

CROSS CONNECTION

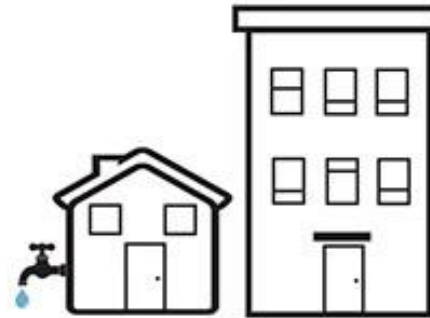
PRESENTER: Geno Pace

For 35 years Geno had taught Plumbing, Natural Gas, Pipefitting and Cross Connection Control at NSCC until his retirement. For the last five (5) years, he has continued to teach Cross Connection Control, as needed, at NSCC and Local 56 – Plumbers & Pipefitters Union.

He is presently a member of the ACWWA Cross Connection Section and is Chair of the ACWWA Education Committee. He is also an active member, and former Chair, of the National Cross Connection Control Committee.

CROSS CONNECTION

AN EXISTING CONNECTION OR A POTENTIAL CONNECTION BETWEEN ANY PART OF A POTABLE WATER SYSTEM AND ANY OTHER ENVIRONMENT CONTAINING OTHER SUBSTANCES IN A MANNER WHICH, UNDER ANY CIRCUMSTANCES, WOULD ALLOW SUCH SUBSTANCE TO ENTER THE POTABLE WATER SYSTEM.









PURVEYOR

RESPONSIBILITIES

- ✓ Provide safe drinking water.

PROVINCIAL HEALTH

RESPONSIBILITIES

- ✓ Ensuring that water purveyor operates the system free of actual or potential health hazards.

[Cross Connection Control Guide.pdf \(novascotia.ca\)](#)

PLUMBING INSPECTION

RESPONSIBILITIES

- ✓ Prevent unprotected cross connection from being designed or built into the structures as demanded by 2.2.6.2.1.(1) in the National Plumbing Code.

CONSUMER

RESPONSIBILITIES

- ✓ Prevent pollutants and contaminants from entering the potable water system.
- ✓ Responsible for installation, testing and repair of any backflow device.

BACKFLOW

The unwanted reverse flow of water or other liquid back into the potable water system.

CAUSES OF BACKFLOW

- ✓ Back siphonage
- ✓ Back pressure
- ✓ Combination of both

BACK SIPHONAGE

- ✓ Defined as backflow caused by a negative pressure in the system.

BACK PRESSURE

- ✓ Defined as backflow caused when a potable system is connected to a system operating under a higher pressure.

TYPES OF HAZARDS

- ✓ **SEVERE**
- ✓ **MODERATE**
- ✓ **MINOR**

Refer to CSA B 64.10

SEVERE HAZARDS

- A cross connection involving any substance in sufficient concentration to cause death, spread disease or illness, or contain any substance which has a high probability of causing such effects.
- Internal Examples:
 - Connections to sewer pipes (bacteria)
 - Operating rooms/Lab Sink
 - Heating system and fire systems with chemical additives
- Building Examples:
 - Hospitals, Car Wash, Marine Facility

MODERATE HAZARDS

- A cross connection involving any substance which has a low probability of becoming a severe hazard and would constitute a nuisance or be aesthetically objectionable if introduced into the domestic water supply
- Examples:
 - Commercial Swimming Pools
 - Ornamental fountains
 - Heating system and fire systems with **no** chemical additives
- Building Examples:
 - Apartment, Office, Hotel, Shopping Mall

MINOR HAZARDS

- A cross connection between the potable water system and any pipe, vat or tank intended for carrying or holding potable water, which has a low probability of becoming a moderate hazard.
- Examples:
 - Residential boilers (**no** additives)
 - Single family homes
 - Flexible shower heads
- Building Examples:
 - Single Family Home, Duplex, Small Church with only a bathroom



What classification would you give the above example?



What classification would you give the above example?

PREMISE

What classification would you give a hospital?

What classification would you give an apartment building?

What classification would you give a single-family house?

VALVE LOCATIONS

- **Premise** – after the meter, protects the water main from the building.
 - Protects water main from building
- **Combination/Full** – after the meter and at the fixture or appliance that has a cross connection.
 - Protects water main and the people in the building

PROPER SYSTEM PROTECTION

Devices shall be selected according to the protection required due to the degree of hazard and the possible type of backflow present.

- Is it Severe, Moderate or Minor?
- Is it subjected to back pressure or back siphonage?

