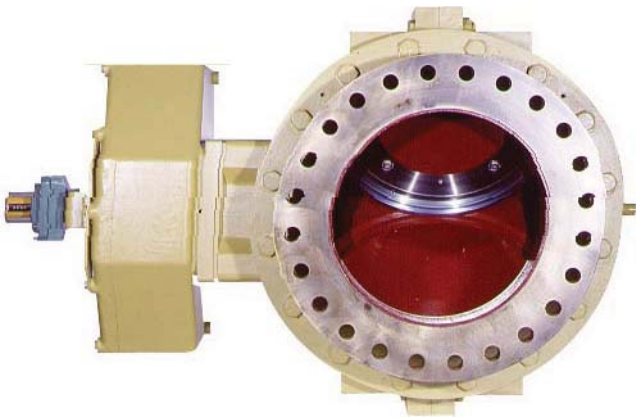


# Metal Seated Ball Valve



## Operation and Maintenance Manual

Job Name: \_\_\_\_\_

Contractor: \_\_\_\_\_

Date: \_\_\_\_\_

## Metal Seated Ball Valve

### SAFETY MESSAGES

All safety messages in the instructions are flagged with an exclamation symbol and the word “Warning”. These messages indicate procedures that must be followed exactly to avoid equipment damage, physical injury, or death. Safety labels on the product indicate hazards that can cause equipment damage, physical injury, or death.



#### **WARNING**

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials.

### PARTS

Order parts from your local Henry Pratt sales representative or directly from Henry Pratt Company. When ordering parts, please include the serial number located on the valve tag.

### WARRANTY ISSUE

Seller warrants that, at its option, it will repair, replace, or refund the unit purchase price of any products which are non-conforming due to Seller’s material or workmanship during the warranty period. The warranty period shall be twelve (12) months for parts and eighteen (18) months for all other goods after date of shipment. This shall be Buyer’s sole remedy. In order to maintain this product warranty, Buyer must give written notice to Seller’s Field Service Supervisor prior to any work being performed.

IN CONSIDERATION OF THE FOREGOING, SELLER EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Seller does not warrant water operated metallic cylinders against damage caused by corrosion, electrolysis or mineral deposits. In no event shall warranty include valve removal or reinstallation.



#### **WARNING**

***Read all applicable directions and instructions prior to any maintenance, troubleshooting or installation***

## Table of Contents

FUNCTIONAL DESCRIPTION	4
INSTALLATION	5
OPERATION	5
MAINTENANCE	6
TROUBLESHOOTING	7
CONTACTING PRATT	8
PRODUCT DRAWINGS	9

## Metal Seated Ball Valve

### FUNCTIONAL DESCRIPTION

Ball valve rotors rotate 1/4 turns to provide tight shutoff in air or water pipelines. The valves can be used to regulate flow rate or pressure by positioning the rotor between 15 and 90 degrees open.

Manually operated ball valves are powered with gear actuators, which convert multiple handwheel, chainwheel or nut input turns into 1/4 turn valve operation. The travel of the valve disc is limited by physical stops in the actuator housing.



#### **WARNING**

***Forcing the handwheel, chainwheel or nut against the stops will not provide tighter shutoff of the valve and may damage the actuator. Only actuator adjustments will affect valve shutoff.***

Motor operated ball valves are powered with gear actuators, which convert multiple motor input turns into 1/4 turn valve operation. The travel of the valve rotor is limited by limit switches in the motor housing and physical stops in the actuator housing. Valve shutoff is affected by limit switch and physical stop settings.



#### **WARNING**

***Improperly set limit switches and/or physical stops may damage the motor and/or actuator.***

Hydraulically operated ball valves are powered with a gear box and double acting cylinder. The linear stroke of the cylinder is converted to 1/4 turn operation by the gear box. Auxiliary controls are provided to direct hydraulic power to the cylinder and to control the operating speed of the cylinder.

## Metal Seated Ball Valve

### INSTALLATION

The metal seated ball valve is factory tested for leakage and the seat is set to the correct position during this testing procedure. Then it is opened against an unbalanced working pressure to check that no wedging or galling of the seat is taking place. As this leakage test is performed without the valve being subjected to any extraneous pipeline stresses, it is important to remember that when installing the valve in the line that the same conditions are applied, as bad installation practices may alter the seat setting. The valve is designed to rest on top of a base plate which would allow free lateral movement with the pipeline, and it should not be bolted down as this can also cause misalignment of the seats. The base plate is typically tied into either a concrete or grout pad. Valve shall be supported on the four support legs having lifting lug taps in them.



