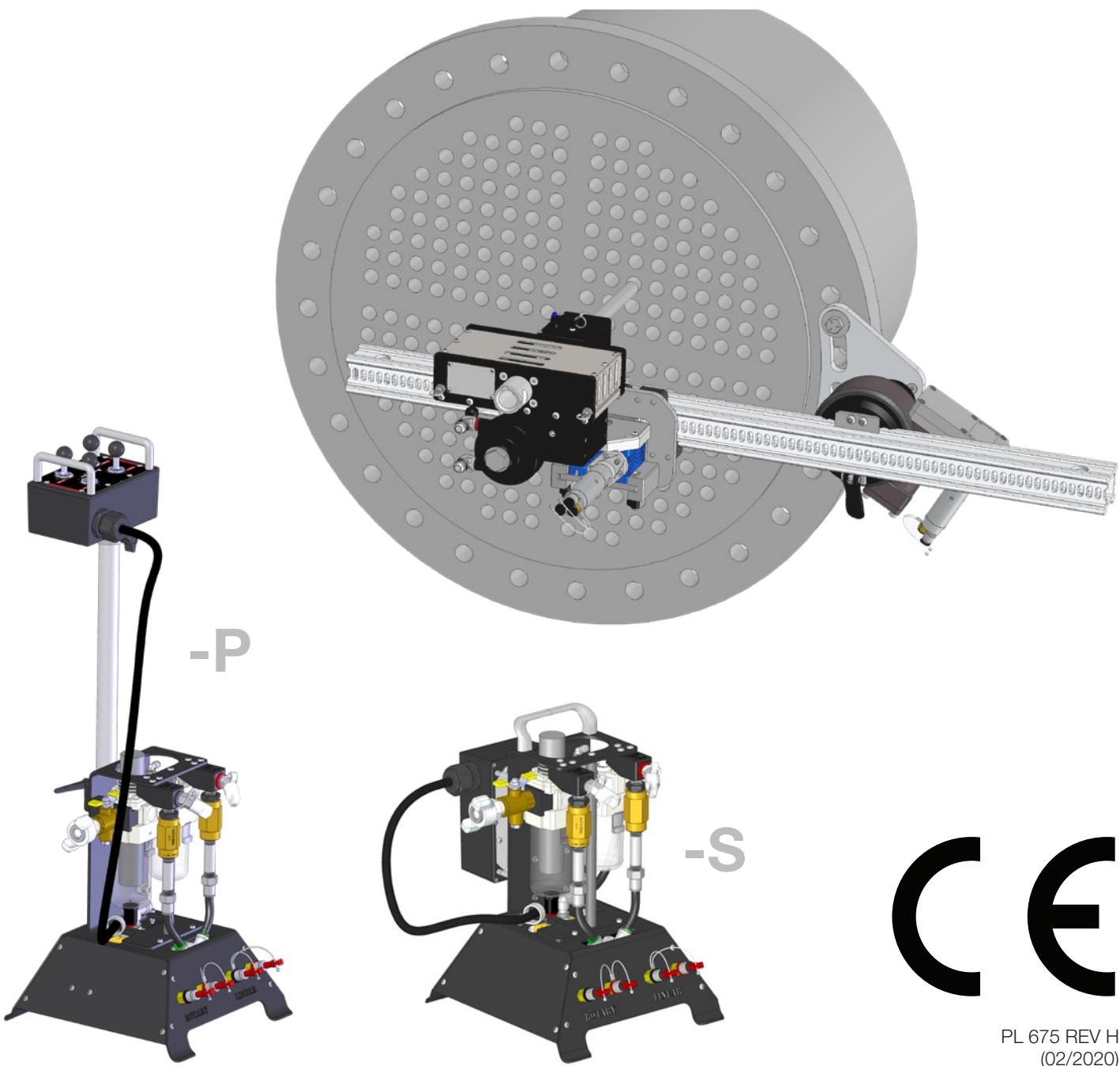




PROPOSITIONER™ (PROP-300) CONTROL BOX (CB-PROP,-S,-P) USER MANUAL



PL 675 REV H
(02/2020)

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This manual must be used in accordance with all applicable national laws. The manual shall be regarded as a part of the machine and shall be kept for reference until the final dismantling of the machine, as defined by applicable national law(s).

Updated manuals can be downloaded at:
<https://www.stoneagetools.com/manuals>

SPECIFICATIONS			
PROP-300 POSITIONER		Imperial	Metric
Weights	ABX-PRO Tractor, Guide Tube/Collet Block, and 12in Guide Tube	27 lbs	12.2 kg
	Mounting Plate	6 lbs	2.7 kg
	Linear Drive	11.5 lbs	5.2 kg
	Rotary Drive	32 lbs	14.5 kg
Dimensions	Standard Slotted Rail	2.5 x 2.5 x 45 in.	64 x 64 x 1219 mm
	Slotted Rail with extension	2.5 x 2.5 x 61 in.	64 x 64 x 1549 mm
	Mounting Plate	11 x 7 x 4 in.	279 x 178 x 102 mm
	Linear Drive	13 x 8 x 6 in.	330 x 203 x 152 mm
	Rotary Drive	8 x 11 x 9 in.	203 x 279 x 229 mm
CB-PROP-X (-P or -S)		Imperial	Metric
(-P) Pedestal Mount Control Box Weight		14 lbs	6.4 kg
(-P) Pedestal Mount control box Dimensions		12 x 13 x 14 in	305 x 330 x 356 mm
(-S) Side Mount Control Box Weight		14 lbs	6.4 kg
(-S) Side Mount control box Dimensions		12 x 18 x 14 in	305 x 457x 356 mm
Maximum Air Supply Pressure:		125 psi	8,6 bar
System Operating Pressure:		100 psi	6,8 bar
Recommended Operational Temperature Range		-20 to 140 °F	-29 to 60 °C
Air Supply Connection to Control Box		Chicago style twist-claw fitting	
Air Connections from Control Box to Tractor and Positioner		4-(15' x 3/8" Tubing) <i>Control Box to Drives</i> 2-(15' x 1/2" Hoses with JIC) <i>Control Box to Tractor</i>	
ABX-PRO TRACTOR		For detailed up to date information on these components. https://www.stoneagetools.com/assets/pdf/manuals/ABX-PRO_manual.pdf	

DESCRIPTION OF EQUIPMENT AND INTENDED USE

The ProPositioner can be mounted to a variety of heat exchanger tube bundles and has pneumatic powered horizontal and rotary drives. It is intended to be used with AUTOBOX®(ABX-PRO) TRACTOR and a Control Box (CB-PROP-S,-P).

The ProPositioner has been designed to provide a lightweight, low cost, entry level, option for contractors just starting out with hands free waterblasting equipment.

KEY FEATURES:

- Modular system designed for portability and easy assembly
- Quick install with two adjustable wrenches and a 4 mm hex wrench.
- Utilizes 2.5 in. (64 mm) slotted box rail
- Adjustable handles and Push-to-Connect air connections allow for quick adjustments.



EC DECLARATION OF CONFORMITY

Manufacturer:

StoneAge Incorporated
466 South Skylane Drive
Durango, CO 81303
USA

Authorized Representative:

StoneAge Netherlands BV
Reedijk 7Q
3274 KE Heinenoord
Netherlands
Bob Van Wordragen, Operations Manager StoneAge NL

Declare that:

ProPositioner (PROP-300) and Control Box (CB-PROP-S,-P)
for high pressure water cleaning of system parts.

Is compliant with the following Directives and Standards:

Directive 2006/42/EC (Machinery Directive)

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

The Technical File for ProPositioner (PROP-300) and Control Box (CB-PROP-S,-P) is maintained at:

StoneAge Incorporated, 466 South Skylane Drive, Durango, CO 81303, USA and was compiled by the Engineering Manager.
The Technical File is available through the Authorized Representative.

This Declaration of Conformity is issued under the exclusive responsibility of StoneAge Incorporated.



StoneAge Incorporated, Durango, CO, USA
Adam Markham, Engineering Manager, Robotics

03/15/2019
Date



WARNING AND SAFETY INSTRUCTIONS

OPERATOR TRAINING

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

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

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

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

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

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

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

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

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

SAFETY LABEL DEFINITIONS

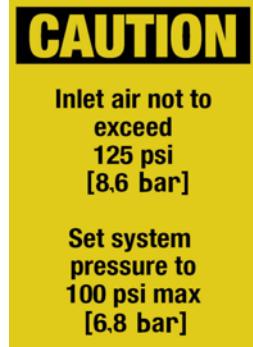
Replacement labels can be ordered through Stoneage®. See part diagrams for label locations and replace when necessary.

The PROP-300 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.



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



WARNING AND SAFETY INSTRUCTIONS

⚠ WARNING

Operations with this equipment can be potentially hazardous. Caution MUST be exercised prior to and during equipment 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 ProPositioner (PROP-300) 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 the Hose Stop Collet located within the Hose Guide Assembly. StoneAge offers several different size Hose Stop Collets. The Collet Size Reference guide is located on the Hose Guide Assembly.
- The Control Box should be located in a safe location where the Operator has good visibility of the pipe and hose. The ProPositioner (PROP-300) 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.
- When moving the ProPositioner (PROP-300) lift with care to prevent bodily injury.

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 Mounting Bracket on the exchanger face is securely fastened.**

- 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.

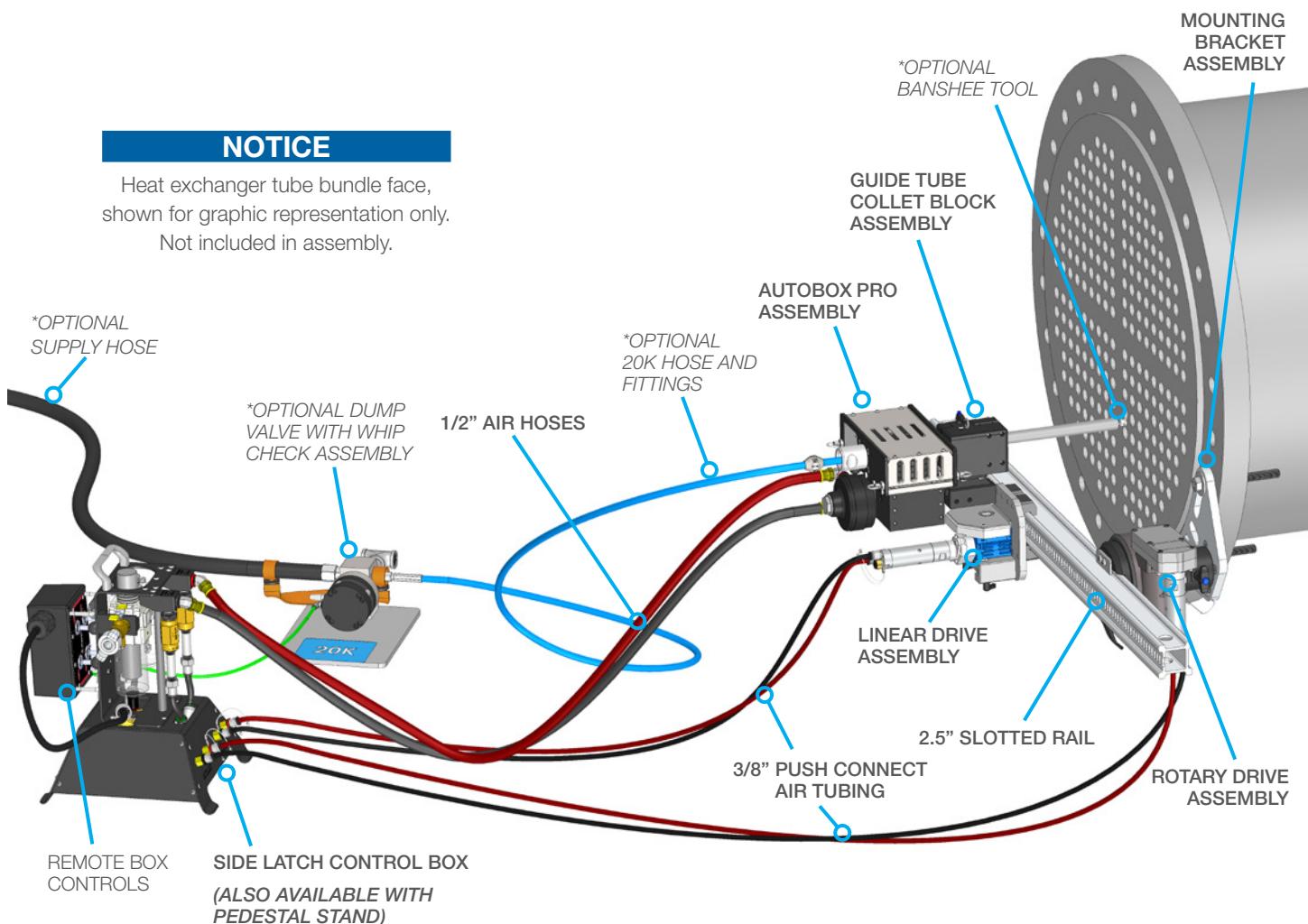
• ****Ensure that an anti-withdrawal device (collet), whip checks (hose whips), and all other applicable safety devices are installed and set-up properly.****

- Ensure the door on the ABX-PRO Tractor is closed and securely latched.
- Test the Control Box before operating 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.

**PROPOSITIONER (PRO-300) AND
CONTROL BOX (CB-PROP-S,-P)
SYSTEM ASSEMBLY**

NOTICE

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



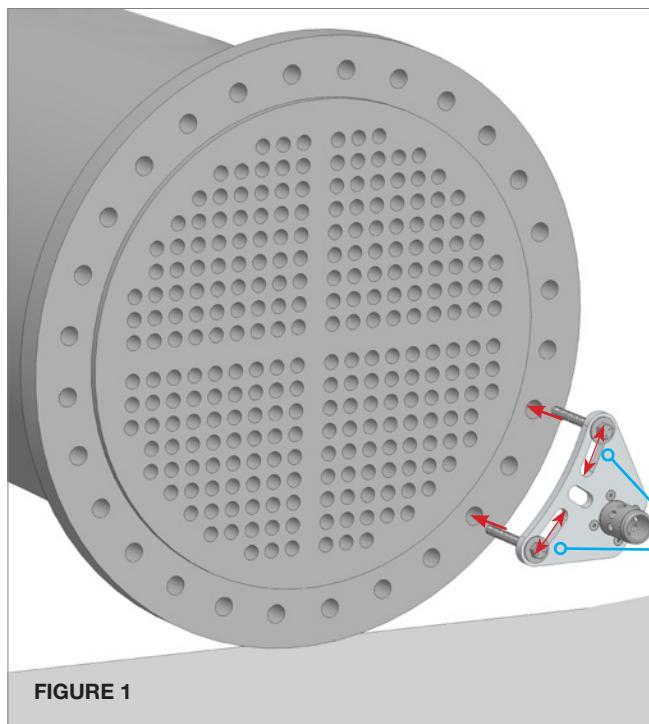
REMOTE BOX CONTROLS



PROPOSITIONER SET-UP

INSTALL THE MOUNTING BRACKET

1. Install the Mounting Bracket onto the tube face. The best location for ease of set-up is in the lower right hand quadrant of the exchanger as shown in **(Figure 1)**. However, the ProPositioner can be mounted in any of the bolt hole positions around the flange. The bracket has three mounting points. The two outside points are adjustable.

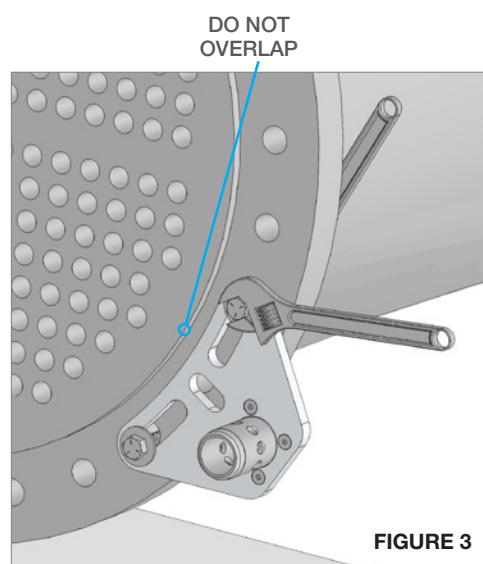
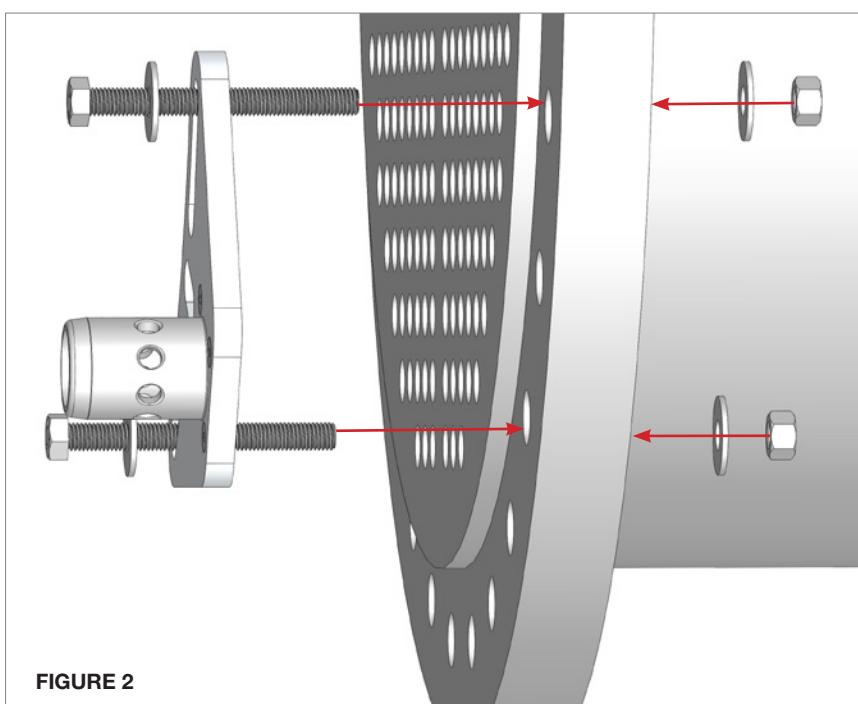


WARNING

Check that the Mounting Bracket on the exchanger face is securely fastened.

