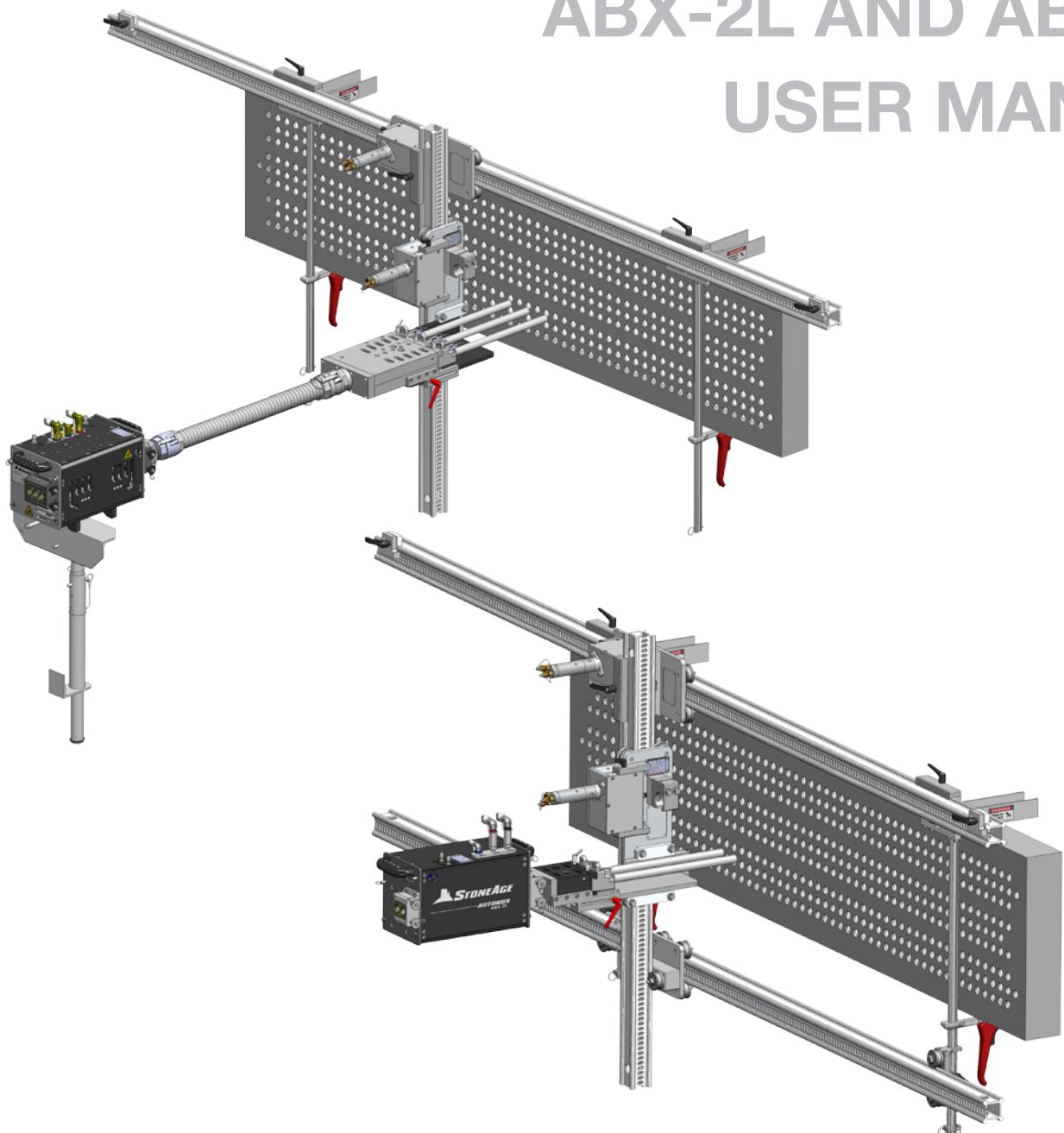




FIN FAN ACCESSORY KITS FOR AUTOBOX® ABX-2L AND ABX-3L USER MANUAL



*All available configurations are not depicted in these images.

PL 631 REV A
(07/2017)

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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

For Use with 3/4 to 8/4 flex lances

PACKAGE NUMBER	ABX-2L	ABX-3L	2 LANCE CLEANING	3 LANCE CLEANING	DIRECT MOUNT	SNOUT MOUNT	BOTTOM SUPPORT RAIL	GUIDE ASSEMBLY SIZE	PITCH
FF-280-2LR2L-10-PKG	✓		✓		✓		✓	6.5" W X 25" L X 5" H (165mm W X 635mm L X 127mm H)	DUAL 1.75" TO 3.0" (44mm x 76mm)
FF-280-2LR3L-10-PKG		✓	✓		✓		✓	6.5" W X 25" L X 5" H (165mm W X 635mm L X 127mm H)	DUAL 1.75" TO 3.0" (44mm x 76mm)
FF-280-2LS2L-10-PKG	✓		✓			✓		6.5" W X 25" L X 5" H (165mm W X 635mm L X 127mm H)	DUAL 1.75" TO 3.0" (44mm x 76mm)
FF-280-2LS3L-10-PKG		✓	✓			✓		6.5" W X 25" L X 5" H (165mm W X 635mm L X 127mm H)	DUAL 1.75" TO 3.0" (44mm x 76mm)
FF-380-3LS3L-10-PKG		✓		✓		✓		11.25" W X 30" L X 6.25" H (286mm W X 762mm L X 159mm H)	TRIPLE 1.75" TO 3.0" (44mm x 76mm) DUAL 3.5"- 6.0" (89mm x 153mm)

DESCRIPTION OF EQUIPMENT AND INTENDED USE

The StoneAge Fin Fan Accessory is a specifically engineered accessory for the Autobox Hose Tractor family. The Fin Fan Accessory adapts the Autobox Hose Tractors for easy mounting to a Fin Fan header box for efficient tube cleaning.

The included scaffold mount allows the Autobox Hose Tractors to be attached to the catwalk railing—keeping hoses clear of the walkway for easy setup and operation. The Fin Fan Snout and Guide Assemblies provide anti-withdrawal protection, and precise tube pitch adjustment.

KEY FEATURES:

- Modular, lightweight, fully adjustable, easy to install, design
- Utilizes 2.5 in. (6.35 cm) box rail cut to custom lengths to accommodate any size Fin Fan face dimension
- Adjustable pitch for different tube arrangements.
- 2 and 3 Lance, direct and snout mount Options
- 30° adjustable clamps.
- Works with the ABX-2L and ABX-3L Hose Tractors, CB-ABX Control Box, and LWP-500-V2 Light Weight Positioner
- Quick adjust handle to slide FF guide tubes back to clear exchanger obstructions.
- Ultra High Molecular Weight Polyethylene Body to Increase hose efficiency from drag and decrease weight.

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 of 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.

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

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 Fin Fan Accessory 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 (backout preventer) MUST be used at all times. The backout prevention device is the Hose Stop Collet located within the Fin Fan Snout Assembly. StoneAge offers several different size Hose Stop Collets. The Collet Size Reference guide is located on the Vertical Drive Assembly and in the Part Diagram 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 Fin Fan Accessory 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.

HIGH-PRESSURE HOSE

- The AUTOBOX® System and its accessories are designed to be used with Parker Pro-Lance® and/or Spir Star Blast-Pro® hose ends. Standard hose ends may not fit into the AUTOBOX® Hose Tractors and/or Guide Tubes.
- Only high quality hoses intended for waterblast applications should be used as high-pressure hoses. Pressure rating of high-pressure hoses **MUST NEVER** be exceeded.
 - Verify that the high-pressure hose is properly installed in the back-out preventer. Operate the high-pressure hose and waterjet tool at full pressure to test the clamp force. Proper clamp force will provide good control of the hose in forward and reverse directions, and keep the hose running through the AUTOBOX® ABX-3L Drive Belt or AUTOBOX® ABX-2L Rollers.

NOTICE

Do not use a shrouded hose or hose with a steel protective cover. This will cause severe damage to the Drive Rollers on the AUTOBOX® Hose Tractor.

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

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

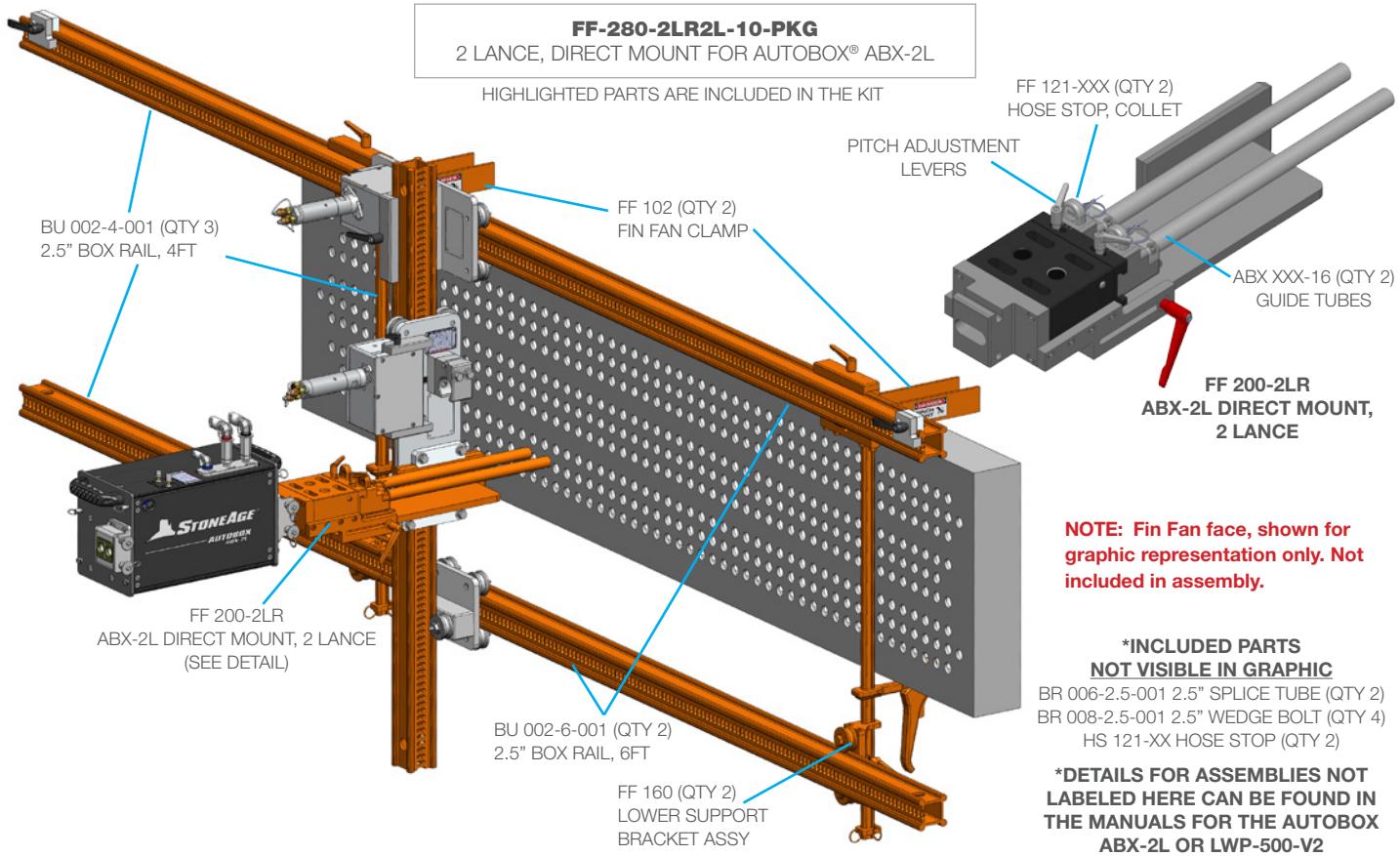
ACCESSORY CONFIGURATIONS	ACTUAL LENGTH OF CONFIGURATION	RECOMMENDED ADDITIONAL CONNECTION LENGTH
Autobox® 2L/3L, Hose Guide, and Lightweight Positioner	32.9 in / 836 mm	39 in / 991 mm
Autobox® 2L/3L, Hose Guide, Lightweight Positioner, and HCS	145.0 in / 3683 mm	39 in / 991 mm
Autobox® 2L/3L, Fin Fan Guide, Snout	138 in / 3505 mm	39 in / 991 mm
Autobox® 2L/3L, Fin Fan Guide, Snout, and HCS	165 in / 4191 mm	39 in / 991 mm

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

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

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

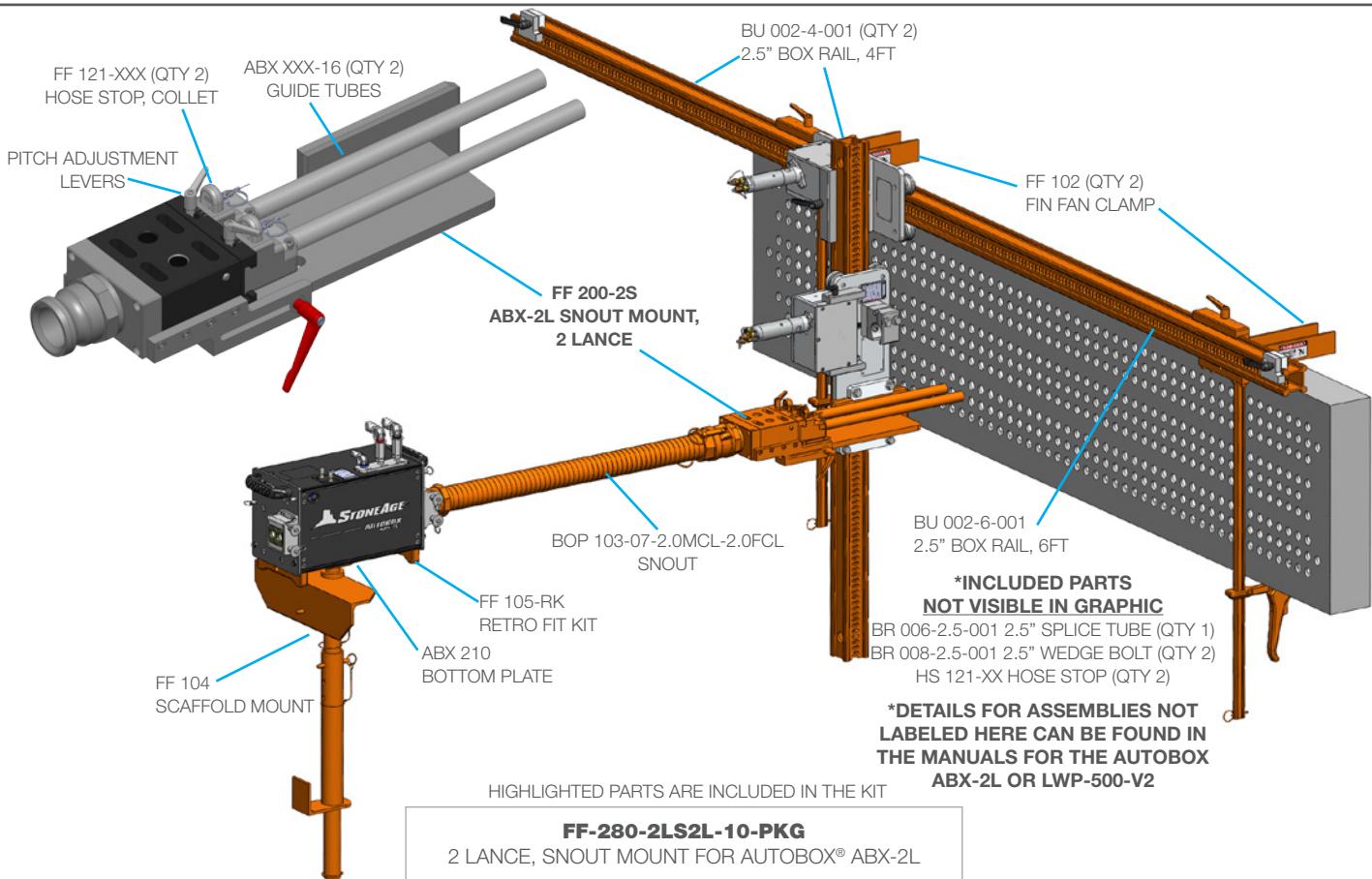
AUTOBOX® ABX-2L KIT OPTIONS OVERVIEW



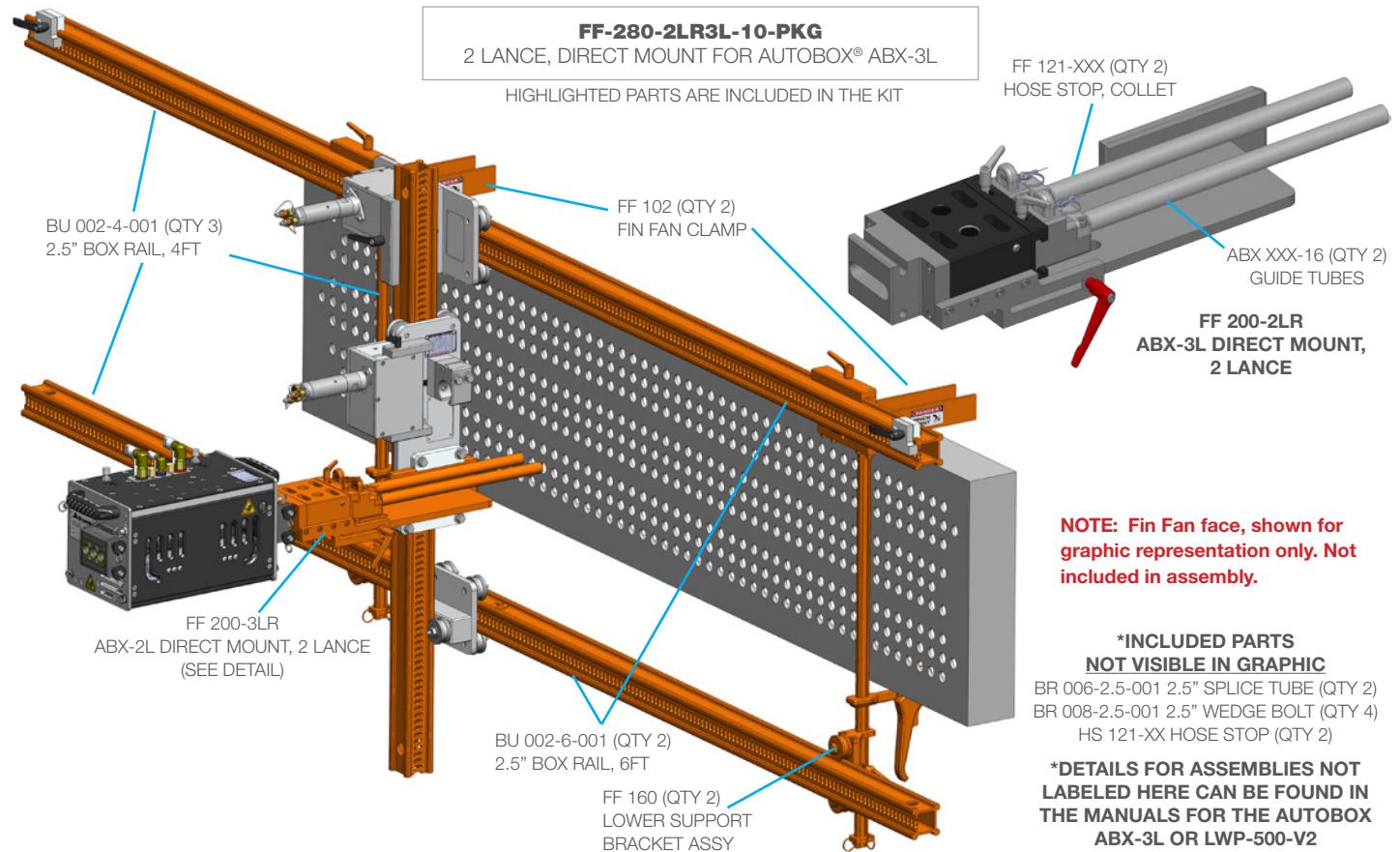
*INCLUDED PARTS
NOT VISIBLE IN GRAPHIC

BR 006-2.5-001 2.5" SPLICE TUBE (QTY 2)
BR 008-2.5-001 2.5" WEDGE BOLT (QTY 4)
HS 121-XX HOSE STOP (QTY 2)

