



INSTALLATION MAINTENANCE, AND TEST INSTRUCTIONS

BACKFLOW PREVENTION SUPPLY
962 East 900 South
Salt Lake City, Utah 84105
(801) 355-6736

**BEECO MODEL 6CM REDUCED
PRESSURE PRINCIPLE
BACKFLOW PREVENTER**



**HERSEY MODEL NO. 2
DOUBLE CHECK
VALVE ASSEMBLY**

GENERAL INFORMATION

Beeco® Model 6CM Reduced Pressure Principle Backflow Preventers and Hersey No. 2 Double Check Valve Assemblies are designed and manufactured to give long, troublefree service in safeguarding public and private water systems from pollution or contamination caused by cross-connections. However, to insure proper operation, each device should be tested at least annually (or as prescribed by authorities having jurisdiction), and after each repair operation.

Rubber parts, which include valve discs, relief valve diaphragms and small o-rings should be replaced at least every five years or as prescribed by authorities having jurisdiction (see replacement valve kits).

Special test kits and repair tools are required to repair and test these devices. Model 6CM and No. 2 repair tools and test kits are listed in this manual.

If service by the manufacturer is preferred, factory-trained field service engineers are available. Contact Hersey Total Service at (214) 423-7359 for details.

PARTS ORDERING INSTRUCTIONS

Please state name of part, part number and quantity required. If applicable, also state model, size and serial number of device for which parts are intended.

PARTS LISTS ACCURACY

Each entry has been checked for accuracy. However, should any question arise regarding the proper description, part number, quantity or list price of any item or items listed in this parts catalog, Hersey Products Inc. reserves the right to determine the applicable description, part number, quantity or list price.

HERSEY LIMITED WARRANTY

Hersey Products ("Hersey") warrants for a period of one year from the date of sale (warranty period) that the product(s) sold hereunder are free from defects in material and workmanship. Our obligation under this warranty is limited to repair or replacement, or, at our option, we will repay the price paid for the product(s), plus any transportation charge paid by the purchaser. In the case of replacement, we will pay the transportation charges to the location of the defective product. We must be given the opportunity to inspect any product you believe to be defective. To make a claim under this limited warranty, contact Hersey Customer Service.

THERE ARE NO OTHER WRITTEN OR ORAL WARRANTIES. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE DURATION OF THE LIMITED WARRANTY SET FORTH ABOVE.

Hersey does not assume any other obligation in connection with the sale of the product(s) by purchaser.

This warranty shall not apply to any product(s) which have been installed in violation of written instructions furnished by the manufacturer, repaired or altered, misused or damaged, or not properly maintained.

UNDER NO CIRCUMSTANCES WILL HERSEY BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF THE PRODUCT(S).

TABLE OF CONTENTS

	Page
Description, Operation and Installation - Model 6CM Reduced Pressure Principle Backflow Preventer	2
Description, Operation and Installation - Hersey No. 2 Double Check Valve Assembly	5
Repair Procedures - Model 6CM Reduced Pressure Principle Backflow Preventer and Hersey No. 2 Double Check Valve Assembly	7
2½"-6" Main and Check Valve Assemblies (Models 6CM and Hersey No. 2)	8
2½"-6" Relief Valve Assembly and Housing Assembly (Model 6CM)	10
Main and Check Valve Assemblies (8" & 10" Model 6CM and Hersey No. 2)	11
Relief Valve Assembly (8" & 10" Model 6CM)	12
Main and Check Valve Parts (2½"-6" Model 6CM)	13
Main and Check Valve Parts (8" & 10" 6CM)	14
Relief Valve Parts (2½"-6" Model 6CM)	15
Relief Valve Parts (8" & 10" Model 6CM)	16
Fittings (Model 6CM)	17
Spring Removal Tools (Model 6CM)	17
Seat Removal Tools (Model 6CM)	17
Rubber Parts Kits (Model 6CM)	18
Bodies (Model 6CM)	18
Check Valve Parts (Hersey No. 2)	19
Rubber Parts Kit (Hersey No. 2)	20
Fittings (Hersey No. 2)	20
Bodies (Hersey No. 2)	20
Test Procedure (Model 6CM)	21
Test Procedure (Hersey No. 2)	25
Packaging and Installation of Test Cocks and Test Cock Fittings	25

DESCRIPTION, OPERATION AND INSTALLATION INSTRUCTIONS MODEL 6CM REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS

DESCRIPTION (see Fig. 1)

The BEECO Reduced Pressure Principle Backflow Preventer operates on the principle that water will not flow from a zone of lower pressure to one of higher pressure. It provides protection against backflow caused by both backpressure and backsiphonage.

The device consists of two spring-load check valves (A and B) and a spring-loaded, diaphragm-actuated differential pressure relief valve (C) located in the zone between the check valves.

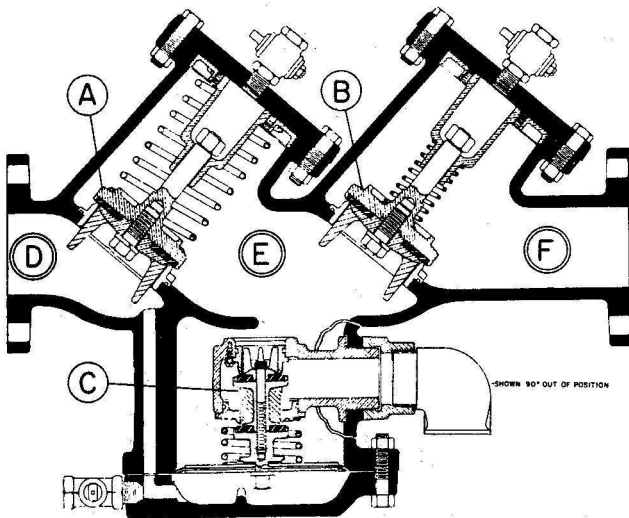


FIGURE 1

NORMAL OPERATION

The first check valve (A) causes all water passing through it to be automatically reduced in pressure by approximately 8 psi.

The second check valve (B) is lightly spring-loaded and forms the "double check" feature of the device. It acts to prevent unnecessary drainage of the domestic system in case a backflow condition occurs.

The relief valve (C) is spring-loaded to remain open, and diaphragm actuated to close by means of differential pressure.

To illustrate the operation, assume water, having a supply pressure of 60 psi, is flowing in a normal direction through the device. If all valves beyond area F are closed, creating a static condition, the water pressure in area D will be 60 psi and water pressure between the check valves (E) will be 52 psi.

The inlet pressure of 60 psi is transmitted through a cored passageway to the underside of the diaphragm of the relief valve (C). This valve is spring-loaded to remain in an open position until the differential pressure amounts to approximately 4 psi across the relief valve.

During normal operation, therefore, the 8 psi differential pressure produced by the first check valve (A) exceeds the spring-loading of the relief valve (C) and caused the relief valve (C) to remain closed.

BACKFLOW

There are two conditions that tend to produce backflow:

Backsiphonage — where the pressure in the drinking water system becomes less than atmospheric due to a vacuum or partial vacuum in that system.

Backpressure — where the pressure in the non-potable system exceeds that in the drinking water system.

BACKSIPHONAGE

As the supply pressure drops in area D, it also drops in the area below the diaphragm of the relief valve (C). When the pressure differential across the diaphragm decreases to approximately 4 psi, the relief valve (C) will start to open. This happens because the spring above the diaphragm of the relief valve (C), which is trying to force the valve open, is designed to compress with a differential pressure of 8 psi. When that differential is decreased to 4 psi, the spring will extend and cause the relief valve (C) to start to open.

This spring-loaded relief valve is designed to eliminate intermittent discharges and "spitting" with normal minor fluctuations in the line pressure.

As the supply pressure continues to drop, the relief valve (C) automatically continues to drop, the relief valve (C) automatically continues to drain and, regardless of the pressure on the supply side, approximately 4 psi less pressure will be maintained between the check valves (zone E). This will cause continual drainage which will be readily visible at the drain outlet.

BACKPRESSURE

Assume that pressure at the discharge side (F) increases to 80 psi, while the supply pressure (D) remains at 60 psi:

1. *If the second check valve (B) does not leak*, water under higher pressure in area F will not enter the area between the check valves (zone E), and the pressure in this zone will remain at 52 psi. Under these conditions, the relief valve (C) will remain closed since the 8 psi differential pressure is still being maintained between the supply pressure (area D) and the area of reduced pressure between the check valves (zone E).

2. *If the second check valve (B) does leak*, water under high pressure (area F) will flow into zone E. If the pressure in this zone increases to approximately 56 psi — still 4 psi lower than the supply pressure (area D) — the relief valve will start to open and discharge this reversely flowing water to atmosphere, maintaining the pressure in zone E approximately 4 psi lower than supply pressure. The relief valve will automatically continue to drain as long as this backflow condition exists and as long as the second check valve (B) is leaking.

If for any reason the first check valve (A) should leak during a shutoff beyond area F, the water under higher pressure in area D will leak into zone E. This will cause the relief valve to open as previously described and, again, provide visual indication at the drain outlet.

In the unlikely event that the relief valve diaphragm should rupture, an unbalanced condition between area D and zone E will occur, and the relief valve will immediately discharge to atmosphere.

INSTALLATION — GENERAL COMMENTS

A. WARM CLIMATE ABOVE GROUND INSTALLATION (Fig. 2)

Reduced pressure backflow preventers should be installed only where there is adequate drainage. At no time should they be placed where any part of the unit could be submerged in standing water.

The most satisfactory installation is above ground. This type of installation is recommended wherever practical. Support should be provided for the larger sizes (3" and up). A concrete slab under the unit is sometimes desirable.

Normally, any discharge from the relief valve is spilled onto the ground through the drain outlet. Drainage may be piped away from the location, in which case an air gap should be used between the relief valve outlet and the drain line.

B. COLD CLIMATE INDOOR INSTALLATION (Fig. 3)

In climates where freezing conditions are likely or where it is impractical to install the backflow preventer above ground, the installation should be made in an easily accessible location inside a building.

The unit should be placed above the floor at a distance great enough to allow clearance for repair work. If the backflow preventer is positioned against a wall, care should be taken to be sure that the four test cocks are easily accessible. Proper drainage should be provided for the relief valve. An air gap should be used between the relief valve outlet and the drain line if drainage is to be piped away.

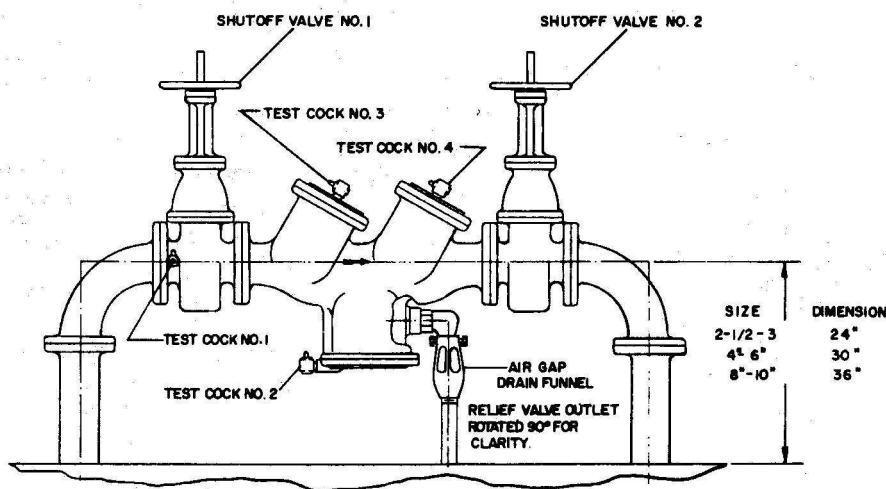


FIGURE 2
ABOVE GROUND INSTALLATION

In remote locations or where installation cannot be made in a heated buildings, a separate insulated structure should be build around the backflow preventer and adjacent piping. In extremely cold areas, some form of heat should be provided within the structure. Strip heaters or light bulbs may be sufficient for this purpose.

