



INSTALLATION
OPERATION &
MAINTENANCE
GUIDE



HIGH PRESSURE CONTROL VALVE
R2L ACTUATOR

HIGH PRESSURE CONTROL VALVE

Model: R2L ACTUATOR

Installation, Operation & Maintenance Guide



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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 R2L adapter 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 cautions and warnings.

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 R2L adapter.

A3 Description

The R2L adapter is an open Yoke design with standard Coupling Block and mounting hardware to valve. The R2L adapter is a weather tight and maintenance free design.

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.



WARNING:

DO NOT remove the Actuator from the valve while the valve is still pressurized.

Always wear protective gloves, clothing, and eyewear when performing any maintenance operations to avoid personal injury.

Disconnect any operating lines providing electric power, or a control signal to the Actuator. Be sure the Actuator cannot suddenly open or close the valve.

Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure on both sides of the valve. Drain the process media from both sides of the valve.

Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.

Related Publications

The following publications are applicable for the Actuator.

Number	Type	Title
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See catalog section E1 for product pages.

Abbreviations / Acronyms

The abbreviations that follow are used in this manual.

Term	Definition
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Commonly Replaced Parts

Occasional Replacement Parts

See repair kit

A5 Changes & Updates

SPECIAL TOOLS & EQUIPMENT**NOTICE:**

The Kimray R2L Actuator DOES NOT require special tools for disassembly, inspection and assembly.

A6

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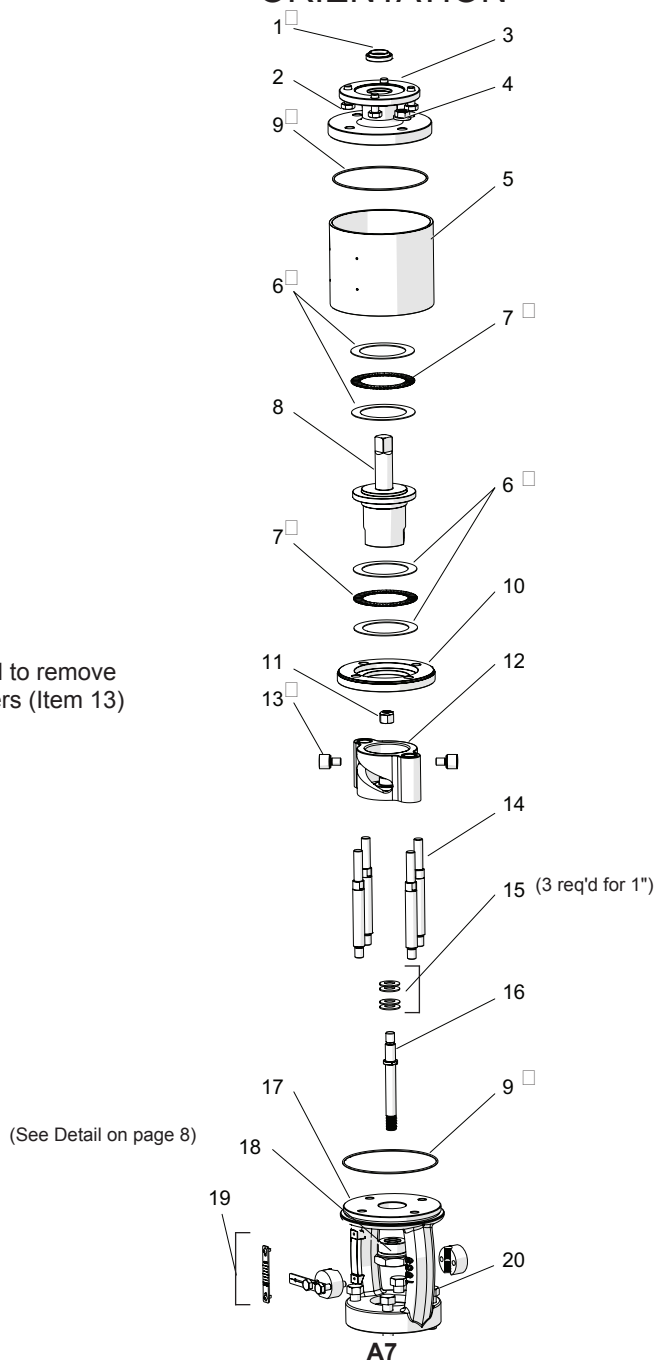
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NOTE:

Heat may be applied to remove the old Cam Followers (Item 13) from the assembly.

