



CLASSIC (WS) ROTARY SWIVEL NOZZLES USER MANUAL



TABLE OF CONTENTS

MANUFACTURER'S INFORMATION		3
SPECIFICATIONS.....		3
DESCRIPTION AND INTENDED USE		3
KEY FEATURES		3
EC DECLARATION OF CONFORMITY		4
UK DECLARATION OF CONFORMITY		5
WARNING AND SAFETY INSTRUCTIONS		6
BACKOUT PREVENTION		6
OPERATOR TRAINING RISK ASSESSMENT		7
PPE.....		8
PRE-RUN SAFETY CHECK		9
WARTHOG® CLASSIC (WS-X-1/2)OVERVIEW.....		10
WARTHOG® CLASSIC (WS-X-1/2)MODEL INFORMATION		11
OPERATION		12
TROUBLESHOOTING		13
TOOL SERVICE INFORMATION		14
VISCOUS FLUID FILL INFORMATION.....		14
DISASSEMBLY		15
ASSEMBLY		17
PART NAMES AND SERVICE KITS.....		19
TERMS AND CONDITIONS AND WARRANTY		20

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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>

WARTHOG® CLASSIC (WS) SPECIFICATIONS	
Tool Family:	Warthog® CLASSIC
Tool Model:	WS-X-1/2
Pipe Size:	4-8 in. (100-200 mm)
Pressure Range:	1200-5000 psi (83-350 bar)
Flow Range:	9-21 gpm (34-79 Lpm)
Flow Coefficient:	1.3 Cv
Visc Service Life:	40-50 Hours
Rotation Speed:	300-500 rpm
Inlet Connection:	1/2" NPT or BSPP
Jet Port Size:	3 x 1/8" NPT
Jet Type & Plug Type:	AP2 & AP 002
Outside Diameter:	2.0 in. (51 mm)
Overall Length:	5.5 in. (140 mm)
Weight:	2.2 lbs (1 kg)
Max Water Temperature:	160 °F (70 °C)

DESCRIPTION AND INTENDED USE

The Warthog® WS-X-1/2 is designed to handle 4"-8" (102-203 mm) lines and is most commonly used with trailer jetters. It is used to clean lines in restaurants, hospitals, multi-story apartment buildings, residential, and other applications. Easily removes grease, cuts roots, and clears ice and soil blockages.

RIGID AND JOINTED INLETS

The WS-J-1/2 model allows the inlet hose to bend to the side, shortening the rigid length of the tool and allowing limited access applications to be cleaned much easier.

The WS-X-1/2 is an excellent tool for straight pipes. The whip hose is removed, allowing the hose to connect directly to the tool

KEY FEATURES:

- Navigates sweeping bends.
- Cuts roots, clears ice and blockages
- Whip hose, jointed inlet and direct connection available
- Replaceable AP2 jets.

EC DECLARATION OF CONFORMITY

Manufacturer: StoneAge Incorporated
466 South Skylane Drive Durango, CO 81303 USA

Authorized Representative: StoneAge Netherlands BV
Reedijk 7Q
3274 KE Heinenoord Netherlands
Sander de Korte, Customer Service Manager

Declare that: Warthog® Classic (WS-X-1/2)
are rotary swivel tools designed for cleaning pipes with bends.

Are compliant with the following Directives and Standards:

Directive 2006/42/EC (Machinery Directive)

EN ISO 12100:2010 (E) Safety of machinery – General principles for design – Risk assessment and risk reduction

The Technical Files for the Warthog® Classic (WS-X-1/2) are maintained at:

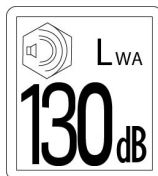
StoneAge Incorporated, 466 South Skylane Drive, Durango, CO 81303, USA and were compiled by the Engineering Manager. The Technical File is available through the Authorized Representative. This Declaration of Conformity is issued under the exclusive responsibility of StoneAge Incorporated.



StoneAge Incorporated, Durango, CO, USA
Liz Mancuso, Director of Engineering

02/15/23

Date



UK DECLARATION OF CONFORMITY

Manufacturer: StoneAge Incorporated
466 South Skylane Drive Durango, CO 81303 USA

Authorized Representative: StoneAge UK
Unit 3
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Woodbury Lane
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Steve Ellis, Managing Director StoneAge UK

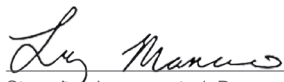
Declare that: Warthog® Classic (WS-X-1/2)
are rotary swivel tools designed for cleaning pipes with
bends.

