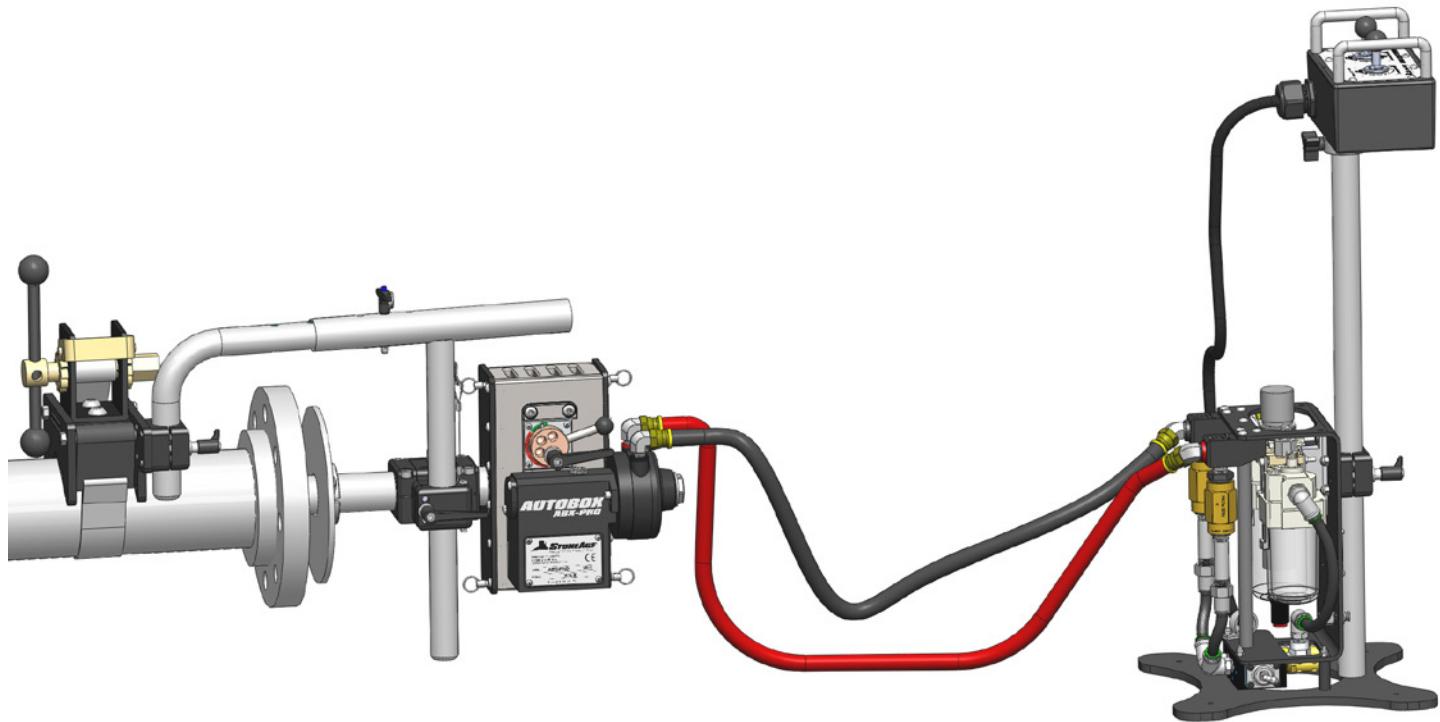




AUTOBOX® (ABX-PRO-100) CONTROL BOX (CB-ABX-PRO-100-X) & AUTOBOX® ABX-PRO ACCESSORIES USER MANUAL



PL 612 REV H
(05/2017)

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**CE DECLARATION OF INCORPORATION
OF PARTLY COMPLETED MACHINERY**

We: StoneAge, Inc. 466 South Skylan Drive Durango, CO 81303, USA

Declare that this "partly completed machinery" supplied with this declaration:

Equipment: AUTOBOX® ABX-PRO

Model name: ABX-PRO-100 is in accordance with the following Directives: and

- is designed and manufactured solely as a non-functional component to be incorporated into a machine requiring completion;
- must not be put into service within the European Community ("EC") until the final machinery into which it is to be incorporated has been declared in conformity with the Machinery Directive and all other applicable EC Directives; and
- is designed and manufactured to comply with the 2006/42/EC Essential Health and Safety Requirements of the Machinery Directives and the relevant parts of the following specifications:

EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction

We hereby declare that the equipment named above has been tested and found to comply with the relevant sections of the above referenced specifications and directives.

Date 06/15/2016

StoneAge Europe
Unit 2, Britannia Business Centre
Britannia Way
Malvern WR14 1GZ
United Kingdom

The Technical File for the AUTOBOX® (ABX-PRO-100) is maintained at: StoneAge, Inc. 466 South Skylan Drive, Durango, CO 81303, USA



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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).

SPECIFICATIONS

GENERAL:

Pipe Size	2" - 8" (51 mm - 203 mm)
Feed Rate	0.2 ft/sec - 2.5 ft/sec (61 mm/sec - 762 mm/sec)
Poly Hose Size	3/2-8/4, 3/8 Rubber Covered
Air Connection to CB	Chicago style twist-claw fitting
Air Connection from CB to Tractor	1/2" JIC

WEIGHTS:

ABX-PRO Tractor with rollers	< 25 lbs (11.3 kg)
Pedestal Mount Control Box	14 lb (6.4 kg)
Side Mount Control Box	14 lb (6.4 kg)

DIMENSIONS:

AUTOBOX® ABX-PRO-100	7" x 9.25" x 10" (178 mm x 235 mm x 254 mm)
Pedestal Mount control box	12" x 13" x 14" (305mm x 330mm x 356mm)
Side Mount control box	12" x 13" x 14" (305mm x 330mm x 356mm)

DESCRIPTION OF EQUIPMENT AND INTENDED USE

The AUTOBOX® ABX-PRO-100 is a hose feed device engineered to quickly and safely clean a broad range of pipes with or without a flange. The system is lightweight, portable, and highly adaptable, making it the perfect tool for limited access applications.

The AUTOBOX® ABX-PRO-100 is designed with multiple mounting options allowing it to be used with a wide variety of pipe sizes and configurations. The system also includes a lightweight control box for increased safety and mobility.

KEY FEATURES:

AUTOBOX® ABX-PRO-100

- Ultra portable system design allows a single operator to move, setup and run.
- Interchangeable rollers accommodate multiple hose sizes and can handle a wide range of tube/pipe cleaning applications.
- Adjustable forward and reverse feed rate to customize dwell time for consistent controllable cleaning in both directions and better results in less time.
- Multiple mounting options for pipes with or without a flange provide quick set-up in a variety of application environments.
- Built in back-out preventer and splash guard increases job site safety.
- Optional snout enables quick, easy setup for challenging or unique applications.

CB-ABX-PRO-100-X Control Box

- The Control Box is available in two different configurations;
-P for the Pedestal style
-S for the Side mount style
- Small, lightweight, ergonomic design that includes a portable floor stand and filter-regulator-lubricator assembly
- 10' (3048 mm) umbilical allows user to move with the controls
- Drive controls: forward/reverse hose feed

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.

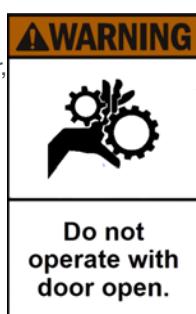
First aid provision - users MUST be provided with suitable first aid facilities at the operation site.

SAFETY LABEL DEFINITIONS

Replacement labels can be ordered through Stoneage®. See part diagrams for label locations and replace when necessary.

The AUTOBOX® ABX-PRO-100 has the potential to cause serious injury if fingers, hair, or clothing become caught between the hose rollers of the ABX-PRO Tractor.

DO NOT OPERATE WITH THE HOUSING 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 Waterjetting Equipment, or equivalent.

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

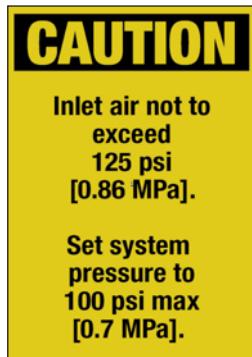
The risk assessment MUST consider potential material or substance hazards including:

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

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 (0.7 MPa). Never exceed 125 psi (0.56 MPa) supply pressure. Exceeding 125 psi (0.86 MPa) 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.

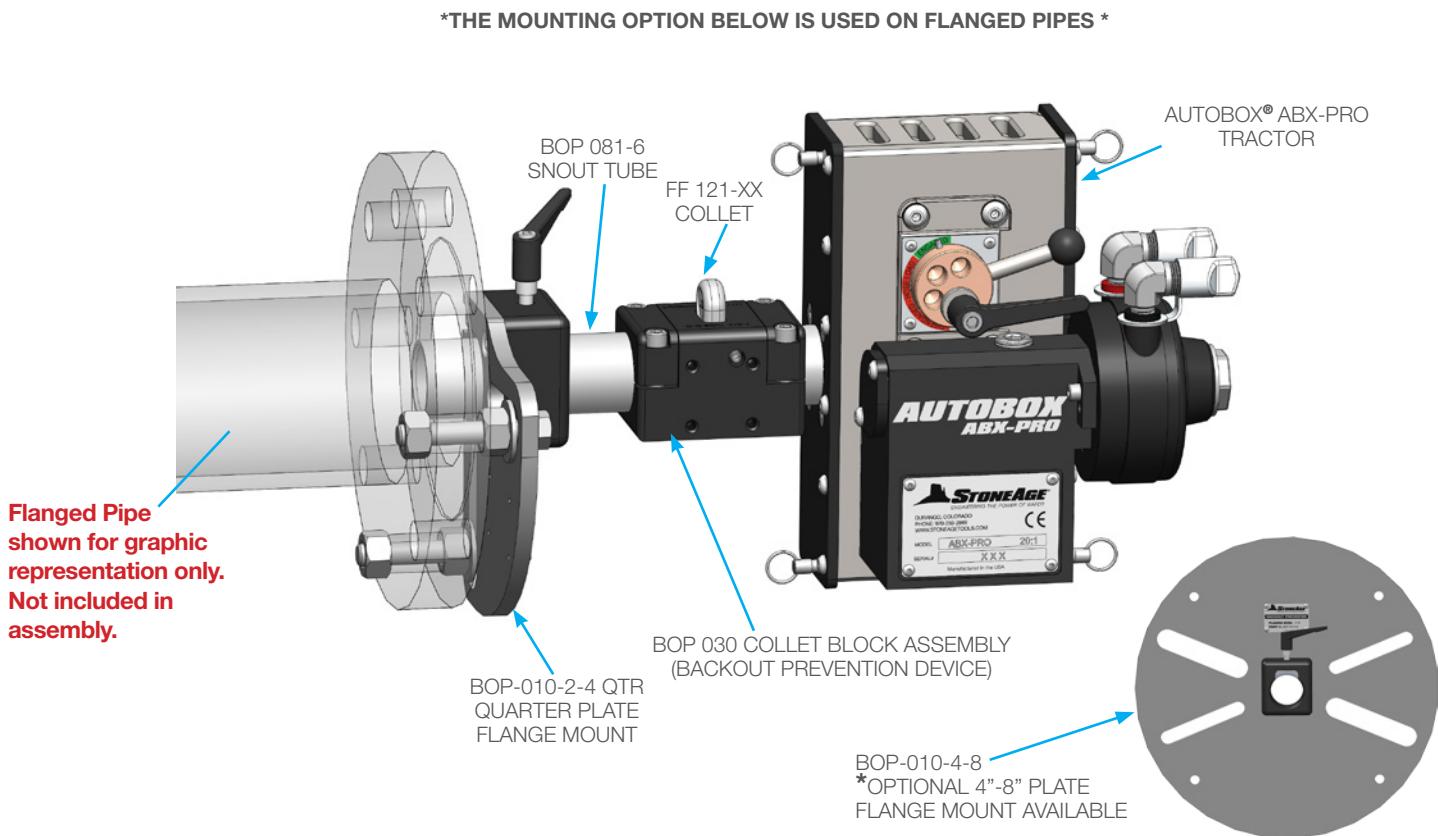
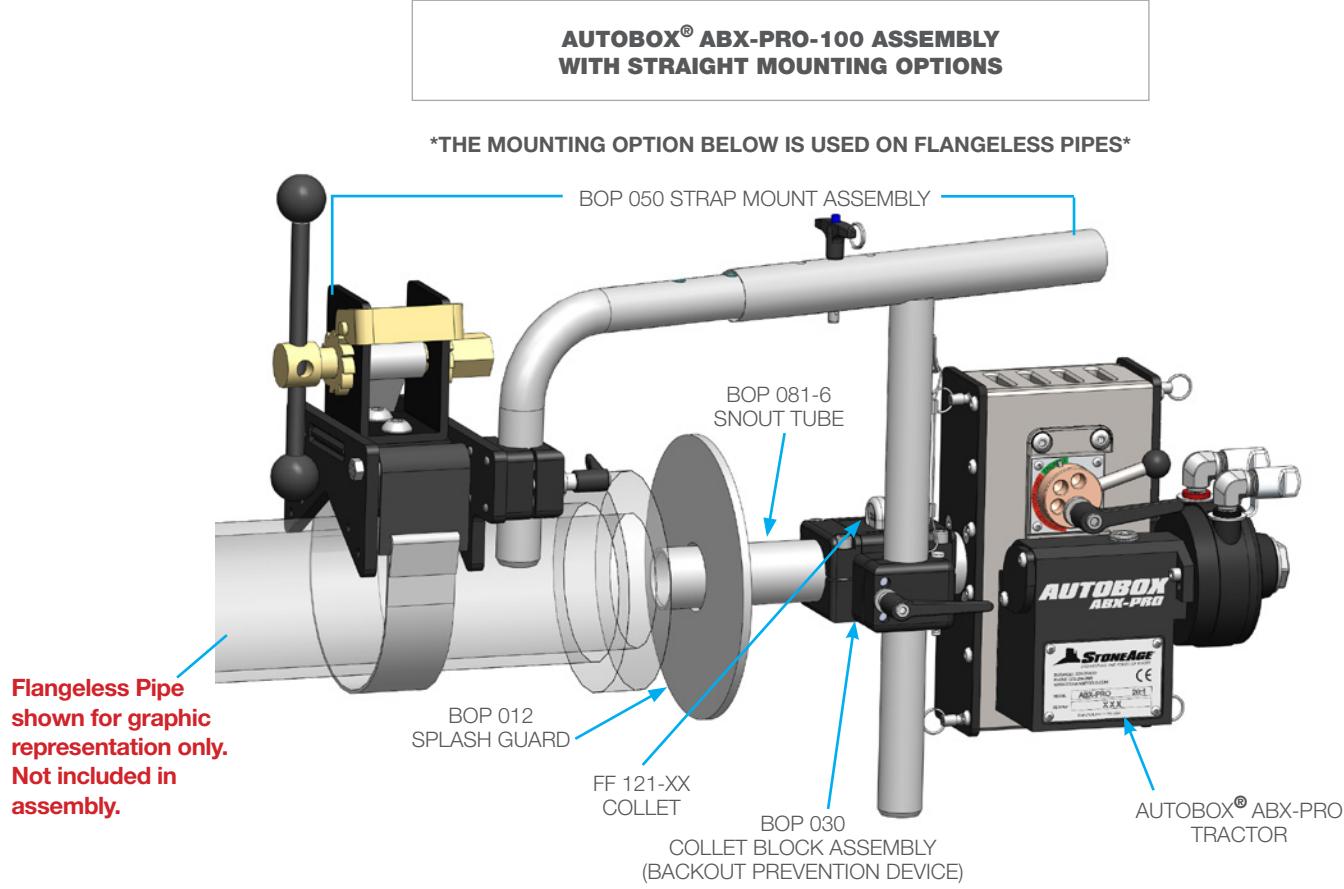
- Do not exceed the maximum operating pressure specified for any component in a system.
- The immediate work area MUST be marked off to keep out untrained persons.
- Inspect the equipment for visible signs of deterioration, damage, and improper assembly. Do not operate if damaged, until repaired.
- Make sure all threaded connections are tight and free of leaks.
- Users of the AUTOBOX® ABX-PRO-100 MUST be trained and/or experienced in the use and application of high-pressure technology and cleaning, as well as all associated safety measures, according to the WJTA Recommended Practices for the use of High-pressure Waterjetting Equipment.
- An anti-withdrawal device (back-out preventer) MUST be used at all times. The back-out prevention device is located on the Collet Block Assembly of the AUTOBOX® ABX-PRO-100. The instruction is located in the "Hose and Collet Installation" section of this manual.
- The Control Box should be located in a safe location where the Operator has good visibility of the pipe and hose. The AUTOBOX® ABX-PRO-100 and Control Box MUST be supervised at all times and should never be left unattended.
- Always de-energize the system before servicing or replacing any parts. Failure to do so can result in severe injury and/or death.

PRE-RUN SAFETY CHECK

Refer to WJTA-IMCA's, 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 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), and all other applicable safety devices are installed and set-up properly.****
- Test the Control Box before operating the AUTOBOX® ABX-PRO-100 with high-pressure water to verify the control valves move the hose in the intended direction, and that the 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



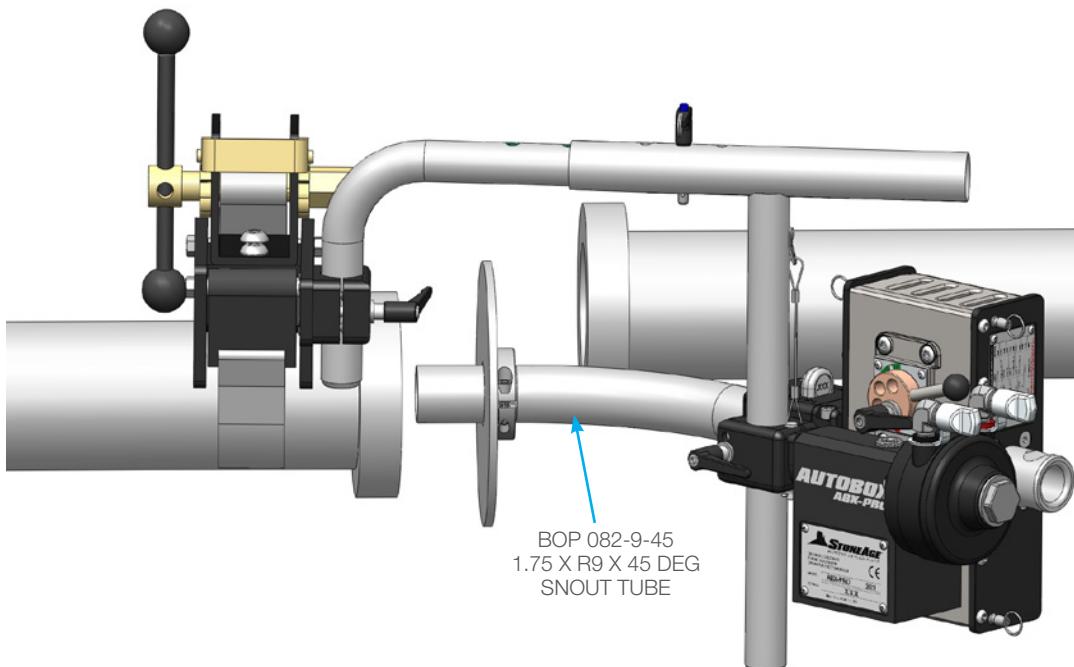
**AUTOBOX® ABX-PRO-100 ASSEMBLY
WITH OFF AXIS MOUNTING OPTIONS FOR TIGHT PIPE JOINTS**

THE MOUNTING OPTIONS BELOW ARE FOR USE WHEN THE PIPE JOINT WILL NOT SEPARATE ENOUGH TO ALLOW A STRAIGHT ENTRY CONNECTION.

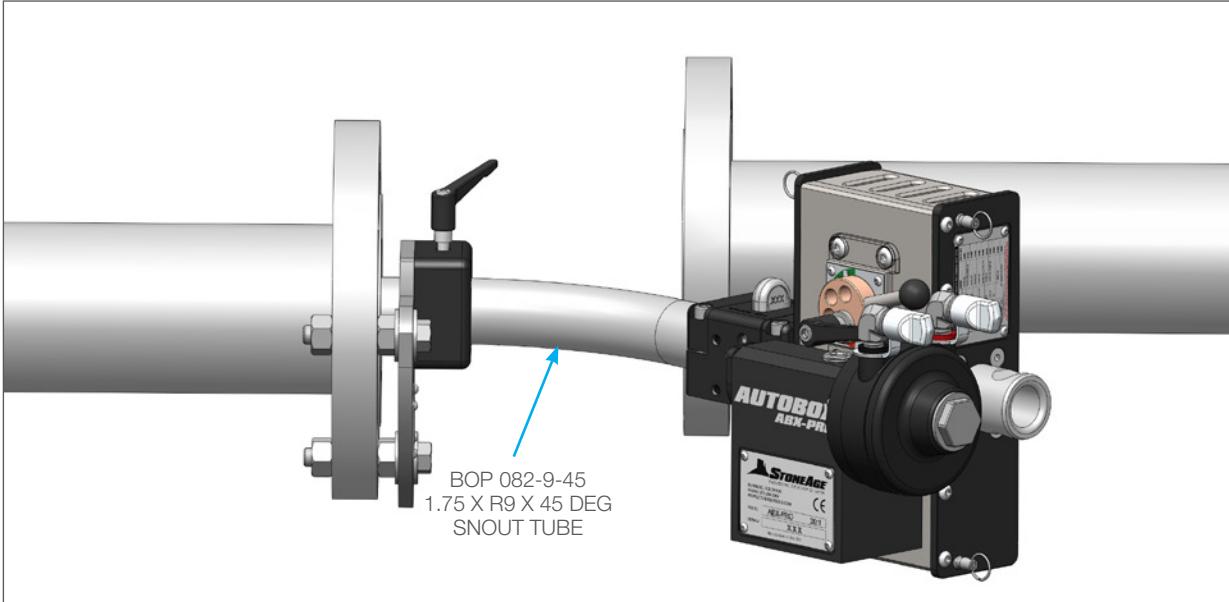
The BOP 082-9-45 is available through STONEAGE® for 45° BENDS. A standard 1.75" electrical conduit can also be used for connections of varying angles.

NOTICE

If using electrical conduit, be sure to maintain a greater than 6" centerline radius bend to avoid constraining the movement of the tool.



AUTOBOX® ABX-PRO-100 ASSEMBLY WITH STRAP MOUNT

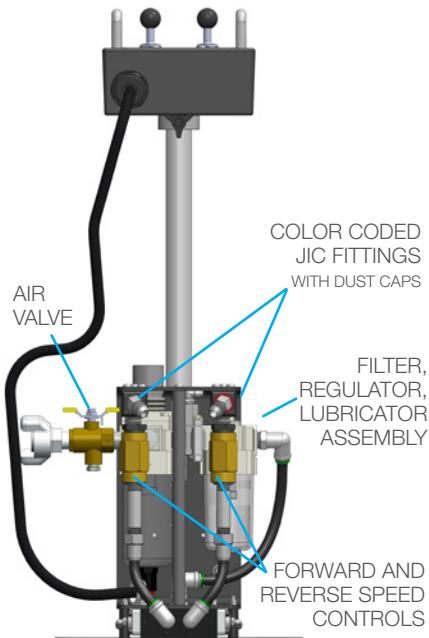


AUTOBOX® ABX-PRO-100 ASSEMBLY WITH QUARTER PLATE MOUNT

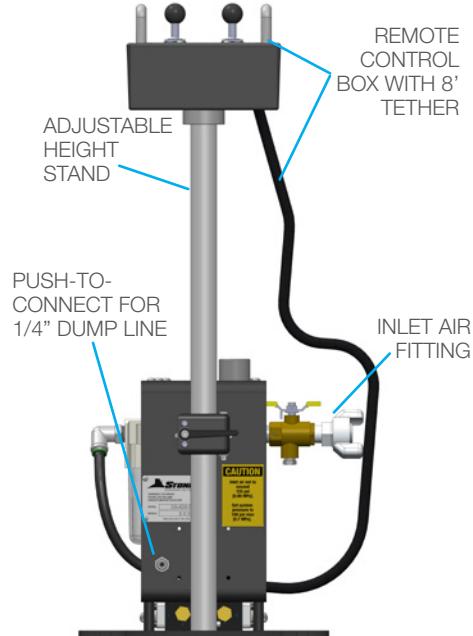
SYSTEM ASSEMBLY - OVERVIEW

**PEDESTAL MOUNT OPTION
CONTROL BOX**
(CB-PRO-100-P)

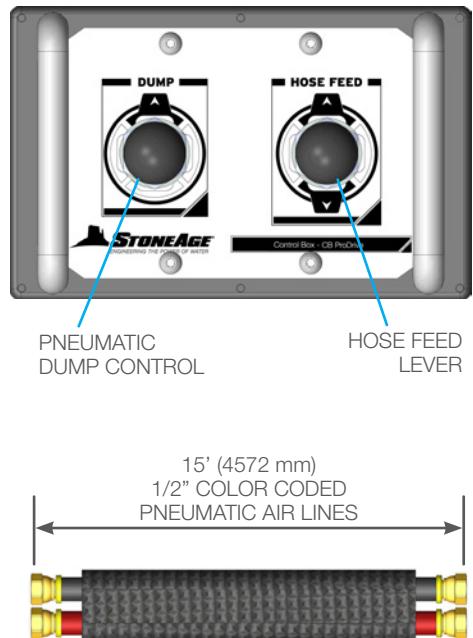
FRONT VIEW



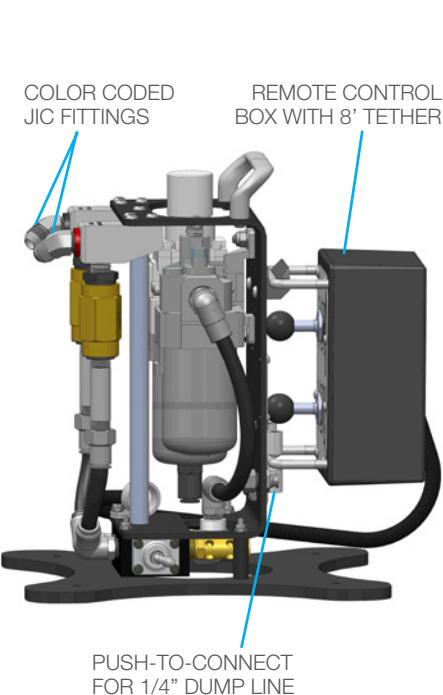
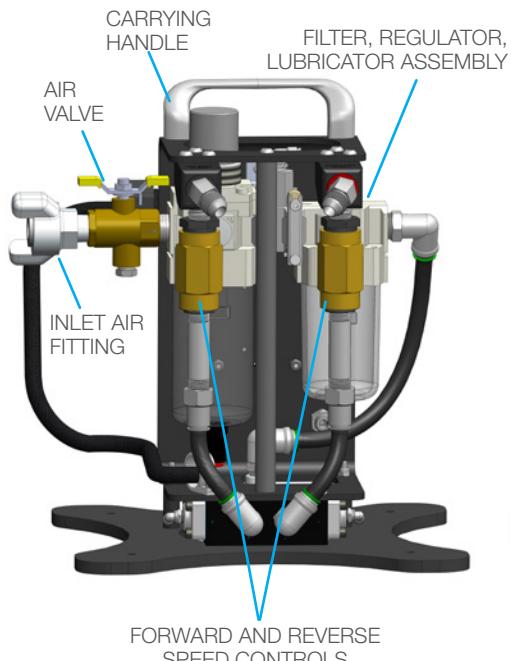
BACK VIEW



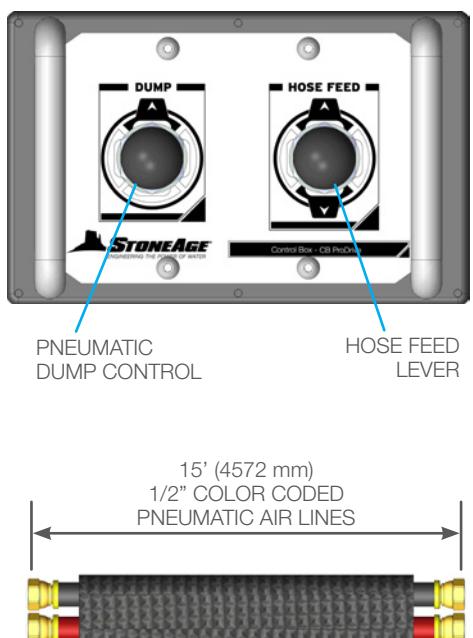
CONTROL PANEL VIEW



**SIDE MOUNT OPTION
CONTROL BOX**
(CB-PRO-100-S)



CONTROL PANEL VIEW



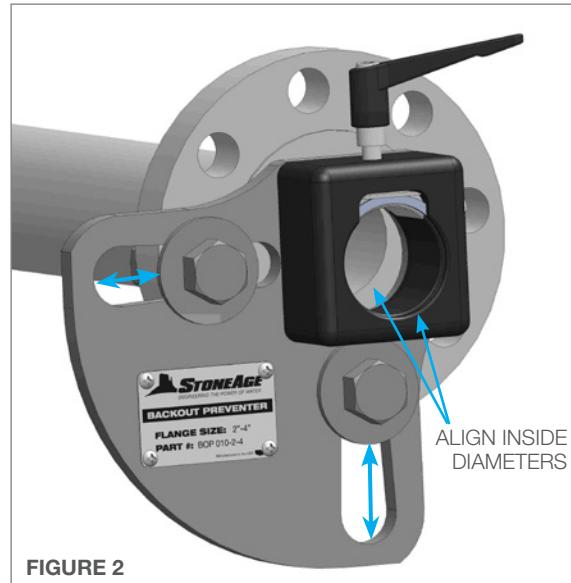
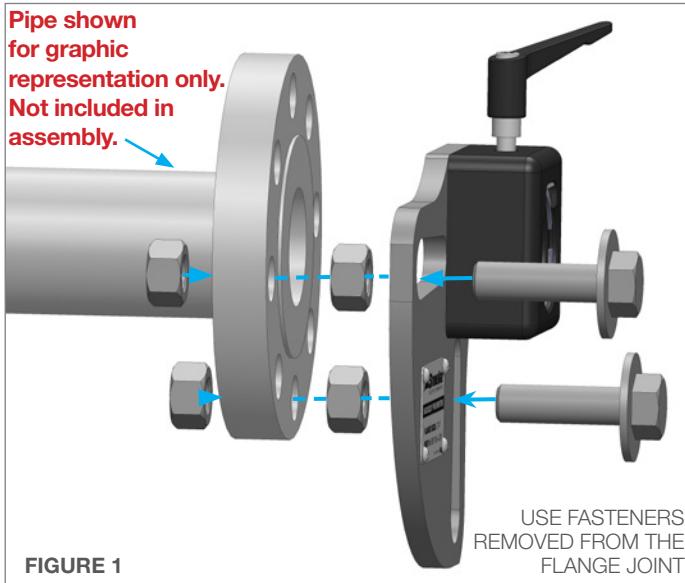
FRONT VIEW

SIDE VIEW

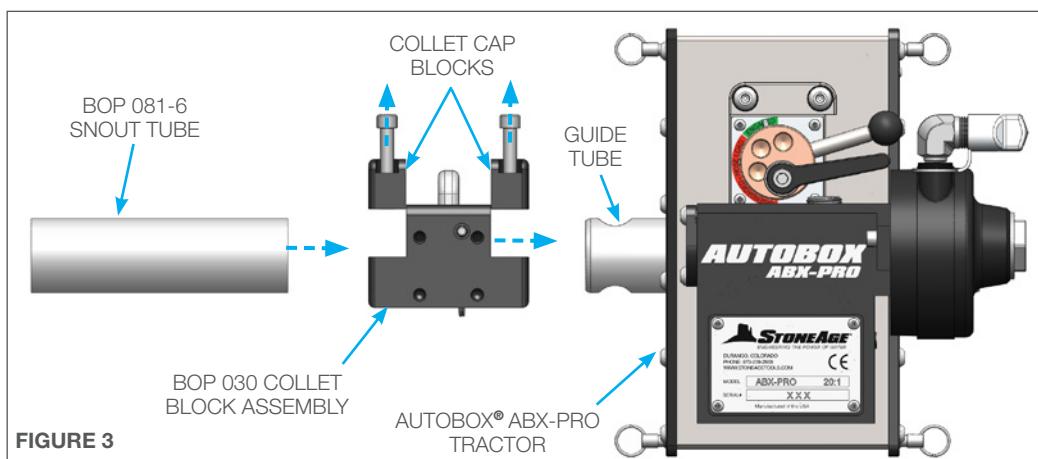
QUARTER PLATE FLANGE MOUNT ASSEMBLY SET-UP

QUARTER PLATE FLANGE MOUNT (BOP 010-2-4 QTR) TO PIPE AND ABX-PRO

1. Attach the Quarter Plate Flange Mount to the pipe flange using the fasteners that were removed from the flange joint. The nuts shown between the pipe flange and the Quarter Plate Flange Mount are to allow for drainage. Other spacer options such as washers are acceptable. (**Figure 1**)
2. Adjust the Quarter Plate Flange Mount by sliding it along the slots to center the inside diameter of the Hinge Clamp with the inside diameter of the pipe. Tighten all hardware to secure in place. (**Figure 2**)

