

# *Welcome*

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Thank you for choosing your Motorola TDMA digital StarTAC™ phone from a global leader in communications technology. All Motorola digital cellular phones are designed and manufactured to meet Motorola's rigorous specifications and world-class quality standards. During development, our laboratory testing team took your TDMA digital StarTAC™ cellular phone through rigorous durability tests including temperature, humidity, shock, dust, vibration, and drop tests—and the phone still worked!

We are confident that the phone you purchased will meet your own exacting standards. Enjoy your Motorola TDMA digital StarTAC™ phone.

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# *Safety Information*

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**Important:** Read this information before using your wireless handheld phone.

## ***Exposure to Radio Frequency Signals***

Your wireless handheld portable telephone is a low power radio transmitter and receiver. When it is ON, it receives and also sends out radio frequency (RF) signals.

In August 1996, The Federal Communications Commission (FCC) adopted RF exposure guidelines with safety levels for handheld wireless phones. Those guidelines are consistent with safety standards previously set by both U.S. and international standards bodies:

- American National Standards Institute (ANSI) IEEE. C95. 1-1992
- National Council on Radiation Protection and Measurement (NCRP). Report 86
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1996
- Ministry of Health (Canada), Safety Code 6

Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. For example, over 120 scientists, engineers, and physicians from universities, government health agencies, and industry reviewed the available body of research to develop the ANSI Standard (C95.1).

The design of your phone complies with the FCC guidelines (and those standards). For additional information concerning exposure to radio frequency signals, see the statement by the FDA at the end of this user guide.

To maintain compliance with FCC RF exposure guidelines, if you wear a handset on your body, use the Motorola-supplied or approved carrying case, holster, or other body-worn accessory.

If you do not use a body-worn accessory, ensure the antenna is at least one inch (2.5 centimeters) from your body when transmitting. Use of non-Motorola accessories may violate FCC RF exposure guidelines.

## ***Antenna Care***

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the phone and may violate FCC regulations.

## ***Phone Operation***

### ***Normal Operation***

Hold the phone as you would any other telephone, with the antenna pointed up and over your shoulder.

### ***Tips on Efficient Operation***

Observe the following guidelines to operate your phone most efficiently.

- Extend your antenna fully, if applicable.
- Do not touch the antenna unnecessarily when the phone is in use. Contact with the antenna affects call quality and may cause the phone to operate at a higher power level than otherwise needed.

## ***Batteries***

**Caution:** All batteries can cause property damage, injury, or burns if a conductive material, such as jewelry, keys or beaded chains, touches exposed terminals. The material may complete an electrical circuit and become quite hot. To protect against such unwanted current drain, exercise care in handling any charged battery, particularly when placing it inside your pocket, purse, or other container with metal objects. When the battery is detached from the phone, your batteries are



packed with a protective battery cover; please use this cover for storing your batteries when not in use.

## ***Driving***

Check the laws and regulations on the use of wireless telephones in the areas where you drive. Always obey them. Observe the following guidelines when using your phone while driving.

- Give full attention to driving--driving safely is your first responsibility.
- Use hands-free phone operation, if available.
- Pull off the road and park before making or answering a call if driving conditions so require.

## ***Electronic Devices***

Most modern electronic equipment is shielded from RF signals. However, certain equipment may not be shielded against the RF signals from your wireless phone.

### ***Pacemakers***

The Health Industry Manufacturers Association recommends that a minimum separation of six inches (6") be maintained between a handheld wireless phone and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research by and recommendations of Wireless Technology Research.

Persons with pacemakers:

- should ALWAYS keep the phone more than six inches from their pacemaker when the phone is turned ON
- should not carry the phone in a breast pocket
- should use the ear opposite the pacemaker to minimize the potential for interference
- should turn the phone OFF immediately if you have any reason to suspect that interference is taking place

### ***Hearing Aids***

Some digital wireless phones may interfere with some hearing aids. In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.

### ***Other Medical Devices***

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from external RF energy. Your physician may be able to assist you in obtaining this information.

Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

### ***Vehicles***

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

### ***Posted Facilities***

Turn your phone OFF in any facility where posted notices so require.

### ***Aircraft***

Switch OFF your phone before boarding an aircraft.

Airline regulations prohibit using your phone while in the air. Check and comply with the policy of your airline regarding the use of your phone while the aircraft is on the ground.

### ***Blasting Areas***

To avoid interfering with blasting operations, turn your phone OFF when in a "blasting area" or in areas posted: "Turn off two-way radio." Obey all signs and instructions.

## ***Potentially Explosive Atmospheres***

Turn your phone OFF, do not remove your battery when you are in any area with a potentially explosive atmosphere, and obey all signs and instructions. Sparks from your battery in such areas could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include: fueling areas such as gasoline stations; below deck on boats; fuel or chemical transfer or storage facilities; areas where fuel odors are present (for example, if a gas/propane leak occurs in a car or home); areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you normally would be advised to turn off your vehicle engine.

## ***For Vehicles Equipped with an Air Bag***

An air bag inflates with great force. Do NOT place objects, including both installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

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# Overview

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## Package Content Options

Your TDMA digital StarTAC™ cellular phone is typically packed with a transformer charger and at least one battery. Below is a sampling of the different package options.

**Note:** Your phone and accessories may not look exactly as pictured.



TDMA digital  
StarTAC™ Cellular  
Telephone



Slim Main Battery  
with Battery Cover



Standard Main Battery  
with Battery Cover



AC Adapter



Slim Auxiliary Battery  
with Battery Cover



Holster



Vehicle Power  
Adapter



Headset



Desktop Charger  
(AC Adapter required)

## Phone Overview

See the inside front cover of this guide for a diagram of the components described below.

**Antenna**—Provides superior connectability.


**Earpiece**—Ultra-compact phone speaker.


**Accessory Connector Port**—Provides the connections for an external power supply and vehicular and optional accessories.


**Headset Jack**—Provides the connection for an optional headset.


**Microphone**—Positioned for convenient conversation.

### Function Keys

 —Turns the phone On and Off.


 —Acts as a "shift" key to access the secondary functions of other keys.



 —Recalls phone numbers from memory.

 —Stores phone numbers into memory.



 —Clears characters from the screen.

 —Ends phone calls.

 —Places or answers calls.

 and  —Can be used to scroll through memory entries and menu features.

 **Message Center Button**—Allows access to digital messages and voice mail messages.

 **Smart Button**—Use the Smart Button to recall information from memory, place and end calls, select menu features, and toggle features on and off. The symbol  in your display represents the Smart Button.



**Volume Keys**—The upper and lower volume keys can adjust keypad, earpiece, and ringer volume. After pressing the Smart Button, the volume keys also scroll through memory entries and menu features.

## *Understanding the Guide*

### **Key Presses**

Key presses are represented in this guide using symbols so that you may locate and use the required sequence quickly. A sequence of key presses may be shown as follows:



This means you should press **FCN** followed by **0**, **7**, and then **CLR**, in sequence, not simultaneously.

### **Prompts and Messages**

Your phone responds to key presses by displaying either a prompt that guides you to the next action or a message confirming that your action is complete. Prompts and messages are represented in this guide in LCD style, for example: `Reset Timer`.

### **Short Cuts and Tips**

In the margins of your guide are short cuts and useful hints and ways to improve your phone's performance. These are especially helpful for experienced Motorola Users, who can find many of the same key sequences used with other Motorola models.

# Using the Battery

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## About Your Batteries

Your TDMA digital StarTAC™ phone can use either Lithium Ion (LiIon) or Nickel Metal Hydride (NiMH) batteries. Batteries are available in these sizes: Slim, Standard, and Extra Capacity.

Your phone can use two batteries at the same time. You can use:

- any single main or auxiliary battery
- or**
- a main and auxiliary battery combination

to fit your needs. You can even extend your talk-time by attaching an auxiliary battery at any time, without interrupting your call.

## Battery Talk-Time and Standby-Time

*Talk-time* is the time you can talk on your phone before the battery is fully discharged. *Standby-time* is the time your phone is on but not used for talking.

### Notes:

- Talking on the phone uses more power than leaving it idle. The more power you use for talking, the less you'll have for standby-time, and vice-versa.
- All times are approximate and depend on the battery used, network configuration, signal strength, and the features selected.
- Talk and standby times are lower in analog mode.
- Your phone operates more efficiently in Digital mode. If the **D** icon is displayed in the lower left corner, your phone's

performance is reflected in the digital section of the table below. Otherwise, refer to the Analog section.

The following table shows ranges for battery talk-times and standby times.

Battery Type	Digital		Analog	
	Talk (up to)	Standby (up to)	Talk (up to)	Standby (up to)
Slim Main LiION 500mAH	60 min.	50 hrs.	35 min.	10 hrs.
Standard Main NiMH (500mAH)				9 hrs.
Extra Capacity LiION 900 mAH	130 min.	160 hrs.	60 min.	15 hrs.
Slim Auxiliary LiION 900 mAH				

## ***Storing and Disposing of Batteries***

To prolong the life of your batteries, do not expose them to temperatures below -10°C (14°F) or above 45°C (113°F). Always take your phone with you when you leave your car.

To dispose of batteries, check with your local recycling center for a battery recycler near you. Never dispose of batteries in a fire.

**Caution:** To prevent injuries or burns, do not allow metal objects to contact or short-circuit the battery terminals.

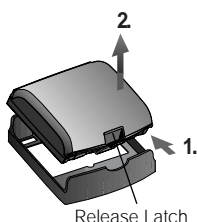


## Removing and Attaching Battery Covers

Your phone's batteries are shipped uncharged and fitted with protective covers. Before you install the batteries, remove these covers, and save them for storing unused batteries. The covers prevent metal objects from contacting the battery terminals, reducing the risk of injury or damage from a battery short circuit.

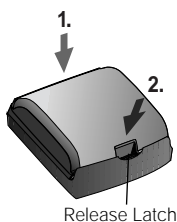
### Removing the Main Battery Cover

1. Press in the release latch.
2. Rotate the battery upward and lift it out of the cover.



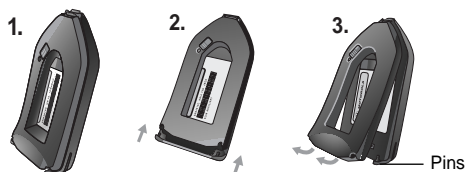
### Attaching the Main Battery Cover

1. Lower the edge of the battery opposite the release latch into the cover.
2. Drop the side with the release latch down until the latch clicks into place.



## ***Removing the Auxiliary Battery Cover***

1. Hold the auxiliary battery securely with one hand.
2. With your other hand's thumb, push up on the bottom of the cover.
3. Continue pushing until the cover slides free of the pins on the bottom of the battery, and swing the cover away from the battery.



## ***Attaching the Auxiliary Battery Cover***

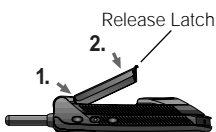
1. Slide the cover's narrow end into the small grooved hook on top of the auxiliary battery.
2. Push the cover firmly downward until the base of the cover slides past the battery pins; then release.



# Installing and Removing Batteries

## Installing a Main Battery

1. Set the edge of the battery opposite the release latch into the cover.
2. Press the release latch side of the battery into the cover until the latch clicks into place



## Removing a Main Battery

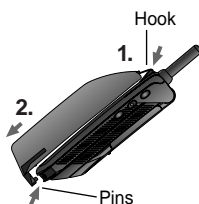
1. If you don't have another battery attached, press  to turn your phone off.
2. Press the release latch back toward the battery, and lift the battery out.



## Installing an Auxiliary Battery

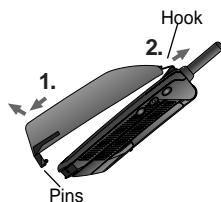
The auxiliary battery clips onto the back of your phone.

1. Place the hook located on the narrow end of the battery into the slot on the back of the phone.
2. Pull the battery toward the bottom of the phone and slide the battery pins over the bottom of the phone.
3. Once the battery clears the bottom of the phone, release it. Make sure that the pins fit securely into place.



## Removing an Auxiliary Battery

1. Pull the battery down until the pins release from the base of the phone, and pull the base away from the phone.



2. Lift the battery's hook out of the slot on the back of the phone.

## Checking Battery Levels

### Battery Level Indicator

The three bar segments on your phone's Battery Level Indicator display the amount of charge remaining in your battery. The more segments visible, the greater the charge.

For a detailed battery level reading:

Press **FCN** **4**.

One of the following is displayed:



The more segments filled on the battery gauge, the greater the charge.



High



Low

### Low Battery Warning

When the battery level is low and only a few minutes of talk-time remain, your phone signals you in three ways:

- Low Battery appears in the first line of the display.
- No bar segments are highlighted.
- A short tone plays periodically.

To confirm low battery signals:

Press **FCN** **4**.

## Power Status Messages

You may also see one of the following messages:

Auxiliary	Auxiliary and/or main batteries fitted; phone is operating from auxiliary battery.
Main	Auxiliary and/or main batteries fitted; phone is operating from main battery.
Charging Auxiliary	Auxiliary and main batteries fitted; auxiliary battery is being charged.
Charging Main	Auxiliary and/or main batteries fitted; main battery is being charged.

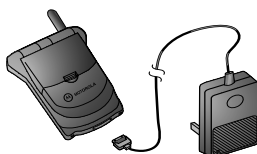
## Charging Batteries

### Using the Internal Charger

Your phone has a built-in battery charger. Using either the AC or vehicle power adapter, you can plug the handset directly into a power source to charge any attached batteries.

To charge:

1. Plug the AC adapter or vehicle power adapter into the accessory connector on the bottom of your phone as shown, with the release tab facing up.



### Tip:

*You can still place and answer calls while using either the internal charger or the vehicle power adapter. Remember that talking on the phone requires energy, so charging takes more time. To place the phone in charger-only mode, turn off the phone by pressing **Power** once.*

2. Plug the power adapter into a 110V AC electrical outlet.

**or**

Plug the vehicle power adapter into the power adapter plug in the vehicle.

In both cases, a beep-tone sounds, and the battery icon flashes.

See "Charge Times" on page 24 for charge times.

## ***Using the Desktop Charger***

You can use the desktop charger to charge batteries while they are attached to your phone, or you can charge a main battery separately.

To charge:

1. Plug the AC adapter into the back of the charger, release tab facing up.
2. Plug the other end of the adapter into an AC wall socket.
3. With battery(ies) attached, place the phone into the charger's pocket.



**Note:** When the phone is charging, the battery level indicator flashes. When the battery is fully charged, this icon stops flashing. If your phone cannot charge the battery, this indicator does not appear.

