BACKFLOW SUPPLY
151 W MALVERN AVENUE
SOUTH SALT LAKE, UT 84115



INSTALLATION MAINTENANCE, AND TEST INSTRUCTIONS

BEECO® Aergap

MODELS FRP I AND FRP II

REDUCED PRESSURE

PRINCIPLE

BACKFLOW PREVENTER

FRP I, ¾ ″, 1″

FRP II, ¾ ″, 1½ ″, 2″

MODEL FDC
BACKFLOW PREVENTER

GENERAL INFORMATION

Beeco® Aergap™ Model FRP Reduced Pressure Principle Backflow Preventers and Model FDC 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 crossconnections. 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 FRP and FDC 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).

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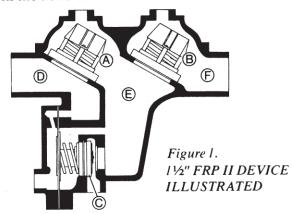
3/4"-2" BEECO MODEL FRP I / FRP II REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

Model FRP Section I — Description and Operation

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-loaded check valves (A and B) and a spring-loaded, diaphragmactuated differential pressure relief valve (C) located in the zone between the check valves.



NORMAL OPERATION

The first check valve (A) causes all water passing through it to be automatically reduced in pressure by approximately 5-8 psi.

The second check valve (B) is lightly springloaded 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 drilled passageway to the *underside* of the diaphragm of the relief valve (C). This valve is springloaded 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 dif-

ferential pressure produced by the first check valve (A) exceeds the spring-loading of the relief valve (C) and causes 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 nonpotable 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 opens 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) until zone pressure reaches atmospheric.

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.

FRP SECTION II — INSTALLATION

A. GENERAL INSTALLATION INSTRUC-TIONS

- 1. Before installing the device, pipelines should be thoroughly flushed to remove foreign material.
- 2. If not already provided, shut off valves should be installed at each end of the device so that it can be tested and maintained. A 1/4" test cock must be mounted on the inlet side of the inlet shutoff valve.
- 3. Devices must be installed in a *horizontal* position above the ground or floor level.
- 4. Devices should be installed in an accessible location with ample clearance to facilitate testing and repairs. (See Fig. 2)
- In no case should the relief valve discharge be solidly piped into a sump, sewer, drainage ditch, etc.
- 6. This device should be tested upon installation to insure proper operation and then inspected periodically for continual dis-

charge from the relief valve, which indicates a need for maintenance.

B. WARM CLIMATE OUTDOOR INSTALLATION (See Fig. 2)

- Reduced pressure backflow preventers should be installed only where there is adequate drainage and no danger of freezing. At no time should they be placed where any part of the unit could be submerged in standing water. The recommended installation is above ground. A concrete slab under the unit is sometimes desirable.
- 2. Normally, any discharge from the relief valve is spilled onto the ground. Drainage may be piped away from the location, in which case, an air gap must be used between the relief valve port and the drain line. (See Fig. 4)

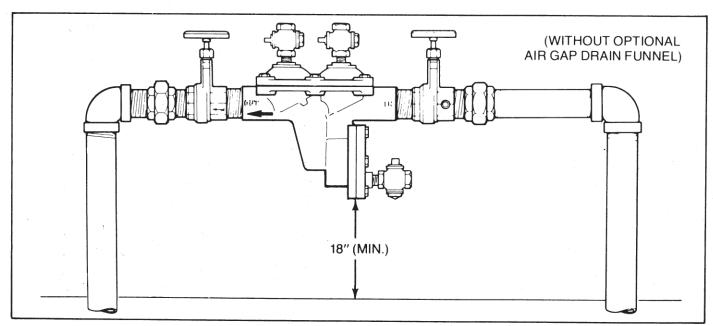


Figure 2. WARM CLIMATE OUTDOOR INSTALLATION

C. COLD CLIMATE OUTDOOR INSTALLATION

In remote locations or where installation cannot be made in 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.

D. COLD CLIMATE INDOOR INSTALLATION (See 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 at an easily accessible location inside a heated 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 must be used between the relief valve outlet and the drain line if drainage is to be piped away.