Are compliant with the following Statutory Requirements and Designated Standards:

S.I. 2008 No. 1597 (E) Safety of machinery – General principles for design – Risk assessment and risk reduction
EN ISO 12100:2010 (E) Safety of machinery – General principles for design – Risk assessment and risk
reduction

The Technical Files for the Warthog® Classic (WS-X-1/2) are maintained at:

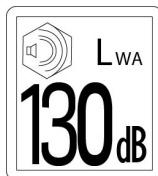
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Liz Mancuso, Director of Engineering

02/15/23

Date



**UK
CA**

WARNING AND SAFETY INSTRUCTIONS

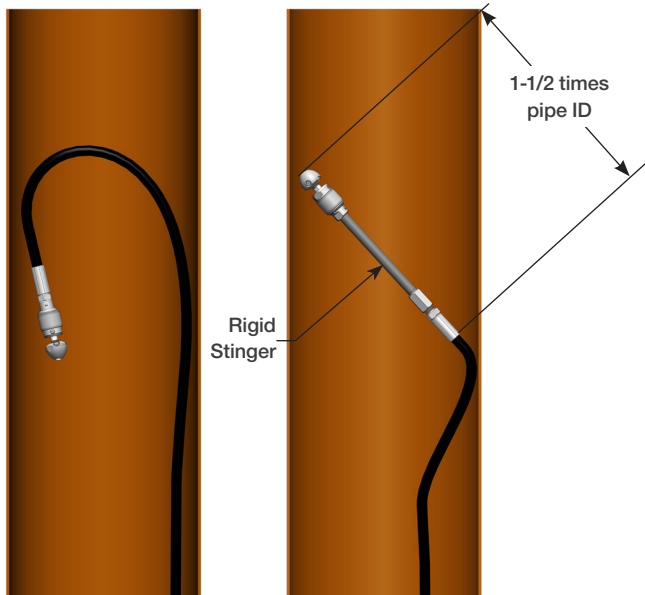
⚠ WARNING

Because of the short length of the Warthog® Classic (WS-X-1/2), the tool can turn around in pipes and come back at the operator at a high rate of speed. A rigid “stinger” should be used between the hose and the tool. The rigid length of the tool including hose end must be 1-1/2 times the inside diameter of the pipe being cleaned (see below).

Make sure there is an operator controlled dump in the system, operated by the person closest to the cleaning job. It is recommended that the hose be marked a few feet from the end with a piece of tape so the operator knows when to stop when retracting the tool.

⚠ DANGER

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. Deviating from safety instructions and recommended practices can lead to severe injury and/or death.



IMPROPER USE:

Classic (WS) will turn around in large diameter pipe

VERY DANGEROUS!

PROPER USE:

Classic (WS) with rigid “stinger” to prevent turnaround, still able to pass through elbows.

WARNING AND SAFETY INSTRUCTIONS

OPERATOR TRAINING

Managers, Supervisors, and Operators **MUST** be trained in Health and Safety Awareness of High-pressure Water Jetting and hold a copy the Water Jetting Association (WJA) Code of Practice, or equivalent (see www.waterjetting.org.uk).

Operators **MUST** be trained to identify and understand all applicable standards for the equipment supplied. Operators should be trained in manual handling techniques to prevent bodily injury.

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

IT IS THE RESPONSIBILITY OF THE INSTALLER/ OPERATOR to conduct a job specific risk assessment prior to use. Job specific risk assessment **MUST** be repeated for each different set up, material, and location.

The risk assessment **MUST** conform to the Health and Safety at Work Act 1974 and other relevant Health and Safety legislation.

Operators **MUST** read, understand, and follow the Operational and Training Requirements (Section 7.0) of WJTA-IMCA's Industry Best Practices For The Use Of High-pressure Waterjetting Equipment, or equivalent.

Operators **MUST** read, understand and follow the Warnings, Safety Information, Assembly, Installation, Connection, Operation, Transport, Handling, Storage, and Maintenance Instructions detailed in this manual.

The risk assessment **MUST** consider potential material or substance hazards including:

- Aerosols
- Biological and microbiological (viral or bacterial) agents
- Combustible materials
- Dusts
- Explosion
- Fibers
- Flammable substances
- Fluids
- Fumes
- Gases
- Mists
- Oxidizing Agents

WARNING AND SAFETY INSTRUCTIONS

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

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

Hygiene - Operators are advised to wash thoroughly after all waterjetting operations to remove any waterblast residue which may contain traces of harmful substances.

First aid provision - users **MUST** be provided with suitable first aid facilities at the operation site.