## ***Desktop Charger Indicator Lights***

The lights for charging a battery are:

**Red** The battery is rapid charging.

**Flashing yellow** The battery is waiting for its charge.

### **Tip:**

*If both a main and auxiliary battery are attached, the main battery is charged to 90% before the auxiliary is charged.*

**Green** The battery is charged within approximately 90% of its capacity and can be used. Charging the battery for an additional hour brings it up to 100% capacity.

**Flashing red** Either the battery or the power supply is damaged and cannot be charged.

The light for charging a battery attached to the phone is:

**Yellow** The phone is inserted and rapid charging.

## Charging Two Batteries on the Phone

When you charge your phone with a main and auxiliary battery attached, the main battery is charged first.

To find out which battery is being charged:

Press **FCN** **4**.

**Note:** If the battery cannot be charged and you press **FCN** **4**, you will see *Invalid Battery*.

## Battery Charging Tips

To ensure that you enjoy maximum battery life and use your battery to its fullest capacity:

- Always use Motorola approved battery chargers.
- For the best results, Li-Ion batteries should be charged using the E•P™ Desktop Charger, or your phone's internal charger.
- The battery should be at or near room temperature when charging.
- When you don't intend to use a battery for a while, store it uncharged in a cool, dark, dry place, such as a refrigerator.

**Tip:** *"batt" is printed on the **4** key as a reminder.*

- Do not leave a NiMH battery connected to any charger for longer than 24 hours.

A new NiMH battery may require several full charge/discharge cycles in order to achieve its optimum performance. After this initial charge, you can recharge your battery at your convenience, using the phone's rapid travel charger.

### ***Quick Change Power Source ("Seamless Connection")***

The quick change feature enables you to switch power sources while a call is in progress without losing the call. If you hear a low-battery warning while you are in a call, plug in the vehicle power adapter or AC Adapter.

### ***Charge Times***

Locate your battery by type to see how long your battery takes to charge to a 95% power level:

Battery Type	Charge Time (hrs)
	Internal Charger
NiMH Main (500 mAH)	1.25
Slim LiION Main (500 mAH)	2.5
Extended LiON Main (900 mAH)	3.0
LiION Auxiliary (900 mAH)	3.0



After the battery reaches 95%, it begins to slow charge until it is fully charged. It is normal for batteries to become warm during charging.



# Using the Phone

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## Turning the Phone On and Off

1. Open your phone to expose the keypad.
2. To turn the phone on, press and hold  until the display appears and you hear an audible alert.
3. Press and hold  again to turn the phone off. *Powering off* will be displayed, and you will hear an audible alert.



## What You Will See

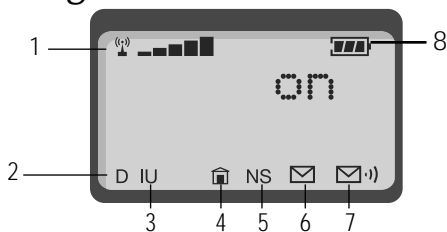
When you turn on your TDMA digital StarTAC™ phone, it performs a self-test to let you know it is operational. When the test is completed, the display shows:

- one of several possible greetings, such as:
  - the name of your Service Provider

**or**

- an indication of local or non-local coverage area
- your phone number
- the Digital or Analog icon

## Reading the Indicators



High



Low

D

### ***Signal Strength Indicator (1)***

The Signal Strength Indicator (SSI) indicates the strength of your phone's connection with the local cellular system. A strong signal increases your chances of placing and receiving calls. Low signal strength can occur in a fringe area of the cellular system. Buildings, tunnels, and bad weather can block or interfere with reception.

IU

### ***Digital Indicator (2)***

If you are in a digital coverage area, the digital indicator appears.



### ***In Use Indicator (3)***

The In Use (IU) Indicator appears when a call is in progress.

NS

### ***In-Building Indicator (4)***

The In-Building Indicator lights when the phone accesses an In-Building Cellular System or other non-public system.

### ***No Service Indicator (5)***

If you travel beyond the range of a cellular system, the No Service Indicator appears to let you know that calls cannot be placed or received from your location.

## ***SMS Message Waiting Indicator (6)***

The Short Message Service (SMS) Message Waiting Indicator is displayed when the phone receives a message. (This is an optional, network and subscription-dependent feature that is not available in all areas.)



## ***Voice Message Waiting Indicator(7)***

The Voice Message Waiting Indicator is displayed when your Voicemail has received a message. (This is an optional, network and subscription-dependent feature that is not available in all areas.)



## ***Battery Level Indicator (8)***

The three bar segments on the Battery Level Indicator show the amount of charge remaining in your battery. The more segments you see, the greater the charge. The phone alerts you to a low charge in three ways:

- No bar segments are highlighted.
- Low Battery appears on your screen.
- A short tone plays periodically.




High




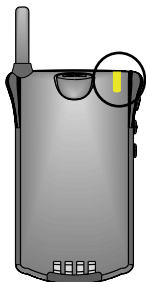
Low

## ***VibraCall™ Alert Indicator***

When you select one of the VibraCall™ alert combinations, the following types of indicators appear in the display:

 **VibraCall on**—Your phone's ringer is turned off and the VibraCall™ alert is on.

 **Vibrate then ring**—Both your phone's ringer and the VibraCall™ alert are on.



## Power/Status Indicator

You can check the Power/Status indicator on top of the phone for status information on your current type of service and message status. Messages can include voice mails and Short Message Services (SMS) messages or the receipt of recent calls. (This is an optional, network and subscription-dependent feature that is not available in all areas.)

During wake-up and while the phone is ringing, the indicator flashes red and green. Otherwise, if the flip is closed and the *Status Light* setting is set to *On*, then the Power/Status Indicator flashes according to the following chart. (See “Selecting Battery Options—Status Light” on page 94 for information on the status indicator.)

Service	Condition	First Flash	Second Flash
Service in home system	No message	Green	Green
	Message waiting		Red
Roaming (service in non-home system)	No message	Yellow	Yellow
	Message waiting		Red
No service	No message	Red	Off
	Message waiting		Red

**Note:** The Power/Status Indicator is Off when the phone is in charger-only mode or when the status light feature is turned off.

## Standby Mode

To conserve energy, your phone may turn off its lights when in standby mode. The display comes back the next time you press a key or open the phone.

## Storing Your Phone in Its Holster




To store your phone in its holster, make sure the main battery is facing the inside of the holster. Then clip the holster onto a belt, purse or briefcase.

### Notes:


- For body-worn use, keep the antenna at least one inch from your body when transmitting.
- The holster has been designed for your convenience and is not meant to secure your phone under all circumstances.

## Placing a Call

To place a call:


1. With the phone powered on, press and hold  until the display appears and you hear an audible alert.
2. Enter the number you want to call.
  - Press  to erase one digit at a time if you make a mistake.
  - Press and hold  to clear the entire entry.

You can also recall a previously dialed or stored number. (See "Using Phone Memory" on page 34 for details.)

3. Press and hold  until you hear a second tone.

**or**

Press  to place the call.

You hear a single-tone alert (if the keypad tones are turned on) and see *Dialing*  
.

4. You can dial phone numbers with up to 32 digits, but only the last 20 digits appear in the display.


Press **RCL** to see the entire phone number.

## *Ending a Call*


To end a call:

Press **END** or close the phone.

**or**

1. Press and hold  until you hear a second tone.

You will see **# To End Call**.

2. Press  again to end the call.

## *Receiving a Call*

Your phone must be powered on to receive calls. To answer a call:

Press **SEND** or open the phone when the phone rings.

**Note:** Opening the phone does not answer the call if the Open to Answer feature is off. (See “Deactivating Open to Answer” on page 92.)

## *Unanswered Call Indicator*

When you cannot take a call, your TDMA digital StarTAC™ phone keeps a count of your unanswered calls and alerts you with the message **Missed XX Calls**, where XX is the number of missed calls.


Press  to view missed calls.

## *Terminating the Ring or Vibrate Indicator*

You can terminate either the ring or the vibrate indicator by pressing either of the volume keys during the ring/vibrate cycle.

## Using the Smart Button

Use the Smart Button to place and end calls, enter menus, toggle features on and off, and select items in the display. The Smart Button is the middle key on the left side—easy to feel, easy to find, and easy to use.

The symbol  in your display represents the Smart Button.

### Selecting Items in the Display

The most basic use of the Smart Button is for making selections. Whenever you are given a choice such as a ringer setting, press the Smart Button to select the setting you want.

### Toggle Features On and Off

Some of your phone's features toggle on and off. Use the upper or lower volume key to scroll to the desired feature, then press the Smart Button to select it.

### Entering the Menu System

Press , then press  to access the menu. You will see Recent Calls.

### Placing and Ending a Call

You can use the Smart Button to place and end a call, as described in "Placing a Call" on page 29 and "Ending a Call" on page 30.

### Switching Between Digital and Analog Modes

To switch from digital to analog mode, or from analog to digital during a call:

Press  .

Depending upon availability, your phone selects the TDMA digital system or the analog system.

**Tip:** You can also enter the menu system by pressing

 .

## Notes:

- This feature is not available on all models of this phone.
- Once you switch from digital to analog mode, you can not switch back to digital mode until you turn your phone off and on again.
- When you switch from digital to analog mode, you may still see the digital **D** indicator while the phone is idle (that is, not in an active call).

## *Redialing a Number*

### ***Automatic Redial***



A fast busy signal indicates that the cellular system is busy. With Automatic Redial, your phone calls continuously for the next four minutes.

When it makes a connection, the phone rings or vibrates. You can distinguish this ring because it is half as long as the ring or vibrate for a new incoming call. When the person you are calling answers, you can begin talking.

#### **If you hear a fast busy signal:**




1. You will see `Redial Call?`

Press  or press  to redial, or press  to exit.

2. If the call does not go through after four minutes, press , or press  to continue the call attempt.

You will see `Redial`.

#### **If you hear an ordinary busy signal:**

1. Press  to hang up.
2. Press  or press  to redial the busy number.

You will see `Dialing 5551234`.





# Controlling Volume




## Adjusting Volume

Use the upper and lower volume keys to adjust earpiece, keypad, and ringer volume. When you press these keys, the phone's speaker demonstrates the current volume level.

### To adjust earpiece and keypad volume:





Press  or  to raise or lower the volume.

### To adjust the ringer volume:

1. Press .
2. Press  or  to raise or lower the ringer volume.



## Muting the Microphone

For privacy during a call, mute the microphone. You can hear the person on the other end, but he or she cannot hear you.

1. Press   to mute the microphone. You will see *Mute*.
2. Press   again to resume normal conversation.

## Selecting Silent Vibration Mode

In situations where you don't want your phone to ring, or in noisy places where you may not hear your phone, select the VibraCall™ Alert function for discrete vibration:

Press   to toggle between ringer and vibration mode. You will see *Ring only* or *Vibrate only*.

# Using Phone Memory

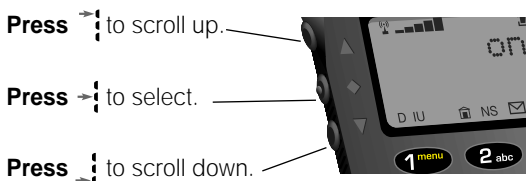
---

Use your TDMA digital StarTAC™ phone's internal Phone Book to store up to 99 names and numbers for easy access.

In this chapter you will learn how to:

- store names and numbers into the Phone Book
- recall phone numbers from memory
- clear names and numbers
- dial a number with Speed Dial and Turbo Dial™
- make notes on the scratchpad

Follow these symbols as a guide for using the keys on the side of your phone:



You can also use your phone's ◀\* and #▶ keys to scroll through the menu system.

## Using Your Phone's Built-in Phone Book

Each phone number in your phone book is stored in a *memory location* numbered 01-99.

Arrange numbers for easy recall by storing related numbers in groups. If you store the numbers you call most in locations 01-09, then you can use Turbo Dial™ to call those numbers with a single key. (See "Using the Turbo Dial™ Function" on page 39 for details.)

You can also store names to identify phone numbers. Later, you can recall a number by the name that corresponds to it.

## Storing Names and Numbers

### How to Store Phone Numbers

1. Enter the phone number you want to store.

**Note:** You can store up to 32 digits per phone number entry.

2. Press **STD** to begin storing.

The phone prompts you to enter a memory location. You will see `Location —`.

3. Enter the two-digit memory location where you want the sequence stored.


**or**



Press **⬅\*** to store the sequence in the first available location.

**or**

Enter the first digit of the memory location, then press **⬅\*** to store the sequence in the first available location beginning with that digit.



You will see `Alpha Or #`.

**Tip:** The  symbol in your display represents the Smart Button.

4. Enter a name to identify the phone number.  
(See the following section for details on entering names.)
5. Press  or  when you finish entering the name.

Your phone confirms your entry by displaying the information you stored.



## How to Enter Letters and Numbers

When the display shows **Alpha Dr** , you can press the numeric keys one or more times to produce any letter or number in the alphabet. Use the letters printed on each key as a guide. For example, press  to enter "A," "B," "C," or "2" as shown:






## How to Enter a Name


**Tip:**  
 Press the upper or lower volume key first, to toggle between upper and lower case letters.

1. Enter a letter by pressing a key as many times as necessary. Enter punctuation by pressing  as many times as indicated by the chart below. Pressing  a single time produces a single space.

2	3	4	5	6	7	8	9	10
1	/	'	,	?	\$	.	&	!

The cursor advances automatically to the next space after you enter a letter or after three seconds of inactivity. If you are repeating a character, then press  to advance the cursor to the next space.



2. Press  or  to erase a letter if you make an error.

3. Press  or **STO** when you finish entering the name.

Your phone confirms your entry by displaying the information you stored.

## *Recalling an Entry by Name*


After storing names and numbers, you can recall them alphabetically and immediately place calls. Use the Smart Button for instant access to the name directory.

1. Press  once to enter your name directory.
2. Press  to scroll to the name you are looking for.

**or**

Enter the first letter of the name you want to recall. The display shows the first name in the phone book that begins with that letter. If no entry beginning with that letter is found, No A is displayed.

When the name is displayed, the corresponding number is displayed on a third line, and the phone memory location is displayed in the upper right corner.

3. Press and hold , or press **SEND**, to call the number you selected.

## *Recalling an Entry by Memory Location*

Each name and number you store is placed in a memory location numbered 01-99. Once you have stored names and numbers, you can recall them by memory location:

1. Press **RCL**.
2. Enter the two-digit memory location of the phone number you want.
3. Press and hold **→|**, or press **SEND** to call the number you selected.

