



**2017/18**  
WATERBLAST

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'WE WANT YOU TO BE READY'  
— KERRY SIGGINS

**The world of industrial cleaning has been rapidly evolving over the last several years. Chemical plants and refineries around the world now demand that contractors use safer, more productive processes and equipment in their facilities.**

Contractors who can adapt their methods to meet these new requirements will define success. Those who ignore the changes risk declining reputations and the steady loss of contracts.

At StoneAge, it is our mission to ensure that our customers are successful, which is why we've developed the best nozzles in the industry as well as CE certified, hands-free automated solutions for almost all industrial cleaning applications.

Of course, industry leading products are only part of the equation – for us, providing exceptional customer experience and world class technical support carry equal weight. So this year we are excited to provide increased support for our customers by expanding our rental program in North America and opening a new StoneAge location in the United Kingdom to support direct and dealer sales throughout Europe.

As StoneAge products are steadily adopted across the globe, we are committed to providing our growing customer base with fast and accurate access to localized stock, training, repair, and support – which is why **we are delighted to have launched StoneAge Europe, our European sales and distribution facility, based in the United Kingdom.**

Staffed with experienced industry professionals, we are ready to ship and service product throughout all of Europe. Our European team is just a phone

call away and able to provide in-depth product training and demonstration to help our customers successfully use our products to win and keep contracts. We also have plans to add facilities in Western Europe in the near future.

In North America we are continuing to expand the StoneAge Rental program to meet demand, giving contractors greater flexibility, and allowing them to go after new contracts with the confidence that they can expand their fleet of equipment as needed. **This year we are pleased to partner with Joe Johnson Equipment to bring StoneAge sales, service and rentals direct to contractors in Canada.** All StoneAge rental locations are fully equipped to provide back-up equipment, spare parts, expert technical support, and a full range of compatible hoses and fittings so that our customers have convenient access to everything they need for a job in one stop.

When your opportunity arrives to deliver great results for your customers, to excel in the face of a challenge, or to grow your business, we want you to be ready.

Our goal is to inspire you to say, "Why would I choose anyone but StoneAge?"

Kerry Siggins  
Chief Executive Officer, StoneAge Inc.

**NEW**

# STONEAGE PRODUCTS FOR 2017



## NEW AUTOBOX ABX-3L

TRIPLE FLEX-LANCING SYSTEM

Automated system for hands-free tube bundle and Fin Fan heat exchanger cleaning applications

PAGES 10-11



## NEW DOMED BUNDLE POSITIONER

AUTOMATED DOMED BUNDLE POSITIONER  
Engineered to achieve full coverage tube sheet cleaning in confined spaces.

PAGE 16



## NEW AUTOPACK™

PIPE &amp; DRAIN CLEANING EQUIPMENT KITS

Pre-assembled kits are an easy way to expand the capabilities of your automated equipment fleet

PAGES 6-7

## NEW LIGHTWEIGHT STRIKER™

PORTABLE, REMOTE SHOTGUN SYSTEM

Modular shotgun system designed for portability and easy assembly.

PAGES 26-27



## NEW SPEED CONTROLLED SWIVEL

HIGH FLOW TANK CLEANER

High flow, controlled rotation for optimal cleaning of medium to large tanks and vessels.

PAGES 52-53

## NEW ROTARY HYDRO-X

ROTARY HYDRO EXCAVATION TOOLS

Hydro Excavation is a safe alternative to access buried utilities by potholing or trenching with high pressure water.

PAGES 74-75



**NEW!**  
NOW AVAILABLE

## ABX-3L TRIPLE LANCE TRACTOR

PAGES 10-11



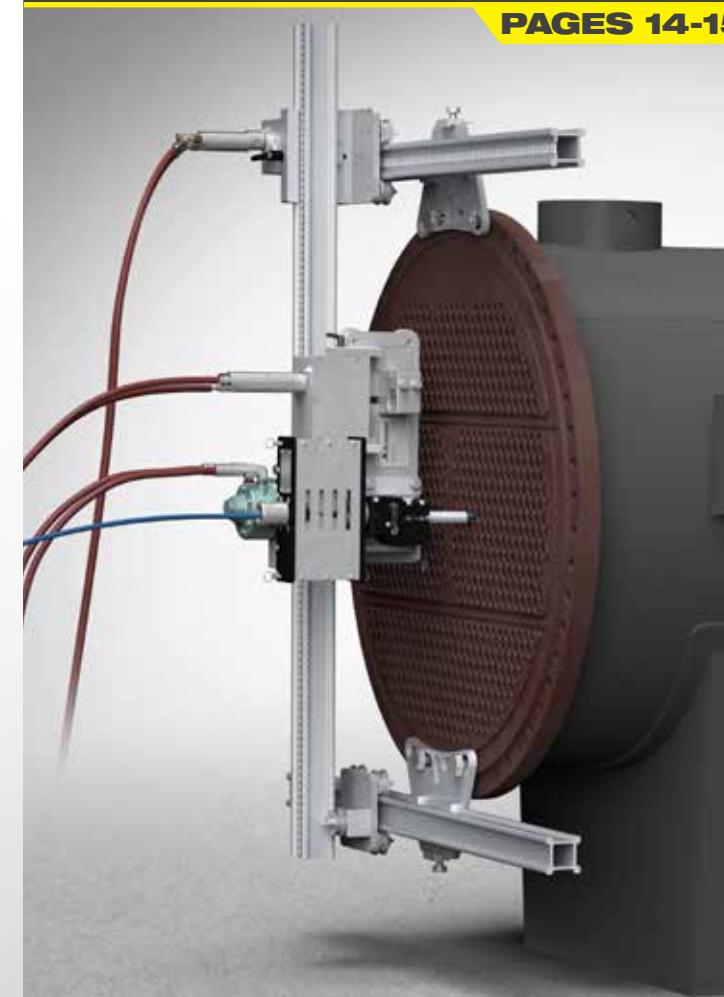
**ABX-2L**  
DUAL LANCE TRACTOR

PAGES 12-13



**ABX-PRO**  
SINGLE LANCE TRACTOR

PAGES 14-15



TUBE CLEANING SYSTEMS



# TUBE CLEANING SYSTEMS

**OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

Our remote-controlled equipment offers the very latest in high pressure waterblast capability – designed for safety, reliability and highly productive cleaning.

These tools are designed and extensively tested to last day in and day out, and serviceability is incorporated into every tool produced.

All StoneAge products are backed by our industry leading customer support. Should a problem arise requiring assistance, you can rely on our worldwide service centers to help minimize downtime and get the job done.

#### LIGHTWEIGHT POSITIONER

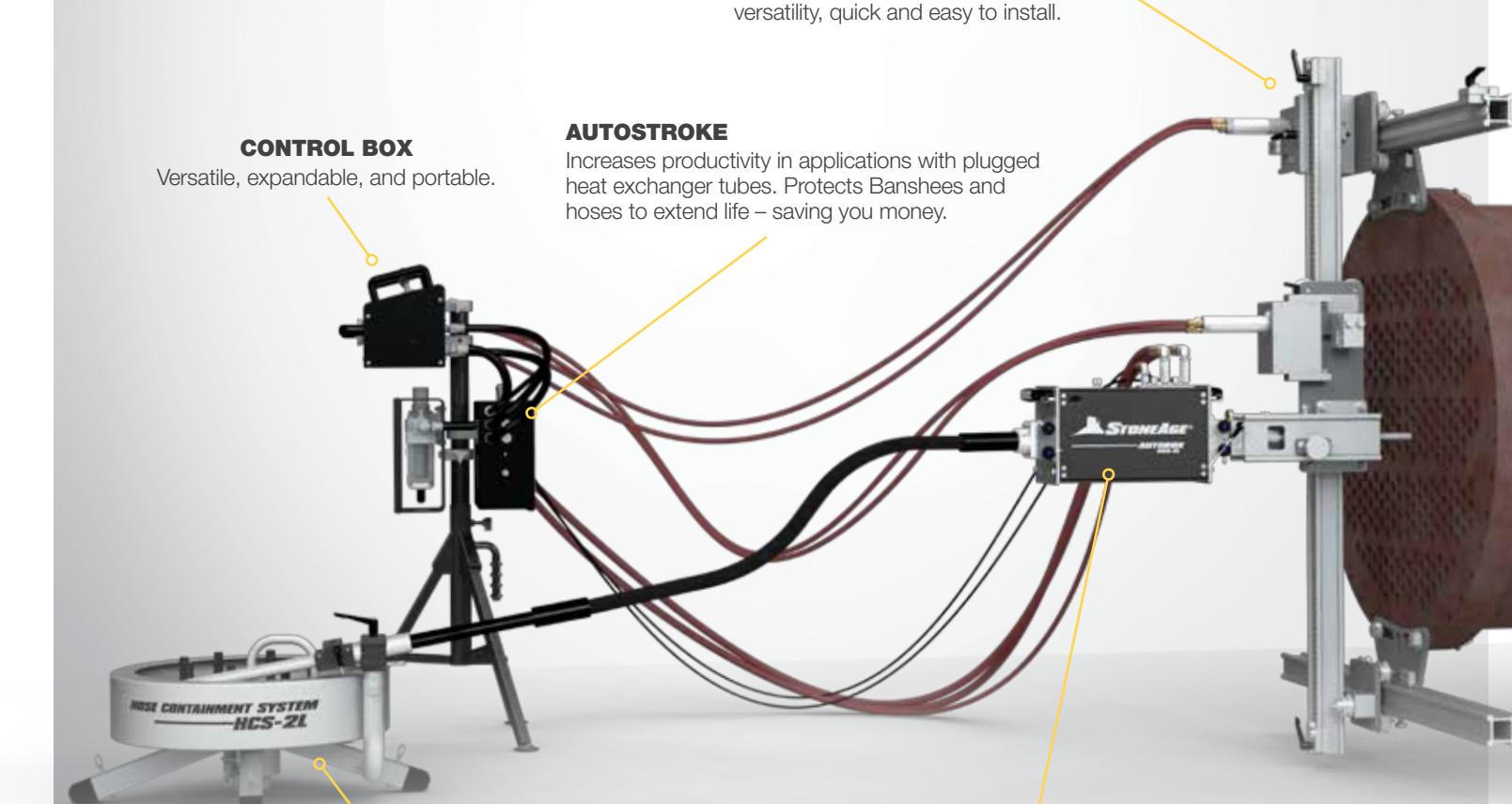
Universal to all flex lance tractors. Proven versatility, quick and easy to install.

#### CONTROL BOX

Versatile, expandable, and portable.

#### AUTOSTROKE

Increases productivity in applications with plugged heat exchanger tubes. Protects Banshees and hoses to extend life – saving you money.



#### HOSE CONTAINMENT

Protects hose and improves workplace safety.

#### HOSE TRACTOR

StoneAge hose tractors are intuitive to use, inexpensive to maintain and extremely versatile.



# TUBE CLEANING

**NEW  
AVAILABLE NOW!**

## AUTOBOX® ABX-3L

The StoneAge AutoBox ABX-3L is an automated system for hands-free heat exchanger tube cleaning applications. It is designed to run **triple, dual, or single flex lance setups** with an emphasis on portability, ease of setup, and safety.

The ABX-3L can be used with any pressure rated hose ranging in size from 3/2 to 8/4. Paired with StoneAge Banshee rotary tube cleaning nozzles and Lightweight Positioner, the ABX-3L offers safe and efficient tube cleaning in the harshest exchanger environments.

### FEATURES:

- Triple, dual, or single lance operation
- Lightweight, modular design allows a single operator to move, set up, and run
- Handles hose sizes from 3/2 to 8/4 with no modifications
- Hose clamp pressure and feed rates can be remotely adjusted on the fly for repeatable, consistent cleaning
- Proven reliability on the toughest jobs and most corrosive environments
- Low cost of ownership – low cost components, quick and easy maintenance

**Package it with AUTOPACKS!**  
See pages 6-7 for details

### PACKAGES INCLUDE:

- ABX-3L Hose Tractor
- Guide Tubes
- Hose Feed Stop
- Lightweight Positioner
- Guide Tube Assembly
- Backout Collet
- Control Box
- Plate Clamp Assembly

Contact StoneAge for prices and availability:  
**(970) 259-2869 • WWW.STONEAGETOOLS.COM**

Tool Model	Hose Feed Rate	Pitch Adjustment	Hose Sizes	Weight
ABX-3L	0.3–3.0 ft/sec 91–914 mm/sec	Dual: 0.6–3.0 in. 16–76 mm Triple: 0.6–1.5 in. 16–38 mm	3/2–8/4	49 lbs 22 kg



**OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

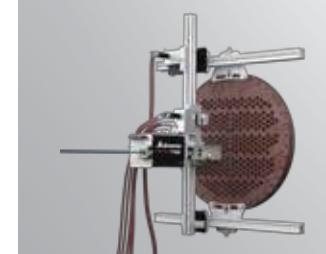
**REMOTELY ADJUSTABLE HOSE CLAMP**  
Adjust to changing conditions on the fly and minimize hose wear without interrupting workflow

**INDEPENDENT FWD/REV SPEED CONTROL**  
Consistent cleaning in both directions produces better results in less time

**HIGH VISIBILITY GUIDE ASSEMBLY**  
Quick clamps for easy pitch adjustment with no additional tools or adapters required

**STEEL-REINFORCED DRIVE BELT**  
Replacement takes minutes, requires no tools and costs a fraction of competing drive systems

## ACCESSORIES



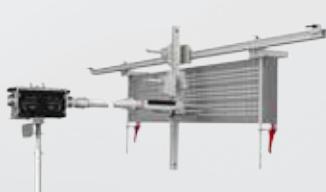
**LIGHTWEIGHT POSITIONER**  
Proven versatility, quick and easy to install. **(page 16)**



**AUTOSTROKE AST-200**  
Increases efficiency in applications with plugged tubes. **(page 17)**



**HOSE CONTAINMENT**  
Protects hose and improves workplace safety. **(page 17)**



**FIN FAN ACCESSORY**  
Adapts the AutoBox family to clean Fin Fan style exchangers. **(page 18)**



# TUBE CLEANING

## AUTOBOX® ABX-2L

The StoneAge AutoBox ABX-2L is an automated two lance system for hands-free heat exchanger tube cleaning applications. It was designed to reliably control one or two flex lances with an emphasis on portability, ease of setup, and safety.

The ABX-2L can be used with any pressure rated hose ranging in size from 3/2 to 8/4. Paired with StoneAge Banshee rotary tube cleaning nozzles and Lightweight Positioner, the ABX-2L offers safe and efficient tube cleaning in the harshest exchanger environments.

### FEATURES:

- Lightweight, modular design allows a single operator to move, set up and run
- Quick-swap rollers can be changed without tools to accommodate different hose sizes
- Hose clamp pressure and feed rates can be remotely adjusted on the fly for repeatable, consistent cleaning
- Proven reliability on the toughest jobs and most corrosive environments
- Low cost of ownership – low cost components, quick and easy maintenance

**Package it with AUTOPACKS!**  
See pages 6-7 for details

### PACKAGES INCLUDE:

- |                          |                        |
|--------------------------|------------------------|
| • ABX-2L Hose Tractor    | • Guide Tube Assembly  |
| • Guide Tubes            | • Backout Collet       |
| • Hose Feed Stop         | • Control Box          |
| • Lightweight Positioner | • Plate Clamp Assembly |

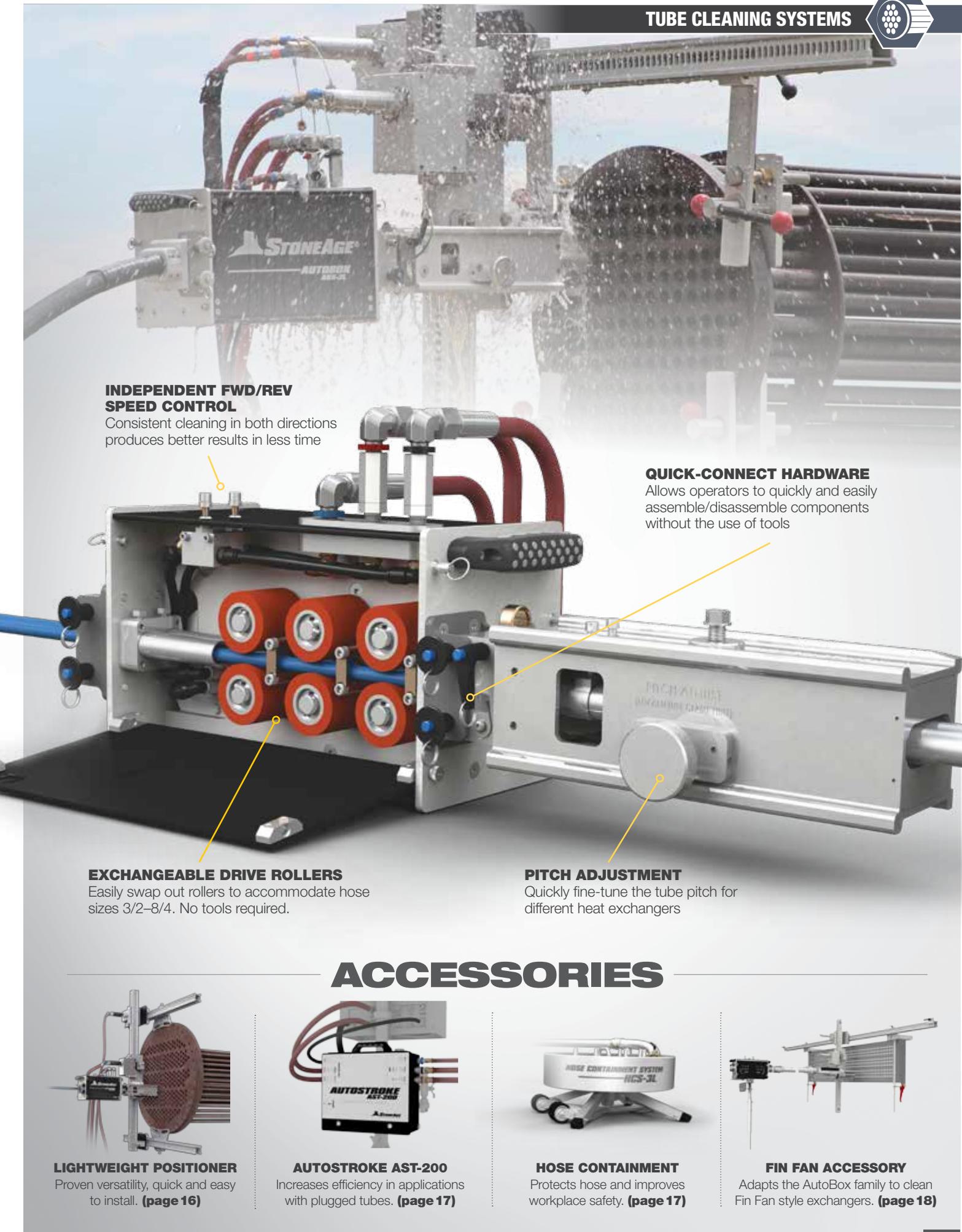
Contact StoneAge for prices and availability:  
(970) 259-2869 • [WWW.STONEAGETOOLS.COM](http://WWW.STONEAGETOOLS.COM)

Tool Model	Max. Feed Rate	Pitch Adjustment	Hose Sizes	Weight
ABX-2L	3.0 ft/s 914 mm/s	0.625–2.5 in. 15.9–63.5 mm	3/2–8/4	42 lbs 19 kg

**“** The ABX-2L is the most versatile and reliable flex lancing system we've ever used.  
**DOUG MCGEE**  
**EVERGREEN INDUSTRIAL SERVICES**



**OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION



## ACCESSORIES





# TUBE CLEANING

**NEW  
UPDATES FOR 2017**

## AUTOBOX® ABX-PRO

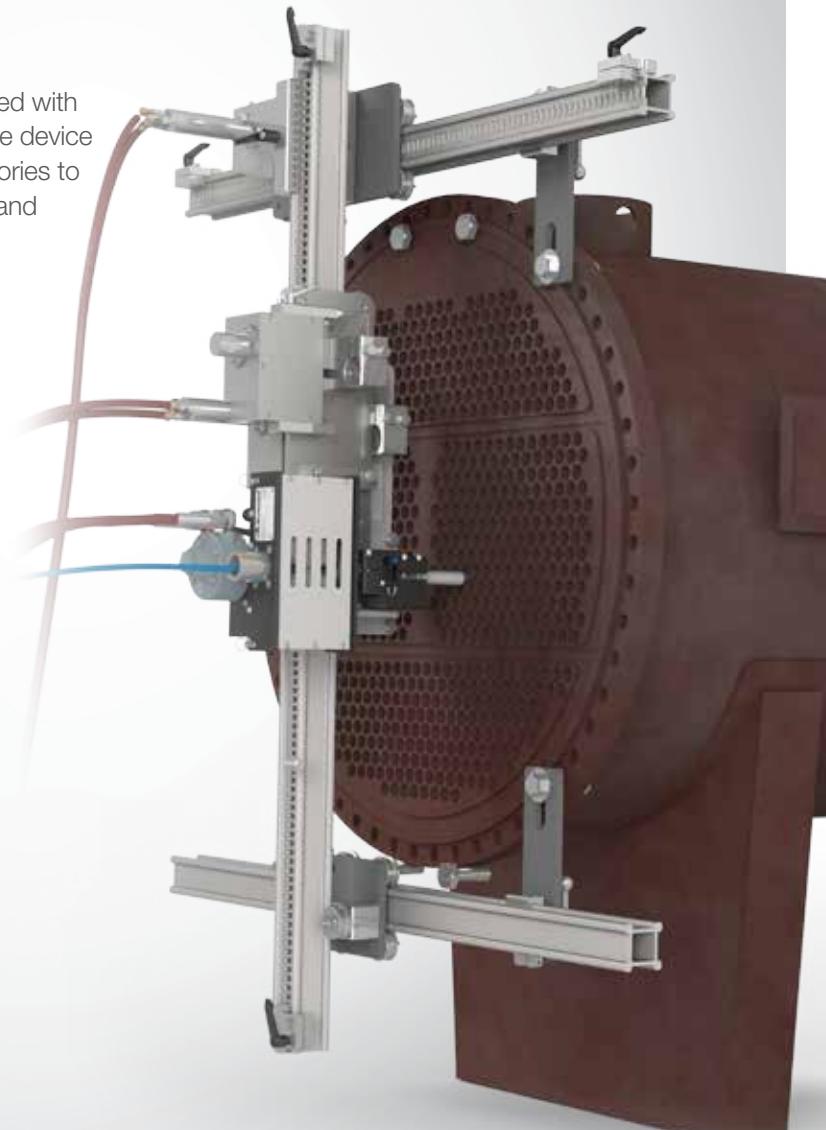
The AutoBox ABX-PRO is a hose feed tractor engineered with safety, portability and quick set-up in mind. This versatile device is designed with multiple mounting options and accessories to adapt it for a wide variety of small diameter pipe, drain and tube cleaning applications.

The ABX-PRO is the perfect tool for limited access applications and includes a lightweight control box for increased safety and mobility.

### FEATURES:

- Ultra portable system design
- Interchangeable rollers to accommodate multiple hose sizes
- Independently adjustable forward and reverse feed rate to customize dwell time
- Ergonomic control box
- Multiple mounting kits available for tube, pipe, and drain cleaning
- Add hose rotation with NAV-170-PKG accessory for cleaning pipe with multiple bends (page 39)

**Package it with AUTOPACKS!**  
See pages 6-7 for details



**OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.**

**SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

Tool Model	Hose Feed Rate	Min. Feed Rate	Poly Hoses	Weight (Tractor Only)
ABX-PRO	0.2–2.5 ft/sec 61–762 mm/sec	0.2 ft/sec 61 mm/sec	3/2–8/4, 3/8 Rubber Covered	22 lbs 10 kg

**LIGHTWEIGHT CONTROL BOX**  
Has 12 in. (305 mm) of height adjustment for standing or sitting applications

**4 SETS OF ROLLERS**  
Handle rubber covered hose sizes from 3/2 to 8/4 and 3/8

**COLLET BLOCK BACK-OUT PREVENTER**  
Increases job site safety by preventing high pressure tools from backing out.

**GUIDE TUBES**  
Handles a full range of guide tubes – no adapters required.

## ACCESSORIES

**LIGHTWEIGHT POSITIONER**  
Proven versatility, quick and easy to install. **(page 16)**

**HOSE CONTAINMENT**  
Protects hose and improves workplace safety. **(page 17)**

**FIN FAN ACCESSORY**  
Adapts the AutoBox family to clean Fin Fan style exchangers. **(page 18)**



*"I brought our new AUTOPACK-PRO into the field with a crew that had never used it before. Within an hour, they were effectively cleaning pipe for our customer. They were amazed at how simple and fast it was to set up. The PRODRIVE is revolutionizing the automated high pressure industry."*

DAVID LAMOUREUX - CLEAN HARBORS



**NEW FOR 2017**

## AUTOPACK™ COMPLETE PIPE, TUBE AND DRAIN CLEANING KITS

StoneAge created AutoPacks to simplify the process of adding automation to your equipment fleet with self-contained kits designed for plug and play use in the most common water blasting applications.

Each AutoPack kit is built around a specific piece of StoneAge automated equipment and contains all the components and accessories needed to perform fully automated Pipe Cleaning, Tube Cleaning, Drain Cleaning, or Surface Cleaning right out of the box.

StoneAge AutoPack kits are designed to help you tackle challenging jobs and exceed plant hands-free safety requirements while increasing the productivity and organization of your workforce.

- Automated Equipment increases the safety and productivity of your crew
- Standardized kits keep your workforce organized and efficient
- Job box protects your equipment, simplifies transport, and minimizes set-up time
- Customized storage inserts allow quick visual inventory management
- Build your reputation for quality and safety

More information and product videos available here:  
[www.stoneagetoools.com/autopack-pro](http://www.stoneagetoools.com/autopack-pro)

## AUTOPACK RANGE

AutoPack kits consist of four basic packages. For maximum productivity, choose the optimal configuration for your application.



### AUTOPACK-PRO

SINGLE HOSE PIPE AND DRAIN CLEANING EQUIPMENT KITS

The ProDrive hose feed device has been engineered to quickly and safely clean a broad range of pipes with or without a flange. The system is lightweight and designed for portability making it the perfect tool for limited access applications.



### AUTOPACK-LWP

LIGHTWEIGHT POSITIONER EQUIPMENT KITS

The Lightweight Positioner is used in conjunction with AutoBox automated flex lancing systems for controlled, efficient, and safe cleaning of heat exchanger tube IDs. It is specifically designed to be modular, lightweight, easy to setup, and expandable to allow for cleaning of different sized heat exchangers.



### AUTOPACK-2L

DUAL FLEX LANCE EXCHANGER/FIN FAN TUBE CLEANING EQUIPMENT KITS

The StoneAge AutoBox ABX-2L is an automated system for hands-free heat exchanger tube cleaning applications. It is designed with an emphasis on safety, ease of setup, portability and reliability. When paired with StoneAge Banshee rotary tube cleaning nozzles and lightweight positioner, the AutoBox ABX-2L offers safe and efficient tube cleaning in the harshest exchanger environments.



### AUTOPACK-3L

TRIPLE FLEX LANCE EXCHANGER/FIN FAN TUBE CLEANING EQUIPMENT KITS

The StoneAge AutoBox ABX-3L is an automated system for hands-free tube bundle and Fin Fan heat exchanger cleaning applications. It is designed to run triple, dual, or single flex lance setups with an emphasis on portability, ease of setup, and safety.



# LIGHTWEIGHT POSITIONER

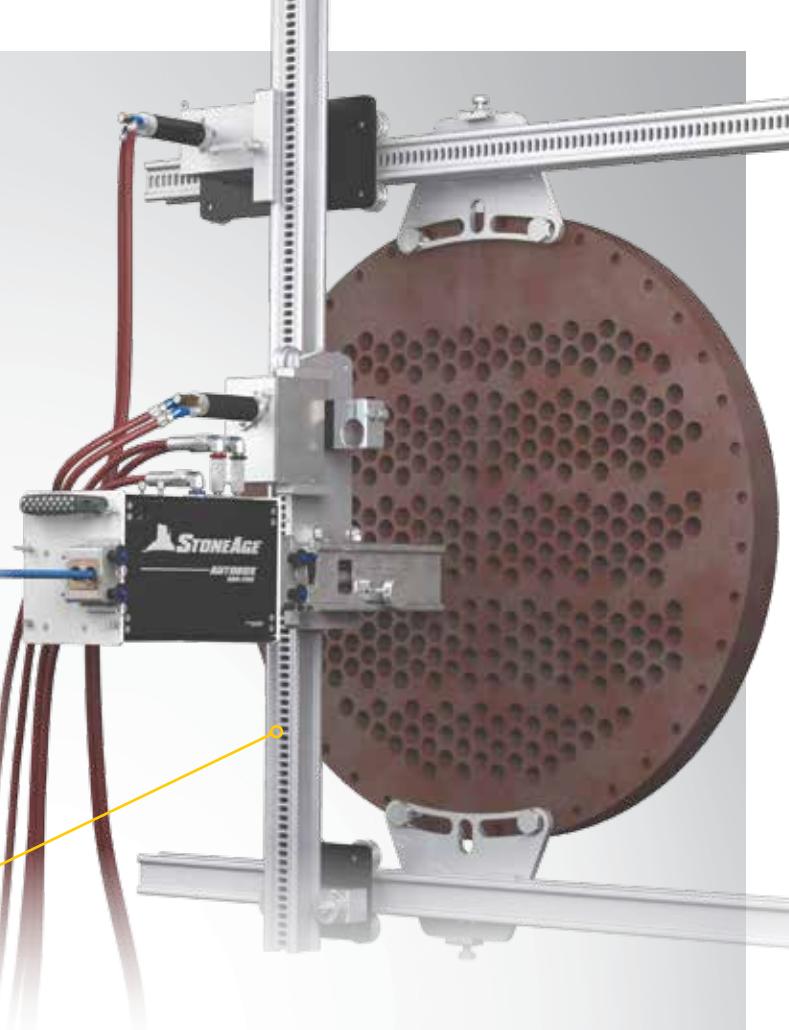
Compatible with:

**ABX-3L** **ABX-2L** **ABX-PRO**

The Lightweight Positioner (LWP) is a utility indexing system that can be paired with a variety of StoneAge automated systems for applications where controlled movement is required. The system is a proven workhorse for controlled, efficient, and safe cleaning of heat exchanger tube IDs. The LWP can also be paired with shotgun tools for tube sheet cleaning and surface preparation.

It is specifically designed to be modular, lightweight, easy to setup, and expandable for use on a range of exchanger sizes or configurations.

**LWP-500-V2**



# AUTOSTROKE™

Compatible with:

**ABX-3L** **ABX-2L**

The AutoStroke is designed to increase efficiency and simplify operation of the AutoBox ABX-2L and ABX-3L in applications with plugged tubes.

The AutoStroke senses when a Banshee nozzle has hit a blockage and activates an automatic forward and reverse pecking motion that allows the jets to maintain rotation and effectively break through obstructions without operator intervention.

This produces optimal cleaning and saves contractors money by reducing wear on your Banshee tools and high pressure flex lances.



HEAD CONTACTS BLOCKAGE

AUTOSTROKE 'SENSES' BLOCKAGE AND PULLS HOSE BACK SLIGHTLY TO PERMIT CLEANING

HOSE ADVANCES AND PROCESS ITERATES UNTIL OBSTRUCTION IS REMOVED

# CONTROL BOXES

StoneAge control boxes deliver best in class performance. All control boxes are designed to be durable, lightweight and cross-compatible.

**CB-ABX**

for the ABX-2L & ABX-500

**CB-ABX-PRO**  
for the ABX-PRO



**CBX-ABX**

for the ABX-3L & ABX-2L



# RUGGED PERFORMANCE

## ERGONOMIC CONTROLS

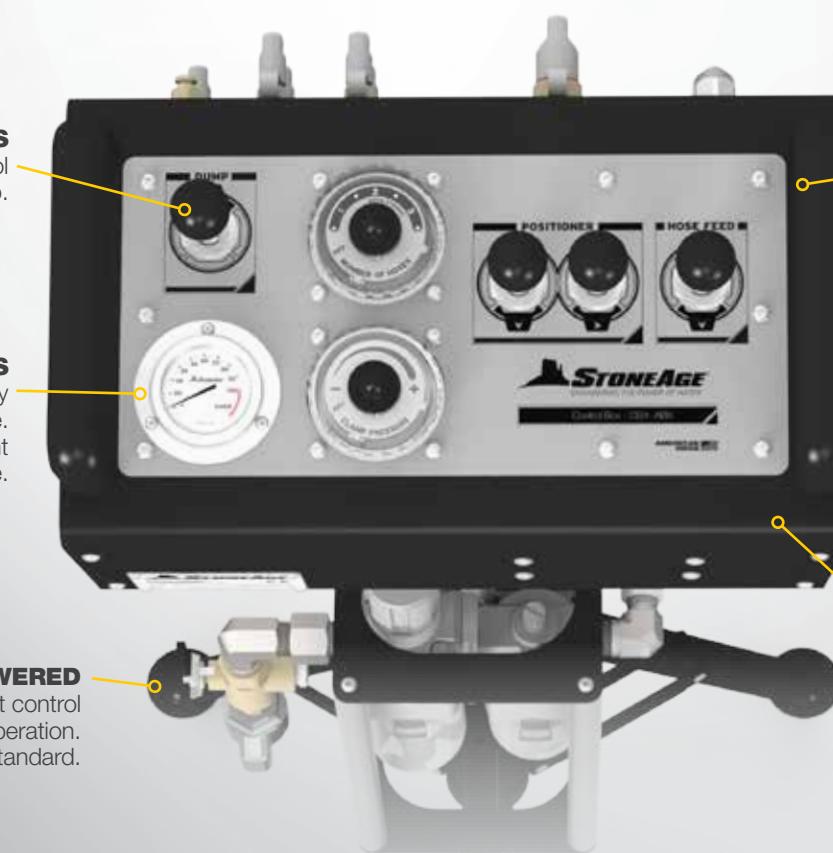
Optimized for better control and improved grip.

## EASY TO READ GAUGES

Allows the operator to quickly make adjustments at a glance. Repeatably set up equipment for consistent performance.

## PNEUMATICALLY POWERED

Delivers smooth, consistent control for precise equipment operation. Air prep package comes standard.



## HARD ANODIZED ALUMINUM CASING

Protects from impacts and harsh jobsite conditions.

## COMPACT DESIGN

Compact and lightweight allows for work in tight spaces.



# HOSE CONTAINMENT

Compatible with:

**ABX-3L ABX-2L ABX-PRO\***

The Hose Containment System is a lightweight accessory for the AutoBox family of cleaning systems that contains and securely stores hoses typically used for heat exchanger tube cleaning.

The Hose Containment System is simple to setup and operate, and greatly increases job site safety by eliminating the potential for high pressure hoses to snag on structure, valves, or other objects. It also increases hose life by reducing wear and makes it easy to store and transport hoses between jobs.

\*Custom order only



**HCS-3L**

For use with the ABX-3L (page 10-11)



**HCS-2L**

For use with the ABX-2L (page 12-13) or ABX-PRO (page 16-17)

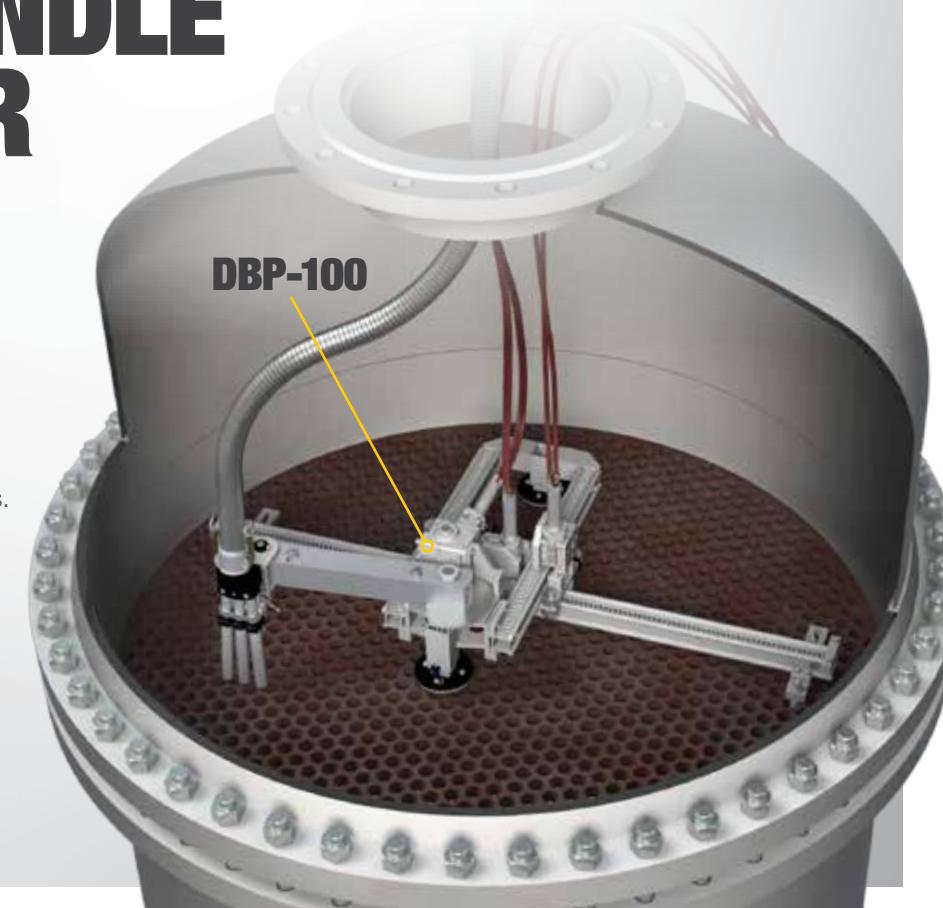
# DOMED BUNDLE POSITIONER

**NEW  
COMING SOON!**

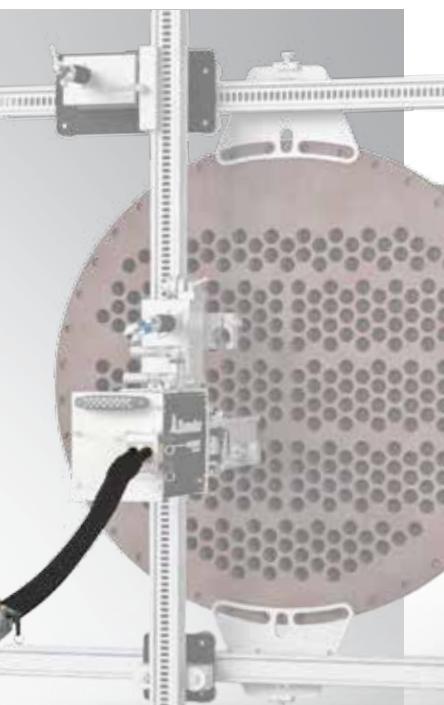
The Domed Bundle Positioner (DBP) is a motorized positioning system that is used in conjunction with an ABX-3L, ABX-2L, or ABX-PRO hose tractor, snout and control panel to position flex lance guide tubes over heat exchanger tubes in exchangers and evaporators.

## FEATURES:

- Maximizes tube sheet coverage
- Remote Camera allows external viewing of lance positioning
- Lightweight, versatile, modular
- Can be set up by a single operator in minutes



**DBP-100**



# FIN FAN

FIN FAN STYLE EXCHANGER CLEANING

Compatible with:

**ABX-2L ABX-3L ABX-PRO**

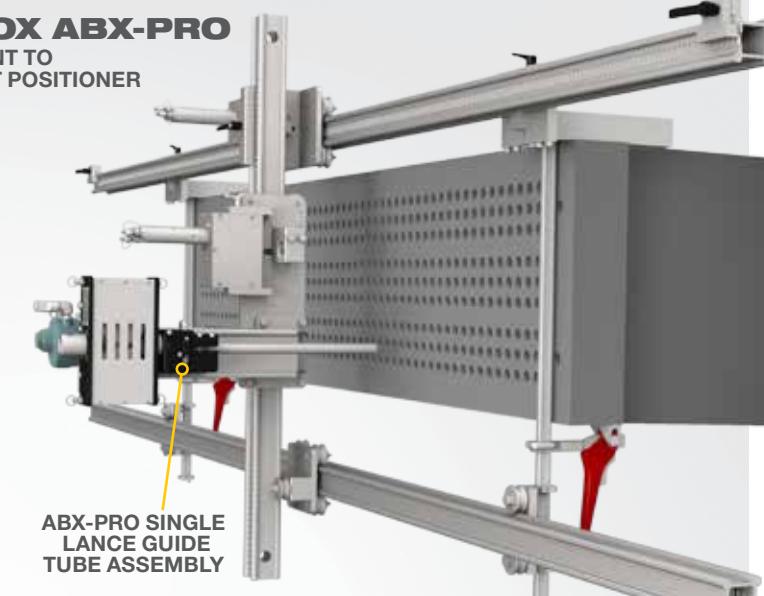
The Fin Fan Accessories are designed to adapt the AutoBox family of flex lance systems for the specific requirements of cleaning Fin Fan style exchangers. The Fin Fan kit is compatible with the ABX-PRO, ABX-2L, and ABX-3L.

Fin Fan exchangers can be much wider than standard heat exchangers and are often accessed by very narrow walkways. Fin Fan Accessory components allow the AutoBox and Lightweight Positioner to be safely mounted in tight walkway spaces for this type of cleaning. Customizable rail lengths and simple mounting clamps enable the positioning system to accommodate most Fin Fan headers and configurations.

## SINGLE LANCE SYSTEM

### AUTOBOX ABX-PRO

DIRECT MOUNT TO LIGHTWEIGHT POSITIONER



ABX-PRO SINGLE LANCE GUIDE TUBE ASSEMBLY

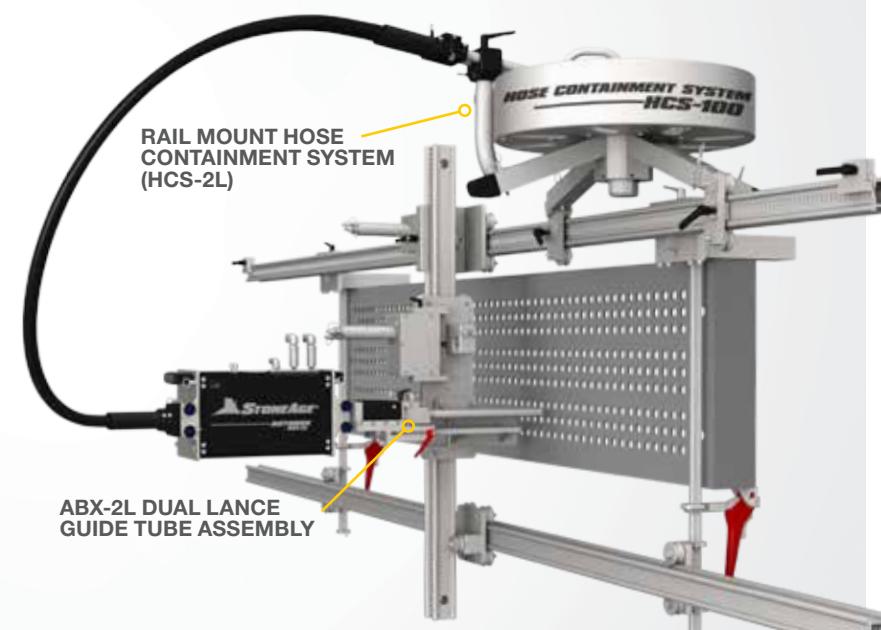
## DUAL LANCE SYSTEM

### AUTOBOX ABX-2L OR ABX-3L

DIRECT MOUNT TO LIGHTWEIGHT POSITIONER

#### ADDITIONAL CONFIGURATION OPTIONS

- SNOUT
- SCAFFOLD MOUNT
- FREE STANDING HOSE CONTAINMENT SYSTEM

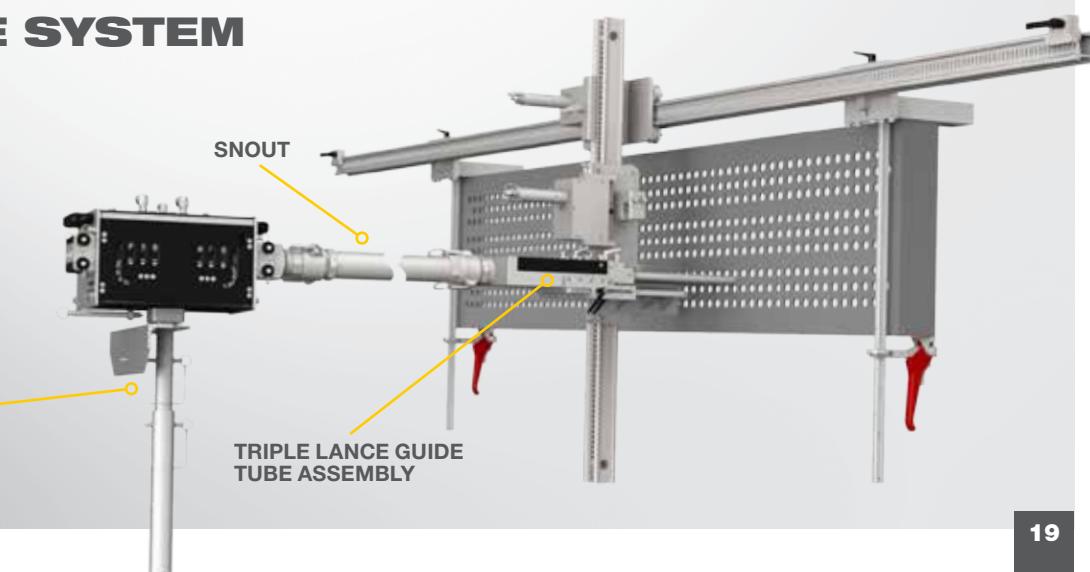


RAIL MOUNT HOSE CONTAINMENT SYSTEM (HCS-2L)

ABX-2L DUAL LANCE GUIDE TUBE ASSEMBLY

## TRIPLE LANCE SYSTEM

### AUTOBOX ABX-3L



SNOUT

GUARD RAIL MOUNT

TRIPLE LANCE GUIDE TUBE ASSEMBLY



# TUBE CLEANING

## RIGID LANCE MACHINE

StoneAge Rigid Lance Machines are the industry standard for both horizontal and vertical rigid lance cleaning of heat exchangers. These systems operate up to three rotary lances and provide more forward jet power than flex-lancing to clean difficult deposits. Fully remote operation increases safety by removing the operator from the splash-back area.

