



KELLOGG KEY-BX SYSTEMS

1949 System Description

System description manual for the Key-Bx System. A manual selecting intercom system with outside trunk access.

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KELLOGG

KEY-BX SYSTEMS

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

6650 South Cicero Avenue

Chicago 38, Illinois

KELLOGG WIRING PLAN

FOREWORD

The Kellogg Key-BX is a wiring plan system. This equipment provides business establishments with a specialized telephone system within their own organization.

This wiring plan makes subscribers telephone service more flexible and more convenient. For business houses requiring several simultaneous outlets to the main exchange the Key-BX system is the answer to improved and efficient telephone service.

Telephone companies will be quick to recognize the value of this equipment as a lucrative means of increasing yearly operating revenues.

The Key-BX system is a wiring plan scheme which eliminates the necessity of floor type or cordless P.B.X. switchboards requiring an attendant to handle outgoing, incoming, and intercommunication calls.

No special attendant is required with the Key-BX system. Each individual is his own attendant and has access to all incoming and outgoing trunks, and can call any individual in the organization connected to the Key-BX system.

This equipment permits one to six trunks to a common battery manual or dial exchange; up to twenty telephone stations within the business office or building; and one or two intercommunication circuits for talking between individuals, or for conference calls between several individuals.

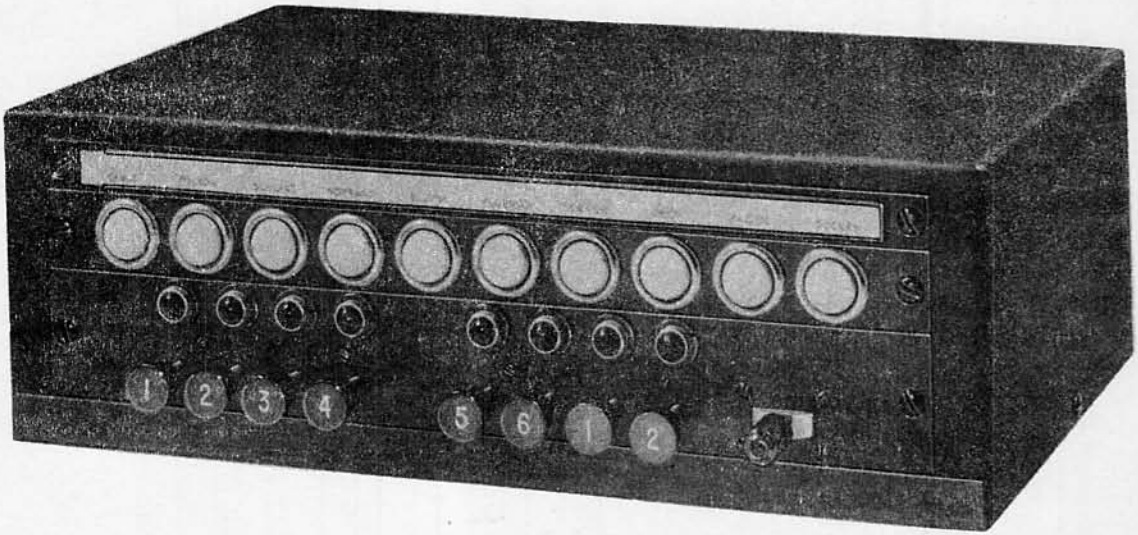
This bulletin discusses the features of the Key-BX system, description of equipment, method of operation, and ordering information.

This bulletin will assist you in determining your requirements. Kellogg will be pleased to quote you prices and deliveries based upon your needs.

