



Sentinel
EXCHANGER CLEANING PLATFORM BY **StoneAge**

AUTOBOX® (ABXS-3L) HOSE TRACTOR WITH SENTINEL TECHNOLOGY USER MANUAL

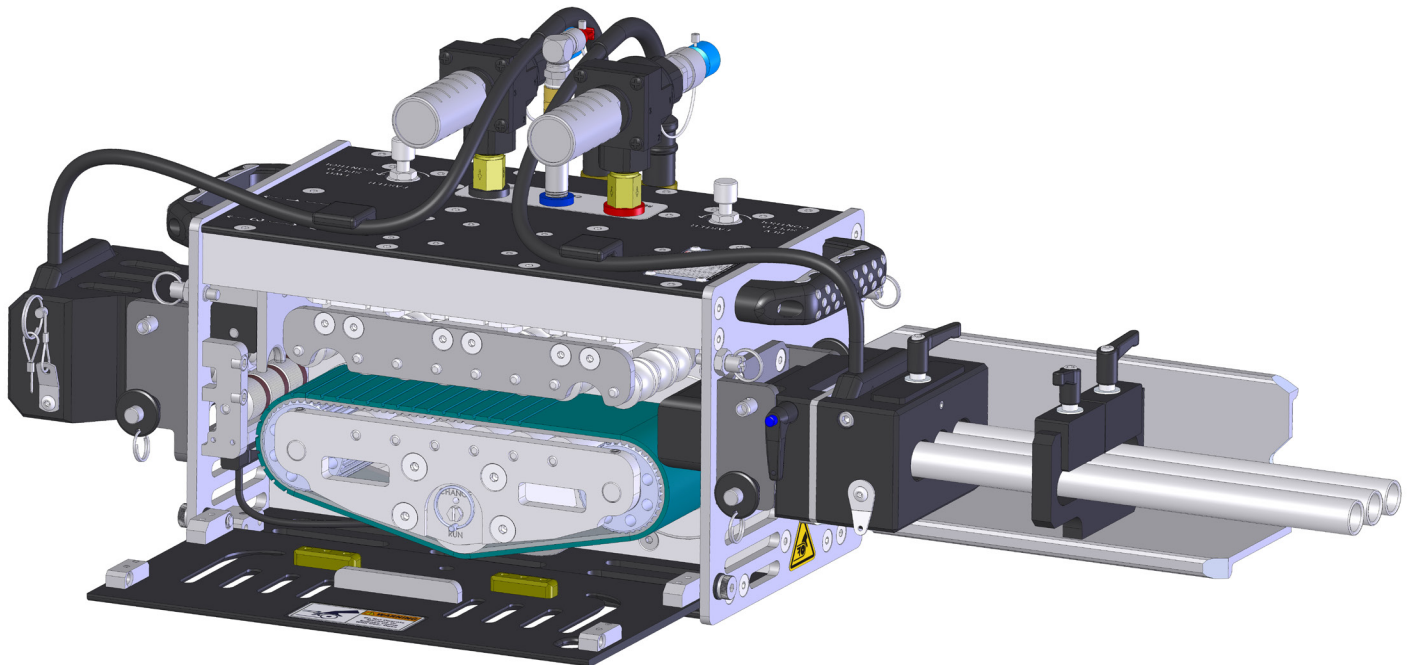


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MANUFACTURER'S INFORMATION

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

StoneAge NL
Reedijk 7Q
3274 KE Heinenoord
Netherlands
(+31) (0) 85 902 73 70
sales-NL@stoneagetools.com

StoneAge UK
Unit 3
Crucible Business Park
Woodbury Lane
Norton
Worcester
Worcestershire, WR5 2DQ
United Kingdom
+44 (0) 1684 892065
sales-eu@stoneagetools.com

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>

DESCRIPTION OF EQUIPMENT AND INTENDED USE

The new AUTOBOX® ABXS-3L Hose Tractor design keeps all the same field proven features and adds integrated sensing technology.

The ABXS-3L Hose Tractor is designed to automatically feed lances and optimize cleaning with integrated, user-adjustable, speed controls. It also tracks lance position in the tube and detects and clears blockages. The Hose 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.

This Hose Tractor 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.

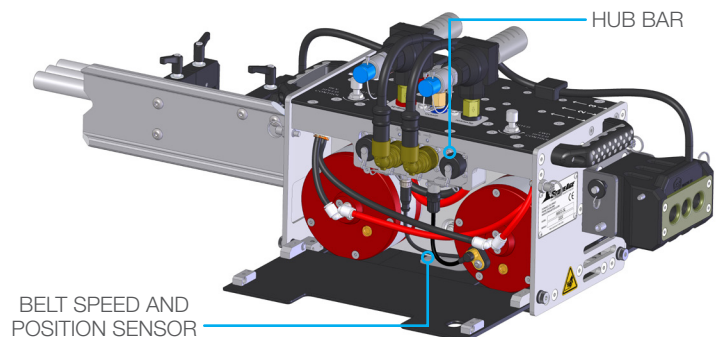
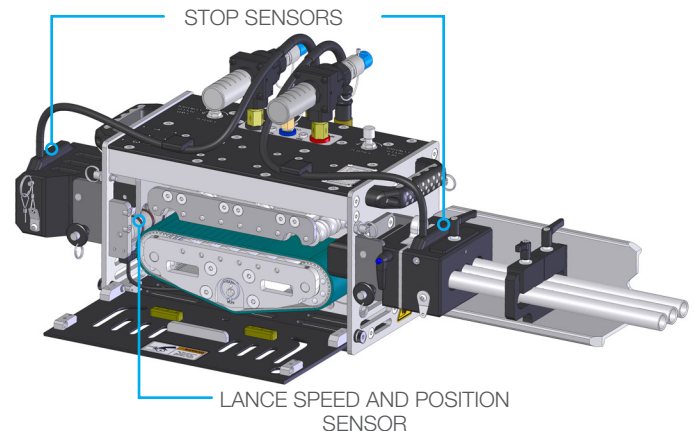
The ABXS-3L Hose Tractor was designed to accommodate up to three simultaneous flex lances ranging in size from 3/2 to 8/4 matched with the appropriate BN9.5, BN13, BN15, or BN18 size Banshee.

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

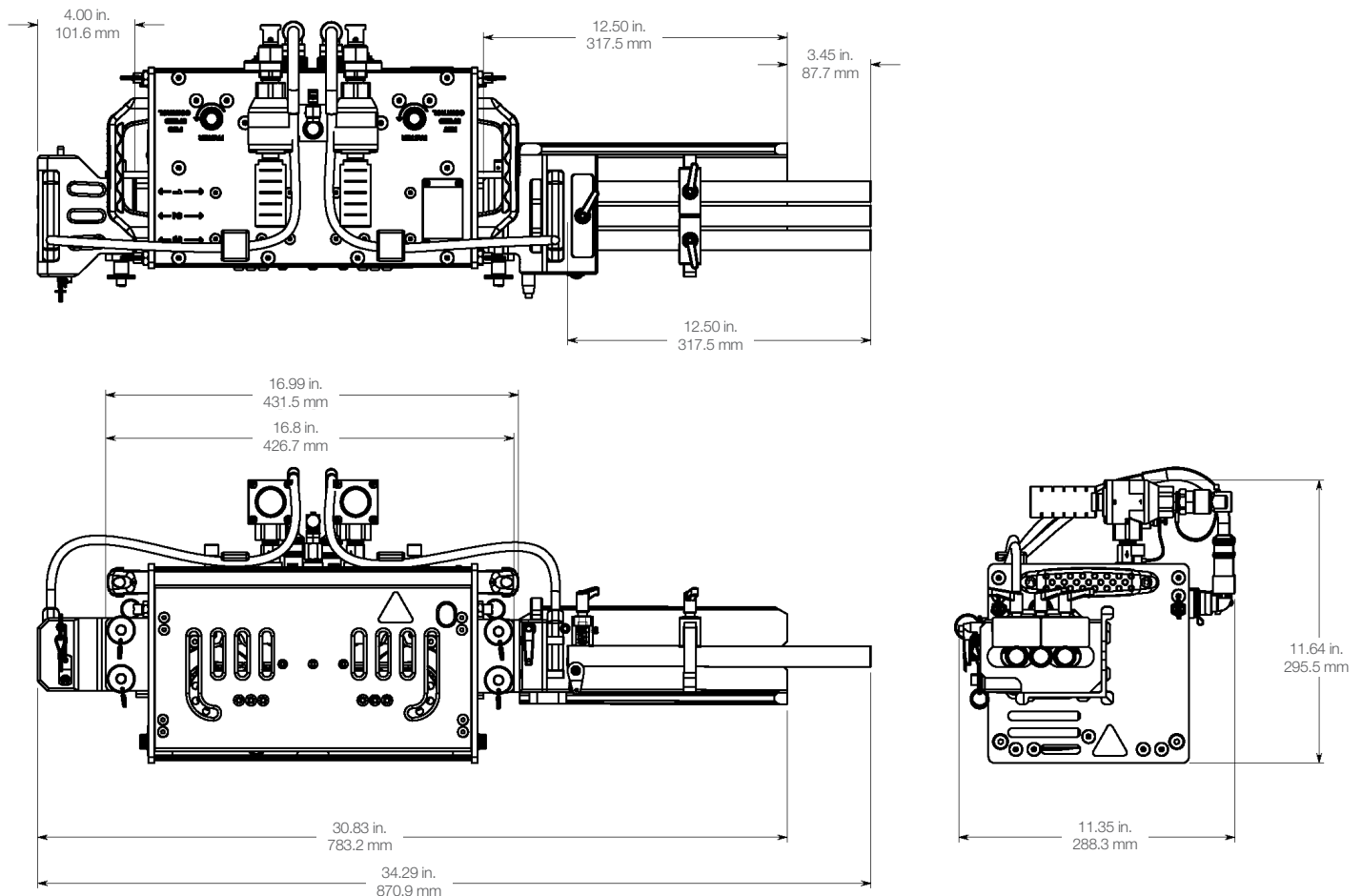
NEW FEATURES:

HOSE TRACTOR (ABXS-3L) WITH HOSE GUIDE (ABXS 160)

- Stop Sensors
 - Proprietary design
 - Reliably senses footfalls and all hose crimps
 - Wear indicating rings
 - Replaceable 17-4 SS wear plate and anti-withdrawal collets
 - Contactless design
 - Easily removable sensor unit for maintenance and replacement
- Hub Bar
 - Integrated into ABXS frame Durable bayonet style external connectors Sealed and factory pressurized
- Lance Speed and Position Sensor
 - Independent suspension allows each lance to be detected separately
 - Flat knurled rollers for traction and accuracy
 - Pneumatic idlers pressurized from clamp circuit
 - Contactless magnetic sensor
 - Easily removable sensor unit for maintenance and replacement
- Belt Speed and Position Sensor
 - Heavy-duty sealed sensor
 - Integrated into air motor for durability
 - Single mounting screw, easily replaced



HOSE TRACTOR (ABXS-3L)		Imperial	Metric
Weight:	Without rear block, guide, and pins	52.6 lbs	24 kg
	With rear block, stop sensor, pins, NO GUIDE	56.4 lbs	26 kg
	Complete; with 3 guide tubes, collet, and, stop sensors	68.2 lbs	31 kg
Dimensions:	Tractor (only)	11.35 x 11.64 x 16.99 in.	288.3 x 295.5 x 431.5 mm
	Tractor with Hose Guide and 12 in. guide tubes	11.35 x 11.64 x 34.29 in	288.3 x 295.5 x 870.9 mm
Feed Rate: <i>dependent upon application and hose size</i>		0.3 - 3.0 ft/sec	91 - 914 mm/sec
Push/Pull Force		15 -150 lbs (5-75 lbs per lance)	7-68 kg (2-23 kg per lance)
System Air Consumption		50 cfm at 100 psi	1416 lpm at 6,8 bar
Manway Access:		18 in.	457 mm
HOSE GUIDE ASSEMBLY (ABXS 160)			
Weight:	With guide tubes and stop sensor, NO COLLET	11 lbs	5 kg
	Without collet or guide tubes, WITH STOP SENSOR	8 lbs	3.6 kg
Dimensions:		5.39 x 4.8 x 12.5 in.	137 x 122 x 317.5 mm
Pitch Adjustment Range (Dual)		5/8 - 5.0 in.	16 - 127 mm
Pitch Adjustment Range (Triple)		5/8 - 2.5 in.	16 - 64 mm
CONTROLLER (CTRL-101) AND POWER HUB (PH-A0302A00C20)		For detailed up to date information on these components. https://www.stoneagetools.com/assets/pdf/manuals	
LIGHTWEIGHT POSITIONER (LWPS-100-X)		For detailed up to date information on these components. https://www.stoneagetools.com/assets/pdf/manuals	





EC DECLARATION OF CONFORMITY

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

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

Declare that: **AutoBox® Hose Tractor (ABXS-3L)
for high pressure water cleaning of system parts.**

Is compliant with the following Directives and Standards:

- EU- Machinery Directive (2006/42/EC)
- EU- RoHS Directive (2011/65/EU)
- EU- EMC Directive (2014/30/EU)
- EN ISO 12100:2010 (e) Safety of machinery – General principles for design – Risk assessment and risk reduction
- EN ISO 4414:2010 (en) Pneumatic Fluid Power – General rules and safety requirements for systems and components
- EN 55011:2009 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
- EN 60204-1:2018 Safety of machinery– Electrical equipment of machines

This device complies with part 15 of the FCC rules and Industry Canada ICES-003. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Technical File for AutoBox® Hose Tractor (ABXS-3L) 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
Liz Mancuso, Director of Engineering

09/29/21
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 (ABXS-3L)
for high pressure water cleaning of system parts.**

Is compliant with the following Directives and Standards:

- S.I. 2008:1597 - Supply of Machinery (Safety) Regulations 2008
- S.I. 2012:3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
- S.I. 2016:1091 - Electromagnetic Compatibility Regulations 2016
- S.I. 2008:1597 Safety of machinery – General principles for design – Risk assessment and risk reduction
- S.I. 2008:1597 Pneumatic Fluid Power – General rules and safety requirements for systems and components
- S.I. 2016:1091 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
- S.I. 2016:1091 Safety of machinery– Electrical equipment of machines
- S.I. 2016:1091 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonized Standard for Electromagnetic Compatibility

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

09/29/21
Date



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® (ABXS-3L) 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 read 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.

CAUTION

Inlet air not to exceed
125 psi
[8.6 bar]

Set system pressure to
100 psi max
[6.8 bar]

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.

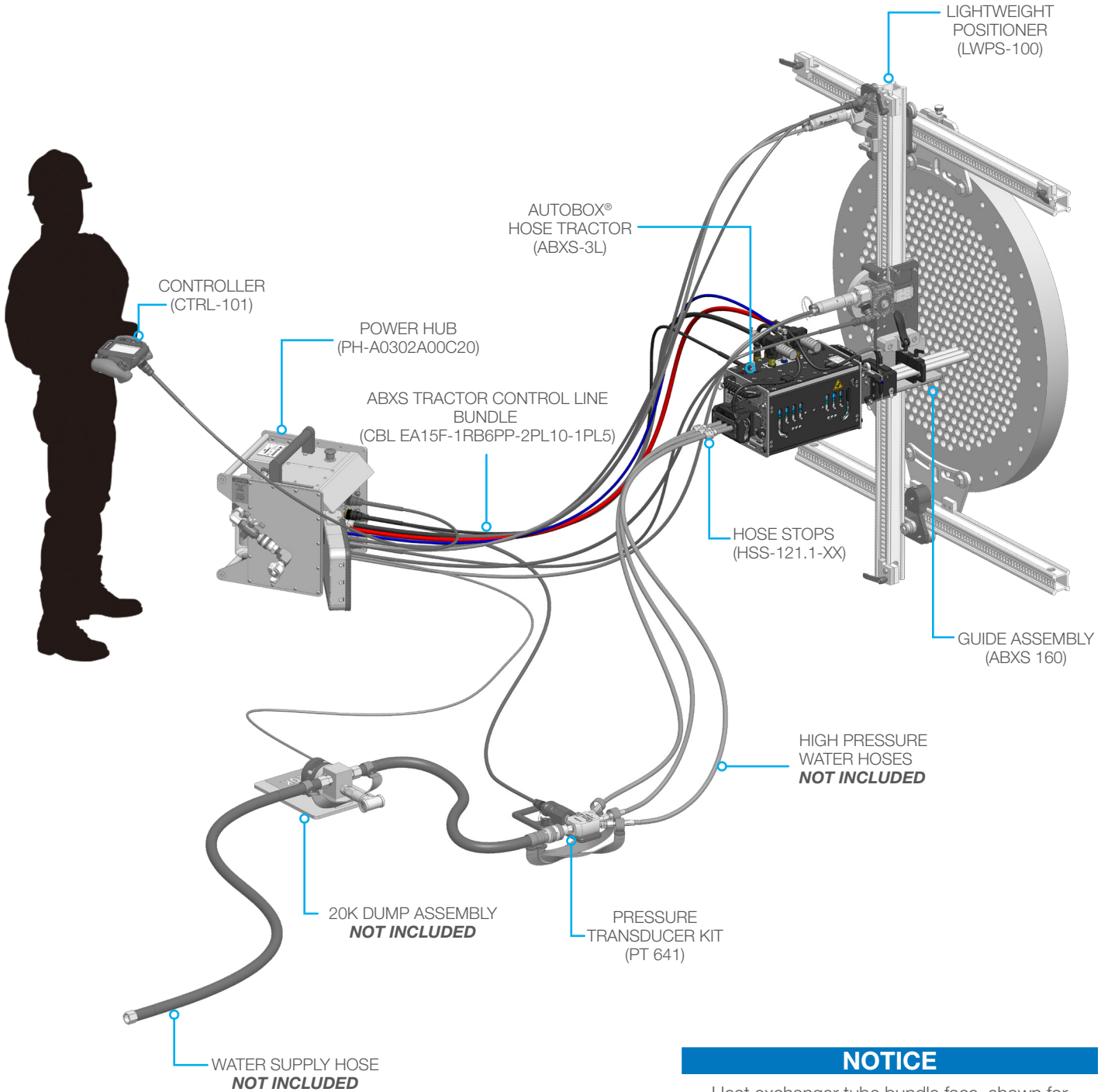
- Do not exceed the maximum operating pressure specified for any component in a system.
- The immediate work area MUST be marked off to keep out untrained persons.
- Inspect the equipment for visible signs of deterioration, damage, and improper assembly. Do not operate if damaged, until repaired.
- Make sure all threaded connections are tight and free of leaks.
- Users of the AUTOBOX® (ABXS-3L) 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 Controller should be located in a safe location where the Operator has good visibility of the tool entering the exchanger tubes. The AUTOBOX® (ABXS-3L) Hose Tractor and Controller 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® (ABXS-3L) 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® (ABXS-3L) Hose Tractor lift with care to prevent bodily injury.
- Do not operate the AUTOBOX® (ABXS-3L) 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® (ABXS-3L) Hose Tractor are closed and securely latched.
- Test the Controller before operating the AUTOBOX® (ABXS-3L) 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.

