



AUTOBOX® TRACTOR (ABX-2L-B-V2) LIGHTWEIGHT POSITIONER (LWPS-100-NS) & CONTROL BOX (CBX-ABX-PL) USER MANUAL

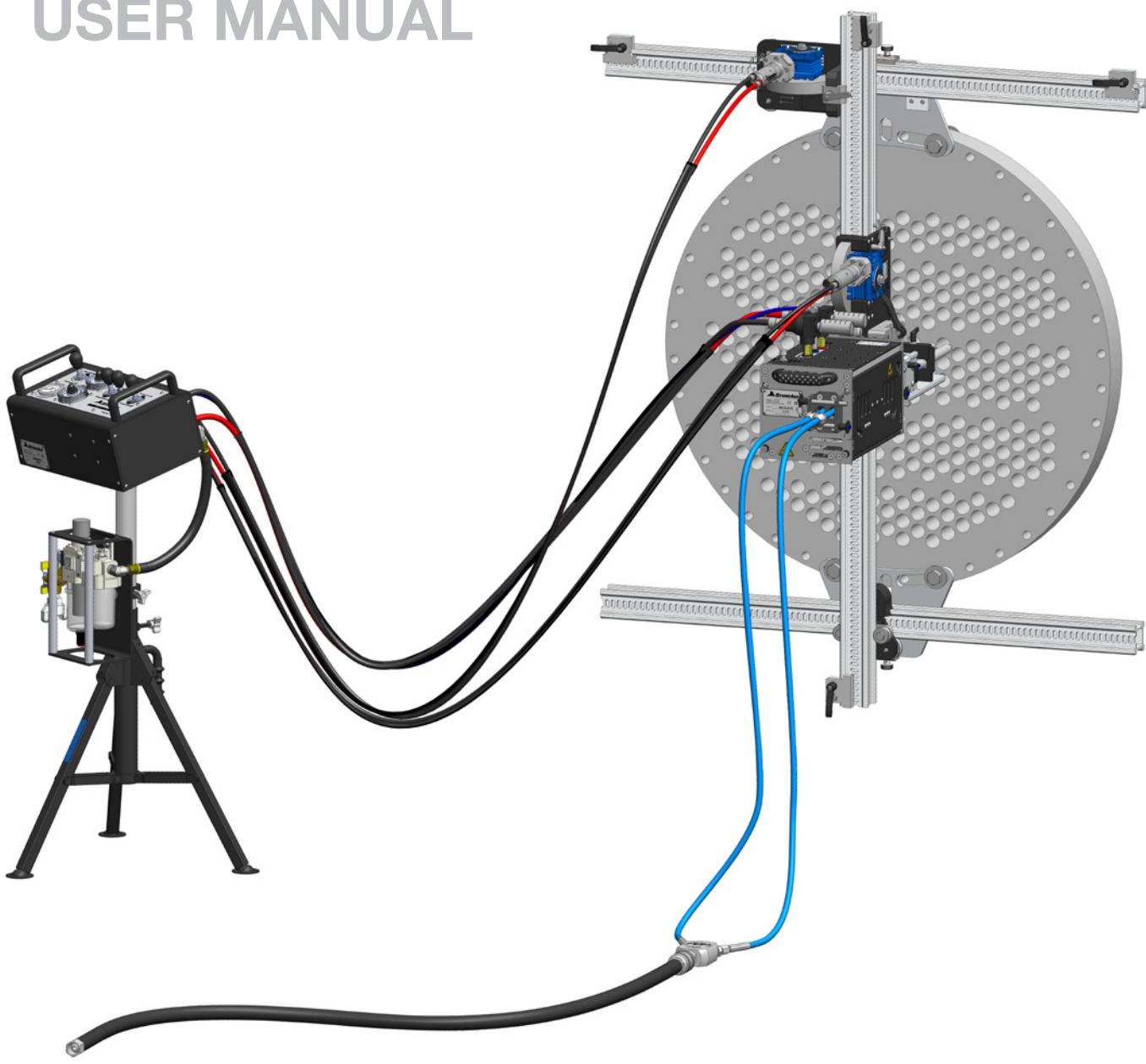


TABLE OF CONTENTS

MANUFACTURER'S INFORMATION.....	3
SPECIFICATIONS	3
DESCRIPTION OF EQUIPMENT AND INTENDED USE.....	3
KEY FEATURES.....	3
EC AND UKCA DECLARATIONS OF CONFORMITY.....	4-5
WARNING AND SAFETY INSTRUCTIONS	6
OPERATOR TRAINING.....	6
PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS.....	6
SAFETY LABEL DEFINITIONS.....	6
PRE-RUN SAFETY CHECK	7
SYSTEM ASSEMBLY - OVERVIEW	8
LIGHTWEIGHT POSITIONER - OVERVIEW	9
LIGHTWEIGHT POSITIONER CLAMP SELECTION.....	10
LIGHTWEIGHT POSITIONER SET-UP.....	11
SHOTGUN MOUNT	12
GUIDE ASSEMBLY - OVERVIEW	14
GUIDE ASSEMBLY SET-UP	15
GUIDE ASSEMBLY TO LIGHTWEIGHT POSITIONER SET UP	16
AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR - OVERVIEW	17
AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR TO GUIDE ASSEMBLY.....	18
CONTROL BOX - OVERVIEW.....	19
CONTROL BOX SET-UP.....	20
CONTROL BOX AIR SUPPLY FITTING	21
CONTROL BOX TO AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR	22
OPERATION.....	23
AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR DOORS AND PINS.....	23
COLLET INSERTION, HOSE, AND HOSE STOP INSTALLATION	24
CONTROL BOX AND HIGH PRESSURE HOSE.....	25
TEST RUN, AND RUN PROCEDURES AND HOSE CLAMP	26
MAINTENANCE AND STORAGE, TRANSPORTATION, AND HANDLING	27
ABX-2L-B-V2 BELT REPLACEMENT INSTRUCTIONS	28
PARTS DIAGRAMS	29
TERMS AND CONDITIONS.....	46
WARRANTY INFORMATION.....	47

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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>

SPECIFICATIONS

ABX-2L-B-V2 TRACTOR		Imperial	Metric
Weight	Single Motor	43 lbs	20 kg
	Dual Motor	48 lbs	22 kg
Dimensions		8.3 x 8.2 x 16.9 in.	211 x 208 x 429 mm
Feed Rate: dependent upon application and hose size		0.3 - 3.0 ft/sec	8 - 914 mm/sec
Maximum Push/Pull Force:	Single Motor	70 lbs (35 lbs per lance)	32 kg (16 kg per lance)
	Dual Motor	150 lbs (75 lbs per lance)	68 kg (23 kg per lance)
Minimum Push/Pull Force:		15 lbs (5 lbs per lance)	7 kg (2 kg per lance)
System Air Consumption:		50 cfm at 100 psi	1416 lpm at 6,8 bar
Manway Access:		18 in.	457 mm
CBX-ABX-PL CONTROL BOX		Imperial	Metric
Weight: Includes Control Box, FRL, and stand		48 lbs	22 kg
Dimensions		44 x 19 x 19 in (25 in. ø foot print)	1114 x 492 x 492 mm (628 mm. ø foot print)
Maximum Air Supply Pressure:		125 psi	8,6 bar
System Operating Pressure:		100 psi	6,8 bar
Recommended Operational Temperature Range:		-20 ° to 140 °F	-29 ° to 60 °C
LIGHTWEIGHT POSITIONER		120 lbs	54.4 kg
Weight: Includes 6ft rails, horiz. and vert. idler carriages, and 4 clamps			
HI-VIZ GUIDE ASSEMBLY		Imperial	Metric
Weight:	With Guide Tubes	9.5 lbs	4 kg
	Without Guide Tubes	6 lbs	3 kg
Pitch Adjustment Range (Dual):		5/8 - 2.5 in.	16 - 64 mm

DESCRIPTION OF EQUIPMENT AND INTENDED USE

The AUTOBOX® ABX-2L-B-V2 base system consists of a Hose Tractor, Control Box, Guide Assembly, and Lightweight Positioner. There are several accessories available to optimize the use of the system for specific tube cleaning applications. These accessories include Hose Containment, Fin-Fan Kit, and the Autostroke.

This system was developed for "Hands Free" heat exchanger tube cleaning applications. It is recommended it be used with the StoneAge® Banshee line of self-rotary waterblast tools.

The AUTOBOX® ABX-2L-B-V2 system was designed to accommodate up to two simultaneous flex lances ranging in size from 3/2 to 8/4 matched with the appropriate BN9.5, BN13, BN15, or BN18 size Banshee.

The tractor utilizes a heavy-duty synchronous belt with a durable polyurethane cover to control the rate at which the hoses and Banshee tools are advanced or retracted inside the tubes.

The guide assembly provides anti-withdrawal protection, and precise tube pitch adjustment.

The lightweight positioner can be mounted to a variety of heat exchanger tube bundles and has pneumatic powered horizontal and vertical drives.

The control box is small and lightweight with an emphasis on ergonomics. The AUTOBOX® ABX-2L-B-V2 system was designed with simplicity, lightweight components, durability, and reliability in mind. It can be easily carried to the job site and setup in minutes.

KEY FEATURES:

Hose Tractor (ABX-2L-B-V2)

- Heavy-duty 75mm wide drive belt with steel tension members
- Drive belt has durable polyurethane cover to ensure traction in all operation conditions
- Can run any hose size from 3/2 to 8/4 without any component changes.
- Can be used in dual or single lance applications
- Quick pin attachment to guide assembly
- Hinged side doors for easy access to belt and drive components
- Independent forward/reverse speed controls

Control Box (CBX-ABX-PL)

- Ergonomic design that includes a portable stand and filter-regulator-lubricator assembly
- Tractor controls: forward/reverse hose feed, feed motor pressure selector, and clamp pressure
- Positioner controls: left/right and up/down
- Pneumatic dump control switch

Lightweight Positioner (LWPS-100-NS)

- Modular, lightweight design with quick install drive carriages
- Utilizes 2.5 in. (64 mm) box rail
- Stainless Steel air motors
- Variety of clamp and bolt-on attachment options are available

Guide Assembly (ABX-201)

- Quick change guide tubes
- 17-4 SS hose stop collets



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
Bob Van Wordragen, Operations Manager StoneAge NL

Declare that:

AutoBox® Hose Tractor (ABX-2L-B-V2) and Control Box (CBX-ABX-PL)
for high pressure water cleaning of system parts.

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 File for AutoBox® Hose Tractor (ABX-2L-B-V2) and Control Box (CBX-ABX-PL) is maintained at:
StoneAge Incorporated, 466 South Skylane Drive, Durango, CO 81303, USA and was 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
Scott Howell, New Product Introduction Manager

11/01/2021

Date



UK DECLARATION OF CONFORMITY

Manufacturer:

StoneAge Incorporated
466 South Skylane Drive
Durango, CO 81303
USA

Authorized Representative:

StoneAge UK
Unit 3
Crucible Business Park
Woodbury Lane
Norton
Worcester
Worcestershire, WR5 2DQ
United Kingdom
Steve Ellis, Managing Director StoneAge UK

Declare that:

AutoBox® Hose Tractor (ABX-2L-B-V2) and Control Box (CBX-ABX-PL)
for high pressure water cleaning of system parts.

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

The Technical File for AutoBox® Hose Tractor (ABX-2L-B-V2) and Control Box (CBX-ABX-PL) is maintained at:
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StoneAge Incorporated, Durango, CO, USA
Scott Howell, New Product Introduction Manager

11/01/2021
Date

UK
CA

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.

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.

SAFETY LABEL DEFINITIONS

The AUTOBOX® (ABX-2L-B-V2) Hose Tractor has the potential to cause serious injury if fingers, hair, or clothing become caught between the hose rollers or drive belts. Be sure to heed the Hand Entanglement Roller Labels.

DO NOT OPERATE WITH THE DOORS OPEN. ENSURE THAT ALL FOUR DOOR PINS ARE SECURED PRIOR TO OPERATION.



Operators MUST read, understand, and follow the Operational and Training Requirements (Section 7.0) of WJTA-IMCA's Recommended Practices For The Use Of High-pressure Water jetting 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.

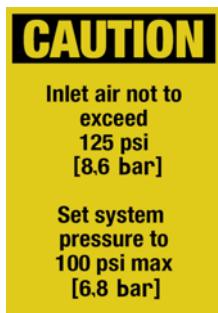
The risk assessment MUST consider potential material or substance hazards including:

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

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

Maximum operating air pressure is 100 psi (6.8 bar). Never exceed 125 psi (8.6 bar) supply pressure. Exceeding 125 psi (8.6 bar) supply pressure may result in injury to the Operator and/or damage to the equipment.



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. 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 AUTOBOX® (ABX-2L-B-V2) Hose Tractor 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 Water jetting Equipment.
- The Lightweight Positioner must be securely fastened to the tube bundle, and the Guide Assembly and Tractor must be securely fastened to the Lightweight Positioner prior to operation.
- An anti-withdrawal device (back-out preventer) MUST be used at all times. The back-out prevention device is the Hose Stop Collet located within the Hose Guide Assembly. StoneAge offers several different size Hose Stop Collets. The Collet Size Reference guide is located on the Hose Guide Assembly.
- The Control Box should be located in a safe location where the Operator has good visibility of the tool entering the exchanger tubes. The AUTOBOX® (ABX-2L-B-V2) Hose Tractor and Control Box MUST be supervised at all times and should never be left unattended.
- Do not fully release the hose clamp (decreasing pressure to zero) during operation, or the AUTOBOX® (ABX-2L-B-V2) Hose Tractor will release the hose and may create a dangerous runaway hose condition, which can result in severe injury and/or death.
- Always de-energize the system before opening the door to service or replace any parts. Failure to do so can result in severe injury and/or death.
- When moving the AUTOBOX® (ABX-2L-B-V2) Hose Tractor lift with care to prevent bodily injury.
- Do not operate the AUTOBOX® (ABX-2L-B-V2) Hose Tractor while either side door is open.

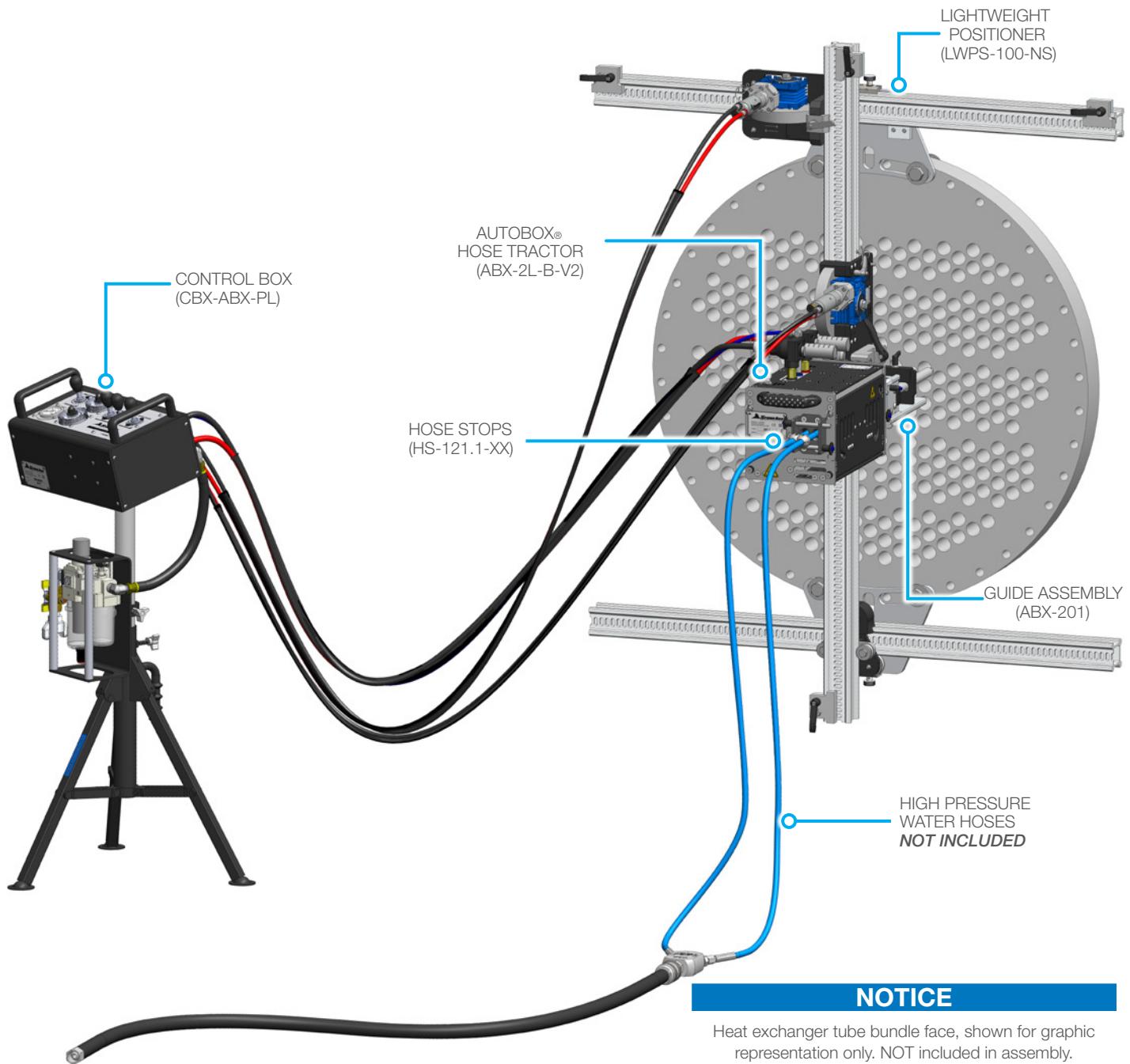
PRE-RUN SAFETY CHECK

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

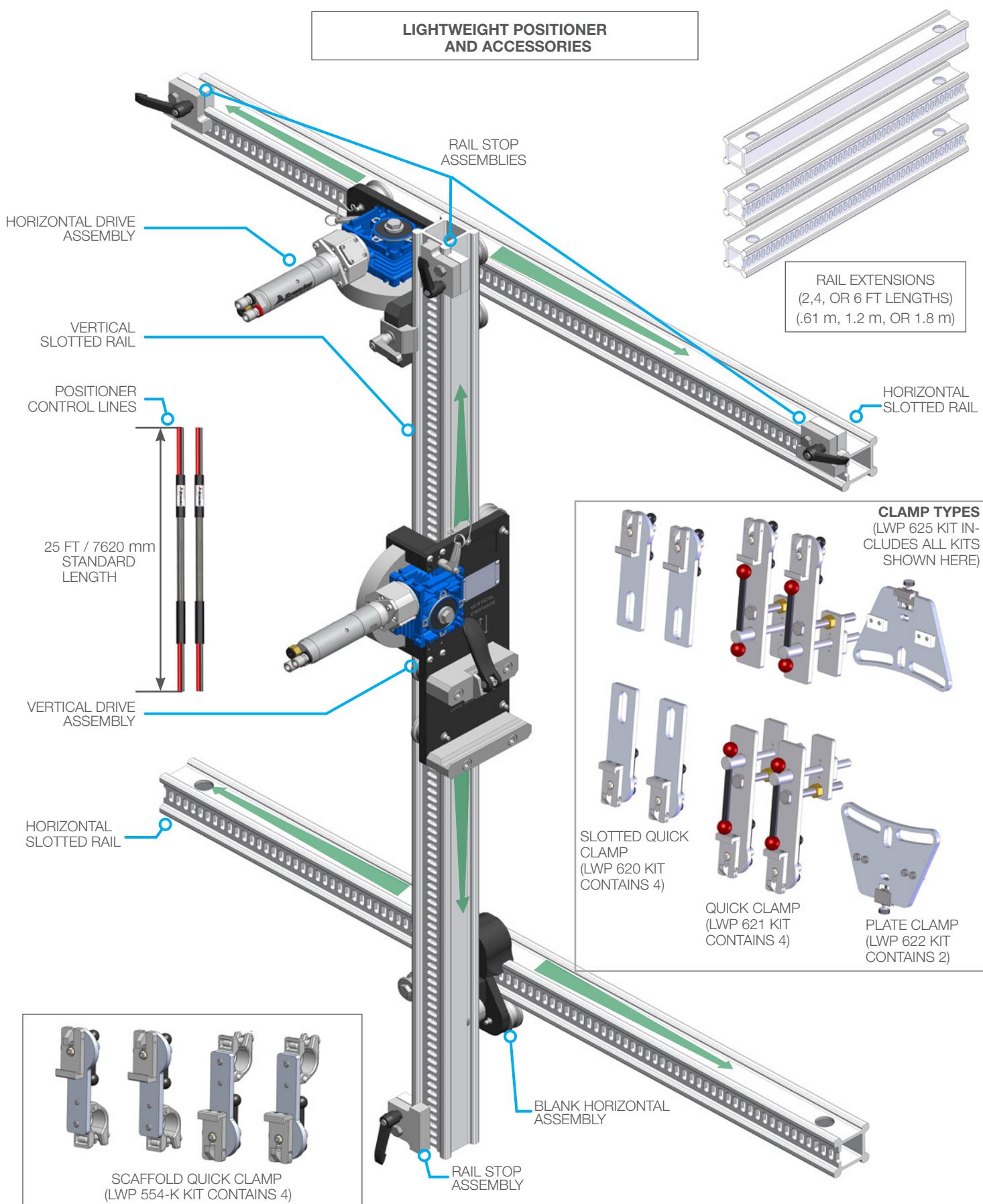
- Complete a job specific risk assessment and act on the resulting actions.
- Adhere to all site specific safety procedures.
- Ensure the waterblasting zone is properly barricaded and that warning signs are posted.
- Ensure the work place is free of unnecessary objects (e.g. loose parts, hoses, tools).
- Ensure all Operators are using the correct Personal Protective Equipment (PPE).
- Check that the air hoses are properly connected and tight.
- Check all hoses, lances, 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.
- **• **Ensure that an anti-withdrawal device (back-out preventer), whip checks (hose whips), and the appropriate hose stop collet are installed and set up properly. They must be verified, secured, tested, and performance confirmed before operating at high pressure.****
- Ensure the doors of the AUTOBOX® (ABX-2L-B-V2) Hose Tractor are closed and securely latched.
- Test the Control Box before operating the AUTOBOX® (ABX-2L-B-V2) Hose Tractor with high pressure water to verify the control valves move the hose in the intended direction, and that the high pressure dump valve and hose clamp are 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.

SYSTEM ASSEMBLY - OVERVIEW

AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR, LIGHTWEIGHT POSITIONER, GUIDE ASSEMBLY, AND CONTROL BOX (CBX-ABX-PL) SYSTEM ASSEMBLY



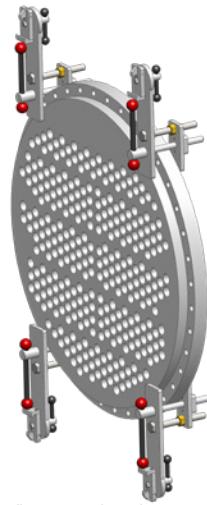
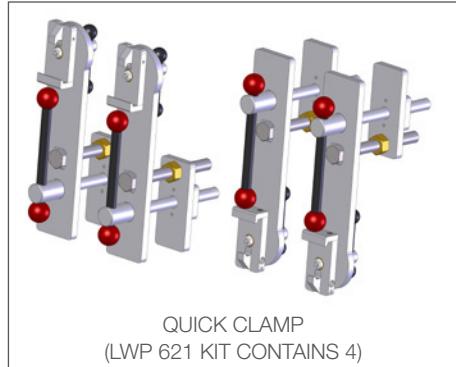
LIGHTWEIGHT POSITIONER - OVERVIEW



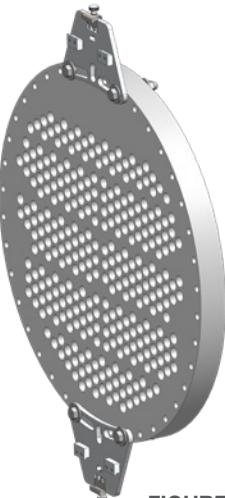
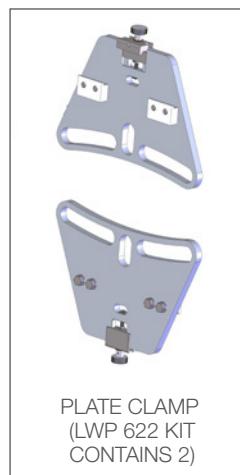
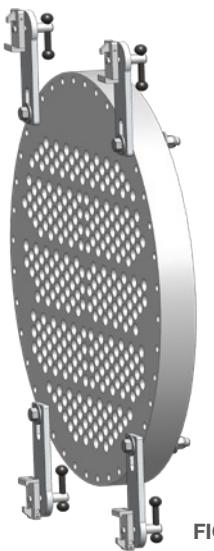
LIGHTWEIGHT POSITIONER CLAMP STYLES

CLAMP SELECTION is dependent upon the heat exchanger geometry, bolt holes, hole spacing, and flange accessibility.

