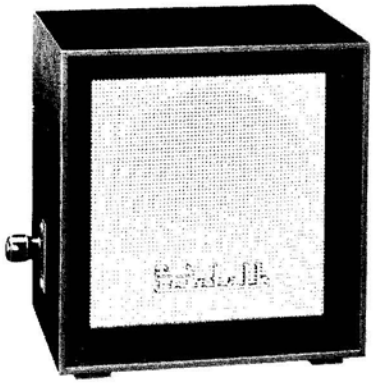
installation

series 700
Teletalk

bulletin M7D1

WEBSTER ELECTRIC Teletalk

MASTER
STATION



SPEAKER
STATION

INSTRUCTIONS

for the installation of

TELETALK SERIES 700

This bulletin contains complete instructions for installing Series 700 Teletalk Intercommunication units. Before starting the actual installation, read the instructions thoroughly and check each unit carefully to be sure it is the correct unit for the power supply and for the use required. All installation work should be neat and workmanlike to match the fine quality of the Teletalk units.

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WEBSTER ELECTRIC
RACINE, WISCONSIN

"Where quality is a responsibility and fair dealing an obligation"

Established 1909

IMPORTANT INSTALLATION INSTRUCTIONS

Before starting the installation, check each unit to be sure it is the correct one for the power supply at each location. The label inside the cabinet will indicate whether the unit is 117-volt 60-cycle, 230-volt 60-cycle, or 117-volt 25-cycle.

Make a detailed layout of the complete system to show exactly where each unit will be located and what type of unit it will be.

When difficulties arise which require trouble-shooting any circuits inside the units, refer the unit to authorized repair men. Do not remove back cover and attempt to make changes or repairs to the equipment.

IDENTIFICATION OF MODELS

TELETALK INTERCOMMUNICATION SYSTEMS

Teletalk systems are made up of two or more "Stations" joined by interstation wiring. These stations may be either "Master Stations" or "Speaker Stations," depending on the type of system employed, and the kinds of intercommunication desired at each particular point where a station is to be located.

TELETALK MASTER STATIONS

A "Master Station" consists of a cabinet containing an amplifier, a speaker-microphone, and the necessary switches and controls for operation in the particular type of system employed. A Master Station requires an alternating-current power supply.

The Master Stations can originate calls with other Master Stations or Speaker Stations. Master Station units are used at all points where it is necessary to communicate with several other stations. The number of stations which can be called varies from 6 to 48 depending on the model used. Master Stations are designed for "S" circuit and "M" circuit applications.

The "M" circuit is not secretive - any Master unit can monitor a Speaker unit or another Master Station. Any Master can listen in on conversations between any other two units. However, the "-14" Silencing circuit can be used to prevent "monitoring."

An "S" circuit is secretive. Conversations between two Master Stations cannot be listened to by any other station, nor can any Master Station "monitor" any other except when set up for conference.

Several variations of the Master Station unit are available to meet special conditions and are described in the section "Circuit Variations and Connections."

A "Speaker Station" consists of a cabinet containing a speaker-microphone only and no amplifier. It, therefore, can be used to converse only with a Master and not with another Speaker Station. Two-way conversation is possible from Speaker Stations to the "M" circuits of a Master Station. When Speaker Stations are connected into the "S" circuits of a Master only one-way conversation is possible from Master to Speaker. It is possible to originate a call to a Master from each Speaker equipped with either an annunciator push button or Call-In switch.

MASTER STATION CODE SYSTEM FOR MODEL IDENTIFICATION

The Teletalk Key Number or Coding System is designed to combine all the necessary information on a particular model, its variations, and equipment into a single Code Number.

The "Basic Model" code number gives only the series Number and Capacity Number (Number of Stations).

Table 1

No. added to series number	Capacity
06	6-station
12	12-station
24	24-station
48	48-station

Other letters, and numbers preceded by a dash are used in the code number to designate model variations as indicated.

Table 2

Variation Number	Variation
A	Annunciator
C	Earphone
L	Busy signal
T	Telephone handset
-V	230 volts A.C.
-Z	25-cycle
-1	All-call switch
-3	Three-position selector switches
-6	500-ohm voice line
-14	Silencing circuit
-15	Paging key
-18	All-call paging

TYPICAL CODE EXAMPLE

The following example shows how a typical code may be made up of Series Number, Capacity (Number of Stations), and Model Variation Letters or Numbers.

Example

7	06	A	V	-1	-3
700 Series	6-Station Capacity	Annunciator	230-Volt	All-Call Switch	3-Position Selector Key

CABLING AND CONNECTING INSTRUCTIONS

INTERSTATION CABLE

Webster Electric interstation cable is made especially for Teletalk installation. It is constructed of No. 22 soft-drawn copper wires. Each pair of wires is color-coded and is twisted. This twist has been found to be best to prevent crosstalk and noise pickup on voice lines. Over all the wires is a vinyl plastic covering. Webster Electric cable is available with 6, 9, 15 and 27 pairs of wires. The following table shows the Teletalk cable diameter and the size of metal conduit recommended.

Taletalk Cable	Diameter	Wire Size	Conduit Size
6 pair	9/32 in.	No. 22	1/2 in.
9 pair	5/16 in.	No. 22	1/2 in.
15 pair	3/8 in.	No. 22	1/2 in.
27 pair	1/2 in.	No. 22	3/4 in.

The length of cable run between stations will determine the wire size used for both voice lines and annunciator lines. Based on an allowable 6DB. line loss, the following lengths and sizes may be used with these Teletalks for voice circuits.

Wire Size	Length (pair of wires)
No. 22	2,000 feet
No. 19	4,000 feet
No. 16	8,000 feet
No. 14	12,000 feet

When long runs between stations are necessary, 500-ohm impedance units should be used throughout the system. With 500-ohm impedance units, the wire length given above may be multiplied by ten. For example, with 500-ohm impedance unit, No. 22 wire - 20,000 feet.

In any Call-In circuit, including 500-ohm systems, the D.C. line resistance should not exceed 35 ohms. Use a wire size large enough to obtain this value or wires can be paralleled to lower the line resistance.

From the above table it can be seen that No. 22 wire may be used up to 3,000 feet if a slight loss in volume is not objectionable. Do not use cheap interstation wiring as it will only prove a source of trouble in time.

NOTE

45-ohm speaker-microphones are used in the Teletalk units because of the much lower line loss incurred. This line loss is only 1/9 that of a 5-ohm speaker-microphone unit.

The wrappings on the wire should be held with shellac to prevent unraveling of the insulation at the terminal strips. Keep the interstation wiring as far as convenient (at least 12 inches) from any parallel power or telephone wires to prevent interference which might be picked up from these lines and amplified at the master unit.

All voice lines should be twisted pair wires. Never use a common wire to connect a number of speaker-microphone units. Interstation wires should be run so that they do not cross hot metal pipes and where there is no danger of cable being covered with water.

TELETALK TO JUNCTION BOX CABLE

The cable connecting the junction box to the Teletalk unit consists of plastic insulated wire. Each pair of wires is color-coded and twisted. Over all the wires is a cotton-braided covering. The cable used on 12-station models is coded as follows:

Pair No.	Conductor	Mate
1	Light Blue	White
2	Dark Blue	White
3	Orange	White
4	Light Green	White
5	Dark Green	White
6	Light Brown	White
7	Dark Brown	White
8	Light Slate	White
9	Dark Slate	White
10	Pink	White
11	Yellow	White
12	Purple	White
Home Line	Dark Green	Light Green
Ground	Black	
Spare	Dark Brown	Light Brown
Spare	Red	

The cable used on 24-station models consists of the above plus the first twelve colored wires paired

with red mates. The cable used on 12-station annunciator models consists of the above wires plus the first twelve colored wires for the annunciator circuits, and their red mates for the (-3) switching circuits. On six-station models the first six colored wires paired with white mates, plus the green pair, black and spare wires are included in the cable.

