



**HOWMET  
AEROSPACE**

## Instruction Manual

# 244X & 244OSX series

## Pneudraulic Installation Tools

*Patent Pending*



244X shown as shipped



244OSX (boot removed)  
shown with typical offset nose  
assembly, not included

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**HOWMET  
AEROSPACE**

## Declaration of Conformity

**Manufacturer:**

Huck International, LLC, Industrial Products Group, 1 Corporate Drive, Kingston, NY, 12401, USA

**Description of Machinery:**

Models 24#, 25#, and 2047 family of hydraulic installation tools and specials based on their design (e.g. PR#####).

**Relevant provisions complied with:**

Council Directive related to Machinery (2006/42/EC)

Supply of Machinery (Safety) Regulations 2008

British Standard related to hand held, non-electric power tools (ISO 11148-2:2011)

**Representatives:**

UK: Paul Carson, Huck International, Ltd. Unit C Stafford Park 7, Telford Shropshire TF3 3BQ, England, United Kingdom

EU: Lutz Baumann, Hildesheim Operations, Fairchild Fasteners Europe - VSD GmbH, Steven 3, 31135, Hildesheim, Germany

**Authorized Signature/date:**

I, the undersigned, do hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Signature: \_\_\_\_\_

Full Name: Nicholas Gougouris

Position: Engineering Manager

Location: Huck International, LLC d/b/a Howmet Fastening Systems  
Kingston, New York, USA

Date: 11/02/2021 (November 2, 2021)



**Declared dual number noise emission values in accordance with ISO 4871**

A weighted sound power level, LWA: **91** dB (reference 1 pW) Uncertainty, KWA: 3 dB

A weighted emission sound pressure level at the work station, LpA: **80** dB (reference 20 µPa) Uncertainty, KpA: 3 dB

C-weighted peak emission sound pressure level, LpC, peak: **115** dB (reference 20 µPa) Uncertainty, KpC: 3 dB

Values determined according to noise test code ISO 3744. The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements.

**Declared vibration emission values in accordance with EN 12096**

Measured Vibrations emission value, a:	<b>.63</b> m/s <sup>2</sup>
Uncertainty, K:	<b>.72</b> m/s <sup>2</sup>
Values measured and determined according to ISO 28662-1, ISO 5349-2, and EN 1033	

Test data to support the above information is on file at:  
Howmet Fastening Systems, Kingston Operations, Kingston, NY, USA.



# Safety Instructions

## GLOSSARY OF TERMS AND SYMBOLS:

**UK CA CE** -Product complies with requirements set forth by the relevant UK and European directives.



-Read manual prior to using this equipment.



-Eye protection is required while using this equipment.



-Hearing protection is required while using this equipment.

Notes: are reminders of required procedures.

***Bold, Italic type, and underline:*** emphasize a specific instruction.



**WARNINGS: Must be understood to avoid severe personal injury.**



**CAUTIONS: Show conditions that will damage equipment or structure.**

### I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Howmet equipment.
2. Howmet equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Howmet procedures.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the assembly power tool.
5. Do not modify this assembly power tool. This can reduce effectiveness of safety measures and increase operator risk.
6. Do not discard safety instructions; give them to the operator.
7. Do not use assembly power tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Howmet representative.
11. Only genuine Howmet parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and preventing an accident which may cause severe personal injury.
17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled with out nose assembly installed.
19. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet for correct positioning.

### II. PROJECTILE HAZARDS:

1. Risk of whipping compressed air hose if tool is pneudraulic or pneumatic.
2. Disconnect the assembly power tool from energy source when changing inserted tools or accessories.
3. Be aware that failure of the workpiece, accessories, or the inserted tool itself can generate high velocity projectiles.
4. Always wear impact resistant eye protection during tool operation. The grade of protection required should be assessed for each use.
5. The risk of others should also be assessed at this time.
6. Ensure that the workpiece is securely fixed.
7. Check that the means of protection from ejection of fastener or pintail is in place and operative.

8. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

### III. OPERATING HAZARDS:

1. Use of tool can expose the operator's hands to hazards including: crushing, impacts, cuts, abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly and be ready to counteract normal or sudden movements with both hands available.
4. Maintain a balanced body position and secure footing.
5. Release trigger or stop start device in case of interruption of energy supply.
6. Use only fluids and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these not to allow counteracting of normal or unexpected tool movement.
8. If the assembly power tool is fixed to a suspension device, make sure that fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

### IV. REPETITIVE MOTION HAZARDS:

1. When using assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. When using tool, the operator should adopt a comfortable posture while maintaining a secure footing and avoid awkward or off balanced postures.
3. The operator should change posture during extended tasks to help avoid discomfort and fatigue.
4. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warnings should not be ignored. The operator should tell the employer and consult a qualified health professional.

### V. ACCESSORIES HAZARDS:

1. Disconnect tool from energy supply before changing inserted tool or accessory.
2. Use only sizes and types of accessories and consumables that are recommended. Do not use other types or sizes of accessories or consumables.

### VI. WORKPLACE HAZARDS:

1. Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line or hydraulic hose.
2. Proceed with caution while in unfamiliar surroundings; there could be hidden hazards such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive environments.
4. Tool is not insulated against contact with electrical power.
5. Ensure there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

### VII. NOISE HAZARDS:

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems such as tinnitus, therefore risk assessment and the implementation of proper controls is essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpiece from 'ringing'.
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain tool as recommended in the instruction handbook to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable / inserted tool as recommended to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

### VIII. VIBRATION HAZARDS:

1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your employer and consult a physician.
4. Support the weight of the tool in a stand, tensioner or balancer in order to have a lighter grip on the tool.

### IX. PNEUMATIC / PNEUDRAULIC TOOL SAFETY INSTRUCTIONS:

1. Air under pressure can cause severe injury.
2. Always shut off air supply, drain hose of air pressure and disconnect tool from air supply when not in use, before changing accessories or when making repairs.
3. Never direct air at yourself or anyone else.
4. Whipping hoses can cause severe injury, always check for damaged or loose hoses and fittings.
5. Cold air should be directed away from hands.
6. Whenever universal twist couplings (claw couplings) are used, lock pins shall be installed and whip-check safety cables shall be used to safeguard against possible hose to hose or hose to tool connection failure.
7. Do not exceed maximum air pressure stated on tool.
8. Never carry an air tool by the hose.



## Specifications

### POWER SOURCE

90 psi shop air

### HYDRAULIC FLUID

Hydraulic fluid shall meet DEXRON III, DEXRON VI, MERCON, Allison C-4 or equivalent ATF specifications. Fire resistant fluid may be used if it is an ester based fluid such as Quintolubric HFD or equivalent. Water based fluid shall NOT be used as serious damage to equipment will occur.