E. MODIFIED PIT INSTALLATION (See Fig. 5)

In the event installation must be made in a pit, only the modified pit type installation may be used. The relief valve drain should be piped to the outside of the pit and discharged no less than 12" above the grade line.

F. BATTERY (PARALLEL) INSTALLATION (See Fig. 6)

Where it is essential to provide uninterrupted water service, installation of two model FRP devices in a battery (parallel) setting is recom-

mended. This avoids interruptions to water service when maintenance or testing is required. One device can be shut off while the other is left in operation. This installation also provides higher flow capacity than provided by one backflow preventer.

G. CORRECTION OF DISCHARGE

- 1. After installation, with flow through the device, continual discharge from the relief valve opening usually indicates that there is foreign material holding the relief valve open. To remove foreign material, flush relief valve as follows:
 - a. Close inlet shutoff valve.
 - b. Open test cock No. 2. Relief valve should fully open and discharge.
 - c. Close test cock No. 2.
 - d. 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.*
- 2. After installation, with no flow through the 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 first check valve.*
- 3. Occasional "spitting" or momentary discharge from the relief valve can be expected, if line pressure drops suddenly, due to operation of flushometers, quick opening valves, or similar devices and valves.

*See Disassembly and Cleaning Procedures.

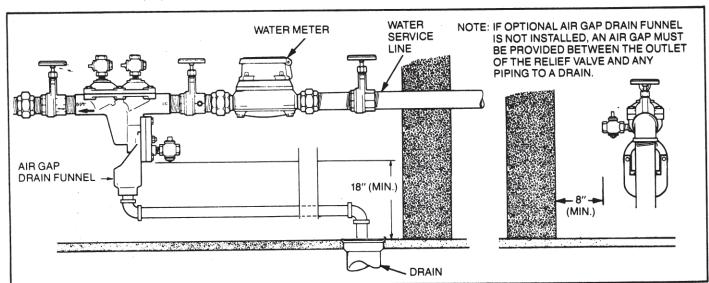


Figure 3. COLD WEATHER INDOOR INSTALLATION

MODEL FRP RELIEF VALVE AIR GAP DRAIN FITTING

GENERAL

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.

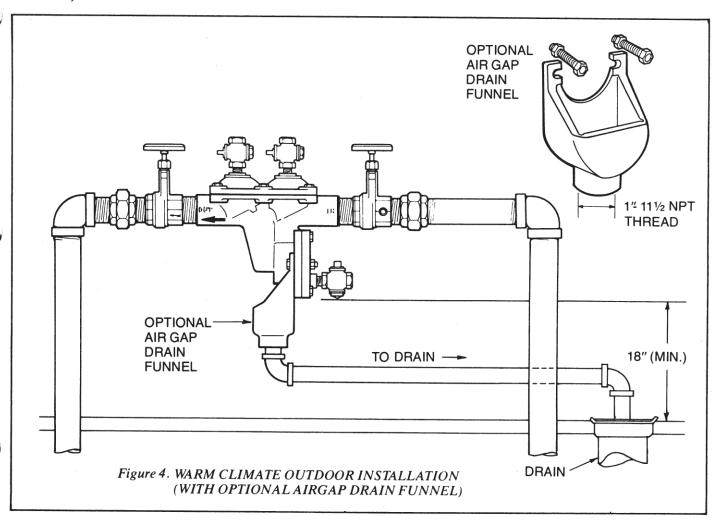
Two sizes are provided: one for installation on $\frac{3}{4}$ " and 1" devices; and the second for installation on $\frac{1}{4}$ ", $\frac{1}{2}$ " and 2" devices. The internal thread size is 1" - $\frac{11}{2}$ NPT on both fittings. Both fittings are available as kits which include the fitting and two connection bolts and nuts (see FRP Parts List, pages 10 and 12).

INSTALLATION (see Fig. 3)

Remove the two relief valve cover bolts that are in line with the notches on the fitting. Discard them.

Hold the fitting in position against the flange on the bottom case *opposite* the cover. Insert bolts into the holes on the flange and tighten firmly, using an open-end wrench. Install nuts.