*DETAILS FOR ASSEMBLIES NOT
LABELED HERE CAN BE FOUND IN
THE MANUALS FOR THE AUTOBOX
ABX-2L OR LWP-500-V2



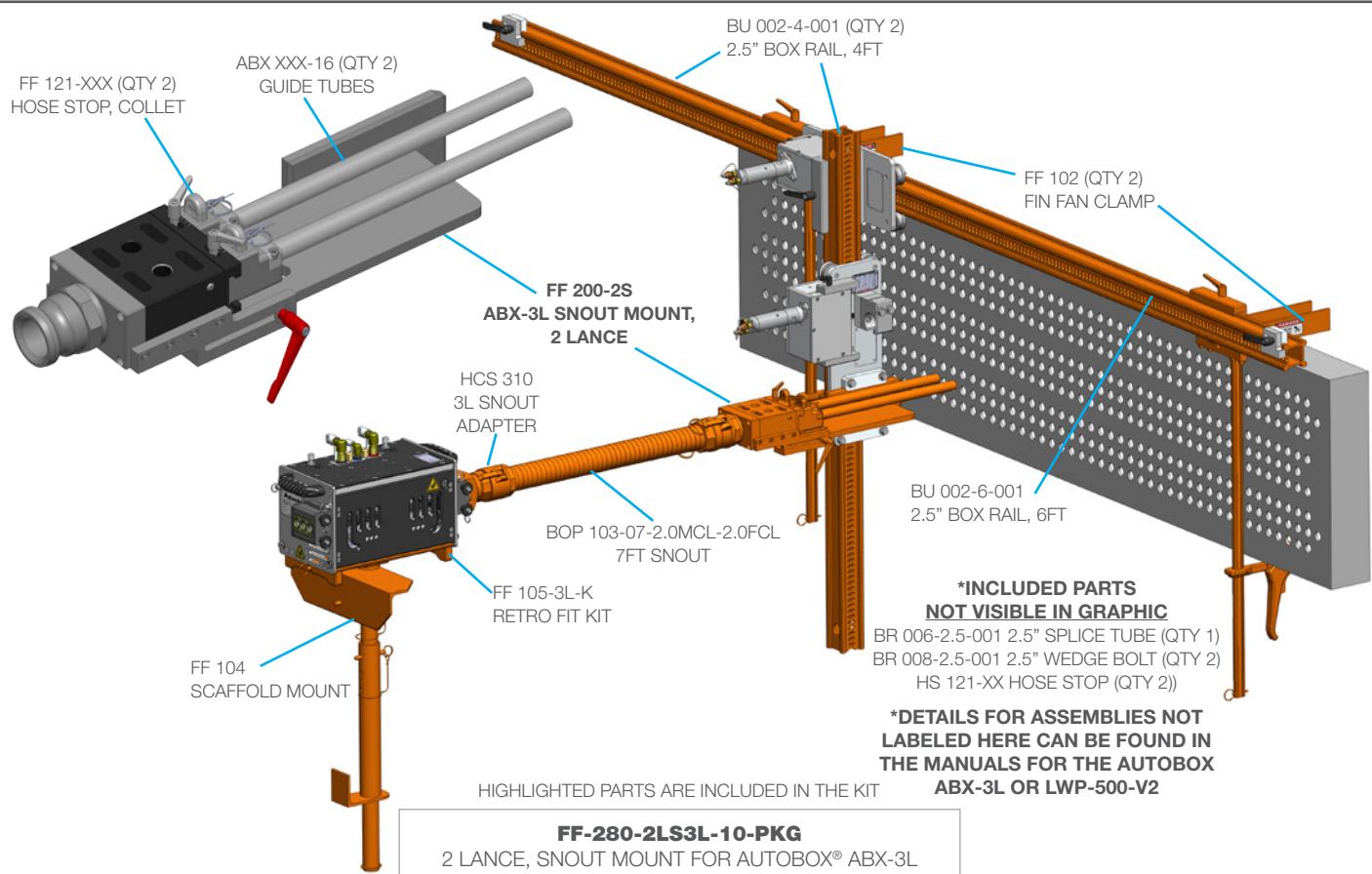
AUTOBOX® ABX-3L KIT OPTIONS OVERVIEW



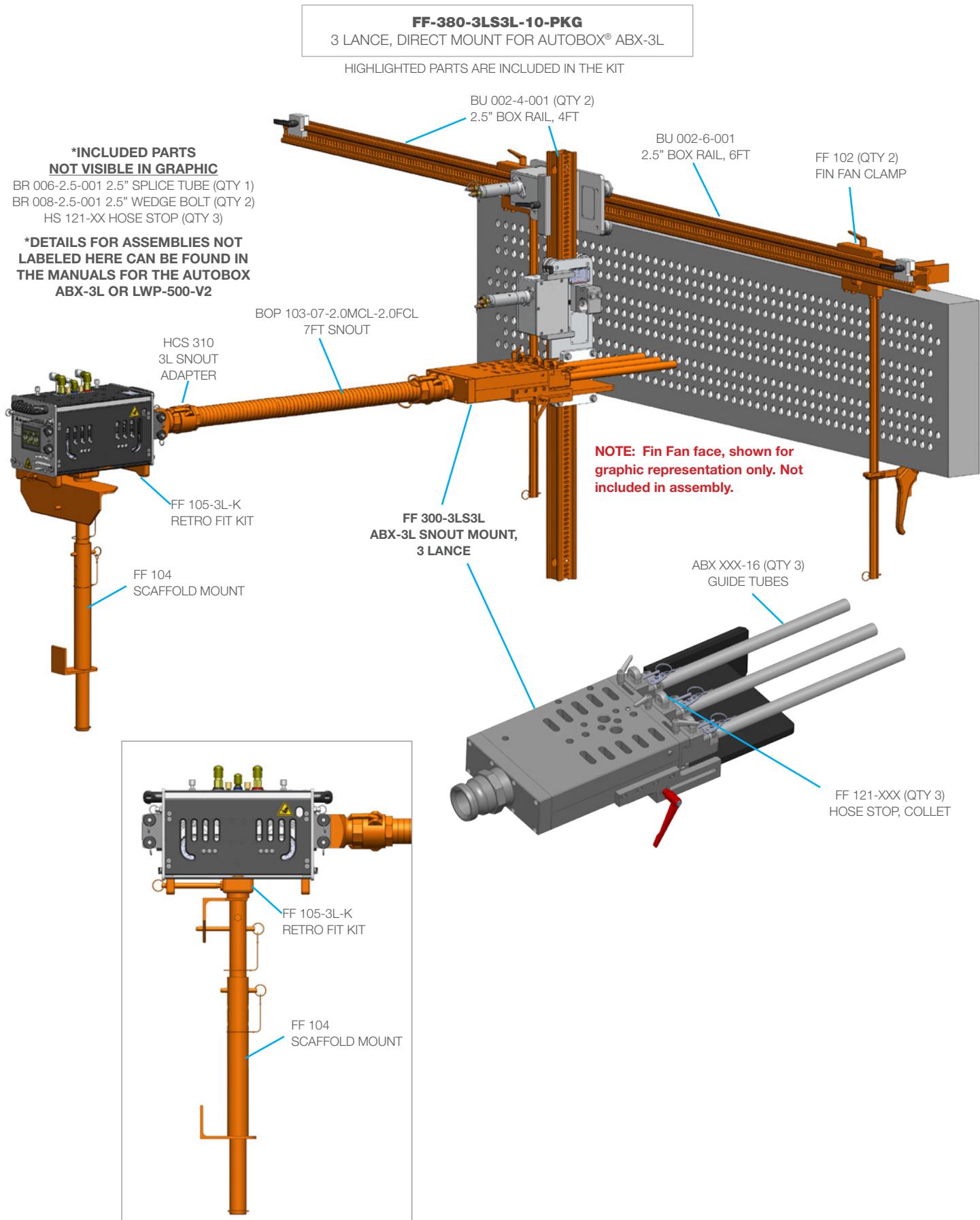
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THE MANUALS FOR THE AUTOBOX
ABX-3L OR LWP-500-V2



AUTOBOX® ABX-3L KIT OPTIONS OVERVIEW



RAIL, COLLETS, AND GUIDE TUBES

- The Direct Mount Accessory Kits come with two **Horizontal Rail Assemblies**. The Snout Mount Kits come with one. Insert the Splice tube into one rail section lining up the holes. Align the flat side of the Wedge Bolt parallel to the slots in the Rail. Insert the Wedge Bolt all the way through the Rail Section and Splice Tube, and tighten with a 3/8" wrench. Align the slotted sides of the 4FT and 6FT rail sections and slide the remaining rail onto the Splice Tube. Insert the Wedge Bolt all the way through the Rail Section and Splice Tube, and tighten with a 3/8" wrench. Repeat the process if there is a second **Horizontal Rail Assembly**. (**Figure 1**)

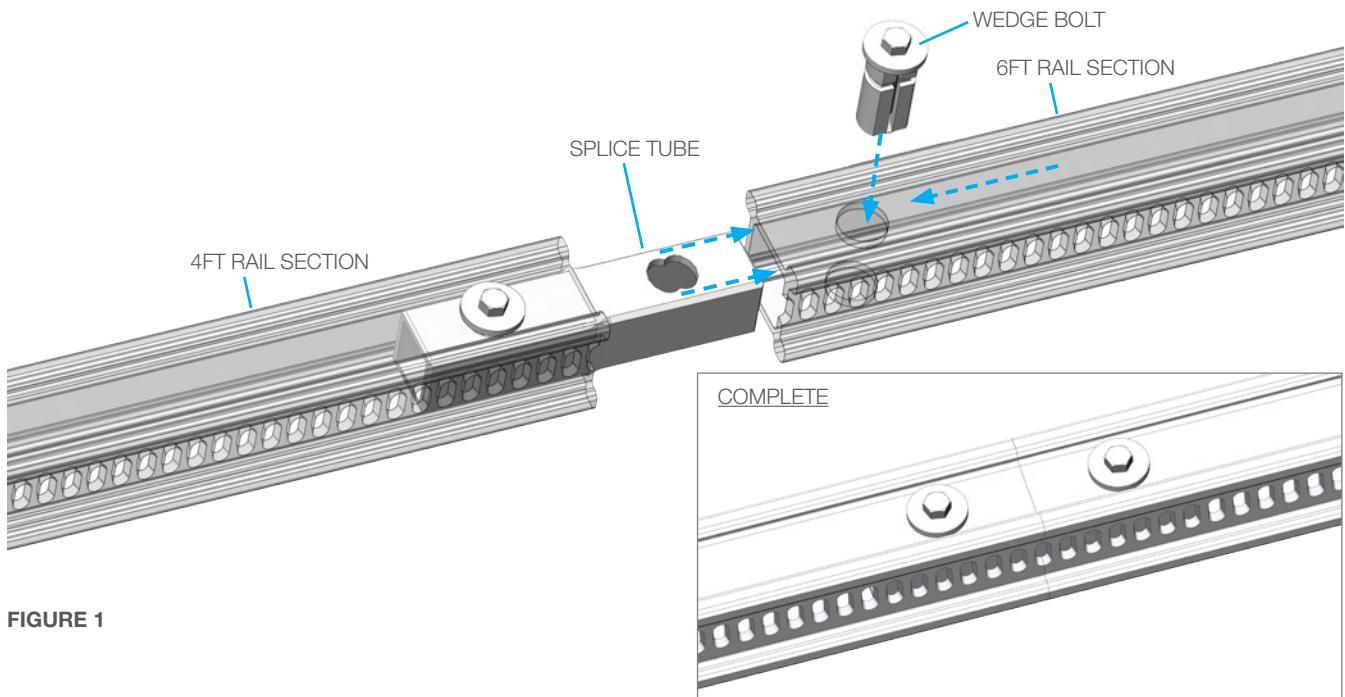


FIGURE 1

- Each **Fin Fan Hose Guide Assembly** should come with the **Collets** and **Guide Tubes** installed. If they need to be changed or installed, do this before installing the Guide onto the Light Weight Positioner. The two lance option is depicted here, but there will be an additional Collet and Guide Tube for the three lance option. Remove Quick Release Pins and insert Collets. Replace the Quick Release Pins being sure they are through the holes in each Collet. (**Figure 2**)
- Loosen the screws on both collet cap blocks. Slide the slide the Guide Tubes into the T-Blocks until the stop and tighten the two screws until secure. (**Figure 3**)

ADDITIONAL COLLET AND GUIDE TUBE SIZES ARE LISTED IN THE PART DIAGRAM SECTION IN THE BACK OF THIS MANUAL.

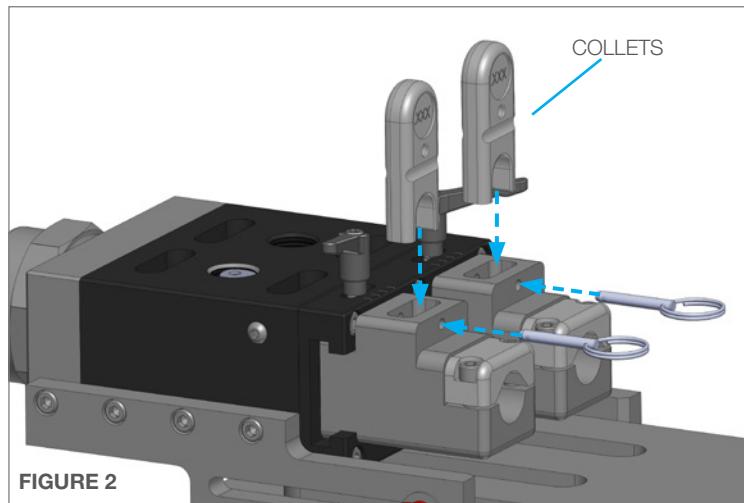


FIGURE 2

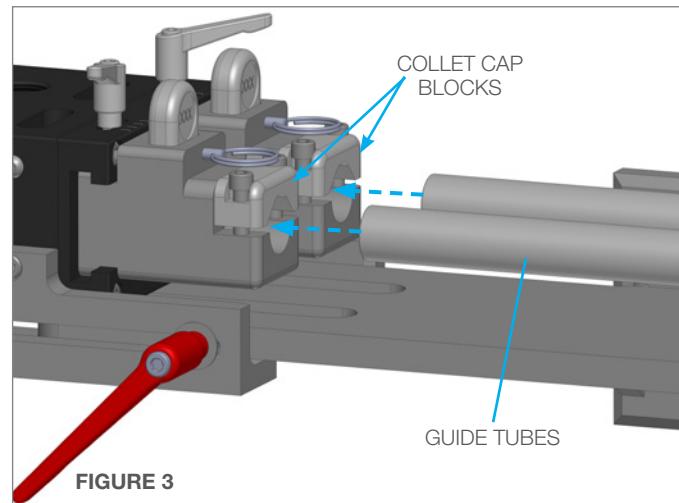
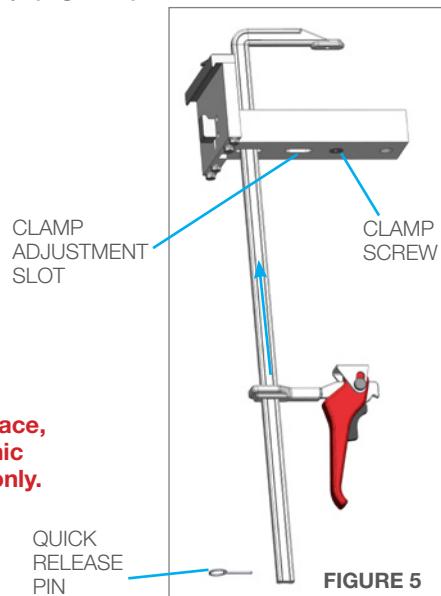
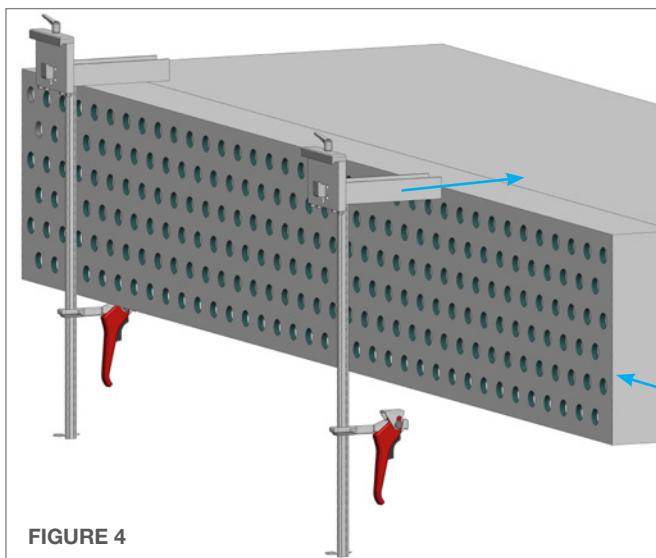


FIGURE 3

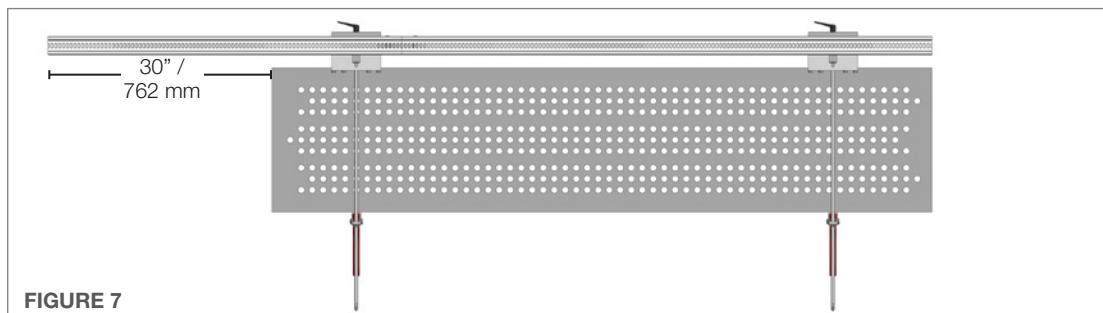
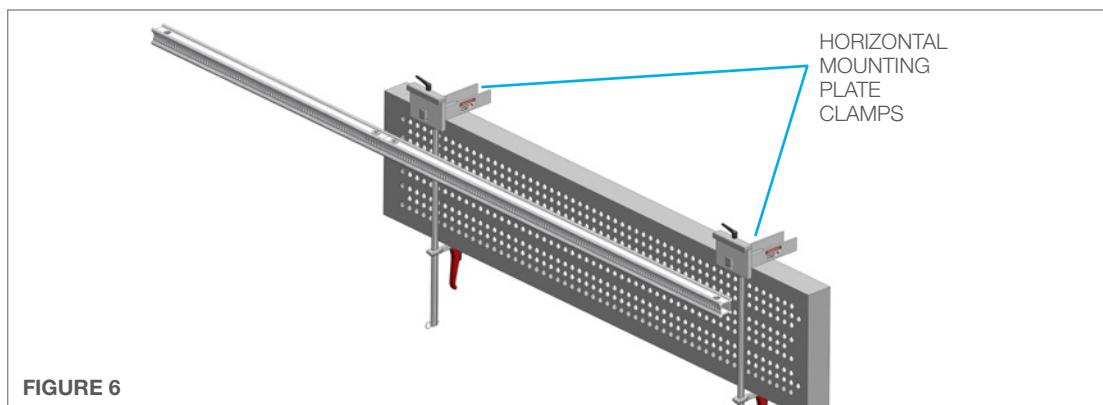
FIN FAN ACCESSORY SET-UP

CLAMPS AND UPPER RAIL

4. Mount the **Fin Fan Clamp Assemblies** to the tube bundle as shown. The Clamps should be as square to the bundle as possible. Ratchet the red Handle Assembly until tight. (**Figure 4**)
5. If more stand-off is needed from the face of the bundle, it is possible to adjust the Clamp by removing Quick Release Pin on the bottom of the vertical bar, sliding off the red Handle Assembly, unscrewing the Clamp from the Channel, and moving the Clamp to the open slot. Relocate the screw to the next position, tighten, and attach the red handle assembly. (**Figure 5**)



6. Loosen the Horizontal Mounting Plate Clamps and the Slide the **Horizontal Rail (slots facing out)** in between the Clamp Finger and Rail Clamp. The **Horizontal Rail** should be ordered 30" (762 mm) longer than width of the tube bundle to provide complete coverage with a single installation. (**Figure 6**)
7. Position the **Horizontal Rail** so that it extends 30" (762 mm) beyond the tube bundle as shown in (**Figure 7**). This is to allow the Carriage to travel far enough to reach the tubes located farthest to the left. Tighten the Clamps securing the rail to the Mounting Plates. **Horizontal Rail** longer than 150" (3810 mm) will require additional Horizontal Mounting Plate Clamps spaced 75" (1905 mm) apart. Clamps spacing: Maximum spacing between clamps = 72" (1828 mm) Maximum spacing from end of rail = 50" (1270 mm)



DIRECT MOUNT KITS ONLY: The Direct Mount Options comes with two Horizontal Rail Assemblies, two FF 160 Lower Support Brackets and one SRT 560 Blank Horizontal Assembly.

