

A Few Words About Cleaning

There are a lot of valves out there that make various claims about “Cavity Free”, “Reduced Cavity”, “Available with Cavity Fillers” and other terms. Some of QCI’s literature still says “Cavity Free” and I have as yet been unable to find a definition that describes a valve that has zero risks of contaminants.

Probably the best choice of a contaminant free valve is a pinch valve where the material flowing thru the valve only contacts the elastomer of the lining. Unfortunately, they only exist as two way valves and most cannot be used in pigging service.

Another good choice would be a sleeved plug valve. I would say that the biggest drawback to this is expansion of the Teflon sleeve at elevated temperatures could lead to the valve binding. Many of these valves also require some adjustments periodically.

Ball valves are also offered with “cavity fillers”. While this may be a step in the right direction there is still a crevice between the two parts of the fillers that could trap contaminants. A standard ball valve has cavities that once filled with contaminants have no way of being removed unless flush ports are added to the valve body.

The QCI valve on the other hand has a small amount of space in the gap between the seals and the body bore plus there is some space between the rotor, the rotor washers and the caps. While this space traps some of the media flowing through the valve it is only temporary as this is flushed out every time the valve is cycled. As the gaps between the seals passes over the entry port part of the flow is able to pass between the rotor, washers and caps flushing out the material left there from the last time the valve was cycled. The majority of this flushing takes place when the cycling is half way between positions. In most cases this works quite well as there is nothing trapped inside as there would be in a ball valve.

In the previous paragraph I said “most cases” but there are always some extreme situations. There are some cases where the valve may not be cycled often enough to do a complete flushing and solids or other residues build up inside. There may be cases where the media has a high solid content or is very sticky, contributing to a build up inside the valve. In many of those cases the problem can be solved with the addition of “flush ports” in the top and bottom covers. Another method, particularly when there are a large amount of solids in the media, is to add o’rings between the rotor and the caps. This method reduces the chance of the buildup causing the valve to bind up. In this case we use a special rotor that has round seals and round pockets for the seals in the rotor so that we can maximize the space between the rotor and the caps that is protected by the o’rings. I will go into more detail on this later.

First of all, QCI valves are tested to ANSI Class VI leakage standards before they leave the factory. If a valve is to be introduced into a new system care must be taken to prevent any leftover debris (weld slag, filings, dirt, etc.) from getting into the valve. New piping should be thoroughly flushed out prior to installing the valve. Some plants like to use temporary “spool” sections in place of the valve to accomplish this. Not cleaning the line properly can be extremely damaging to

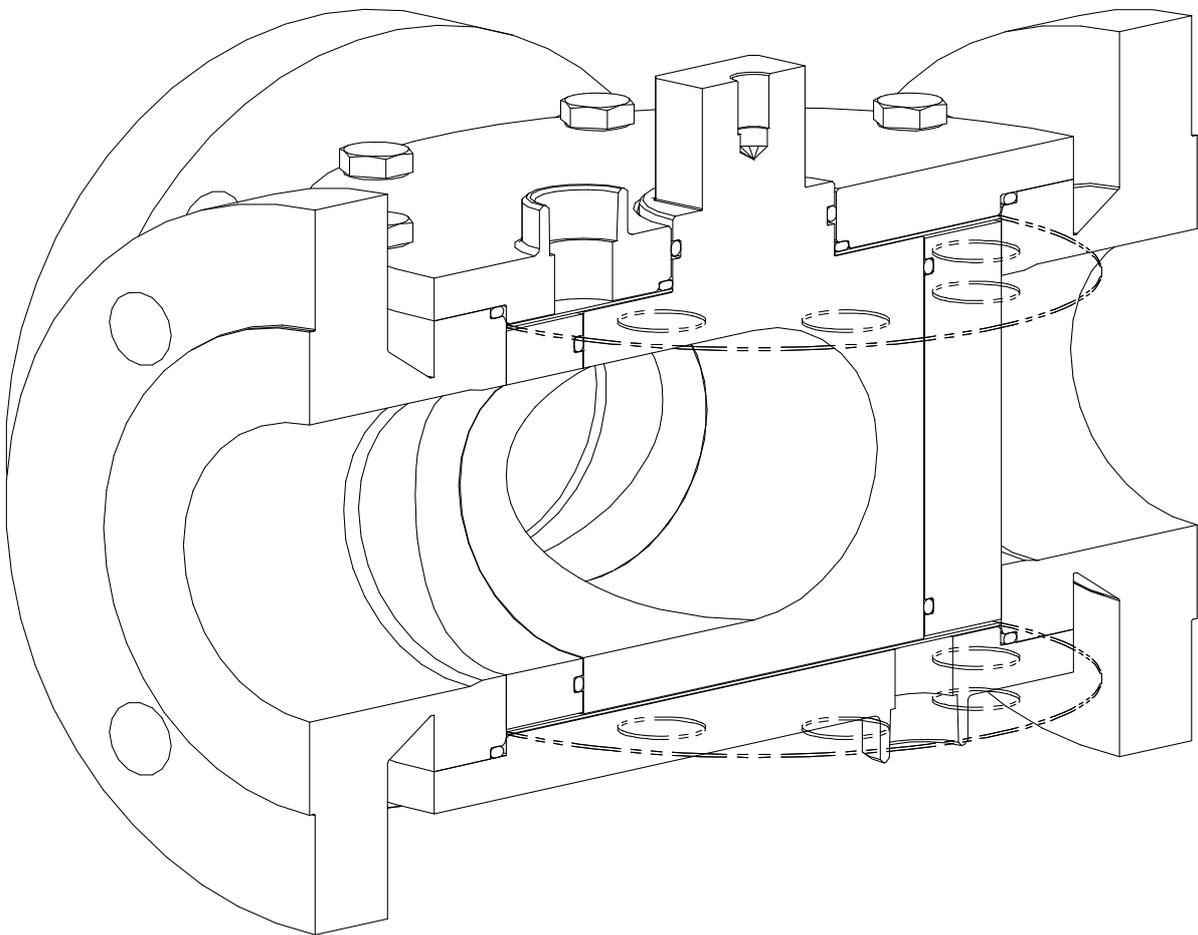
a valve. Below is an example of a seal that was removed from a new valve in a new installation. As you can see the surface is completely impregnated with all kinds of “crud and corruption”. Fortunately, we were able to rebuild the valve before the metal fragments did any damage to the body bore.



As I had stated above, the QCI valve for the most part is flushed out every time the valve is cycled, but what can be done to improve on this?

OPTIONS

Our most popular option is the addition of “flush” or “rinse” ports. These are generally 1/8" to 1/2" fnt fittings that are added to the top and bottom covers of the valve. Along with the ports on the caps this design incorporates rotor washers that are perforated to help with the flushing operation. This also has the added advantage of allowing the valve to be flushed while the valve is in use as the rotor seals prevent the flushing fluid from mixing with the process fluid.



Another option that can be used for slurry applications consists of a valve that utilizes a rotor with round seals. This allows us to place a sealing o'ring between the rotor and the caps minimizing the internal volume that particles from the slurry can get into. The caps are modified to accommodate the o'ring and thrust washers that keep the rotor centered. Also, the seals have an additional diameter o'ring to prevent particles from the slurry from getting in behind the seals.

