Badger™ 2" Self-Rotary Swivel (BA-LK-P4, -BSPP4, -MP9L, -MP9R)

For applicable patents see: http://www.sapatents.com

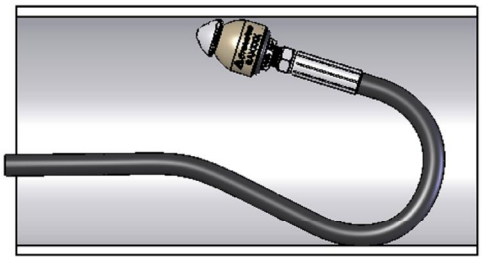
The **BA-LK-P4 / BA-LK-BSPP4 / BA-LK-MP9L / BA-LK-MP9R** is a self-rotating swivel designed for cleaning 2" to 4" tubes and pipes with bends and long radius elbows, such as U-Tubes and process lines. The P4 and BSPP4 tools can be used at operating pressures up to 15,000 psi (1035 bar) and the MP9L and MP9R tools at up to 22,000 psi (1500 bar). The P4 and BSPP4 have either a 1/4" NPT or 1/4" BSPP female pipe thread inlet. If a standard 1/4" NPT or BSPP hose end is used, they can pass through elbows in 3" and larger pipe. If using the tool in 2" pipe a special shorter hose end is required to allow tool to travel through elbows. Contact StoneAge for more information on the hose requirements. The MP9L tool has a 9/16" female left-hand medium pressure inlet and the MP9R has a 9/16" female right-hand medium pressure inlet. The tools do not use any bearings, seals, or lubricating fluid. Rotation is powered by the jet thrust. The nozzle inserts used in the head determine the flow rate and the pulling force.

Operation:

Before connecting the tool to the end of the hose, flush the high pressure hose to remove debris. **The most important item in maintaining the BA is keeping debris from entering the tool, which will prevent it from rotating.** Attach the tool to the end of the hose. Note that there is a large O-Ring (WV 008) around the inlet. This O-Ring helps prevent the tool from getting caught on the rear edge when pulling the tool back out of the line. Position the tool within the pipe to be cleaned; bring the pump up to pressure, making certain that the Badger begins to pull its way into the pipe. Once the pump is up to pressure, feed the Badger at a reasonable rate to allow the jets time to clean the pipe.

Use Parker Thread Mate and Teflon tape on all pipe thread connections (P4, BSPP4); use anti-seize on all straight thread connections (MP9L, MP9R) to the swivel inlet.

