4” BADGER

Rotary Cleaning for Medium Pipes with Elbows

TOOL TALK



The 4” Badger rotary nozzle is engineered with a compact length to optimize it for cleaning pipes with bends. It is capable of navigating a 90 degree elbows in pipes as small as 4” (102 mm) in diameter. The operator can adjust the speed of controlled rotation by changing the viscous fluid, and the jetting is highly configurable to meet the job conditions of any pipe cleaning application.

COMPETITIVE ADVANTAGES

- Navigates 90° elbows in pipes as small as 4 inches (102 mm) at up to 43.5k psi (3000 bar)
- 15K and 22K models **run 5 times longer than any competitive too**l before needing maintenance, saving time and money in the field
- Can do the job of an expensive and bulky Rotary Hose Device (RHD), passing through tight bends to clean pipes that are inaccessible with other tools
- Configurable jetting configurations to dial in the right amount of pull and cleaning power to successfully remove any material
- Controlled rotation provides complete internal coverage without striping
- Designed to easily pair with the AutoBox ABX-500 hose handling system for hands-free pipe cleaning

FEATURES	BENEFITS
• Seat and seals are now standardized and all wear components are optimized for extended life across 15K and 22K tools	• 5X the runtime of any tool out there – **Start a job and finish it**
• Simplified overhaul and assembly due to redesigned internal mechanisms	• Unprecedented durability on the job
• Replaceable jets and consistent controlled rotation	• Configure jetting to meet the job conditions of any pipe cleaning application
• Large flow range	• Optimize tool to deliver more power for a variety of pump pressures and flows • Pull more hose while cleaning 4”-8” pipe with bends

StoneAge
ENGINEERING THE POWER OF WATER

4" BADGER OVERVIEW

QUESTIONS TO ASK THE CUSTOMER

- What type of cleaning is required — hard scale, soft material flush or completely plugged?
- Are there any bends or vertical climbs in the pipe between access points?
- What size and length of hose are you using?
- What pressure and flow are you operating?
- Do you need a hose adapter?
- Do you need a backout preventer?
  You should always use a backout preventer with high pressure pipe cleaning tools.
- Do you need a stinger or centralizer?
  A stinger or centering device is required when the ID of the pipe is 1.5 times larger the diameter of the tool being used, as described in the WJTA Recommended Guide.

OTHER INFORMATION

- The 4" Badger can be used with the AutoBox ABX-500 for a complete hands-free pipe cleaning solution.

