



MECHANICAL OIL VALVES & TRUNNIONS

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Instruction Manual: IMC2OA



OA & OA PB
Cast Iron, Ductile Iron, & Steel
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HUTA
Ductile Iron, & Steel
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DESCRIPTION:

The Mechanical Oil Valves, Model OA and OA PB are designed to be operated by a float/lever trunnion assembly for use in liquid dump control applications. The valves have a single port body and a mechanical actuator.

The Model OA is balanced by a diaphragm, while the Model OA PB is balanced by a piston and is suitable for higher pressures.*

*Maximum Operating Pressure

	Body	Cast Iron	Ductile Iron	Steel	
Diaphragm Balanced	NPT	2"	125	250	
		3-4"	125	125	
	Flanged	2"	125	250	250
		3-4"	125	125	125
	6"	125	125	125	
Piston Balanced	NPT	2"	500		
		3-4"	250		
	Flanged	2"	250	285	
		3-4"	250	285	

A teflon packed rotary stuffing box seals the rotating shaft.

The Model OA and OA PB feature quick-opening trim, but because of its direct mechanical link with the liquid level, normal action is a throttling mode. The valve is balanced allowing it to function smoothly and close completely regardless of the pressure differential from upstream to downstream. The valve's large opening provides high flowing capacity.

A name tag is attached to the actuator housing on each valve. The name tag lists the serial number, model number, and pressure rating. An additional tag is installed to indicate any special trim options, should they be required.

When servicing valves, always use only Kimray replacement parts. For specific model numbers, part numbers, and repair kit numbers, refer to the Kimray Catalog, Section C2, or to the packing slip which is enclosed with each valve.

SPECIFICATIONS

Normal Service: Liquids

Features:

- Designed for on / off service
- Quick opening trim
- Shut off at full rated upstream pressure
- Large size port for high capacity
- Balanced single seat
- Teflon packed rotary stuffing box
- Available in Pressure Opening or Pressure Closing
- Available in Angle or Thru Body

Construction Materials:

Body	Cast Iron	Ductile Iron	Steel
Stem	303 Stainless	303 Stainless	303 Stainless
Plug	Ductile Iron	Ductile Iron	Steel
Cage	Ductile Iron	Ductile Iron	Ductile Iron
Disc	Ductile Iron	Ductile Iron	Ductile Iron
Seat	Nitrile	Polyurethane	Polyurethane
Diaphragm	Nitrile/Nylon	Nitrile/Nylon	Nitrile/Nylon
Piston	303 Stainless	303 Stainless	303 Stainless
Diaphragm	303 Stainless	303 Stainless	303 Stainless
Stuffing Box	Brass	Brass	Brass
Packing	Nitrile	Nitrile	Nitrile

AVAILABLE MODELS

- Connection Size:** 2", 3", 4", 6"
- Connection Style:** NPT or Flanged
- Body Style:** Angle or Thru
- Actuation:** Mechanical--Rotary
- Balancing:** Diaphragm or Piston
- Body Material:** Cast Iron, Ductile Iron, Steel



MECHANICAL OIL VALVES

Models Models OA & OA PB

SPECIFICATIONS - Continued

Body End Connections & Pressure Ratings:

Body Pressure Rating

Cast Iron:	2", 3" NPT	175 psig (12 bar)
	2", 3", 4" ANSI 125 Flanged	175 psig (12 bar)
Ductile Iron:	2" NPT	500 psig (34.5 bar)
	3" & 4" NPT	300 psig (20.7 bar)
	2", 3", 4", 6" ANSI 150 RF Flanged	250 psig (17.2 bar)
Steel:	2", 3", 4", 6" ANSI 150 RF Flanged	285 psig (19.6 bar)

Normal Operating Temperature:

- 20° to 200° F
- 29° to 93° C

Options:

- Elastomers: HSN, Viton®, Aflas®
- Trim Material: 316 Stainless Steel internal parts

Installation:

Normally with actuator in vertical orientation.

INSTALLATION:

BEFORE INSTALLATION:

Be sure you fully understand the application, operation, and connection of the device before installing.

WARNING:

Only trained personnel should install or service a control valve. Control valves and other control devices should be installed, operated, and maintained in accordance with international codes and regulations, manufacturer's instructions, and proven best practices.

