



common code violations

The Main Water Shutoff Valve

One of the more common code violations our inspectors observe in the field involves the main water shutoff valve to the property. The purpose of this article is to assist property owners, tenants, and construction and inspection professionals in identifying these common code violations so they may be corrected.

What is a Main Water Shutoff Valve?

A main water shutoff valve is nothing more than a valve that stops the flow of water into a building. One of the main purposes of this valve is to prevent water damage in an emergency should a pipe burst or begin to leak. Another purpose is or to allow for routine maintenance of the plumbing system (such as repairing or upgrading a plumbing fixture) so that water can be safely shut off until all plumbing repairs are completed. Still another prudent use of the main shutoff valve is to shut off the flow of water to a home during vacations or lengthy periods of non use in order to prevent accidental unattended leaks. Shutting off the house supply and “bleeding” the remaining water out of the plumbing supply system is an effective method for “winterizing” a vacation home to prevent freezing (and breakage) of pipes during winter months (even Florida homes are subjected to freezing conditions in certain areas, requiring such preventative measures).

As a result, Section 3403.10.1¹ of the International One- and Two-Family Dwelling Code requires the installation of a main shutoff valve near the point where of the water service enters the home and another shutoff valve at the curb or property line connection. (The curb or property line shutoff valve must be installed in accordance with local requirements that are often similar to those as shown below in Figure 2 on page two below).

Figure 1 (at right) shows a properly installed main water shutoff valve on the bottom with a separate drain valve on top. The main shutoff valve is closed by turning the handle in a clockwise direction and the drain valve is opened by turning the handle in the counterclockwise direction in order to “bleed” the water left in the plumbing supply system.

As a result, homeowners and tenants should routinely check these shutoff valves to make sure that they operate freely and do not show any signs of leakage or corrosion. Also, make sure that these valves are not painted closed from years of haphazardly applied exterior house paint. The valve should turn freely and should be easy to reach.



FIGURE 1: Main Shutoff Valve with Drain Valve at exterior of home.



common code violations

Additionally, the code requires that the main water shutoff valve must be made *accessible* (meaning it cannot be concealed or difficult to reach) and must provide for proper *drainage*. Drainage may be accomplished with a simple bleed orifice on the valve body itself or with a separate drain valve located near the main shutoff valve. The purpose of this drain valve is to “bleed” the water supply system after the main shutoff valve has been closed (turned off). Without a drain valve, the plumbing supply system in the home will continue to hold water – and therefore a fixture will continue to leak and cause needless water damage – until all of the residual water has drained out of the plumbing supply system.

Figure 2 (at right) shows the main water shutoff valve in the curbside box with the water meter. This valve is different from the valve shown above in that it normally requires a “key” to operate. This key is a special wrench fitted at the end of a long handle (available at most hardware stores). Though other tools may be used, only a proper key should be used in order to avoid breaking the valve stem. When this happens, the local water department will have to turn off the water supply to the neighborhood or a temporary valve will have to be installed until the damaged valve stem can be repaired properly.



FIGURE 2: Main Shutoff Valve located inside curbside “Buffalo” box.

Figure 2 above shows the valve mounted with the water meter inside a *Buffalo Box*. The term “*Buffalo Box*” is a plumber’s term referring to bygone days when the boxes made for housing and providing access to the city shut-off valve and meter were made of cast iron by a company in Buffalo, New York. In addition, shutoff valves are often used inside the building at individual fixtures and appliances (such as sinks, commodes, and washing machines) in order to allow the homeowner to turn off the water supply for the individual fixture itself. Contrary to popular belief, installation of these secondary valves is not specifically required by code (see section 3403.10.3²).



common code violations

Figure 3 (at right) shows a typical fixture shut-off valve located at a water closet (toilet). Installation of fixture shut-off valves such as this, though not required by code, are installed as good plumbing practice and design.



FIGURE 3: Fixture Shutoff Valve located at the bathroom water closet (toilet).

