



LIGHTWEIGHT POSITIONER (LWPS-100-X) USER MANUAL

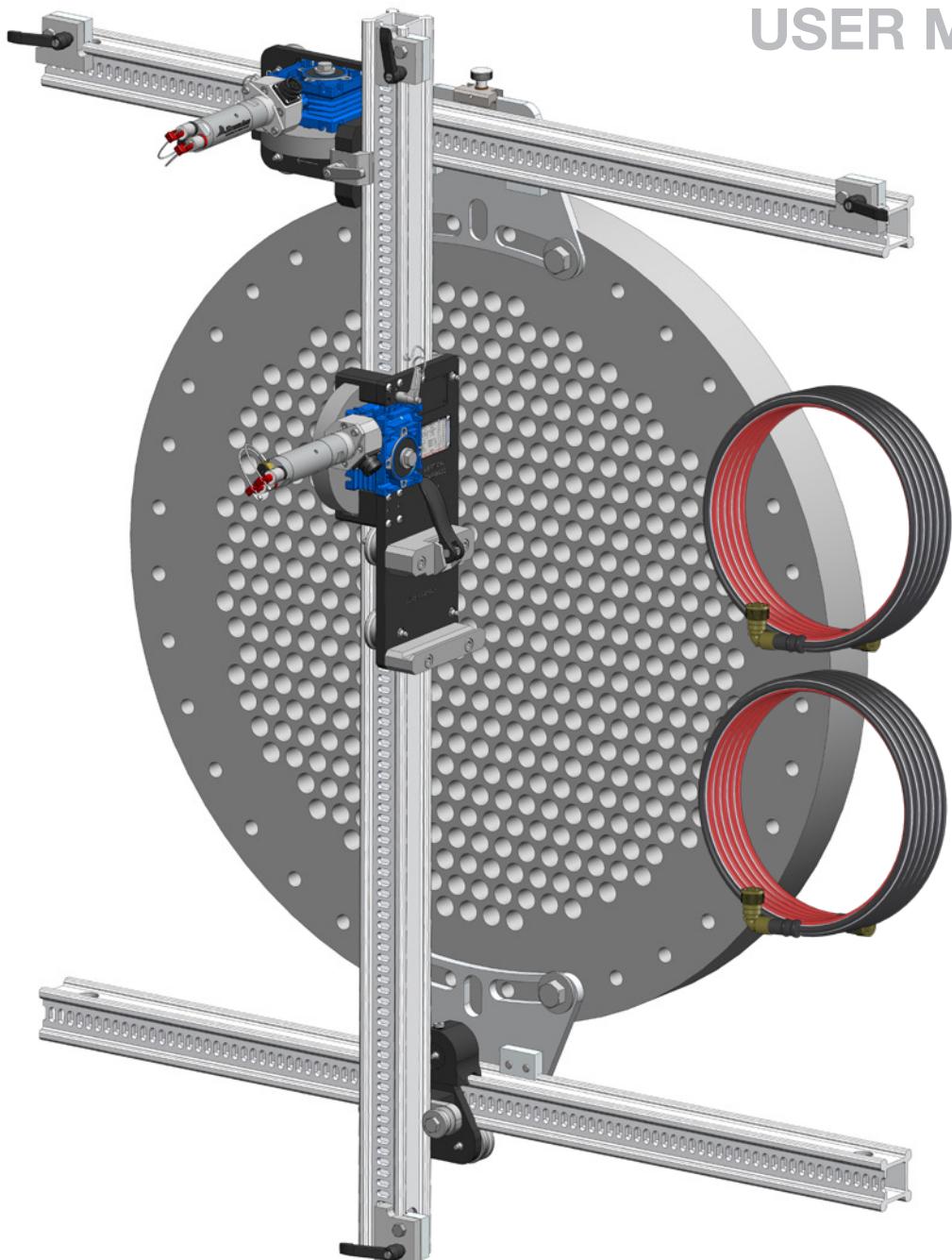


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This manual must be used in accordance with all applicable national laws. The manual shall be regarded as a part of the machine and shall be kept for reference until the final dismantling of the machine, as defined by applicable national law(s). Updated manuals can be downloaded at: <https://www.stoneagetools.com/manuals>

SPECIFICATIONS		
	Imperial	Metric
Full Positioner Weight	120 lbs	54.4 kg
Vertical Carriage Weight	17 lbs	7.7 kg
Horizontal Carriage Weight	15.4 lbs	7 kg
Idler Carriage Weight	4.4 lbs	2 kg
Dimensions without extensions	6 x 6 ft	1829 x 1829 mm
Cleaning Window Dimensions for 6ft Rail Configuration	<i>See diagram below table</i>	
Optional Rail Extension lengths	2, 4, and 6 ft	607, 1219, and 1829 mm

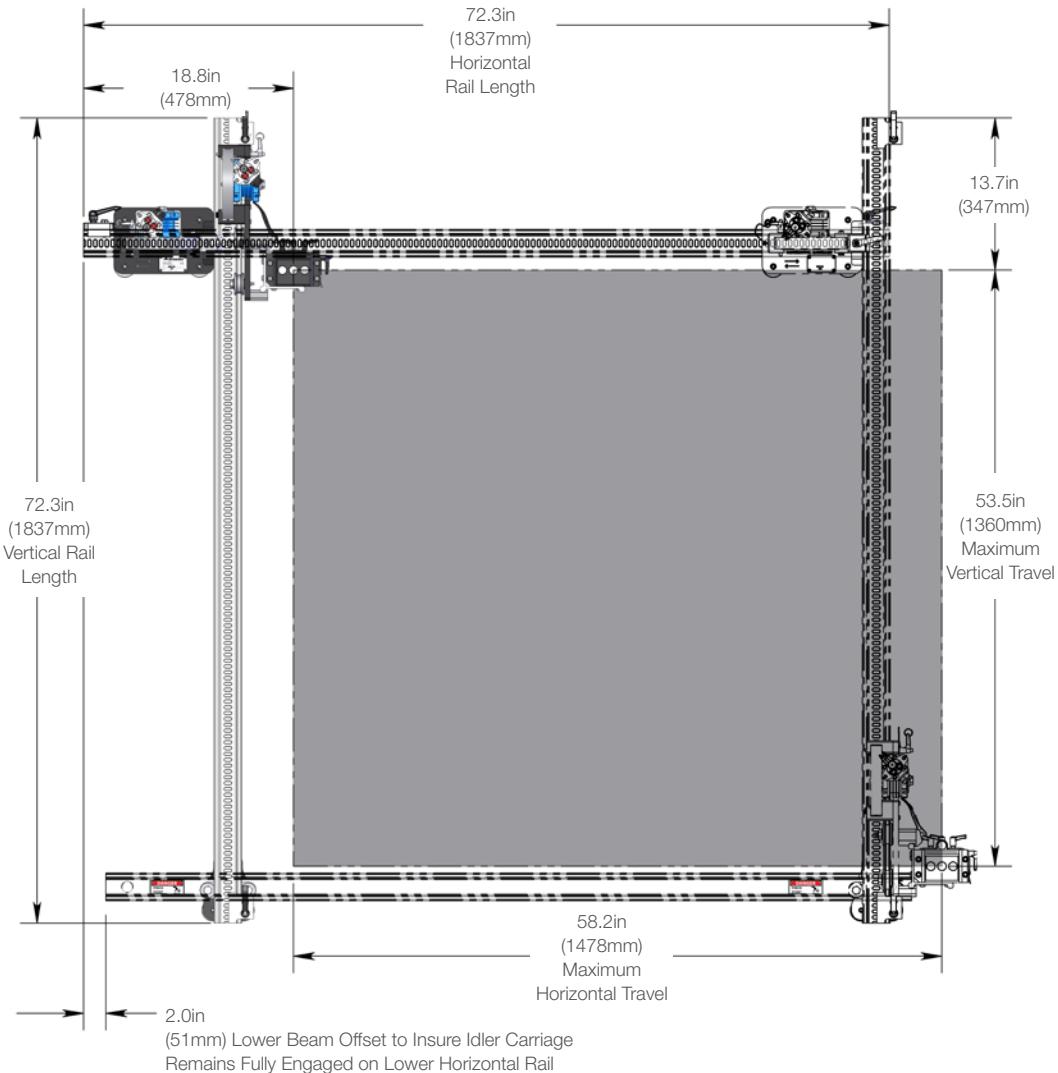
DESCRIPTION OF EQUIPMENT AND INTENDED USE

The Lightweight Positioner can be mounted to a variety of heat exchanger tube bundles and has pneumatic powered horizontal and vertical drives. It is intended to be used with these AUTOBOX® Hose Tractors;

- ABXS-3L (3 Lance with Sentinel Technology)
- ABX-3L (3 Lance)
- ABX-2L-B (2 Lance Belt Drive)
- ABX-PRO (Single Lance)

KEY FEATURES:

- Better positioning accuracy - reduced backlash and clearance across the system
- Completely tool free setup and operation
- Drives locked in place by a pin for visual confirmation of engagement
- Highly accurate position encoding
- Reduced component size and weight
- Larger usable window size
- Push-to-Connect fittings
- Metric hardware and tube sizes
- Sensor can be replaced in minutes
- Same sensor used in both drives
- Carriages are interchangeable with LWP-500
- Rail scraper on idler carriage
- Utilizes field proven stainless steel air motors





EC DECLARATION OF CONFORMITY

Manufacturer:

StoneAge Incorporated
466 South Skylane Drive
Durango, CO 81303
USA

Authorized Representative:

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

Declare that:

Light Weight Positioner (LWPS-100-X)
for mounting and positioning hose tractors to heat exchangers.

Is compliant with the following Directives and Standards:

EU- Machinery Directive (2006/42/EC)

EU- RoHS Directive (2011/65/EU)

EU- EMC Directive (2014/30/EU)

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

EN ISO 4414:2010 (en) Pneumatic Fluid Power – General rules and safety requirements for systems and components

EN 55011:2009 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement

EN 60204-1:2018 Safety of machinery– Electrical equipment of machines

This device complies with part 15 of the FCC rules and Industry Canada ICES-003. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Technical File for Light Weight Positioner (LWPS-100-X) is maintained at: StoneAge Incorporated, 466 South Skylane Drive, Durango, CO 81303, USA and was compiled by the Director of Engineering and Technology. The Technical File is available through the Authorized Representative.

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



StoneAge Incorporated, Durango, CO, USA

Scott Howell, New Product Introduction Manager

09/29/2021

Date





UK DECLARATION OF CONFORMITY

Manufacturer:

StoneAge Incorporated
466 South Skylane Drive
Durango, CO 81303
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Authorized Representative:

StoneAge UK
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Crucible Business Park
Woodbury Lane
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United Kingdom
Steve Ellis, Managing Director StoneAge UK

Declare that:

Light Weight Positioner (LWPS-100-X)
for mounting and positioning hose tractors to heat exchangers.

Is compliant with the following Directives and Standards:

S.I. 2008:1597 - Supply of Machinery (Safety) Regulations 2008

S.I. 2012:3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

S.I. 2016:1091 - Electromagnetic Compatibility Regulations 2016

S.I. 2008:1597 Safety of machinery – General principles for design – Risk assessment and risk reduction

S.I. 2008:1597 Pneumatic Fluid Power – General rules and safety requirements for systems and components

S.I. 2016:1091 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement

S.I. 2016:1091 Safety of machinery– Electrical equipment of machines

S.I. 2016:1091 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements;
Harmonized Standard for Electromagnetic Compatibility

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StoneAge Incorporated, Durango, CO, USA
Scott Howell, New Product Introduction Manager

09/29/21
Date



WARNING AND SAFETY INSTRUCTIONS

OPERATOR TRAINING

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

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

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

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

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

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

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

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

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

SAFETY LABEL DEFINITION

The Lightweight Positioner (LWPS-100-X) has the potential to cause serious injury if fingers, hair, or clothing become caught between the rollers and the rails.

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 Lightweight Positioner (LWPS-100-X) 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 Lightweight Positioner (LWPS-100-X) 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 Lightweight Positioner (LWPS-100-X) lift with care to prevent bodily injury.

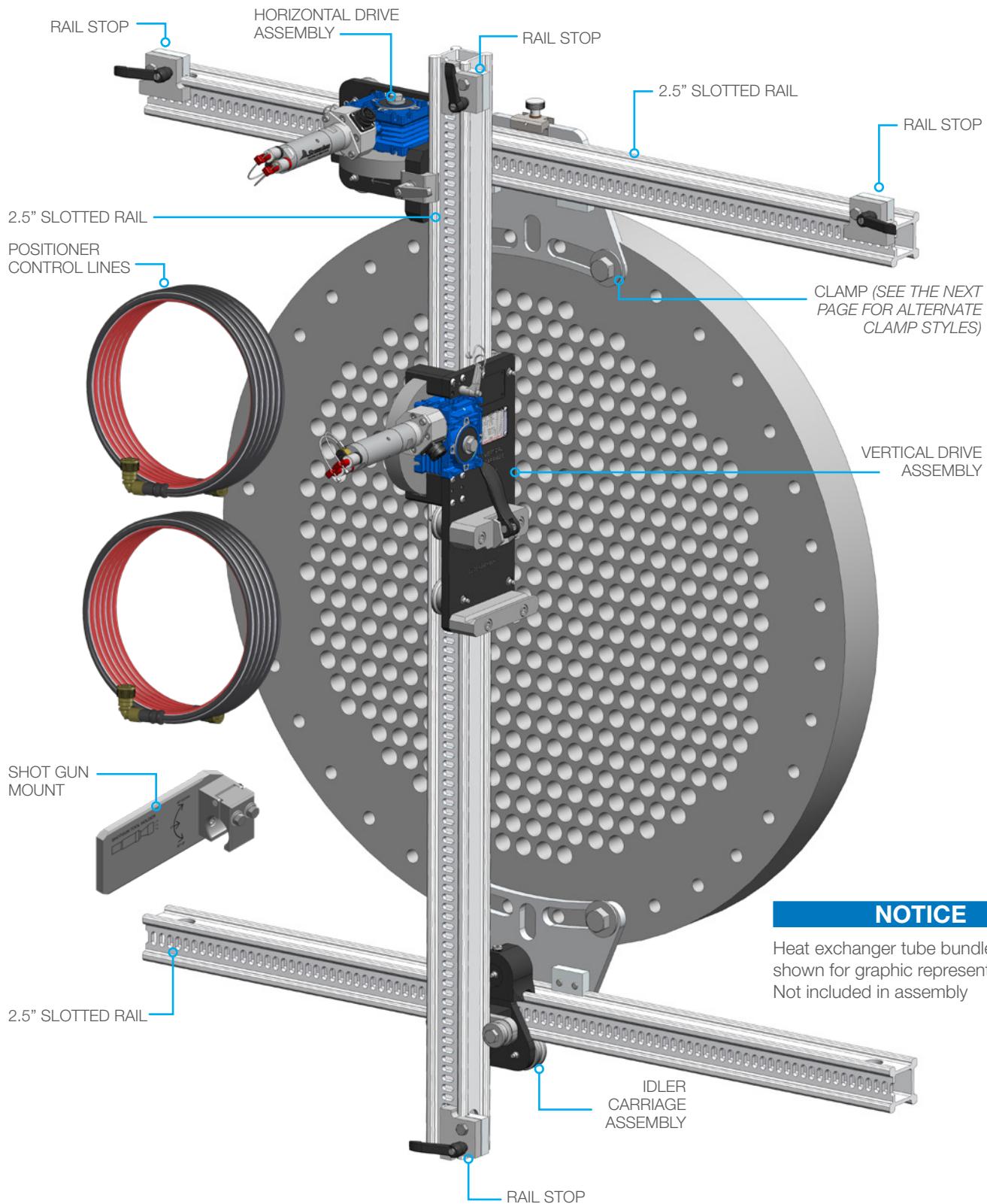
PRE-RUN SAFETY CHECK

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 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 a anti-withdrawal device (back-out preventer), whip checks (hose whips), and all other applicable safety devices are installed and set-up properly.****
- Ensure the doors of the Lightweight Positioner (LWPS-100-X) are closed and securely latched.
- Test the Control Box before operating the Lightweight Positioner (LWPS-100-X) with high-pressure water to verify the control valves move the hose in the intended direction, and that the dump valve and hose clamp are working properly.
- Ensure that Operators never connect, disconnect, or tighten hoses, adapters, or accessories with the high-pressure water pump unit running.
- Ensure no personnel are in the hydroblasting zone.