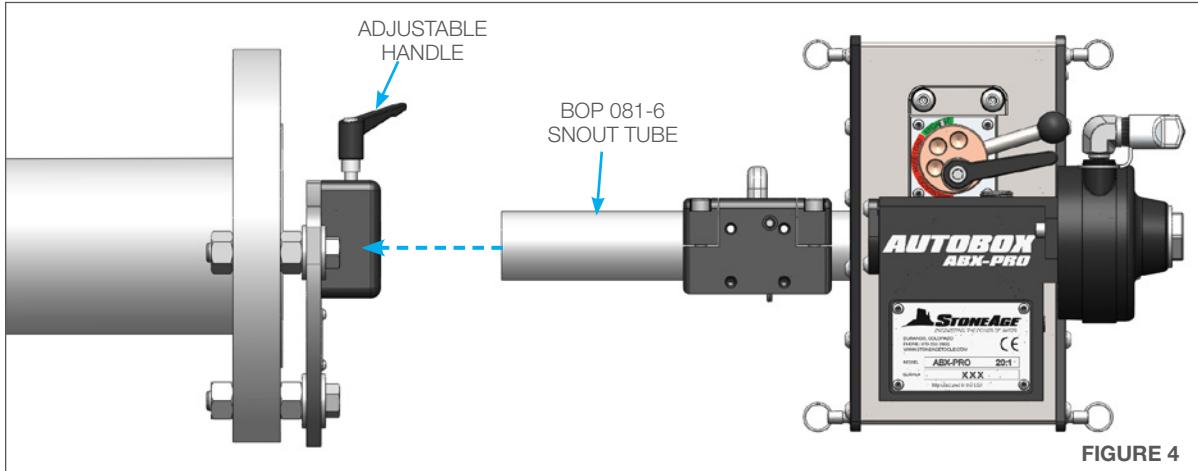


3. Loosen the screws on both collet cap blocks. Slide the BOP 030 Collet Block Assembly onto the guide tube on the ABX-PRO and tighten the two screws until secure. Slide the BOP 081-6 Snout Tube into the BOP 030 Collet Block Assembly. Push the Snout Tube in until it stops, then tighten the two until secure. (**Figure 3**)

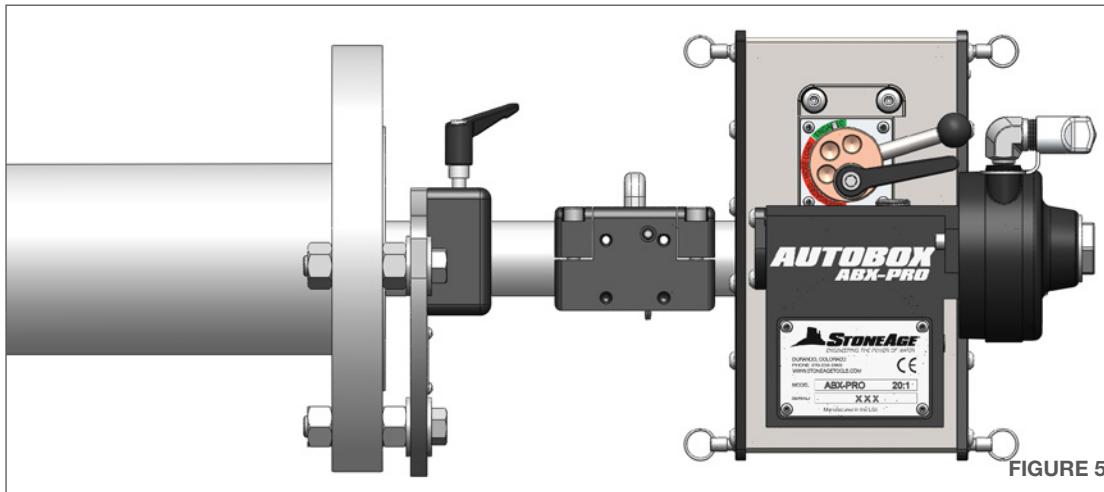


QUARTER PLATE FLANGE MOUNT ASSEMBLY SET-UP

4. Loosen the adjustable handle on the Hinge Clamp. Slide the Snout Tube into the Quarter Plate Flange Mount. Tighten the adjustable handle to secure. (**Figure 4**)



5. The Quarter Plate Flange Mount option is now ready to be loaded with a high pressure hose. (**Figure 5**) Go to page 17, "Hose and Collet Installation" for instructions.



4"-8" FLANGE MOUNT PLATE (BOP 010-4-8)

1. Attach the 4"-8" Flange Mount Plate to the pipe flange using the fasteners that were removed from the flange joint. The nuts shown between the flange and the Flange Mount Plate are to allow for drainage. Other spacer options are acceptable. (**Figure 1**)
2. Align the appropriate slots or pre-drilled holes to the hole pattern on the flange. Adjust the Flange Mount Plate by sliding it along the slots to center the inside diameter of the Hinge Clamp with the inside diameter of the pipe. Tighten all hardware to secure in place. (**Figure 2**)

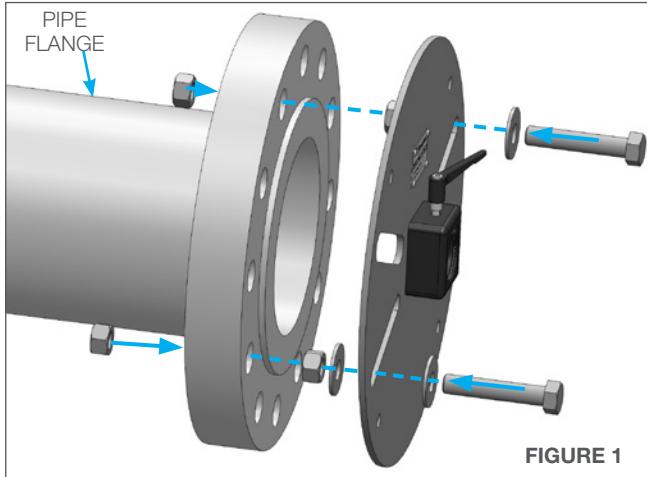


FIGURE 1

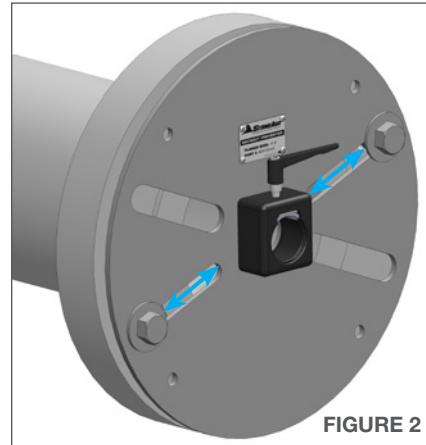
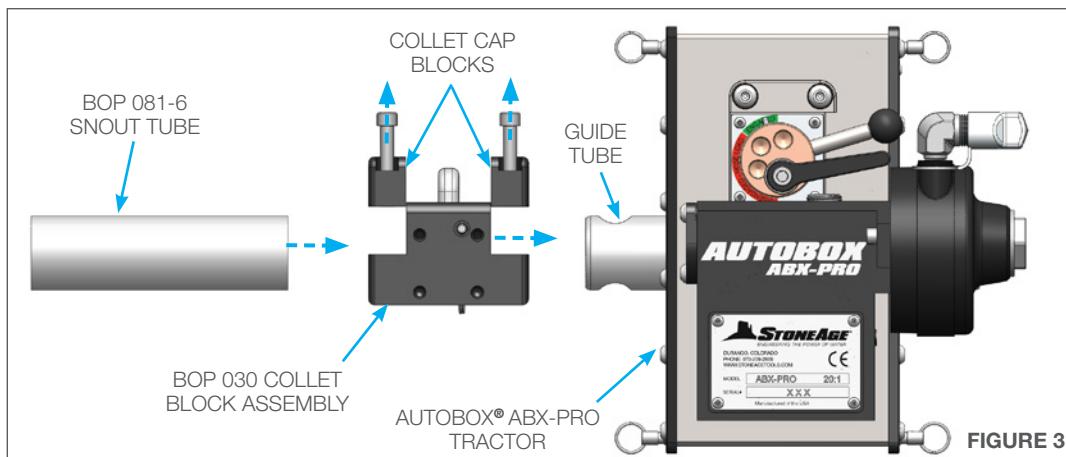


FIGURE 2

3. Loosen the screws on both collet cap blocks. Slide the BOP 030 Collet Block Assembly onto the guide tube on the ABX-PRO and tighten the two screws until secure. Slide the BOP 081-6 Snout Tube into the BOP 030 Collet Block Assembly. Push the Snout Tube in until it stops, then tighten the two until secure. (**Figure 3**)



4. Loosen the adjustable handle on the Hinge Clamp. Slide the Snout Tube into the 4"-8" Plate Flange Mount. Tighten the adjustable handle to secure. The 4"-8" Plate Flange Mount option is now ready to be loaded with the high pressure hose. (**Figure 4**) Go to page 17, "Hose and Collet Installation" for instructions.

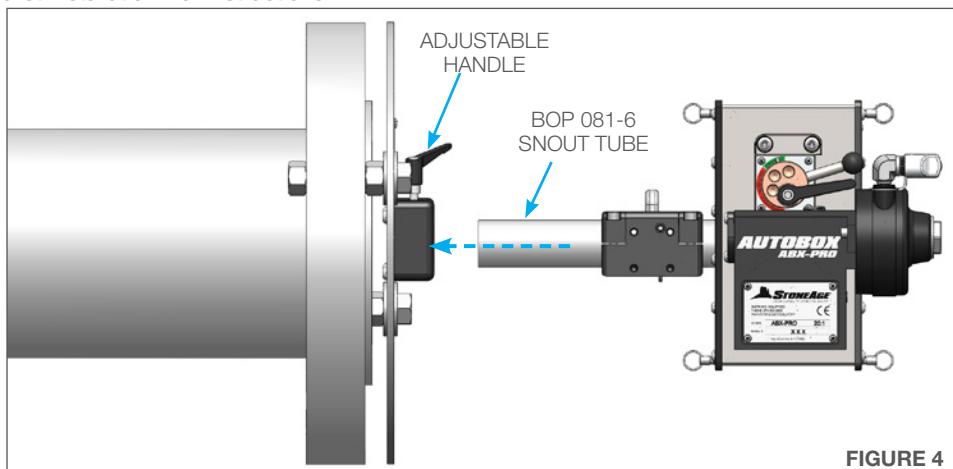


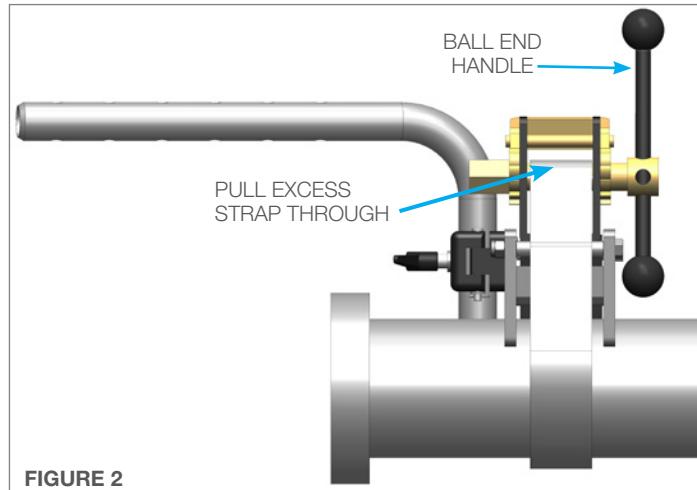
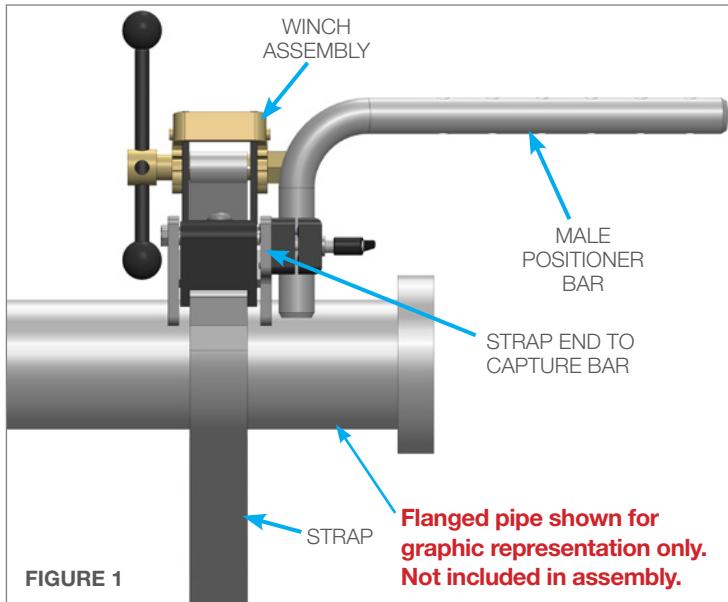
FIGURE 4

STRAP MOUNT ASSEMBLY SET-UP

STRAP MOUNT ASSEMBLY (BOP 050) - MALE POSITIONER SIDE

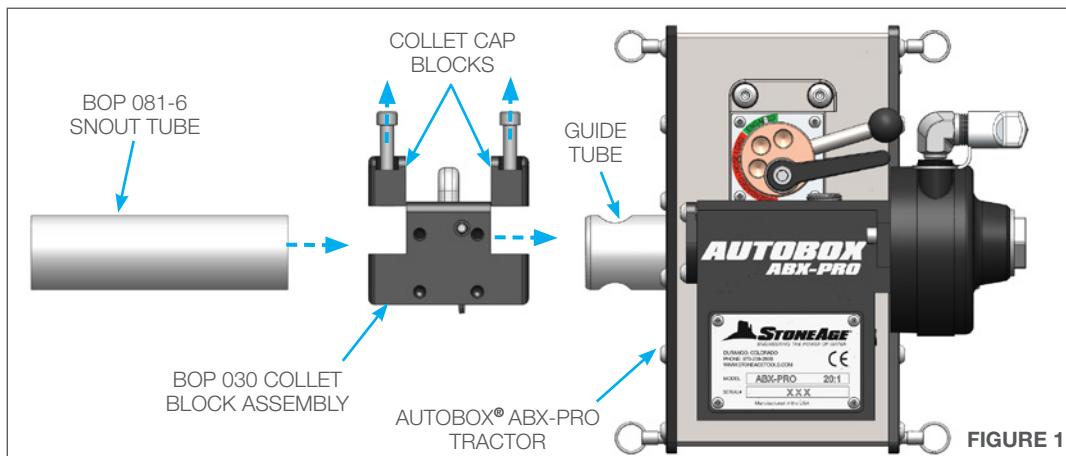
The Strap Mount Assembly (BOP 050) is designed for pipes that do not have flanges.

1. Attach the strap end to the strap capture bar and wrap the strap around the pipe towards the Winch Assembly. (**Figure 1**)
2. Pull excess strap through the Winch Assembly and tighten down with the Ball End Handle. (**Figure 2**)



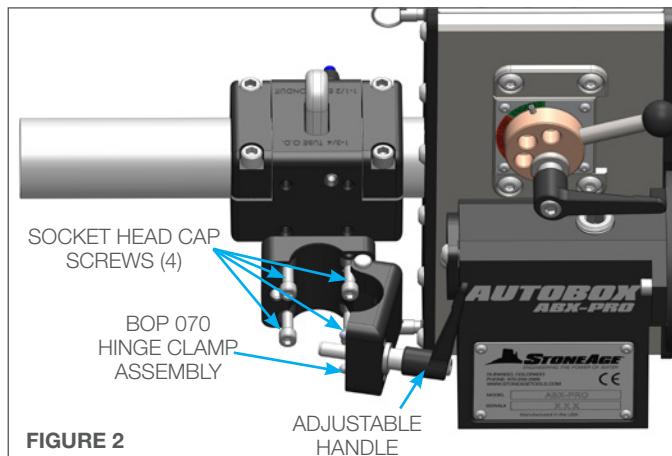
STRAP MOUNT ASSEMBLY (BOP 050) - FEMALE POSITIONER SIDE

1. Loosen the screws on both collet cap blocks. Slide the BOP 030 Collet Block Assembly onto the guide tube on the ABX-PRO and tighten the two screws until secure. Slide the BOP 081-6 Snout Tube into the BOP 030 Collet Block Assembly. Push the Snout Tube in until it stops, then tighten the two until secure. (**Figure 1**)

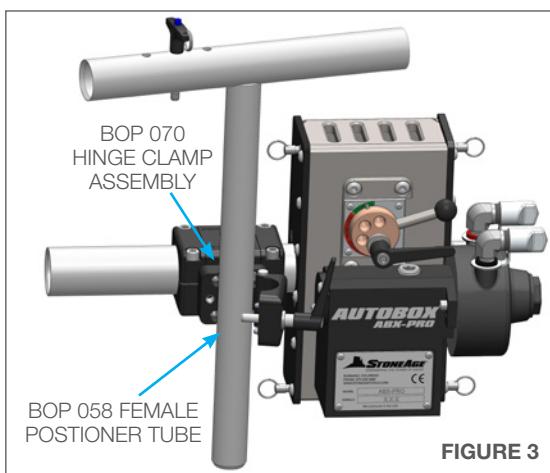


STRAP MOUNT ASSEMBLY SET-UP

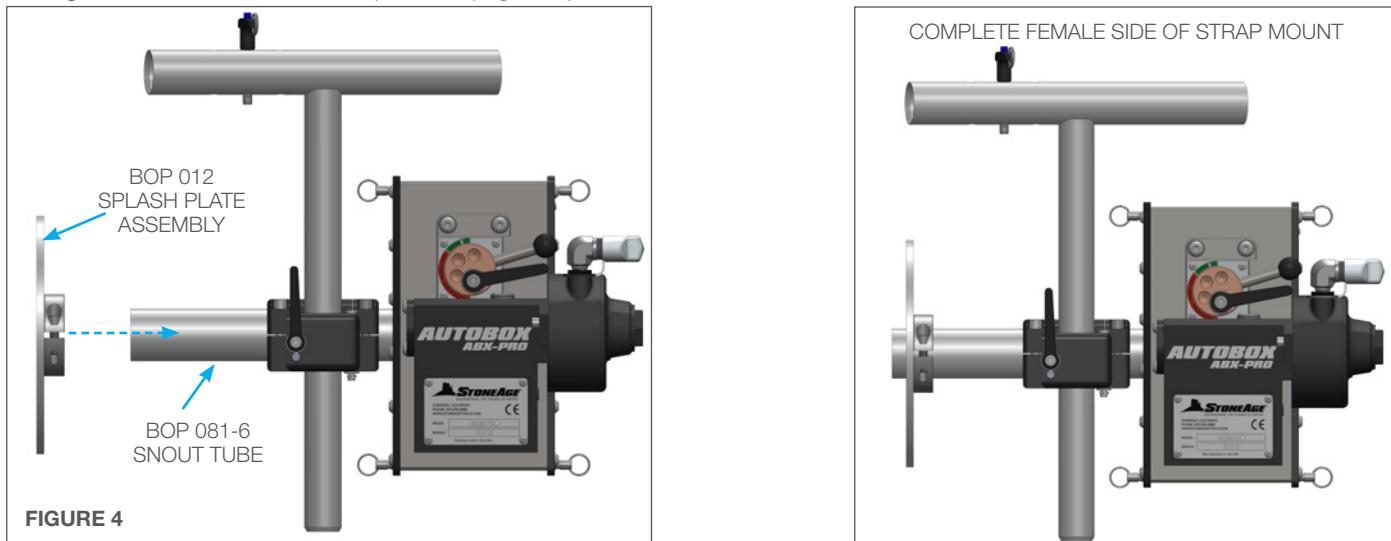
2. Release the Adjustable Handle on the BOP 070 Hinge Clamp to access the 4 socket head cap screws. Locate the side of the BOP 030 Collet Block Assembly with 4 threaded holes. Orient the Hinge Clamp so that the hinge is on the right. Fasten the Hinge Clamp Assembly to the Collet Block Assembly using the 4 supplied socket head cap screws. (**Figure 2**)



3. Insert the BOP 058 Female Positioner Assembly into the Hinge Clamp Assembly then close the Hinge Clamp Assembly and tighten the Adjustable Handle. The Female Positioner height can be adjusted in the open or closed position and is designed to be adjustable based on the size of the pipe. (**Figure 3**)



4. To Install the BOP 012 OPTIONAL Splash Plate, loosen the two bolts on the collar, slide it onto the BOP 081-6 Snout Tube and hand tighten the collar bolts when in position. (**Figure 4**)



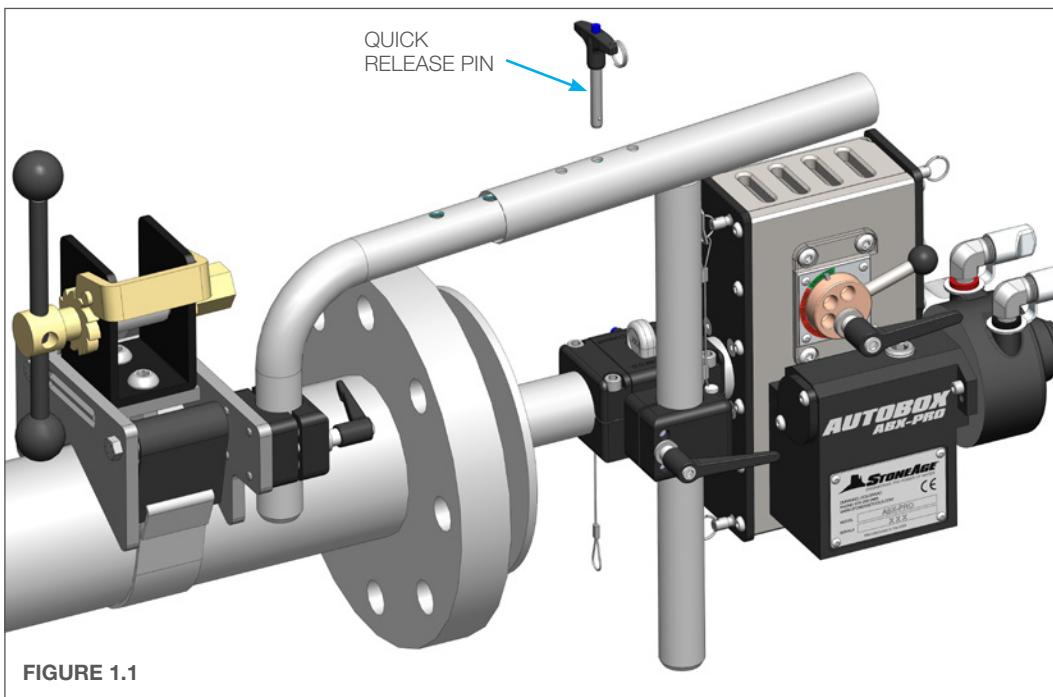
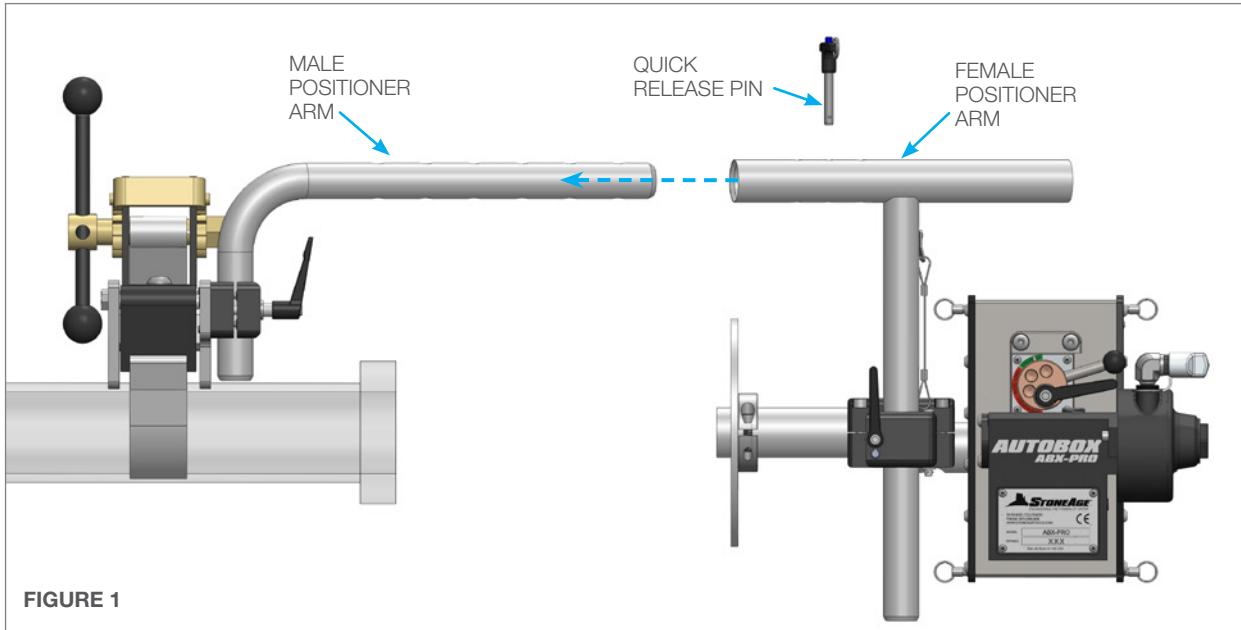
STRAP MOUNT ASSEMBLY SET-UP

FEMALE POSITIONER ARM TO MALE POSITIONER ARM CONNECTION

⚠ WARNING

Prior to use, always tighten and test the Backout Preventer to ensure the tool does not pass backward toward the Collet Block Assembly. Failure to do so can result in severe injury and/or death.

1. Slide the Female Positioner Arm onto the Male Positioner Arm. (**Figure 1**) Line up the incremental holes and push the Quick Release Pin through both positioner arms. (**Figure 1.1**)

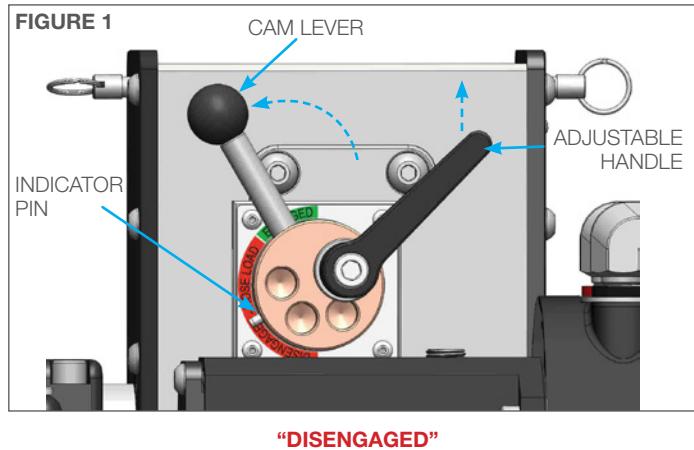


LOADING THE HIGH-PRESSURE HOSE

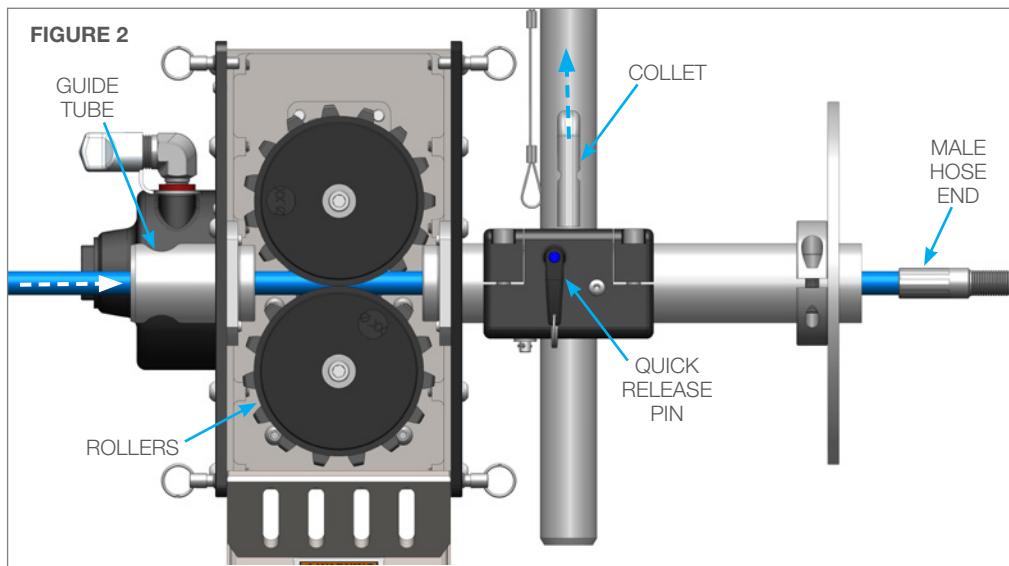
NOTICE

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. Do not use a shrouded hose or hose with a steel protective cover. This will cause severe damage to the Rollers.

- To load a hose, release the Adjustable Handle and rotate the Cam Lever until the Indicator Pin is in the “**Disengaged**” position. This opens up the space between the rollers. (**Figure 1**)



- Pull out the Quick Release Pin and remove the Collet. Feed the male hose end into the guide tube, through the rollers and out the end of the BOP 081-6 Snout Tube. (**Figure 2**) Go to page 23, “Roller and Collet Selection” to determine the appropriate size Rollers and Collets for the high pressure hose diameter.

