

2014

WATERBLAST TOOLS & ACCESSORIES



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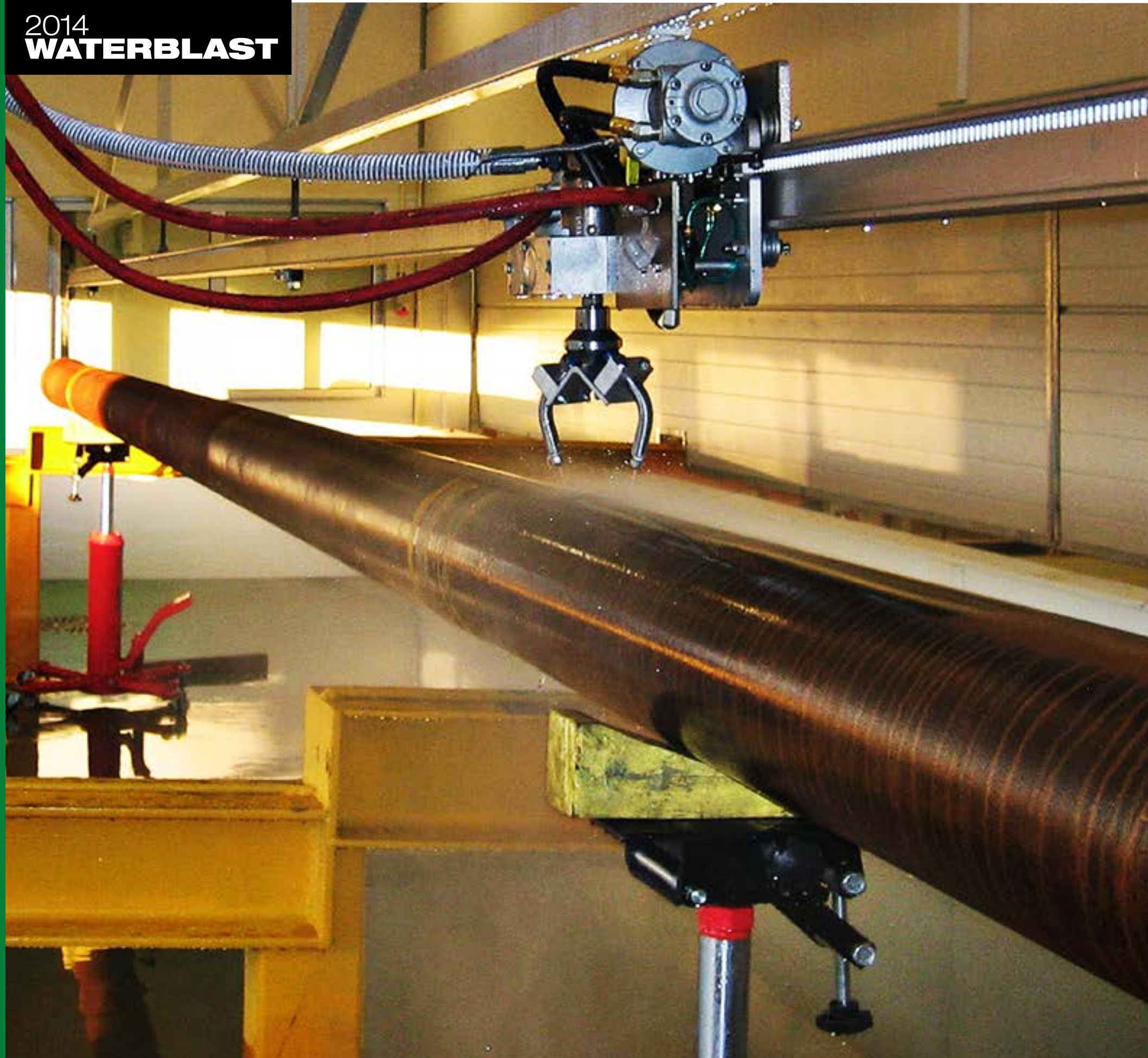
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AUTOMATED SURFACE
CLEANING



AUTOMATED SURFACE CLEANING



AUTOMATED SURFACE CLEANING



The Blastrack System is excellent for remote ship hull cleaning.

Eliminate Shotgun Cleaning

BLASTRACK

Automated, Modular Systems

The Blastrack is a simple rail and tractor system that automates the cleaning process for most surfaces. All components of the system can be configured specifically to the job.

This system is portable, can be modified to fit different lengths.

IDEAL FOR CLEANING:

- External tube bundles
- Tunnel walls
- Ship hulls
- OD pipes
- Conveyors
- Stacks/pilings
- Concrete scarification

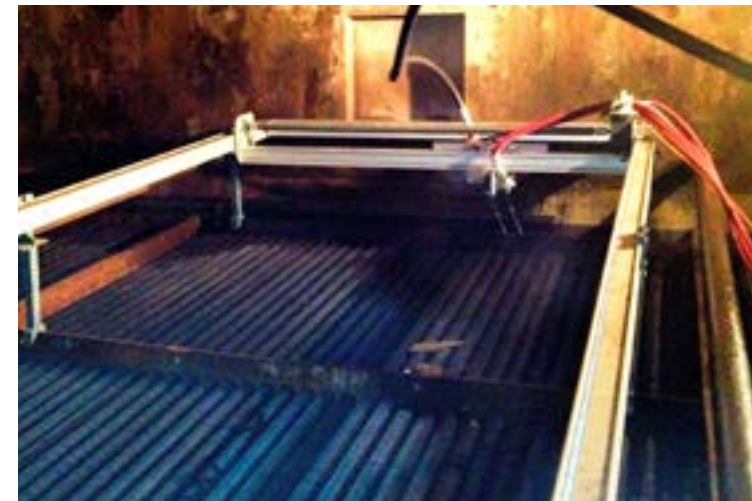


TOOL OVERVIEW:

Max. Pressure	Up to 40 k psi - (2800 bar)
Flow	110 gpm - (38 l/min)
Rotation Speed	10-1000 rpm
Linear Speed	7-40 ft/min - (2-12 m/min)

Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

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XY Positioner for cleaning horizontal surfaces



Remote control keeps operators at a safe distance

TOOL FEATURES:	HOW THIS HELPS:
Automated replacement for shotgun cleaning	Safer working environment for operators
Controlled linear motion	Adapt dwell time to application
Independent speed and rotation controls	Maximize efficiency and decrease cleaning time
Versatile box rail track	Can be adapted to any length
Moveable stops	Adjustable travel distance and engage auto-reverse
Exchangeable assembly	Can be adapted to a wide range of applications
X-Y configuration available	Can be modified to clean large surfaces in four directions
Circular drive rail available	Can be modified to clean round surfaces

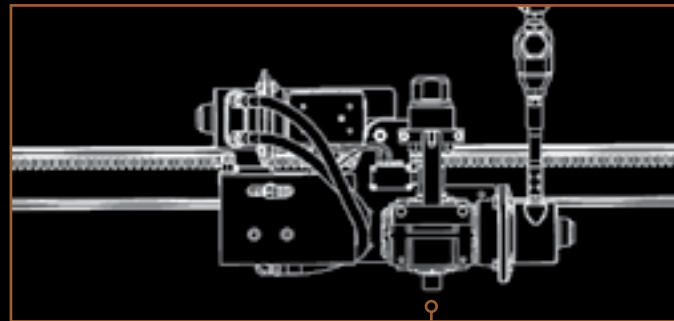
SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



TOOLTALK

THREE PRIMARY COMPONENTS MAKE UP THE BLASTRACK SYSTEM:



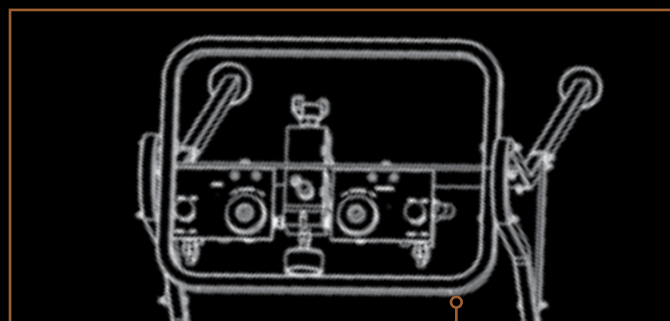
▶ TRACTOR

Air motor powered linear motion along a slotted rail. Designed to support various models of rotating waterblasting heads.



▶ DRIVE RAIL

Sections of rail may be spliced together for longer lengths. Tractor automatically switches direction when contacting adjustable stops.



▶ CONTROL BOX

Remote panel controls the travel and rotation speeds while keeping the operator at a safe distance.



CREATE INFINITE CLEANING POSSIBILITIES:



Exterior Tube Bundle Cleaning



X/Y Positioner



Circular Piling Cleaner



OD Pipe Cleaner



Vertical Tube Face Cleaner



Tunnel Cleaning/Resurfacing



Ship Hull Cleaning



Conveyor Belt Cleaning

CHALLENGE US. WHAT DO YOU NEED TO CLEAN?

Custom built for the toughest applications the Blastrack system delivers the durability professionals have come to expect from StoneAge.

Contact StoneAge Automated Solutions at: 1-970-259-2869



POWERED ROTATION

Air or Hydraulic Powered Swivel

Powered Rotation units control 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 40k psi bar and various rotation speeds.

IDEAL FOR:

- External tube bundle and tunnel wall cleaning mounted on the StoneAge Blastrack System
- Floors, conveyors and large surfaces



TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	Up to 110 gpm - (38 l/min)
Rotation Speed	250-1000 rpm
Weight	26-30 lbs - (12-14 kg)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



SELF ROTATING

Self-Rotary Cleaning Heads

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

IDEAL FOR:

- Conveyor belt cleaning
- Airport runway rubber removal
- Belts, screens and coatings
- Degreasing and decontaminating concrete
- Use this unit for manufacturing floor cleaners



TOOL OVERVIEW:

Pressure	Up to 22k psi - (1500 bar)
Flow	Up to 50 gpm - (190 l/min)
Rotation Speed	300-1000 rpm
Weight	25 lbs - (11 kg)

TOOL FEATURES:	HOW THIS HELPS:
Water propelled rotation	Eliminates the need for expensive air drives
Radiused arms	Produce powerful and effective jets
Adjustable rotation speeds	Dwell time can be made longer for heavier deposits or shorter for lighter deposits
Protective nozzle guards	Help keep nozzles protected from splashback
Replaceable nozzle tips	Maximize jet quality
2 sizes available	Optional 18" or 24" jet paths

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



ROTARY SHOTGUN
CLEANING





NEW FOR 2014
IMPROVED SPITFIRE
ROTARY SHOTGUN TOOL

SPITFIRE

Rotary Shotgun Tools for Thin, Hard Deposits

The new design replaces the female shaft with a male shaft/head connection, improving shaft durability and allowing for two different head configurations.