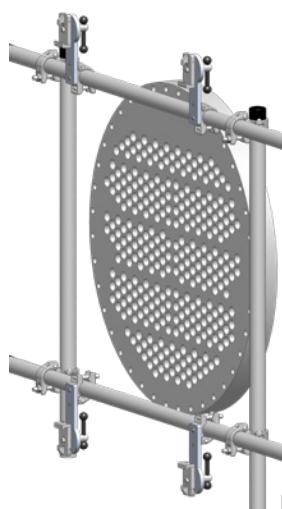
QUICK CLAMPS (LWP 518) are for use with heat exchanger flanges that provide a robust clamping surface or if flange holes are inaccessible. Align clamps on the surface of the flange to maximize flange engagement to clamps. (Figure 1)



SLOTTED QUICK (LWP 552) AND PLATE CLAMPS (LWP 519) are for use with heat exchanger flanges that have easily accessible bolt holes. Use quick clamps or plate clamps, depending on the spacing of the hole pattern. (Figures 1 & 3)



SCAFFOLD QUICK CLAMPS (LWP 554) are for use with scaffolding in situations where they may be no way to clamp directly onto the heat exchanger. (Figure 4)



LIGHTWEIGHT POSITIONER STEP BY STEP SET-UP

1. Mount the appropriate frame **Positioner Clamps** to the tube bundle as shown in Figure 1. (Shown with Plate Clamps) Positioner Clamps should be Parallel to the direction of the tube rows. (**Figure 1**)

NOTICE

Heat exchanger tube bundle face, shown for graphic representation only. NOT included in assembly.

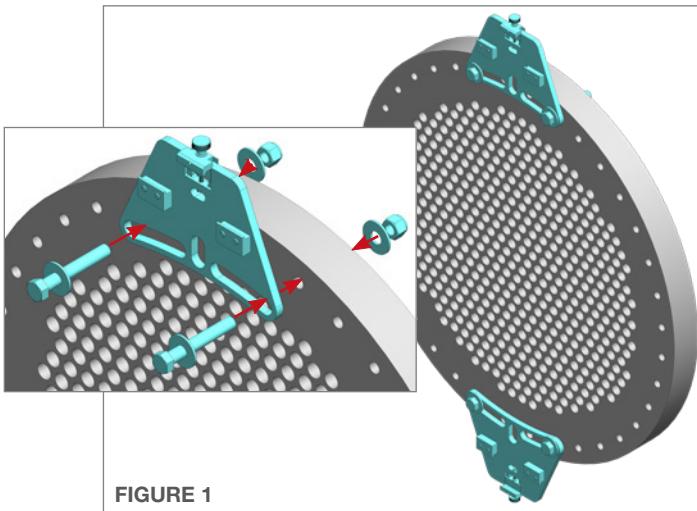


FIGURE 1

2. Loosen the **Rail Clamp Tensioner** on the top **Positioner Clamp** and insert the **Top Rail (slots facing out)** into the upper rail clamps. Tighten the **Rail Clamp Tensioner** securing the rail to the **Positioner Clamp**. Check Rail Clamp bolts to ensure they are secured to the tube bundle flange. (**Figure 2**)

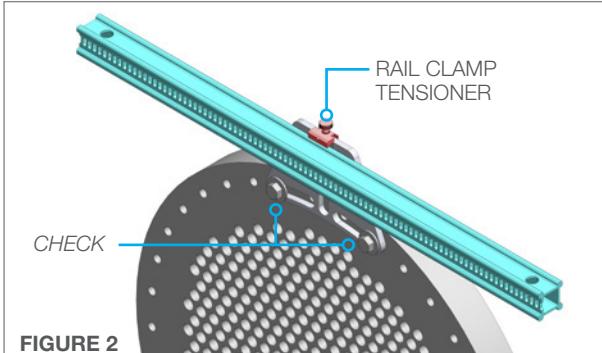


FIGURE 2

3. Loosen the **Rail Clamp Tensioner** on the bottom **Positioner Clamp** and insert the **Lower Rail** into the lower rail clamps. It is not critical that this rail is aligned as precisely as the top rail, but it should be close to parallel with the top rail for best performance. Tighten the **Rail Clamp Tensioner** securing the rail to the **Positioner Clamp**. Check Rail Clamp bolts to ensure they are secured to the tube bundle flange. (**Figure 3**)

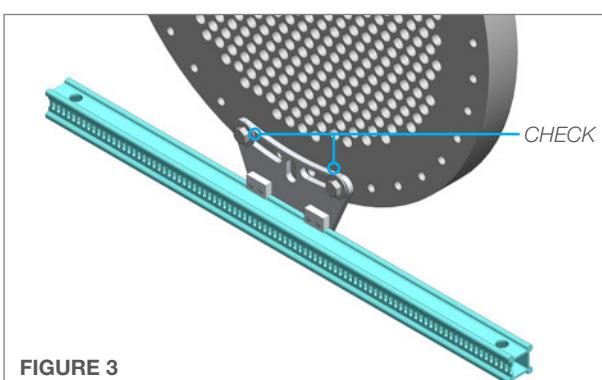


FIGURE 3

4. Remove the **Quick Release Pin** from the *locked* position, pull back on the air motor to lift the gear, and insert the **Quick Release Pin** into the *unlocked* position. This will allow the **Horizontal Drive Carriage** to slide onto the rail without pneumatic power. Center the carriage on the top rail, pull out the **Quick Release Pin**, let the gear drop into place and verify the gear is engaging the slotted rail correctly.

Replace the **Quick Release Pin** into the *locked* position. (**Figures 4 & 5**)

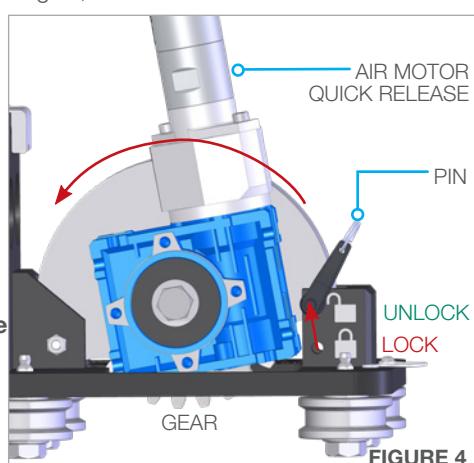


FIGURE 4

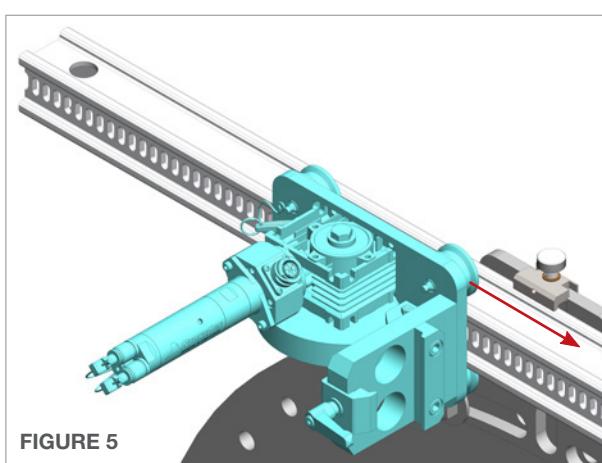


FIGURE 5

LIGHTWEIGHT POSITIONER SET-UP

- Angle the **Idler Carriage** as shown to allow the Idler Carriage to engage with the lower rail properly. Rotate it back to the vertical position and slide it towards the lower Rail Clamp. (Figure 6)



TECH TIP:

The rail scraper is spring loaded to fit closely against the rail to remove debris ahead of the idler roller. Pulling up on the rail scraper or tilting the idler carriage during installation will increase clearance and simplify installation.

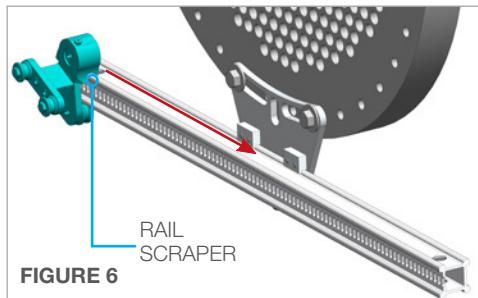


FIGURE 6

- Loosen the **Rail Clamp Handle** on the Horizontal Drive. Align the Idler Carriage on the lower rail so the Vertical Rail can slide into it. Slide the **Vertical Rail** with (**slots facing out**) down through the Horizontal Drive clamp and between the rollers on the idler carriage. Adjust the position of the vertical rail as required and secure the rail in place by tightening the **Rail Clamp Handle** on the Horizontal Drive. (Figure 7)

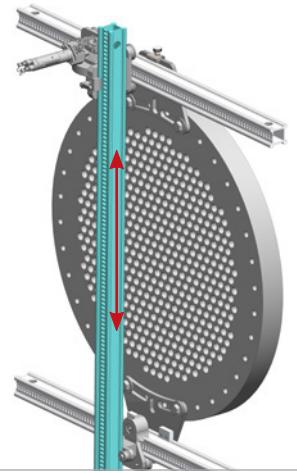
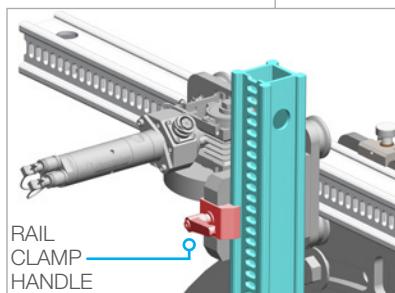


FIGURE 7

- Remove the **Quick Release Pin** from the *locked* position, pull back on the air motor to lift the gear, and insert the **Quick Release Pin** into the *unlocked* position. This will allow the **Vertical Drive Carriage** to slide onto the rail without pneumatic power. Center the carriage on the vertical rail, pull out the **Quick Release Pin**, let the gear drop into place and verify the gear is engaging the slotted rail correctly. Replace the **Quick Release Pin** into the *locked* position. (Figures 8 & 9)

CAUTION

Verify the Positioner Clamps and Rail Clamps are securely fastened and both drive carriages are securely engaged and the pinned in the locked position.

Never unlock the vertical drive once the guide assembly and tractor are installed, as it may result in the carriage slipping down the vertical rail and may cause damage and/or injury.

- Loosen the handles on the four **Rail Stops** and slide one onto both ends of the top horizontal rail and both ends of the vertical rail. Rotate all the handles so they face away from Horizontal and Vertical Drives (as shown) and ensure that they are securely fastened. (Figure 10)

WARNING

Failure to secure the Rail Clamps properly could result in the carriages driving off the rails. This may create a hazardous situation resulting in serious injury or death.

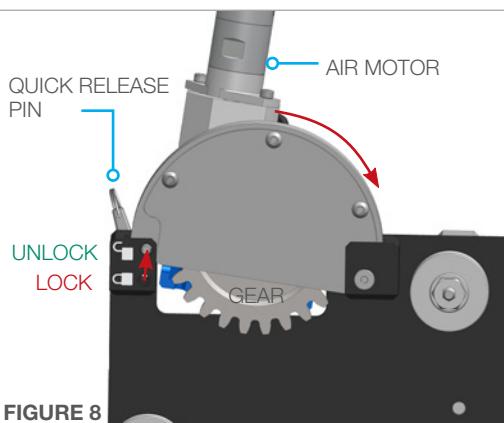


FIGURE 8

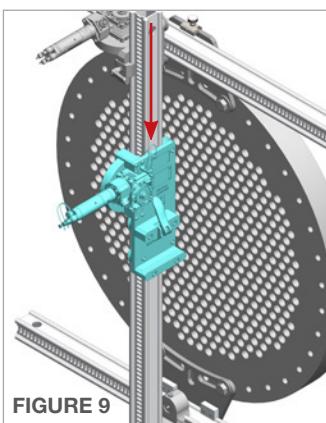


FIGURE 9

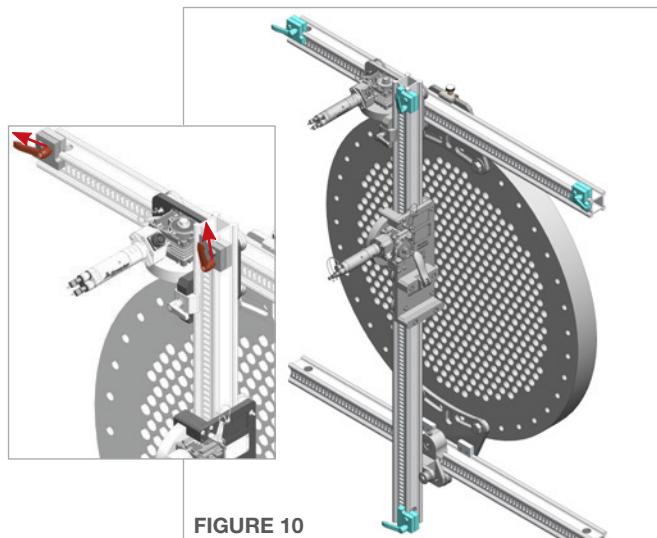


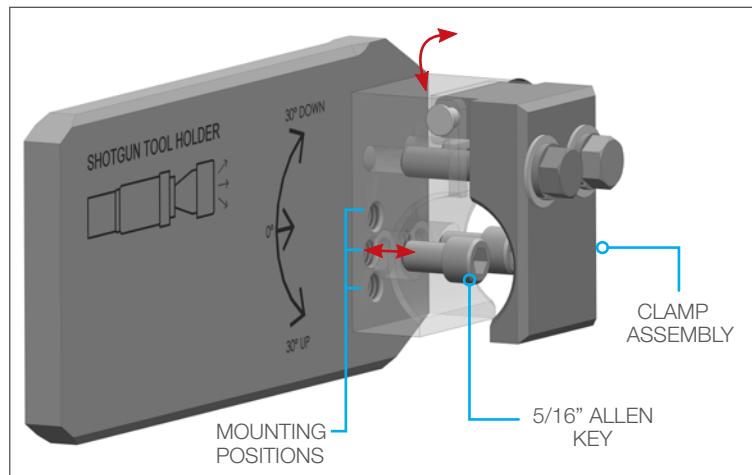
FIGURE 10

OPTIONAL SHOTGUN MOUNT INSTALLATION

INSTALL SHOTGUN MOUNT (FOR USE WITH BARRACUDA OR SPITFIRE TOOL)

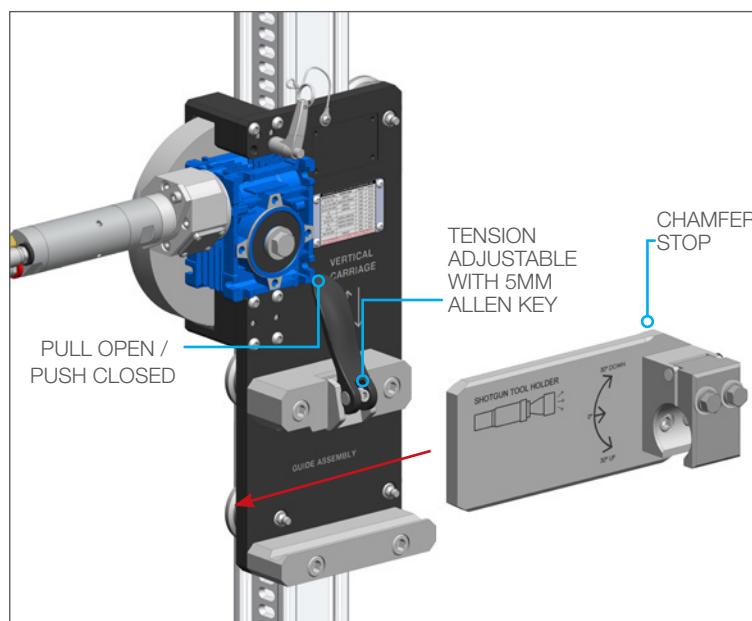
1. Set the desired Clamp Angle.

- The Clamp Assembly on the Shotgun Mount can be rotated 30° Up or Down by removing the two SHCS Screws with a 5/16" Allen Key, rotating the Clamp into the desired position, and fastening the Screws in the desired location.
- Make sure these screws are tightened before operation.**



2. Install Shotgun Mount onto the Vertical Carriage.

- Pull to open the Clamp Handle on the Vertical Carriage and slide the Shotgun Mount in back to front.
- The mount will stop when it reaches the chamfers at the front. This is a safety feature.
- Lock the Clamp Handle in place when the mount is in position.
- Be sure to adjust the tension bolt if necessary

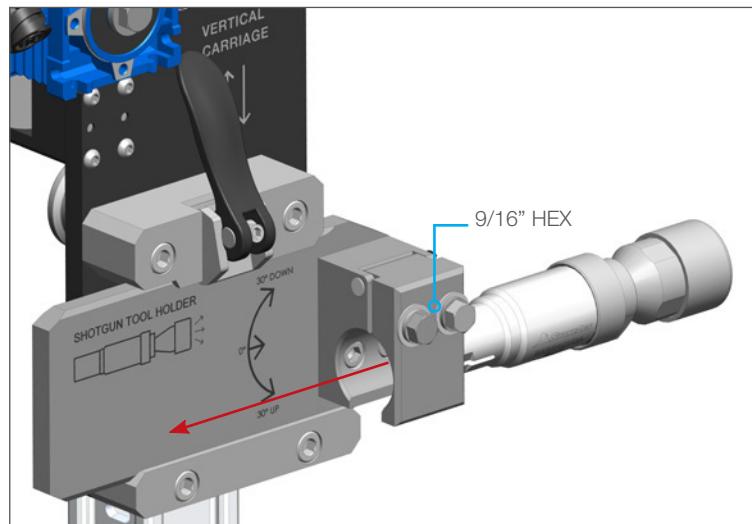
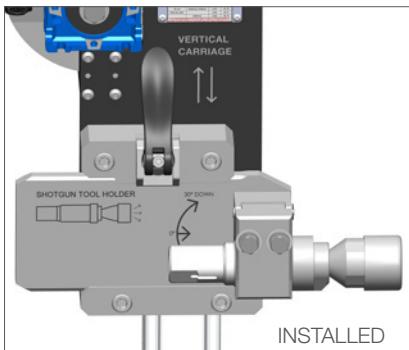


CAUTION

If the Clamp Handle feels too loose or too tight, it can be adjusted with a 5mm Allen Key.

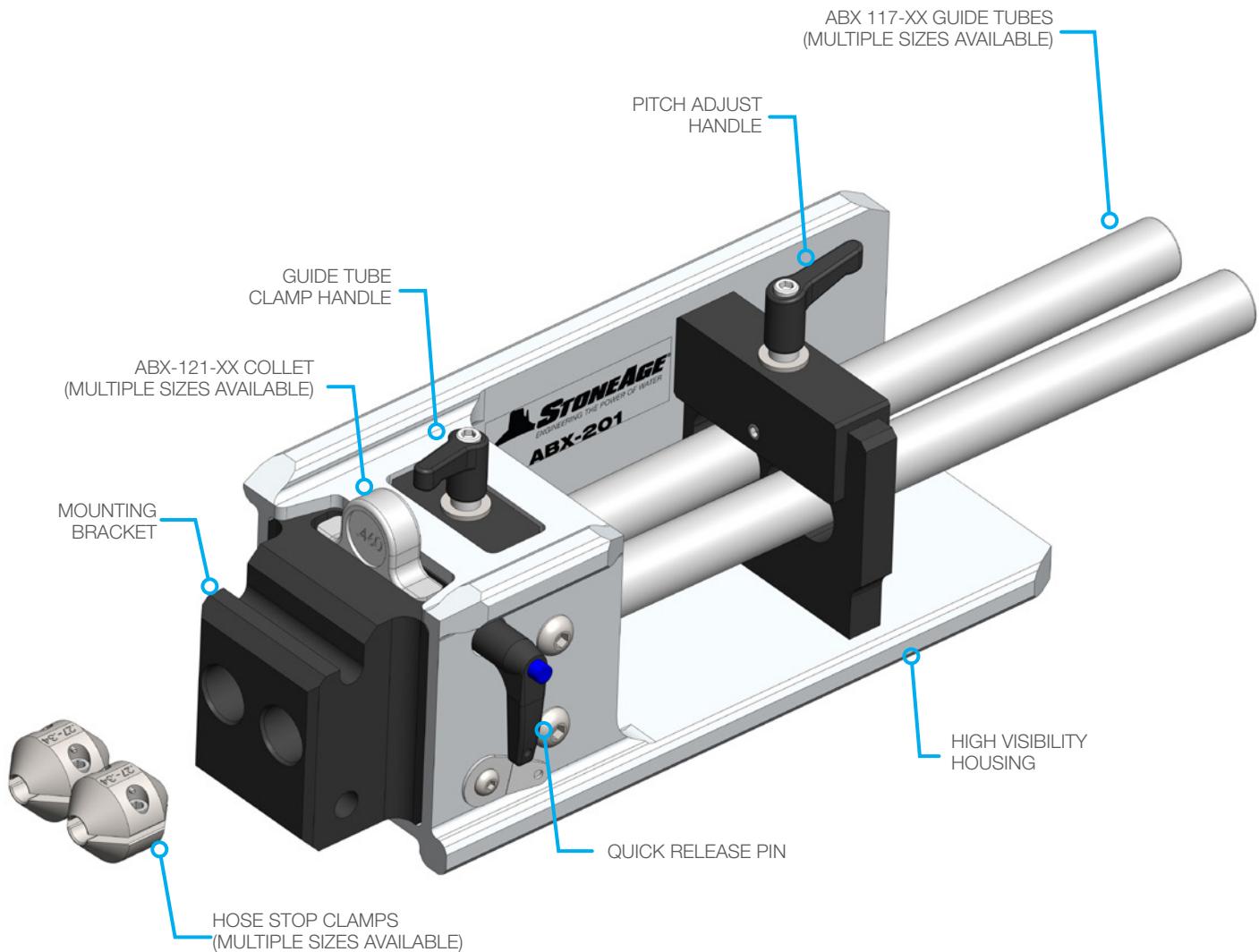
3. Fasten the Shotgun tool in the Clamp.

- Loosen the two Hex Bolts on the Clamp with a 9/16" Hex Wrench.
- Slide the tool in back to front and securely tighten the Hex Bolts.



HOSE GUIDE ASSEMBLY - OVERVIEW

HOSE GUIDE ASSEMBLY (ABX-201)



*OPTIONAL ABX 140-XX GUIDE TUBE ANTI-TWIST CLAMP

DESIGNED TO KEEP PITCH ALIGNMENT BETWEEN LONGER GUIDE TUBES

SEE "PART DIAGRAM" PAGES FOR SIZING.

HOSE GUIDE ASSEMBLY

- Select the appropriate Guide Tube size for the application from the chart below.

- The length of the Guide Tubes for an exchanger bundle with no channel head is 12.5 in. (318 mm).
- A deeper channel head will require extended Guide Tubes. The depth of the channel head added to the 12.5 in. (318 mm) length will give the desired tube length.
- Longer guide tubes are available if required for use with channel heads.

NOTICE

The Banshee tool should not have excessive clearance if the correct Guide Tube size is used.

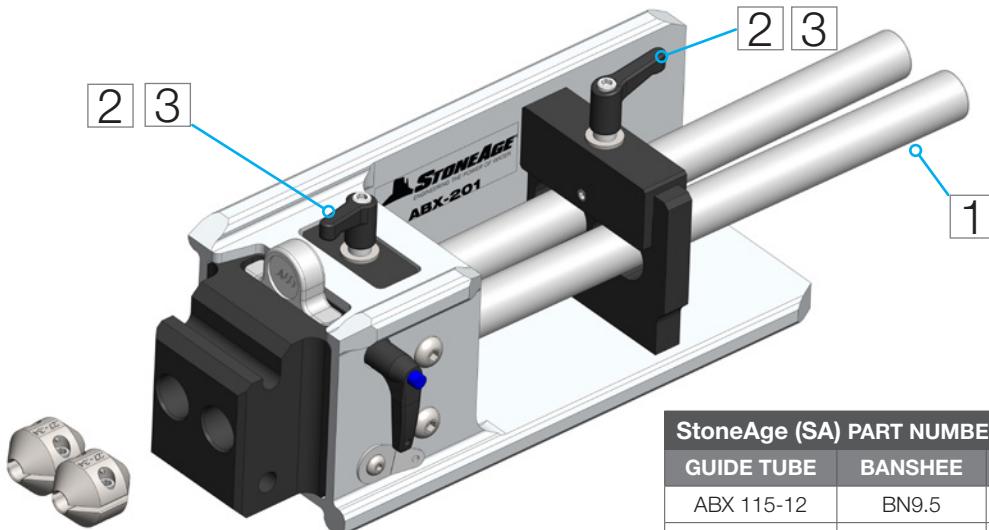
- To remove the existing Guide Tubes, loosen the Tube Clamp Lever and the Pitch Adjust Lever, located on top of the Hose Guide Assembly. After selecting the appropriate Guide Tubes, install the Guide Tubes into the Hose Guide Assembly.
- Secure the Guide Tubes by tightening the Tube Clamp Lever and Pitch Adjust Lever, when the desired pitch has been set.
- Select the appropriate Collet and Hose Stops from the chart below and reserve them for future Hose and Collet installation instructions in this manual.

WARNING

Appropriate size Collet selection is **CRITICAL** to ensuring proper backout prevention of the tool.