Thread piping to fitting, using commercially-available pipe sealant.



FRP SECTION III — MAINTENANCE

A. DISASSEMBLY

- 1. Remove top case bolts and lift off top case(s).
- 2. Loosen check valve mounting screws and lift off check valve assemblies, with screws attached. (See Fig. 7, 14A, 14B, 15).
- 3. Remove relief valve housing bolts and relief valve housing, or relief valve cover (See Fig. 7, 14A, 14B, 15).
- 4. Remove relief valve assembly from housing by grasping diaphragm and lifting assembly up (FRPI) or pull out horizontally (FRPII).
- 5. Inspect relief valve seat for damage caused by foreign material. If it requires replacement, order repair kit (see page 10, 12).
- 6. To remove seat, insert wrench and turn counterclockwise. (See Fig. 9A, 9B).

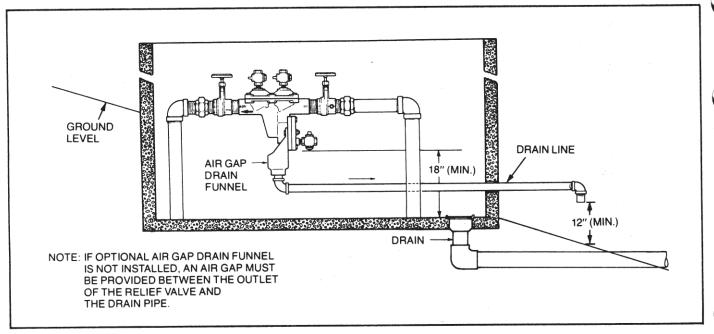


Figure 5. MODIFIED PIT INSTALLATION

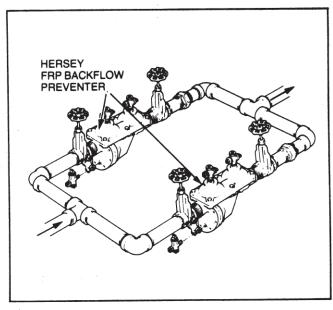


Figure 6. BATTERY (PARALLEL)
INSTALLATION

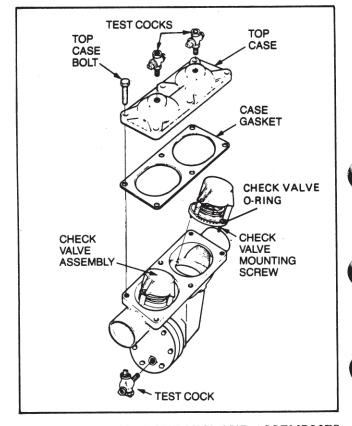


Figure 7.3/4" AND 1" CHECK VALVE ASSEMBLIES

B. CLEANING

- 1. Check Valves
 - a. If dirt in the lines has accumulated on first check valve seat, causing leakage when there is no flow through the device, remove check valve as outlined in Paragraph A.
 - b. Open 34" and 1" first check valves as follows:
 - 1. Press thumb against disc to compress spring.
 - 2. Insert flat-sided wooden pencil between seat and disc to hold valve open (see Fig. 10).
 - c. Open 11/4", 11/2" and 2" first check valves as follows:
 - 1. Remove the check valve disc screw, but leave washer in place.
 - 2. Attach the spring compression tool (see Fig. 11) with 4 machine screws

- and wing nuts provided, using the mounting screw holes in the check valve seat ring.
- 3. Engage the pilot on the end of the jacking screw in the valve screw hole.
- 4. Turn jacking screw clockwise to open valve.
- d. To open second check valves, all sizes, press thumb against disc to compress spring.
- e. Clean valve seats and discs with a clean non-abrasive cloth. DO NOT USE SOLVENTS ON THE PLASTIC SEAT!
- f. Re-assemble check valves to body of device. (On 1¼", 1½" and 2" sizes first remove spring compression tool and replace disc screw.)
- g. If cleaning does not stop leaking replace the check valve assembly.