### STROKE

**244X:** .562 in (1.43 cm) at full load with losses

**244OSX:** Adjustable 0-.562 in (0-1.43 cm)

### WEIGHT

5 lbs 11 oz (2.58 kg)

### MAXIMUM AIR PRESSURE

90 psi (6.2 BAR)

### MAXIMUM FLOW RATE

6.3 scfm (178 L/m)

### CAPACITY

4606 lbs (20.49 kN) @ 90 psi (6.2 BAR)

### SPEED/CYCLES

30 per minute

### MAXIMUM OPERATING TEMPERATURE

125°F (52°C)

Where the following trade names are used in this manual, please note:

**DEXRON** is a registered trademark of General Motors Corporation.

**GLYD Ring** is a registered trademark of Trelleborg Sealing Solutions Germany GmbH

**Loctite** is a registered trademark of Henkel IP & Holding GmbH

**LUBRIPLATE** is a registered trademark of Fiske Brothers Refining Co.

**MERCON** is a registered trademark of Ford Motor Corp.

**MOLYKOTE** is a registered trademark of Dow Corning Corporation

**Never-Seez** is a registered trademark of Bostik, Inc.

**Quintolubric** is a registered trademark of Quaker Chemical Corp.

**Slic-tite** is a registered trademark of LA-CO Industries, Inc.

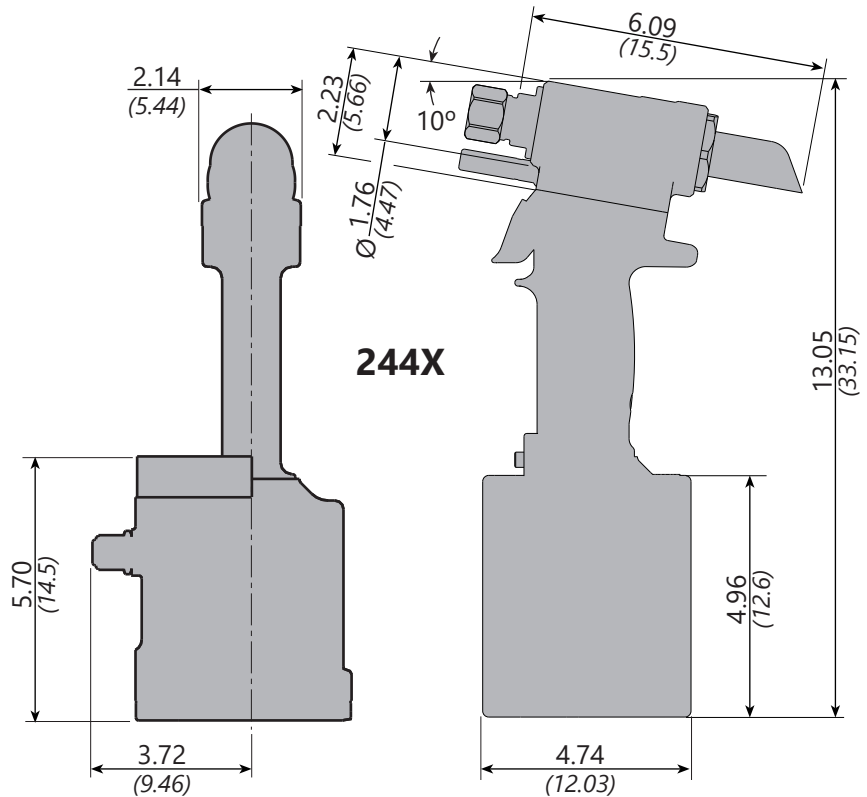
**Spirolox** is a registered trademark of Smalley Steel Ring Company

**Teflon** is a registered trademark of Chemours Company FC.

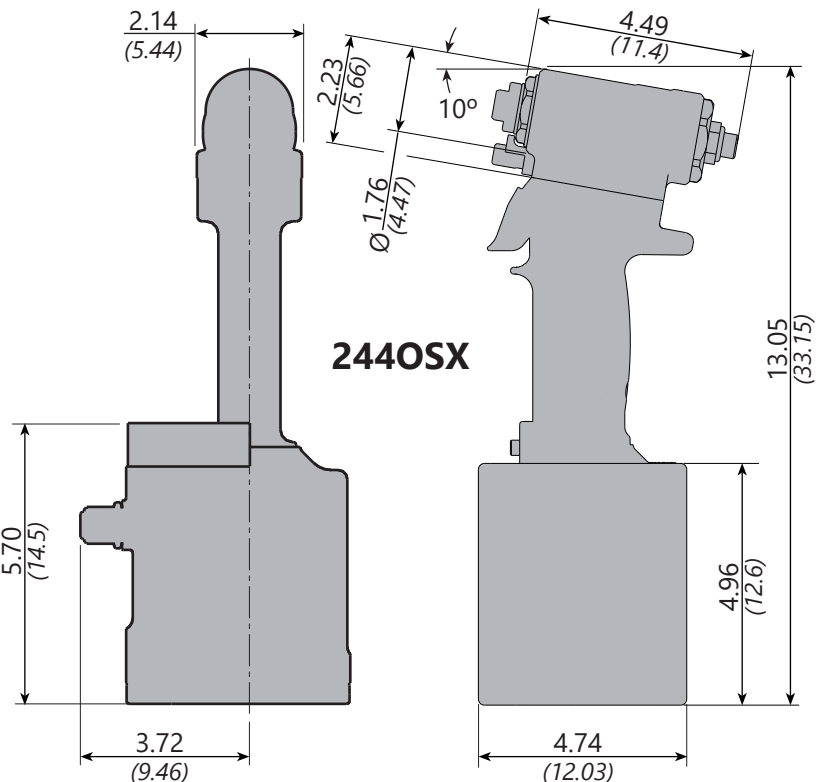
**Threadmate** is a registered trademark of Parker Intangibles LLC.