STONEAGE (SA) PART NUMBER COLLET AND HOSE STOP REFERENCE CHART

HOSE O.D.	SPIR STAR	PARKER	COLLET SIZE	COLLET PART NUMBER	HOSE STOP SIZE	HOSE STOP PART NUMBER
.27-.41 in (7 mm - 10 mm)	3/2	2240D-02	.297 in. / 8 mm	ABX 121-297	.27-.34 / 7-9 mm	HS 121-27-34
	3/4, 4/2	2240D-025, 2440D-02	.328 in. / 8 mm	ABX 121-328	.27-.34 / 7-9 mm	HS 121-27-34
	3/6, 5/2	2240D-03	.406 in. / 10 mm	ABX 121-406	.34-.42 / 9-11 mm	HS 121-34-42
.44-.50 in (11 mm - 13 mm)	4/4	2448D-025	.438 in. / 11 mm	ABX 121-438	.34-.42 / 9-11 mm	HS 121-34-42
	4/6, 5/4		.460 in. / 12 mm	ABX 121-460	.42-.50 / 11-13 mm	HS 121-42-50
	6/2	2240D-04, 2640D-025	.484 in. / 12 mm	ABX 121-484	.42-.50 / 11-13 mm	HS 121-42-50
	6/4	2440D-04, 2740D-025	.516 in. / 13 mm	ABX 121-516	.50-.56 / 13-14 mm	HS 121-50-56
.52-.61 in (13 mm - 16 mm)	5/6, 8/2	2240D-05, 2740D-03	.547 in. / 14 mm	ABX 121-547	.50-.56 / 13-14 mm	HS 121-50-56
	5/6H, 8/4		.594 in. / 14 mm	ABX 121-594	.56-.61 / 14-16 mm	HS 121-56-61
		2440D-05	.625 in. / 15 mm	ABX 121-625	.56-.61 / 14-16 mm	HS 121-56-61



StoneAge (SA) PART NUMBER GUIDE TUBE REFERENCE CHART

GUIDE TUBE	BANSHEE	INSIDE DIAMETER, LENGTH
ABX 115-12	BN9.5	.459 in / 12 mm, 12.5 in. / 318 mm
ABX 115-36	BN9.5	.459 in / 12 mm, 36 in. / 914 mm
ABX 116-12	BN13	.546 in / 14 mm, 12.5 in. / 318 mm
ABX 116-36	BN13	.546 in / 14 mm, 36 in. / 914 mm
ABX 117-12	BN15	.674 in / 17 mm, 12.5 in. / 318 mm
ABX 117-36	BN15	.674 in / 17 mm, 36 in. / 914 mm
ABX 119-12	BN18	.745 in / 19 mm, 12.5 in. / 318 mm
ABX 119-36	BN18	.745 in / 19 mm, 36 in. / 914 mm

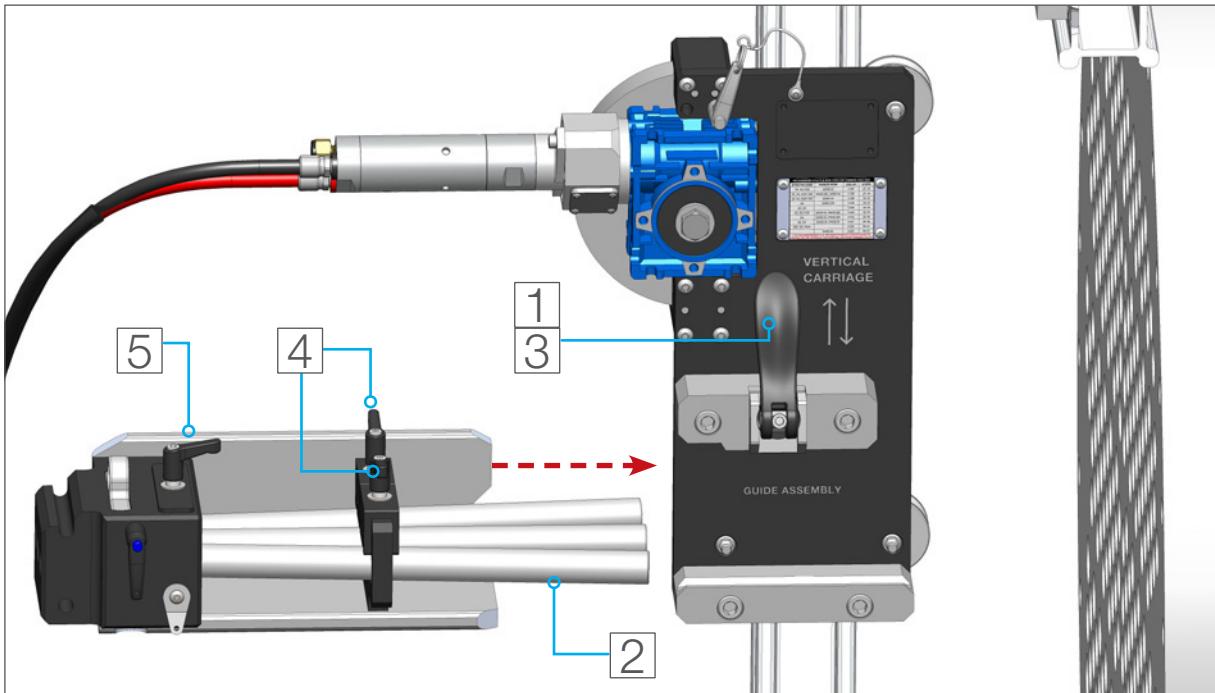
HOSE GUIDE ASSEMBLY TO LIGHTWEIGHT POSITIONER SET UP

ATTACH GUIDE ASSEMBLY TO LIGHTWEIGHT POSITIONER

1. Pull Quick Release Handle open and slide the Guide Tube Assembly onto the Vertical Carriage.
2. Adjust position until the Guide Tubes are approximately 1/2 in. (13 mm) away from the face of the heat exchanger.
3. Lock the Quick Release Handle in place when the mount is in position. Be sure to adjust the tension bolt if necessary. (See Tech Tip below)
4. Loosen the Pitch Adjustment Levers and adjust the guide tubes until they are in line with pitch of the tubes in the bundle.
5. Tighten Tube Clamp and Pitch Adjustment Levers until tubes are secured in position.

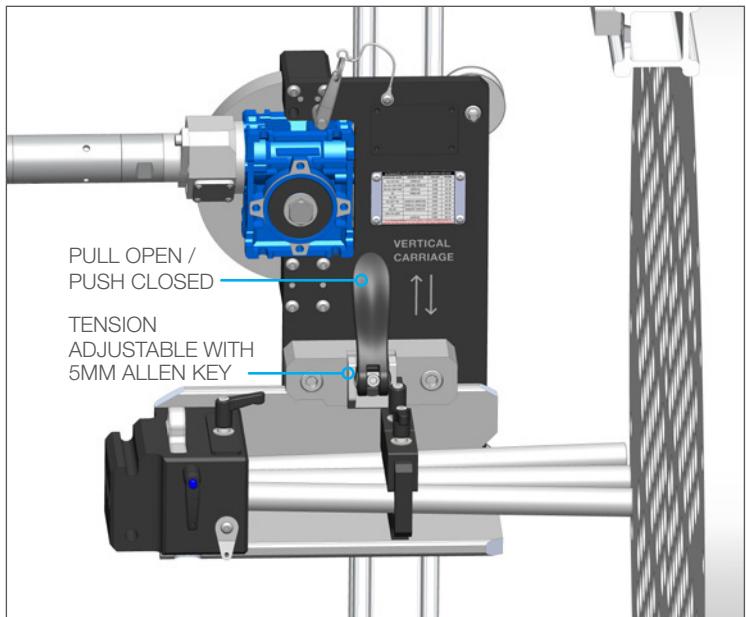
CAUTION

The quick release handle on the vertical carriage must be securely fastened to the guide tube assembly. Adjust the tension on the bolt handle to ensure a secure clamp on the guide tube assembly. See diagram at the bottom of the page.

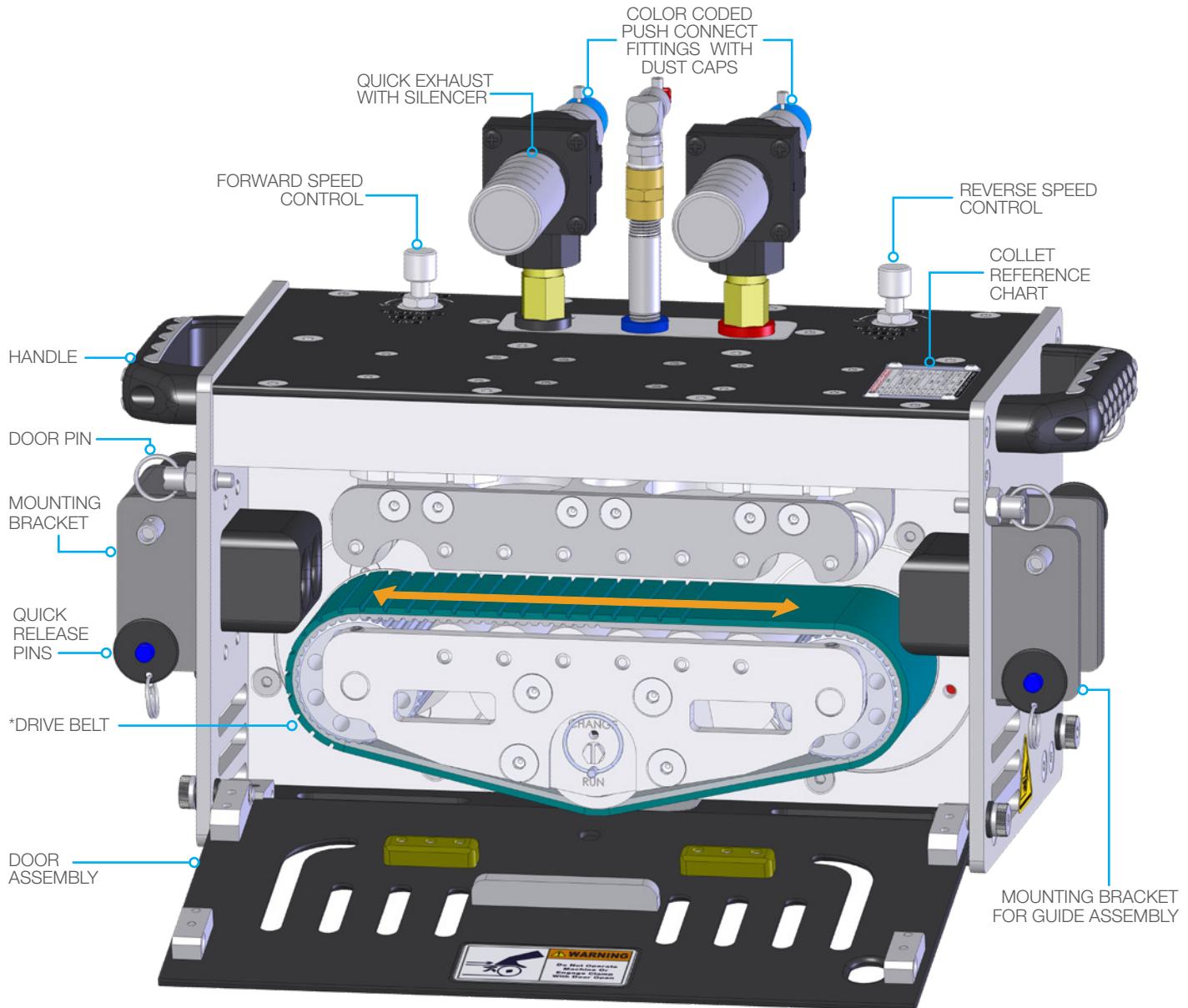


Tech Tip:

- When mounting the Guide Tube Assembly make sure to lift the backside of the Tractor, this will make sure the Guide Tube Assembly is parallel with the Vertical Carriage.
- Always make sure before operating, to pull down on the Tractor with both hands and try to pull it back from the Lightweight Positioner and tilt the back of the Tractor upwards to make sure there is no play.
- If the Clamp Handle feels too loose or too tight, it can be adjusted with a 5mm Allen Key. Follow the instructions on the decal on the Vertical Drive.



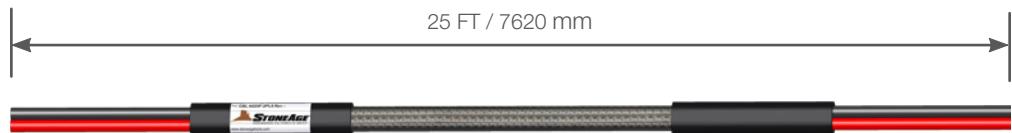
**AUTOBOX® HOSE TRACTOR
(ABX-2L-B-V2)**



*ABX 305-50 BELT 50A 10MM (INSTALLED)

ABX 305-80 BELT 80A 25MM (INCLUDED)

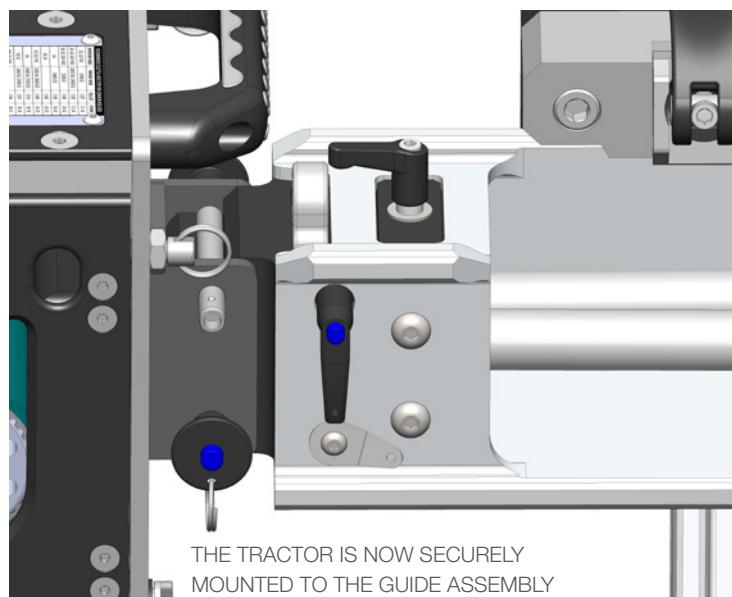
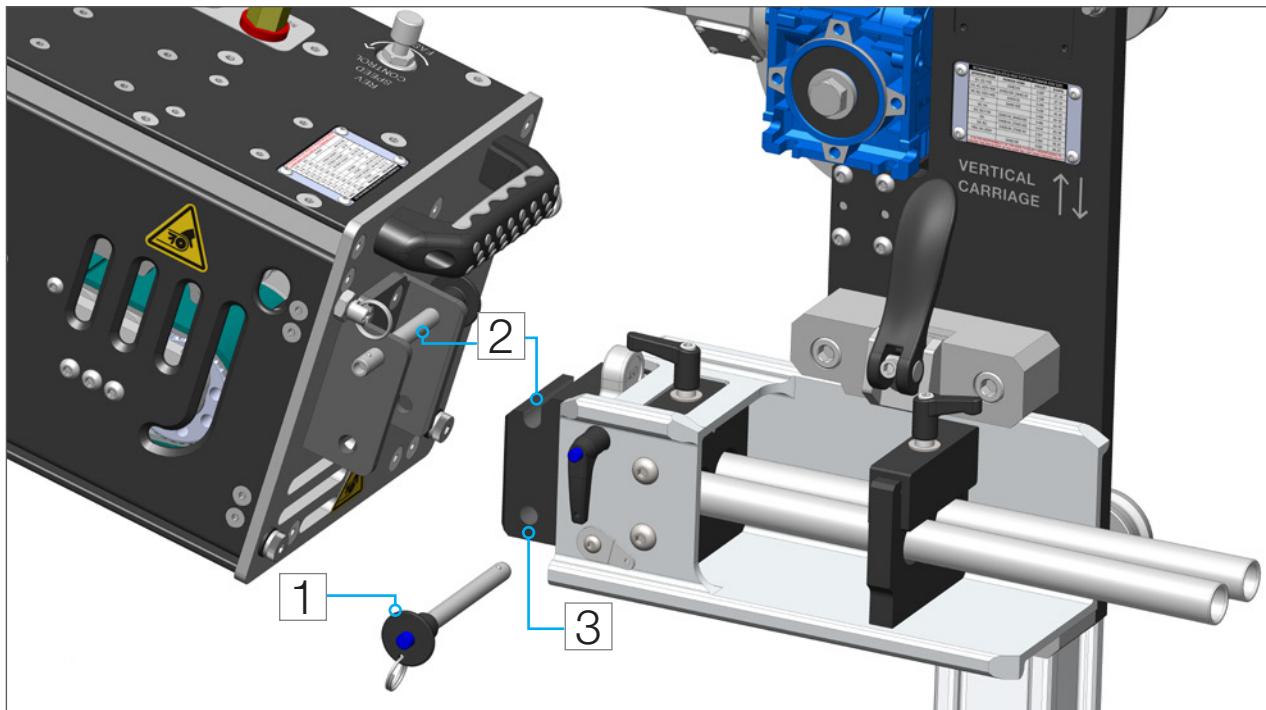
**PNEUMATIC SUPPLY LINES
(CBL A025F-2PL5)**



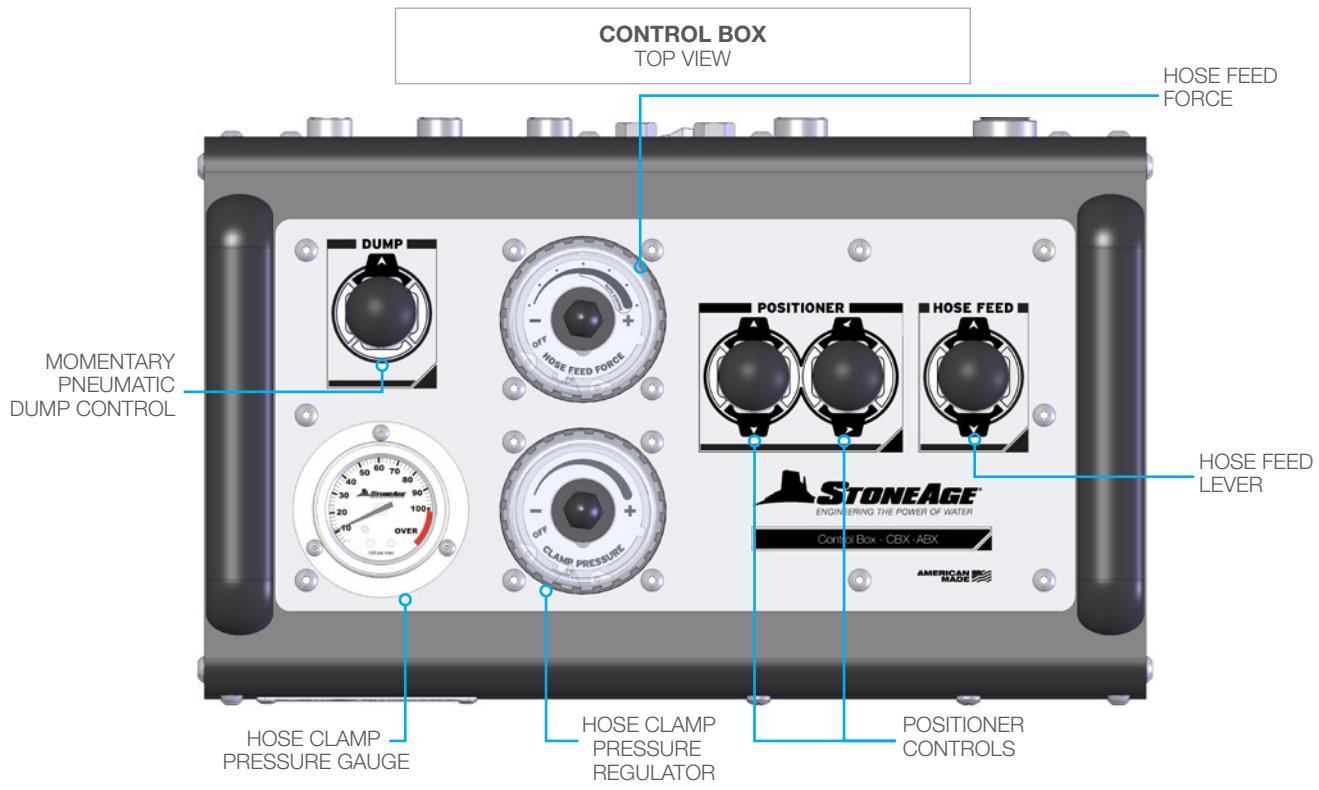
ABXS-3L HOSE TRACTOR TO GUIDE ASSEMBLY

ATTACH AUTOBOX® (ABX-2L-B-V2) HOSE TRACTOR TO GUIDE ASSEMBLY

1. Remove the lower quick release pin from the AUTOBOX® (ABX-2L-B-V2) Hose Tractor.
2. Slide the mounting bracket over the block on the Guide Assembly and lay the pin onto the top slot on the Guide Assembly block.
3. Install the lower pin through the mounting bracket on the Hose Tractor and the block on the Guide Assembly.

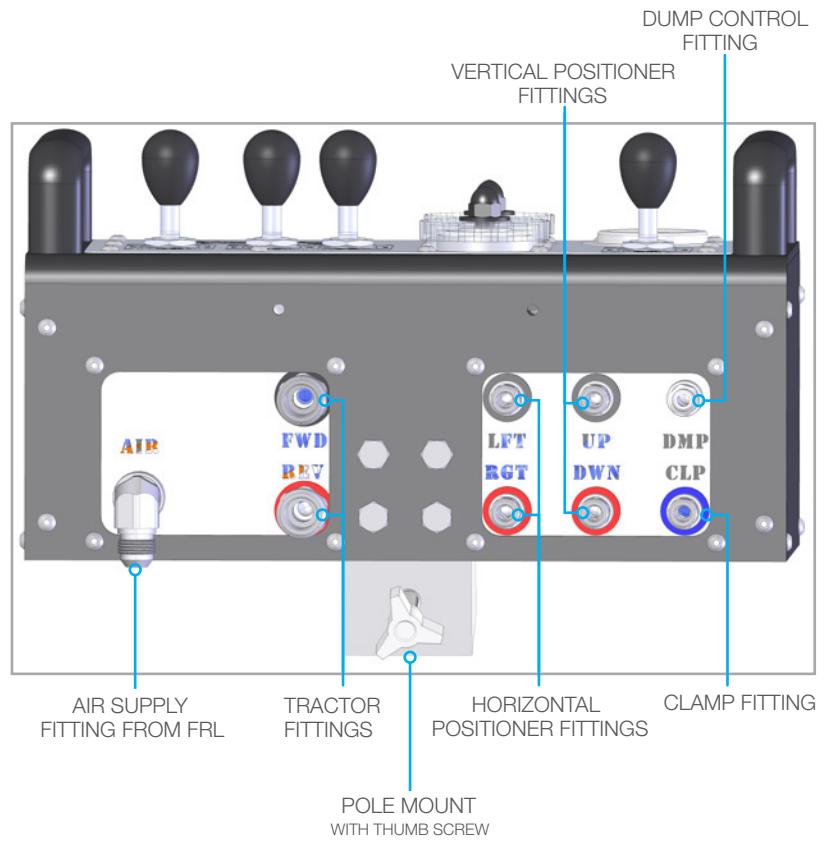
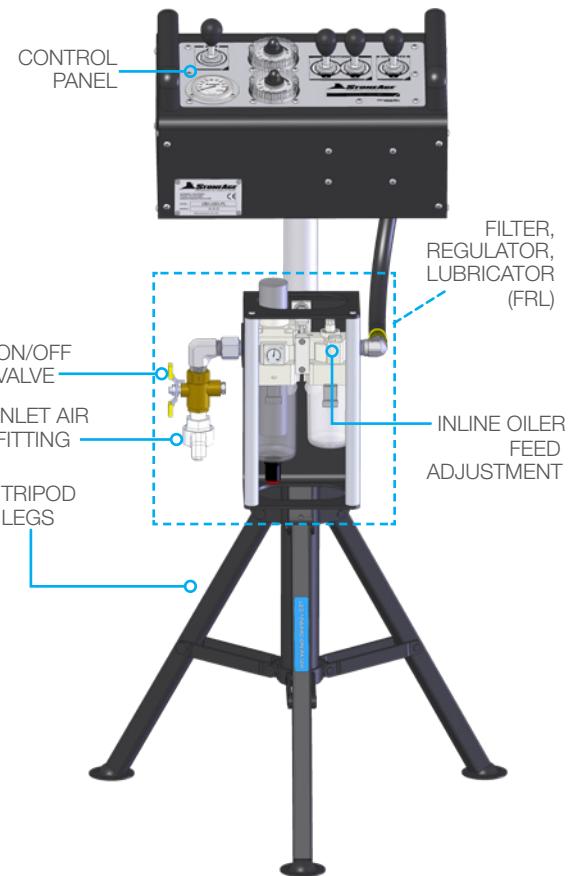


CONTROL BOX - OVERVIEW



CONTROL BOX FRONT VIEW

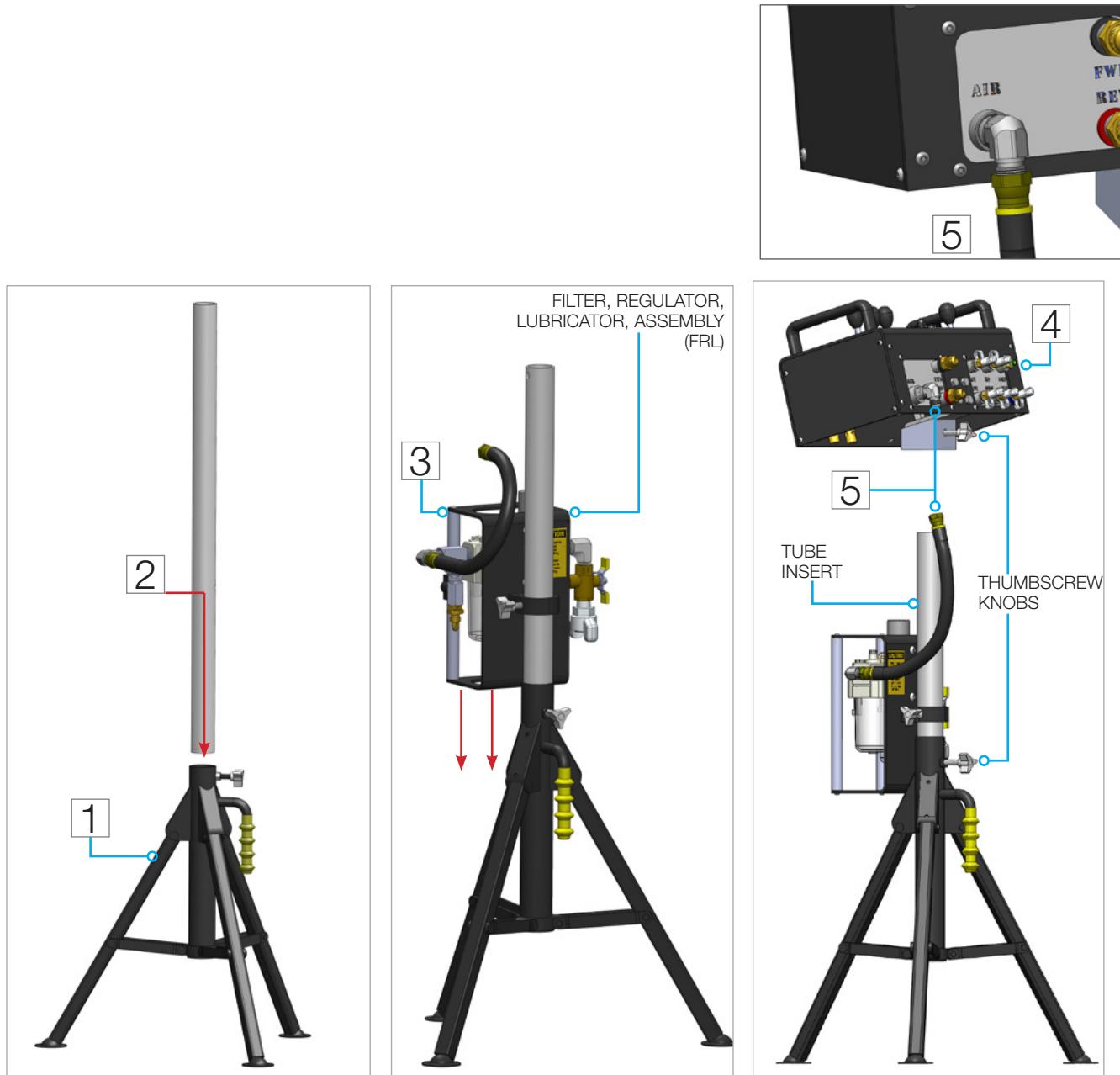
CONTROL BOX BACK VIEW



CONTROL BOX SET-UP

ASSEMBLE CONTROL BOX, FRL, AND TRIPOD BASE

1. Setup the tripod base in a location with good visibility to the bundle face, but at a safe distance away from high pressure nozzles.
2. Slide the vertical tube into the tripod base. Secure with the supplied thumbscrew knob.
3. Slide the Filter, Regulator, Lubricator (FRL) assembly over the vertical tube down to the tripod base. Secure with the supplied thumbscrew knob.
4. Slide the Control Box over the vertical tube. The Control Box has a stop that keeps it located at the top of the vertical tube. Secure with the supplied thumbscrew knob.
5. Install and tighten the short 1/2 in. (13 mm) I.D. hose between the FRL and the Control Box.

