

Supplement B (Replacing Supplement A)
(Insert this Supplement before Specifications 3859)

STATION WIRING PLANS

| Contents | Page |
|---|------|
| GENERAL | 4 |
| STATION APPARATUS | 4 |
| CLASSIFICATION AND DESCRIPTION OF PLANS..... | 8 |
| PLAN DIAGRAMS, LIMITS, USE, OPERATION AND CIRCUITS. | 9 |
| STATION APPARATUS INSTALLATION | 33 |
| STATION CONNECTIONS | 34 |
| STATION MAINTENANCE | 35 |
| BATTERY SUPPLY AND BATTERY FEEDER RESISTANCE..... | 39 |
| MODIFICATION OF PLANS—SPECIFICATIONS 3859..... | 40 |

(Copyright, 1930, by American Telephone and Telegraph Company)
Printed in U. S. A.

TABLE OF CONTENTS

| | SEC. | PAGE |
|--|------|------|
| GENERAL | 1 | 4 |
| STATION APPARATUS | 2 | 4 |
| CLASSIFICATION AND DESCRIPTION OF PLANS | | |
| Cutoff Plans | 3 | 8 |
| Intercommunicating Plans | 4 | 8 |
| Pick-up Plans | 5 | 8 |
| Summary of Plan Features..... | 6 | 8 |
| PLAN DIAGRAMS, LIMITS, USE, OPERATION AND CIRCUITS | | |
| Supplementing Plan Circuits—Sec. 13 | | |
| Specifications 3859..... | 7 | 9 |
| Diagram, Number of Lines, Stations and Bells, Station and Bell Combinations, Use, Operation and Circuits | 8 | 9 |
| STATION APPARATUS INSTALLATION | | |
| Amending Sec. 15—Specs. 3859..... | 9 | 33 |
| Supplementing Sec. 15—Specs. 3859..... | 10 | 33 |
| STATION CONNECTIONS | | |
| Supplementing Sec. 17—Specs. 3859..... | 11 | 34 |
| STATION MAINTENANCE | | |
| Apparatus Cabinet per ED-90389-01 Testing and Adjusting Relays | | |
| Wiring of Apparatus Units J-53001-A and J-53001-B | 12 | 35 |
| Automatic Cutoff and Holding Circuit..... | 13 | 35 |
| Automatic Cutoff and Holding Circuit..... | 14 | 38 |
| BATTERY SUPPLY AND BATTERY FEEDER RESISTANCE | | |
| General | 15 | 39 |
| Central Office Battery Supply..... | 16 | 39 |
| Local Battery Supply | 17 | 40 |
| MODIFICATION OF PLANS—SPECIFICATIONS 3859 | | |
| Plan 200 | 18 | 40 |
| Plan 401 | 19 | 40 |
| Relay Holding Circuit—Increased Range..... | 20 | 40 |

GENERAL

1. Reasons for Issuing Supplement

This supplement is issued to cover the following:

- (a) New plans and apparatus adopted.
- (b) Changes in methods covered in Specifications 3859 and Supplement A.

STATION APPARATUS

Replacing Section 1 Specifications 3859

2. The apparatus required for the work covered by Specifications 3859 and this supplement (other than desk stands, hand telephone sets and subscriber sets included in separate specifications or Bell System Practices) is given below in alphabetical order.

Apparatus Cabinet: **APPARATUS CABINET PER ED-90389-01.** Consists of a mahogany-walnut finished wooden box with a removable cover.

Contains a relay gate designed to mount one Apparatus Unit J-53001-A and two Apparatus Units J-53001-B. Used with Plans 107 and 108.

Apparatus Units: **J-53001-A APPARATUS UNIT.**

Consists of holding equipment for 1 line, automatic cut off equipment for 1 station and a terminal strip on a mounting plate. For wiring diagram see Sec. 13. Used with Plans 107 and 108.

J-53001-B APPARATUS UNIT.

Consists of automatic cut off equipment for 2 stations and a terminal strip on a mounting plate. For wiring diagram see Sec. 13. Used with Plans 107 and 108.

Battery Bag: **BATTERY BAG PER KS-6677.**

Canvas bag for holding 3 dry cells. For use where appearance or protection from moisture, metallic dust or exposure to other adverse conditions does not require a #1-A Battery Box to be used.

Battery Boxes: **#1-A BATTERY BOX.**

Metal box for holding 3 dry cells to provide current for operation of buzzer circuits.

#2-B BATTERY BOX.

Metal box for holding 9 dry cells to provide current for intercommunication.

Buzzer: BUZZER, A. T. & T. CO., DRAWING 705-678.

To be used with 3 dry cells for buzzer circuits.

Cords: #540 CORD.

For connecting dry cells together.

D3R CORD.

Three conductor switch cord. Used in Plan 401-A.

D5A CORD.

Five conductor desk stand cord. Used in Plan 401-A.

R2AH CORD.

Two conductor single head receiver cord. Used in Plan 401-A.

R2AS CORD.

Two conductor double head receiver cord. Used in Plan 400.

Head Bands: #1-B HEAD BAND.

Double head band. Used with two #528 receivers in Plan 400.

#11-A HEAD BAND.

Single head band. Used with one #528 receiver in Plan 401-A.

Instruction Cards:

SUBSCRIBERS' INSTRUCTION CARDS.

Left with subscriber when plan is installed.

| | | | |
|-----|-------------|-------|-------------|
| 100 |E-404 | 204 |E-412 |
| 101 |E-405 | 205 |E-1050 |
| 102 |E-406 | 206 |E-1050 |
| 107 |E-1046 | 207 |E-1051 |
| 108 |E-1047 | 208 |E-1052 |
| 110 |E-1048 | 209 |E-1053 |
| 111 |E-1049 | 210 |E-1054 |
| 150 |E-407 | 211 |E-1055 |
| 200 |E-408 | 300 |E-413 |
| 201 |E-409 | 400 |E-414 |
| 202 |E-410 | 401 |E-415 |
| 203 |E-411 | 401-A |E-415 |

Jack: #190 JACK.

Station jack. Used in Plan 400.

Keys: #6009-A KEY.

A mounted four button mechanically locking type key. Three lower buttons each make and break 2 sets of contacts. Top button makes 2 sets of contacts. Holding buttons (red) do not lock. Used in Plans 200 and 300.

REF ID: A66626
DIVISION**#6009-B KEY.**

A mounted five button mechanically locking type key. Four lower buttons each make and break 2 sets of contacts. Top button makes 2 sets of contacts. Holding buttons (red) do not lock. Used in Plans 108, 111, 201 and 202.

#6009-C KEY.

A mounted five button mechanically locking type key. All buttons make and break 2 sets of contacts. Used in Plans 205, 206, 208 and 211.

#6011-A KEY.

A mounted two button mechanically locking type key. Top button makes 2 sets of contacts. Bottom button (red) makes and breaks 2 sets of contacts and does not lock. Used in Plan 107.

#6012-A KEY.

Combination of three button mechanically locking type key and lever key in same mounting. Two lower buttons each make and break 2 sets of contacts. Top button and lever each make 2 sets of contacts. Holding button (red) does not lock. Used in Plan 102.

#6017-B KEY.

A mounted two position lever key making and breaking 2 sets of contacts. Used in Plans 100, 101, 102, 110, 111, 150, 207, 400 and 401.

#6017-D KEY.

A mounted two position lever key making and breaking 3 sets of contacts. Used in Plan 100.

#6017-E KEY.

A mounted three position lever key. Two positions each make and break 2 sets of contacts. Used in Plans 201, 203, 204, 207, 208, 209 and 210.

#6019-A KEY.

A mounted eight button mechanically locking type key. Seven lower buttons each make and break 2 sets of contacts. Top button makes 2 sets of contacts. Holding buttons (red) do not lock. Used in Plans 209, 210 and 211.

Key Mountings: #360 KEY MOUNTING.
For one push button. Used with buzzer circuits.

#361 KEY MOUNTING.
For two push buttons. Used with buzzer circuits.

Plugs: #148 PLUG.
Station plug used with double head receivers in Plan 400.

Push Button: PUSH BUTTON, A. T. & T. CO., DRAWING 705-679.
Used with buzzer circuits.

Receiver: #528 RECEIVER.
Used with Plans 400 and 401-A.

Retardation Coil: #160-A RETARDATION COIL.
#54-D Retardation Coil in a wooden box.
Used in Plans 108, 110, 111; 207 and 208.

Subscriber Sets: #541-A SUBSCRIBER SET.
One line talking, holding and intercommunicating set. Includes retardation coil and holding equipment in addition to a ringer, induction coil and 2 condensers. For wiring diagram see Sec. 22 of Specifications 3859. Used with Plans 102, 111, 209 and 210.

#542-A SUBSCRIBER SET.
Two line talking, holding and intercommunicating set. Includes retardation coil and holding equipment in addition to two ringers, induction coil and three condensers. For wiring diagram see Sec. 22 of Specifications 3859. Used with Plans 200, 201, 202, 209, 210 and 211.

#544-A SUBSCRIBER SET.
Listening in set. Consists of a repeating coil and condenser. For wiring diagram see Sec. 22 of Specifications 3859. Used with Plan 400.

Switch: #2047 SWITCH.
Two position indicating snap switch making and breaking one set of contacts. Used in Plan 150.

CLASSIFICATION AND DESCRIPTION OF PLANS

The new wiring plans adopted are divided into the following general groups.

3. Cut-off Plans

Plans 107 and 108 provide automatic cut-off features arranged so that certain stations are cut off by relay operation when other stations are using the line. Both plans are provided with holding and Plan 108 is also arranged for intercommunication.

4. Intercommunicating Plans

Plans 110 and 111 provide intercommunicating arrangements associated with one C.O. or P.B.X. line. Holding is also provided with Plan 111.

5. Pickup Plans

Plans 205 to 211 provide keys at certain stations so that these stations may pick up any of 2, 3, 4 or 5 lines. Holding and intercommunicating features are provided with certain of these plans.

6. Summary of Plan Features

The various features of the plans covered in this supplement are summarized below:

| Plan | No. of Stations | | No. of Bells | | Cut Off | Pick Up | Hold- ing | Inter-Com- muni- cation |
|--------|--|-----------|--------------|------------|---------|---------|-----------|-------------------------|
| | Lines | Min. Max. | Min. | Max.* | | | | |
| 107 | 1 | 2...5 | 1 | 4 | Yes | No | Yes | No |
| 108 | 1 | 2...5 | 1 | 4 | Yes | No | Yes | Yes |
| 110 | 1 | 2...5 | 1 | 4 | No | No | No | Yes |
| 111 | 1 | 2...5 | 1 | 4 | No | No | Yes | Yes |
| 205 | 4 | 4...** | 1 per line | 4 per line | No | Yes | No | No |
| 206 | 5 | 5...** | 1 per line | 4 per line | No | Yes | No | No |
| 207 | 2 | 2...** | 1 per line | 4 per line | No | Yes | No | Yes |
| 208 | 3 | 3...** | 1 per line | 4 per line | No | Yes | No | Yes |
| 209 | 3 | 1...** | 1 per line | 4 per line | No | Yes | Yes | No |
| 210 | 3 | 2...** | 1 per line | 4 per line | No | Yes | Yes | Yes |
| 211 | 4 | 1...† | 1 per line | 4 per line | No | Yes | Yes | No |
| 401-A† | Key connects either hand or head receiver. | | | | | | | |

* See Section 17, Specifications 3859.

