

# Valtek MegaStream Control Valves

## GENERAL INSTRUCTIONS

The following instructions are designed to assist in the disassembly, reassembly and troubleshooting of MegaStream™ attenuators in Valtek® valves. Product users and maintenance personnel should thoroughly review this bulletin in conjunction with Installation, Operation, Maintenance Instructions 1 (Mark One and Two Control Valves) before installing, operating or performing any maintenance on the valve.

This publication does not contain information on installing, maintaining, troubleshooting, calibrating, and operating Valtek positioners. Refer to the appropriate Maintenance Instructions when this information is required.

**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 inferior parts, or using maintenance procedures other than outlined could drastically affect performance and be hazardous to personnel and equipment.**

MegaStream attenuators are designed to reduce gaseous noise in automatic control valves through staged pressure reduction and turbulence control. MegaStream valves have two basic designs: A one- or two-stage attenuator for low to moderate pressure drop services and a multi-stage attenuator for high pressure drop applications. Pressure-balance designs are available in both types.

### Installation

Standard unpacking and installation instructions are outlined in Installation, Operation, Maintenance Instructions 1. Regardless of the air-action, it is imperative that valves equipped with MegaStream attenuators be **installed in the line with flow direction under the**

**plug. It is also strongly suggested that during start-up, a strainer be placed in-line before valve to catch debris prior to it reaching the MegaStream valve.**

**WARNING: Improper installation will result in excessive noise, causing possible damage to valve parts or injury to personnel.**

## DISASSEMBLY AND REASSEMBLY

### Disassembling Unbalanced MegaStream

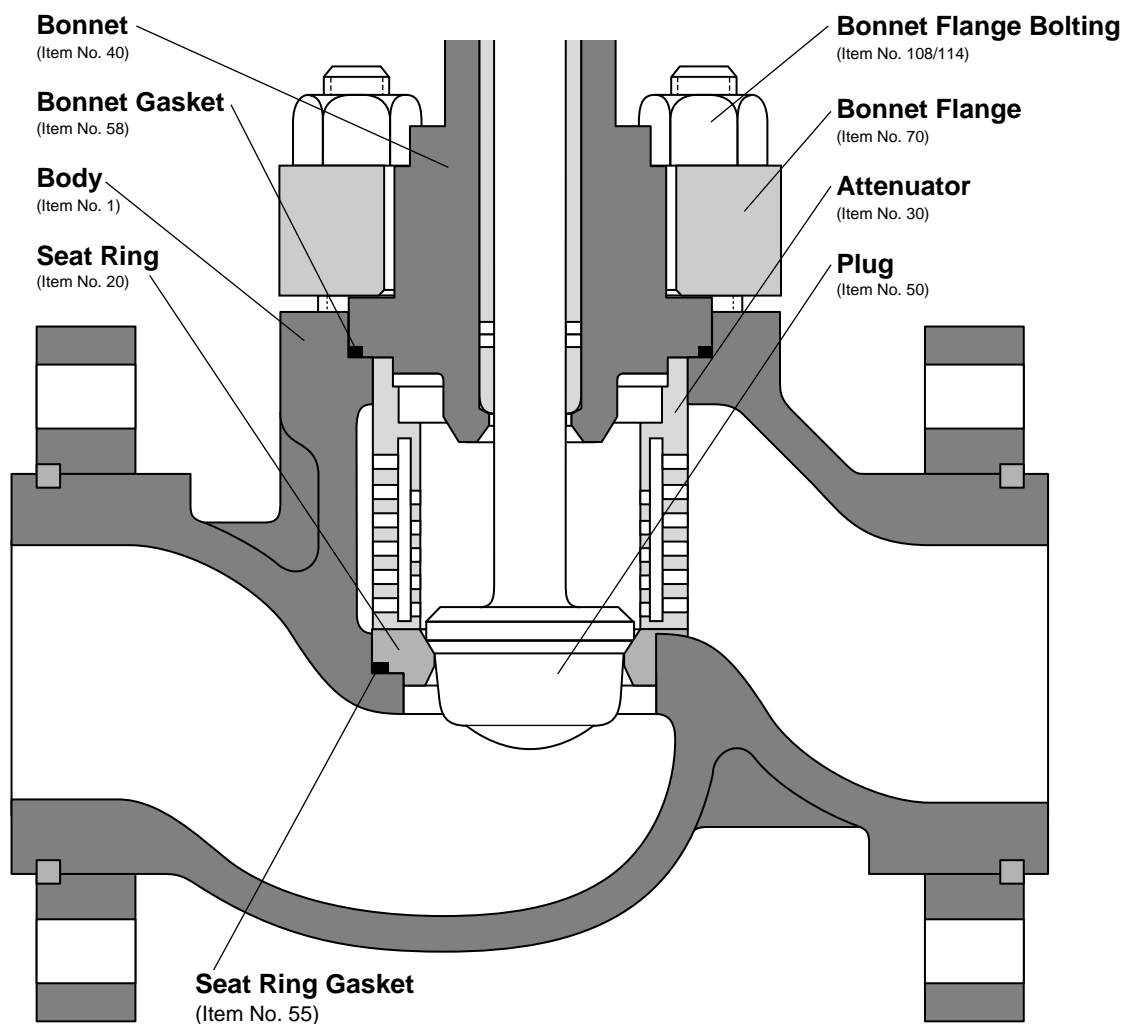
Refer to Figure 1 and proceed as follows:

