

## Buying a Toilet

In your home the toilet uses the most water—accounting for approximately 30 per cent of indoor water use.



Figure 1 Two-piece toilet



Figure 2 One-piece toilet

Prior to 1980 many toilets flushed with 20 litres of water. Then the 13-litre or “water saver” toilets became available in the early 1990s. They are still available in the marketplace. In 1996, the Ontario Building Code introduced legislation requiring 6-litre toilets for all new homes. Currently, no other province or territory has this legislation but some municipalities, such as Vancouver, have their own 6-litre bylaws. Six-litre toilets are often referred to as ultra-low-flush (ULF) toilets.

While many first generation 6-litre toilets did not perform well—today’s 6-litre toilets have been re-engineered to flush in many cases, better than their 13-litre counterparts. Typically, toilets found in the Canadian market place have been tested by the Canadian Standards Association or an equivalent lab. A list of high-performing toilets can be found in the CMHC partnered study “Maximum Performance Testing of Popular Water-Efficient Toilet Models (MaP)” (see back page). The full report can be found at [www.cwwa.ca](http://www.cwwa.ca).

### Cost and Performance

Most manufacturers produce a range of toilets to suit tastes, style, and colour.

Toilets come in a range of prices from \$100 to \$1,000 but price does not necessarily mean better water savings or improved performance.

### THE MOST COMMON TYPES OF 6-LITRE TOILETS

1. **Gravity** – 99 per cent of residential toilets are gravity type. Six-litre gravity-type toilets have a re-designed bowl to enhance the siphoning action, which pulls the water out of the bowl. It eliminates the need for a higher volume of water since it doesn't rely just on gravity to create the flush.
2. **Vacuum-assist** – These toilets have a mechanism within the tank that creates a small vacuum in the trapway to aid in the normal flush action of the toilet. These types of toilets use the same kind of early closing flush and fill valves that gravity flush toilets use.

3. **Pressure-assist** – These flapperless toilets use pressure instead of gravity to create a more forceful flush. Pressure-assist toilets are similar in action to the flush valve operated toilets commonly found in institutional and commercial buildings. They are not as quiet as the gravity toilet. The toilet utilizes a vessel inside the tank that traps air. As it fills with water, it uses the water supply line pressure to compress the trapped air inside. The compressed air is what forces the water into the bowl, so instead of the "pulling" or siphoning action of the gravity unit, the pressure-assist unit "pushes" waste out.
4. **Tip Bucket** – The tip-bucket technology uses a bucket located at the top of the toilet tank. This bucket fills up with water, when the lever is activated. The bucket then tips the water into the tank where it drains into the bowl. An advantage of the tip-bucket technology is that there are no flappers to leak or to be replaced. By incorporating an adjustable tank, this toilet can be used for 10-inch or 12-inch rough-in (distance from the bolts on the base of the toilet to the wall behind the toilet).
5. **Dual flush** – Dual-flush toilets permit the user to flush with a 3-litre flush for liquid waste and the regular 6-litre flush for solid waste thereby saving even more water. While this technology is relatively new to North America it has been mandated in Australia for many years.

### Toilet lining/insulation

Toilet tanks are prone to "sweating" when the weather is hot and humid, often resulting in a puddle of water behind your toilet. This is not a leak. As the cold water refills the tank after a flush, the tank surface becomes cooler. The sweating is caused when the humidity in the air condenses on these cold surfaces. This sweating tends not to be as much of a problem if the house has air conditioning.

Some tanks are insulated to prevent sweating. Many 6-litre tanks are not insulated, which is not necessarily a problem. They discharge only about half of the water into the tank. The cold water refilling the tank is somewhat diluted by the warmer water that remains in the tanks and therefore there is less chance of sweating.

### WHERE TOILETS ARE SOLD

Homeowners can purchase toilets from plumbing specialty stores, hardware stores, "box" stores, etc. while professional installers and builders usually purchase directly

from wholesale distributors. Most retail outlets will carry a limited number of toilet makes and models. Buyers may wish to visit a few stores to get a better idea of the various types of toilets currently available. Most toilets weigh approximately 45kg. Two-piece toilets generally come in two separate boxes—one for the tank and one for the bowl.

### REPLACING YOUR TOILET?

If you do not intend to make changes to the bathroom floor, or repaint the walls, then you need to consider:

#### Tank size

Many 6-litre tanks are smaller and may not cover the same wall area as your previous toilet. If the wall behind your toilet is unfinished, you should measure the tank size prior to shopping for a new one.