** See station and bell combinations, Sec. 8.

† See Section 20.

PLAN DIAGRAMS, LIMITS, USE, OPERATION AND CIRCUITS

7. Supplementing Plan Circuits—Sec. 13, Specs. 3859

Use one No. 554-C set (in place of the combination of one No. 534-C set and one No. 534-D set) at the following stations, unless bell must be wired in series with bell and condenser at another station:

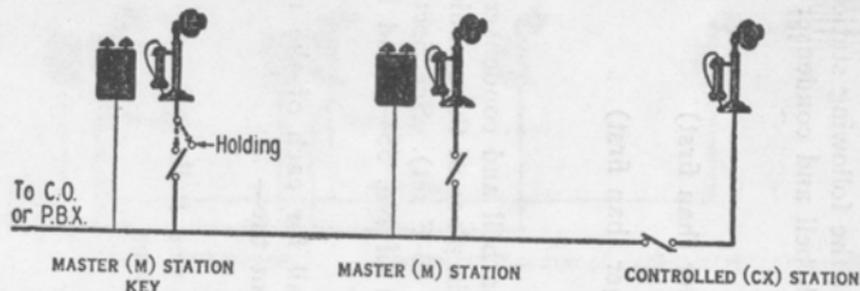
| | |
|----------|------------------------------|
| Plan 102 | C Station |
| " 200 | M Station (other than first) |
| " 201 | C Station |
| " 202 | M Station (other than first) |
| " 203 | M Stations |
| " 204 | M Stations |

If bell must be wired in series with a bell and condenser at another station use one No. 584-A set (in place of the combination of one No. 534-C set and one No. 43-F set). See Section 11 of this supplement for connections of No. 554-C and No. 584-A sets.

8. The following pages give in detail for each of the new wiring plans adopted in this supplement the—

Diagram
Number of Lines, Stations and Bells
Station and Bell Combinations
Use
Operation and
Circuits

PLAN 107-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) M, CX |
|-----------------|--------------------|---------|-----------------|---------|---|
| | Minimum | Maximum | Minimum | Maximum | |
| 1 | 2 | 5 | 1 | 4 | |

Use

Where subscriber requires one C.O. or P.B.X. line and two or more stations and desires that certain stations be automatically cut off when other stations are using the line. To enable the transfer of calls, holding is provided, but the plan may, if desired, be installed without holding.

Operation

M stations automatically cut off other M and C stations and may, if desired, hold the line.

If holding is provided the M station has a #6011-A key.

With the #6011-A key normal, the associated M station is disconnected from the line.

Operating the top button connects the station to the line.

Operating the bottom button holds the line.

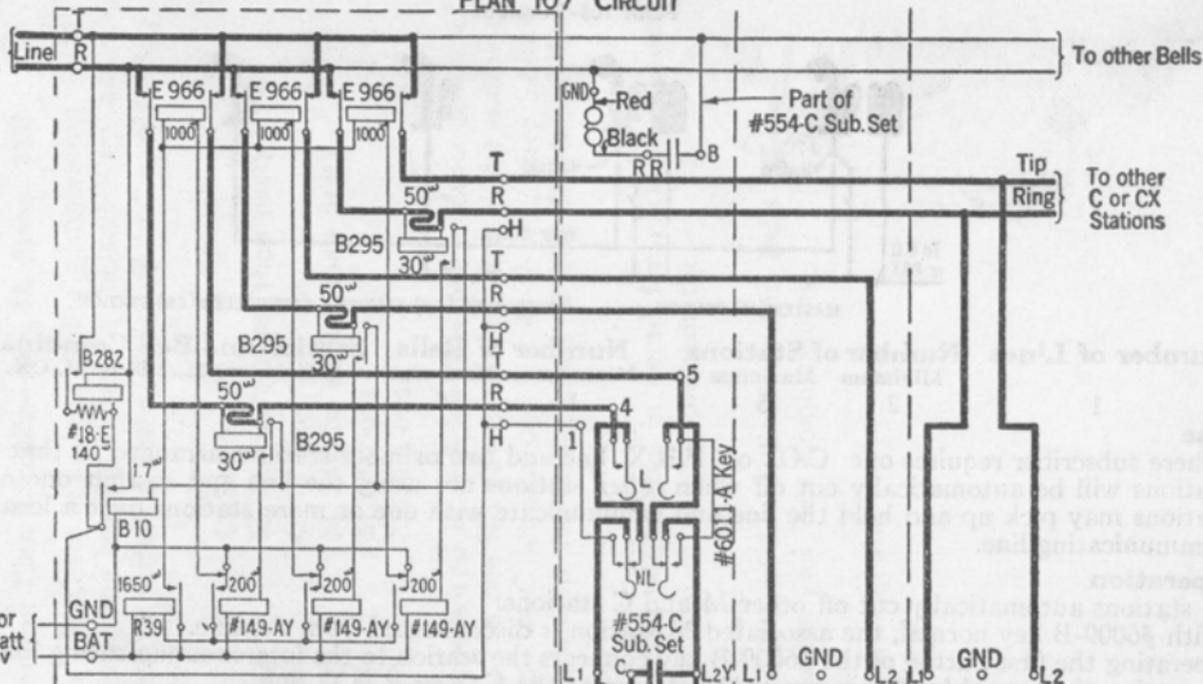
C stations automatically cut off M stations but do not cut off other C stations.

For explanation of operation of automatic cut-off and holding circuit see Sec. 14.

*Additional M, MX, C or CX stations may be installed provided the limit of 5 stations and 4 bells is not exceeded. L or LX stations shall not be provided. For extension bells see Sec. 18 Specs. 3859.

PLAN 107 CIRCUIT

To C.O.
or P.B.X.



To C.O. or
Local Batt
14-26V

Apparatus Cabinet per ED-90389-01

L1
R
GN
To Desk Stand
or Hand Set

L1
GND
#554-C, #584-A
or #584-C
Sub.Set
See Sec. II

L2
GND
#554-C, #584-A
or #584-C
Sub.Set
See Sec. II

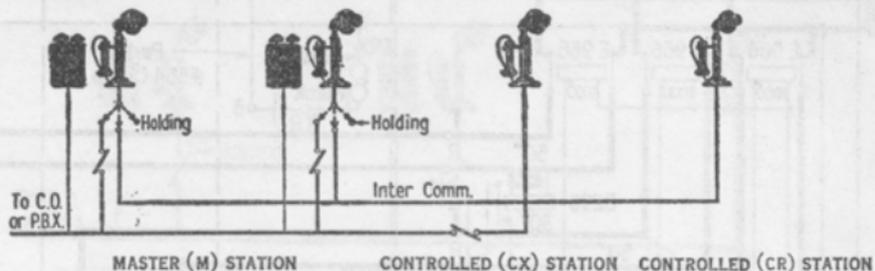
M Station

M or MX Station

C or CX Station

STATION
WIRING
PLANS

PLAN 108-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) M, MX or M, CX, CR |
|-----------------|--------------------|---------|-----------------|---------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 1 | 2 | 5 | 1 | 4 | |

Use

Where subscriber requires one C.O. or P.B.X. line and two or more stations arranged so that certain stations will be automatically cut off when other stations are using the line and so that one or more stations may pick up and hold the line and communicate with one or more stations over a local intercommunicating line.

Operation

M stations automatically cut off other M and C stations.

With #6009-B key normal, the associated M station is disconnected from the line.

Operating the first button of the #6009-B key connects the station to the intercommunicating line.

Operating the second button connects the station to the C.O. or P.B.X. line.

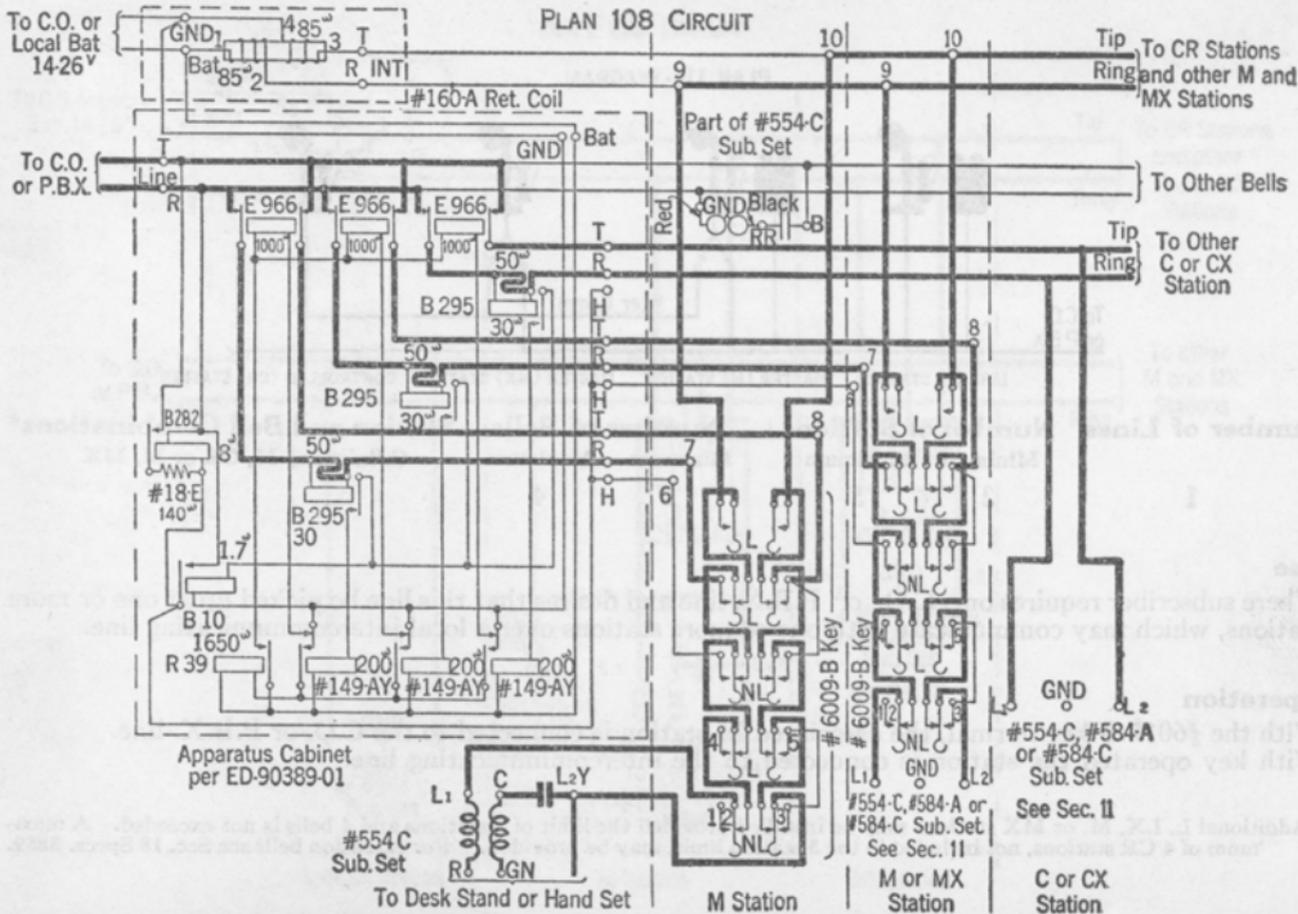
Operating the third button holds the C.O. or P.B.X. line.