**WARNING: Depressurize line to atmospheric pressure and drain all fluids before working on the valve. Failure to do so can cause serious injury.**

1. Fully retract plug until stem clamp is pointing to the open position on the actuator stroke plate.
2. Remove bonnet flange bolting and lift actuator, bonnet and plug assembly out of the valve body. Remove the bonnet gasket.

**WARNING: A hoist may be necessary for larger actuators (size 50 and larger). Care must be taken to lift the actuator and plug straight out of the valve body. Any scraping of parts while removing the actuator may damage valve parts. When the actuator is not equipped with a lifting ring, do not attach one; instead, lift the actuator by using lifting straps through the yoke legs. In this case, the center of gravity may be above the lifting point. Therefore, support must be given to prevent the actuator from rotating; otherwise, serious injury may result.**

3. With the actuator, bonnet and plug removed, the attenuator can be lifted out of the valve body. In larger sizes, the attenuator may be too heavy to lift



**Figure 1: Unbalanced MegaStream Assembly**

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

without a hoist; in this case, tapped holes are machined into the top of the attenuator for installation of lifting rings.

4. Remove the seat ring and seat ring gasket.
5. The attenuator may now be cleaned according to established industry methods. If uncertain as to which methods to use with a particular attenuator and application, contact factory.

### Reassembling Unbalanced MegaStream

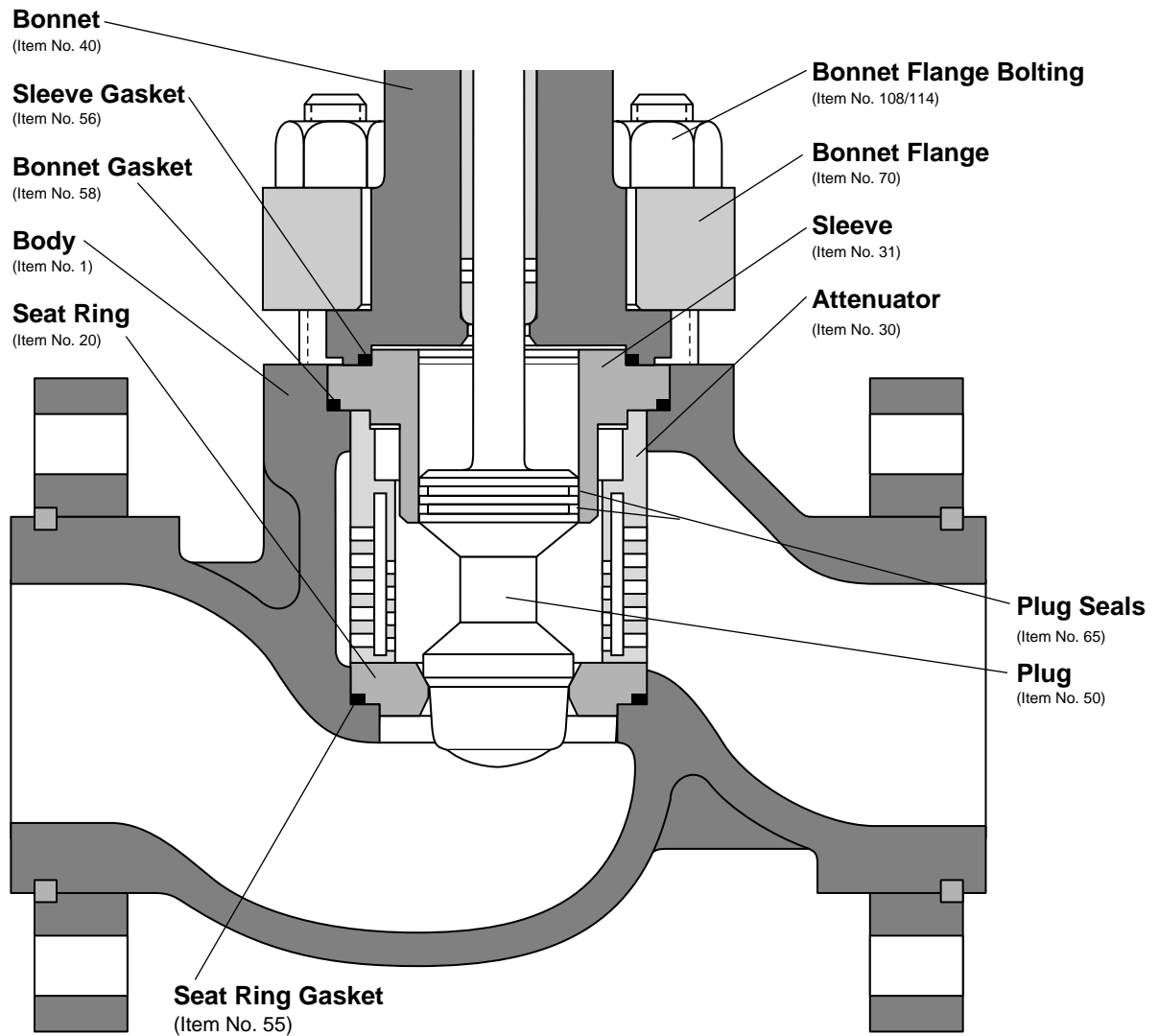
Refer to Figure 1 and proceed as follows:

