

Valtek Soft Seats

GENERAL INFORMATION

The following instructions are designed to assist in disassembling, reassembling and troubleshooting Valtek® globe valves supplied with soft seats. Product users and maintenance personnel should thoroughly review this bulletin in conjunction with Installation, Operation, Maintenance Instructions 1 (Mark One and Two Control Valves) and the appropriate positioner Installation, Operation, Maintenance Instructions, before installing, operating or performing any maintenance on the valve.

To avoid possible injury to personnel or damage to valve parts, WARNING and CAUTION notes must be strictly adhered to. Modifying this product, substituting nonfactory parts, or using maintenance procedures other than outlined could void warranties, drastically affect performance and be hazardous to personnel and equipment.

Valtek control valves seal “bubble-tight” with the use of a soft seat ring. The design consists of a seat ring base, an elastomer insert and a seat insert retainer (refer to Figure 1 for standard soft seat construction). The soft seat assembly is completely interchangeable with standard seat rings in any Valtek control valve body without further modifications. Standard insert materials include TFE Teflon, FEP Teflon, polyurethane, and KEL-F.

Disassembling Soft Seats

To disassemble valves with soft seats, refer to Figures 1 and 2 and proceed as follows:

WARNING: Drain all fluids from valve and depressurize line to atmospheric pressure. Failure to do so can cause serious injury.

1. If the valve is air-to-open, apply air to the lower cylinder port to lift the plug off the seat before disassembling the valve. On air-to-close valves, the fail-safe spring will hold the valve plug off the seat.
2. Remove the bonnet flange bolting. Lift the actuator, bonnet, bonnet flange, and plug out of the valve body.

CAUTION: To avoid damage to the plug or seat, carefully lift the actuator and plug straight out of the valve body. Using lifting straps around the yoke legs.

WARNING: When lifting an actuator with lifting straps, be aware the center of gravity may be above the lifting point. Therefore, support must be given to prevent the actuator from rotating. Failure to do so can cause serious injury to personnel and damage to the actuator or nearby equipment.

3. Lift the seat retainer, soft seat ring assembly and gaskets out of the body.
4. Make sure gasket surfaces on the seat ring base, bonnet and body are clean and undamaged.

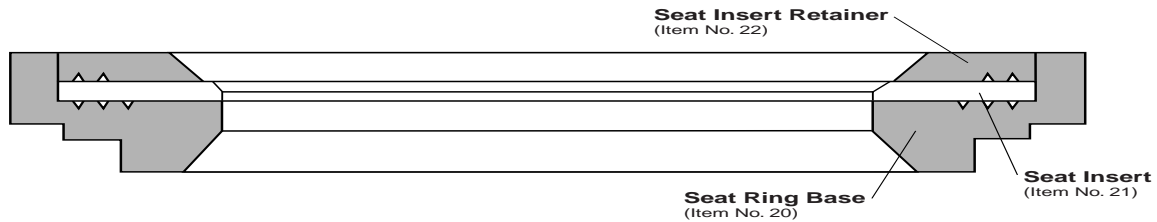


Figure 1: Soft Seat Assembly

NOTE: Item numbers correspond directly to the valve's bill of material. Refer to the bill of material for specific part numbers.

5. Check to see that seating surfaces on the plug and seat assembly are free of damage. If the seat insert is worn, remove it from the assembly. Since the plug seating surface does not come in contact with the seat insert retainer, it is not necessary to correct any minor damage to that part. The plug seating surface can be remachined to a 30 degree angle. Lapping will not be necessary if proper reassembly procedures are followed.

CAUTION: If remachining plug seating surface, protect the plug stem during turning and insure concentricity of seating surface with the stem.

Reassembling Soft Seats

To reassemble valves with soft seats, refer to Figures 1 and 2 and proceed as follows:

1. Using a new elastomeric insert, assemble the three soft seat components as illustrated in Figure 1.
2. Install new bonnet and seat ring gaskets in the body.
3. Insert the soft seat assembly and seat retainer into the valve body.
4. On air-to-open actuators, apply air to the lower cylinder port to retract the plug.
5. Lower the actuator and bonnet assembly squarely into the body. Do this slowly and carefully, to avoid sticking or misalignment which could cause damage to the plug or soft seat assembly. Since the bonnet fits closely to the body, make sure the bonnet is square when entering the body.
6. To properly align the soft seat and plug, first bring bonnet flange bolting to finger tightness. Apply air pressure to the upper cylinder port to seat the plug in the seat ring. While maintaining air pressure in the actuator, tighten each bonnet flange bolt $\frac{1}{6}$ of a turn (one flat). Firmly tighten all bolts evenly and completely, using full wrench force to compress the bonnet gasket and to seat the bonnet metal-to-metal in the body. Proper tightness requires considerable force; however, the bottoming of the bonnet metal-to-metal in the body can be easily felt through the wrench.
7. If the valve is taken out of the line to inspect, repair or replace a soft seat, make sure the flow arrow indicates proper flow direction upon reinstallation.