**TRUARC** is a trademark of TRUARC Co. LLC.

**Vibra-Tite** is a registered trademark of ND Industries, Inc. USA.

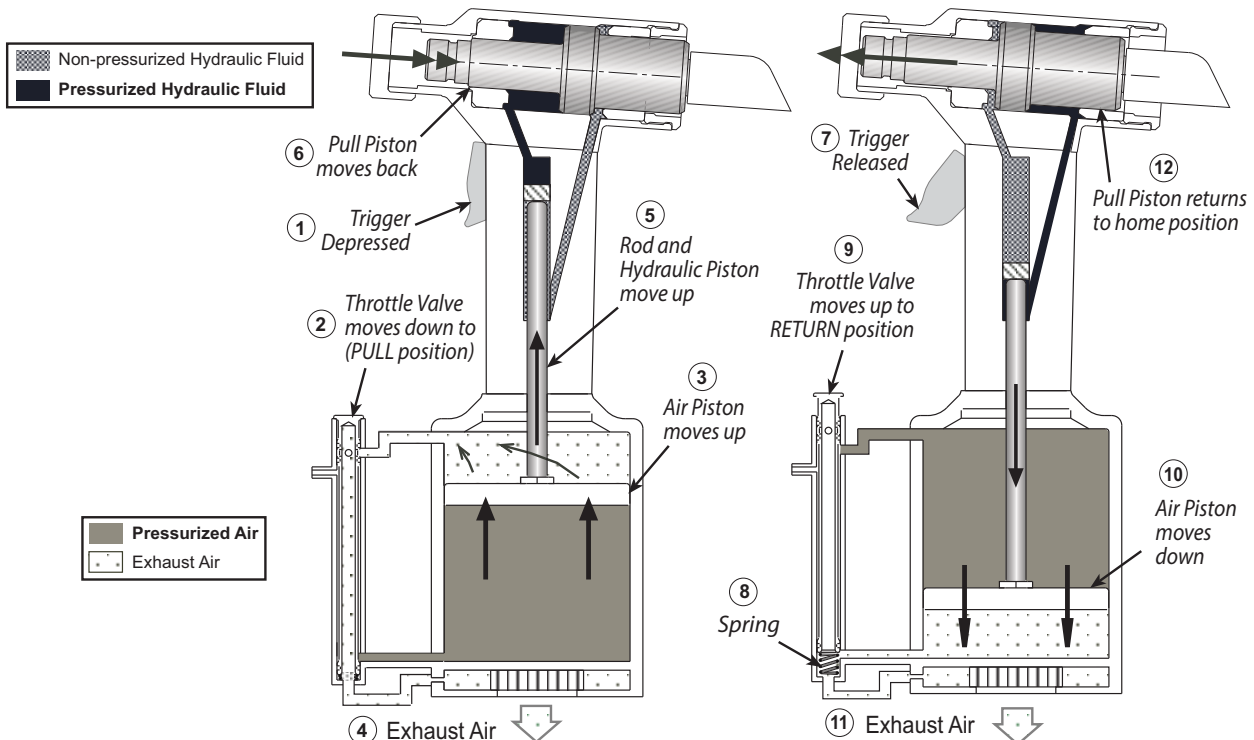


INCHES  
(cm)





## Principle of Operation



**PULL:** When trigger is depressed (1), throttle valve moves to down position (2), and pressurized air is directed to bottom of air piston, causing it piston to move upward (3). Air above the piston is exhausted and directed through the center of the throttle valve and out the bottom of the tool (4). As the air piston moves upward, the attached rod and hydraulic piston and are forced up (5), and a column of pressurized fluid is forced into the head, which moves the hydraulic pull piston back (6). The attached nose assembly moves with the hydraulic pull piston to begin fastener installation.

**RETURN:** When fastener installation is completed, trigger is released (7). Air pressure, with the assistance of a spring (8), causes the throttle valve to return to its up position (9). Pressurized air is redirected to the top of the air piston, causing it to move downward (10). The air from below the piston is exhausted through bottom of tool (11). As the rod and air piston move downward, hydraulic pressure is reversed and the hydraulic pull piston is returned forward (12). The return pressure relief valve protects the tool against pressure spikes. The reservoir replenishes the hydraulic system as needed.

## Preparation for Use



**CAUTION: Do not use TEFLON® tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction.**

**(Threadmate™ is available from Howmet in a 4oz. tube as part number 508517.)**

244 series installation tools are shipped with a plastic plug in the air inlet connector. The connector has 1/4-18 female pipe threads to accept the air hose fitting. Quick disconnect fittings and 1/4" inside diameter air hose are recommended. An air supply of 90-100 psi capable of 6.3 CFM must be available. Air supply should be equipped with a filter-regulator-lubricator unit.

1. Remove plastic shipping plug from Air Inlet Connector and put in a few drops of Automatic Transmission Fluid, DEXRON III, or equivalent.
2. Screw quick disconnect fitting into Air Inlet Connector.
3. Set air pressure on regulator to 90-100 psi.
4. Attach optional Air Hose (Howmet part number 115436), supplied with tool, to air inlet connector.
5. Connect air hose to tool.
6. Cycle tool a few times by depressing and releasing trigger.
7. Disconnect air hose from tool.

8. Remove Retaining Nut and Stop. (244X ONLY)
9. Select proper Nose Assembly for fastener to be installed.
10. **244OSX:** Set stroke required for Nose Assembly selected. Refer to Adjust Stroke section of this manual for adjustment procedure (Fig 11).
11. Attach nose assembly. For special instructions to attach a nose assembly to the 244OSX model, see page 19 of this manual (Fig 12).
12. Connect air hose to tool and install fastener(s) in test plate of proper thickness with proper size holes. Inspect fastener(s).

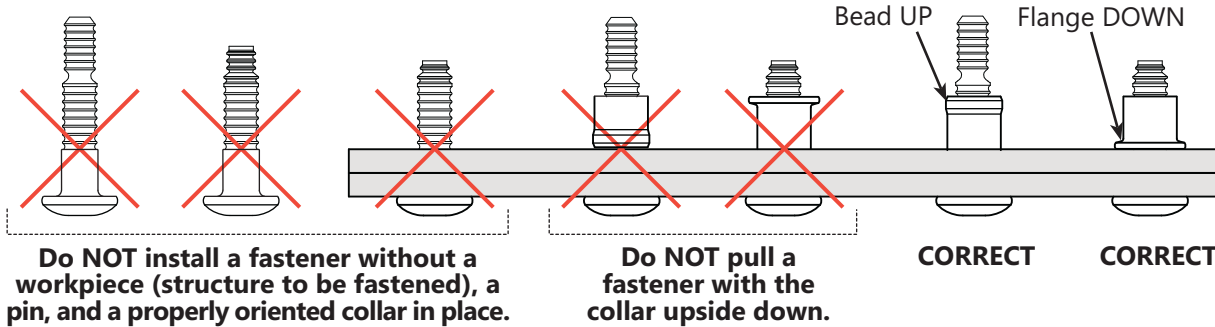
### NOTES:

- 1 **Air quick disconnect fittings and air hoses are not available from Howmet Aerospace, Inc.**
- 2 **On older-style nose assemblies with lock collars, Loctite® 243™ Threadlocker (Howmet part number 508567) should be used on collet threads, since there is no staking hole provided on the pull piston.**



## Operating Instructions

**FOR SAFE OPERATION, THIS SECTION MUST BE READ AND UNDERSTOOD.**



**Do NOT install a fastener without a workpiece (structure to be fastened), a pin, and a properly oriented collar in place.**

**Do NOT pull a fastener with the collar upside down.**

**CORRECT**

**CORRECT**



### WARNINGS:

To avoid severe personal injury, wear approved eye and ear protection.

Be sure of adequate clearance for operator's hands before proceeding with fastener installation.

Do NOT attempt to install a pin without placing the fastener and collar in the work piece (structure to be fastened).

Do NOT attempt to install a pin without a properly oriented collar in place.

The collar flange must be against work piece.

If these safety measures are not followed, the fastener could eject with great velocity and cause severe personal injury.



**WARNING:** Inspect tool for damage or wear before each use. Do not operate if damaged or worn, as severe personal injury may occur.