### FEATURES:

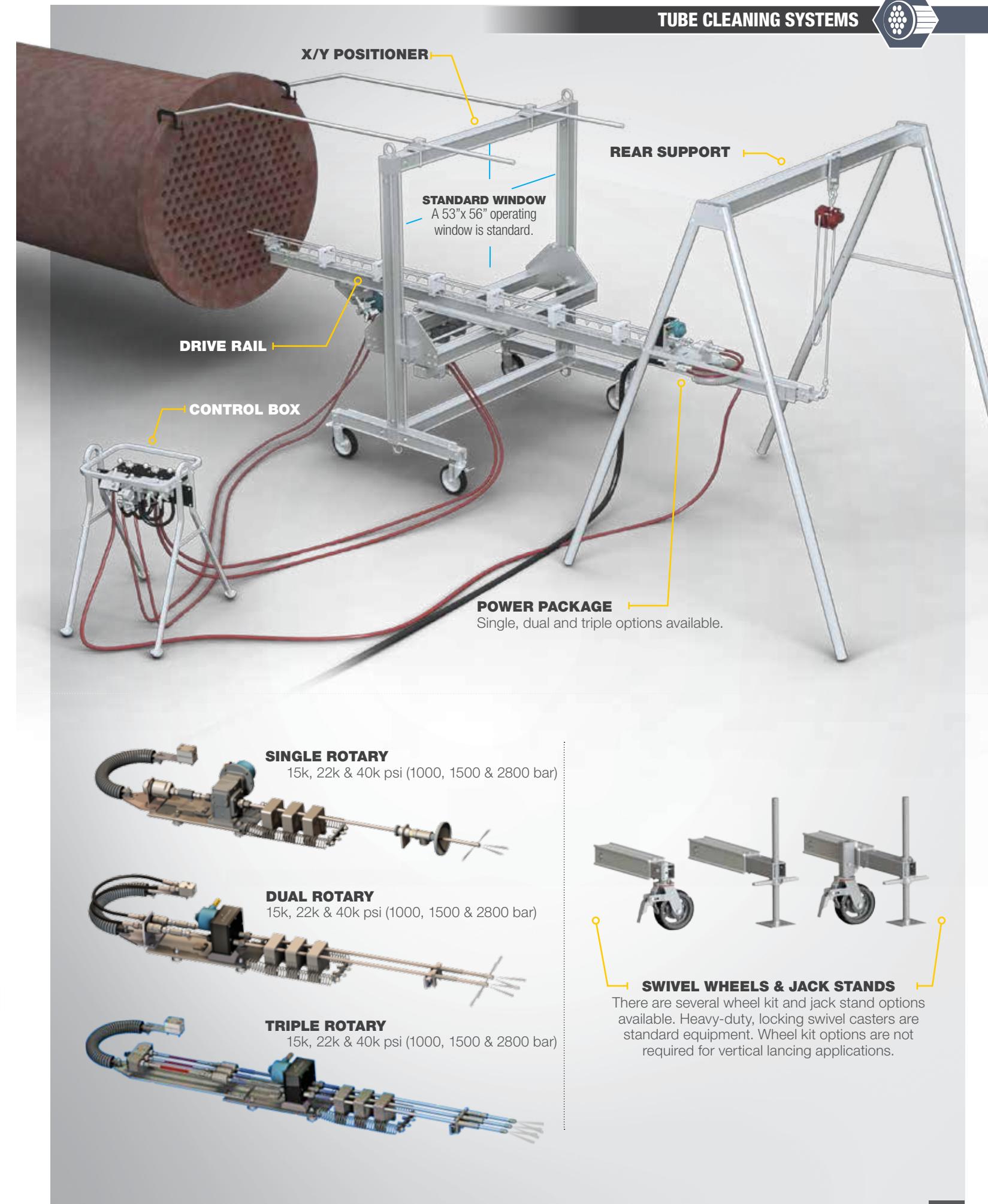
- Triple, dual, or single lance operation
- Adapts to any size bundle and can be configured for horizontal or vertical operations to maximize flexibility
- Operator is removed up to 25 ft (7.6m) away from the splash back area for increased safety
- Dual coil springs increase safety and stability of guide block
- Swivel wheels, jack stands, and rear supports provide extra stability and support in key points of the system
- Air or hydraulic powered

### IDEAL FOR:

- Clearing and unplugging vertical and horizontal bundles
- Cleaning and polishing evaporator tubes
- Removing thin, hard scale, carbons, coke, and polymers



Tool Model	Pressure Range	Flow Range	Max Rail Length	Feed Rate
BRLM	Up to 40k psi 2800 bar	Up to 60 gpm 227 l/min	60 ft 18 m	0.3-1.2 ft/s 0.1-0.37 m/min





# TUBE CLEANING

## BUNDLE BLASTER™

The Bundle Blaster system offers a powerful and affordable automated solution for external cleaning of heat exchangers and tube bundles. This system is ideal for contractors and plants interested in low maintenance, cost-effective, easy to use equipment. The Bundle Blaster is safer and more effective than traditional hand-held methods of shell side cleaning, and 1/3 of the cost of truck mounted systems.

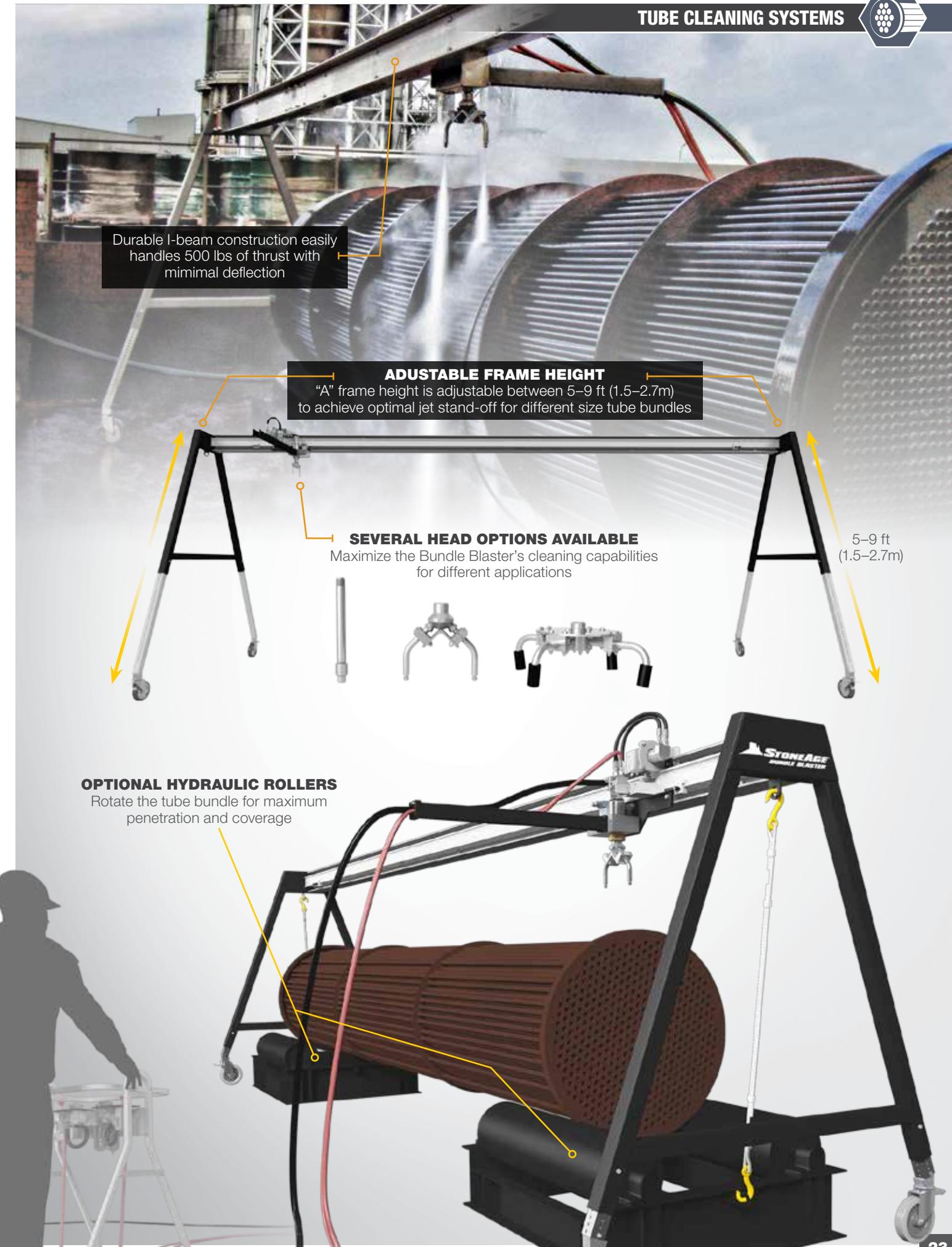
The Bundle Blaster is offered in standard 24 ft (7.3m) and 36 ft (11m) lengths to accommodate the most common bundle sizes. The "A" frames are height adjustable to account for small and large diameters. The entire assembly is modular and can be taken apart for transportation or storage.

### FEATURES:

- Designed for maneuverability on a blast pad and transport between job sites
- Multiple head options for delivering more concentrated power or covering a wider cleaning path
- Available in standard 24 ft (7.3m) and 36 ft (11m) lengths
- Adjustable "A" frames with locking wheels and anchor hooks
- Can be adapted to a variety of pressures and flows for highest level of cleaning efficiency
- Match the stroke length to each tube bundle with simple auto-stops for efficient cleaning with no wasted time
- Rotation and traverse speed are independently adjustable using remote control panel
- The entire assembly is modular and can be taken apart with simple hand tools for transportation
- Rollers are available to rotate the tube bundle for complete coverage
- Easy and cost-effective to maintain

Contact StoneAge for rental availability or lead times to purchase.

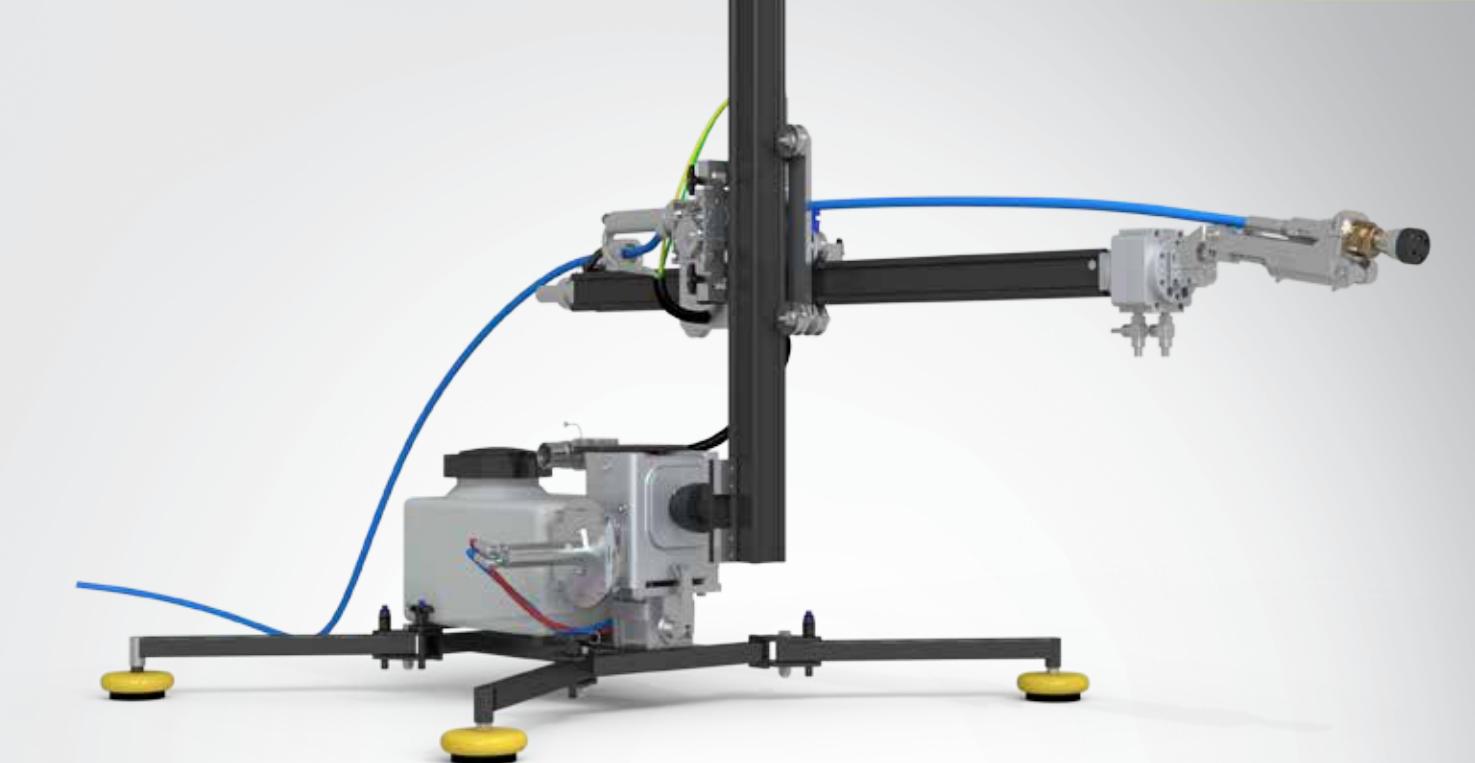
Tool Model	Pressure Range	Flow Range	Rotation Speed	Linear Speed	Power Supply	Rail Length
BB-100	Up to 40k psi 2800 bar	Up to 110gpm 416 l/m	50–1000 rpm	7–40 ft/min 2.1–12 m/min	Air or Hydraulic	24 ft and 36 ft 7.3 m and 11 m



**NEW!**  
NOW AVAILABLE

## SKRL-100 LIGHTWEIGHT STRIKER

PAGES 26-27



**SKR-100  
STANDARD BASE STRIKER**

PAGES 34-35



**SKR-TRK  
TRACKED BASE STRIKER**

PAGES 35-36



SURFACE PREPARATION SYSTEMS



# SURFACE PREPARATION SYSTEMS

**OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

The Striker family of automated surface preparation systems has been engineered to replace the difficult and dangerous practice of manual shotgunning.

These hands-free surface prep systems allow the operator precise control of the equipment from safely outside the blast zone. The advantages of automation include uninterrupted run time at greater thrust and more productive cleaning rates.

Three Striker models offer flexibility for the contractor to meet specific application needs.

## STRIKER MODELS OVERVIEW



	<b>SKRL-100</b> <small>BEST FOR: In situ cleaning in hard to access locations</small>	<b>SKR-STD</b> <small>BEST FOR: In situ / pad cleaning that requires higher PSI</small>	<b>SKR-TRK</b> <small>BEST FOR: Pad cleaning with in-operation maneuverability</small>
Pressure Range	Up to 20k psi (1380 bar)	Up to 40k psi (2800 bar)	Up to 40k psi (2800 bar)
Jet Reaction Force	Up to 50 lb (23 kg)	Up to 70 lb (32 kg)	Up to 100 lbs (45 kg)
Total Weight	140 lbs (64 kg)	260 lbs (118 kg)	570 lbs (259 kg)
Control Box	Tethered	Tethered	Wireless
Cleaning Window Dimensions	 47 in. H x 68 in. W x 40 in. D 1194 mm x 1727 mm x 1016 mm	 60 in. H x 84 in. W x 54 in. D 1525 mm x 2134 mm x 1372 mm	 66 in. H x 84 in. W x 54 in. D* 1676 mm x 2134 mm x 1372 mm *Unlimited X/Z dimensions when using tracks



# SURFACE PREPARATION

**NEW FOR 2017**

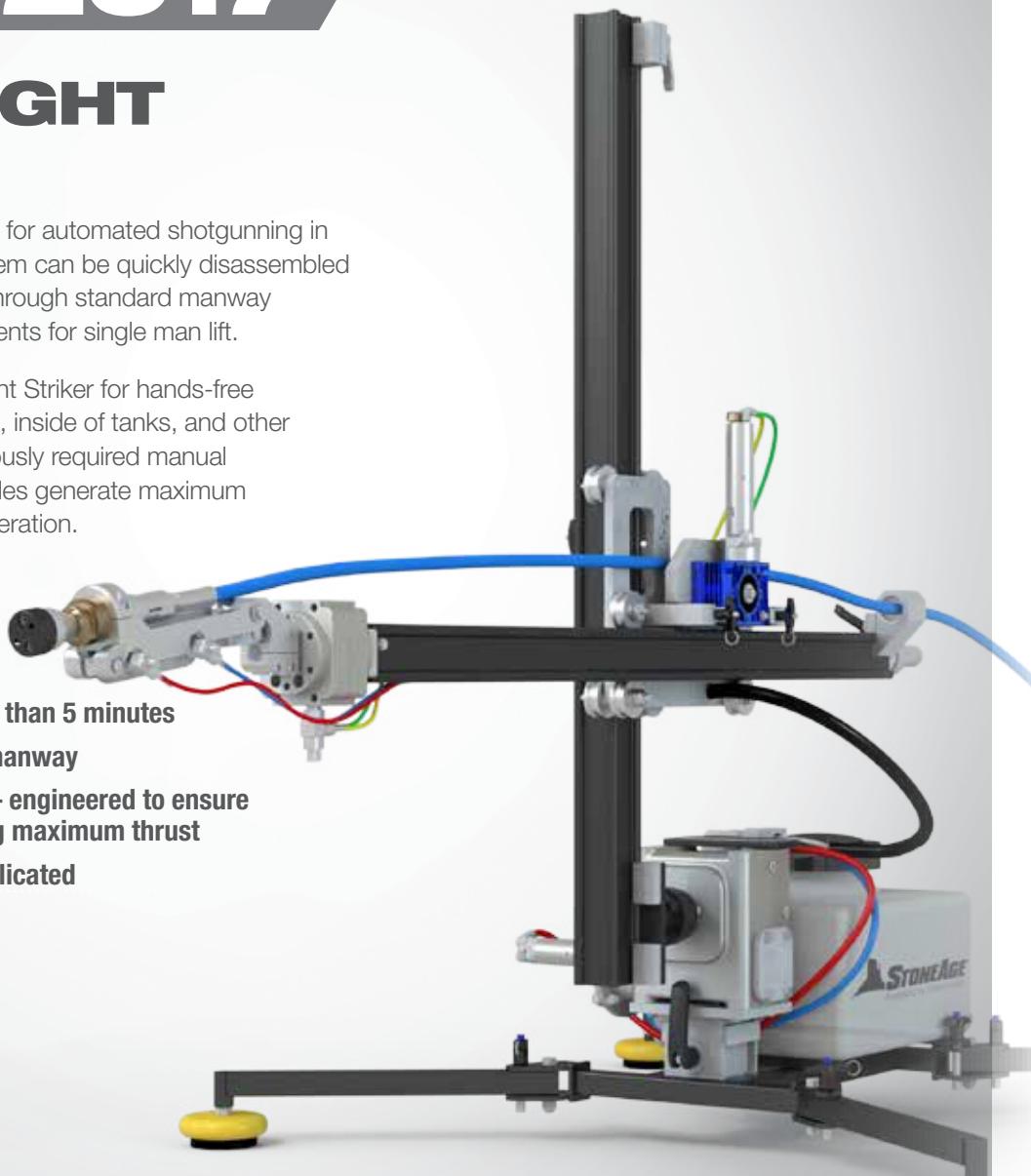
## LIGHTWEIGHT STRIKER™

The Lightweight Striker is designed for automated shotgunning in hard to access locations. The system can be quickly disassembled into modular components that fit through standard manway openings and meet plant requirements for single man lift.

Contractors can use the Lightweight Striker for hands-free surface prep on elevated platforms, inside of tanks, and other limited access locations that previously required manual cleaning. Custom engineered nozzles generate maximum cleaning thrust and ensure safe operation.

### FEATURES:

- Modular system designed for portability
- Can be fully assembled in less than 5 minutes
- Fits through 21 in. (534 mm) manway
- Custom 10K and 20K nozzles – engineered to ensure safe operation while delivering maximum thrust
- Affordable alternative to complicated robotic systems
- CE Certified



Tool Model	Pressure Range	Jet Reaction Force	Cleaning Window Dimensions	Weight
SKRL-100	Up to 20k psi 1380 bar	Up to 50 lb 23 kg	47 in. H x 68 in. W x 40 in. D 1190 mm x 1730 mm x 1020 mm	140 lbs 64 kg





# SURFACE PREPARATION

## STRIKER™

The Standard Striker is the perfect entry point for contractors who want to add a remote shotgun system to their fleet. The system offers a unique combination of portability and higher thrust capacity for maximum flexibility on the job site, at a fraction of the cost of other robotic options. This modular system combines a rotary shotgun arm and a wheeled base for easy mobility providing a powerful alternative to manual shotgun cleaning and surface preparation.

### FEATURES:

- Modular system designed for portability and easy assembly
- Remotely operated from outside the blast zone for safety
- Lightweight components for single operator setup and use
- Wheeled base for easy maneuverability
- Ergonomic control box offers intuitive remote operation
- Affordable alternative to complicated robotic systems
- No operator fatigue – higher productivity over time
- CE Certified

*\*Rotary nozzle and feed hose sold separately*

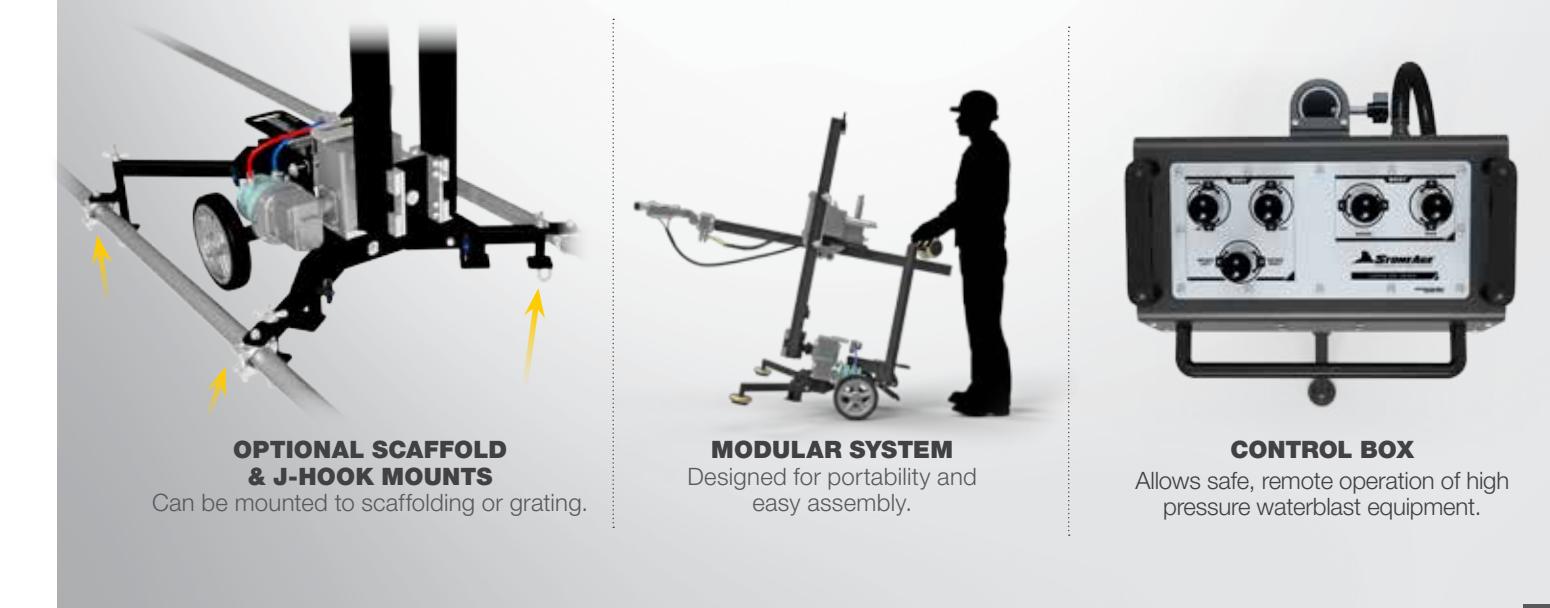


Tool Model	Pressure Range	Jet Reaction Force	Cleaning Window Dimensions	Weight
SKR-STD	Up to 40k psi 2800 bar	Up to 70 lb 310 N	52 in. H x 80 in. W x 46 in. D (1320 mm x 2030 mm x 1170 mm)	260 lbs 118 kg



**3-D CLEANING CAPABILITY**  
60 in. H x 84 in. W x 54 in. D  
(1525 mm x 2134 mm x 1372 mm)

**FULL WRIST ARTICULATION**  
Allows the “wrist” of the Striker to both flex 80 degrees and rotate up to 270 degrees.



**OPTIONAL SCAFFOLD & J-HOOK MOUNTS**  
Can be mounted to scaffolding or grating.

**MODULAR SYSTEM**  
Designed for portability and easy assembly.

**CONTROL BOX**  
Allows safe, remote operation of high pressure waterblast equipment.



# SURFACE PREPARATION

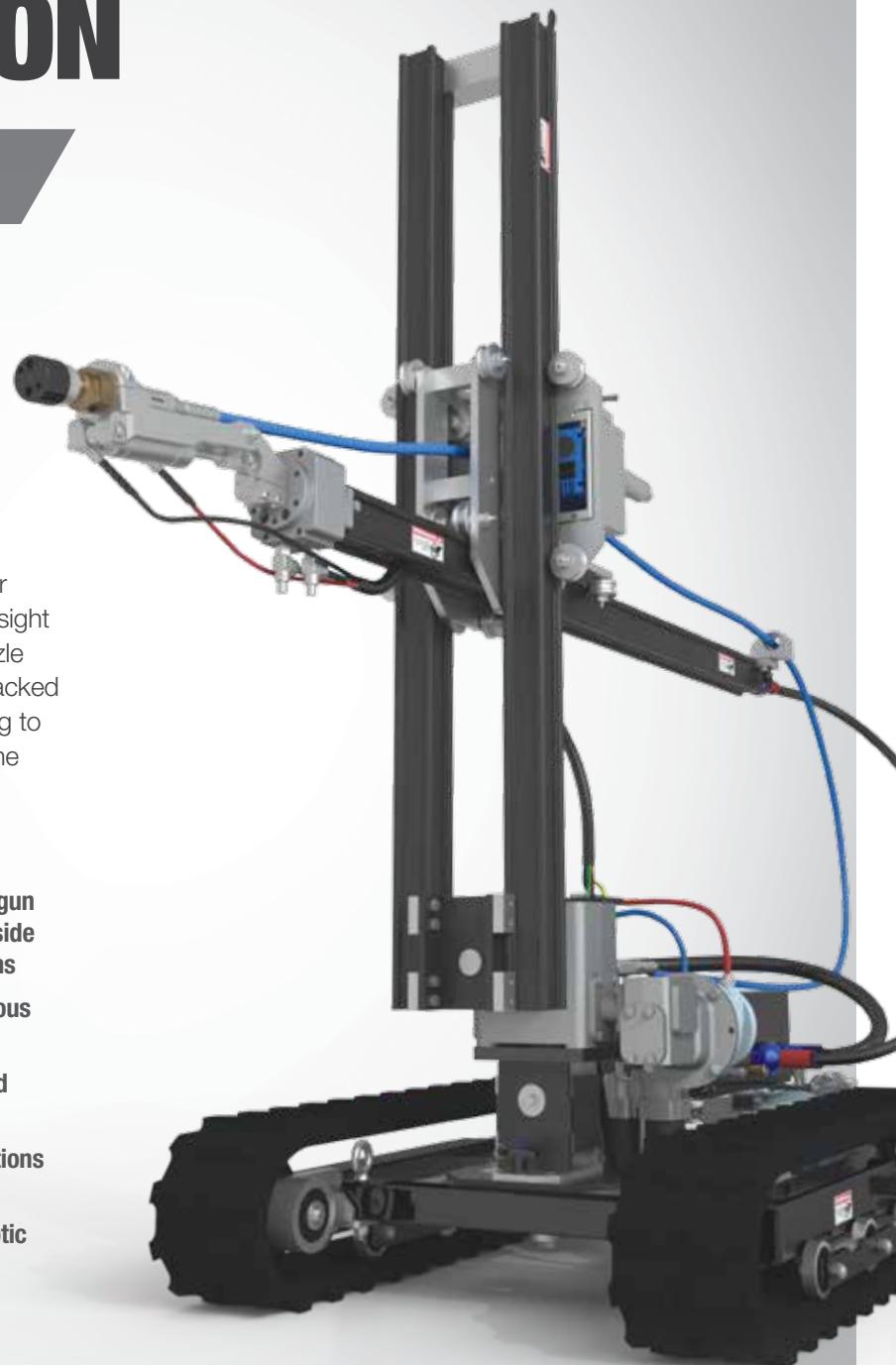
**NEW  
AVAILABLE NOW!**

## TRACKED STRIKER™

The Tracked Striker adds mobile positioning, wireless control, and increased thrust to the Striker system for safe, high powered automated surface cleaning. Wireless remote control gives the operator complete freedom of movement to maintain line of sight while enabling precision control of the shotgun nozzle from safely outside the blast zone. The steerable tracked base allows for continuous cleaning without needing to stop for repositioning, making the Tracked Striker the ideal solution for pad work.

### FEATURES:

- Highly versatile system – enables safe, precise shotgun cleaning on blast pads, walkways and platforms, inside vessels, boilers and other difficult to access locations
- Remotely steerable tracked base allows for continuous cleaning without needing to stop for repositioning
- Wireless controller allows freedom of movement and continuous line of sight
- Modular design – adapts to a wide range of applications with plug-and-play accessories
- All the capability of complicated and expensive robotic systems at half the price
- CE Certified



Tool Model	Pressure Range	Jet Reaction Force	Cleaning Window Dimensions	Weight
SKR-TRK	Up to 40k psi 2800 bar	Up to 100 lbs 45 kg	66 in. H x 84 in. W x 54 in. D* 1676 mm x 2134 mm x 1372 mm <small>*Unlimited X/Z dimensions when using tracks</small>	570 lbs 259 kg



**WIRELESS CONTROLLER**  
Allows freedom of movement and continuous line of sight



# SURFACE PREPARATION

## FLOOR CLEANERS

### Self-Rotary Surface Cleaning

Floor Cleaners perform a wide range of functions such as: removing paint markings, coatings, contaminants, and membranes and degreasing surfaces. They are even powerful enough to scarify concrete.

#### FEATURES:

- Adjustable rotation speeds – longer dwell time for heavier deposits or shorter for lighter deposits
- Easy height adjustment adapts standoff distance to surface conditions
- Wide jet path cleans large areas quickly
- Optional vacuum system recovers water and material from work area

#### IDEAL FOR:

- Cleaning garages, parking lots, and other flat surfaces effectively and safely
- Removing coatings, contaminants, and membranes
- Cleaning tank and pit floors
- Concrete scarification



Tool Model	Pressure Range	Flow Range	Rotation Speed	Jet Path	Height Range	Weight
FCSV	Up to 20k psi 1380 bar	Up to 28gpm 106 l/m	300–1000 rpm	18–24 in. 356–610 mm	1–5 in. 26–127 mm	255 lbs 116 kg





# SURFACE CLEANING ACCESSORIES

## POWERED ROTATION

Air or Hydraulic Powered Swivel

Powered Rotation units control head rotation speeds and allow the use of a wide variety of head configurations for diverse cleaning applications. These units can be specified for up to 44k psi (3000 bar) and various rotation speeds.

### FEATURES:

- Slow rotation speed increases dwell time for difficult deposits
- Fast rotation speed cuts through deposits quickly with less striping or effect on the surface
- Adaptable head configurations can be customized for a large range of applications



### FAST ROTATION SPECIFICATIONS

Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Power Mode	Weight
<b>SG-40</b>	15–22k psi 1000–1500 bar	50 gpm 190 l/min	3/4 NPT 3/4 MP	300–1000 rpm	Air: 60 cfm @ 80 psi 100 m³/hr @ 5.5 bar	26 lb 12 kg
<b>SG-50</b>	15–22k psi 1000–1500 bar	50 gpm 190 l/min	3/4 NPT 3/4 MP	100–950 rpm	Hydraulic: 4.2 gpm @ 1500 psi 16 l/min @ 100 bar	26 lb 12 kg

### SLOW ROTATION SPECIFICATIONS

Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Power Mode	Weight
<b>SG-E60</b>	15–22k psi 1000–1500 bar	110 gpm 420 l/min	3/4 NPT 3/4 MP	10–50 or 120–600 rpm	Air: 60 cfm @ 80 psi 100 m³/hr @ 5.5 bar	26 lb 12 kg
<b>SG-E70</b>	15–22k psi 1000–1500 bar	110 gpm 420 l/min	3/4 NPT 3/4 MP	5–30 or 40–400 rpm	Hydraulic: 4.2 gpm @ 1500 psi 16 l/min @ 100 bar	26 lb 12 kg

### 40K SPECIFICATIONS

Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Power Mode	Weight
<b>UH-40</b>	Up to 44k psi 3000 bar	20 gpm 76 l/min	9/16 HP	250–1000 rpm	Air: 60 cfm @ 80 psi 100 m³/hr @ 5.5 bar	26 lb 12 kg
<b>UH-50</b>	Up to 44k psi 3000 bar	20 gpm 76 l/min	9/16 HP	250–1000 rpm	Hydraulic: 4.2 gpm @ 1500 psi 16 l/min @ 100 bar	26 lb 12 kg

# SURFACE CLEANING ACCESSORIES

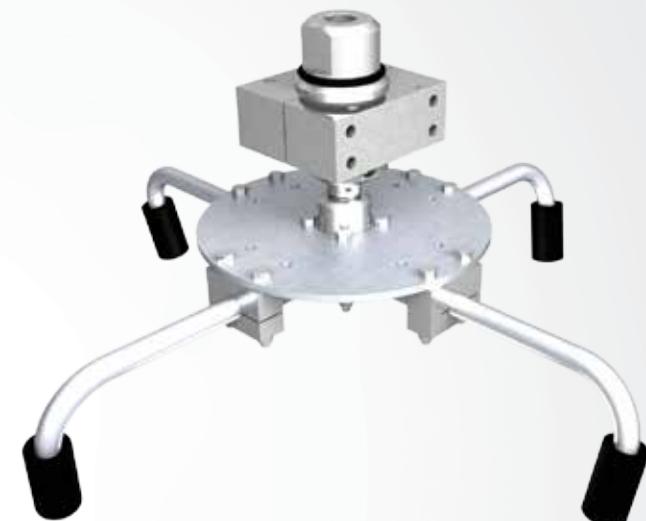
## SELF ROTATING

Self-Rotary Cleaning Heads

SG-30 Free Spinner tools provide cost-effective and simple self-rotating surface cleaning and preparation solutions.

### FEATURES:

- Water propelled rotation eliminates the need for expensive air drives
- Radiused arms produce powerful and effective jets
- Adjustable rotation speeds – increase dwell time for heavier deposits or shorten dwell time for lighter deposits
- Protective nozzle guards help keep nozzles protected from splashback
- Replaceable nozzle tips maximize jet quality
- Optional 18 or 24 in. (457 or 610 mm) jet paths



### IDEAL FOR:

- Floor cleaners
- Conveyor belt cleaning
- Airport runway rubber removal
- Belts, screens and coatings
- Degreasing and decontaminating concrete

Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight
<b>SG-30-P12</b>	Up to 15k psi 1000 bar	50 gpm 76 l/min	3/4 NPT	300–1000 rpm	25 lb 11 kg
<b>SG-30-M12</b>	Up to 22k psi 1500 bar	50 gpm 76 l/min	3/4 MP	300–1000 rpm	26 lb 11 kg



# PIPE CLEANING

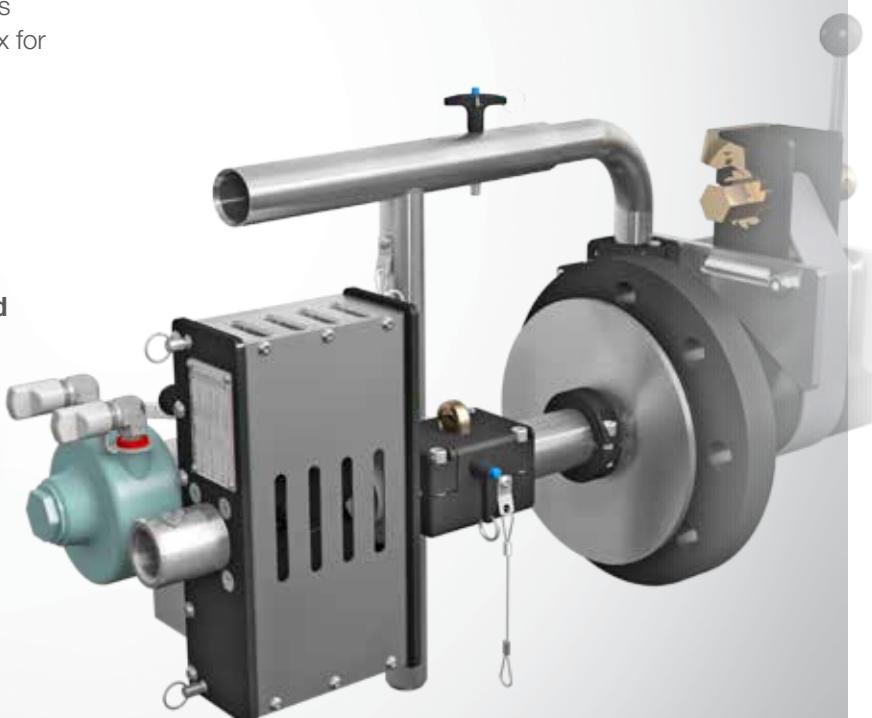
## AUTOBOX<sup>®</sup> ABX-PRO

The AutoBox ABX-PRO is a hose feed tractor engineered with safety, portability and quick set-up in mind. This versatile device is designed with multiple mounting options and accessories to adapt it for a wide variety of pipe, drain and tube cleaning applications.

The ABX-PRO is the perfect tool for limited access applications and includes a lightweight control box for increased safety and mobility.

### FEATURES:

- Ultra portable system design
- Interchangeable rollers to accommodate multiple hose sizes
- Independently adjustable forward and reverse feed rate to customize dwell time
- Ergonomic control box
- Multiple mounting kits available for tube, pipe, and drain cleaning
- Add hose rotation with NAV-170-PKG accessory for cleaning pipes with multiple bends (page 39)
- CE Certified



Tool Model	Hose Feed Rate	Min. Feed Rate	Poly Hoses	Weight (Tractor Only)
ABX-PRO	0.2–2.5 ft/sec 61–762 mm/sec	0.2 ft/sec 61 mm/sec	3/2–8/4, 3/8 Rubber Covered	22 lbs 10 kg

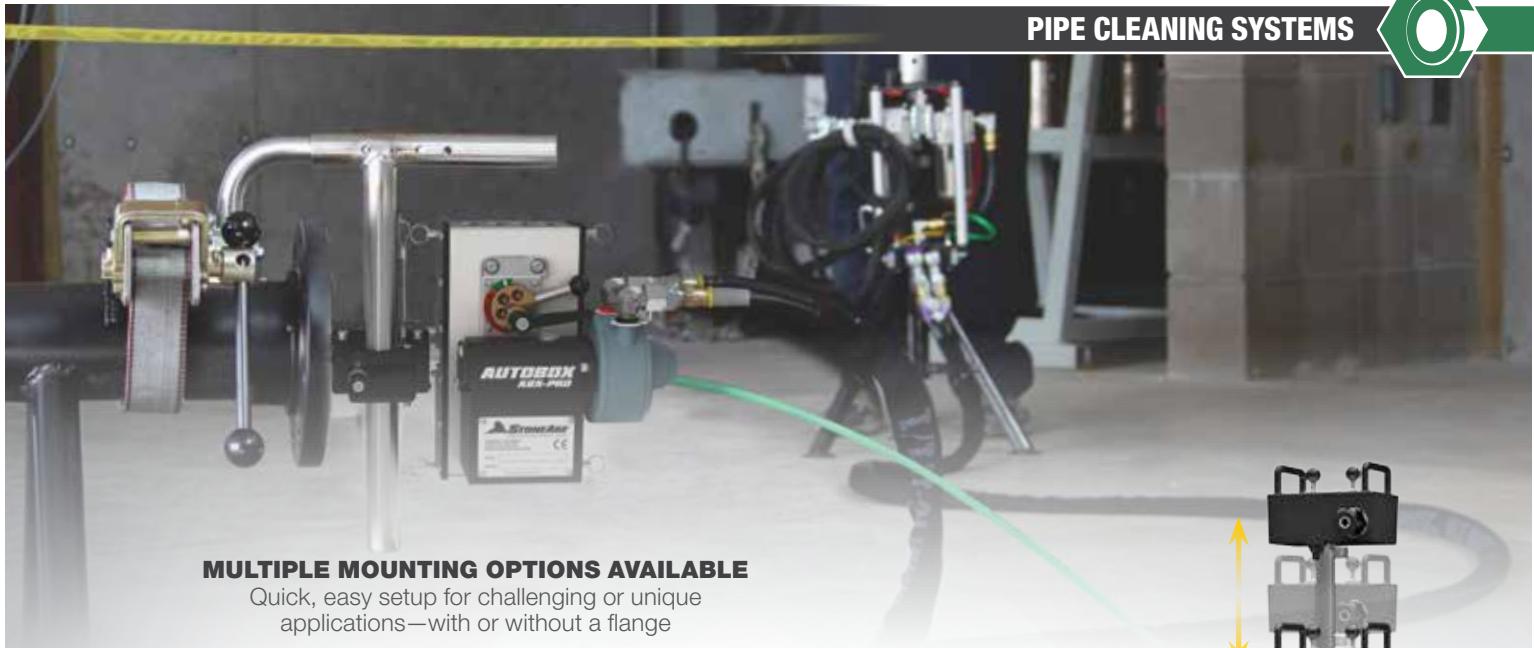


**OPERATING WATERBLASTING EQUIPMENT  
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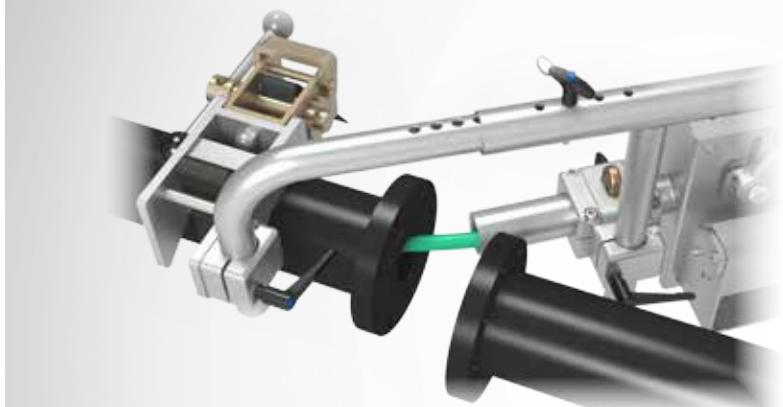
**“**When we needed light, versatile, automated equipment for challenging pipe cleaning jobs like elevated areas and pipe rack cleaning, the ProDrive fit the bill perfectly.