Recommended Drainline Size
2 1/2" - 6" : 2"
8", 10" : 4"

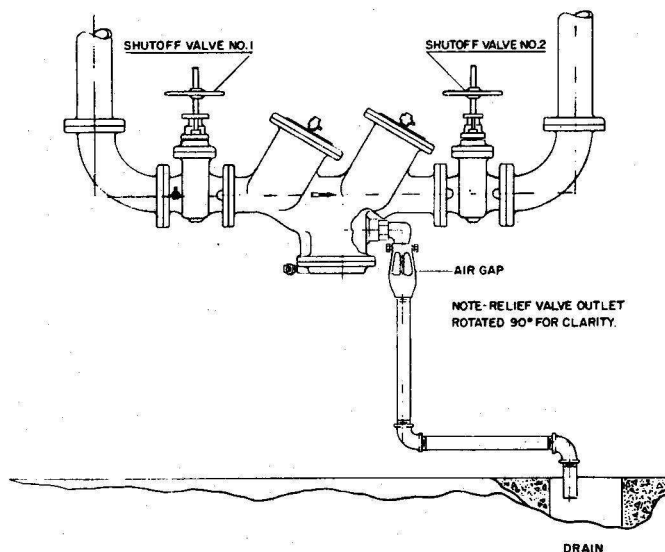


FIGURE 3
INDOOR INSTALLATION

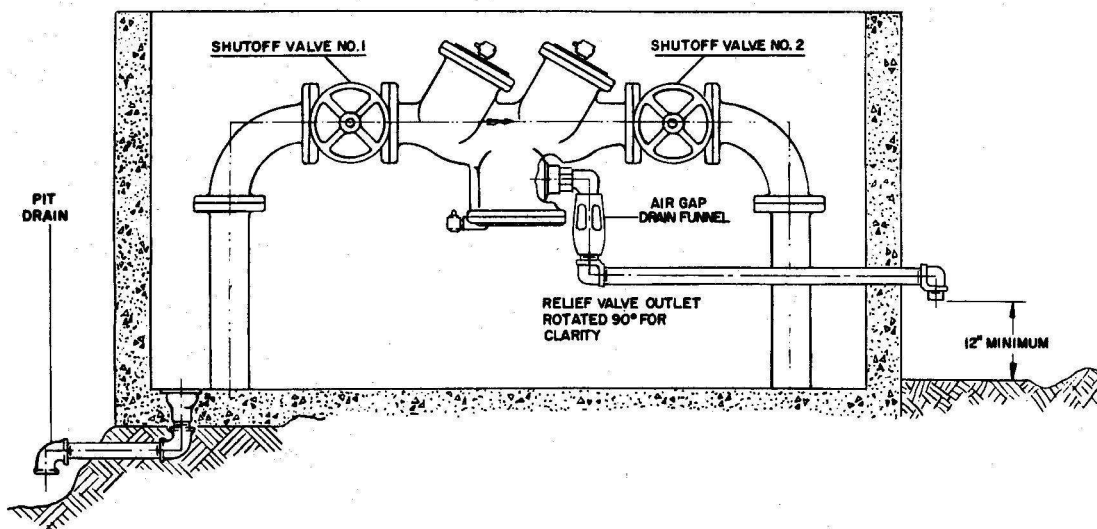


FIGURE 4
MODIFIED PIT INSTALLATION

C. MODIFIED PIT INSTALLATION (Fig. 4)

Unless absolutely necessary, it is strongly recommended that backflow preventer *not* be placed in pits. In the event installation must be made in a pit, the modified pit type installation (Fig. 4) is preferable. The relief valve drain should be piped to the outside of the vault and discharged no less than 12" above the grade line; and should not be higher than the Relief Valve Outlet at any point.

INSTALLATION — SPECIFIC PROCEDURES

- A) Before installing the device, pipelines should be thoroughly flushed to remove foreign matter.
- B) Install the device in a horizontal position in an accessible location to facilitate maintenance. In particular, provide for access to test cocks. Arrow on case must point in direction of flow.
- C) Sufficient clearance must be provided beneath the device to permit removal of the relief valve and housing assemblies. Recommended pipe center line - floor (or ground) dimensions are shown on Figure 2.
- D) In no case should the relief valve discharge be solidly piped into a sump, sewer, drainage ditch, etc. An air gap must be provided between the relief valve opening and the discharge pipe (see Figure 3).
- E) If not already provided with the device, shutoff valves should be installed at each end of the device, so that it can be tested and maintained. The inlet shut off valve must be provided with a test cock for test purposes on its inlet side.
- F) Three testcocks are provided for each device plus one for the inlet gate valve (if device is provided with gate valves). *These must be installed before the device can be placed in operation.* Further information is provided on page 25 on packaging and installation of testcocks and testcock fittings.
- G) This device should be tested upon installation to insure proper operation and then inspected periodically for continual discharge from the

relief valve, which indicates a need for maintenance. After installation, with flow through the device, continual discharge from the relief valve opening usually indicates that there is a foreign material holding the relief valve open. To remove foreign material, flush relief valve as follows:

- 1) Close inlet shutoff valve.
- 2) Open test cock No. 2. Relief valve should fully open and discharge.
- 3) Close test cock No. 2.
- 4) Open inlet shutoff valve.

If relief valve continues to leak, repeat procedure. If flushing does not stop discharge with flow through the device, close shutoff valves. Remove and clean the relief valve discs and seats.

- H) After installation, with no flow through device (inlet shutoff valve open, outlet shutoff valve closed) continual discharge from the relief valve indicates a leaking first check valve, probably caused by foreign material under the seat. If flushing (substantial flow through the device) will not clear the device, close shutoff valves. Remove and clean the relief valve discs and seats.
- I) Occasional "spitting" or momentary discharge from the relief valve can be expected, if line pressure drops approximately 4 psi, due to operation of flushometers, quick opening valves, or similar devices and valves.

DESCRIPTION, OPERATION AND INSTALLATION. HERSEY NO. 2 DOUBLE CHECK VALVE ASSEMBLY

I. DESCRIPTION AND OPERATION

A. DESCRIPTION

The Hersey No. 2 Double Check Valve Assembly consists of two independent spring-loaded poppet-type check valve assemblies, mounted in series in a common body. Two gate valves and four test cocks for field testing complete the assembly. For ease of repair, the valve assemblies are removable from the top of the device, making possible in-line maintenance without removing the device from its setting. The valves have screwed, replaceable seats, which are sealed by a face o-ring.

B. OPERATION

Under normal operating conditions, the check valves remain closed until there is a demand for water. Each of the two check valves is designed to open at a one psi pressure differential in the direction of flow. In the event pressure increases downstream of the device, tending to reverse the direction of flow, both check valves are closed to prevent backflow. If the second check valve is prevented from closing tightly, the first check valve will still provide protection from a backflow condition.

II INSTALLATION - GENERAL COMMENTS

A. WARM CLIMATE ABOVE GROUND INSTALLATION (Fig. 5)

Double Check Valve Assemblies should be installed only where there is adequate drainage. At no time should they be installed where any part of the unit could be submerged in standing water.

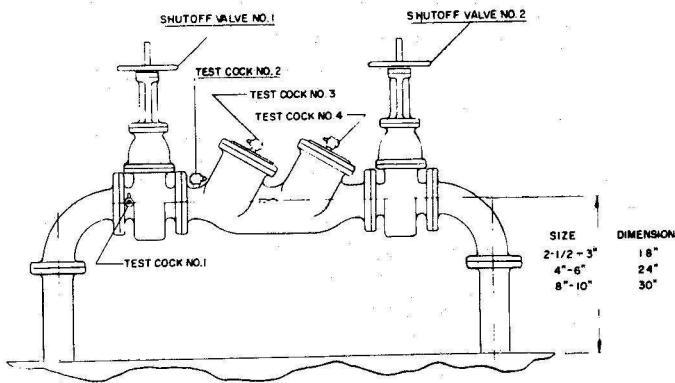


FIGURE 5
ABOVE GROUND INSTALLATION

The most satisfactory installation is above ground. This type of installation is recommended wherever practical. Support should be provided for the larger sizes (3" and up). A concrete slab under the unit is sometimes desirable.

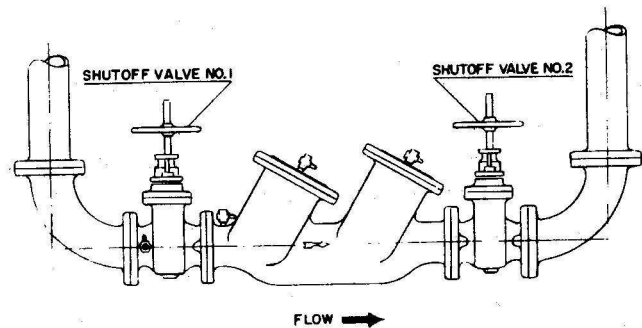


FIGURE 6
INDOOR INSTALLATION

B. COLD CLIMATE INSTALLATIONS (Fig. 6)

In climates where freezing conditions are likely or where it is impractical to install the backflow preventer above ground, the installation should be made in an easily accessible location inside a building.

In remote locations or where installation cannot be made inside a heated building, a separate insulated structure should be built around the backflow preventer and adjacent piping. In extremely cold areas, some form of heat should be provided within the structure. Strip heaters or light bulbs may be sufficient for this purpose.

C. MODIFIED PIT INSTALLATION (Fig. 7)

Installation of double check backflow preventers in pits below grade is not recommended. Should the pit be located on a slope, so that a drain can be installed which discharges by gravity to at least 12" above grade, the "modified" pit installation may be used (Fig. 7).

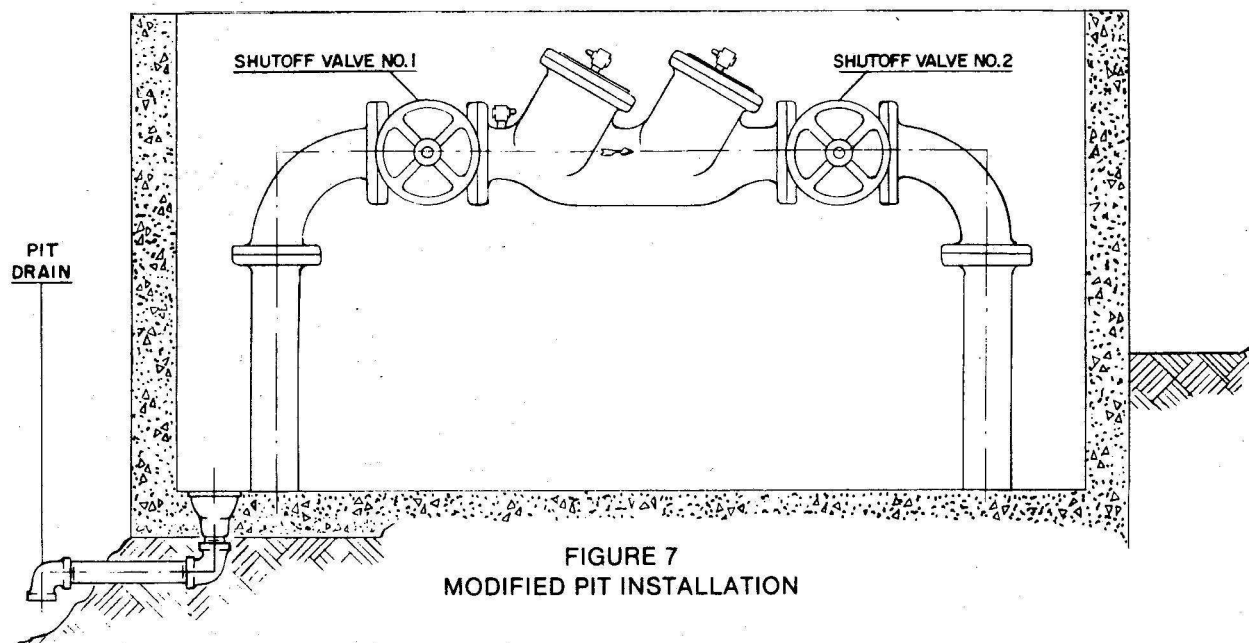


FIGURE 7
MODIFIED PIT INSTALLATION

III. INSTALLATION — SPECIFIC PROCEDURES

- A. BEFORE INSTALLING THE DEVICE, PIPELINES SHOULD BE THOROUGHLY FLUSHED TO REMOVE FOREIGN MATTER.
- B. Install the device in a horizontal position in an accessible location. In particular, provide for access to testcocks. Arrow on cases must point in direction of flow.
- C. If not already provided with the device, shutoff valves should be installed at each end of the device so that it can be tested and maintained. The inlet shutoff valve must be provided with a testcock for test purposes on its inlet side.
- D.
 1. If the four testcocks (three on the device and one on the inlet shutoff valve) are not already installed, remove testcocks and nipples from bag attached to the device. *
 2. Remove plastic protective caps from the four testcock openings.
 3. Install testcock nipples and testcocks, using commercially-available pipe sealant. If pipe compound is used, exercise care to avoid introducing the compound into the device as it may cause a malfunction.
 4. Inspect testcocks to be sure they are closed (operating boss at top of testcock should be at right angles to opening).

*See notes, p. 25.

REPAIR PROCEDURES

I INTRODUCTION

- A. General Comments

Usually, it is possible to determine which internal subassemblies require maintenance by observing or testing the backflow preventer. Complete subassemblies, where time is limited, may be installed.
- B. Rubber Parts

Rubber wearing parts should be replaced every five years, or sooner if necessary. These include the two check valve discs, relief valve discs and relief valve diaphragm. Rubber parts kits which include these parts and all necessary gaskets and o-rings are listed in this manual.
- C. Springs

Springs rarely require replacement. However, it is advisable to inspect springs for corrosion, pitting or breakage.
- D. Valve Seats

Check Valve and relief valve seats should be smooth and clean. The rubber valve discs will seal properly on seats with minor imperfections. If seats are worn considerably, pitted or corroded, they should be replaced.
- E. Other Working Parts

Inspect disc holders, spacers and valve guides for evidence of excessive wear or corrosion. Replace worn or corroded parts.