**AUTOBOX® (ABXS-3L) HOSE TRACTOR
AND (ABXS 160) HOSE GUIDE
SHOWN IN THE SYSTEM ASSEMBLY**



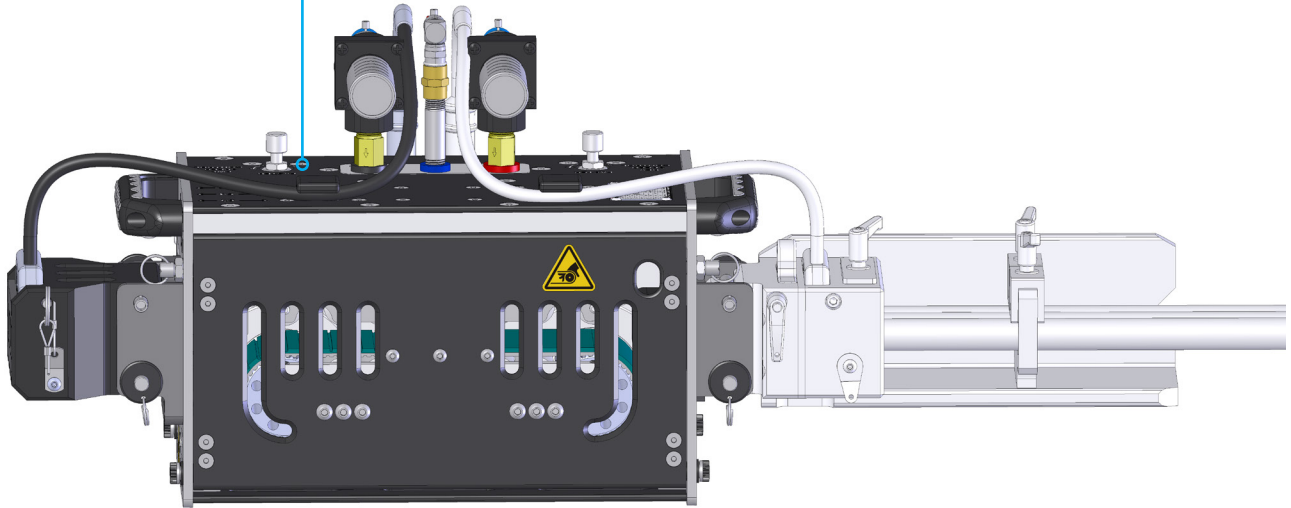
NOTICE

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

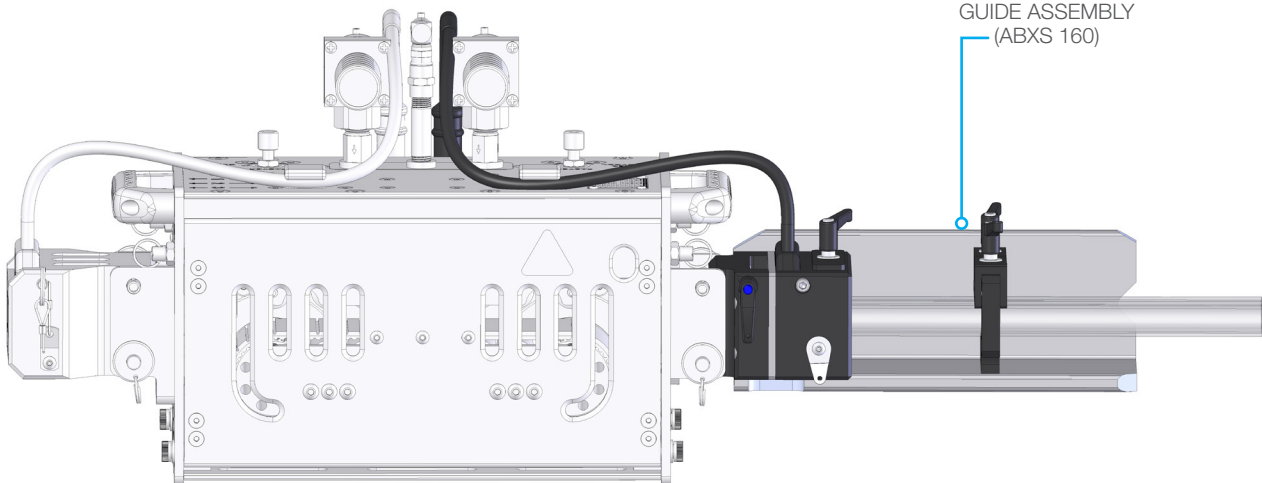
**AUTOBOX® (ABXS-3L) HOSE TRACTOR WITH
HOSE GUIDE AND CONTROL LINE BUNDLE**

AUTOBOX® HOSE TRACTOR
(ABXS-3L)

SEE THE PART DIAGRAM SECTION IN THIS MANUAL
FOR DETAILED PART INFORMATION



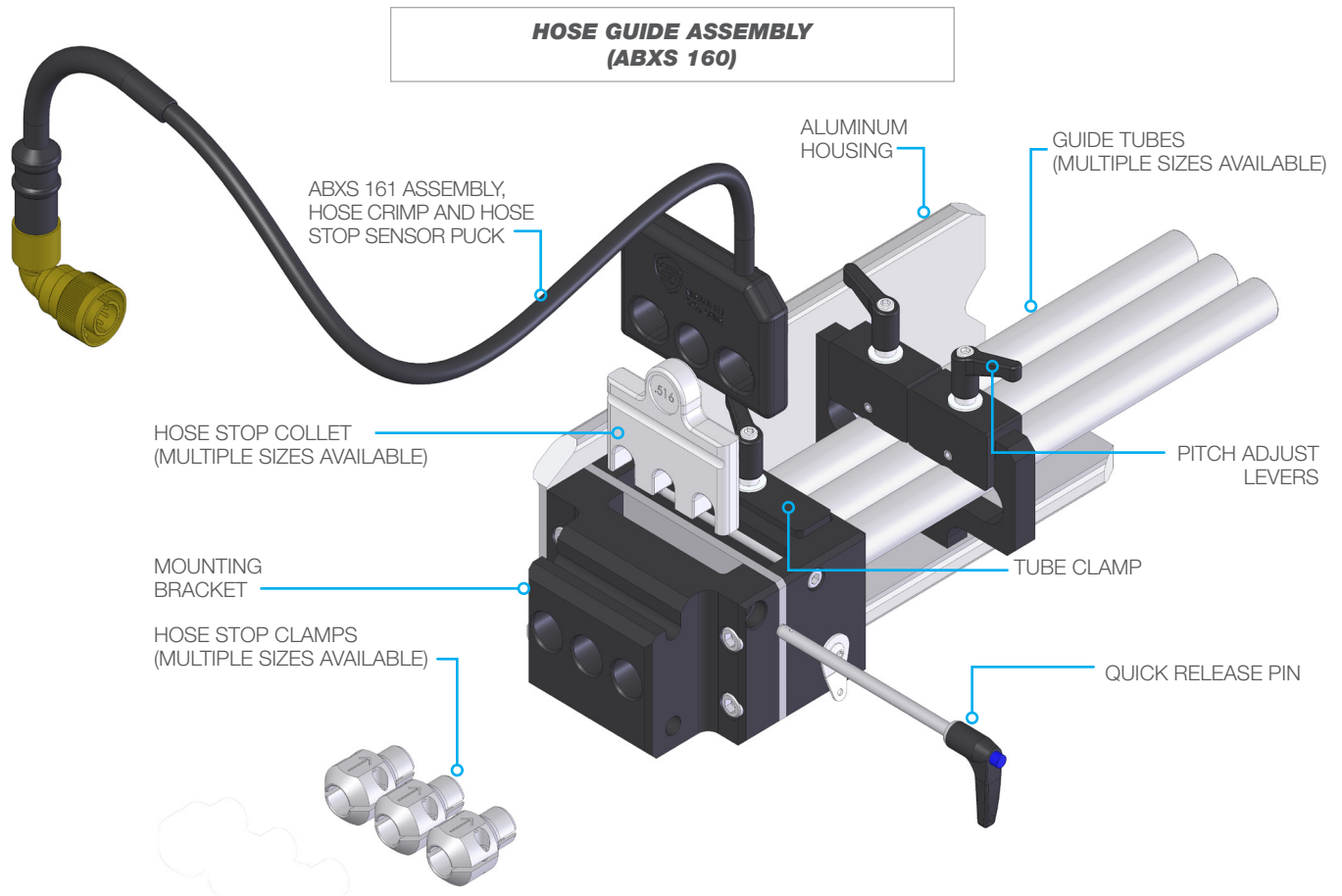
GUIDE ASSEMBLY
(ABXS 160)



15FT (4.5m) ABXS TRACTOR CONTROL LINE BUNDLE
(CBL EA15F-1RB6PP-2PL10-1PL5)



HOSE GUIDE ASSEMBLY (ABXS 160) - OVERVIEW



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. / 7.5 mm	ABX 171-297	.27-.34 / 7-9 mm	HSS 121-27-34
	3/4, 4/2	2240D-025, 2440D-02	.328 in. / 8.3 mm	ABX 171-328	.27-.34 / 7-9 mm	HSS 121-27-34
	3/6, 5/2	2240D-03	.406 in. / 10.3 mm	ABX 171-406	.34-.42 / 9-11 mm	HSS 121-34-42
.44-.50 in (11 mm - 13 mm)	4/4	2448D-025	.438 in. / 11.1 mm	ABX 171-438	.34-.42 / 9-11 mm	HSS 121-34-42
	4/6, 5/4		.460 in. / 11.7 mm	ABX 171-460	.42-.50 / 11-13 mm	HSS 121-42-50
	6/2	2240D-04, 2640D-025	.484 in. / 12.3 mm	ABX 171-484	.42-.50 / 11-13 mm	HSS 121-42-50
	6/4	2440D-04, 2740D-025	.516 in. / 13.1 mm	ABX 171-516	.50-.56 / 13-14 mm	HSS 121-50-56
.52-.61 in (13 mm - 16 mm)	5/6, 8/2	2240D-05, 2740D-03	.547 in. / 13.9 mm	ABX 171-547	.50-.56 / 13-14 mm	HSS 121-50-56
	5/6H, 8/4		.594 in. / 15.1 mm	ABX 171-594	.56-.61 / 14-16 mm	HSS 121-56-61
		2440D-05	.625 in. / 15.9 mm	ABX 171-625	.56-.61 / 14-16 mm	HSS 121-56-61

StoneAge (SA) PART NUMBER GUIDE TUBE REFERENCE CHART

GUIDE TUBE	BANSHEE	INSIDE DIAMETER, LENGTH
ABX 115-12	BN9.5	.459 in / 11.7 mm, 12.5 in. / 318 mm
ABX 115-36	BN9.5	.459 in / 11.7 mm, 36 in. / 914 mm
ABX 116-12	BN13	.546 in / 13.9 mm, 12.5 in. / 318 mm
ABX 116-36	BN13	.546 in / 13.9 mm, 36 in. / 914 mm
ABX 117-12	BN15	.674 in / 17.1 mm, 12.5 in. / 318 mm
ABX 117-36	BN15	.674 in / 17.1 mm, 36 in. / 914 mm
ABX 119-12	BN18	.745 in / 18.9 mm, 12.5 in. / 318 mm
ABX 119-36	BN18	.745 in / 18.9 mm, 36 in. / 914 mm

HOSE GUIDE ASSEMBLY

1. Select the appropriate Guide Tube size and length for the application from the chart at the bottom of the previous page.
 - 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.

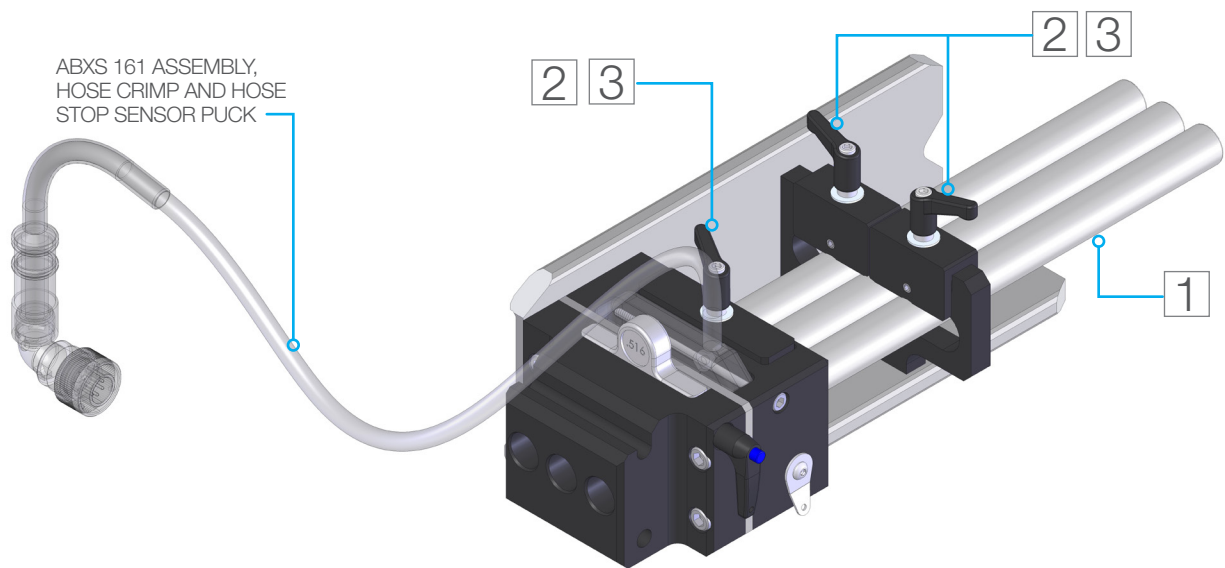
NOTICE

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

2. To remove the existing Guide Tubes, loosen the Tube Clamp Lever and the two Pitch Adjust Levers, located on top of the Guide Assembly.
3. Secure the Guide Tubes by tightening the Tube Clamp Lever and Pitch Adjust Levers, when the desired pitch has been set.
4. Select the appropriate Collet and Hose Stops from the chart on the previous page and reserve them for future Hose and Collet installation instructions in this manual.

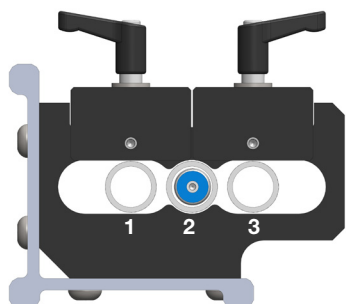
⚠ WARNING

Appropriate size Collet selection is **CRITICAL** to ensuring proper backout prevention of the tool. Use the chart on the previous page to select the proper Collet and Hose Stop sizes per hose diameter. Always confirm backout prevention performance before operating the system at high pressure.

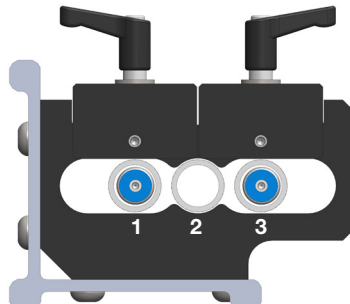


1, 2, or 3 HOSE LOADING POSITIONS

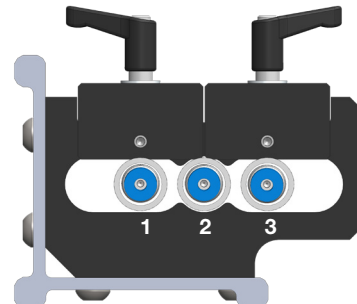
The AUTOBOX® (ABXS-3L) Hose Tractor can be used as a 1, 2, or 3 Lance tool. The diagrams below show which Guide Tubes to load for best performance. The numbered positions correspond with the indicator markings on the top of the Hose Tractor and the identifiers in the Controller interface.



