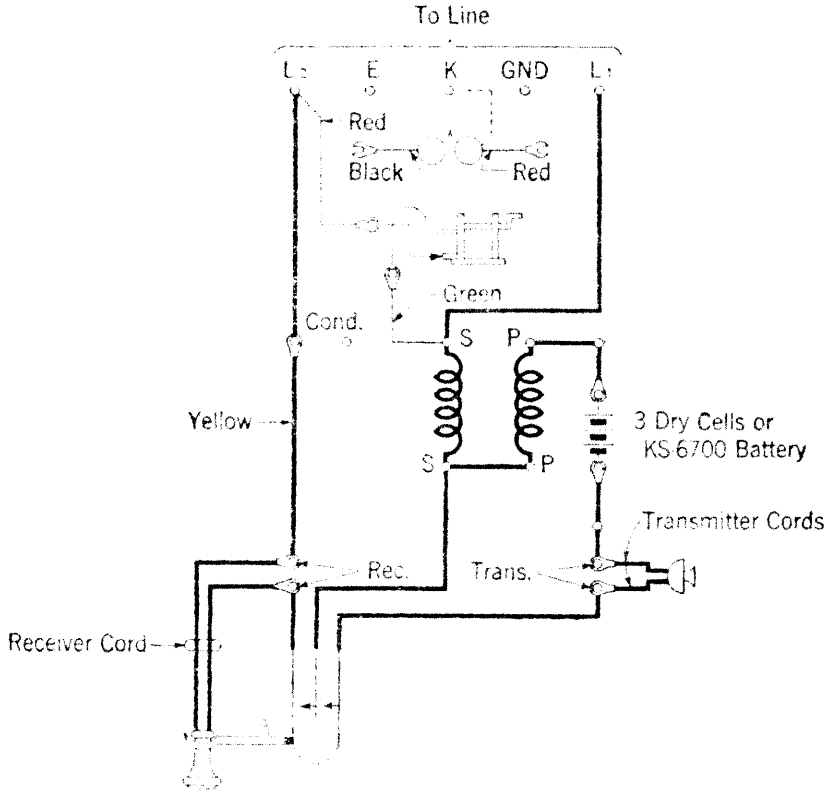
SIDETONE MAGNETO STATIONS
CONNECTIONS

1. GENERAL

1.01 This section includes diagrams and other information relating to the connection of magneto station apparatus and of this apparatus to the line.

1.02 This section is reissued to cover the 392K and 392L subscriber sets (loud ringing bells); the new unit-type battery KS-6700; the new 625A transmitter for hand sets, and to bring the section up to date in other minor respects.

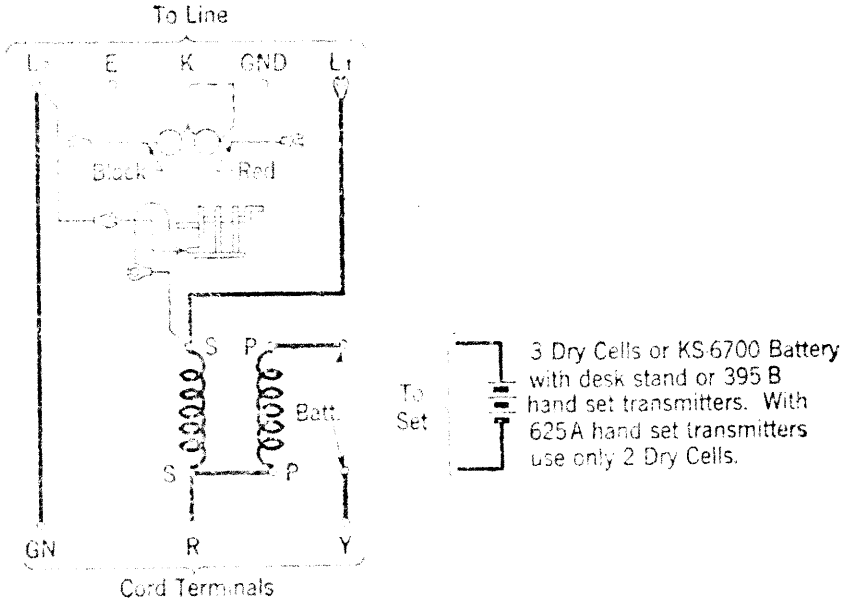
2. WALL SET CONNECTIONS. (ALL CLASSES OF SERVICE)



Note: The 317BS, 317AH and 317P Subscriber Sets are wired as shown except that the 317AH and 317P do not have E or K terminals or third ringer lead.

Fig. 1—317-Type Subscriber Set

3. HAND TELEPHONE SET CONNECTIONS. (ALL CLASSES OF SERVICE)



Note: The 315E and 315H Subscriber Sets are wired as shown except that the 315H does not have E or K terminals or third ringer lead and the generator is wired to L1 instead of to S terminal of induction coil. For 300K Subscriber Set which may also be used with Hand Telephone Sets, see Fig. 5.