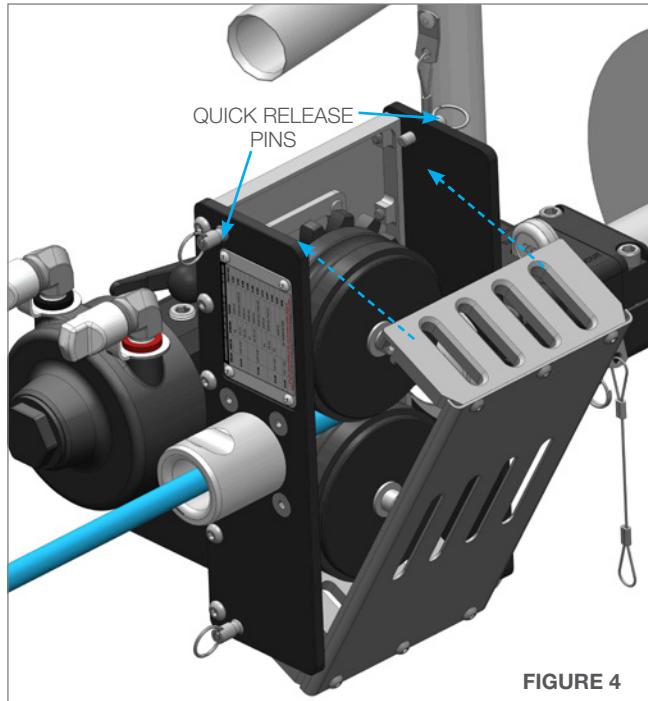
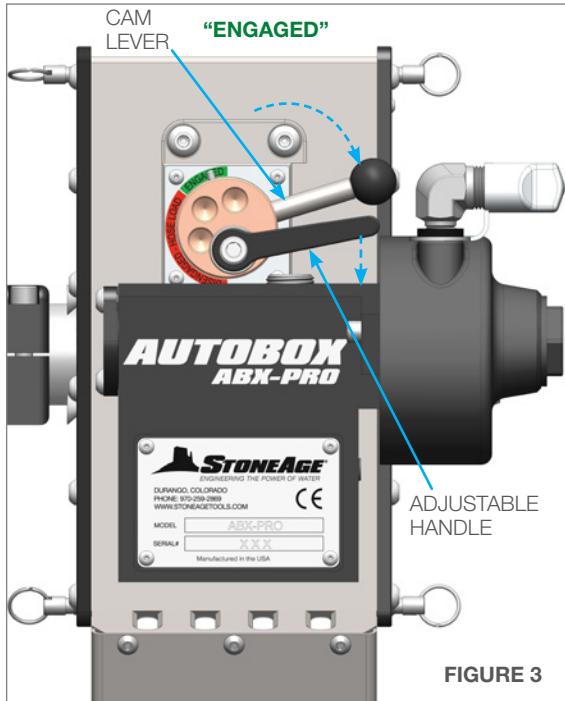


HOSE AND COLLET INSTALLATION

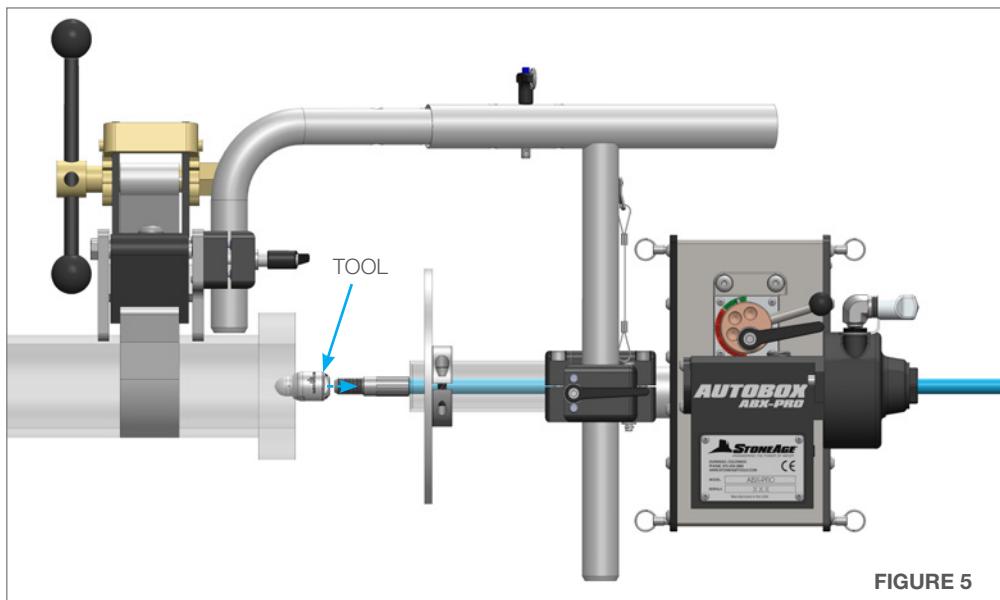
3. Rotate the Cam Lever clockwise to the “**Engaged**” position to tighten the Idler Roller down onto the hose. There should be a slow slip on the hose. If the slip is too tight or loose, move the Eccentric Lever off until a slow slip is obtained. Once the slip level is achieved, push down on the Adjustable Handle to tighten the bushing assembly. (**Figure 3**)
4. Push the back cover back into the closed position and secure the two Quick Release Pins on the top of the AUTOBOX® ABX-PRO TRACTOR. (**Figure 4**)

⚠ WARNING

Prior to use, always tighten and test the backout preventer to ensure the tool does not pass backward toward the Collet Block Assembly. Failure to do so can result in severe injury and/or death. It is the responsibility of the user to select proper collet sizing to assure the end of the hose will not pass through the collet.



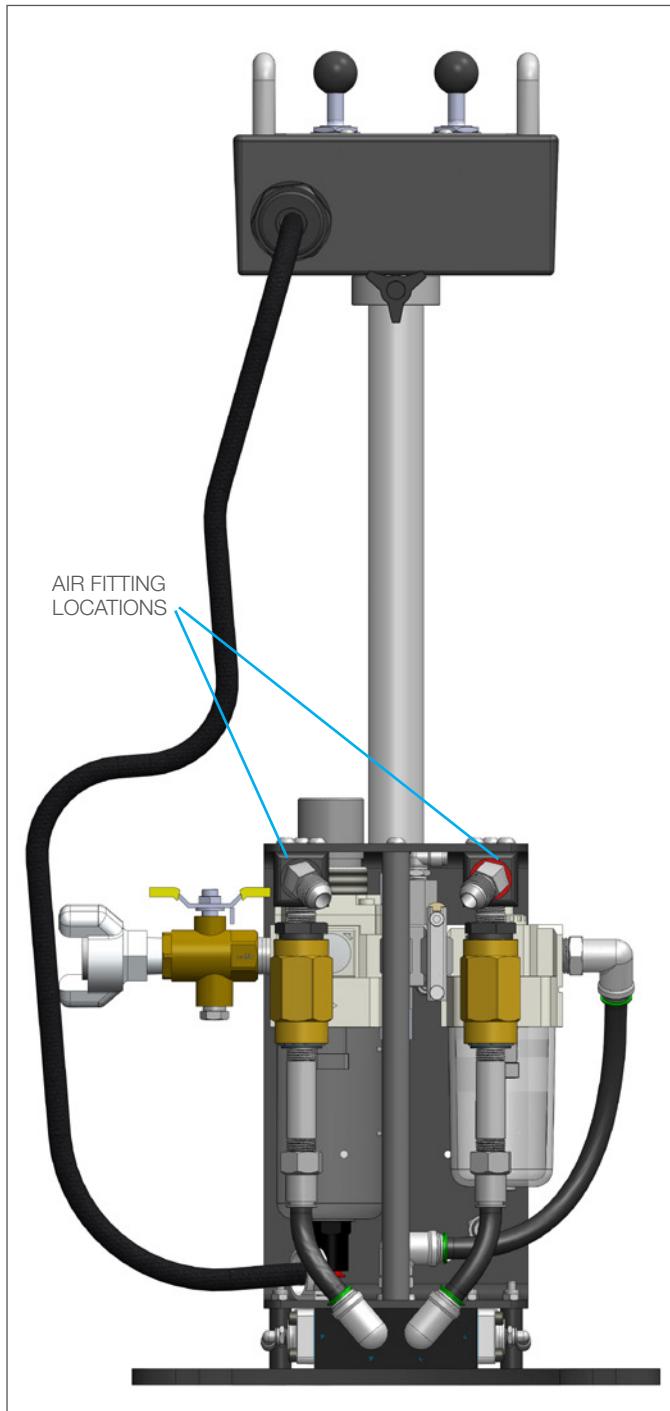
5. Attach the desired tool onto the male hose end (Stoneage® BT25 Beetle® shown for reference). SEE THE APPLICABLE TOOL MANUAL FOR SPECIFIC INSTALLATION INSTRUCTIONS.



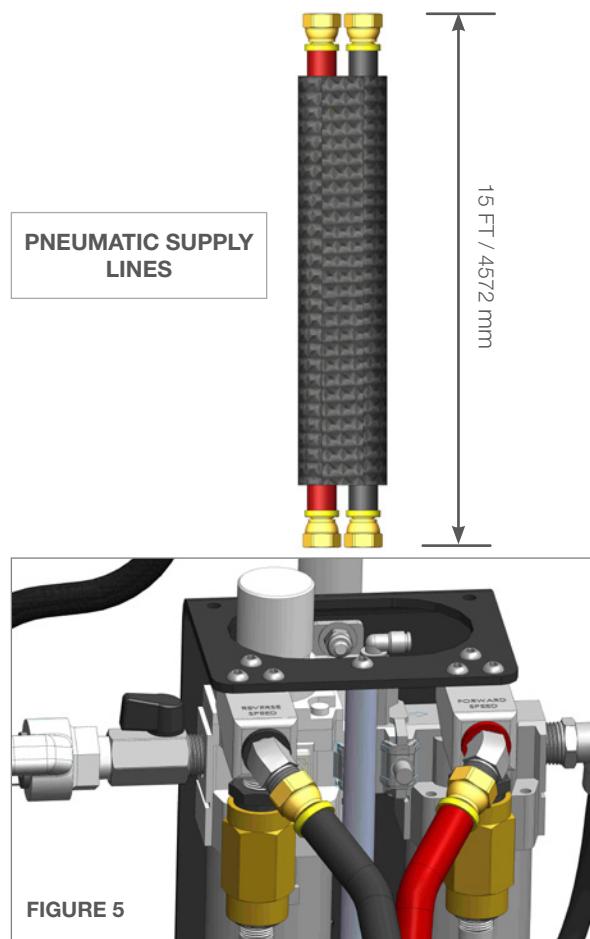
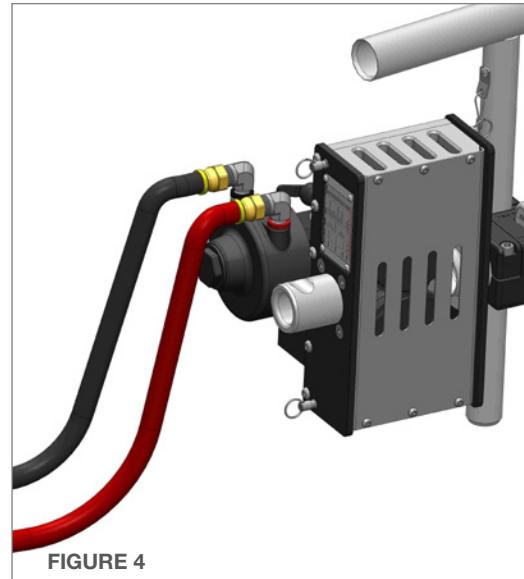
PNEUMATIC AIR LINE CONNECTIONS

4. Pull the Dust Caps off the Pneumatic Air Fittings. Connect the Pneumatic Supply Lines from the CB-ABX-PRO-100-X Control Box to the AUTOBOX® ABX-PRO-100. Pay close attention to the color coded tabs on the air fittings of the Air Motor and the Control Box. Connect the red hose to the red banded air fittings and the black hose to the black banded air fittings. (**Figure 4 & 5**)

CONTROL BOX WITH PEDESTAL MOUNT



AIR MOTOR ON TRACTOR ASSEMBLY



AIR FITTINGS ON CONTROL BOX ASSEMBLY

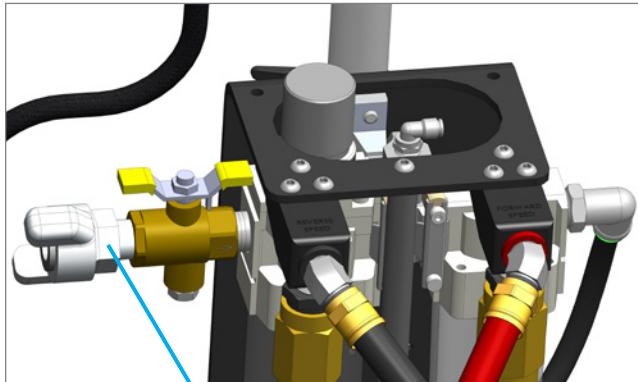
CONTROL BOX SET-UP

AIR SUPPLY AND LUBRICATOR SETTING

1. 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. If another pneumatic connection is preferred, this fitting can be removed and any male 1/2 in NPT fitting may be used.
2. Using the pressure regulator on the FRL, adjust the operating pressure to 100 psi (0.7 MPa) for the application.

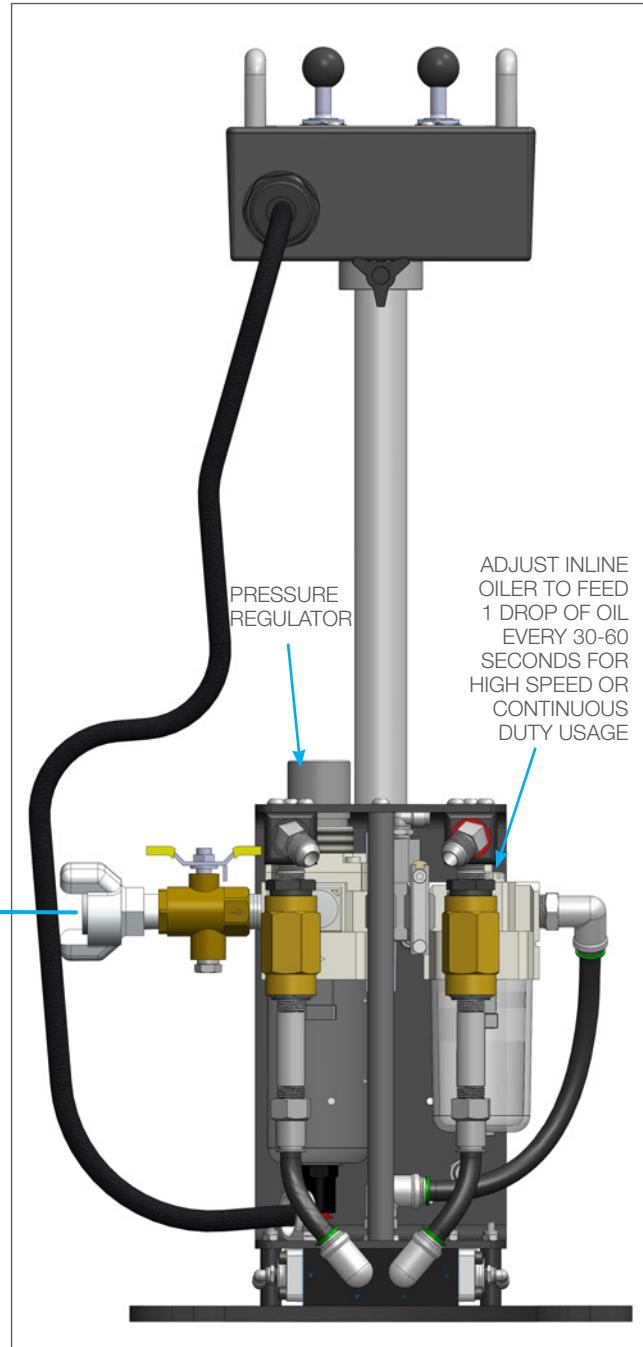
⚠ WARNING

Maximum operating pressure is 100 psi (0.7 MPa). Never exceed 125 psi (0.86 MPa) supply pressure. Exceeding 125 psi (0.86 MPa) supply pressure may result in injury to the Operator and/or damage to the equipment.



AIR SUPPLY FITTING

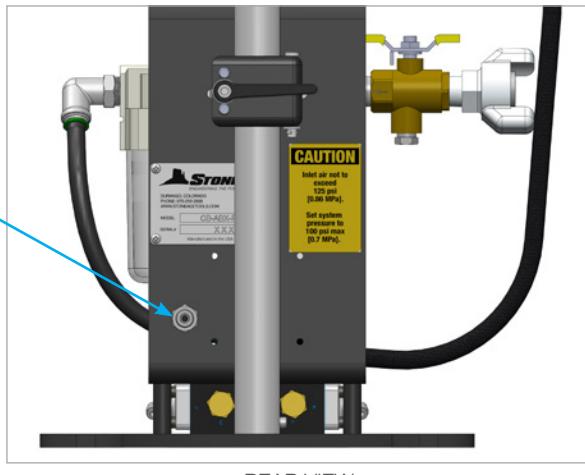
A universal **AIR SUPPLY FITTING** (Chicago style) is located on the FRL. Connect a compatible compressed air line (not included) according to the manufacturer's instructions. If another pneumatic connection is preferred, this fitting can be removed and any male 1/2 in NPT fitting may be used.



PNEUMATIC DUMP CONTROL FITTING AND LINE

A **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. (6.35 mm) O.D. nylon tubing (not included) between the **DUMP CONTROL FITTING** and the pneumatic dump valve. (NOT INCLUDED)

DUMP CONTROL FITTING
INSTALL 1/4 IN. (6.35 MM) O.D. NYLON
TUBING (NOT INCLUDED) HERE



REAR VIEW

OPERATION

CONTROL PANEL OPERATION

The Control Box consists of a base unit with a tethered Remote Box to allow the operator to easily move around if desired. There are two levers on the Remote Box: **DUMP** and **HOSE FEED**. The levers are spring loaded to return to the center, **OFF** position.

The **DUMP** lever, when pushed forward, provides air to the 1/4" push-connect fitting that is intended to supply air to a pneumatic dump valve to divert high-pressure water to the tool.

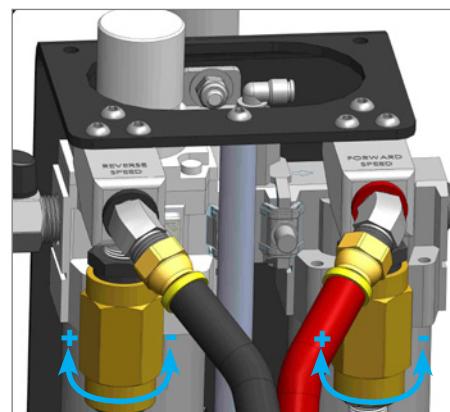
When the **HOSE FEED** lever is pushed forward, it drives the hose forward into the pipe. When the **HOSE FEED** lever is pulled backward, it retracts the hose from the pipe.

Forward and Reverse **HOSE FEED SPEED** can be adjusted independently using the brass colored flow control valves on the base of the control box. The Forward and Reverse directions are labeled. Rotate the flow controls in the clockwise direction to increase the speed and counterclockwise to slow the speed. Slow speeds are required to go forward through bends. Faster speeds are acceptable during retraction.

CONTROL PANEL REMOTE BOX



SPEED / FLOW CONTROLS



MAINTENANCE AND TROUBLESHOOTING

MAINTENANCE

Maintenance Item	Frequency	Maintenance Required
Air Motors	After each use	Apply a small amount of air tool oil directly into the forward and reverse fittings. Then, briefly operate the controls at slow speed for a short duration in each direction to coat the interior parts of the motor.
All Air Fittings	After each use	Reinstall all dust caps to protect from dirt and moisture.
All components the hoses pass through	After each use	As wear occurs the rounded edges could become sharp and damage hoses. Any components showing excessive wear should be replaced.
Roller grooves	Before each use	Replace roller if cuts or roughness is present. (See the Roller Removal and Installation pages in this manual)
Hose	After each use	Install cap on threads to protect threads and prevent contamination.
Lubricator of control box	Before each use	Add oil when fluid drops below minimum level marking.
Snout and BOP Components	After each use	Wash out any material build up to prevent components from being clogged.
Waterblast Tool	After each use	Remove tool, lubricate and store in clean container.
Webbing strap	Before each use	Replace strap when frayed, cut or torn

TROUBLESHOOTING

Problem	Solution
No air is delivered to tool	<ul style="list-style-type: none">-Check that shut-off valve near regulator is open-Check that regulator is set to 100 psi-Open flow control valves by rotating the brass colored speed controls in the counterclockwise direction.
Hose is being damaged by Rollers	<ul style="list-style-type: none">-Check that the proper Rollers are installed (see roller and collet reference plate)-Loosen eccentric lever to reduce clamp force on hose.-Check Rollers for excessive wear in groove
Hose slippage on Rollers	<ul style="list-style-type: none">-Check that the proper Rollers are installed (see roller and collet reference plate)-Tighten eccentric lever to retain clamp force on hose.

Contact StoneAge for Safety Data Sheets for material usage, a complete list of spare part numbers, and service instructions for the AUTOBOX® ABX-PRO-100 and CB-ABX-PRO-100-X Control Box.

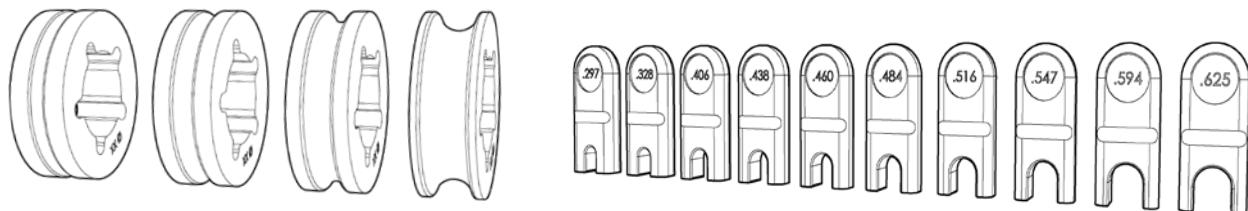
STORAGE, TRANSPORTATION, AND HANDLING

When storing the unit, use compressed air to blow out the air lines to remove debris and moisture. Use mild soapy water to clean the machine in order to remove corrosive materials.

SELECTING THE APPROPRIATE COLLET AND ROLLERS

The AUTOBOX® ABX-PRO-100 comes with one pair of the PRO 174-46 installed in the AUTOBOX® ABX-PRO TRACTOR. It also comes with a pair of the PRO 174-34 and PRO 174-58 rollers in the package. The PRO 174-89 rollers are available for 3/8" hoses but not included. The sizing chart below is also located on a plaque near the air motor on the AUTOBOX® ABX-PRO TRACTOR.

POLY ROLLERS ABX-PRO	HOSE OD	SPIRSTAR	PARKER	COLLET SIZE	STONEAGE PART NUMBER
PRO 174-34 Ø 0.34 IN.	0.26–0.38 IN.	3/2	2240D-02	0.297 in. / 7.5 mm	FF 121-297
		3/4, 4/2	2240D-025, 2440D-02	0.328 in. / 8.0 mm	FF 121-328
		3/6, 5/2	2240D-03	0.406 in. / 10.0 mm	FF 121-406
PRO 174-46 Ø 0.46 IN.	0.39–0.50 IN.	4/4	2448D-025	0.438 in. / 11.0 mm	FF 121-438
		4/6, 5/4, 6/2	2240D-04	0.460 in. / 11.7 mm	FF 121-460
			2640D-025, 2740D-03	0.484 in. / 12.3 mm	FF 121-484
PRO 174-58 Ø 0.58 IN.	0.51–0.61 IN.	6/4	2440D-04	0.516 in. / 13.0 mm	FF 121-516
		5/6, 8/2	2240D-05, 2740D-03	0.547 in. / 14.0 mm	FF 121-547
		8/4		0.594 in. / 15.0 mm	FF 121-594
PRO 174-89 Ø 0.89 IN.	0.80–0.93 IN.		2440D-05	0.625 in. / 16.0 mm	FF 121-625
		3/8" RUBBER WB HOSE	N/A	N/A	N/A



COLLET AND HOSE INSTALLATION

- Once the appropriate Collet size for the hose diameter is selected, pull the Quick Release Pin and remove the Collet. Feed the Male Hose End through the AUTOBOX® ABX-PRO TRACTOR, BOP 030 Collet Block, and BOP 081-6 Snout Tube. (**Figure 1**) Replace the Collet and Quick Release Pin. Pull back on the hose to ensure the Male Hose End does not back out past the Collet. (**Figure 1.1**)

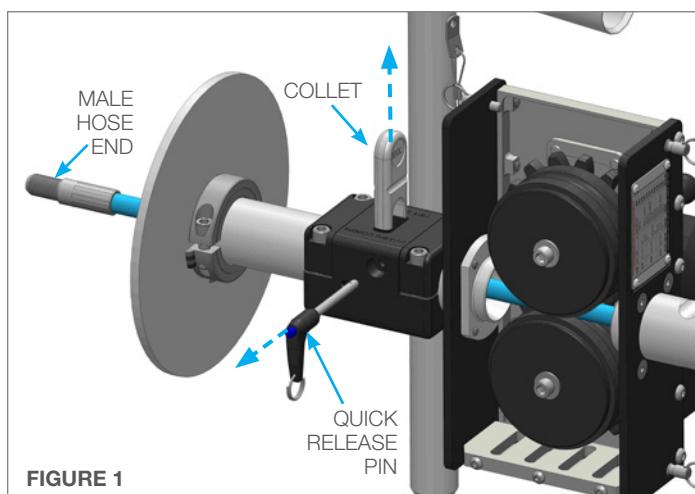


FIGURE 1

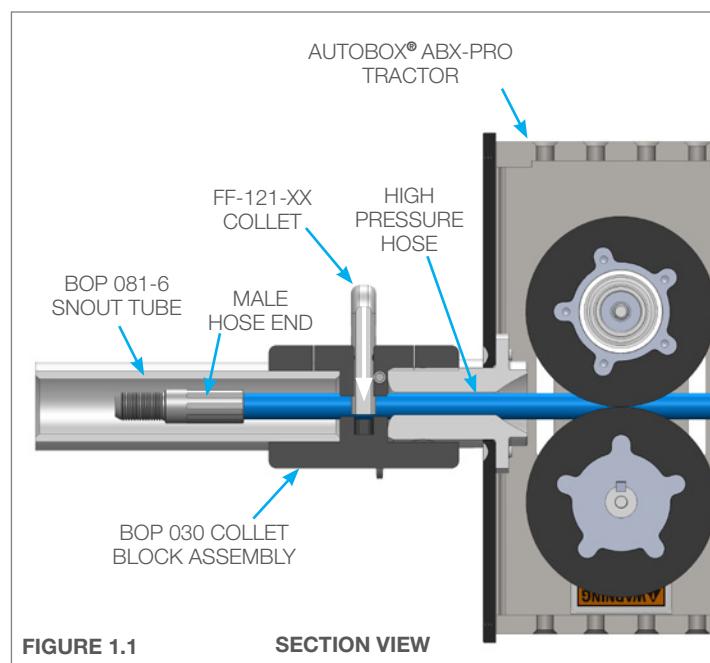


FIGURE 1.1

SECTION VIEW

ROLLER REMOVAL INSTRUCTIONS

ROLLER REMOVAL

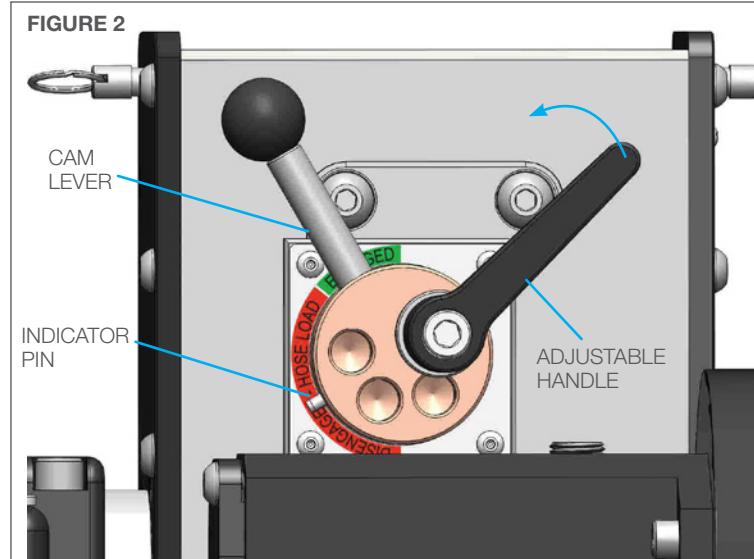
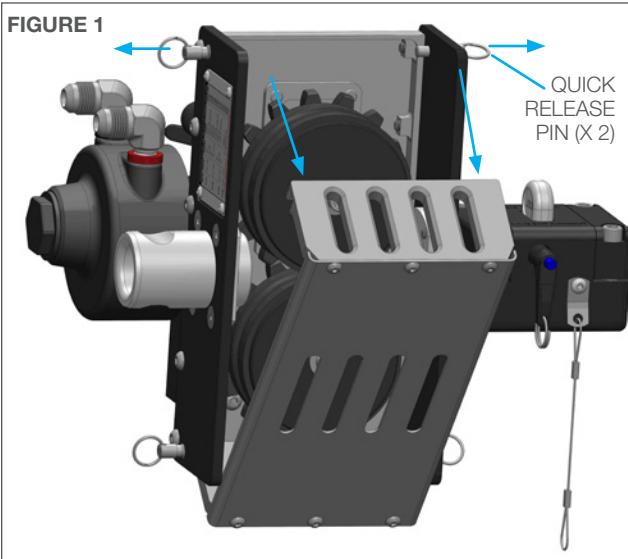
NOTICE

This process will be typical for Poly Roller replacements on the ABX-PRO Tractor Assembly. Installation of the appropriate Roller should be completed prior to installing the hose and tool into the AUTOBOX® ABX-PRO-100 Assembly.

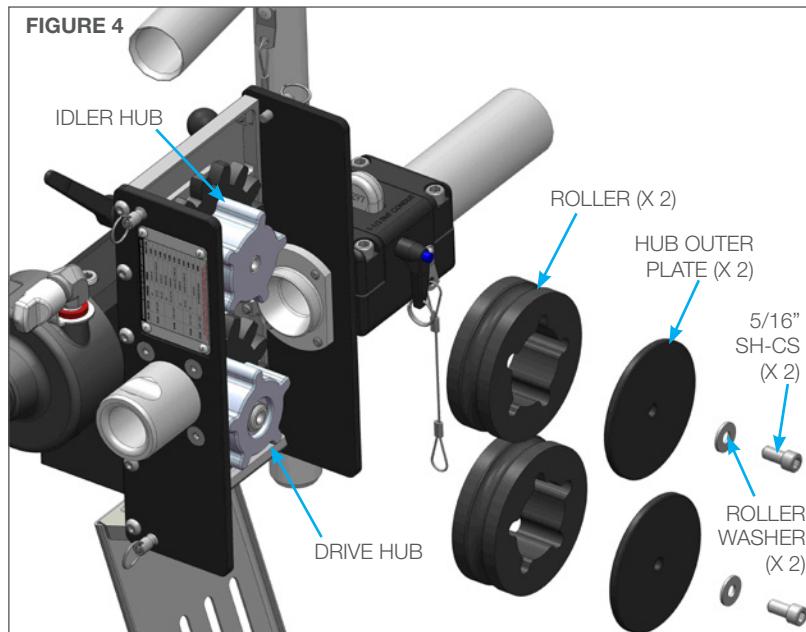
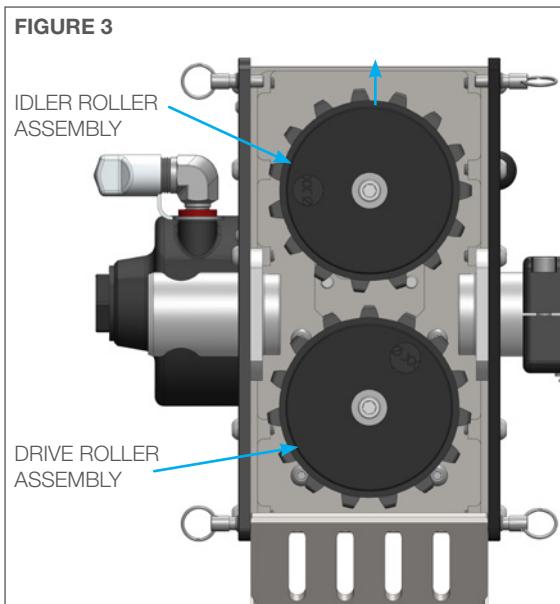
WARNING

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.

1. Open the back cover of the ABX-PRO Tractor by pulling the top two Quick Release Pins in the outward direction. (**Figure 1**)
2. Push the Adjustable Handle in the counterclockwise direction to loosen the CAM Lever and bushing. Push the Eccentric Lever in the counterclockwise direction, moving the indicator pin to “**Disengaged**”. (**Figure 2**)



3. Loosening the Cam Lever opens up the space between the Spline Roller Assemblies. (**Figure 3**)
4. Remove the two socket head cap screws, Roller Washers, Hub Outer Plates and Rollers. (**Figure 4**)



ROLLER INSTALLATION

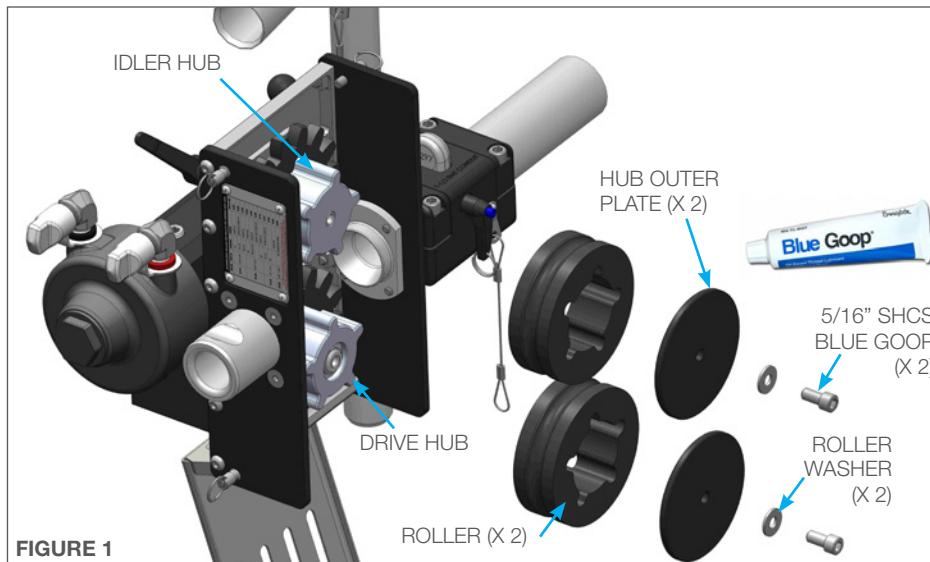
NOTICE

This process will be typical for Poly Roller replacements on the ABX-PRO Tractor Assembly. Installation of the appropriate Roller should be completed prior to installing the hose and tool into the AUTOBOX® ABX-PRO-100 Assembly.

