

ANTI-SIDETONE EXTENSION STATION AND EXTENSION RINGER CONNECTIONS

1. GENERAL

1.01 This section covers the extension station and extension ringer connections (including loud ringing bells) for anti-sidetone subscriber sets when such sets are used at regular manual or dial common battery stations or at local battery talking, common battery signaling stations (L.B.T., C.B.S.).

1.02 The diagrams show extension ringers or extension stations with ringers. The dash lines (—) in the diagrams indicate the part of the extension station connections which is not required where extension ringers only are installed. Where alternate terminal markings depending on the set used are required, both markings are shown. Where "R" or "B" is shown as an alternate terminal marking it applies to the extension ringer.

1.03 **Sidetone Subscriber Sets:** The diagrams are for anti-sidetone subscriber sets. However, if permitted by zoning instructions, sidetone subscriber sets may be associated either as main or extension stations with anti-sidetone subscriber sets, provided that the sidetone sets are connected according to the section covering "Sidetone Extension Station and Extension Ringer Connections."

1.04 **"E" Terminal:** Where an "E" terminal is shown in the diagrams, it must be added to the set if not already provided.

1.05 Low and High Impedance Ringers or Relays and Loud Ringing Bells: The resistances for both low and high impedance ringers or relays and for loud ringing bells are shown in the following table.

	NON-POLARIZED RINGING LINES (Non-Relay Sets)		POLARIZED RINGING LINES (Relay Sets)		
	Ringers	Loud Ringing Bells	Ringers	Relays	Loud Ringing Bells
Low Impedance	1000 ^Ω 1400 ^Ω 1500 ^Ω	1000 ^Ω	1000-3000 ^Ω	2040 ^Ω	—
High Impedance	3500 ^Ω	2500 ^Ω	6000 ^Ω	5700 ^Ω	4500 ^Ω

1.06 Loud ringing bells are covered by Part 5 of this section.

1.07 Condenser Capacities for Extension Ringers: Extension ringers are the same for both sidetone and anti-sidetone installations. Where used for anti-sidetone installations, the low impedance ringers should be connected in series with a 1 mf. condenser unless wired in series with another ringer and condenser or used with relay type subscriber sets. The high impedance extension ringers should be connected in series with a 1/2 mf. condenser except for relay type subscriber sets and never wired in series with another ringer.

1.08 **Maximum Number of Ringers Per Main Station:** The maximum number of ringers per main station (including the main station ringer) shall be as indicated in the following table:

CLASS OF SERVICE (Includes L.B.T., C.B.S.)	Maximum No. of Ringers Per Main Station
Individual Line Stations All P.B.X. Stations except as covered below *Two-Party Selective Flat Rate Stations *Two-Party Selective Message Rate Stations -- Manual Two-Party Selective Message Rate Stations -- Dial	4
P.B.X. Stations for night or through dial connections where there is an a.c. bridge in the P.B.X. Circuit No. 750A P.B.X. (All stations) *Four-Party Semi-Selective Stations Four-Party Selective Stations	2
*Eight-Party Semi-Selective Stations *Divided Code Ringing Stations Non-Selective Party Stations	1

* When it is necessary for noise reasons to restrict the unbalance between two sides of a line, the excess of high impedance ringers or relays connected to ground on one side of the line should not be greater than three.

1.09 Ground Connection: When extension stations are installed on grounded ringing lines the ground connection should be made as close as possible to the set. Figs. 1 and 2 show typical illustrations of how, in general, wire runs may be made to keep the length to a minimum.

**Typical Example
of
Extension Station Ringer Ground Obtained at Main Station**

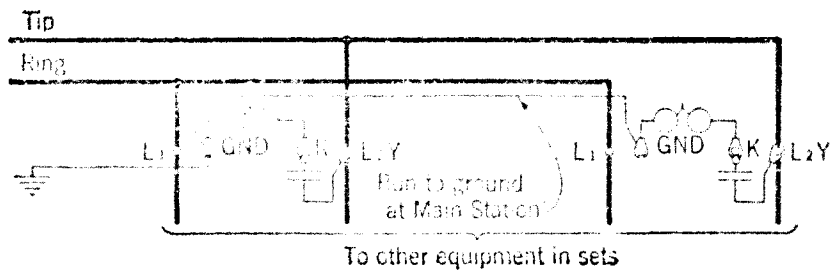


Fig. 1.

**Typical Example
of
Extension Ringer Cut Into Signaling Ground Wire**

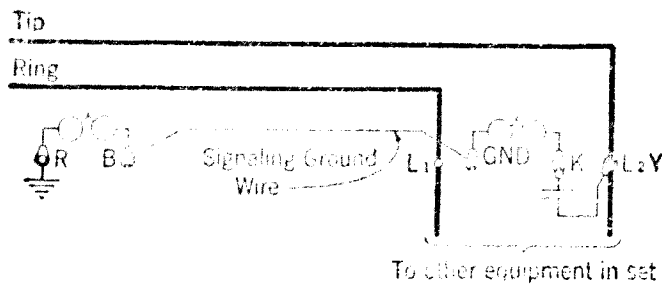


Fig. 2.

**2. MAIN STATION AND ONE EXTENSION STATION WITH RINGER,
MAIN STATION AND ONE EXTENSION RINGLER**

2.01 Individual Line Stations (Including L.B.T., C.B.S.)—
Manual and Dial.

All P.B.X. Stations (Including L.B.T., C.B.S.) Except as
Covered in Paragraphs 2.02 and 2.03—Manual and Dial.
(High or low impedance ringers)

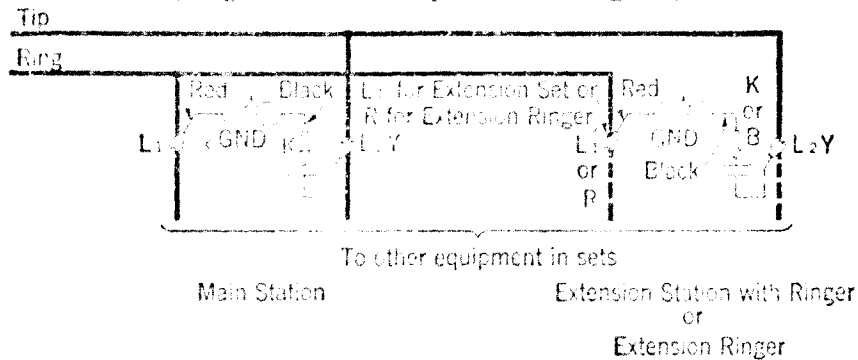


Fig. 3.

Fig. 3 shows the preferred arrangement for an extension ringer. As an alternate arrangement the series connection shown in Fig. 4 may be used.

2.02 P.B.X. Stations (Including L.B.T., C.B.S.) for Night or
Through Dial Connections Where There Is an A.C.
Bridge in the P.B.X. Circuit—Manual and Dial.
No. 750A P.B.X. Keyless Stations.