SINGLE HOSE LOAD



DUAL HOSE LOAD

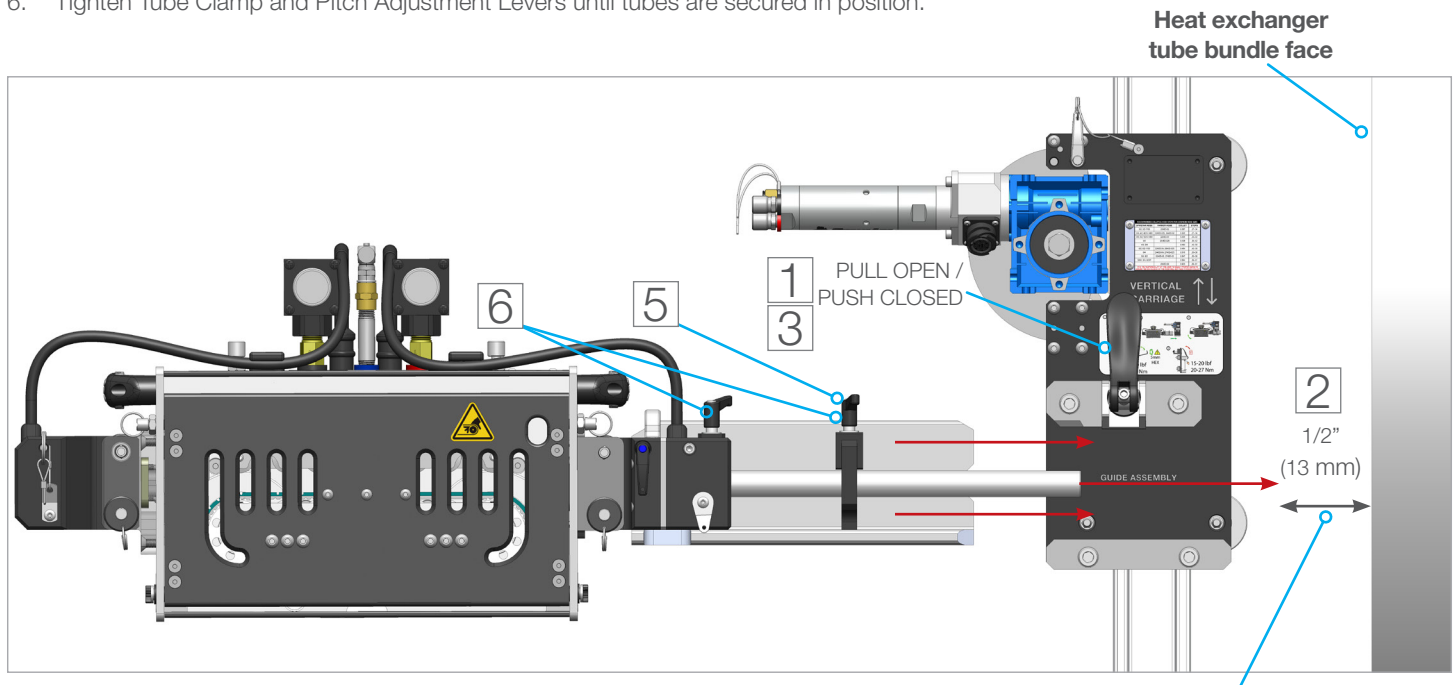


TRIPLE HOSE LOAD

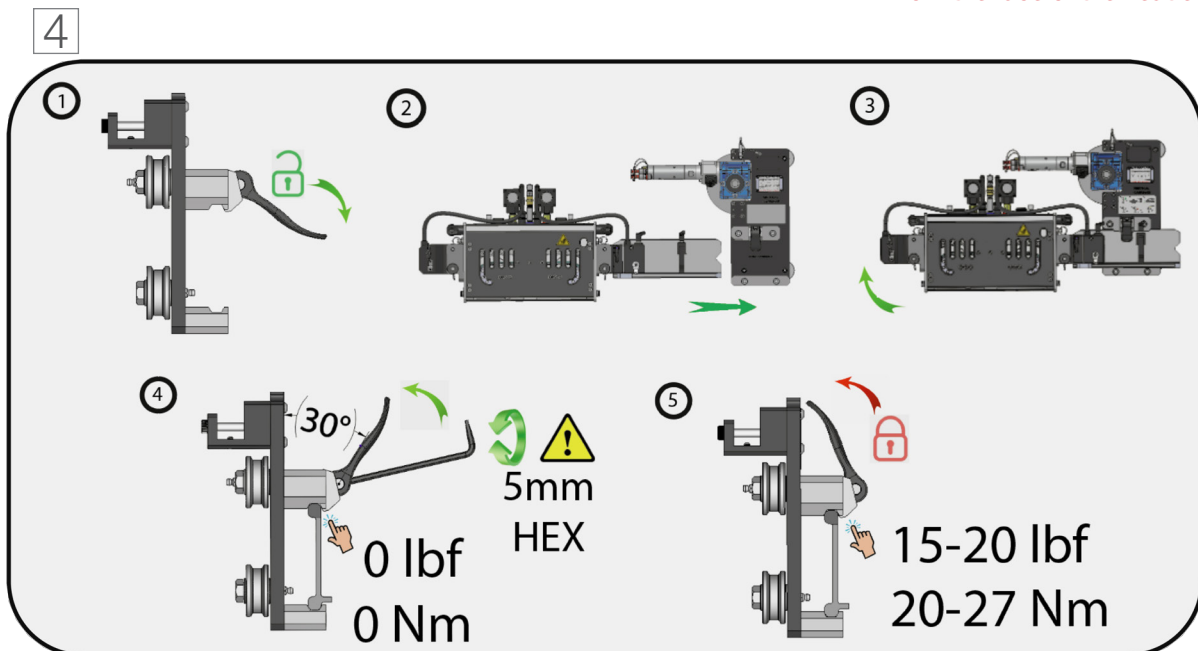
HOSE GUIDE ASSEMBLY TO LIGHTWEIGHT POSITIONER SET UP

ATTACH GUIDE ASSEMBLY TO LIGHTWEIGHT POSITIONER

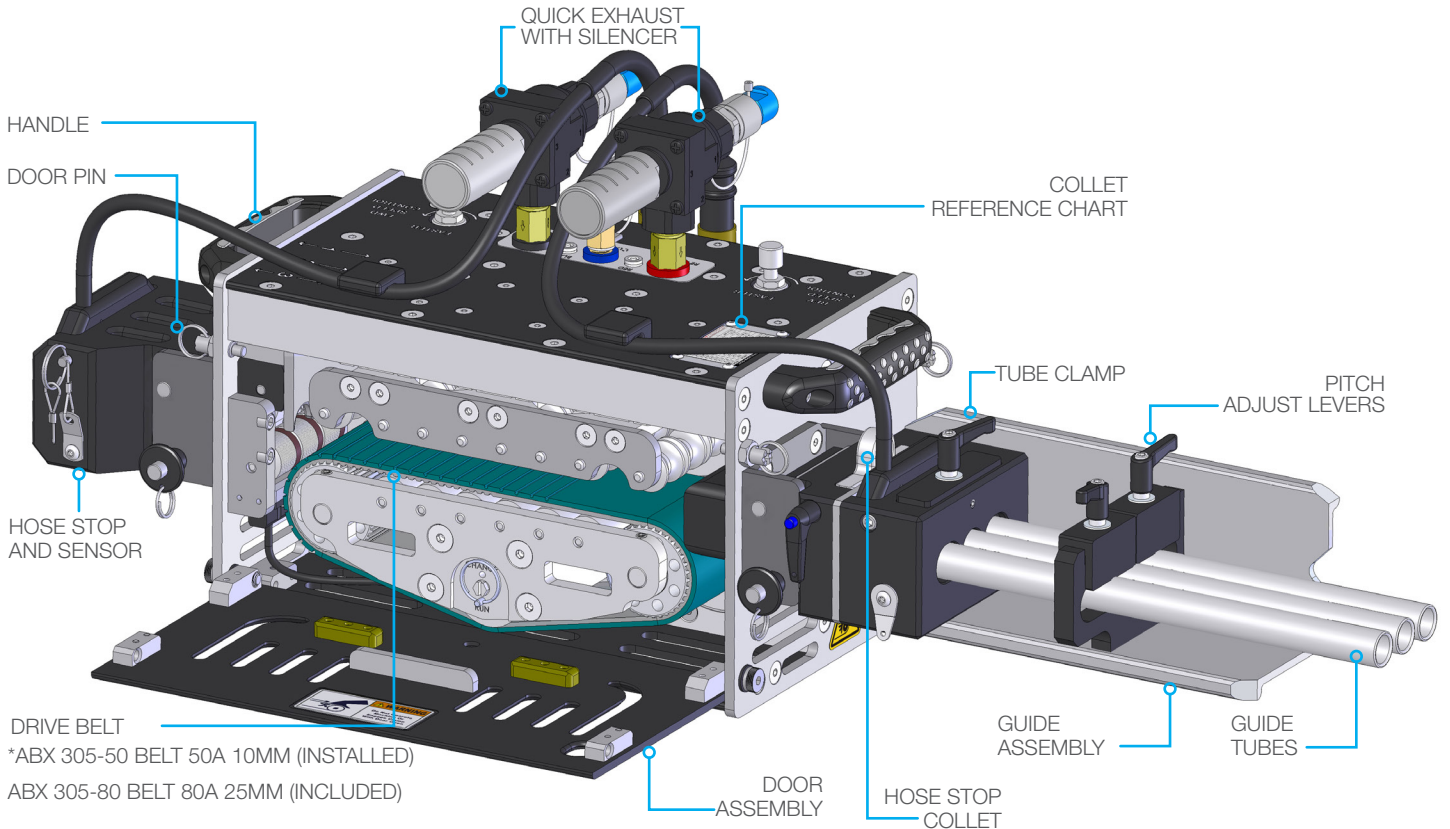
1. Pull to open the Clamp Handle on the Vertical Carriage and slide the Tractor/Guide Tube Assembly into the Clamp Mount.
2. Leave 1/2" (13mm) between the end of the Guide Tube and the face of the exchanger.
3. Lock the Clamp Handle in place when the assembly is in position.
4. If the Clamp Handle feels too loose or too tight, it can be adjusted with a 5mm Allen Key. Follow the instructions on the decal on the Vertical Drive. (Also shown below)
5. Loosen the Pitch Adjustment Levers and adjust the guide tubes until they are in line with pitch of the tubes in the bundle.
6. Tighten Tube Clamp and Pitch Adjustment Levers until tubes are secured in position.



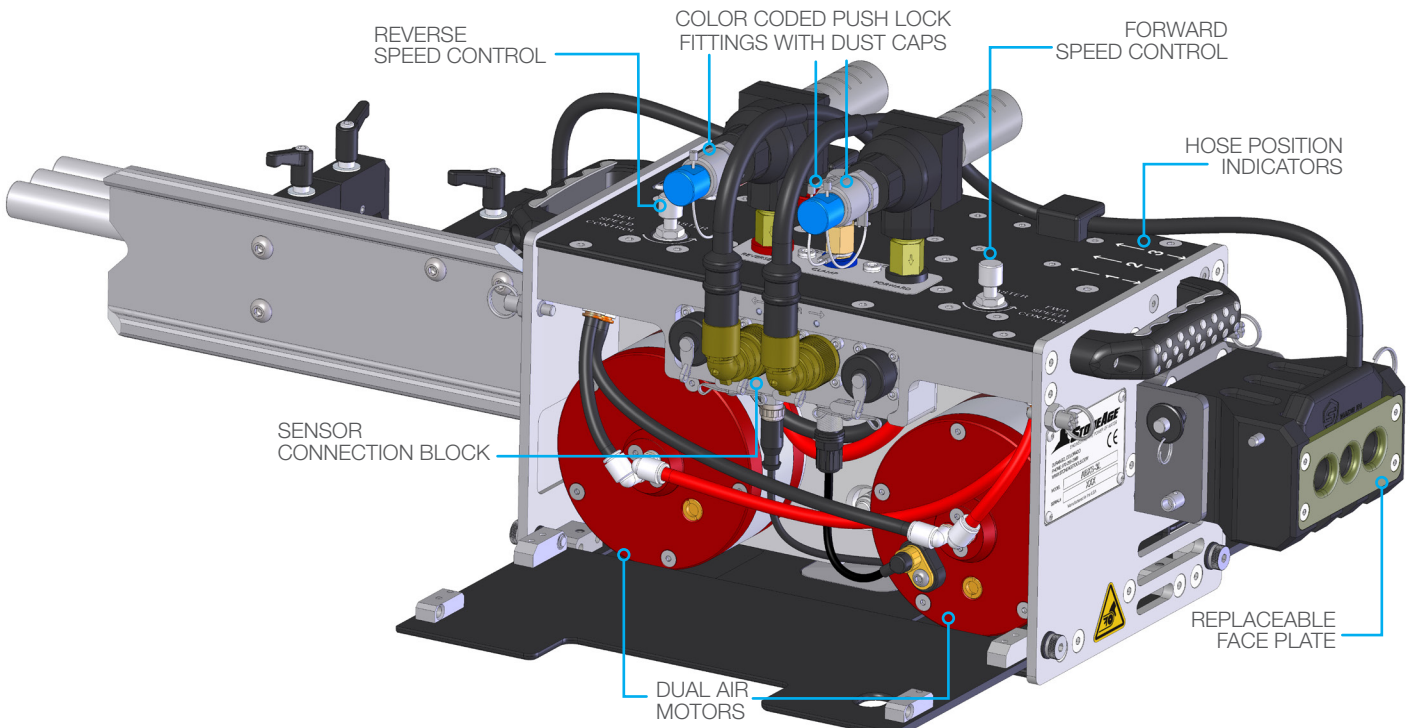
Adjust position until the Guide Tube is approximately 1/2 in. (13 mm) away from the face of the heat exchanger.



**AUTOBOX® HOSE TRACTOR
(ABXS-3L)**



FRONT VIEW



REAR VIEW

HOSE TRACTOR CONNECTIONS TO POWER HUB

PNEUMATIC SUPPLY LINE CONNECTIONS

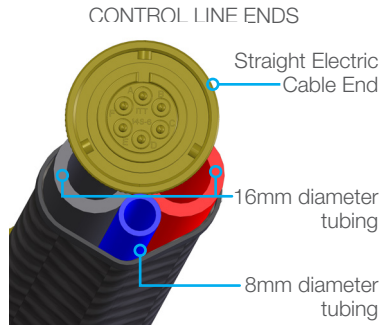
1. Remove the dust caps from the fittings on the AUTOBOX® (ABXS-3L) Hose Tractor.
2. **Connect the Hose Bundle to the Power Hub**
Match the colored tubing to the corresponding color coded fittings under the "Tractor" label. Connect the Pot Plug to the receptacle marked "Tractor" and listen for a click. This ensures it is water tight.
3. **Blow out all Pneumatic Lines**
Turn the Main Air Supply on. Use the Controller to activate the Forward, Reverse, and Clamp functions. **Use of dirty or contaminated pneumatic hoses will cause component damage and malfunction**

4. **Connect hoses to the Hose Tractor**
Match the colored tubing to the corresponding color coded fittings on top of the Hose Tractor. Connect the potted plug to the receptacle marked "Tractor" on the back of the Hose Tractor and listen for a click. This ensures it is water tight.
5. Test the Controller 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.

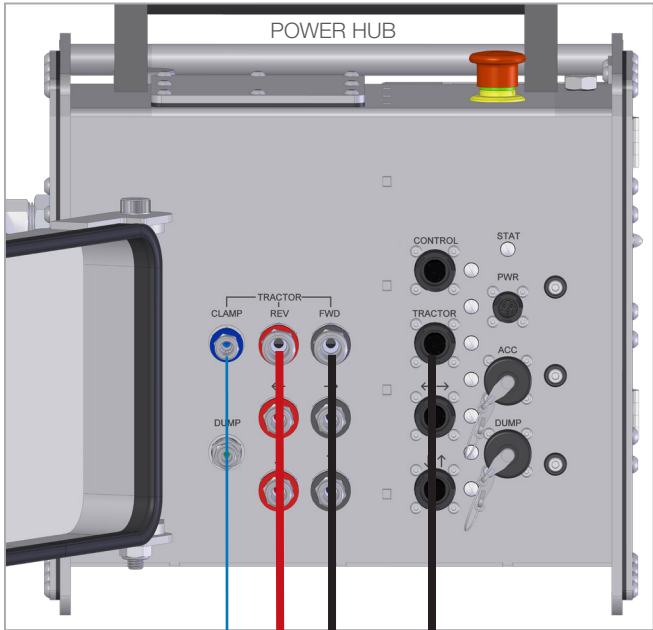
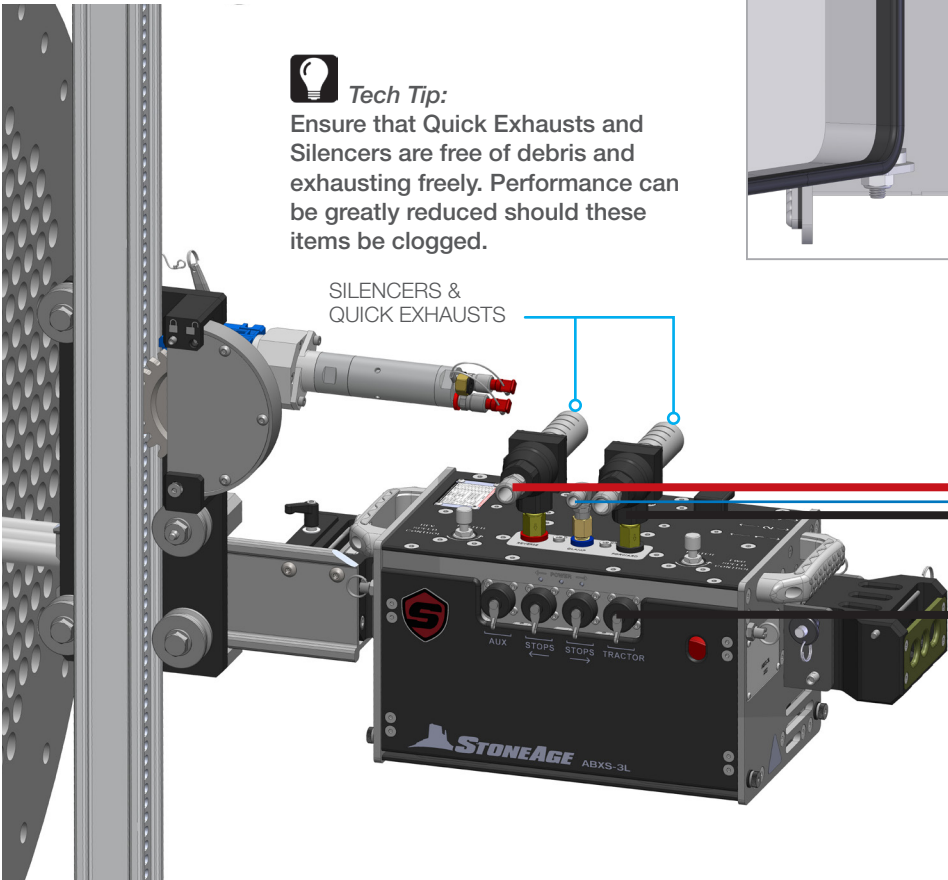
NOTICE

For Detailed Instructions and Setup of the Controller and Power Hub Assemblies, see the Controller and Power User Manual.

<https://www.stoneagetools.com/assets/pdf/manuals/>



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.