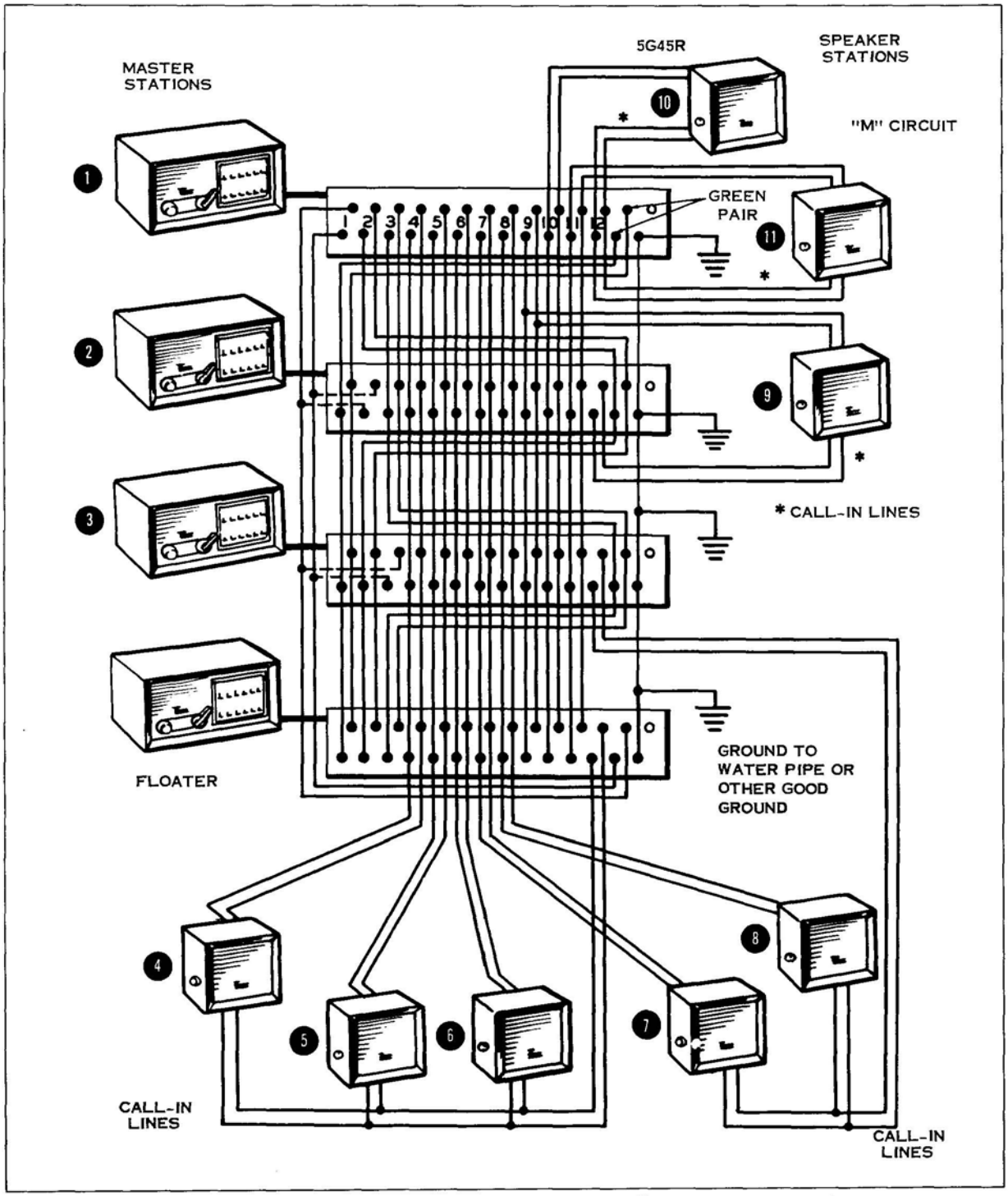


Figure 1. Combination "M" and "S" System or all "M" System Layout using CALL-IN Type SPEAKER STATIONS

TELETALK SERIES 700 INSTALLATION

SYSTEM LAYOUT

Before actually making a Teletalk installation, prepare a layout to show where each Master Station and Speaker Station will be located similar to the Typical Teletalk System Layout (Figure 1). The number of Master Stations and Speaker Stations may be varied to suit individual requirements. The total number of stations which can be connected to any Master Station is controlled by the number of Selector switches as indicated by the Series code number.

LOCATION OF UNITS

Install each Teletalk Master Station unit in a convenient place at the location desired. Be sure that a power outlet receptacle is available and that the current and voltage of the power supply is within the limits specified on the Teletalk being installed. Plug the unit into the power receptacle.

Select the line number to be assigned to each station and make a record of the names to be placed on the name strip.

COMBINATION "M" AND "S" CIRCUITS WITH THE CALL-IN FEATURE

CONNECTIONS

When the stations have been selected, arrange to connect all Master Stations to the Selector switch starting with number 1 and up consecutively. The number of Selector switches to be assigned to masters will be one less than the total number of masters in the system. Call one master a "Floater" and assign a number to the others.

Connect voice lines from the "Floater" Station to other Master Stations at terminal No. 1 at Station No. 1, terminal No. 2 at Station No. 2, and in this same manner to the other Master Stations.

At Station No. 1 connect the terminals to which the twisted green pair of wires are attached, to No. 1 terminals of all the other Master Stations. Connect No. 2 Station green pair terminals to No. 2 terminals at all the other Master Stations. Connect the remaining Master Stations the same way as shown in Figure 1.

To prevent the possibility of cross talk, wherever practical, keep Master Station cables separated from Speaker Station Voice and Call-In lines.

Connect Speaker Station Voice lines in parallel to consecutive terminals, starting next to the "Call-In" terminals, which are the last numbered ones on the strip, as shown in Figure 1, thus assigning speakers to the higher numbered selector keys. The Call-In switch of one Speaker Station can be connected to only one Master Station in a system. Any number of speaker Call-In switches can be connected to one master. Connect speaker Call-In switches to Master Call-In terminals (last numbered in terminal box). Ground each Master Station from the end (ground) terminal to a water pipe or other suitable ground. This ground connection should be as close to the terminal box as possible.

PREPARATION OF SWITCH PANEL

When all connections have been made, remove the Selector switch panel from the front of the unit. Cut the looped common wires connecting the Selector switches between the last "S" circuit Master Station and first "M" circuit Speaker Station and insulate and bend these wires to one side. (See Figure 7.) The cutting of the jumpers is necessary in order that all Master Stations will function as "S" circuit units.

The panel is removed by turning a latch, located at the top of the panel, with a screw driver. After the latch disengages the cabinet front, tilt the switch

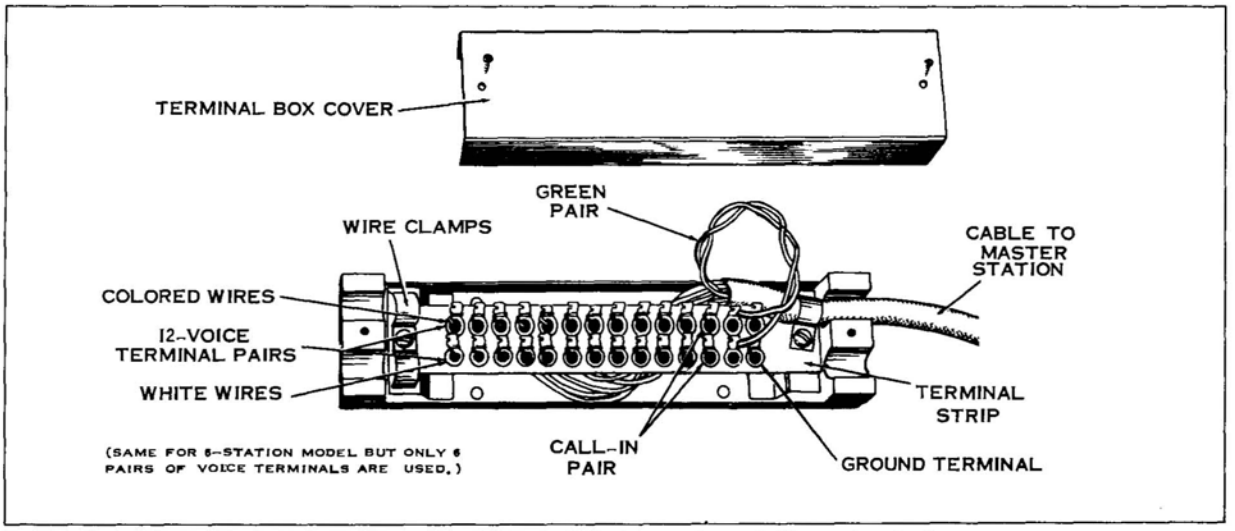


Figure 2. Teletalk Terminal Box - 6- and 12-Station Units

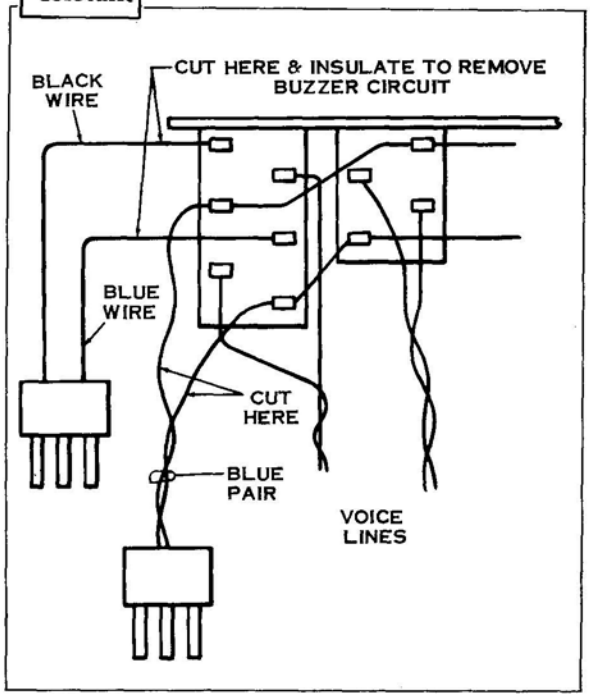


Figure 3. Connections to be cut for an all "S" Circuit System

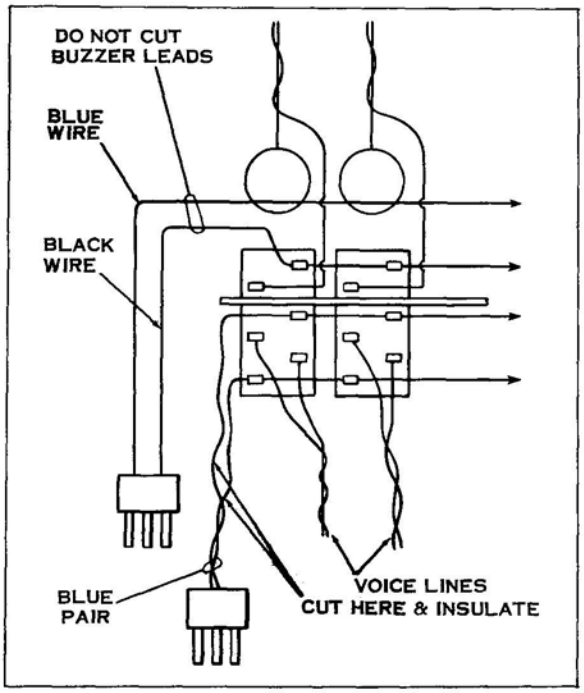


Figure 4. Connections to be cut for an all "S" Circuit System (Annunciator Circuit)

panel back using the bottom of the cabinet opening as the hinge. (See Figure 6.)

