

PLUMBING IN FOOD SERVICE ESTABLISHMENTS

- I. PLUMBING CODE – FOOD CODE - DEFINITIONS**
- II. BACKFLOW PREVENTION DEVICES AND INSTALLATION.**
- III. AIR GAPS**

2000 MICHIGAN PLUMBING CODE:

AIR GAP – *The unobstructed vertical distance through the free atmosphere between the outlet of the waste pipe and the flood level rim of the receptacle into which the waste pipe is discharging.*

802.1.1 *Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap.*

802.2.1 Air gap. *The gap between the indirect waste pipe and the flood level rim of the waste receptor shall be a minimum of twice the effective opening of the indirect waste pipe.*

THE 1999 FDA FOOD CODE:

5-202.11 Approved System* *A plumbing system shall be designed, constructed and installed according to law (see above plumbing code).*

5-202.13 Backflow Prevention, Air Gap.* *An air gap between the water supply inlet and the flood rim of the plumbing fixture, equipment, or nonfood equipment shall be at least twice the diameter of the water supply inlet, and may not be less than 25 mm (1 inch).*

5-203.14 Backflow Prevention Device, When Required* *A plumbing system shall be installed to preclude backflow of a solid, liquid or gas contaminant into the water supply system at each point of use at the food establishment, including on a hose bibb if a hose is attached by:*

- (A) Providing an air gap; or*
- (B) Installing an approved backflow prevention device.*

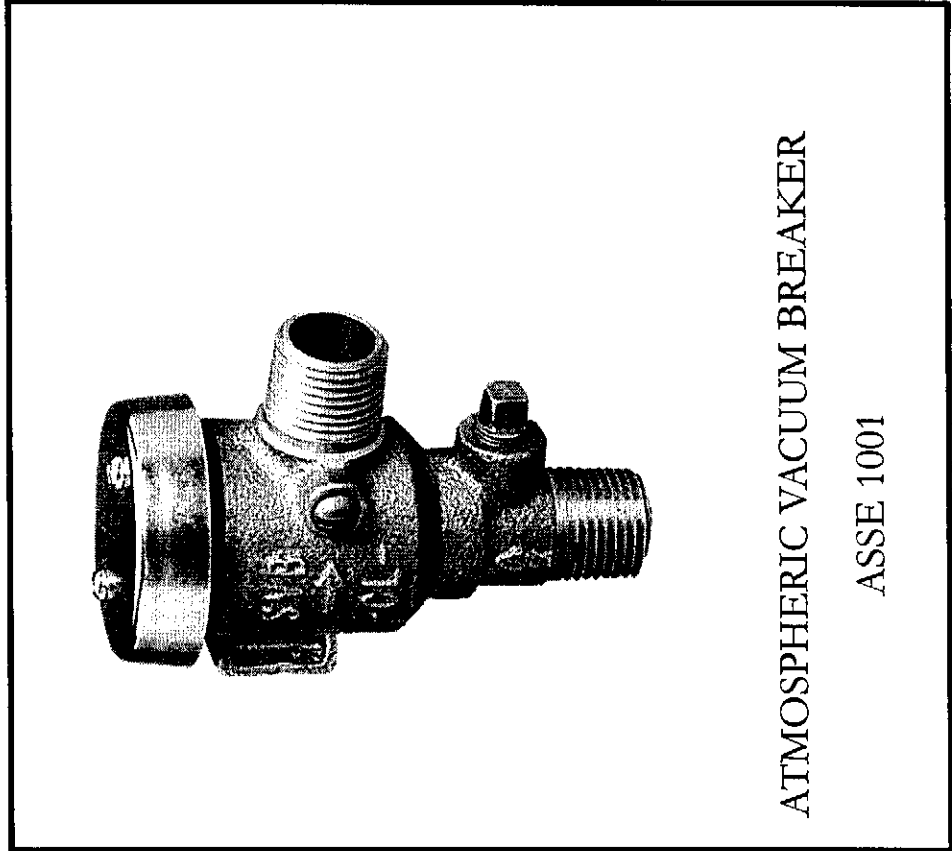
5-205.15 Maintained in Good Repair* *A plumbing system shall be: Repaired according to law AND maintained in good repair (s).*

5-402.11 Backflow Prevention* *A direct connection may not exist between the sewage system and a drain originating from equipment in which food, portable equipment or utensils are placed.*