- Remove Quick Release Pins from the bottom of the Fin Fan Clamps and slide the Lower Support Brackets and Stops on until the holes for the Pins line up with the holes on the Clamp. Secure the Quick Release Pins in place. (**Figure 8 & 9**)

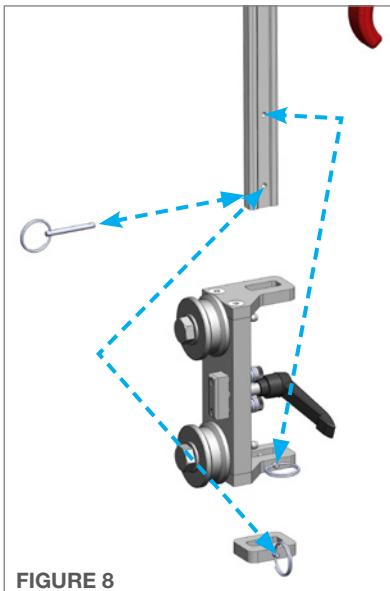


FIGURE 8

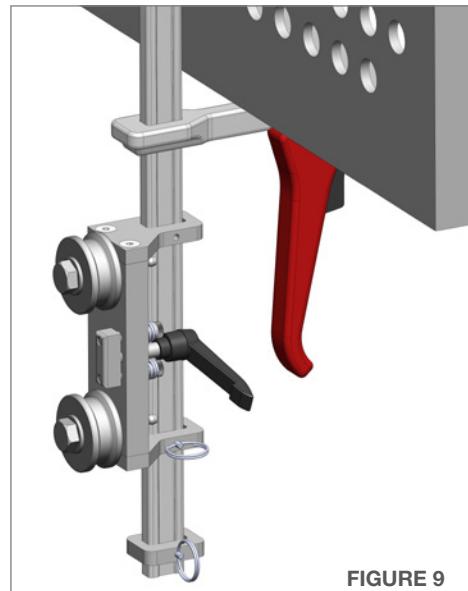


FIGURE 9

- Slide the bottom Horizontal Rail Assembly into the bottom Support Brackets. Slot orientation does not matter on the Bottom Rail. Tighten the Ratcheting Handle, securing the rail to the Support Brackets. The Bottom Rail can replace the Top if the slots become worn. (**Figure 10**)
 - Slide the back four rollers of the SRT 560 onto the front edges of the bottom Horizontal Rail and about half way down. (**Figure 11**)
- The SRT 560 Carriage comes with the Light Weight Positioner LWP-500-V2 and is NOT INCLUDED in any of the Fin Fan Accessory Kits.**

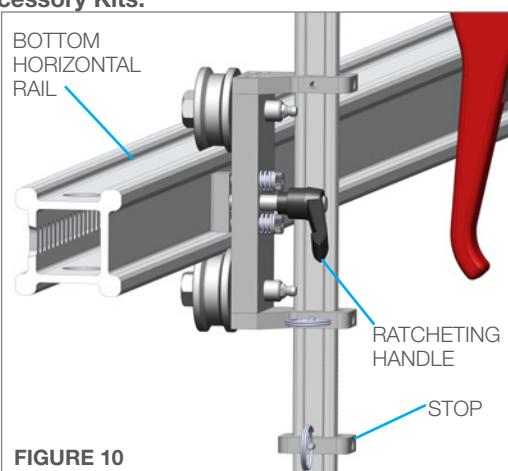


FIGURE 10

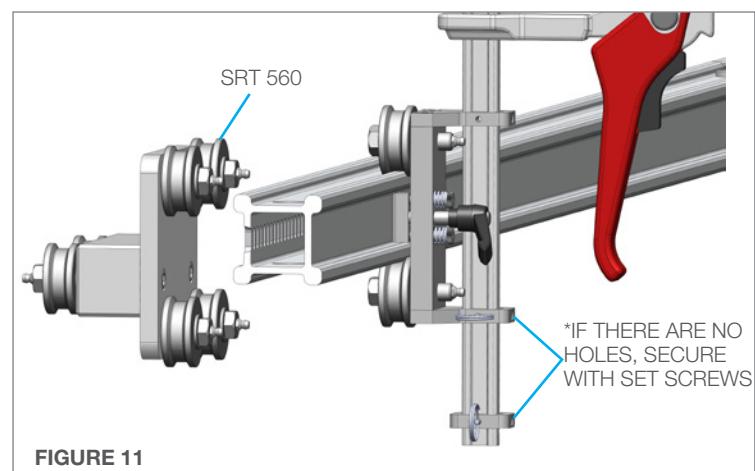
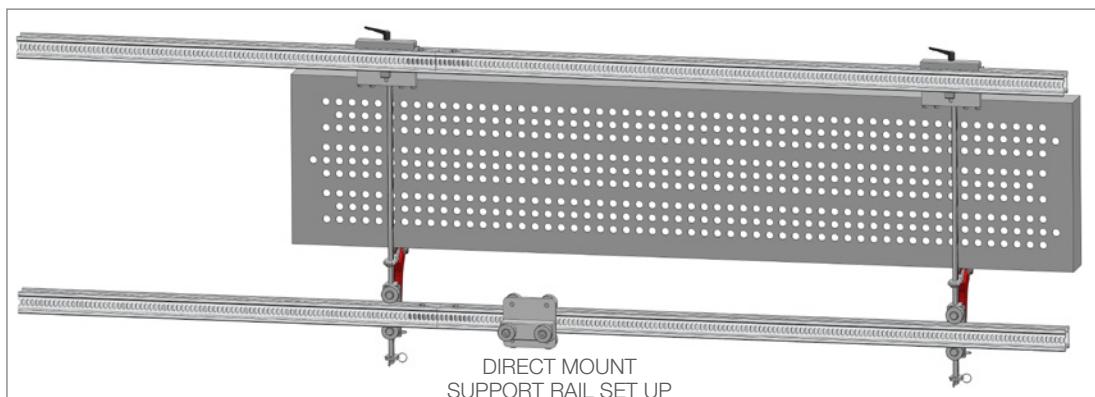


FIGURE 11

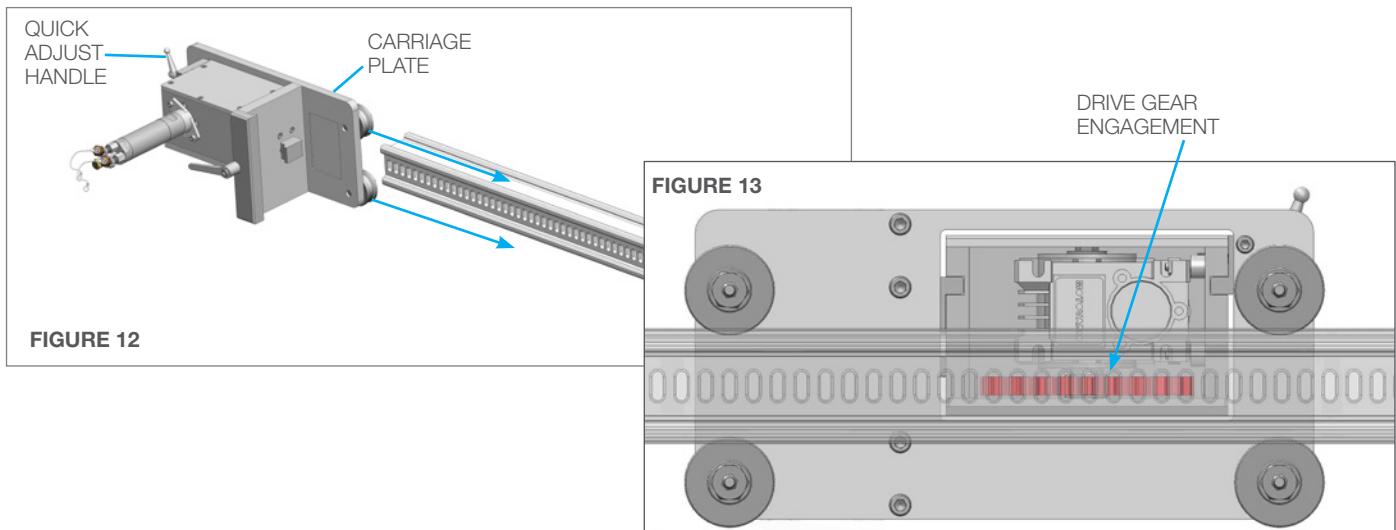


DIRECT MOUNT SUPPORT RAIL SET UP

FIN FAN ACCESSORY SET-UP

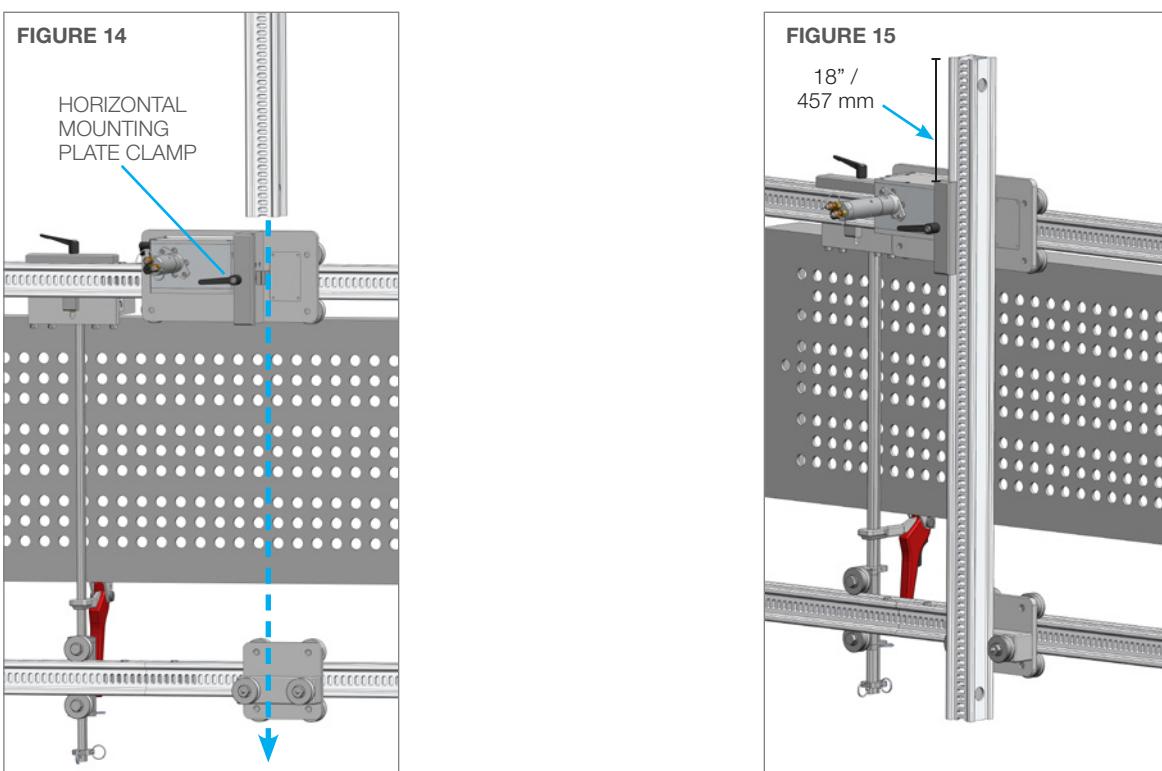
HORIZONTAL CARRIAGE AND VERTICAL RAIL

11. Loosen the Quick Adjust Handle and pull the gearbox away from the carriage plate. This will allow the **Horizontal Drive Carriage** to roll onto the rail without pneumatic power. (**Figure 12**)
The LWP 501 and LWP 502 Drive Carriages come with the Light Weight Positioner LWP-500-V2 and are NOT INCLUDED in any of the Fin Fan Accessory Kits.
12. Locate the Carriage on the rail and push the gearbox toward the rail to engage the drive gear into the rail slots. Verify the drive gear is engaging the slots correctly and tighten the adjustable handle. (**Figure 13**)



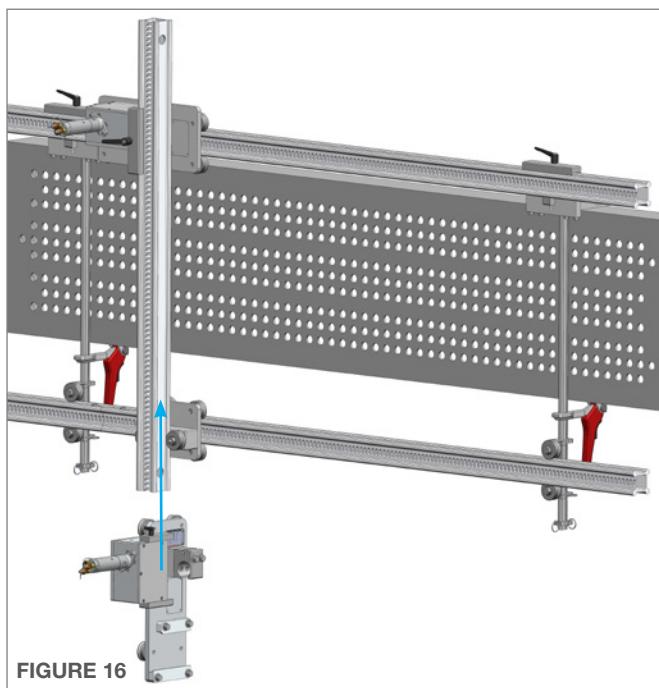
BACKSIDE VIEW OF GEAR ENGAGEMENT
(RAIL IS TRANSPARENT FOR CLARITY)

13. Loosen the Horizontal Mounting Plate Clamp. Install the **Vertical Rail** with (**slots facing out**) between the Clamp Finger and Rail Clamp. (**Figure 14**)
14. Position the **Vertical Rail** so that it is centered with the face of the tube bundle. The **Vertical Rail** should be ordered 18" (457 mm) taller than the height of the tube bundle so that it extends vertically beyond the tube bundle face. Secure the Horizontal Mounting Plate Clamp when the **Vertical Rail** is in position. (**Figure 15**)



VERTICAL CARRIAGE

15. Loosen the Quick Adjust Handle and pull the gearbox away from the carriage plate. This will allow the **Vertical Drive Carriage** to roll onto the rail without pneumatic power. (**Figure 16**)



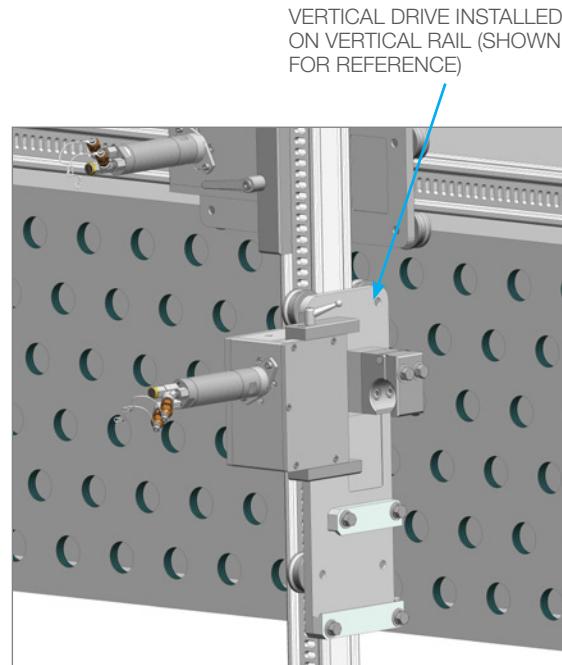
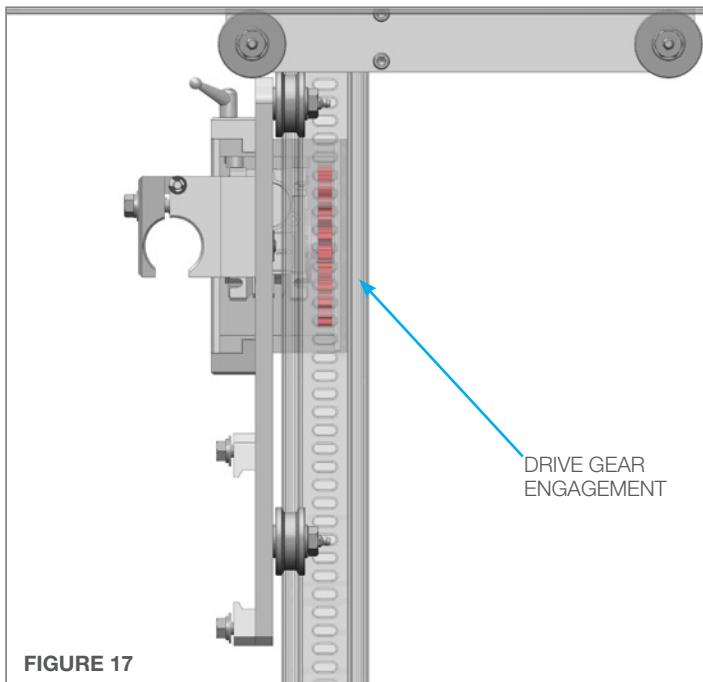
16. Locate the Carriage on the rail and push the gearbox toward the rail to engage the drive gear into the rail slots. Verify the drive gear is engaging the slots correctly and tighten the adjustable handle. (**Figure 17**)

NOTICE

Verify the Mounting Plates are securely tightened. Verify both Drive Carriages are engaged with the rails and the Quick Adjust Handles are tightened.

WARNING

Never loosen the Vertical Drive once the Fin Fan Snout Assembly is installed, as it may result in the Carriage falling vertically down. This may cause damage and/or injury.

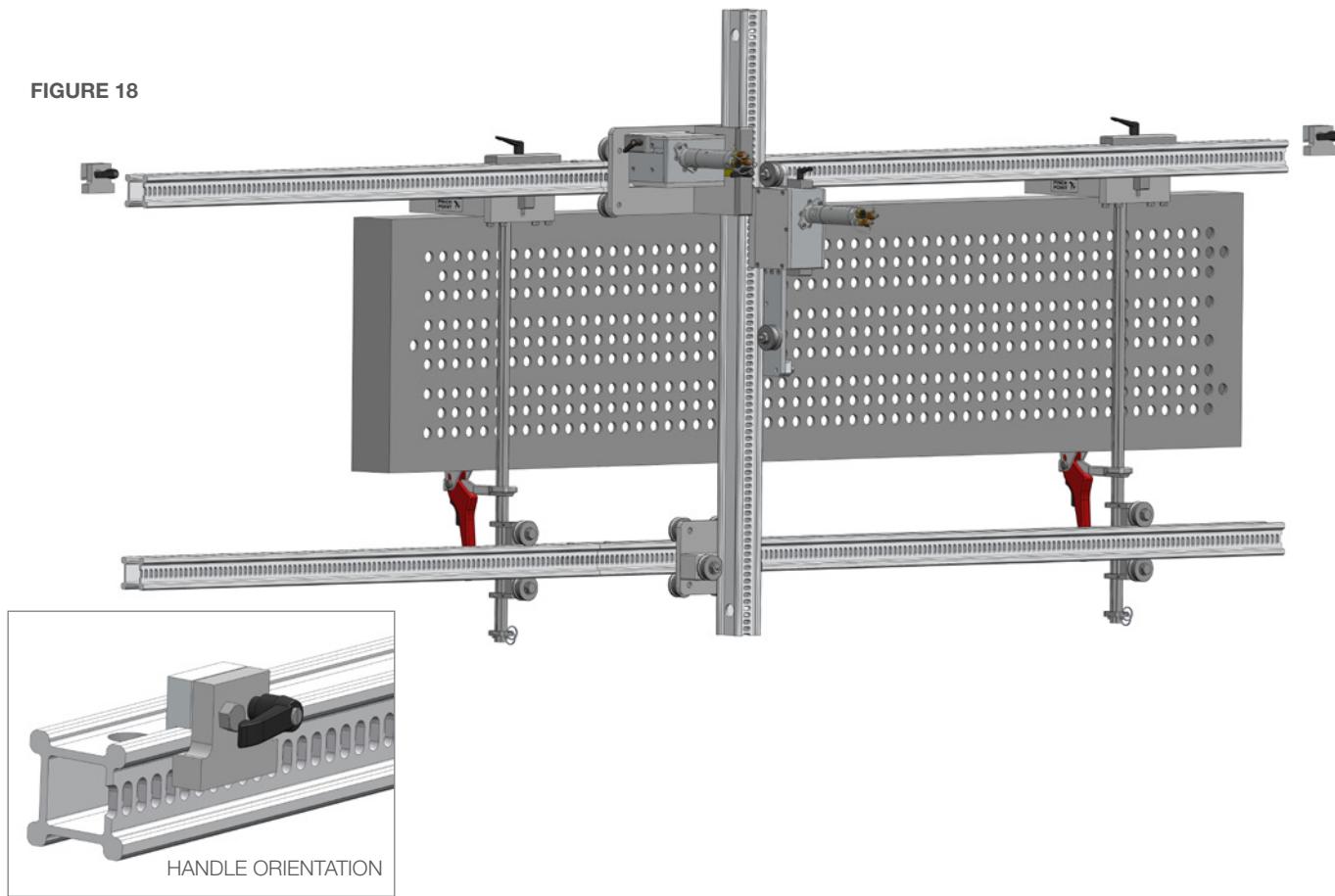


FIN FAN ACCESSORY SET-UP

RAIL STOPS AND GUIDE

17. Install Rail Stops on both ends of the Upper Horizontal Rail Assembly. Face Quick Release Handles away from the Carriages. BU 152 Rail Stops come with the Light Weight Positioner LWP-500-V2 and are NOT INCLUDED in any of the Fin Fan Accessory Kits. (**Figure 18**)

FIGURE 18



18. Using a 9/16 in. wrench, loosen all four Guide Clamp Bolts located on the Vertical Carriage. Install the Guide Plate Assembly into the Guide Clamps. (**Figure 19**) This is the procedure for all Kits. The 2 Lance, Snout Mount is shown in Figure 19.