2. Insert a 5/8" x 6" Bolt with Flat Washer through each Adjustable Slot on the Mounting Bracket and holes on the exchanger Flange. Install Flat Washers and Hex Nuts on the end of each bolt. **(Figures 1 & 2)**

-  TECH TIP: (2) 5/8" x 6" bolts are provided for convenience, but any bolts smaller than 1" or 25mm in diameter can be used.
3. Be sure the Mounting Bracket Plate sits flat on the flange and does not over lap the ridge of tube face. Fasten in position with two adjustable end wrenches. **(Figure 3)**



INSTALL THE ROTARY DRIVE

4. Pull the Quick Release Pin out of the Rotary Drive. Slip the Rotary Drive over the Mounting Shaft. (**Figure 4**)
5. Rotate the Rotary Drive so that the Air Motor is as far away from the tube face as possible. This allows more room on the Drive Rail for the Linear Drive and Guide Tube/Collet Assembly. Keep in mind the orientation of the Push Lock Fittings for the routing of the umbilical. (**Figure 4**)

 TECH TIP: Applying a light coat of grease to the Mounting Shaft will allow the Rotary Drive to slide on easily.

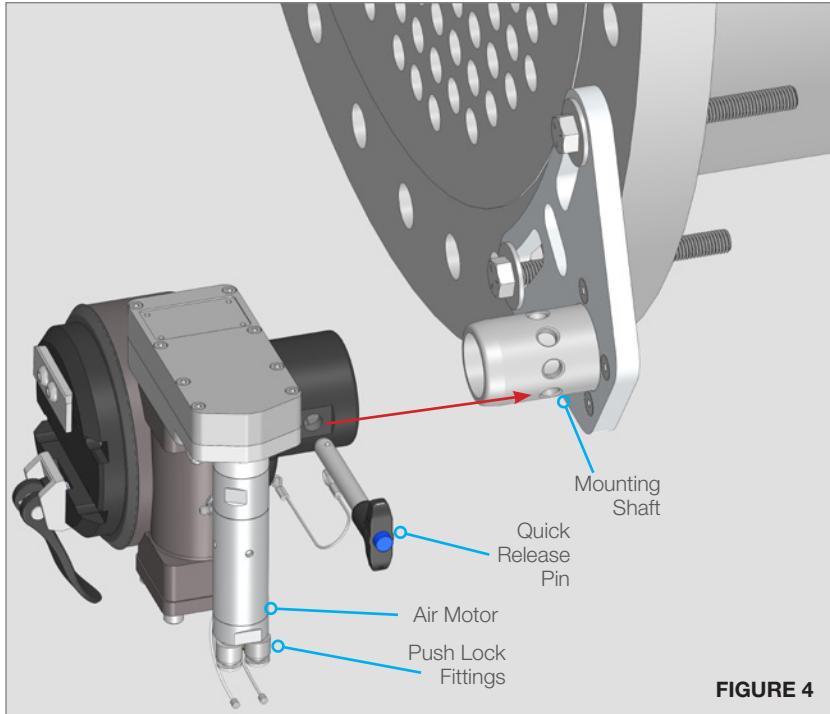


FIGURE 4

6. To make installation of the Rail and the Linear Drive easier, the Rail Clamp Handle should be facing down but is not required. In order to change the orientation of the handle, connect the air hoses from the Control Box to the Rotary Drive as shown in the next step. (**Figure 5**)

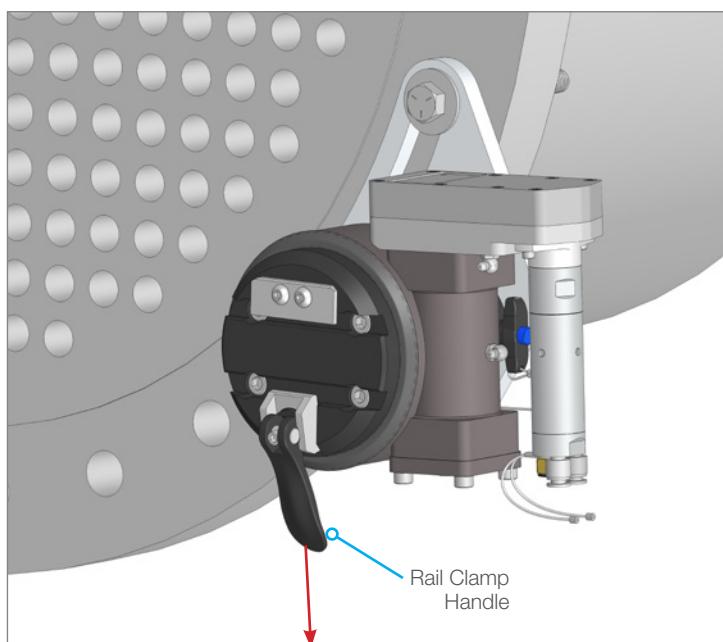


FIGURE 5

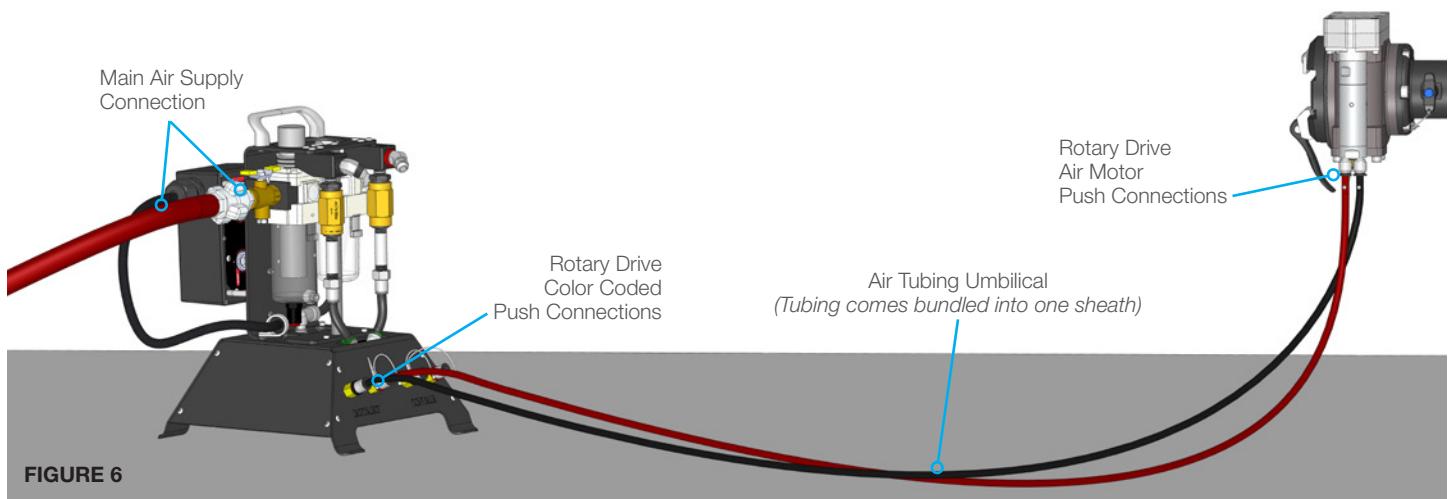
PROPOSITIONER SET-UP

CONNECT THE CONTROL BOX TO THE ROTARY DRIVE

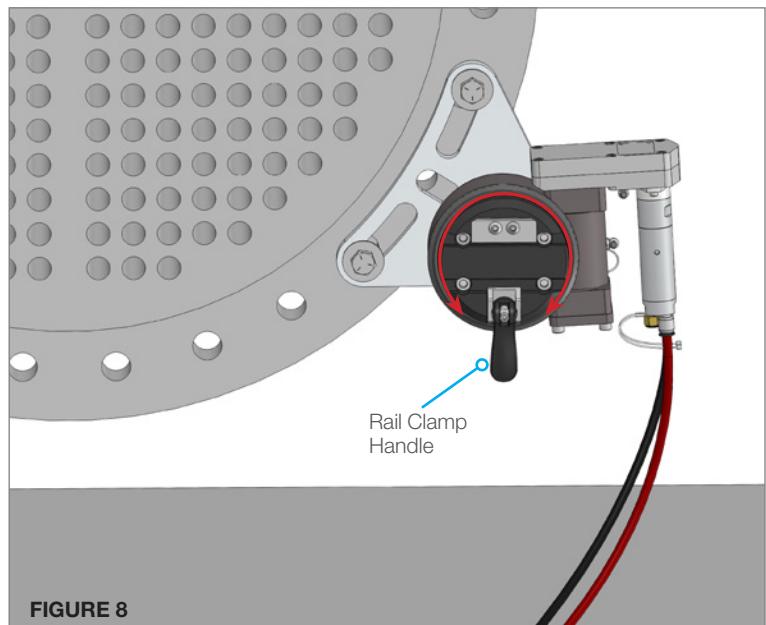
7. Connect the Main Air Supply Hose to the Chicago Air Fitting located on the side of the Control Box and turn the Air Valve to the "ON" position. (**Figure 6**)
8. Connect the color coded Air Tubing to their respective Push Connect Fittings, located above the "ROTARY" label on the base of the Control Box. (**Figure 6**)
9. Operate the "Rotary" lever on the control box to blow out the Air Tubing lines before connecting the opposite ends to the Rotary Drive.
10. Connect the opposite ends of the Air Tubing to the Push Connect Fittings on the Rotary Drive air motor. (**Figure 6**)

NOTICE

Due to the various mounting options, the Rotary Drive air motor is not color coded. If the operating directions seem reversed, the connections at the air motor can easily be switched at the Push Connect Fittings.



11. Using the control marked "Rotary" on the Remote Box, rotate the Rail Clamp Handle to the down position. (**Figures 7 & 8**)



INSTALL THE DRIVE RAIL

12. Open the Rail Clamp Handle on the Rotary Drive. Slide the Slotted Rail (Slots facing out) into the clamp on the Rotary Drive face. Push the Rail Clamp Handle on the Rotary Drive to secure in place. (**Figure 9**)

TECH TIP: *Clamp Handles are fully engaged when they come to a mechanical stop. If the resistance on the handle seems loose, tighten the center screw by rotating 60 degrees or one flat of the internal hex with a 5mm hex wrench. This is true for all Clamping Handles in the ProPositioner Assembly.*

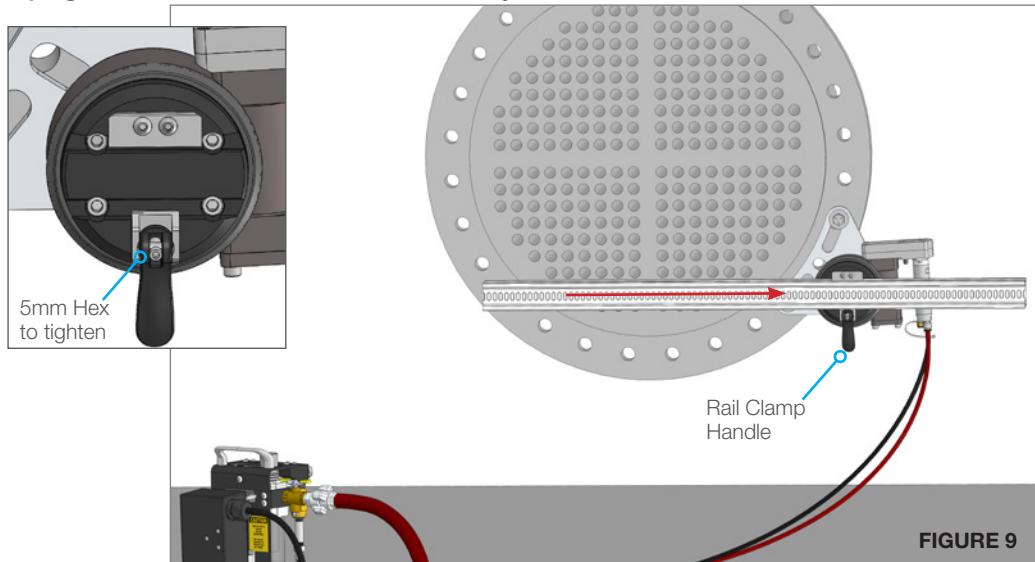


FIGURE 9

INSTALL THE LINEAR DRIVE ONTO THE RAIL

13. Orient the Linear Drive as shown in (**Figure 10**)
 14. Align the bottom Plastic Guides with the Rail and slide the Linear Drive onto the Rail. (**Figures 10 & 11**)
 15. Use the Drive Gear Engagement Handles to ensure the Drive Gear is engaged with the slots on the Rail. (**Figure 11**)

NOTICE

Verify Drive Gear Engagement Handles are tight before proceeding with the next assembly steps.

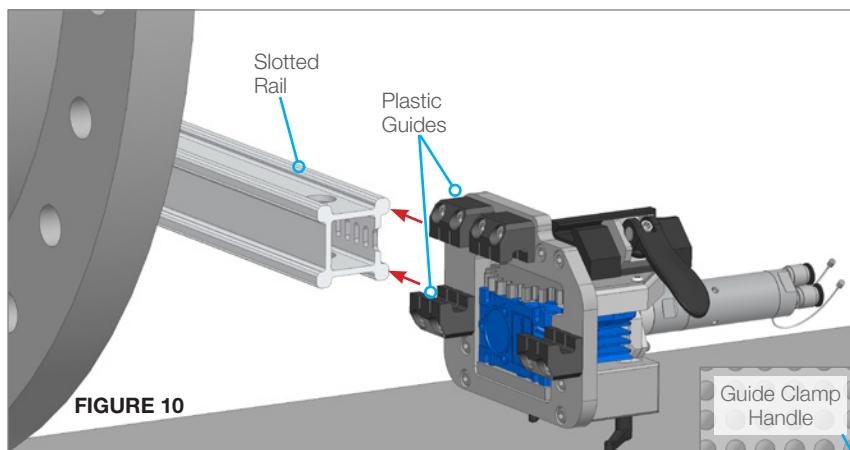


FIGURE 10

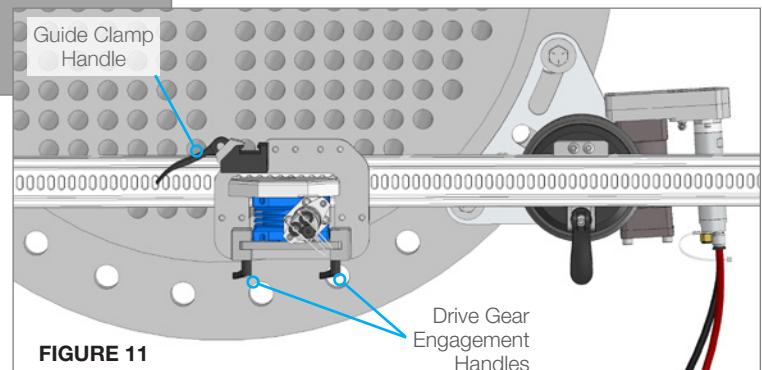
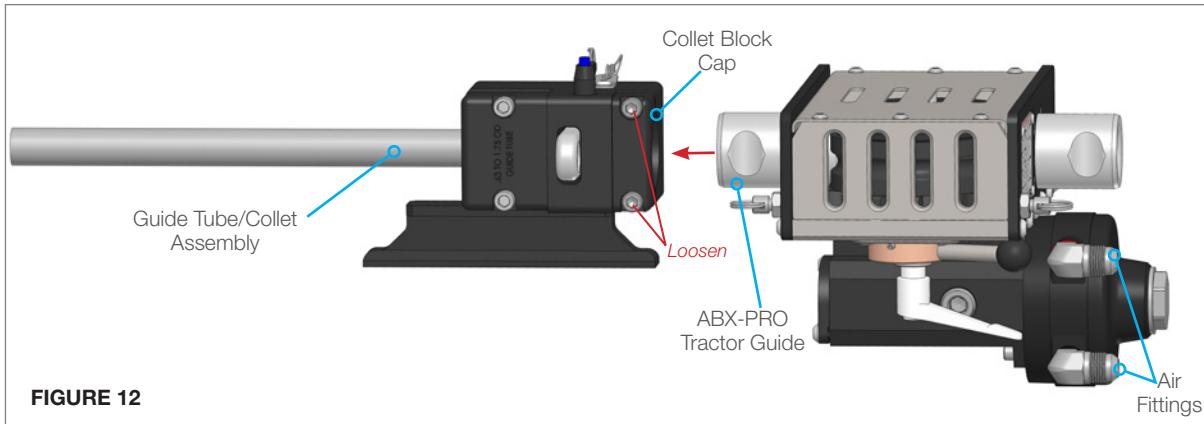


