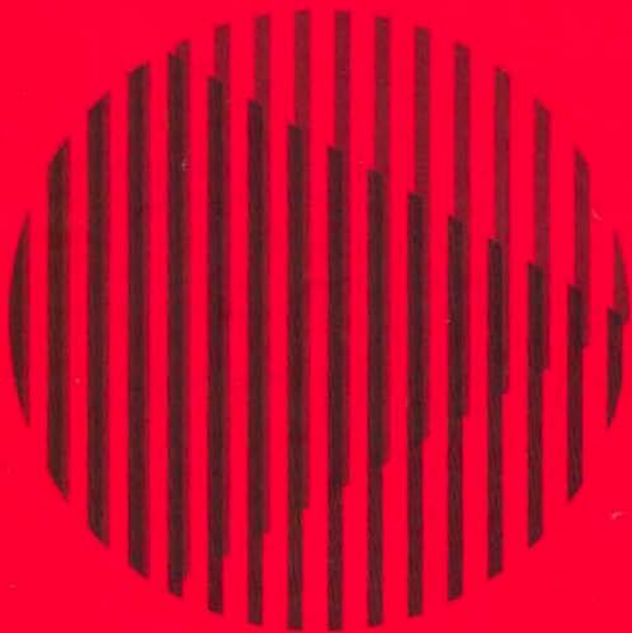


***Installing your
own inside
telephone
wiring***



Illinois Bell

You can now legally wire your premises for telephone service. This booklet is your guide to Customer Provided Inside Wiring (CPIW).

These instructions apply to direct line basic telephone exchange service. Such wiring must be used only with FCC-registered or grand-fathered non-button and/or single-button telephone sets and certain associated devices.

This manual does not apply to wiring connected to coin telephones, telephones in explosive atmospheres or large business communications systems such as switchboards, and key telephones.

This booklet explains how to install telephone jacks anywhere in your premises.

It should be used in conjunction with:

1. The Illinois Commerce Commission Standards for Customer-Provided Inside Wiring (CPIW);
2. Local building and electrical codes;
3. Any manufacturer or supplier instructions which accompany the components you've purchased; and
4. A book explaining the basic principles of electrical wiring if basic wiring is new to you.

WARNING: Telephone wire conducts electricity. Caution must be used to avoid electrical shock. See "Cautions," page 10.

DO NOT work on your telephone wiring at all if you wear a Pacemaker.

NOTE: Customers who provide their own premises inside wire are responsible for all resulting loss or injury as provided in the applicable tariff (Ill. C.C. No. 5, Part 1, Section 5, page 12.10 paragraphs 31.1(I) and 31.2(C).

About telephone wiring

Your telephone line runs directly from your premises to the telephone company, where it is connected to equipment that provides your telephone service. This line always carries some electrical current, although the voltage varies. The line enters your premises at some point and connects to a protective device and sometimes to a Standard Network Interface. From this point, the inside wire connects to all your telephones. Connecting points between the telephone line and your telephones may be of several types, depending on when your telephones were installed:

Hard Wired—The telephone is wired directly into the line. The connecting point is a connecting block, which is usually a small, square plastic or metal box on or near the baseboard (Figure 1). Hard-wired telephone equipment cannot be unplugged.

4-Prong Plugs and Jacks—On some desk-type telephones, there is a round or rectangular 4-prong plug at the end of the telephone cord (Figure 2). The prongs plug into a jack with four holes. Telephones equipped with a 4-prong plug may be connected and disconnected by plugging and unplugging them.

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This manual includes the following sections:

About telephone wiring	page 2
Explains how your telephone is connected to the telephone network.	
CPIW components	page 6
Describes the different types of components available for your wiring work.	
Planning your wiring job	page 8
Tells how to plan your wiring. You should be familiar with the requirements outlined in this section.	
Cautions	page 10
Gives you detailed safety measures.	
Installation procedures	page 11
Outlines the general installation procedures.	
Testing	page 12
Describes how to test your wiring when your work is finished.	
Troubleshooting	page 12
Explains some procedures for locating and correcting problems with your telephone wiring.	
Quick reference wiring guide	page 13
If you already know which components to use and how to run your wiring, you can refer to this section whenever you do any telephone wiring work. If telephone wiring work is new to you, or if you need more information, you should read the other sections.	

