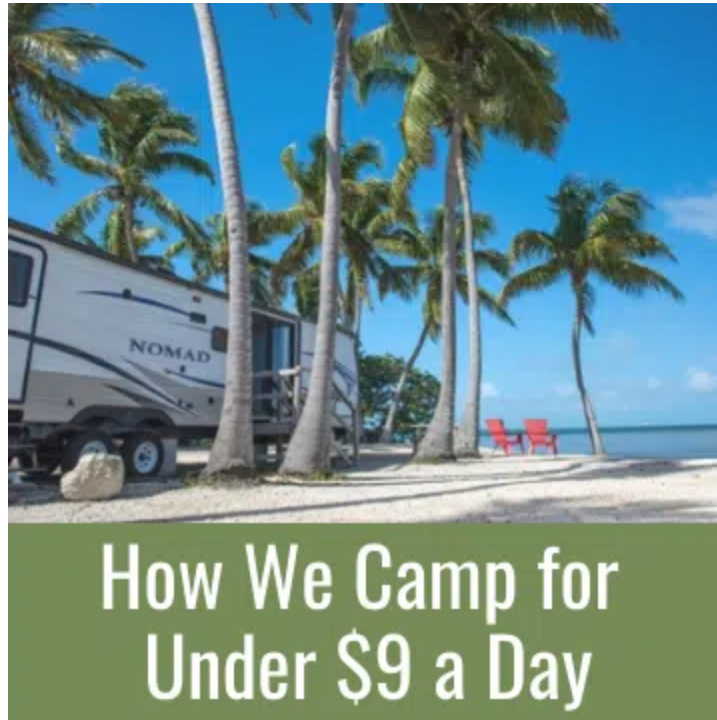


How to DIY Replace a Thetford RV Toilet Waste Ball Seal

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Having problems with the seal on your RV toilet? Replacing the waste ball seal in a Thetford RV toilet is a simple and inexpensive DIY RV toilet repair. In this post, I walk you through the process, step-by-step to save you time, money, and avoid those unpleasant odors in your RV! Here's how we knew we had a problem.

"Ewww, *what's that smell?*", Jeanne asked me one morning as we awoke in our motorhome. Even our Cavalier King Charles adventure dog, Hershey Pup, was scrunching up his little black nose! One good whiff and I knew it was a sewer smell from our RV's black waste tank. But, why?

I ventured into the bathroom of our mid-size 30' motorhome and right away observed the root of the problem. There was no water left in the toilet bowl. It had drained dry overnight, indicating that the waste ball valve seal was no longer maintaining a watertight seal. To be honest, we had noticed the water levels in the bowl shrinking over time, but we...okay, I... had been procrastinating doing something about it. Jeanne and Hershey Pup said it was time for me to tackle another of my first-time DIY RV repair and maintenance projects!