If, at a later date, the number of assigned Master and Speaker Stations is changed, connect the cut common wires back to the proper switch terminals and again cut the common wires between the last "S" circuit Master Station and first "M" circuit

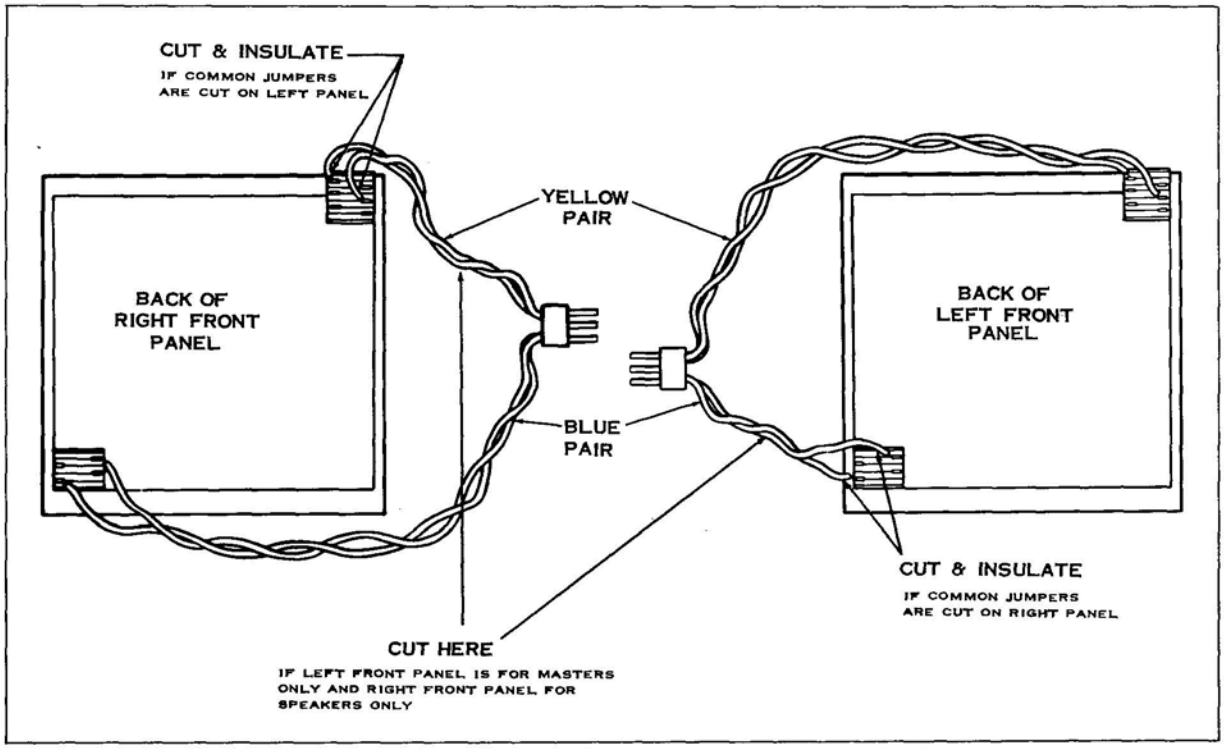


Figure 5. Connections to be cut on a Two-Panel Teletalk

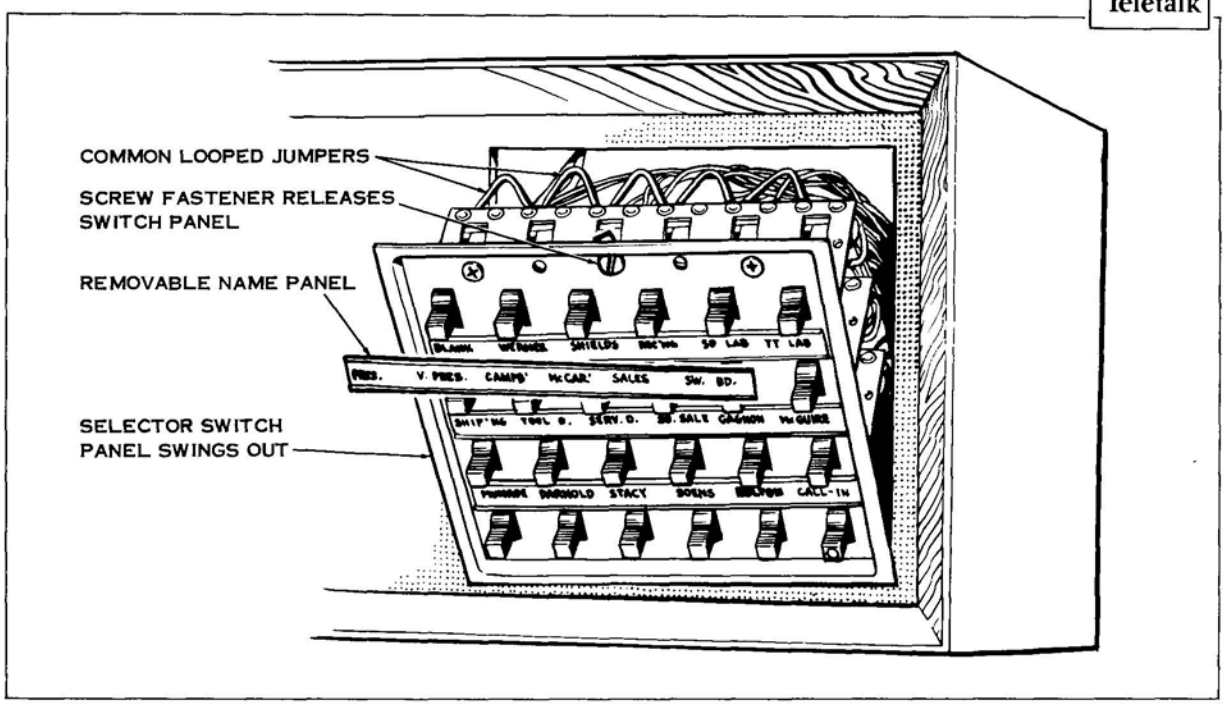


Figure 6. Front Switch Panel Removed

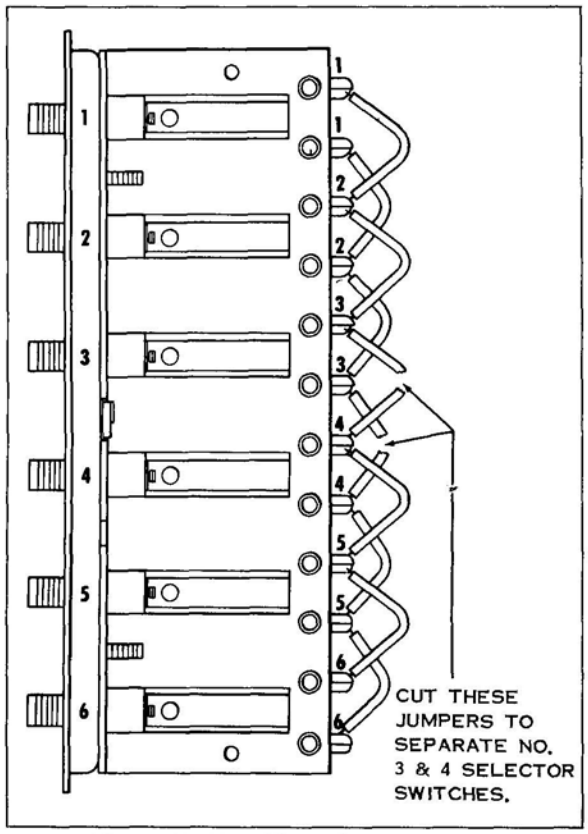


Figure 7. Top View of Switch Panel Showing Looped Jumper Wires

Speaker Station. Remember that "S" circuit Master Stations are always assigned to the low numbered selector keys and the "M" circuit Speaker Stations are always assigned the high numbered keys.

If the Master Station has two panels and the common wires to be cut are on the left front panel, also cut the yellow pair of wires connecting the right front panel to the plug. If the common wires to be cut are on the right front panel, cut the blue pair of wires connecting the left front panel to the plug.

If the left front panel is for "S" circuit masters only and the right front panel is for "M" circuit speakers only cut the yellow pair from plug to right front panel and the blue pair from the plug to the right front panel. These wires should be cut at the switches and taped. (See Figure 5.)

COMBINATION "M" AND "S" CIRCUITS WITHOUT THE CALL-IN FEATURE

CONNECTIONS

The connections for a combination "M" and "S" circuit installation using Speaker Stations (5G45) without the Call-In feature are the same as the connections for a system using Call-In, with the exception that the Call-In lines are deleted (see Figure 10). If desired, the Call-In selector key can be used for an "M" circuit station. If the Call-In selector key is not to be used for an extra "M" circuit station no connection should be made to the Call-In terminals in the junction box, or the Call-In circuit should be isolated by removing the buzzer circuit leads from the Call-In switch.

PREPARATION OF SWITCH PANEL

The preparation of the Master Station switch panel is the same as for a master in a system using Call-In except that the Call-In selector key switch must be prepared if it is to be used for an extra "M" circuit station. To do this, cut and insulate the single blue plastic and black wires (buzzer circuit) from this switch as shown in Figure 8.

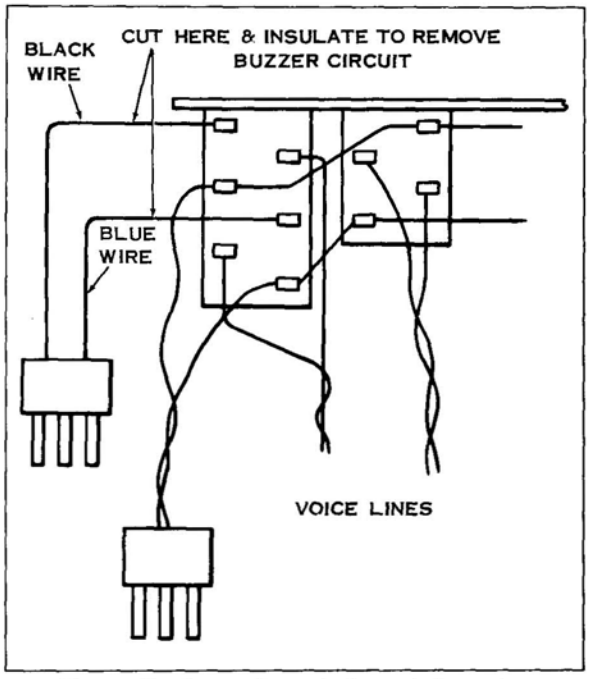


Figure 8. Connections to be cut for using Call-In Key for "M" Circuit

NOTE

Annunciator model Master Stations are not furnished with the Call-In circuit.