### Water Savings

For example, if you are replacing a toilet that flushes with 18 litres with a 6-litre model, and the toilet is used 10 times per day, you would expect a savings of 120 litres per day. For example,

$$(18 \text{ litres/flush} - 6 \text{ litres/flush}) \times 10 \text{ flushes/day} = 120 \text{ litres/day.}$$

Additional water economy can be achieved by installing a dual flush toilet. Field studies have shown that dual flush toilets can save approximately 25 per cent more water than a conventional 6-litre toilet.

Whether you are on a well or on municipal water, water savings can lessen the impact you make on the environment and reduce your water or hydro (for your pump) bills, and if applicable will help extend the life of your well.

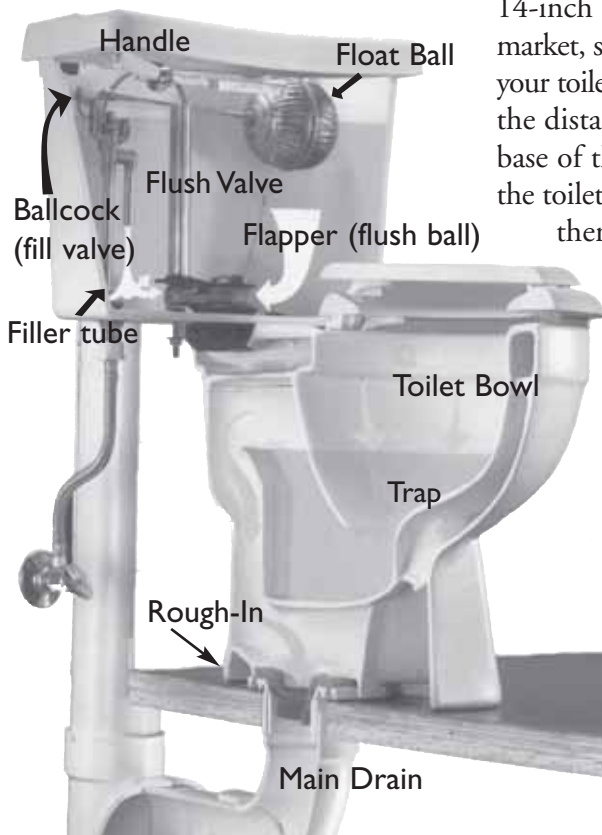
The amount of water you save will depend on:

- (a) the flush volume of the existing toilet; and
- (b) how often the toilet is flushed.

## Toilet Installation

Replacing an existing toilet tank with only a new 6-litre tank is not recommended as the bowl has not been redesigned to accommodate less water. In other words it is advisable to replace the whole toilet unit.

Toilets with larger tanks may flush with larger volumes of water, if the proprietary flapper (specific to the toilet model) is replaced with a non-proprietary flapper. This means a loss in water savings.



**Figure 3** Toilet detail

Note: There are many different names for the same parts in toilets. Some names change with the age and style of toilet. These are the most common names.

## Will the toilet fit the existing hole and cut-away in the floor?

The toilet footprint is the space that the toilet pedestal takes up on the floor. If you choose a new toilet that has a smaller footprint than your existing one, you may need to refinish around the base of the new toilet. You'll avoid this work if you choose a toilet that has a similar or larger footprint size than the one you are replacing. Measure the footprint of your existing toilet at its widest and longest point.

## Toilet rough-in

Typically 95 per cent or more of new rough-ins are 12 inch. This means the centre of the drainpipe is 12 inches from the wall. There are 10 and 14-inch rough-ins available on the market, so be sure to check first. Find your toilet's rough-in size by measuring the distance from the bolts on the base of the toilet to the wall behind the toilet (usually about 12 inches). If

there are two sets of bolts, measure from the ones closest to the wall.

## Flappers and chains

There are three types of flappers generally used in residential homes: **standard, air bleed/baffle, and adjustable float.**

## Rebate opportunities

Some municipalities offer rebate incentives, typically between \$40–\$200, to homeowners purchasing 6-litre toilets. The reasons for these programs are to reduce municipal water demands or wastewater volumes, deferring new infrastructure costs.

Adjustable float and air bleed flappers are proprietary or specific to the model of toilet. Using the wrong flapper in a toilet will change the flush volume of the toilet. This causes the toilet to flush with a greater volume of water which means little or no water savings. Typically, the flapper should be replaced every five years. Ensure that a proprietary replacement flapper is readily available, or consider purchasing a toilet with a standard flapper.

**Chain material** - The chain connects the flapper to the toilet flush lever. Chains are available in a variety of materials. Some tests have shown that rubber chains can close prematurely or stay open longer than required, leading to highly variable flush volumes. Link chains can also get twisted or “hung up”. Metal bead chains appear to provide the most consistent performance.

## Warranty

Do not put cleaning agents such as chlorine pucks or cleaners in your toilet tank, as this deteriorates the rubber flapper and plastic parts of the working pieces. Your toilet warranty will become void if these cleaning agents are used.

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