**BRADLEY COBLE  
PSC FAST DIRECTOR**



### MULTIPLE MOUNTING OPTIONS AVAILABLE

Quick, easy setup for challenging or unique applications—with or without a flange



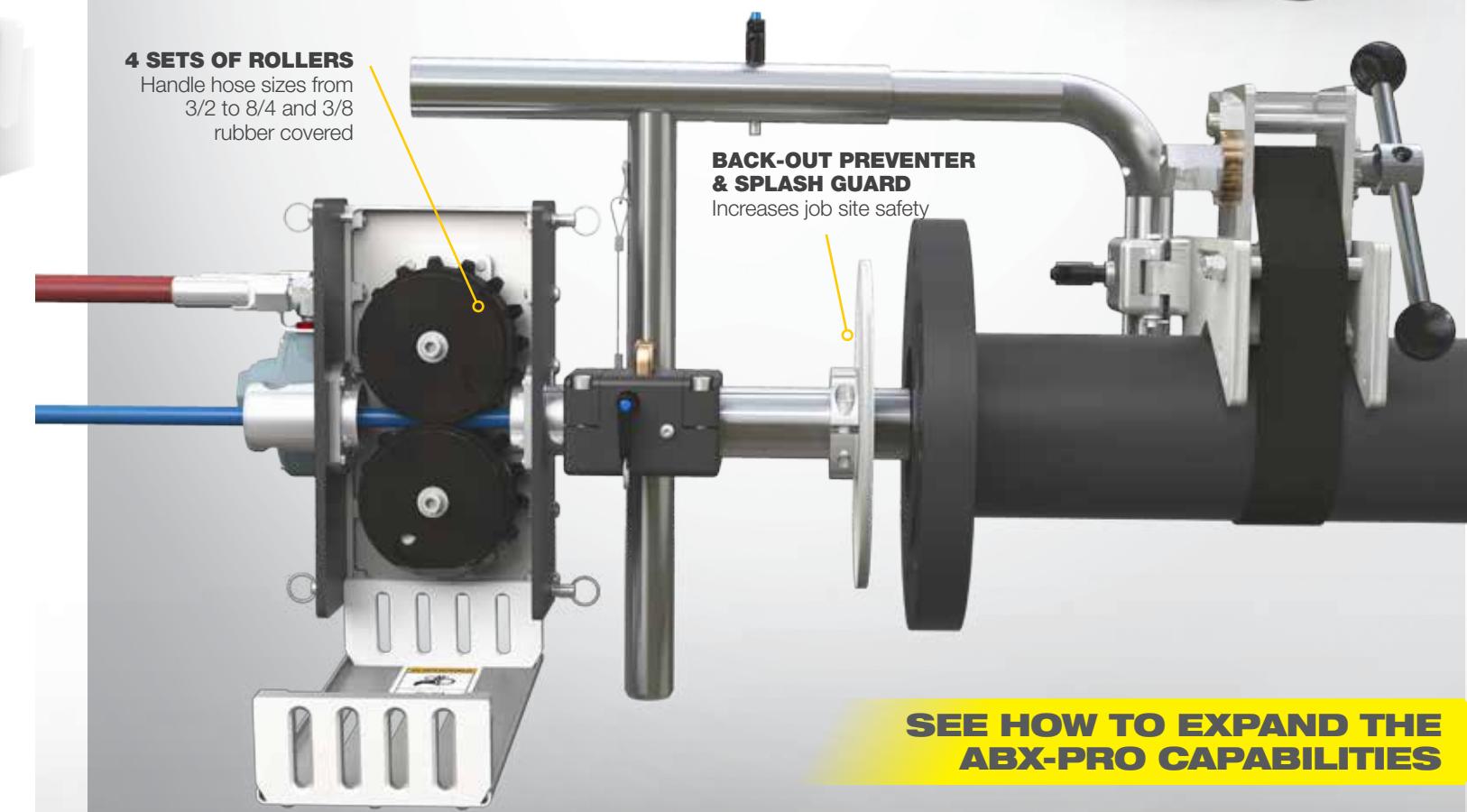
### LIGHTWEIGHT CONTROL BOX

Has 12 in. (305 mm) of height adjustment for standing or sitting applications



### 4 SETS OF ROLLERS

Handle hose sizes from 3/2 to 8/4 and 3/8 rubber covered



**SEE HOW TO EXPAND THE  
ABX-PRO CAPABILITIES**



# AUTOBOX ABX-PRO ONE SYSTEM • MANY APPLICATIONS

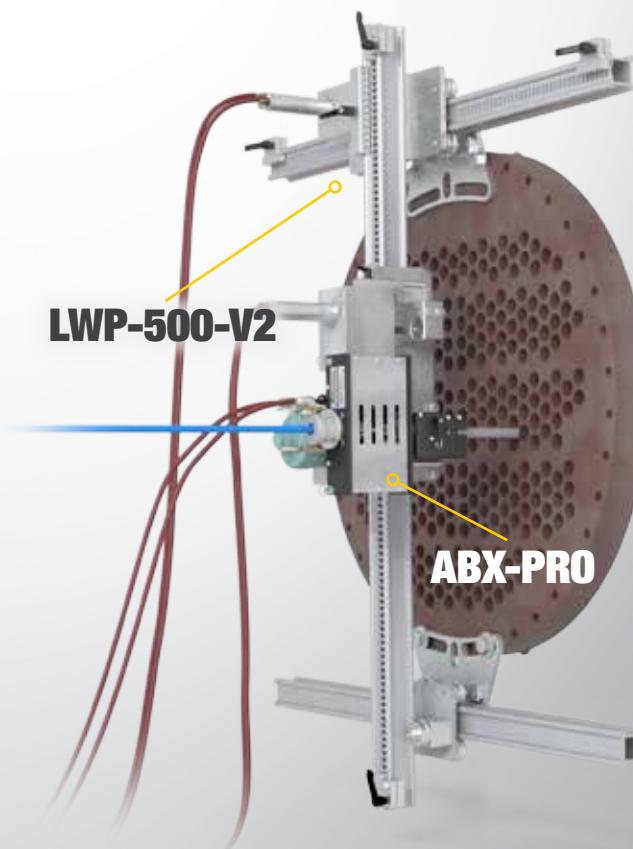
## DRAIN CLEANING

The ProDrain PRO-700-V2 facilitates safe and easy drain cleaning with the ABX-PRO hose tractor. The ProDrain does not require tethering—simply position over a floor drain and begin. If the system becomes unsteady, an integrated dump circuit cuts water to prevent tipping. The protective splash plate is weighted for stability and a hose pilot tube guides the tool to ensure quick, precise jetting.



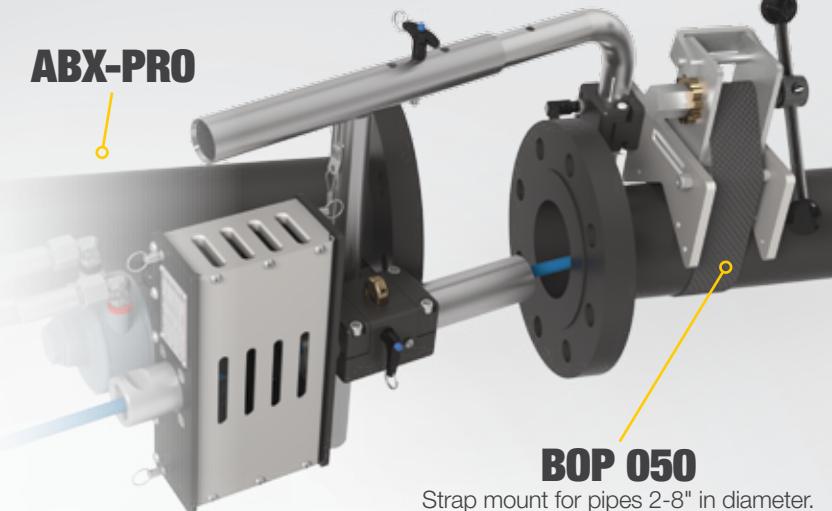
## EXCHANGER CLEANING

The Lightweight Positioner is used in conjunction with AutoBox automated flex lancing systems for controlled, efficient, and safe cleaning of heat exchanger tube IDs. It is specifically designed to be modular, lightweight, easy to setup, and expandable to allow for cleaning of different sized heat exchangers.



## PIPE CLEANING

The strap mount accessory is used to mount the ABX-PRO to pipes that do not have a flange. The strap mount can be used to position the ABX-PRO in line with the open pipe, or off axis when access to the pipe opening is limited.



## NAV-170-PKG

Navigator Rotary Hose Device with Control Box



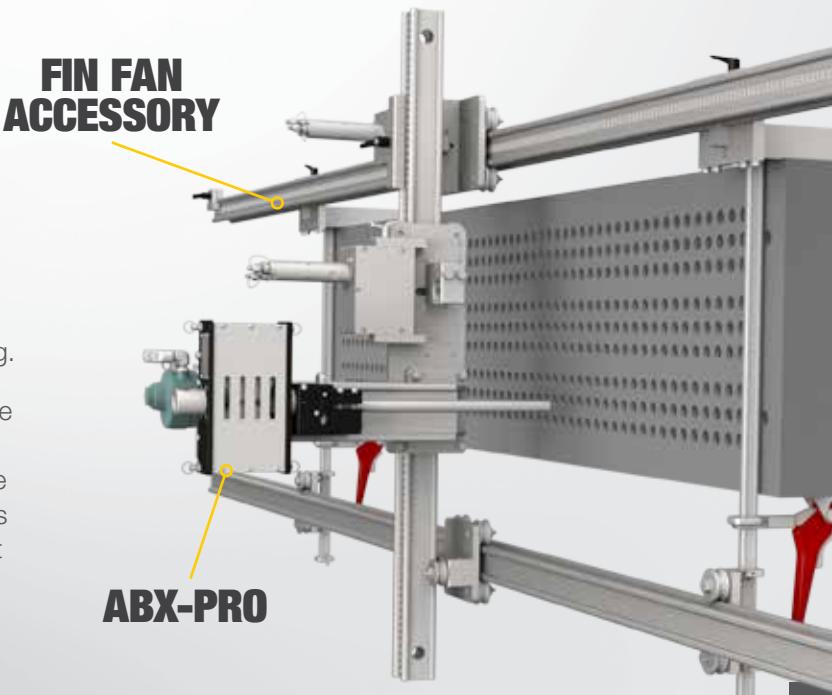
## SMALL PROCESS PIPE CLEANING

The NAV-170-PKG can be used to upgrade an existing ABX-PRO tractor to a full Navigator system. The Navigator adds controlled rotation to the hose and allows it to pass through multiple elbows to clean pipe that is inaccessible with other methods. (page 40)

## FIN FAN CLEANING

StoneAge has designed a series of accessories to adapt the AutoBox ABX-3L and ABX-2L for the specific requirements of Fin Fan exchanger cleaning.

Fin Fan Accessory components allow the hose drive to be attached to our Lightweight Positioner and safely mounted in the tight walkway spaces that are common on Fin Fan units. Customizable rail lengths and simple mounting clamps adapt the Lightweight Positioner to accommodate most Fin Fan headers and configurations.





**! OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# SMALL PROCESS PIPE CLEANING

## NAVIGATOR™

The Navigator is the only automated rotary hose device in the industry specifically engineered to clean small diameter process pipe with bends.

The Navigator uses an Autobox ABX-PRO tractor to feed the hose in and out of the pipe and a spinning drum to rotate the hose. This unique hose rotation allows the Navigator to work past multiple elbows/bends in process piping that may have been inaccessible in the past. The Navigator is ideal for cleaning piping, drain lines, and other small pipes with bends.

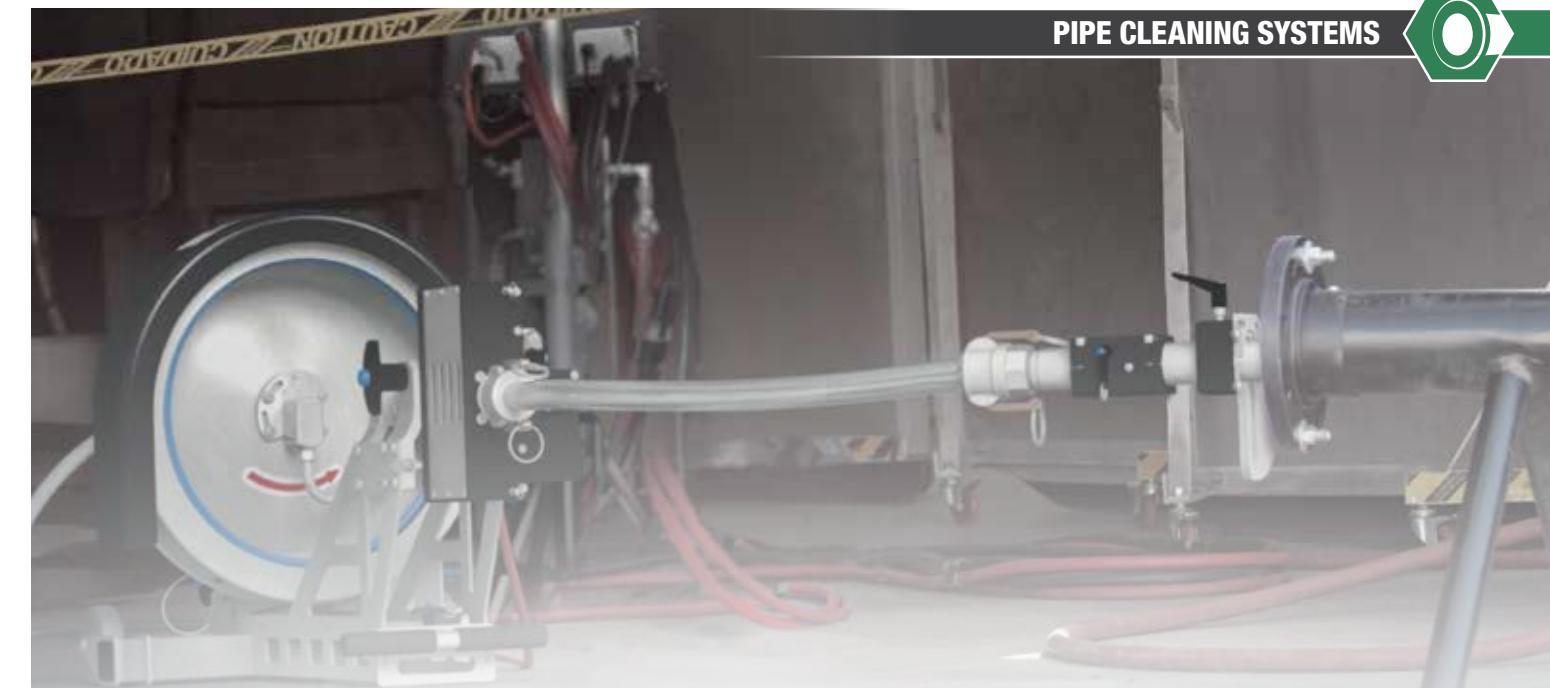
The ABX-PRO tractor can be removed and used independently for pipe, tube and drain cleaning where hose rotation is not required.

### FEATURES:

- The Navigator is small and lightweight with a wheeled base for portability
- It disassembles into modular components with quick release pins
- Each component meets plant weight and size requirements for single man lift, and manway access
- Continuous rotation of the hose allows the nozzle to pass up to eight bends in small pipe
- The drum keeps the high pressure hose safely contained and protected
- Can hold 100 ft (30 m) of hose for approximately 85 ft (26 m) of reach
- Forward and reverse feed rates can be independently adjusted to optimize dwell time
- The Navigator utilizes the same mounting accessories as the ABX-PRO providing options for a variety of applications
- The ABX-PRO tractor can be removed and used independently for pipe cleaning where hose rotation is not required.
- Compatible with StoneAge Badger™ pipe cleaning tools, and Banshee™ Beetle tube cleaning tools
- CE Certified



Tool Model	Max. Pressure	Max. Feed Rate	Min. Feed Rate	Hose Size	Usable Hose Length	Complete Weight
NAV-100	20k psi 1400 bar	2.0 ft/sec 609 mm/sec	0.2 ft/sec 61 mm/sec	4/4, 5/4 and 6/4	90ft 90 m	100 lbs 45 kg



### TETHERED REMOTE

Allows freedom of movement outside the blast zone for safety and visibility.



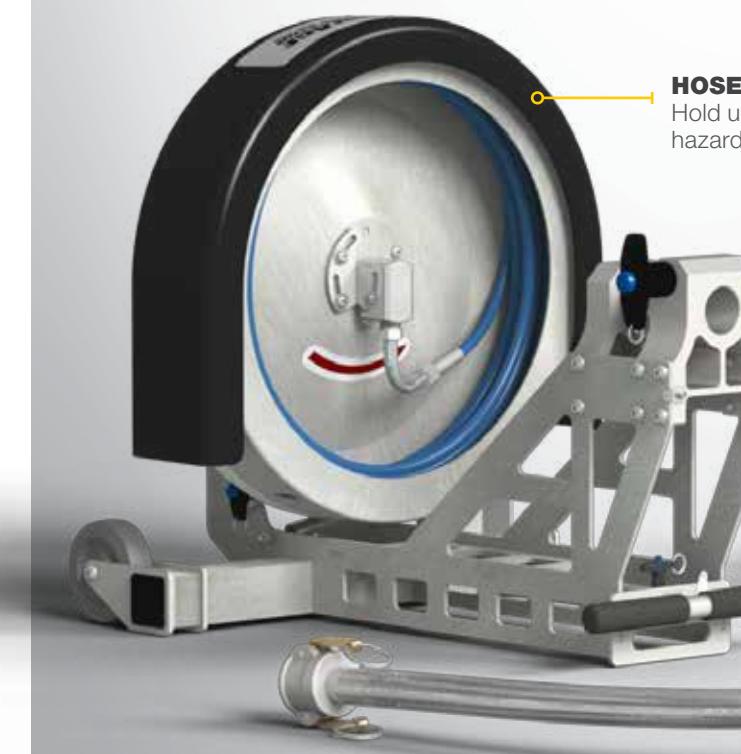
### ACCOMMODATES SEVERAL HOSE SIZES

Designed to work with 4/4, 5/4, and 6/4 hoses.  
**NOTE:** 4 wrap hoses are required due to hose rotation demands.



### FLANGE MOUNT

Versatile mount with cam-lock attachment for quick setup.



### HOSE DRUM

Hold up to 100 ft (30 m) of hose. Keeps job site clear of trip hazards. Also protects the hose during transport and storage.



### AUTOBOX ABX-PRO TRACTOR

Can be removed and used independently for pipe, tube and drain cleaning where hose rotation is not required.

### SNOUT

Allows quick, easy setup and increases safety with integrated backout preventer.

### SNOUT

Allows quick, easy setup and increases safety with integrated backout preventer.



# PIPE CLEANING

**“** StoneAge helped us get our equipment fleet 100% automated.

**MARK BLANCHARD**  
**WATERWORKS INDUSTRIAL**

## AUTOBOX® ABX-500

The AutoBox ABX-500 is a hands-free hose tractor for pipe and vessel cleaning. This utility hose feeding system can be adapted for a wide range of applications to enable precision hose control and increased safety. The ABX-500 accommodates a wide range of hose sizes and passes couplings up to 1.75 in. (45 mm) OD.

You can connect any StoneAge rotary cleaning nozzle or 3D tool to the hose to suit your application. The ABX-500 controls the forward and reverse speed of the rotary tool for consistent feed rate and dwell time.

### FEATURES:

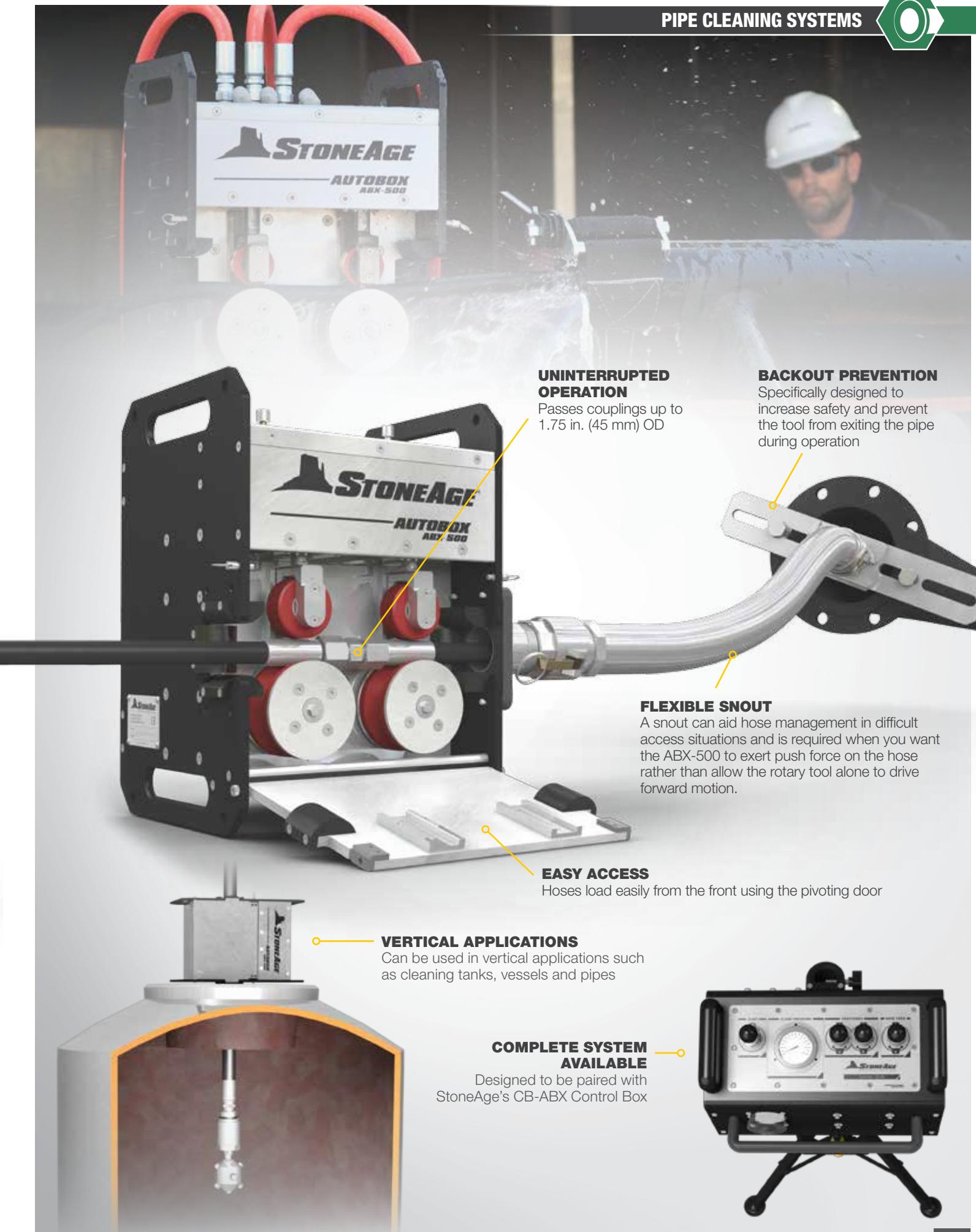
- Remote operation from outside of the blast zone reduces risk of injuries
- Hands-free cleaning minimizes operator fatigue and reduces downtime
- Remotely adjustable hose clamp pressure allows operator to adapt to changing conditions and minimize hose wear
- Forward and reverse feed rates can be independently adjusted for repeatable, consistent cleaning
- Capable of exerting up to 200 ft-lb of push/pull force on the hose when outfitted with snout accessory
- Passes hoses and couplings up to 1.75 in. (44.5 mm) O.D.
- Several mounting options available
- CE Certified

Tool Model	Pulling Force	Feed Rate	Hose Size	Weight
ABX-500	Up to 200 lbs 90.7 kg	1–30 ft/min 0.3–9.1 m/min	0.56–1.75 in. 13–44 mm	90 lbs 41 kg



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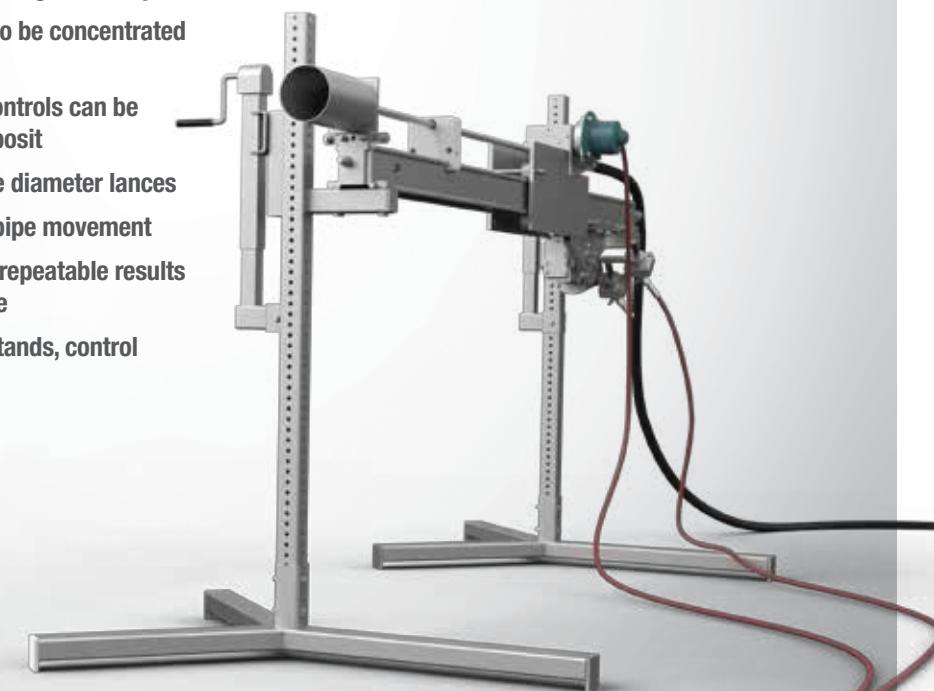
# PIPE CLEANING

## INSIDE DIAMETER PIPE CLEANER

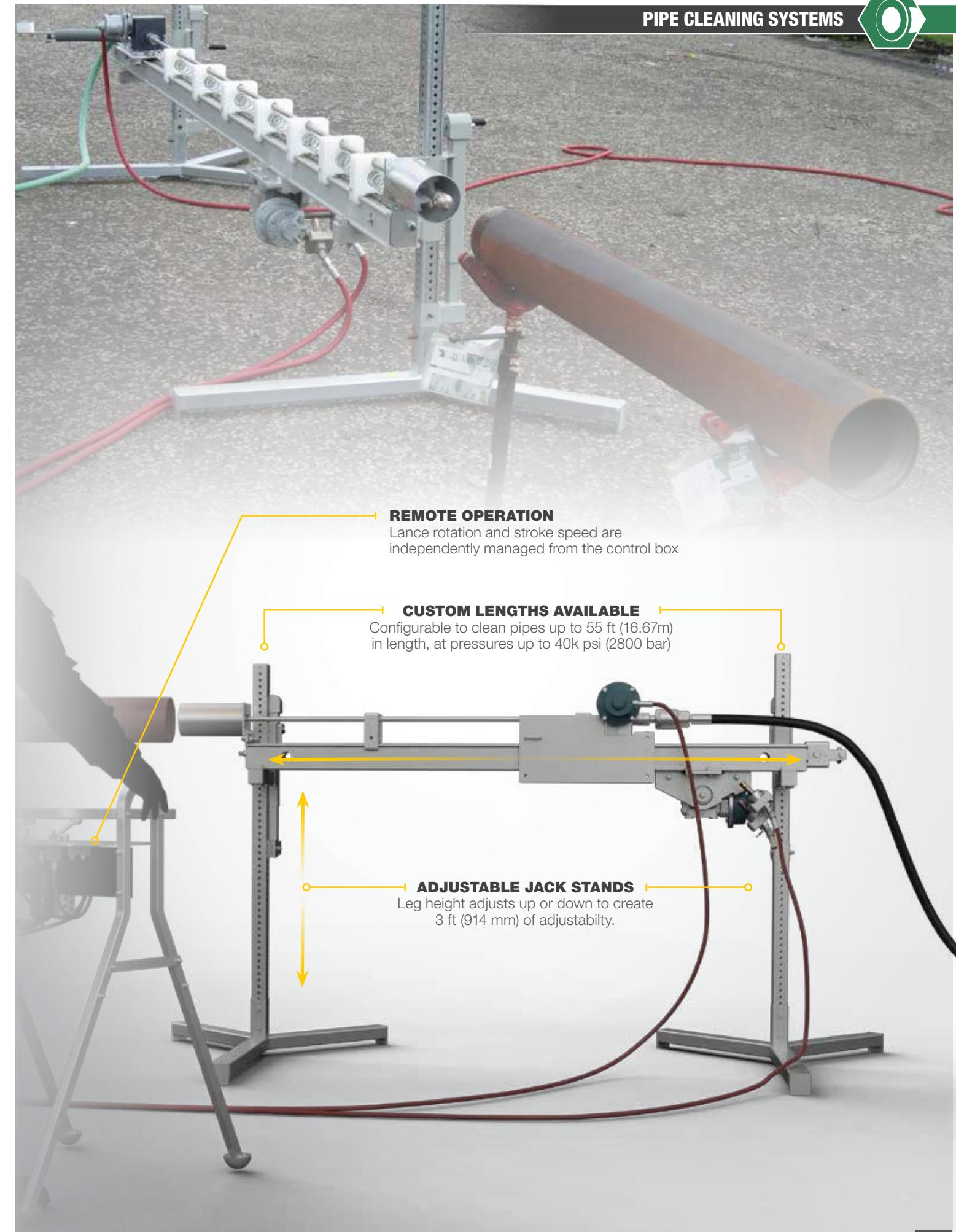
The StoneAge I.D. Pipe Cleaner is an automated rigid lance system designed to clean the interior surface of drill pipes used in the oil and gas industry. The I.D. Pipe Cleaner can run pressures up to 40K psi (2800 bar) and has adjustable rotation and stroke controls to optimize blast settings for any deposit including cement, drill mud, paraffin, and NORM. This system is also ideal for use in the descaling or pickling process used in many steel foundries.

### FEATURES:

- Affordable modular design is configurable to clean pipes up to 55 ft (16.7 m) in length
- Can be adapted to a variety of pressures and flows up to 60 gpm (227 l/min) and 40k psi (2800 bar) for the highest level of cleaning efficiency
- Rigid rotating lance allows all power or flow to be concentrated for cleaning rather than pulling or rotation
- Independently adjustable rotation and feed controls can be set for optimal dwell to match any type of deposit
- Heavy-duty carriage assembly adapts to large diameter lances
- Rugged pipe vice attachment helps stabilize pipe movement
- Automated operation delivers consistent and repeatable results when cleaning thousands of linear feet of pipe
- Complete package includes adjustable jack stands, control box, rigid lance, and cleaning heads



Tool Model	Pressure Range	Flow Range	Rotation Speed	Stroke Length	Weight
I.D. PIPE CLEANER	Up to 40k psi 2800 bar	Up to 60 gpm 227 l/min	50–300 rpm	Up to 55 ft 16.7 m	87 lb 40 kg





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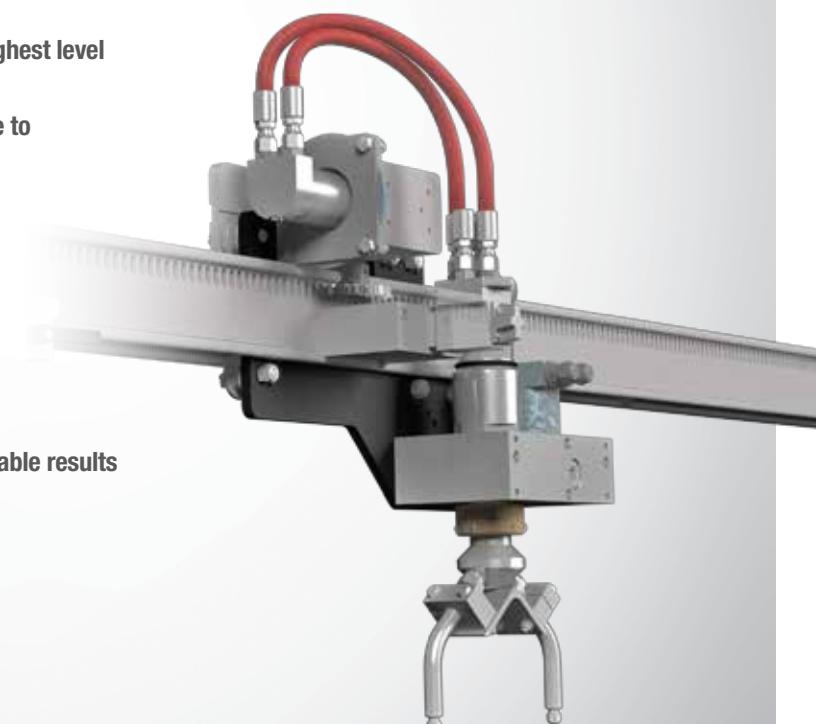
# PIPE CLEANING

## OUTSIDE DIAMETER PIPE CLEANER

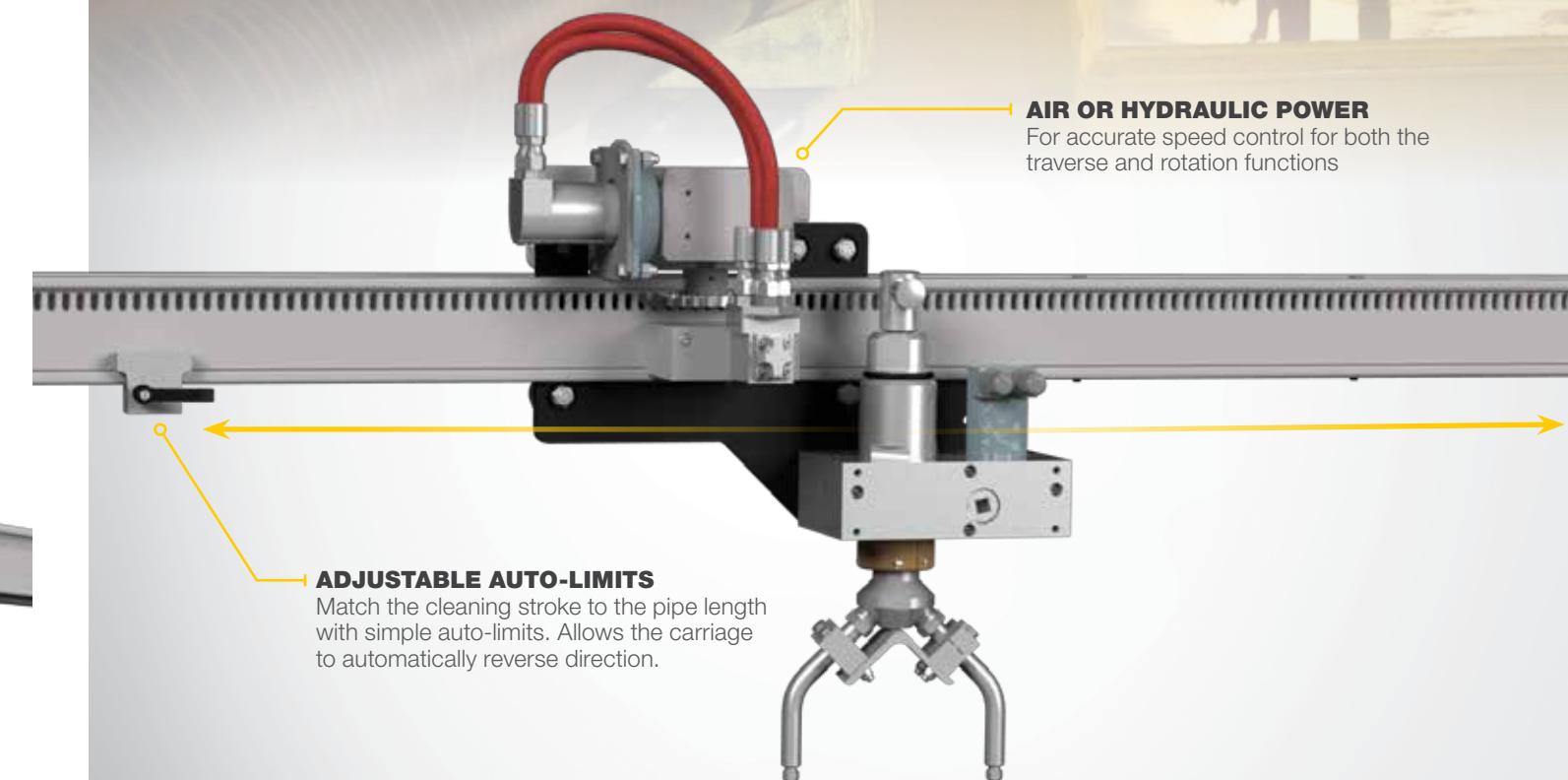
The StoneAge O.D. Pipe Cleaner is a powerful and affordable automated solution for cleaning the outer surface of drill pipes used in the oil and gas industry. The length of the system can be easily customized for permanent installation into pipe cleaning facilities providing consistent and efficient removal of drill mud, concrete, slag, or other exterior deposits on large volumes of pipe.

### FEATURES:

- Can be adapted to a variety of pressures and flows for highest level of cleaning efficiency
- Rotation and traverse speed are independently adjustable to customize dwell time
- Several head options available for delivering more concentrated power or covering a wider cleaning path
- Match the stroke length to the pipe sections being cleaned with simple auto-limits for efficient cleaning with no wasted time
- Modular rail allows the assembly to be customized to any length
- Fully automated operation delivers consistent and repeatable results when cleaning thousands of linear feet of pipe lengths



Tool Model	Pressure Range	Flow Range	Rotation Speed	Linear Speed	Air Supply	Rail Length
O.D. PIPE CLEANER	Up to 40k psi 2800 bar	Up to 50 gpm 190 l/min	50-1000 rpm	7-40 ft/min 2.1-12 m/min	60 cfm @ 80 psi 100 m/hr @ 5.5 bar	Up to 60 ft 18.3 m





**OPERATING WATERBLASTING EQUIPMENT  
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# TANK & VESSEL CLEANING

## TORUS® TR-130

### 3D Tank and Vessel Cleaning

The Torus TR-130 is a powerful and highly adaptable 3-D cleaning tool designed to easily adjust to a wide range of pump capacities, working pressures, and cleaning applications.

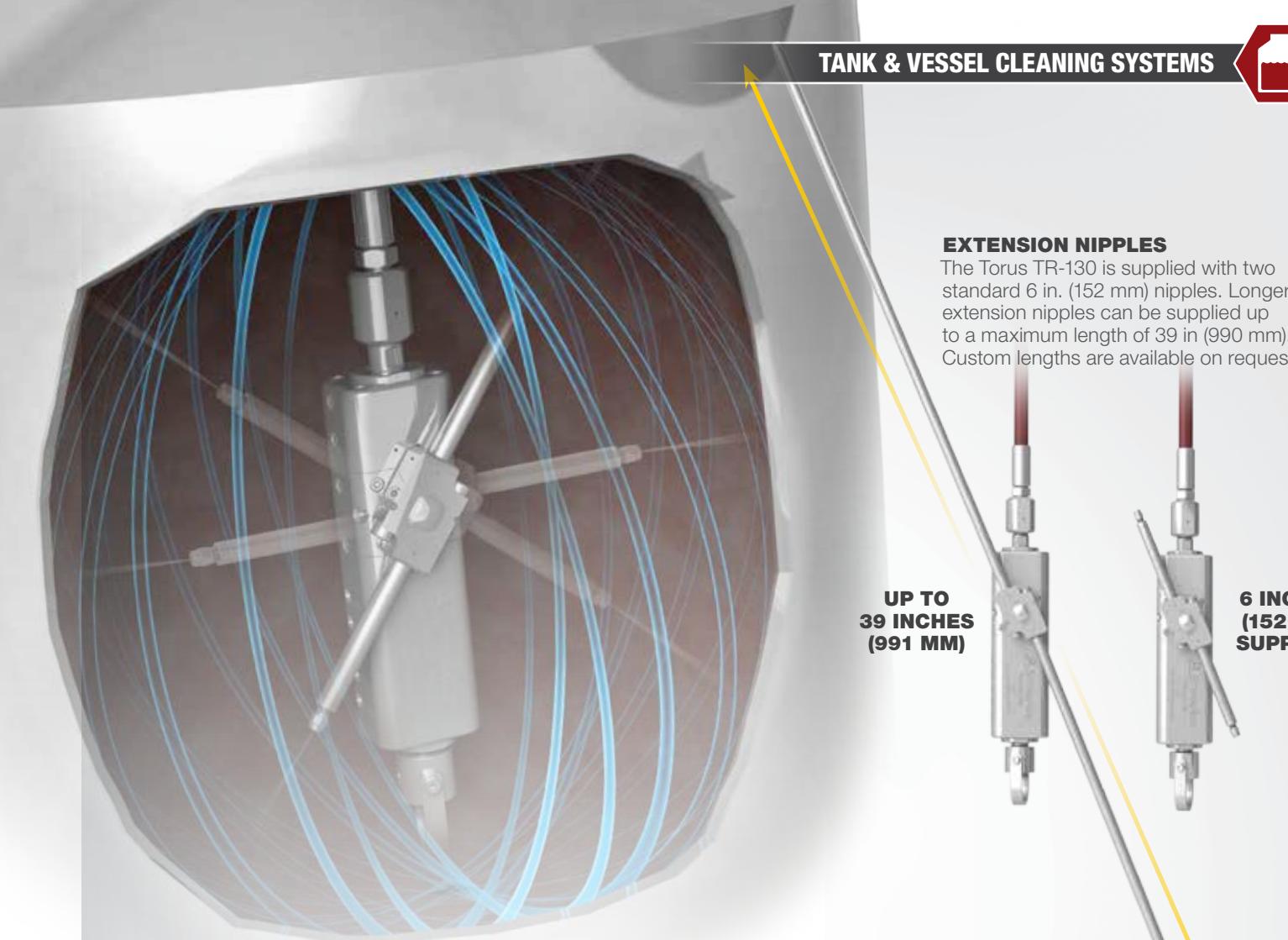
Today's cleaning environments demand hands-free automated technology for increased safety. When the Torus TR-130 is combined with our positioning equipment in chemical and power plants these challenges are met.

#### FEATURES:

- Small entry diameter enables access to more tanks and vessels
- If the arms hit an internal obstruction while in operation, the Torus TR-130 simply stops rotating without damaging the gear mechanism
- Minimal pressure loss which provides more power delivery than other tools on the market
- Interchangeable manifolds and couplings allow the operator to use the TR-130 on different pumps ranging from 10k psi (700 bar) to 20k psi (1500 bar)
- Wide range of accessories are available including positioning devices, cage centralizers and extensions help adapt the Torus TR-130 to specific needs and jobs



Tool Model	Pressure Range	Flow Range	Cycle Time	Inlet Connection	Rotation Speed	Weight
TR-130	2–22k psi 138–1500 bar	10–81 gpm 38–307 l/min	4–24 minutes	3/4 NPT, 1 NPT, 3/4 MP, 1 MP, M24	Adjustable	35 lb 16 kg



#### EXTENSION NIPPLES

The Torus TR-130 is supplied with two standard 6 in. (152 mm) nipples. Longer extension nipples can be supplied up to a maximum length of 39 in (991 mm). Custom lengths are available on request.

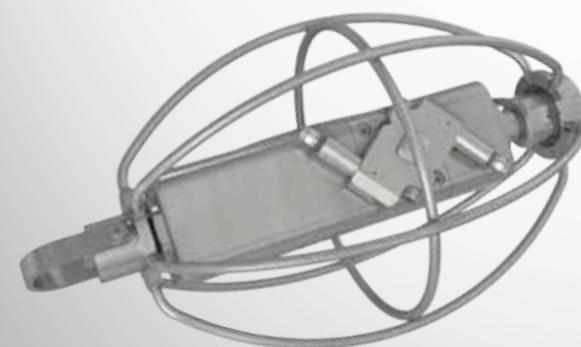
UP TO  
39 INCHES  
(991 MM)



6 INCHES  
(152 MM)  
SUPPLIED

#### TR 408-SS - CAGE CENTRALIZER

The Torus TR-130 can be fitted with a cage-style centralizer. This is ideal for applications where debris or internal structures may interfere with the cleaning operation. Nipples 2 in. (51 mm) in length must be used with the centralizer.



#### VERTICAL APPLICATIONS

Pair the Autobox ABX-500 (page 42) with the Torus for vertical tank and vessel cleaning applications.



#### MAINTENANCE RESOURCES

Tool	Service Kit	Seal Kit	Overhaul Kit	Manual
TR-130	TR130 600	TR 602	TR130 610	PL 556



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SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

# TANK & VESSEL CLEANING

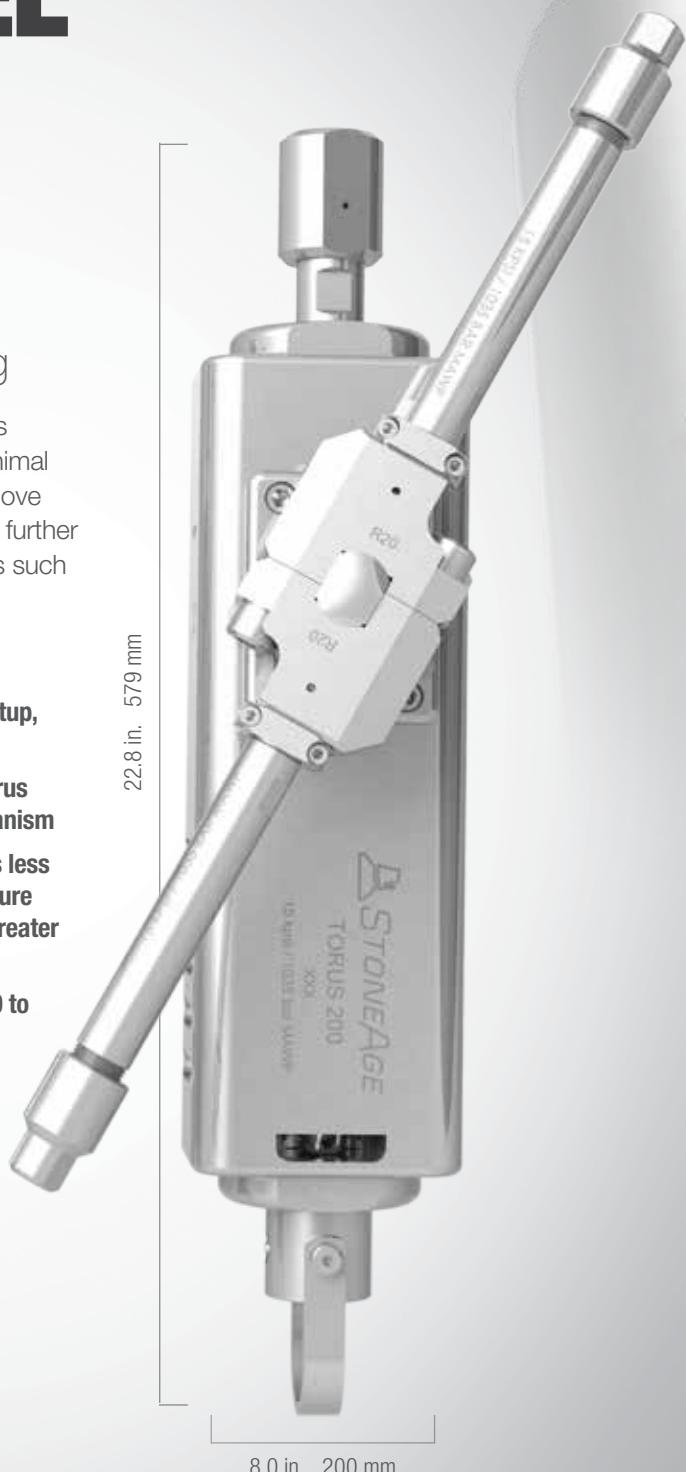
## TORUS® TR-200

### High Flow 3D Tank and Vessel Cleaning

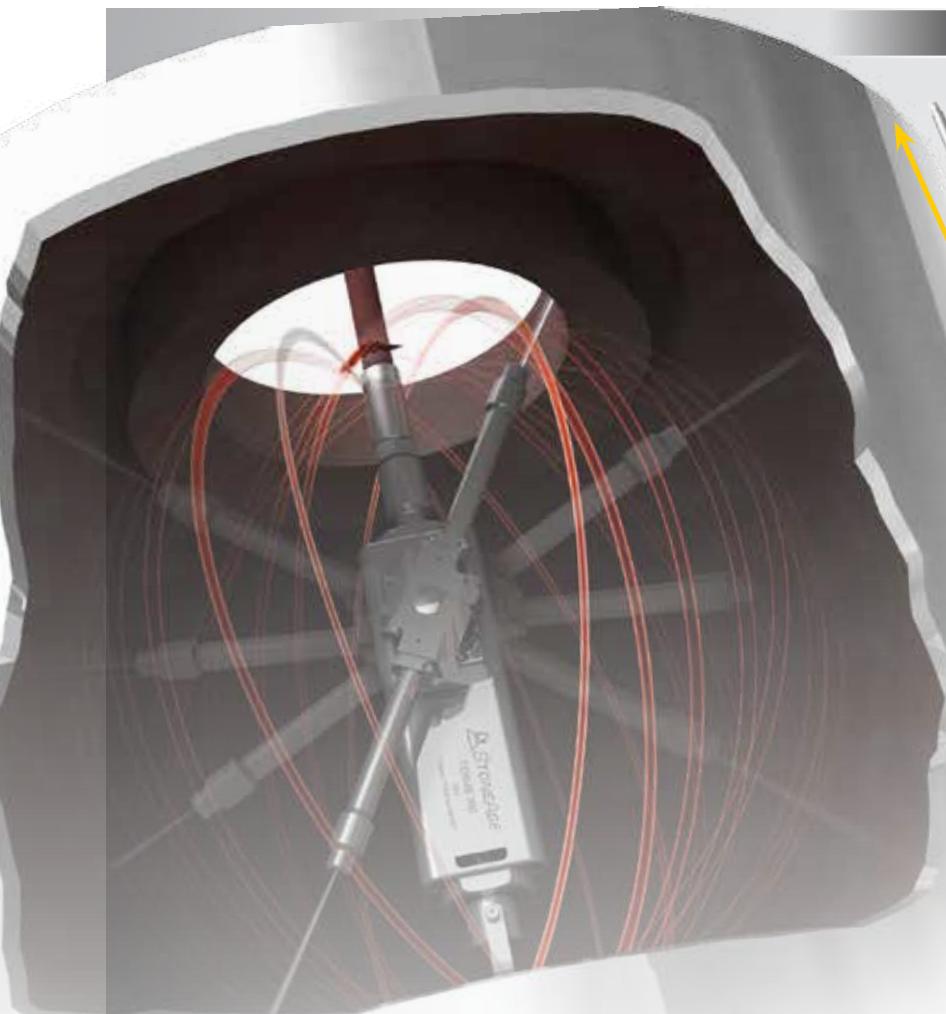
The Torus TR-200 is the industry's most powerful 3-D tool. It is capable of delivering flows up to 220 gpm (830 l/min) with minimal pressure loss. Applying higher flows allows contractors to remove thicker deposits and deliver longer and harder hitting jets from further distances. This is ideal for cleaning hard to handle applications such as large tanks and difficult materials such as coke deposits.

