

# Soft Seats

*Used in Globe Valves*

# 10

## 1.1 - GENERAL INFORMATION

The following instructions were designed to help you to disassemble, reassemble and to troubleshoot globe valves supplied with soft seats. Before the installation, operation or any maintenance, users and maintenance personnel must read this bulletin carefully, as well as the maintenance manual of the valve where the soft seat is installed: GLS valves (IOM 01), GXL valves (IOM 02), GLH valves (IOM 03) or GLB valves (IOM 06).

Valtek Sulamericana control valves equipped with soft seats are able to meet the requirements of ANSI B16.104/FCI-70.2, class VI. The soft seat assembly consists of a seat base, a seat insert – usually manufactured with a polymer material – and an insert retainer (Figure 1 shows the standard construction for the soft seat assembly). For valves of the same model, size, pressure class and trim size, the soft seat assembly is totally interchangeable with the metal seat. The standard manufacturing material for inserts is virgin PTFE, but inserts can be optionally manufactured with fiberglass reinforced PTFE (PTFEG), FEP, PEEK, polyurethane or KEL-F (PCTFE).



## 1.2 - SAFETY WARNINGS

To avoid potential injury and/or damage to the valve parts, **WARNING** and **CAUTION** notes must be strictly observed. Changing this product characteristics, using non-original spare parts or using maintenance procedures different from those presented herein may affect the performance of the valve, be hazardous to personnel and equipment and may void the manufacturer warranty.



## WARNING

**Standard industry safety practices must be applied when using this equipment. Industrial safety standards for personal protection and for equipment handling must also be observed.**

## DISASSEMBLY AND REASSEMBLY

### 1.3 - DISASSEMBLING THE SOFT SEAT

To disassemble a valve equipped with soft seat, refer to Figures 1 and 2 and proceed as follows:



## CAUTION

**Removing the valve for maintenance: piping must be depressurized and process fluid drained. In case of toxic, caustic or hazardous fluid services, the valve must be decontaminated to avoid accidents.**



## CAUTION

**When operating the valve, keep your hands, hair, clothes, etc. away from moving parts. Failure to follow this warning may result in serious injury.**

- If the valve is air-to-open, apply air in the lower chamber of the actuator to lift the plug off the seat before disassembling the valve. On air-to-close valves, the safety spring of the actuator will maintain the valve plug off the seat.
- Remove the bonnet flange nuts and, then, lift the actuator, bonnet and plug, taking them out of the valve.

## Installation, Operation and Maintenance Instructions



### CAUTION

**Heavy actuators may require using a hoist for their removal. In case the actuator has one lifting ring, use it to lift the actuator, otherwise, use a hook or pass lifting straps through the yoke legs to raise the assembly. During the disassembly, the actuator must be maintained in the upright position to prevent damages to the plug and to the seat.**

- Remove the seat retainer, soft seat assembly and gaskets from the body.
- Check if the seating surfaces on the seat and plug are not damaged and can assure tight shutoff. In case the soft seat insert is worn out or damaged, it must be replaced during the reassembly. Since the seating surface of the plug does not contact the insert retainer, it is not necessary to correct minor damages existing on this part.
- Make sure the gasket seating surfaces on the seat, bonnet and body are clean and not damaged.

### 1.4 - REASSEMBLING THE SOFT SEAT

To reassemble a valve equipped with soft seat, refer to Figures 1 and 2 and proceed as follows:

- Using a new seat insert, assemble the three components of the soft seat assembly as illustrated on Figure 1.
- Install the new bonnet and seat gaskets with beveled edge up for Teflon gaskets.

**Note:** On valves equipped with soft seats, use only flat gaskets (resilient). Using spiral wound gaskets may cause problems during assembly and operation.

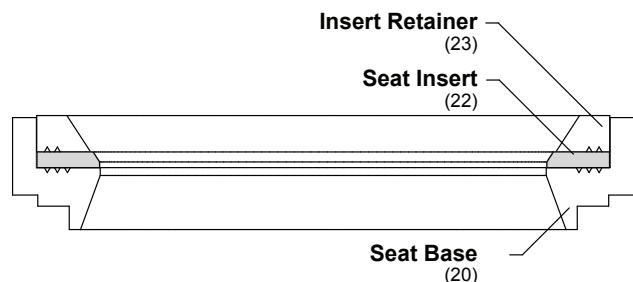
- Insert the soft seat assembly into the body with the step side downward. Place the seat retainer into the body, with the thinner end of the cathedral window downward.
- On air-to-open valves (fail-close), apply air in the lower chamber of the actuator to retract the plug.
- Keeping the assembly comprised by the actuator, bonnet and plug in the upright position, lower this assembly over the valve body, taking care to pre-

vent scratching or damaging the plug while being inserted into the valve body.