PPE may include:

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



WARNING AND SAFETY INSTRUCTIONS

WARNING

Operations with this equipment can be potentially hazardous. Caution **MUST** be exercised prior to and during equipment and water jet tool use. Please read and follow all of these instructions, in addition to the guidelines in the WJTA-IMCA's Industry Best Practices handbook, available online at www.wjta.org. Deviating from safety instructions and recommended practices can lead to severe injury and/or death.

- Do not exceed the maximum operating pressure specified for any component in a system.
- The immediate work area **MUST** be marked off to keep out untrained persons.
- Inspect the equipment for visible signs of deterioration, damage, and improper assembly. Do not operate if damaged, until repaired.
- Make sure all threaded connections are tight and free of leaks.
- Users of the Warthog® Classic (WS-X-1/2) **MUST** be trained and/or experienced in the use and application of high-pressure technology and cleaning, as well as all associated safety measures, according to the WJTA Recommended Practices for the use of High-pressure Waterjetting Equipment.
- Install mechanical stops, stingers and back out preventers as appropriate when doing any tube, pipe or vessel cleaning.
- Always de-energize the system before servicing or replacing any parts. Failure to do so can result in severe injury and/or death.

PRE-RUN SAFETY CHECK

Refer to WJTA-IMCA's Industry Best Practices For The Use Of High-pressure Waterjetting Equipment and/or The Water Jetting Association's, WJA Code of Practice for additional safety information.

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

WARTHOG® CLASSIC (WS-X-1/2)

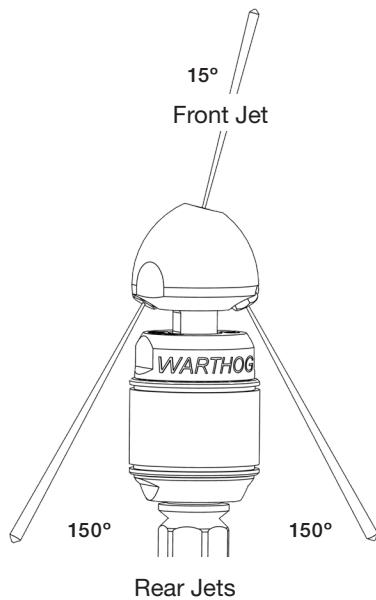
PIPE SIZE: 4"-8" LINES (100-200 MM)

INLET: 1/2" NPT OR BSPP

FLOW RATE: 9-21 gpm | 34-79 lpm

SERVICE INTERVAL: 40-50 hours

The Classic (WS-X-1/2) is preconfigured to deliver top performance in the most common 4-8" (102-203 mm) pipe applications so you can get right to work and deliver great results removing grease, cutting roots, and clearing ice and soil blockages.



UNIVERSAL

- Jetting is preconfigured for an equal balance of pulling, flushing, cleaning, and cutting

CLASSIC (WS-X-1/2)

3 Ports:

1 @ 15°

2 @ 150°



RECOMMENDED HOSES

WS-X-1/2: StoneAge recommends a 1/2" ID hose be used, especially when using longer hose lengths.

JETTING

Pumps are commonly sold based on their *theoretical* maximum flow output; in reality, none are 100% efficient. We try to take this into account when supplying you the jets. If you are not getting to the operating pressure desired, the sizes of the jets may need to be changed.

The table below is provided as an overview of common jetting parameters. For more precise jetting information, please use the StoneAge Jetting App to determine jet sizes:

jetting.stoneagetools.com

For more information regarding the Warthog® Classic (WS) or other Warthog® Sewer Tools, contact your factory authorized Warthog® Distributor or go to;

www.sewernozzles.com

Warthog® Classic (WS-X-1/2) HEAD OFFSET CHART

WS WITH 500' OF Ø1/2" HOSE			PRESSURE				
			2500 PSI	3000 PSI	3500 PSI	4000 PSI	4500 PSI
FLOW	GPM	L/MIN	170 BAR	210 BAR	240 BAR	280 BAR	310 BAR
	9	34	R25	R25	R25	R25	R25
	12	45	R25	R19	R19	R19	R19
	15	57	R19	R19	R19	R14	R14
	18	68	R14	R14	R14	R14	R14
	21	79	R14	R14	R14	R14	R10

NOTICE

The two most important items in maintaining the WS tools;

- *Keep debris from entering the tool and preventing it from rotating by flushing hoses before use.*
- *Keep the WS full of viscous fluid to maintain control and rotation speed. When the viscous fluid is lost or contaminated, the rotation speed of the tool will increase, which reduce the life of the high pressure seal and bearing. We recommend that this is done after every 40 to 50 hours of operation. If the tool is spinning much faster than when new, this is an indication that it needs fluid.*

OPERATION:

- Make sure the operator has a controlled dump in the system and it is operated by the person closest to the job. Test the dump prior to beginning the job.
- Flush out the high pressure hoses before connecting the WS to eliminate debris.
- Attach the tool to the end of the hose; prepare the threads per the “TECH TIP” below. There is a large O-Ring (WS 030) around the inlet, covering up the wrench flats. This O-Ring helps prevent the tool from getting caught on the rear edge when pulling the tool back out of the line. When attaching the tool to the hose end, slide the O-Ring up the hose out of the way until the connection is tightened, and then roll the O-Ring back into its original place.



