All Rights Reserved.
All contents of this publication including illustrations are believed to be reliable. And while efforts have been made to ensure their accuracy, they are not to be construed as warranties for guarantees, express or implied, regarding Kimray products or services described herein or their use or application. All sales are governed by our terms and conditions, which are available on request.

Kimray reserves the right to modify or improve the designs or specifications of such products at any time without prior notice.

©2015 Kimray Inc.
# Contents

## A Before you start
- A1 Scope ...................................................... 5
- A2 Introduction ............................................ 5
- A3 Description ............................................. 5
- A4 Maintenance ........................................... 5
- A5 Changes and Update ............................... 5
- A6 Special Tools and Equipment ...................... 7
- A7 Orientation ............................................ 9

## INSTALLATION
- 1 Installation ............................................ 10
- 2 Start-up and Test ....................................... 10

## DISASSEMBLY
- 3 Adjusting Screw, Pivot, Breather Plug, Bonnet....11
- 4 Travel Indicator ......................................... 12
- 5 Pivot, Spring Plate, Spring ............................ 12
- 6 Pivot Sleeve, Diaphragm Plate, Diaphragm Nut.....13
- 7 Yoke Assembly .......................................... 14
- 8 Packing Box Removal ................................... 15
- 9 Packing Box .............................................. 16
- 10 Piston Assembly ....................................... 17

## INSPECTION
- 11 Inspection & Cleaning ............................... 18

## ASSEMBLY
- 12 Seat Insertion ......................................... 19
- 13 Upper Housing ......................................... 20
- 14 Packing Box Assembly ................................ 21
- 15 Diaphragm Assembly ................................. 22
- 16 Internal Yoke Assembly ............................. 23
- 17 Pressure Closed ....................................... 24
- 18 Travel Indicator ....................................... 25

## TESTING
- 19 High Pressure Control Valve Testing ............. 26
A Before you start

⚠️ CAUTION:
The instructions provided herein should be completely reviewed and understood before operating or repairing this equipment. All CAUTION and WARNING notes must be strictly observed to prevent personal injury or equipment damage.

A1 Scope
Do not install, operate, or maintain a control valve without being fully trained and qualified with the Kimray installation operation and maintenance manual.

To avoid personal injury or property damage, it is important to carefully read, understand, and follow all the contents of this manual, including all safety CAUTION’s and WARNING’s.

If you have any questions about this manual, contact your Kimray applications support group before proceeding.

A2 Introduction
This repair manual contains information for the PB, PO, PC, High Pressure Control Valve.

A3 Description
The Kimray High Pressure Control Valve (HPCV) is designed for use in liquid and gas control applications which require modulating (throttling) or on/off service.

The HPCV has a single port body and a pneumatic spring actuator. This actuator is available in either pressure open PO (normally closed), or pressure closing actuators.

Because of the high pressure range, a Packing Box houses a non adjustable spring loaded teflon sleeve around the stem with a wiper felt and buna backups for leak free sealing.

⚠️ CAUTION:
When ordered, the HPCV configuration and construction materials were selected to meet specific pressure, temperature, pressure drop and fluid conditions. Since some body / trim material combinations are limited in their pressure drop and temperature ranges, do not subject the pressure regulator to any other conditions without first contacting the Kimray Inc, sales office or a sales / applications representative.

A4 Maintenance
Maintenance should be performed on a regular basis. Initial intervals of 12 months is recommended. The maintenance interval may increase or decrease depending on changing application environments. The valve can be repaired without being removed from the piping.

Related Publications
See catalog section E1 for product pages.

Abbreviations / Acronyms
The abbreviations that follow are used in this manual.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>Piston Balanced</td>
</tr>
<tr>
<td>PO</td>
<td>Pressure Open</td>
</tr>
<tr>
<td>PC</td>
<td>Pressure Closed</td>
</tr>
</tbody>
</table>

Commonly Replaced Parts
- Trim Set
- Piston Assembly
- Diaphragm
- O-Ring
- Packing

Occasional Replacement Parts
- Body
- Spring

A5 Changes and Updates

⚠️ NOTE:
To prevent galling or seizing at assembly level for straight threads Kimray recommends using a nickel impregnated paste. For other threads use a nickel impregnated PTFE thread sealant tape.
Model: PB, PO, PC
Installation, Operation & Maintenance Guide
## SPECIAL TOOLS AND EQUIPMENT

**Seat Installation Tool**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Line Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6670</td>
<td>2 in.</td>
</tr>
<tr>
<td>6826</td>
<td>3 in.</td>
</tr>
</tbody>
</table>

