

THE FATE OF FREEZING

Perhaps you know someone who has placed a bottle or can of soda, or other soft drink, into a freezer for a quick chill and did not rescue the refreshment from its Arctic winter before the sugar-filled slush turned solid. Upon opening the freezer door, one would discover the container had morphed into a shape quite different from its originally packaged form. In some cases the container broke or the cap popped off and a frozen waterfall resulted. In the construction industry, the consequences of freezing water – and its expansion forces – are more costly and serious than the inconvenience of finding a frozen soft drink in a freezer.

Crumbling roadways and broken water pipes are regular and costly occurrences when the weather turns cold. Freezing costs municipalities, water authorities, homeowners, and businesses significant resources in preventative measures and repairs. This force of nature requires considerable forethought and planning to minimize the otherwise inevitable and expensive damages to public infrastructure and water delivery systems.

Brass valves are no exception. Customers have returned numerous valves to Ford Meter Box because they succumbed to the expanding force of freezing water. Components within key style and ball style valves can become significantly distorted, preventing proper valve operation. Freezing can

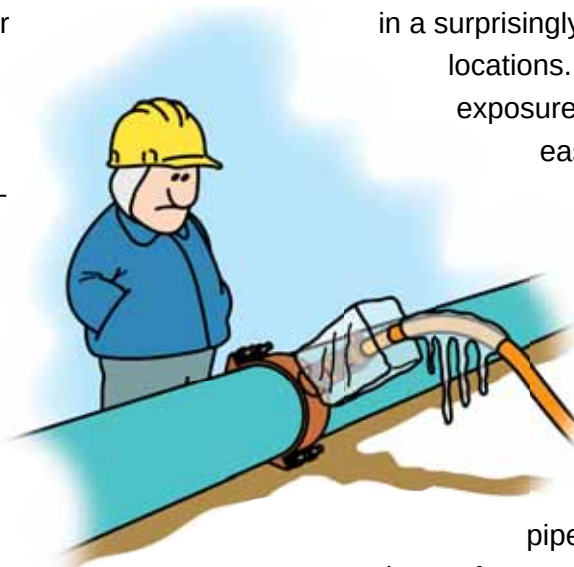
distort and crack the body casting and the assembly connections. These distortions can also allow leakage once the frozen valve thaws. An attempted operation of a ball valve, while obstructed with ice, can distort internal components and subsequently prevent the valve from fully opening or fully closing.

Without proper protection, freezing can occur in a surprisingly short time and in unexpected locations. An uninstalled valve, upon full exposure to freezing temperatures, can

easily chill its contents soon after installation and allow a surprisingly rapid freeze before backfill material can sufficiently insulate the valve. In regions that rarely experience freezing temperatures, valves are sometimes assembled to pipe or tubing above ground. Just

an hour of exposure to freezing temperatures could cause damage. Multiple and minimal freezing intervals in limited durations can also have a cumulative effect on the valve's integrity and functionality.

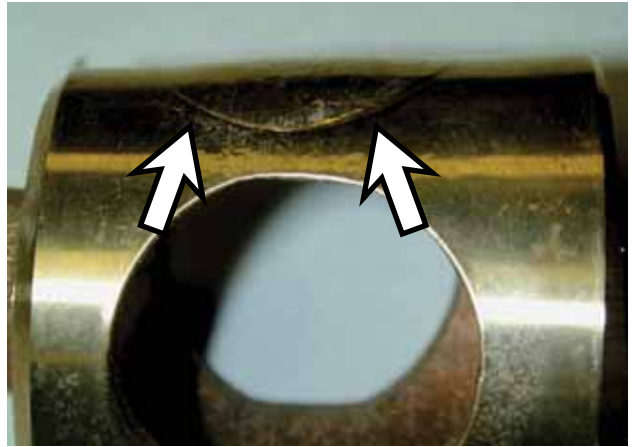
Examples of returned valve components, distorted from freezing, are pictured on the other side of this page. For further information on identifying environmental, application, or installation issues that adversely affect product performance, see the PowerPoint presentation on the Ford Meter Box website entitled, "Trouble Shooting - How to Recognize Improper Installation," located at www.fordmeterbox.com/documents/powerpoint.php.



