



Replacing a toilet is simple, and the latest generation of 1.6-gallon water-saving toilets has overcome the performance problems of earlier models.

YOU CAN REPLACE A POORLY FUNCTIONING TOILET WITH A HIGH-EFFICIENCY, HIGH-QUALITY NEW TOILET FOR UNDER TWO HUNDRED AND FIFTY DOLLARS, but don't, as Ben Franklin would say, be penny wise and pound foolish. All toilets made since 1996 have been required to use 1.6 gallons or less per flush, which has been a huge challenge for the industry. Today, the most evolved 1.6-gallon toilets have wide passages behind the bowl and wide (three-inch) flush valve openings—features that facilitate short, powerful flushes. This means fewer second flushes and fewer clogged toilets. These problems were common complaints of the first generation of 1.6-gallon toilets and continue to beleaguer inferior models today. See what toilets are available at your local home center in your price range, then go online and see what other consumers' experiences with those models have been. New toilets often go through a "de-bugging" stage when problems with leaks and malfunctioning parts are more common. Your criteria should include ease of installation, good flush performance, and reliability. With a little research, you should be able to purchase and install a high-functioning economical gravity-flush toilet that will serve you well for years to come.

TOILETS 101



Buy a toilet that will fit the space. Measure the distance from the floor bolts back to the wall (if your old toilet has two pairs of bolts, go by the rear pair). This is your *rough-in distance* and will be either 10" or approximately 12". Make note of the *bowl shape*, round or oval (long). Oval bowls (also called elongated bowls) are a few inches longer for greater comfort, but may be too big for your space. The safest bet is to buy a replacement with the same bowl shape.

TERMS YOU NEED TO KNOW

CLOSET FLANGE—the metal or plastic slotted ring on the floor around the drain opening to which the toilet is bolted.

CLOSET ELBOW—the drain elbow the closet flange attaches to.

WAX RING—a compressible ring that forms a seal between the toilet and the closet flange; it fits either a 3-inch or 4-inch closet elbow.

CLOSET BOLTS—the pair of bolts that attach the toilet to the flange.

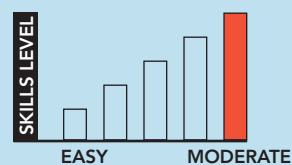
TOOLS & SUPPLIES YOU'LL NEED



SKILLS YOU'LL NEED

- Making compression joints
- Lifting 50 pounds
- Hand tool usage

DIFFICULTY LEVEL

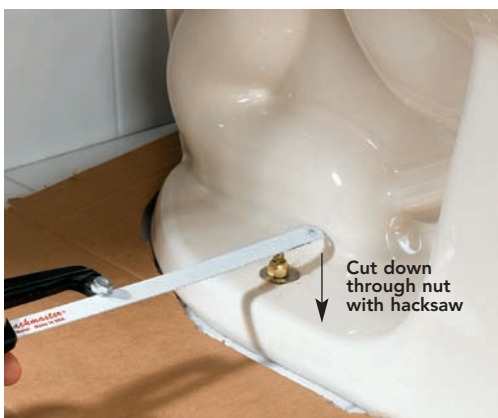


Time: Allow about 1 hour for this project

HOW TO REPLACE A TOILET



1 Remove the old toilet. First, turn off the water at the stop valve (see page 18 if you have trouble). Flush the toilet holding the handle down for a long flush, and sponge out the tank. Unthread the coupling nut for the water supply below the tank using channel-type pliers if needed. **TIP:** If you have a wet vac, use this here and in step three to clear any remaining water out of the tank and bowl.



3 Remove the nuts that hold the bowl to the floor. First, pry off the bolt covers with a screwdriver. Use a socket wrench, locking pliers, or your channel-type pliers to loosen the nuts on the tank bolts. Apply penetrating oil and let it sit if the nuts are stuck, then take them off. As a last resort, cut the bolts off with a hacksaw by first cutting down through one side of the nut. Tilt the toilet bowl over and remove it.