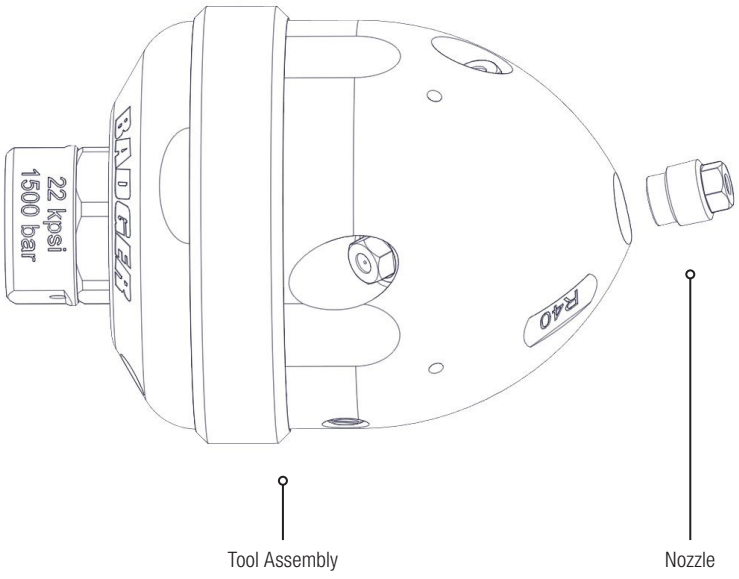
TOOL SPECIFICATIONS

MODEL	BAE-P6	BAE-BSPP6 BAE-MP9R BAE-M24	BA-H6
Pressure Range	5–15k psi 344–1034 bar	5–22k psi 344–1500 bar	22–43.5k psi 1500–3000 bar
Flow Range	13–27 gpm 49–114 LPM	12–25 gpm 45–95 LPM	4.5–12 gpm 17–45 l/min
Rotation Speed	20–100 rpm (Slow Fluid) 75–250 rpm (Fast Fluid)	20–100 rpm (Slow Fluid) 75–250 rpm (Fast Fluid)	100–400 rpm (Fast Fluid)
Inlet Connection	3/8 NPT	3/8 BSPP, 9/16 MP, M24	3/8 HP Female
Diameter	2.75 in. 70 mm	2.75 in. 70 mm	2.95 in. 75 mm
Length	3.5 in. 89 mm	3.5 in. 89 mm	3.9 in. 99 mm
Weight	3.0 lb 1.4 kg	3.0 lb 1.4 kg	4.0 lb 1.8 kg
Maximum Water Temperature	160 ºF 70 ºC	160 ºF 70 ºC	160 ºF 70 ºC

Visit our website for tool resources including operation and maintenance videos:

WWW.STONEAGETOOLS.COM

4” BADGER TOOL CONFIGURATION



A complete 4” Badger tool configuration requires the following components:

1. Appropriate tool option for the working pressure, inlet connection and rotation speed
2. Nozzles/Plugs of appropriate number and size

The following items may also be required:

- Suitable hose/lance adapter
- Backout preventer
- Stinger or centralizer

To configure a 4” Badger tool, the following information should be obtained:

- Pump pressure and flow
- Hose length and ID
- Hose end fitting

4” BADGER TOOL CONFIGURATION

ORDERING A STANDARD PACKAGE

StoneAge offers standardized 4” Badger tool packages for the most commonly used configurations. All 4” Badger tool packages come fully assembled and include: 1. Tool, 2. Nozzles specified to jetting, 3. Case.

The following table shows the configurations of standard 4” Badger tool packages:

PRESSURE	INLET CONNECTION	FLOW	PACKAGE CONTENTS	PACKAGE PART ID
5–15k psi 344–1034 bar	3/8 NPT Female	13–27 gpm 49–102 LPM	1 x 4” Badger tool assembly 5 x AP2 nozzles/plugs 1 x **BA 080** case	**BAE-P6-PKG**
5–22k psi 344–1500 bar	3/8 BSPP Female	12–25 gpm 45–95 LPM	1 x 4” Badger tool assembly 5 x AP2 nozzles/plugs 1 x **BA 080** case	**BAE-BSPP6-PKG**
	9/16 MP Female	12–25 gpm 45–95 LPM	1 x 4” Badger tool assembly 5 x AP2 nozzles/plugs 1 x **BA 080** case	**BAE-MP9R-PKG**
	M24 X 1.5 Male	12–25 gpm 45–95 LPM	1 x 4” Badger tool assembly 5 x AP2 nozzles/plugs 1 x **BA 080** case	**BAE-M24-PKG**
43.5k psi 3000 bar	3/8 HP Female	5–12 gpm 19–45 LPM	1 x 4” Badger tool assembly 5 x OS6 nozzles/plugs 1 x **BA 080** case	**BA-H6-PKG**

When ordering a 4” Badger package, you should specify:

1. Package Part ID
2. Fast or Slow rotation speed
3. Pump pressure and flow
4. Jetting configuration with nozzle/plug locations
5. Hose length and ID
6. Hose end fitting

FOR EXAMPLE:

QTY	PART ID	DESCRIPTION
1	**BA-P6-PKG**	15,000 psi 15 gpm 100 ft 3/8” ID hose FAST speed

PLEASE NOTE: Hose adapters are not included in packages. If an adapter is required for your configuration, it must be ordered separately. See Fittings and Adapters or ask your StoneAge Representative for options.

4” BADGER TOOL CONFIGURATION

ORDERING BY LINE ITEM

Complete tools can be configured by following the steps outlined below.
Contact StoneAge Customer Service for questions about specific applications.

