Illinois Section of the American Water Works Association
BACKFLOW COMMITTEE
545 South Randall Road, St Charles, IL 60174
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Backflow Bulletin #1

FIRE PROTECTION SYSTEMS

DC = Double Check Valve
DCDA = Double Check Detector Assembly
RP (aka RPZ) = Reduced Pressure Zone
RPDA = Reduced Pressure Detector Assembly

	None	DC	DCDA	RP	RPDA
• **Chemicals in the System** Anti-Freeze, Foam, Corrosion Inhibitors, etc.				√	√
• **Chemicals in the System – Glycerin** Glycerin or similar food-grade non-toxic additive		√	√	√	√
• **Siamese Fitting or Similar External Water Connection** Allows for potential non-potable water entering the system				√	√
• **Looped System (Domestic Water)** No longer than a 3' dead end or branch to any sprinkler head	√				
• **Basic Wet Fire Protection System** Clean water only with no exterior connections		√	√		
• **Single Head off of Domestic Water** No longer than a 3' run from the domestic water line to the head	√				
• **Multiple Heads off of Domestic Water – Remote Location** Water piping must be looped. Maximum run to a head is 3'	√				
• **Multiple Heads off of Domestic Water – Remote Location** Piping not looped…has dead-ends. No chemical additives.		√			
• **Multiple Heads off of Domestic Water – Remote Location** Piping not looped…has dead-ends. With chemical additives.				√	
• **Dry Fire System** No Chemicals, Foam, External Connections (Siamese fittings), etc		√	√		
• **Residential Fire System** Same as above. Generally a DC at the domestic water connection.		√			

Miscellaneous:

►ALWAYS check with your local Water Purveyor, Building Department, and/or Fire Department
►MANY communities require "Detector Assemblies," not simply a DC or RP
►MANY communities allow a DC or DCDA even though Plumbing Code requires an RP. This is done mostly on retrofit projects where pressure head loss, lack of an adequate floor drain, etc are issues.
►ALL backflow preventers must be tested annually.
►RP installations must be high enough above the floor or ground to allow for an air gap below the relief valve.
►Backflow preventers shall be installed no higher than 5' and shall have full access for testing and repairs.

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Backflow Bulletin #2

BOILERS & PRESSURE VESSELS

Hydronic Heating

** DuC = Dual Check Valve w/Atmospheric Vent (ASSE 1012 or ASSE 1022)*
** RP (aka RPZ) = Reduced Pressure Zone Backflow Preventer*
** (√) = Often approved on retrofit situations*

	Air Gap/Break Tank	DuC	RP
• **Commercial Boiler – High Pressure…above 30psi** Must have a break tank	√		
• **Commercial Hot Water Boiler - No Chemicals** Low pressure, hot water boiler, no additives or means to add chemicals	√	√	√
• **Commercial Hot Water Boiler - No Chemicals But Has the Capability** May not have chemicals but has provisions to add chemicals	√		(√)
• **Commercial Hot Water Boiler - Chemicals** Contains anti-freeze, corrosion inhibitors, cleaners, has a snow melt system, etc	√		(√)
• **Commercial Steam Boiler - Chemicals or No Chemicals** Almost all steam boilers require additives to keep the water from surging.	√		(√)
• **Commercial Boiler with Solar Panels** Heat exchanger should be double-walled per Plumbing Code. If not, must be RP (anti-freeze)		√	√
• **Residential Steam Boiler - Chemicals or No Chemicals** Almost all steam boilers require additives to keep the water from surging.	√	(√)	(√)
• **Residential Hot Water Boiler with Solar Panels** Heat exchanger should be double-walled per Plumbing Code. If not, must be RP (anti-freeze)		√	√
• **Residential Hot Water Boiler with Snow Melt** Generally will have anti-freeze in the system (toxic chemicals require an air gap/break tank)	√		(√)
• **Residential "Small" Hot Water Boiler without Snow Melt** Under 200,000 btu, no chemicals or means to put chemicals into the boiler	*Protection is not req'd but is recommended*	none req'd	none req'd
• **Residential "Large" Hot Water Boiler without Snow Melt** Over 200,000 btu, no chemicals (toxic chemicals require an air gap/break tank)		√	√

Note that an air gap or break tank is always best!

