hd. Mach. Screw       |
| 19   | Rubber Foot                     |
| 20   | Cover                           |
| 21   | Cabinet Lock Screw              |
| 22   | Rubber Tubing (For Tuning Stem) |
| 23   | Headless Set Screw              |

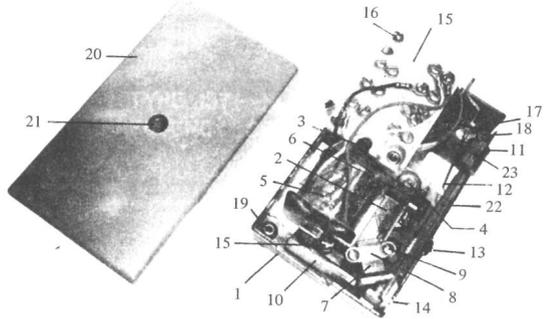


FIGURE 2 TOP VIEW - COVER REMOVED

Distribution D

1.03 The 137 compact ringer is a single coil, single gong, frequency selective type of unit, with a volume control, assembled on a die-cast metal base and fitted with a molded plastic protective cover. (See Figure 2) In combination with types 136 and 138 it provides a complete range of units which meet the requirements of every class of service for compact telephone line main or extension ringers. Screw terminals are provided for all lead connections (see Figure 3A) and the base casting is fitted with shock absorbing rubber feet.

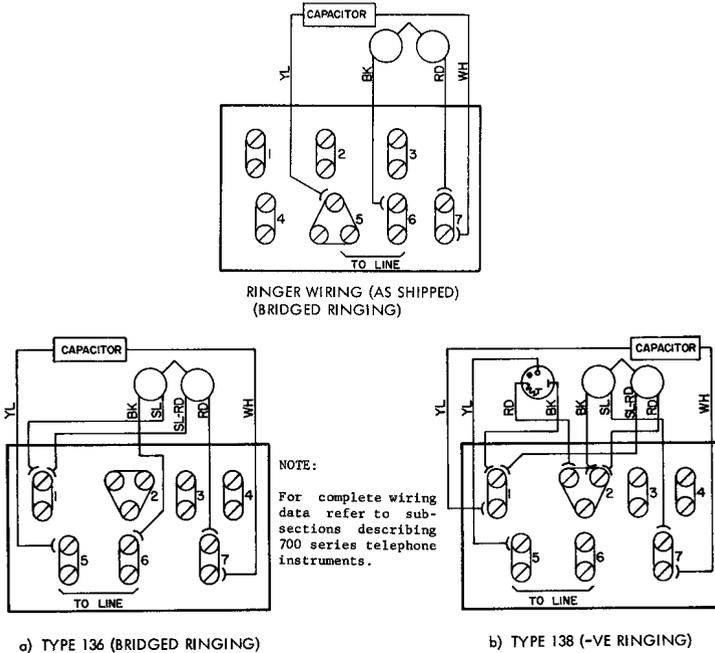


FIGURE 3 RINGER WIRING (AS SHIPPED)

2. MAINTENANCE

2.01 When ringer fails to operate properly, check first that customer is familiar with volume control operation. If volume control is set correctly and ringer still fails, proceed as follows:

- a. Check airgap at armature for dirt or foreign material and clean if necessary.
- b. Be sure all connections are tight and correct.
- c. Check that leads do not interfere with operation of the ringer.
- d. Check mechanical requirements and bias spring position.

- 2.02 Replace ringer if requirements are not met. Do not disassemble, adjust, or replace armature, coil, or permanent magnet, since these are factory aligned.
- 2.03 With the control lever in the lowest volume position there must be a clearance of 1/16" between the tip of the rubber cam and the bushing of the clapper. Rotate the rubber cam on the shaft to obtain the required clearance. The top surface of the bushing of the clapper must be set between, level with and 1/32" below the top surface of the rubber cam. Bend the stem of the clapper near its base to effect this adjustment.
- 2.04 The lever lock may be set to prevent the volume control being moved from the loud position, if desired. The lever stop may be set to prevent the volume control lever from being lifted over the step of the frame into the cut-off position. No free movement of the clapper is permissible in the cut-off position.
- 2.05 Moving the volume control from the highest to the lowest position should result in a reduction in sound output of 10 db. This may be measured on a sound output meter. Slight repositioning of the rubber cam or clapper may be necessary to achieve this variation.
- 2.06 Sensitivity (using moving coil meter and ERG source) the ringer should function strongly with the maximum voltages, steadily with the minimum voltages and just tinkle with the ultimate voltages applied across the coil and capacitor.

Condition	Frequency	Max. V	Min.V	Ult. V
Low Bias	16 cps	44	36	26
	20 cps	63	48	37
	30 cps	88	56	40
High Bias	16 cps	67	58	47
	20 cps	87	77	61
	30 cps	120	107	81

- 2.07 The type 138 gas ringer tube must first be checked, and adjusted if necessary, in the same manner as the type 136 ringer. Then connect the gas tube and apply the ringing signals in series with a 45 to 48 volt battery.

With the bias spring in the low tension position and the gas tube biased to conduction the ringer must function strongly with a series resistance of 10,000Ω in circuit at frequencies of 16, 20 and 30 cps. When the gas tube is reverse biased the ringer must not function, or may tinkle very slightly, with no series resistance in circuit. It will probably be necessary to set the bias spring in the high notch in order to obtain these conditions.

### 3. MECHANICAL REQUIREMENTS

- 3.01 The armature will restore to nonoperate side of airgap when manually operated.
- 3.02 Clearance between clapper and gong should be a minimum of 1/64 inch. The pressure of the clapper stem against the rubber sleeve on the tuning stem must be set within the following ranges:

Ringer Frequency	Pressure
16, 16-2/3, 20, 25 cps	0-1 ozs      0-30 grams
30, 33-1/3 cps	0-3 ozs      0-90 grams
40, 42, 50, 54, 60, 66, 66-2/3 cps ]	3-5 ozs      90-150 grams

The pressure must be measured at the top of the angled portion of the clapper stem.

3.03 Volume-control lever should operate smoothly over entire range. The sleeve on the volume control lever must rest tightly against the gong in the quiet position and must be clear of the gong in the loud position. Reshape the tip of the lever if necessary.

4. **BIAS SPRING POSITION**

4.01 The ringer is shipped with bias spring in the high (outside) notch. Table A indicates proper position for various classes of service.

**TABLE A**  
**BIAS SPRING POSITION**

Class of Service		Bias Spring Notch	Remarks
Bridged Ringing Service	Individual Line and PBX Stations	High	If three or more ringers are bridged across line and operation is not satisfactory, place bias spring in low notch on all ringers. If condition still exists, replace ringer.
	Nonselective Party Lines	Low	
Grounded Ringing Service	2-Party Flat and Message Rate	High	
	4-Party Semiselective	High	If five ringers are connected between same side of line and ground, and operation is not satisfactory, place bias spring in low notch on all ringers on that side of line. If condition still exists, replace ringer.
	4-Party Selective 8-Party Semiselective Divided Code	Low	If ringer buzzes on short-loop installations when the party of opposite polarity on same side of line is being called, place bias spring in high-tension notch. If ringer still buzzes or fails to ring, replace ringer.

*NOTE: Do not bend bias spring. Correct bias spring tension has been set at factory. Do not use tools when relocating bias spring.*

4.02 Obtain a ringing test after completing work. Check for bell taps while dialing.

4.03 If bell taps with bias spring in low notch and with ringer properly connected, move bias spring to high notch. Repeat ringing test. If ringer still fails to operate properly, replace ringer.