CENTRAL SUMTER UTILITY COMPANY, L.L.C.
POTABLE WATER SYSTEM

CROSS-CONNECTION CONTROL HANDBOOK

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STATEMENT OF POLICY AND LEGAL AUTHORITY

Under the provisions of the Safe Drinking Water Act adopted by the E.P.A. in 1974, the potable Water Purveyor (supplier) is held responsible for compliance to the provisions of the Act, to include a warranty that water quality provided by his operation is in conformance with the E.P.A. standards at the source, and is delivered to the Customer without the quality being compromised as a result of its delivery through the distribution system.

The safe and efficient operation and maintenance of backflow assemblies is essential in order to properly protect the public from possible hazards caused by contamination. To this end, Central Sumter Utility Company (CSU) endorses the Statement of Policy adopted by the American Water Works Association (AWWA) as follows:

"The American Water Works Association recognizes that the Water Purveyor has a responsibility to provide its Customers at the service connection with potable water that is safe under all foreseeable circumstances. Thus, in the exercise of this responsibility, the Water Purveyor must take reasonable precautions to protect the community distribution system from the hazards originating on the premises of its Customers that may degrade the water in the community distribution system.

Cross-connection control and plumbing inspections on premises of water Customers are regulatory in nature and should be handled through the rules, regulations and recommendations of the health authority or the plumbing-code enforcement agencies having jurisdiction. The Water Purveyor, however, should be aware of any situation requiring inspection and/or re-inspection necessary to detect hazardous conditions resulting from cross-connections. If, in the opinion of the Utility, effective measures consistent with the degree of hazard have not been taken by the regulatory agency, the Water Purveyor should take such measures as he may deem necessary to ensure that the community potable water distribution system is protected from contamination. Such action would include the installation of a backflow prevention assembly, consistent with the degree of hazard at the service connection or discontinuance of the service.

In addition, Customer use of potable water from the community distribution system for cooling or other purposes within the Customer's system and later return of the water to the community distribution system is not acceptable and is opposed by AWWA."

In order to implement an effective cross-connection control program, CSU adopts the following guidelines:

1. Establish a Cross-Connection Control Handbook outlining policies, rules, regulations, and procedures to be followed to ensure the quality of water supplied by the potable water supply system.
2. Implement an Education Program which may include information provided at the time of request for service, mail-outs to Customers, and newspaper articles.
3. Send personnel who monitor compliance with the program to courses on backflow prevention (BFP) and cross-connection control.
4. Conduct periodic meetings with local plumbing inspection personnel, licensed plumbers and others who will be involved in the installation, inspection, testing and repair of backflow prevention assemblies.

5. Instruct meter readers and maintenance personnel to watch for cross-connections during their daily work schedules and report any cross-connections to management.
6. Establish a policy that specifies the types of service connections that will require a backflow prevention assembly, proper location of the backflow prevention assembly, and a list of all approved assemblies.
7. Ensure that any new construction is reviewed to assess the degree of hazard and ensure that the proper backflow prevention assembly is installed.
8. Continue a backflow protection program to install a residential dual check backflow device at the potable water service to every new residence (existing residential dual check backflow devices mare replaced at a minimum of once every ten years).
9. As existing water meters are repaired or replaced at residences, ensure that a residential dual check backflow preventer is set or replaced with the new or reworked water meter, as applicable.
10. Prepare a listing of all testable backflow assemblies in the system and ensure that they are tested by certified test personnel on an annual basis.
11. Maintain records associated with installation, testing, and repair of backflow prevention assemblies.
12. Provide a customer service contact number and specify information handling procedures for complaints and emergencies related to backflow prevention assemblies and possible cross contamination.

The Cross Connection Control Program Handbook may be amended at any time at the discretion and approval of CSU.

A. RULES CONCERNING THE PROTECTION OF THE POTABLE WATER SUPPLY SYSTEM (CENTRAL SUMTER UTILITY)

In order to protect the public water supply system from contamination due to cross-connections, CSU hereby establishes the following rules:

A.1. No installation of potable water supply piping or part thereof shall be made in such a manner that it will be possible for used, unclean, polluted or contaminated water, mixtures or substances to enter any portion of such piping from any tank, receptacle, equipment or plumbing fixture by reason of back-siphonage, back-pressure, or any other cause either during normal use and operation thereof or when any such tank, receptacle, equipment or plumbing fixture is flooded or subject to pressure in excess of the pressure in the hot or cold water piping.

A.2. No person shall make a connection or allow one to exist between pipes or conduits carrying domestic water supplied by any public or private water service system, and any pipes, conduits or fixtures containing or carrying water from any other source or containing or carrying water which has been used for any purpose whatsoever, or any substances whatsoever, unless there has been provided an approved backflow prevention assembly. The approval of CSU must be obtained before any connection is made between the domestic supply and any auxiliary water system.

A.3. No plumbing fixture or device shall be installed or maintained or shall be connected to any domestic potable water supply when such installation or connection may provide a cross-connection between a distributing system of water for drinking and domestic purposes and water which may become contaminated by such plumbing fixture or device unless there has been provided an approved backflow prevention assembly.

A.4. No water piping supplied by any private water supply system or industrial piping system shall be connected to the potable water system without approval from CSU.

A.5. Any business, resident, or any other connection having been found by CSU to be a potential backflow source or which meets the established requirements for backflow prevention protection shall install or cause to be installed an approved backflow prevention assembly.

A.6. All assemblies, which consist of independent units assembled for the purpose of preventing backflow, shall comply with the material, operational, and other specifications of The American Water Works Association (AWWA), The American Society of Sanitary Engineering (ASSE), or the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) as required for backflow prevention assemblies. In order to ensure proper operation, all assemblies shall be completely assembled by the manufacturer with all required components. Resilient seated shut-off valves and test cocks are considered to be an integral part of the assembly.

A.7. The assembled piping shall be thoroughly flushed before installing the backflow prevention assemblies.

A.8. All backflow prevention assemblies shall be adequately supported.

A.9. All backflow prevention assemblies are the property of the customer. CSU shall have no ownership or responsibility for the proper installation, operation, maintenance, or repair of any backflow prevention assembly.

B. EXCERPTS FROM STATE CODES AND REGULATIONS

The following excerpts are herein incorporated into this program by reference, including any future amendments. In the event of any conflict between this Document and other Codes or Regulations, excluding State and Federal Laws, the terms and provisions of this Document shall prevail.

B.1. RULES OF THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION 62-550.200(26):

(26) "CROSS-CONNECTION" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as the result of backflow. By-pass arrangements, jumper connections, removable sections, swivel or changeable devices, and other temporary or permanent devices through which or because of which backflow could occur are considered to be cross-connections.

SECTION 62-555.360(1), (2) AND (3):

(1) Cross-connections, as defined in Rule 62-550.200, F.A.C. are prohibited unless appropriate backflow protection is provided to prevent backflow through the cross-connection into the public water system. This does not prohibit a public water system from being interconnected to another public water system of the same type without backflow protection.

(2) Each community water system (CWS) shall establish and implement a cross-connection control program utilizing backflow protection at or for service connections from the CWS in order to protect the CWS from contamination caused by cross-connections on customers' premises.

(3) Upon discovery of a prohibited or inappropriately protected cross-connection, public water systems either shall ensure that the cross-connection is eliminated shall ensure that appropriate backflow protection is installed to prevent backflow into the public water system, or shall discontinue water service.

B.2. FLORIDA BUILDING CODE, PLUMBING

CHAPTER 6 – WATER SUPPLY AND DISTRIBUTION:

Section 608 – Protection of Potable Water Supply (Section in its entirety)

608.1 General. A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross-connections or any other piping connections to the system. Backflow preventer applications shall conform to Table 608.1 , except as specifically stated in Sections 608.2 through 608.16.10.

C. RESULT OF NON-COMPLIANCE WITH HANDBOOK

Any person or customer failing to comply with this program or part hereof shall be deemed to be in non-compliance, and potable water service may be terminated by CSU until corrective actions required by this program are completed and verified.

C.1. FEES DISCONNECT/RECONNECT:

Fees may be assessed to customers regarding actions taken by CSU associated with disconnection/reconnection of service, performance of backflow prevention assembly testing and/or repair, or any other applicable actions.

Any person, persons, or customers having been deemed to be in non-compliance with this program shall pay fees as may be assessed by CSU.

C.2. TERMINATION OF SERVICE:

In emergency conditions, when the public potable water supply is being contaminated or is in danger of contamination, water service may be disconnected by CSU.

D. HAZARD REVIEW PROCESS AND BFP ASSEMBLY DETERMINATION

D.1. All commercial facilities that intend to connect to the CSU potable water system shall submit a Cross-Connection Control Survey Form at the time of application for water service (see Appendix A). Failure to comply with the submittal of the Cross-Connection Control Survey Form shall be a violation of this program. Upon review, CSU shall evaluate the hazard potential and determine the type of backflow prevention assembly that is required. There are varying degrees of hazard, and the degree of protection shall be commensurate with the degree of hazard.

D.2. All commercial connections to the potable water system shall be required to have a backflow prevention assembly as otherwise specified herein. All backflow prevention assemblies and their installation location that are installed shall be approved by CSU or its designated representative.

D.3. **Residential** - All new residential potable water connections will include a residential dual check backflow prevention device that is integral to the meter. As all existing residential potable water meters are repaired or replaced, water system operations personnel will ensure that a residential dual check backflow prevention device is present or installed. Whenever a residential potable water meter is replaced, the dual check device will be replaced or rebuilt as well.

If any devices or equipment are installed that connect to a residential potable water line that have the potential for increasing the level of hazard to the public water system, the resident will be responsible for installing an additional backflow prevention assembly in compliance with the requirements of 62-555 F.A.C. and this Handbook. All assemblies shall be installed in accordance with the manufacturer's recommendations. Added backflow prevention assemblies shall be required to be tested and reported in accordance with the requirements of Section H of this Handbook.

If the provisions of this Handbook are not met, CSU may disconnect the potable water service until such time as proper corrections are made and verified.

Home dialysis machines or any other equipment or device that presents a high hazard to the potable water system shall require the installation of a reduced pressure assembly. The assembly shall be installed next to the home, upstream of any other connection.

D.4. **Assembly Location** - Backflow prevention assemblies shall be located on the facility side of the potable water meter, upstream of any connection points to the water service line. Reduced Pressure Assembly backflow prevention assemblies shall be located a minimum of 12 inches above finished grade as close to the building as possible so as to allow for screening by landscaping.

In no case shall there be any connections to the potable water service upstream of the backflow prevention assembly.

D.5. **Assembly Type** - Backflow prevention assembly types shall be as determined by CSU or its designated representative. The following chart shows, in general, the types of assemblies that are required as a minimum level of protection for various types of commercial connections. Final determination of the assembly type will be made by CSU or its designed representative and will be based on the assessment of the potential hazard to the potable water system.

CSU COMMERCIAL CONNECTIONS APPROVED BACKFLOW PREVENTION ASSEMBLIES	
Connection Type	**Approved BFP Assembly**
Restaurant	DCVA
Medical/Dental/Veterinary/Eye Care	RP
Laboratory/Blood Center	RP
Office	DCVA
Grocery Store	RP
Beauty or Nail Salon/Spa	RP
Drug Store	DCVA
Pet Store	DCVA
Convenience Stores	DCVA
Banks/Financial	DCVA
Home Improvement/Hardware	RP
Clothing Retail	DCVA
Furniture Retail	DCVA
Restroom Facility	DCVA
Pool	DCVA with Air Gap
Postal Facility	DCVA
School	DCVA
Church	DCVA
Funeral Home	RP
Maintenance Facility (Golf, Landscape, etc.)	RP
Wastewater Pumping Station	RP
Wastewater Treatment Plant	RP
Commercial Car Wash	RP
Assisted Living/Nursing Facility	RP
Independent Living Facility	DCVA
Skilled Nursing Facility	RP
Commercial Laundries/Dry Cleaners	RP
Automotive Repair/Tire Store	RP
Photo Processing Facilities	RP
Pest Control Companies	RP
Cooling Towers	RP
Hospitals	RP
Definitions	
BFP	Backflow Prevention
DCVA	Double Check Valve Assembly
RP	Reduced Pressure Assembly
Notes	
1. Backflow Prevention Assemblies for facility types not described above shall be submitted to and approved by CSU or its authorized representative prior to installation.	
2. An alternate Backflow Prevention Assembly may be submitted for approval. Alternate assemblies shall be approved by CSU or its authorized representative prior to installation.	

D.6. **Approved Assemblies** - Refer to Appendix B for general information on approved backflow prevention assemblies. Final approval of the specific assembly (manufacturer and model) shall be by CSU or their designated representative.

D.7. Upon completion of the installation of a backflow prevention assembly, the Owner shall submit to CSU detailed installation data on the Installation Record form provided in Appendix A.

E. INSPECTION

E.1. Duly authorized employees or representatives of CSU shall be permitted to enter upon properties for the purpose of sampling or testing the potable water supply, or to make inspections or observations of connections to the potable water supply. Refusal to allow inspection shall constitute a violation of this program.

E.2. If a backflow prevention assembly is required, the Customer shall have installed the correct backflow prevention assembly as determined by CSU. At such time, an inspection by CSU may be performed; such inspection by CSU shall determine satisfactory compliance by the Customer with this program. If such inspection fails to show compliance with this program, CSU shall not be compelled to establish potable water service until such time that satisfactory compliance has been achieved.

F. EXISTING FACILITIES

F.1. All premises where cross-connections are suspected shall be surveyed by CSU to determine if a detailed inspection will be required. The Owners of the premises shall be contacted to secure an appointment for inspection of the premises. The Owner or his authorized representative will be required to accompany the Inspector during the tour of the premises. A cross-connection survey form will be completed by the Inspector and signed by the Owner or his representative. The Owner shall be made aware of any corrective measures that need to be made. Upon conformance to the requirements in the notification, the Owner shall immediately notify CSU to schedule a date for re-inspection.

F.2. In order for potable water service to be continued, corrective measures identified by CSU must be completed by the owner within sixty (60) days or an alternate timeframe as specified by CSU.

F.3. If corrective measures are not completed within the specified timeframe, CSU may disconnect potable water service.

F.4. If an existing condition is deemed an immediate hazard to the water system, CSU may disconnect the potable water service until such time as corrective measures are completed and verified.

G. NEW FACILITIES

G.1. All new commercial connections to the CSU potable water system shall require a backflow prevention assembly in accordance with the provisions of this handbook.

G.2. The installation of thermal expansion devices and/or pressure relief valves is needed within the closed-loop plumbing system created by the required use of backflow prevention assemblies to protect the CSU water system.

H. TESTING AND REPORTING

H.1. Testing shall be required on all backflow prevention assemblies. Testing is to be performed by a certified backflow prevention device technician in accordance with AWWA standards or an individual holding the necessary license. All backflow prevention assemblies, and all assemblies installed where testing is made possible by the design of the assembly shall be tested a minimum of once every twelve (12) months. In the opinion of CSU, if a backflow prevention assembly is used in high hazard applications, it may be required by CSU to be tested more frequently.

H.2. Annual backflow prevention assembly testing and any required maintenance or repair shall be completed and reported to CSU by July 1st of each year. An alternate schedule or greater frequency may be approved/required by CSU.

H.3. Customers may receive a past due notice from CSU if an annual passing test and report is not received in accordance with the dates indicated by CSU.

H.4. If an acceptable test report that includes all of the required information, as shown in Appendix A, titled “CSU Potable Water System Backflow Prevention Assembly Test and Maintenance Report Requirements” is not received in accordance with the required timeframes, CSU, at its option, may perform the testing on behalf of the customer or disconnect potable water service until corrective actions required by this program are completed and verified. Fees may be assessed to customers regarding actions taken by CSU associated with testing or disconnection/reconnection of service.

H.5. Duly authorized employees or representatives of CSU shall be permitted to enter upon properties for the purpose of testing backflow prevention assemblies, or to make inspections or observations. Refusal to allow testing or inspection shall constitute a violation of this program.

I. REPAIRS

I.1. A backflow prevention assembly that fails a test or does not meet the standards of this program shall be repaired/replaced by the Owner to correct any deficiencies or problems with the assembly. The Customer, Owner or Authorized Agent for the Owner shall be responsible for any and all repairs/replacement necessary to maintain good working condition of the backflow prevention assembly.

Repairs shall be performed by a certified backflow prevention device repair technician or an individual holding the necessary licensing.

I.2. Certified backflow prevention device technician or an individual holding the necessary license shall determine shall determine and affirm to CSU satisfactory repair and compliance of the backflow prevention equipment. Said affirmation of compliance by the technician shall be provided to CSU in accordance with the schedule in section H, Testing and Reporting.

I.3. If any necessary repair/replacement of a backflow prevention assembly is not performed in accordance with the required timeframes, CSU, at its option, may perform the repair/replacement on behalf of the customer or disconnect potable water service until actions required by this program are completed and verified. Fees may be assessed to customers regarding actions taken by CSU associated with repair/replacement of backflow prevention assemblies.

I.4. Duly authorized employees or representatives of CSU shall be permitted to enter upon properties for the purpose of repair/replacement of backflow prevention assemblies. Refusal to allow repair/replacement shall constitute a violation of this program.

J. EDUCATION PROGRAM

J.1. Upon application for water service, all potential commercial customers will receive a copy of a letter titled “Cross-Connection Control Program.” This letter explains the responsibilities of CSU and the commercial customer regarding our Cross-Connection Control Program. The letter also includes instructions for downloading a copy of the Cross Connection Control Handbook. A copy of the letter can be found in Appendix A.

J.2. Commercial customers will receive an annual letter by mail prior to their backflow assembly test due date as a reminder of the reporting requirements and that their annual backflow assembly test is due. If an acceptable backflow assembly test report is not received within the specified time, a past due letter will be mailed to the customer advising them of their non-compliance. If after receiving a past due letter an acceptable backflow assembly test report is not received within the specified time, further steps will be taken by CSU as explained in Section H Testing and Reporting. It is the responsibility of the customer to ensure that an acceptable backflow assembly test report is submitted for each backflow assembly that exists at their location.

J.3. Periodic newspaper articles will be in the local newspaper to notify residential and commercial customers of the backflow prevention and water system protection issues.

J.4. Meter readers and utility operations personnel will receive training regarding the requirements for commercial and residential backflow prevention assemblies. Locations that are found to be non-compliant with the provisions of this handbook will receive individual notification of actions that must be taken to bring the correction into compliance.

K. COMPLIANTS AND EMERGENCIES

K.1. **Normal Business Hours -** Complaints and emergencies regarding backflow shall be directed to the CSU utility customer service number (352) 750-0000 from 8:00AM to 5:00PM, Monday through Friday.

K.2. **After Hours and on Weekends -** Complaints and emergencies regarding backflows shall be directed to Community Watch (352) 753-0550.

K.3. Information regarding backflow complaints and emergencies will be relayed to utility operations personnel who will implement required response actions. Utility operations personnel are on call twenty-four (24) hours per day, seven day (7) days per week.

K.4. In the event of an identified cross-connection or backflow occurrence, the CSU utility response procedures can be found in Appendix A.

L. RECORDKEEPING

L.1. All records will be maintained for not less than ten (10) years.

L.2. Records will be maintained by the CSU Utility Department or their designated representative.

L.3. Records will be kept on items including, but not limited to:

a) Cross-Connection Survey Forms

b) Backflow Prevention Assembly - Installation Records

c) Backflow Prevention Assembly - Test and Maintenance Reports

d) Backflow Compliant and Emergency Work Orders

e) Education Program Materials

M. EFFLUENT REUSE

M.1. The CSU Wastewater Treatment Plant (WWTP) shall supply reclaimed water for the development's golf courses. The reclaimed water source consists of treated wastewater effluent, which satisfies requirements for slow-rate land application systems on public access areas in accordance with Chapter 62-610 F.A.C. CSU shall have the responsibility of operating and maintaining the reclaimed water transmission/distribution system.

M.2. At this time there is no plan to make reclaimed water available for residential or commercial use. If this were to occur in the future, all regulatory requirements would be complied with prior to initiating residential or commercial use of reclaimed water.

M.3. In addition to the potable water utility (Central Sumter Utility), CSU also operates and maintains Sumter Water Conservation Authority (SWCA), which is a non-potable irrigation water system. This non-potable irrigation water system supplies and distributes non-potable water to satisfy the required irrigation and fire protection demands for the residential and commercial properties as well as the irrigation needs of the boulevard right-of-ways. The non-potable water source consists of storm water and ground water from a total of five (5) lower Floridan Aquifer irrigation wells.

M.4. **WASTE TREATMENT AND DISINFECTION -** Pre-application waste treatment shall result in reclaimed water that meets, at a minimum, secondary treatment and high-level disinfection. The reclaimed water shall not contain more than 5.0 milligrams per liter (mg/L) of suspended solids before the application of the disinfectant. Filtration shall be provided for TSS control. Chemical feed facilities for coagulant, coagulant aids, or polyelectrolytes shall be provided. Such chemical feed facilities may be idle if the TSS limitation is being achieved without chemical addition. The reclaimed water shall not contain less than 1.5 mg/L of chlorine at the discharge of the chlorine contact basin. Dosing rates of sodium hypochlorite shall be varied to maintain the minimum chlorine residual for adequate disinfection.