**Seat Installation Tool**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Line Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>5561</td>
<td>4 in.</td>
</tr>
<tr>
<td></td>
<td>6 in.</td>
</tr>
<tr>
<td></td>
<td>8 in.</td>
</tr>
</tbody>
</table>

**Kimray Upper Cage Puller Tool**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Line Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>5296</td>
<td>2 in.</td>
</tr>
<tr>
<td>5297</td>
<td>3 in.</td>
</tr>
<tr>
<td>5298</td>
<td>4 in.</td>
</tr>
<tr>
<td>6402</td>
<td>6 in.</td>
</tr>
<tr>
<td>6651</td>
<td>8 in.</td>
</tr>
</tbody>
</table>

---

**Tip:**

Kimray recommends using the above special tools and equipment for disassembly, assembly and new part replacements.

---

Kimray reserves the right to modify or improve the special tools and equipment designs or specifications at anytime without notice.

www.kimray.com
ORIENTATION
Piston Balanced

See catalog section E1 for additional information

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No. / Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjusting Screw</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Pivot</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Breather Plug</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Bonnet</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Spring Plate</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Spring</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Plate Assembly</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Diaphragm</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Ring</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Upper Stem</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Yoke</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Nut</td>
<td>24</td>
</tr>
<tr>
<td>13</td>
<td>Travel Indicator Assembly</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Lower Adjusting Screw</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Packing Box</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Upper Housing</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Screw</td>
<td>8</td>
</tr>
<tr>
<td>18</td>
<td>Piston Assembly</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Screw</td>
<td>24</td>
</tr>
<tr>
<td>20</td>
<td>Body</td>
<td>1</td>
</tr>
</tbody>
</table>

Kimray reserves the right to modify or improve the designs or specifications of such products at anytime without notice.
1 Installation

Before installing the control valve, inspect it for shipment damage and for foreign material that may have collected during shipment. Inspect the openings in the valve and clean the pipe lines to remove scale, chips and debris.

1. Install the valve with the arrow on the body pointing in the direction of flow. The arrow indicates that the direction of flow and will not necessarily prevent flow in the opposite direction.

   The flow direction of the HPCV PB is up through the valve. The stem guided trim is down through the valve. If conditions indicate the possibility of back word flow, you may wish to install check valves.

2. Install the valve using good piping practice. For flanged bodies use a suitable gasket between the body and the pipeline flanges. For threaded (NPT) bodies, use TFE Tape or pipe thread sealant on external pipe threads.

3. Connect instrument gas to the actuator connection. The maximum required instrument gas pressure is 30 psig (2 bar); 45 psig (3 bar) is permissible.

⚠️ CAUTION:
When ordered, the high pressure valve configuration and construction materials were selected to meet specific pressure, temperature, pressure drop and fluid conditions. Since some body/trim material combinations are limited in their pressure drop and temperature ranges, DO NOT subject the high pressure valve to any other conditions without first contacting the Kimray Inc, sales office or a sales/applications representative.

⚠️ WARNING:
DO NOT exceed the maximum supply pressure specified on the HPCV nameplate. Under no circumstances should the HPCV supply pressure ever exceed the maximum psig.

Pressure Opening Valve
Remove the plastic stopper from the tapped hole in the underside of the bonnet. Install a 1/4” or 3/8” tube fitting (not provided). The tubing must be installed from your source of instrument gas. The fitting at the top of the bonnet is a Breather Plug.

Pressure Closing Valve
Remove the plastic stopper from the tapped hole in the top side of the bonnet. Install a 1/4” or 3/8” tube fitting (not provided).

The tubing must be installed from your source of instrument gas. The fitting in the lower half of the bonnet is a Breather Plug.

⚠️ NOTE:
Never stand directly over or in front of a valve when the system is pressurized. The valve could suddenly open, blowing debris into the person’s face and eyes.

2 Start-up and Test

With the installation completed and appropriate relief and check valves installed and set, slowly open the upstream and downstream shutoff valves. In order to test the function of the valve, allow only a small amount of upstream fluid to flow through the upstream shutoff valve. Check for proper valve operation by cycling the actuator arm several times.

⚠️ WARNING:
Before any service, be certain that the valve is fully isolated and that all pressure upstream and downstream has been relieved. Use bypass valves or fully shut off the process. Be sure that any operating or instrument gas lines has been disconnected. Never assume that a check valve is fully blocking the downstream line. Never tighten any fitting or the main connections to the regulator while there is pressure on the line. A leaking valve indicates that service is required. Failure to take the valve out of service immediately may create a hazardous condition.

Verify all pressure connections are tight before pressurizing the system.