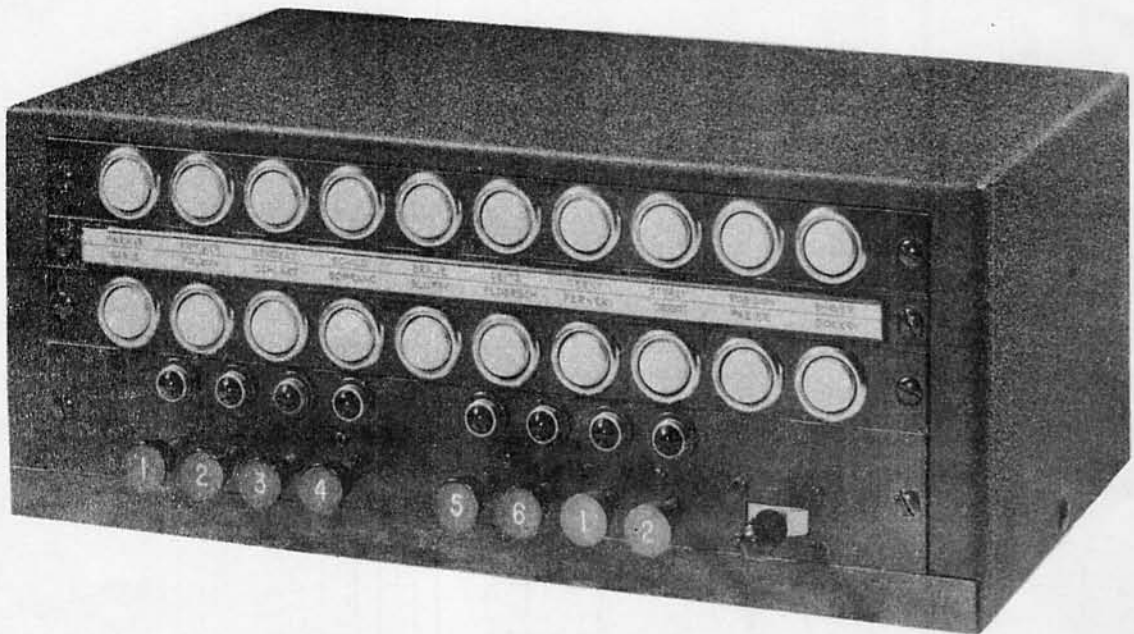
KELLOGG SWITCHBOARD AND SUPPLY COMPANY

6650 South Cicero Avenue

Chicago 38, Illinois



6-2-10 KEY BOX



6-2-20 KEY BOX

KELLOGG WIRING PLAN

Dimensions and Capacities

Dimensions

- (a) Dimensions of the Key-BX Box for 6-2-10; 3-1-10; 2-2-10 systems as follows: -

Length 10-7/8" - Height 3-1/2" - Depth 6-1/2"

- (b) Dimensions of the Key-BX Box for 6-2-20 system as follows:

Length 10-7/8" - Height 4-5/16" - Depth 6-1/2"

Capacities

6-2-20 System wired for 6 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 20 stations.

6-2-10 System wired for 6 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 10 stations.

3-1-10 System wired for 3 trunks to a common battery manual or dial exchange, 1 intercommunication circuit, and 10 stations.

2-2-10 System wired for 2 trunks to a common battery manual or dial exchange, 2 intercommunication circuits, and 10 stations.

NOTE: Refer to Ordering Information Section for full details in ordering this equipment.

KELLOGG WIRING PLAN
Operating Features of The Key-BX System

Trunks

1. Associated with each trunk is an individual push button type answer key. Trunk keys are numbered for designation purposes.
2. The trunk lamp associated with each trunk is a "line" lamp while flashing, and a "busy" lamp when burning with a steady glow.
3. A cam type hold key is provided which is arranged to hold any trunk call that has been answered.
4. For receiving incoming trunk signals an audible signal (chime) can be furnished. This signal can be installed individual to each trunk, or common to all trunks.
5. All trunk circuits multiple thru all key boxes in the system.
6. Any station in the system may answer, hold, and transfer a trunk call.
7. Conference connections may be arranged by any station calling any other station and requesting them to connect with any trunk circuit which is to be used for the conference.

Intercommunication

1. Associated with each intercommunication circuit is an individual push button type answer key. Each key is numbered for designation purposes.
2. The intercommunication lamp is a "busy" lamp only. When the intercommunication circuit is in use this lamp burns with a steady glow. It does not "flash" as does the trunk lamp.
3. All intercommunication circuits multiple thru all key boxes in the system.
4. Conference connections may be arranged between lines by requesting them to connect with any intercommunication circuit which is to be used for the conference.
5. A buzzer is provided in the key box for receiving incoming signals from other lines in the system.

Lines

1. Any telephone with a standard talking circuit may be used at each station.
2. Push button keys are furnished which provide selective ringing for all stations.
3. All line circuits multiple thru all key boxes in the system.

KELLOGG KEY-BX WIRING PLAN

Method Of Operation

(A) Incoming Trunk Calls

1. Associated with each trunk in the key box is a trunk supervisory lamp and a locking type, push button "trunk answer" key.
2. On an incoming trunk call the supervisory lamp associated with the trunk continues to "flash" during the ringing period.
3. The incoming call is answered by depressing the "trunk answer" key associated with the incoming trunk. The supervisory lamp lights and burns steadily indicating that ringing has ceased and the trunking is in a talking condition.
4. Upon answering the incoming trunk call the circuit is closed to a cam type hold and release key. This key is operated when it is necessary to hold the incoming trunk call while the individual answers another incoming trunk call or finds it necessary to communicate with some other telephone in the wiring plan system.
5. Assuming it necessary to hold an incoming trunk call the individual operates the cam type hold and release key. This restores the trunk answer push button key to normal but causes the trunk supervisory lamp to remain lighted during the answer and hold periods.
6. To complete conversation on the trunk call being held it is necessary to again depress the trunk answer key to its locking position. The circuit is now ready for talking purposes.
7. When conversation is completed, the hand set is restored to its cradle on the telephone, and the trunk answer key is restored to normal by operating the hold and release key. This action releases all trunk relays in the attendant station relay cabinet and extinguishes the trunk supervisory lamp.

(B) To Transfer A Trunk Call

1. To transfer a call, the person who handled the call originally, presses the "ringing" button of the station desired, which indicates to the person thus signaled that they are to answer on an "Intercom" circuit. This party is then instructed to answer the call on the trunk, which is waiting for them.

(Cont'd. on next page)

2. When this is done the person who first handled the call "hangs up" their receiver and considers the matter "closed" so far as they are concerned.

(C) Outgoing Trunk Calls

1. An outgoing trunk call is made by operating the answer Key on a trunk line that is not busy. This connects the local station telephone directly to the main exchange and the operator will answer if the exchange is Common Battery Manual.
2. If the Main Exchange is "Dial" the local station will be connected with the trunk line the same as for a Manual Exchange but will dial the desired number upon hearing the "Dial Tone" on the trunk.