PREMISE AND INTERNAL

CSA B64.4 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

CSA B64.5 DOUBLE CHECK VALVE ASSEMBLY

CSA B64.6 DUAL CHECK VALVE

INTERNAL ONLY

CSA B64.1.2 PRESSURE VACUUM BREAKERS

CSA B64.1.1 ATMOSPHERIC VACUUM BREAKERS

CSA B64.2 HOSE CONNECTION VACUUM BREAKERS

CSA B64.3 DUAL CHECK WITH ATMOSPHERIC PORT

CSA B64.7 LABORATORY FAUCET VACUUM BREAKER

CSA B64.8 DUAL CHECK WITH VENT

CSA B64.10 MANUAL FOR THE SELECTION, INSTALLATION, AND FIELD TESTING OF BACKFLOW PREVENTION DEVICES

PREMISE ISOLATION

RP - REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

- ✓ Protects against **severe** hazards
- ✓ Protects against backsiphonage and backpressure
- ✓ Unless approved, it must be installed horizontally
- ✓ Must be installed as an assembly
- ✓ Approximately 10 psi pressure loss
- ✓ Used for premise and internal protection

MUST BE TESTED

RP

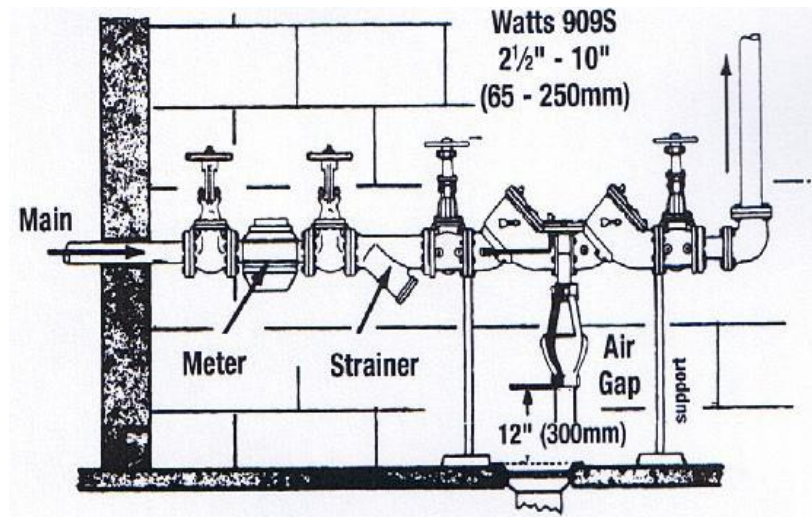


Example of units 2" and under



Example of units 2 1/2" and larger

RP



Premise



Internal

DCVA - DOUBLE CHECK VALVE ASSEMBLY

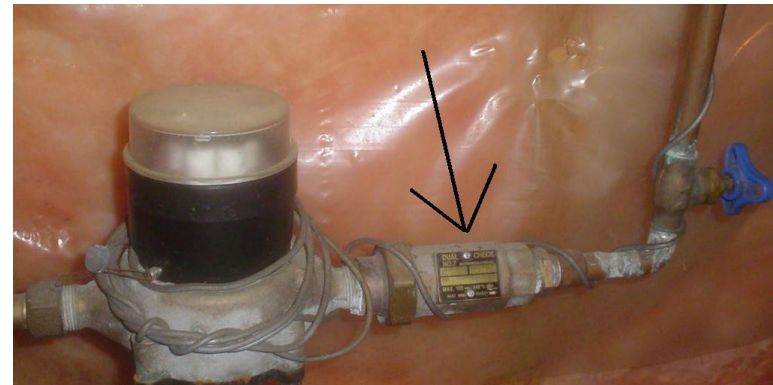
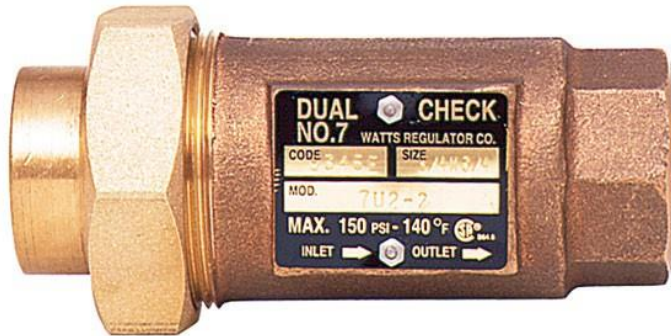
- ✓ Protects against **moderate** hazards
- ✓ Protects against backsiphonage and backpressure
- ✓ Unless approved, it must be installed horizontally
- ✓ May be subjected to continuous pressure
- ✓ Approximately 4 psi pressure loss
- ✓ Used for premise and internal protection