ORIENTATION



☐ Recommended spare parts and stocked as repair kits
See catalog section E1 for product size & description.

Item	Description	Qty
1	Rod Wiper ☐	1
2	Screws	4
3	Flange Adapter	1
4	Lock Nuts	4
5	Dust Cover	1
6	Thrust Bearing Races ☐	4
7	Thrust Bearings ☐	2

Item	Description	Qty
8	Rotary Shaft	1
9	O-Ring ☐	2
10	Bearing Support	1
11	Lock Nut	1
12	Stem Carrier	1
13	Cam Followers ☐	2
14	Guide Rods	4

Item	Description	Qty
15	Disc Springs	4
16	Stem	1
17	Mounting Yoke	1
18	Adjusting Screw Assembly	1
19	Travel Indicator Assembly	1
20	Screws	4

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

1 Installation

If the Actuator has been shipped separately for installation on a Kimray Valve Body, or if the Actuator was removed for maintenance, mount the Actuator by following the instructions presented in this section. Inspect the surface of the Mounting Yoke and clean the mating valve surface to remove scale, chips and debris.

The Kimray R2L is used with Kimray High Pressure Control Valves such as through or angle body valves. In the R2L Actuator, the spiral rotation of the Rotary Shaft by means of a rotary Actuator is translated into linear motion, opening and closing the valve. The stroke length is achieved with a 90° rotation of the shaft, clockwise to close. As the Plug contacts the seat, a series of Springs become loaded to ensure valve closure in the event of seat creep or wear.

1. Mount the Actuator onto the Valve using supplied bolts and tighten.

NOTE:

Tighten the bolts in a criss-cross pattern to avoid any miss alignment. **DO NOT OVER TIGHTEN.** For 1in. and 2in. tighten bolts from 25-30 ft/lbs torque.

2. Install Travel Indicator Assembly on Stem and tighten the bolts in the Coupling Block with a socket. Align the open or close line on the Indicator Scale with the Travel Indicator and secure the Indicator Scale by driving in the u-drive screws. Adjust the Travel Indicator as needed to ensure it does not catch or drag against the Indicator Scale.

NOTE:

For the quarter turn Actuator, follow manufacturer recommendation for the installation and operation notes.

3. Install the valve using good piping practice. For flanged bodies remove the masking sticker from the raised face of each end connection & 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.
4. Install the valve using good piping practices. 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. Use good practices.

NOTE:

Use good electrical wiring practices and consult with electrician.
See Fig. 1-1

2 Start-up & Test

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 have 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 E1 of catalog or the packing slip enclosed with each valve for the correct repair kit numbers.

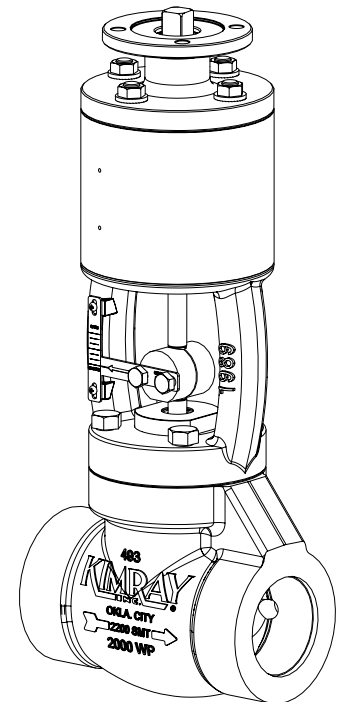


Fig. 1-1

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DISASSEMBLY

3 Adjusting Screw Assembly

Disassembly

Remove outside O-Ring (Item 2).

