

# BEETLE

## CURVED PIPE & TUBE CLEANING NOZZLES

### USER MANUAL



BT9.5



BT12



BT18



BT25

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StoneAge Inc.  
466 S. Skylane Drive  
Durango, CO 81303, USA  
Phone: 970-259-2869  
Toll Free: 866-795-1586  
www.stoneagetools.com

StoneAge Europe  
Unit 2, Britannia Business Centre  
Britannia Way  
Malvern WR14 1GZ  
United Kingdom  
Phone: +44 (0) 1684 892065

This manual must be used in accordance with all applicable national laws. The manual shall be regarded as a part of the machine and shall be kept for reference until the final dismantling of the machine, as defined by applicable national law(s).

Updated manuals can be downloaded at:  
<https://www.stoneagetools.com/manuals>

Beetle Model Specifications				
	BT9.5	BT12	BT18	BT25
Tube I.D. Range	0.47–.63 in. 12–16 mm	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	8–22k psi 550–1500 bar	10–22k psi 700–1500 bar	10–22k psi 700–1500 bar	8–22k psi 550–1500 bar
Flow Range	5–6 gpm 19–23 l/min	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	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	0.37 in. 9.5 mm	0.5 in. 12 mm	0.7 in. 18 mm	1.0 in. 26 mm
Length	1.4 in. 35 mm	1.3 in. 32 mm	1.5 in. 39 mm	1.9 in. 48 mm

## DESCRIPTION OF EQUIPMENT AND INTENDED USE

The Beetle line of rotary tools leverage off the same patented technology that has made BEETLE nozzles the most successful tube cleaning tools in the industry. Beetle nozzles are engineered to provide the same powerful cleaning features, but in a compact size that is ideal for navigating tubes and small pipes with curves and elbows.

The small diameter and short length of Beetle tools make them perfect for use with a Navigator, AutoBox ProDrive or Boiler Tube Cleaner for cleaning process piping, drain lines, u-tube bundles and other small ID conduit with bends that may have between inaccessible in the past.

## KEY FEATURES:

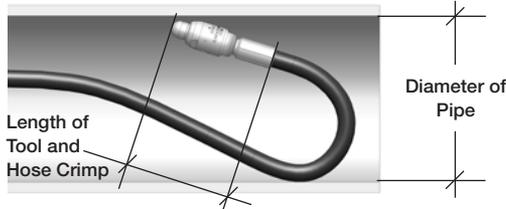
- Rotating Head for better jet coverage and more efficient cleaning than a static head.
- Short tool length allow Beetle to pass bends and elbows to clean tubes that may otherwise be inaccessible.
- Small Diameter cleans tubes with internal diameters as small as .47 in. (12 mm)
- Patented liquid bearing technology means no bearings, seals or lubricant to replace helps reduce maintenance costs.
- Recessed inlet design retains short rigid length when coupled with hose.
- Up to 22k (1500 bar) MAWP is ideal for removing scale, carbons and polymers.

# WARNING AND SAFETY INSTRUCTIONS

## ▲WARNING

Operations with this 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.
- The *Dump Valve* is the most important safety device. Each operator must have and be able to use their own Dump Valves to shut down the water pressure immediately if necessary.
- Inspect the equipment and nozzle for visible signs of deterioration, damage, and improper assembly. Do not operate until repaired. Make sure all threaded connections are tight and free of leaks.
- All operators and persons in close proximity must wear personal protective equipment, including approved protection for body, hands, feet, face, ears, eyes, and air passages. Please refer to the WJTA Recommended Practices, Section 6.
- Water pressure greater than 20,000 psi (1379 bar) can reach 200°F (93°C) and can scald or burn the operator. Always use face shields, water jet resistant armor, and gloves to protect the operator from being burned or cut.
- Inspect the high pressure hose for damage. Use ONLY hoses or flex lances intended for waterblast applications and rated for the maximum operating pressure on the job. The high pressure hose crimp/end fitting should be equal to or less than the diameter of the BEETLE tool. The high pressure hose should be as large as possible to minimize pressure loss through the hose. There is increased risk of hydraulic shock when cleaning plugged tubes, when using larger ends.
- The BT should NOT be used in pipes with a larger diameter than the overall length of the tool and hose crimp; otherwise the tool can turn around and come back toward the operator, causing serious injury or death.