(D) Intercommunication Calls

1. Associated with each intercommunication circuit on the key box is a intercom supervisory lamp and a locking type push button key for talking and answering purposes.
2. Also provided on the key box are individual push button keys each associated with another telephone in the wiring plan system. These push button keys provide full selective ringing for all stations.
3. When making an intercom call to another telephone in the wiring plan system select an idle intercommunication circuit, depress the associated locking type push button key which lights all associated supervisory lamps indicating to all stations that the circuit is in use.
4. When conversation is completed the handset is restored to its cradle on the telephone. The push button key is restored to normal by operating the hold and release key. The associated supervisory lamp is restored to normal and the circuit is available for the next intercommunication call.

KELLOGG KEY-BX WIRING PLAN

Description Of Equipment

(A) Key-BX Boxes

The Key-BX Box associated with each telephone instrument in the wiring plan system is small, compact, streamlined; and mounts readily on the top or side of an office desk or work table.

The modern design adapts this key box to the styling of business offices, office furniture, office fixtures and other office devices which increases business efficiency.

Standard cabinet for Key-BX boxes is steel with black wrinkle finish. Cable entrance knockouts are provided on both ends and also back of cabinet for convenience and appearance in mounting.

For special applications a wood cabinet can be provided in place of the steel, black wrinkle finish. Standard finish is mahogany. Other special finishes available upon request.

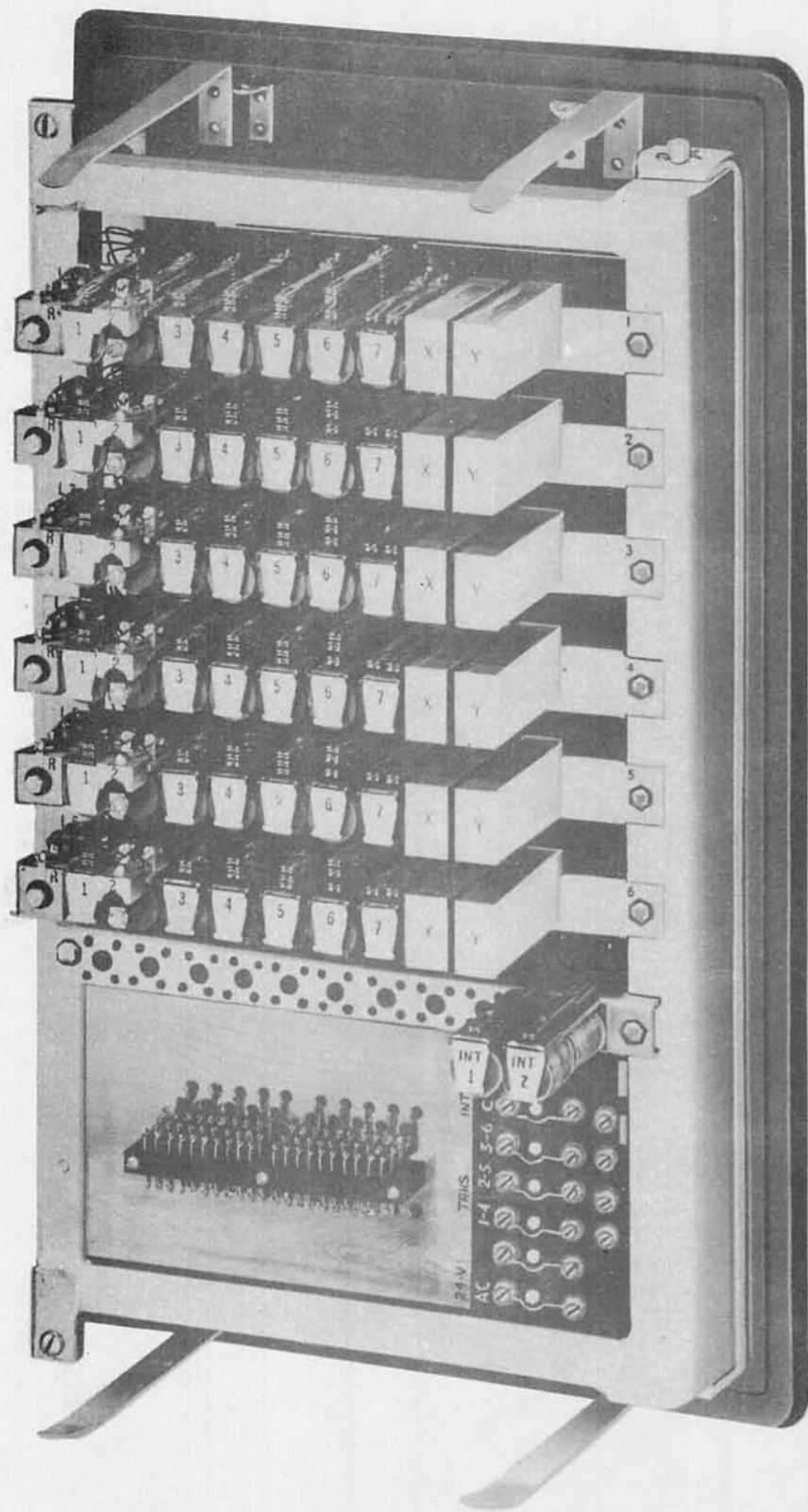
The face equipment of the Key-BX Box consists of push button locking keys associated with individual lamps for trunk and intercommunication circuits, a holding and release key, and individual selective ringing push button keys for each station in the wiring plan system.