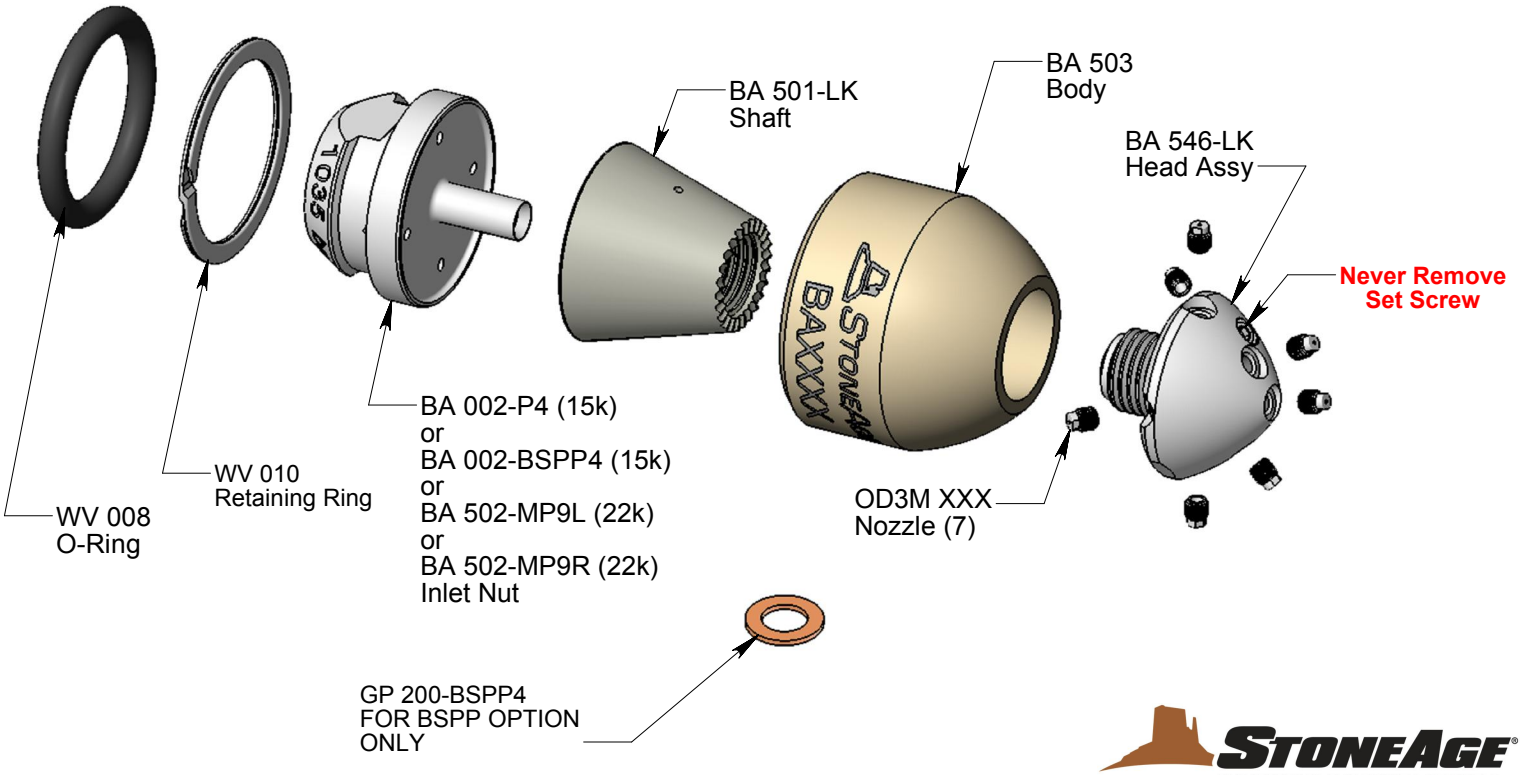
After the Badger is removed from the hose, blow out water with compressed air and spray a light oil such as WD-40 into the tool.



SAFETY!
If the BA is being used in pipes larger than 4 inch diameter, a rigid stinger should be installed between the tool inlet and the hose end; otherwise the tool can turn around and come back toward the operator, causing serious injury or death.

Nozzle Head:

The nozzle head has forward jets at 15°, 30° and 45°, two jets at 90°, and two back jets at 132°. Ports can be plugged to concentrate jetting power where desired. StoneAge recommends replacing the entire head assembly with the nozzles pre-installed at the factory.