Fig. 2—315-Type Subscriber Set

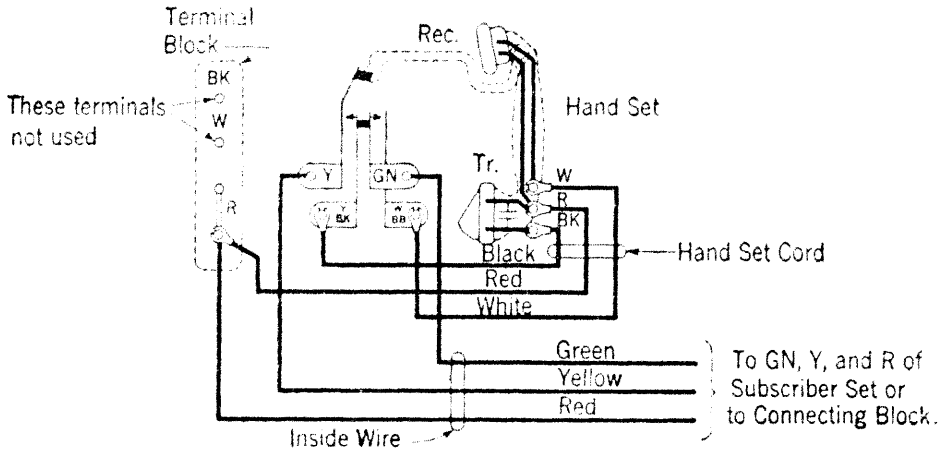


Fig. 3—101A-3 Hand Telephone Set

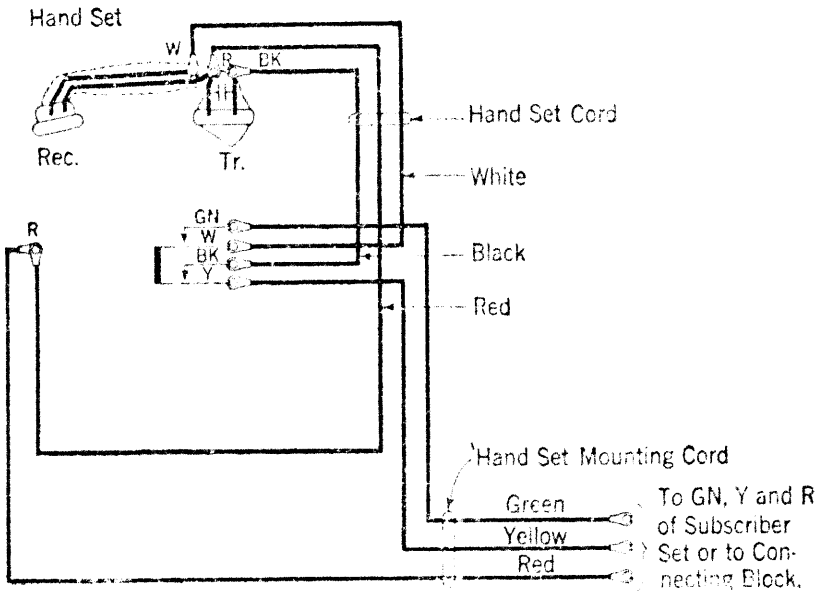
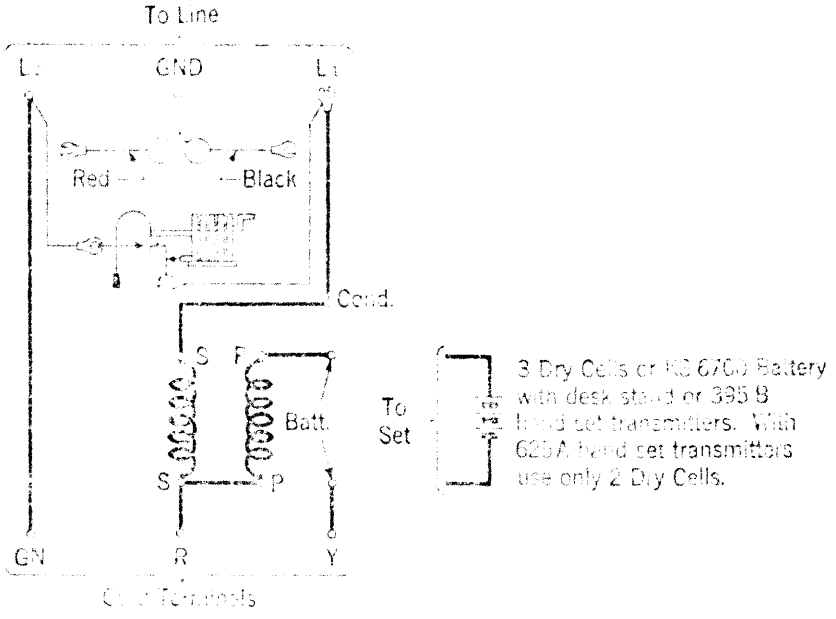


Fig. 4—102A-3 and B1A-3 Hand Telephone Sets

4. DESK STAND CONNECTIONS. (ALL CLASSES OF SERVICE)



Note: For 315E and 315H Subscriber Sets which may also be used with desk stands, see Fig. 2.