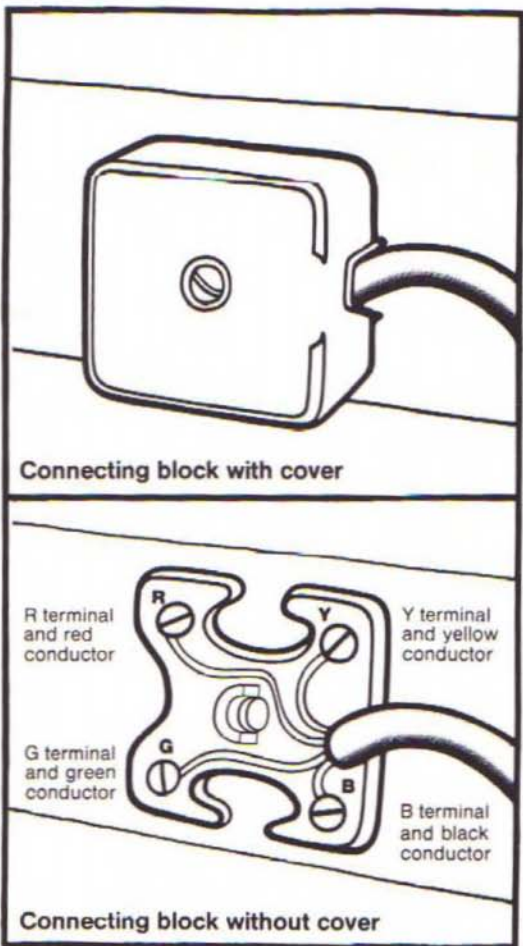


Figure 1 (Typical arrangement)

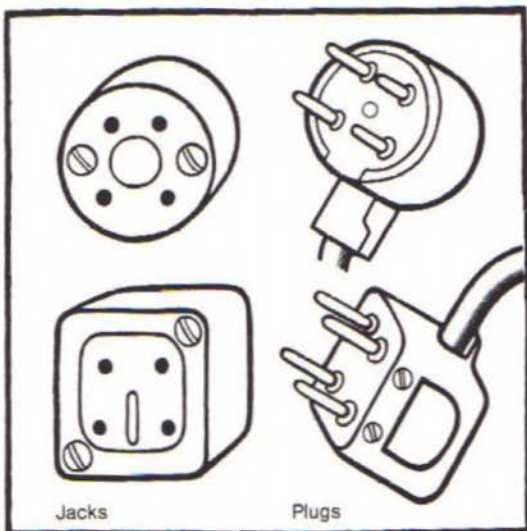


Figure 2

Modular Plugs and Jacks—Telephones installed more recently are connected to the line using the modular system, which consists of a modular plug and a matching modular jack. Desk-type telephones are connected to a modular cord, which is plugged into a modular jack, usually on or near the baseboard (Figure 3). Wall-mounted telephones have a pair of slots and a sliding modular plug on the back. The telephone is mounted on a modular jack which has two studs (to support the weight of the telephone) that fit in the slots and a modular jack for the sliding plug on the telephone (Figure 4). Illinois Bell and other suppliers offer devices to convert hard-wired and 4-prong connecting equipment to the modular system.