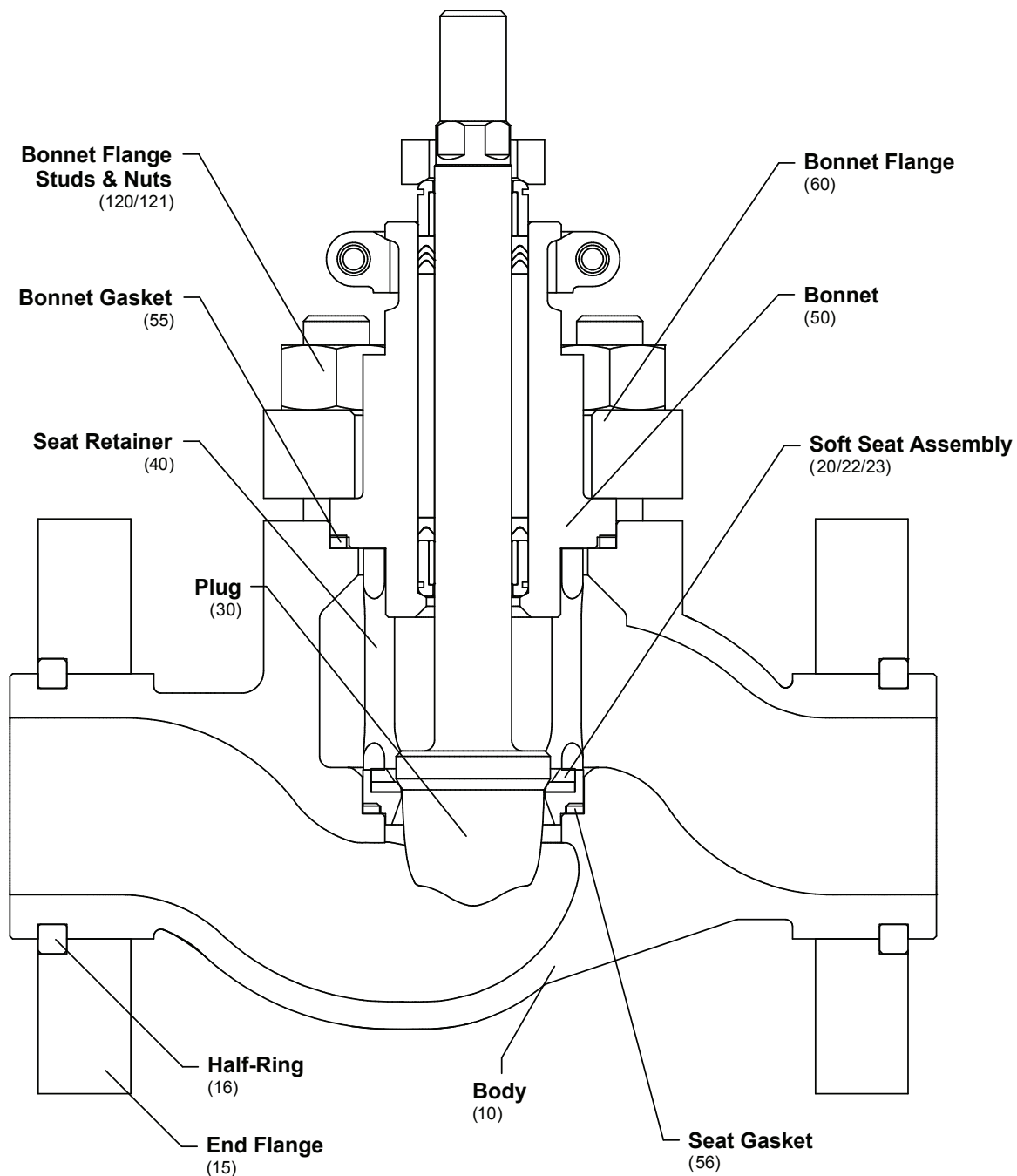
- To align the plug and the seat properly, tighten the bonnet flange nuts with your fingers. In case of valves equipped with pneumatic actuators, apply air pressure in the actuator upper chamber to seat the plug into the seat ring.

**Note:** In case of valve equipped with an electric or hydraulic actuator, return the plug for the half-stroke position after aligning the plug and before proceeding with the tightening sequence of bonnet flange nuts (see the maintenance bulletin of the valve).