### CAUTIONS:

Remove excess gap from between the sheets. This permits enough pintail to emerge from collar for ALL jaw teeth to engage with pintail. If ALL teeth do not engage properly, jaws will be damaged.

To avoid structural and Tool damage, be sure enough clearance is allowed for nose assembly at full stroke. Do not abuse the tool by dropping it, using it as a hammer or otherwise causing unnecessary wear and tear. Reasonable care of installation tools by operators is an Important factor in maintaining tool efficiency and reducing downtime.

### LOCKBOLT® FASTENER INSTALLATION:

Place pin in work hole and place collar over pin. Hold pin and push nose assembly onto pin protruding through collar until nose anvil touches collar. Press trigger and hold until collar is swaged and pintail breaks. Release trigger and tool will go into return stroke. The tool and nose assembly are ready for the next fastener installation cycle.

### BLIND FASTENER INSTALLATION:

Fastener may be placed in work hole or in end of nose assembly. In either case, tool and nose assembly must be held against work and at right angles to it. Press trigger and hold until fastener is installed and pintail breaks. Release trigger and tool will go into return stroke. Tool and nose assembly are ready for next fastener installation cycle.

## Maintenance

### GENERAL

1. Tool life and efficiency depends upon proper maintenance. Regular inspection and correction of minor problems keeps tool operating efficiently and prevent downtime. The tool should be serviced by personnel who are thoroughly familiar with how it operates.
2. Service tool in a clean, well-lit area to prevent contamination of pneumatic and hydraulic systems.
3. Proper hand tools, both standard and special, must be available.
4. All parts must be handled carefully and examined for damage or wear. Always replace seals when tool is disassembled for any reason. Components should be disassembled and assembled in a straight line without bending, cocking, or undue force.
5. Service Parts Kit 244KIT includes consumable parts and should be available at all times. Other components, as experience dictates, should also be available.

### DAILY

1. If a Filter-Regulator-Lubricator unit is not being used, uncouple air disconnects and put a few drops of ATF or light oil into the air inlet of the tool. If the tool is in continuous use, put a few drops of oil in every two to three hours.
2. Bleed the air line to clear it of accumulated dirt or water before connecting air hose to the tool.
3. Check all hoses and couplings for damage or air leaks, tighten or replace if necessary.
4. Check the tool for damage or air/hydraulic leaks, tighten or replace if necessary.
5. Check the nose assembly for tightness or damage, tighten or replace if necessary.
6. Check oil level in tool reservoir, replenish if necessary.

### WEEKLY

1. Disassemble and clean nose assemblies and reassemble.
2. Check the tool and all connecting parts for damage or oil/air leaks, tighten or replace if necessary.



# Disassembly Procedure



**WARNING:** Be sure air hose is disconnected from tool before cleaning or performing maintenance. Severe personal injury may occur if air hose is not disconnected.

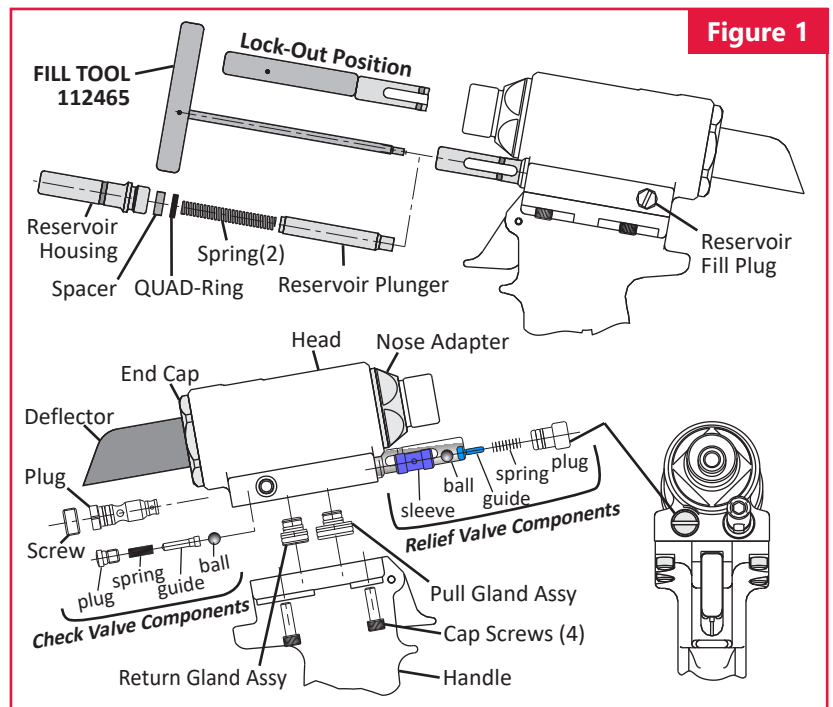
**NOTE:** Only disassemble the components necessary to replace damaged O-rings, Quad Rings, Back-up Rings, and worn/damaged components. Always use soft jaw vice to avoid damage to tool.

1. Disconnect air hose from tool.
2. Remove nose assembly.
3. Insert Fill Tool through reservoir housing and screw into Reservoir Plunger, locking it in the out position. (Figure 1)
4. Unscrew 4 Cap Screws with 5/32 hex key. Carefully lift Head straight up from Handle, and remove Pull and Return Gland Assemblies. (Figure 1)
5. Unscrew Relief Valve Plug. Remove Relief Valve Spring, Guide, Sleeve and Steel Ball. A small magnet is helpful.
6. Unscrew Reservoir Fill Plug. Hold over waste oil container and release Fill Tool slowly.
7. Unscrew Reservoir Housing/Spacer Assembly. Remove 2 Springs between housing and plunger. Slide Reservoir Plunger from head. Remove Spacer and Quad-Ring (a pick may be used to remove the Quad-Ring).
8. Unscrew Check Valve Plug, Spring, Guide, and Stainless Steel Ball.
9. **244X ONLY:** Pintail Deflector can be pulled at rear of Tool.
10. **244X:** Unscrew End Cap from Head, Plug & Seat Assembly with 1 9/16 open end wrench.

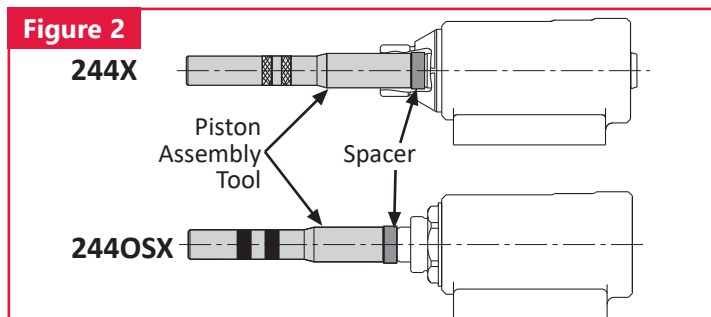
**244OSX:** Loosen and remove Locknut from Piston Stop. Unscrew Piston Stop from End Cap, then unscrew End Cap from Head, Plug & Seat Assembly with 1 9/16 open end wrench.