The fourth and fifth buttons are not wired to any circuits.

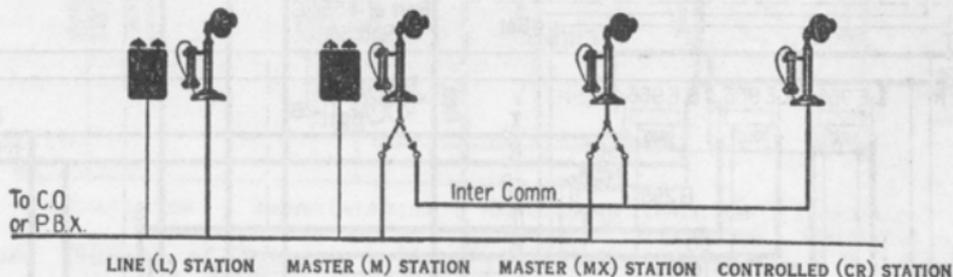
C stations automatically cut off M stations but do not cut off other C stations.

For explanation of operation of automatic cut-off and holding circuit see Sec. 14.

*Additional M, MX, C or CX stations may be installed provided the limit of 5 stations and 4 bells is not exceeded. A maximum of 4 CR stations not included in the 5 station limit may be provided. L or LX stations shall not be provided. For extension bells see Sec. 18 Specifications 3859.



PLAN 110-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) M, CR or M, MX |
|-----------------|--------------------|---------|-----------------|---------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 1 | 2 | 5 | 1 | 4 | |

Use

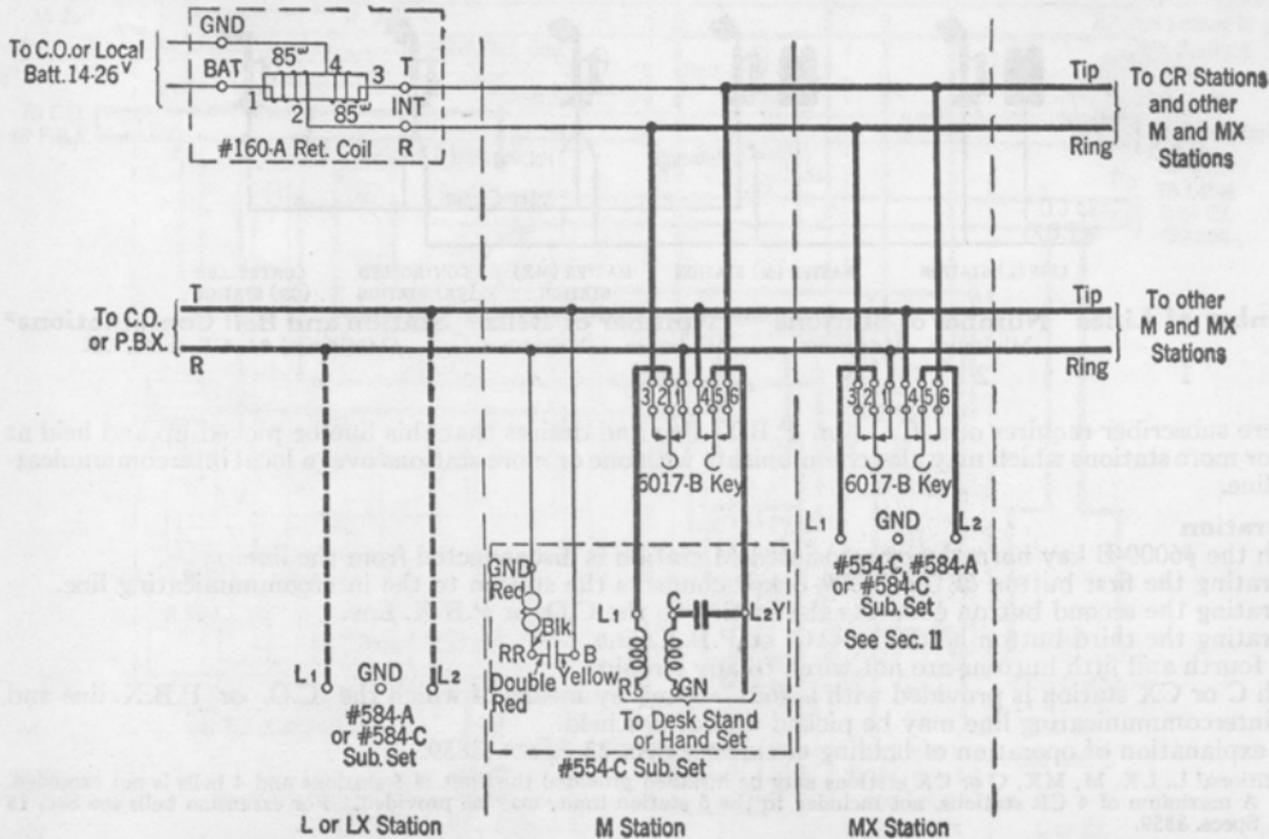
Where subscriber requires one C.O. or P.B.X. line and desires that this line be picked up at one or more stations, which may communicate with one or more stations over a local intercommunicating line.

Operation

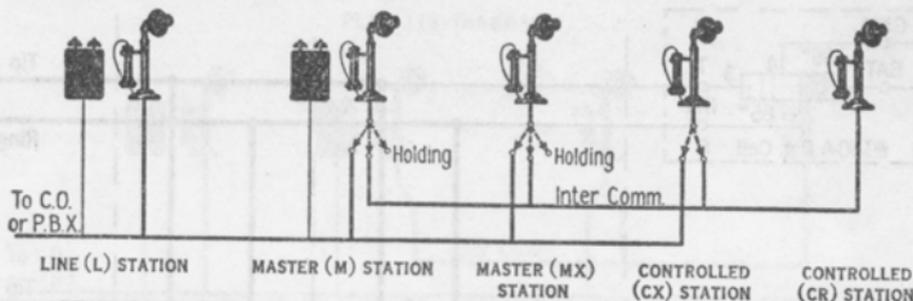
With the #6017-B key normal, the associated M station is connected to the C.O. or P.B.X. line. With key operated the station is connected to the intercommunicating line.

*Additional L, LX, M, or MX stations may be installed provided the limit of 5 stations and 4 bells is not exceeded. A maximum of 4 CR stations, not included in the 5 station limit, may be provided. For extension bells see Sec. 18 Specs. 3859.

PLAN 110 CIRCUIT



PLAN 111-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) M, CR or M, CX |
|-----------------|--------------------|---------|-----------------|---------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 1 | 2 | 5 | 1 | 4 | |

Use

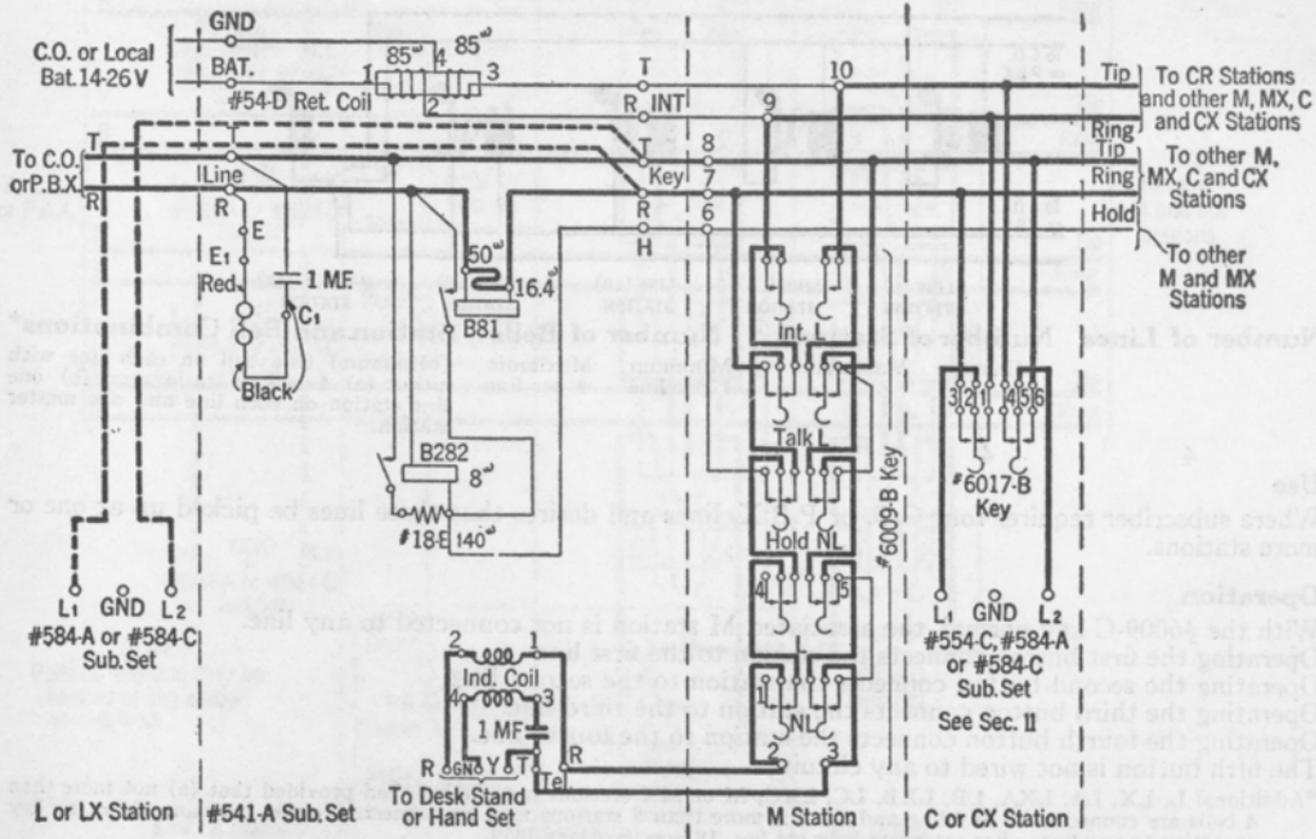
Where subscriber requires one C.O. or P.B.X. line and desires that this line be picked up and held at one or more stations which may also communicate with one or more stations over a local intercommunicating line.