ALL "M" CIRCUIT SYSTEMS

CONNECTIONS

Connections are the same as those given under the sections on "Combination 'M' and 'S' circuits." (See Figure 1 and Figure 10.)

PREPARATION OF SWITCH PANEL

Units shipped from the factory are wired for "M" system operation and no cutting of jumpers or leads is necessary if this type of operation is desired. The Call-In circuit can be removed and the Call-In key position be used for an additional "M" circuit station by cutting and taping the single blue plastic and black wires (buzzer circuit). (See Figure 8.)

NOTE

Annunciator models are not furnished with the Call-In circuit.

CONNECTING 700 SERIES UNITS INTO AN EXISTING "M" CIRCUIT SYSTEM

CONNECTIONS

When installing a 700 Series Master Station into an existing 100M, 200M, or 600M Series system, connect the various voice line terminals of the 700 Series station to the assigned (Home Line) terminals of each existing "M" circuit unit. The voice line terminals of the 100M, 200M, or 600M units, which are assigned to the 700 Series station, are connected to the green pair (Home Line) terminals of the 700 Series unit. Voice lines from the 700 Series Master Station to the Speaker Stations require no special connections. (See Figure 9.)

PREPARATION OF SWITCH PANEL

Units shipped from the factory are wired for "M" circuit operation. Therefore, no cutting leads or jumpers is necessary for this type of operation unless the last Selector key is to be used for an extra station instead of for the Call-In feature. To prepare the last Selector switch for another "M" circuit station cut from it and insulate the single blue plastic and black wires (buzzer circuit). (See Figure 8.)

NOTE

Annunciator models are not furnished with the Call-In circuit.

ALL "S" CIRCUIT SYSTEMS

CONNECTIONS

Refer to Figure 11 showing the connections between the four Master Stations. In all "S" circuit systems, Master units are connected in the same manner regardless of the number of stations used. Arrange to connect all Master Stations to the first Selector switches starting with No. 1 and up. The number of Selector switches to be assigned to the Masters will be one less than the total number of Masters in the system.

Connect voice lines from the "Floater" Station to other Master Stations at terminal No. 1 at Station No. 1, terminal No. 2 at Station No. 2 and in this same manner to the other Master Stations.

At Station No. 1 connect the terminals to which the green pair of wires are attached, to the No. 1 terminals of all the other Master Stations. Connect Station No. 2 green pair terminals to the No. 2 terminals at all the other Master Stations. Connect the remaining Master Stations in the same manner as shown in Figure 11.

PREPARATION OF THE SWITCH PANEL

For an all "S" circuit system the common jumpers between Selector switches should not be cut. The last Selector switch must be prepared by cutting and insulating the twisted blue pair of wires, the

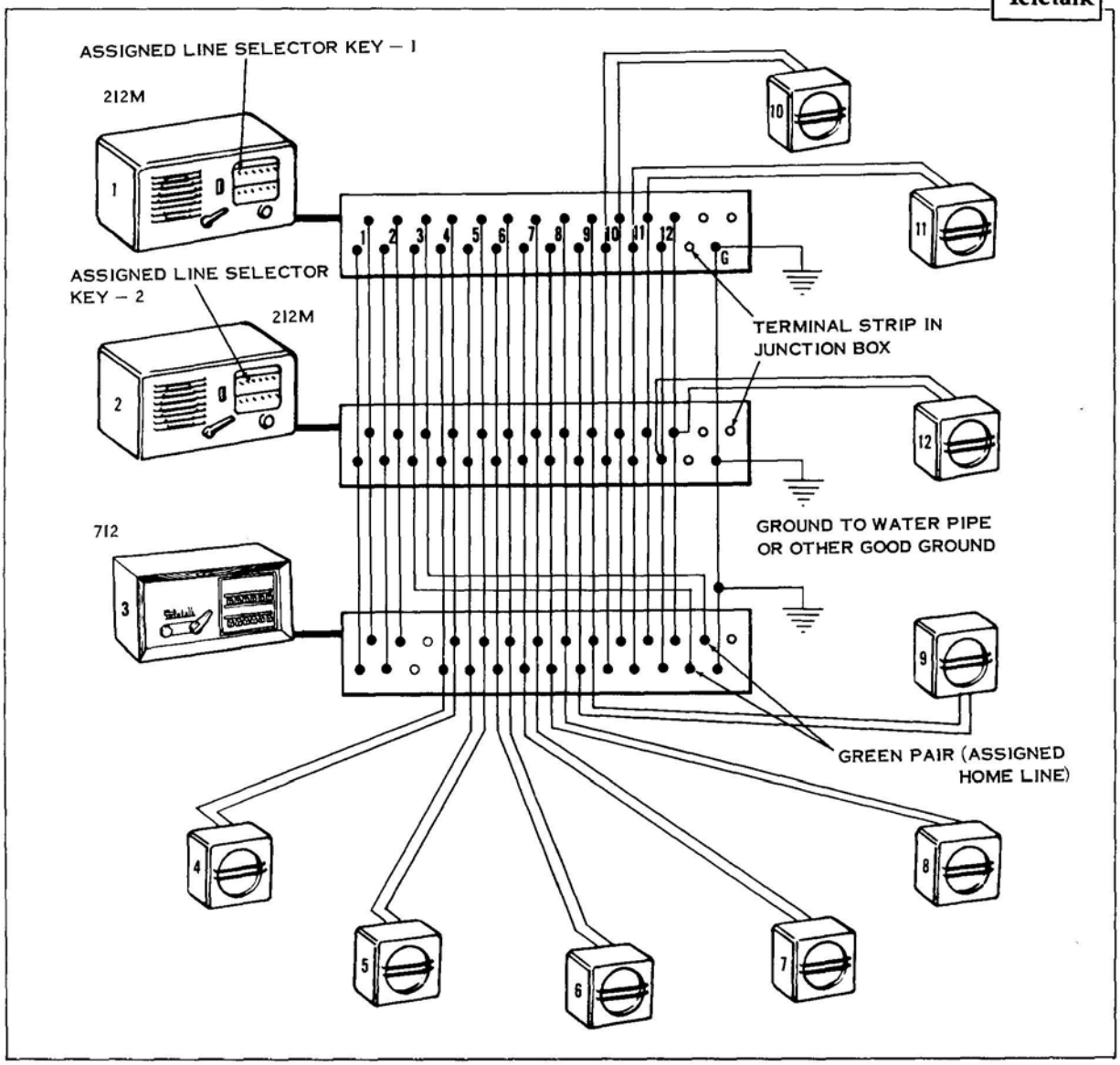


Figure 9. Connection of a 700 Series Unit into an Existing "M" Circuit System

single blue plastic wire and the single black wire from the switch. (See Figure 3.)

If the units are annunciator models, only the twisted blue pair of wires should be cut from the switch since the buzzer circuit is necessary for annunciator operation. (See Figure 4.) Annunciator models are not furnished with the standard Call-In feature.

CONNECTING 700 SERIES UNITS INTO EXISTING "S" CIRCUIT SYSTEMS

CONNECTIONS

When installing a 700 Series unit into a 200S or 500 Series system the connections are the same as those given under the section "All 'S' Circuit System." It must be remembered that on 700 Series units the green pair terminals in the junction box connects to the home line, therefore, all incoming voice lines from other stations must be connected to these terminals rather than to the terminals of an assigned selector key.

When connecting a 700 Series station into a 900 Series system, the various voice line terminals of the 700 Series units are connected to the extra (14th) pair of terminals of each 900 Series junction box rather than to the green pair terminals. See bulletin TEL 115, "Installation of Series 900 Teletalk."

PREPARATION OF THE SWITCH PANEL

The preparation of the switch panel is the same as that given under the section on "All 'S' Circuit System."

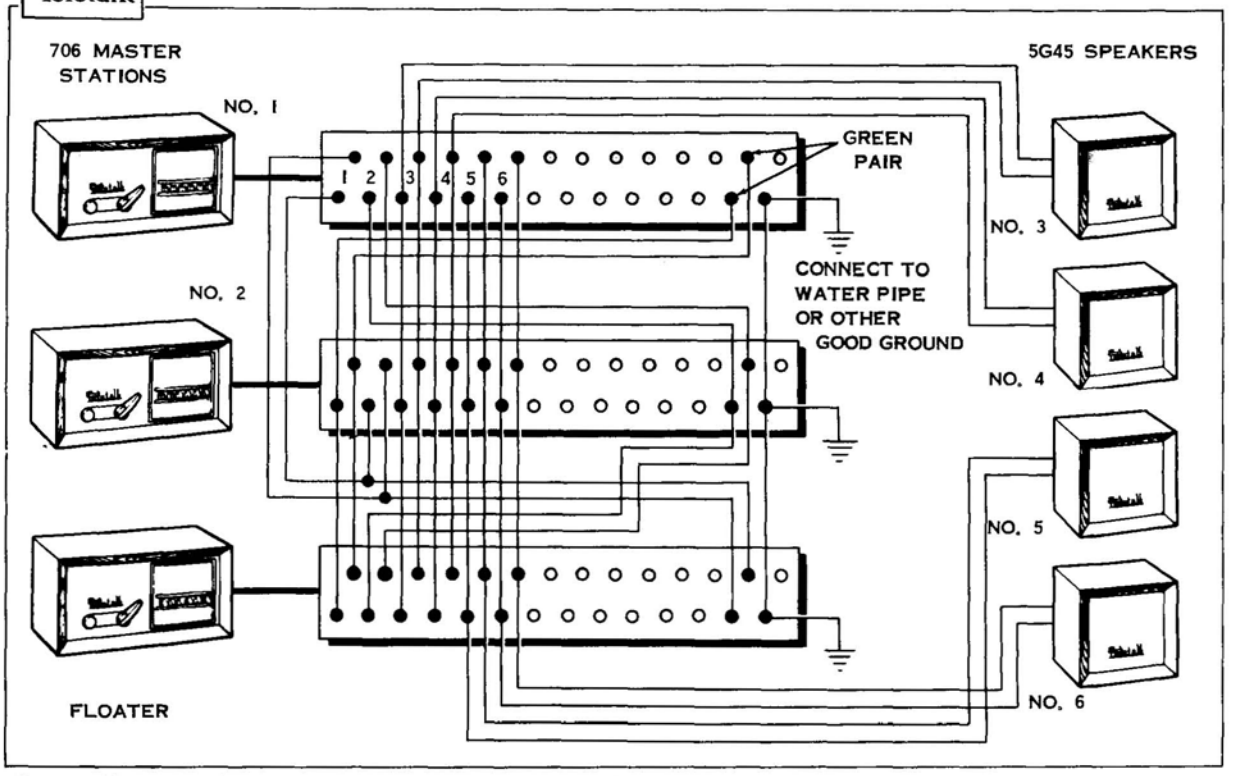


Figure 10. Typical "M" and "S" Circuit System or all "M" Circuit System Layout without Call-In Feature

