

Understanding Frost Free Hose Bibs

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For the purpose of this article, I will be referring to a standard residential home connection, utilizing the most common types of faucets.

An Exterior Hose Bib, or otherwise called a Sill Cock, is a “[Tap](#)” point to the homes water supply, and is commonly used to connect a garden hose for various uses on the exterior of the home such as watering the lawn or washing the car.



Until the late-1960’s, these units where primarily a gate valve attached to the end of a water pipe on the exterior of the home. These units where prone to freezing due to the fact the water stop point was in the cold, or un-insulated section of the home. Water would commonly freeze just inside the valve and expand the metal, usually galvanized steel, to a point that it would cause the pipe to crack.

In 1965, a patent was filed by [Nibco Inc.](#), for a “Frost Free” type of hose bib where the shutoff point was relocated from the exterior, to a point that could be placed within the insulated space of the structure.

A tube was attached to the valve, which contains a rod attaching the control handle on the exterior, to a seal at the other end, thus stopping the water flow before it entered the cold space. These are traditionally installed in either a wall or floor cavity that can be insulated with the structure.



The design has not changed much in over 50 years simply due to the simplicity and functionality of that design. However, as with most items, the most common failures are due to improper installation and/or use, which I will discuss shortly.

Lets first understand how these units are constructed. The most common frost-free hose bibs/sill cocks being sold today consist of a copper or brass tub which contains the shutoff rod and seal, along with a brass “bib” that contains the valve handle and hose connection fitting. Additionally, most units today also are fitted with an Anti-Siphon valve, which will be discussed in a later article. Although the bib, or hose connection is usually made of a thick and hardened brass material that weathers well, the valve tube is generally not. On a majority of these units, this tube is made of a light copper or brass material that does not easily corrode and allows the rubber seal to easily move inside to provide a good seal. Since this part is designed to be inside the conditioned space, the common materials used work very well and as intended.

In my opinion, there are only two main types of failures of these units, wear and tear and critical failure. Wear and tear on these units is usually easily repaired by replacing a rubber washer, or a broken handle, whereas a critical failure leads to a complete replacement, usually accompanied with repair of structural and/or personal items. There is not much one can do to prevent normal wear and tear, but there are two things that can significantly decrease the chance of a critical failure.

- 1) **Proper installation** – Ensure manufacturer instructions are followed during installation or replacement. Once critical step is to ensure the unit is installed with a slight downward slope toward the exterior. This allows the water inside the valve tube to drain when unit is shut off, trapping the water supply inside conditioned space. Bibs are usually sold with a wall spacer that helps keep the faucet on a slope.
- 2) **Remove hose during freezing weather** – It is recommended by most faucet manufacturers to remove hoses, timers, etc. when not in use, but is even more important on Frost Free units and critical during freezing weather. When the hose is left attached, the faucet cannot drain the valve tube and water is trapped inside a tube that is not designed to freeze. When the water in the hose freezes, it can expand back into the valve tube section and cause it to crack as shown here.



When a frost-free bib cracks during the winter, you may not even realize it until spring. When you turn that faucet on to water the lawn, pressurized water enters the cracked valve tube, and exits into the wall or floor cavity where it is installed, leading to a possibly expensive repair.

In summary, I recommend that a Frost-Free, Anti-Siphon Hose Bib is your best option for exterior faucets on a home in the Northwest where frozen pipes are more common than you may think. However, like many other parts of your home, thy do require proper installation and normal maintenance.



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