M.5. **MONITORING AND OPERATING PROTOCOL -** Reclaimed water limitations shall be met after disinfection and before discharge to holding ponds or reuse systems. The total suspended solids limitation shall be achieved before disinfection, regardless of the actual reclaimed water compliance monitoring location.

The CSU WWTP shall include continuous on-line monitoring for turbidity before the application of the disinfectant. Continuous on-line monitoring of total chlorine residual shall be provided at the compliance monitoring point. Instruments for continuous on-line monitoring of turbidity and disinfectant residuals shall be equipped with an automated data logging or recording device.

Continuous on-line monitoring instruments shall be maintained according to the manufacturer's operation and maintenance instructions. Please refer to the Effluent Operating Protocol for the CSU WWTP for more detailed descriptions and instructions.

Reclaimed water produced at the CSU WWTP that fails to meet the criteria established in the operating protocol shall not be discharged into the system storage or reuse system. Such substandard reclaimed water (reject water) shall be either stored for subsequent additional treatment or shall be discharged to a permitted effluent disposal system (i.e. rapid infiltration basins).

M.6. **PUBLIC NOTIFICATION AND ADVISORY SIGNS -** The public shall be notified of the use of reclaimed water. This shall be accomplished by posting the advisory signs designating the nature of the reuse project area where reuse is practiced, notes on scorecards, or by other methods. Examples of some of the notification methods, which may be used by permittees include, posting advisory signs at the entrance to a golf course. Advisory signs shall include the text, "Do not drink" in English and in Spanish together with the equivalent standard international symbols.

Advisory signs shall be posted adjacent to basins used to store reclaimed water that are not located at the domestic wastewater treatment facilities.

Advisory signs at storage basins shall include the text, "Do not drink" and "Do not swim" in English and Spanish together with the equivalent standard international symbols.

CSU shall ensure that users of reclaimed water and non-potable water are informed about the origin, nature and characteristics of reclaimed water and non-potable water; the manner in which reclaimed water and non-potable water can be safely used; and limitations on the use of reclaimed water and non-potable water.

Neither reclaimed water nor non-potable water shall be used to fill swimming pools, hot tubs, or wading pools.

M.7. **COLOR-CODING AND LABELING OF RECLAIMED WATER LINES -** All reclaimed water valves and outlets must be appropriately tagged and labeled as reuse in order to inform the public that the source is non-potable and to prevent the consumption of reclaimed water. Likewise, all non-potable water valves and outlets must be appropriately tagged and labeled as non-potable in order to inform the public that the source is non-potable and to prevent the consumption of non-potable water. Signs on these appurtenances shall bear the words, "Do not drink" in English and in Spanish together with the equivalent international symbol.

1. Reclaimed water valve boxes shall be adjustable with covers cast with the inscription RECLAIMED WATER in legible lettering on the top.
2. All reclaimed and non-potable water valves and outlets shall be installed in such a manner that restricts public access.
3. Vaults for reclaimed and non-potable water hose bibs and outlets shall be locked or require a special tool to operate the hose bib or outlets. All underground piping which is not manufactured of metal or concrete shall be color coded for reclaimed and non-potable water distribution systems using Pantone Purple 522C. Underground metal or concrete piping shall be color coded or marked using purple as the predominate color. If tape is used to mark the pipe, the tape shall be permanently affixed to the top and each side of the pipe. A single tape may be used along the top of the pipe for pipes less than 24 inches in diameter.

4. Installation shall be performed in accordance with applicable provisions of AWWA Manual M23 (PVC Pipe) and AWWA Standard C600 (Ductile Iron Pipe).

M.8. **MINIMUM SEPARATION DISTANCES -** Horizontal Separation: A minimum horizontal separation distance of 3 feet (measured outside to outside) between reclaimed water lines and potable water mains. The minimum horizontal separation distance between non-potable water lines and potable water mains is also 3 feet (measured outside to outside). Smaller horizontal separation distances are allowed provided one of the following conditions is met.

1. The top of either the reclaimed water main or the non-potable water main is installed at least 18 inches below the bottom of the potable water main.
2. The reclaimed water main or the non-potable water main is encased in concrete.
3. The applicant provides an affirmative demonstration in the engineering report that another alternative will result in an equivalent level of protection.

M.9. **VERTICAL SEPARATION -** Reclaimed water lines and non-potable water lines crossing under potable water mains shall be installed to provide a minimum vertical separation distance of 18 inches between the invert of the upper pipe and the crown of the lower pipe. Where the minimum vertical separation cannot be maintained one of the following conditions shall be met.

1. The crossing shall be arranged so that the reclaimed water pipe joints or non-potable water joints are equidistant from the point of crossing with no less than 10 feet between any two joints.
2. The reclaimed water main or the non-potable water main may be placed in a sleeve or encased in concrete to obtain the equivalent of the required 10 feet separation.

Where there is no alternative to reclaimed water pipes or non-potable water pipes crossing over a potable water main, the criteria for minimum separation between lines and joints listed above shall be required.

M.10. **SETBACK DISTANCE -** The reclaimed water system shall maintain the following setback distances.

1. Setback distance of 75 feet from the edge of the wetted area of the public access land application area to potable water supply wells that are either existing or are proposed which have been approved by FDEP or by the department of health.
2. Setback distance of 75 feet from reclaimed water transmission facility to a public water supply well.

3. Setback distance of 100 feet from reuse facilities to outdoor public eating, drinking and bathing facilities, low trajectory nozzles, or other means to reduce aerosol formation.

4. Setback distance of 100 feet from indoor aesthetic features, such as decorative pools or fountains, using reclaimed to adjacent indoor public eating and drinking facilities where the aesthetic features and eating and drinking facilities are within the same room or building.

Setback distances for potable water supply wells shall be applied only for new or expanded reuse facilities. Setback distances shall not be applied when considering renewal of a permit.

No setback distance is required for other potable water supply wells or to non-potable water supply wells. Setback distances are not required for surface waters or developed areas.

M.11. **CROSS-CONNECTION INSPECTIONS -** CSU is responsible for conducting inspections within the reclaimed water service area and non-potable water service area to verify proper connections, monitor proper use of reclaimed water, and minimize the potential for cross-connections.
Inspections are required when customers first connect to the reclaimed water distribution system.

M.12. **IDENTIFICATION OF A CROSS-CONNECTION -** The following procedures shall be initiated in the event that a cross-connection between a reclaimed water line or non-potable water line and a potable water line is discovered.

1. Potable water service to the affected area shall be immediately discontinued.

2. The cross-connection shall be eliminated.

3. Install a double check backflow prevention assembly at a potable water service connection point (to prevent contamination of the potable water system) and connect service to the potable water system affected area.

4. Flush the contaminated lines with potable water for a minimum of 30 minutes.

5. Inject sodium hypochlorite solution (5 mg/L- residual) at the backflow prevention assembly. The backflow prevention assembly shall be designed to have an injection port.

6. Service lines shall be filled with sodium hypochlorite solution until chlorine can be detected at all fixtures or at all connection points to the potable system.

7. A minimum 30-minute residence time shall be required.

8. A final flush of the lines shall be performed with potable water for a minimum of 30 minutes.

9. Perform two bacteriological and chlorine residual tests on two consecutive days to verify that service can be cleared. The backflow prevention assembly shall be removed only when the lines have been cleared for service.

10. The affected area shall be inspected for other possible cross-connections.

11. CSU shall report any cross-connections within 24 hours of discovery to the appropriate FDEP district office and the drinking water program staff of the county health department.

12. CSU shall submit a written report of any cross-connections to FDEP and the county health department within 5 days of its discovery. The report shall include the following details.

    - A description of the cross-connection.
    - How the cross-connection was discovered.
    - The exact date and time the cross-connection was discovered.
    - The approximate time the cross-connection has existed.
    - The cause of the cross-connection (how it occurred).
    - The steps taken to correct the cross-connection.
    - Whether or not reclaimed water was consumed, and if so, whether any potential illness was reported.
    - Whether drinking water system was contaminated, and if so, the steps taken to clear the distribution lines.
    - When the cross-connection was corrected or is expected to be corrected.
    - Plan of action for subsequent testing for other possible cross-connections in the area.
    - Evaluation of the CSU's cross-connection control and inspection program to ensure that future cross-connections do not occur.

N. DEFINITIONS

AIR GAP: A physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An "approved air-gap separation" shall be at least double the diameter of the supply pipe measured vertically above the top of the rim of the vessel. In no case shall it be less than 1 inch.

APPROVED: Accepted by CSU.

AUXILIARY WATER SUPPLY: Any water supply on or available to the premises other than CSU approved potable water supply. These auxiliary waters may include water from another purveyor's potable water supply or any natural source(s) such as a well, spring, stream, river, harbor, etc., or "used waters" or "industrial fluids."

BACK PRESSURE: Any elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point of consideration, which would cause - or tend to cause - a reversal of the normal direction of flow through the backflow prevention assembly.

BACK-SIPHONAGE: A form of backflow due to a reduction in system pressure, which causes a negative or sub-atmospheric pressure to exist at a site in the water system.

BACKFLOW: The undesirable reversal of flow of water or mixtures of water and other liquids, gases or other substances into the distribution pipes of the potable supply of water from any source or sources.

BACKFLOW PREVENTION ASSEMBLY: A device or means designated to prevent back pressure, backsiphonage, or backflow.

CONTAMINATION: An impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease. (see also pollution).

CROSS-CONNECTION: Any physical arrangement whereby a potable water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage, or other water or liquid of unknown or unsafe quality which may be capable of imparting contamination to the potable water supply as a result of backflow. Bypass arrangements, jumper connections, removable sections, swivel or changeable devices, and other temporary or permanent devices through which or because of which backflow could occur are considered to be cross-connections.

CROSS-CONNECTION, CONTROL BY CONTAINMENT: The installation of an approved backflow prevention assembly at the service connection to any Customer's premises where it is not physically and economically feasible to find and permanently eliminate or control all actual or potential cross-connections within the Customer's water system; or it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a Customer's water system where there are actual or potential cross- connections which cannot be effectively eliminated or controlled at the point of connection.

CROSS-CONNECTION, CONTROLLED: A connection between a potable water system and a non-potable water system with an approved backflow prevention assembly properly installed that will continuously afford protection against contamination or pollution commensurate with the degree of hazard.

DOUBLE CHECK VALVE ASSEMBLY: An assembly composed of two (2) single, independently acting check valves, including tightly closed shut-off valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve. A check valve is a valve that is drip-tight in the normal direction of flow when the inlet pressure is 1 psi and the outlet pressure is zero. The check valve shall permit no leakage in a direction reverse to the normal flow. The closure element (e.g., clapper) shall be internally weighted or otherwise internally loaded to promote rapid and positive closure.

DUAL CHECK VALVE ASSEMBLY: An assembly of two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks, generally employed immediately downstream of the water meter to act as a containment device.

HAZARD, DEGREE OF: A measure of hazard derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

HAZARD, HEALTH: Any condition, device or practice in the water supply system and its operation which could create or, in the judgment of CSU, may create a danger to the health and well-being of the water Consumer. An example of a health hazard is a structural defect, including cross-connections, in a water supply system.

HAZARD, PLUMBING: A plumbing type cross-connection in a Consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation, or backflow prevention assembly. Unprotected plumbing type cross-connections are considered to be a health hazard.

HAZARD, POLLUTION: An actual or potential threat to the physical properties of the water system or to the potability of the Public or the Consumer's potable water system, but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

HAZARD, SYSTEM: An actual or potential threat of severe damage to the physical properties of the potable water system or the Consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

INDUSTRIAL FLUIDS SYSTEM: Any system containing fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, plumbing, pollution or system hazard if introduced into the Public potable water supply. This may include, but not be limited to, polluted or contaminated waters; all types of process waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalies, circulated cooling water connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural water such as from wells, springs, streams, rivers, bay, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions and other liquids and gaseous fluids used for industrial or other purposes or firefighting purposes.

POLLUTION: The presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

REDUCED PRESSURE BACKFLOW ASSEMBLY: An assembly containing within its structure a minimum of two (2) independently acting approved check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and at cessation of normal flow the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The unit shall include tightly closing shut-off valves located at each end of the assembly, and each assembly shall be fitted with properly located test cocks.

WATER, NON-POTABLE: Water which is not safe for human consumption.

WATER, POTABLE: Any water which, according to recognized Standards, is safe for human consumption.

WATER PURVEYOR: The Owner or Operator of a Potable Water Utility supplying a potable water supply to the Public.

WATER SERVICE CONNECTIONS: The terminal end of a service connection from the potable water system; i.e., where CSU loses sanitary control over the water at its point of delivery to the Customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream side of the meter.

There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention assembly located at the point of delivery to the Customer's water system. Service connections shall also include all other temporary or emergency water service connections from the Public potable water system.

WATER, USED: Any water supplied by a Water Purveyor from a potable water system to a Consumer's water system after it has passed through the point of delivery and is no longer under sanitary control of the Water Purveyor.

APPENDIX A
LETTERS AND FORMS

CROSS-CONNECTION CONTROL PROGRAM

Dear Utility Customer,

The Potable water supplied to your facility is provided by a water system owned by Central Sumter Utility Company (CSU). A critical element to operating a potable water system is to ensure the protection of the health and safety of the water supplied. One of the ways that this is achieved is by requiring that a Backflow Prevention Assembly be installed at all service connections. A Backflow Prevention Assembly is typically either a Double Check (DC) or Reduced Pressure Assembly (RP) and is located on the customer side of the water meter. This is further explained in the Cross-Connection Control Program Handbook that was created by CSU in compliance with the rules of the Florida Department of Environmental Protection (FDEP). The handbook outlines the requirements of the customer, which includes installation and annual testing and maintenance on all Backflow Prevention Assemblies. A copy of the handbook can be downloaded at www.DistrictGov.org by selecting the following: Departments - Utilities - Commercial Customers - and then under the heading Cross-Connection Control Handbook, select CSU - Download Here.

COMMONLY ASKED QUESTIONS REGARDING CROSS-CONNECTION AND BACKFLOW

What is a cross-connection?
A cross-connection is a point in a plumbing system where the potable water supply is connected to a non-potable source.

Where might cross-connections be found?
They can be found in all plumbing systems in areas such as:

- Wash Basins and Service Sinks
- Ornamental Fountains
- Medical and Dental Equipment
- Hose Bibs
- Photo Developing Equipment
- Fire Sprinkler Systems

What is backflow?
It is the unwanted flow of non-potable or contaminated fluids back into the customer's plumbing system and/or the public water system. There are two types of backflow, see below:

- Backsiphonage - caused by a negative pressure in the supply line to a facility or plumbing fixture.
- Backpressure - can occur when the potable water supply is connected to another system operated at a higher pressure or has the ability to create pressure. Primary causes are booster pumps, pressure vessels, elevated plumbing, etc.

What is a Cross-Connection Control Program?
It is a program required by the FDEP to detect and prevent possible sources of non-potable water or contaminants from entering the public water supply.

Why do backflow assemblies need to be tested every year?
A backflow assembly is a mechanical device that needs maintenance just as a vehicle does. The annual test indicates if the internal check valves and mechanics are working properly. Annual testing and maintenance, if necessary, is also required by FDEP and CSU.

Who do I contact to have my backflow assembly tested?
Typically, you would contact a plumber. It is important to ask for a current copy of their backflow prevention testing certification to ensure they are qualified to perform the test. In order to repair a backflow prevention assembly they will need a separate certification that allows them to perform repair activities.

CSU EMERGENCY RESPONSE PROCEDURES IN THE EVENT OF AN IDENTIFIED CROSS- CONNECTION OR BACKFLOW EVENT

The following Procedures will be followed by CSU personnel in the event of an identified water system cross-connection or backflow event.

1. DISCONNECT

- Eliminate the cross-connection or disconnect the backflow source.

2. REPORT

- Immediately report the incident to the following utility contacts:

CONTACT	PHONE NUMBER
VCCDD Customer Service	(352) 750-0000
CH2M HILL Project Director	(352) 259-2802
CSU Utility Engineer	(352) 753-4747
CH2M HILL Project Manager	(352) 259-2802
VCCDD Public Safety	(352) 205-8280
After Hours or Weekends - Community Watch	(352) 753-0550

- Begin documentation log at notification of cross-connection to include date, time, location, and activities associated with the event.

3. INVESTIGATION/NOTIFICATION

- Perform an investigation of the cross-connection to identify the potential contaminant and the degree of hazard.
- Do an assessment to determine the potential impact area.
- If a known contaminant has been introduced into the water system, isolate the impacted area and shut down the water system.
- Notify all affected homes and businesses regarding the system outage.
- If it cannot be determined that a contaminant has been introduced into the water system, issue a Boil Water Notice to the potentially impacted area using the following procedures:
    - Send email to the VCCDD Utilities email group identifying the incident that occurred, location of incident, and number of homes/businesses affected.
    - Provide a PSA for the billing and Customer Service Division, VCCDD Utilities email group, and the Public Safety Department.
    - Place door hangers on the front door of homes that are affected by the incident and directly contact affected businesses.

- Notify the Florida Department of Environmental Protection.
- Notify the County Health Departments at the following numbers:

HEALTH DEPARTMENT	PHONE NUMBERS
Sumter County Health Department	(352)793-7133
Marion County Health Department	(352) 629-0137
Lake County Health Department	(352) 589-6424

4. CORRECTION

- Implement technical activities to repair and correct the cross-connection or backflow event.
- Flush and decontaminate the water system as necessary.
- Perform a site inspection of the affected area to be sure the cross-connection source has been eliminated.
- Perform water samples to be sure the distribution system is free of any contaminants.

5. RESCIND NOTIFICATION

- Notify the VCCDD Utilities email group and the affected homes when the precautionary boil water notice in rescinded by placing door hangers on the front door of the homes that were affected. Businesses should be contacted directly.

CSU WATER SYSTEM
CROSS-CONNECTION CONTROL SURVEY FORM

ACCOUNT NUMBER: _____

DATE COMPLETED: _____

FACILITY NAME: _____

CONTACT NAME: _____

FACILITY ADDRESS: _____

FACILITY PHONE: ( ) _____ FACILITY FAX: ( ) _____

OWNER NAME: _____

CONTACT NAME: _____

OWNER ADDRESS: _____

OWNER PHONE: ( ) _____ OWNER FAX: ( ) _____

TYPE OF FACILITY: _____

DESCRIBE ACTIVITIES AT THE FACILITY: _____

WATER SERVICE LINE SIZE (in): _____ WATER METER SIZE (in): _____

NOTE: Completion of this form in its entirety is required prior to initiation of water service

QUESTIONS	YES	NO
1. Is there another source of water to the property other than the service connection to the public potable supply i.e., a private well, lake, stream, river, pond, etc.?	( )	( )
2. Is there an irrigation system on the property?	( )	( )
3. Are there any facilities (such as a booster pump, pressure tank, etc.) that increase the water pressure to the facility or any portion thereof, above the supply pressure presently provided by the potable supply?	( )	( )
4. Are any chemicals used in the operation?	( )	( )
5. Are any chemicals stored at the facility?	( )	( )
6. Are any ejectors, aspirators, or pumps used in the operation?	( )	( )
7. Is any water recycled during the operation of an air conditioner or other equipment in your plant or building?	( )	( )
8. Are there any water supply lines submerged in tanks, vats, etc.?	( )	( )
9. Is there a fire stand-pipe or fire sprinkler system installed in the building?	( )	( )

PROVIDE APPROPRIATE DETAILS ON ALL QUESTIONS ANSWERED “YES”.

ATTACH ADDITIONAL SHEETS AS NECESSARY:

Acknowledgement: Details regarding the Cross-Connection Control Program are contained in a handbook that has been adopted by CSU. By my signature below, I acknowledge that CSU has made the Cross-Connection Control Program Handbook available to me by logging on to www.DistrictGov.org and then selecting the following: Departments - Utilities - Commercial Customers - and then under the heading Cross-Connection Control Handbook, select CSU - Download Here. I further agree to be bound by the conditions and guidelines included therein. I also acknowledge that the information that I have provided is correct to the best of my knowledge and may result in the requirement of additional actions. Such actions may include, but are not limited to, installation of or modification of a backflow prevention assembly. Any action, if required, will be the responsibility of the customer or facility owner, as appropriate. Actions shall be completed within 30 days of receipt of notification by CSU or its designated agent.

OWNER OR AGENT: _____ TITLE: _____
(Please Print)

SIGNATURE: _____ DATE: _____

CSU REPRESENTATIVE: _____ DATE: _____

Upon completion of this form, please return the original to:

Arnett Environmental, LLC
Attention: CSU Cross-Connection Control Program
1038 Lake Sumter Landing
The Villages, FL 32162
Fax: (352) 753-1296, Email: RSmith@ArnettEnvironmental.com

CSU POTABLE WATER SYSTEM
BACKFLOW PREVENTION ASSEMBLY INSTALLATION RECORD

ACCOUNT NUMBER: _____

DATE COMPLETED: _____

FACILITY NAME: _____

OWNER: _____

OWNER ADDRESS: _____

OWNER PHONE: ( ) _____ OWNER FAX: ( ) _____

FACILITY ADDRESS / LOCATION: _____

FACILITY PHONE: ( ) _____ FACILITY FAX: ( ) _____

LOCATION 1

WATER SERVICE DESCRIPTION (potable indoor, pool make-up, etc.)