Fig. 5—300K Subscriber Set

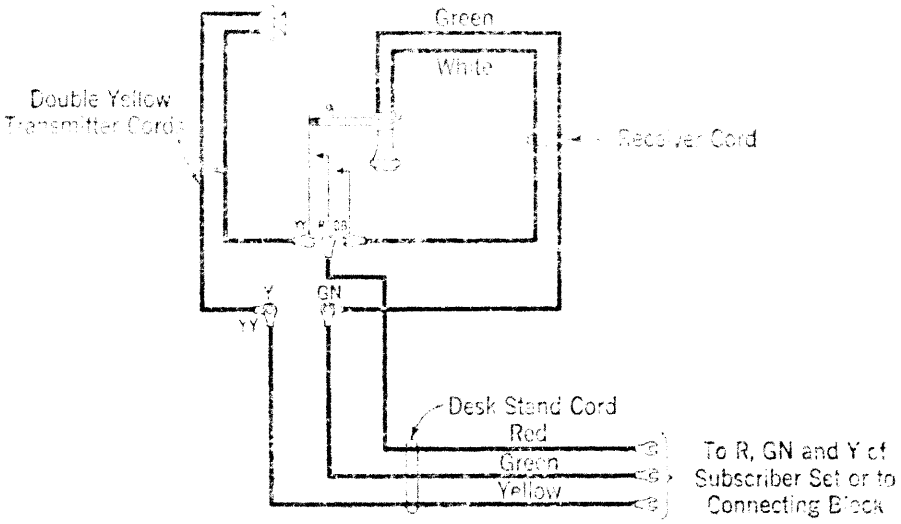


Fig. 6—40 AL Desk Stand

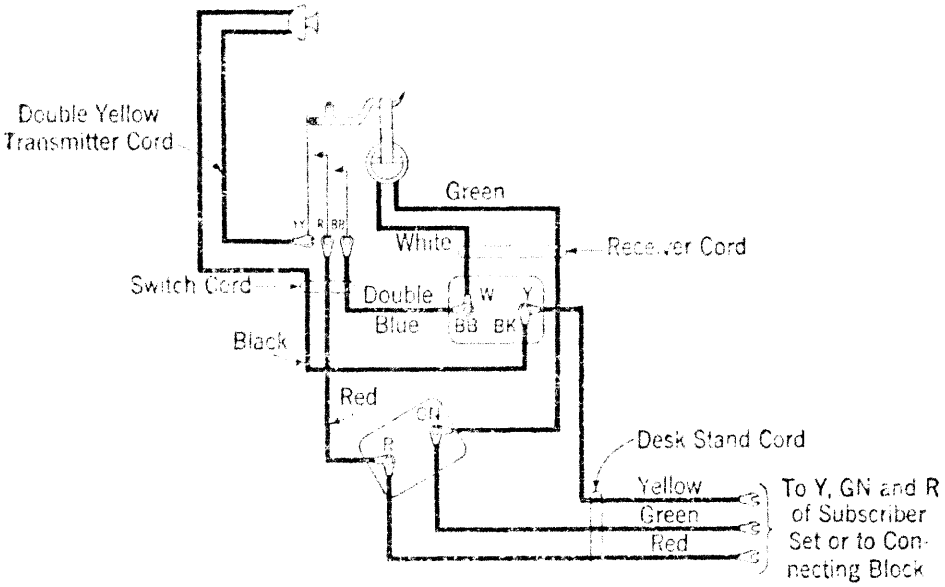


Fig. 7—52 AB Desk Stand

5. LINE AND RINGER CONNECTIONS

(A) All Classes of Service

5.01 **Tip and Ring:**

(a) When operator rings with individual line key "Tip" side of line is connected to ground side of ringing machine. "Ring" side of line is connected to live side of ringing machine.

(b) To test for "tip" and "ring":

Have operator ring on line with individual line key. While ringing current is on the line connect one terminal of test receiver or test set to ground and touch the other terminal alternately to each side of the line. "Ring" side gives louder click in receiver.

5.02 **Number of Ringers:** Care shall be taken in each specific case to avoid connecting so many ringers to a line that satisfactory ringing cannot be assured.

5.03 To insure satisfactory ringing do not install for one subscriber more than the following number of ringers including main station ringer (unless the subscriber is served by more than one line).

Individual Line Stations	4
Magneto P.B.X. Stations	4
Non-Selective Party Line Stations (including bridged ringing rural line stations)	2*
Two-party Selective Stations	4
Four-party Semi-Selective Stations	2
Four-party Selective Stations	2

*Maximum 8 low impedance ringers or 16 high impedance ringers on one line. For each loud ringing bell the permissible number of normal ringers will be reduced by 2

5.04 **Connection of High Impedence Ringers to Reduce Inductive Noise:** In the case of semi-selective or selective stations equipped with high impedance (4300 ohm or 3500 ohm) ringers to reduce severe inductive noise, all ringers on the line should be of this type, and any loud ringing bells should also be of the high impedance type (392K or 392L). Connect ringers in extension station sets and extension ringers in same manner as ringer at main station. To minimize noise due to unbalance in the number of ringers connected to opposite sides of the line, the excess of ringers on one side should never be greater than three. From the standpoint of inductive noise, high impedance loud ringing bells should be considered to cause as much unbalance as two high impedance ringers.