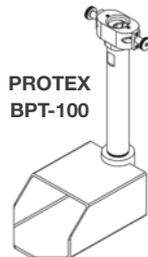
- An *Anti-Withdrawal Device* must be used when flex lancing. These devices provide a mechanical stop to prevent the waterjet tool from exiting the tube and injuring the operator during the cleaning operation. StoneAge automated, hands-free, equipment is designed to protect the operator and provide backout prevention. If StoneAge automated equipment is not being used with the flex lances then one of two StoneAge backout prevention options should be used.

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

The **ProTex BPT-100** vertical splash guard is lightweight and durable to keep operators safe from the potential hazards of flex-lancing.



VE-400  
SAFETY STOP

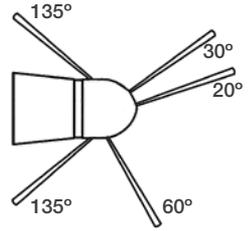


PROTEX  
BPT-100

# PART NUMBERS WITH SPECIFICATIONS

The BEETLES are self-rotating swivels designed for tube and pipe cleaning. The diameter of the tool and inlet nut connection determine the model and part number. The tool can be used at operating pressures from 8,000 psi to 22,000 psi, depending on the inlet connection and head jetting. Standard tool part numbers are shown in Table 1 along with corresponding inlet connections, pressures and flows.

Each tool is capable of a range of pressures and flows. The maximum pull of the standard tools range from 9 to 20 pounds. The nozzle head/shafts are wear items that will need to be replaced after 20 to 60 hours, depending on water filtration and operating pressure. The wrench flats provided on the Body & Nut should always be used when maintaining these tools. Table 2 details the wrench size required for each tool part. These wrenches are available from StoneAge.



**UNIVERSAL HEAD**  
5 Ports: 1 @ 20°, 1 @ 35°  
1 @ 60°, 2 @ 135°

\*BSPP=British Standard Pipe NPT=National Pipe Thread

Part Number	Inlet Connection	Max Pressure	Pressure Range (psi)	Flow Range
BT9.5-P1-B	1/16 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	5-6 gpm
BT9.5-M7-B	M7-1.0	22kpsi / 1500 bar	15,000 - 22,000 psi	5-6 gpm
BT12-P1-B	1/16 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	5-6.5 gpm
BT12-M7-B	M7-1.0	22kpsi / 1500 bar	15,000 - 22,000 psi	6.5-8.5 gpm
BT12-MP4L-B	1/4-28 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	6.5-8.5 gpm
BT12-MP4R-B	1/4-28 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	6.5-8.5 gpm
BT18-P1-A	1/16 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	7-9 gpm
BT18-P2-A	1/8 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	7-9 gpm
BT18-BSPP2-A	1/8 BSPP	18kpsi / 1250 bar	10,000 - 18,000 psi	8-10 gpm
BT18-MP4L-A	1/4-28 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	9-11 gpm
BT18-MP4R-A	1/4-28 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	9-11 gpm
BT18-MP6L-A	3/8-24 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	9-11 gpm
BT18-MP6R-A	3/8-24 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	9-11 gpm
BT25-P2-A	1/8 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	12-16 gpm
BT25-P4-A	1/4 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	12-16 gpm
BT25-BSPP4-A	1/4 BSPP	20.3kpsi / 1400 bar	15,000 - 20,300 psi	16-20 gpm
BT25-MP6L-A	3/8-24 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	16-20 gpm
BT25-MP6R-A	3/8-24 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	16-20 gpm
BT25-MP9L-A	9/16-18 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	16-20 gpm
BT25-MP9R-A	9/16-18 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	16-20 gpm
BT25-P2-C	1/8 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	8-11 gpm
BT25-P4-C	1/4 NPT	15kpsi / 1035 bar	8,000 - 15,000 psi	8-11 gpm
BT25-BSPP4-C	1/4 BSPP	20.3kpsi / 1400 bar	15,000 - 20,300 psi	11-13 gpm
BT25-MP6L-C	3/8-24 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	11-13 gpm
BT25-MP6R-C	3/8-24 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	11-13 gpm
BT25-MP9L-C	9/16-18 Left Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	11-13 gpm
BT25-MP9R-C	9/16-18 Right Hand	22kpsi / 1500 bar	15,000 - 22,000 psi	11-13 gpm

# BEND RADIUS CHART

## APPLICATION SPECIFICATIONS

It is important to consider the length of your hose crimp and avoid couplings and adapters when configuring the Beetle to take advantage of the small profile when cleaning tubes with bends or elbows.

