MOD KEY 16

EASY INSTALLATION GUIDE

TIE/communications, Inc.

SYSTEM PRACTICE 01410 IMG

MOD KEY 16

Easy Installation Guide

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> # PART 1
>
> # AN INTRODUCTION TO YOUR MOD KEY 16

Quick.
Efficient.
Economical.
These are words that you have probably never heard used to describe a telephone system. . .
Until now.

The MOD KEY 16 system is a microprocessor-based, state-of-the-art communications system which offers you superb service, and the flexibility and features which are usually only found on larger, more expensive systems.

The MOD KEY 16 system is designed to give you the best custom-designed services available, making it as easy to use as it is to install. The system can operate by itself or behind a Private Branch Exchange (PBX), and can grow in size from the basic two outside lines and eight extensions to six lines and sixteen extensions.

With the touch of a few keys, you will have such advanced features as Speed Dial, Conference Call, Night Answer and Paging at your fingertips. You can even choose to place and receive calls without lifting the handset!

The possibilities are almost limitless. The system offers you the flexible assignment of outside lines, and a toll restriction package that can be tailored to suit your needs. Several pieces of optional equipment (including paging amplifiers, a power failure alarm and an emergency-use telephone) can be installed if you desire. Such options are guaranteed to expand and enrich the already wide horizons of your system.

This manual will provide you with step-by-step instructions for the installation of the basic equipment, the procedure for customizing your system so that it serves your office or company's particular needs, and the easy, almost effortless instructions for using your telephones.

We'll begin with a short discussion of the pieces of equipment you should have on hand to install the system. If you are missing anything, this will be your opportunity to order it!

NOTE: Please read through this entire manual *at least once* before ordering any additional equipment or attempting any installation.

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PART 2

PREPARING TO INSTALL THE MOD KEY 16

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Before installation, it is important to have all of the necessary tools and equipment on hand. The following paragraphs contain information on the equipment that you should have ordered for your system.

Three components are required for the basic use of your MOD KEY 16 system: the Key Service Unit (KSU), the telephones and the power supply. If desired, expansion cartridges may have been ordered to provide more lines or extensions to your system. All of these components are shown below.

THE MOD KEY 16 SYSTEM COMPONENTS

ULTRAKEY

ECON-O-KEY

KEY SERVICE UNIT
(Equipped with two outside lines and eight extensions)

01410-I-1

DELPHI

MERITOR

One or Four Line Expansion Cartridge

Eight Extension Expansion Cartridge

EXPANSION CARTRIDGES

POWER SUPPLY
(Included with KSU)

BUSINESSCOM 16
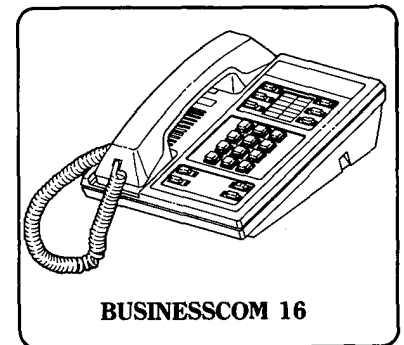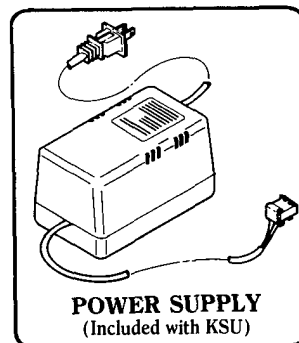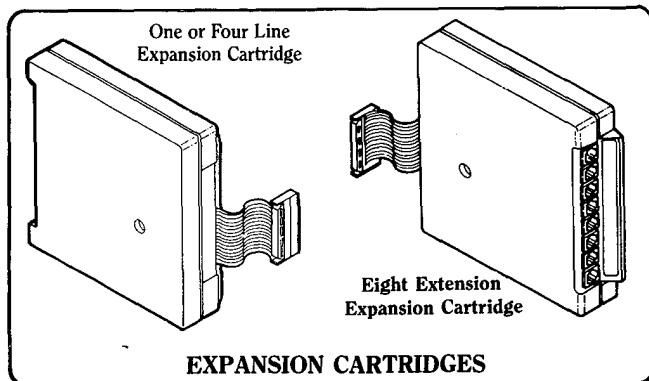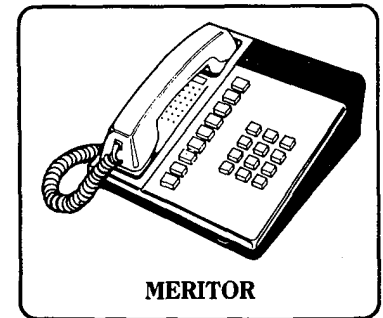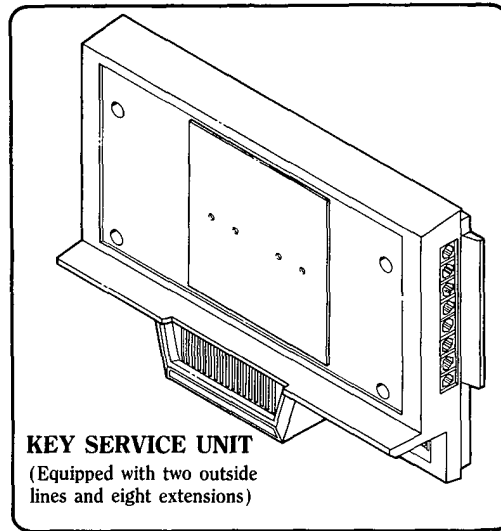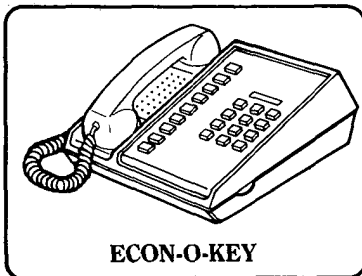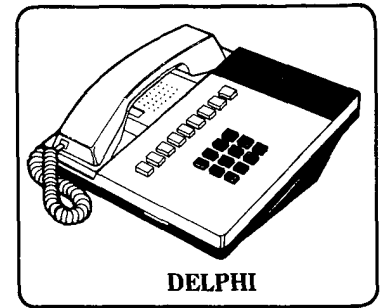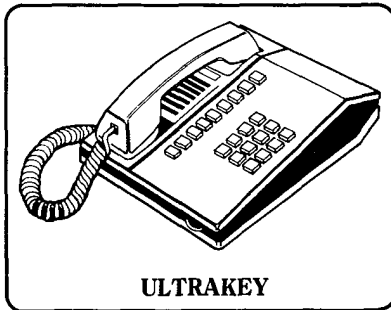
Item 1: Key Service Unit/Power Supply

One Key Service Unit and Power Supply *must* be installed with your system.

Note that on the Checklist (p. 2-3), the entry marked **Item 1** has already been filled out for you.

It is strongly advised that you install a surge protector at the dedicated outlet for the KSU. This will protect the system from sudden increases in voltage (for example, during a thunderstorm).

On the Checklist indicate if a surge protector has been ordered.

Item 2: Telephone Company Lines

The basic system is equipped to accept two outside lines. If an expansion cartridge is installed, either three or six outside lines may be installed (depending upon the cartridge ordered).

Indicate the number of outside lines installed on the Checklist.

Item 3: Telephone Extensions

The amount and type of telephone extensions should be marked under **Item 2** on the Checklist.

Next to each model ordered, fill in the blank to indicate how many telephones have a speakerphone for Handsfree operation and/or how many have been ordered with a wall-mounting kit.

Item 4: Expansion Cartridges

Your system comes ready to supply you with access to two outside lines and eight extensions. Three kinds of expansion cartridges can be installed in the KSU. These cartridges provide you with expanded service at low cost without ever forcing you to tamper internally with your system.

One cartridge allows you access to **one** additional outside line, while another cartridge allows you access to **four** more outside lines (you can only use *one* of these two cartridges). The third type of cartridge allows you to install **eight** more extensions.

If more than two lines are to be installed (see Item 2), then you *must* install either a one or four line expansion cartridge.

If more than eight extensions are to be installed (see Item 3), then you *must* install an eight station expansion cartridge.

On the Checklist, indicate if any of the expansion cartridges have been ordered.

Item 5: Additional Installation Items

1. A dedicated 15 amp, 120 V AC outlet *must* be located within 12 feet of the KSU, and within 25 feet of the line connections from the telephone company. If necessary, you can request that the telephone company reinstall their lines for easier access to the KSU.
2. The following pieces of equipment are required to attach each extension to the KSU:
   - Two four-wire 625A modular jacks **per extension**
   - One four-conductor modular line cord **per extension** in (addition to the cord which comes with each extension ordered); a line cord must also be ordered for **each outside line** that is installed in the system
   - Standard 24 AWG two-pair twisted cable; the maximum distance between any extension and the KSU can exceed 1,200 feet — enough cable should have been ordered to allow each extension to be connected

   Record the number of modular jacks, modular line cords and length of cable that have been ordered on the Checklist.

NOTE: Since the installation of some pieces of optional equipment requires additional line cords or modular jacks, you may want to purchase a few extra of each.

Item 6: Optional Equipment

You may have several pieces of optional equipment installed with the system. Record any of these items on the Checklist.

1. **External Paging Equipment** - loudspeakers or amplifiers may be attached to the system to allow paging announcements to be heard in large areas; an audio-matching transformer (600 ohms input to 50K ohms output) is required along with the equipment.
2. **Loud Bells** - a bell may be installed in large or noisy areas. This bell will ring when the system receives an incoming call; a separate power supply is required for the loud bell.

3. **Extension 07 Loud Bell** - a bell may be installed in large or noisy areas that rings only when an intercom or outside call is received at Extension 07; a separate power supply is required for the Extension 07 loud bell.

4. **Music On Hold** - a radio or other music source may be connected to the system to provide music to callers on Hold; a separate power supply is required for a music source.

5. **Power Failure Alarm** - some type of warning device (bell, light, buzzer, etc.) may be attached to the KSU.

6. **Emergency-Use Telephone** - a standard single line telephone may be plugged into the POWER FAIL TRAN jack on the KSU. This phone (which uses line 1) will only operate when the power to the system has failed; calls can then be placed and received on this phone.

7. **Door Chime Box** - a Door Chime Box may be installed at any door so that a person at the door can signal and communicate with someone inside. A signal will be received over the telephone speakers at those extensions programmed to receive it.

CHECKLIST

ITEM DESCRIPTION	TIE PART NO.	AMOUNT REQUIRED
Item 1: Key Service Unit / Power Supply	60000	ONE
Plug-In Power Line Surge Protector	—	_____
Item 2: Telephone Company Lines	—	_____
Item 3: Telephone Extensions		
ULTRAKEY	60015	_____
____ with Speakerphone	60016	_____
____ Wall Mounting Kit	86062	_____
MERITOR 1E	60020	_____
____ with Speakerphone	60021	_____
____ Wall Mounting Kit	86077	_____
ECON-O-KEY	60025	_____
____ with Speakerphone	60026	_____
____ Wall Mounting Kit	30883	_____
DELPHI 6	60030	_____
____ with Speakerphone	60031	_____
____ Wall Mounting Kit	41643	_____
BUSINESSCOM 16	60010	_____
____ with Speakerphone	60011	_____
Item 4: Expansion Cartridges		
One Line Cartridge	60003	_____
Four Line Cartridge	60002	_____
Eight Extension Cartridge	60004	_____
Item 5: Additional Installation Items		
Dedicated 15 Amp, 120 V AC outlet	—	ONE
Modular Jacks (two per extension)	—	_____
Modular Line Cords (one per extension; one per outside line)	—	_____
Two-pair twisted cable	—	_____ (feet)
Item 6: Optional Equipment		
External Paging Equipment	—	_____
Loud Bells / Extension 07 Loud Bell	—	_____
Music Source	—	_____
Power Failure Alarm	—	_____
Emergency-Use Telephone	—	_____
Door Chime Box	60005	_____

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Finally, before installing your MOD KEY 16 system, please read the following information:

FCC & TELEPHONE COMPANY REQUIREMENTS

The rules and regulations for the operation and installation of telephone equipment which has been connected to a public telephone network have been established by the Federal Communications Commission (FCC). These rules permit the use of privately-owned telephones and telephone systems. According to Part 68 (Connection of Terminal Equipment to the Telephone Network) and its amendments, several actions are required before and during installation of customer-provided equipment. These requirements are explained in the following two paragraphs.

NOTIFICATION TO TELEPHONE COMPANY

You must give the following information to the operating telephone company *before* connecting or disconnecting equipment:

(a) Sufficient notice of your intention to use privately-owned telephone equipment

(b) The particular telephone line to be used:
(number xxx-xxxx)

(c) Model: **MOD KEY 16**

(d) FCC Registration Number: **BJ29QL-71229-KF-E**

(e) Ringer Equivalence: **0.4B**

(f) Confirmation of type of dialing service:
tone or pulse

(g) Request for connector USOC RJ11C for telephone line

CONNECTION TO TELEPHONE COMPANY LINES

Connection of this telephone system to telephone company lines must be made with FCC approved plugs and jacks.

INCIDENCE OF HARM

When practical, the telephone company will notify you that service may be temporarily discontinued if customer-provided equipment is causing harm to the telephone network. The telephone company will attempt to inform you that service will be discontinued before actually interrupting service. The telephone company must also provide you with an opportunity to correct the problem and must advise you of proper procedures.

RADIO FREQUENCY INTERFERENCE

If the system is not installed and used according to the manufacturer's instructions, this equipment may interfere with radio and television reception. It has been type tested and found to comply with the limits for a Class B Computing Device, according to specifications in FCC Rules covering protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. Interference to radio or television reception caused by this equipment can be determined by turning the equipment on and observ'' operation of the radio or television.

If an interference problem exists, the problem may be solved in one or more of the following ways:

(a) Reorient the receiving antenna
(b) Relocate the receiver with respect to the equipment
(c) Plug the equipment and receiver into outlets on different branch circuits

If necessary, consult your dealer for additional assistance. The following booklet, prepared by the FCC, may be helpful:

HOW TO IDENTIFY AND REMOVE RADIO-TV INTERFERENCE PROBLEMS

This booklet can be ordered from:
U.S. Government Printing Office
Washington, D.C. 20402
(Stock No. 004-000-00345-4)

HEARING AID COMPATIBILITY

Rules prohibit the use of non-hearing aid compatible telephones in the following locations:

(a) Any public or semipublic location where coin-operated or credit card telephones may be found.

(b) Elevators, highways, and tunnels (automobile, subway, railroad, or pedestrian) where a person with impaired hearing might be isolated in an emergency.

(c) Places where telephones are specifically installed to alert emergency authorities such as fire, police, or medical assistance personnel.

(d) Hospital rooms, residential health care facilities, convalescent homes, and prisons, specifically where telephones are used for signaling life-threatening or emergency situations if alternative signaling methods are not available.

(e) Workstations for hearing impaired personnel.

(f) Hotel, motel, apartment lobbies; in stores where telephones are used by patrons to order merchandise; in public transportation terminals where telephones are used to call taxis, or to reserve lodging or rental automobiles.

(g) Hotel and motel rooms. At least ten percent of the rooms must contain hearing aid compatible telephones; or contain jacks for plug-in hearing aid compatible telephones which will be provided to hearing impaired customers upon request.

NOTE: The telephones available for use with this system are NON-hearing aid compatible.

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PART 3

INSTALLING YOUR MOD KEY 16 SYSTEM

The installation of the system is divided into three sections: Installation of Basic Equipment, Simple Test Check and Installation of Optional Equipment.

Before you proceed to the Installation of the Basic Equipment, please take the time to read the precautionary suggestions and the table containing the physical and electrical specifications of the system.

PRECAUTIONARY SAFEGUARDS

1. Read and follow all instructions marked on the MOD KEY 16 equipment.
2. Please check with your telephone company to be sure that your outside lines are protected from lightning and power surges.
3. When service or repair work is required on your system, please **do not disassemble the unit** and attempt to service it yourself. Take the system to a qualified serviceman or contact TIE/communications, Inc. at the numbers listed on the last page of this guide.

The following table should be used as a reference for your system's electrical and physical specifications. At no time should any portion or component of your system exceed these specifications *in any way*.

MOD KEY 16 SPECIFICATIONS

Maximum System Capacity (with expansion cartridges installed):

CO Lines	6 (All CO lines must have adequate lightning protection installed, such as carbon blocks, gas tubes, etc.)
Stations	16
Intercom Links	2

Cable Requirements:

Station cable: two-pair twisted, 24 AWG minimum; maximum cable length: 1200 feet (366m) or 2000 feet (610m) if 20 AWG

Power Requirements:

KSU & Power Supply:
Input: *DEDICATED* 117 V AC, (120 V AC nominal); 0.6 AMPS, 60 Hz, single phase.

Power Dissipation:

KSU & Power Supply:
70 watts maximum at 120 V AC input with fully loaded system.

Dimensions and Weights:

KSU:	14.31" W	x	9.25" H	x	3.0" D		3.7 lbs.
	39.2cm	x	23.7cm	x	7.6cm		1.7 kg.
One Line Expansion Cartridge:	6.75" W	x	6.75" H	x	1.5" D		1.0 lbs.
	17.1cm	x	17.1cm	x	3.8cm		.5 kg.
Four Line Expansion Cartridge:	6.75" W	x	6.75" H	x	1.5" D		1.5 lbs.
	17.1cm	x	17.1cm	x	3.8cm		.7 kg.
Eight Extension Expansion Cartridge:	6.75" W	x	6.75" H	x	1.5" D		1.3 lbs.
	17.1cm	x	17.1cm	x	3.8cm		.6 kg.
Power Supply:	2.81" W	x	5.0" H	x	2.75" D		3.0 lbs.
	7.2cm	x	12.7cm	x	7.0cm		1.4 kg.

Switching Principle:

Microprocessor-controlled, solid-state, analog-switching matrix with stored program control.

Environmental Operating Conditions:

Temperature: 0° to 40° C (32° to 104° F)
Humidity: 5% to 95% relative, noncondensing.
(Reference Bell Functional Product Class Criteria of
September 1978 publication PUB 48002)

Music On Hold:	**External Relay Contacts:**
10 milliwatts input (maximum)	24V DC at 100 mA

Battery:

Power Failure Backup of memory for approximately two weeks.

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Section 1:

Installing the Basic Equipment

The installation of the basic equipment can be divided into five stages:

Stage 1: Installing the KSU
Stage 2: Installing the Expansion Cartridges
Stage 3: Installing the Telephone Extensions
Stage 4: Installing the Outside Lines
Stage 5: Installing the Power Supply

You should follow each stage of the installation *in the order that they are presented.* Follow the instructions and diagrams presented in each stage of the installation carefully. Be sure to read the precautionary safeguards which follow each set of instructions.

For Your Notes

STAGE 1

Installing the KSU

Before you install your KSU, you must choose an appropriate site to mount the unit. The location should be in close proximity to the RJ11C jacks from the telephone company. The KSU should be installed in a clean, dry, centrally-located spot (such as a closet), where it is out of direct sunlight. The area should be free of moisture (water, dampness, etc.), and away from any equipment which might vibrate. You should choose a location that is well-ventilated, where the temperature does not *exceed* that of a normal room (approximately 70°F).

Now that you have picked a place for your KSU, you are ready to begin the installation!

Step 1: Hold the KSU against the wall and mark the location of the mounting screws (the distance between the mounting holes is marked on the diagram for you). To provide easy access to the cabling of the KSU, don't mount the unit too close to a corner.

Step 2: Drive in the flathead screws, leaving them about ¼″ out from the wall.

Step 3: Place the KSU on the screws and slide it down until it locks.

Step 4: Tighten the mounting screws.
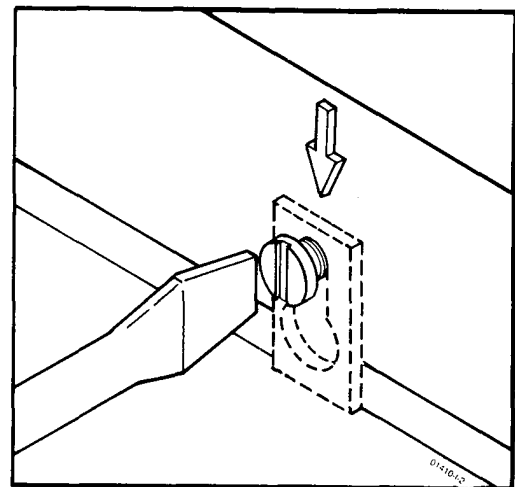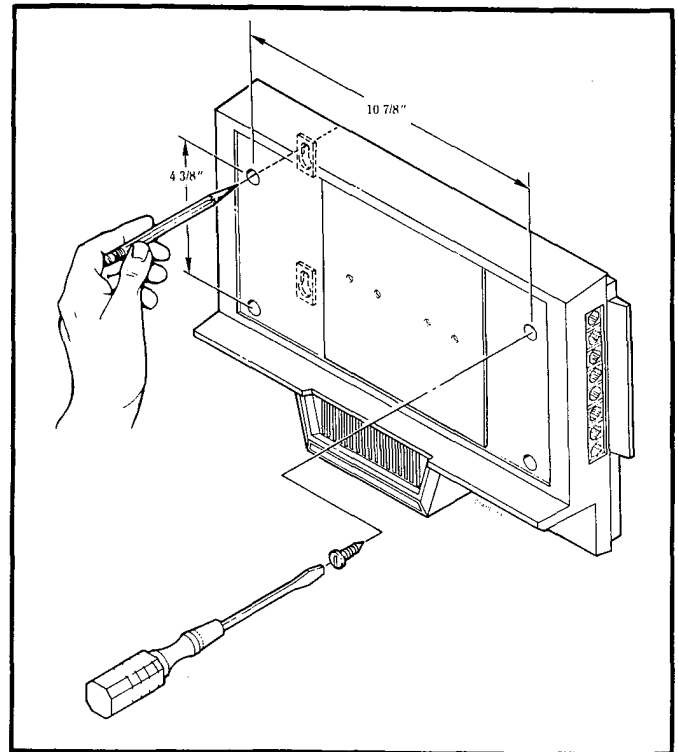
PRECAUTIONARY SAFEGUARDS

1. Never install the KSU where it may be exposed to water (near a bathtub, pool, sink, etc.).
2. Never mount the KSU on an unstable surface, where it might fall.
3. Never block the vents on the KSU. These vents prevent the unit from overheating. Proper ventilation *must* be supplied for the unit.
4. Never place any objects inside the vents of the KSU.

STAGE 2

Installing the Expansion Cartridges

This stage of the installation is required only if you have ordered one or two expansion cartridges. If you do not have cartridges to install, go on to Stage 3. Otherwise, proceed to the steps below.

