

1A AND 1B CODE CALLING SYSTEMS INSTALLATION

1. GENERAL

1.01 This section covers the installation of the 1A and 1B Code Calling Systems, including their associated signals which are also used in connection with the 2A and 2B Code Calling Systems covered in the P.B.X. Installation and Maintenance Practices.

1.02 This section is reissued to convert it to letter size and to incorporate material from the addendum in its proper location. In the process of this conversion, marginal arrows have been omitted.

1.03 Code calling systems require a certain amount of power wiring which under the contract for code calling service is provided by the subscriber in advance of the actual installation of the code calling equipment. A survey of the subscriber's premises should, therefore, be made by a representative of the Telephone Company in cooperation with the subscriber or his representatives to determine what equipment and power wiring is required and what locations for the equipment will be satisfactory to the subscriber. The service order prepared for the installer's guidance should specify the equipment to be installed and the locations for the particular items as determined by this survey.

1.04 The Telephone Company should ordinarily furnish the subscriber the special outlet boxes which form part of some of the signals and which require power wiring so they can be installed as part of the power wiring system in advance of the installation of the signals and other equipment. This also applies to the special weatherproof receptacle of certain outdoor signals, to the 3-pole receptacle furnished with certain code sending stations and to the relay sets which require power wiring. The subscriber should provide power circuit receptacles, as required, for indoor type signals for the 1B and 2B Systems. All power wiring provided by the subscriber should meet the requirements of the National Electrical Code and any local regulations that may apply.

2. LOCATION OF EQUIPMENT

2.01 In making the survey mentioned in 1.02 and deciding upon the locations for the signals and other apparatus forming a part of the code calling system the following requirements shall be met:

- (1) The code sending station shall be located so that it is convenient for the attendant to operate. It may be placed on a small table within easy reach of the attendant or, if preferred by the subscriber, on top of the switchboard framework or on mounting brackets at one end of the framework as described in Part 3. In the case of large switchboards, the top and ends of the framework are not generally within easy reach of the attendant and it will usually be necessary to use a small table or the blank keyshelf at the end section. In the case of switchboards of several positions an attendant who wishes to communicate with the attendant at whose position the code calling equipment is located may do so by means of an interposition trunk or call circuit.
- (2) Where appearance is controlling, signal control relay sets, transformer relay sets, etc., shall be located at inconspicuous locations, preferably not in closets or other locations where the equipment might not be accessible for maintenance purposes.
- (3) Signals and other equipment shall not be placed at locations which are hazardous from an installation and maintenance standpoint such as near moving machinery, open stairways, exposed electric power wires, accessories of other services, etc.

(4) Locate equipment where it will not be damaged or made inoperative or inaccessible by external objects which might be piled against it.

(5) Locate equipment where it can be securely fastened, as some of the signals are heavy and require substantial fastening.

(6) Place signals where the sound will be distributed as uniformly as possible over the area to be covered. In the case of bells, the distribution of sound is best from the side rather than in front of the gong.

2.02 The installer shall meet the requirements given above and shall consult his supervisor regarding any cases where the requirements cannot be met due to improper power wiring or for other reasons.

3. INSTALLATION OF CODE SENDING STATION

3.01 Where the station is to be located on top of the switchboard or on a table, it is not usually necessary to fasten it. However, if the subscriber desires that the set be fastened, use 1" No. 8 RH Blued Wood Screws through the holes in the feet at the rear of the station. When not used for fastening, turn these feet under the station.

3.02 When the station is to be mounted at the side of the switchboard, make sure that the bottom is even with the top of the switchboard keyshelf and that the front is even with the face of the board. Use KS-8225-L35 mounting bracket, which includes a wooden base, for installations of this kind. Attach bracket to P.B.X. and code sending station to the wooden base with the 3/4" F.H. Brass Screws furnished or with larger screws if required.

3.03 Where growth requires a larger code capacity in the code calling system, it will be necessary to disassemble the code sending station and install additional key units as indicated in Fig. 1.