## *Clearing a Phone Memory Entry*

### *Clearing an Entry by Name*

1. Recall by name the entry that you want to erase. (See "Recalling an Entry by Name" on page 37.)

2. Press **CLR** to clear the entry.

You will see **Clear Entry?**.

3. Press **→|** or **STO** to confirm that you want to erase the entry.

The numbered location of the cleared entry is shown in the display.

### *Clearing an Entry by Location Number*

1. Recall by location the entry that you want to erase.
2. Press **CLR** to clear the display.
3. Press **STO** and the location you want to clear.



You will see **XX Full Change?**

4. Press **STO** to confirm that you want to erase the entry.

# Shortcuts for Recalling Phone Book Entries



## Using Speed Dial

If you know the memory location of the number you want to call, try the Speed Dial function:

1. Enter the two-digit memory location (01-99).
2. Press and hold , or press  to place the call.

## Using the Turbo Dial™ Function

The Turbo Dial™ function enables you to dial numbers stored in locations 01-09 with the push of a single button:

Press and hold a number  through  on the keypad, and your call is placed. You will hear a two-tone alert afterwards.

Your phone's Priority Call feature gives you fast access to any number stored in location 01. To learn more about this feature, see "Activating Priority Calling" on page 79.

## *Making Notes on the Scratchpad*

In addition to your internal phone book, you also have a built-in scratchpad for making quick notes. The scratchpad remembers the last phone number shown on your display.

### ***Entering a Number in the Scratchpad***

If you are on the phone and your party gives you another number to call, enter the number on the scratchpad so you can place the call later.

1. Enter the number into the keypad. (The person on the line can hear tones as you dial.)
2. Press **END** to end the current call, if necessary.
3. Press **SEND** to call the number you saved on the Scratchpad.

### ***Storing Numbers During a Call***

You can also store numbers during a call:

1. Enter the number into the keypad. (The person on the line can hear tones as you dial.)
2. Press **STD** and continue storing with step 3 in "Storing Names and Numbers" on page 35.



# Using the Menu System

---

Your TDMA digital StarTAC™ cellular phone includes many features to help you be more productive. The phone's user-friendly menu system helps you find what you need quickly and easily.

In this chapter you will learn:

- what are the main menu features
- how to navigate through the menus
- how to read a menu road map

## Introducing the Menu Features

As you scroll through the menu system, you will see the following icons, each representing a high-level menu.



Recent Calls



Phone Book



Timers



Tone Control



Lock Secure



Phone Options





Network Selection

## Navigating the Menu

You can navigate through the menu system using the three keys located on the left side of the phone. Use the upper and lower volume keys to scroll to sub-menus and to control volume. Use the middle Smart Button to choose menus and functions.



Follow these symbols as a guide for using the keys on the side of your phone:

Press  to scroll up.

Press  to select.

Press  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.




## Road Maps

To help you navigate through the phone's menu system, each chapter begins with an easy-to-follow visual "road map." Simply press the key shown, and observe the message that appears in the display. For example, try this:

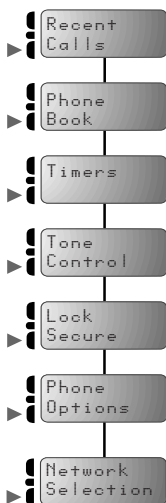
1. Press , then press  to enter the menu features

or

Press  . "menu" is printed on the  key as a reminder.

2. Press  or  to scroll through the menu's top level, shown here in the margin.
3. Press  to exit the menu.

Detailed instructions within each chapter describe how each feature works.




# Managing Recent Calls


---

The recent calls menu option allows you to access your Caller Line ID and review previous calls. Caller Line ID is an optional network and subscription-dependent feature that is not available in all areas.

In this chapter you will learn how to review all calls that you have received or dialed.



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

## Road Map for Recent Calls

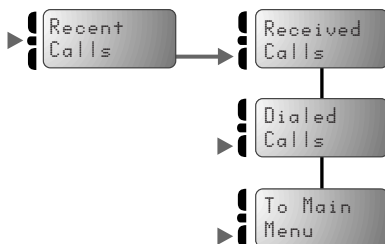
To enter the menu system:

**Press** **FCN**, then **press** **→**.

**or**

**Press** **FCN** **1**.

Start:



## About Recent Calls

The Recent Calls menu allows you to review previous calls that you have received or dialed. Following are some useful tips and information about reviewing recent calls.





- Your TDMA digital StarTAC™ cellular phone can store the telephone numbers and names of the last thirty incoming calls.
- If the caller's phone number matches a phone number stored in the phone's memory, the phone automatically displays the name associated with that phone number.
- If you subscribe to call waiting and receive a call while another call is in progress, you hear a call waiting tone, and the caller's name and number appear on the display. The name and number are automatically stored and can be viewed after ending the call, using the procedure described in "Reviewing Received Call" on page 46.

- Caller Line ID allows you to view the name and number of the calling party in the phone's display while the phone is ringing.

Caller Line ID is an optional feature that is not available in all markets. Contact your Service Provider for availability information.

- If the caller has restricted transmission of the phone number, your phone displays **Anonymous**. If the Calling Number ID information is not available to the cellular network, your phone displays **Unavailable**.
- You can store any number contained in your Caller Line ID memory to a memory location in the same way you would save any phone number. Once the correct number is displayed, press **STD** and a memory location or **STD** **☒** to autoload. See "Storing with the Menu" on page 52 for more information on storing phone numbers.
- To view Caller Line ID information prior to answering a call, you must turn off the Open to Answer feature. (See "Deactivating Open to Answer" on page 92.)




## Getting to Recent Calls

1. Press **FCN**, then press  to enter the menu system.
2. When you see **Recent Calls**, press  to select.
3. Press  or  to scroll to the following features.

### Shortcut:

Press **RCL** **RCL** to view your received calls. You must hold the second **RCL** until the received call list is displayed.

## Reviewing Received Call

1. Follow the steps in the "Getting to Recent Calls..." block to scroll to **Received Calls**. The total numbers of received calls stored is displayed in the upper right corner. If there are no numbers in the Caller Line ID list, you will see 00 in the upper right corner.
2. Press  to enter your Caller Line ID list of received calls.
3. Press  or  to scroll through the list.

The display shows the order in which the call was received in the upper right corner, with the phone number and name of the calling party (if available).

The received call list can range from 01 (the most recent previous phone call) to 30 (the least recent phone call).

The following symbols appear next to the received calls:



Answered





Missed

4. Press **SEND** to dial the displayed number.


## Reviewing Dialed Calls

1. Follow the steps in the "Getting to Recent Calls..." block to scroll to Dialed Calls.




The total number of dialed calls that are stored is displayed in the upper right corner. You can see up to the last twenty numbers dialed. If there are no numbers in the Dialed Call list, you will see 00.

2. Press  to enter your dialed calls list.
3. Press  to scroll through the list. The dialed call list can range from 01 (the most recent dialed phone call) to 20 (the least recent dialed phone call).

The display shows the order of the previously dialed phone call in the upper right corner, with the phone number and name (if available) of the party called.

4. Press  to dial the displayed number.


### Shortcut:

Press    
 to enter  
your dialed  
calls list.

**Tip:** To erase **all** entries you must press and hold **CLR**, whereas to erase a **single** entry you simply press **CLR**.

## Clearing Caller Line ID


To **erase all entries** saved in your Caller Line ID memory:

1. Follow the steps in the "Getting to Recent Calls..." block to scroll to Received Calls.
2. Press and hold **CLR** when a Caller Line ID name and number is displayed. You will see Clear All?.
3. Press  or **STO** to clear.

**or**

Press **END** to leave your Caller Line ID memory intact.

To **erase a single entry** saved in your Caller Line ID memory:

1. Press **CLR** or any other key when a Caller Line ID name and number is displayed. You will see Clear Entry?.
2. Press  or **STO** to clear.

**or**

Press **END** to leave your Caller Line ID memory intact.



# Managing the Phone Book

---


In “Using Phone Memory” you learned how to store and recall phone numbers with the internal Phone Book. You can access the same features, along with several advanced features, using your phone’s convenient menu system.

In this chapter you will learn how to:

- recall and store phone numbers using the menu system
- store numbers with pause dialing
- store calling card sequences for easy access
- edit your memory information
- select the individual ringer style



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone’s  and  keys to scroll through the menu system.

## Road Map for Phone Book

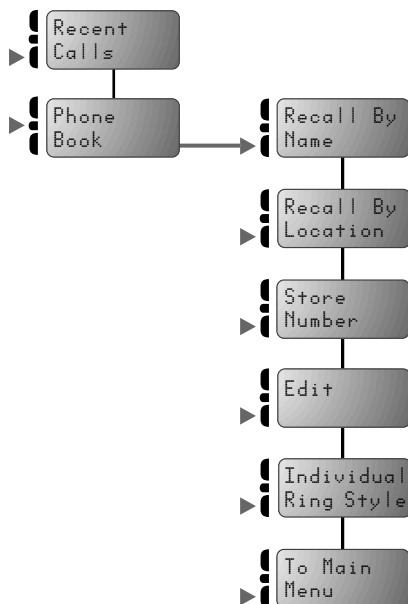
To enter the menu system:

**Press** **FCN**, then **press** **→/.**








**or**

**Press** **FCN** **1**.

Start:






## Getting to Phone Book...

1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Phone Book**, and press  to select.
3. Press  or  to scroll to the following features, and press  to select.


### Recalling an Entry by Name

To recall a stored name with the Phone Book menu:

1. Follow the steps in the "Getting to Phone Book..." block above to select **Recall By Name**. You will see **Enter 1st Letter**.
2. Enter the first letter of the name you want to recall. The display shows the first name in the phone book that begins with that letter. If no entry beginning with that letter is found, **No A's** is displayed.
3. Press  or  to scroll to the name you want.
4. Press and hold , or press **SEND** to call the number you selected.

### Recalling an Entry by Location

Each name and number you store is placed in a memory location numbered 01-99. After storing names and numbers, you can recall them by memory location with the Phone Book menu.

1. Follow the steps in the "Getting to Phone Book..." block above to select **Recall By Location**. You will see **Location**.
2. Enter the two-digit memory location of the number you want.
3. Press and hold , or press **SEND**, to call the number you selected.

**Tip:** You can also recall phone numbers without using the Phone Book. See "Recalling an Entry by Name" on page 37 or "Recalling an Entry by Memory Location" on page 38.

## Storing with the Menu

Use the phone's menu system to store names and numbers into the Phone Book.

1. Follow the steps in the "Getting to Phone Book..." block to select **Store Number**. You will see **Enter Number**.
2. Enter the phone number you want to store. See "How to Enter Letters and Numbers" on page 36.
3. Press **→|** when you finish entering the number.

You will see **Location —**.

4. Press **←\*** to store the sequence in the next available location.

**or**

Enter the first digit of the memory location and press **←\*** to store the sequence in the first available location beginning with that digit.

**or**








Enter the two-digit memory location where you want the sequence stored.

5. You will see **Alpha Or \***. Enter a name to identify the phone number, or skip this step and continue with step 6. (See "How to Enter a Name" on page 36 for details on entering names.)
6. Press **→|**, or **STO**, when you finish entering the name. Your phone confirms your entry by displaying the location, number, and name you stored. Proceed with step 7 below, or return to step 2 above to store more numbers.
7. Press **END** to exit the menu.

### Tip:

*If the chosen location is full, press **END** and restart the storing sequence.*

## Getting to Phone Book...


1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Phone Book**, and press  to select.
3. Press  or  to scroll to the following features, and press  to select.

## Storing and Placing Numbers with Pause Dialing

### Entering a Pause in a Number

When you call automated systems, a recorded message prompts you for PIN numbers, Voice Mail numbers, etc.

You can store these numbers in your phone's memory, separated by "pauses"—special characters that tell your phone to wait before sending additional numbers.

1. Follow the steps in the "Getting to Phone Book..." block above to select **Store Number**. You will see **Enter Number**.
2. Enter the phone number you use to access the automated system.
3. Press **FCN**, then press **SEND**.  
You will see **Insert Wait**.
4. Press  to insert a pause (⌚) into the sequence.
5. Enter the next group of numbers (such as an account number or PIN number.)
6. Enter any other required symbols (such as \* or #).

7. Insert another pause, and enter the next group of numbers by repeating steps 3 through 5 as many times as necessary.

You can store up to 32 digits, including pauses. Then store the entire sequence as you would any phone number.

8. Press **STO** to begin storing.

You will see **Location** —.

9. Enter the two-digit memory location where you want the sequence stored.

You will see **Alpha** Or **+**.

10. Enter a name for your sequence.

(See "How to Enter a Name" on page 36 for details on entering names.)

11. Press **→|** when you finish entering the name.

Your phone confirms your entry by displaying the location, number, and name you stored.

## ***Placing a Call with Pauses***

To use your stored sequence:

1. Recall the stored number with the pause inserted.
2. Press and hold **→|**, or press **SEND**, to place the call.
3. When the recording prompts you for information, press **→|** or **SEND** to send the next set of stored numbers.
4. Press **→|** or press **SEND** as many times as necessary, to transmit all the numbers.

## Getting to Phone Book...

1. Press **FCN**, then press **→|** to enter the menu system.
2. Press **→|** or **→|** to scroll to **Phone Book**, and press **→|** to select.
3. Press **→|** or **→|** to scroll to the following features, and press **→|** to select



## Storing and Placing Numbers for Calling Card Information

### Storing Calling Card Information

Like Pause Dialing, you can store calling card access numbers, separated by pauses, for recall later. You can also store a Number Character in the sequence to save a place for the number you call when you use your calling card.

See "Using Lock/Security Features" on page 75 for more information on protecting your calling card information.


1. Follow the steps in the "Getting to Phone Book..." block above to select **Store Number**. You will see **Enter Number**.
2. Enter the phone number you use to access your calling card system. (Skip this step if you only dial 0.)
3. Press **FCN SEND**. You will see **Insert Wait o**.
4. Press **→|** to insert a pause (o) into the sequence.
5. Enter the next numbers, if needed. (For example, some long distance carriers require you to dial a 0 first. If no further numbers are needed, skip to step 7.)
6. Press **FCN SEND**.

7. Press  to scroll to the Number Character. You will see *Insert Number* .


8. Press  to insert the  Character.

This special character saves a place for the phone number you will be calling. The number is inserted automatically when you place the call.

9. Press  .

10. Press  to insert another pause, as in steps 3 and 4.

11. Enter your calling card PIN number.


12. Press  to store your calling card sequence.

You will see *Location* .

13. Enter the two-digit memory location where you want the sequence stored.

You will see *Alpha Or* .