Personal injury, equipment damage, property damage, leakage or bursting of pressure-containing parts may result if the valve is overpressured or installed where service conditions could exceed the limits given in the SPECIFICATIONS section.

Overpressure protection should also be provided if the valve inlet pressure may exceed the safe working pressure of the equipment downstream.

To avoid injury or damage, install pressure-relieving or pressure limiting devices to prevent service conditions from exceeding those limits. Consult the appropriate code, regulations, or standards.

Consideration should be given to the potential risk of injury or property damage due to escaping fluid. To avoid such risks, install the regulator in a safe location.

Inspect the openings in the valve for foreign material and clean the pipe lines to remove scale, chips, and debris.

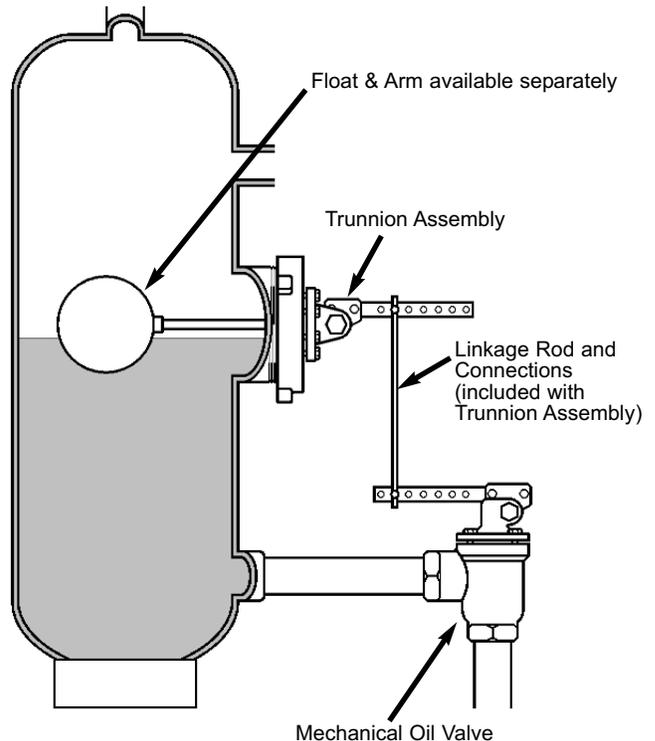
Install the valve with the arrow on the body pointing in the direction of flow. The arrow signifies that the device will operate properly in the direction of flow indicated and will not necessarily prevent flow in the opposite direction. **If conditions indicate the possibility of backward flow you may wish to install check valves.**

A person should never stand directly over or in front of a valve when the system is pressurized. Never look directly into a valve in a pressurized system. The valve could suddenly open, blowing gas, dirt, metal particles, or other debris into the person's face and eyes.

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.

The flanged valve bodies are rated ANSI class 125 or 150. Do not install the valve in a system where the working pressure can exceed ANSI class ratings.

Connect linkage from float/lever trunnion assembly. (for further information see instructions on page 5).



Mechanical Dump Installation



MECHANICAL OIL VALVES

Models Models OA & OA PB

START-UP & TEST:

With 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 linkage several times. Then watch as the vessel fills to be sure the float and linkage are operating properly.

WARNING:

Before performing any service be sure 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.

Never assume that a check valve is fully blocking the downstream line.

Never tighten any fitting or the main connections to the valve while there is pressure on the line.

NOTE:

When a gasket seal is disturbed during disassembly a new gasket should be installed during reassembly to ensure proper sealing.

MAINTENANCE:

Maintenance should be performed on a regular basis. An initial inspection interval of 12 months is recommended. Depending on the service conditions and the condition of the valve, the inspection interval may be decreased or increased.

Warning: If the valve leaks fluid, it indicates that service is required. Failure to take the valve out of service immediately may create a hazardous condition.

The valve can be repaired without being removed from the piping.

Detailed repair instructions are available for your specific valve.

Repair Kits are available. Consult the Kimray Catalog, Section C2, or the packing slip which is enclosed with each valve for the correct Repair Kit number.

REPAIR HINTS:

- Make sure packing nut is not over-tightened. This can prevent shaft from turning freely.
- Evenly tighten the screws which hold the bonnet to the valve body.
- Diaphragms will harden with age.

