

ORDINANCE NO. 925

CITY OF PRINEVILLE WATER DEPARTMENT STANDARD
GUIDELINES FOR THE INSTALLATION, TESTING AND
INSPECTION OF BACKFLOW PREVENTION DEVICES.

11-3-84
This
Ordinance
Needs an
"Ordain" Clause
on it. Per "Ord. 925"

See
Ord
933
for revision

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SECTION I

GENERAL RULES

I-A. GENERAL STATEMENT

1. These standards set forth minimum requirements for safe practice in the delivery of water for domestic use. They are to be interpreted as meeting only the minimum requirements of design, construction, maintenance and operation of the water utility system.
2. For the purpose of these minimum requirements, the use of the word "shall" indicates a mandatory requirement and the use of the word "should" indicates a recommendation for good waterworks practice.

I-B. WATER SYSTEM

1. The water system shall be considered as made up of two parts: The utility system and the customer system.
2. The utility system shall consist of the source of facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer system begins, generally at the water meter, or in a case of unmetered fire services, at the utility control valve or detector check.
3. The customer system shall include those parts of the facilities which convey domestic water to points of use beyond the termination of the utility system. The term "customer system" is that of any user whether or not a charge is made.

I-C. CONNECTION WITH CUSTOMER SYSTEM

1. As used in this section, unless the context requires otherwise, the following definitions shall apply:
 - a. "Air gap separation" means a physical break between a supply pipe and a receiving vessel. The air gap shall be at least two times the diameter of the supply pipe, measured vertically above the top rim of the vessel, but in no case less than one inch.
 - b. "Atomspheric vacuum breaker" means a device which allows air to enter the water piping when the pressure within the piping is reduced to a guage pressure of 0 or below. Atmospheric breakers are designed to prevent back-siphonage only and shall not be installed for the prevention of backflow nor where such breaker will be under continuous operating pressure. Atmospheric vacuum breakers shall be limited to on-premise use or for irrigation systems and shall not be considered as

limited to on-premise use and shall be installed a minimum of 12 inches above the highest outlet and/or overflow level on the nonpotable system. Pressure vacuum breakers may be used for protection from the introduction to toxic substances into the domestic water supply system providing that the regularly established annual inspection is performed except that pressure vacuum breakers are designed to prevent back-siphonage only and shall be installed for the prevention of backflow.

- i. "Reduced pressure principle backflow prevention device" means a device incorporating two or more check valves, an automatically operating differential relief valve located between the checks, two shut-off valves and equipped with necessary appurtenances for testing, including test cocks. The device shall operate to maintain the pressure in the zone between the two check valves at a value less than the pressure on the supply system side of the device. At cessation of normal flow, the pressure between check valves shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve shall operate to maintain this reduced pressure by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less, the relief valve shall open to the atmosphere thereby providing an air gap in the device. To be approved, these devices must be readily accessible for maintenance and testing, installed in a location where no part of the valve will be submerged, and protected from freezing.
2. The customer's system shall be open for inspection at all reasonable times to authorized representatives of the utility to determine whether cross connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the utility shall deny or immediately discontinue the service at the premises by a physical break in the service until the condition has been corrected, provided that opportunity to be heard upon request shall be allowed thereafter as soon as practicable.
3. Backflow prevention devices shall be installed whenever the following conditions exist:
 - a. In the case of premises having an auxiliary water supply which is connected to the customer system.
 - b. In the case of premises on which any substances are handled under any pressure in such a fashion so to permit entry into the utility system.

adequate protection when toxic substances may be introduced into the domestic water system. Atmospheric vacuum breakers shall be installed downstream of the last shut-off valve at a minimum of 12 inches above the highest outlet and/or overflow level on the nonpotable system and shall be readily accessible for maintenance.

- c. "Auxiliary water supply" means any water supply that is or may be cross connected to the public water supply system.
- d. "Backflow" means the flow of water or other fluids or substance or a combination or mixture thereof into the public water supply system from any source or sources other than the intended source of water supply.
- e. "Check valve" means a check valve that seats readily and completely. It must be carefully machined to have free moving parts and assure water tightness. The base of the closure element and valve seat must be molded synthetic rubber, composition or other noncorrodible material which will seat tightly under all prevailing conditions of field use. Pins and bushings shall be of bronze or other noncorrodible, nonsticking material, machined for easy dependable operation. The closure element shall be internally loaded to promote rapid and positive closure in all sizes where this feature is obtainable.
- f. "Cross connection" means any actual or potential connection, link or channel between the water supply system carrying domestic water in a pipe or piping system used or intended to be used for some other purpose, or between such supply system and a plumbing fixture, appliance, receptacle, vessel, or other device or a source other than the intended source of water supply, whereby it may be possible for contaminated water or water of questionable or unsafe quality, or fluid substance other than potable water, to enter any part of the domestic water supply system.
- g. "Double check valve assembly" means an assembly of at least two independently acting approved check valves including tightly closing shut-off valves on each side of the check valve assembly and suitable leak-dector drains with test cock for testing the water tightness of each valve. Test cocks are to contain removable brass plugs.
- h. "Pressure vacuum breaker" means a device consisting of one check valve and an internally loaded vacuum relief valve, inlet and discharge shut-off valves and properly installed test cocks. Pressure vacuum breakers shall be

- c. In the case of premises having: (1) Internal cross connections that are not correctable, or (2) Intricate plumbing arrangements which make it impracticable to ascertain whether or not cross connections exist, or (3) Premises where inspection is restricted or (4) Those premises where the potential hazard is extreme including sewage treatment plants and pumping stations chemical manufacturing plants, hospitals, clinics, mortuaries and metal plating establishments.
4. The type of protective device required under Subsection 3 a., b. & c. shall depend on the degree of the hazard which exists as follows:
 - a. In the case of any premises where there is an auxiliary water supply which is not safe bacteriological quality and which is connected to the customer system, the potable water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow preventing device, a double check valve assembly may be used if the auxiliary water supply is of proven safe bacteriological quality.
 - b. In the case of any premise where there is any material dangerous to health which is handled in such a fashion as to permit entry into the potable water system, the potable water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention device if the premise is to be entirely isolated, or, if on-premise protection is desirable to protect the health of those persons on the premises, a pressure vacuum breaker subject to regular annual inspection may be used.
 - c. In the case of any premise where a substance that would be objectionable but not hazardous to health, may be introduced into the potable water system shall be protected by an approved double check valve assembly or by an approved pressure vacuum breaker.
 - d. Irrigation systems may be protected by approved atmospheric or pressure vacuum breakers or double check valve assemblies, except that if fertilizers or other toxic substances are introduced through the irrigation system, an air gap or reduced pressure principle backflow prevention device shall be used.
5. Any protective device required herein shall be a model approved by the City of Prineville Water Department.
6. It shall be the duty of the owner of the property served to keep backflow protective devices in good working condition at all times. It shall also be the duty of the owner of the property at any premise where backflow protective devices

are installed to have thorough inspections and leakage tests made at least once a year or more often in those instances where successive inspections indicate failure. These inspections and tests shall, at the expense of the owner of the property, be performed by the representatives of the City of Prineville Water Department or by a person approved by the State of Oregon as a competent device tester. It is the responsibility of the City's representatives to see that these tests are made. Approved device testers shall notify the Water Works Superintendent in advance when the test is to be undertaken so that City Representatives may witness the test. Backflow prevention devices shall be repaired, overhauled or replaced at the expense of the owner of the property whenever they are found to be defective. Records of such tests, repairs and overhauls will be maintained by the City Water Department and it is the responsibility of any backflow prevention device tester performing tests and maintenance on backflow prevention devices to submit records of such tests, repairs and overhauls to the Water Works Superintendent.

7. All presently installed backflow prevention devices which do not meet the requirements of these rules but were approved devices for the purposes described herein at the time of installation and which have been properly maintained shall, except for the inspection of requirements under Subsection I-C. 6, be excluded from the requirements of these rules so long as they satisfactorily protect the water system. Whenever such existing device is moved from the present location or requires more than minimum maintenance which constitutes a hazard to health, the device shall be replaced by a backflow prevention device meeting the requirements of these rules.

I-D. Interconnection With Other Water Supplies Prohibited

1. The City of Prineville shall not permit any physical connection between any other water supply and the City's water distribution system unless a reduced pressure principle backflow device as described in I-C. 1. i. above is installed and maintained. The City Water Department will immediately discontinue water service to any premises or customer where such a condition occurs until such time as the cross connection is eliminated or the required backflow prevention device is installed. Customers using the City of Prineville water supply and any other water supply on the same premises shall install and maintain a separate plumbing system for the City's water supply which shall be separated by an air gap of not less than one foot from any other supply, unless such reduced pressure principle backflow device is installed and maintained at the meter for the premises.

I-E. Plumbing Code

1. As a condition of water service, customers shall install, maintain and operate their piping and plumbing systems in accordance with the Oregon State Plumbing Laws and Administrative Rules and, if applicable, in accordance with the ordinances of the City of Prineville.

I-F. Protection Against Circulating Flow

1. The City of Prineville may refuse to service any premise with more than one service connection except that multiple service connections may be used for service to a premise under one ownership or management wherein each service connection serves separate buildings or groups of buildings and there is no physical connection between separate plumbing systems which would permit circulating flow at the time of application for service and there is reasonable assurance that no future interconnection will be established.

In large industrial and commercial piping systems requiring multiple service connections for adequacy of supply and for fire protection, the City of Prineville may permit such multiple connections with interconnection on the customer's premises provided that there shall be approved single check valves installed immediately downstream from each meter to prevent circulating flow when such multiple service connections are connected to the same water main. When such multiple service connections are connected to different City mains and/or pressure levels, there shall be an approved double check valve assembly at the downstream side of each meter which shall be installed and operated in the same manner as approved double check valve assemblies used for cross connection control.

SECTION II

BACKFLOW PREVENTION DEVICES
INSTALLATION GUIDELINES

II-A. AIR GAP SEPARATION

1. Definition: A physical separation between a potable water supply pipeline and a receiving vessel.
2. Air gap separations provide maximum protection from backflow hazards and are required at premises where a substance is handled which would be hazardous to health if introduced into the potable water system.
3. Approved Air Gap Separation Installations:

An approved air gap separation shall be at least double the diameter of the supply pipeline measured vertically above the top rim of the receiving vessel - in no case less than one (1) inch.

The supply pipeline discharge opening shall be located at least 3 diameters of the pipeline measured horizontally from any wall of the receiving vessel (such as a splash plate).

4. Air gap separations must not be altered in any way without prior approval from the City of Prineville Water Department.

II-B. PRESSURE VACUUM BREAKER (PVB)

1. Definition: a device containing one or two independently operating loaded check valve(s) and an independently operating loaded air inlet valve located on the discharge side of the check(s). Device must be equipped with properly located all brass test cocks and tightly closing shut off valves located at each end of the assembly.
2. PVB's are required at premises where a substance is handled which would be objectionable but not hazardous to health if introduced into the potable water system. The device must be a model approved for use at the premises by the City of Prineville Water Department.
3. PVB's protect against back siphonage only and shall not be installed where there is potential for back pressure.
4. The device shall be installed a minimum of 12 inches above the highest use outlet or overflow level downstream from the device.
5. PVB's shall not be installed in an area subject to flooding and should be located where water damage would not occur when device discharges water.
6. The device must be protected from freezing.
7. The device shall be readily accessible for testing and maintenance, with a minimum clearance of 12" all around the device.
8. PVB's shall be located between 12" and 48" above ground level.
9. All PVB's must be tested upon installation and at least once per year thereafter by a State certified tester. The City of Prineville Water Department provides the initial test without charge to the owner. The owner must notify the City Water Department upon installation of any backflow prevention device.
10. Variances from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Prineville Water Department.
11. Although all approved devices are repairable in-line, the installation of union fittings on both ends of the device is recommended for vault installations due to the lack of space required for easy repairs and maintenance.
12. Standard drawings are shown in Appendix.

II-C. ATMOSPHERIC VACUUM BREAKER (AVB) (NON-PRESSURE TYPE VACUUM BREAKER)

1. Definition: A device containing a shut-off valve followed by a valve body containing a float check, a check seat and an air inlet port. When the shut-off valve is closed, the float falls and forms a check valve against back-siphonage and at the same time opens the air inlet port.
2. AVB's are approved for extremely low hazard conditions only. These devices cannot be routinely tested and their use is discouraged for most cross connection control applications.
3. AVB's are designed to protect against back-siphonage only and shall not be installed where a back pressure may occur.
4. The device must be installed a minimum of 6" above the highest use outlet or overflow level downstream from the device.
5. Shut-off valves downstream from the device are not permitted.
6. AVB's are permitted for only those applications where there is less than 12 hours per day continuous use.