⚠️ NOTE:
When a gasket seat is disturbed during disassembly a new gasket should be installed during re-assembly to ensure proper sealing.

Repair kits are available. See section E of catalog or the packing slip which is enclosed with each valve for the correct repair kit number.
DISASSEMBLY

3 Adjusting Screw, Pivot, Breather Plug, Bonnet

Use a wrench to remove the Adjusting Screw on top of the bonnet. See Fig. 3-1

Remove Pivot from Adjusting Screw. See Fig. 3-2

⚠️ NOTE:
Sometimes the Pivot will separate from the Adjusting Screw and sit on top of the Spring Plate.

Remove the Breather Plug from Bonnet. See Fig. 3-3

Loosen the Bolts to remove the Bonnet. See Fig. 3-4
DISASSEMBLY

4 Travel Indicator

Remove the bolts from the Travel Indicator Block. See Fig. 4-1

Remove the Block from the Stem.

5 Pivot, Spring Plate, Spring

⚠️ NOTE:
Again sometimes the Pivot will separate from the Adjusting Screw and sit on top of the Spring Plate.

Remove Pivot from top of Spring Plate.

Remove Spring Plate.

Remove the Spring from the Pivot Sleeve. See Fig. 5-1
DISASSEMBLY

6 Pivot Sleeve, Diaphragm Plate, Diaphragm Nut

Use a small adjustable wrench to hold the Upper Stem in place by the flats and spin the Diaphragm Plate in a counter clock wise direction loosening it from the Upper Stem. See Fig. 6-1

⚠️ NOTE:
Peel the Diaphragm edge away from the Yoke, rotate the Diaphragm Assembly off the Upper Stem inside the Yoke See Fig. 6-1

Flip the Diaphragm Assembly over and remove the Diaphragm Nut, use a hammer and punch. See Fig. 6-2
7 Yoke Assembly

Use a wrench to remove the Bolts from the Yoke base.

Slide Yoke up from the Upper Housing. See Fig. 7-1

Flip the Yoke upside down, then use a socket wrench to remove the Lower Adjusting Screw. See Fig. 7-2

Slide out the Upper Stem from the Lower Adjusting Screw and remove the outside O-Ring from the Lower Adjusting Screw.

Remove O-Ring from the inside of the Lower Adjusting Screw.

Use a pair of snap ring pliers to remove the Snap Ring.

Remove the Retainer Washer.

Remove the Wiper from the Lower Adjusting Screw. See Fig. 7-3
8 Packing Box Removal

Wrench up on the flats machined into the Packing Box body and remove by turning counter-clockwise.

Remove Packing Box from the Upper Housing.
See Fig. 8-1

⚠️ CAUTION:
When removing Packing Box from body, if pressure starts to exit out of weep hole than stop and check on isolation.

![Fig. 8-1](image-url)
9 Packing Box

Disassembly

- Remove Snap Ring (Item 1)
- Remove Felt Retainer (Item 2)
- Remove Felt Wiper (Item 3)
- Remove Packing Box and Packing Ring (Item 6)
- Remove Packing Follower (Item 7)
- Remove Spring (Item 8)

**NOTE:**
Using a punch, tap the Packing Rings and Sleeve through the bottom of the Packing Box.

Assembly

- Check all parts for damages.

**NOTE:**
Apply all purpose grease to the inside of the Packing Box before inserting parts.

- Insert new Felt Wiper (Item 3)
- Insert new Felt Retainer (Item 2)
- Insert new Snap Ring (Item 1)

Apply all purpose grease to the Packing Rings on the sides before inserting into the Packing Box (Item 6)

- Use a socket to push the packing down.
- Insert new Packing Follower (Item 7)
- Reuse Spring (Item 8)
- Fill the Packing Box with all purpose grease using a brush or grease gun before inserting the spring.

**Tip:**
Use Kimray replacement parts only.

---

* Recommended spare parts and stocked as repair kits

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No. / Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ring, Snap</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Felt Retainer</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Wiper, Felt</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Stuffing Box</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>O-Ring Buna-N</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Packing Rings and Sleeve</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Packing Follower</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Packing Spring</td>
<td>1</td>
</tr>
</tbody>
</table>

Kimray reserves the right to modify or improve the designs or specifications of such products at any time without notice.
10 Piston Assembly

Disassembly

- Remove O-Rings from the outside Cage grooves (Item 1)
- Remove Cage (Item 2) from Piston (Item 5)
- Remove Back Up Rings from Cage (2 Req’d), (Item 3).
- Remove Quad Ring (Item 4)
- Remove Piston Assembly (Item 5)
- Remove O-Ring (Item 6)
- Remove Seat Disc (Item 7)
- Remove O-Ring (Item 8)
- Remove Ratio Plug (Item 9)
- Remove Screw (Item 10)
- Remove Seal Ring (Item 11)
- Remove Seat (Item 12)
- Remove O-Ring from Seat (Item 13)

Tip:
Use Kimray replacement parts only.

