

# The Repair Guys



## Repairing the AMES 4000SS

### Question:

In our line of work, we field questions from contractors and technicians concerning repairs, installations, and general backflow prevention practices. We'd like to share some questions that we receive as well as our answers. Everyone has different opinions on these subjects and we would like to hear yours. Contact us with questions and ideas via email at: [imark@backflowparts.com](mailto:imark@backflowparts.com) or mail us at American Backflow Products Co., PO Box 37025, Tallahassee, Florida 32315.

Mark Inman and  
Doug Taylor

Over the years we have fielded quite a few calls on how to repair the Ames 4000SS relief valve assembly. Most of the questions are about how to install the diaphragm back into the relief valve body. We have talked about this relief valve in previous articles, and have decided to discuss this repair again because of the volume of questions regarding this unique relief valve assembly.

### Mark:

Although all relief valves are unique in their own way, we refer to the Ames relief valve as being unique because of the configuration of the piston and diaphragm assembly. Most relief valves have diaphragms that start out flat and have bolt holes to help in alignment. They have modules that may contain the spring, spring retainers, inner diaphragm, and piston making the repair quick and easy. We have become quite fast and proficient at repairing that type of relief valve assembly. The piston and diaphragm assembly of the Ames 4000SS RV must be "set" correctly so that the piston can move up and down within the valve housing. It may simply take a little extra time, practice, and yes, patience when repairing this type of relief valve assembly.

### Doug:

The first thing we need to do is remove the relief valve from the body of the assembly. Loosen the swivel end of the sensing line that is attached to the #2 test-cock and then the hose can be removed from the RV body. The relief valve is threaded into the assembly body and sealed by an o-ring. To remove, simply unscrew the RV counter clockwise.

**Note: DO NOT** use a pipe wrench to loosen the relief valve. If the wrench is placed on the sidewalls of the housing, the RV body will bend or warp and will have to be replaced. We have found that if you are careful, you can use a pipe wrench on the cover and cover flange, but never on the body of the relief valve. Ames

recommends using a long screwdriver placed between two of the cover bolts to help with loosening the relief valve.

### Mark:

Now that the relief valve has been removed, we can begin working on it. Remove the four 7/16" stainless steel bolts and the RV cover.



Just out of habit I like to draw a line as a point of reference with a permanent marker on the cover and flange of the RV body so that when we replace the cover, the sensing elbow stays



in the same orientation. With the cover off, we can now remove the piston and diaphragm assembly. The piston diaphragm assembly will slide out, along with a plastic sleeve, through the flanged end of the RV body. In some cases this can be hard to do by hand if dirt and debris are trapped between the plastic sleeve and the wall of the relief valve body. After removing the piston and diaphragm assembly, make sure to clean the inside of the relief valve body well and inspect the relief seat, which is part of the relief valve body. The seat is a stainless steel ridge located near vent holes of the relief valve body.

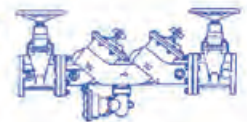


You will want to make sure this surface is clean and there are no dings or dents. If the seat is damaged the whole relief valve body needs to be replaced. To disassemble the piston diaphragm assembly, unscrew the piston assembly from the bolt that runs through the disc-holder. The piston diaphragm assembly is held together by the RV bolt. There is a slight spring tension as you remove the bolt, so take care to not lose any parts. Once this assembly is disassembled, the RV disk and o-rings are free for inspection or replacement.

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have reread the article and see where you are coming from with your findings. The line in paragraph eleven, – “All backflow devices are to be tested annually” – is meant to imply that all backflow devices are to be checked and if required by law tested annually. My apologies for this misleading information, which I can correct in future articles.

The second issue is the use of “RPA” for a reduced pressure backflow assembly. These devices are known in the irrigation industry as RP, RPA, RPP, and RPZ and there might even be others used locally in other regions. One thing that I have learned over many years in the irrigation industry is that there are as many as three names for many of the devices and terms.

I agree with you whole heartedly that cross connection and backflow are a real concern. I have been promoting the correct use of backflow prevention for irrigation and wherever I run into an illegal connection in my classes, in articles, on my website and directly to contractors in supply houses or at their jobsites. Through my articles, I strive to provide accurate information, which as in this case is not accurate for your location and the misrepresentation that all backflows require testing. I will work on ensuring that my information is correct everywhere prior to submitting my article for verification and publication. I would love to be able to include you as a verification reader before I send my articles in, if you are willing to do so. This way we will be certain that bad information is not printed.

Let me know what you think Bill.

Sincerely,  
Lorne Haveruk

**Mr. Bill Coulter Responds to Mr. Haveruk**

Lorne,

Thank you for your quick response to my letter. After reading your letter and the offer / request for an additional set of eyes, I would consider it a privilege to exercise that opportunity.

Please let me know how and when I can be of assistance.

Thanks,  
Bill

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**Doug:**

Once the piston diaphragm assembly is reassembled, we can concentrate on installing it back into the RV body. The trick here is to set the diaphragm into place between the piston assembly and the sleeve. Pull the diaphragm through the inside of the black plastic sleeve, with the ribbed end of the sleeve being at the top. Now place the ribbed end of the diaphragm over the ribbed end of the plastic sleeve and fill the diaphragm up with water. You can use the #1 test-cock as a water source. With the diaphragm full of water, grasp the sleeve with your left hand and use your right palm to pinch the diaphragm around the black sleeve as well as seal the water into the diaphragm.

Now place the bolt down against a flat surface (tailgate or toolbox) and slowly push down with both hands and try to slide the sleeve down over the piston assembly. Make sure the lip of the diaphragm stays against the lip of the black sleeve to help set the diaphragm. Remember that water cannot be compressed, so the water will come squirting out where your palm meets the diaphragm as the water is being displaced, but getting a little wet is well worth the amount of time saved with this method. If all goes well, the piston and diaphragm assembly should be inside the sleeve and the diaphragm should have no creases. You may have to try it a couple of times until you get the right fit. Once you get it right, you can slide the sleeve and assembly into the RV body. Replace the cover and bolts and the RV is ready to be reinstalled.