Installation, Maintenance, and Repair Manual

Maxim™ Series M400, M500, LFM500

Reduced Pressure Zone Assemblies
Reduced Pressure Detector Assemblies

2½" – 10"

⚠ WARNING

Read this Manual BEFORE using this equipment.

Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.

Keep this Manual for future reference.

⚠ WARNING

Local building or plumbing codes may require modifications to the information provided. You are required to consult the local building and plumbing codes prior to installation. If this information is not consistent with local building or plumbing codes, the local codes should be followed.

⚠ WARNING

Need for Periodic Inspection/Maintenance: This product must be tested periodically in compliance with local codes, but at least once per year or more as service conditions warrant. Corrosive water conditions, and/or unauthorized adjustments or repair could render the product ineffective for the service intended. Regular checking and cleaning of the product's internal components helps assure maximum life and proper product function.

⚠ WARNING

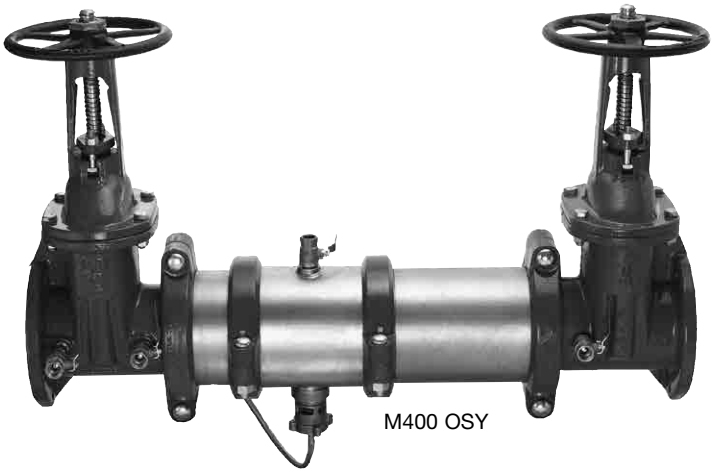
This device must be tested periodically in compliance with local codes, but at least once per year or more as service conditions warrant. If installed on a fire sprinkler system, all mechanical checks, such as alarm checks and backflow preventers, should be flow tested and inspected internally in accordance with NFPA 13 and NFPA 25.

⚠ WARNING

Do not impede or prevent sleeve movement by installing riser cradle clamps or other obstructive elements on or around the sleeve. Sleeve movement is required to service the backflow.

NOTICE

Due to shipping, storage, and general handling, the Victaulic Coupling for the shutoff valves may have loosened and should be retightened during installation.



M400 OSY

Testing

For field testing procedure, download IS-A-ATG-1 at watts.com.

For technical assistance, contact your local Ames representative.

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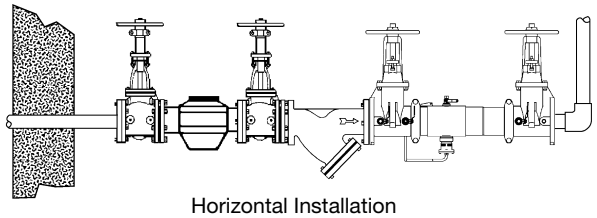
Installation Guidelines

- Most field problems occur because dirt and debris present in the system at the time of installation becomes trapped in check No. 1. Flush the system before the valve is installed. If the system is not flushed until after the valve is installed, remove both check modules from the valve and open the inlet shutoff to allow water to flow for a sufficient time to flush debris from the water line. If debris in the water system continues to cause fouling, a strainer can be installed upstream of the backflow assembly.
- Series M400, M500, and LFM500 can be installed in either horizontal, “N” pattern, or “Z” pattern position as long as the backflow assembly is installed in accordance with the direction of the flow arrow on the assembly and the local water authority approves the installation.
- The assembly should be installed with adequate clearance around the valve to allow for inspection, testing, and servicing. Ensure a minimum clearance of 12" between the lower portion of the assembly and the floor or grade. Protect the valve from freezing.
- Do not install the backflow preventer in a pit or vault. This is not recommended.
- Normal discharge and nuisance spitting are accommodated by the use of an Ames air gap fitting and a fabricated indirect waste line. Install floor drains of the same size for disposal of any excessive discharge.
- Have a certified technician test the series at the time of installation.

