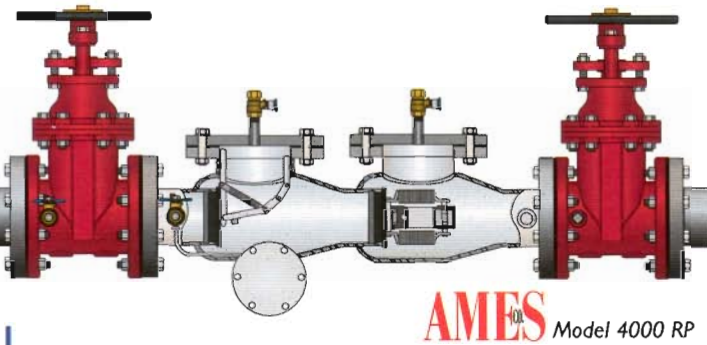


# The Repair Guys

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 we receive and our answers. Everyone has different opinions on these subjects and we would like to hear yours. Contact us with your questions and ideas via email at: [imark@backflowparts.com](mailto:imark@backflowparts.com) or mail us at American Backflow Products Co., P.O. Box 37025, Tallahassee, FL 32315.



## QUESTION —

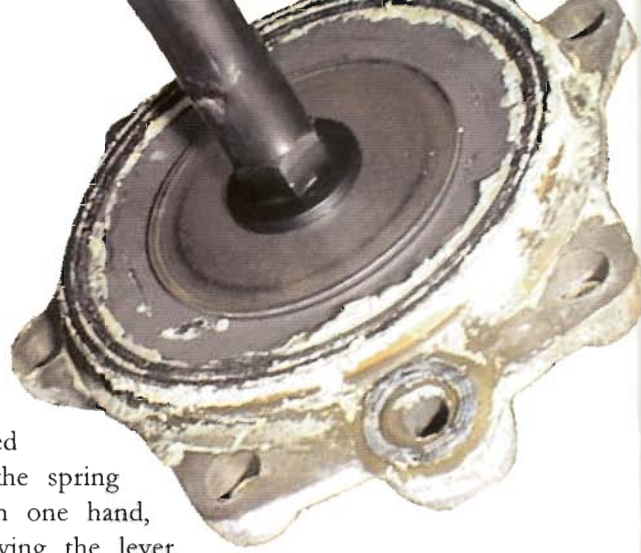
I have an AMES 6 inch model 4000RP that needs some repair. I've decided to replace the clapper plate on both knuckle joint assemblies, and the maintenance manual that I have lists a couple of tools needed for this repair. It seems like such a hassle for me to purchase these items for only this one device, especially considering the cost. Can I make the repair without them? Are these tools really necessary?

## Mark -

I'm glad to see that you have a maintenance manual, and that you've taken the time to look through it to see what you will be dealing with before actually going to the job. We'll try to answer your questions by explaining what these tools are used for and how they work, then we'll let you decide whether they are necessary or not. The larger of the two tools is called the Tong Tool. This tool is used to repair the first check Knuckle Joint Assembly. This check assembly is spring loaded and held into place by four bolts. The Tong Tool will allow you to relieve the spring tension while loosening the nuts from the knuckle joint mounting bracket, located on the rear side of the port tube.

## - Jason

For illustrative purposes only, we'll compare the knuckle joint assembly with a mouse trap. To disarm a mouse trap,



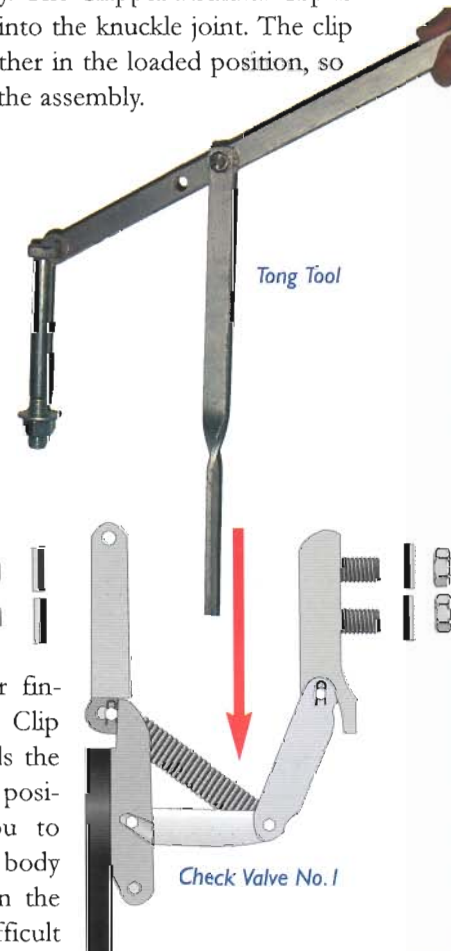
you will need to relieve the spring tension with one hand, while removing the lever with the other. The Tong Tool was designed to help in safely relieving the spring tension to allow for disassembly. Failing to relieve the spring tension could result in damaging the threads on the bolts, as well as possibly warping the brackets on the knuckle joint, which would cause misalignment with the seat.

