KIMRAY INC.®

INSTALLATION OPERATION & MAINTENANCE GUIDE

‡®

TREATER VALVE

M0001
V. 002

‡ Configuration of Water Valve is a trademark of Kimray, Inc..

Contents

A Before you start

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

A1 Scope

⚠ NOTE:
Do not install, operate, or maintain a treater 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 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 SWA and FWA treater valves.

A3 Description

The Kimray treater valve is designed as an oil or water valve for emulsion treaters, water knockouts and gunbarrels. The treater valve is ideal for salt water disposal syStems.

⚠ CAUTION:
When ordered, the treater 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 pressure regulator to any other conditions without first contacting the Kimray Inc, sales office or a sales / applications representative.

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

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
The following publications are applicable for the regulator

Number Type	Title

Catalog Pages D:10.1-5

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

Term	Definition
SWA	Screwed, Water, Angle
FWA	Flanged, Water, Angle

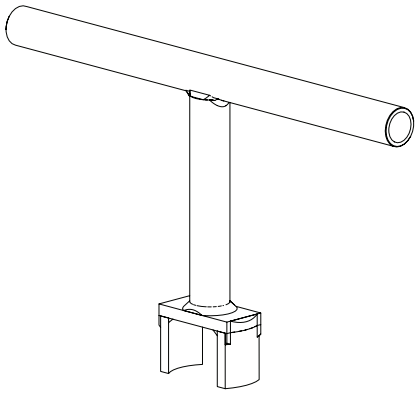
Commonly Replaced Parts
- Trim Set
- Diaphragm
- O-Ring

Occasional Replacement Parts
- Body

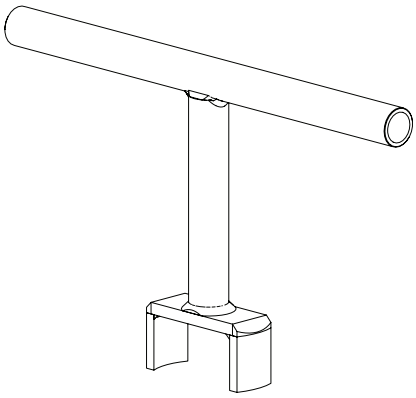
A5 Changes and Updates

SPECIAL TOOLS AND EQUIPMENT

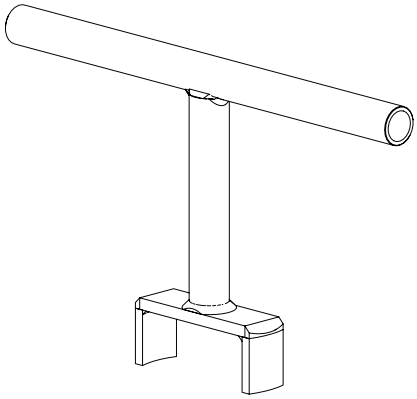
Kimray Seat Wrenches



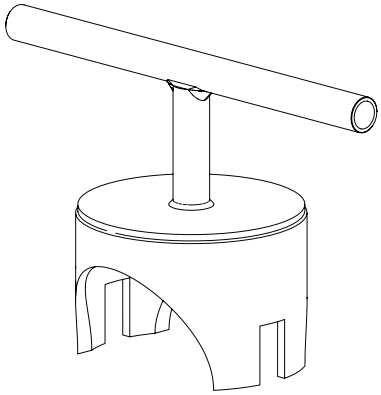
2 in.
#384SW



3 in.
#385SW



4 in.
#386SW



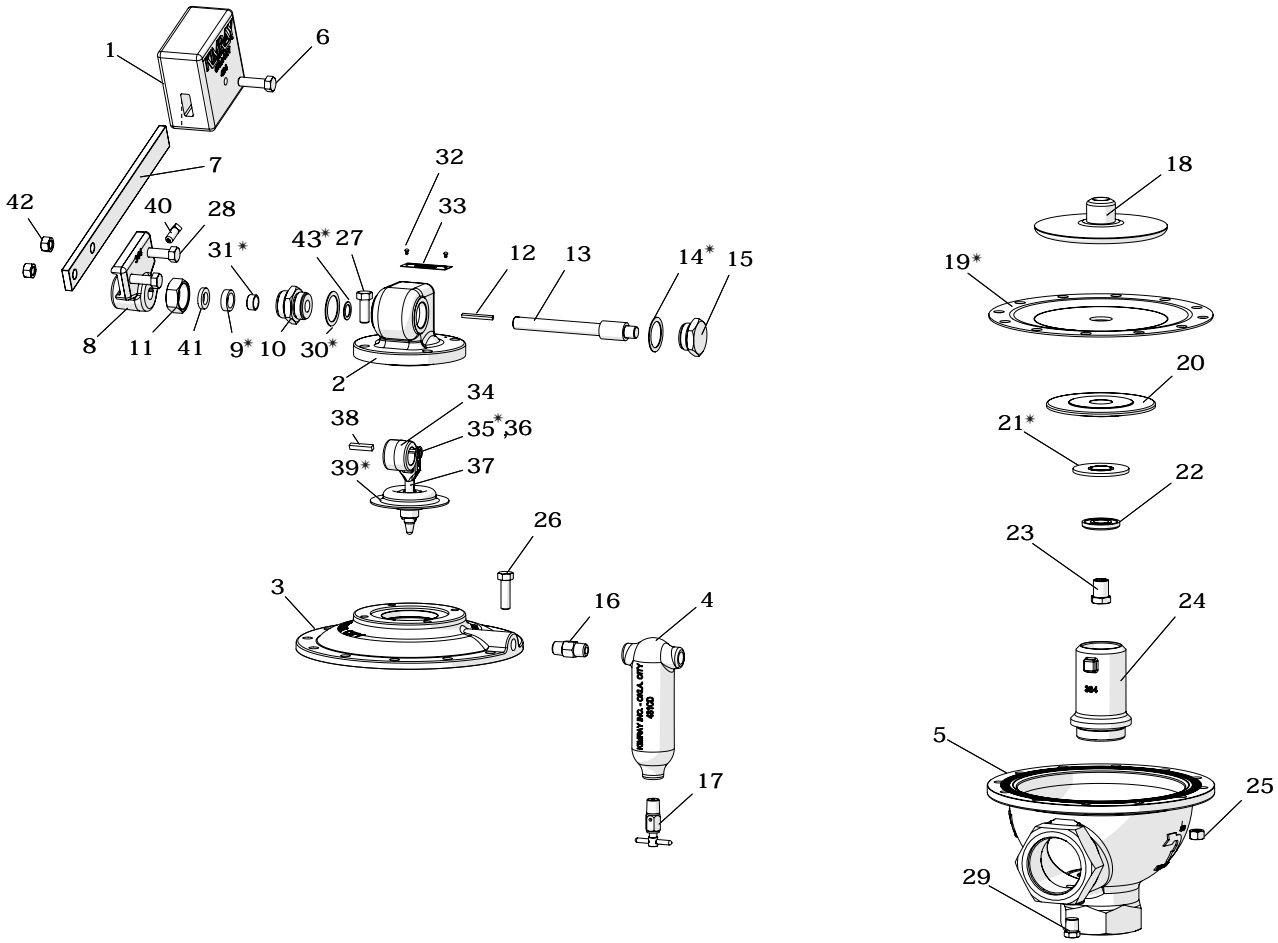
6 in.
#1771SW

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

A6

ORIENTATION

2" Angle Body Shown



A7

* Recommended spare parts and stocked as repair kits

See catalog section D for additional information

Item	Description	Qty
1	Weight	1
2	Bonnet	1
3	Diaphragm Housing	1
4	Drip Pot	1
5	Body	1
6	Hex Bolt	1
7	Lever Bar	1
8	Lever Hub	1
9	Packing Ring *	1
10	Stuffing Box	1
11	Nut	1
12	Key	1
13	Trunnion Shaft	1
14	Gasket *	1
15	Plug	1

Item	Description	Qty
16	Nipple	1
17	Bleed Valve	1
18	Diaphragm Plate	1
19	Diaphragm *	1
20	Disc	1
21	Seat *	1
22	Ratio Plug	1
23	Pivot	1
24	Removable Seat	1
25	Nut	12
26	Screw	12
27	Screw	4
28	Screw	2
29	Plug	1
30	Gasket *	1

Item	Description	Qty
31	Packing, Teflon *	1
32	Pin, Groove	2
33	Name Plate	1
34	Link Hub	1
35	Snap Ring *	2
36	Link Pin	1
37	Stem	1
38	Hub Link Key	1
39	Diaphragm *	1
40	Set Screw	1
41	Packing Follower	1
42	Nut	2
43	Thrust Washer *	1

1 Installation

Before installing the treater 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.

Verify all pressure connections are tight before pressurizing the syStem.

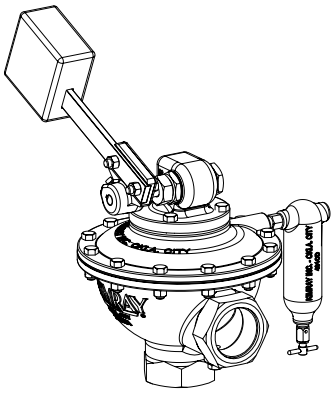
1. Install the valve with the arrow on the Body pointing in the direction of flow. The direction of flow indicated will not necessarily prevent flow in the opposite direction. See Fig. 1-1

2. 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.

⚠ NOTE:
The flange bodies are not rated to the ANSI class pressure. Connection rating can be higher than Body rating.

3. Install gas equalizing line to 1/4" connection of Drip Pot. Do not share this line with any other equipment.

4. Adjust weight on Lever Arm. All the way out towards the end of lever bar will achieve 4 ft. of liquid head. All the way in towards Hub Assembly will achieve 2 ft. of liquid head.



⚠ 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.

