ELECTRICAL PANEL SAFETY ALERT

The Electrical Panel

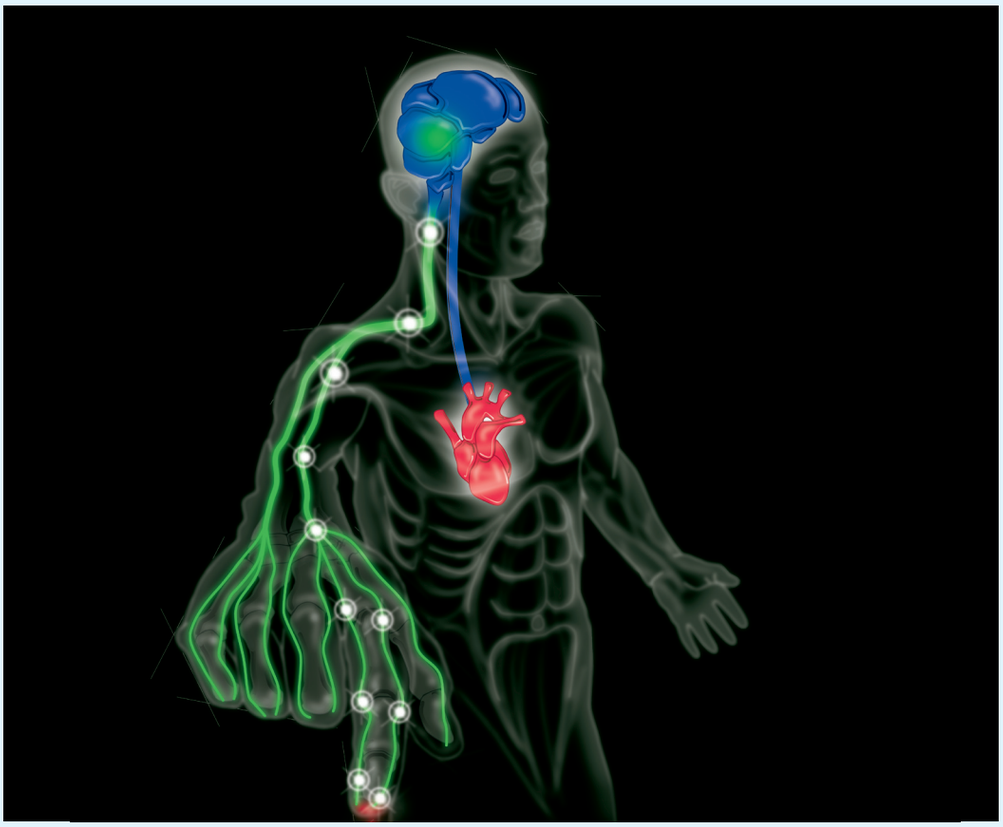
The Heart of a Home's Electrical System

The home's electrical system operates like a human being's body. Circuits and wires carry electricity throughout the home like veins and arteries carry blood to organs and limbs. Just as blood keeps the body alive, electricity keeps televisions on, computers powered, and refrigerators running.

Blood cannot travel throughout a body unless its heart is pumping, and electricity cannot travel throughout a home unless the electrical panel is operating properly. The panel is the heart of an entire home's electrical system. Without a properly functioning panel, nothing electrical in a home will work.

People's hearts can develop problems due to age, diet, and genetic reasons. Panels also can develop problems. Today, there are two brands of panels that may have major manufacturing and/or design flaws that potentially put homeowners at risk — Federal Pacific Electric panels and certain older Zinsco panels. Also, there are millions of people today with panels that are more than 40 years old and may no longer protect their homes from overcurrents and short circuits.

This booklet will provide you vital information on each of these panels and explain how you can protect your home and loved ones from any possible shock or fire hazard.



Outdated Electric Panels Can't Handle Current Electrical Needs

May Leave Homes Open to Potential Hazards

Today's society depends more than ever on electricity. Most people have at least one computer, several televisions, a stereo system, cell phones, clock radios, and the list continues. All of these devices require electricity to function. More than half of the homes today were constructed before the 1970s, according to the U.S. Census Bureau. That means more than half were built decades before many of these modern, electronic conveniences even were invented. A majority of these older homes possessed no more than 60-amp electrical service. Today, homes should have at least 150 amps.