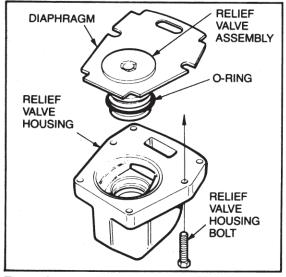


Figure 8A. RELIEF VALVE ASSEMBLY FRP-I

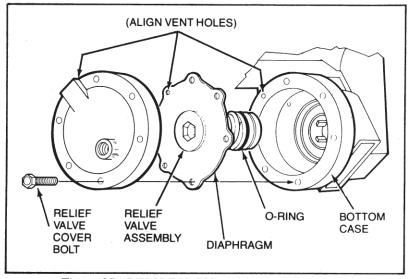


Figure 8B. RELIEF VALVE ASSEMBLY FRP-II (1-1/2" ILLUSTRATED)

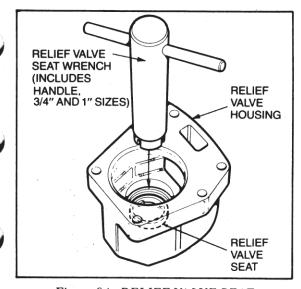


Figure 9A. RELIEF VALVE SEAT REPLACEMENT FRP-I

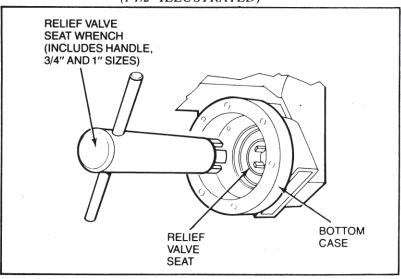


Figure 9B. RELIEF VALVE SEAT REPLACEMENT FRP-II

C. REPAIRS

Foreign matter in the supply line may cause wear or damage to components of the check and relief valve assemblies. To simplify repair procedures, complete valve assemblies, rather than individual parts, are provided at modest prices.

Kits are available for the first check, second check and relief valve assemblies, and also including all three valves. Case gaskets, o-ring seals and mounting screws (first and second valve kits) are included. See description on pages 10 and 12.

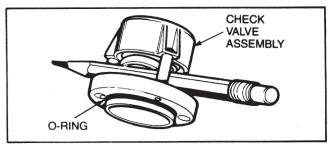


Figure 10. CLEANING 3/4" AND 1" CHECK VALVE

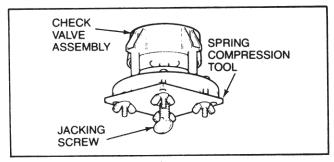


Figure 11. CLEANING 11/4", 11/2" AND 2" CHECK VALVE

D. REASSEMBLY

- 1. Check valves
 - a. Make sure o-ring is in place as shown in Figure 7.
 - b. Place mounting screws in holes in check valve assembly as shown in Fig. 7, and position valve in body. The ¾" and 1" valves have 2" screws; the 1¼", 1½" and 2" valves have 4 screws.
 - c. Tighten screws until resistance is felt. Do not overtighten screws.

2. Relief Valve

- a. Make sure o-ring is in place as shown in Fig. 8.
- b. If seat has been removed, apply Loctite adhesive sealant to threads of replacement seat (remove any residue from bottom case or housing threads before installing seat.)
- c. Install seat, using special wrench. Turn clockwise until resistance is felt. To avoid distortion of seat do not overtighten.

NOTE: Do not get any sealant on seating area of seat. Remove any present before installing relief valve assembly.

- d. Push relieve valve into position in housing or bottom case, seating o-ring in recess.
- e. Align diaphragm plate parallel to flange on housing or bottom case. Diaphragm holes must align with holes in flange. (See Figs. 8A and 8B.) On 1½ ", 1½" and 2" sizes, the diaphragm plate extends inside the outer surface of the flange.
- f. Test relief valve operation by pushing assembly in with thumbs to compress spring. Assembly should spring back when pressure is released.
- g. Reassemble housing or cover to bottom case.

NOTE: On the FRPII, the vent holes in the cover, diaphragm and flange must be aligned. The vent hole in the cover is inside the boss opposite the test cock.