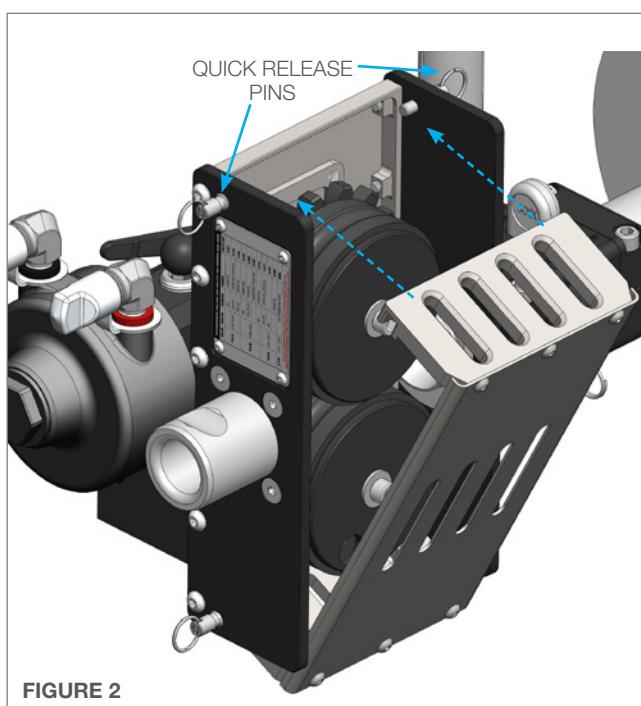
WARNING

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.

1. Choose an alternate size or replacement set of Poly Rollers by using the reference chart in the section below to select the proper sizing. Slide the Poly Rollers onto the Hubs. Then fasten the Hub Outer Plates and Roller Washers onto the Spline Load Rollers with the two 5/16" socket head cap screws. (**Figure 1**)

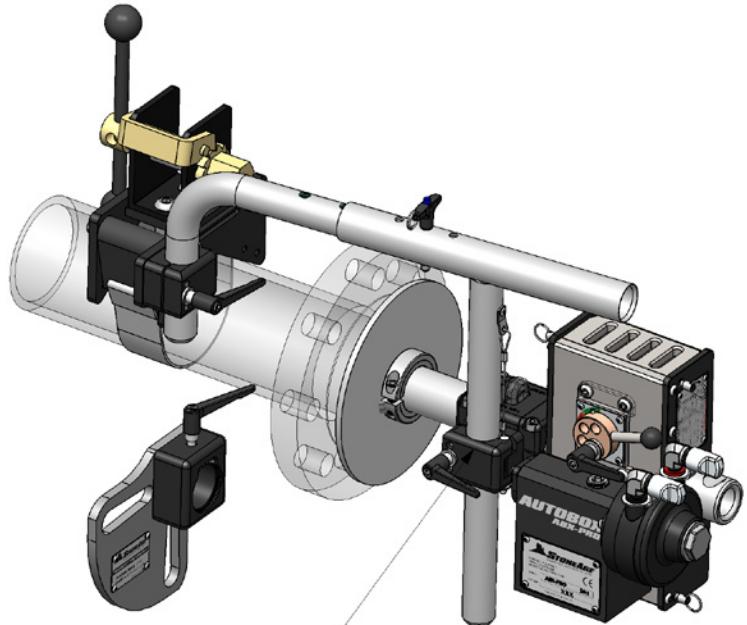


2. Push the back cover back into the closed position and secure the two Quick Release Pins on the top of the AUTOBOX® ABX-PRO TRACTOR. (**Figure 2**)



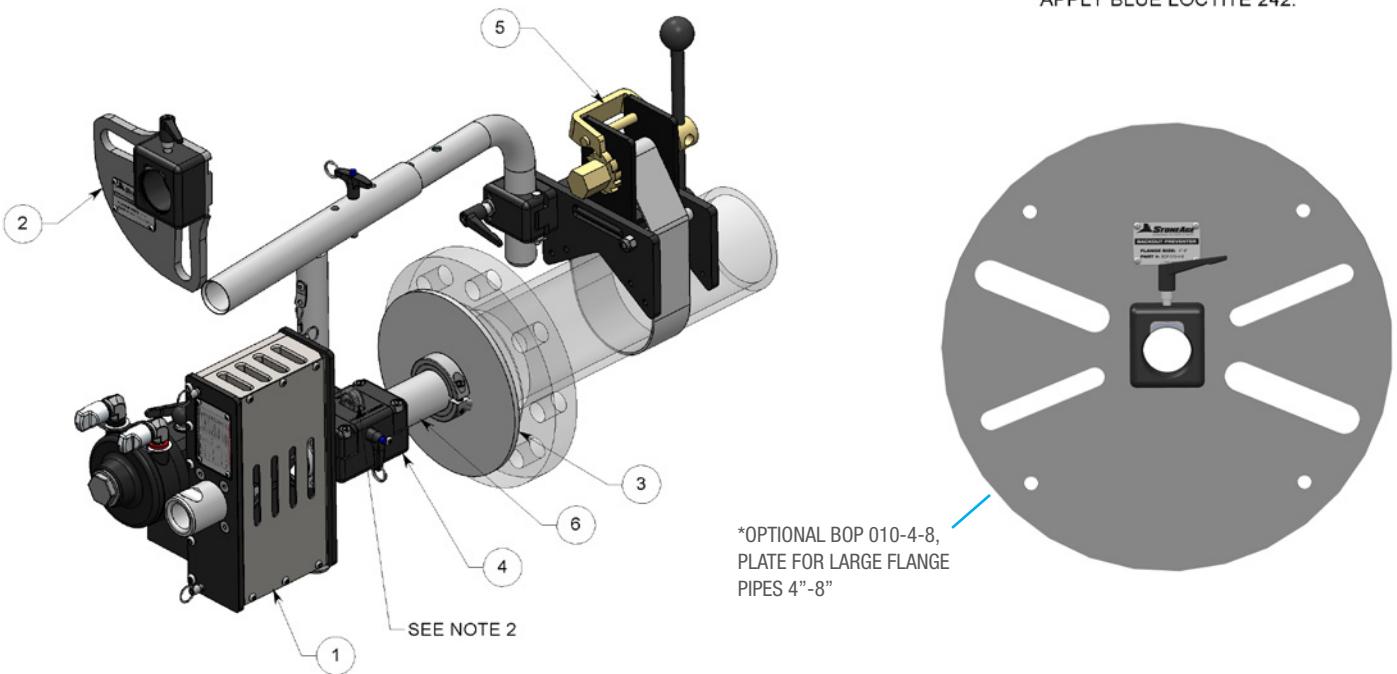
PARTS DIAGRAM

AUTOBOX® (ABX-PRO-100)
FULL ASSEMBLY

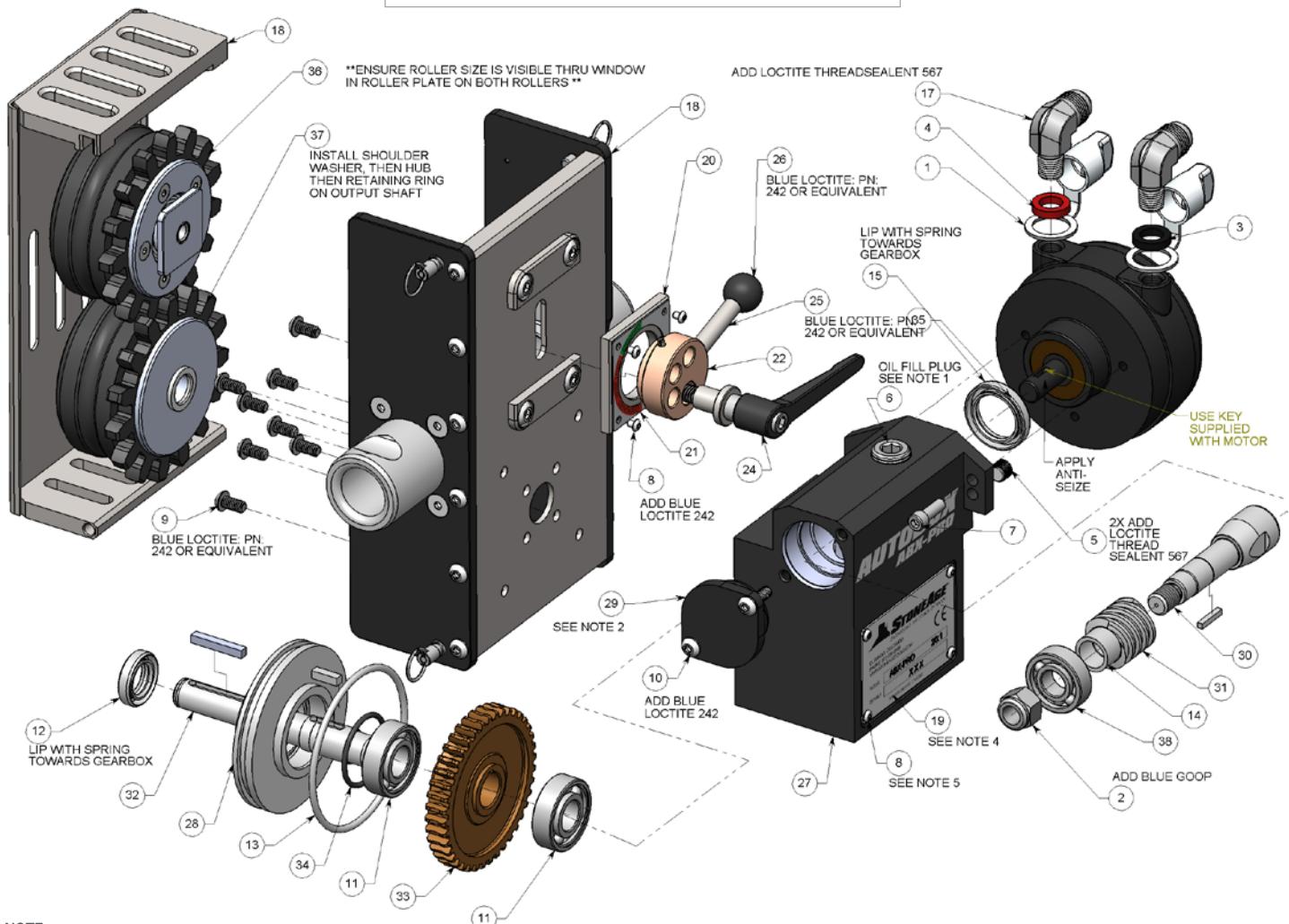


NOTICE

ASSEMBLY MUST NOT BE OPERATED WITHOUT THE USE OF A COLLET (FF 121-XXX) OR COLLET SET (PRO 621 OR PRO 622)



#	PART NUMBER	QTY.
1	AUTOBOX ABX-PRO TRACTOR ASSEMBLY	1
2	BOP 010-2-4 QTR, QUARTER PLATE BOP	1
3	BOP 012 SPLASH PLATE WELDMENT	1
4	BOP 030 COLLET BLOCK ASSEMBLY	1
5	BOP 050 STRAP MOUNT ASSEMBLY	1
6	BOP 081-6 SNOUT TUBE 1.75 X 6 SS	1

AUTOBOX® (ABX-PRO)
TRACTOR ASSEMBLY


NOTE:

1. ADD 5.0 OUNCES OF MOBIL SYNTHETIC OIL SCH 634 (SA# GP 146.1)
2. THIS WORM CAP WILL BOTTOM ON BEARING, WILL NOT BOTTOM ON HOUSING WHEN TIGHTENED
3. ADD PRELUBE TO ALL SHAFTS, GEARS, BEARINGS, AND SEALS.
4. CLEAN SURFACE PRIOR TO INSTALLING SERIAL PLAQUE. STAMP IN ACCORDANCE WITH WORK INSTRUCTIONS.
5. 4X ADD RED LOCTITE: PN: 262 OR EQUIVALENT.

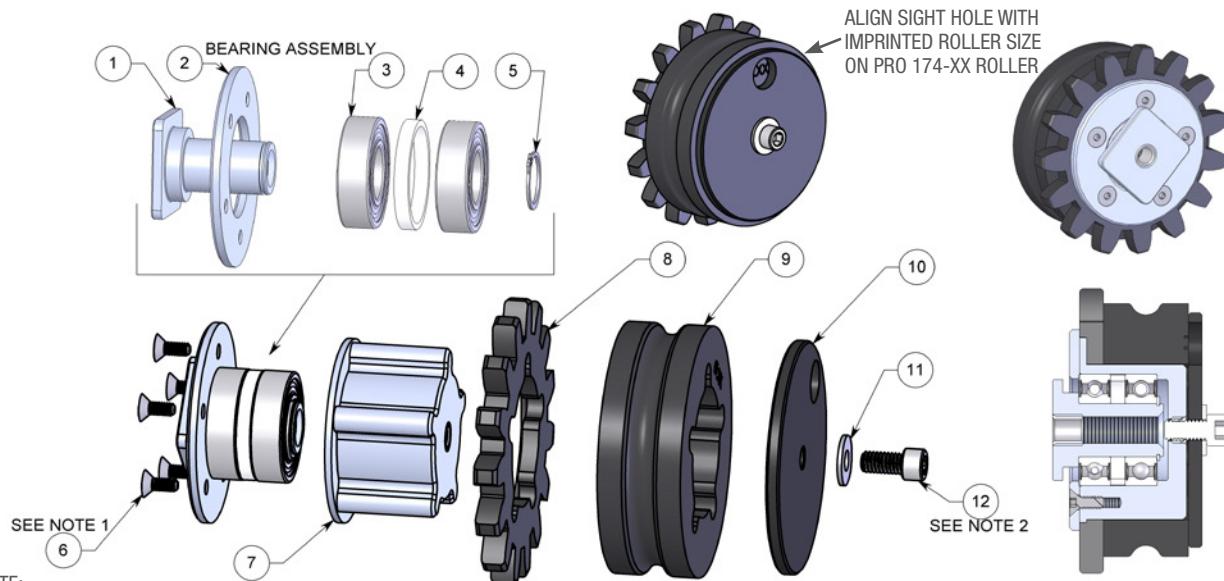
#	PART NUMBER	QTY.
1	BR 167 90° DUST CAP	2
2	GN 550-L NYLOK NUT	1
3	GP 013-BK BLACK ID BAND, SM	1
4	GP 013-R RED ID BAND, SM	1
5	GP 025-P2SS HEX SOCKET PLUG	1
6	GP 025-P8SS HEX SOCKET PLUG	1
7	GS 325-03 SHCS .25-20 X .75 SS (TB 050)	2
8	GSB 313-0075 BHCS 6-32 X .188 LG SS	8
9	GSB 325-02 BHCS .25-20 X .50 LG SS	8
10	GSB 325-03 BHCS .25-20 X .75 LG SS	2
11	HLXD 002 BEARING, OUTPUT	2
12	HLXD 003 SEAL, OUTPUT	1

13	HLXD 006 O-RING, OUTPUT	1
14	HLXD 011 SPACER	1
15	HLXD 013 SEAL, INPUT	1
16	HLXD 017 CAP O-RING, INPUT	1
17	HRS 552 FITTING, ELBOW OUTLET P4J8 90°	2
18	PRO 101 HOUSING ASSEMBLY	1
19	PRO 109 CE SERIAL PLATE	1
20	PRO 112 CAM PLATE	1
21	PRO 113 CAM PLATE, DECAL	1
22	PRO 114 CAM BUSHING	1
23	PRO 115 ROLL PIN	1
24	PRO 116 ADJUSTABLE HANDLE ASSEMBLY	1
25	PRO 117 CAM LEVER SHAFT	1

26	PRO 118 CAM LEVER KNOB	1
27	PRO 130 GEARBOX HOUSING	1
28	PRO 131 BULKHEAD, OUTPUT	1
29	PRO 132 INPUT CAP	1
30	PRO 133 INPUT SHAFT	1
31	PRO 134 WORM 20-1	1
32	PRO 136 OUTPUT SHAFT	1
33	PRO 137 WORM GEAR 20-1	1
34	PRO 138 O-RING	1
35	PRO 155-001 AIR MOTOR	1
36	PRO 170 IDLER ROLLER ASSEMBLY	1
37	PRO 181 DRIVE ROLLER ASSEMBLY	1
38	RJ 009 BEARING	1

PARTS DIAGRAM

PRO 170
IDLER ROLLER ASSEMBLY



NOTE:

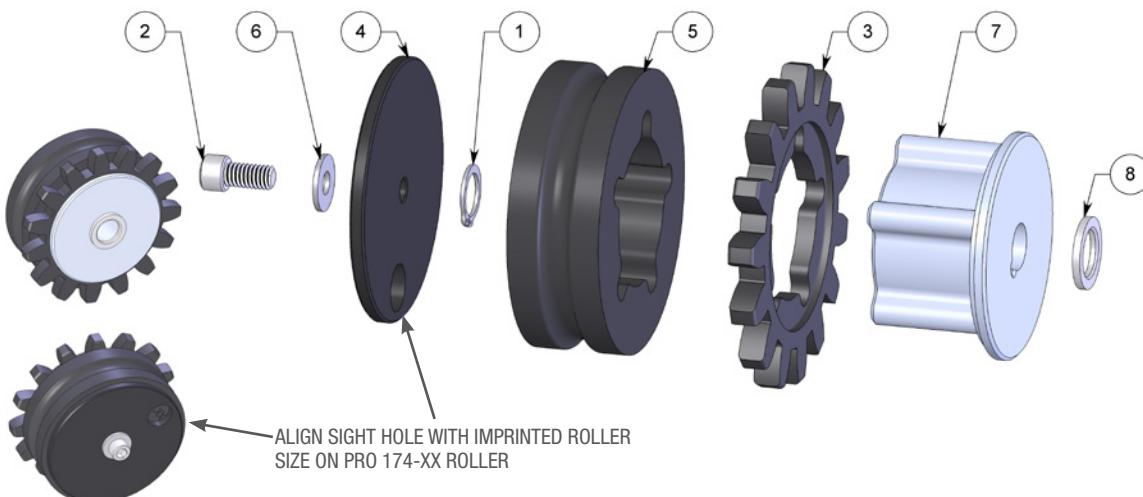
1. 5x BLUE LOCTITE: PN: 242 OR EQUIVALENT
2. APPLY BLUE GOOP (A SWAGELOK BRAND) ANTI-SEIZE.

#	PART NUMBER	QTY.
1	PRO 176 IDLER SHAFT	1
2	PRO 177 IDLER BEARING PLATE	1
3	PRO 178 BEARING	2
4	PRO 179 BEARING SPACER OD	1

5	PRO 180 RETAINING RING	1
6	GSF 319-02-24 FHCS .19-24 X .50 LG SS	5
7	PRO 171 IDLER HUB	1
8	PRO 172 ROLLER GEAR 15T	1

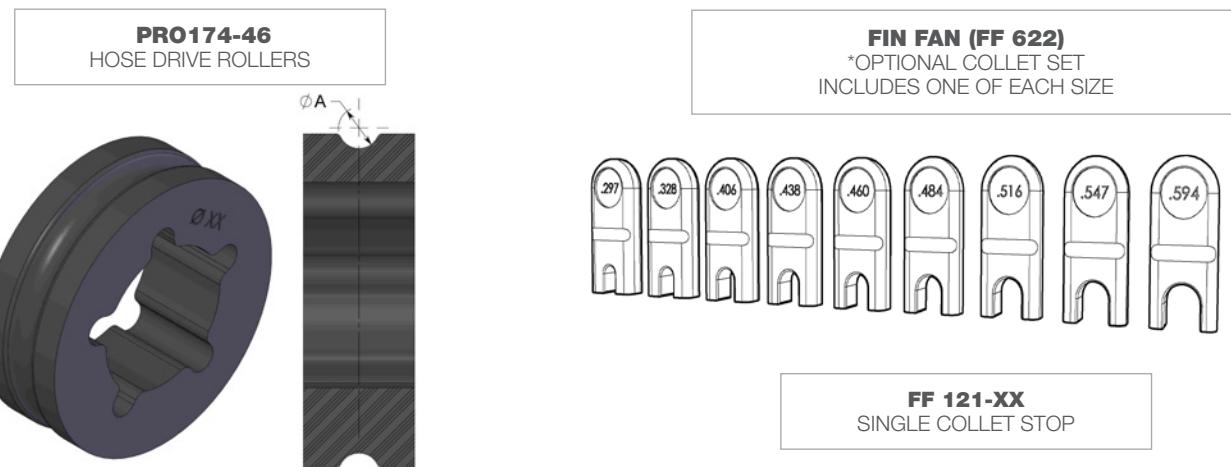
9	PRO 174-46 POLY ROLLER	1
10	PRO 173 ROLLER PLATE	1
11	PRO 175 HIGH-STRENGTH WASHER	1
12	GS 331-025 SHCS .31-18 X .62 SS	1

PRO 181
DRIVE ROLLER ASSEMBLY

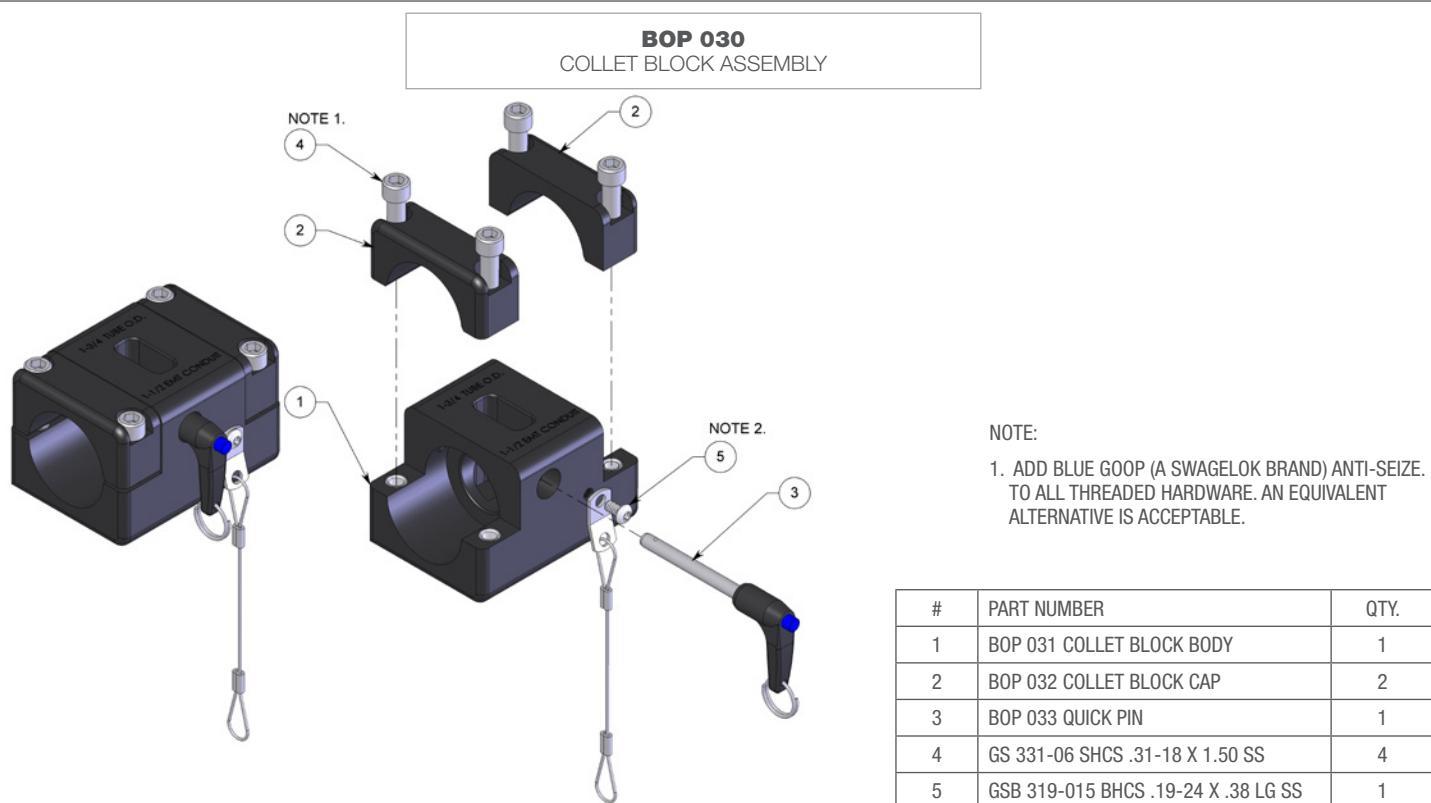


#	PART NUMBER	QTY.
1	ABX 249 RETAINING RING, HD EXT SS	1
2	GS 531-025 SHCS .31-18 X .62 SS	1
3	PRO 172 ROLLER GEAR	1
4	PRO 173 ROLLER PLATE	1

5	PRO 174-46 POLY ROLLER	1
6	PRO 175 HIGH-STRENGTH WASHER	1
7	PRO 182 DRIVE HUB	1
8	PRO 183 SHAFT SHOULDER WASHER	1

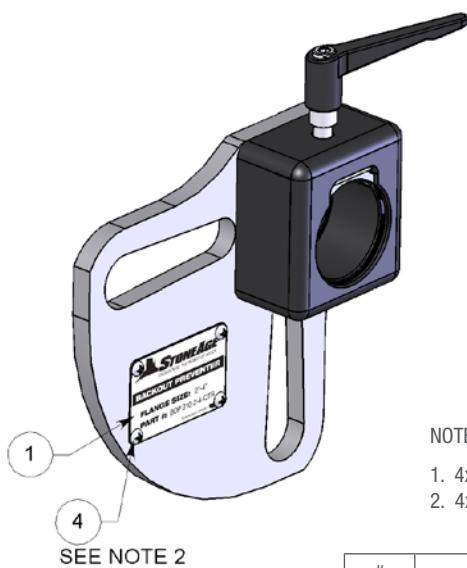


ROLLER INSIDE ABX-PRO-100	HOSE OD	SPIRSTAR	PARKER	COLLET SIZE	COLLET
PRO 174-34 Ø 0.34 IN.	0.26–0.38 IN.	3/2	2240D-02	0.297 in. / 7.5 mm	FF 121-297
		3/4, 4/2	2240D-025, 2440D-02	0.328 in. / 8.0 mm	FF 121-328
		3/6, 5/2	2240D-03	0.406 in. / 10.0 mm	FF 121-406
PRO 174-46 Ø 0.46 IN.	0.39–0.50 IN.	4/4	2448D-025	0.438 in. / 11.0 mm	FF 121-438
		4/6, 5/4, 6/2	2240D-04	0.460 in. / 11.7 mm	FF 121-460
			2640D-025, 2740D-03	0.484 in. / 12.3 mm	FF 121-484
PRO 174-58 Ø 0.58 IN.	0.51–0.61 IN.	6/4	2440D-04	0.516 in. / 13.0 mm	FF 121-516
		5/6, 8/2	2240D-05, 2740D-03	0.547 in. / 14.0 mm	FF 121-547
		8/4		0.594 in. / 15.0 mm	FF 121-594
PRO 174-89 Ø 0.89 IN.	0.80–0.93 IN.	3/8" RUBBER WB HOSE	N/A	N/A	N/A

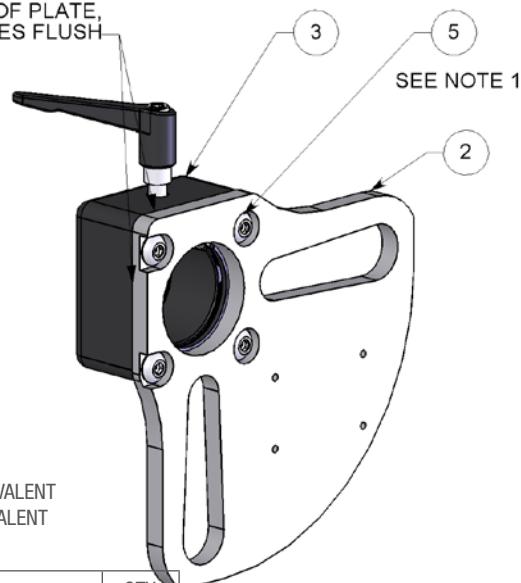


PARTS DIAGRAM

BOP-010-2-4 QTR
QUARTER PLATE BOP



NOTE ORIENTATION OF PLATE,
ALIGN THESE EDGES FLUSH

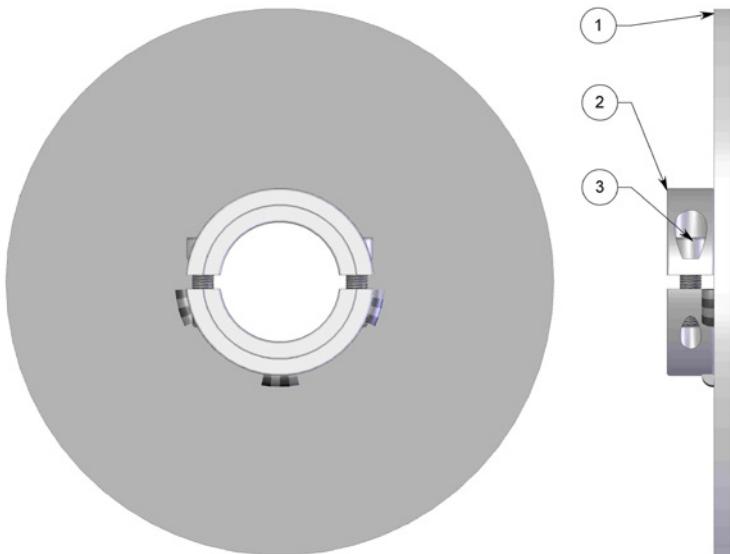


NOTE:

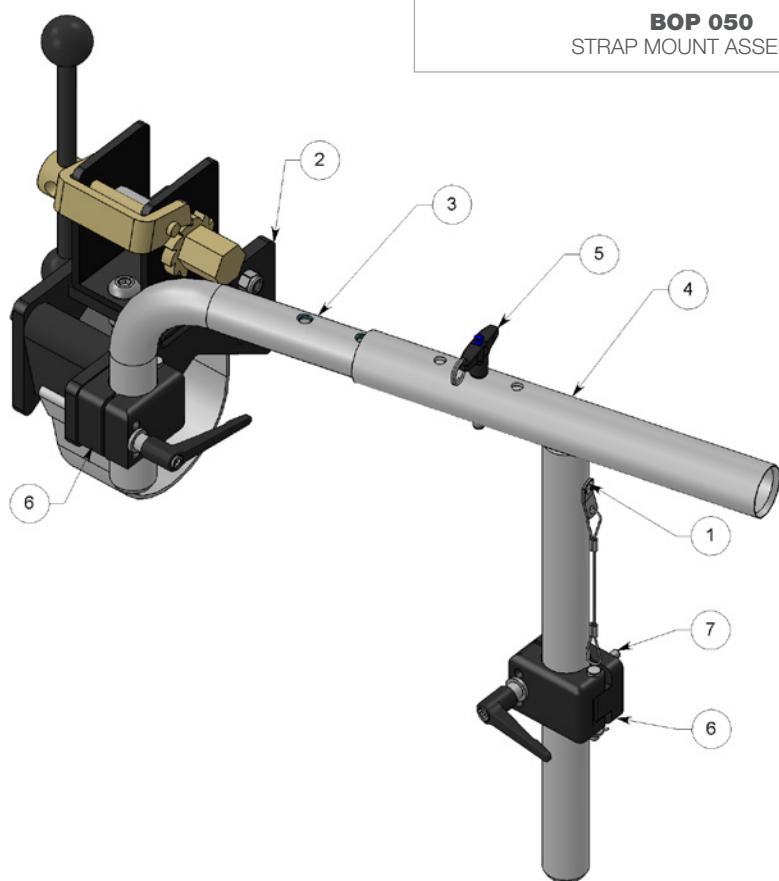
1. 4x BLUE LOCTITE: PN: 242 OR EQUIVALENT
2. 4x RED LOCTITE: PN: 262 OR EQUIVALENT

