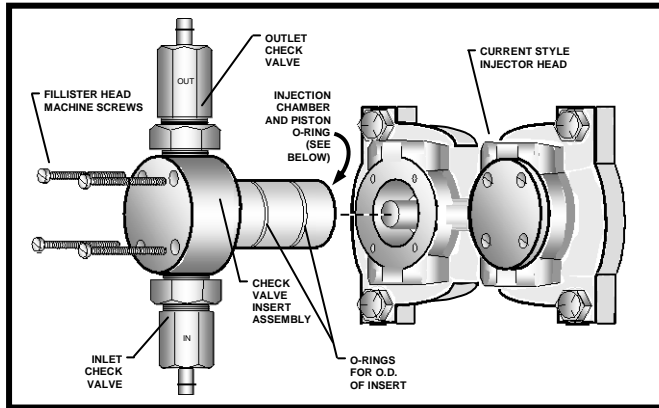


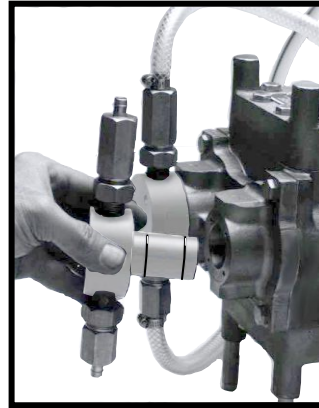
Injector Piston O-ring Replacement, Models R-1, R-3, R-4, R-6, and R-8

Over the years, there have been three different types of injector heads utilized on bronze Smith MeaSUREMENT liquid chemical injectors: (1) the current "Check Valve Insert" type; (2) the old style "Injector Head Insert" type; and (3) the old style all-bronze injector head. The following shows how to change the injector piston o-ring in all of these units, as well as the R-1. Related procedures are more detailed in Manual "CM-2", and covered in Spanish language "Boletín 195". **Always replace the injector piston o-rings annually, if not sooner.**

(1) The current Smith MeaSUREMENT injectors are provided with an improved chemically resistant, opaque white, polypropylene, injector head "Check Valve Insert", which incorporates the injection chamber and o-ring, and has also been lengthened, drilled, and tapped to accommodate the check valves. This enhances external isolation of metered concentrates, improves injection system durability and corrosion resistance under average conditions, and allows easier extraction of the insert, to inspect and replace the injector piston o-ring. To replace the injector piston o-ring, remove the tubing from the check valves. Remove the four fillister head machine screws that hold the check valve insert onto the injector head. Then carefully pull the check valve insert assembly away from the injector head, exposing the chamber with the o-ring.



CURRENT CHECK VALVE INSERT FOR BRONZE SINGLE INJECTOR

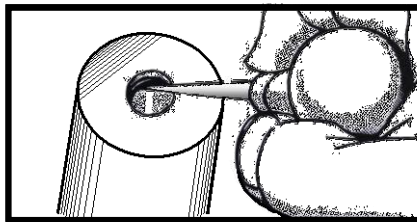


CURRENT CHECK VALVE INSERT FOR BRONZE TWIN INJECTOR

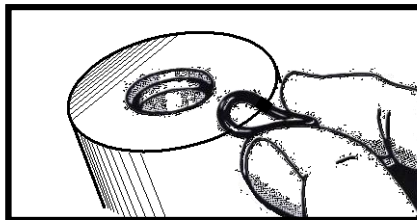


TYPICAL CHECK VALVE INSERT SIMILAR TO THOSE SHOWN TO THE LEFT, FOR PLASTIC MODEL R-1 (SOLD ONLY AS A 1:100/1:100 TWIN INJECTOR).

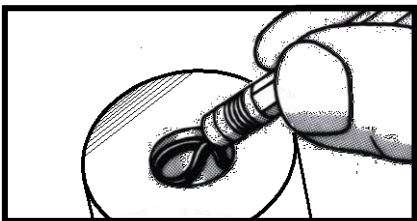
FOR O-RING REPLACEMENT, FOLLOW THE PROCEDURES AS LISTED BELOW.



PIERCING THE OLD O-RING WITH A SHARP INSTRUMENT, FOR REMOVAL



PINCHING THE NEW O-RING INTO AN OVAL SHAPE TO INSTALL IT



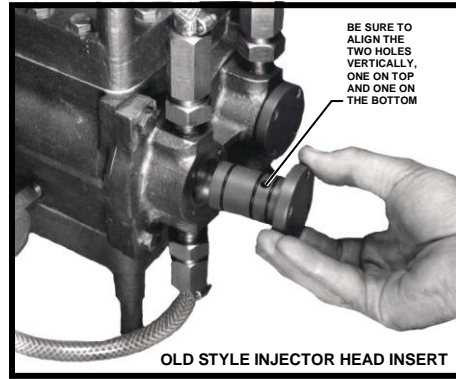
WORKING THE NEW O-RING INTO THE O-RING GROOVE