5.05 **Connecting Ringer Leads—All Stations:** Connect red and black leads of ringers and loud ringing bells at two-party selective, four-party semi-selective and four-party selective stations as indicated on the diagrams in order to secure correct poling of ringers. In some old-style sets the ringer leads are not red and black. In these cases the ringer coil lead nearest the biasing spring corresponds to the black lead. The 584DD, 584DE and 584DF extension ringer sets have terminals marked R and B (corresponding to the red and black leads) and a third terminal (for use where a condenser is required) which is marked L2.

5.06 **Extension Stations:** Ringers provided at extension stations and extension ringers shall be of the same resistance as the main station ringer except as covered specifically in the following paragraphs. Where loud ringing bells are required, use loud ringing bells of the proper type as covered in the section on apparatus and material. Hand generators at extension stations shall be of the same type as those at the associated main station.

(B) Individual Line Stations and Magneto Private Branch Exchange Stations

5.07 **Main Station and Extension Stations with Ringers:**

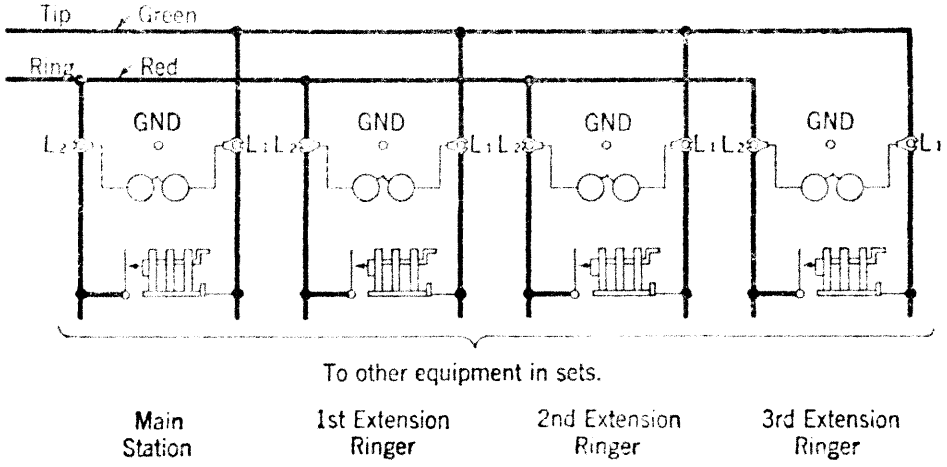


Fig. 8.

5.08 **Main Station and Extension Station without Ringer:**

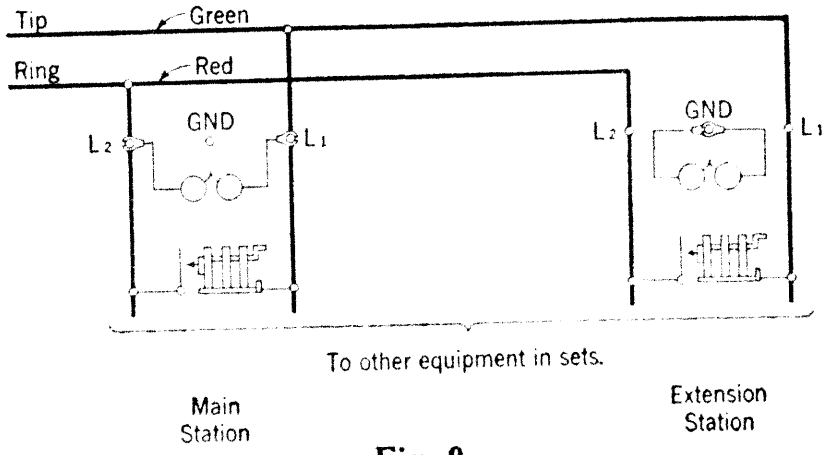
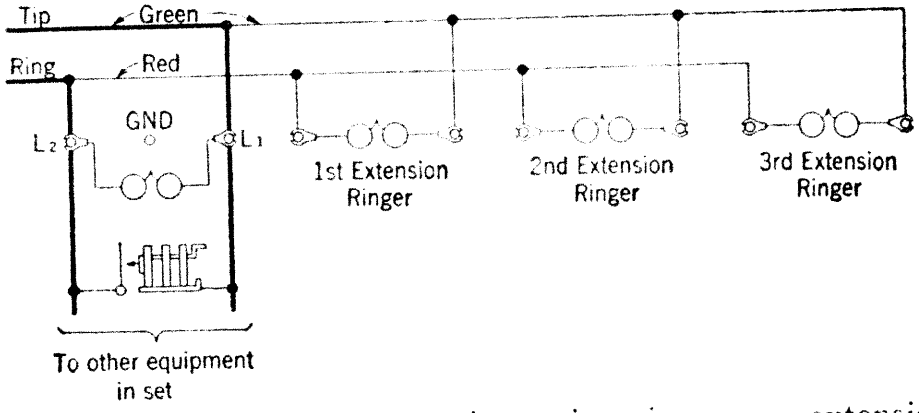


Fig. 9.