#	PART NUMBER	QTY.
1	BOP 001-2-4-QTR DECAL PLATE	1
2	BOP 002-2-4-QTR QUARTER FLANGE PLATE 2-4IN	1
3	BOP 007 TUBE CLAMP ASSY	1
4	BOP 013 SCREW 6-32X.25 SELF TAP	4
5	GSB 331-03 BHCS .31-18 X .75 LG	4

BOP 012
SPLASH PLATE WELDMENT



#	PART NUMBER	QTY.
1	BOP 012.1 SPLASH PLATE	1
2	GC SP-28-A COLLAR ASSEMBLY	1
3	GS 331-04-24 SHCS .31-24 X 1.00 SS	2

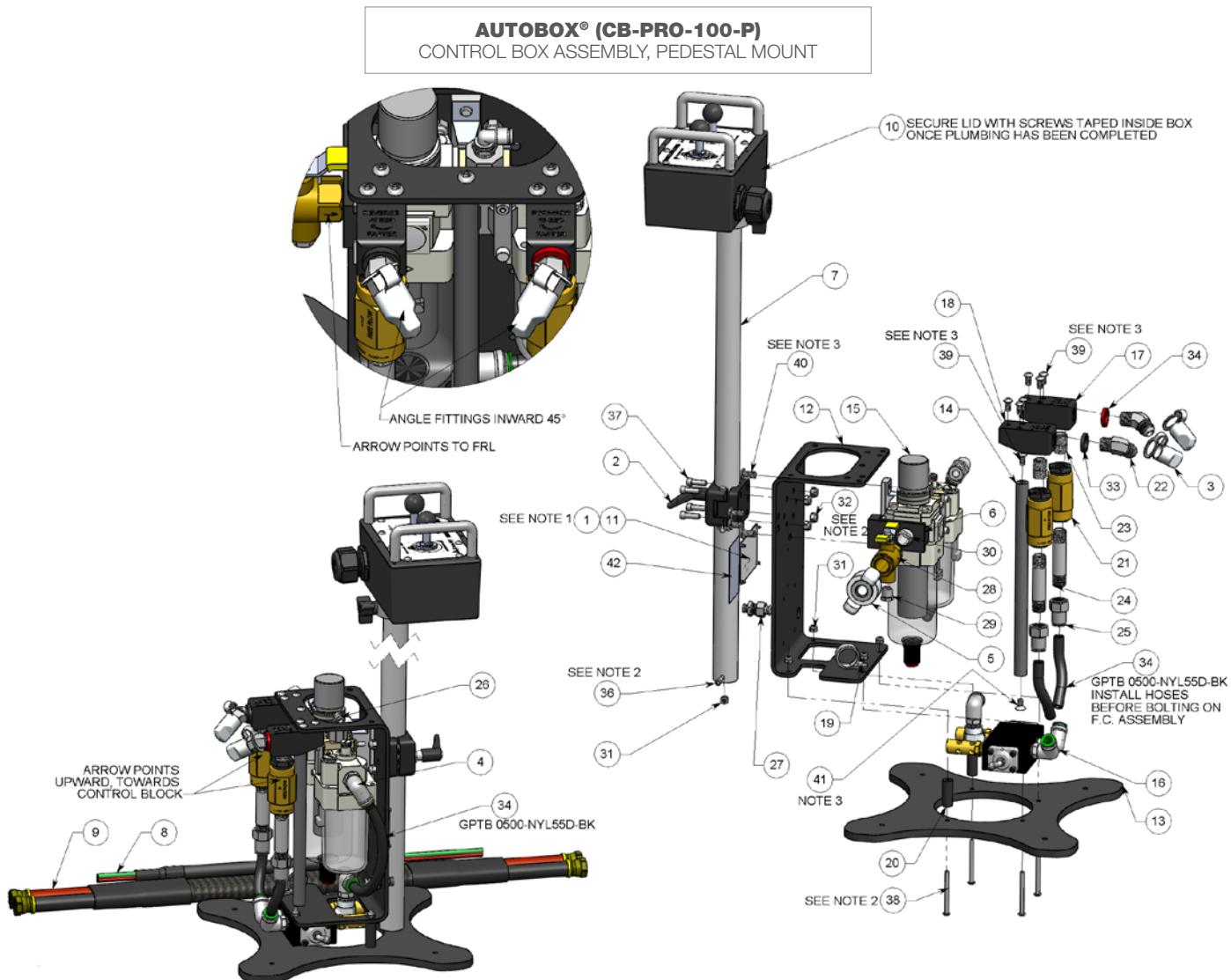


***OPTIONAL BOP 082-9-45**
1.75 X R9 X 45 DEG
SNOUT TUBE

#	PART NUMBER	QTY.
1	BOP 049 RIVET SS	1
2	BOP 051 RATCHET STRAP ASSEMBLY	1
3	BOP 057 POSITIONER TUBE, MALE	1
4	BOP 058 POSITIONER TUBE, FEMALE WELDMENT	1
5	BOP 059 QUICK PIN	1
6	BOP 070 HINGE CLAMP ASSEMBLY	2
7	GS 325-025 SHCS .25-20 X .62 SS	8



PARTS DIAGRAM



NOTE:

2. APPLY BLUE GOOP (A SWAGELOK BRAND) ANTI-SEIZE. TO ALL THREADED HARDWARE.
3. BLUE LOCTITE: PN: 242 OR EQUIVALENT
4. LOCTITE THREAD SEALANT 567 TO ALL NPT THREADS

NOTE:

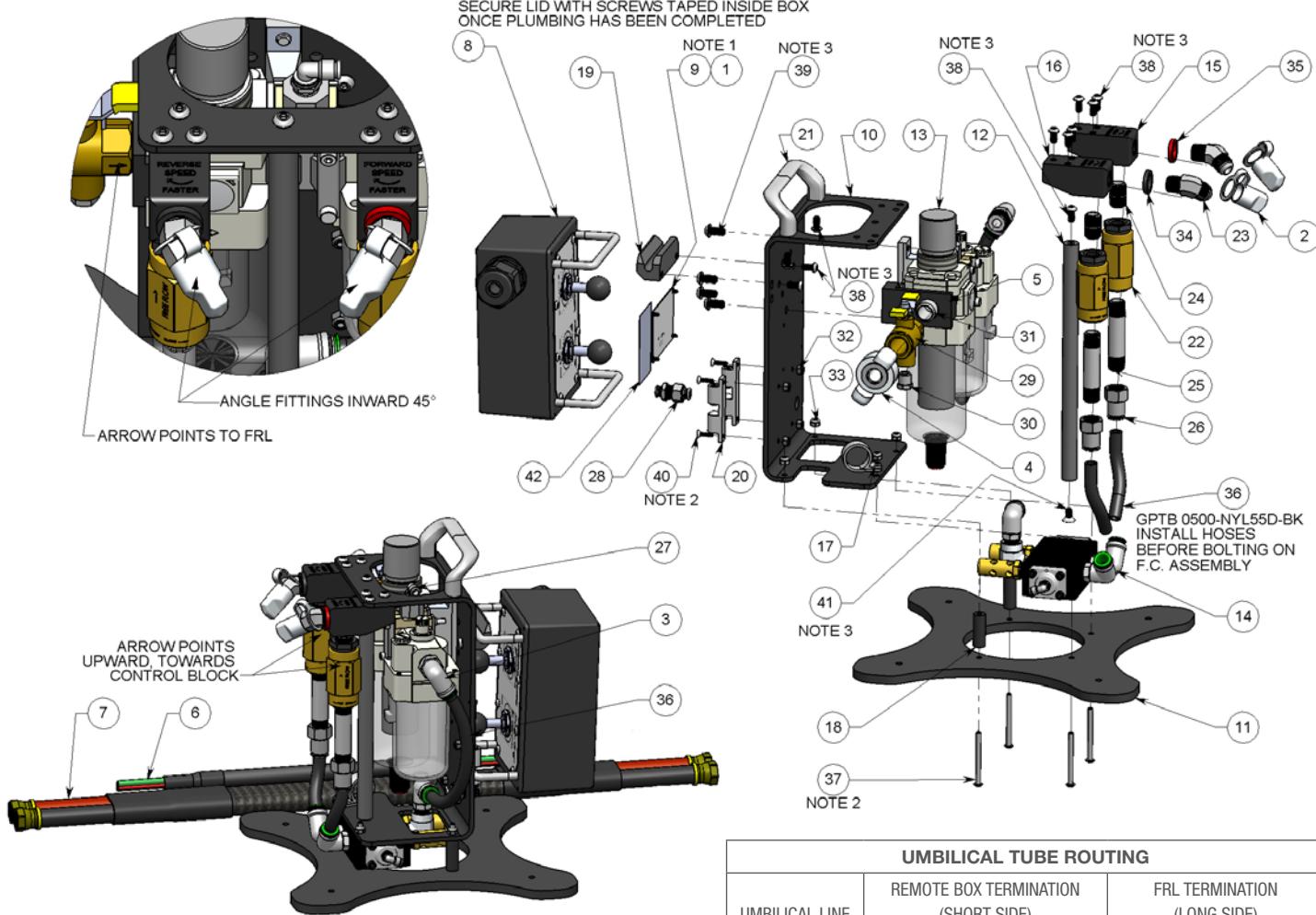
SEE THE CB-ABX-PRO-S PART DIAGRAM ON THE NEXT PAGE FOR NOTES AND UMBILICAL LINE TABLE.

#	PART NUMBER	QTY.
1	BOP 013 SCREW 6-32X.25 SELF TAP	4
2	BOP 070 HINGE CLAMP ASSEMBLY	1
3	BR 167 DUST CAP	2
4	BUD 142 FITTING 90° SWIVEL P8MPL8	1
5	CB 114 INLET FITTING	1
6	CB 395 FRL BRACKET	1
7	CB 727 REMOTE BOX POLE, 1.250D	1
8	CB 740-10 UMBILICAL ASSEMBLY	1
9	CB 745-15 SUPPLY HOSE BUNDLE	1
10	CB 750-X ABX-PRO REMOTE BOX ASSEMBLY	1
11	CB 754 CE SERIAL PLATE	1
12	CB 760 FRL FRAME, ABX-PRO	1
13	CB 761 FRL BASE	1
14	CB 762 FRL SUPPORT ROD, ABX-PRO	1

15	CB 763 FRL ASSY, ABX-PRO	1
16	CB 764 SPOOL VALVE ASSY, ABX-PRO	1
17	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1
18	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1
19	CB 766 LOOP CLAMP	1
20	CB 767 FRAME SPACER	2
21	CB 780-P6 IN-LINE FLOW CONTROL, P6	2
22	CB 781 FITTING, 45DEG, P6J8	2
23	CB 782 PIPE NIPPLE P6P6 X 1.00 SS	2
24	CB 783 PIPE NIPPLE P6P6 X 3.00 SS	2
25	CB 784 FITTING, P6PL8	2
26	CB 786 FITTING, 90DEG SWIVEL, P4MPL4	1
27	CB 790 FITTING, BULKHEAD, PL4PL4	1
28	CB 792 VALVE, AUTODRAIN, P8	1
29	CB 793 BREATHER, SINTERED BRONZE, P4	1

30	CB 794 PIPE NIPPLE, P8P8 X 1.13 SS	1
31	GN 319-L NYLOK NUT SS (HC 025.1)	5
32	GN 325-L NYLOK NUT SS (TB 044.1)	4
33	GP 011-BK BLACK ID BAND MED	1
34	GP 011-R RED ID BAND MED	1
35	GPTB 0500-NYL55D-BK	2FT
36	GS 319-02 SHCS .19-24 X .50 SS	1
37	GS 325-03 SHCS .25-20 X .75 SS	4
38	GSB 319-09 BHCS .19-24 X 2.25 LG SS	4
39	GSB 325-02 BHCS .25-20 X .50 LG SS	7
40	GSB 331-025 BHCS .31-18 X .62 LG SS	4
41	GSF 325-02 FHCS .25-20 X .50 LG SS	1
42	PL 156-125 CAUTION INLET AIR, 125PSI MAX	1

AUTOBOX® (CB-ABX-PRO-100-S)
CONTROL BOX ASSEMBLY, SIDE MOUNT



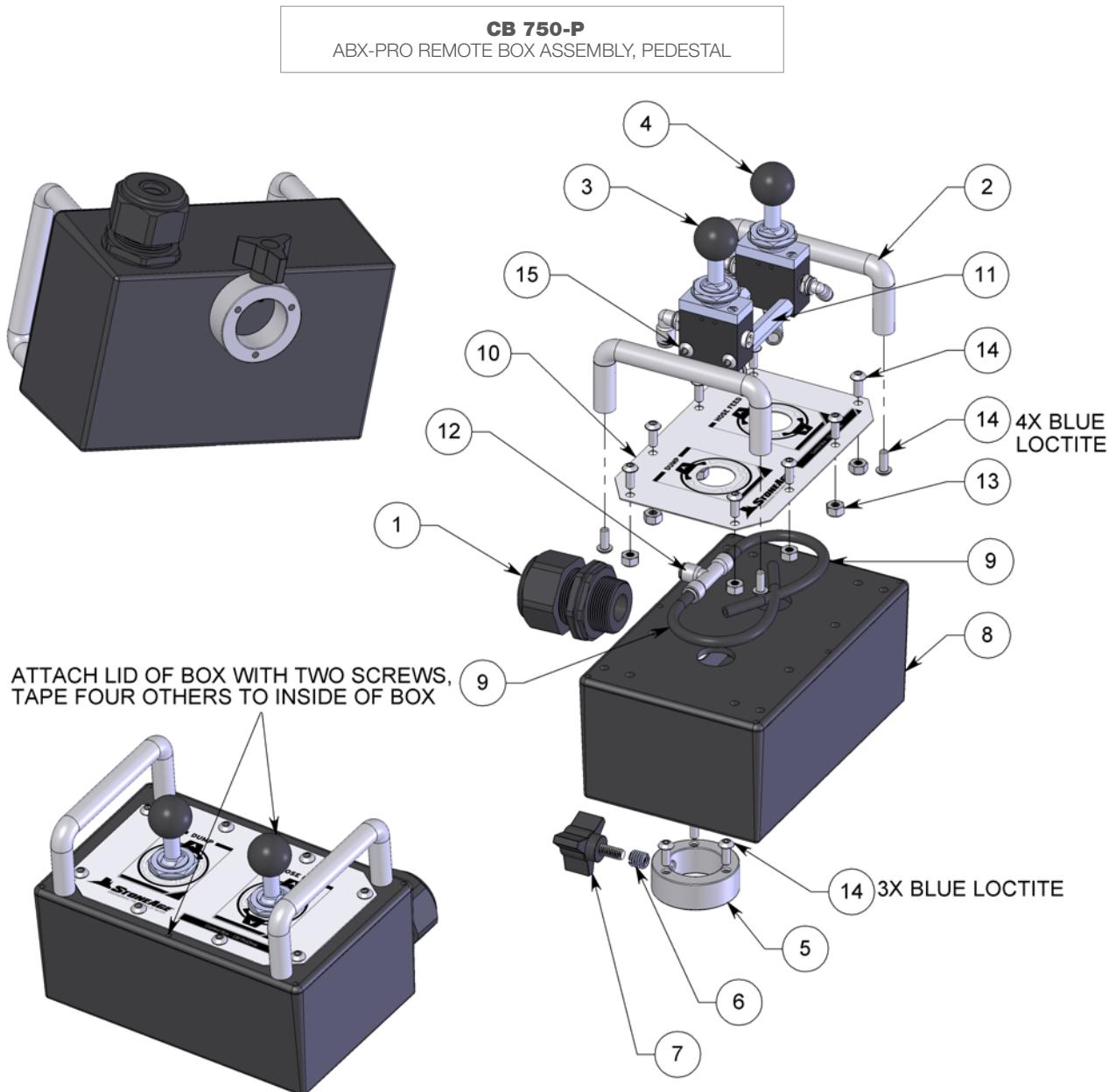
NOTE:
 2. APPLY BLUE GOOP (A SWAGELOK BRAND) ANTI-SEIZE. TO ALL THREADED HARDWARE.
 3. BLUE LOCTITE: PN: 242 OR EQUIVALENT
 4. LOCTITE THREAD SEALANT 567 TO ALL NPT THREADS

#	PART NUMBER	QTY.
1	BOP 013 SCREW 6-32X.25 SELF TAP	4
2	BR 167 DUST CAP	2
3	BUD 142 FITTING 90° SWIVEL P8MPL8	1
4	CB 114 INLET FITTING	1
5	CB 395 FRL BRACKET	1
6	CB 740-10 UMBILICAL ASSEMBLY	1
7	CB 745-15 SUPPLY HOSE BUNDLE	1
8	CB 750-X ABX-PRO REMOTE BOX ASSEMBLY	1
9	CB 754 CE SERIAL PLATE	1
10	CB 760 FRL FRAME, ABX-PRO	1
11	CB 761 FRL BASE	1
12	CB 762 FRL SUPPORT ROD, ABX-PRO	1
13	CB 763 FRL ASSY, ABX-PRO	1
14	CB 764 SPOOL VALVE ASSY, ABX-PRO	1

UMBILICAL TUBE ROUTING		
UMBILICAL LINE	REMOTE BOX TERMINATION (SHORT SIDE)	FRL TERMINATION (LONG SIDE)
1/4" BLACK	TEE FOR SUPPLY	DRY AIR TAP
1/4" GREEN	DUMP	BULKHEAD DUMP
1/8" BLACK	FORWARD	"REVERSE SPEED" SIDE
1/8" RED	REVERSE	"FORWARD SPEED" SIDE

15	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1	30	CB 793 BREATHER, SINTERED BRONZE, P4	1
16	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1	31	CB 794 PIPE NIPPLE, P8P8 X 1.13 SS	1
17	CB 766 LOOP CLAMP	1	32	GN 316-L-32 NYLOK NUT SS	4
18	CB 767 FRAME SPACER	2	33	GN 319-L NYLOK NUT SS (HC 025.1)	4
19	CB 771 UPPER HANGER	1	34	GP 011-BK BLACK ID BAND MED	1
20	CB 772 TENSION CATCH	2	35	GP 011-R RED ID BAND MED	1
21	CB 773 OFFSET HANDLE	1	36	GPTB 0500-NYL55D-BK	2FT
22	CB 780-P6 IN-LINE FLOW CONTROL, P6	2	37	GSB 319-09 BHCS .19-24 X 2.25 LG SS	4
23	CB 781 FITTING, 45DEG, P6J8	2	38	GSB 325-02 BHCS .25-20 X .50 LG SS	11
24	CB 782 PIPE NIPPLE P6P6 X 1.00 SS	2	39	GSB 331-025 BHCS .31-18 X .62 LG SS	4
25	CB 783 PIPE NIPPLE P6P6 X 3.00 SS	2	40	GSF 316-025 FHCS .16-32 X .63 LG SS	4
26	CB 784 FITTING, P6PL8	2	41	GSF 325-02 FHCS .25-20 X .50 LG SS	1
27	CB 786 FITTING, 90DEG SWIVEL, P4MPL4	1	42	PL 156-125 CAUTION INLET AIR, 125PSI MAX	1
28	CB 790 FITTING, BULKHEAD, PL4PL4	1			
29	CB 792 VALVE, AUTODRAIN, P8	1			

PARTS DIAGRAM

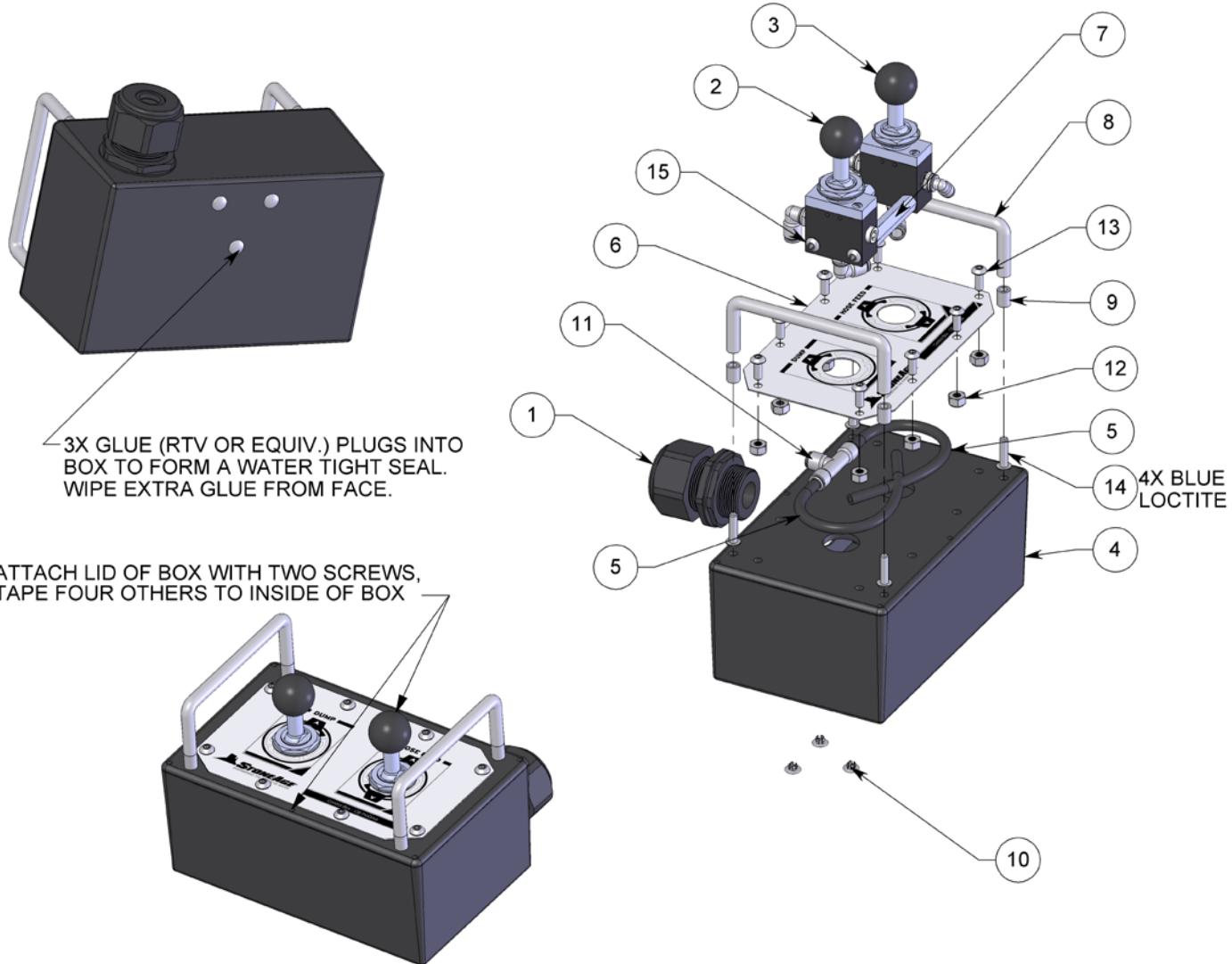


#	PART NUMBER	QTY.
1	CB 714 CORD GRIP, .51-.79	1
2	CB 716 ANODIZED PULL HANDLE	2
3	CB 721 PNEUM 3WAY ASSY, DUMP	1
4	CB 722 PNEUM 3WAY ASSY, FWD-REV	1
5	CB 724 MODIFIED COLLAR	1
6	CB 725 THREAD LOCKING SLOTTED INSERT	1
7	CB 726 THREE LOBE KNOB, .25-20	1

#	PART NUMBER	QTY.	UNIT
8	CB 751 ENCLOSURE, ABX-PRO	1	
9	CB 751.1 TUBE, REMOTE BOX CONTROLS	2	
10	CB 752 GRAPHIC ABX-PRO	1	
11	CB 753 HEX STANDOFF	2	
12	CB 791 FITTING, TEE, PL4	1	
13	GN 319-L-32 NYLOK NUT SS	8	
14	GSB 319-02-32 BHCS .19-32 X .50 LG	15	
15	GSB 319-04-32 BHCS .19-32 X 1.00 LG SS	4	

#	PART NUMBER	QTY.	UNIT
9	CB 751.1 TUBE, REMOTE BOX CONTROLS GPTB 0250-PUR95A-BK	2	7.5 IN

CB 750-S
ABX-PRO REMOTE BOX ASSEMBLY, SIDE MOUNT



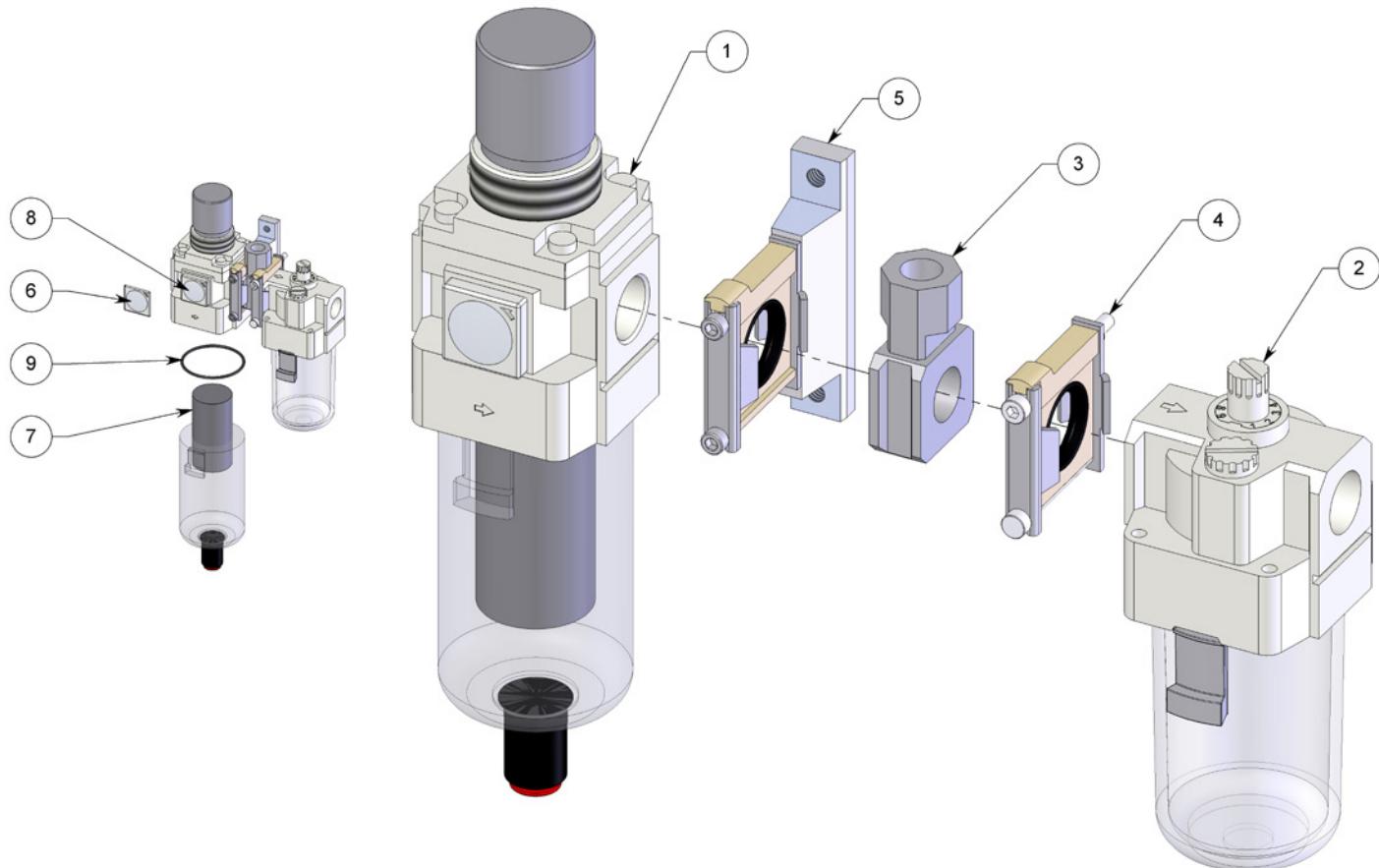
#	PART NUMBER	QTY.
1	CB 714 CORD GRIP, .51-.79	1
2	CB 721 PNEUM 3WAY ASSY, DUMP	1
3	CB 722 PNEUM 3WAY ASSY, FWD-REV	1
4	CB 751 ENCLOSURE, ABX-PRO	1
5	CB 751.1 TUBE, REMOTE BOX CONTROLS	2
6	CB 752 GRAPHIC ABX-PRO	1
7	CB 753 HEX STANDOFF	2

#	PART NUMBER	QTY.
8	CB 775 HANDLE, SIDE LATCH	2
9	CB 776 HANDLE SPACER, SIDE LATCH	4
10	CB 777 HOLE PLUG	3
11	CB 791 FITTING, TEE, PL4	1
12	GN 319-L-32 NYLOK NUT SS	8
13	GSB 319-02-32 BHCS .19-32 X .50 LG	8
14	GSB 319-03-32 BHCS .19-32X.75 SS	4
15	GSB 319-04-32 BHCS .19-32 X 1.00 LG SS	4

#	PART NUMBER	QTY.	UNIT
5	CB 751.1 TUBE, REMOTE BOX CONTROLS GPTB 0250-PUR95A-BK	2	7.5 IN

PARTS DIAGRAM

CB 763
ABX-PRO FILTER, REGULATOR, LUBRICATOR ASSEMBLY

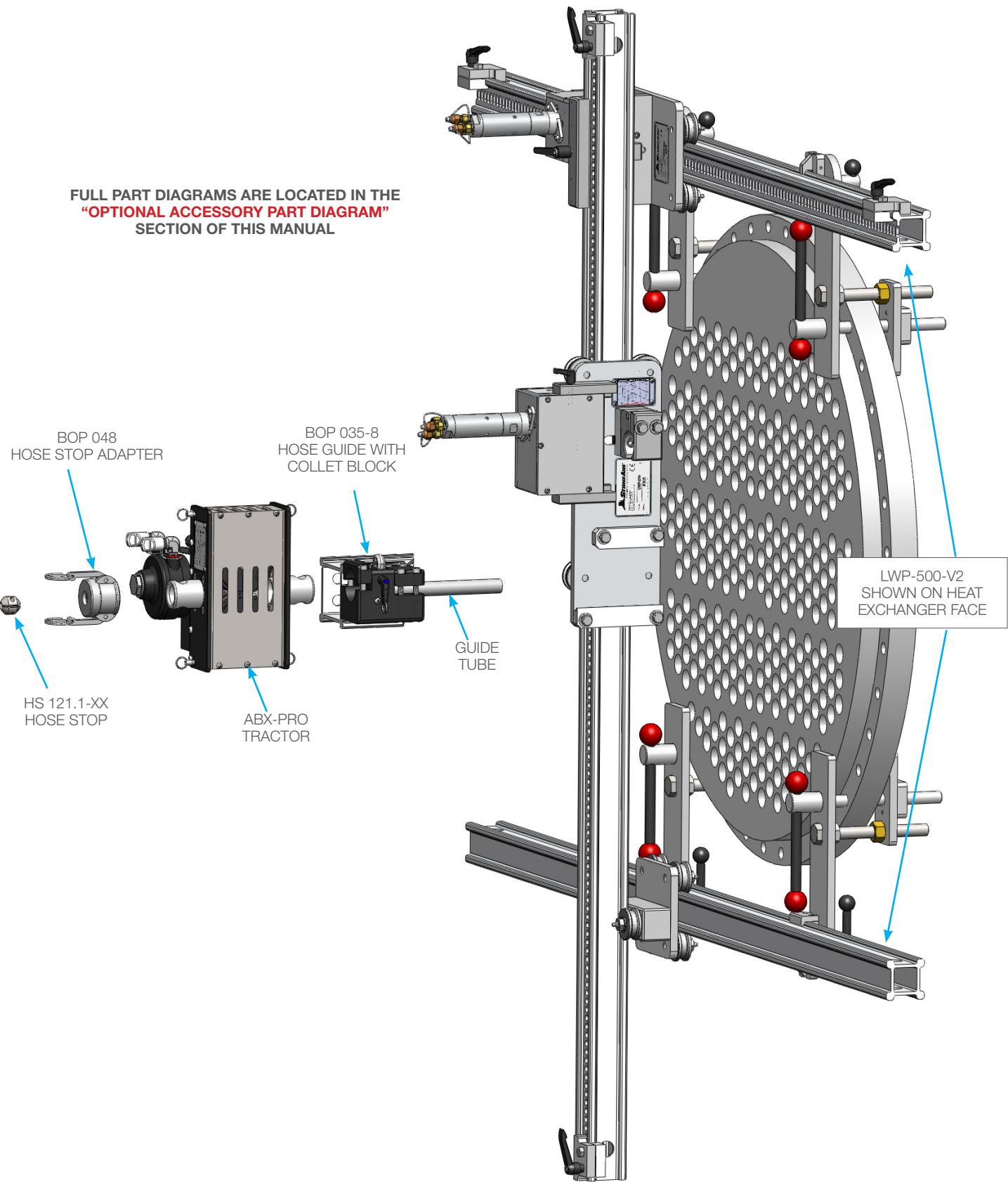


#	PART NUMBER	QTY.
1	CB 312.1 GEN3 REGULATOR-FILTER	1
2	CB 312.2 LUBRICATOR AL40-N04-Z-A	1
3	CB 312.4 SPACER ATTACHMENT Y410-N02-A	1
4	CB 312.5 SPACER W-O BRACKET, GEN2 Y400	1
5	CB 763.1 MODIFIED SPACER W-O BRACKET, GEN2 Y400	1
6	CB 312.1.4 LENS COVER FOR GAUGE	1
7	CB 312.1.6 FILTER	1
8	CB 312.1.7 GAUGE WITH LENS	1
9	CB 312.1.8 ORING	1