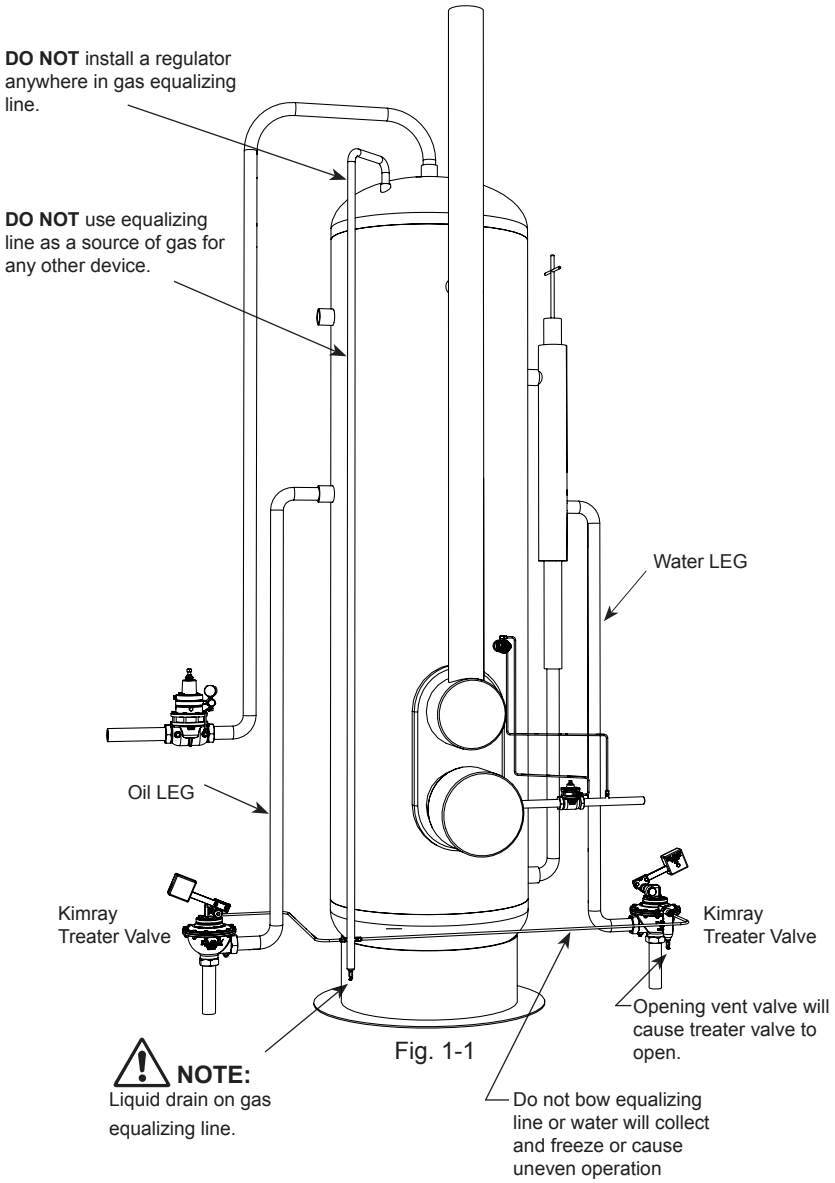


Fig. 1-1

⚠ NOTE:
DO NOT connnect gas equilizing line to gas vent line, burner manifold or downstream of mist extractor. **DO NOT** share equalizer lines.

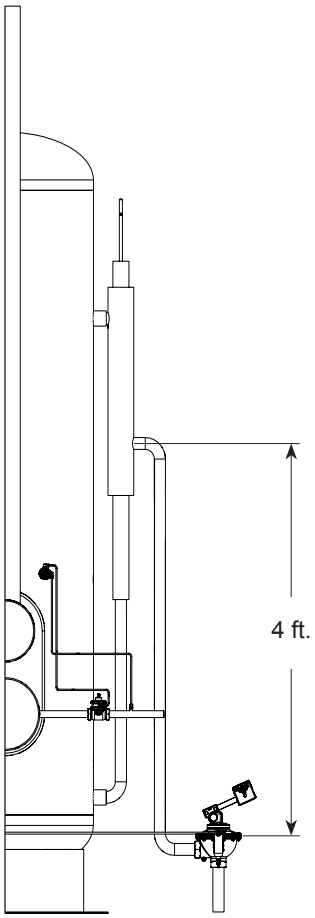


Fig. 1-2
Not to scale

Fig. 1-2 shows a single weight all the way out on a standard Lever Bar allowing the maximum 4 feet of liquid head.

Fig. 1-3 shows two weights all the way out on the longer Lever Bar allowing the maximum 12 feet of liquid head.

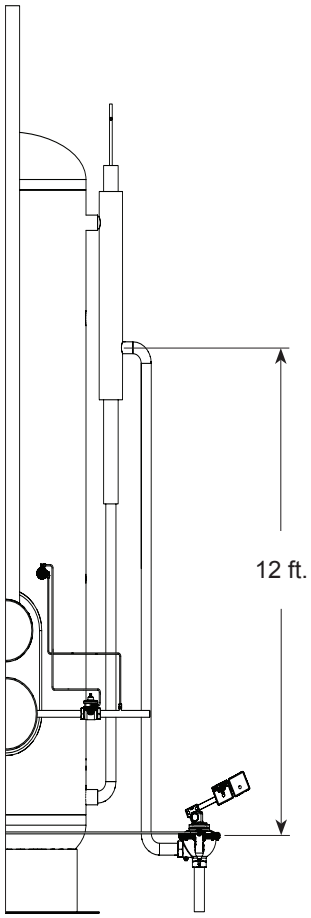


Fig. 1-3
Not to scale

Table 1 - Lengths and Weights

Size	Standard Lever Bar	(Hi-Head) Lever Bar	Weight Part No's.
2	419	419L	424
3	420	420L	425
4	420	420L	426
6	420	420L	426

All heights subject to liquid with a specific gravity of 1.

For gravity correction, multiply the above Figures by $\frac{1}{\sqrt{G}}$ Where "G" is the specific gravity of the flowing liquid.

DISASSEMBLY

2 Weight & Drip Pot

Secure valve in vise, remove the weight by loosening the Bolt. Unscrew Drip Pot from Nipple and remove Bleed Valve from Drip Pot. See Fig. 2-1

Remove both Bolts from the Lever Hub and remove Lever. See Fig. 2-2

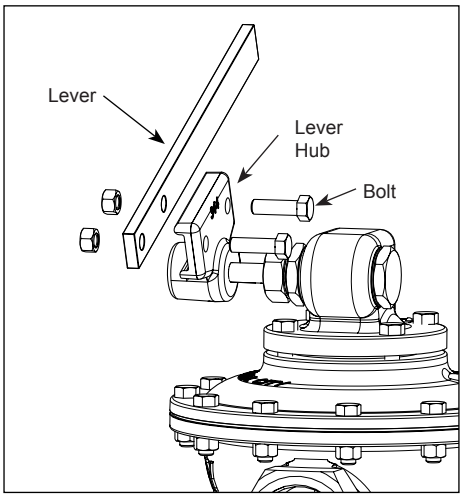


Fig. 2-2

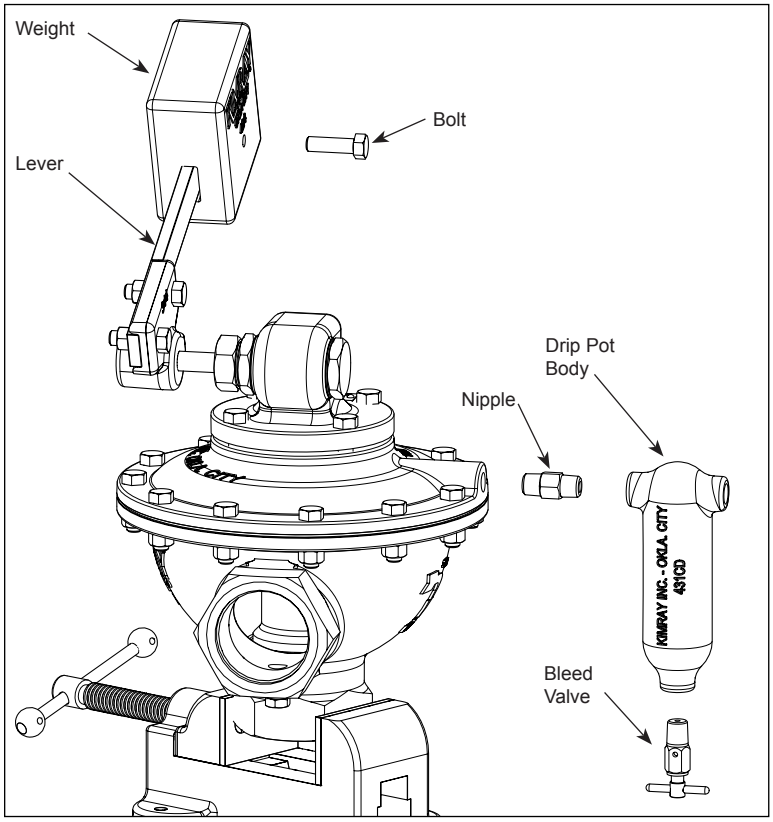


Fig. 2-1

DISASSEMBLY

3 Lever Hub

Loosen Locking Screw from Lever Hub.
See Fig. 3-1

Remove Lever Hub from Shaft be careful to not bend the Shaft.
Remove Key from Lever Hub. See Fig. 3-2

NOTE:
The Lever Hub may be difficult to remove from the Shaft if so remove the Shaft from the Bonnet place into a vice and heat the Lever Hub with a torch.