5.09 **Main Station and Extension Ringers (Normal or Loud Ringing):**

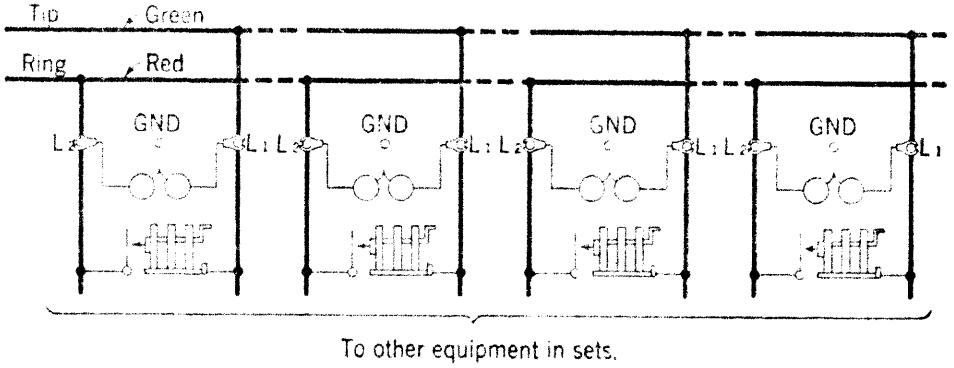


Note: With 1000 ohm main station ringer use extension ringers having 1000 ohms, 1400 ohms or 1500 ohms, or 392B loud ringing bells.

Fig. 10.

(C) Non-Selective Party Line Stations (Including Bridged Ringing Rural Line Stations) (Normal or Loud Ringing)

5.10 **Main Stations:**



Note: On bridged ringing rural lines with more than 8 stations or over 800 ohms resistance, station sets contain five bar hand generators and 2500 ohm ringers.

Fig. 11.

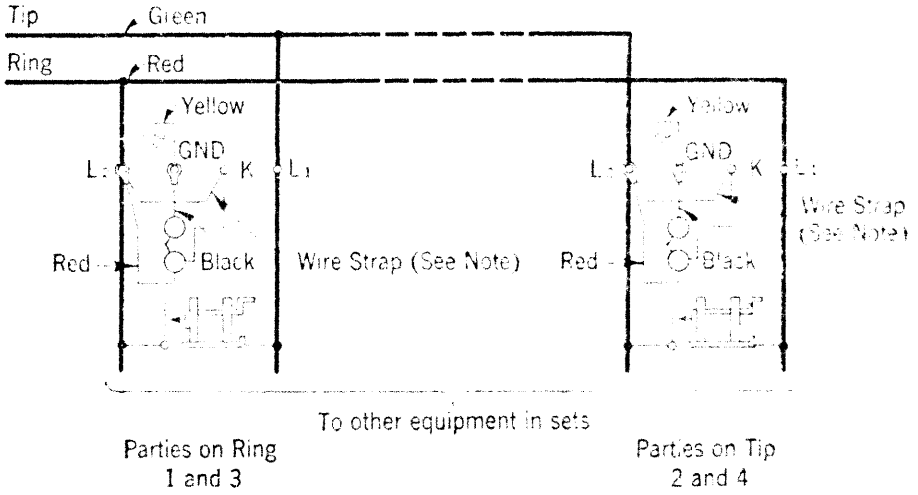
5.11 **Main Station and Extension Station with Ringer:** Connect according to main station and first extension station, Fig. 8.

5.12 **Main Station and Extension Station without Ringer:** Connect according to Fig. 9.

5.13 **Main Station and Extension Ringer:** Connect according to main station and first extension ringer, Fig. 10.