#### FEATURES:

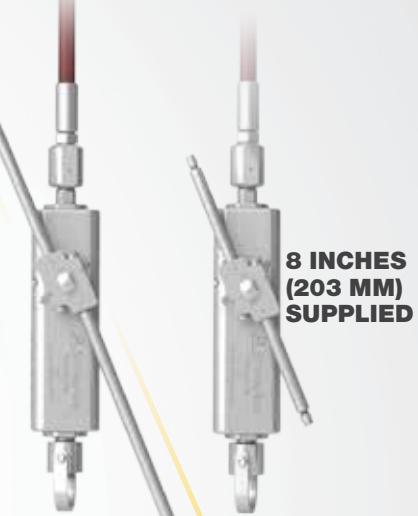
- Small entry diameter and light weight enable easy transport, setup, storage, and access to more tanks and vessels
- If the arms hit an internal obstruction while in operation, the Torus TR-200 simply stops rotating without damaging the gear mechanism
- Side by side field trials prove that the Torus TR-200 experiences less pressure loss than competitive tools on the market – less pressure loss equals more power delivered to the cleaning surface and greater productivity
- Positioning devices and extensions help adapt the Torus TR-200 to specific needs



Tool Model	Pressure Range	Flow Range	Cycle Time	Inlet Connection	Rotation Speed	Weight
TR-200	8–15k psi 550–1000 bar	50–220 gpm 190–830 l/min	10–88 minutes	P16 (up to 12k psi MAWP) MP16 (up to 15k psi MAWP)	Adjustable	100 lb 45 kg



UP TO  
48 INCHES  
(1200 MM)

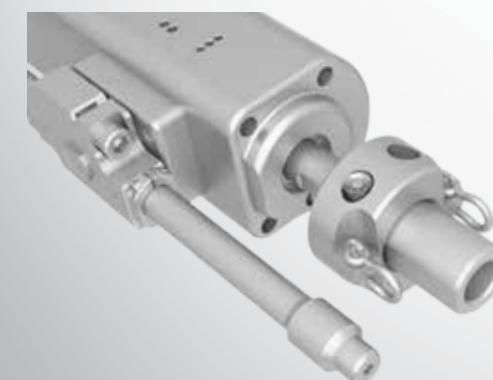


#### EXTENSION NIPPLES

The Torus TR-200 is supplied with two standard 8-inch (203 mm) extension nipples. Longer nipples can be purchased up to a maximum length of 48 in. (1200 mm). Custom lengths are available on request.

#### LIFTING ASSEMBLY

The Torus TR-200 comes with a heavy duty and versatile lifting assembly. It includes two quick release pins, two ring attachments, and a choice of P16 or MP16 coupling.



#### VERTICAL APPLICATIONS

Pair the Autobox ABX-500 (page 42) with the Torus for vertical tank and vessel cleaning applications.



#### MAINTENANCE RESOURCES

Tool	Service Kit	Seal Kit	Overhaul Kit	Manual
TR-200	TR200 600	TR200 602	TR200 610	PL 557



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# TANK & VESSEL CLEANING

**NEW  
AVAILABLE NOW**

## SPEED CONTROLLED SWIVEL (SCS)

The new StoneAge SCS High Flow Tank Cleaner has been engineered to deliver high flow and controlled rotation for optimal cleaning of medium to large tanks and vessels.

**The SCS has a unique speed controlled swivel that allows the operator to adjust rotation speed from 5–50 rpm while delivering up to 300 gpm (1136 lpm).**

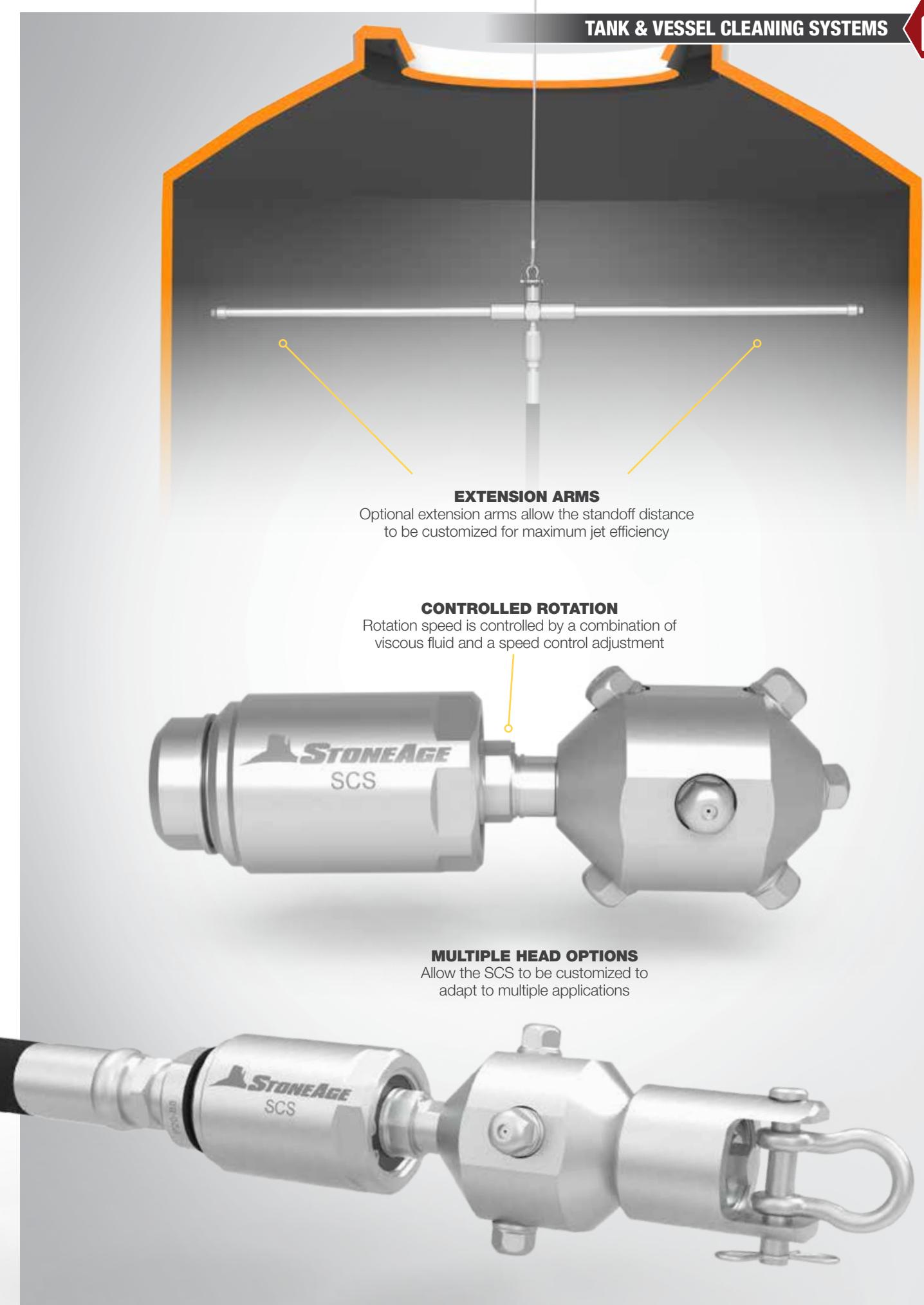
This combination of high flow and slow rotation is ideal for removing difficult materials such as coke or refractory. The SCS High Flow Tank Cleaner can be customized with several head options to adapt for large pipe cleaning, tunnel cleaning or stack cleaning. We also offer newly designed high flow nozzles with unique flow straighteners to increase the precision and power of the jets.

### FEATURES:

- High flow, slow rotation
- Adjustable speed control
- Multiple head options
- Uniquely designed high flow nozzles with flow straighteners
- Adaptable to large pipe cleaning, tunnel cleaning or stack cleaning



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight
SCS-100	10–22k psi 690–1500 bar	10–300 gpm 151–1136 lpm	1in MP (MP16), 1in NPT (P16), 1.25in NPT (P20)	5–50 rpm	12lbs (5 kg) Swivel only, no head





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# TANK & VESSEL CLEANING

## POSITIONING BOOMS

Positioners provide up to 19 ft (5.8 m) of reach for the Torus 3-D tank cleaner in addition to tilt and rotation adjustments. Intended for vertical or near vertical applications.

### FEATURES:

- Easily adjustable extension/retraction lengths means the cleaning nozzle can be extended or retracted to a variety of insertion depths for better cleaning coverage
- 24 in. (610 mm) aluminum mounting plate secures to the vessel during cleaning operation, increasing operator safety
- Inspection hatch allows for line of sight placement of cleaning head to check cleaning progress
- Portable and easy setup; no special tools required to position head
- Control Box (optional) offers convenient controls for vertical positioning and linear speed

### SIMPLE BOOM SPECIFICATIONS

MODEL	SB-H	SB-P16
Maximum Pressure	N/A	10k psi (690 bar)
Maximum Flow	50 gpm (190 l/min)	150 gpm (570 l/min)
Inlet Connections	1/2 NPT or 1-12 "M"	1 NPT
Maximum Hose I.D.	0.5 in. (13 mm)	N/A
Maximum End Fitting	1.5 in. (38 mm)	N/A
Weight	80 lb (36 kg)	80 lb (36 kg)

### EXTENSION BOOM SPECIFICATIONS

MODEL	EB-100
Maximum Pressure	12k psi (830 bar)
Linear Speed	8-45 in./min (0.2-1.1 m/min)
Maximum Stroke Length	12 ft (3.7 m)
Inlet Connection	3/4 NPT



TORUS sold separately

## PRIMARY MODELS FOR POSITIONING BOOMS



SIMPLEBOOMS

TELEBOOM

EB-BOOM (AIR-POWERED)

## POSITIONING BOOMS

Large tanks and vessels can be among the most difficult cleaning challenges due to their size, limited access, and internal geometries. StoneAge offers several tools that keep the operator out of the tank. The most efficient means of cleaning is a 2-D tool moved along the axis of the vessel. When this is not possible due to central obstructions such as agitators, the simplest solution is to use a 3-D tank cleaning tool

The easiest method for using a 3-D tool is to hang it in the tank by the high pressure hose. Several types of positioners for 3-D tools allow you to place the tool closer to the surface to be cleaned and position the tool away from obstructions. Large diameter tanks that have an accessible center can effectively be cleaned using a 2-D rotating tool that is slowly raised or lowered with a hose tractor such as the ABX-500 to achieve complete coverage. Nipple extensions should be used when possible to ensure proper standoff distances.

### TELEBOOM SPECIFICATIONS

MODEL	TB-6-TR	TB-8-TR	TB-10-TR
Maximum Pressure	22k psi (1500 bar)	22k psi (1500 bar)	22k psi (1500 bar)
Maximum Flow	100 gpm (380 l/min)	100 gpm (380 l/min)	100 gpm (380 l/min)
Inlet Connections	3/4 NPT, 3/4 MP or M24	3/4 NPT, 3/4 MP or M24	3/4 NPT, 3/4 MP or M24
Maximum Hose I.D.	3/4 in. (19 mm)	3/4 in. (19 mm)	3/4 in. (19 mm)
Collapsed Length	6.5 ft (2.0 m)	8.5 ft (2.6 m)	10.5 ft (3.2 m)
Maximum Reach	13 ft (4.0 m)	19 ft (5.8 m)	25 ft (7.6 m)
Weight	120 lb (55 kg)	130 lb (59 kg)	140 lb (63 kg)



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SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# TANK & VESSEL CLEANING

## SM-AIR LARGE TANK CLEANER

### High Flow Tank Cleaning

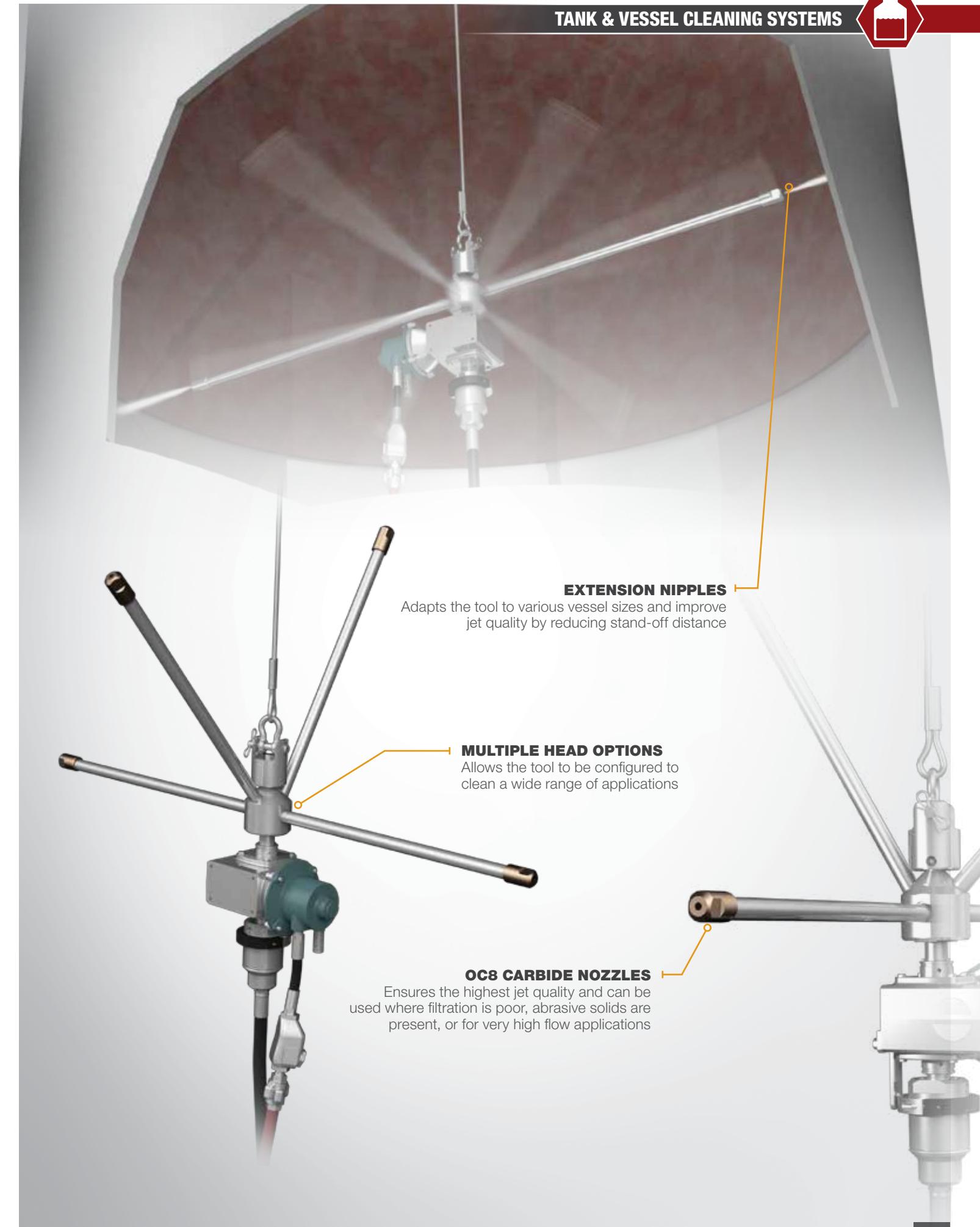
The SM-AIR offers air powered rotation at high flows for effective jet power over long distances. Different head options allow cleaning above and below irregular surfaces.

#### FEATURES:

- Versatile and durable gearbox can be used with a variety of head designs for many different applications
- Air-powered rotation provides uniform coverage over a large area
- Variable speed control maximizes efficiency for heavy or light applications
- Ideal for cleaning boilers, furnaces, cyclones, and cokers



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight
SM-AIR	Up to 12k psi 830 bar	Up to 300 gpm 1140 l/min	1 NPT	10-70 rpm	78 lb 35 kg





**OPERATING WATERBLASTING EQUIPMENT  
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**“**This StoneAge Boiler Tube Cleaner is one of the best automated hydroblast tools ever made. We can perform the cleaning without vessel entry, and without touching a high pressure hose. What a great way to clean a boiler.”

**MARK BLANCHARD  
WATERWORKS INDUSTRIAL**

# FURNACE & BOILER CLEANING

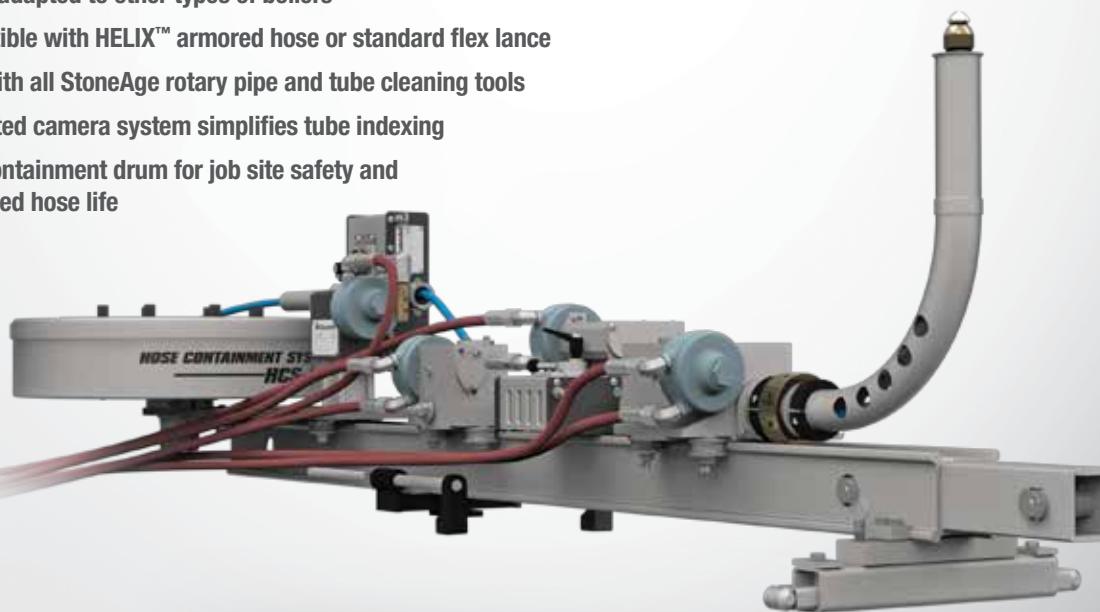
## BOILER TUBE CLEANER

The StoneAge BTC-200 Boiler Tube Cleaner cleans radial tubes found in the mud and steam drums of package boilers. It fits through a standard manway and cleans boiler tubes without the need for an operator to enter the vessel.

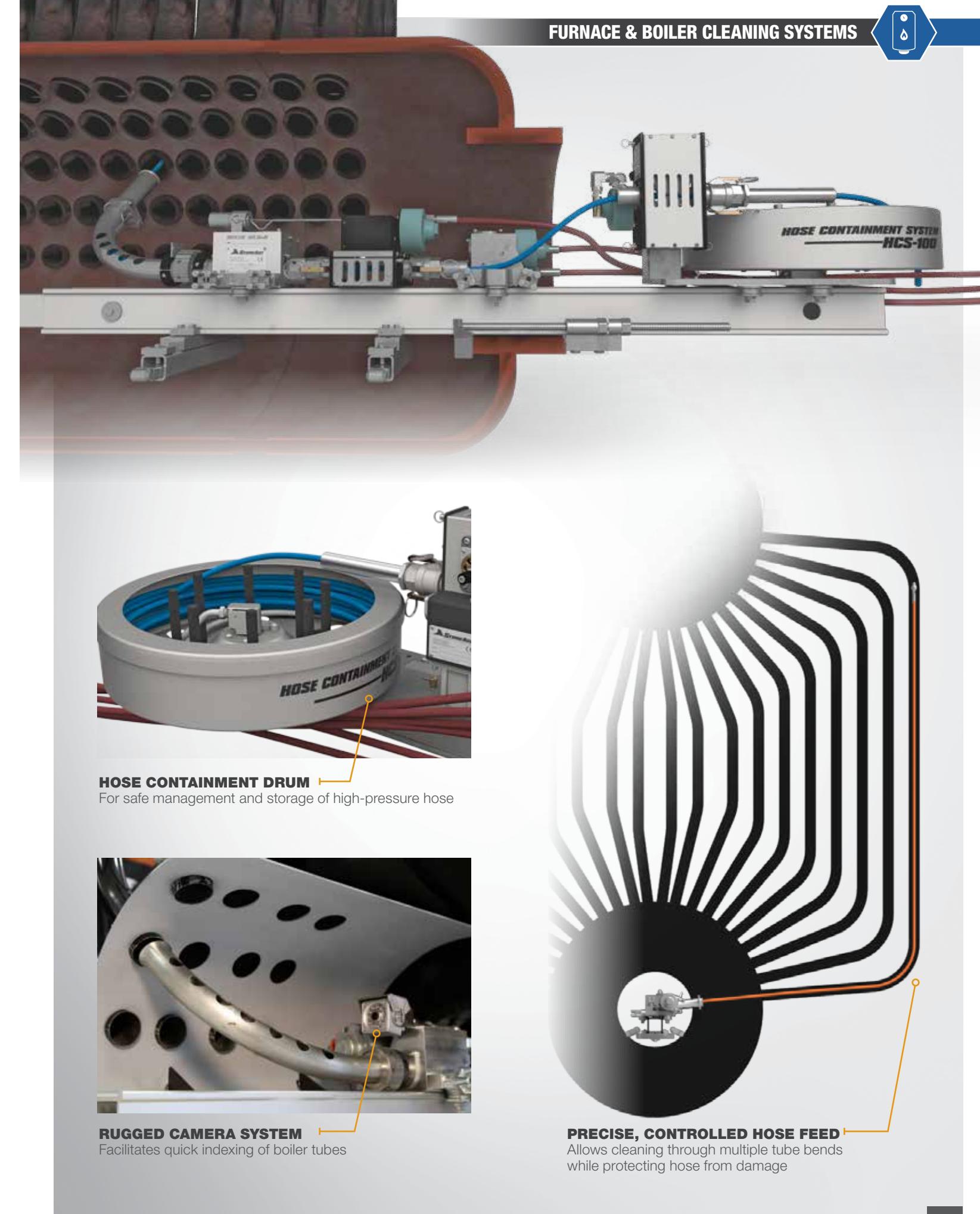
ABX-PRO Drive Technology delivers up to 50 lbs (23 kg) of push to clear plugged tubes and help the hose travel long distances through multiple bends.

### FEATURES:

- Eliminates confined space entry
- Can be adapted to other types of boilers
- Compatible with HELIX™ armored hose or standard flex lance
- Pairs with all StoneAge rotary pipe and tube cleaning tools
- Integrated camera system simplifies tube indexing
- Hose containment drum for job site safety and prolonged hose life



Tool Model	Max Pressure	Flow Range	Hose I.D.	Feed Rate	Max Hose Length	Max Tube Length
BTC-200	20k psi 1400 bar	5–12 gpm 19–45 l/min	5–6mm	9–50 ft/min 2.7–15.2 m/min	75 ft 22 m	50 ft 15 m





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# FURNACE & BOILER CLEANING

## YELLOW JACKET™

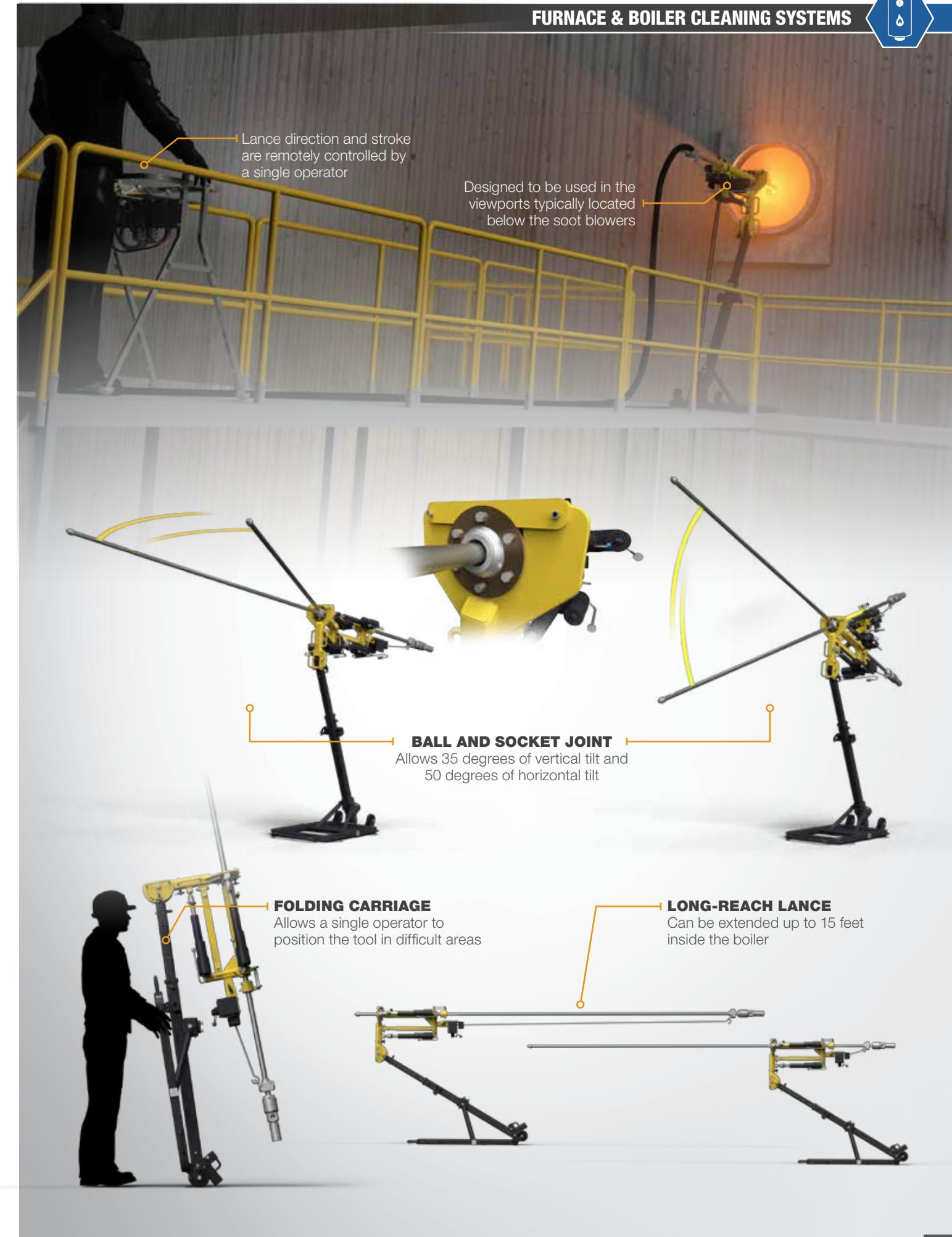
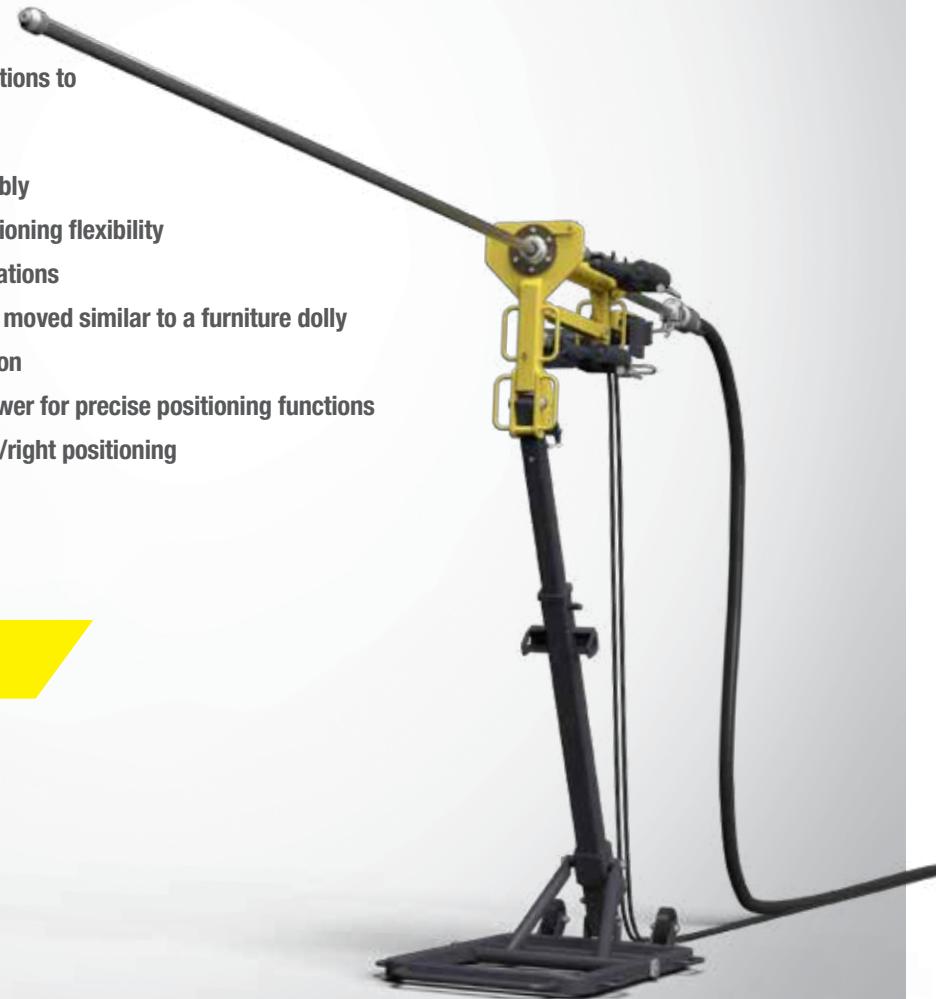
The StoneAge Yellow Jacket automated high flow water lancing system has been specifically designed for online boiler cleaning. The system features a pivoting lance that allows the waterjet to be precisely aimed for productive removal of excessive slag from key locations inside a boiler while the boiler is still online.

### FEATURES:

- Lance pivot angle can be set at multiple positions to provide maximum range of motion
- Modular design with pinned connections for portability and quick assembly/disassembly
- Stand raises/lowers and telescopes for positioning flexibility
- Compact rigid base with multiple anchor locations
- Lower frame has integral wheels and can be moved similar to a furniture dolly
- Remote operation from corded pendant station
- All functions utilize low voltage electrical power for precise positioning functions
- 24V DC linear actuators for up/down and left/right positioning
- 24V DC winch extends lance into the boiler
- Requires 120 VAC 20A power supply
- Remote dump control available

Contact StoneAge for rental availability or lead times to purchase.

Tool Model	Max Pressure	Flow Range	Vertical Tilt	Horizontal Tilt	Lance Extension	Weight
JKT-100	Up to 10K psi 690 bar	Up to 100 gpm 380 l/min	35 degrees	50 degrees	15 ft 4.6 m	410 lbs 186 kg





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# FURNACE & BOILER CLEANING

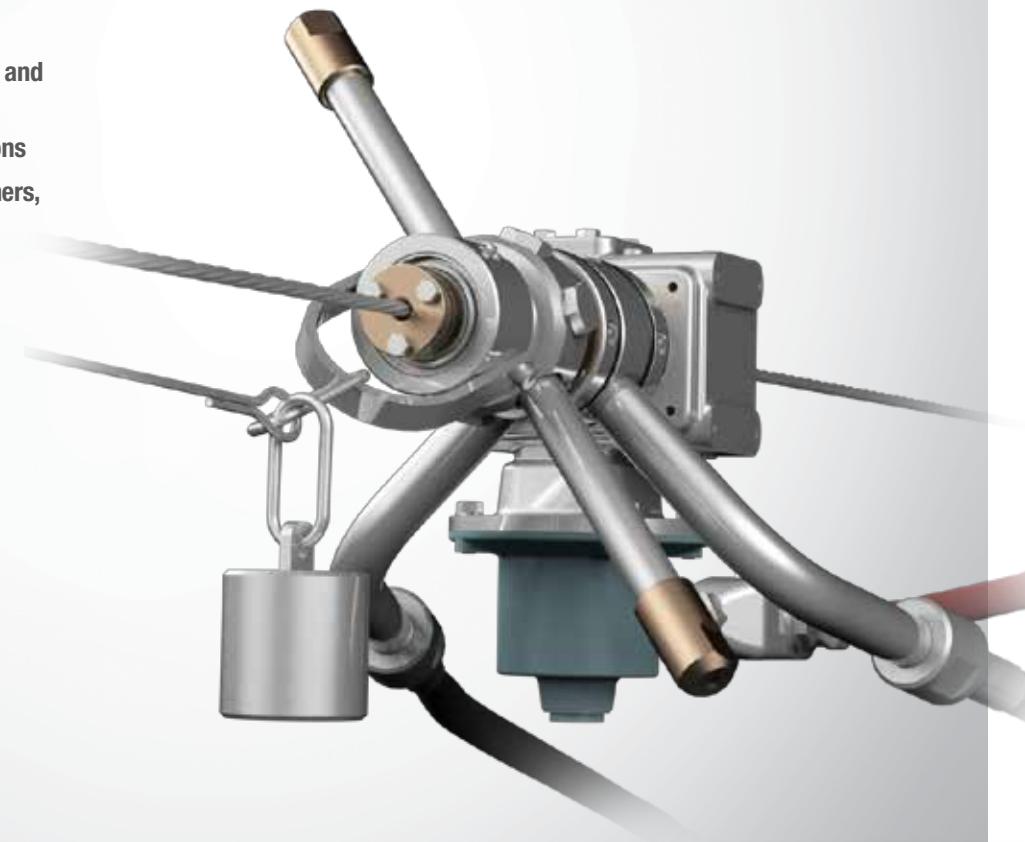
## CABLE SWIVEL TOOL (CST)

The patented, hollow-shaft CST-AIR slides on a 3/8 in. (9.5 mm) diameter stretched cable (not supplied) and can is moved by a pulling cable. Head rotation is powered by an air motor.

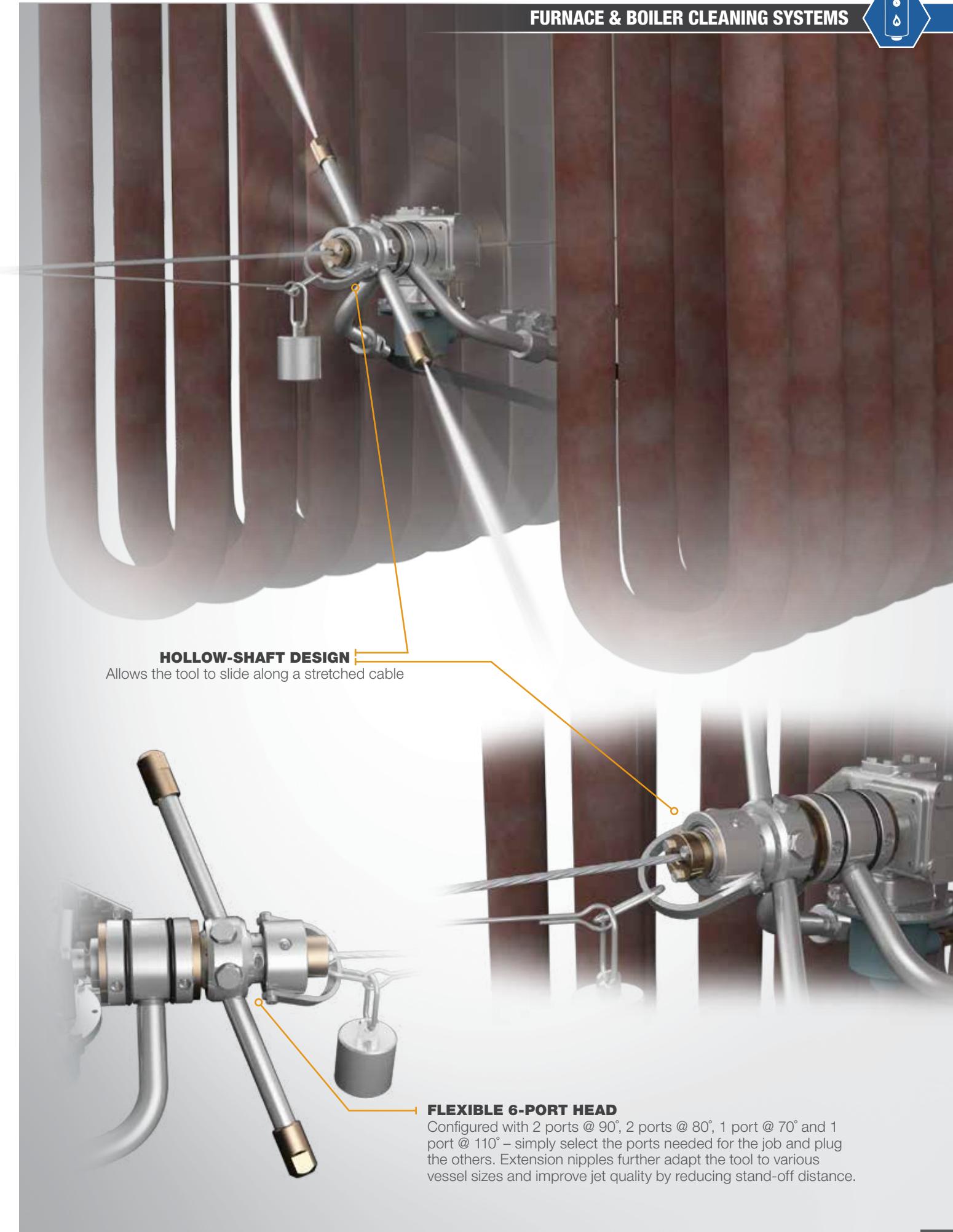
Extension nipples further adapt the tool to various vessel sizes and improve jet quality by reducing stand-off distance.

### IDEAL FOR:

- Direct fired furnaces, superheaters, and economizer sections
- Cleaning in difficult to reach locations
- Cleaning boilers, re-boilers, re-formers, cokers and precipitators



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Rotation Range	Weight
<b>CST-AIR</b>	Up to 10k psi 700 bar	Up to 170 gpm 640 l/min	2 x 1 NPT	5-60 rpm	360°	46 lb 21 kg





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# FURNACE & BOILER CLEANING

## BIG FLOW WATERLANCER (BFW-100)

The BFW-100 is an automated system designed for hands-free online boiler cleaning that enables contractors to reduce down time by cleaning at high temperatures. With a 300 gpm (1140 l/min) flow capability, the BFW-100 can effectively clean any large vessel with limited entry access.

The BFW-100 features an adjustable cart with an air-powered boom positioner and provides excellent cleaning for pulp plant boilers, refinery and chemical plant vessels, as well as furnace radiant sections.

### FEATURES:

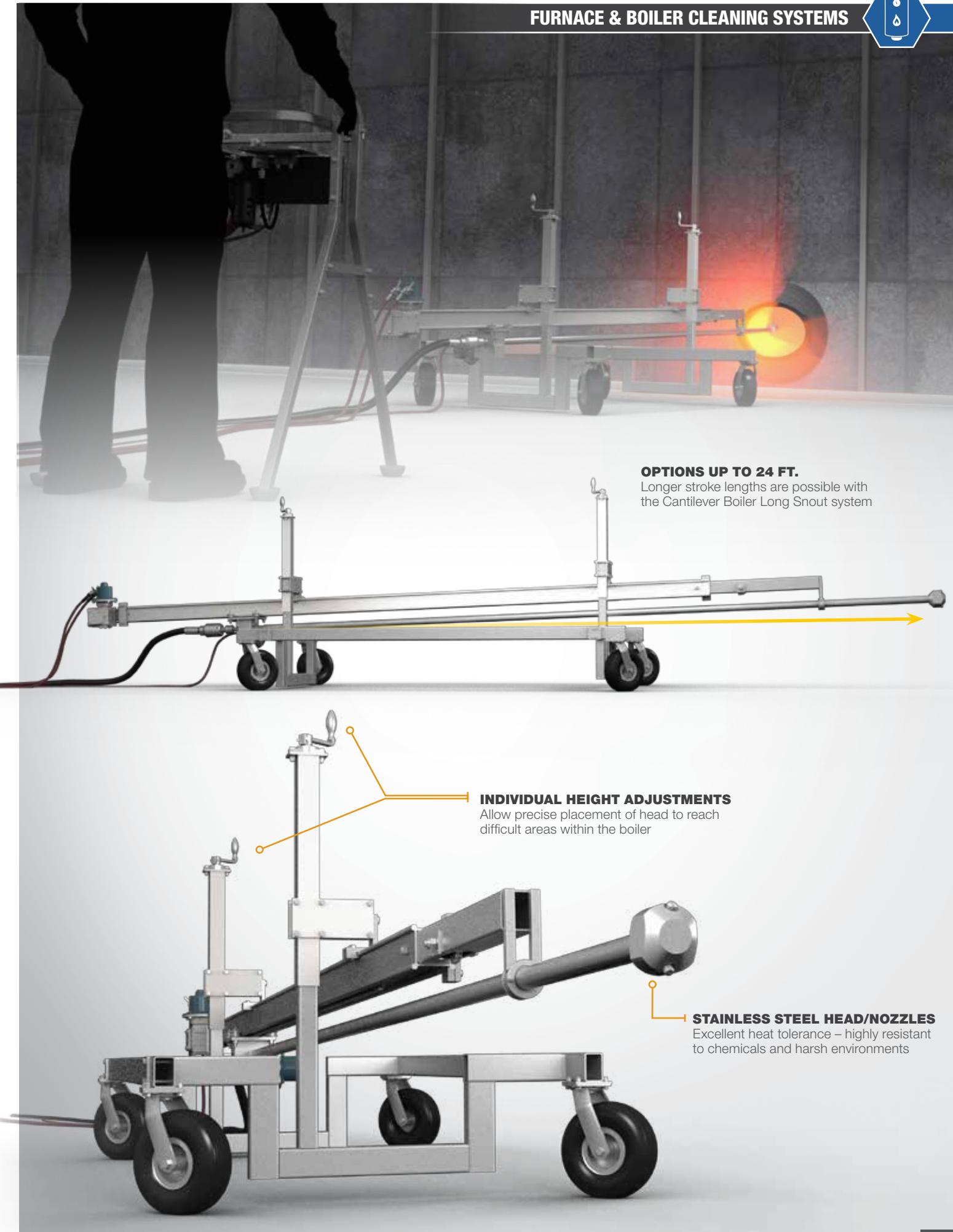
- Temperature resistant design reduces downtime by allowing cleaning operation while online
- Remote Control Box controls linear and rotation speeds from a safe distance
- Adjustable rail and cart allows for easy tool positioning, including elevation and angle of the lance
- Cantilever option available – accommodates lengths up to 24 ft (7.3 m)

### IDEAL FOR:

- Pulp plant boilers
- Refinery and chemical plant vessels
- Furnace radiant sections
- Boiler floors



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Linear Speed	Stroke Length
BFW-100	10k psi 700 bar	300 gpm 1140 l/min	1 NPT	10–50 rpm	8–35 ft/min 2.4–11 m/min	13 ft 4.0 m





# CONCRETE DEMOLITION

## BLACKHAWK™

Automated Concrete Demolition System

The Blackhawk is a cost-effective, safe alternative to traditional methods of removing and scarifying concrete. Hydrodemolition is more effective and precise than jackhammering for concrete removal on bridges, garages, dams, and roadways. The universal mounting plate allows the Blackhawk to easily adapt to your choice of equipment (Skid Steer, Telescopic Forklift, etc.)

