



FRM-SCS.009

# ELECTRIC PRESSURE COOKERS

## WHAT CONSUMERS NEED TO KNOW

The new electric pressure cookers (EPC) are currently dominating the consumer small appliance market. Why? Consumers see them as a way to streamline the cooking process. Manufacturers promote them as appliances that make cooking easier, faster, smarter and healthier. But what exactly is pressure cooking and how can consumers benefit from using this innovation in small appliances?





## BENEFITS OF ELECTRIC PRESSURE COOKING



Pressure cooking and pressure canning are not the same. A pressure cooker should never be used for canning.

Electric pressure cooking is healthy. Fresh meats and vegetables can be cooked in a very short period of time, reducing nutrient loss and packing in flavor. Busy cooks no longer have to rely on processed, pre-cooked frozen foods and foods high in preservatives in order to make a quick meal.

Electric pressure cooking is safe. Thanks to a microprocessor in the housing of the appliance, the electric pressure cooker sounds a warning if the pressure buildup in the inner pot becomes too great. Likewise, if the temperature becomes too hot, there

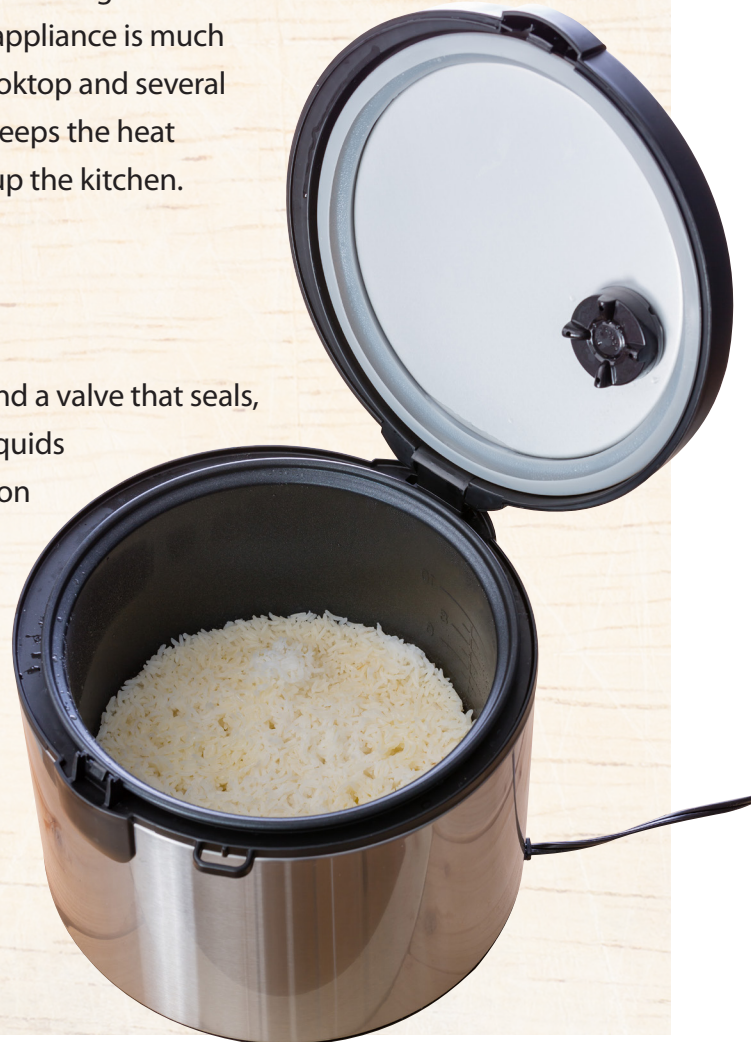
is a circuit breaker in many models that will actually turn off the electrical power to the appliance. There is very little chance that the electric pressure cooker will explode if used properly and not filled over its capacity.

Electric pressure cooking is energy efficient. Reduced cooking times mean more efficient cooking, and the use of just one small appliance is much more energy efficient than combining the use of a cooktop and several small appliances. In addition, the insulated housing keeps the heat concentrated inside the appliance, so it doesn't heat up the kitchen.

