



Utility Sentry

High Water Usage

Leaking toilets cause more water waste than any other fixture in the home. Even a silent toilet leak (one you normally can't hear) will waste from 30 to 500 gallons of water per day. The ones you can hear will waste much, much more.

WOMAN SHOCKED BY \$1600.00 WATER BILL

MINNEAPOLIS – A woman received a \$1,600 water bill; 20 times the woman's usual bill of \$70 to \$80 per month. The city determined she had a running toilet. (Associated Press: February 21, 2010)

DALLAS- Though no obvious leak was apparent, the Service Manager replaced the flappers and fill valves in unit identified as high usage by Utility Sentry. Resident stated that this service was above and beyond anywhere she has ever lived. (Bell Valley Ranch: March 22, 2013)

WHAT CAN LEAK?

It's not enough to just know your toilet is leaking; you also need to know what part is leaking. Here is a list of the most common places inside the tank that can leak into the bowl.

A worn out flapper or ball.

A damaged seat under the flapper

A damaged gasket under the flush valve

A hole or crack in the overflow tube

A refill valve (ballcock) that needs a new seat or washer

SIGNS OF A LEAK

There are a number of signs that a toilet needs some repairs, but many toilets leak without conspicuous indications of trouble.

Here are some of the more obvious signs of a leaking toilet:

- Tank is constantly sweaty
- Having to jiggle the flush handle to make a toilet stop running
- Sounds coming from a toilet that is not being used
- Having to hold the flush handle down to allow the tank to empty
- Water running over the top of the overflow. To determine whether or not water is running over the top of the overflow pipe sprinkle talcum powder on top of the water in the tank
- Water is trickling down the sides of the toilet bowl long after it's been flushed
- Water is dripping out of the refill tube into the overflow pipe
- Phantom Flush - If a toilet turns the water on for 15 seconds or so without touching the handle.

RUNNING TOILET

The most common problem is that the chain connecting the flush handle and the flapper valve is not adjusted properly and gets caught under the flapper valve preventing a good seal. The water continually leaks out of the tank and therefore the tank continually attempts to refill. Another issue occurs when some part of the flush mechanism catches on another part. This is not

uncommon, especially if a ball float is used. The ball float may catch on the trip lever, or even the flapper itself. If neither is the case the flapper valve may be worn out.

If the toilet is **running**, and the constant filling is on and off, then it could be one of several things:

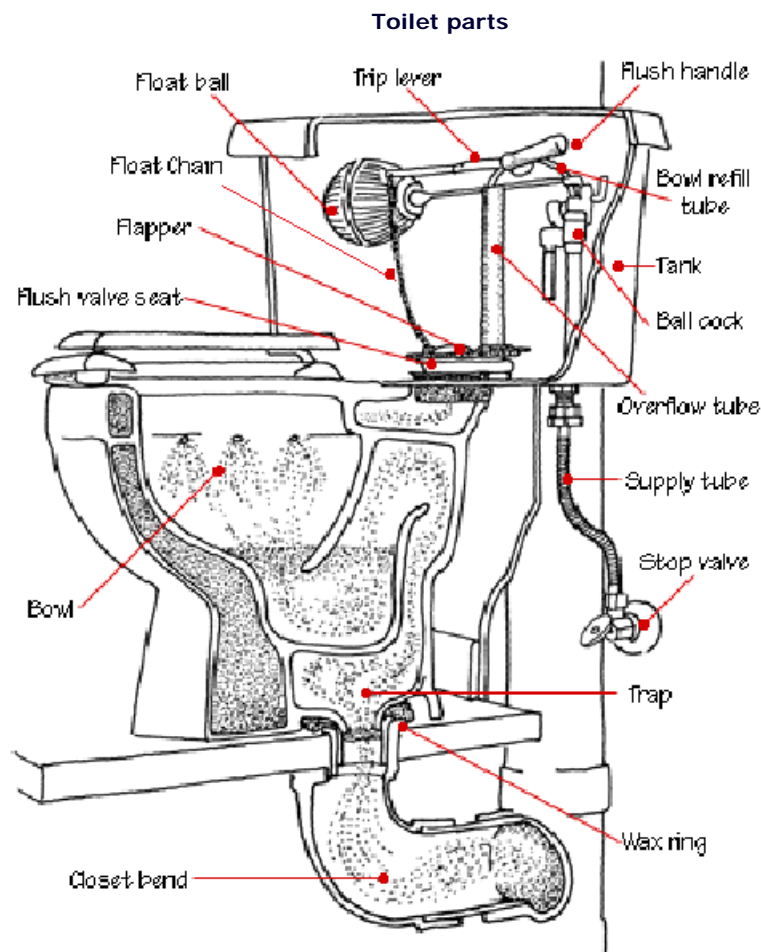
- The flapper valve warped or not closing.
- The float chain could be caught under the flapper.
- The bowl refill tube siphoning (the bowl refill tube is too far down into the overflow tube in the tank, resulting in a constant cycle partially draining and filling the tank)
- The flapper/flapper seat is dirty or has buildup.