II-D. DOUBLE CHECK VALVE ASSEMBLY (DCV) INSTALLATION REQUIREMENT

1. Definition: An assembly composed of two single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and fitted with four properly located all brass test cocks.
2. Double check valve assemblies are required at premises where a substance is handled which would be objectionable but not hazardous to health if introduced into the potable water system. The device installed must be a model which is approved for use by the City of Prineville Water Department.
3. DCV's must be sized to provide an adequate supply of water and pressure for the premises being served. Flow characteristics are not standard. Consult manufacturer's specifications for specific performance data.
4. Premises where interruption of water supply is critical should be provided with two devices install in parallel. They should be sized in such a manner that either device will provide the minimum water requirements while the two together will provide the maximum flow required.
5. Bypass lines are not permitted. Pipe fittings which could be used for connecting a bypass line shall not be installed.
6. Backflow prevention devices which are installed to isolate premises from the public potable water system must be installed on the downstream side of the meter at or near the property line or immediately inside the building being served but in any case must be installed before the first branch line.
7. Installation Inside Building

The device shall be readily accessible with adequate room for testing and maintenance. Minimum clearances shall be as follows:

A. All Devices:

1. Headroom of 6'0" Minimum
2. Device shall be located between 6" and 48" above the floor.

B. Devices 2" and Smaller:

1. At least 6" clearance all around device and at least 12" on test cock side.

C. Devices Larger than 2":

1. At least 12" all around device.

8. Installations in Vaults

DVC's may be installed below grade, providing all test cocks are fitted with brass pipe plugs. All vaults shall be constructed of concrete, plastic, or other suitable materials, sized to make the valve readily accessible for testing and maintenance and allow for the minimum clearances established below. Vault sides and bottom shall be solid to prevent collapse or rodent intrusions and shall be well drained.

Minimum clearances shall be as follows:

A. All devices:

1. Headroom of 6' 0" is required in vaults without a full opening top.
2. The device shall be located between 4" and 24" from the bottom of vault.
3. For reach-in type vaults, all test cocks shall be within 12" of vault opening.

B. Devices 2" and smaller:

1. At least 6" clearance all around device with at least 12" on test cock side.

C. Devices larger than 2":

1. At least 6" clearance all around device with at least 12" on test cock side.

9. The device must be protected from freezing and other severe weather conditions.
10. Vertical installation is restricted to those DCV's specifically approved for vertical installation by the manufacturer.
11. The property owner assumes all responsibility for foundation or basement wall penetration, leaks and damage, the owner shall also see that the vault is kept free of silt and debris.

12. All DCV's must be tested upon installation and at least once per year thereafter by a State certified tester. The owner must notify the City Water Department upon installation of any backflow prevention device.
13. Variances from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Prineville Water Department.
14. Although all approved devices are repairable in-line, the installation of union fittings on both ends of the device is recommended for vault installations due to the lack of space required for easy repairs and maintenance.
15. Standard drawings are shown in Appendix.

II-E. REDUCED PRESSURE PRINCIPLE DEVICE (RP)

1. Definition: A device containing two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure relief valve located between the check valves. The unit shall include properly located all brass test cocks and rightly closing shut-off valves at each end of the assembly.
2. RP devices are required in the main water line at premises where a substance is handled which would be hazardous to health if introduced into the potable water system.
3. RP devices must be sized to provide an adequate supply of water and pressure for the premises being served. Flow characteristics are not standard. Consult manufacturer's specifications for specific performance data.
4. Premises where interruption of water supply is critical should be provided with two devices installed in parallel. They should be sized in such a manner that either device will provide the minimum water requirements while the two together will provide the maximum flow required.
5. Bypass lines are not permitted. Pipe fittings which could be used for connecting a bypass line shall not be installed.
6. Backflow prevention devices which are installed to isolate premises from the public potable water system must be installed on the downstream side of the meter at or near the property line or immediately inside the building being served but in any case must be installed before the first branch line.

7. Installations Inside Buildings:

The device must be readily accessible for testing and maintenance, and shall be located in an area where water damage to buildings or furnishings would not occur when the relief valve is flowing. If the relief valve is piped to discharge water outside the building, an approved air gap of at least 6" is required at both ends of the drain line. The drain line must be sized to accommodate full relief valve discharge and must be installed level or down slope.

Installation without drains must be located in well drained areas where the highest possible level of standing water is below the bottom of the device.

Minimum clearances shall be as follows:

- a. Headroom of 6' 0" minimum
- b. At least 12" all around the device
- c. Device located between 12" and 48" from floor
- d. Relief valve opening must be at least 12" plus nominal size of device from floor or highest possible floor level.

8. Installations in Vaults or Other Enclosures:

- RP devices may be installed below grade providing that an adequate drain is provided.
- Drains must be bore sighted to daylight.
- RP devices are typically installed above grade, with drainage openings located at bottom of enclosure (at grade surface).
- The vault or enclosure must be sized to make the device readily accessible for testing and maintenance and allow for the minimum clearances established below. Sides and bottom of enclosure must be solid to prevent collapse or rodent intrusion. All enclosures must drain to daylight. Drain ports should be sized to accommodate full pressure discharge from the device.

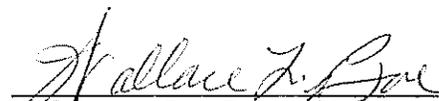
Minimum clearances shall be as follows:

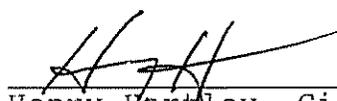
- a. Headroom of 6' 0" required for vaults without a full opening top.
- b. The device shall be located between 12" and 24" from floor.
- c. For devices 2" and smaller:
 - At least 6" clearance all around the device.
 - Relief valve opening shall be at least 6" from highest possible flood level in enclosure.

- d. For devices larger than 2":
- At least 6" clearance all around device with at least 12" on test cock side.
 - Relief valve opening shall be at least 12" plus nominal size of device above the highest possible flood level in enclosure.
9. The device must be protected from freezing and other severe weather conditions.
10. Vertical installation is restricted to those RP devices specifically approved for vertical installation by the manufacturer.
11. The property owner assumes all responsibility for foundation or basement wall penetration, leaks and damage. The owner shall also see that the vault is kept free of silt and debris.
12. All RP devices must be tested upon installation and at least once per year thereafter by a State certified tester. The owner must notify the City Water Department.
13. Variance from these specifications will be evaluated on a case by case basis. Any deviations must have prior written approval of the City of Prineville Water Department.
14. Although all approved devices are repairable in-line, the installation of union fittings on both ends of the device is recommended for vault installations due to the lack of space required for easy repairs and maintenance.
15. Standard drawings are shown in Appendix.

Passed by the City Council this 9th day of August, 1988.

Approved by the Mayor this 9th day of August, 1988.


Wallace L. Boe, Mayor


Henry Hartley, City Administrator
Recorder

SECTION III

LIST OF APPROVED DEVICES

FOUNDATION FOR CROSS-CONNECTION
 CONTROL & HYDRAULIC RESEARCH

OFFICE OF THE DIRECTOR
 (213) 743-2032

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 19 November 1984
 (Supercedes all prior lists)

**LIST OF APPROVED
BACKFLOW PREVENTION ASSEMBLIES**

NOTICE: The original Certificate of Approval - identified by the Edition of the Manual and the Approved date shown below - is valid only if the original or renewal date shown hereon is within three (3) years of the current date. The responsibility to request a renewal of an Approval is that of each manufacturer. The Foundation retains the right of determining the extent of re-evaluation required before renewal is granted. Certificates of Approval are not recalled for the purpose of updating the effective date. This revision of date is only published via the current "List of Approved Backflow Prevention Assemblies".

Unless otherwise specified by the manufacturer all devices are to be installed on cold water applications - below 110° F.

DOUBLE CHECK VALVE ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Beeco (Hersey)	ψ VC - 2", 3", 4"	Full Approval - Paper No. 5
	FDC - 3/4"	Approved 5th Ed. of Manual (11 Oct 1976) Renewed 5 October 1982
	FDC - 1 1/2"	Approved 5th Ed. of Manual (1 Aug 1979) Renewed 1 Aug 1982
	FDC - 2"	Approved 5th Ed. of Manual (20 Dec 1978) Renewed 20 December 1981
Cla-Val	D - 2", 4", 6"	Full Approval 3rd Ed. of Manual
	D - 2 1/2"	Approved 4th Ed. of Manual (1 Oct 1972) Renewed 1 October 1984
	D - 3"	Approved 4th Ed. of Manual (18 May 1970) Renewed 7 January 1983
	D - 8"	Approved 4th Ed. of Manual (27 June 1973) Renewed 7 January 1983
	D - 10"	Approved 5th Ed. of Manual (10 Oct 1975) Renewed 10 October 1984
	D2 - 1 1/4", 1 1/2"	Approved 5th Ed. of Manual (6 Nov 1976) Renewed 6 November 1982
	D2 - 3/4", 1"	Approved 5th Ed. of Manual (19 April 1977) Renewed 19 April 1983

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ψ - Only spare parts available

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**LIST OF APPROVED
BACKFLOW PREVENTION ASSEMBLIES**

DOUBLE CHECK VALVE ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Febco	805 - 3/4", 1", 1 1/2", 2"	Approved 4th Ed. of Manual (29 April 1974) Renewed 29 April 1983
	805 - 3", 4"	Approved 4th Ed. of Manual (26 Oct 1973) Renewed 7 January 1983
	805Y - 6", 8"	Approved 5th Ed. of Manual (26 Aug 1977) Renewed 26 August 1983
	805Y - 10"	Approved 5th Ed. of Manual (31 May 1978) Renewed 31 May 1984
	(NOTE: the 805Y 6", 8", and 10" were formerly called 805)	
	805Y - 3/4", 1"	Approved 6th Ed. of Manual (13 May 1982)
	805Y - 3", 4"	Approved 6th Ed. of Manual (4 August 1982)
	805Y - 1 1/2", 2"	Approved 6th Ed. of Manual (5 Jan. 1983)
	805Y - 2 1/2"	Approved 6th Ed. of Manual (7 March 1983)

GRINNELL - see Kennedy

Hersey (BEECO)	ψ #1 - 2", 3", 4", 6", 8", 10"	Full Approval 2nd Ed. of Manual
		Approved 5th Ed. of Manual (27 Dec 1978) Renewed 27 December 1981
	#2 - 6"	Approved 5th Ed. of Manual (22 Dec 1978) Renewed 22 December 1981
		#2 - 8"
	#2 - 10"	Approved 6th Ed. of Manual (19 Feb. 1982)
	E-1 -4"	Approved 5th Ed. of Manual (24 July 1979) Renewed 24 July 1982
E-1 -6"	Approved 5th Ed. of Manual (30 Dec 1979) Renewed 30 December 1982	

Kennedy (Grinnell)	1373 - 4", 6", 8"	Full Approval Paper No. 5
	1373 - 10"	Approved 5th Ed. of Manual (21 Oct 1975) Renewed 21 October 1984

Neptune - see Wilkins

Orion (Toro)	80-0070 - 1 1/2"	Approved 5th Ed. of Manual (16 May 1975) 16 May 1981
	9-2930 - 2"	Approved 5th Ed. of Manual (16 May 1975) Renewed 16 May 1981

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 (Supercedes all prior lists)

**LIST OF APPROVED
 BACKFLOW PREVENTION ASSEMBLIES**

DOUBLE CHECK VALVE ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Orion (Toro)	BDC - 3/4", 1"	Approved 5th Ed. of Manual (7 Dec 1976) Renewed 7 December 1982
	BDC - 4"	Approved 5th Ed. of Manual (18 Jan 1979) Renewed 18 January 1982
	BDC - 3"	Approved 6th Ed. of Manual (9 Sept 1982)
Rain Bird	ϕ DC-250L - 2 1/2"	Approved 5th Ed. of Manual (10 Jan 1981) Renewed 10 January 1984
	ϕ DC-300L - 3"	Approved 5th Ed. of Manual (10 Jan 1981) Renewed 10 January 1984
	DCA-075 - 3/4"	Approved 6th Ed. of Manual (4 August 1982)
	DCA-100 - 1"	Approved 6th Ed. of Manual (4 August 1982)
	DCA-150 - 1 1/2"	Approved 6th Ed. of Manual (27 April 1982)
	DCA-200 - 2"	Approved 6th Ed. of Manual (27 April 1982)
	DCA-250 - 2 1/2"	Approved 6th Ed. of Manual (20 July 1982)
	DCA-300 - 3"	Approved 6th Ed. of Manual (20 July 1982)
	DCA-400 - 4"	Approved 6th Ed. of Manual (15 Jan 1982)
	DCA-600 - 6"	Approved 6th Ed. of Manual (18 May 1981) Renewed 18 May 1984
	DCA-800 - 8"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
DCA1000 - 10"	Approved 6th Ed. of Manual (16 March 1983)	
Richwell	- see Wilkins	
Rockwell	ϕ 711 - 1 1/2", 2"	Approved 5th Ed. of Manual (19 Jan 1979) Renewed 19 January 1982
	ϕ 711 - 2 1/2", 3"	Approved 5th Ed. of Manual (9 Aug 1977) Renewed 9 August 1983
	ϕ 711 - 4"	Approved 5th Ed. of Manual (31 Aug 1977) Renewed 31 August 1983
	ϕ 711 - 6"	Approved 5th Ed. of Manual (3 April 1980) Renewed 3 April 1983
SMR	- see Wilkins	
Toro	- see Orion	