19. The Guide Tubes should be set 1/4"-1/2" (6 - 13 mm) away from the face of the tube bundle. (**Figure 20**)

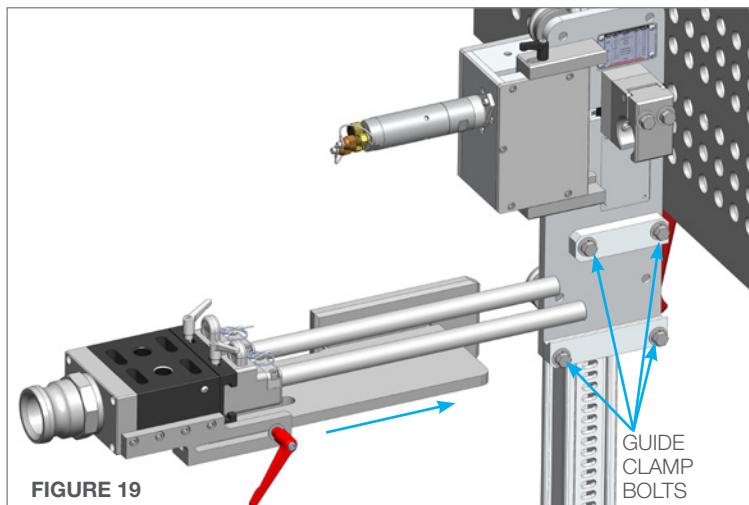


FIGURE 19

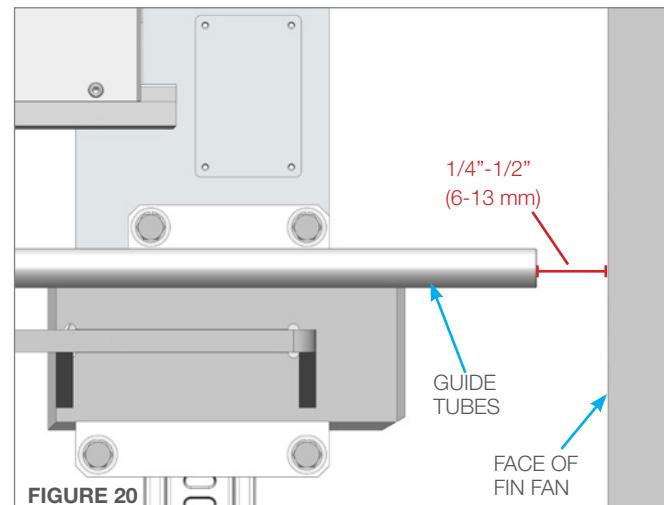


FIGURE 20

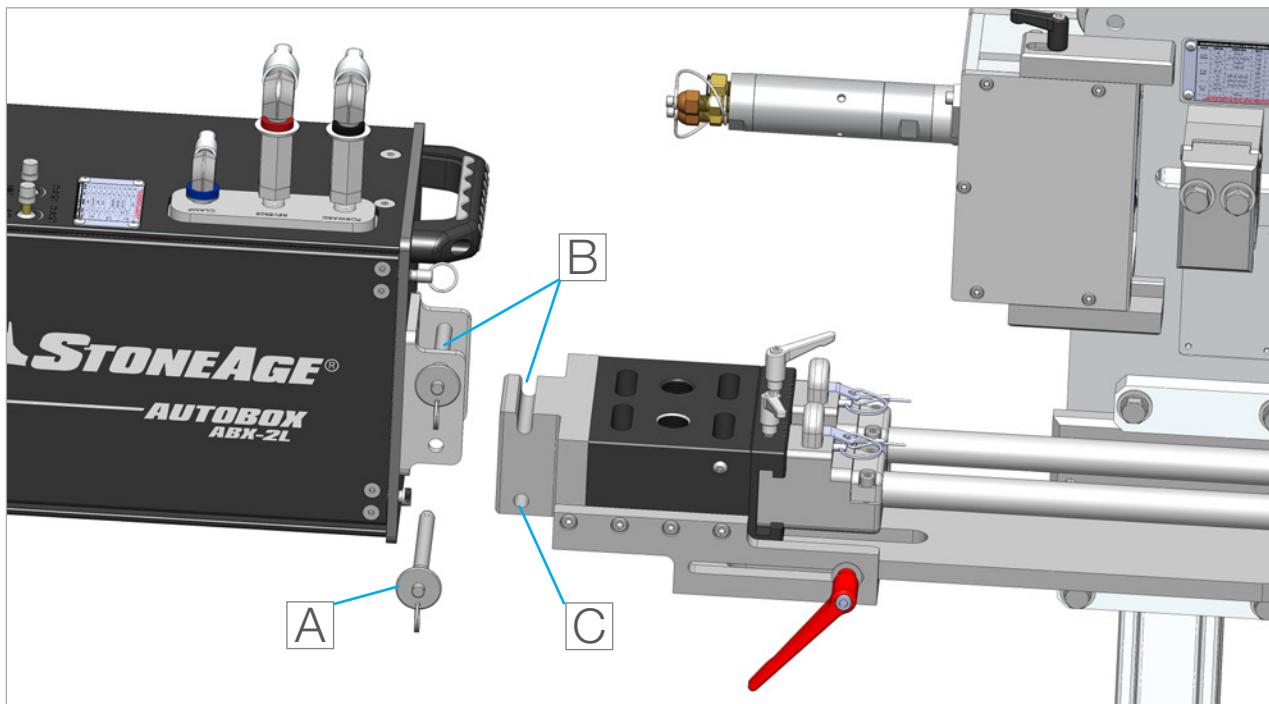
DIRECT AND SNOUT MOUNT CONNECTIONS

20. DIRECT MOUNT -There are two Direct Mount Kit Options. Both are two lance options and connect in the same manner, but one has a wider mount for the ABX-3L.

A. Remove the lower quick release pin from the AUTOBOX® Hose Tractor.

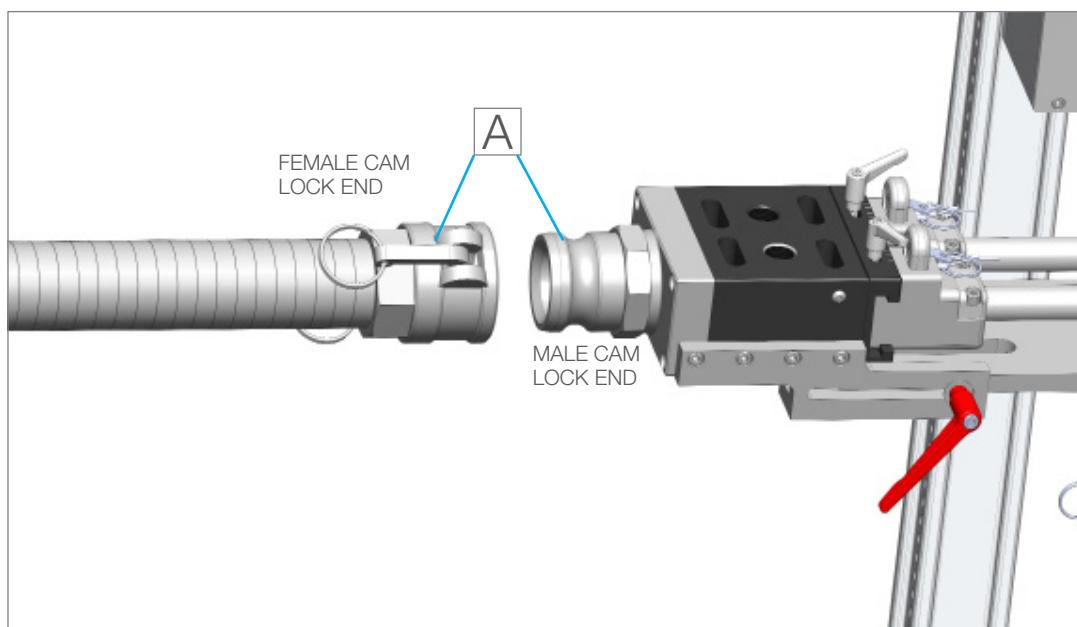
B. Slide the mounting bracket over the block on the Guide Assembly and lay the pin onto the top slot on the Guide Assembly block.

C. Install the lower pin through the mounting bracket on the Hose Tractor and the block on the Guide Assembly.



21. SNOUT MOUNT -There are three Snout Mount Kit options. There are 2 two lance options for both AUTOBOX® Hose Tractors and one three lance option for the ABX-3L. All snouts connect in the same manner and are designed to work in conjunction with the Scaffold Mounting System for the AUTOBOX® Hose Tractors.

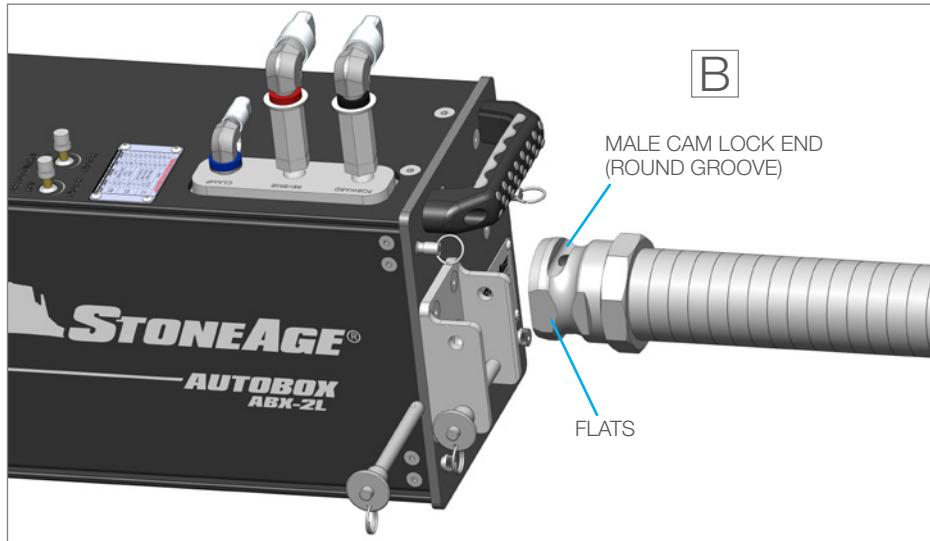
A. Connect the Female Cam Lock End of the Snout to the Male Cam Lock End on the Guide. Test the connection by pulling on the snout to ensure Cam Locks are engaged. This is typical to all Snout Mounts.



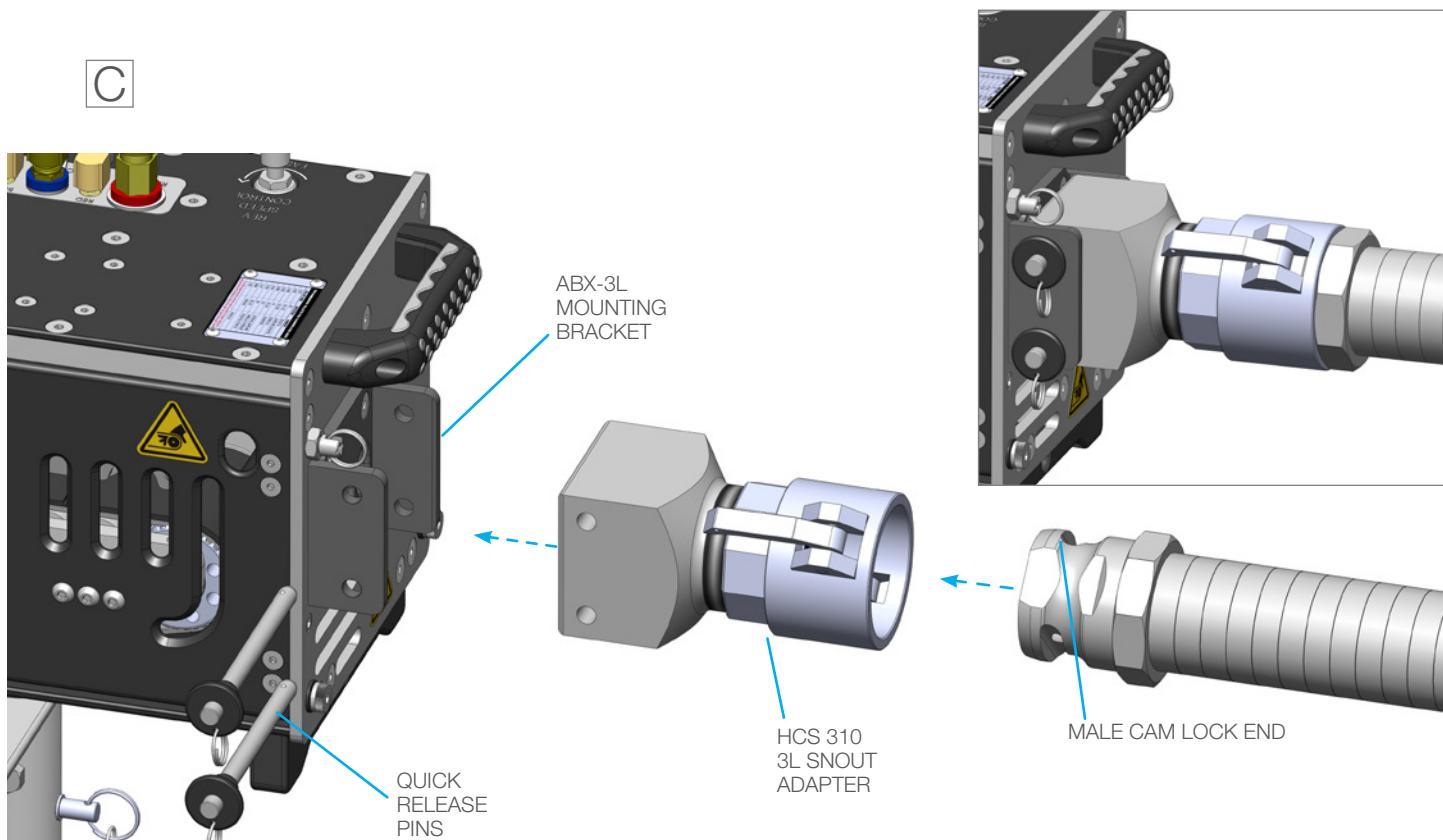
FIN FAN ACCESSORY SET-UP

SNOUT MOUNT CONTINUED

B. **ABX-2L ONLY-** Pull the Top Quick Release Pin out. Insert the Male End of the Snout into the Mounting Bracket so that the flats are parallel to the inside of Mounting Bracket and round groove sets on top of the Bottom Quick Release Pin. Insert the Top Quick Release Pin through the Mounting Bracket and engaging the round groove on the Male End of the Snout.



C. **ABX-3L ONLY-** Remove the two Quick Release Pins from the ABX-3L Mounting Bracket and install the HCS 310 3L Snout Adapter. Install the Quick Release Pins to secure the adapter. Insert the Male End of the Snout into the HCS 310 3L Snout Adapter. Test the connection by pulling on the snout to ensure Cam Locks are engaged. This is typical to all Snout Mounts.



AUTOBOX® SCAFFOLD MOUNT RETROFIT KITS INSTALLATION

AUTOBOX® ABX-2L ONLY RETROFIT KIT BOTTOM PLATE CONVERSION (OLDER MODELS ONLY)

- DETERMINE IF THE BOTTOM PLATE NEEDS TO BE CONVERTED- The latest AUTOBOX® (ABX-2L) models will have the ABX-210 Bottom Plate installed. If the AUTOBOX® (ABX-2L) already has this plate, then skip to Step 3. The older models will not have a center mounting hole, shown in **(Figure 1)**, and will need to be converted to the new plate. The new bottom plate with the center mounting hole is shown in **(Figure 1.1)**.

ORIGINAL BOTTOM PLATE ON
OLDER MODEL AUTOBOX® (ABX-2L)



FIGURE 1

NEW BOTTOM PLATE FOR
SCAFFOLD MOUNT KITS

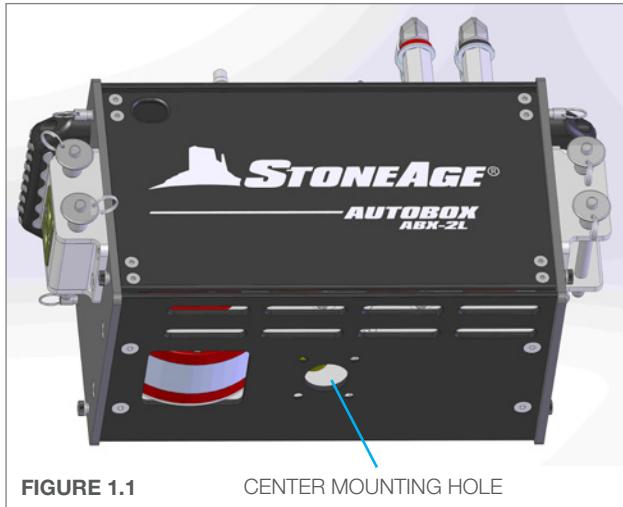


FIGURE 1.1 CENTER MOUNTING HOLE

- Remove the old bottom plate and install the new one with the four 1/4" flat head cap screws. **(Figure 2)** IF INSTALLING A SCAFFOLD MOUNT RETROFIT KIT, DISCARD THE REMOVED SCREWS AND FOLLOW STEP 3.