## COMPONENTS OF AN ELECTRIC PRESSURE COOKER

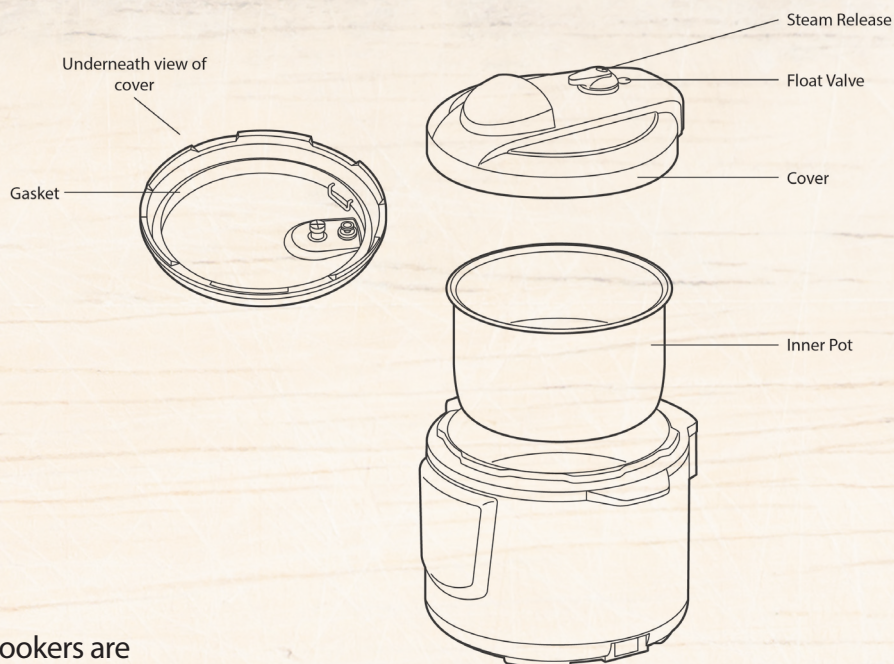
A pressure cooker is simply a pot with a lockable lid and a valve that seals, to control the pressure created inside the pot when liquids are heated. Although there are many brands of EPCs on the market, the key parts are very similar. Consumers should be familiar with the main parts, in order to use the electrical pressure cooker properly.

**HOUSING AND/OR EXTERIOR POT** - The outer pot holds the controls, sensors, and heating elements of the electric pressure cooker. It should be wiped clean with a soft cloth when soiled. It should never be immersed in water!





**INNER POT** - This removable stainless-steel pot holds the food to be cooked. It is dishwasher safe or can be washed by hand. Some models have a non-stick coating on the inner pot. An option for consumers is to purchase an extra inner pot, so that the electric pressure cooker can be used to prepare two different food options for one meal. The inner pot should never be more than 2/3 full when pressure cooking.



**CONTROLS** - Most electric pressure cookers are truly multi-cookers, which have a variety of pre-set controls for making yogurt, soups/stews, rice, and cooked oatmeal, as well as other foods. Although these settings are convenient, the multi-cooker can also be programmed manually for these items, and many cooks find this option is just as easy. Most electric pressure cookers have a high and low pressure setting. Most recipes call for high pressure.

**LOCKING COVER** - The lid of the electric pressure cooker has several key features. The cover has a locking mechanism that will not allow you to open the cover when the pot is under pressure.

**SILICONE GASKET** - This gasket assures the lid is properly sealed. It can be removed and washed in the dishwasher. The silicone gasket should be washed after each use and checked for small cuts or tears. Be certain the gasket is fitted properly inside the cover prior to each use. This gasket will absorb food odors, so having two separate gaskets - one for sweet foods and another for savory - would be a good investment. Storing your cover upside down, as opposed to locked on the pot, will also help prevent food odors.

**STEAM RELEASE** - On the top of the lid is a valve that can be opened and shut to control the build-up of pressure inside the cooker. The valve is closed during the pressure cook cycle, allowing the pressure to build up inside the cooker. When the cooking cycle is complete, the valve can be opened to eliminate the pressure and release any steam that has built up inside the cooker. Most recipes will indicate either to open the valve immediately after the cooking cycle, known as a quick release, or will call for a natural pressure release. A natural pressure release allows the steam to release slowly without opening the valve. If the recipe does not recommend a time frame to natural release, the general recommendation is to open the steam release after ten minutes.

**FLOAT VALVE**. Another valve on the top of the lid indicates when the pressure has built up sufficiently to cook the food. This float valve is open until the pressure inside pushes it shut. When the float pops up, the valve is shut, and pressure is maintained inside the cooker. When the cooking cycle is complete, and the steam release is opened, the inside pressure diminishes, allowing the float valve to recede back into the lid.