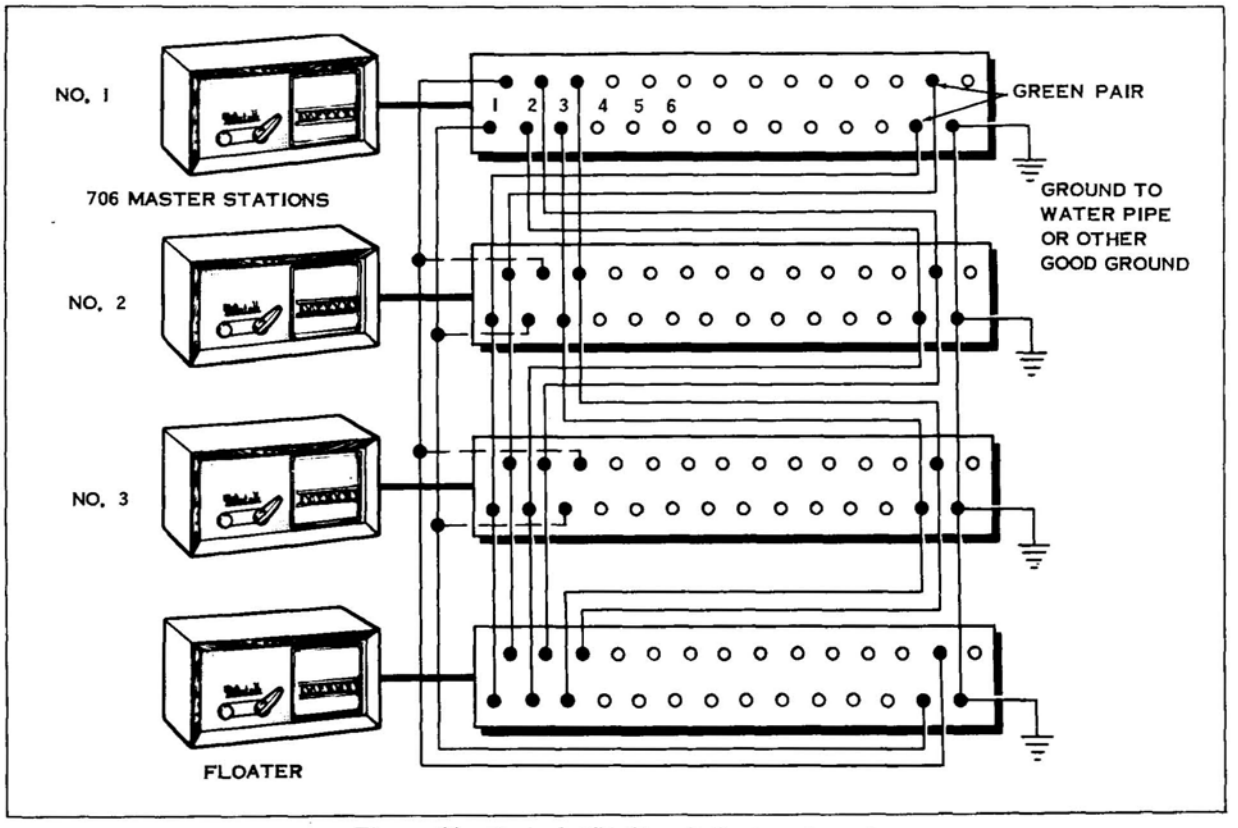


Figure 11. Typical "S" Circuit System Layout

ANNUNCIATOR AND SWITCHING CIRCUIT (-3) CONNECTIONS

Annunciator model Teletalks are installed in the same manner as standard units as far as voice lines are concerned, except that they are not equipped with the Call-In key and circuit. When preparing the switch panel for one of the various type systems, do not cut the single blue plastic or black wires (buzzer circuit) from the last switch. (See Figure 4.)

In each terminal box a terminal strip will be found for connecting annunciator circuits. No. 22 wire is satisfactory for annunciator lines up to 1,000 feet. A heavy common wire permits use up to 2,000 feet.

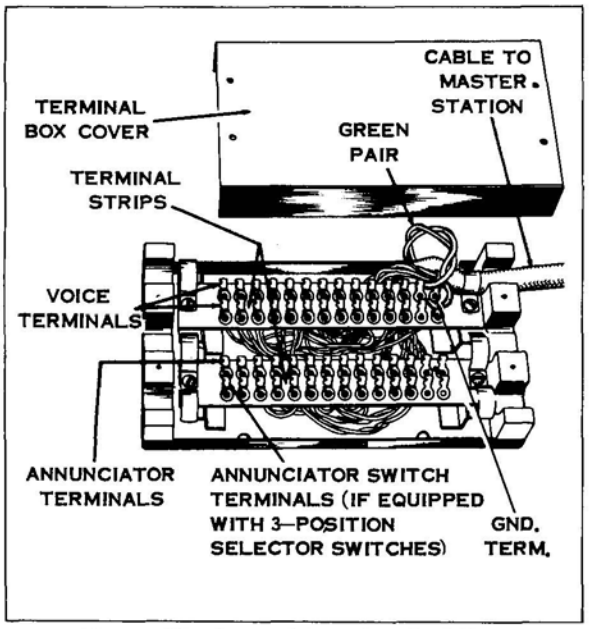


Figure 12. Annunciator Terminal Box - 12-Station Unit

If there are more than two or three annunciator models in the system it is necessary to run the annunciator and voice lines from each unit to a centrally located junction box for the interconnection of all units. The wiring problem is greatly simplified by this method. If an installation is divided into groups of units separated by an appreciable distance it may be advisable to connect each group separately, each group having its own central junction box with each central junction box connected by a suitable cable.

All annunciator model Teletalk Master Stations which must call each other by the annunciator system should have three-position selector switches (code -3). The third position (down) of the Selector switch is used as a push button to operate the annunciator assigned to that station number on the switch panel of the other annunciator model Teletalk Master Stations in the system.

Connect the voice lines as shown in the system layout. (See Figure 10.) The system layout in Figure 13 shows how annunciator push buttons from Speaker Stations are connected for operation with four Master Annunciator Stations. Connect the annunciators for the Master Stations in the system by making the connections first for one station, then for another, and so on, until the annunciator system is completed. The annunciator switches at each Master Station are connected as follows:

Master Station 1. (Assigned line number 1.)
- Switch 1 - Connect to Annunciator 1 of Floater Station.
- Switch 2 - Connect to Annunciator 1 of Station 2
- Switch 3 - Connect to Annunciator 1 of Station 3

(Continue as above until all connections are made to switches of Station 1.)

Master Station 2. (Assigned line number 2.)
- Switch 1 - Connect to Annunciator 2 of Station 1.
- Switch 2 - Connect to Annunciator 2 of Floater Station.
- Switch 3 - Connect to Annunciator 2 of Station 3

(Continue as above until all connections are made to switches of Station 2.)

Floater Station
- Switch 1 - Connect to Annunciator 1 of Station 1
- Switch 2 - Connect to Annunciator 2 of Station 2
- Switch 3 - Connect to Annunciator 3 of Station 3

(Continue as above until all connections are made to switches of "Floater Station.")

Complete connections at other stations in the same manner.

It is absolutely necessary that a common, or ground connection for the annunciator and switches be made by a wire connecting to the ground in the terminal boxes.

The common wire of the annunciator (also common wire of switches of the 3-position selector switches) may be No. 22 to No. 14 wire in the interstation cable or if a very low resistance ground circuit is available this ground circuit may be used. Always check the resistance of annunciator lines when making the installation. If the resistance exceeds 35 ohms, the annunciator may not operate properly and correction should be made at the time of installation. If the resistance is too high, it is necessary either to parallel another wire with these circuits, if there are any spare wires in the cable available; or else heavier wires must be run.