REPAIR PROCEDURES

II. MAIN AND CHECK VALVES

A. MAIN OR CHECK VALVE ASSEMBLIES, DISCS, SEATS, & O-RINGS.

2 1/2", 3", 4", & 6" MODEL 6C-M & HERSEY NO. 2

1. Close inlet and outlet shutoff valves.
2. Open testcocks 2, 3, & 4 to release pressure.
3. Remove main valve cover bolts and nuts (the 2 1/2" bronze 6C-M has hex cap screws only).
4. Remove the main valve cover and gasket.
5. Insert the proper eyebolts into the threaded holes on the top of the spring retainer, and lift the entire main valve assembly out of the body.
6. a) Remove the eye bolts and place the assembly so it rests on a flat surface with its guide fingers pointing up, to permit cleaning of the disc.
b) Remove the hex cap screw and guide to release the main valve disc, if it is to be replaced.
7. Replace the guide and tighten the hex cap screw. Replace the eyebolts in the spring retainer. Place the assembly aside.
8. Remove the main valve seat, unscrewing it counter-clockwise with the 6C-M seat removal tool (Be careful not to damage the seat face when seating the tool).
9. Replace the seat and the seat o-ring, if required. (Lubricate o-ring with vaseline to hold it in place).
10. Tighten the seat (again being careful not to damage the seat face), until resistance is felt.
11. Carefully lower the main valve assembly into the body (being careful the the guide fingers do not damage the seat face).
12. Remove the eyebolts from the spring retainer; replace the cover gasket and cover.
13. Tighten the cover bolts and nuts and repeat steps 3 thru 13 for the check valve assembly.
14. Close testcocks.
15. Open inlet and outlet valves.

B. MAIN OR CHECK VALVE SPRING, SPRING RETAINER AND DISC HOLDER 2 1/2", 3", 4" & 6" MODEL 6C-M & HERSEY NO. 2

NOTE: This operation should not be performed unless replacement of one of the above parts is required. The spring exerts a strong force against the spring retainer and caution is advised when this operation is done.

1. Close inlet and outlet shutoff valves.
2. Open testcock 2, 3, & 4 to release pressure.
3. Remove main valve cover bolts and nuts (The 2 1/2" bronze 6C-M has hex cap screws only).
4. Remove the main valve cover and gasket. Leave the check valve assembly in the body.
5. a) Attach the two threaded rods of the spring removal tool to the main valve flange with the nuts and washers provided.
NOTE: The 2 1/2" bronze 6C-M has threaded holes on the main valve flange. The rods must be screwed in the flange of this type of unit.
b) Fully tighten the nuts on the top and bottom of the main valve flange.
6. Slide the spring removal plate down on the rods to rest on the nuts, and securely tighten the nuts and washers on the top of the plate.
7. Remove the spring retainer nut.
8. Gradually loosen the top rod nuts to allow the spring to relax. Caution! *Check rods to make sure they are not turning. Retighten flange nuts if necessary.*
9. When the spring is fully relaxed, remove the plate. The spring, spring retainer or the disc holder can now be replaced.
10. To reassemble, reverse steps 1 thru 9.
11. Repeat procedure for check valve.

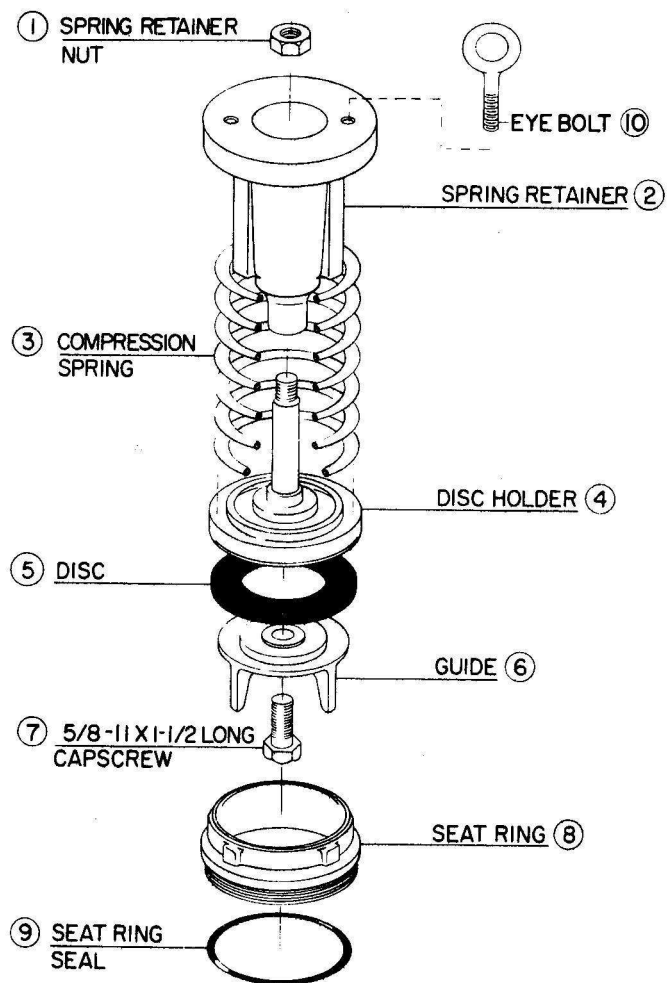


FIGURE 8
MAIN VALVE ASSEMBLY
2½"-6" MODEL 6CM

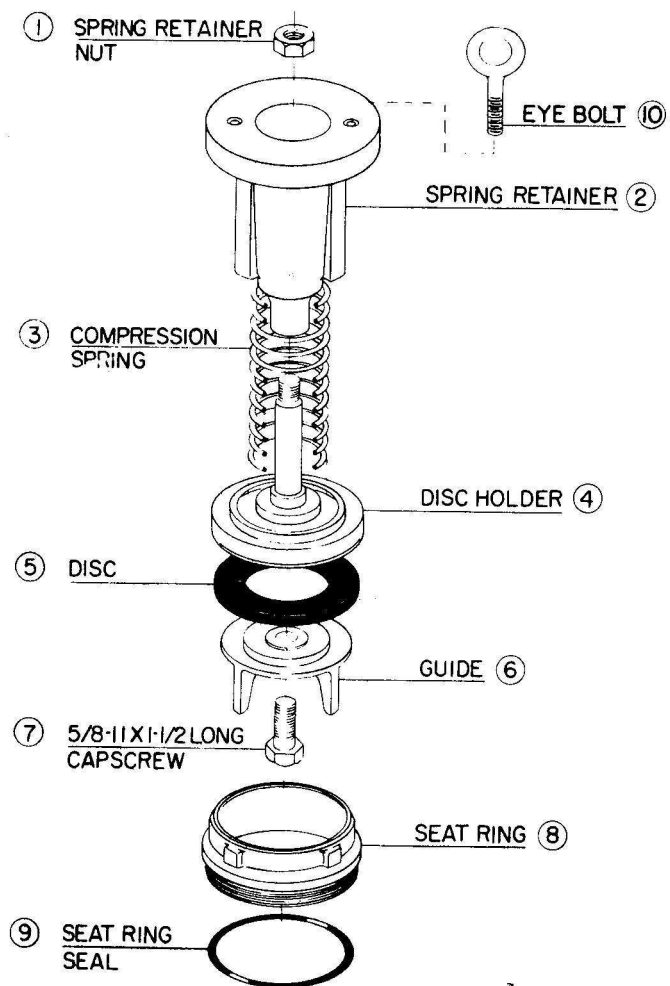


FIGURE 9
CHECK VALVE ASSEMBLY
2½"-6" MODEL 6CM

III RELIEF VALVE ASSEMBLY AND HOUSING ASSEMBLY

2 1/2", 3", 4" & 6" MODEL 6C-M

1. Close inlet and outlet shutoff valves.
2. Open testcocks 2, 3 and 4 to relieve pressure.
3. Remove all but two relief valve cover bolts and nut, loosen these.

Note: If cover adheres to body, strike cover at junction of body and cover to break it free. Should diaphragm adhere to body or cover separate it by running knife around flange between diaphragm and body of cover. At this point, relief valve assembly should drop on cover.

4. Support cover and remove remaining bolts to release cover and valve assembly from body.

Note: If relief valve did not drop on cover, remove cover. Grasp diaphragm on opposite sides and slowly pull down (adhesion of lower seat o-ring to relief valve housing may cause valve to remain in position).

5. To disassemble relief valve:

- a) Place the assembly on a flat surface, with the guide fingers pointing down.
- b) Press down on lower diaphragm plate to maintain spring in compression. At the same time, loosen the clamp nut (to facilitate this operation, it may be desirable to have one person hold the spring in compression and a second remove the nut). Release pressure on diaphragm plate. Plate should rise against nut. If it does not, tap upper diaphragm plate to release adhesion of diaphragm plate gasket. Press down on diaphragm plate and remove clamp nut.
- c) Slowly release pressure on the diaphragm plate until spring extends fully. Remove diaphragm plates, diaphragm, spring and diaphragm plate gasket from balance of assembly.
- d) Remove assembly screw and separate upper seat guide, upper disc, upper stem, lower disc, lower stem and lower seat. Discs and other parts may now be cleaned or replaced.

Note: Rubber discs may tend to stick to stems after assembly screw is removed.

6. To reassemble relief valve:

- a) Place discs on lower and upper stems, and assemble lower seat to upper stem, and upper stem to lower stem (projection on stem goes into hole in disc). Place guide on upper stem (projection on guide goes into hole on disc). Replace assembly screw.
- b) Rest assembly on flat surface, guide fingers pointing down. Place diaphragm plate gasket and spring on lower stem.
- c) Place diaphragm between diaphragm plates and rest upper plate on spring.
- d) Press on lower diaphragm plate until threaded end of lower stem appears in hole on plate. Replace lockwasher and clamp nut, and release plate.

Note: Apply vaseline to lower seat o-ring (seal) before assembling to seat. If original o-ring is left in place, apply vaseline to it.

7. To disassemble RV housing assembly, first unscrew housing nut (do not apply pressure to elbow). Then remove the assembly by sliding it in and down, out of the body. The RV housing gasket which fits over the two locating pins on the housing flange can now be replaced.
8. Remove the three screws and lock washers that hold the upper seat in the housing. The o-ring (upper seat seal) or the seat itself can now be replaced. Note: Apply vaseline to o-ring before assembling to seat.
9. To reassemble:
 - a) Press upper seat into place and fasten screws.
 - b) Place housing in body, being careful to align pins with holes on body. Attach housing nut. Be sure elbow points down. Reattach drain funnel assembly if device is so equipped.
10. Rotate relief valve so that hole in diaphragm for internal passageway in body aligns with body opening. Lift RV assembly up into body, inserting upper seat guide fingers into upper seat opening. Note: Avoid contact of guide fingers with upper seat.
Hold relief valve in position, and assemble RV cover and cover bolts to body.
11. Close testcocks 2, 3, and 4 and open shut off valves.