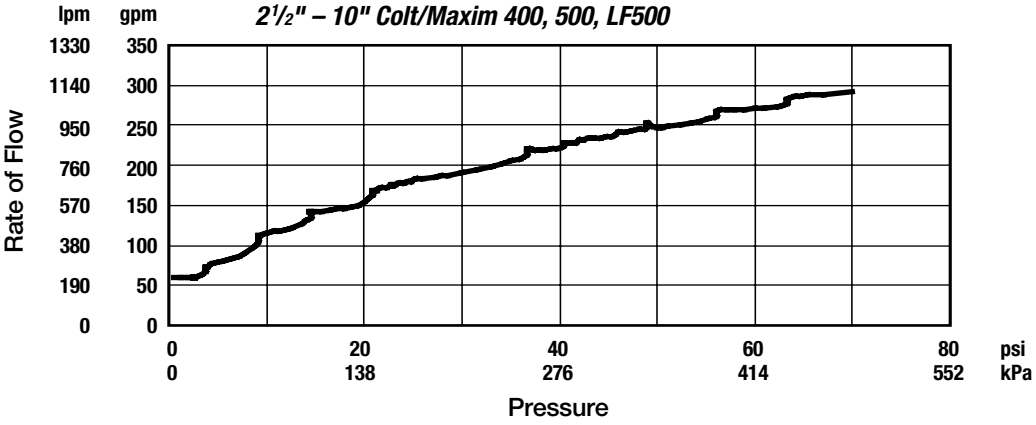


Horizontal Installation

NOTICE

Assembly body should not be painted.

Relief Valve Discharge



Maintaining the Check Modules

2½" – 4"

⚠ WARNING

Depressurize valve before servicing.

Housing

Figure A

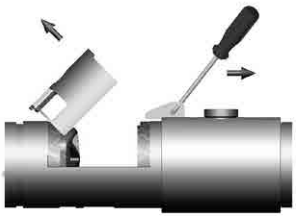


Figure B

Figure C

Check No. 1

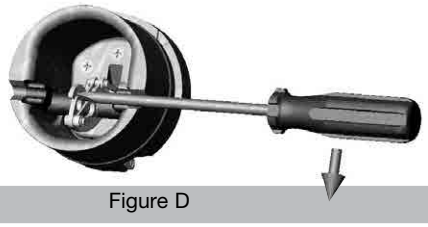


Figure D

Figure E

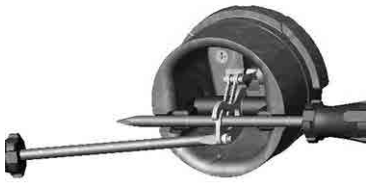


Figure F

Check No. 2

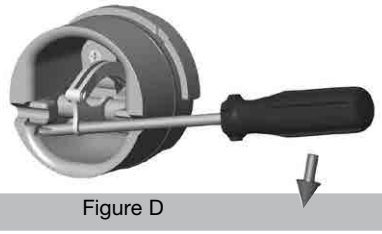


Figure D

Figure E

Figure F

⚠ WARNING

Before servicing any Ames valve, shut down the water system by closing both the inlet and outlet shutoff valves. This is mandatory. After shutoff valves are closed, open test cocks No. 2, No. 3, and No. 4 to relieve pressure within the backflow assembly.