VACUUM BREAKERS: NO SHUT-OFFS PERMITTED DOWNSTREAM NO CONTINUOUS PRESSURE

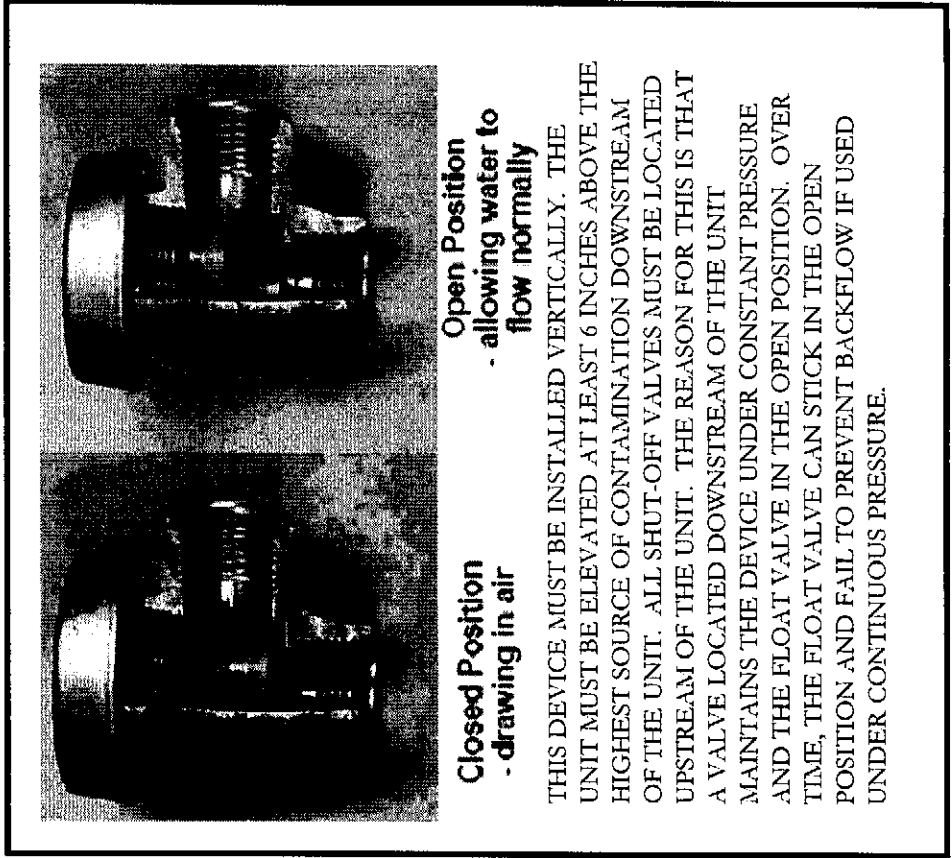
5-202.11 Approved System* *A plumbing system shall be designed, constructed and installed according to law (see above plumbing code).*

CONTINUOUS PRESSURE – *Pressure across a backflow prevention device caused by a valve such as a shut-off handle or solenoid being located downstream of the backflow device. This is not permitted on certain backflow devices such as hose bibb vacuum breakers and atmospheric vacuum breakers.*



ATMOSPHERIC VACUUM BREAKER

ASSE 1001



Closed Position
- drawing in air

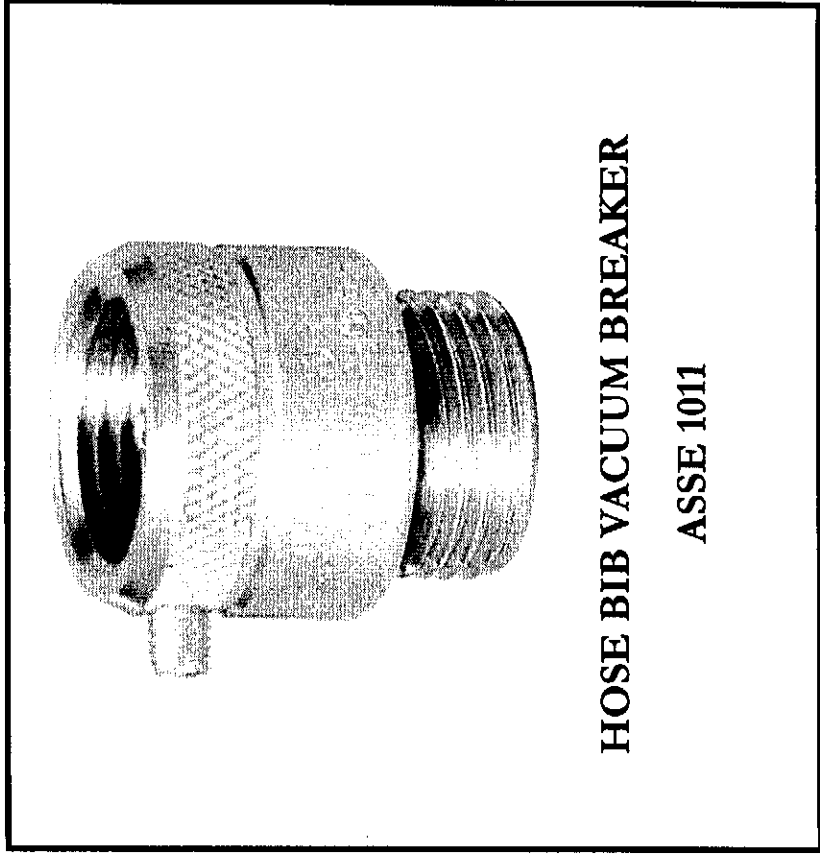
Open Position
- allowing water to flow normally