14. Enter a name for your sequence. (See "How to Enter a Name" on page 36 for details on entering names.)

15. Press  when you are finished entering the name.

Your phone confirms your entry by displaying the location, number, and name you stored.

## ***Placing a Calling Card Call***

To recall your stored calling card information:

1. Recall the calling card information you stored.



(See "Recalling an Entry by Name" and "Recalling an Entry by Location" on page 51 for more information on Recalling Numbers.)

2. Press  before entering the number. You will see *Enter Number*.





3. Enter the phone number you want to call, including the area code.

Enter the number manually, by location, or recall.

4. Press and hold , or press , to place the call.

Your phone dials the number to access your long distance provider.

5. Press , or press , to send the next group of numbers when you are prompted.

The phone automatically inserts the selected number to call at the appropriate time in the sequence.

6. Repeat step 5 to send the next group of numbers as many times as necessary.

## Getting to Phone Book...

1. Press **FCN**, then press  $\rightarrow$  to enter the menu system.
2. Press  $\rightarrow$  or  $\leftarrow$  to scroll to **Phone Book**, and press  $\rightarrow$  to select.
3. Press  $\rightarrow$  or  $\leftarrow$  to scroll to the following features, and press  $\rightarrow$  to select.

### *Editing a Memory Location*

After you store names and numbers in the Phone Book, you can edit the information or erase entries at any time.

1. Follow the steps in the "Getting to Phone Book..." block above to select **Edit**.
2. Recall the entry by location or by name.  
(See "Recalling an Entry by Name" and "Recalling an Entry by Location" on page 51.)
3. Press  $\rightarrow$  to begin editing the phone number.


The display shows the name briefly, then the phone number.

4. Press **CLR** to erase one digit at a time.  
Press and hold **CLR** to erase the entire number.
5. Enter your changes to the phone number.
6. Press  $\rightarrow$  when you finish editing the phone number.

The display shows the location where your number is currently stored.


7. Press **CLR** to erase the memory location, then enter a new two-digit location.


**or**

Press  to keep the phone number in its current location.

The display shows the name stored with the phone number you are editing.

8. Enter your changes to the name. (See "How to Enter a Name" on page 36.)


Press  to erase one letter at a time, or skip to step 9 to leave the name unchanged.


9. Press  when you finish editing the name. The display shows the new information.


10. Press  to save your changes.

Your phone confirms your entry by displaying the location, number, and name you stored.

**or**

Press  to leave the information unchanged.

When you see `Location` , enter a new two-digit memory location to avoid overwriting the information in the current location.

11. Press  to exit, or scroll to other features.

## Getting to Phone Book...

1. Press **FCN**, then press **→** to enter the menu system.
2. Press **→** or **←** to scroll to **Phone Book**, and press **→** to select.
3. Press **→** or **←** to scroll to the following features, and press **→** to select.

### *Assigning an Individual Ring Style to a Phone Book Entry*

You can use the individual ring style feature to assign one of nine ring styles to alert you of an incoming call from a phone number listed in your phone book.

**Note:** This feature will only operate if you subscribe to Caller ID from your service provider. Caller ID is not available in all areas.

1. Follow the steps in the "Getting to Phone Book..." block to select **Individual Ring Style**.
2. Select the phone book entry to which you want to assign an individual ring style.
  - a. Enter the first letter of the name entry associated with the phone number.
  - b. Scroll up and down to reach the desired phone book entry.
3. When you reach the phone number you want, select it by pressing **→** or **STD**.

The display will show **Press 0-9, 0=OFF**.

4. Press **0** to assign the default ring style for the number.

**or**

Press an entry from **1** to **9** to select one of the nine ring styles.

5. Press  or **STD** to select that ring style.

The display confirms the selection by showing *Ring Style Assigned*.

6. Press **END** to exit, or scroll to other features.

# Timing Your Calls


---

Your phone's Call Timers give you a variety of options for managing your time. You can monitor the length of individual calls, set a timer to track monthly usage, or have the phone alert you at intervals that you specify.


In this chapter you will learn how to:

- view the timers
- monitor the length of your calls
- set and view the resettable timer for long-term monitoring
- program audible timers for your individual needs



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

# Road Map for Call Timers

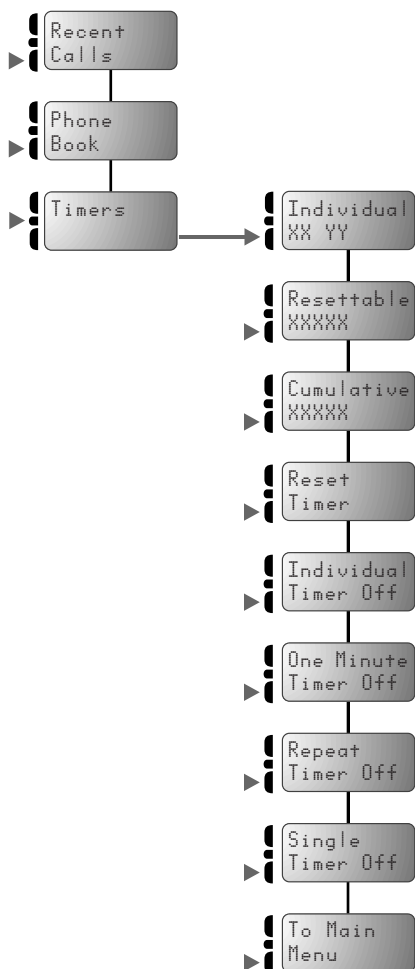
To enter the menu system:

**Press** **FCN**, then **press** **→**.

**or**

**Press** **FCN** **1**.

Start:



## Getting to Call Timers...

1. Press **FCN**, then press **→** to enter the menu system.
2. Press **↓** or **↑** to scroll to **Timers** and press **→** to select.
3. Press **↓** or **↑** to scroll to the following features, and press **→** to select.

### Shortcut:

Press **RCL** **#>** **#>** for a quick look at this timer.

### Shortcut:

Press **RCL** **#>** **#>** **#>** for a quick look at this timer.

## *Viewing the Individual Call Timer*

You can view the air-time of the most recent call or the call in progress (in minutes and seconds) at any time using this feature. The Individual Call Timer resets when you place the next call and when you turn the phone off. You can also choose to have the timer display while calls are in progress. See "Displaying the Individual Timer Automatically" on page 66.

1. Follow the steps in the "Getting to Call Timers..." block above to select **Individual XX YY**. The display shows the air-time of your last call in minutes (XX) and seconds (YY).
2. Press **END** to exit, or scroll to other features.

## *Viewing the Resettable Call Timer*

You can track how much air time you have accumulated at any time. Use this feature to view the time elapsed, and follow the instructions in "Resetting the Timer" on page 65 to reset the timer.

1. Follow the steps in the "Getting to Call Timers..." block above to select **Resettable XXXX**. The display shows your air time in minutes since you last reset the timer.
2. Press **END** to exit, or scroll to other features.





## Viewing the Cumulative Timer

This is a non-resettable timer that keeps track of your phone's total air time (in minutes).

1. Follow the steps in the "Getting to Call Timers..." block to select **Cumulative** XXXXX. The display shows your air time in minutes since your phone was activated.
2. Press **END** to exit, or scroll to other features.

## Resetting the Timer

By resetting this timer at the beginning of each billing cycle, you can keep a running tab of your monthly usage. After you reset the timer, it continues to keep track of your air time (in minutes) until you reset it again.

1. Follow the steps in the "Getting to Call Timers..." block to select **Individual** XX YY.
2. Press  to scroll to **Reset Timer**.
3. Press  to reset the timer.
4. Press **END** to exit, or scroll to other features.

### Shortcut:

Press **RCL**   
**#**  **#**   
for a quick look  
at this timer.

## Getting to Call Timers...

1. Press **FCN**, then press  $\rightarrow$  to enter the menu system.
2. Press  $\updownarrow$  to scroll to **Timers** and press  $\rightarrow$  to select.
3. Press  $\updownarrow$  to scroll to the following features, and press  $\rightarrow$  to select.

### Tip:

*Activating the Individual Timer may reduce both standby and talk times.*

## Displaying the Individual Timer Automatically

When you turn this feature on, your phone automatically displays your air time in minutes (XX) and seconds (YY) during and after each call.

1. Follow the steps in the "Getting to Call Timers..." block to select Individual Timer. You will see Individual Timer Off or Individual Timer On.
2. Press  $\rightarrow$  to toggle between Individual Timer Off and Individual Timer On.
3. Press **END** to exit, or scroll to other features.


## Setting the One-Minute Audible Timer

Activate this feature to hear an audible beep 10 seconds before the end of every minute during a call. The party on the other end does not hear the beeps.



1. Follow the steps in the "Getting to Call Timers..." block to select One Minute Timer. You will see One Minute Timer Off or One Minute Timer On.
2. Press  $\rightarrow$  to toggle between One Minute Timer Off and One Minute Timer On.
3. Press **END** to exit, or scroll to other features.

## Setting the Repeating Audible Timer

You can set this timer to beep during your calls at an interval that you select—from 11-999 seconds. You will hear the beep 10 seconds before the end of each interval, but the party on the other end does not hear the beeps.

1. Follow the steps in the "Getting to Call Timers..." block to select *Repeat Timer*. You will see *Repeat Timer Off* or *Repeat Timer On*.
2. Press  to toggle between *Repeat Timer Off* and *Repeat Timer On*.


The prompt to enter seconds appears **only** if you have turned the feature on. If you have turned it off, you will see *Repeat Timer Off*.

3. Enter the number of seconds you would like between audible beeps. You will see *Beep At YYY Secs*.
4. Press  to set the timer. The phone confirms the setting by displaying *Set At YYY Secs*.
5. Press  to exit, or scroll to other features.



## Setting the Single Timer

Like the Repeating Timer, you can set the Single Timer to beep at a time that you select—from 11-999 seconds. It beeps once during each call, 10 seconds before the end of the interval. The party on the other end does not hear the beep.

1. Follow the steps in the "Getting to Call Timers..." block to select *Single Timer*. You will see *Single Timer Off* or *Single Timer On*.

2. Press  to toggle between Single Timer Off and Single Timer On.

The prompt to enter seconds appears **only** if you have turned the feature on. If you have turned it on, you will see Single Timer Off.

3. Enter the number of seconds you would like between audible beeps. You will see Beep At YYY Secs.
4. Press  to set the timer. The phone confirms the setting by displaying Set At YYY Secs.
5. Press  to exit, or scroll to other features.

# Adjusting Tone Controls


---


Use these features to select vibration mode, personalize your phone's ringer styles, or turn the ringer off.

In this chapter you will learn how to:

- select the type of Call Alert or Message Alert
- choose from nine different ringer styles
- silence the keypad
- silence the scratchpad



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

## Road Map for Tone Controls

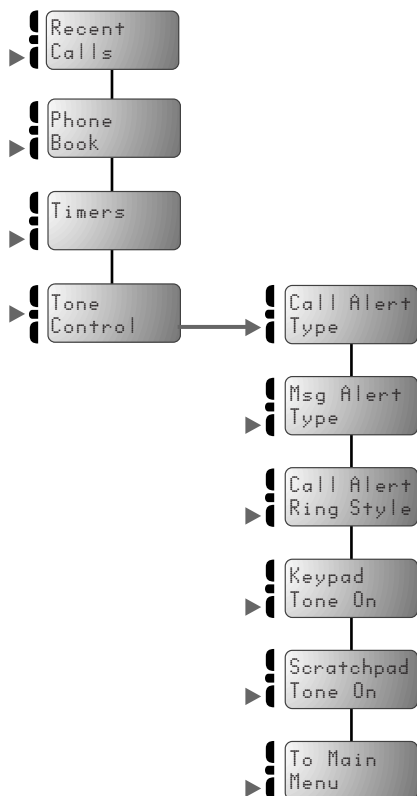
To enter the menu system:

Press **FCN**, then **press** **→**.

or

Press **FCN** **1**.

Start:



## Getting to Tone Controls...

1. Press **FCN**, then press **→|** to enter the menu system.
2. Press **→|** or **←|** to scroll to **Tone Control** and press **→|** to select.
3. Press **→|** or **←|** to scroll to the following features, and press **→|** to select.

### Selecting Call Alert Type

Using this feature, you can choose to be alerted to incoming calls using the vibrating ringer, the ringer, both, or neither. **Ring Only** is the default.

In particular, the VibraCall™ Alert vibrating alert is ideal for situations where ringing may not be appropriate, or in noisy places where you might not hear the ringer.

When both the ringer and vibrating alerts are selected, the phone alerts you by vibrating for three cycles and then ringing.

#### Notes:


- Although you set your call alert type below, the selection is temporarily suppressed if Pager Mode is enabled. See "Activating Pager Mode" on page 87 for details.
  - When your phone is connected to an external power supply and you receive an incoming call, your phone will ring, regardless of the call alert setting.
1. Follow the steps in the "Getting to Tone Controls..." block above to select **Call Alert Type**. The display shows your current alert type setting.





#### Shortcut:


Press **FCN** **8** to toggle the VibraCall™ Alert function on and off.

**Shortcut:**

Press **FCN** **8** to toggle among the Message Alert and Call Alert types.

2. Press  to scroll through your choices:



Ring Only	
Vibrate Only	
Ringer On and Vib On	
Ringer Off Vib Off	

3. Press  when you reach the setting you want.
4. Press **END** to exit, or scroll to other features.

## Selecting Message Alert Type








Using this feature, you can choose to receive an alert to incoming voice mails and short messages using the VibraCall™ alert, beeping alert, or no alert.

The beep tone and vibrating patterns differ if the incoming message is marked urgent versus normal. You will receive one beep for a normal message and three beeps for an urgent message.

1. Follow the steps in the "Getting to Tone Controls..." block to select Message Alert Type.
2. Press  to scroll through your choices: Messages Beep, Messages Vibrate, Beep Off, and Vib Off. Messages Beep is the default setting.
3. Press  when you reach the setting you want.
4. Press **END** to exit, or scroll to other features.




## Getting to Tone Controls...

1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Tone Control** and press  to select.
3. Press  or  to scroll to the following features, and press  to select

### Selecting a Ring Style

Your phone lets you select any of nine different ring styles. After you choose a style, the phone give you a brief sample of the new ring style, or vibrates if you have selected the VibraCall™ Alert feature.

1. Follow the steps in the "Getting to Tone Controls..." block to select Call Alert+ Ring Style.
2. Press **1** through **9** to hear the different ring styles, or scroll through the ring styles. Ring Style 1 is the default setting.
3. Press  when you reach the ring style you want.