TROUBLE SHOOTING:

SYMPTOM	POSSIBLE CAUSE
Fluid leaking from bonnet	Shaft packing or the shaft itself is worn.
Fluid leaking from body/actuator joint.	Screws attaching bonnet to body are loose. Diaphragm between body and actuator is worn or damaged.
Excessive trim leakage with the valve closed.	Debris is interfering with seat contact. Insufficient shut-off force from actuator. Seat surfaces are worn or damaged.
Valve stem movement is sticky or jerks.	Valve stem is bent or misaligned.



HAMMER UNION TRUNNION ASSEMBLY

Model 850 HUTA

DESCRIPTION:

The Hammer Union Trunnion Assembly, Model HUTA is designed to be operated by a float assembly and is connected to a mechanical liquid dump valve for use in liquid dump control applications.

The Model 850 HUTA is recommended for service pressure of no more than 500 psig (34.5 bar).

A teflon packed rotary stuffing box seals the rotating shaft.

When servicing trunnion assemblies and valves, always use only Kimray replacement parts. For specific model numbers, part numbers, and repair kit numbers, refer to the Kimray Catalog, Section C2, or to the packing slip which is enclosed with each valve and trunnion assembly.



HUTA
Ductile Iron, & Steel

AVAILABLE MODELS

Connection Size: 8"
Connection Style: Hammer Union with Acme Threads
Body Style: 8" Pipe
Actuation: Mechanical--Rotary

SPECIFICATIONS

Normal Service: Liquids

Features:

Teflon packed rotary stuffing box
 303 Stainless steel shaft
 Stainless steel adjustable linkage
 3/4" NPT Float hub
 Standard ACME thread

Construction Materials:

Bonnet	Ductile Iron ASTM - A395
Plate	Steel SA - 515 Grade 70 Plate
Stuffing Box	Brass with Nitrile/Teflon Packing
Shaft	303 Stainless Steel
Float Hub	Ductile Iron ASTM - A395
Union Nut	Ductile Iron ASTM - A395
Weld Neck	8 inch Schedule 100 Pipe ASTM A-106 Grade B
Lever Hub	Gray Iron ASTM A-126-B

Normal Operating Temperature:

-20° to 200° F -- Limited by nitrile packing. For higher temperatures or other environmental concerns, optional materials are available.

Options:

Elastomers: HSN, Viton®, Aflas®
 Trim Material: 316 Stainless Steel internal parts

INSTALLATION:

BEFORE INSTALLATION:

Be sure you fully understand the application, operation, and connection of the device before installing.

WARNING:

Only trained personnel should install or service a trunnion assembly or control valve. Control valves and other control devices should be installed, operated, and maintained in accordance with international codes and regulations, manufacturer's instructions, and proven best practices.

Personal injury, equipment damage, property damage, leakage or bursting of pressure-containing parts may result if the valve or trunnion assembly is overpressured or installed where service conditions could exceed the limits given in the SPECIFICATIONS section.

Overpressure protection should also be provided if the vessel inlet pressure may exceed the safe working pressure of the equipment downstream.

To avoid injury or damage, install pressure-relieving or pressure limiting devices to prevent service conditions from exceeding those limits. Consult the appropriate code, regulations, or standards.

Consideration should be given to the potential risk of injury or property damage due to escaping fluid. To avoid such risks, install the regulator in a safe location.

Inspect the opening in the weld neck for foreign material and clean the pipe to remove scale, chips, and debris.

NOTE: Before welding the weld neck to the vessel, remove the hammer union nut and trunnion assembly. Remove the O-ring from the face of the weld neck. Then re-install just the hammer union nut. Now when welding is done, the nut will help reduce potential warping. After the weld has cooled, the O-ring and trunnion assembly may be re-installed.

Install the hammer union using good piping practice. Make sure the threads on the inside of the hammer union nut and on the outside of the weld neck are completely clean

Connect linkage from float/lever trunnion assembly to the liquid dump valve.

START-UP & TEST:

With 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 and trunnion assembly, allow upstream fluid to flow through the upstream shutoff valve. Check for proper valve operation by cycling the actuator linkage several times. Then watch as the vessel fills to be sure the float and linkage are operating properly.