Outdated Panel Boxes Present Major Problems

Among a variety of older panels, there are two distinct types that should be upgraded. They offer unique problems for homes. These two types of panels are fuse boxes and split-buss panels.

1. Fuse boxes were the precursor to the panel box. If an overcurrent or short circuit occurred, a fuse would pop and have to be replaced. This is where problems regularly occur. When replacing the blown fuse, especially if it routinely happens, people have been known to:

    - For example, replace a 15-amp fuse with a 20 - or 30-amp fuse. That creates a massive fire hazard; the wires are not able to handle that much electricity and heat!

    - Insert a coin, usually a penny, where the blown fuse once was. That possibly presents an even larger fire hazard! That fuse can never pop, no matter how much electricity surges through it. It leaves the home open to the potential for a fire risk.

2. Split-bus panels create unique challenges, as well. Namely, these panels do not have a main breaker; instead, they have a smaller breaker feeding the bottom half of the panel. These smaller breakers have been known to melt or burn due to the excessive demand placed on them. Today, split-bus panels probably would not be UL listed and would not be considered a safe option.

Unless it's been upgraded, electrical systems in older homes cannot safely handle the demands of today's society.

Federal Pacific Electric Panel Boxes Can Be Fire Hazards

Potentially Could Fail to Provide Proper Safety and Protection for Homes

The Federal Pacific Electric Company (FPE) was one of the most common manufacturers of electrical panel boxes in North America from the 1950s to the 1980s. Millions of their panels were installed in homes across the country. Over time, electricians and home inspectors found as many as 60% of all Federal Pacific Electric panels sometimes failed to provide proper protection to homeowners. Experts say that certain panels could appear to work fine for years, but after one overcurrent or short circuit, they could overheat and become fire hazards.

Federal Pacific Electric Panel Boxes Have 3 Reported Major Faults:

1. Federal Pacific Electric panels may not pass updated safety codes.

If a Federal Pacific Electric panel has been in a home for 15 years and not been serviced by a licensed electrician, the breakers may be fully depreciated. It is possible that the breakers would not properly trip and protect an electrical system from overheating!

2. Federal Pacific Electric panels may have been created with significant design flaws.

Federal Pacific Electric panels reportedly have defects not shared by other panels of similar age. For example, often certain breakers have loose connections rendering them useless. Should an overcurrent occur, the breakers could melt instead of trip.

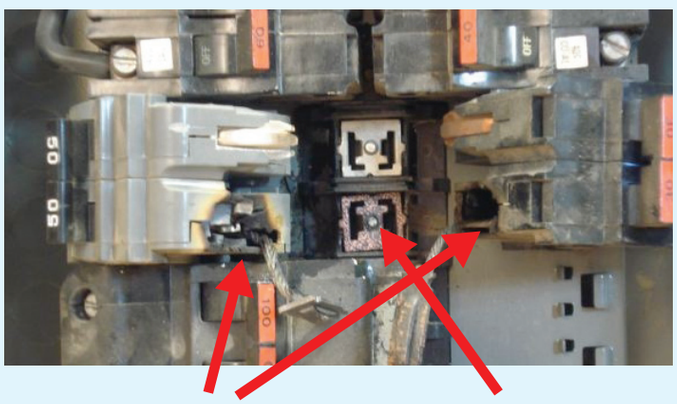
3. Federal Pacific Electric panels may have manufacturing defects.

Experts also report that Federal Pacific Electric panels may be unfit for homes because of manufacturing defects. The materials used to construct the breakers may be weak. As a result, the breakers may not trip, and the panel could be susceptible to catching on fire.

Example Of Damage Created by a Failed Federal Pacific Electric Panel

Below is a picture of a Federal Pacific Electric panel. The homeowner reportedly heard a loud pop followed by a sizzle noise and a burning smell. She called an electrician; this is what was found.