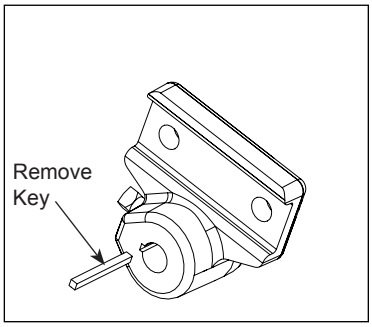


Fig. 3-2

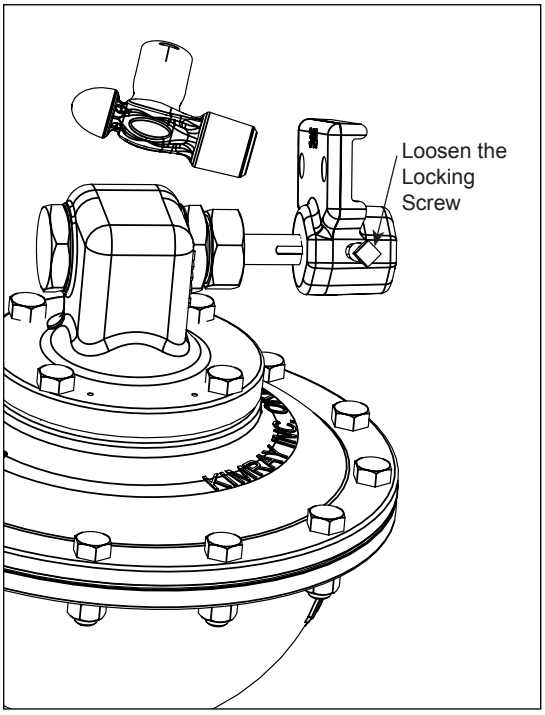


Fig. 3-1

DISASSEMBLY

4 Shaft

Use an adjustable wrench to remove the Nut.
See Fig. 4-1

Remove Packing Follower behind Nut. See Fig. 4-2

Remove Stuffing Box Assembly. See Fig. 4-3

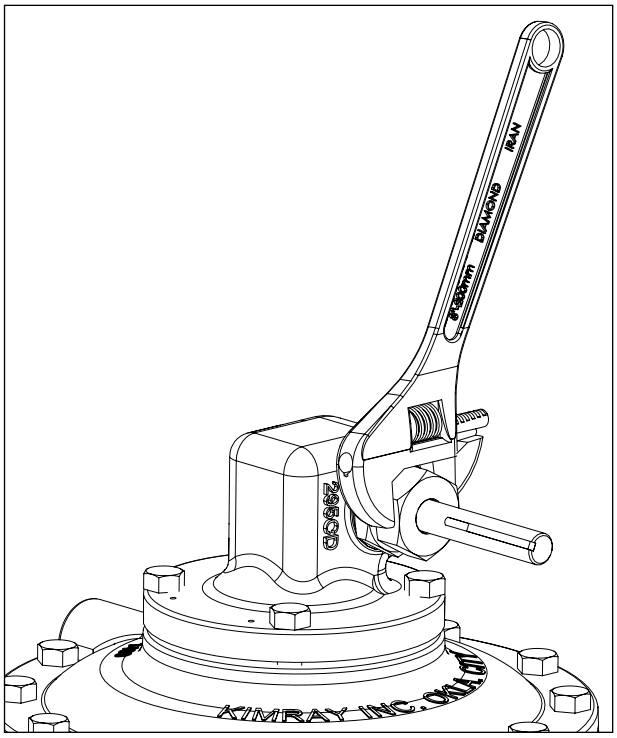


Fig. 4-1

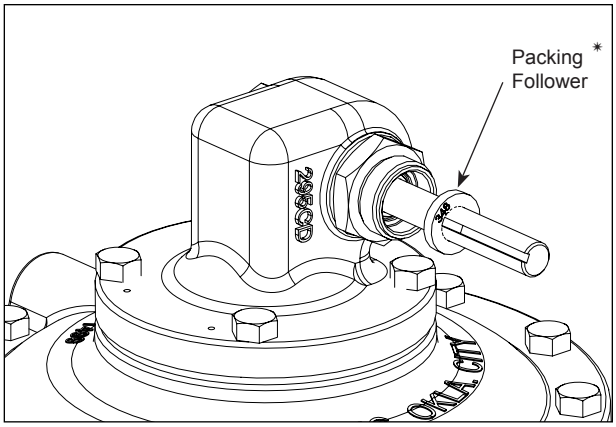


Fig. 4-2

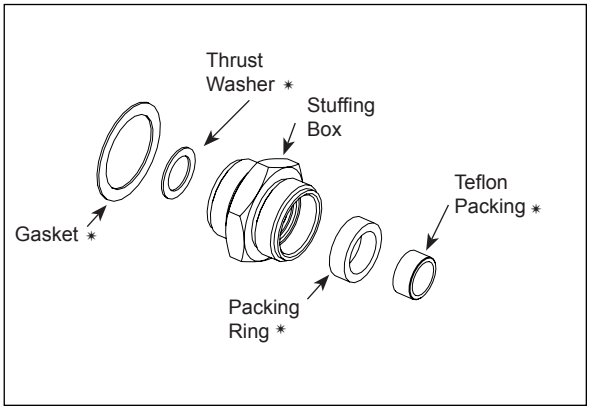


Fig. 4-3

✳ Recommended spare parts and stocked as repair kits

DISASSEMBLY

Use a wrench to remove the Plug.

Remove Gasket from Plug. See Fig. 4-4

Use large punch and carefully tap Shaft out.
See Fig. 4-5

NOTE:
If Shaft is bent, it may be necessary to cut the Shaft off, then tap the Trunnion Shaft out. See Fig.4-6

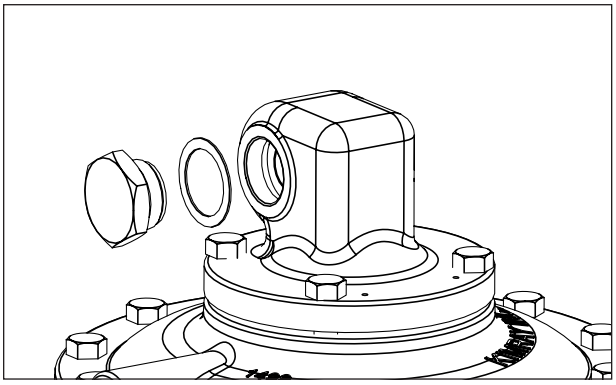


Fig. 4-4

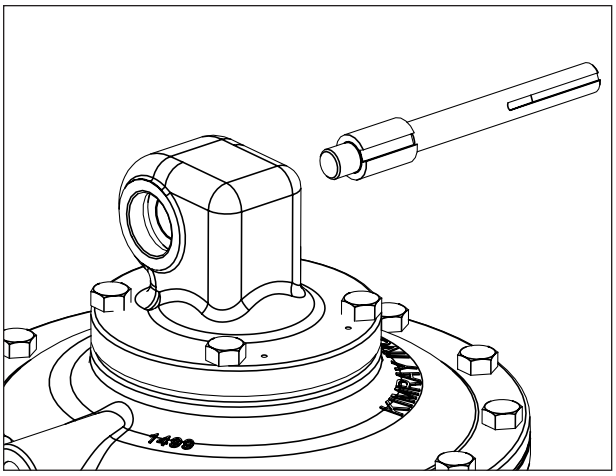


Fig. 4-5

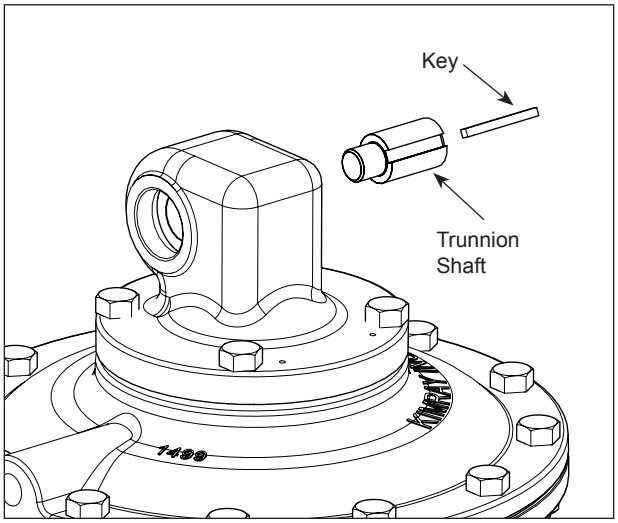


Fig. 4-6

DISASSEMBLY

5 Bonnet

Remove 4 Bolts from Bonnet and remove Bonnet.
See Fig. 5-1

NOTE:
If Bonnet is stuck, pry gently with a flat blade screw driver.

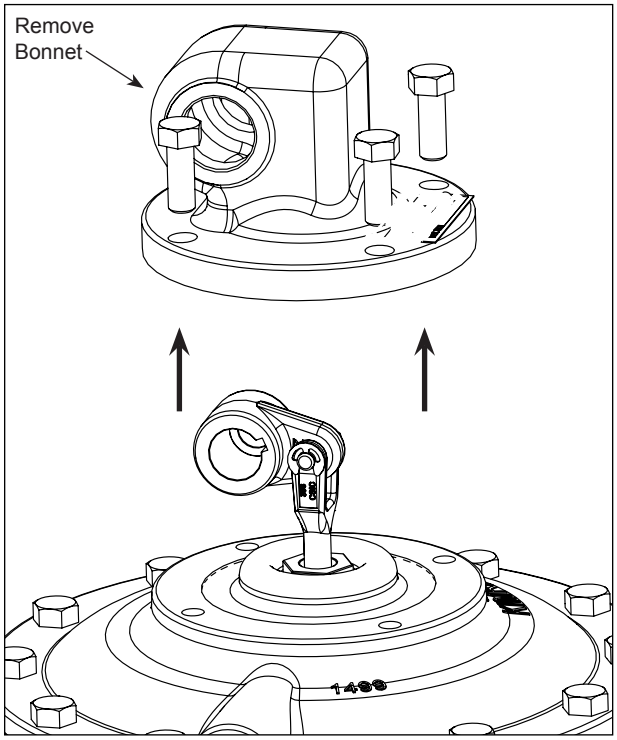


Fig. 5-1

DISASSEMBLY

6 Trunnion Hub

Remove Snap Rings.

Remove Pin.

Remove Trunnion Hub. See Fig. 6-1

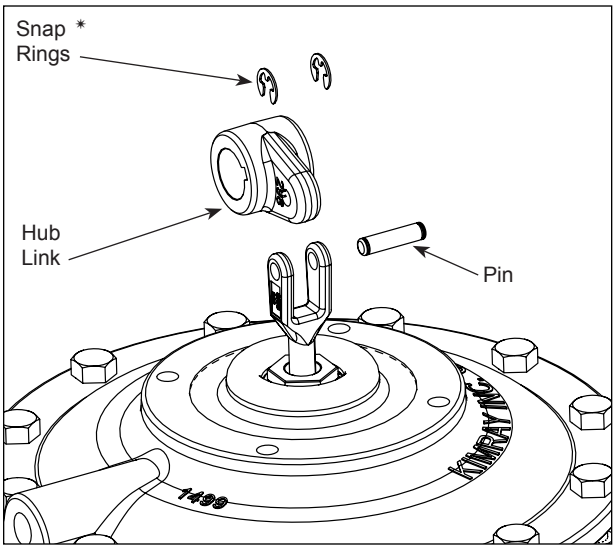


Fig. 6-1

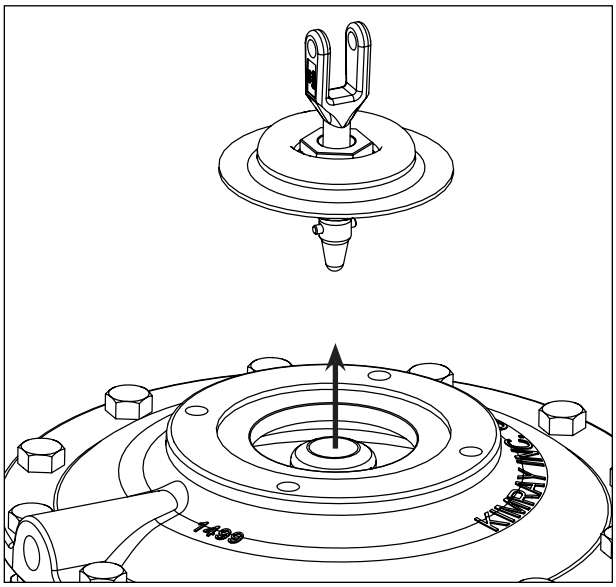


Fig. 7-1

7 Stem Assembly

Loosen Diaphragm Bolt and remove Stem Assembly from Body. See Fig. 7-1

Pull Pin from Stem Assembly.

