



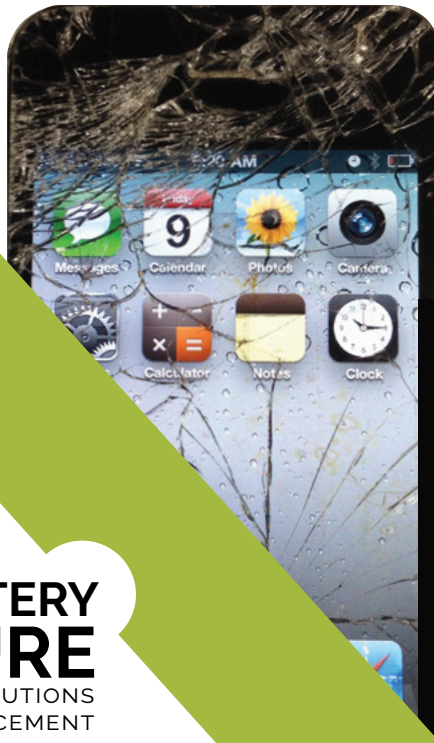
CELL PHONE REPAIR SPECIALISTS

REPAIR GUIDE

A resource for troubleshooting common handset problems

Dropping your cell phone, spilling water on it, overheating the battery... accidents happen, and they're not always your fault. How you choose to repair those accidents is your choice. Our cell phone repair specialists would like to share some of their favorite at-home solutions, along with helpful tips for pros and beginners.

Broken screens, water damage and charging failures tend to affect the majority of the iPhones, smartphones and cell phones that arrive at our repair center. They are also the most visible problems and can be diagnosed somewhat more easily; so we'll focus on these problems first!



**CRACKED OR BROKEN
SCREENS**
INCLUDING REMOVAL OF
GLASS & TOUCHSCREENS

**WATER
DAMAGE**
INCLUDING COMMON
FORMS OF DAMAGE

**BATTERY
FAILURE**
INCLUDING OTHER SOLUTIONS
TO REPLACEMENT

**OTHER PROBLEMS &
SOLUTIONS**
INCLUDING "FIELD TEST" CODES

OPENING THE CELL PHONE

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CRACKED OR BROKEN SCREENS

From flip phones to touchscreen devices

Varying degrees of damage can exist on a cell phone's screen, from a minor fracture to what looks like a puncture wound. A lot of people can live with a small divot or crack on their device's screen without it affecting them. Let's be honest, repairs aren't always cheap and parts are expensive.

Bigger issues are not so easy to live with. Glass gradually chipping away will expose sensitive regions on the phone, components beneath the glass can break, and a broken touchscreen can render a smartphone completely useless.

Solutions

Cell phone screens include the glass, digitizer, lights and a lot of other small components. On some touchscreen devices, the factory fuses all of these parts together because it means that they can manufacture the phones faster. Instead of just replacing the glass, you now need to replace the entire screen assembly, which includes correctly attaching it to the phone's motherboard.

Proper knowledge of your particular device and how it was manufactured is key to performing the correct screen repairs.

The majority of repairs (for broken screens and other problems) require opening your device, so we have included some tips for that at the end of this guide. Before beginning, turn off the cell phone!

Replacing the Glass & Other Components

If the glass covering your mobile device's screen broke, and it is not fused to the screen assembly, you may be in some luck. Cheap replacement glass is available online, as well as video tutorials for many different models. Likely, you will need to use a suction to pull the glass from the screen. Use care when reapplying the glass so it looks flawless.

Lights and digitizers beneath the glass can be more troublesome to repair or replace. Lights can be soldered or screwed to other pieces, including the motherboard; while digitizers are often wired to the device's computer. Once again, use care, being especially careful not to damage other parts of the phone.

Fused Touchscreens

How the touchscreen is attached to the device is up to manufacturer. Likely, you will need a suction device or a small screwdriver to remove the screen assembly. The digitizer will be linked to the cell phone's computer with a flex cable. Take careful note of how the touchscreen is positioned in the device before you proceed with extraction.



WATER DAMAGE

Saving up for a rainy day

Puddles, toilets and other pools of water have claimed the lives of countless cell phones. We all dread it will happen to our devices. If you are so unfortunate, our specialists have a few tips for trying to revive your phone.

Water and other liquids can enter your phone through seams in the case, such as by the screen or battery, or through the micro-USB port and other openings. Just a little exposure can be as damaging as dunking it in a pool.

Common Forms of Damage

Short Circuits

Liquids such as water are conductive and will wreck havoc on the circuitry inside the phone. Electricity follows the path of least resistance, which is why touching a live electrical wire while you are grounded will result in a nasty shock. Water seeps between the gaps in the circuitry and, being conductive, allows electrical signals to jump to a nearby, more attractive destination rather than following the paths provided by the phone's circuit board. The circuit has been cut short; or, a "short circuit" has formed.

Short circuits are caused when two components inside the phone that are not supposed to interact do interact because the water has allowed electricity to conduct between them. Usually, cell phones have no safeguards to protect against short circuits.

Corrosion

Another type of damage is more long-term than the immediate effects of a short circuit. Rust is caused by water coming into contact with metal, and then this metal is exposed to air, which corrodes the metal through oxidation. Rusty metals are not as conductive for electricity as a clean, polished surface. Cell phone charging ports, internal circuitry and other components rely heavily on metallic connections and copper wiring. Corrosion affects cell phones just as much as it does any other electronic device.

Other

Contrary to popular belief, you cannot "fry" a cell phone by exposing it to water. You won't find any smoke coming out of your device any time soon.