1. Install a new seat ring gasket and reinstall seat ring.  
**NOTE:** Bonnet and seat ring gaskets should be replaced each time the valve is disassembled.
2. Install the cleaned attenuator, making sure the hole pattern closest to the edge is situated at the bottom (by the seat ring).
3. Replace bonnet gasket.

4. Fully retract the plug (stem clamp indicator pointing to the open position) and lower the actuator, bonnet and plug squarely into the body and attenuator.

**CAUTION:** The bonnet aligns closely to the body. Damage could result from misalignment of the plug and attenuator; therefore, extreme caution should be exercised in this operation to make sure it is installed squarely.

5. Once the actuator is resting on the body, tighten the bonnet flange bolting fingertight.
6. Seat the plug two or three times to center the seat ring. This can be done by applying air to the actuator.
7. Leaving the plug in the extended (or closed) position, begin tightening the bonnet flange bolting in a criss-cross pattern that will keep the bonnet square with the body. Tighten the first bolt  $\frac{1}{6}$  turn, then tighten the bolt directly opposite  $\frac{1}{6}$  turn.
8. Continue tightening all bolts until the bonnet is firmly



**Figure 2: Pressure-balanced MegaStream Assembly**

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

seated, metal-to-metal, in the body. This can be easily felt through the wrench.

9. Slowly stroke the plug up and down to check the alignment of the plug with the attenuator.

### Disassembling Pressure-balanced MegaStream

Refer to Figure 2 and proceed as follows:

**WARNING: Depressurize line to atmospheric pressure and drain all fluids before working on the valve. Failure to do so can cause serious injury.**

1. Fully retract plug until indicator is pointing to the open position.
2. Remove bonnet flange bolting and lift the actuator, bonnet and plug out of the valve body. A hoist may be necessary for larger valves.

**WARNING: A hoist may be necessary for larger actuators (size 50 and larger). Care must be**

**taken to lift the actuator and plug straight out of the valve body. Any scraping of parts while removing the actuator may damage valve parts. When the actuator is not equipped with a lifting ring, do not attach one; instead, lift the actuator by using lifting straps through the yoke legs. In this case, the center of gravity may be above the lifting point. Therefore, support must be given to prevent the actuator from rotating; otherwise, serious injury may result.**

**WARNING: Danger exists in removing the actuator, bonnet and plug—especially if PTFE pressure-balanced seals are used. The attenuator sleeve may stick to the plug and fall during disassembly, causing possible serious injury and/or damage to the valve or nearby equipment. Steps 3 thru 6 must be followed before attempting to remove the plug from the sleeve.**

3. If the sleeve is observed sticking to the plug during

6. Lift the actuator bonnet and plug assembly from body, taking care not to damage the sleeve bore or plug head.
7. Remove the sleeve attenuator, seat ring and gaskets from the body.
8. The attenuator may now be cleaned according to established industry methods. If uncertain as to which methods to use with a particular attenuator and application, refer to factory.