**PLEASE NOTE:** Achieving the lowest possible bend radius may necessitate using hose/fitting combinations that are rated for lower pressures than the Beetle tool rating.

The following table illustrates minimum tube size and bend radius specifications for common applications:

Model	Application				Minimum Hose Bend	Tube ID	Minimum Tube Radius
	Pressure	Hose	Fitting	Overall Length			
BT9.5	15k psi 1034 bar	3/2	P1	2.54 in. 65 mm	2.36 in. 60 mm	0.47 in. 12 mm	6.50 in. 166 mm
						0.63 in. 16 mm	3.60 in. 92 mm
	17.4k psi 1200 bar	4/2	M7	3.16 in. 80 mm	2.95 in. 75 mm	0.47 in. 12 mm	14.00 in. 356 mm
		4/2H	M7			0.63 in. 16 mm	5.60 in. 143 mm
BT12	15k psi 1034 bar	3/2	P1	2.26 in. 57 mm	2.36 in. 60 mm	0.60 in. 15 mm	3.75 in. 96 mm
						1.00 in. 25 mm	2.36 in. 60 mm
	17.4k psi 1200 bar	4/2	M7	3.00 in. 76 mm	2.95 in. 75 mm	0.47 in. 12 mm	5.75 in. 147 mm
						0.63 in. 16 mm	3.40 in. 87 mm
	20k psi 1379 bar	3/4	MP4L	3.40 in. 87 mm	4.33 in. 110 mm	0.60 in. 15 mm	8.70 in. 221 mm
			MP4R			1.00 in. 25 mm	4.85 in. 124 mm
	20.3k psi 1400 bar	4/2H	M7	3.01 in. 76 mm	2.95 in. 75 mm	0.60 in. 15 mm	5.75 in. 147 mm
						1.00 in. 25 mm	3.40 in. 87 mm
BT18	15k psi 1034 bar	3/2	P1	2.46 in. 63 mm	2.36 in. 60 mm	0.90 in. 22 mm	3.05 in. 78 mm
						1.30 in. 33 mm	2.13 in. 54 mm
		4/2	P2	2.80 in. 71 mm	2.95 in. 75 mm	0.90 in. 22 mm	3.90 in. 100 mm
						1.30 in. 33 mm	2.80 in. 72 mm
		5/2	P2	2.88 in. 73 mm	3.74 in. 95 mm	0.90 in. 22 mm	4.53 in. 116 mm
			BSPP2	3.50 in. 89 mm		1.30 in. 33 mm	3.47 in. 89 mm
		6/2	P2	3.52 in. 89 mm	4.33 in. 110 mm	0.90 in. 22 mm	6.10 in. 155 mm
						1.30 in. 33 mm	4.48 in. 114 mm

