

What it means if your Reduced Pressure Principle (RP) backflow device is leaking

A Reduced Pressure Principle (RP) backflow device has two internal check valves and a relief valve. If you see water discharging from the relief valve, you may have faulty check valves and/or a faulty relief valve.

Or, the device may be operating properly, as designed.

Normal Operation:

An RP is designed to discharge water in the event of a backflow condition or during line pressure fluctuations. If you see a drip or a burst of water from the relief valve that lasts for only a few seconds, this may be normal operation. (Residual dripping will follow the initial discharge.) The device is reacting to water pressure changes, be it a backflow condition or line pressure fluctuations, and the relief valve is opening temporarily just as it was designed to do.

Leaking:

If you see a continual drip or stream of water, or a full-blown discharge as you can see in the picture on the right, then you most likely have a failure of one of the components of the device. You will need to have the device tested and repaired to fix the leak.

Do not attempt to "fix" the relief valve. The problem is most often internal and using any method to "fix" the relief valve may in fact damage it. Most leaking is caused by a failed internal component, in which case, the relief valve is operating correctly by opening and discharging water.



What makes an RP backflow device leak?

An RP is composed of two check valves and a relief valve, which incorporate a variety of rubber parts, plastic parts, springs, diaphragms, o-rings, and so forth. These parts can wear out from normal wear and tear, be degraded by the water and substances found in the water or be damaged by debris in the water, such as rust, rocks, nails, wood, solder, and whatever other substance has found its way into the water supply.



Normal wear & tear can cause the rubber components to degrade.

Debris that gets stuck and embedded in the check valve will cause a leak around the debris. Once the debris is removed, an indentation is left in its place, and water leaks through the indentation. Thus, it is most often necessary to rebuild or replace the check valve to stop the leaking. The pictures below show you how debris damages a check valve disc.



Will a repair be permanent?

Once the backflow device is repaired and put back into service, it is susceptible to the same conditions that caused it to leak in the first place, so no repair is permanent. More debris in the water main can make its way to the backflow device, which can cause a new failure and a new leak at any time.

Whenever possible, the device should be flushed during the repair, which helps move a high volume of water at high velocity, which helps rid the water main of debris that can cause problems in the backflow device.



Disclaimer

This is a general explanation of leaking, but due to the variety of backflow devices and conditions, it cannot cover every possible cause of leaking. But it covers the basics.