How a Standard Frost-Proof Faucet Works

The product is designed to be frost-proof when installed properly (with a slight downward pitch) and there is no restriction on the hose nozzle to prevent the faucet from draining. If a hose is attached during freezing weather, water is trapped inside the faucet which may cause the faucet to freeze and burst.

Figure 1

Product with the valve in the closed position. The water is shut off several inches into the home. The water line does not freeze because of the heat in the home. The product cannot freeze because there is no water in the faucet. When the valve is turned off, all of the water in front of the valve drains from the faucet leaving the tube empty.

Figure 2

An example of a faucet with the valve closed and a hose attached. Water remains in the faucet. Water does not drain out of the faucet because a hose prevents the water from draining. This is similar to the effect of holding liquid in a straw by holding a finger over one end.

Figure 3

The warning that the product needs to be installed with a downward pitch (this facilitates the draining of the water once the unit is turned off). Also indicated is the warning that the hose must be removed in freezing weather or the faucet may freeze and burst.

Figure 4

Adjustable wall flange (inset) displaying this warning.

Figure 5

Animation sequence shows how a faucet can freeze and burst if a hose is left attached in freezing conditions.

Click here to view animation sequence.

Fig. 1

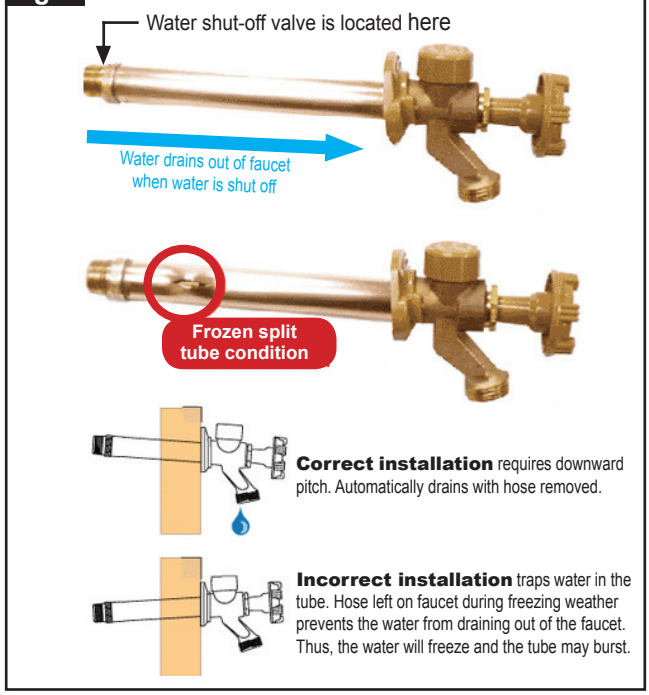

Fig. 2

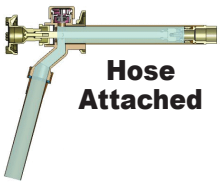

Fig. 3

WARNING - Faucet must be installed with downward pitch toward nozzle and hose must be removed in freezing weather or faucet may freeze and burst. Not intended for continuous use applications.

Fig. 4

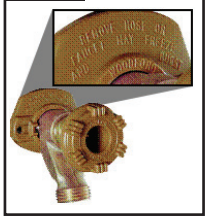

Fig. 5

When a hose or other restriction is left attached, the water cannot drain from the faucet properly. As the temperature drops below freezing, the water in the faucet begins to freeze. The freezing conditions are applied from the outside of the house back toward the interior as the water continues to freeze. Once the water has frozen into the faucet itself, if the faucet has been shut off, there is no relief from this expanding pressure. Eventually the copper tubing will burst to relieve the pressure. No noticeable damage is visible in the home at this time. Only a few drops of water will leak through this bulge at the time of the bursting. Once the weather warms, the water in the faucet will melt. Since the burst in the tubing is after the shut off valve, water will not leak out of the burst tubing until the water is turned on. Thus, there can be a considerable amount of time between the actual rupture of the tubing and the discovery of the problem.

The only possible cause of the bursting of the tube is an obstruction such as a hose being left on in freezing conditions or the improper installation of the product that prevents the water from draining after the valve is shut-off.