Operation

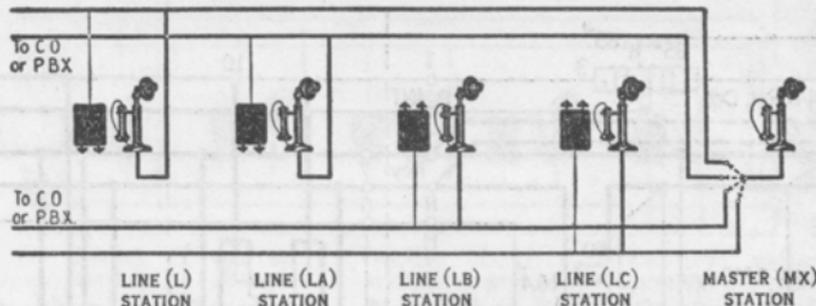
With the #6009-B key normal, the associated M station is disconnected from the line. Operating the first button of the #6009-B key connects the station to the intercommunicating line. Operating the second button connects the station to the C.O. or P.B.X. line. Operating the third button holds the C.O. or P.B.X. line. The fourth and fifth buttons are not wired to any circuits. Each C or CX station is provided with a #6017-B key by means of which the C.O. or P.B.X. line and the intercommunicating line may be picked up but not held. For explanation of operation of holding circuit see Sec. 23 Specs. 3859.

*Additional L, LX, M, MX, C or CX stations may be installed provided the limit of 5 stations and 4 bells is not exceeded. A maximum of 4 CR stations, not included in the 5 station limit, may be provided. For extension bells see Sec. 18 Specs. 3859.

PLAN 111 CIRCUIT



PLAN 205-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* |
|-----------------|--------------------|---------|-----------------|------------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 4 | 4 | * | 1 per line | 4 per line | (Minimum) One bell on each line with either (a) 4 master stations or (b) one line station on each line and one master station. |

Use

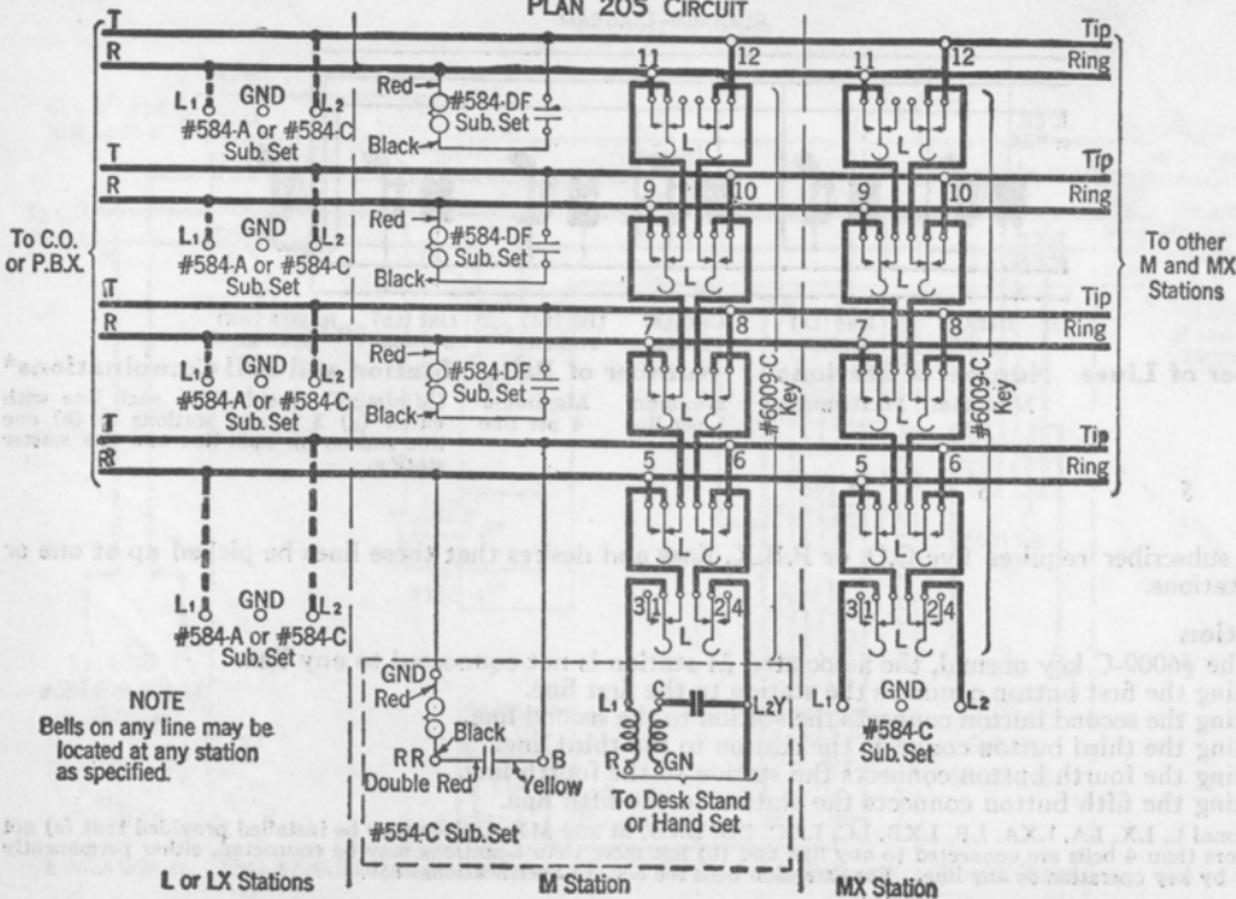
Where subscriber requires four C.O. or P.B.X. lines and desires that these lines be picked up at one or more stations.

Operation

- With the #6009-C key normal, the associated M station is not connected to any line.
- Operating the first button connects the station to the first line.
- Operating the second button connects the station to the second line.
- Operating the third button connects the station to the third line.
- Operating the fourth button connects the station to the fourth line.
- The fifth button is not wired to any circuit.

*Additional L, LX, LA, LXA, LB, LXB, LC, LXC, M or MX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected, either permanently or by key operation to any line. For extension bells see Sec. 18 Specifications 3859.

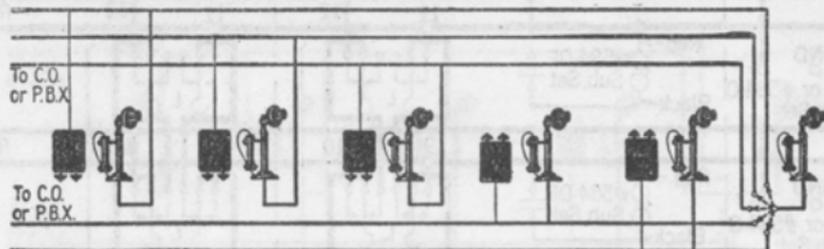
PLAN 205 CIRCUIT



NOTE
Bells on any line may be located at any station as specified.

STATION
WIRING
PLANS

PLAN 206-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) One bell on each line with either (a) 5 master stations or (b) one line station on each line and one master station. |
|-----------------|--------------------|---------|-----------------|------------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 5 | 5 | * | 1 per line | 4 per line | |

Use

Where subscriber requires five C.O. or P.B.X. lines and desires that these lines be picked up at one or more stations.

Operation

With the #6009-C key normal, the associated M station is not connected to any line.

Operating the first button connects the station to the first line.

Operating the second button connects the station to the second line.

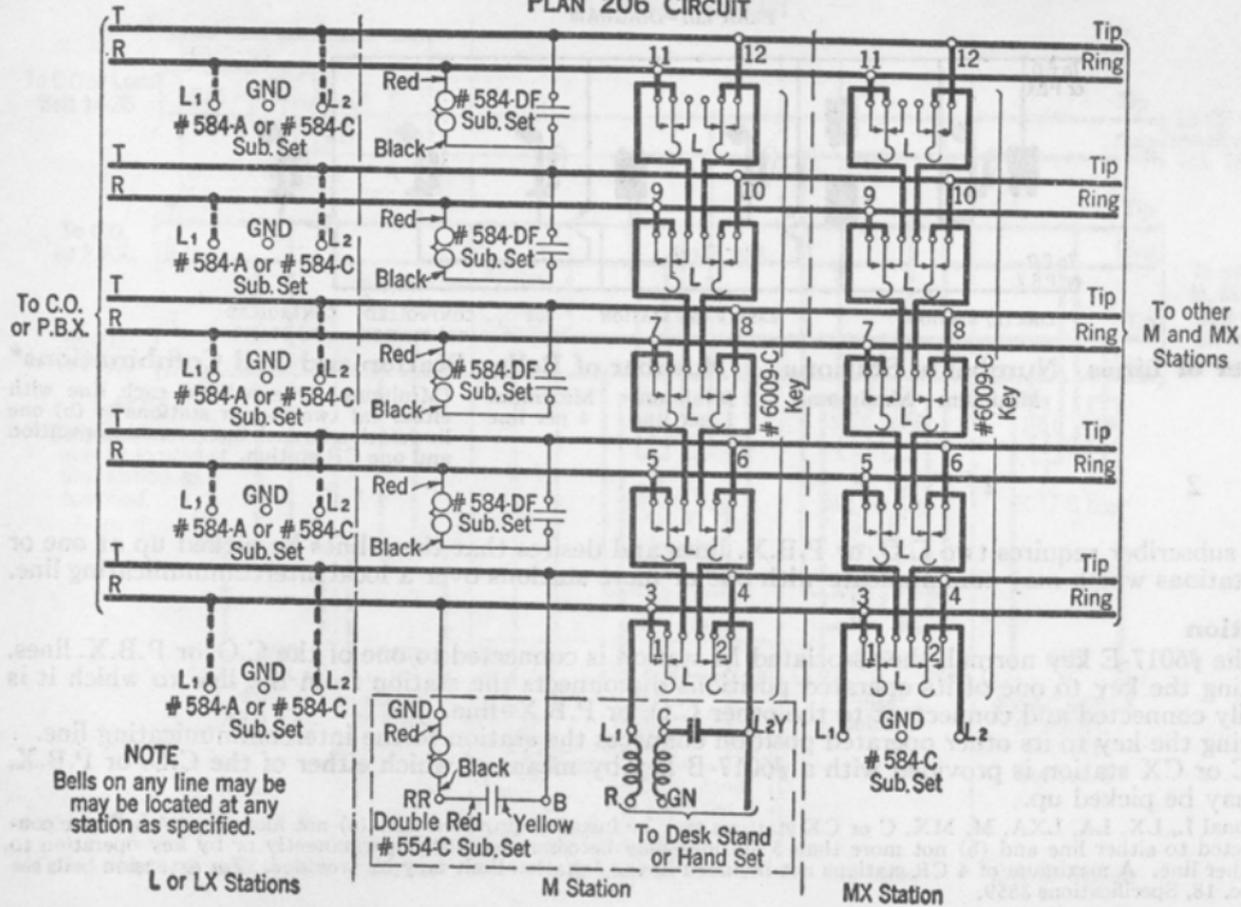
Operating the third button connects the station to the third line.