• **SHROUDED HEAD VERSION**

External shroud protects the tool from lateral impacts.

• **BUMPER HEAD VERSION**

Used when debris would otherwise lodge in the shroud, preventing head rotation.

IDEAL FOR:

- Removing hardened paint and epoxies
- Cleaning/preparing surfaces for re-coating

TOOL FEATURES:	HOW THIS HELPS:
Self-propelled rotation	Eliminates the need for expensive compressed air drives
Patented liquid bearing technology	Simple to maintain – no bearings, seals or lubricants
Extra light weight	Decreases operator fatigue
Hardened stainless steel shroud	Protects head for increased durability



TOOL OVERVIEW:

Pressure	5k-22k psi - (345-1500 bar)
Flow	2.3-15 gpm - (8.7-57 l/min)
Rotation Speed	3000-5000 rpm
Diameter	1.7 in. - (43 mm)
Length	4.8 in. - (122 mm)
Weight	1.6 lbs - (0.73 kg)

NEW MODELS READY FOR IMMEDIATE DELIVERY



NEW DESIGN AVAILABLE



Titanium Head

Lighter weight equals less operator fatigue.

Low-flow Design

Rotates consistently with less water allowing multiple guns to be used from one pump.

BARRACUDA

Rotary Shotgun Tools for Thick, Heavy Deposits

The Barracuda is excellent for cleaning surfaces where an operator can more efficiently maneuver a hand-held tool. Highly adaptable and simple to maintain.

IDEAL FOR:

- Concrete demolition and scarification
- Removing tar and asphalt deposits from equipment
- Cutting rubber
- Easily adaptable to remote shotgun equipment

TOOL FEATURES:	HOW THIS HELPS:
Centrifugal speed control	Longer jet dwell times for hard to remove deposits
2 or 4 jet configuration	Choose the best configuration for your specific type of job
Easy field maintenance	Lubricating fluid can be easily flushed and refilled for continual productivity on the job
Optional inlet adapters for 15k or 22k psi	One tool adapts to multiple pressure ranges

TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	1.6-15 gpm - (6-57 l/min)
Diameter	1.8 in. - (46 mm)
Length	7.8 in. - (199 mm)
Weight	2.6 lbs - (1.2 kg)

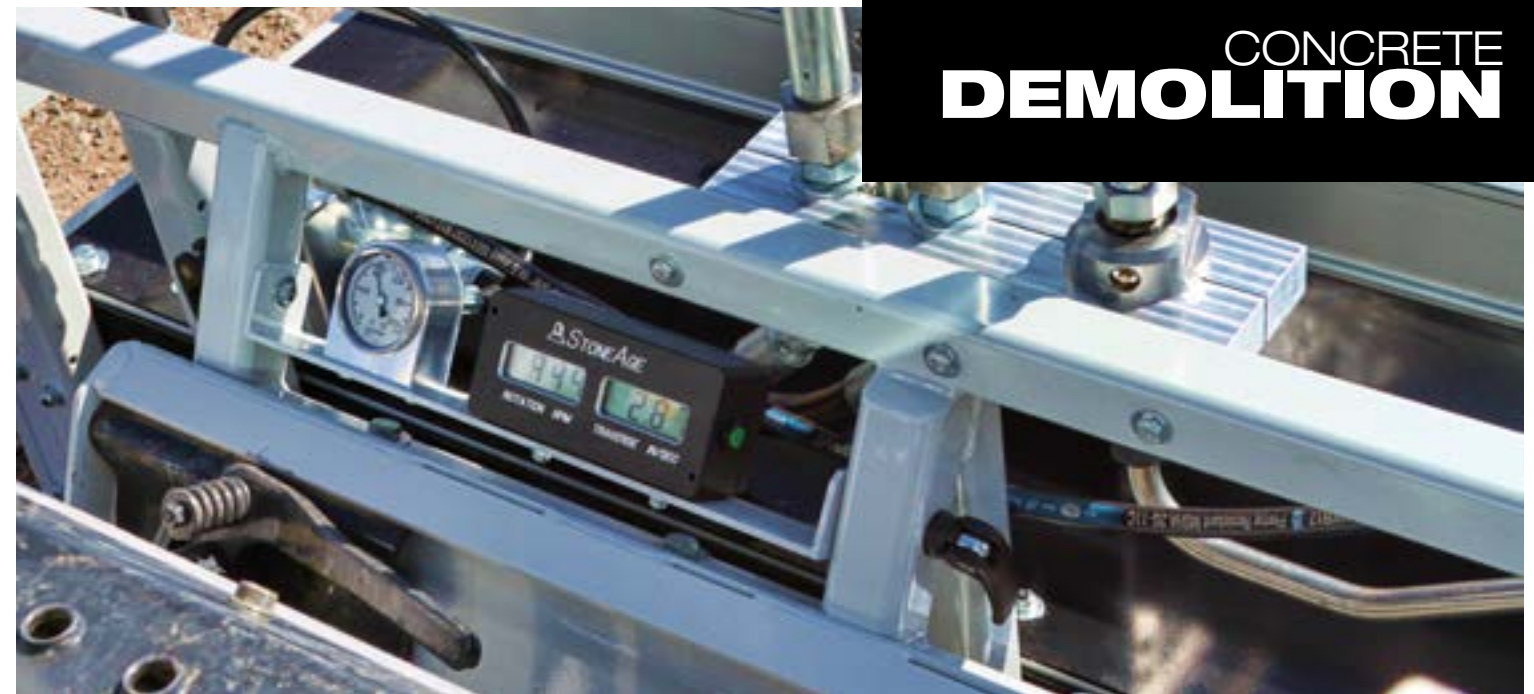
SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



CONCRETE
DEMOLITION





Wireless display features rotation speed in rpm and traverse rate in in/sec

New for 2014

BLACKHAWK

Automated Concrete Demolition System

The Blackhawk is a cost-effective and safer alternative to traditional methods of removing and scarifying concrete.

The universal mounting plate allows the tool to easily adapt to your choice of implement (Skid Steer, SkyTrack, etc.)

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 weak areas
- Removes up to 1 foot (depth) or more based on pressure, flow, and grade of concrete
- Removing concrete without causing damage to steel/rebar structure or fracturing



TOOL OVERVIEW:

Pressure	22k psi - (1500 bar)
Flow	50 gpm - (190 l/min)
Weight	1200 lbs - (544 kg)
Machine Attachment	Universal Skid Steer Plate

Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

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Supplied quick connectors attach to most standard flow skid steers



Rubber lined shroud reduces noise and contains debris

TOOL FEATURES:	HOW THIS HELPS:
Universal mounting plate	Usable in any orientation with many different machines
Can be configured to specific nozzle standoff, traverse and rotation speeds/rates	Maintains consistent/repeatable results. No need to reconfigure after each use.
Adjustment knobs are on the front of the carriage	Rotation speed and traverse speed are independently adjustable
Rubber lined shroud	Reduces noise and contains debris
Moveable stops on either side control travel distance	Adjustable travel for specific applications
Wireless display system	Displays rotation speed in rpm and traverse rate in in/sec to operator

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



AUTOMATED FLOOR **CLEANING**



AUTOMATED FLOOR CLEANING



FLOOR CLEANERS

Air Powered or Self-Rotary Surface Cleaning

These systems perform a wide range of functions, including cleaning paint markings and degreasing surfaces, as well as removing coatings, contaminants and membranes. They are sufficiently powerful to scarify concrete.

IDEAL FOR:

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

TOOL FEATURES:	HOW THIS HELPS:
Adjustable rotation speeds	Longer dwell time for heavier deposits or shorter for lighter deposits
Easy height adjustment	Adapt standoff distance to surface conditions
Wide jet path	Cleans large areas quickly
Optional vacuum system	Recovers water and material from work area

AUTOMATED SOLUTIONS

HANDS FREE

TOOL OVERVIEW:

Pressure	2k-40k psi - (140-2800 bar)
Flow Range	6-28 gpm - (23-106 l/min)
Jet Path	14-24 in. - (356-610 mm)
Height Range	1-5 in. - (26-127 mm)
Weight	215-290 lbs - (98-132 kg)
Rotation Speed	300-1000 rpm

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



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AUTOMATED FLOOR CLEANING



New for 2014

PAINT GRATE CLEANERS

Powerful Paint Removal

Ultra high pressure surface cleaner designed specifically for cleaning automotive paint booth grates. Updated design for 2014 includes improved operator controls and safety features.

IDEAL FOR:

- Cleaning paint residues and chemical deposits

TOOL FEATURES:	HOW THIS HELPS:
Air powered, adjustable rotation	Adapt dwell time for optimal paint removal
Angled jet configuration	Jets attack all surfaces of the grate
Integral height adjustment	Adapt standoff distance to deposit
Compact dome	Improved paint booth access
Simple external adjustments	No special tools needed for adjustments
3-wheel chassis	Highly maneuverable
Application-specific design	Lower cost

AUTOMATED SOLUTIONS

HANDS FREE

TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	10 gpm
Jet Path Dia.	17 in. - (432 mm)
Height Range	1.5 in. - (38 mm)
Weight	160 lbs - (76 kg)
Rotation Speed	300-1000 rpm

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



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EXCHANGER **CLEANING**





Shotgun-compatible for cleaning the bundle face and tube IDs with one setup

SABERTOOTH

Automated Tube Lancing System

The Sabertooth SRT-100 was developed as a powerful alternative to manual lancing of tube bundles such as those found in industrial heat exchangers and evaporators.

This system automates the cleaning process, increasing both safety and efficiency, yet remains flexible, portable and fast.

IDEAL FOR:

- Clearing and unplugging vertical and horizontal tubing
- Cleaning and polishing evaporator tubes
- Removing thin, hard scale, carbons, coke, and polymers
- Accessing man ways as small as 24 inches wide
- Cleaning liquor lines
- Cleaning paper/pulp tubes



TOOL OVERVIEW:

Pressure	22k psi - (1500 bar)
Maximum Flow	40 gpm - (150 l/min)
Tube Sizes I.D.	0.87-2 in. - (22-50.8 mm)
Pitch	1.32-2.32 in. - (36-59 mm)
Hose Length	66 ft - (20 m)
Stroke Length	52 ft - (16 m)
Feed Rate	0.3-1.2 ft/s - (0.1-0.37 m/min)
Weight	550 lbs - (250 kg)

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Utilizes Banshee Tube cleaning technology



Remote control keeps operators at a safe distance

TOOL FEATURES:	HOW THIS HELPS:
Dual-lance drive system	Cleans two tubes at once
Contained hose reel	Stores and feeds full length of hose. Keeps work area free of loose hoses.
Auto-stroke function	Reacts when hitting blockages and adjusts to keep nozzles rotating
High/low speed forward drive	Maximizes efficiency in varying conditions
Adjustable working window frame and tilt function	Easily adapts to size of bundle for both in horizontal and vertical operations
Quick assembly/disassembly	In-field adjustment and portability
Integrated air filtration system	Increases tool reliability with poor source air
Fully sealed drive motors	Built-in durability for difficult environments
Remote pneumatic control box	Provides safe control of system

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.