Remove inside O-Ring (Item 1).

Remove Snap Ring (Item 6).

Remove Retainer (Item 5).

Remove Wiper (Item 4).



Tip:
Use Kimray replacement parts only.

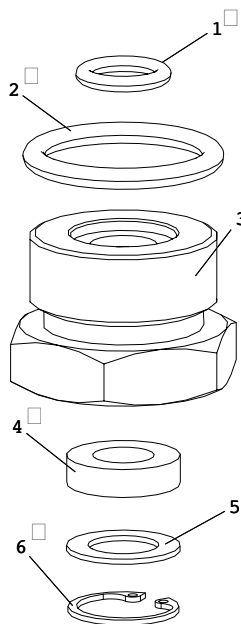


Fig. 3-1

Assembly

Insert Wiper (Item 4).

Insert Retainer (Item 5).

Insert Snap Ring (Item 6).

Lightly grease inside O-Ring, roll into groove of Lower Adjustment Screw (Item 1).



NOTE:
At this point, lightly grease the outside O-Ring before install (Item 2).

Item	Description	Part No.	Qty
1	O-Ring Nitrile <input type="checkbox"/>	153 (1")	1
		530 (2")	
2	O-Ring Nitrile <input type="checkbox"/>	491 (1")	1
		537 (2")	
3	Adjusting Screw	458 (1")	1
		503 (2")	
4	Wiper <input type="checkbox"/>	480 (1")	1
		527 (2")	
5	Retainer Washer	486 (1")	1
		528 (2")	
6	Snap Ring <input type="checkbox"/>	938 (1")	1
		940 (2")	

☐ Recommended spare parts and stocked as repair kits

INSPECTION

4 Inspection & Cleaning

**NOTE:**

Check Cam Followers and Stem Carrier for excessive wear.

Inspect:

If Thrust Bearings are dry, apply grease or replace if necessary.

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ASSEMBLY

5 Mounting Yoke, Adjustment Screw, O-Ring

Hand start the Lower Adjustment Screw into the Mounting Yoke, lightly grease O-Ring before placing onto Mounting Yoke O-Ring groove. See Fig. 5-1



NOTE:

Flip Mounting Yoke over and use a 7/8 in. socket for a 1 in. and use a 1 3/8 in. socket for a 2 in. to tighten.

Place Mounting Yoke upright onto Bottom Works. See Fig. 5-2



NOTE:

Tighten the bolts in a criss-cross pattern to avoid any miss alignment. DO NOT OVER TIGHTEN. For 1 in. and 2 in. tighten bolts from 25-30 ft/lbs torque. See Fig. 5-2

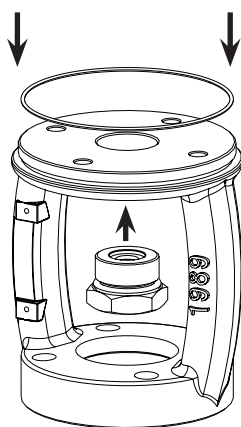


Fig. 5-1

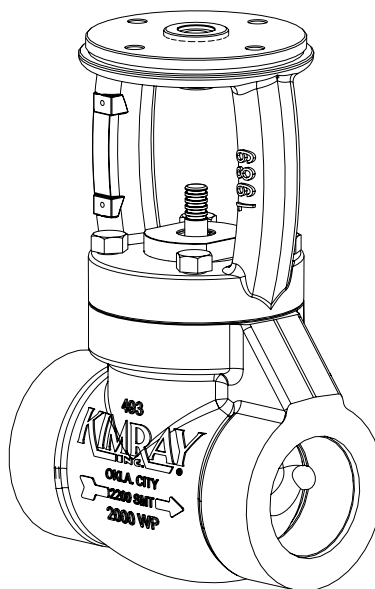


Fig. 5-2

ASSEMBLY

6 Spring Disc, Stem, Guide Rods, Stem Carrier

Install Stem into Adjustment Screw.