(D) Two-Party Selective and Four-Party Semi-Selective Stations

5.14 **Main Stations:**



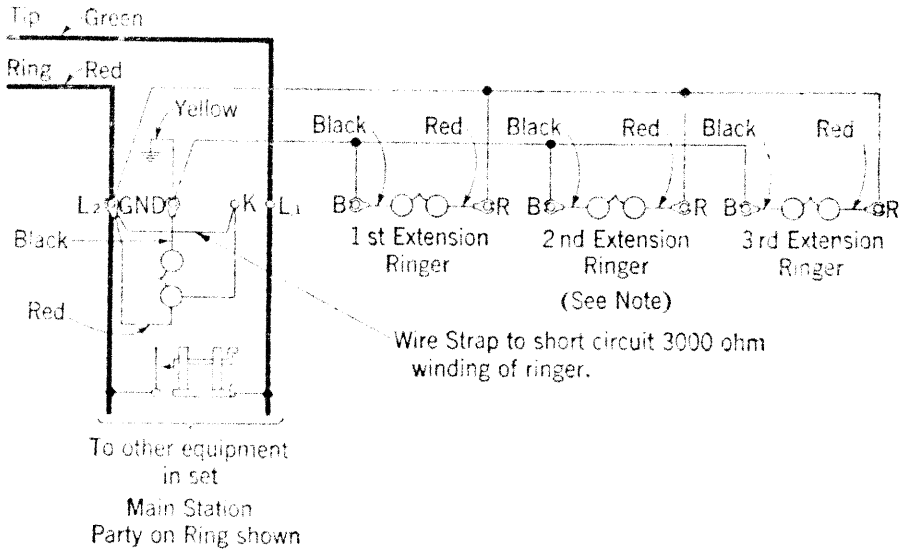
Note: At both main and extension stations use wire strap to short-circuit 3000 ohm winding and see that ringers are adjusted for A. C. ringing current. (See Section, "Ringers and Loud Ringing Bells—Tests and Adjustments.") An exception to this is where stations of this class are rung with superimposed or pulsating ringing current, in which case the ringers are connected and adjusted as at four-party selective stations. In areas having no superimposed or pulsating ringing current, 1000, 1400, or 1500 ohm ringers may be used, in which case no wire strap is required. At stations having high impedance ringers, no strap is required.

Fig. 12.

5.15 **Main Station and Extension Stations with Ringer:** Connect extension stations in the same way as the associated main station.

5.16 **Main Station and Extension Station without Ringer:** Connect extension station set to tip and ring of line and connect red and black leads of extension station ringer to GND terminal.

5.17 Main Station and Extension Ringers (Normal or Loud Ringing):



Note: With 1000-3000 ohm main station ringer use extension ringers having 1000 ohms, 1400 ohms or 1500 ohms, or 392L loud ringing bells with condenser short-circuited. With high impedance main station ringer use high impedance extension ringers or 392L loud ringing bells with condenser short-circuited. At four-party semi-selective stations only one extension ringer is allowed at any station. Not more than one loud ringing bell shall be connected to each side of a four-party semi-selective line. At stations having high impedance ringers, wire strap is not required.

Fig. 13.

(E) Four-Party Selective Stations

5.18 Main Stations:

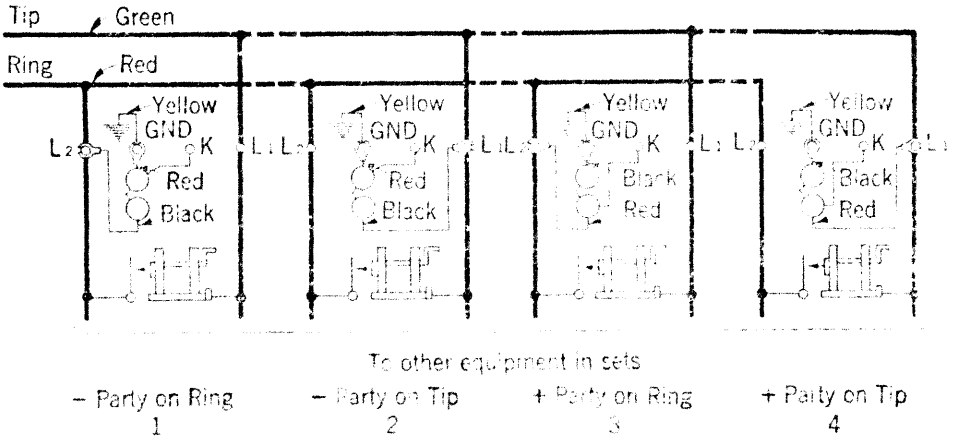
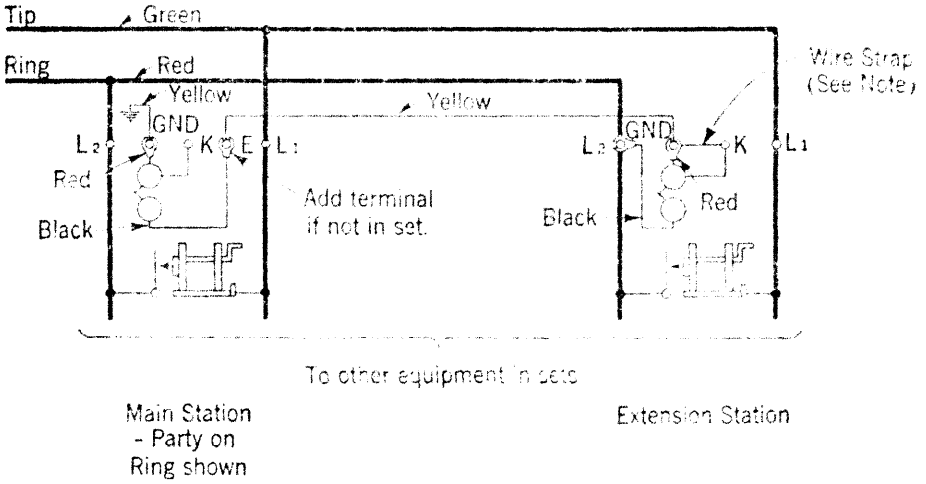


Fig. 14.