Operating the fourth button connects the station to the fourth line.

Operating the fifth button connects the station to the fifth line.

*Additional L, LX, LA, LXA, LB, LXB, LC, LXC, LD, LXD, M and MX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected, either permanently or by key operation to any line. For extension bells see Sec. 18 Specifications 3859.

PLAN 206 CIRCUIT



To C.O. or P.B.X.

To other M and MX Stations

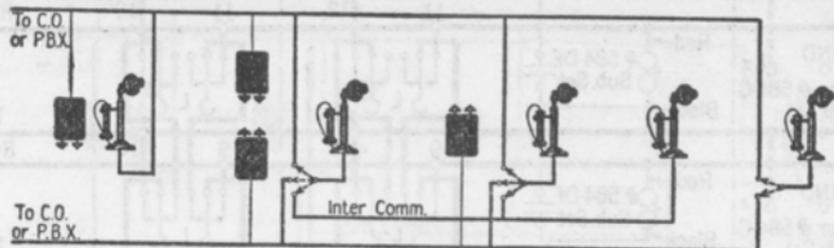
NOTE
Bells on any line may be located at any station as specified.

L or LX Stations

M Station

MX Station

PLAN 207-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) One bell on each line with either (a) two master stations or (b) one line station on each line, one master station and one CR station. |
|-----------------|--------------------|---------|-----------------------|-----------------------|--|
| | Minimum | Maximum | Minimum 1 per line | Maximum 4 per line | |
| 2 | 2 | * | | | |

Use

Where subscriber requires two C.O. or P.B.X. lines and desires that these lines be picked up at one or more stations which may communicate with one or more stations over a local intercommunicating line.

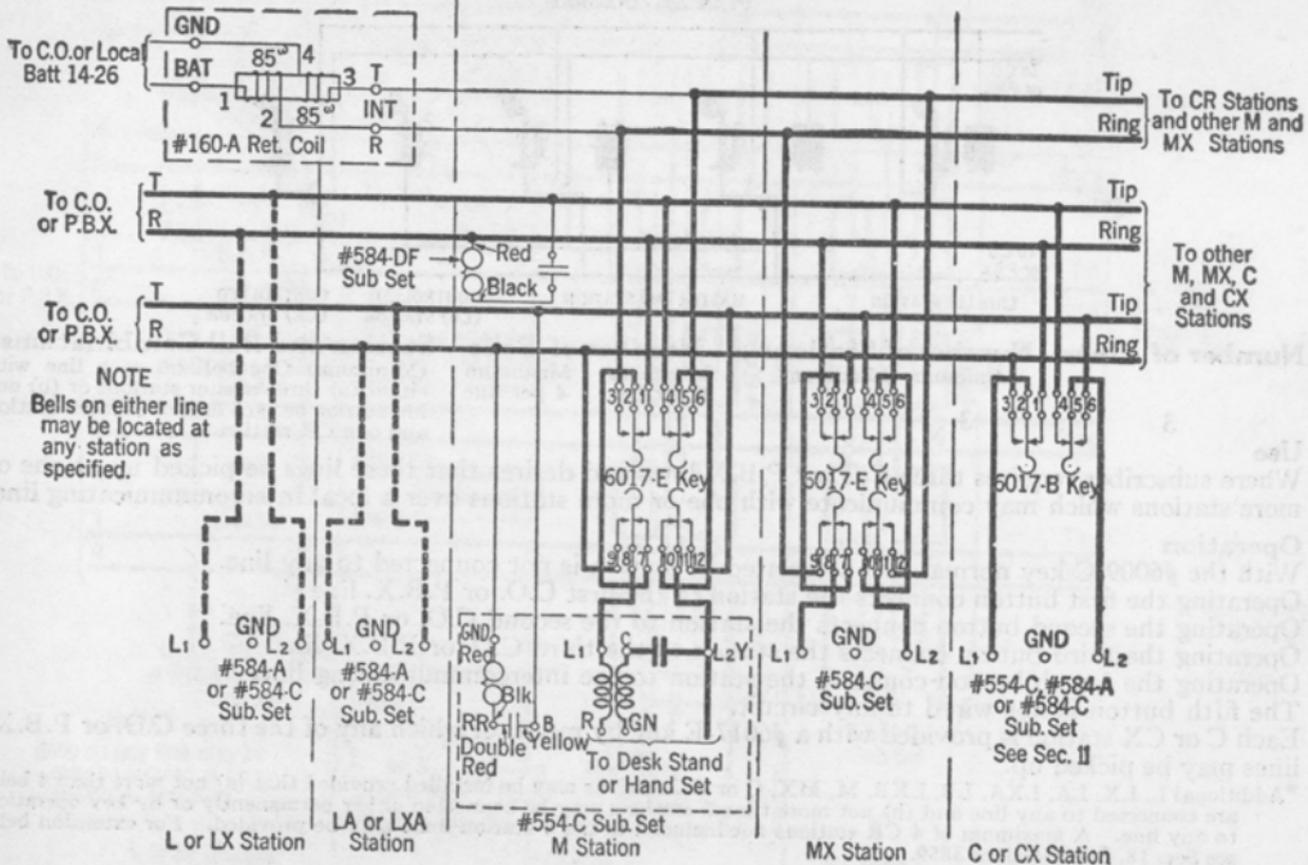
Operation

With the #6017-E key normal, the associated M station is connected to one of the C.O. or P.B.X. lines. Operating the key to one of its operated positions disconnects the station from the line to which it is normally connected and connects it to the other C.O. or P.B.X. line.

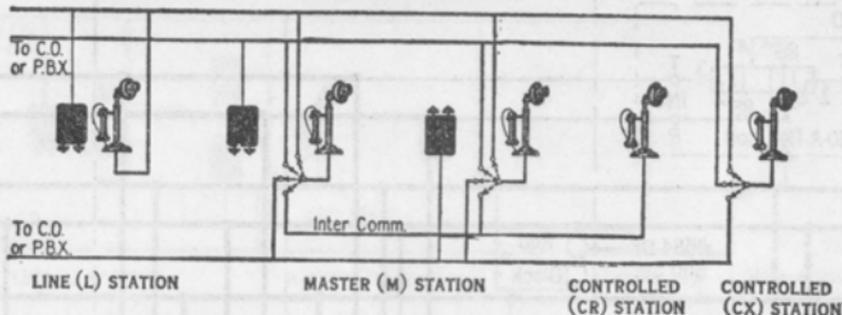
Operating the key to its other operated position connects the station to the intercommunicating line. Each C or CX station is provided with a #6017-B key by means of which either of the C.O. or P.B.X. lines may be picked up.

*Additional L, LX, LA, LXA, M, MX, C or CX stations may be installed provided that (a) not more than 4 bells are connected to either line and (b) not more than 5 stations may be connected either permanently or by key operation to either line. A maximum of 4 CR stations not included in the 5 station limit may be provided. For extension bells see Sec. 18, Specifications 3859.

PLAN 207 CIRCUIT



PLAN 208-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* |
|-----------------|--------------------|---------|-----------------|------------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 3 | 3 | * | 1 per line | 4 per line | (Minimum) One bell on each line with either (a) three master stations or (b) one line station on each line, one master station and one CR station. |

Use

Where subscriber requires three C.O. or P.B.X. lines and desires that these lines be picked up at one or more stations which may communicate with one or more stations over a local intercommunicating line.

Operation

With the #6009-C key normal, the associated M station is not connected to any line.

Operating the first button connects the station to the first C.O. or P.B.X. line.

Operating the second button connects the station to the second C.O. or P.B.X. line.

Operating the third button connects the station to the third C.O. or P.B.X. line.

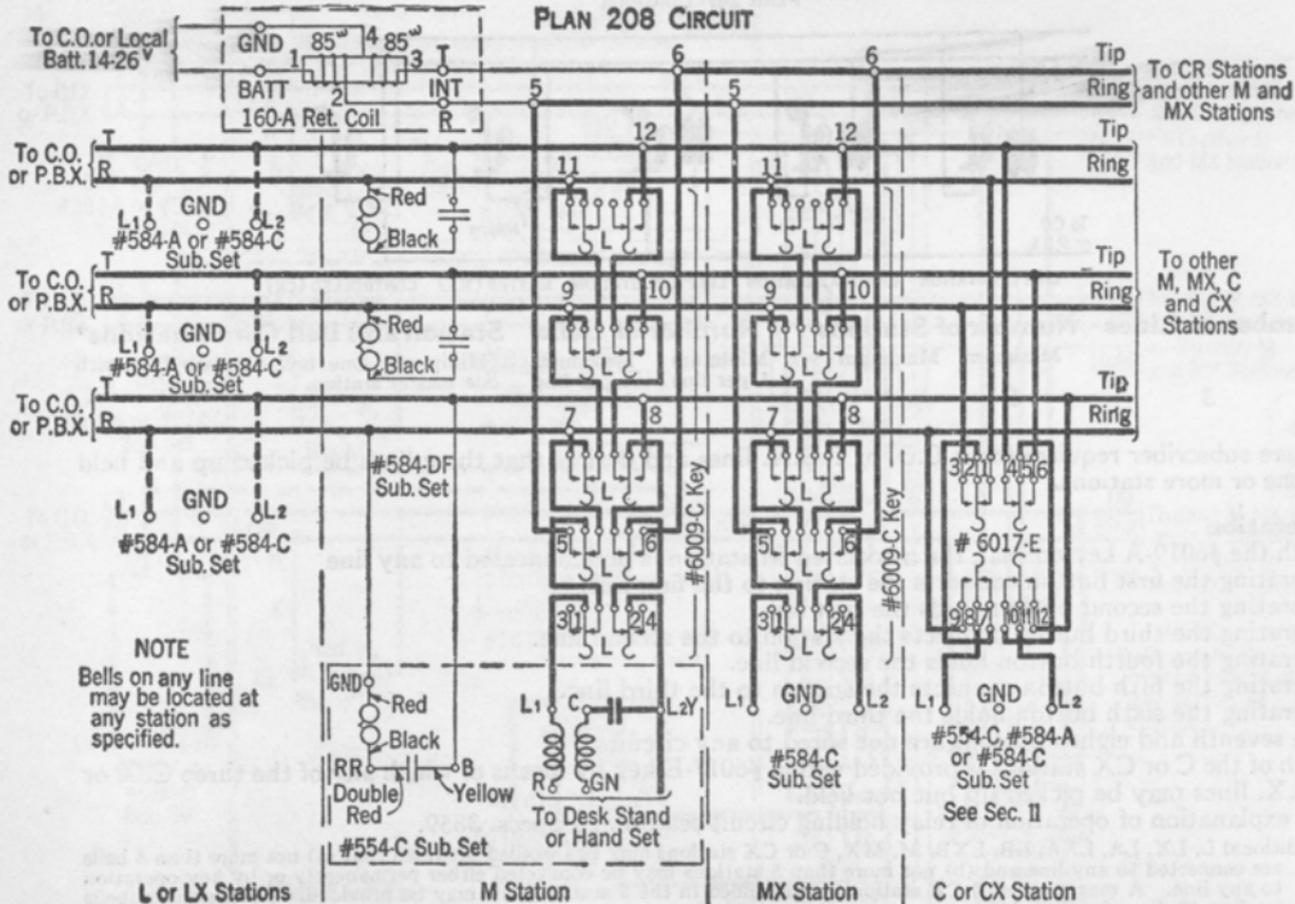
Operating the fourth button connects the station to the intercommunicating line.