11. (Figure 2) Place spacer over front of Piston and thread Piston Assembly Tool onto Piston. Tap or press Piston Assembly out of head. **NOTE: This action will also push out front and rear gland assemblies.**
12. Pushing the piston out of the tool also causes rear gland/sleeve assembly (Figures 11 & 12) to be pushed out. Slide sleeve off of piston in order to replace seals on piston and to replace O-ring inside cylinder head.
13. Remove Nose Adapter from front of Head, Plug & Seat Assembly. (Figures 11 & 12).
14. If Seat is damaged, contact your Howmet representative. If Seat Assembly is damaged, it can be removed by using Seat Removal Tool (126136) optionally available. **NOTE: Seats must not be reused. They must be replaced.**

*continued*



**Figure 1**



	TOOL	SPACER	PISTON ASSEMBLY TOOL	KIT (contains spacer and piston assy tool)
<b>244X</b>		123112-2	123111-2	123110-11
<b>244OSX</b>		123112-8	123111-8	123110-10



## Disassembly Instructions *continued*

15. With a small punch and hammer, drive out the Trigger/Handle Roll Pin. Remove ball cable end from Throttle Arm and pull Cable Assembly out of Handle. (Fig. 10)
16. Remove Pivot Screw and Lever Guard from Throttle Arm. Remove Throttle Arm. Pull Throttle Valve out of cylinder. Remove Spring.
17. Remove Bleed Plug from handle.
18. Hold tool inverted in vice. Unscrew three Button Head Screws with 1/8 hex key.
19. Remove Bottom Plate, Gasket and Muffler.
20. Remove Retaining Ring from Cylinder Assembly.
21. Install Screws into Cylinder Head. Carefully pry under screws to remove cylinder head.
22. Push air piston all the way down in cylinder, lay tool on its side. Hold Locknut with a 9/16 socket and extension and with 7/64 hex key, remove piston Screw.
23. Grip Locknut under Air Piston with pliers and pull piston and rod assembly from handle and cylinder assembly.
24. Turn cylinder and handle upside down and secure in a vise.
25. With a 1 3/8 socket and extension, remove Gland Assembly. Handle and cylinder will now separate.
26. Push Intensifier Piston Assembly out of handle. Push out from top to bottom.
27. To service handle sleeve and handle, use a blunt-tipped punch to gently tap sleeve from top of handle through the bottom. Inspect sleeve for damage or wear, and replace if necessary. Service O-ring inside handle bore.
28. Remove Swivel Assembly from cylinder. Swivel Assembly may be disassembled to replace seals if necessary. (Fig. 10)
29. To remove Polyseal from Gland Assembly, remove Retaining Ring and Spacer. (Fig. 10)



**CAUTION: A plastic or wooden drift must be used to avoid damaging the handle bore.**



**CAUTION: Do not scratch piston rod or cylinder during removal.**





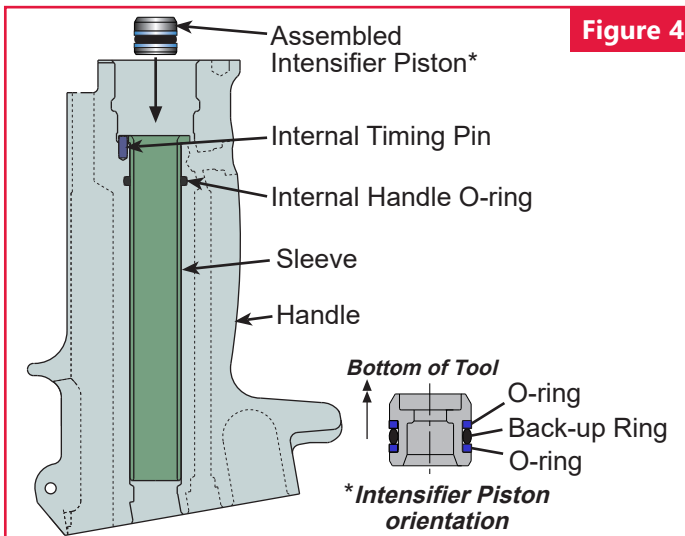
## Assembly Instructions

Clean components with mineral spirits or similar solvent. Inspect for wear or damage and replace as necessary. Replace all seals of disassembled components, using the O-rings, Quad-Rings and Back-up rings provided in Service Kit 244KIT. Smear LUBRIPLATE 130AA on O-rings, Quad-Rings, Back-up rings and mating parts to ease assembly. Assemble tool without damaging seals.



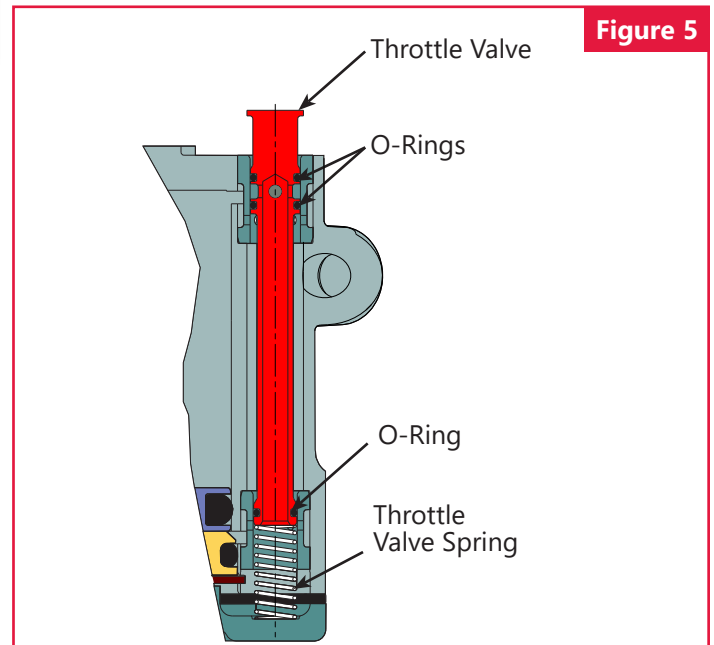
**CAUTION: Do NOT scratch piston rod.**

1. Install internal handle O-ring. Holding handle inverted in a vice, Install internal timing pin. Align small slot in sleeve with timing pin in handle and press in until seated.



