

# Cam-Centric® 1/2" - 2" Plug Valve

## Operation, Maintenance and Installation Manual

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VAL-MATIC® VALVE AND MANUFACTURING CORP.

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# 1/2" to 2" SERIES 5800RTL PLUG VALVE OPERATION, MAINTENANCE AND INSTALLATION

## INTRODUCTION

The Series 5800RTL Plug Valve has been designed to give years of trouble-free operation. This manual will provide you with the information to properly install and maintain the valve to ensure a long service life. The valve is a resilient seated, quarter-turn valve capable of handling many types of fluids including fluids with suspended solids. The Size, Cold Working Pressure (CWP), and Model No. are stamped on the nameplate for reference.

**CAUTION:** Do not use valve for line testing at pressures higher than nameplate rating or leakage and damage to valve may occur.

The "Cold Working Pressure" is the non-shock pressure rating of the valve at 150°F. The valve is not intended as a block valve for line testing above the valve rating. The "Seat End" is also marked on the valve body.

## RECEIVING AND STORAGE

Inspect valves upon receipt for damage in shipment. Loose bolts or handles should be tightened before using the valve.

Valves should remain boxed, clean and dry until installed to prevent weather related damage. For long term storage greater than six months, valve must remain boxed or slightly open and the rubber surfaces of the plug coated with a thin film of FDA approved grease such as Dow Corning # 7. Do not expose resilient seat to sunlight or ozone for any extended period.

## DESCRIPTION OF OPERATION

As shown in Figure 2, the valve consists of a body and a 1/4 turn plug that is offset from the seat centerline. The eccentric offset causes the plug to lift and rotate off the seat simultaneously to reduce seat friction and wear during operation. Direct Pressure pushes the plug into the seat and Reverse Pressure pushes the plug away from the seat. The valve is operated by rotating the handle 90 degrees. A clockwise rotation will close the valve and put the handle perpendicular to the pipe.

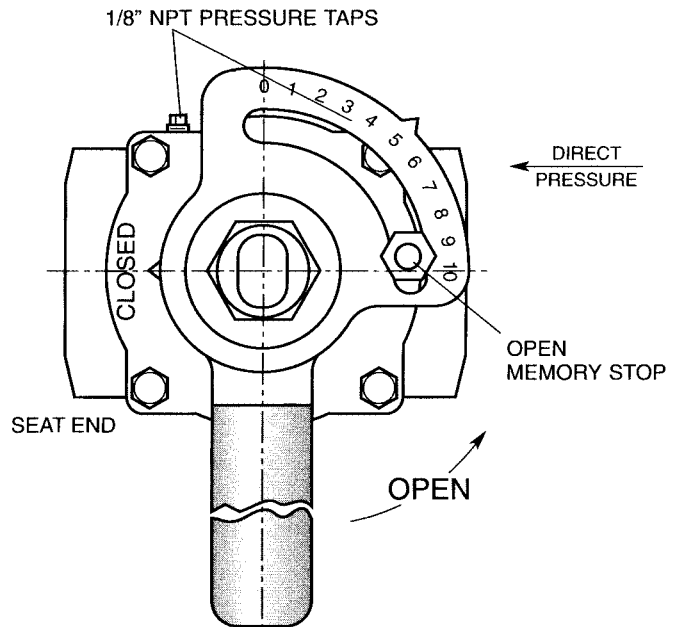


FIGURE 1. PLUG VALVE WITH HAND LEVER

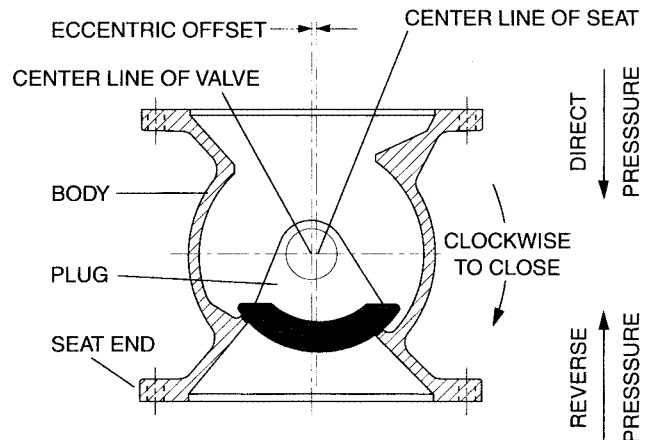


FIGURE 2. PLUG VALVE TERMS

## VALVE CONSTRUCTION

The standard Series 5800RTL Plug Valve is constructed of rugged cast iron with permanently lubricated stainless steel bearings. See the specific Materials List submitted for the order if other than standard cast iron construction. The details of construction are illustrated in Figure 3.