The fifth button is not wired to any circuit.

Each C or CX station is provided with a #6017-E key by means of which any of the three C.O. or P.B.X. lines may be picked up.

*Additional L, LX, LA, LXA, LB, LXB, M, MX, C or CX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected either permanently or by key operation to any line. A maximum of 4 CR stations not included in the 5 station limit may be provided. For extension bells see Sec. 18, Specifications 3859.

PLAN 208 CIRCUIT



NOTE
Bells on any line
may be located at
any station as
specified.

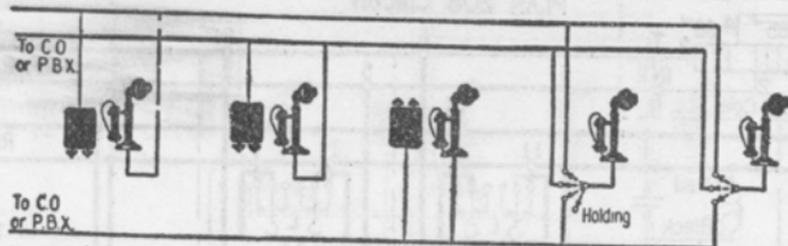
L or LX Stations

M Station

MX Station

C or CX Station

PLAN 209-DIAGRAM*



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* |
|-----------------|--------------------|---------|-----------------|------------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 3 | 1 | * | 1 per line | 4 per line | (Minimum) One bell on each line with one master station. |

Use

Where subscriber requires three C.O. or P.B.X. lines and desires that these lines be picked up and held at one or more stations.

Operation

With the #6019-A key normal, the associated M station is not connected to any line

Operating the first button connects the station to the first line.

Operating the second button holds the first line.

Operating the third button connects the station to the second line.

Operating the fourth button holds the second line.

Operating the fifth button connects the station to the third line.

Operating the sixth button holds the third line.

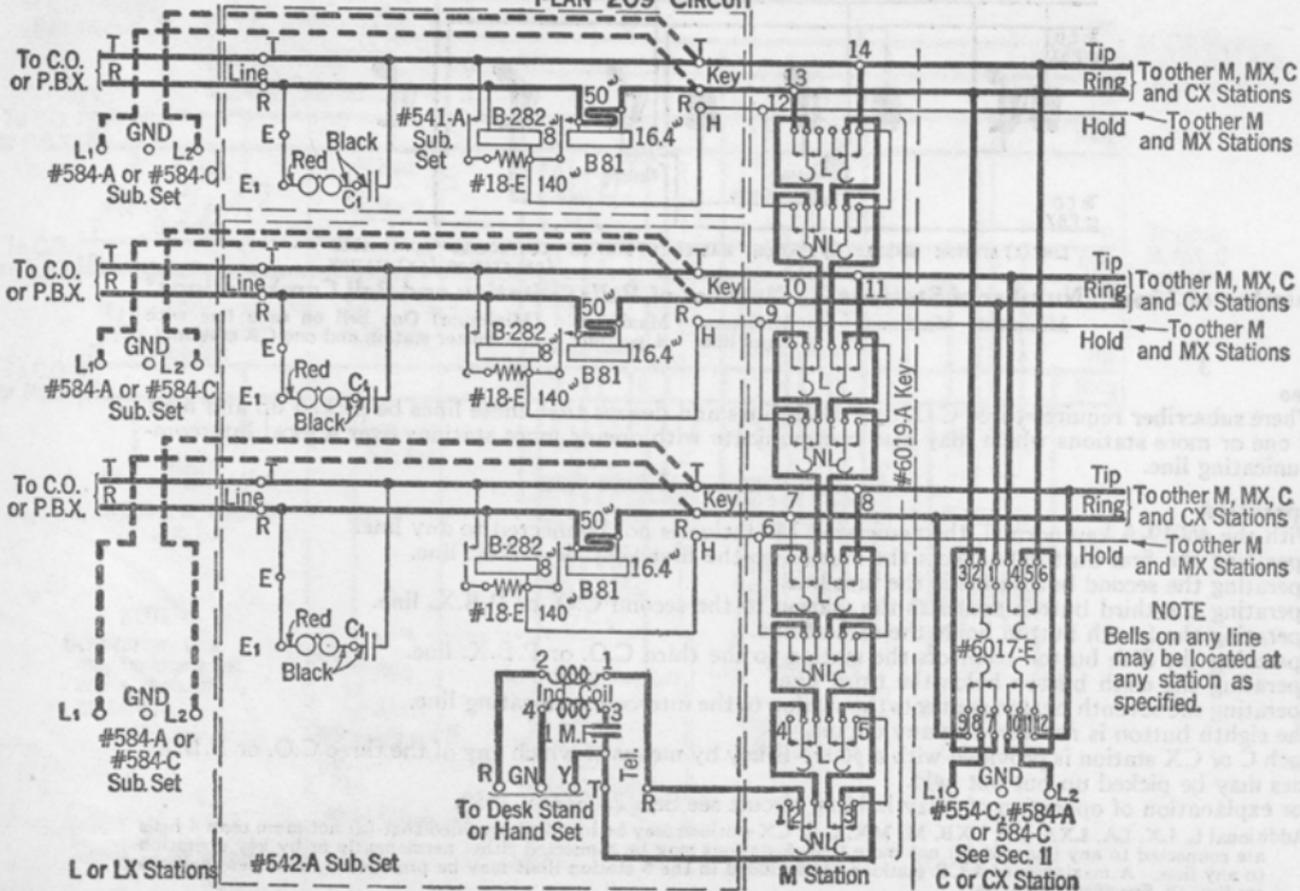
The seventh and eighth buttons are not wired to any circuits.

Each of the C or CX stations is provided with a #6017-E key by means of which any of the three C.O. or P.B.X. lines may be picked up but not held.

For explanation of operation of relay holding circuit see Sec. 23 Specs. 3859.

*Additional L, LX, LA, LXA, LB, LXB, M, MX, C or CX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected either permanently or by key operation to any line. A maximum of 4 CR stations not included in the 5 station limit may be provided. For extension bells see Sec. 18, Specifications 3859.

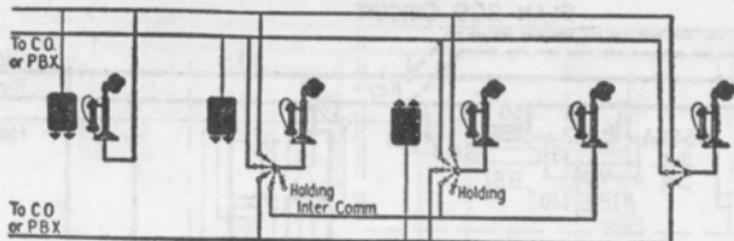
PLAN 209 CIRCUIT



NOTE
Bells on any line
may be located at
any station as
specified.

STATION
WIRING
PLANS

PLAN 210-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) One bell on each line with one master station and one CR station. |
|-----------------|--------------------|---------|-----------------|------------|---|
| | Minimum | Maximum | Minimum | Maximum | |
| 3 | 2 | * | 1 per line | 4 per line | |

Use

Where subscriber requires three C.O. or P.B.X. lines and desires that these lines be picked up and held at one or more stations which may also communicate with one or more stations over a local intercommunicating line.

Operation

- With the #6019-A key normal, the associated M station is not connected to any line.
- Operating the first button connects the station to the first C.O. or P.B.X. line.
- Operating the second button holds the first line.
- Operating the third button connects the station to the second C.O. or P.B.X. line.
- Operating the fourth button holds the second line.
- Operating the fifth button connects the station to the third C.O. or P.B.X. line.
- Operating the sixth button holds the third line.
- Operating the seventh button connects the station to the intercommunicating line.

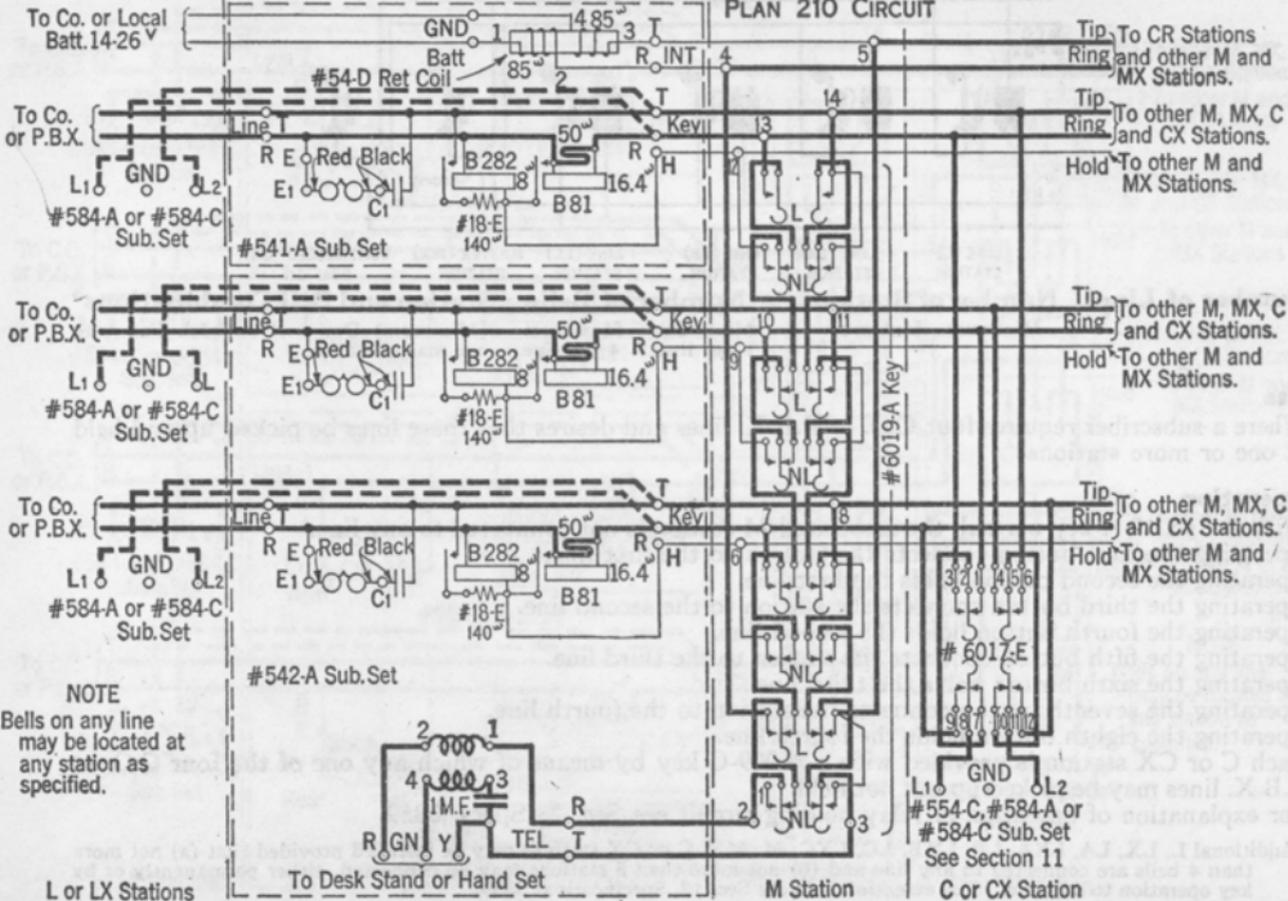
The eighth button is not wired to any circuit.