MUST BE TESTED

DCVA



DuC - DUAL CHECK VALVE

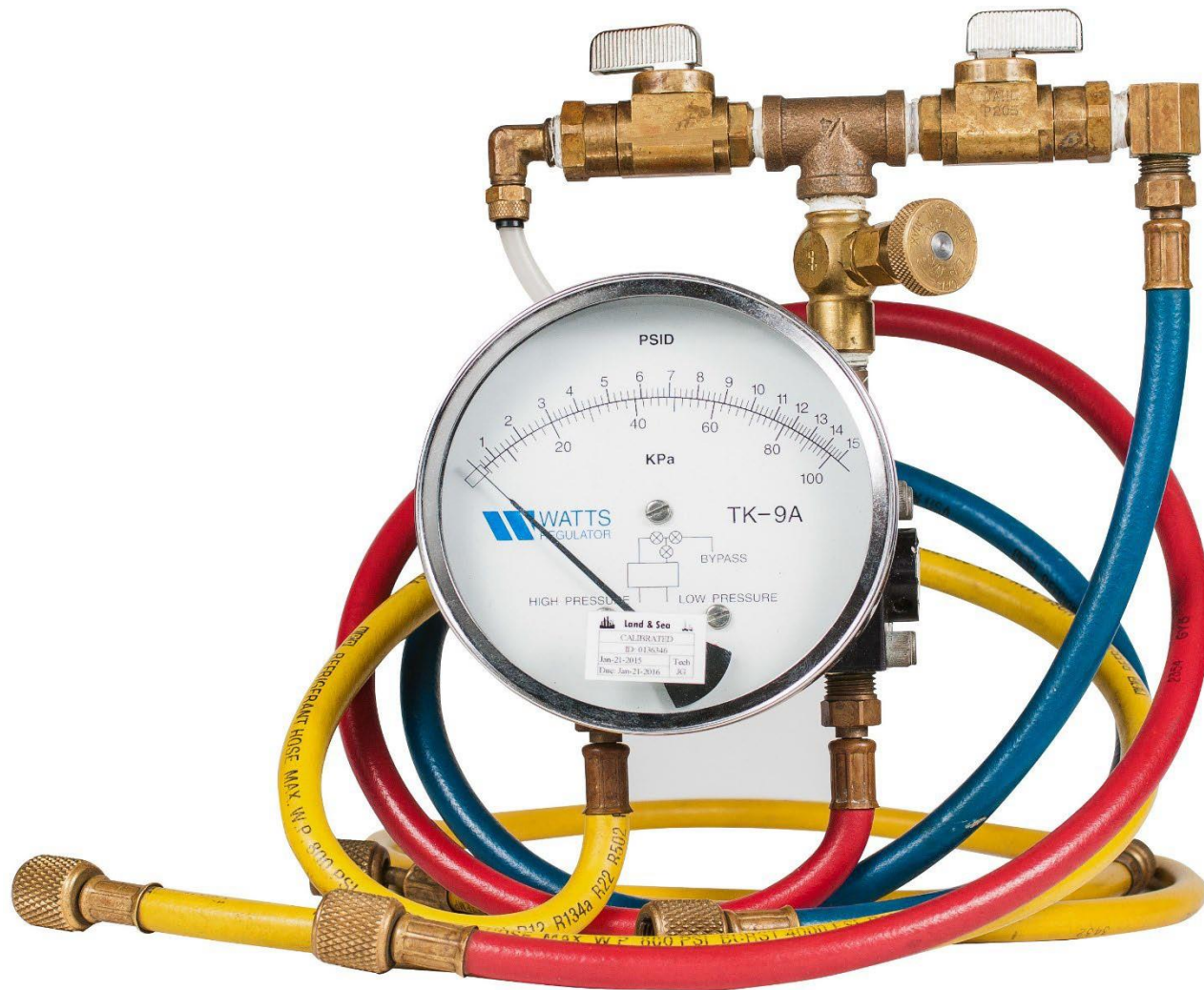


Residential Premise Only

- ✓ Protects against **minor** hazard only
- ✓ Protects against backsiphonage and backpressure
- ✓ Used for **residential** premise protection
- ✓ Approximately 4 psi pressure loss

COULD BE TESTED (not mandatory)





DCVA VIDEO

<https://youtu.be/VF488rRguDk>

RP VIDEO

<https://youtu.be/A8spqrjDyik>