(Low impedance ringers only)

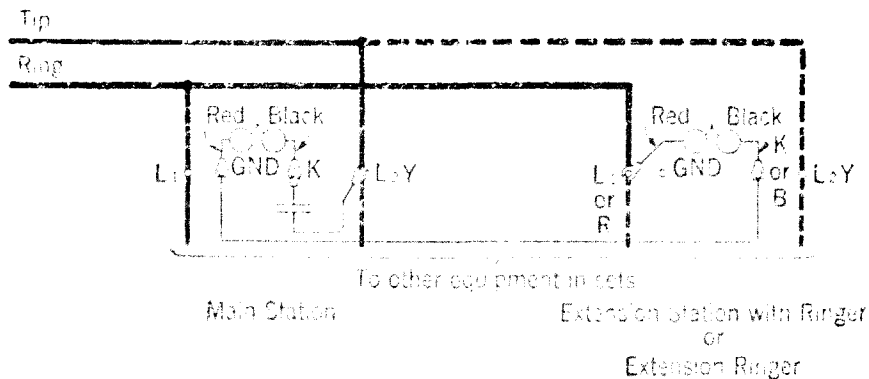


Fig. 4.

2. (Cont.) MAIN STATION AND ONE EXTENSION STATION WITH RINGER,
 MAIN STATION AND ONE EXTENSION RINGER

2.03 No. 750A P.B.X. Key and Control Stations—Dial.
 (Low impedance ringers only)

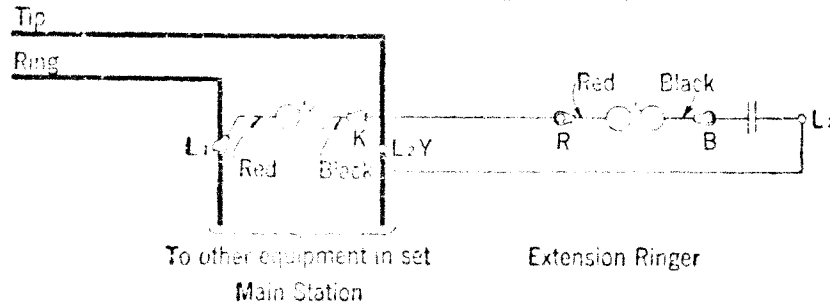


Fig. 5.

2.04 Two-Party Selective Flat Rate Stations (Including L.B.T., C.B.S.)—Manual and Dial.
 Two-Party Selective Message Rate Stations (Including L.B.T., C.B.S.)—Manual.

PARTY ON RING
 (High or low impedance ringers)

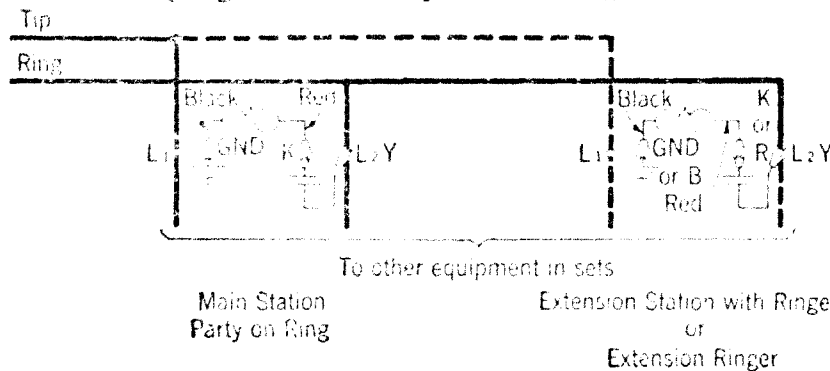


Fig. 6.

PARTY ON TIP
(High or low impedance ringers)

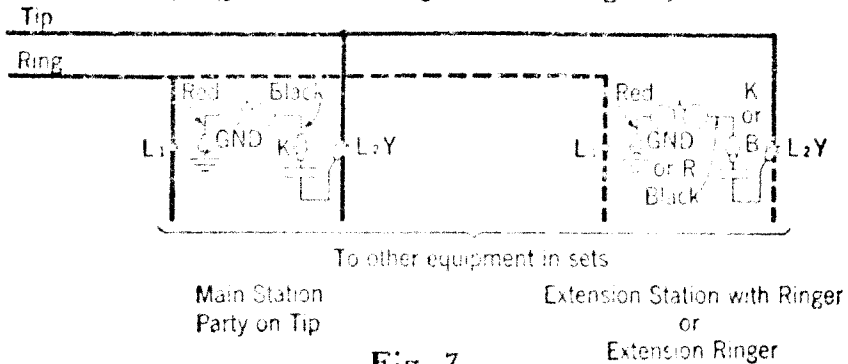


Fig. 7.

Figs. 6 and 7 show the preferred arrangement for an extension ringer. As an alternate arrangement the series connection shown in Figs. 8 and 9 may be used.

PARTY ON RING
(Low impedance ringers only)

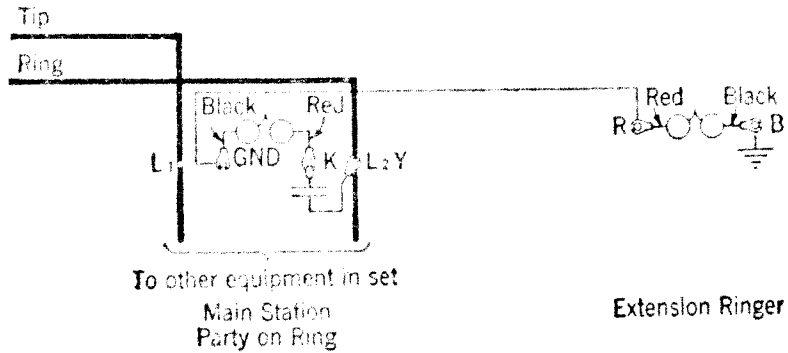


Fig. 8.

PARTY ON TIP
(Low impedance ringers only)

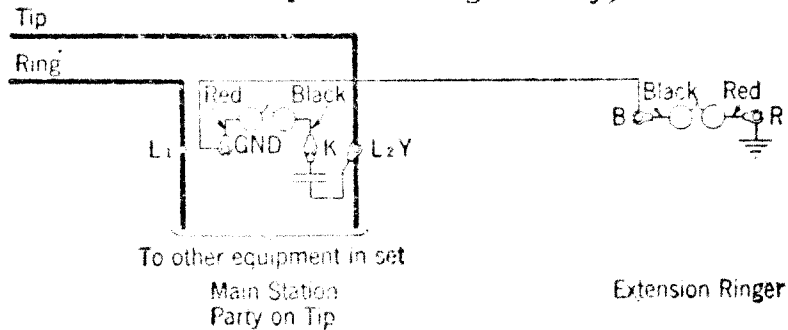


Fig. 9.