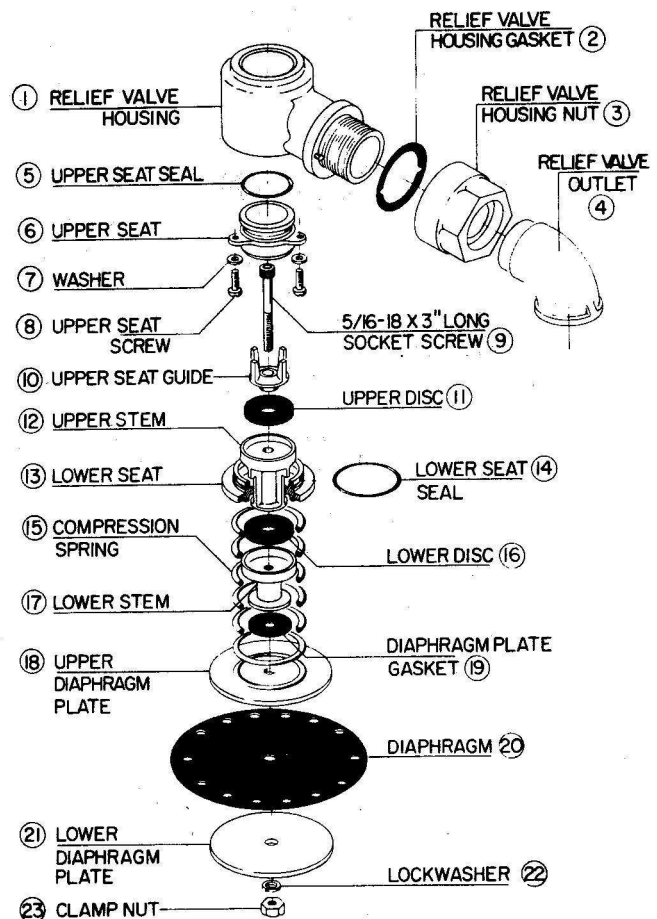
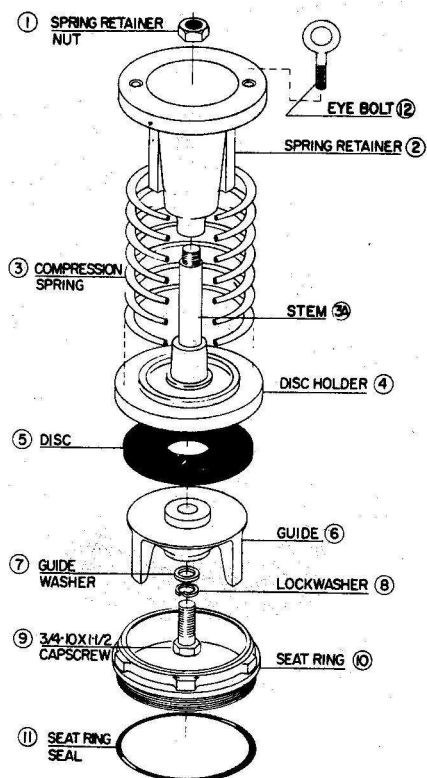


FIGURE 10
RELIEF VALVE ASSEMBLY
AND HOUSING ASSEMBLY
2 1/2"-6" MODEL 6CM

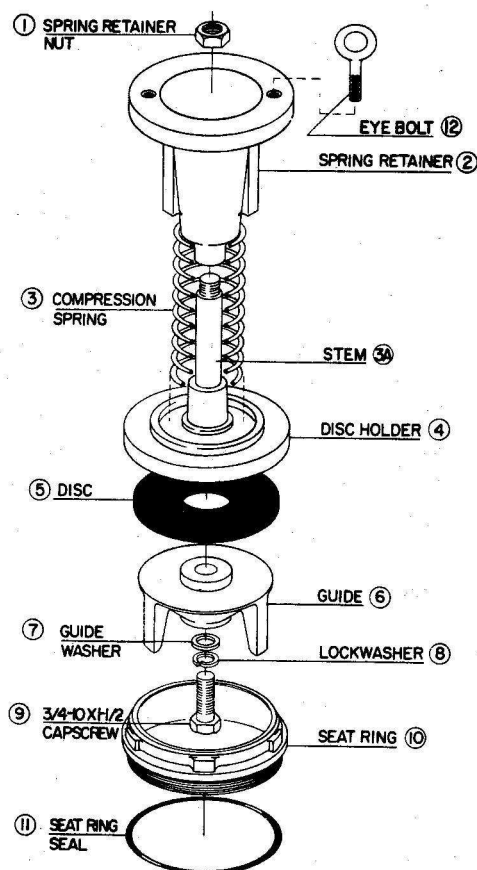
IV MAIN AND CHECK VALVE ASSEMBLIES AND SEATS 8" & 10" MODEL 6CM & HERSEY NO. 2

1. Close inlet and outlet shutoff valves.
2. Open testcocks 2, 3 and 4 to relieve pressure.
3. Remove valve cover bolts and nuts.
4. Remove valve cover and gasket, using eyebolt provided.
5. Insert eyebolts (see parts list, page 14) into the threaded holes on the top of the spring retainer, and lift the entire valve assembly out of the body (at this point, the valve seat may be replaced if necessary).
6. a) Remove the eyebolts and place the assembly so that it rests on a flat surface with its guide fingers pointing up, to permit cleaning of the disc.
b) Remove the hex cap screw and guide. The disc can now be replaced, if necessary.
7. Reassemble the guide to the disc holder.
8. To remove and replace spring, follow procedure below:
a) Place valve assembly back in body of device.
b) Attach the two threaded rods of the spring removal tool to the valve flange with the nuts and washers provided, and tighten the nuts fully.



**FIGURE 11
MAIN VALVE ASSEMBLY
8" & 10" MODEL 6CM**

- c) Slide the spring removal plate down on the rods to rest on the hex nuts, and tighten the top nuts and washers against the plate.
- d) Remove the spring retainer nut from the valve assembly.
- e) Gradually loosen top rod nuts to allow spring to relax (use extreme caution until the spring is fully relaxed).
- f) Remove the tool plate, spring retainer and spring.
- g) Place new spring on disc holder. Place spring retainer on spring.
- h) Reassemble tool plate, nuts and washers to threaded rods.
- i) Tighten nuts until spring is compressed sufficiently to permit replacement of spring retainer nut.
- j) Loosen tool plate nuts and remove tool.
- k) Replace gasket and cover; close testcocks 2, 3, 4; and open shutoff valves.



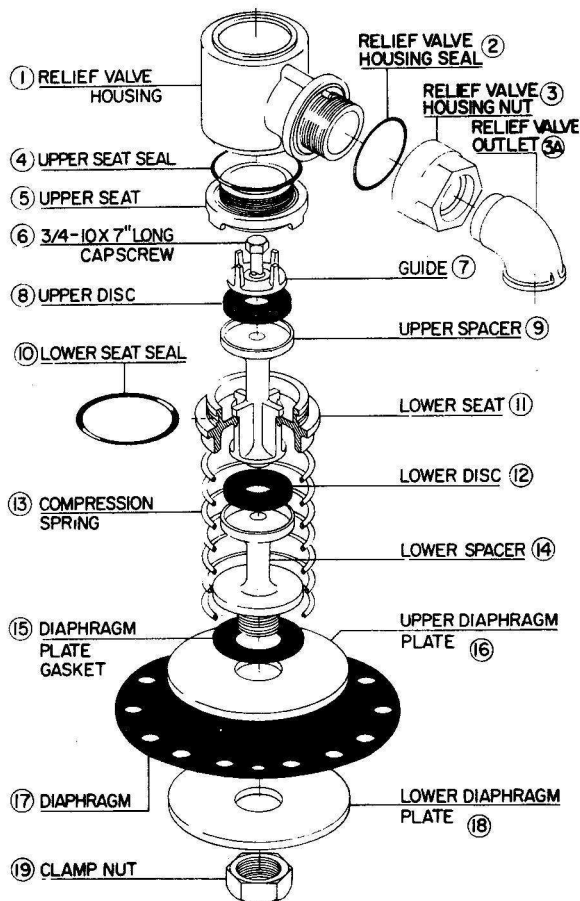
**FIGURE 12
CHECK VALVE ASSEMBLY
8" & 10" MODEL 6CM**

V RELIEF VALVE ASSEMBLY AND HOUSING ASSEMBLY 8" AND 10" MODEL 6C-M

Relief valve assembly and housing assembly, 8" and 10" Model 6CM.

1. Close inlet and outlet shutoff valves.
2. Open testcocks 2, 3 and 4 to relieve pressure.
3. Remove all but two relief valve cover bolts and nuts, loosen these.
Note: If cover adheres to body, strike cover at junction of body and cover to break it free. Should diaphragm adhere to body or cover separate it by running knife around flange between diaphragm and body or cover. At this point, relief valve assembly should drop on cover.
4. Support cover and remove remaining bolts to release cover and valve assembly from body.
Note: If relief valve did not drop on cover, remove cover. Grasp diaphragm on opposite sides and slowly pull down (adhesion of lower seat o-ring to relief valve housing may cause valve to remain in position).
5. To disassemble relief valve:
 - a) Place assembly in an arbor press with the guide facing up.
Caution: Do not attempt to disassemble by compressing spring by hand. Substantial spring force could cause injury if spring compression is released suddenly.
 - b) Press on *lower seat*, compressing spring slightly to release tension on assembly screw.
 - c) Holding spring in compression, remove assembly screw.
 - d) Slowly release pressure until spring is fully extended. Remove guide, upper spacer, lower seat, discs and spring from the balance of the assembly. The discs and lower seat seal (o-ring) may now be replaced. (lubricate o-ring).
 - e) If diaphragm is to be replaced, remove clamp nut from lower spacer. Separate lower spacer, diaphragm plate gasket, diaphragm and diaphragm plates. If diaphragm or gasket sticks to other parts, insert knife between them to separate.
6. To reassemble relief valve:
 - a) Reassemble lower spacer, diaphragm, diaphragm plates, diaphragm plate gasket and nut as illustrated.
 - b) Place these parts in arbor press, lower spacer facing up.
 - c) Place lower disc on lower spacer.
 - d) Place spring and lower seat on upper diaphragm plate.
 - e) Insert upper spacer into lower seat, and rest seat on spring.
 - f) Place upper disc on upper spacer, and guide on upper disc (base of guide fits into hole in disc). Insert assembly screw in guide.
 - g) Apply pressure to lower seat until spring is sufficiently compressed to permit engagement of assembly screw threads. Tighten screw in place after checking that upper spacer is properly seated in hole in lower disc. Release pressure on spring.

7. To disassemble relief valve housing assembly:
 - a) Unscrew housing nut (do not apply wrench to elbow), and slide housing in and down, out of the body.
 - b) Unscrew upper seat from housing, if replacement of seat o-ring is indicated.
8. To reassemble relief valve housing assembly:
 - a) Apply vaseline to new or existing housing o-ring and place it on housing.
 - b) If seat was removed, also apply vaseline to o-ring prior to reassembly of seat.
 - c) Slide housing through hole in body, carefully aligning locating pins with holes in body. Replace nut and elbow. Be sure elbow faces downward. Reattach drain funnel assembly if device is so equipped.
9. Rotate relief valve so that hole in diaphragm for internal passageway in body aligns with body opening. Lift RV assembly up into body, inserting upper seat guide fingers into upper seat opening. Note: Avoid contact of guide fingers with upper seat.
10. Hold relief valve in position, and assemble RV cover and cover bolts to body.
11. Close testcocks, 2, 3, and 4 and open shut off valves.



MODEL 6CM MAIN & CHECK VALVE PARTS

2½" - 6" 6CM MAIN AND CHECK VALVE PARTS

If more than one part is required per valve assembly, quantity is indicated in parentheses after part number.

C.I.: Cast Iron Case

BRZ: Bronze Case

C.W.: Cold Water

H.W.: Hot Water

All 3"-6" parts are interchangeable between cold water and hot water models, and between iron case and bronze case models, except as noted. All 2½" parts are for cold or hot water bronze case device only.

Illus. No.	Description	2½" Part No.	3" Part No.	4" Part No.	6" Part No.
	MV & CV Cover Bolt (Brz.)	90114(8)	90129(8)	90129(14)	90135(16)
	MV & CV Cover Bolt (C.I.)	90117(2)	90129(8)	90168(14)	90292(16)
	MV & CV Cover Bolt (C.I.)	90124(6)			
	MV & CV Cover Nut (C.I.)	90112(6)	90151(8)	90151(14)	90251(16)
	MV & CV Cover (C.I.)	63527	63302	63402	63602
	MV & CV Cover (Brz.)	63502	63327	63427	63627
	MV & CV Cover Gasket (Brz.)	63504	63304	63404	63604
	MV & CV Cover Gasket (C.I.)	63552			
1	MV & CV Spring Retainer Nut	90069	90260	90336	90336
2	MV & CV Spring Retainer	63509	63309	63409	63609
3	MV Spring	63507	63307	63407	63607
3	CV Spring	63508	61388	62304	61485
4	MV & CV Disc Holder	62112	61832	61852	61892
5	MV & CV Disc	62331	62334	62335	63605
6	MV & CV Guide	63511	63311	63411	63611
7	MV & CV Guide Cap Screw	90172	90282	90282	90382
8	MV & CV Seat	63506	63306	63406	63606
9	MV & CV O-Ring (C.W.)	98339	98335	98336	98337
9	MV & CV O-Ring (H.W.)	98349	98350	98351	98352
10	Eyebolt	90197	90197	90198	90198
1-7	MV Assembly Complete	63512	63312	63412	63612
1-7	CV Assembly Complete	63513	63313	63413	63613