CONTROL LINE BUNDLE (CBL EA15F-1RB6PP-2PL10-1PL5)



DOOR

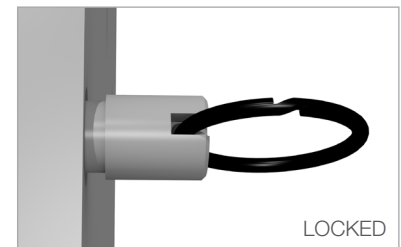
Always run the AUTOBOX® (ABXS-3L) Hose Tractor with the doors closed and locked.

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.



UNLOCKED

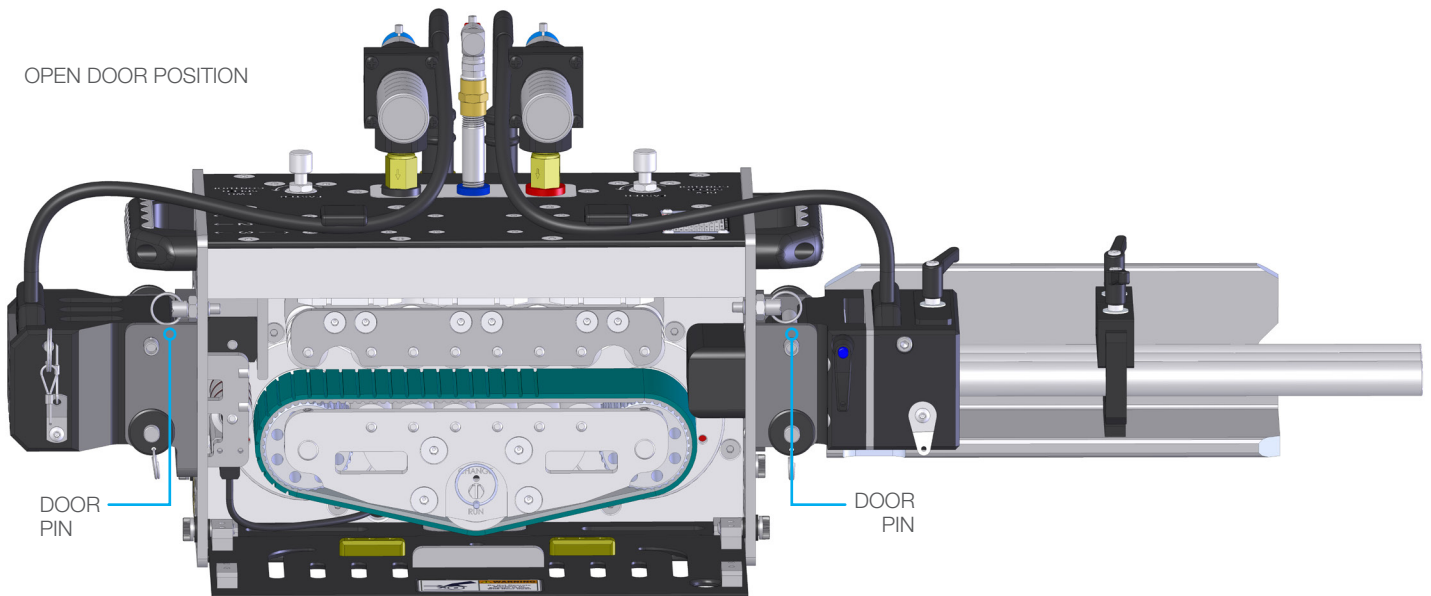


LOCKED

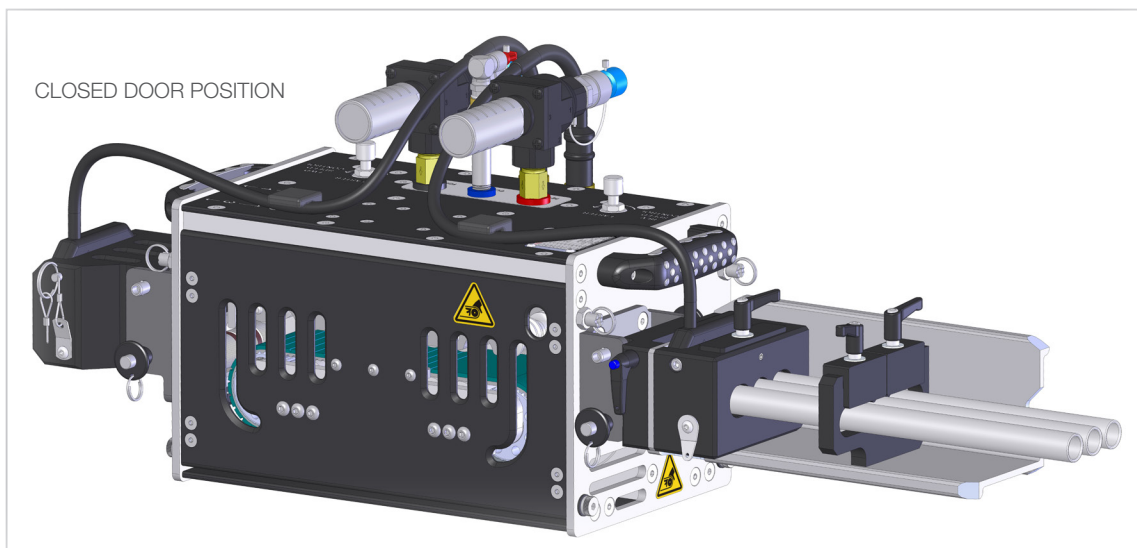
CAUTION

Make sure to lock both doors on each side of the Hose Tractor before operating AUTOBOX® (ABXS-3L) Hose Tractor.

OPEN DOOR POSITION



CLOSED DOOR POSITION



HIGH PRESSURE HOSE LENGTH AND COLLET INSERTION

HIGH-PRESSURE HOSE

- The AUTOBOX® (ABXS-3L) 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.

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.

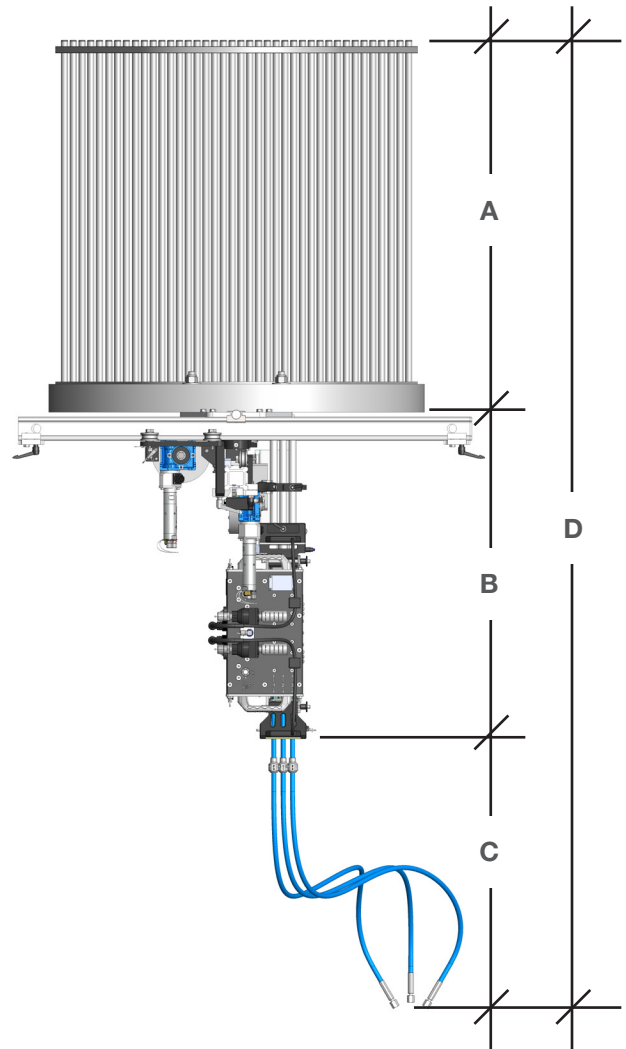
- Verify that the high-pressure hose is properly installed in the back-out preventer. Operate the high-pressure hose and waterjet tool at full pressure to test the clamp force. Proper clamp force will provide good control of the hose in forward and reverse directions, and keep the hoses synchronized at full retract and full extend positions.
- HOSE LENGTHS** There are a many varieties of tube bundles that will require additional hose length to be considered. This should be verified prior to ordering high pressure hose for each job. The calculation below determines the additional length necessary to keep the assembly from lifting off the ground during operation. Provide the tube bundle length and use the calculation below to determine the total hose length.

$$\begin{aligned}
 & \mathbf{A \text{ (Tube Bundle Length in inches / mm) +} } \\
 & \mathbf{B \text{ (Total Length of components in inches / mm) +} } \\
 & \mathbf{C \text{ (Recommended Additional Connection Length in / mm)} } \\
 & \mathbf{=} \\
 & \mathbf{D \text{ (Total required Length of hose in inches /mm)} }
 \end{aligned}$$

EXAMPLE: The hose length equation for a 20ft (6096 mm) tube bundle with ABXS-3L, Hose Guide, and Lightweight Positioner would be as follows;

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

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



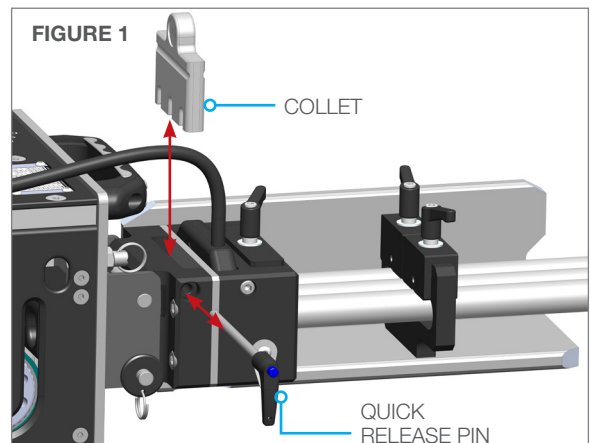
B (TOTAL COMPONENT LENGTH)	C (RECOMMENDED ADDITIONAL CONNECTION LENGTH)
ABXS-3L-V2, Hose Guide, and Lightweight Positioner = 32.9 in / 836 mm	39 in / 991 mm

COLLET INSERTION

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® (ABXS-3L) Hose Tractor.) **(Figure 1)**

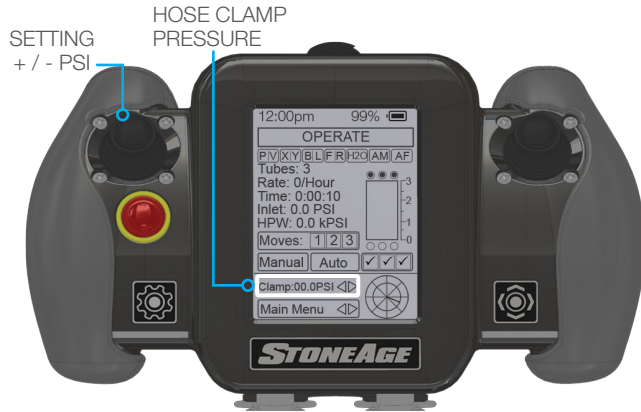
⚠ WARNING

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 ABXS-3L Tractor or the side of the vertical carriage on the Lightweight Positioner.

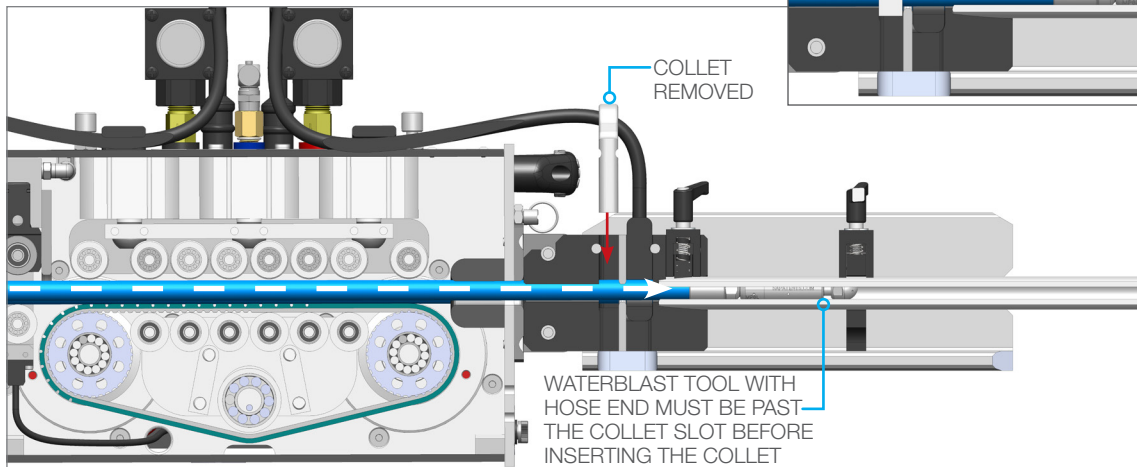
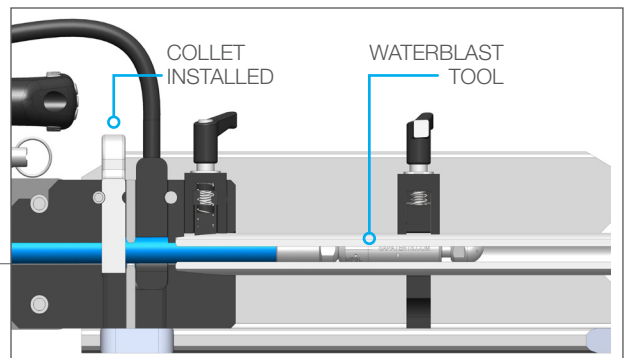
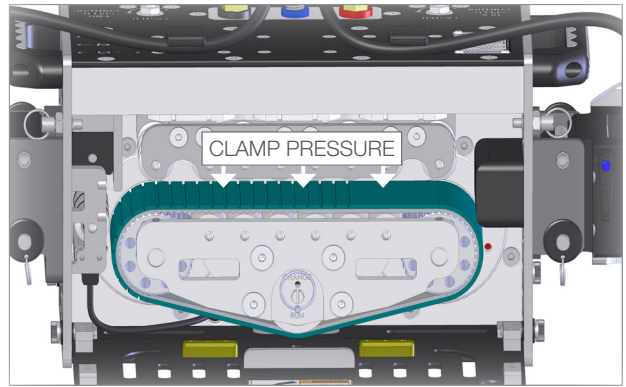


HOSE AND HOSE STOP INSTALLATION

1. The **HOSE CLAMP PRESSURE REGULATOR** on the Controller **MUST BE TURNED TO ZERO** pressure to make room for the hoses to be installed. Use the left Joystick on the Controller to highlight the Clamp Pressure setting. Then move the left Joystick left or right to decrease or increase the pressure.



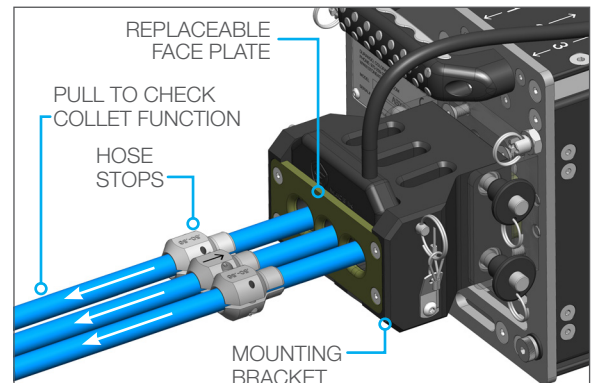
2. Insert the hoses, equipped with the waterblast tools, into the mounting bracket on the side of the AUTOBOX® (ABXS-3L) Hose Tractor until they engage the Drive Belt. Slightly increase the pressure on the **HOSE CLAMP PRESSURE REGULATOR** to extend the clamp rollers and clamp the hoses.
3. When the waterjet tools pass the Collet slot, install the Collet and quick release pin.



4. Pull on the hoses from the back of the AUTOBOX® (ABXS-3L) Hose Tractor to ensure that the Collet does not allow the waterblast tool back out of the Guide or Hose Tractor.
5. To install hose stops, drive 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 with the arrows pointing to the tractor, then push them toward the mounting bracket and tighten in place.

NOTICE

If the Wear Indicator Grooves on the Replaceable Face Plate are gone, continued long-term operation will significantly reduce the life of the rear stop sensor.

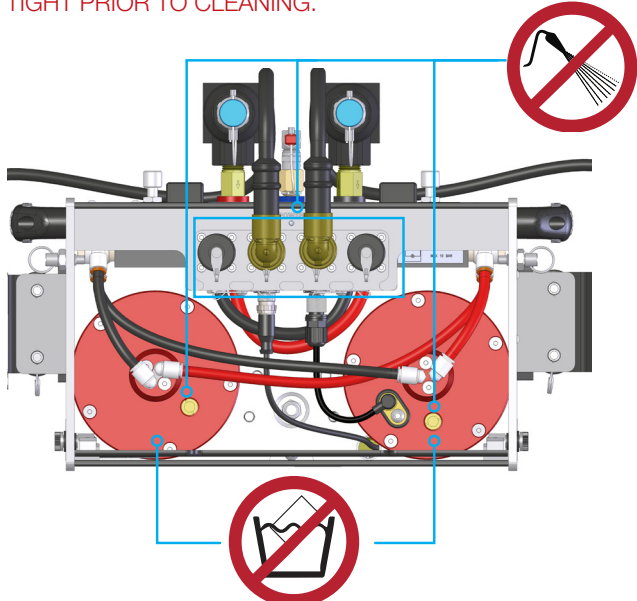


⚠ WARNING

Do not fully release the hose clamp (decreasing pressure to zero) during operation, or the AUTOBOX® (ABXS-3L) 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.