### WARNING

***The valve should never be used for pipeline support, in fact care should be taken to see that this is not the case. It is advisable to make sure that the bolt holes at the connections between the valve flange face and the pipe flange face have enough clearance to enable the pipe and valve to be bolted together without any distortion.***

Installation of your Ball Valve should be accomplished by personnel well versed in piping installations and who are familiar with the end configuration used to join the components. The use of standard, good joining procedures are all that are normally required. The only notable precaution would be in regard to the direction of fluid flow. The seat side of the valve must be oriented so that pressure pushes the rotor or ball toward the seat end of the valve. On pump discharge applications, the seat is located on the pump side of the valve.

### OPERATION

Flow control is achieved by rotating the rotor inside of the pipeline about its diametrical axis, hence changing the total free flow area of the valve. Positioning of the rotor is achieved by the valve actuator which has been mounted, adjusted, and tested at our Plant. Your valve may be motor, cylinder, or manually operated.



## Metal Seated Ball Valve

### MAINTENANCE

Although the actuator may or may not require periodic maintenance (depending upon which actuator is used), the valve itself requires no periodic maintenance. Pratt Ball Valves are supplied with self-lubricating type sleeve bearings. No maintenance attention to them is necessary.

However, after many years of continued service, the stem packing may show signs of wear. If repair becomes apparent (by leaking) contact Henry Pratt's Field Service Department immediately for repair options.

The metal seat located on the valve rotor provides a tight seal by flexing toward the body seat when under pressure. There is a factory set gap of .005" to .010" between the seat and rotor to provide a tight seal at the operating pressure and minimize wear during valve travel. To provide a seal at low pressure applications (less than 50 psig) it may be necessary to adjust the seat. Contact Henry Pratt's Field Service Department immediately for information regarding seat adjustments.options.

## Metal Seated Ball Valve

### TROUBLESHOOTING

<b>PROBLEM</b>	<b>CAUSES</b>	<b>REMEDIES</b>
Leakage between valve and actuator	Packing leak	Clean packing bore and replace packing
Bottom trunnion leaks	Nut Seal leak	Replace nut seal
Valve leaks when closed	<ul style="list-style-type: none"> <li>• Rotor not full closed or past fully closed</li> <li>• Rotor edge wear or damage</li> <li>• Flexible seat wear or damage</li> <li>• Loose debris in valve</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust actuator closed position stop</li> <li>• Clean and/or repair edge</li> <li>• Adjust or replace seat</li> <li>• Cycle valve five times to flush out debris</li> </ul>
Valve hard to operate	<ul style="list-style-type: none"> <li>• Foreign material in valve</li> <li>• Corroded actuator parts</li> <li>• Loose actuator</li> <li>• Insufficient seat gap</li> </ul>	<ul style="list-style-type: none"> <li>• Remove obstructions</li> <li>• Clean and grease actuator</li> <li>• Apply Loctite and tighten bolts</li> <li>• Contact Pratt Field Service for seat adjustment information</li> </ul>



## Metal Seated Ball Valve

### HOW TO CONTACT PRATT

#### HOW TO ORDER PARTS:

To order parts, contact our Parts Department:

Write: - Henry Pratt Company  
401 South Highland Avenue  
Aurora, IL 60506-5563

Attn: Parts Manager

Call - (630) 844-4000

Fax - (630) 844-4191

Please include valve serial number and description of part requested.

#### HOW TO OBTAIN SERVICE:

To obtain further information or secure field service, contact our Field Service Department:

Write: - Henry Pratt Company  
401 South Highland Avenue  
Aurora, IL 60506-5563

Attn: Field Service Manager

Call - (630) 844-4163

Fax - (630) 844-4160

Please include the following with your inquiry for service:

Henry Pratt Order Number:

Henry Pratt Item Number:

Valve Serial Number:

Type of Service Requested



## Metal Seated Ball Valve

### Pratt Metal Seated Ball Valve Parts Drawing

ITEM NO.	DESCRIPTION
1	END PIECE (RIGHT)
2	END PIECE (LEFT)
3	CENTER PIECE (TOP)
4	CENTER PIECE (BOTTOM)
5	ROTOR
6	SHAFTS
7	SHAFT PINS
8	BEARINGS (BODY)
9	BEARINGS (ROTOR)
10	SEAT (ROTOR)
11	SEAT (BODY)
12	RETAINER RING
13	CAP SCREWS
14	CAP SCREWS
15	O-RING
16	O-RING
17	V-TYPE PACKING
18	THRUST BEARING
19	SEALING NUT
20	THREADED STUD
21	THRUST COLLAR
22	SPRING PIN
23	PARKER "THREDESEAL"