SYSTEM ASSEMBLY - OVERVIEW

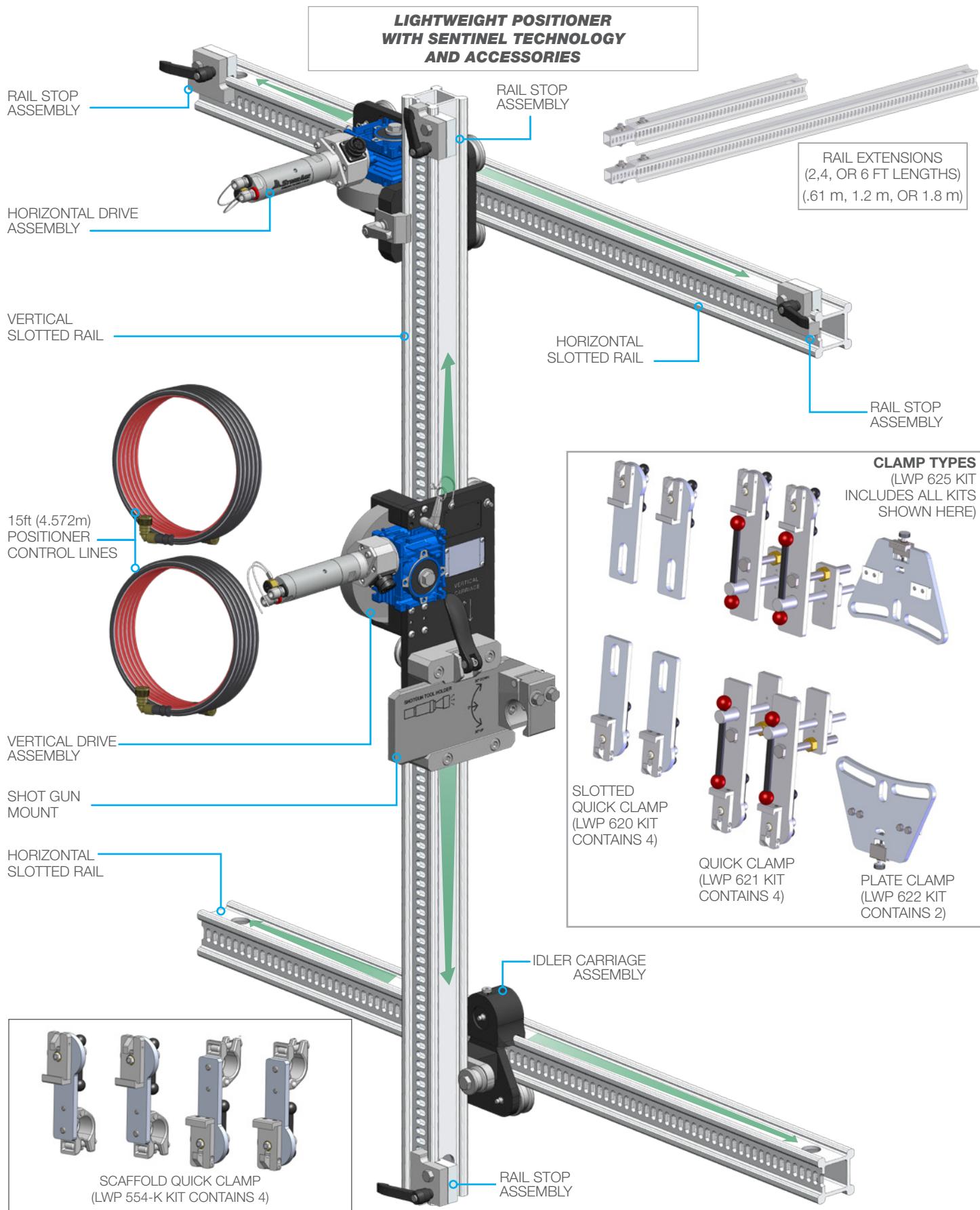
LIGHTWEIGHT POSITIONER ASSEMBLY (LWPS-100-X)



NOTICE

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

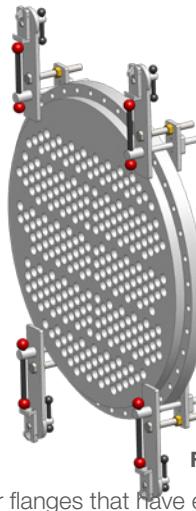
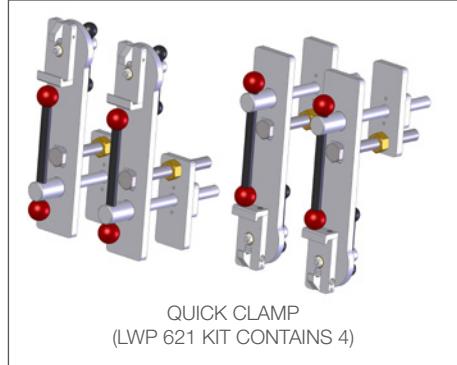
LIGHTWEIGHT POSITIONER - OVERVIEW



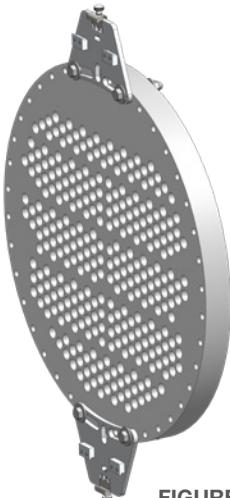
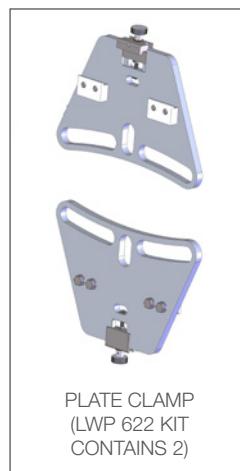
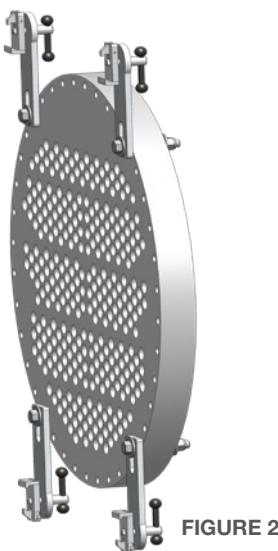
LIGHTWEIGHT POSITIONER CLAMP STYLES

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

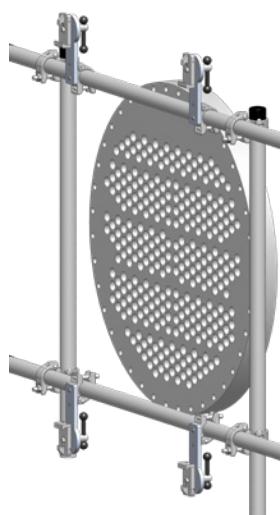
QUICK CLAMPS (LWP 518) are for use with heat exchanger flanges that provide a robust clamping surface or if flange holes are inaccessible. Align clamps on the surface of the flange to maximize flange engagement to clamps. (Figure 1)



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



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



LIGHTWEIGHT POSITIONER STEP BY STEP SET-UP

NOTICE

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

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

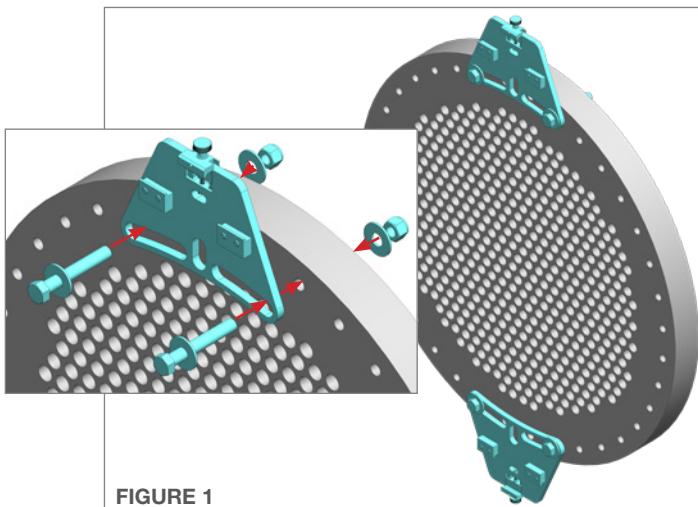


FIGURE 1

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

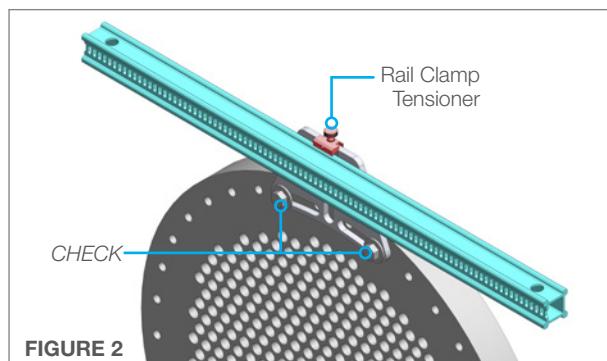


FIGURE 2

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

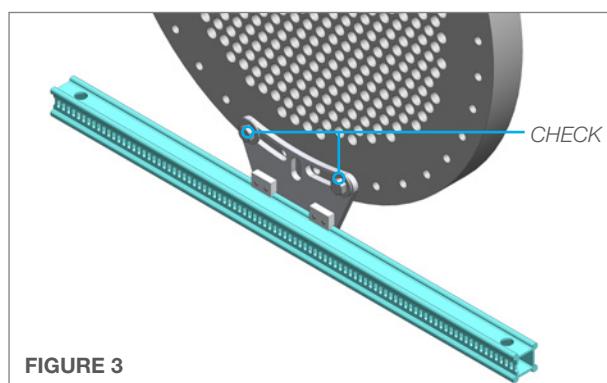


FIGURE 3

4. Remove the **Quick Release Pin** from the *locked* position, pull back on the air motor to lift the gear, and insert the **Quick Release Pin** into the *unlocked* position. This will allow the **Horizontal Drive Carriage** to slide onto the rail without pneumatic power. Center the carriage on the top rail, pull out the **Quick Release Pin**, let the gear drop into place and verify the gear is engaging the slotted rail correctly. Replace the **Quick Release Pin** into the *locked* position. (**Figures 4 & 5**)

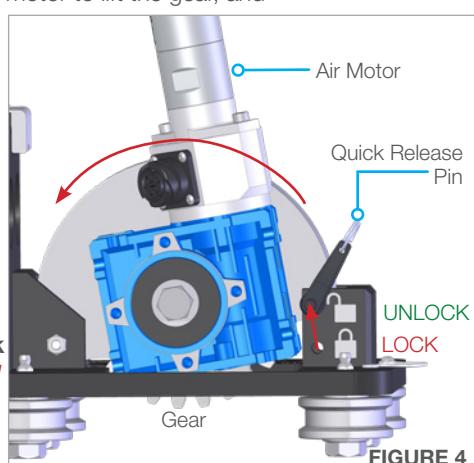


FIGURE 4

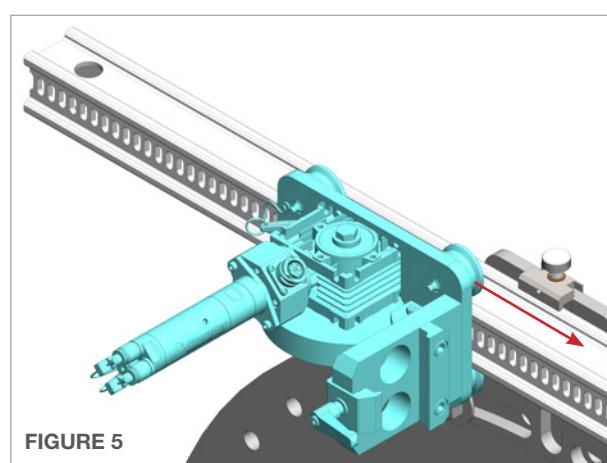


FIGURE 5

LIGHTWEIGHT POSITIONER SET-UP

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



TECH TIP:

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

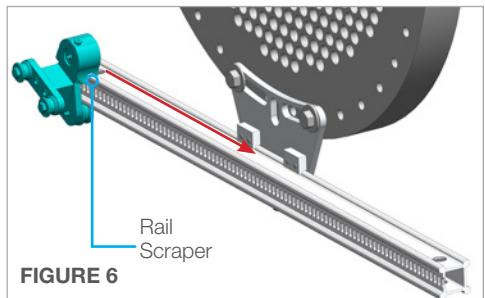


FIGURE 6

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

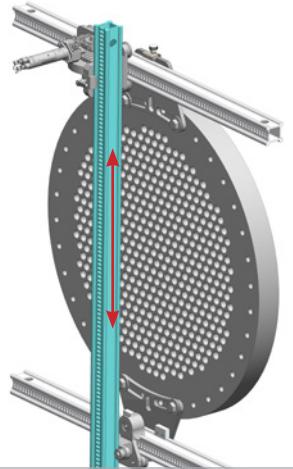
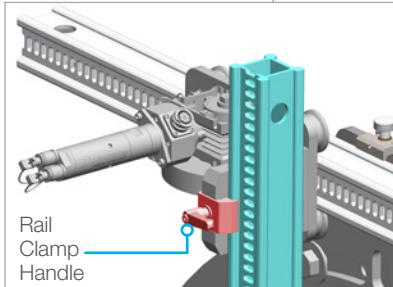


FIGURE 7

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

⚠ CAUTION

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

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

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

⚠ WARNING

Failure to secure the Rail Clamps could result in the carriages driving off the rails. This will create a hazardous situation which, if not avoided, **could** result in death or serious injury.