Table continued on next page

# BEND RADIUS CHART

## APPLICATION SPECIFICATIONS (continued)

Model	Application				Minimum Hose Bend	Tube ID	Minimum Tube Radius		
	Pressure	Hose	Fitting	Overall Length					
BT18	20k psi 1379 bar	3/4	MP4L	3.58 in. 91 mm	4.33 in. 110 mm	0.90 in. 22 mm	5.80 in. 148 mm		
			MP4R			1.30 in. 33 mm	4.45 in. 113 mm		
		5/4	MP6L	2.86 in. 73 mm		0.90 in. 22 mm	6.10 in. 155 mm		
			MP6R			1.30 in. 33 mm	5.15 in. 131 mm		
	22k psi 1517 bar	6/4	MP6L	2.99 in. 76 mm	7.09 in. 180 mm	0.90 in. 22 mm	6.40 in. 163 mm		
			MP6R			1.30 in. 33 mm	5.30 in. 135 mm		
BT25	15k psi 1034 bar	4/2	P2	2.64 in. 67 mm		2.95 in. 75 mm	1.20 in. 30 mm	3.29 in. 84 mm	
							3.00 in 76 mm	2.00 in. 51 mm	
		5/2	P2	2.72 in. 69 mm	3.74 in. 95 mm		1.20 in. 30 mm	3.95 in. 101 mm	
							3.00 in 76 mm	2.00 in. 51 mm	
			P4	3.53 in. 90 mm			1.20 in. 30 mm	4.80 in. 122 mm	
							3.00 in 76 mm	2.31 in. 59 mm	
		6/2	P2	3.36 in. 85 mm	4.33 in. 110 mm		1.20 in. 30 mm	5.05 in. 129 mm	
								3.00 in 76 mm	2.60 in. 67 mm
	P4		2.82 in. 72 mm	1.20 in. 30 mm		4.50 in. 115 mm			
				3.00 in 76 mm		2.28 in. 58 mm			
	BSPP4		3.95 in. 100 mm	1.20 in. 30 mm		5.80 in. 148 mm			
				3.00 in 76 mm		2.95 in. 75 mm			
	20k psi 1379 bar	5/4	MP6L	2.79 in. 71 mm	5.91 in. 150 mm	1.2 in. 30 mm	5.70 in. 145 mm		
			MP6R			3.0 in 76 mm	3.24 in. 83 mm		
8/4		MP9L	3.40 in. 86 mm	7.87 in. 200 mm		1.2 in. 30 mm	7.80 in. 199 mm		
		MP9R				3.0 in 76 mm	5.10 in. 130 mm		
22k psi 1517 bar		6/4	MP6L			2.92 in. 74 mm	7.09 in. 180 mm	1.2 in. 30 mm	5.87 in. 149 mm
			MP6R					3.0 in 76 mm	3.35 in. 86 mm

## OPERATION

### OPERATION STEPS:

1. Flush out the entire system before installing the BEETLE tool on the end of the hose. A clean water supply is needed for reliable operation and should contain no larger than 25 micron particulates.
2. Once the system is flushed, attach the BEETLE tool and place it in an open tube while the operating pressure is being set.
3. When the tool is at operating pressure, the water exiting the tool through the leak paths/weep holes will keep external debris from entering the tool.
4. If the tool is not under pressure it should not be left inside a plugged tube. Doing so could allow debris to enter and prevent rotation or cause damage to the tool.
5. If the tool does not rotate when the dump valve is closed, the operator should try closing the dump valve slowly a few times to build up pressure until normal operation is achieved. This will also flush debris from the tool.
6. The BEETLE drilled nozzle head will last between 20 and 60 hours. Worn jets decrease the cutting rate. The tool may begin to hydraulick when cleaning plugged tubes. This occurs when the jets are not effectively cutting the material into smaller pieces.
7. When using BEETLE tools in plugged tubes, do not jam the head into the deposit because this will stop the rotation of the tool and impede the cutting ability. When the tool contacts the deposit, allow it to cut away the material and advance at its own pace. If it stops advancing, pull back slightly on the hose to move the head away from the deposit. This action also allows the jets to cut the deposit at different angles. The hose should be gradually fed into and out of the tube, allowing time for the jets to do their work. Repeat this process until the tube is unplugged.
8. When polishing tubes with scale, the tool has been observed passing through a 50 foot long scaled tube in 10 seconds. While this is sufficient when cleaning easy-to-remove deposits, we recommend feeding the tool through the tube at a slower rate. This will ensure adequate cleaning. Unless the deposit is very easy to remove, this will not completely remove the scale.

## NOTICE

Corrosion pitting is one of the most common failures of BEETLE tools. Pitting can cause premature tool failure due to cracking. StoneAge recommends the following to help extend the life of the BEETLE tools.