THIS DEVICE MUST BE INSTALLED VERTICALLY. THE UNIT MUST BE ELEVATED AT LEAST 6 INCHES ABOVE THE HIGHEST SOURCE OF CONTAMINATION DOWNSTREAM OF THE UNIT. ALL SHUT-OFF VALVES MUST BE LOCATED UPSTREAM OF THE UNIT. THE REASON FOR THIS IS THAT A VALVE LOCATED DOWNSTREAM OF THE UNIT MAINTAINS THE DEVICE UNDER CONSTANT PRESSURE AND THE FLOAT VALVE IN THE OPEN POSITION. OVER TIME, THE FLOAT VALVE CAN STICK IN THE OPEN POSITION AND FAIL TO PREVENT BACKFLOW IF USED UNDER CONTINUOUS PRESSURE.

VACUUM BREAKERS: **NO** SHUT-OFFS PERMITTED DOWNSTREAM NO CONTINUOUS PRESSURE

5-202.11 Approved System* *A plumbing system shall be designed, constructed and installed according to law (see above plumbing code).*

CONTINUOUS PRESSURE – *Pressure across a backflow prevention device caused by a valve such as a shut-off handle or solenoid being located downstream of the backflow device. This is not permitted on certain backflow devices such as hose bibb vacuum breakers and atmospheric vacuum breakers.*

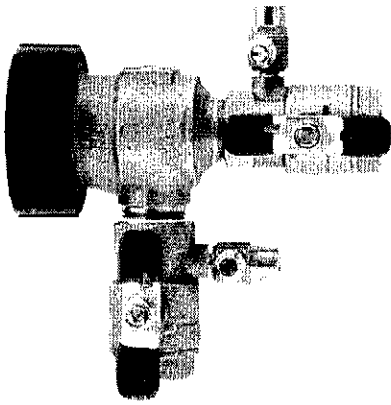


HOSE BIBB VACUUM BREAKERS ARE SMALL INEXPENSIVE DEVICES WITH HOSE CONNECTIONS WHICH ARE SIMPLY ATTACHED TO SILL COCKS AND THREADED FAUCETS OR WHEREVER THERE IS A POSSIBILITY OF A HOSE BEING ATTACHED. HOWEVER, LIKE A THE ATMOSPHERIC VACUUM BREAKER THEY SHOULD NOT BE USED UNDER CONTINUOUS PRESSURE.

EACH HOSE CONNECTED TO A MANIFOLD OR "Y" MUST BE PROVIDED WITH ITS OWN DEVICE.

BACKFLOW PREVENTION

SHUT-OFFS PERMITTED DOWNSTREAM / CONTINUOUS PRESSURE PERMITTED



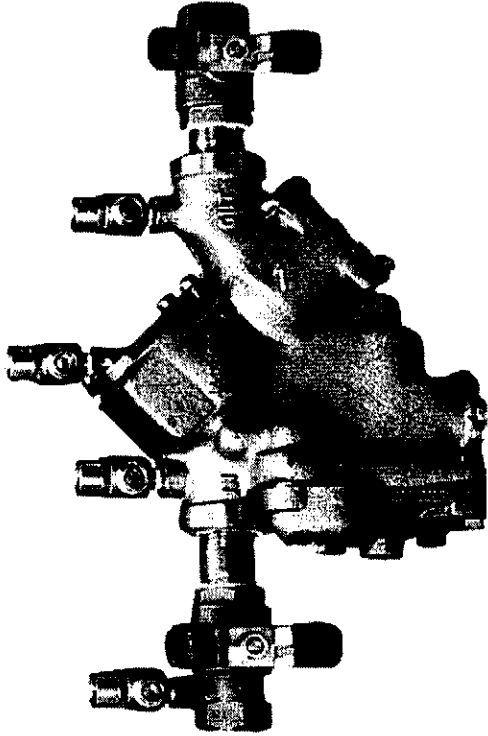
PRESSURE VACUUM BREAKER

ASSE 1020

THE PRESSURE VACUUM BREAKER IS SIMILAR TO THE ATMOSPHERIC VACUUM BREAKER EXCEPT IT HAS TEST COCKS AND TWO GATE VALVES FOR TESTING THE UNIT.

THE UNIT MUST BE INSTALLED AT LEAST 12 INCHES ABOVE THE HIGHEST ELEVATED INLET OR FIXTURE ON ITS DOWNSTREAM SIDE. THE UNIT MUST HAVE A SHUT-OFF VALVE ON EACH SIDE AND TWO TEST COCKS FOR TESTING.