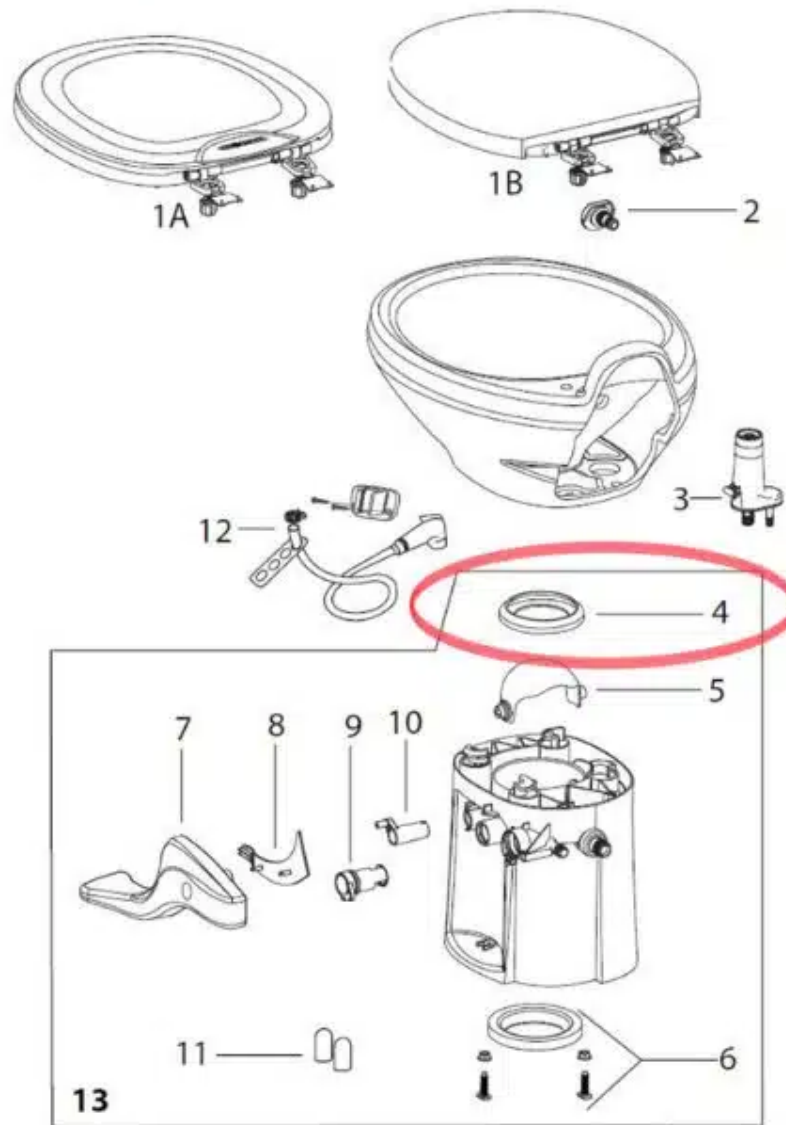


Your Waste Ball Seal Protects You From RV Black Tank Smells

In our rig, we have a Thetford Aqua Magic Style II porcelain RV toilet, which is a pretty common toilet in thousands of motorhomes, 5th wheels, and travel trailers. This toilet, along with its Aqua Magic companion models (Style Plus, Style Lite, and Residence), uses a large ball-type rotating valve at the bottom of the toilet bowl to let waste flow down into your RV's black holding tank.

Aqua Magic® Style II

Part Diagram



Waste ball valve (#5) and waste ball seal (#4)

The waste ball valve, and its surrounding rubber seal (see #4 in the diagram above), serve to create a barrier between the RV toilet bowl and the black holding tank below. Unlike “sticks ‘n’ bricks” residential toilets that have serpentine P-trap configurations that keep water in the bowl and sewer smells out, the RV toilet uses the ball valve and round rubber seal to accomplish both of those necessities.

If you want to learn more about some of the many different types of [RV toilets](#), check out this [blog post](#), or the video below.

When Your Waste Ball Seal No Longer Seals

However, the waste ball seal can degrade over time, as well as suffer from a build-up of mineral scaling. Both of those issues can eventually prevent a good seal. That allows the water in the bowl to slowly drain out and the stinky smells of the black tank to come wafting up into your RV.

We have always tried to keep the seal clean and lubricated, using occasional white vinegar soaks ([as mentioned in this other RV Hack post](#)), scrubbing, and plumbers grease. But I guess after 5 years, and especially the last 2 1/2 years of 24/7 full-time travel use, a seal replacement was inevitable. Fortunately, it is a fairly easy DIY project!



Mineral scale build-up on the seal, waste ball valve, and seal recess.

How To Replace The RV Toilet Waste Ball Seal in 10 [Mostly] Easy Steps

Don't be like us (okay, don't be like ME) and wait too long! As soon as you notice a problem with your RV toilet's waste ball seal, and cleaning and lubricating it no longer helps, replace it. It is a very low-cost fix and can be done as a simple DIY RV repair and maintenance project in as little as half an hour. And you'll be a hero to your spouse/partner and your dog!

An inexpensive RV toilet waste ball valve seal replacement kit is available on Amazon here: [Thetford 34120 Waste Ball Seal](#). You can also pick one up at most RV dealers and supply stores. This kit comes with both the waste ball seal and also the seal between the RV toilet pedestal and the floor (Thetford part #42141). You won't need that floor seal, but I recommend holding on to it in case one day you need to replace your whole RV toilet.