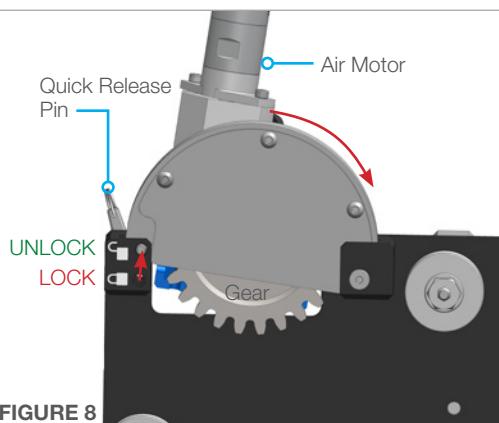


FIGURE 8

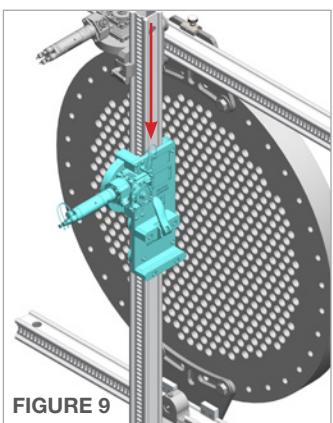


FIGURE 9

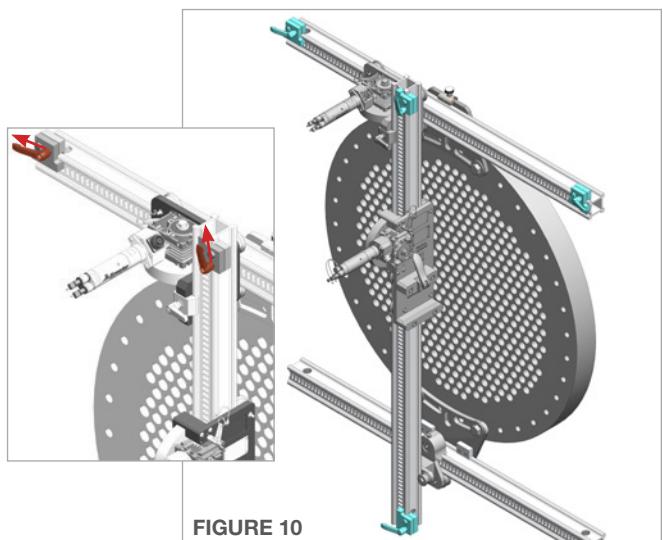


FIGURE 10

LIGHTWEIGHT POSITIONER CONNECTIONS TO THE POWER HUB

CONTROL LINE CONNECTIONS

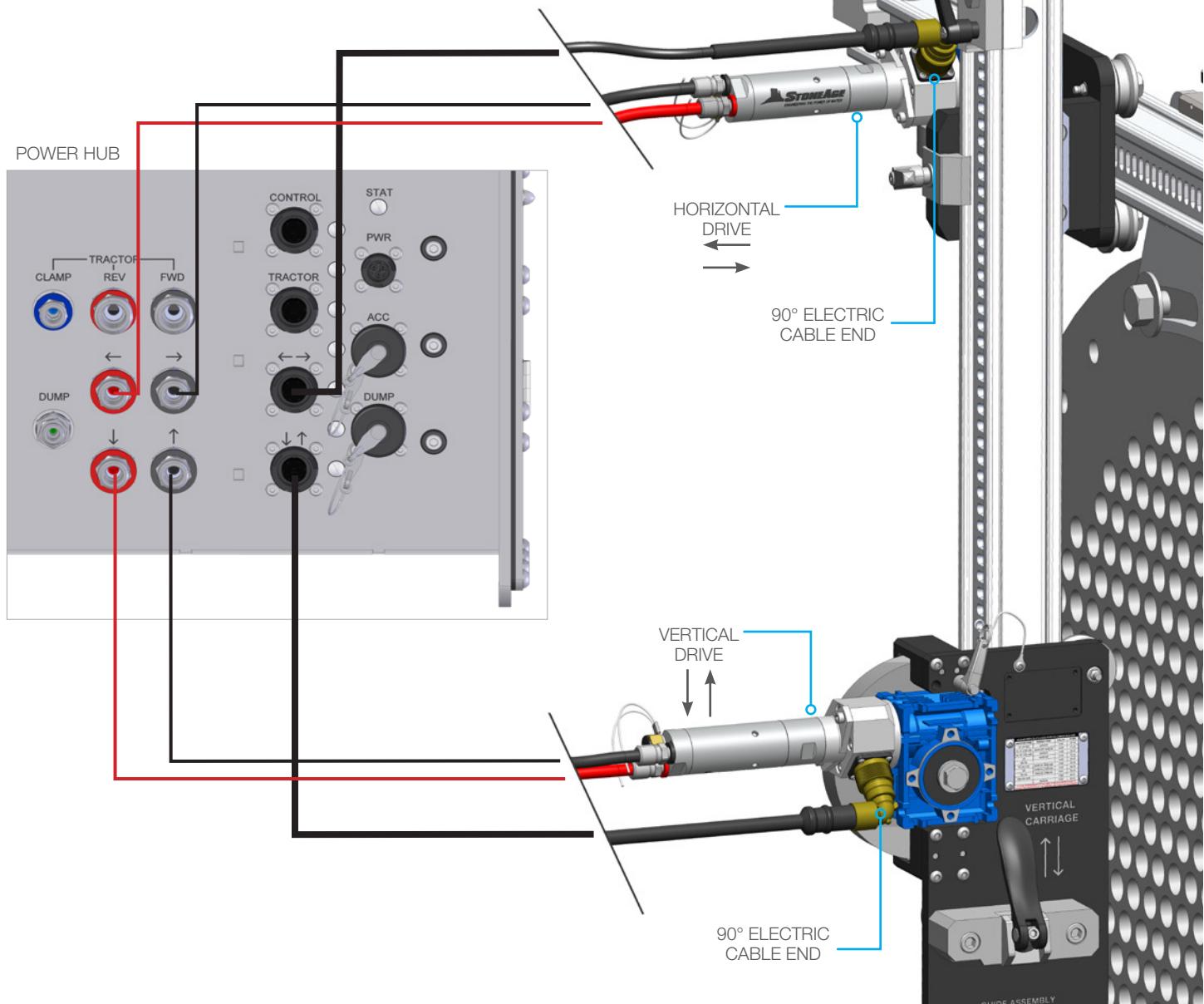
1. Remove the dust caps from all fittings of the Horizontal and Vertical Drives.
2. **Connect control lines to the front of the Power Hub**
 - Two Straight Electric Cable Ends (↓ ↑ , ← →)
 - Two 8mm diameter tubing for the Horizontal Drive (← →)
 - Two 8mm diameter tubing for the Vertical Drive. (↓ ↑)
3. **Blow out all control lines. Use of dirty or contaminated pneumatic hoses will cause component damage and malfunction**

4. Connect control lines to the Horizontal Drive

- Connect the two 8mm diameter tubing from the Power Hub (← →) to the corresponding color coded fittings on the Horizontal Drive.
- Connect the 90° Pot Plug from the Power Hub (← →) to the receptacle on the sensor.

5. Connect control lines to the Vertical Drive

- Connect the two 8mm diameter tubing from the Power Hub (↓ ↑) to the corresponding color coded fittings on the Vertical Drive.
- Connect the 90° Pot Plug from the Power Hub (↓ ↑) to the receptacle on the sensor.

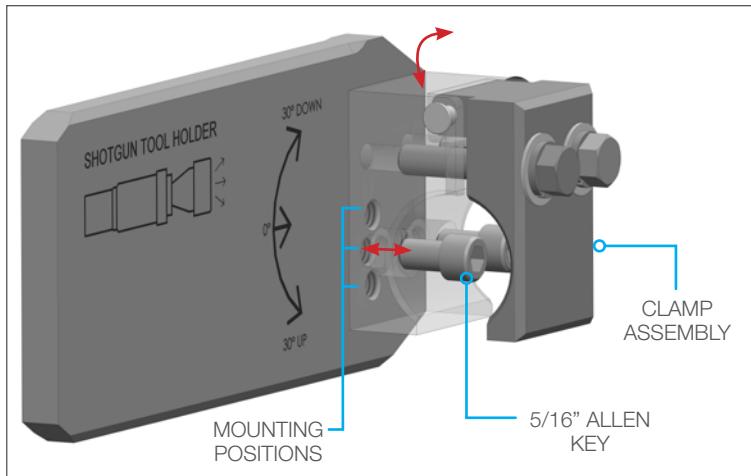


SHOTGUN MOUNT INSTALLATION

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

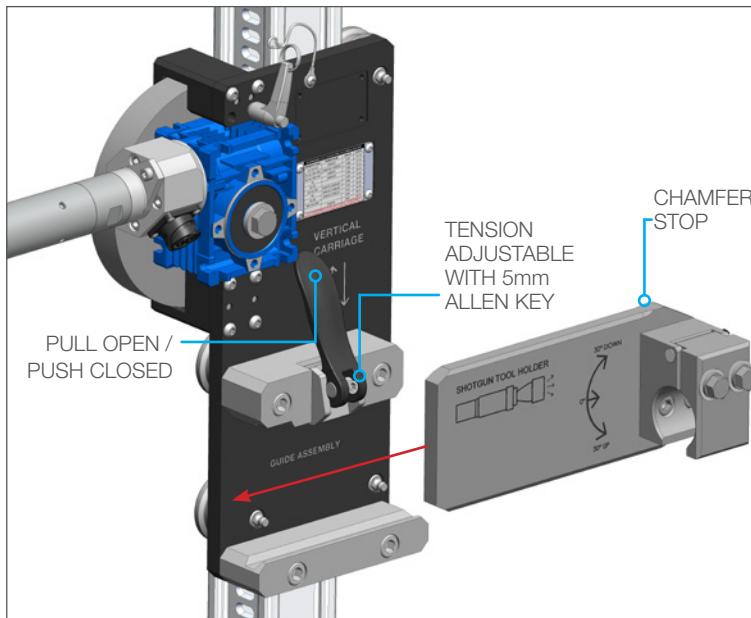
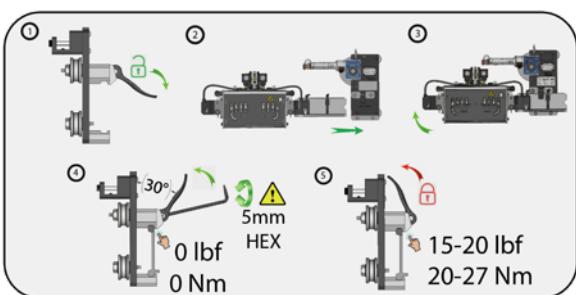
1. Set the desired Clamp Angle.

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



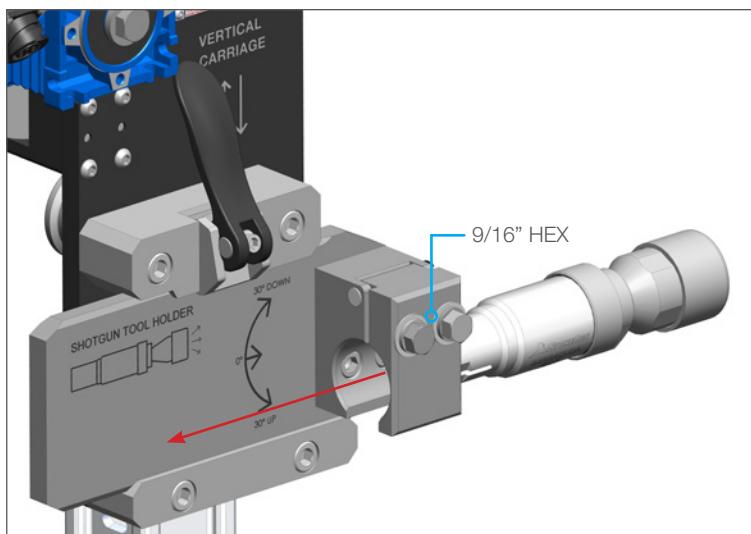
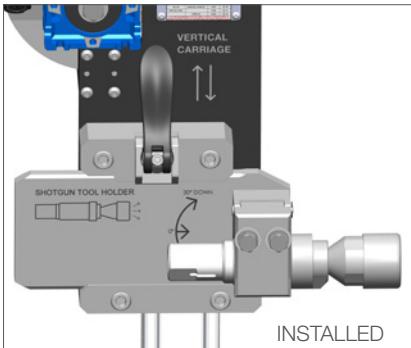
2. Install Shotgun Mount onto the Vertical Carriage.

- Pull to open the Clamp Handle on the Vertical Carriage and slide the Shotgun Mount in back to front.
- The mount will stop when it reaches the chamfers at the front. This is a safety feature.
- Lock the Clamp Handle in place when the mount is in position.
- If the Clamp Handle feels too loose or too tight, it can be adjusted with a 5mm Allen Key. Follow the instructions on the decal on the Vertical Drive.