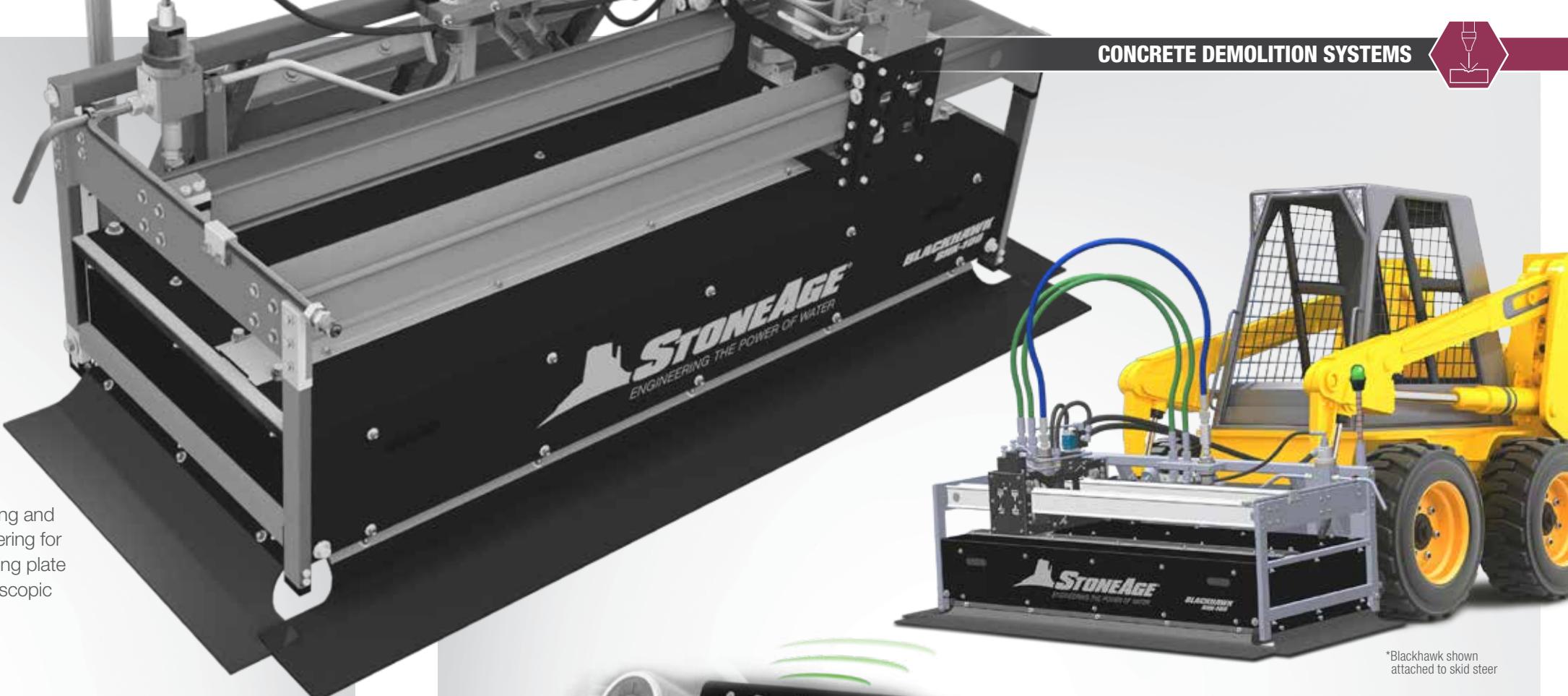
### FEATURES:

- Does not negatively affect sound concrete or introduce fracturing into the structure
- Cleans and decontaminates embedded metal elements and rebar without causing damage
- Adaptable to your choice of equipment (standard flow skid steer, telehandler, etc.)
- Designed for use at any orientation
- Choice of penetrating single jet or multi-jet bar head for increased efficiency when preparing concrete surfaces
- Can be configured to specific nozzle standoff, traverse and rotation speeds for consistent/repeatable results
- Removes up to 12 in. (305 mm) of material or more based on pressure, flow, and grade of concrete

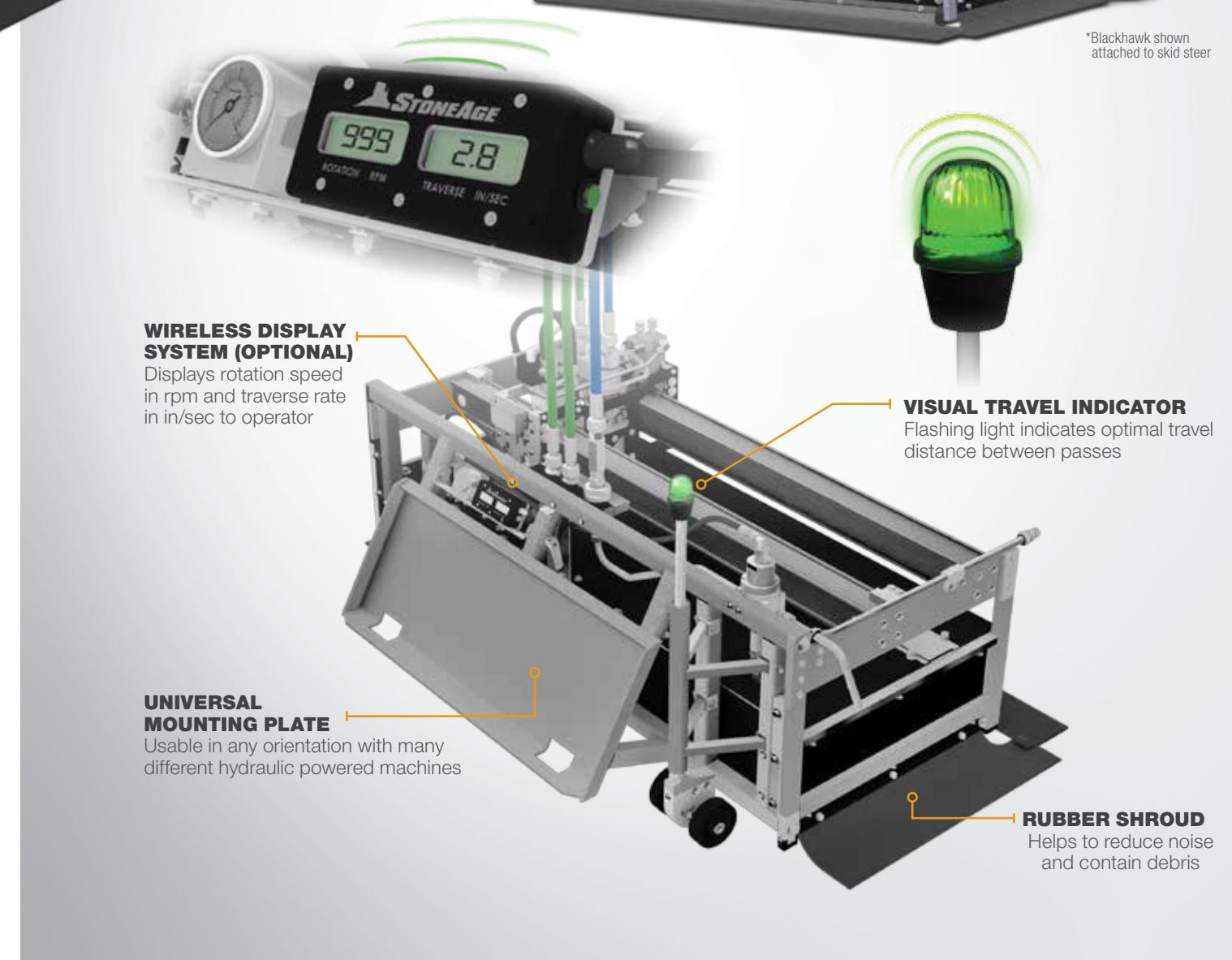
### IDEAL FOR:

- Horizontal uses: bridge decks, parking structures, bike paths
- Vertical uses: piers, buildings, tanks, walls
- Scarification to provide a good bonding surface
- Partial depth cuts to expose rebar and remove damaged or defective concrete
- Removing concrete without causing damage to steel/rebar structure or fracturing

Tool Model	Pressure Range	Flow Range	Inlet Connection	Weight	Machine Attachment
BHK-100	Up to 22k psi 1500 bar	Up to 50 gpm 190 l/min	3/4 MP	1200 lbs 544 kg	Universal Skid Steer Plate



\*Blackhawk shown attached to skid steer



# STONEAGE SOLUTIONS

## CUSTOM ENGINEERED WATERBLASTING SOLUTIONS

StoneAge offers a dedicated resource group on staff who can solve your difficult waterblast applications. StoneAge Solutions is available for a wide range of support from simple modifications to turn key comprehensive accessory packages. This service are available directly to our dealers, contractors, and end users.

- CYCLONE CLEANING
- LARGE TUNNEL CLEANING
- ONLINE BOILER CLEANING
- PORTABLE, EXTERNAL BUNDLE BLASTING
- INTERNAL & EXTERNAL DRILL PIPE CLEANING



### SURFACE PREP/VACUUM ATTACHMENT

Modify the Tracked Striker with a short arm and a vacuum attachment for a custom configuration geared for floor cleaning, coating removal, or scarification. The wireless controller keeps the operator safely out of the blast zone.

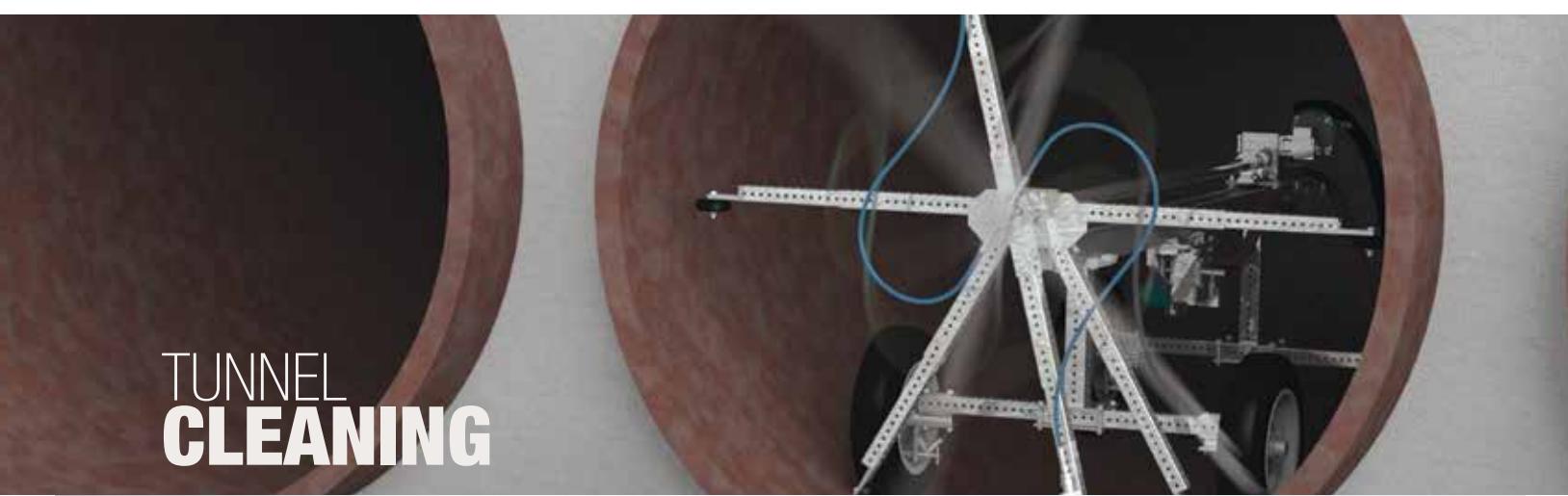
FOR MORE ABOUT HOW TO CUSTOMIZE THESE TOOLS

PLEASE CONTACT OUR SOLUTIONS DEPARTMENT

970.403.1437

[SOLUTIONS@STONEAGETOOLS.COM](mailto:SOLUTIONS@STONEAGETOOLS.COM)

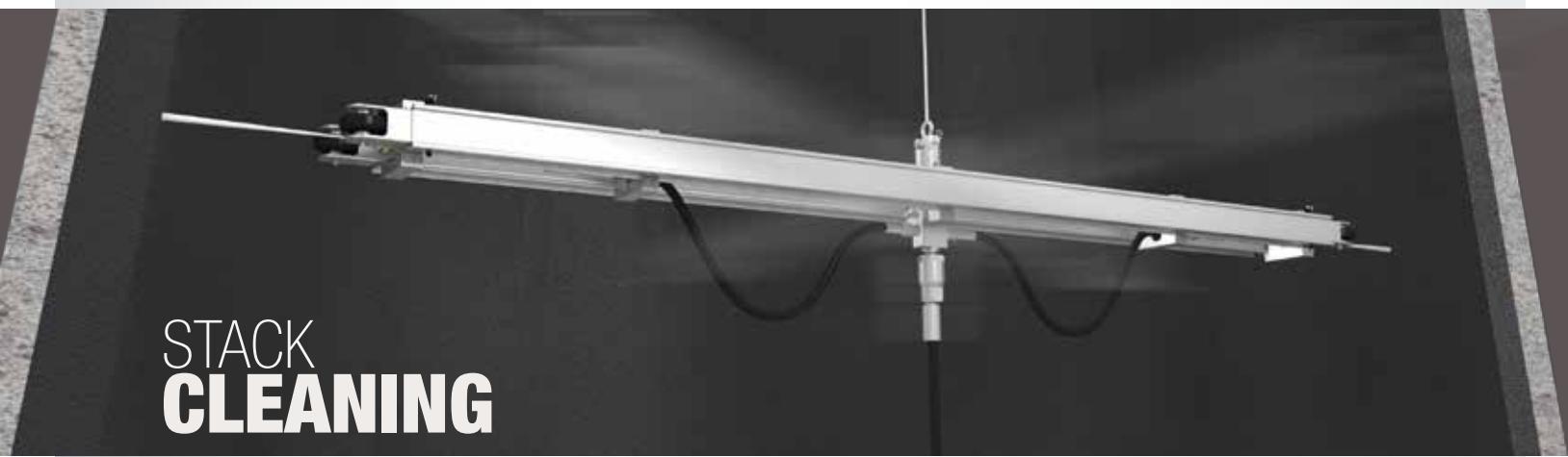
## TUNNEL CLEANING



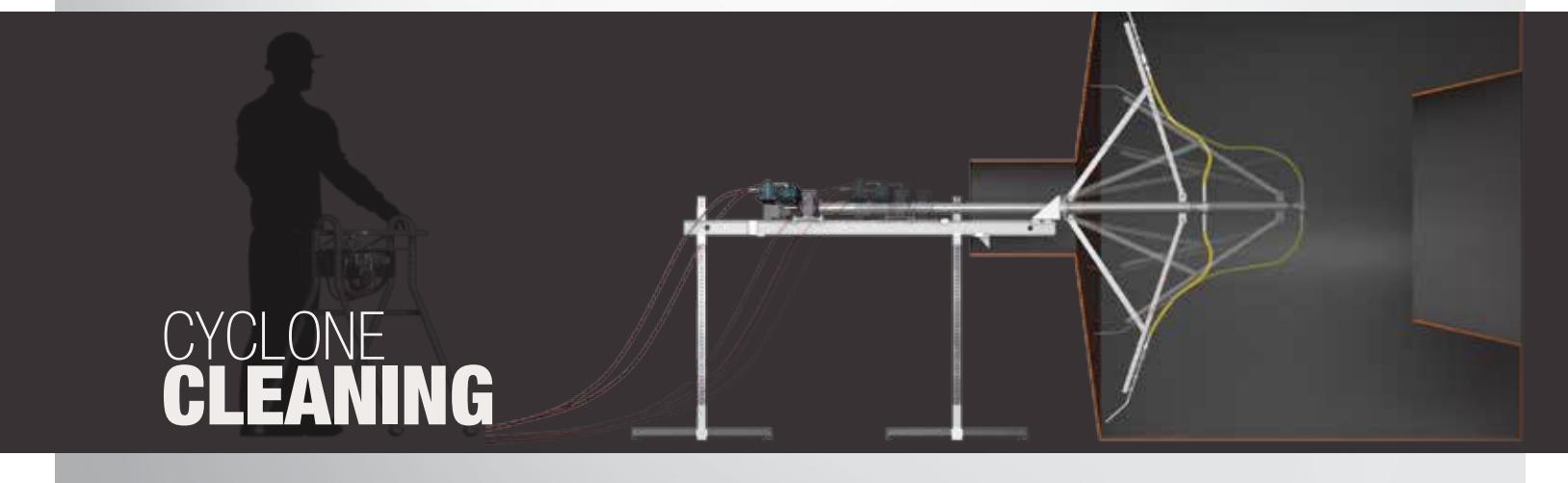
## CONVEYOR CLEANING



## STACK CLEANING



## CYCLONE CLEANING





**! OPERATING WATERBLASTING EQUIPMENT  
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SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# ROTARY SHOTGUN CLEANING

## BARRACUDA®

### Rotary Shotgun Tools for Heavy Deposits

Barracuda self-rotary tools are the industry standard for rotary shotgunning. Excellent for irregular surfaces where an operator using a hand-held tool can more efficiently maneuver. Also used on automated and hands-free equipment.

#### NEW UPGRADES:

- New BC 705 cartridge seal is designed as a drop-in replacement to the BC 505-S cartridge seal for 44k psi Barracuda Shotgun tool
- Field and in-house testing has shown the new cartridge effectively doubles the life of the seal

#### FEATURES:

- Effective shotgunning for a wide range of pressures
- Jet reaction creates rotation—no need for compressed air
- Light weight eases operator fatigue
- Field maintainable and easily rebuilt at a low cost
- Four port heads for thin, harder deposits can be also be configured to two port applications for thicker, softer deposits



Tool Model	Pressure Range	Flow Range	Inlet Connection	Weight	Max Water Temp.
<b>BC-K</b>	2–22k psi 140–1500 bar	4.4–11 gpm 17–42 l/min	9/16 MP	2.7 lb 1.2 kg	160 °F 70 °C
<b>BC-K-P2</b>	5–22k psi 340–1500 bar	4–13 gpm 16–49 l/min	9/16 MP	2.7 lb 1.2 kg	160 °F 70 °C
<b>BC-H9-C</b>	20–40k psi 1400–2800 bar	5–7.4 gpm 19–28 l/min	9/16 HP	2.9 lb 1.3 kg	160 °F 70 °C
<b>BC-H9LF-C</b>	20–40k psi 1400–2800 bar	2.9–4.8 gpm 11–18 l/min	9/16 HP	2.9 lb 1.3 kg	160 °F 70 °C
<b>BC-H9XXLF-C-TI</b>	20–40k psi 1400–2800 bar	1.7–3.1 gpm 6–12 l/min	9/16 HP	3.2 lb 1.45 kg	160 °F 70 °C



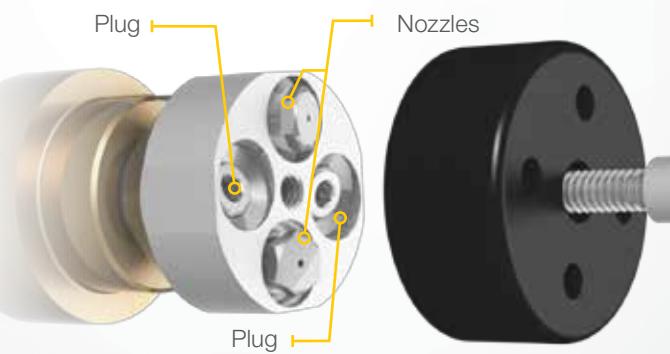
#### BC 705 CARTRIDGE SEAL

Effectively doubles the life of the previous BC 505-S Cartridge Seal. For Barracuda rotary shotgun tools rated up to 44k psi/3000 bar.



#### NOZZLES AND PLUGS

Barracuda tools come in 2-port and 4-port configurations. Generally, two jets deliver more concentrated power for heavy, thick deposits and four jets are ideal for removing thin, hard deposits. It is possible to plug two of the ports on 4-port Barracuda tools. The plugs must always be installed in the ports positioned opposite each other, as indicated in Figure 1.



#### IMPACT RESISTANT SHIELD

Inexpensive and easily replaceable shield protects working parts of the tool

Figure 1. Plugs installed in opposite nozzle ports

#### MAINTENANCE RESOURCES

Tool	Service Kit	Seal Kit	Overhaul Kit	Tool Kit	Lubricant	Manual
<b>BC-K</b>	<b>BC 600</b>	<b>BC 602</b>	<b>BC 610</b>	<b>BC 612</b>	<b>GP 042</b>	<b>PL 514</b>
<b>BC-K-P2</b>	<b>BC 600</b>	<b>BC 602</b>	<b>BC 610</b>	<b>BC 612</b>	<b>GP 042</b>	<b>PL 514</b>
<b>BC-H9-C</b>	<b>BC 600-H9-C</b>	<b>BC 607-H9-C</b>	<b>BC 610-H9-C</b>	<b>BC 612</b>	<b>GP 042</b>	<b>PL 515</b>
<b>BC-H9LF-C</b>	<b>BC 600-H9-C</b>	<b>BC 607-H9-C</b>	<b>BC 610-H9-C</b>	<b>BC 612</b>	<b>GP 042</b>	<b>PL 515</b>
<b>BC-H9XXLF-C-TI</b>	<b>BC 600-H9-C</b>	<b>BC 607-H9-C</b>	<b>BC 610-H9-C-TI</b>	<b>BC 612</b>	<b>GP 042</b>	<b>PL 566</b>



**! OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# ROTARY SHOTGUN CLEANING

## SPITFIRE®

Rotary Shotgun Tools for Thin, Hard Deposits

The Spitfire rotary shotgun tool is designed for cleaning difficult and irregular surfaces where manual shotgun cleaning is required. The extra lightweight Spitfire requires little maintenance, reducing down time and increasing productivity.

### FEATURES:

- Handles a wide range of pressure ratings from 2–22k psi (140–1500 bar)
- Fewer tools to buy to cover all applications and less downtime changing or rebuilding tools
- High speed rotation is excellent for removing thin coatings
- Angled jets allow for broader impact for quicker, more effective cleaning of large surfaces and odd shapes
- Fewer parts and no seals to stock or replace – reduced costs and maintenance downtime
- Short overall tool length and light weight makes for easy handling, reducing operator fatigue
- External shield option protects the tool from damage caused by lateral impacts



Tool Model	Pressure Range	Flow Range	Rotation Speed	Inlet Connection	Weight	Max Water Temperature
SPFR-P8-S/ SPFR-P8-B	5–15k psi 340–1000 bar	2–15 gpm 8–58 l/min	3000–5000 rpm	1/2 NPT	1.5 lb 1.7 lb 0.7 kg (S) 0.8 kg (B)	212 °F 100 °C
SPFR-MP9-S/ SPFR-MP9-B	5–22k psi 340–1500 bar	4–13 gpm 16–49 l/min	3000–5000 rpm	9/16 MP	1.5 lb 1.7 lb 0.7 kg (S) 0.8 kg (B)	250 °F 120 °C





OPERATING WATERBLASTING EQUIPMENT  
CAN BE POTENTIALLY HAZARDOUS.  
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# HYDRO EXCAVATION

**NEW FOR 2017**

## HYDRO-X

### Rotary Hydro Excavation Tools

Hydro Excavation is a safe alternative to access buried utilities by potholing or trenching with high pressure water. StoneAge now has four options available for different applications.

#### FEATURES:

- Angled rotating jet pattern removes more material and safely cleans around utilities (rotary model only)
- Save labor hours and expensive heavy equipment costs
- Avoid risks of costly and dangerous damage to existing utilities
- Replaceable shroud made from UHMW (rotary only)
- ATEX compliant
- Rebuild kits available

**NOW AVAILABLE!**  
ROTARY NOZZLE



Tool Model	Pressure Range	Flow Range	Cone Angle	Inlet Connection	Weight	Diameter	Length
ROTARY NOZZLE	Up to 5k psi 340 bar	3–15 gpm 9–58 l/min	18°	0.5–14 NPT	1.1 lb 0.5 kg	1.75 in. 44 mm	4.2 in. 107 mm



## HXR-300 NOW AVAILABLE

### ROTARY HYDRO EXCAVATION TOOLS

#### REPLACEABLE SHIELD CAP

Made from durable, impact resistant UHMW



#### ANGLED ROTATING JET PATTERN

Outstanding jet quality minimizes undercutting and safely removes material around utilities

#### REPLACEABLE COMPONENTS MADE FROM LONG LIFE CARBIDE STEEL

Allows the HXR-300 to be serviced quickly and inexpensively

## NON-ROTARY HYDRO EXCAVATION TOOLS

HX-101	HX-102	HX-103S	
Single Head Assembly • OCIH Carbide (1)	Double Head Assembly • AP2 Attack Tips (2)	Triple Head Assembly • AP2 Attack Tips (3)	
Maximum Pressure*	Maximum Flow*	Inlet	Weight
5k psi (350 bar)	12 gpm (45 l/min)	1/2 NPT	1.0 lb (0.5 kg)

\*Each assembly is jettied to match pump's pressure and flow.



# EXCHANGER CLEANING

## BANSHEE®

Banshee tube cleaning nozzles are the industry standard for effective tube cleaning. They use high pressure water as a liquid bearing, thereby eliminating ball bearings, seals or lubricant used in conventional rotary tools. Each tool is easily configured to suit any application by choosing from a variety of replaceable heads and inlet options.

### FEATURES:

- Patented liquid bearing design means no bearings, seals, or lubricants to replace
- Stainless steel construction for extreme durability and longevity
- Multiple inlet options & replaceable heads make configurations easy
- Shrouded model keeps head protected and rotating when tool is pushed against a plug

### IDEAL FOR:

- Unplugging, cleaning, and polishing tubes, such as those found in heat exchangers and industrial tube bundles
- Effectively removes thin, hard scale, carbons, coke, and polymers
- Ideal for manual and powered lancing operations



### BANSHEE SPECIFICATIONS 22K PSI (1500 BAR)

	Tube I.D. Range	Max. Pressure	Max. Pressure (BSPP Inlet)	Flow Range	Inlet Connections	Diameter	Length
<b>BN9.5</b>	0.47-0.63 in. 12-16 mm	22k psi 1500 bar	N/A	4.5-8 gpm 17-30 l/min	M7, 1/16 NPT, 1/4 LH or 1/4 RH	0.37 in. 9.5 mm	2.6 in. 65 mm
<b>BN13</b>	0.60-1.0 in. 15-25 mm	22k psi 1500 bar	18k psi 1250 bar	7-10 gpm 27-38 l/min	1/8 NPT, 1/8 BSPP, 1/4 LH, 1/4 RH, 3/8 LH or 3/8 RH	0.50 in. 13 mm	2.9 in. 74 mm
<b>BN15</b>	0.75-1.2 in. 19-30 mm	22k psi 1500 bar	18k psi 1250 bar	8-10 gpm 30-38 l/min	1/8 NPT, 1/8 BSPP, 3/8 LH/RH	0.6 in. 15 mm	3.0 in. 76 mm
<b>BN18</b>	0.87-1.3 in. 22-33 mm	22k psi 1500 bar	20k psi 1400 bar	8-14 gpm 30-53 l/min	1/4 NPT, 1/4 BSPP, 9/16 LH or 9/16 RH	0.69 in. 18 mm	3.8 in. 97 mm
<b>BN24</b>	1.1-2 in. 28-51 mm	22k psi 1500 bar	22k psi 1500 bar	12-25 gpm 45-95 l/min	3/8 NPT, 3/8 BSPP, 9/16 LH or 9/16 RH	0.93 in. 24 mm	5.1 in. 130 mm
<b>BN33</b>	1.5-2.4 in. 38-60 mm	22k psi 1500 bar	15k psi 1000 bar	12-49 gpm 45-190 l/min	1/2 NPT, 1/2 BSPP, or 9/16 MP	1.3 in. 33 mm	6.9 in. 180 mm
<b>BT12</b>	0.60-1.0 in. 15-25 mm	22k psi 1500 bar	N/A	Up to 8.5 gpm 32 l/min	P1, M7, MPL4, MPR4	0.50 in. 13 mm	1.3 in. 33 mm
<b>BT18</b>	0.87-1.3 in. 22-33 mm	22k psi 1500 bar	18k psi 1250 bar	Up to 11 gpm 42 l/min	P1, P2, BSPP2, MPL6, MPR6, MPL4, MPR4	0.69 in. 18 mm	1.5 in. 39 mm
<b>BT25</b>	1.2-3.0 in. 30-76 mm	8-22k psi 550-1500 bar	N/A	8-20 gpm 30-76 l/min	1/8 NPT, 1/4 NPT, 1/4 BSPP, 3/8-28 LH/RH, 9/16-18 LH/RH	1.0 in. 26 mm	1.9 in. 48 mm



## 12 MODELS AVAILABLE

UP TO 40K PSI (2800 BAR)



**BN33**  
1.5-2.4 in.  
I.D. Tubes (38-60 mm)



**BN27-40K**  
1.25-2.0 in. I.D. Tubes (32-51 mm)



**BN24**  
1.1-1.8 in. I.D. Tubes (28-46 mm)



**BN18-40K**  
0.87-1.3 in. I.D. Tubes (22-33 mm)



**BN18**  
0.87-1.3 in. I.D. Tubes (22-33 mm)



**BN15**  
0.75-1.2 in. I.D. Tubes (19-30 mm)



**BN13-40K**  
0.60-1.0 in. I.D. Tubes (15-25 mm)



**BN13-SHROUDED**  
0.60-1.3 in. I.D. Tubes (15-33 mm)



**BN13**  
0.60-1.0 in. I.D. Tubes (15-25 mm)



**BN9.5**  
0.47-0.63 in. I.D. Tubes (12-16 mm)



**NEW! BT25 - EXCELLENT FOR CURVED TUBES**  
1.2-3.0 in. I.D. Tubes (30-76 mm)

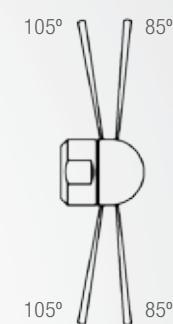


**BT18 - EXCELLENT FOR CURVED TUBES**  
0.87-1.3 in. ID Tubes (22-33 mm)

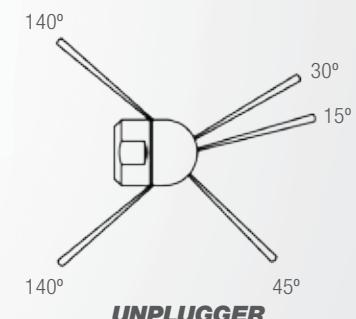


**BT12 - EXCELLENT FOR CURVED TUBES**  
0.60-1.0 in. I.D. Tubes (15-25 mm)

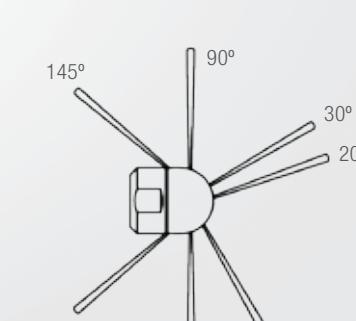
### 3 STANDARD HEAD CONFIGURATIONS



**POLISHER**  
4 PORTS: 2 @ 85°, 2 @ 105°



**UNPLUGGER**  
5 PORTS: 1 @ 15°, 1 @ 30°  
1 @ 45°, 2 @ 145°



**UNIVERSAL**  
7 PORTS: 1 @ 20°, 1 @ 30°  
1 @ 60°, 2 @ 90°, 2 @ 145°

# BANSHEE

## 22K (1500 BAR) HEAD OPTIONS

### BN9.5 HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
10-15K PSI (700-1000 BAR)	BN9.5 042-A	Polisher	4.5-5.5 gpm (17-21 l/min)
	BN9.5 043-A	Unplucker	5-6 gpm (19-23 l/min)
15-22K PSI (1000-1500 BAR)	BN9.5 042-B	Polisher	5-6 gpm (19-23 l/min)
	BN9.5 043-B	Unplucker	5.5-6.5 gpm (21-25 l/min)
	BN9.5 044-1	Universal	7.0-8.0 gpm (27-30 l/min)

### BN13 HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
10-15K PSI (700-1000 BAR)	BN13 042-A	Polisher	7-9 gpm (27-34 l/min)
	BN13 043-A	Unplucker	7-9 gpm (27-34 l/min)
15-22K PSI (1000-1500 BAR)	BN13 044-A	Universal	8-10 gpm (30-38 l/min)
	BN13 042-C	Polisher	7-9 gpm (27-34 l/min)
	BN13 043-C	Unplucker	7-9 gpm (27-34 l/min)
	BN13 044-C	Universal	8-10 gpm (30-38 l/min)

### BN15 HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE	PRESSURE	PART NUMBER	STYLE	FLOW RANGE
10-15K PSI (700-1000 BAR)	BN15 042-A	Polisher	7-9 gpm (27-34 l/min)	15-22K PSI (1000-1500 BAR)	BN15 042-C	Polisher	7-9 gpm (27-34 l/min)
	BN15 043-A	Unplucker	7-9 gpm (27-34 l/min)		BN15 043-C	Unplucker	7-9 gpm (27-34 l/min)
	BN15 044-A	Universal	8-10 gpm (30-38 l/min)		BN15 044-C	Universal	8-10 gpm (30-38 l/min)

### BN18 HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
10-15K PSI (700-1000 BAR)	BN18 042-A	Polisher	11-14 gpm (42-53 l/min)
	BN18 042-B	Polisher	8-10 gpm (30-38 l/min)
	BN18 043-A	Unplucker	11-14 gpm (42-53 l/min)
	BN18 043-B	Unplucker	8-10 gpm (30-38 l/min)
	BN18 044-A	Universal	11-14 gpm (42-53 l/min)
	BN18 044-B	Universal	8-10 gpm (30-38 l/min)
	BN18 042-C	Polisher	11-14 gpm (42-53 l/min)
	BN18 042-D	Polisher	8-10 gpm (30-38 l/min)
	BN18 043-C	Unplucker	11-14 gpm (42-53 l/min)
	BN18 043-D	Unplucker	8-10 gpm (30-38 l/min)
15-22K PSI (1000-1500 BAR)	BN18 044-C	Universal	11-14 gpm (42-53 l/min)



### BN24 HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
10-15K PSI (700-1000 BAR)	BN24 042-A	Polisher	20-25 gpm (76-95 l/min)
	BN24 042-B	Polisher	15-19 gpm (57-72 l/min)
	BN24 042-C	Polisher	12-14 gpm (45-53 l/min)
	BN24 044-A	Universal	20-25 gpm (76-95 l/min)
	BN24 044-B	Universal	15-19 gpm (57-72 l/min)
	BN24 044-C	Universal	12-14 gpm (45-53 l/min)
15-22K PSI (1000-1500 BAR)	BN24 042-D	Polisher	18-21 gpm (68-80 l/min)
	BN24 042-E	Polisher	15-17 gpm (57-64 l/min)
	BN24 042-F	Polisher	12-14 gpm (45-53 l/min)
	BN24 044-D	Universal	18-21 gpm (68-80 l/min)
	BN24 044-E	Universal	15-17 gpm (57-64 l/min)
	BN24 044-F	Universal	12-14 gpm (45-53 l/min)

# BANSHEE

## 40K (2800 BAR) MODELS

### BANSHEE SPECIFICATIONS 40K PSI (2800 BAR)

MODEL	BN13	BN18	BN27
Tube I.D. Range*	0.60-1.0 in. 15-25 mm	0.87-1.3 in. 22-33 mm	1.25-2.0 in. 32-51 mm
Maximum Pressure	40k psi 2800 bar	40k psi 2800 bar	40k psi 2800 bar
Flow Range	4.5-6 gpm 17-23 l/min	5-8.5 gpm 19-32 l/min	5-8.5 gpm 19-32 l/min
Inlet Connections	1/4-28 LH or 3/8-24 LH	3/8-24 LH or M14 LH	9/16-18 LH or M14 LH
Diameter	0.52 in. 13 mm	0.69 in. 18 mm	1.06 in. 27 mm
Length	3.5 in. 89 mm	4.7 in. 120 mm	5.5 in. 140 mm

\* When cleaning 5/8" diameter tubes at 40k psi please contact our Technical Support team for hose specifications.

## ROTARY TOOLS & ACCESSORIES



HOSE CHARTS FOR BANSHEE TOOLS ARE NOW AVAILABLE ON OUR WEBSITE

### BN13-40K

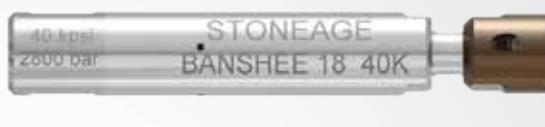
0.60-1.0 in. I.D. Tubes (15-25 mm)



### BN18-40K

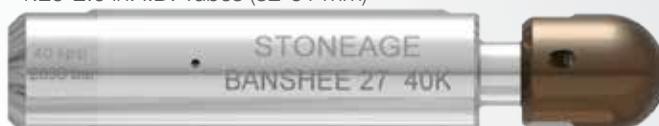
LEFT-HANDED INLET NOW AVAILABLE

0.87-1.3 in. I.D. Tubes (22-33 mm)



### BN27-40K

1.25-2.0 in. I.D. Tubes (32-51 mm)



# BANSHEE

## 40K (2800 BAR) HEAD OPTIONS

### BN13 40K HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
30-40K PSI (2100-2800 BAR)	BN13 442-C	Polisher	5.5-6 gpm 21-23 l/min
	BN13 442-D	Polisher	4.5-5 gpm 17-19 l/min
	BN13 443-C	Unplucker	5.5-6 gpm 21-23 l/min
	BN13 443-D	Unplucker	4.5-5 gpm 17-19 l/min

### IMPORTANT!

All **BANSHEE** tube cleaning tools require the use of a correctly sized open-end wrench to fit the flats provided on the inlet nut when attaching the tool to the lance.

**DO NOT USE A PIPE WRENCH OR PLIERS WITH TEETH**

This can crush and crack the hardened steel body, leading to tool breakage during operation. It is also recommended to flush the tool with WD-40® for storage.

### BN18 40K HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
30-40K PSI (2100-2800 BAR)	BN18 442-A	Polisher	8-8.5 gpm (30-32 l/min)
	BN18 442-B	Polisher	7-7.5 gpm (27-28 l/min)
	BN18 442-C	Polisher	6-6.5 gpm (23-25 l/min)
	BN18 442-D	Polisher	5-5.5 gpm (19-21 l/min)
	BN18 443-A	Unplucker	8-8.5 gpm (30-32 l/min)
	BN18 443-B	Unplucker	7-7.5 gpm (27-28 l/min)
	BN18 443-C	Unplucker	6-6.5 gpm (23-25 l/min)
	BN18 443-D	Unplucker	5-5.5 gpm (19-21 l/min)

### BN27 40K HEAD SELECTION

PRESSURE	PART NUMBER	STYLE	FLOW RANGE
30-40K PSI (2100-2800 BAR)	BN27 442-A	Polisher	8-8.5 gpm (3



**! OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

# CURVED PIPE CLEANING

## 2" BADGER®

Rotary Cleaning for Small Pipes with Elbows

The 2" Badger is a self-rotating tool designed for cleaning 2–4 in. (51–102 mm) pipes with bends and long radius elbows such as U-Tubes and process lines. The latest design includes a spring-loaded pin that ratchets the head to machined edges on the shaft. Therefore, the head can only be removed with a special head removal tool, not while in operation.

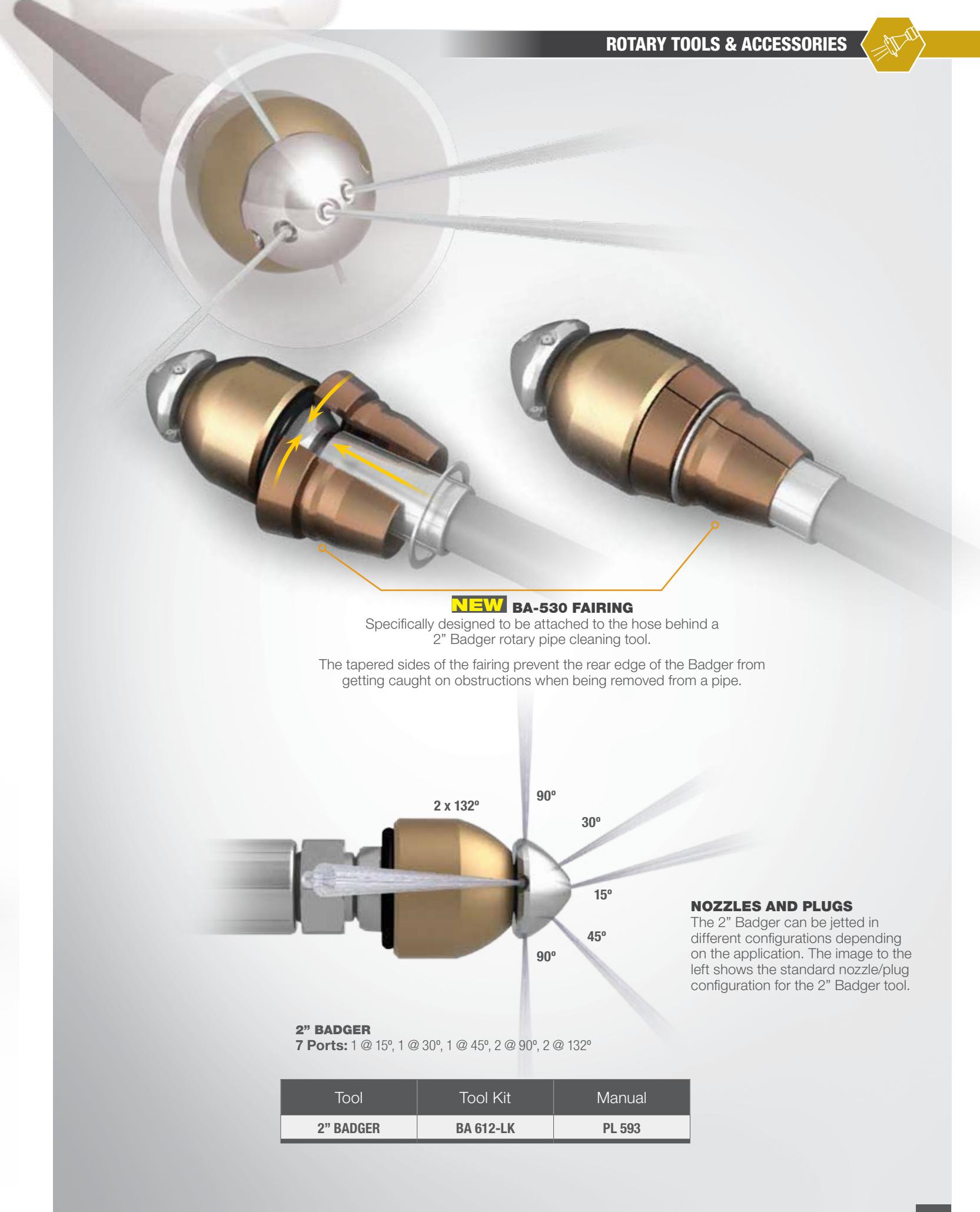
### FEATURES:

- The only self-rotary tool on the market that can navigate 2 in. (50 mm) pipes with bends
- The only tool in the industry with head locking technology for increased safety
- Multiple jetting options allow the tool to be optimized for a variety of pump pressures and flows. Unplug, polish, or run longer lines based on jetting
- Pair with the ABX-PRO for hands-free mole lining



**NEW  
BA-530 FAIRING**

Tool Model	Pressure Range	Flow Range	Inlet Connection	Weight	Max Water Temperature
<b>BA-LK-P4</b> <b>BA-LK-BSP4</b>	2–15k psi 140–1000 bar	3–20 gpm 11–76 l/min	1/4 NPT or 1/4 BSPP	0.45 lb 0.20 kg	250 °F 120 °C
<b>BA-LK-MP9L</b> <b>BA-LK-MP9R</b>	12–22k psi 830–1500 bar	3–15 gpm 11–57 l/min	9/16 MP or M24	0.45 lb 0.20 kg	250 °F 120 °C



**2" BADGER**  
7 Ports: 1 @ 15°, 1 @ 30°, 1 @ 45°, 2 @ 90°, 2 @ 132°

Tool	Tool Kit	Manual
<b>2" BADGER</b>	<b>BA 612-LK</b>	<b>PL 593</b>

**NOZZLES AND PLUGS**  
The 2" Badger can be jetted in different configurations depending on the application. The image to the left shows the standard nozzle/plug configuration for the 2" Badger tool.



# CURVED PIPE CLEANING

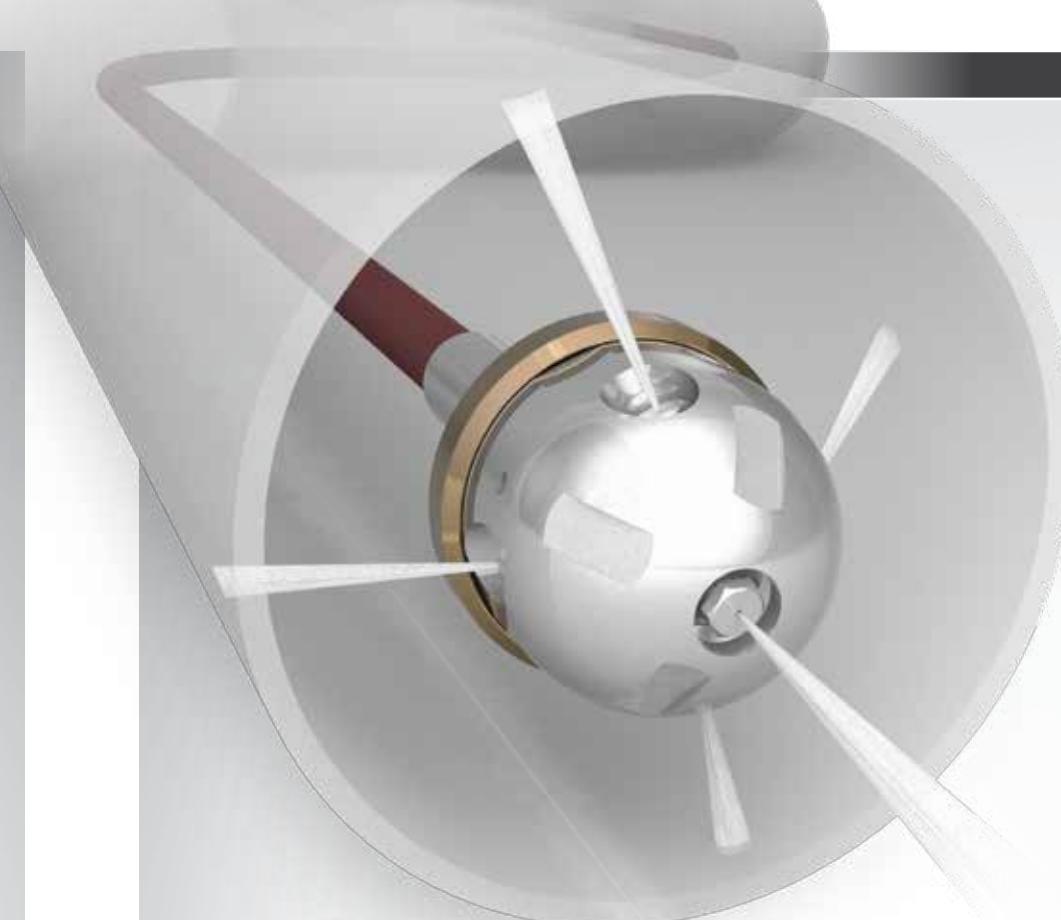
## 4" BADGER®

Rotary Cleaning for Medium Pipes with Elbows

The 4" Badger self-rotary tool makes cleaning pipes with elbows easy, navigating 4 in. (102 mm) bends with controlled rotation which is important for efficiently cleaning larger pipes. The operator can choose between two rotation speeds by selecting fast or slow viscous fluid.