Pull Stem through Diaphragm Bolt.

Remove Diaphragm.

Remove Retainer from Diaphragm Bolt. See Fig. 7-2

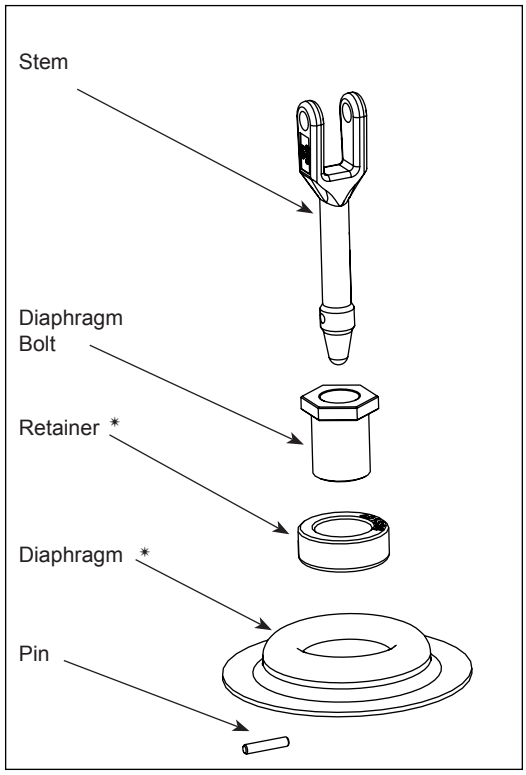


Fig. 7-2

DISASSEMBLY

8 Housing

Remove Bolts connecting Upper Housing to Lower Body. See Fig. 8-1

⚠ NOTE:
If Bonnet is stuck, tap with hammer if Bolts break off during removal, knock them out with a punch and hammer.

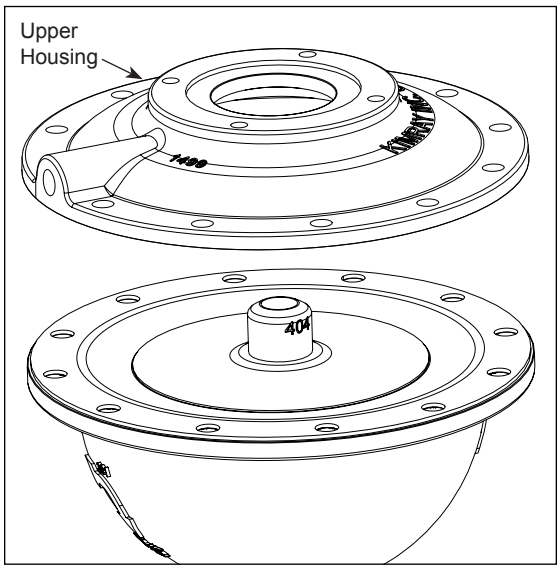


Fig. 8-1

9 Diaphragm Assembly

Loosen Diaphragm Assembly with a wrench and remove Pivot. See Fig. 9-1

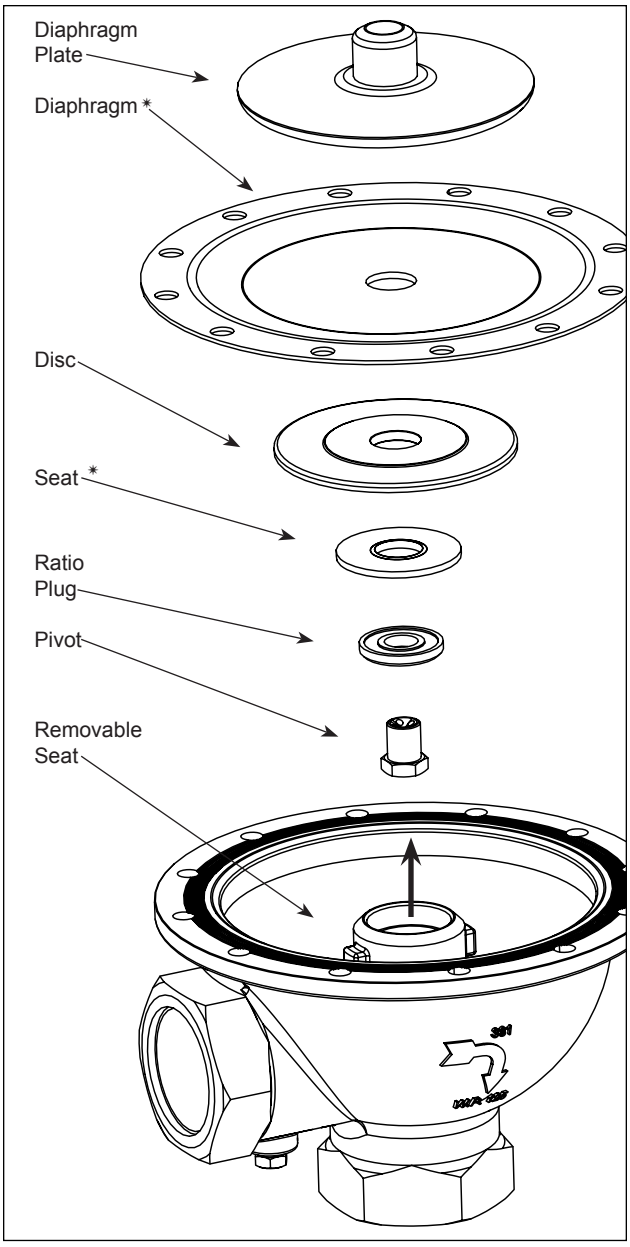


Fig. 9-1

DISASSEMBLY

10 Removable Seat

NOTE:
Remove Seat only if Seating area is damaged.