Step 1: Remove the faceplate from the front of the KSU by removing the two slotted headscrews. Now, based upon the cartridges that you have, go to the appropriate step(s) below.
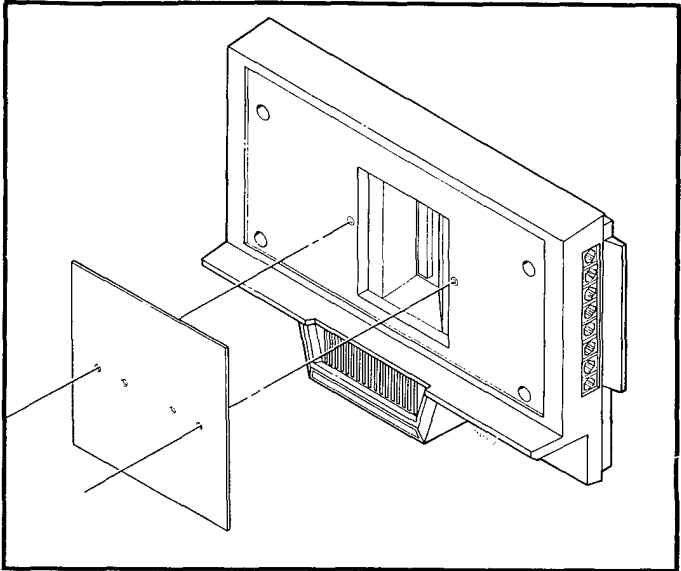
Step 2: To install a line expansion cartridge:
- *Hold the cartridge with the line connectors on the left side and the ribbon cable on the right side.*
- *Plug the ribbon cable into the largest connector (on the left) in the KSU.*
- *Slide the cartridge to fit snugly against the KSU.*
- *Place the screw that was packed with the cartridge into the hole in the cartridge and tighten it.*
- *Replace the faceplate to the right of the cartridge, so that it fits snugly against the KSU.*
- *Use one of the faceplate screws to fasten down the faceplate.*
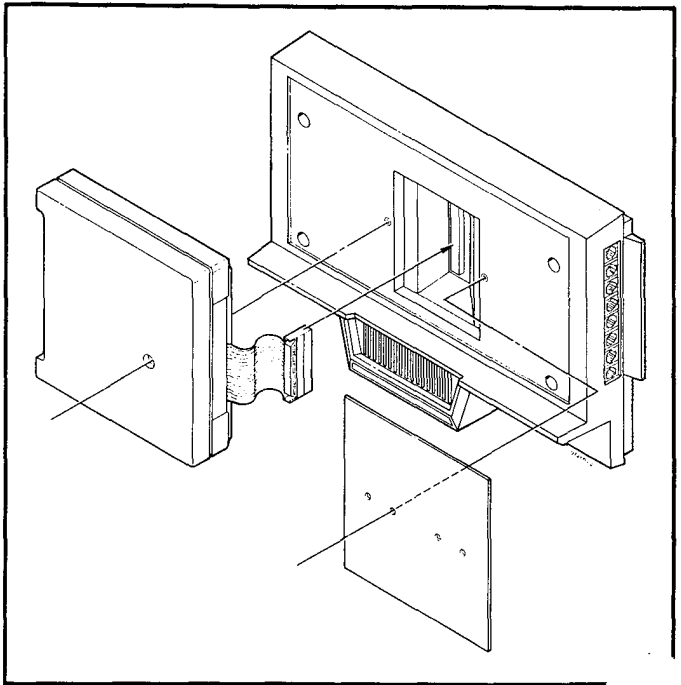
Step 3: To install the extension expansion cartridge:
- *Hold the cartridge with the connectors on the right side and the ribbon cable on the left side.*
- *Plug the ribbon cable into the smaller connector (on the right) in the KSU.*
- *Slide the cartridge so it fits snugly against the KSU.*
- *Place the screw that was packed with the cartridge into the hole in the cartridge and tighten it.*
- *Replace the faceplate to the left of the cartridge, so it fits snugly against the KSU.*
- *Use one of the faceplate screws to fasten the faceplate.*
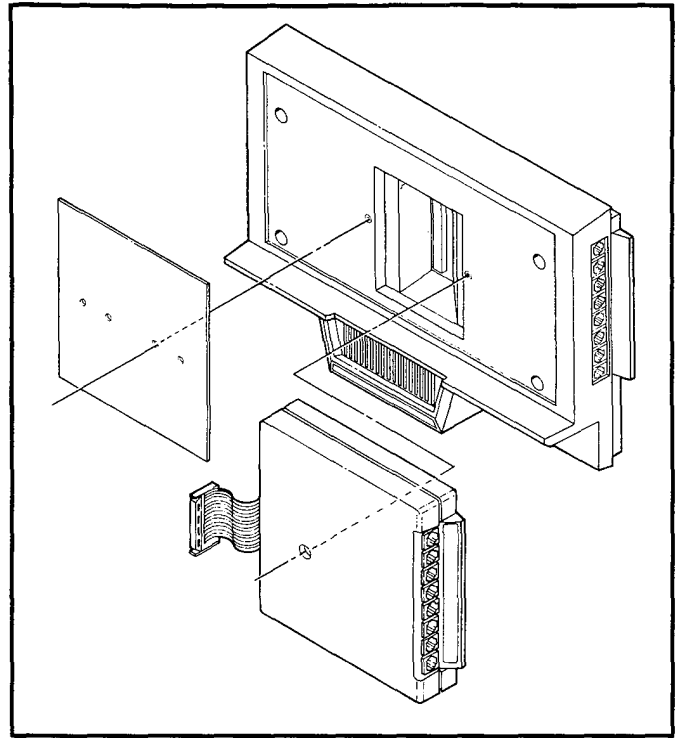
Step 4: To install both a line and extension cartridge:
- *Install the cartridges as detailed in Step 2 and Step 3.*
- ***Do not** replace the faceplate.*

PRECAUTIONARY SAFEGUARDS

1. Do not twist the ribbon cables on the cartridges.
2. Make sure the cartridges are plugged into the proper connectors, and that the cartridges fit snugly against the KSU. **DO NOT FORCE ANY CABLE INTO A CONNECTOR.**
3. If cartridges are to be inserted into an existing system, make sure that the power supply is unplugged before installation.

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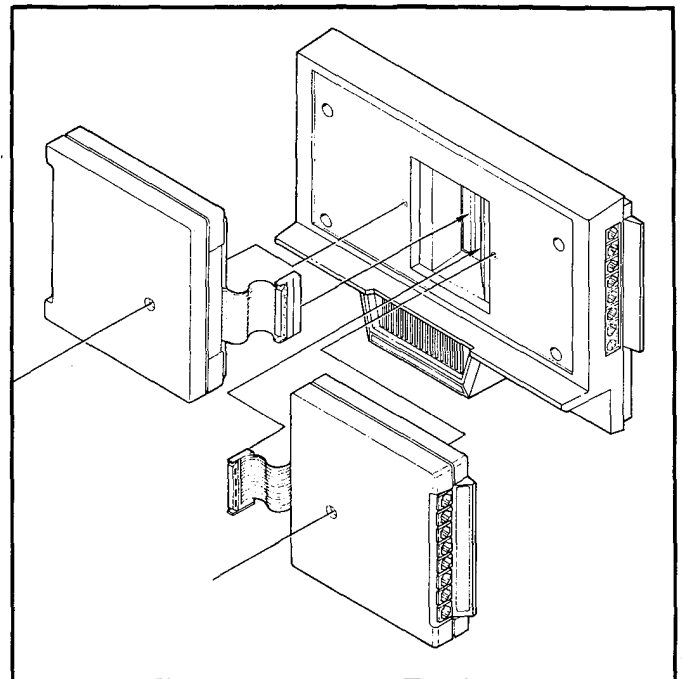
It is now time to attach the extensions to the KSU. Before you begin, you will need to have the modular jacks, modular line cords and twisted-pair cable on hand. Each extension should come equipped with its own modular line cord. It is also a good idea to have wire cutters on hand to cut and strip the cable.

You may want to consider three facts before installing the extensions:

1. Extension 01 is the location where all the programming of the system is entered; therefore, you may wish to limit access to this telephone to the system manager.
2. Extension 06 serves as the operator or attendant's extension — make sure that he or she is assigned this extension.
3. Extension 08 *must* be used if you want to install a Door Chime Box. The Box simply takes the place of the telephone.

Step 1: Open a modular jack. Wire one end of a piece of twisted-pair cable to the colored terminals in the jack according to the following chart:

Jack Terminal	Twisted-Pair Cable
Green	White/Blue
Red	Blue/White
Black	White/Orange
Yellow	Orange/White

Step 2: Run the other end of the twisted-pair cable to a location close to the extension. Remember, the length of the cable *cannot exceed* 1,200 feet using standard 24 AWG cable.

Step 3: Cut the cable and wire it to another modular jack using the following chart:

Jack Terminal	Twisted-Pair Cable
Green	Blue/White
Red	White/Blue
Black	Orange/White
Yellow	White/Orange

Step 4: Connect this jack and the extension together via the extension's line cord.

Step 5: Place Extension 01 in its desired location.

Step 6: Plug one end of a modular line cord into the connector on the KSU marked **STA 1.**

Step 7: Plug the other end of the cord into a modular jack.

Repeat these steps for each extension (or the Door Chime Box).

PRECAUTIONARY SAFEGUARDS

1. **Under no circumstances** should you install a telephone as an off-premises extension. For example, do not place one of your extensions in a different building from the KSU. The system can be damaged by voltage overloads (lightning, for example).

Step 5

Step 6

Step 4

Jack Terminal	Twisted-Pair Cable
Green	White/Blue
Red	Blue/White
Black	White/Orange
Yellow	Orange/White

YEL

BLK

Jack Terminal	Twisted-Pair Cable
Green	Blue/White
Red	White/Blue
Black	Orange/White
Yellow	White/Orange

GRN

RED

Step 3

Step 7

YEL

BLK

GRN

RED

Step 1

Step 2

Step 3

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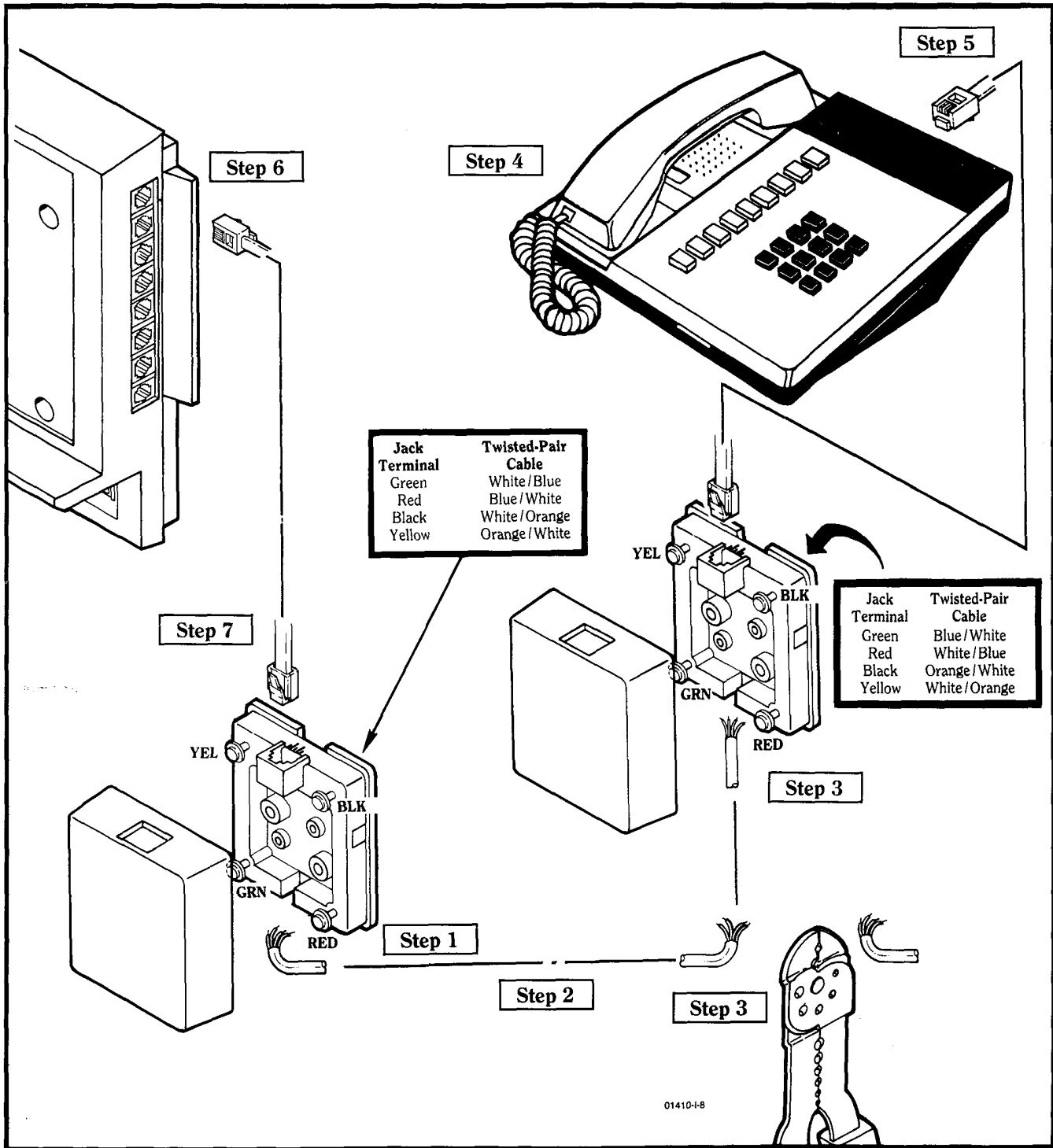
For Your Notes

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STAGE 4

Installing the Outside Lines

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You can now connect the outside lines to your KSU. These outside lines will allow you to place and receive outside calls.

Step 1: Plug one end of a modular line cord into the connector on the KSU marked **CO 1.**

Step 2: Locate the telephone company jack with the number of the line labeled on it that you wish to be line 1. Plug the other end of the modular line cord into this jack.

Repeat these steps for lines two through six (if installed).

Step 1
Plug Into CO 1

Step 2
Plug Into
RJ11C Jack

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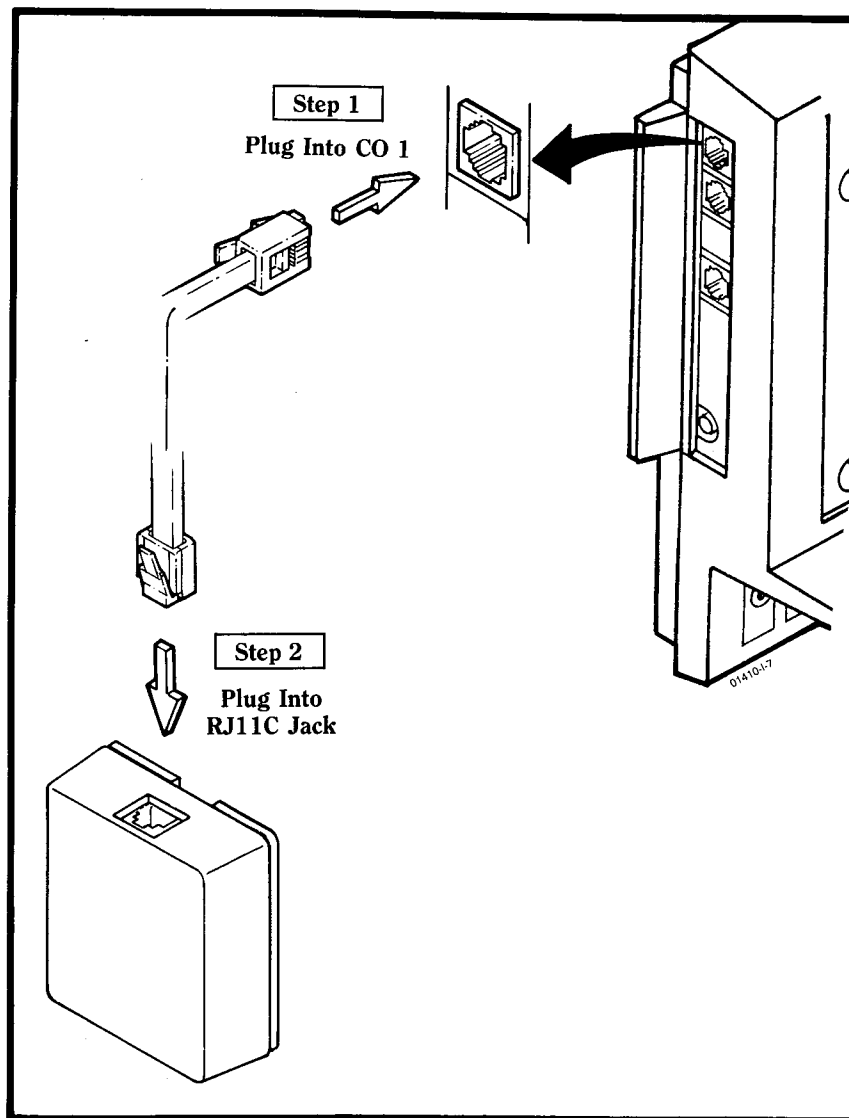
STAGE 5

Installing the Power Supply

Now that your extensions and your outside lines are installed, you are ready to power up your system and begin using your telephones!

Step 1: Install a surge protector (if purchased) in the outlet dedicated for the use of your KSU.

Step 2: Plug the female connector located at the end of the power supply's cord into the three-pronged male connector labeled **MAIN POWER** on the KSU. Push down the connector until you hear a snap, and the connector fits tightly.

Step 3: Insert the black plug located at the end of the power supply's black cord into the surge protector or outlet. (The plug is *polarized*, [one blade of the plug is wider than the other] and will fit into the protector or outlet one way. If the plug does not insert correctly, **do not** force it — reverse the plug and try again. If the plug still does not fit, have an electrician supply you with a new protector or outlet.) The power to your system is now on. The red light labeled POWER on the KSU should now be illuminated.

PRECAUTIONARY SAFEGUARDS

1. If you intend to physically alter your system in any way (such as changing or adding expansion cartidges), make sure that the power supply is **unplugged.**
2. If you wish to clean the KSU, unplug the power supply.
3. Do not rest anything on the power cord.
4. Do not let the cord lie in an area where it can be stepped on.
5. If the power cord is damaged or frayed in any w unplug the power supply and have the cord repairs
6. If the KSU gets wet in any way, unplug the power cord.

Step 1

Surge Protector

Step 3

Step 2

Power Supply

KSU

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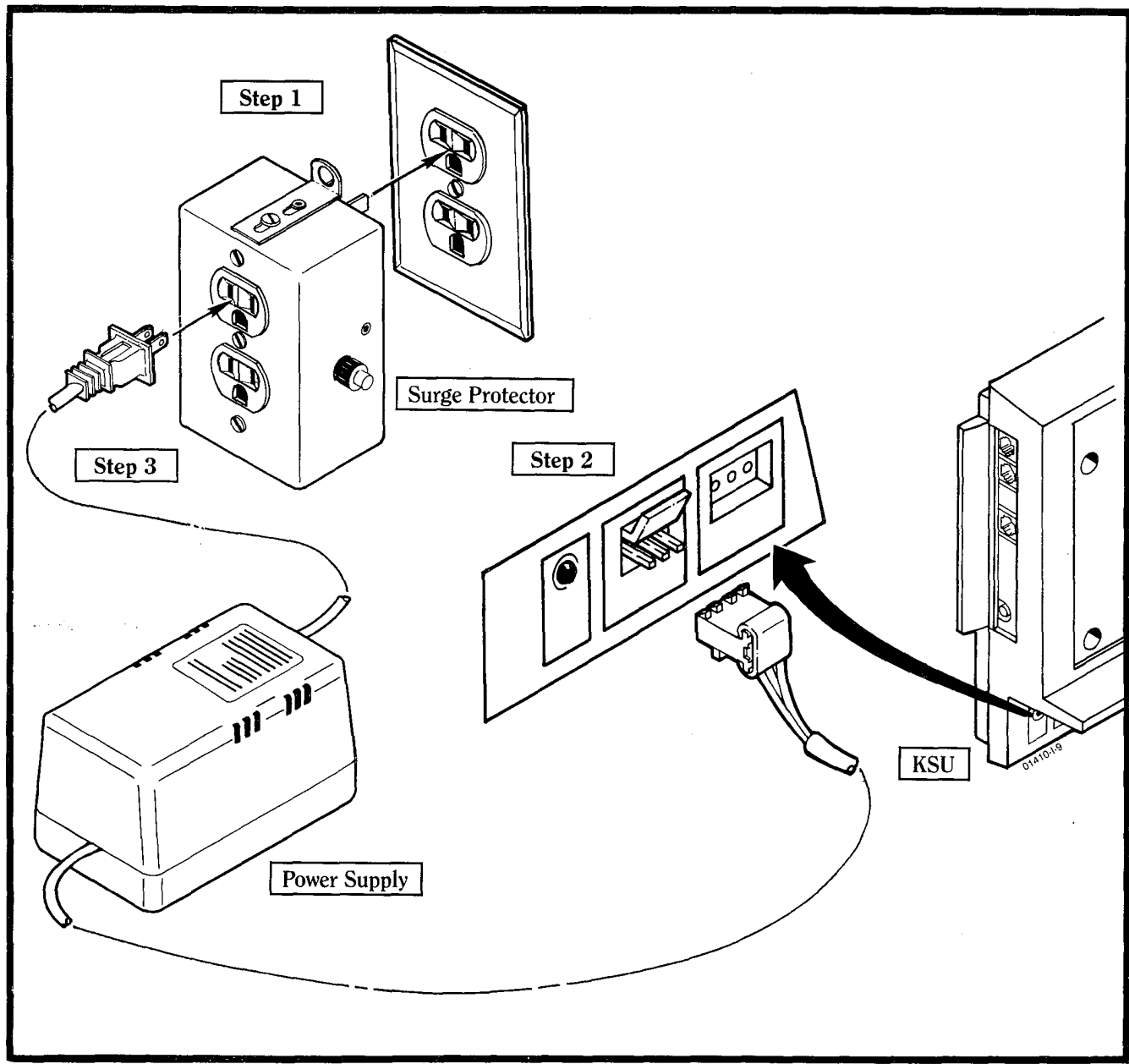
Section 2:
Simple Test Check

Before checking your outside lines, find out whether your phone company has installed tone (DTMF) or pulse- signaled lines to your system.

> **Important Programming Note:** Do not return to this test and perform it after any programming has been completed, as all programs will be returned to their default values.

If the outside lines to your system are tone-signaled:
1. *Do not lift the handset.*
2. *Press # at Station 1.*
3. *Dial 99.*
4. *Press the illuminated HF/MIC or MON/MIC key.*

If the outside lines to your phone system are pulse-signaled:
1. *Do not lift the handset.*
2. *Press # at Station 1.*
3. *Dial 98.*
4. *Press the illuminated HF/MIC or MON/MIC key.*

Checking the Outside Lines (Once Installed)

To make a trial outside call:
1. *Lift the handset.*
2. *Press the key of a line accessible to that extension.*
3. *After receiving a dial tone, dial a number.*

Checking Other Extensions

To make a trial intercom call:
1. *Lift the handset. You **should not** hear a dial tone.*
2. *Dial the number of a valid extension you want to call (01-16). You hear ringing.*
3. *Lift the handset at the ringing extension to complete the intercom call.*

If these simple tests cannot be completed successfully, consult Section 5 of this manual, or contact the Technical Service department at TIE/communications, Inc., at the number listed at the back of this manual.

| Section 3: |
| Installing Optional Equipment |

As mentioned earlier, when ordering the equipment, several kinds of optional equipment can be installed with your system. To remind you, the devices which can be used are:

- External Paging Equipment
- Extension 07 Loud Bell
- Loud Bells
- A Power Failure Alarm

- A Music Source (for Music On Hold)
- A Door Chime Box
- An Emergency-Use Telephone

The installation of each device is discussed in this section, in the order that each is presented on the list above. You need only read the information for the devices with which you intend to equip your system.