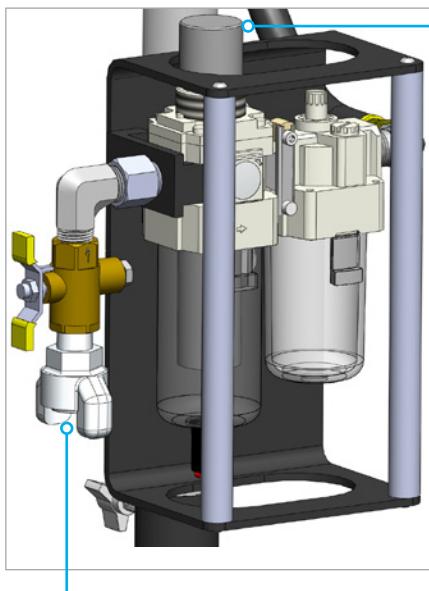


AIR SUPPLY AND LUBRICATOR SETTING

- The Control Box is supplied with a twist claw style inlet coupling (Chicago style) located on the side of the FRL Assembly. Connect a compatible compressed air line (not included) according to the Manufacturer's instructions.
- Using the regulator adjust the operating air pressure to 100 psi (6,8 bar) for the application.

WARNING

Maximum operating air pressure is 100 psi (6,8 bar). Never exceed 125 psi (8,6 bar) supply pressure. Exceeding 125 psi (8,6 bar) supply pressure may result in injury to the Operator and/or damage to the equipment.



REGULATOR
ADJUSTING KNOB

AIR SUPPLY FITTING

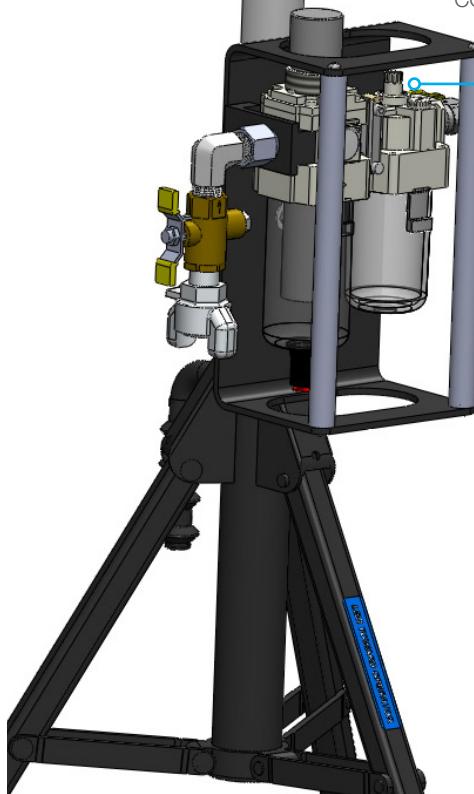
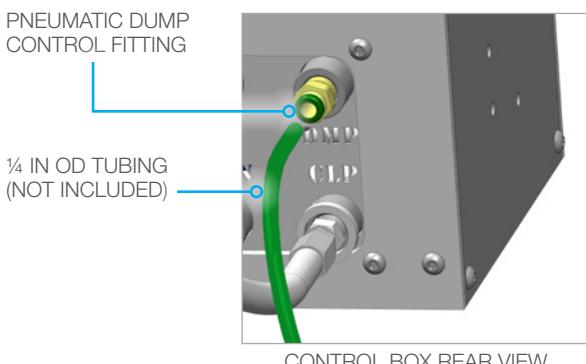
A universal **AIR SUPPLY FITTING** (Chicago style) is located on the FRL. Connect a compatible compressed air line (not included) according to the Manufacturer's instructions.



ADJUST INLINE OILER
TO FEED 1 DROP OF OIL
EVERY 30-60 SECONDS
FOR HIGH SPEED OR
CONTINUOUS DUTY
USAGE

PNEUMATIC DUMP CONTROL FITTING AND LINE

A **MOMENTARY PNEUMATIC DUMP CONTROL** is located on the Control Box panel and can be set up to control an air actuated dump valve. To utilize the toggle, the end user will need to install 1/4 in. O.D. tubing (not included) between the **PNEUMATIC DUMP CONTROL FITTING** and the pneumatic dump valve.

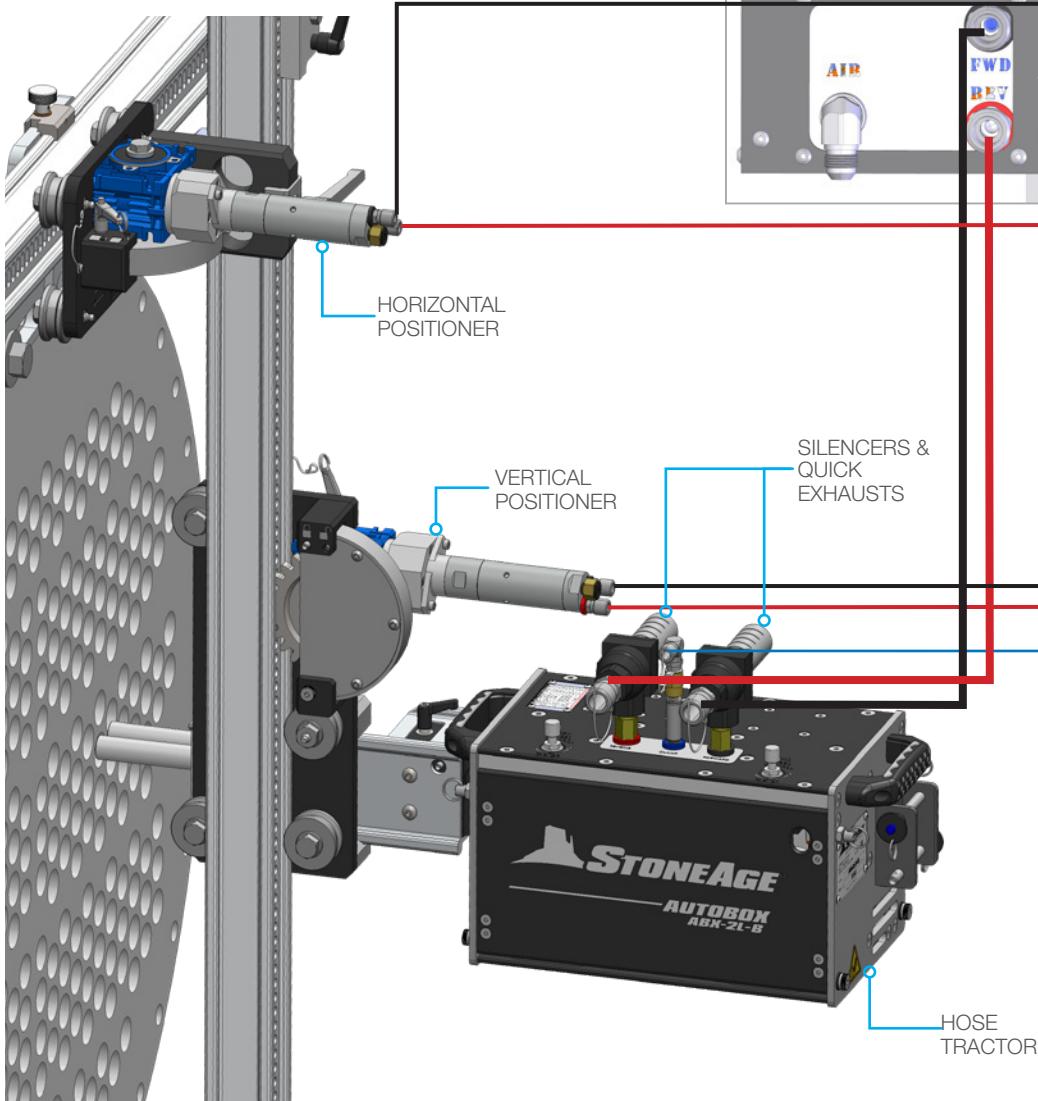


CONTROL BOX TO ABX-2L-B-V2 TRACTOR

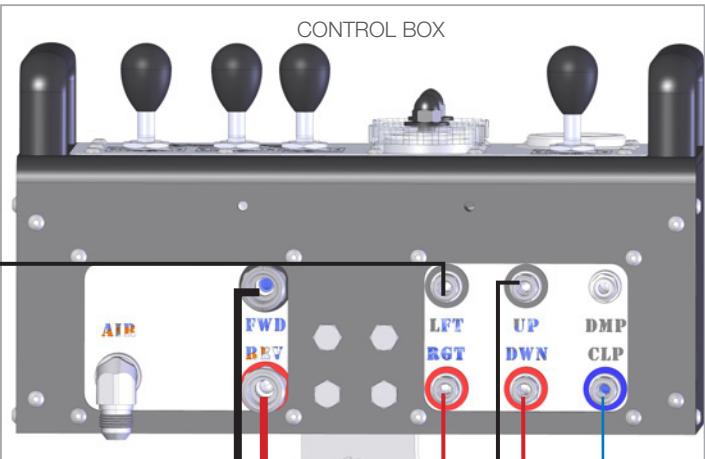
PNEUMATIC SUPPLY LINE CONNECTIONS

1. Remove the dust caps from the Joint Industry Council (JIC) fittings of the Control Box and the AUTOBOX® (ABX-2L-B-V2) Hose Tractor.
2. Connect hoses to the back of the Control Box
 - Two 8 mm diameter tubing (FWD-BLACK & REV-RED)
 - One 6 mm diameter tubing (CLP-BLUE)
 - Two 6 mm diameter tubing for the Horizontal positioner. (LFT-BLACK, RGT-RED)
 - Two 6 mm diameter tubing for the Vertical positioner. (UP-BLACK, DWN-RED)
3. Blow out all control lines. *Use of dirty or contaminated pneumatic hoses will cause component damage and malfunction*

 FORWARD  LEFT  UP
 REVERSE  RIGHT  DOWN  CLAMP



4. Connect hoses to the Hose Tractor
 - Two 8 mm diameter tubing (FWD-BLACK & REV-RED)
 - One 6 mm diameter tubing (CLP-BLUE)
5. Connect hoses to the Horizontal and Vertical Positioners
 - Two 6 mm diameter tubing for the Horizontal positioner. (LFT-BLACK, RGT-RED)
 - Two 6 mm diameter tubing for the Vertical positioner. (UP-BLACK, DWN-RED)
6. Test the Control Box before operating the system with high pressure water to verify the control valves move the hoses and positioners in their intended directions, and that the dump valve is working properly.



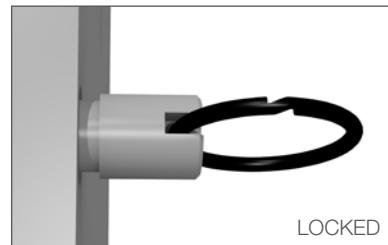
 **Tech Tip:** Ensure that Quick Exhausts and Silencers are free of debris and exhausting freely. Performance can be greatly reduced should these items be clogged.

DOOR

Always run the AUTOBOX® (ABX-2L-B-V2) Hose Tractor with the doors closed and locked.

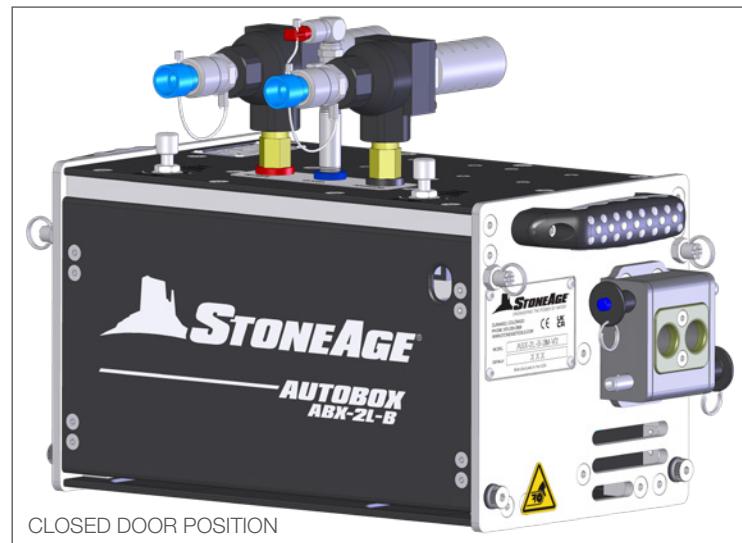
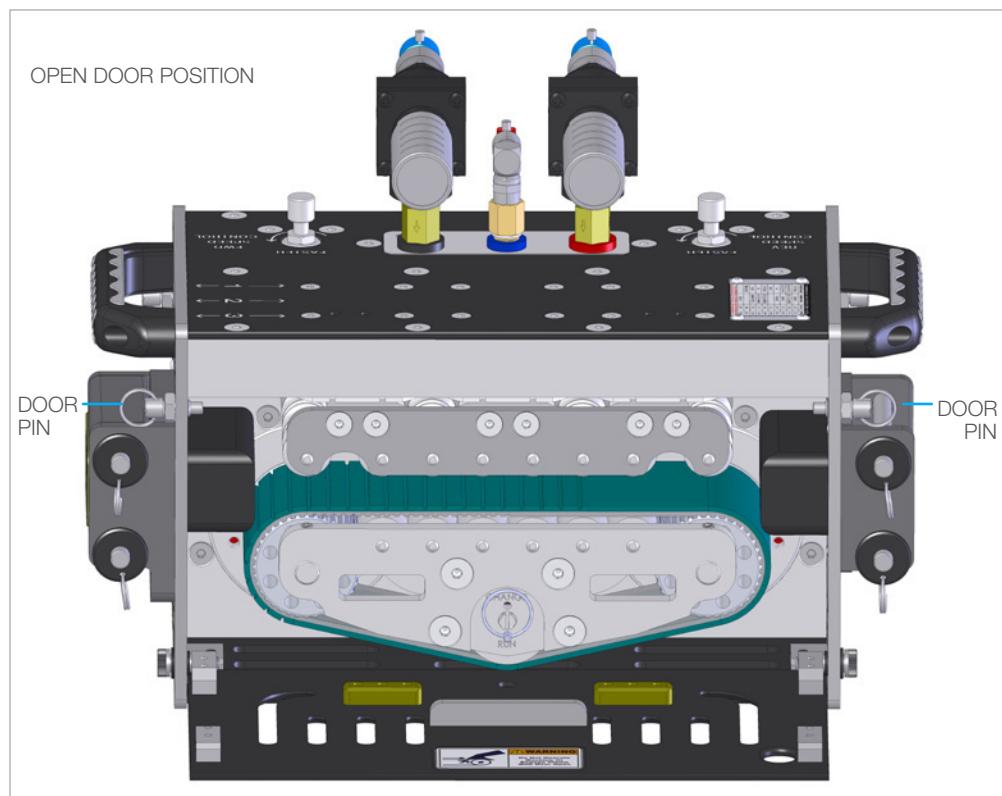
DOOR PIN

The Door Pin is a spring plunger with a pull ring. To unlock the door, pull and twist the pull ring. To close and lock the door, pull and twist the pull ring, then release it into the groove of the pin. Verify the pin engages the door fully.



CAUTION

Make sure to lock both doors on each side of the Hose Tractor before operating AUTOBOX® (ABX-2L-B-V2) Hose Tractor.



OPERATION

COLLET INSERTION, HOSE, AND HOSE STOP INSTALLATION

1. Remove Quick Release Pin and pull out existing Collet. Select the appropriate Collet size for the diameter of the hoses. (See the "Recommended Collets For Common Hose Sizes" plaque on the top plate of the AUTOBOX® (ABX-2L-B-V2) Hose Tractor.) (**Figure 1**)

⚠ WARNING

Appropriate size Collet selection is **CRITICAL** to ensuring proper anti-withdrawal prevention of the tool. See "Recommended Collets For Common Hose Sizes" plaque on the top plate of the ABX-2L-B-V2 Tractor or the side of the vertical carriage on the Lightweight Positioner.

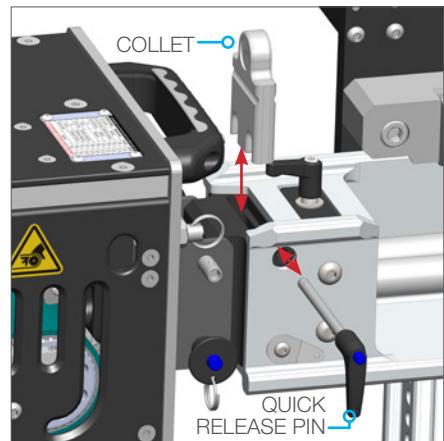
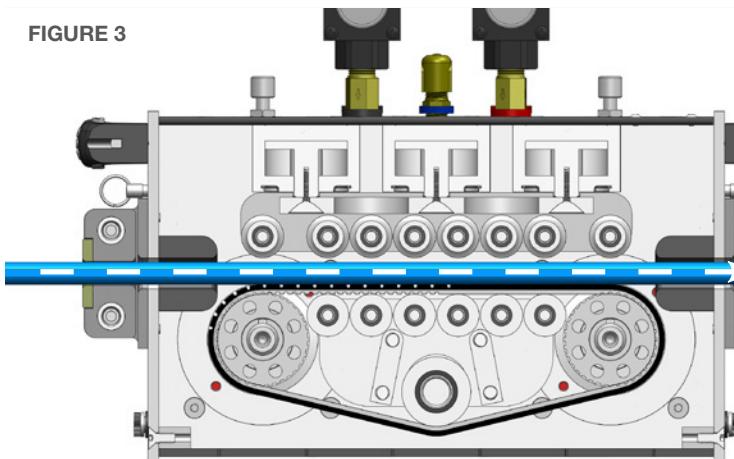


FIGURE 1

2. The **HOSE CLAMP PRESSURE REGULATOR** on the Control Box MUST be turned to zero pressure to open the door for easy hose installation. (**Figure 2**)
3. Insert the hoses, equipped with the waterblast tools, into the mounting bracket on the side of the AUTOBOX® (ABX-2L-B-V2) Hose Tractor until the engage the Drive Belt. Slightly increase the pressure on the **HOSE CLAMP PRESSURE REGULATOR** to extend the clamp rollers and clamp the hoses. (**Figure 3**)
4. When the waterjet tools pass the Collet slot, install the Collet and quick release pin. (**Figure 4**)

FIGURE 3



5. Pull on the hoses from the back of the AUTOBOX® (ABX-2L-B-V2) Hose Tractor to ensure that the Collet does not allow the waterblast tool back out of the Guide Assembly. (**Figure 5**)
6. To install hose stops, push waterblast tools through the exchanger until the tips are 1-2" (25-51 mm) past the end of the tube bundle. Loosely install the stop, then push toward the mounting bracket and tighten in place. (**Figure 5**)



FIGURE 2

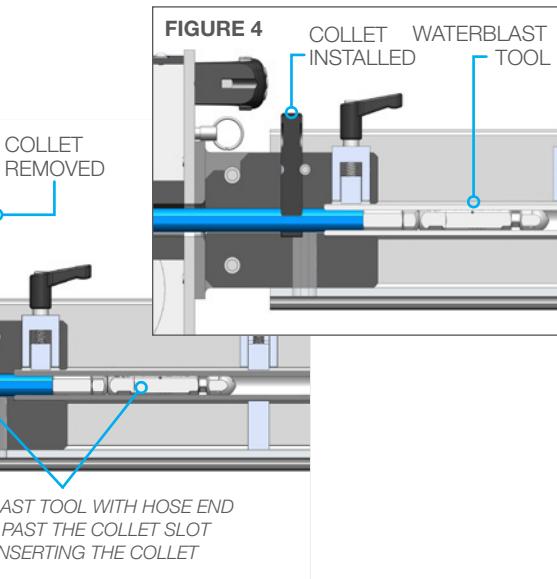


FIGURE 4

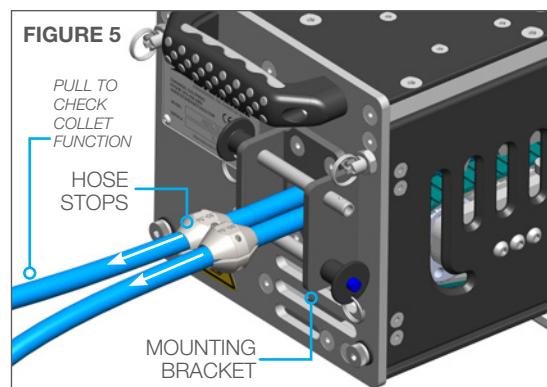


FIGURE 5

CONTROL BOX

- The **HOSE FEED LEVER** will move the hose in the forward (feeding) and reverse (retracting) directions. The **OFF** position is at the spring centered middle position and will stop the Drive Belt from turning. The speed controls are located on the AUTOBOX® (ABX-2L-B-V2) Hose Tractor. Speed is independently adjustable for Forward/Reverse. Minimum speed is .3ft/sec (91 mm/sec). Maximum speed is 3.0ft/sec (914 mm/sec).
- To use the **MOMENTARY PNEUMATIC DUMP CONTROL**, hold it in the Forward/UP position to route the high-pressure water to the tool. Release the knob to divert the high-pressure water away from the tool.
- To de-energize the system, release the **HOSE FEED LEVER** and the **MOMENTARY PNEUMATIC DUMP CONTROL**. This will stop the Drive Belt from moving and reroute the high-pressure water away from the AUTOBOX® (ABX-2L-B-V2) Hose Tractor.
- The **UP / DOWN POSITIONER LEVER**, will move the positioner carriage up and down the vertical rail. Let go of the lever to stop the movement and it will automatically return to the neutral position.
- The **LEFT / RIGHT POSITIONER CONTROL**, will move to positioner carriage side to side along the horizontal rail. Let go of the lever to stop the movement and it will automatically return to the neutral position.
- The **HOSE CLAMP PRESSURE REGULATOR** controls the drive belt traction. It is recommended to operate the clamp pressure as low as possible without excessive slippage. Optimal clamp pressure is achieved when the Drive Belt slips at a slow rate of speed after hitting the hose stops (forward) or the Collet engages the hose crimp (reverse). It is recommended to use hoses supplied with the secondary crimp so the (anti-withdrawal protection) Collet does not impact the pressure containing crimp. Clamp force will not damage hoses. Proper clamp force will provide good control of the hose in forward and reverse directions, and allows for rapid synchronizing of hoses when the hose crimps contact the collet and when the hose stops contact the rear plate. Proper clamp force will also increase the life of the Drive Belt and High Pressure Hoses.