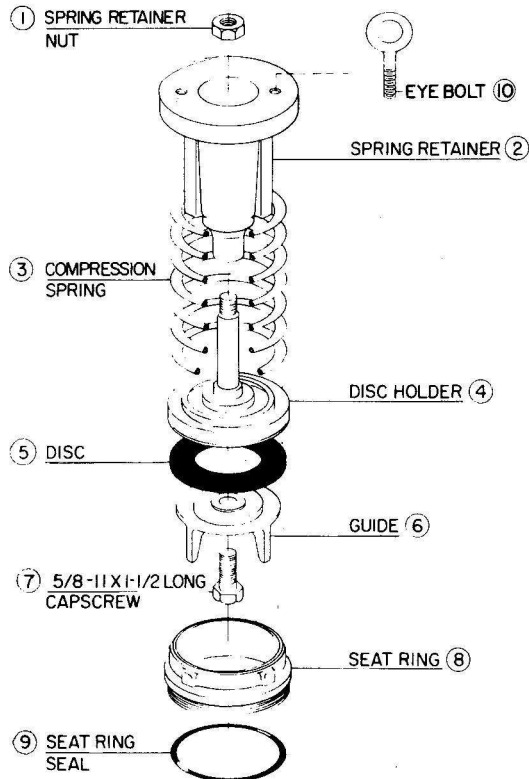


FIGURE 14
MAIN VALVE ASSEMBLY
2½"-6" MODEL 6CM

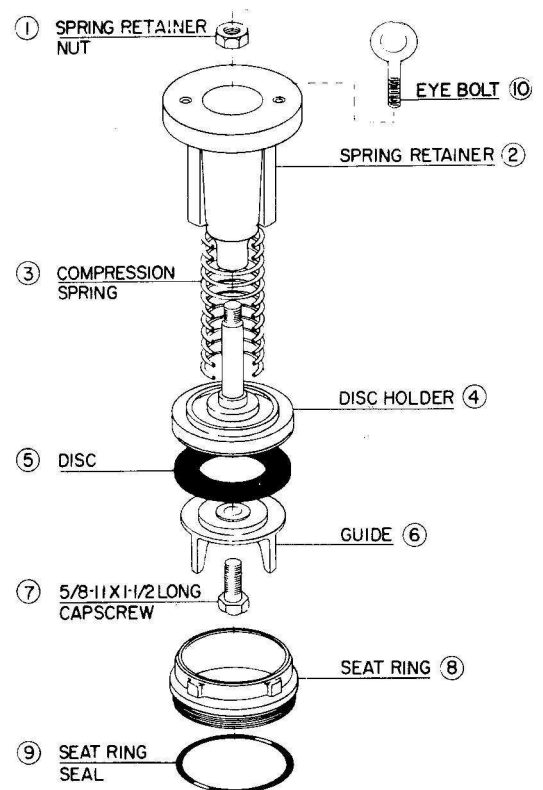


FIGURE 15
CHECK VALVE ASSEMBLY
2½"-6" MODEL 6CM

MODEL 6CM MAIN & CHECK VALVE PARTS

8" & 10" Model 6CM main and check valve parts. If more than one part is required per assembly, quantity is indicated in parentheses after part number.

Size 8"

Size 10"

Illus. No.	Description	Part No.	Illus. No.	Description	Part No.
	MV & CV Cover Bolt	90140(2)		MV & CV Cover Bolt	90360(2)
	MV & CV Cover Nut	90358(14)		MV & CV Cover Nut	90372(16)
	MV & CV Cover Bolt	90141(14)		MV & CV Cover Bolt	90371(16)
	MV & CV Cover	63802		MV & CV Cover	63902
	MV & CV Cover Gasket	63804		MV & CV Cover Gasket	63904
1	MV & CV Spring Retainer Nut	90336	1	MV & CV Spring Retainer Nut	90373
2	MV & CV Spring Retainer	63809	2	MV & CV Spring Retainer	63909
3	MV Spring	63807	3	MV Spring	63907
3	CV Spring	63808	3	CV Spring	63908
3A	MV & CV Stem	63852	3A	MV & CV Stem	62238
4	MV & CV Disc Holder	61275	4	MV & CV Disc Holder	62235
5	MV & CV Disc	63810	5	MV & CV Disc	63910
6	MV & CV Guide	61754	6	MV & CV Guide	62236
7	MV & CV Guide Washer	63820	7	MV & CV Guide Washer	63820
8	MV & CV Lock Washer	90337	8	MV & CV Lock Washer	90337
9	MV & CV Guide Capscrew	90381	9	MV & CV Guide Capscrew	90381
10	MV & CV Seat	63806	10	MV & CV Seat	63906
11	MV & CV O-Ring	98343	11	MV & CV O-Ring	98340
1-11	MV Assembly Complete	63812	1-11	MV Assembly Complete	63912
1-11	CV Assembly Complete	63813	1-11	CV Assembly Complete	63913
12	MV & CV Eye Bolt	90198(2)	12	MV & CV Eye Bolt	90199(2)

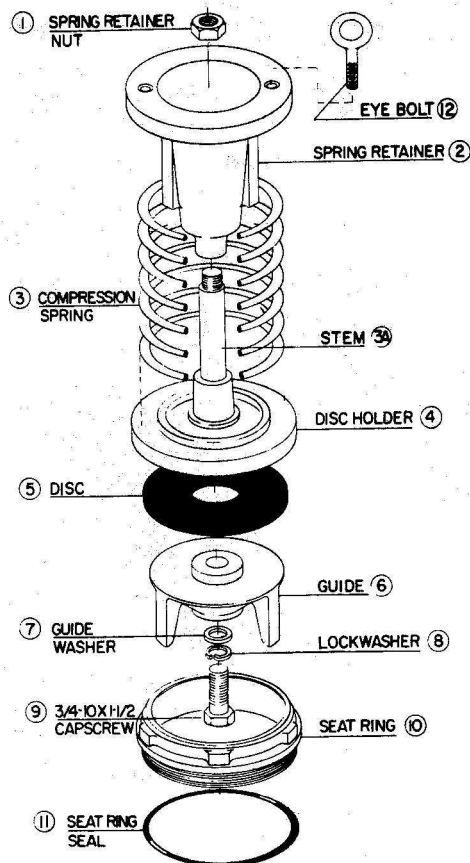


FIGURE 16
MAIN VALVE ASSEMBLY
8" & 10" MODEL 6CM

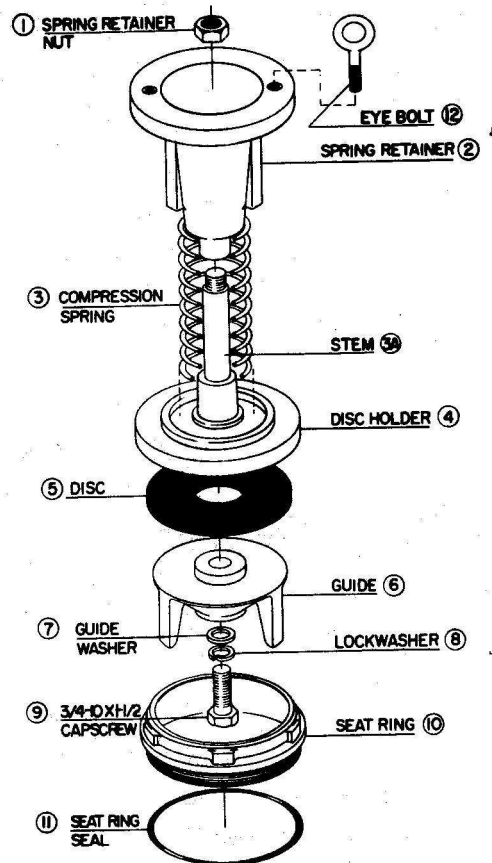


FIGURE 17
CHECK VALVE ASSEMBLY
8" & 10" MODEL 6CM

MODEL 6CM RELIEF VALVE PARTS

2½" - 6" MODEL 6CM RELIEF VALVE AND RELIEF VALVE HOUSING ASSEMBLY

If more than one part is required per assembly, quantity is indicated in parentheses after part number.

C.I.: Cast Iron Case

Brz: Bronze Case

C.W.: Cold Water

H.W.: Hot Water

Relief Valve Parts

Relief Valve Housing Assembly Parts

Illus. No.	Description	Part No.	Illus. No.	Description	Part No.
	RV Cover Nut (C.I.)	90151(12)	1	RV Housing	60645
	RV Cover Nut (Brz.) (3"-6")	90112(16)	2	RV Housing Gasket	60644
	RV Cover Bolt (C.I.)	90168(12)	3	RV Housing Nut	63356
	RV Cover Bolt (2½" Brz.)	90114(16)	4	RV Housing Elbow** *	63357
	RV Cover Bolt (Brz.) (3"-6")	90126(16)	5	RV Seat O-Ring (C.W.)	98318
	RV Cover (C.I.)	63303	5	RV Seat O-Ring (H.W.)	98354
	RV Cover (Brz.)	63503	6	RV Upper Seat	60233
9	RV Assembly Bolt	98145	7	RV Lock Washer	98155(3)
10	RV Upper Seat Guide	60230	8	RV Seat Assembly Screw	98165(3)
11	RV Upper Disc	60237	1-8	RV Housing Assembly Complete (C.W.)	63519
12	RV Upper Stem	60231	1-8	RV Housing Assembly Complete (H.W.)	63349
13	RV Lower Seat	60234		Dowel Pin	62313(2)
14	RV O-Ring (C.W.)	98319		*Also order RV Housing Nut if replacing copper elbow.	
14	RV O-Ring (H.W.)	19110		**Not included in assembly. Order separately.	
15	RV Spring	60236			
16	RV Lower Disc	60237			
17	RV Lower Stem	60232			
18	RV Upper Diaphragm Plate	60235			
19	RV Diaphragm Plate Gasket	60239			
20	RV Diaphragm (C.W.) (C.I.)	63305			
20	RV Diaphragm (H.W.)	63345			
20	RV Diaphragm (C.W., Brz.)	63505			
20	RV Diaphragm (C.I., H.W.)	63346			
21	RV Lower Diaphragm Plate	60235			
22	RV Lock Washer	98137			
23	RV Lower Stem Nut	90159			
9-23	RV Assembly Complete (C.I., C.W.)	63314			
9-23	RV Assembly Complete (C.I., H.W.)	63347			
9-23	RV Assembly Complete (Brz., C.W.)	63514			
9-23	RV Assembly Complete (Brz., H.W.)	63348			

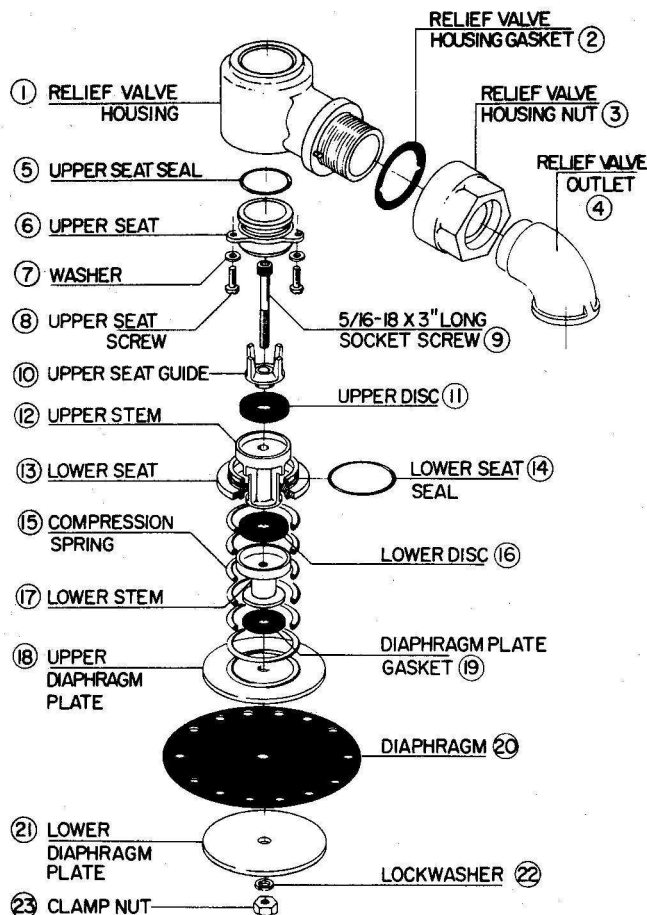


FIGURE 18
RELIEF VALVE ASSEMBLY
AND HOUSING ASSEMBLY
2½"-6" MODEL 6CM

MODEL 6CM RELIEF VALVE PARTS

8" & 10" Model 6CM relief valve and relief valve housing assembly parts. If more than one part is required per assembly, quantity is indicated in parentheses after part numbers.