FIGURE 11

PROPOSITIONER SET-UP

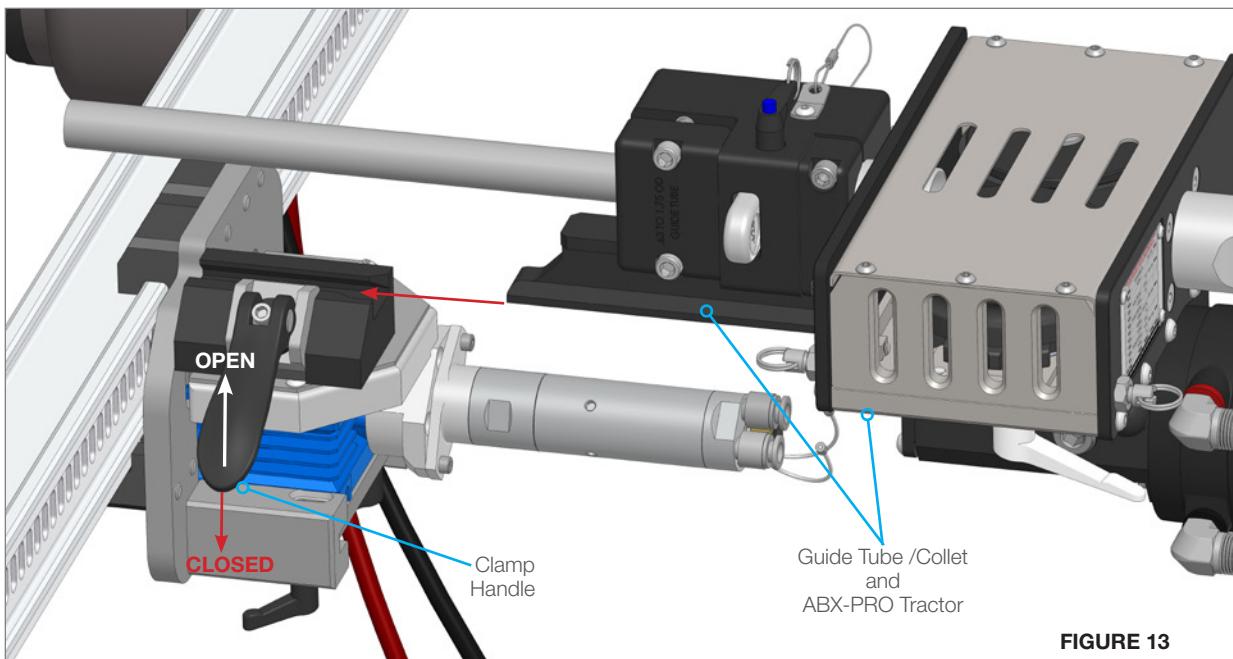
INSTALL THE ABX-PRO TRACTOR ONTO THE GUIDE TUBE/COLLET BLOCK ASSEMBLY

16. Loosen the Collet Block Cap with a 4mm Hex Wrench. (Figure 13)
17. Slide the ABX-PRO Tractor Guide into the Collet Block until it comes to a stop. The Air Fittings on the ABX-PRO Tractor should be oriented away from the Collet Block. (**Figure 12**)



INSTALL THE GUIDE TUBE/COLLET ASSEMBLY ONTO THE LINEAR DRIVE

18. Pull the Clamp Handle up and slide the Guide Tube/Collet and ABX-PRO Tractor onto the Clamp Block. Secure in place by closing the Clamp Handle. (**Figure 13**)

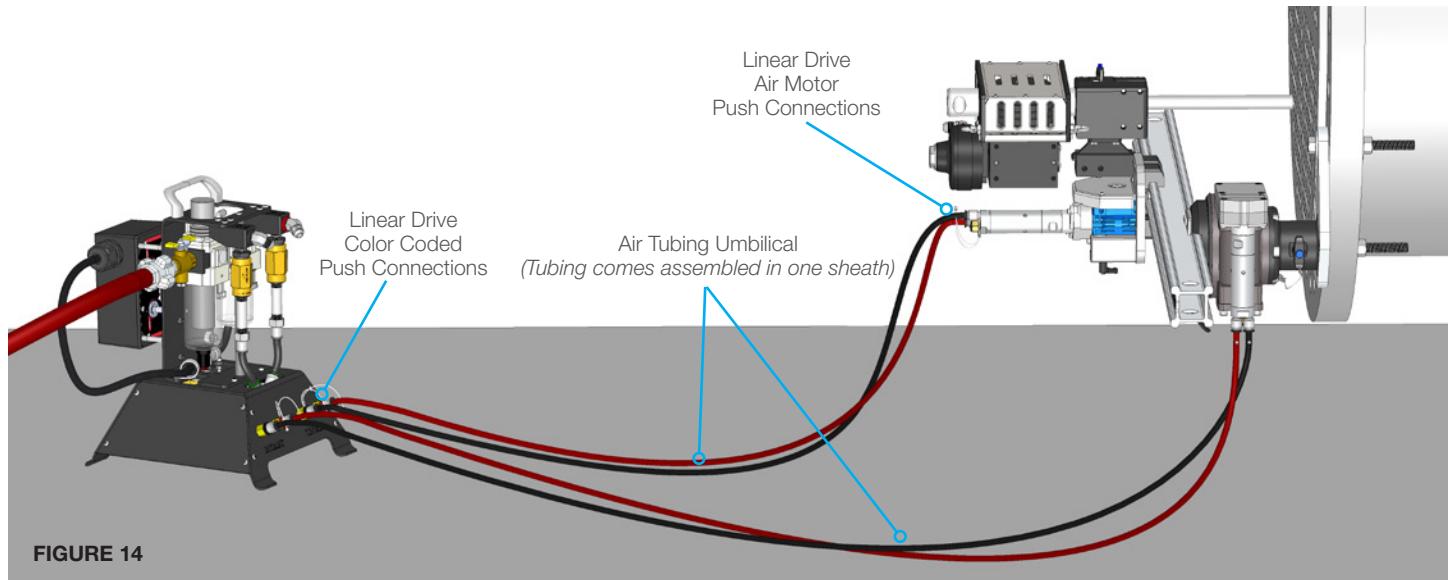


CONNECT THE CONTROL BOX TO THE LINEAR DRIVE

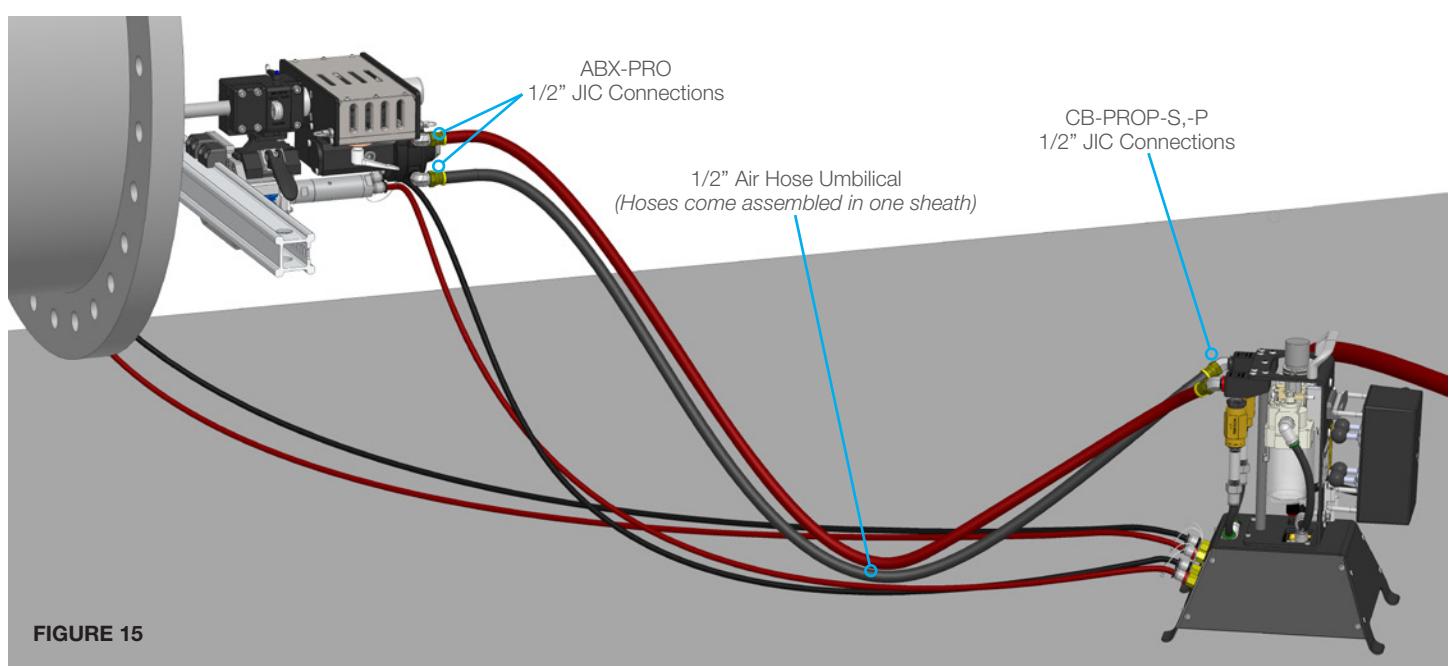
19. Connect the color coded Air Tubing to their respective Push Connect Fittings, located above the "LINEAR" label on the base of the Control Box. **(Figure 14)**
20. Operate the "Linear" lever on the control box to blow out the Air Tubing lines before connecting the opposite ends to the Linear Drive.
21. Connect the opposite ends of the Air Tubing to the Push Connect Fittings on the Linear Drive air motor. **(Figure 14)**

NOTICE

Due to the various mounting options, the Linear Drive air motor is not color coded. If the operating directions seem reversed, the connections at the air motor can easily be switched at the Push Connect Fittings. **(Figure 14)**

**CONNECT THE CONTROL BOX TO THE ABX-PRO TRACTOR**

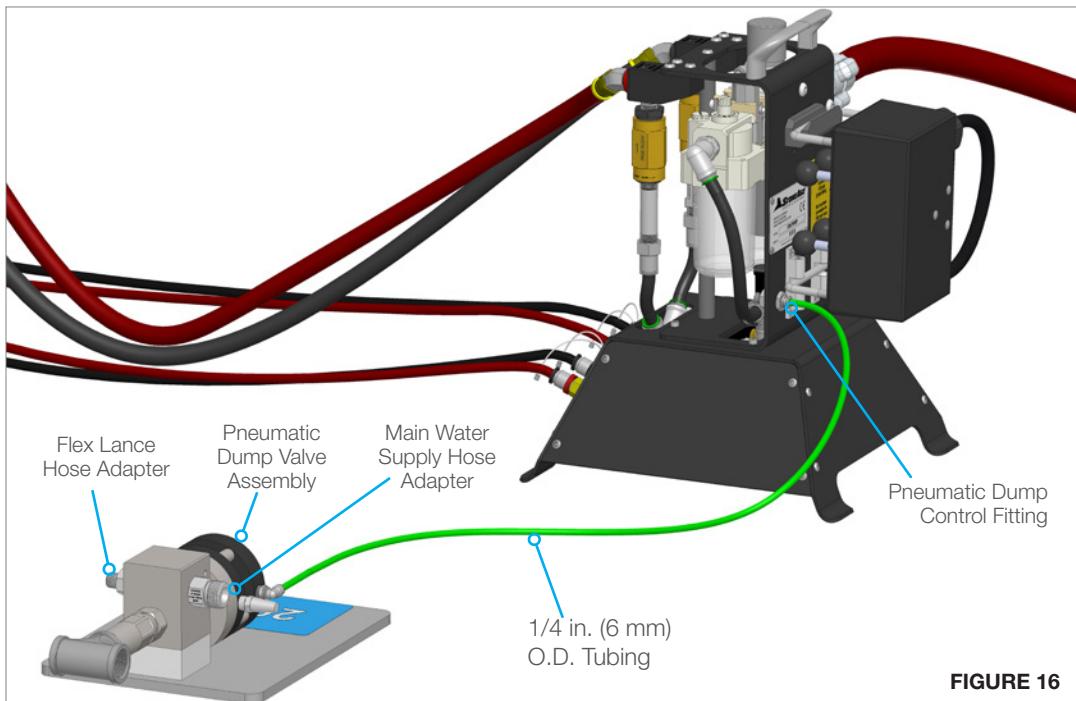
22. Screw the color coded 1/2" Pneumatic Hoses to the Color Coded JIC Fittings on the ABX-PRO Tractor. **(Figure 15)**
23. Operate the "Feed" lever on the control box to blow out the Pneumatic lines before connecting the opposite ends to the ABX-PRO.
24. Screw the opposite ends of the color coded 1/2" Pneumatic Hoses to the Color Coded JIC Fittings on the Control Box. **(Figure 15)**



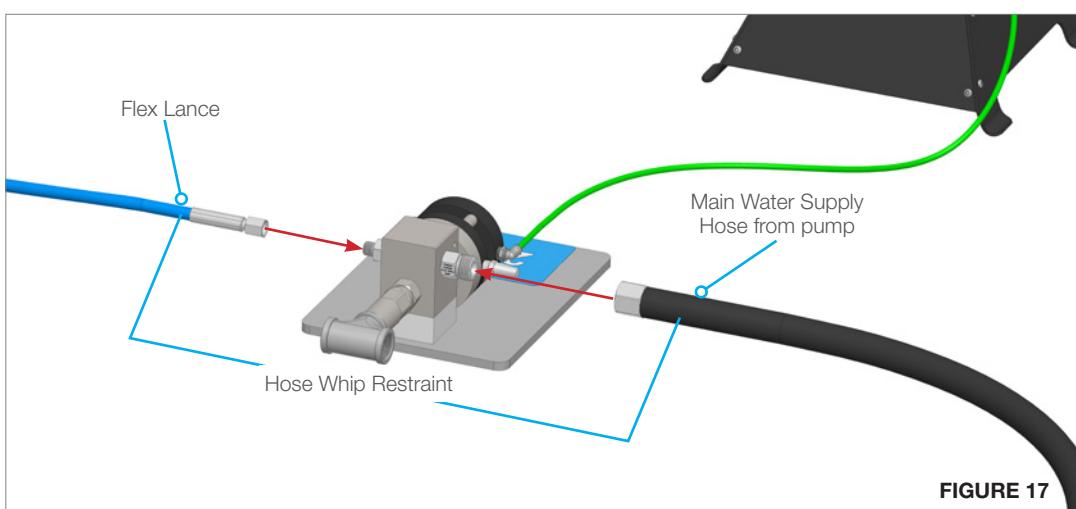
PROPOSITIONER SET-UP

PNEUMATIC DUMP CONTROL CONNECTIONS

25. Install the 1/4 in. (6 mm) O.D. Tubing between the Pneumatic Dump Control Fitting located on the back of the Control Box and the fitting on the Pneumatic Dump Valve Assembly. (**Figure 16**)
26. Install Main Water Supply and Flex Lance Hose Adapters. Be sure to use the appropriate anti-seize, thread lubricant, and/or pipe tape as recommended in the StoneAge Tool Fittings and Accessories Catalog at the link below. (**Figure 16**)
<https://www.stoneagetools.com/product-catalogs>



27. Fasten the Main Water Supply and Flex Lance Hoses. Be sure to use the appropriate anti-seize, thread lubricant, and/or pipe tape as recommended in the StoneAge Tool Fittings and Accessories Catalog. (**Figure 17**)



⚠ WARNING

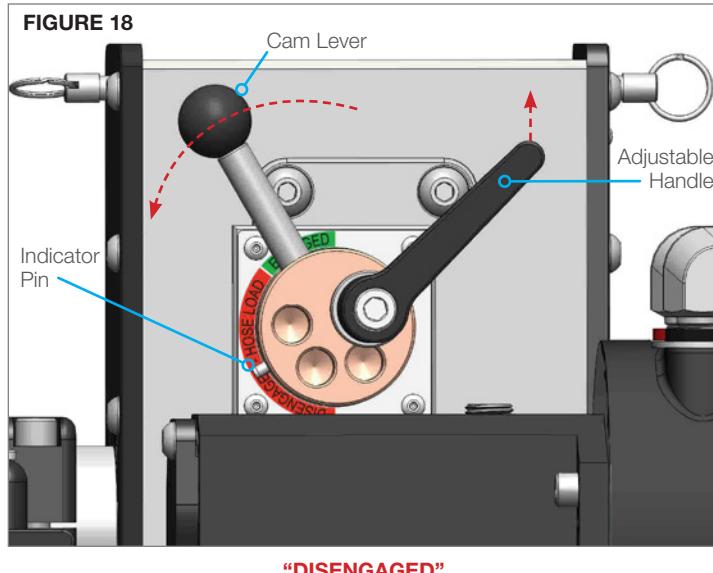
Always use Hose Whip Restraints. Failure to do so can result in severe injury and/or death. It is the responsibility of the user to properly install the Hose Whip Restraints. Never exceed safe working load. Follow manufacturer's recommendations and ratings.