### FEATURES:

- Different jetting configurations allow for increased or decreased pull and forward hitting power
- Navigates elbows as small as 4 in. (102 mm)
- Self-rotary, speed control provides complete internal coverage, while speed control provides optimum jet delivery
- Two speeds to choose from to maximize cleaning. Choose slower speeds for hard to clean or plugged pipes, and faster speeds for polishing easy to clean pipes with a single tool
- Multiple jetting options optimize the tool for a variety of pumps pressures and flows. Unplug, polish, or run longer lines based on jetting
- Designed to pair with the AutoBox ABX-500 hose handling system for hands-free pipe cleaning

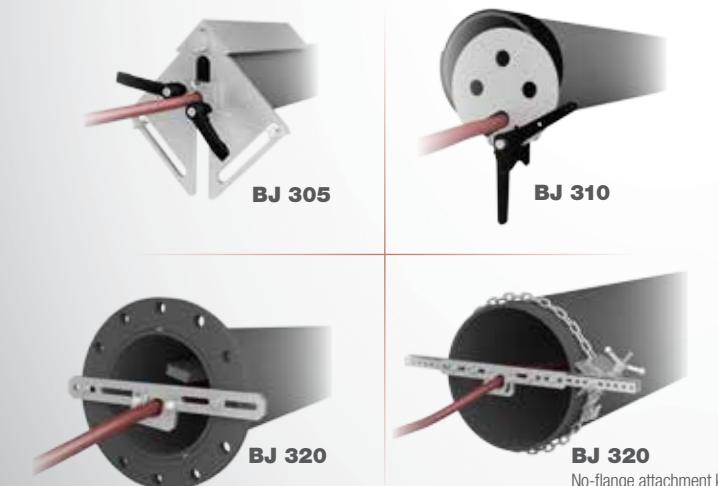


## 4OK

### CURVED PIPE CLEANING TOOL

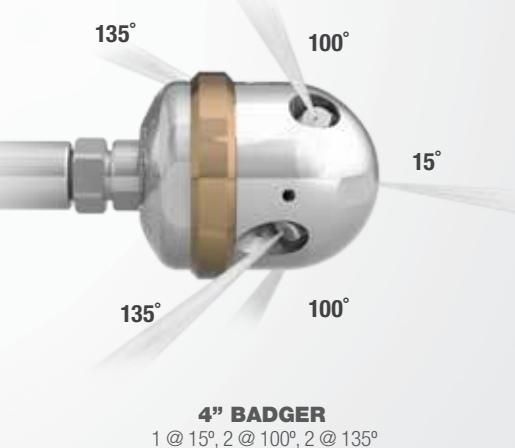
### BACKOUT PREVENTERS

Increase 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.



### NOZZLES AND PLUGS

The 4" Badger can be jetted in different configurations depending on the application. The image below shows the standard nozzle/plug configuration for the 4" Badger tool.



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight
BA-P6, BA-BSP6	2–15k psi 140–1000 bar	13–30 gpm 49–110 l/min	3/8 NPT, 3/8 BSPP	20–100 rpm (Slow Fluid) 75–250 rpm (Fast Fluid)	3.0 lbs 1.4 kg
BA-TM12	12–22k psi 830–1500 bar	12–25 gpm 45–95 l/min	3/4 Type M Male	20–100 rpm (Slow Fluid) 75–250 rpm (Fast Fluid)	3.0 lbs 1.4 kg
BA-H6	43.5k psi 3000 bar	4.5–12 gpm 17–45.5 l/min	3/8 HP Female	100–400 rpm	4.0 lbs 1.8 kg

### MAINTENANCE RESOURCES

Tool	Rotation Speed	Seal Kit	Service Kit	Overhaul Kit	Disk Kit	Tool Kit	Lubricant	Manual
BA-P6/ BA-BSP6	Slow	BA 602	BA 600-S	BA 610-S	BA 604	BA 612	BJ 048-S	PL 501
	Fast	BA 602	BA 600-F	BA 610-F	BA 604	BA 612	BJ 048-F	PL 501
BA-TM12	Slow	BA 602-TM12	BA 600-TM12-S	BA 610-TM12-S	BA 604	BA 612	BJ 048-S	PL 501
	Fast	BA 602-TM12	BA 600-TM12-F	BA 610-TM12-S	BA 604	BA 612	BJ 048-F	PL 501



**! OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# CURVED PIPE CLEANING

## 6" BADGER®

Rotary Cleaning for Large Pipes with Elbows

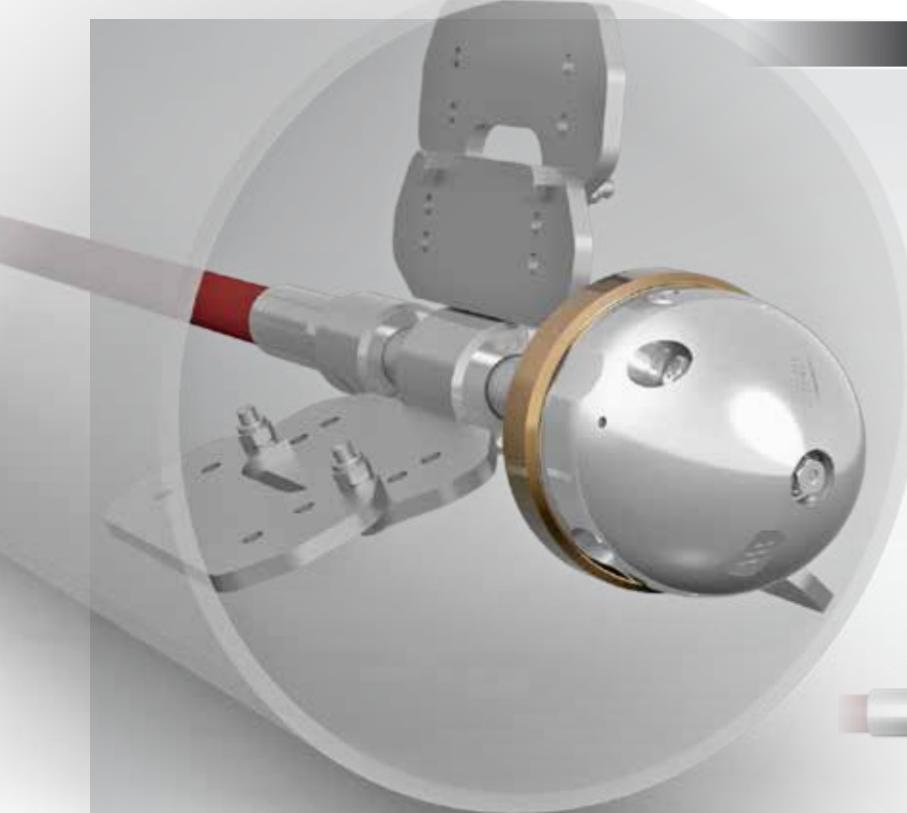
The 6" Badger self-rotary tool features adjustable speed control which allows operators to meet the demands of the task at hand – slower rotational speeds for tough deposits and plugs, faster rotation for easier jobs or polishing.

### FEATURES:

- Only rotary pipe cleaning tool on the market with adjustable speed control for fine-tuning to specific requirements
- Different jetting configurations allow for more or less pull and forward hitting power
- Navigates elbows as small as 6 in. (152 mm)
- Speed controlled rotary tools provide complete internal coverage, while providing optimum jet delivery
- Maximize cleaning by choosing slower speeds for hard to clean or plugged pipes and faster speeds for polishing easy to clean pipes with a single tool
- Optimize the tool for a variety of pumps pressures and flows with multiple jetting options
- Pair with the ABX-500 for hands-free pipe cleaning

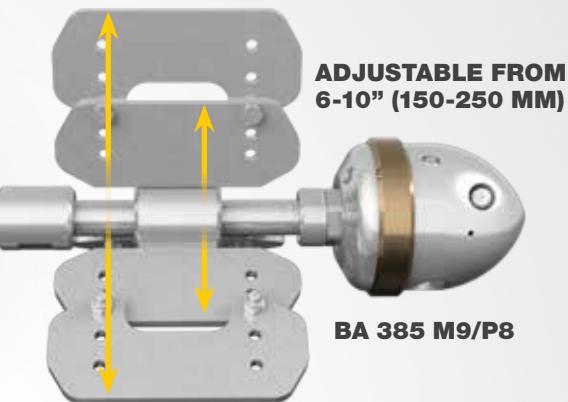


Tool Model	Pressure Range	Flow Range	Rotation Speed	Inlet Connection	Weight	Max Operating Temperature
BA-MP9/BA-M24	12–22k psi 840–1500 bar	14–43 gpm 53–163 l/min	50–300 rpm (Adjustable)	9/16 MP, M24	8.0 lbs 3.6 kg	250 °F 120 °C
BA-P8	2–15k psi 140–1000 bar	15–55 gpm 57–208 l/min	50–300 rpm (Adjustable)	1/2 NPT	8.0 lbs 3.6 kg	250 °F 120 °C



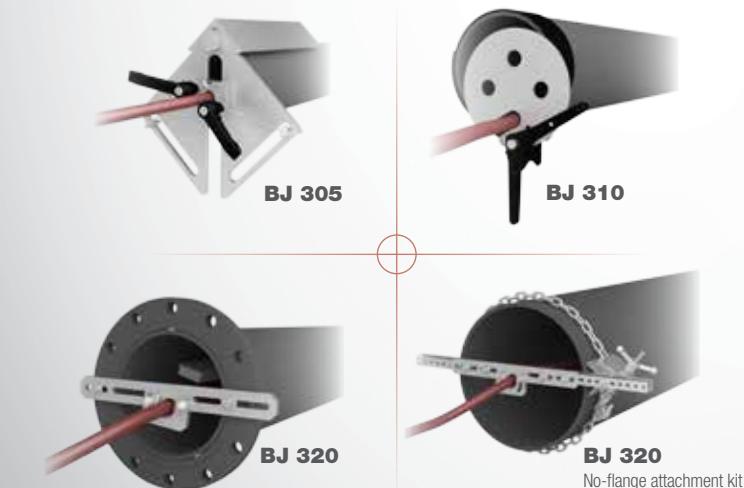
### OPTIONAL CENTRALIZERS

A centralizer helps to protect the tool as it passes through the pipe and balances jet standoff distance for more consistent cleaning. In cases where pipe size is more than 1.5 times the diameter of the tool, a centralizer is an important safety device, preventing the tool from turning around and thrusting backwards out of the pipe.



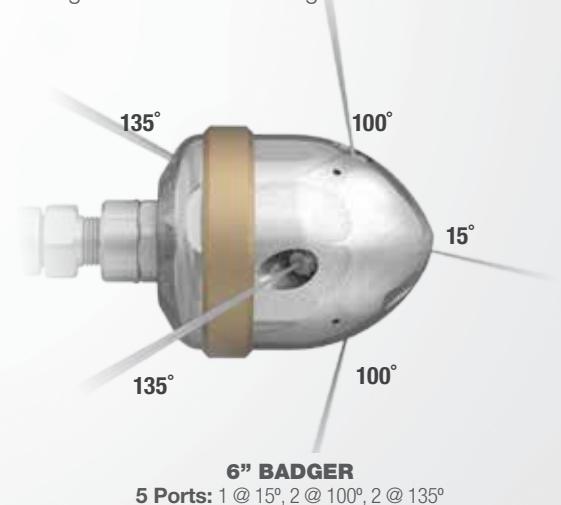
### BACKOUT PREVENTERS

Increase 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.



### NOZZLES AND PLUGS

The 6" Badger can be jetted in different configurations depending on the application. The image below shows the standard nozzle/plug configuration for the 6" Badger tool.



### MAINTENANCE RESOURCES

Tool	Seal Kit	Service Kit	Overhaul Kit	Disk Kit	Tool Kit	Lubricant	Manual
BA-P8	BA 602-P8/MP9	BA 600-P8/MP9	BA 610-P8/M9	BA 606	BA 612-P8/MP9	BJ 048-F	PL 503
BA-M24	BA 602-P8/MP9	BA 600-P8/MP9	BA 610-P8/M9	BA 606	BA 612-P8/MP9	BJ 048-F	PL 503
BA-MP9	BA 602-P8/MP9	BA 600-P8/MP9	BA 610-P8/M9	BA 606	BA 612-P8/MP9	BJ 048-F	PL 503



**OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

# CURVED PIPE CLEANING

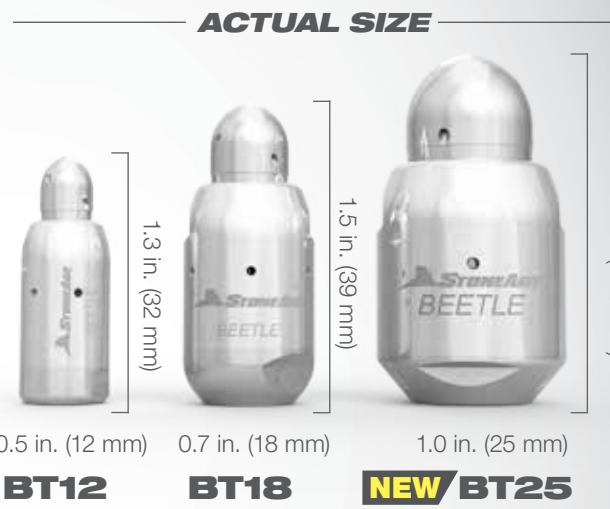
## BEETLE™ BT12, BT18, BT25

For cleaning small, curved tubes, pipes and drains

The small diameter and short length of the Beetle models make them ideal for cleaning process piping, drain lines, u-tube bundles and other small I.D. tubes with bends and elbows that may have been inaccessible in the past.

### FEATURES:

- Navigates tight curves in small diameter pipes
- Low cost, low maintenance design
- Easy to pair with automated flex lance machines



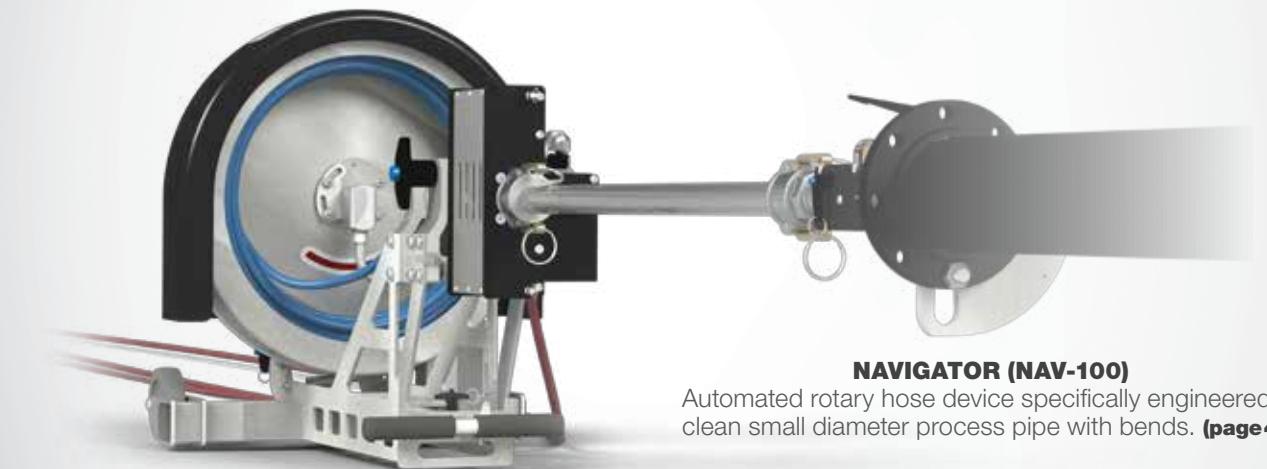
	BT12	BT18	BT25
TUBE I.D. RANGE	0.6–1.0 in. 15–25 mm	0.9–1.3 in. 22–33 mm	1.2–3.0 in. 30–76 mm
PRESSURE RANGE	10–22k psi 700–1500 bar	10–22k psi 700–1500 bar	8–22k psi 550–1500 bar
FLOW RANGE	6.5–8.5 gpm 25–32 l/min	8.5–11 gpm 32–42 l/min	8–20 gpm 30–76 l/min
INLET CONNECTIONS	P1, M7, MP4L, MP4R	P1, P2, BSPP2, MP6L, MP6R, MP4L, MP4R	1/8 NPT, 1/4 NPT, 1/4 BSPP, 3/8–28 LH/RH, 9/16–18 LH/RH
DIAMETER	0.5 in. 12 mm	0.7 in. 18 mm	1.0 in. 26 mm
LENGTH	1.3 in. 32 mm	1.5 in. 39 mm	1.9 in. 48 mm

*"Lines we've only been able to poke holes in are draining like no one has seen in over 20 years."*

**WATERBLAST CONTRACTOR,  
LOUISIANA**

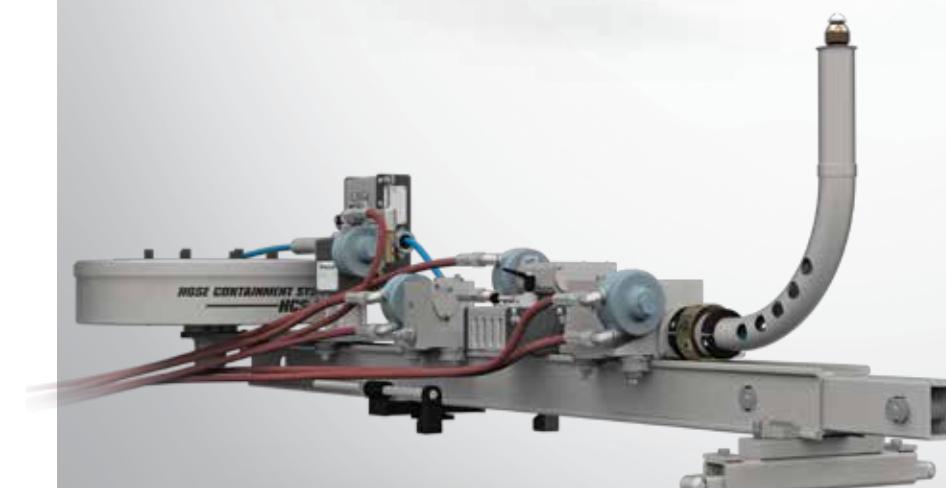


**PAIR THE BEETLE WITH STONEAGE'S  
AUTOMATED CLEANING TOOLS FOR  
OPTIMUM RESULTS**



**NAVIGATOR (NAV-100)**

Automated rotary hose device specifically engineered to clean small diameter process pipe with bends. [\(page 40\)](#)



**BOILER TUBE CLEANER (BTC)**

Cleans radial tubes found in the mud and steam drums of package boilers. [\(page 58\)](#)



**AUTOBOX ABX-PRO**

Hose feed tractor engineered with safety, portability and quick set-up in mind. [\(page 36\)](#)

# SPECIALTY HIGH FLOW TOOLS

**NEW  
AVAILABLE NOW**

## SPEED CONTROLLED SWIVEL (SCS)

The new StoneAge SCS High Flow Tank Cleaner has been engineered to deliver high flow and controlled rotation for optimal cleaning of medium to large tanks and vessels.

**The SCS has a unique speed controlled swivel that allows the operator to adjust rotation speed from 5–50 rpm while delivering up to 300 gpm (1136 lpm).**

This combination of high flow and slow rotation is ideal for removing difficult materials such as coke or refractory. The SCS High Flow Tank Cleaner can be customized with several head options to adapt for large pipe cleaning, tunnel cleaning or stack cleaning. We also offer newly designed high flow nozzles with unique flow straighteners to increase the precision and power of the jets.

Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight
<b>SCS-100</b>	10–22k psi 690–1500 bar	10–300 gpm 151–1136 lpm	1in MP (MP16), 1in NPT (P16), 1.25in NPT (P20)	5–50 rpm	12lbs (5 kg) Swivel only, no head



**NEW  
AVAILABLE NOW**

## 1.25 HIGH FLOW HOSE

The 1.25 hose is useful for flow rates above 100 gpm (379 lpm) and up to 200 gpm (757 lpm), either as hose to route up structure or to feed a 2D or 3D tool, where running two 1 in. (25mm) hoses in parallel is difficult or impossible. The 1.25 I.D. hose is rated to 10,000 psi (690 bar) waterblast working pressure and is available in lengths up to 200 ft (61m).

The 1.25 hose replaces the need to run 2 X 1 in. (25mm) hoses in parallel to manage pressure loss.

### Comparison of pressure loss 100 ft (30.5m) length:

Flow Rate	1 X 1 in. (25mm) Hose	1 X 1.25 Hose	2 X 1 in. (25mm) Hoses in parallel
100 gpm (379 lpm)	356 psi (25 bar) loss	117 psi (8 bar) loss	90 psi (6 bar) loss
150 gpm (568 lpm)	801 psi (55 bar) loss	262 psi (18 bar) loss	200 (14 bar) psi loss
200 gpm (757 lpm)	1424 psi (98 bar) loss	467 psi (32 bar) loss	356 psi (25 bar) loss



# SPECIALTY HIGH FLOW TOOLS

## TORUS® TR-200

### High Flow 3D Tank and Vessel Cleaning

The Torus TR-200 is the industry's most powerful 3-D tool. It is capable of delivering flows up to 220 gpm (830 l/min) with minimal pressure loss. Applying higher flows allows contractors to remove thicker deposits and deliver longer and harder hitting jets from further distances. This is ideal for cleaning large tanks, removing coke deposits, and other hard to handle applications and materials.

#### FEATURES:

- Small entry diameter and light weight enable easy transport, setup, storage, and access to more tanks and vessels
- If the arms hit an internal obstruction while in operation, the Torus TR-200 simply stops rotating without damaging the gear mechanism
- Side by side field trials prove that the Torus TR-200 experiences less pressure loss than competitive tools on the market – less pressure loss equals more power delivered to the cleaning surface and greater productivity
- Positioning devices and extensions help adapt the Torus TR-200 to specific needs

Tool Model	Pressure Range	Flow Range	Cycle Time	Inlet Connection	Rotation Speed	Weight
<b>TR-200</b>	8–15k psi 550–1000 bar	50–220 gpm 190–830 l/min	10–88 minutes	P16 (up to 12k psi MAWP) MP16 (up to 15k psi MAWP)	Adjustable	100 lb 45 kg



## 1.25 HOSE STORAGE REEL

The 1.25 Hose Reels allow precise, controlled feed rates down to 4 in. (102mm) per minute for raising and lowering a 2D tool, and for positioning a 3D tool. They can also be used in line cleaning to feed and retract a high flow 2D tools as well.

It is possible to measure and display amount of hose fed out for precise positioning. It can lift or pull up to 1500 lbs. (680 kg) pull force.

The 1.25 Hose Reels can be built to hold up to 150 ft. (46m) of capacity (hose length).





**! OPERATING WATERBLASTING EQUIPMENT CAN BE POTENTIALLY HAZARDOUS.**  
SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION

# STRAIGHT PIPE CLEANING

## BJV™

### Rotary Cleaning for Straight Pipes

The BJV family is our most versatile line of pipe cleaning tools, designed for the widest range of configurations. A variety of head choices allow for pulling ring connections, customized porting, and multiple jetting options. Different viscous fluid options give operators the ability to change the rotation speed for hard or easy applications. Can be used with a wide range of centralizers and backout preventers for added safety.

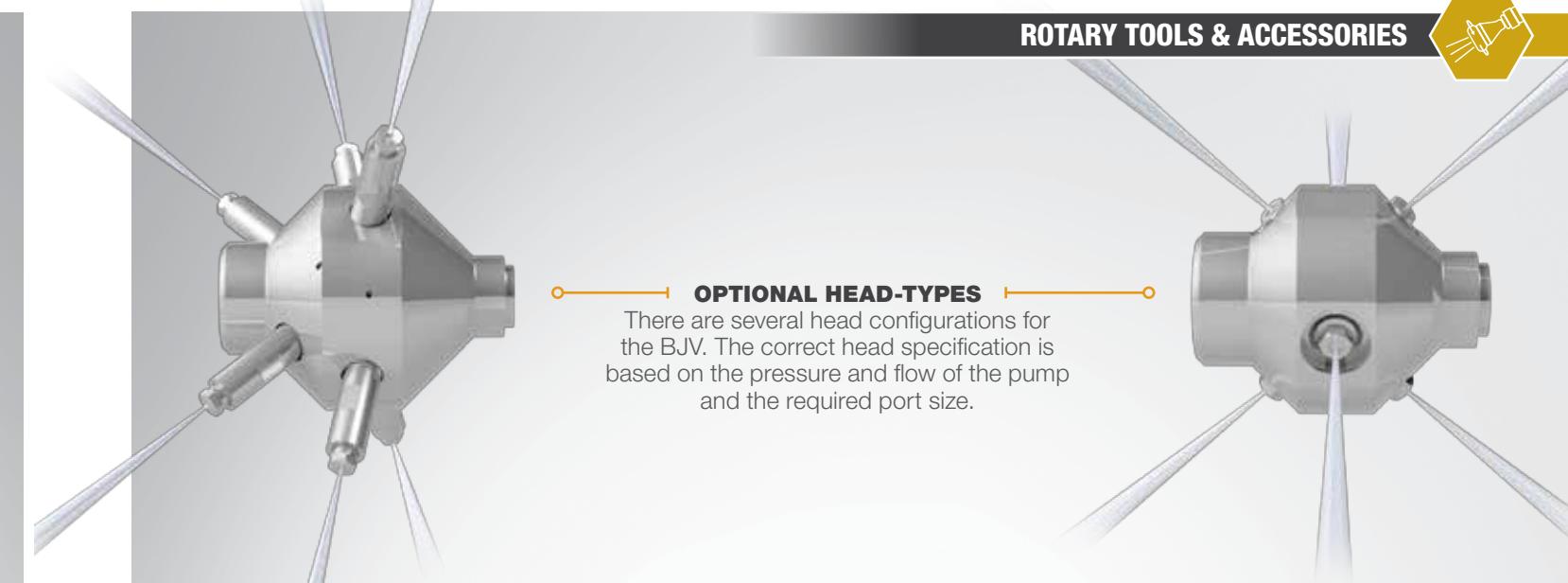
BJV tools are also highly effective tank and stack cleaners.

#### FEATURES:

- Clean 6 in. (152 mm) pipes to 15 ft (4.5 m) diameter tanks with simple modifications
- Interchangeable heads allow the tool to be used on any type of pump
- Multiple head options to allow for flush mounted nozzles, extension arms, plugs, and pulling rings
- Simple nozzle changes allow operators to configure for many cleaning applications
- Easy to pair with AutoBox ABX-500 for hands-free pipe cleaning



Tool Model	Pressure Range	Flow Range	Rotation Speed	Inlet Connection	Weight	Max Water Temperature
BJV-P16	2-10k psi 140-700 bar	20-200 gpm 76-757 l/min	20-80 rpm (Slow Fluid) 50-200 rpm (Fast Fluid)	1 NPT	9.2 lbs 4.2 kg	160 °F 70 °C
BJV-P12	2-15k psi 140-1000 bar	12-100 gpm 45-380 l/min	20-80 rpm (Slow Fluid) 40-200 rpm (Fast Fluid)	3/4 NPT	8.6 lbs 3.9 kg	160 °F 70 °C
BJV-M24	2-22k psi 140-1500 bar	12-100 gpm 45-380 l/min	20-80 rpm (Slow Fluid) 40-200 rpm (Fast Fluid)	M24	9.0 lbs 4.1 kg	160 °F 70 °C
BJV-MP12	2-22k psi 140-1500 bar	10-60 gpm 38-230 l/min	20-50 rpm (Slow Fluid) 70-300 rpm (Fast Fluid)	3/4 MP	9.4 lbs 4.3 kg	160 °F 70 °C
BJV-H9	20-40k psi 1400-2800 bar	3.4-20 gpm 13-76 l/min	20-60 rpm (Slow Fluid) 90-250 rpm (Fast Fluid)	9/16 HP	9.3 lbs 4.4 kg	160 °F 70 °C



**OPTIONAL HEAD-TYPES**  
There are several head configurations for the BJV. The correct head specification is based on the pressure and flow of the pump and the required port size.

#### BJV HEAD SPECIFICATIONS

	BJV-P16	BJV-P12	BJV-M24	BJV-MP12	BJV-H9
<b>STANDARD HEAD</b>	<b>BJ 041-P8-RX</b>	<b>BJ 044-P4-RX</b>	<b>BJ 144-P4-RX</b>	<b>BJ 144-P4-RX</b>	<b>BJ 444-S6-RX</b>
<b>DIAMETER</b>	3.5 in. 89 mm	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm
<b>NOZZLES</b>	6 x <b>OC8</b>	6 or 7 x <b>AP4</b>	6 or 7 x <b>AP4</b>	6 or 7 x <b>AP4</b>	6, 7 or 8 x <b>OS6</b>
<b>HEAD WEIGHT</b>	4.8 lb 2.2 kg	3.3 lb 1.5 kg	3.3 lb 1.5 kg	4.5 lb 2.0 kg	3.3 lb 1.5 kg
<b>EXTENSION HEAD</b>	<b>BJ 041-P12-RX</b>	<b>BJ 041-P8-RX</b>	<b>BJ 145-G12-RX</b>	<b>BJ 145-G12-RX</b>	<b>BJ 441-G9-RX</b>
<b>DIAMETER</b>	3.5 in. 89 mm	3.5 in. 89 mm	3.5 in. 89 mm	3.5 in. 89 mm	3.5 in. 89 mm
<b>EXTENSION PORTS</b>	6 x 3/4 NPT	6 x 1/2 NPT	6 x G12	6 x G12	6 x G9
<b>HEAD WEIGHT</b>	4.6 lb 2.1 kg	4.8 lb 2.2 kg	4.5 lb 2.0 kg	5.2 lb 2.4 kg	5.8 lb 2.6 kg

#### BJV HEAD SELECTION

BJV-P12					
OFFSET		R60		R35	
PRESSURE	10k psi 700 bar	13-25 gpm	49-95 l/min	22-39 gpm	83-150 l/min
	15k psi 1000 bar	12-21 gpm	45-79 l/min	22-39 gpm	83-150 l/min
BJV-P16					
OFFSET		R20		R12	
PRESSURE	10k psi 700 bar	50-85 gpm	190-320 l/min	85-120 gpm	320-450 l/min
	15k psi 1000 bar	12-21 gpm	45-79 l/min	22-39 gpm	83-150 l/min
BJV-MP12					
OFFSET		R60		R35	
PRESSURE	22k psi 1500 bar	10-15 gpm	38-57 l/min	15-24 gpm	57-91 l/min
	30k psi 2100 bar	12-21 gpm	45-79 l/min	22-39 gpm	83-150 l/min
BJV-M24					
OFFSET		R60		R35	
PRESSURE	15k psi 1000 bar	12-21 gpm	45-79 l/min	22-39 gpm	83-150 l/min
	22k psi 1500 bar	12-20 gpm	45-76 l/min	21-34 gpm	45-79 l/min
BJV-H9					
OFFSET		R70		R40	
PRESSURE	30k psi 2100 bar	3.9-6.7 gpm	15-25 l/min	6.7-12 gpm	25-45 l/min
	35k psi 2400 bar	3.6-6.2 gpm	14-24 l/min	6.4-11 gpm	24-42 l/min
	40k psi 2800 bar	3.4-5.8 gpm	3-22 l/min	5.8-10 gpm	22-39 l/min



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SEE PAGE 121 FOR IMPORTANT SAFETY INFORMATION**

# STRAIGHT PIPE CLEANING

## BJV CENTRALIZERS

Centering Devices for Any Application



### BJ-070 SKID STYLE

Utilizes interchangeable plastic runners which can be easily replaced. Works well in elbows and can effectively clean up to 12 in. (305 mm) diameter pipes and works with all BJV models.

**Tool not included.**

### Skid Sizes (Diameter)

<b>BJ 070-6</b>	6 in. 150 mm
<b>BJ 070-8</b>	8 in. 200 mm
<b>BJ 070-10</b>	10 in. 250 mm
<b>BJ 070-12</b>	12 in. 300 mm



### BJ-286 CENTRALIZER

Designed for straight pipe runs only, these six-wheel centralizers feature an adjustable, scissor-style aluminum frame and tough plastic wheels. They are compatible with the entire BJV line of rotary tools.

**Tool not included.**



### BJ-288 FOR PIPES WITH BENDS

With adjustable, telescopic steel legs and tough plastic wheels, these eight-wheel centralizers are designed to travel through elbows easily and are compatible with the entire BJV line of rotary tools.

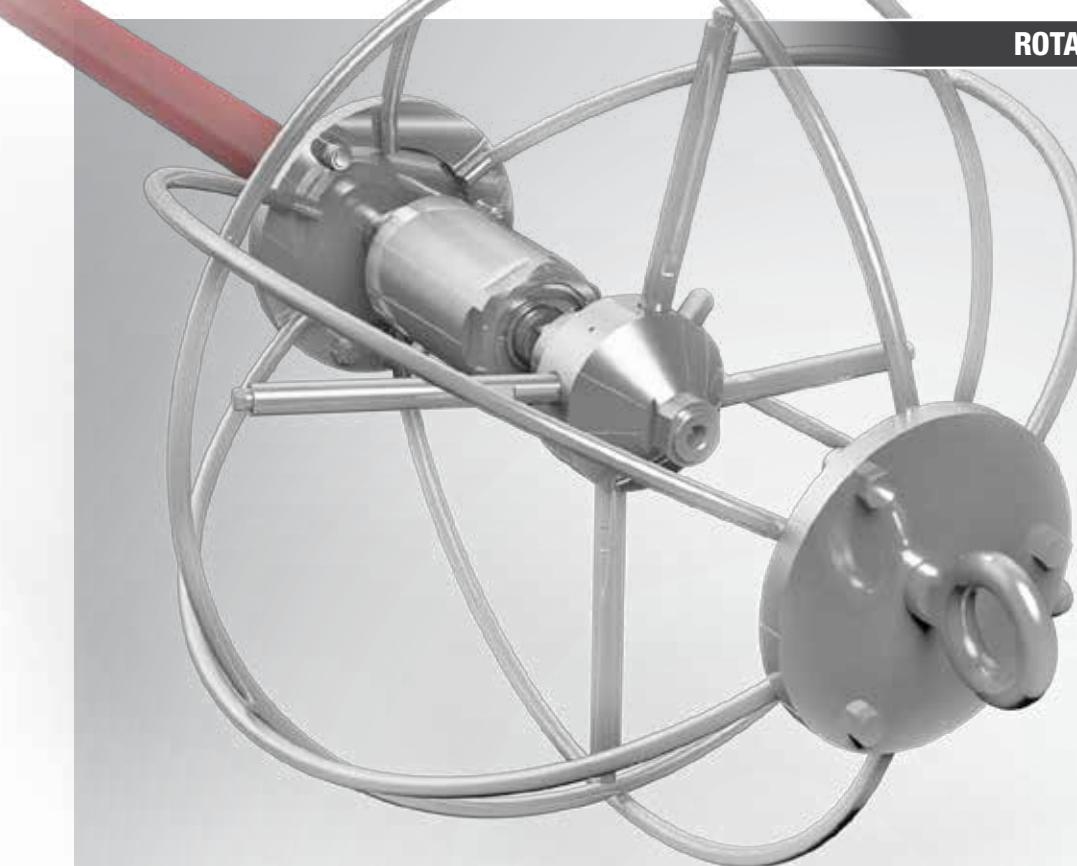
**Tool not included.**

### Centralizer Sizes (Diameter)

		Weight
<b>BJ 286-S</b>	9–18 in. 230–460 mm	20 lb 9 kg
<b>BJ 286-M</b>	13–40 in. 330–1000 mm	32 lb 15 kg
<b>BJ 286-L</b>	16–60 in. 410–1500 mm	40 lb 18 kg

### Centralizer Sizes (Diameter)

		Weight
<b>BJ 288-S</b>	16–21 in. 410–530 mm	12 lb 5.5 kg
<b>BJ 288-M</b>	22–29 in. 560–740 mm	13 lb 5.9 kg
<b>BJ 288-L</b>	30–37 in. 770–940 mm	16 lb 7.3 kg



## CAGE-STYLE CENTRALIZERS

We recommend using stainless steel centralizers when negotiating complex piping arrangements and removing built-up debris while maintaining jet rotation.

### BJ 408-MP12/H9 BJ 408-P12/M24



Different inlet plates are available for all models.

### BJ 100-SS BJ 100-SS-MP



Different collar sizes are available for all models.

Part ID	BJ 408-MP12/H9	BJ 408-P12/M24*	BJ 100-SS	BJ 100-SS-MP
<b>DIAMETER</b>	12 in. 300 mm	12 in. 300 mm	20 in. 510 mm	20 in. 510 mm
<b>LENGTH</b>	20 in. 510 mm	20 in. 510 mm	24 in. 610 mm	24 in. 610 mm
<b>WEIGHT</b>	10 lb 4.5 kg	10 lb 4.5 kg	11 lb 5.0 kg	11 lb 5.0 kg

\*Requires specified extension nipple on the inlet



# STRAIGHT PIPE CLEANING

## RAPTOR™

### Rotary Cleaning for Straight Pipes

The Raptor 2-D self-rotating tool is used to clean process drains, totes, closed head drums, water well screens, ducts, and exhaust stacks.

Combined with a centralizer, it cleans pipes from 3–12 in. (76–305 mm) in diameter and can clean straight tubes as small as 2.25 in. (57 mm) in diameter.

The Raptor uses viscous fluid speed control and operates with 2, 4, or 6 jets in balance. We recommend using a centralizer to protect the head and improve jet action on the wall being cleaned.

#### FEATURES:

- High flow range aids in removing thick, tough deposits
- Controlled rotation for longer jet dwell times for difficult deposits
- Multiple jetting options allows for fine tuning heads to optimize cleaning
- Optional pull ring connection aids in jobs where tool needs to be pulled through the pipe
- Multiple head options available
- Optional entering devices available



Tool Model	Pressure Range	Flow Range	Rotation Speed	Inlet Connection	Length	Weight
RPT	Up to 22k psi 1500 bar	Up to 60 gpm 230 l/min	15-60 rpm (Slow Fluid) 50-250 rpm (Fast Fluid)	1/2 NPT, 9/16 MP or M24	9.5 in. 240 mm	5.5 lbs 2.5 kg

**RPT 070**  
For 4", 5", 6", 8", 10" and 12" pipes.

**RPT 075**  
For 3" or 4.5" pipes.

**OPTIONAL CENTRALIZERS**  
A centralizer helps to protect the tool as it passes through the pipe and balances jet standoff distance for more consistent cleaning. In cases where the pipe size is more than 1.5 times the diameter of the tool, a centralizer is an important safety device, preventing the tool from turning around and thrusting backwards out of the pipe.

**RAPTOR HEAD SPECIFICATIONS**

HEAD	RPT 043-P2-6	RPT 044-P4-6
Diameter	2.0 in. 51 mm	2.5 in. 64 mm
Nozzles	6 or 7 x AP2	6 x AP4

**RAPTOR HEAD SELECTION**

PRESSURE	Head Offset	R30	R18	R11
	5k psi 350 bar	10-23 gpm 38-87 l/min	16-38 gpm 60-140 l/min	25-60 gpm 95-230 l/min
10k psi 700 bar	10-18 gpm 38-68 l/min	15-31 gpm 57-120 l/min	25-51 gpm 95-190 l/min	
15k psi 1000 bar	10-17 gpm 38-64 l/min	16-28 gpm 60-110 l/min	26-47 gpm 98-180 l/min	
22k psi 1500 bar	10-16 gpm 38-60 l/min	17-26 gpm 64-100 l/min	27-43 gpm 100-160 l/min	



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# STRAIGHT PIPE CLEANING

## GOPHER™

Speed Controlled Rotary Cleaning for Tubes  
2–6 Inches (51–152 mm) in Diameter

The Gopher self-rotary tool is ideal for cleaning evaporator tubes and a variety of process lines. It is ideal for cutting through coke, polymers, coatings and latex. The Gopher is offered in two pressure ranges up to 40,000 psi (2800 bar).

### FEATURES:

- Self-rotary, speed control provides complete internal coverage while speed control provides optimum jet delivery
- Two head options available: 7 port unplugging option for maximum forward hitting power and a 6 port polishing head for IRIS inspection polishing
- Multiple jetting configurations means the same tool can be re-jetted to match a wide variety of cleaning applications—great for when you need more pulling force or forward hitting power



Tool Model	Pressure Range	Flow Range	Inlet Connection	Rotation Speed	Weight	Max Operating Temperature
<b>GO-MP9</b>	2–22k psi 140–1500 bar	18–25 gpm 30–95 l/min	9/16 MP	600–1000 rpm	3.0 lb 1.36 kg	160 °F 70 °C
<b>GO-H9-C</b>	22k–40k psi 1500–2800 bar	4–10 gpm 15–40 l/min	9/16 HP	600–1000 rpm	3.3 lb 1.5 kg	160 °F 70 °C

**OPTIONAL CENTRALIZERS**

A centralizer helps to protect the tool as it passes through the pipe and balances jet standoff distance for more consistent cleaning. In cases where the pipe size is more than 1.5 times the diameter of the tool, a centralizer is an important safety device, preventing the tool from turning around and thrusting backwards out of the pipe.

Pipe Size

3 in. 76 mm	Centralizer (Complete)	Weight
4.5 in. 114 mm	GO 075-4.5	0.3 lb 0.1 kg

Pipe Size

4 in. 100 mm	Centralizer (Complete)	Weight
5 in. 127 mm	GO 070-5	1.4 lb 0.6 kg
6 in. 152 mm	GO 070-6	1.6 lb 0.7 kg
8 in. 203 mm	GO 070-8	1.9 lb 0.9 kg
12 in. 305 mm	GO 070-12	2.2 lb 1.0 kg

\*Set of 2 collars

\*\*Set of 3 skids with 6 screws

**100° TWO STANDARD HEAD CONFIGURATIONS**

**GOPHER HEAD SELECTION**

MODEL	GO-MP9	GO-H9-C
Polisher LF	7–14 gpm (27–53 l/min)	4–7 gpm (20–27 l/min)
Model	<b>GO 042-R.14</b>	<b>GO 342-R.14</b>
Polisher HF	14–25 gpm (53–95 l/min)	7–12 gpm (27–45 l/min)
Model	<b>GO 042-R.07</b>	<b>GO 342-R.08</b>
Unplucker LF	8–15 gpm (30–57 l/min)	4–7 gpm (20–27 l/min)
Model	<b>GO 043-R.17</b>	<b>GO 343-R.18</b>
Unplucker HF	15–25 gpm (57–95 l/min)	7–12 gpm (27–45 l/min)
Model	<b>GO 043-R.08</b>	<b>GO 343-R.08</b>

**MAINTENANCE RESOURCES**

Swivel	Service Kit	Seal Kit	Overhaul Kit	Tool Kit	Lubricant	Manual
<b>GO-MP9</b>	<b>GO 600</b>	<b>GO 602</b>	<b>GO 610</b>	<b>GO 612</b>	<b>GP 044</b>	<b>PL 511</b>
<b>GO-H9-C</b>	<b>GO 600-H9-C</b>	<b>BC 602-H9-C</b>	<b>GO 610-H9-C</b>	<b>GO 612</b>	<b>GP 044</b>	<b>PL 510</b>



# ROTARY SWIVELS

## ROTARY SWIVELS

The Industry's Largest Selection

Stainless steel construction, heavy duty bearings, and long lasting high pressure seals. Either 0° or 90° inlet connections are available.