TECH TIP: NPT threads -StoneAge recommends the use of Teflon tape and yellow Threadmate™ on NPT thread connections.

Fine and high pressure threads- StoneAge recommends the use of Blue Goop® Anti-seize on Fine and high pressure thread connections.

- It is recommended that the hose be marked a few feet from the end with a piece of tape so the operator knows when to stop on the way back out.
- Position the tool within the pipe to be cleaned; bring the pump up to pressure, making certain that the WS begins to pull it's way in the proper direction into the pipe. If roots are present, feeding at a slower rate will improve the cleaning results. Depending on the amount of debris in the pipe, it may be necessary to occasionally pull the WS back toward the pipe entrance to prevent large buildups behind the tool.
- Close the dump and slowly bring the pump up to pressure the first time to make sure jets are not plugged and the jet thrust is correct. The WS should begin to slowly rotate.
- Once the pump is up to pressure, feed the WS at a reasonable rate to allow the jets time to clean the pipe. Once operating pressure is reached, feed the tool into the pipe to begin the cleaning job.
- Depending on the amount of debris in the pipe, it may be necessary to occasionally pull the WS back toward the pipe entrance to prevent large buildups behind the tool. Allow the jets time to do their work by feeding the hose out at a controlled rate.
- When finished cleaning, shut down and secure pump before removing WS from line. If the WS will be removed from the line and stored for more than several days, blow out water with compressed air to prolong the life of the internal components.

Blue Goop® is a registered trademark of the Swagelock® Corporation.

Parker Threadmate™ is a registered trademark of the Parker Hannifin Corporation.

HEAD WILL NOT ROTATE:

- First try rotating head by hand and see if it feels rough or gritty to turn. If it does, the tool must be disassembled and repaired; it likely has bad bearings, seals and fluid. If the tool feels okay, check to see if any nozzles are plugged; even if a nozzle is only partially blocked it can keep the head from rotating. Nozzles must be removed from the head to properly clean them; it does not do any good to poke the material plugging the nozzle back into the head, as it will just replug a nozzle.

HEAD SPINS TOO FAST:

- It is likely that the swivel is low on viscous fluid, or the viscous fluid has water in it. The best thing to do is drain all the fluid, wipe the parts clean and refill with the proper fluid. Check that the shaft seals are still good and will keep the fluid from leaking out. If it spins too fast as a new tool or after proper repair, check with StoneAge or your distributor to make sure that the tool has the correct head and nozzle combination.

SEAL LEAK:

- The seal may leak initially at low pressure, but should pop closed as pressure is increased. If operating pressure is reached and the seal is leaking continuously, the high pressure seal may need to be replaced. Refer to the maintenance below.

SEALS WEAR OUT QUICKLY:

- The tool must be disassembled and inspected. The brass seat should be checked for being installed in the right direction, and it should be replaced any time the high pressure seal is replaced. The bore of the shaft where the high pressure seal is located should be checked for grooving. If it is worn larger than .383", the shaft will need to be replaced.

NOT GETTING THE DESIRED OPERATING PRESSURE:

- The sizes of the jets may need to be changed. Verify jetting at jetting.stoneagetools.com
- For more information contact your factory authorized StoneAge® Inc. distributor or go to www.sewernozzles.com for help.

TOOL SERVICE INFORMATION

TOOL SERVICE

The Warthog® WS also has a high pressure seal that will last between 150 and 300 hours. The seal may leak at low pressure, but will seal at high pressures unless it has worn out. Refer to this manual for assembly instructions.

Product training and proper tools are required to service this tool. If you are uncomfortable performing the service, bring the WS to your authorized dealer.

The use of a bench vice and an arbor press is highly helpful. Take care throughout the entire procedure to keep the internals clean and free from grit, lint, and contamination. Failure to do so could result in premature failure after service.