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 (Supersedes all prior lists)

**LIST OF APPROVED
 BACKFLOW PREVENTION ASSEMBLIES**

DOUBLE CHECK VALVE ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Viking	A-1 - 8"	Approved 5th Ed. of Manual (21 Oct 1976) Renewed 5 October 1982
	A-1 - 4", 6"	Approved 5th Ed. of Manual (22 June 1977) Renewed 20 June 1983
	A-1 - 10"	Approved 5th Ed. of Manual (28 Sept 1977) Renewed 28 September 1983
Watts	φ 700 - 2 1/2", 3"	Approved 5th Ed. of Manual (10 Jan 1981) Renewed 10 January 1984
	709 - 3/4", 1"	Approved 6th Ed. of Manual (4 August 1982)
	709 - 1 1/2", 2"	Approved 6th Ed. of Manual (27 April 1982)
	709 - 2 1/2", 3"	Approved 6th Ed. of Manual (20 July 1982)
	709 - 4"	Approved 6th Ed. of Manual (15 Jan. 1982)
	709 - 6"	Approved 6th Ed. of Manual (18 May 1982)
	709 - 8"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
	709 - 10"	Approved 6th Ed. of Manual (16 March 1983)
Wilkins (Neptune)	550 - 3/4", 1"	Approved 5th Ed. of Manual (11 Oct 1976) Renewed 5 October 1982
	550 - 1 1/4", 1 1/2", 2"	Approved 5th Ed. of Manual (11 Oct 1976) Renewed 5 October 1982
	550 - 3"	Approved 5th Ed. of Manual (20 Aug 1979) Renewed 20 August 1982
	550 - 4"	Approved 5th Ed. of Manual (20 June 1980) Renewed 20 June 1983
	550 - 6"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
	MBD- 10" (6"x6"x10" Manifold)	Approved 6th Ed. of Manual (11 April 1983)

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φ - Only spare parts available

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 BACKFLOW PREVENTION ASSEMBLIES

DOUBLE CHECK-DETECTOR CHECK

WARNING

The Double Check-Detector Check Assemblies shown below have been evaluated with a specific meter as the detector element of the assembly. That specific meter is coded by a parenthetic letter shown immediately after the size designation. This coding of meters is shown in this Section. Other meters having similar performance characteristics to permit the assembly to meet the Specifications are shown immediately after the original evaluation meter. The use of any other meter or modified bypass piping invalidates the Approval.

Each of the Approved Assemblies below utilize a line-size assembly which is not a standard or stock Approved Double Check Valve Assembly. Increased loads are required in the line-size device to allow the assembly to accurately record low flow rates in the bypass meter. Therefore, various 'off the shelf' components can not be assembled and expected to perform satisfactorily.

Identification of meters:

- | | |
|--------------------------------|------------------------------|
| (A) Hersey Model F-F 5/8"x3/4" | (G) Rockwell 5/8" |
| (B) Hays Acumeter 5/8"x3/4" | (H) Hersey Model 430 - 5/8" |
| (C) Carlon 5/8" | (I) Neptune Trident 8 5/8" |
| (D) Dande' Model D-3 5/8"x3/4" | (J) Neptune 5/8" |
| (E) Gamon-Calmet 5/8" | (K) Arad 5/8"x3/4" |
| (F) Precision 5/8" | (L) Badger Model 25 3/4" |
| | (M) Hersey Model MVR-30 3/4" |

DOUBLE CHECK-DETECTOR CHECK ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Cla-val	Model 16 - 4", 6", 8", 10" (C), D, E, F, G, H, I, J, K, L, M	Approved 6th Ed. of Manual (14 Dec 1979) Renewed 14 December 1982
Febco	Model 806 - 4" (J), A, B, C, D, E, F, G, H, I, K, L, M	Approved 6th Ed. of Manual (4 Aug 1983)
	Model 806 - 6", 8", 10" (J), A, B, C, D, E, F, G, H, I, K, L, M	Approved 6th Ed. of Manual (13 May 1982)

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DOUBLE CHECK - DETECTOR CHECK ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Hersey	Model DDC-II - 4", 6" (H), I, J, K, L, M	Approved 6th Ed. of Manual (10 Apr 1980) Renewed 18 March 1983
	Model DDC-II - 8" (H), I, J, K, L, M	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
Watts	Model 709DDC - 3" (L), B, C, D, E, F, G, H, I, J, K, M	Approved 6th Ed. of Manual (19 Apr 1984)
	Model 709DDC - 4", 6" (L), A, B, C, D, E, F, G, H, I, J, K, M	Approved 6th Ed. of Manual (27 July 1984)
	Model 709DDC - 8" (L), A, B, C, D, E, F, G, H, I, J, K, M	Approved 6th Ed. of Manual (19 Apr 1984)
	Model 709DDC - 10" (L), E, F, G, H, I, J, K, M	Approved 6th Ed. of Manual (27 July 1984)

REDUCED PRESSURE PRINCIPLE ASSEMBLIES

Beeco	Φ #6C- 1", 1 1/2", 2", 2 1/2" 3", 4", 6", 8", 10"	Full Approval - Paper No. 5
	Φ #10- 1 1/4"	Full Approval - Paper No. 5
	Φ #12 - 3/4"	Full Approval - Paper No. 5
	Φ Model 14 - 1"	Approved 4th Ed. of Manual (30 July 1971) Renewed 30 July 1984
	Φ Model 14 - 3/4"	Approved 4th Ed. of Manual (22 Dec 1971) Renewed 22 December 1983
	Φ Model 14 - 1 1/2"	Approved 4th Ed. of Manual (11 Mar 1974) Renewed 21 March 1983
	Φ Model 14 - 2"	Approved 5th Ed. of Manual (14 May 1973) Renewed 21 March 1983
	Φ Model 14 - 2 1/2"	Approved 5th Ed. of Manual (25 Nov 1974) Renewed 25 November 1983
	Φ Model 14 - 3"	Approved 4th Ed. of Manual (23 Jan 1974) Renewed 21 March 1983
	Φ Model 14 - 4"	Approved 5th Ed. of Manual (19 Dec 1975) Renewed 19 December 1981
	Φ Model 14 - 6"	Approved 5th Ed. of Manual (18 Aug 1976) Renewed 5 October 1982
	Model 6CM - 2 1/2"	Approved 6th Ed. of Manual (12 Aug 1983)
	Model 6CM - 3"	Approved 5th Ed. of Manual (1 Dec 1978) Renewed 1 December 1981

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REDUCED PRESSURE PRINCIPLE ASSEMBLIES

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Beeco	Model 6CM - 4"	Approved 5th Ed. of Manual (21 Dec 1978) Renewed 21 December 1981
	Model 6CM - 6"	Approved 5th Ed. of Manual (27 Dec 1978) Renewed 27 December 1981
	Model 6CM - 8"	Approved 5th Ed. of Manual (10 Feb 1981) Renewed 10 February 1984
	Model 6CM - 10"	Approved 6th Ed. of Manual (19 Feb 1982)
	ψ Model FRP - 3/4", 1"	*Approved 5th Ed. of Manual (11 Oct 1976) Renewed 5 October 1982
	*See Installation Instruction Tag on device - must be installed with device rotated 45° about the pipeline axis with the No. 2 test cock downward.	
	Model FRP-2 - 3/4", 1"	Approved 5th Ed. of Manual (15 Dec 1978) Renewed 15 December 1981
	Model FRP-2 - 1 1/2"	Approved 5th Ed. of Manual (10 April 1980) Renewed 18 March 1983
	Model FRP-2 - 2"	Approved 5th Ed. of Manual (5 May 1980) Renewed 5 May 1983
	Model FRP-2 - 1 1/4"	Approved 6th Ed. of Manual (21 Jan 1981) Renewed 21 Jan 1984
Cla-Val	Model 6CM-Bronze - 2 1/2"	Approved 5th Ed. of Manual (30 Nov 1978) Renewed 30 November 1981
	Model 6CM-Bronze - 3", 4"	Approved 6th Ed. of Manual (6 Aug 1980) Renewed 6 August 1983
	Model 6CM-Bronze - 6"	Approved 6th Ed. of Manual (23 Dec 1980) Renewed 23 December 1983
	RP-1 - 2", 2 1/2"	Approved 5th Ed. of Manual (3 May 1974) Renewed 3 May 1983
	RP-1 - 4", 6", 8", 10"	Approved 5th Ed. of Manual (3 July 1975) Renewed 3 July 1984
	RP-1 - 3"	Approved 5th Ed. of Manual (31 Oct 1975) Renewed 31 October 1984
	(NOTE: The above units have the CDIS-20 relief valves)	
RP-2 - 3/4", 1"	Approved 4th Ed. of Manual (6 Feb 1974) Renewed 18 March 1983	
RP-2 - 1 1/4", 1 1/2"	Approved 5th Ed. of Manual (13 Aug 1976) Renewed 5 October 1982	

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REDUCED PRESSURE PRINCIPLE ASSEMBLIES

<u>COMPANY</u>	<u>MODEL-SIZE</u>	<u>STATUS OF APPROVAL</u>
Craneline	ψ A - see BEECO 6C	
Febco	825 - 1 1/2", 2", 2 1/2"	Approved 5th Ed. of Manual (17 Mar 1975) Renewed 17 March 1984
	825 - 3"	Approved 5th Ed. of Manual (16 June 1975) Renewed 16 June 1984
	825 - 4"	Approved 5th Ed. of Manual (12 June 1975) Renewed 12 June 1984
	825 - 6"	Approved 5th Ed. of Manual (6 June 1975) Renewed 6 June 1984
	825 - 8"	Approved 5th Ed. of Manual (11 Nov 1975) Renewed 11 November 1984
	825 - 10"	Approved 5th Ed. of Manual (23 March 1979) Renewed 23 March 1982
	ψ 835B- 3/4", 1", 1 1/2", 2"	Approved 5th Ed. of Manual (6 March 1979) Renewed 6 March 1982
	825Y - 3/4", 1"	Approved 6th Ed. of Manual (19 March 1982)
	825Y - 1 1/4"	Approved 6th Ed. of Manual (3 June 1982)
	825Y - 1 1/2", 2"	Approved 6th Ed. of Manual (6 August 1982)
Jersey	- see Beeco	
ITT Lawler	ψ RZ-12 - 3"	Approved 5th Ed. of Manual (27 Sept 1979) Renewed 27 September 1982
	ψ RZ-24 - 6"	Approved 5th Ed. of Manual (25 Sept 1979) Renewed 25 September 1982
	ψ RZ-16 - 4"	Approved 5th Ed. of Manual (7 Feb 1980) Renewed 7 February 1983
	ψ RZ-32 - 8"	Approved 5th Ed. of Manual (21 Jan 1981) Renewed 21 Jan 1984
	ψ RZ-40 - 10"	Approved 5th Ed. of Manual (21 Jan 1981) Renewed 21 Jan 1984
Orion (Toro)	80-0069 - 1 1/2"	Approved 5th Ed. of Manual (20 Nov 1975) Renewed 20 November 1981
	BRP - 3/4", 1"	Approved 5th Ed. of Manual (15 Dec 1977) Renewed 15 December 1983
	9-2929 - 2"	Approved 5th Ed. of Manual (20 Nov 1975) Renewed 20 November 1981

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REDUCED PRESSURE PRINCIPLE ASSEMBLIES