CLAMP PRESSURE MUST NOT EXCEED

Or belt and hose life will be reduced;

66 PSI for 2 Hoses and 33 PSI for 1 Hose

- Use the **HOSE CLAMP PRESSURE GAUGE** to record desired pressure for future use and to monitor pressure during operation.
- HIGH-PRESSURE HOSE:** The AUTOBOX® (ABX-2L-B-V2) Hose Tractor is designed to be used with Parker Pro-Lance® and/or Spir Star Blast-Pro® hose ends. Standard hose ends may not fit into Hose Tractor and/or Guide Tubes.
- NOTE: MAXIMUM hose end diameter must NOT exceed .74 in. (19 mm)**
- Only high quality hoses intended for waterblast applications should be used as high-pressure hoses. Pressure rating of high-pressure hoses **MUST NEVER** be exceeded.
- Verify that the high-pressure hose is properly installed in the back-out preventer. Operate the high-pressure hose and waterjet tool at full pressure to test the clamp force. Proper clamp force will provide good control of the hose in forward and reverse directions, and keep the hoses synchronized at full retract and full extend positions.

NOTICE

Do not use a shrouded hose or hose with a steel protective cover. This will cause severe damage to the Drive Belt and Idlers.

Test the Control Box before operating the AUTOBOX® (ABX-2L-B-V2) Hose Tractor with high-pressure water to verify the control valves move the hose in the intended direction, and that the dump valve is working properly.

The AUTOBOX® (ABX-2L-B-V2) Hose Tractor **MUST** be supervised at all times

HOSE LENGTHS

The ABX-2L-B-V2 has a variety of accessories that will require additional hose length to be considered in addition to the tube bundle length. This should be verified prior to ordering high pressure hose for each job. The chart below shows the actual length of each configuration and recommended additional length necessary to keep the assembly from lifting off the ground during operation. Provide the tube bundle length and use the chart to follow the calculation below to determine the total hose length.

$$\text{(Tube Bundle Length in inches/mm)} + \text{(Actual Length of Configuration in inches/mm)} + \text{(Recommended Additional Connection Length in/mm)} = \text{Total Hose Length in inches/mm}$$

ACCESSORY CONFIGURATIONS	ACTUAL LENGTH OF CONFIGURATION	RECOMMENDED ADDITIONAL CONNECTION LENGTH
ABX-2L-B, Hose Guide, and Lightweight Positioner	32.9 in / 836 mm	39 in / 991 mm
ABX-2L-B, Hose Guide, Lightweight Positioner, and HCS	145.0 in / 3683 mm	39 in / 991 mm
ABX-2L-B, Fin Fan Guide, Fin Fan Snout	128.5 in / 3264 mm	39 in / 991 mm
ABX-2L-B, Fin Fan Guide, Fin Fan Snout, and HCS	240.6 in / 6111 mm	39 in / 991 mm

For example: The hose length equation for a 20ft (6096 mm) tube bundle with ABX-3L-V2, Hose Guide, and Lightweight Positioner would be;

STANDARD: (20ft x 12 in/ft) + 32.9 in + 39 in = **311.9 in.**

METRIC: 6096 mm + 836 mm + 991 mm = **7922 mm**

OPERATION

TEST RUN PROCEDURE

- Perform the **PRE-RUN SAFETY CHECK (SEE PAGE 7)**.
- Ensure appropriate Collet is installed and set initial hose clamp pressure to 20-30 psi (1,4-2,0 bar)
- Operate the high-pressure hose and waterjet tool at full pressure to test the clamp force. Optimal clamp force will provide good control of the hose in forward and reverse directions, and will vary by application.
- Adjust the hose feed speed controls. Proper forward and reverse speeds will vary, depending on the type of material being removed and the tube size. Adjustment of the hose feed speed controls may be necessary during operation in order to optimize cleaning and overall productivity.
- Operate the high-pressure water at full pressure and use the **MOMENTARY PNEUMATIC DUMP CONTROL** to verify that the dump valve is working properly.

RUN PROCEDURE

- Verify the AUTOBOX® (ABX-2L-B-V2) Hose Tractor system is ready for operation.
- Verify that all hose connections have been secured, it is recommended to flush the hoses and verify the dump valve is working properly before installing the Banshee tools.
- After flushing the hoses, install the Banshee tools and insert both tools into the back of the AUTOBOX® (ABX-2L-B-V2) Hose Tractor. It may be necessary to twist the hoses slightly as the tools and hose ends are manually pushed through the Idlers and Guides.
- Once the Banshees are inside the Guide Tubes, install the Collet (anti-withdrawal protection). **The appropriate Collet must be verified, installed, secured, tested, and performance confirmed before operating at high pressure.**
- Adjust the initial clamp pressure to 20-30 psi (1,4-2,0 bar). Align the Guide Tubes with an open set of tubes in the heat exchanger bundle.
- Feed forward and advance the hoses into the tube bundle at low pressure and wait for the tools to exit the far side of the heat exchanger.
- Set the forward hose stops in the desired position to ensure the entire tube is cleaned, but that the hose crimp does not fully exit the tube.

- Retract the hoses into the Guide Tubes.
- Close the dump and gradually increase the pump to the desired operating pressure.
- Feed forward and advance the hoses into the tube bundle. Dump and make any desired changes to forward and/or reverse operating speeds.
- If the Drive Belt is slipping excessively, increase the clamp pressure. It is recommended to operate the clamp pressure as low as possible without excessive slippage. Optimal clamp pressure is achieved when the Drive Belt slips at a slow rate of speed after hitting the hose stops (forward) or the Collet engages the hose crimp (reverse). It is recommended to use hoses supplied with the secondary crimp so the (anti-withdrawal protection) Collet does not impact the pressure containing crimp. Operating at high clamp pressures will reduce Belt life.

CLAMP PRESSURE MUST NOT EXCEED *Or belt and hose life will be reduced;*

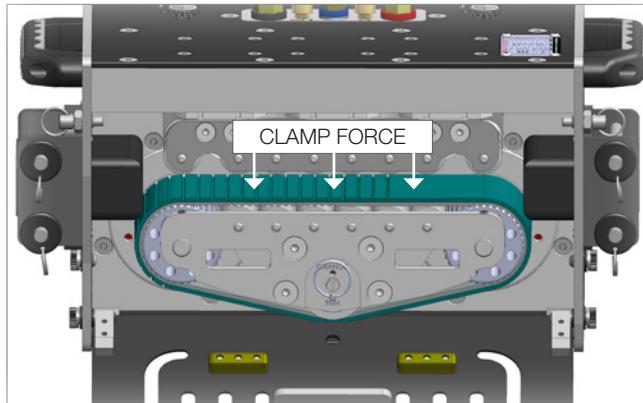
66 PSI for 2 Hoses, and 33 PSI for 1 Hose

- Operate the left/right and up/down positioner functions to begin high pressure cleaning at the preferred location on the tube bundle.
- Always align the Guide Tubes as closely as possible with the heat exchanger tubes before advancing the hoses
- When operating the AUTOBOX® (ABX-2L-B-V2), an obstacle or restriction within a heat exchanger tube may be encountered. When this occurs, the AUTOBOX® (ABX-2L-B-V2) is designed to slow and stall the air drive motor, stopping the advancement of the hose, lance, and Banshee tool. The operator should stop forward feed and reverse the lance feed direction, backing the tool away from the obstruction. Repeat the back and forth operation, until the resistance or obstruction is cleared via the cleaning action of Banshee tool at the end of the hose. The AUTOBOX® (ABX-2L-B-V2) is not designed for continuous high speed slippage. If excessive slippage occurs, gradually increase the clamp force using the **HOSE CLAMP PRESSURE REGULATOR** on the Control Box. If the performance of the belt is not functioning well for the conditions, try replacing it with the alternate durometer belt (included).

⚠ WARNING

Do not fully release the hose clamp (decreasing pressure to zero) during operation, or the AUTOBOX® (ABX-2L-B-V2) Hose Tractor will release the hose and may create a dangerous runaway hose condition, which can result in severe injury and/or death.

Crush Hazard. Keep hands, hair, and clothing clear of all moving parts. Contact with moving parts can result in severe injury.



Maintenance Item	Frequency	Maintenance Required
Forward, reverse, and clamp fittings	Before each use	Inspect threads on fittings for wear or damage.
Lubricant level of Filter, Regulator, Lubricator	Before each use	For average conditions, the use of high quality SAE #10 (S.U.V. 150-200 SEC @ 100°F) oil is recommended. Other lubricants, as specified by the maker of the equipment to be lubricated, may be used if not heavier than SAE #40 (S.U.V. 800 SEC @100°F).
Drive Belt (See Belt Replacement instructions in this manual)	After each use	The Belts are very durable and should last several hundred hours. However, it is recommended to inspect the Belt for wear and/or cracks at the completion of each job. Replacement is required when the Belt is damaged. If the performance of the belt is not functioning well for the conditions, try replacing it with the alternate durometer belt (included). <div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;">NOTICE</div> Operation with a severely damaged belt will result in excessive damage to the Idler rollers and drive sprockets.
All components the hoses pass through	After each use	Most wear parts are made from durable materials and should have a very long life. However, as wear occurs the rounded edges could become sharp and damage hoses. Any components showing excessive wear should be replaced.
FWD, REV, LFT, RGT, UP, DOWN fittings	After each use	Apply a small amount of air tool oil directly into FWD, REV, LFT, RGT, UP, DOWN fittings. Then, briefly operate the controls at slow speed for a short duration in each direction to coat the interior parts of the motor. Install the dust caps onto all fittings to keep moisture and dirt out. <div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;">NOTICE</div> Do not add oil to the Clamp (CLP) fitting, as oil may accumulate in the air cylinders and prevent them from fully retracting.
ABX-2L-B-V2 (Inside)	After each use	When storing the unit, use compressed air to blow out any residual remove debris and moisture. Use mild, soapy, low pressure, water to clean the machine in order to remove corrosive materials. DO NOT SPRAY WATER INTO OR SUBMERGE, THE AIR MOTOR HOUSING OR BREATHER.
Lubricant level of Filter, Regulator, Lubricator	Cessation of oil dripping through the sight dome	If both air and oil are kept clean, and the oil level is never allowed below end of tube in the bowl, the lubricator should provide long periods of unattended service. Cessation of oil dripping through the sight dome, irrespective of knob adjustment, is an indication that cleaning is necessary. To clean, it is not necessary to remove lubricator from the line. De-pressurize and disassemble. In most instances, cleaning is needed only in the oil metering area. Pull off adjusting knob, unscrew sight dome assembly, remove inner drip spout and clean with household soap. PLASTIC BOWLS AND SIGHT DOME MUST BE CLEANED WITH HOUSEHOLD SOAP ONLY.
Lubricant level of Filter, Regulator, Lubricator	Intermittent Adjustments	The adjustment knob is factory set so that, when turned fully clockwise, no oil is delivered to the venturi for atomization, and the equipment is not being lubricated. To adjust the oil drip rate, turn on the air, start flow and set knob to obtain the desired drip rate, which is visible through the sight dome. As a start, one to two drops per minute is suggested, correct lubrication is a matter of experience and demand. Clockwise rotation of knob decreases oil feed rate. To check lubrication, hold thumbnail or a mirror near the equipment exhaust. A heavy film indicates over-lubrication and the drip rate should be reduced by turning knob to a lower setting.

Contact StoneAge for Safety Data Sheets for material usage, a complete list of spare part numbers, and service instructions for the AUTOBOX® (ABX-2L-B-V2) Hose Tractor, LWPS-100-NS Positioner, and CBX-ABX-PL.

STORAGE, TRANSPORTATION, AND HANDLING

The AUTOBOX® (ABX-2L-B-V2) Hose Tractor, LWPS-100-NS Positioner, and CBX-ABX-PL is shipped in a custom wooden crate or job box and should be stored upright in the containers between jobs. When moving the any of the AUTOBOX® equipment, lift with care to prevent bodily injury.

ABX-2L-B-V2 HOSE TRACTOR - DRIVE BELT REPLACEMENT

⚠ WARNING

Always de-energize the system before servicing or replacing any parts. Failure to do so can result in severe injury and/or death. Keep hands, hair, and clothing clear of rotating parts.



TECH TIP: If the performance of the belt is not functioning well for the conditions, try replacing it with an alternate durometer belt.

BELTS INCLUDED:

ABX 305-50 Green

(50 durometer – softest – better grip , but fastest wear)

ABX 305-80 Black

(80 durometer – hardest – most durable, but most slip)

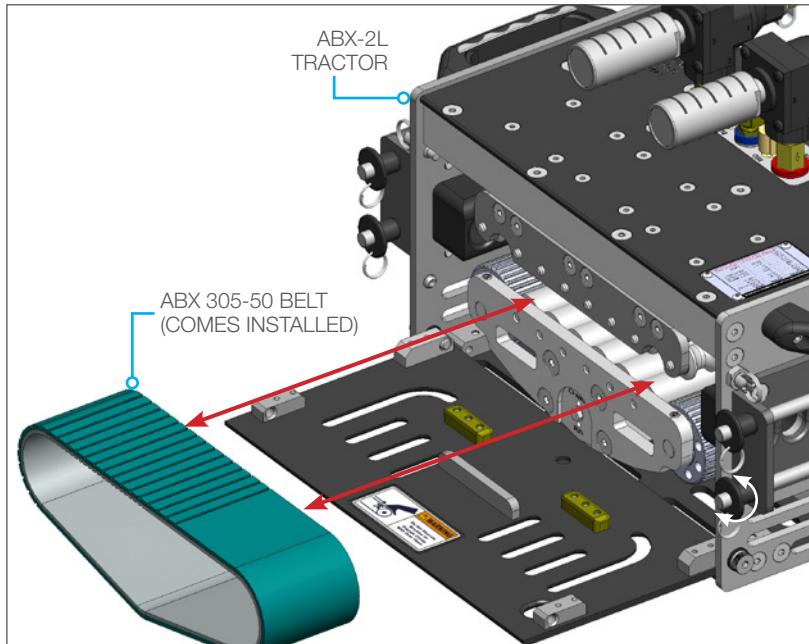
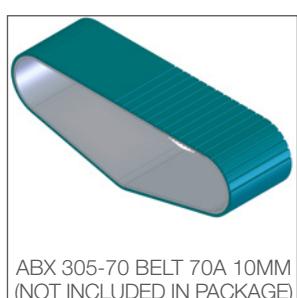
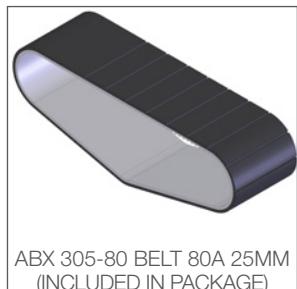
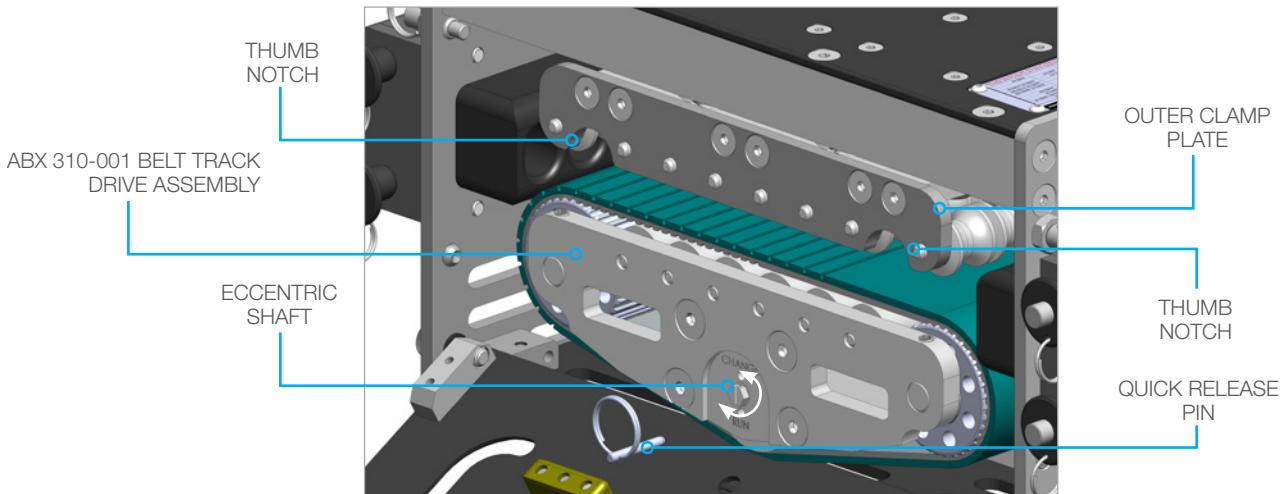
BELT OPTIONAL:

ABX 305-70 Green

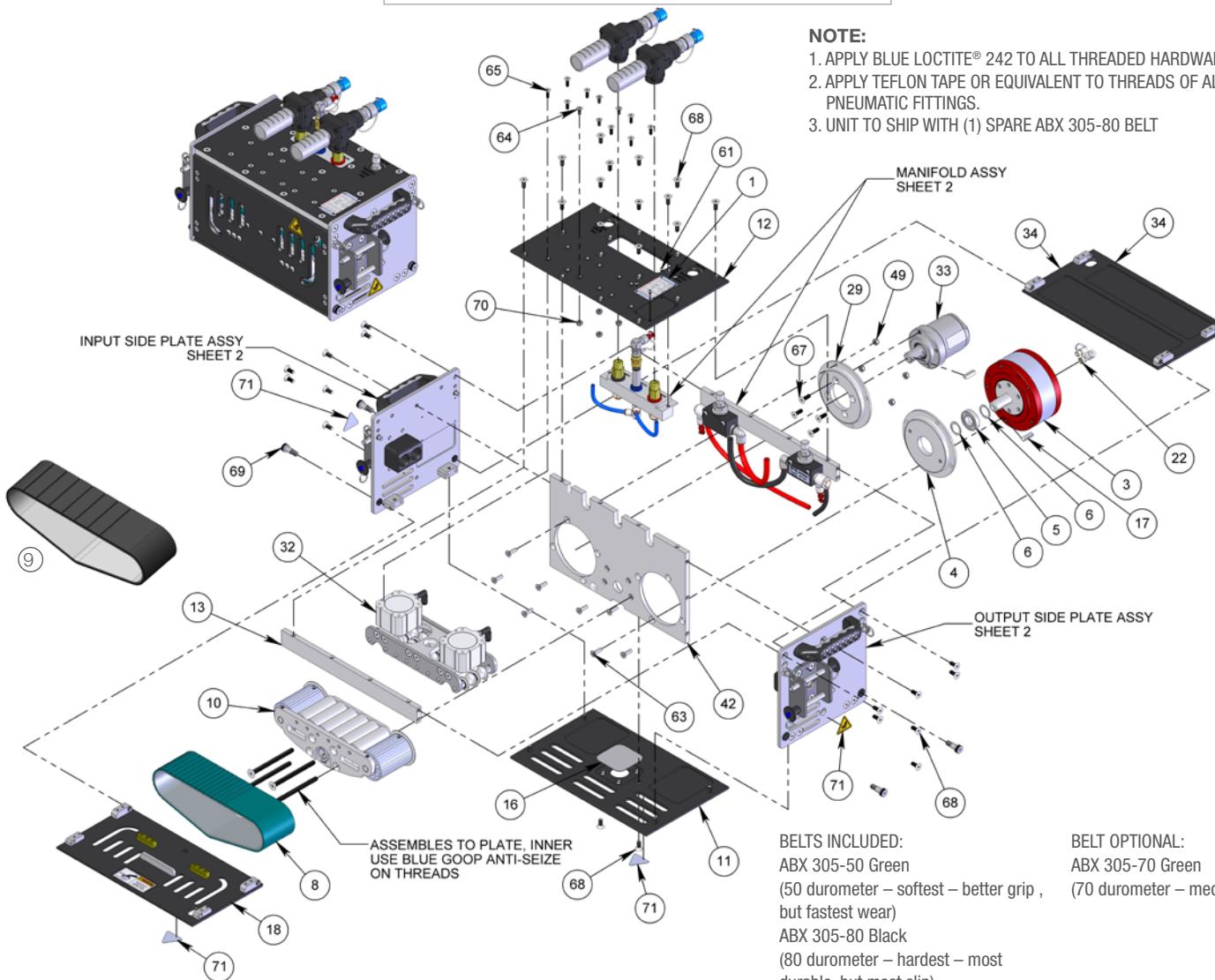
(70 durometer – medium)

TO REPLACE THE BELT:

1. Pull out the Quick Release Pin on the front of the ABX 310-001 Belt Track Drive Assembly.
2. Use a flat head screwdriver to rotate the Eccentric Shaft 180° in either direction. This will release tension on the Drive Belt Assembly.
3. Install pin into the "CHANGE" position so it does not get misplaced, and to ensure the tension idler is in the correct position before removing the belt.
4. Place thumbs on the top of the belt into the notches of the Outer Clamp Plate. Place fingers under the Drive Belt and light squeeze in the shape of the tensioned Drive Belt. Then pull the Drive Belt out from the ABX-2L Tractor.
5. Slide the old Drive Belt off and discard. Slide the new Drive Belt on in a similar manner.
6. Rotate the Eccentric Shaft 180° in either direction to properly tension the Drive Belt.
7. Move the Quick Release Pin to the "RUN" position.



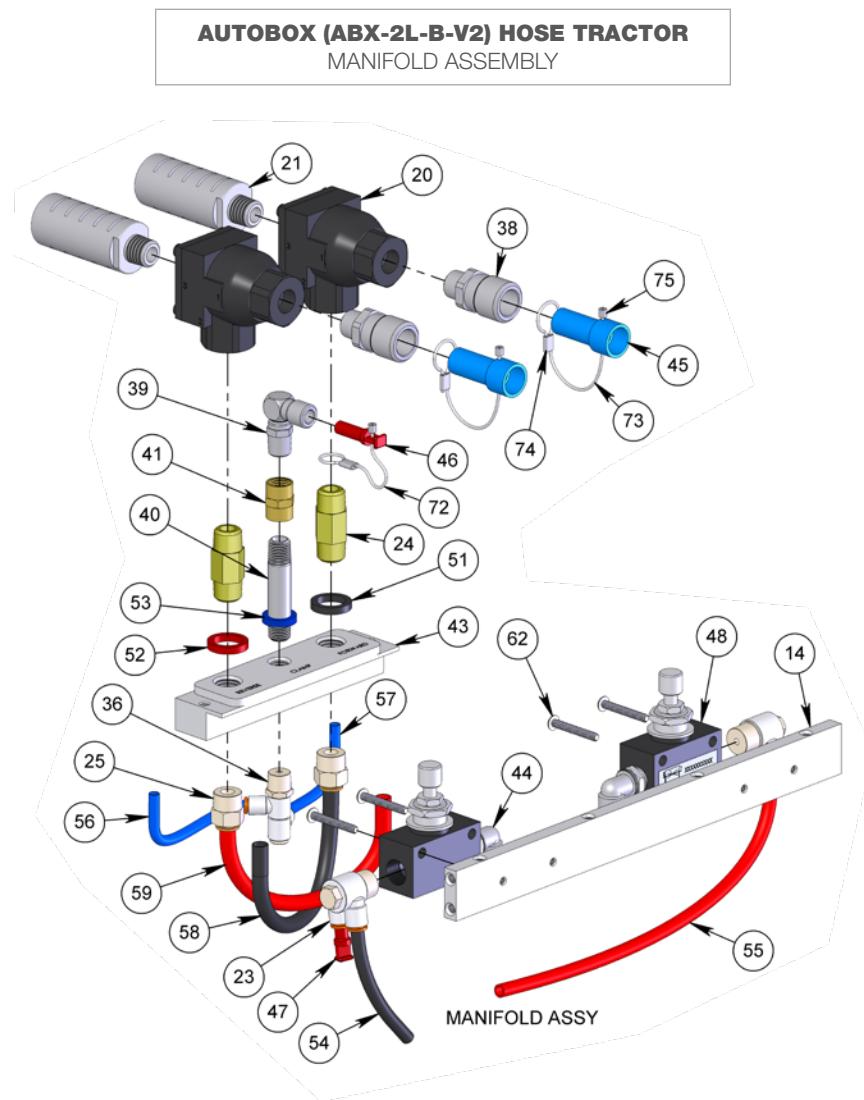
AUTOBOT (ABX-2L-B-V2) HOSE TRACTOR



#	PART NUMBER	QTY
1	ABX 139 COLLET REFERENCE PLATE	1
3	ABX 250 AIR MOTOR, GLOBE	1
4	ABX 252 PLATE, AIR MOTOR BEARING	1
5	ABX 257 MOTOR BEARING 19MM X 37MM X 9MM	1
6	ABX 258 SHIM WASHER	2
8	ABX 305-50 BELT, 50A 10MM Sipe	1
9	ABX 305-80 BELT, 80A 25mm Sipe (INCLUDED IN PACK)	1
10	ABX 310-001 BELT TRACK DRIVE ASSY BOTTOM	1
11	ABX 343 PLATE, BOTTOM	1
12	ABX 344 PLATE, TOP	1
13	ABX 345 STIFFENER, TOP PLATE	1
16	ABX 348 COVER	1
17	ABX 353 KEY, MODIFIED	2
18	ABX 370-001 DOOR ASSY	1