### FEATURES:

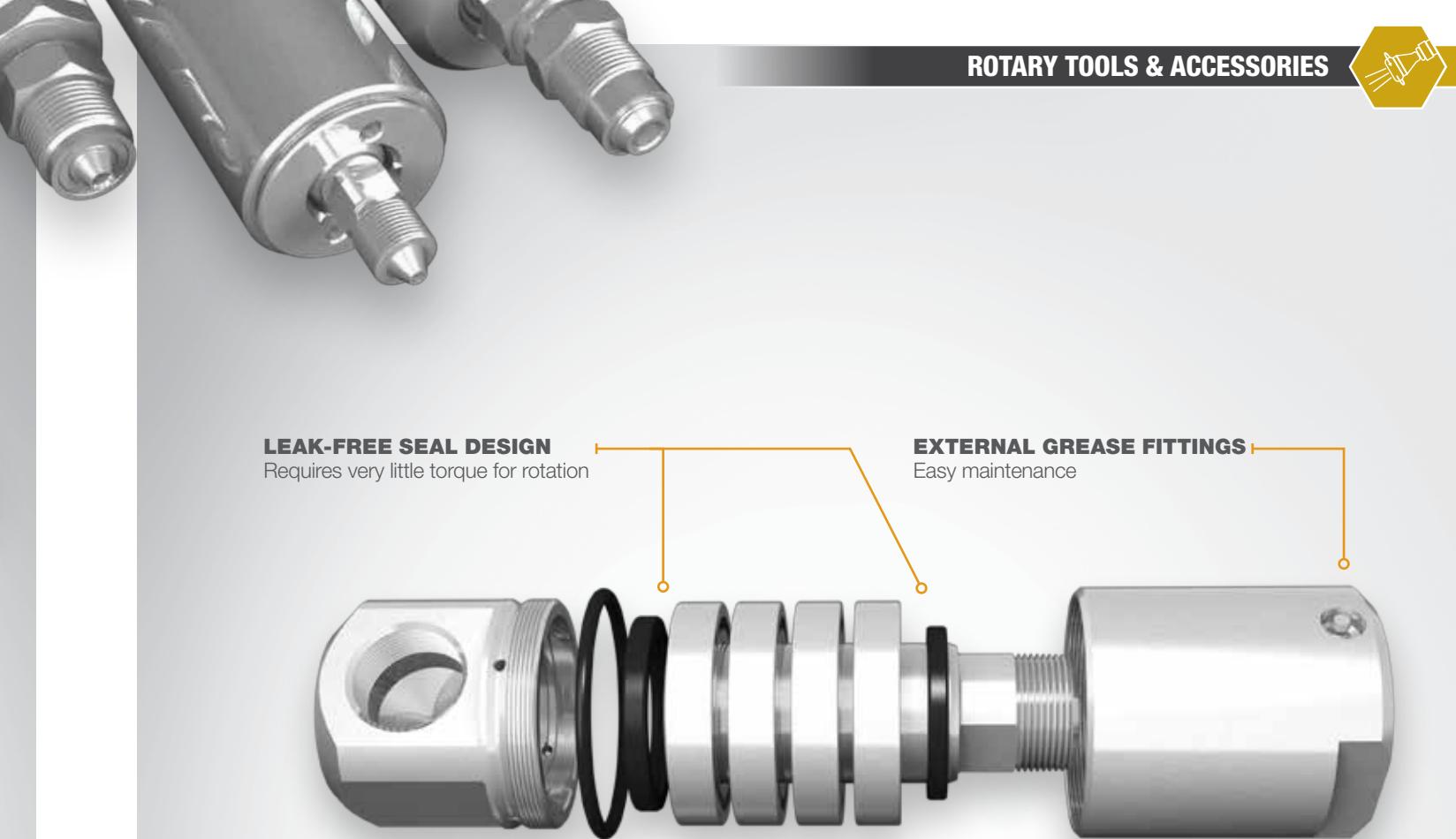
- Heavy-duty stainless steel construction
- Unique, leak-free seal design requires very little torque for rotation
- Multiple inlet options available mean the tool can be used at different pressures
- External grease fittings for easy maintenance
- 0° or 90° inlet connection simplifies hose routing

### IDEAL FOR:

- Floor cleaners, hose reels, and shot guns
- Preventing hose kink
- Conveying high pressure water from a stationary line to a powered rotating or twisting assembly



Pressure Range	Flow Range	Length	Diameter	Weight	Rotation
2-40k psi 138-2800 l/min	Up to 400 gpm 1500 l/min	2.6-6.9 in. 792-2103 mm	0.37-1.3 in. 9.4-33 mm	3-15 lbs 1.4-6.8 kg	Up to 1000 rpm



## SG SWIVEL

The Industry's Widest Selection

SG Swivels are reliable, easy to maintain, and are widely used in our surface preparation tools. Heavy-duty ball bearings with external grease fittings, stainless steel construction, and long lasting high pressure seals combine to make these the best swivels in the industry.



SG-P12P12-62

SG-MP12AV12

SG-CCN MP12K

	SG-P8P8	SG-P12P12-62	SG-MP12AV12	SG-MP16MP16	SG-CCN P12K	SG-CCN MP12K
Maximum Pressure	15k psi 1000 bar	15k psi 1000 bar	22k psi 1500 bar	22k psi 1500 bar	15k psi 1000 bar	22k psi 1500 bar
Maximum Flow	50 gpm 190 l/min	110 gpm 420 l/min	50 gpm 190 l/min	110 gpm 420 l/min	50 gpm 190 l/min	50 gpm 190 l/min
Rotation Speed	0-600 rpm	0-600 rpm	0-600 rpm	0-600 rpm	0-2000 rpm	0-2000 rpm
Flow Coefficient	2.3 Cv	4.6 Cv	2.0 Cv	4.6 Cv	2.3 Cv	2.0 Cv
Inlet Connection	1/2 NPT, 1/2 BSPP	3/4 NPT, 3/4 BSPP	3/4 MP	1 MP	3/4 NPT	3/4 MP
Shaft Connection	1/2 NPT	3/4 NPT	3/4 MP	1 MP	1-1/8 K	1-1/8 K
Diameter	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm	3.0 in. 76 mm
Length	6.6 in. 170 mm	6.6 in. 170 mm	7.9 in. 200 mm	9.0 in. 230 mm	7.0 in. 180 mm	7.0 in. 180 mm
Weight	8.4 lb 3.8 kg	8.4 lb 3.8 kg	8.8 lb 4.0 kg	8.8 lb 4.0 kg	8.4 lb 3.8 kg	8.4 lb 3.8 kg



# ROTARY SWIVELS

## UH SWIVEL

Ultra High Pressure Rotation

Considered the benchmark of high pressure rotary couplings, UH Swivels lead the industry in durability. The UH-H9H6 is available in either a 0° or 90° inlet connection.

	<b>UHS-H9H9</b>	<b>UH-H9H6</b>
Maximum Pressure	40k psi 2800 bar	44k psi 3000 bar
Maximum Flow	10 gpm 38 l/min	20 gpm 76 l/min
Flow Coefficient	0.30 Cv	0.50 Cv
Rotation Speed*	0-1500 rpm	0-1000 rpm
Inlet Connection	9/16 HP	9/16 HP
Shaft Connection	9/16 HP	3/8 HP, G12
Diameter	1.75 in. 45 mm	2.5 in. 64 mm
Length	5.9 in. 130 mm	8.8 in. 220 mm
Weight	2.0 lb 0.90 kg	7.5 lb 3.4 kg

\*NOTE: Break in new seals for 1/2 hour at 500 rpm max.



## SL SWIVEL

Lightweight and Compact

SL swivels feature replaceable seals, smooth ball bearings, stainless steel construction, and low static torque for easy rotation. They are installed standard on our Lancing Machines and are available with either 0° or 90° inlets.

	<b>SL-P8P4</b>	<b>SL-MP9AV9</b>
Maximum Pressure	15k psi 1000 bar	22k psi 1500 bar
Maximum Flow	35 gpm 130 l/min	25 gpm 95 l/min
Rotation Speed	0-1000 rpm	0-800 rpm
Flow Coefficient	1.6 Cv	1.1 Cv
Inlet Connection	1/2 NPT	9/16 MP
Shaft Connection	1/4 NPT	9/16 MP
Diameter	1.75 in. 45 mm	1.75 in. 45 mm
Length	4.6 in. 120 mm	5.9 in. 130 mm
Weight	1.63 lb 0.74 kg	2.0 lb 0.89 kg



## SM SWIVEL

High Flow Rotation

Constructed similarly to the SG swivel, the heavy-duty SM series is built to handle up to 3500 hp. Featuring stainless steel construction, heavy duty bearings, and long lasting high pressure seals, SM Swivels are excellent for boilers, furnaces, tube bundles, large tank, and vessel cleaning applications. Either 0° or 90° inlet connections are available.

	<b>SM-P16</b>	<b>SM-P20</b>
Maximum Pressure	12k psi 830 bar	10k psi 700 bar
Maximum Flow	300 gpm 1100 l/min	600 gpm 2300 l/min
Flow Coefficient	13 Cv	18 Cv
Rotation Speed	0-300 rpm	0-300 rpm
Inlet Connection	1 NPT	1-1/4 NPT
Shaft Connection	1 NPT	1-1/4 NPT
Diameter	3.5 in. 8.9 mm	3.5 in. 8.9 mm
Length	7.3 in. 190 mm	*7.3 in. *190 mm
Weight	10 lb 4.5 kg	*11 lb *5.0 kg

\*For 0° inlet.



## SH SWIVEL

Prevents Hose Twist

SH swivels can be installed between a tool's inlet connection and the high pressure hose to prevent hose twist and ease hose handling. They can also provide compact rotary motion for a variety of low speed applications.

	<b>SH-P8P8</b>
Maximum Pressure	15k psi 1000 bar
Maximum Flow	50 gpm 190 l/min
Rotation Speed	0-250 rpm
Flow Coefficient	2.3 Cv
Inlet Connection	1/2 NPT
Shaft Connection	1/2 NPT
Diameter	2.25 in. 57 mm
Length	4.13 in. 105 mm
Weight	1.9 lb 0.86 kg

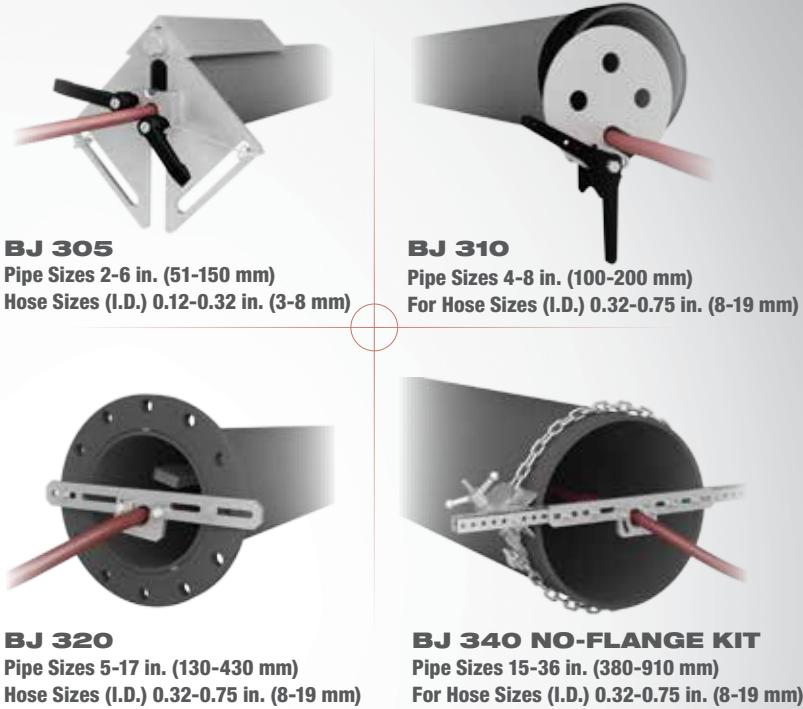




# WATERBLAST ACCESSORIES

## BACKOUT PREVENTERS

Backout preventers increase 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.



## VE-400™ SAFETY STOP

### Tube Cleaning Safety

The VE-400 is designed to protect the operator from a flex-lance exiting the tube sheet during cleaning operations.

The VE-400 adapts to both horizontal and vertical applications and has a wide range of adjustments that easily accommodate different tube sheet sizes.

**Weight Complete: 20 lb - (9.0 kg)**



# WATERBLAST ACCESSORIES

## BANSHEE PROTEX™

### Vertical Splash Guard

The Banshee ProTex is a lightweight, durable splash guard built to keep operators safe from the potential hazards of manual flex-lancing.

The ProTex is designed specifically for use with Banshee tube cleaning tools and the anti-withdrawal collet easily adjusts to fit many hose sizes. A removable insert centers smaller tools and we offer an optional three foot long tube for use with a Stinger.

**Weight Complete: 12 lb - (5.5 kg)**

**Hose Range: 0.125-1.3 in. - (3-33 mm) OD**

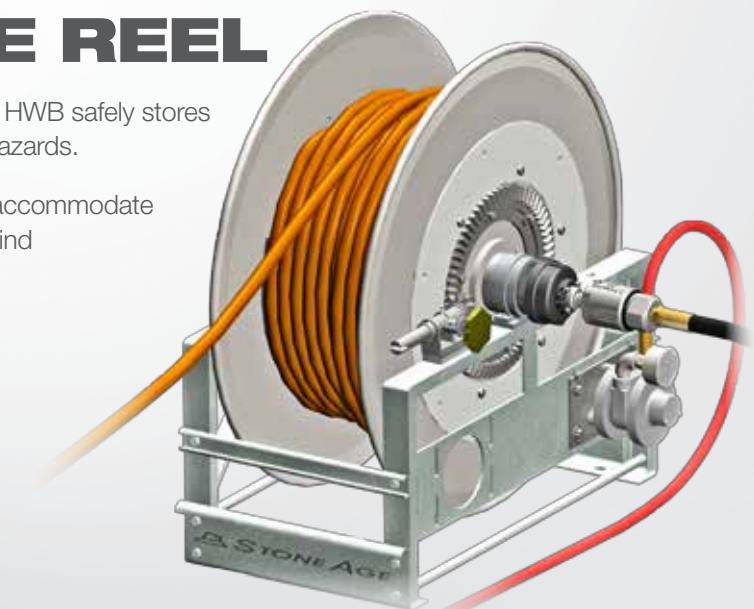


## HOSE STORAGE REEL

Protect your hoses while improving job site safety. The HWB safely stores hoses, easily moves from job to job and reduces trip hazards.

Featuring StoneAge rotary couplings, these reels can accommodate pressures up to 40k psi\*. Air or hydraulic powered rewind systems available. Hose not included.

Diameter	32 in. 810 mm
Height	34 in. 860 mm
Width	18 in. 460 mm
Hose Bend Radius	10 in. 810 mm
Weight	170 lb 77 kg
<b>HOSE O.D.</b>	<b>MAXIMUM LENGTH</b>
0.8 in. 20 mm	440 ft 134 m
1.0 in. 25 mm	275 ft 84 m
1.2 in. 30 mm	167 ft 51 m



\*Hose must be extended prior to use.



# WATERBLAST ACCESSORIES

## SAPPHIRE NOZZLES

For High Pressure Applications

These nozzles are used for high pressure jetting applications where water filtration of 10 micron or better is required.

Jeweled orifices make the best quality, longest lasting jets possible, especially for ultra-high pressures.

- Pressure Range: 20–40k psi (1400–2800 bar)
- Flow Range: 0.2–4.8 gpm (0.75–18 l/min)



Shown larger than actual size.

### SAPPHIRE NOZZLE FLOW CHART (GPM)

ORIFICE I.D. in. mm	PRESSURE KPSI & (BAR)												AVAILABILITY OS4 OS6 OS7
	20 (1400)	22 (1500)	24 (1700)	26 (1800)	28 (1900)	30 (2100)	32 (2200)	34 (2300)	36 (2500)	38 (2600)	40 (2800)		
.009 (0.23)	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	•	
.010 (0.25)	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.34	0.4	• •	
.011 (0.28)	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	• •	
.012 (0.30)	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	• • •	
.013 (0.33)	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	• • •	
.014 (0.36)	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	• • •	
.015 (0.38)	0.6	0.7	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.9	0.9	• • •	
.016 (0.41)	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	• • •	
.017 (0.43)	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	• • •	
.018 (0.46)	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	• • •	
.019 (0.48)	1.0	1.0	1.1	1.1	1.9	1.2	1.3	1.3	1.4	1.4	1.4	• • •	
.020 (0.51)	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	• • •	
.021 (0.53)	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	• • •	
.022 (0.56)	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	• • •	
.023 (0.58)	1.5	1.5	1.6	1.7	1.7	1.7	1.8	1.9	1.9	2.0	2.0	• • •	
.024 (0.61)	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.2	• • •	
.025 (0.64)	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.4	2.4	• • •	
.026 (0.66)	1.9	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.6	• •	
.027 (0.69)	2.0	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.8	• •	
.028 (0.71)	2.2	2.3	2.4	2.5	2.6	2.5	2.7	2.8	2.9	3.0	3.1	• • •	
.029 (0.74)	2.3	2.4	2.5	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	• •	
.031 (0.79)	2.6	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	• • •	
.033 (0.84)	3.0	3.1	3.3	3.4	3.5	3.7	3.8	3.9	4.0	4.1	4.2	• •	
.034 (0.86)	3.2	3.3	3.5	3.6	3.8	3.9	4.0	4.2	4.3	4.4	4.5	• •	
.035 (0.89)	3.4	3.5	3.7	3.8	4.0	4.1	4.3	4.4	4.5	4.6	4.8	• •	
.036 (0.91)	3.6	3.7	3.9	4.0	4.2	4.4	4.5	4.6	4.8	4.9	5.0	• • •	
.037 (0.94)	3.7	3.9	4.1	4.3	4.4	4.6	4.8	4.9	5.0	5.2	5.3	• • •	
.039 (0.99)	4.2	4.4	4.6	4.7	4.9	5.1	5.3	5.4	5.6	5.7	5.9	• • •	
.047 (1.20)	6.1	6.4	6.6	6.9	7.2	7.4	7.7	7.9	8.1	8.4	8.6	• •	

# WATERBLAST ACCESSORIES

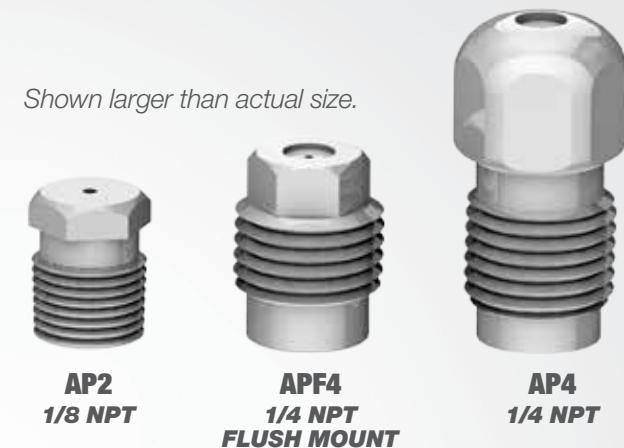
## ATTACK TIPS™

For Low/Medium Pressure Applications

StoneAge Attack Tips are the highest quality, longest lasting nozzles available for low and medium pressure applications (up to 22k psi - 1500 bar). Flow straighteners correct turbulence, ensuring excellent jetting results.

- Pressure Range: 20–40k psi (1400–2800 bar)
- Flow Range: 0.6–46 gpm (2.27–174 l/min)

Shown larger than actual size.



### STAINLESS STEEL OR CARBIDE AVAILABLE

ORIFICE I.D. in. mm	PRESSURE - KPSI & (BAR)												FLOW RATING
	2 (140)	4 (280)	6 (410)	8 (550)	10 (700)	12 (830)	14 (970)	15 (1000)	16 (1100)	18 (1200)	20 (1400)	22 (1500)	
.018 (0.46)	0.39	0.55	0.68	0.78	0.87	0.96	1.0	1.1	1.1	1.2	1.2	1.3	0.6
.020 (0.51)	0.48	0.68	0.83	0.96	1.1	1.2	1.3	1.3	1.5	1.5	1.5	1.6	0.7
.022 (0.56)	0.58	0.82	1.0	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	0.8
.024 (0.61)	0.69	0.98	1.2	1.4	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	1.0
.026 (0.66)	0.81	1.2	1.4	1.6	1.8	2.0	2.1	2.2	2.3	2.4	2.6	2.7	1.1
.029 (0.74)	1.0	1.4	1.7	2.0	2.3	2.5	2.7	2.8	2.9	3.0	3.2	3.4	1.4
.032 (0.81)	1.2	1.7	2.1	2.5	2.8	3.0	3.3	3.4	3.5	3.7	3.9	4.1	1.7
.035 (0.89)	1.5	2.1	2.6	3.0	3.3	3.6	3.9	4.0	4.2	4.4	4.7	4.9	2.1
.038 (0.97)	1.7	2.5	3.0	3.5	3.9	4.3	4.6	4.8	4.9	5.2	5.5	5.7	2.5
.042 (1.07)	2.1	3.0	3.7	4.2	4.7	5.2	5.6	5.8	6.0	6.4	6.7	7.0	3.0
.047 (1.19)	2.7	3.8	4.6	5.3	5.9	6.5	7.0	7.3	7.5	8.0	8.4	8.8	3.8
.052 (1.32)	3.3	4.6	5.6	6.5	7.3	8.0	8.6	8.9	9.2	9.8	10	11	4.6
.057 (1.45)	3.9	5.5	6.8	7.8	8.7	9.6	10	11	11	12	12	13	5.5
.063 (1.60)	4.8	6.8	8.3	9.6	11	12	13	13	14	14	15	16	6.8
.069 (1.78)	5.7	8.1	9.9	12	13</td								



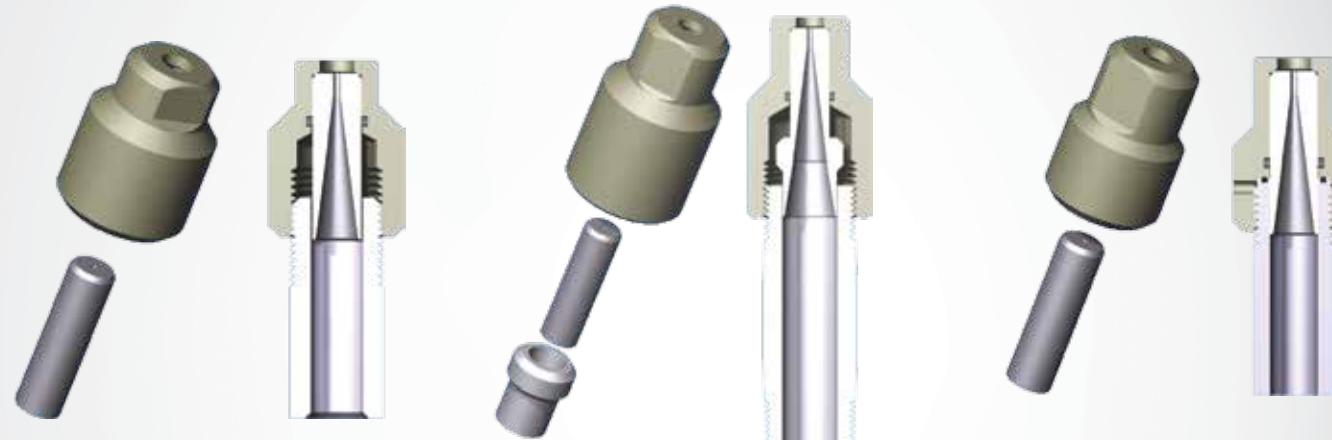
# WATERBLAST ACCESSORIES

## OC8 CARBIDE INSERTS

For High Flow Applications

We recommend using our OC8 Holders and OC8 Carbide Inserts where filtration is poor, abrasive solids are present or for very high flows. Replaceable carbide inserts are available in large orifice diameters to handle high flows and contain a long taper to provide excellent jet quality.

- Pressure Range: 2–22k psi (138–1500 bar)
- Flow Range: 7–106 gpm (26.5–401 l/min)



**OC8 P8 HOLDER & OC8 CARBIDE INSERTS**  
For 15k psi (1000 bar) 1/2 NPT female connection.

**OC8 P12 HOLDER & OC8 CARBIDE INSERTS**  
For 15k psi (1000 bar) 3/4 NPT female connection.

**OC8 G12 HOLDER & OC8 CARBIDE INSERTS**  
For 22k psi (1500 bar) G12 female connection.

## OC8 NOZZLE FLOW CHART (GPM)

<b>ORIFICE I.D. in. mm</b>	<b>PRESSURE - KPSI &amp; BAR</b>												<b>FLOW RATING</b>
	2 (140)	4 (280)	6 (410)	8 (550)	10 (700)	12 (830)	14 (970)	15 (1000)	16 (1100)	18 (1200)	20 (1400)	22 (1500)	
.063 (1.60)	4.8	6.7	8.2	9.5	11	12	13	13	14	14	15	16	7
.075 (1.91)	6.8	9.6	12	14	15	17	18	19	19	20	21	22	10
.085 (2.16)	8.7	12	15	17	19	21	23	24	25	26	28	129	12
.095 (2.41)	11	15	19	22	24	27	29	30	31	33	33	36	15
.105 (2.67)	13	19	23	27	30	33	35	36	38	40	42	44	19
.125 (3.18)	19	27	33	38	42	46	50	52	53	56	60	62	27
.145 (3.68)	25	36	44	50	57	62	67	69	72	76	80	84	36
.165 (4.19)	33	46	56	66	73	80	87	90	93	98	104	109	46
.175 (4.45)	37	52	64	74	82	90	98	101					52
.190 (4.83)	43	61	75	87	97	106	115	119					61
.200 (5.08)	48	68	83	96	108	118	127	132					68
.215 (5.46)	56	79	96	111	124								78
.235 (5.97)	66	94	115	133	149								94
.250 (6.35)	75	106	130	150	168								106

# WATERBLAST ACCESSORIES

## EXTENSION NIPPLES

Durable Stainless Steel Construction

Maximize jet power and removal rates by placing nozzles close to the target surface. Extension nipples also enhance jet quality by improving upstream conditions. Standard lengths in stock for all StoneAge tools.

Custom lengths available.



**SA 567-P4P2**  
Fits 1/4 npt ports

**SA 356-P8P4**  
Fits 1/2 npt ports

**SA 577-G12P4**  
Fits G12 ports

**SA 569-G9S6**  
Fits G9 ports

## NIPPLE EXTENSION SPECIFICATIONS

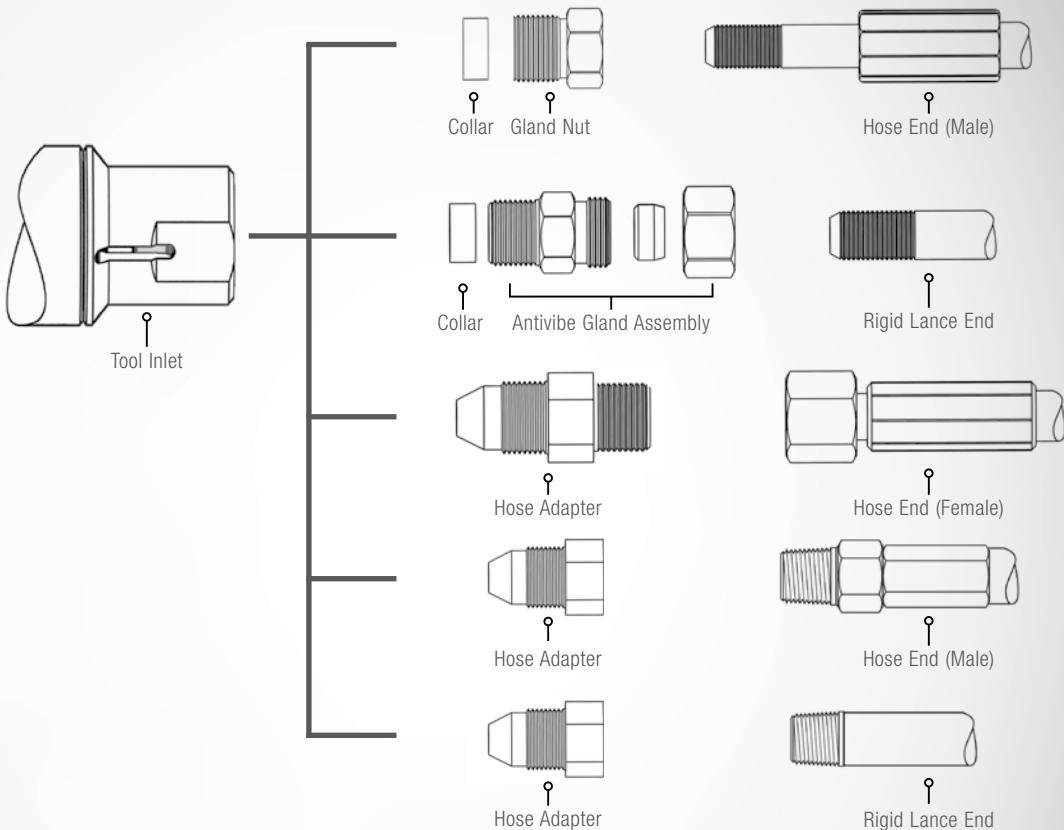
<b>TYPE</b>	<b>PART NUMBER</b>	<b>MAWP</b>	<b>THREADS</b>	<b>O.D.</b>	<b>I.D.</b>
9/16 MP Tubing	<b>SA 567-P4P2*</b>	22k psi (1500 bar)	1/4 NPTM x 1/8 NPTF	0.56 in. (14 mm)	0.31 in. (8 mm)
9/16 MP Tubing	<b>SA 567-MP9P2</b>	22k psi (1500 bar)	9/16 MP x 1/8 NPTF	0.56 in. (14 mm)	0.31 in. (8 mm)
9/16 MP Tubing	<b>SA 567-MP9MP9</b>	22k psi (1500 bar)	9/16 MP x 9/16 MP	0.56 in. (14 mm)	0.31 in. (8 mm)
1/2 Sched.160 Pipe	<b>SA 356-P8P4**</b>	15k psi (1000 bar)	1/2 NPTM x 1/4 NPTF	0.84 in. (21 mm)	0.47 in. (12 mm)
1/2 Sched.160 Pipe	<b>SA 356-P8P8</b>	15k psi (1000 bar)	1/2 NPTM x 1/2 NPTM	0.84 in. (21 mm)	0.47 in. (12 mm)
3/4 Sched.160 Pipe	<b>SA 366-P12P12</b>	15k psi (1000 bar)	3/4 NPTM x 3/4 NPTM	1.1 in. (27 mm)	0.61 in. (16 mm)
3/4 MP Tubing	<b>SA 577-MP12LMP12L-19</b>	22k psi (1500 bar)	3/4 MP x 3/4 MP	0.75 in. (19 mm)	0.44 in. (11 mm)
3/4 MP Tubing	<b>SA 577-MP12LP4-10</b>	22k psi (1500 bar)	3/4 MP x 1/4 NPTF	0.75 in. (19 mm)	0.44 in. (11 mm)
3/4 MP Tubing	<b>SA 577-G12P4**</b>	22k psi (1500 bar)	3/4 G12 x 1/4 NPTF	0.75 in. (19 mm)	0.44 in. (11 mm)
9/16 HP Tubing	<b>SA 569-G9S6*</b>	40k psi (2800 bar)	9/16 G9 x 3/8-24 F	0.56 in. (14 mm)	0.19 in. (5 mm)

# HOSE FITTINGS & ADAPTERS

## 9/16 MP (13/16 THREAD)

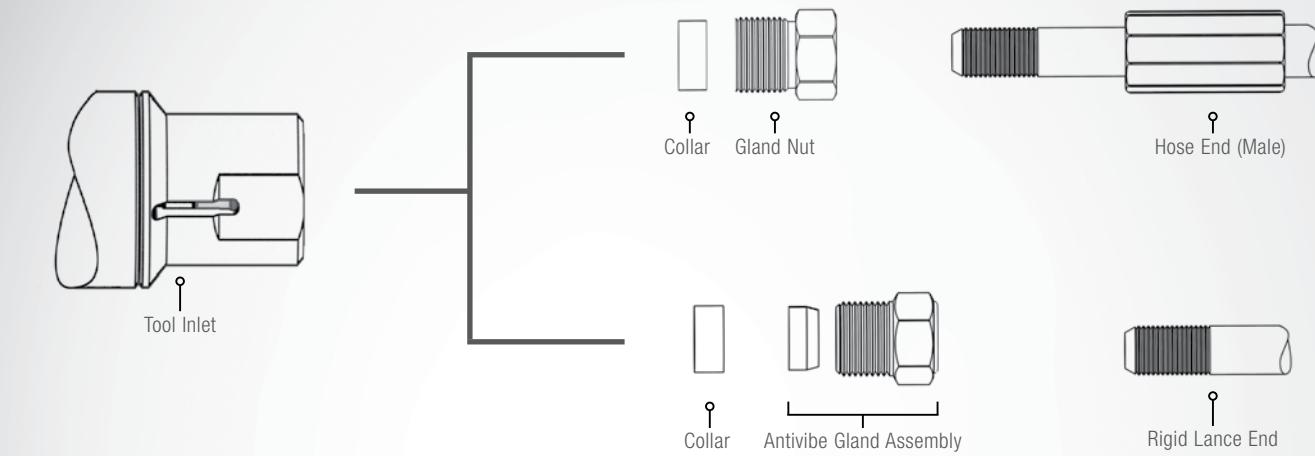
### TOOL MODELS:

- BA-MP9
- BC-K
- BC-K-P2
- BN33-MP9
- GO-MP9
- RPT-MP9-F
- RPT-MP9-S
- SL-MP9AV9
- SPFR-MP9



Hose End	LH Collar	Gland Nut	Adapter
9/16-18 LH	<b>AF 071-MP9</b>	<b>AF 070-MP9</b>	
M14 LH	<b>AF 071-MPM14L</b>	<b>AF 070-MP9</b>	
M24 Female			<b>GP 255-MP9M24L</b>
1/2 NPT Male			<b>AF 065-MP9P8</b>
3/8 NPT Male			<b>AF 065-MP9P6</b>
9/16-18 Type M			<b>AF 060-MP9</b>
3/4-16 Type M			<b>AF 061-MP9</b>
Lance End	LH Collar	AV Gland Nut	Adapter
9/16-18 LH	<b>AF 071-MP9</b>	<b>AF 072-MP9</b>	
M14 LH	<b>AF 071-MPM14L</b>	<b>AF 072-MP9</b>	
1/2 NPT Male			<b>AF 065-MP9P8</b>
3/8 NPT Male			<b>AF 065-MP9P6</b>

## 9/16 HP (1-1/8 UNF)



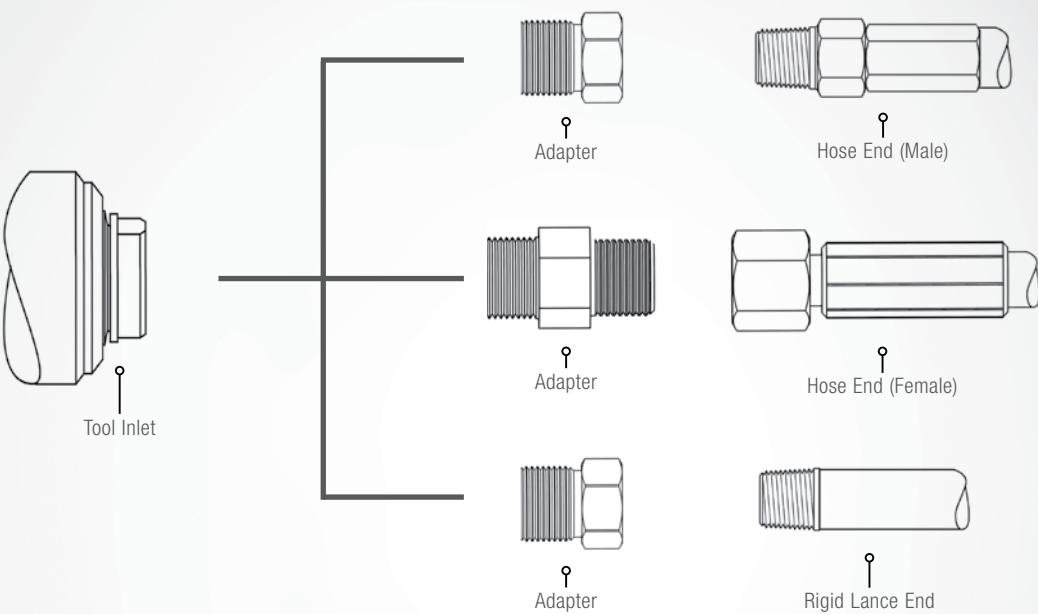
### TOOL MODELS:

- BC-H9-C
- BC-H9LF-C
- BC-H9XXLF-C-TI
- BJV-H9-F
- BJV-H9-S
- GO-H9-C
- UH-40-H9H9-0
- UH-40-H9H9-90
- UH-H9H6
- UH-H9H6-90
- UHS-H9H9
- UH-H9G12
- UH-H9G12-90

Hose End	LH Collar	Gland Nut
9/16-18 LH Male	<b>AF 071-H9</b>	<b>AF 070-H9</b>
M14 LH Male	<b>AF 071-HM14L</b>	<b>AF 070-H9</b>
Lance End	LH Collar	AV Gland Nut
9/16-18 LH Male	<b>AF 071-H9</b>	<b>AF 072-H9</b>
M14 LH Male	<b>AF 071-HM14L</b>	<b>AF 072-H9</b>

# HOSE FITTINGS & ADAPTERS

## P12 (3/4 NPT)



### TOOL MODELS:

- BJV-P12-F
- BJV-P12-S
- SG-30-P12-0-18
- SG-30-P12-0-24
- SG-30-P12-90-18
- SG-30-P12-90-24
- SG-40-CCN-P12K-0-2
- SG-40-CCN-P12K-90-2
- SG-50-CCN-P12K-0-2
- SG-50-CCN-P12K-90-2
- SG-CCN-P12K-0
- SG-CCN-P12K-90
- SG-E60-P12K-0-5
- SG-E60-P12K-0-60
- SG-E60-P12K-90-5
- SG-E60-P12K-90-60
- SG-E70-P12K-0-5
- SG-E70-P12K-0-60
- SG-E70-P12K-90-5
- SG-E70-P12K-90-5
- SG-P12K-62-0
- SG-P12P12-62-0
- SG-P12P12-62-90
- TR 230-P12

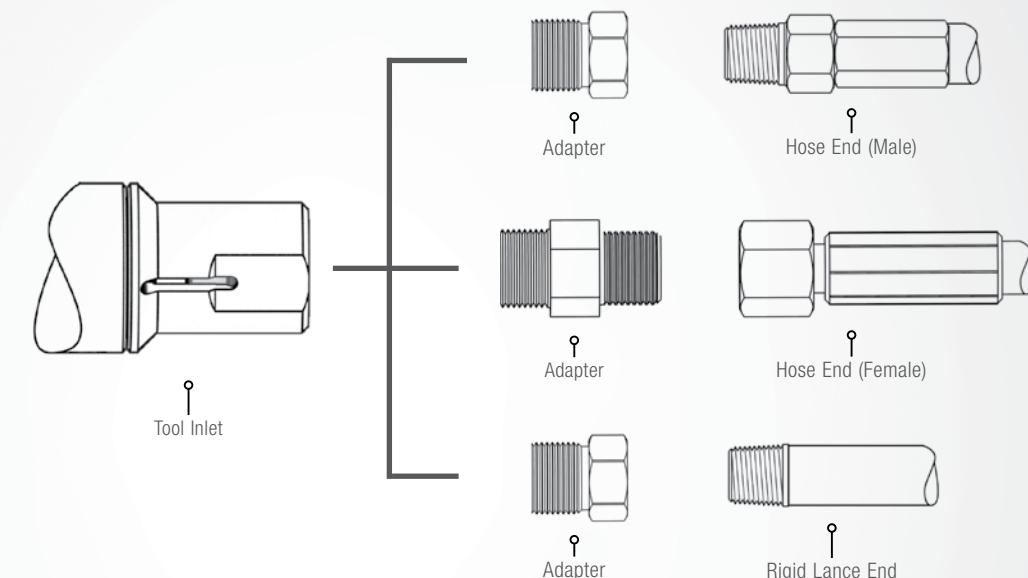
Hose End	Adapter
1/2 NPT Male	GP 051-P8P12
M24 Female	GP 255-P12M24C
M36 Female	GP 255-P12M36C
Lance End	Adapter
1/2 NPT Male	GP 051-P8P12

# HOSE FITTINGS & ADAPTERS

## P8 (1/2 NPT)

### TOOL MODELS:

- BA-P8-R21
- BA-P8-R31
- BA-P8-R40
- BN33-P8
- RPT-P8-F
- RPT-P8-S
- SG-P8P8-0
- SG-P8P8-90
- SH-P8P8-0
- SH-P8P8-90
- SL-P8P4-0
- SL-P8P4-90
- SPFR-P8-B
- SPFR-P8-S



Hose End	Adapter
1/4 NPT Male	GP 051-P4P8
3/8 NPT Male	GP 051-P6P8
9/16-18 Type M Female	AF 060-P8
3/4-16 Type M Female	AF 061-P8
1-12 Type M Female	AF 063-P8
Lance End	Adapter
1/4 NPT Male	GP 051-P4P8
3/8 NPT Male	GP 051-P6P8

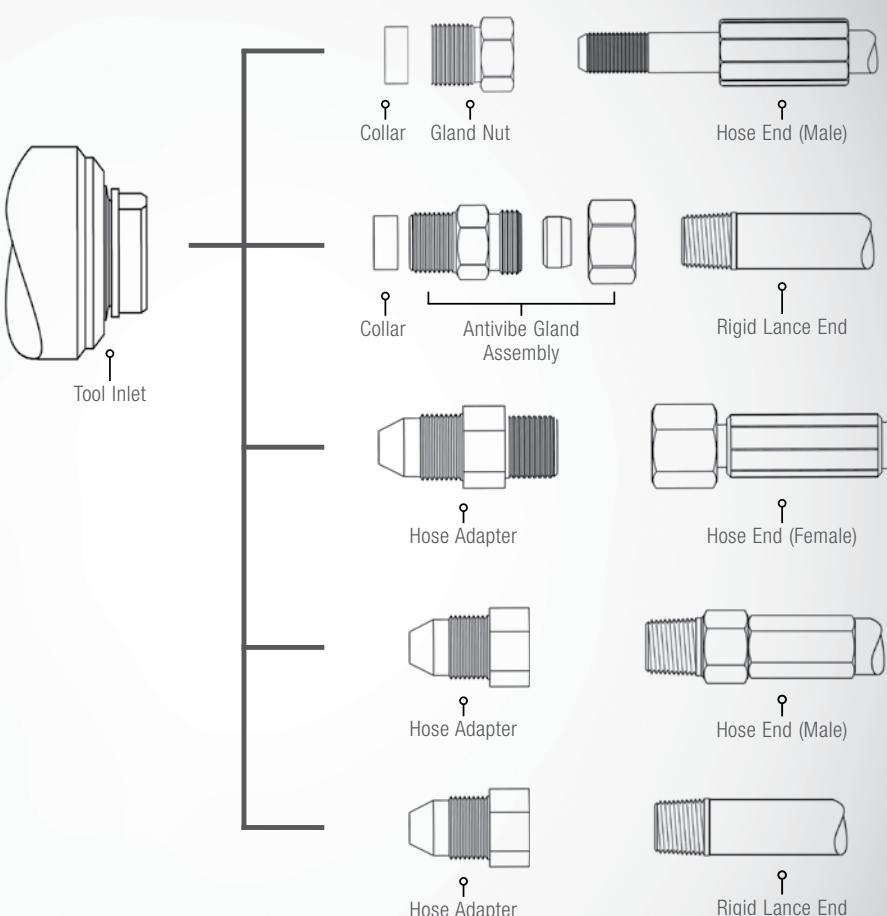
# HOSE FITTINGS & ADAPTERS

## 3/4 MP (3/4-14 NPSM)

### TOOL MODELS:

- BJV-MP12-F
- BJV-MP12-S
- SG-30-MP12-0-18
- SG-30-MP12-0-24
- SG-30-MP12-90-18
- SG-30-MP12-90-24
- SG-40-CCN-MP12K-0-2
- SG-40-CCN-MP12K-90-2
- SG-50-CCN-MP12K-0-2
- SG-50-CCN-MP12K-90-2
- SG-E60-MP12K-0-5
- SG-E60-MP12K-0-60
- SG-E60-MP12K-90-5
- SG-E60-MP12K-90-60
- SG-E70-MP12K-0-5
- SG-E70-MP12K-0-60
- SG-E70-MP12K-90-5
- SG-E70-MP12K-90-5
- SG-MP12-62-90
- SG-MP12AV12-0
- SG-MP12AV12-90
- SG-MP12K-62-0
- TR 230-MP12

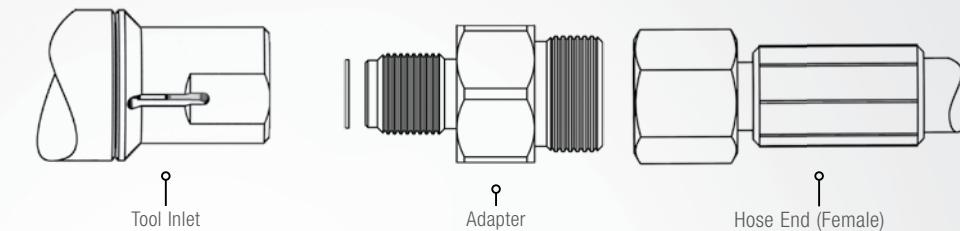
Hose End	LH Collar	Gland Nut	Adapter
3/4-16 LH Male	<b>AF 071-MP12</b>	<b>AF 070-MP12</b>	
9/16-18 Type M			<b>AF 060-MP12</b>
3/4-16 Type M			<b>AF 061-MP12</b>
1-12 Type M			<b>AF 063-MP12</b>
1/2 NPT Male			<b>AF 065-MP12P8</b>
3/4 NPT Male			<b>AF 065-MP12P12</b>
Lance End	LH Collar	AV Gland Nut	Adapter
3/4-16 LH	<b>AF 071-MP12</b>	<b>AF 072-MP12</b>	
1/2 NPT Male			<b>AF 065-MP12P8</b>
3/4 NPT Male			<b>AF 065-MP12P12</b>



## BSPP6 (3/8 BSPP)

### TOOL MODELS:

- BA-BSPP6-R16-F
- BA-BSPP6-R16-S
- BA-BSPP6-R22-F
- BA-BSPP6-R22-S
- BN24-BSPP6



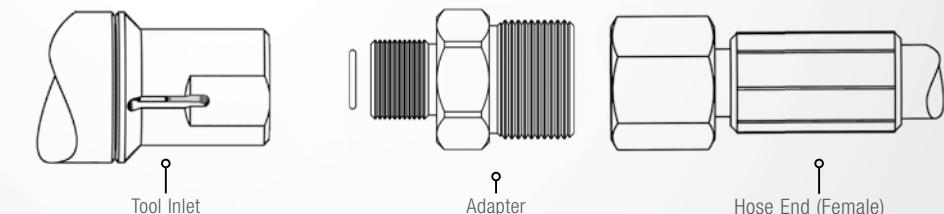
Hose End	Adapter	Copper Washer*
1/4 BSP Female	<b>GP 255-BSPP6-BSPP4C</b>	<b>GP 200-BSPP6</b>
1/2 BSP Female	<b>GP 255-BSPP6-BSPP8C</b>	<b>GP 200-BSPP6</b>
M24 Female	<b>GP 255-BSPP6-M24C</b>	<b>GP 200-BSPP6</b>

\*Included with adapter

## M24X1.5

### TOOL MODELS:

- BA-M24-R21
- BA-M24-R31
- BA-M24-R40
- BJ 286-L-M24
- BJ 286-M-M24
- BJ 286-S-M24
- BJ 288-M-M24
- BJ 288-S-M24
- BJV-M24-F
- BJV-M24-S
- RPT-M24-F
- RPT-M24-S
- TR 230-M24



Hose End	Adapter	O-Ring*
1/2 BSP Female	<b>GP 255-M240BSPP8C</b>	<b>GP 259</b>
3/4 BSP Female	<b>GP 255-M240BSPP12C</b>	<b>GP 259</b>
M24 Female	<b>GP 255-M240M24C</b>	<b>GP 259</b>
M36 Female	<b>GP 255-M240M36C</b>	<b>GP 259</b>

\*Included with adapter

# TECHNICAL REFERENCE

## STANDARD THREAD ABBREVIATIONS

NPT = National Pipe Thread	MP = Medium Pressure Cone & Thread Connection	G9 = 9/16 Thread with O-ring Groove Face Seal
NPTM = National Pipe Thread Male	HP = High Pressure Cone & Thread Connection	G12 = 3/4 Thread with O-ring Groove Face Seal
NPTF = National Pipe Thread Female	LH = Left-hand Direct Tube-end Thread Connection	G16 = 1-1/2 UNF Thread with O-Ring Face Seal
BSPP = British Standard Parallel Pipe	RH = Right-hand Direct Tube-end Thread Connection	K = 1-1/8 Thread with O-ring Groove Face Seal

## STANDARD UNIT ABBREVIATIONS

Pressure	Flow	Distance	Weight	Temperature
psi = pounds per square inch	gpm = gallons per minute	in. = inches	lb = pounds	°F = degree Fahrenheit
b = bar	l/min = liters per minute	ft = feet	kg = kilograms	°C = degree Celsius
	Cv = flow coefficient	mm = millimeters		
	Cd = discharge coefficient	cm = centimeters		
		m = meters		

## MEASUREMENT CONVERSIONS

From	To	Multiply By
meters (m)	feet (ft)	3.281
feet (ft)	meters (m)	0.3048
millimeters (mm)	inches (in.)	0.0394
inches (in.)	millimeters (mm)	25.4
l/min	gpm (US)	0.2642
l/min	gpm (Brit)	0.2200
gpm (US)	l/min	3.785
gpm (Brit)	l/min	4.546
gpm (US)	gpm (Brit)	0.8327
gpm (Brit)	gpm (US)	1.201
bar	psi	14.5
psi	bar	0.0689
kilograms (kg)	pounds (mass) (lb)	2.205
pounds (mass) (lb)	kilograms (kg)	0.4536
newtons (N)	pounds (force) (lb)	0.2248
pounds (force) (lb)	newtons (N)	4.448
kilowatts (kW)	horsepower (hp)	1.341
horsepower (hp)	kilowatts (kW)	0.7457

# TECHNICAL REFERENCE

## PRESSURE AND FLOW EQUATIONS

Q = Flow in gpm	$Q = 29.92 \times d^2 \times P^{1/2} \times Cd$
V = Velocity in ft/sec	$V = 12.186 \times P^{1/2} = Cd \times .4085 \times Q/d^2$
P = Pressure in psi	$P = .00112 \times Q^2/(d^4 \times Cd^2)$
Hp = Horsepower	$Hp = .0174 \times d^2 \times P^{3/2} \times Cd, \approx P \times Q/1714$
Cv = Flow Coefficient	$Cv = Q/\Delta P^{1/2}, = 53 \times (D^{2.5}/L^{1/2})$
ΔP = Pressure Drop	$\Delta P = (Q/Cv)^2$
F = Thrust in lb	$F = \pi/2 \times d^2 \times P \times Cd, = .052 \times P^{1/2} \times Q, \approx .0018 \times (Q/D)^2 \times Cd$
ΔT = Temp Change °F	$\Delta T = \Delta P/337.6$

### For all equations:

- L = Tube length in feet
- D = Tube I.D. in inches
- d = Orifice diameter in inches
- Cd = Discharge Coefficient
  - Cd = 0.90 for long cone orifice
  - Cd = 0.70 for drilled steel orifice
  - Cd = 0.65 for sapphire orifice

# FITTING ASSEMBLY GUIDELINES

Understanding the proper preparation and assembly of high pressure fittings and components is critical to the safe operation and longevity of your tools and equipment.

