

Cat

Pressure Control

Regulator

Rebuild Procedure



Step 1. Bioclean *always* recommends reading though all of the instructions before beginning a project of this size first. Give yourself a large, clean working area where you can lay out the parts without fear of losing them. Next, inspect the threads on all three water entry/exit points of the regulator. As the regulator ages the water has a tendency of wearing the threads away, usually on the bypass end of the lower body. If this appears OK, back out Brass Adjusting nut located on top of valve to relieve all tension within the regulator.



Step 2. Unscrew and remove top portion of regulator body. *Be conscious of all parts within the regulator!* It is common for parts to stick together when disassembling and if parts are lost the regulator will no longer work. Here you can see the beveled washer sets and valve stem.



Step 3. Remove beveled washer sets, stem, along with other parts. Depending on year of manufacture, your valve may also contain 1-2 small flat washers and an anti-rotation washer (the black washer with the 2 ears in the photo). Now is a good time to inspect the stem and snap ring on the stem. If these parts show signs of corrosion or heavy wear, these parts should be replaced.



Step 4. Next, flip the bottom half of the body over. This is the part that contains the piston, piston seat, and retaining ring. Using an 11/16" deepwell socket, center it over the piston seat. Gently tap with a hammer on the socket until the piston and piston seat fall out of the body. If you are fortunate the retaining ring will fall out at this time also. If it doesn't, use a larger screwdriver and, working your way continuously around in a circle, gently tap it out from the bottom.



Step 5. Lift lower half of regulator body away. In this example I was fortunate enough to get all 3 pieces at once.



Step 6. Once separated, you will be able to inspect all three pieces. The piston and seat shouldn't show score marks and should fit well together on their mating surfaces. Also inspect the mating surface on the lower body that the piston seat fits into for wearmarks. The retaining ring should be smooth on the inside where the piston moves back and forth within it. If not, they will need replacing in order for the regulator to function properly.



Step 7. Remove old o-rings and Teflon ring off of the three pieces and toss them in the trash. Wipe the piston, piston seat, and retaining ring down with a rag and re-inspect them again for possible damage. Open the seal kit and remove the new o-rings and Teflon ring. Install each o-ring on each part, being careful not to “roll” the o-ring onto the part. The o-ring should be gently stretched and placed in the groove that it rides in.



Step 8. **THIS IS IMPORTANT!** Confirm that the Teflon backing ring and o-ring are installed on to the piston exactly in the order shown in the photo.



Step 9. It is time for reassembly of the parts back into the lower body. Grease all o-rings and mating surfaces before attempting to reassemble. First, place the seat into position. You should be able to push this into place by hand. You will feel it snap into place. Once seated, inspect to ensure the o-ring stayed in its place.



Step 10. **THIS IS IMPORTANT!** When placing the retaining nut in position **DO NOT** position as shown in the above photo. This is **UPSIDE DOWN** and the valve will not work properly!



Step 11. This is the **PROPER** way to install the retaining ring with the recessed groove sitting on top. Gently set this into place inside the body.



Step 12. Next, thread the upper body onto the lower body until it comes to a stop. This will slowly and evenly push the retaining ring into place. When the upper body bottoms out there should only be about a $\frac{1}{2}$ thread showing. Then unscrew them from each other again. An oversized socket can also be used as well. Lightly and evenly tap it with a hammer until the retaining ring is fully in place. It is recommended that you still thread the upper body on to the lower body and verify that only $\frac{1}{2}$ thread is showing.



Step 13. Once the upper body is removed you should inspect the retaining ring and verify that it is in place and no harm has been done to its o-ring.



Step 14. Before setting the piston in to place, inspect it and make sure that the o-ring and retaining ring are installed in the correct order.



Step 15. It is time to install the piston into the piston retainer ring. Set the piston into place.



Step 16. Set the regulator stem inside the piston. While gently tapping on the stem, use a smooth, rounded tool and press in on the o-ring as the two pieces slide together. This will help ensure that the o-ring won't catch on the sharp edge of the retaining ring.



Step 17. When the piston is in place it should be flush with the retaining ring as shown in the photo.



Step 18. Drop the small flat washer onto the stem and let it rest on the snap ring.



Step 19. Now it is time to install the beveled washer “packs”. You may have either 12 or 13 “sets” of these depending on year of manufacture. If they are corroded it may be a good idea to clean them up on a wire wheel before reusing them. If they are heavily corroded or it appears that they are fatigued and have lost their “springiness” it may be a good time to replace them. When installing, always fit the beveled washer fronts to fronts and backs to backs as shown in the photo or the regulator will not work at all.



Step 20. Most models will have a second small flat washer. Install this on top of your beveled washer sets at this time.



Step 21. Your regulator may also have an anti-rotation washer as well. It is a larger washer with two ears and will look like the one shown in the photo. Inspect it. Due to corrosion it may need to be cleaned on the wire wheel or possibly in need of replacement.



Step 22. This is where the ears of the anti-rotation washer will set inside the upper part of the body. They also may be corroded and may need cleaning with a wire brush and pick or screwdriver.



Step 23. Dab a little grease or oil on both sides of the anti-rotation washer. This will help it stick in place when you flip the upper body back over for re-assembly and reduce corrosion. Set it in place with the ears setting inside the grooves of the upper body.



Step 24. Set the upper body in place and thread the two halves back together so that they are tight together.



Step 25. The two halves should thread together so that there is barely a thread showing as shown in the photo. If 3-4 threads are still showing you have possibly installed the retaining ring upside down. Revisit steps 10-13. If it is all correct, reinstall on your plumbing and set your pressures. Depending on your pump, set your pressure between 1200-1350 psi. If the pump is running at the correct rpm's, the water pressure should not drop more than 25-35 psi per gun in use for a maximum of 110 psi when all three guns are in use. A pressure drop greater than this may indicate some other plumbing or pump problem which will need addressing.