2. With handle still inverted in a vice, install Intensifier Piston, with O-ring and Back-up rings in place, into handle. NOTE: Intensifier Piston must be pressed in from bottom of handle to avoid damaging seals. Ensure correct orientation as shown in Figure 4.
3. Place Cylinder Assembly on handle with Timing Pin positioned in matching hole. Assemble Main Gland Assembly (Figures 10 & 13).
4. Using a 1 3/8 socket wrench, screw Gland Assembly into Handle, and torque to 75-80 ft. lbs.
5. Push Piston Rod through Air Piston from flat side. Drop Washer over thread and screw Locknut onto rod. Using 9/16 wrench and socket, hold rod hex and torque nut to 28-32 ft. lbs.
6. Push assembled Air Piston and Piston Rod into Air Cylinder and Gland Assembly until it stops.
7. Push Air Cylinder with O-ring in place squarely into Main Cylinder. Install Retaining Ring. (Figure 10)

8. Hold handle upside down in vise. Position Muffler and Gasket on Air Cylinder; then place Bottom Plate on top of Gasket and secure with 3 Button Head Screws using 1/8 hex key. (Figure 10)
9. Turn tool upright. Drop Spring into Throttle Valve hole in Cylinder. Push Throttle Valve with O-rings in place into Cylinder. (Fig. 5)



10. Assemble Trigger, Cable Assembly and Trigger Pin together and slide cable into Handle. Align holes of Trigger and handle ears; then install Roll Pin with a hammer and punch. (Figure 10)
11. Slide Throttle Arm onto ball end of Throttle Cable (Figure 10). Swing arm until other end fits over throttle valve. Place Lever Guard over Throttle Arm. Install Pivot Screw, and tighten with a 5/32 hex key.

continued



## Assembly Instructions continued

12. Install Swivel Assembly in Cylinder Assembly, and attach air hose.
13. If Seat Assembly is being replaced, push seat and seal assembly in using soft drift. Take care not to damage ball seat surface.
14. Assemble hydraulic Piston with new lubricated seals. Lubricate with LUBRIPLATE or PARKER SUPER-O-LUBE.
15. Install Nose Adapter on front of head. Apply Loctite® 243™ threadlocker to threads per manufacturer's instructions, and torque to 50-60 ft. lbs. Loctite is a registered trademark of Henkel Corporation.
16. Install internal Cylinder Head O-ring.
17. Place seals on rear gland/sleeve
18. Thread Piston Assembly Tool onto Pull Piston. Using an arbor press, press Cylinder sleeve over the back of the piston until seated on piston. Slide complete Front Gland Assembly and other components, as shown in Figure 6, over Piston Assembly Tool, onto Piston.
19. Press entire piston, gland assembly, and components into head. Remove Piston Assembly Tool from piston.
20. **244X:** (Figure 11) Place Seals on Rear Gland Assembly. Push assembly into head and screw in End Cap, and torque to 50 - 60 ft. lbs.
21. Install Quad Ring and Spacer. Slide Reservoir Plunger in. Install Spring (507602) first, then Spring (505864).
22. Screw Housing/Spacer Assembly into head.
23. **244X ONLY:** (Figure 11) Push Pintail Deflector onto rear of Piston
24. Place O-ring on Bleed Plug Assembly and screw assembly into Handle. (Figure 10)
25. Install Pull and Return Gland Assemblies in handle (Figures 10 & 13). Push head down on glands. Place tool in a vise Head down and install 4 Cap Screws to secure the head assembly on the handle assembly.
26. The tool is now completely assembled except for relief and check valves. See FILL AND BLEED procedure for replacement of valve components.

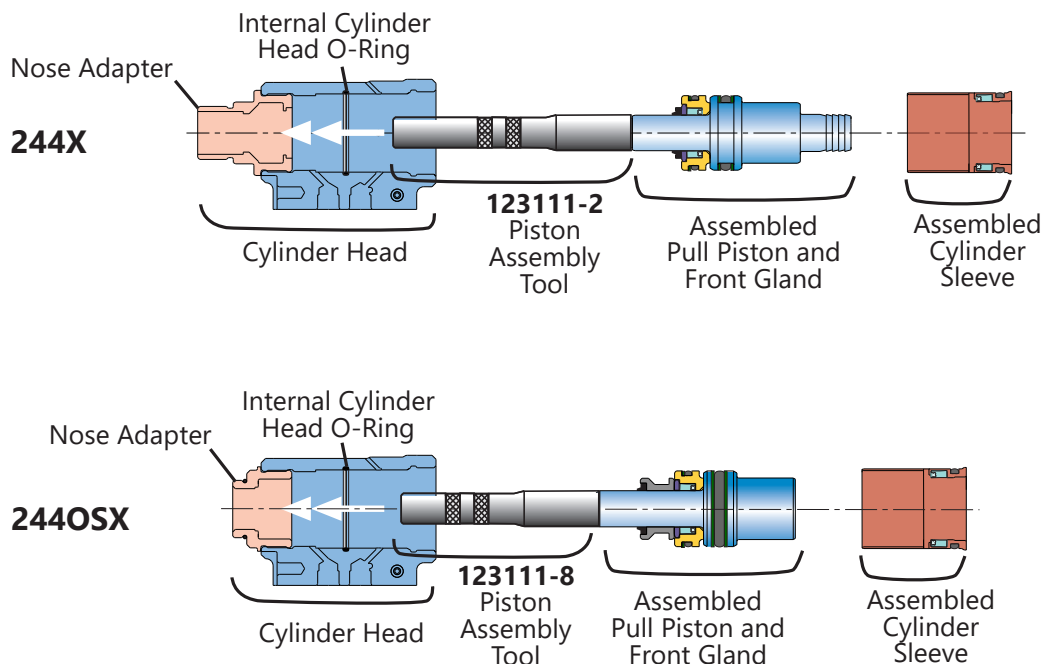


Figure 6



## Fill and Bleed



**WARNINGS:** Avoid contact with hydraulic fluid. Hydraulic fluid must be disposed of in accordance with local regulations. See MSDS for fluid shipped with tool. Air pressure must be set at 20–40 psi (1.4–2.8 bar) to prevent possible injury from high-pressure spray. If the plug is removed, the fill bottle must be in place before cycling the tool.



**CAUTION:** All fluid must be purged from the tool before refilling. The tool stroke will be diminished if the fluid is aerated. For optimal performance, refill with a fluid that is recommended in **SPECIFICATIONS**.

### EQUIPMENT REQUIRED:

- Shop airline with 90-100 psi max.
- Air regulator
- Fill Bottle (supplied with tool).
- Fill Tool Assy (supplied with tool)
- Large flat blade screwdriver
- Stall Nut 124090 (244X)

### PREPARATION:

1. Install air regulator in airline and set pressure to 20-40 psi.
2. Fill the bottle almost full of DEXRON III - ATF (automatic transmission fluid) per specifications on page 4. *Refill tool only when red line on plunger drops below the red line on the reservoir housing or when tool is rebuilt.*

**STEP 1:** Screw Fill Tool P/N 112465 into Reservoir Plunger, pull Plunger into Housing and lock Fill Tool in full forward position by tilting handle (long side touching tool) and locking in place.

**STEP 2:** Remove Relief Valve and Check Valve plugs, guides, springs and balls from ports in head. Reinstall Plug and sleeve in head in Relief Valve port (front of tool).