1. After test cock No. 3 has been opened to relieve pressure, remove the test cock from the housing. (See Figure A.)
2. Insert a #3 screwdriver through the hole on the top of the cover sleeve and, using both hands, rotate the cover sleeve approximately a quarter turn clockwise and a quarter turn counterclockwise to break the sleeve O-ring seals. Using the screwdriver, slowly slide the cover sleeve to the downstream side of the housing. (See Figure B.)
3. Remove the stainless steel check retainer from the housing. (See Figure B.)
4. Remove check module No. 1 by inserting two flat blade screwdrivers into the slots on either side of the check module. (See Figure C.) Gently pry the check module toward the open zone.
5. Repeat step 4 to remove check module No. 2.
6. To clean or inspect either check module, insert a #3 screwdriver through the downstream side of the check module. (See Figures D and E.) When the screwdriver is in place, remove the E-clip and the pin connecting the structural members. (See Figure F.) The check clapper opens with no tension.
7. Clean the seating area thoroughly. The sealing disc can be removed, if necessary, by detaching the screws connecting the keeper plate to the clapper. The sealing disc can be reversed and reinstalled if the elastomer is cut or damaged.
8. Wash check module and O-ring then inspect for any damage. If damaged, install new parts during reassembly.
9. After a thorough cleaning, lubricate the O-ring with an FDA Approved lubricant, replace the pin and E-clip in the structural members, remove screwdriver, and reinstall the check modules. Reverse the order of these steps to reassemble the parts and housing.

Maintaining the Check Modules

6" – 10"

Material/Tool Requirements

- #4 Phillips screwdriver or 3/8" diameter rod, length sufficient to span diameter of check (See Figures A and B.)
- 1/2" – 13 x 5 fully threaded hex bolt (service bolt)
- 3/4" open end or socket wrench

Instructions

⚠ WARNING

Before servicing any Ames valve, shut down the water system by closing both the inlet and outlet shutoff valves. This is mandatory. After the shutoff valves are closed, open test cock No. 2, No. 3, and No. 4 to relieve pressure within the backflow assembly.

1. After test cock No. 3 has been opened to relieve pressure, remove test cock from the housing.

   When repairing a 6", 8", or 10" device, remove both Victaulic couplers from the body. Slide the downstream Victaulic coupler gasket to the downstream side of the housing. The upstream Victaulic coupler gasket stays in place.

2. Remove the check(s) to be serviced.
3. Locate the service hole and thread in the service bolt by hand until it contacts the linkage. (See Figure A.)
4. Continue to thread in the service bolt with the wrench until the service hole in the linkage is aligned with the service notches on the spring arbors. (See Figure A.)
5. Insert the Phillips screwdriver through the arbors and service hole of the linkage, making sure the tip of the screwdriver extends past the ends of the arbors by a minimum of ¼". (See Figure B.)
6. Loosen the service bolt until the load is transferred to the screwdriver. Continue to loosen the service bolt until sufficient clearance is achieved to remove the complete spring mechanism.
7. To disconnect the linkage, remove the retaining clip and pin. (Store both items in a safe location for reinstallation.)
8. To remove the spring mechanism, grasp the screwdriver at the center and pull the complete assembly straight out. Store in a safe place.
9. Reverse the order of these steps to reassemble the parts and housing.

⚠ WARNING

While the spring mechanism is removed for check servicing, never pull the screwdriver out or off the support notches on the arbors. Doing so may cause bodily injuries.

Figure A

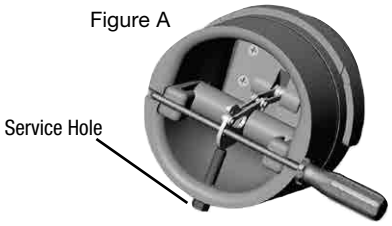
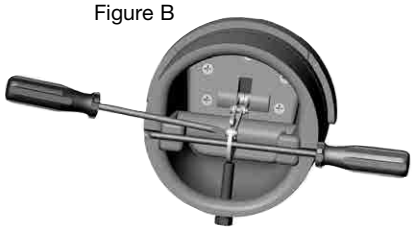


Figure B



Servicing the Relief Valve

⚠ WARNING

Before servicing the relief valve, shut down the water system by closing both the inlet and outlet shutoff valves and relieving pressure within the assembly by opening the test cocks No. 2, No. 3, and No. 4.