The display will show Ring Style X Set.



4. Press **END** to exit, or scroll to other features.

### Turning Keypad Tones On and Off

Keypad tones are the sounds you hear when you press any key on the phone. By default, keypad tones are turned on. If you want to be discreet, use this feature to silence the audio feedback from the keypad.



**Note:** The other party still hears tones.

1. Follow the steps in the "Getting to Tone Controls..." block to select Keypad Tone. You will see Keypad Tone On or Keypad Tone Off.

2. Press  to toggle between Keypad Tone On and Keypad Tone Off.
3. Press  to exit, or scroll to other features.

## *Turning Scratchpad Tones On and Off*

Scratchpad tones are the tones that your phone sends to access automated calling systems like Voice Mail. By default, scratchpad tones are turned on. If you don't want your party to hear these sounds when you use the scratchpad, turn the scratchpad tones off.

1. Follow the steps in the "Getting to Tone Controls..." block to select Scratchpad Tone. You will see Scratchpad Tone On or Scratchpad Tone Off.
2. Press  to toggle between Scratchpad Tone On and Scratchpad Tone Off.
3. Press  to exit, or scroll to other features.

**Note:** If you turned the scratchpad tones off but want to access a tone-activated system like Voice Mail, place the call, enter the numbers you need to transmit, then:

Press   to send the tones.

# Using Lock/Security Features


While you probably would not want to leave your phone unattended, your TDMA digital StarTAC™ phone has a number of built-in security features to prevent unauthorized use.


In this chapter you will learn how to:

- activate the Voice Privacy feature
- lock and unlock your phone
- place priority calls
- change your lock code
- restrict call placement and memory access
- reset or clear your phone's settings



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

# Road Map for Lock Security

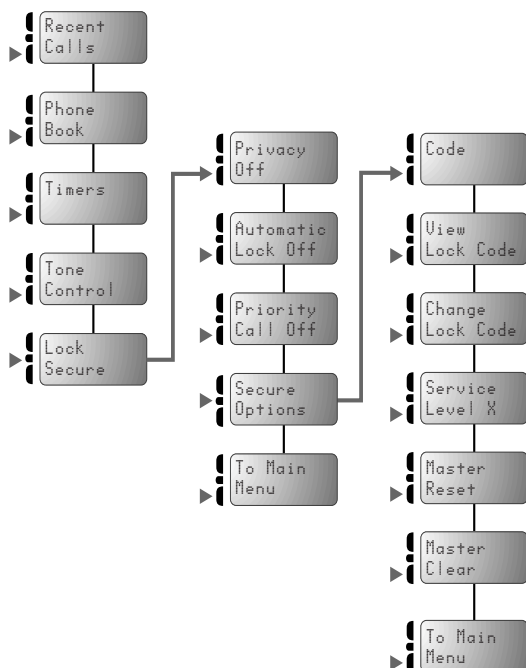
To enter the menu system:

Press **FCN**, then press **→**.








or

Press **FCN** **1**.

Start:



## Getting to Lock Security...

1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Lock Secure** and press  to select.
3. Press  or  to scroll to the following features, and press  to select.


## Activating Voice Privacy

When you activate your phone's Voice Privacy feature, you request your cellular system to search for a Voice Privacy channel with each call. If no Voice Privacy channel is available (or your call is "handed off" to a cell where a Voice Privacy channel is not available), five short beeps alert you that the call is no longer private.

You must select the Voice Privacy feature before you make a call in order for that call to search for a Voice Privacy channel.

**Note:** This feature is not available in all markets. Contact your Service Provider for additional information about your service area.

To turn the Voice Privacy feature on or off:

1. Follow the steps in the "Getting to Lock/Security..." block above to select Voice Privacy. You will see **Privacy Off** or **Privacy Preferred**.
2. Press  to toggle between **Privacy Off** and **Privacy Preferred**.
3. Press **END** to exit, or scroll to other features.

# Locking/Unlocking Your Phone

For your protection, you must enter the six-digit security code to access the features that your phone contains. The factory-programmed lock code for unlocking the phone is 123. The six-digit security code is 000000. These may have been changed when your phone was activated.

## Locking Your Phone Automatically

When you turn this feature on, your phone automatically locks itself each time you turn it off.

### Shortcut:

Press **FCN**, the Smart Button, **1** **5**, and continue with step 2.

1. Follow the steps in the "Getting to Lock/Security..." block to select Automatic Lock. You will see Automatic Lock Off or Automatic Lock On.
2. Press **→|** to toggle between Automatic Lock Off and Automatic Lock On.
3. Press **END** to exit, or scroll to other features.

## Locking Your Phone Manually

**Tip:** "LOCK" is printed on the **5** key, as a reminder.

You can lock your phone manually at any time to prevent unwanted use. Once you lock the phone, it remains locked whether it is powered on or off.

1. Press **FCN**.
2. Press and hold **5** for at least one full second. You will see Lock?.
3. Press **STD** or **→|** to lock. You will see Locked.


## Unlocking Your Phone

To unlock your phone:

Once your phone is on, **enter your three-digit lock code** to unlock your phone. (See "Viewing the Lock Code" on page 80 and "Changing the Lock Code" on page 80 for more information on your lock code.)

## Answering Calls While the Phone Is Locked

You can still receive calls when the phone is locked. To answer an incoming call:


1. Enter your three-digit lock code.
2. Press and hold , or press **SEND** to receive the call.

## Activating Priority Calling

Priority Call allows the Turbo Dial™ function to dial from memory location 01—even when the phone is locked. You can store an emergency number or the number of someone you would like to contact in case of emergency.

**Note:** Some cellular systems have their own emergency numbers and deny access to emergency numbers like 911 (not available in some areas). Check with your Service Provider for more information.

By default, Priority Call is activated. To turn it off or to switch it back on, complete the following steps:







1. Follow the steps in the "Getting to Lock/Security..." block on the previous page to select Priority Call. You will see Priority Call Off or Priority Call On.
2. Press  to toggle between Priority Call Off and Priority Call On.
3. Press **END** to exit, or scroll to other features.

**Tip:** If you forget your lock code, try pressing **1** **2** **3** or the last three digits of your cellular phone number.

### Shortcut:


Press **FCN**, the Smart Button, **2** **9**, and continue with step 2.

## Getting to Secure Options...

1. Press **FCN**, then press  to enter the menu system.
2. Press  to scroll to **Lock Secure** and press  to select.
3. Press  to scroll to the **Secure Options** submenu, and press  to select.
4. Enter your **six-digit security code**, scroll to the following features, and press  to select.

### *Viewing the Lock Code*

To display the active three-digit lock code:

1. Follow the steps in "Getting to Secure Options..." above to select **View Lock Code**. You will see **View Lock Code**.
2. Press  to display your three-digit lock code. The code appears for a few seconds.
3. Press **END** to exit, or scroll to other features.

### *Changing the Lock Code*

To change your three-digit lock code:

1. Follow the steps in "Getting to Secure Options..." above to select **Change Lock Code**. You will see **Enter Code** —.
2. Enter the new three-digit code. You will see **Changed To XXX**.
3. Press **END** to exit, or scroll to other features.




**Note:** If you try to change your lock code to 911 or the first three digits of an emergency number, you will see **Code Invalid**, and the code you entered **will not** be accepted. You will return to step 1 above.



# Restricting Call Placement

You can restrict call placement or hide memory information when loaning your phone to others.

## Selecting a Service Level

1. Follow the steps in "Getting to Secure Options..." to select **Service Level**. The phone displays your current service level. Refer to the chart on the next page.
2. Press  or  to scroll through the service level settings, and press  to select the service level you want.

If you select Level 7, the phone prompts you for the range of memory locations you want to remain active. You will see **Range 1---**.

Enter the range of digits memory locations from which calls are allowed. The phone confirms the allowed range, and you will see **1-XX Allowed**.

3. Press **END** to exit, or scroll to other features.

## Service Level Settings









Each of your phone's eight service levels offers a different combination of access privileges and restriction.

**Note:** Caller Line ID is an optional network and subscription feature that is not available in all areas.

Level	Description	Display
1	<ul style="list-style-type: none"><li>• Calls can be placed from memory locations 1-10 only.</li><li>• No dialing from keypad</li><li>• No memory edit or storage</li><li>• No access to name directory</li><li>• No access to last number dialed</li></ul>	1 Memory 1-10

Level	Description	Display
2	<ul style="list-style-type: none"> <li>• Calls can be placed from all memory locations.</li> <li>• No dialing from keypad</li> <li>• No memory edit or storage</li> <li>• No access to Caller Line ID stack or Last Number Dialed</li> </ul>	2 Memory Only
3	<ul style="list-style-type: none"> <li>• Calls can be placed manually from the keypad only.</li> <li>• No access to memory information</li> <li>• No memory edit or storage</li> <li>• No access to Caller Line ID stack or Last Number Dialed</li> </ul>	3 Keypad Only
4	Standard setting, no restrictions	4 Standard Setting
5	Seven-digit (local) dialing only	5 Local Only
6	<ul style="list-style-type: none"> <li>• Calls can be placed from the keypad and from memory.</li> <li>• No edit or memory storage to memory locations 1-10</li> </ul>	6 No Store 1-10
7	<ul style="list-style-type: none"> <li>• Calls can be placed from a selected memory range only.</li> <li>• Memory edit and storage allowed with the selected range.</li> <li>• No access to name directory</li> </ul>	7 Allow Range
8	No edit, storage, or recall from memory locations 1-9	8 Hide Turbo


## Getting to Secure Options...

1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Lock Secure** and press  to select.
3. Press  or  to scroll to the **Secure Options** submenu, and press  to select.
4. Enter your **six-digit security code**, scroll to the following features, and press  to select.

## Resetting All Options

Use the Master Reset feature to reset all user-selectable options back to their original factory settings.

**Note:** Once you select this feature, the reset process cannot be canceled or reversed.

1. Follow the steps in "Getting to Security Options..." above to select **Master Reset**.
2. Press  if you want to reset all your phone's options back to their factory settings. You will see **Standard Setting**.

**or**


Press **END** to exit the menu if you do not want to reset your phone's options.

3. Press **END** to exit, or scroll to other features.


## *Clearing All Stored Information*


If you want to start over, use Master Clear to reset all user-selectable options, clear the resettable timer, and erase all Phone Book information.

**Note:** Once you select this feature, the process cannot be canceled or reversed.

1. Follow the steps in "Getting to Security Options..." to select **Master Clear**.
2. Press  to clear the memory and reset all your phone's options back to their factory settings. You will see **Busy**. (This takes a few seconds.)

**or**

Press  to exit the menu if you do not want to reset your phone's options.

3. Press  to exit, or scroll to other features.

# Customizing Phone Options

---

The Phone Options menu lets you customize the way your phone sends and receives calls.


You can tune your phone for optimal performance, view information about the phone, and choose from a number of convenient features.

In this chapter you will learn how to:

- activate pager mode
- switch between analog or digital mode
- view your own phone number
- switch cellular phone numbers
- review your phone's feature settings
- select features for vehicular use
- conserve battery power
- display your system identification
- select a language



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

# Road Map for Phone Options

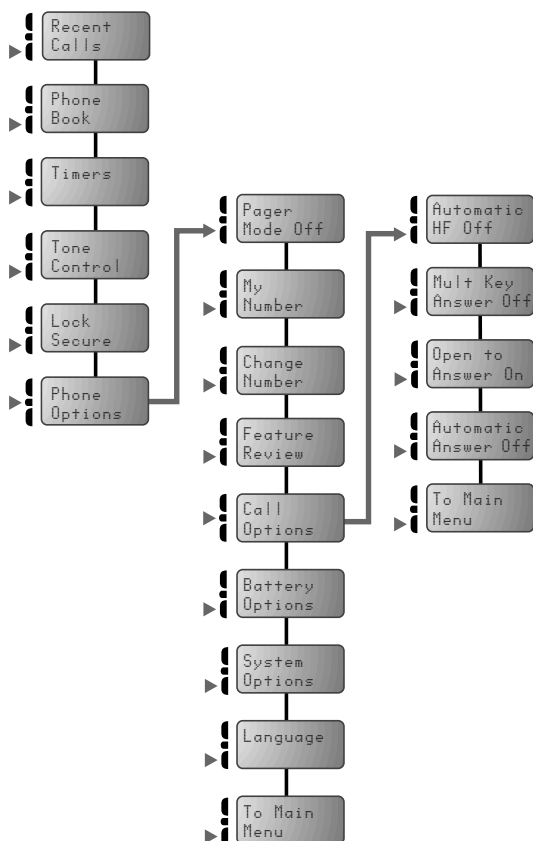
To enter the menu system:

Press **FCN**, then press **→**.

or

Press **FCN** **1**.

Start:



## Getting to Phone Options...

1. Press **FCN**, then press **→|** to enter the menu system.
2. Press **→|** to scroll to **Phone Options** and press **→|** to select.
3. Press **→|** to scroll to the following features

### Activating Pager Mode

When Pager Mode is activated, the phone simulates a pager. Pager Mode suppresses incoming call alerts but leaves message alerts active. The following conditions occur:

- Voice call alerts are suppressed.
- Message alerts are allowed.
- The Open to Answer function is turned off.
- The Automatic Answer function is turned off.
- The Call Alert Type, Open to Answer, and Automatic Answer menus cannot be accessed.

By default, Pager Mode is turned off. Complete the following steps to turn Pager Mode on and off.

1. Follow the steps in "Getting to Phone Options..." above to select **Pager Mode on/off**. The display shows your current Pager Mode setting.
2. Press **→|** to toggle between Pager Mode on and off.
3. Press **END** to exit, or scroll to other features.

**Tip:** When Pager Mode is active, **FCN** **8** only toggles the Message Alert Type settings. **FCN** **8** has no effect on the Call Alert Type settings.

## Viewing Your Own Number

Use this feature to view your phone's currently active phone number. If you have more than one phone number, you can change the active number with the Change Number feature in the Phone Options menu. (See "Switching Between Numbers" on page 89.)







### Shortcut:

Press **RCL** **#** **▶** for a quick look at your phone number.

1. Follow the steps in "Getting to Phone Options..." to select **My Number**.
2. Press **→|** to view your own phone number.  
Your active phone number appears on the screen. After six seconds, the phone returns to step 1.
3. Press **END** to exit, or scroll to other features.



## Getting to Phone Options...

1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Phone Options** and press  to select.
3. Press  or  to scroll to the following features



### *Switching Between Numbers*

**Note:** This is a carrier-specific option. If unavailable, please contact your service provider.

Your phone can operate on two different home systems. If you travel often, you can have your phone programmed with two cellular numbers to reduce roaming. This feature allows you to change your active number to the one appropriate for the area you are in.