3. Fasten the Shotgun tool in the Clamp.

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



Maintenance Item	Frequency	Maintenance Required
Forward, reverse, and clamp fittings	Before each use	Inspect threads for wear or damage.
Carriage rollers	Every 100 Hours of use	Lubricate Zerks on all Carriage Rollers using any multipurpose NLGI 2 grease.
Vertical and Horizontal Rails	As Needed	Inspect for wear that would allow Carriage Rollers to slip off. Replace Rail as needed.
Quick Release Handles	When loose or too tight	5mm hex to tighten. When it's set correctly it should take 15-20lbs of force to close the lever

Contact StoneAge for Safety Data Sheets for material usage, a complete list of spare part numbers, and service instructions for the Lightweight Positioner.

STORAGE, TRANSPORTATION, AND HANDLING

Return the plugs into all push connect fittings to keep water away from the connectors during cleaning. Use mild soapy water to clean the machine in order to remove corrosive materials. Before storing the unit, use compressed air to lightly 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.

**DO NOT SPRAY WATER DIRECTLY AT OR SUBMERGE THE AIR MOTOR BREather PORTS OR ELECTRONIC COMPONENTS.
MAKE SURE ALL DUST CAPS ARE IN PLACE AND ELECTRICAL SENSOR CONNECTIONS ARE TIGHT PRIOR TO CLEANING.**

The Lightweight POSITIONER (LWPS-100-X), can be broken down into smaller components that should be stored in a clean and dry area.

PARTS DIAGRAM

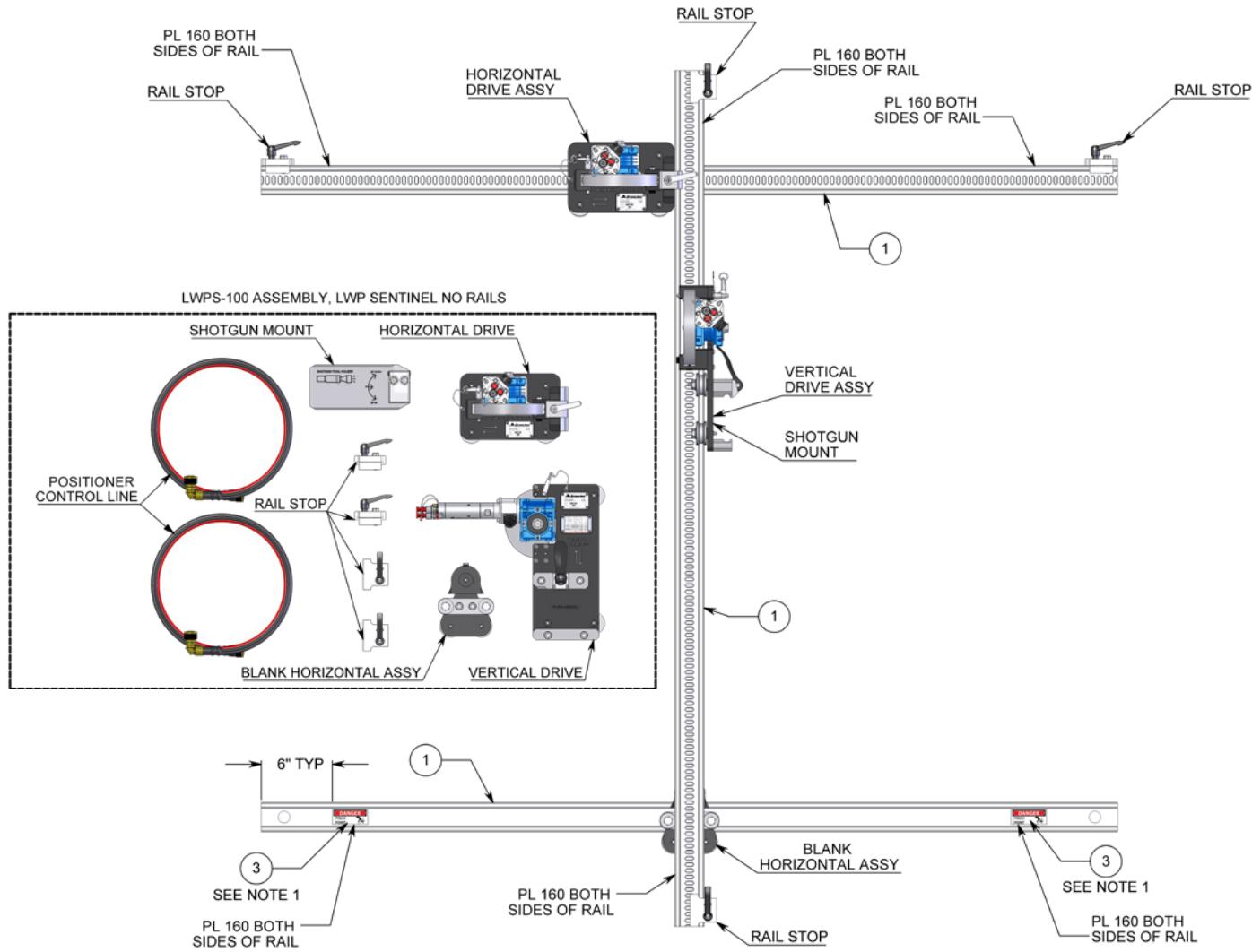


#	PART NUMBER	QTY	OAL EACH
1	CBL EA15F-1RB6PP-2PL6.1 LABEL	1	
2	CBL EA15F.1 WIRE, 1X4 PAIR, 24 (7/32" AWG COPPER ALLOY, .011" POLYPLEFIN	1	15'-0"
3	EE CN-RB-PF6PS-14S-0001 PLUG, POT AND HEATSHRINK ENDBELL	1	
4	EE CN-RB-PF6PS-14S-90-0001 PLUG, 90 DEG POT AND HEATSHRINK ENDBELL	1	
5	GPHS 1100-OLE-A-BK HEAT SHRINK, 1.1" ID , BLACK	2	5"
6	GPSL 0750-NYL-G-BK HOSE BUNDLE SLEEVE	1	11'-4"
7	GPTB 8MM6-PUR95A-BK 8MM OD X 6MM ID URETHANE TUBING, BLACK	1	14'-2"
8	GPTB 8MM6-PUR95A-RD 8MM OD X 6MM ID URETHANE TUBING, RED	1	14'-2"

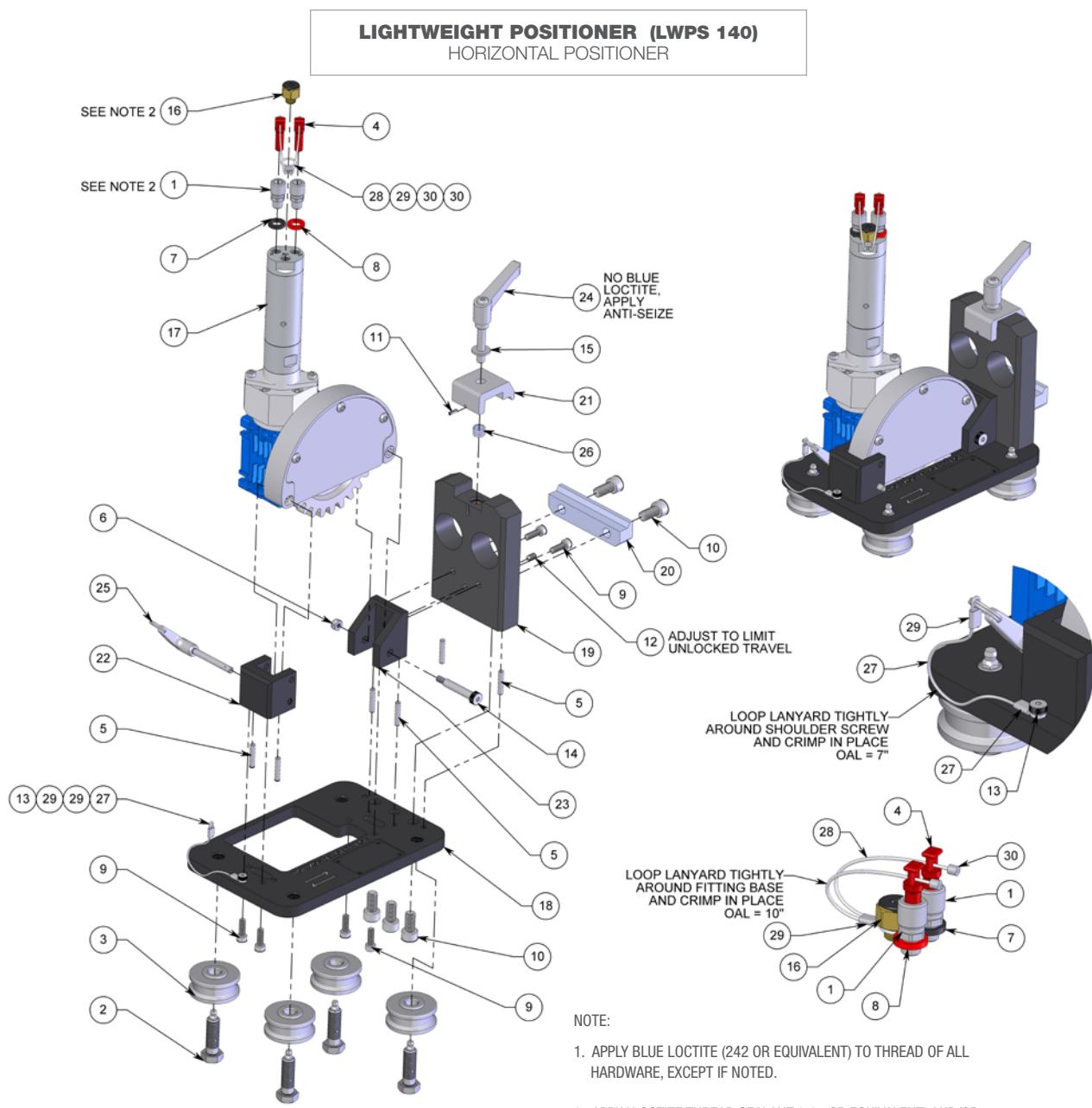
PIN	WIRE	
A	BROWN / BROWN WHITE	12V
B	GREEN WHITE	485-B
C	GREEN	485-A
D	BLUE / BLUE WHITE	GND
E	ORANGE	SFT-A
F	ORANGE WHITE	SFT-B

PARTS DIAGRAM

LIGHTWEIGHT POSITIONER ASSEMBLY (LWPS-100-X)



#	PART NUMBER	QTY
1	BU 002-6-001 2.5" BOX RAIL EXTRUSION, SLOTTED	3
2	LWPS-100 ASSEMBLY, LWP SENTINEL NO RAILS	1
3	PL 160 WARNING PINCH POINT 1.25 X 3.0 DECAL	12



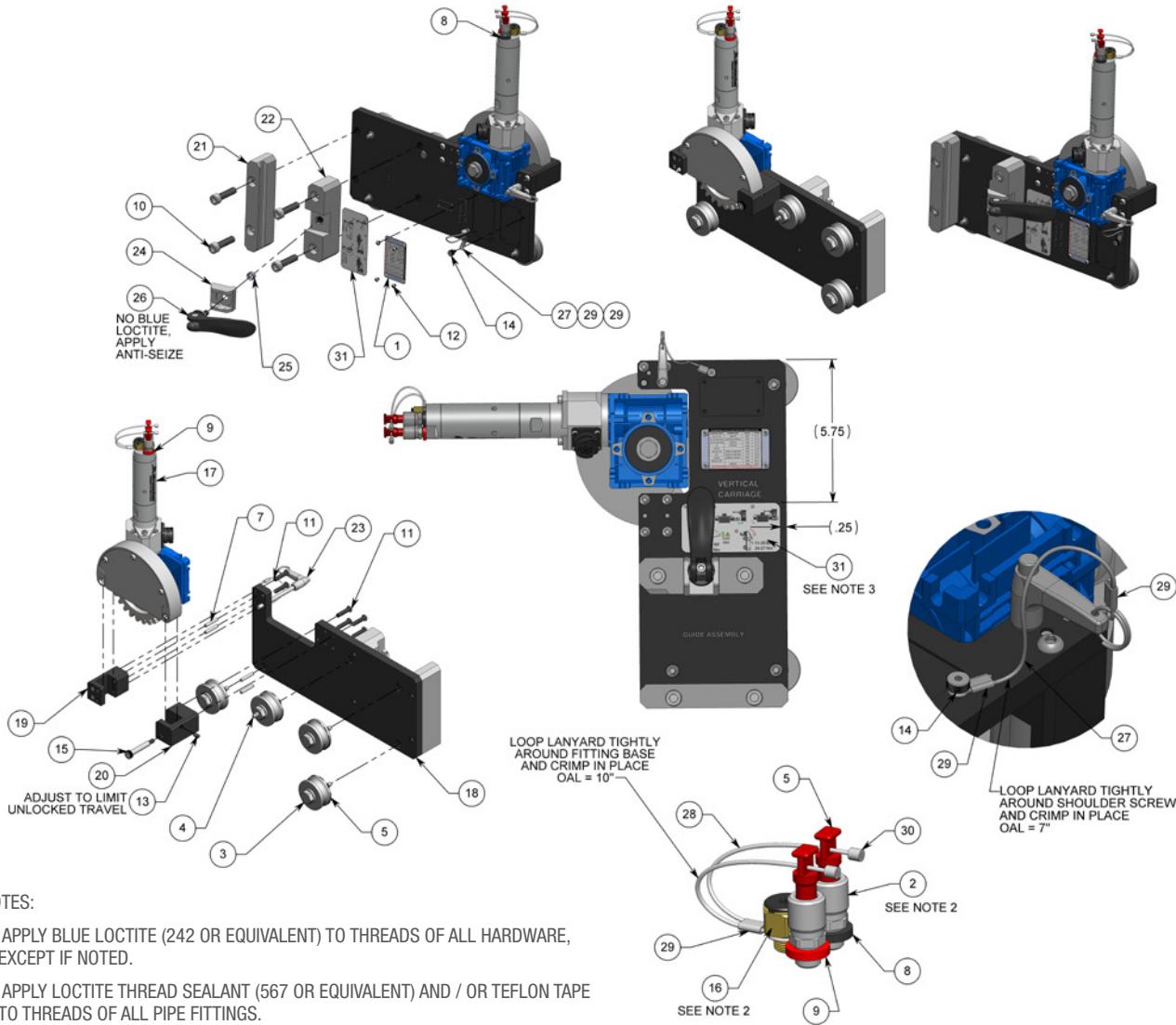
#	PART NUMBER	QTY
1	ABXS 277 FTG, ADAPTER P2M PL5 EISELE	2
2	BR 051-1.5-0 AXLE-ZERK	4
3	BR 055-SS ROLLER ASSY	4
4	CB 499 FTG, STEM PLUG PL5 MODIFIED	2
5	GDP 3M5-26 PIN, DOWEL M5 x 26 SS	6
6	GN 3M6-1.0-L NUT, NYLOK M6x1.0 SS	1
7	GP 014-BK ID WASHER, RUBBER, EXTRA SMALL, BLACK	1
8	GP 014-R ID WASHER, RUBBER, EXTRA SMALL, RED	1
9	GS 3M6-18-1.0 SHCS M6x1.0 x 18 SS	6
10	GS 3M10-20-1.5 SHCS M10x1.5 x 20 SS	5