LOADING THE HIGH-PRESSURE HOSE INTO THE ABX-PRO TRACTOR AND GUIDE TUBE/COLLET BLOCK

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 in the ABX-PRO Tractor. (**Figure 18**)



- Pulling out the Spring Plungers will release the Cover Plate on the Tractor and allow access to the rollers. (**Figure 19**)
- Pull out the Quick Release Pin on the Collet Block and remove the Collet. Feed the male hose end into the Guide Tube, through the Rollers and out the end of the Guide Tube/Collet Block Assembly. (**Figure 19**) Refer to the “Part Diagram” section of this manual for Collet sizes for high pressure hose diameter. Roller options can be found in the *ABX-PRO-100 User Manual* that is included with the ABX-PRO Tractor.

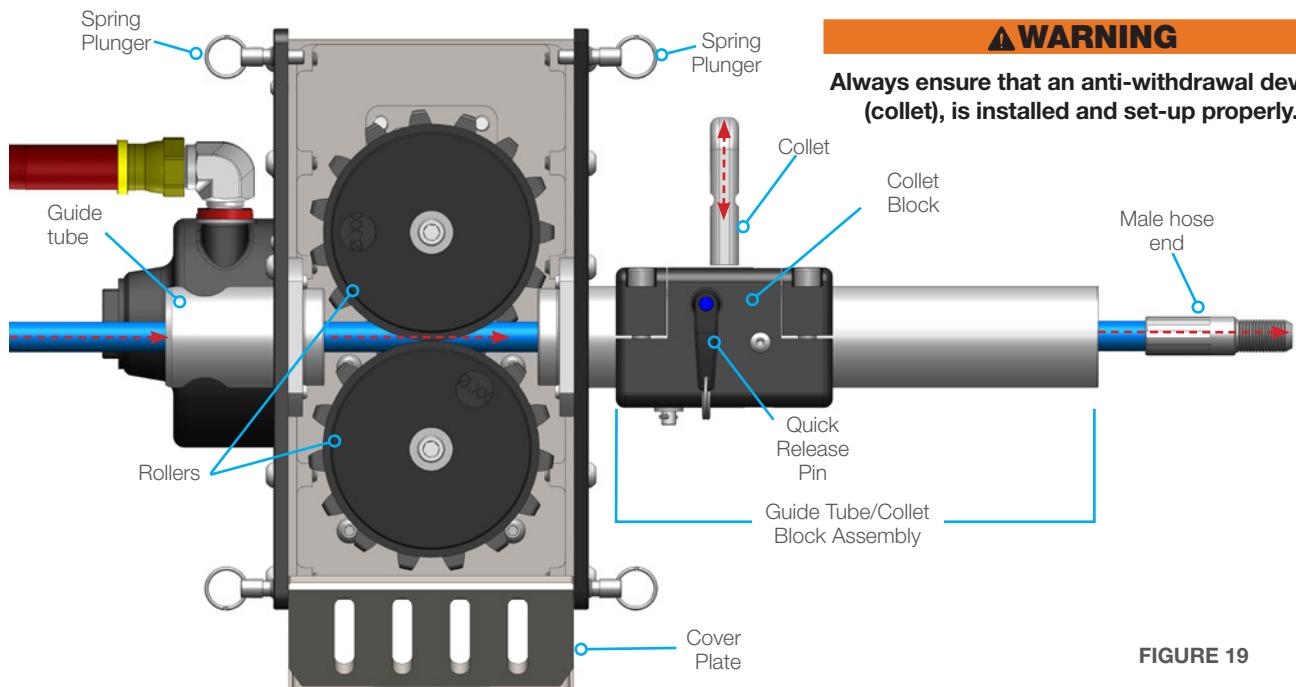
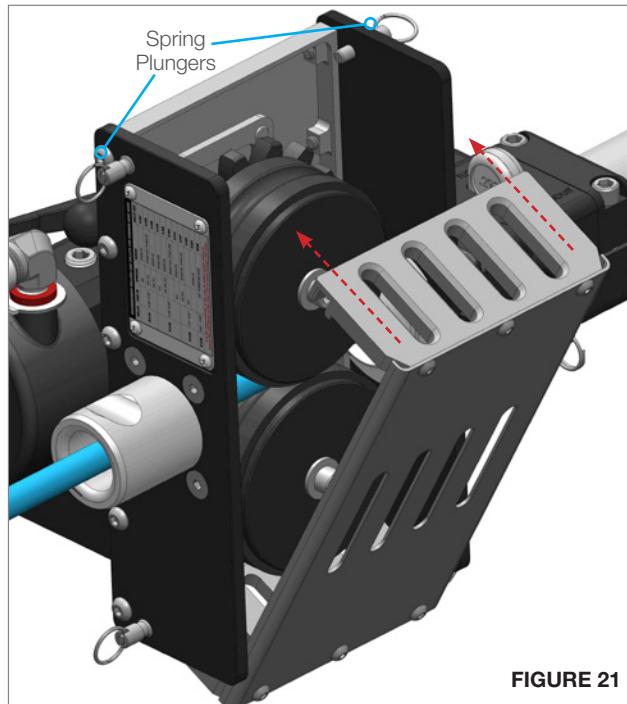
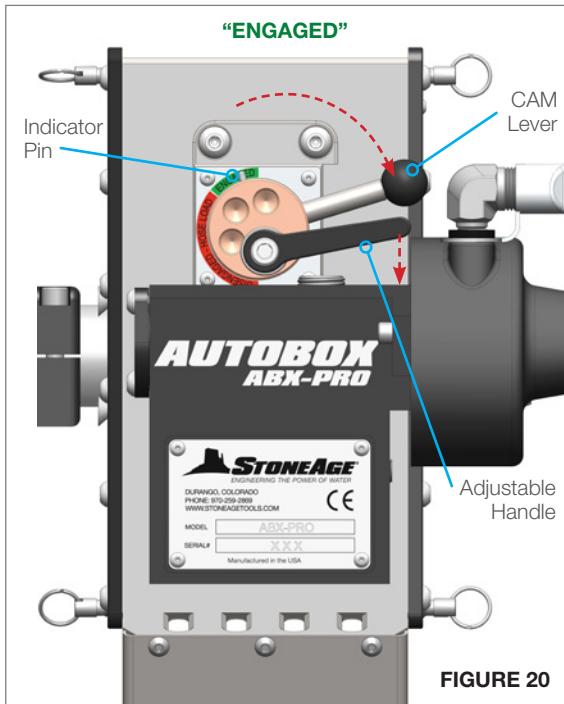


FIGURE 19

HOSE AND COLLET INSTALLATION

31. 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 20**)
32. Push the back cover back into the closed position and secure the two Spring Plungers on the top of the ABX-PRO Tractor. (**Figure 21**)



33. Attach the desired tool onto the Male Hose End on the Flex Lance. (Stoneage® BN15 Banshee® shown for reference). (**Figure 22**)
SEE THE APPLICABLE TOOL MANUAL FOR SPECIFIC INSTALLATION INSTRUCTIONS.

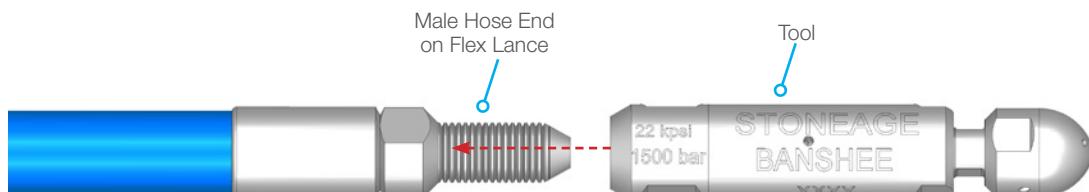


FIGURE 22

⚠️ WARNING

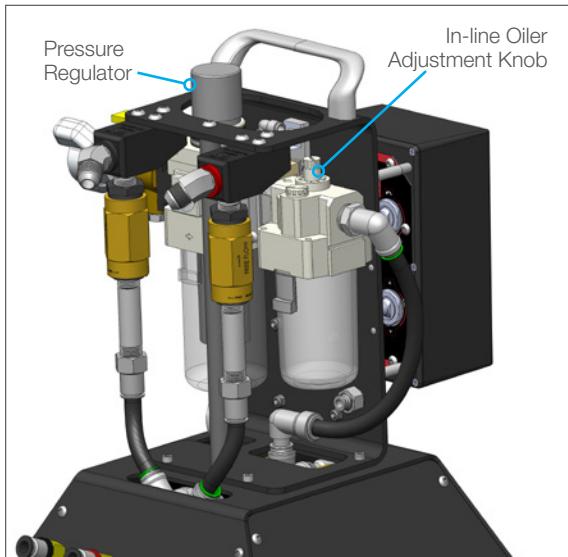
Prior to use, always test the backout preventer (Collet) to ensure the tool does not pass backward toward the Collet Block Assembly. Failure to do so can result in severe injury and/or death. It is the responsibility of the user to select proper collet sizing to assure the end of the hose will not pass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

CONTROL BOX SETTINGS

1. Using the Pressure Regulator on the FRL, adjust the operating pressure to 100 psi (6,8 bar) for the application.
2. Adjust in-line oiler to feed 1 drop of oil every 30-60 seconds for high speed or continuous duty usage.

WARNING

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



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 four levers on the Remote Box: **DUMP, FEED, LINEAR, and ROTARY**. The levers are spring loaded to return to the center, **OFF** position.

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

When the **FEED** lever is pushed forward, it drives the flex lance and tool forward into the pipe. When the **FEED** lever is pulled backward, it retracts the flex lance and tool from the pipe.

Forward and Reverse **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.

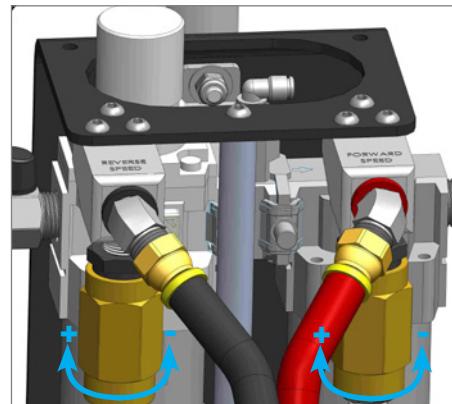
The **ROTARY** lever allows the ProPositioner Assembly to pivot up and down from the mounting bracket.

The **LINEAR** lever moves the Linear Drive side to side along the Slotted Rail.

CONTROL 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	Always use the supplied plugs and caps to seal the air motor ports when not in use. Make sure the plugs are clean and/or wipe them off before inserting them into the air motor fittings.
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.
Guide Tube/Collet Block	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.
Rotary Drive	Every 8 hours of use	Lubricate the two Zerks on the Rotary Drive with 1 to 2 pumps of any multipurpose NLGI 2 grease.

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.

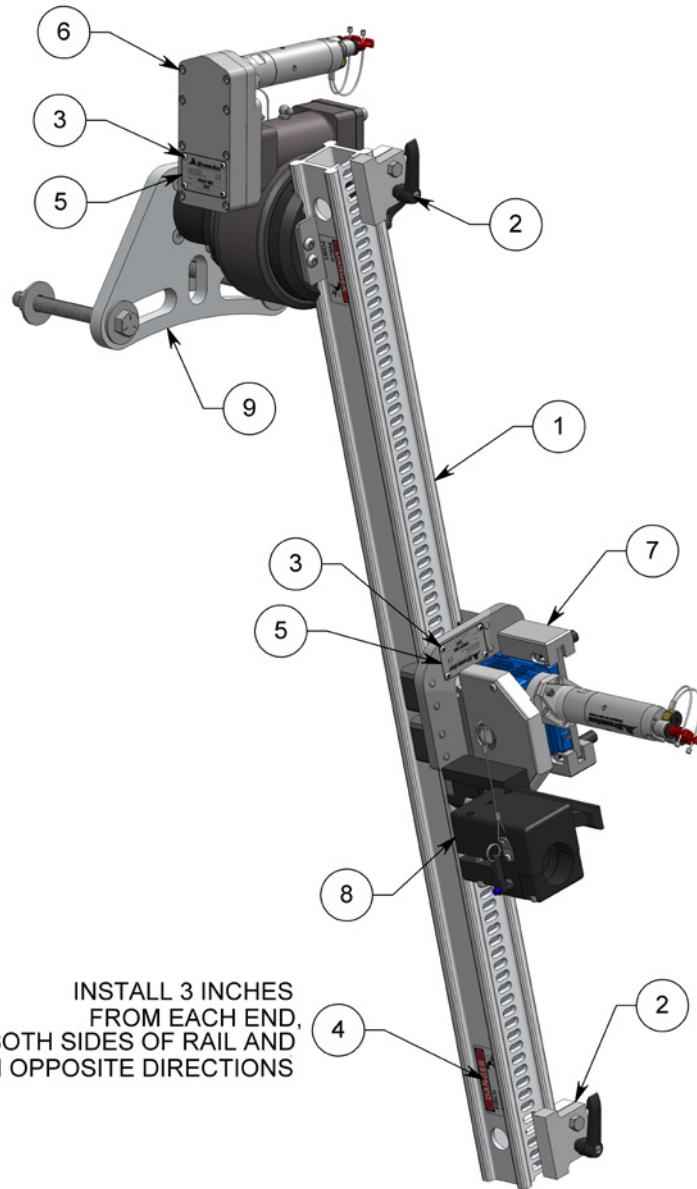
Contact StoneAge for Safety Data Sheets for material usage, a complete list of spare part numbers, and service instructions for the ProPositioner (PROP-300), and CONTROL BOX (CB-PROP,-S,-P).

STORAGE, TRANSPORTATION, AND HANDLING

Use mild soapy water to clean the equipment in order to remove corrosive materials. Before storing the unit, use compressed air to blow off debris and moisture. Apply a small amount of air tool oil directly into the Linear and Rotary 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. Always use the supplied plugs and caps to seal the air motor ports when not in use. Make sure the plugs are clean and/or wipe them off before inserting them into the air motor fittings.

The ProPositioner (PROP-300), can be broken down into smaller components that should be stored in a clean and dry area.