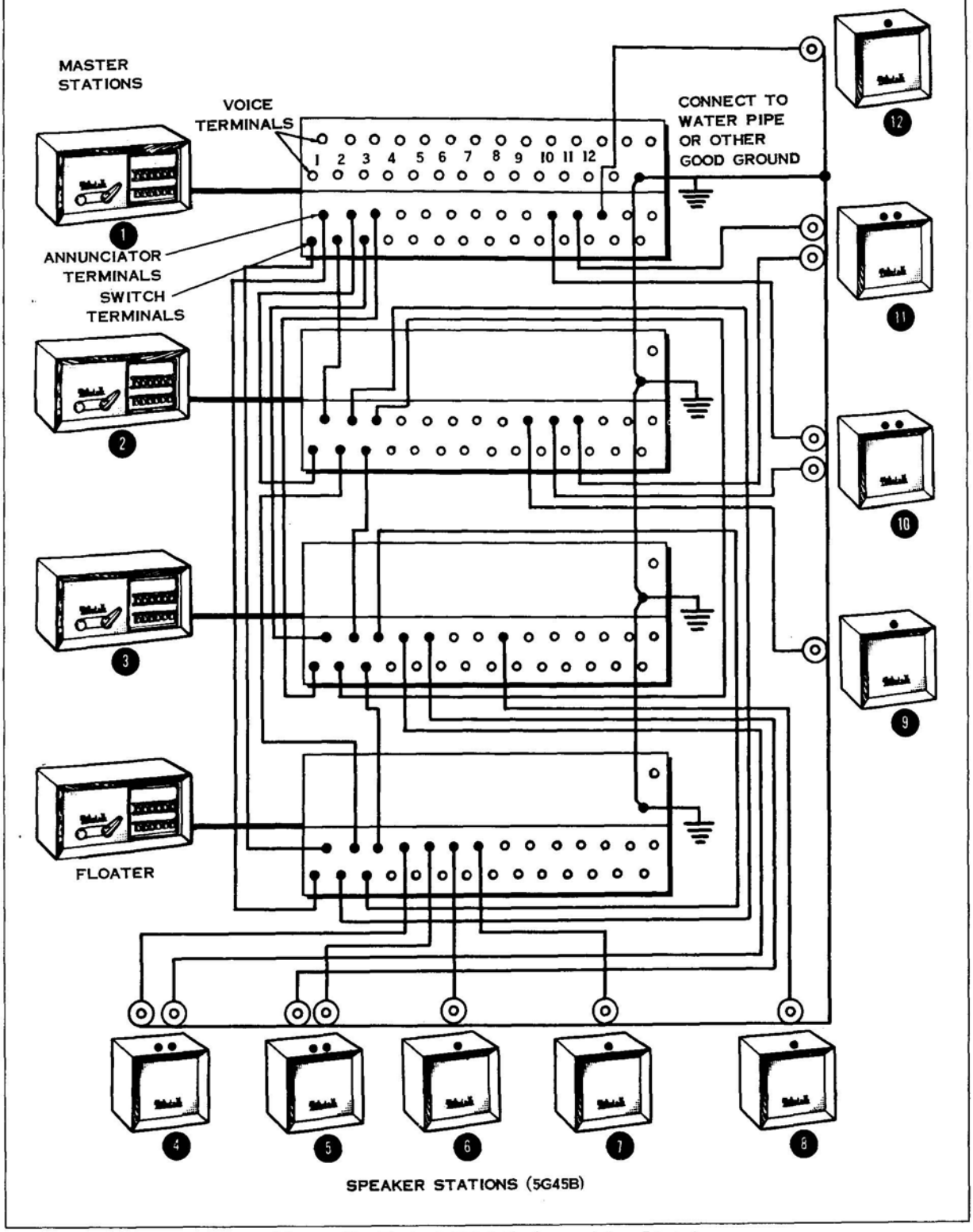


Figure 13. Typical Teletalk Annunciator Layout

SPEAKER STATION CONNECTIONS

5G45 SPEAKER STATION CONNECTIONS

Connections to the speaker are made at screw terminals at the bottom of the cabinet. These terminals are identified by the word "LINE." (See Figure 14.) (The 5G45 Speaker is not equipped with a Call-In switch.)

The connections to the 5E45 Speaker Stations are similar. The 5E45 is a model used for flush mounting. The chassis extends 2-3/8" from the rear of the face plate requiring a 7" circle or a standard 8" high by 8" wide by 4" deep wall box with 7-1/4" x 5-1/2" mountings.

5G45R SPEAKER STATION CONNECTIONS

This type Speaker Station is equipped with a Call-In switch which is connected to the last numbered pair of voice terminals of the Master Station (designated as the "Call-In terminals"). Thus, when the Call-In switch at any remote Speaker Station is pressed, a buzzer is sounded at the Master Station (the buzzer tone will also be heard at the Speaker Station). The individual at the Master will determine the caller and, after this has been done, the person at the remote Speaker Station can converse without pressing the Call-In switch. The Call-In circuit can use the same wire size as the Speaker voice circuit and it can be included in the cable. The Call-in switch should be connected only to one Master Station in the system. The connections to the Speaker unit are made at screw terminals on the bottom of the unit. The Call-In terminals are identified by the words "Call-In" and the voice line terminals by the word "LINE."

The operation and connections of a 5E45R Speaker Station are similar.

5G45B SPEAKER STATION CONNECTIONS

This type Speaker Station is equipped with a push button switch which is connected to the assigned annunciator terminal of the Master Station and to the common ground wire of the system. These wires should be connected to the screw terminals on the bottom of the Speaker unit which are identified. (See Figure 14.) One push button is used to call one Master unit only. Two or three push buttons can be provided. On these models the annunciator circuit wires are connected to a terminal strip inside the unit.

5G45S and 5G45BS SPEAKER STATION CONNECTIONS

These Speaker Stations are used in Silencing circuit "-14" systems. They are equipped with reply-back push buttons which must be held down while talking. When this switch is not pressed, the Master Station cannot hear your conversation, thus preventing eavesdropping. The voice circuit wiring is the same as for a 5G45 or 5G45B Speaker Station. A connection from reply-back switch to a common (ground) wire of the system is necessary. It is

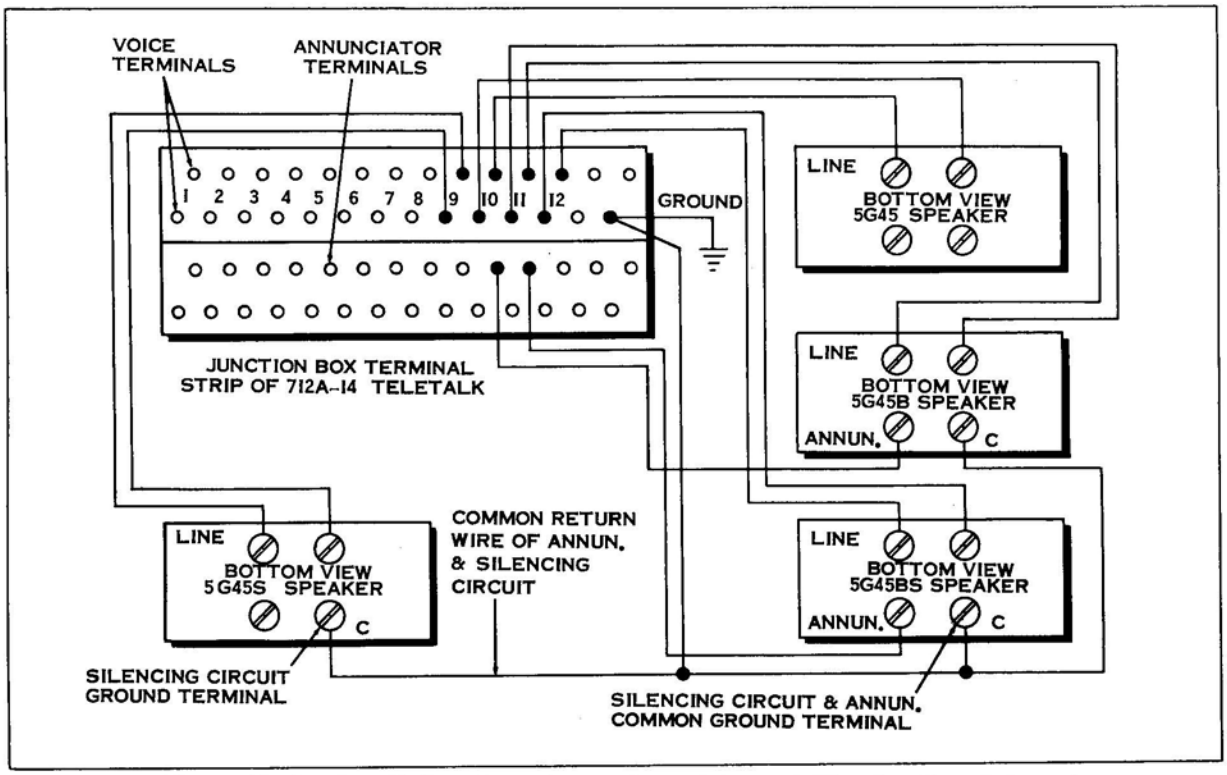


Figure 14. Speaker Station Connection - Annunciator and Silencing Circuit Layout

made at a terminal identified by the letter "C" on the bottom of the unit. (See Figure 14.)

5E45BS Speaker Station connections are similar.

5G45RS SPEAKER STATION CONNECTIONS

This type Speaker Station is equipped with a reply-back switch for use in "-14" systems and a Call-In switch. The reply-back button must be held down while talking except when calling in using the Call-In lever. The Call-In and voice circuit wiring is the same as for a 5G45R Speaker Station. A connection from the reply-back switch to the common (ground) wire of the system is necessary. It is made at a special terminal inside the unit.

CIRCUIT VARIATIONS AND CONNECTIONS

SILENCING CIRCUIT CONNECTIONS (-14)

A silencing circuit can be incorporated in any 700 Series system employing "-14" Master Stations. This Master Station prevents return speech and eavesdropping unless a reply-back button on the "-S" Speaker Station is pressed. Silencing circuit Master and Speaker Stations are installed in the same manner as the standard units as far as voice lines and annunciator circuits are concerned. The only exception is that the reply-back button of the Speaker Station should be connected to a common (ground) wire in the system. (See Figure 14.)

In systems employing more than one "-14" Master Station, all Masters should be connected for "S" circuit operation. It is not recommended that more than one "M" circuit master be used in a "-14" system. If more than one Master Station is used, all units should be the "-14" type.

NOTE

The busy signal feature cannot be used on "-14" models.

ALL-CALL CONNECTIONS (-1)

The Master Stations are installed in a system in the same manner as standard units. On models furnished with the Call-In key and circuit, the last Selector switch is not connected into the All-Call switching circuit. Two extra wires are provided on the All-Call switch for connection to the voice pair of the last Selector switch whenever it is connected to an additional Speaker Station. When making a call, lift the All-Call switch lever clockwise and talk, using the Talk-Listen lever. The All-Call lever should be placed in the horizontal position when a call is completed.

It is recommended that All-Call be connected to Speaker Stations only.

500-OHM SYSTEM CONNECTIONS (-6)

500-ohm Master Stations (-6) and Speaker Stations (5G500) are installed in a system in the same manner as the standard units. The Call-In circuits and annunciator circuits of 5G500R and 5G500B Speakers must not exceed 35 ohms, D.C. resistance. When 500-ohm Master Stations are used in a system, 500-ohm Speakers also must be used.

EARPHONE MODEL CONNECTIONS (C)

These Master Stations are installed in a system in the same manner as standard units. Earphone models are designed for use with other "S" circuit Master Stations only.