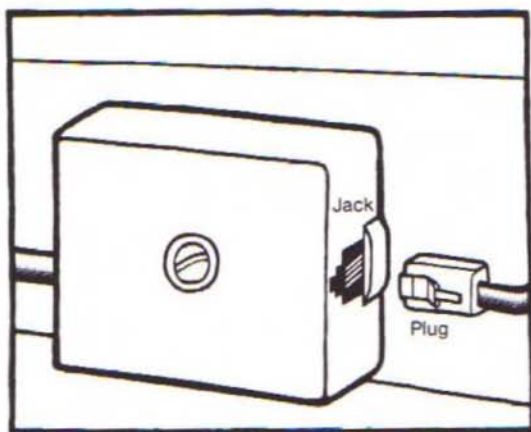


Figure 3

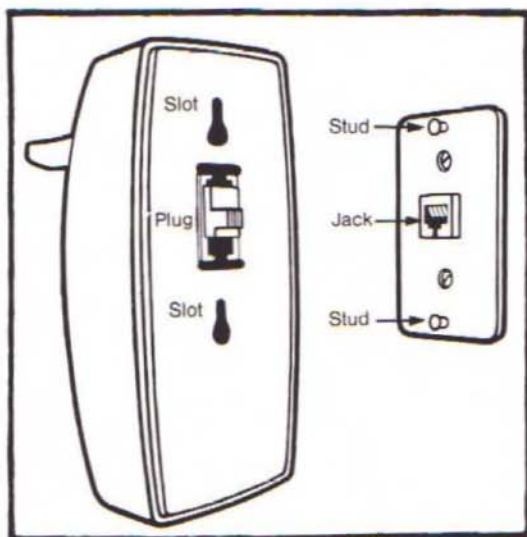


Figure 4

Demarcation Jack—The boundary between the wiring in your premises and the telephone company access line is the demarcation jack.

If there is no existing inside wire, as in a new home, you must have a Standard Network Interface (Figure 5) installed by Illinois Bell. When you have finished your wiring work, you will plug the modular plug of the new wiring into the Standard Network Interface. The Standard Network interface is the demarcation jack.

In premises with existing telephone wiring, the demarcation jack is an in-place jack nearest the entrance of the telephone company access line.

Connection Jack—The demarcation jack or any modular jack can serve as the point of connection between your new wiring and the existing wiring. This point of connection is called the connection jack.

You may be able to convert an existing hard wired or 4-prong jack to a modular connection jack, using components available from Illinois Bell or other suppliers.

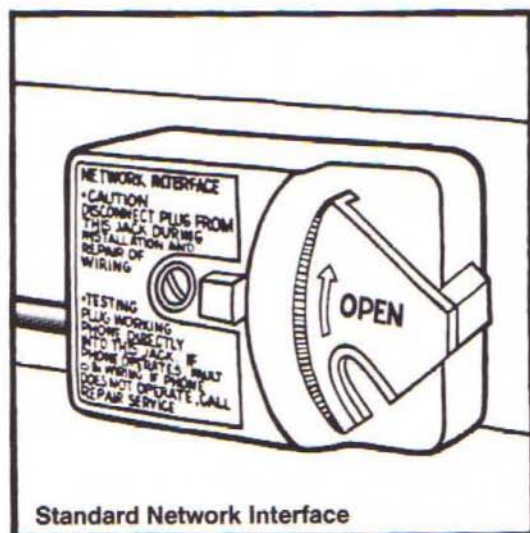


Figure 5

WARNING: Telephone wire conducts electricity. Caution must be used to avoid electrical shock. See "Cautions," page 10.

CPIW components

There are several types of components associated with Customer Provided Inside Wiring (CPIW):

Modular Jacks—These are the jacks into which modular telephone equipment is plugged. There are two basic types—jacks for desk telephone sets and jacks for wall telephone sets. In shopping for CPIW components, you may encounter several variations of modular jacks. Some attach to the surface of the baseboard or wall, while others are flush-mounted, requiring a hole in the wall. Some provide a spring-loaded door to protect the jack opening from dust and dirt when not in use.

Wire Junctions—The purpose of a wire junction is to connect two or more sets of telephone wires (Figure 6). Some junctions include a cord with a modular plug on the end, intended to connect your CPIW to the connection jack. Other junctions are designed to be placed at a point where several telephone wires meet. Proper use of junctions will minimize the amount of wire required for your wiring job.