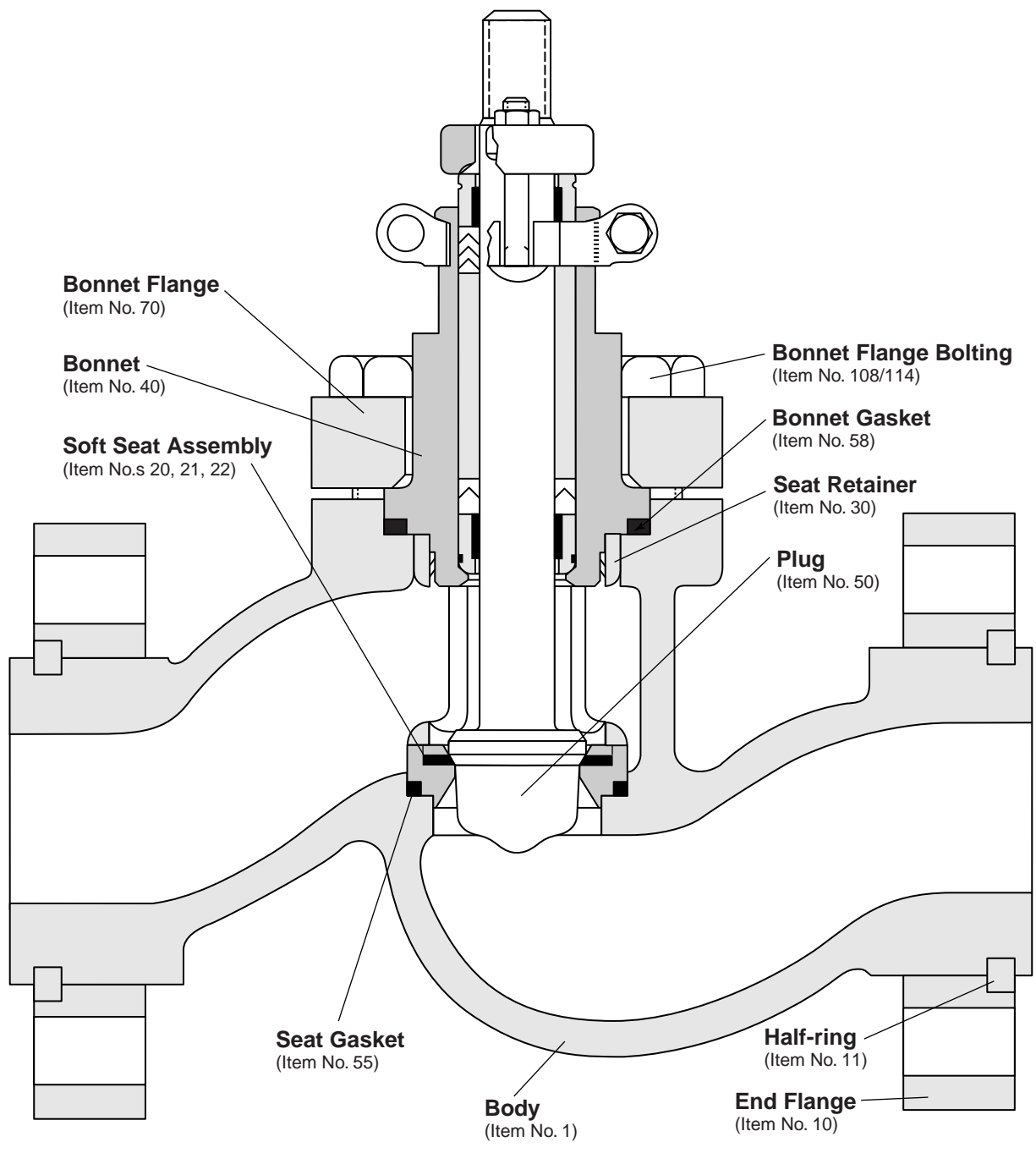


Figure 2: Mark One Globe Valve with Soft Seat

*NOTE: Item numbers correspond directly to the valve's bill of material.
Refer to the bill of material for specific part numbers.*

Troubleshooting Soft Seats

Problem	Probable Cause	Corrective Action
Excessive seat ring leakage	<ol style="list-style-type: none"> 1. Insufficient bonnet flange bolt tightness 2. Extruded elastomer seal 3. Insufficient plug seating force 4. Improper plug adjustment (on air-to-close valves, the amount the plug is screwed into the actuator stem is not particularly important. Leave two or three threads exposed. On air-to-open valves, stem engagement must be correct.) 	<ol style="list-style-type: none"> 1. Tighten bonnet flange bolts to provide proper gasket compression 2. Replace elastomer (check service conditions to ensure soft seat material compatibility) 3. Check actuator sizing for actual service conditions (a minimum of 50 pounds thrust per lineal inch is recommended) 4. For correct plug stem to actuator stem engagement, screw the plug stem into the actuator stem as far as it will go. Apply air pressure above the piston to drive it to the bottom of the cylinder. Back the plug stem out of the actuator stem until the plug just touches the seat. CAUTION: Do not turn the plug on the seat. Raise the plug by applying air to the underside of the piston and back the plug stem out of the actuator stem one additional turn. This will ensure proper plug seating and establish proper piston clearance, assuring stiff, non-slamming valve operation.
Short elastomer seal life	<ol style="list-style-type: none"> 1. Elevated pressures and temperatures 2. High velocity impingement (damage to the elastomer may occur due to entrained particles) 3. Corrosive service conditions (polyurethane seals are attacked by certain acids and solvents) 	<ol style="list-style-type: none"> 1. Check operating conditions (maximum soft seat operating temperature for Teflon should be below 300°F; for high pressure applications, maximum temperature is 100°F) 2. Use polyurethane seal (polyurethane seals provide best service under high velocity conditions) 3. Use Teflon or KEL-F seal (Teflon KEL-F seals provide excellent resistance to most chemicals and solvents)
Misalignment of the soft seat assembly	<ol style="list-style-type: none"> 1. Improper fit of parts (high and low pressure designs are not interchangeable) 2. Assembly bent or warped 3. Seating surface damaged 	<ol style="list-style-type: none"> 1. Make sure the soft seat is designed for the same pressure class valve as it is being installed in 2. Repair or replace assembly 3. Replace elastomeric insert and remachine plug seating surface if plug is scored or galled.

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