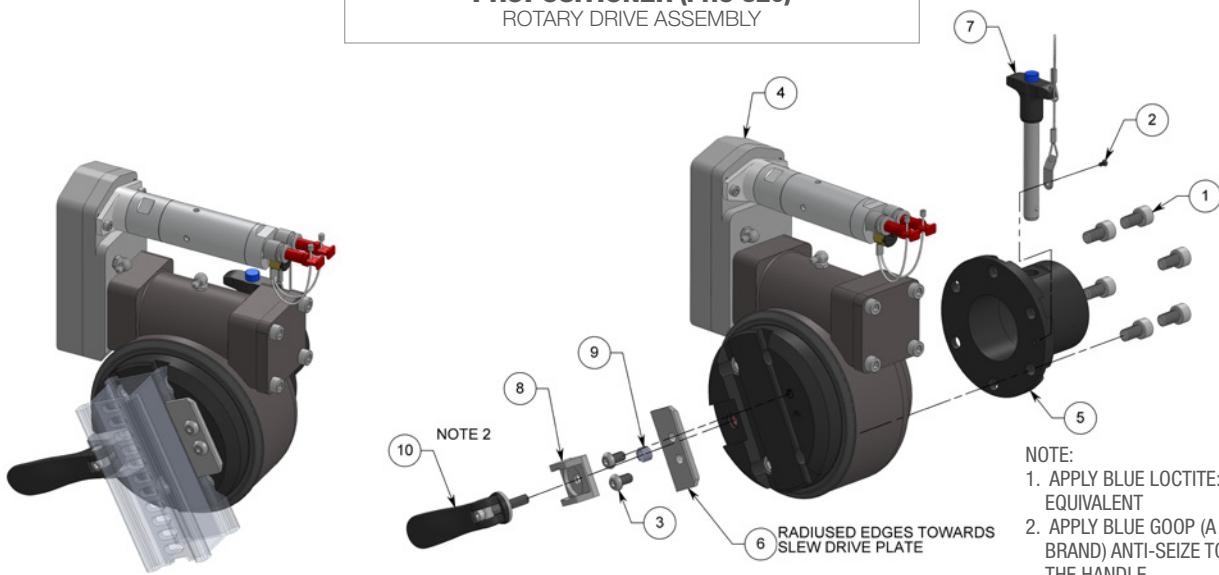
**PROPOSITIONER ASSEMBLY
(PROP-300)**



#	PART NUMBER	QTY.
1	BU 002-3.75-001 2.5" BOX RAIL EXTRUSION, SLOTTED	1
2	BU 152 RAIL STOP ASSY	2
3	GSB 313-0075 BHCS 6-32 X .19 SS	8
4	PL 160 WARNING PINCH POINT 1.25X3.0 DECAL	4
5	PROP 305 CE SERIAL PLATE SET	1
6	PROP 320 ROTARY DRIVE ASSEMBLY	1
7	PROP 330 LINEAR DRIVE ASSEMBLY	1
8	PROP 340 GUIDE TUBE COLLET BLOCK ASSEMBLY	1
9	PROP 350 MOUNTING BRACKET ASSY	1

PARTS DIAGRAM

PROPOSITIONER (PRO 320) ROTARY DRIVE ASSEMBLY

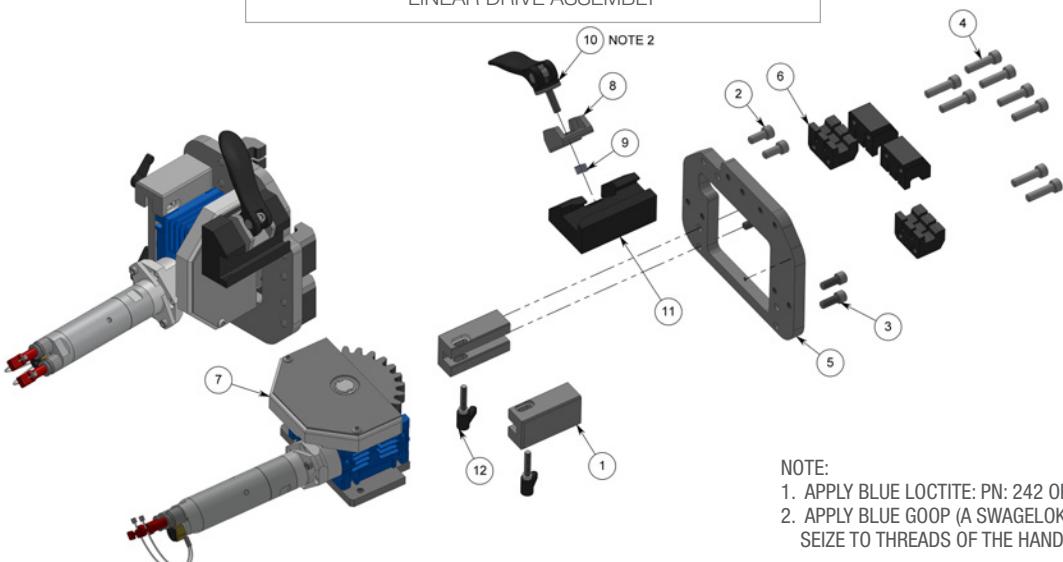


NOTE:
 1. APPLY BLUE LOCTITE: PN: 242 OR EQUIVALENT
 2. APPLY BLUE GOOP (A SWAGELOK BRAND) ANTI-SEIZE TO THREADS OF THE HANDLE.

#	PART NUMBER	QTY.
1	GS 3M10-18-1.5 SHCS M10X1.5 X 18 SS	6
2	GSB 3M3-6-0.5 BHCS M3X0.5 X 6 SS	1
3	GSB 3M8-16-1.25 BHCS M8X1.25 X 16 SS	2
4	PROP 310 GEARBOX ASSEMBLY	1
5	PROP 322 COUPLING, SLEW DRIVE	1

6	PROP 323 PLATE, COVER	1
7	PROP 325 PIN, QUICK RELEASE	1
8	PROP 334 TAB, CLAMP	1
9	PROP 335 SPRING, COMPRESSION	1
10	PROP 336 HANDLE ASSY	1

PROPOSITIONER (PROP 330) LINEAR DRIVE ASSEMBLY



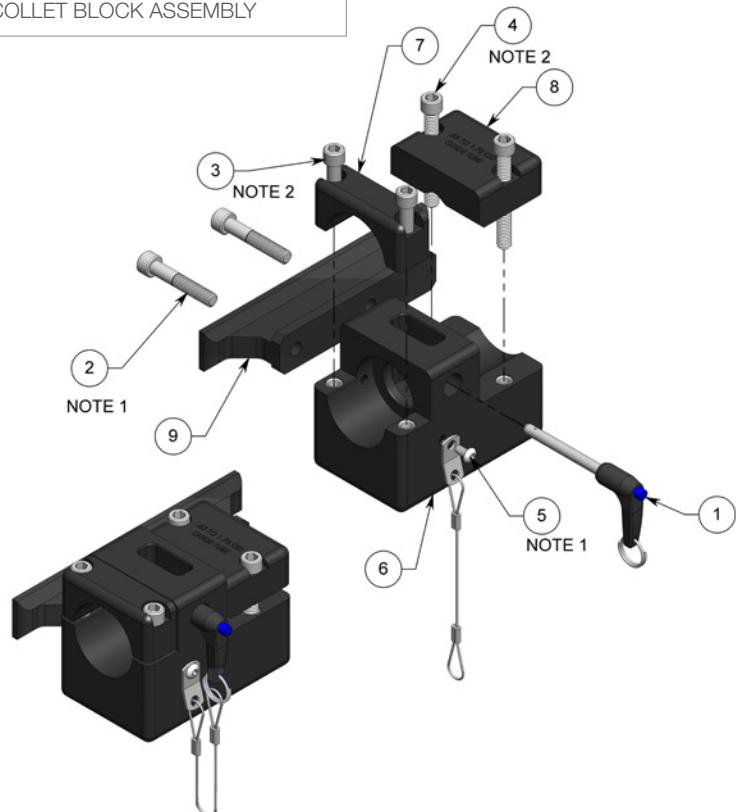
NOTE:
 1. APPLY BLUE LOCTITE: PN: 242 OR EQUIVALENT
 2. APPLY BLUE GOOP (A SWAGELOK BRAND) ANTI-SEIZE TO THREADS OF THE HANDLE.

#	PART NUMBER	QTY.
1	DBP 116 HANDLE BLOCK MOUNT HZ	2
2	GS 3M8-18-1.25 SHCS M8x1.25 x 18 SS	2
3	GS 331-03 SHCS .31-18 x .75 SS	4
4	GS 3M8-30-1.25 SHCS M8x1.25 x 30 SS	8
5	PROP 331 PLATE, CARRIAGE	1
6	PROP 332 RAIL SLIDE, PLASTIC	4

7	PROP 333 MOTOVARIO ASSY	1
8	PROP 334 TAB, CLAMP	1
9	PROP 335 SPRING, COMPRESSION	1
10	PROP 336 HANDLE ASSY	1
11	PROP 338 BLOCK, CLAMP	1
12	SRT 557 ADJUSTABLE HANDLE .25-20 X 1.19	2

PROP 340
GUIDE TUBE COLLET BLOCK ASSEMBLY

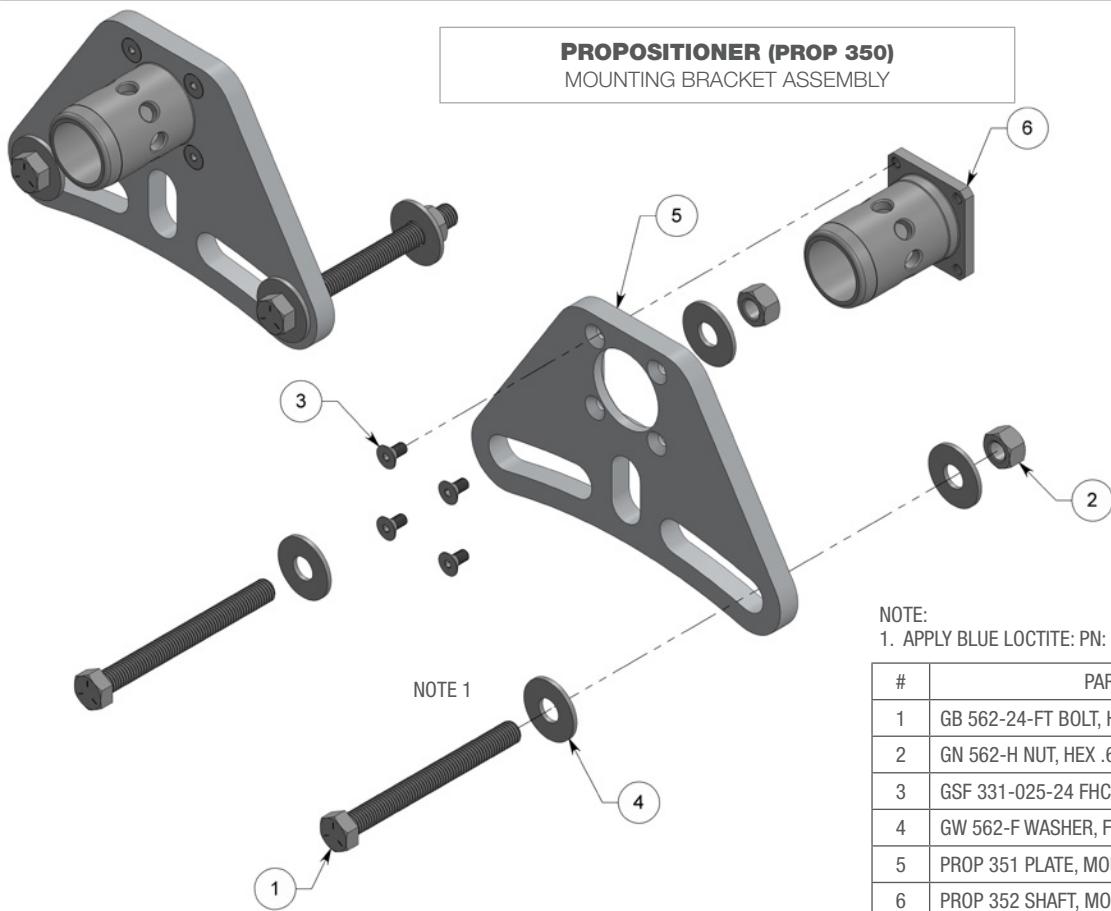
#	PART NUMBER	QTY.
1	BOP 033 QUICK PIN WITH LANYARD	1
2	GS 3M8-45-1.25 SHCS	2
3	GS 331-06 SHCS .31-18 x 1.50 SS	2
4	GS 331-10 SHCS .31-18 x 2.50 SS FULL THD	2
5	GSB 319-015 BHCS 10-24 x .38 SS	1
6	PROP 341 GUIDE TUBE COLLET BLOCK BODY	1
7	PROP 342 COLLET BLOCK CAP	1
8	PROP 343 GUIDE TUBE COLLET BLOCK CAP	1
9	PROP 345 BLOCK, SLIDE	1



NOTE:

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

PROPOSITIONER (PROP 350)
MOUNTING BRACKET ASSEMBLY

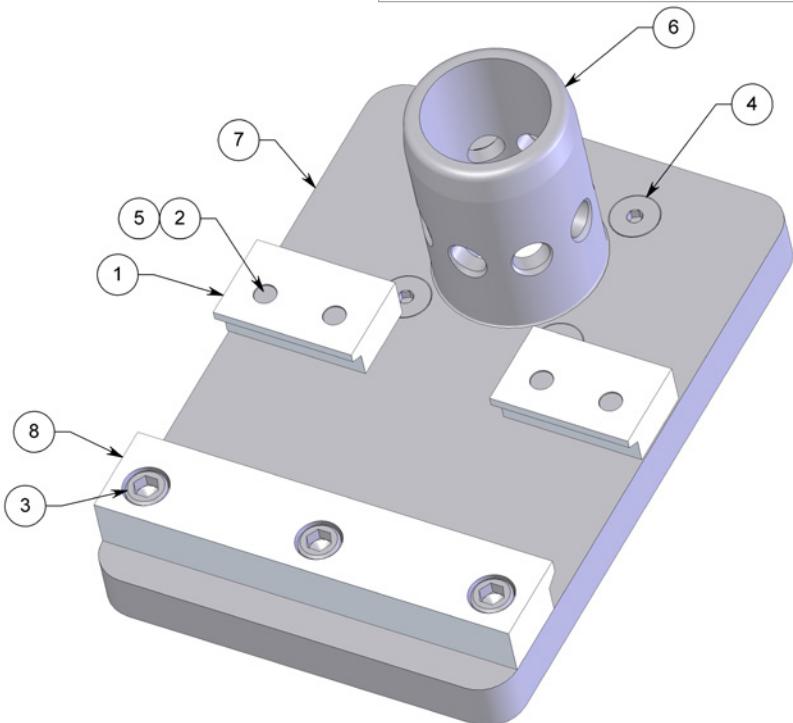


NOTE:
1. APPLY BLUE LOCTITE: PN: 242 OR EQUIVALENT

#	PART NUMBER	QTY
1	GB 562-24-FT BOLT, HEX .62-11 X 6.00 FULL THD	2
2	GN 562-H NUT, HEX .62-11	2
3	GSF 331-025-24 FHCS .31-24 X .62 SS	4
4	GW 562-F WASHER, FLAT .62	4
5	PROP 351 PLATE, MOUNTING	1
6	PROP 352 SHAFT, MOUNTING	1

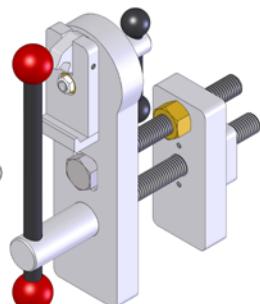
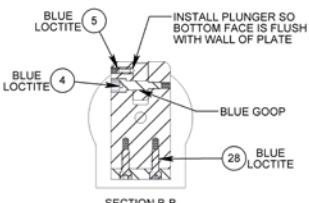
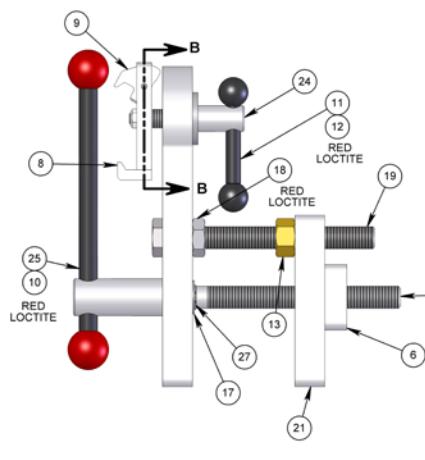
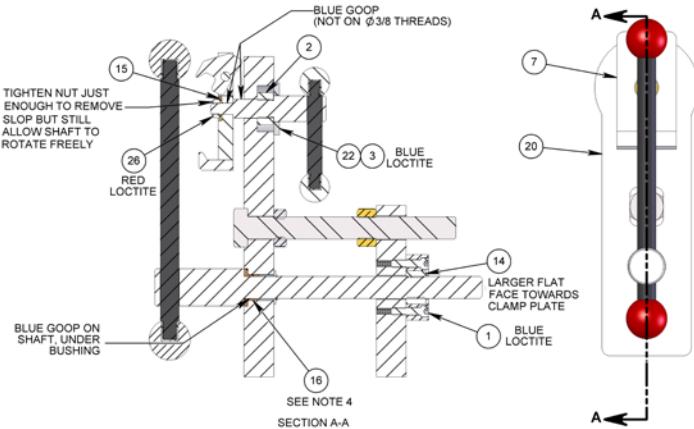
PARTS DIAGRAM

PROPOSITIONER (PROP 470)
RAIL MOUNT ASSEMBLY



#	PART NUMBER	QTY
1	BR 060 RAIL CLAMP	2
2	GB 337-06 BOLT, HEX .37-16 X 1.50 SS	4
3	GS 337-04 SHCS .37-16 X 1.00 SS	3
4	GSF 331-025-24 FHCS .31-24 X .62 SS	4
5	GW 337-L WASHER, LOCK .37 SS	4
6	PROP 352 SHAFT, MOUNTING	1
7	PROP 471 PLATE, RAIL MOUNT	1
8	PROP 472 RAIL CLAMP, LOWER	1