*After use, blow out excess water and debris.  
Flush the tool with WD-40®  
Store tool in WD-40®*

## TROUBLESHOOTING

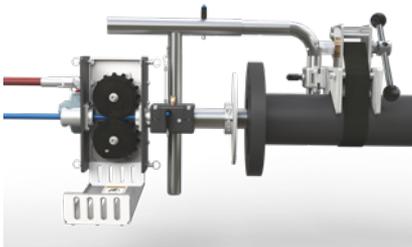
### TOOL WILL NOT ROTATE:

- All BEETLE tools have a tapered shaft that fits into a tapered body. These surfaces do not touch during operation. Do not pull out on the head/shaft in order to rotate the tool, it will lock up. If this happens, tap the head/shaft on a surface to knock it free.
- Check the nozzle orifices in the head for plugging; if one becomes plugged the swivel will likely not rotate. If this does not solve the problem, the swivel should be disassembled and inspected.
- There are two small holes exiting the tapered portion of the shaft; these should be checked for debris and cleaned out. Blow out the body and wipe off the shaft to remove any debris.

WD-40® is a registered trademark of the WD-40 Corporation.



U TUBE EXCHANGER CLEANING



AUTOBOX® ABX-PRO  
PIPE CLEANING



AUTOBOX® ABX-PRO ON PRO-700-V2  
DRAIN CLEANING



NAVIGATOR (NAV-100)  
PIPE CLEANING

## NOTICE

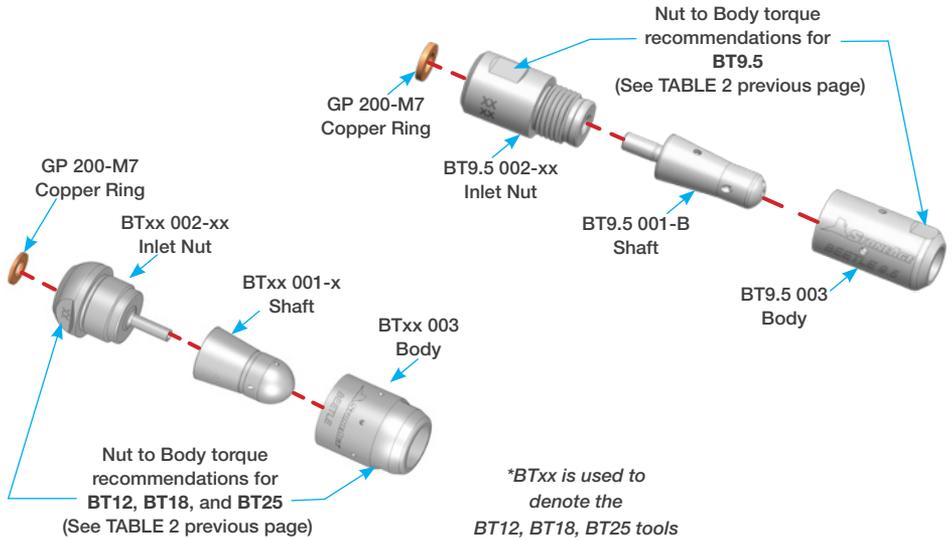
### **DO NOT USE A PIPE WRENCH OR PLIERS WITH TEETH**

This can crush and crack the hardened steel body, leading to tool breakage during operation.

The nozzle heads are wear items that will need to be replaced after 20 to 60 hours, depending on water filtration and operating pressure. All BEETLE 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. The wrench flats should always be used when maintaining these tools. TABLE 2 details the wrench size required for each part of the tools and the available kits that contain the wrenches for each tool model.

**Table 2 - Recommended Torque Ranges and Required Wrench Sizes**

Beetle Size	Part	Wrench Size (in)	Recommended Torque Ranges (with anti-seize)					
			IN-LBS		FT-LBS		N-m	
BT9.5	Body	11/32	156	180	13	15	17.6	20.3
	Nut	11/32						
BT12	Body	7/16	156	180	13	15	17.6	20.3
	Nut	7/16						
BT18	Body	5/8	270	300	23	25	30.5	33.9
	Nut	9/16						
BT25	Body	15/16	420	460	35	38	47.58	52.0
	Nut	11/16						



## DISASSEMBLY STEPS:

1. Layout the appropriate size open end wrenches for the tool intended for maintenance. See Table 2 on the previous page for list of wrench sizes.
2. Locate the flats on the Head and tighten them in a vice, so that the nut end of the tool is facing up.
3. Slide a wrench onto the flats of the Nut and body to loosen the Assembly.
4. Remove the BEETLE from the vice and unscrew the Body from the Nut.
5. The Shaft should just drop out of the Body and the Disassembly is complete.