HANDSET MODEL CONNECTIONS (T) AND BUSY SIGNAL MODEL CONNECTIONS (L)

These Master Stations are installed in the same manner as standard models. In busy signal systems it is advisable to use a common ground wire throughout the system. For proper busy signal operation, the Talk-Listen lever must be in the IDLE position when not conversing. If this is not done, a busy signal will be given to a calling station. The IDLE position must be used to determine if another station, either Speaker or Master, is busy. On Handset models do not lift the handset off the cradle when determining if a station is busy; otherwise the pilot lamp will signal busy.

PAGING CONNECTIONS (-15)

Voice and annunciator circuits are connected in the same manner as standard units. In systems where a "-15" Master Station is employed for paging, the last Selector switch (key with green dot) connects the output of the Teletalk with the input of the paging amplifier. (Second from last key is used for Call-In on "-15" models.) The Output terminals of the paging amplifier are connected to speakers which are not part of the Teletalk system. The last numbered pair of terminals of the Master Station junction box is connected to the Input terminals of the paging amplifier. A special cord and terminal block is brought out of the Master Station for connections to the "B" supply cut-off relay of the paging amplifier. The relay switching circuit total line resistance should be approximately 2 ohms.

Figure 15 shows a 700-15 system layout consisting of one 712L and two 712L-15 Teletalks, a group of paging speakers, and an 85-25 Paging Amplifier. This layout shows the Output and the relay terminal blocks of two 712L-15 Teletalks connected to one

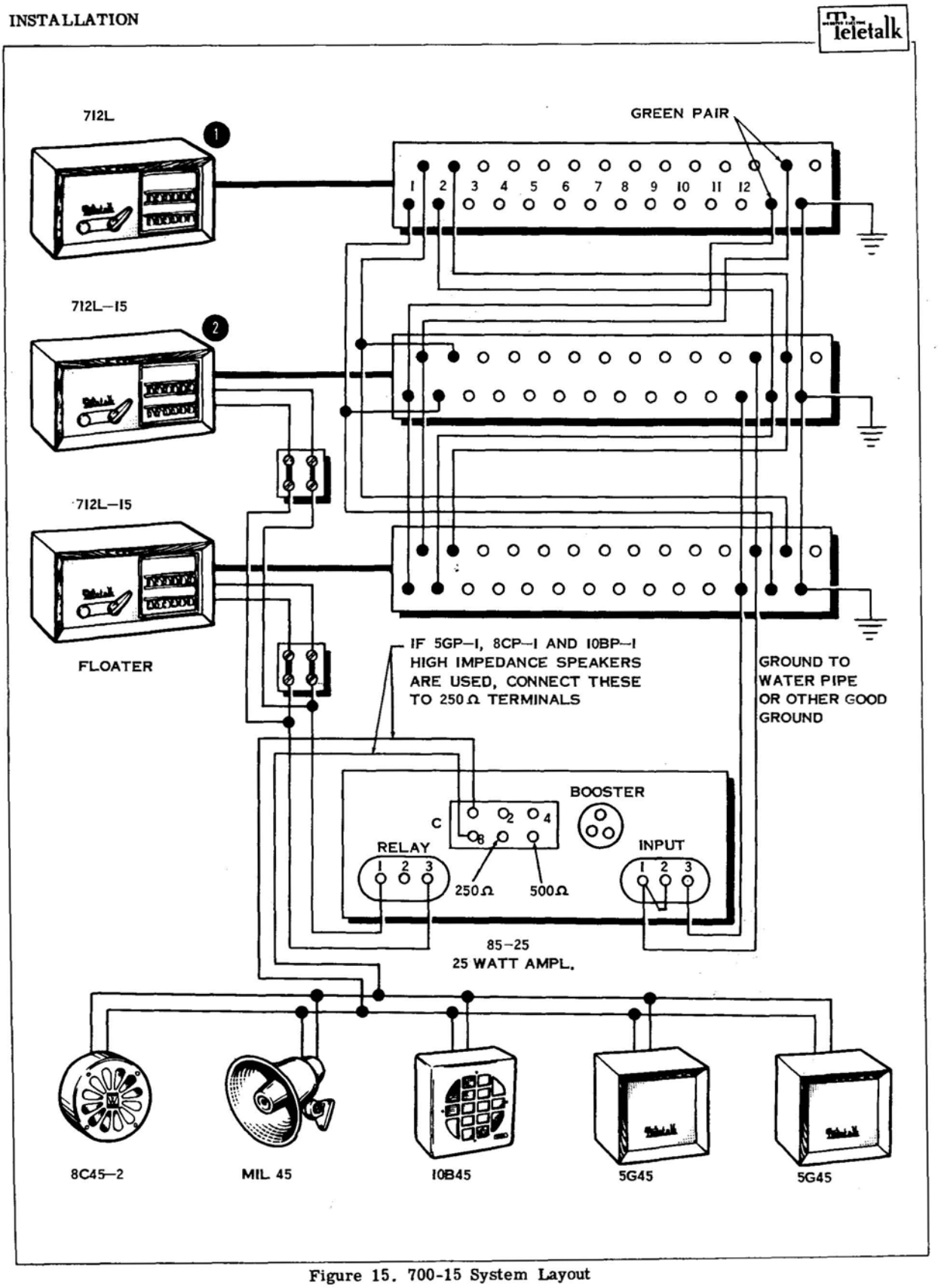


Figure 15. 700-15 System Layout

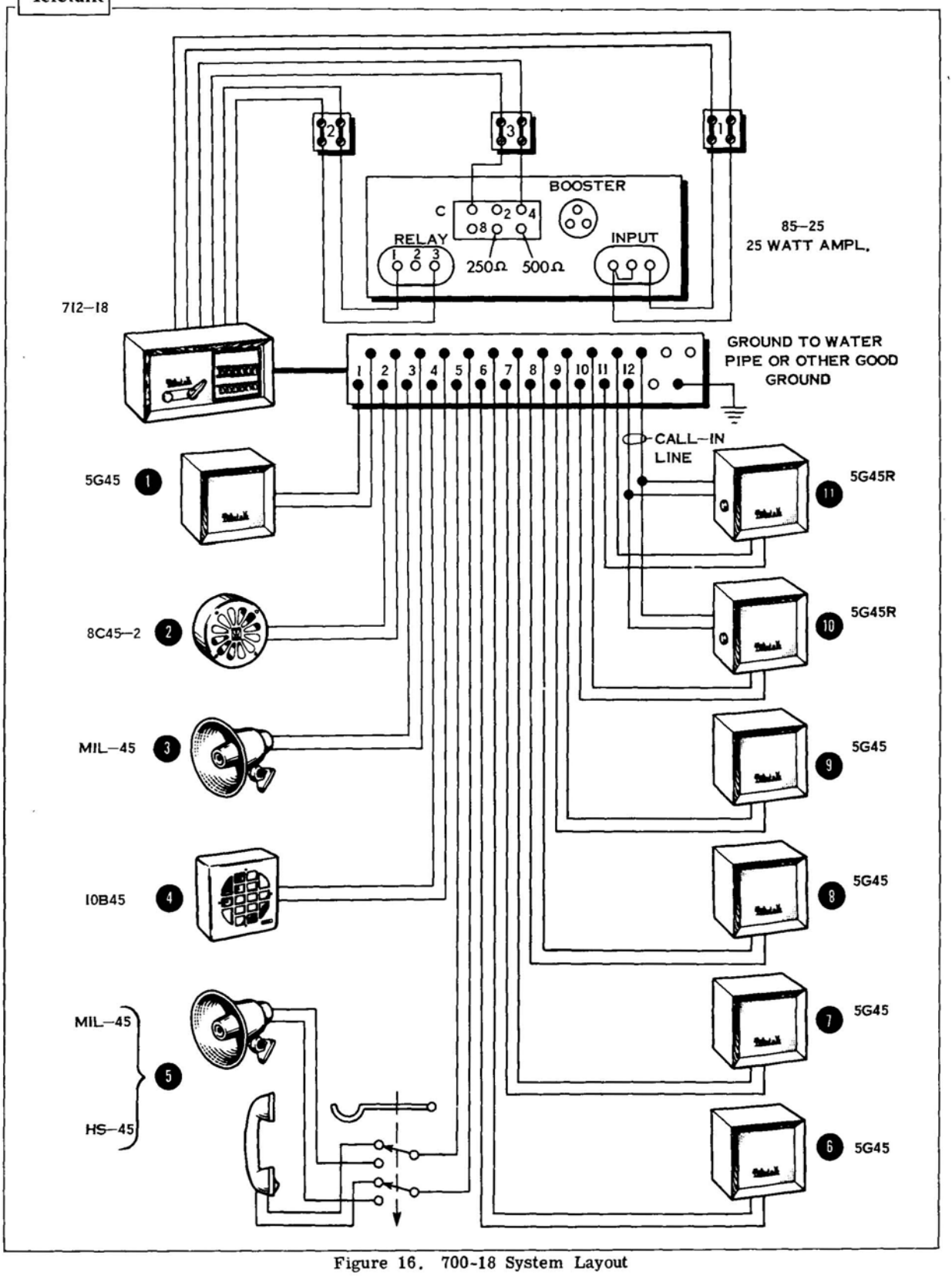


Figure 16. 700-18 System Layout

paging amplifier. When this is done, both Master Stations must call the same group of Speakers. By using busy light (L) model Master Stations, a busy indication will be given if another Master Station is making an All-Call.

ALL-CALL CONNECTIONS (-18)

The voice lines and annunicator circuits are connected in the same manner as for standard models. In systems where a "-18" Master Station is employed for paging, a special All-Call switch is used to connect the Output of the Teletalk to the Input of the paging amplifier and transfer the paging amplifier output to the Speaker Stations in the Teletalk system. Three cords and numbered terminal blocks are brought out of the Master Station for voice line and relay connections. (See Figure 16.)

The wire size used for relay switching circuit connections should be such that line D.C. resistance between Master Station and paging amplifier is as low as possible, approximately 2 ohms. If booster paging amplifiers are used in conjunction with the paging amplifier, the relay circuit line resistance between the booster and the paging amplifier should not exceed one ohm.