NOTE: Once the injection chamber, which contains the injector piston o-ring, is exposed, the following o-ring replacement procedure applies to all old style and current injector heads:

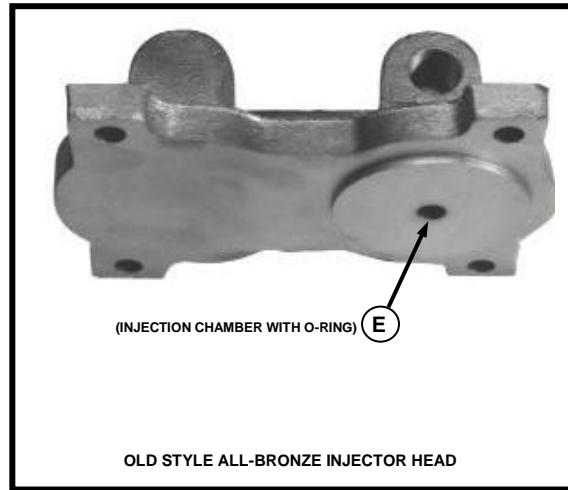
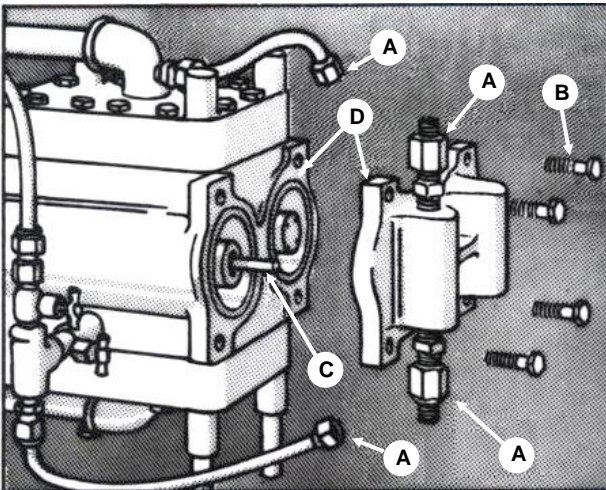
Use a penknife, safety pin, ice pick, or any such small sharp metal tool to pierce and remove the o-ring from the groove in the end of the injection chamber. Do not scratch or deform the groove or the chamber. Make sure that they are clean and in good condition. Next, install the new o-ring as shown to the left (*it must be the proper size and compound for the application*). Moisten the groove with water. Pinch the o-ring into an oval shape, with the forefinger and thumb. Place it in the o-ring groove and push down and in, until the o-ring starts to enter the groove. (Never reuse an o-ring that has been pierced for removal from the chamber). Finally, use the eraser end of a pencil, or any such soft blunt tool, to push down on the o-ring after it has one edge started in the groove. **Do not use oil or grease to facilitate this operation. Use water as a lubricant.** If the o-ring should go past the groove, remove it carefully with the head of a nail and try again. Keep pushing the o-ring with the soft blunt tool until most of it enters the groove. Since the groove actually compresses the o-ring to a smaller size, be sure to insert the soft blunt tool into the chamber, and rotate it around the inner diameter *in order to evenly seat the o-ring all the way around the entire groove, without any visible protrusions, or other deformation.* (Procedure continues on pg. 2).

For all inserted style heads, replace the o-rings on the o.d. (outside diameter) of the insert if they are damaged. After replacing the injector piston o-ring inside the insert, as well as any damaged o-rings on the o.d. of the insert, reinstall all parts in reverse sequence. For current style injectors, push the check valve insert back into the injector head, tighten the four fillister head machine screws, and reattach the tubing to the check valves.

(2) The old style inserted units had a removable brass or PVC “Injector Head Insert”, which incorporated the injection chamber and o-ring. The check valves were mounted onto the injector head casting, as with the original old style all-bronze injector heads. To replace the injector piston o-ring, remove the four fillister head machine screws, and extract the insert from the injector head. The injector piston o-ring is installed in the injection chamber just inside the open end of the insert. (See the continuation of this procedure on pg. 1). Once the o-rings are replaced, push the injector head insert back into the injector head, and tighten the four fillister head machine screws. Be sure the two holes through the chamber wall are aligned, vertically.



(3) The original units had the old style all-bronze injector head. To replace the injector piston o-ring, first remove the tubing from the check valves (A), unscrew 4 or 6 bolts (B), and separate the injector head casting from the cylinder block (D), exposing the chamber (E) and the piston (C). (See the continuation of this procedure on pg. 1). Once the o-ring is replaced, replace the injector head casting, tighten the bolts, and reattach the tubing to the check valves.



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