Installing External Paging Equipment

The installation of loudspeakers and amplifiers allows paging announcements to be heard in large areas (such as a warehouse, factory, etc).

Paging equipment requires the use of one line circuit from the KSU (reducing the total maximum number of available outside lines you can have by one). You should have the paging equipment, the audio-matching transformer and audio cable on hand.

Please note that the installation described is only one method for hooking up external paging equipment. Your installation may differ depending upon the equipment that you ordered.

Step 1: After plugging one end of a line cord into a CO connector on the KSU or expansion module, wire the other end to the 600 ohm side of the transformer.

Step 2: Connect the transformer to the paging amplifier with the audio cable.

600 Ohms to 50 K Ohms

Red

Step 1

Plug Into CO
Connector

Green

Step 2

Amplifier
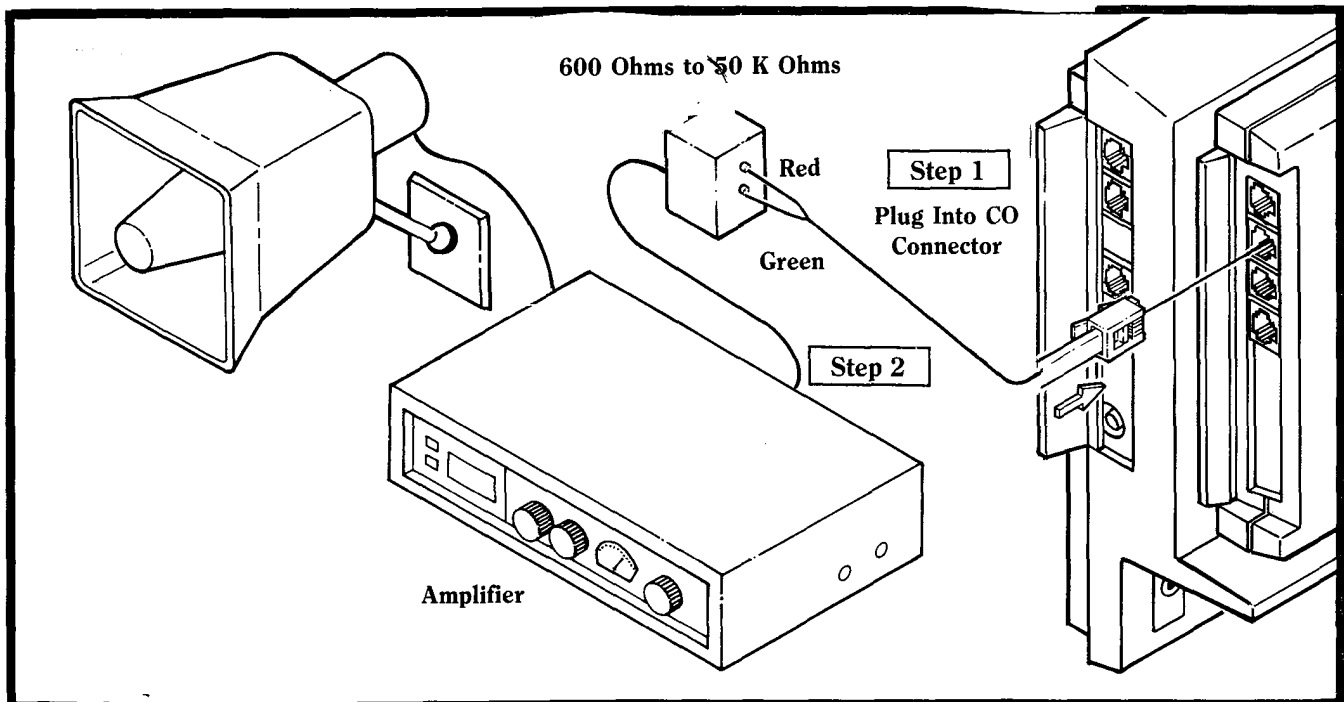
Installing an Extension 07 Loud Bell

A loud ringer (bell) can be attached to the KSU so that only intercom and outside calls to Extension 07 activate the bell.

For example, a car dealer may install Extension 07 (and the Extension 07 loud bell) in the service garage so that only calls to the service department ring the loud bells. The mechanics will not be forced to answer the phone each time a call rings in to the system — only when the call is for them.

The MOD KEY 16 system provides a dry relay contact (24 V DC @ 100mA) which is normally open. This contact will close when a call is received at Extension 07.

> Please note that the installation described is only one method for hooking up a bell. Your installation may differ depending upon the equipment you use.

Step 1: Wire the control leads on the power supply to the screw terminals marked STA 7 RING on the KSU.

Step 2: Wire the power supply to a modular jack using twisted pair cable. The wire-to-terminal assignments inside the jack are as follows:

Jack Terminal	Twisted-Pair Cable
Green	White/Blue
Red	Blue/White
Black	White/Orange
Yellow	Orange/White

Step 3: Connect the modular jack (wired in **Step 2**) to the bell with a modular line cord.

Step 4: Plug in the power supply.

> **PRECAUTIONARY SAFEGUARDS**
> 1. If the Extension 07 Loud Bell has requirements that exceed the rating of the contacts, external relays must be used. Do not try to switch AC power using the contacts marked STA 7 RING.
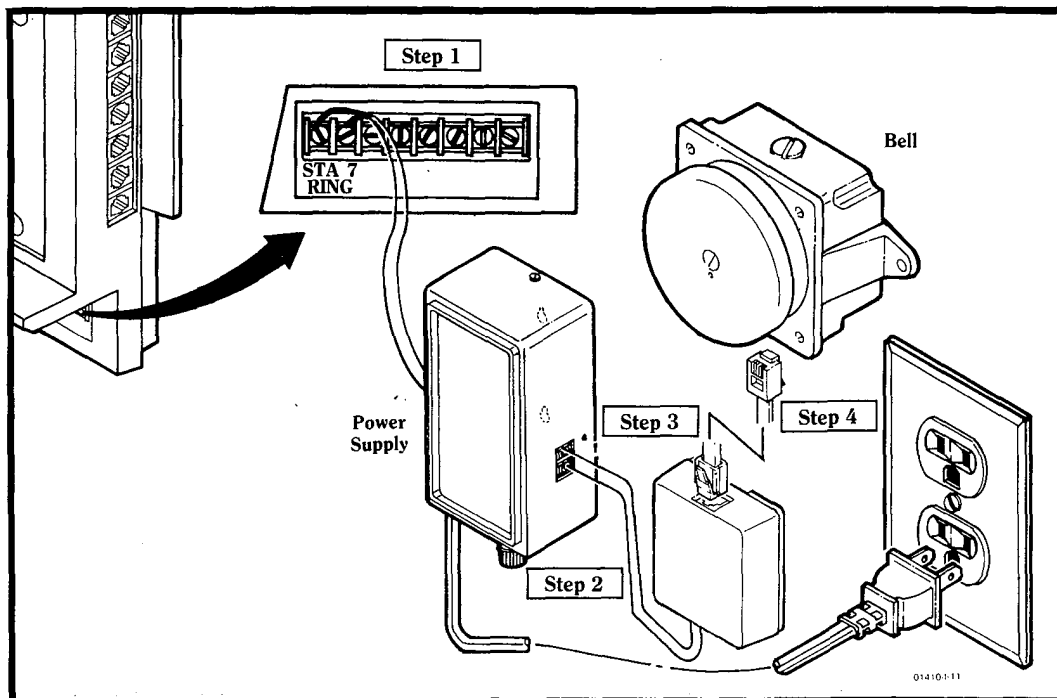
Installing Loud Bells

Loud Bells can be installed which will ring when any outside call rings into the system. Loud Bells may be desired in a large factory when the attendant is not able to answer calls.

The MOD KEY 16 system provides a dry relay contact (24 V DC @ 100 mA) which is normally open. This contact will close when a call rings into the system.

> Please note that the installation described is only one method for hooking up a bell. Your installation may differ depending upon the equipment you use.

Step 1: Wire the control leads on the power supply to the screw terminals marked CO RING on the KSU.

Step 2: Wire the power supply to a modular jack using twisted-pair cable. The wire-to-terminal assignments are as follows:

Jack Terminal	Twisted-Pair Cable
Green	White/Blue
Red	Blue/White
Black	White/Orange
Yellow	Orange/White

Step 3: Connect the power supply to the bell with a modular line cord.

Step 4: Plug in the power supply.

> **PRECAUTIONARY SAFEGUARDS**
> 1. If the Loud Bells have requirements that exceed the rating of the contacts, external relays must be used. Do not try to switch AC power using the contacts marked CO RING.
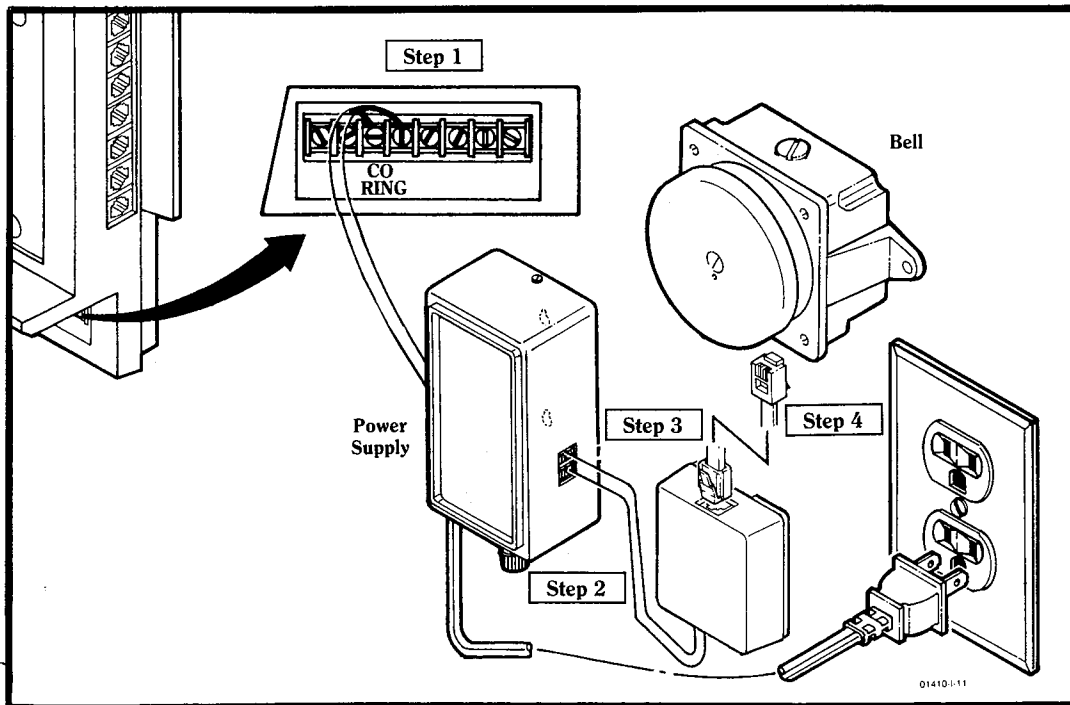
Installing a Power Failure Alarm

The system can be equipped with an alarm system that will be activated whenever there is an AC power failure. You can hook up a bell, buzzer, flashing light or any other kind of emergency indication device to the alarm system.

The MOD KEY 16 system provides a dry relay contact (24 V DC @ 100 mA) which is held open when the power is on. The contact closes and the alarm is activated (by the alarm's battery) when the power goes down.

Please note that the installation described is only one method for hooking up a Power Failure Alarm. Your installation may differ depending upon the equipment that you ordered.

Step 1: Wire the detection circuit of the Battery Alarm Relay System to the screw terminals marked FAIL ALARM on the KSU.

PRECAUTIONARY SAFEGUARDS

1. If the Power Failure Alarm has requirements that exceed the rating of the contacts, external relays must be used. Do not try to switch AC power using the contacts marked FAIL ALARM.

FAIL ALARM

Any Power Failure Alarm Device

Step 1

01410-I-14
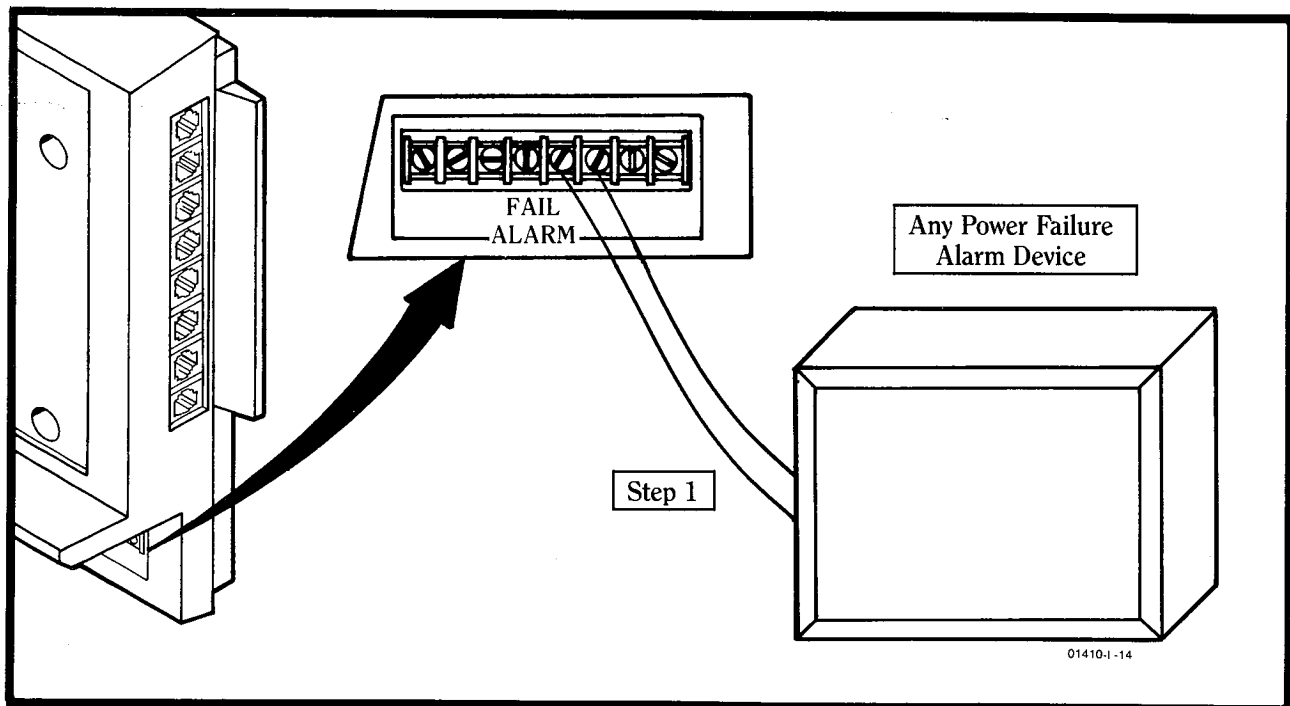
Installing Music On Hold

The system can be equipped with a music source so that callers on Hold will receive music.

The music is received at the KSU with an input of 600 ohm AC resistance and 35 ohm DC resistance, requiring the music to be received at 10 milliwatts (2 volts, peak to peak).

Please note that the installation described is only one method for hooking up a music source. Your installation may differ depending upon the equipment you use.

Step 1: Connect the music source to the screw terminals marked MUSIC SOURCE on the KSU via an earphone jack or an external speaker connection from the music source.

Step 2: Connect the music source to the wall outlet with the power *off*.

Step 3: Turn on the music source.

Step 4: While listening to Music On Hold at an extension, adjust the volume of the music source for a pleasing and clear sound.
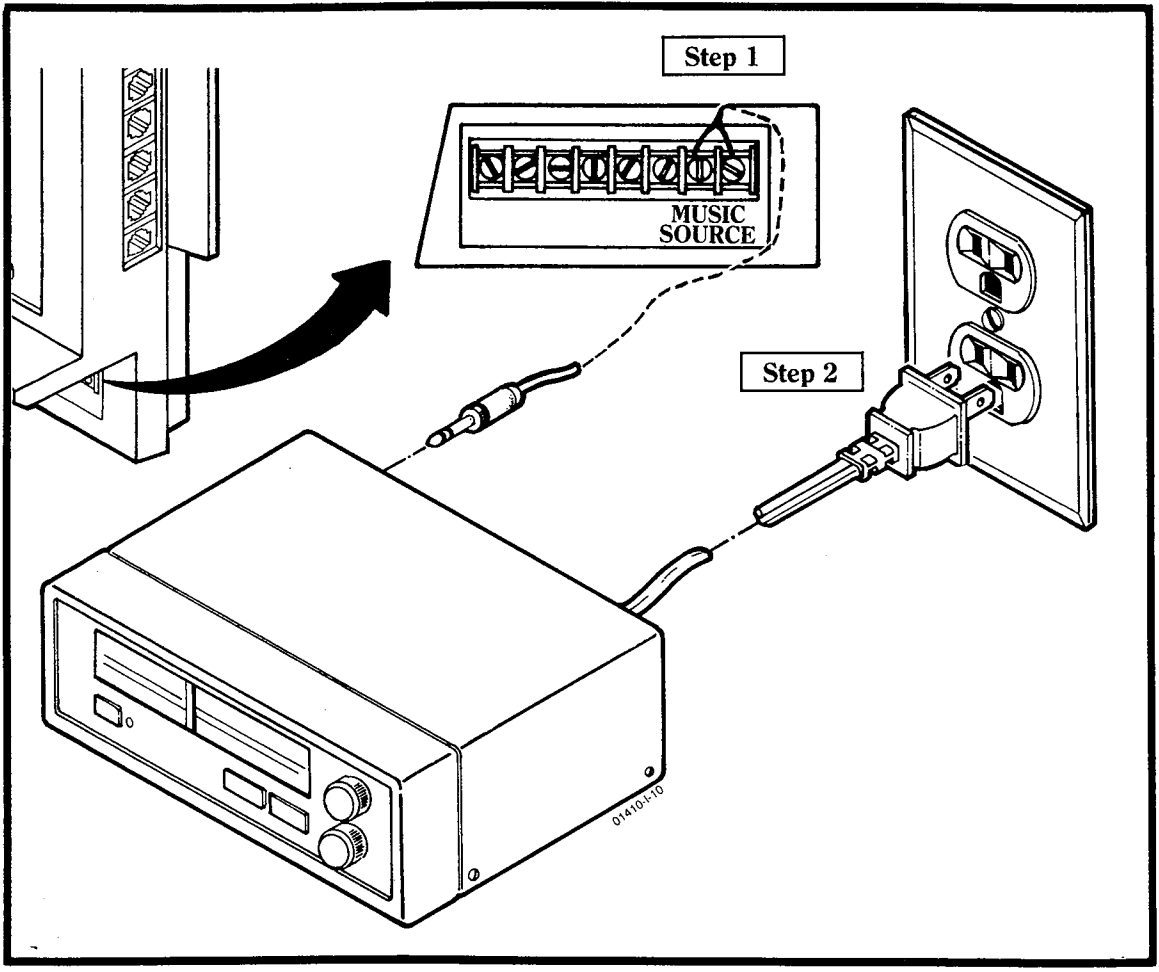
Installing an Emergency-Use Telephone

Should there be a power failure, a standard 500/2500 type single line telephone can be used with the system to place and receive calls on outside line 1. This emergency telephone will work *only* when the KSU is not receiving power.

Step 1: Attach the single line telephone to the connector marked PWR FAIL TRAN on the KSU via a modular line cord.

Plug Into A
Single Line Phone

Plug Into
PWR
FAIL
TRAN
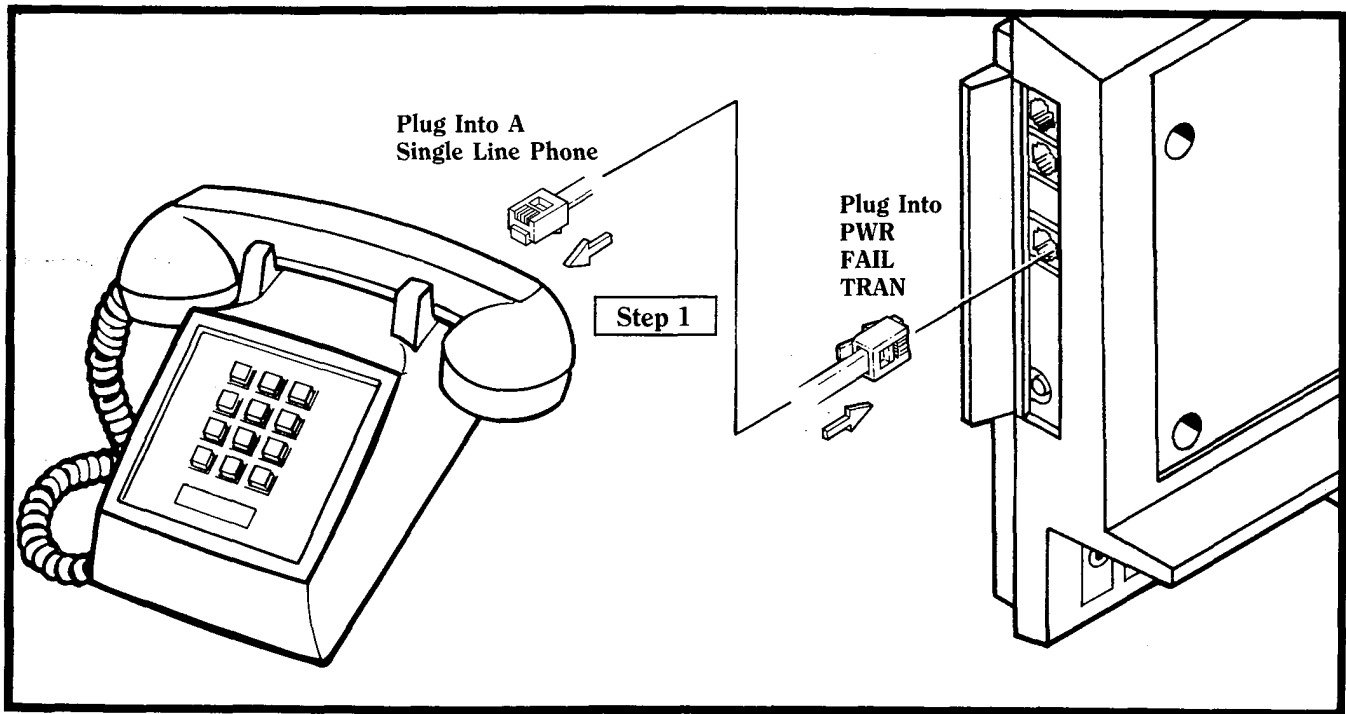
Step 1

Installing a Door Chime Box

You can equip your system with a Door Chime Box which allows you to converse with people at the door. A Door Chime Box takes the place of Extension 08.

Step 1: Open a modular jack. Wire one end of a piece of twisted-pair cable to the colored terminals in the jack according to the following chart:

Jack Terminal	Twisted-Pair Cable
Green	White/Blue
Red	Blue/White
Black	White/Orange
Yellow	Orange/White

Step 2: Run the other end of the cable through the small opening in the back of the Door Chime Box.

Step 3: Hold the top section of the box so that you are looking at the four screw terminals, and the button that you push is facing up. Wire the free end of the twisted-pair cable to the terminals as follows:

Screw Terminals	Twisted-Pair Cable
Yellow (far left)	White/Orange
Black (middle left)	Orange/White
Green (middle right)	White/Blue
Red (far right)	Blue/White

Step 4: Position the back of the box on the wall where you wish it to be located. The twisted-pair cable which you have run through the opening in the box fits into the groove which runs down the length of the back. Secure the box on the wall with two screws.