<u>COMPANY</u>	<u>MODEL-SIZE</u>	<u>STATUS OF APPROVAL</u>
Orion (Toro)	BRP - 3"	Approved 5th Ed. of Manual (16 June 1980) Renewed 16 June 1983
	BRP - 4"	Approved 5th Ed. of Manual (19 April 1979) Renewed 19 April 1982
Rain Bird	Model RPA - 075 - 3/4"	Approved 5th Ed. of Manual (29 Sept 1979) Renewed 29 September 1982
	Model RPA - 100 - 1"	Approved 5th Ed. of Manual (29 Sept 1979) Renewed 29 September 1982
	Model RPA - 125 - 1 1/4"	Approved 5th Ed. of Manual (7 Febr 1980) Renewed 7 February 1983
	Model RPA - 150 - 1 1/2"	Approved 5th Ed. of Manual (7 Febr 1980) Renewed 7 February 1983
	Model RPA - 200 - 2"	Approved 5th Ed. of Manual (7 Feb 1980) Renewed 7 February 1983
	Model RPA - 250 - 2 1/2"	Approved 6th Ed. of Manual (4 Feb 1983)
	Model RPA - 300 - 3"	Approved 6th Ed. of Manual (4 Feb 1983)
	Model RPA - 400 - 4"	Approved 6th Ed. of Manual (15 Jan 1982)
	Model RPA - 600 - 6"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
	Model RPA - 800 - 8"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
Model RPA - 1000 - 10"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984	
Richwell - see Wilkins		
Rockwell	ϕ 701 - 1 1/2", 2"	Approved 5th Ed. of Manual (18 Jan 1979) Renewed 18 January 1982
	ϕ 701 - 2 1/2", 3"	Approved 5th Ed. of Manual (1 March 1981) Renewed 1 March 1983
	ϕ 701 - 4"	Approved 5th Ed. of Manual (12 Aug 1976) Renewed 5 October 1982
	ϕ 701 - 6"	Approved 5th Ed. of Manual (3 Apr 1980) Renewed 3 April 1983
Toro - see Orion		

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REDUCED PRESSURE PRINCIPLE ASSEMBLIES

<u>COMPANY</u>	<u>MODEL-SIZE</u>	<u>STATUS OF APPROVAL</u>
Watts	909HW - 3/4", 1"	Approved 5th Ed. of Manual (29 Sept 1979) Renewed 29 September 1982
	909HW - 1 1/4", 1 1/2", 2"	Approved 5th Ed. of Manual (7 Febr 1980) Renewed 7 February 1983
	909 - 3/4", 1", 1 1/4", 1 1/2", 2"	Approved 6th Ed. of Manual (15 Jan. 1982)
	909 - 2 1/2", 3"	Approved 6th Ed. of Manual (4 Feb 1983)
	909 - 4"	Approved 6th Ed. of Manual (15 Jan. 1982)
	909 - 6", 8", 10"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
Wilkins (Neptune)	575 - 3/4", 1"	Approved 5th Ed. of Manual (28 April 1976) Renewed 30 April 1982
	575 - 1 1/4", 1 1/2", 2" (MOD-II)	Approved 5th Ed. of Manual (11 Oct 1976) Renewed 5 October 1982
	575 - 3"	Approved 5th Ed. of Manual (20 Aug 1979) Renewed 20 August 1982
	575 - 4"	Approved 5th Ed. of Manual (8 June 1980) Renewed 8 June 1983
	575 - 6"	Approved 6th Ed. of Manual (6 July 1981) Renewed 6 July 1984
	MBC - 8" (4"x4"x8" Manifold)	Approved 6th Ed. of Manual (11 April 1983)
	MBC - 10" (6"x6"x10" Manifold)	Approved 6th Ed. of Manual (1 June 1983)

ATMOSPHERIC (NON-PRESSURE) TYPE VACUUM BREAKER

Arrowhead Brass	58 - 1/2"	Approved 6th Ed. of Manual (18 March 1983)
American Standard	VB-4 - 1/2"	L.A. CITY MECHANICAL TESTING LABORATORY
Belvedere	403 and 404 - 1/4", 3/8"	L.A. CITY MECHANICAL TESTING LABORATORY
Cash	VB - 111 - 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY

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ATMOSPHERIC (NON-PRESSURE) TYPE VACUUM BREAKER

COMPANY	MODEL-SIZE	STATUS OF APPROVAL
Champion Brass	162 (straight) 3/4", 1", 1 1/4", 1 1/2", 2" 262 (angle) - 3/4", 1", 1 1/4" 1 1/2", 2" 362 (angles with union)-3/4", 1"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
Chicago Faucet	892 - 1/2" 893 - 3/8"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
Consolidated Brass (Conbraco)	#38-103 - 1/2" #38-104 - 3/4" #38-105 - 1"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
Febco	710A - 1/4", 3/8", 1", 1 1/4", 1 1/2", 2" 715A - 1/2", 3/4" 715G - 1/2", 3/4" 710G - 1", 1 1/4", 1 1/2", 2" 730 - 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
ITT Lawler	Model VB-1 - 1/4" Model VB-1.5 - 3/8" Model VB-2 - 1/2" Model VB-3 - 3/4" Model VB-4 - 1" Model VB-5 - 1 1/4" Model VB-6 - 1 1/2" Model VB-8 - 2" Model VB-10 - 2 1/2" Model VB-12 - 3"	Approved 6th Ed. of Manual (20 April 1981) Renewed 20 April 1984 Approved 6th Ed. of Manual (20 April 1981) Renewed 20 April 1984 Approved 6th Ed. of Manual (21 April 1981) Renewed 21 April 1984 Approved 6th Ed. of Manual (21 April 1981) Renewed 21 April 1984 Approved 6th Ed. of Manual (21 April 1981) Renewed 21 April 1984 Approved 6th Ed. of Manual (March 30 1981) Renewed 30 March 1984 Approved 6th Ed. of Manual (March 17 1981) Renewed 30 March 1984 Approved 6th Ed. of Manual (March 19 1981) Renewed 19 March 1984 Approved 6th Ed. of Manual (March 25 1981) Renewed 25 March 1984 Approved 6th Ed. of Manual (March 31 1981) Renewed 31 March 1984

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ATMOSPHERIC (NON-PRESSURE) TYPE VACUUM BREAKER

<u>COMPANY</u>	<u>MODEL-SIZE</u>	<u>STATUS OF APPROVAL</u>
Nidel	34H (A), (D), (F), (W), 3/4" Hose Bib	L.A. CITY MECHANICAL TESTING LABORATORY
Rain Bird	AVB - 3/4", 1", 1 1/4", 1 1/2", 2" † AVB - 2 1/2", 3" HVB - 8A - 3/4" hose APAS - 075 - 3/4" PAS - 075 - 3/4" PAS - 075U - 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY Approved 6th Ed. of Manual (22 April 1982) Approved 6th Ed. of Manual (22 April 1982) Approved 6th Ed. of Manual (4 June 1982)
Sloan	V-350-A - 1/2", 3/4" V-360-A - 1/4", 3/8", 1/2", 3/4" V-370-A - 1/4", 3/8", 1/2", 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
Strahman	HS - Vertical - 3/4" HS - Horizontal - 3/4"	Approved 6th Ed. of Manual (5 June 1981) Renewed 5 June 1984 Approved 6th Ed. of Manual (15 Sept. 1981) Renewed 5 Sept 1984
Tempstat	VB-10 - 1/2", 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY
Toro	AVB - 3/4", 1" AVB w/ Manual Control Valve - 3/4"	L.A. CITY MECHANICAL TESTING LABORATORY Approved 6th Ed. of Manual (15 Aug 1984)
Water Saver	L-100 - 3/8" L-101 - 1/2"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY
Watts	8 - 3/4 hose 8A-C 3/4 hose 8B - 3/4 hose 8C - 3/4 hose NLF- 9 3/8" 288A - 1/4", 3/8", 1/2", 3/4", 1" 1 1/4", 1 1/2", 2", 2 1/2" S8 - 1/2"	L.A. CITY MECHANICAL TESTING LABORATORY L.A. CITY MECHANICAL TESTING LABORATORY

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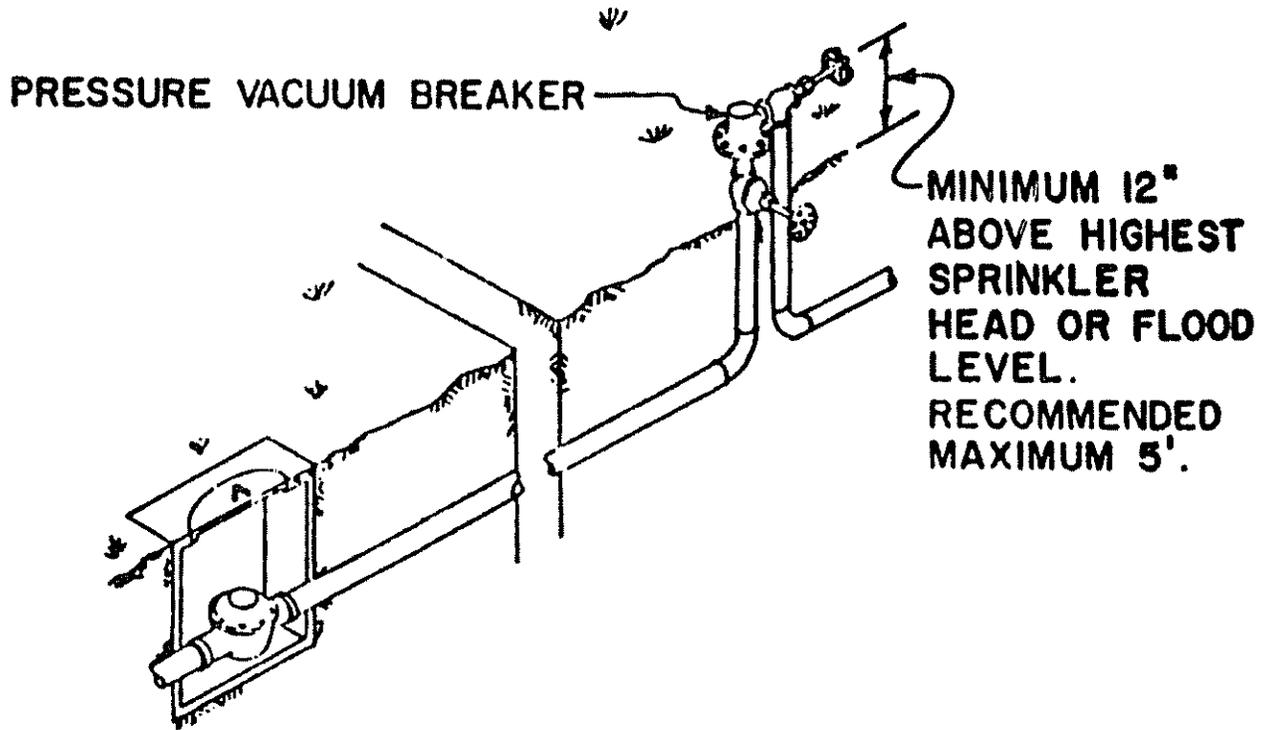
† - Only spare parts available