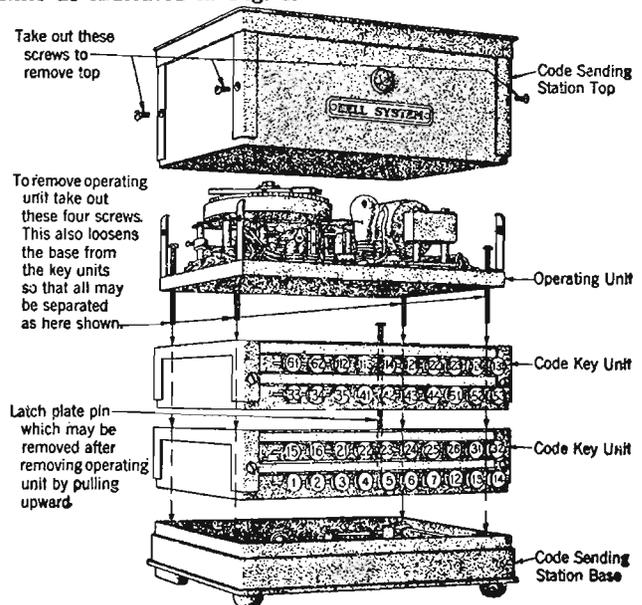


Fig. 1—40-Code Sending Station for 1A System Shows

3.04 When the original installation is a 10-code size, it will be necessary to remove the 10-code key unit and install a 20-code size key unit.

3.05 Where more than one key unit is used, it is necessary to connect the latch plates together so that any depressed key will be released when another key is pressed. These plates are connected together by means of latch plate pins furnished with the key units, the length of the pins depending upon the number of key units used. Where only a single key unit is used, no latch plate pin is required.

3.06 Where more than one key unit is used longer screws are required to fasten them together. Proper length screws are furnished with new key units.

3.07 While the above description is based on the code sending station for use with the 1A Code Calling System the information applies equally well to the code sending station associated with the 1B Code Calling System.

3.08 The KS-14468 code sending stations may be located on the top of a switchboard or table. The cushion rubber pads on the bottom of the sender housing ordinarily will be sufficient to prevent the unit from moving when a key is depressed. However, the stations are equipped with 2 brackets on the bottom of the housing which may be reversed so that they will extend behind the set. No. 6 screws can be inserted through the holes in the brackets to fasten the set in place, if desired.

3.09 In the 1A code calling system, insert the plug of the sender into the 3-wire receptacle connected to the KS-8230, List 1 signal control relay set.

3.10 In the 1B code calling system:

- Mount the KS-14468, List 3 transformer unit on the furnished backboard, within reach of the sender cord.
- Connect the low voltage relay leads to terminals (S1) and (S2) on the transformer terminal strip after passing them through the bushing in the bottom of the unit.
- Insert the sender cord into the 3-wire receptacle on the left of the transformer unit.
- Plug the cord of the transformer unit into the 105- to 125-volt power outlet.
- If the KS-7357 night alarm relay is part of the system, insert the plug from the relay into the 2-wire receptacle on the right of the transformer unit.

4. INSTALLATION OF SIGNALS FOR 1A AND 2A CODE CALLING SYSTEMS

4.01 The various signals are equipped with outlet boxes for connecting them to the electric power circuit. Make sure the power is not connected to the circuit before attempting to connect the signals. As mentioned in 1.03, the power wiring including these outlet boxes is installed in advance of the code calling equipment installation.

4.02 A typical indoor bell is shown in Fig. 2. Signals of this type should be installed in accordance with Fig. 2.

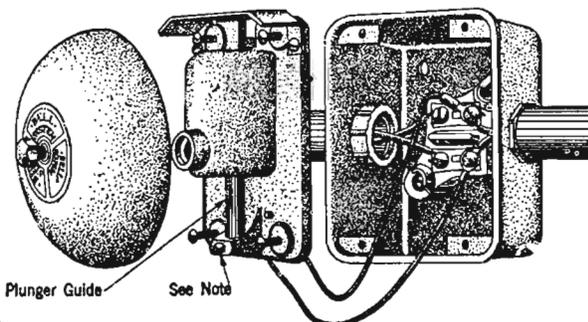


Fig. 2—Typical Indoor Signal for 1A or 2A System

4.03 A typical outdoor type bell is shown in Fig. 3. This bell has an outlet box with a side cover which is equipped with a rubber gasket to exclude moisture from the outlet box. Signals of this type should be installed in accordance with Fig. 3.

4.04 **Horns:** The outlet boxes for some of the earlier horn signals are not equipped with terminals for connecting the wires in the horn to the power wiring. It is necessary in these cases to solder the horn leads to the power wiring.