WARNING:

Before performing any service be sure that the vessel is fully isolated and that all pressure upstream and downstream has been relieved.

Never assume that a check valve is fully blocking the downstream line.

Never tighten any fitting or the main connections to the valve while there is pressure on the line.

NOTE:

When a gasket seal is disturbed during disassembly a new gasket should be installed during reassembly to ensure proper sealing.

MAINTENANCE:

Maintenance should be performed on a regular basis. An initial inspection interval of 12 months is recommended. Depending on the service conditions and the condition of the valve, the inspection interval may be decreased or increased.

Warning: If the valve or trunnion leaks fluid, it indicates that service is required. Failure to take the valve out of service immediately may create a hazardous condition.

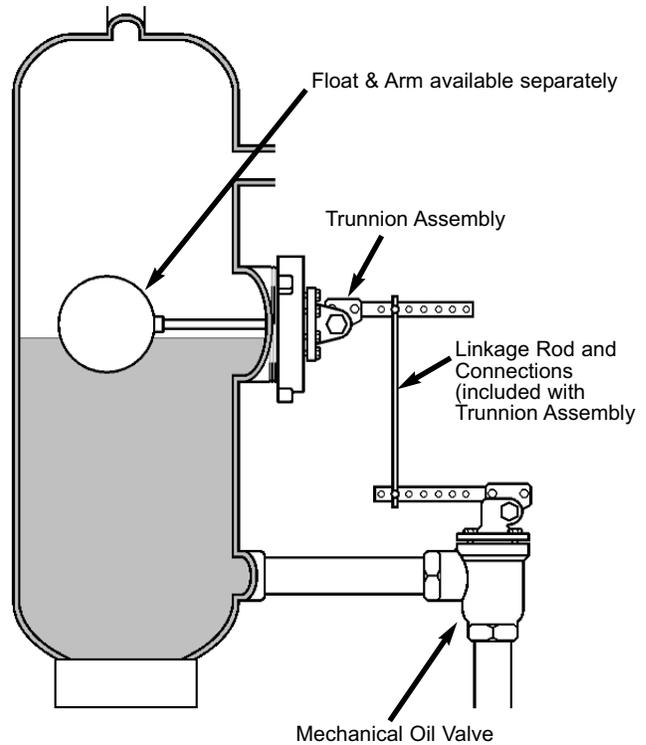
Repair Kits are available. Consult the Kimray Catalog, Section C2, or the packing slip which is enclosed with each valve for the correct Repair Kit number.

REPAIR HINTS:

- Make sure packing nut is not over-tightened. This can prevent shaft from turning freely.
- Evenly tighten the screws which hold the bonnet to the plate.

TROUBLE SHOOTING:

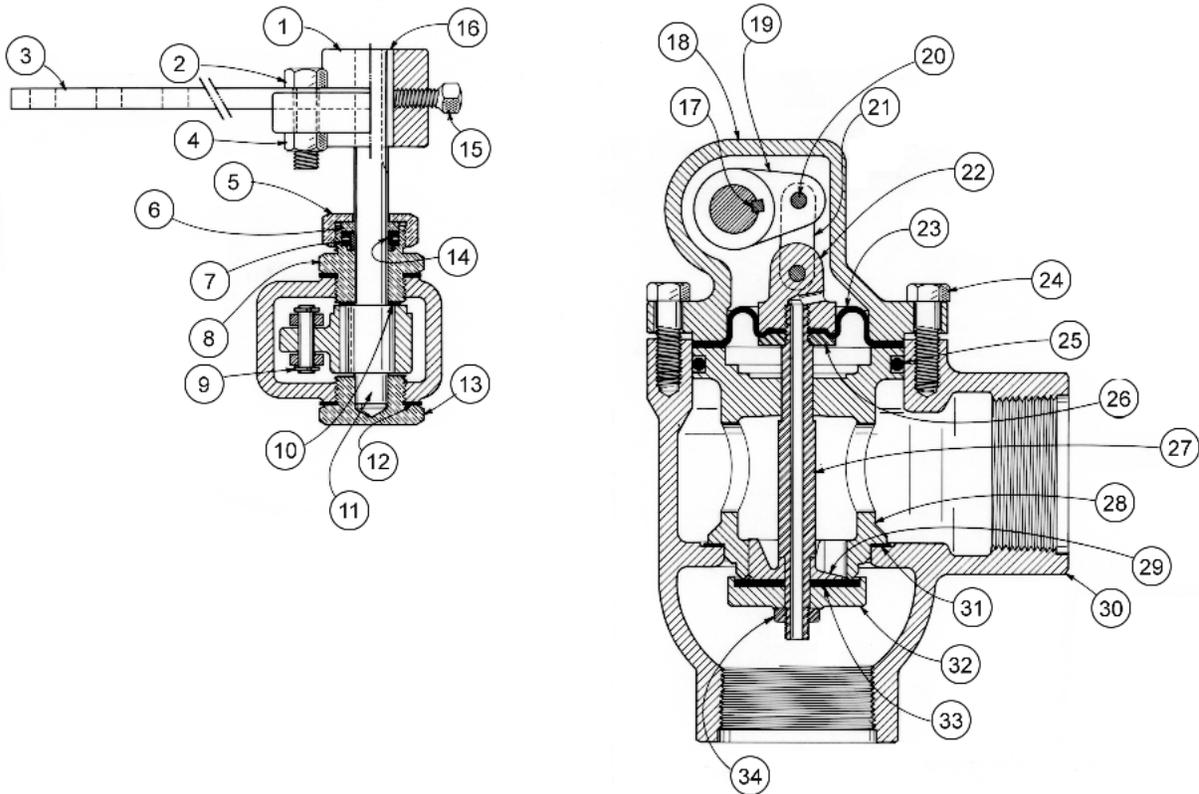
SYMPTOM	POSSIBLE CAUSE
Fluid leaking from bonnet	Shaft packing or the shaft itself is worn.
Fluid leaking from body/actuator joint.	Screws attaching bonnet to plate are loose. Gasket between bonnet and plate is worn or damaged.
Trunnion shaft movement is sticky or jerks.	Shaft is bent or misaligned.



Mechanical Dump Installation

The mechanical liquid level control installation as illustrated above provides a continuous throttled flow of the liquid being released from the vessel. Normally the liquid level remains constant within two to three inches. The position of the liquid level is adjusted with the linkage between the float assembly and the valve.

Floats and float arms are sold separately.



This is a general representation of a Diaphragm Balanced Mechanical Oil Valve model OA DB.

For specific parts and their orientation refer to the Kimray Catalog or the packing slip which is enclosed with each regulator.

Key Description

- 1 Hub, cast iron
- 2 Bolt, plated steel
- 3 Lever, plated steel
- 4 Nut, plated steel
- 5 Nut, brass
- 6 Follower, brass
- 7 Packing Ring, nitrile
- 8 Stuffing Box, brass
- 9 Snap Ring, stainless steel
- 10 Thrust Washer, teflon
- 11 Shaft, stainless steel
- 12 Gasket