DO NOT REMOVE SPIDER BUSHING FOR SERVICING

1. Disconnect the hose from the bottom cover plate to the relief valve.
2. An O-ring seals the relief valve body to the main housing. Avoid tightening the connection beyond firm hand tightening. Loosen the relief valve by hand to remove it, then unscrew the relief valve from the housing.
3. Remove the cover plate of the relief valve by detaching the four connecting screws.
4. Remove the rubber diaphragm from the relief valve. Notice how the diaphragm is configured to reinstall it in the same manner. The hard rubber tab in the diaphragm fits into a similar socket in the head of the piston. (See Figure A.)

Figure A

Figure B

5. Hold the relief valve in both hands with the threaded end up and both thumbs on the head of the piston. Push up on the piston until the piston shaft with the attached E-clip is exposed. Remove the E-clip. (See Figure B.)
6. Remove the piston and spring from the relief valve housing and thoroughly clean all parts including the diaphragm. Inspect all rubber parts and replace any that are damaged.
7. Reverse the order of these steps to reassemble the parts and housing.

Testing Reduced Pressure Zone Assemblies

Test No.1

Purpose: To test check valve No. 2 for tightness against reverse flow.

Requirements: Valve must be tight against reverse flow under all pressure differentials. Slowly open the 'high' valve A and the 'vent' valve C, and keep the 'low' valve B closed. Open test cock No. 4. Indicated pressure differential is expected to decrease lightly. If pressure differential continues to decrease (until the vent opens) check valve No. 2 is reported as 'leaking.'

Test No. 2

Purpose: To test shutoff No. 2 for tightness.

Requirements: After passing test No. 1, continue to Test No. 2 by closing test cock No. 2. The indicated pressure differential is expected to decrease slightly. If pressure differential continues to decrease (approach 0 (zero)), shutoff No. 2 is reported to be 'leaking.'

Test No. 3

Purpose: To test check Valve No. 1 for tightness.

Requirements: Valve must be tight against the reverse flow under all pressure differentials. Close 'high' valve A and open test cock No. 2. Close test cock No. 4. Disconnect the vent hose at test cock No. 4. Open valves B and C, bleeding to atmosphere. Then closing valve B restores the system to a normal static condition. Observe the pressure differential gauge. If there is a decrease in the indicated value, check valve No. 1 is reported as 'leaking.'

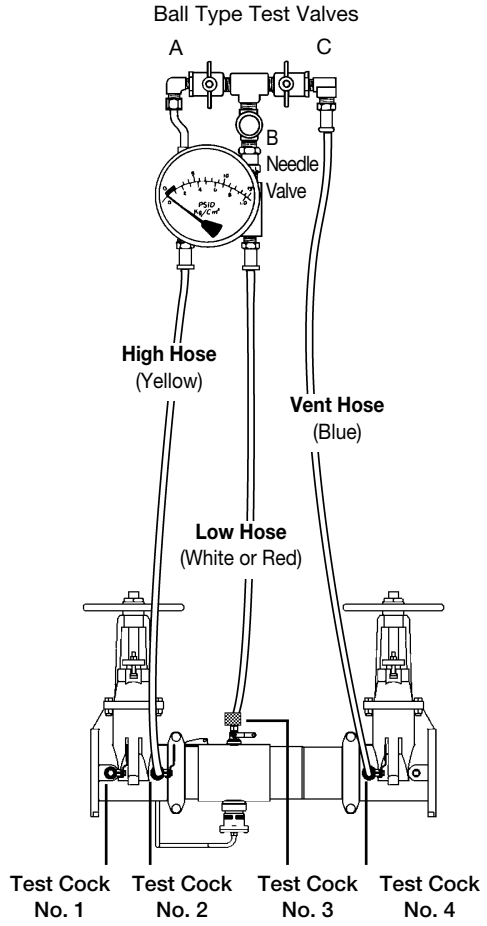
Test No. 4

Purpose: To test operation of pressure differential relief valve.