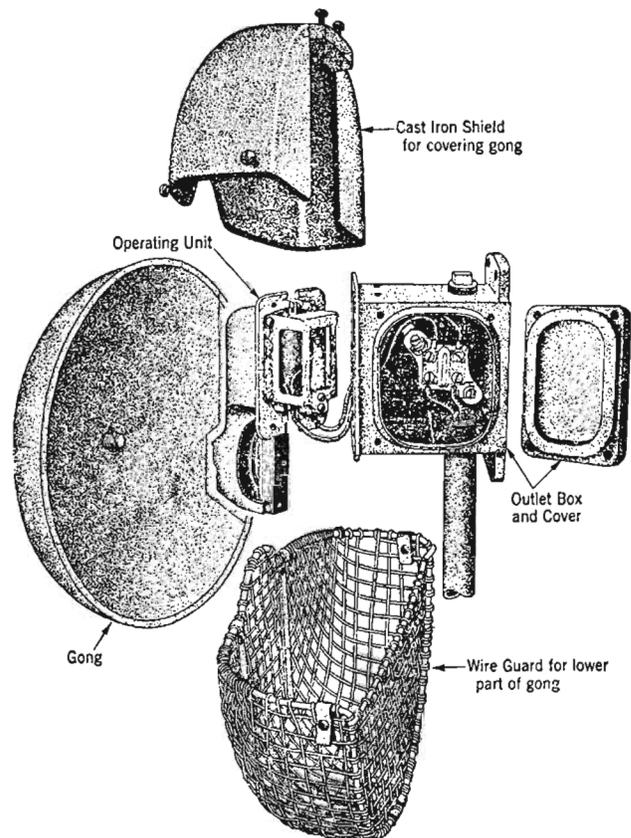


Fig. 3—Typical Outdoor Signal for 1A or 2A System

5. INSTALLATION OF SIGNALS FOR 1B OR 2B CODE CALLING SYSTEMS

Indoor Signals

5.01 The indoor signals for use on the 1B and 2B code calling systems are equipped with a low voltage relay which is operated by current furnished over telephone wiring and which controls the commercial power supply to the signal. Each signal comes equipped with a two-conductor cord for connection to the telephone wiring provided between signals and a cord with a plug for connections to the power circuit. A connecting block should be provided in the telephone wiring for connecting the cord. The power circuit receptacles are provided by the subscriber.

5.02 The signals are furnished with a backboard which should be mounted on the wall or other surface with four fasteners of the type specified for mounting backboards for subscriber sets.

5.03 The backboards are equipped with screws for mounting the signals on the backboard. The backplates of the signals are equipped with buttonhole slots which permits the signal to be hung on the screws in the backboard shown in Fig. 4.

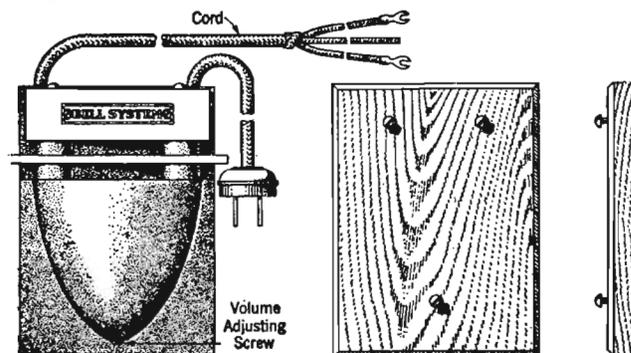


Fig. 4—Typical Indoor Signal for 1B or 2B System

Outdoor Signals

5.04 Outdoor Signals for the 1B and 2B code calling systems are either of the type equipped with a relay as described in 5.01 or equipped with a signal coil which operates directly on 48 volts, 60 cycles a-c. Signals equipped with relays have bushed holes in the base through which the drop or block wiring can be brought and have cords with a special weatherproof plug for connecting to the commercial power supply. The special weatherproof receptacle required is supplied with the signal and is furnished the subscriber for installation in advance of the signals and other equipment. Signals operating directly on 48 volts, 60 cycles a-c are supplied with current over drop or block wiring from a transformer relay set located inside of the building. The telephone wiring is brought into the signal through a hole in the base. The latter arrangement is illustrated in Fig. 5. These signals are permanently mounted by means of fasteners, such as No. 14 R.H. Galvanized Wood Screws, 1/4" Toggle Bolts, 5/16" Hammer Drive Anchors, etc.