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OPTIONAL ACCESSORY OVERVIEW- ABX-PRO TRACTOR ON LWP-500-V2 POSITIONER

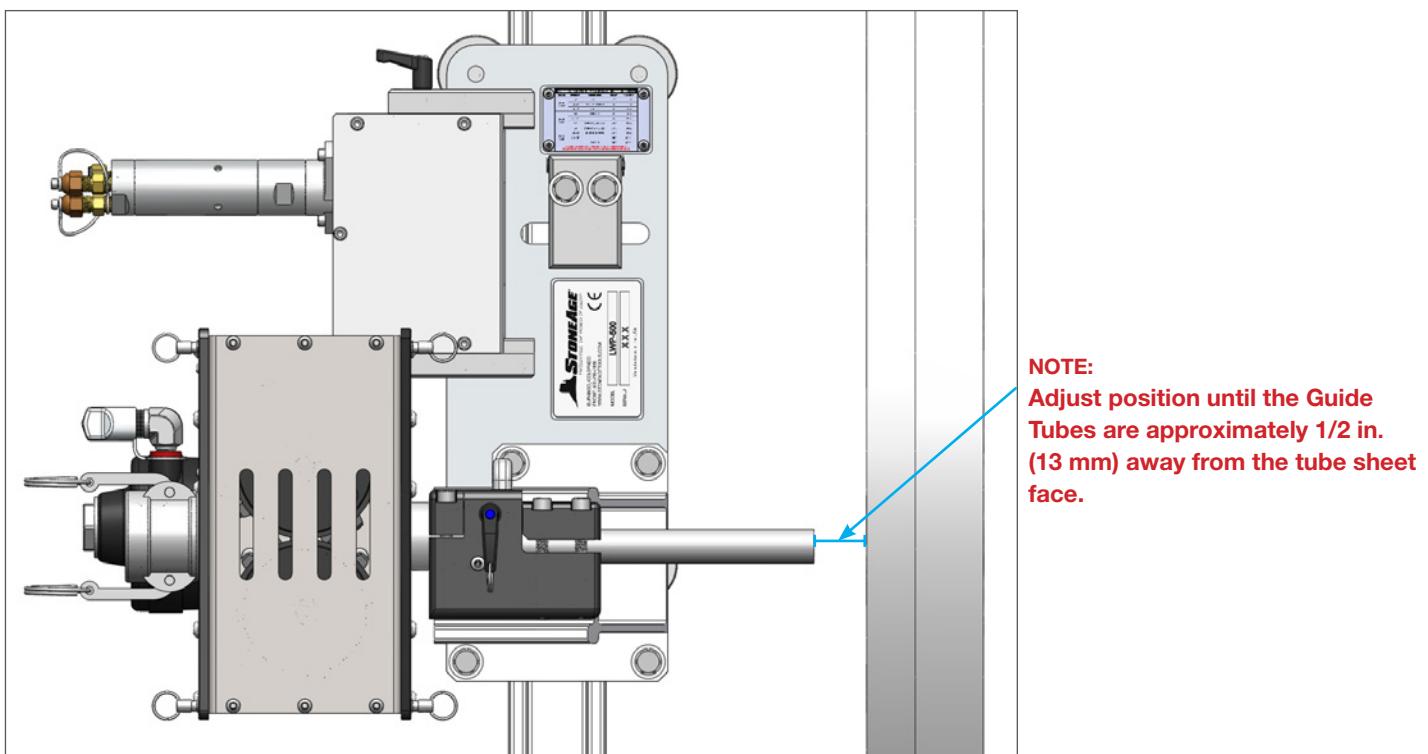
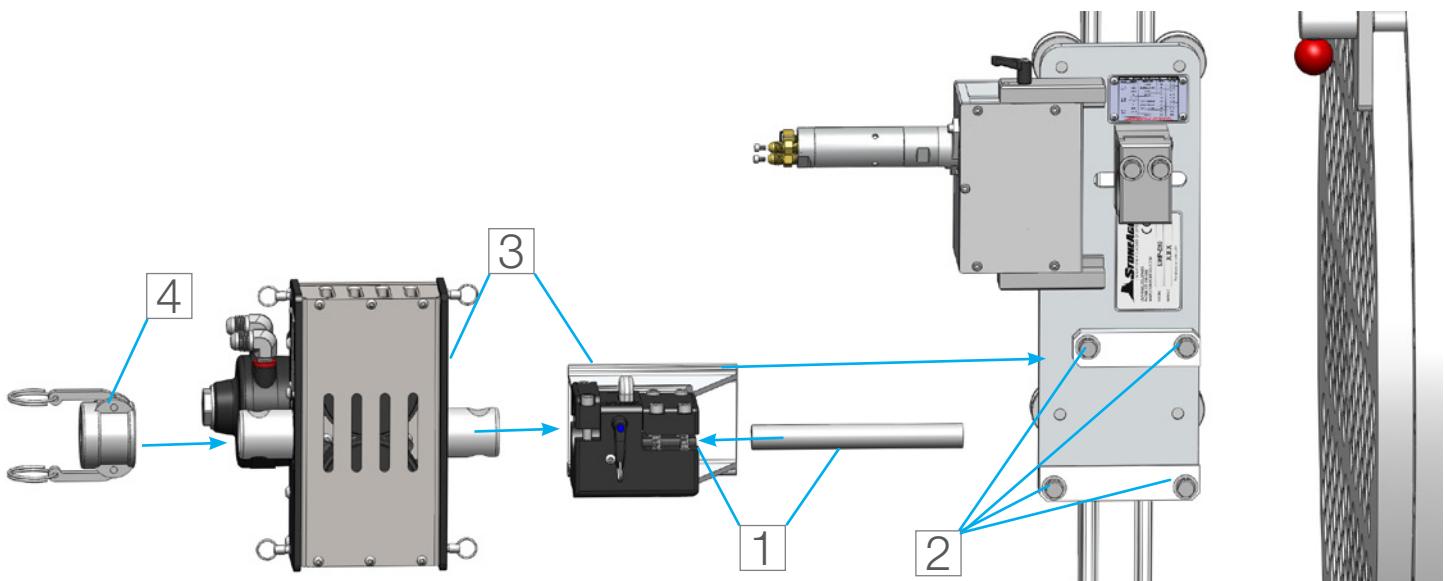
ABX-PRO TRACTOR ON THE
LWP-500-V2 LIGHTWEIGHT POSITIONER



ABX-PRO TRACTOR ON LWP-500-V2 POSITIONER SET-UP

ATTACH ABX-PRO TRACTOR TO GUIDE ASSEMBLY AND LIGHTWEIGHT POSITIONER

1. Select an appropriate size Guide Tube from the chart located in the “Part Diagram” section of this manual. Install Guide Tube into the Collet Block on the Guide Assembly by loosening the 4 screws with a 1/4" Allen Wrench. Insert the Guide tube and tighten the 4 screws on the Collet Block Cap.
2. Using a 9/16 in. wrench, loosen all four rail clamp bolts located on the vertical carriage. Install the Guide Assembly into the rail clamps and adjust position until the Guide Tubes are approximately 1/2 in. (13 mm) away from the tube sheet face. Tighten the four rail clamp bolts.
3. Loosen the 2 screws on the Collet Block with a 1/4" Allen Wrench and slide the Guide on the Tractor into the Collet Block Cap. Tighten the two screws on Collet Block Cap until secure.
4. Rotate the pull rings on the BOP 048 Female Camlock to align with the notches on the ABX-PRO Tractor Guide. Slide the BOP 048 Female Camlock onto the ABX-PRO Tractor Guide and secure in place.



CONTROL BOX TO ABX-PRO TRACTOR ASSEMBLY

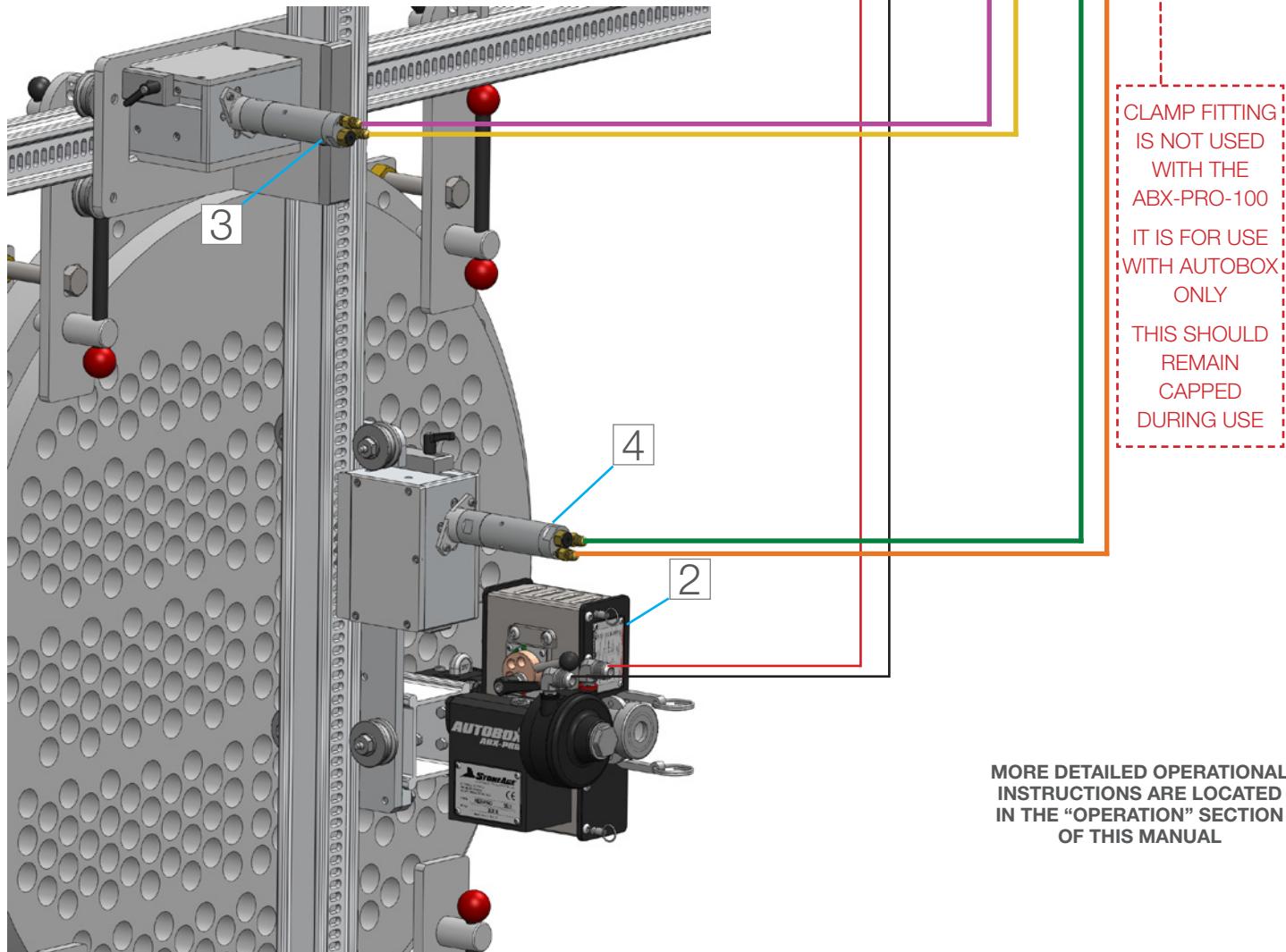
PNEUMATIC SUPPLY LINE CONNECTIONS

1. Remove the dust caps from the Joint Industry Council (JIC) fittings of the Control Box and the ABX-PRO Tractor.
2. Connect the ABX-PRO Tractor to the CB-ABX-PRO Control Box with two 1/2 in. (13 mm) JIC hoses. Verify the Control Box moves the hose in the appropriate directions.
3. Connect the Horizontal Positioner drive air motor to the CB-ABX-PRO Control Box with two 1/4 in. (6 mm) JIC hoses. Use the diagram below for proper connections. Verify the CB-ABX-PRO Control Box moves the Horizontal Carriage in the LEFT AND RIGHT directions.



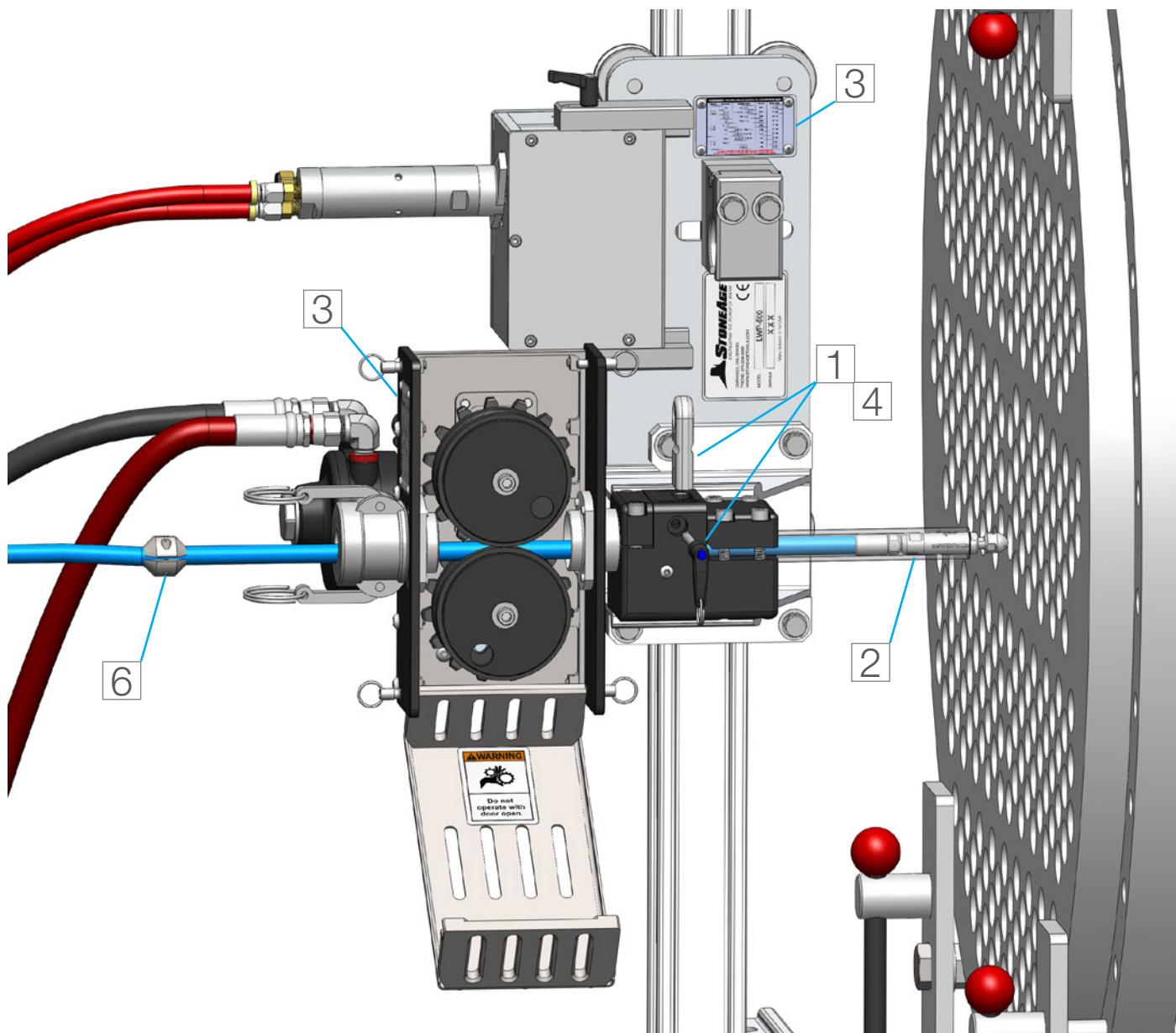
NOTICE

The 4 Positioner control lines are not color coded. Colors are shown in manual for clarity.



COLLET INSERTION, HOSE, AND HOSE STOP INSTALLATION

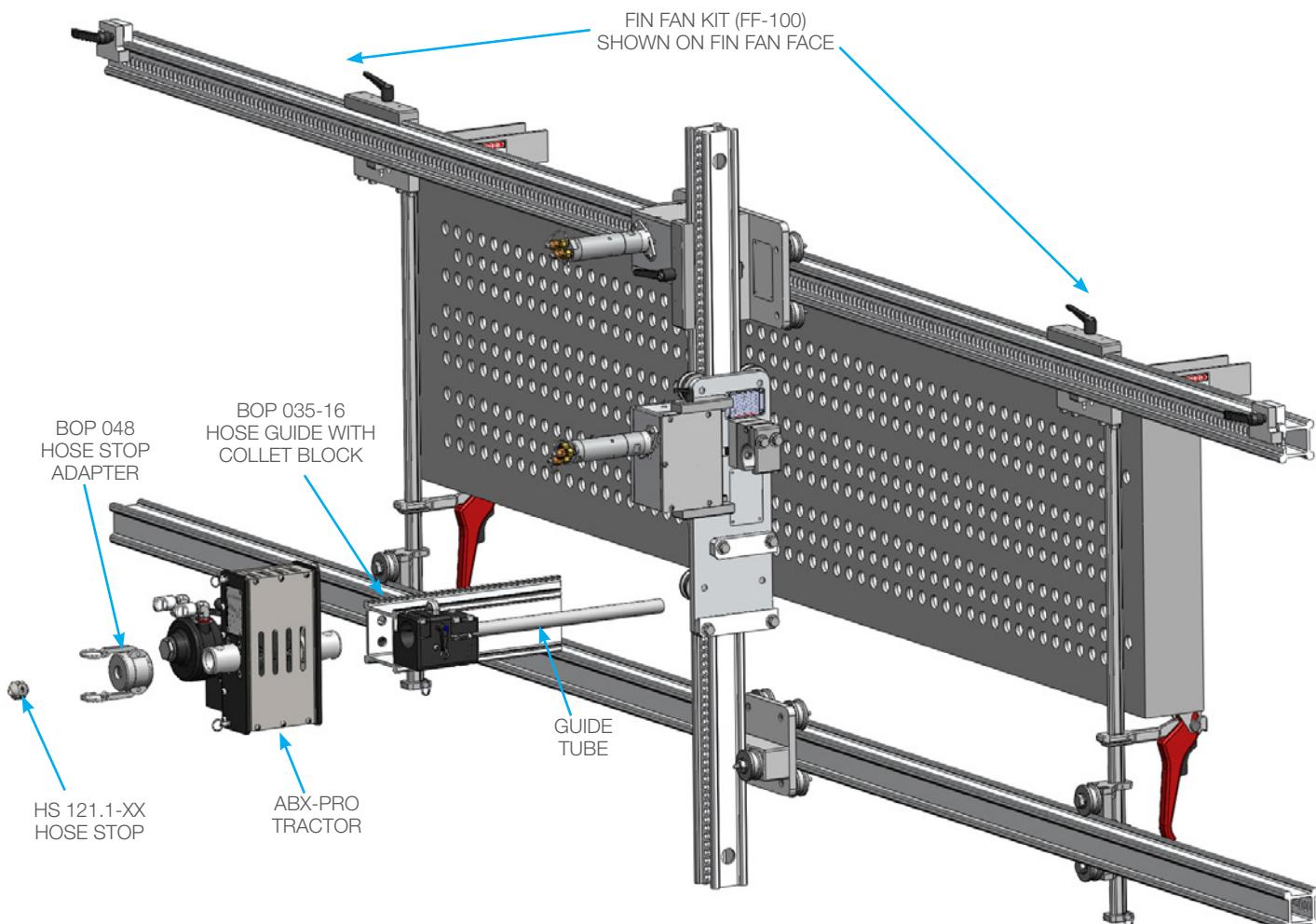
1. Remove Quick Release Pin and pull the Collet out of the Block.
2. Insert waterblast tool on high pressure hose, through the ABX-PRO Tractor and Collet Block Assembly. Be sure the waterblast tool and hose end pass the location of the Collet. *Guide tube is shown translucent for clarity*
3. Select the appropriate Collet size for the diameter of the hose. (See “Recommended Collets For Common Hose Sizes” plaque on the side plate of the ABX-PRO Tractor or the side of the vertical carriage on the Lightweight Positioner.)
4. Install the Collet and Quick Release Pin.
5. Pull on the hose from the back of the ABX-PRO Tractor to ensure that the Collet does not allow the waterblast tool to back out of the Guide or the ABX-PRO Tractor.
6. To install hose stops, push tool through 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.



OPTIONAL ACCESSORY OVERVIEW- ABX-PRO TRACTOR ON FF-100 FIN FAN KIT

ABX-PRO TRACTOR ON THE FF-100 FIN FAN KIT

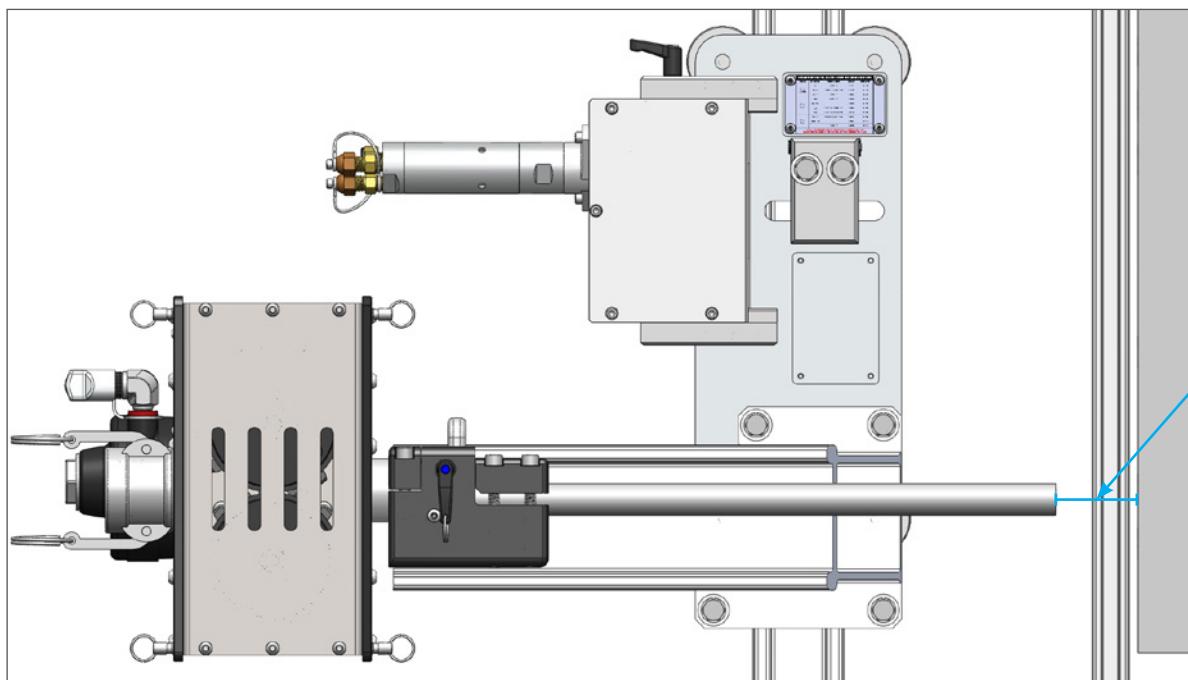
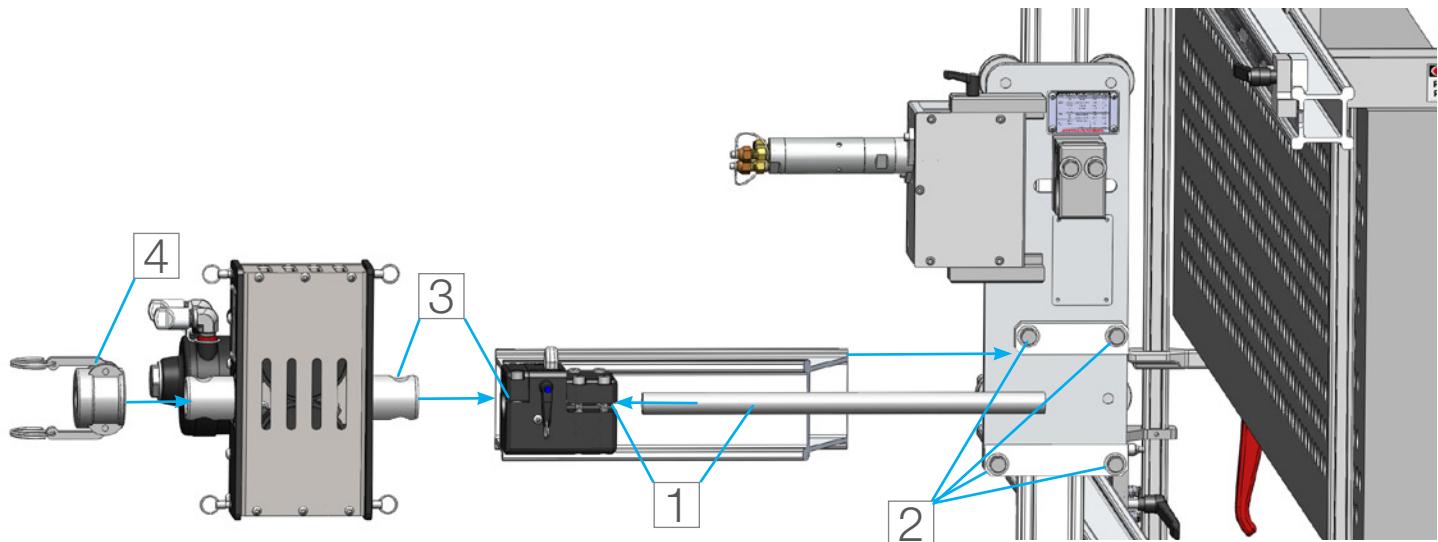
FULL PART DIAGRAMS ARE LOCATED IN THE
“OPTIONAL ACCESSORY PART DIAGRAM”
SECTION OF THIS MANUAL



ABX-PRO TRACTOR ON FF-100 FIN FAN KIT SET-UP

ATTACH ABX-PRO TRACTOR TO GUIDE ASSEMBLY AND FIN FAN

1. Select an appropriate size Guide Tube from the chart located in the "Part Diagram" section of this manual. Install Guide Tube into the Collet Block on the Guide Assembly by loosening the 4 screws with a 1/4" Allen Wrench. Insert the Guide tube and tighten the 4 screws on the Collet Block Cap.
2. Using a 9/16 in. wrench, loosen all four rail clamp bolts located on the vertical carriage. Install the Guide Assembly into the rail clamps and adjust position until the Guide Tubes are approximately 1/2 in. (13 mm) away from the tube sheet face. Tighten the four rail clamp bolts.
3. Loosen the 2 screws on the Collet Block with a 1/4" Allen Wrench and slide the Guide on the Tractor into the Collet Block Cap. Tighten the two screws on Collet Block Cap until secure.
4. Rotate the pull rings on the BOP 048 Female Camlock to align with the notches on the ABX-PRO Tractor Guide. Slide the BOP 048 Female Camlock onto the ABX-PRO Tractor Guide and secure in place.



CONTROL BOX TO ABX-PRO TRACTOR ASSEMBLY

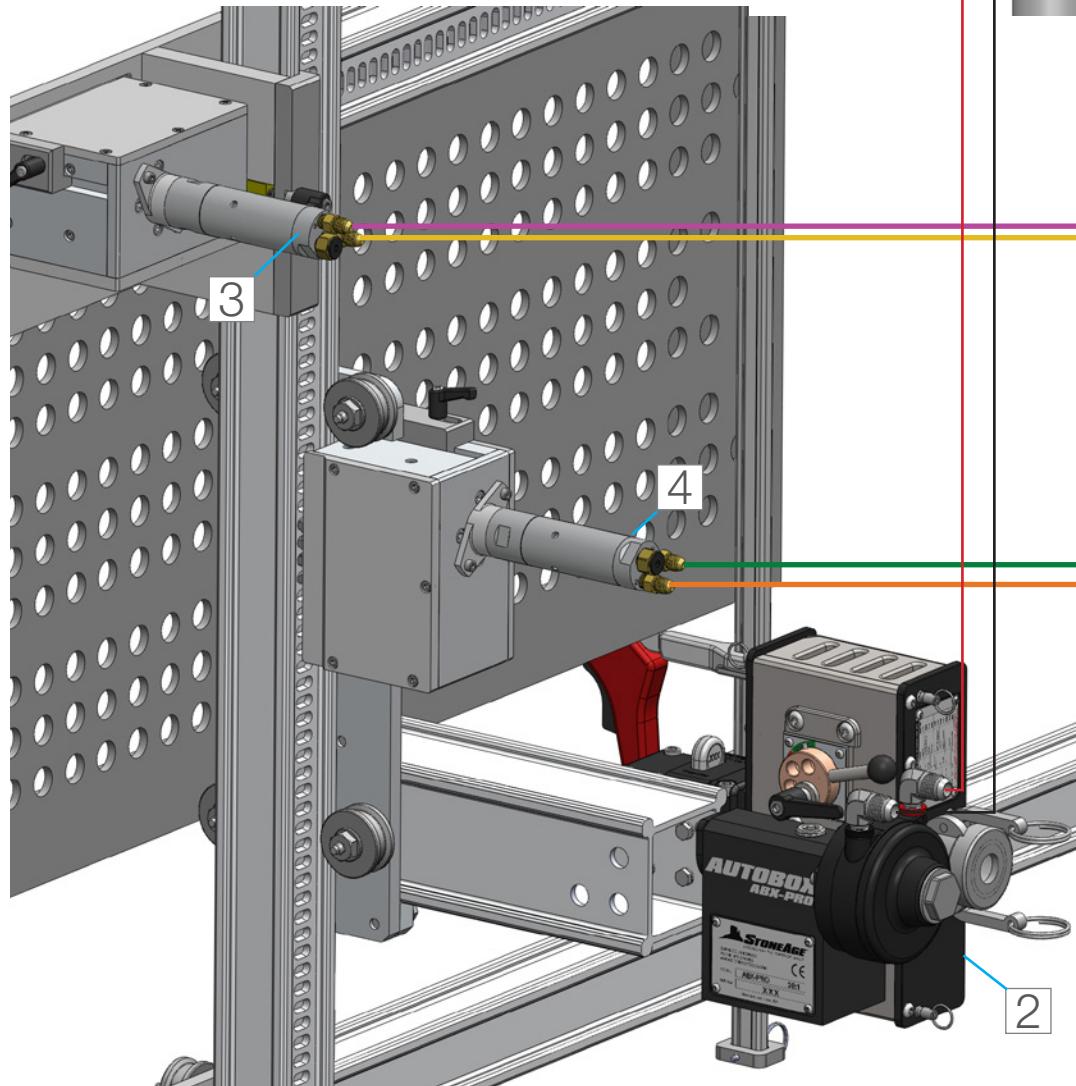
PNEUMATIC SUPPLY LINE CONNECTIONS

1. Remove the dust caps from the Joint Industry Council (JIC) fittings of the Control Box and the ABX-PRO Tractor.
2. Connect the ABX-PRO Tractor to the CB-ABX-PRO Control Box with two 1/2 in. (13 mm) JIC hoses. Verify the Control Box moves the hose in the appropriate directions.
3. Connect the Horizontal Positioner drive air motor to the CB-ABX-PRO Control Box with two 1/4 in. (6 mm) JIC hoses. Use the diagram below for proper connections. Verify the CB-ABX-PRO Control Box moves the Horizontal Carriage in the LEFT AND RIGHT directions.