## CLEAN:

1. Use a pin gauge or needle to make sure all orifices in all four parts are free of debris. The holes in the Shaft are critical for proper rotation.
2. After cleaning each part, blow out excess water.

## INSPECT:

1. The drilled nozzle head/shafts are designed for 20-60 hours of wear dependent upon water quality and operating pressure. Worn head will decrease the cutting rates and overall productivity. Inspect the head for dents, pock marks, and jets. When in doubt replace the Head.
2. Inspect the Shaft for cracking, pitting, or uneven wear.

## ASSEMBLY STEPS:

1. Position the stem of the Nut into the Shaft.
2. Slide the Body over the Shaft and screw onto the Inlet Nut.
3. Locate the flats on the Nut and the Body and tighten them in a vice.

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*After use, blow out excess water and debris.  
Flush the tool with WD-40®  
Store tool in WD-40®*

# TERMS AND CONDITIONS AND WARRANTY INFORMATION

**1. Acceptance of Terms and Conditions.** Receipt of these Terms and Conditions of Sale ("Terms and Conditions") shall operate as the acceptance by StoneAge, Inc. ("Seller") of the order submitted by the purchaser ("Buyer"). Such acceptance is made expressly conditional on assent by Buyer to these Terms and Conditions. Such assent shall be deemed to have been given unless written notice of objection to any of these 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 Buyer with prompt and efficient service. However, to individually negotiate the terms of each sales contract would substantially impair Seller's ability to provide such service. Accordingly, the product(s) furnished by Seller are sold only according to the terms and conditions stated herein and with the terms and conditions stated in any effective StoneAge Dealer Agreement or StoneAge Reseller Agreement, if applicable. Notwithstanding any terms and conditions on Buyer's order, Seller's performance of any contract is expressly made conditional on Buyer's agreement to these Terms and Conditions 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.

**2. Payment/Prices.** Unless other arrangements have been made in writing between Seller and Buyer, payment for the product(s) 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 the product(s), and the collection of which Seller is or may be responsible to provide to any governmental authority, unless acceptable exemption certificates are provided by Buyer in accordance with applicable 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 product(s) being purchased, whether now in effect or hereafter imposed by any governmental authority, foreign or domestic.

**3. Warranty.** SELLER MAKES NO WARRANTIES OR REPRESENTATIONS AS TO THE PERFORMANCE OF ANY PRODUCT EXCEPT AS SET FORTH IN THE STONEAGE LIMITED WARRANTY PROVIDED WITH THE PRODUCT.

**4. 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. The proposed shipment date is an estimate. Seller will notify Buyer promptly of any material delay and will specify the revised delivery date as soon as practicable. 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).

All product(s) will be shipped F.O.B. point of origin, unless specifically agreed otherwise, and Buyer shall pay all shipping costs and insurance costs from that point. Seller, in its sole discretion, will determine and arrange the means and manner of transportation of the product(s). Buyer shall bear all risk of loss commencing with the shipment or distribution of the product(s) from Seller's warehouse. Order shortages or errors must be reported within fifteen (15) business days from receipt of shipment to secure adjustment. No product(s) may be returned without securing written approval from Seller.

**5. Modification.** These Terms and Conditions are intended by Seller and Buyer to constitute a final, complete and exclusive expression of agreement relating to the subject matter hereof and cannot be supplemented or amended without Seller's prior written approval.

**6. Omission.** Seller's waiver of any breach or Seller's failure to enforce any of these 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 hereof.

**7. Severability.** If any provision of these Terms and Conditions is held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the other portions hereof.

# TERMS AND CONDITIONS AND WARRANTY INFORMATION

**8. Disputes.** Seller and Buyer shall attempt in good faith to promptly resolve any dispute arising under these Terms and Conditions by negotiations between representatives who have authority to settle the controversy. If unsuccessful, Seller and Buyer 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 Seller and Buyer.

**9. Governing Law.** 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.

**10. Jurisdiction and Venue.** Seller and Buyer agree that the state or federal courts located within the City and County of Denver, Colorado shall have sole and exclusive jurisdiction over any litigation concerning any dispute arising under these Terms and Conditions not otherwise resolved pursuant to Section 9 as well as any alleged defects of any Products or damages sustained as a result of such alleged defects. Seller and Buyer further agree that should any litigation be commenced in connection with such a dispute, it shall only be commenced in such courts. Seller and Buyer agree to the exclusive jurisdiction of such courts and neither will raise any objection to the jurisdiction and venue of such courts, including as a result of inconvenience.