SECTION IV

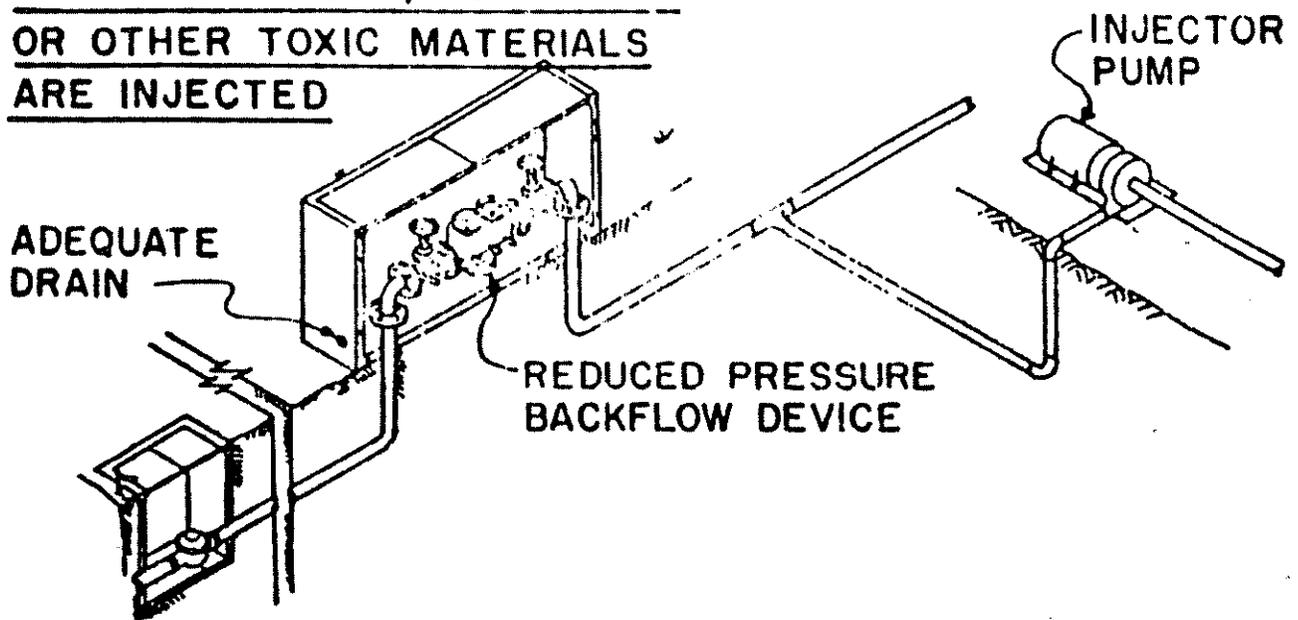
APPENDIX

IRRIGATION SYSTEMS

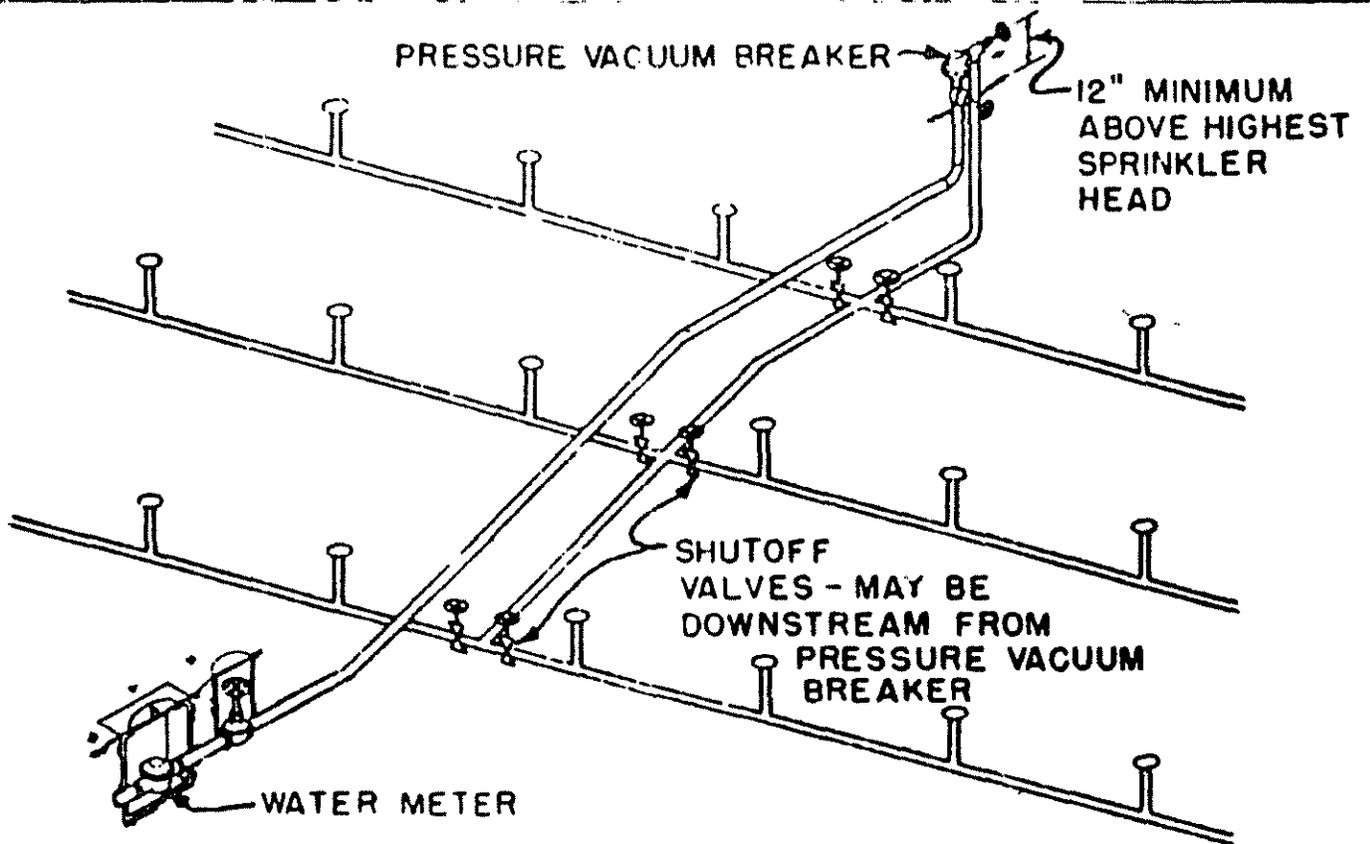
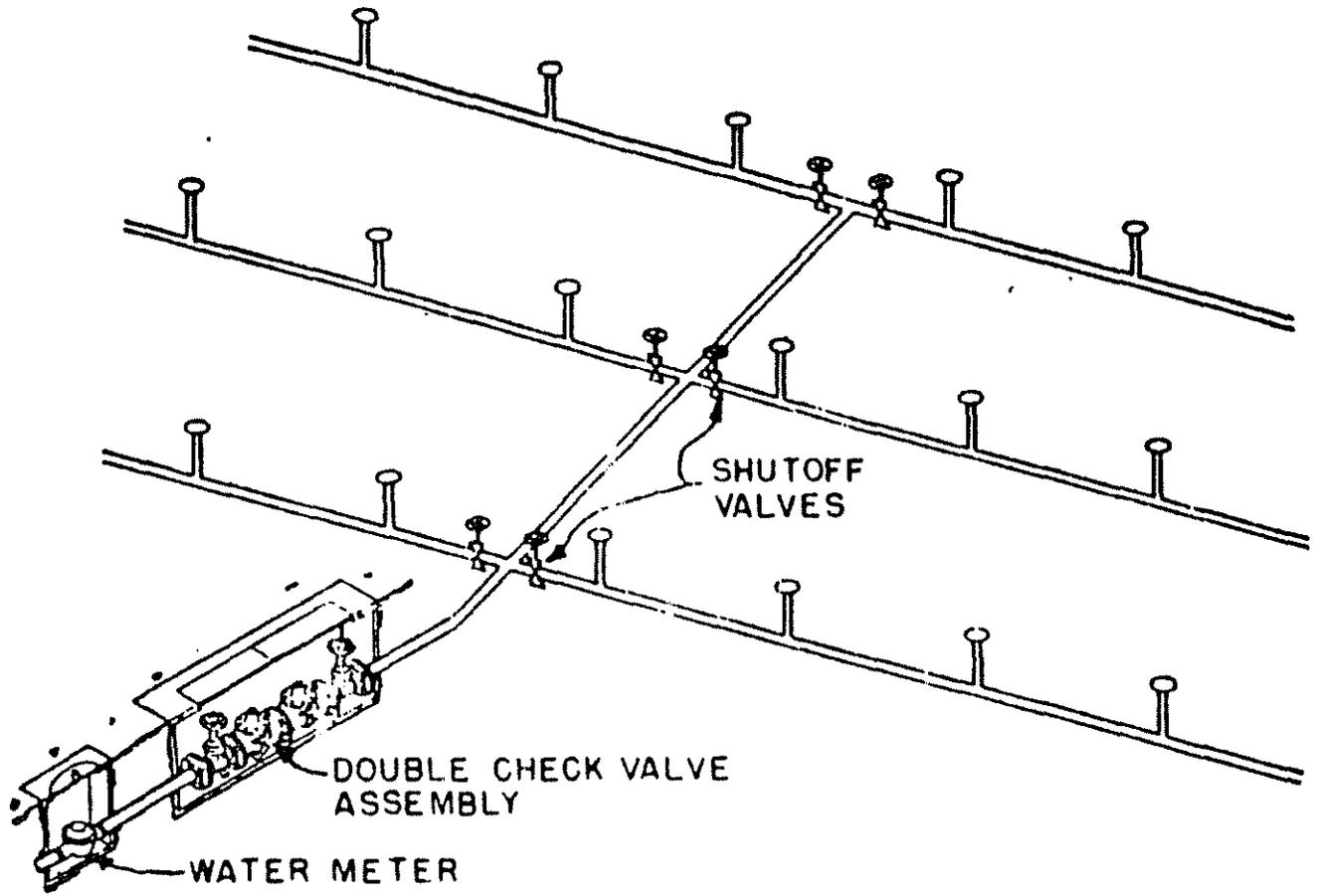
(WHERE THERE IS NO INJECTION)