HOSE TRACTOR (ABXS-3L) MAINTENANCE

Maintenance Item	Frequency	Maintenance Required
Drive Belt (See Belt Replacement instructions in this manual)	After each use	<p>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).</p> <p style="text-align: center;">NOTICE</p> <p>Operation with a severely damaged belt will result in excessive damage to the Idler rollers and drive sprockets.</p>
All components the hoses pass through, particularly face and guide plates.	After each use	<p>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.</p> <p>If the ABXS 183-001 face plate is not replaced in a timely manner, it will result in damage and/or premature failure of the rear stop sensor. <i>See next page</i></p>
FWD, REV, LFT, RGT, UP, DOWN fittings	After each use	<p>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.</p> <p style="text-align: center;">NOTICE</p> <p>Do not add oil to the Clamp (CLP) fitting, as oil may accumulate in the air cylinders and prevent them from fully retracting.</p>
ABXS-3L (Inside)	After each use	<p>When storing the unit, use compressed air to blow out any residual debris and moisture. Use mild, soapy, low pressure, water to clean the machine in order to remove corrosive materials.</p> <p style="color: red;">DO NOT SPRAY WATER DIRECTLY AT OR SUBMERGE THE AIR MOTOR BREATHER PORTS OR ELECTRONIC COMPONENTS. MAKE SURE ALL DUST CAPS ARE IN PLACE AND ELECTRICAL SENSOR CONNECTIONS ARE TIGHT PRIOR TO CLEANING.</p> 

Contact StoneAge for Safety Data Sheets for material usage, a complete list of spare part numbers, and service instructions for the AUTOBOX® (ABXS-3L) Hose Tractor and Controller.

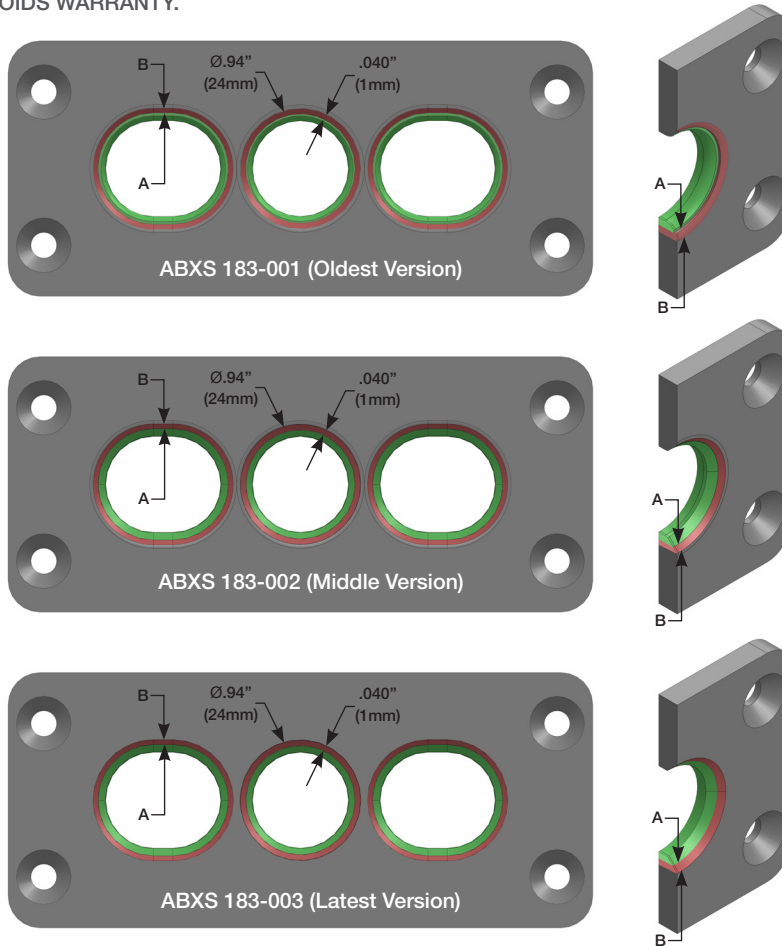
STORAGE, TRANSPORTATION, AND HANDLING

The AUTOBOX® (ABXS-3L) Hose Tractor should be stored upright in a job box between jobs. When moving the AUTOBOX® (ABXS-3L) Hose Tractor, lift with care to prevent bodily injury.

ABXS 183-00X FACE PLATE WEAR INDICATORS

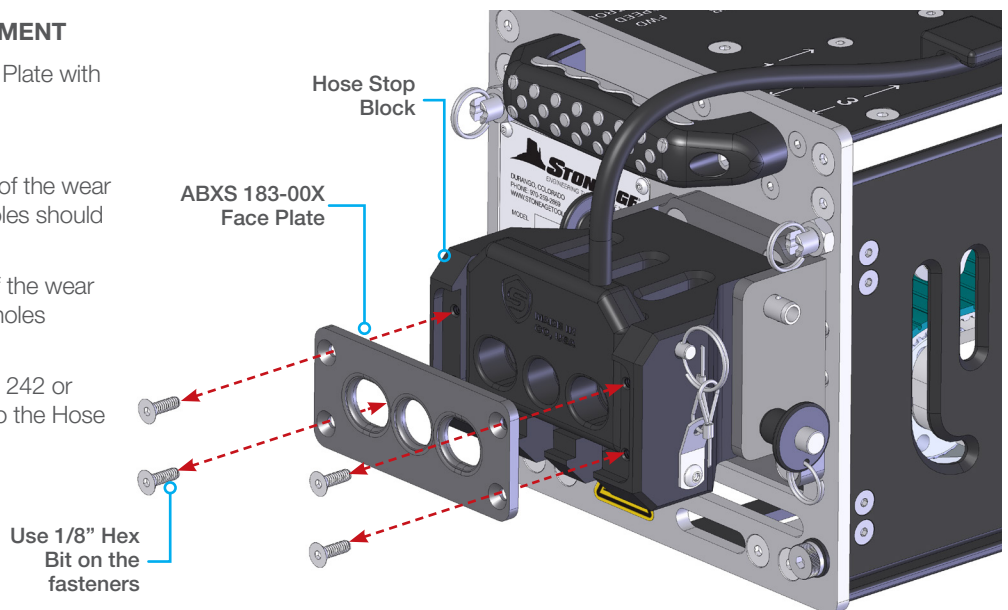
The Wear Indicators on the Face Plates are to inform operators that excessive wear is occurring. Continued long-term operation will significantly reduce the life of the rear stop sensor. There are three versions of the ABXS 183-00X Face Plates and they are all backwards compatible with the only difference being the type of Wear Indicator. **The wear indicators are colored in the diagrams for clarity.*

- A. The inner boundary of the 'red zone' indicates severe wear has occurred and that the plate needs to be replaced as soon as practical.
- B. The outer boundary of the 'red zone' indicates excessive wear has occurred and the plate needs to be replaced immediately as CONTINUED OPERATION VOIDS WARRANTY.



ABXS 183-00X FACE PLATE REPLACEMENT

1. Remove the 4 fasteners from the Face Plate with a 1/8" Hex Bit.
2. Remove the Face Plate.
3. Rotate the Face Plate 180° if one side of the wear indicators is worn. The countersunk holes should be facing out as shown.
4. Install a new Face Plate if both sides of the wear indicators are worn. The countersunk holes should be facing out as shown.
5. Coat the 4 fasteners with Blue Loctite® 242 or equivalent then fasten the Face Plate to the Hose Stop Block.



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:

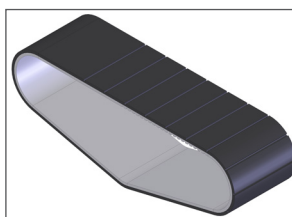
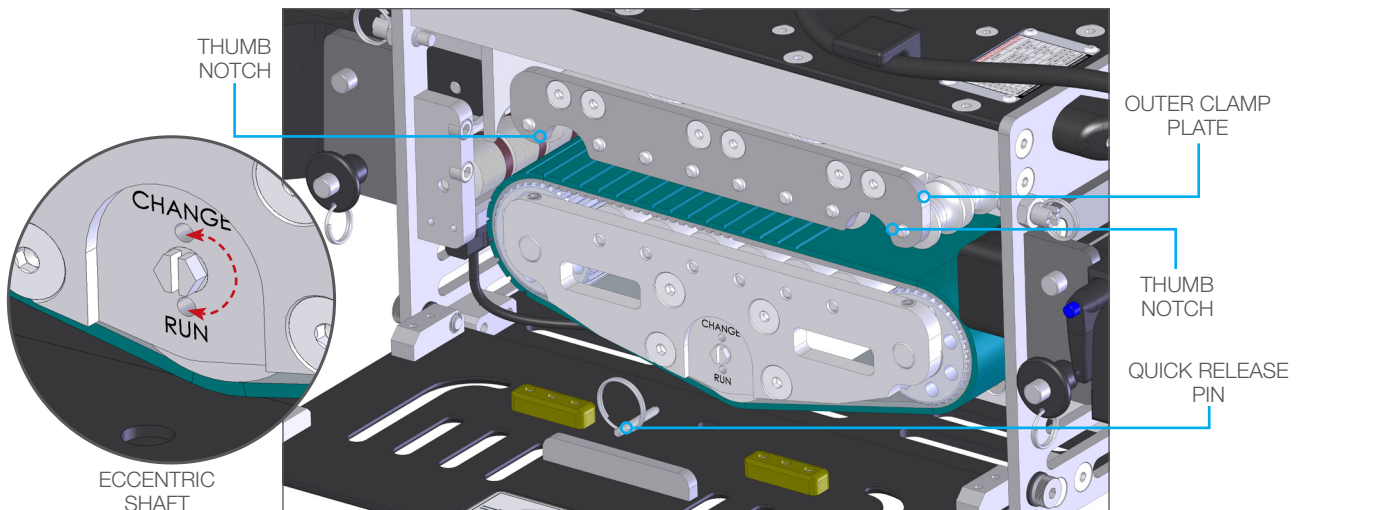
- ABX 305-50 Green**
(50 durometer – softest – better grip , but fastest wear)
- ABX 305-80 Black**
(80 durometer – hardest – most durable, but most slip)

BELT OPTIONAL:

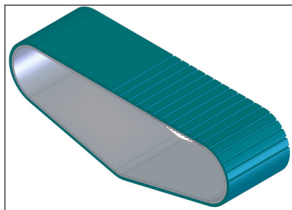
- ABX 305-70 Green**
(70 durometer – medium)

TO REPLACE THE BELT:

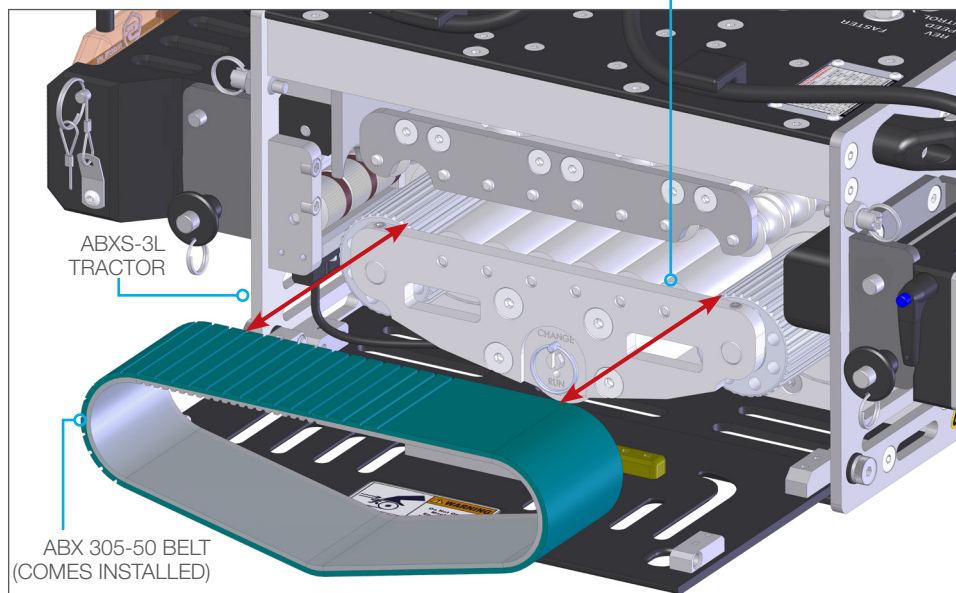
1. Pull out the Quick Release Pin on the front of the ABX 310-001 Belt Track Drive Assembly.
2. Use a flat head screwdriver to rotate the Eccentric Shaft 180° in either direction. This will release tension on the Drive Belt Assembly.
3. Install pin into the “CHANGE” position so it does not get misplaced, and to ensure the tension idler is in the correct position before removing the belt.
4. Place thumbs on the on 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 Dive Belt out from the ABX-3L-V2 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.



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



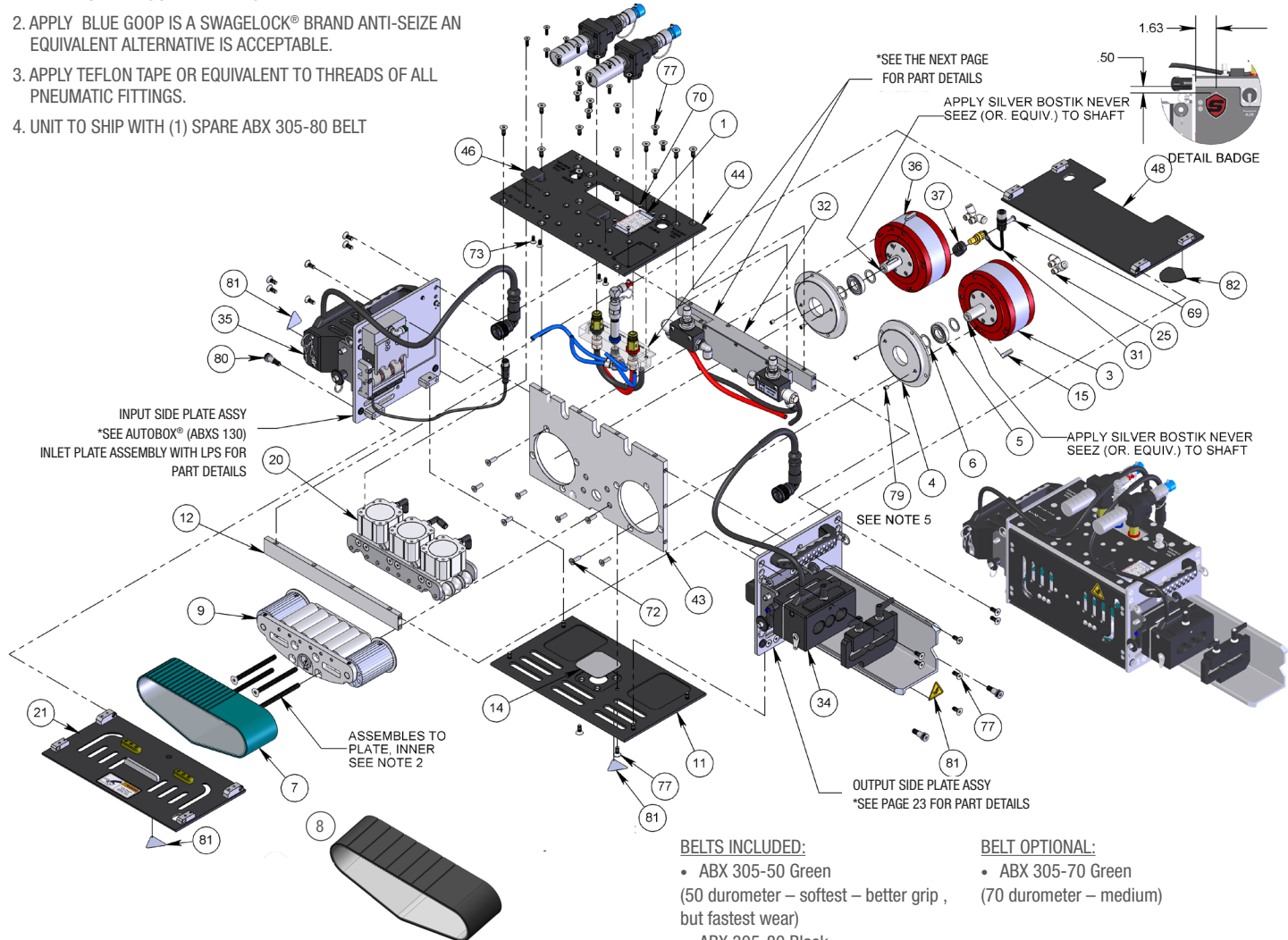
ABX 305-70 BELT 70A 10MM
(NOT INCLUDED IN PACKAGE)



AUTOBOX® (ABXS-3L) HOSE TRACTOR

NOTE:

1. APPLY PURPLE LOCTITE® 222 TO ALL THREADED HARDWARE.
2. APPLY BLUE GOOP IS A SWAGELock® BRAND ANTI-SEIZE AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
3. APPLY TEFLON TAPE OR EQUIVALENT TO THREADS OF ALL PNEUMATIC FITTINGS.
4. UNIT TO SHIP WITH (1) SPARE ABX 305-80 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)