For 2 in. (four required), stack two Disc Spring onto Stem with conical side down. Stack the other two onto the Stem opposing the other two.



For 1 in. (three required), Stack Disc Spring in series onto Stem starting with conical side down. place next Spring Disc with conical side up. Place third Spring Disc with conical side down.



Hand start the Guide Rods into Yoke. DO NOT tighten fully.

Place Stem Carrier onto Guide Rods.

See Fig. 6-1 & Fig. 6-2

Thread Lock Nut onto Stem.



NOTE:

Use a 1/4 in. open ended wrench for 1 in. and 5/16 in. open ended wrench for 2 in. or adjustable wrench.

Use wrench flats to tighten.

Ensure assembly moves smoothly before and after tightening Guide Rods.

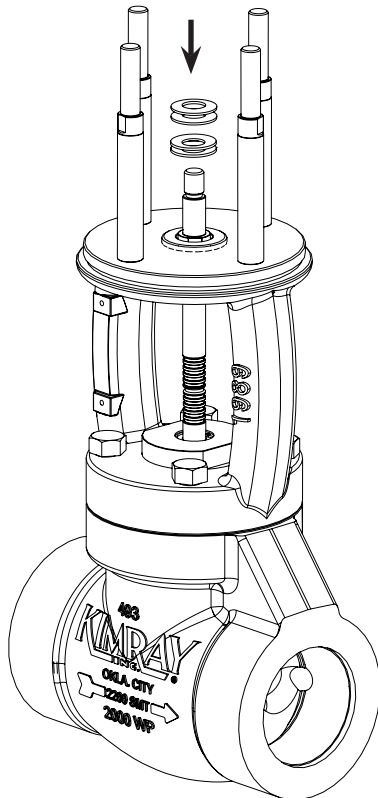


Fig. 6-1

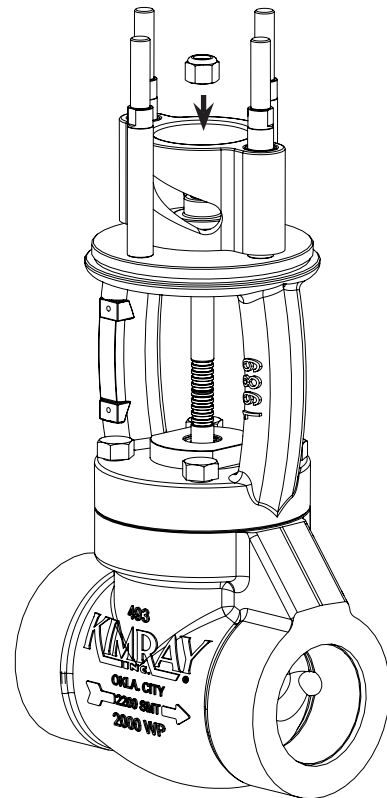


Fig. 6-2

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ASSEMBLY

7 Bearing Support

Place Bearing Support onto Guide Rods.