Step 5: Place the front of the box onto the back of the box.

Step 6: Now return to the modular jack that you wired in Step 1. Plug one end of the line cord into this jack, and the other end into the connector labeled STA 8 on the KSU. The Door Chime Box *must* be plugged into the connector labeled STA 8.

Jack Terminal	Twisted Pair Cable
Green	White / Blue
Red	Blue / White
Black	White / Orange
Yellow	Orange / White

STA 8

Step 6

YEL

BLK

RED

GRN

Step 1

Step 2

Yellow Black Green Red

WHT/ ORN

ORN/ WHT/ BLU/
WHT BLU WHT

Step 3

Step 5

Step 4
(not shown)
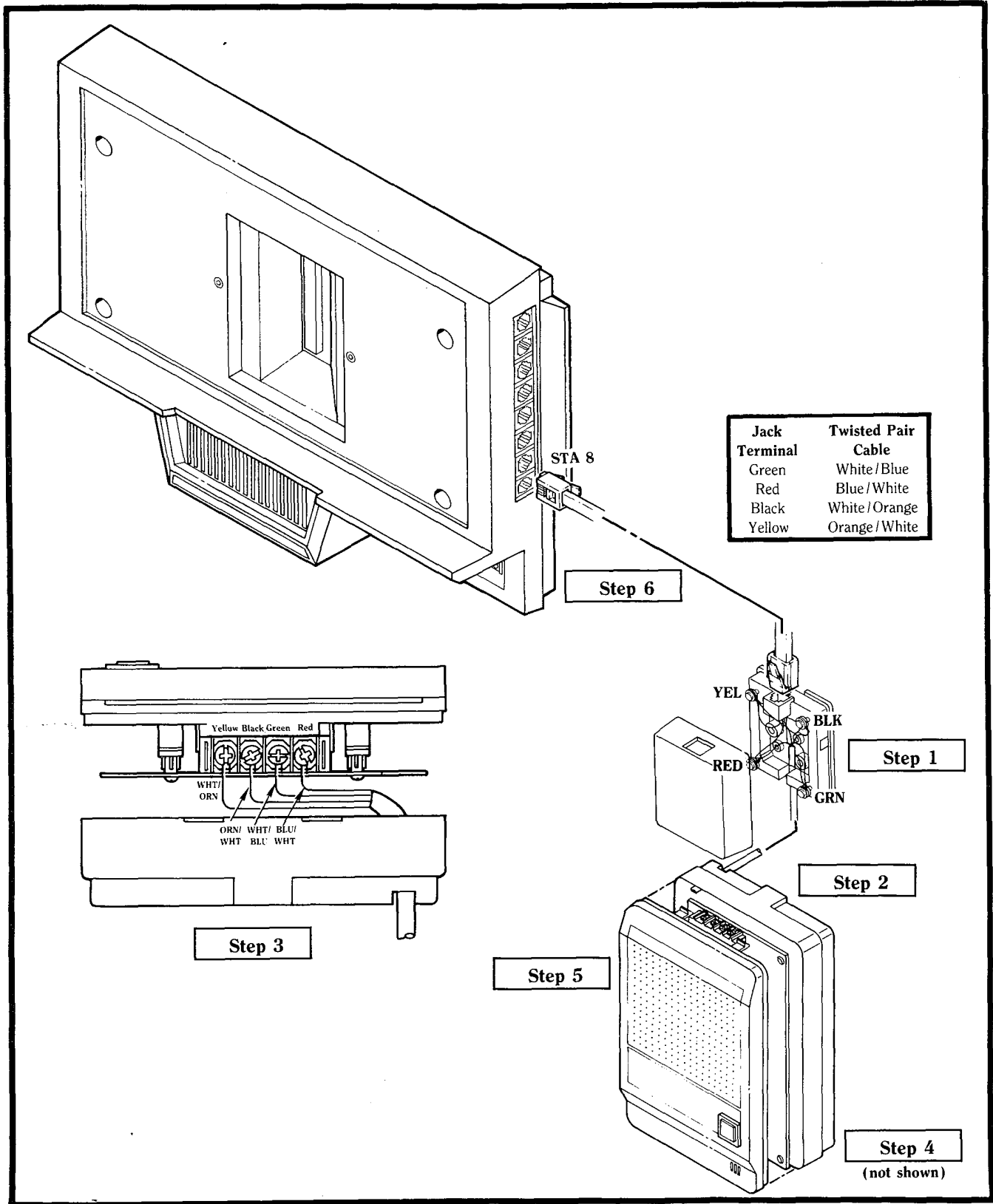
PART 4

CUSTOMIZING YOUR MOD KEY 16 SYSTEM

Your MOD KEY 16 system is completely flexible, and allows you to decide how you would like it to operate. This part of the manual presents you with a list of the options available for configuring your system to best suit your needs. A table is provided in the middle of the section (Configuration Sheet) on which you can record your choices. You will then be told how to enter your selections into the system.

One person in your office or company should be designated as the system manager. The system manager is responsible for recording your configuration information and making any programming changes necessary.

To begin, a list of the system's features and a brief explanation of each is presented.

MOD KEY 16 System Features

Answering an Outside Call - An outside call can be answered at any extension so programmed by lifting the handset and pressing the flashing line key (or by just pressing the line key on an extension with a speakerphone).

Call Waiting - If you are on a call when another call comes in, you can receive a signal (a beep tone) to alert you to the second call.

Conference - You can establish a three-way call from your extension with either two outside calls, *or* one intercom and one outside call.

Door Chime Box - A Door Chime Box can be substituted in place of an extension telephone at Extension 08. Someone at the door can signal a preprogrammed extension (or extensions) in the system, and a two-way conversation can be established.

Flash - This feature is used with special phone company services, special features for systems behind a PBX and special computer access codes. For more information on Flash, contact your local telephone company.

Handsfree - Some extensions may be equipped with a speakerphone (within the telephone) that allows calls to be answered or placed without lifting the handset. Conversations are carried on over the telephone's speaker and built-in microphone.

Hold - You can place an outside call in a waiting condition (Hold). There are two types of Hold: the first allows the call you placed on Hold to be picked up at any extension in the system; the second type allows **only you** to pick up a call you have put on Hold. The system can be instructed to re-ring any extension where a call has been on Hold too long.

Intercom - A call can be made from an extension to any other extension in the system.

Last Number Redial - You can automatically redial the last number you called (up to 25 digits) with the touch of a few buttons at your extension.

Line Groups - You can assign outside lines to a maximum of six line groups (the same types of lines are usually put in the same line group). If you try to use a line in a line group for Last Number Redial or Speed Dial, and that line is busy, the system will automatically choose the next free line in the group for you. If all lines in the line group are busy, you will hear a busy tone.

Night Answer - Your system can be assigned so that certain extensions will receive ringing on calls only during the day, while additional extensions will receive ringing at night.

Paging - You can make announcements to other extensions in the system (received through an extension's speaker) in groups or system-wide, **or** to external speakers (if the system is so equipped).

Placing a Call - An intercom call can be placed from *any* extension. Outside calls can be placed from any extension that is so allowed. Last Number Redial and Speed Dial offer alternate methods for placing a call.

Privacy - Complete privacy is insured on all calls held at any extension unless a conference is established or the system is programmed otherwise.

Pulse to Tone Conversion - Your system utilizes either pulse (rotary) or tone (DTMF) signaling when placing a call. The type of signaling used is dependent upon your telephone company. If your system uses pulse signaling, and you wish to call a number that requires tone signaling, you can switch the signaling from your extension. As soon as that call is hung up, the system reverts to pulse signaling.

Room Monitor - From your telephone you can listen to activity (conversations, noises, etc.) in an area around another extension. The other extension must be set up to be monitored.

Speed Dial - Frequently-dialed outside telephone numbers can be stored either privately at your extension (where up to ten numbers can be stored) or by the system manager at Extension 01 (where up to 20 numbers can be stored for access by all extension users). Numbers stored at your extension can be accessed **only at your extension.** Numbers stored by the system manager at Extension 01 for system-wide use can be accessed **at any extension in the system** (some numbers, however, may be blocked from being dialed out at a particular extension if Toll Restriction is invoked).

Toll Restriction - The system can be configured so that certain extensions are restricted from making long distance or local calls. The system allows you to make exceptions to this restriction for designated area codes or local exchanges.

Transfer - You can transfer an outside call from your extension to any other extension in the system. A transferred call can be picked up only at your extension, or at the extension to which it has been transferred.

Configuring Your System

Following is a description of the twelve programs which will affect the operation of your system. When you first turn on the system, the programs will operate using preprogrammed, factory-installed values (known as **default values**; each station is identically programmed). You may choose to accept these values, or to change them. If a particular extension is not installed, the default value should be left unchanged. These values are located in a box below each program explanation.

Each description provides you with a program's default value, and the instructions for entering a new value. New entries **must** be made at Extension 01, and should be recorded by the system manager on the Configuration Sheet, located on pages 4-13 through 4-19 in this section. This sheet will be used to program your system.

Program 1 - System Speed Dial Numbers

Frequently-dialed numbers can be stored at Extension 01. These numbers can be accessed and dialed out with the touch of a few buttons at any extension.

System Speed Dial numbers are stored in *bins* (storage locations within the system). The bins are numbered 11 to 30, thereby allowing 20 numbers to be stored.

On the Configuration Sheet, record any System Speed Dial numbers (up to seventeen digits each) that you plan to store.

Default Value:
The system contains no default values for this program.

Program 2 - Line Access

This program permits you to allow or deny each extension access to the outside lines.

For each extension (labeled 01-16 on this portion of the Configuration Sheet) enter a 1 if the extension **should** have access to a line, or 0 if it should not.

The seventh digit you must enter either allows (enter 1) or prevents (enter 0) an extension from receiving Call Waiting signals from an outside call while on another call. This will not affect Intercom Call Waiting signals.

Sample: (Extension 05)

0	1	1	0	0	1	1
Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	CO Call Waiting Signal

Extension 05 can now be used to access lines 2, 3 and 6. If the user of Extension 05 is on a call, and another call rings in on lines 2, 3 or 6, Call Waiting tones will be heard through the handset (or the telephone's speaker). An extension must also be assigned ringing (Program 3) for an outside line in order to receive Call Waiting signals for calls received on it.

Default Value:

1	1	1	1	1	1	0
Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	CO Call Waiting Signal

All extensions are allowed access to all lines, and will not receive Call Waiting signals for calls received on outside (CO) lines.

Important Programming Note: It is recommended that you deny all extensions access to any outside line that is not installed (connected to telephone company lines) or not connected to external paging equipment.

Program 3 - Line Ringing

This program permits you to allow or deny each extension ringing for calls coming in on outside lines.

For each extension (coinciding with 21-36 on the Line Ringing portion of the Configuration Sheet) enter a 1 if the extension **should** receive ringing for an incoming call on that line, or 0 if it should not.

The seventh digit you must enter indicates whether this extension will receive ringing on all outside lines (enabled for access at that extension [Program 2]) when the system is in the Night Answer mode. Enter 1 if the extension should ring at night, or 0 if it should not.

The eighth digit indicates whether this extension will be signaled when a Door Chime Box is installed. Enter 1 if the extension should be signaled, or 0 if it should not (or if the Door Chime Box is not installed).

Sample: (Extension 03)

1	1	1	0	0	0	1	0
Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Night Mode	Door Chime Box

Extension 03 will receive ringing only for incoming lines 1, 2 and 3 during the day, but will receive ringing for all lines that it has access to at night (see **Program 2**). If the button on a Door Chime Box is pushed, this phone will not be signaled.

Default Value:

1	1	1	1	1	1	0	0
Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Night Mode	Door Chime Box

All extensions receive ringing for all lines during the day. Since ringing is allowed for all lines during the day, all lines always ring at night. No extension will receive a signal when a Door Chime Box is used.

Program 4 - Paging Group Assignments/Toll Restriction

This program allows you to assign each extension to one of four paging groups, and to toll restrict any or all extensions if so desired. If the system is installed behind a PBX, the Toll Restriction programmed here does not apply.

For each extension (this time labeled 41-56 on the Paging Group Assignments/Toll Restriction portion of the Configuration Sheet) choose one of the five options below to be entered for the first three digits.

Paging Group Assignment	Entry
No paging group	000
Paging group 1	001
Paging group 2	010
Paging group 3	011
Paging group 4	100

You should assign as few extensions to the same paging group as possible, since the volume of the page at each extension decreases as the number of extensions in the paging group increases.

The fourth digit indicates whether or not the extension can be used to dial programmed exceptions to its toll restriction. Enter 1 if the user *can* dial programmed exceptions and/or restrict the number of digits dialed, or 0 if the user *cannot*.

The fifth digit is significant only if you entered "1" for digit 4. This digit tells the extension what kind of exceptions you will be able to dial — area codes or exchange prefixes. Enter 0 if the exceptions are to be area codes, or 1 if the exceptions are to be exchange prefixes.

The sixth digit tells the extension whether or not a call requiring a leading "0" can be dialed. Enter 0 if leading "0" calls can be made, or 1 if they cannot.

The seventh digit tells the extension whether or not a call requiring a leading "1" can be dialed. Enter 0 if leading "1" calls can be made, or 1 if they cannot.[†]

Sample:(Extension 04)

0	1	0	1	1	1	0
└ Paging Assignment ┘			Allow Exceptions	Area Codes/ Exchanges	Leading "0"	Leading "1"

Extension 04 is in paging group 2. The extension can be used to dial exceptions to its toll restriction. These exceptions will be exchange prefixes and will be the *only* prefixes allowed. A leading "1" may or may not precede an allowed exchange prefix. Area codes cannot be dialed from this extension. The extension cannot call exchange prefixes requiring a leading "0."

Default Value:

0	0	0	0	0	0	0
└ Paging Assignment ┘			Allow Exceptions	Area Codes/ Exchange Prefixes	Leading "0"	Leading "1"

Extensions are not assigned to paging groups and are not toll restricted.

[†]**NOTE:** If the digit 4, 6 or 7 is a 1, then the number of digits dialed per call are counted, and must be specified in Program 5.

Program 5 - Dialing Digits Allowed and Toll Exceptions

This program lets you tell each extension the number of digits that can be dialed from it, and specifically what toll restriction exceptions can be dialed. If, in Program 4, you have entered 0 for digits 4, 6 and 7, you can ignore this program.

For each extension (labeled 61-76 on the Dialing Digits Allowed and Toll Exceptions section of the Configuration Sheet) you will enter toll exceptions based on whether the exceptions are area codes or exchange prefixes (see **Program 4**). You cannot allow both area codes and exchange prefix exceptions.

For the first two digits, enter the maximum number of digits (●3-25) that can be dialed from the extension being programmed. Based upon whether the exceptions that can be dialed from the extension are area codes or exchange prefixes, refer to the appropriate paragraph below.

If an extension can be used to call certain area codes, enter up to six three-digit area codes. If, for example, you only want to enter two area codes, enter six digits and hang up. Any local exchange prefix will be allowed.

If an extension can be used to call certain exchanges, enter up to six three-digit exchange prefixes. If, for example, you only want to enter two exchange prefixes, enter the six digits and hang up.

> Please note that outside calls to **411, 611, 911** and all **800** numbers are *always allowed.* Since these calls cannot be restricted, they need never be programmed as exceptions.

Sample: (Extension 09)

```
1  1  x  x  x  x  x  x  x  x  x  -  -  -  -  -  -  -  -  -
┌────┐ ┌─────┐ ┌─────┐ ┌─────┐ ┌────┐ ┌────┐ ┌────┐
│# of│ L Area ┘ L Area ┘ L Area ┘ L No ┘ L No ┘ L No ┘
 Dialed   Code    Code    Code    Entry   Entry   Entry
 Digits
```

x = represents digits

Extension 09 can be used to dial eleven digits, and to call the three area codes which have been programmed.

> **Default Value:**
>
> ```
> 2  5  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
> ┌────┐ ┌────┐ ┌────┐ ┌────┐ ┌────┐ ┌────┐ ┌────┐
> │# of│ L No ┘ L No ┘ L No ┘ L No ┘ L No ┘ L No ┘
>  Dialed  Entry   Entry   Entry   Entry   Entry   Entry
>  Digits
> ```
>
> No area codes or prefixes are assigned.

Program 6 - Line Options

This program allows you to configure each of the outside lines that you have installed. If you so desire, you can customize each line for its unique situation. Remember that when you provide or deny an outside line a particular option, you are in essence providing or denying that option to all extensions which have access to the line.

For each installed outside line (labeled 81-86 on the Line Options portion of the Configuration Sheet) consult the chart below, answer the questions for each line, and record them on the Configuration Sheet.

Digit #	Question	Entry
Digit 1	Is the outside line behind a PBX?	Yes = 1 No = 0 If Yes, there is no Toll Restriction *on that line.*
Digit 2	Can this line be used to override an extension's restrictions?	Yes = 1 No = 0
Digit 3	Does this line use tone or pulse signaling?	Tone = 1 Pulse = 0
Digits 4, 5 and 6	What line group is this line in?	None - line is used for external paging equipment = 000 Line Group 1 = 001 Line Group 2 = 010 Line Group 3 = 011 Line Group 4 = 100 Line Group 5 = 101 Line Group 6 = 110

Sample: (Line 3)

1	1	1	0	1	1
Outside line behind A PBX?	Override Ext.'s Restrictions?	Tone / Pulse Signaling?		Line Group	

Line 3 is a tone-signaled line (digit 3) installed in a system behind a PBX (digit 1). This line is in line group 3 (digits 4, 5 and 6) and can be used to override an extension's restrictions (digit 2).

Default Value:

0	0	1	0	0	1
Outside line behind A PBX?	Override Ext.'s Restrictions?	Tone / Pulse Signaling?		Line Group	

All lines are installed as tone-signaled in an independent system (*not* behind a PBX). The lines are in line group 1 and *cannot* be used to override an extension's restrictions.

Program 7 - Intercom Ringing/Privacy Release

This program allows you to configure two aspects of all extensions at the same time: 1) whether all extensions with the Handsfree feature should receive ringing or voice announcements for all intercom calls, and 2) whether an extension user can join into a conversation held on an outside line by simply pressing an outside line key.

For the first digit, enter 0 if all intercom calls should ring, or 1 if all calls should be voice-announced at Handsfree extensions.

For the second digit, enter 0 if all extensions can be used to join into a conversation on an outside line, or 1 if they cannot.

Sample:

1	1
Ringing or Voice Announce?	Privacy?

In the sample system, all intercom calls are voice-announced. Conversations held on outside lines cannot be joined (except if the Conference feature is used).

Default Value:

0	1
Ringing or Voice Announce?	Privacy?

All intercom calls to extensions with Speakerphones will ring. Conversations held on outside lines cannot be joined from any extension (except if the Conference feature is used).

Programs 8 & 9 - Make/Break Timer

> **YOU SHOULD CONSULT YOUR TELEPHONE COMPANY BEFORE MAKING ANY CHANGES TO THIS PROGRAM.**

If any of your outside lines are pulse-signaled, you *may* have to change this entry. Otherwise, you should accept the default value.

If the telephone company requires a Make/Break ratio of 60/40 at 10 pulses/second, then the default value is correct. Otherwise, choose a value for the Break Time *and* the Make Time from the table below and record them with the Break Time *first, then* the Make Time.

Make/Break Timer Table

Time (in milliseconds)	Entry
15.2	0011
20.4	0100
25.6	0101
30.9	0110
36.0	0111
41.3	1000
46.6	1001
51.8	1010
57.0	1011
62.2	1100
67.5	1101
72.7	1110
78.0	1111

C1410IM.1-3

Sample:

A system requiring a Make/Break ratio of 68 milliseconds to 32 milliseconds at 10 pulses per second would refer to the table and enter 0110 for the Make time and 1101 for the Break time. The numbers have been rounded to the closest higher or lower value on the table.

Three of the most common Make/Break ratios are:

	Make Entry	Break Entry
60/40 at 10pps	1000	1100
68/32 at 10pps	0110	1101
60/40 at 20pps	0100	0110

> **Default Value:** (60/40 at 10 pps)
> **Break entry:** 1100
>
> **Make entry:** 1000

Program 10 - Flash Timer

> **YOU SHOULD CONSULT YOUR TELEPHONE COM-PANY BEFORE MAKING ANY CHANGES TO THIS PROGRAM.**

If your system requires that you use a flash in any way, you *may* have to change this entry. Otherwise, accept the default value.

If necessary, choose a value from the Flash Timer Table and record the eight-digit entry.

> **NOTE:** When using flash to gain a new CO dial tone, ample time must be provided between the dial tones in order for Toll Restriction to be effective. This should be considered before establishing a flash time.

Flash Timer Table

Flash Time (in seconds)	Entry
.240	00000011
.320	00000100
.400	00000101
.480	00000110
.560	00000111
.640	00001000
.720	00001001
.800	00001010
.880	00001011
.960	00001100
1.04	00001101
1.28	00010000
1.52	00010011
1.76	00010110
2.00	00011001
2.24	00011100
2.48	00011110
2.72	00100010
3.04	00100110
3.28	00101001
3.52	00101100
3.76	00101111
4.00	00110010

C1410IM.1-4

Sample:
For a system requiring a flash of two seconds, enter 00011001.

> **Default Value:**
> 00000111 (.560 seconds)

Program 11 - Hold Recall Timer

This program allows you to set the amount of time before a call on Hold re-rings the extension where the call was put on Hold.

From the Hold Recall Table, choose the entry that corresponds to the Hold Recall time you desire for your system.

Hold Recall Table

Hold Recall	Entry
No recall	00000000
30 secs.	00000110
45 secs.	00001001
1 min.	00001100
1 min. 15 secs.	00001111
1 min. 30 secs.	00010010
1 min. 45 secs.	00010101
2 min.	00011000
2 min. 15 secs.	00011011
2 min. 30 secs.	00011110
2 min. 45 secs.	00100001
3 min.	00100100
3 min. 15 secs.	00100111
3 min. 30 secs.	00101010
3 min. 45 secs.	00101101
4 min.	00110000
4 min. 15 secs.	00110011
4 min. 30 secs.	00110110
4 min. 45 secs.	00111001
5 min.	00111100
5 min. 15 secs.	00111111
5 min. 30 secs.	01000010
5 min. 45 secs.	01000101
6 min.	01001000
7 min.	01010100
8 min.	01100000
9 min.	01101100
10 min.	01111000

C1410IM.1-5

Sample:
For a system requiring a Hold Recall time of two (2) minutes, enter 00011000.

Default Value:
00000000 (no recall). If you desire a Hold Recall time of *any* duration, you must enter one of the values from the table.

Program 12 - Pause Timer

Pause Time Table

A pause may be desired in a Speed Dial number. The pause that you store will be of the duration that you enter in this program.

This program allows you to set the duration of the pause which the system inserts before dialing out a Speed Dial or line number. The pause allows the telephone company time to establish a dial tone before the Speed Dial number dials out. No matter what value is entered from the Pause Time Table, this value will always be at least 1.5 seconds. The value will also be the duration between a PBX Access Code and the number dialed.

The Pause Time also establishes the duration of a pause entered into a Speed Dial number by a user. There are no limitations to the length of this pause.

From the Pause Time Table, choose the entry which corresponds to the duration of the pause your system requires.