VALVES MAY BE LOCATED ON THE DOWNSTREAM SIDE.



REDUCED PRESSURE ZONE (RPZ)

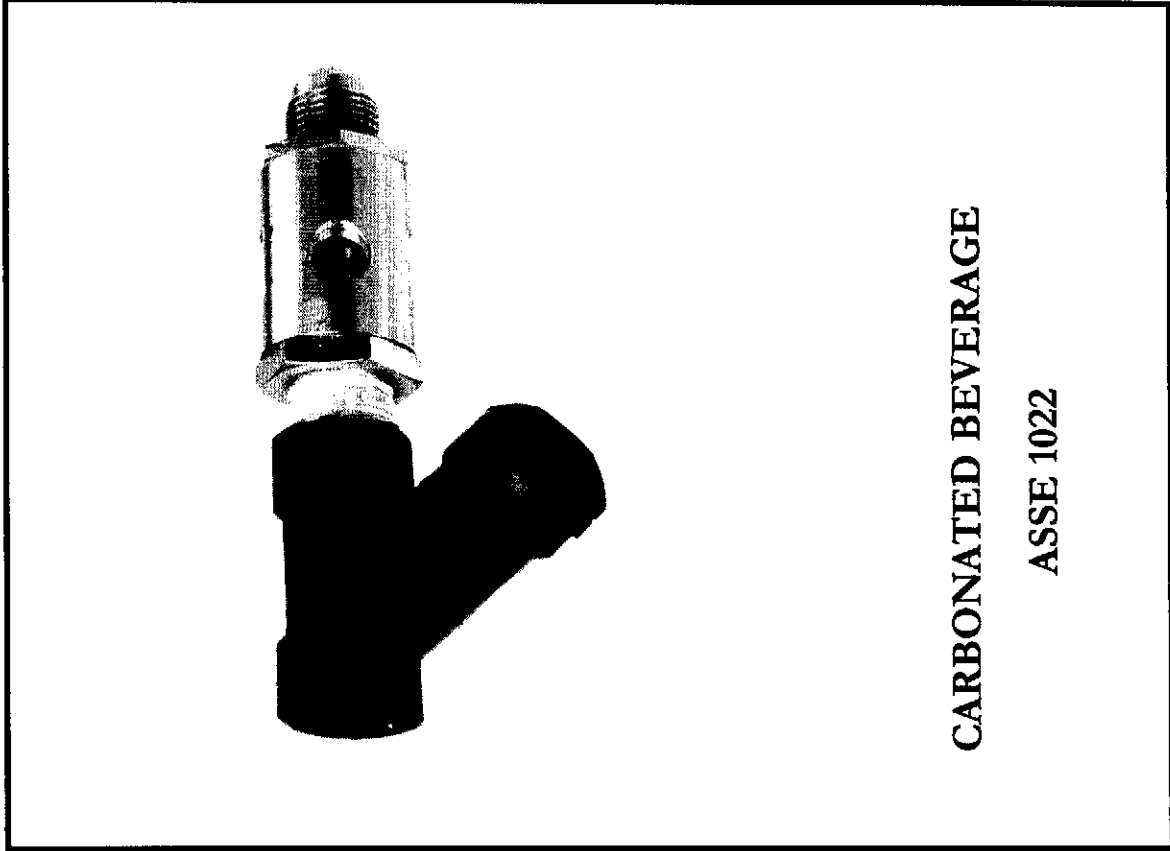
ASSE 1013

RPZ BACKFLOW DEVICES ARE DEVICES THAT ARE PERMITTED TO HAVE VALVES LOCATED DOWNSTREAM AND MAY BE LOCATED AT ANY LEVEL RELATIVE TO THE WATER INLET HEIGHT ON EQUIPMENT. COMMONLY SEEN AT WOKS.

BACKFLOW PREVENTION –

INTERMEDIATE ATMOSPHERIC VENT:

SHUT-OFFS PERMITTED DOWNSTREAM



CARBONATED BEVERAGE

ASSE 1022

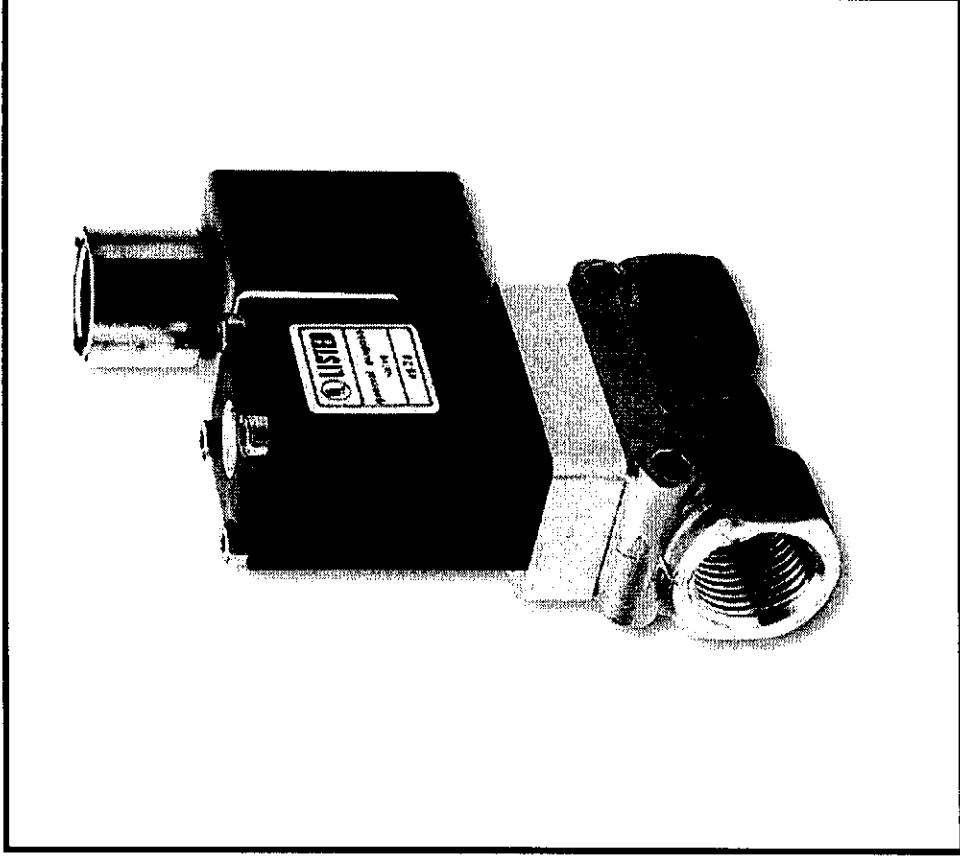
**THIS UNIT CAN BE INSTALLED
HORIZONTALLY OR VERTICALLY.**

**IT IS APPROVED FOR USE ON
CARBONATED BEVERAGE DISPENSERS.**

**THIS DEVICE MAY NOT BE LOCATED IN
AN AREA SUBJECT TO STANDING WATER
OR IN A PIT.**

BACKFLOW PREVENTION -

SOLENOID VALVE: NO SHUT-OFFS PERMITTED DOWNSTREAM / NO CONTINUOUS PRESSURE

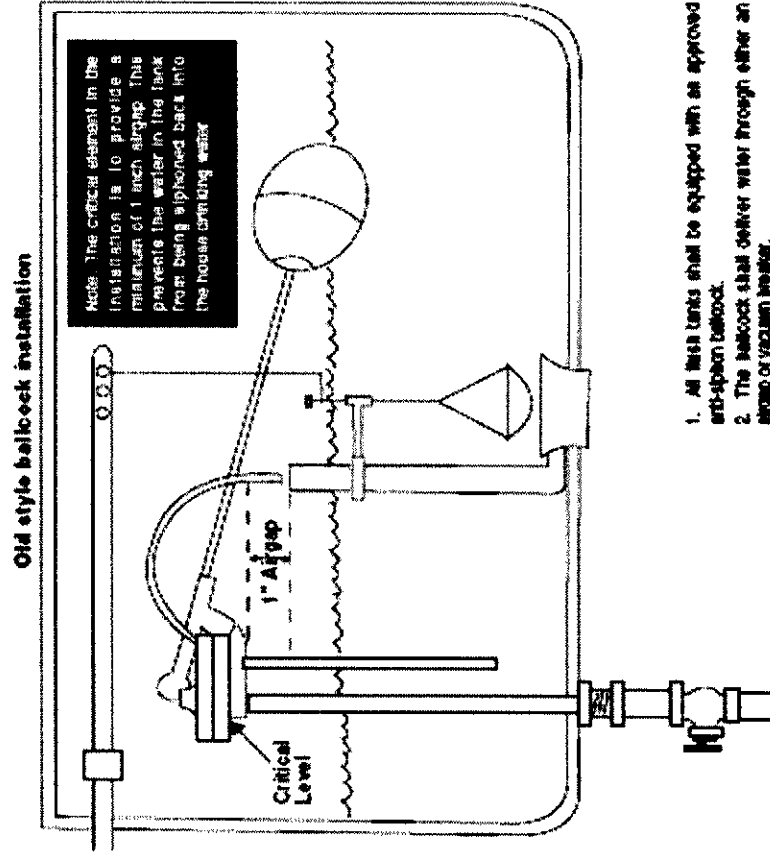


SOLENOID VALVE - COMMONLY INSTALLED AT A COMMERCIAL GARBAGE DISPOSAL OR DISHMACHINE.