(B) Relay Equipment Cabinet

Overall dimensions of this cabinet is, width 16 inches, height 2 feet 4 inches, depth 9-1/4 inches. The slip on wood cabinet cover is of dust proof construction and attaches to the back-board with 4 mounting screws. Cabinet finish is olive green and is designed for wall mounting in a convenient location in any office or business establishment.

Rigid steel mounting details are provided in the cabinet, to which is attached a side swinging relay gate for mounting trunk relays, condensers, battery feed coils and other miscellaneous apparatus.

Trunk relays, and associated apparatus for each individual trunk are mounted on a single mounting plate and wired with a hand made cable which attaches to a plug also associated with the mounting plate. This arrangement of trunk equipment provides for convenience in installing additional trunk circuits when desired.



#25 RELAY CABINET

Trunk relays are of the Kellogg 1700-1800 type having twin contacts of precious metal on all contact springs. These relays are provided with the new "clip on" type anti residual plate which eliminates the difficulty of hammering down of residual pins.

A hand-made cable connects all relays and miscellaneous apparatus and terminates on a terminal strip mounted on a maple shellacked connecting rack. All wire used in hand-made cable is tinned enameled with two silk, celanese or equivalent material and one cotton insulation and shall not be smaller than #22B&S gauge commercial pure solid copper wire. The hand-made cable is carefully laced into form with the wires properly run in pairs. The forms are saturated with a beeswax compound.

A small power and fuse panel of black phenol fibre is provided and is mounted on a maple shellacked connecting rack.

(C) Telephones

Standard Kellogg #1000 series desk and #1100 series wall Masterphones as pictured in this bulletin are excellent companions to the Kellogg Key-BX wiring plan systems.

These telephones are a masterpiece of efficiency with respect to ease of installation, low maintenance cost, subscriber approval, and dependable operation.

Following are outstanding features of both desk and wall Kellogg Masterphones:

One Base Plate for both Desk and Wall Masterphones.
Housings interchangeable in a matter of seconds.

One Universal Anti-Side Tone Triad Circuit for all service applications. Never necessary to change permanent wiring. Color codes, physical circuit changes, and complicated servicing completely eliminated.

Plug-In Type Induction Coil, Condenser, and Dial Plug.
Complete elimination of soldering and unsoldering reduces maintenance costs to a minimum.

(Cont'd. on next page)



D 1100-LR



D 1000-LR-K

Induction Coil provides best ratio between side-tone reduction, and transmission and reception. Three way switch permits matching induction coil to long or medium loops, and reduces transmitter current supply on short loops.

One Condenser for all applications.

Transmitter provides greater electrical output and faithful articulation throughout a wide range of applied voltages. Reliable and dependable under varying temperatures and humidity conditions.

Controlled Response Receiver eliminates objectionable characteristics throughout the voice frequency range. High fidelity voice reproduction is assured.

Handset and base cords are three conductor moisture and fungus proof with rubber covered tinsel conductors.

KELLOGG KEY-BX WIRING PLAN

Ordering Information

I - Key Boxes

- (a) Provide 1 - #18 Key Box for each station in a 10 station (6-2-10 system) See Note
- (b) Provide 1 - #19 Key Box for each station in a 20 station (6-2-20 system) See Note
- (c) Provide 1 - #20 Key Box for each station in a 10 station (3-1-10 system) See Note
- (d) Provide 1 - #22 Key Box for each station in a 10 station (2-2-10 system) See Note

NOTE:- Indicate after code of Key Box "M" for metal cabinet, "W" for Wood cabinet. Example:- #18-M Key Box.

#18 Key Box - This key box may be expanded from a 10 station to a 20 station ultimate. Your order should read as follows:- "10 additional station keys for #18 key box with end brackets and metal cover". Note - The equipment to be furnished will be one additional strip of 10 station ringing keys mounted on an escutcheon with a hand-made cable attached to the station keys at one end and formed at the other end for attaching to the terminal strip mounting in the #18 key box. Also furnished are auxiliary metal brackets for increasing the size of the #18 key box and a larger metal cover. This expansion applies only to the #18 key box.

II - Relay Equipment Cabinet

- (a) Provide 1 - #25-A or B Relay Cabinet for each installation.

NOTE:- Your order should specify the number of trunk circuits the relay cabinet should be wired for, and the number to be equipped, as follows:-

Code #25-A Cabinet

For 6-2-10 and 6-2-20 systems relay cabinet is wired for ultimate capacity of the relay cabinet which is 6 trunks and 2 intercommunication circuits.

Code #25-B Cabinet

For 3-1-10 and 2-2-10 systems relay cabinet is wired for 3 trunks, and 2 intercommunication circuits which provides sufficient wiring for 3-1-10 or 2-2-10 systems.