If the constant filling is non-stop, then it could be:

- The float ball could be catching or hanging up on something.
- The float chain could be caught under the flapper.
- The ballcock valve has sediment in it and needs to be cleaned out.
- The ballcock valve has failed and should be replaced.
- A water logged float ball.

GET TO KNOW WHAT'S IN YOUR TOILET

Mechanisms vary, but they all work on the same principles. Flush your toilet a couple of times while you watch in the tank with the tank lid off to observe the process.



Tank — The tank is the top portion which holds either the freestanding water to be flushed (gravity-fed).

Bowl — The bowl is the lower half of the toilet used to hold liquid and solid wastes prior to flushing.

Wax Ring - The yellowish beeswax (or beeswax type material) ring between the bottom of your toilet bowl and the closet-ring.

Ballcock (Fill Valve) - The mechanism inside the tank (left-hand side) with a float connected to it by means of a metal rod or plastic arm. Or a float that slides up and down the tube/barrel of the mechanism itself.

Float Ball - The bulb-shaped sphere on the outer end of the float rod/arm OR the can-shaped float that slides up and down over the fill valve tube.

Trip Lever - The metal rod or plastic arm that connects the ballcock's float to the shut-off lever on the ballcock valve itself.

Flush Valve Seat - The mechanism directly in the center inside the tank.

Refill Tube - This is the small plastic tube (approximately 1/8-inch in diameter) that is connected near the top of the ballcock mechanism on one end and to the inside of the overflow tube on the other end.

Overflow Tube - This is the (approximately one-inch diameter) hollow tube to which the refill tube is connected. When the water level is adjusted too high, then water will flow from the inside of the tank into this tube and into the toilet bowl.

Flapper/Flapper Seat - The flapper is the flush valve seal and controls the volume of water passing from the tank to the bowl during the flush cycle. It mates with the flapper seat to complete the seal and prevent water leaking from the tank into the bowl between flushes.

Flush or Trip Handle - This is the handle normally found on the upper left front of the tank or on the upper left side of the tank. It is the mechanism pushed or pulled to effect the flush.

Flush or Trip Lever Chain/Tail - This is the connecting link between the flush/trip lever arm and the flapper.

Stop/Shut-off Supply Valve - The valve on your wall near the base of the toilet that allows you to shut your water off,

Supply Line - This is the solid or flexible line between the stop/shut-off supply valve and the connection on the bottom of your tank.

TESTING FOR LEAKS

Even if the toilet doesn't have any of these symptoms, it's still possible that it is leaking. These leaks are known as SILENT LEAKS, because they usually go undetected.

Prior to performing any testing – check the following:

Toilets:

- Flappers should be red, green or blue. Black on any part of the flapper is disintegration and water will leak through at those areas.
- Floats should be set so that fill level is no higher than 1" below the top of the overflow tube. Fill level to the top of the overflow tube can cause a siphon effect.
- Shine flashlight inside overflow tube or sprinkle talcum powder into tank. There should be absolutely no movement of water or powder. If movement occurs- check the entire length of the flow tube for cracks.

Check for streaks in toilet bowls, sinks and bathtubs/showers. Discoloration around the faucets and shower valves is an indication of water dripping.

Check hot water heaters for temperature setting, T&P Valve, water in the drain pan and discharge from the drain pipe. Excessive hot water temperature settings will cause evaporation resulting in higher water usage.

Check for exterior hose bibs. Cap if found.

Check for cross piping with adjacent units. Contact local plumber if this is suspected for correction.

Verify ACTUAL OCCUPANCY of the unit.

Check previous work orders to see if possible issues may have already been corrected. (Billing is usually generated from meter reads from 6 to 8 weeks earlier).

TESTING

The easiest way to determine if toilet is leaking is to perform a **dye test**.

1. Remove the cover on the toilet tank. Remove any "in-tank" bowl cleaners that color the water and begin the test with clear water in the tank as well as in the bowl.
2. Put enough dye in the tank water to give the water a deep color. (Food coloring, instant coffee or powdered fruit drink mix can be used to perform the test.)
3. Wait 30 minutes and make sure nobody uses the toilet. In 30 minutes if you find any of the dyed water is now in the toilet bowl -- **your toilet is leaking**. A properly operating toilet will store water in the tank indefinitely without any water running into the bowl.

Another simple test can be performed to determine which part of the toilet is causing the leak, the flush valve or the refill valve.