When your phone has two numbers, both are designated as your home system but only one number can be active at any given time. Calls are placed and received by the currently active number only. Each time you turn your phone ON, you'll see a message in the display that indicates which phone number and home system are currently active.





To switch your phone number:

1. Follow the steps in the "Getting to Phone Options..." block to select **Change Number**. The active phone number appears in the display (for example, 5155551515).
2. Press  to switch to your other phone number (for example, 7085551212).
3. Press  to confirm the new setting.
4. Press **END** to exit, or scroll to other features.

## Reviewing Feature Settings

Use this feature to review the changes you've made to feature settings.










**Note:** While scrolling through Feature Review, you can only review settings. You cannot change them.

1. Follow the steps in the "Getting to Phone Options..." block to select Feature Review.
2. Press  or , or press  or  to scroll through features you changed from their default settings.

If all of the features are set to the factory standard settings, the display shows Standard Setting.

3. Press  to exit the menu.

## Getting to Call Options...


1. Press **FCN**, then press  to enter the menu system.
2. Press  or  to scroll to **Phone Options** and press  to select.
3. Press  or  to scroll to the **Call Options** submenu, and press  to select.
4. Press  or  to scroll to the following features.

### *Activating Automatic Hands-Free*

Turn this feature on when you are using Hands-Free vehicular accessories.

**Note:** The use of wireless telephones and their accessories (devices) may be prohibited or restricted in certain areas. Always obey the laws and regulations on the use of these devices.

To find out more about accessories for your car, refer to "Accessory Options" on page 114.

1. Follow the steps in "Getting to Call Options..." above to scroll to **Automatic HF**. You will see **Automatic HF On** or **Automatic HF Off**.
2. Press  to toggle between **Automatic HF On** and **Automatic HF Off**.
3. Press **END** to exit, or scroll to other features.

## Activating Multiple Key Answer

Turn on the Multiple Key Answer feature to answer calls by pressing the Smart Button, any key on the upper keypad **1** **-** **#**, or the upper and lower volume keys.

1. Follow the steps in "Getting to Call Options..." to scroll to Mult+ Key Answer. You will see Mult+ Key Answer On or Mult+ Key Answer Off.
2. Press **→|** to toggle between Mult+ Key Answer On and Mult+ Key Answer Off.
3. Press **END** to exit, or scroll to other features.

## Deactivating Open to Answer

With Open to Answer set to off, you can open the phone to see the message in the display and then answer by pressing **SEND** or **→|**.



### Notes:

- To view Caller ID information prior to answering a call, you must turn off the Open to Answer feature.
  - You cannot access the Open to Answer setting while the Pager Mode feature is active.
1. Follow the steps in "Getting to Call Options..." to scroll to Open to Answer. You will see Open to Answer On or Open to Answer Off.
  2. Press **→|** to toggle between Open to Answer On and Open to Answer Off.
- Note:** The Open to Answer function cannot be accessed when in Pager Mode.
3. Press **END** to exit, or scroll to other features.

# Activating Automatic Answer





Turn Auto Answer on to have your phone automatically answer incoming calls after two rings.

**Note:** Auto Answer does not work if the keypad cover is closed or if Pager Mode is activated. However, the Auto Answer will work with the headset while the keypad cover is closed.

1. Follow the steps in "Getting to Call Options..." to scroll to Automatic Answer. You will see Automatic Answer On or Automatic Answer Off.
2. Press  to toggle between Automatic Answer On and Automatic Answer Off.
3. Press  to exit, or scroll to other features.


**Tip:** If the ringer and VibraCall™ alert are off, the phone answers without ringing or vibrating.

## Getting to Phone Options...

1. Press **FCN**, then press  to enter the menu system.
2. Press  to scroll to **Phone Options** and press  to select.
3. Press  to scroll to the following features.


### *Selecting Battery Options— Status Light*

This feature enables you to turn off the Power/Status Indicator. Turn this mode on to increase talk or standby times.

1. Follow the steps in "Getting to Phone Options..." above to select the Battery Options sub-menu. You will see Status Light On or Status Light Off.
2. Press  to toggle between Status Light On and Status Light Off.
3. Press **END** to exit, or scroll to other features.




### *Displaying System Identification*

This feature shows the System ID number that identifies the cellular system your phone is currently accessing. An even number indicates a wireline system, while an odd number indicates a non-wireline system.

1. Follow the steps in "Getting to Phone Options..." above to enter the System Options sub-menu. You will see Display SID.
2. Press  to view the System ID number. After six seconds, the phone goes back to step 2.
3. Press **END** to exit, or scroll to other features.

## Selecting Language

This feature enables you to select the language in which your phone displays prompts and messages.

1. Follow the steps in "Getting to Phone Options..." on the previous page to select the Language sub-menu.
2. Press  to scroll through the language options. The choices include English, Spanish, French, Portuguese, Hebrew, and Russian.
3. Press  to select the language setting you want.
4. Press  to exit, or scroll to other features.









# Selecting a Network<sup>(Δ)</sup>

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**Note:** This is an optional network- and subscription-dependent feature that is not available in all areas.

The Network Selection menu lets you decide which network your phone will use.


In this chapter you will learn how to:

- select a non-public network
- select a public network
- search for the default network
- view all non-public networks



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.



You can also use your phone's  and  keys to scroll through the menu system.

# Road Map for Phone Options

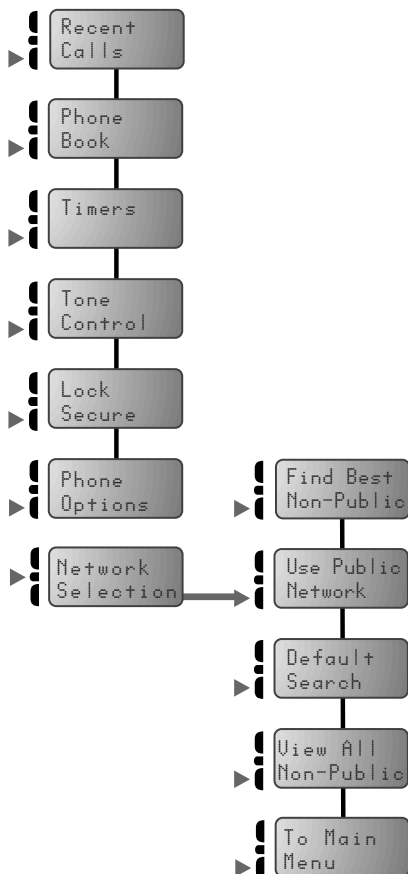
To enter the menu system:

Press **FCN**, then press **→.:**

or

Press **FCN** **1**.

Start:



# Getting to Network Selection


1. Press **FCN**, then press **→** to enter the menu system.
2. Press **→** to scroll to **Network Selection**, and press **→** to select.
3. Press **→** to scroll to the following features.

## Selecting a Non-Public Network

To select a non-public network:

1. Follow "Getting to Network Selection" above to scroll to **Find Best Non-Public**, and press **→** to activate a search.
2. Follow the appropriate instructions below:

If You See This Message:	Do the Following:
Search Done: [network ID]	<ul style="list-style-type: none"> <li>• To search for the next best network, press <b>CLR</b>.</li> <li>When you see the desired network, go on to step 3.</li> <li>• To cancel the search and exit the menu, press <b>END</b>.</li> </ul>
Search All Bands?	<ul style="list-style-type: none"> <li>• To continue searching for networks in another band, press <b>→</b>.</li> <li>When you see the desired network, go on to step 3.</li> <li>• To cancel the search and exit the menu, press <b>CLR</b>.</li> </ul>
Not Available	Press <b>END</b> to exit, and retry the search later.
Non-Public Not Found	The phone returns to the main menu. Retry the search later.

3. Press  to register with the displayed network.


If registration is successful, your phone displays a confirmation message from the network.

**Note:** The phone is registered with the selected network until you place or receive a phone call or until you turn the phone on and off.

If registration is not successful, your phone displays *Not Available*. (Registration can fail if you travel outside the network range after you locate the network but before you attempt to register.)

## *Selecting a Public Network*

To search for and select a public network:



Follow "Getting to Network Selection" on page 101 to scroll to *Use Public Network*, and press  to activate a search.

If the phone finds a public network, it attempts to register. When registration is successful, your phone displays a confirmation message.

**Note:** The phone is registered with the selected network until you place or receive a phone call or until you turn the phone on and off.


If the phone does not find a public network, it displays *Public Not Found*.

Press  to exit, or scroll to other features.

To cancel a search, press  or .

## Specifying a Default Search


To reset the phone to use the default network search (rather than forcing the selection of a public or non-public network):

Follow "Getting to Network Selection" on page 101 to scroll to **Default Search**, and press  to select it.




## Viewing All Non-Public Networks

You can list up to fifteen non-public networks that your phone has located in previous searches.

To list non-public networks:

1. Follow "Getting to Network Selection" on page 101 to scroll to **View All Non-Public**, and press  to select it.

Your phone displays the first network in the list.

2. Press  or  to scroll through the entire list.
3. Press  to exit, or scroll to other features.

# Using the Message Center


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The Message Center gives you easy access to both voice mail and your text messages. In this chapter you will learn how to:

- use voice mail
- edit a phone number to access voice mail
- use short messaging services (SMS) to view, lock/unlock, and clear messages
- adjust speed of your scrolling messages

**Note:** Voice mail and SMS are optional network and subscription-dependent features that are not available in all areas.



Follow these symbols as a guide for using the keys on the side of your phone:

**Press**  to scroll up.

**Press**  to select.

**Press**  to scroll down.

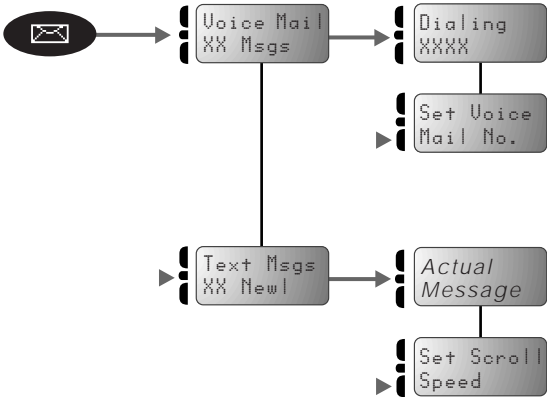


You can also use your phone's  and  keys to scroll through the menu system.






# Road Map for Message Center

Start:




## Getting to Voice Mail

1. Press  to enter the message center.
2. Press  or  to scroll to **Voice Mail**.

### *Voice Mail Alerts*

This feature updates you each time a message is sent to your voice mail number, providing you with real-time information on messages waiting to be retrieved.


When a voice mail message is received:

- Voice Mail XX Msgs appears.
- The  icon appears.
- The phone beeps three times or vibrates one time for a message.

### *Dialing Voice Mail*



You can retrieve your voice mail messages in one of two ways.

#### ***From the Voice Mail Alert Screen***

When you receive a voice mail alert and the Voice Mail XX message appears, press  to dial your voice mail number.




Your access number for the voice mail center is dialed automatically, and Dialing XXXX appears on the display, where XXXX is your access number.

#### ***From the Message Center***

Follow the steps in "Getting to Voice Mail..." above and press  or  to dial your voice mail number.

Your access number for the voice mail center is dialed automatically, and Dialing XXXX appears on the display, where XXXX is your access number.

# Getting to Text Messages

1. Press  to enter the message center.
2. Press  or  to scroll to **Text Msgs.**

## *Reading Text Messages*

Some Service Providers let you subscribe to a Short Message Service (SMS), which allows you to receive alphanumeric messages on your TDMA digital StarTAC™ phone, just like a pager. Contact your Service Provider for information about the availability of messaging in your area.


SMS enables your phone to save up to 15 short messages, each up to 80 characters in length, or five full-length 239-character messages.

Your TDMA digital StarTAC™ phone automatically replaces the oldest messages with the newest as they are received. You can store Call Back messages and numbers for later review. The one-touch Message Button makes viewing your messages easy.


## *How Your Phone Receives Message Alerts*

### *New Message Alerts*

If your phone is on and receives a new digital message, the phone alerts you in two different ways:

- Message Received appears in the display, and:
  - The message icon  appears.
  - The phone beeps three times or vibrates once.



**or**

- Urgent Msg Received or EMERGENCY MSG RECVD appears in the display, and:
  - The message icon  appears.
  - The phone beeps five times or vibrates three times.

### ***Short Message Indicators***

If the sender has marked the message "Emergency" or "Urgent," the display shows the message content on the first line and either Urgent or Emergency on the second line. The message number appears in the upper right of the display.


### ***Selecting and Reading Short Messages***


1. Follow the steps in the "Getting to Text Messages..." block.
  - If the message center has messages, you will see Text Msgs XX New, where XX is the number of unread messages.  
The total number of messages stored, YY appears in the upper right of the display.
  - If the message center has no messages, you will see Text Msgs Empty, and 00 will appear in the upper right portion of the display.
2. Press  or  to view the message headers.



If the message center is full, you will see Msg Memory Full displayed for two seconds prior to viewing the message headers.




3. Now you can scroll through a list of message headers. Each header includes:

- the message number
- its urgency
- the beginning of the message text

Press  to scroll forward or backward through the list of message headers. The newest message is placed at the top of the list, and the oldest message is at the bottom.



4. Press  to select and view a message. First, the time and date stamp is displayed for two seconds, and then the message text appears, starting on the top line.

Press  to halt the display of the message text. Press  again to restart it.

5. After reading a selected message, press  to scroll through the list of message headers.
6. Press  or press and hold  to exit, or scroll to other features.

## Initiating a Call Back

When the current message has scrolled across the display, you can call back a number embedded in the text message.


1. Press and hold , or press  to initiate a Call Back, if a Call Back number was included in the message.

You will see Dial No.? XXXXXXXX.

If a Call Back number was not included in the text message, the phone dials the first number present in the text message.

2. Press , or press  to dial the number shown.

**or**

Press  to search the text message for the next call back number.

**Note:** While in the message center, you can enter a Call Back number at any time by using the keypad, and then pressing **SEND** to place the call.

## ***Locking and Unlocking a Message***

You can lock important messages to ensure their safekeeping for later review. A locked message cannot be deleted until the message is unlocked.

Press **FCN** **5**, to toggle the current message between locked and unlocked.

Msg Locked is displayed when a message is locked.

**Note:** If your message memory is full and a new message is received, the oldest unlocked message that has been read is deleted.

