TOWN OF DERRY, NH

PLUMBING FOR
COMMERCIAL KITCHENS

Chemical Dispenser and Y-Valve (Wye) Installations

Plumbing must meet the 2018 International Plumbing Code requirements (2018 IPC) which prevents cross-connection hazards from occurring. Plumbing installations and connections, including chemical dispensing systems that provide a means of mixing potable water with chemicals to provide a user with a ready-to-use chemical solution, must follow current codes and manufacturer design specifications.

Provide an *approved dedicated water supply line and connection outlet with shut off valve* for the mop/service sinks or three bay sinks to supply water when chemical dispensers are utilized. See Figure 1.

Figure 1 – Approved Connection

Do not use a faucet equipped with an atmospheric vacuum breaker (AVB) to supply water to chemical dispensers in a potable water distribution system. An AVB located on a mop/service sink faucet is considered a non-testable backflow prevention device. This must be installed at a minimum critical level point of at least 6-inches above the greatest elevation of use in the system.

The AVB is not designed for use in high health hazard applications (e.g. soaps, sprays, degreasers, chemicals, and similar contaminants), and must not be used where subjected to continuous pressure on the backflow prevention device. Y-Valves, shut-off valves, devices or obstructions downstream (i.e. chemical dispenser, shut-off type spray nozzle, etc.) from faucet AVBs are not permitted, as this will result in continuous water pressure and failure of the backflow prevention device. It is considered a violation and requires corrective action.

All chemical dispensing systems must be classified American Society of Sanitary Engineering (ASSE) standard l055, either equipped with a visible full self-contained air gap fitting as a means of backflow protection, **See Figure 2**, or provided with an approved testable continuous pressure backflow prevention assembly. S**ee Figures 3a and 3b.**

INCORRECT INSTALLATION AT 3-BAY

This connection has NO protection or backflow prevention device to protect the potable water. Questionable fittings and piping do not comply with code requirements.

Connections to potable water and installations of backflow preventers should only be done by a licensed New Hampshire plumber.

CORRECT INSTALLATION AT 3-BAY

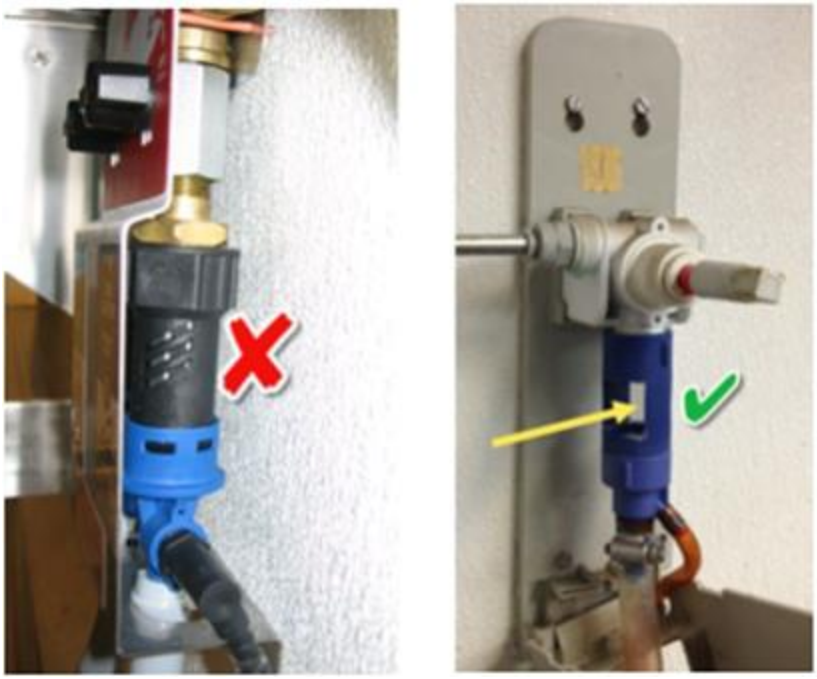

Figure 2 – ASSE 1055 Air Gapped Equipped

Notice: Elastomeric gaps (e-gap, flex gaps, etc.) are not allowed unless approved backflow protection assemblies are installed upstream of the chemical dispensing units. (i.e. Continuous pressure vacuum breaker or RPZ.)

Figure 3a – Continuous Pressure Vacuum Breaker

Figure 3b – Reduced Pressure Principle Zone Assembly (RPZ)

The following plumbing connection scenarios are considered to be improperly installed (with or without hose-bib vacuum breakers attached) and are not in compliance:

- **A faucet equipped with an AVB with a water supply line directly feeding a chemical dispenser:** ASSE 1001 performance requirements for AVB devices state that these backflow preventers are not designed for applications where they could be subjected to continuous water pressure, and are not testable for maintenance. Under such installations the AVB devices will fail under constant pressure conditions. There is now a potential cross-connection hazard. See Figure 4.

Figure 4 – Unapproved Connection

- **A faucet equipped with an AVB and a Y-valve attached supplying water to a chemical dispenser:**

  Installing a Y-valve, similar downstream shut-off device, or obstruction places back pressure on the AVB. Both sides of a Y-valve connected to a sink for a chemical dispenser are pressurized; one side supplying water to the chemical feeder and the other side to the shut-off valve on the Y-valve, or to a hose attached. Since, AVB's could be kept on under constant pressure at all times, they will fail under such installations. When the faucet is used with a hose on the open side of a Y-valve, there is now a potential cross-connection hazard. See Figure 5.

Figure 5 – Unapproved Connection

A faucet equipped with an AVB and a Y-valve attached: Y-valves and similar downstream shut-off devices that have an integral shut-off valve (e.g. solenoid, butterfly valve, ball valve, spray nozzle, etc.) connected to a faucet equipped with an integral AVB, including shut-off type spray nozzles and chemical dispensing units, are not permitted on a faucet equipped with an AVB, due to device's inability to be under constant pressure as this will result in failure of the backflow device. There is now a potential cross-connection hazard. See Figure 6.

Y-VALVES ARE NOT PERMITTED DOWNSTREAM FROM AN ATMOSPHERIC VACUUM BREAKER.

Figure 6 – Unapproved Connection

A faucet equipped with an AVB with a pressure bleed device or similar downstream shutoff device or obstruction: Installing a "side-kick", similar downstream shut-off device, or obstruction places back pressure on the AVB. Since the atmospheric vacuum breakers could be kept on under constant pressure at all times, they will fail under such installations. Chemical dispensers that are connected to a faucet with a pressure bleeding device on the faucet outlet, this includes devices referred to as a wasting tee, flow-through device, or otherwise known as a "sidekick" device are considered obstructions and are not approved by the Department, as they are prone to fouling/plugging failure under typical water and operating conditions found within Town of Derry. There is now a potential cross-connection hazard. See Figure 7.

Figure 7 – Unapproved Connection

A faucet equipped with an AVB, Y-valve attached and a hose(s) is connected, or a faucet equipped with an AVB with an adjustable/shut-off type spray nozzle attached to a hose:

If you wish to maintain a hose attached with a shut-off type spray nozzle under continuous pressure, an approved testable continuous pressure vacuum breaker must be installed. Notice: Simply adding a hose-bib type vacuum breaker to a faucet under the aforementioned scenarios will not result in code compliance. See Figure 8.

Figure 8 – Unapproved Connection

All cross-connection hazards must be prevented, and all plumbing must be in compliance with current plumbing and health codes.

A good reference for determining the proper installation of backflow prevention devices and assemblies, and preventing cross connections is the Cross-Connection Control Manual, which is published by the U.S. EPA.