## Reassembling Pressure-balanced MegaStream

Refer to Figure 2 and proceed as follows:

1. Install new seat gasket and reinstall seat ring.

**NOTE:** All gaskets should be replaced whenever the valve is disassembled.

2. Install attenuator and sleeve. Replace bonnet and sleeve gaskets, and plug seals.
3. Lower the actuator, bonnet and plug assembly squarely into the sleeve bore. If PTFE seals are used, the plug may remain retracted. With metal piston ring seals, the plug must be extended a few

inches to allow the use of a ring compressor on the metal rings. A suitable sized screw-type hose clamp will also serve to compress the rings for reassembly. Care should be taken to avoid damaging the sealing surfaces while fitting the plug into the sleeve bore.

4. Once the bonnet is resting on the body, reinstall and tighten the bonnet flange bolting fingertight.
5. Using the actuator, seat the plug two or three times to center the seat ring.
6. Leaving the plug in the extended (or closed) position, begin tightening the bonnet flange bolting in a crisscross pattern that will keep the bonnet square with the valve. Tighten the first bolt  $\frac{1}{6}$  turn, then tighten the bolt directly opposite  $\frac{1}{6}$  turn.
7. Continue tightening all bolting until the bonnet is firmly seated, metal to metal, in the body. This can be easily felt through the wrench.
8. Slowly stroke the plug up and down to check the alignment of the plug with the attenuator. If binding, sticking or scraping noises are heard, stop stroking valve immediately. Disassemble the valve to determine noise and to detect possible damage.

## Troubleshooting MegaStream Control Valves

Problem	Probable Cause	Corrective Action
Jerky stem travel	<ol style="list-style-type: none"> <li>1. Galling or scoring between plug and pressure-balanced sleeve</li> <li>2. Overtightened packing</li> <li>3. Service temperature exceeds operating parameter of trim design</li> <li>4. Inadequate air supply</li> <li>5. Malfunctioning positioner</li> </ol>	<ol style="list-style-type: none"> <li>1. Superficial scoring or galling may be removed with a light application of emery cloth; if more serious damage exists, contact factory <b>CAUTION: Trim parts are machined to close tolerances which are essential for correct functioning of the valve; attempting to remove deep scratches could result in high leakage rates or improper functioning of valve.</b></li> <li>2. Adjust the packing box nuts to slightly over finger-tight (overtightening will cause excessive packing wear and high stem friction)</li> <li>3. Reconfirm service conditions and contact factory</li> <li>4. Check for leaks in air supply or instrument signal system; tighten any loose connections and replace any leaky lines</li> <li>5. Refer to positioner maintenance instructions</li> </ol>
Excessive leakage	<ol style="list-style-type: none"> <li>1. Insufficiently tightened bonnet flange bolting</li> <li>2. Worn or damaged seat ring</li> <li>3. Worn or damaged plug seals</li> <li>4. Worn or damaged gaskets</li> <li>5. Inadequate actuator thrust</li> <li>6. Incorrectly adjusted plug</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to "Reassembly" section for correct tightening procedure</li> <li>2. Disassemble and replace or repair seat ring (for correct procedure on remachining seat, see Maintenance Instructions 1)</li> <li>3. Disassemble and replace plug seals</li> <li>4. Disassemble and replace gaskets</li> <li>5. Check for adequate air supply to the actuator; if supply is okay, reconfirm service conditions and contact factory.</li> <li>6. Refer to Maintenance Instructions 1 for correct plug adjustment</li> </ol>
Restricted flow	<ol style="list-style-type: none"> <li>1. Dirty attenuator</li> <li>2. Incorrectly adjusted limit-stop or handwheel</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble and clean attenuator, using established industry cleaning methods</li> <li>2. Check stroke limiting device and correct, if necessary</li> </ol>
Excessive noise	<ol style="list-style-type: none"> <li>1. Improper flow direction</li> <li>2. Excessive pressure drop</li> <li>3. Jerky or improper stem travel</li> <li>4. Throttling too close to the seat</li> <li>5. Loose parts</li> </ol>	<ol style="list-style-type: none"> <li>1. Check installation for flow direction under the seat; reinstall, if necessary</li> <li>2. Check design service conditions</li> <li>3. See corrective action under "Jerky stem travel"</li> <li>4. Recommended throttling should be 5 percent or more open</li> <li>5. Check all external bolts and nuts for tightness; if noise is internal, disassemble, check for damaged, scored parts or missing seat gasket</li> </ol>

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