NOTE: Tighten all bolts finger-tight before using wrench. Tighten opposite bolts in sequence to avoid cocking the assembly.

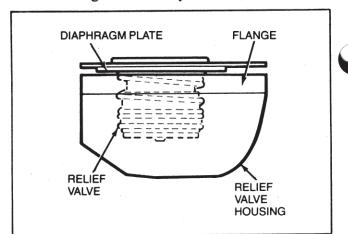


Figure 12A. REPLACING RELIEF VALVE FRP-I

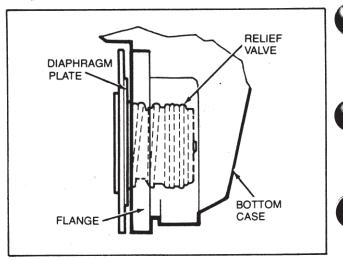


Figure 12B. REPLACING RELIEF VALVE FRP-II

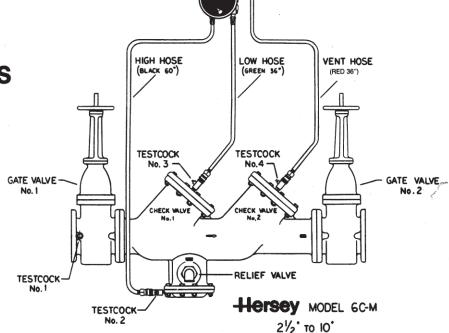
DIFFERENTIAL PRESSURE GAUGE TEST METHOD BEECO TEST KIT PART NUMBER 98415

MODEL FRP II and 6CM

REDUCED PRESSURE BACKFLOW PREVENTERS

ASSEMBLY OF TEST KIT TO BACKFLOW PREVENTER

- 1. Close valves (A), (B) and (C) on test kit.
- Connect HIGH pressure hose (black) to testcock No. 2 on the device.
- 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).
- Open high pressure (A) and low pressure (C) valves until all air is expelled.
- 8. Close (A), (B) and (C) valves.
- Connect VENT hose (red) to testcock No. 4 on the device.



VALVE(A)~

·VALVE (B)

VALVE (C)



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.
 - Crack open gate valve No. 2 to re-establish pressure conditions in the device.
 - 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.
 - Slowly open HIGH valve (A) and VENT valve (B). Keep LOW valve (C) closed.
 - 2. Open testcock No. 4
 - 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 press relief valve must operate to maintain the zone between the two check valves at least 2 PSI less than the supply pressure.
 - 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).
 - 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.

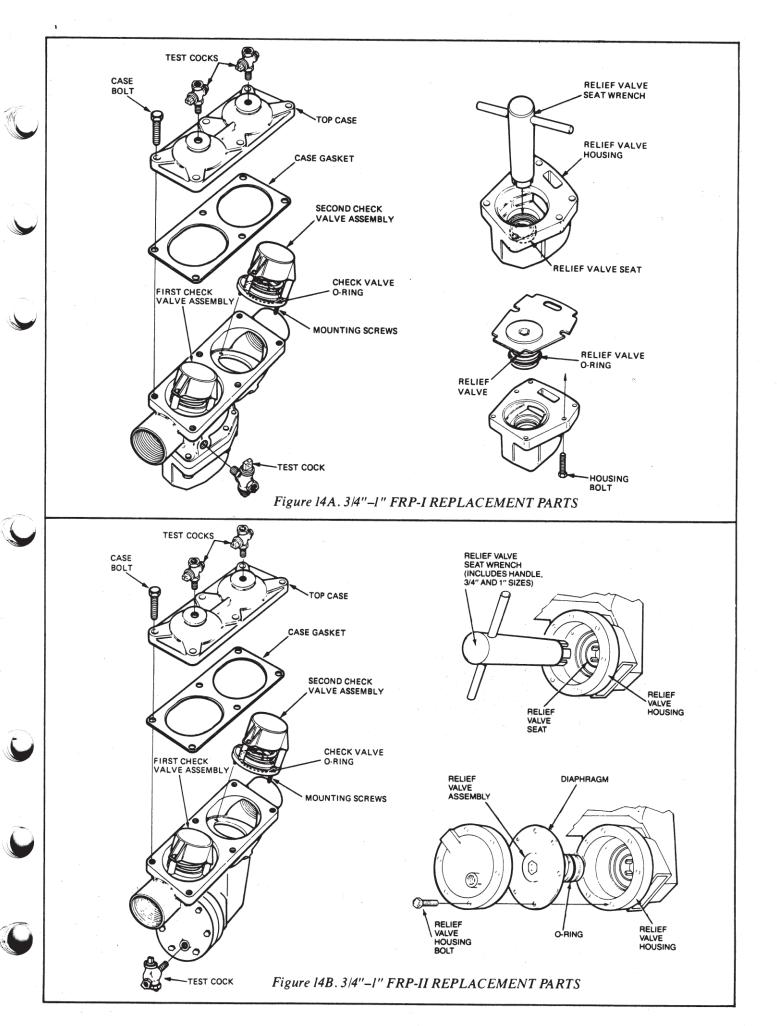
NOTE: If during test C, gate valve No. 2 is shown to be leaking, also open VENT valve (B) and testcock No. 4 during step #2 of Test D. This extra step uses supply pressure to seat check valve No. 2 and allows testing of the relief valve.