PROPOSITIONER (PROP 518)
QUICK CLAMP ASSEMBLY

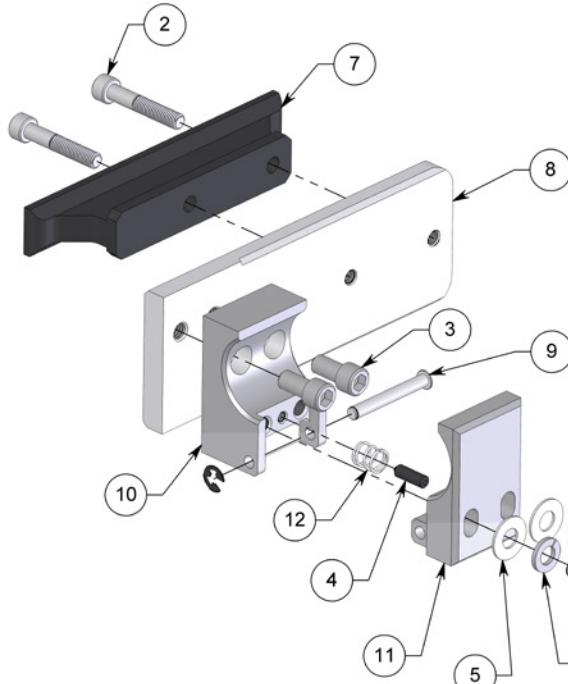


#	PART NUMBER	QTY.
1	BC 053 SHCS .25-20 X 1.00 SS	2
2	GN 562-H-LH-18 HEX NUT .62-18 LEFT HAND	1
3	GSF 319-02 FHCS 10-24 X .50 SS	2
4	GSSH 0312-0750-SS SHOULDER SCREW .312 X .750 .25-20 SS	1
5	LWP 517 BALL NOSE SPRING PLUNGER	1
6	LWP 523 NUT CAP	1
7	LWP 524 RAIL CLAMP PLATE	1
8	LWP 525 STATIC RAIL CLAMP	1

9	LWP 526 QUICK RAIL CLAMP FINGER	1
10	LWP 530 FLANGE CLAMP KNOB	2
11	LWP 531 RAIL CLAMP LEVER	1
12	LWP 532 RAIL CLAMP KNOB	2
13	LWP 533 NUT, BRASS, 3/4-10	1
14	LWP 534 NUT, SQUARE, 3/4-10	1
15	LWP 535 THRUST WASHER	1
16	LWP 545 FLANGED BUSHING	1
17	LWP 547 SHIM	1
18	LWP 548 NUT, HEX JAM .75-10	1

19	LWP 555 BOLT, 3/4-10 X 7.00L, THREADED	1
20	PROP 521 QUICK CLAMP BASE PLATE	1
21	PROP 522 FLANGE CLAMP PLATE	1
22	PROP 523 NUT CAPTIVE PLATE	1
23	PROP 527 FLANGE CLAMP SCREW	1
24	PROP 528 RAIL CLAMP SHAFT	1
25	PROP 529 FLANGE CLAMP LEVER	1
26	SRT 333 NYLOCK HEX JAM NUT SS THIN	1
27	SRT 537 RETAINING RING, SS EXTERNAL	1
28	TB 050 SHCS .25-20 X .75 SS	2

PROPOSITIONER (PROP 480)
SHOTGUN MOUNT ASSEMBLY



LWP 560-56
HARDLINE COLLET
(SOLD SEPARATELY)

#	PART NUMBER	QTY.
1	GB 337-08 BOLT, HEX .37-16 X 2.00 SS	2
2	GS 3M8-45-1.25 GS 3M8-45-1.25 SHCS	2
3	GS 337-03 SHCS .37-16 X .75 SS	2
4	GSS 525-20-75CU SET SCREW, CUP PT .25-20 X .75	1
5	GW 337-F WASHER, FLAT .37 SS	2
6	GW 337-L WASHER, LOCK .37 SS	2
7	PROP 345 BLOCK, SLIDE	1
8	PROP 481 CLAMP SPACER	1
9	SRT 579 CLEVIS PIN, SS WITH E-RING	1
10	SRT 582 VERTICAL BOTTOM PIPE CLAMP	1
11	SRT 583 VERTICAL TOP PIPE CLAMP	1
12	SRT 586 SMALL CLAMP SPRING	1

HS 121-XX-XX
HOSE STOP CLAMPS



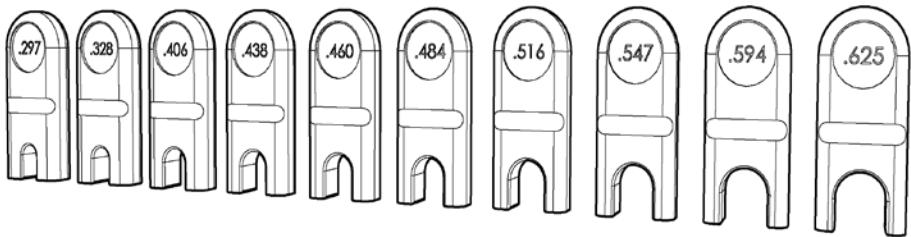
HOSE STOP TO HOSE REFERENCE TABLE

HOSE STOP PART NUMBER	HOSE STOP CLAMP ASSEMBLY SIZE		SPIRSTAR	PARKER	REQUIRED QTY
	in.	mm			
HS 121-27-34	0.27-0.34	6.8-8.6	3/2, 3/4	2240D-02, 2440D-02	1 PER LANCE
			4/2	2240D-025	
HS 121-34-42	0.34-0.42	8.6-10.7	4/4	2448D-025	
			5/2	2240D-03	
HS 121-42-50	0.42-0.50	10.7-12.7	4/4	2448D-025	
			4/6, 5/4, 6/2	2240D-04	
HS 121-50-56	0.50-0.56	12.7-14.2	5/6	2240D-05	
			6/4	2440D-04	
			8/2	2740D-03	
HS 121-56-61	0.56-0.61	14.2-15.5	8/4		

PARTS DIAGRAM

FIN FAN (FF 622)

*OPTIONAL COLLET SET
INCLUDES ONE OF EACH SIZE (**FF 121-XX**)



COLLET TO HOSE REFERENCE TABLE

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

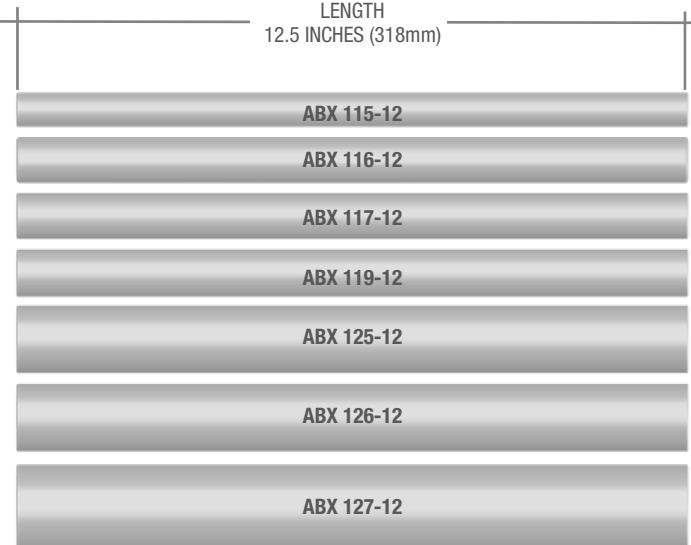
PROP 490-X

AUTOBOX GUIDE TUBE KITS

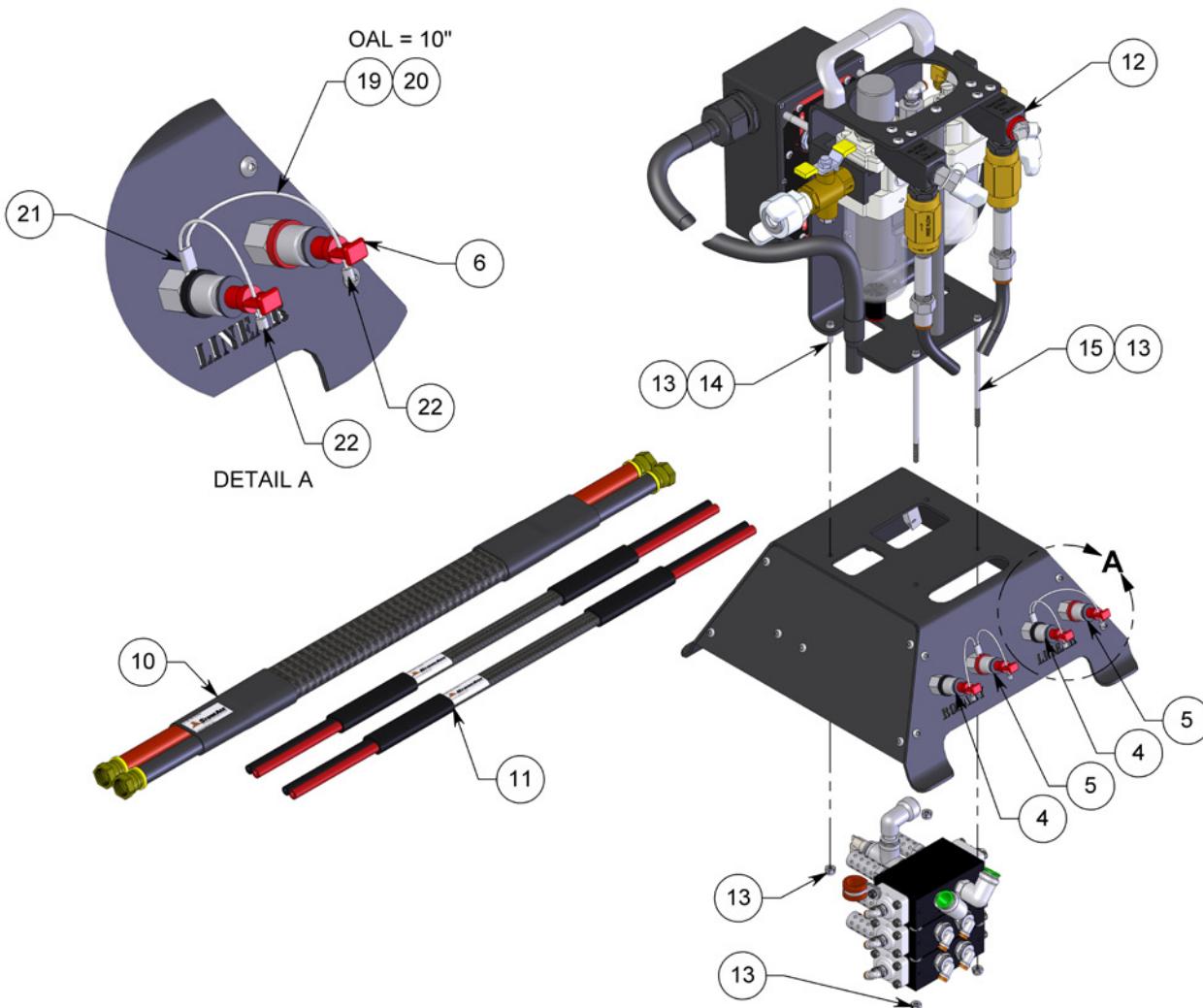
GUIDE TUBE TO BANSHEE SIZE REFERENCE TABLE

PROPOSITIONER KIT NUMBER	BANSHEE PART NUMBER	GUIDE TUBE PART NUMBER	INSIDE DIAMETER	
			in.	mm
PROP-490-S	BN9.5	ABX 115-12	.459	12
	BN13	ABX 116-12	.546	14
	BN15	ABX 117-12	.674	17
	BN18	ABX 119-12	.745	19
PROP-490-L	BN24	ABX 125-12	1.01	26
	BN24 / BN27	ABX 126-12	1.12	28
	BN33	ABX 127-12	1.38	35

LENGTH
12.5 INCHES (318mm)



PROPOSITIONER (CB-PROP-S)
CONTROL BOX SIDE LATCH ASSEMBLY

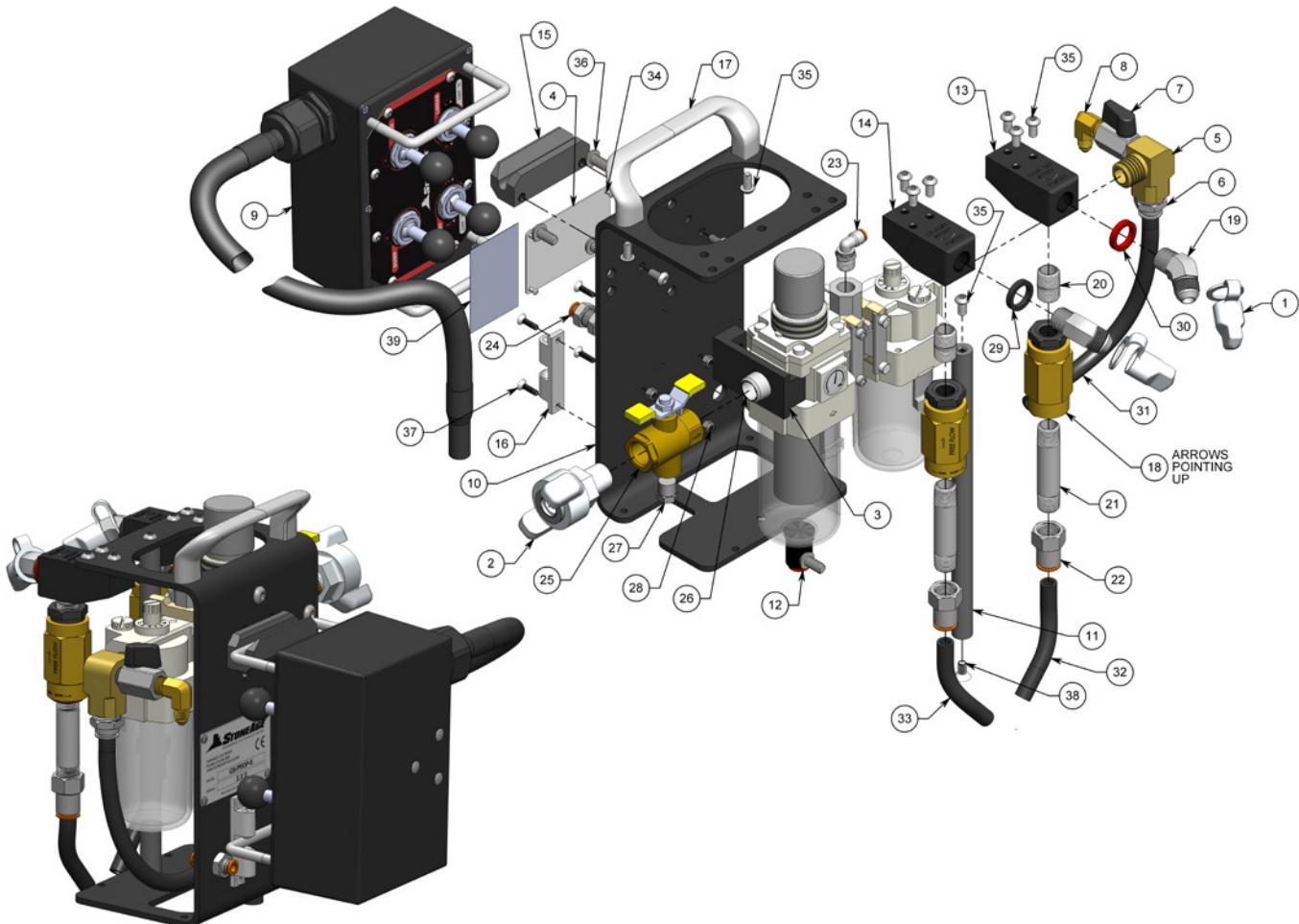


#	PART NUMBER	QTY.
1	CB 471 BASE	1
2	CB 472 BASE SIDE PLATE	2
3	CB 473 BASE BRACE	4
4	CB 480-BK FTG ASSY, PL6 BLACK	2
5	CB 480-RD FTG ASSY, PL6 RED	2
6	CB 481 FTG, STEM PLUG PL6 MODIFIED	4
7	CB 486 REGULATOR ASSY, SUPPLY	1
8	CB 496 SPOOL VALVE ASSY, CB-PROP (PROP)	2
9	CB 497 SPOOL VALVE ASSY, CB-PROP (PRO)	1
10	CB 745-15 PRODRIVE SUPPLY HOSE BUNDLE	1
11	CB 749-15 PRO POSITIONER UMBILICAL ASSEMBLY	2