RIGID LANCE MACHINE

Safe and Productive Tube Bundle Cleaning

The StoneAge Rigid Lancing Systems are the industry standard for both horizontal and vertical rigid lance cleaning of heat exchangers and evaporator tubes.

IDEAL FOR:

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



TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Maximum Flow	40 gpm - (150 l/min)
Max. Rail Length	60 ft - (18 m)
Feed Rate	0.3-1.2 ft/s - (0.1-0.37 m/min)
Number of Lances	1, 2 or 3 lances

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Dual springs prevent damage to lances and provides greater safety. If one spring fails in operation the second spring will prevent lance damage.



Available as single, dual and triple lance packages.



Remote control keeps operators at a safe distance.

TOOL FEATURES:

Modular automated system for rigid tube lancing

Increased safety

Air or hydraulic powered

Dual coil springs

Expandable operating window

Swivel wheels, jack stands, and rear supports available

HOW THIS HELPS:

Provides greater forward jet power than flex lancing, adapts to any size bundle, and can be configured to horizontal or vertical operations

Operator is removed up to 25 feet away from the splashback area

Power source flexibility

Increase safety and stability of guide block

Easily conforms to size of heat exchanger

Provide extra stability and support in key points of the system

▶ SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



EXCHANGER CLEANING



BANSHEE

Rotary Small Tube Cleaning

Banshees 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.

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.

TOOL FEATURES:	HOW THIS HELPS:
Patented liquid bearing design	No bearings, seals or lubricants to replace
Stainless steel construction	Extreme durability and longevity
Multiple inlet and replaceable heads options	Easily configured for a variety of pressures and applications, from unplugging to polishing
Shrouded model available for use with powered equipment	More forward power for clearing completely plugged lines



TOOL OVERVIEW:

Pressure	2-40k psi - (138-2800 l/min)
Flow	Up to 49 gpm - (185 l/min)
Length	2.6-6.9 in. - (792-2103 mm)
Diameter	0.37-1.3 in. - (9.4-33 mm)

▶ SEE IT IN ACTION










Scan this code with your smartphone to view a video of this tool in action.



9 MODELS AVAILABLE

UP TO 40K PSI - 2800 BAR (2800 BAR)

All BANSHEE Tools on this Page are Actual Size

	BN9.5 0.47-0.63 in. ID Tubes 12-16 mm
	BN13 0.60-1.0 in. ID Tubes 15-25 mm
	SHROUDED BANSHEE FOR POWERED EQUIPMENT 0.60-1.0 in. ID Tubes 15-25 mm
	BN13-40K 0.60-1.0 in. ID Tubes 15-25 mm
	BN18 0.87-1.3 in. ID Tubes 22-33 mm
	BN18-40K 0.87-1.3 in. ID Tubes 22-33 mm
	BN24 1.1-1.8 in. ID Tubes 28-46 mm
	BN27-40K 1.25-2.0 in. ID Tubes 32-51 mm
	BN33 1.5-2.4 in. ID Tubes 38-60 mm



GOPHER

Speed Controlled Rotary Cleaning for Tubes 2-6 Inches in Diameter

The Gopher has the power to cut through coke, polymers, coatings and latex—anything clogging tubes 2-6 inches in diameter.

IDEAL FOR:

- Clearing and unplugging vertical and horizontal exchangers
- Cleaning and polishing evaporator tubes
- Excellent for use with the Sabertooth SRT-100



TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	Up to 25 gpm - (95 l/min)
Length	7.8 in. - (198 mm)
Diameter	1.6 in. - (41 mm)
Weight	3 lbs - (1.4 kg)
Rotation	600-1000 rpm

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



TOOL FEATURES:	HOW THIS HELPS:
Multiple head options	Configure tool for unplugging, pulling, or polishing; one tool can be used to effectively perform different operations
Multiple jetting options	Fine tune head to optimize cleaning
Controlled rotation speed	Aids in polishing pipes
Centering devices available	Stabilize tool in pipe and maintain standoff



BUNDLE BLASTER

Automated Exterior Tube Cleaning Tools

A powerful and affordable alternative for external or “shell side” cleaning of heat exchangers and tube bundles.

Available in 20 or 32ft. lengths*. The “A” frames are adjustable to meet different diameter bundles and come with locking caster wheels. The entire assembly is modular and can be taken apart for easy transportation. Rotation speed and traverse speed are independently adjustable with our CB-BUD Control Panel.

TOOL FEATURES:	HOW THIS HELPS:
Portable automated rail system	Eliminates need for large, expensive systems; highly adaptable to size of tube bundle
Affordable modular design	
Air or hydraulic powered	Power source flexibility
Customizable application	Can be adapted to a variety of pressures and flows for highest level of cleaning efficiency
Quick disassembly and adjustment with simple hand tools	Aids in portability and field customization

AUTOMATED SOLUTIONS
HANDS FREE

TOOL OVERVIEW:

Max. Pressure	40k psi - (2800 bar)
Rotation Speed	50-1000 rpm
Linear Speed	7-40 ft/min - (2.1-12 m/min)
Power Supply	Air or Hydraulic
Rail Length	24 ft (7.3 m) and 30 ft (9.1 m) <small>*Custom lengths available</small>

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



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STRAIGHT PIPE
CLEANING



STRAIGHT PIPE CLEANING



STRAIGHT PIPE CLEANING



Shown with optional centralizer.

ID PIPE CLEANERS

Automated Interior Pipe Cleaning

Adjustable rotation and stroke controls help clean each pipe while operators are kept at a safe distance from the high pressure water.

The modular design cleans pipes up to 55 feet in length at pressures up to 40k psi. The complete package includes adjustable jack stands, control panel, rigid lance, rail and cleaning heads.

IDEAL FOR:

- Removing concrete linings, drill mud deposits and coatings
- Cleaning pipe by sections on racks
- Removing scale and NORM from well pipe over 6 inches in diameter
- Cleaning vertical and horizontal piping

TOOL FEATURES:	HOW THIS HELPS:
Affordable, modular design	Configurable to clean pipes up to 55 ft. in length at pressures up to 40k psi
Adjustable rotation and stroke controls	Clean each pipe effectively keeping operator at a safe distance
Heavy duty carriage assembly	Adapts to large diameter lances
Rugged pipe vice attachment	Helps stabilize pipe movement



TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	Up to 50 gpm - (190 l/min)
Stroke Length	Up to 55 ft. - (16.7 m)
Diameter	1.6-3.5 in. - (41-89 mm)
Weight	350 lbs - (159 kg)
Rotation	50-300 rpm

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



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BJV

Rotary Cleaning for Straight Pipes 2-72 Inches in Diameter*

Our most versatile family of pipe cleaning tools, offering a wide variety of configurations.

IDEAL FOR:

- Cleaning pipes and vessels
- Cleaning vertical and horizontal piping
- Adaptable to tank cleaning
- Especially useful for oil refineries, power plants and petrochemical production

NOTE: Centralizers and nipple extensions are recommended for pipes over 6 inches in diameter.

TOOL FEATURES:	HOW THIS HELPS:
Multiple jetting options, customized porting, and head selections	Optimizes to a variety of pumps, pressures, and flows. Unplug, polish, or run longer lines based on jetting.
Multiple centralizers and extension nipples available	Easily minimize standoff distance, putting the jets close to the wall being cleaned
Optional pull ring connection	Aids in jobs where tool needs to be pulled through the pipe



TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow	4-200 gpm - (15-757 l/min)
Length	7.8-9.5 in. - (198-241 mm)
Diameter	1.6-3.5 in. - (41-89 mm)
Weight	3-8 lbs - (1.4-3.6 kg)
Rotation	300 rpm

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



BJV CENTRALIZERS

Centering Devices for Any Application



BJ-070 SKID STYLE

This versatile system utilizes interchangeable plastic runners which can be easily replaced. The skid works well in elbows, can effectively clean up to 12 inch diameter pipes and works with all **BJV** models. *Tool not included.*

MODEL	SKID SIZES
SMALL	6 in. 150 mm
MEDIUM	8 in. 200 mm
MEDIUM	10 in. 250 mm
LARGE	12 in. 300 mm



BJ-286 FOR STRAIGHT PIPES

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.*

MODEL	RANGE	WEIGHT
SMALL	9-18 in. 230-460 mm	20 lb 9 kg
MEDIUM	13-40 in. 330-1000 mm	32 lb 15 kg
LARGE	16-60 in. 410-1500 mm	40 lb 18 kg



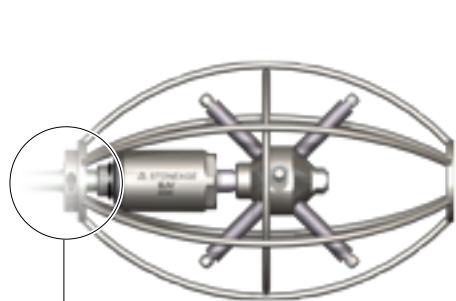
BJ-288 FOR PIPES WITH BENDS

With adjustable, telescopic steel legs and tough plastic wheels, these eight-wheel centralizers are designed to travel through elbows easily and can be used with all **BJV** models. *Tool not included.*

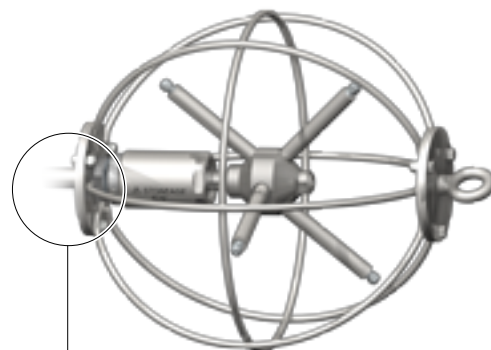
MODEL	RANGE	WEIGHT
SMALL	16-21 in. 410-530 mm	12 lb 5.5 kg
MEDIUM	22-29 in. 560-740 mm	13 lb 5.9 kg
LARGE	30-37 in. 770-940 mm	16 lb 7.3 kg

CAGE CENTRALIZERS

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



DIFFERENT COLLAR SIZES ARE AVAILABLE FOR ALL MODELS



DIFFERENT INLET PLATES ARE AVAILABLE FOR ALL MODELS

TOOLTALK

TOOL CHOICES FOR CLEANING LARGE DIAMETER PIPES



CLEANING LARGE PIPES

Reducing the distance from the end of the nozzle to the surface being cleaned (stand-off distance) is key to effective cleaning. Centralizers keep the tool located in the middle of the pipe, allowing the use of extension nipples for consistent and effective cleaning. Extension nipples not only reduce the stand off distance but also reduce turbulence which improves jet quality.