_____

WATER SERVICE LINE SIZE (in): _____ WATER METER SIZE (in): _____

BACKFLOW PREVENTION ASSEMBLY:

Manufacturer: _____

Model Number: _____

Size (in): _____

Type (Double Check, Reduced Pressure Assembly, etc): _____

LOCATION 2

WATER SERVICE DESCRIPTION (potable indoor, pool make-up, etc.)

_____

WATER SERVICE LINE SIZE (in): _____ WATER METER SIZE (in): _____

BACKFLOW PREVENTION ASSEMBLY:

Manufacturer: _____

Model Number: _____

Size (in): _____

Type (Double Check, Reduced Pressure Assembly, etc): _____

Please attach additional sheets as necessary for additional water system service connections. Completed forms shall be submitted to:

Arnett Environmental, LLC
Attention: CSU Cross-Connection Control Program
1038 Lake Sumter Landing
The Villages, FL 32162
Fax: (352) 753-1296, RSmith@ArnettEnvironmental.com

CSU POTABLE WATER SYSTEM
BACKFLOW PREVENTION ASSEMBLY
TEST AND MAINTENANCE REPORT REQUIREMENTS

The following information should be included either on the backflow test report form provided by the backflow assembly tester, or be attached to the backflow assembly test report form. The test report form should also include all the necessary assembly testing results and requirements.

Facility and Owner Information

- Date of Test
- Facility Account Number
- Facility Name
- Facility Address
- Facility Phone Number
- Owner Name
- Owner Address
- Owner Phone Number

Assembly Description

- Location of Assembly
- Manufacturer, Model Number, and Serial Number
- Type of Assembly (Double Check, Reduced Pressure Assembly, etc.)
- Size of Assembly

Meter Information

- Meter Size
- Serial Number

Tester Information

- Company Name
- Phone Number
- Tester Name **(clearly written or typed)**
- Tester Certification Number
- Gauge Manufacturer, Model Number, and Serial Number
- Last Calibration Date of Gauge (this date must be current)

All forms shall be completed and submitted to:

Arnett Environmental, LLC
Attention: CSU Cross-Connection Control Program
1038 Lake Sumter Landing
The Villages, FL 32162
Fax: (352) 753-1296, Email: RSmith@ArnettEnvironmental.com

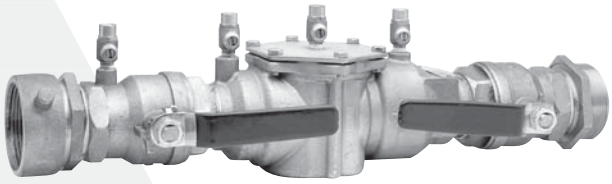
APPENDIX B
APPROVED ASSEMBLIES
& INSTALLATION DETAILS

DOUBLE CHECK VALVE ASSEMBLY

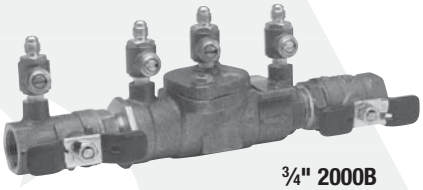
Series 2000B

Double Check Valve Assemblies

Sizes: 1½" – 2" (15 – 60mm)



2" 2000B HC (50mm)



¾" 2000B (20mm)

Features

- Ease of maintenance with only one cover
- Top entry
- Replaceable seats and seat discs
- Modular construction
- Compact design
- ½" – 2" (15 – 50mm) Cast bronze body construction
- Top mounted ball valve test cocks
- Low pressure drop
- No special tools required
- ½" – 1" (15 – 25 mm) have tee handles

Available Models

Suffix:

B - Quarter turn ball valves
LBV - less ball valves
LH - locking handle ball valves (open position)
SH - stainless steel ball valve handles
HC - 2½" inlet/outlet fire hydrant fitting (2" valve)

Prefix:

U - union connections

Pressure — Temperature

Temperature Range: 33°F – 140°F (5°C – 60°C)

Maximum Working Pressure: 175psi (12.06 bar)

Standards

AWWA Std. C510, IAPMO PS31

Series 2000B Double Check Valve Assemblies shall be installed at referenced cross-connections to prevent the backflow of polluted water into the potable water supply. Only those cross-connections identified by local inspection authorities as non-health hazard shall be allowed the use of an approved double check valve assembly.

Check with local authority having jurisdiction regarding vertical orientation, frequency of testing or other installation requirements.

These valves meet the requirements of ASSE Std. 1015 and AWWA Std. C510 and are approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Specifications

A Double Check Valve Assembly shall be installed at each noted location. The assembly shall consist of two positive seating check modules with captured springs and rubber seat discs. The check module seats and seat discs shall be replaceable. Service of all internal components shall be through a single access cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves and four top mounted, resilient seated test cocks. The assembly shall meet the requirements of ASSE Std. 1015 and AWWA Std. C510. Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Assembly shall be an Ames Company Series 2000B.

Approvals

1015 B64.5 ¾" - 2" (LBV Models Only)

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

LBV models not listed.

Horizontal and vertical "flow up" approval on all sizes.

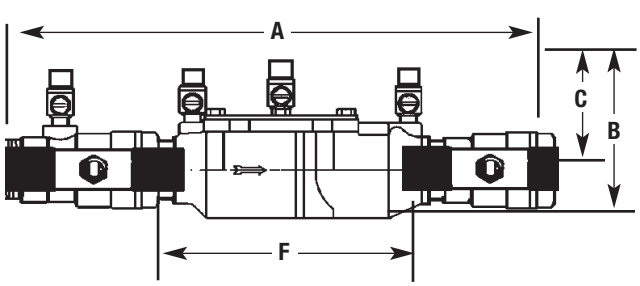
Job Name _____ Contractor _____

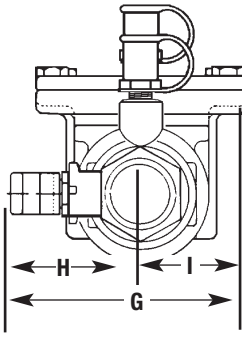
Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

Dimensions – Weights





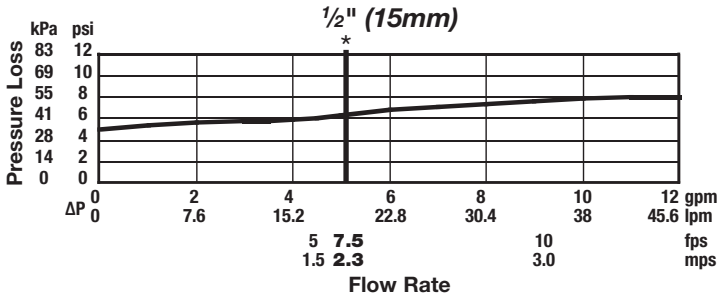
Suffix HC — Fire Hydrant Fittings dimension "A" = 23½" (594mm)

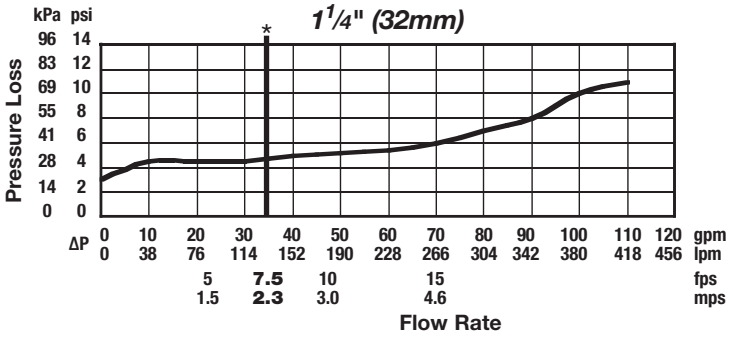
SIZE (DN)		DIMENSIONS														WEIGHT	
		A		B		C		F		G		H		I			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
½	15	10	254	4⅝	117	2 7/16	62	5	127	3⅜	85	2 5/16	59	2 1/16	52	4.5	2
¾	20	11⅛	282	4	102	3⅛	79	6 3/16	157	3 7/16	87	2⅛	54	1 5/16	33	5	2.3
1	25	13¼	337	5⅛	130	4	102	7½	191	3⅜	85	11 1/16	43	11 1/16	43	12	5.4
1¼	32	16⅜	416	5	127	3 5/16	84	9½	241	5	127	3	76	2	50	15	6.8
1½	40	16¾	425	4⅞	124	3½	89	9¾	248	5 13/16	148	3⅛	79	2 1/16	68	15.86	7.2
2	50	19½	495	6¼	159	4	102	13⅜	340	6⅛	156	3 7/16	87	2 1/16	68	25.75	11.7

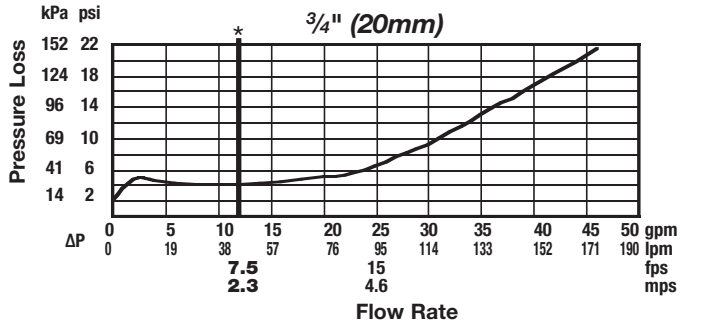
Strainer sold separately

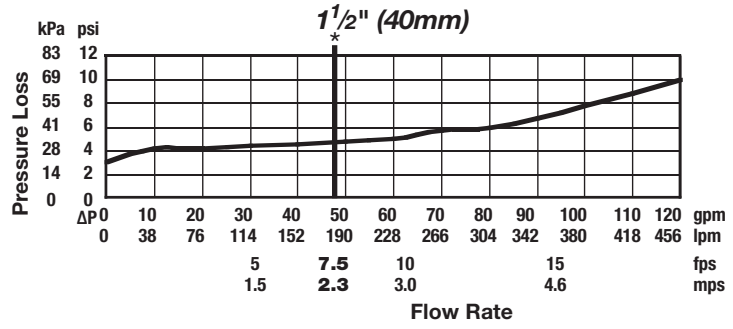
Capacities

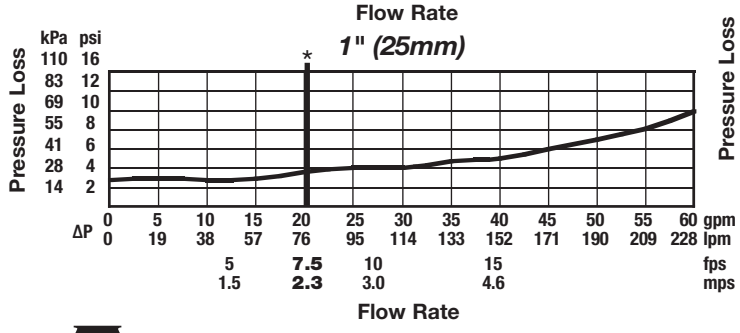
As compiled from documented Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California lab tests.
*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)

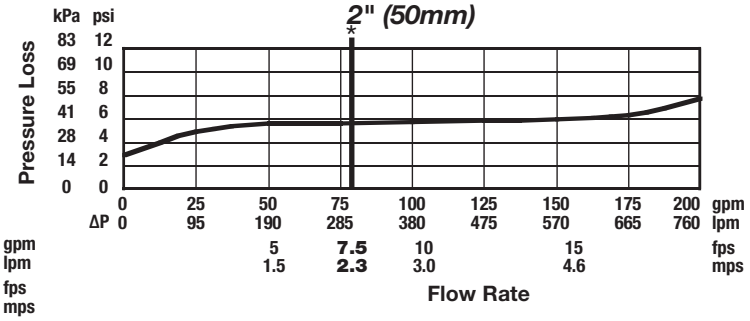












IMPORTANT: Inquire with governing authorities for local installation requirements.

AMES FIRE & WATERWORKS™ *A Division of Watts Regulator Company* www.amesfirewater.com

ISO 9001 CERTIFIED

1427 North Market Blvd. • Suite #9 • Sacramento, CA 95834 • Phone: 916-928-0123 • Fax: 916-928-9333

Series 2000SS

Double Check Valve Assemblies

Sizes: 2½" – 12" (65 – 300mm)

Features

- Patented Cam-Check Assembly provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless Steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved style coupling for ease of maintenance
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- May be installed in horizontal or vertical "flow up" position

Available Models

Suffix:

NRS – non-rising stem resilient seated gate valves

OSY – UL/FM outside stem and yoke resilient seated gate valves

*OSY FxG – flanged inlet gate connection and grooved outlet gate connection

*OSY GxF – grooved inlet gate connection and flanged outlet gate connection

*OSY GxG – grooved inlet gate connection and grooved outlet gate connection

LG – less gates

Available with grooved NRS gate valves - consult factory*

Post indicator plate and operating nut available – consult factory*

*Consult factory for dimensions

Materials

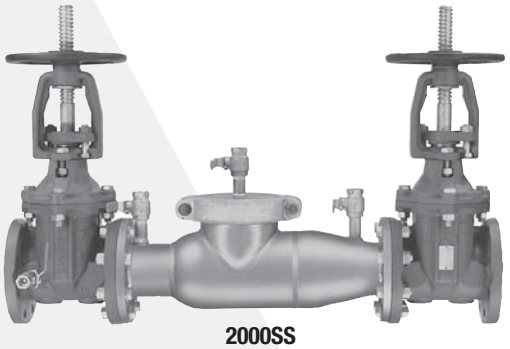
All internal metal parts: 300 Series stainless steel

Main valve body: 300 Series stainless steel

Check assembly: Noryl®

Flange dimension in accordance with AWWA Class D

Noryl® is a registered trademark of General Electric Company.



2000SS

Series 2000SS Double Check Valve Assemblies are designed to prevent the reverse flow of polluted water from entering into the potable water system. This series can be applied, where approved by the local authority having jurisdiction, on non-health hazard installations. Features short end-to-end dimensions, lightweight stainless steel body, and low head loss.

Specifications

A Double Check Valve Assembly shall be installed at each noted location to prevent the unwanted reversal of polluted water into the potable water supply. The main valve body shall be manufactured from 300 series stainless steel to provide corrosion resistance, 100% lead free through the waterway. The double check shall consist of two independently operated spring loaded cam-check valves, required test cocks, and optional inlet and outlet resilient seated shutoff valves. Each cam-check shall be internally loaded and provide a positive drip tight closure against the reverse flow of liquid caused by backsiphonage or backpressure. The modular cam-check includes a stainless steel spring and cam-arm, rubber faced disc and a replaceable seat. There shall be no brass or bronze parts used within the cam-check valve assembly. The valve cover shall be held in place through the use of a single grooved style two-bolt coupling. The main assembly shall consist of two independently operating torsion spring check assemblies, two resilient seated isolation valves, and four ball valve type test cocks. The assembly shall be an Ames Company Series 2000SS.

Pressure — Temperature

Temperature Range: 33°F – 110°F (5°C – 43°C)

Maximum Working Pressure: 175psi (12.06 bar)

Standards

AWWA C510-92, CSA B64.5

Approvals

1015 (OSY ONLY) For 12" approvals consult factory

Job Name _____ Contractor _____

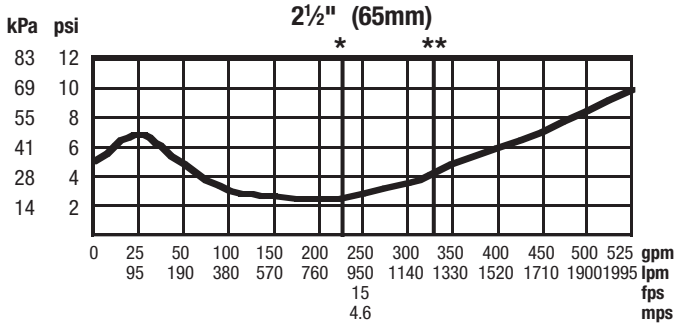
Job Location _____ Approval _____

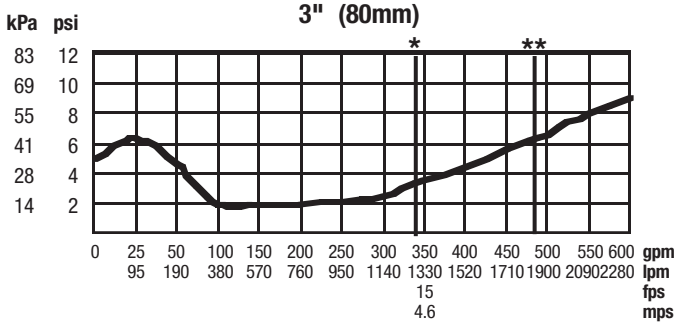
Engineer _____ Contractor's P.O. No. _____

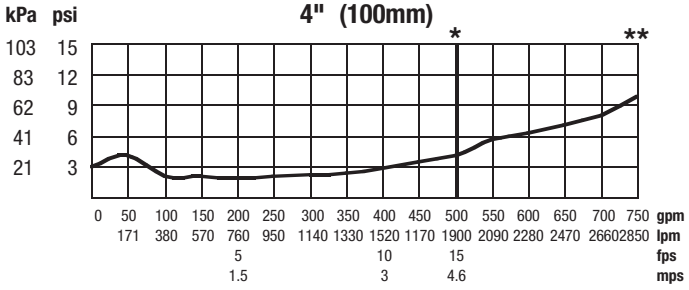
Approval _____ Representative _____

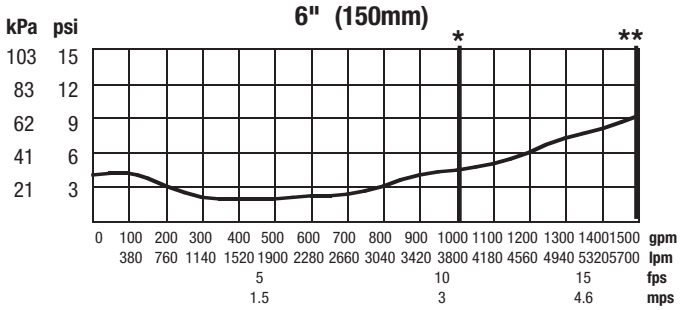
Capacities

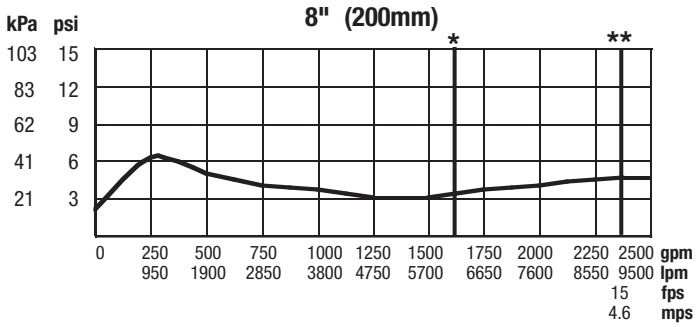
Rated working pressure 175psi (12.06 bar) * Rated flow **UL Tested

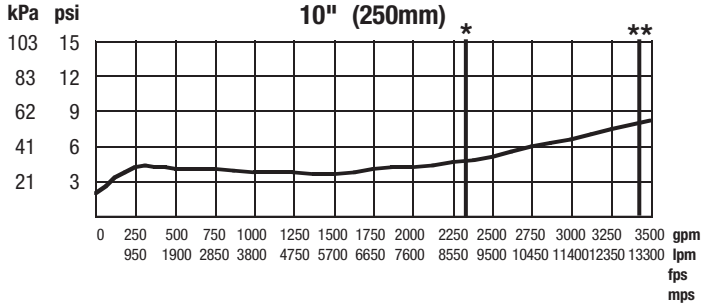


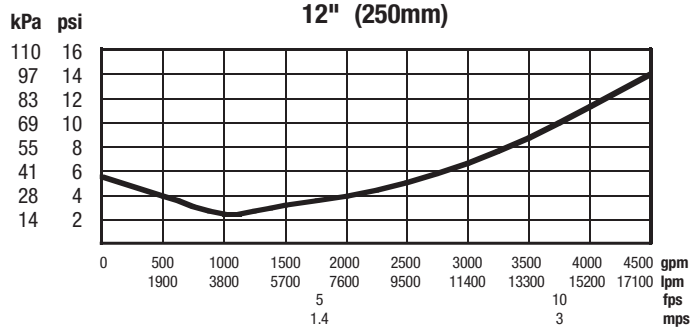




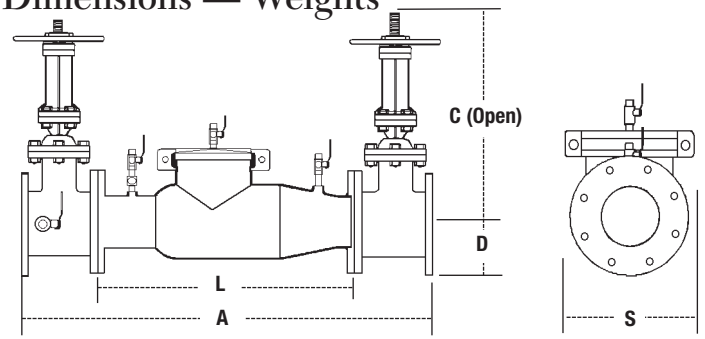








Dimensions — Weights



SIZE (DN)		DIMENSIONS												WEIGHT			
		A		C (OSY)		C(NRS)		D		L		S		w/Gates		w/o Gates	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb.*	*kg.*	*lb.*	*kg.*
2½	65	37	965	16⅜	416	9⅜	238	3½	89	22	559	7	178	140	64	53	24
3	80	38	965	18⅞	479	10¼	260	3¾	95	22	559	7½	191	215	98	55	25
4	100	40	1016	22¾	578	12 3/16	310	4½	114	22	559	9	229	225	102	58	26
6	150	48½	1232	30⅛	765	16	406	5½	140	27½	699	11	279	375	170	105	48
8	200	52½	1334	37¾	959	19 15/16	506	6¾	171	29½	749	13½	343	561	254	169	77
10	250	55½	1410	45¾	1162	23 13/16	605	8	200	29½	749	16	406	763	346	179	81
12	300	57½	1461	53⅛	1349	26¾	679	9½	241	29½	749	19	483	1033	469	209	95