5.19 Main Station and Extension Station with Ringer:



Note: Use wire strap to short circuit 3000 ohm winding of one ringer where ringers are connected in series as shown.
When used, strap K terminal to terminal having red ringer lead.

Fig. 15.

5.20 For parties having extension station sets with ringer, connect proper ringer lead at extension station to proper line terminal. (For proper color of ringer lead and line terminal see Fig. 14, **Main Stations.**) Connect other extension station ringer lead to GND terminal of extension station set. At the associated main station connect the ringer for the

proper party (See Fig. 14, **Main Stations**) but the ringer lead shown on Fig. 14 connected to the line terminal is to be connected to "E." Use wire strap to short out 3000 ohm winding of ringer at extension station.

5.21 **Main Station and Extension Station with Ringer—High Impedance Ringers:**

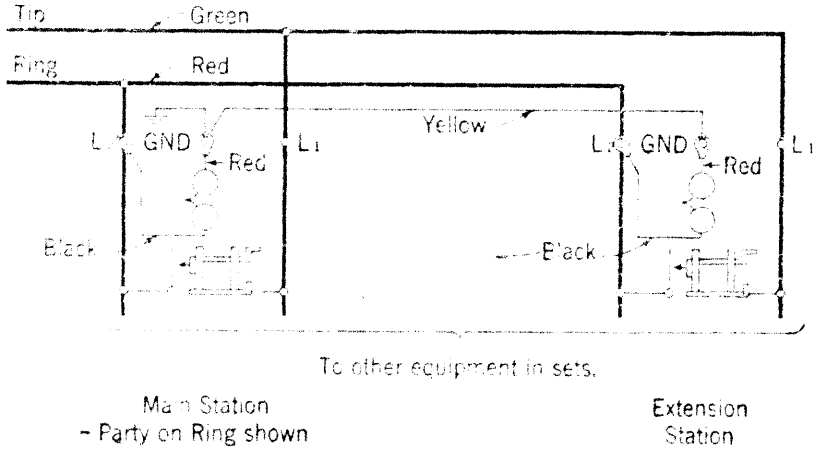


Fig. 16.

5.22 **Main Station and Extension Station without Ringer:** Bridge set on line same as main station set. Connect red and black leads of extension station ringer to GND terminal.

5.23 **Main Station and Extension Ringer (Normal Ringing) —1000-3000 Ohm Main Station Ringer:**

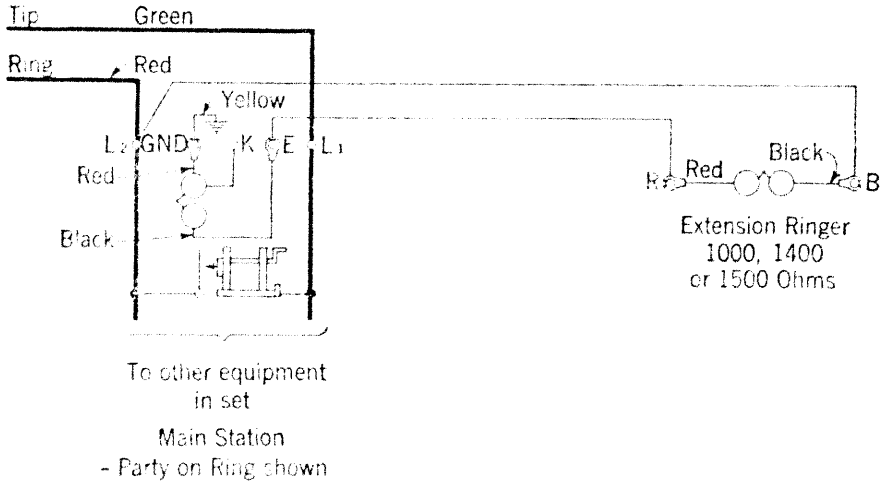


Fig. 17.

5.24 For all parties connect main stations as in Fig. 14, **Main Stations,** except that ringer lead shown there connected to line should be connected to "E." Wire extension ringer lead

of proper color to proper line terminal. (For proper color and line terminal see Fig. 14.) Wire other extension ringer lead to "E."