2. (Cont.) MAIN STATION AND ONE EXTENSION STATION WITH RINGER,
 MAIN STATION AND ONE EXTENSION RINGER

205 Two-Party Selective Message Rate Stations—Dial.

PARTY ON RING
 (Low impedance ringers only)

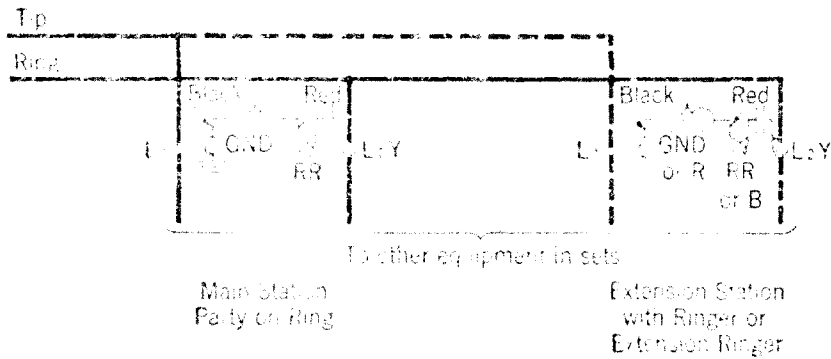


Fig. 10.

PARTY ON TIP
 (Low impedance ringers only)

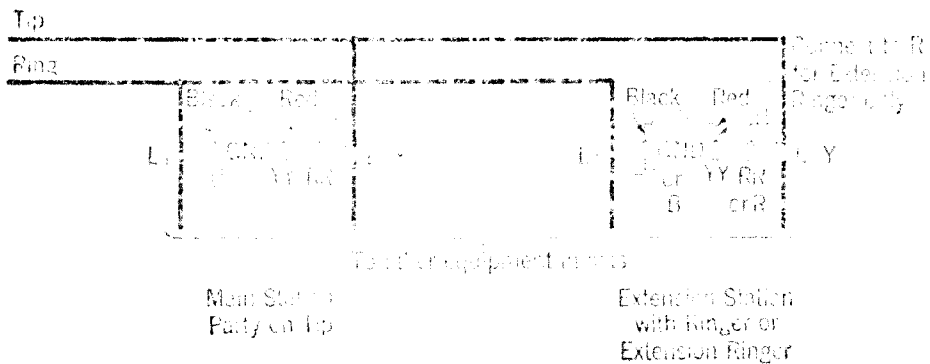


Fig. 11.

2.06 Four-Party Semi-Selective Stations (Including L.B.F., C.B.S.)—Manual and Dial.

PARTY ON RING
(High impedance ringers only)

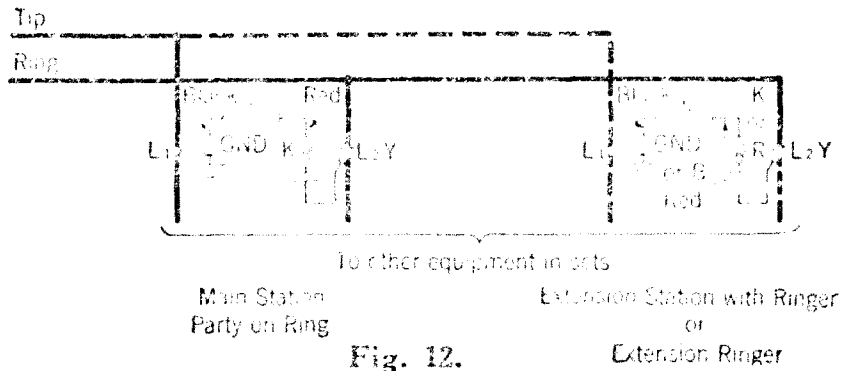


Fig. 12.

PARTY ON TIP
(High impedance ringers only)

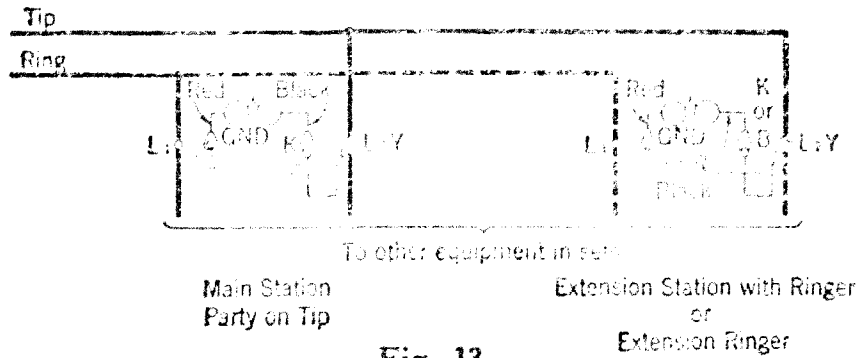


Fig. 13.

PARTY ON RING
(Low impedance ringers only)

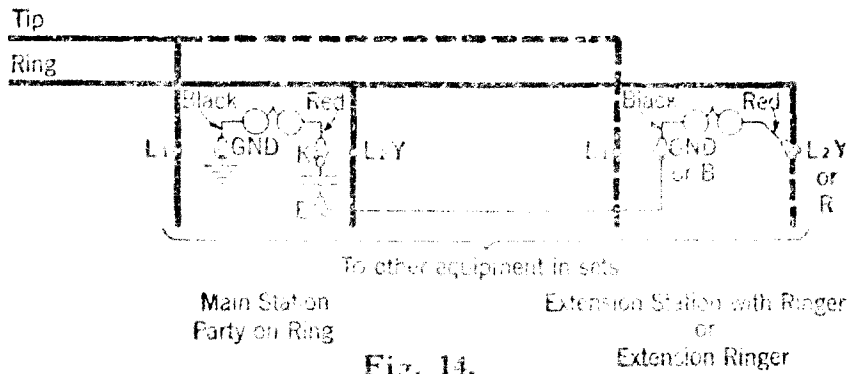


Fig. 14.

2. (Cont.) MAIN STATION AND ONE EXTENSION STA-
TION WITH RINGER,
MAIN STATION AND ONE EXTENSION RINGER

2.06 (Cont.) Four-Party Semi-Selective Stations (Including
L.B.T., C.B.S.)—Manual and Dial.

PARTY ON TIP
(Low impedance ringers only)

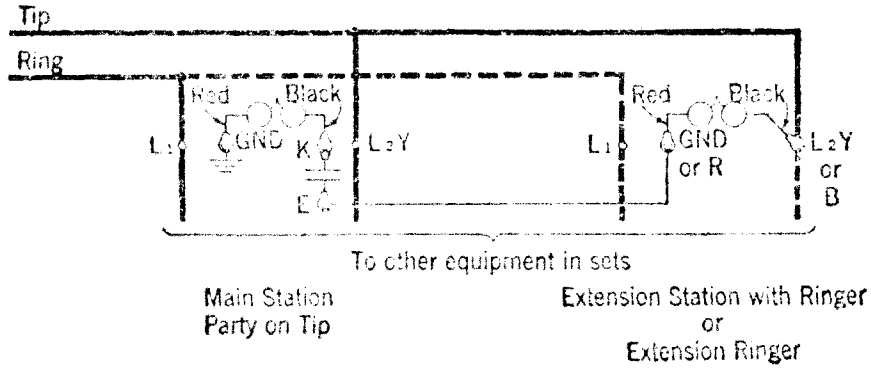


Fig. 15.