AMES FIRE & WATERWORKS™ *A Division of Watts Regulator Company* www.amesfirewater.com

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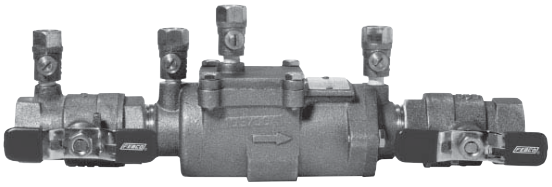
SPECIFICATION SHEET

Series 850

Double Check Valve Assemblies

Size: ½" - 2" (15mm - 50mm)

The FEBCO Series 850 Double Check Valve Assemblies are designed for non-health hazard applications. End Connections – NPT ANSI / ASME B1.20.1



Series 850

Pressure – Temperature

Max. Working Pressure:	175psi (12.1 bar)
Hydrostatic Test Press:	350psi (24.1 bar)
Temperature Range:	32°F to 140°F (0°C to 60°C)

Materials

Valve Body:	Bronze
Elastomers:	Silicone
Springs:	Stainless Steel

Models

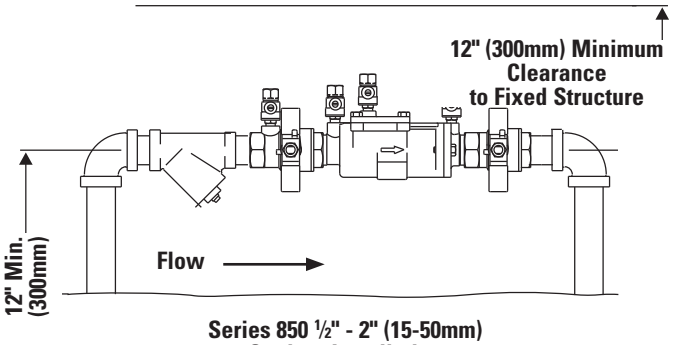
- Wye - Strainer

Approvals – Standards

- ANSI/AWWA Conformance (C510-92)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

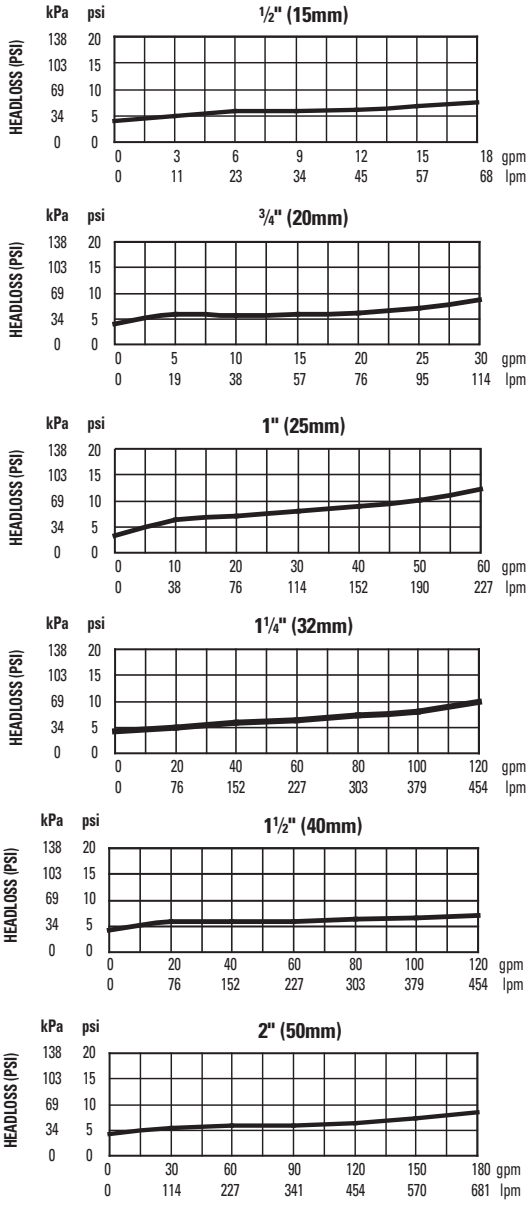
ASSE 1015 CSA B64.5

Typical Installation



Series 850 ½" - 2" (15-50mm)
Outdoor Installation

Capacity



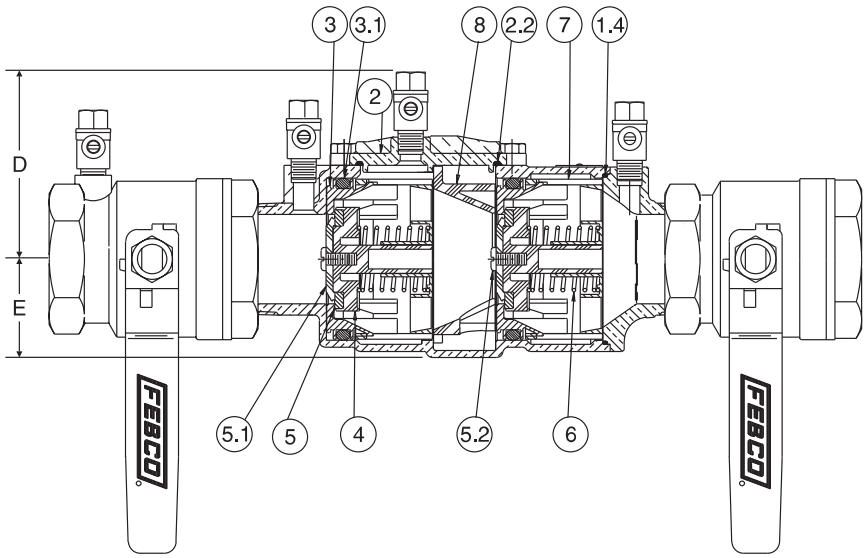
Job Name _____ Contractor _____

Job Location _____ Approval _____

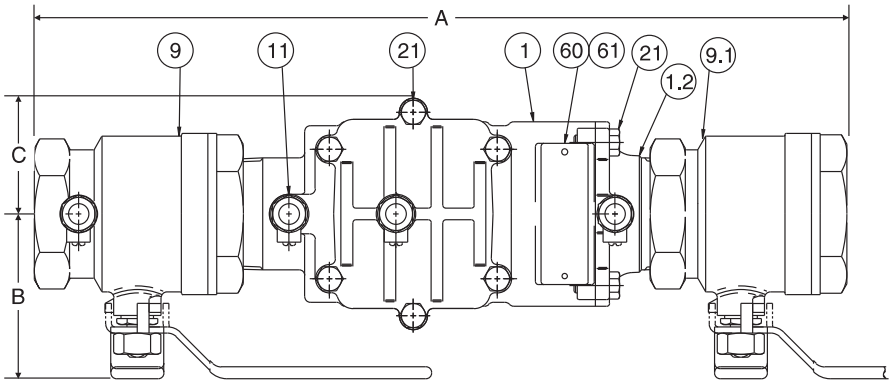
Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

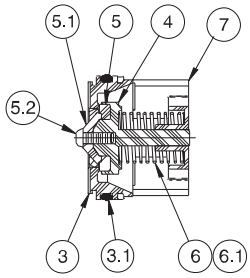
FEBCO product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact FEBCO. FEBCO reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on FEBCO products previously or subsequently sold.



ITEM	DESCRIPTION	MATERIALS
1	Body	Bronze
1.2	Tailpiece	Bronze
1.4	O-Ring	Silicone
2	Cover	Bronze
2.2	O-Ring	Silicone
3	Seat	Noryl®
3.1	O-Ring	Silicone
4	Poppet	Noryl®
5	Seat Disc	Silcone
5.1	Disc Retainer	Noryl®
5.2	Rnd HD Screw	Stainless Steel
6	Spring	Stainless Steel
7	Guide	Noryl®
8	Retainer Spacer	Noryl®
9	Ball Valve (w/tap)	Bronze
9.1	Ball Valve	Bronze
11	Test Cock	Bronze
21	Hex HD Capscrew	Stainless Steel
60	Identification Plate	Brass
61	Drive Screw Stick	Stainless Steel



Check Assembly



Dimensions and Weights

Size: ½" - 2" (15 - 50mm)

SIZE (DN)		DIMENSIONS										WEIGHT	
		A		B		C		D		E			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
½	15	10	254	1½	38	1½	38	3⅛	79	1¼	32	4.2	1.9
¾	20	10¾	273	1½	38	1½	38	3⅛	79	1¼	32	4.4	2.0
1	25	12½	318	1⅞	48	1⅝	41	3⅜	86	1½	38	6.8	3.1
1¼	32	15⅞	403	3	76	2½	64	4¼	108	2¼	57	15.8	7.2
1½	40	16⅜	416	3	76	2½	64	4¼	108	2¼	57	16.2	7.4
2	50	17⅝	450	3½	89	2½	64	4¼	108	2¼	57	21.1	9.6

Note: Dimensions are nominal. Allowances must be made for normal manufacturing tolerances.

SPECIFICATION SHEET

MasterSeries® 850
Double Check Valve Assemblies

Size: 2½" - 10" (65mm - 250mm)

The FEBCO Master Series® 850 Double Check Valve Assemblies are designed for non-health hazard applications.
End Connections – Flanged ANSI B16.1 Class 125

Model 850 Double Check Assembly
U.S. Patent No. 4,989,635

Pressure – Temperature

Max. Working Pressure:	175psi (12.1 bar)
Hydrostatic Test Press:	350psi (24.1 bar)
Temperature Range:	32°F to 140°F (0°C to 60°C)

Materials

Main Valve Body:	Ductile iron Grade 65-45-12
Coating:	Fusion epoxy coated internal and external AWWA C550-90
Shutoff Valves:	NRS resilient wedge gate valves AWWA C509
Trim:	Bronze
Elastomer Discs:	EPDM
Spring:	Stainless steel
Clamp:	AWWA C606

Approvals – Standards

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. - 2½" - 8" (65 - 80mm) (Horizontal & Vertical Up)
- ANSI/AWWA (C510) - 2½" - 8" (Horizontal & Vertical Up), 10" (Horizontal)

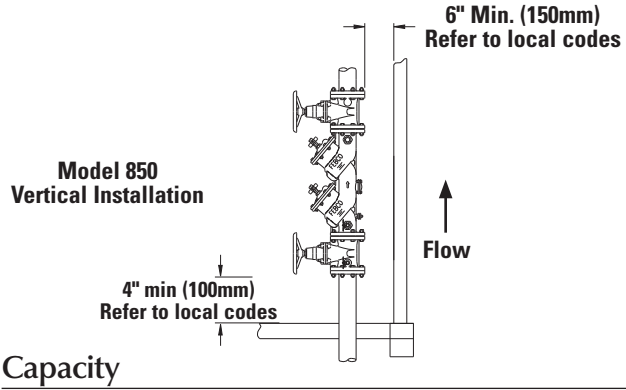
ASSE 1015 — **2½" - 8" (65 - 200mm) (Horizontal & Vertical up) 10" (250mm) (Horizontal)**

CSA B64.5 / cULus CLASSIFIED / FM Approved — **2½" - 8" (65 - 200mm) (Horizontal & Vertical up)**

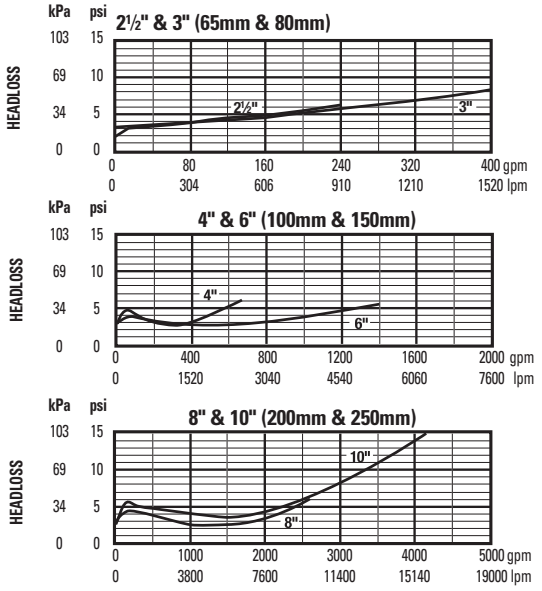
* Less gates not FM approved. Less gates not UL Classified unless installed with UL listed gate valves.

Models

- UL/FM OS&Y RW Gate Valves
- Wye-Strainer



Capacity

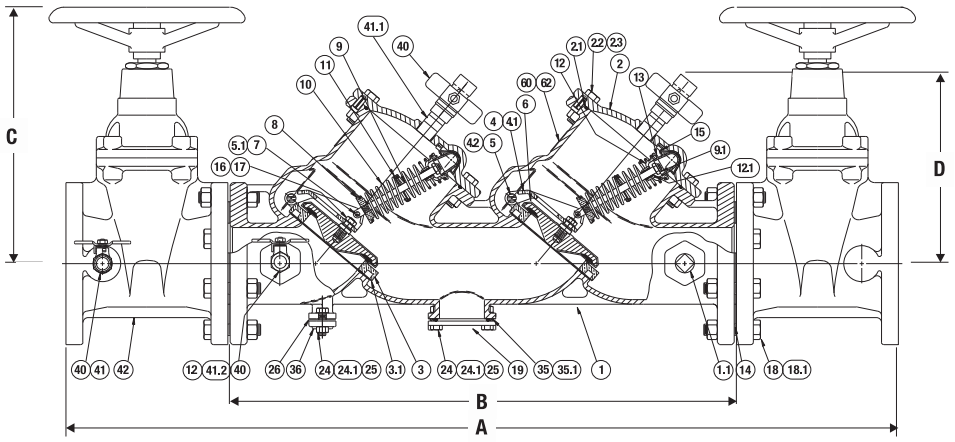


Job Name _____ Contractor _____

Job Location _____ Approval _____

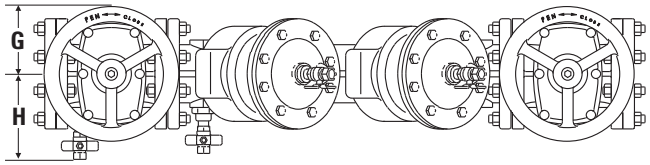
Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____



ITEM	DESCRIPTION	MATERIAL
1	Body	A536 GR 65-45-12
1.1	Pipe Plug	Galv. Steel
1.2	Bushing (21/2 -4 only)	Brass
2	Cover	A536 GR 65-45-12
2.1	O-Ring	EPDM ASTM D2000
2.2	Cap Screw	Plated Steel
2.3	Hex Nut	Plated Steel
3	Seat Ring	B584 Alloy C83600
3.1	Gasket	EPDM ASTM D2000
4	Arm	B584 Alloy C83600
4.1	Bushing-Swing Pin	Acetal Resin
4.2	Swing Pin	304 SS
5	Retaining Clip	302 SS
5.1	Retaining Clip	302 SS
6	Check Disk Assy	EPDM Coated GR, 45 Ductile Iron with type 304 SS stem
7	Load Pin	304 SS
8	Lwr Spring Retnr	B584 Alloy C83600
9	Spring Stem	304 SS
9.1	Elastic Stop Jam Nut	18-8 SS
10	Spring	A313 Type 631 SS
11	Spring Guide	B130 Alloy C22000
12	Upr Spring Retnr	B584 Alloy C83600
12.1	Bushing-Spr. Stem	Acetal Resin
13	Pivot Bearing	B585 Alloy C83600
14	Flange Gasket	Rubber/Fabric
15	Bearing Socket	Acetal Resin
16	Hex Jam Nut	18-8 SS
17	Washer	302 SS
18	Flange Nut	Plated Steel
18.1	Flange Nut	Plated Steel
19	Cover	A36 Stl Epoxy Coated
24	Bolt	Plated Steel
24.1	Washer	Plated Steel
25	Nut	Plated Steel
26	Gasket	EPDM ASTM D2000
35	O-Ring	EPDM ASTM D2000
35.1	Back-Up Ring	Acetal Resin
36	Cover	B584 Alloy C83600
40	Ball Valve	B584 Alloy C84400
41	Nipple	Brass
41.1	Nipple	Brass
41.2	Nipple	Brass
42	Gate Valve	AWWA C509
60	Id Plate	B36 Alloy C26000
62	Drive Screw	SS
70	Clamp (10" Only, Not Shown Above)	AWWA 606

Top View



Dimensions and Weights

Size: 2½" - 10" (65 - 250mm)

SIZE (DN)		DIMENSIONS															
		A		B		C*		D		G		H		NRS		OS&Y	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	65	40¾	1035	25½	648	12⅝	321	10	254	4½	114	7⅛	181	199	90	203	92
3	80	41⅞	1064	25⅝	651	12⅞	327	10	254	4½	114	7⅜	187	211	96	213	97
4	100	46¼	1175	28	711	14⅜	365	10⅛	257	5½	140	8⅛	206	288	131	312	142
6	150	56	1422	34¾	883	18⅞	479	12¾	324	6½	165	9⅞	251	450	204	494	224
8	200	65	1651	41¾	1061	23½	597	15⅝	397	7	178	11⅛	283	711	323	773	351
10	250	72⅝	1845	46⅜	1178	27½	699	15⅝	397	9	229	12⅜	314	980	445	1080	490

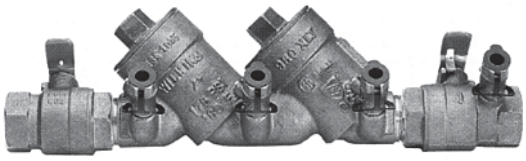
* With NRS Gate Valves

Note: Dimensions shown are nominal. Allowances must be made for normal manufacturing tolerances.

WILKINS
a ZURN company

Model 950XLT
Top Access Double Check Valve Assembly

SPECIFICATION SUBMITTAL SHEET



FEATURES

Sizes: ❑3/4" ❑ 1" ❑ 1 1/4" ❑ 1 1/2" ❑ 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1

OPTIONS

(Suffixes can be combined)

- ❑ L - less ball valves
- ❑ FT - with "Fast Test" testcocks
- ❑ U - with union ball valves
- ❑ S - with bronze "Y" type strainer

ACCESSORIES

- ❑ Repair kit (rubber only)
- ❑ Thermal expansion tank (Model WXTP)
- ❑ Bronze wye strainer
- ❑ Stainless steel ball valve handles
- ❑ QT-SET Quick Test Fitting Set
- ❑ Test Cock Lock (Model TCL24)

APPLICATION

Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A tethered test cock cap is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.