Assembly

- Insert O-Rings into the outside Cage grooves and grease the outside of the O-Rings with a brush. (Item 1)
- Install Quad and Back Up Rings into Cage Assembly (Item 4)
- Insert (Items 6, 7, 8, 9, 10, 11) into (Item 5)
- Slide Cage Assembly onto Piston Assembly.
- Place (Item 12) onto the Piston Assembly (Item 5)

⚠️ NOTE:
Place (Item 13) O-Ring onto (Item 12) Seat, finger tighten into (Item 12) Ratio Plug holding onto Piston Assembly wrench flats.

- Use brass jaws to hold the Piston Assembly in vice.
- Align holes in Piston with holes in Ratio Plug.
- Use a socket to tighten the Ratio Plug Screw.
- Use all purpose grease to the outside Piston surface with a brush.
- Insert Piston into Cage.
- Press Seal Ring (Item 11) into Seat (Item 12)
- Screw Seat (Item 12) onto Cage.
- Install O-Ring (Item 13) onto Seat (Item 12)

Fig. 10-1

* Recommended spare parts and stocked as repair kits

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No. / Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>O-Ring</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Cage Assembly</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Back Up</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Quad Ring</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Piston</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>O-Ring</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Seat Disc</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>O-Ring</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Ratio Plug</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Screw</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Seal Ring</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Seat</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>O-Ring</td>
<td>1</td>
</tr>
</tbody>
</table>
INSPECTION

11 Inspection & Cleaning

⚠️ NOTE:
This is one of the most affected parts due to the severe impact of the particles that flow through the valve. Most of the time these parts can be repaired by cleaning and wire brushing both the inside and outside threads.

Cage, Piston Rod, Piston  See Fig. 11-1

NOTE:
If the valve is improperly disassembled, there is a high possibility that the Cage is out of round.

Replace if the Cage has lost its shape.

Replace the Piston if the parts present corrosion on the outside surface.

Seat
Check for scoring or scratches on the inside diameter. If the seal shows any indication of leakage.  See Fig. 11-2

Ratio Plug
Replace if there are scratches, corrosion and wear.  See Fig. 11-3

Body
Replace the O-Ring.
Inspect the O.D. threads for nicks, burrs and flats.
Inspect the I.D. threads for nicks, burrs and flats.
A thread repair tool may be used for light damage.  See Fig. 11-4
12 Seat Insertion

12-1 Seat

Use all purpose grease on the seat surface inside the body. See Fig. 12-1

Fig. 12-1

Use all purpose grease HERE.
13 Upper Housing

Place Upper Housing onto Body Fig. 13-1

Make sure the safety relief hole is facing tapped holes on body.

⚠️ NOTE:
Make sure you tighten the bolts in a criss-cross pattern to avoid any misalignment. DO NOT OVER TIGHTEN. For 2in., 3in., 4in., 6in., 8in., and 10in. tighten bolts from 25-30 ft/lbs torque. See Fig. 13-2
14 Packing Box Assembly

Fill the Packing Box with all purpose grease.

Apply all purpose grease on the outside of the Packing Box. DO NOT apply grease on the outer threads.

Clean male and female threads thoroughly.

⚠️ NOTE: To prevent galling or seizing use a nickel impregnated paste on threads. See Fig. 14-1

Insert Packing Box into the Upper Housing. See Fig. 14-1

Use an adjustable wrench on flats for tightening Packing Box. DO NOT use pipe wrench on body. DO NOT OVER TIGHTEN. See Fig. 14-2
15 Diaphragm Assembly

Use brass jaws to hold the Diaphragm Plate in a vice.

Place Diaphragm on Diaphragm Plate. See Fig. 15-1

Thread Diaphragm Nut on Diaphragm Plate.

⚠️ **NOTE:**
Make sure the Diaphragm does not wrinkle.

Insert Diaphragm Assembly in the center of the Yoke.
See Fig. 15-2

Use an adjustable wrench to hold the Upper Stem while tightening the Diaphragm Plate.

![Diaphragm Assembly Diagram](image-url)
**ASSEMBLY**

### 16 Internal Yoke Assembly

Place the Yoke on top of the Body.

Insert bolts and tighten with a wrench.

Use a brush to grease the Upper Stem. See Fig. 16-1

Slide the Spring Plate on the Pivot Sleeve. See Fig. 16-2

Slide the Spring on the Pivot Sleeve.