Pipe before cleaning

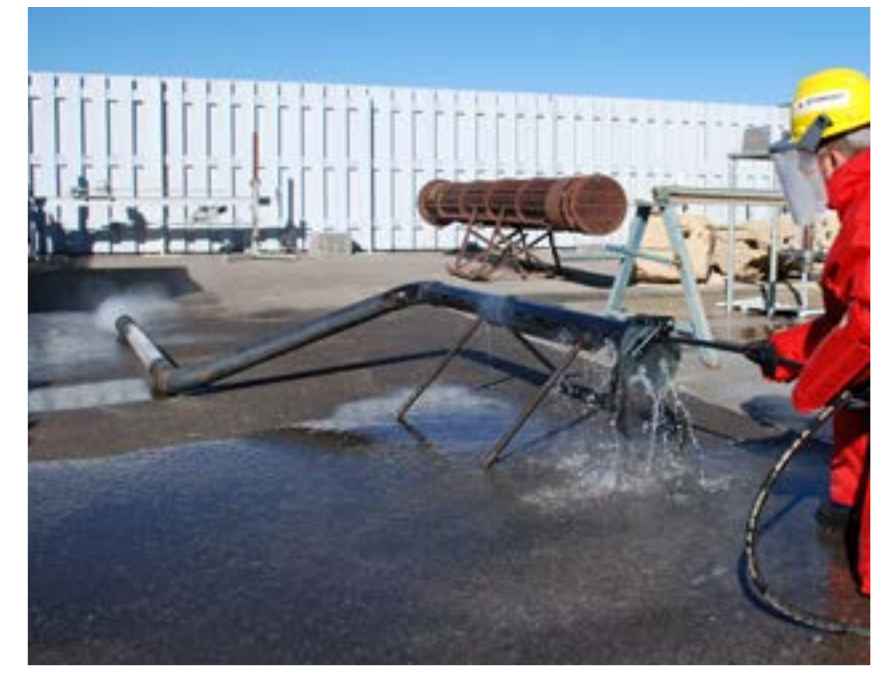


Cleaning in progress



Final result

CURVED PIPE
CLEANING



CURVED & STRAIGHT PIPE CLEANING

AUTOBOX ABX-500

- REPLACE YOUR RHD**
- **LOW MAINTENANCE**
 - **REDUCED OPERATING COSTS**
 - **PORTABLE AND EASY TO USE**

NEW FOR 2014
AUTOMATED, PORTABLE
HOSE CONTROL



AUTOBOX

A safe alternative for cleaning pipes with rotary jetting tools

Traditional methods require the operator to hand feed a hose, which can cause streaking, fatigue and increased safety risk.

The AutoBox is a portable, air powered device. The feed rate can be adjusted to meet the demands of each pipe cleaning job. The unit can pass hose couplings for continuous operation.

IDEAL FOR:

- Any pipe cleaning application, including those currently handled with manual tools or a rotary hose device.
- Pipes in plants where space is limited and safety is a priority.

TOOL BENEFITS:

- Smaller, lighter, more portable than a rotary hose device
- Requires only a single operator to run
- Passes couplings up to 1.75 in. OD
- Safely operated from outside the blast zone

**AUTOMATED
SOLUTIONS**
HANDS FREE

TOOL OVERVIEW:

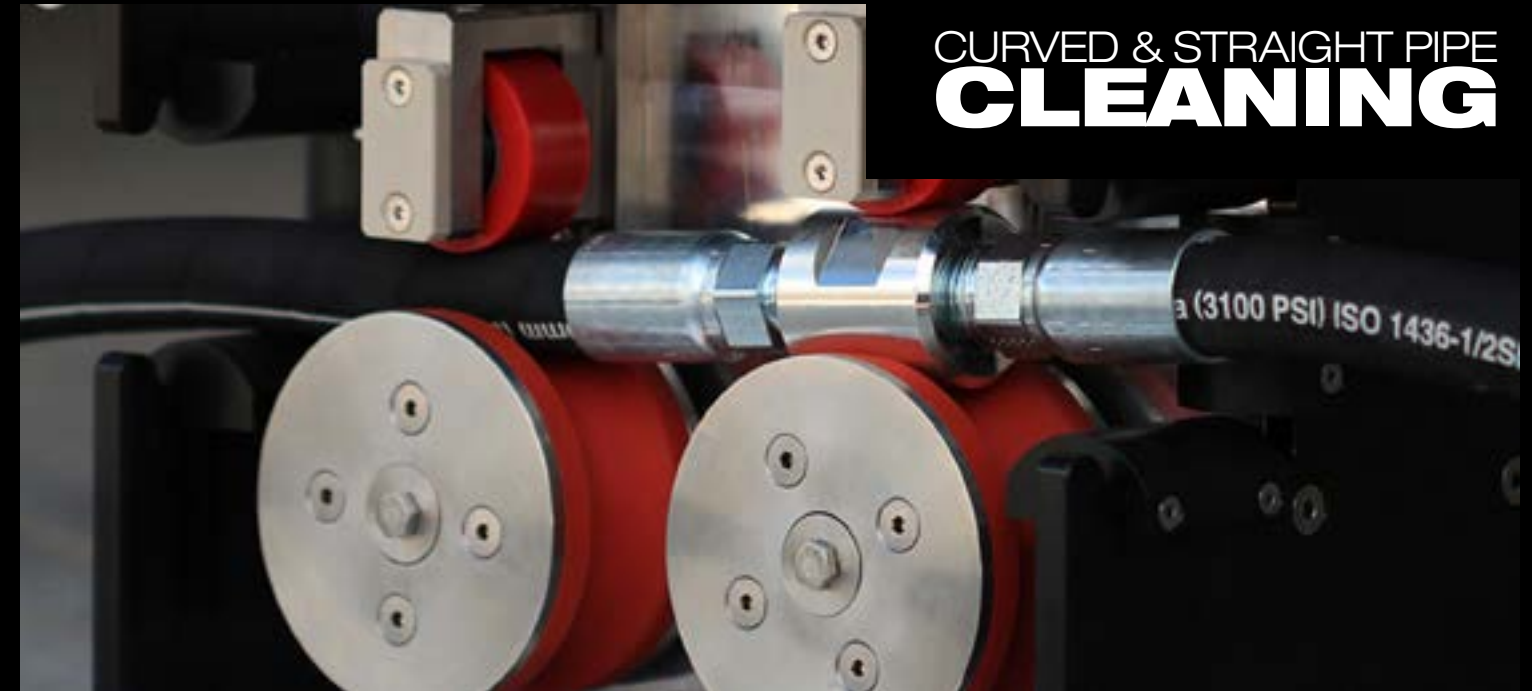
Hose Force	400-700 lbs - (181-317 kg)
Feed Rate	9-50 ft/min - (2.7-15.2 m/min)
Hose Size	0.5-1.25 in. - (13-32 mm) OD
Weight	90 lbs - (41 kg)

MOUNTING OPTIONS AVAILABLE THROUGH STONEAGE CUSTOM SOLUTIONS

Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

WWW.WATERBLASTSOLUTIONS.COM

CURVED & STRAIGHT PIPE CLEANING



Passes couplings up to 1.75 in. OD for uninterrupted operation



Pneumatic controls remotely adjust hose clamp pressure, hose feed speed and hose feed direction (forward/reverse)



Includes 2 roller sizes. Handles hose sizes from 0.56 - 1 in (8mm - 26mm) ID



PAIR THE AUTOBOX 500

with any of the StoneAge rotary pipe cleaning tools to replace your Rotary Hose Device.

FLOW RANGE: 5-200 GPM
PRESSURE RANGE: 2K-43K
ROTATION SPEED: 20-300 RPM

▶ SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



CURVED PIPE CLEANING



BADGER

Rotary Cleaning for Pipes with Elbows
2-12 Inches in Diameter

Unique design allows this tool to easily navigate bends. Features adjustable speed control—slower speeds for tough deposits and faster rotation for easier plugs.

IDEAL FOR:

- Cleaning pipes from 2-12 inches in diameter
- Unplugging and clearing pipes with multiple bends
- Industries such as oil refineries, power plants and petrochemical production

TOOL FEATURES:	HOW THIS HELPS:
Multiple jetting options	Optimizes to a variety of pumps, pressures, and flows. Save time, money, and water. Unplug, polish, or run longer lines based on jetting
Controlled rotation	Adapt tool for lighter or heavier deposits
Compact design	Easily maneuvers bends
Optional rigid lance centralizer	Provides more consistent cleaning in large diameter pipes, reduces head wear, and prevents tool turn-around

NEW FOR 2014

**2" Badger Pipe
Cleaning Tool
with All New
Head Locking
Design**

- New design ratchets the head to machined edges on the shaft.
- Head can only be removed with a disassembly tool and not while in operation.
- Extensive testing and development has proven this to be a very effective additional safety feature.

TOOL OVERVIEW:

Pressure	Up to 40k psi - (2800 bar)
Flow Range	Up to 43 gpm (160 l/min)
Length	2-5.36 in. - (51-136 mm)
Diameter	1.3-3.75 in. - (33-96 mm)
Weight	7.9 lbs - (3.6 kg)
Rotation Speed	20-300 rpm

▶ SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



TOOLTALK

UNDERSTANDING 'R' VALUE RADIAL DISTANCE



HEAD SELECTION

Each of our self-rotating tools require torque to be rotated. To create torque we offset the jets at different angles from the center line of the head. The distance from center to where the nozzle is located is called its "R" value (short for Radial distance). It's important to match each head with the pump capacity you are operating.

Your dealer can advise you of the correct head for your application. In general, the higher flow pump you have the lower the R value you will need while the lower flow pump you have the higher the R value will need to be to generate higher torque. Please note, if you switch the tool from one pump to another, you may need to review the correct head option required.

Number of Jets

More isn't always better, especially in water jetting. The goal is to use fewer jets that hit harder. The reason for this is that your pump operates at a fixed horse power. Dividing that power by more jets only reduces the impact with each additional jet used.

