

# Badger Self-Rotary Swivel (BA-P4, BA-BSPP4)

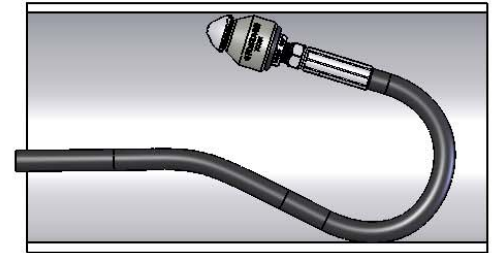
US Patent No. 7,635,096 & D617,871  
Other Patents Pending

The **BA-P4 / BA-BSPP4** 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 tool can be used at operating pressures up to 15,000 psi (1035 bar). It has either a 1/4" NPT or 1/4" BSPP pipe thread inlet. If a standard 1/4" NPT or BSPP hose end is used, it 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 tool does 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; we recommend using teflon tape to seal the threads. 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.

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!

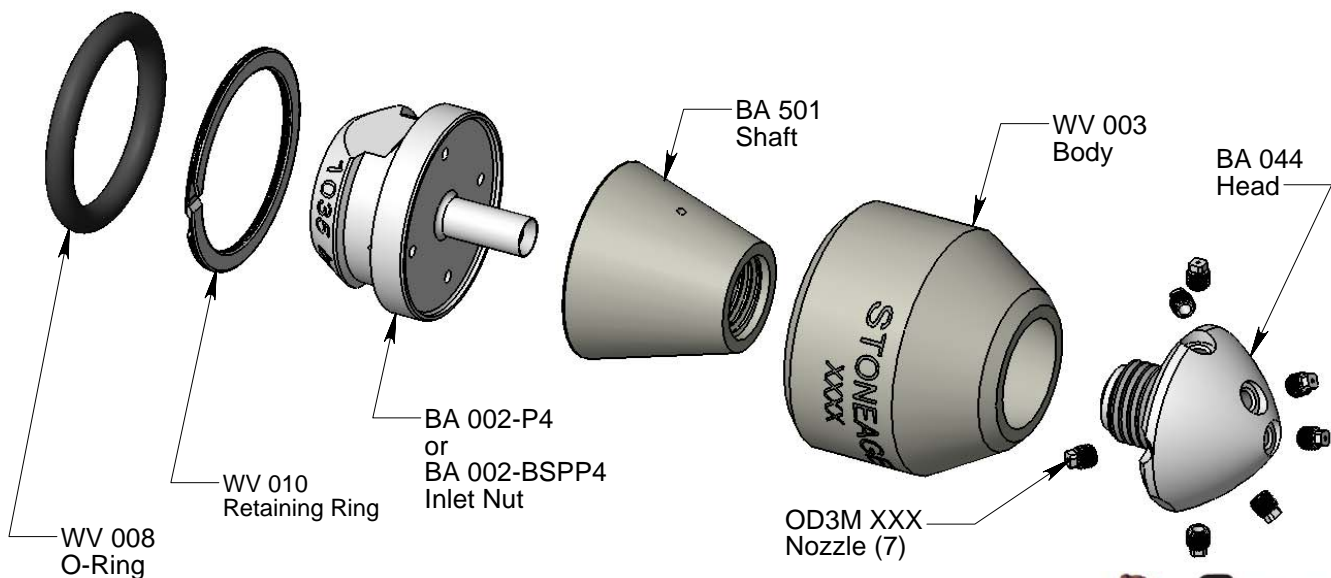
If the BA is being used in pipes larger than 4 inch diameter, a rigid stinger should be installed between the tool inlet and the hose end; otherwise the tool can turn around and come back toward the operator, causing serious injury or death.

## 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. The inserts can be removed and installed using a Schrader valve stem tool (available from StoneAge as part number BA 180). Use Loctite 680 to retain and seal the nozzles. The nozzles should be installed as far as the tool will allow. To remove nozzle inserts, heat the head with a propane torch for 60 seconds to break down the Loctite.

## Troubleshooting:

**Head will not rotate:** 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-P4 612) 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) out of the Body (WV 003). Using a spanner wrench, unscrew the Shaft (BA 501) from the Head (BA 044). 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.



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WATERBLAST TOOLS

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