12	CB-PROP.1-S CONTROL BOX UPPER ASSY, SIDE LATCH	1
13	HC 025.1 NUT, NYLOK 10-24 SS	8
14	GS 319-03 SHCS 10-24 X .75 SS	2
15	GS 319-20 SHCS 10-24 X 5.00 SS	2
16	GSB 319-02 BHCS 10-24 X .50 SS	4
17	GSB 319-02-32 BHCS 10-32 X .50 SS	16
18	GW 325-L WASHER, LOCK .25 SS	4
19	SRT 209.1.1 WIRE ROPE FOR CB-PROP LEFT (CUT TO LENGTH)	1
20	SRT 209.1.1 WIRE ROPE FOR CB-PROP RIGHT (CUT TO LENGTH)	1
21	SRT 209.1.3 ALUMINUM SLEEVE	2
22	SRT 209.1.4 ALUMINUM STOP SLEEVE	4

PARTS DIAGRAM

PROPOSITIONER (CB-PROP.1-S)
CONTROL BOX SIDE LATCH SUB-ASSEMBLY

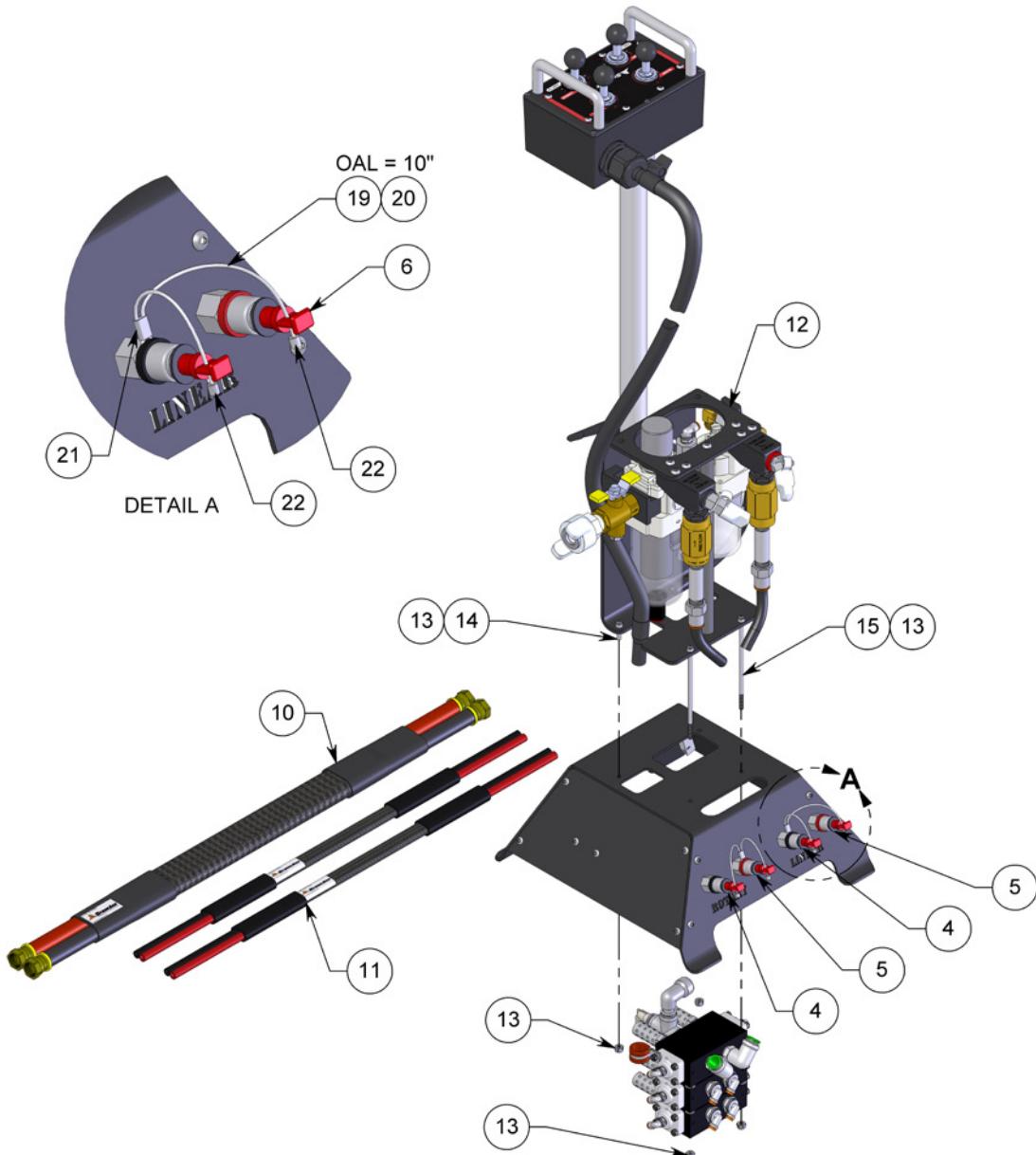


#	PART NUMBER	QTY.
1	BR 167 DUST CAP, J8	2
2	CB 114 INLET FITTING W/ PIN	1
3	CB 395 FRL BRACKET	1
4	CB 469-S CE SERIAL PLATE, SIDE LATCH	1
5	CB 475 FTG, ELBOW 90 P8M P8F P4F	1
6	CB 477 FTG, ADAPTER P8M PL8	1
7	CB 478 FTG, BALL VALVE P4M P4F	1
8	CB 479 FTG, ELBOW 90 P4M J4M BRASS	1
9	CB 490-S CB-PROP REMOTE BOX ASSY, SIDE LATCH	1
10	CB 760 FRL FRAME, ABX-PRO	1
11	CB 762 FRL SUPPORT ROD, ABX-PRO	1
12	CB 763 FRL ASSY, ABX PRO	1
13	CB 765-FWD 90 DEG FLOW CONTROL BLOCK, FORWARD	1

14	CB 765-REV 90 DEG FLOW CONTROL BLOCK, REVERSE	1
15	CB 771 UPPER HANGER	1
16	CB 772 TENSION CATCH	2
17	CB 773 OFFSET HANDLE	1
18	CB 780-P6 IN-LINE FLOW CONTROL, P6	2
19	CB 781 FTG, ELBOW 45 P6M J8M	2
20	CB 782 PIPE NIPPLE P6P6 X 1.00 SS	2
21	CB 783 PIPE NIPPLE P6P6 X 3.00 SS	2
22	CB 784 FTG, ADAPTER P6F PL8	2
23	CB 786 FTG, ELBOW SWIVEL 90 P4M PL4	1
24	CB 790 FTG, BULKHEAD UNION PL4 PL4	1
25	CB 792 VALVE, AUTODRAIN, P8	1
26	CB 794 FTG, NIPPLE CLOSE P8M P8M SS	1
27	DB 026 BREATHER, SINTERED BRONZE, P4	1

28	GN 316-L NUT, NYLOK 8-32 SS	4
29	GP 011-BK ID WASHER, RUBBER, MED, BLACK	1
30	GP 011-R ID WASHER, RUBBER, MED, RED	1
31	GPTB 0500-PUR95A-BK MAIN TUBE, FRL, 9IN	1
32	GPTB 0500-PUR95A-BK MAIN TUBE, FC2, 4IN	1
33	GPTB 0500-PUR95A-BK MAIN TUBE, FC1, 4IN	1
34	GR 125-SS-188-250 RIVET, BLIND, DOMED, SS, Ø.125, .188-.250 L	4
35	GSB 325-02 BHCS .25-20 X .50 SS	11
36	GSB 331-025 BHCS .31-18 X .62 SS	4
37	GSF 316-025 FHCS 8-32 X .62 SS	4
38	GSF 325-02 FHCS .25-20 X .50 SS	1
39	PL 156-125 CAUTION INLET AIR, 125 MAX	1

PROPOSITIONER (CB-PROP-P)
CONTROL BOX PEDESTAL ASSEMBLY

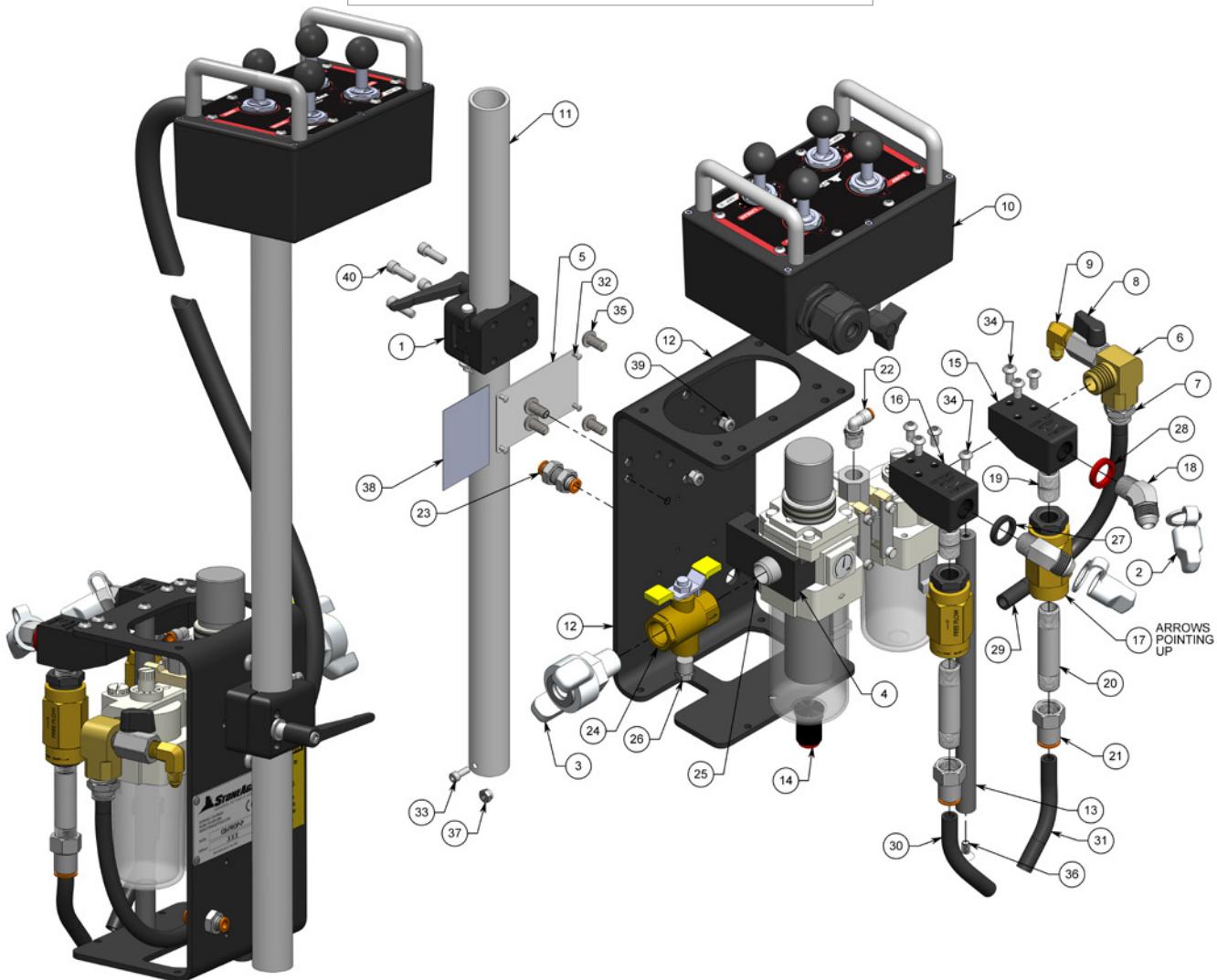


#	PART NUMBER	QTY.
1	CB 471 BASE	1
2	CB 472 BASE SIDE PLATE	2
3	CB 473 BASE BRACE	4
4	CB 480-XX FTG ASSY, PL6	2
5	CB 480-XX FTG ASSY, PL6	2
6	CB 481 FTG, STEM PLUG PL6 MODIFIED	4
7	CB 486 REGULATOR ASSY, SUPPLY	1
8	CB 496 SPOOL VALVE ASSY, CB-PROP (PROP)	2
9	CB 497 SPOOL VALVE ASSY, CB-PROP (PRO)	1
10	CB 745-15 PRODRIVE SUPPLY HOSE BUNDLE	1
11	CB 749-15 PRO POSITIONER UMBILICAL ASSEMBLY	2

12	GN 319-L NYLOK NUT SS (HC 025.1)	8
13	GS 319-03 SHCS .19-24 X .75 SS	2
14	GS 319-20 SHCS .19-24 X 5.00 SS	2
15	GSB 319-02 BHCS 10-24 X .50 SS (TR130 235)	4
16	SRT 209.1.3 ALUMINUM SLEEVE	2
17	GSB 319-02-32 BHCS 10-32 X .50 SS	16
18	GW 325-L LOCK WASHER SS	4
19	SRT 209.1.1 WIRE ROPE FOR CB-PROP LEFT (CUT TO LENGTH)	1
20	SRT 209.1.1 WIRE ROPE FOR CB-PROP RIGHT (CUT TO LENGTH)	1
21	SRT 209.1.3 ALUMINUM SLEEVE	2
22	SRT 209.1.4 ALUMINUM STOP SLEEVE	4

PARTS DIAGRAM

PROPOSITIONER (CB-PROP.1-P)
CONTROL BOX PEDESTAL SUB- ASSEMBLY

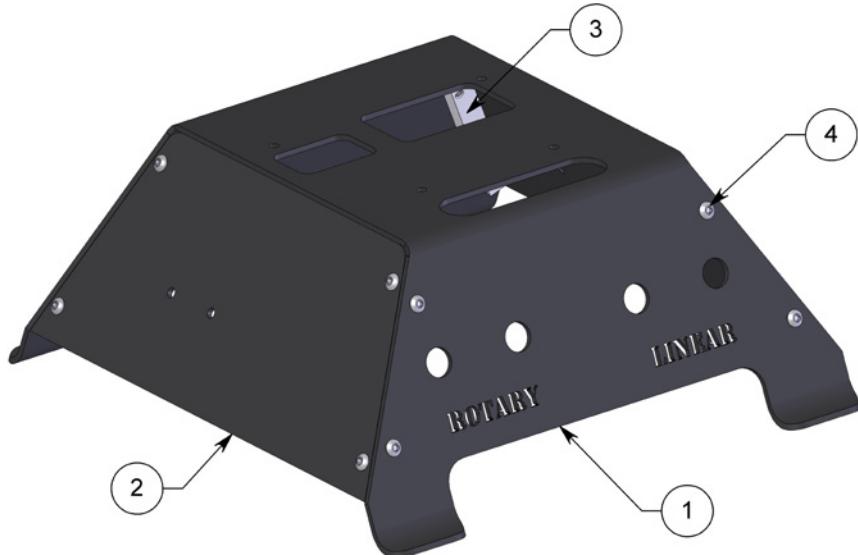


#	PART NUMBER	QTY.
1	BOP 070 HINGE CLAMP ASSEMBLY	1
2	BR 167 DUST CAP J8	2
3	CB 114 INLET FITTING	1
4	CB 395 FRL BRACKET	1
5	CB 469-P CE SERIAL PLATE, PEDESTAL	1
6	CB 475 FTG, ELBOW 90 P8M P8F P4F	1
7	CB 477 FTG, ADAPTER P8M PL8	1
8	CB 478 FTG, BALL VALVE P4M P4F	1
9	CB 479 FTG, ELBOW 90 P4M J4M BRASS	1
10	CB 490-P CB-PROP REMOTE BOX ASSEMBLY, PEDESTAL	1
11	CB 727 REMOTE BOX POLE, 1.250D	1
12	CB 760 FRL FRAME, ABX-PRO	1
13	CB 762 FRL SUPPORT ROD, ABX-PRO	1
14	CB 763 FRL ASSY, ABX-PRO	1

15	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1
16	CB 765-XXX 90 DEG FLOW CONTROL BLOCK	1
17	CB 780-P6 IN-LINE FLOW CONTROL, P6	2
18	CB 781 FTG, ELBOW 45 P6M J8M	2
19	CB 782 FTG, NIPPLE CLOSE P6M P6M SS	2
20	CB 783 FTG, NIPPLE P6M P6M X 3.00 SS	2
21	CB 784 FTG, ADAPTER P6F PL8	2
22	CB 786 FTG, ELBOW SWIVEL 90 P4M PL4	1
23	CB 790 FTG, BULKHEAD UNION PL4 PL4	1
24	CB 792 VALVE, AUTODRAIN, P8	1
25	CB 794 FTG, NIPPLE CLOSE P8M P8M SS	1
26	DB 026 MUFFLER, SINTERED BRONZE, P4	1