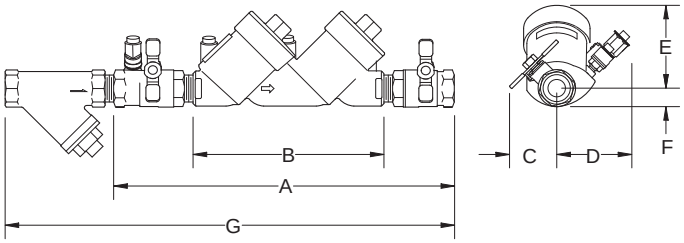
STANDARDS COMPLIANCE

(unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California

MATERIALS

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved) Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic

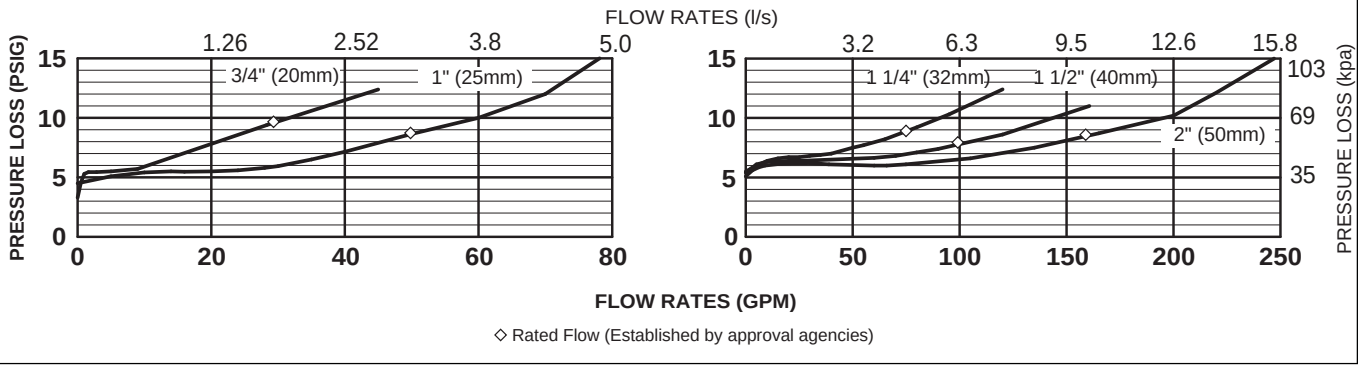


DIMENSIONS & WEIGHTS (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL		B LESS BALL		C		D		E		F		G		LESS BALL		WITH BALL	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

FLOW CHARACTERISTICS

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

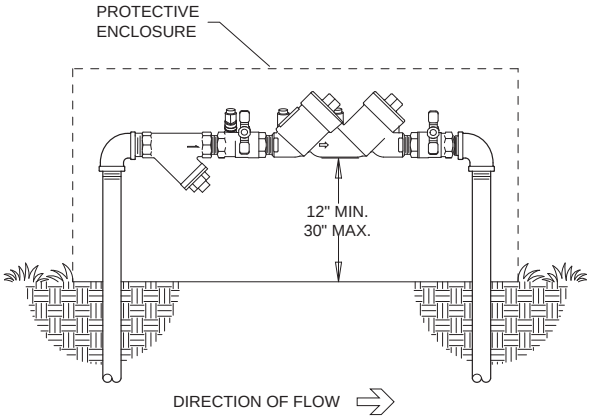


◇ Rated Flow (Established by approval agencies)

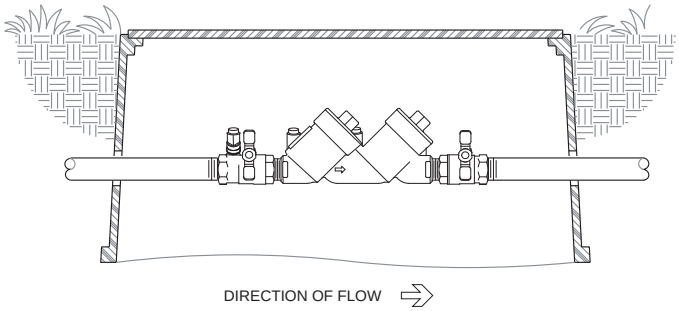
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2"	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

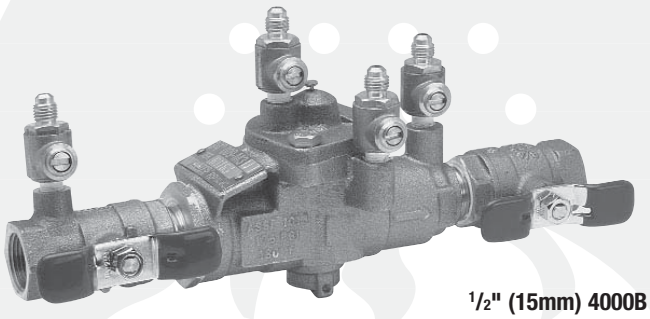
The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and testcocks shall be accessible from the top of the device. Testcocks shall be protected from debris by a tethered cap. The Double Check Type Backflow Preventer shall be a WILKINS Model 950XLT.

REDUCED PRESSURE ASSEMBLY

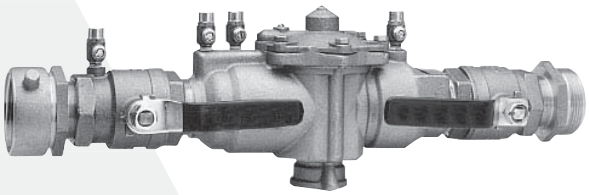
Series 4000B

Reduced Pressure Zone Assemblies

Sizes: ½" – 2" (15 – 50mm)



½" (15mm) 4000B



2" (50mm) 4000B-HC

Features

- Single access cover and modular check construction for ease of maintenance
- Top entry - all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Bronze body construction for durability - ½" to 2" (15-50mm)
- Ball valve test cocks - screwdriver slotted -½" to 2" (15-50mm)
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

Series 4000B Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross connections in piping systems or for containment at the service line entrance.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ½"- 1" (15-25mm) shutoffs have tee handles.

Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsiphonage and/or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The assembly shall meet the requirements of: USC Manual 8th Edition†; ASSE Std. 1013; AWWA Std. C511; CSA B64.4. The assembly shall be an Ames Company Series 4000B.

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

Materials

Bronze body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable stainless steel relief valve seat. Stainless steel cover bolts.

Standardly furnished with NPT body connections. For optional bronze union inlet and outlet connections, specify prefix U (½" - 2")(15-50mm). Series 4000B furnished with quarter turn, full port, resilient seated, bronze ball valve shutoffs.

Standards

AWWA C511-92, USC Manual 8th Edition, IAPMO File No. 1563

Approvals

1013 **B64.4** **¾" - 2" (20-50mm) (LBV models only)**

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Approval models QT, U.

Pressure — Temperature

Suitable for supply pressures up to 175psi (12.06 bar) and water temperature to 180°F (75°C) continuous.

Available Models

Suffix:

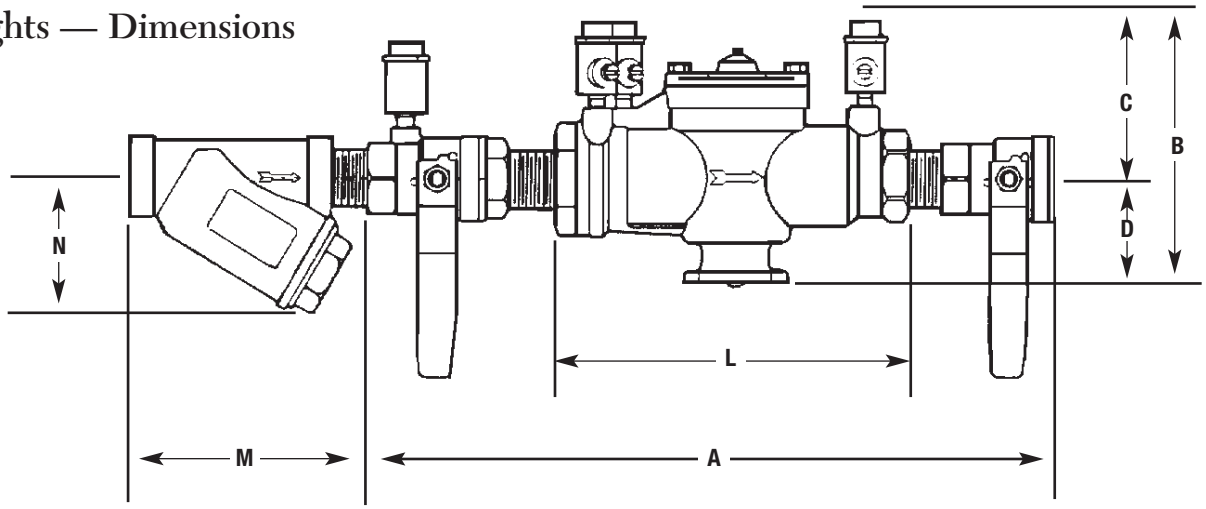
- B - quarter-turn ball valves
- LBV - less ball valves
- LH - locking handle ball valves (open position)
- SH - stainless steel ball valve handles
- HC - 2½" inlet/outlet fire hydrant fitting (2" valve)
- S - bronze strainer

Prefix:

- U - union connections

IMPORTANT: Inquire with governing authorities for local installation requirements.

Weights — Dimensions



Suffix HC - Fire Hydrant Fittings dimension "A" = 25 1/16 (637mm)

MODEL	SIZE (DN)		DIMENSIONS										STRAINER DIMENSIONS				WEIGHT	
			A		B		C		D		L		M		N			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kg.*
4000B**	½	15	10	250	4⅝	117	3⅜	86	1¼	32	5½	140	3	76	2	51	4.50	2.0
4000B M3**	¾	20	10¾	273	5	127	3½	89	1½	38	6¾	171	3 5/16	84	2 5/16	59	5.75	2.6
4000B M2**	1	25	16¾	425	5½	140	3	76	2½	64	9½	241	4½	114	2 5/16	59	12.25	5.6
4000B**	1¼	32	17⅜	44	116	150	3½	89	2½	64	11⅜	289	5⅛	130	3⅛	79	14.62	6.6
4000B**	1½	40	17⅞	454	6	150	3½	89	2½	64	11⅛	283	5⅞	149	3¾	95	16.32	7.4
4000B**	2	50	21⅜	543	7¾	197	4½	114	3¼	83	13½	343	6 3/16	157	4⅞	124	30.00	13.6

Strainer sold separately

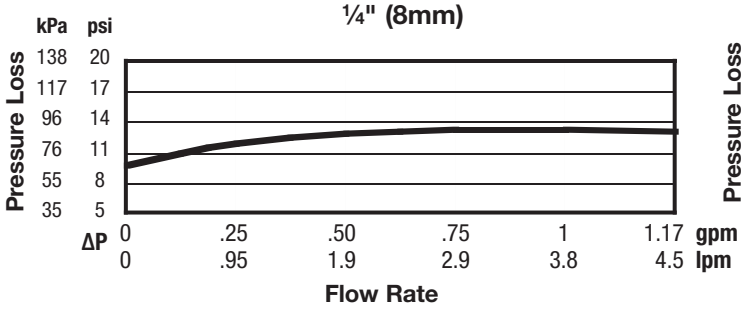
****Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.**

Capacity

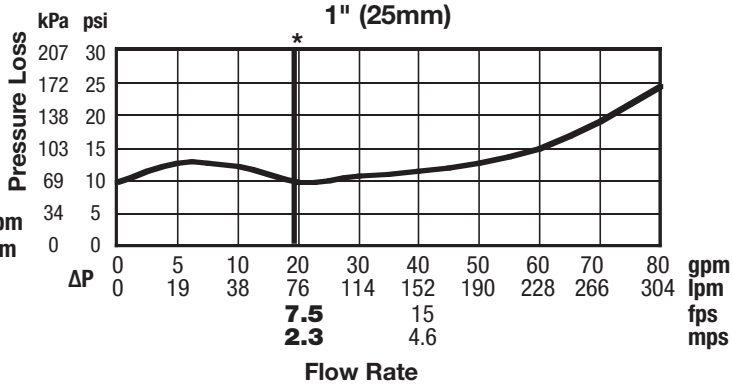
Performance as established by an independent testing laboratory.

*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)

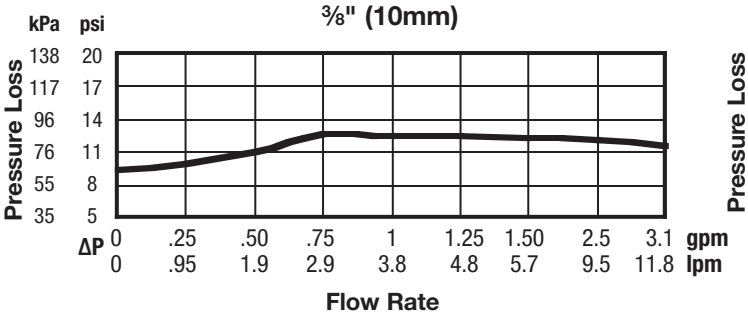
¼" (8mm)



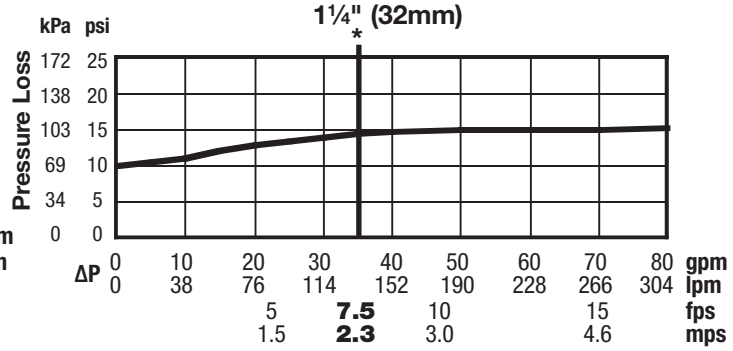
1" (25mm)



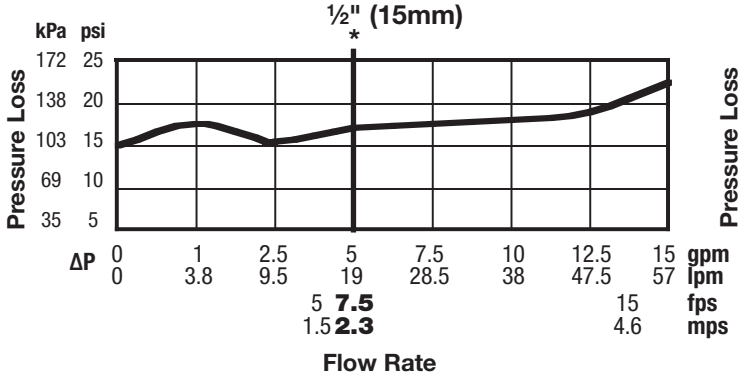
⅜" (10mm)



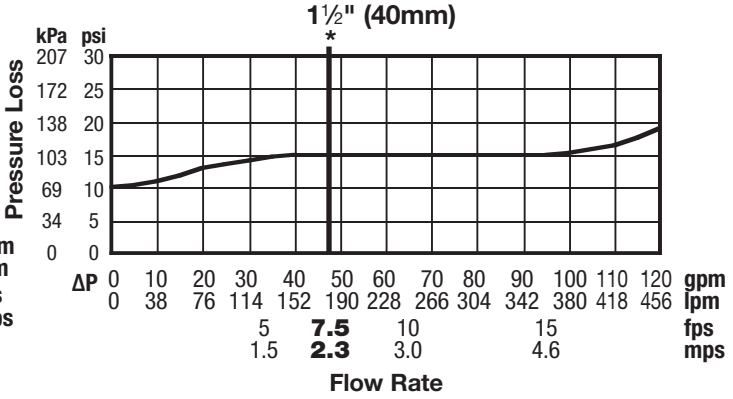
1¼" (32mm)



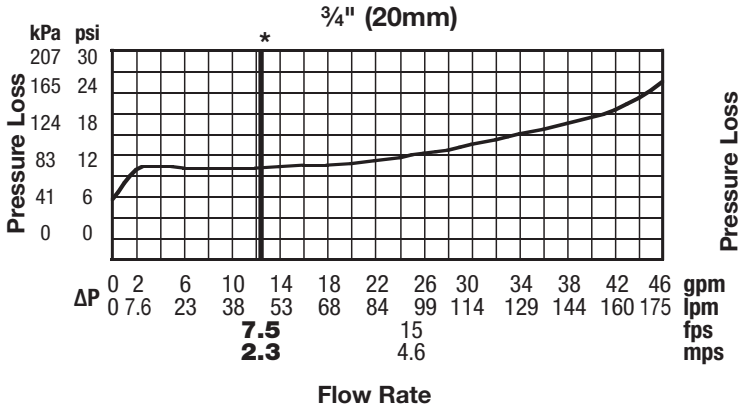
½" (15mm)



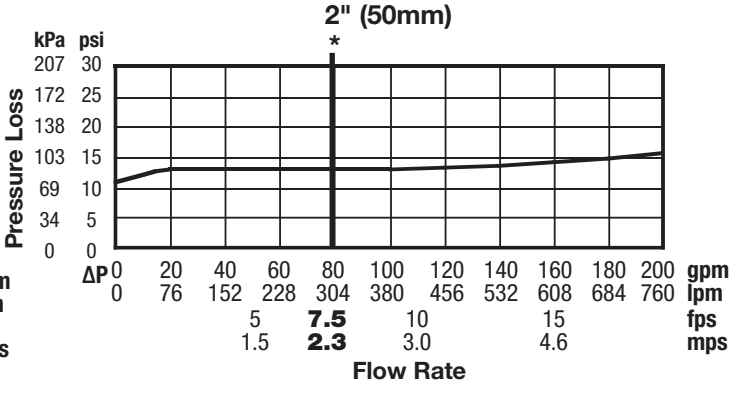
1½" (40mm)



¾" (20mm)



2" (50mm)



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ES-A-4000B 0625

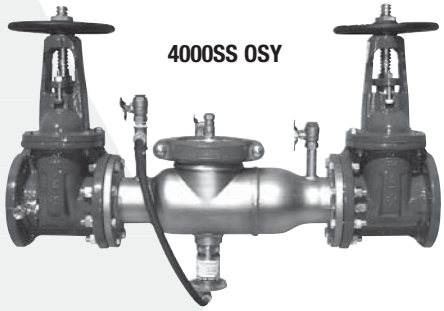
Series 4000SS

Reduced Pressure Zone Assemblies

Sizes: 2½" – 10" (65 – 250mm)

Features

- Stainless steel construction provides long term corrosion resistance and maximum strength
- Stainless steel body is half the weight of competitive designs reducing installation & shipping costs
- Short end-to-end dimensions makes retrofit easy
- Patented cam-check assembly provides maximum flow at low pressure drop
- No special tools required for servicing
- Compact construction allows for smaller enclosures
- Stainless steel relief valve features a balanced rolling diaphragm to eliminate sliding seals and lower maintenance costs



Series 4000SS Reduced Pressure Zone Assemblies are designed to provide protection of the potable water supply in accordance with national codes. This series can be used where approved by the local authority having jurisdiction on health hazard cross connections. Series 4000SS features short lay length, lightweight stainless steel body, corrosive resistant stainless steel relief valve, and patented cam-check assembly.

Materials

All internal metal parts: 300 Series stainless steel
Main valve body: 300 Series stainless steel
Check assembly: Noryl®
Flange dimension in accordance with AWWA Class D

Pressure — Temperature

Temperature Range: 33°F – 110°F (5°C – 43°C)
Maximum Working Pressure: 175psi (12.06 bar)

Available Models

Suffix:

NRS – non-rising stem resilient seated gate valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
*OSY FxG – flanged inlet gate connection and grooved outlet gate connection
*OSY GxF – grooved inlet gate connection and flanged outlet gate connection
*OSY GxG – grooved inlet gate connection and grooved outlet gate connection
LG – less gates

Available with grooved NRS gate valves - consult factory*
Post indicator plate and operating nut available – consult factory*

*Consult factory for dimensions

Note: The installation of a drain line is recommended. When installing a drain line, an air gap is necessary. The 4000SS should be installed with a minimum clearance of 12" between lowest point of the assembly and the floor drain or grade.

Specifications

A Reduced Pressure Zone Assembly shall be installed at each cross-connection to prevent backsiphonage and backpressure of hazardous materials into the potable water supply. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating cam-check assemblies. The main valve body shall be manufactured from 300 Series stainless steel for corrosion resistance. The cam-check assembly shall be of thermoplastic construction with stainless steel hinge pins, cam arm, and cam bearing. The cam-check assembly shall utilize a single torsion spring design to minimize pressure drop through the assembly. The cam-check assembly shall be modular and shall seal to the main valve body by the use of an O-ring. There shall be no brass or bronze parts used within the check assembly or relief valve. The use of seat screws to retain the check valve seat is prohibited. All internal parts shall be accessible through a single cover on the valve assembly securely held in place by a two-bolt grooved coupling. The differential relief valve shall be of stainless steel construction and shall utilize a rolling diaphragm and no sliding seals. The relief valve shall be bottom mounted and supplied with a steel reinforced sensing hose. The assembly shall include two resilient seated shutoff valves & four ball type test cocks. The assembly shall be an Ames Company Series 4000SS.

Standards

AWWA C511-92

Approvals

1013 | B64.5 | Sizes 2½" – 10", OSY only | OSY only

Note: When installing a drain line on Series 4000SS backflow preventer, use air gap.
See Literature ES-A-AG/EL/TC for additional information.

Job Name _____ Contractor _____

Job Location _____ Approval _____

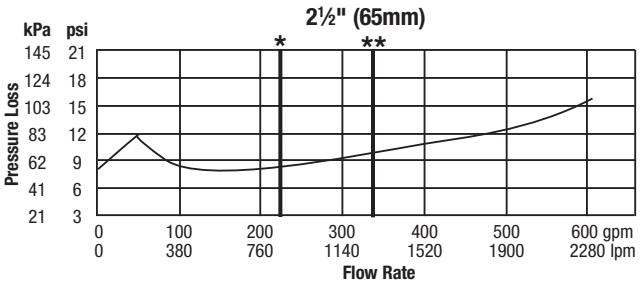
Engineer _____ Contractor's P.O. No. _____

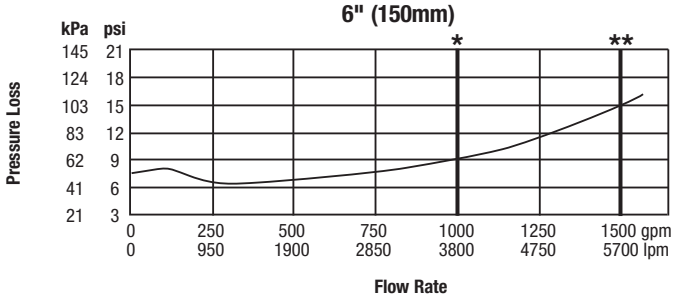
Approval _____ Representative _____

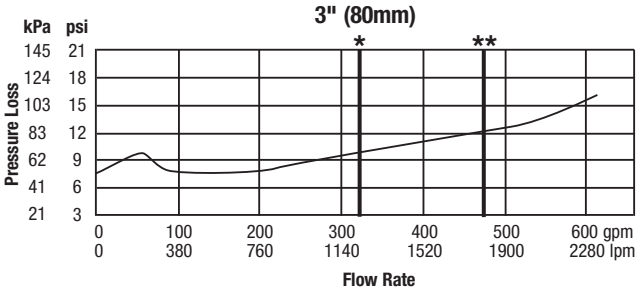
Capacity

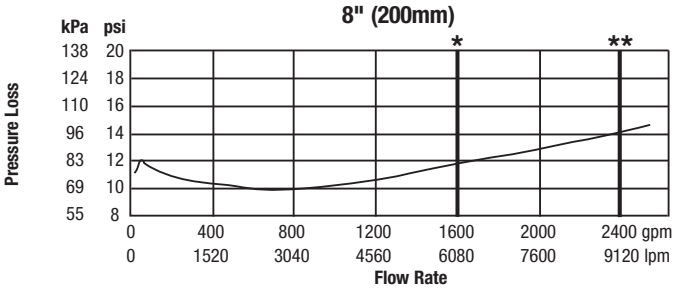
Series 4000SS performance as established by an independent testing laboratory (1996 UL). UL certified flow characteristics.
Documented flow characteristics (including shutoff valves).