LIST OF TOOLS:

- Bench Vice (recommended)
- Arbor Press (recommended)
- Medium size flat-head screw driver
- Pick
- Small needle nose pliers
- WS 612 Tool Kit
 - TJ 064 Fill Tube
 - WS 105 Installation Tool
- VS 604-S Visc\Syringe Kit
 - 6oz Slow Visc
 - BC 410 Syringe

LIST OF MATERIALS:

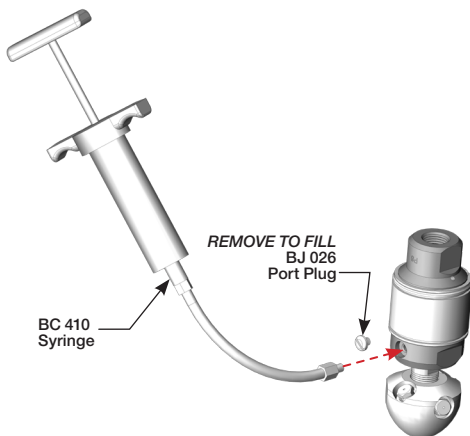
- Clean lint free rags or blue shop towels
- Lithium Soap Grease – StoneAge PN (GP 048 Grease)
- Isopropyl Alcohol or Denatured Alcohol
- Anti-Seize - Swagelok® Blue Goop® StoneAge PN (GP 043)
- Parker® Yellow ThreadMate and Teflon Tape or an equivalent combination on the threads of the WS 001 Shaft.

*Blue Goop® is a registered trademark of Swagelok® Company.
Parker® Yellow ThreadMate™ is a registered trademark of Parker-Hannifin Corporation.*

VISCOUS FLUID FILL INSTRUCTIONS

TO FILL WITH VISCOUS FLUID

1. Fill the syringe with viscous fluid. This is best done by unscrewing the handle from the tube and pulling out the plunger. Pour fluid into the tube; reassemble the syringe.
2. Hold the WS with the hose end up as shown. Remove the Port Plug (BJ 026) from the WS. Thread the syringe fitting into the port, and slowly squeeze fluid into swivel until excess fluid comes out around the inlet end. If the fluid coming out appears dirty or watery, keep squeezing in new fluid until it comes out clean.
3. Remove syringe from WS-X-1/2 head, install Port Plug.



DISASSEMBLY

1. Clamp the flats of the WS 140 Head in a vise as shown.
2. Clamp the flats on the Shaft with a 9/16" or an Adjustable Wrench and rotate the WS Assembly Counterclockwise.

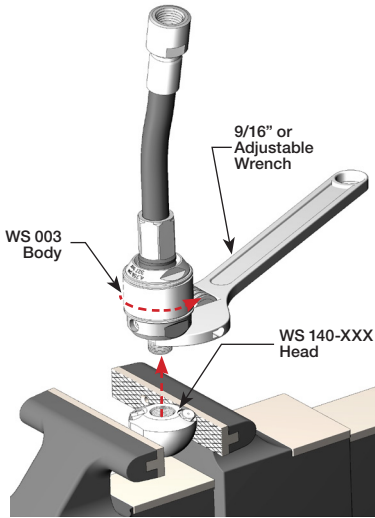


Figure 1: For Steps 1-2

3. Clamp the flats on the Body in the Vise.
4. Unscrew the Inlet Nut (WS 002) and Hose from the Body. Use the flats on the Inlet Nut, not the hex on the hose end.

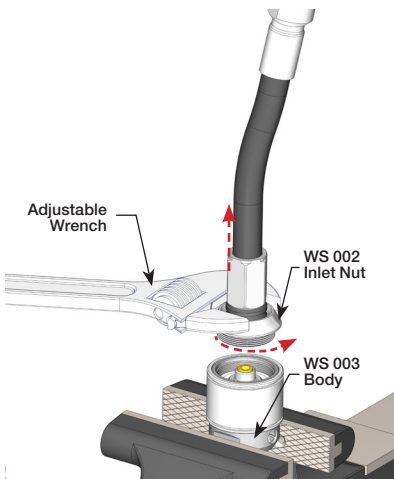


Figure 2: For Steps 3-4

5. Remove the Centralizer (WS 080).
6. Remove the Seat (RJ 011) and H.P. Seal (RJ 012-TO) from the Shaft bore.
7. Push the Shaft (WS 001) with bearings out of Body.