Rotation Speed

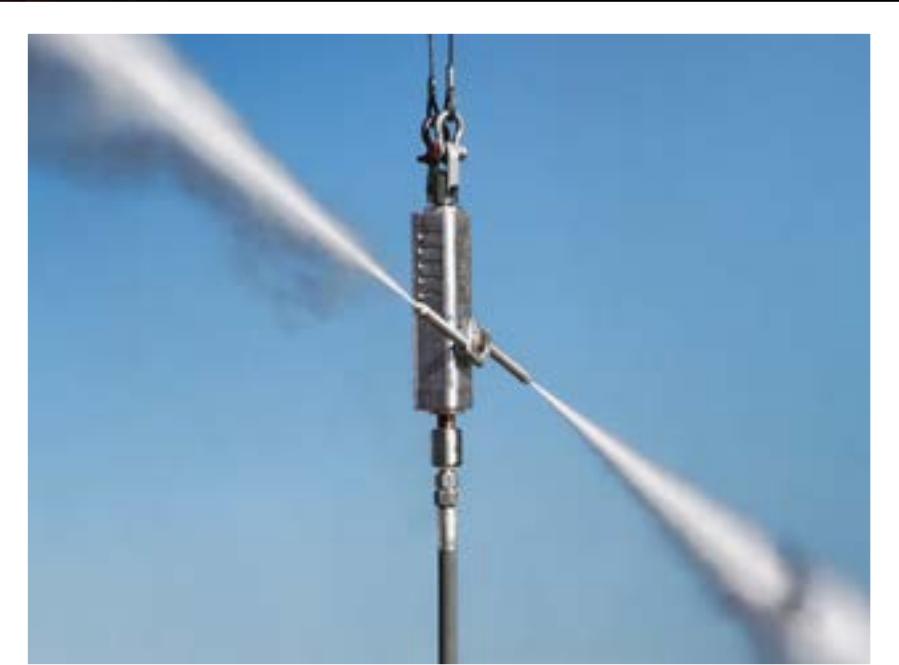
Non-rotating tools require lots of jets to try and reduce streaking inside of the pipe. Rotating tools offer complete coverage inside of a pipe and allow the use of fewer and harder hitting nozzles. StoneAge pipe cleaning tools offer controlled rotation speeds allowing for faster or slower options. Harder to clean applications require slower rotation while easier to clean applications can use faster rotation for higher production rates.

**FOR MORE ABOUT HOW OUR TOOLS
CAN WORK FOR YOU VISIT:**

WWW.STONEAGETOOLS.COM



TANK AND VESSEL **CLEANING**



TANK AND VESSEL CLEANING

TORUS TR-130



TORUS TR-200



**AUTOMATED
SOLUTIONS**
HANDS FREE

TOOL OVERVIEW:

Pressure	15-22k psi - (1500 bar)
Flow	80-220 gpm - (300-757 l/min)
Entry Diameter	5-8 in. - (127-203 mm)
Weight	35-100 lbs - (16-45 kg)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.

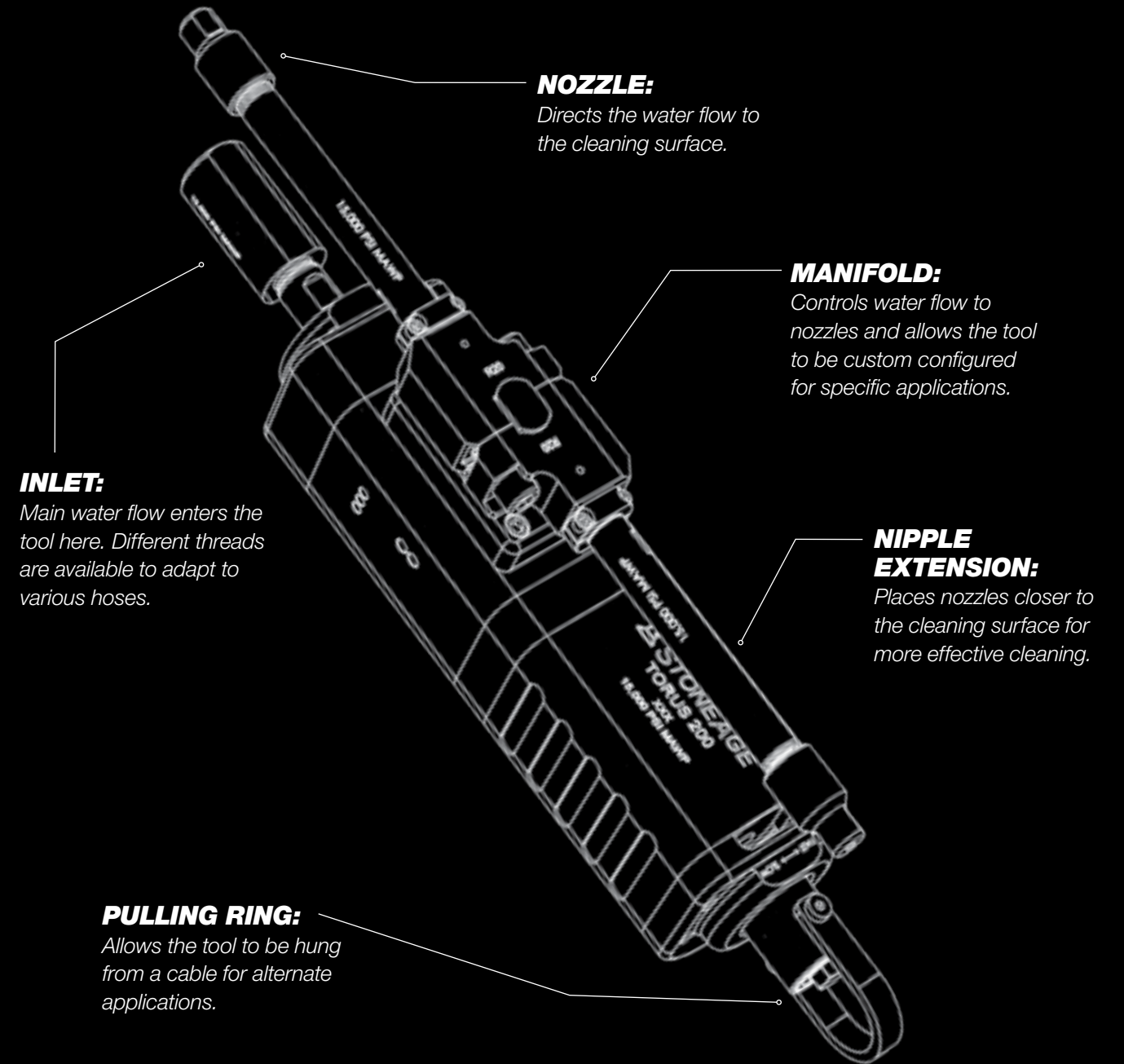


Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

WWW.WATERBLASTSOLUTIONS.COM

TOOLTALK

ANATOMY OF A TORUS TANK AND VESSEL CLEANING TOOL



TORUS

3-D Tank and Vessel Cleaning

The Torus 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.

IDEAL FOR:

- Cleaning tanks, vessels and autoclaves
- Ducts and reactor interiors with thick heavy deposits

TOOL FEATURES:	HOW THIS HELPS:
Interchangeable manifolds and multiple inlet options	Maximum flexibility for up to 220 gpm and working pressures from 2-22k psi - 1500 bar
Compact design	Fits most openings
Simple speed control adjustment	Easily change rotation for heavier deposits or faster material removal
High grade carbide nozzles	Ensure excellent jetting results and hours of trouble-free operation
Wide range of nipple extensions	Maximum jet power puts nozzles closer to the target surface

FOR MORE ABOUT HOW OUR TOOLS CAN WORK FOR YOU VISIT:

WWW.STONEAGETOOLS.COM



TOOL OVERVIEW:

Pressure	Up to 22k psi - (1500 bar)
Flow	Up to 150 gpm - (570 l/min)
Extended Length	Up to 19 ft - (5.8 m)
Weight	80-130 lbs - (37-59 kg)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:
WWW.WATERBLASTSOLUTIONS.COM

POSITIONING BOOMS

Positioning Devices for the TR-130

Positioners provides up to 19 feet of reach for the Torus 3-D cleaner, in addition to tilt and rotation adjustments. Intended for vertical or near vertical applications.

- IDEAL FOR:**
- Safe, controlled cleaning of large tanks and vessels

TOOL FEATURES:	HOW THIS HELPS:
Easily adjustable extension/retraction lengths	Cleaning nozzle can be extended (or retracted) to a variety of insertion depths for better cleaning coverage
24" aluminum mounting plate	Secures vessel during cleaning operation, increasing operator safety
Inspection hatch	Line of sight placement of cleaning head and to check cleaning progress
Modular design	Portable and easy setup. No special tools required to position head
Control box (optional)	Offers convenient controls for vertical positioning and linear speed