Pause Time (in seconds)	Entry	Pause Time (in seconds)	Entry
0.48	00000110	10.48	10000011
1.04	00001101	11.04	10001010
1.52	00010011	11.52	10010000
2.00	00011001	12.00	10010110
2.48	00011111	14.28	10011100
3.04	00100110	13.04	10100011
3.52	00101100	13.52	10101001
4.00	00110010	14.00	10101111
4.48	00111000	14.48	10110101
5.04	00111111	15.04	10111100
5.52	01000101	15.52	11000010
6.00	01001011	16.00	11001000
6.48	01010001	16.48	11001110
7.04	01011000	17.04	11010101
7.52	01011110	17.52	11011011
8.00	01100100	18.00	11100001
8.48	01101010	18.48	11100111
9.04	01110001	19.04	11101110
9.52	01110111	19.52	11110100
10.00	01111101	20.00	11111010

C1410IM.1-6

Sample:
For a system requiring a pause that is six (6.00) seconds long, enter 01001011.

Default Value:
00010011 (1.52 seconds)

MOD KEY 16

| CONFIGURATION SHEET |

Program 1   **System Speed Dial Numbers** (No Default Value)

11. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

12. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

13. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

14. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

15. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

16. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

17. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

18. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

19. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

20. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

21. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

22. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

23. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

24. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

25. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

26. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

27. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

28. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

29. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

30. └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘

Remember — You only have to fill in entries for the extensions and outside lines that you have installed. If only part of a program line needs to be changed, fill in the rest of the line with the default value. Any program line that needs *no* change from the default value can be ignored.

Program 2	Line Access (Default: 111111 0)

01. (EXT. 01): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

02. (EXT. 02): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

03. (EXT. 03): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

04. (EXT. 04): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

05. (EXT. 05): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

06. (EXT. 06): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

07. (EXT. 07): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

08. (EXT. 08): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

09. (EXT. 09): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

10. (EXT. 10): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

11. (EXT. 11): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

12. (EXT. 12): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

13. (EXT. 13): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

14. (EXT. 14): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

15. (EXT. 15): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

16. (EXT. 16): ⌊_⌊_⌊_⌊_⌊_⌊_⌋ ⌊_⌋

Program 3   **Line Ringing** (Default: 111111 00)

21. (EXT. 01): ⌐ └─┴─┴─┴─┴─┴─┘   └─┴─┘

22. (EXT. 02):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

23. (EXT. 03):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

24. (EXT. 04):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

25. (EXT. 05):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

26. (EXT. 06):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

27. (EXT. 07):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

28. (EXT. 08):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

29. (EXT. 09):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

30. (EXT. 10):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

31. (EXT. 11):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

32. (EXT. 12):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

33. (EXT. 13):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

34. (EXT. 14):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

35. (EXT. 15):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

36. (EXT. 16):   └─┴─┴─┴─┴─┴─┘   └─┴─┘

Program 4   **Paging Group Assignments/Toll Restriction** (Default: 000 0000)

41. (EXT. 01): |__|__|__| |__|__|__|__|

42. (EXT. 02): |__|__|__| |__|__|__|__|

43. (EXT. 03): |__|__|__| |__|__|__|__|

44. (EXT. 04): |__|__|__| |__|__|__|__|

45. (EXT. 05): |__|__|__| |__|__|__|__|

46. (EXT. 06): |__|__|__| |__|__|__|__|

47. (EXT. 07): |__|__|__| |__|__|__|__|

48. (EXT. 08): |__|__|__| |__|__|__|__|

49. (EXT. 09): |__|__|__| |__|__|__|__|

50. (EXT. 10): |__|__|__| |__|__|__|__|

51. (EXT. 11): |__|__|__| |__|__|__|__|

52. (EXT. 12): |__|__|__| |__|__|__|__|

53. (EXT. 13): |__|__|__| |__|__|__|__|

54. (EXT. 14): |__|__|__| |__|__|__|__|

55. (EXT. 15): |__|__|__| |__|__|__|__|

56. (EXT. 16): |__|__|__| |__|__|__|__|

Program 5 **Dialing Digits Allowed and Toll Exceptions**
(Default: 25 000 000 000 000 000 000)

61. (EXT. 01): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

62. (EXT. 02): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

63. (EXT. 03): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

64. (EXT. 04): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

65. (EXT. 05): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

66. (EXT. 06): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

67. (EXT. 07): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

68. (EXT. 08): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

69. (EXT. 09): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

70. (EXT. 10): └┴┴┘└┴┴┴┘ └┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

71. (EXT. 11): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

72. (EXT. 12): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

73. (EXT. 13): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

74. (EXT. 14): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

75. (EXT. 15): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

76. (EXT. 16): └┴┴┘└┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘ └┴┴┴┘

Program 6   **Line Options** (Default: 001 001)

                81. (LINE 01):   ⌊___⌋ ⌊___⌋

                82. (EXT. 02): ⌊___⌋ ⌊___⌋

                83. (EXT. 03): ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

                84. (EXT. 04): ⌊___⌋ ⌊___⌋

                85. (EXT. 05): ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

                86. (EXT. 06): ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Program 7   **Intercom Ringing/Privacy Release** (Default: 01)

                System-Wide Entry

                92.   ⌊_⌊_⌋

Program 8   **Break Timer** (Default: 1100)

                System-Wide Entry

                93.   ⌊_⌊_⌊_⌊_⌋

Program 9   **Make Timer** (Default: 1000)

                System-Wide Entry

                94.   ⌊_⌊_⌊_⌊_⌋

| Program 10 | **Flash Timer** (Default: 00000111) |

System-Wide Entry

95. L__I__I__I__I__I__I__I__I

| Program 11 | **Hold Recall Timer** (Default: 00000000) |

System-Wide Entry

96. L__I__I__I__I__I__I__I__I

| Program 12 | **Pause Timer** (Default: 00010011) |

System-Wide Entry

97. L__I__I__I__I__I__I__I__I

PROGRAMMING THE SYSTEM

This section will tell you how to take the values that you have entered on the Configuration Sheet and program them into your system. You will enter values for the programs in the order that they appeared on the Configuration Sheet. You may wish to copy the Configuration Sheet and have it by your side as you begin making entries.

Remember — programming can be completed **only** from Extension 01. If at any time during the programming you hear a reorder (fast busy) tone, you know you have made a mistake and must make that entry again.

Entries may be made with the handset on or off-hook. If, after making an entry, you hear a beep tone, you know that you have made the entry properly.

> **Important Programming Note:** If you wish to exit the programming mode after completing entries for any particular program, you must complete the steps detailed under **Exiting Programming** on p. 4-23.

SYSTEM INITIALIZATION

> MAKING AN ENTRY FOR THIS PROGRAM RESETS THE ENTIRE SYSTEM TO THE DEFAULT VALUES. THEREFORE, IT IS STRONGLY ADVISED THAT YOU COMPLETE THIS PROCEDURE BEFORE MAKING ANY PROGRAMMING ENTRIES.

Before you begin any programming, you can tell your system (by initializing it) what kinds of lines it has installed (pulse or tone-signaled).

To initialize the system for pulse-signaled lines:
1. Press #.
2. Dial 98.
3. Press HF/MIC key.

To initialize the system for tone-signaled lines:
1. Press #.
2. Dial 99.
3. Press HF/MIC key.

PROGRAMMING SHORTCUT

While making entries for a particular program, you may want to enter the same value for another extension or group of consecutively numbered extensions. For example, if you have assigned a toll restriction for Extension 05, and want to program that same toll restriction for Extension 09 through 12, you can do so simply by using the programming shortcut detailed below:

To copy a value to one other extension:

1. *Press #.*
2. *From the Configuration Sheet, enter the number corresponding to the extension to receive the copied value (for example, if Extension 04 is going to receive another extension's Toll Restriction [Program 4], enter 44).*
3. *Press *.*
4. *Enter the number corresponding to the extension you want to copy from (for example, if the Toll Restriction [Program 4] for Extension 15 is going to be copied, enter 55 [or 15]).*

Example:

To copy the Toll Restriction for Extension 05 to Extension 09:

1. *Press #.*
2. *Dial 49 (the entry for Extension 09).*
3. *Press *.*
4. *Dial 45 (the entry for Extension 05).*

To copy a value to a group of other extensions:

1. *Press #.*
2. *Enter the number corresponding to the first extension in the group that you wish to receive the copied value.*
3. *Press * twice.*
4. *Enter the number of the last extension in the group that you wish to receive the copied value (in this case, you can either enter the corresponding number from the Configuration Sheet or the normal two-digit extension number).*
5. *Enter the number of the extension you want to copy from (you can either enter the corresponding number from the Configuration Sheet or the normal two-digit extension number).*

Remember — you can only copy values within a given program (that is, you cannot copy a value from one program into another).

Example:

To copy the Toll Restriction for Extension 05 to Extensions 09-12:

1. *Press #.*
2. *Dial 49 (the entry for Extension 09).*
3. *Press * twice.*
4. *Dial 12 or 52 (the entry for Extension 12).*
5. *Dial 05 or 45 (the entry for Extension 05).*

Entry of Program 1

To enter System Speed Dial numbers (at Extension 01 **only**):
1. *Press #.*
2. *Press MEM.*
3. *Enter the storage location number (11-30).*
4. *Press the line you want the number to dial out on.*
5. *Dial the number to be dialed out (up to seventeen digits), including SPECIAL SPEED DIAL ENTRIES (see below).*
6. *Press the MON/MIC or HF/MIC key.*

SPECIAL SPEED DIAL ENTRIES

In the course of entering a Speed Dial number, you may need to insert one of the special functions listed below into the number. If so, simply enter the function (as instructed) when desired. **All functions count as one of the Speed Dial number's seventeen digits.**

PAUSE: To enter a pause, press line key 1.
FLASH: To enter a flash, press line key 2.
PULSE TO TONE CONVERSION: To switch from pulse to tone signaling, press line key 3. This function may be entered only once while storing a Speed Dial number.†

†If the line selected is tone-signaled, this line key does not illuminate.

SPECIAL CONTROL KEYS

These time-saving shortcuts are available after entering a Speed Dial number:
TO REENTER A NUMBER BEGINNING AT STEP 4 (ABOVE): To begin storing again without reentering the bin number, press line key 4.
TO ENTER NUMBERS IN CONSECUTIVE BINS (WITHOUT ENTERING THE BIN NUMBER): Press line key 5 and proceed to step 4 (above) for the rest of the number.
TO SKIP STEPS 1 & 2 (ABOVE) WHEN STORING MANY NUMBERS: Press line key 6 and proceed to step 3 (above) for the remaining numbers. You must have entered at least one Speed Dial number using the entire procedure.

To erase a System Speed Dial number that is already stored:
1. *Press #.*
2. *Press MEM.*
3. *Press the storage bin number (11-30). You hear a confirmation tone.*

Entry of Program 2

To enter Line Access assignments (from Extension 01 **only**):
1. *Press #.*
2. *From the Configuration Sheet, enter the two-digit number corresponding to the extension you are entering data for (01-16). You hear a confirmation tone.*
3. *Press the seven-digit entry from the Configuration Sheet. You hear a confirmation tone.*

Important Programming Note:
If you wish to make entries for more than one extension, simply return to step 2 and continue entering numbers. This rule applies to Programs 2-6.

Entry of Program 3

To program Line Ringing assignments (from Extension 01 **only**):
1. *Press #.*
2. *From the Configuration Sheet, press the two-digit number (21-36) corresponding to the extension you wish to enter data for (for example, to enter data for extension 10, enter 30). You hear a confirmation tone.*
3. *Press the eight-digit entry from the Configuration Sheet. You hear a confirmation tone.*

Entry of Program 4

To enter Paging Group/Toll Restriction assignments (from Extension 01 **only**):
1. *Press #.*
2. *From the Configuration Sheet, enter the two-digit number corresponding to the extension you wish to enter data for (41-56). You hear a confirmation tone.*
3. *Enter the first three digits from the Configuration Sheet. You hear a confirmation tone.*
4. *Enter the last four digits from the Configuration Sheet. You hear a confirmation tone.*

Entry of Program 5

To enter the Allowed Dialing Digits and Toll Exceptions (from Extension 01 **only**):

1. Press #.
2. From the Configuration Sheet, enter the two-digit number corresponding to the extension you wish to enter data for (61-76). You hear a confirmation tone.
3. Enter the two-digit entry for the number of Allowed Digits and the three-digit exceptions from the Configuration Sheet. You hear a confirmation tone after each entry.

You will hear a confirmation tone after every three digits. After the sixth set of three-digits, you will hear a longer confirmation tone.

If you wish to enter more exceptions for an extension after you have completed entering digits, you must reenter all exceptions for that extension. If an exception is entered as less than three digits, that entry is ignored by the system.

Entry of Program 6

To enter Line Option assignments (from Extension 01 **only**):

1. Press #.
2. From the Configuration Sheet, enter the two-digit number corresponding to the line you wish to enter data for (81-86). You hear a confirmation tone.
3. Enter the six-digit entry from the Configuration Sheet. You hear a confirmation tone.

Entry of Program 7

To assign Intercom Ringing/Privacy (from Extension 01 **only**):

1. Press #.
2. Dial 92. You hear a confirmation tone.
3. Press the two-digit entry from the Configuration Sheet. You hear a confirmation tone.

Entry of Programs 8 & 9

To set the duration of the Break and Make Timers (from Extension 01 **only**):

1. Press #.
2. Dial 93. You hear a confirmation tone.

3. Press the four-digit entry (Break Time) from the Configuration Sheet. You hear a confirmation tone.
4. Press #.
5. Dial 94. You hear a confirmation tone.
6. Press the four-digit entry (Make Time) from the Configuration Sheet. You hear a confirmation tone.

Entry of Program 10

To set the duration of a flash (from Extension 01 **only**):

1. Press #.
2. Dial 95. You hear a confirmation tone.
3. Press the eight-digit entry from the Configuration Sheet. You hear a confirmation tone.

Entry of Program 11

To set the duration of the Hold Recall Timer (from Extension 01 **only**):

1. Press #.
2. Dial 96. You hear a confirmation tone.
3. Press the eight-digit entry from the Configuration Sheet. You hear a confirmation tone.

Entry of Program 12

To set the duration of a pause (from Extension 01 **only**):

1. Press #.
2. Dial 97. You hear a confirmation tone.
3. Press the eight-digit entry from the Configuration Sheet. You hear a confirmation tone.
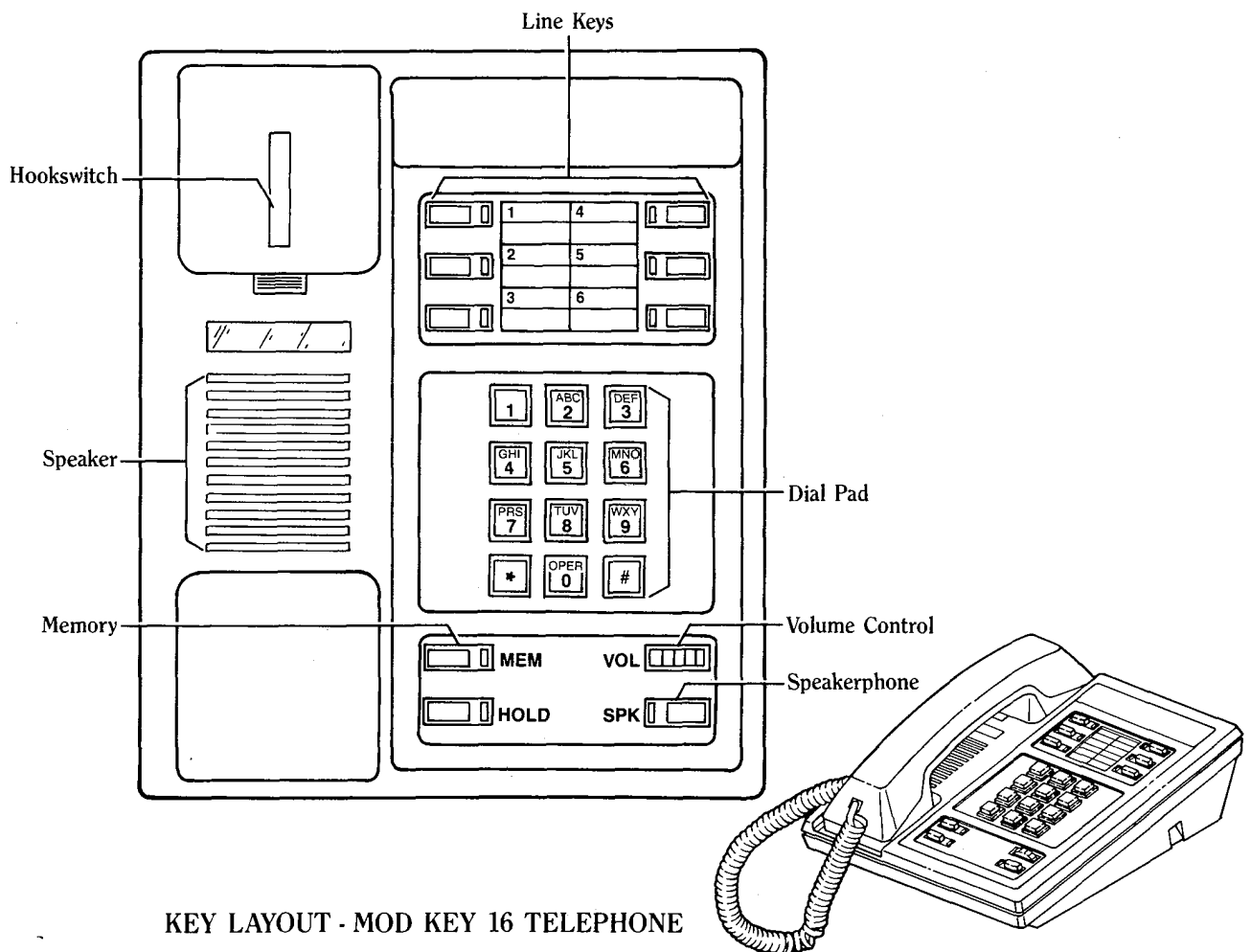
Exiting Programming

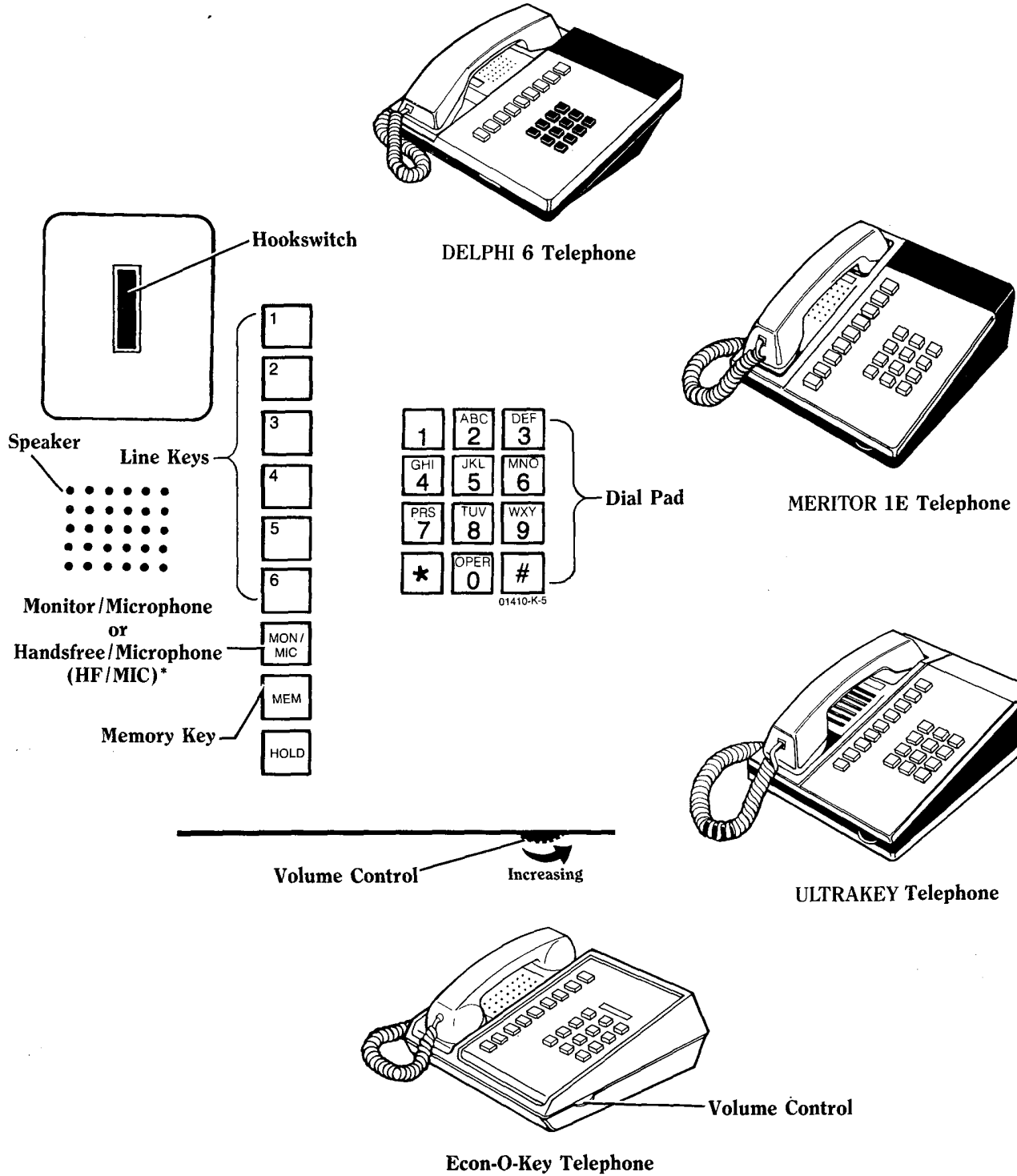To exit a program or the programming mode (from Extension 01 **only**):

1. If programming on-hook, press the illuminated MON/MIC or HF/MIC key (the key will go out); otherwise, lift and replace the handset. If programming off-hook, then hang up the handset.

TiE®

<div style="border:1px solid">

PART 5

USING YOUR MOD KEY 16 TELEPHONES

</div>

You are now ready to begin using your MOD KEY 16 telephones! This part of the manual is divided into two sections – the Basics and the Features. The Basics tell you how to place, answer and end calls. The Features demonstrate the flexibility and usefulness of the many system features. Included with the operation of most of the Basics and Features are Visual Key Patterns. These patterns show you how a given key will illuminate (and in some cases, when the phone will ring) when a Basic or Feature is used.

Before you move on to the instructions on the use of the telephones, please take a minute to examine the layouts of the keys on the telephones which are located on the bottom of this page and next page. These pictures should help you locate the keys you will need to use to operate your telephone.

KEY LAYOUT - MOD KEY 16 TELEPHONE

DELPHI 6 Telephone

Hookswitch

Speaker
Line Keys

1
2
3
4
5
6

Monitor / Microphone
or
Handsfree / Microphone
(HF / MIC)*

Memory Key

MON / MIC

MEM

HOLD

1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PRS 7	TUV 8	WXY 9
*	OPER 0	#

01410-K-5

Dial Pad

MERITOR 1E Telephone

ULTRAKEY Telephone

Volume Control   Increasing

Econ-O-Key Telephone

Volume Control

KEY LAYOUT - MOD KEY 16 TELEPHONES

The Basics

The following instructions tell you how to place, answer or end an outside or intercom call.