Unscrew Removable Seat. See Fig. 10-1

Remove Gasket from Removable Seat. See Fig. 10-2

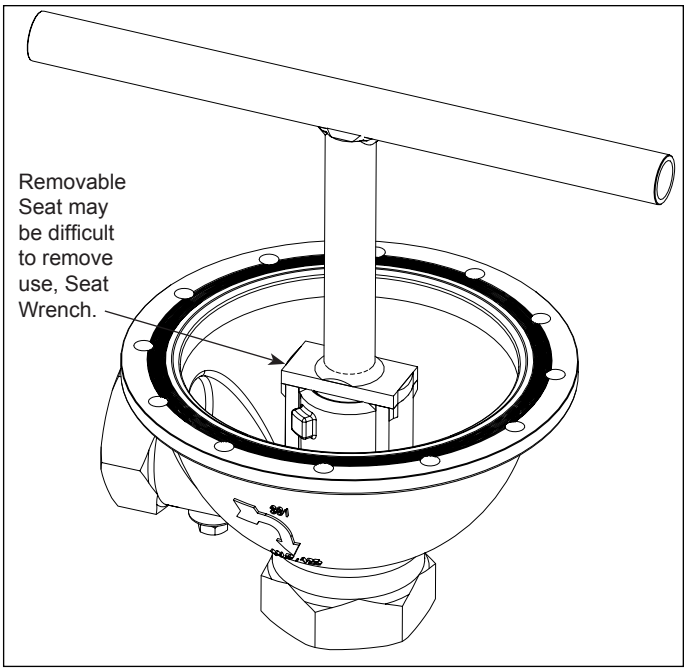


Fig. 10-1

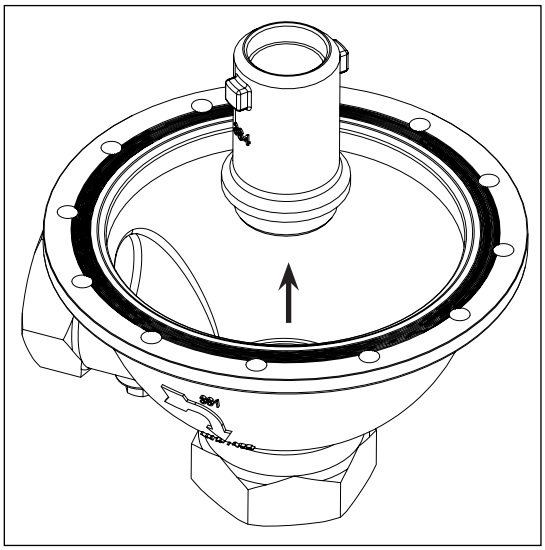


Fig. 10-2

INSPECTION

11 Inspection & Cleaning

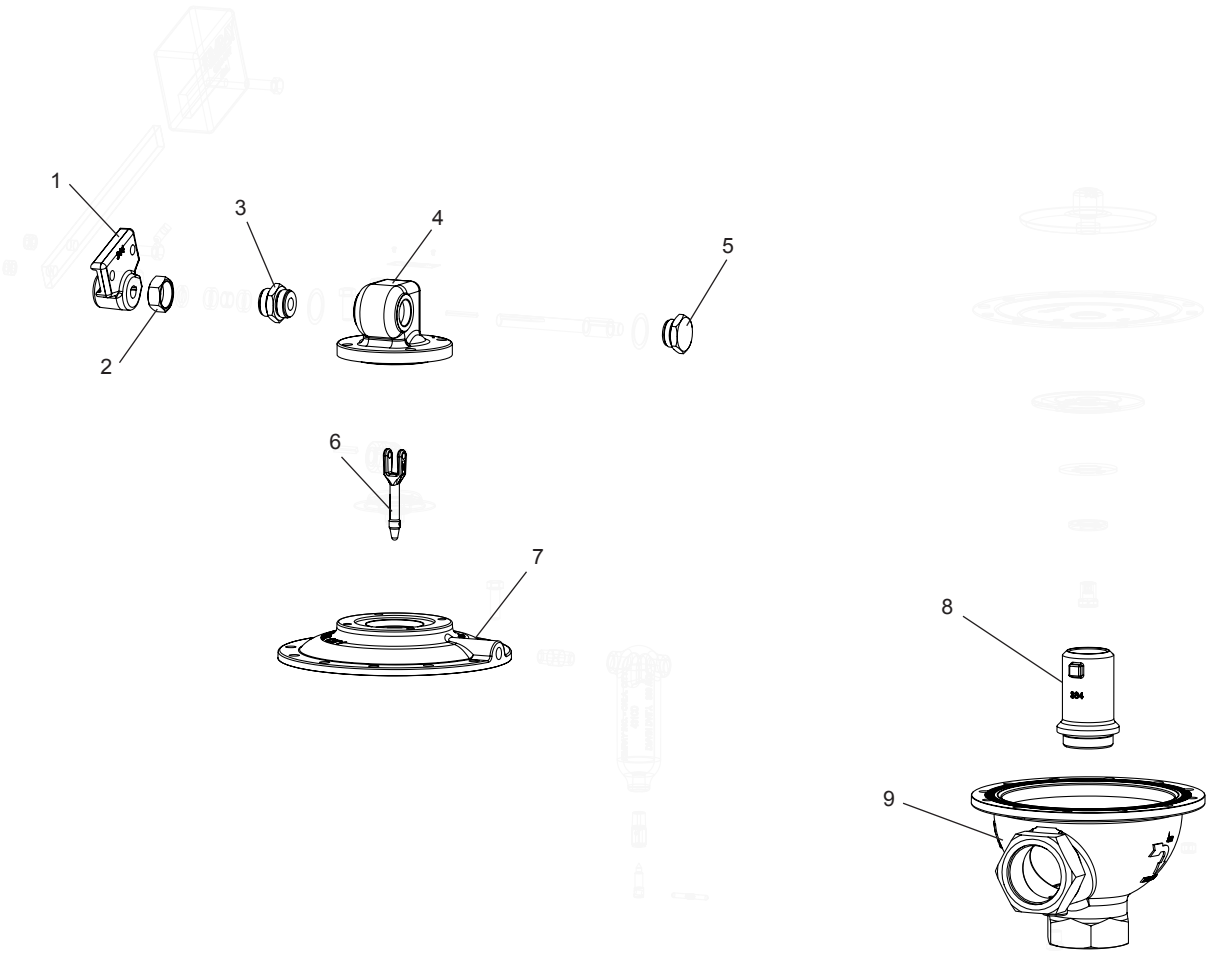


Fig. 11-1

Item numbers 1- 9 should be sandblasted or cleaned

Item	Description	Qty
1	Lever Hub	1
2	Nut	1
3	Stuffing Box	1
4	Bonnet	1
5	Plug	1
6	Stem	1
7	Housing	1
8	Removable Seat	1
9	Body	1

INSPECTION

Wire brush to clean the following:

- Plug See Fig. 11-1
- Stuffing Box See Fig. 11-2
- Nut See Fig. 11-3
- Bonnet See Fig. 11-4
- Stem See Fig. 11-5
- Diaphragm Plate See Fig. 11-6
- Ratio Plug See Fig. 11-7
- Removable Seat See Fig. 11-8
- Housing See Fig. 11-9
- Body See Fig. 11-10

Use an air nozzle to blow out the particles from inside.

NOTE:

Any loose particles left inside could cause leakage.

Flip Bonnet over and verify that communication hole is clear and free of debris. See Fig. 11-4

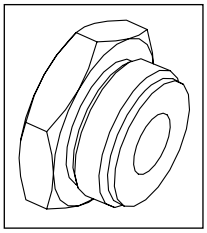


Fig. 11-1

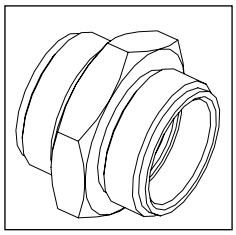


Fig. 11-2

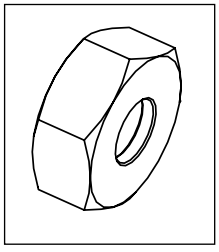


Fig. 11-3

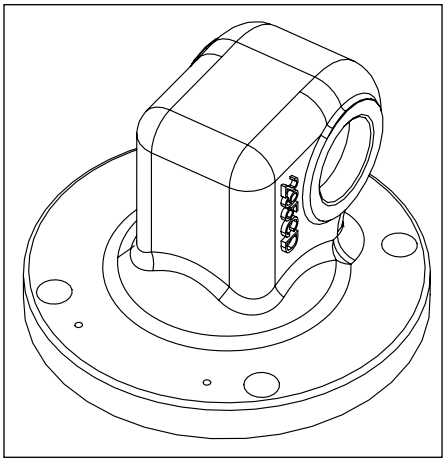


Fig. 11-4

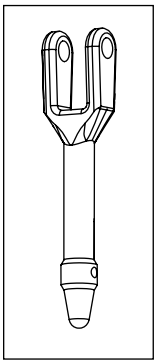


Fig. 11-5

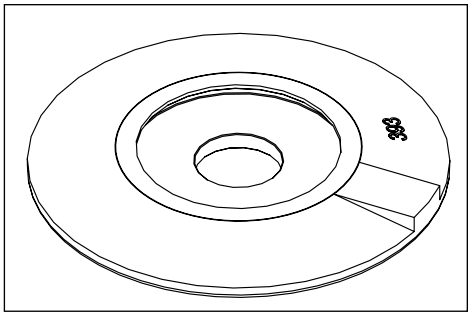


Fig. 11-6

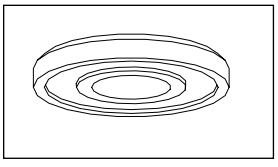


Fig. 11-7

INSPECTION

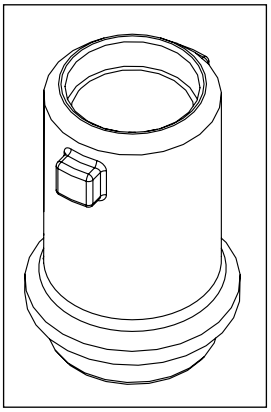


Fig. 11-8

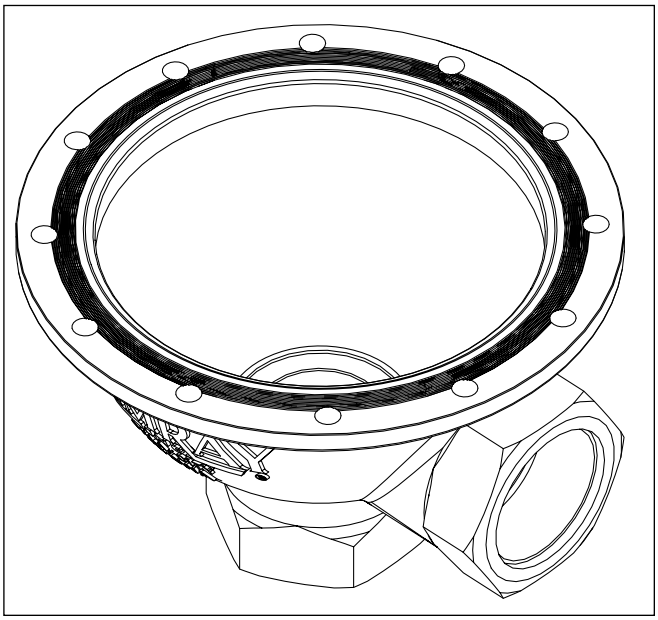


Fig. 11-10

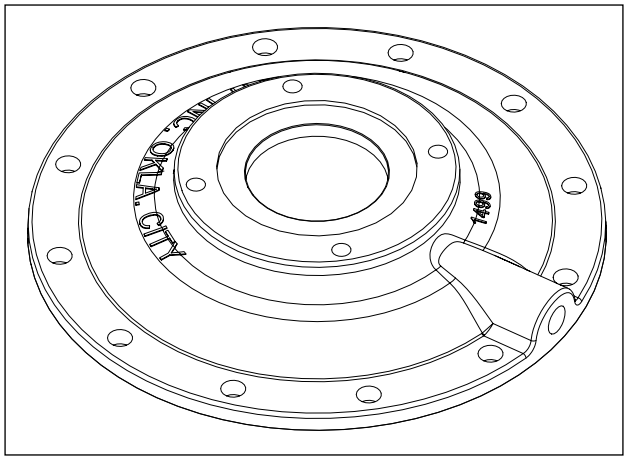


Fig. 11-9

ASSEMBLY

12 Removable Seat

Apply all purpose grease to the Seat area of the Body as shown. See Fig.12-1

Flip Removable Seat upside down and apply all purpose grease. See Fig. 12-2

Install Removable Seat in Body, may have to use Seat Wrench. See Fig. 12-3 & 12-4

⚠ CAUTION:
Over tightening the Seat can tear the Gasket.