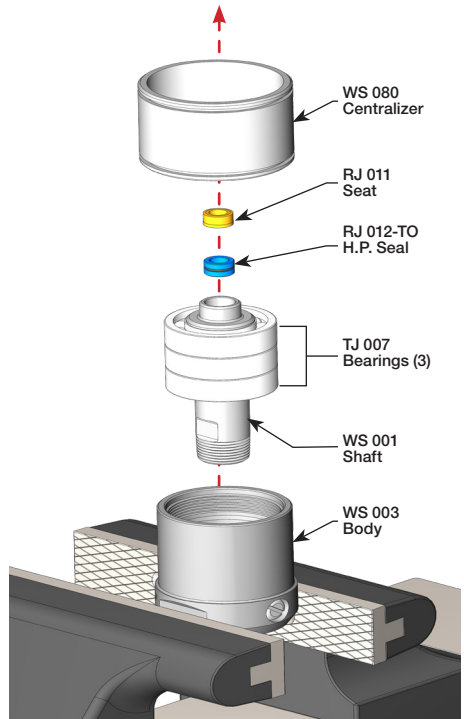


Figure 3: For Steps 5-7



TECH TIPS: Use a pick to gently remove the Brass Seat and High Pressure Seal. If using an Arbor Press to push the Shaft out of the Bearings, be sure to set the bearing down on the inner race and make sure everything is straight before pressing.

8. Remove the three Bearings (TJ 007) from the Shaft (WS 001). Inspect bearings binding rotation.

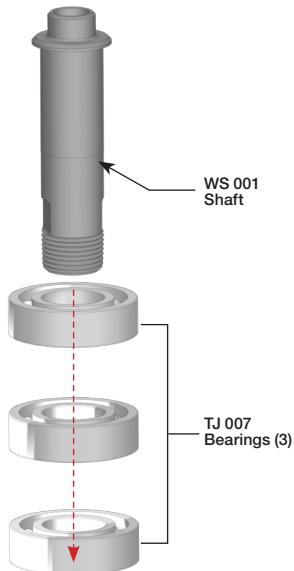


Figure 4: For Step 8

9. Remove the O-Ring (RJ 008) and Shaft Seal (WS 010) from Inlet Nut. Inspect both the O-Ring and Shaft Seal for damage.

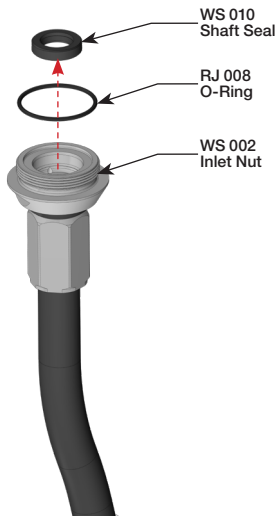


Figure 5: For Step 9

10. Remove the Port Plug (BJ 026) and Shaft Seal (WS 010) from Inlet Nut. Inspect both the O-Ring and Shaft Seal for damage.

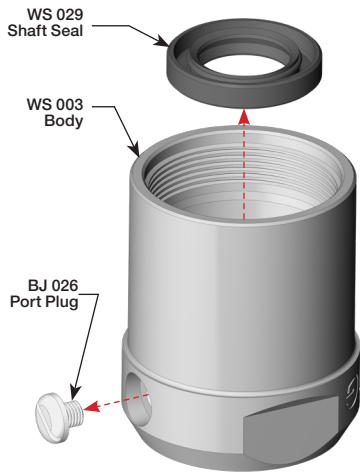


Figure 6: For Step 10

 **TECH TIPS:** Use a pick to gently remove the Seals and O-Ring.

NOTICE

Before reassembly of the tool
Wash all parts in solvent and blow dry
and
Inspect wear items, (High Pressure Seal
Assembly, Shaft Seals, O-Rings, Bearings, and
Port Plug.)

See the “Maintenance Kits” section of this
manual for a complete list of Service, Overhaul,
and, Tool kits.

ASSEMBLY

1. Install the Shaft Seal (WS 010) with the LIP FACING DOWN into the Inlet Nut (WS 002).
2. Using the (WS 105) Tool, install the O-Ring (RJ 008) into the groove below the threads of the Inlet Nut (WS 002).