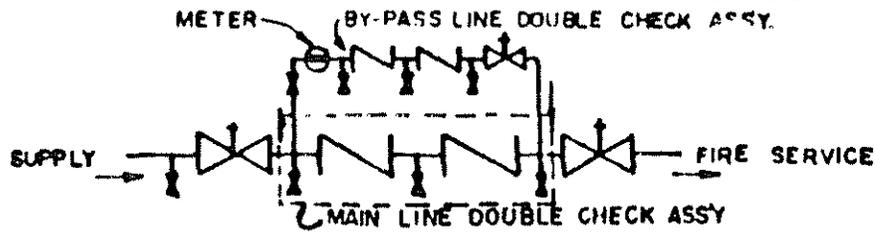


REQUIRED ON ALL SYSTEMS
WHEN FERTILIZER, HERBICIDES
OR OTHER TOXIC MATERIALS
ARE INJECTED

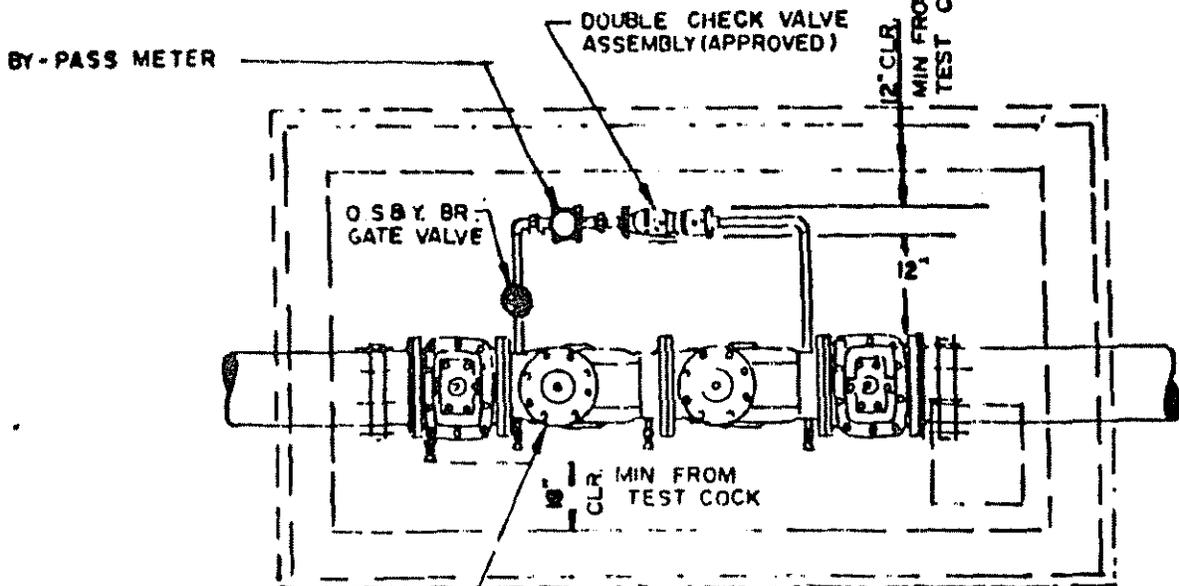


HILL SIDE IRRIGATION SYSTEMS



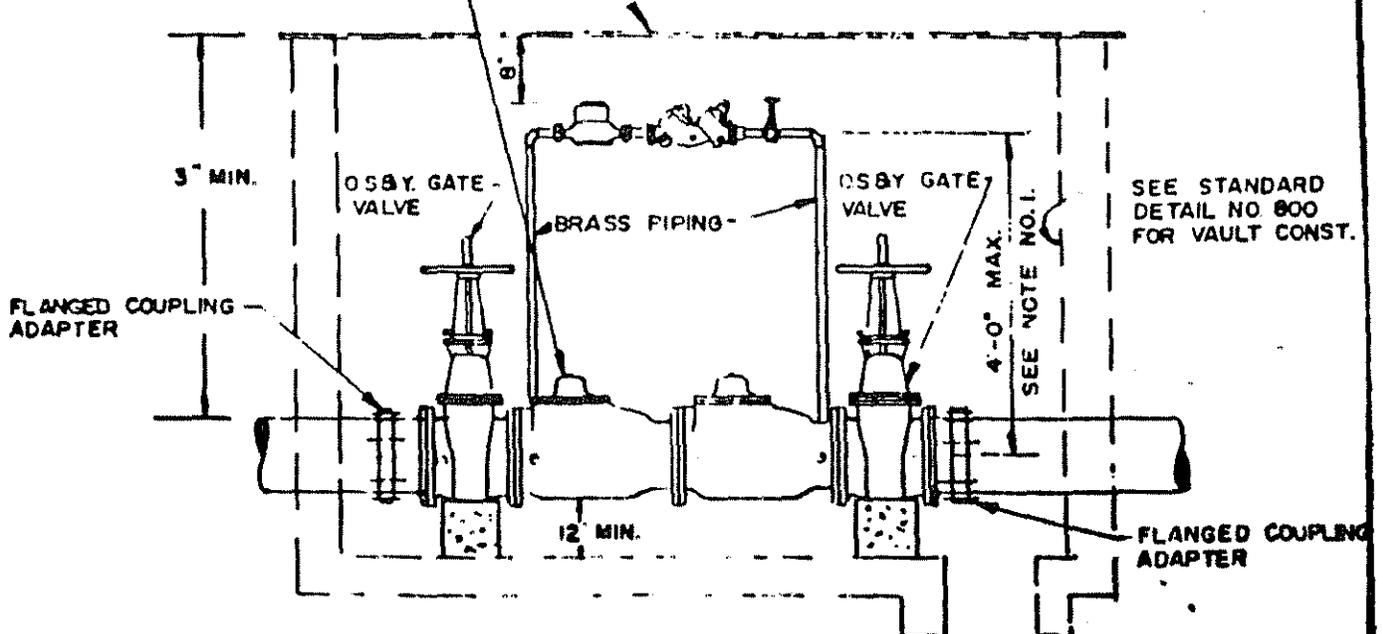


SCHMATIC



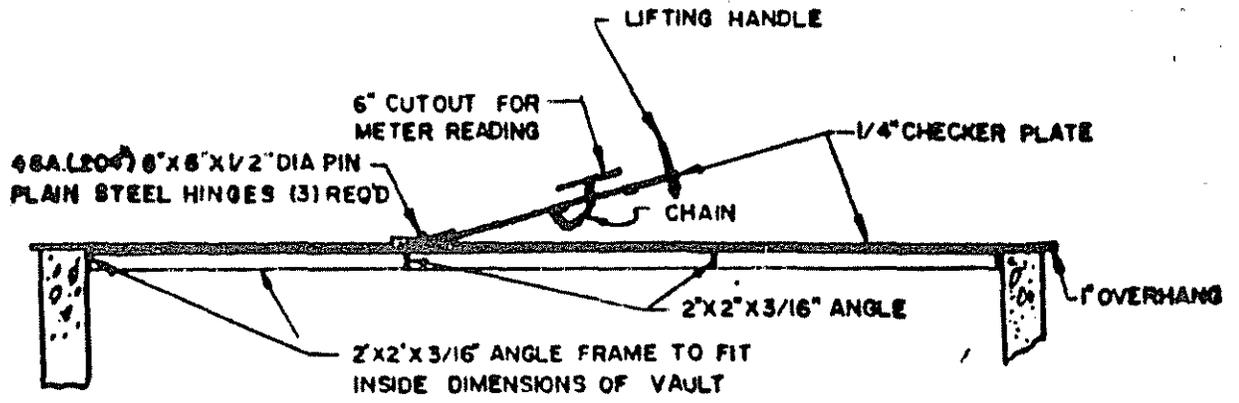
DOUBLE CHECK DETECTOR (APPROVED BY M.W.C.)

SEE STANDARD LID DETAIL NO. 802

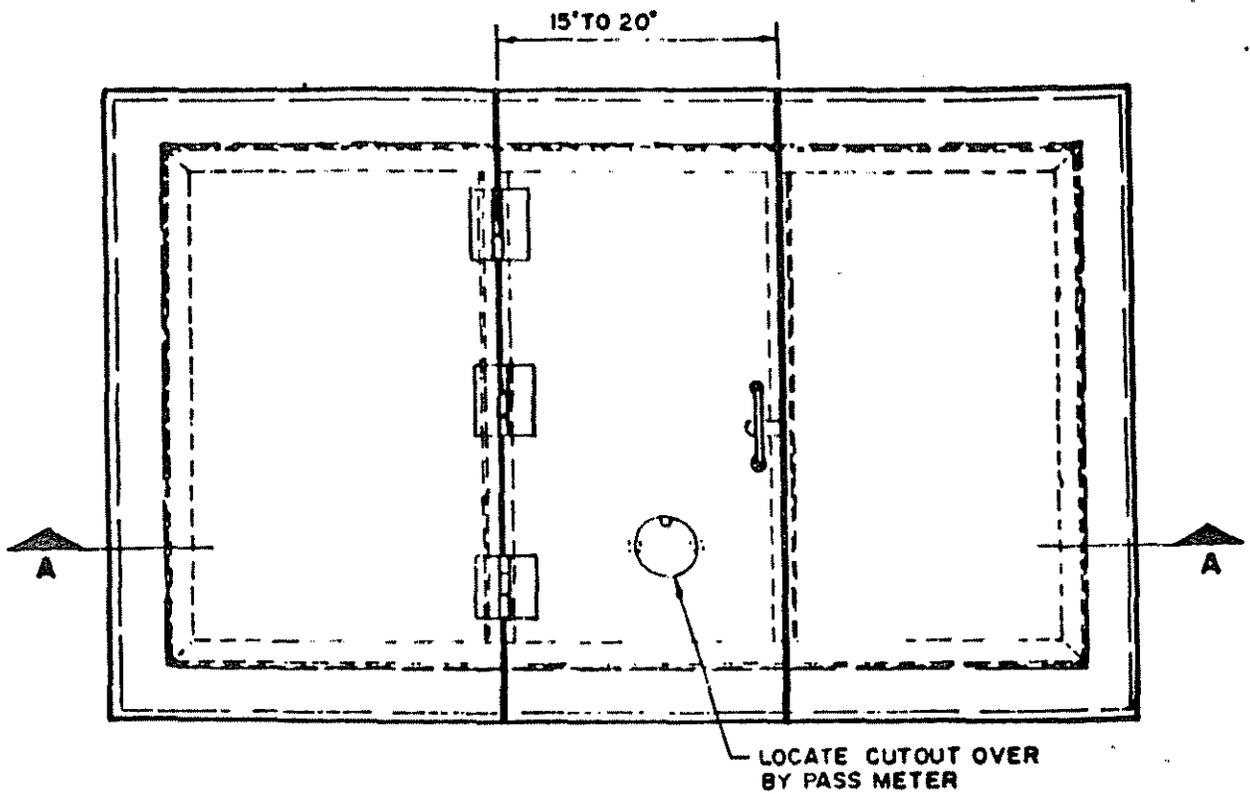


NOTES

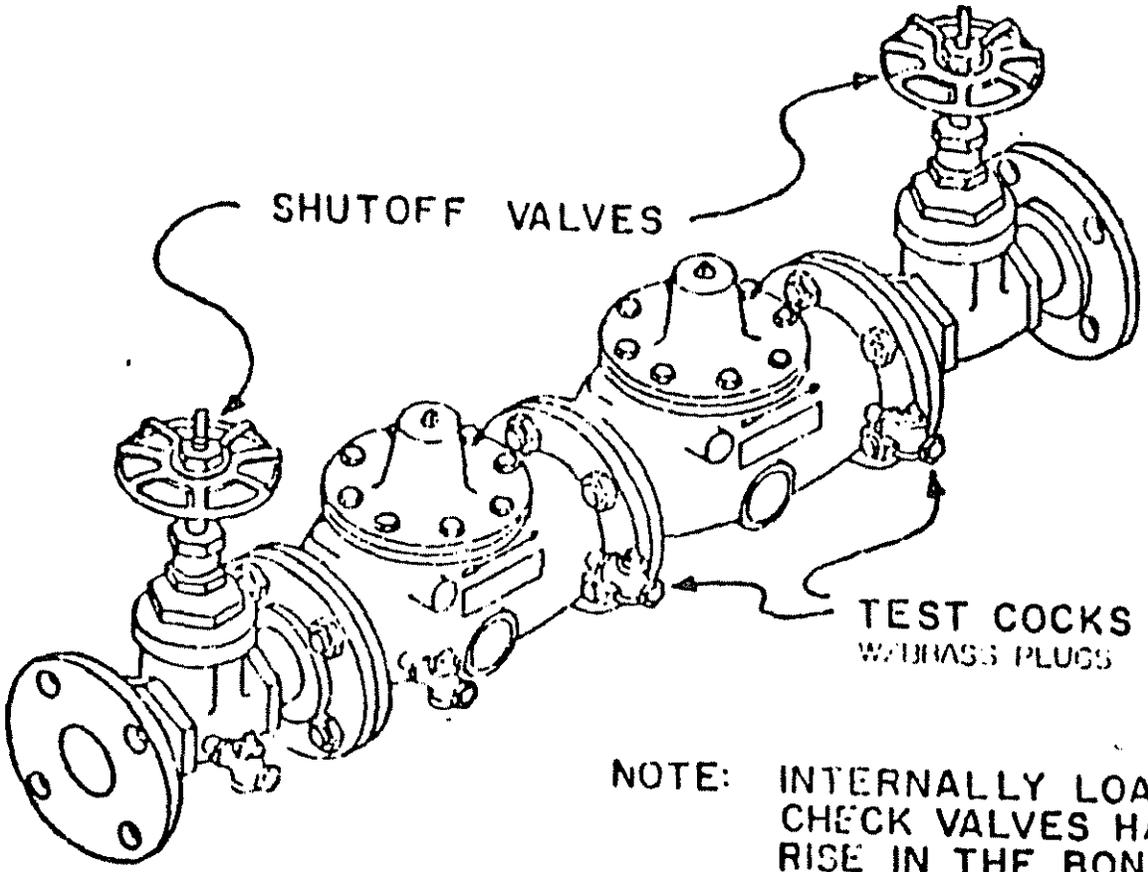
1. WHEN RISE IS OVER 4'-0" USE REMOTE REGISTER
2. BRASS PLUGS TO BE INSTALL IN ALL TEST COCK



SECTION "A-A"