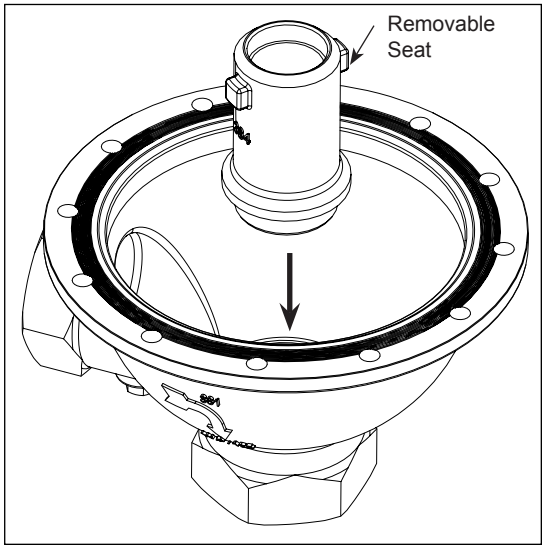


Fig. 12-3

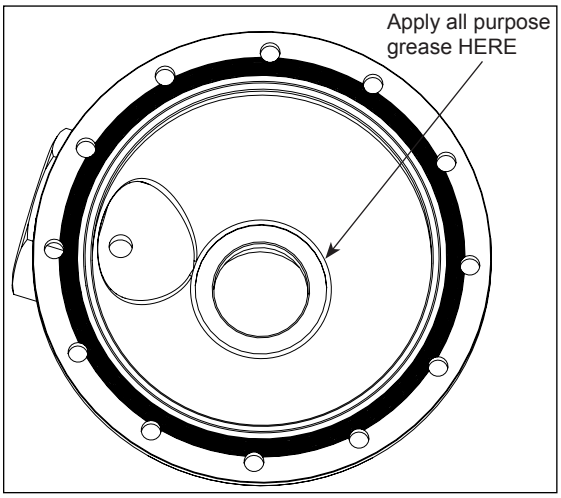


Fig. 12-1

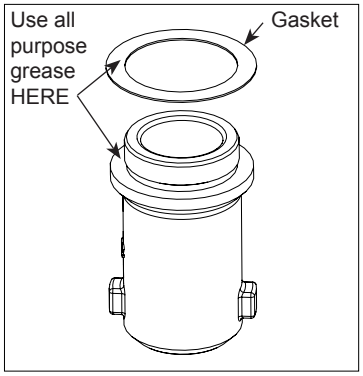


Fig. 12-2

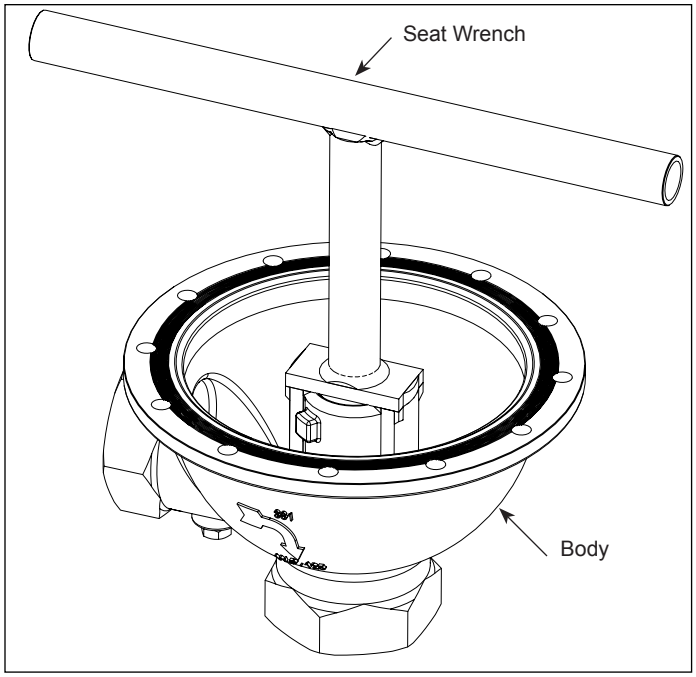


Fig. 12-4

ASSEMBLY

13 Diaphragm Assembly

Flip Diaphragm Plate over and place Diaphragm on top.

Place Disc onto Diaphragm.

Place rubber Seat into Disc.

⚠ NOTE:
Use a flat head screw driver to work the Rubber Seat into place.

Insert Pivot into Ratio Plug.

Insert into Seat.

Insert into Disc.

Insert into Diaphragm.

Insert into Diaphragm plate.

See Fig. 13-1

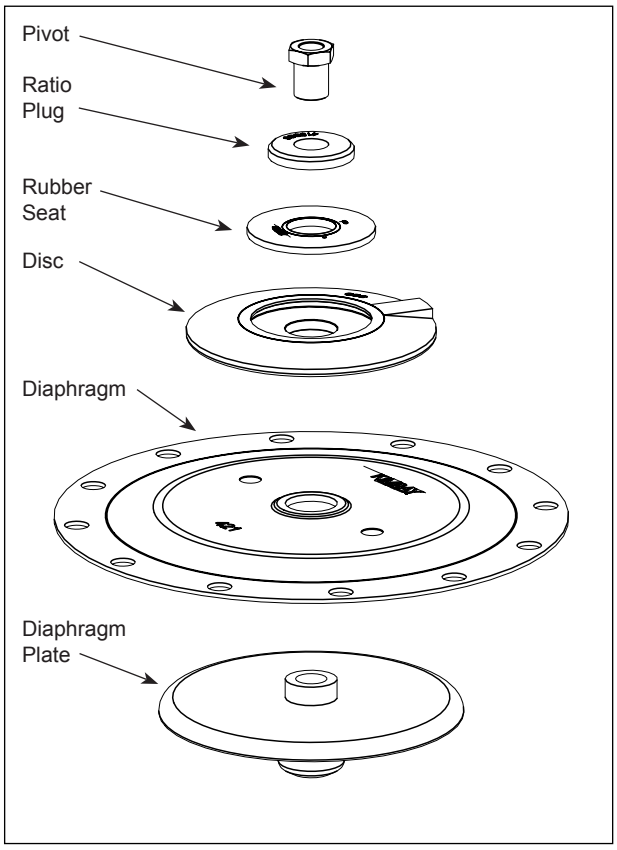


Fig. 13-1

Place pivot on ratio plug

Be sure grooved side faces toward seat

Take wrench and tighten Pivot
See Fig. 13-2

Place Diaphragm Assembly on Body
See Fig. 13-3

⚠ CAUTION:
DO NOT OVER TIGHTEN, can tear Gasket.

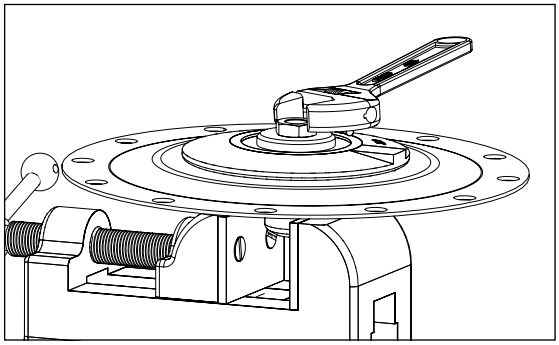


Fig. 13-2

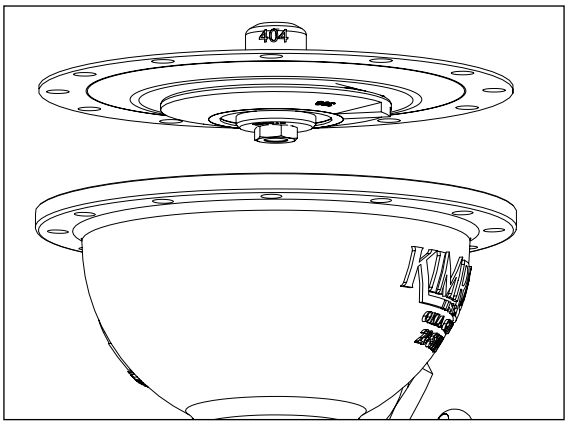


Fig. 13-3

ASSEMBLY

14 Housing

Place Diaphragm Housing on Body.
See Fig. 14-1 & 14-2

⚠ NOTE:
Make sure you tighten the Bolts in a criss-cross pattern to avoid any miss alignment. For 2in., 3in., and 4in. tighten Bolts from 25-30 ft/lbs torque.

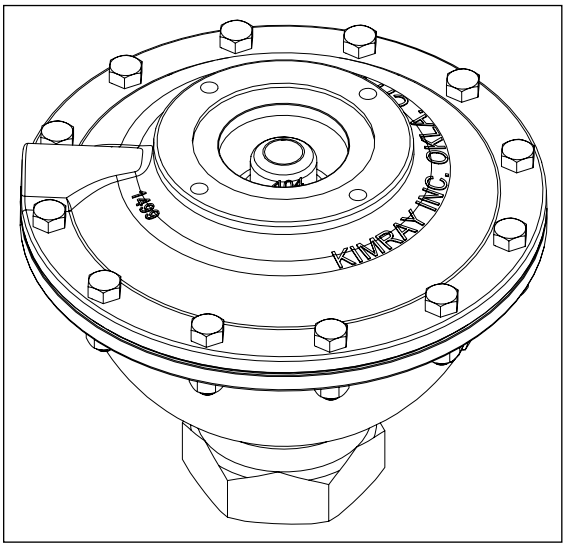


Fig. 14-1

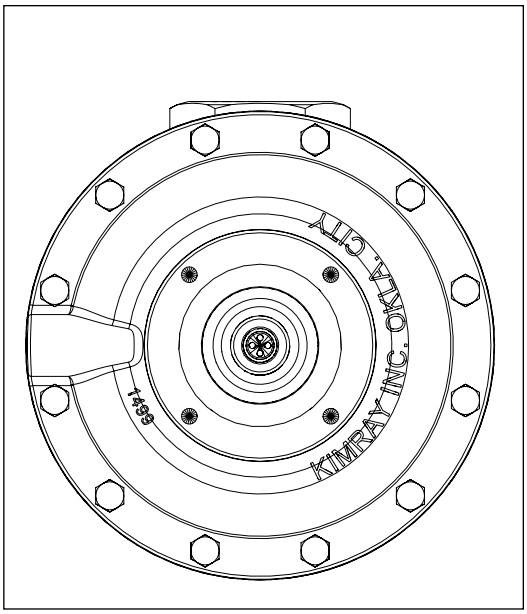


Fig. 14-2

ASSEMBLY

15 Stem / Hub Sub-Assembly

⚠ CAUTION:
Hold the Stem Pin into place during installation. Tighten the Assembly using both a crows foot wrench and a torque wrench. Tighten from 10-12 ft/lbs torque.

Verify that the Hub is positioned as shown with Keyway in the up position.

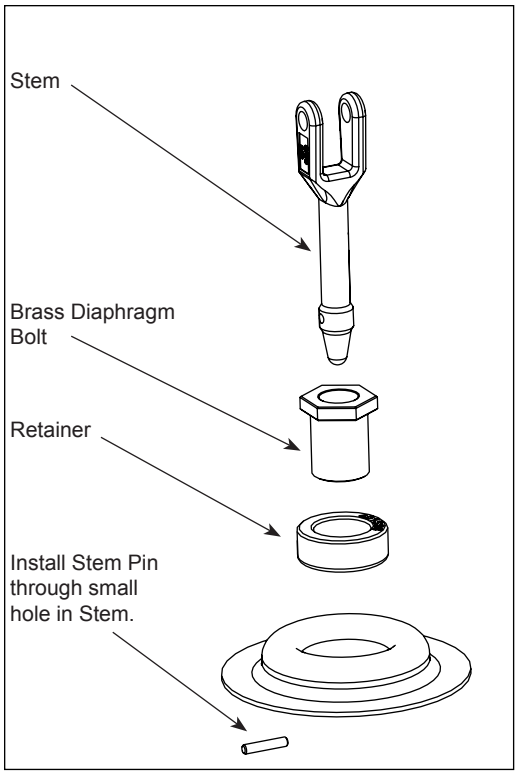


Fig. 15-1

Install Stem Diaphragm Assembly into Diaphragm Plate. See Fig. 15-2

⚠ NOTE:
DO NOT DROP Stem Assembly into Housing.