5.25 **Main Station and Extension Ringer (Normal Ringing) Cut Into Signaling Ground Wire—1000-3000 Ohm Main Station Ringer.**

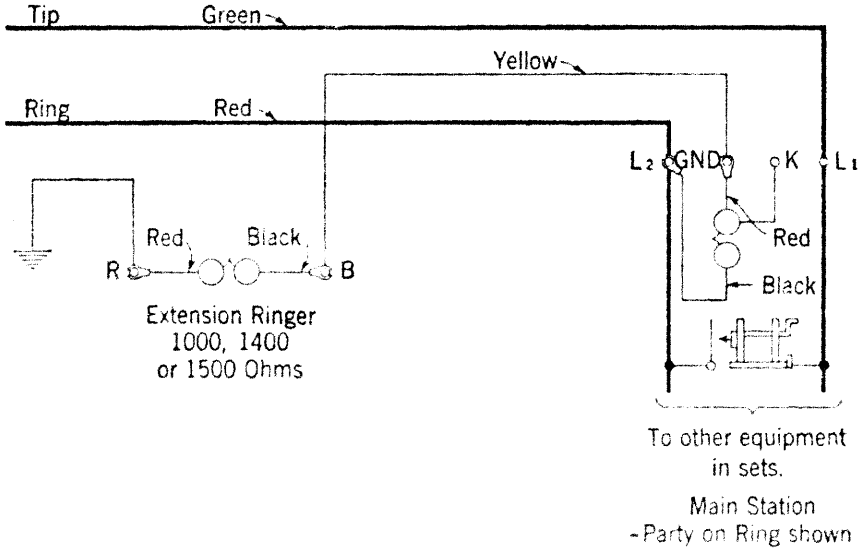


Fig. 18.

5.26 Connect ringer leads at main station to same terminals as in Fig. 14, **Main Stations.** The color of extension ringer lead wired to ground connection shall be the same as color of ringer lead of Main Station ringer connected to GND terminal.

5.27 **Main Station and Extension Ringer (Normal Ringing) —High Impedance Ringers:**

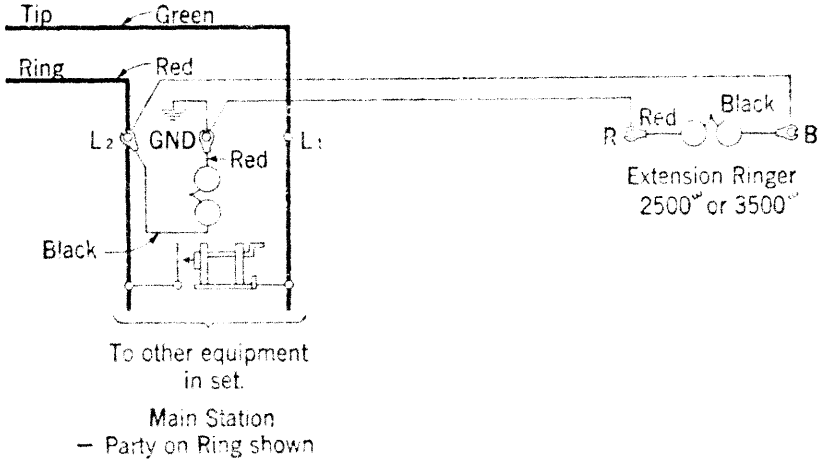


Fig. 19.

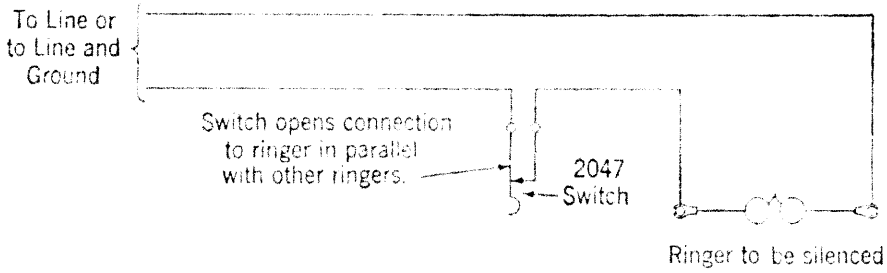
5.28 Connect main station ringer as shown in Fig. 14 and connect to ground same color lead of extension ringer as at main station ringer.

5.29 **Main Station and Extension Ringer (Loud Ringing):** Connect main station ringer as shown in Fig. 14, **Main Stations.** Wire 392K loud ringing bell as shown for extension ringer in Fig. 19 connecting same color ringer lead to ground as at main station ringer. Not more than two normal ringers shall be connected to same side of line having a loud ringing bell and if 2 loud ringing bells are required on same side of line, all normal ringers must be omitted from that side of line.

(F) Keys and Switches to Silence Ringers

5.30 **All Stations:** When covered on the service order, install keys and switches for temporarily cutting off ringers at main stations, extension stations, extension ringers or loud ringing bells. Where this is done the arrangement shall insure that at least one ringer will remain connected to the line at all times to receive calls.

5.31 **Ringers in Parallel with Other Ringers:**



Note: For line and ringer connections see main and extension station connections applying to class of line on which ringer or ringers are to be silenced.

Fig. 20.

5.32 **Series Ringers at Four-Party Selective Stations:** Where series ringers have been installed or, in cases of new installations, would normally be provided and it is desired to provide a ringer cutoff key, install high impedance ringers for both main station and extension and connect according to paragraphs 5.27 to 5.31, inclusive.