

PROCESS DESCRIPTION OF REPLACING A DAMAGED TOILET FILL VALVE STANDARD FOR AN EDUCATED OBSERVER

by
Bethany G. Roberts

INTRODUCTION

Replacing a damaged fill valve is a process in which plumbers remove a broken fill valve from a toilet tank and replace it with a new one. Fill valves refill the toilet's water tank after flushing.

Damaged fill valves cause two common problems since the fill valve keeps the toilet from overflowing. A damaged fill valve will produce strange noises, such as a hum or scream. The most notable issue is overflowing toilets. Plumbers replace broken fill valves to avoid these overflowing toilets and any further issues they may cause, such as water damage to the bathroom itself. Replacing a damaged fill valve is a much cheaper and faster option than repairing water damage to bathroom floors or walls instead.

Sir John Harrington is said to have created the first modern flushing toilet for Queen Elizabeth I in 1596. If water proved to be difficult to come by and this early commode required 7.5 gallons of water per flush, Harrington noted that 20 people could use the two-foot-deep bowl between flushes.

Modern flushing toilets did not gain popular use with anyone other than the upper class until the Industrial Revolution. Thomas Crapper is falsely credited with inventing modern flushing toilets, but he did create the fill valve in the late 19th century. Crapper's involvement in toilet development was so iconic that American servicemen referred to toilets as "crappers."

Replacing the fill valve in a toilet involves working with an assembly, a locknut, and a shank. An assembly is a collection of parts made to achieve a greater purpose within a device, such as an engine in a car or a fill valve in a toilet's water tank. A locknut refers to a nut that will lock itself once screwed tightly enough against another part. A shank is the part of an assembly that is used to attach that assembly to something else, usually using nuts. The shank usually has a spiraled pattern like a screw.

To replace a fill valve, the plumber needs adjustable pliers, an adjustable opening wrench, a plastic bin, and new fill valve assembly package. The fill valve assembly package should include a fill valve assembly, a refill tube, a locknut, and gaskets.

Once the fill valve is successfully replaced, the toilet should flush with no strange noises or overflowing water. The water should refill to an inch below the top of the tank.

The plumber should replace the fill valve again after five years at the latest. Any further wait before replacing the fill valve may allow the assembly to begin disintegrating and tearing down, causing further issues with the toilet.

There are four phases to replacing a damaged fill valve: removing the old assembly, installing the new assembly, adjusting the refill hose, and refilling the tank.

REMOVING THE OLD ASSEMBLY

Removing the old assembly will dispose of the broken parts and allow room for the new assembly to be installed. The plumber should be prepared for draining water throughout this phase.

The toilet lid will be removed to fully see the fill valve inside of the water tank. The plumber will empty the tank of all water by turning off the water supply hose located at the base of the water tank and behind the seat. A plastic bin will be placed underneath the water supply hose to collect any draining water throughout this process. The plumber will then unscrew the water hose from the base of the tank using the white plastic cap against the tank's base. The plastic bin will catch any draining water while the plumber works.

Adjustable pliers or an adjustable opening wrench will be used to unscrew the locknut from the fill valve shank at the base of the water tank. This will fully release the damaged fill valve and allow the plumber to remove it from the water tank.

While using adjustable pliers, the plumber will be sure to push outward with the pliers instead of pulling them towards himself. This will keep the pliers from slipping out of the plumber's hands and/or crashing into the toilet, avoiding potential injury. This will also keep the plumber from accidentally stripping the locknut.

The plumber will put the old assembly into the plastic bin before proceeding, as the old assembly may continue to drip water.

INSTALLING THE NEW ASSEMBLY

Installing the new assembly involves securing a new fill valve within the water tank. This step requires more attention, but should ensure the water tank will refill appropriately for five years maximum. Plumbers encourage replacing fill valves every five years to keep the valves from deteriorating and causing issues.

The new fill valve assembly will be adjusted to fit the new water tank. This assembly should keep the water one inch below the edge of the tank.

The threaded end of the new assembly will be placed into the hole at the bottom of the water tank from which the old assembly was taken. The plumber will hold the new assembly upright within the water tank itself while screwing the locknut onto the threaded end of the assembly by hand.

After getting the locknut screwed on as tightly as possible, the plumber will use adjustable pliers to create a watertight seal by adding a quarter turn more to the locknut. As stated earlier, the plumber will be careful not to harm himself while using the adjustable pliers by pushing outward, instead of pulling towards himself.

The plumber will attach the water supply hose to the fill valve shank by replacing the hose cap to the shank outside of the tank. The plumber will then screw the white cap back on to the shank by hand.

ADJUSTING THE REFILL HOSE

Adjusting the refill hose properly will keep the water tank from refilling too much or too little. If the refill hose goes below the tank's water line, then the water will constantly drain from the tank and create more issues.

After installing the new assembly, the plumber will put the refill hose into the overflow tube located towards the center of the water tank. The new assembly kit should include a metal clip or adapter to keep the refill tube from going below the water line. The plumber will use the metal clip or adapter to measure and trim the refill hose.

REFILLING THE TANK

Once the new assembly is installed and the refill hose is adjusted, the plumber will turn on the water supply valve to the toilet. The plumber will then adjust the fill valve using the adjustment clip on its side.

The plumber will check the water supply hose to ensure there are no leaks after installing the new assembly. Finally, the plumber will replace the toilet lid to indicate the project is finished.