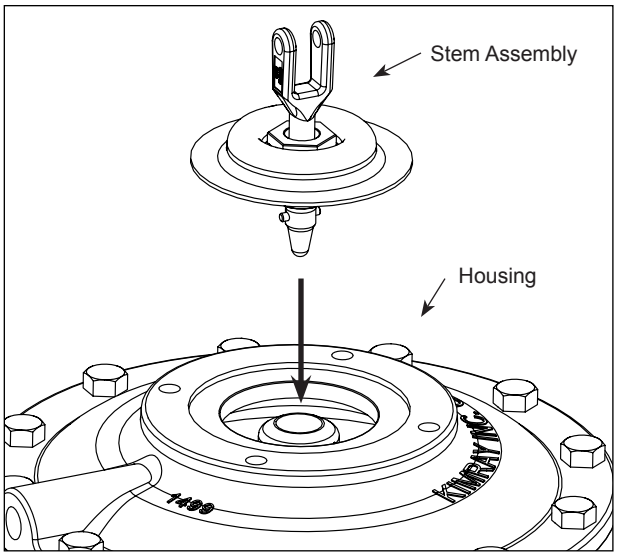


Fig. 15-2

Hand start brass Diaphragm Bolt into Diaphragm Plate. See Fig. 15-3

An adjustable wrench may be used to run down Diaphragm Bolt until it stops. **DO NOT** use an adjustable wrench to fully tighten Bolt. Tighten Bolt from 10-12 ft./lbs torque.

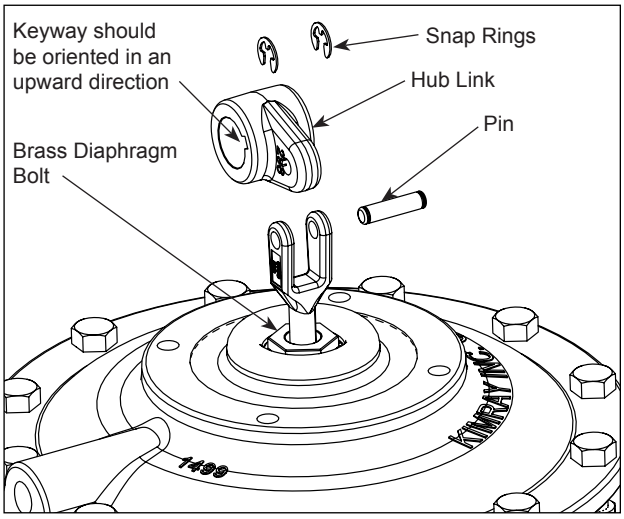


Fig. 15-3

ASSEMBLY

16 Bonnet

Lift Link Hub slightly and place Bonnet over Stem Assembly and onto Stem Diaphragm Assembly. See Fig. 16-1

Fig. 16-2 shows correct orientation of Bonnet to Body.

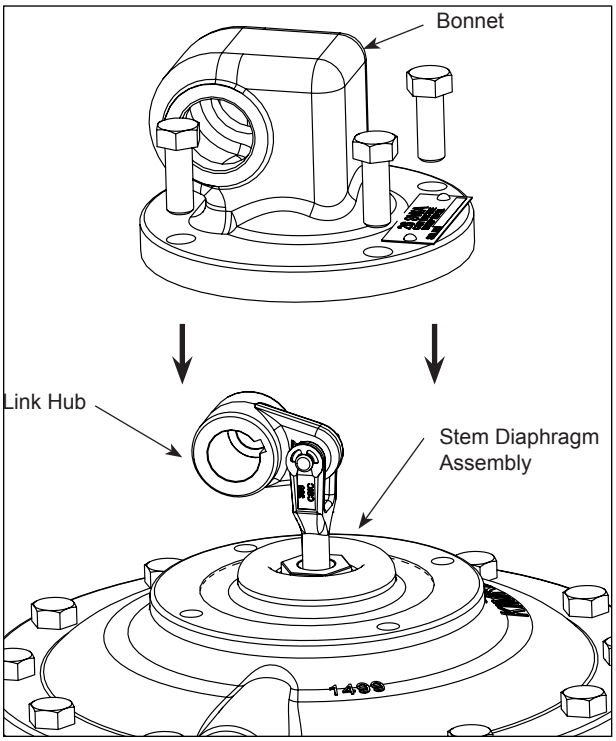


Fig. 16-1

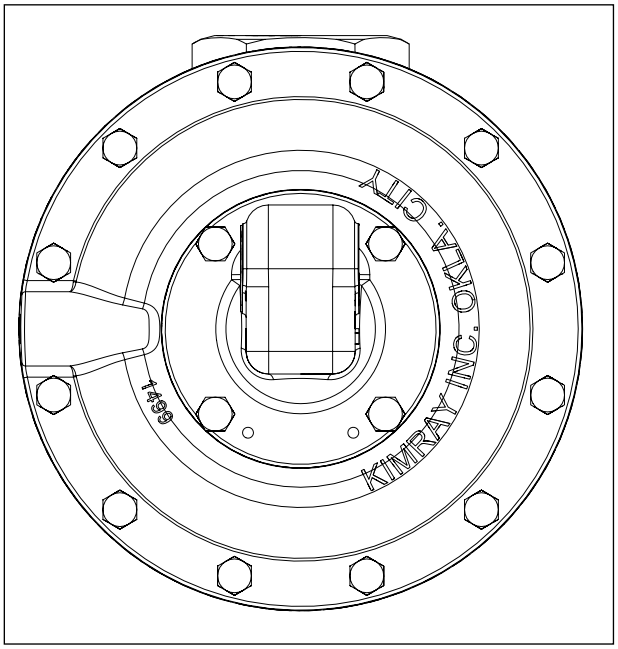


Fig. 16-2

NOTE:
Make sure you tighten the Bolts in a criss-cross pattern to avoid any miss alignment. For 2 in., 3 in., 4 in. and 6 in. tighten Bolts from 25-30 ft/lbs torque.

ASSEMBLY

17 Stem

Insert Key onto Stem and insert Stem Assembly into Keyway on large diameter of Shaft.

Line up Key with the Keyway inside the Link Hub and slide Shaft and Key into Hub. Long end of Shaft will be oriented opposite the pressure port of the Diaphragm Housing.

⚠ NOTE:
Use all purpose grease or use never seize on Shaft.

Insert long side of Stem opposite of vent line hole.

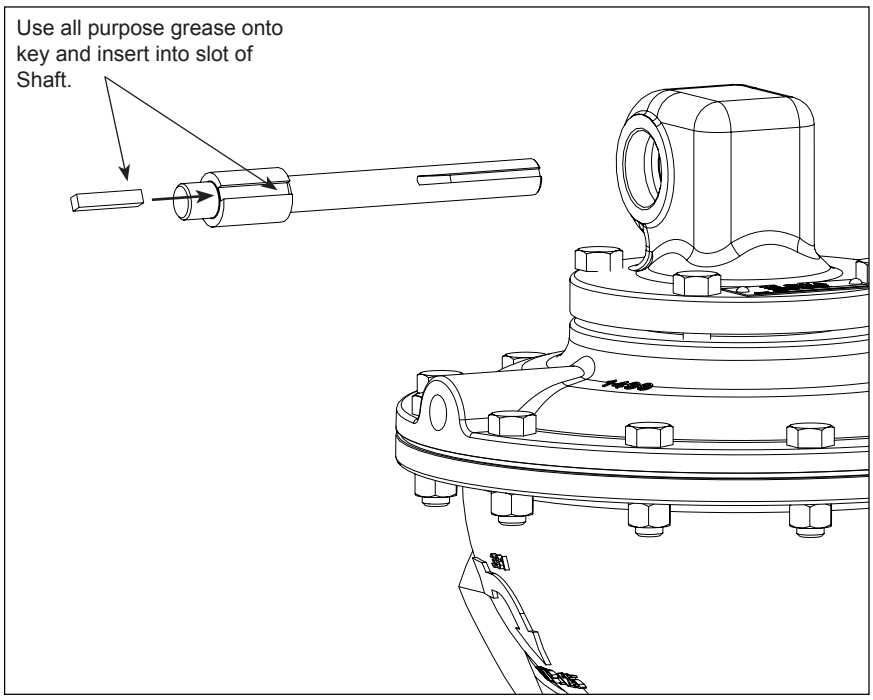


Fig. 17-1

ASSEMBLY

18 Plug and Stuffing Box

Install the Gasket on the Plug making sure the Gasket rests against the shoulder of the Plug.
See Fig. 18-1

⚠ NOTE:
Use all purpose grease on both sides of the Gasket just before the Plug is installed.

Tighten Plug from 20-25 ft/lbs torque.

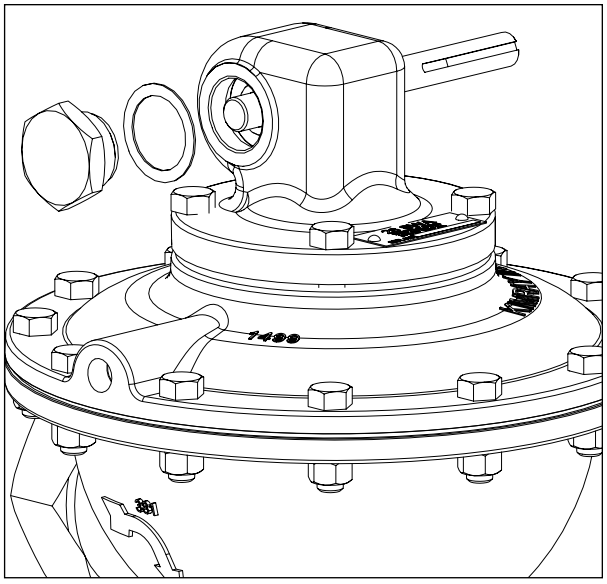


Fig. 18-1

19 Lever Hub

Install the Washer onto the Shaft.

Install the Gasket onto the Shaft.

Install the Stuffing Box onto the Shaft.

Install the Packing Ring onto the Shaft.

Install the Teflon Packing onto the Shaft.

Install the Packing Follower onto the Shaft.

Install the Nut onto the Shaft.

See Fig. 19-1

⚠ NOTE:
If getting the Hub on Shaft becomes difficult after the Key is inserted, place Hub on first and gently hammer Key in until Shaft and Hub are flush.