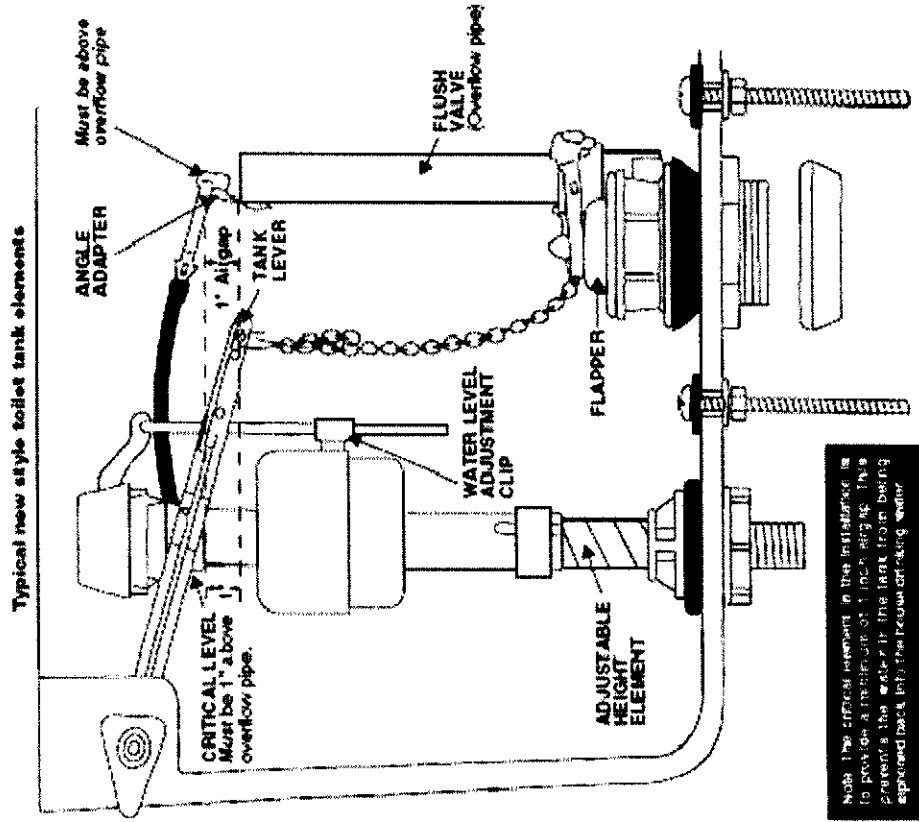
REQUIRED TOILET TANK AIR GAP

5-203.14 Backflow Prevention Device, When Required* *A plumbing system shall be installed to preclude backflow of a solid, liquid or gas contaminant into the water supply system at each point of use at the food establishment, including on a hose bibb if a hose is attached by:*

- Providing an air gap; or*
- Installing an approved backflow prevention device.*



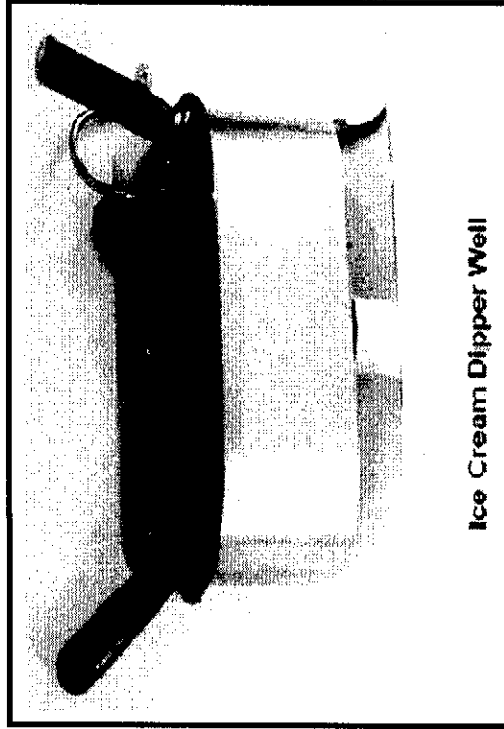
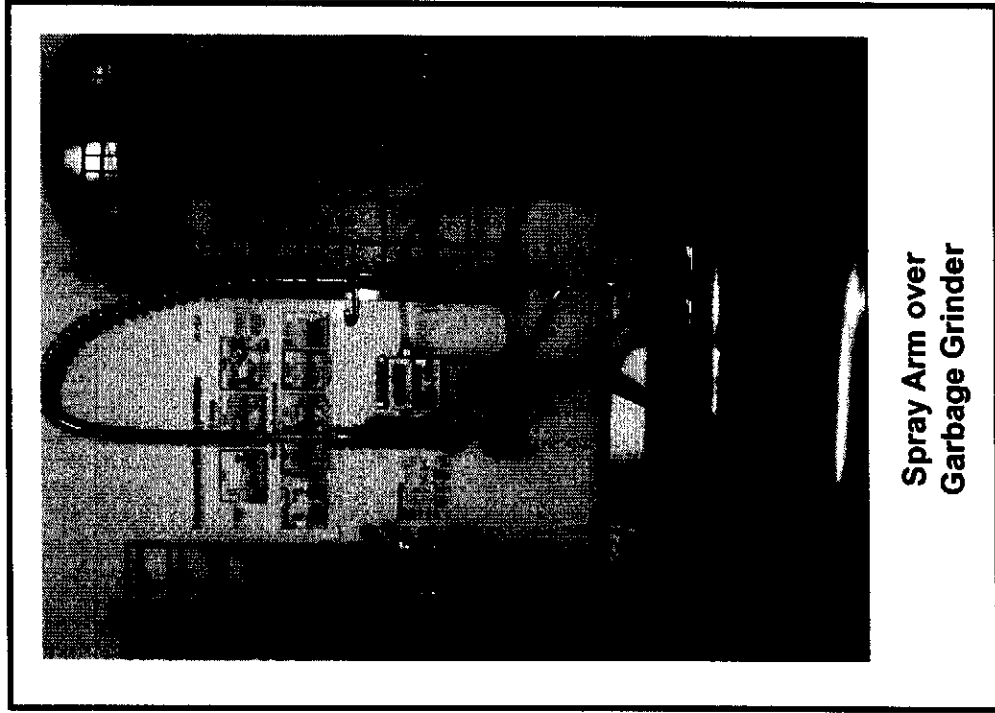
1. All test tanks shall be equipped with an approved anti-siphon ballcock.
2. The ballcock shall prevent water from flowing either an airgap or vacuum breaker.
3. The ballcock should be marked with a critical level "C-L".
4. The critical level of the ballcock shall be one 1 inch above the top of the overflow.
5. In the absence of a "C-L" marking, the bottom of the vacuum breaker shall be taken as the "C-L".
6. The overflow tube shall not be capped, as this will result in an inoperable flush.