2.07 Four-Party Selective Stations—Manual and Dial.

— PARTY ON RING
(Low impedance ringers only)

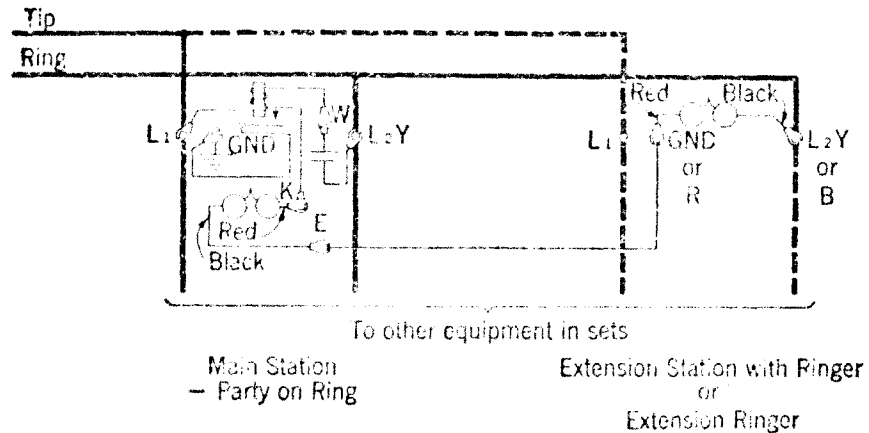


Fig. 16.

— PARTY ON TIP
(Low impedance ringers only)

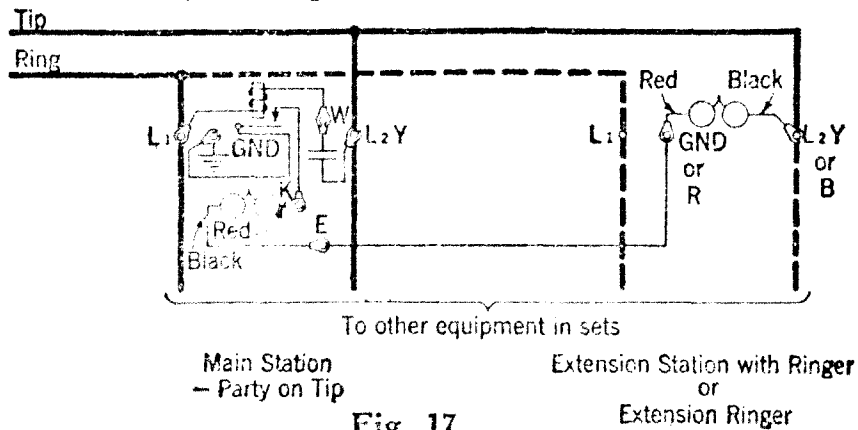


Fig. 17.

+ PARTY ON RING
(Low impedance ringers only)

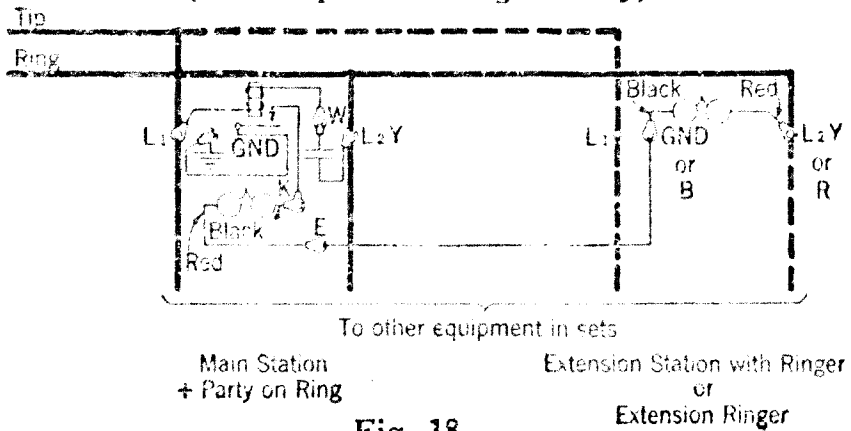


Fig. 18.

+ PARTY ON TIP
(Low impedance ringers only)

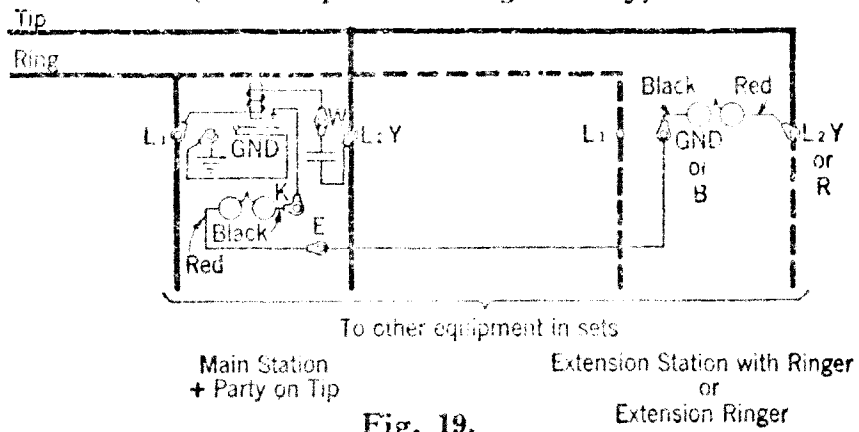


Fig. 19.

3. MAIN STATION AND 2 OR 3 EXTENSION STATIONS WITH RINGERS, MAIN STATION AND 2 OR 3 EXTENSION RINGERS, MAIN STATION AND EXTENSION STATIONS WITH EXTENSION RINGERS

3.01 Individual Line Stations (Including L.B.T., C.B.S.)—Manual and Dial.

All P.E.X. Stations (Including L.B.T., C.B.S.) Except as Covered by Note 1—Manual and Dial.

(Low impedance ringers only)

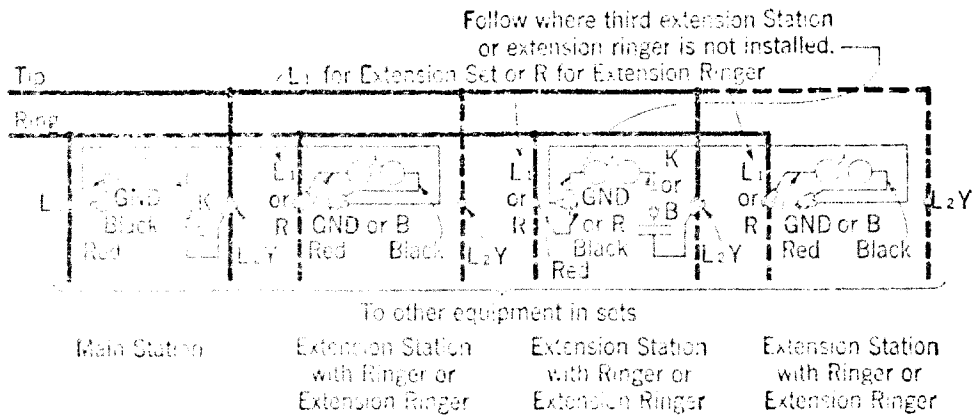


Fig. 20.