Each C or CX station is provided with a #6017-E key by means of which any of the three C.O. or P.B.X. lines may be picked up but not held.

For explanation of operation of relay holding circuit see Sec. 23 Specs. 3859.

*Additional L, LX, LA, LXA, LB, LXB, M, MX, C or CX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected either permanently or by key operation to any line. A maximum of 4 CR stations not included in the 5 station limit may be provided. For extension bells see Sec. 18, Specifications 3859.

PLAN 210 CIRCUIT



Tip To CR Stations and other M and MX Stations.
 Ring To other M, MX, C and CX Stations.
 Hold To other M and MX Stations.

Tip To other M, MX, C and CX Stations.
 Ring To other M, MX, C and CX Stations.
 Hold To other M and MX Stations.

Tip To other M, MX, C and CX Stations.
 Ring To other M, MX, C and CX Stations.
 Hold To other M and MX Stations.

NOTE

Bells on any line may be located at any station as specified.

L or LX Stations

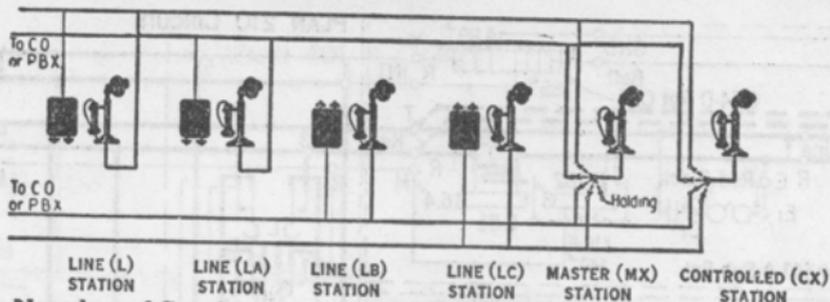
To Desk Stand or Hand Set

M Station

C or CX Station

#554-C, #584-A or #584-C Sub.Set
 See Section 11

PLAN 211-DIAGRAM



| Number of Lines | Number of Stations | | Number of Bells | | Station and Bell Combinations* (Minimum) One bell on each line with one master station. |
|-----------------|--------------------|---------|-----------------|------------|--|
| | Minimum | Maximum | Minimum | Maximum | |
| 4 | 1 | * | 1 per line | 4 per line | |

Use

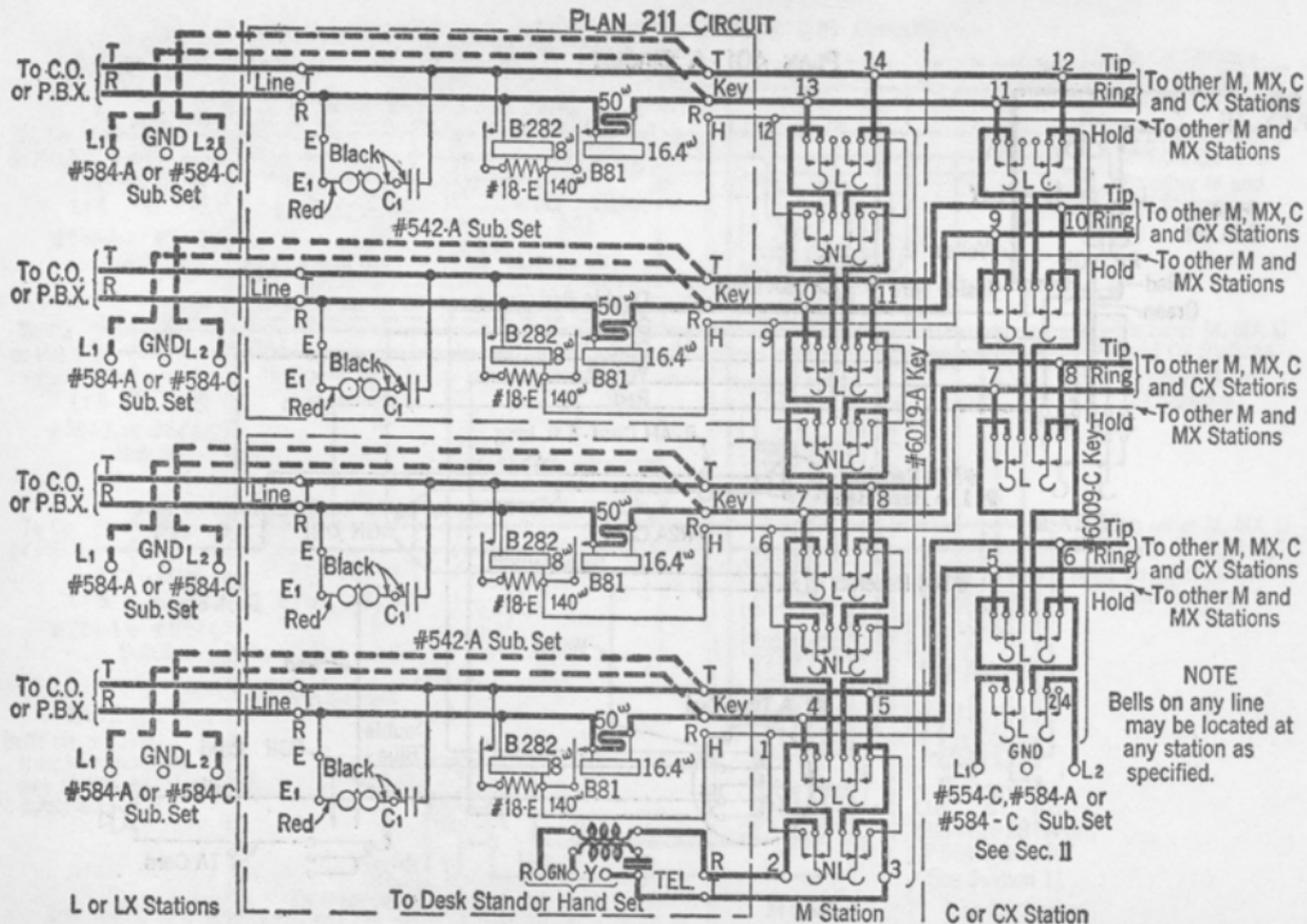
Where a subscriber requires four C.O. or P.B.X. lines and desires that these lines be picked up and held at one or more stations.

Operation

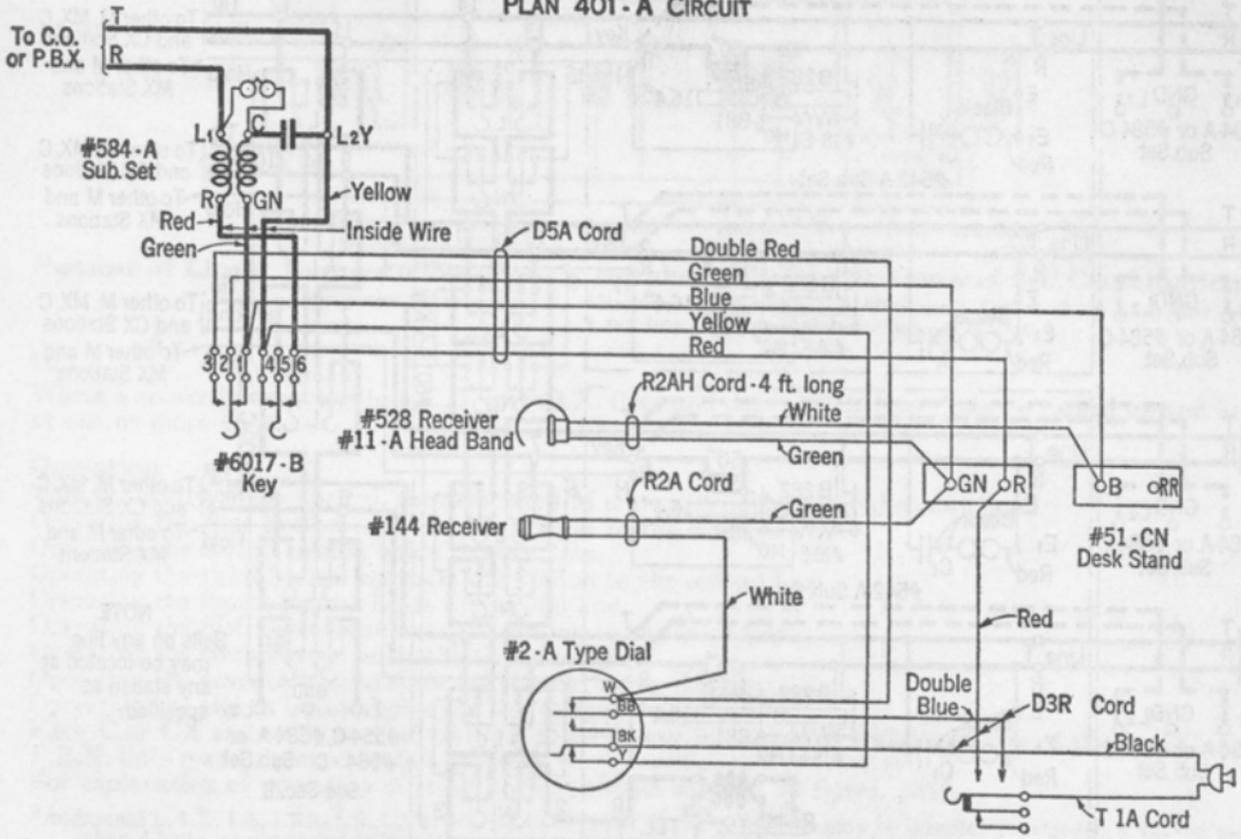
- With the #6019-A key normal, the associated M station is not connected to any line.
- Operating the first button connects the station to the first line.
- Operating the second button holds the first line.
- Operating the third button connects the station to the second line.
- Operating the fourth button holds the second line.
- Operating the fifth button connects the station to the third line.
- Operating the sixth button holds the third line.
- Operating the seventh button connects the station to the fourth line.
- Operating the eighth button holds the fourth line.
- Each C or CX station is provided with a #6009-C key by means of which any one of the four C.O. or P.B.X. lines may be picked up but not held.