Solutions

Besides accidents, a lot of people imagine a cell phone vibrating in a drinking glass when they think of water damage. It's true, if you place a cell phone in a glass, there's a good chance that it will continue working while it's soaked in liquid.

A popular remedy is to fill a plastic bag or covered container full of rice, insert the cell phone, and surround it with the grains. The idea is that the rice will absorb the liquid. Your cell phone may work for a while after that, but maybe not for long. Without proper airflow, the liquid doesn't go very far and enough of it can linger inside the cell phone, and corrode the internal components.



WATER DAMAGE

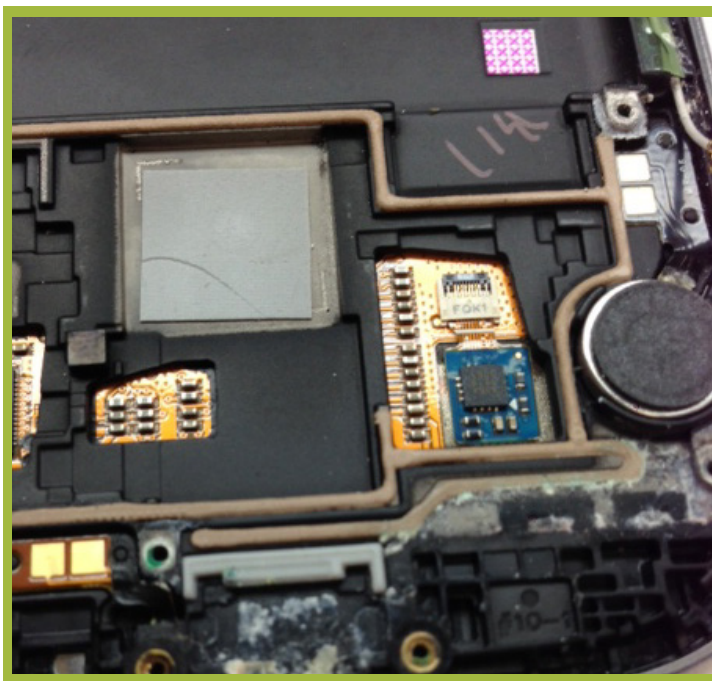
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Solutions Continued

Leaving the device in the sun or letting it dry in another natural way will still invite corrosion to take over. So will taking canned air or some other kind of air blower and using it to push the liquid out.

Pouring rubbing alcohol or another quick-drying household cleaner into the cell phone has some pluses and minuses as well. Liquid trapped in the phone may mix with the alcohol and evaporate, but absolutely no kind of liquid is meant to enter your phone. Household cleaners can eat away parts or cause more damage, anyways.

Opening the cell phone and cleaning the interior is the only complete way to fix water damage. Please turn off the cell phone before you do so. We explain this more in a later section.





BATTERY FAILURE

So much for being mobile

Batteries power every cell phone on the market, from basic candy bar-shaped devices to flagship touchscreen devices. And through all the transformations cell phones have gone through, their batteries haven't changed much at all.

Some of the signs your battery is going bad are longer charge times, or the cell phone loses power quicker than it used to. If you open the battery cover, you may find the battery misshapen, leaking or covered in a dried film.

Most cell phones allow you to access the battery, but not all. Some are built with a "unibody" design, without a battery cover.

Solutions

Test your battery by connecting a different charger. If there are still problems, replace the battery. Simple enough!

If a new battery produces the same results as the old one and acts as though it's failing as well, it's likely a problem with the cell phone. The charging port can be easily damaged from accidentally tripping on a cord while it's connected, or through corrosion from water damage. If so, shut down the phone and prepare to explore its insides. We discuss tips for disassembling and reassembling your phone in a later section.



OTHER PROBLEMS & SOLUTIONS

If your cell phone is experiencing problems with the audio, slow performance or other difficulties, there are diagnostic tools built into the device that can help. For example, dialing * 3001#12345# * on the iPhone will display “Field Test,” which is the phone’s diagnostic mode. Here, you can test each part of the phone’s functions.

Here are a few more codes (may not work on all models):

BlackBerry: TEST
HTC: *##3423##*
iPhone: * 3001#12345# *
LG: 2945## or 2945*#01*#
Motorola: ##7764726
Nokia: ##3282
Samsung: * #0011#
Sony: 904059+>

If, indeed, it is a hardware problem that is affecting your phone, then you will need to open the device to repair or replace the appropriate parts and components.



OPENING THE CELL PHONE

1

First: Turn off the cell phone and remove the battery.

Unless your cell phone is experiencing a software problem, the difficulties with your device often stem from a broken internal component. Some handsets come apart easily, while others need a lot of tinkering with. Consulting your user manual or online resources (videos, discussion forums, etc.) is a good second step.

Just like any kind of surgery, a sterile environment is best. Your cell phone isn't going to pick up an infection, but the slightest amount of debris could get into the circuitry and cause more problems.

A little bit of patience is as good as having an assistant nearby. You'll let yourself concentrate and not become so frustrated if something goes wrong.

PUTTING IT BACK TOGETHER

Before you take your cell phone apart, make sure you know how to put it back together again. Some devices require heating up components so they release from the parts they're assembled to. Make sure you don't damage parts and components when disassembling them, especially when they are glued or otherwise adhered to one another, or else they will not reassemble. Parts and components within the device need to be reset exactly as they were. As compact and feature-rich as cell phones are, they leave no room for error.



Lastly: Replace the battery and turn the cell phone on.