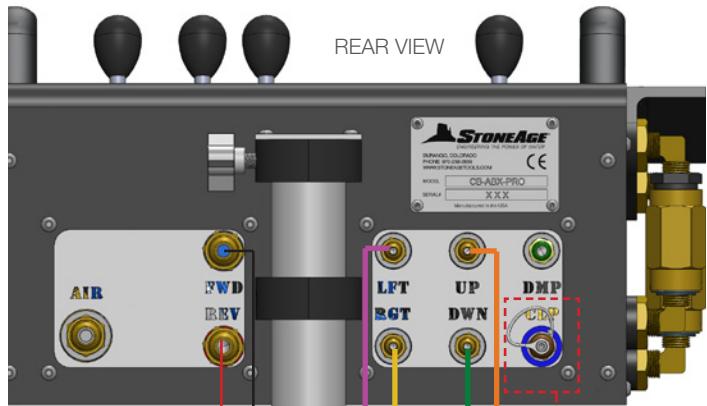
NOTICE

The 4 Positioner control lines are not color coded. Colors are shown in manual for clarity.



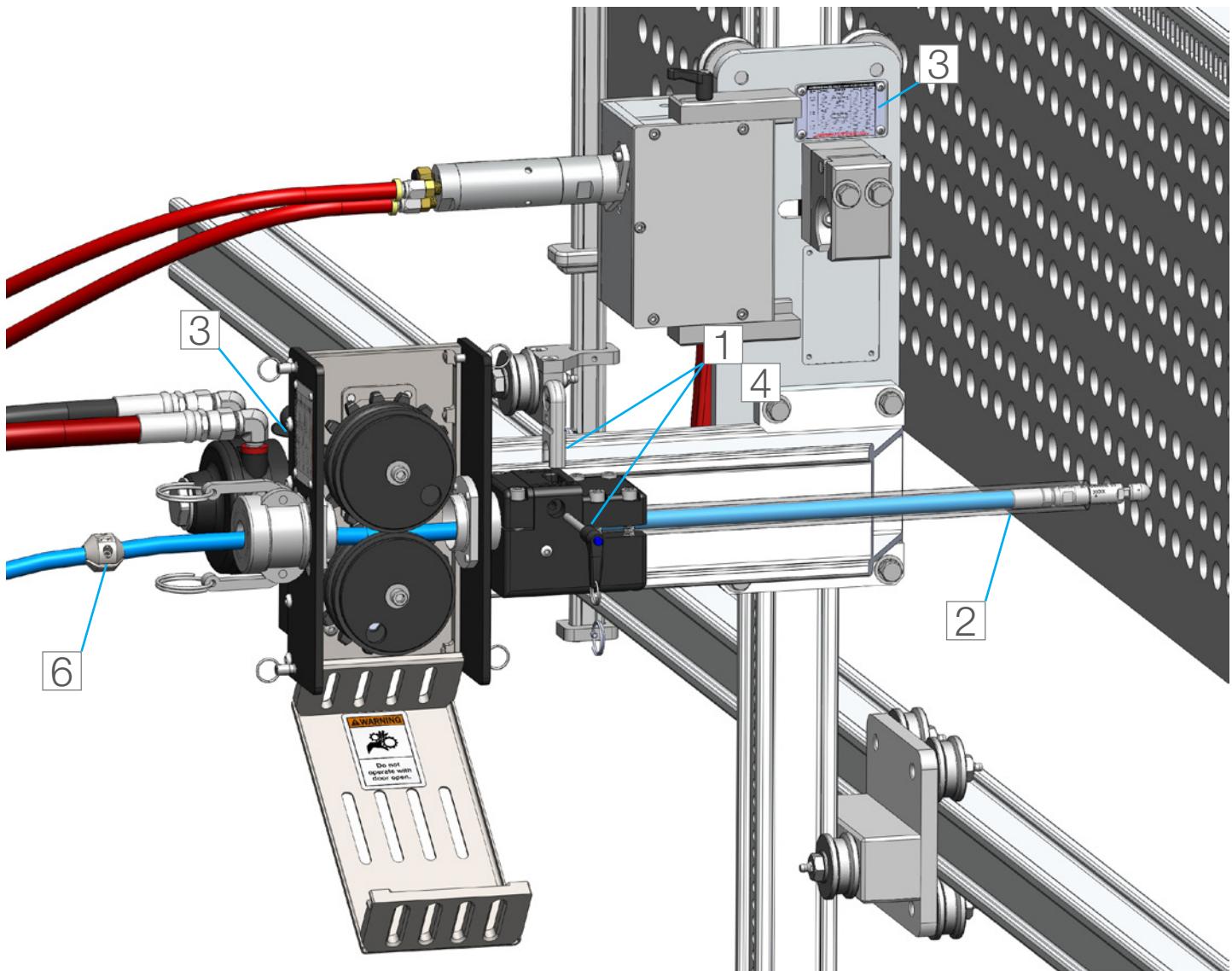
MORE DETAILED OPERATIONAL INSTRUCTIONS ARE LOCATED IN THE "OPERATION" SECTION OF THIS MANUAL

4. Connect the vertical positioner drive air motor to the CB-ABX-PRO Control Box with two 1/4 in. (6 mm) JIC hoses. Use the diagram below for proper connections. Verify the CB-ABX-PRO Control Box moves the vertical carriage in the UP AND DOWN directions.
5. Test the CB-ABX-PRO Control Box before operating the ABX-PRO Tractor with high pressure water to verify the control valves move the hose in the intended directions and that the dump valve is working properly.



COLLET INSERTION, HOSE, AND HOSE STOP INSTALLATION

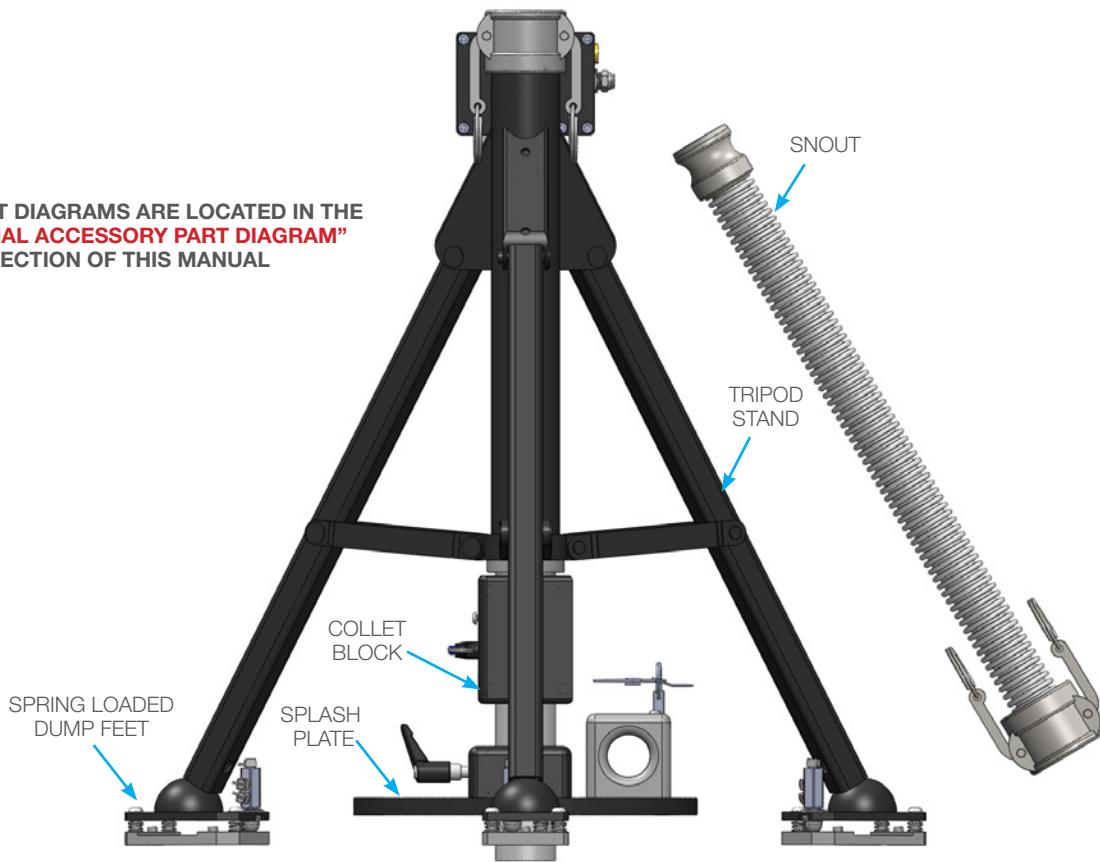
1. Remove Quick Release Pin and pull the Collet out of the Block.
2. Insert waterblast tool on high pressure hose, through the ABX-PRO Tractor and Collet Block Assembly. Be sure the waterblast tool and hose end pass the location of the Collet. *Guide tube is shown translucent for clarity*
3. Select the appropriate Collet size for the diameter of the hose. (See “Recommended Collets For Common Hose Sizes” plaque on the side plate of the ABX-PRO Tractor or the side of the vertical carriage on the Lightweight Positioner.)
4. Install the Collet and Quick Release Pin.
5. Pull on the hose from the back of the ABX-PRO Tractor to ensure that the Collet does not allow the waterblast tool to back out of the Guide or the ABX-PRO Tractor.
6. To install hose stops, push tool through 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.



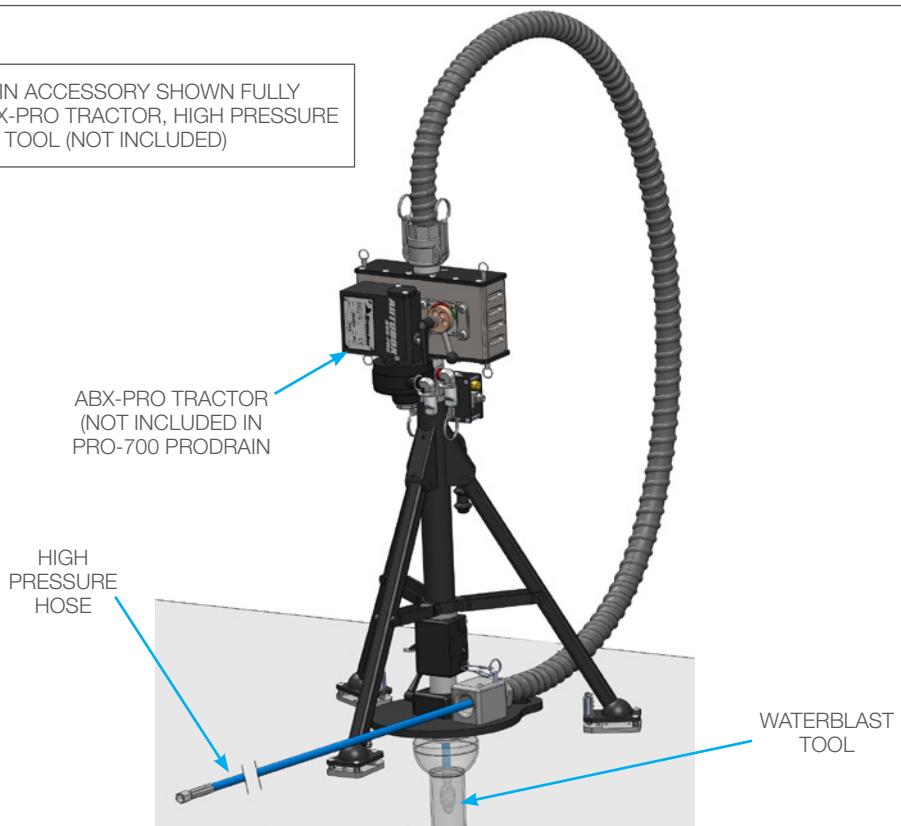
OPTIONAL ACCESSORY OVERVIEW- PRO-700 PRODRAIN

PRO-700 PRODRAIN
PRODRAIN FULL ASSEMBLY

FULL PART DIAGRAMS ARE LOCATED IN THE
“OPTIONAL ACCESSORY PART DIAGRAM”
SECTION OF THIS MANUAL

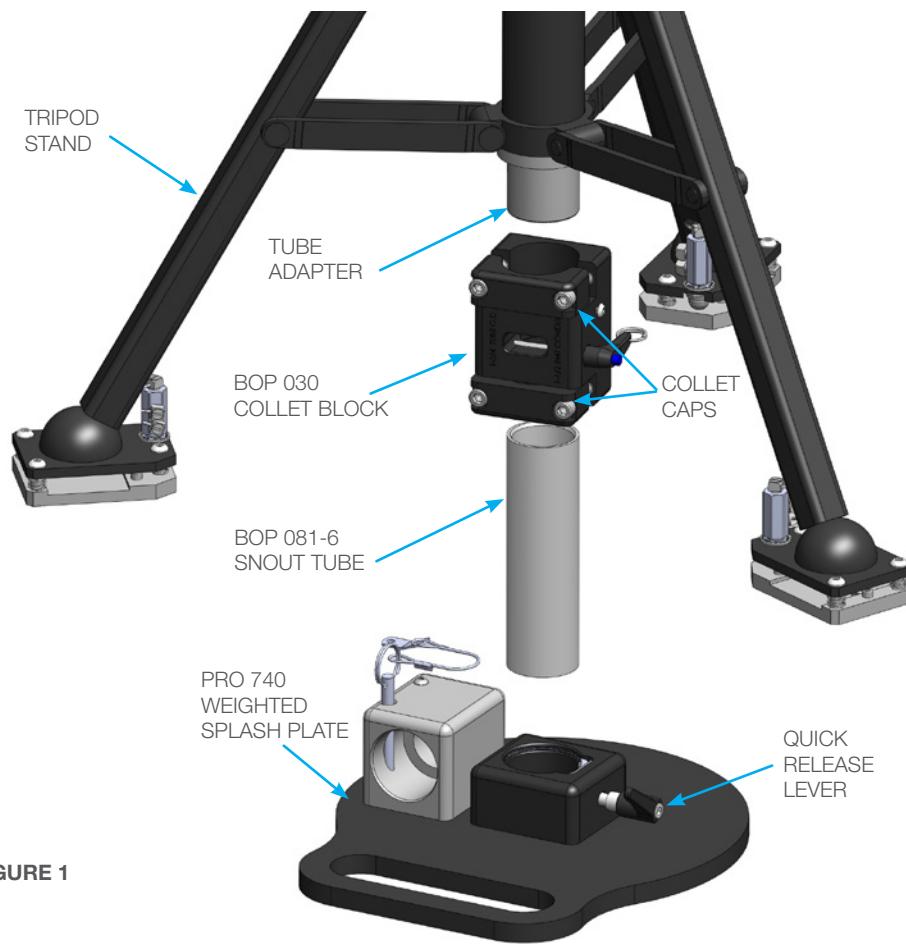


PRO-700 PRODRAIN ACCESSORY SHOWN FULLY
ASSEMBLED WITH ABX-PRO TRACTOR, HIGH PRESSURE
HOSE AND TOOL (NOT INCLUDED)

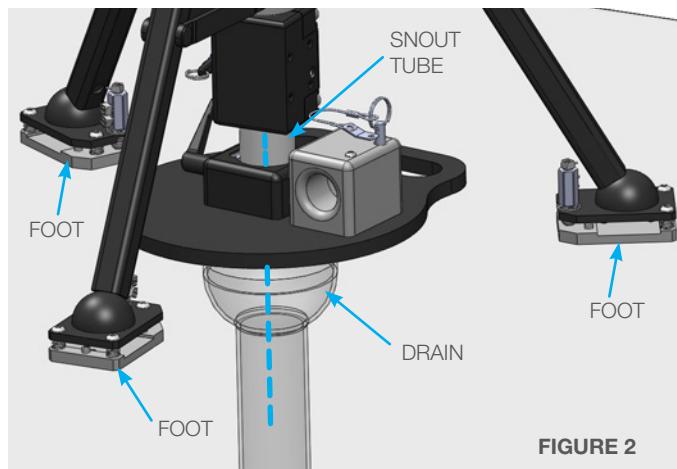


PRO-700 PRODRAIN SET-UP PROCEDURE

1. Attach the BOP 030 Collet Block to the Tripod Stand. Loosen two screws on one Collet Cap with a 1/4" Allen wrench. Slide the BOP 030 Collet Block onto the Tube Adapter located on the bottom end of the Tripod Stand. Tighten the two screws on the Collet Cap until secure. The BOP 030 Collet Block Assembly can stay attached to Tripod Stand when not in use. (**Figure 1**)
2. Attach the BOP 081-6 Snout Tube to BOP 030 Collet Block. Loosen two screws on the other Collet Cap with a 1/4" Allen wrench. Slide the Snout Tube into the Collet Block and tighten the two screws until secure. (**Figure 1**)
3. Attach the PRO 740 Weighted Splash Plate to the BOP 081-6 Snout Tube. Loosen two screws on the other Collet Cap with a 1/4" Allen wrench. Slide the Weighted Splash Plate onto Snout Tube and tighten the Quick Release Lever until secure. (**Figure 1**)

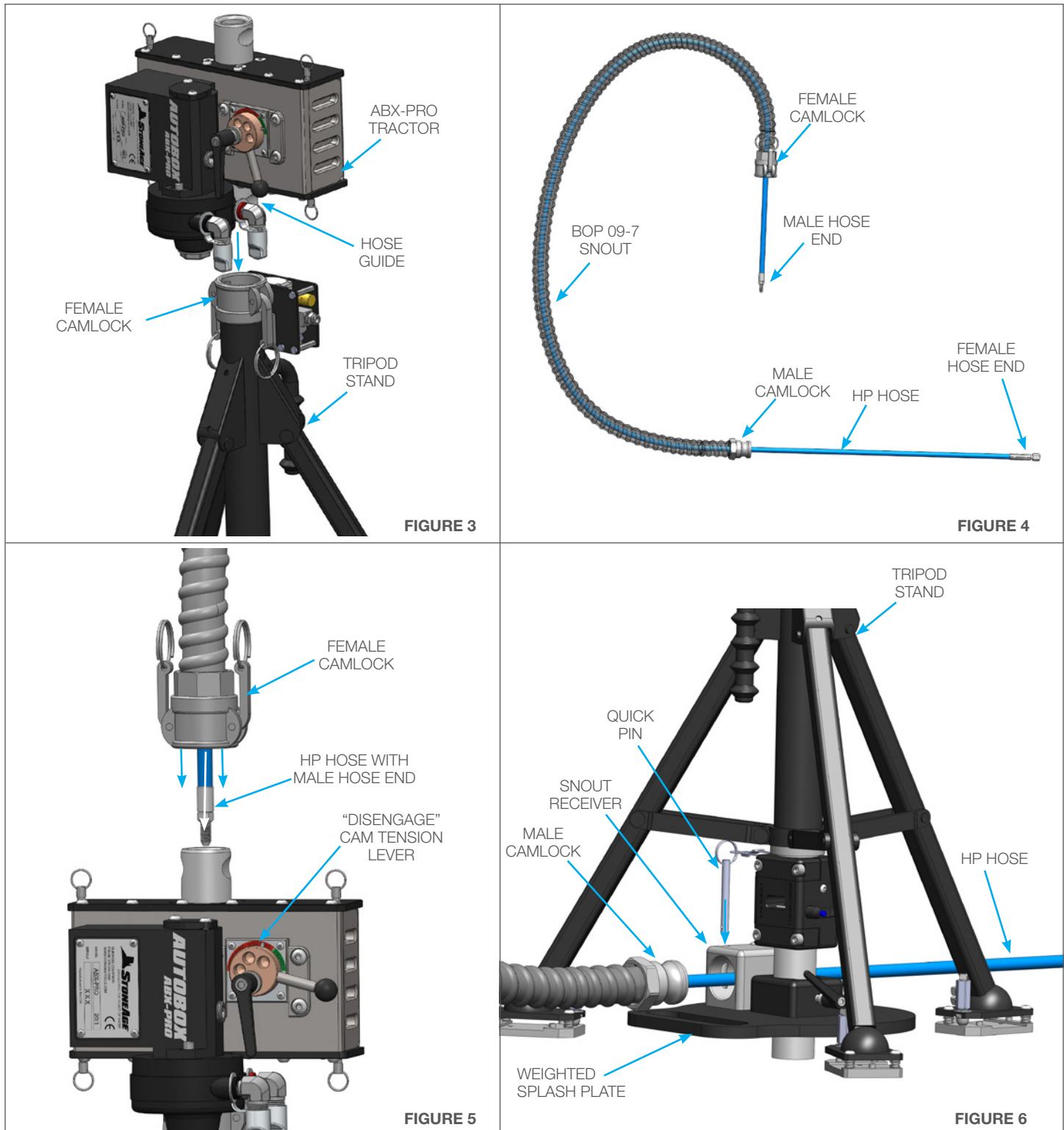


4. Place the Tripod Stand Assembly over the drain. Center the Snout Tube into the drain and be sure that all three feet are planted firmly on the ground. (**Figure 2**)



PRO-700 PRODRAIN SET-UP

5. Slide the hose guide on the ABX-PRO Tractor into the Camlock on the Tripod Stand, with air fittings pointed down. Make sure to engage the Camlock lever lock pins. (**Figure 3**)
6. Feed the HP Hose through BOP 09-7 Snout. (**Figure 4**)
7. Rotate the Cam Tension Lever counterclockwise on the ABX-PRO Tractor to the “Disengaged” position and feed the HP Male Hose End through the ABX-PRO Tractor and attach the Female Camlock to the ABX-PRO Tractor hose guide. (**Figure 5**)
8. Feed the HP Female Hose End through the Snout Receiver on the Weighted Splash Plate. Remove the Quick Pin from the Snout Receiver, insert the Male Camlock and reinsert the Quick Pin. (**Figure 6**)



PRO-700 PRODRAIN SET-UP

9. The image below shows how the Prodrain should look once the HP Hose and Snout have been properly installed. (**Figure 7**)
10. Lay the assembly down to attach the waterblast tool to the Male Hose End. Coat the threads of the hose end with Blue Goop by SWAGELOK® or and equivalent Anti-seize. (**Figure 8**)
11. Remove the Quick Release Pin and insert the FF 121-XX into the collet block. (**Figure 9**)
12. Rotate the Clamp Tension Lever clockwise on the ABX-PRO Tractor to tighten the cam in place. (**Figure 10**)



FIGURE 7

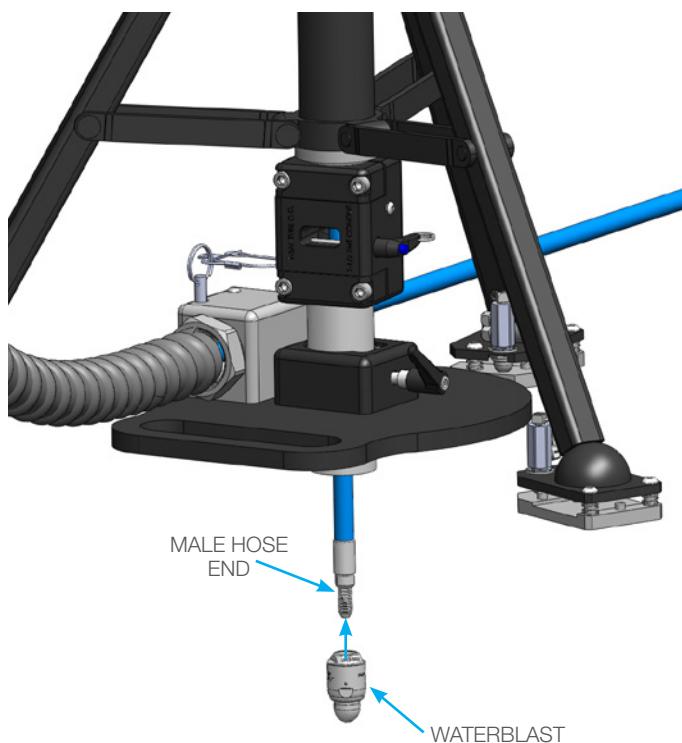


FIGURE 8

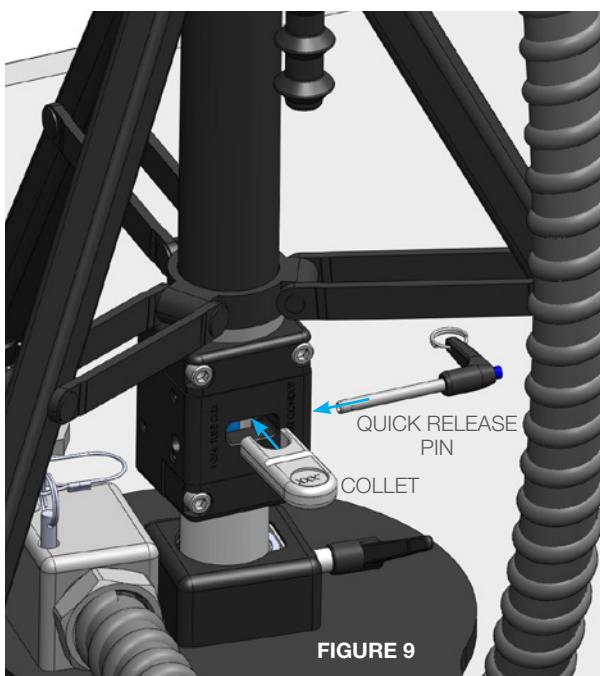


FIGURE 9

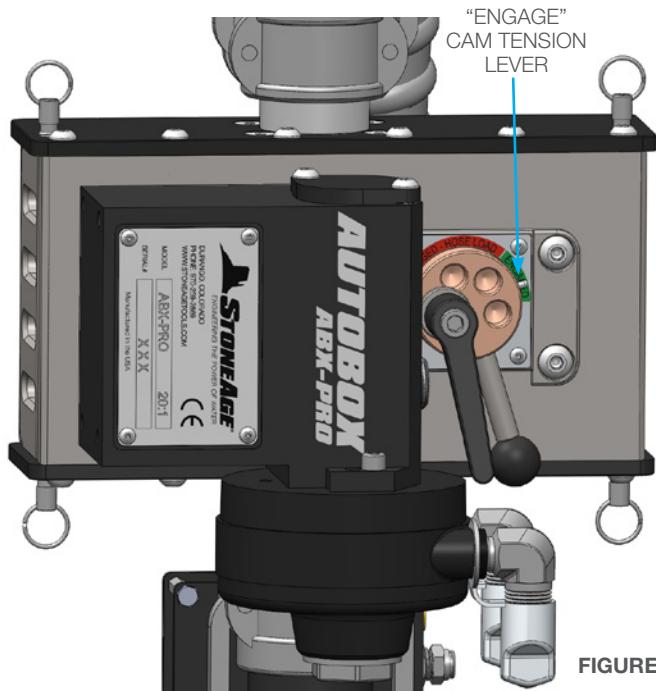


FIGURE 10

PRO-700 PRODRAIN TO DUMP AND CONTROL BOX SET-UP

13. Connect 1/4" air lines from Control Box to the valve assembly on the Tripod Stand and from the Tripod Stand to the Dump. (**Figure 11**)
14. Connect 1/2" black and red air supply hoses from the fittings on the Control Box to the fittings on the ABX-PRO Tractor. Mate each hose to its respective color bands. (**Figure 12**)
15. Test run the assembly without HP water to in and out set feed rates and verify hose clamp pressure.
16. Verify each pneumatic foot function and cuts air supply to the dump
17. Ready to operate and clean the drain.