22	ABX 391 FTG, ELBOW SWIVEL 90 BSPT2M PL8MMF	2
29	ABX 452 PLATE, IDLER ASSY ADAPTER	1
32	ABX 460 BELT TRACK DRIVE ASSY TOP	1
33	ABX 470 IDLER ASSY	1
34	ABX 480 GUARD ASSY	1
42	ABXS 340 PLATE, INNER	1
49	GN 3M6-1.0-L NUT, NYLOK M6X1.0 SS	4
61	GSB 313-0075 BHCS 6-32 x .19 SS	8
63	GSF 3M6-20-1.00 FHCS M6x1.00 x 20 SS	8
64	GSF 319-02 FHCS 10-24 X .50 SS	4
65	GSF 319-025 FHCS 10-24 X .62 SS	16
67	GSF 325-03 FHCS .25-20 X .75 SS	4
68	GSF 325-025 FHCS .25-20 X .62 SS	42
69	GSSH 0375-0500-SS SHOULDER SCREW .375 X .500 .31-18 SS	4
70	HC 025.1 NUT, NYLOK 10-24 SS	4
71	PL 162 WARNING DECAL, PINCH POINT	4

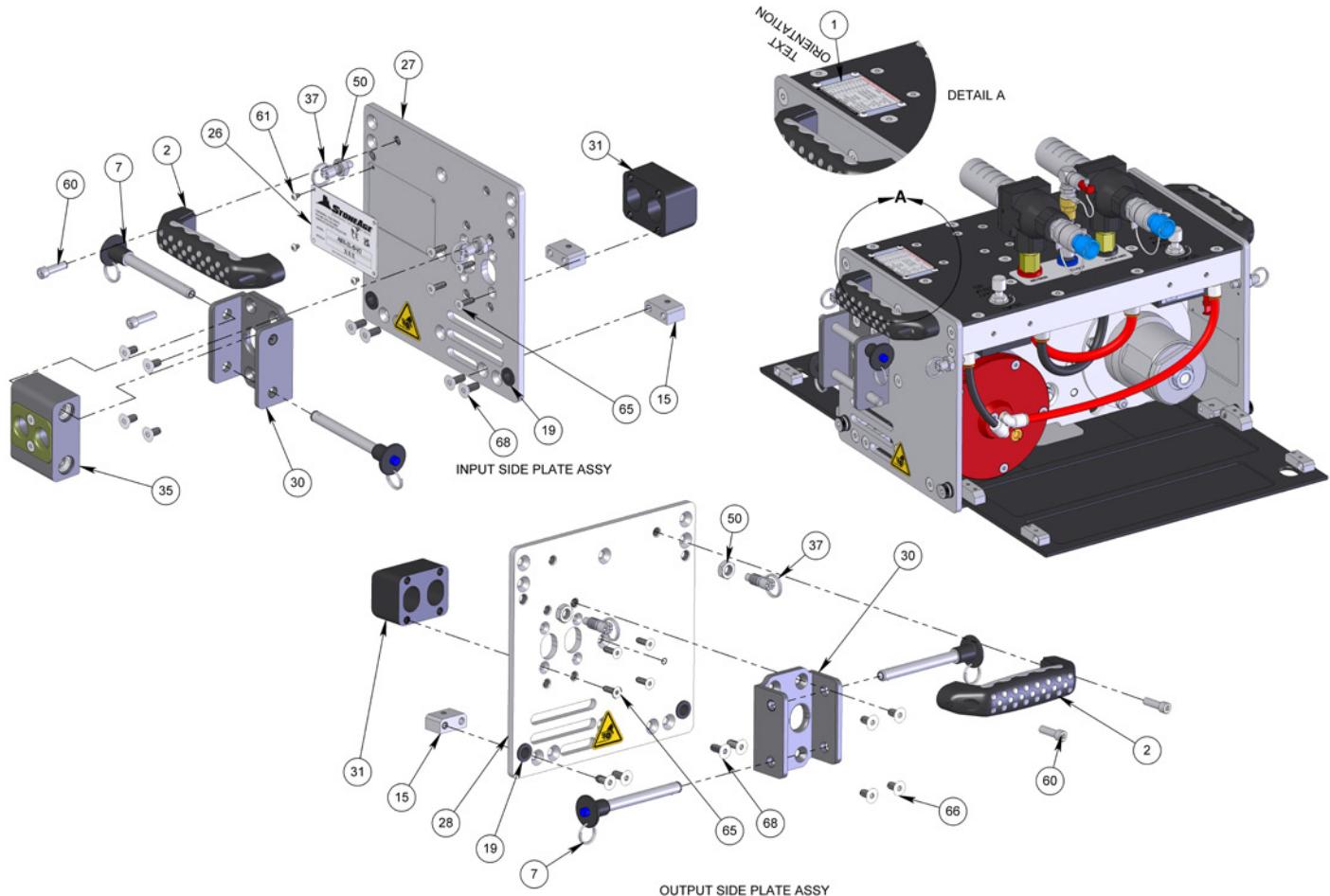
PART DIAGRAM



#	PART NUMBER	QTY
14	ABX 346 PLATE, FLOW CONTROL	1
20	ABX 382 QUICK EXHAUST VALVE, P6	2
21	ABX 383 SILENCER, P6	2
23	ABX 392 FTG, MANIFOLD 90 P6M 2XPL5	2
24	ABX 394 FTG, INLINE FILTER P6M P6M	2
25	ABX 397 FTG, ADAPTER P6M PL6	2
36	ABX 499 FTG, MANIFOLD 90 P4M 2XPL4	1
38	ABXS 270 FTG, ADAPTER P6M PL10 EISELE	2
39	ABXS 274 FTG, ELBOW SWIVEL 90 P4M PL5 EISELE	1
40	ABXS 284 FTG, NIPPLE P4M P4M X 2.50 SS	1
41	ABXS 285 FTG, COUPLING P4F BRASS	1
43	ABXS 386 AIR MANIFOLD	1
44	CB 352 FTG, ELBOW SWIVEL 90 P6M PL6	2
45	CB 474 FTG, STEM PLUG PL10 MODIFIED	2
46	CB 499 FTG, STEM PLUG PL5 MODIFIED	1
47	CB 499.1 FTG, STEM PLUG PL5	2

48	CB 528 FLOW CONTROL VALVE, P6	2
50	GN 337-HJ NUT, HEX JAM .37-16 SS	4
51	GP 011-BK ID WASHER, RUBBER, MED, BLACK	1
52	GP 011-R ID WASHER, RUBBER, MED, RED	1
53	GP 013-B ID WASHER, RUBBER, SMALL, BLUE	1
54	GPTB 8MM-PUR95A-BK 2LV2TUBE 1 M8 BK (4")	1
55	GPTB 8MM-PUR95A-RD 2LV2TUBE 1 M8 RD 1MOTOR (12")	1
56	GPTB 0250-PUR95A-BL 2LV2TUBE 1 PL4 BL (5")	1
57	GPTB 0250-PUR95A-BL 2LV2TUBE 2 PL4 BL (5")	1
58	GPTB 0375-PUR95A-BK 2LV2TUBE 1 PL6 BK (8")	1
59	GPTB 0375-PUR95A-RD 2LV2TUBE 1 PL6 RD (7.5")	1
62	GSB 319-055 BHCS 10-24 x 1.38 SS	4
72	SRT 209.1.1 WIRE ROPE FOR ABXS PL5 (Cut to 5.25in)	1
73	SRT 209.1.1 WIRE ROPE FOR ABXS PL10 (Cut to 6.75in)	2
74	SRT 209.1.3 ALUMINUM SLEEVE	3
75	SRT 209.1.4 ALUMINUM STOP SLEEVE	3

AUTOBOX (ABX-2L-B-V2) HOSE TRACTOR
INSIDE AND OUTSIDE PLATE ASSEMBLIES



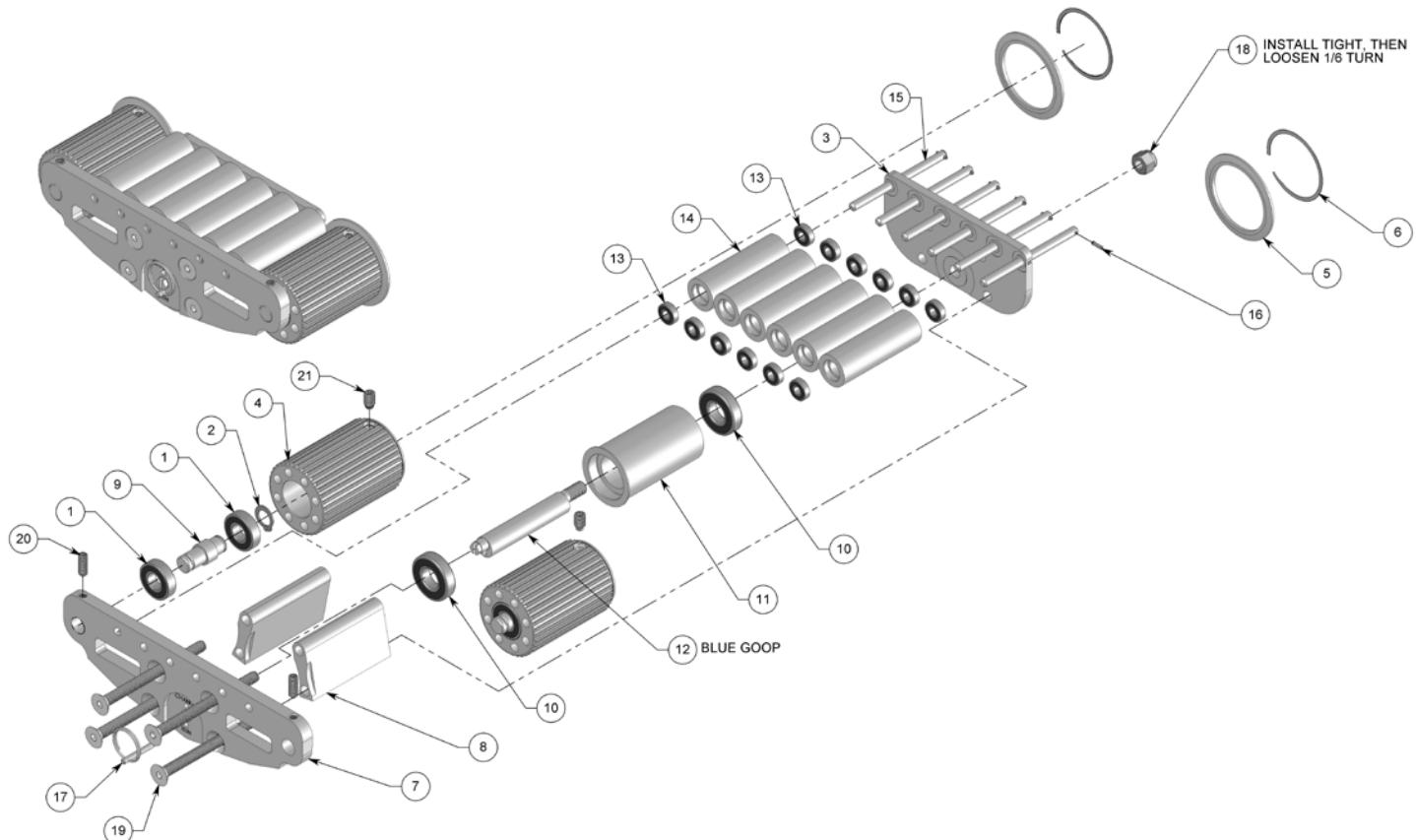
#	PART NUMBER	QTY
1	ABX 139 COLLET REFERENCE PLATE	1
2	ABX 215 PULL HANDLE GREY	2
7	ABX 298 QUICK PIN	4
15	ABX 347 BLOCK, SUPPORT	4
19	ABX 375 BUSHING, PEEK .375 ID X .375 LG	4
26	ABX 403-001 CE SERIAL PLATE	1
27	ABX 441 SIDE PLATE INLET	1
28	ABX 442 SIDE PLATE OUTLET	1
29	ABX 452PLATE, IDLER ASSY ADAPTER	1

30	ABX 457 MOUNTING BRACKET, INLET	2
31	ABX 459 HOSE GUIDE BLOCK, INNER	2
35	ABX 490 REAR MOUNT ASSEMBLY	1
37	ABX 566-001 SPRING PLUNGER ASSY	4
50	GN 337-HJ NUT, HEX JAM .37-16 SS	4
60	GS 325-035 SHCS .25-20 X .88 SS	4
61	GSB 313-0075 BHCS 6-32 x .19 SS	8
65	GSF 319-025 FHCS 10-24 x .62 SS	16
66	GSF 325-02 FHCS .25-20 x .50 SS	8
68	GSF 325-025 FHCS .25-20 x .62 SS	42

PART DIAGRAM

AUTOBOX (ABX 310-001)

BELT TRACK DRIVE ASSEMBLY



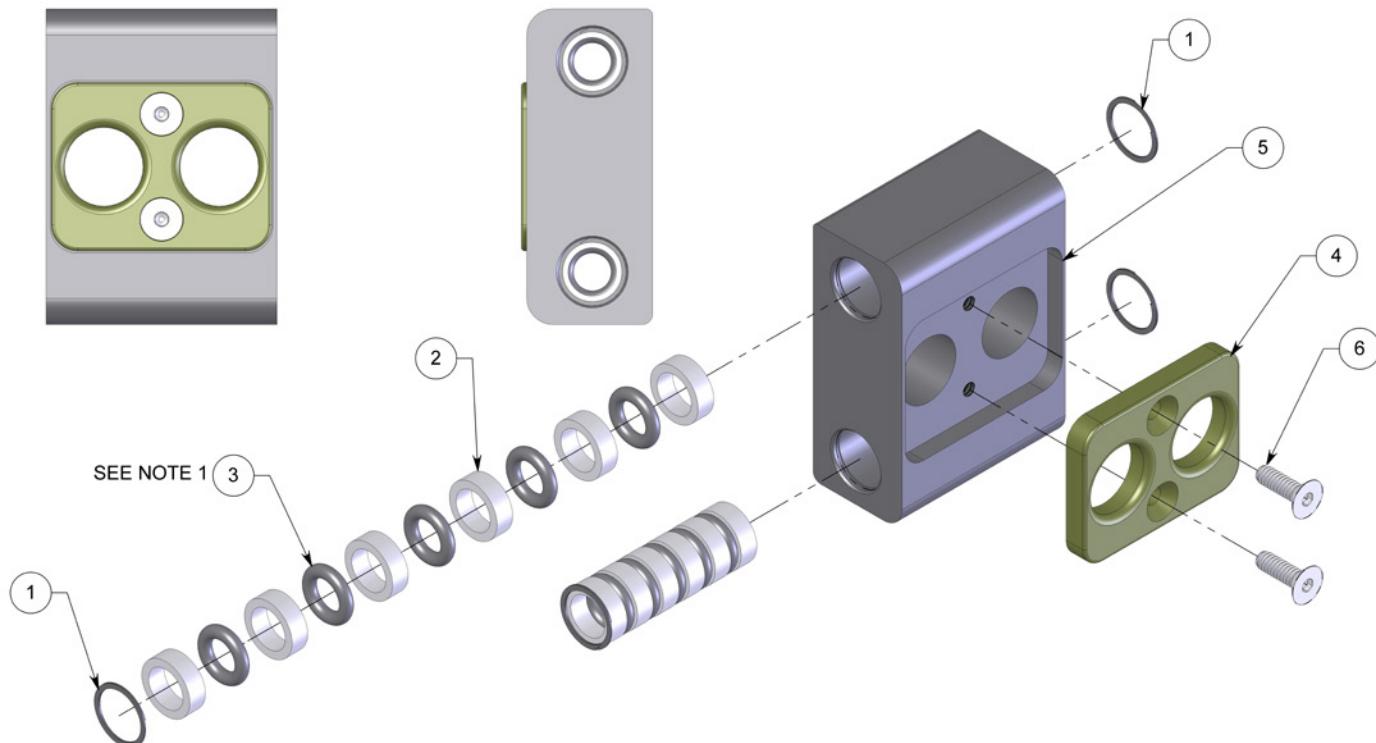
NOTE:

1. APPLY BLUE LOCTITE® 242 TO ALL THREADED HARDWARE.
2. BLUE GOOP IS A SWAGELOCK® BRAND ANTI-SEIZE AN EQUIVALENT ALTERNATIVE. IS ACCEPTABLE.

#	PART NUMBER	QTY.
1	ABX 228 BEARING .500 ID X 1.125 OD SEALED PERMALUBE	4
2	ABX 267 RETAINING RING, SL EXTERNAL SS	2
3	ABX 311-001 PLATE, BELT INNER	1
4	ABX 314 DRIVE SPROCKET 36T-AT5	2
5	ABX 315 SPROCKET FLANGE	2
6	ABX 316 RETAINING RING, FLANGE 2.00 EXT LIGHT DUTY	2
7	ABX 317-001 PLATE, SIDE	1
8	ABX 318 BLOCK, BELT DRIVE	2
9	ABX 320 STUB SHAFT, DRIVE ROLLER	2
10	ABX 322 BEARING R10, PERMALUBE	2

11	ABX 323 IDLER, TENSIONING	1
12	ABX 324 ECCENTRIC SHAFT	1
13	ABX 326 R4 PERMA LUBE BEARING	12
14	ABX 327 ROLLER, BELT	6
15	ABX 330 SHAFT, IDLER	6
16	ABX 332 SPRING PIN, .094 X .375	6
17	ABX 333 QUICK RELEASE PIN .156 X .8 LG	1
18	GN 337-L NYLOK NUT SS	1
19	GSF 331-16 FHCS .31-18 X 4.00 SS	4
20	GSS 325-20-75C0 SET SCREW, CONE PT SS	2
21	GSS 331-18-50DP SET SCREW, DOG PT SS	2

AUTOBOX (ABX 490)
REAR MOUNT INSIDE ASSEMBLY

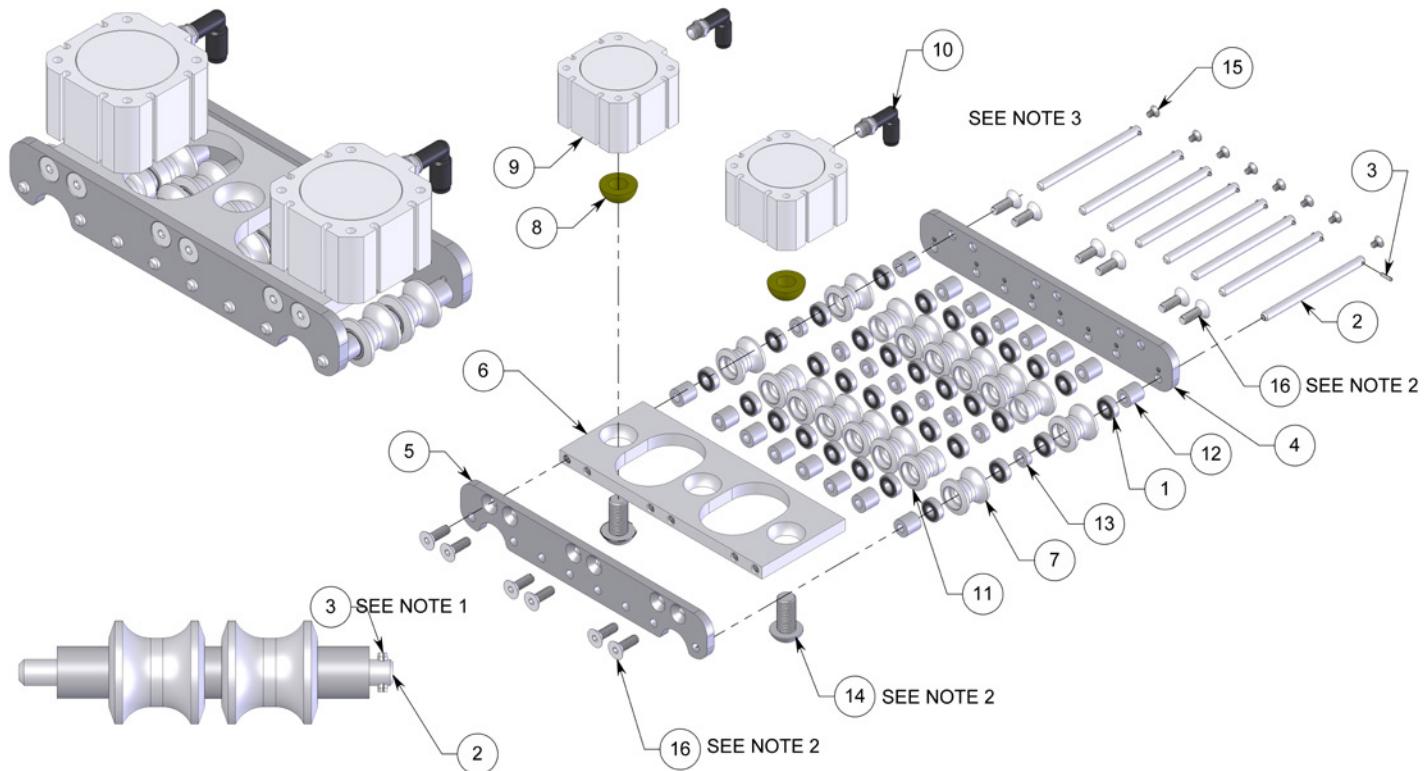


#	PART NUMBER	QTY.
1	ABX 230 SPIRAL INTERNAL RETAINING RING, .625 BORE, SS	4
2	ABX 293 SPACER, ORING	12
3	ABX 294 O-RING, SHOCK ABSORBING	10
4	ABX 416 HOSE GUIDE PLATE, OUTER	1
5	ABX 492 REAR MOUNTING BRACKET, INSIDE	1
6	GSF 319-025 FHCS .19-24 X .62 SS	2

PART DIAGRAM

AUTOBOX (ABX 460)

BELT TRACK DRIVE ASSEMBLY

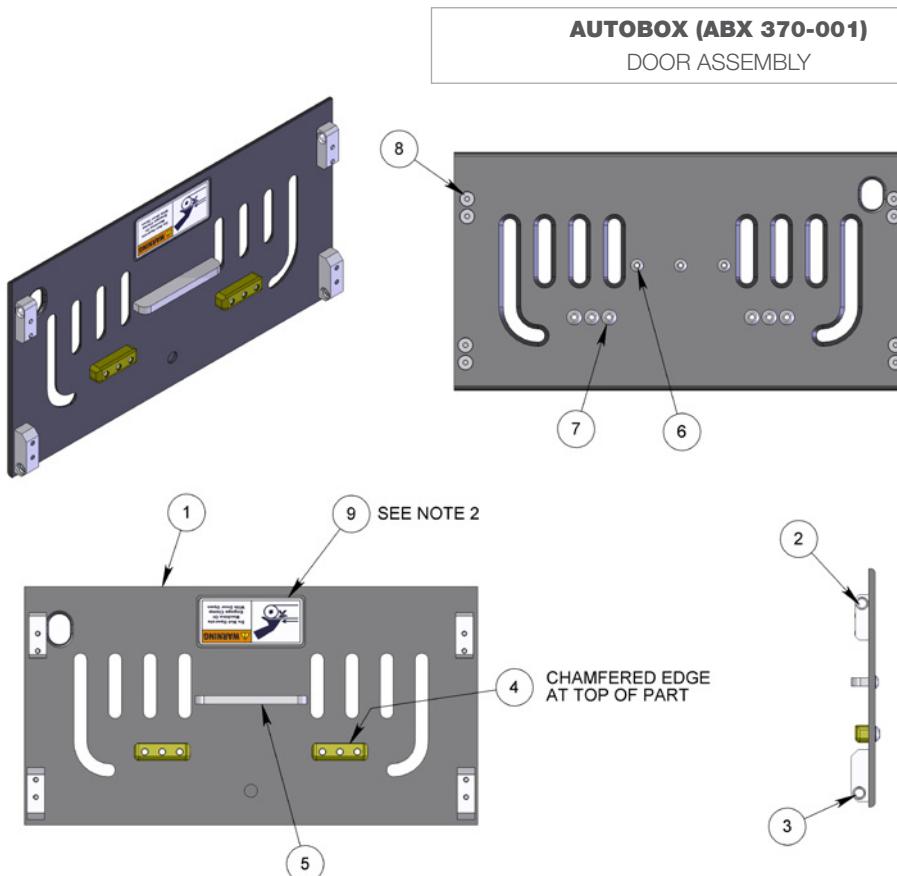


NOTE:

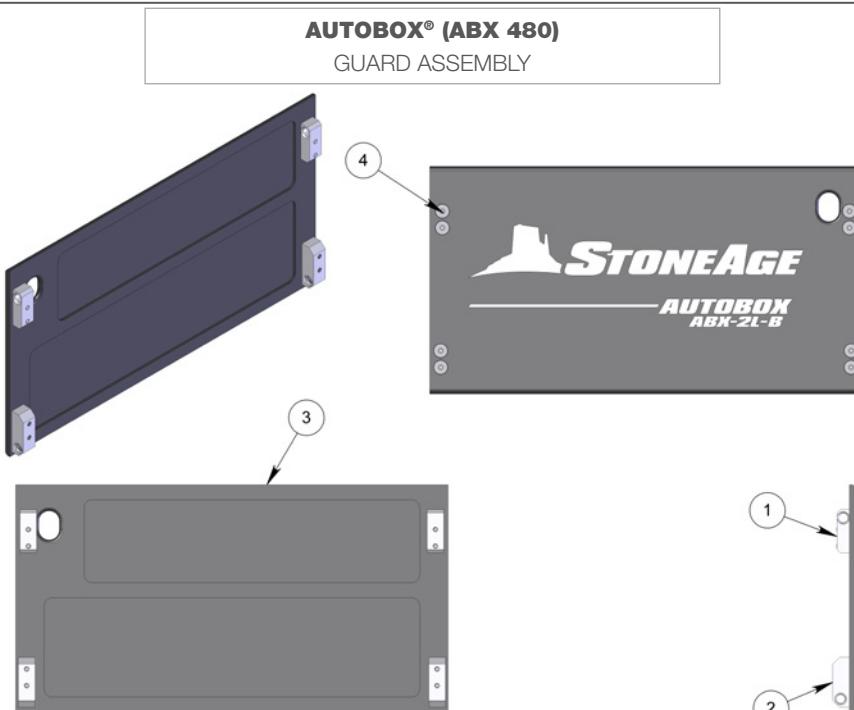
1. CENTER PIN WHEN INSTALLING SHAFT
2. APPLY BLUE LOCTITE® 242 TO ALL THREADED HARDWARE.
2. APPLY TEFLON TAPE OR EQUIVALENT TO THREADS OF ALL PNEUMATIC FITTINGS.