AUTOBOX® SCAFFOLD MOUNT RETROFIT KITS (FF 105-RK AND FF 105-3L-K) INSTALLATION (TYPICAL TO BOTH ABX-2L AND ABX-3L)

- If installing the Scaffold Mount Retrofit Kits, remove the bottom plate and discard the four 1/4" flat head cap screws (If not already done in Step 2). Fasten the Center Pivot Mount to the Bottom Plate with the mounting hole with four 1/4" x 5/8" flat head cap screws. Fasten the Foot Blocks and Bottom Plate to the AUTOBOX® with the 1/4" x 1 1/4" flat head cap screws provided in the kit. **(Figure 3)**

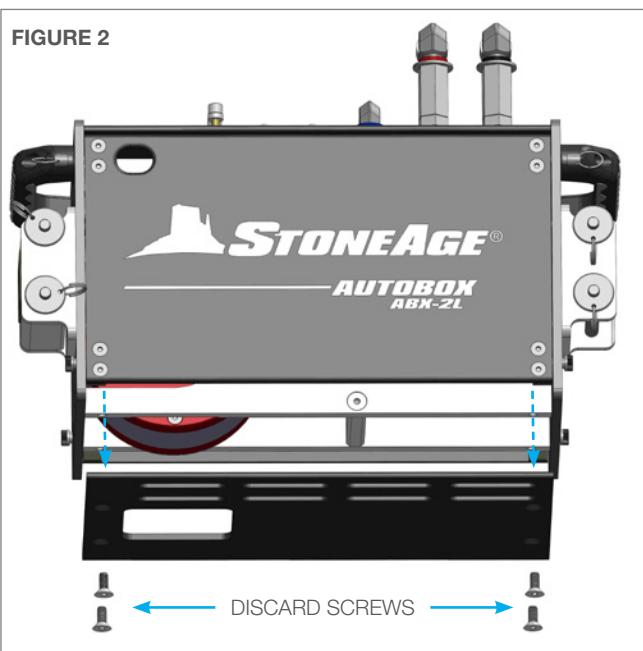


FIGURE 2

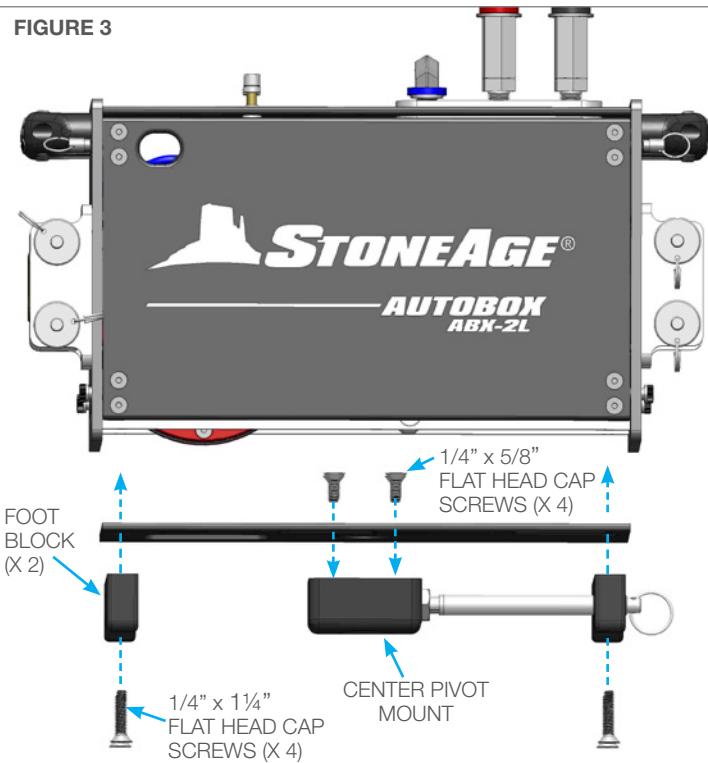
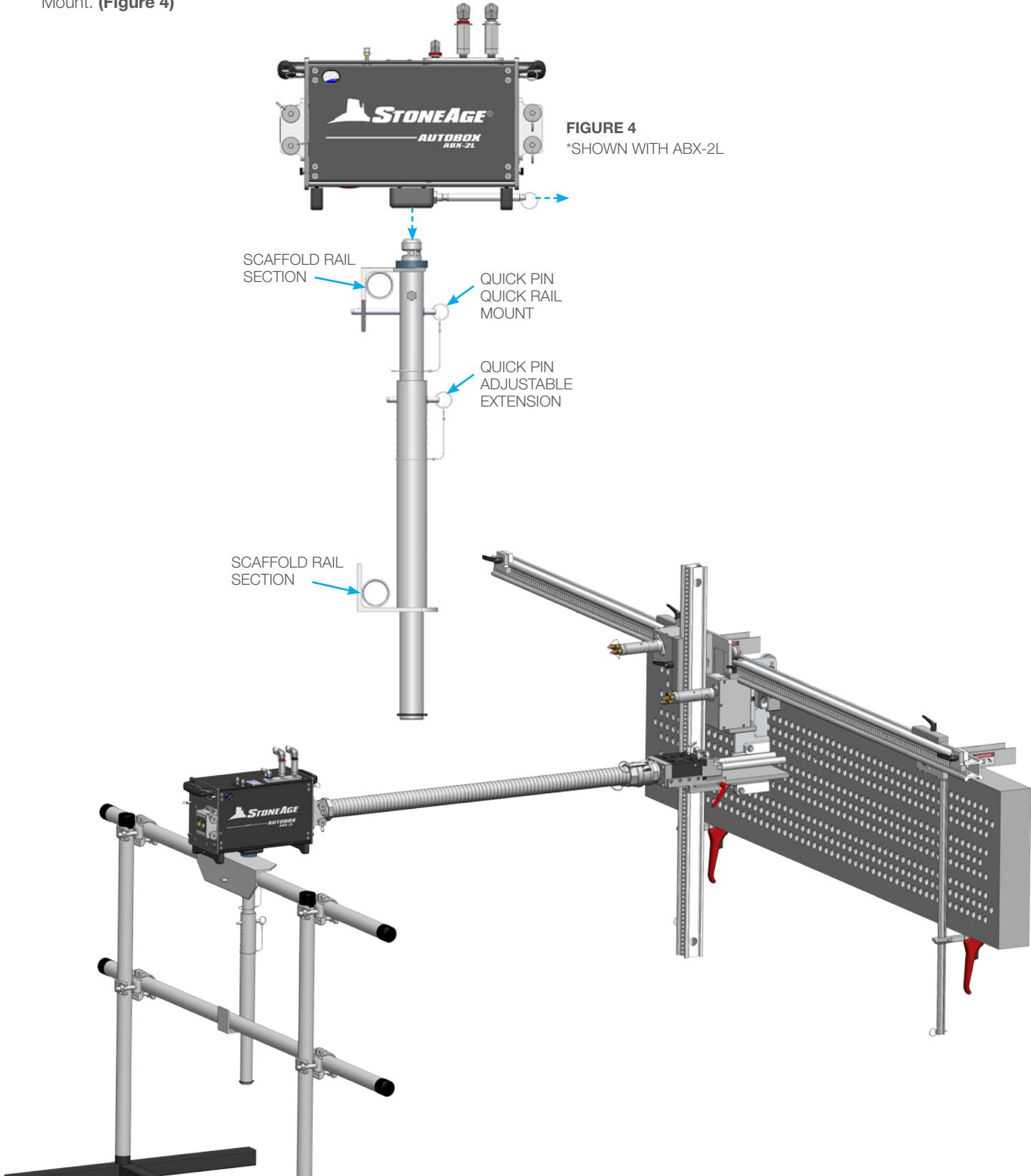


FIGURE 3

AUTOBOX® SCAFFOLD MOUNT RETROFIT KITS INSTALLATION

SCAFFOLD MOUNT TO AUTOBOX® (TYPICAL TO BOTH ABX-2L AND ABX-3L)

4. Attach Scaffold Mount to scaffold railing before attaching AUTOBOX®. Ensure the adjustable extension is positioned so that the mount is tight to the rails. Set the AUTOBOX® (ABX-2L) on the Scaffold Mount, so that the Center Hole Mount is over the pivot end of the Scaffold Mount. Pull the Quick Pin on the Retrofit Kit out and release it when it is in position with a desired notch on the Scaffold Mount. (Figure 4)

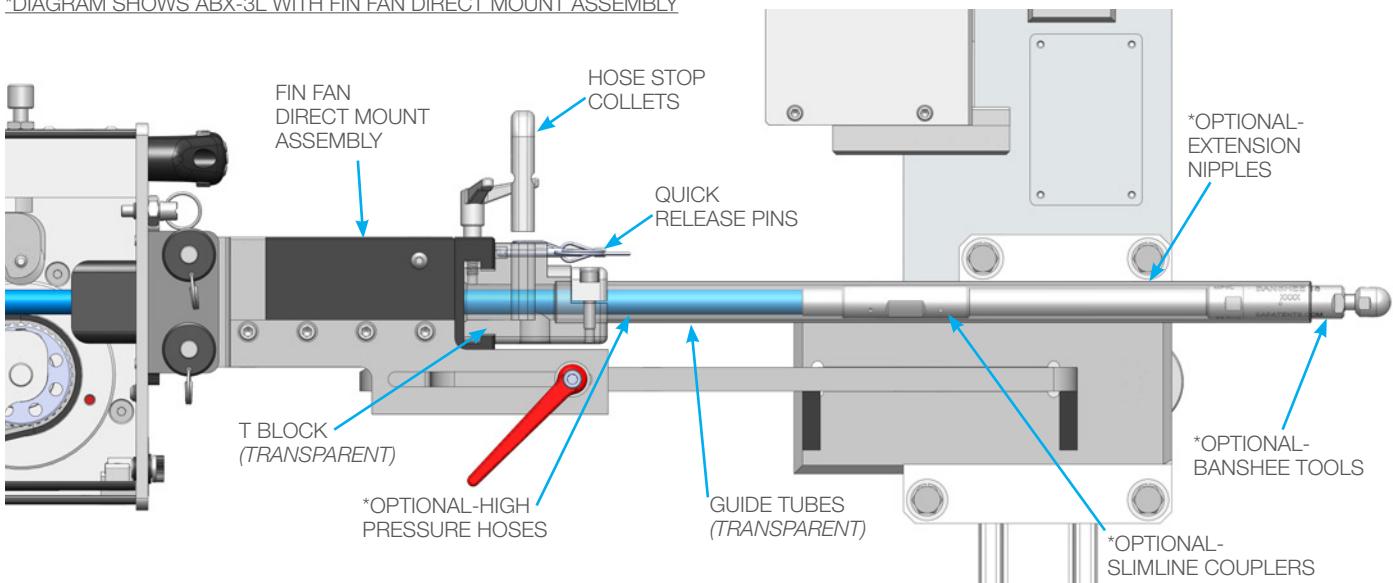


FIN FAN ACCESSORY HOSE AND TOOL INSTALLATION

COLLET INSERTION, HOSE, AND HOSE STOP INSTALLATION

1. Remove Quick Release Pins and pull out existing Collets. Select the appropriate Collet size for the diameter of the hoses. (See the "Recommended Collets For Common Hose Sizes" plaque on the top plate of the AUTOBOX® Hose Tractor.)
2. Insert the hoses, equipped with the waterblast tools, into the mounting bracket on the side of the AUTOBOX® Hose Tractor until they engage the Rollers or Drive Belt. Slightly increase the pressure on the **HOSE CLAMP PRESSURE REGULATOR** to clamp the hoses.
3. When the waterjet tools pass the Collet slot, install the Collet and quick release pin.

*DIAGRAM SHOWS ABX-3L WITH FIN FAN DIRECT MOUNT ASSEMBLY



⚠ WARNING

Proper Collet size selection is CRITICAL to ensuring backout prevention of the tool. Test the back out prevention by reversing the Banshee tools into the Guide Tubes. The Hose Stop Collets should prevent the Banshee tool from moving back into the Fin Fan Snout Assembly.

NOTICE

Extension nipples and slimline couplers are recommended on the end of the hoses to easily bridge the gap in the header. The Banshee tools, recommended extension nipples, and slimline couplers are NOT included in the Fin Fan Accessory.

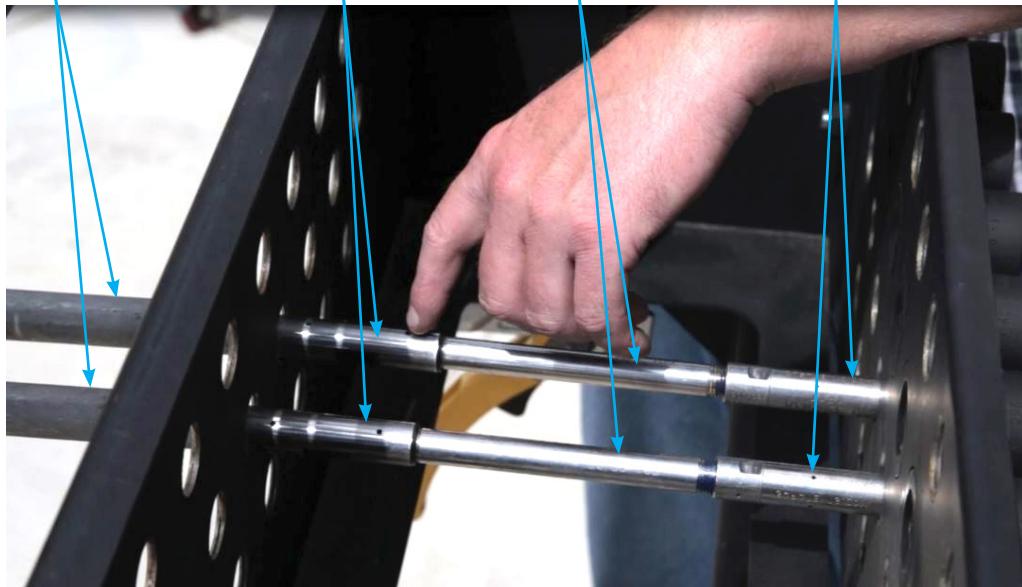
If using BN18s, StoneAge offers a reduced O.D. Slimline Coupler for use with standard Guide Tubes.

*OPTIONAL-HIGH PRESSURE HOSES

*OPTIONAL-SLIMLINE COUPLERS

*OPTIONAL-EXTENSION NIPPLES

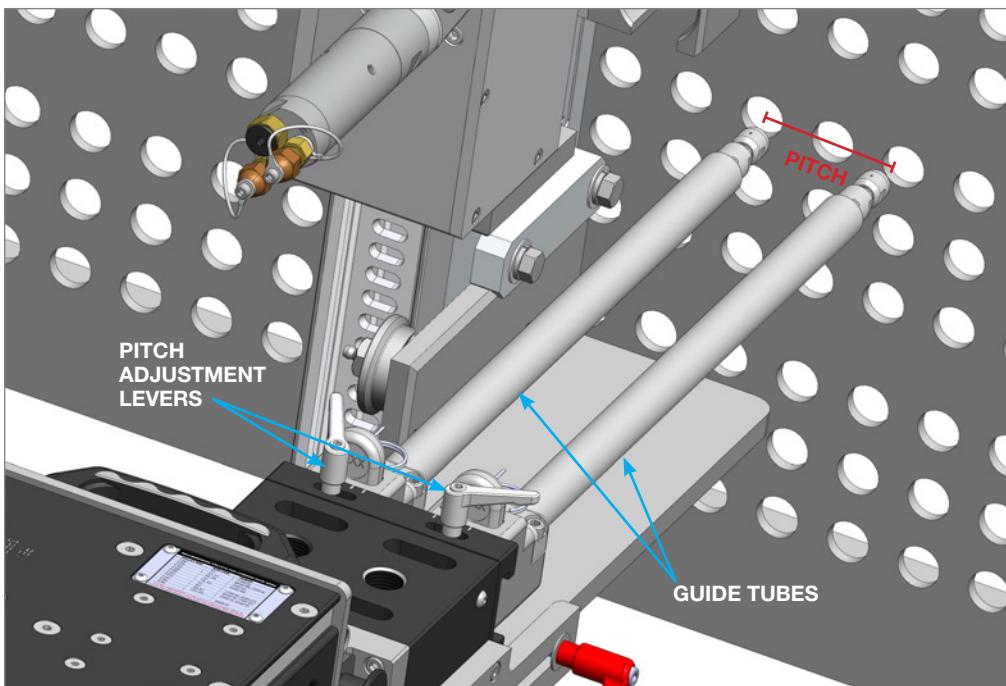
*OPTIONAL-BANSHEE TOOLS



FIN FAN ACCESSORY PITCH ADJUSTMENT AND PNEUMATIC LINES

PITCH ADJUSTMENT

The pitch can be set between by releasing the Pitch Adjustment levers and sliding the guides tubes into the desired position. (Refer to pitch dimension table on Page 3 for specific pitch distances for each kit.)



PNEUMATIC SUPPLY LINE CONNECTIONS

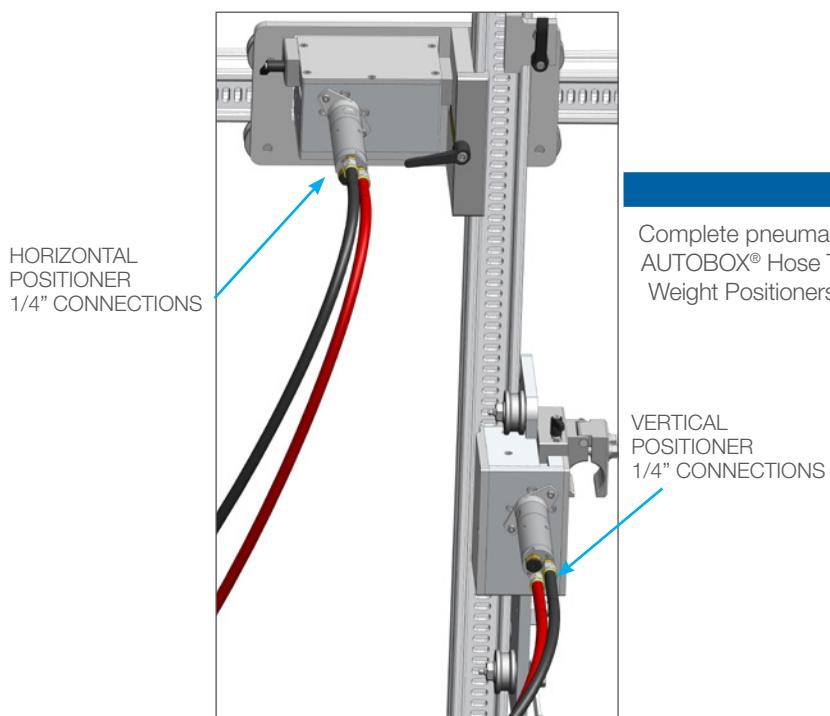
Pneumatic Supply Line Bundles are supplied with both the Control Box and Lightweight Positioner Assemblies.

Verify the AUTOBOX® Hose Tractor is connected to the Control Box with two 1/2 in. (13 mm) JIC hoses and one 1/4 in. (6 mm) JIC hose.

Remove the dust caps from the Joint Industry Council (JIC) fittings of the Control Box and the Vertical and Horizontal Drives.

Connect the Vertical and Horizontal Drives to the Control Box with two each, 1/4 in. (6 mm) JIC hoses.

Verify the Control Box moves the both the Vertical and Horizontal Carriages in the appropriate directions.



NOTICE

Complete pneumatic supply line connections for the AUTOBOX® Hose Tractors, Control Boxes, and Light Weight Positioners, can be found in their respective User Manuals .

Reference your AUTOBOX® ABX-2L or ABX-3L User Manuals for complete operating instructions

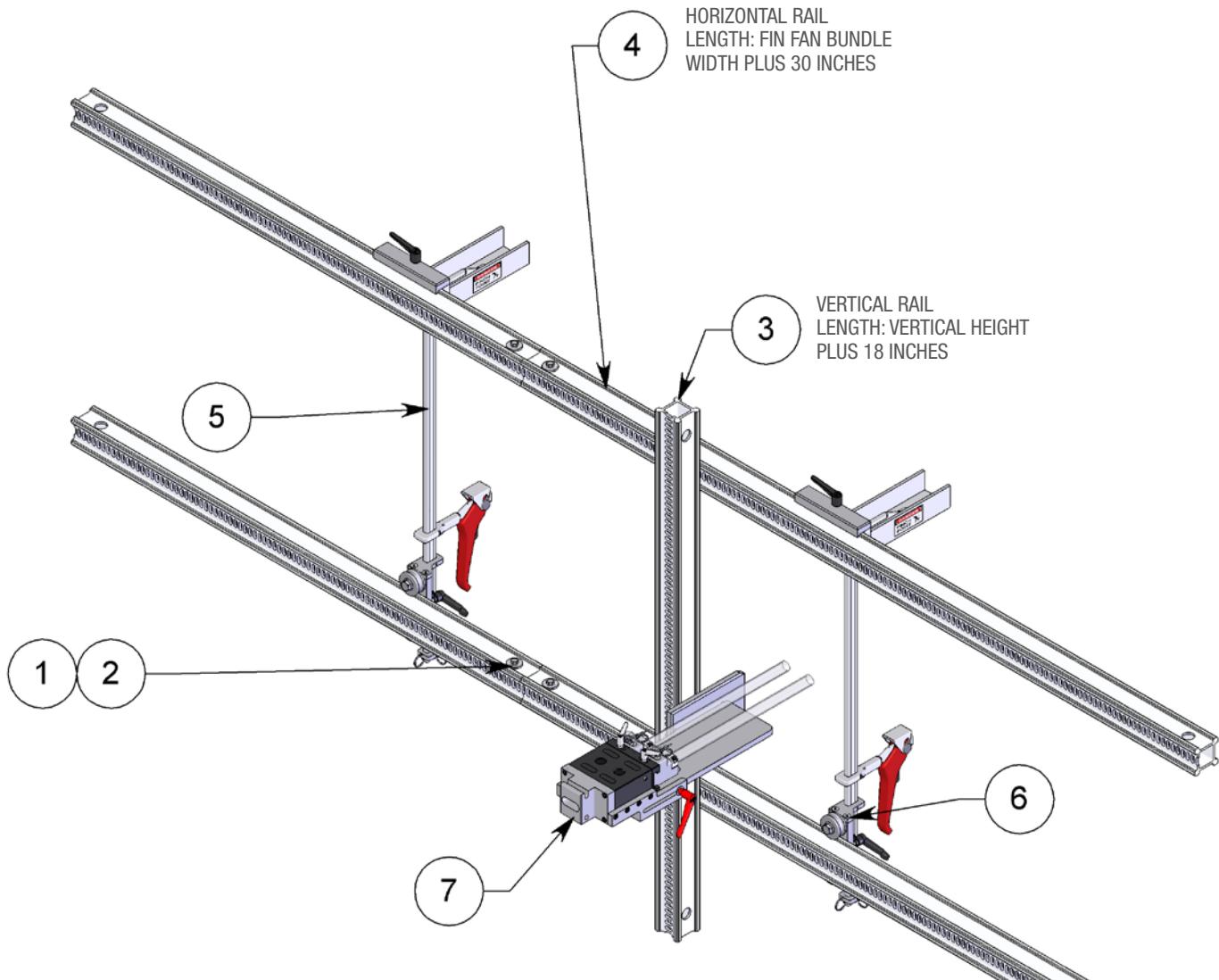
STORAGE, TRANSPORTATION, AND HANDLING

Use mild soapy water to clean the accessory components in order to remove corrosive materials. Before storing the kit, use compressed air to blow off debris and moisture. Apply a small amount of air tool oil directly into the Horizontal and Vertical Drive fittings. Then, briefly operate the controls at slow speed for a short duration in each direction to coat the interior parts of the motor. Install the dust caps onto all fittings to keep moisture and dirt out.