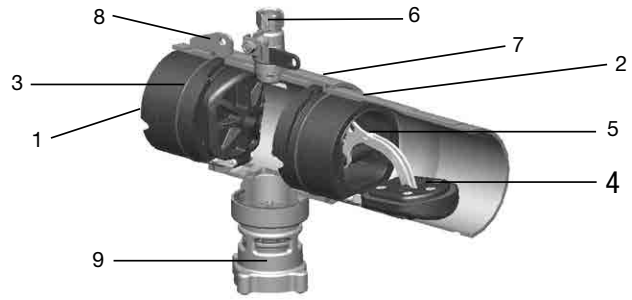
Requirements: The pressure differential relief valve must operate to maintain the 'zone' between the two check valves at least 2 psi less than the supply pressure. Close 'vent' valve C. Open 'high' valve A. Open the 'low' valve B very slowly until the differential gauge needle starts to drop. Hold the valve at this position and observe the gauge reading when the first discharge is noted from the relief valve. Record this as the opening differential pressure of the relief valve.

NOTICE

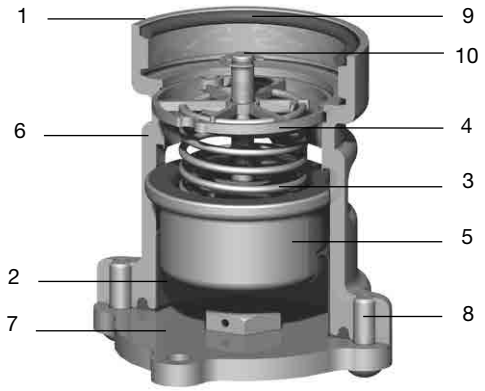
The differential gauge needle MUST drop slowly. Close test cocks No. 2 and No. 3. Use the vent hose to relieve pressure from the test kit by opening valves A, B, and C. Remove all test equipment then open shutoff No. 2.



Parts



ITEM NO.	DESCRIPTION
1	First Check Module
2	Second Check Module
3	O-Ring, Check Module
4	Elastomer Disc
5	Grooved Check Pin
6	Closure Sleeve Test Cock
7	Closure Sleeve
8	Closure Sleeve O-Ring
9	Relief Valve Assembly



ITEM NO.	DESCRIPTION
1	Relief Valve Assembly
2	Diaphragm
3	Spring
4	Spider Bushing
5	Piston Assembly
6	Body
7	Hose & Cover Plate
8	Cover Screw
9	Inlet coupler, O-ring,
10	'E' Clip

For repair kits and parts, refer to the Backflow Prevention Products, Repair Kits, and Parts PL-AMES price list at watts.com.

Troubleshooting

PROBLEM	CAUSE	SOLUTION
Relief valve discharges water while system is not flowing	Check No. 1 is fouled	Remove and clean check No. 1
	Relief valve does not properly close	Service relief valve
	Municipal water pressure is fluctuating	Install check valve upstream of backflow assembly
Relief valve does not shut off properly	Fouled relief valve seat	Service relief valve
	Incorrectly installed diaphragm	Remove diaphragm and correctly install
	Damaged rubber surface on piston	Replace with new piston
	Damaged or plugged pressure hose	Repair or replace hose

Limited Warranty: Ames Fire & Waterworks (the "Company") warrants each product to be free from defects in material and workmanship under normal usage for a period of one year from the date of original shipment. In the event of such defects within the warranty period, the Company will, at its option, replace or recondition the product without charge.

THE WARRANTY SET FORTH HEREIN IS GIVEN EXPRESSLY AND IS THE ONLY WARRANTY GIVEN BY THE COMPANY WITH RESPECT TO THE PRODUCT. THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE COMPANY HEREBY SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The remedy described in the first paragraph of this warranty shall constitute the sole and exclusive remedy for breach of warranty, and the Company shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, or any other circumstances over which the Company has no control. This warranty shall be invalidated by any abuse, misuse, misapplication, improper installation or improper maintenance or alteration of the product.

Some States do not allow limitations on how long an implied warranty lasts, and some States do not allow the exclusion or limitation of incidental or consequential damages. Therefore the above limitations may not apply to you. This Limited Warranty gives you specific legal rights, and you may have other rights that vary from State to State. You should consult applicable state laws to determine your rights. **SO FAR AS IS CONSISTENT WITH APPLICABLE STATE LAW, ANY IMPLIED WARRANTIES THAT MAY NOT BE DISCLAIMED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL SHIPMENT.**

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