See Fig. 7-1

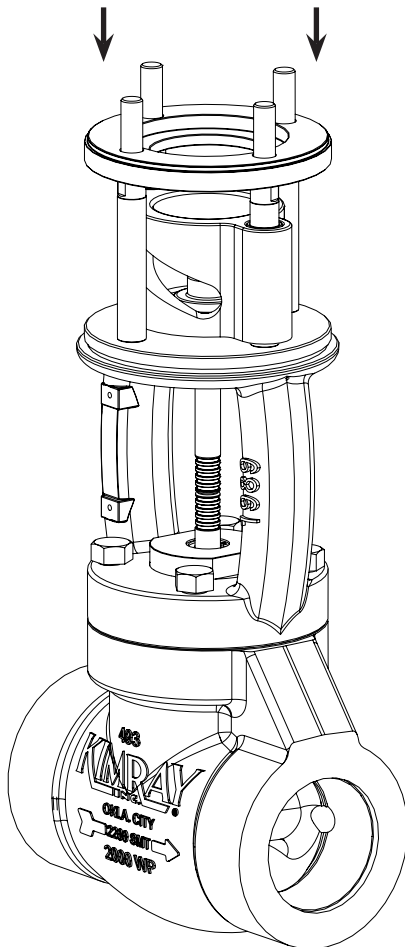


Fig. 7-1

ASSEMBLY

8 Race Bearing, Thrust Bearing, Rotary Shaft & Cam Followers



NOTE:
Lightly grease both sides of Thrust Bearing thoroughly.

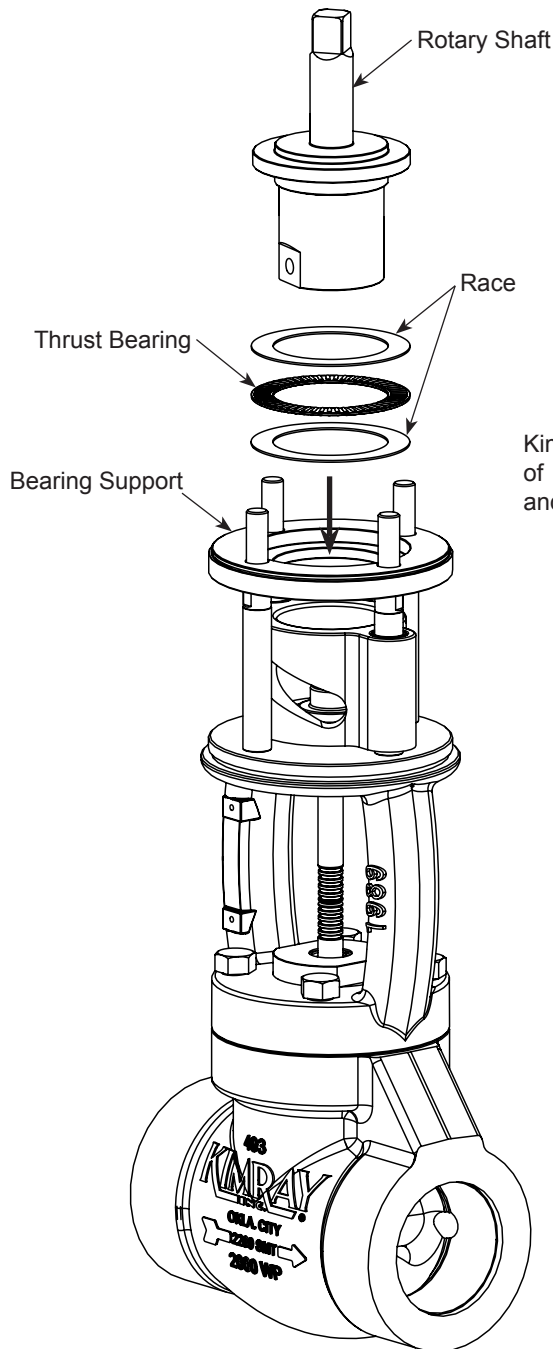


Fig. 8-1

Place Race onto Bearing Support followed by Thrust Bearing and another Race onto Thrust Bearing. See Fig. 8-1

Place Rotary Shaft into Bearing Support. Place another Race on top of Rotary Shaft and place Bearing and another Race onto Thrust Bearing. Locate thread holes on Rotary Shaft. Prime and place one drop of red Loctite™ onto threads of Cam Followers. Align holes of Rotary Shaft with opening in Stem Carrier and thread Cam Followers into Rotary Shaft. See Fig. 8-2.



NOTE:
Tighten Cam Followers to 20 in/lbs torque for 1in., tighten the 2in. to 55 in/lbs with an 1/8in. allen wrench for both sizes.

Kimray recommends the use of Loctite™ 7649 primer and red Loctite™ 262.