TOOLTALK

PRIMARY USES FOR POSITIONING BOOMS

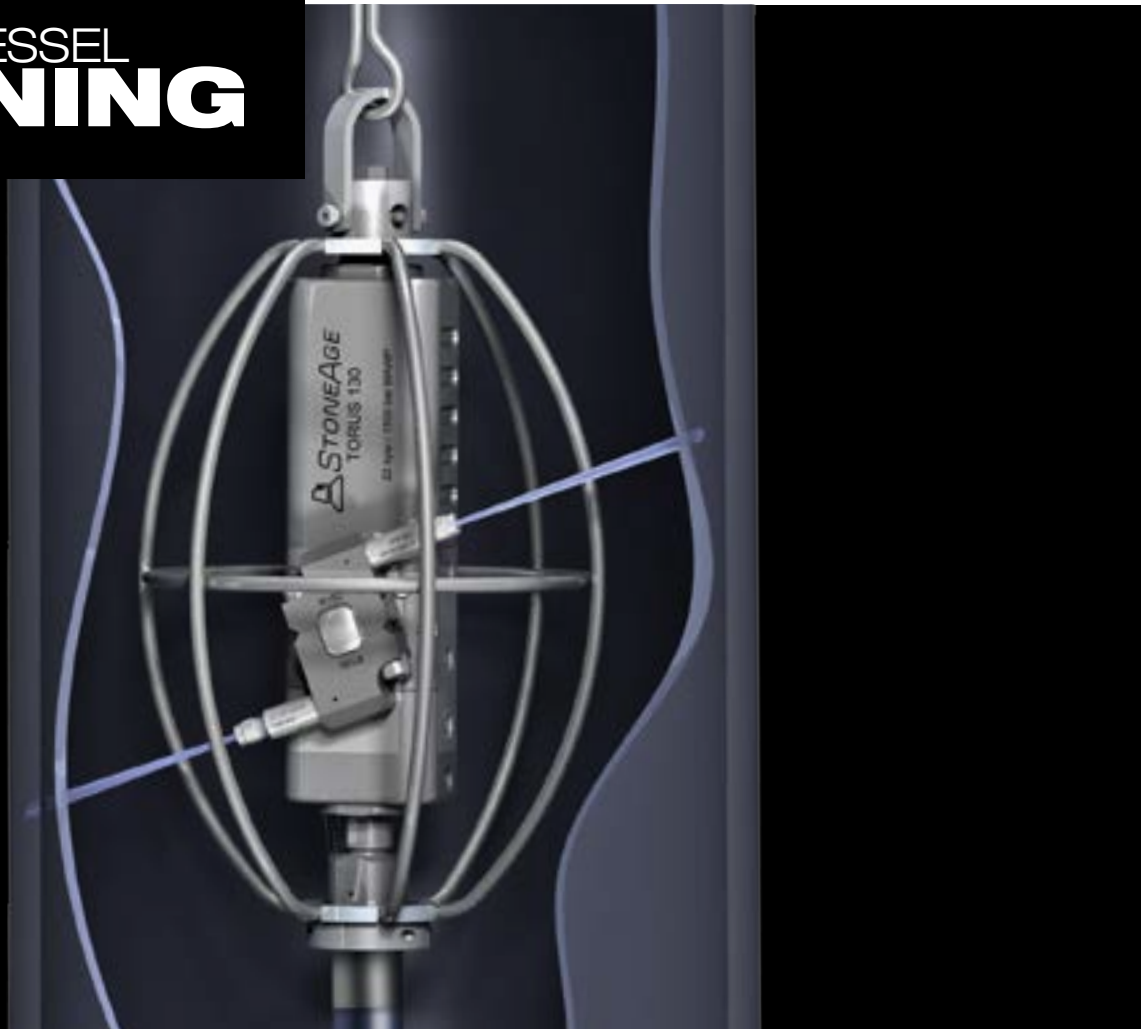


POSITIONING BOOMS

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. This is not possible in most tanks due to central obstructions such as agitators. In these cases the simplest way 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 also 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 to achieve complete coverage. In all cases nipple extensions should be used to ensure proper standoff distances.

**FOR MORE ABOUT HOW OUR TOOLS CAN WORK FOR YOU VISIT:
WWW.STONEAGETOOLS.COM**



CENTRALIZERS

Durable Cage Centralizer for the Torus 3-D

The TR 408-SS Cage Centralizer is used in applications where debris or internal structures may interfere with the cleaning operation.

Note: Nipples over 2 inches in length cannot be used this centralizer.

IDEAL FOR:

- Centering tools for effective cleaning
- Smaller tanks/vessels where tool arms may come in contact with side walls
- Pipes and distillation trays



TOOL OVERVIEW:

Length	17 in. - (432 mm)
Diameter	11.75 in. - (298 mm)
Weight	6.5 lbs - (2.9 kg)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



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.

IDEAL FOR:

- Boilers and furnaces
- Cyclones
- Cokers

TOOL FEATURES:	HOW THIS HELPS:
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	Maximize efficiency for heavy or light applications



TOOL OVERVIEW:

Pressure	Up to 12k psi - (830 bar)
Flow	Up to 300 gpm - (1136 l/min)
Rotation	10-50 rpm
Diameter	Up to 15 ft. - (4.6 m)
Weight	70-90 lbs - (32-41 kg)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



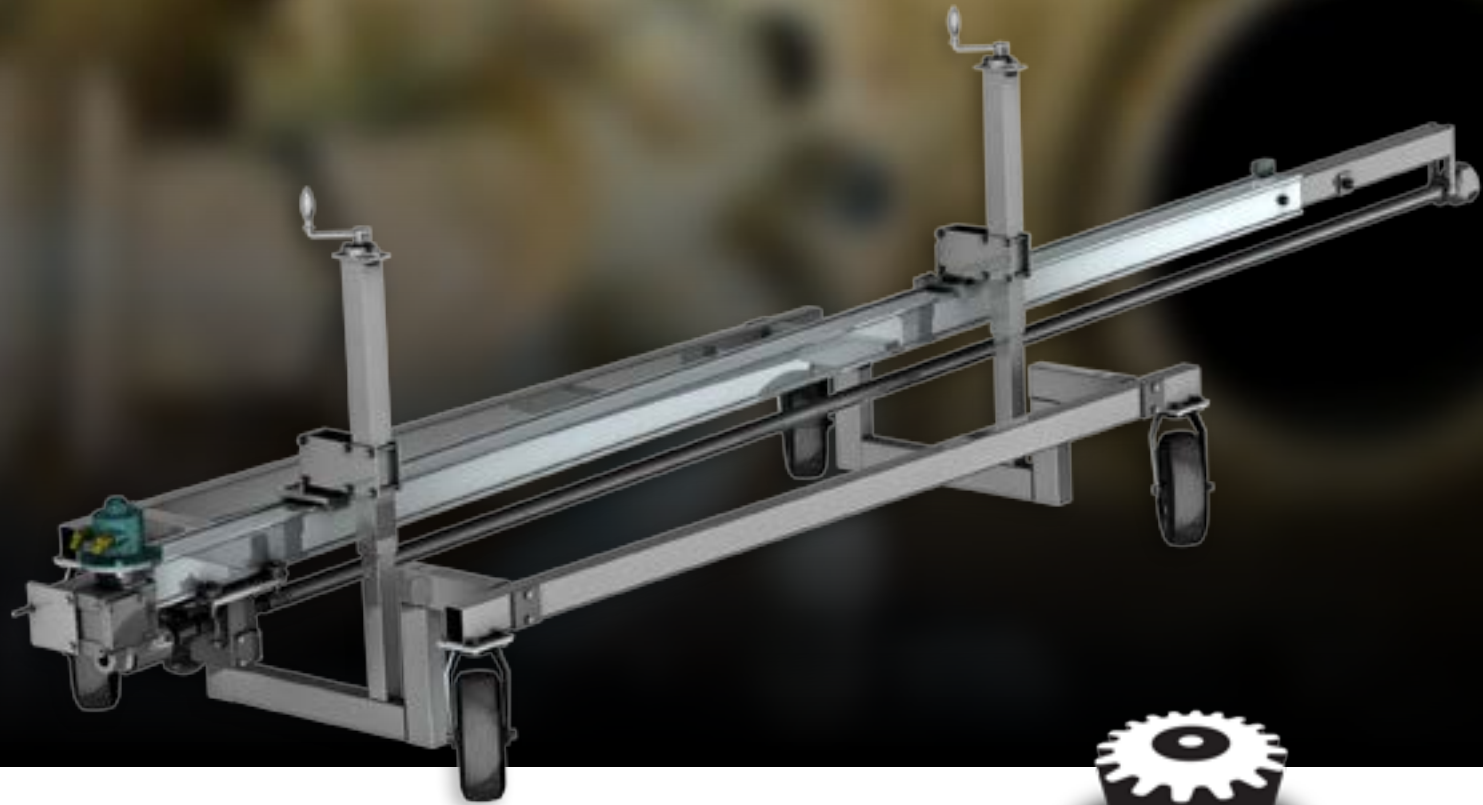
Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

WWW.WATERBLASTSOLUTIONS.COM



FURNACE AND BOILER **CLEANING**





BIG FLOW WATERLANCER

High Flow Online Boiler Cleaning

Designed for online boiler cleaning, contractors can reduce down time by cleaning at high temperatures. With a 300 gpm flow capability, the BFW-100 can effectively clean any large vessel with limited entry access.

IDEAL FOR:

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

TOOL FEATURES:	HOW THIS HELPS:
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	Easy tool positioning, including elevation and angle of the lance
Cantilever option available	Can accommodate lengths up to 24 feet



TOOL OVERVIEW:

Pressure	Up to 10k psi - (700 bar)
Flow	Up to 300 gpm - (1136 l/min)
Rotation	10-50 rpm
Length	Up to 24 ft. - (7.3 m)
Linear Speed	8-35 ft/min - (2.4-10.7 m/min)

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

WWW.WATERBLASTSOLUTIONS.COM



CABLE SWIVEL TOOL

Cable-guided Furnace and Boiler Cleaning

The CST-Air slides on a 3/8" diameter stretched cable. This air powered swivel is designed for large vessel and boiler cleaning.

IDEAL FOR:

- Cable-guided cleaning for difficult to reach locations
- Direct fired furnaces, superheater and economizer sections
- Boilers and re-boilers, reformers, cokers and precipitators

TOOL FEATURES:	HOW THIS HELPS:
Patented, hollow-shaft design	Allows tool to be suspended on a cable and passed hard to reach areas <i>*Through cable not included</i>
Powerful rotating jets	Two to six options
360° rotation	Cleans large areas in single configuration
Integrated pull ring	Provides additional option for pulling tool across cleaning surface
Extension nipples available	Improve jet quality by reducing stand-off distance



TOOL OVERVIEW:

Pressure	10k psi - (700 bar)
Flow	170 gpm - (644 l/min)
Rotation	5-60 rpm
Length	21 in. - (533 mm)
Weight	46 lbs - (21 kg)

SEE IT IN ACTION

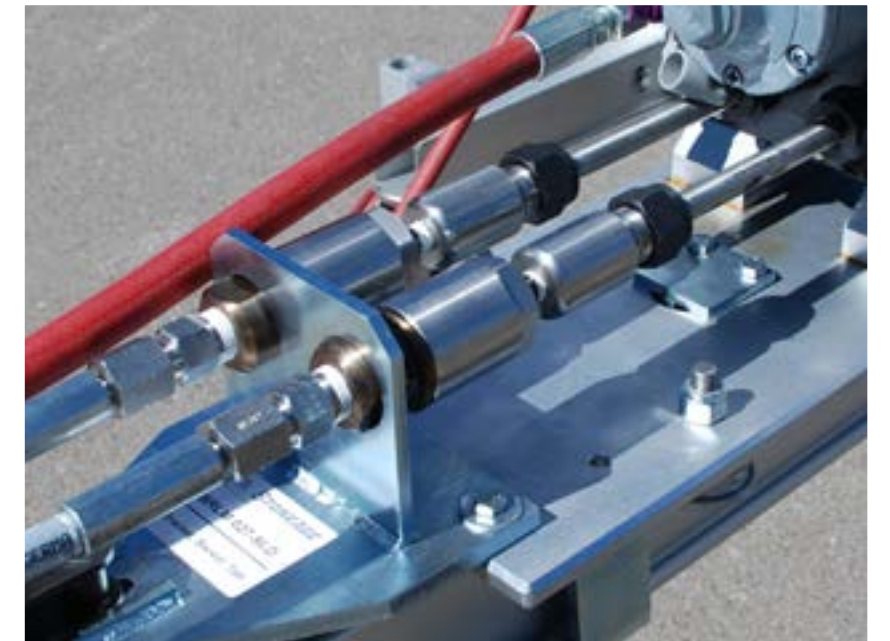
Scan this code with your smartphone to view a video of this tool in action.



