

Help protect  
your home,  
possessions  
and family.

A guide to your  
Square D® electrical  
distribution system

Make the most of your energy™



# Understanding your home's electrical distribution system

As one of the most important systems in your home, your electrical system is essential to your daily life.

At the heart of this system is the load center, an electrical panel that includes circuit breakers, which help protect you and your home 24 hours a day from electrical shock, fire and other damage that could be caused by overloads or short circuits. In the event of an electrical fault, the circuit breakers automatically "trip" to cut off the potentially dangerous current.

**Homeline®** Load Centers provide a smart choice for value and performance-minded homeowners with a variety of value-added features and accessories.

**QO® Load Centers** offer premium features, including QO breakers with exclusive Visi-Trip® indicators that provide a clear and instant identification of a tripped circuit breaker. This helps to reduce maintenance calls because you can easily spot and reset a tripped circuit and reduce the chance that other circuits will be turned off accidentally.

Other devices, such as Ground- and Arc-Fault Interrupters and secondary surge arresters, can be installed in your electrical panel to reduce the chance of electrical shock or damage to appliance and electronic equipment.



Load centers and circuit breakers are designed to distribute power from your electrical utility to many loads (circuits) throughout your home. The wiring within your walls rely on this system for 24-hour electrical service. Your appliances and electronic equipment rely on surge protection and arresters to help protect them.



Added electrical  
protection for your home



## The following items may be installed in your Homeline or QO load center:

### Help protect against harmful electrical shocks caused by ground faults.

Ground-Fault Interrupters (GFIs) are required in parts of the home where electricity could possibly come into contact with water, such as bathrooms, kitchens, patios and garages.

**GFI circuit breakers** combine ground fault protection with the functions of a standard circuit breaker. Located in the load center, these breakers can provide ground fault protection for circuits with receptacles, as well as for larger loads such as hot tubs and spas. GFI receptacles combine ground fault protection with a plug outlet. These devices can provide protection to items plugged into the outlet as well as protect other plug outlets that have been wired directly from the GFI receptacle.



**To Test:** Push the test button located on the Square D® GFI circuit breaker or receptacle. If it trips, it's working properly. If the device fails the test procedure, consult your builder's warranty. Remember to reset the GFI breaker by first moving the handle to the OFF position and then returning to the ON position.

### Help protect against fires caused by arc faults.

According to the National Fire Protection Association, electrical arcing is the source of ignition in more than 30,000 fires each year. These fires cause hundreds of deaths and injuries and more than \$750 million in direct property damage.

**AFI and AFCI circuit breakers**, such as the Square D® Arc-Fault Interrupter, protect against threatening arc faults caused by worn or damaged electrical cords and wires. AFI circuit breakers can be added to your Square D load center to provide protection to any location in the home, effectively stopping the flow of current during most arcing events before a residential fire can start.



**To Test:** To test the Square D Arc-Fault Interrupter, turn OFF all loads downstream of the circuit breaker. Make sure power to the electrical panel is ON and the circuit breaker handle is in the ON position. Push the green test button on the circuit breaker. If the circuit breaker is operating correctly, it will trip, and the handle will move to the tripped (center) position. Remember to reset the AFI circuit breaker by moving the handle to the OFF position and then back to the ON position.

# Help protect against power loss and power surges



You may consider adding these devices to your home for power to selected circuits during a utility power outage.

## Connect a backup power generator

Your home can lose power for a variety of reasons – from summertime brownouts to severe storms. A Square D Generator Panel can connect critical circuits, such as lighting and heat, to a backup power source. Ask your builder, contractor or local Square D supplier for further information on Square D Generator Panels and the right backup power source connection option for you:

- Simple backup from a portable generator.
- Expanded backup from your existing Square D electrical panel from either a portable or pad mounted generator.
- Automatic backup for your entire home with a pad mounted generator.



## Help protect home electronics from damaging surges.

Surges can enter your home's electrical system externally (e.g., lightning or utility surges) or can be generated within the home by other equipment or appliances. These internally created surges are even more common than external ones and can damage connected equipment, like your television or personal computer.

**Surge protectors**, such as the Square D Surgebreaker Plus Whole House Surge Protector, can create a blanket of surge protection throughout your home, for electrical, cable and phone systems by protecting at the service entrance location.



**To Test:** Check the green light on the AC section of the Square D Surgebreaker Plus device periodically to ensure that it is illuminated. If the green light goes out, it indicates that AC power, coaxial cable and telephone protection has been lost.