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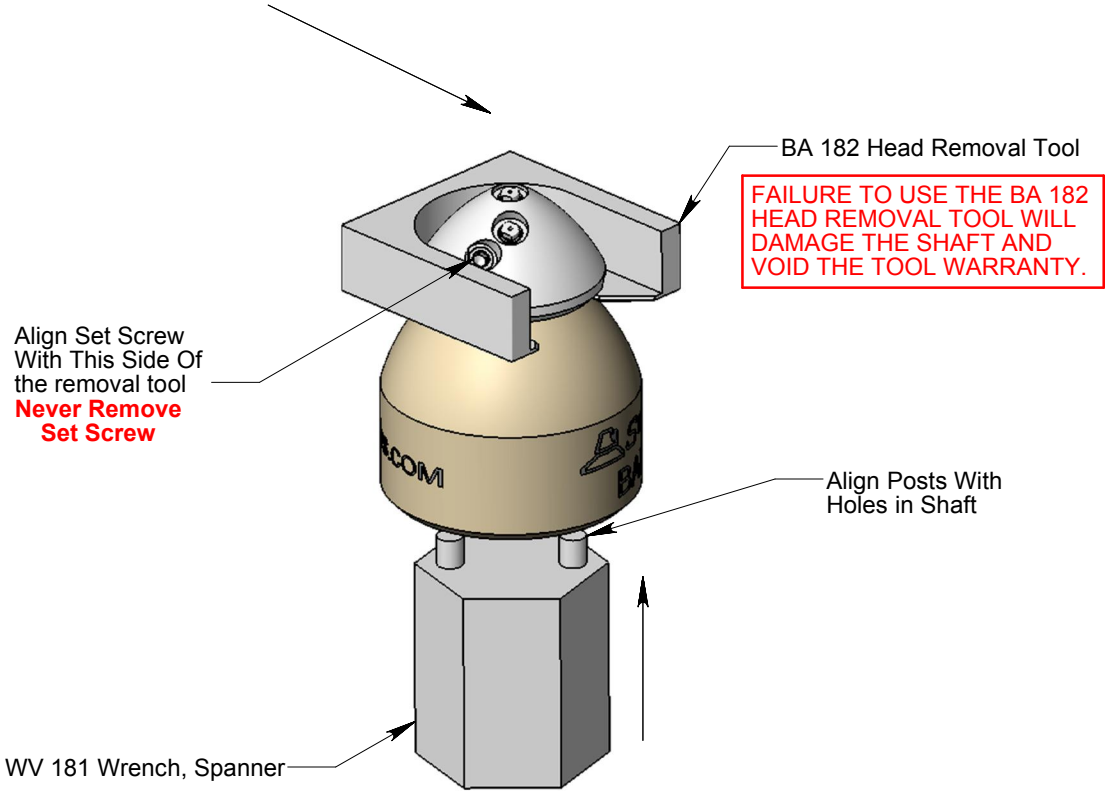
Troubleshooting:

Head will not rotate: First, make sure the head (BA 546-LK) is still tightened into the shaft (BA 501-LK). A saftey feature built into the shaft stops the tool from rotating if the head comes loose. If the head isn't loose, try the following procedure. Spray a light oil such as WD-40 into the tool and rotate head by hand until it turns freely again. Make sure that the jets in the head are not plugged. If the tool still does not rotate after trying this several times, it may need to be disassembled and cleaned on the inside. To do this requires a spanner wrench (available in StoneAge Tool Kit BA 612-LK) inserted into the rear of the shaft to remove the head from the shaft. Begin by removing the O-ring (WV 008) and the Retaining Ring (WV 010). Pull the Inlet Nut (BA 002-P4,-BSPP4,BA 502-MP9L,BA 502-MP9R) out of the Body (BA 503). Using a spanner wrench (WV 181) and the head removal tool (BA 182), unscrew the Shaft (BA 501-LK) from the Head (BA 546-LK). Make sure the head removal tool slides under the head in the orientation shown.This process is shown in the figure below. Make sure the two small holes in the side of the shaft are cleaned out; debris plugging these holes is the most likely cause of the tool not rotating. If the outside of the shaft is badly worn, it needs to be replaced.

NOTE: Whenever reassembling tool, apply 2-4 drops of Loctite #262 Red (StoneAge p/n BA 185) around the circumference of the threads on the Head prior to screwing it into the Shaft. Care must be taken not to allow excess Threadlocker into the internal shaft bore below the female threads or onto the tapered external surface of the shaft. Torque to 100 in-lbs using socket wrench (available from StoneAge as p/n WV 181). Also replace Retaining Ring (WV 010) with a new one during each reassembly.
If you do not have the required tools or you are not confident in performing these procedures please send the tools back to StoneAge for maintenance and repairs.



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