Repairing the FEBCO model 825YD Relief Valve

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 or mail us at American Backflow Products Co., PO Box 37025, Tallahassee, Florida 32315.

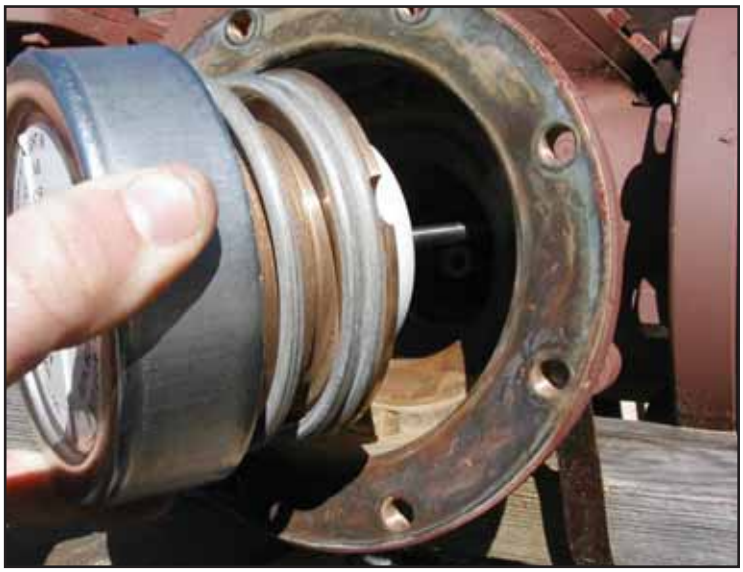
-- Mark Inman and Jason Gregg

Question:

I recently had to put a relief valve rubber kit into a 6" Febco model 825YD. A week later the customer called me because the relief valve was discharging. After disassembling the relief valve, I found that the small inner diaphragm had a tear in it. I'm pretty sure that I installed the rubbers correctly because it was working when I left the job. Could you go over this repair with me to make sure that I did it correctly?

Mark:

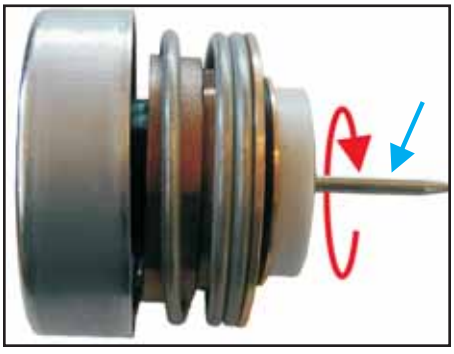
This is a very common question with regards to the 825YD relief valve repair. Although there are other conditions that could cause this inner diaphragm to tear or blow out, most often the problem is caused by the improper installation of this diaphragm. The inner diaphragm for this model has two different sides and is easy to install backwards. We'll go over with you how to properly disassemble and replace the rubbers inside of this relief valve module. Hopefully we'll cover everything so that anyone who has never worked on one of these won't make the same mistakes that we've made in the past.



Jason:

We'll start by removing the copper sensing line and the relief valve cover. After removing the cover and large outer diaphragm, you'll notice the round stainless (button), which should have a protective sticker that covers the retaining screw. This sticker is in place to keep the outer diaphragm from being cut by this screw. To remove the module, grasp the outer edges of this (button) and pull it straight out of the body.

It is very important not to twist the module when it is being removed. With a ½" wrench remove the lower stem guide by turning counter-clockwise. Then you can remove the retaining washer and relief valve disc. Now place the module

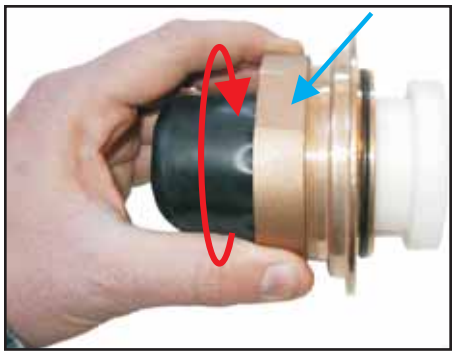


on a flat surface with the (button) facing up. Remove the center portion of the sticker so that the slotted screw is

exposed. I try to only cut a couple of the tabs on the sticker so that hopefully I can replace this part of the sticker upon completion. Now take a slotted screwdriver and remove the screw while applying pressure with your other hand to control RV spring tension.

Mark:

Once the spring tension is released, remove the screw, button, and the spring. Now you should be able to remove the white main-stem (disc holder) by sliding it out of the inner



diaphragm. Inspect the main-stem for cracks or abnormal wear and replace if necessary. To gain access to the inner diaphragm, you need to remove the retainer from the upper guide by turning it counter-clockwise. The retainer should come off fairly easy because it only needs to be hand tight, but if you need to use a wrench, you can utilize the flats provided on the retainer nut. After removing the retainer nut, diaphragm, and the white plastic slip ring, clean the upper guide and the retainer with water and check for any wear or damage. At this point go ahead and replace the o-ring on the upper guide.

Jason:

Now we can get to the fun part; installing the inner diaphragm correctly. The inner diaphragm is shaped like a top hat. It has a prominent bead that runs

around the edge or lip of the diaphragm. The brass upper guide has a recessed groove on the end where the male threads are located. Take the diaphragm and slide it into the brass guide so that the beaded edge of the diaphragm fits down into the groove of the upper guide. Now take the white plastic slip ring and insert it into the retainer nut and then hand tighten the retainer onto the guide. The slip ring keeps the diaphragm from getting twisted or cut between the guide and the retainer nut. Now take your

fingers and push the diaphragm back through the guide so that it's inverted or

inside-out. At this point you can smooth out any wrinkles or bubbles and then slide the main-stem through the guide and into the diaphragm. Turn the assembly over onto the main-stem so that the diaphragm is pointing up. Push down slightly on the top of the diaphragm so that it's smooth and formed against the bottom of the main-stem. Once that is installed, you can replace the spring, button, and screw. All that is left is to reinstall relief valve disc, retaining washer, and lower stem guide. When you reinstall the module back into the body, remember not to twist, simply push the relief valve module straight into the body.