Additional Trunks - When ordering additional trunk circuits for the #25 Relay Cabinet your order should specify the quantity of trunks required and should read as follows:- "Trunk circuit complete for #25 Relay Cabinet". Note - The equipment to be furnished will be all trunk relays mounted on an individual mounting plate wired with a hand-made cable which is attached to the plug receptacle at one end.

III - Power Equipment

- (a) Provide 1 - #RFR-1027 Raytheon Rectifier which furnishes 24 volts, 0.5 amps DC and AC output for operation. This Rectifier simply plugs into the AC source of commercial power and furnishes stabilized DC and AC voltages to insure proper operation of the Kellogg Key-BX wiring plan systems.

IV - Cable

NOTE:- In most installations a plastic covered flexible cable, rather than a lead covered cable will be wanted for Key box installations. At a later date Kellogg may announce such a cable. Until such time we can furnish Okonite Okoseal jacket in 16, 26, or 32 pairs. This cable is available thru our Supply Sales Department.

If lead covered cable is wanted we furnish ordering information as follows:-

- (a) Provide 147-L lead covered 26 pairs switchboard cable between all stations in a 10 station 6-2-10 system.
- (b) Provide 168-L lead covered 32 pairs switchboard cable between all stations in a 20 station 6-2-20 system.
- (c) Provide 144-L lead covered 16 pairs switchboard cable between all stations in a 10 station 3-1-10 or 2-2-10 system.

NOTE:- Amount of cable required depends upon the layout of the system and location of the telephones. This cable is furnished in bulk on a reel in the number of feet specified by the customer on the order.

V - Junction Boxes

- (a) Provide Cook Electric Company #490-5426 as required for each of the Key-BX systems indicated above. Specify number of Junction Boxes required.

VI - Audible Tone Signals

- (a) If desired an extension bell or a chime can be provided for mounting in a central location in the office or room in which the Key-BX system is in operation, to call attention to an incoming trunk flashing lamp signal on the respective Key-BX Boxes in the system.
- (b) Provide 1 - #F-605-DA extension bell common to all incoming trunks, or
- (c) Provide 1 - #N-11, 24 volt D.C. single tone chime common to all incoming trunks.

NOTE:- Some installations may desire an extension bell or chime for each individual trunk. If so specify the number of extension bells or chimes required.

VII - Telephone Instruments

NOTE:- Standard Kellogg 1000 series Masterphones may be used with Key Boxes. Because buzzer signal is provided in each key box the telephones do not require a ringer and "Less Ringer" types are indicated below. Select the telephone desired and order one instrument to be associated with each key box.

(A) When Main Exchange is C.B. Dial Equipment

- 1. Desk - #D-1000-LR
- 2. Wall - #D-1100-LR

NOTE:- If dial with both Digits and Letters is desired specify "with #10-G Dial" after code of telephone.

(B) When Main Exchange is Manual Equipment

- 1. Desk - #1000-LR
- 2. Wall - #1100-LR

NARRATIVE OF OPERATION

KELLOGG WIRING PLAN CKT. 21295

Capacities

- "6-2-20" - 6 Trunk (To C.B. Manual or Dial Exc.) 2 Intercom. & 20 stations
- "6-2-10" - 6 Trunk (To C.B. Manual or Dial Exc.) 2 Intercom. & 10 stations
- "3-1- 8" - 3 Trunk (To C.B. Manual or Dial Exc.) 1 Intercom. & 8 stations
- "2-2- 8" - 2 Trunk (To C.B. Manual or Dial Exc.) 2 Intercom. & 8 stations

Features

1. The Trunk Lamp is a "line" lamp while it is flashing. It is a "busy" lamp while it is burning with a steady glow.
2. The Intercom. Lamp is a "busy" lamp only (It does not flash).
3. Push button keys are furnished which provide selective ringing for all stations.
4. Telephones with standard talking circuit and buzzer are used with this system. The buzzer is located in the key box.
5. ALL CIRCUITS MULTIPLE through all stations.
6. Individual "Answer" Keys are furnished for each trunk and each Intercom. circuit.
7. A HOLD KEY is provided which is arranged to HOLD Any Trunk call that has been answered.
8. ANY STATION may ANSWER, HOLD and TRANSFER a trunk call.
9. "CONFERENCE" Connections may be arranged by Any Station calling Any other Stations and requesting them to connect with any Trunk or Intercom. Circuit which is to be used for the "conference".
10. AUDIBLE SIGNAL "Individual" to each trunk or "common" to all trunks can be furnished when specified.

METHOD OF OPERATION

1. Incoming Trunk Call

- a. The incoming ringing current causes Relay #1 to operate and close the circuit through Relay #2 to battery. Relay #2 operates and closes the circuit through Relay #3 to battery. Relay #3 operates and closes the circuit through Relay #5 to battery. Relay #5

operates and closes the lamp circuit and also closes the circuit for Relay #4, which operates and releases Relay #5, which in turn extinguishes the line lamp and releases Relay #4. This causes Relay #5 to again operate, and which causes the lamp to light again.

Relay #4 and #5 will continue to alternately operate and release, causing the lamp to "flash" as long as the ringing current continues on the trunk.