11	GSP 3M3-10 SLOTTED SPRING PIN M3 X 10 SS	1
12	GSS 3M6-1.0-10CU SET SCREW, CUP PT M6x1.0 x 10 SS	1
13	GSSH M5-4-SS SHOULDER SCREW M5 X 4 SS	1
14	GSSH M8-40-SS SHOULDER SCREW M8 X 40 SS	1
15	GW 525-F WASHER, FLAT .25	1
16	LWP 557 FTG, EXHAUST PROTECTOR P2M	1
17	LWPS 110 ASSY, GEAR DRIVE	1
18	LWPS 141 PLATE, HORIZONTAL CARRIAGE	1
19	LWPS 143 PLATE, RAIL BASE	1

20	LWPS 144 CLAMP, RAIL	1
21	LWPS 145 JAW, ADJUSTABLE CLAMP	1
22	LWPS 148 MOUNT, HORIZONTAL GEAR LEFT	1
23	LWPS 149 MOUNT, HORIZONTAL GEAR RIGHT	1
24	LWPS 151 LEVER, HAND SS	1
25	LWPS 152 PIN, QUICK-RELEASE .25 X 1.75	1
26	PROP 335 SPRING, COMPRESSION	1
27	SRT 209.1.1 WIRE ROPE FOR LWPS 140 (CUT TO 7IN)	1
28	SRT 209.1.1 WIRE ROPE FOR LWPS AIR MOTOR (CUT TO 10IN)	1
29	SRT 209.1.3 ALUMINUM SLEEVE	3
30	SRT 209.1.4 ALUMINUM STOP SLEEVE	2

PARTS DIAGRAM

LIGHTWEIGHT POSITIONER (LWPS 160)
VERTICAL POSITIONER



NOTES:

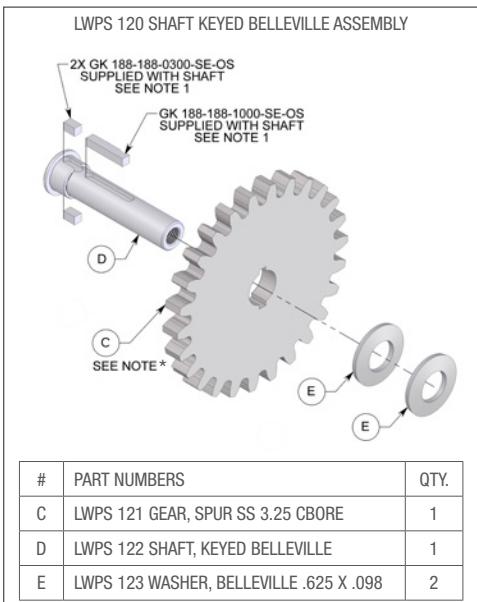
1. APPLY BLUE LOCTITE (242 OR EQUIVALENT) TO THREADS OF ALL HARDWARE, EXCEPT IF NOTED.
2. APPLY LOCTITE THREAD SEALANT (567 OR EQUIVALENT) AND / OR TEFLON TAPE TO THREADS OF ALL PIPE FITTINGS.
3. CLEAN SURFACE WITH ISOPROPYL ALCOHOL BEFORE INSTALLING DECAL. LOCATE APPROX. WHERE SHOWN.

#	PART NUMBER	QTY
1	ABX 139 COLLET REFERENCE PLATE	1
2	ABXS 277 FTG, ADAPTER P2M PL5 EISELE	2
3	BR 051-1.5-0 AXLE-ZERK	3
4	BR 052-1.5 AXLE-ZERK	1
5	BR 055-SS ROLLER ASSY	4
6	CB 499 FTG, STEM PLUG PL5 MODIFIED	2
7	GDP 3M5-26 PIN, DOWEL M5 X 26 SS	4
8	GP 014-BK ID WASHER, RUBBER, EXTRA SMALL, BLACK	1
9	GP 014-R ID WASHER, RUBBER, EXTRA SMALL, RED	1
10	GS 3M10-40-1.5 SHCS M10X1.5 X 40 SS	4

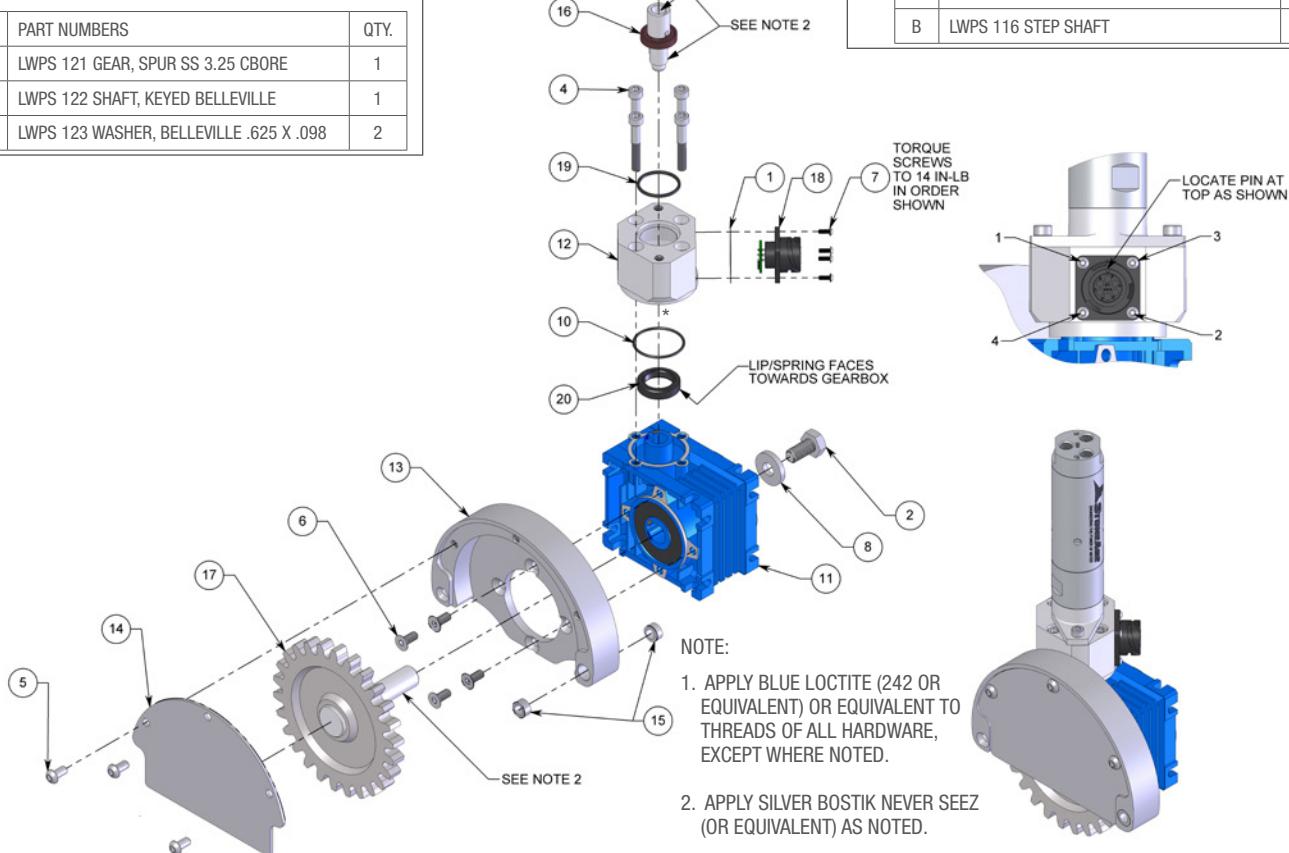
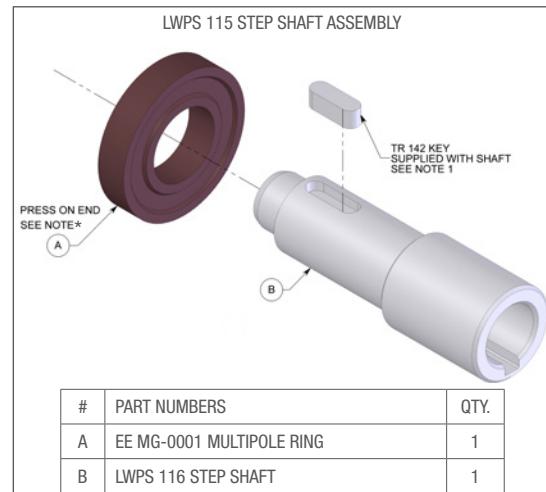
11	GSB 3M6-25-1.0 BHCS M6X1.0 X 25 SS	6
12	GSB 313-0075 BHCS 6-32 X .19 SS	4
13	GSS 3M6-1.0-10CU SET SCREW, CUP PT M6X1.0 X 10 SS	1
14	GSSH M5-4-SS SHOULDER SCREW M5 X 4 SS	1
15	GSSH M8-40-SS SHOULDER SCREW M8 X 40 SS	1
16	LWP 557 FTG, EXHAUST PROTECTOR P2M	1
17	LWPS 110 ASSY, GEAR DRIVE	1
18	LWPS 161 PLATE, VERTICAL CARRIAGE	1
19	LWPS 163 MOUNT, VERTICAL GEAR LEFT	1
20	LWPS 164 MOUNT, VERTICAL GEAR RIGHT	1

21	LWPS 166 CLAMP, LOWER RAIL	1
22	LWPS 167 CLAMP, UPPER RAIL	1
23	LWPS 171 PIN, QUICK-RELEASE .25X2.75	1
24	PROP 334 TAB, CLAMP	1
25	PROP 335 SPRING, COMPRESSION	1
26	PROP 336 HANDLE ASSY	1
27	SRT 209.1.1 WIRE ROPE FOR LWPS 160 (CUT TO 7IN)	1
28	SRT 209.1.1 WIRE ROPE FOR LWPS AIR MOTOR (CUT TO 10IN)	1
29	SRT 209.1.3 ALUMINUM SLEEVE	3
30	SRT 209.1.4 ALUMINUM STOP SLEEVE	2
31	PL 211 LWPS CLAMP DECAL	1

LIGHTWEIGHT POSITIONER (LWPS 110) GEAR DRIVE ASSEMBLY



* APPLY LOCTITE RETAINING COMPOUND (680 OR EQUIVALENT) TO COMPONENTS AS NOTED. BE SURE AND SET MAGNET BEFORE KEY. BE SURE TO SET KEY AND MAGNET COMPLETELY AND SECURELY WHILE LETTING LOCTITE CURE FOR 5 HRS. WIPE EXCESS LOCTITE (ESPECIALLY SHAFT).



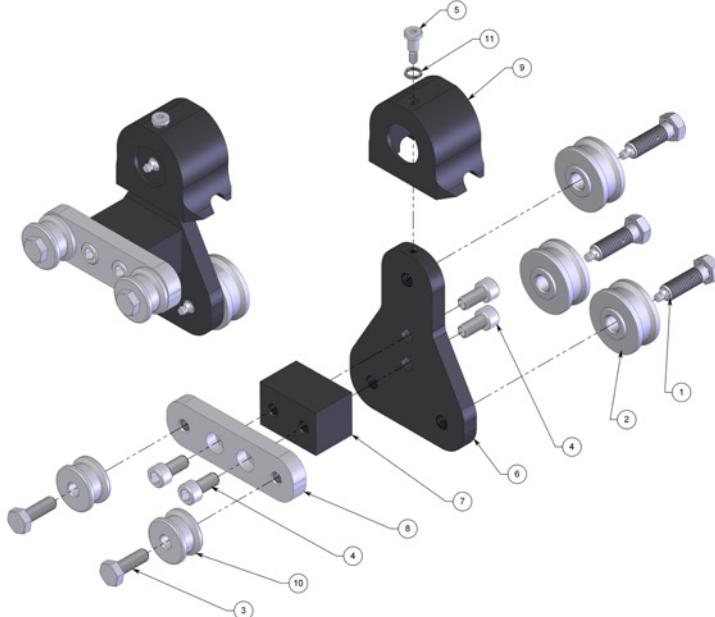
#	PART NUMBER	QTY
1	EE CN-RB-G-14S-F-AX GASKET, CONNECTOR	1
2	GB 3M10-20-1.25 BOLT, HEX M10x1.25 x 20 SS	1
3	GS 3M5-14-0.8 SHCS M5x0.8 x14 SS	2
4	GS 3M6-40-1.0 SHCS M6x1.0 x 40 SS	4
5	GSB 3M6-12-1.0 BHCS M6x1.0 x 12 SS	3
6	GSF 3M6-14-1.00 FHCS M6x1.00 x 14 SS	4

7	GTB 3M3-8-0.5 BHTS M3x0.5 x 8 Torx SS	4
8	GW 3M10-F WASHER, FLAT M10x4mm	1
9	LWP 520-001 AIR MOTOR, SS, W/ FLANGE, LUBE FREE	1
10	LWP 538 O-RING	1
11	LWP 550 MOTOVARIO GEARBOX	1
12	LWPS 111 HUB, ENCODER MOTOR MOUNT	1
13	LWPS 112 PLATE, DRIVE SPROCKET	1

14	LWPS 113 COVER, GEAR	1
15	LWPS 114 SLEEVE BEARING, OIL-IMPREGNATED	2
16	LWPS 115 ASSY, STEP SHAFT	1
17	LWPS 120 ASSY, SHAFT KEYED BELLEVILLE	1
18	LWPS 130 ASSY, LWPS SENSOR BOARD	1
19	LWPS 133 O-RING, DOUBLE SEAL X-PROFILE	1
20	SL 010 SEAL	1