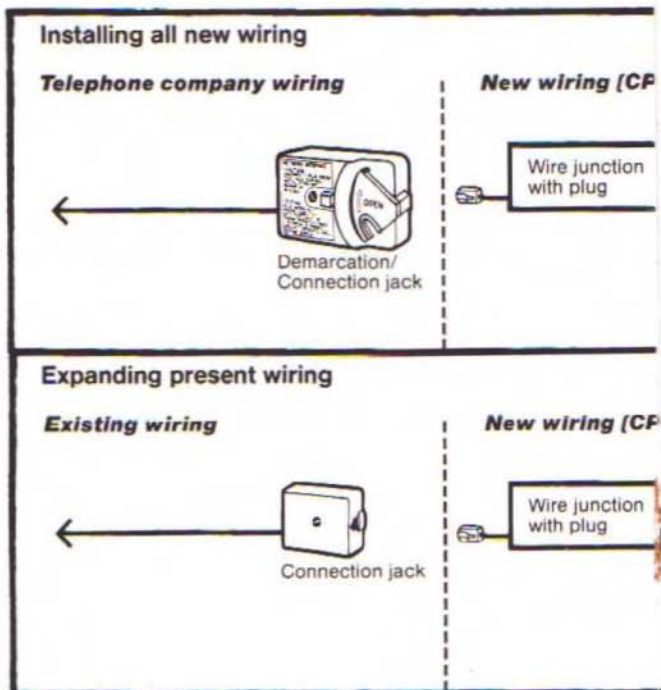


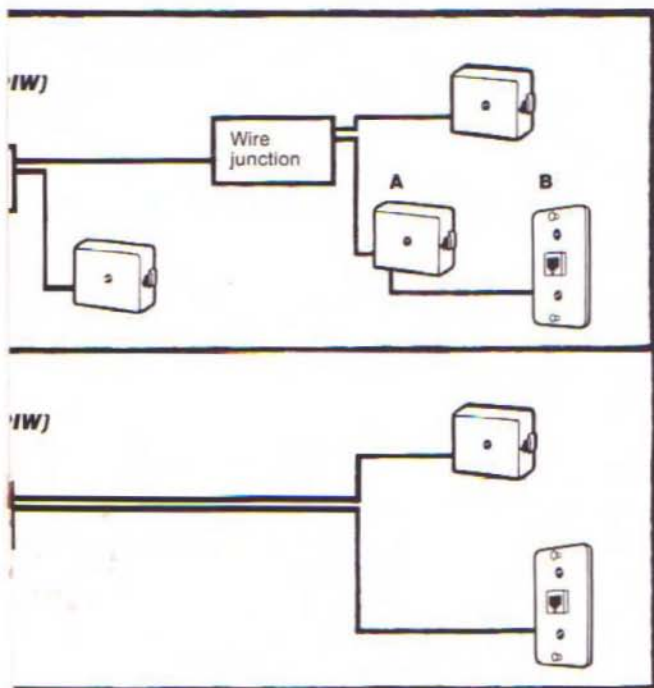
Figure 6 DO NOT plug into the connection jack until

WARNING:

Telephone wire conducts electricity. Caution must be taken to avoid electrical shock. See "Cautions," page 10.

Telephone Wire—Wire used for CPIW should contain four or more solid copper, 22 or 24 gauge, conductors which are insulated and color-coded. (See Figure 1.) The wire should have an outer jacket protecting all conductors, and must meet the requirements of the Illinois Commerce Commission Standards for Customer-Provided Inside Wiring (CPIW). Copies of these standards are available at Illinois Bell Service Centers. Wire is generally secured to the wall with U-shaped wiring staples. If more than four conductor wire is used, see wiring standards publication for details.

Instructions—Instructions describing how to connect the components should be obtained from the manufacturer or supplier of the components which you purchase.



wiring work is complete.

used

Planning your wiring job

Before you purchase any CPIW components, you should plan your wiring job to determine which components you need.