(High impedance ringers only)

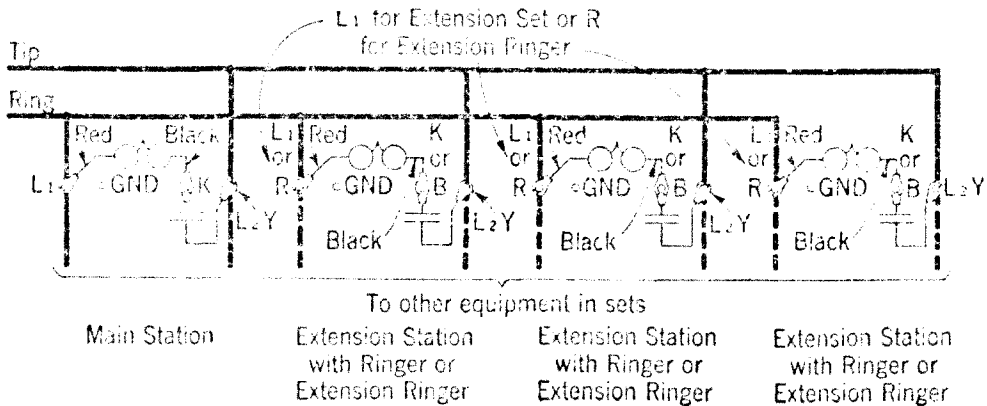


Fig. 21.

Note 1. Do not use Fig. 20 or Fig. 21 for P.B.X. stations arranged for night or through dial connections where there is an a.c. bridge in the P.B.X. circuit or for 750A P.B.X. stations.

3.02 Two-Party Selective Flat Rate Stations (Including L.B.T., C.B.S.)—Manual and Dial.

Two-Party Selective Message Rate Stations (Including L.B.T., C.B.S.)—Manual.

PARTY ON RING
(High impedance ringers only)

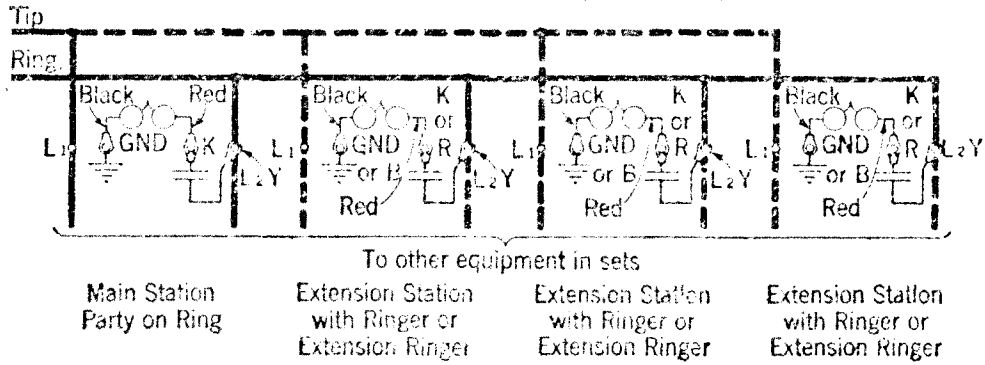


Fig. 22.

PARTY ON TIP
(High impedance ringers only)

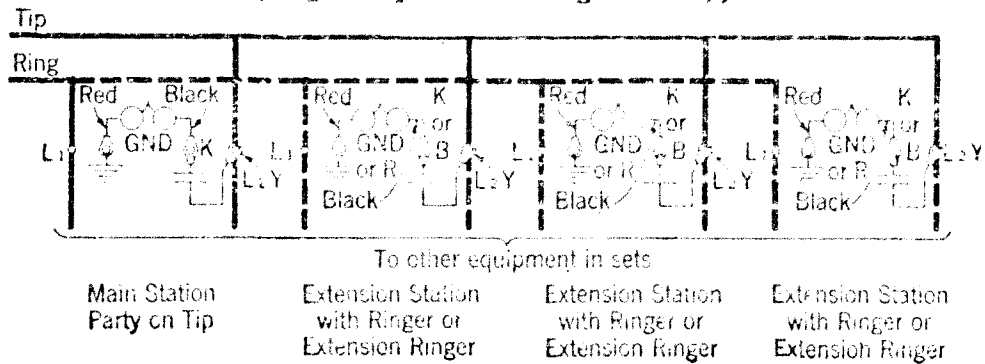


Fig. 23.

3. (Cont.) MAIN STATION AND 2 OR 3 EXTENSION STATIONS WITH RINGERS,
 MAIN STATION AND 2 OR 3 EXTENSION RINGERS,
 MAIN STATION AND EXTENSION STATIONS WITH
 EXTENSION RINGERS

3.03 Two-Party Selective Flat Rate Stations (Including
 L.B.T., C.B.S.)—Manual and Dial.

Two-Party Selective Message Rate Stations (Including
 L.B.T., C.B.S.)—Manual.

PARTY ON RING
 (Low impedance ringers only)

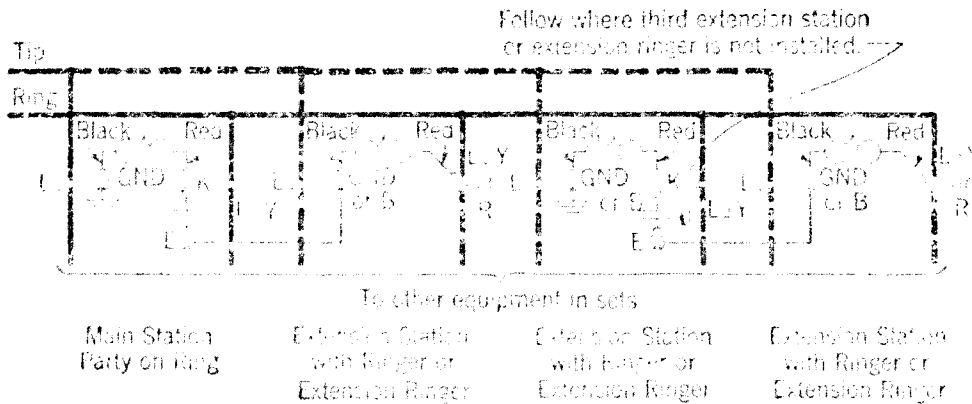


Fig. 24.