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.
- Remove hoses from testcocks No. 2 and No. 3 and drain remaining water in the gauge to prevent freezing.

FRP SECTION V — ¾" AND 1" REPLACEMENT PARTS (SEE FIGS. 14A AND 14B)

	Part No. 34"-1"		
COMPLETE VALVE KIT — FRP I FRP II	65554 65627	RELIEF VALVE AIR GAP FITTING	KIT 65639
Includes: First Check Valve Assembly Second Check Valve Assembly Relief Valve Assembly Case Gasket Check Valve O-rings (2) Relieve Valve O-ring Check Valve Mounting Screws (4)		RELIEF VALVE SEAT INSTALLATION KIT Includes: Relief Valve Seat Relief Valve Seat Wrench Relieve Valve Adhesive/Sealant	65524
FIRST CHECK VALVE KIT Includes:	65555	DIFFERENTIAL PRESSURE GA TEST KIT	UGE 98415
First Check Valve Assembly Check Valve O-ring Case Gasket Mounting Screws (2)		OTHER PARTS: Relief valve cover-FRP II Relief valve housing w/seat	65624
SECOND CHECK VALVE KIT Includes: Second Check Valve Assembly Check Valve o-ring Case Gasket Mounting Screws (2)	65556	Ring-FRP I Top case Bottom case-FRP II 3/4" Bottom case-FRP II 1" Bottom case-FRP I Case bolts -FRP I Case bolts-FRP II	N/A 65531 65623 65622 N/A 90026 (12) 90026 (12)
RELIEF VALVE KIT — FRP I FRP II Includes: Relief Valve O-ring Seal	65557 65628	Test cocks Check valve mounting screws Case gasket (Figures in parentheses after par dicate number of parts required, one.)	96339 (3) 98116 (4) 65534 t number in- if more than



FRP'SECTION VI-11/4", 11/2" and 2" FRP-II REPLACEMENT PARTS (SEE FIG. 15)

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

COMPLETE VALVE KIT Includes: First Check Valve Assembly Second Check Valve Assembly	Part No. 1 ¹ / ₄ ", 1 ¹ / ₂ " 65525	Part No. 2" 65543	
Relief Valve Assembly Case Gaskets (2) Check Valve O-rings (2) Relief Valve O-ring Check Valve Mounting Screws (8)			
FIRST CHECK VALVE KIT Includes: First Check Valve Assembly Check Valve O-ring Case Gasket Mounting Screws (4)	65526	65544	
SECOND CHECK VALVE KIT Includes: Second Check Valve Assembly Check Valve O-ring Case Gasket Mounting Screws (4)	65527	65545	
RELIEF VALVE KIT Includes: Relief Valve O-Ring Seal	65546	65546	
RELIEF VALVE SEAT INSTALLATION KIT Includes: Relief Valve Seat Relief Valve Seat Wrench Relief Valve Adhesive/Sealant	65548	65548	
DIFFERENTIAL PRESSURE GAUGE TEST KIT	98415	98415	Ó
RELIEF VALVE AIR GAP FITTING KIT	65640	65640	7
OTHER PARTS Relief Valve Cover Top Case Bottom Case Case Bolts Test Cocks Check Valve Spring Compression Tool Check Valve Mounting Screws 1½"x1¼" Reducing Bushing (1¼" only) Case Gasket	65560(2) 65631 90028(18) 96339(3) 65572 98174(8) 67016(2)	Part No. 2" 65632 65578(2) 65636 90028(22) 96339(3) 65572 98174(8) 65595(2)	