The Fin Fan Accessory, can be broken down into smaller components that should be stored in a clean and dry area.

PARTS DIAGRAM

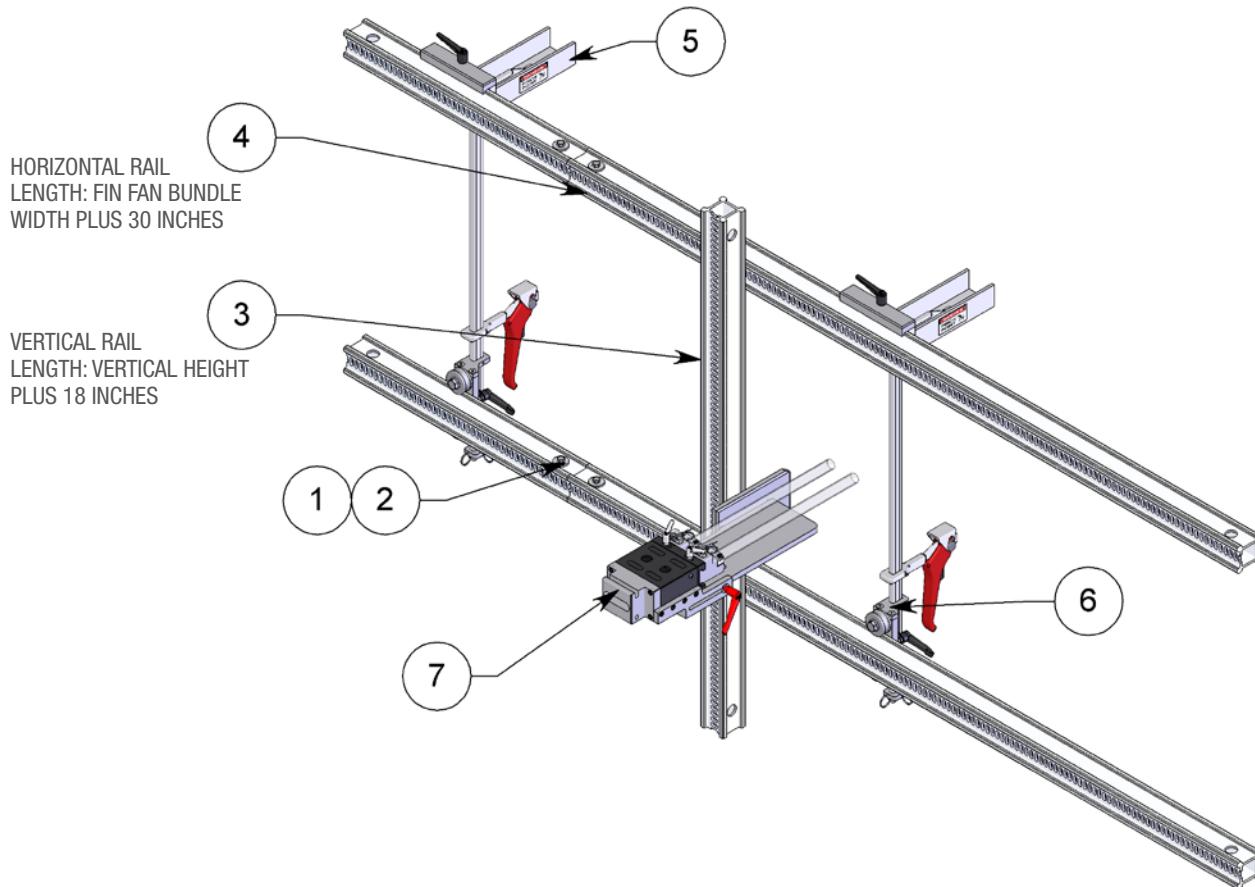
FIN FAN ACCESSORY (FF-280-2LR2L-10-PKG)
2 LANCE DIRECT MOUNT FOR ABX-2L



#	NUMBER / DESCRIPTION	QTY.
1	BR 006-2.5-001 2.5" SPLICE TUBE	2
2	BR 008-2.5-001 2.5" WEDGE BOLT ASSEMBLY	4
3	BU 002-4-001 2.5" BOX RAIL EXTRUSION, SLOTTED	3
4	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	2
5	FF 102 FIN FAN CLAMP ASSY	2
6	FF 160 LOWER SUPPORT BRACKET ASSY	2
7	FF 200-2LR ABX-2L RIGID MOUNT FIN FAN	1

PART NUMBER	BN18-XX	BN15-XX	BN13-XX
ABX 119-16 GUIDE TUBE,.745 ID	2	-	-
ABX 117-16 GUIDE TUBE,.674 ID	-	2	-
ABX 116-16 GUIDE TUBE,.546 ID	-	-	2
FF 121-XXX	2	2	2

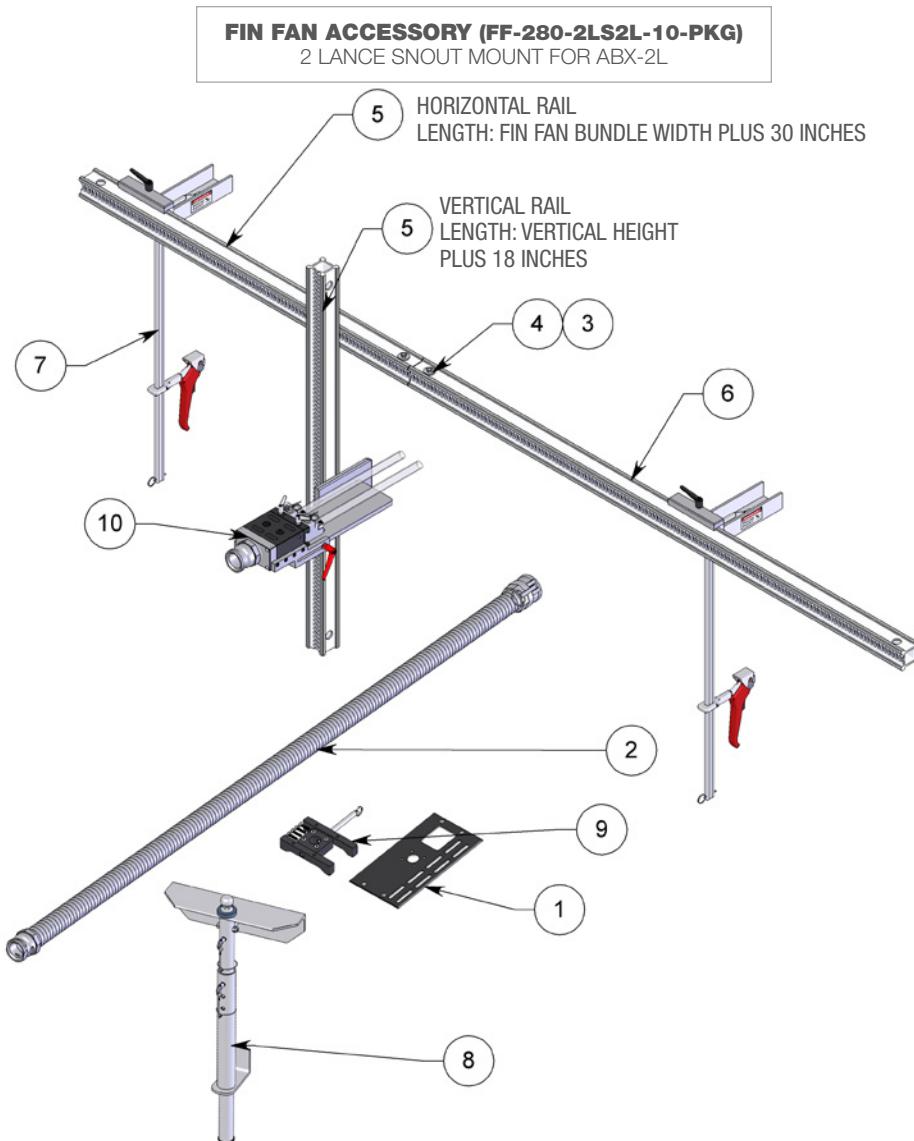
FIN FAN ACCESSORY (FF-280-2LR3L-10-PKG)
2 LANCE DIRECT MOUNT FOR ABX-3L



#	NUMBER / DESCRIPTION	QTY.
1	BR 006-2.5-001 2.5" SPLICE TUBE	2
2	BR 008-2.5-001 2.5" WEDGE BOLT ASSEMBLY	4
3	BU 002-4-001 2.5" BOX RAIL EXTRUSION, SLOTTED	3
4	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	2
5	FF 102 FIN FAN CLAMP ASSY	2
6	FF 160 LOWER SUPPORT BRACKET ASSY	2
7	FF 200-3LR ABX-3L RIGID MOUNT FIN FAN	1

PART NUMBER	BN18-XX	BN15-XX	BN13-XX
ABX 119-16 GUIDE TUBE,.745 ID	2	-	-
ABX 117-16 GUIDE TUBE,.674 ID	-	2	-
ABX 116-16 GUIDE TUBE,.546 ID	-	-	2
FF 121-XXX	2	2	2
HS 121-XXX	2	2	2

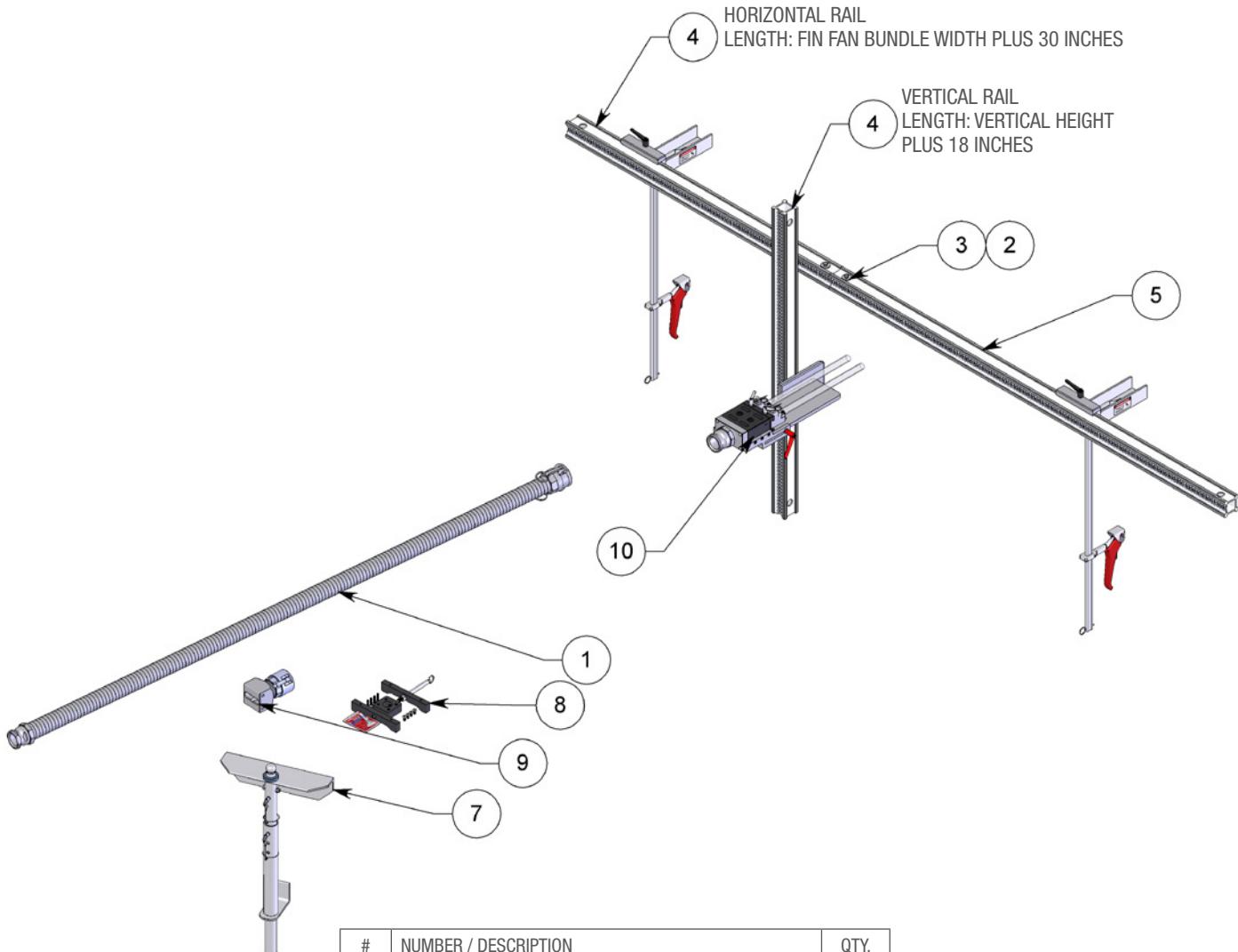
PARTS DIAGRAM



#	NUMBER / DESCRIPTION	QTY.
1	ABX 210 PLATE, BOTTOM	1
2	BOP 103-07-2.0MCL- 2.0FCL 2.0 INTERLOCK SNOUT, 7FT	1
3	BR 006-2.5-001 2.5" SPLICE TUBE	1
4	BR 008-2.5-001 2.5" WEDGE BOLT ASSEMBLY	2
5	BU 002-4-001 2.5" BOX RAIL EXTRUSION, SLOTTED	2
6	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	1
7	FF 102 FIN FAN CLAMP ASSY	2
8	FF 104 ABX-2L SCAFFOLD MOUNT ASSY	1
9	FF 105-RK RETROFIT KIT	1
10	FF 200-S ABX SNOUT FIN FAN	1

PART NUMBER	BN18-XX	BN15-XX	BN13-XX
ABX 119-16 GUIDE TUBE,.745 ID	2	-	-
ABX 117-16 GUIDE TUBE,.674 ID	-	2	-
ABX 116-16 GUIDE TUBE,.546 ID	-	-	2
FF 121-XXX	2	2	2
HS 121-XXX	2	2	2

FIN FAN ACCESSORY (FF-280-2LS3L-10-PKG)
2 LANCE SNOUT MOUNT FOR ABX-3L

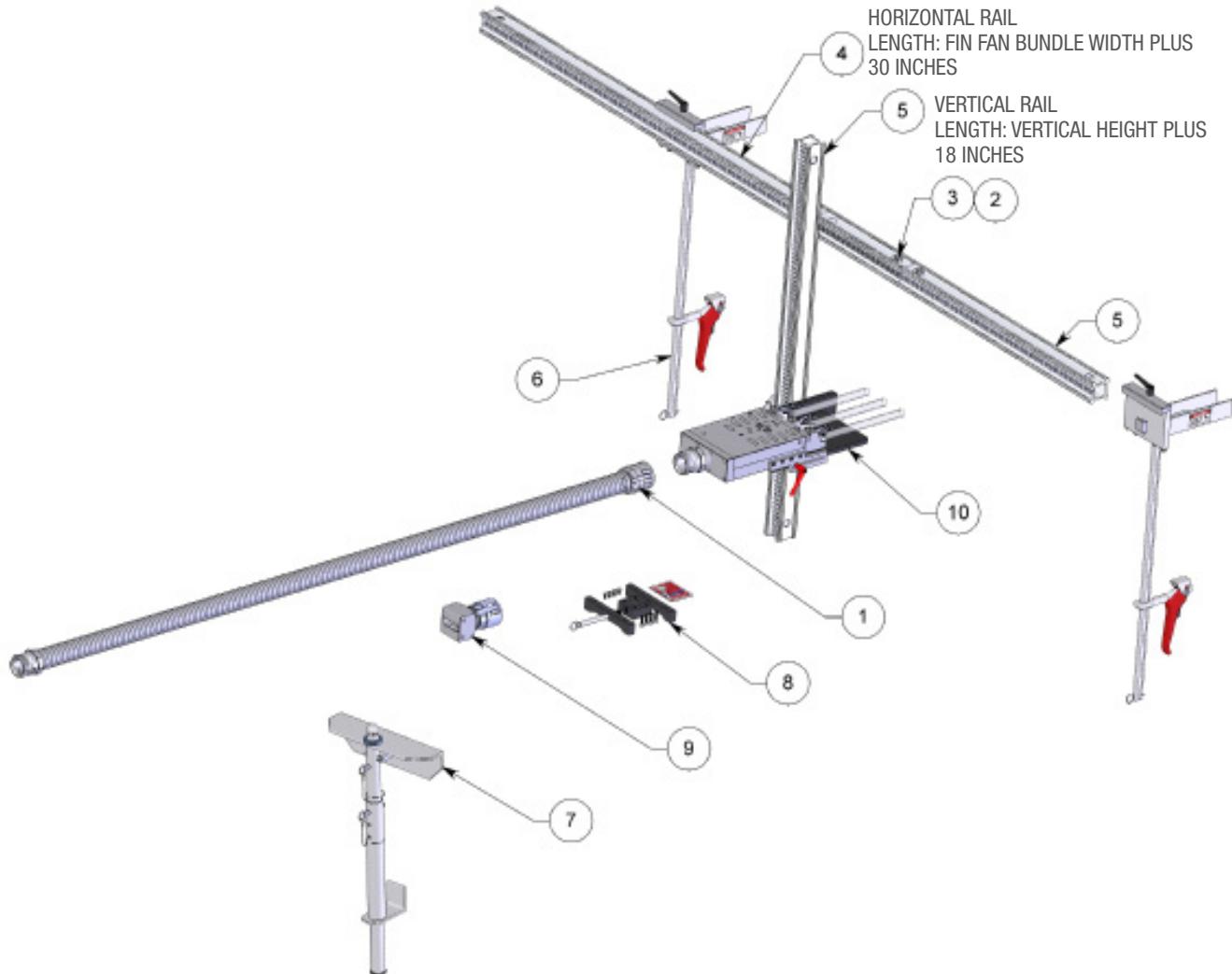


#	NUMBER / DESCRIPTION	QTY.
1	BOP 103-07-2.0MCL- 2.0FCL 2.0 INTERLOCK SNOUT, 7FT	1
2	BR 006-2.5-001 2.5" SPLICE TUBE	1
3	BR 008-2.5-001 2.5" WEDGE BOLT ASSEMBLY	2
4	BU 002-4-001 2.5" BOX RAIL EXTRUSION, SLOTTED	2
5	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	1
6	FF 102 FIN FAN CLAMP ASSY	2
7	FF 104 ABX-2L SCAFFOLD MOUNT ASSY	1
8	FF 105-3L-K ABX-3L FIN FAN KIT	1
9	HCS 310 SNOUT 3L ADAPTER WELDMENT	1
10	FF 200-S ABX SNOUT FIN FAN	1