PARTY ON TIP
 (Low impedance ringers only)

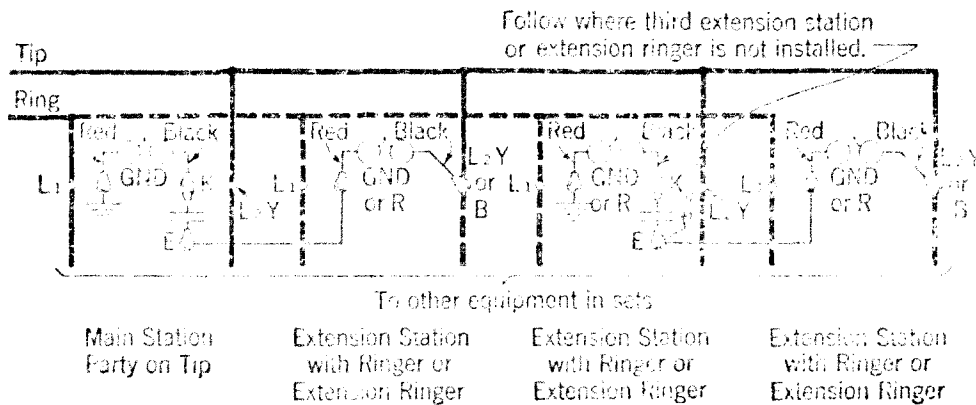


Fig. 25.

3.01 Two-Party Selective Message Rate Stations—Dial.

PARTY ON RING (Low impedance ringers only)

Follow where third extension station or extension ringer is not installed.

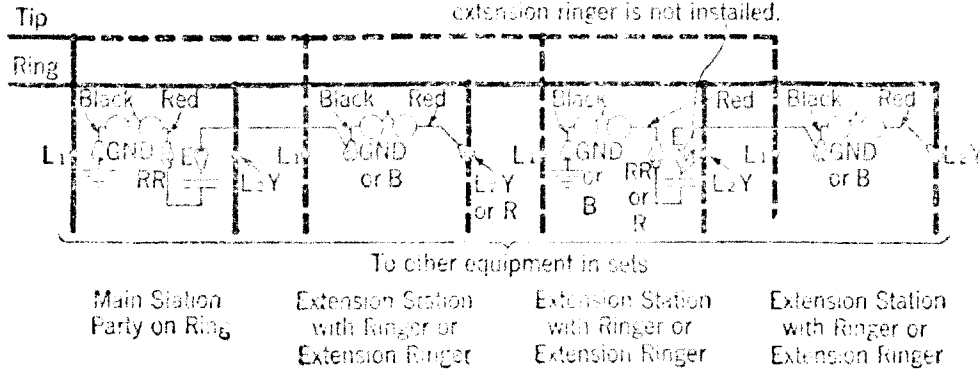


Fig. 26.

PARTY ON TIP (Low impedance ringers only)

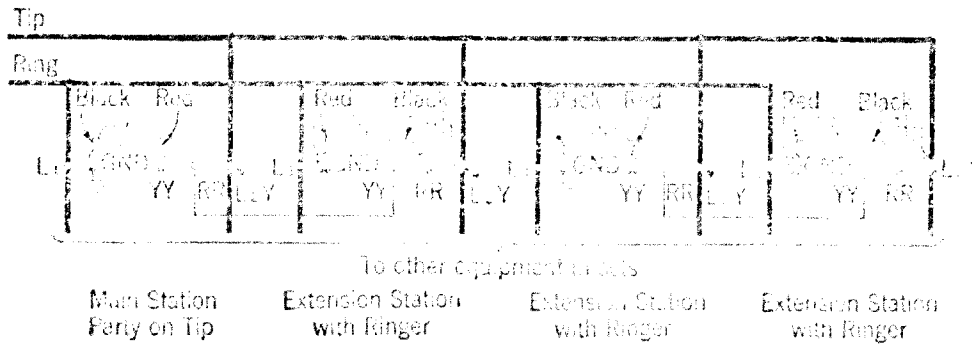


Fig. 27.

PARTY ON TIP (Low impedance ringers only)

Follow where third extension ringer is not installed.

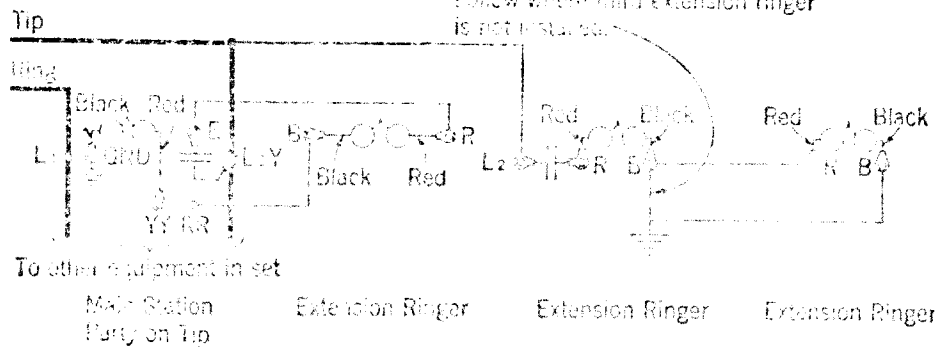


Fig. 28.

4. MAIN STATION AND 1, 2, 3 OR 4 EXTENSION STATIONS WITHOUT RINGERS

4.01 All Stations (Including L.B.T., C.B.S.) Except:
Two-Party Selective Message Rate Stations—Dial.
No. 750A P.B.X. Key and Control Stations—Dial.

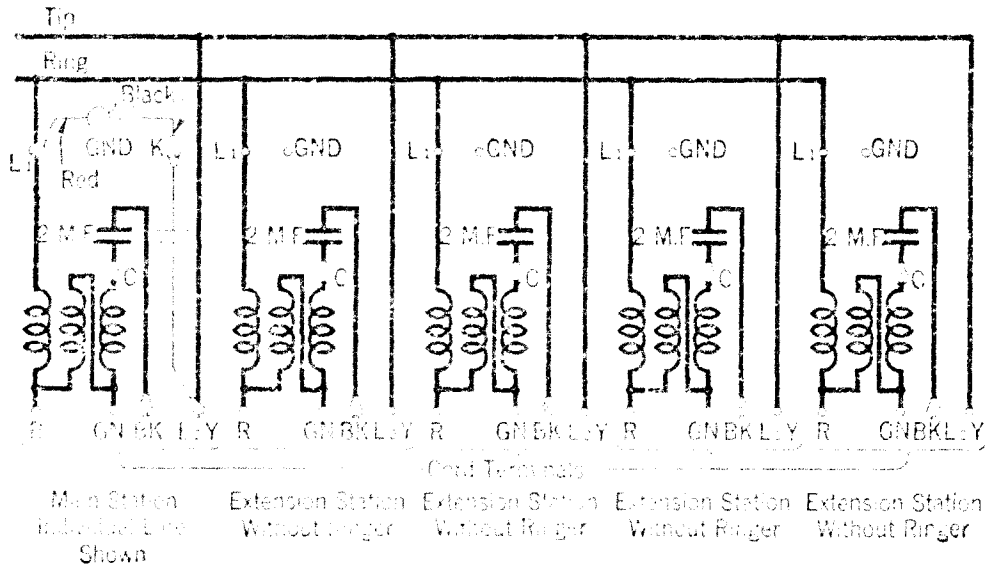


Fig. 29.