The body (1) is provided with 1" or 2" NPT threaded ends. The 1/4 turn plug (3) is guided by stainless steel bearings (6) in the body and cover (2). The body and plug shaft are sealed with a cover seal (8) and a shaft seal (7). Leak-tight closure is made when the rubber plug (3) is rotated into the seat on the "SEAT END" of the body.

ITEM	DESCRIPTION	MATERIAL
1	Body	Cast Iron
2	Cover	Cast Iron
3	Plug*	Cast Iron with Resilient Facing
6	Bearings*	316 Stainless Steel
7	Shaft Seal*	Buna-N
8	Cover Seal*	Buna-N
9	Friction Ring	Teflon
14	Friction Nut	Steel (plated)
15	Cover Bolt	Alloy Steel, Gr 5
16	Hand Lever	Cast Iron
22	Thrust Bearing*	Teflon
25	Memory Stop Bolt*	Steel (Plated)
27	Lock Washer*	Steel (Plated)
28	Lock Nut*	Steel (Plated)
31	Spring Washer*	Steel (Plated)

\*RECOMMENDED SPARE PART

TABLE 1. STANDARD PLUG VALVE PARTS LIST

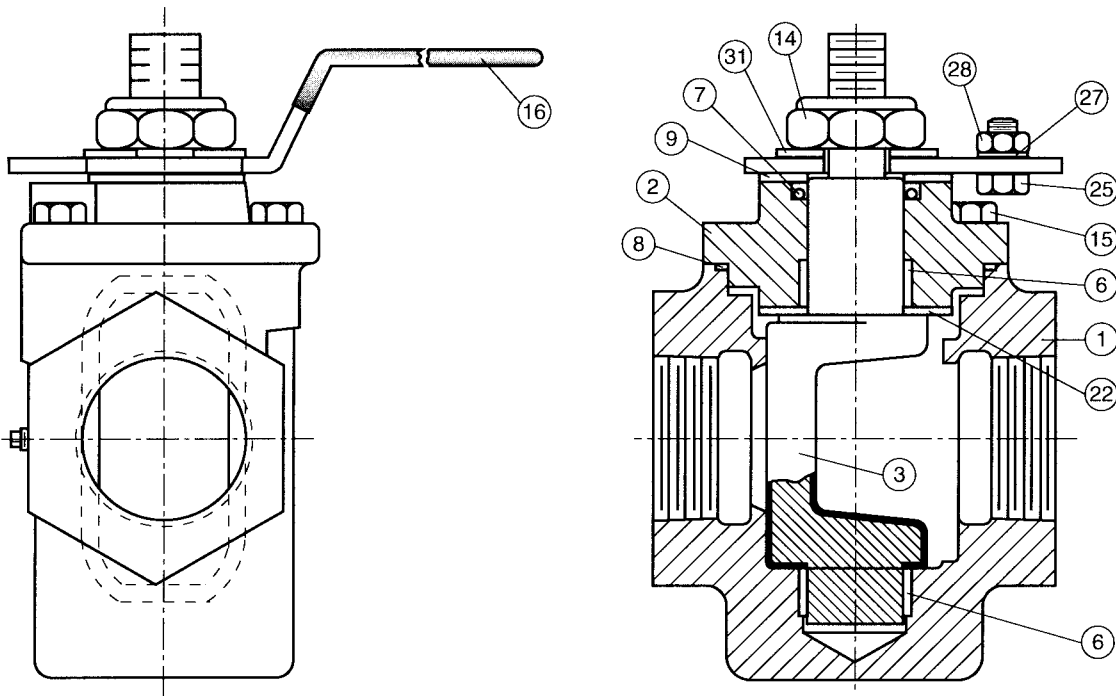


FIGURE 3. STANDARD PLUG VALVE CONSTRUCTION

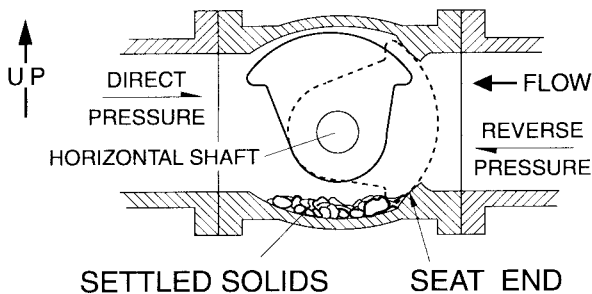
## INSTALLATION

The installation of the valve is important for its proper operation. The valve is capable of flow in either direction but the location of the seat end can help prevent clogging in fluids containing solids.