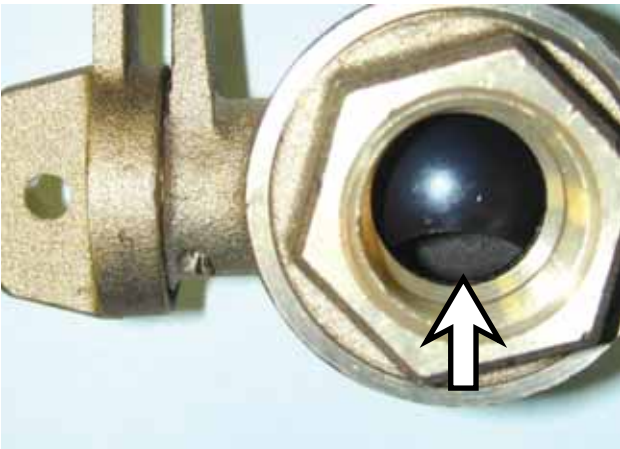
Valve Damage Caused By Freezing



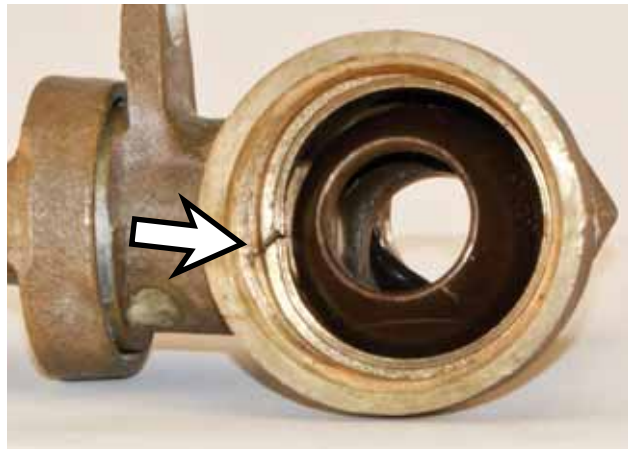
Valve body is split because it was not installed at the proper depth. Frozen water expanded and ruptured the valve body wall.



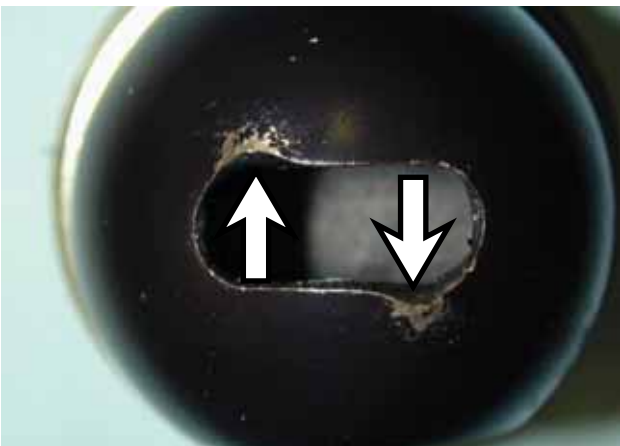
The valve leaks and is hard to operate. The key is bulged from the expansion of frozen water. The key was in the closed position when frozen.



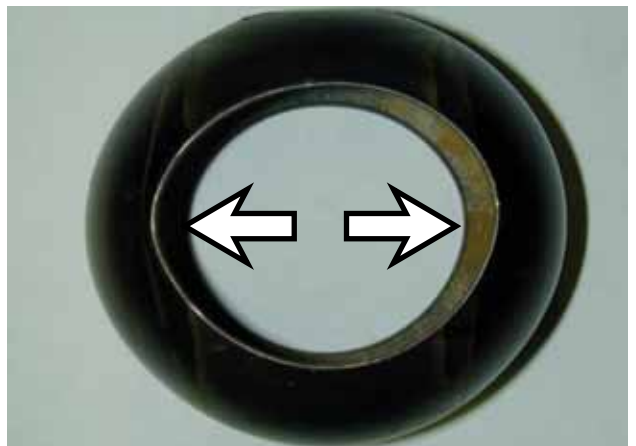
Valve appears to be closed but allows water flow. The ball valve is not fully closed when the tee-head is in a fully closed position.



Frozen water expanded and distorted and split the valve body. The valve ball also sustained some distortion.



Valve is hard to operate. Ball distortion results from attempting to operate the valve while frozen.



Valve is hard to operate. Ball distortion results from freezing.