The homeowner had no way of knowing that too many electrical devices were plugged into one room. The devices required more electricity than the circuit could provide. The wiring severely overheated. Normally, a breaker would trip to cut off electricity and prevent a fire. The panel's breakers did not trip. Two breakers burned, as well as a bus bar.



Burned breakers Burned bus bar

Federal Pacific Electric panels cannot always be counted on to protect homes from overcurrents or short circuits that could result in a fire.

Expert Opinion on Federal Pacific Electric (FPE) Circuit Breaker Panels

"The presence of a Federal Pacific panel in a home should be classified as a 'Safety Defect'. The Federal Pacific breakers are primary safety devices of questionable operating reliability. The breaker's function is to stop certain electrical sequences that could lead to fire in the building. If an electrical fire hazard develops somewhere in the building, the breaker is supposed to trip and minimize the possibility of fire ignition. If the breaker is defective, fire is more likely to result.

"There is no question that the Federal Pacific Stab-Lok® panels should be replaced. There is no practical and safe alternative."

Dr. Jesse Aronstein BME, MSME, PhD
Consulting Engineer Specializing in Mechanical and Materials Engineering
Federal Pacific Electric Stab-Lok Electric Panels and Circuit Breakers: Information for Inspectors and Homeowners

Examples of Damage Created by Federal Pacific Electric (FPE) Panels:

The e-mails below were sent to Dr. Jesse Aronstein from homeowners and electricians regarding their experiences with Federal Pacific Electric panels. Aronstein included 50 of these accounts in a letter to the U.S. Consumer Product Safety Commission. Here are excerpts from several of those emails:

E-Mail 8/7/99 *"Last month a co-worker was responding to an apartment maintenance request... He found the breaker on... and no lights… Thinking that there was a loose connection at the first fixture he returned to the shop for a ladder. What we didn't know was that the problem was a short and that the Federal Pacific breaker had failed to trip. We never had a chance to return with the ladder, the fire department interrupted our repair. Nobody was at home so nobody was hurt. Five homes were left uninhabitable and the damages will probably reach $500,000..."*

E-Mail 7/12/02 *"We had a fire in my home Tuesday due to over-current and Federal Pacific Electric Stab-Lock Panel 100amp service. The panel failed to trip and fire occurred within a wall. We have been in this home one month. The home was inspected and we were given no warning about Federal Pacific Electric panels..."*

NEWS FLASH

Federal Pacific Electric Committed Consumer Fraud By Fraudulently Placing The "Underwriters Laboratory" Seal Of Approval On Its Circuit Breakers

Judge Bryan D. Garruto of the New Jersey State Court held that Federal Pacific Electric "violated the Consumer Fraud Act because FPE ***knowingly and purposefully distributed circuit breakers which were not tested to meet UL standards as indicated on their label*** . . .."

Yacout v. Federal Pacific Company, et. al., Docket No. L-2904-97.

Zinsco Panel Boxes May Produce Dangerous Situations

May Leave Homes and Homeowners at Risk

Many Zinsco panels are obsolete today. However, at one time, they were extremely popular and installed in many regions throughout North America. As time has passed, some electricians and home inspectors have discovered that certain Zinsco panels often can fail to operate properly as much as 25% of the time and may leave homes and homeowners at risk to both fire and electrical shock.

Zinsco Panel Boxes Have 3 Reported Major Faults

1. Zinsco panels may not pass updated safety codes.

A leading expert on panel safety says that older Zinsco panels would not receive today's UL listing. These panels would not be allowed to be sold to the general public because they no longer pass current safety codes. Safety standards that were once acceptable years ago are no longer considered safe.

2. Zinsco panels may have been created with significant design flaws.

Zinsco panels reportedly have defects not shared by other panels of similar age. For example, often certain breakers have loose connections rendering them useless. Should an overcurrent occur, the breakers could melt instead of trip.

3. Zinsco Electric panels may have manufacturing defects.

Experts have identified design flaws in older Zinsco panels that may not be shared with other panels of similar age. For example, some components are aluminum; the connection between the breakers and buss bar may not be solid; and breakers can appear to be off, yet internally the panel still allows power to flow to the house.