**STEP 3: 244X:** Screw retaining nut onto head assembly. Screw stall nut onto piston and tighten to ensure full thread engagement. Back-off retaining nut until it engages stall nut. Check piston location. Piston must be all the way forward and locked with stall nut and retaining nut. **244OSX:** Loosen locknut. Screw piston stop in until it pushes and holds the piston in the full-forward position and is locked in place with the stop.

**STEP 4:** Attach the air source momentarily to seat air piston at bottom of cylinder; then disconnect air source. With fill port facing up, lay the tool on its side.

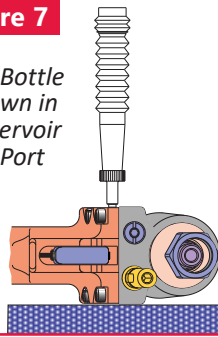
**STEP 5:** Install fill bottle in check valve hole.

**STEP 6:** Connect tool to shop air 20 to 40 psi. Cycle tool 20-30 times, watch for air bubbles escaping from the tool into bottle. Tool may be rocked to free trapped air. *Do not allow the air to re-enter the tool.* When cycling tool, always hold bottle upright to prevent drawing in air from empty part of bottle.

**STEP 7:** When no more air bubbles appear in bottle, remove bottle while tool is lying on its side.

Figure 7

Fill Bottle shown in Reservoir Fill Port



**STEP 8:** Install check valve ball, guide, and spring; then replace the plug.

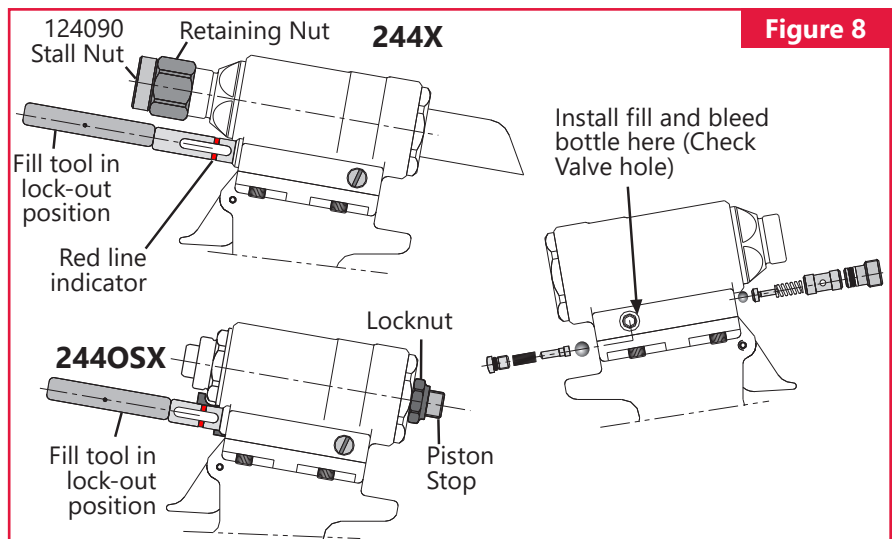
**STEP 9:** Back-out the setscrew inside of the relief valve plug by approximately 1/2 turn counterclockwise; then remove the relief valve plug. This ensures the piston will remain in full-forward position. Install relief valve ball, guide, sleeve, and spring. Replace the plug.

**STEP 10: 244X:** Unlock fill tool and check reservoir red line. Cycle the tool the with stall nut attached and retaining nut locked in the full-forward position. This is called a "dead stall". Reservoir should not drop below the red line on the reservoir housing. **244OSX:** Unlock fill tool and check reservoir red line. Cycle the tool with the stop still holding the piston in the full-forward position. This is called a "dead stall". Reservoir should not drop below the red line on the reservoir housing.

**STEP 11:** Re-lock the fill tool. Lay tool on its side and remove plug. Top off reservoir by placing a few drops of oil in hole and waiting for air bubbles to escape. Push a pin or a scribe into the hole to check for trapped air bubbles. Replace plug.

**STEP 12:** Unlock the fill tool and cycle tool as in step 10. Reservoir may drop slightly. If so, repeat step 11 until when the fill tool handle has no pressure against it, and it drops out of the lock position, and the plunger does not drop when tool is cycled. **NOTE:** This usually requires 3 to 4 times topping off.

**STEP 13: 244X:** Remove fill tool and stall nut. Install a nose assembly and pull several fasteners to test function. **244OSX:** Remove fill tool. Adjust tool stroke for the nose assembly being used by threading out piston stop. Figure 14 for procedure.





## Troubleshooting

Always check the simplest possible cause (such as a loose or disconnected trigger line) of a malfunction first. Then proceed logically, eliminating other possible causes until the cause is discovered. Where possible, substitute known good parts for suspected defective parts. Use this Troubleshooting information to aid in locating and correcting trouble.

**NOTE: "Piston drift" is when the air piston is in the down position, but the hydraulic pull piston is not in the full-forward position. This causes an out-of-sequence condition.**

**1. Tool fails to operate when trigger is pressed.**

- a. Air line not connected.
- b. Worn or damaged throttle valve O-rings.
- c. Broken throttle valve cable.

**2. Tool does not complete fastener installation and break pintail.**

- a. Air pressure too low.
- b. Worn or damaged air piston Quad-ring.
- c. Tool is low on hydraulic fluid. See the FILL AND BLEED section.
- d. Air in hydraulic system. See FILL AND BLEED.
- e. Worn or damaged reservoir springs.
- f. Check for piston drift.

**3. Pintail stripped and/or swaged collar not ejected.**

- a. Check for broken or worn jaws in nose assembly.
- b. Check for loose retaining nut.
- c. Check for piston drift.

**4. Hydraulic fluid exhausts with air or leaks at base of handle.**

- a. Worn or damaged gland assembly. Inspect Polyseal, O-rings, Quad-ring, and Back-up ring. Replace if necessary.

**5. Tool has piston drift.**

- a. Loose collet crashing into the front of the anvil causing the relief valve to open. Tighten the collet. See FILL AND BLEED.
- b. Worn or damaged return pressure relief valve. Inspect seat, O-ring, Back-up rings, ball, and valve spring. Replace if necessary.
- c. Worn or damaged Intensifier Piston Assembly. Inspect O-rings and Back-up rings. Replace if necessary.

**6. Hydraulic fluid leaks at rear of pull piston.**

- a. Worn or damaged rear gland. Inspect O-rings and Back-up rings. Replace if necessary.

**7. Hydraulic fluid leaks at front of pull piston.**

- a. Worn or damaged front gland. Inspect Polyseal. Replace if necessary.