NOTE: Throughout this portion of the book, the step "Press HF/MIC or MON/MIC key" should be replaced by "Press SPK" when using the BUSINESSCOM 16 telephone.

Outside Calls

To place an outside call:
1. *Press a line key (1-6) and wait for a dial tone (the line key and either the HF/MIC or MON/MIC key will light).*
2. *Dial the number.*
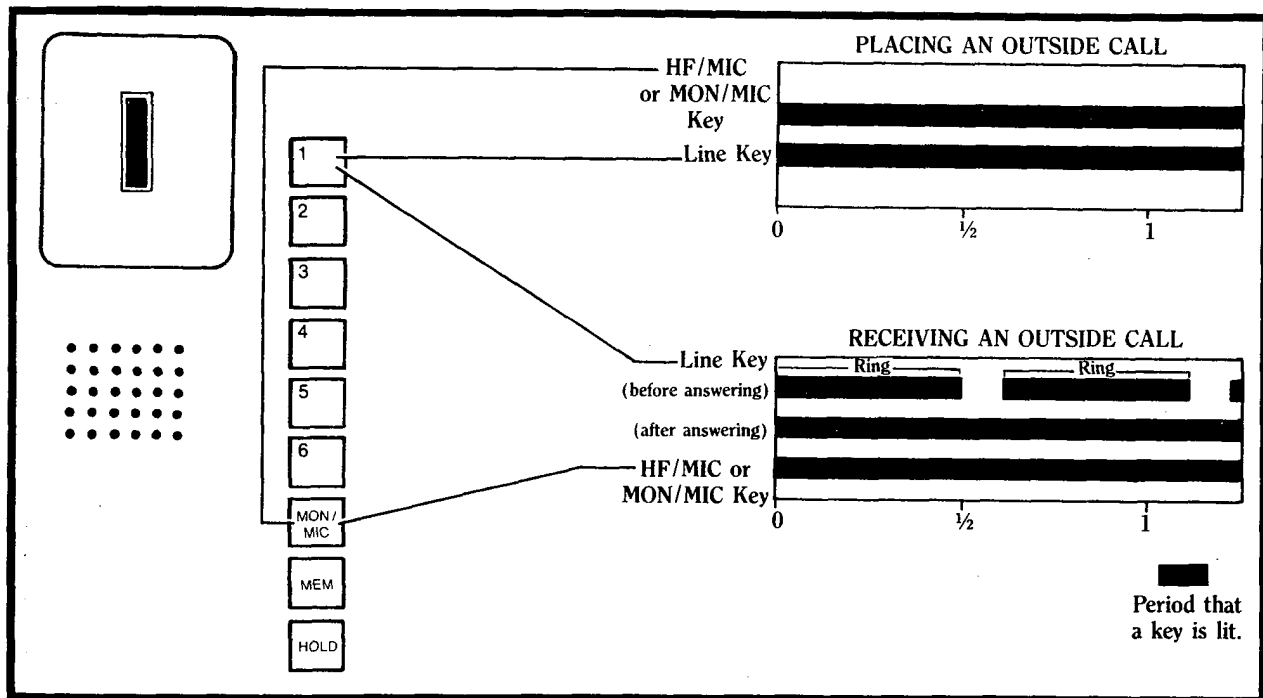3. *If necessary, lift the handset to talk.*[†]

[†]You will only need to lift the handset if your extension has a MON/MIC key. Once you lift the handset to talk, the MON/MIC key will go out. If it is equipped with a HF/MIC key, you can talk without lifting the handset and the telephone's microphone will pick up your voice.

To answer an outside call:
1. *Press the flashing line key (the key lights steadily).*
2. *If necessary, lift the handset to talk.*

To end an outside call:
1. *Press the HF/MIC key (the key will go out).*
     OR
   Hang up the handset.

PLACING/RECEIVING
AN OUTSIDE CALL

Intercom Calls

To place an intercom call:

1. *Dial the two-digit number (01-16) of the extension you wish to reach (the MEM key and either the HF/MIC or MON/MIC key will be steadily lit).*
2. *When the party answers, speak to him or her.*
   OR
   If necessary, lift the handset to talk (the MON/MIC key goes out). If you do not lift the handset, you are only able to hear the other person talk — you cannot respond.

To place an intercom call over an extension's speaker (even if your extension has a MON/MIC key):

1. *Lift the handset and place the intercom call.*
2. *Press MEM key (the MEM key and either the HF/MIC or MON/MIC key will be steadily lit). You hear a beep.*
3. *Make your announcement. You must press the MEM key to talk, and release it to hear the other person talk back.*

If you receive this kind of call over your phone speaker, your HF/MIC or MON/MIC key will be illuminated. When it is your turn to talk, the MEM key will be illuminated — simply reply (you do not have to lift the handset to talk). If the MEM key is illuminated before you make an intercom call, all intercom lines are busy.

To call the operator:

1. *Dial 00.*
   OR
   Dial 06.
2. *If necessary, lift the handset to talk.*

To answer a ringing intercom call (the MEM key will flash):

1. *Press the HF/MIC key (the HF/MIC and MEM keys are steadily lit).*
   OR
   Lift the handset (the MEM key will be steadily lit).
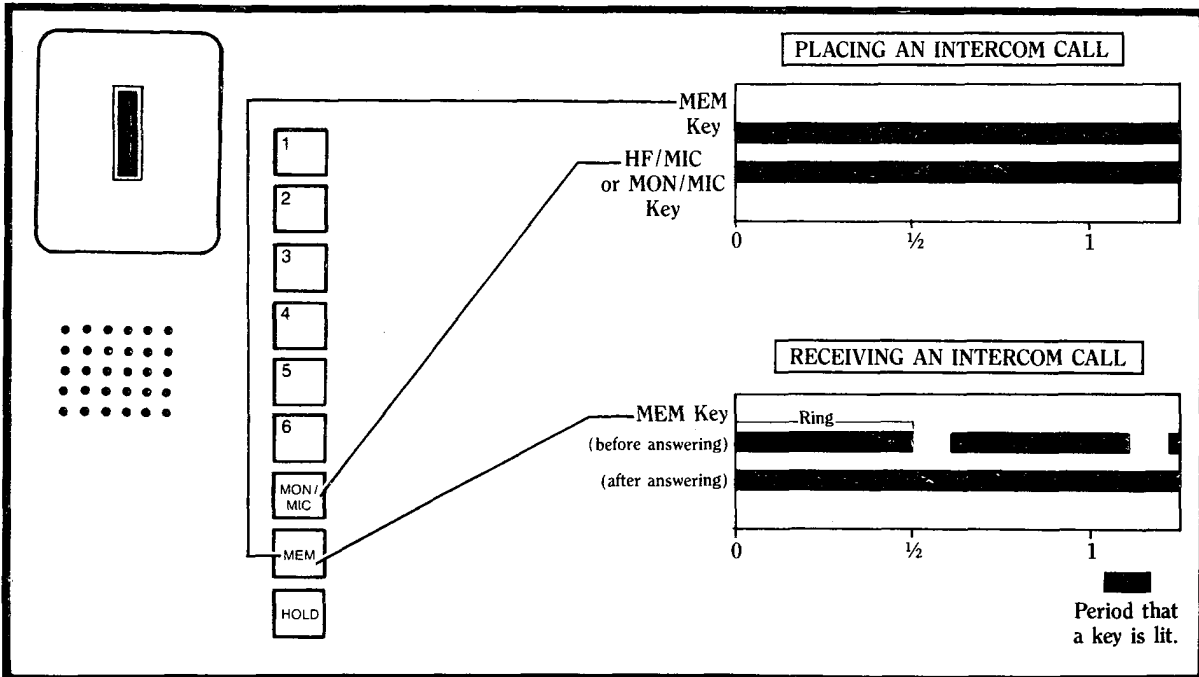   *OR*
   Simply reply Handsfree (if you hear a beep and your HF/MIC key lights).

To end an intercom call:

1. *Press the HF/MIC key (the HF/MIC and MEM keys go out).*
   OR
2. *Hang up the handset (the MEM key will go out).*

PLACING/RECEIVING
AN INTERCOM CALL

MOD KEY 16

The Features

The use of the following features are described in this section:

Call Waiting
Conference
Door Chime Box
Flash
Handsfree Capability
Hold
Last Number Redial
Night Answer
Paging

Privacy
Pulse to Tone Conversion
Room Monitor
Speed Dial
Transfer
Volume Control

The use of a feature is written with the assumption that an extension has access to that feature. If a feature does not work at a given extension, the programming should be checked.

Call Waiting

While on another call, you can receive a Call Waiting signal (one beep) under three circumstances: a) if another extension user is trying to reach you; b) if someone is trying to transfer an outside call to you, or c) if another outside call is ringing in to your system (you will only receive a beep for a second incoming call if you are on an *outside* call).

To send a Call Waiting signal to a busy extension:

1. Call the extension and receive a busy signal.
2. Press the MEM key. The person at the busy extension will hear a beep.
3. Wait until the busy signal changes to ringing. The other party should answer shortly.

You have several alternatives if you *receive* the beep. If you choose to respond in any way, you must first complete the call you are on. If you are on an intercom call, you *must* hang up — intercom calls cannot be put on Hold. If you are on an outside call you can hang up or put the call on Hold. Based upon your decision, refer to the correct steps below.

If you decide to put the outside call on Hold and answer the Call Waiting signal:

1. Press HOLD (the line key flashes).
2. One of three things will now happen:
   (a) You will be automatically connected to a waiting intercom caller (if the party has remained off-hook).
   (b) Your line keys will temporarily go out and one key will flash showing the transferred call. Press this key to answer your call (the key will change to steadily lit; all other keys will return to their normal status).
   (c) One of the other line keys will be flashing to indicate another incoming call. Press this line key to answer a different call.

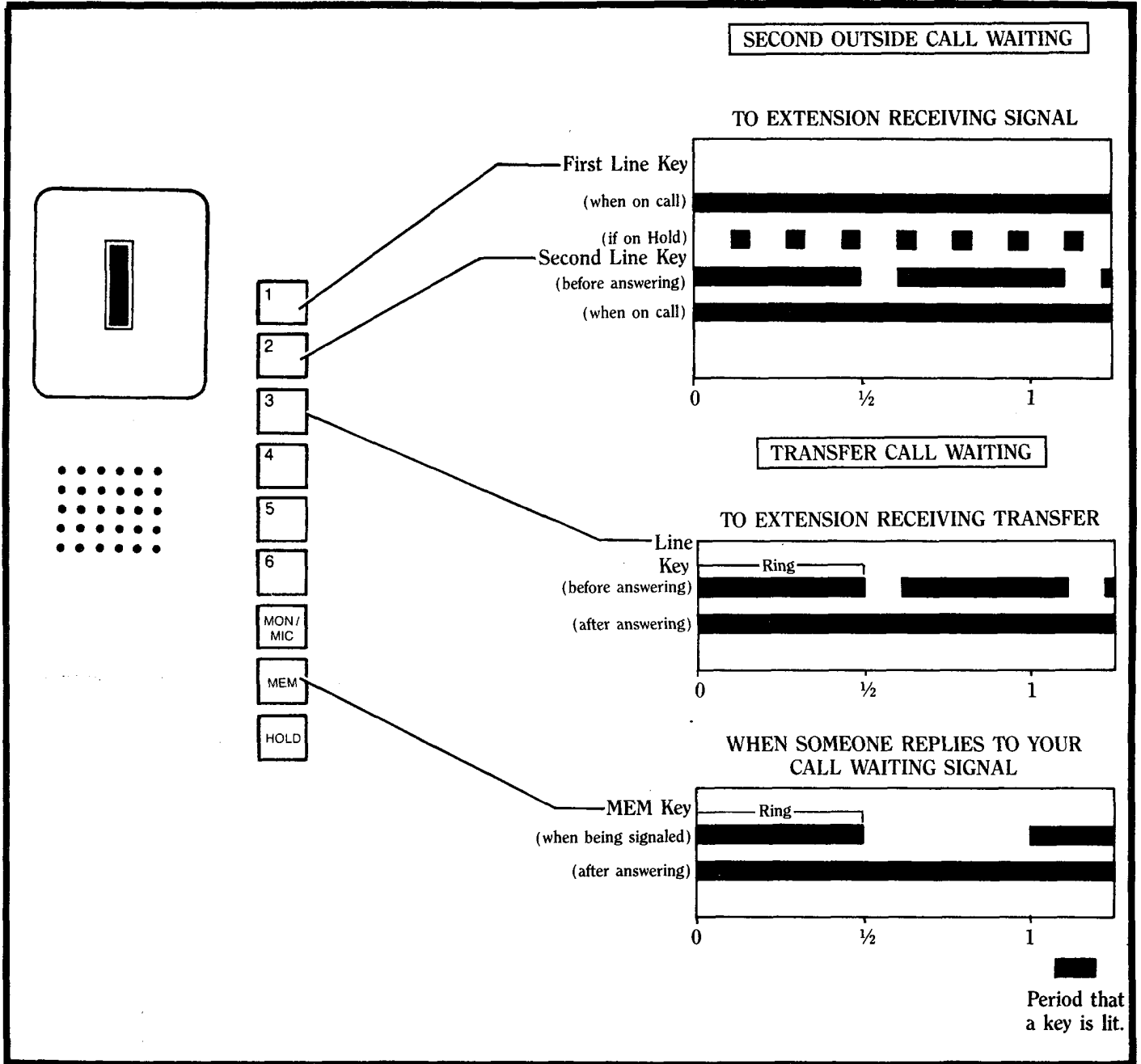If you decide to hang up the outside call and answer the Call Waiting signal:

1. Hang up (by pressing HF/MIC or hanging up the handset).
2. One of three things will now happen:
   (a) Your phone will ring. When you lift the handset or press HF/MIC, you will be automatically connected to a waiting intercom caller (if the party has remained off-hook).
   (b) Your line keys will temporarily go out and one key will flash showing the transferred call. Press the key to answer your call (the key will change to steadily lit; all other keys will return to their normal status).
   (c) One of the other line keys will be flashing to indicate a different incoming call. Press the line key to answer the call.

   OR

1. Press the hookswitch, then release it.
2. One of three things will now happen:
   (a) You will hear ringing and your MEM key will flash. When you release the hookswitch, you will be automatically connected to a waiting intercom caller.
   (b) After you release the hookswitch, the keys that are lit on your telephone will temporarily go out and one line key will flash showing the transferred call. Press this key to answer the call (the key will change to steadily lit; all other keys will return to their normal status).
   (c) One of the other line keys will be flashing to indicate a different outside call. Press this key to answer the call.

Remember — if you are on an intercom call and receive a beep, you know it is to indicate either that another extension user is trying to reach you, or a call is being transferred to you. You *will not* receive a beep for an incoming call while on an intercom call.

MOD KEY 16

SECOND OUTSIDE CALL WAITING

TO EXTENSION RECEIVING SIGNAL

First Line Key
(when on call)
(if on Hold)
Second Line Key
(before answering)
(when on call)

0   ½   1

TRANSFER CALL WAITING

TO EXTENSION RECEIVING TRANSFER

Line
Key — Ring
(before answering)
(after answering)

0   ½   1

WHEN SOMEONE REPLIES TO YOUR
CALL WAITING SIGNAL

MEM Key — Ring
(when being signaled)
(after answering)

0   ½   1

Period that
a key is lit.

1
2
3
4
5
6
MON/MIC
MEM
HOLD

CALL WAITING

Conference

You can establish two kinds of multiple-party conversations: 1) you, and two other outside parties can talk at the same time, or 2) you, one inside and one outside party can talk at the same time.

To join two outside parties in a conference:

1. *Place the first outside call.*
2. *When the first party answers (you may need to lift the handset to talk), press the HOLD key twice (the line key will flash at your phone and remain steadily lit at all others). This call cannot be picked up by anyone else.*
3. *Place the second outside call.*
4. *When the second party answers, press the MEM key.*
5. *Press the HOLD key. You can now speak to both outside callers, and they can speak to each other.*

You can put both parties on Hold by pressing the HOLD key. To rejoin both calls, press the MEM key, then the HOLD key. To continue a conversation on one outside line and disconnect the other, simply press the key of the line you wish to continue a conversation on.
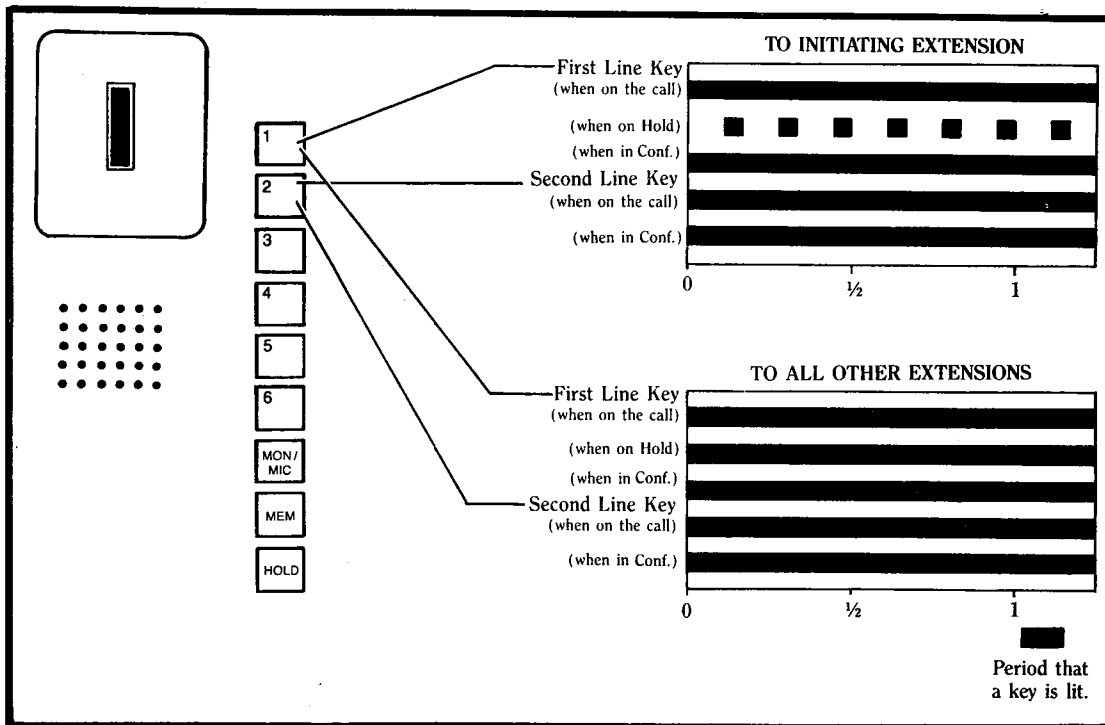
If *you* hang up, the two outside callers are disconnected, and can no longer speak to one another.

To join an inside and outside party in conference:

1. *Place or answer the outside call first.*
2. *When the conversation is established (you may need to lift the handset to talk), press the HOLD key twice.*
3. *Call the extension of the party you want to join the conference.*
4. *When the inside party answers, press the MEM key.*
5. *Press the HOLD key. All three callers are now joined in conference.*
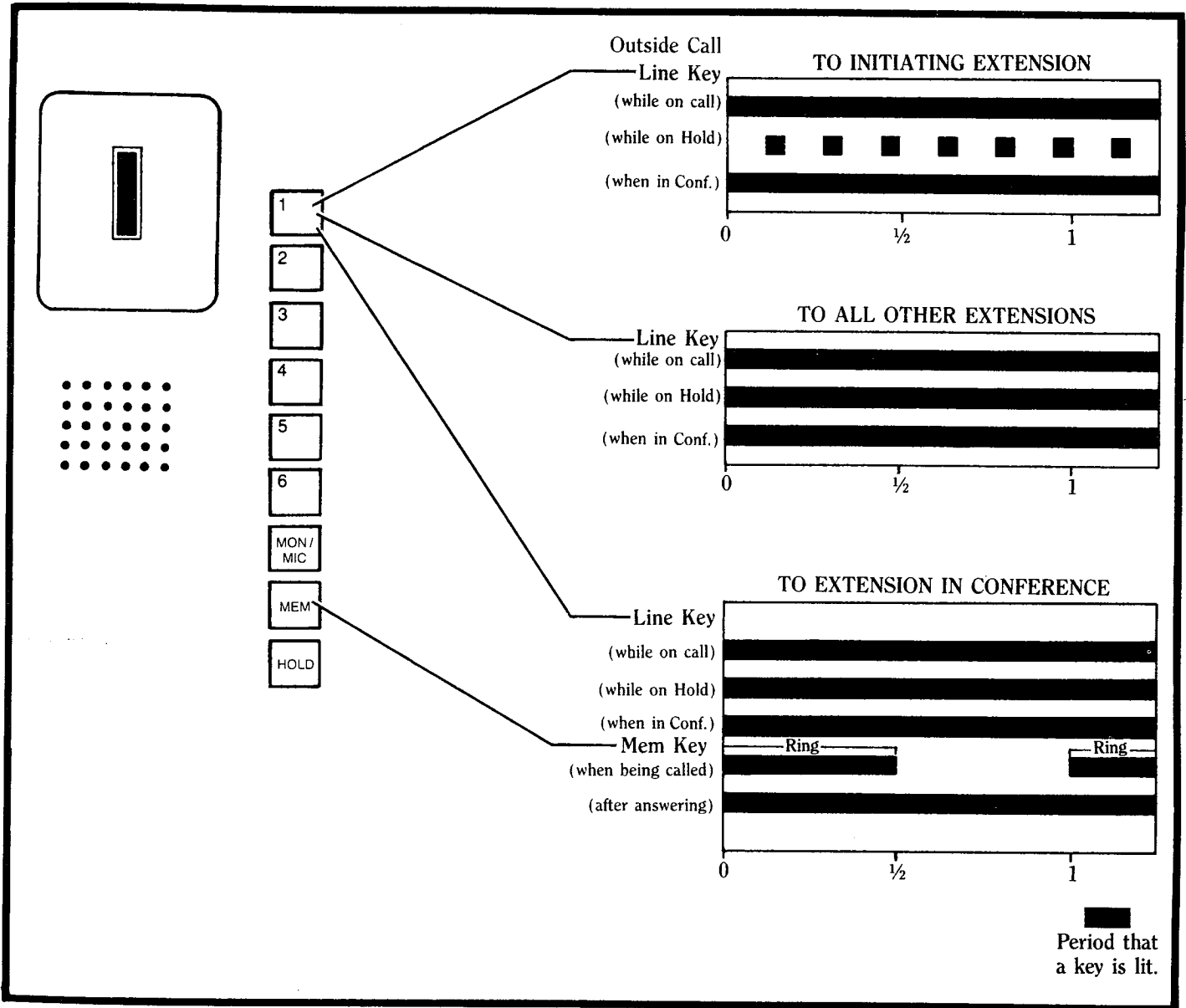
Either internal party can hang up at any time, leaving the other two to converse. The only way to complete the call is for both inside parties to hang up. You cannot add more than one other inside party to the conference.

A third, and special kind of conference can be established (if your system is so programmed [see **Privacy** on p. 6-14]) allowing a user at another extension to join a conversation you are having on an outside line. Someone in your office can go to an extension, press the line key you are holding your conversation on, and join the discussion (they may need to lift the handset to talk).

CONFERENCE
(TWO OUTSIDE PARTIES)

Outside Call
Line Key
(while on call)
(while on Hold)
(when in Conf.)