## TAPERED PIPE THREADS

Tapered pipe threads (NPT) seal by contact of threads. A paste type anti-seize compound such as Parker Thread-Mate™ along with thread sealing tape works most effectively with NPT threads.

- Use anti-seize compound on male thread, then 2–3 wraps of Teflon® tape (if larger than 3/4 NPT, use 3–4 wraps).
- Prepared fittings should engage about 2 turns by hand and at least 5–6 turns before reaching the recommended torque. Failure to reach minimum engagement usually indicates poorly formed or damaged threads.

Thread Size	Recommended Torque	
1/16 NPT	4–5 Nm	3–4 ft-lb
1/8 NPT	20–23 Nm	15–17 ft-lb
1/4 NPT	24–29 Nm	18–21 ft-lb
3/8 NPT	27–34 Nm	20–25 ft-lb
1/2 NPT	54–61 Nm	40–45 ft-lb
3/4 NPT	88–102 Nm	65–75 ft-lb
1 NPT	129–163 Nm	95–120 ft-lb
1-1/4 NPT	176–203 Nm	130–150 ft-lb

## BSPP THREADS

British Standard Parallel Pipe threads (BSPP) seal with the use of a bonded or metal seal that is crushed between the male and female thread at either the face or the shoulder, they do not seal on the threads. A paste type anti-seize compound such as Swagelok Blue Goop® works most effectively with BSPP threads.

- Use anti-seize compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Size	Recommended Torque	
1/8 BSPP	20–22 Nm	15–16 ft-lb
1/4 BSPP	30–35 Nm	22–26 ft-lb
3/8 BSPP	40–50 Nm	30–37 ft-lb
1/2 BSPP	55–65 Nm	41–50 ft-lb
3/4 BSPP	90–100 Nm	66–74 ft-lb
1 BSPP	135–160 Nm	100–118 ft-lb
1-1/4 BSPP	200–230 Nm	150–170 ft-lb

## METRIC THREADS

Metric threads with cone seal (M36, M24, M7) seal with the use of an angled male and female conical surface, they do not seal on the threads. A paste type anti-seize compound such as Swagelok Blue Goop® works most effectively with metric cone seal threads.

- Use anti-seize compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Size	Recommended Torque	
M7	18–20 Nm	13–15 ft-lb
M24	90–105 Nm	66–77 ft-lb
M36	190–220 Nm	140–162 ft-lb

# FITTING ASSEMBLY GUIDELINES

## TYPE M SWIVEL

Type M swivel nut threads (TM12, AF 060-XX, AF 061-XX, AF 062-XX, AF 063-XX) seal with the use of an angled male and female cone, they do not seal on the threads. Designed for fast, simple connections of waterblast hoses and waterblast equipment. A paste type anti-seize compound such as Swagelok Blue Goop® works most effectively with metric cone seal threads.

- Use anti-seize compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Size	Recommended Torque	
9/16	46–52 Nm	34–38 ft-lb
3/4	75–81 Nm	55–60 ft-lb
7/8	102–109 Nm	75–80 ft-lb
1	122–135 Nm	90–100 ft-lb
1-5/16	176–203 Nm	130–150 ft-lb

## SAPPHIRE NOZZLES

Sapphire Nozzle threads (OS4, OS6, OS7) seal with the use of an angled male and female seat, they do not seal on the threads. A paste type anti-seize compound such as Swagelok Blue Goop® works most effectively with seat seal threads.

- Use anti-seize compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Size	Recommended Torque	
1/4-28 OS4	6–7.5 Nm	4.5–5.5 ft-lb
3/8-24 OS6	19–22 Nm	14–16 ft-lb
7/16-20 OS7	34–37 Nm	25–27 ft-lb

## SAPPHIRE/M3 NOZZLES

Sapphire and M3 Nozzle threads (OS2, OD3M) seal with the use of a thread sealing compound. Loctite® 680 is applied to the male thread. This type of thread needs to have a curing time of 24 hours before water pressure is applied.

- Use thread sealing compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Size	Recommended Torque	
M3 Drilled Nozzle	6–7.5 Nm	4.5–5.5 ft-lb
6-40 UNF Sapphire Nozzle	19–22 Nm	14–16 ft-lb

# FITTING ASSEMBLY GUIDELINES

## STONEAGE PROPRIETARY

StoneAge proprietary threads (G9, G12, G16, K) seal with the use of an O-Ring on the male thread and a flat face at the bottom of the female thread. They do not seal on the threads. A paste type anti-seize compound such as Swagelok Blue Goop® works most effectively with these StoneAge propriety threads.

## MEDIUM & HIGH PRESSURE FITTINGS

These “cone and thread” fittings use straight threads and seal on a tapered cone. There are two pressure ranges for this type of connection: medium pressure up to 22,000 psi, and high pressure up to 40,000 psi. The traditional design consists of pressure containing tubing with a cone on one end and a left-hand thread for a collar, and a larger gland nut with right-hand threads. Fitting sizes are indicated by tubing O.D.

Anti-vibe, an additional feature typically included, consists of a split tapered collet that grips the tubing in support to prevent cracking at the left-hand thread.

Variations of these fittings are made where the entire geometry is reproduced in one piece, and where the tubing itself is directly threaded into a port with either left or right hand threads.

Female ports have a weep hole that will leak if the fitting is not tightened, if the cone surface is damaged, or if the collar is not threaded on far enough to allow contact of the cone to the seat. If a connection leaks along the tubing through the inside of the gland nut, inspect for a crack in the tubing threads.

- Use anti-seize compound on male thread.
- Prepared fittings should engage fully by hand.

Thread Type	Recommended Torque	
G9	46–52 Nm	34–38 ft-lb
G12	75–81 Nm	55–60 ft-lb
G16	105–115 Nm	80–90 ft-lb
K	122–135 Nm	90–100 ft-lb

## Gland and Collar Assemblies

- Inspect cone surface for damage.
- Use Swagelok Blue Goop® on all male threads.
- Slide gland nut onto tubing, then thread on collar until one thread shows between collar and cone.
- Tighten medium pressure anti-vibe nut last while holding other flats.

## One Piece Connections

- Inspect cone surface for damage.
- Use Swagelok Blue Goop® on male threads.

Thread Size	Recommended Torque	
1/4-28 Left Hand	6.5 Nm	5 ft-lb
1/4-28 Right Hand	6.5 Nm	5 ft-lb
1/4 Gland and Collar 7/16-20	24 Nm	18 ft-lb
3/8-24 Left Hand	22 Nm	16 ft-lb
3/8-24 Right Hand	22 Nm	16 ft-lb
3/8 Gland and Collar 9/16-18	38 Nm	28 ft-lb
9/16-18 Left Hand	47 Nm	34 ft-lb
9/16-18 Right Hand	47 Nm	34 ft-lb
9/16 Gland and Collar 13/16-16	68 Nm	50 ft-lb
3/4-16 Left Hand	70 Nm	50 ft-lb
3/4-16 Right Hand	70 Nm	50 ft-lb
3/4 Gland and Collar 3/4-14 NPSM	102 Nm	75 ft-lb
1-12 Left Hand	98 Nm	70 ft-lb
1-12 Right Hand	98 Nm	70 ft-lb
1 Gland and Collar 1-3/8-12	135 Nm	100 ft-lb

# TECHNICAL REFERENCE

## STONEAGE THREAD SIZE CODING

We use several codes in StoneAge Part IDs to indicate relevant thread sizes:

NPT Thread Size	StoneAge Code
1/16 NPT	P1
1/8 NPT	P2
1/4 NPT	P4
3/8 NPT	P6
1/2 NPT	P8
3/4 NPT	P12
1 NPT	P16
1-1/4 NPT	P20
1-1/2 NPT	P24

BSPP Thread Size	StoneAge Code
1/8 BSPP	BSPP2
1/4 BSPP	BSPP4
3/8 BSPP	BSPP6
1/2 BSPP	BSPP8
3/4 BSPP	BSPP12
1 BSPP	BSPP16
1-1/4 BSPP	BSPP20

Metric Thread Size	StoneAge Code
M3 x .5	M3
M7 x 1	M7
M24 x 1.5	M24
M36 x 2	M36

Straight Thread Size	StoneAge Code
M3 x .5 Drilled Nozzle	OD3M
6-40 UNF Sapphire Nozzle	OS2
1/4-28 UNF Sapphire Nozzle	OS4
3/8-24 UNF Sapphire Nozzle	OS6
7/16-20 UNF Sapphire Nozzle	OS7

## FOR EXAMPLE:

**BN9.5-P1** is the Part ID for a Banshee swivel. The **P1** indicates 1/16 NPT inlet thread.

The same applies for nipples/lances: **SA 356-P8P4-12** is the Part ID for an extension nipple. The **P8P4** indicates 1/2 NPT one end and 1/4 NPT other end. The **-12** indicates overall length in inches.

For metric threads:

**BN9.5-M7** is the Part ID for a Banshee swivel. The **M7** indicates M7 x 1 inlet thread.

The same applies for adapters:

**GP 255-M240M24C** is the Part ID for a hose adapter. The **M24** indicates M24 x 1.5 thread on one side. The **0** designates an o-ring seal. The second **M24** indicates M24 x 1.5 thread on the other side, with the **C** designating an internal cone to suit a standard M24 Female hose end.

# TECHNICAL REFERENCE

## **NOTES:**



**1-866-795-1586 (TOLL FREE IN THE U.S.)  
970-259-2869 (OUTSIDE THE U.S.)  
[WWW.STONEAGETOOLS.COM](http://WWW.STONEAGETOOLS.COM)**

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# TECHNICAL REFERENCE

NOTES:



**1-866-795-1586 (TOLL FREE IN THE U.S.)  
970-259-2869 (OUTSIDE THE U.S.)  
[WWW.STONEAGETOOLS.COM](http://WWW.STONEAGETOOLS.COM)**

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# TECHNICAL REFERENCE

## STONEAGE THREAD SIZE CODING

MP Thread Size	StoneAge Code
1/4-28 Left Hand	MP4L
1/4-28 Right Hand	MP4R
1/4 Gland and Collar 7/16-20	MP4
3/8-24 Left Hand	MP6L
3/8-24 Right Hand	MP6R
3/8 Gland and Collar 9/16-18	MP6
9/16-18 Left Hand	MP9L
9/16-18 Right Hand	MP9R
9/16 Gland and Collar 13/16-16	MP9
3/4-16 Left Hand	MP12L
3/4-16 Right Hand	MP12R
3/4 Gland and Collar 3/4-14 NPSM	MP12
M14 x 1.5 Left Hand	MPM14L
1-12 Left Hand	MP16L
1-12 Right Hand	MP16R
1 Gland and Collar 1-3/8-12	MP16
HP Thread Size	StoneAge Code
1/4-28 Left Hand	H4L
1/4-28 Right Hand	H4R
1/4 Gland and Collar 9/16-18	H4
3/8-24 Left Hand	H6L
3/8-24 Right Hand	H6R
3/8 Gland and Collar 3/4-16	H6
9/16-18 Left Hand	H9L
9/16-18 Right Hand	H9R
9/16 Gland and Collar 1-1/8-12	H9
M14x1.5 Left Hand	HM14L
StoneAge Thread Size	StoneAge Code
9/16-18 UNF O-Ring Face	G9
3/4-16 UNF O-Ring Face	G12
1-12 UNF O-Ring Face	G16
1 1/8-12 UNC O-Ring Face	K
3/4 Type M Male	TM12

### FOR EXAMPLE:

**BN18-MP9L** is the Part ID for a Banshee swivel. The **MP9L** indicates 9/16-18 UNF left hand thread. So this tool would fit directly to a 9/16-18 LH hose or lance end.

**BN33-MP9** is the Part ID for a Banshee swivel. The **MP9** indicates a 9/16 MP inlet that requires a gland and collar, and the actual thread size is 13/16-16 UNF right hand. Check the fittings and adapters section for the correct selection of gland nut and collar or other adapter.

**BJV-MP12-S** is the Part ID for a BJV swivel. The **MP12** indicates a 3/4 MP inlet that requires a gland and collar, and the actual thread size is 3/4-14 NPSM right hand. Check the fittings and adapters section for the correct selection of gland and collar or other adapter.

**BN13-H4L** is the Part ID for a Banshee swivel. The **H4L** indicates 1/4-28 UNF left hand thread. The tool would fit directly to a 1/4-28 LH hose or lance end.

**BC-H9-C** is the Part ID for a Barracuda tool assembly. The **H9** indicates a 9/16 HP inlet that requires a gland and collar, and the actual thread size is 1 1/8-12 right hand. Check the fittings and adapters section for the correct selection of gland and collar.

## AIR MOTORS

Our most commonly used air motors are listed below. Use the information in the chart to the right to plan your compressed air requirements.



**SG 055**

**LM 016-4**

**LM 016-6**

MODEL	SG 055 & LM 016-4	LM 016-6
At Peak		
Rotation Speed	3000 rpm	3000 rpm
Power	1.7 HP 1.3 kW	4.0 HP 3.0 kW
Torque	36 in-lb 4.1 Nm	84 in-lb 9.5 Nm
Air Consumption	72 cfm 120 m³/hr	130 cfm 220 m³/hr
Air Pressure	100 psi 7 bar	100 psi 7 bar
At Minimum		
Rotation Speed	600 rpm	600 rpm
Power	0.35 HP 0.26 kW	0.75 HP 0.56 kW
Torque	32 in-lb 3.6 Nm	68 in-lb 7.7 Nm
Air Consumption	16 cfm 27 m³/hr	27 cfm 46 m³/hr
Air Pressure	60 psi 4.1 bar	60 psi 4.1 bar

## HYDRAULIC MOTORS

### LM 121 & LM 122

Use the information in the chart to the right to help you plan oil pumping and control requirements. Available with either 0° (LM 121) or 90° (LM 122) ports.



LM 121 & 122	CONTINUOUS	INTERMITTENT
Maximum Rotation Speed	1960 rpm	2430 rpm
Minimum Rotation Speed	50 rpm	N/A
Power	2.3 HP 1.7 kW	3.5 HP 2.6 kW
Torque	95 in-lb 4.1 Nm	135 in-lb 10.0 Nm
Oil Flow	4.2 gpm 1 m³/hr	5.3 gpm 1.2 m³/hr
Oil Pressure	1450 psi 100 bar	2000 psi 140 bar

## LUBRICANTS

MSDS sheets are available for all lubricants.

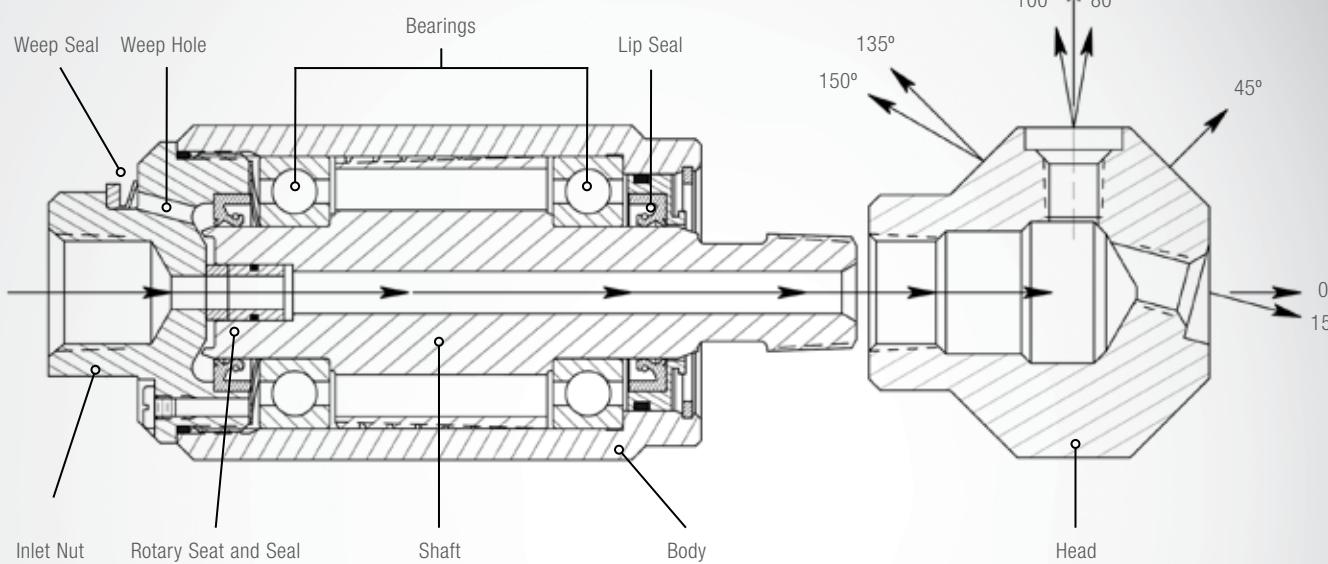


LUBRICANT	PART NUMBER	QTY	SOURCE	SPECIFICATION
Viscous Fluid	<b>BJ 048-X</b>	6 oz.	<b>STONEAGE®</b>	Synthetic Silicone Lubricant
Air Motor Oil	<b>GP 041</b>	32 oz.	Mobil	Almo 525/ISO 46/SAE 10
Auto Trans. Fluid	<b>GP 042</b>	32 oz.	NAPA®	Mercon®/Dexron® ATF
Anti-Seize	<b>GP 043</b>	2 oz.	Swagelok	Blue Goop®
Motor Oil	<b>GP 044</b>	32 oz.	NAPA®	10W-40
Gearbox Lube	<b>GP 046</b>	32 oz.	NAPA®	80W-85W-90
Thread Sealant	<b>GP 047</b>	4 oz.	Parker	ThreadMate®
Grease	<b>GP 048</b>	14 oz.	Mobil	Synthetic Grease SHC 100

# SERVICE & SUPPLIES

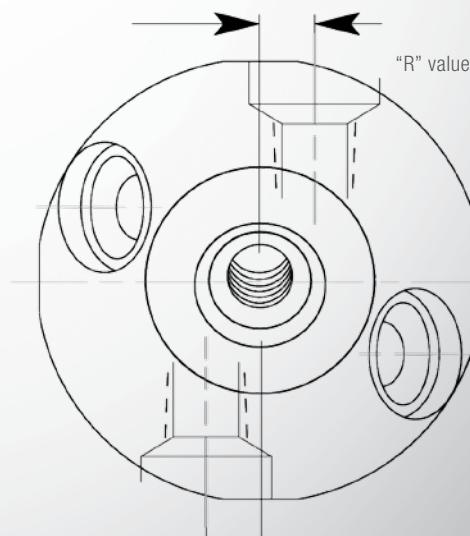
# TECHNICAL REFERENCE

## STONEAGE SWIVEL BASICS



**StoneAge swivels are designed for optimal delivery of high pressure water for cleaning applications:**

- Water flows in a direct path through the tool from the inlet
- Weep seals keep contaminants out of the high pressure seat area
- Weep holes allow water that may leak past the high pressure seat to escape – if a seat leaked and the nut was unable to release pressure, it could “wash out” the viscous fluid or blow the inlet nut off the end of the tool.
- In our rotary seat and seal design, brass or carbide seats seal against inlet nut. The plastic seal under the seat “swells” and rotates with the shaft and against the seat so the seat does not rotate against the nut
- Lip seals seal in governor fluid (the fluid helps to control rotation speed) and keep contaminants out
- Jet ports are called by degree, zero being in a straight line with the inlet side of the tool



- The “R” value on our heads is the offset at 90°, even if the head has no ports there

## ⚠ WARNING ⚠

Operations with waterblast equipment can be potentially hazardous. Caution MUST be exercised prior to and during machine and water jet tool use.

Please read and follow all of these instructions, in addition to the guidelines in the WJTA Recommended Practices handbook, available online at [www.wjta.org](http://www.wjta.org). Deviating from safety instructions and recommended practices can lead to severe injury and/or death.

- Do not exceed the maximum operating pressure specified for any component in a system.
- The immediate work area MUST be marked off to keep out untrained persons.
- Inspect the equipment for visible signs of deterioration, damage, and improper assembly. Do not operate if damaged, until repaired.
- Make sure all threaded connections are tight and free of leaks.
- Always de-energize the system before opening a door to service or replace any parts. Failure to do so can result in severe injury and/or death.

### Pre-Run Safety Check

Install mechanical stops, stingers and back out preventers as appropriate when doing any tube, pipe or vessel cleaning. See the WJTA-IMCA's Recommended Practices for the use of high-pressure water jetting equipment and/or the water jetting association's, WJA Code of Practice for additional safety information.

- Complete a job specific risk assessment and act on the resulting actions.
- Adhere to all site specific safety procedures.
- Ensure the waterblasting zone is properly barricaded and that warning signs are posted.
- Ensure the work place is free of unnecessary objects (e.g. loose parts, hoses, tools).
- Ensure all Operators are using the correct Personal Protective Equipment (PPE).
- Check that the air hoses are properly connected and tight.
- Check all hoses and accessories for damage prior to use. Do not use damaged items. Only high quality hoses intended for waterblast applications should be used as high-pressure hoses.
- Check all high-pressure threaded connections for tightness.
- Operate the high-pressure water at full pressure and use the Pneumatic Foot Pedal Dump Control to verify that the dump valve is working properly.
- Ensure that Operators never connect, disconnect, or tighten hoses, adapters, or accessories with the high-pressure water pump unit running.
- Ensure no personnel are in the hydroblasting zone.

### Personal Protective Equipment

Use of Personal Protective Equipment (PPE) is dependent on the working pressure of water and the cleaning application. Managers, Supervisors, and Operators MUST carry out a job specific risk assessment to define the exact requirements for PPE. See Protective Equipment for Personnel (Section 6) of WJTA-IMCA's Recommended Practices For The Use Of High-pressure Water jetting Equipment for additional information.

- Hygiene—Operators are advised to wash thoroughly after all waterjetting operations to remove any waterblast residue which may contain traces of harmful substances.
- First aid provision—users MUST be provided with suitable first aid facilities at the operation site.

### PPE MAY INCLUDE:

- Eye protection: Full face visor
- Foot protection: Kevlar® brand or steel toe capped, waterproof, non-slip safety boots
- Hand protection: Waterproof gloves
- Ear protection: Ear protection for a minimum of 85 dBA
- Head protection: Hard hat that accepts a full face visor and ear protection
- Body protection: Multi-layer waterproof clothing approved for water jetting
- Hose protection: Hose shroud
- Respiratory protection: May be required; refer to job specific risk assessment

StoneAge has designed and manufactured this equipment considering all hazards associated with its operation. StoneAge assessed these risks and incorporated safety features in the design. StoneAge WILL NOT accept responsibility for the results of misuse.

- IT IS THE RESPONSIBILITY OF THE INSTALLER/OPERATOR to conduct a job specific risk assessment prior to use. Job specific risk assessment MUST be repeated for each different set up, material, and location.
- The risk assessment MUST conform to the Health and Safety at Work Act 1974 and other relevant Health and Safety legislation.
- The risk assessment MUST consider potential material or substance hazards including: **Aerosols, Biological and microbiological (viral or bacterial) agents, Combustible materials, Dusts, Explosion, Fibers, Flammable substances, Fluids, Fumes, Gases, Mists, Oxidizing Agents.**

# MAINTENANCE KITS

STONEAGE TOOL	SERVICE KIT	SEAL KIT	OVERHAUL KIT	TOOL KIT	LUBRICANT
BARRACUDA - BC-K - 20K PSI	BC 600	BC 602	BC 610	BC 612	GP 042
BARRACUDA - BC-H9-C - 40K PSI	BC 600-H9-C	BC 602-H9-C	BC 610-H9-C	BC 612	GP 042
BJV-M	BJ 600-M-X	BJ 602-M	BJ 610-M-X	BJ 612	BJ 048-X
BJV-M24	BJ 600-M24-X	BJ 602-M	BJ 610-M24-X	BJ 612	BJ 048-X
BJV-P16	BJ 600-P16-X	BJ 602-P16	BJ 610-P16-X	BJ 612	BJ 048-X
BJV-20K	BJK 600-X	BJK 602	BJK 610-X	BJK 612	BJ 048-X
BJV-H9	BJ 600-H9-X	BJ 602-H9	BJ 610-H9-X	BJ 612-H9	BJ 048-X
GOPHER - GO-M9 - 20K PSI	GO 600	GO 602	GO 610	GO 612	GP 044
GOPHER - GO-H9-C - 40K PSI	GO 600-H9-C	BC 602-H9-C	GO 610-H9-C	GO 612	GP 044
RAPTOR - RPT	RPT 600-X	RPT 602	RPT 610-X	RPT 612	BJ 048-X
BADGER - 15K PSI	BA 600-X	BA 602	BA 610-X	BA 612	BJ 048-X
BADGER - 20K PSI	BA 600-20K-X	BA 602-20k	BA 610-20K-X	BA 612	BJ 048-X
BADGER - BA-P8 & BA-M9	BA 600-P8/M9	BA 602-P8/M9	BA 610-P8/M9	BA 612-P8/M9	BJ 048-F
BADGER - BA-40K	BA 600-H6	BA 602-H6	BA 610-H6	BA 612-H6	BJ 048-F
CST	CST 600		CST 610		GP 048
TORUS	TR 600	TR 602	TR 610		GP 048
TORUS TR-130	TR130 600	TR130 602	TR130 610		GP 048
TORUS TR-200	TR200 600	TR200 602	TR200 610		GP 048
SA 1900, SA 1909	HI 600		HI 610		GP 048
SL-P8P4	SL 600-P		SL 610-P	SL 612	GP 048
SL-M9AV9	SL 600-K		SL 610-K	SL 612	GP 048
SG-P8P8 & SG-M12M12	SG 600		SG 610	SG 612	GP 048
SG-P12P12-M & SG-M16M16	SG 600-M		SG 610-M	SG 612	GP 048
SG-CCN	SG 600-CCN		SG 610-CCN	SG 612	GP 048
SH-P8P8	SH 600		SH 610		GP 048
SM-P16	SM 600-P16		SM 610-P16		GP 048
SM-P20	SM 600-P20		SM 610-P20		GP 048
HI	HI 600		HI 610		GP 048
UH-H9H6	UH 600		UH 610	UH 612	GP 048
UHS-H9H9	UHS 600		UHS 610	UHS 612	GP 048

**NOTE:** X Indicates fast or slow rotation speeds available. Please specify when ordering.

# MAINTENANCE KITS

## STONEAGE SERVICE KITS CONTENTS

### SERVICE KITS

Kits contain everything needed for routine maintenance, including: high pressure seals, critical o-rings, a seat for the high pressure seal (where applicable), 6 oz. of viscous fluid for rotation control (where applicable) and a fill tube or syringe. Call or visit our website for specific details regarding individual service kits.

### SEAL KITS

Identical to the Service Kits, but does not include viscous fluid, fill tube and syringe. These kits are for customers who already have these items. Call or visit our website for specific details regarding individual seal kits.

### OVERHAUL KITS

Kits contain normal wear items, including: a single high pressure seal and seat, shaft seals, bearings and 6 oz. of viscous fluid (where applicable). Call or visit our website for specific details regarding individual overhaul kits.

### TOOL KITS

These kits differ for every StoneAge tool. They contain special tools for seating shaft seals or performing other tool-specific maintenance. Call or visit our website for specific details regarding individual tool kits.

### LUBRICANTS

Lubricants are available in each manufacturer's packaging for your convenience.

# TECHNICAL REFERENCE

## **NOTES:**



**1-866-795-1586 (TOLL FREE IN THE U.S.)  
970-259-2869 (OUTSIDE THE U.S.)  
[WWW.STONEAGETOOLS.COM](http://WWW.STONEAGETOOLS.COM)**

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# TECHNICAL REFERENCE

## NOTES



**1-866-795-1586 (TOLL FREE IN THE U.S.)  
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# CUSTOMER SERVICE

**1-866-795-1586 (TOLL FREE IN THE U.S.)**

**OUTSIDE THE US: 970-259-2869 • SALES@STONEAGETOOLS.COM**

**HOURS: 8:00 AM - 5:00 PM MONDAY - FRIDAY (USA MOUNTAIN TIME)**

## TECHNICAL SUPPORT

For Technical Support in North America, please contact StoneAge. Outside of North America, please visit our website at [www.stoneagetoools.com](http://www.stoneagetoools.com).

## MANUALS

Operator's manuals and repair videos for all equipment are available online. They illustrate tools, identify parts, and detail maintenance and overhaul procedures.

## REPAIRS

Repair & Maintenance Service is available by the same technicians who build and test our tools. We try to complete repairs and test every tool within three days of receipt. You must call StoneAge for an RMA number prior to sending your tool in for repair.

### Send tool to:

StoneAge Inc. Attention Repairs, 466 S. Skylane Dr., Durango CO 81303, USA

## LEAD TIME

Parts and Service Kits are available to ship same day as ordered. Standard tools can usually be shipped the next day. Custom porting of heads usually requires 3-4 days to schedule through the factory. More complicated systems like Lancing Machines are built when ordered, which can take several weeks depending on factory backlog. Check availability and place orders early enough to avoid scheduling conflicts.

## ORDERING

Call or email your order to StoneAge or an authorized dealer with purchase order number, shipping and billing addresses, and delivery date. Check datasheet to ensure specifications are complete. Advise whether we should hold shipment until all items are available.

## SHIPPING

Shipping is pre-paid and invoiced with order but may be charged directly to the customer's account with selected courier by special instruction. Most orders are shipped via UPS or Fed Ex couriers; specify a preference if you wish. Larger equipment will be shipped by truck or air freight. Either party may make the arrangements. Airline counter-to-counter delivery is not reliable from our mountain location.

## PAYMENT

Major credit cards or bank transfers are accepted. Pre-payment is required to ship custom equipment.

## RETURNS

Any parts returned for credit or warranty must be accompanied by a StoneAge RMA number. Please contact a Customer Service Specialist or Authorized Dealer to obtain an RMA number. A minimum restocking fee of 15% applies to standard items returned unused. Returns will only be accepted on unused items returned 6 months or less from invoice date. All returns and restocking fees are subject to StoneAge final decision. Returns of custom products and obsolete items are not accepted.

# TERMS & CONDITIONS

PRODUCTS SOLD BY SELLER ARE DESIGNED AND INTENDED TO BE USED AT HIGH PRESSURES AND SPEEDS, AND MAY BE DANGEROUS IF OPERATED IMPROPERLY OR WITHOUT THE USE OF APPROPRIATE SAFETY DEVICES AND GUARDS. BUYER IS CAUTIONED TO CAREFULLY READ AND UNDERSTAND THESE TERMS AND CONDITIONS, AS THEY HAVE IMPORTANT LEGAL CONSEQUENCES.

**1. Purchase Orders.** Buyer shall order products in accordance with these Terms and Conditions. Orders for the purchase of products ("Purchase Order(s)") must be submitted to Seller by an authorized representative of Buyer by email. Each Purchase Order shall specify (i) the quantity of products being ordered, (ii) product prices, (iii) payment terms granted by Seller, and (iv) a requested receipt date. Requested receipt dates must be during the term of the Waterblast Tool Reseller Agreement, except, in its sole discretion, Seller may elect to accept a Purchase Order with a requested receipt date after the expiration or termination of Waterblast Tool Reseller Agreement, in which case these Terms and Conditions shall apply to such shipment, but under no circumstances should such shipment be deemed to be or construed as being a renewal, amendment or extension of the Waterblast Tool Reseller Agreement. The Parties agree that these Terms and Conditions shall prevail over any conflicting terms and conditions in any Purchase Order, acknowledgement form, or other instrument. Any additional or different terms or conditions in any Purchase Order, acknowledgement form, or other instrument or response from Buyer shall be deemed rejected by Seller without need of any further or additional notice of rejection, and such additional or different term shall be of no effect or in any way binding upon Seller. Seller assumes and shall have no liability for any delay in filling or shipping any Purchase Orders.

**2. Acceptance of Purchase Order by Seller.** Purchase Orders are subject to written acceptance by an authorized representative of Seller and such acceptance is made expressly conditional on assent by an authorized representative of Buyer to the Terms and Conditions. Seller reserves the unconditional right to reject any Purchase Order, in whole or in part. Purchase Orders submitted by Buyer shall not be binding on Seller until the earlier of written acceptance by Seller or shipment, and acceptance by shipment shall only be binding as to the portion of the Purchase Order actually shipped by Seller. Any automatic or computer generated response to a Purchase Order by Seller's internal electronic data exchange system or otherwise shall not be deemed acceptance of a Purchase Order. Notwithstanding the foregoing, Seller reserves the right to refuse, cancel, modify or delay any Purchase Order placed by Buyer and accepted by Seller when Buyer is delinquent in payments or when Buyer has failed to perform any of its obligations under the Waterblast Tool Reseller Agreement.

**3. Payment/Prices.** Unless other arrangements have been made in writing between Seller and Buyer, payment for product delivered shall be made upon receipt of invoice. The prices shown on the face hereof are those currently in effect. Prices invoiced shall be per pricelist in effect at the time of shipment. Prices are subject to increase for inclusion of any and all taxes which are applicable and which arise from the sale, delivery or use of Seller's products or services and for the collection of which Seller is or may be responsible to any governmental authority unless acceptable exemption certificates are provided by Buyer in accordance with law. Buyer shall pay all charges for transportation and delivery and all excise, order, occupation, use or similar taxes, duties, levies, charges or surcharges applicable to the equipment or services being purchased, whether now in effect or hereafter imposed by any governmental authority, foreign or domestic.

**4. Warranty.** Subject to the limitations and conditions hereinafter set forth, Seller warrants to the original Buyer that its products are free from defects in workmanship and material for a period of six (6) months from shipment. Seller's obligation under this warranty shall be limited to repairing, replacing or issuing a credit for, at Seller's option, any products or services it finds to be defective in material or workmanship. In no event shall Seller be liable for any incidental, consequential or indirect damages of any kind. THIS WARRANTY SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY FOR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. No statement or recommendation made by Seller or its representative to Buyer or User shall constitute a warranty by Seller or a waiver or modification to any of the provisions hereof or create any liability for Seller. All warranty claims are subject to the exclusions and limitations set forth below:

a. The warranty shall not apply if the product or service (1) has been subject to misuse, negligence or accident; (2) has not been installed or operated in accordance with Seller's recommendations; (3) has been operated under more severe conditions than those specified for the particular product or service; (4) has been operated beyond the rated capacity of the product; or (5) has been repaired or altered outside Seller's facilities or in any way so as, in Seller's judgment, to affect its stability or reliability.

b. Products that Seller furnishes, but does not manufacture, carry only the warranty of the manufacturer of such products. Where other manufacturers' or suppliers' products used in Seller's products or services prove defective, Seller's liability shall exist only to the extent that Seller is able to recover from such manufacturers or suppliers for such defects.

c. Any warranty granted by Seller to the Buyer shall be deemed void if any goods covered by such warranty are used for any purpose not recommended or permitted. In addition, the Buyer shall indemnify Seller and hold Seller harmless from and against any and all claims, damages, losses, costs, expenses and other liability of whatever nature that Seller suffers or incurs by reason of any such unintended use.

d. Notice of defective product or service must be given in writing to Seller by Buyer or User within fifteen (15) business days following receipt of goods. Buyer or User shall keep such products or services in an unaltered condition for examination by Seller's representative. No goods may be returned for credit or adjustment without prior written permission from Seller.

**5. Product Liability.** Buyer specifically acknowledges that the products being purchased may be operated at high speeds and/or pressures, and that as such they may be inherently dangerous if not used correctly. Buyer shall be solely responsible for the safe operation of the products at all times and for determining the safety devices and guards that may be required for the safe operation of the products. Buyer shall undertake to specify and order all safety devices and guards necessary for the safe operation of the equipment covered. All safety devices and guards offered in Seller's quotations are recommended for purchase. Seller may provide necessary safety devices and guards not offered in the quotation at an extra price in accordance with the specifications of Buyer. Buyer shall at all times use and require its employees to use all necessary and appropriate safety devices, guards and proper safe operating procedures. Buyer shall not remove or modify any such devices, guards or warning signs and shall insist on safe operating practices on the part of its personnel. In no event shall Seller be responsible for any injuries to persons or property caused by defects in any equipment, including by way of illustration and not limitation, any pumps, compressors, fittings, connections, components, piping or hoses up to the point that same are connected to the product. Buyer agrees to indemnify and to save Seller harmless from any and all liability or obligation incurred by or against Seller, including costs and attorneys' fees, to or by any persons injured directly or indirectly in the operation of the equipment furnished under the following conditions:

- a) if Buyer fails to purchase and use necessary and appropriate safety devices and guards as determined by Buyer and/or as recommended by Seller;
- b) if Buyer fails to maintain in good working order such safety devices and guards as are purchased from Seller;
- c) c. if Buyer adds, omits, repairs, modified, replaces or substitutes any components on the equipment without permission from Seller;
- d) d. if Buyer exceeds at any time the maximum safe loads, pressures or speeds recommended by Seller for the equipment furnished hereunder without the specific written consent of Seller; or
- e) e. if Buyer otherwise fails to operate the product or equipment in accordance with Seller's printed instructions or otherwise negligently operates the equipment.

**6. Delivery.** Shipment of products shall be F.O.B. the Seller's warehouse. Title and risk of loss will pass F.O.B. Seller's shipping point. Buyer will be responsible for and pay all freight, shipment, and insurance charges associated with shipment of the products, even if the order is rejected upon delivery. Seller, in its sole discretion, will determine and arrange the means and manner of transportation of the products.

Seller shall use commercially reasonable effort to ship products to Buyer on or before the requested receipt date designated in a Purchase Order. The Parties agree, however, that shipment of any products ordered from Seller under these Terms and Conditions may be delayed for a period of time sufficient to allow Seller to manufacture and assemble or otherwise acquire the products for Buyer. The Parties further agree that Seller shall not be held liable to Buyer or any other party for any delay in shipment of any Purchase Order.

Order errors must be reported by Buyer within fifteen (15) business days from receipt of shipment to secure adjustment. No merchandise may be returned without securing written approval from Seller.

**7. Seller's Right to Delay, Cancel, or Allocate.** Notwithstanding the Seller's obligations under the Waterblast Tool Reseller Agreement, Seller reserves the right to refuse, cancel, modify or delay any shipment to Buyer when Buyer is delinquent in payments, when payment for shipment has not been arranged to Seller's reasonable satisfaction, or when Buyer has failed to perform any of its obligations under the Waterblast Tool Reseller Agreement. Should any Buyer Purchase Order for products exceed Seller's available inventory, Seller shall in its sole discretion determine how to allocate its current and anticipated inventory without liability to Buyer on account of the method of allocation determined or its implementation.

**8. Technical Advice.** All technical advice, recommendations and services of Seller are intended for use by persons having adequate skill, at their own risk, and Seller assumes no responsibility, and Buyer hereby waives all claims against Seller, for results obtained or damages incurred from the use of Seller's advice, recommendations and services.

**9. Modification.** These Terms and Conditions are intended by Seller and Buyer to constitute a final, complete and exclusive expression of agreement and cannot be supplemented or amended without Seller's prior written approval. Seller's waiver of any breach or failure to enforce any of the Terms and Conditions at any time, shall not in any way affect, limit or waive Seller's right thereafter to enforce and compel strict compliance with every Term and Condition thereof. If any provisions of these Terms and Conditions are held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the other portions hereof.

**10. Disputes.** Buyer and Seller shall attempt in good faith promptly to resolve any dispute arising under these Terms and Conditions by negotiations between representatives who have authority to settle the controversy. If unsuccessful, Buyer and Seller shall further attempt in good faith to settle the dispute by nonbinding third-party mediation, with fees and expenses of such mediation apportioned equally to each side. Any dispute not so resolved by negotiation or mediation may then be submitted to a court of competent jurisdiction in accordance with the terms hereof. These procedures are the exclusive procedures for the resolution of all such disputes between the parties.

All sales, agreements for sale, offers to sell, proposals, acknowledgments and contracts of sale, including, but not limited to, Purchase Orders accepted by Seller, shall be considered a contract under the laws of the State of Colorado and the rights and duties of all persons, and the construction and effect of all provisions hereof shall be governed by and construed according to the laws of such state. A state or federal court located within the State of Colorado shall have sole and exclusive jurisdiction over any litigation concerning any such matters as well as any alleged defects of any products or equipment covered thereby or damages sustained as a result of such alleged defects.

If any litigation is commenced between Seller and Buyer, or their personal representatives, concerning any provision hereof, the party prevailing in the litigation shall be entitled, in addition to such other relief that is granted, to a reasonable sum as and for their attorneys' fees and costs in such litigation or arbitration.

### STONEAGE TRADEMARK LIST

View the list of StoneAge's trademarks and service marks and learn how the trademarks should be used. Use of StoneAge trademarks may be prohibited, unless expressly authorized.

<http://www.stoneagetoools.com/trademark-list>

### STONEAGE PATENT DATA

View the list of StoneAge's current U.S. patent numbers and descriptions.

<http://www.sapatents.com>

# STONEAGE NORTH AMERICA



## STONEAGE HEADQUARTERS

DURANGO, CO

- **1-866-795-1586 (TOLL FREE IN THE U.S.)**
- **.970-259-2869 (OUTSIDE THE U.S.)**
- **SALES@STONEAGETOOLS.COM**
- **8:00 AM - 5:00 PM MON. - FRI. (U.S.A. MOUNTAIN TIME)**

## REGIONAL LOCATIONS

### TEXAS

Pasadena, TX  
(281) 888-5069

### LOUISIANA

Geismar, LA  
(225) 508-3520

### OHIO

North Royalton, OH  
(440) 230-8080



## EQUIPMENT RENTAL

### UNITED STATES:

- STONEAGE TEXAS  
(281) 888-5069
- STONEAGE LOUISIANA  
(225) 508-3520
- STONEAGE OHIO  
(440) 230-8080

### CANADA:

- JOE JOHNSON EQUIP.  
Innisfil, Ontario  
705-733-7700
- JOE JOHNSON EQUIP.  
Edmonton, Alberta  
Phone: 780-469-1584

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