Please contact an Authorized Automated Solutions Dealer or StoneAge directly for more information:

WWW.WATERBLASTSOLUTIONS.COM

ROTARY
SWIVELS



ROTARY SWIVELS



ROTARY SWIVELS

The Industry's Widest Selection

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

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

TOOL OVERVIEW:

Pressure	2k-44k psi - (138-3000 bar)
Flow	Up to 600 gpm - (2270 l/min)
Length	4.3-8.8 in. - (109-224 mm)
Diameter	1.6-3.0 in. - (41-76 mm)
Weight	1.9-11 lbs - (0.9-5 kg)
Rotation	300-2000 rpm

TOOL FEATURES:	HOW THIS HELPS:
Unique, leak-free seal design	Tool requires very little torque for rotation
Multiple inlet options available	Tool can be used at different pressures
Heavy-duty stainless steel construction	Durability and long tool life
External grease fittings	Easy maintenance
0° or 90° inlet connection	Aids hose routing

SEE IT IN ACTION

Scan this code with your smartphone to view a video of this tool in action.



TOOLTALK

PRIMARY USES FOR ROTARY SWIVELS



MACHINE COMPONENT:

Conveying high pressure water from a stationary line to a powered rotating or twisting assembly.



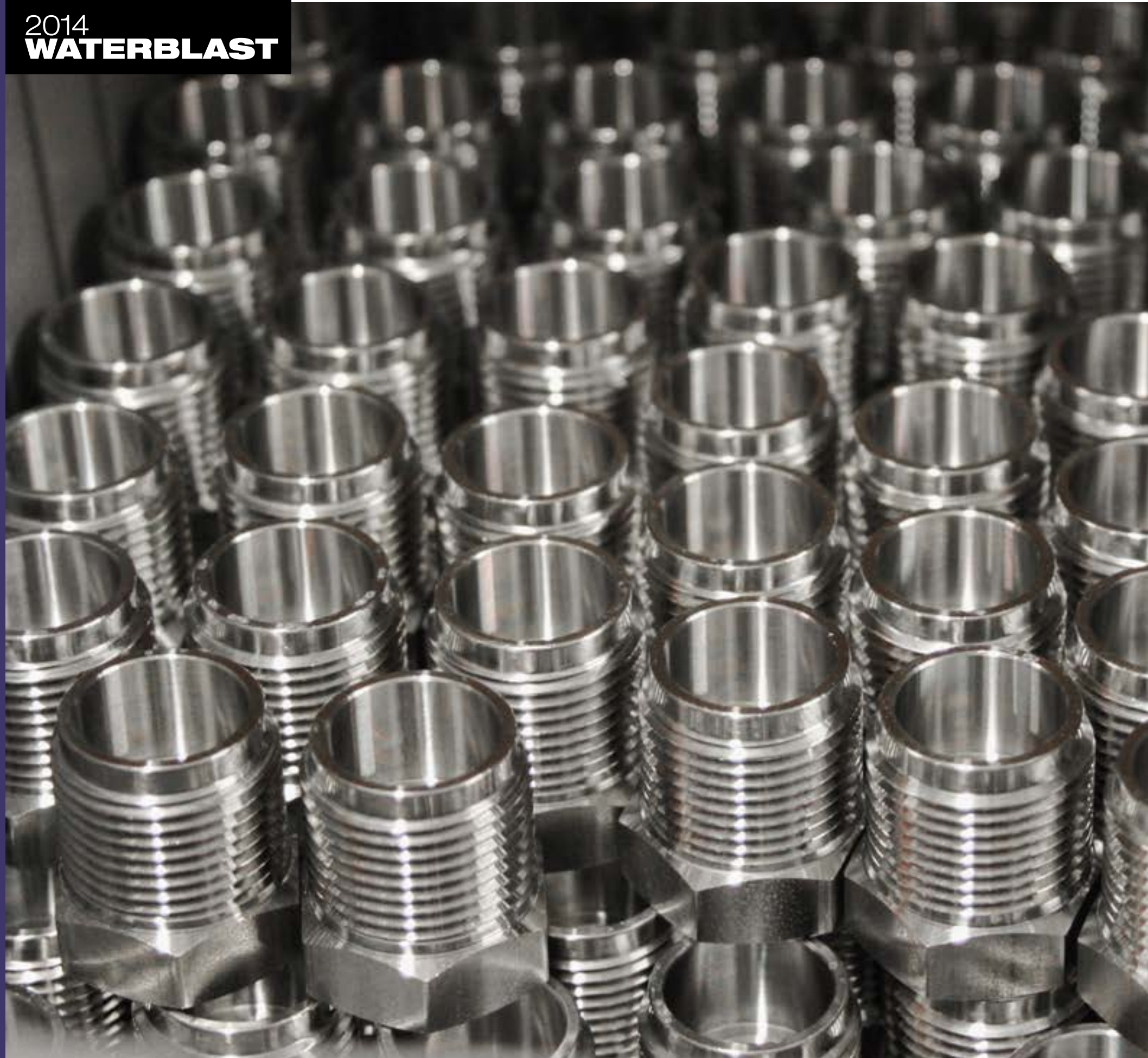
HOSE TWIST PREVENTION:

Swivels can be installed in-line with hoses to prevent twisting while operating equipment.

FOR MORE ABOUT HOW OUR TOOLS CAN WORK FOR YOU VISIT:

WWW.STONEAGETOOLS.COM

WATERBLAST
ACCESSORIES





BACKOUT PREVENTERS

Pipe Cleaning Safety

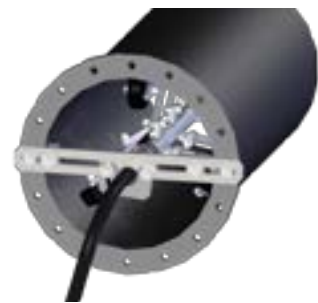
Our Backout Preventers increase operator safety by preventing the tool from backing out of the pipe.

Several options are available including fixtures for small diameter pipes, pipes with various flange diameters and adapters for pipes with no-flange entries.

BJ 305 for 2-6" (51-150 mm) pipes



BJ 310 for 4-8" (100-200 mm) pipes



BJ 320 for 5-17" (130-430 mm) pipes with flanges



BJ 325 EXTENSION for 8-36" (380-910 mm) pipes. Only for use with the BJ 320.

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.

It adapts to both horizontal and vertical applications, and the wide range of adjustment easily accommodates different sizes of tube sheets.



VE-400
Weight Complete: 20 lb - (9.0 kg)

BANSHEE PROTEX

Vertical Splashguard

The Banshee ProTex is a lightweight, durable splashguard 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 unique anti-withdrawal collet easily adjusts to fit many hose sizes. A removable insert easily centers smaller tools and we offer an optional three foot long tube for use with a stinger.



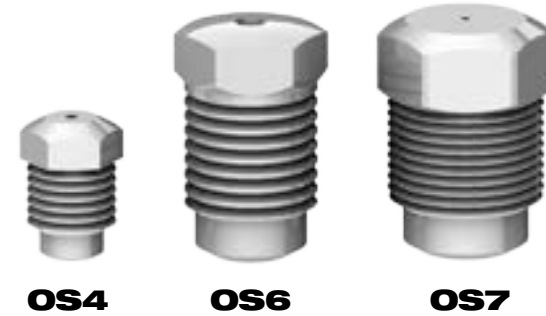
BPT-100
Weight Complete:
12 lb - (5.5 kg)
Hose Range:
0.125-1.3" - (3-33 mm) OD

SAPPHIRE NOZZLES

High Pressure Applications

These nozzles are used for 40k psi 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.

**Shown larger than actual size.*

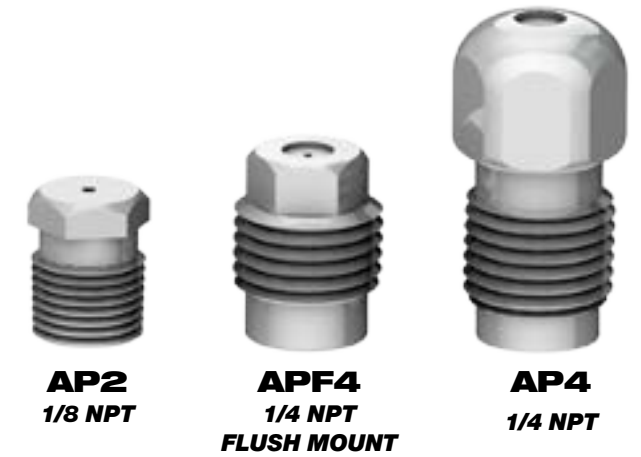


ATTACK TIPS

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.

**Shown larger than actual size.*

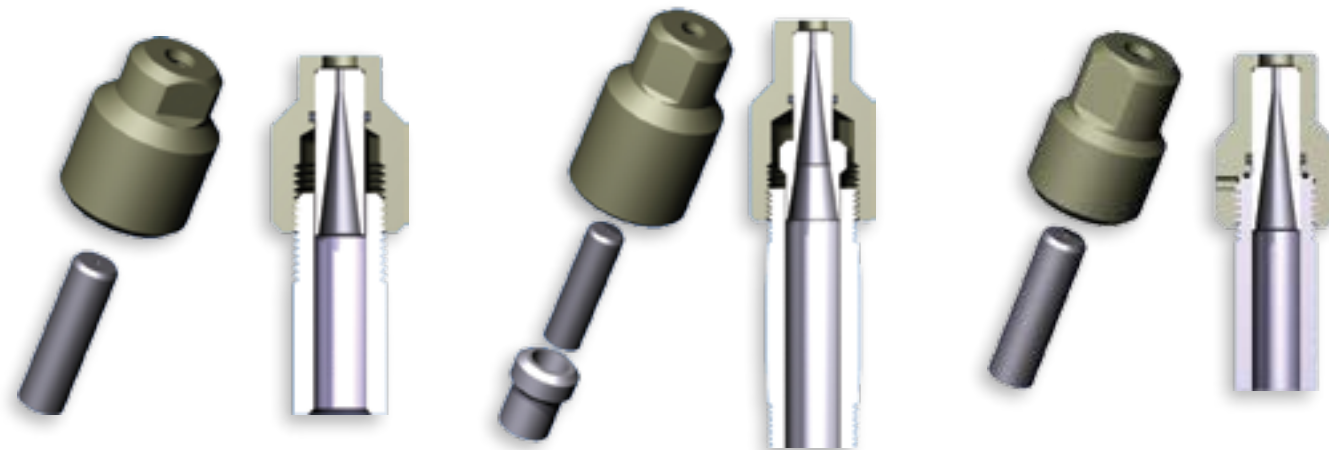


Stainless or Carbide Steel Available

OC8 CARBIDE INSERTS

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 flow applications. Replaceable carbide inserts are available in large orifice diameters to handle high flows and contain a long taper to provide excellent jet quality.