TO INITIATING EXTENSION

0   ½   1

Line Key
(while on call)
(while on Hold)
(when in Conf.)

TO ALL OTHER EXTENSIONS

0   ½   1

Line Key
(while on call)
(while on Hold)
(when in Conf.)
Mem Key
(when being called)
(after answering)

TO EXTENSION IN CONFERENCE

Ring   Ring

0   ½   1

Period that
a key is lit.

CONFERENCE
(ONE INSIDE AND ONE OUTSIDE PARTY)

Door Chime Box

Your system may be equipped with a Door Chime Box. When someone calls from the Door Chime Box, your extension may receive a beep tone. If so, you can talk to the person at the door.

To answer someone at a Door Chime Box:
1. *Lift the handset.*
2. *Dial 08.*
3. *Press the MEM key and speak to the person at the door. Release the MEM key to hear the person talk to you.*

Flash

Flash allows an opening on a line for the purposes of signaling.

To initiate a Flash pulse:
1. *Press and release the line key already in use.*

Handsfree Capability

If your extension is equipped with a speakerphone for Handsfree conversations, you can perform almost all feature operations without ever lifting the handset. Instead of lifting the handset to talk to a party, simply talk, and the telephone's microphone will pick up your voice. This allows you the freedom to move about a room while maintaining a conversation. To end the conversation, press the illuminated HF/MIC key.

If you are on a handset call and wish to switch to a Handsfree conversation, press HF/MIC and hang up the handset. The HF/MIC key will light. You can now continue your conversation. If you desire privacy, just lift the handset and talk (the HF/MIC key will go out).

HF/MIC
Key
(when on any
Handsfree call)

0   ½   1

Period that
a key is lit.

SPEAKERPHONE
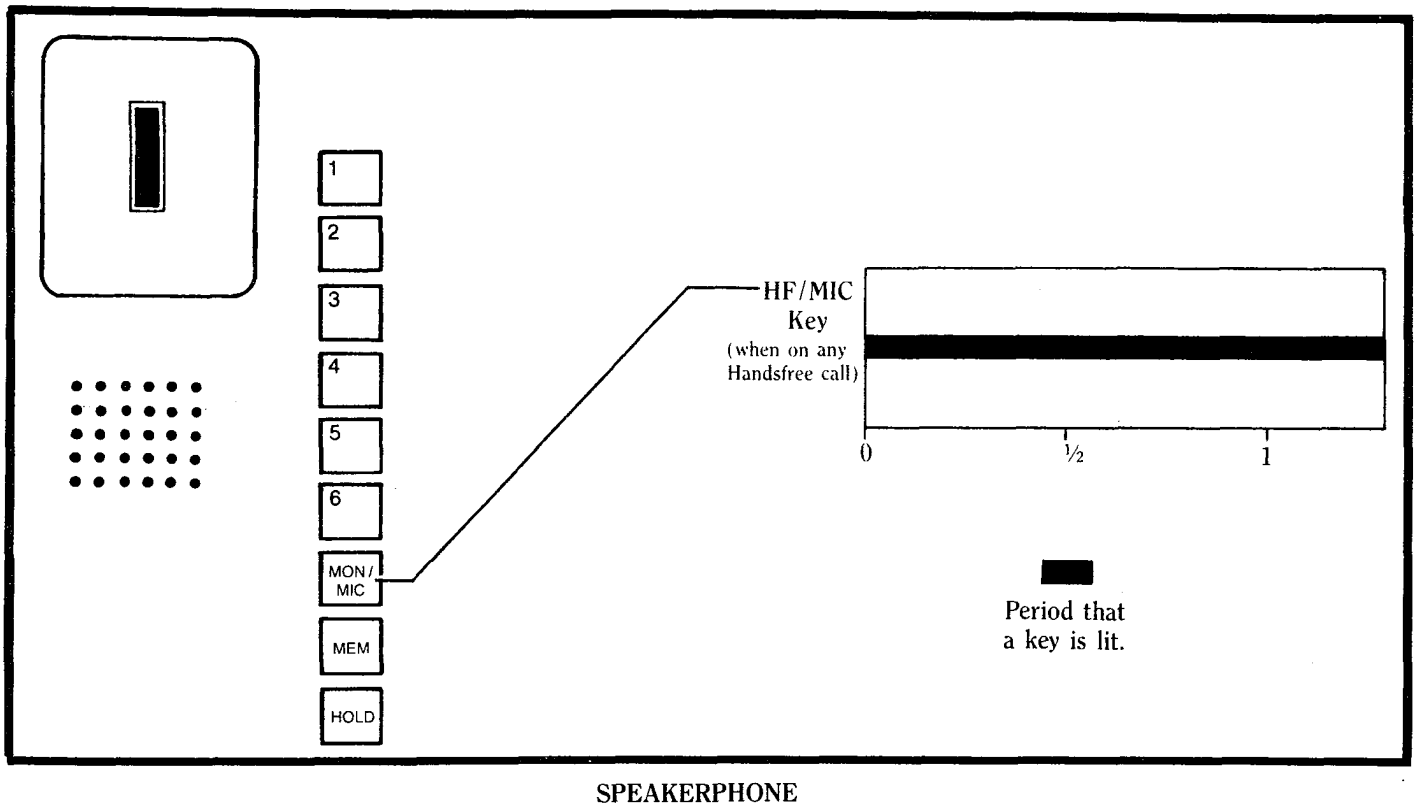
Hold

You can place outside calls in two kinds of temporary waiting conditions: 1) only your extension can pick the call up again, or 2) anyone, at any extension where the line of the call on Hold can be accessed, can pick up the call. You *cannot* put intercom calls on Hold.

To put a call on Hold so that *only you* can answer it:

1. *Press the HOLD key twice (the line key flashes on your phones, and appears steadily lit at all others).*

To put a call on Hold so that it can be picked up *at any extension*:

1. *Press the HOLD key once (the line key flashes quickly at your phone, and a bit more slowly at all others).*

To answer a call on Hold:

1. *Press the flashing line key (the line key will change to steadily lit).*
2. *If necessary, lift the handset to talk.*

If a call has been on either kind of Hold too long, your extension will re-ring to remind you of the call (if programmed). If you still don't pick up the call, all phones that the outside line can be used at will ring and can be used to pick up the call.
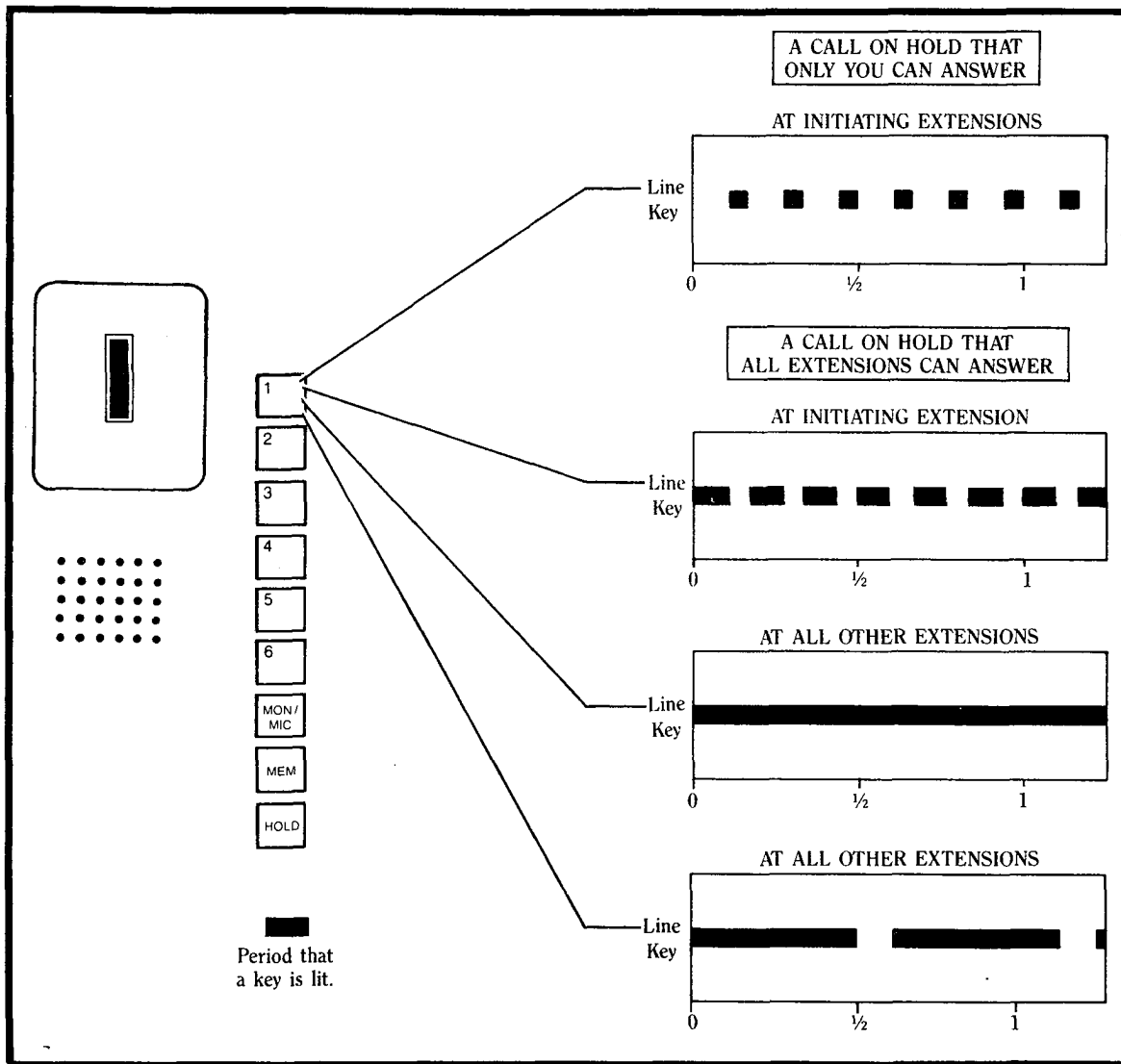
HOLD

Last Number Redial

You can instruct the system to automatically redial the last outside number you called (up to 25 digits) either on the same outside line or a different outside line than was originally used for the call.

To redial using the same outside line:
1. Press the ✳ key (the line key used for your last call and either the HF/MIC or MON/MIC key will light).†
2. After the number dials out, if necessary, lift the handset to talk.

To redial using a different line:
1. Press a new line key.
2. Press the MEM key.
3. Press the ✳ key (the new line key and either the HF/MIC or MON/MIC key will light).†
4. After the number dials out, if necessary, lift the handset to talk.

†You can lift the handset before or after pressing the ✳ key.

Night Answer

Your system may be programmed so that outside calls will ring at additional extensions (with access to that line) when the attendant is away from his or her extension, or at night. The system can *only* be put in the Night Answer mode at Extension 01 or 06 (the attendant's extension).

To place the system in the Night Answer mode (from Extensions 01 and 06 **only**):
1. Press #. The HF/MIC or MON/MIC key is illuminated.
2. Dial 91. You will hear a beep.
3. Press the HF/MIC or MON/MIC key (the key will go out).

To return the system to the Day mode (from Extensions 01 and 06 **only**):
1. Press #. The HF/MIC or MON/MIC key is illuminated.
2. Dial 90. You will hear another beep.
3. Press the HF/MIC or MON/MIC key (the key will go out).

Paging

You can make an announcement to a group of extensions, all extensions, or to paging speakers. Pages will be received through a phone's speaker.

To page a group of extensions:
1. Dial the two-digit number assigned to the group you wish to page:

To Page	Dial
All extensions	20†
Group 1	21
Group 2	22
Group 3	23
Group 4	24

2. If necessary, lift the handset. Make your announcement.
3. Press the HF/MIC key or hang up the handset.

†When you dial 20, you will reach all extensions assigned to page groups (*not* any external paging speakers). Any extension not in a page group will not receive the page.

To page external speakers:
1. Press the line key reserved for paging to speakers (the microphone is turned on immediately).
2. If necessary, lift the handset. Make your announcement.
3. Press the HF/MIC key or hang up the handset.

Privacy

You will have complete privacy on any outside or intercom call you are on, unless you decide to add another party to your conversation using the Conference feature. However, for your convenience, the Privacy feature can be disabled for *all* extensions in the system, allowing quick and easy conferences on outside calls (of *any* number of extensions) to be established, or the ability to interrupt someone's conversation to make an announcement.

To join a conversation from any extension in the system:

1. *From any extension, press the line key of the conversation you wish to join.*
2. *If necessary, lift the handset to talk.*

Pulse to Tone Conversion

If your outside lines are pulse-signaled, and you need to dial a number that requires tone signaling, you may switch the signaling for the duration of the number you are dialing.

To switch from pulse to tone signaling:

1. *At the point where the switch should occur, press the # key.*

Pulse signaling automatically switches to tone signaling when you chain a number to a Speed Dial number *or* dial a number over 25 digits.

Room Monitor

You can listen in to (monitor) one or two extensions from your phone's extension. This feature can be particularly useful if one phone is located in a small child's room, and you wish to listen in from another room. Extensions which are going to be monitored must be set up *before* you monitor them.

To set up an extension to be monitored:
1. *Lift the handset.*
2. *Press the HOLD key (the MEM key will flash).*
3. *If Handsfree Monitor is desired, press the HF/MIC or MON/MIC key and hang up the handset.*

To monitor an extension:
1. **Do not** *lift the handset.*
2. *Press the HOLD key (the MON/MIC or HF/MIC key will light and the MEM key flashes at your extension).*

To stop monitoring an extension:
1. *Press HF/MIC or MON/MIC* **or** *hang up your handset.*

To disable an extension from being monitored any longer:
1. *At the monitored extension, hang up the handset* **or** *press the HF/MIC or MON/MIC key.*

If one or more extensions are being monitored and the handset at any extension is hung up, that extension can no longer be monitored, and cannot be reenabled for monitoring again while you are monitoring the other extensions.

ROOM MONITOR

TiE®
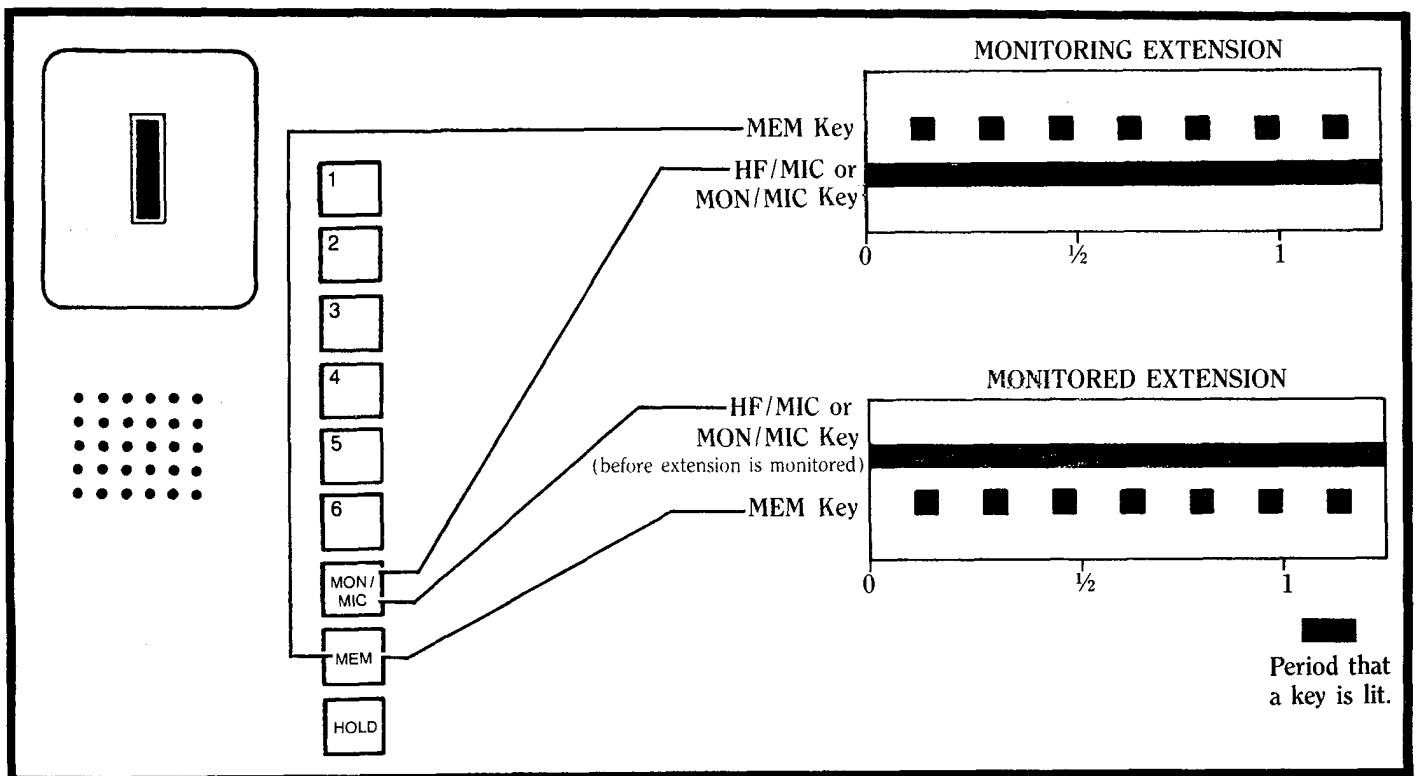
Speed Dial

Up to ten frequently-dialed telephone numbers (of up to seventeen digits each) can be stored at each extension for exclusive use *at that extension*. When you need to call these numbers, you must only complete three easy steps, and the system will automatically dial them out for you.

Up to 20 numbers can be stored at Extension 01 for use by *everyone* in the system. You can record your personal Speed Dial numbers on the table provided for you on page 6-19. In addition, the user of Extension 01 can store ten additional Speed Dial numbers for use at Extension 01 only.

To store your personal Speed Dial numbers:

1. *Press #.*
2. *Press the MEM key (the HF/MIC or MON/MIC key will light).*
3. *Enter a two-digit storage bin location (01-10) for the number to be stored. This bin location number will be used to dial the number out later. (You will hear a beep and all line keys that you have access to will flash.)*
4. *Press a flashing line key. This will select a line for the number you are going to store to dial out on. (All line keys now light.)†*
5. *Enter the number to be stored (up to seventeen digits), including special functions (see the chart in the next column).*
6. *Press the MON/MIC or HF/MIC key or lift the handset and hang up. (All line keys go out.)*

†CO Line 3 will not illuminate if the line you have chosen is tone-signaled.

To have the system dial out one of your personalized Speed Dial numbers:

1. *Press the MEM key (the HF/MIC or MON/MIC key will light).*
2. *Dial the storage bin location number (01-10).‡*
3. *If necessary, lift the handset after the number dials out to talk.*

‡If the line stored with the number is busy (and all lines in that line's line group are busy), you will receive a busy signal. You may, however, preselect another line for the call, by pressing the line key desired, and then following the steps above.

SPECIAL SPEED DIAL ENTRIES

In the course of entering a Speed Dial number, you may need to insert one of the special functions listed below into the number. If so, simply enter the function (as instructed) when desired. **All functions count as one of the Speed Dial number's seventeen digits.**

PAUSE: To enter a pause, press line key 1.
FLASH: To enter a flash, press line key 2.
PULSE TO TONE CONVERSION: To switch from pulse to tone signaling, press line key 3. This function may be entered only once while storing a Speed Dial number.
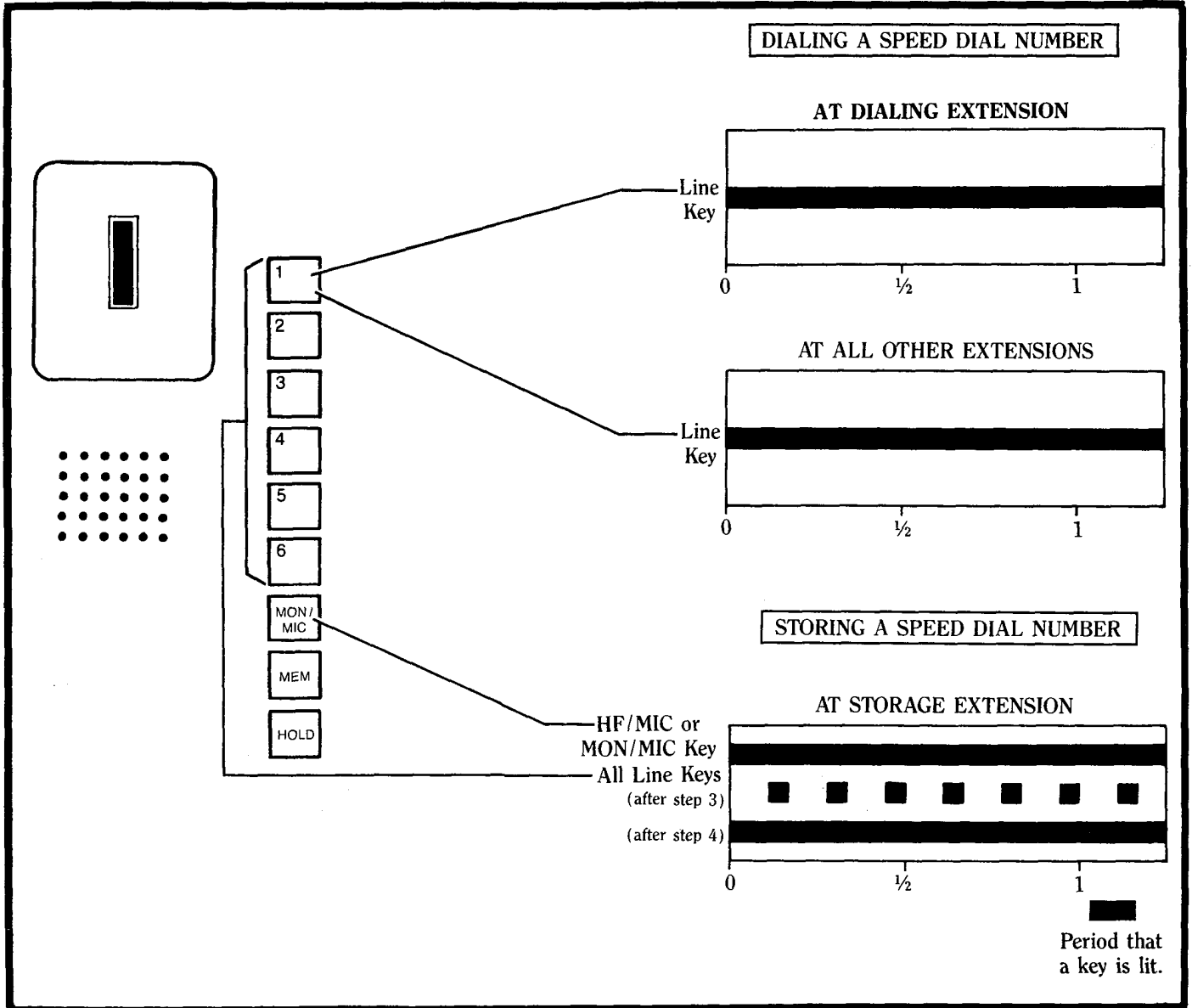
SPECIAL CONTROL KEYS

These time-saving shortcuts are available after entering a Speed Dial number:

TO REENTER A NUMBER BEGINNING AT STEP 4 (ABOVE): To begin storing again without reentering the bin number, press line key 4.
TO ENTER NUMBERS IN CONSECUTIVE BINS (WITHOUT ENTERING THE BIN NUMBER): Press line key 5 and proceed to step 4 (above) for the rest of the number.
TO SKIP STEPS 1 & 2 (ABOVE) WHEN STORING MANY NUMBERS: Press line key 6 and proceed to step 3 (above) for the remaining numbers. You must have entered at least one Speed Dial number using the entire procedure.