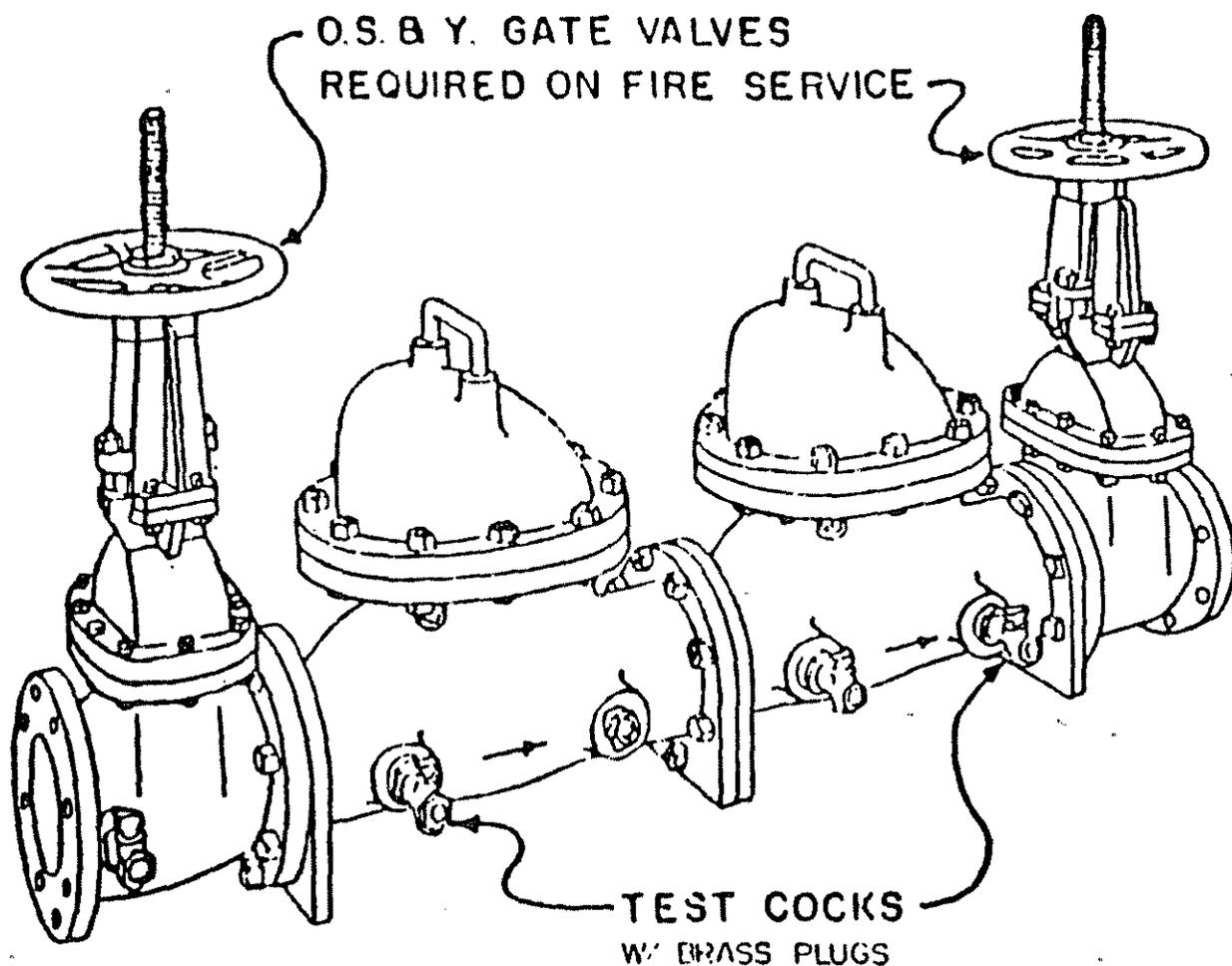


TYPICAL SPRING LOADED DOUBLE CHECK VALVE ASSEMBLY

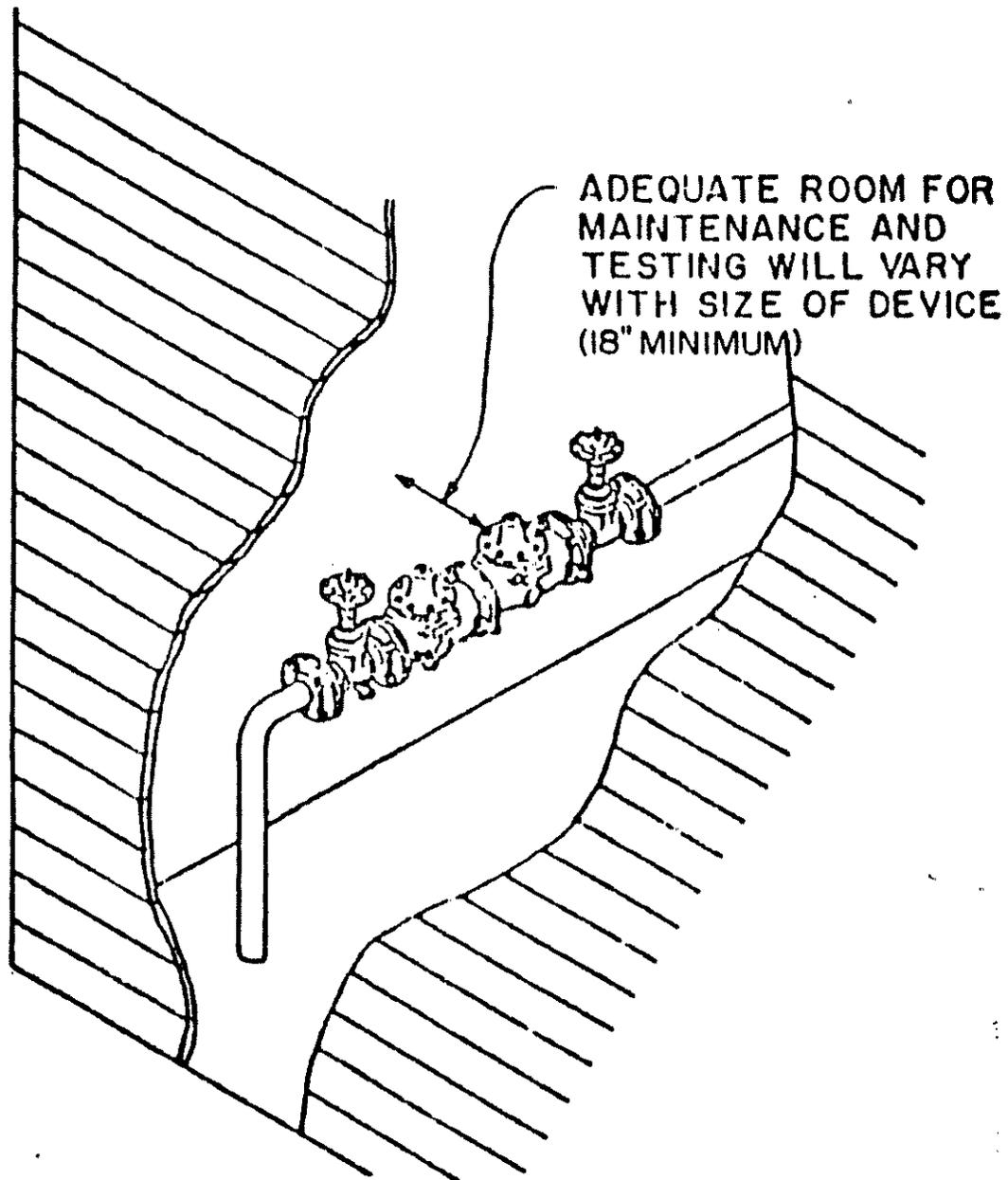


NOTE: INTERNALLY LOADED
CHECK VALVES HAVE A
RISE IN THE BONNET.
SWING CHECK VALVES
NORMALLY HAVE NO
RISE IN THE BONNET.

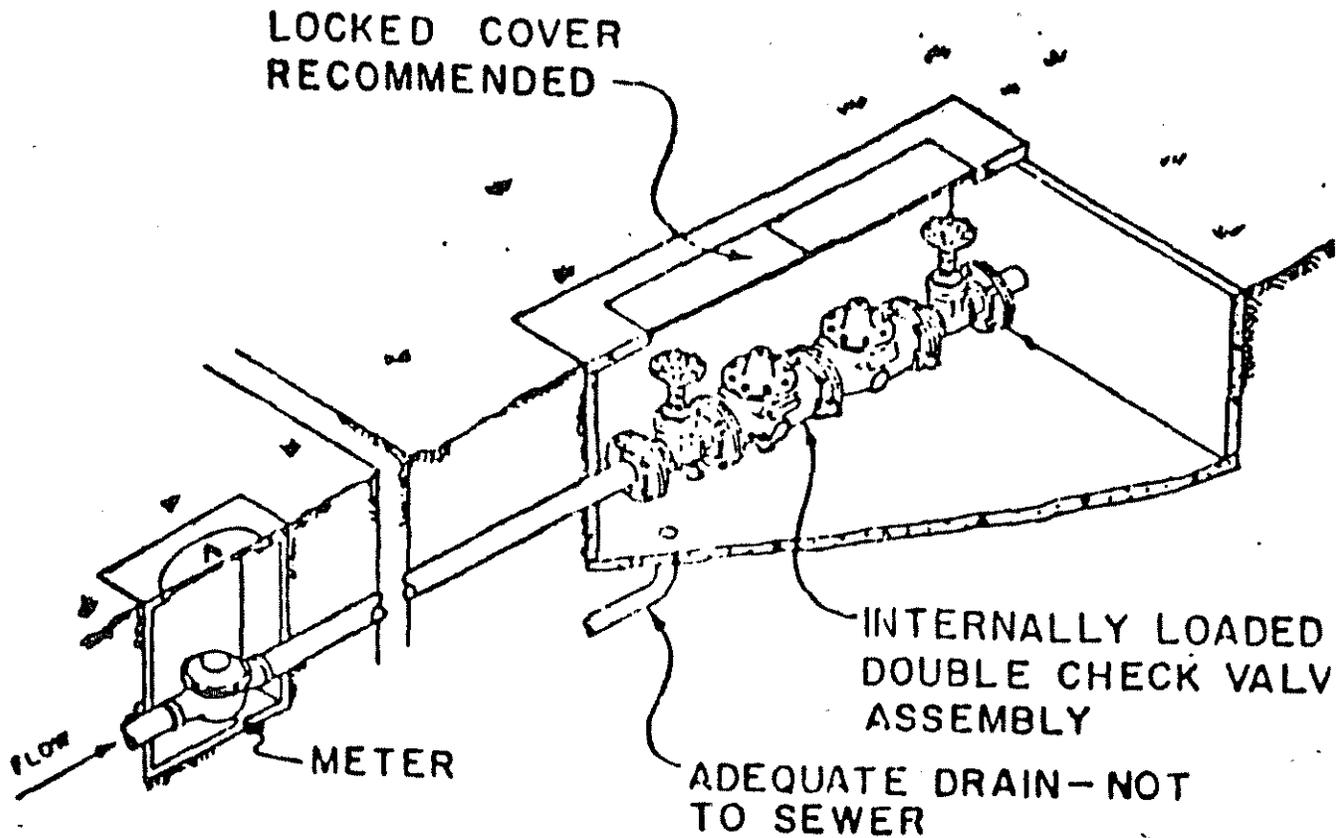
TYPICAL INTERNALLY WEIGHTED DOUBLE CHECK VALVE ASSEMBLY



TYPICAL INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY IN BUILDING



PIT INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY (NOT RECOMMENDED)