## Mark -

The smaller tool is called a Clapper Retainer Clip. This tool will be helpful in repairing the check valve number 2 Knuckle Joint Assembly. The second check assembly is also spring loaded, but held into place by only two bolts located on the side of the valve body. The Clapper Retainer Clip is simply a clip that is inserted into the knuckle joint. The clip holds the knuckle joint together in the loaded position, so that you can remove it from the assembly.

## - Jason

Okay, back to the mouse trap. The Tong Tool used with the check valve number 1 knuckle joint was compared to disarming a mouse trap. With the Clapper Retainer Clip, we will compare its function with arming a mouse-trap. To arm a mouse-trap, you will need to contain the spring tension with the lever to keep it from snapping your fingers. The Clapper Retainer Clip does the same thing. It holds the knuckle joint in its current position, which will allow you to remove it from the device body for repair. Failing to contain the knuckle joint can make it difficult



to remove and/or reinstall the mounting bolts. It can also cause damage to the bolts and brackets, as well as, your hands. To make it easier, we have included step by step instructions on how to use these tools.

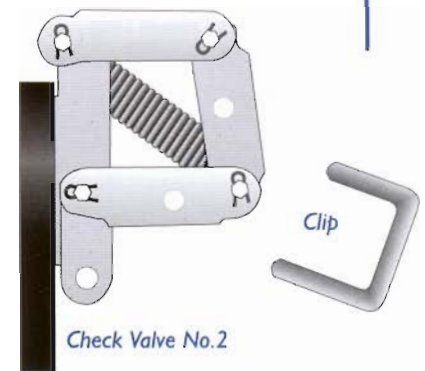
### TONG TOOL OPERATION:

- 1) Place the forked end of the Tong Tool center arm onto horizontal link pin of the Knuckle Joint Assembly.
- 2) Place the pivot arm of the Tong Tool into adjacent port flange hole, using the washer and nut to hold into place.
- 3) Remove the two rear mounting nuts from exterior of body.
- 4) While depressing Tong Tool handle, work rear mounting link away from port tube. (Caution: considerable tension is on Tong Tool at this time, Hold Firmly.)
- 5) Slowly release controlled pressure on Tong Tool handle until tension is relieved from springs.
- 6) Remove Tong Tool from device.
- 7) Remove 2 - 3/8" mounting bolts from the front of port tube.
- 8) Remove Knuckle Joint Assembly from body.



### RETAINER CLIP OPERATION:

- 1) Push Retainer Clip into Knuckle Joint retention openings located on inner and outer linkages of Knuckle Joint Assembly, until clapper opens slightly.
- 2) Carefully loosen and remove the two Knuckle Joint mounting bolts, located on exterior of valve body.
- 3) Remove Knuckle Joint Assembly from body assuring that Retainer Clip is not disturbed.
- 4) Bolt the Knuckle Joint Assembly onto the exterior of the body through the mounting link holes, or press on hard surface to remove retainer clip.
- 5) Push on clapper plate to release retainer clip, and remove clip. Slowly release tension on clapper and unbolt Knuckle Joint Assembly from mounting link holes.
- 6) After repairing, install Knuckle Joint onto exterior of body as in Step 4.
- 7) Push on clapper plate to extend springs and install retainer clip. Unbolt from exterior of body, keeping retainer clip in position.
- 8) Position Knuckle Joint in place inside body, and tighten bolts (Remember to replace the rubber faced washers that help seal the bolt holes).
- 9) Remove Retainer Clip.



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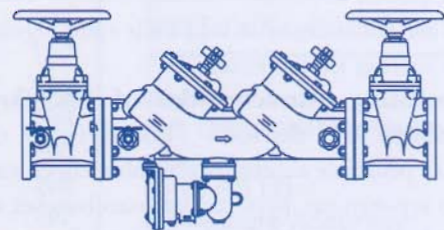


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