STEP 1 TOOL SELECTION

There are nineteen 4” Badger tool options available. The correct tool is selected based on the inlet connection, maximum working pressure, and required rotation speed.

PRESSURE	INLET CONNECTION	FLOW	PART ID BASED ON ROTATION SPEED	
			SLOW (20-100 RPM)	FAST (75-250 RPM)
5–15k psi 344–1034 bar	3/8 NPT Female	13–20 gpm 49–76 LPM	**BAE-P6-R22-S**	**BAE-P6-R22-F**
		20-27 gpm 76–102 LPM	**BAE-P6-R18-S**	**BAE-P6-R18-F**
5–22k psi 344–1500 bar	3/8 BSPP Female	12-19 gpm 45–72 LPM	**BAE-BSPP6-R22-S**	**BAE-BSPP6-R22-F**
		19-25 gpm 72–95 LPM	**BAE-BSPP6-R18-S**	**BAE-BSPP6-R18-F**
	9/16 MP Female	12-19 gpm 45–72 LPM	**BAE-MP9R-R22-S**	**BAE-MP9R-R22-F**
		19-25 gpm 72–95 LPM	**BAE-MP9R-R18-S**	**BAE-MP9R-R18-F**
	M24 X 1.5 Male	12-19 gpm 45–72 LPM	**BAE-M24-R22-S**	**BAE-M24-R22-F**
		19-25 gpm 72–95 LPM	**BAE-M24-R18-S**	**BAE-M24-R18-F**
43.5k psi 3000 bar	3/8 HP Female	5–7 gpm 19–26 l/min	N/A	**BA-H6-R50**
		7–9.5 gpm 26–36 l/min	N/A	**BA-H6-R35**
		9.5–12 gpm 36–45 l/min	N/A	**BA-H6-R25**

STEP 2 HOSE ADAPTER

A hose adapter may be required. See *Fittings and Adapters* for options depending on the inlet connection.

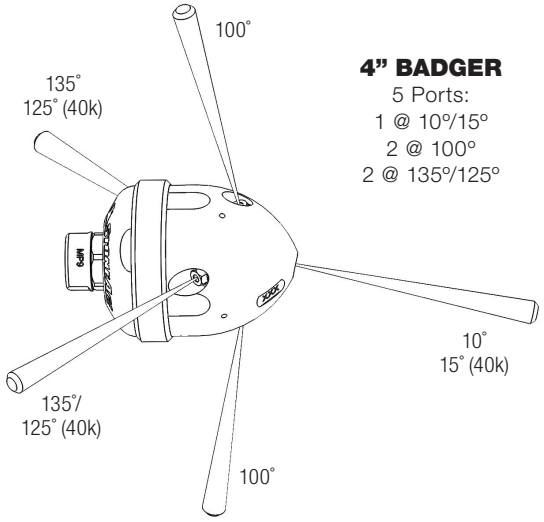
4" BADGER TOOL CONFIGURATION

STEP 3 NOZZLES AND PLUGS

The 4" Badger can be jetted in different configurations depending on the application. The table below shows commonly used nozzle/plug configurations for the 4" Badger tool.

10º/15º PORT	100º PORTS	135º/125º PORTS
1 x Nozzle	2 x Nozzle	2 x Nozzle
1 x Plug	2 x Nozzle	2 x Nozzle
1 x Nozzle	2 x Plug	2 x Nozzle
1 x Plug	2 x Plug	2 x Nozzle

Once you have confirmed the required jetting configuration, use the StoneAge Jetting App to determine nozzle sizes:
JETTING.STONEAGETOOLS.COM