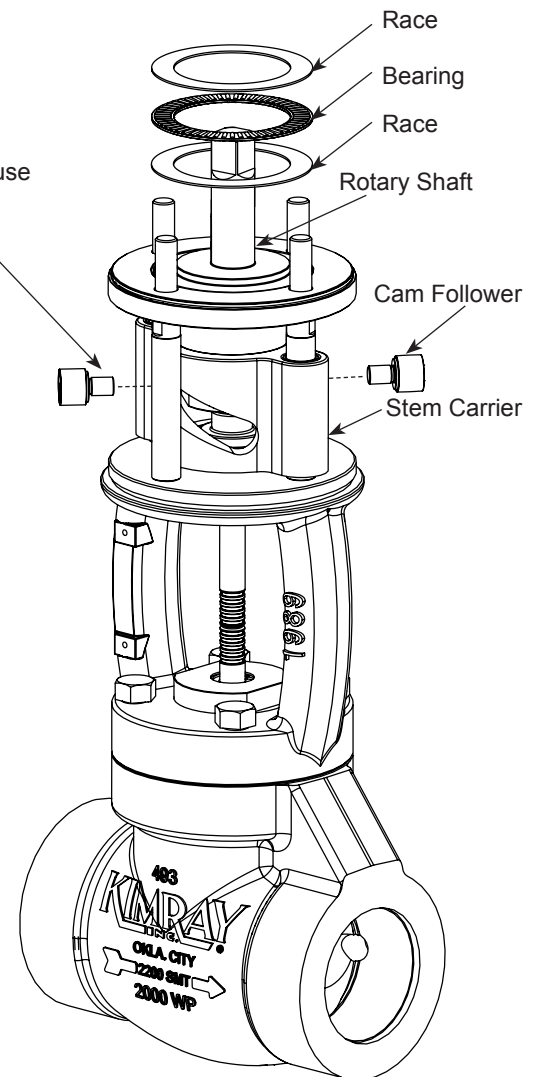


Fig. 8-2

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ASSEMBLY

9 Cover, Flange Adapter, Rod Wiper

Slide Dust Cover onto assembly.
Install O-Ring onto Bearing Support.
See Fig. 9-1

Install Rod Wiper into top side of Flange Adapter.
Install Flange Adapter onto assembly. Ensure O-Ring is not pinched. See Fig. 9-2



NOTE:

Kimray recommends using O-Ring pick.

Thread Lock Nuts onto Guide Rods and tighten with wrench.
Install Indicator Scale on Yoke assembly and Coupling Block and Pointer on Stem.
Install Travel Indicator Assembly on Stem. See Fig. 9-3

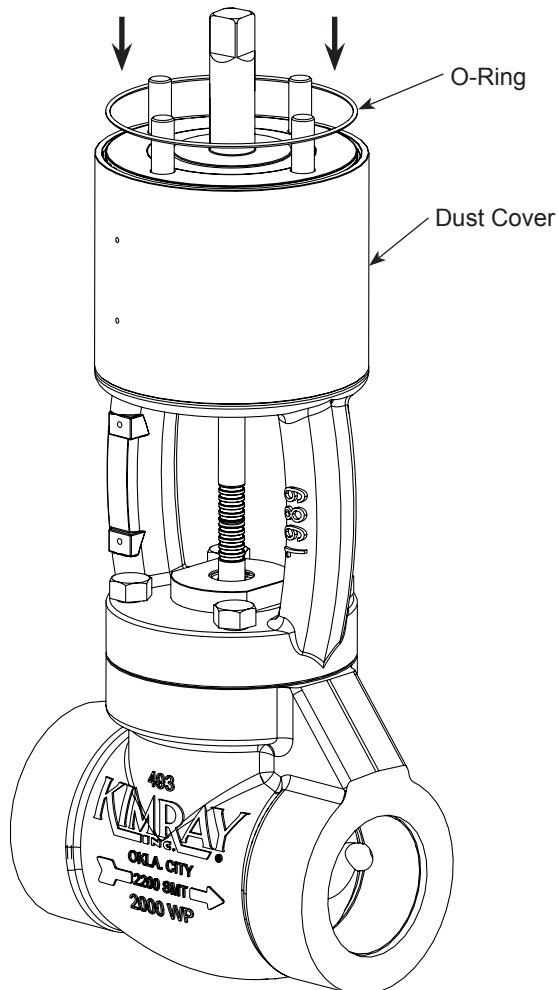


Fig. 9-1

10 Serial Tag

Lightly tap drive screws with small hammer. Leave tag slightly loose until remaining drive screws are in place. Then tap the screws tight against the tag.