**11. Attorney's Fees.** 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 mediation.

## 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.StoneAgetools.com/trademark-list/>

## STONEAGE PATENT DATA

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

<http://www.sapatents.com>

## STONEAGE TERMS AND WARRANTY

View StoneAge's Terms and Warranty Conditions online.

<http://www.stoneagetools.com/terms>

<http://www.stoneagetools.com/warranty>

## WARRANTY:

Warranties set forth herein extend only to End-Users, meaning customers acquiring, or that have previously acquired, a product manufactured by StoneAge ("Product") for their own use and not for resale, either directly from StoneAge Inc. ("StoneAge") or from a StoneAge Authorized Dealer or Reseller ("Dealer"). No warranty of any kind or nature is made by StoneAge beyond those expressly stated herein.

**1. LIMITED WARRANTY PERIOD.** Subject to the limitations and conditions hereinafter set forth, StoneAge warrants its Product to be free from defects in workmanship and material for a period of one (1) year from the date of purchase by the End-User, provided that the end of the limited warranty period shall not be later than eighteen (18) months from the date of shipment of the Product to the Dealer or the End-User by StoneAge ("Limited Warranty Period"). All replacement parts which are furnished under this Limited Warranty and properly installed shall be warranted to the same extent as the original Product under this Limited Warranty if, and only if, the original parts were found to be defective within the original Limited Warranty Period covering the original Product. Replacement parts are warranted for the remainder of the original Limited Warranty Period. This Limited Warranty does not cover any component part of any Product not manufactured by StoneAge. Any such component part is subject exclusively to the component manufacturer's warranty terms and conditions.

**2. LIMITED WARRANTY COVERAGE.** StoneAge's sole obligation under this Limited Warranty shall be, at StoneAge's option and upon StoneAge's inspection, to repair, replace or issue a credit for any Product which is determined by StoneAge to be defective in material or workmanship. StoneAge reserves the right to examine the alleged defective Product to determine whether this Limited Warranty is applicable, and final determination of limited warranty coverage lies solely with StoneAge. No statement or recommendation made by a StoneAge representative, Dealer or agent to End-User shall constitute a warranty by StoneAge or a waiver or modification to any of the provisions hereof or create any liability for StoneAge.

**3. WARRANTY SERVICE PROVIDERS.** Service and repair of the Product is to be performed only by StoneAge authorized service representatives, including Dealers who are authorized repair centers, with StoneAge approved parts. Information about StoneAge authorized service representatives can be obtained through the StoneAge website at [www.stoneagetools.com/service](http://www.stoneagetools.com/service). Unauthorized service, repair or modification of the Product or use of parts not approved by StoneAge will void this Limited Warranty. StoneAge reserves the right to change or improve the material and design of the Product at any time without notice to End-User, and StoneAge is not obligated to make the same improvements during warranty service to any Product previously manufactured.

**4. WARRANTY EXCLUSIONS.** This Limited Warranty does not cover, and StoneAge shall not be responsible for the following, or damage caused by the following: (1) any Product that has been altered or modified in any way not approved by StoneAge in advance in writing; (2) any Product that has been operated under more severe conditions or beyond the rated capacity specified for that Product; (3) depreciation or damage caused by normal wear and tear, failure to follow operation or installation instructions, misuse, negligence or lack of proper protection during storage; (4) exposure to fire, moisture, water intrusion, electrical stress, insects, explosions, extraordinary weather and/or environmental conditions including, but not limited to lightning, natural disasters, storms, windstorms, hail, earthquakes, acts of God or any other force majeure event; (5) damage to any Product caused by any attempt to repair, replace, or service the Product by persons other than StoneAge authorized service representatives; (6) costs of normal maintenance parts and services; (7) damage sustained during unloading, shipment or transit of the Product; or (8) failure to perform the recommended periodic maintenance procedures listed in the Operator's Manual accompanying the Product.