- b. An incoming trunk call is answered by operating the trunk "answer" key, which closes the circuit to the "Hold" Key and also connects the operator's circuit with the trunk circuit. The Supervisory Relay #7 is in series with the "ring" side of the trunk line and will now operate from the battery current supplied by the main exchange through the trunk battery. The operation of Relay #7 closes a ground connection to Relay #5 which operates and causes the lamp to light and burn steadily, and also closes the circuit for Relay #4 which operates and prepares the circuit for "Hold" Relay #6. In considering the circuit operation when a call is answered it is to be assumed that the ringing current has ceased and that Relays #1, 2 & 3 have returned to normal.

- c. "Holding" a trunk call is accomplished as follows:

With the answering key, relays and lamp in "answer" position as outlined in paragraph 1-b, the "Hold" key is operated. NOTE that the contact springs on the hold key must make before the answering key is released by the hold key.

The operation of the "Hold" Key closes the circuit to ground for Relay #6, which operates and locks up through its own make-before-break contact and the "ground" connection at Relay #4, which is a slow release Relay and holds up long enough for Relay #7 to restore due to the release of the "answer" key through the operation of the "Hold" key. (The operation of Relay #6 does release Relay #4 however). The operation of the "Hold" Key releases the "Answer" Key, which in turn releases the Series Relay #7. Relay #6 will now be "held" through the "ground" connection at Relay #7.

- d. The Completion of the connection is accomplished by the original station, or some other station, operating the "Answer" Key of this same circuit. This will cause Relay #7 to again operate and Relay #6 to release and close the circuit for Relay #5 to operate. Relay #5 remained operated when Relay #6 released and Relay #7 operated. This causes the lamp to

remain lighted with a continuous glow during all of the "Answer" and "Hold" periods.

When the conversation is completed the receiver is hung up and the "Answer" Key is restored to normal, which releases all Relays, and extinguishes the line lamp, (which is also the busy lamp).

2. To Transfer a call, the person who handled the call originally, presses the "Ringing" button of the station desired, which indicates to the person thus signaled that they are to answer on an "Intercom." circuit. This party is then instructed to answer the call on the trunk, which is waiting for them. When this is done the person who first handled the call "hangs up" their receiver and considers the matter "closed" so far as they are concerned.

3. Outgoing Trunk Calls

An outgoing trunk call is made by operating the Answer Key on a trunk line that is not busy. This connects the local station telephone directly to the main exchange and the operator will answer if the exchange is Com. Batt. Manual.

If the Main Exchange is "Dial" the local station will be connected with the trunk line the same as for a Manual Exchange but will dial the desired number upon hearing the "Dial Tone" on the trunk.