## ***Clearing Messages***

### ***Clearing the Current Message***

1. Press **CLR** when the message you want to erase is on the display.

You will see Clear Message?, where XX is the number of the message you will clear. This number will appear in the upper right portion of the display.

2. Press **→** or **STO** to clear the message.

You will see Message Cleared.

**or**

Press **END** or any other key if you do not wish to clear the message. You will see Msg Not Cleared.

**Note:** You must unlock a locked message before you can clear it. For more information, see "Locking and Unlocking a Message" above.

## Clearing All Messages

To erase all the messages from your Message Center at once:

1. Press and hold **CLR** when you are in the message center.

You will see `Clear All?`.

2. Press **→** or **STO** to verify that you want all the messages cleared.

**or**





Press **END** if you decide not to clear all the messages. You are returned to the message center.

3. Press **END** to exit from the message center.

If all messages have been cleared and no locked messages remain in the message center, `Msg Center Empty` appears in the display.

**Note:** You must unlock any locked messages before they can be cleared. For more information, see "Locking and Unlocking a Message" on page 110.


## Getting to Message Center Options...

1. Press  to enter the message center.
2. Press  to scroll to **Msg Center Options** and press  to select.
3. Press  to scroll to the following features.


### *Editing the Voice Mail Number*

This feature allows you to save your voice mail access number.

**Note:** When you receive your phone, the default voice mail number is your phone number.

1. Follow the steps in the "Getting to Message Center Options..." block.
2. Press  to select **Set Voice Mail No.**
3. Enter your voice mail number.

The digits appear as you enter them.

4. Press  or **STD**.

A message confirms that your number has been saved.





**Note:** If you subscribe to a system that provides a shortcut number for voice mail, enter the complete number—not the shortcut number.

5. Press **END** to exit, or scroll to other features.



## Setting the Scrolling Speed

To adjust the scrolling speed of your incoming messages:

1. Follow the steps in the "Getting to Message Center Options..." block.
2. Press  to select the Set Scroll Speed option.
3. Press  to scroll through scrolling speed settings:
  - To scroll slowly, select Slow Scrolling.
  - For medium scrolling, select Medium Scrolling.
  - To scroll quickly, select Fast Scrolling.
4. Press  to select a scrolling speed.
5. Press  to exit, or scroll to other features.

# Reference Information

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## Accessory Options

An exciting line of Motorola TDMA digital StarTAC™ accessories, now smaller and lighter than ever, can enhance and personalize your cellular experience.

### Batteries

If your cellular phone is quickly becoming your companion, an optional auxiliary battery gives your phone a boost. Auxiliary batteries attach to the back of your phone and provide extra talk time in addition to your main battery. See “Battery Talk-Time and Standby-Time” on page 15 for battery talk-times and standby-times.



**Note:** Nickel Metal Hydride batteries should not be left in the charger for more than 24 hours.

### Vehicle Power Adapter



With the vehicle power adapter, you can power your phone and charge your phone's battery directly from your vehicle's power adapter plug! In some cars, the engine must be running in order for the power adapter plug to operate.

## ***Desktop Charger (AC Adapter required)***

The desktop charger is designed for optimal performance and compatibility with Motorola's new generation of cellular telephones. The desktop charger's pocket can charge batteries while they are attached to or separate from your phone. Now it is easy to rotate batteries and always have a charged spare.



## ***Holster***

Your TDMA digital StarTAC™ phone is so small and light, it is positively wearable. Slip it in and clip it on—for the ultimate in high-tech fashion.



### **Notes:**

- The holster is designed for your convenience and is not meant to secure your phone under all circumstances.
- For body-worn use, keep the antenna at least one inch from your body when transmitting.

## ***Headset***



The convenient headset provides both an earphone and microphone in one small piece for simple hands-free and private telephone conversations. The headset plugs directly into the jack on the top of your phone, so that you can wear your phone and move freely. Place the foam cover on the earpiece for a more comfortable fit.

## ***Hands-Free Vehicle Kit***

The optional Hands-Free Kit gives you the convenience of hands-free, speaker phone operation while in your car. Full duplex operation lets you simultaneously talk and listen, so both parties can interrupt each other for a normal sounding conversation.

The Hands-Free Kit automatically powers your phone and charges its battery (even when your car's engine is turned off). The Hands-Free Kit also includes a required external antenna that can improve your signal reception and boost performance.

**Note:** The use of wireless telephones and their accessories (devices) may be prohibited or restricted in certain areas. Always obey the laws and regulations on the use of these devices.

## ***Accessory Limited Warranty Information***

We recommend that you use Motorola original batteries and accessories. Under its limited cellular telephone warranty, Motorola specifically disclaims any responsibility for damage caused by the use of portable cellular telephone accessories not manufactured by Motorola.

For details on the complete line of Motorola cellular accessories, see your dealer or visit our Web site at <http://www.mot.com/>.

# Troubleshooting

Question	Answer
<p><b>I pressed the power button, but nothing happened. What's wrong with my phone?</b></p>	<p>Make sure that you press and hold the power button until the display appears and you hear an audible alert. If nothing still happens, then check that you have installed a battery and that the battery is charged. For more information about batteries and charging see the sections on batteries starting with "Installing and Removing Batteries" on page 19.</p>
<p><b>My battery didn't last as long as I expected. What can I do to extend battery life?</b></p>	<p>Your battery's "talk-time" and "standby-time" are relative measurements of the battery's capacity. The more you talk on the phone, the less standby-time you have, and vice versa.</p> <p>To get the most from your battery, allow it to charge fully. To charge the battery to 100% of its capacity, leave it in the charger for an extra hour after the charger's light turns green.</p> <p>You can also turn on the Power Save Mode feature to extend battery life. However, the LED Power/Status Indicator does not light when this feature is activated.</p> <p>Certain features demand power from your battery and reduce battery life. If you have selected the Automatic Display of Individual Call Timer feature, the display uses battery power to remain active during each call. Turn this feature off to conserve battery energy. (See "Displaying the Individual Timer Automatically" on page 66 for more information on this feature.)</p> <p>Make sure that you are using batteries that are compatible with your phone.</p> <p>Exposing your battery to extreme temperatures—below -10°C (14°F) or above 45°C (113°F)—can shorten battery life. Batteries are especially sensitive to high temperature extremes. As a good rule, always take your phone with you when you leave your car.</p>
<p><b>The display says, "Locked." How do I unlock my phone?</b></p>	<p>Enter the last three digits of your cellular number. If that doesn't work, use the factory preset lock code: 123. If all else fails, call your service provider (the company that sends you your monthly cellular bill) for assistance. (See "Locking/Unlocking Your Phone" on page 78 for more information on Security Features.)</p>

Question	Answer
<b>I tried to place a call and received a fast busy signal.</b>	This sound means that the cellular system did not process your call. For example, the cellular system may be overloaded with call attempts. To redial the number, press <b>SEND</b> before ending your call attempt, or press <b>END</b> and try the call again later. (See "Redialing a Number" on page 32 for more information on redialing.)
<b>I tried to place a call and received an alternating high/low tone.</b>	<p>This sound means your call did not reach the cellular system. You may have dialed the number too soon after turning the phone on. Wait until the "NS" light stops blinking before placing a call.</p> <p>An alternating tone may also indicate that your phone's signal is blocked. Make sure you're clear of any obstructions such as bridges, parking garages, or tall buildings.</p>
<b>I tried to listen to my Voice Mail (or use a paging service, a calling card, etc.) but nothing happened.</b>	You have probably turned off the Scratchpad tones. Place your call, enter the access numbers when prompted by the recording, then press <b>RCL</b> <b>SEND</b> . To avoid this problem in the future, follow the directions "Turning Scratchpad Tones On and Off" on page 74 to turn the Scratchpad tones on.
<b>My phone was stolen. What should I report and to whom?</b>	Report a stolen phone to the police and to your service provider (the company that sends you your monthly cellular service bills).
<b>I tried to place a calling card call using the internal Phone Book, but it didn't work.</b>	<p>You may have turned off your Scratchpad tones. Follow the directions in "Turning Scratchpad Tones On and Off" on page 74 to turn the Scratchpad tones on.</p> <p>Check that you stored your calling card information in the correct order, and make sure the groups of numbers are separated by pauses. The easiest way to correct the sequence may be to start from scratch. Follow the instructions on "Storing Calling Card Information" on page 55, enter your calling card information again, and store it in the same memory location as your previous attempt.</p> <p>Also keep in mind that when using your calling card, you must enter the number you are calling with the area code, but without the initial "1." Check with your long distance carrier for details on using your calling card.</p>

# Glossary

---

## A

**AC adapter** An accessory device that allows you to power your phone and charge any attached batteries from a wall outlet.

**AMPS (Advanced Mobile Phone System)** A cellular technology that operates on 832 channels.

**accessory connector port** A socket on the bottom of the phone where you can attach accessories such as an AC adapter, battery charger, cigarette lighter adapter, or optional accessories.

**air-time** The amount of time you spend using a cellular system. Especially, the time between successfully placing a call and terminating a call.

**antenna** The device attached to your phone that sends and receives cellular signals.

**Auto Answer** When you activate this feature, your phone automatically answers after two rings. See "Activating Automatic Answer" on page 93.

**Automatic Redial** When your cellular network cannot handle your call, this feature enables your phone to automatically redial for the next four minutes. See "Redialing a Number" on page 32.

## C

**Caller Line ID** A network/subscription dependent service that allows you to view information on incoming calls before answering. Not available in all areas.

**cellular carrier** One of multiple competing organizations in a given geographic area that owns and operates a cellular system.

**cellular signal** The radio waves that carry information between your cellular phone and the cellular system.

**cellular system** The cellular equipment in a given geographic area that relays signals to and from individual cellular telephones and the landline telephone system.

**cigarette lighter adapter** An accessory device that allows you to power your phone and charge any attached batteries from a car's cigarette lighter.

## D

**DTMF tones** See Dual Tone Multi-Frequency tones.

**default** A feature's original setting as pre-programmed in the factory.

**Dual Tone Multi-Frequency tones** The tones that your telephone transmits when you press a key on the keypad. These tones are used to access automated calling systems such as Voice Mail, paging services, banking-by-phone, etc. These tones are also heard by the party on the other line if you use the Scratchpad while a call is in progress. Synonymous with Scratchpad tones or touch tones.

## E

**emergency call** This feature allows you to make an emergency call even if your phone is locked, by dialing 911 or another emergency access number.

## F

**fringe area** The outermost range of a cellular system where signals are weak.

**function keys** The non-numeric keys on your phone's keypad used to perform specific tasks.

## H

**home system** The local cellular system where you obtain your cellular service.

**home type system** A cellular system of the same type as your local cellular system. See also non-home type system, and system type.

## I

**icon** One of the variety of symbols used to designate menu features and messages.

**indicator** A light on your phone that gives you information about your phone's status.

**Internal Charger** A charger built into your phone for use with an AC adapter or cigarette lighter adapter. See "Using the Internal Charger" on page 21.



## K

**Keypad Tones** The sounds produced through your phone's speaker when you press the keys. See "Turning Keypad Tones On and Off" on page 73.

## L

**landline** The telephone system used for conventional office and home phones.

**Lithium Ion** (Lion) A battery technology used in personal cellular telephones. Lithium Ion batteries generally provide more energy capacity than Nickel Metal Hydride batteries of the same weight.

**lock** Use this feature to prevent unauthorized access to your telephone.

**lock code** A three-digit code used to access your phone once it has been locked. The factory programmed lock code is 123. To view or change your lock code, see "Locking/Unlocking Your Phone" on page 78.

## M

**memory location** A space in the internal Phone Book where you can store a telephone number and a name.

**menu feature** Any feature that can be accessed through the menu system.

**menu system** The hierarchical arrangement of your phone's features that allows for quick, intuitive access. The top-level menu contains: Phone Book, Timers, Tone Control, Lock Secure, Phone Options, and Message Center.

**Message Center Key** Located on the bottom row of the keypad, the dedicated Message Center Key provides quick access to messages and messaging functions. See "Using the Message Center" on page 104.

## N

**name directory** An alphabetical list of the names and telephone numbers you have stored into your phone's internal Phone Book.

**Nickel Metal Hydride** (NiMH) A battery technology used in personal cellular telephone batteries.

## P

**pause** A special character that tells your phone to “pause” or wait for your input before sending a group of numbers stored in memory.

**Pause Dialing** A method of storing Phone Book entries that allows you to store multiple strings of numbers in one memory location; useful, for instance, in accessing automated phone systems. See “Storing and Placing Numbers with Pause Dialing” on page 53.

**Personal Identification Number (PIN)** A private numeric password that protects personal accounts such as bank-by-phone or Voice Mail.

**prompt** A message requesting input.

## R

**road map** The visual representation of your phone’s menu system provided in this user guide.

## S

**scratchpad tones** The tones that your telephone transmits when you press a key on the keypad. These tones are used to access automated calling systems such as Voice Mail, paging services, banking-by-phone, etc. These tones are also heard by the party on the other line if you use the Scratchpad while a call is in progress. Synonymous with Dual Tone Multi-Frequency tones.

**scroll** To move backward or forward through a list; for example: to move backward or forward through the menu system or the name directory.

**security code** A six-digit code used to access sensitive features in the Secure Options submenu of the Lock/Security menu.

**service provider** A company affiliated with a cellular carrier that provides satellite service to its customers.

**signal** The radio waves that carry information between your phone and the satellite system.

**Smart Button** The middle key on the side of your phone used to access the Phone Book’s name directory, send calls, end calls, enter the menu system, select features, and toggle features ON and OFF.

**Speed Dial** a feature that enables you to place a number by entering the two-digit location of your number and then pressing and holding the Smart Button.

**standby-time** The length of time a battery typically lasts if the phone is left ON but is not in use.

**status indicator** See indicator.

**submenu** A secondary level of your phone's menu system hierarchy.

**System Identification** A five-digit number that identifies your home cellular system. An even number indicates a wireline system and an odd number indicates a non-wireline system. See also system type.

## T

**talk-time** The amount of time that you spend talking on the phone.

**toggle** To switch between two possible options; for example: on versus off.

**Turbo Dial™ keys** a feature that enables you to dial numbers stored in memory locations by pressing and holding a single number key.

**TDMA (Time Division Multiple Access)** TDMA is an efficient method of providing digital cellular communication by allowing several different conversations on the same carrier frequency.