**5. REQUIRED WARRANTY PROCEDURES.** To be eligible for warranty service, the End-User must: (1) report the Product defect to the entity where the Product was purchased (i.e. StoneAge or the Dealer) within the Limited Warranty Period specified in this Limited Warranty; (2) submit the original invoice to establish ownership and date of purchase; and (3) make the Product available to a StoneAge authorized service representative for inspection to determine eligibility for coverage under this Limited Warranty. This Limited Warranty shall not extend to any person or entity who fails to provide proof of original purchase from StoneAge or a Dealer. No Product may be returned for credit or adjustment without prior written permission from StoneAge.

**6. DISCLAIMER OF IMPLIED WARRANTIES AND OTHER REMEDIES.** EXCEPT AS EXPRESSLY STATED HEREIN (AND TO THE FULLEST EXTENT ALLOWED UNDER APPLICABLE LAW), STONEAGE HEREBY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY AND ALL WARRANTIES, REPRESENTATIONS OR PROMISES AS TO THE QUALITY, PERFORMANCE OR FREEDOM FROM DEFECT OF THE PRODUCT COVERED BY THIS LIMITED WARRANTY. STONEAGE FURTHER DISCLAIMS ALL IMPLIED INDEMNITIES.

# TERMS AND CONDITIONS AND WARRANTY INFORMATION

**7. LIMITATION OF LIABILITY.** End-User specifically acknowledges that the Product may be operated at high speeds and/or pressures, and that as such it may be inherently dangerous if not used correctly. End-User shall familiarize itself with all operation materials provided by StoneAge and shall at all times use and require its agents, employees and contractors to use all necessary and appropriate safety devices, guards and proper safe operating procedures. In no event shall StoneAge be responsible for any injuries to persons or property caused directly or indirectly by the operation of the Product if End-User or any agent, employee, or contractor of End-User: (1) fails to use all necessary and appropriate safety devices, guards and proper safe operating procedures; (2) fails to maintain in good working order such safety devices and guards; (3) alters or modifies the Product in any way not approved by StoneAge in advance in writing; (4) allows the Product to be operated under more severe conditions or beyond the rated capacity specified for the Product; or (5) otherwise negligently operates the Product. End-User shall indemnify and hold StoneAge harmless from any and all liability or obligation incurred by or against StoneAge, including costs and attorneys' fees, to or by any person so injured.

TO THE FULL EXTENT ALLOWED BY APPLICABLE LAW, STONEAGE SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES (INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF GOODWILL, DIMINUTION OF VALUE, WORK STOPPAGE, INTERRUPTION OF BUSINESS, RENTAL OF SUBSTITUTE PRODUCT, OR OTHER COMMERCIAL LOSS EVEN TO THE EXTENT SUCH DAMAGES WOULD CONSTITUTE DIRECT DAMAGES), WITH RESPECT TO THE COVERED STONEAGE PRODUCT, OR OTHERWISE IN CONNECTION WITH THIS LIMITED WARRANTY, REGARDLESS OF WHETHER STONEAGE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

IT IS UNDERSTOOD THAT STONEAGE'S LIABILITY, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE, OR OTHERWISE SHALL NOT EXCEED THE AMOUNT OF THE PURCHASE PRICE PAID BY THE END-USER FOR THE PRODUCT. STONEAGE'S MAXIMUM LIABILITY SHALL NOT EXCEED, AND END-USER'S REMEDY IS LIMITED TO EITHER (1) REPAIR OR REPLACEMENT OF THE DEFECTIVE WORKMANSHIP OR MATERIAL OR, AT STONEAGE'S OPTION, (2) REFUND OF THE PURCHASE PRICE, OR (3) ISSUANCE OF A CREDIT FOR THE PURCHASE PRICE, AND SUCH REMEDIES SHALL BE END-USER'S ENTIRE AND EXCLUSIVE REMEDY.

YOU, THE END-USER, UNDERSTAND AND EXPRESSLY AGREE THAT THE FOREGOING LIMITATIONS ON LIABILITY ARE PART OF THE CONSIDERATION IN THE PRICE OF THE STONEAGE PRODUCT YOU PURCHASED.

Some jurisdictions do not allow the limitation or exclusion of liability for certain damages, so the above limitations and exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction. If any provisions of this Limited Warranty is held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the other portions hereof.



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