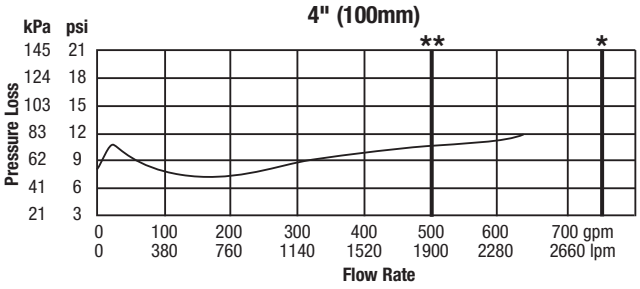
*UL Rated **UL Tested

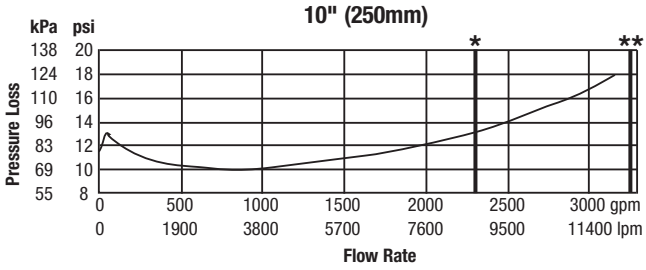




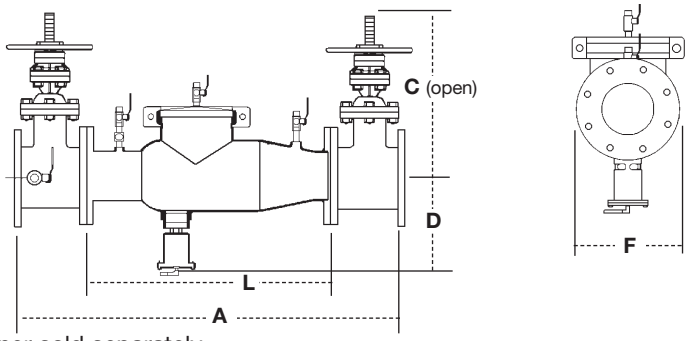








Dimensions – Weights



Note: Strainer sold separately

SIZE		DIMENSIONS												NET WEIGHT			
		A		C (OSY)		C(NRS)		D		F		L		w/Gates		w/o Gates	
in.	mm	in.	mm	in.	mm	in.	mm	in	mm	in.	mm	in.	mm	lb.	kg.	lb.	kg.
2½	65	37	940	16⅜	416	9⅜	238	10½	267	7	178	22	559	148	67	60	27
3	80	38	965	18⅞	479	10¼	260	10½	267	7½	191	22	559	226	103	62	28
4	100	40	1016	22¾	578	12 3/16	310	10½	267	9	229	22	559	235	107	65	30
6	150	48½	1232	30⅛	765	16	406	11½	292	11	279	27½	699	380	172	110	50
8	200	52½	1334	37¾	959	19 15/16	506	12½	318	13½	343	29½	749	571	259	179	81
10	250	55½	1410	45¾	1162	23 13/16	605	12½	318	16	406	29½	749	773	351	189	86

Noryl® is a registered trademark of General Electric Company

IMPORTANT: Inquire with governing authorities for local installation requirements.

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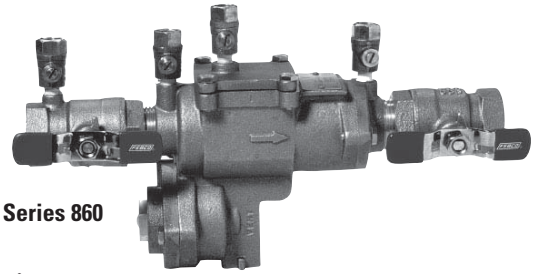
SPECIFICATION SHEET

Series 860

Reduced Pressure Zone Assemblies

Size: ½" - 2" (15mm - 50mm)



Series 860

The FEBCO Series 860 Reduced Pressure Zone Assemblies are designed for use in health-hazard applications.
End Connections – NPT ANSI / ASME B1.20.1

Pressure – Temperature

Max. Working Pressure:	175psi (12.1 bar)
Hydrostatic Test Press:	350psi (24.1 bar)
Temperature Range:	32°F to 140°F (0°C to 60°C)

Materials

Valve Body:	Bronze
Elastomers:	Silicone
Springs:	Stainless Steel

Models

- Wye - Strainer

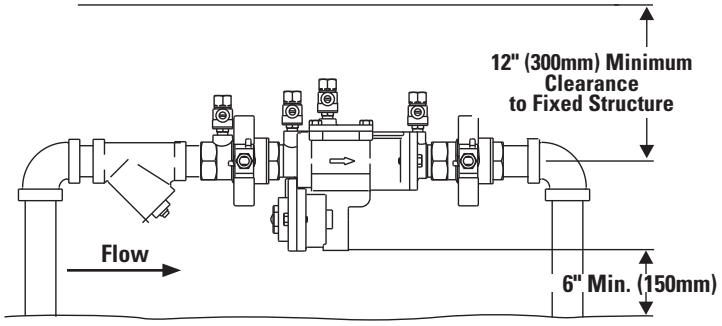
Approvals – Standards

- ANSI/AWWA Conformance (C511)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

1013 **B64.4**

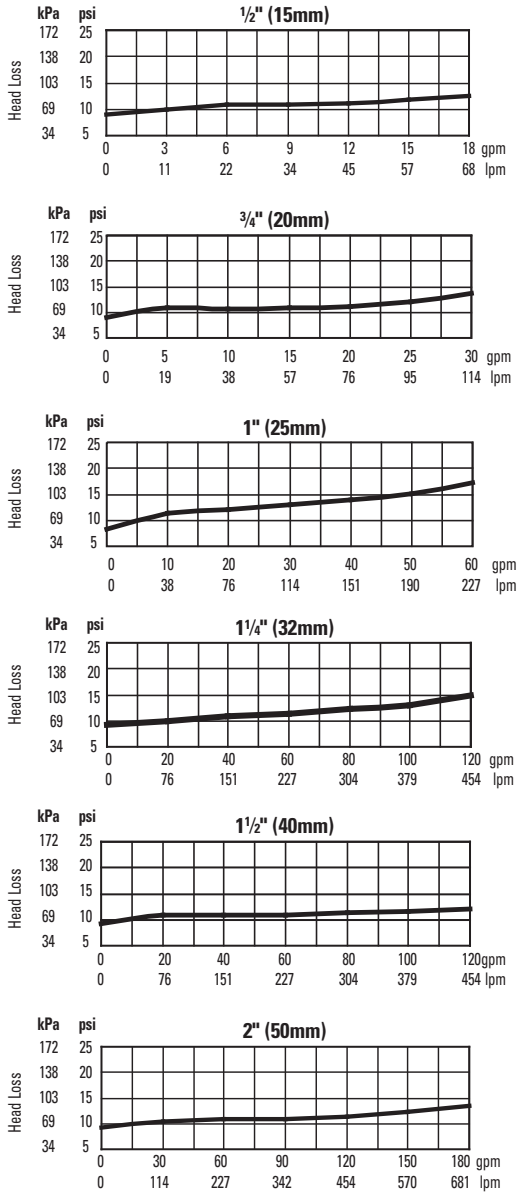
Typical Installation

Series 860 ½" - 2" (15 - 50mm)
Outdoor Installation



IMPORTANT: INQUIRE WITH GOVERNING AUTHORITIES FOR LOCAL INSTALLATION REQUIREMENTS

Capacity



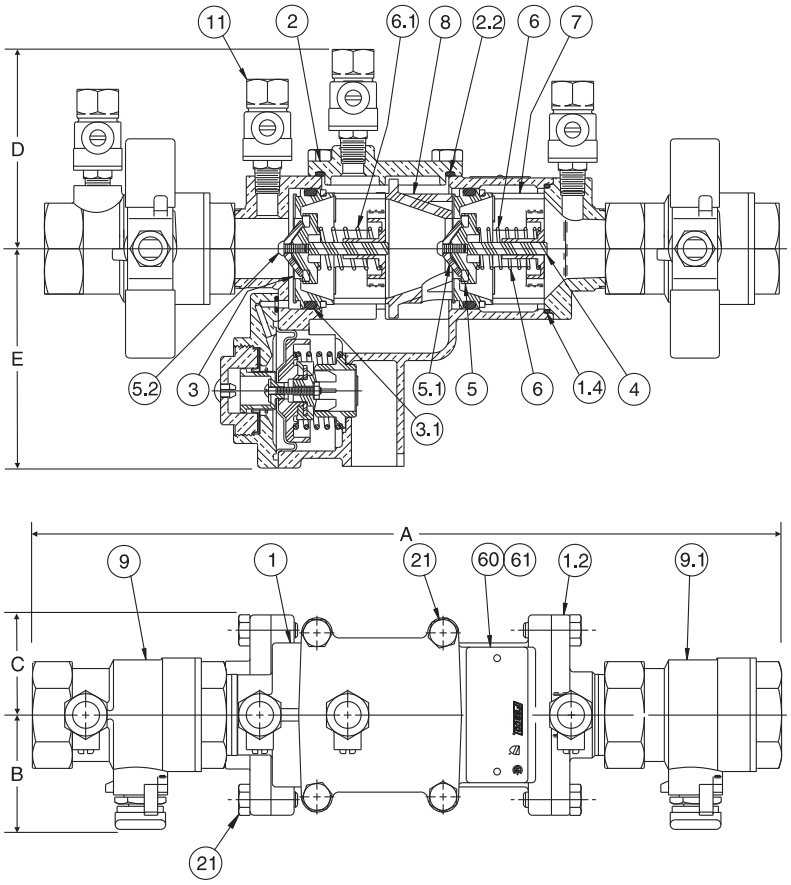
Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

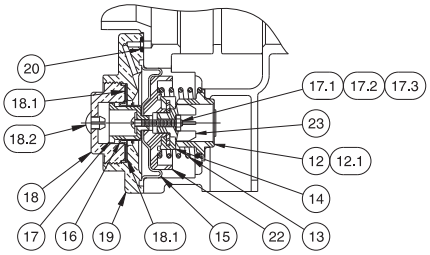
Approval _____ Representative _____

FEBCO product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact FEBCO. FEBCO reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on FEBCO products previously or subsequently sold.

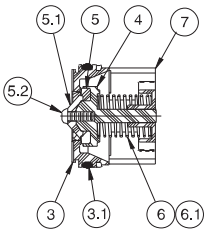


ITEM	DESCRIPTION	MATERIALS
1	Body	Bronze
1.2	Tailpiece	Bronze
1.4	O-Ring	Silicone
2	Cover	Bronze
2.2	O-Ring	Silicone
3	Seat	Noryl®
3.1	O-Ring	Silicone
4	Poppet	Noryl®
5	Seat Disc	Silicone Rubber
5.1	Disc Retainer	Noryl®
5.2	Rnd HD Screw	Phillips, 18-8 SS
6	Spring	SS
6.1	Spring	SS
7	Guide	Noryl®
8	Retainer Spacer	Noryl®
9	Ball Valve	Bronze
9.1	Ball Valve	Bronze
11	Test Cock	Bronze
12	Seat Ring-RV	Noryl®
12.1	Gasket Ring-RV	Silicone Rubber
13	Spring-RV	SS
14	Seat Disc-RV	Silicone Rubber/SS
15	Diaphragm-RV	Rubber/Fabric
16	Outer Diaphragm-RV	Rubber/Fabric
17	Small Piston-RV	Noryl®
17.1	Rnd HD Screw	Phillips, 18-8 SS
17.2	Washer	18-8 SS
17.3	Hex Nut	18-8 SS
18	Cylinder-RV	Brass
18.1	Slip Ring-Cylinder	Acetal
18.2	Slide (Plug)	Nylon
19	Cover-RV	Bronze
20	O-Ring	Silicone
21	Hex HD Capscrew	18-8 SS
22	Large Piston-RV	Noryl®
23	Guide-RV	Noryl®
60	Identification Plate	Brass
61	Drive Screw Stick	SS

Relief Valve Assembly



Check Assembly



Note: The gap drain is not designed to catch the maximum discharge possible from the relief valve. The installation of FEBCO air gap with the drain line terminating above a floor drain will handle any normal discharge or nuisance spitting through the relief valve. However, floor drain size may need to be designed to prevent water damage caused by a catastrophic failure condition. Do not reduce the size of the drain line from the air gap fitting.

Dimensions – Weights

Size: ½" - 2" (15 - 50mm)

SIZE (DN)		DIMENSIONS										WEIGHT	
		A		B		C		D		E			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
½	15	10	254	1½	38	1½	38	3⅛	79	3½	89	5.6	2.5
¾	20	10¾	273	1½	38	1½	38	3⅛	79	3½	89	5.8	2.6
1	25	12½	318	1⅞	48	1⅝	41	3⅜	86	3⅝	92	9.2	4.2
1¼	32	15⅞	403	3	76	2½	64	4¼	108	5⅝	143	20.2	9.2
1½	40	16⅜	416	3	76	2½	64	4¼	108	5⅝	143	20.6	9.4
2	50	17⅝	450	3½	89	2½	64	4¼	108	5⅝	143	24.8	11.3

Note: Dimensions are nominal. Allowances must be made for normal manufacturing tolerances.

FEBCO®

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Canada: 5435 North Service Rd. • Burlington, ONT. • L7L 5H7 • Tel. (905) 332-4090 • Fax: (905) 332-7068 • www.FEBCOonline.ca

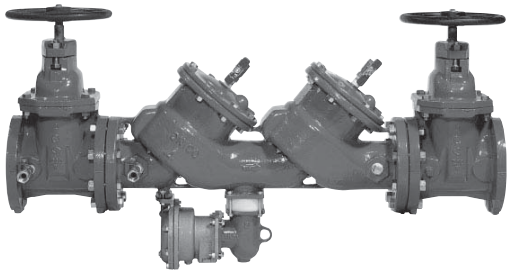
SPECIFICATION SHEET

MasterSeries® 860

Reduced Pressure Zone Assemblies

Size: 2½" - 10" (65mm - 250mm)

The FEBCO Master Series® 860 Reduced Pressure Zone Assemblies are designed for health hazard applications.
End connections – Flanged ANSI B16.1 Class 125



MODEL 860 REDUCED PRESSURE ASSEMBLY
U.S. Patent No. 4,989,635

Pressure – Temperature

Max. Working Pressure:	175psi (12.1 bar)
Hydrostatic Test Press:	350psi (24.1 bar)
Temperature Range:	32°F to 140°F (0°C to 60°C)

Materials

Main Valve Body:	Ductile iron Grade 65-45-12
Coating:	Fusion epoxy coated internal and external AWWA C550-90
Shutoff Valves:	NRS and OS&Y resilient wedge gate valves AWWA C509
Trim:	Bronze Alloy C83600
Elastomer Discs:	EPDM
Spring:	Stainless steel
Clamp:	AWWA C606 (10" only, 250mm)

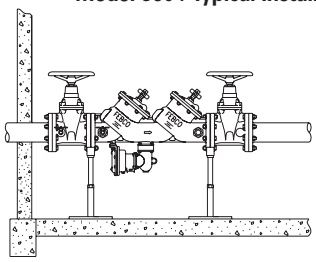
Approvals – Standards

- ANSI/AWWA (C511-89) - 2½" - 10"
- Approved by the Foundation for Cross-connection Control and Hydraulic Research at the University of Southern California. - 2½" - 8" (65 - 200mm)

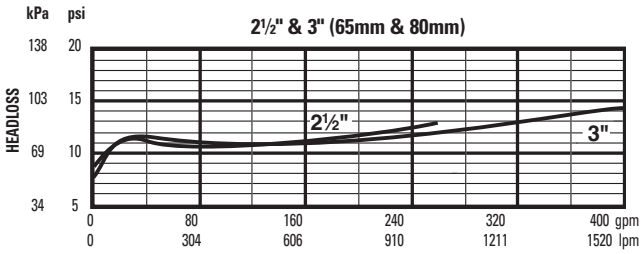
1013	B64.4		
2½" - 10"	2½" - 8"	2½" - 8"	2½" - 8"
65 - 250mm	65 - 200mm	65 - 200mm	65 - 200mm

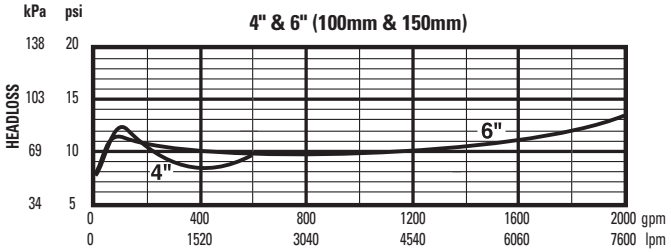
Typical Installation

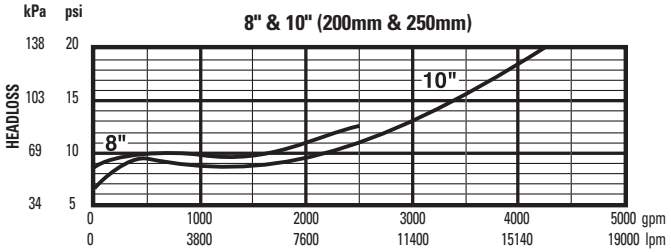
Model 860 / Typical Installation



Capacity





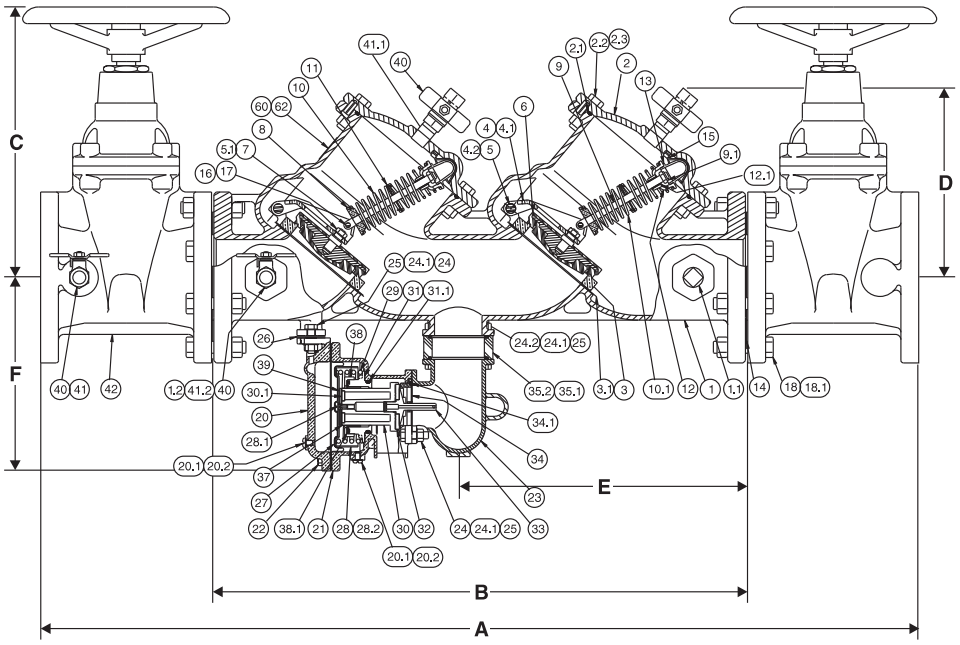


Job Name _____ Contractor _____

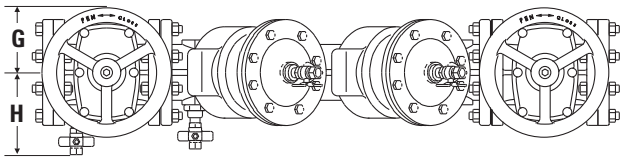
Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____



