

Fork Seal Replacement

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You would be hard pressed to find anything more neglected on a motorcycle than its fork oil. Some bikes carry the same few ounces of fork oil for their entire lifetimes. For all the hard work the fork does in keeping your ride smooth, you should reward it with fresh oil every two years or 15,000 miles. Perhaps, even though you've been a good caretaker of your cruiser, you noticed a teardrop of oil on the top of the slider during your pre-ride check. You'll need to replace the seal and minimize your riding until you do. If you're not careful, the oil could drip onto the caliper, rendering the brake useless.

Set aside around two hours to replace the fork seals. Gather all the parts and tools you'll need in advance. Even if you only need to replace one seal, replace them in pairs to keep them on equal footing. The parts are usually under \$20. Be sure to calculate how much oil you'll need. This V-Star 1100 required exactly 1.1 ounces more than a single bottle of fork oil held, so don't assume one bottle per fork leg will be enough. For tools, you'll need the usual assortment of mechanics' sockets, ratchets and wrenches. You'll also need a way to support your bike with the front wheel off. If you don't own a lift, a floor jack and piece of wood works just fine. Other items you'll find useful are: an oil recycling container, a Ratio Rite (to measure out the proper amount of fork oil), a Race Tech Fork Oil Level Tool or a tape measure that will fit inside the stanchions, seal drivers or a piece of PVC pipe of the right diameter, rags, paper towels, a garage door frame (or other convenient, solid wall), and a heavy four-wheeled vehicle.

Before you jack the bike's front wheel off the ground, loosen the axle and brake caliper bolts. If you're just jacking the front wheel off the ground, make sure the bike is in gear and the rear wheel is chocked, If you're using a lift, make sure the bike is securely strapped to it.

Remove the wheel and unbolt the caliper bolts. Having an assistant hold the calipers away from the shiny, delicate fender paint will make life easier. Remove the fender and place it somewhere it won't get kicked or have something knocked on it by the dog. (Don't ask me why I stress this.) Do not leave the calipers hanging from their hydraulic lines; hang them from a convenient part of the bike.

Cruisers with fat fork covers can be a bother. So, to make sure everything stays in line while you're working, only remove one fork leg at a time. Start by loosening the top pinch bolt. When that is loose, remove any plastic fork caps that may be in the top triple clamp. If the fork has screw-in caps, loosen it a quarter turn to break any stiction the threads may have. Hold on to the fork as you loosen the lower pinch bolt(s). Often the leg will drop free once the pinch bolt(s) has released. If the leg doesn't drop free, gently pull downward while twisting the fork.

Now comes the fun/messy part. Those of you whose fork caps have threads, unscrew the cap with a socket wrench. Be forewarned, when the threads disengage, the cap will pop out, possibly with a good deal of force. Even when you're prepared for this, the cap can still get away from you. So, keep your face out of the line of fire and try to point the cap at something that will safely catch it! Forks with circlip secured caps often require three hands to

free up. One person presses down on the cap while the other removes the circlip. Then the circlip remover should wrap a rag around the top of the fork as the presser slowly releases the cap.

Remove the spring and any preload spacer and/or washers from the stanchion and set them aside on some clean rags. Laying them in the proper order and orientation will ease reassembly. Using a small flat-head screw driver, pry the dust seal away from the top of the slider. Slip it off the top of the stanchion. Now remove the retaining ring from inside the slider just above the fork seal.

You now stand at a fork in the road. (Sorry about the pun.) To the left is the traditional means of replacing the fork seal: drain the fork, remove the damping rod bolt from the bottom of the slider, remove the damping rod, and—returning to your prehistoric roots—muscle the stanchion out of the slider. The advantage of this method is that you can actually inspect the fork bushing for signs of wear. The disadvantage is that lots of extra steps and sweat are involved.

So, instead, we'll take the road less traveled. All you'll need is some cheap motor oil, a catch pan, a jack, a piece of wood, and a car or truck. Fully extend the stanchion out of the slider and completely fill the fork with oil. If possible, make sure there is no air in the system. Reinstall the fork cap. You now have a closed system with nowhere for the oil to go. Lay the fork on top of the catch pan with one end against your garage door frame. Now park your car with its front wheel parallel to the door frame. Place a board across the car wheel and wedge your car's jack horizontally between the fork and the board. Slowly extend the jack. With nowhere to go, the fork seal will push out. As soon as the seal slides out far enough that you can pry it the rest of the way with a screwdriver, stop compressing the fork, or things could get messy.

Remove the fork cap and drain the oil into a recycling container. Pump the fork several times and drain again. Repeat until all of the oil has been removed. Before you slide the old seal off the stanchion, note its orientation. While most fork seals look similar, their orientation can vary from model to model. Closely inspect the stanchion for any dings. Minor ones can be cleaned up with a gentle rub of fine grit wet/dry sand paper. Use a little WD-40 as lubricant and wrap rag around the top of the slider to keep any dirt out of the fork. Wash the stanchion with contact cleaner and a rag. If you find a major ding, take the fork to your local bike shop to have a pro look at it.

Moisten the inner surface of the new seal with fresh fork oil. Carefully slip it over the top of the stanchion and slide it down to the slider. If you have a fancy seal driver set, simply drive the seal into the slider. If you're cheap like me, take the old seal, cut out the inner surface, and place it upside down over the new seal. If you're lucky, you were able to find a piece of PVC pipe that matches the outer diameter of the fork seal perfectly. If not, take a hacksaw and cut out six sections evenly spaced around the PVC. Clean up all the grit and place it over the stanchion. Wrap a beefy wire-tie around the pipe and tighten it until the PVC fingers fit the diameter of the fork seal. Now, tap the top of the PVC until the fork seal is completely seated.

After installing the dust seal, measure the proper amount of fork oil. Slowly pour oil into the fork. About halfway through, pump the stanchion a few times to transfer oil to the slider internals. When you've poured in all the oil,

pump it at least 10 times before measuring the oil height. Before I acquired a Race Tech Fork Oil Level Tool, I used to dangle a piece of coat hanger with tape on the end to measure oil height. You can also use a tape measure. The Race Tech tool allows you to draw out the excess oil. If the tool doesn't get any oil, add oil until it is slightly above the end of the tube and suck out the excess. Fork oil height should be measured without the spring installed and with the stanchion fully compressed.

Clean the spring before reinstalling it, and make sure you position a progressively wound spring in the same way it came out. Screw-on fork caps are much easier to install alone. You'll need your assistant again for circlip fork caps. Slide the stanchion back into the triple clamp. Be sure to bring the stanchion to the same level on the top triple clamp as the other one. Tighten the pinch bolts to spec. Now, you're ready for the second fork leg!