For explanation of operation of relay holding circuit see Sec. 23 Specs. 3859.

*Additional L, LX, LA, LXA, LB, LXB, LC, LXC, M, MX, C or CX stations may be installed provided that (a) not more than 4 bells are connected to any line and (b) not more than 5 stations may be connected, either permanently or by key operation to any line. For extension bells see Sec. 18, Specifications 3859.



PLAN 401 - A CIRCUIT



STATION APPARATUS INSTALLATION

9. Amending Sec. 15 Specs. 3859

Cancel the 2nd paragraph which reads "Inspect test and (if necessary) readjust, relays in the Nos. 541-A and 542-A subscriber sets as specified under Section 21 in these specifications."

10. Supplementing Section 15, Specs. 3859

Locate keys and other equipment where they will be most satisfactory to the subscriber from the standpoints of appearance and of comfortable and convenient use.

When installing wiring plans having the holding feature, the holding wire shall be one of a pair, the other wire of the pair being taped and dead ended in the wiring plan subscriber set or apparatus cabinet and at the key.

When a No. 541-A or No. 542-A set is located where the ringer would not be effective, disconnect the ringer and install a separate set (No. 584-DF, etc.) in a suitable location.

STATION CONNECTIONS

STATION CONNECTIONS

11. Supplementing Section 17 of Specs. 3859

At stations having keys to pick up more than one line use subscriber sets as follows:

- At stations where no ringer is desired and an induction coil-condenser circuit only is necessary use a No. 584-C set.
- At stations where one ringer only is desired use a No. 584-A or a No. 554-C set to obtain the induction coil-condenser circuit and ringer circuit.

If the ringer may be connected in series with a ringer and condenser at another station use a No. 584-A set and connect as shown in Fig. 2.

If a condenser in series with the ringer is necessary use a No. 554-C set and connect as shown in Fig. 1.

- At stations where two or more ringers are desired install one ringer as covered under (b) above. For each additional ringer install a No. 584-DF set if the ringer may be connected in series with a ringer and condenser at another station. Install a No. 149-A condenser in the No. 584-DF set if it is necessary to provide a condenser in series with the ringer.

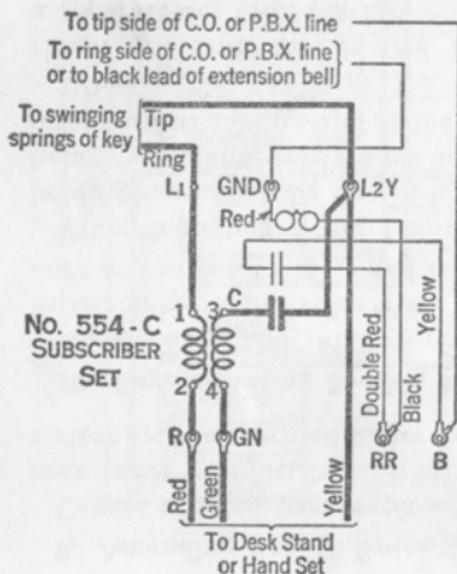


FIG. 1

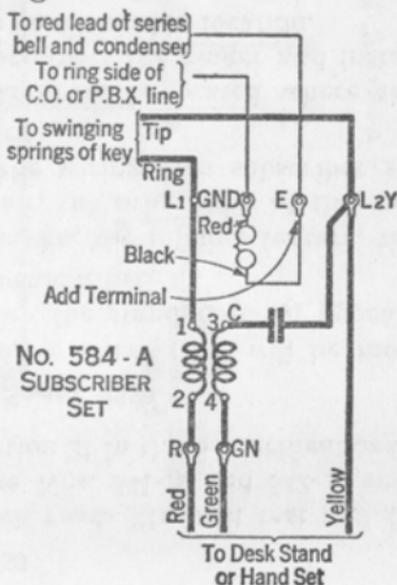


FIG. 2

STATION APPARATUS INSTALLATION

9. Amending Sec. 15 Specs. 3859

Cancel the 2nd paragraph which reads "Inspect test and (if necessary) readjust, relays in the Nos. 541-A and 542-A subscriber sets as specified under Section 21 in these specifications."

10. Supplementing Section 15, Specs. 3859

Locate keys and other equipment where they will be most satisfactory to the subscriber from the standpoints of appearance and of comfortable and convenient use.

When installing wiring plans having the holding feature, the holding wire shall be one of a pair, the other wire of the pair being taped and dead ended in the wiring plan subscriber set or apparatus cabinet and at the key.

When a No. 541-A or No. 542-A set is located where the ringer would not be effective, disconnect the ringer and install a separate set (No. 584-DF, etc.) in a suitable location.

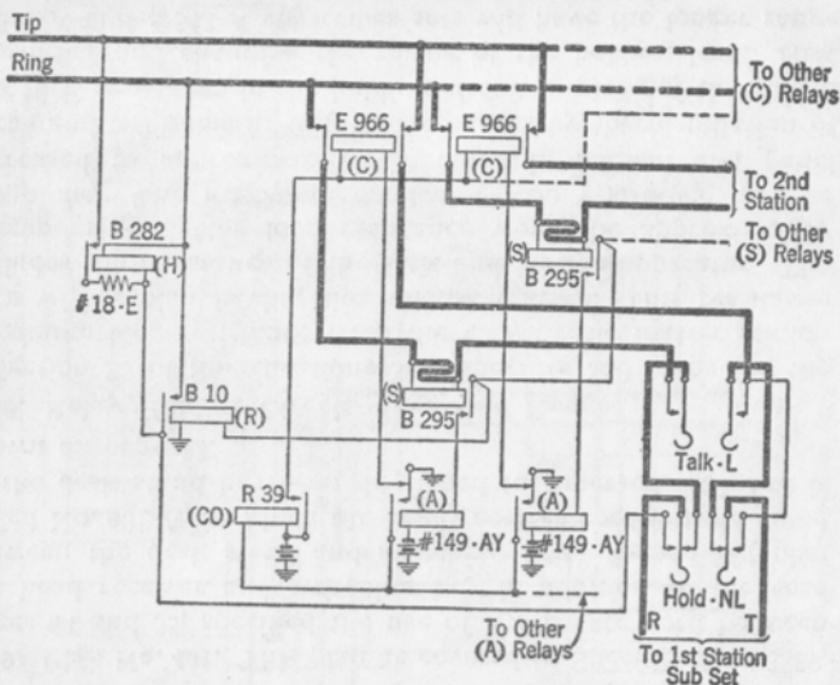
STATION CONNECTIONS

14. Method of Operation—Automatic Cut Off and Holding Circuit Plans 107 and 108.

- (a) **Automatic Cut off.** When the receiver is removed from the switchhook at any station, the associated (S) relay operates on battery from the C.O. or P.B.X. and closes the circuit to the associated (A) relay. Relay (A) operated opens the circuit to the associated (C) relay and connects ground to the winding of the (CO) relay. The (CO) relay operated connects battery to the windings of all the other (C) relays, operating all (C) relays except the one associated with the station using the line. Any other station taking a receiver off the switchhook at this time will find no battery, thus indicating that the line is busy. When the receiver is placed on the switchhook at the station using the line, relay (S) releases, in turn releasing relays (A) and (CO). When the (CO) relay releases, all (C) relays that were operated release.
- (b) **Holding.** When the holding key is operated at a station while the receiver is off the switchhook a circuit is established from the tip side of the line through the deskstand, holding lead and (H) relay to the ring side of the line. The (H) relay operates on battery from the C.O. or P.B.X. and locks up across the line in series with the 18-E resistance.

If any station with the receiver off the switchhook is connected to the line the holding will be released. Battery from the C.O. or P.B.X. operates the (S) relay, which causes the (R) relay to operate in series with the associated (A) relay. Relay (R) operated, short circuits the windings of the (H) relay, which releases, removing the holding bridge from the line.

AUTOMATIC CUT - OFF. AND HOLDING CIRCUIT



BATTERY SUPPLY AND BATTERY FEEDER RESISTANCE

15. General. The source of battery supply may be over direct battery feeders from the C.O. or from a local storage battery. If the wiring plan is associated with P.B.X. extensions where the P.B.X. battery is supplied over direct feeders from the C.O., additional direct battery feeders will be required for the wiring plan unless the additional battery requirements will warrant provision of a storage battery charged locally or over floater feeders from the C.O.

12. Central Office Battery Supply. It will be necessary to maintain a certain minimum voltage at wiring plans 107 and 108 in order to supply sufficient current for the proper operation of the relays. In order to maintain this minimum voltage the maximum resistance of the battery supply feeders between the C.O. and the wiring plan shall not exceed the following values for Plans 107 and 108.

| No. of Mutual Cut off Stations | Plan 107 Min. Voltage at 24 volt Bus Bar | | | Plan 108 Min. Voltage at 24 volt Bus Bar | | |
|--------------------------------|---|--------|-------------|---|--------|-------------|
| | 20v.* | 21v.** | 22-1/2v.*** | 20v.* | 21v.** | 22-1/2v.*** |
| 2 | 65w | 75w | 91w | 36w | 42w | 52w |
| 3 | 56w | 65w | 80w | 33w | 39w | 48w |
| 4 | 50w | 58w | 70w | 31w | 36w | 44w |
| 5 | 45w | 52w | 63w | 29w | 34w | 41w |

* Manual Offices.

** Dial Offices having 24 cell main batteries.

*** Dial Offices having 23 cell main batteries.

For plans requiring a separate battery supply for intercommunication only the maximum feeder resistance from the C.O. to the wiring plan shall not exceed 250 ohms.

17. Local Battery Supply. When local battery is used to supply current the minimum voltage for any plan shall not be less than 14 volts.

MODIFICATION OF PLANS—SPECIFICATION 3859

18. Plan No. 200. The maximum allowable number of stations may be increased from two to six.

19. Plan No. 401. This plan as covered in Specifications 3859, pages 34 and 35, specified the use of a separate cord between the head receiver and switching key in addition to the cord between the desk stand and switching key. A modified plan coded No. 401-A, in which the head receiver cord is terminated in the desk stand has been developed to supersede 401 and is shown on page 32.

20. Relay Holding Circuit—Increased Range.

Section 23 of Specifications 3859 specifies 550 ohms for the maximum loop resistance from the C.O. to the master station of a wiring plan having the holding feature. This resistance includes the resistance of the C.O. and station apparatus. The maximum conductor loop resistance would be approximately 260 ohms. The maximum conductor loop resistance may be increased to approximately 450 ohms in manual and panel areas and 600 ohms in step by step areas by the installation of a #18-E resistance in the holding circuit in place of the #18-Z resistance and changing the wiring of the holding lead. New #541-A and #542-A subscriber sets will have the longer range holding circuit.