8" & 10" Relief Valve Parts

8" & 10" Relief Valve Housing Assembly Parts

Illus. No.	Description	Part No.	Illus. No.	Description	Part No.
	RV Cover Nut	90301(12)	1	RV Housing	63830
	RV Cover Bolt	90347(12)	2	RV Upper Seat O-Ring	98339
	RV Cover	63803	3	RV Housing Nut	63856
6	RV Assembly Bolt	90346	3A	RV Elbow*	63857
7	RV Upper Seat Guide	63839	4	RV Housing O-Ring*	98342
8	RV Upper Disc	63835	5	RV Upper Seat	63831
9	RV Upper Spacer	63833	1-3, 5	RV Housing Assembly Complete	63819
10	RV O-Ring	98341		Dorvel Pin	61873(2)
11	RV Lower Seat	63832		*Not included in RV Assembly. Order separately.	
12	RV Lower Disc	63835			
13	RV Spring	61503			
14	RV Lower Spacer	63834			
15	RV Diaphragm Plate Gasket	63837			
16	RV Upper Diaphragm Plate	61475			
17	RV Diaphragm	61479			
18	RV Lower Diaphragm Plate	61475			
19	RV Lower Stem Nut	61483			
6-19	RV Assembly Complete	63814			

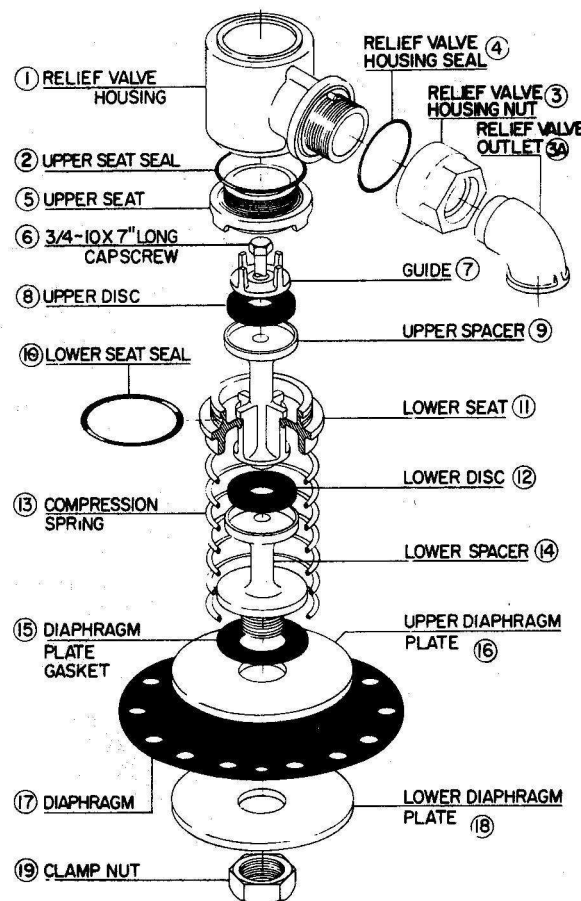


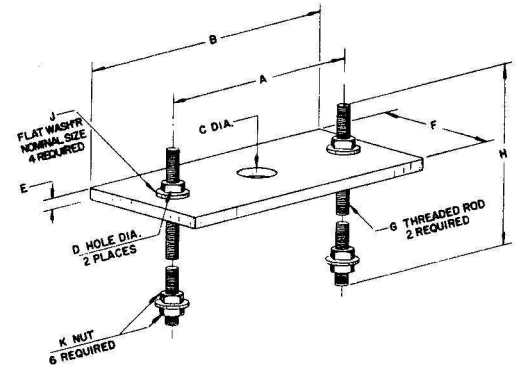
FIGURE 19
RELIEF VALVE ASSEMBLY
AND HOUSING ASSEMBLY
8" & 10" MODEL 6CM

MODEL 6CM FITTINGS AND TOOLS

If more than one part is required per unit, quantity is indicated in parenthesis after part number.

DEVICE SIZE	DESCRIPTION	PART NO.
2½"	Testcock	96443(3)
3"	Testcock	96443(3)
4"	Testcock	96443(3)
6"	Testcock (Body)	96444(2)
6"	Testcock (R.V. Cover)	96443
8"	Testcock	96444(3)
10"	Testcock	96444(3)
2½"-4"	Inlet Gate Valve Testcock	96443
2½"-4"	Inlet Gate Valve Nipple	96263
2½"-4"	Inlet Gate Valve Coupling	96027
6", 8", 10"	Inlet Gate Valve Testcock	96444
6", 8", 10"	Inlet Gate Valve Nipple	96060
6", 8", 10"	Inlet Gate Valve Coupling	96147

8" and 10" Relief Valve upper seat removal tool - part no. 6162-2 (not illustrated).

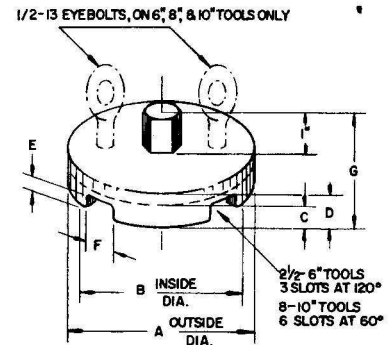


HERSEY PART NO.	SIZE DEVICE	A IN.	B IN.	C IN.	D IN.	E IN.	F IN.	G IN.	H IN.	J IN.	K IN.
63560	2½"	6	7½	1½	½	¼	4	7/16-14	12½	7/16	7/16-14
63560	3"	7	8½	1¾	¾	¼	4	½-13	17	½	½-13
63460	4"	8¼	9¾	2	¾	½	4	½-13	17	½	½-13
63660	6"	11	13	2	¾	½	6	½-13	17	½	½-13
63860	8"	14¾	17	2	1	½	6	¾-10	30	¾	¾-10
63960	10"	18	21	2½	1	½	6	¾-10	30	¾	¾-10

SPRING REMOVAL TOOLS (Fig. 20)

MODEL 6CM MAIN & CHECK VALVE SEAT REMOVAL TOOLS

SIZE	TOOL PART NO.
2 1/2"	63553
3"	63353
4"	63453
6"	63653
8"	63853
10"	63953



MODEL 6CM SPRING REMOVAL TOOLS

SIZE	TOOL PART NO.
2 1/2"	63560
3"	63360
4"	63460
6"	63660
8"	63860
10"	63960

HERSEY PART NO.	SIZE DEVICE	A IN.	B IN.	C IN.	D IN.	E IN.	F IN.	G IN.
63553	2½"	3 1/16	3 3/8	1 1/16	15/16	1/4	9/16	1 5/16
63353	3"	4 5/16	4	1 1/16	15/16	5/16	13/16	1 5/16
63453	4"	5 5/16	5	1 5/16	1 1/16	5/8	1 1/16	2 1/16
63653	6"	7 3/16	7 7/16	1 5/16	1 5/16	3/4	1 1/16	2 3/16
63853	8"	10 3/4	9 5/8	1 1/2	1 3/8	7/8	1 1/8	2 3/8
63953	10"	12 1/2	11 9/32	1 5/8	1 9/16	1"	1 5/8	2 9/16

MAIN & CHECK VALVE SEAT REMOVAL TOOLS (Fig. 21)

MODEL 6CM RUBBER PARTS KITS

HW/Hot Water

If more than one part is required in a device, quantity is indicated in parenthesis after Part Number.

Parts are interchangeable between 2½" – 6" bronze and cast iron assemblies unless indicated otherwise.

DESCRIPTION	PART NO.	PART NO.	DESCRIPTION	PART NO.	PART NO.
	2½" COLD WATER	2½" HOT WATER		6" COLD WATER	6" HOT WATER
RV Disc	60237(2)	60237(2)	RV Disc	60237(2)	60237(2)
Diaphragm Plate Gasket	60239	60239	Diaphragm Plate Gasket	60239	60239
RV Housing Gasket	60644	60644	RV Housing Gasket	60644	60644
MV & CV Disc	62331(2)	62331(2)	MV & CV Disc	63605(2)	63605(2)
MV & CV Cover Gasket (Brz)	63504(2)	63504(2)	MV & CV Cover Gasket	63604(2)	63604(2)
MV & CV Cover Gasket (CI)	63552(2)	63552(2)	RV Diaphragm (CI)	63305	63346
RV Diaphragm (Brz)	63505	63345	RV Diaphragm (Brz)	63505	63345
RV Diaphragm (CI)	63305	63346	O-Ring	98318	19110
O-Ring	98318	19110	O-Ring	98319	98354
O-Ring	98319	98354	O-Ring	98337(2)	98352(2)
O-Ring	98339(2)	98349(2)	Complete Parts Kit (CI)	63650	63654
Complete Parts Kit (CI)	63543	63554	Complete Parts Kit (Brz)	63643	63644
Complete Parts Kit (Brz)	63550	63544			
	3" COLD WATER	3" HOT WATER		8" COLD WATER	
RV Disc	60237(2)	60237(2)	RV Disc	63835(2)	
Diaphragm Plate Gasket	60239	60239	RV Gasket	63837	
RV Housing Gasket	60644	60644	MV & CV Disc	63810(2)	
MV & CV Disc	62334(2)	62334(2)	MV & CV Cover Gasket	63804(2)	
MV & CV Cover Gasket	63304(2)	63304(2)	RV Diaphragm	61479	
RV Diaphragm (CI)	63305	63346	O-Ring	98339	
RV Diaphragm (BRZ)	63505	63345	O-Ring	98341	
O-Ring	98318	19110	O-Ring	98342	
O-Ring	98319	98354	O-Ring	98343	
O-Ring	98335(2)	98350(2)	Complete Parts Kit	63850	
Complete Parts Kit (CI)	63350	63354			
Complete Parts Kit (Brz)	63343	63344		10" COLD WATER	
	4" COLD WATER	4" HOT WATER			
RV Disc	60237(2)	60237(2)	RV Disc	63835(2)	
Diaphragm Plate Gasket	60239	60239	RV Gasket	63837	
RV Housing Gasket	60644	60644	MV & CV Disc	63910(2)	
MV & CV Disc	62335(2)	62335(2)	MV & CV Cover Gasket	63904(2)	
MV & CV Cover Gasket	63404(2)	63404(2)	RV Diaphragm	61479	
RV Diaphragm (CI)	63305	63346	O-Ring	98339	
RV Diaphragm (Brz)	63505	63345	O-Ring	98340	
O-Ring	98318	19110	O-Ring	98341	
O-Ring	98319	98354	O-Ring	98342	
O-Ring	98336(2)	98351(2)	Complete Parts Kit	63950	
Complete Parts Kit (CI)	63450	63454			
Complete Parts Kit (Brz)	63443	63444			

MODEL 6CM BODIES

DESCRIPTION	CAST IRON PART NO.	BRONZE PART NO.
2½" Body	63526	63501
3" Body	63301	63326
4" Body	63401	63426
6" Body	63601	63626
8" Body	63801	—
10" Body	63901	—

If more than one part is required per assembly, quantity is indicated in parentheses after part number.

ILLUS. NO.	DESCRIPTION	3" PART NO.	4" PART NO.	6" PART NO.
1	Cover Bolt	90129(8)	90168(14)	90292(16)
	Cover Nut	90151(8)	90151(14)	90251(16)
	Cover	63302	63402	63602
	Cover Gasket	63304	63404	63604
	Spring Retainer Nut	90260	90336	90336
	Spring Retainer	63309	63409	63609
	Spring	61388	62304	61485
	Disc Holder	61832	61852	61892
	Disc	62334	62335	63605
	Guide	63311	63411	63611
	Guide Cap Screw	90282	90282	90382
2	Seat	63306	63406	63606
3	O-Ring	98335	98336	98337
1-11	Complete Valve Assembly	63313	63413	63613

ILLUS. NO.	DESCRIPTION	8" PART NO.	10" PART NO.
1	Cover Bolt	90141(14)	90360(2)
	Cover Bolt	90140(2)	90371(16)
	Cover Nut	90358(14)	90372(16)
	Cover	63802	63902
	Cover Gasket	63804	63904
	Spring Retainer Nut	90336	90373
	Eyebolt	90198	90199
	Spring Retainer	63809	63909
	Spring	63808	63908
	Stem	63852	62238
	Disc Holder	61275	62235
2	Disc	63810	63910
3	Guide	61754	62236
3A	Stem	63820	63820
4	Disc Holder	61275	62235
5	Disc	63810	63910
6	Guide	61754	62236
7	Guide Washer	63820	63820
8	Lockwasher	90337	90337
9	Guide Cap Screw	90381	90381
10	Seat	63806	63906
11	O-Ring	98343	98340
1-11	Complete Valve Assembly	63813	63913