Decide where in your premises you want modular telephone jacks and which type of jack is best for each location.

Determine the best route for the wiring from the connection jack to each of the new jacks.

Junctions should be placed where two or more wire routes come together. Typical wiring schemes are shown in Figure 6.

Note the placement of the junctions. Also note that wiring continues past jack A to the wall set jack B. This approach minimizes the amount of wire necessary.

When planning and installing your telephone wiring, you must comply with any applicable building or electrical codes, and the Illinois Commerce Commission Standards for Customer-Provided Inside Wiring (CPIW). Failure to meet these requirements may result in poor telephone service, safety problems, and/or a repair charge from the telephone company.

Recommendations

When installing your telephone wiring, avoid:

- *Damp locations*
- *Locations not easily accessible*
- *Temporary structures*
- *Wire runs that might provide support for foreign objects (e.g., decorative items, lighting, etc.)*
- *Excessively hot locations (heating pipes, etc.)*
- *Locations where wire will be subject to abrasion*

The *total* length of wire between the demarcation jack and the farthest modular jack should not exceed 200 feet.

Wires should be placed horizontally or vertically in straight lines, but should be kept as short as possible.

To make wiring as inconspicuous as possible, run wire along door or window casings, baseboards or other trim, and the underside of rails, moldings, etc.

Wire must not be exposed to mechanical stress, such as being pinched when a door or window closes.

Place modular jacks and wire junctions high enough for them to remain moisture-free during normal floor cleaning.

To keep dirt out, openings of modular jacks should never face upward.

Wood surfaces are preferred for fastening wire and attaching modular jacks and wire junctions. When attaching hardware to plaster walls, use anchors or toggle bolts.

Avoid attaching telephone wire to the outside of your building. However, if such placement is necessary, drill holes to the outside through wooden window or door frames. Slope entrance holes upward from the outside to prevent water from leaking in. Also:

- *Rear and side outside walls are preferable locations.*
- *Place wire routes beyond the reach of passersby.*
- *Do not place wire in front of signs, doors, windows, fire escapes, awnings, etc.*

Use a wire guard or two layers of electrical tape to protect the wire in places where it may be subject to abrasion.

Attachments to cement or cinder block should be made with screw anchors, toggle bolts, plastic anchors, or masonry fasteners.

On brick, it is preferable to drill holes for fasteners in the centers of the bricks. However, with face or ornamental bricks, it is necessary to put holes in the mortar to avoid cracking the bricks.

Tools

To install your wiring, you will need some or all of the following tools:

Screwdriver with insulated handle.

Something to cut telephone wire (recommended: a pair of diagonal cutters with insulated grips).

Something to strip the telephone wire outer jacket without damaging any of the inner conductors.

A hammer or staple gun.

A drill with appropriate sized bits, to drill holes for screws and anchors.

Cautions

Do not work on your telephone wiring at all if you wear a Pacemaker.

Telephone lines carry electrical current. To avoid contact with electrical current:

- Use a screwdriver and other tools with insulated handles
- Do not touch screw terminals or bare conductors with your hands.
- Do not work on your telephone wiring while a thunderstorm is in the vicinity.

You and those around you should wear safety glasses or goggles.

Be sure that your modular plug is not connected to the connection jack while you are working on your telephone wiring.

If you are connecting a new modular jack to existing telephone company wiring which is hard wired (Page 2), take the handset of one of your telephones off the hook. This will keep the phone from ringing and reduce, but not eliminate, the possibility of your contacting electricity.

Do not place telephone wiring or connections in any conduit, outlet or junction box containing electrical wiring.

Do not fish wire between studding when electric wiring is present.

When drilling through walls, floors, or ceilings, be careful to avoid contact with concealed hazards such as electrical wiring, gas pipes, steam pipes, water pipes, etc.

Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities.

Telephone wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.