The critical element in the installation is to provide a minimum of 1 inch airgap. This prevents the water in the tank from being exposed back into the house draining water.

Water Inlet Air Gaps

5-202.13 Backflow Prevention, Air Gap.* *An air gap between the water supply inlet and the flood rim of the plumbing fixture, equipment, or nonfood equipment shall be at least twice the diameter of the water supply inlet, and may not be less than 25 mm (1 inch).*

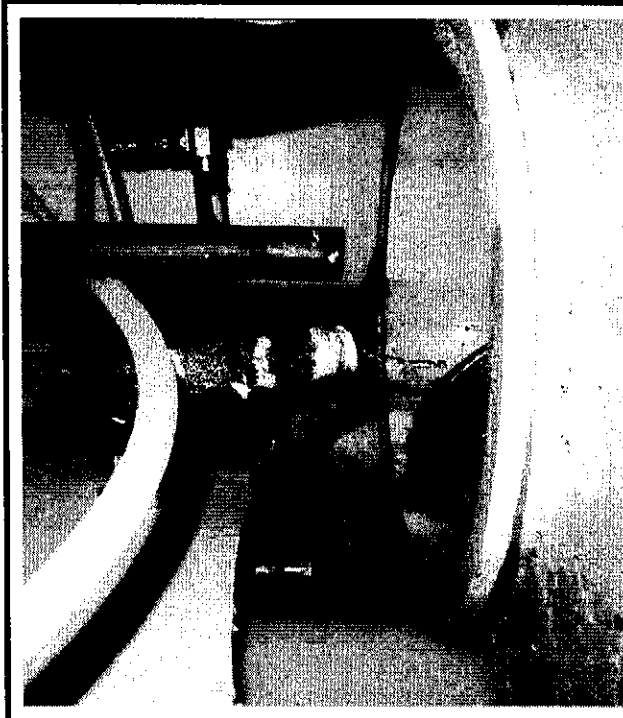


Waste Drain Air Gap

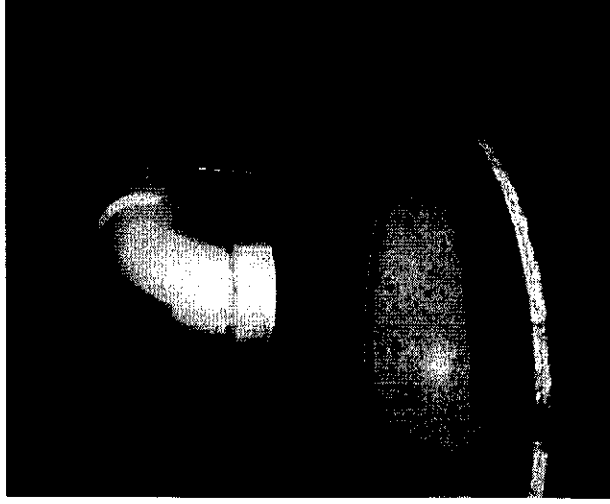
Plumbing Code: "Equipment and fixtures utilized for the storage, preparation and handling of food shall discharge through an indirect waste pipe by means of an air gap."