FIG. 1.
CITY TRUNKS

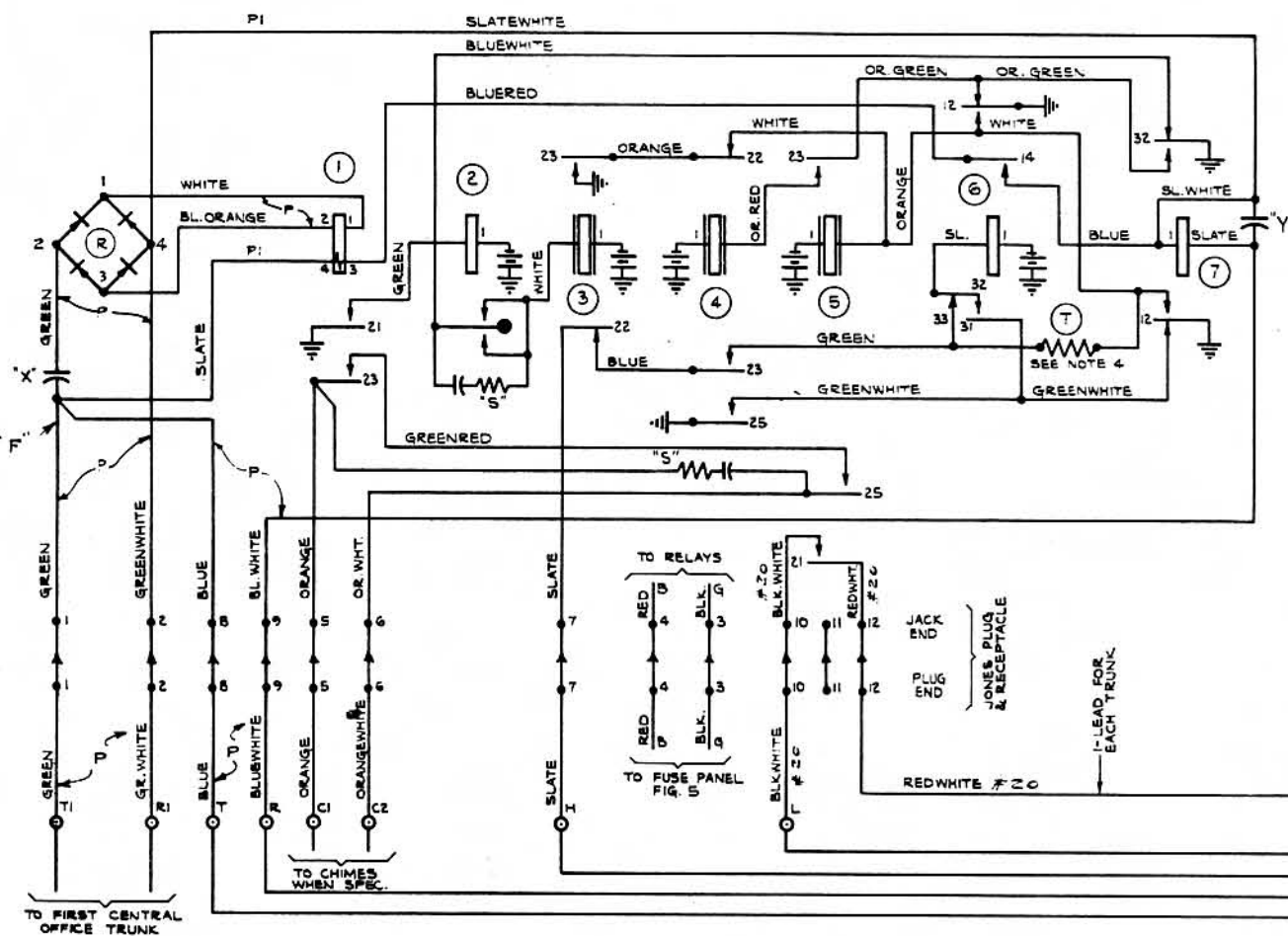


FIG. 3.
INTERCOMM.

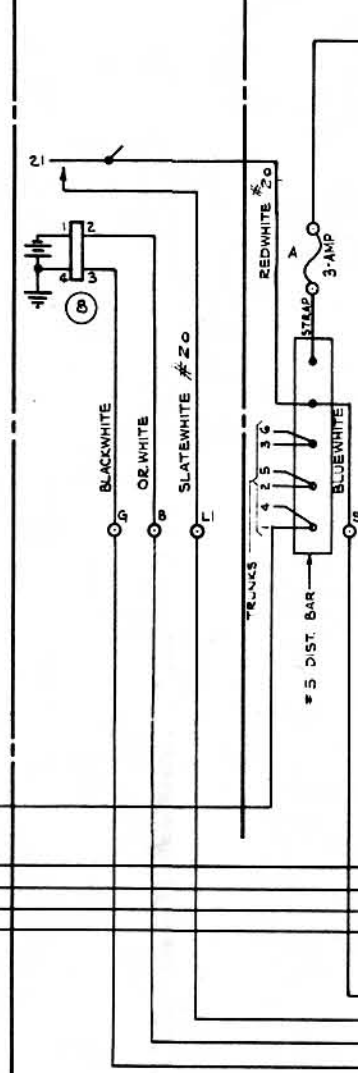


FIG. 5.
FUSE PANEL.

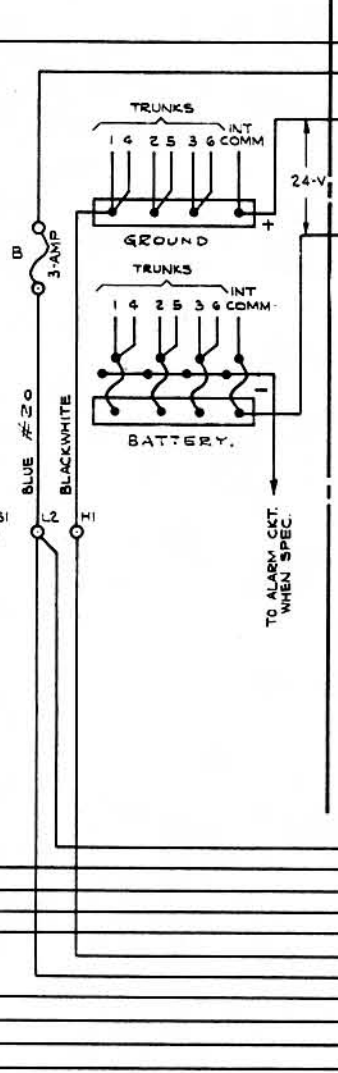


FIG. 4.
WIRED BY INSTALLER.