Parts and tools you will need:

- [Thetford 34120 Waste Ball Seal](#)
- [Socket wrench](#) or [adjustable wrench](#)
- [Disposable gloves](#)
- [Plumbers' grease or silicone lubricant](#)
- Optional extras include your phone for photos and a [telescoping mirror](#)



Thetford Waste Ball Valve Seal Kit

Ready to replace that seal? Follow these 10 steps:

1. Shut off the water to the RV system. Release the water pressure by holding the foot pedal down until the water flow stops completely. This will drain the water out of the toilet inlet water line and the bowl.
2. Using a socket wrench, extract the two long hex-head screws that hold the toilet bowl onto the pedestal. (*This is a little challenging since they are located in the back of the toilet bowl within a small recess that you can't see into. You have to reach around and do it by feel.*) Keep track of the stainless steel and nylon washers, as well as the order in which they are used...metal washer at the top, nylon washer at the bottom.

Note: Yes, it is possible to replace the waste ball valve seal without removing the toilet bowl from the base. Without removing the toilet bowl first, however, extracting the old seal and wedging the new seal back into place properly is a challenge. And perhaps more importantly, you won't be able to clean the mineral scaling around the waste ball seal recess and edges of the waste ball valve (*as shown above in the photo with the toilet bowl removed*). There can be a lot of "gunk" in there, so I don't recommend taking a shortcut with this step.



Long hex-head screws secure the RV toilet bowl to the pedestal

Next, removing the toilet bowl and cleaning the stinky seal

3. The toilet bowl removes easily with a slight counter-clockwise twist and lifting it off the pedestal. It can be carefully laid on its side on the floor by the pedestal (don't drop it like I did!). The water inlet line does NOT have to be detached on a Thetford Style II and also probably not with most others.
4. The round waste ball seal easily lifts out and you can now thoroughly clean the seal recess area. You may have to do a little scraping to get the mineral scaling completely removed. Be careful not to damage the surface of the recess.
5. Coat the new seal lightly with silicone lubricant or plumber's grease, and place it in the cleaned seal recess.



New seal lubricated and placed in seal recess around the waste ball valve

6. While the toilet bowl is still detached, it can be cleaned of any mineral scaling around the bottom of the bowl outlet.
7. Return the toilet bowl to the pedestal. Four holes on the bottom of the bowl will fit over four large plastic “tabs” on the pedestal (see *photo below*). Carefully seat the bowl properly on the tabs. This time, use a slight *clockwise* twist of the bowl to lock it into position. You’ll be able to tell when it stops firmly in place. Make sure that the waste ball seal is evenly situated around the edge of the bottom of the toilet bowl outlet. You can adjust its position at this time.



Four holes on the bottom of the RV toilet bowl fit down onto these tabs

Finishing up

8. Reinstall the two long screws in the recess in the back to secure the bowl to the pedestal. This may not be easy since it has to be done blindly. It can be hard to line up the screws to bite into the receiving holes, but it is very important that they go into the right places to be secure. And remember the order of the washers...metal washers on top, nylon washers on the bottom. The nylon washers protect the delicate porcelain toilet bowl material from the metal screws and washers.

PRO TIP 🖐️ *I used my phone to take a picture back there so I could see where I needed to put the screws. You can also use a small Telescoping Inspection LED Mirror, to see around the back and guide you.*

9. Turn the water back on to the system and check for leaks.
10. Over the next day or two, you'll want to periodically re-inspect the waste ball seal, as well as around the toilet pedestal, to ensure that you still have no leaks.



The Result

After this easy DIY seal replacement project, our RV toilet is holding water again and there are no more smells! We are always happy for these kinds of low-cost fixes with no downtime for our rig.

Cost: \$18 bucks! Time: Less than an hour. How long was the RV stuck at a dealer or in a repair shop: Zero! Number of calls made to a mobile RV repair technician? Zero!

This is a perfect example of simple DIY RV repairs and maintenance that can be done easily while saving yourself significant dollars. It also underscores why we carry several types of spare parts on our RV travels, including replacement toilet seals and a spare toilet water

valve. The feeling of being self-reliant and resourceful while on the road is incredibly satisfying!

Do you tackle DIY repairs and maintenance on your RV? Have Any Questions? Drop us a note in the comments below!



Author Bio: Erik Anderson

Erik and his wife Jeanne have been traveling full-time around the U.S. in their Class A motorhome since July 2020. They love hiking, biking and kayaking, and adventuring with their beloved Cavalier King Charles spaniel "Hershey pup". Erik also moderates the Living the RV Life Facebook group community.

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GOT COMMENTS OR QUESTIONS?

We would love to hear from you. Drop us a note in the comments section below.