**Surge arresters** help protect against power surges and should be used in conjunction with plug-in type surge suppressors located at the electrical outlet(s). A surge arrester, such as the Square D® Surgebreaker® Secondary Surge Arrester, helps protect electrical wiring and reduces power surges to a level that plug-in suppressors can handle.



**To Test:** To test a Square D Surgebreaker Secondary Surge Arrester, look for the green LED indicator light on the front of the unit. If the light is on, the unit is operational. If not, the unit should be replaced. Always check the surge arrester after a storm to make sure it is still working.

**Surge suppressors** are located at the electrical outlet and help protect computers and electronic equipment throughout your home, and include APC SurgeArrest® surge protectors, audio-visual protectors, and battery backups. Surge suppressors help provide limited protection for individual equipment only and are not designed to safeguard your home's wiring or electrical panel.



**To Test:** Check the green indicator light periodically to ensure the surge protector helps protect equipment from harmful electrical surges. If the indicator does not illuminate when the unit is turned ON, the unit is no longer able to help protect equipment.

# Troubleshooting your electrical system



## > Lights won't work?

It may sound obvious, but make sure the light switch is in the ON position, especially if the light is controlled by more than one switch or plugged into a receptacle that's controlled by a light switch. A burned-out bulb is another obvious, but often overlooked, culprit.

If the switch is on, and the bulb is good, you may have a tripped circuit breaker. Go to your load center and look for a breaker that's in the tripped or OFF position via the orange Visi-Trip indicator. Always make sure no one is working on the electrical system, then firmly move the tripped handle to the OFF position and then back to the ON position.



## > Lights flickering?

Start-up of certain appliances, such as air conditioners and shop tools, may cause a slight flicker or blinking of the lights. A brief occasional flicker is normal. However, if permanent dimming occurs, or usage of a particular appliance repeatedly causes a circuit breaker to trip, that may be a warning signal that your electrical system is overloaded or something else is wrong.

## > Receptacles aren't working?

Check to see if a light switch controls power to the receptacle, and keep in mind that a different wall switch may control each socket of the receptacle. Next, go to the load center and check for a tripped circuit breaker.

If the problem receptacle is located in the kitchen, bathroom, garage or outside, it may be a Ground-Fault Interrupter (GFI) or Arc-Fault Interrupter (AFI). The GFI may be in the form of either a GFI wall receptacle (or downstream of a tripped GFI receptacle) or a GFI circuit breaker in the load center. If it's a receptacle, you'll see a reset button on the face of the receptacle – push that button to reset the unit. If it's a tripped GFI circuit breaker, reset by moving the handle to the OFF position and then back to the ON position. The AFI is provided only by circuit breaker protection in your load center. If it's a tripped AFI breaker, reset as described above for the GFI breaker.



# Troubleshooting your electrical system

## > Air conditioning quits?

Oftentimes, a blown fuse can be the cause of an air conditioning unit not functioning. Check the outdoor air conditioning disconnect to be sure it is in the ON position. Then, check your load center for a tripped circuit breaker. Make sure no one is working on the electrical system, then firmly move the tripped handle to the OFF position and then back to the ON position.

## > Circuit breaker tripped?

Usually a circuit breaker trips because it detected a problem. So before resetting the breaker, look for any obvious reasons for the tripping, such as an overload or short circuit caused by damaged appliance wiring. If none are obvious, reset the breaker. Do not repeatedly reset the breaker without resolving the cause of the tripping. You may have overloaded circuits or a problem in the permanent wiring, appliances or power cords.

**If a problem persists after following these basic maintenance and troubleshooting tips, consult your electrical contractor or professional for additional assistance.**

### **Electrical system general maintenance tips:**

- ✔ Test your Ground-Fault Interrupter (GFI) receptacles, GFI circuit breakers and Arc-Fault Interrupter (AFI) breakers once a month (see pages 4 and 5).
- ✔ Visually inspect surge arresters or protectors periodically and after major storms (see section on surge protection on pages 6 and 7).
- ✔ Even if your smoke detector is hard-wired to your load center, you should push the test button weekly and replace the backup batteries annually. Consult your smoke detector manual for directions.
- ✔ Avoid pushing furniture against or placing on electrical cords. This can damage the cords and become a potential hazardous condition for arcing faults.

AUTO



DOWN

TEMPERATURE

UP

# Your electrical distribution system is no place to compromise

- Square D® load centers, combination service entrance devices and generator panels carry a ten-year limited warranty.
- Square D circuit breakers carry a lifetime warranty when used for residential applications.
- Square D products consistently exceed standard requirements and provide unmatched quality and performance.
- Builders and electrical contractors choose Square D two-to-one over any other brand!