## V

**VibraCall™ alert** Motorola's silent vibration mode that discreetly alerts you to incoming calls.

**Voice Mail** Contact your Service Provider for availability.

**volume keys** Located on the side of your phone, the upper and lower volume keys are used to adjust phone volume.

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# Patent Information

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Manufactured under one or more of the following U.S. patents:

4121218	4628529	4761621	4897873	D316859	5121047
4127824	4629829	4764737	D305717	5017856	5121288
4128740	4630304	D297734	4903327	5018188	5121412
4138681	4630305	D297735	D306163	5020076	5122722
4193036	4633141	D297736	4904549	5020091	D327062
4254382	4636593	4777564	4905288	5020092	5124889
4302845	4636741	Re.32768	4905301	5020093	5127040
4312074	4644351	4783697	D306299	5023580	5127042
4327319	D288432	D299232	4910470	5023866	5128834
4329666	4648125	4797929	4912602	5023911	5130682
4369516	4649543	4798975	4916262	5025387	5130683
4369522	D288683	4800348	4918403	5028859	5133010
4378603	4654655	4802236	4918732	5029233	5136135
4390963	4654867	4803726	4922209	5036532	5140286
4398265	4662691	4809356	4924194	5040127	5142551
4400584	4667333	4811377	4930126	5042071	5142696
Re.31470	4668917	4811404	D309301	5045824	5148471
4431977	4670747	4816774	D309451	5053924	5150075
4434461	4672502	4817157	4945570	5055800	5150359
4455534	4692726	4823098	4954796	5055802	5150384
4462098	4704588	D300742	4956854	5055803	5152006
4484153	D292578	D300827	4963812	5057762	5152007
4485486	4706036	4827226	4963843	5058136	5153590
4486624	D292920	4827507	4965537	5059885	5157693
4491972	4710724	4829274	4970475	5060264	5159283
4504834	4711361	4829543	4972355	5060294	5160898
D278708	4715063	4837534	4972432	5063340	5163159
4523155	4716319	4843621	4972455	5065408	5164652
4546329	4716391	4845772	4975808	5067139	5166596
4549311	4723305	4851966	4982108	5068625	5166642
4550426	D294257	4868576	4984219	5070310	5170173
4551696	4727306	4872196	4989230	5077757	5170492
4564821	4727583	4873683	D314173	5081674	5173672
D282169	4730195	4876552	4992753	5083304	5175759
4571595	4734635	4876740	4998289	5093632	5175874
4573017	4737976	D304189	D315330	D325028	5177458
4574243	4740794	4879533	D315543	5107487	5182749
4585957	4741018	4885553	5004992	5109536	5185566
4602218	4741034	4887050	5008925	5111162	5187640
D284759	4742562	4890199	5010309	5113400	5187809
4616314	D295627	D305427	5010570	5113436	5192924
4617520	D295975	4896124	5014294	5117441	5193223
4626309	4751737	4896361	5014346	5117449	5195106

5195108	5242767	5287555	5367558	5446763	D369598
5198887	D339127	5287556	5371791	5448763	D369797
5200655	D339335	5289505	D353131	5448770	5519303
5201069	D339336	D344512	5373101	5448771	5519346
5202654	D339337	5297142	D353361	5453997	5519506
5203009	5247544	5299232	5375143	D362840	5519777
D334746	D339578	5301364	5375258	D362852	D370016
5204977	5249302	5301365	D353587	5461643	D370463
5205751	5250916	5308716	D353588	5463628	5526398
5208566	5251331	5312705	5379324	5465412	D370672
5210793	5253292	5321847	5384825	5469177	5530922
5211581	5255292	5323421	5392000	5475752	5539360
5212815	5257414	5325429	5392023	D365094	5542103
5212826	5259005	D348250	5396654	5477192	5542106
5214675	5260170	D348427	D356309	D365817	5544250
5214774	5260988	5327642	5402447	5486843	D372481
5220290	5261119	D348665	5404120	5487184	5546380
5222078	5262710	D348666	5404582	5488335	D372896
5222104	5263052	D348668	5406146	5490177	5551078
5222251	5263055	5331123	5406562	5493198	5555550
5224122	5265219	D349273	D357224	5493700	5559471
5230007	D341589	5336984	D357457	5493714	D374013
5230093	5271042	5338909	5410275	5495206	5561436
5233506	D342248	D350113	5414711	5497126	D374227
5233633	5276685	D350348	D358148	5497383	D374424
5235492	5276707	D350349	5420759	D367640	5565881
5237257	5276913	D350350	5424689	5499273	5570453
5237570	5278527	5349588	5428820	5504812	5572223
5239127	5278832	5351245	5428836	5506490	5572224
5239294	5278994	D351375	5430416	D368696	5577267
5241545	5280637	5359696	5432017	5508709	5577268
5241548	5280644	5361400	5434947	5510693	D375932
5241592	D343615	5363071	5436589	5511235	D375952
5241650	D343616	5365549	5436802	5513078	
5241688	D343834	D352503	5438684	5513382	
5241693	D343835	5366826	D361070	D369359	
D338887	5287553	5367538	5444764	5513996	

Other patents pending.





## ***The U.S. Food and Drug Administration's Center for Devices and Radiological Health Consumer Update on Mobile Phones***

FDA has been receiving inquiries about the safety of mobile phones, including cellular phones and PCS phones. The following summarizes what is known—and what remains unknown—about whether these products can pose a hazard to health, and what can be done to minimize any potential risk. This information may be used to respond to questions.

### ***Why the concern?***

Mobile phones emit low levels of radio frequency energy (i.e., radio frequency radiation) in the microwave range while being used. They also emit very low levels of radio frequency energy (RF), considered non-significant, when in the stand-by mode. It is well known that high levels of RF can produce biological damage through heating effects (this is how your microwave oven is able to cook food). However, it is not known whether, to what extent, or through what mechanism, lower levels of RF might cause adverse health effects as well. Although some research has been done to address these questions, no clear picture of the biological effects of this type of radiation has emerged to date. Thus, the available science does not allow us to conclude that mobile phones are absolutely safe, or that they are unsafe. However, the available scientific evidence does not demonstrate any adverse health effects associated with the use of mobile phones.

## ***What kinds of phones are in question?***

Questions have been raised about hand-held mobile phones, the kind that have a built-in antenna that is positioned close to the user's head during normal telephone conversation. These types of mobile phones are of concern because of the short distance between the phone's antenna—the primary source of the RF—and the person's head. The exposure to RF from mobile phones in which the antenna is located at greater distances from the user (on the outside of a car, for example) is drastically lower than that from hand-held phones, because a person's RF exposure decreases rapidly with distance from the source. The safety of so-called “cordless phones,” which have a base unit connected to the telephone wiring in a house and which operate at far lower power levels and frequencies, has not been questioned.

## ***How much evidence is there that hand-held mobile phones might be harmful?***

Briefly, there is not enough evidence to know for sure, either way; however, research efforts are on-going. The existing scientific evidence is conflicting and many of the studies that have been done to date have suffered from flaws in their research methods. Animal experiments investigating the effects of RF exposures characteristic of mobile phones have yielded conflicting results. A few animal studies, however, have suggested that low levels of RF could accelerate the development of cancer in laboratory animals. In one study, mice genetically altered to be predisposed to developing one type of cancer developed more than twice as many such cancers when they were exposed to RF energy compared to controls. There is much uncertainty among scientists about whether results obtained from

animal studies apply to the use of mobile phones. First, it is uncertain how to apply the results obtained in rats and mice to humans. Second, many of the studies that showed increased tumor development used animals that had already been treated with cancer-causing chemicals, and other studies exposed the animals to the RF virtually continuously—up to 22 hours per day.

For the past five years in the United States, the mobile phone industry has supported research into the safety of mobile phones. This research has resulted in two findings in particular that merit additional study:

1. In a hospital-based, case-control study, researchers looked for an association between mobile phone use and either glioma (a type of brain cancer) or acoustic neuroma (a benign tumor of the nerve sheath). No statistically significant association was found between mobile phone use and acoustic neuroma. There was also no association between mobile phone use and gliomas when all types of types of gliomas were considered together. It should be noted that the average length of mobile phone exposure in this study was less than three years.

When 20 types of glioma were considered separately, however, an association was found between mobile phone use and one rare type of glioma, neuroepitheliomatous tumors. It is possible with multiple comparisons of the same sample that this association occurred by chance. Moreover, the risk did not increase with how often the mobile phone was used, or the length of the calls. In fact, the risk actually decreased with cumulative hours of mobile phone use. Most cancer causing agents increase risk with increased exposure. An ongoing study of brain

cancers by the National Cancer Institute is expected to bear on the accuracy and repeatability of these results.<sup>1</sup>

2. Researchers conducted a large battery of laboratory tests to assess the effects of exposure to mobile phone RF on genetic material. These included tests for several kinds of abnormalities, including mutations, chromosomal aberrations, DNA strand breaks, and structural changes in the genetic material of blood cells called lymphocytes. None of the tests showed any effect of the RF except for the micronucleus assay, which detects structural effects on the genetic material. The cells in this assay showed changes after exposure to simulated cell phone radiation, but only after 24 hours of exposure. It is possible that exposing the test cells to radiation for this long resulted in heating. Since this assay is known to be sensitive to heating, heat alone could have caused the abnormalities to occur. The data already in the literature on the response of the micronucleus assay to RF are conflicting. Thus, follow-up research is necessary.<sup>2</sup>

FDA is currently working with government, industry, and academic groups to ensure the proper follow-up to these industry-funded research findings. Collaboration with the Cellular Telecommunications Industry Association (CTIA) in particular is expected to lead to FDA providing research recommendations and scientific oversight of new CTIA-funded research based on such recommendations.

Two other studies of interest have been reported recently in the literature:

1. Two groups of 18 people were exposed to simulated mobile phone signals under laboratory conditions while they performed cognitive function tests. There were no changes in the subjects' ability to recall words, numbers, or pictures, or in their spatial memory, but they were able to make choices more quickly in one visual test when they were exposed to simulated mobile phone signals. This was the only change noted among more than 20 variables compared.<sup>3</sup>
2. In a study of 209 brain tumor cases and 425 matched controls, there was no increased risk of brain tumors associated with mobile phone use. When tumors did exist in certain locations, however, they were more likely to be on the side of the head where the mobile phone was used.

Because this occurred in only a small number of cases, the increased likelihood was too small to be statistically significant.<sup>4</sup>

In summary, we do not have enough information at this point to assure the public that there are, or are not, any low incident health problems associated with use of mobile phones. FDA continues to work with all parties, including other federal agencies and industry, to assure that research is undertaken to provide the necessary answers to the outstanding questions about the safety of mobile phones.

***What is known about cases of human cancer that have been reported in users of hand-held mobile phones?***

Some people who have used mobile phones have been diagnosed with brain cancer. But it is important to



understand that this type of cancer also occurs among people who have not used mobile phones. In fact, brain cancer occurs in the U.S. population at a rate of about 6 new cases per 100,000 people each year. At that rate, assuming 80 million users of mobile phones (a number increasing at a rate of about 1 million per month), about 4800 cases of brain cancer would be expected each year among those 80 million people, whether or not they used their phones. Thus it is not possible to tell whether any individual's cancer arose because of the phone, or whether it would have happened anyway. A key question is whether the risk of getting a particular form of cancer is greater among people who use mobile phones than among the rest of the population. One way to answer that question is to compare the usage of mobile phones among people with brain cancer with the use of mobile phones among appropriately matched people without brain cancer. This is called a case-control study. The current case-control study of brain cancers by the National Cancer Institute, as well as the follow-up research to be sponsored by industry, will begin to generate this type of information.

### ***What is FDA's role concerning the safety of mobile phones?***

Under the law, FDA does not review the safety of radiation-emitting consumer products such as mobile phones before marketing, as it does with new drugs or medical devices. However, the agency has authority to take action if mobile phones are shown to emit radiation at a level that is hazardous to the user. In such a case, FDA could require the manufacturers of mobile phones to notify users of the health hazard and to repair, replace or recall the phones so that the hazard no longer exists.

Although the existing scientific data do not justify FDA regulatory actions at this time, FDA has urged the mobile phone industry to take a number of steps to assure public safety. The agency has recommended that the industry:

- support needed research into possible biological effects of RF of the type emitted by mobile phones
- design mobile phones in a way that minimizes any RF exposure to the user that is not necessary for device function
- cooperate in providing mobile phone users with the best possible information on what is known about possible effects of mobile phone use on human health

At the same time, FDA belongs to an interagency working group of the federal agencies that have responsibility for different aspects of mobile phone safety to ensure a coordinated effort at the federal level. These agencies are:

- National Institute for Occupational Safety and Health
- Environmental Protection Agency
- Federal Communications Commission
- Occupational Health and Safety Administration
- National Telecommunications and Information Administration

The National Institutes of Health also participates in this group.

***In the absence of conclusive information about any possible risk, what can concerned individuals do?***

If there is a risk from these products—and at this point we do not know that there is—it is probably very small. But if people are concerned about avoiding even potential risks, there are simple steps they can take to do so. For example, time is a key factor in how much exposure a person receives. Those persons who spend long periods of time on their hand-held mobile phones could consider holding lengthy conversations on conventional phones and reserving the hand-held models for shorter conversations or for situations when other types of phones are not available.

People who must conduct extended conversations in their cars every day could switch to a type of mobile phone that places more distance between their bodies and the source of the RF, since the exposure level drops off dramatically with distance. For example, they could switch to:

- a mobile phone in which the antenna is located outside the vehicle
- a hand-held phone with a built-in antenna connected to a different antenna mounted on the outside of the car or built into a separate package
- a headset with a remote antenna to a mobile phone carried at the waist

Again, the scientific data do not demonstrate that mobile phones are harmful. But if people are concerned about the radio frequency energy from these products, taking the simple precautions outlined above can reduce any possible risk.

## ***Where can I find additional information?***

For additional information, see the following websites:

**Federal Communications Commission (FCC)** RF Safety Program (select "Information on Human Exposure to RF Fields from Cellular and PCS Radio Transmitters"):

<http://www.fcc.gov/oet/rfsafety>

**World Health Organization (WHO)** International Commission on Non-Ionizing Radiation Protection (select Qs & As): <http://www.who.int/emf>

**United Kingdom, National Radiological Protection Board:** <http://www.nrp.org.uk>

**Cellular Telecommunications Industry Association (CTIA):** <http://www.wow-com.com>

**U.S. Food and Drug Administration (FDA)** Center for Devices and Radiological Health:

<http://www.fda.gov/cdrh/consumer/>

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4. Hardell, L, Nasman, A, Pahlson, A, Hallquist, A and Mild, KH. Use of cellular telephones and the risk for brain tumors: a case-control study. *Int. J. Oncol.*, 15: 113-116, 1999.

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