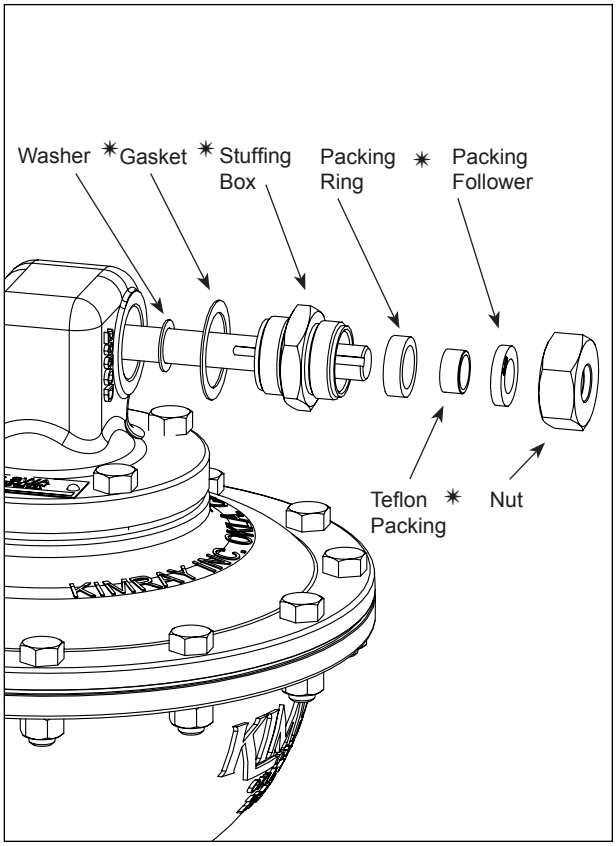


Fig. 19-1

ASSEMBLY

Line up Keyway on Shaft and Lever Hub.

Lightly tap Key into Keyway.

NOTE:
When completed, the Key, the end of the Shaft and the side of the Lever Hub should be flush.
See Fig. 19-2

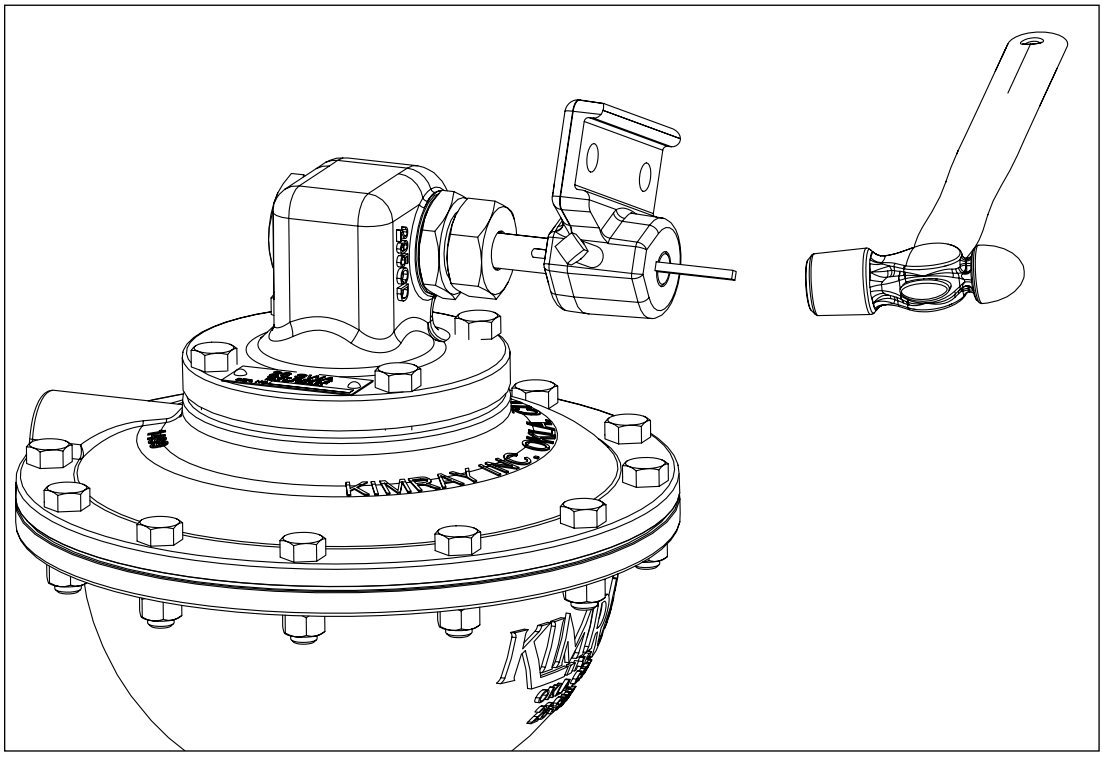


Fig. 19-2

ASSEMBLY

20 Drip Pot

NOTE:
Apply Blue Loctite™ to the threads in the places .
See Fig. 20-1

Thread the Nipple into the side pressure port three full turns.

Thread the Bleed Valve Body into the end pressure port of the Drip Pot Body.

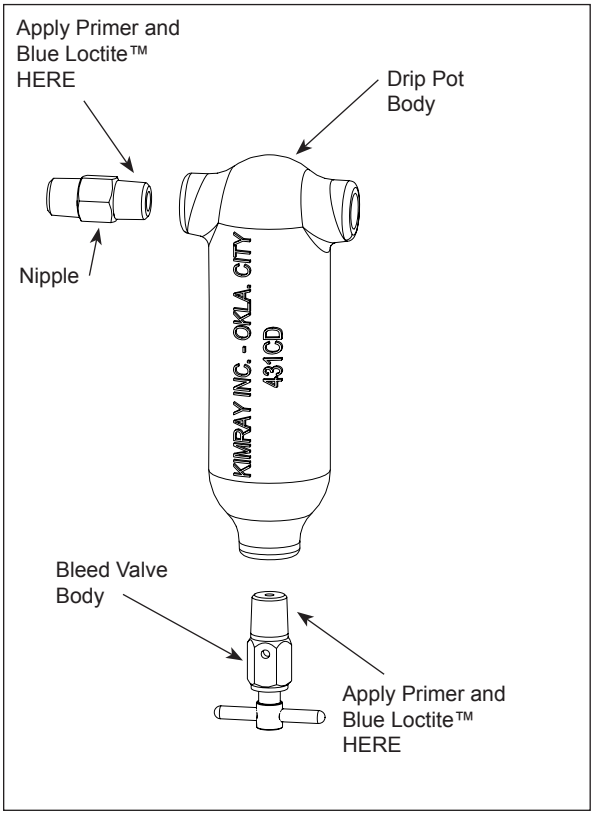


Fig. 20-1

21 Serial Tag

Lightly tap Drive Screws with small hammer. Leave Tag slightly loose until remaining drive Screws are in place. Tap the screws tight against the Tag.
See Fig. 21-1

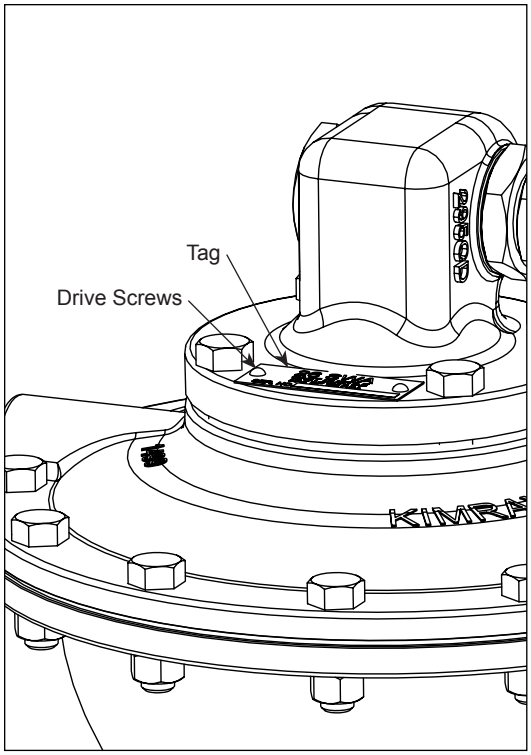


Fig. 21-1

TESTING

22 Flow Direction, Check For Leakage

Flow Direction
Make sure the air is flowing from upstream to downstream. Regulators have an arrow showing the direction of flow.

Check for Leakage
Turn supply air off and make sure the Gauge is holding pressure on the upstream side. If Gauge falls off then you have leakage.

Check if any leakage is coming out the downstream side.

Spray soaped water on Housings, Breather Plugs and Plugs. The identification of leakage will be noted if any bubble shows up.

Treater Valve Test
Once no leakage is detected, close upstream flow.

⚠ NOTE:
Make sure the regulator holds various levels of pressure. (100 psi down to 5 psi by turning the Adjusting Screw out).

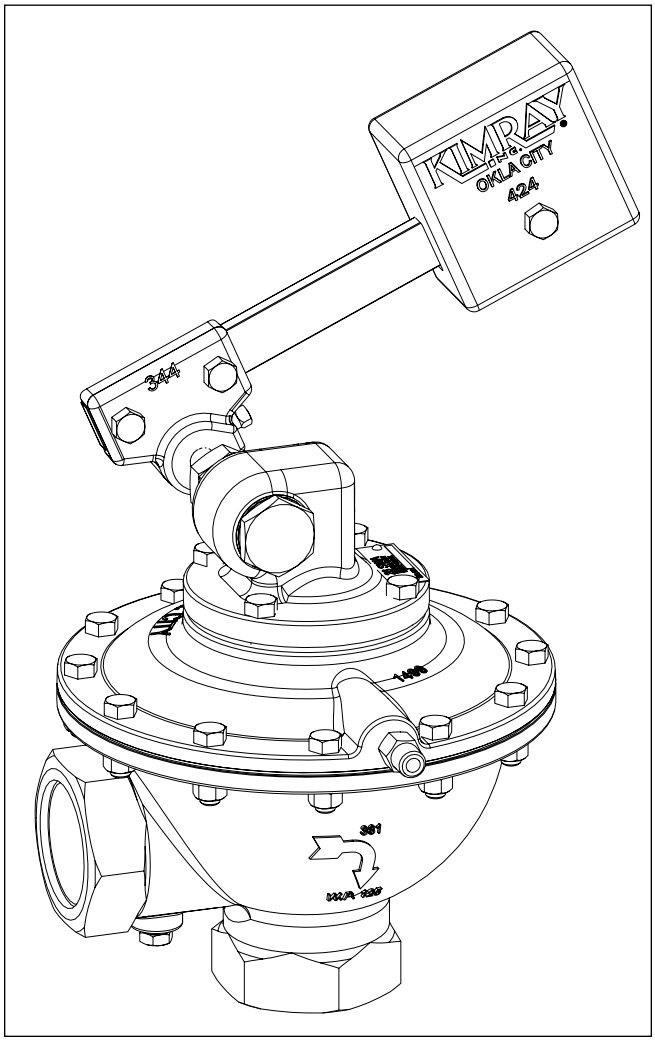


Fig. 22-1

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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 Kimray HPCV.

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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.

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