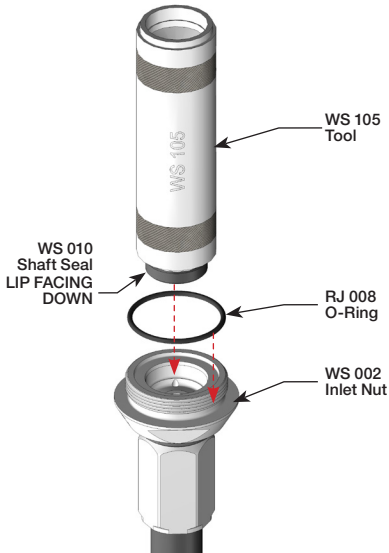


Figure 7: For Steps 1-2

3. Using the (WS 105) Tool, install Shaft Seal (WS 029) into Body with the LIP FACING UP.

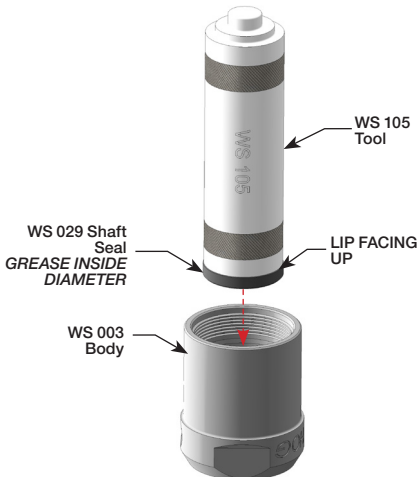


Figure 8: For Steps 3-4

4. Press the Bearings (TJ 007) one at a time onto the Shaft. It is best to push only on the inner race of the bearing.

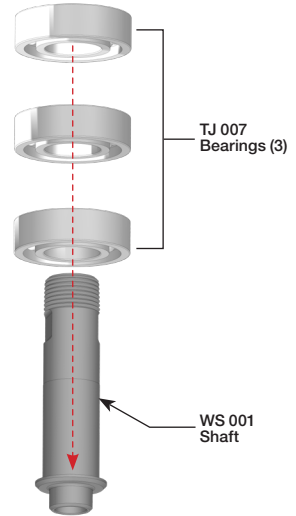


Figure 9: For Step 4

5. Grease Shaft. Push Shaft/bearing stack-up into Body. It is easiest to turn the shaft clockwise to thread the pipe threads through the shaft seal in the Body.

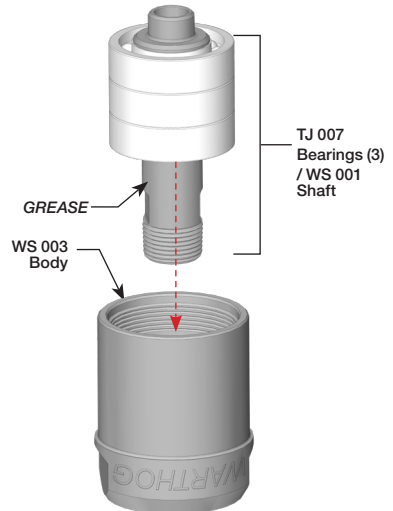


Figure 10: For Step 5

6. Clamp the flats of the Body/Shaft Assembly in a vise as shown.
7. Insert H.P. Seal (RJ 012-TO) into Shaft bore, until flush with end of shaft. Apply grease to the H.P. Seal.
8. Push Brass Seat (RJ 011) into shaft with large diameter down until top of step aligns with top end of shaft. Apply grease to the top of Brass Seat.
9. Slide Centralizer (WS 080) over the Body.

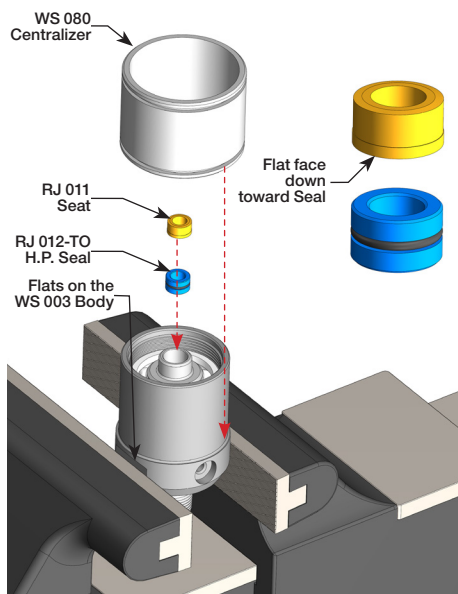


Figure 11: For Steps 6-9



TECH TIPS: Greasing the O-Ring on the H.P. Seal prevents it from tearing in the tight bore of the Shaft.

10. Apply *Blue Goop*® to threads and thread Inlet Nut into Body, tighten to 30 ft-lb.

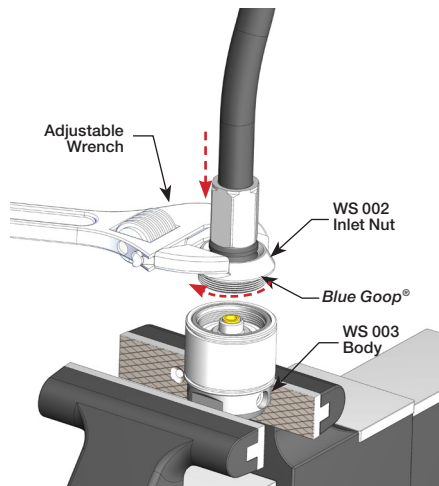


Figure 12: For Step 10

11. Clamp the flats of the WS 140 Head in a vise as shown.
12. Apply Parker® Yellow ThreadMate and Teflon Tape or an equivalent combination on the threads of the WS 001 Shaft.
13. Thread the Shaft into the Head and rotate the WS Assembly Clockwise. Finish tightening with a 9/16" or Adjustable End Wrench.
14. Fill tool with syringe as shown on Page 14, then install Port Plug (BJ 026).