- In case of valves equipped with pneumatic actuators, keep the upper chamber of the actuator pressurized and start tightening the bonnet flange nuts in such a way as to maintain the bonnet flange parallel to the body.
- Tighten the first nut with 1/6 of a turn, then tighten the directly opposite nut with 1/6 of a turn, and so on, successively. Tighten completely all nuts to seat the bonnet in the body and to assure the proper compression of the gaskets. The correct tightening requires a considerable force, but the bottoming of the bonnet in the body (metal-to-metal) can be easily felt through the wrench.
- If the valve has been removed of the piping for inspection, repair or replacement of the soft seat, make sure it is reinstalled with the correct flow direction.



**Figure 1 - Soft Seat Assembly**



**Figure 2 – Globe Valve with Soft Seat**

<sup>(1)</sup> Item numbers above correspond directly to the valve's bill of material.

# Installation, Operation and Maintenance Instructions

## 1.5 - TROUBLESHOOTING OF VALVES EQUIPPED WITH SOFT SEATS

Problem	Probable Cause	Corrective Action
Excessive leakage through the valve seat	<ul style="list-style-type: none"> <li>Insufficient tightness on the bonnet flange nuts</li> <li>Extruded polymer insert</li> <li>Insufficient actuator thrust</li> <li>Improper plug adjustment (in the air-to-close configuration, the number of threads in the plug stem connected to the actuator stem is not particularly important. Leave two or three threads exposed. In the air-to-open configuration, the engagement must be correct)</li> </ul>	<ul style="list-style-type: none"> <li>See steps on "Reassembling" section for tightening procedures</li> <li>Replace the polymer insert. Check the service conditions to assure the compatibility of the insert material</li> <li>Verify air supply pressure to actuator; if pressure is adequate, double check service conditions and contact the manufacturer</li> <li>For the correct plug stem to actuator stem engagement, screw the plug stem into the actuator stem as far as it will go. Pressurize the upper chamber of the actuator to push the piston up to the bottom of the cylinder. Return stem outwards the actuator stem until the plug slightly touches the seat (<b>WARNING! Do not turn the plug over the seat</b>). Lift the plug, applying air in the lower chamber of the actuator, and back the plug stem outwards the actuator stem one additional turn. This will assure the proper seating of the plug and will establish the proper distance for the piston, providing stiffness and non-slaming valve operation</li> </ul>
Soft seat insert with short operating service life	<ul style="list-style-type: none"> <li>High pressures and temperatures</li> <li>Impact of particles carried by fluid at high velocity</li> <li>Corrosive service conditions (polyurethane inserts are attacked by some acids and solvents)</li> </ul>	<ul style="list-style-type: none"> <li>Check the operating conditions (the max. operating temperature for PTFE insert must be below 300°F (150°C); For high pressure applications, the max. temperature must be below 100°F (38°C)</li> <li>Use a polyurethane insert (polyurethane inserts present extended life time under high speed flow conditions)</li> <li>Use PTFE or KEL-F inserts (KEL-F inserts present excellent resistance to most chemicals and solvents)</li> </ul>
Misalignment of the soft seat assembly	<ul style="list-style-type: none"> <li>Improper setting of the parts (high-pressure and low-pressure designs are not interchangeable)</li> <li>Warped or bent assembly</li> <li>Damages in the seating surface</li> </ul>	<ul style="list-style-type: none"> <li>Make sure the soft seat assembly is designed for a valve with the same pressure class as the one where the assembly is being installed</li> <li>Repair or replace the assembly</li> <li>Replace the seat insert. Replace the plug if its seating surface presents roughness or scratches</li> </ul>

Although Valtek Sulamericana provides precise and detailed installation, operation and maintenance instructions, in accordance with their design reviews, the customer/user shall be responsible for the information provided to generate product specifications, shall understand precisely the operation and maintenance instructions provided with the products and shall provide training for their employees and contracted personnel regarding the safe use of Valtek Sulamericana products, in accordance with the specific applications they were designed for. The information herein shall not be considered as a certificate for assurance of satisfactory results. Valtek Sulamericana products are continuously improved and upgraded and the specification, dimensions and information contained herein are subject to change without notice. For further information or to confirm these presented here, consult Valtek Sulamericana at Rua Goiás, 345, Diadema, São Paulo, Brasil, CEP 09941-690, Phone: 55-11 4072-8600, Fax: 55-11 4075-2477.

Quality Management System



Certificate No. 311001 QM

Kel-F is a registered trademark of 3M Corporation.  
GL̄, GL̄, GL̄ and Ḡ are registered trademarks of Valtek Sulamericana.  
Valtek Sulamericana is a registered trademark.

Printed in Brazil

[www.valteksulamericana.com.br](http://www.valteksulamericana.com.br)

IOM 10 Soft Seats Rev. 0 05/2011E PN-9810016 (Copyright 2011 Valtek Sulamericana)