Note: Fig 29 shows the main station connections for an individual line but other classes of stations where extension stations without ringers are required should be connected in a similar manner, providing an induction coil and condenser in all cases.

If wall sets or sets with ringers are used for extension stations the ringers should be disconnected.

4.02 Two-Party Selective Message Rate Stations—Dial.

PARTY ON RING
(Low impedance ringers only)

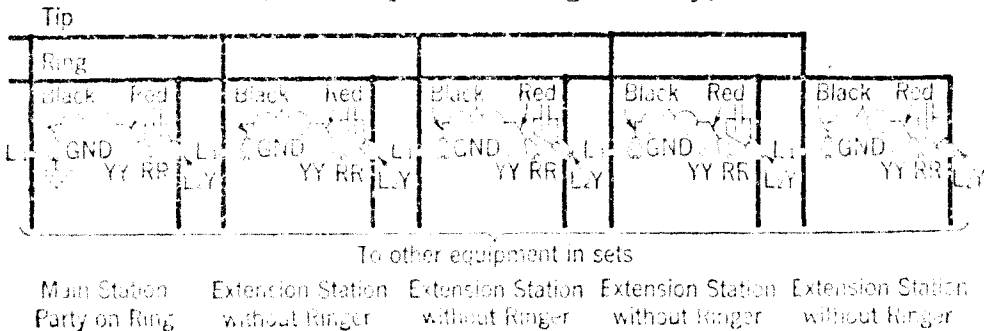


Fig. 30.

PARTY ON TIP
(Low impedance ringers only)

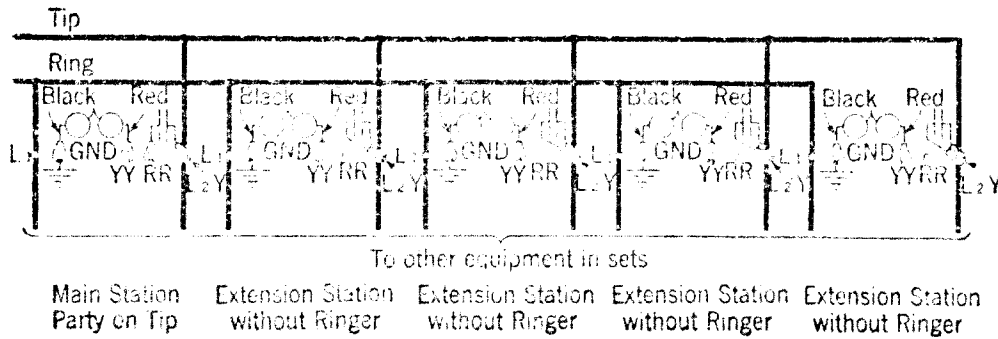


Fig. 31.

Note: The ringers of extension stations shown in Fig. 31 are for the Party Identification Test only.

4.03 No. 750A P.B.X. Key and Control Stations—Dial.

No extension stations
 should be provided.

5. LOUD RINGING BELLS

5.01 Maximum Number of Loud Ringing Bells Permitted:

CLASS OF SERVICE (Includes L.B.T., C.B.S.)	Normal Ringers at Station	Maximum Number of Loud Ringing Bells Permitted		
		High	Low 1mf. 2mf. See Note 2.	
Individual Line Stations	0	4	or 2	or 1
All P.B.X. Stations except as covered below	1 (high)	3	or 1	or 1
Two-Party Selective Plot Rate Stations—See Note 1	2 "	2	or 1	0
Two-Party Selective Plot Rate Stations—See Note 1	3 "	1	0	0
Two-Party Selective Mes- sage Rate Stations— Manual—See Note 1	1 (low)	2	or 1	0
Two-Party Selective Mes- sage Rate Stations— Manual—See Note 1	2 (low in series)	2	or 1	0
P.B.X. Stations for night or through-dial connections where there is an a.c. bridge in the P.B.X. circuit No. 750 A.P.B.X. call stations	0	2	or 1	0
Two-Party Selective Mes- sage Rate Stations—Dial	0	4	or 2	or 1
	1 (low)	See Note 3.		
	2 (low in series)	2	or 1	0
Four-Party Semi-Selective Stations—See Note 1	0	2	or 1	0
	1 (high)	1	0	0
Divided Code Ringing Sta- tions—See Note 1	0	1	0	0
Non-Selective Party Sta- tions—Manual	0	1	0	0
Four-Party Selective Stations	0	1	—	—
Eight-Party Semi-Selective Stations—See Note 1	0	1	—	—
		See Note 4.		

Note 1: When it is necessary for noise reasons to restrict the unbalance between two sides of a line, the excess of high impedance loud ringing bells or high impedance ringers or relays connected to ground on one side of the line should not be greater than one high impedance loud ringing bell and one high impedance ringer or relay.

Note 2: Recommended where conditions permit satisfactory performance. Under severe conditions use high impedance.

Note 3: High impedance loud ringing bells cannot be used on tip party stations where there is no normal ringer at the station because the tip party requires a 10 μ sec signal for the party identification test. Low impedance loud ringing bells can be used at tip party stations with no normal ringer if properly connected to give the party identification test.

Note 4: If there are four parties on one side of the line, only one of them can have a loud ringing bell. If there are only three parties on one side of the line, all of them may have loud ringing bells.

5.02 **Connections:** High impedance or low impedance loud ringing bells should not be connected in series with another ringer or loud ringing bell. The diagrams which follow show typical illustrations of the methods for connecting one loud ringing bell. Where additional loud ringing bells are required they should be connected in the same manner as the first one but the number used should not exceed the limitation shown in the previous table.

5.03 **Maximum Number of Loud Ringing Bells:** Where the maximum number of loud ringing bells is required and the normal ringer at the station can be disconnected, the loud ringing bell should be connected in place of it.

5.04 **Omitting Normal Ringer:** When the table shows that a normal ringer is not permitted when a loud ringing bell is required, the normal ringer should be disconnected and the loud ringing bell connected in place of it.

5.05 **Use of Main Set Condenser:** If a low impedance loud ringing bell is being used in place of a normal low impedance ringer as covered in 5.03 and 5.04, the unused 1 mfd. ringing condenser may be employed instead of adding a condenser for the loud ringing bell.

5.06 Individual Line Stations (Including L.B.T., C.B.S.)—
Manual and Dial.

All P.B.X. Stations (Including L.B.T., C.B.S.) Except as
Covered in Paragraph 5.09—Manual and Dial.

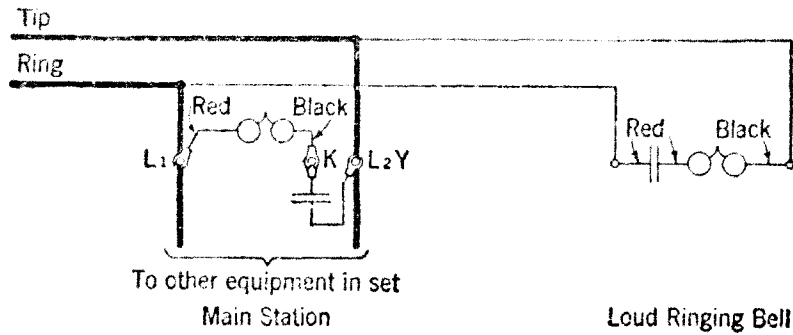


Fig. 32.