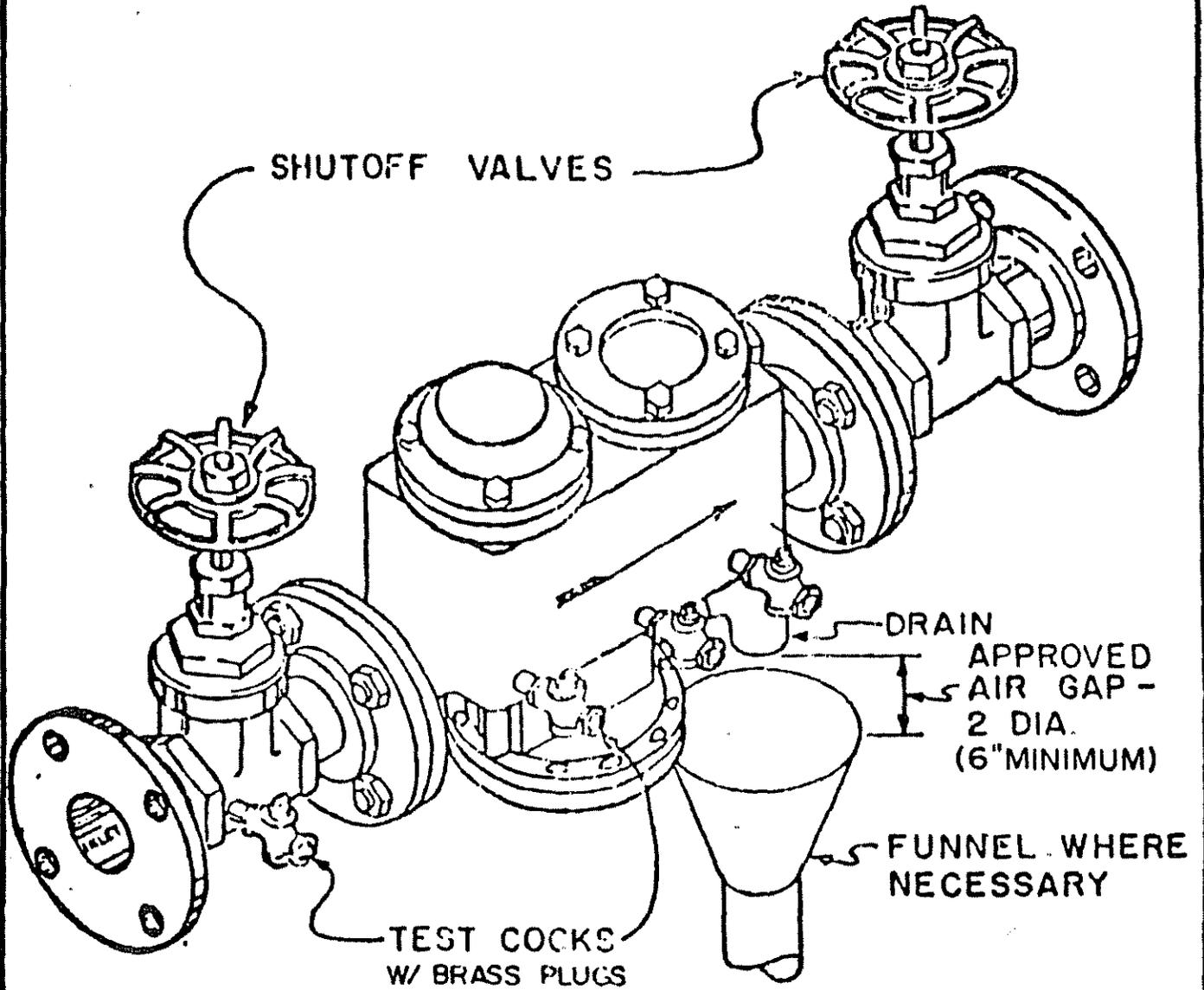


PROVISIONS MUST BE MADE
TO DRAIN VAULT

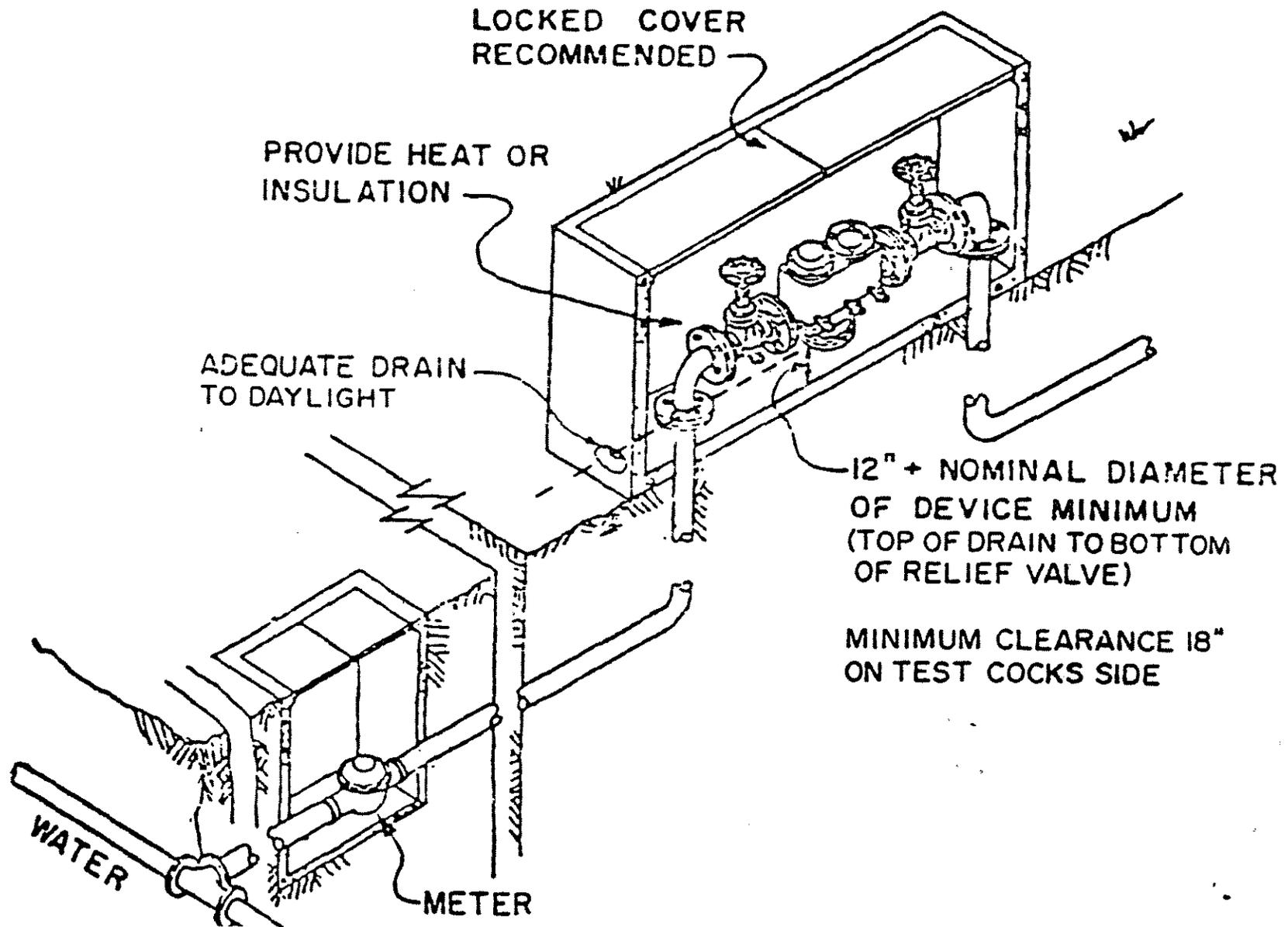
PROVIDE ADEQUATE ROOM IN VAULT
FOR REPAIR AND TESTING

PROTECT DEVICE AGAINST FREEZING
PLUG TEST COCKS WITH BRASS PLUGS

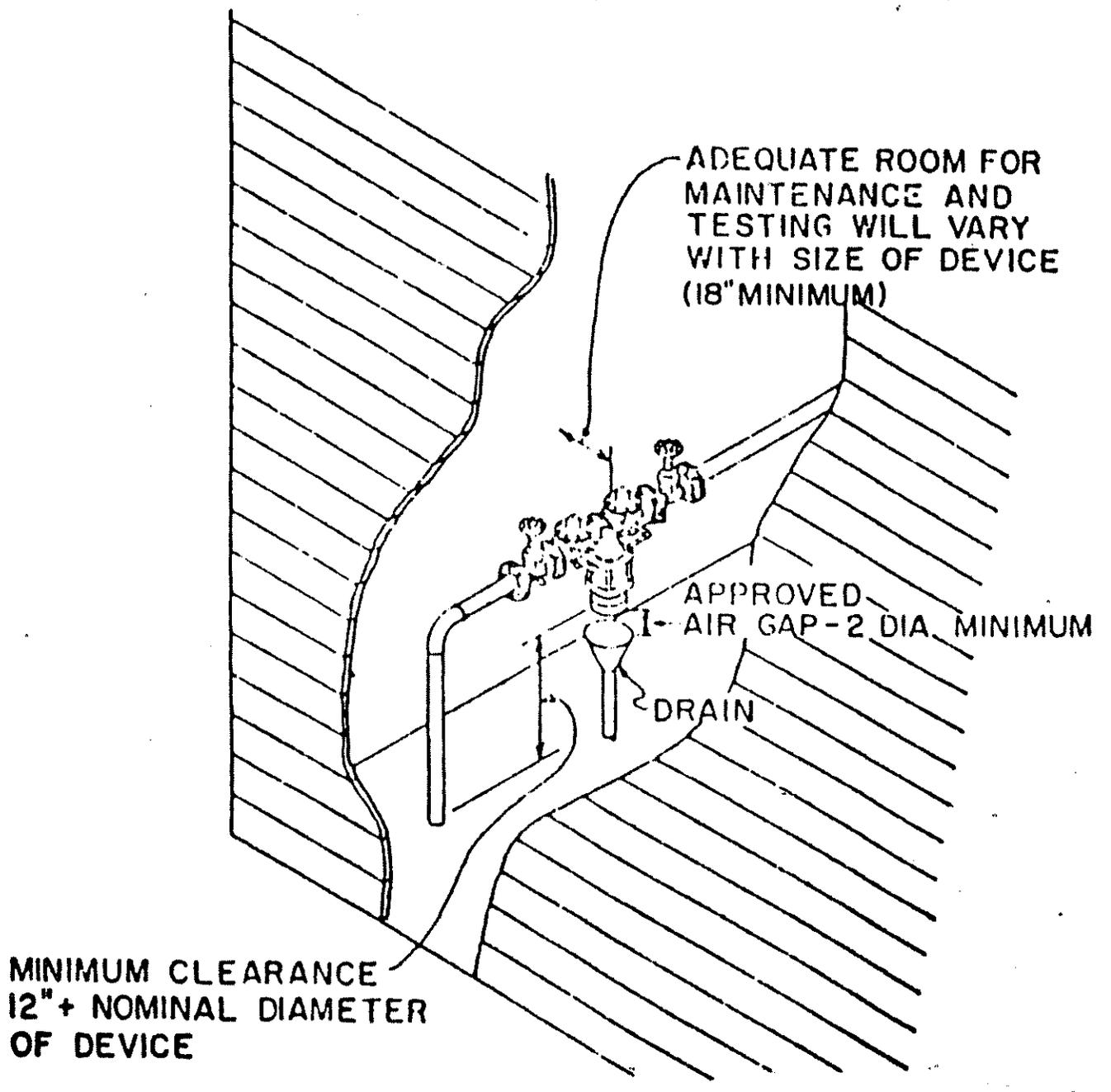
TYPICAL REDUCED PRESSURE BACKFLOW PREVENTION DEVICE



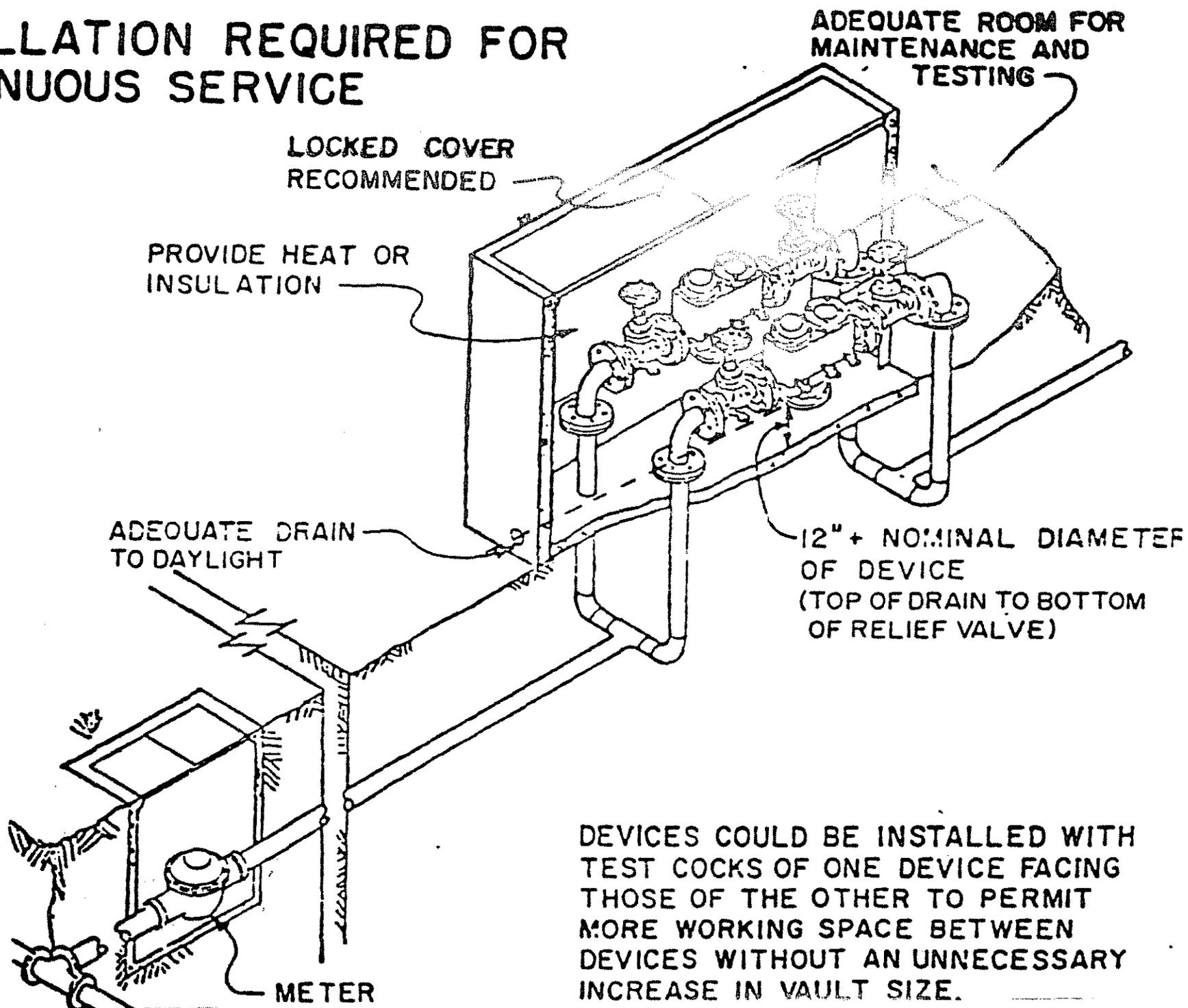
TYPICAL INSTALLATION OF REDUCED PRESSURE PRINCIPLE DEVICE



TYPICAL INSTALLATION OF REDUCED PRESSURE PRINCIPLE DEVICE IN BUILDING



INSTALLATION REQUIRED FOR CONTINUOUS SERVICE



PORTABLE SPRAY AND CLEANING EQUIPMENT

Any portable pressure spray or cleaning units that have the capability of connecting to any potable water supply and do not contain a built-in approved air gap, should be fitted with a reduced pressure backflow device or double check valve assembly depending on the degree of hazard. This should not include fire or street cleaning equipment. (See Page 60.)

MISCELLANEOUS USES OF WATER FROM FIRE HYDRANTS

Many cities allow the use of water directly from fire hydrants for flushing storm and sanitary sewers and similar uses. Where this is permitted, it is recommended a portable backflow device be required to protect the city system from backflow through the hydrant.

STANDARD SAFETY ELECTRICAL BONDING WIRE FOR DEVICES

Water pipe can become electrically charged. In high resistance soil, electric power agencies tend to use water pipe as a grounding media and stray currents from electrical conduit also may induce a current in a water pipe. If a backflow device should have to be removed for repair, the circuit will be broken. A repairman can receive a severe electrical shock if he accidentally grabs both ends of the pipe so the current is allowed to flow through his body or if he grabs one end of the pipe and the current goes to ground through his body. For these reasons, it is recommended a ground wire be installed around the device. (For illustration, see Page 61.)

APPROVED METHODS OF FILLING PORTABLE SPRAY AND CLEANING EQUIPMENT