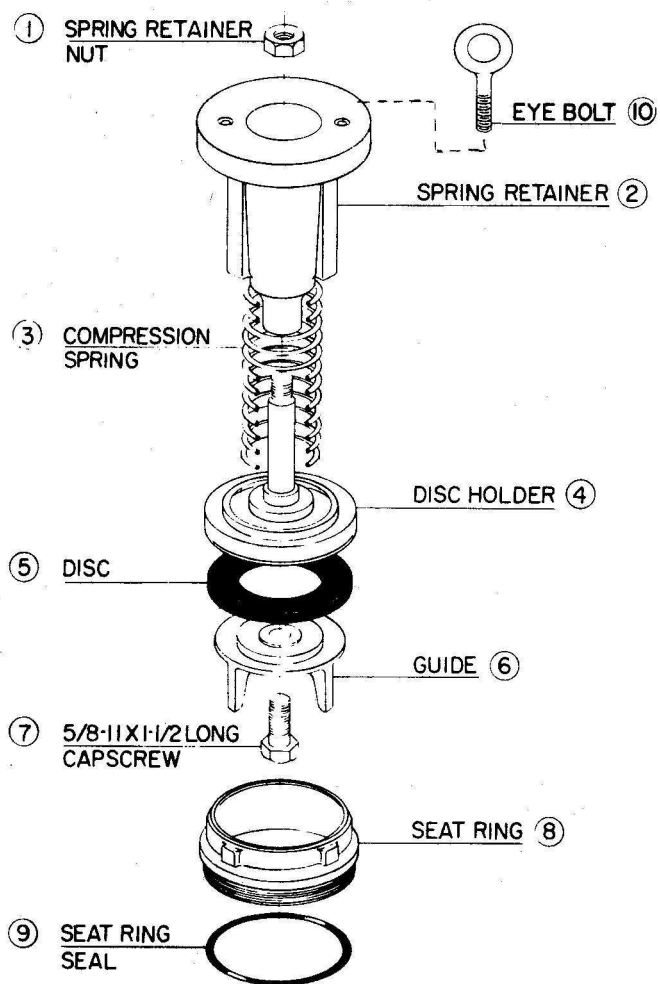


FIGURE 22
CHECK VALVE ASSEMBLY
2 1/2" - 6" HERSEY NO. 2

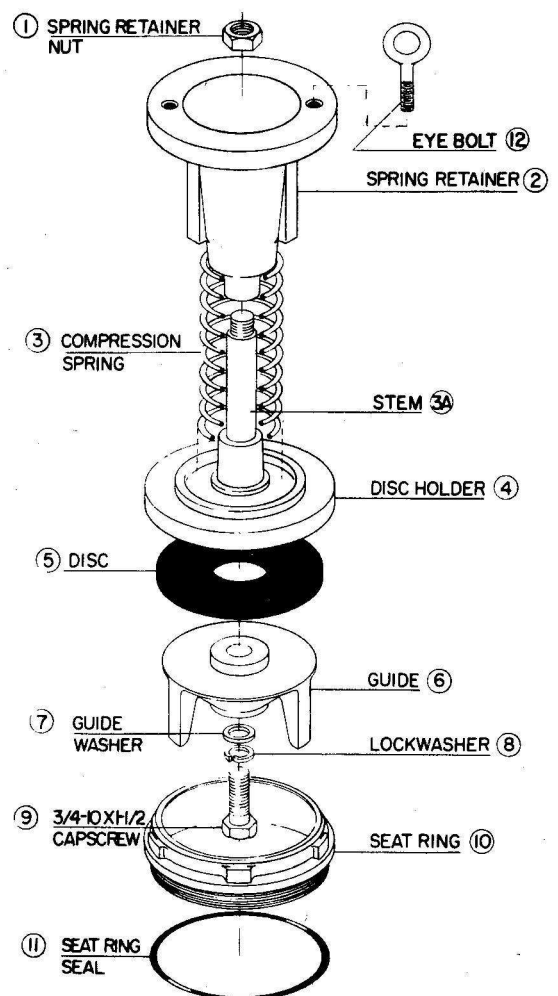


FIGURE 23
CHECK VALVE ASSEMBLY
8" - 10" HERSEY NO. 2

HERSEY NO. 2 CHECK VALVE ASSEMBLY

If more than one part is required per unit, quantity is indicated in parenthesis after part number.

FITTINGS

DESCRIPTION	PART NO.
SIZE 3"	
Space Nipple (first testcock)	96263
Testcock	96443(3)
Coupling (first testcock)	96027
SIZE 4"	
Space Nipple (first testcock)	96263
Testcock	96443(3)
Coupling (first testcock)	96027
SIZE 6"	
Testcock	96444(3)
SIZE 8"	
Testcock	96444(3)
SIZE 10"	
Testcock	96444(3)
3", 4" Inlet Gate Valve	
Testcock	96443
Space Nipple	96263
Coupling	96027
6", 8", 10" Inlet Gate Valve	
Testcock	96444
Space Nipple	96060
Coupling	96147

RUBBER PARTS KITS

DESCRIPTION	PART NO.
SIZE: 3"	
Rubber Parts Kits Complete	63351
CV Disc	62334(2)
CV Cover Gasket	63304(2)
CV O-Ring	98335(2)
SIZE: 4"	
Rubber Parts Kits Complete	63451
CV Disc	62335(2)
CV Cover Gasket	63404(2)
CV O-Ring	98336(2)
SIZE: 6"	
Rubber Parts Kits Complete	63651
CV Disc	63605(2)
CV Cover Gasket	63604(2)
CV O-Ring	98337(2)
SIZE: 8"	
Rubber Parts Kits Complete	63851
CV Disc	63810(2)
CV Cover Gasket	63804(2)
CV O-Ring	98343(2)
SIZE: 10"	
Rubber Parts Kits Complete	63951
CV Disc	63910(2)
CV Cover Gasket	63904(2)
CV O-Ring	98340(2)

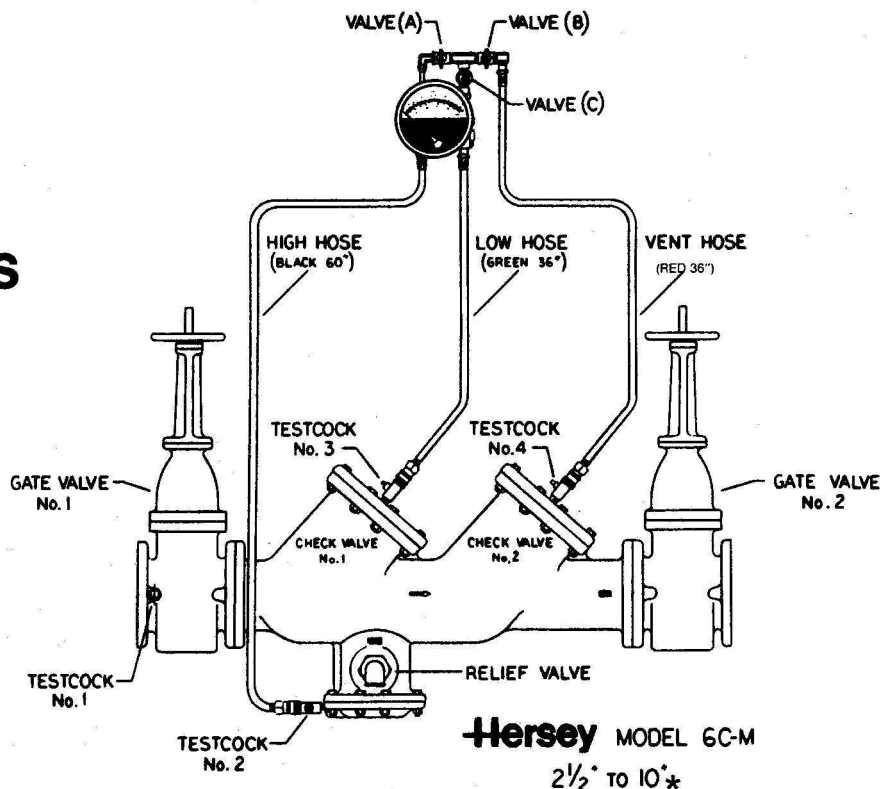
HERSEY NO. 2 BODIES

SIZE	PART NO.
3"	63318
4"	63418
6"	63618
8"	63818
10"	63918

REDUCED PRESSURE BACKFLOW PREVENTERS

ASSEMBLY OF TEST KIT TO BACKFLOW PREVENTER

1. Close valves (A), (B) and (C) on test kit.
2. Connect HIGH pressure hose (black) to testcock No. 2 on the device.
3. Connect LOW pressure hose (green) to testcock No. 3.
4. Close gate valve No. 2.
5. Open testcocks No. 2 and No. 3.
6. Open vent valve (B).
7. Open high pressure (A) and low pressure (C) valves until all air is expelled.
8. Close (A), (B) and (C) valves.
9. Connect VENT hose (red) to testcock No. 4 on the device.



TEST PROCEDURES

- A. To determine the static pressure drop across the first check valve. Requirement: the first check valve shall maintain a static pressure drop of at least 5 PSI.
1. Testcocks No. 2 and No. 3 must be open.
 2. Crack open gate valve No. 2 to re-establish pressure conditions in the device.
 3. Close gate valve No. 2 and note the differential pressure on the gauge. A reading of 5-8 PSI is normal.
- B. To test the second check valve for tightness against reverse flow. Requirement: the second check valve must be tight against reverse flows under all pressure differentials.
1. Slowly open HIGH valve (A) and VENT valve (B). Keep LOW valve (C) closed.
 2. Open testcock No. 4
 3. The differential pressure reading on the gauge will drop slightly and then remain steady. If the gauge reading continues to drop (until the relief valve discharges), it indicates that the second check valve is leaking.
- C. To test gate valve No. 2 for tightness. After passing Test B, continue the test by closing testcock No. 2. The indicated pressure will decrease slightly. If the pressure differential continues to decrease (approaching zero), the No. 2 gate valve is reported to be leaking.

NOTE: If gate valve No. 2 is leaking, the Test A is invalid. An indication of leakage in Test B could be either check valve No. 1 or check valve No. 2. If no indication of leakage in Test B, then both check valves are tight.

- D. To test operation of the differential pressure relief valve. Requirement: the differential pressure relief valve must operate to maintain the zone between the two check valves at least 2 PSI less than the supply pressure.
1. Valves (A), (B) and (C), and testcock No. 4 must be closed. Testcocks No. 2 and No. 3 must be open.
 2. Open HIGH valve (A).
 3. Very slowly open LOW valve (C) until the differential gauge needle starts to drop. Note the pressure reading when the relief valve starts to discharge. This gauge reading must be at least 2 PSI.
- NOTE: If during test C, gate valve No. 2 is shown to be leaking, also open VENT valve (B) and testcock No. 4 during step #2 of Test D. This extra step uses supply pressure to seat check valve No. 2 and allows testing of the relief valve.

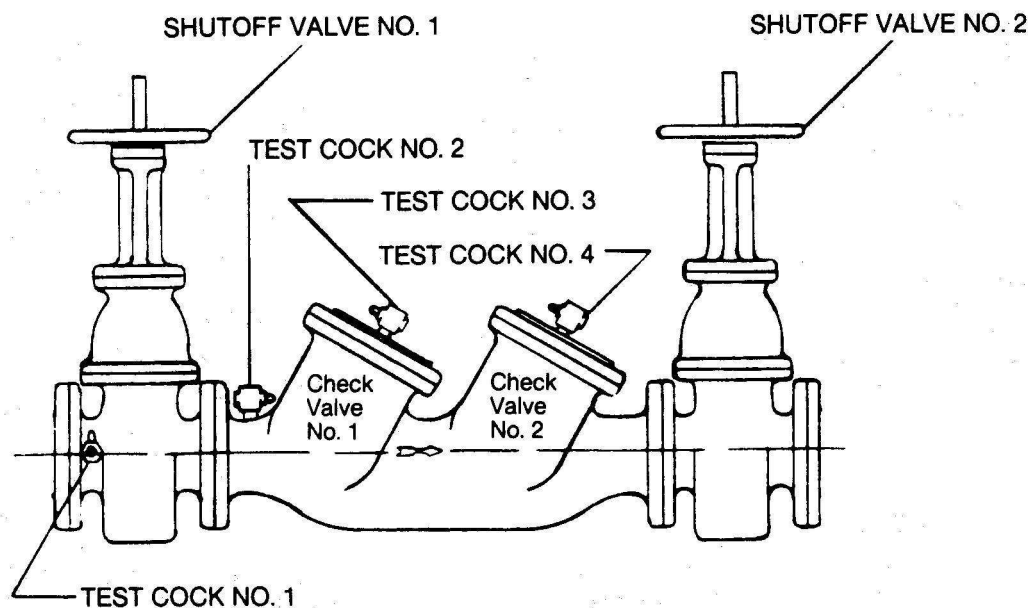
TEST CONCLUSION

1. Close all testcocks.
2. Disconnect VENT hose from testcock No. 4
3. Open valves (A), (B) and (C) to drain water pressure from the test gauge.
4. Remove hoses from testcocks No. 2 and No. 3 and drain remaining water in the gauge to prevent freezing.

*The same test is also used for testing the Hersey/BEECO Model FRPIL.

Hersey No. 2

DOUBLE CHECK VALVE ASSEMBLY SIZES 3", 4", 6", 8" & 10"*



TEST PROCEDURE Double Check Valves

TESTING OF CHECK VALVE NO. 1

1. Close No. 1 and No. 2 gate valves.
2. Open testcocks Nos. 2, 3 and 4. Confirm that gate valve No. 1 is holding tight by observing that the discharge of water from testcock No. 2 stops.
3. Attach test kit VENT hose (red) to testcock No. 1, LOW hose (green) to testcock No. 2, and HIGH hose (black) to testcock No. 3. Open valves (A) and (B). Close valve (C).
4. Close testcock No. 4
5. Open testcock No. 1. The needle on the gauge will indicate a pressure in excess of 15 PSI.
6. Slowly open valve (C) until the gauge reads approximately 10 PSI. Close valve (C). The gauge reading will not change if check valve No. 1 is holding tight. If No. 1 check valve is leaking the gauge reading will drop to 0.