The red and green or equivalent conductors (Page 7) should connect to the telephone line, and the black and yellow or equivalent conductors are used for the second line in Family Plan Service.

Before working with existing inside wiring, check all electrical outlets for a square dial light transformer and unplug it from the power source.

Contact with such power sources can cause electrical shock.

Do not connect electrical power source transformers to the telephone lines. Transformer leads for power used with terminal equipment must be connected in accordance with the transformer manufacturer's instructions.

Do not run telephone wire between buildings. Such a condition allows exposure to lightning.

Do not place a jack where it would allow a person to use the telephone while in a bathtub, shower, swimming pool, or similar hazardous location.

Protectors and grounding wire placed by the telephone company must not be connected to, removed, or modified by the customer.

Installation Procedures

Once you have planned your telephone wiring and purchased the necessary CPIW components, you are ready to start. We outline here the general procedures to follow. For each component you install, be sure you read through any instructions packaged with the component before beginning the installation.

Identify your connection jack and convert it to a modular jack if necessary. Your CPIW begins with either a wire junction with plug or a modular plug-ended length of wire which will plug into the connection jack.

DO NOT plug into the connection jack until your wiring work is complete.

Attach each component to the wall or baseboard. Wood screws should be used to attach components to baseboards or other wooden surfaces. To fasten components to plaster walls, use anchors or toggle bolts.

Run wire to each component, stapling wire to the wall or baseboard. Allow enough wire to make the connections to each component. Space staples about 7 inches apart, and be sure not to pierce or pinch the wire with staples.

Remove the telephone wire jacket as necessary and connect the conductors to the terminals for each component. Trim any excess wire and fasten the component cover to the base.

After your work is finished, plug into the connection jack. If you took a phone off the hook, hang it up.

Testing

Once you have finished installing your telephone wiring, you should test it. To test, lift the handset of a telephone plugged into one of the new jacks, listen for dial tone, then dial a digit and listen for the absence of dial tone and for excessive noise. If the dial tone cannot be interrupted by dialing a digit, or if excessive noise occurs, attempt to locate the problem using the troubleshooting guidelines below. You should disconnect your wiring from the connection jack until the trouble is located and repaired.

Troubleshooting

If your new wiring does not meet the tests described above or trouble develops with your telephone service, determine whether it is caused by your wire or equipment. To do so:

Unplug the telephone wiring you installed from the connection jack.

Plug a known working telephone into the connection jack and try the phone as in the "Testing" section to see if the trouble continues or disappears.

If trouble continues, plug the working telephone into the demarcation jack and try the phone as above.

If there is still trouble after connecting the phone to the demarcation jack, follow the "Trouble Reporting Procedure" (opposite page).

If there is no trouble condition at the demarcation jack, the problem is somewhere in your wire, the equipment or connection jack. You may be able to identify the source of the trouble by plugging the working telephone into different modular jacks and testing. Possible sources of trouble are broken wires, damaged insulation, conductors reversed, loose connections, and staples through the wire.

If, after lifting the handset of a telephone plugged into one of your new jacks, you get dial tone but have Touch-Tone® service which does not operate, you should try reversing the red and green or equivalent conductors at that jack (after unplugging your wiring from the connection jack), then plug back into the connection jack and test the phone again. If you are unable to locate and repair the trouble, you should follow the "Trouble Reporting Procedure" (opposite page).

Trouble Reporting Procedure

A charge will apply if a visit is made and it is determined that the fault is with the wiring you installed.

To report trouble:

- Dial your telephone repair service.
- Describe the trouble.
- State that you have installed your own telephone wiring.

Quick reference wiring guide

- Be sure the modular plug is unplugged from the connection jack.
 - Attach each component to the wall or baseboard.
 - Run telephone wire to each component, allowing enough extra wire to make the connections.
 - Make the connections and put covers on components.
 - Plug the modular plug into the connection jack.
 - Plug in telephones and test (see "Testing")
 - If you have any problems see "Troubleshooting."
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