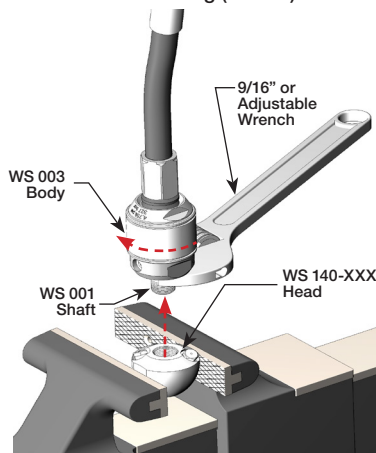
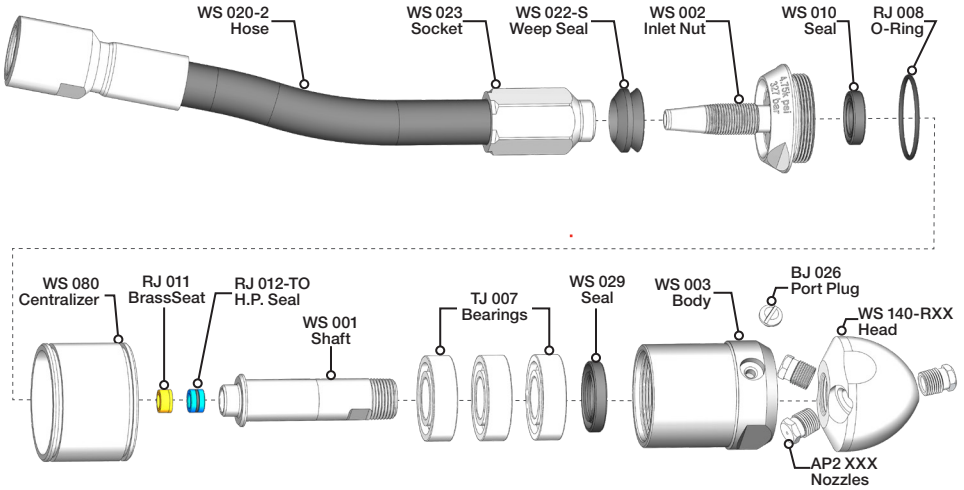


Figure 13: For Step 12



KITS AND KIT CONTENTS

WS 600-ST1 SERVICE KIT	WS 610-RT1 OVERHAUL KIT
1 BJ 062-S Copper Antiseize 1.3, 2g pouch 1 RJ 011 Brass Seat 1 RJ 012-TO H.P. Seal & O-Ring	1 BJ 026 Port Plug 1 BJ 062-S Copper Antiseize 1.3, 2g pouch 1 PL 530 Warthog Classic (WS) User Manual 1 RJ 008 O-Ring 1 RJ 011 Brass Seat 1 RJ 012-TO H.P. Seal & O-Ring 3 TJ 007 Bearing, Ball 1 WS 010 Seal 1 WS 022-S Weap Seal 1 WS 029 29mm OD Double Lip Seal
WS 610-J-RT1 OVERHAUL KIT	WS 612 TOOL KIT
1 BJ 026 Port Plug 1 BJ 062-S Copper Antiseize 1.3, 2g pouch 1 PL 530 Warthog Classic (WS) User Manual 1 RJ 008 O-Ring 1 RJ 011-K Brass Seat 1 RJ 012-KTO H.P. Seal & O-Ring 3 TJ 007 Bearing, Ball 1 WS 010 Seal 1 WS 202 Nut, Face 1 WS 029 29mm OD Double Lip Seal 1 WS 208 O-Ring, 1-1/8 OD, 70A 2 WS 210 O-Ring, 3/4 OD, 90A	1 TJ 064 Fill Tube 1 WS 105 Installation Tool
	VS 604-S VISC/SYRINGE KIT
	1 6oz Slow Visc 1 BC 410 Syringe

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.

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.

TERMS AND CONDITIONS AND WARRANTY INFORMATION

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>

TERMS AND CONDITIONS AND WARRANTY INFORMATION

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. 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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