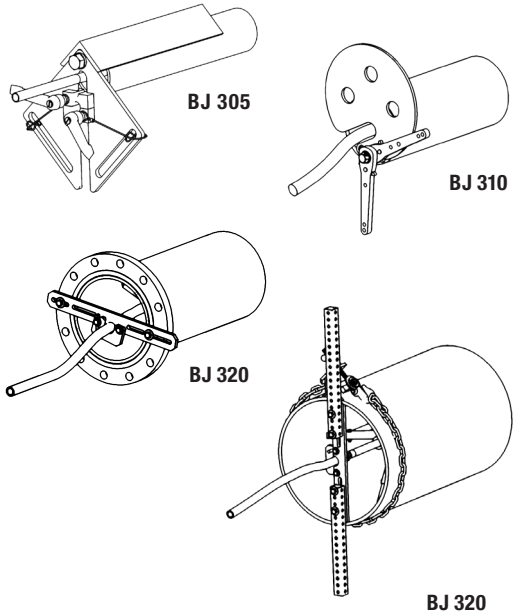
4" BADGER
5 Ports:
1 @ 10º/15º
2 @ 100º
2 @ 135º/125º

STEP 4 BACKOUT PREVENTER

Backout preventers increase operator safety by keeping the tool from backing out of the pipe. Several options are available including fixtures for small diameter pipes, pipes with various flange bolt circle diameters, and adapters for pipes with no-flange entry.

PIPE SIZE	HOSE OD	BACKOUT PREVENTER	DESCRIPTION	WEIGHT
2–6 in. 51–150 mm	0.3–0.7 in. 8–18 mm	**BJ 305***	Backout preventer for small pipes	5.6 lb 2.5 kg
4–8 in. 100–200 mm	0.3–1.5 in. 8–38 mm	**BJ 310**	Backout preventer for small to medium pipes	7.6 lb 3.4 kg
5–17 in. 130–430 mm	0.3–1.5 in. 8–38 mm	**BJ 320**	Backout preventer for medium to large pipes	6.3 lb 2.9 kg
15–36 in. 380–910 mm	N/A	**BJ 325**	Extension kit for **BJ 320** backout preventer	8.5 lb 3.6 kg
8–36 in. 130–910 mm	N/A	**BJ 340**	No-flange kit for **BJ 320** backout preventer	17 lb 7.7 kg

*Securing device not supplied



BJ 320
shown with **BJ 325** extension kit and **BJ 340** No-flange attachment kit

4” BADGER TOOL CONFIGURATION

STEP 5 MAINTENANCE RESOURCES

The following maintenance kits are available for 4” Badger tools:

TOOL	ROTATION SPEED	KIT DESCRIPTION	KIT PART ID	KIT CONTENTS
BAE-P6 BAE-BSPP6 BAE-MP9R BAE-M24	Slow	Service Kit, Sow	**BAE 600-S**	1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BJ 048-S** Viscous Fluid, Slow - 6oz. 1 x **RJ 011-C** Carbide Seat, .375OD 1 x **RJ 012-TO** H.P. Seal & O-Ring 1 x **BJ 062-S** Antiseize, 2g 1 x **PL 663** Manual, Badger Family
BAE-P6 BAE-BSPP6 BAE-MP9R BAE-M24	Fast	Service Kit, Fast	**BAE 600-F**	1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BJ 048-F** Viscous Fluid, Fast - 6oz. 1 x **RJ 011-C** Carbide Seat, .375OD 1 x **RJ 012-TO** H.P. Seal & O-Ring 1 x **BJ 062-S** Antiseize, 2g 1 x **PL 663** Manual, Badger Family
BA-H6	NA	Service Kit, 40k	**BA 600-H6**	1 x **BA 412-O** H.P. Seal Assy 1 x **BA 420** Seal Retainer, 40k 1 x **BA 424** Spring, Compression - 40k psi 1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BC 511** Carbide Seat - 40k psi (BC 505-S) 1 x **BJ 048-F** Viscous Fluid, Fast - 6oz. 1 x **BJ 062-S** Antiseize, 2g 1 x **PL 600** Manual, BA-H6 40k
BAE-P6 BAE-BSPP6 BAE-MP9R BAE-M24	Slow	Overhaul Kit, Sow	**BAE 610-S**	1 x **BA 006** Seal 1 x **BA 007** Seal 1 x **BAE 008** O-Ring, 2.239, 70D 3 x **BAE 010** O-Ring, .676, 70D 1 x **BAE 017** Retaining Ring, Spiral 1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BJ 026** Port Plug 1 x **BJ 048-S** Viscous Fluid, Fast - 6oz. 1 x **BJ 062-S** Antiseize, 2g 1 x **BRLM 109** Bearing, Single sided (BRLM 101) 1 x **RJ 011-C** Carbide Seat, .375OD 1 x **RJ 012-TO** H.P. Seal & O-Ring 1 x **PL 663** Manual, Badger Family
BAE-P6 BAE-BSPP6 BAE-MP9R BAE-M24	Fast	Overhaul Kit, Fast	**BAE 610-F**	1 x **BA 006** Seal 1 x **BA 007** Seal 1 x **BAE 008** O-Ring, 2.239, 70D 3 x **BAE 010** O-Ring, .676, 70D 1 x **BAE 017** Retaining Ring, Spiral 1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BJ 026** Port Plug 1 x **BJ 048-F** Viscous Fluid, Fast - 6oz. 1 x **BJ 062-S** Antiseize, 2g 1 x **BRLM 109** Bearing, Single sided (BRLM 101) 1 x **RJ 011-C** Carbide Seat, .375OD 1 x **RJ 012-TO** H.P. Seal & O-Ring 1 x **PL 663** Manual, Badger Family