5-402.11 Backflow Prevention: "A direct connection may not exist between the sewage system and a drain originating from equipment in which food, portable equipment or utensils are placed."

**** Examples of drains requiring air gaps: PREP SINKS, ICE MACHINES, ICE BINS, CONDENSATE LINES FROM COOLERS/FREEZERS/ICE MACHINES, DIPPERWELLS, STEAM TABLES, ANY OTHER BEVERAGE OR FOOD DISPENSING MACHINE WITH A DRAIN TO SEWER.**

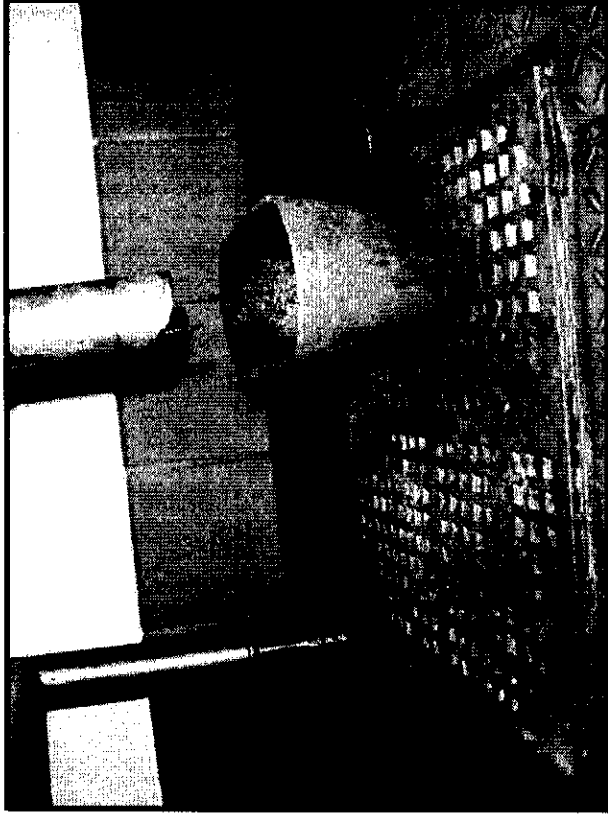
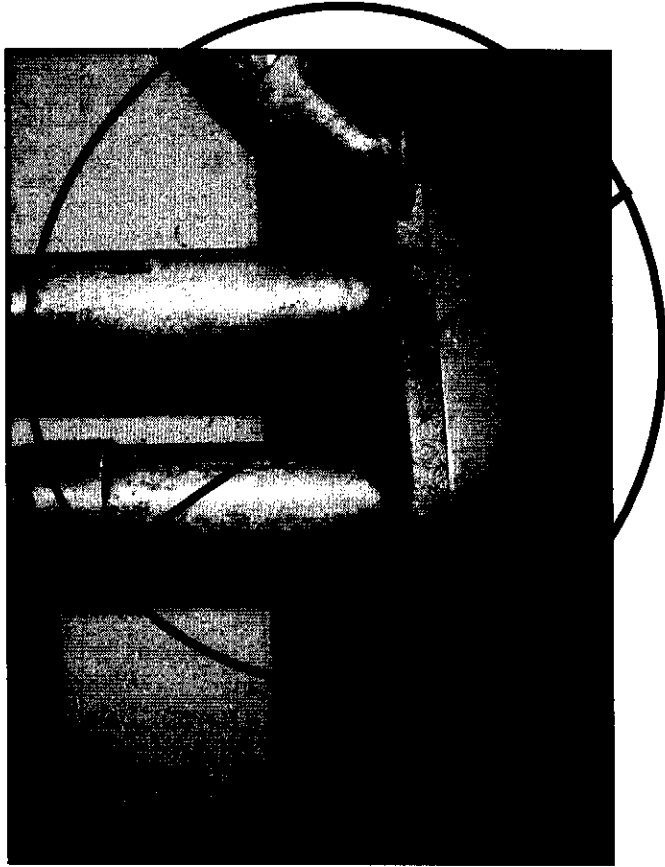


3 AIR GAPS: ICE MACHINE, ICE MACHINE CONDENSATE, AND ICE BIN.



DRAIN FROM PREP SINK

Waste Drain Air Gap



A DRAIN OVER A CUP TO PREVENT SPLASH MUST BE MAINTAINED AT LEAST ONE INCH OVER THE FLOOD RIM OF THE CUP ON THE DRAIN GRATE. IF PIPES ARE CUT ON AN ANGLE THE MEASUREMENT IS MADE FROM THE LOWEST PORTION OF THE ANGLE TO THE TOP OF THE CUP.