## HOW DOES AN ELECTRIC PRESSURE COOKER WORK?

As the liquids heat up in an electric pressure cooker, steam is formed. That steam is trapped inside the pressure cooker, which increases the internal pressure. As the pressure increases, the temperature inside the cooker increases beyond the boiling point, up to 250 degrees F. Because the cooking temperature is higher in a pressure cooker, the cooking time drops significantly. In addition, the high pressure inside the cooker “pushes” the moisture into the food, making it not only cook faster, but taste more flavorful. Meats cooked in the electric pressure cooker come out extremely juicy and tender. Rice can cook in five minutes instead of twenty, and pasta is perfectly cooked in five minutes as well. Soups and stews can cook quickly, but taste like they have simmered for hours.

## WHAT HAPPENS INSIDE THE ELECTRIC PRESSURE COOKER?

Food is placed in the inner pot of the EPC with enough liquid to create sufficient steam when the appliance heats up. Once the lid is locked on to the top of the cooker, the locking system and silicone gasket keep the pressure from escaping and the lid from opening when the pressure cooker is in use. A heating element in the bottom of the appliance transfers heat to the internal pot when the lid is locked, and the appliance is turned on.

As the pressure cooker heats up, the pressure inside builds, causing the internal temperature to rise. The float valve on the top of the pressure cooker, which is normally open, is pushed upward by the steam inside and closes, trapping the pressure inside the cooker. The food is cooked at high heat and under tremendous pressure, greatly reducing the cooking time. The control center in the electric pressure cooker housing monitors the temperature and pressure controlling the time, heating and cooking cycle. When cooking is completed, the steam release valve opens and the pressure inside the cooker is released. The lid can be opened, and the food inside is ready to be served.



## HOW DOES AN ELECTRIC PRESSURE COOKER STREAMLINE THE COOKING PROCESS?

Not only does an electric pressure cooker make cooking a meal faster, it also makes the whole cooking process more efficient. Many EPCs include a sauté option. Many recipes call for browning meat or caramelizing onions as a first step. That can be done in the electric pressure cooker on the sauté setting. Then, add remaining ingredients and sufficient liquids and set to cook under pressure. Often the pot will need to be deglazed after sautéing and prior to utilizing the pressure cooking function. To deglaze the pot, pour a small amount of the additional liquid you will be using for the recipe into your pot. Use a spatula or spoon to remove any bits that may be stuck to the bottom of the pot. Many pots have a safety feature/burn notice that will shut off pressure cooking if anything is stuck to the bottom of the inner pot. Following the pressure cooking cycle most multi-cookers will switch to the keep warm setting. The keep warm function on the electric pressure cooker will keep the food hot until ready to serve, much like a simmer setting on the stovetop.

Electric pressure cookers are very easy to clean. Although the housing cannot be submerged in water, on most models all the other parts of the appliance - the inner pot and the cover - are dishwasher safe. Please check your owner's manual for specific cleaning recommendations for the brand you are using.

Many electric pressure cookers have a time delay start function which can be programmed to begin cooking at a desired time. Always follow food safety recommendations when using this feature, perishable foods should not be left at room temperature for longer than two hours. Also remember, unlike a slow cooker, the electric pressure cooker should never be set to begin cooking when not attended.



The electric pressure cooker can eliminate the need for other small appliances and reduces the use of the stovetop range. The sauté option streamlines the cooking process and eliminates the need to use an electric skillet or frying pan on the stovetop. Many models have a slow cook option, so the appliance can be used as a slow cooker. The electric pressure cooker makes rice comparable in quality to a rice cooker, and it can may also be used to prepare oatmeal, boiled eggs, bake desserts, and perform many other cooking functions reserved for the range or other small appliances. It is truly a multi-functional appliance in the broadest sense.



## CONCLUSION

The electric pressure cooker has revolutionized the preparation of quick and easy meals for busy households. It provides individuals and families with a multi-functional small appliance that is easy to use, energy efficient and safe. In addition, there are now numerous websites and cookbooks that have a variety of recipes specifically developed for use with the electric pressure cooker. The versatility of the electric pressure cooker makes it an ideal cooking appliance for any household, but especially for those who are looking for quick and healthy ways to prepare meals.



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## RESOURCES

Consumer Reports. <https://www.consumerreports.org/kitchen-appliances/electric-vs-stovetop-pressure-cooker/> Accessed February 5, 2018.

Discover Pressure Cooking. <http://discoverpressurecooking.com/history.html>

National Presto Industries, Inc. Accessed January 15, 2018.

Instant Pot. <https://instantpot.com/portfolio-item/benefits-of-pressure-cooking/> Accessed February 17, 2018.

Instant Pot. <https://instantpot.com/portfolio-item/how-electric-pressure-cookers-work/> Accessed January 17, 2018.

Modernist Cuisine. <http://modernistcuisine.com/2013/02/how-pressure-cookers-work/>. Accessed January 17, 2018.

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