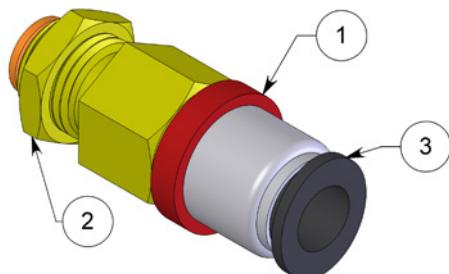
27	GP 011-BK BLACK ID BAND MED	1
28	GP 011-R RED ID BAND MED	1
29	GPTB 0500-PUR95A-BK	1
30	GPTB 0500-PUR95A-BK	1
31	GPTB 0500-PUR95A-BK	1
32	GR 125-SS-188-250 RIVET	4
33	GS 319-02 SHCS .19-24 X .50 SS	1
34	GSB 325-02 BHCS .25-20 X .50 SS	7
35	GSB 331-025 BHCS .31-18 X .62 SS	4
36	GSF 325-02 FHCS .25-20 X .50 SS	1
37	GN 319-L NYLOK NUT SS (HC 025.1)	1
38	PL 156-125 CAUTION INLET AIR, 125PSI MAX	1
39	GN 325-L NYLOK NUT SS (TB 044.1)	4
40	GS 325-03 SHCS .25-20 X .75 SS (TB 050)	4

POSITIONER CONTROL BOX (CB 470)
BASE ASSEMBLY



#	PART NUMBER	QTY.
1	CB 471 BASE	1
2	CB 472 BASE SIDE PLATE	2
3	CB 473 BASE BRACE	4
4	GSB 319-02-32 BHCS 10-32 X .50 SS	16

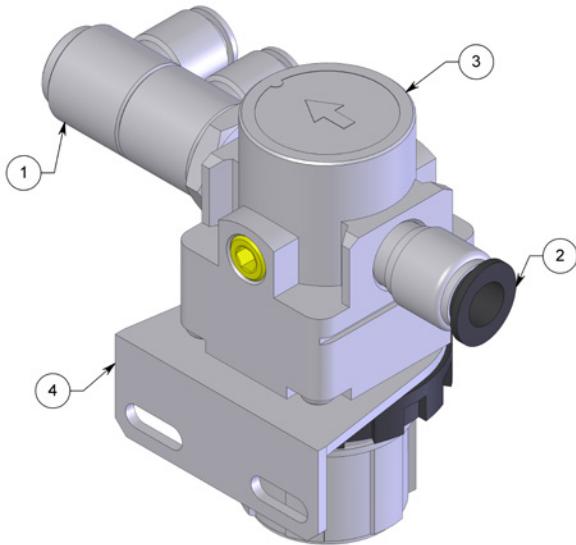
CB 480-XX
FTG ASSY, PL6 (BK OR RD)



#	PART NUMBER	-BK PL6/QTY.	-RD PL6/QTY.
1	GP 013-BK ID WASHER, RUBBER, SMALL, BLACK	1	-
1	GP 013-R ID WASHER, RUBBER, SMALL, RED	-	1
2	CB 482 FTG, BULKHEAD ADAPTER P4F PL4	1	1
3	CB 483 FTG, ADAPTER P4M PL6	1	1

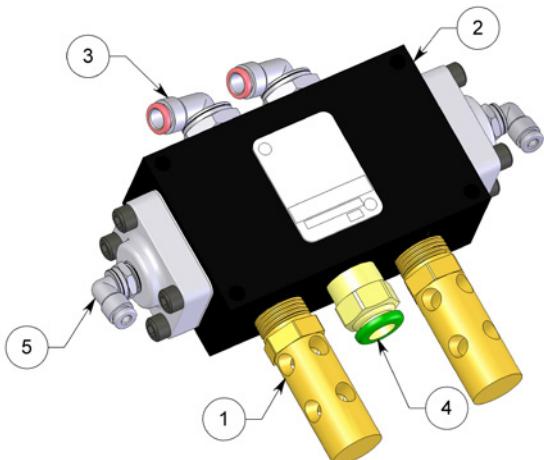
PARTS DIAGRAM

PROPOSITIONER (CB 486)
PILOT REGULATOR ASSEMBLY



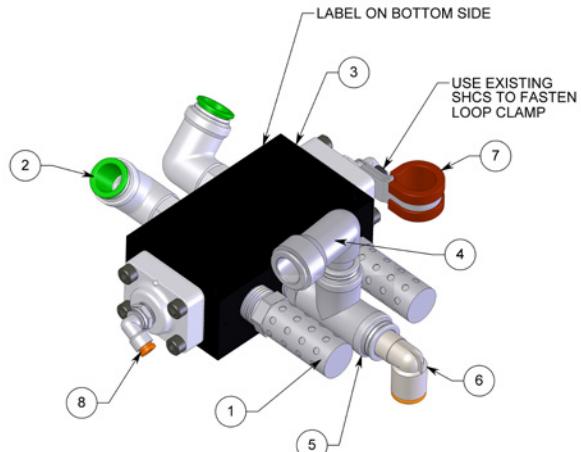
#	PART NUMBER	QTY
1	CB 339 FTG, MANIFOLD 90 P4M 2XPL6	1
2	CB 483 FTG., ADAPTER P4M PL6	1
3	CB 704 PRESSURE REGULATOR, 60 PSI	1
4	CB 704.1 BRACKET ASSY	1

PROPOSITIONER (CB 496)
SPOOL VALVE ASSEMBLY



#	PART NUMBER	QTY.
1	BR 154 MUFFLER P6	2
2	CB 329-OPEN PILOT SPOOL VALVE, OPEN CENTER	1
3	CB 375 FTG, ELBOW SWIVEL 90 P6M PL4	2
4	CB 559 FTG, ADAPTER P6M PL6	1
5	CB 785 FTG, ELBOW SWIVEL 90 P2M PL2	2

PROPOSITIONER (CB 497)
SPOOL VALVE ASSEMBLY

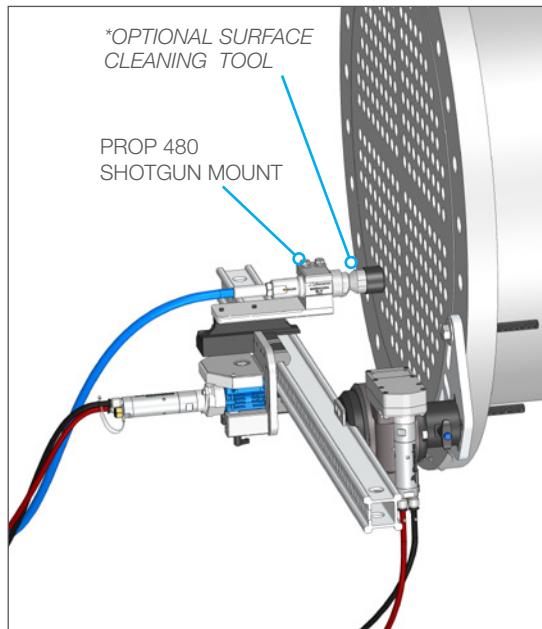


#	PART NUMBER	QTY.
1	BR 154 MUFFLER P6	2
2	BUD 141 FTG, ELBOW SWIVEL 90 P6M PL8	2
3	CB 329-OPEN RY3G PILOT SPOOL VALVE, OPEN CENTER	1
4	CB 494 FTG, STEM ELBOW 90 PL8M PL8F	1
5	CB 495 FTG, TEE MALE RUN P6M PL8F PL8F	1
6	CB 756 FTG, STEM ELBOW 90 PL8M PL6F	1
7	CB 766 LOOP CLAMP	1
8	CB 785 FTG, ELBOW SWIVEL 90 P2M PL2	2

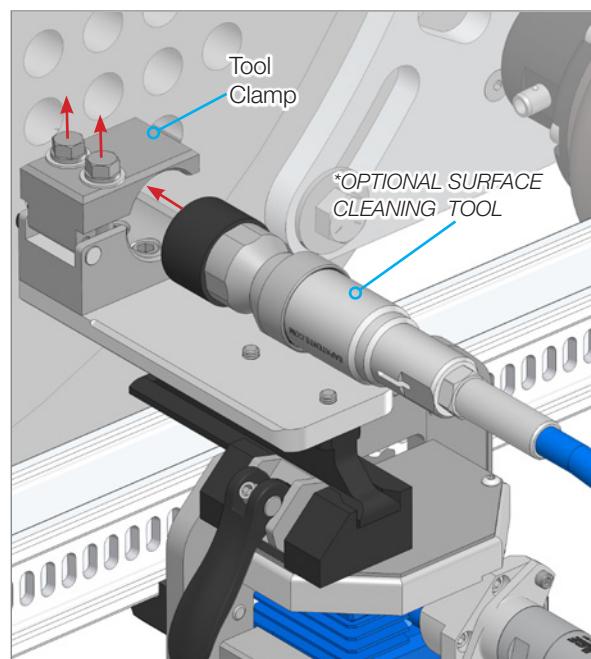
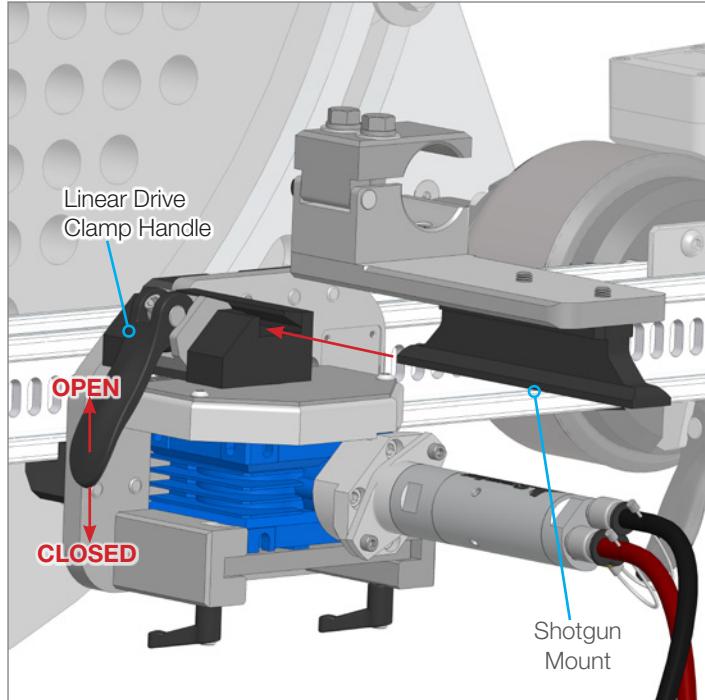
PROPOSITIONER (PROP 480)

SHOTGUN MOUNT ASSEMBLY

The Shotgun Mount can be paired with a StoneAge Barracuda or Spitfire rotary tool to add surface cleaning capability to the ProPositioner. The Shotgun Mount is easily installed in minutes without disconnecting the whole system. Extremely dirty exchangers may require their faces be cleaned prior to tube cleaning in order to uncover the tubes. It can also be used after tube cleaning to remove blasted debris from the exchanger face.

**INSTALL SHOTGUN MOUNT ONTO THE LINEAR DRIVE**

1. Pull the Clamp Handle up and slide the Shotgun Mount onto the Clamp Block and secure in place by closing the Clamp Handle.
2. Loosen the Tool Clamp on the Shotgun Mount, insert the Surface Cleaning Tool and tighten the Tool Clamp to secure the Tool.
3. The distance from the face of the tool to the face of the exchanger can be adjusted by opening the Linear Drive Clamp Handle and sliding the Shotgun Mount forward or back, then locking the Clamp Handle down.



OPTIONAL ACCESSORY

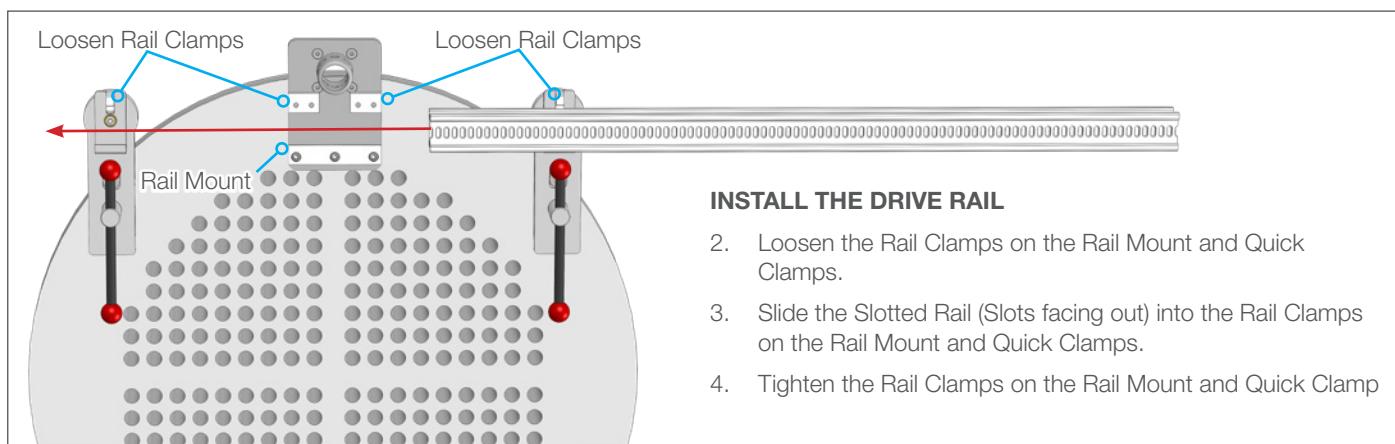
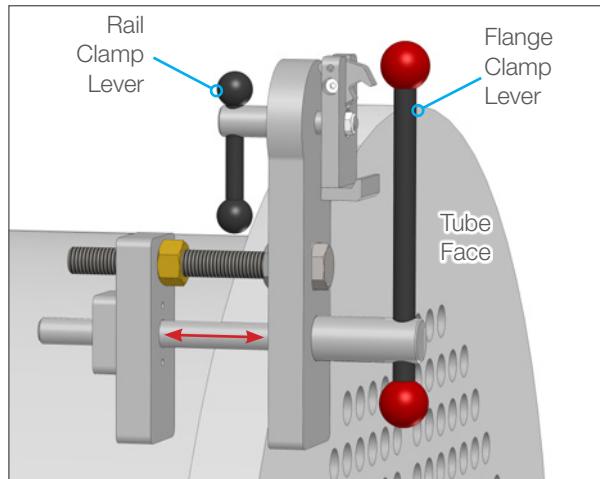
PROPOSITIONER RAIL MOUNT (PROP 470) AND QUICK CLAMPS (PROP 518)

BOLTLESS FLANGE MOUNTING ACCESSORY

Quick Clamps are for use with boltless heat exchanger flanges that provide a robust clamping surface. Align clamps on the surface of the flange to maximize flange engagement to clamps.

INSTALL THE QUICK CLAMPS

1. Mount the Quick Clamps to the tube bundle flange as far apart and as securely as possible. Positioner Clamps should be aligned horizontally with the direction of the tube rows.

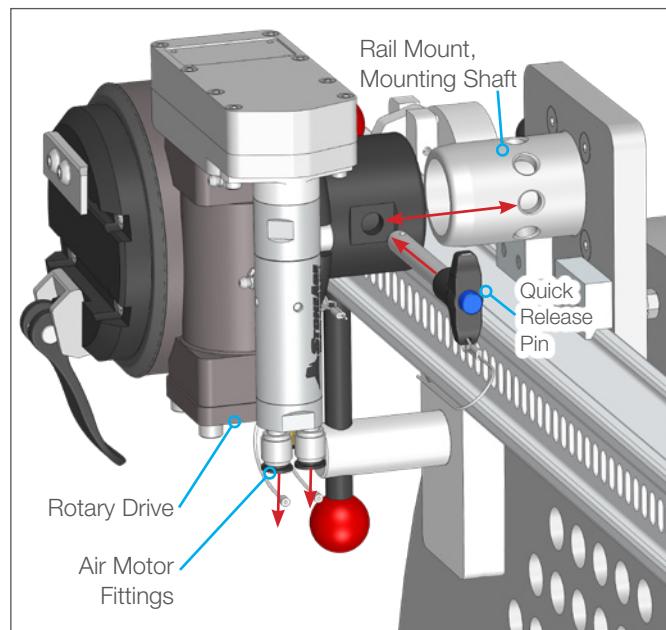


INSTALL THE DRIVE RAIL

2. Loosen the Rail Clamps on the Rail Mount and Quick Clamps.
3. Slide the Slotted Rail (Slots facing out) into the Rail Clamps on the Rail Mount and Quick Clamps.
4. Tighten the Rail Clamps on the Rail Mount and Quick Clamp

INSTALL THE ROTARY DRIVE

5. Pull the Quick Release Pin out of the Rotary Drive. Slip the Rotary Drive over the Mounting Shaft.
6. Rotate the Rotary Drive so that the Air Motor fittings are facing down. Keep in mind the orientation of the Push Lock Fittings for the routing of the umbilical.
7. Continue to "CONNECT THE CONTROL BOX TO THE ROTARY DRIVE" in the *ProPositioner Set-Up* section of this manual and follow the remainder of the assembly instructions until the Set-up is complete.



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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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