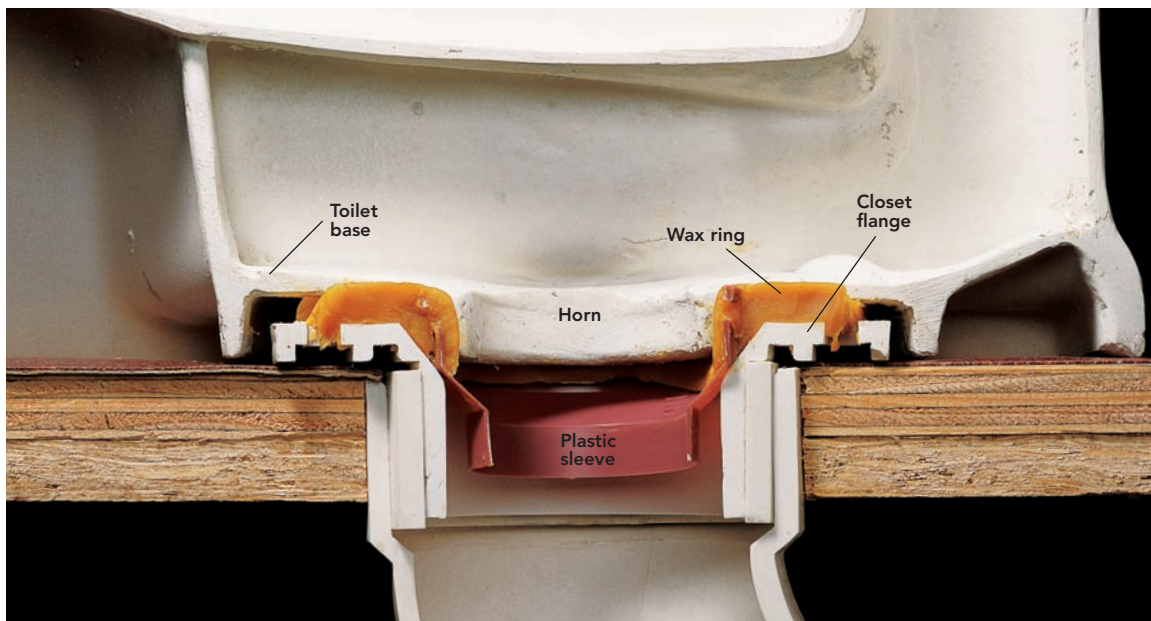
2 Grip each tank bolt nut with a box wrench or pliers and loosen it as you stabilize each tank bolt from inside the tank with a large slotted screwdriver. If the nuts are stuck, apply penetrating oil to the nut and let it sit before trying to remove them again. You may also cut the tank bolts between the tank and the bowl with an open-ended hacksaw (inset). Remove and discard the tank.

TECHNIQUE TIP

Removing an old wax ring is one of the more disgusting jobs you'll encounter in the plumbing universe (the one you see here is actually in relatively good condition). Work a stiff putty knife



underneath the plastic flange of the ring (if you can) and start scraping. In many cases the wax ring will come off in chunks. Discard each chunk right away—they stick to everything. If you're left with a lot of residue, scrub with mineral spirits. Once clean, stuff a rag in a bag in the drain opening to block sewer gas.



A cross-section of the connection between the toilet stool and the drain reveals that it really is only a ring of wax that makes the difference between a pleasant water closet and something that smells like an open sewer.



4 Remove the rag-in-a-bag from the drain opening and put new all-brass toilet bolts into the slots on the closet flange at 3 and 9 o'clock and rotate each $\frac{1}{4}$ turn so the elongated heads cannot be withdrawn. Put the plastic keepers or extra washers and nuts on the bolts to secure them to the flange. Unwrap the wax ring and position it over the flange so it looks like the one in the cross section photo at the top of this page.