DIALING A SPEED DIAL NUMBER

AT DIALING EXTENSION

Line
Key

0   ½   1

AT ALL OTHER EXTENSIONS

Line
Key

0   ½   1

STORING A SPEED DIAL NUMBER

AT STORAGE EXTENSION

HF/MIC or
MON/MIC Key
All Line Keys
(after step 3)

(after step 4)

0   ½   1

Period that
a key is lit.

1

2

3

4

5

6

MON/
MIC

MEM

HOLD

SPEED DIAL
(YOUR PERSONAL NUMBERS)

To store a number for system-wide use (at Extension 01 *only):*

1. *Press the # key (the HF/MIC or MON/MIC key will light).*
2. *Press the MEM key.*
3. *Enter a two-digit storage bin number (11-30). You will hear a beep and all line keys flash. This bin number will be used to dial the number out later. (All lines available for use in your system will flash.)*
4. *Press a line key. The number will be dialed out on this line. (All line keys now light.)†*
5. *Enter the number, up to seventeen digits, including special functions (see the chart on p. 5-16).*
6. *Press the MON/MIC or HF/MIC key. (All line keys go out.)*

†CO Line 3 will not illuminate if the line you have chosen is tone-signaled.

To call a system-wide number (from any extension):

1. *Press the MEM key (the HF/MIC or MON/MIC key will light).*
2. *Dial the storage bin number (11-30). If the line stored with the number is busy (or all lines in that line's line group are busy), you will receive a busy signal.‡*
3. *If necessary, lift the handset to talk after the number dials out.*

‡You can preselect another line for the call by pressing the desired line key, then proceeding with the steps above.

> **NOTE:** When there is no Four-Line Expansion Cartridge installed, line keys 4, 5 and 6 on all extensions may be used for one-button access to frequently used System Speed Dial numbers.
>
> — To dial System Speed Dial number 11, press line key 4.
> — To dial System Speed Dial number 12, press line key 5.
> — To dial System Speed Dial number 13, press line key 6.

You can "chain" a Speed Dial number to another Speed Dial number, a manually-dialed number or a redialed number so that both numbers dial out together. To "chain" two numbers — after the first number dials out, dial the second (or press the MEM key and the second Speed Dial bin number) — it's that easy!

NOTE: When a number is chained to a Speed Dial number, the second set of digits will **always** be sent out tone-signaled, whether the first set of digits is pulse or tone-signaled.
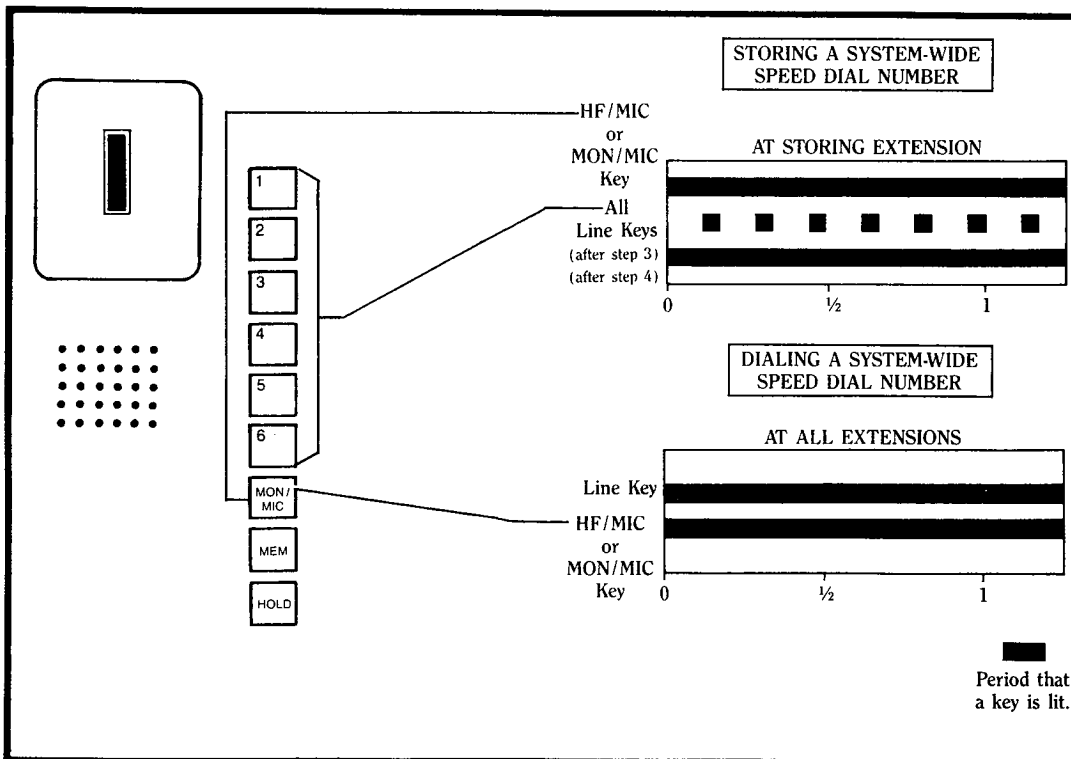
SPEED DIAL (SYSTEM-WIDE)

SPEED DIAL

Personal Speed Dial Numbers

01.

02.

03.

04.

05.

06.

07.

08.

09.

10.

Transfer

You can send (transfer) an outside call from your extension to any other extension.

To transfer a call:

1. Place the call on Hold.
2. Call the extension you want to transfer the call to, and press the # key.
3. Either wait for the party to answer and announce the transfer, or hang up (by pressing HF/MIC or hanging up the handset).

If you are about to receive a transfer and you are on a call, you will hear a beep and the line keys that are lit on your phone (if any) will temporarily go out. The line key of the transferred call will flash.

To receive a transfer:

1. Press the flashing line key (the line key and either the MON/MIC or HF/MIC key will be steadily lit). Only you and the transferring station will be able to access the transferred call prior to you picking up the call.
2. If necessary, lift the handset to talk. If you are on another call when you receive a transfer, complete that call, if necessary, and answer the transfer.

Volume Controls

You can control the loudness of the calls that ring (or Handsfree conversations) at your extension.

To adjust the volume:

1. Turn the volume control wheel counterclockwise (to the right on the BUSINESSCOM 16 telephone) to increase the volume, and clockwise (to the left on the BUSINESSCOM 16 telephone) to decrease it.
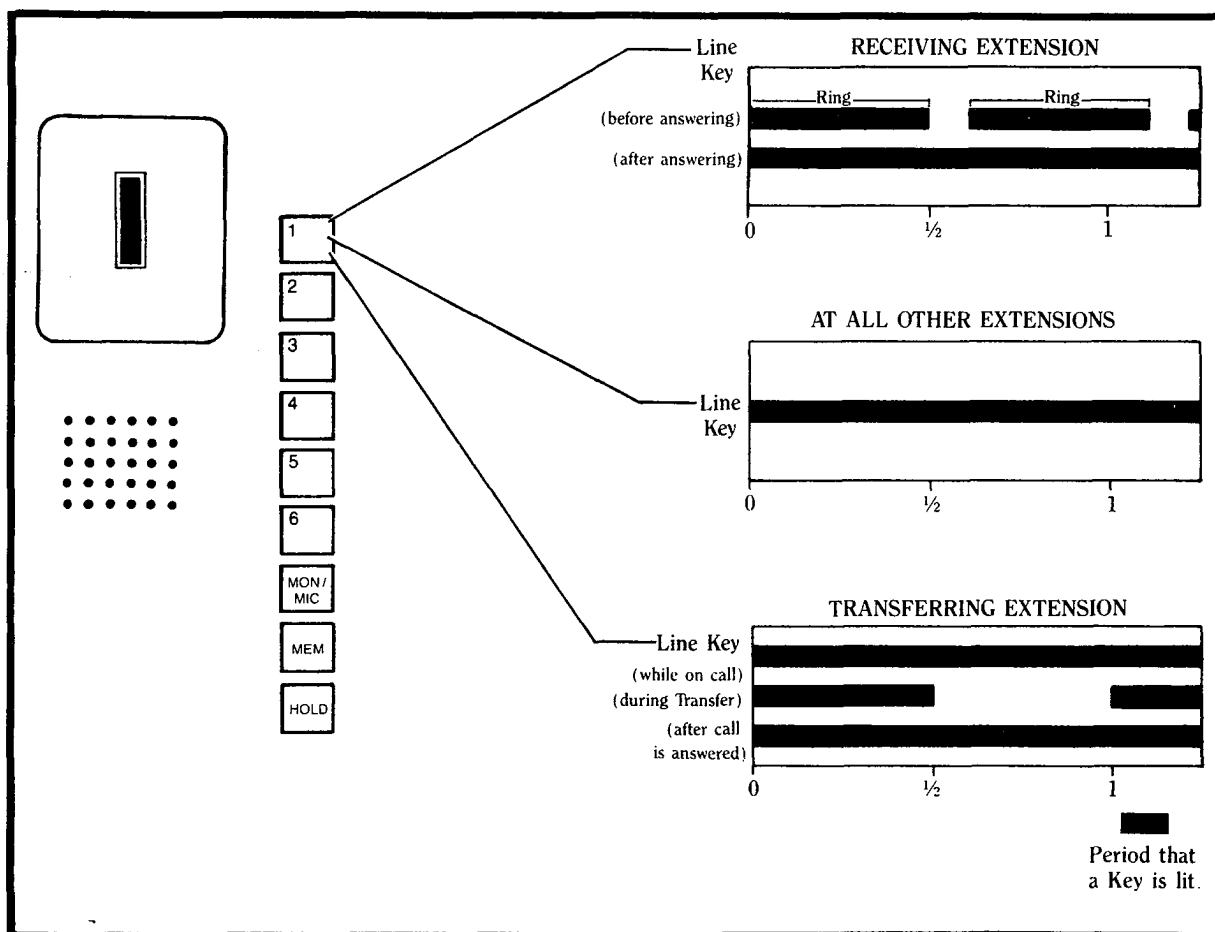
TRANSFER

PART 6

CHECKING YOUR MOD KEY 16 SYSTEM

This part of the manual will provide you with several probable solutions that you can consult if your system is not working properly. Also included is a complete list of replacement parts for your system, so that you can easily make any necessary hardware changes.

Correcting System Problems

Some problems might occur during the lifetime of your system. Following are some of these problems, and their possible causes and solutions. Usually the problem will take only a few moments to locate and fix.

Problem:
A line key does not light or the light works but no dial tone is received when the key is pressed.

Probable Cause:
1. The line may not be installed.
2. The extension from which the line is trying to be accessed may not be programmed for access to that line (Program 2) or may be restricted from placing calls using that line (Program 4).
3. If no expansion cartridges are installed, only CO1 and CO2 will be illuminated if the line keys are pressed when the system is powered up.
4. An expansion cartridge may not be installed properly.

Solutions:
1. Make sure that the line in question is installed.
2. Check Programs 2 and 4, and the assignments for the extension being used.

Problem:
One or more extensions cannot be reached by making an intercom call (but at least one extension in the system *does* work).

Probable Cause:
1. Some extensions may not be installed.
2. An improper connection from the telephone to the KSU may have been made.

3. When attempting to reach another extension, a one-digit number (1-9) may have been dialed instead of a two-digit number (01-09).
4. An extension expansion cartridge may not be installed properly.

Solutions:
1. Make sure *all* connections are secure (KSU to jack; jack to jack; jack to telephone; expansion cartridge to KSU).
2. Make sure the extension you are trying to call is installed. If the extension is not *installed*, you will hear a reorder (fast busy) tone when you attempt to call it.
3. Make sure a two-digit number has been dialed to reach the extension, *not* a one-digit number.

Problem:
The programming information is not being accepted by the system.

Probable Cause:
1. The programming may not be entered at Extension 01.
2. A problem may exist in the wiring of Extensions 01 *or* 02.
3. A line or extension that values are being entered for may not be connected to the system.

Solutions:
1. If an extension other than Extension 01 is being used to enter programming, the entries will not be accepted.
2. Make sure Extensions 01 *and* 02 are wired properly.
3. Make sure all lines and extensions that programming entries are being made for are installed, and the connections are secure.

Problem:
An expansion cartridge does not work.

Probable Cause:
1. The cartridges may be plugged into the wrong connectors on the KSU.
2. The lines or extensions for the cartridge may not be installed.

Solutions:
1. Make sure that all connections (cartridges to KSU; lines to cartridge; extensions to cartridge) are secure.
2. Make sure all required lines or extensions are attached to the correct cartridges.

Problem:
No portion of the system operates.

Probable Cause:
1. The power may be out, or the power supply to the KSU may be unplugged.
2. The power supply may not be properly connected to the KSU.
3. The KSU may be wet or overheated.
4. The fuse in the KSU may have blown.

Solutions:
1. Make sure the POWER light on the KSU is on. If not, make sure that the power supply is plugged in. (Is there power to the outlet?)
2. Make sure that the connection from the power supply to the KSU is secure.
3. Make sure that the KSU is not wet or overheated.
4. Try unplugging all lines and extensions. Plug two extensions directly into the KSU and try to call one from the other. If the POWER light is on but nothing else works, the problem is in the KSU or in an extension.
5. Remove the fuse from the KSU (see **Quick Repairs**) and inspect it.

Quick Repairs

If, for any reason, you cannot locate the source of the problem, it is strongly advised that you call qualified telephone repair personnel.

Sometimes you may discover that the reason for a problem lies in a part, and you may want to order a replacement. You may just decide to order some new equipment. In either case, the Replaceable Parts List on the next page should provide all the information you need for ordering new equipment.

REPLACEMENT PARTS, MOD KEY 16

| ITEM	PART NUMBER	DESCRIPTION	WHERE USED
MOD KEY KSU	60000	MOD KEY 16 KSU Single Unit, wall-mounted (w/power supply)	—
MOD KEY KSU	60006	MOD KEY 16 KSU	—
MOD KEY POWER SUPPLY	60001	Power Supply	—
EXPANSION CARTRIDGE	60003	One Line Cartridge	KSU
EXPANSION CARTRIDGE	60002	Four Line Cartridge	KSU
EXPANSION CARTRIDGE	60004	Eight Station Cartridge	KSU
ULTRAKEY	60015	ULTRAKEY Telephone	—
ULTRAKEY w/SPU	60016	ULTRAKEY Telephone with Speakerphone	—
MERITOR 1E	60020	MERITOR 1E Telephone	—
MERITOR 1E w/SPU	60021	MERITOR 1E Telephone with Speakerphone	—
ECON-O-KEY	60025	ECON-O-KEY Telephone	—
ECON-O-KEY w/SPU	60026	ECON-O-KEY Telephone with Speakerphone	—
DELPHI 6	60030	DELPHI 6 Key Telephone	—
DELPHI 6 w/SPU	60031	DELPHI 6 Key Telephone with Speakerphone	—
BUSINESSCOM 16	60010	BUSINESSCOM 16 Key Telephone	—
BUSINESSCOM 16 w/SPU	60011	BUSINESSCOM 16 Key Telephone with Speakerphone	—
—	86062	ULTRAKEY Wall-Mounting Kit	ULTRAKEY
—	86077	MERITOR 1E Wall-Mounting Kit	MERITOR 1E
—	30883	ECON-O-KEY Wall-Mounting Kit	ECON-O-KEY
—	41643	DELPHI 6 Wall-Mounting Kit	DELPHI 6
—	86125	ULTRAKEY & MERITOR 1E Handset Coil Cord 6'	ULTRAKEY
—	86126	ULTRAKEY & MERITOR 1E Handset Coil Cord 9'	and
—	86127	ULTRAKEY & MERITOR 1E Handset Coil Cord 13'	MERITOR 1E
—	86128	ULTRAKEY & MERITOR 1E Line Cord (4 cond.) 7'	ULTRAKEY
—	86129	ULTRAKEY & MERITOR 1E Line Cord (4 cond.) 14'	and
—	86130	ULTRAKEY & MERITOR 1E Line Cord (4 cond.) 25'	MERITOR 1E
	66005	ULTRAKEY Tele. Hookswitch Plunger	ULTRAKEY
	60052	BUSINESSCOM/DELPHI Designation Sheet	Telephone
	60052B	MERITOR/ULTRAKEY Designation Sheet	Telephone
	60053	ULTRAKEY & MERITOR 1E Clear Key Cap (8 per)	Telephone
	60054	ULTRAKEY & MERITOR 1E Red Key Cap (1 per)	Telephone
	86132	MERITOR 1E Rubber Feet	MERITOR 1E
	60057	MERITOR 1E Tele. Hookswitch Plunger	MERITOR 1E
	86134	MERITOR 1E Tele. Hookswitch Coil Spring	MERITOR 1E
	86145	MERITOR 1E Plastic Sta. No. Shield	MERITOR 1E
—	30862	ECON-O-KEY Handset Coil Cord 6'	ECON-O-KEY
—	30863	ECON-O-KEY Handset Coil Cord 9'	ECON-O-KEY
—	30864	ECON-O-KEY Handset Coil Cord 13'	ECON-O-KEY
—	30847	ECON-O-KEY Line Cord (4 cond.) 7'	ECON-O-KEY
—	30848	ECON-O-KEY Line Cord (4 cond.) 14'	ECON-O-KEY
—	30849	ECON-O-KEY Line Cord (4 cond.) 25'	ECON-O-KEY
	30866	ECON-O-KEY Rubber Feet (4 per set)	ECON-O-KEY
	30889	ECON-O-KEY Hookswitch Plunger & Spring	ECON-O-KEY
	60038	ECON-O-KEY Face Plate (W.G.)	ECON-O-KEY
	72999	ECON-O-KEY Plastic Sta. No. Insert	ECON-O-KEY
—	41685	DELPHI 6 Handset Coil Cord 6'	DELPHI 6
—	41686	DELPHI 6 Handset Coil Cord 9'	DELPHI 6
—	41687	DELPHI 6 Handset Coil Cord 13'	DELPHI 6
—	41688	DELPHI 6 Line Cord (4 cond.) 7'	DELPHI 6
—	41689	DELPHI 6 Line Cord (4 cond.) 14'	DELPHI 6
—	41690	DELPHI 6 Line Cord (4 cond.) 25'	DELPHI 6
	6005A	DELPHI 6 Directory Tray No. Card	DELPHI 6
	60059	DELPHI 6 Top Plate No. Insert Card	DELPHI 6
—	—	4 AMP, 32 V Fuse	KSU
—	—	Two-Pair Twisted Station Cable	Connecting Block
—	—	625-Type Modular Station Jack	Telephone
—	—	Plug-In Power Line Surge Protector	Power Supply
—	60051	ULTRAKEY Handset	ULTRAKEY
—	60056	MERITOR 1E Handset	MERITOR 1E
—	60039	ECON-O-KEY Handset	ECON-O-KEY
—	60043	DELPHI 6 Handset	DELPHI 6
—	60058A	Directory Tray	Telephone
	01410 IMG	MOD KEY 16 Easy Installation Manual	
	01410 MBU	ULTRAKEY Multibutton User Guide	Telephone
	01410 MBM	MERITOR 1E Multibutton User Guide	Telephone
	01410 MBK	ECON-O-KEY Multibutton User Guide	Telephone
	01410 MBD	DELPHI 6 Multibutton User Guide	Telephone

Installing a New Fuse

One of the items mentioned in the Replacement Parts Table (page 6-5) is the 4 amps, 32 volt fuse, located on the lower side of the KSU. This fuse regulates power within the KSU. If you should need to replace the fuse, use the following directions:

Step 1: Unplug the system.

Step 2: Using a flat blade screwdriver, turn the fuse counter-clockwise. The cap of the fuse should pop out.

Step 3: Replace this fuse with another 4 amp fuse by turning the fuse clockwise with the flat blade screwdriver. **NEVER REPLACE THE FUSE WITH A FUSE OF HIGHER AMPERAGE OR A SLO-BLOW FUSE.**

Step 4: Plug the system back in. The POWER light should go on. If the light does not go on, then there is either no power, or the power supply or KSU is inoperative.

To Remove Fuse

To Reinstall Fuse
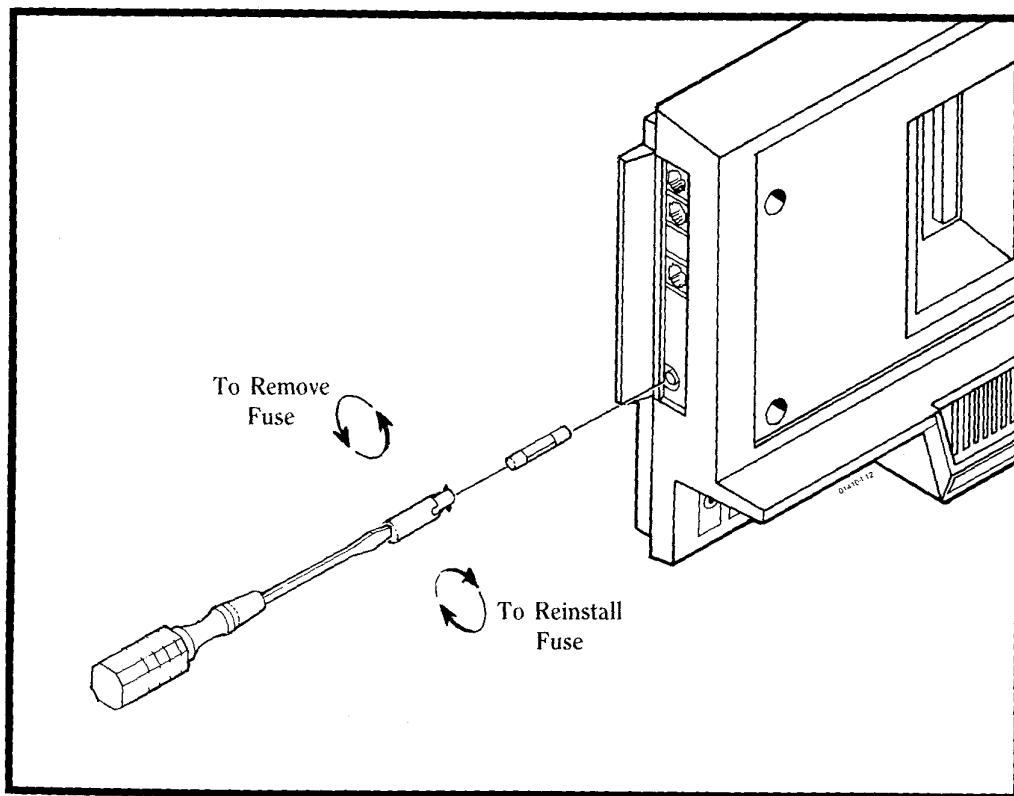
TECHNICAL ASSISTANCE

When problems or questions arise during installation or servicing that cannot be resolved using this or related documents, contact TIE Technical Service Department as follows:

For assistance between 8:30 AM and 5:00 PM, Eastern time, call:

(203) 888-8033

For assistance in the event of an **ABSOLUTE** emergency at other times than those listed, call:

(203) 929-7920

For Your Notes

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