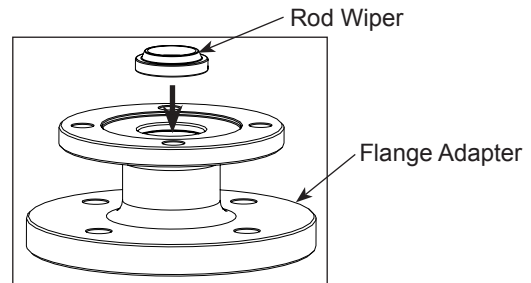


Fig. 9-2

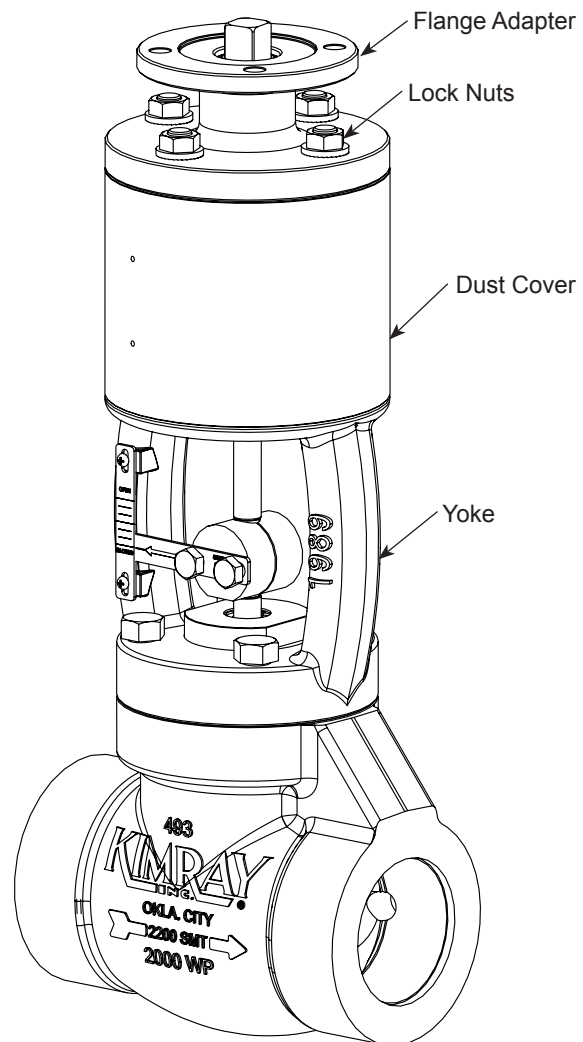


Fig. 9-3

TESTING

11 Actuator Test

**NOTE:**

Use an open ended wrench to ensure assembly functions properly without binding.

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Kimray is an ISO 9001- certified manufacturer.
Kimray quality assurance process maintains strict controls
of materials and the certification of parts used in the Kimray R2L actuator.

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

WHO WE ARE

Kimray is a manufacturer of oil and gas control equipment based in Oklahoma City, Oklahoma, USA.

Trusted for generations, Kimray has been creating simple, effective solutions for temperature, level, flow, and pressure control since 1948. Common applications include separation, heating, compression, dehydration, and artificial lift.

Buying from Kimray is about much more than the product. We are partners with hearts to serve. The relationships between our representatives and our customers extend from before the sale through the life of the product. Our focus is not on short-term profits but long-term growth for our customers.

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