**SUSPENDED SOLIDS SERVICE:** For fluids containing suspended solids, special orientations are needed to prevent debris from collecting in the valve. For **horizontal** installations (Figure 4), the valve should be installed with the flow entering the **seat end** of the valve and the shaft in a horizontal position with the plug up when open. For **vertical** installations (Figure 5), the valve must be installed with the **seat end** up regardless of flow direction.

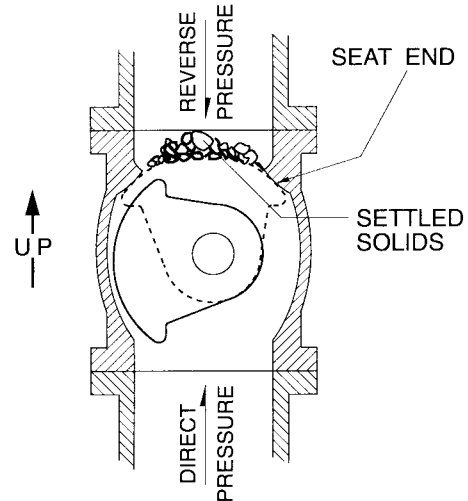
**WATER SERVICE:** The valve can be installed in water lines with flow in either direction in horizontal or vertical pipes.

**AIR AND GAS SERVICE:** Install valve with pressure toward the end opposite the **seat end**. Lubricate plug face with FDA approved silicone grease such as Dow Corning #7 before installation.



**FIGURE 4. HORIZONTAL PIPE WITH SOLIDS.**

**Throttling/Balancing Service:** Set open position with memory stop bolt (25) and lock nut (28). Sufficiently tighten friction nut (14) above to handle to prevent plug movement during flow.



**FIGURE 5. VERTICAL PIPE WITH SOLIDS**

**THREADED ENDS:** Threaded ends should be mated with steel pipe with tapered threads. Apply pipe joint compound to the male threads of the pipe and hand turn the valve onto the pipe. Then rotate the valve about two (2) more turns or until tight using a large crescent wrench. Complete the rotation so that the handle is oriented in a convenient orientation. Note: Some sizes are equipped with threaded reducer bushings which should be installed prior to torquing the valve.

**CAUTION:** Heat from soldering will damage the rubber plug. For nearby soldering, remove the rubber plug from the valve first.

**HANDLEVER:** The valves are equipped with a top-mounted handlever for direct quarter-turn operation. To open the valve, slowly rotate the lever 90° in the counter-clockwise CCW direction. The open position is adjusted with a memory stop bolt and lock nut.

**FRICTION ADJUSTMENT:** The friction nut (14) on the top of the valve should be tightened so that the valve will automatically stay in the open or closed position.

**CAUTION:** Open and close valve slowly to prevent water hammer.

## INSTALLATION (Cont'd)

**PRESSURE TAPS:** located on the side of the valve are 1/8" NPT plugged ports for connection to pressure gauges or meters (by others) when the valve is used for throttling service.

## MAINTENANCE

The Cam Centric® Plug Valve requires no scheduled lubrication or maintenance other than regular exercising and occasional inspection of the plug. The exercising is achieved by fully opening and closing the valve to verify smooth operation. If operation is difficult, it may be necessary to flush sediment from the valve by opening and closing the valve several times under flowing conditions or adjusting the top friction nut (14).

The recommended interval for exercising is every six months or annually if the valve is regularly operated. Over the life of the valve, inspection and some regular adjustments may be needed as given below.

If the valve is found to leak in the closed position due to wear, the valve can be adjusted by loosening the friction nut (14) and rotating the plug further into the seat. Because of the eccentric action of the valve, further rotation will provide additional interference between the rubber plug surface and the body seat. Valves that have been in service for several years may require inspection of the plug for damage or wear. See the Disassembly Instructions.

**PACKING ADJUSTMENT:** The top shaft is equipped with a self-energizing o-ring seal. The seal is pressure assisted and does not require adjustment. If a leak develops, the seal should be replaced.

**PACKING REPLACEMENT:** To replace the seal, it is recommended that the line be drained. The valve can remain in the line. To replace the packing, first open the valve and drain the line. Close the valve to hold the plug in position.