Top View



ITEM	DESCRIPTION	MATERIAL
1	Body	A536 GR 65-45-12
1.1	Pipe Plug	Galv. Stl.
1.2	Bushing (2½"-4" Only)	Brass
2	Cover	A536 GR 65-45-12
2.1	O-Ring	EPDM ASTM D2000
2.2	Cap Screw	Plated Steel
2.3	Hex Nut	Plated Steel
3	Seat Ring	B584 Alloy C83600
3.1	Gasket	EPDM ASTM D2000
3.2	Socket Head Screw	18-8-SS
3.3	Washer	304 SS
3.4	Elastic Stop Nut	18-8-SS
4	Arm	B584 Alloy C83600
4.1	Bushing-Swing Pin	Acetal Resin
4.2	Swing Pin	304 SS
5	Retaining Clip	302 SS
5.1	Retaining Clip	302 SS
6	Check Disk	EPDM Coated GR, 45 Ductile Iron with A276 type 304SS stem
7	Load Pin	B150 Alloy C61300
8	Lwr Spring Retnr	B584 Alloy C83600
9	Spring Stem	304 SS
9.1	Elastic Stop Jam Nut	18-8 SS
10	Spring	A313 Type 631 SS
10.1	Spring 2nd Check	A313 Type 631 SS
10.2	Spring Shim 2nd Check	Acetal Resin
11	Spring Guide	B130 Alloy C22000
12	Upr Spring Retnr	B584 Alloy C83600
12.1	Bushing-Spr. Stem	Acetal Resin
13	Pivot Bearing	B585 Alloy C83600
14	Flange Gasket	Rubber/Fabric
15	Bearing Socket	Acetal Resin
16	Hex Jam Nut	18-8 SS
17	Washer	302 SS
18	Flange Nut	Plated Steel
18.1	Flange Nut	Plated Steel
20	R.V. Cover	B584 Alloy C83600
20.1	Bleed Screw	18-8 SS
20.2	Gasket	HDPE
21	R.V. Body	B584 Alloy C83600
22	Cover Bolt	18-8 SS
23	Elbow	A536 GR 65-45-12
24	RV Mtg Bolt	Plated Steel
24.1	Washer	Plated Steel
25	RV Mtg Nut	Plated Steel
26	Gasket	EPDM
27	Lrg. Diaphragm	Nitrile ASTM D2000
28	Button	A240 304 SS
28.1	Flow Washer	Acetal Resin
29	RV Spring	A313 Type 302 SS
30	RV Stem	Acetal Resin
31	Main Guide	B584 Alloy C83600
31.1	Main Guide O-Ring	FDA EPDM
32	Seat Disc	EPDM AST D2000
33	Lower Guide	Acetal Resin
34	Seat Ring	B584 Alloy C83600
34.1	O-ring	FDA EPDM
35.1	O-Ring	EPDM ASTM D2000
35.2	Extension	Acetal Resin
37	Sm. Diaphragm	Nitrile ASTM D2000
38	Retainer	B584 Alloy C83600
38.1	Slip Ring	Acetal Resin
39	Flow Washer	Acetal Resin
40	Ball Valve	B584 Alloy C84400
41	Nipple	Brass
41.1	Nipple	Brass
41.2	Nipple	Brass
42	Gate Valve (NRS)	AWWA C509
60	Identification Plate	B36 Alloy C26000
62	Drive Screw	Stainless Steel
70	Clamp	AWWA C606 (10" Only)

Dimensions – Weight

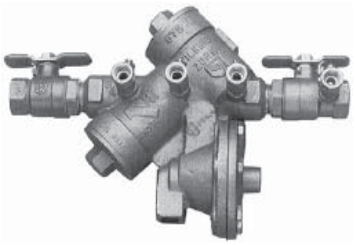
Size: 2½" - 10" (65 - 80mm)

SIZE (DN)		DIMENSIONS																WEIGHT			
		A		B		C		D		E		F		G		H		NRS		OS&Y	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	65	40¾	1035	25½	648	12⅝	321	10	254	12⅞	327	10	254	4½	114	7⅛	181	219	99	223	101.2
3	80	41⅞	1064	25⅝	651	12⅞	327	10	254	13	330	10	254	4½	114	7⅜	187	231	105	233	105.7
4	100	46¼	1175	28	711	14⅜	365	10⅛	257	15⅛	384	10⅛	257	5½	140	8⅛	206	317	144	334	151.5
6	150	56	1422	34¾	883	18⅞	479	12¾	324	20¾	527	11⅛	283	6½	165	9⅞	251	481	218	516	234.1
8	200	65	1651	41¾	1061	23½	570	15⅝	397	26⅞	683	12¼	311	7	178	11⅛	283	734	333	796	361.1
10	250	72⅝	1845	46⅜	1178	27½	699	15⅝	397	28¼	718	12⅜	314	9	229	12⅜	314	946	429	1008	457.2

Note: Dimensions shown are nominal. Allowances must be made for normal manufacturing tolerances.

Note: The gap drain is not designed to catch the maximum discharge possible from the relief valve. The installation of FEBCO air gap with the drain line terminating above a floor drain will handle any normal discharge or nuisance spitting through the relief valve. However, floor drain size may need to be designed to prevent water damage caused by a catastrophic failure condition. Do not reduce the size of the drain line from the air gap fitting.

SPECIFICATION SUBMITTAL SHEET



FEATURES

Sizes: ❑ 3/4" ❑ 1" ❑ 1 1/4" ❑ 1 1/2" ❑ 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1

OPTIONS

(Suffixes can be combined)

- ❑ - with full port QT ball valves (standard)
- ❑ L - less ball valves
- ❑ U - with union ball valves
- ❑ MS - with integral relief valve monitor switch
- ❑ P - for reclaimed water systems
- ❑ S - with bronze "Y" type strainer
- ❑ BMS - with battery operated monitor switch
- ❑ FDC - with fire hydrant connection; 2" only
- ❑ TCU - with test cocks up
- ❑ V - with union swivel elbows
- ❑ SE - with street elbows
- ❑ FT - with integral male 45° flare SAE test fitting

ACCESSORIES

- ❑ Air gap (Model AG)
- ❑ Repair kit (rubber only)
- ❑ Thermal expansion tank (Model WXTP)
- ❑ Soft seated check valve (Model 40)
- ❑ Shock arrester (Model 1250)
- ❑ QT-SET Quick Test Fitting Set
- ❑ Ball valve handle locks
- ❑ Test Cock Lock (Model TCL24)

APPLICATION

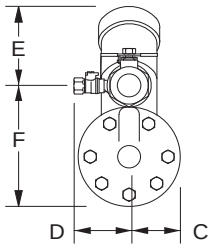
Designed for installation on potable water lines to protect against both backsiphonage and backpressure of contaminated water into the potable water supply. Assembly shall provide protection where a potential health hazard exists.

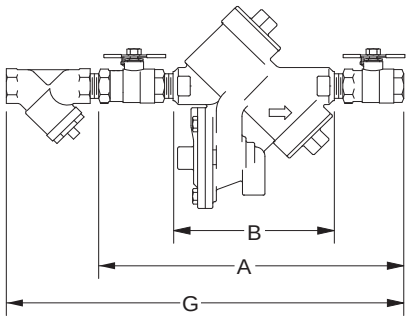
STANDARDS COMPLIANCE

- ASSE® Listed 1013
- IAPMO® Listed
- UL® Classified (less shut-off valves or with OS&Y valves)
- C-UL® Classified
- CSA® Certified
- AWWA Compliant C511
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California
- NYC MEA 425-89-M VOL 3

MATERIALS

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA Approved)
	Buna Nitrile (FDA Approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series





Relief Valve discharge port:
3/4" - 1" - 0.63 sq. in.
1 1/4" - 2" - 1.19 sq. in.

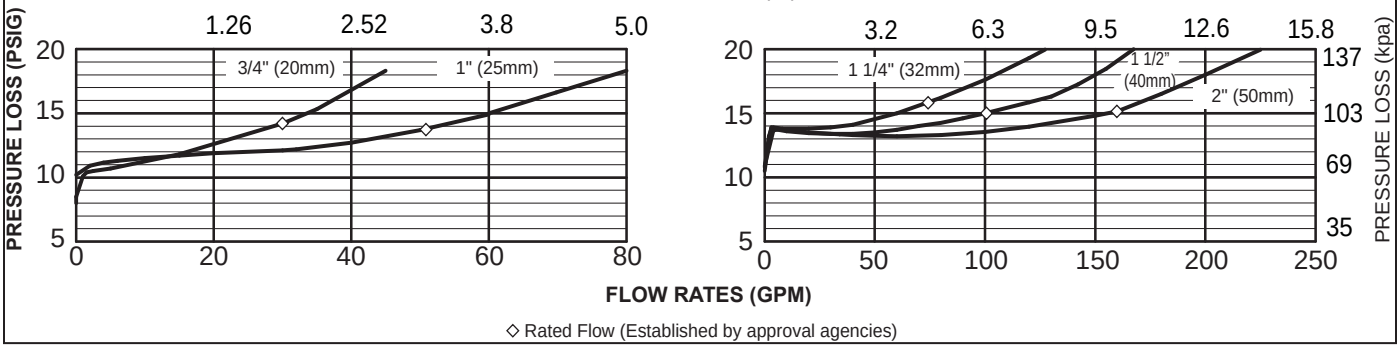
DIMENSIONS & WEIGHTS (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs	kg	lbs.	kg
3/4	20	12	305	13 3/4	349	7 3/4	197	2 1/8	54	3	76	3 1/2	89	5	127	16 1/8	410	10	4.5	12	5.5
1	25	13	330	14 1/2	368	7 3/4	197	2 1/8	54	3	76	3 1/2	89	5	127	17 3/8	441	10	4.5	14	6.4
1 1/4	32	17	432	18 13/16	478	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	22 9/16	573	22	10	28	12.7
1 1/2	40	17 3/8	441	19 3/8	492	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	24 1/16	611	22	10	28	12.7
2	50	18 1/2	470	20 1/2	521	10 15/16	278	2 3/4	70	3 1/2	89	5	127	6 3/4	171	26 1/2	673	22	10	34	15.4

WILKINS a Zurn company, 1747 Commerce Way, Paso Robles, CA 93446 Phone:**805/238-7100** Fax:**805/238-5766**
In Canada: ZURN INDUSTRIES LIMITED, 3544 Nashua Dr., Mississauga, Ontario L4V 1L2 Phone:**905/405-8272** Fax:**905/405-1292**
Product Support Help Line: 1-877-BACKFLOW **(1-877-222-5356)** • **Website: http://www.zurn.com**

FLOW CHARACTERISTICS

MODEL 975XL 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

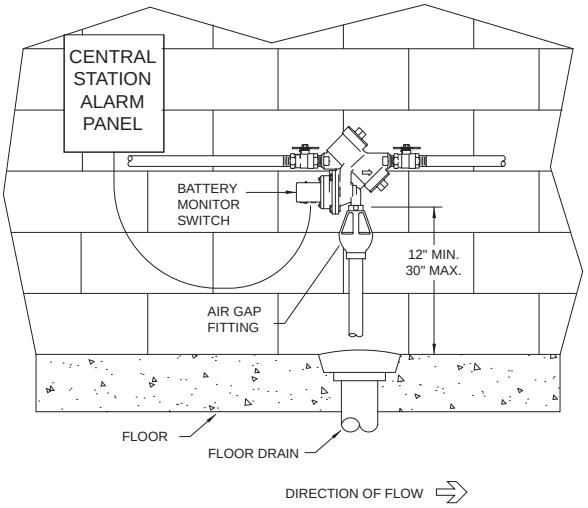


◇ Rated Flow (Established by approval agencies)

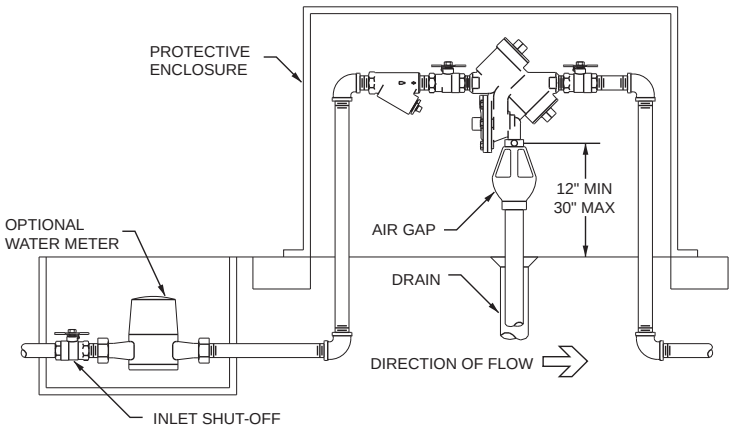
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2"	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



INDOOR INSTALLATION
(Shown w/optional BMS)

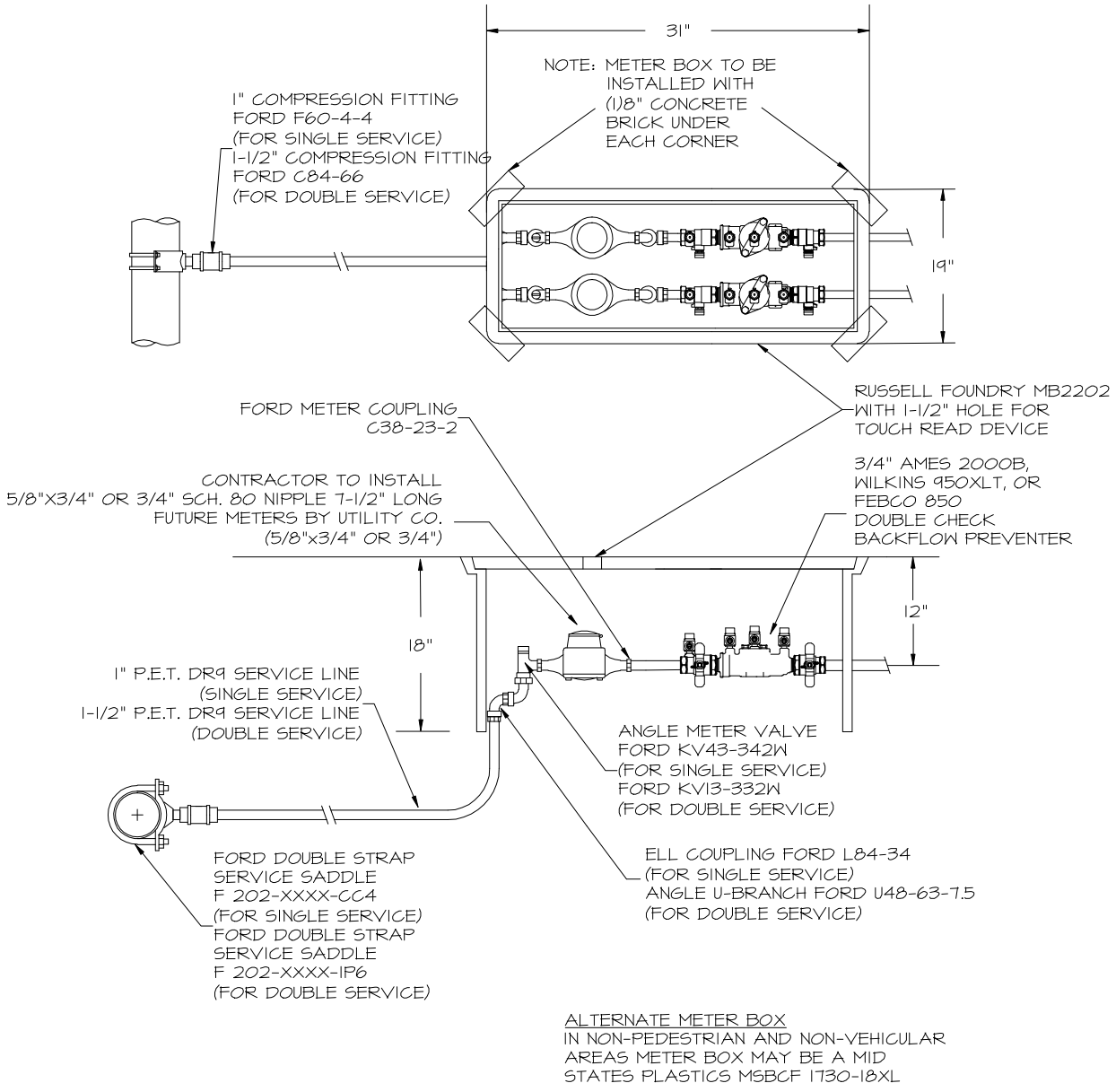


OUTDOOR INSTALLATION

SPECIFICATIONS

The Reduced Pressure Principle Backflow Preventer shall be ASSE® Listed 1013, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be silicone. The first and second checks shall be accessible for maintenance without removing the relief valve or the entire device from the line. If installed indoors, the installation shall be supplied with an air gap adapter and integral monitor switch. The Reduced Pressure Principle Backflow Preventer shall be a WILKINS Model 975XL.

INSTALLATION DETAILS



ALTERNATE METER BOX
IN NON-PEDESTRIAN AND NON-VEHICULAR AREAS METER BOX MAY BE A MID STATES PLASTICS MSBCF 1730-18XL

ISSUE DATE 03-28-03

NOT TO SCALE

GRANT & DZURO Engineers Surveyors Planners
1100 Main Street The Villages, FL 32159
Tel No. (352)753-6260 Fax No. (352)753-6264

REVISIONS	4-21-08							

5/8"x3/4" & 3/4" COMMERCIAL WATER METER ASSEMBLY DETAIL

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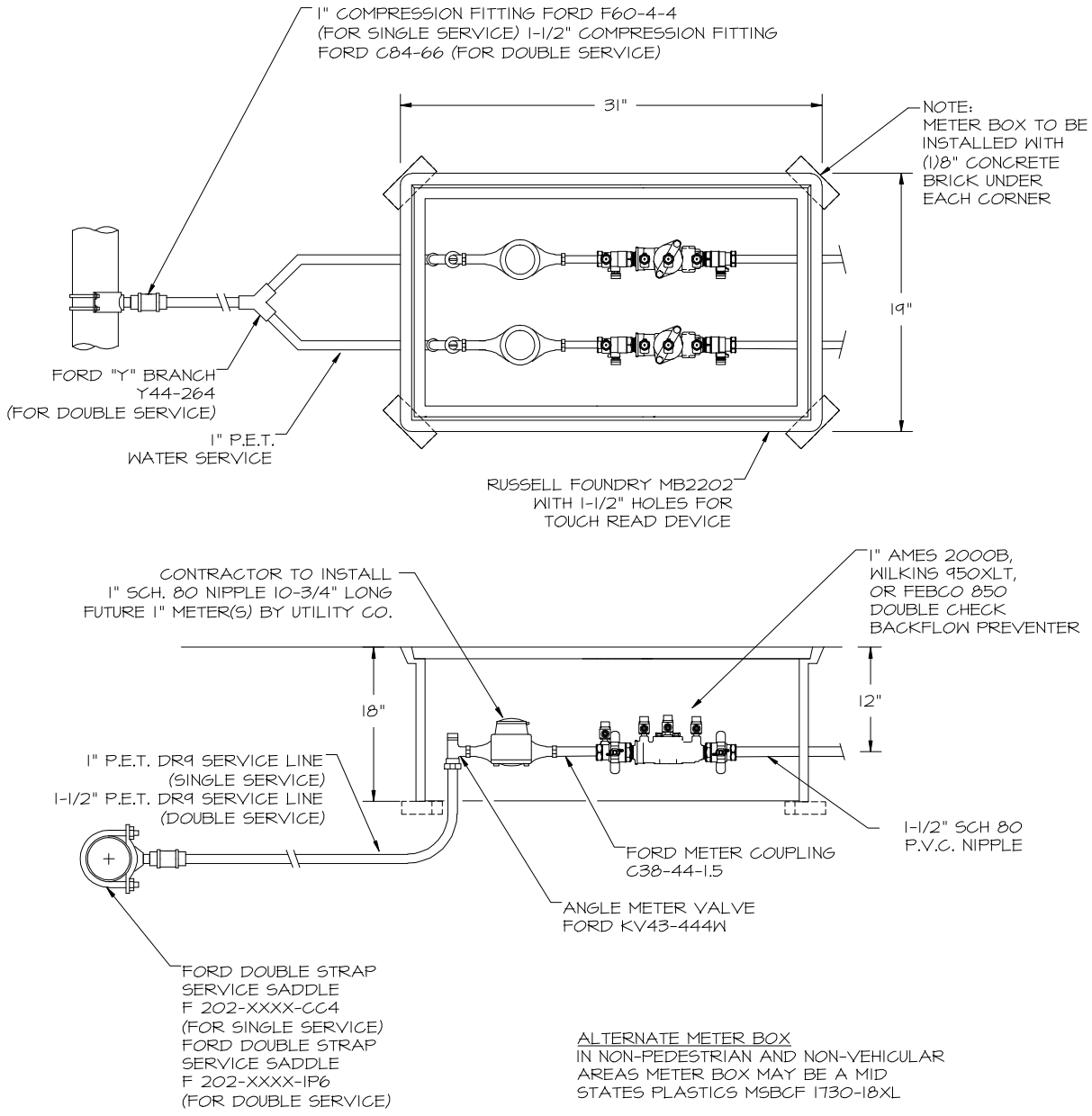

ALTERNATE METER BOX
IN NON-PEDESTRIAN AND NON-VEHICULAR
AREAS METER BOX MAY BE A MID
STATES PLASTICS MSBCF 1730-18XL

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1" COMMERCIAL WATER METER ASSEMBLY DETAIL