Key Description

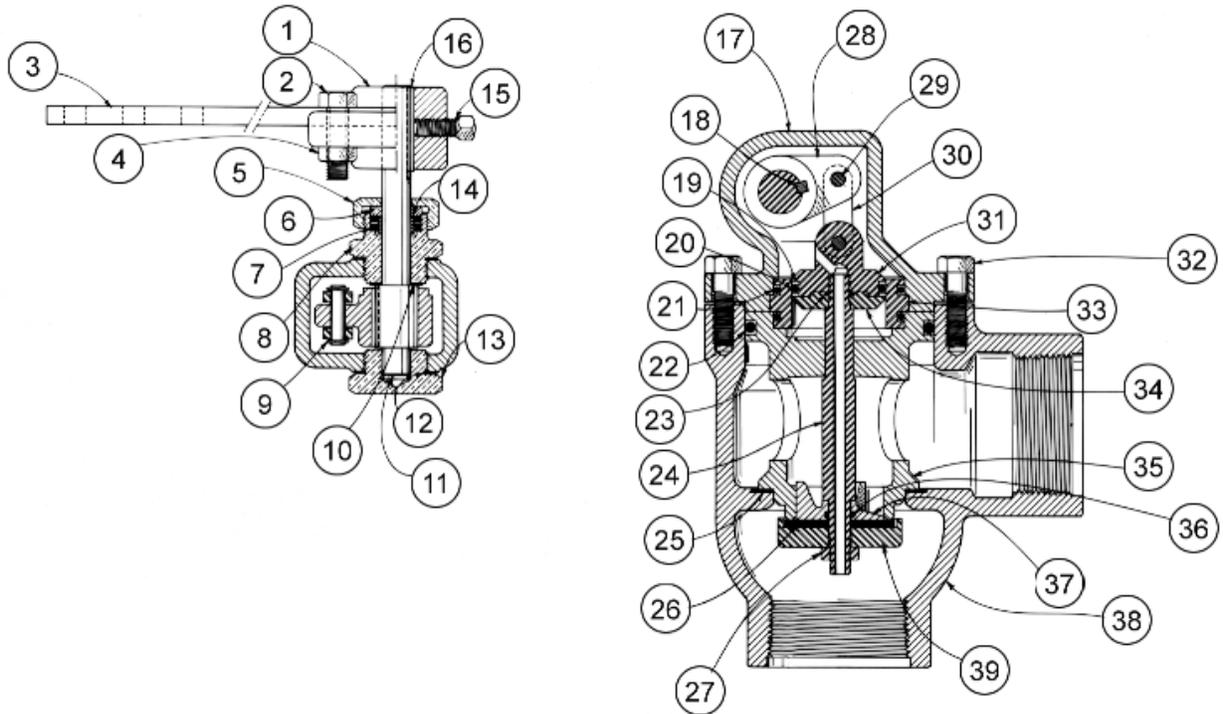
- 13 Plug, brass
- 14 Packing, teflon
- 15 Screw, plated steel
- 16 Key, steel
- 17 Key, steel
- 18 Bonnet, cast iron, ductile iron, steel
- 19 Trunnion Hub, ductile iron
- 20 Pin, stainless steel
- 21 Link, steel
- 22 Nut, ductile iron
- 23 Diaphragm, nylon reinforced nitrile
- 24 Screw, plated steel

Key Description

- 25 O-Ring, nitrile
- 26 Plate, steel
- 27 Stem, stainless steel
- 28 Cage, ductile iron
- 29 Ratio Plug, ductile iron
- 30 Body, cast iron, ductile iron, steel
- 31 Gasket
- 32 Seat Disc, ductile iron
- 33 Seat, *nitrile, **polyurethane
- 34 Jam Nut, plated steel

*Cast Iron Valves

**Ductile Iron & Steel Valves



This is a general representation of a Piston Balanced Mechanical Oil Valve model OA PB.
 For specific parts and their orientation refer to the Kimray Catalog or the packing slip which is enclosed with each regulator.

Key Description

- 1 Hub, cast iron
- 2 Bolt, plated steel
- 3 Lever, plated steel
- 4 Nut, plated steel
- 5 Nut, brass
- 6 Follower, brass
- 7 Packing Ring, nitrile
- 8 Stuffing Box, brass
- 9 Snap Ring, stainless steel
- 10 Thrust Washer, teflon
- 11 Shaft, stainless steel
- 12 Gasket
- 13 Plug, brass