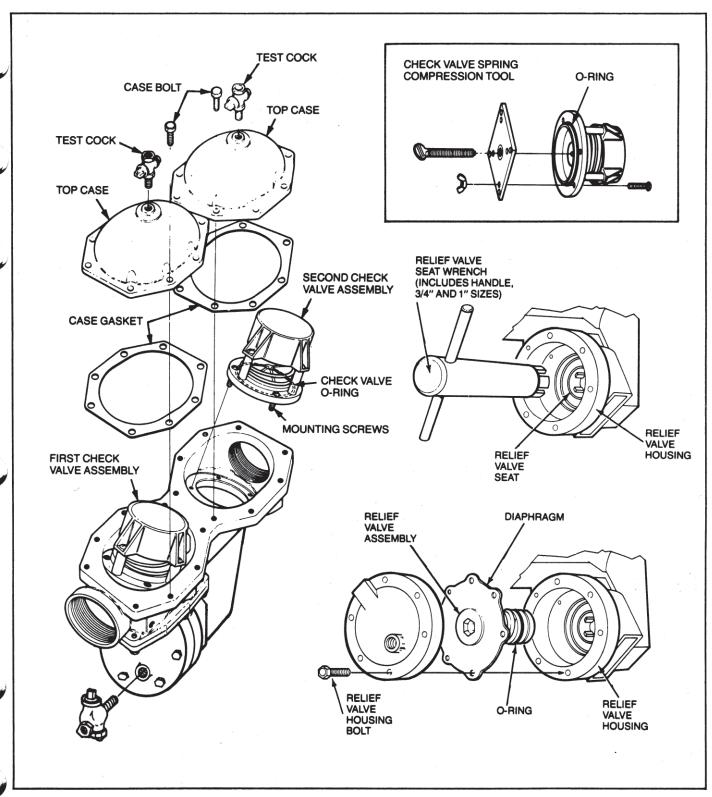


Figure 15. 11/4", 11/2" AND 2" FRP II REPLACEMENT PARTS

FDC-SECTION I — Description, Operation and Installation-Model FDC Double Check Valve Assemblies

DESCRIPTION AND OPERATION

The Hersey Model FDC 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.

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.

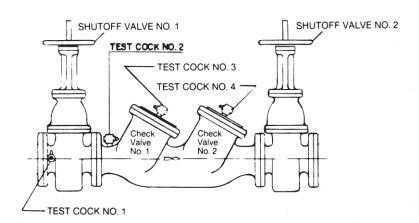
INSTALLATION

The same instructions apply to installation of the Model FDC as for the Model FRP, except that no provision for discharge of water from the device has to be made. In addition to being installed in the horizontal position, the Model FDC may also be installed in the vertical position when the flow is upward. See pages 3–5.

MAINTENANCE

The Model FDC should be tested annually, and valves replaced at least every 5 years. For further details, refer to cleaning, repair and assembly procedures for Model FRP check valves, pages 6-8.

FDC SECTION II **TESTS**



TEST PROCEDURE - Using Beeco Differential Pressure Test Kit Part Number 98415

Double Check Valves - Hersey Model No. 2 and FDC*

TESTING OF CHECK VALVE NO. 1

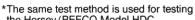
- 1. Close No. 1 and No. 2 gate valves.
- 2. Open testcocks Nos. 2, 3 and 4. Confirm that gate valve No. 1 is holding tight by observing that the discharge of water from testcock No. 2 stops.
- 3. Attach test kit VENT hose (red) to testcock No. 1, LOW hose (green) to testcock No. 2, and HIGH hose (black) 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.

the Hersey/BEECO Model HDC.