PAGE
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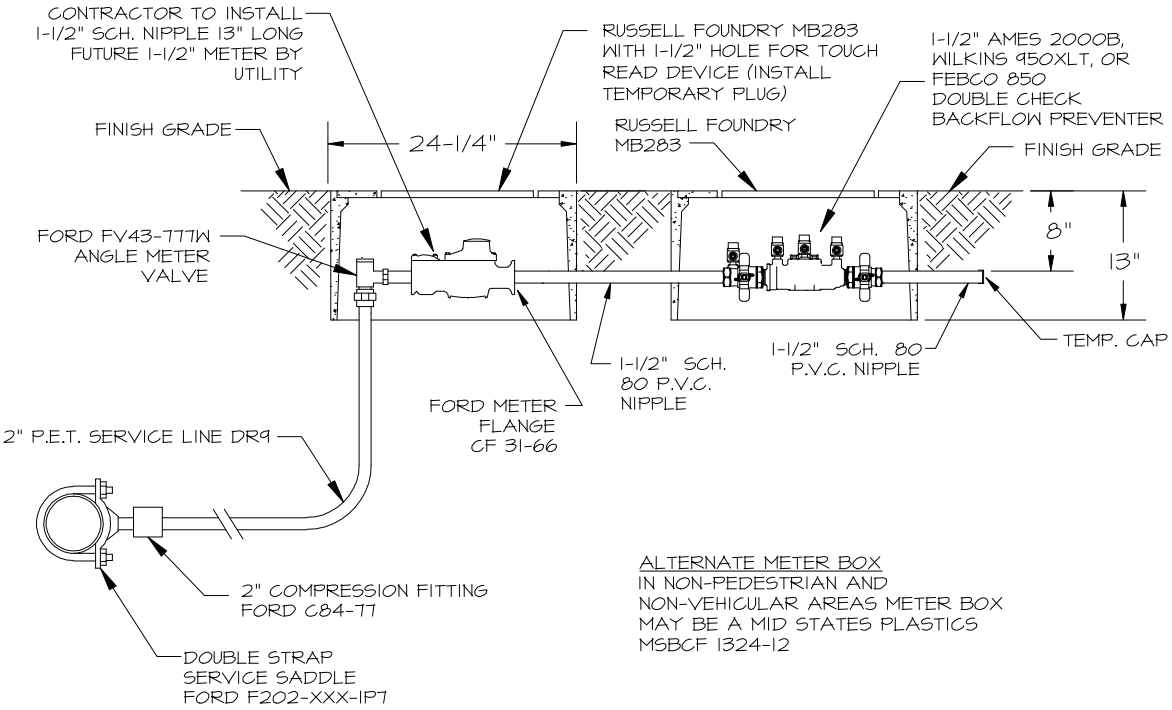

ALTERNATE METER BOX
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1-1/2" COMMERCIAL WATER METER ASSEMBLY DETAIL

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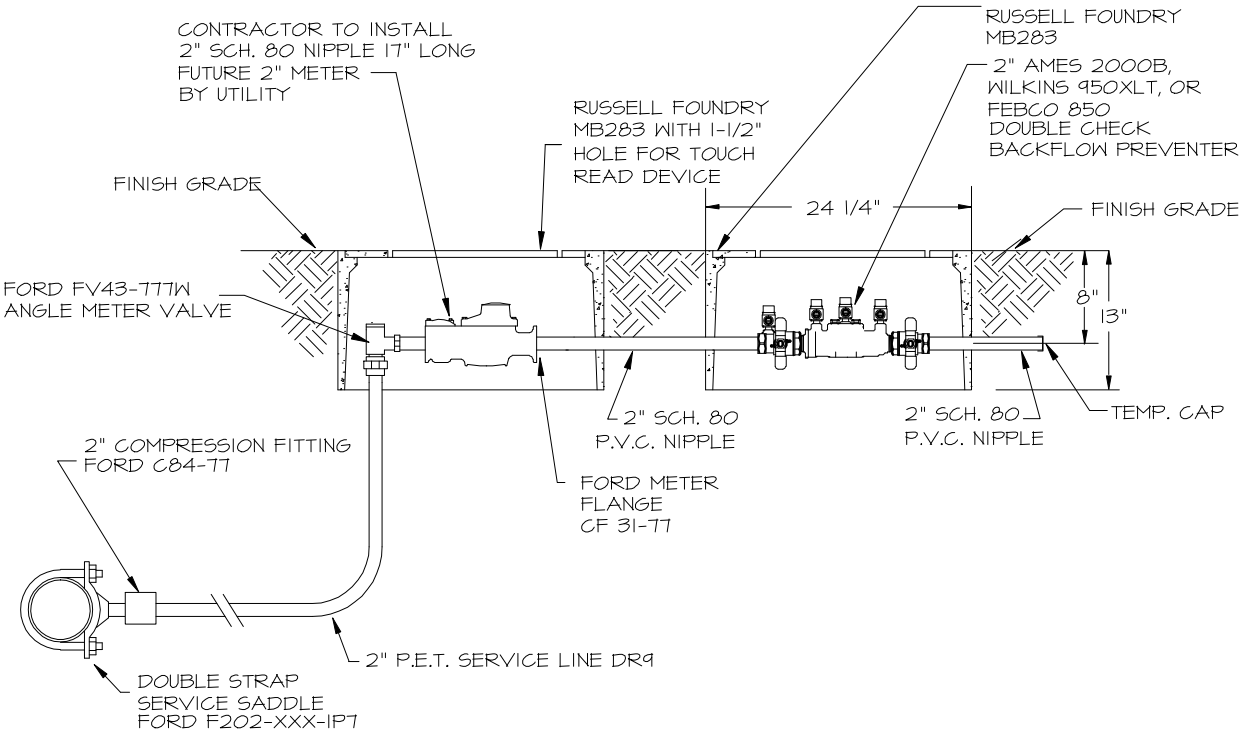

ALTERNATE METER BOX
IN NON-PEDESTRIAN AND
NON-VEHICULAR AREAS METER BOX
MAY BE A MID STATES PLASTICS
MSBCF 1324-12

ISSUE DATE 03-28-03

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REVISIONS	8-23-03	4-21-08						

2" COMMERCIAL WATER METER ASSEMBLY DETAIL

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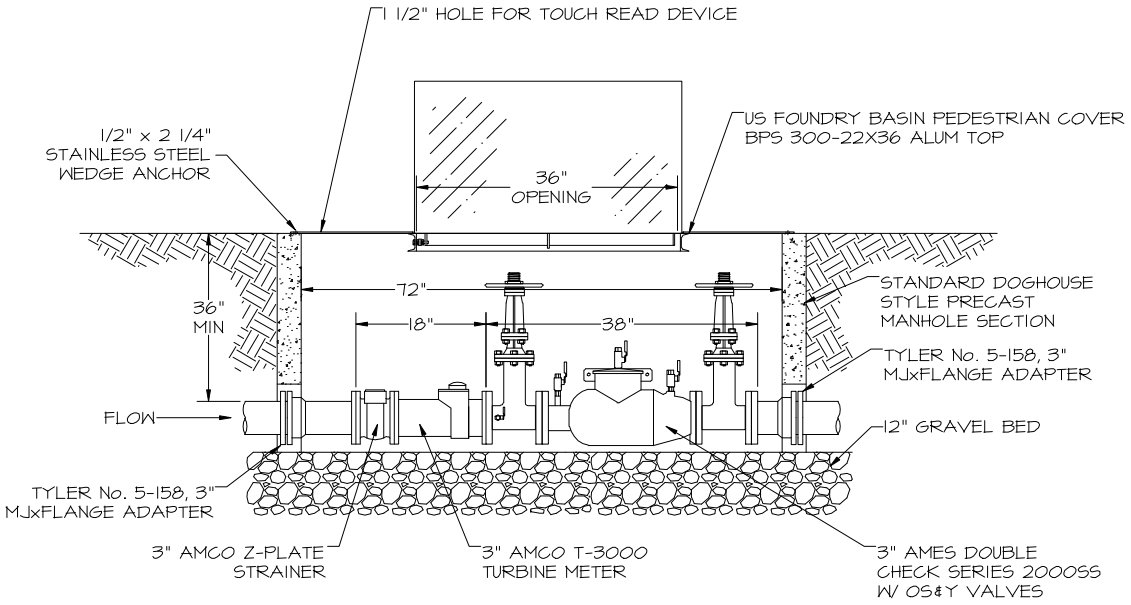

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REVISIONS	4-27-05	8-9-05	4-21-08					

3" COMMERCIAL WATER METER ASSEMBLY DETAIL

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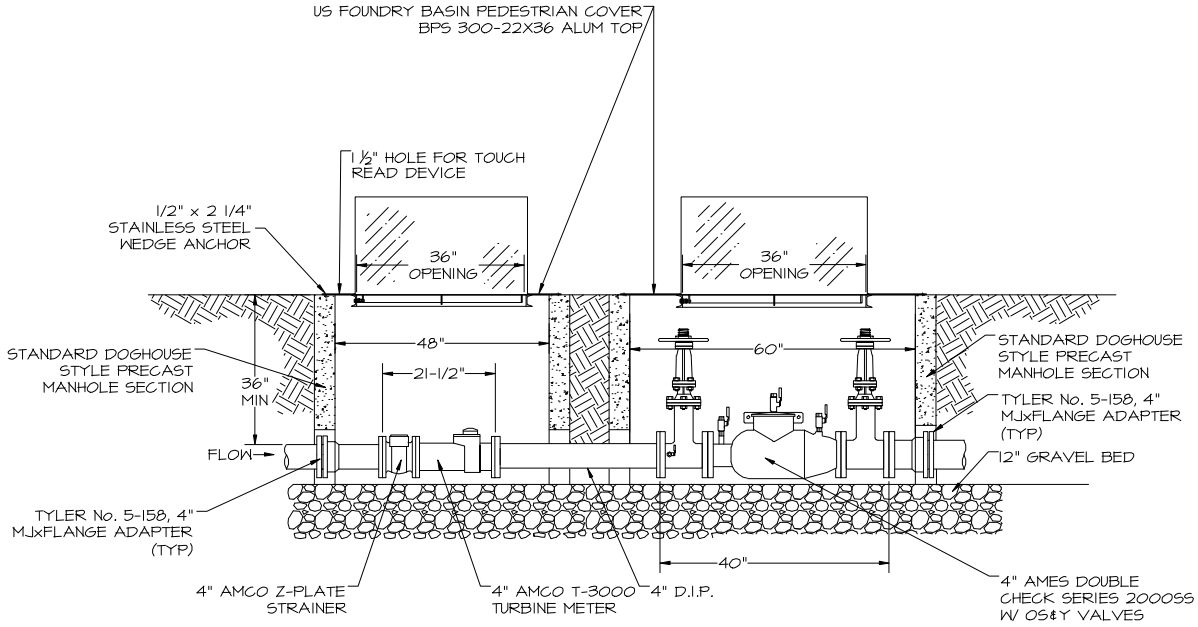

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REVISIONS	4-27-05	8-9-05	4-21-08					

4" COMMERCIAL WATER METER ASSEMBLY DETAIL

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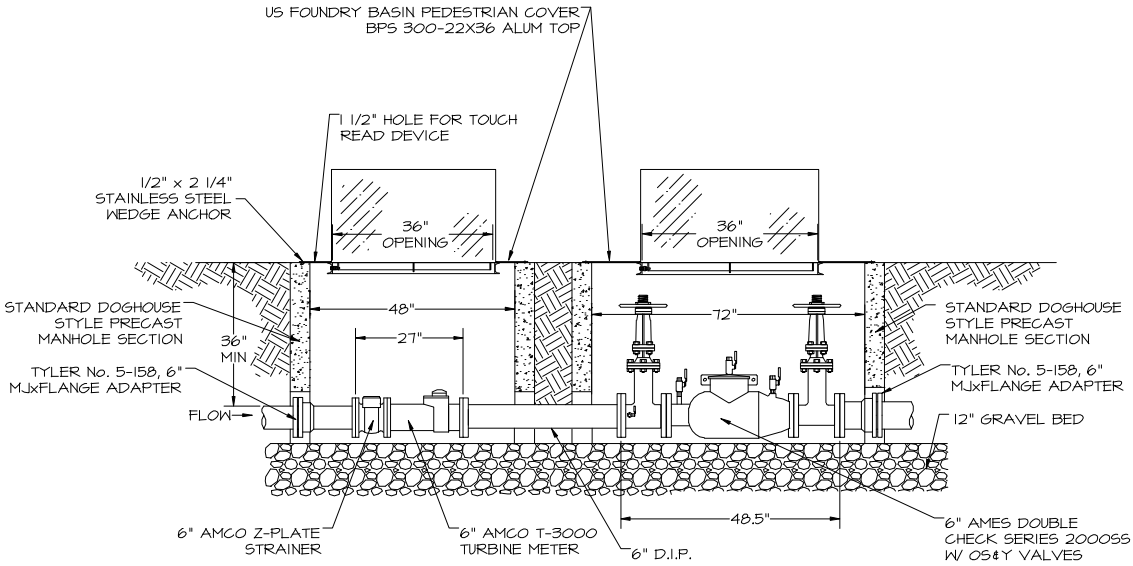

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REVISIONS	4-27-05	8-9-05	4-21-08					

6" COMMERCIAL WATER METER ASSEMBLY DETAIL

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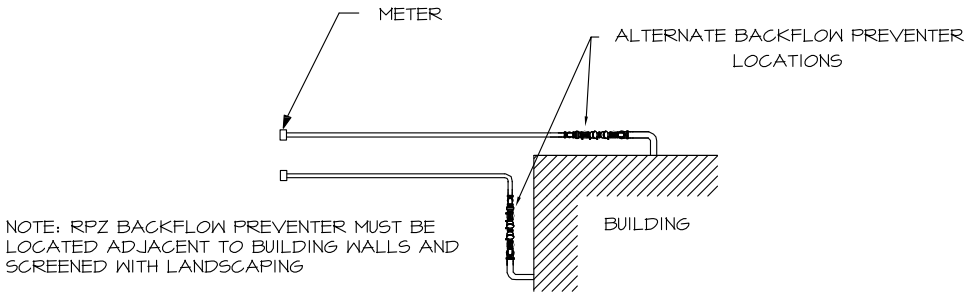

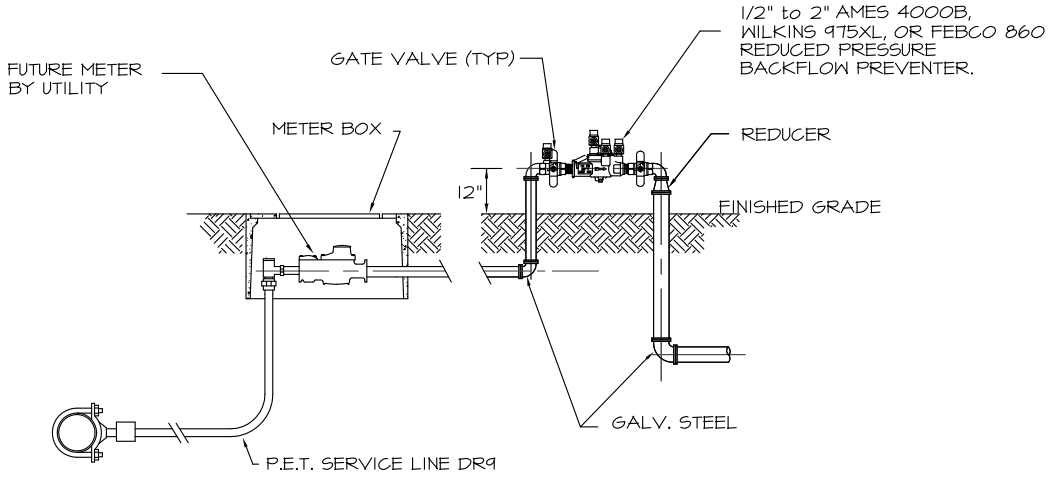

NOTE: SEE APPROPRIATE ASSEMBLY DETAILS FOR ADDITIONAL INFORMATION

TO BE USED FOR HIGHER RISK FACILITIES ONLY, SUCH AS:

COMMERCIAL CAR WASH
COMMERCIAL LAUNDRIES / DRY CLEANERS
PHOTO PROCESSING FACILITIES
PEST CONTROL COMPANIES
COOLING TOWERS
HOSPITALS
MEDICAL & DENTAL OFFICES
ASSISTED LIVING/NURSING FACILITIES
VETERINARY CLINICS
WASTEWATER LIFT STATIONS (IF SERVED BY POTABLE WATER)
WASTEWATER TREATMENT PLANT
MAINTENANCE FACILITY (GOLF, LANDSCAPE, ETC.)
GROCERY STORE
BEAUTY SALON/SPA
HOME IMPROVEMENT/HARDWARE
FUNERAL HOME
EYE CARE CLINIC
LABORATORY / BLOOD CENTER
AUTOMOTIVE / TIRE STORE

ISSUE DATE 07-11-03

1 OF 2

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REVISIONS	3-27-07	3-23-09	9-15-11					

BACKFLOW PREVENTER ASSEMBLY DETAIL

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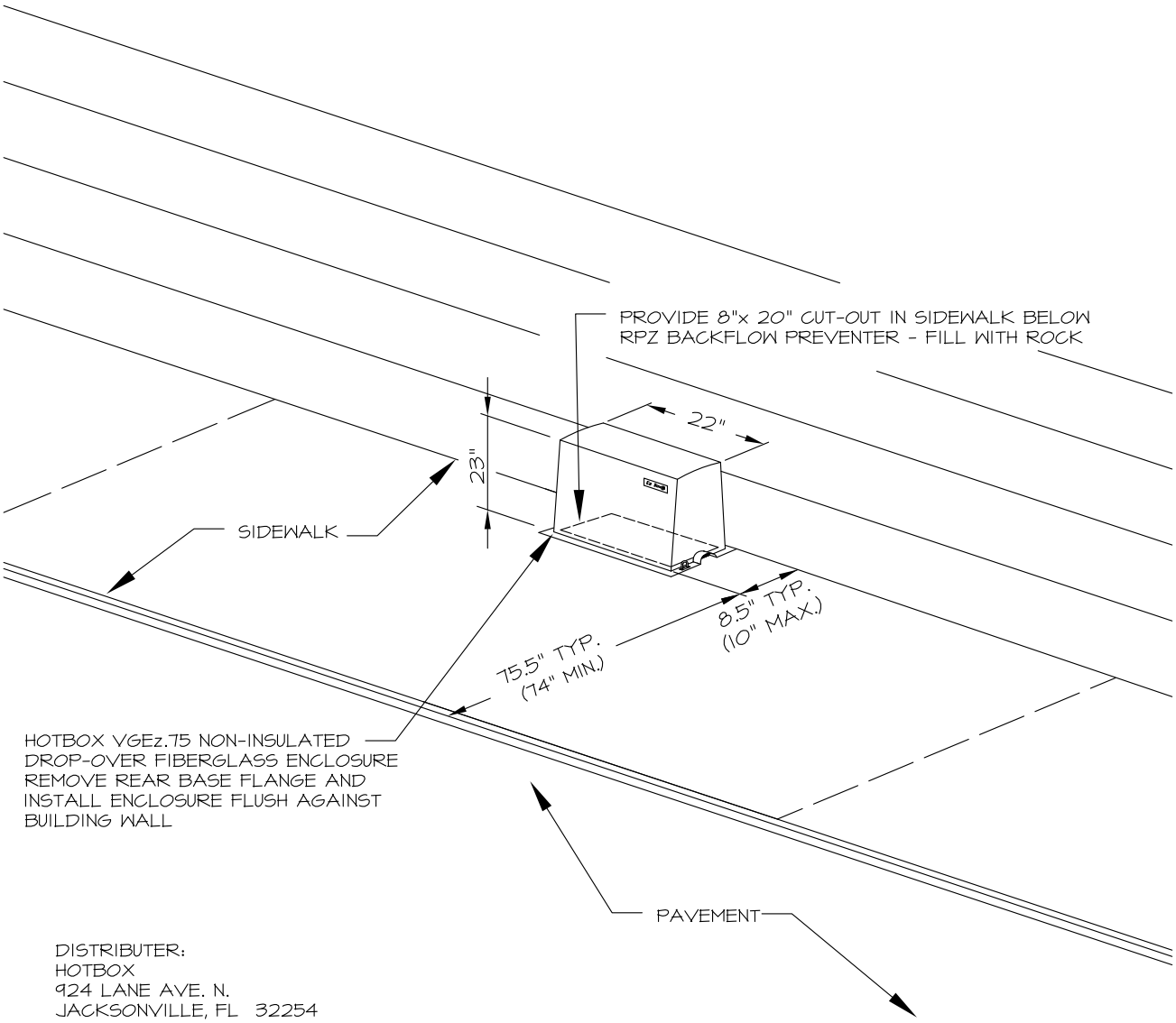

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NOTE:
ENCLOSURE REQUIRED ONLY IF A RPZ
BACKFLOW PREVENTER MUST BE INSTALLED
ABOVE GRADE IN NON-LANDSCAPED AREAS

ISSUE DATE 03-23-09

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NOT TO SCALE

GRANT & DZURO
Engineers
Surveyors
Planners
1071 Canal Street The Villages, FL 32162
Tel No. (352)753-6260 Fax No. (352)753-6264

REVISIONS

BACKFLOW PREVENTER ASSEMBLY DETAIL

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