It is possible to connect more than one "-18" Teletalk to one paging amplifier in a system. When this is done, it is necessary that the paging amplifier Output wires to the Master No. 3 terminal block be polarized to prevent shorting the Speaker Stations if one calling station breaks in on another. Care should be taken so that one Master Station does not interrupt another when calling.

On models furnished with the Call-In key and circuit, the last Selector switch is not connected into the All-Call page switching circuit. Two extra wires are provided on the All-Call switch for connection to the voice pair of this last Selector switch whenever it is connected to an additional Speaker Station. To page, lift the paging lever clockwise and talk using the Talk-Listen lever. When finished, the paging lever should be placed in the horizontal position. Master Stations in a system should not be connected to the paging circuit of a "-18" Master Station and wires from the All-Call paging switch to Selector keys assigned Master Stations should be cut and insulated.

OPERATING INSTRUCTIONS

OPERATION "S" CIRCUIT

IDLE POSITION. Keep your Teletalk in IDLE position when not conversing. Turn ON-OFF switch on. The pilot lamp will glow to indicate your Teletalk is turned on.

Lift Talk-Listen lever to IDLE position (up) and be sure all Selector keys are in normal position (down).

On Busy Signal Models, the Talk-Listen lever must be in the IDLE position to determine if the station called is busy.

When the Talk-Listen lever is in the LISTEN or TALK position, a busy indication will be given to any calling Master Station.

TO CALL A STATION. With the Talk-Listen lever in IDLE, flip up Selector key for the desired station. On a Busy Signal Model, if the pilot lamp goes out, the station called is busy.

TO CALL BY ANNUNCIATOR. Signal the station to be called by pushing the station Selector key momentarily to the down position. When the station answers, push the Selector key up and converse using the Talk-Listen lever.

TO CALL BY VOICE. Hold Talk-Listen lever in TALK position (down) and call the person desired; then announce your name or station. Return the lever to LISTEN position (center) while waiting for reply. When a reply is received, converse normally, depressing the lever to TALK and releasing it to LISTEN.

On all calls, adjust volume to the desired level. The ON-OFF switch knob controls volume for both talking and listening. When the call is completed, restore Selector key and return Talk-Listen lever to IDLE position (up).

TO ANSWER A BUZZER CALL-IN. When the buzzer sounds, indicating that a Speaker Station is calling, flip up the "Call-In key" (last Selector key). Using the Talk-Listen lever, determine which station is calling; then return the Call-In key to normal and flip up the caller's Selector key. Converse using the Talk-Listen lever.

TO ANSWER AN ANNUNCIATOR CALL. When a station calls by annunciator, the buzzer will sound and the Annunciator Plunger above the calling station's Selector key will be ejected.

To answer the call, flip up that station's Selector key and converse using the Talk-Listen lever just as you do when originating a call. The plunger can be restored as you trip the Selector key of the calling station.

TO ANSWER A VOICE CALL. To answer a voice call from another Master Station, flip up that station's Selector key and converse using the Talk-Listen lever just as you do when originating a call.

After all calls, return Selector key to normal and the Talk-Listen lever to IDLE position.

TO MAKE A GROUP CALL. To call several stations simultaneously, trip up the Selector key for each station and make the call in the same way as though it were one station.

CONFERENCE CALLS. To originate a conference call with other Master Stations, call each of the stations individually and receive acknowledgement from each. When you call the last individual, ask him to trip up the Selector key of the other stations in the conference. All stations are then connected in one circuit.

EARPHONE. Used for conversing with "S" circuit Masters only. Operate the Talk-Listen lever the same as when earphone is not used.

HANDSET. When conversing with a Master Station, leave the Talk-Listen lever in IDLE and converse without further manual operation. When conversing with a "M" circuit Station, the Talk-Listen lever must be operated the same as when Handset is not used.

On Handset - Busy Signal Models, the Handset should remain on the cradle until a station is selected, since the pilot lamp goes out when the Handset is used in the IDLE position.

OPERATION "M" CIRCUIT

The operations and the Busy Light function of a Master Station when used in a "M" circuit system is the same as given under "S" circuit operation with the following exceptions:

To receive a call from another Master Station, the Talk-Listen lever should remain in the IDLE position. To answer, just reply toward the Speaker-Microphone. The Handset can be used only by the station originating a call, and the Talk-Listen lever must be operated from LISTEN to TALK when conversing. Earphone models cannot be used in an "M" circuit system.

HUM AND NOISE TROUBLES

Hum, noise, or other interference may be produced by medical apparatus, office equipment, motors, or poor wave form of the power supply. It may be picked up by the voice lines running from the Speaker Stations and amplified in the master unit when the Talk-Listen switch is in the LISTEN position. Defective tubes may also prove a source of hum and noise in the amplifier.

Interstation voice lines must always be twisted pair wires, for minimum pickup of interference. The transposing effect obtained from the twisted wires effectively cancels out hum or noise picked up by interstation wiring. Care should be taken that the cable does not ground to any pipe, conduit, or other metal surface or by moisture due to leakage, as this will unbalance the cancelling effect of the twisted wire and may cause noise, hum, or cross talk in the Teletalk. In extremely noisy locations where the noise is picked up by the interstation wiring, it may be necessary to install shielded pairs of wire between the Speaker Station and the Master Station. Never use a single shielded wire for this purpose, using the shield for one wire, but use two-wire shielded cable, grounding the shield at one point near the center of the length of cable or near the Teletalk Master Station.

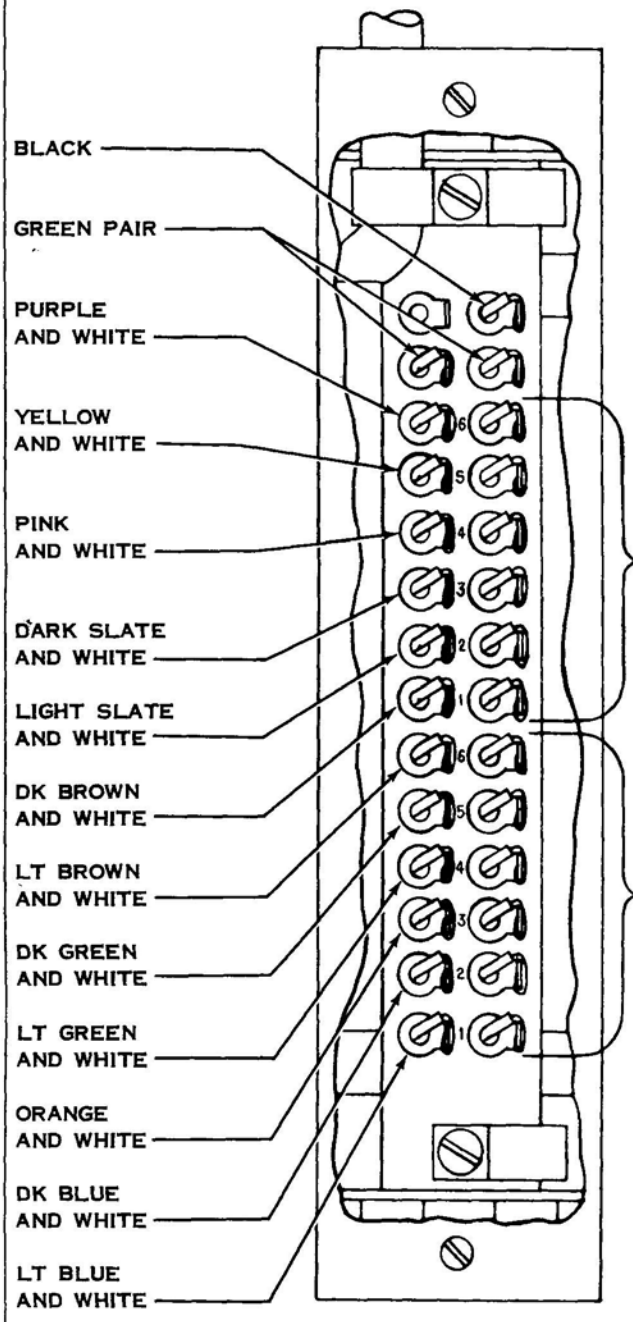
The source of interference caused by office equipment, such as electric typewriters or other equipment using automatic speed regulators, may cause a clicking noise in the Teletalk. Such interference, however, is usually easy to trace since it will occur only when the interfering equipment is in operation. Filters for eliminating the interference caused by these devices are usually available from the manufacturer of the equipment causing such interference.

It might be necessary to reverse the power plug to determine the correct polarity for lowest hum level. The chassis connection in the junction box should always be grounded to a water pipe or other good ground. This will aid in the elimination of hum and noise.

If the hum or noise cannot be eliminated, refer the unit to an authorized maintenance man for trouble shooting.

INSERT NAMES IN NAME STRIP

Type or write names assigned to each Selector key in spaces on manila name strip. Cut strip from card and sandwich it between the transparent covers. Insert sandwiched name strip into name strip holder and push on Teletalk panel. When removing name strip holder, care should be taken not to scratch panel.



NOTE: (A-3)

COLOR CODE AND CONNECTIONS FOR SIX STATION TELETALKS HAVING ANNUNCIATORS AND THREE POSITION SWITCHES SHOWN. COLORED WIRES, DARK BROWN THRU PURPLE, FOR ANNUNCIATOR CONNECTIONS AND WHITE MATES FOR THIRD POSITION SWITCH CONNECTIONS.

SEE NOTES

NOTE: (-A)

FOR MODELS WITH ANNUNCIATORS ONLY, COLORED WIRES, DARK BROWN THRU PURPLE, FOR ANNUNCIATOR CONNECTIONS. (WHITE MATES NOT USED)

VOICE CIRCUITS

NOTE: (-3)

FOR MODELS WITH THREE POSITION SWITCHES ONLY, COLORED WIRES, DARK BROWN THRU PURPLE, FOR THIRD POSITION SWITCH CONNECTIONS. (WHITE MATES NOT USED)

JUNCTION BOX CONNECTIONS 706A-3, 706A AND 706-3 MODELS

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