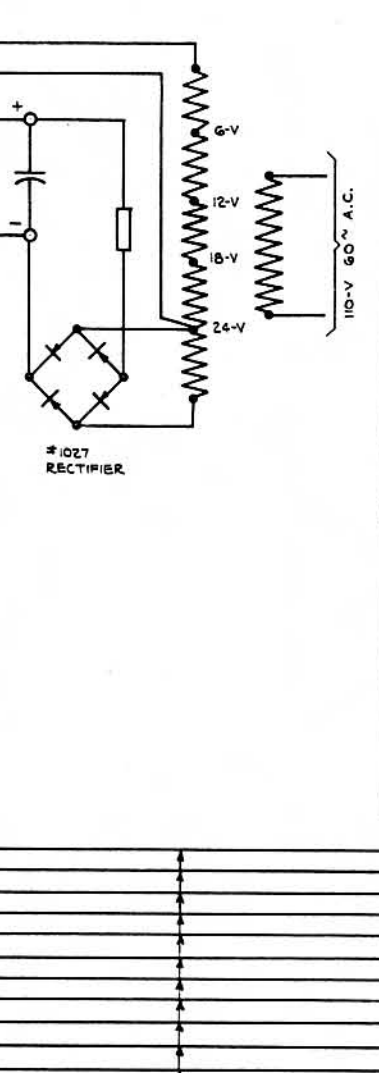


FIG. 2.
KEY BOX

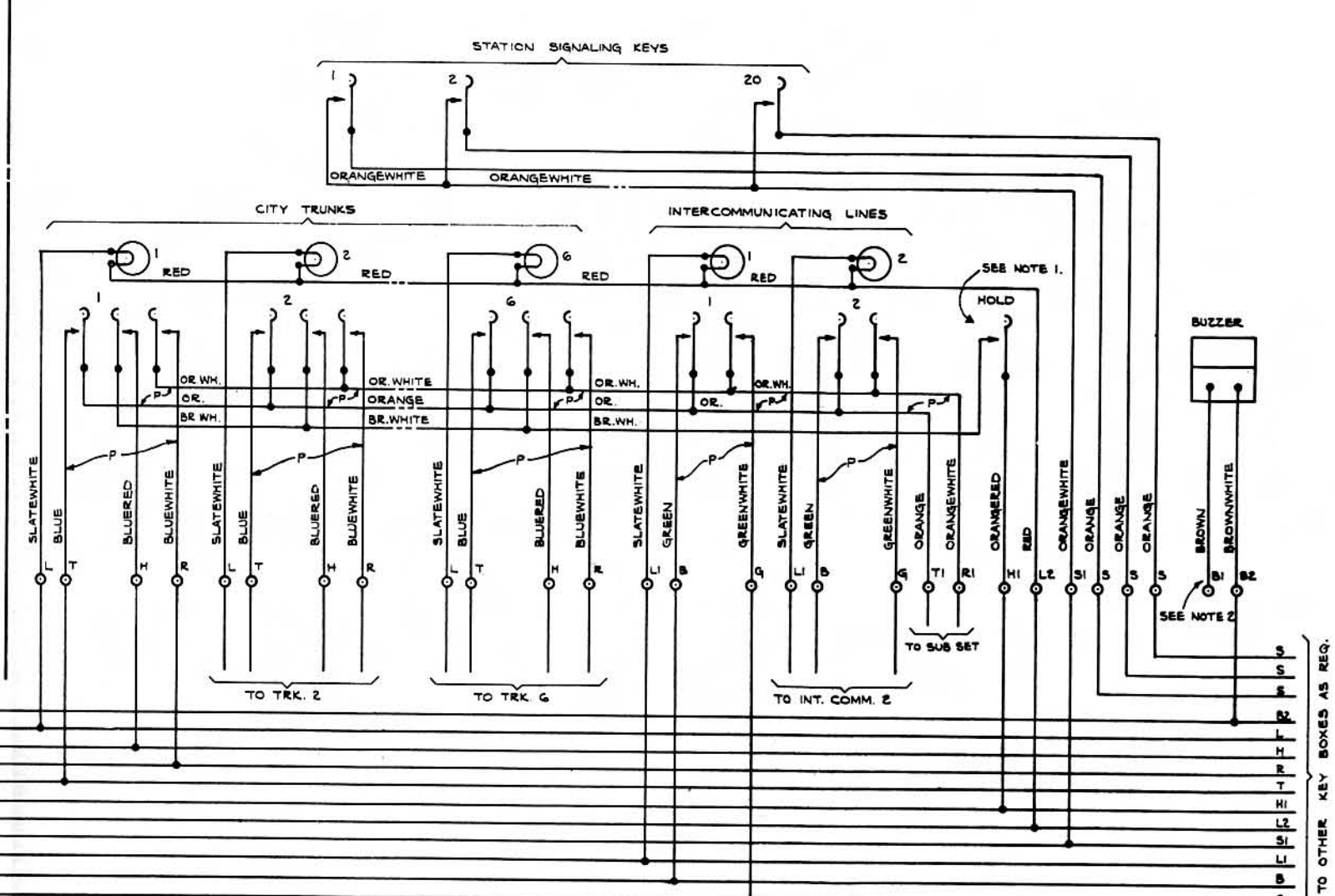


FIG. 1						FIG. 3		FIG. 5	
TRK. 1	TRK. 2	TRK. 3	TRK. 4	TRK. 5	TRK. 6	CKT. 1	CKT. 2	INTER COMM.	FIG. 5
T	L	T	L	T	L	O	L	O	O
O	R	O	X	O	X	O	R	O	O
O	F	O	T	O	C	O	T	O	O
O	R	O	O	O	O	O	O	O	O



TERM. END OF RELAYS 1 & 5.

- NOTES:-
 1- HOLD KEY ADJUSTED TO MAKE BEFORE KEYS 1 & 6 RELEASE
 2- CROSS CONNECT BUZZER TERM. TO HOME STATION TERM. AS ASSIGNED.
 3- ALL FUSES TO BE 1/2 AMP UNLESS OTHERWISE SPECIFIED
 4- RESISTOR "T" TO BE 5000 Ω FOR 24-V BATT.

CITY TRUNKS						INTERCOMM. LINES		STA SIG LINES					TEL.		
1	2	3	4	5	6	1	2	1	2	3	4	5	6	7	8
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
O	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O