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.



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

(SEE FIGURE 16)

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" watertight 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 outfit fittings).

3/8" plywood board for mounting gauges.

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 shutoff 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 No. 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.

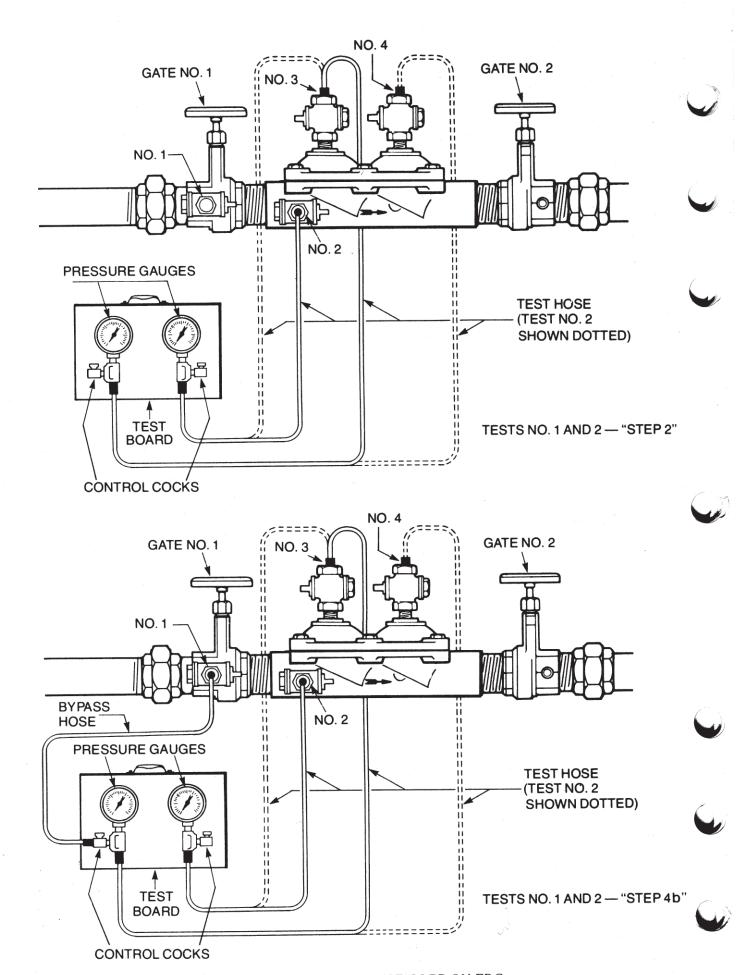


Figure 16. PRESSURE GAUGES INSTALLED ON FDC DOUBLE CHECK VALVE ASSEMBLY

FDC Section III-Replacement Parts

A. ¾" - 1" MODEL FDC DOUBLE CHECK VALVE ASSEMBLY

Description	Part No.
Check Valve Kit	65556 (2)
Bottom Case (¾")	65528
Bottom Case (1")	65601
Top Case	65531
Case Gasket	65534
Test Cocks	96339 (3)
Check Valve Mounting	
Screws	98116 (4)
Case Bolts	90026 (6)

B. 1½" - 2" MODEL FDC DOUBLE CHECK VALVE ASSEMBLY

Description	Part No.	
	11/2"	2"
Check Valve Kit	65527 (2)	65545 (2)
Bottom Case	65559	65574
Top Case	65560(2)	65578 (2)
Case Gasket	65568 (2)	65595 (2)
Test Cocks	96339 (3)	96339 (3)
Check Valve		
Mounting Screws	98174 (8)	98174(8)
Case Bolts	90028 (12)	90028 (16)





Mueller Co. Decatur, IL 62525

For further information contact: Hersey Customer Service Cleveland, NC 27013 1-704-278-2221 1-800-323-8584 (in USA)



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