Damage Created by a Failed Zinsco Panel Box

Problems with certain Zinsco panels cannot be seen by the naked eye. Even after the cover of Zinsco panels has been removed, everything can seem to be in fine working order. Upon exploring its components, electricians find that breakers cannot be removed from the buss bar. They've welded together, which indicates that the breakers have melted. In that condition, a breaker would be unable to trip and may be allowing an unsafe amount of electricity into the home! This could lead to a potential fire.

Please, do not attempt to remove breakers from your own panel to see if they've melted. Only licensed electricians should. Zinsco panels can be electrical shock risks; they can appear to be shut off but are still conducting electricity!

Some Zinsco panels may contain hidden damage that cannot be easily seen. Only professional electricians should explore the panel due to the risks of electric shock.

Expert Opinion on Zinsco Panels

"These circuit breakers do not offer the level of overcurrent and fire protection provided by most other electrical panels and circuit breakers. This equipment presents greater risk of fire or other electrical hazard. Where Zinsco electrical panels are discovered in buildings, they should be replaced to reduce some very real fire and shock hazards.

"Where Zinsco electrical panels and Zinsco circuit breakers are in use, arcing, contact-point burn, and even circuit breaker case blow-out have been observed in the field. A principal Zinsco circuit breaker point of failure appears to be at the point of contact where the circuit breaker contacts clip onto the electrical panel bus, combined with the use of an aluminum electrical panel bus."

Dan Friedman
Educator, author, and building failures researcher
http://www.inspect-ny.com/fpe/fpepanel.htm

Examples of Damage Created by Zinsco Panels

The following accounts were sent to Dan Friedman from electricians regarding their experience with Zinsco panels. Here are excerpts:

9/2/2003 *I was at a site to do an estimate and noticed a Zinsco panel. I asked the customer if it was alright to check it, and he agreed. He said the only trouble he knew about was the water heater didn't always give them real hot water. I pulled the panel cover off and everything looked okay. I checked the breakers with a volt meter, and it had proper voltage at all the circuits. Then, I started (carefully) removing breakers and found the top (water heater circuit) breaker had welded itself to the buss and came apart when I tried to remove it. (This could be very dangerous for a homeowner or home inspector!) I removed several other breakers and found them to be badly damaged, and the bussing was burnt in several locations. After seeing the situation it was not hard to convince the owner that it was time to replace the Zinsco panel.*

5/15/2003 *- I was asked to look at this customer's home to give them an estimate to replace a Zinsco panel. The panel looked okay, but when I removed some of the breakers, I found signs of degradation on the buss. The breaker next to it also had started deteriorating. They had not failed yet or caused the customer any noticeable problems. I then tried to remove another breaker, and it would not come out. The breaker was welded onto the buss so bad that the buss started to come out with the breaker. I pushed the breaker and buss back into place and let the customer know that he had a serious problem that needed to be addressed as soon as possible.*

4/15/03 *– I recently stumbled upon a Zinsco and asked the customer if it was okay to inspect. With the okay, I proceeded to pull the cover off. The breakers and panel looked to be in great shape. There was no obvious heat damage or signs of conductor damage. Upon removing the breakers, I found serious damage to the breakers and bussing. One had become welded to the buss. Another breaker fell apart when I tried to remove it. The panel did not have a main breaker, so there was no way to shut off power to the top section! This could have been extremely dangerous if a homeowner had tried to remove the breaker to replace it, or check it.*

Outdated and Potentially Hazardous Panels Should Be Inspected Immediately

The panel box is one of the most important parts of a home's electrical system. It constantly distributes and receives electricity. The breakers in panel boxes are designed to protect homes from overcurrents or short circuits and any possible damage they may create. With regular maintenance by a licensed electrician, experts say that today's electric panels can function properly and protect homes for 30 years or more.

If you suspect that you may have a Federal Pacific Electric panel, an older Zinsco panel, an outdated panel in your home, or in any event, you have not had your panel inspected recently, experts recommend that your panel be inspected immediately by a qualified licensed electrical contractor in your area.