Miscellaneous:

►ALWAYS check with your local Water Purveyor, Building Department, and/or Inspection Department
►MANY communities have stricter policies, regulations and/or ordinances
►ALL backflow preventers must be tested annually.
►RP installations must be high enough above the floor or ground to allow for an air gap below the relief valve.
►Backflow preventers shall not be installed in pits, be no higher than 5' and shall be fully accessible

NOTE: The reference code for Chicago is 18-29-608 and its sub part. Chicago is much more stringent

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Regulatory Standards for Backflow Protection

Backflow Bulletin #3

Use this Bulletin in conjunction with Bulletin #3.1

Required Backflow Protection	Fixture Type
ASME A112.1.2, ASME A112.1.3	Water Softener Drain
ASSE 1001, ASSE 1011, ASSE 1052	Laundry Tub/Mop Basin w hose threads
ASSE 1011, ASSE 1052	Indoor Hose Bibb(s)
ASSE 1011, ASSE 1019, ASSE 1052, ASSE 1053	Outdoor Hose Bibb(s)
ASSE 1012, 1015 -- No Chemicals; ASSE 1013** -- Chemicals	Boiler or similar
ASME A112.1.2**, ASSE 1012**	Humidifier
ASSE 1002	Toilet(s)
ASSE 1013	Lawn Irrigation
ASME A112.18.1, ASSE 1014	Hand Held Showers/Hose Sprayers
ASSE 1013**	Water Powered Sump Pump
ASME A112.1.2**, ASSE 1001**, ASSE 1013	Pool/Spa/Hot Tub/Water Feature/Pond/Fountain
ASME A112.18.1	Kitchen Faucet(s)
ASME A112.1.2**, ASSE 1012**	Non-Carbonated Beverage
ASSE 1032	Carbonated Beverage
ASME A112.1.2, ASME A112.1.3, ASSE 1001, ASSE 1013,	Developer…Photo, X-Ray, etc

***State Plumbing code may allow other backflow protection under certain hydraulic/pumping/hazard conditions*

1	ASME A112.1.2	Air Gap – The unobstructed vertical distance between the lowest point of any pipe, faucet or fixture and the FLOOD LEVEL RIM of the receptor onto which it is discharging.
2	ASME A112.1.3	Air Gap Fittings – for use with plumbing fixtures and appliances.
3	ASME A112.18.1	Plumbing Supply Fittings.
4	ASSE 1001	Atmospheric Vacuum Breaker – Critical Level of AVB must be installed at least 6” above all downstream piping with NO valves downstream.
5	ASSE 1002*	Anti-Siphon Fill Valves (Ballcock) for Gravity Water Closet Flush Tanks.
6	ASSE 1011*	Hose Bibb Vacuum Breaker (for indoor use).
7	ASSE 1011*	Anti-Frost Hose Bibb Vacuum Breaker – For use on outdoor hose bibs where it could be exposed to freezing.
8	ASSE 1012	Vented Dual Check Valve – For supplies to untreated boilers with less than 15 psig steam or maximum water pressure of 30 psig, or other non-health hazard fixtures.
9	ASSE 1013	Reduced Pressure Principle Backflow Prevention Assembly – Requires annual testing
10	ASSE 1014	Vacuum breaker for handheld showers.
11	ASSE 1015	Double Check Valve Backflow Prevention Assembly - Requires annual testing
12	ASSE 1019	Vacuum Breaker wall hydrants, freeze resistant automatic draining type.
13	ASSE 1020	Pressure Vacuum Breaker – Requires annual testing: This assembly is NOT allowed in Illinois
14	ASSE 1032	Carbonated Beverage Backflow Preventer Dual Check Valve.
15	ASSE 1052	Hose Connection Backflow Preventers.
16	ASSE 1053	Dual Check Backflow Preventer Wall Hydrant Freeze Resistant Type.