Though not required by code, when a valve is installed in a home, Section 3403.10.3³ requires that these valves be made accessible. However, it is not uncommon to find the shutoff valve for the icemaker hidden behind a refrigerator in new home construction.

Common Violations in the Field

As we have seen, water shutoff valves are extremely important. However, there are other factors to consider in order to ensure protection of people and property. The following is a listing of the more common code violations we observe in the field:

1) *Missing Drain Valve*

In many instances, the drain valve discussed above was never installed at all. This normally occurs during replacement or repair of an existing plumbing system.

Figure 4 (at right) shows a main house shutoff valve without a drainage valve.



FIGURE 4: Improperly-Installed Main Shutoff Valve with No Drainage Provisions.

As a result, the homeowner will be able to stop the flow of water into the home but will not be able to “bleed” the plumbing system in the event of an emergency. As discussed above, even though water has been shutoff at this valve, residual water will still remain trapped inside the plumbing supply lines. This means that an interior plumbing leak will continue to pour water into the home until the line has been sufficiently drained. Therefore, installation of a drain valve will prevent this from happening.

2) *Improper Tie-In to Drain Valve Fitting*

Figure 5 (at right) shows a drain valve (at the top) that has been removed in order to feed an improper supply pipe to another fixture (in this case a PVC hose bib). Such temporary piping setups are neither proper nor good plumbing practice. For example, since this drain valve has been removed, the homeowner will not be able to bleed the plumbing system in the event of an emergency. As discussed above, even though water has been shutoff at this valve, residual water will still remain trapped inside the plumbing supply lines. This means that an interior plumbing leak will continue to pour water into the home until the line has been sufficiently drained. Therefore, installation of a drain valve will prevent this from happening.



FIGURE 5: Improper removal of drain valve.

3) *“Frozen” or Leaking Shutoff Valves*

And finally, one of the more common code violations our inspectors observed in the field is a “frozen” valve that does not turn due to corrosion or age, or a valve that leaks water. As a result, homeowners should routinely test and inspect all the shutoff valves in a home in order to ensure that the valve will operate properly when necessary. Also, exterior shutoff valves should be checked to make sure that lawn irrigation heads do not spray water onto the valve fitting, a leading cause of premature corrosion and valve failure.

Summary

As we have seen, the Main Shutoff Valve and subsequent fixture shutoff valves serve an extremely important function – ensuring the safe and proper operation of the water supply system. Whenever plumbing work is required, the main shutoff valve should be closed and the drain valve opened. This will drain the water from the system when interior fixture valves are open, thereby allowing plumbing repair. As professional home and commercial property inspectors, we frequently observe the code violations discussed in this article and encourage property owners as well as inspection and building professionals to take the time and effort to identify and correct them.

Therefore, the conditions discussed in this article should be corrected immediately by a qualified and licensed contractor.



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Please Contact Us

If you have any questions, comments or suggestions regarding the information presented in this article, or if you would like to schedule an inspection of your property to identify these and other common property defects, please feel free to contact us directly:

Guardian Inspection & Information Services

E-mail info@myguardian.com
World Wide Web www.myguardian.com
Telephone 321.639.2743
Facsimile 321.636.6377
Address Guardian Inspection & Information Services®
113 Tropic Place
Rockledge, FL 32955

End Notes

¹ International One- and Two- Family Dwelling Code™ 1998, Copyright © 2000 by International Code Council, Inc. Published in cooperation with: Building Officials and Code Administrators International, Inc., International conference of Building Officials and Southern Building Code Congress International, Inc., Incorporated the provisions of the 1995 edition of the CABO One and Two Family Dwelling Code Promulgated by the council of American Building Officials (CABO).

² Ibid.

³ Ibid.

NOTICE: The information presented in this article is intended for educational purposes only. It is not intended to identify or predict all the potential defects or conditions that may exist and be considered for a complete analysis of a given property.