The **OC8 P8 HOLDER** and **OC CARBIDE INSERTS** for 15k psi - (1000 bar) 1/2 NPT female connection.

The **OC8 P12 HOLDER** and **OC CARBIDE INSERTS** for 15k psi - (1000 bar) 3/4 NPT female connection.

The **OC8 G12 HOLDER** and **OC CARBIDE INSERTS** for 22k psi - (1500 bar) G12 female connection.

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

MAINTENANCE SUPPLIES AND KITS

SERVICE KITS Kits contain everything you need 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 for specific details regarding your tool.

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.

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 for the contents of your specific kit.

TOOL KITS These kits differ for every **STONEAGE** tool. They contain special tools for seating shaft seals or performing other tool-specific maintenance.

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

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.



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 m ³ /hr	130 cfm 220 m ³ /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 m ³ /hr	27 cfm 46 m ³ /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 for hydraulic powered applications. Available with either 0° (**LM 121**) or 90° (**LM 122**) ports.

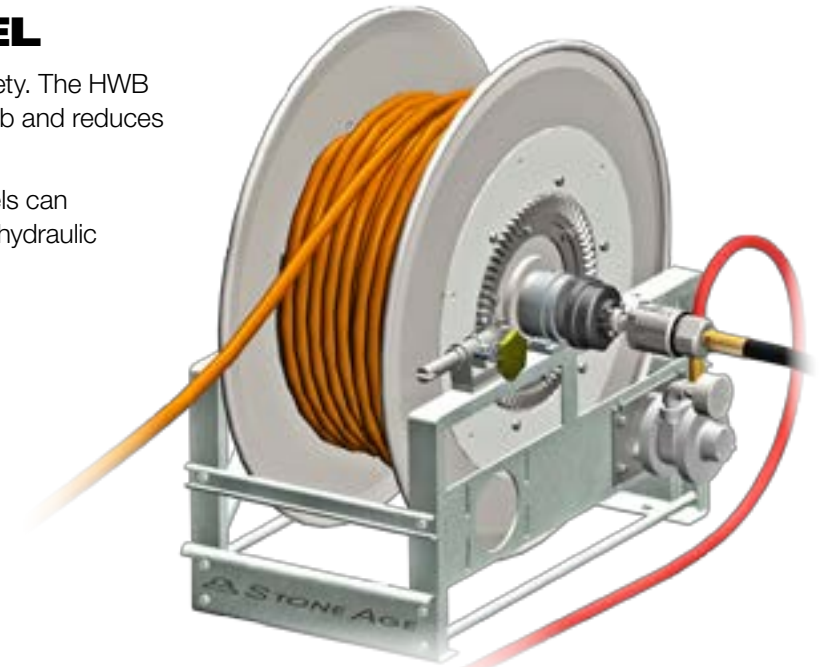


LM 121 & 122	CONTINUOUS	INTERMITTENT
Maximum Rotation Speed	1960 rpm	2430 rpm
Minimum Rotation Speed	50 rpm	N/A
Power	2.3 HP 1.7 kW	3.5 HP 2.6 kW
Torque	95 in-lb 4.1 Nm	135 in-lb 10.0 Nm
Oil Flow	4.2 gpm 1 m ³ /hr	5.3 gpm 1.2 m ³ /hr
Oil Pressure	1450 psi 100 bar	2000 psi 140 bar

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.



TOOL OVERVIEW:

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
HOSE O.D.	
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 not included.
*Hose must be extended prior to use.

FITTINGS AND ADAPTERS

We carry an extensive selection of stainless steel fittings and adapters that are designed to meet the highest standards.



LUBRICANTS

MSDS sheets are available for all lubricants.



LUBRICANT	QTY	SOURCE	SPECIFICATION
Viscous Fluid	6 oz.	STONEAGE	Synthetic Silicone Lubricant
Air Motor Oil	32 oz.	Mobil	Almo 525/ISO 46/SAE 10
Auto Trans. Fluid	32 oz.	NAPA	Mercon/Dexron ATF
Anti-Seize	2 oz.	Swagelok	Blue Goop
Motor Oil	32 oz.	NAPA	10W-40
Gearbox Lube	32 oz.	NAPA	80W-85W-90
Thread Sealant	4 oz.	Parker	ThreadMate
Grease	14 oz.	Mobil	Synthetic Grease SHC 100

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

OUTSIDE THE US: 970-259-2869 • FAX: 970-259-2868 • SALES@STONEAGETOOLS.COM
HOURS: 8:00 AM - 5:00 PM MONDAY - FRIDAY (USA MOUNTAIN TIME)

TECHNICAL SUPPORT

For a list of our current dealers please visit www.StoneAgetools.com/dealers. Our Technical Support team is available during the hours listed above. They are also available for custom projects, see Custom Solutions below.

CUSTOM SOLUTIONS

StoneAge offers custom engineered solutions for your unique or one-off cleaning applications. Please contact either an Authorized StoneAge Automated Solutions Dealer or StoneAge directly for more information.

MANUALS

Operator's Manuals for all equipment are available online. They illustrate tools, identify parts, and detail maintenance and overhaul procedures. Additional copies of the manuals, repair videos and CD's are available at a nominal charge.

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

Serial Number Database is maintained on all equipment sold. If a serial number is provided when ordering parts, we can verify that the right parts are specified.

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.

RENTALS

Not available from StoneAge. Check our web site for a list of StoneAge Authorized Dealers who may rent equipment.

ORDERING

Call, E-Mail, or FAX your order to 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. Lancing Systems, Floor Cleaners, Telebooms and other large equipment must 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 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.

1. Acceptance of Terms and Conditions. These Terms and Conditions shall operate as Seller's acceptance of Buyer's purchase order, and such acceptance is made expressly conditional on assent by Buyer to the Terms and Conditions. Such assent shall be deemed to have been given unless written notice of objection to any of such Terms and Conditions (including inconsistencies between Buyer's purchase order and this acceptance) is given by Buyer to Seller promptly on receipt hereof.

Seller desires to provide its Buyer with prompt and efficient service. However, to negotiate individually the terms of each sales contract would substantially impair Seller's ability to provide such service. Accordingly, products furnished and services rendered by Seller are sold only on the Terms and Conditions stated herein. Notwithstanding any Terms or Conditions on Buyer's order, Seller's performance of any contract is expressly made conditional on Buyer's agreement to Seller's Terms and Conditions of sale unless otherwise specifically agreed to in writing by Seller. In the absence of such agreement, commencement of performance, shipment and/or delivery shall be for Buyer's convenience only and shall not be deemed or construed to be an acceptance of Buyer's Terms and 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.**

2. 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 price list 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.

3. 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 one (1) year 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.

4. 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 this 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 and/or recommended by Seller;

b. if Buyer fails to maintain in good working order such safety devices and guards as are purchased from Seller;

c. if Buyer adds, omits, repairs, modifies, replaces or substitutes any components on the equipment without permission from Seller;

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. if Buyer otherwise fails to operate the product or equipment in accordance with Seller's printed instructions or otherwise negligently operates the equipment.

5. Delivery. Seller is not obligated to make delivery by a specified date, but will always use its best efforts to make delivery within the time requested. All deliveries are based on F.O.B. Seller's factory, unless specifically agreed otherwise, and Buyer shall pay all shipping costs and insurance from that point. Seller, in its sole discretion, will determine and arrange the means and manner of transportation of the products. Responsibility of Seller shall cease and Buyer assumes all risk of loss or damages upon Seller's delivery to and receipt by a common carrier. Carriers shall be responsible for goods lost or damaged in transit and Buyer shall immediately notify the carrier in writing of such loss or damage. At Buyer's request Seller will offer its assistance. THE PROPOSED SHIPMENT DATE IS AN ESTIMATE. UNDER NO CIRCUMSTANCES SHALL SELLER HAVE ANY LIABILITY WHATSOEVER FOR LOSS OF USE OR FOR ANY DIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM DELAY REGARDLESS OF THE REASON(S). Shortages or errors must be reported within fifteen (15) business days from receipt of shipment to secure adjustment. No merchandise may be returned without securing written approval from Seller. Seller will notify Buyer promptly of any material delay and will specify the revised delivery date as soon as practicable. Seller shall not be liable for any delay in delivery or performance, or for any failure to manufacture, deliver or perform due to (a) any cause beyond its reasonable control; (b) any act of God, act of Buyer, act of civil or military authority, governmental priority, strike or other labor disturbance, flood, epidemic, war, riot, delay in transportation or car shortage; or (c) inability on account of any cause beyond the reasonable control of Seller to obtain necessary materials, components, services or facilities. In the event of any such delay, the date of delivery or of performance shall be extended for a period equal to the time lost by reason of the delay.

6. 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.

7. 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.

8. 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.

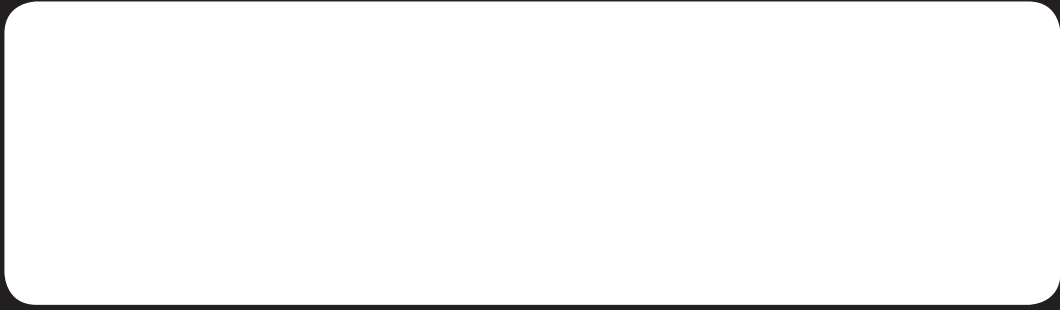
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STONEAGE PATENT DATA

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

<http://www.sapatents.com>

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