**These backflow preventers can be found at hardware stores. A local plumbing permit may be required for installation.*

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Regulatory Standards for Backflow Protection

Backflow Bulletin #3.1

Use this Bulletin in conjunction with Bulletin #3

2	ASME A112.1.3		Air Gap Fittings – for use with plumbing fixtures and appliances such as water softener drains or similar.
4	ASSE 1001		Atmospheric Vacuum Breaker – Critical Level of AVB must be installed at least 6" above all downstream piping with NO valves downstream.
5	ASSE 1002*		Anti-Siphon Fill Valves (Ballcock) for Gravity Water Closet Flush Tanks.
6	ASSE 1011, 1052*		Hose Bibb Vacuum Breaker (for indoor use).
7	ASSE 1011, 1052*		Anti-Frost Hose Bibb Vacuum Breaker – For use on outdoor hose bibs where it could be exposed to freezing.
8	ASSE 1012		Vented Dual Check Valve – For supplies to untreated boilers with less than 15 psig steam or maximum water pressure of 30 psig, or other non-health hazard fixtures.
9	ASSE 1013		Reduced Pressure Principle Backflow Prevention Assembly – Requires annual testing. Can be used on used on high (health) or low hazard connections.
10	ASSE 1014		Vacuum breaker for handheld showers or similar.
11	ASSE 1015		Double Check Valve Backflow Prevention Assembly – Requires annual testing. Use on low hazard (pollutant) connections only.
12	ASSE 1019*		Vacuum Breaker wall hydrants, freeze resistant automatic draining type.
13	ASSE 1020		Pressure Vacuum Breaker – Requires annual testing. Can be used on used on high (health) or low hazard connections. This assembly is **NOT allowed in Illinois**
14	ASSE 1032		Carbonated Beverage Backflow Preventer Dual Check Valve.

**These backflow preventers can be found at hardware stores. A local plumbing permit may be required for installation.*

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Backflow Bulletin #4

RESTAURANTS & FOOD SERVICE

Connections to look for and recommended protection

** VB = Atmospheric Vacuum Breaker (PVB not allowed)*
** DuC = Dual Check Valve w/Atmospheric Vent (ASSE 1012 or ASSE 1022)*
** RP (aka RPZ) = Reduced Pressure Zone Backflow Preventer*
** AG = Air Gap (ASSE 1055 or similar)*

	VB	DuC	RP	AG
• **Dishwasher, Glasswasher, or Mop Basin - No Chemicals** Backflow protection is not required but is recommended.	√	√	√	√
• **Dishwasher, Glasswasher, or Mop Basin – W/Chemicals** Direct or indirect chemical injection	√		√	√
• **3 Compartment Sink or Sink w/Pre-Rinse Faucet – No Chemicals** Fixed height without a spring or pull-down with a spring	√	√	√	√
• **3 Compartment Sink or sink w/Pre-Rinse Faucet – W/Chemicals** Fixed height without a spring or pull-down with a spring. Chemical injection	√		√	√
• **Garbage Disposer with Rim Rinse** Direct water connection below the bowl. If VB, it must be above the rim.	√		√	√
• **Ice Machine – Built-in or free standing** Water cooled and non-water cooled	√	√	√	√
• **Beverage Dispenser - Non-carbonated** Includes coffee, tea, juice, cappuccino, etc. Any unit connected to the water	√	√	√	√
• **Beverage Dispenser - Carbonated** *(copper piping is not allowed!)* A carbonated beverage backflow preventer (ASSE 1032) should be installed.		√ Vented DuC ASSE 1032	√ stainless steel	√
• **Trap Primer (Floor Drain)** Generally the primer is located under a sink or behind a wall access cover				√
• **Food Equipment** Such as: Steamer, Food Warmer, Rethermalizer, Combi unit, WOK, etc	√	√	√	√
• **Chemical Dispenser – Wall hung or free standing.** Look for ANSI or ASSE approved backflow protection sticker, VB, RP, etc	√		√	√

Note that an air gap is always best!

Miscellaneous:

►Hose bibs, mop basin/janitor sink/laundry tubs…ALL faucets with a garden hose thread require VB or similar.
►ALL food prep sinks, 3-compartment sinks, ice machines, water softeners, etc shall have an AG on the drain.
►Testable backflow preventers shall be tested annually and results get submitted to the purveyor or agent.
►Non-testable devices shall be inspected regularly and repaired/replaced as observed and per state codes.
►ALWAYS check with your local Water Purveyor, Building Dept, Health Dept, and/or Inspection Department.

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