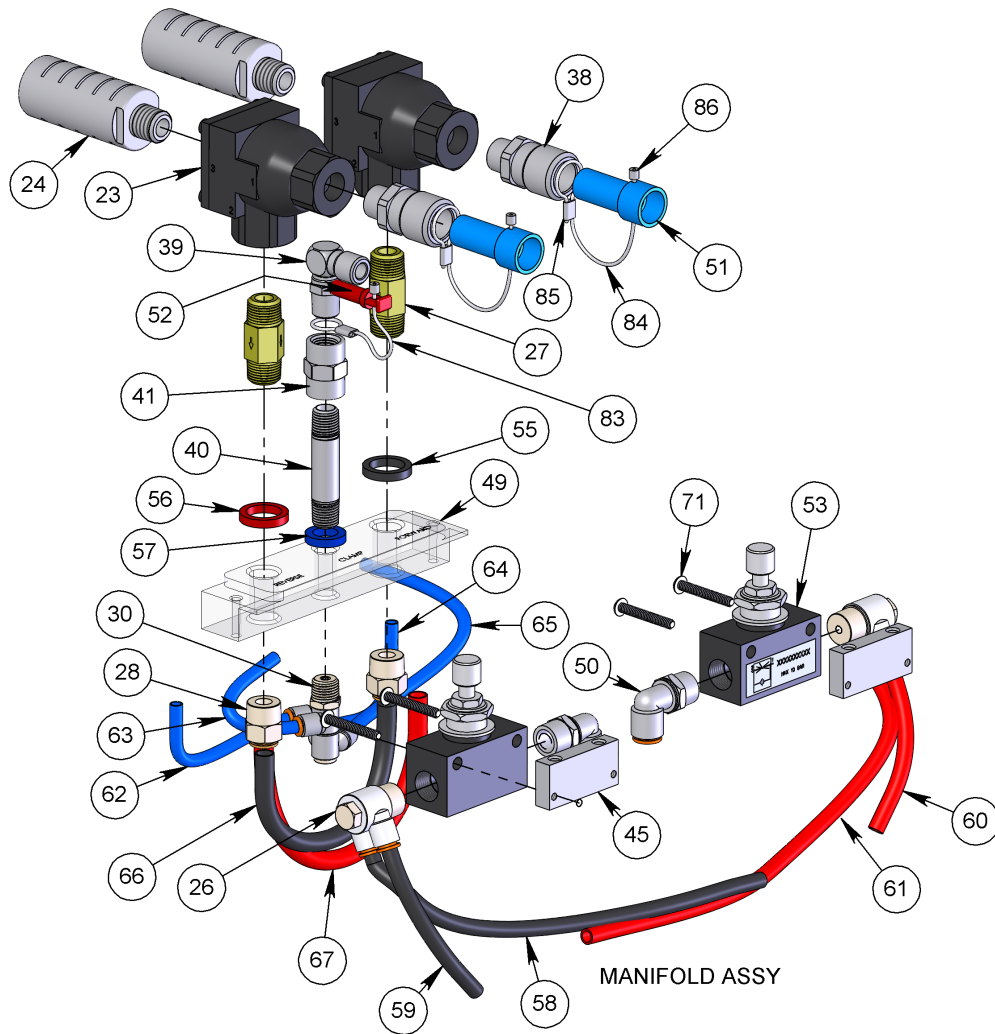
BELT OPTIONAL:

- ABX 305-70 Green (70 durometer – medium)

#	PART NUMBER	QTY			
1	ABX 139 COLLET REFERENCE PLATE	1	20	ABX 360-001 BELT TRACK DRIVE ASSY TOP	1
3	ABX 250 AIR MOTOR, GLOBE	1	21	ABX 370-001 DOOR ASSY	1
4	ABX 252 PLATE, AIR MOTOR BEARING	2	25	ABX 391 FTG, ELBOW SWIVEL 90 BSPT2M PL8MMF	4
5	ABX 257 MOTOR BEARING 19MM X 37MM X 9MM	2	31	ABXS 105 SENSOR ASSY, SPEED AND DIRECTION	1
6	ABX 258 SHIM WASHER	4	32	ABXS 110 ASSY, CONNECTOR BAR	1
7	ABX 305-50 BELT, 50A 10mm SIPE	1	34	ABXS 160 GUIDE ASSEMBLY, 3L SENTINEL	1
8	ABX 305-80 BELT, 80A 25mm SIPE	1	35	ABXS 180 ASSY, HOSE STOP	1
9	ABX 310-001 BELT TRACK DRIVE ASSY BOTTOM	1	36	ABXS 251 AIR MOTOR, GLOBE	1
11	ABX 343 PLATE, BOTTOM	1	37	ABXS 252 PLATE, SPACER	1
12	ABX 345 STIFFENER, TOP PLATE	1	43	ABXS 340 PLATE, INNER	1
14	ABX 348 COVER	1	44	ABXS 344 PLATE, TOP	1
15	ABX 353 KEY, MODIFIED	2	46	ABXS 349 BLOCK, CABLE CLAMP	2
			48	ABXS 380 ASSY, GUARD	1
			61	GPTB 8MM-PUR95A-RD TUBE 2 M8 RD (12 IN)	1
			62	GPTB 0250-PUR95A-BL TUBE 1 PL4 BL (4.5 IN)	1
			63	GPTB 0250-PUR95A-BL TUBE 2 PL4 BL (4 IN)	1
			64	GPTB 0250-PUR95A-BL TUBE 3 PL4 BL (4.5 IN)	1
			69	GSB 3M6-20-1.0 BHCS M6x1.0 x 20 SS	1
			70	GSB 313-0075 BHCS 6-32 x .19 SS	8
			72	GSF 3M6-20-1.00 FHCS M6x1.00 x 20 SS	8
			73	GSF 319-02 FHCS 10-24 x .50 SS	4
			77	GSF 325-025 FHCS .25-20 x .62 SS	46
			79	GSS 3M6-1.0-8CU SET SCREW, CUP PT SS	4
			81	PL 162 WARNING DECAL, PINCH POINT	4
			82	PL 300-2 PIDPLATES S-BADGE, 2 IN., COLOR	1

PART DIAGRAM

AUTOBOX® (ABXS-3L) HOSE TRACTOR MANIFOLD AND CONNECTOR BAR ASSEMBLY

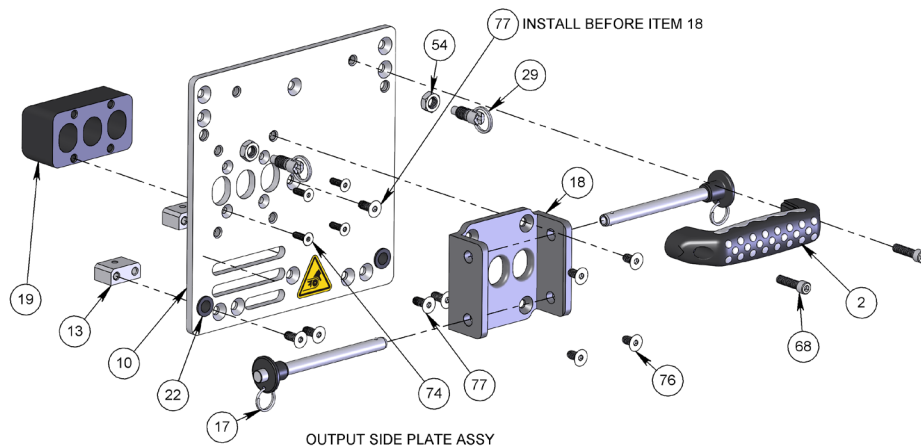
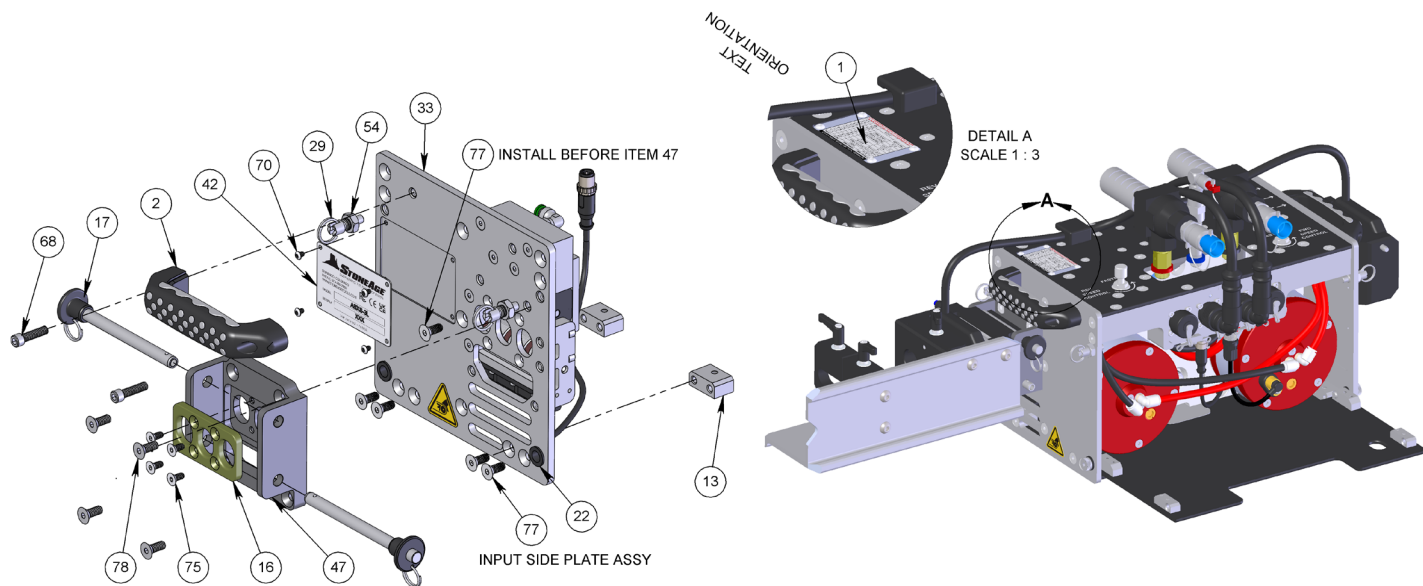


#	PART NUMBER	QTY
23	ABX 382 QUICK EXHAUST VALVE, P6	2
24	ABX 383 SILENCER, P6	2
26	ABX 392 FTG, MANIFOLD 90 P6M 2XPL5	2
27	ABX 394 FTG, INLINE FILTER P6M P6M	2
28	ABX 397 FTG, ADAPTER P6M PL6	2
30	ABXS 102 FTG, MANIFOLD 90 P4M 4XPL4	1
38	ABXS 270 FTG, ADAPTER P6M PL10 EISELE	2
39	ABXS 274 FTG, ELBOW SWIVEL 90 P4M PL5 EISELE	1
40	ABXS 284 FTG, NIPPLE P4M P4M X 2.50 SS	1
41	ABXS 285-SS FTG, STRAIGHT COUPLING P4F SS	1

45	ABXS 346 PLATE, FLOW CONTROL	2
49	ABXS 386 AIR MANIFOLD	1
50	CB 352 FTG, ELBOW SWIVEL 90 P6M PL6	2
51	CB 474 FTG, STEM PLUG PL10 MODIFIED	2
52	CB 499 FTG, STEM PLUG PL5 MODIFIED	1
53	CB 528 FLOW CONTROL VALVE, P6	2
55	GP 011-BK ID WASHER, RUBBER, MED, BLACK	1
56	GP 011-R ID WASHER, RUBBER, MED, RED	1
57	GP 013-B ID WASHER, RUBBER, SMALL, BLUE	1
58	GPTB 8MM-PUR95A-BK TUBE 2 M8 BK (11.5 IN)	1
59	GPTB 8MM-PUR95A-BK TUBE 1 M8 BK (4.5 IN)	1
60	GPTB 8MM-PUR95A-RD TUBE 1 M8 RD (4.5 IN)	1

61	GPTB 8MM-PUR95A-RD TUBE 2 M8 RD (12 IN)	1
62	GPTB 0250-PUR95A-BL TUBE 2 PL4 BL (4.5 IN)	1
63	GPTB 0250-PUR95A-BL TUBE 2 PL4 BL (4 IN)	1
64	GPTB 0250-PUR95A-BL TUBE 3 PL4 BL (4.5 IN)	1
65	GPTB 0250-PUR95A-BL TUBE 4 PL4 BL (8.5 IN)	1
66	GPTB 0375-PUR95A-BK TUBE 1 PL6 BK (8 IN)	1
67	GPTB 0375-PUR95A-RD TUBE 1 PL6 RD (8.5 IN)	1
83	SRT 209.1.1 WIRE ROPE FOR ABXS PL5 (CUT TO 5.25IN)	1
84	SRT 209.1.1 WIRE ROPE FOR ABXS PL10 (CUT TO 6.75IN)	2
85	SRT 209.1.3 ALUMINUM SLEEVE	3
86	SRT 209.1.4 ALUMINUM STOP SLEEVE	3

AUTOBOX® (ABXS-3L) HOSE TRACTOR
INSIDE AND OUTSIDE PLATE ASSEMBLIES

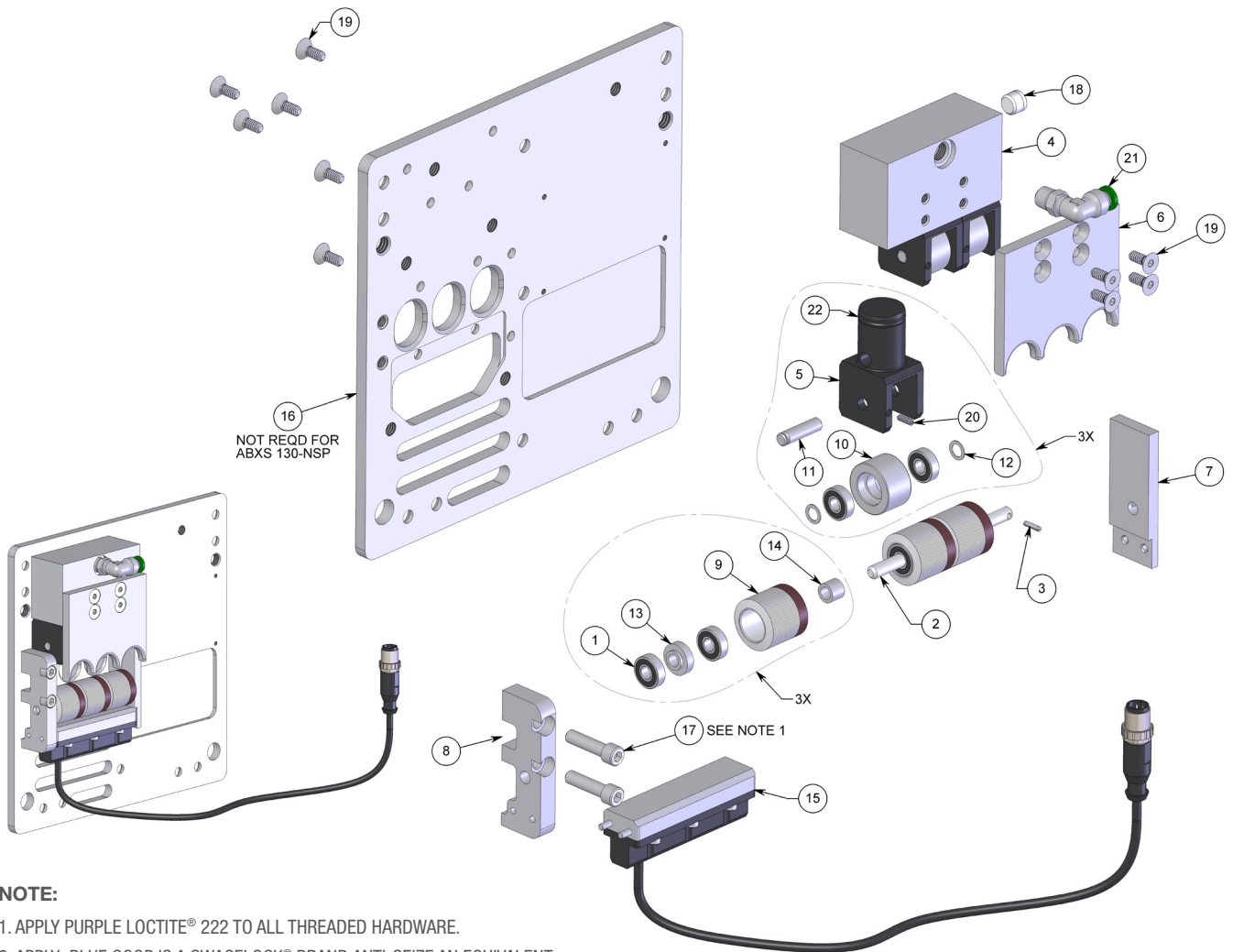


#	PART NUMBER	QTY
1	ABX 139 COLLET REFERENCE PLATE	1
2	ABX 215 PULL HANDLE GREY	2
10	ABX 342 SIDE PLATE OUTLET	1
13	ABX 347 BLOCK, SUPPORT	4
16	ABX 355 HOSE GUIDE PLATE INNER	1
17	ABX 356 QUICK PIN 17-4 SS .38 X 3.75	4
18	ABX 358 MOUNTING BRACKET, OUTLET	1
22	ABX 375 BUSHING, PEEK .375 ID X .375 LG	4
29	ABX 566-001 SPRING PLUNGER ASSY	4
33	ABXS 130 INLET PLATE ASSY WITH LPS	1

42	ABXS 303 PLATE, SERIAL FCC CE	1
47	ABXS 357 MOUNTING BRACKET, INLET	1
54	GN 337-HJ NUT, HEX JAM .37-16 SS	4
68	GS 325-035 SHCS .25-20 X .88 SS	4
69	GSB 3M6-20-1.0 BHCS M6x1.0 x 20 SS	1
70	GSB 313-0075 BHCS 6-32 x .19 SS	8
74	GSF 319-025 FHCS 10-24 x .62 SS	16
75	GSF 319-0175 FHCS 10-24 x .44 SS	4
76	GSF 325-02 FHCS .25-20 x .50 SS	4
77	GSF 325-025 FHCS .25-20 x .62 SS	46
78	GSF 325-0275 FHCS .25-20 x .69 SS	4

PART DIAGRAM

AUTOBOX® (ABXS 130) INLET PLATE ASSEMBLY WITH LPS



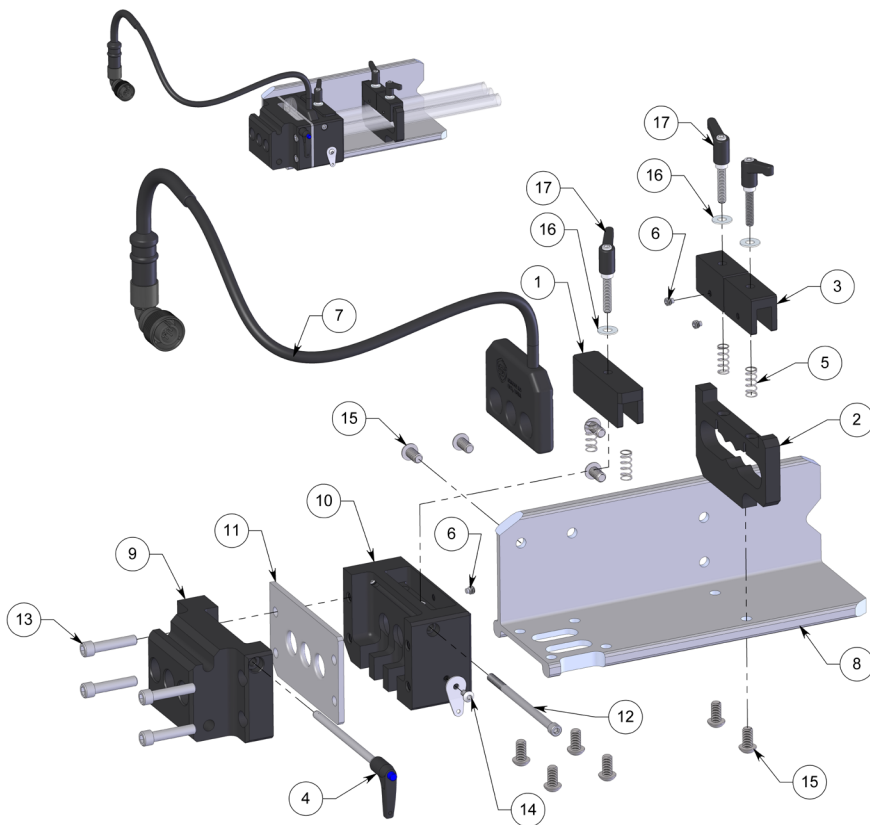
NOTE:

1. APPLY PURPLE LOCTITE® 222 TO ALL THREADED HARDWARE.
2. APPLY BLUE GOOP IS A SWAGELOCK® BRAND ANTI-SEIZE AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
3. APPLY TEFLON TAPE OR EQUIVALENT TO THREADS OF ALL PNEUMATIC FITTINGS.
4. UNIT TO SHIP WITH (1) SPARE ABX 305-80 BELT

#	PART NUMBER	ABXS 130	ABXS 130-NSP				
1	ABX 326 PERMANENTLY LUBRICATED STAINLESS STEEL BALL BEARING, SEALED, TRADE NUMBER R4-2RS, FOR 1/4" SHAFT DIAMETER	12	12	12	ABXS 143 SHAFT, IDLER	3	3
2	ABX 330 SHAFT, IDLER	1	1	12	ABXS 145 SHIM WASHER, SS .020	6	6
3	ABX 332 SPRING PIN, 3/32 X 3/4 OAL (18-8 SS)	1	1	13	ABXS 147 SPACER, .28	3	3
4	ABXS 133 CAP, PISTON	1	1	14	ABXS 148 SPACER, .31	3	3
5	ABXS 134 YOKE, IDLER	3	3	15	ABXS 150 ASSY, LANCE POSITION SENSOR	1	1
6	ABXS 135 YOKE SUPPORT	1	1	16	ABXS 341-001 SIDE PLATE INLET	1	-
7	ABXS 137 SIDE PLATE INNER	1	1	17	BC 053 SHCS .25-20 X 1.00 SS	2	2
8	ABXS 138 SIDE PLATE OUTER	1	1	18	GP 025-P2SS HEX SOCKET PLUG, 1/8 NPT, SS	1	1
9	ABXS 141 ASSY, LPS MAGNET ROLLER	3	3	19	GSF 319-02 FHCS 10-24 X .50 SS	10	10
10	ABXS 142 ROLLER, IDLER	3	3	20	GSS 304-40-37CO SET SCREW, CONE PT 4-40 X .37 SS	3	3
				21	HRS 563 FTG, ELBOW SWIVEL 90 P2M PL4	1	1
				22	SM 016 O-RING	3	3

AUTOBOX® (ABXS 160)
GUIDE ASSEMBLY

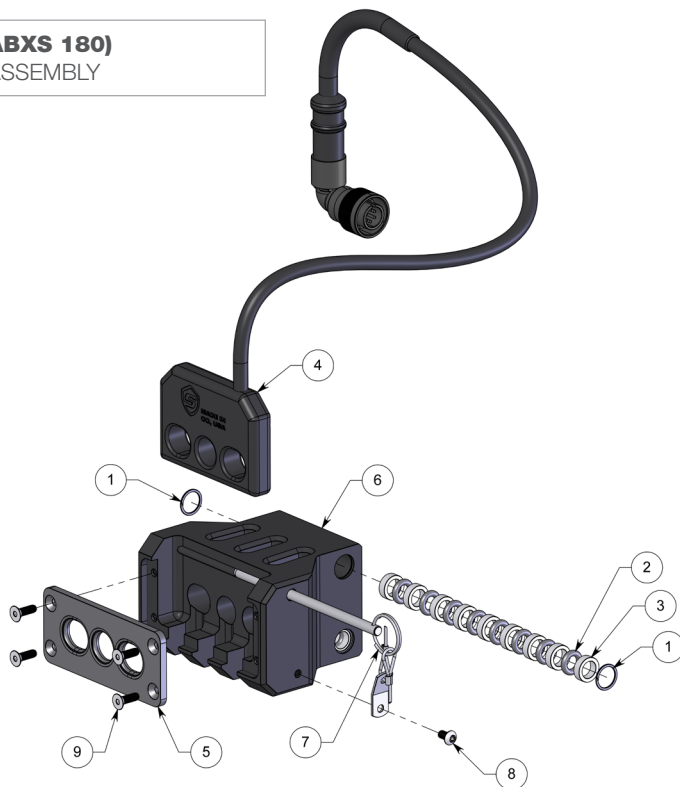
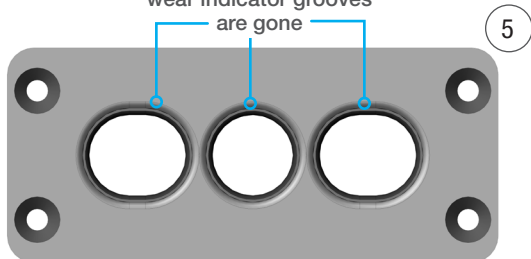
#	PART NUMBER	QTY
1	ABX 177 REAR CLAMP CHANNEL	1
2	ABX 178 PITCH CLAMP PLATE	1
3	ABX 179 PITCH CLAMP CHANNEL, HALF	2
4	ABX 181 PIN, QR, .250 DIA X 4.00 L, WITH LANYARD	1
5	ABX 182 SPRING, COMPRESSION	4
6	ABX 183 SCREW, SET, EXTENDED POINT	3
7	ABXS 361 ASSY, HOSE CRIMP AND HOSE STOP SENSOR PUCK	1
8	ABXS 175 BOX SECTION, SENTINEL	1
9	ABXS 176 SPLIT COLLET BLOCK, TRACTOR SIDE	1
10	ABXS 177 SPLIT COLLET BLOCK, GUIDE TUBE SIDE	1
11	ABXS 178 DIVIDER PLATE .1875	1
12	GS 325-18 SHCS .25-20 X 4.50 SS	1
13	GS 331-06 SHCS .31-18 X 1.50 SS	4
14	GSB 319-015 BHCS 10-24 X .38 SS	1
15	GSB 331-025 BHCS .31-18 X .62 SS	10
16	GW 325-F WASHER, FLAT .25 SS	3
17	SRT 557 ADJUSTABLE HANDLE .25-20 X 1.19	3



AUTOBOX® (ABXS 180)
HOSE STOP ASSEMBLY

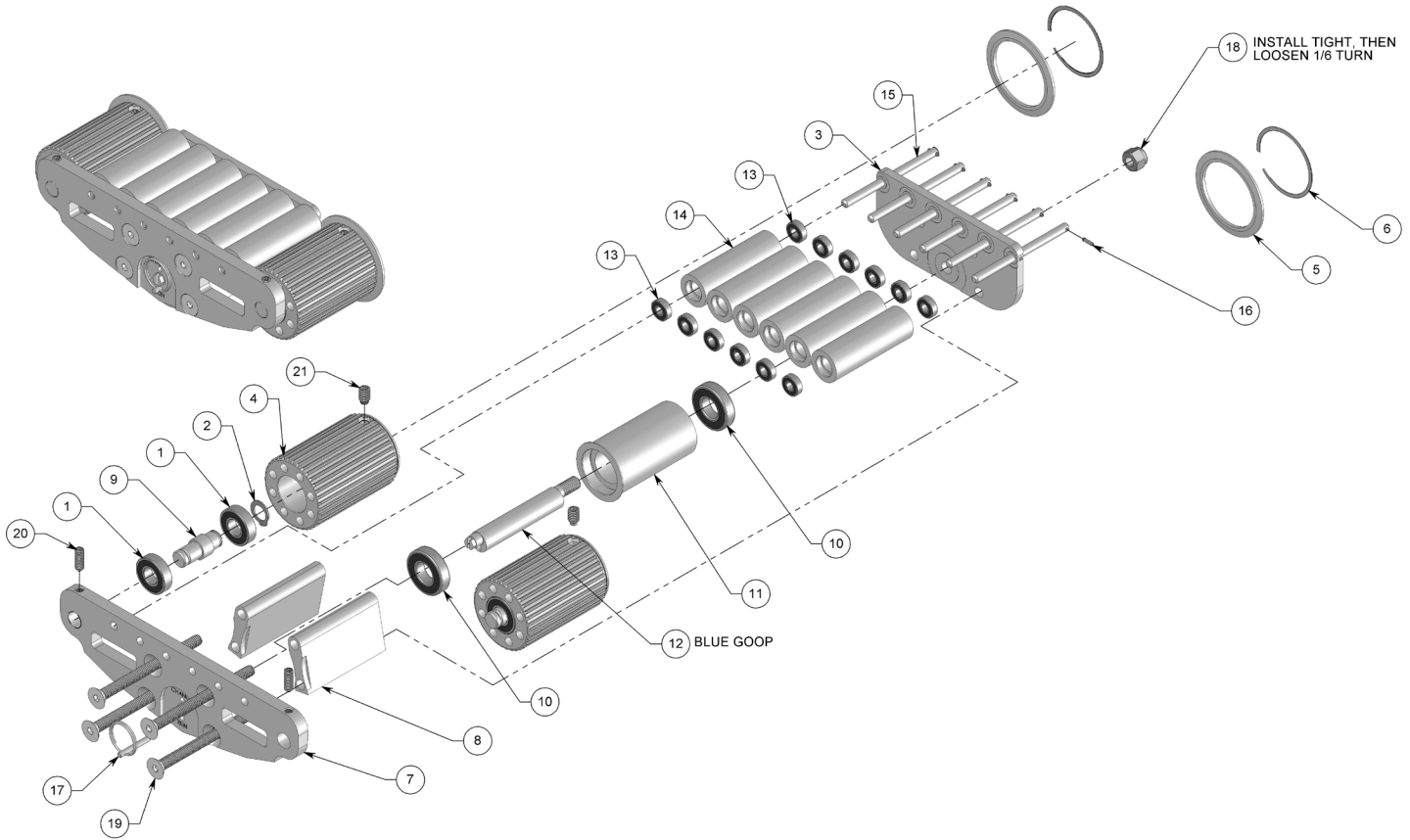
#	PART NUMBER	QTY
1	ABX 230 RING, SPIRAL INTERNAL RETAINER SS (BORE Ø.625 X .035 THICK)	4
2	ABX 294 ORING, SHOCK ABSORBING	16
3	ABX 352 SPACER, O-RING	18
4	ABXS 361 ASSY, HOSE CRIMP AND HOSE STOP SENSOR PUCK	1
5	ABXS 183-001 PLATE, FACE	1
6	ABXS 186 BLOCK, HOSE STOP	1
7	ABXS 187 QUICK RELEASE PIN W LANYARD	1
8	GSB 319-015 BHCS 10-24 X .38 SS	1
9	GSF 319-025 FHCS 10-24 X .62 SS	4

Replace this plate when any part of the wear indicator grooves are gone



PART DIAGRAM

AUTOBOX® (ABX 310-001) BELT TRACK DRIVE ASSEMBLY



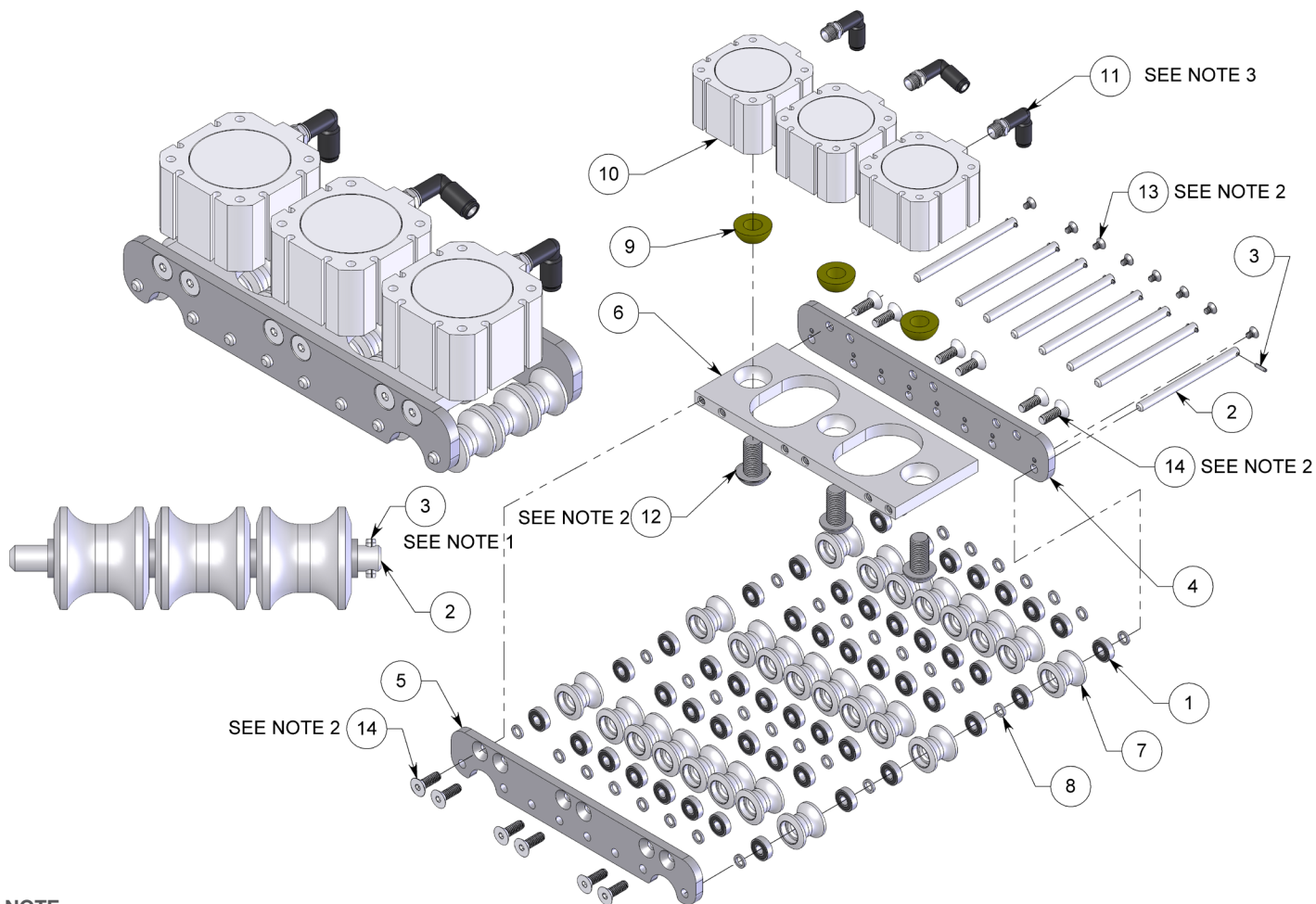
NOTE:

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 325-20-75CO SET SCREW, CONE PT SS	2
21	GSS 331-18-50DP SET SCREW, DOG PT SS	2

AUTOBOX® (ABX 360-001)
BELT TRACK DRIVE ASSEMBLY



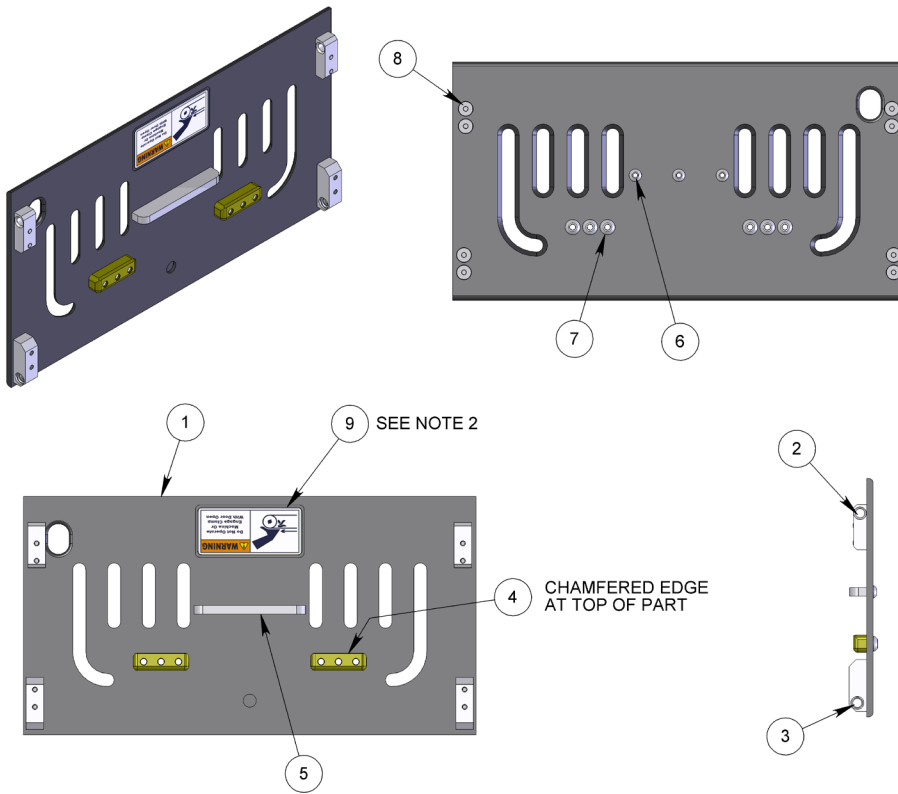
NOTE:

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

#	PART NUMBER	QTY.
1	ABX 326 R4 PERMA LUBE BEARING	48
2	ABX 330 SHAFT, IDLER	8
3	ABX 332 SPRING PIN, .094 X .375	8
4	ABX 361 PLATE, CLAMP INSIDE	1
5	ABX 362 PLATE, CLAMP OUTSIDE	1
6	ABX 364-001 PLATE, CLAMP	1
7	ABX 366 ROLLER, HOSE	24
8	ABX 367 SHIM WASHER	32
9	ABX 377 SPHERICAL BALL	3
10	ABX 385 SMC AIR CYL NCQ8A200-062S	3
11	ABX 387 FTG, ELBOW SWIVEL LONG 90 P2M PL4	3
12	GSB 350-04 BHCS .50-13 X 1.00 SS	3
13	GSF 316-01 FHCS .16-32 X .25 SS	8
14	GSF 325-03 FHCS .25-20 X .75 SS	12

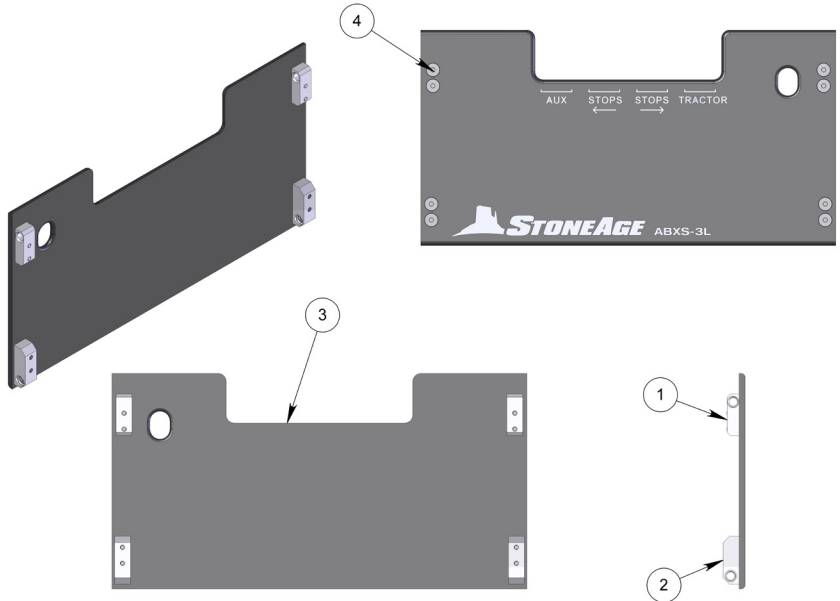
PART DIAGRAM

AUTOBOX® (ABX 370-001) DOOR ASSEMBLY



#	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

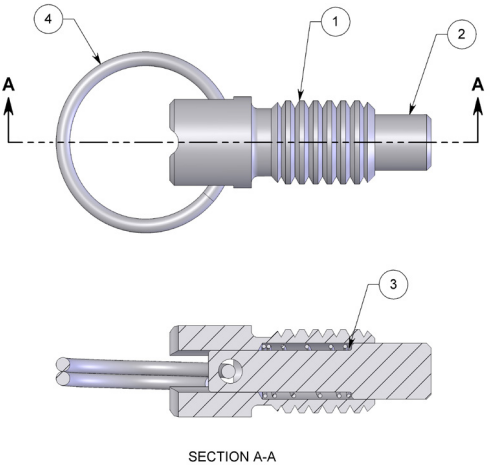
AUTOBOX® (ABXS 380) GUARD ASSEMBLY



#	PART NUMBER	QTY.
1	ABX 372 PIN PLATE, DOOR	2
2	ABX 373 PIVOT PLATE, DOOR	2
3	ABXS 381 GUARD	1
4	GSF 319-0225 FHCS .19-24 X .56 LG SS	8

NOTE:
APPLY PURPLE LOCTITE®
222 TO ALL THREADED
HARDWARE.

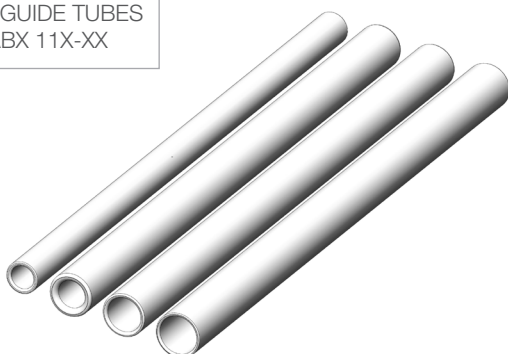
AUTOBOX® (ABX 566-001) SPRING PLUNGER ASSEMBLY



#	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

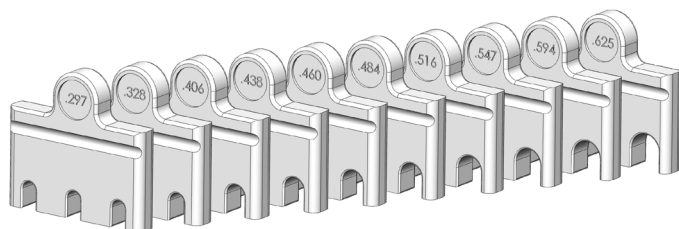
AUTOBOX® ABXS-3L HOSE GUIDE ASSEMBLY ACCESSORIES
GUIDE TUBES, COLLETS, ANTI-TWIST CLAMPS AND HOSE STOPS

ABX GUIDE TUBES
ABX 11X-XX



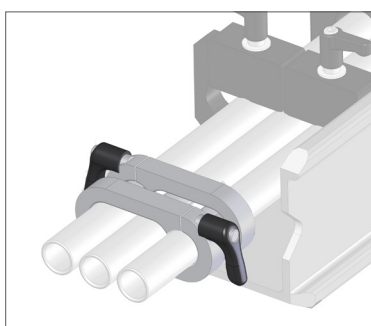
StoneAge (SA) PART NUMBER GUIDE TUBE REFERENCE CHART			
GUIDE TUBE	BANSHEE	INSIDE DIAMETER, LENGTH	QTY
ABX 115-12	BN9.5	.459 in / 12 mm, 12.5 in. / 318 mm	3
ABX 115-36	BN9.5	.459 in / 12 mm, 36 in. / 914 mm	3
ABX 116-12	BN13	.546 in / 14 mm, 12.5 in. / 318 mm	3
ABX 116-36	BN13	.546 in / 14 mm, 36 in. / 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 171-XX



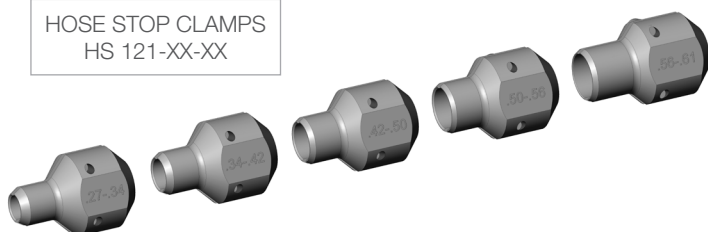
StoneAge (SA) PART NUMBER COLLET REFERENCE CHART		
PART NUMBER	DESCRIPTION	QTY
ABX 171-297	HOSE STOP COLLET .297 in. / 8 mm	1
ABX 171-328	HOSE STOP COLLET .328 in. / 8 mm	1
ABX 171-406	HOSE STOP COLLET .406 in. / 10 mm	1
ABX 171-438	HOSE STOP COLLET .438 in. / 11 mm	1
ABX 171-460	HOSE STOP COLLET .460 in. / 12 mm	1
ABX 171-484	HOSE STOP COLLET .484 in. / 12 mm	1
ABX 171-516	HOSE STOP COLLET .516 in. / 13 mm	1
ABX 171-547	HOSE STOP COLLET .547 in. / 14 mm	1
ABX 171-594	HOSE STOP COLLET .594 in. / 15 mm	1
ABX 171-625	HOSE STOP COLLET .625 in. / 16 mm	1

GUIDE TUBE
ANTI-TWIST CLAMPS
ABX 140-XX



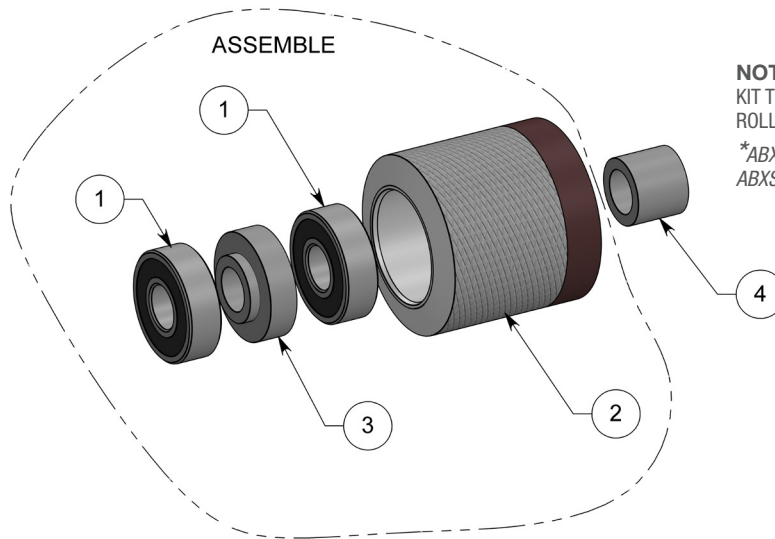
StoneAge (SA) PART NUMBER ANTI-TWIST CLAMP REFERENCE CHART		
PART NUMBER	DESCRIPTION	QTY
ABX 140-625	GUIDE TUBE ANTI-TWIST CLAMP .625	2
ABX 140-840	GUIDE TUBE ANTI-TWIST CLAMP .840	2
ABX 140-875	GUIDE TUBE ANTI-TWIST CLAMP .875	2

HOSE STOP CLAMPS
HS 121-XX-XX



StoneAge (SA) PART NUMBER HOSE STOP REFERENCE CHART		
PART NUMBER	DESCRIPTION	QTY
HSS 121-27-34	HOSE STOP CLAMP ASSEMBLY, .27-34	3
HSS 121-34-42	HOSE STOP CLAMP ASSEMBLY, .34-42	3
HSS 121-42-50	HOSE STOP CLAMP ASSEMBLY, .42-50	3
HSS 121-50-56	HOSE STOP CLAMP ASSEMBLY, .50-56	3
HSS 121-56-61	HOSE STOP CLAMP ASSEMBLY, .56-61	3

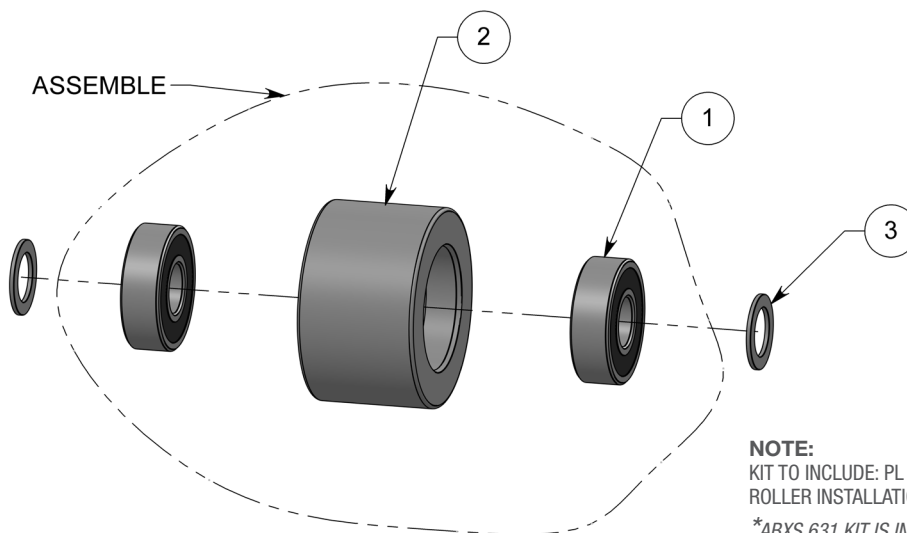
AUTOBOX® (ABXS 630)
LPS MAGNET ROLLER (SINGLE) KIT



NOTE:
KIT TO INCLUDE: PL 699 LPS MAGNET ROLLER INSTALLATION DIAGRAM.
*ABXS 630 KIT IS INCLUDED IN THE ABXS 628-XX SPARE PARTS KIT

#	PART NUMBER / DESCRIPTION	QTY
1	ABX 326 PERMANENTLY LUBRICATED STAINLESS STEEL BALL BEARING, SEALED, TRADE NUMBER R4-2RS, FOR 1/4" SHAFT DIAMETER	2
2	ABXS 141 ASSY, LPS MAGNET ROLLER	1
3	ABXS 147 SPACER, .28	1
4	ABXS 148 SPACER, .31	1

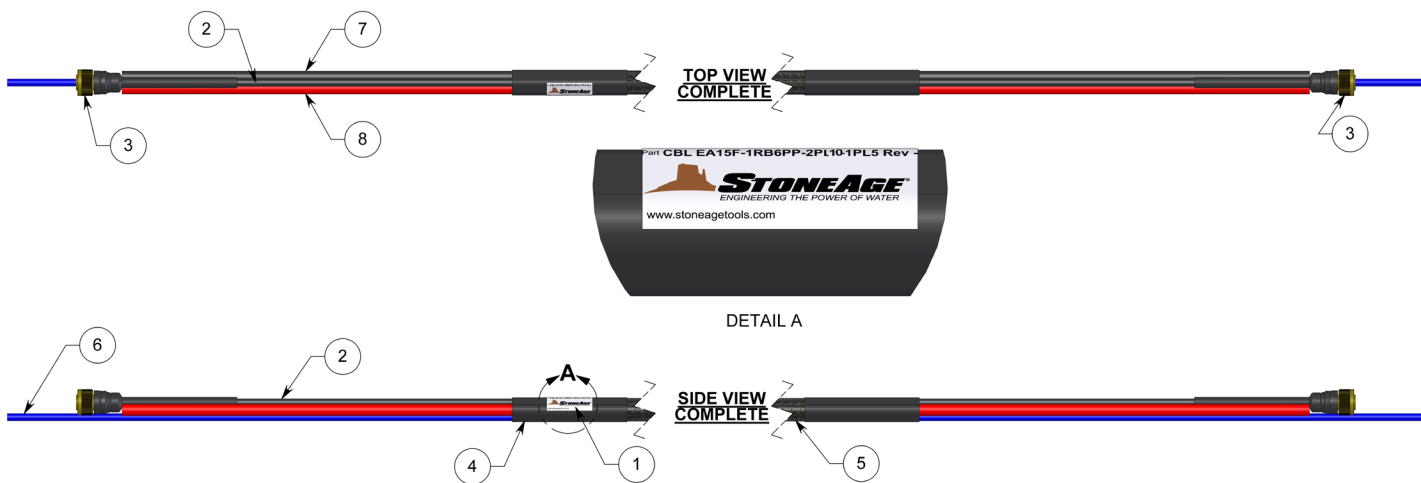
AUTOBOX® (ABXS 631)
LPS IDLER ROLLER (SINGLE) KIT



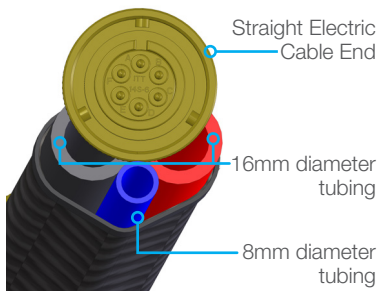
NOTE:
KIT TO INCLUDE: PL 700 LPS IDLER ROLLER INSTALLATION DIAGRAM.
*ABXS 631 KIT IS INCLUDED IN THE ABXS 628-XX SPARE PARTS KIT

#	PART NUMBER / DESCRIPTION	QTY
1	ABX 326 PERMANENTLY LUBRICATED STAINLESS STEEL BALL BEARING, SEALED, TRADE NUMBER R4-2RS, FOR 1/4" SHAFT DIAMETER	2
2	ABXS 142 ROLLER, IDLER	1
3	ABXS 145 SHIM WASHER, SS .020	2

AUTOBOX® (CBL EA15F-1RB6PP-2PL10-1PL5)
15FT ABXS TRACTOR CABLE ASSEMBLY



CONTROL LINE ENDS



#	PART NUMBER / DESCRIPTION	QTY	OAL EACH
1	CBL EA15F-1RB6PP-2PL10-1PL5.1 LABEL	1	
2	EA15F.1 WIRE, 1X4 PAIR, 24 (7/32_AWG COPPER ALLOY, .011" POLYPLEFIN	1	15'
3	EE CN-RB-PF6PS-14S-0001 PLUG, POT AND HEATSHRINK ENDBELL	2	
4	GPHS 1100-OLE-A-BK HEAT SHRINK, 1.1" ID , BLACK	2	5"
5	GPSL 0750-NYL-G-BK HOSE BUNDLE SLEEVE	1	11'-5"
6	GPTB 8MM6-PUR95A-BL 8MM OD X 6MM ID URETHANE TUBING, BLUE	1	15'-6"
7	GPTB 16MM11-PUR95A-BK 16MM OD X 11MM ID URETHANE TUBING, BLACK	1	14'-8"
8	GPTB 0500-PUR95A-RD 16MM OD X 11MM ID URETHANE TUBING, RED	1	14'-8"

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.stoneagetools.com/terms>

<http://www.stoneagetools.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.stoneagetools.com/ service. Unauthorized service, repair or modification of the Product or use of parts not approved by StoneAge will void this Limited Warranty. StoneAge reserves the right to change or improve the material and design of the Product at any time without notice to End-User, and StoneAge is not obligated to make the same improvements during warranty service to any Product previously manufactured.

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

5. REQUIRED WARRANTY PROCEDURES. To be eligible for warranty service, the End-User must: (1) report the Product defect to the entity where the Product was purchased (i.e. StoneAge or the Dealer) within the Limited Warranty Period specified in this Limited Warranty; (2) submit the original invoice to establish ownership and date of purchase; and (3) make the Product available to a StoneAge authorized service representative for inspection to

determine eligibility for coverage under this Limited Warranty. This Limited Warranty shall not extend to any person or entity who fails to provide proof of original purchase from StoneAge or a Dealer. No Product may be returned for credit or adjustment without prior written permission from StoneAge.

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

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

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

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

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

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



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