PARTS DIAGRAM

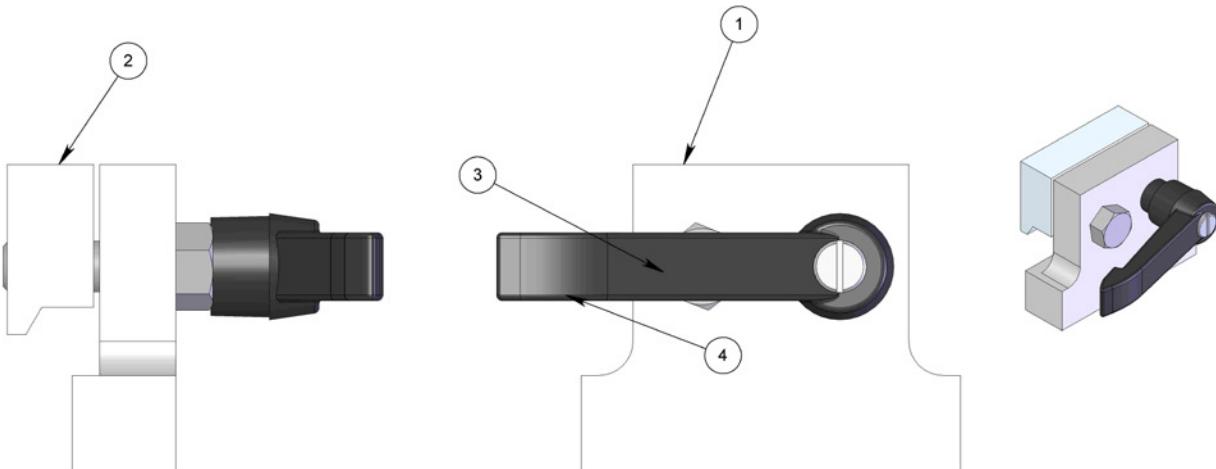
LIGHTWEIGHT POSITIONER (LWPS 180)
IDLER CARRIAGE ASSEMBLY



#	PART NUMBER	QTY
1	BR 051-1.5-0 AXLE-ZERK	3
2	BR 055-SS ROLLER ASSY	3
3	GB 3M10-30-1.5 BOLT, HEX M10x1.5 X 30 SS	2
4	GS 3M10-20-1.5 SHCS M10x1.5 x 20 SS	4
5	GSSH M8-12-SS SHOULDER SCREW M8 X 12 SS	1

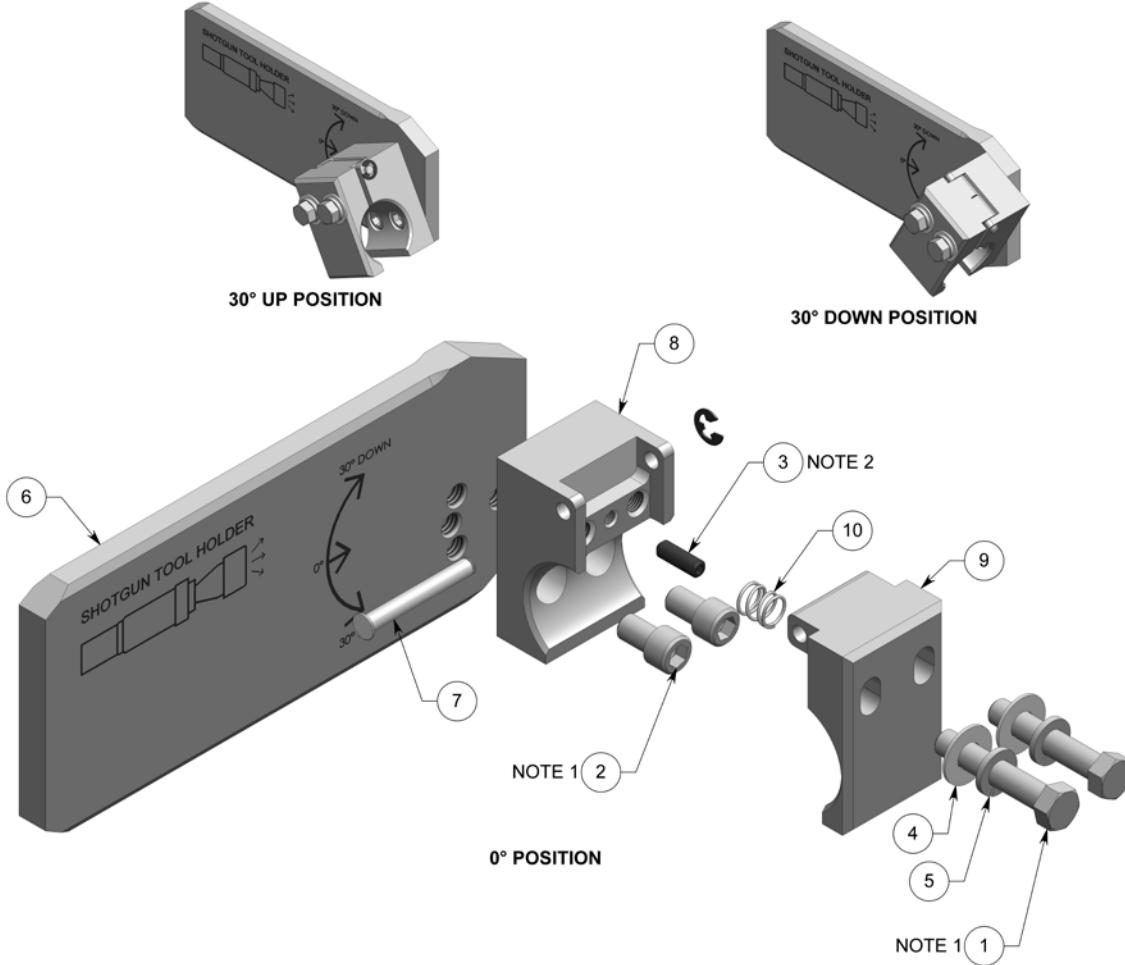
6	LWPS 181 PLATE, IDLER CARRIAGE	1
7	LWPS 182 BLOCK, SPACER	1
8	LWPS 183 PLATE, GUIDE	1
9	LWPS 185 SCRAPER, RAIL	1
10	LWPS 186 STUD, VERTICAL RAIL GUIDE	2
11	LWPS 188 SPRING, WAVE	1

LIGHTWEIGHT POSITIONER (BU 152)
RAIL STOP ASSEMBLY



#	PART NUMBER	QTY.
1	BU 149 PLATE, RAIL STOP	1
2	BR 060 RAIL CLAMP	1
3	GB 537-05 BOLT, HEX .37-16 X 1.25	1
4	BU 151 HANDLE	1

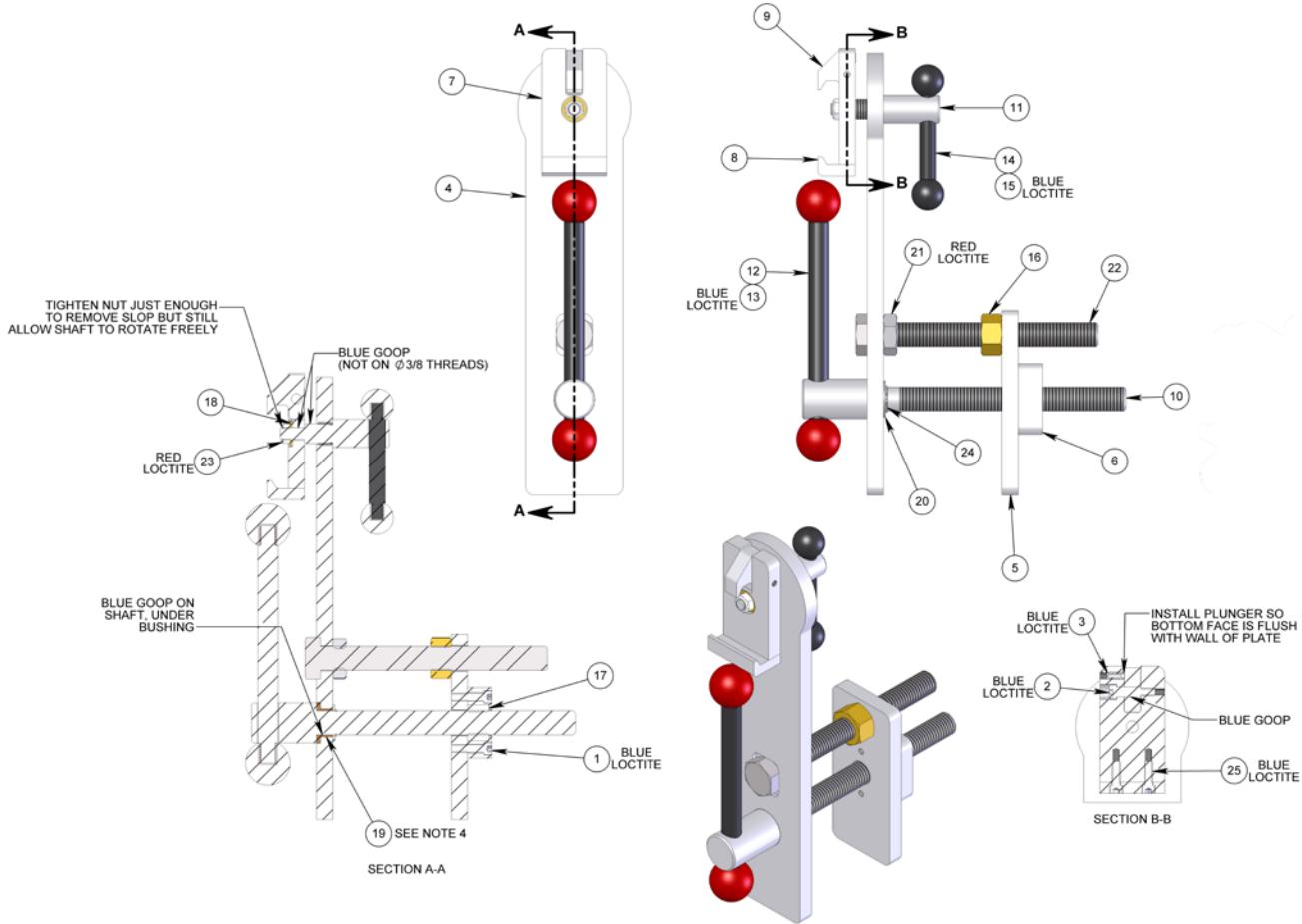
LIGHTWEIGHT POSITIONER (LWPS 220)
SHOT GUN MOUNT ASSEMBLY



#	PART NUMBER	QTY
1	GB 337-08 BOLT, HEX .37-16 X 2.00 SS	2
2	GS 337-025 SHCS .37-16 X .62 SS	2
3	GSS 525-20-75CU SET SCREW, CUP PT .25-20 X .75	1
4	GW 337-F WASHER, FLAT .37 SS	2
5	GW 337-L WASHER, LOCK .37 SS	2
6	LWPS 221 MOUNT, SHOTGUN	1
7	SRT 579 CLEVIS PIN, SS WITH E-RING	1
8	SRT 582 VERTICAL BOTTOM PIPE CLAMP	1
9	SRT 583 VERTICAL TOP PIPE CLAMP	1
10	SRT 586 SMALL CLAMP SPRING	1

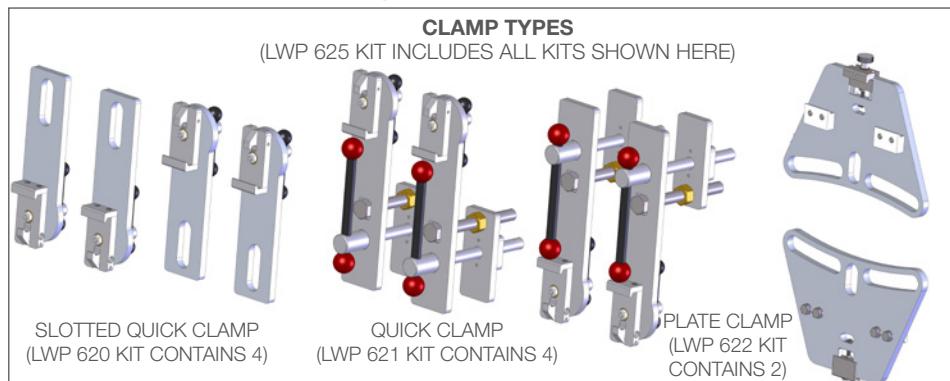
PARTS DIAGRAM

LIGHTWEIGHT POSITIONER (LWP 518)
SLOTTED QUICK CLAMP ASSEMBLY



NOTE:

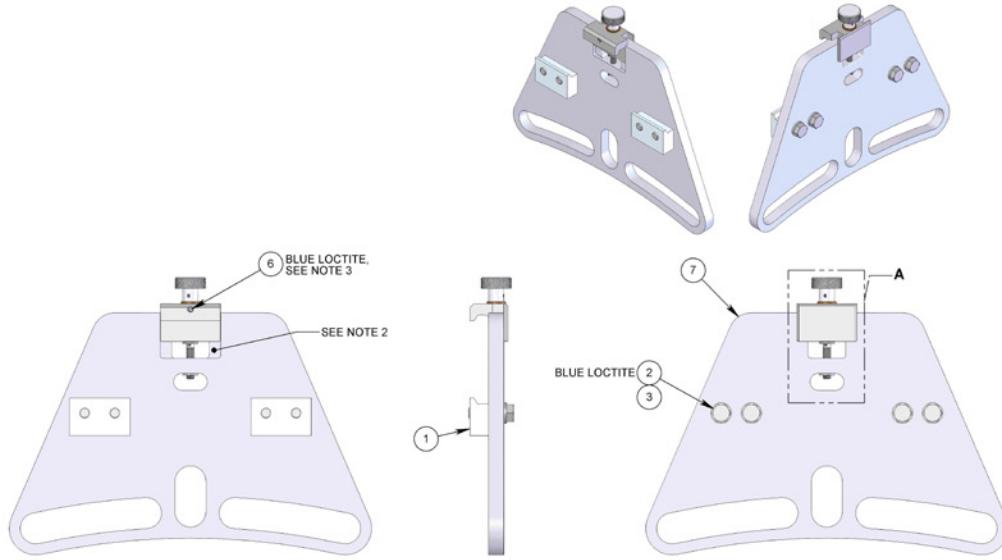
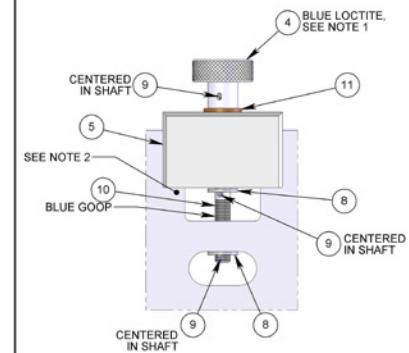
1. BLUE GOOP IS A SWAGELOK BRAND ANTI-SEIZE. AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
2. BLUE LOCTITE: PN: 242 OR EQUIVALENT
3. RED LOCTITE: PN: 262 OR EQUIVALENT
4. IF SHAFT DOES NOT SLIDE THROUGH BUSHING EASILY, REAM BUSHING ID TO SHAFT OD +.005/.001.