5.05 Signals having relays which operate on telephone ringing voltage have a two-position armature air gap. A close air gap adjustment should be made for manual ringing telephone lines and a wide air gap adjustment should be made for machine ringing telephone lines, especially in dial areas.

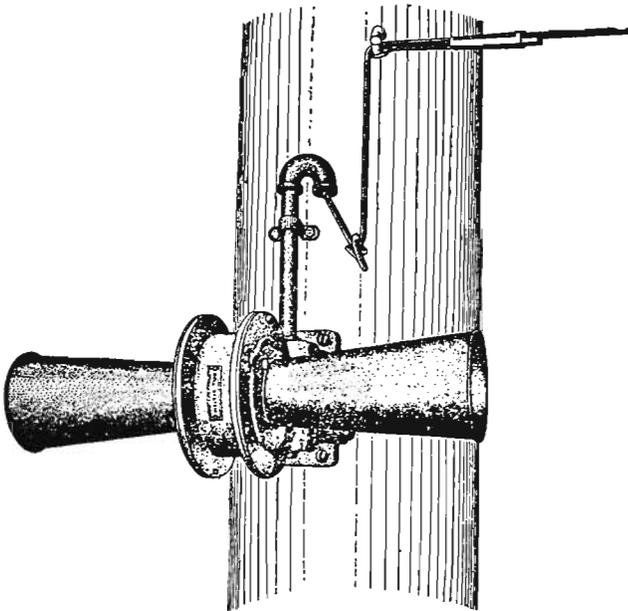


Fig. 5—Typical Outdoor Signal for 1B or 2B System
Operating Directly on 48 Volts a-c

6. INSTALLATION OF SIGNAL CONTROL RELAY SETS FOR 1A SYSTEM

6.01 The KS-8230-L1 or L2 signal control relay set and the KS-7340 or KS-7341 relay sets for night connections are housed in metal boxes with knockouts or holes for

bringing in the power wiring. The boxes are provided with four holes in the back to accommodate suitable fasteners for the surface on which they are to be mounted. Ordinarily these relay sets should be furnished the subscriber along with the outlet boxes for the signals and included in the power wiring installation provided by the subscriber.

7. INSTALLATION OF SIGNAL CONTROL RELAY SETS FOR 1B AND 2B SYSTEMS

7.01 The KS-8231 and the KS-8233-L1 sets are furnished with backboards and are mounted in the same manner as the indoor signals covered in 5.02 and 5.03. The KS-8231 relay set is provided with a three-conductor cord for connecting to the code sending station, a two-conductor cord for connecting to the commercial power supply and two terminal blocks for the low voltage input and output connections. The KS-8233-L1 Transformer Relay Set is provided with a cord for connecting to the commercial power supply and two cords for connecting to the signal and to the control circuits.

7.02 The KS-7340 and KS-7357 relay sets are equipped with a relay which has a two-position armature air gap. A close air gap adjustment should be made for manual ringing telephone lines and a wide air gap adjustment should be made for machine ringing telephone lines, especially in dial areas.

8. WIRING

8.01 The wiring for the 1A and 2A systems, as previously mentioned, consists of power wiring provided by the subscriber. The installer in completing the installation of the code calling system has to mount the various pieces of apparatus and connect them together by means of the wiring already provided when he arrives on the job. The connections to be made are covered in Division C60.

8.02 The wiring for the 1B and 2B systems consists of telephone wiring between the signals and in some cases of drop or block wiring from an indoor relay set to an outdoor signal. This wiring should be done by the installer in accordance with the Station Installation and Maintenance Practices covering station wiring and the Outside Plant Construction and Maintenance Practices covering drop and block wiring. As in the case of the 1A and 2A systems, the subscriber provides all of the power wiring for the 1B and 2B systems.

8.03 The installer should not in any case make final connections to the power circuit until all of the apparatus has been mounted and all of the telephone wiring connections have been made. Furthermore, he should thoroughly inspect the whole system to make sure that all of his work has been properly done before making the final connections to the power circuit. Then the code calling system should be tested in accordance with the requirements given in the section covering tests and adjustments.

8.04 The installer should explain the operation of the code calling system to the attendant and make sure she knows how to operate the system. The subscriber should also be advised to assign those codes having the least number of digits to the parties likely to be called most frequently and to assign the longer codes to the parties having the least number of calls as this practice will tend to decrease the number of soundings of the signals.