PART NUMBER	BN18-XX	BN15-XX	BN13-XX
ABX 119-16 GUIDE TUBE,.745 ID	2	-	-
ABX 117-16 GUIDE TUBE,.674 ID	-	2	-
ABX 116-16 GUIDE TUBE,.546 ID	-	-	2
FF 121-XXX	2	2	2
HS 121-XXX	2	2	2

PARTS DIAGRAM

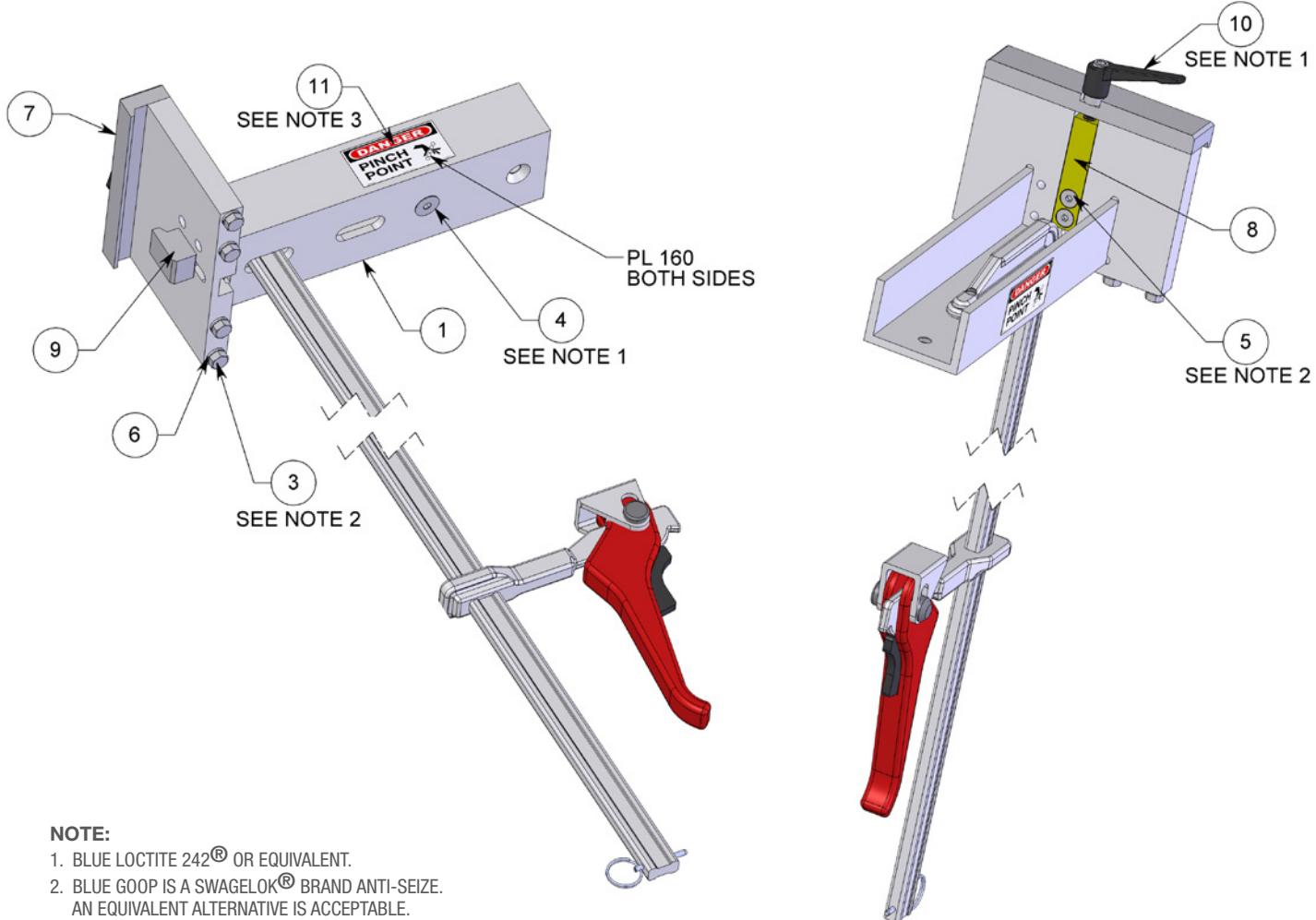
FIN FAN ACCESSORY (FF-380-3LS3L-10-PKG)
3 LANCE SNOUT MOUNT FOR ABX-3L



#	NUMBER / DESCRIPTION	QTY.
1	BOP 103-07-2.0MCL- 2.0FCL 2.0 INTERLOCK SNOUT, 7FT	1
2	BR 006-2.5-001 2.5" SPLICE TUBE	1
3	BR 008-2.5-001 2.5" WEDGE BOLT ASSEMBLY	2
4	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	1
5	BU 002-4-001 2.5" BOX RAIL EXTRUSION, SLOTTED	2
6	FF 102 FIN FAN CLAMP ASSY	2
7	FF 104 ABX-2L SCAFFOLD MOUNT ASSY	1
8	FF 105-3L-K ABX-3L FIN FAN KIT	1
9	HCS 310 SNOUT 3L ADAPTER WELDMENT	1
10	FF 300-3LS3L ABX SNOUT FIN FAN	1

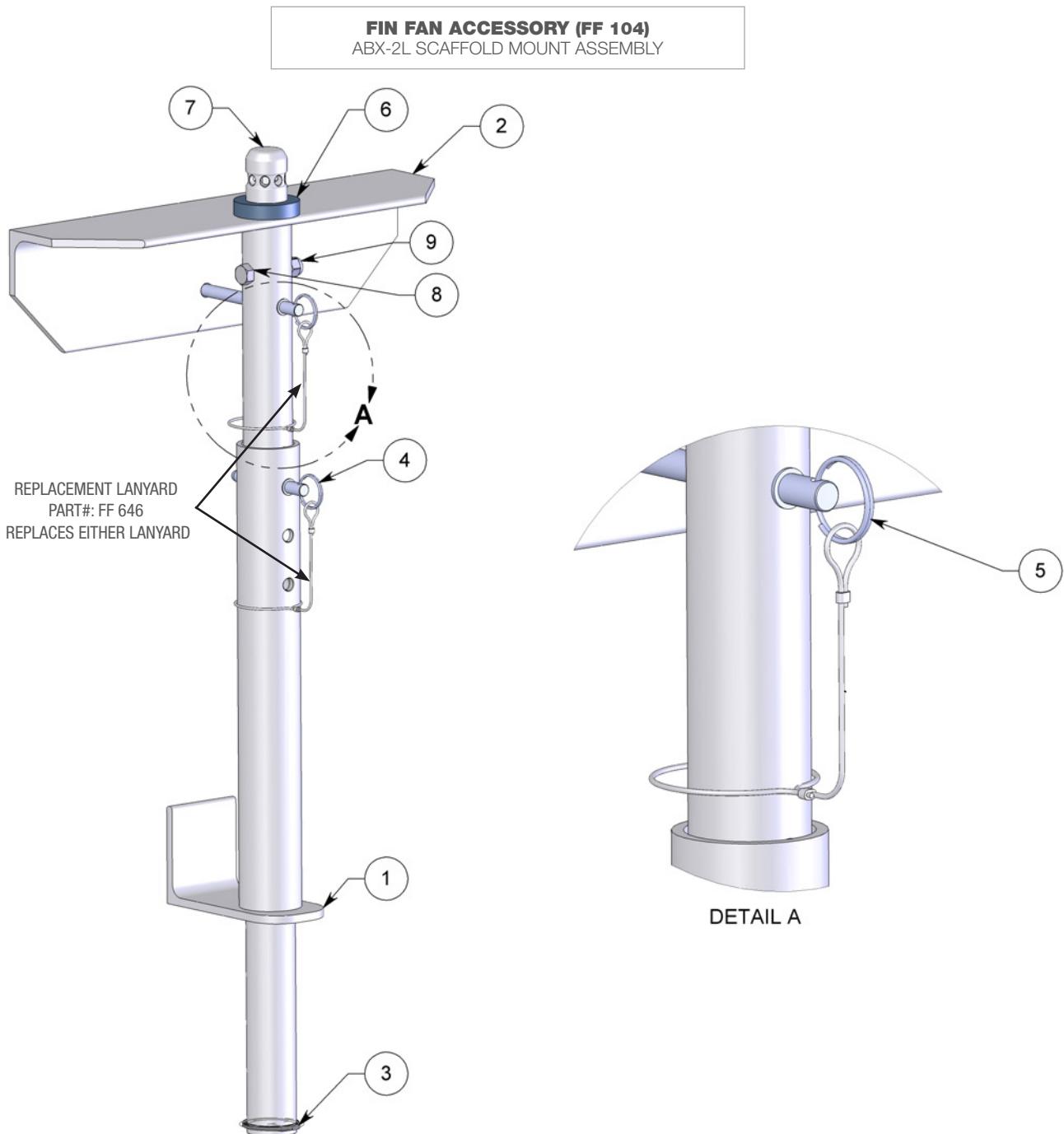
PART NUMBER	BN18-XX	BN15-XX	BN13-XX
ABX 119-16 GUIDE TUBE,.745 ID	3	-	-
ABX 117-16 GUIDE TUBE,.674 ID	-	3	-
ABX 116-16 GUIDE TUBE,.546 ID	-	-	3
FF 121-XXX	3	3	3
HS 121-XXX	3	3	3

FIN FAN ACCESSORY (FF 102)
FIN FAN CLAMP ASSEMBLY



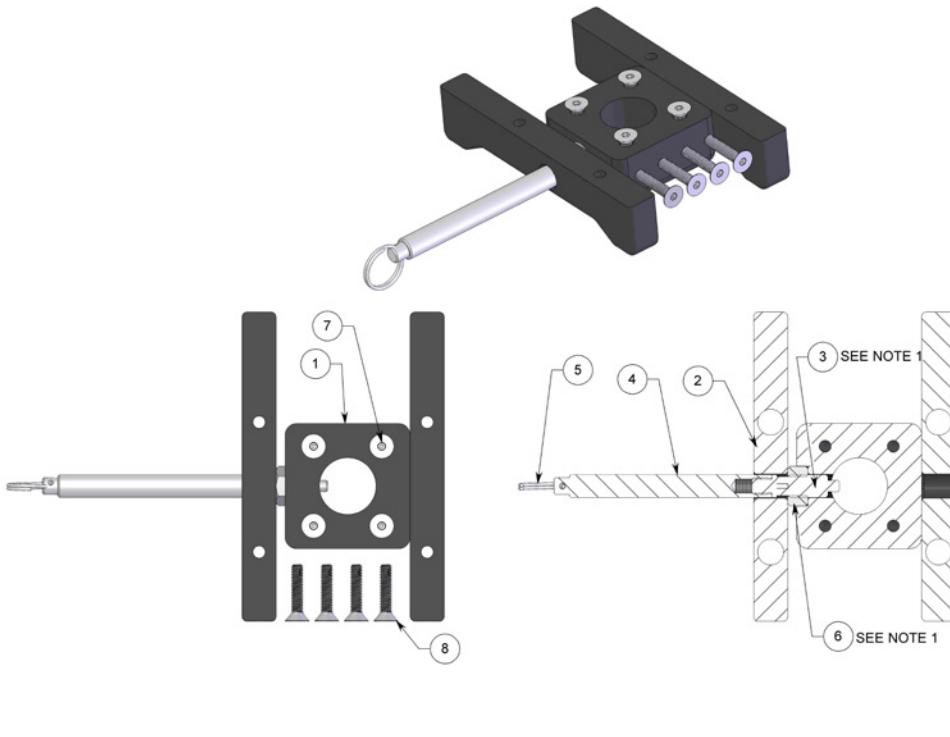
#	PART NUMBER	QTY.
1	FF 122 CLAMP WELDMENT	1
2	FF 123 MODIFIED CLAMP, FIN FAN HEADER	1
3	GB 331-20 BOLT, HEX .31-18 X 5.00 SS	4
4	GSF 337-03 FHCS .37-16 X .75 LG SS	1
5	GSSH 0375-0500-SS SHOULDER SCREW	2
6	GW 331-L LOCK WASHER SS	4
7	SRT 549 HORIZONTAL RAIL CLAMP	1
8	SRT 551 CLAMP FINGER	1
9	SRT 552 ADJUSTABLE RAIL CLAMP	1
10	SRT 556 ADJUSTABLE HANDLE .38-16 X 1.56 SS	1
11	PL 160 PINCH POINT 1.5X3.0 DECAL	2

PARTS DIAGRAM



#	PART NUMBER	QTY.
1	FF 141 LOWER SCAFFOLD BRACKET WELDMENT	1
2	FF 142 POST WELDMENT	1
3	FF 143 RETAINING RING, HD EXTERNAL 1.50	1
4	FF 144 QUICK RELEASE PIN, SS 2.00	1
5	FF 145 QUICK RELEASE PIN, SS 4.00	1
6	FF 147 THRUST WASHER	1
7	FF 148 TRACTOR PIVOT STUD	1
8	GB 537-08 BOLT, HEX .37-16 X 2.00	1
9	GN 537-L NYLOK NUT	1

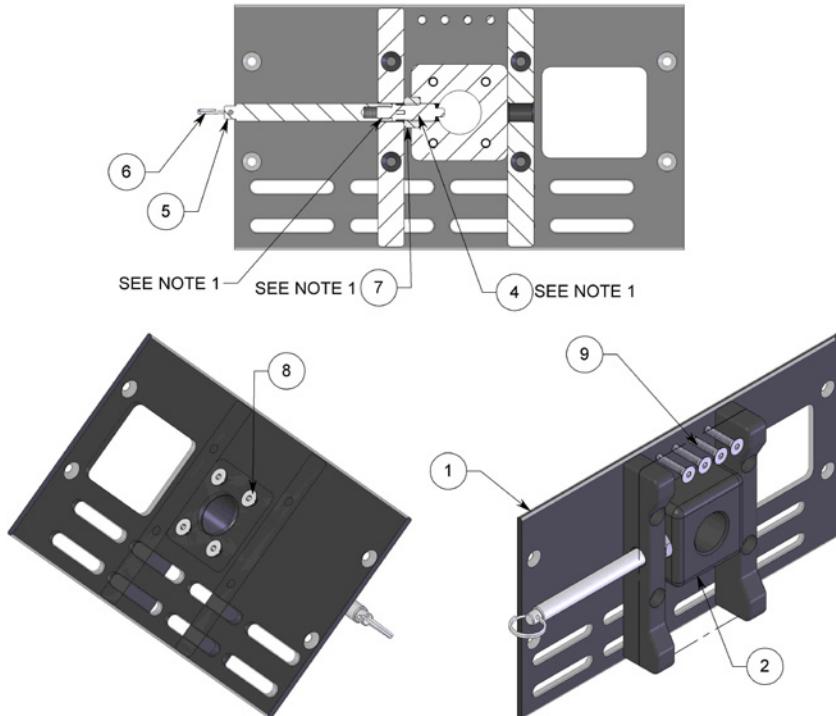
FIN FAN ACCESSORY (FF 105-RK)
ABX-2L RETROFIT KIT

**NOTE:**

1. BLUE LOCTITE 242® OR EQUIVALENT.

#	PART NUMBER	QTY.
1	FF 149 PIVOT BLOCK	1
2	FF 150 BLOCK FOOT	2
3	FF 151 SPRING PLUNGER	1
4	FF 152 EXTENSION STUD	1
5	FF 153 SPLIT RING	1
6	GN 550-H HEX NUT	1
7	GSF 325-025 FHCS .25-20 X .63 LG SS	4
8	GSF 325-05 FHCS .25-20 X 1.25 LG SS THREADLOCKING	4

FIN FAN ACCESSORY (FF 105-ERK)
ABX-2L RETROFIT KIT

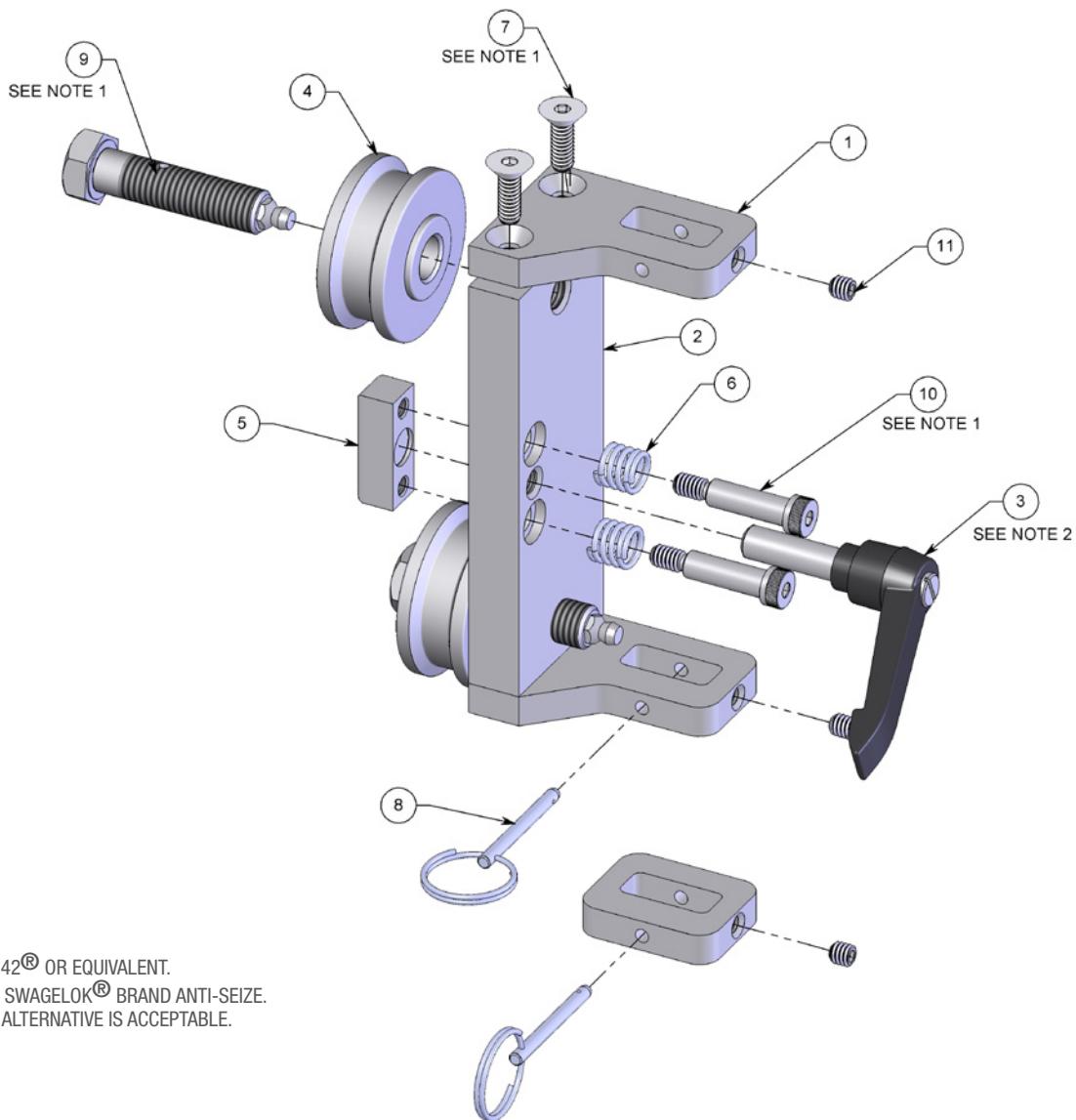
**NOTE:**

1. BLUE LOCTITE 242® OR EQUIVALENT.

#	PART NUMBER	QTY.
1	ABX 210 PLATE, BOTTOM	1
2	FF 149 PIVOT BLOCK	1
3	FF 150 BLOCK FOOT	2
4	FF 151 SPRING PLUNGER	1
5	FF 152 EXTENSION STUD	1
6	FF 153 SPLIT RING	1
7	GN 550-H HEX NUT	1
8	GSF 325-025 FHCS .25-20 X .63 LG SS	4
9	GSF 325-05 FHCS .25-20 X 1.25 LG SS THREADLOCKING	4

PARTS DIAGRAM

FIN FAN ACCESSORY (FF 160)
LOWER SUPPORT BRACKET ASSEMBLY

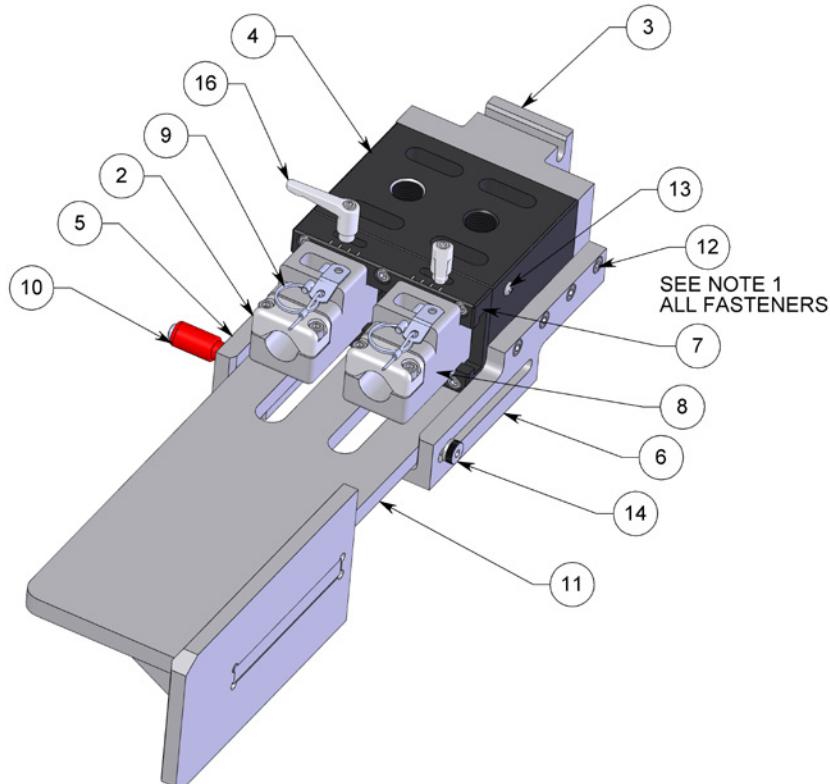


NOTE:

1. BLUE LOCTITE 242® OR EQUIVALENT.
2. BLUE GOOP IS A SWAGELOK® BRAND ANTI-SEIZE.
AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.