1. Draw a pencil line on the back wall of the tank on the inside of the tank at the waterline.

2. Turn the water supply off, either under the tank or at the main shutoff and wait 20 to 30 minutes.
 - If the water level remains at the pencil mark, the leak is occurring at the BALLCOCK / FILL VALVE, the unit in the left side of the tank.
 - If the water level falls below the pencil mark, the leak is in the FLUSH VALVE SEAT, the unit located in the center of the tank.

If after making repairs and there is still a leak there is one more test to further try and pinpoint the problem.

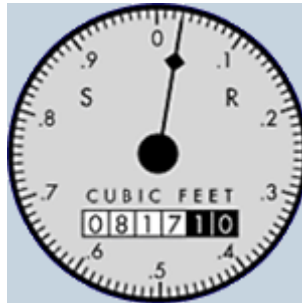
1. Turn the water off to the toilet before going to bed.
2. In the morning, check the water level.
 - If the water level in the tank has dropped drastically the flapper, flush valve seat or gasket under the flush valve seat may need to be replaced.

CHECKING THE METER

First it is important to understand how to read a water meter. The most common type of water meter is the straight-reading meter which resembles the odometer in a car.

How to Read a Straight-Reading Meter

In the meter shown below, the reading is taken from the numbers shown under the words CUBIC FEET. The meter reads 81710.03 which is the total number of cubic feet of water recorded since the meter was installed. (If a utility bills in units of 100 cubic feet the reading for this meter would be 817.)



The meter shown below is brand new, with a reading of 0.00. The small blue triangle (just to the right of the "35") is the low flow indicator. That triangle will spin if any water is flowing through the meter. This indicator is useful in leak detection.



The meter shown below, also cubic feet, is good example of a situation where the final number has already "turned over". The correct reading on this meter is: 2425.92 cubic feet. On most meters, the final digit will turn over once the big sweep hand has passed the 0.6 mark.



Using the Meter to Check for Leaks

Method 1

Turn off all water taps inside the unit. Record the meter reading and return in two to three hours to check for movement. If the meter reading has changed, there is a leak.

Method 2

Many meters have a small red (or blue) triangle on the meter face, designed to detect even small leaks. If this red triangle is moving, even slightly, when you have all water off inside your home, there is a leak.

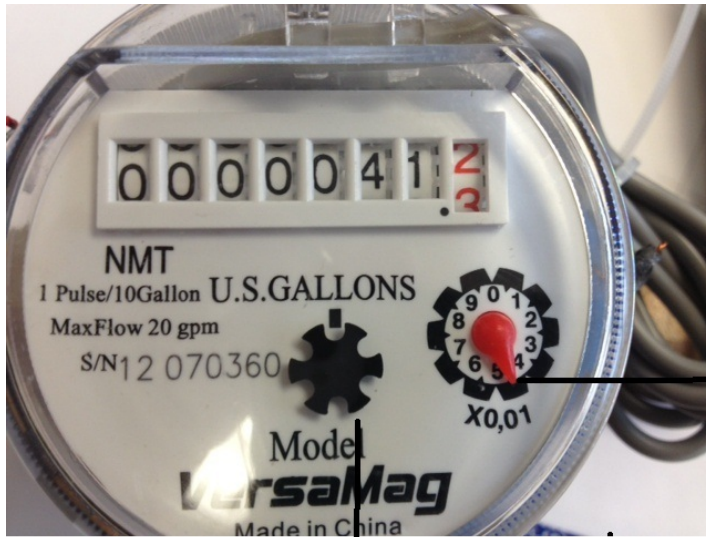
Method 3

A bucket test can be done to determine if the meter is working correctly. **However, without proper equipment/training this test is unreliable.**

Turn off all water sources inside the unit, i.e., dish washer, washing machine, faucets. Watch water meter low flow indicator (leak detector) for at least one minute. **Any movement of the low flow indicator means there is a leak which will make bucket test invalid.** Common sources of leaks are a toilet that is running, a constant drip in a sink, a loose or dripping washer connection, a home water treatment unit, an evaporative cooler unit.

Leaks must be found and repaired prior to resuming bucket test.

Mark very lightly with a marker on the meters glass cover the dial hand location.



Mark dial hand location with marker

Check for movement

Measure from one source the exact amount of water as indicated on the meter face, i.e. 10 gallons or 1 cubic foot(7.48 gallons).

The dial hand should make **one** full rotation to where marked prior to measuring water.

Ideally this test is performed with two people, one watching the meter while the other measures the exact amount of water. As an example using the above meter, the dial is sitting at 4.5, each gallon measured would move the dial hand up to the next number OR 5.5.

Important Note: It is not advisable to make adjustments to a water meter. Removal of a water meter will damage the gaskets and internal parts, voiding any warranties by all parties.