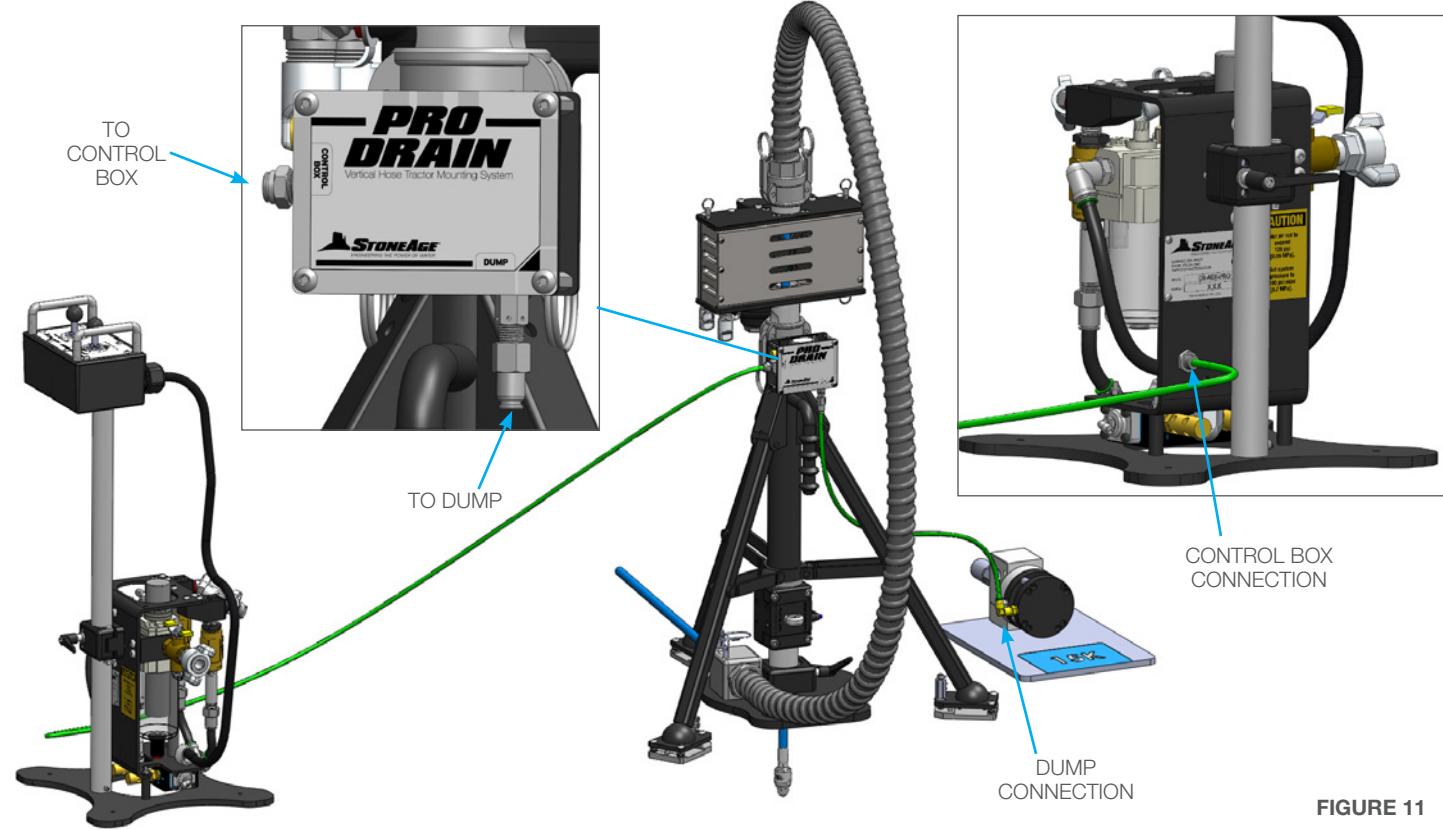


FIGURE 11

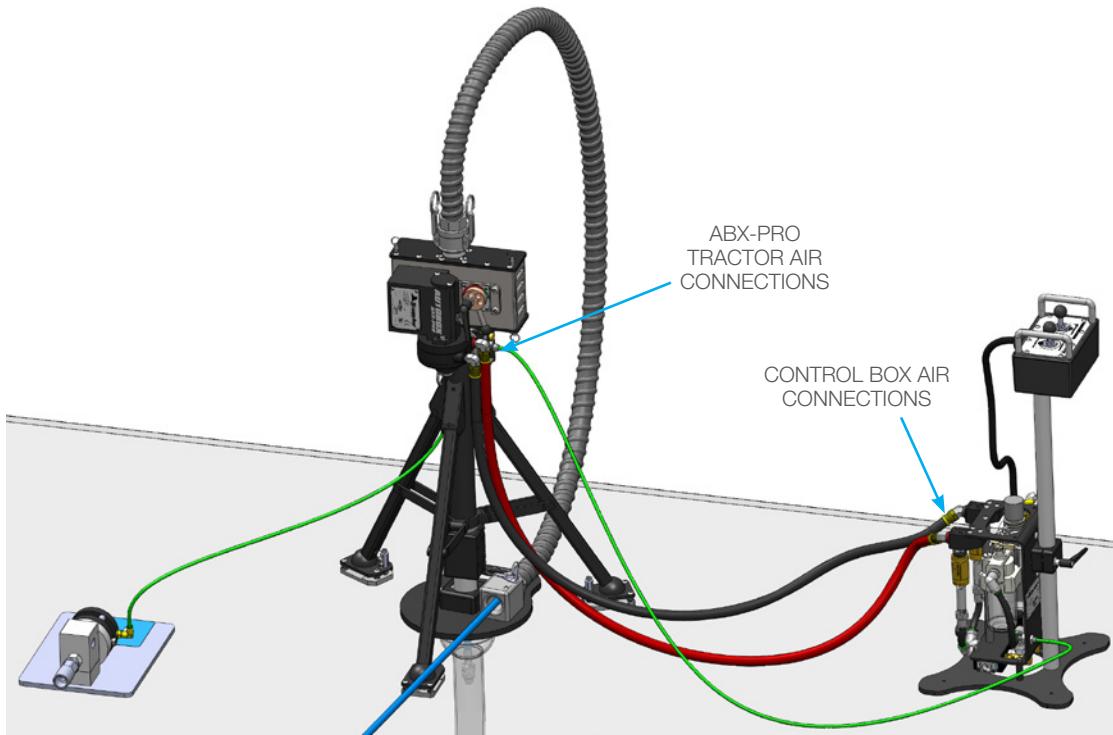


FIGURE 12

OPTIONAL ACCESSORY OVERVIEW- NAV-170-PKG NAVIGATOR

NAV-170-PKG

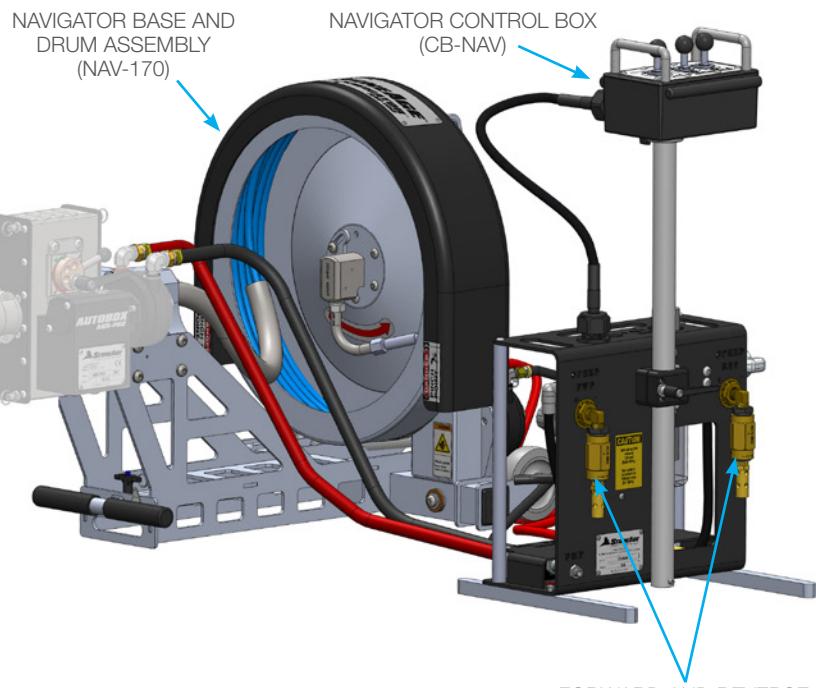
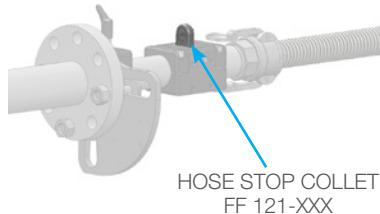
NAVIGATOR ROTARY HOSE DEVICE WITH CONTROL BOX

The is the only automated rotary hose device in the industry specifically engineered to clean small diameter process pipe with bends. It cleans past multiple bends and elbows using hose rotation and is used in conjunction with the AutoBox ABX-PRO hose tractor. It can hold up to 100 feet (30 m) of hose for job site safety, hose protection and transport. Lightweight, compact and portable.

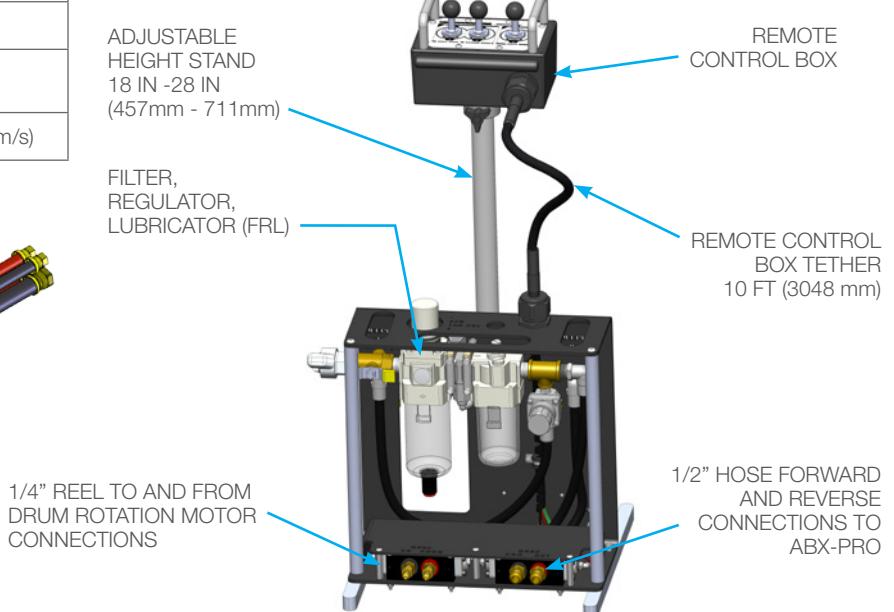
For more details see <http://www.stoneagetools.com/navigator>

NOTICE

GHOSTED PARTS ARE **NOT** INCLUDED IN THE NAV-170-PKG PACKAGE.

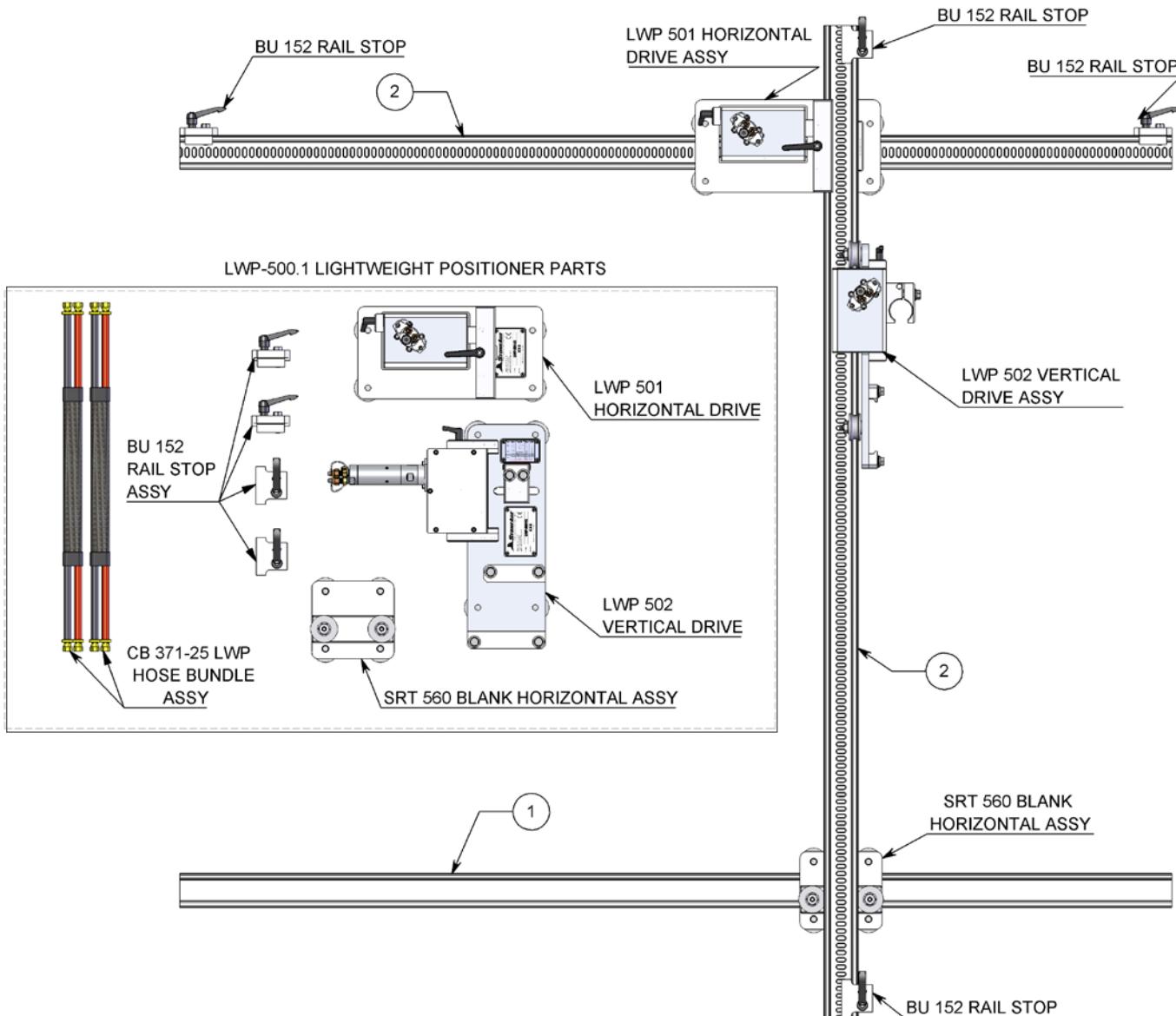


SPECIFICATIONS	
MAX PRESSURE	22k psi (1500 bar)
PIPE SIZE	2-4 in. (51-102 mm)
HOSE SIZE	4/4, 5/4, 6/4
HOSE CAPACITY	Storage: 100 ft (30 m) Reach: 85 ft (26 m)
FEED RATE	1.0-32 in/sec (25-813 mm/s)



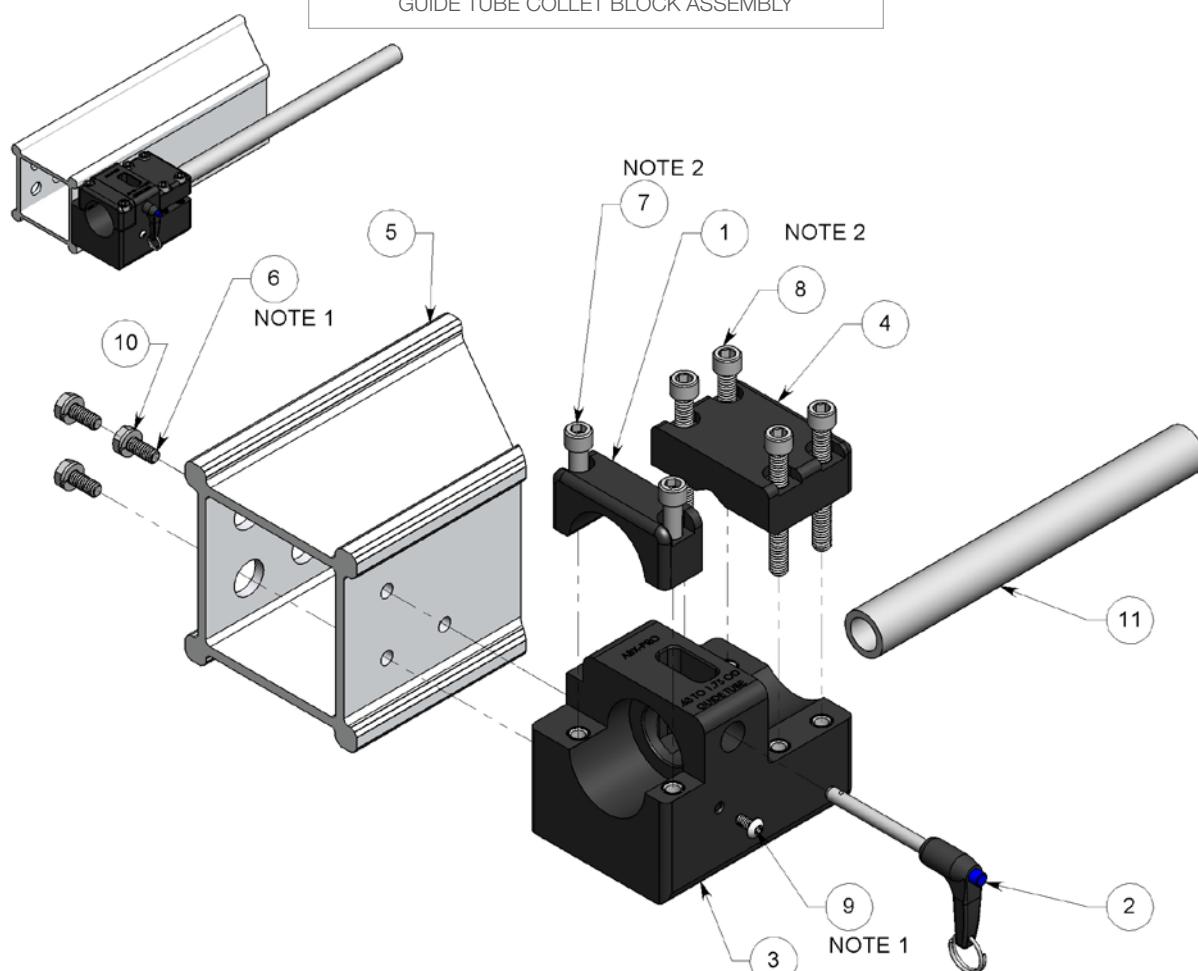
OPTIONAL ACCESSORY PART DIAGRAM

LIGHTWEIGHT POSITIONER ASSEMBLY (LWP-500-V2)



#	PART NUMBER	QTY
1	BR 002-XX-001 2.5 BOX RAIL EXTRUSION	1
2	BU 002-XX-001 2.5 BOX RAIL EXTRUSION, SLOTTED	2
3	LWP-500.1 LIGHTWEIGHT POSITIONER PARTS	1

OPTIONAL ACCESSORY PART DIAGRAM

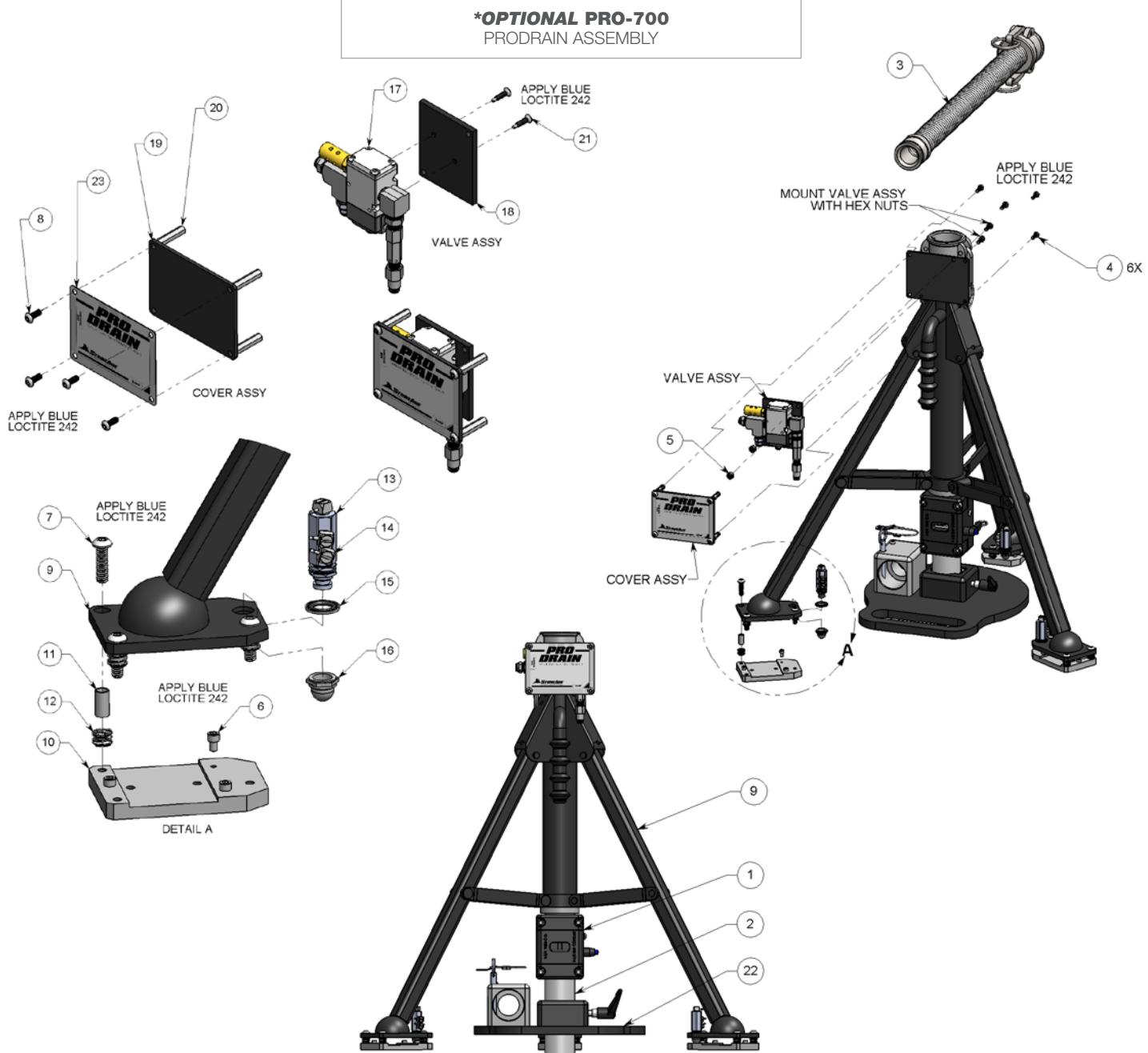


#	PART NUMBER	QTY.
1	BOP 032 COLLET BLOCK CAP	1
2	BOP 033 QUICK PIN	1
3	BOP 036 GUIDE TUBE COLLET BLOCK BODY	1
4	BOP 037 GUIDE TUBE COLLET BLOCK CAP	1
5	BOP 038-XX BOX RAIL, PRO LWP MOUNT	1
6	GB 325-025 BOLT, HEX .25-20 X .63 SS	3
7	GS 331-06 SHCS .31-18 X 1.50 SS	2
8	GS 331-10 SHCS .31-18 X 2.50 SS FULL THD	4
9	GSB 319-015 BHCS .19-24 X .38 LG SS	1
10	GW 325-L LOCK WASHER SS	3
11	ABX XXX-XX GUIDE TUBE (SEE CHART THIS PAGE)	1

GUIDE TUBE OPTION TABLE		
GUIDE TUBE	O.D. X I. D.	BANSHEE
ABX 115-XX	.625 X .459	BN9.5
ABX 116-XX	.840 X .546	BN13
ABX 117-XX	.840 X .674	BN15
ABX 119-XX	.875 X .745	BN18
ABX 125-XX	1.25 X 1.01	BN24
ABX 126-XX	1.25 X 1.12	BN27 / BN24
ABX 127-XX	1.66 X 1.38	BN33

BUILD CONFIGURATIONS TABLE			
APPLICATION	BOP 035-XX GUIDE TUBE COLLET BLOCK	BOP 038-XX BOX RAIL, PRO LWP MOUNT	ABX-XXX-XX GUIDE TUBE
FOR USE WITH THE LIGHTWEIGHT POSITIONER FOR TUBE BUNDLE CLEANING	BOP 035-8	BOP 038-6	ABX-XXX-8
FOR USE WITH THE FIN FAN, FLEX FRAME FOR TUBE BUNDLE CLEANING	BOP 035-16	BOP 038-14	ABX-XXX-16

OPTIONAL ACCESSORY PART DIAGRAM



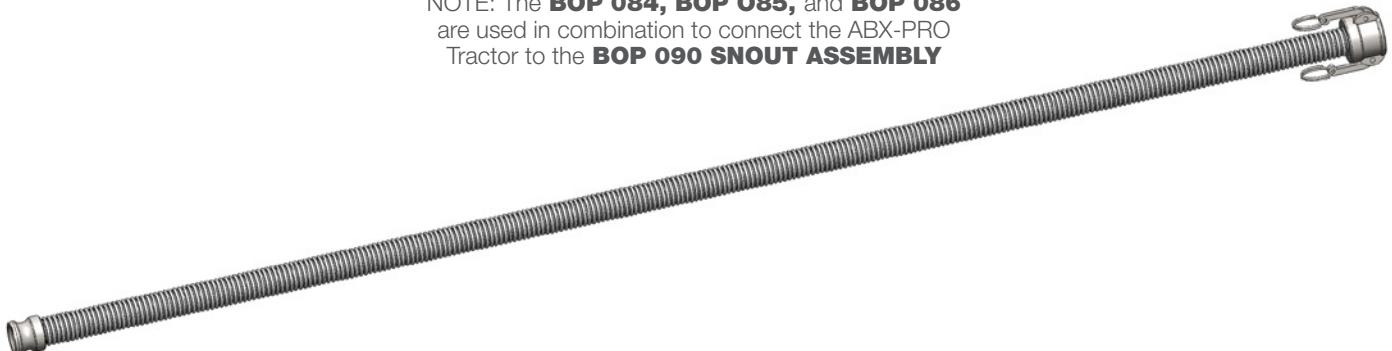
#	PART NUMBER	QTY.
1	BOP 030 COLLET BLOCK ASSEMBLY	1
2	BOP 081-6 SNOOT TUBE 1.75 X 6 SS	1
3	BOP 090-7 SNOOT, CORRUGATED, 1-1_4 CAMLOCKS, 7FT	1
4	GMS 319-025-32 HHMS .19-32X.63 SS	6
5	GN 319-L-32 NYLOK NUT SS	2
6	GS 316-01 SHCS .16-32 X .25 SS	9
7	GSB 325-035 BHCS .25-20 X .875 LG SS	9
8	GTB 319-02-32 BHTS .19-32 X .50 LG TORX-SS	4
9	PRO 701 PRODRAIN STAND WELDMENT	1
10	PRO 705 FOOT SHOE	3
11	PRO 706 FOOT BOLT SPACER	9
12	PRO 707 FOOT SPRING	9

13	PRO 708 FOOT VALVE	3
14	PRO 709 FITTING, .06 BARB X 10-32, 90DEG	9
15	PRO 710 SEALED WASHER	3
16	PRO 711 VALVE BOOT	3
17	PRO 715 VALVE ASSEMBLY	1
18	PRO 716 VALVE INTERNAL PLATE	1
19	PRO 717 VALVE COVER PLATE	1
20	PRO 728 HEX STANOFF, 1.25 LG X 10-32	4
21	PRO 730 SELF TAPPING SCREW, 8-18X.75 SS	2
22	PRO 740 WEIGHTED SPLASH PLATE ASSEMBLY	1
23	PRO 750 DRAIN, GRAPHIC OVERLAY	1
24	GPTB 0125-PUR95A-BK	1

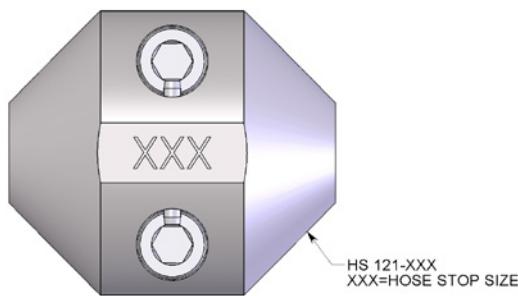
OPTIONAL ACCESSORY PART DIAGRAM

***OPTIONAL BOP 090**
1 1/4" SNOUT WITH CAMLOCKS, 6FT

NOTE: The **BOP 084**, **BOP 085**, and **BOP 086** are used in combination to connect the ABX-PRO Tractor to the **BOP 090 SNOUT ASSEMBLY**

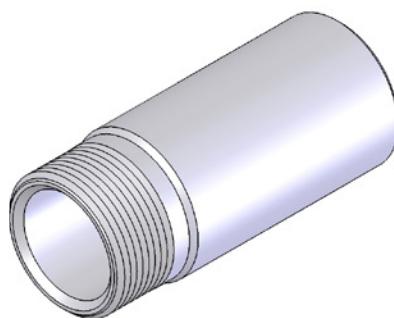


***OPTIONAL HS 121-XX-XX**
HOSE STOP CLAMP

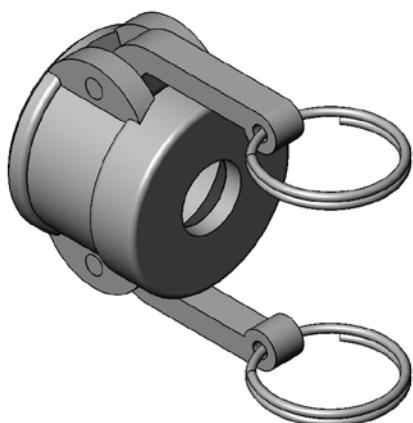


SIZE DESCRIPTION	
HS 121-27-34	HOSE STOP, CLAMP STYLE FOR 3MM OR 4MM (.27-.34"/6.8-8.6MM HOSE DIA)
HS 121-34-42	HOSE STOP, CLAMP STYLE FOR 5/2 (.34-.42"/8.6-10.7MM HOSE DIA)
HS 121-42-50	HOSE STOP, CLAMP STYLE FOR 5MM OR 6MM (.42-.50"/10.7-12.7MM HOSE DIA)
HS 121-50-56	HOSE STOP, CLAMP STYLE FOR 6 OR 8MM (.50-.56"/12.7-14.2MM HOSE DIA)
HS 121-56-61	HOSE STOP, CLAMP STYLE FOR 8MM (.56-.61"/14.2-15.5MM HOSE DIA)

***OPTIONAL BOP 084**
1.75 X 1.25 MNPT THREADED SNOUT TUBE



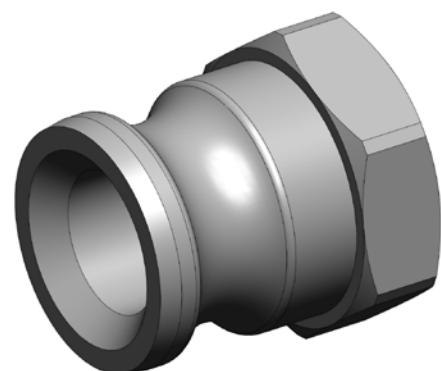
***OPTIONAL BOP 048**
HOSE STOP ADAPTER



***OPTIONAL BOP 085**
1 1/4" MALE CAMLOCK END



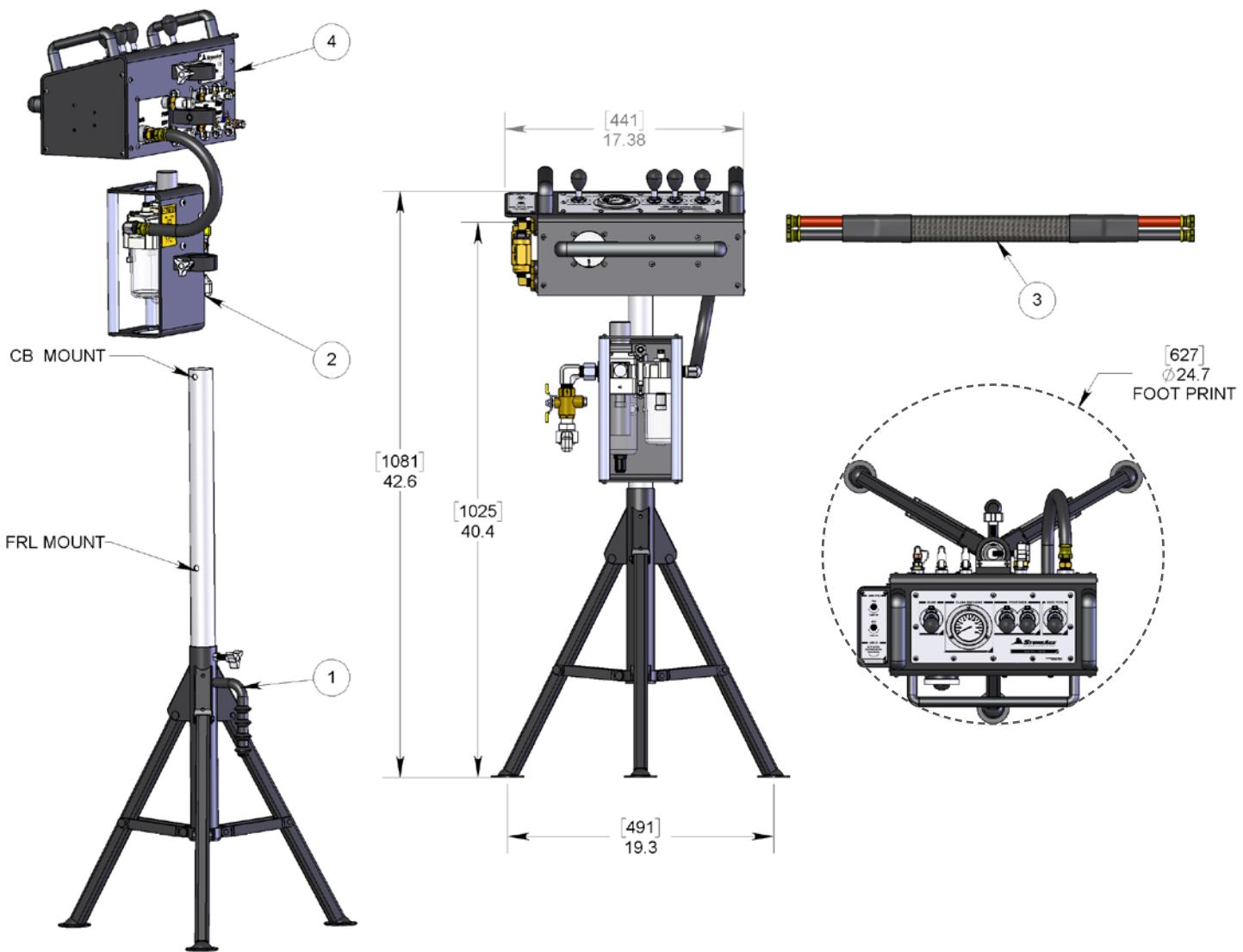
***OPTIONAL BOP 086**
1 1/4" MALE CAMLOCK END



OPTIONAL ACCESSORY PART DIAGRAM

***OPTIONAL CB-ABX-PRO**
CONTROL BOX

The **CB-ABX-PRO** allows the Operator to use the ABX-PRO Tractor on a Lightweight Positioner.



#	PART NUMBER	QTY.
1	CB 301 STAND ASSEMBLY	1
2	CB 310 FRL ASSEMBLY	1
3	CB 745-25 ABX HOSE BUNDLE ASSEMBLY	1
4	CB 800 CONTROL BOX ASSEMBLY	1

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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.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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