Key Description

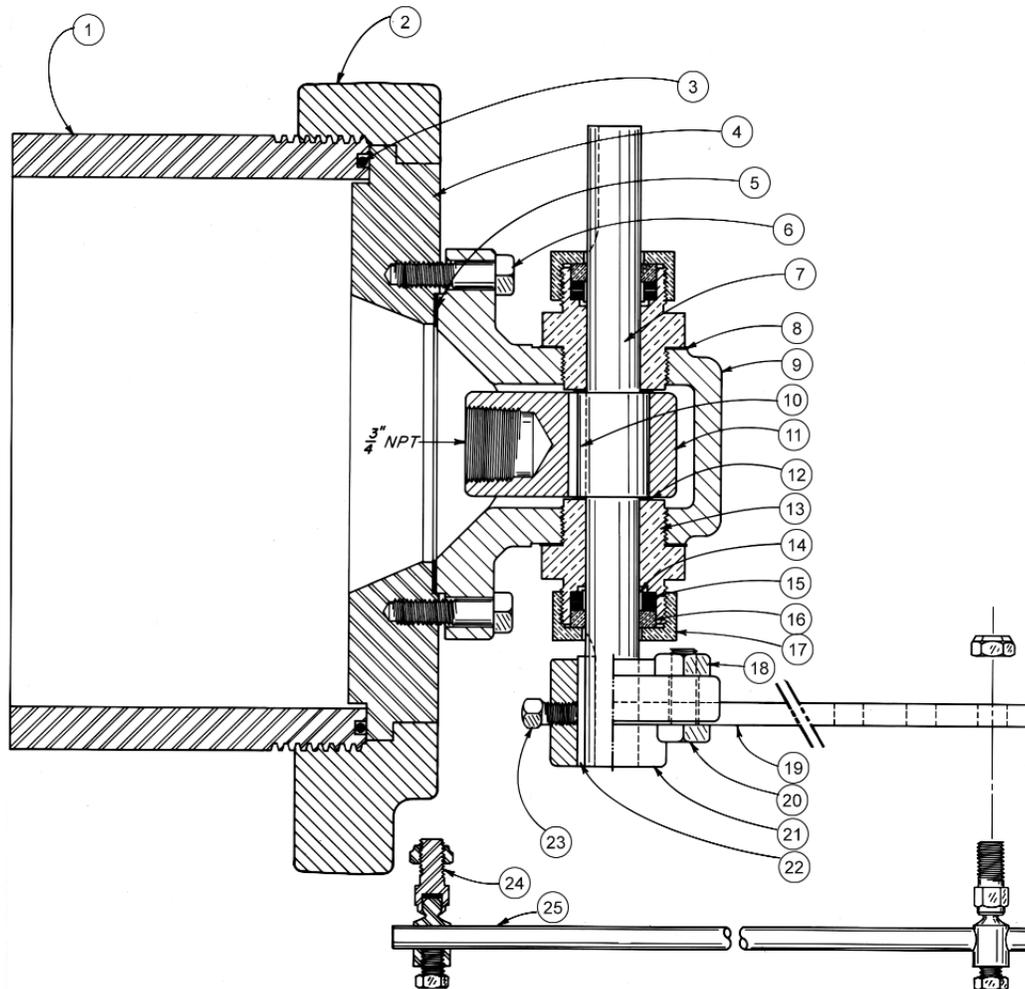
- 14 Packing, teflon
- 15 Screw, plated steel
- 16 Key, steel
- 17 Bonnet, cast iron, ductile iron, steel
- 18 Key, steel
- 19 Back Up, teflon
- 20 O-Ring, nitrile
- 21 O-Ring, nitrile
- 22 O-Ring, nitrile
- 23 O-Ring, nitrile
- 24 Stem, stainless steel
- 25 Gasket
- 26 Seat, *nitrile, **polyurethane

Key Description

- 27 Jam Nut, plated steel
- 28 Trunnion Hub, ductile iron
- 29 Pin, stainless steel
- 30 Link, steel
- 31 Piston, stainless steel
- 32 Screw, plated steel
- 33 Cylinder, stainless steel
- 34 Piston Seal Retainer, stainless steel
- 35 Cage, ductile iron
- 36 O-Ring, nitrile
- 37 Ratio Plug, ductile iron
- 38 Body, cast iron, ductile iron, steel
- 39 Seat Disc, ductile iron

*Cast Iron Valves

**Ductile Iron & Steel Valves



This is a general representation of a Hammer Union Trunnion Assembly model 850 HUTA.
 For specific parts and their orientation refer to the Kimray Catalog or the packing slip which is enclosed with each regulator.

Key Description

- 1 Welding Neck, 8" Schedule 100 Pipe
- 2 Hammer Union Nut, ductile iron
- 3 O-Ring, nitrile
- 4 Plate, steel plate
- 5 Gasket
- 6 Screw, plated steel
- 7 Shaft, stainless steel
- 8 Gasket
- 9 Bonnet, ductile iron
- 10 Key, steel

Key Description

- 11 Hub, ductile iron
- 12 Thrust Washer, teflon
- 13 Stuffing Box, brass
- 14 Packing, teflon
- 15 Packing Ring, nitrile
- 16 Follower, brass
- 17 Nut, brass
- 18 Nut, plated steel
- 19 Lever, plated steel
- 20 Bolt, plated steel

Key Description

- 21 Hub, cast iron
- 22 Key, steel
- 23 Screw, plated steel
- 24 Ball joint, plated steel
- 25 Linkage Rod, stainless steel