TESTING OF CHECK VALVE NO. 2

1. Close testcock No. 1.
2. Open testcock No. 4.
3. Change LOW hose from testcock No. 2 to testcock No. 3. Change HIGH hose from testcock No. 3 to testcock No. 4. Open valves (A) and (B). Close valve (C).
4. Open testcock No. 1. The needle on the gauge will indicate a pressure in excess of 15 PSI.
5. Slowly open valve (C) until the gauge reads approximately 10 PSI. Close valve (C). The gauge reading will not change if check valve No. 2 is holding tight. If check valve No. 2 is leaking, the gauge will drop to 0.

NOTE: Minor leakage in gate valve No. 2 will not affect the test results of check valve No. 2. However, a leaking gate valve No. 1 will cause a good check valve No. 1 to fail the test.

*The same test method is also used for testing the Hersey/BEECO Model FDC and HDC.

**TEST PROCEDURES — HERSEY NO. 2
DOUBLE CHECK VALVE ASSEMBLY
ALTERNATIVE TWO-GAUGE METHOD**

(SEE FIGURE 25)

TEST NO. 1

Purpose:

To test No. 1 check valve for tightness against reverse flow.

Requirement:

Valve must be tight against reverse flow under all pressure differentials.

Steps:

1. Close shutoff valve No. 2.
2. Install pressure gauges and control cocks (closed) at test cocks No. 2 and No. 3.
3. Open test cocks No. 2 and 3. Close No. 1 shut off valve.
4. Drain *slowly* from control cock at test cock No. 2 until gauge at test cock No. 2 reads 1 psi less than gauge at test cock No. 3. Close control cock. If both gauges hold the established differential pressure for at least one minute, the check shall be noted in the report as "Closed Tight".
If the check valve leaks, both gauges will drop simultaneously while water is being drained from control cock at test cock No. 2 in the attempt to establish the one-pound differential. Confirm by the following procedure:
 - a. Open shutoff valve No. 1 and re-establish pressure in the device.
 - b. Install bypass hose between No. 1 and No. 3 test cocks, thus feeding line pressure downstream of check valve.
 - c. Close shutoff valve No. 1 Drain slowly from control cock at test cock No. 2 until gauge at test cock No. 2 reads 1 psi less than gauge at test cock No. 3. If water runs continuously from control cock, the check shall be noted as "Leaked".

TEST NO. 2

Purpose:

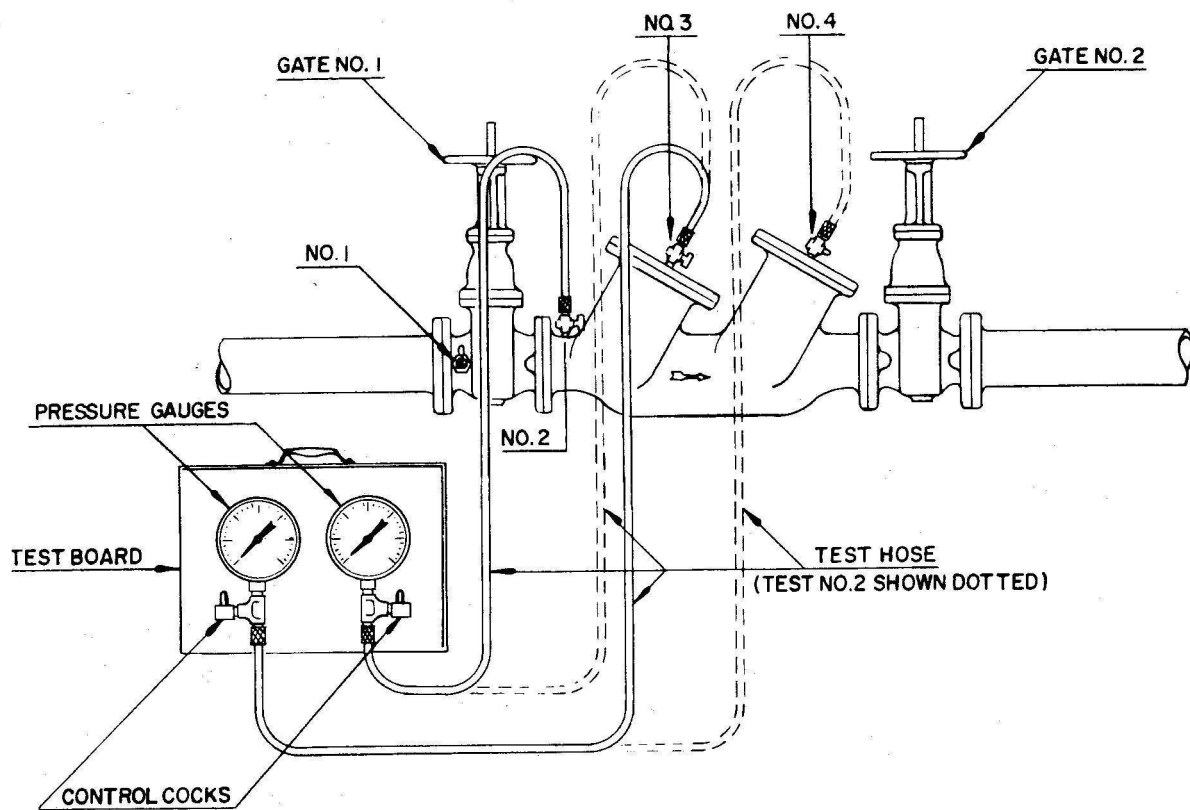
To test No. 2 check valve for tightness against reverse flow.

Requirement:

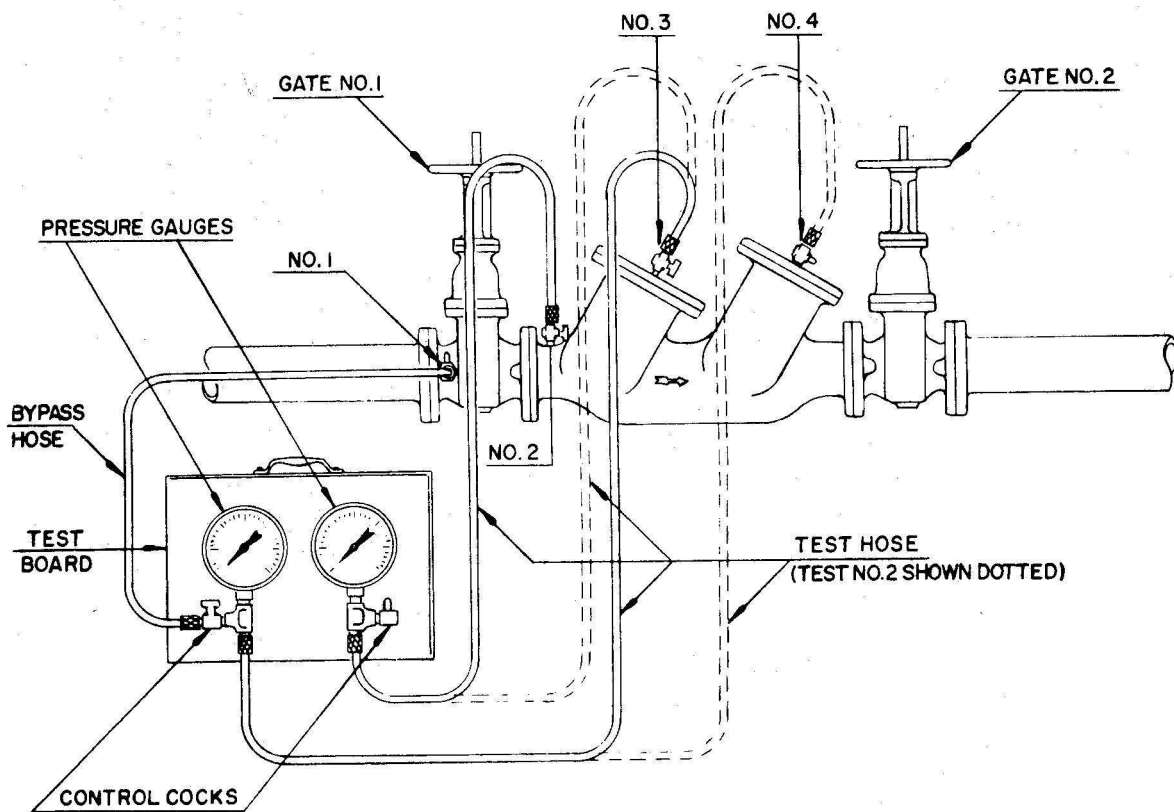
Valve must be tight against reverse flow under all pressure differentials.

Steps:

1. Open No. 1 shutoff valve and re-establish pressure in the device.
2. Install pressure gauges and control cocks at test cocks No. 3 and No. 4.
3. Open test cocks No. 3 and 4. Close No. 1 shutoff valve.
4. Drain *slowly* from control cock at test cock No. 3 until gauge at test cock No. 3 reads 1 psi less than gauge at test cock No. 4. Close control cock. If both gauges hold the established differential for at least one minute the check shall be noted as "Closed Tight."
If the check valve leaks, both gauges will drop simultaneously while water is being drained from control cock at test cock No. 3 in the attempt to establish the one-pound differential. Confirm by the following procedure:
 - a. Open No. 1 shutoff valve and re-establish pressure in the device.
 - b. Install bypass hose between No. 1 and No. 4 test cocks, thus feeding line pressure downstream of check valve.
 - c. Close No. 1 shutoff valve. Drain slowly from control cock at test cock No. 3 until gauge at test cock No. 3 reads 1 psi less than gauge at test cock No. 4. If water runs continuously from control cock, the check shall be noted as "Leaked".
 - d. Remove all equipment and return shut-off valves to original setting.



TESTS NO. 1 AND 2 — "STEP B"



TESTS NO. 1 AND 2 — "STEP F"

FIGURE 25
PRESSURE GAUGES INSTALLED ON HERSEY NO. 2
DOUBLE CHECK VALVE ASSEMBLY

TEST EQUIPMENT FOR HERSEY MODEL NO. 2

Recommended test equipment is outlined below. The test equipment illustrated consists of the following:

Qty.	Description
2 -	Pressure gauges, of good quality — 2" dial or larger, 0-150 psi range.
3 -	6-ft lengths rubber hose with 1/4" water tight screw couplings. (1/4" i.d. welding hose is suggested).
2 -	1/4" level handle brass gauge cocks, double female.
2 -	1/4" standard brass tees
2 -	1/4" brass close nipples
6 -	1/4" I.P. thread to welding hose thread brass couplings (sometimes called regulator outlet fittings).
	3/8" plywood board for mounting gauges.
3 -	1/4" x 1/2" bushings (for use in testing 3" and 4" check valve assemblies)
3 -	1/4" x 3/4" bushings (for use in testing 6", 8" and 10" devices)

In testing 3" and 4" check valve assemblies, install 1/4" x 1/2" bushings in test cocks No. 1, 3, and 4. In testing 6", 8" and 10" assemblies, install 1/4" x 3/4" bushings in testcocks.

MODEL 6CM RELIEF VALVE AIR GAP DRAIN FITTING

This fitting has been designed to permit direct connection of the relief valve drain piping to the backflow preventer. It provides an air gap below the outlet of the relief valve; and includes an internally-threaded opening at its base.

Two sizes are provided: one for installation on 2½"-6" devices; and the second for installation on 8" and 10" devices. The internal thread size is 2"-11½ NPT on the funnel for 2½"-6" devices; and 4"-8 NPT on the funnel for 8" and 10" devices. Both fittings are available as kits which include the fitting and two connection bolts.

INSTALLATION (see fig. 3)

Insert bolts in drain funnel. Position funnel so that bolts can be tightened against opposite sides of relief valve outlet elbow, resting on rim, and parallel to side of device. Tighten bolts firmly. Thread drain piping to fitting, using commercially-available pipe sealant.

RELIEF VALVE AIR GAP FUNNEL KITS

SIZE	PART NO.
(2½" - 6")	63358
(8", 10")	63858

PACKAGING AND INSTALLATION OF TEST COCKS AND FITTINGS

PACKAGING

Three test cocks are provided for each device plus one for the inlet gate valve. On 2½", 3" and 4" devices, a space nipple and coupling are also provided for the inlet gate valve. Sealing tape is factory-installed on test cocks and 2½"-4" space nipple.

For 2½" devices and for 3" devices equipped with gate valves, test cocks and fittings are packaged in a carton attached to the pallet. For 4"-10" devices (and with 3" devices *not* equipped with gate valves) the bag is placed inside the protective cover on the inlet gate valve or flange of the device.

INSTALLATION

Remove plastic protective caps from the four test cock openings (three on the device and one on the inlet shut off valve).

Install test cocks. On 2½", 3" and 4" inlet gate valve, install space nipple, coupling and test cock in that order. Slotted operating boss should have slot at right angles to test cock opening (closed position). *Test cocks must be closed prior to operation of the device.*