#	PART NUMBER	QTY.
1	FF 161-30R TOP PLATE BOTTOM SUPPORT	2
2	FF 162 FRONT PLATE SUPPORT	1
3	BU 151 HANDLE	1
4	BR 055-SS ROLLER ASSY	2
5	FF 163 SLIDE STOP	1
6	FF 164 SS COMPRESSION SPRING	2
7	GSF 325-03 FHCS .25-20 X .75 LG SS	4
8	FF 124 QUICK RELEASE PIN, SS .156X1.30	2
9	BR 051-2.0-0 AXLE-ZERK	2
10	GSSH 0312-1000-SS SHOULDER SCREW	2
11	GSS 325-20-25CU SET SCREW	3
12	FF 165 CLAMP BOTTOM STOP	1

FIN FAN ACCESSORY (FF 200-2LR)
2 LANCE ABX-2L RIGID MOUNT FIN FAN

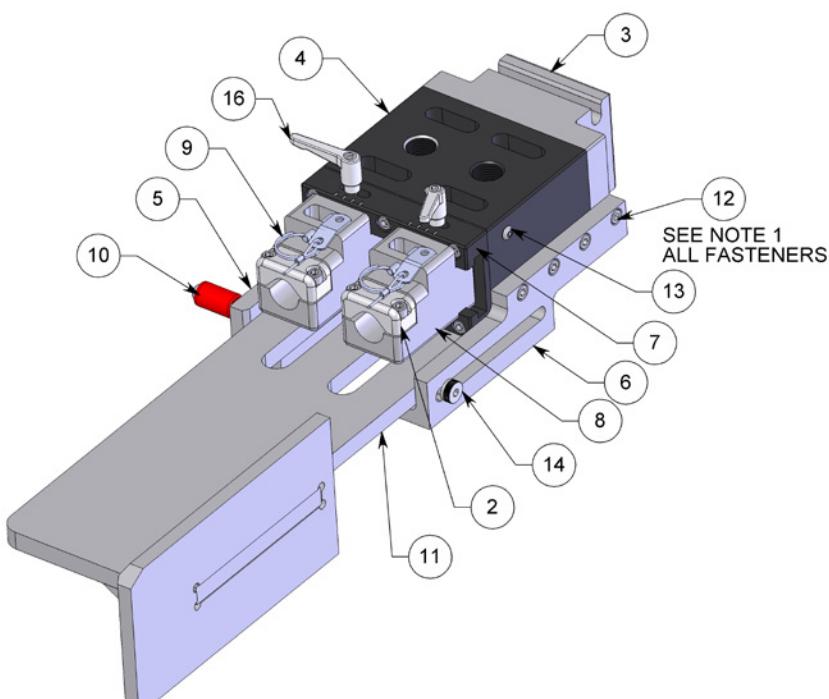


#	PART NUMBER	QTY.
2	FF 111 CAP, SNOUT BLOCK GUIDE TUBE	2
3	FF 202 RIGID 2L ATTACHMENT	1
4	FF 210 GUIDE BLOCK	1
5	FF 211 TRIANGLE SLIDE	1
6	FF 212 TRIANGLE SLIDE MIRROR	1
7	FF 213 GUIDE BLOCK T SLOT	1
8	FF 214 T-BLOCK	2
9	FF 215 QUICK-RELEASE PIN W LANYARD	2
10	FF 225 ADJUSTABLE HANDLE	1
11	FF 238 RIGID MOUNT WELDMENT	1
12	GS 325-04 SHCS .25-20 X 1.00 SS (BC 053)	22
13	GSB 319-02 BHCS .19-24 X .50 LG SS	2
14	GSSH 0375-0500-SS SHOULDER SCREW	1
15	GW 331-F FLAT WASHER SS	1
16	HCS 325 ADJUSTABLE HANDLE	2

NOTE:

1. BLUE LOCTITE 242® OR EQUIVALENT.

FIN FAN ACCESSORY (FF 200-3LR)
2 LANCE ABX-3L RIGID MOUNT FIN FAN



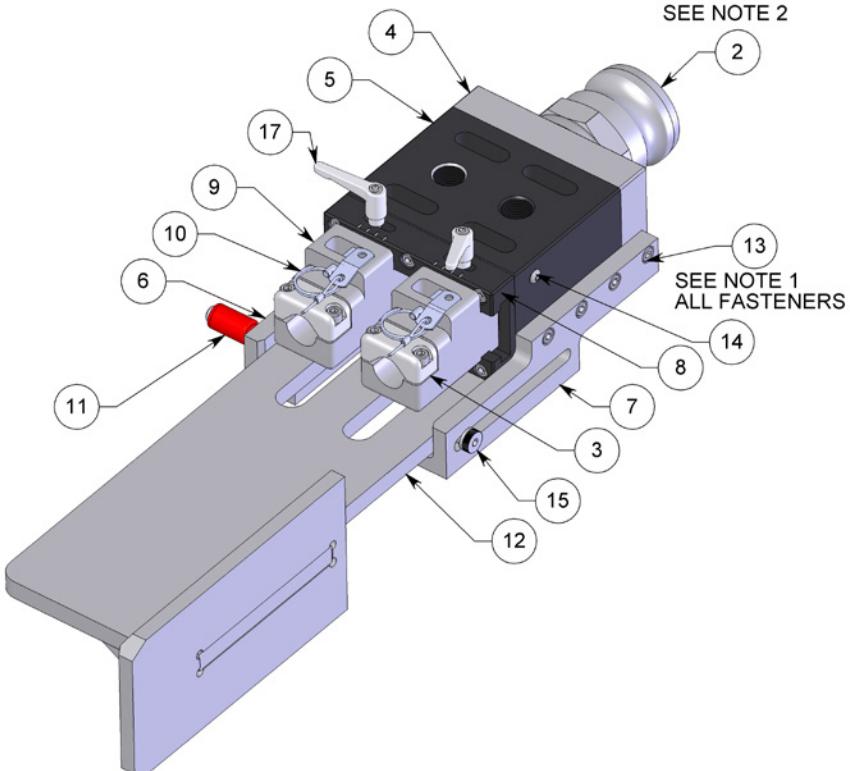
#	PART NUMBER	QTY.
2	FF 111 CAP, SNOUT BLOCK GUIDE TUBE	2
3	FF 201 RIGID 3L ATTACHMENT	1
4	FF 210 GUIDE BLOCK	1
5	FF 211 TRIANGLE SLIDE	1
6	FF 212 TRIANGLE SLIDE MIRROR	1
7	FF 213 GUIDE BLOCK T SLOT	1
8	FF 214 T-BLOCK	2
9	FF 215 QUICK-RELEASE PIN W LANYARD	2
10	FF 225 ADJUSTABLE HANDLE	1
11	FF 238 RIGID MOUNT WELDMENT	1
12	GS 325-04 SHCS .25-20 X 1.00 SS (BC 053)	22
13	GSB 319-02 BHCS .19-24 X .50 LG SS	2
14	GSSH 0375-0500-SS SHOULDER SCREW	1
15	GW 331-F FLAT WASHER SS	1
16	HCS 325 ADJUSTABLE HANDLE	2

NOTE:

1. BLUE LOCTITE 242® OR EQUIVALENT.

PARTS DIAGRAM

FIN FAN ACCESSORY (FF 200-S)
2 LANCE ABX SNOUT MOUNT FIN FAN FOR ABX-2L AND 3L



#	PART NUMBER	QTY.
2	BOP 357 CAM LOCK, 2IN-M, 2INNPT-F	1
3	FF 111 CAP, SNOUT BLOCK GUIDE TUBE	2
4	FF 204 SNOUT ATTACHMENT	1
5	FF 210 GUIDE BLOCK	1
6	FF 211 TRIANGLE SLIDE	1
7	FF 212 TRIANGLE SLIDE MIRROR	1
8	FF 213 GUIDE BLOCK T SLOT	1
9	FF 214 T-BLOCK	2
10	FF 215 QUICK-RELEASE PIN W LANYARD	2
11	FF 225 ADJUSTABLE HANDLE	1
12	FF 238 RIGID MOUNT WELDMENT	1
13	GS 325-04 SHCS .25-20 X 1.00 SS (BC 053)	22
14	GSB 319-02 BHCS .19-24 X .50 LG SS	2
15	GSSH 0375-0500-SS SHOULDER SCREW	1
16	GW 331-F FLAT WASHER SS	1
17	HCS 325 ADJUSTABLE HANDLE	2

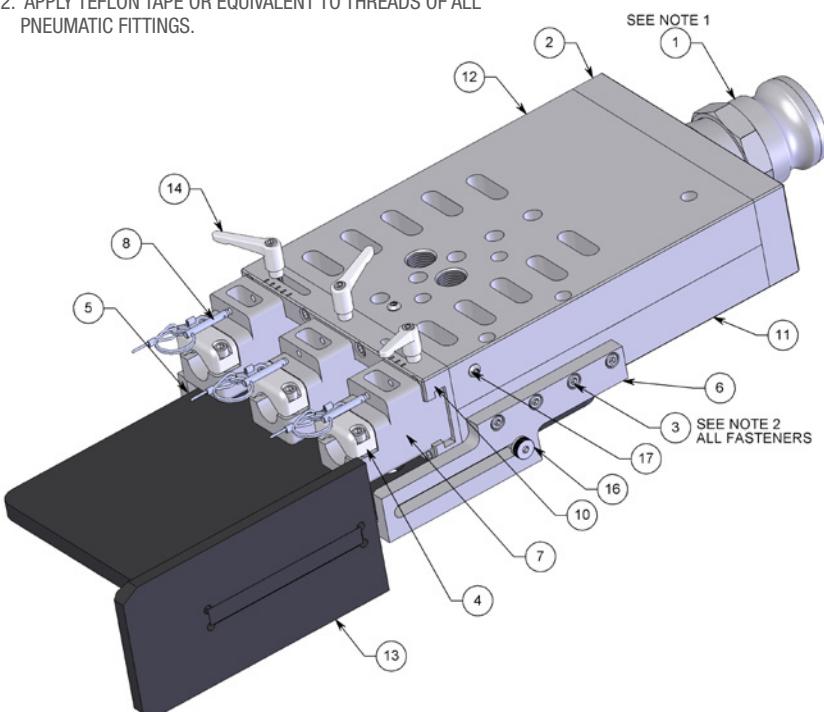
NOTE:

1. BLUE LOCTITE 242® OR EQUIVALENT.
2. APPLY TEFLON TAPE OR EQUIVALENT TO THREADS OF ALL PNEUMATIC FITTINGS.

FIN FAN ACCESSORY (FF 300-3LS3L)
3 LANCE ABX-3L SNOUT MOUNT FIN FAN

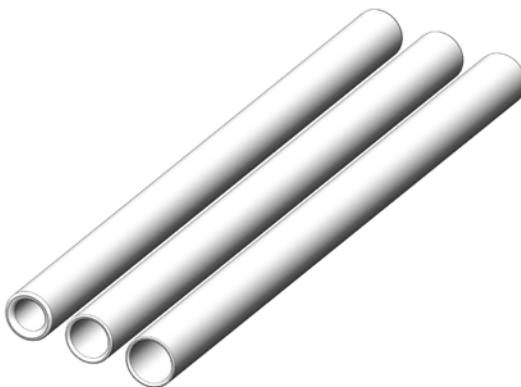
NOTE:

1. BLUE LOCTITE 242® OR EQUIVALENT.
2. APPLY TEFLON TAPE OR EQUIVALENT TO THREADS OF ALL PNEUMATIC FITTINGS.



#	PART NUMBER	QTY.
1	BOP 357 CAM LOCK, 2IN-M, 2INNPT-F	1
2	FF 302 SNOUT ATTACHMENT 3L 3LANCE	1
3	GS 325-04 SHCS .25-20 X 1.00 SS (BC 053)	40
4	FF 111 CAP, SNOUT BLOCK GUIDE TUBE	3
5	FF 211 TRIANGLE SLIDE	1
6	FF 212 TRIANGLE SLIDE MIRROR	1
7	FF 214 T-BLOCK	3
8	FF 215 QUICK-RELEASE PIN W LANYARD	3
9	FF 225 ADJUSTABLE HANDLE	1
10	FF 304 GUIDE BLOCK PLATE T-SLOT 3L 3LANCE	1
11	FF 305 FIN FAN PITCH ADJUSTMENT BLOCK V3 3L 3LANCE	1
12	FF 306 FIN FAN PITCH ADJUSTMENT BLOCK V3 3L 3LANCE TOP	1
13	FF 338 3 LANCE GUIDE WELDMENT	1
14	HCS 325 ADJUSTABLE HANDLE	3
15	GW 331-F FLAT WASHER SS	1
16	GSSH 0375-0500-SS SHOULDER SCREW	1
17	GSB 319-02 BHCS .19-24 X .50 LG SS	3

AUTOBOX® GUIDE ASSEMBLY ACCESSORIES
GUIDE TUBES, COLLETS, AND HOSE STOPS



StoneAge (SA) PART NUMBER GUIDE TUBE REFERENCE CHART

GUIDE TUBE	BANSHEE	INSIDE DIAMETER, LENGTH
ABX 116-16	BN13	.546 in / 14 mm, 16 in. / 406 mm
ABX 117-16	BN15	.674 in / 17 mm, 12.5 in. / 406 mm
ABX 119-16	BN18	.745 in / 19 mm, 12.5 in. / 406 mm



StoneAge (SA) PART NUMBER COLLET REFERENCE CHART

SA PART NUMBER	COLLET SIZE	SPIR STAR	PARKER
FF 121-297	0.297 in. / 8 mm	3/2	2240D-02
FF 121-328	0.328 in. / 8 mm	3/4, 4/2	2240D-025, 2240D-02
FF 121-406	0.406 in. / 10 mm	5/2, 3/6	2240D-03
FF 121-438	0.438 in. / 11 mm	4/4	2448D-25
FF 121-460	0.460 in. / 12 mm	4/6, 5/4, 6/2	2240D-04
FF 121-484	0.484 in. / 12 mm		2640D-25
FF 121-516	0.516 in. / 13 mm	6/4	2440D-04
FF 121-547	0.547 in. / 14 mm	5/6, 8/2	2240D-05, 2740D-03
FF 121-594	0.594 in. / 15 mm	8/4	
FF 121-625	0.625 in. / 16 mm		2240D-05

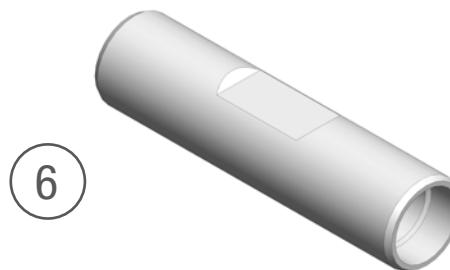
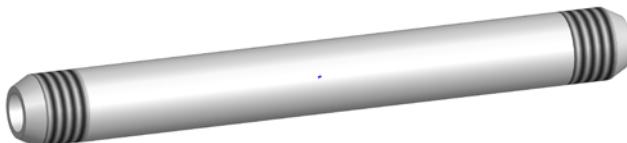
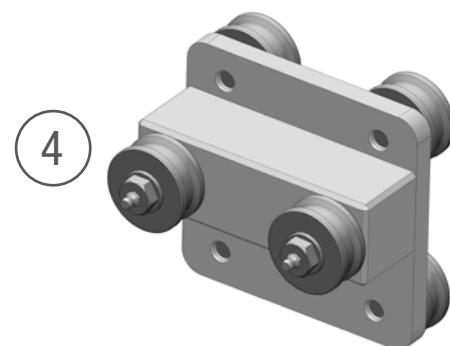
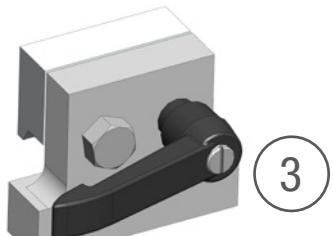
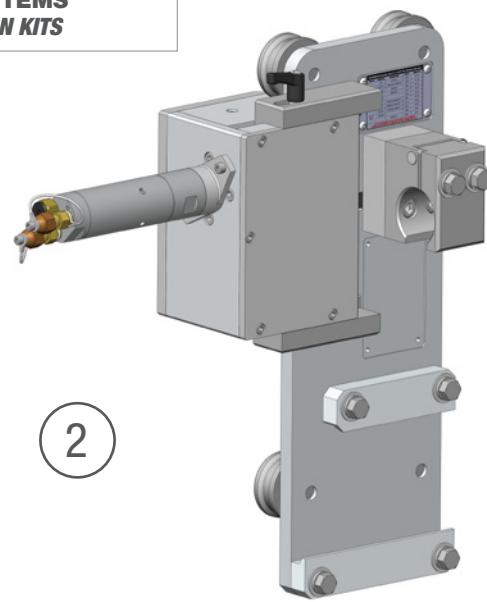
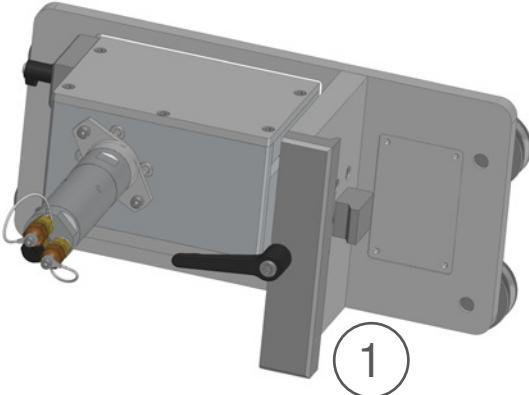


StoneAge (SA) PART NUMBER HOSE STOP REFERENCE CHART

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

PARTS DIAGRAM

**NECESSARY OPTIONAL ITEMS
NOT INCLUDED IN THE FIN FAN KITS**



****OPTIONAL ITEMS ARE STANDARD PARTS FROM THE LIGHT WEIGHT POSITIONER (LWP-500-V2).
SEE THE LIGHT WEIGHT POSITIONER USER MANUAL FOR MORE DETAILED PART BREAKDOWNS.**

#	PART NUMBER	2 LANCE QTY.	3 LANCE QTY.
1	**LWP 501 HORIZONTAL DRIVE ASSY	1	1
2	**LWP 502 VERTICAL DRIVE ASSY	1	1
3	**BU 152 RAIL STOP ASSY	2	2
4	**SRT 560 BLANK (DIRECT MOUNT ONLY)	1	1
5	SA 567-MP9LMP9L-XX NIPPLE	2	3
	SA 567-MP9RMP9R-XX NIPPLE		
6	AF 073-MP9LMP9L-XSL COUPLING	2	3
	AF 073-MP9RMP9R-XSL COUPLING		

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NOTES

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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 price list 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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