Place the second Spring Plate on top of the Spring.

Place Bonnet on top of internal Spring Assembly and insert screws. See Fig. 16-3

⚠️ **NOTE:**

Make sure you tighten the bolts in a criss-cross pattern to avoid any misalignment. **DO NOT OVER TIGHTEN.** Tighten bolts from 25-30 ft/lbs torque. See Fig. 16-3
17 Pressure Closed

⚠️ NOTE:
For pressure closed, flip Diaphragm Assembly upside down and place onto Yoke. See Fig. 17-4

Insert bolts in Bonnet and tighten.
DO NOT OVER TIGHTEN.

Insert Upper Adjusting Screw on top of Bonnet and tighten. DO NOT OVER TIGHTEN. See Fig. 17-5

Insert Breather Plug. See Fig. 17-6

Fig. 17-4

Fig. 17-5

Fig. 17-6
18 Travel Indicator

Forward the Indicator Scale and line up the bottom “closed” line with the arrow on the Indicator. Use two drive screws to install it on the Yoke using a ball peen hammer.

⚠️ NOTE:
Make sure the Travel Indicator Tag shows the correct operation of the valve either PO or PC.

Insert Breather Plug.

When assembling the Coupling Block, make sure the flats are on top together.

Place the threaded half block on back side.
See Fig. 18-1

Tighten the bolts in the Coupling Block with a socket.

In this case we are converting from pressure opening to pressure close. See Fig. 18-2
TESTING

19 High Pressure Control Valve Testing

Use a Male Nipple and install in the pressure port on the Yoke as shown in Fig. 19-1. Test the valve following assembly test procedure.

Supply Pressure: 30 psi.

Supply Connection: A device that will reduce your regulator end to any air supply connection.

⚠️ NOTE:
When testing, it is important to have the test valve fixture screwed onto the valve.

Apply air supply pressure (do not exceed 45 psi) on Yoke. This will open the valve and will pressurize to bottom part of the Diaphragm.

Spray a soapy solution on the interface between the Bonnet, Yoke and Lower Adjusting Screw to check for any leakage.

Check Travel Indicator. See Fig. 19-2

Install the Nameplate on top of the Bonnet with two drive screws and a ball peen hammer.

Replace the Male Nipple with a Blue Plug and thread it in the 1/4" NPT of the Yoke. See Fig. 19-3

<table>
<thead>
<tr>
<th>Troubleshooting</th>
<th>Possible Cause(s)</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid leaking from Packing Box</td>
<td>Packing Box nut loose.</td>
<td>Tighten packing until leaking stops. Replace packing.</td>
</tr>
<tr>
<td></td>
<td>Teflon packing worn.</td>
<td></td>
</tr>
<tr>
<td>Valve leaks when closed</td>
<td>Tape or sealant stuck in valve.</td>
<td>Disassemble and clean seat &amp; diaphragm. Replace seat.</td>
</tr>
<tr>
<td></td>
<td>Soft seat worn.</td>
<td>Loosen packing nut to free shaft.</td>
</tr>
<tr>
<td></td>
<td>Removable seat worn.</td>
<td></td>
</tr>
<tr>
<td>Erratic Operation</td>
<td>Packing Box nut too tight.</td>
<td>Loosen stuffing box nut.</td>
</tr>
<tr>
<td></td>
<td>Soft seat leaking.</td>
<td>Inspect for deformations or obstructions in seat.</td>
</tr>
<tr>
<td></td>
<td>Diaphragms hardened.</td>
<td>Replace seat.</td>
</tr>
<tr>
<td></td>
<td>Wet supply</td>
<td></td>
</tr>
</tbody>
</table>
Kimray is an ISO 9001-certified manufacturer. Kimray quality assurance process maintains strict controls of materials and the certification of parts used in Kimray HPCV.

Please visit our website for up to date product data www.Kimray.com
WHO WE ARE

Kimray designs and manufactures oil and gas control products. Based on more than 65 years of pioneering product development, we provide products and services that are reliable, smart and inventive. We generate meaningful solutions by staying curious and engaging in customers’ needs. Our product ideas are fueled by a deep desire to make a difference that is both personal and unique to the customer.

We have made it our life’s work to provide products and services that are positively impactful. Through the years, this pursuit has built strong relationships. Our customers have known that buying from Kimray is about much more than the product. The relationships between Kimray representatives and our customers extend from before the sale through the life of the product. Those relationships, along with quality Kimray products, are the result of a company striving for excellence for our customers, our company and our community.

Visit Kimray.com to learn more about our company and the products we create.