#	PART NUMBER	QTY.
1	BC 053 SHCS .25-20 x 1.00 SS	2
2	GSSH 0312-0750-SS SHOULDER SCREW	1
3	LWP 517 BALL NOSE SPRING PLUNGER	1
4	LWP 521 QUICK CLAMP BASE PLATE	1
5	LWP 522 FLANGE CLAMP PLATE	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 527 FLANGE CLAMP SCREW	1
11	LWP 528 RAIL CLAMP SHAFT	1
12	LWP 529 FLANGE CLAMP LEVER	1
13	LWP 530 FLANGE CLAMP KNOB	2
14	LWP 531 RAIL CLAMP LEVER	1
15	LWP 532 RAIL CLAMP KNOB	2
16	LWP 533 NUT, BRASS, 3/4-10	1
17	LWP 534 NUT, SQUARE, 3/4-10	1
18	LWP 535 THRUST WASHER	1

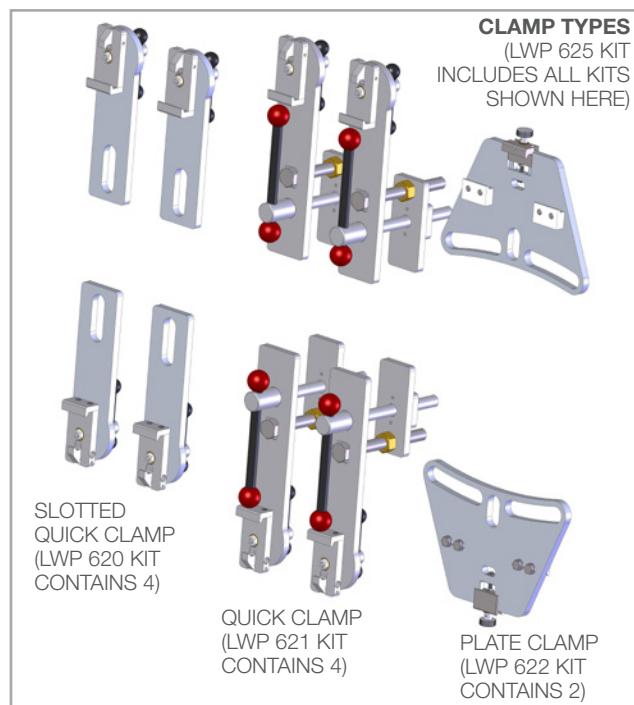
19	LWP 545 FLANGED BUSHING	1
20	LWP 547 SHIM	1
21	LWP 548 FLANGED NUT	1
22	LWP 555 BOLT, 3/4-10 X 7.00L, FULLY THREADED	1
23	SRT 333 NYLOCK HEX JAM NUT SS THIN	1
24	SRT 537 RETAINING RING	1
25	TB 050 SHCS .25-20 x .75 SS	2

LIGHTWEIGHT POSITIONER (LWP 519)
 PLATE CLAMP ASSEMBLY

ALSO SOLD AS LWP 623
 PLATE CLAMP SCREW
 ASSEMBLY KIT


NOTE:

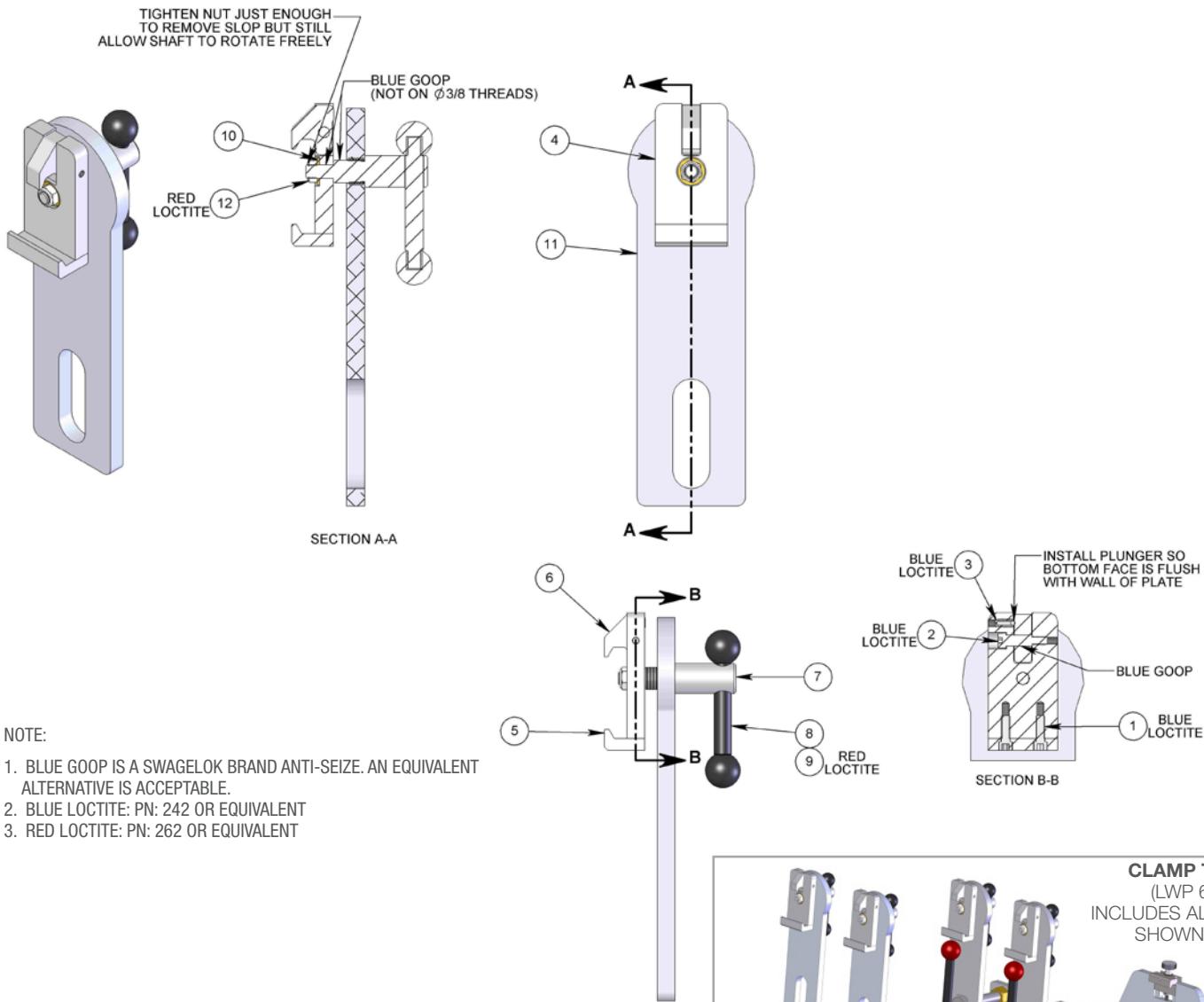
1. BEFORE INSTALLING KNOB, INSTALL MIDDLE SPRING PIN & ADJACENT FLAT WASHER. APPLY A THIN LAYER OF GENERAL PURPOSE GREASE TO UNTHEADED SECTION OF SHAFT THEN INSTALL SHAFT UP THROUGH SLIDE CLAMP. THREAD KNOB ON SHAFT AS FAR AS POSSIBLE WHILE STILL ALLOWING SHAFT TO FREELY ROTATE, THEN BACK OFF TO FIRST SPOT FOR SPRING PIN INSTALLATION.
2. APPLY A THIN LAYER OF GENERAL PURPOSE GREASE TO ALL SURFACES OF PLATE THAT CLAMP WILL SLIDE ON
3. THREAD PLUNGER IN SO BALL ENGAGES DETENTS IN SHAFT.
DO NOT ALLOW BODY OF PLUNGER TO TOUCH SHAFT.
4. BLUE GOOP IS A SWAGELOK BRAND ANTI-SEIZE. AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
5. BLUE LOCTITE: PN: 242 OR EQUIVALENT

#	PART NUMBER	QTY.
1	BR 060 RAIL CLAMP	2
2	GB 337-05 BOLT, HEX HEAD, STAINLESS, 3I8-16 UNC X 1.250L	4
3	GW 337-L WASHER, LOCK, 3/8", STAINLESS	4
4	LWP 536 MODIFIED KNOB	1
5	LWP 537 SLIDE CLAMP	1
6	LWP 539 BALL NOSE SPRING PLUNGER	1
7	LWP 540 PLATE CLAMP BASE PLATE	1
8	LWP 541 FLAT WASHER	2
9	LWP 543 SPRING PIN	3
10	LWP 544 CLAMP SHAFT	1
11	LWP 549 BRONZE THRUST BUSHING	1



PARTS DIAGRAM

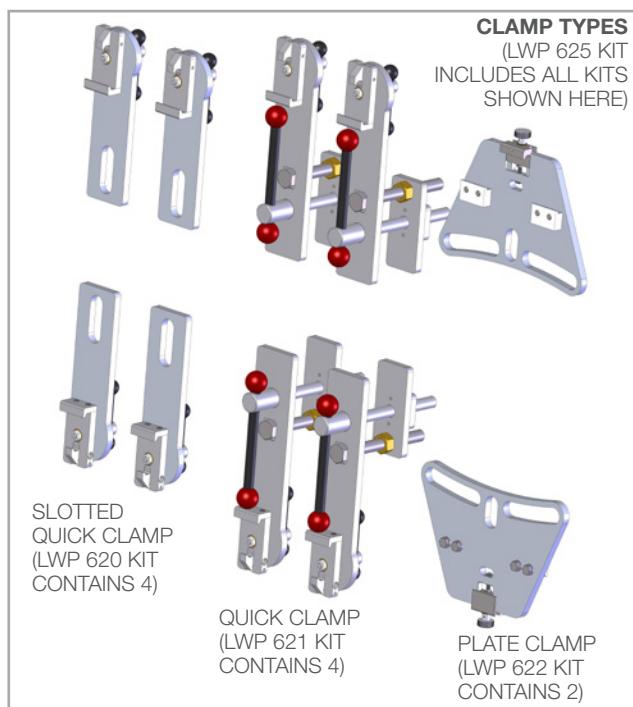
LIGHTWEIGHT POSITIONER (LWP 552) SLOTTED QUICK CLAMP ASSEMBLY



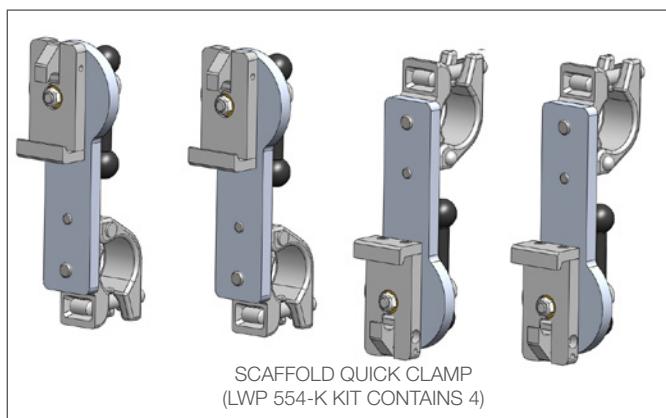
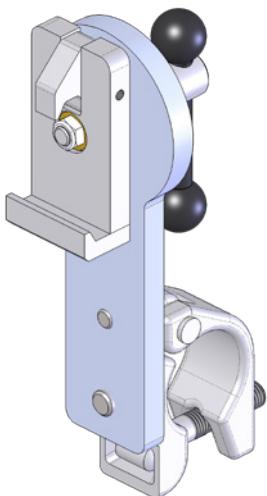
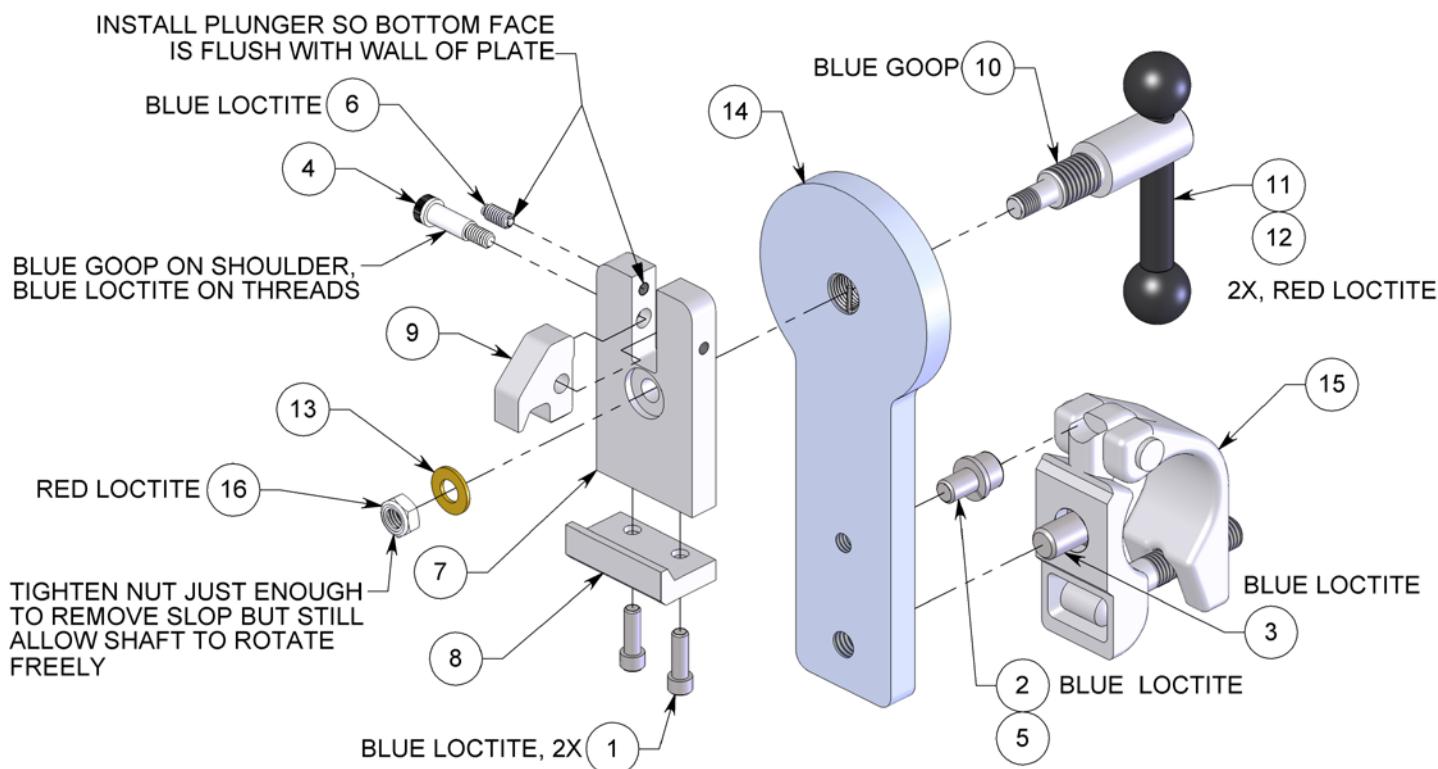
NOTE:

1. BLUE GOOP IS A SWAGELOK BRAND ANTI-SEIZE. AN EQUIVALENT ALTERNATIVE IS ACCEPTABLE.
2. BLUE LOCTITE: PN: 242 OR EQUIVALENT
3. RED LOCTITE: PN: 262 OR EQUIVALENT

#	PART NUMBER	QTY.
1	GS 325-03 SCREW, SHC, STAINLESS, 114-20 UNC X 0.750L	2
2	GSSH 0312-0750-SS SHOULDER SCREW	1
3	LWP 517 BALL NOSE SPRING PLUNGER	1
4	LWP 524 RAIL CLAMP PLATE	1
5	LWP 525 STATIC RAIL CLAMP	1
6	LWP 526 QUICK RAIL CLAMP FINGER	1
7	LWP 528 RAIL CLAMP SHAFT	1
8	LWP 531 RAIL CLAMP LEVER	1
9	LWP 532 RAIL CLAMP KNOB	2
10	LWP 535 THRUST WASHER	1
11	LWP 551 SLOTTED QUICK CLAMP BASE PLATE	1
12	SRT 333 NYLOCK HEX JAM NUT SS THIN	1



LIGHTWEIGHT POSITIONER (LWP 554)
SCAFFOLD QUICK CLAMP ASSEMBLY

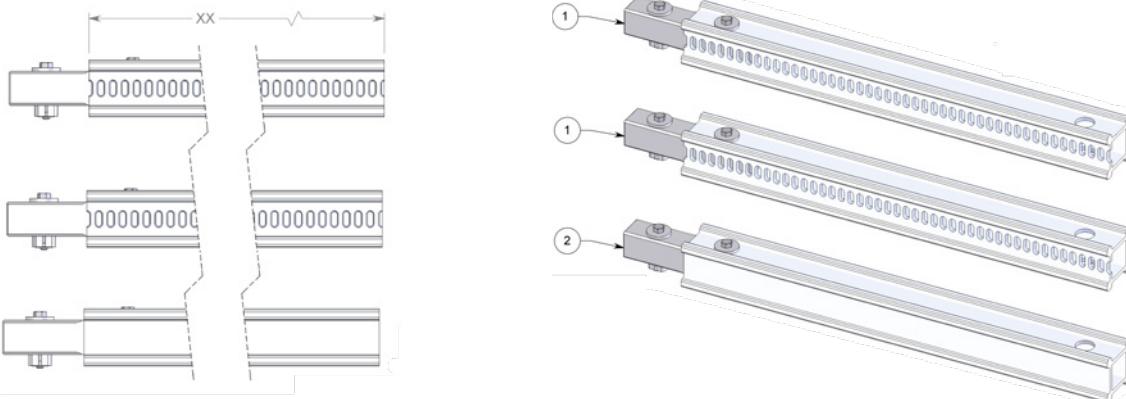


#	PART NUMBER	QTY
1	GS 325-03 SCREW, SHC, STAINLESS, 114-20 UNC X 0.750L	2
2	GS 337-025 SCREW, SHC, STAINLESS, 318-16 UNC X 0.625L	1
3	GSF 350-04 SCREW, FHSC, STAINLESS, 112-13 UNC X 1.000L	1
4	GSSH 0312-0750-SS SHOULDER SCREW, 5/16 DIA, 3/4 L, SS	1
5	GW 337-L WASHER, LOCK, 3/8", STAINLESS	1
6	LWP 517 BALL NOSE SPRING PLUNGER	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 528 RAIL CLAMP SHAFT	1
11	LWP 531 RAIL CLAMP LEVER	1
12	LWP 532 RAIL CLAMP KNOB	2
13	LWP 535 THRUST WASHER	1
14	LWP 553 SCAFFOLD QUICK CLAMP BASE PLATE	1
15	LWP 559 MODIFIED SCAFFOLD CLAMP	1
16	SRT 333 NYLOCK HEX JAM NUT SS THIN	1

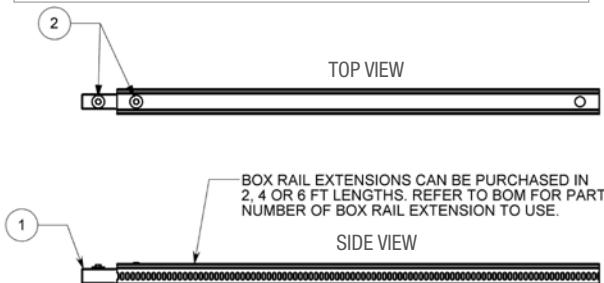
PARTS DIAGRAM

LIGHTWEIGHT POSITIONER (LWP 582-XX-V2) COMPLETE WINDOW, 2.5IN. BOX RAIL EXTENSION KIT



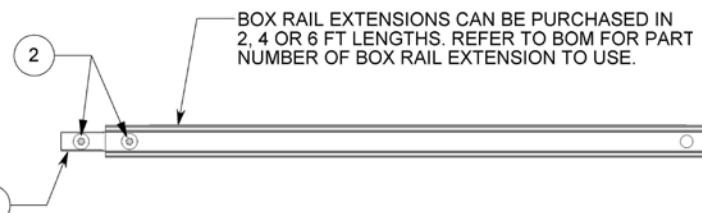
#	PART NUMBER	2FT/QTY.	4FT/QTY.	6FT/QTY.
1	LWP 580-XX-001 2.5IN BOX RAIL EXTENSION KIT, SLOTTED (CAN BE PURCHASED SEPARATELY SEE BELOW)	2	2	2
2	LWP 581-XX-001 2.5IN BOX RAIL EXTENSION KIT (CAN BE PURCHASED SEPARATELY SEE BELOW)	1	1	1

LIGHTWEIGHT POSITIONER (LWP 580-XX-001) 2.5IN. BOX RAIL EXTENSION KIT, SLOTTED



#	PART NUMBER	DESCRIPTION	LWP 580-2 QTY.	LWP 580-4 QTY.	LWP 580-6 QTY.
1	BR 006-2.5-001	2.5" SPLICE TUBE	1	1	1
2	BR 008-2.5-001	2.5" WEDGE BOLT ASSEMBLY	2	2	2
3	BU 002-2-001	2.5" BOX RAIL EXTENSION	1	-	-
4	BU 002-4-001	2.5" BOX RAIL EXTENSION	-	1	-
5	BU 002-6-001	2.5" BOX RAIL EXTENSION	-	-	1

LIGHTWEIGHT POSITIONER (LWP 581-XX-001) 2.5IN. BOX RAIL EXTENSION KIT, NOT SLOTTED



#	PART NUMBER	DESCRIPTION	LWP 581-2 QTY.	LWP 581-4 QTY.	LWP 581-6 QTY.
1	BR 006-2.5-001	2.5" SPLICE TUBE	1	1	1
2	BR 008-2.5-001	2.5" WEDGE BOLT ASSEMBLY	2	2	2
3	BR 002-02-001	2.5" BOX RAIL EXTENSION	1	-	-
4	BR 002-04-001	2.5" BOX RAIL EXTENSION	-	1	-
5	BR 002-06-001	2.5" BOX RAIL EXTENSION	-	-	1

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TERMS AND CONDITIONS

1. Acceptance of Terms and Conditions. Receipt of these Terms and Conditions of Sale ("Terms and Conditions") shall operate as the acceptance by StoneAge, Inc. ("Seller") of the order submitted by the purchaser ("Buyer"). Such acceptance is made expressly conditional on assent by Buyer to these Terms and Conditions. Such assent shall be deemed to have been given unless written notice of objection to any of these Terms and Conditions (including inconsistencies between Buyer's purchase order and this acceptance) is given by Buyer to Seller promptly on receipt hereof.

Seller desires to provide Buyer with prompt and efficient service. However, to individually negotiate the terms of each sales contract would substantially impair Seller's ability to provide such service. Accordingly, the product(s) furnished by Seller are sold only according to the terms and conditions stated herein and with the terms and conditions stated in any effective StoneAge Dealer Agreement or StoneAge Reseller Agreement, if applicable. Notwithstanding any terms and conditions on Buyer's order, Seller's performance of any contract is expressly made conditional on Buyer's agreement to these Terms and Conditions unless otherwise specifically agreed to in writing by Seller. In the absence of such agreement, commencement of performance, shipment and/or delivery shall be for Buyer's convenience only and shall not be deemed or construed to be an acceptance of Buyer's terms and conditions.

2. Payment/Prices. Unless other arrangements have been made in writing between Seller and Buyer, payment for the product(s) shall be made upon receipt of invoice. The prices shown on the face hereof are those currently in effect. Prices invoiced shall be per pricelist in effect at the time of shipment. Prices are subject to increase for inclusion of any and all taxes which are applicable and which arise from the sale, delivery or use of the product(s), and the collection of which Seller is or may be responsible to provide to any governmental authority, unless acceptable exemption certificates are provided by Buyer in accordance with applicable law. Buyer shall pay all charges for transportation and delivery and all excise, order, occupation, use or similar taxes, duties, levies, charges or surcharges applicable to the product(s) being purchased, whether now in effect or hereafter imposed by any governmental authority, foreign or domestic.

3. Warranty. SELLER MAKES NO WARRANTIES OR REPRESENTATIONS AS TO THE PERFORMANCE OF ANY PRODUCT EXCEPT AS SET FORTH IN THE STONEAGE LIMITED WARRANTY PROVIDED WITH THE PRODUCT.

4. Delivery. Seller is not obligated to make delivery by a specified date, but will always use its best efforts to make delivery within the time requested. The proposed shipment date is an estimate. Seller will notify Buyer promptly of any material delay and will specify the revised delivery date as soon as practicable. UNDER NO CIRCUMSTANCES SHALL SELLER HAVE ANY LIABILITY WHATSOEVER FOR LOSS OF USE OR FOR ANY DIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM DELAY REGARDLESS OF THE REASON(S).

All product(s) will be shipped F.O.B. point of origin, unless specifically agreed otherwise, and Buyer shall pay all shipping costs and insurance costs from that point. Seller, in its sole discretion, will determine and arrange the means and manner of transportation of the product(s). Buyer shall bear all risk of loss commencing with the shipment or distribution of the product(s) from Seller's warehouse. Order shortages or errors must be reported within fifteen (15) business days from receipt of shipment to secure adjustment. No product(s) may be returned without securing written approval from Seller.

5. Modification. These Terms and Conditions are intended by Seller and Buyer to constitute a final, complete and exclusive expression of agreement relating to the subject matter hereof and cannot be supplemented or amended without Seller's prior written approval.

6. Omission. Seller's waiver of any breach or Seller's failure to enforce any of these Terms and Conditions at any time, shall not in any way affect, limit or waive Seller's right thereafter to enforce and compel strict compliance with every term and condition hereof.

7. Severability. If any provision of these Terms and Conditions is held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the other portions hereof.

8. Disputes. Seller and Buyer shall attempt in good faith to promptly resolve any dispute arising under these Terms and Conditions by negotiations between representatives who have authority to settle the controversy. If unsuccessful, Seller and Buyer shall further attempt in good faith to settle the dispute by nonbinding third-party mediation, with fees and expenses of such mediation apportioned equally to each side. Any dispute not so resolved by negotiation or mediation may then be submitted to a court of competent jurisdiction in accordance with the terms hereof. These procedures are the exclusive procedures for the resolution of all such disputes between the Seller and Buyer.

9. Governing Law. All sales, agreements for sale, offers to sell, proposals, acknowledgments and contracts of sale, including, but not limited to, purchase orders accepted by Seller, shall be considered a contract under the laws of the State of Colorado and the rights and duties of all persons, and the construction and effect of all provisions hereof shall be governed by and construed according to the laws of such state.

10. Jurisdiction and Venue. Seller and Buyer agree that the state or federal courts located within the City and County of Denver, Colorado shall have sole and exclusive jurisdiction over any litigation concerning any dispute arising under these Terms and Conditions not otherwise resolved pursuant to Section 9 as well as any alleged defects of any Products or damages sustained as a result of such alleged defects. Seller and Buyer further agree that should any litigation be commenced in connection with such a dispute, it shall only be commenced in such courts. Seller and Buyer agree to the exclusive jurisdiction of such courts and neither will raise any objection to the jurisdiction and venue of such courts, including as a result of inconvenience.

11. Attorney's Fees. If any litigation is commenced between Seller and Buyer, or their personal representatives, concerning any provision hereof, the party prevailing in the litigation shall be entitled, in addition to such other relief that is granted, to a reasonable sum as and for their attorneys' fees and costs in such litigation or mediation.

STONEAGE TRADEMARK LIST

View the list of StoneAge's trademarks and service marks and learn how the trademarks should be used. Use of StoneAge trademarks may be prohibited, unless expressly authorized.

<http://www.StoneAgetools.com/trademark-list/>

STONEAGE PATENT DATA

View the list of StoneAge's current U.S. patent numbers and descriptions.

<http://www.sapatents.com>

STONEAGE TERMS AND WARRANTY

View StoneAge's Terms and Warranty Conditions online.

<http://www.stoneagetoools.com/terms>

<http://www.stoneagetoools.com/warranty>

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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