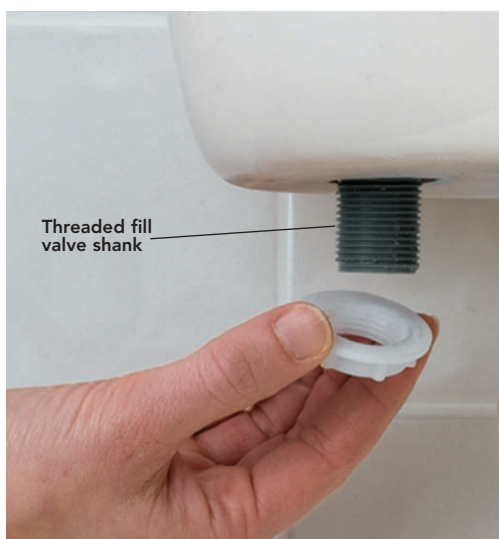


5 Lower the new toilet down over the wax ring so the bolts go through the holes on the bottom of the stool (this can be tricky—be patient and get help). Press down on the toilet to seat it in the wax ring and check for level. If the bowl is not quite level, you can shim the low side with a few pennies. Thread washers and nuts onto the floor bolts and tighten them a little at a time, alternating. Do not overtighten. Cut the bolts off above the nuts with a hacksaw and add the caps. Lay a bead of tub and tile caulk around the base of the toilet, but leave the back open to let water escape so you'll know if there's ever a leak.

HOW TO REPLACE A TOILET (CONTINUED)



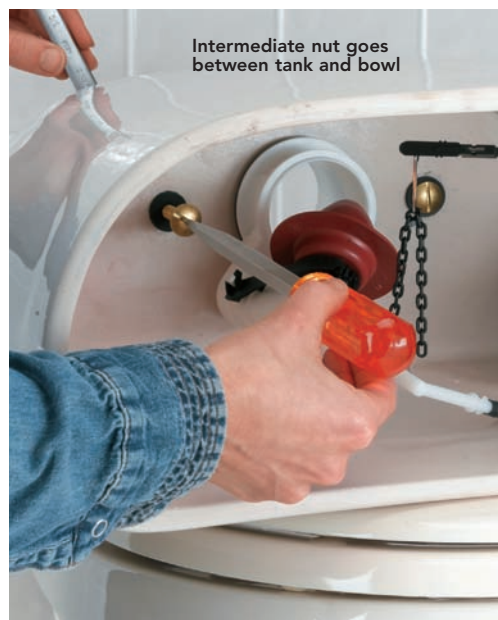
6 Attach the toilet tank. Some tanks come with a flush valve and a fill valve preinstalled, but if yours does not, insert the flush valve through the tank opening and tighten a spud nut over the threaded end of the valve. Place a foam spud washer on top of the spud nut.



8 Position the valve in the tank. Push down on the valve shank (not the top) while hand-tightening the locknut onto the threaded valve shank (thread the nut on the exterior side of tank). Hand-tighten only.



7 If necessary, adjust the fill valve as noted in the directions (also see pages 54 to 57).



9 With the tank lying on its back, thread a rubber washer onto each tank bolt and insert it into the bolt holes from inside the tank. Then, thread a brass washer and hex nut onto the tank bolts from below and tighten them to a quarter turn past hand tight. Do not overtighten.



10 Position the tank on the bowl, spud washer on opening, bolts through bolt holes. Put a rubber washer followed by a brass washer and a wing nut on each bolt and tighten these up evenly.



12 Hook up the water supply by connecting the supply tube to the threaded fill valve with the coupling nut provided. Turn on the water and test for leaks.



11 You may stabilize the bolts with a large slotted screwdriver from inside the tank, but tighten the nuts, not the bolts. You may press down a little on a side, the front, or the rear of the tank to level it as you tighten the nuts by hand. Do not overtighten and crack the tank. The tank should be level and stable when you're done.



13 Attach the toilet seat by threading the plastic or brass bolts provided with the seat through the openings on the back of the rim and attaching nuts.

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