Remove friction nut (14) and handle to expose shaft seal (9). Remove old seal (9) with packing hook or sharp screwdriver. Lubricate new packing with FDA grease and press in place. Reinstall friction ring (9), handle (16), spring washer (31), and friction nut (14). Finally, adjust friction with about 10 ft-lbs of torque on the friction nut.

## TROUBLESHOOTING

Several problems and solutions are presented below to assist you in troubleshooting the valve assembly in an efficient manner.

- **Leakage at Valve Shaft:** Adjust or replace packing.
- **Leakage at connections:** Tighten threads. Remove and reapply joint compound. Some compounds require 4-6 hours to set before pressure can be applied.
- **Valve Leaks when Closed:** Flush debris from seat by cycling valve. Inspect plug for damage and replace. Check friction setting on direct nut valves so that valve is held in closed position.
- **Hard to Open:** Check friction adjustment on friction nut (14). Flush line of debris. Check interior of valve for grit buildup or debris.
- **Noisy Operation:** Flow noise is normal. Loud flow noise similar to hammering may be cavitation from dropping high pressures across valve; review application of valve.

## DISASSEMBLY

Disassembly may be required to inspect the plug for wear or remove debris and deposits from the valve. The valve can be disassembled without removing the valve from pipelines. Refer to Figure 3 for valve construction and parts.

**WARNING: Open valve and drain line before removing cover bolts or pressure may be released causing injury.**

1. Open valve and drain the pipeline. Remove the friction nut (14) along with the spring (13), handle (16), and friction ring (9).
2. Remove the shaft seal (7).
3. Remove cover bolts (15). Matchmark cover (2) and body. Pry cover (2) from valve.
4. Inspection of the bearings (6) is done by measuring diameter of shaft and inside diameter of bearing. Check for a normal running clearance of .005". Bearings are permanently impregnated with oil.
5. Clean and inspect parts. Replace worn parts as necessary and lubricate parts with FDA grease. The machined seat should not be worn or corroded. Replace valve if body seat is damaged.

## **REASSEMBLY**

All parts must be cleaned and gasket surfaces should be cleaned with a stiff wire brush in the direction of the serrations or machine marks. Worn parts and seals should be replaced during reassembly.

1. Press new bearings (6) into cover and body with round, flat bar flush with inside surfaces of body (1) and cover (2).
2. Install cover seal (8) over cover lip.
3. Apply thin film of FDA silicone grease such as Dow Corning #7 to plug rubber surface. Place Teflon bearing (22) over the upper end of the plug.
4. Carefully place plug into body (1) and insert lower plug shaft into bottom bearing (6). Plug (3) should be in the open position. Install cover (2) over plug shaft and into recess in body. Align match marks between body and cover (2). Torque cover bolts (15) to about 15 ft-lbs.
5. Install new shaft seal (7) in cover bore.
6. Place friction ring (9), handle (16), and spring washer (31) with convex side up over plug.
7. Tighten friction nut (14) over plug to 10 ft-lbs.
8. Verify that valve opens and closes.

## **PARTS AND SERVICE**

Parts and service are available from your local representative or the factory. Make note of the valve Size, Series No, and Serial No. located on the valve nameplate and contact:

Val-Matic Valve and Mfg. Corp.  
905 Riverside Drive  
Elmhurst, IL 60126  
PH: 630/941-7600  
FAX: 630/941-8042

A sales representative will quote prices for parts or arrange for service as needed.

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#### **LIMITED WARRANTY**

All products are warranted to be free of defects in material and workmanship for a period of one year from the date of shipment, subject to the limitations below.

If the purchaser believes a product is defective, the purchaser shall: (a) Notify the manufacturer, state the alleged defect and request permission to return the product; (b) if permission is given, return the product with transportation prepaid. If the product is accepted for return and found to be defective, the manufacturer will, at his discretion, either repair or replace the product, f.o.b. factory, within 60 days of receipt, or refund the purchase price. Other than to repair, replace or refund as described above, purchaser agrees that manufacturer shall not be liable for any loss, costs, expenses or damages of any kind arising out of the product, its use, installation or replacement, labeling, instructions, information or technical data of any kind, description of product use, sample or model, warnings or lack of any of the foregoing. NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED. NO AFFIRMATION OF FACT, PROMISE, DESCRIPTION OF PRODUCT OF USE OR SAMPLE OR MODEL SHALL CREATE ANY WARRANTY FROM MANUFACTURER, UNLESS SIGNED BY THE PRESIDENT OF THE MANUFACTURER. These products are not manufactured, sold or intended for personal, family or household purposes.



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