#	PART NUMBER	QTY.
1	ABX 326 R4 PERMA LUBE BEARING	32
2	ABX 330 SHAFT, IDLER	8
3	ABX 332 SPRING PIN, .094 X .375	8
4	ABX 361-001 PLATE, CLAMP INSIDE	1
5	ABX 362 PLATE, CLAMP OUTSIDE	1
6	ABX 364-001 PLATE, CLAMP	1
7	ABX 366 ROLLER, HOSE	12
8	ABX 377 SPHERICAL BALL	2

9	ABX 385 SMC AIR CYL NCQ8A200-062S	2
10	ABX 387 FTG, ELBOW SWIVEL LONG 90 P2M PL4	2
11	ABX 466 ROLLER, HOSE	4
12	ABX 467 SPACER, PURCHASED	16
13	ABX 468 SPACER, MODIFIED	8
14	GSB 350-04-20 BHCS .50-20 X 1.00 SS	2
15	GSF 316-01 FHCS .16-32 X .25 SS	8
16	GSF 325-03 FHCS .25-20 X .75 SS	12

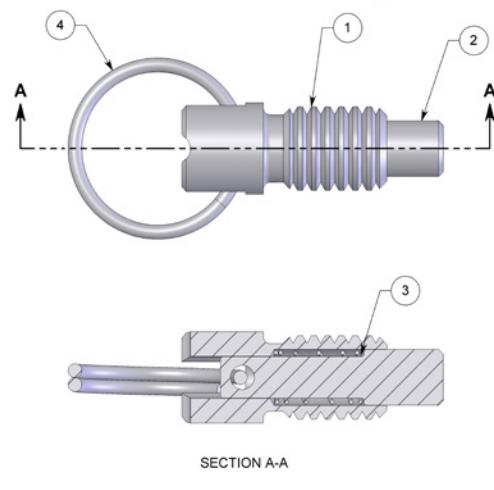


#	PART NUMBER	QTY.
1	ABX 371-001 DOOR	1
2	ABX 372 PIN PLATE, DOOR	2
3	ABX 373 PIVOT PLATE, DOOR	2
4	ABX 374 PLATE, WEDGE	2
5	ABX 376 PLATE, BELT GUIDE	1
6	GSB 319-02 BHCS 10-24 X .50 SS	3
7	GSB 325-02 BHCS .25-20 X .50 SS	6
8	GSF 319-0225 FHCS .19-24 X .56 SS	8
9	PL 164 WARNING, DOOR OPEN CLAMP ENGAGED	1



#	PART NUMBER	QTY.
1	ABX 372 PIN PLATE, DOOR	2
2	ABX 373 PIVOT PLATE, DOOR	2
3	ABX 481 GUARD	1
4	GSF 319-0225 FHCS .19-24 X .56 SS	8

AUTOBOX® (ABX 566-001)
SPRING PLUNGER ASSEMBLY

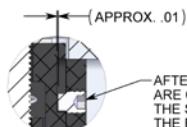


#	PART NUMBER	QTY.
1	ABX 566.1-001 BODY	1
2	ABX 566.2-001 PIN	1
3	ABX 566.3-001 SPRING	1
4	ABX 566.4-001 RING	1

PART DIAGRAM

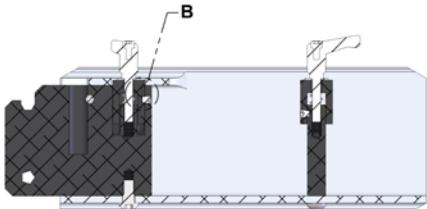
AUTOBOX (ABX-201)

GUIDE ASSEMBLY

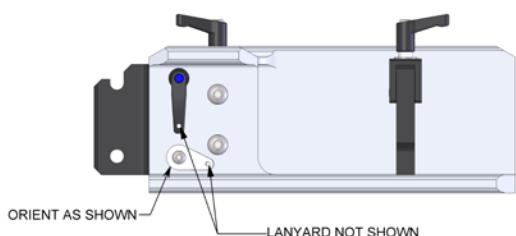
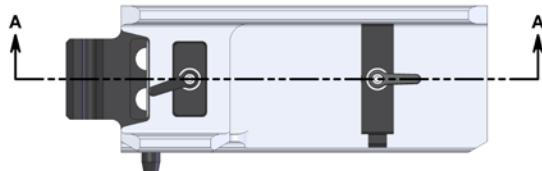


DETAIL B
SCALE 1:1
2 PLACES

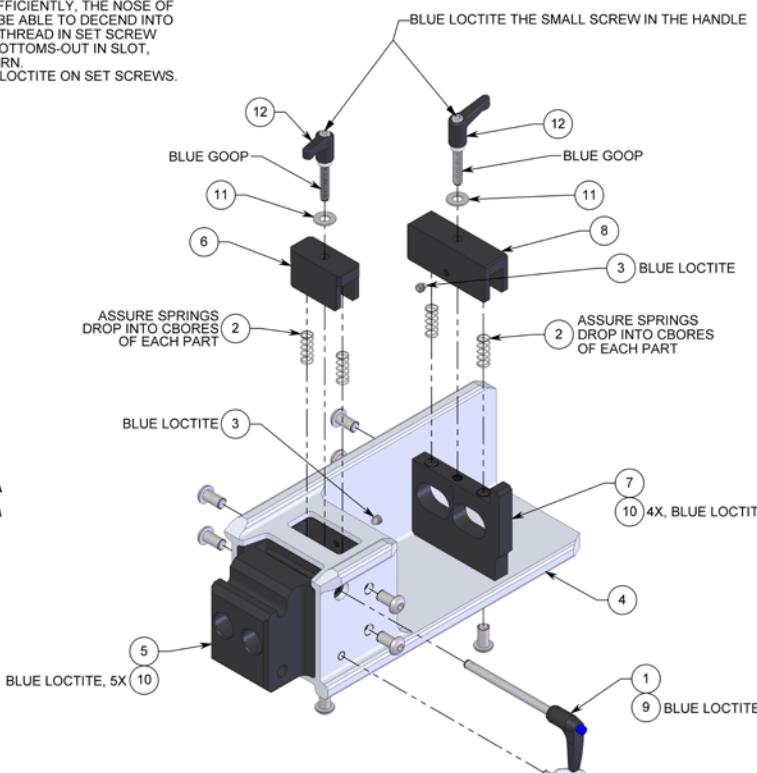
AFTER CLAMP BAR IS INSTALLED AND SPRINGS ARE COMPRESSED SUFFICIENTLY, THE NOSE OF THE SET SCREW WILL BE ABLE TO DESCEND INTO THE RECESSED SLOT. THREAD IN SET SCREW UNTIL NOSE GENTLY BOTTOMS-OUT IN SLOT, THEN BACK OUT 1/4 TURN.
ASSURE TO USE BLUE LOCTITE ON SET SCREWS.



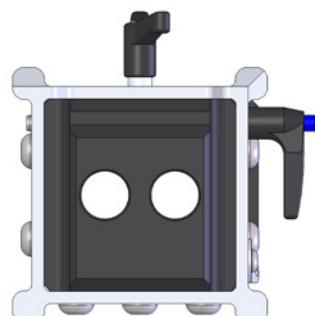
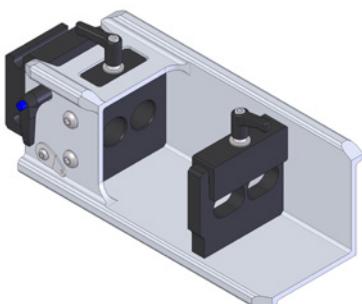
SECTION A-A



ORIENT AS SHOWN
LANYARD NOT SHOWN



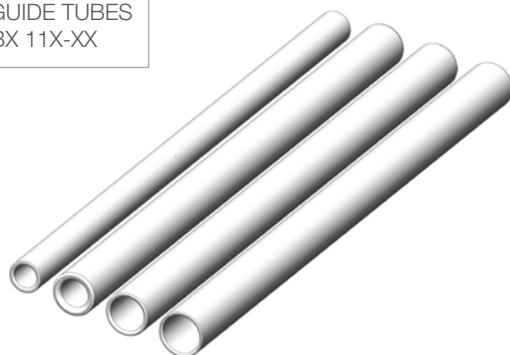
1. BLUE GOOP IS A SWAGELOK® BRAND ANTI-SEIZE AND EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
2. BLUE LOCTITE 242® OR EQUIVALENT.
3. COLLET AND GUIDE TUBE SIZES WILL NEED TO BE CHOSEN AND PURCHASED SEPARATELY BY THE CUSTOMER AT TIME OF ORDER.



#	PART NUMBER	QTY
1	ABX 130-001 QUICK-RELEASE PIN, .250DIA, 3.00L, WITH 6" LANYARD	1
2	ABX 182 SPRING, COMPRESSION	4
3	ABX 183 SCREW, SET, EXTENDED POINT	2
4	ABX 184 BOX SECTION, 2L, HIGH-VISIBILITY	1
5	ABX 185 GUIDE MOUNTING BLOCK, CLAMPING, 2L	1
6	ABX 186 REAR CLAMP CHANNEL, 2L	1
7	ABX 187 PITCH CLAMP PLATE, 2L	1
8	ABX 188 PITCH CLAMP CHANNEL, 2L	1
9	GSB 319-02 SCREW, BHSC, #10-24 UNC X 0.500L	1
10	GSB 331-025 SCREW, BHSC, 5/16-18 UNC X 0.625L	9
11	GW 325-F WASHER, FLAT, 1/4", STAINLESS	2
12	SRT 557 ADJUSTABLE HANDLE .25-20 X 1.19	2

AUTOBOX® ABX-2L-B-V2 HOSE GUIDE ASSEMBLY ACCESSORIES
GUIDE TUBES, COLLETS, ANTI-TWIST CLAMPS AND HOSE STOPS

ABX GUIDE TUBES
ABX 11X-XX



StoneAge (SA) PART NUMBER GUIDE TUBE REFERENCE CHART			
GUIDE TUBE	BANSHEE	INSIDE DIAMETER, LENGTH	QTY
ABX 115-12	BN9.5	.459 in / 12 mm, 12.5 in. / 318 mm	3
ABX 115-36	BN9.5	.459 in / 12 mm, 36 in. / 914 mm	3
ABX 116-12	BN13	.546 in / 14 mm, 12.5 in. / 318 mm	3
ABX 116-36	BN13	.546 in / 14 mm, 36 in. / 914 mm	3
ABX 117-12	BN15	.674 in / 17 mm, 12.5 in. / 318 mm	3
ABX 117-36	BN15	.674 in / 17 mm, 36 in. / 914 mm	3
ABX 119-12	BN18	.745 in / 19 mm, 12.5 in. / 318 mm	3
ABX 119-36	BN18	.745 in / 19 mm, 36 in. / 914 mm	3

HOSE STOP COLLETS
ABX 121-XX



StoneAge (SA) PART NUMBER COLLET REFERENCE CHART		
PART NUMBER	DESCRIPTION	QTY
ABX 121-297	HOSE STOP COLLET .297 in. / 8 mm	1
ABX 121-328	HOSE STOP COLLET .328 in. / 8 mm	1
ABX 121-406	HOSE STOP COLLET .406 in. / 10 mm	1
ABX 121-438	HOSE STOP COLLET .438 in. / 11 mm	1
ABX 121-460	HOSE STOP COLLET .460 in. / 12 mm	1
ABX 121-484	HOSE STOP COLLET .484 in. / 12 mm	1
ABX 121-516	HOSE STOP COLLET .516 in. / 13 mm	1
ABX 121-547	HOSE STOP COLLET .547 in. / 14 mm	1
ABX 121-594	HOSE STOP COLLET .594 in. / 15 mm	1
ABX 121-625	HOSE STOP COLLET .625 in. / 16 mm	1

GUIDE TUBE
ANTI-TWIST CLAMPS
ABX 140-XX



**StoneAge (SA) PART NUMBER ANTI-TWIST CLAMP
REFERENCE CHART**

PART NUMBER	DESCRIPTION	QTY
ABX 140-625	GUIDE TUBE ANTI-TWIST CLAMP .625	2
ABX 140-840	GUIDE TUBE ANTI-TWIST CLAMP .840	2
ABX 140-875	GUIDE TUBE ANTI-TWIST CLAMP .875	2

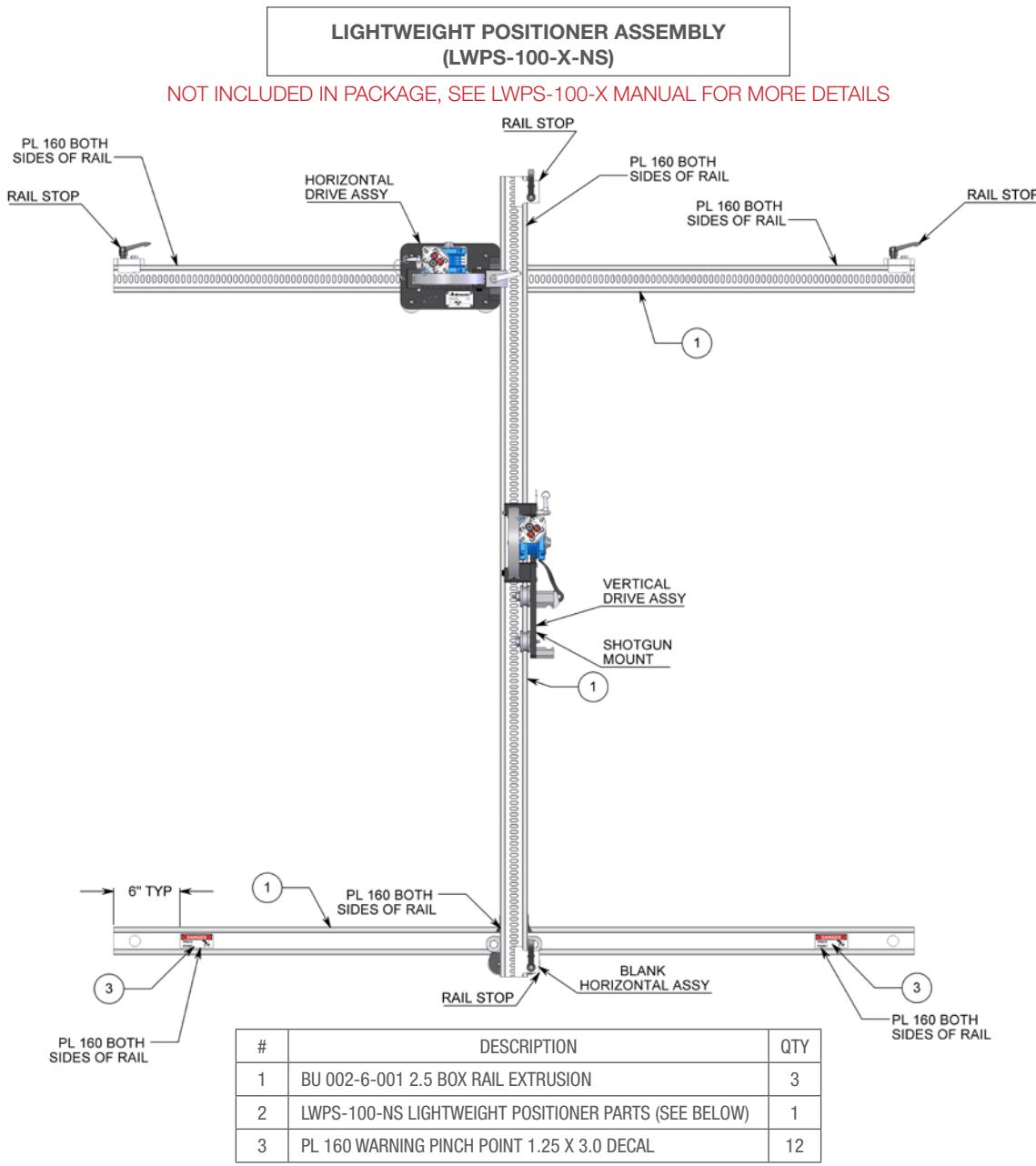
HOSE STOP CLAMPS
HS 121-XX-XX



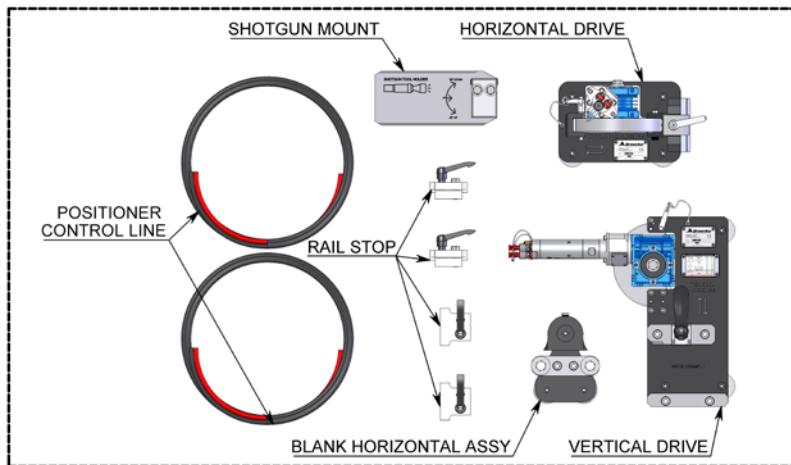
StoneAge (SA) PART NUMBER HOSE STOP REFERENCE CHART

PART NUMBER	DESCRIPTION	QTY
HS 121-27-34	HOSE STOP CLAMP ASSEMBLY, .27-34	3
HS 121-34-42	HOSE STOP CLAMP ASSEMBLY, .34-42	3
HS 121-42-50	HOSE STOP CLAMP ASSEMBLY, .42-50	3
HS 121-50-56	HOSE STOP CLAMP ASSEMBLY, .50-56	3
HS 121-56-61	HOSE STOP CLAMP ASSEMBLY, .56-61	3

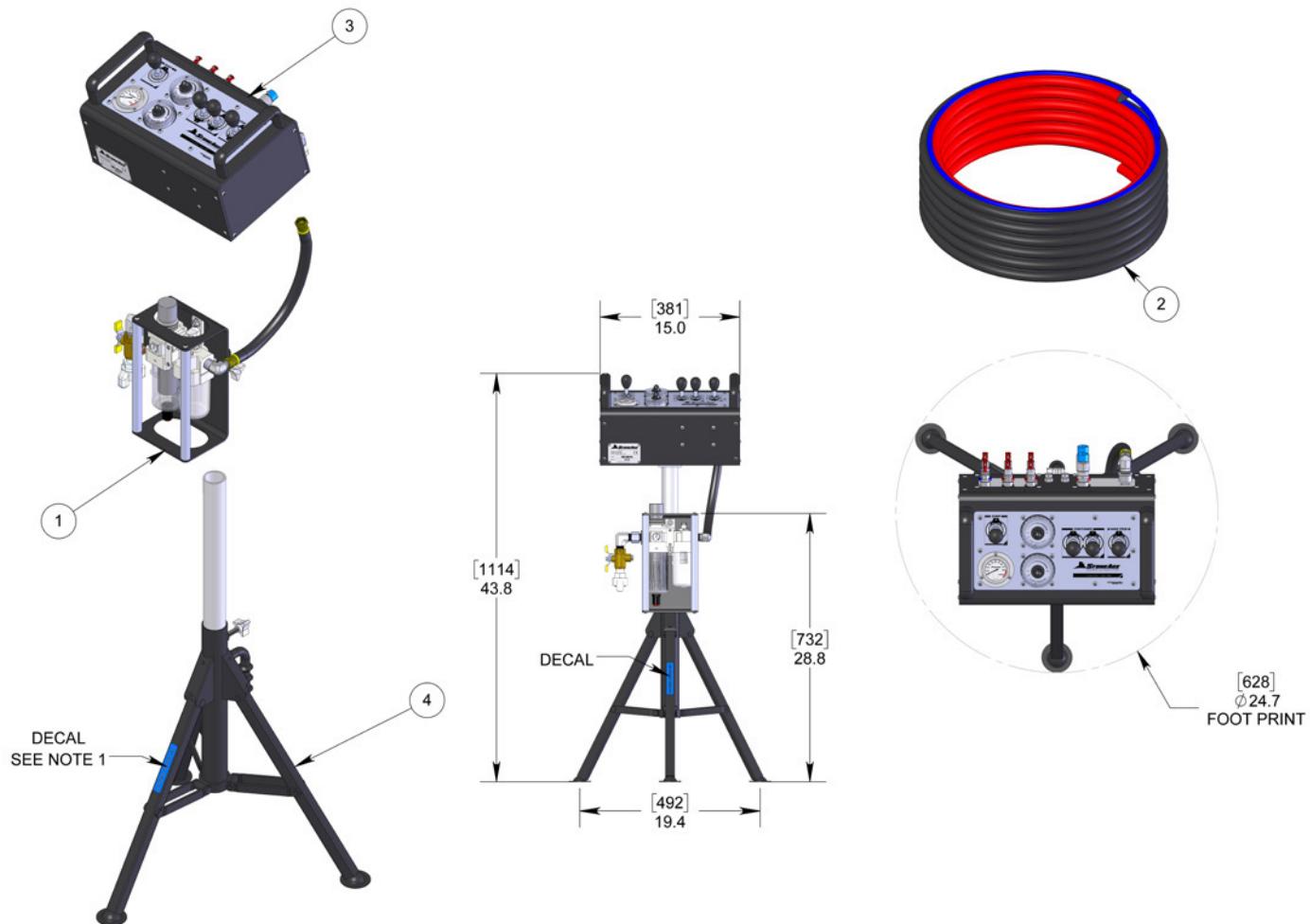
PART DIAGRAM



LWPS-100-NS ASSEMBLY, LWP SENTINEL NO RAILS NO SENSORS



AUTOBOX (CBX-ABX-PL)
CONTROL BOX ASSEMBLY



NOTES:

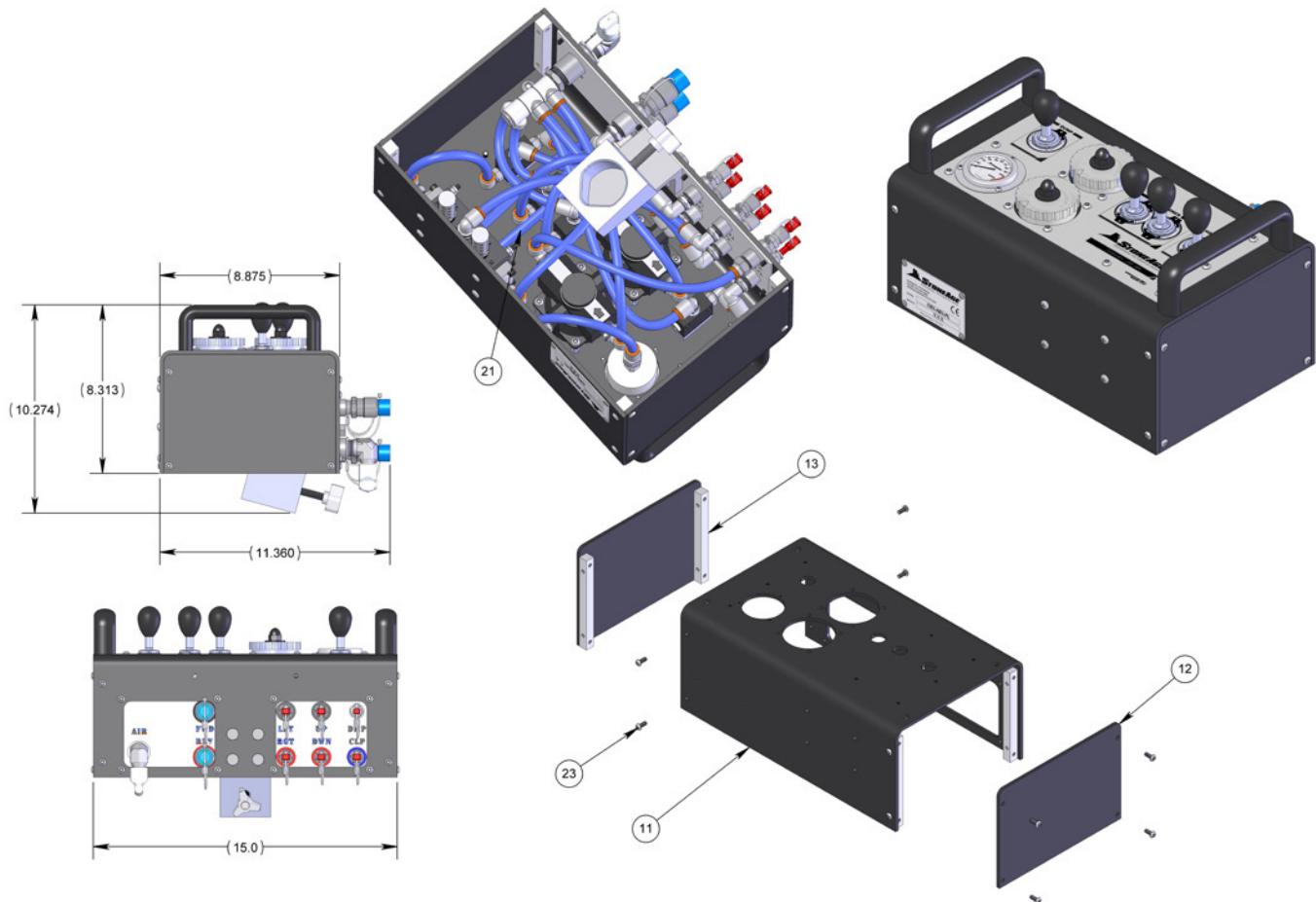
1. ALIGN FRL ASSY AND CONTROL BOX WITH DECAL ON FRONT LEG AS SHOWN.