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4" BADGER TOOL CONFIGURATION

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TOOL	ROTATION SPEED	KIT DESCRIPTION	KIT PART ID	KIT CONTENTS
BA-H6	NA	Overhaul Kit, 40k	**BA 610-H6**	1 x **BA 007** Seal 1 x **BA 407** Seal, Shaft 1 x **BA 409** Bearing, Sealed 1 x **BA 412-O** H.P. Seal Assy 1 x **BA 420** Seal Retainer, 40k 1 x **BA 424** Spring, Compression - 40k 1 x **BA 426** Seat Face, 40k 1 x **BA 430** Wear Ring, 40k 1 x **BC 031** Back-up Ring 1 x **BC 040** O-Ring 1 x **BC 410.15** Syringe, 20CC 1 x **BC 415** Syringe Tube Assembly 1 x **BC 511** Carbide Seat - 40k psi (BC 505-S) 1 x **BJ 008** O-Ring 2 x **BJ 026** Port Plug 1 x **BJ 048-F** Viscous Fluid, Fast - 6oz. 1 x **BJ 062-S** Antiseize, 2g 1 x **MJ 014** Wave Spring 1 x **WGR 007** Bearing 1 x **PL 600** Manual, BA-H6 40k
BAE-P6 **BAE-BSPP6** **BAE-MP9R** **BAE-M24**	Slow, Fast	Seal Kit	**BAE 602**	1 x **RJ 011-C** Carbide Seat, .375OD 1 x **RJ 012-TO** H.P. Seal & O-Ring
BAE-P6 **BAE-BSPP6** **BAE-MP9R** **BAE-M24**	Slow, Fast	Disc Kit	**BAE 604**	4 x **BAE 015** Disc, Inner 3 x **BAE 016** Disc, Outer 1 x **BAE 017** Retaining Ring, Spiral 3 x **BAE 010** O-Ring, .676, 70D 1 x **PL 663** Manual, Badger Family
BAE-P6 **BAE-BSPP6** **BAE-MP9R** **BAE-M24**	Slow, Fast	Tool Kit	**BAE 612**	1 x **BAE 181** Wrench, for BAE, Plated 1 x **BA 105** Tool
BA-H6	NA	Tool Kit	**BA 612-H6**	1 x **BA 480** Tool, Bearing Removal 1 x **BA 482** Socket, 5/16, Deep, 1/4 Drive 1 x **BA 483** Hex Bit, 3/8, 3/8 Drive 1 x **BA 484** Tool, Seal for BA-H6

Tool maintenance and assembly videos are available on our website:
WWW.STONEAGETOOLS.COM

For questions or help with a specific application, configuration or tool repairs, please contact StoneAge Customer Service.