5.07 Two-Party Selective Flat Rate Stations (Including
L.B.T., C.B.S.)—Manual and Dial.

Two-Party Selective Message Rate Stations (Including
L.B.T., C.B.S.)—Manual.

Four-Party Semi-Selective Stations (Including L.B.T.,
C.B.S.)—Manual and Dial. (See Note 1.)

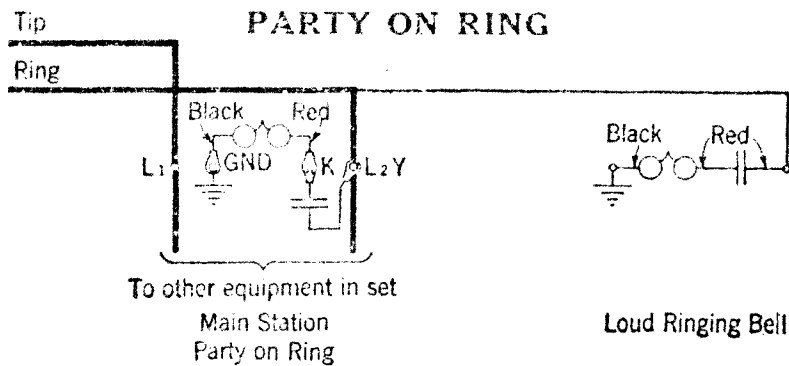


Fig. 33.

PARTY ON TIP

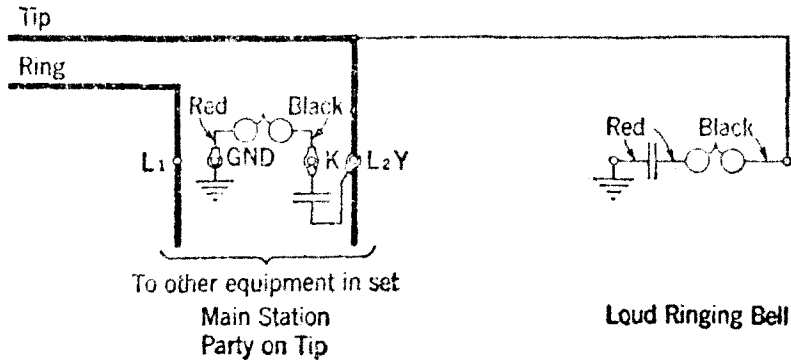


Fig. 34.

Note 1. If main station ringer or loud ringing bell is low impedance the main station ringer should be disconnected for four-party semi-selective stations.

5.08 Two-Party Selective Message Rate Stations—Dial.

PARTY ON RING

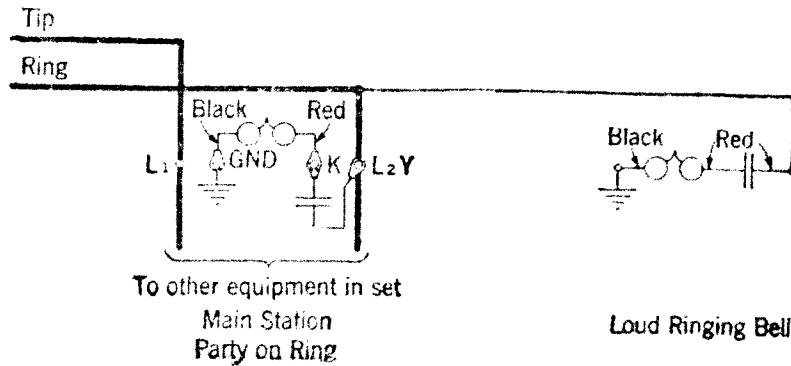


Fig. 35.

PARTY ON TIP

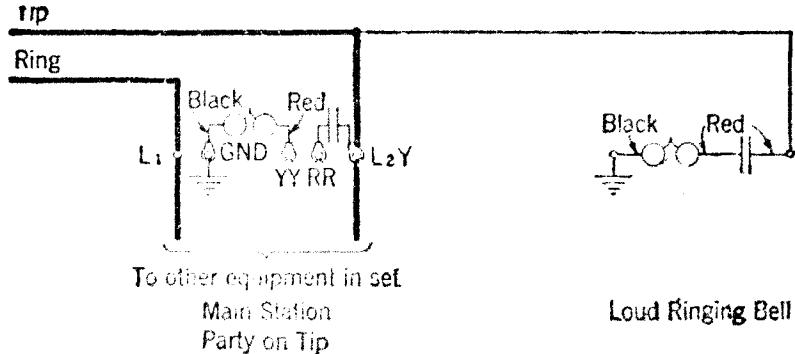


Fig. 36.

5.08 (Cont.) Two-Party Selective Message Rate Stations—
Dial.

PARTY ON TIP
(Low impedance loud ringing bell substituted for normal ringer)

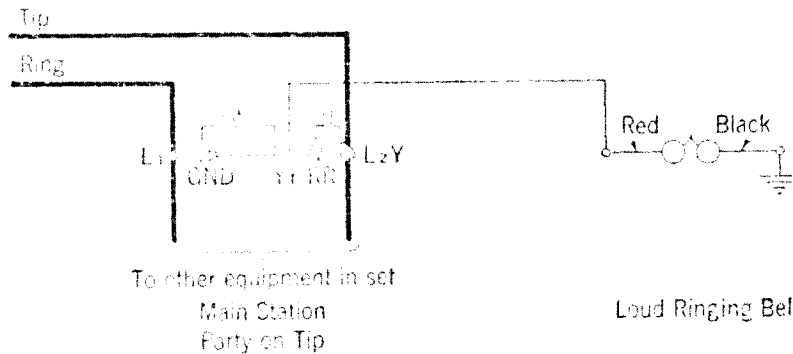


Fig. 37.

5.09 P.B.X. Stations (Including L.B.T., C.B.S.) for Night or
Through Dial Connections Where There Is an A.C.
Bridge in the P.B.X. Circuit—Manual and Dial.

No. 750A P.B.X. Stations—Dial.

Divided Code Ringing Stations (Including L.B.T.,
C.B.S.)—Manual and Dial.

Non-Selective Party Stations—Manual.

Connect Loud Ringing Bell in Place of Normal Ringer. Omitting the Condenser at the Main Station if one is provided with the Loud Ringing Bell. If Not Provided with the L. R. Bell, the Ringing Condenser in the Main Station Set May be Used if it is 1 m.f.

5.10 Four-Party Selective Stations—Manual and Dial.

Eight-Party Semi-Selective Stations (Including L.B.T.,
C.B.S.)—Manual and Dial.

Connect Loud Ringing Bell in Place of Normal Ringer.