#	PART NUMBER	QTY.
1	CB 310 FRL ASSEMBLY	1
2	CBL A025F-2PL10-1PL5 ABX CABLE ASSEMBLY, TRACTOR	1
3	CBX 300-PL CONTROL BOX ASSEMBLY	1
4	CBX 301 CB STAND ASSEMBLY	1

PART DIAGRAM

AUTOBOX(CBX 300-PL)
CONTROL BOX ASSEMBLY

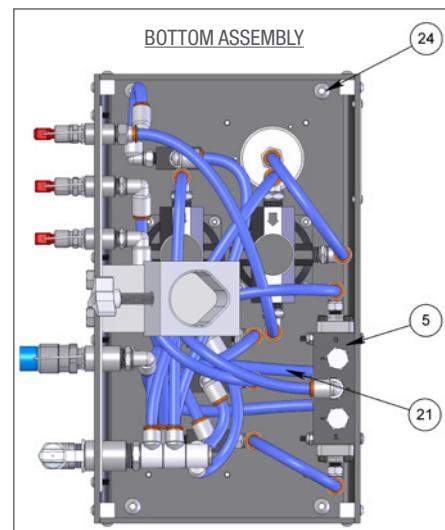
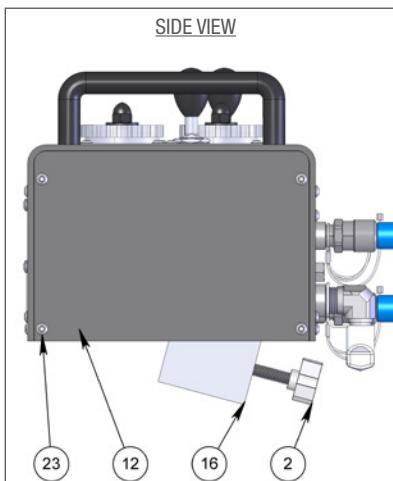
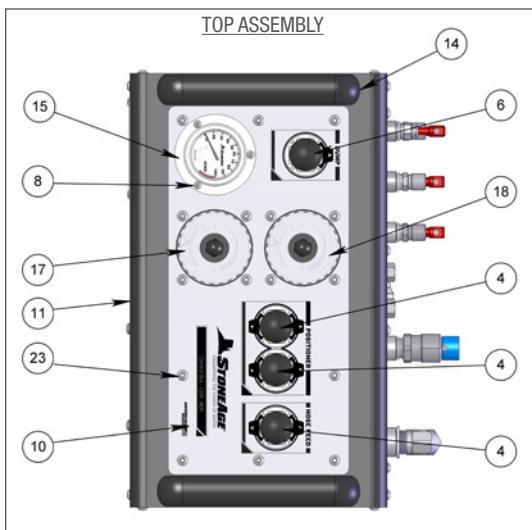
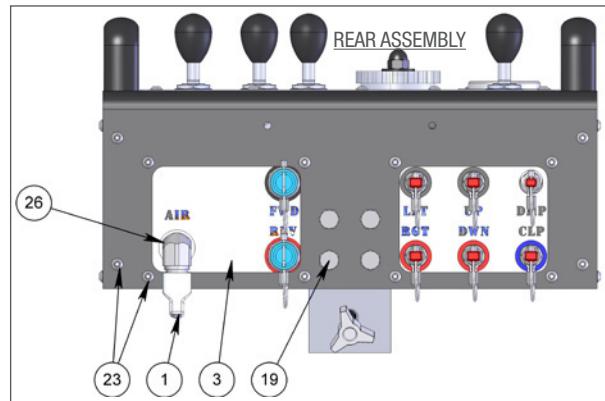
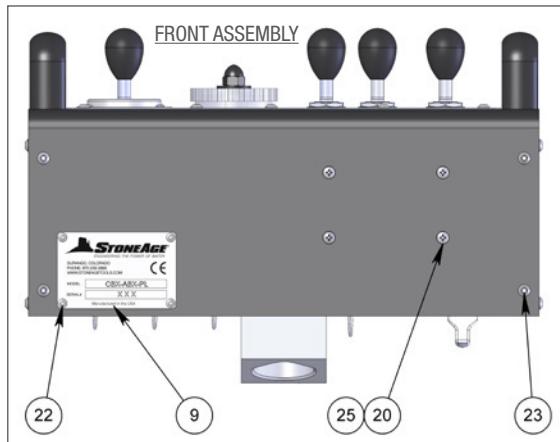
(CONTINUED ON NEXT PAGE)



#	PART NUMBER	QTY.
11	CBX 321 CBX FRAME, ABX-3L	1
12	CBX 322 SIDE PLATE	2
13	CBX 323 CB BRACE REAR	4
21	GPTB 0375-PUR95A-BL 3/8 OD URETHANE TUBING, BLUE	8FT
23	GTB 319-02-32 BHTS, TORX 10-32 X .50 SS	40

AUTOBOX(CBX 300-PL)
CONTROL BOX ASSEMBLY

(CONTINUED)

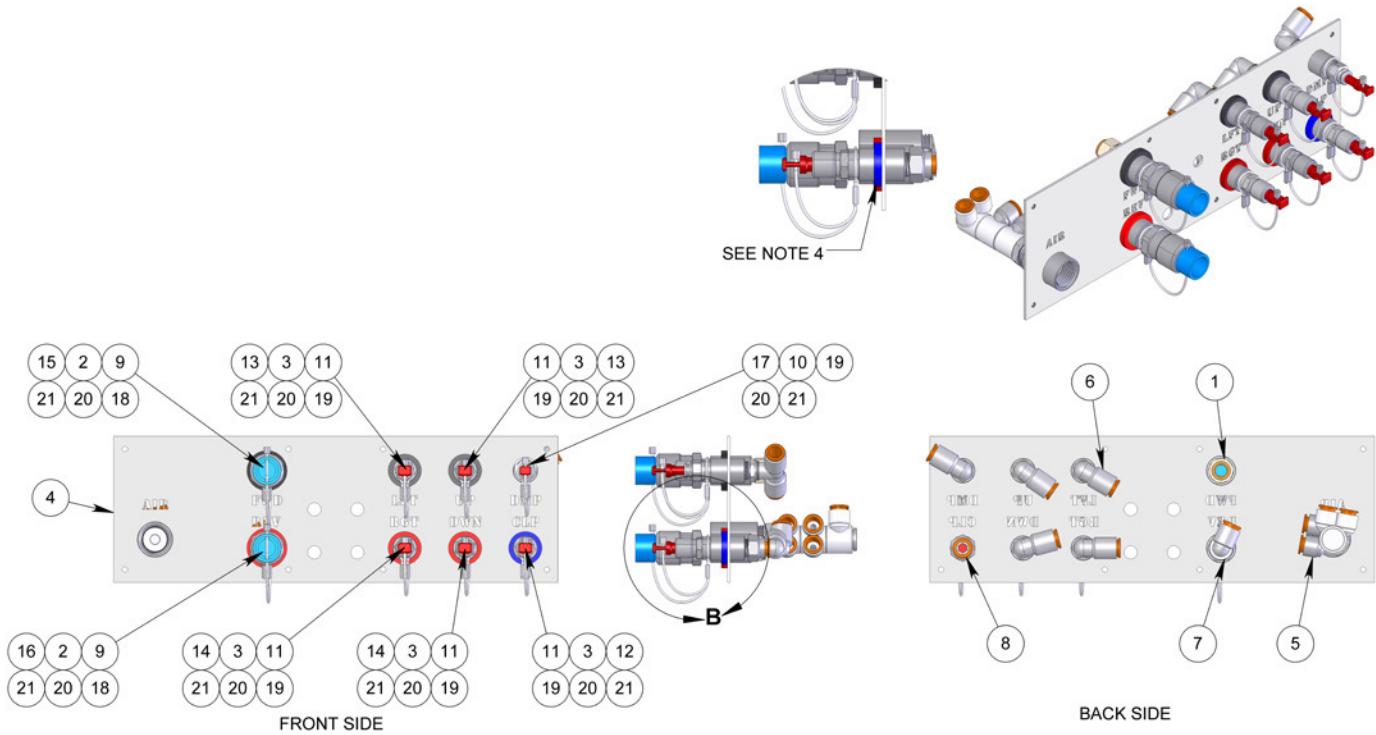


#	PART NUMBER	QTY.
1	BR 167 DUST CAP, J8	1
2	CB 314 3-LOBE KNOB	1
3	CB 327-001-PL COUPLER PLATE, REAR ASSEMBLY	1
4	CB 333-HD PNEUMATIC 3WAY ASSEMBLY	3
5	CB 334 RY3 AAA PILOTED SPOUL VALVE	1
6	CB 337-HD PNEUMATIC 3WAY ASSEMBLY - DUMP	1
7	CB 349 FTG, ADAPTER P4F PL6	1
8	CB 554 BHCS 6-32 X .50 SS	3
9	CBX 315-PL CE SERIAL PLATE, ABX 3L-V3	1
10	CBX 320 GRAPHIC OVERLAY	1
11	CBX 321 CBX FRAME, ABX-3L	1
12	CBX 322 SIDE PLATE	2
13	CBX 323 CB BRACE REAR (PREVIOUS PAGE)	4
14	CBX 325 HANDLE, TOP	2

15	CBX 326 212.53 2 120PSI 1/4 B FF STONEAGE	1
16	CBX 331 POLE MOUNT WELDMENT	1
17	CBX 335 REGULATOR ASSEMBLY (CLAMP PRESSURE)	1
18	CBX 336 REGULATOR ASSEMBLY (NUMBER OF HOSES)	1
19	GB 337-03 BOLT, HEX .37-16 X .75 SS	4
20	GPPH 319-08 PAN HD PHILLIPS MACH SCREW 10-24 X 2.00 SS	4
21	GPTB 0375-PUR95A-BL 3/8 OD URETHANE TUBING, BLUE	8FT
22	GR 125-SS-188-250 RIVET, BLIND, DOMED, SS, 0.125,.188-.250 L	4
23	GTB 319-02-32 BHTS, TORX 10-32 X .50 SS	40
24	GTB 331-025 BHTS, TORX .31-18 X .62 SS	4
25	HC 025.1 NUT, NYLOK 10-24 SS	4
26	HRS 573 FTG, ELBOW 90 P8MJ8M	1

PART DIAGRAM

AUTOBOX (CB 327-001-PL)
COUPLER PLATE, REAR ASSEMBLY

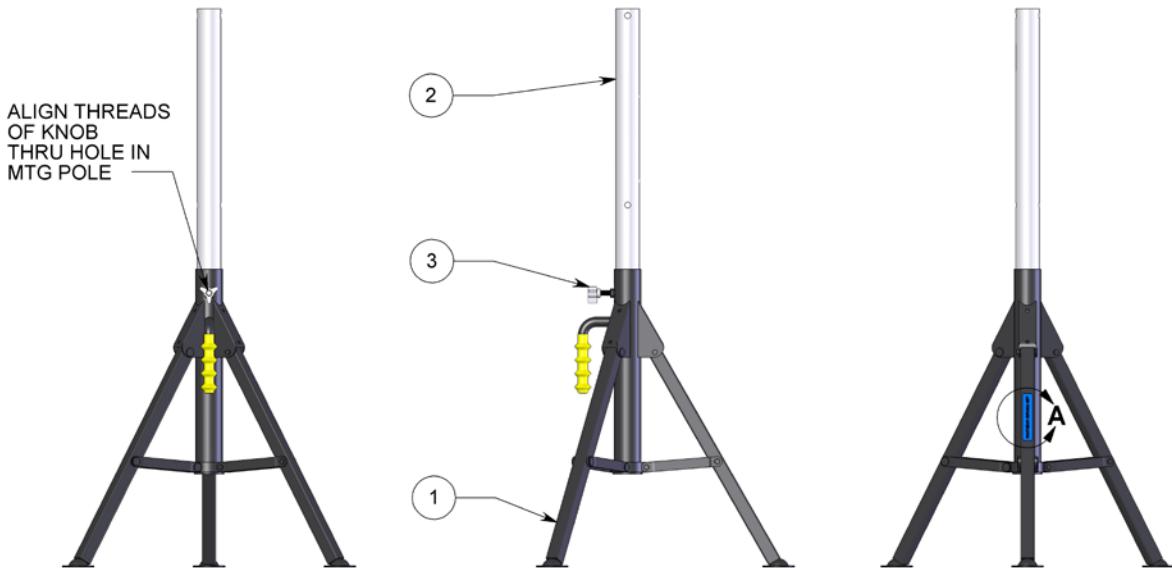


#	PART NUMBER	QTY
1	ABX 397 FTG, ADAPTER P6M PL6	1
2	ABXS 270 FTG, ADAPTER P6M PL10 EISELE	2
3	ABXS 273 FTG, ADAPTER P4M PL5 EISELE	5
4	CB 327.1-001-PL COUPLER PLATE, REAR WELDMENT	1
5	CB 331 FTG, MANIFOLD 90 P8M 6XPL6	1
6	CB 351 FTG, ELBOW SWIVEL 90 P4M PL6	5
7	CB 352 FTG, ELBOW SWIVEL 90 P6M PL6	1
8	CB 354 FTG, ADAPTER P4M PL6	1
9	CB 474 FTG, STEM PLUG PL10 MODIFIED	2
10	CB 498 FTG, STEM PLUG PL4 MODIFIED	1
11	CB 499 FTG, STEM PLUG PL5 MODIFIED	5

12	GP 011-B ID WASHER, RUBBER, MED, BLUE	1
13	GP 011-BK ID WASHER, RUBBER, MED, BLACK	2
14	GP 011-R ID WASHER, RUBBER, MED, RED	2
15	GP 012-BK ID WASHER, RUBBER, LARGE, BLACK	1
16	GP 012-RD ID WASHER, RUBBER, LARGE, RED	1
17	SM 309 FTG, ADAPTER P4M PL4	1
18	SRT 209.1.1 WIRE ROPE FOR CB 327-001-PL PL10 (CUT TO 6.75IN)	2
19	SRT 209.1.1 WIRE ROPE FOR CB 327-001-PL PL5 (CUT TO 5.75IN)	6
20	SRT 209.1.3 ALUMINUM SLEEVE	8
21	SRT 209.1.4 ALUMINUM STOP SLEEVE	8

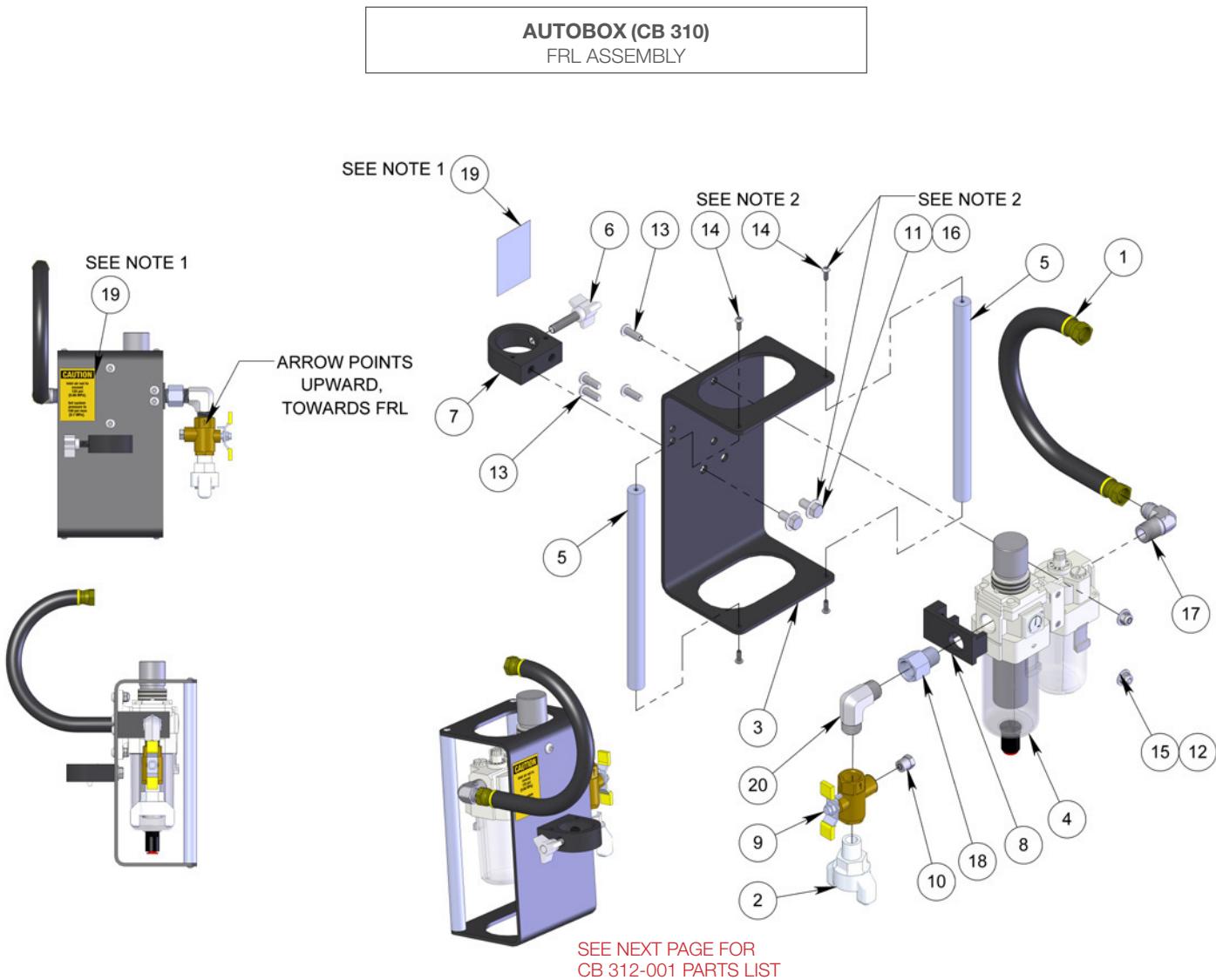
AUTOBOX (CBX 301)
CB STAND ASSEMBLY

DETAIL A
SEE NOTE 1



#	PART NUMBER	QTY.
1	CB 301.1 CUSTOM SUMNER STAND	1
2	CB 303 MTG POLE	1
3	CB 314 3-LOBE KNOB	1
4	PL 163 DECAL, LEG TOWARD OPERATOR	1

PART DIAGRAM

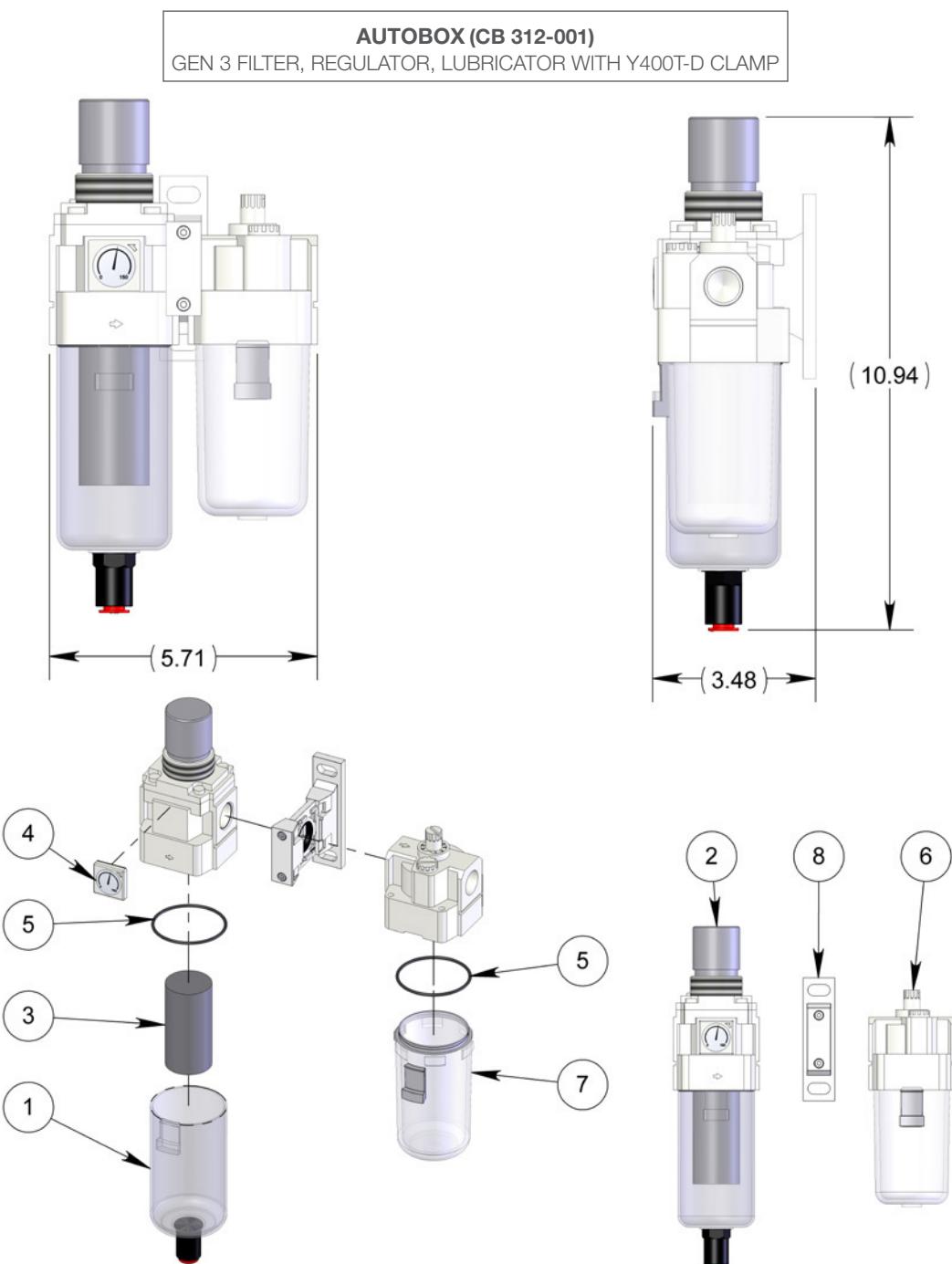


NOTE:

- CLEAN ALL DEBRIS & OILS BEFORE INSTALLING. INSTALL AT APPROXIMATE ORIENTATION AND LOCATION & AT ROOM TEMP.
- APPLY BLUE LOCTITE (PN: 242 OR EQUIVALENT) TO ALL STRAIGHT THREADED FASTENERS.
- APPLY THREAD SEALANT (LOCTITE 567 OR EQUIVALENT) TO ALL TAPERED THREADS.
- ADD BLUE GOOP WHICH IS A SWAGELOK BRAN ANTI-SEIZE TO ALL OTHER THREADED HARDWARE OR AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.

#	PART NUMBER	QTY.
1	CB 052-14 HOSE ASSY (FOR CB ABX)	1
2	CB 114 INLET FITTING	1
3	CB 311 FRL FRAME	1
4	CB 312-001 GEN3 FRL WITH Y400T-D CLAMP	1
5	CB 313 ROD	2
6	CB 314 3-LOBE KNOB	1
7	CB 328-001 POLE MOUNT	1
8	CB 395 FRL BRACKET	1
9	CB 792 VALVE, AUTODRAIN, P8	1
10	DB 026 MUFFLER, SINTERED BRONZE, P4	1

11	GB 337-03 BOLT, HEX .37-16 X .75 SS	2
12	GN 331-L NYLOK NUT SS	2
13	GSB 331-035 BHCS .31-18 X .88 LG SS	4
14	GTB 319-02-32 BHTS .19-32 X .50 LG TORX-SS	4
15	GW 331-F FLAT WASHER SS	2
16	GW 337-F FLAT WASHER SS	2
17	HRS 573 FITTING 90 DEG P8J8	1
18	ML 077-P8 BUSHING	1
19	PL 156-125 CAUTION INLET AIR, 125PSI MAX	1
20	SBT 292.1 FTG 90° ELBOW P8MP8M	1



#	PART NUMBER	QTY.
1	CB 312.1.1 FILTER REGULATOR BOWL	1
2	CB 312.1.3 FILTER BODY	1
3	CB 312.1.6 REPLACEMENT SMC FILTER	1
4	CB 312.1.7 SMC GAUGE WITH LENS	1
5	CB 312.1.8 ORING FOR AW40-A REGULATOR	2
6	CB 312.2.1 LUBRICATOR BODY	1
7	CB 312.2.2 LUBRICATOR BOWL	1
8	CB 312.3-001MODIFIED Y400T-D BRACKET ASSEMBLY, FRL	1

TERMS AND CONDITIONS

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.

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.stoneagetoools.com/terms>

<http://www.stoneagetoools.com/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.stoneagetoools.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 es-

tablish 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.

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 STOP-PAGE, 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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