**8. Pull piston will not return.**

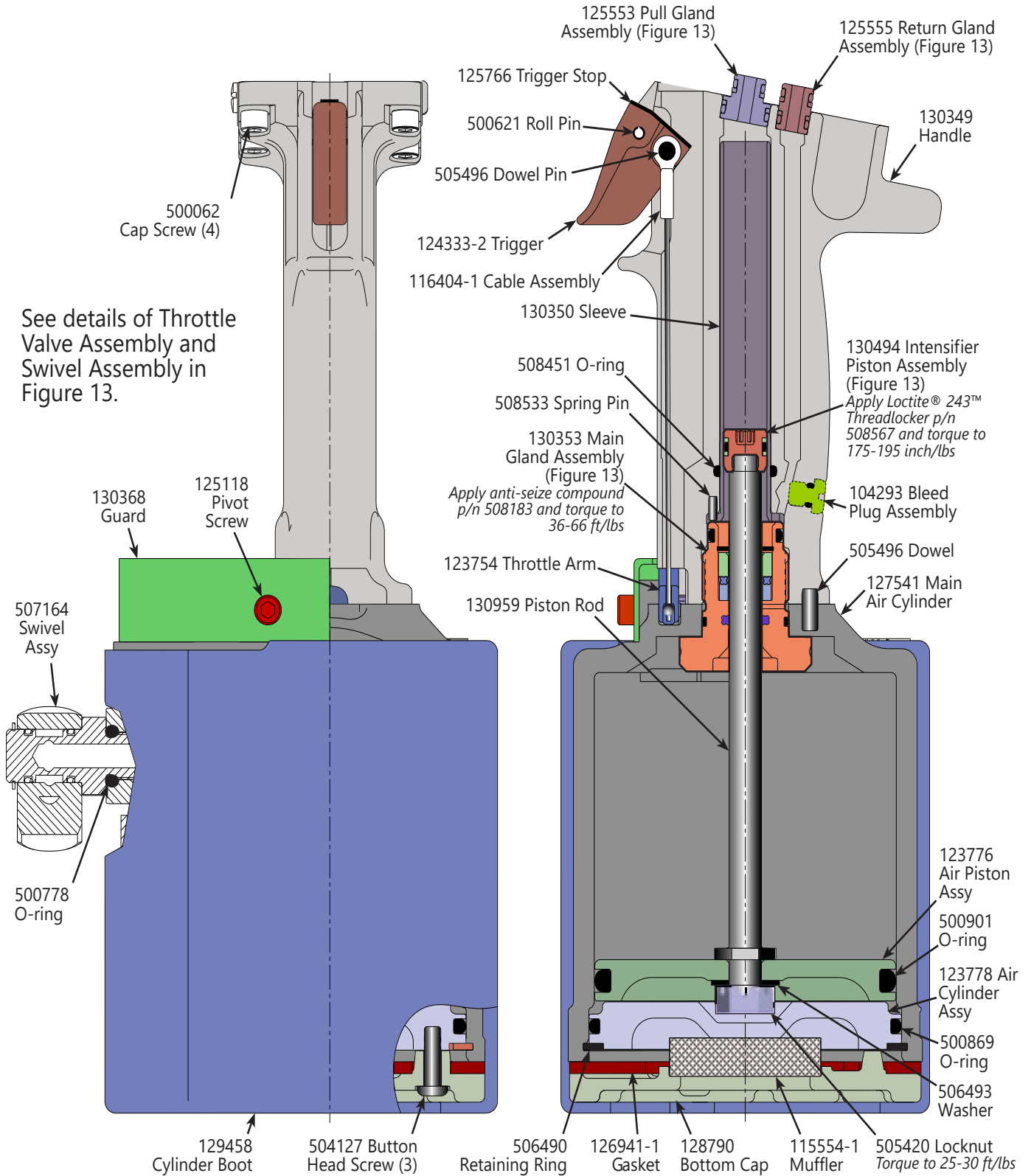
- a. Throttle valve stuck; lubricate O-rings.
- b. Throttle arm, cable, or trigger binding.

**9. Air leaks at air cylinder head.**

- a. Worn or damaged O-ring. Replace if necessary.

# Tool Base - Both Models

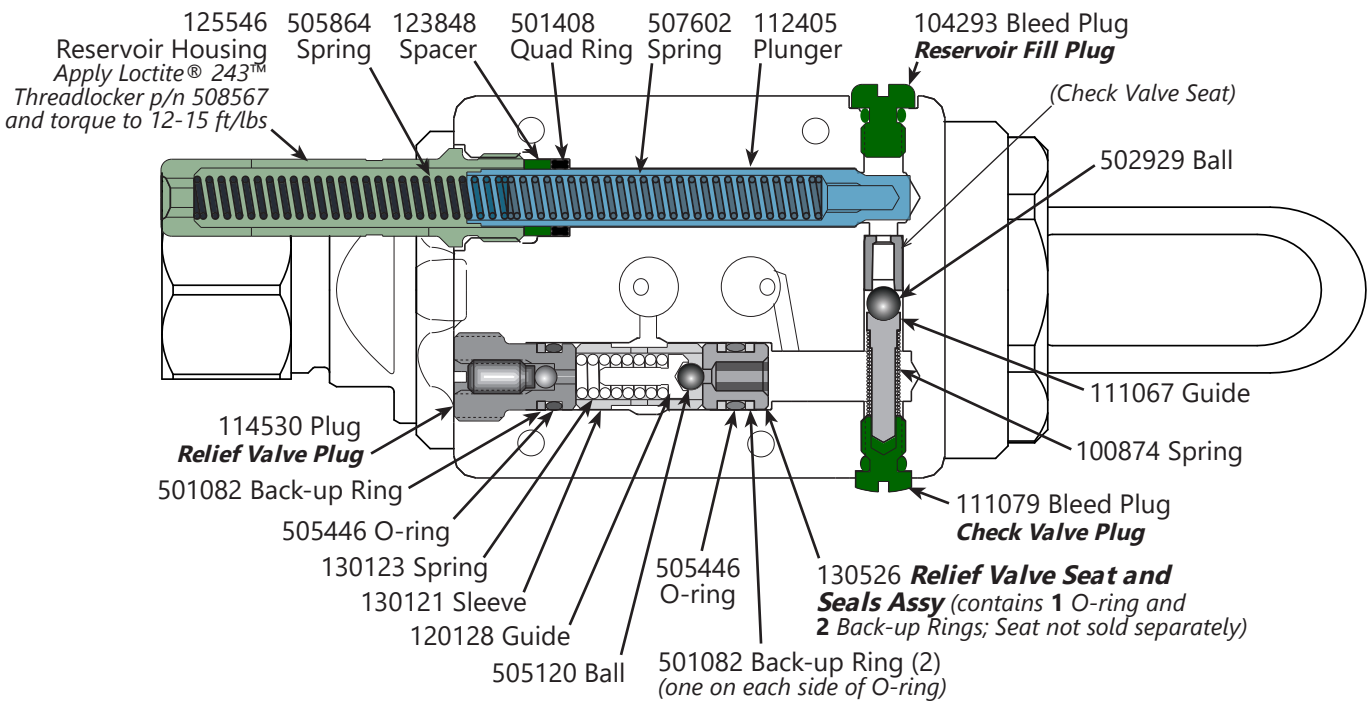
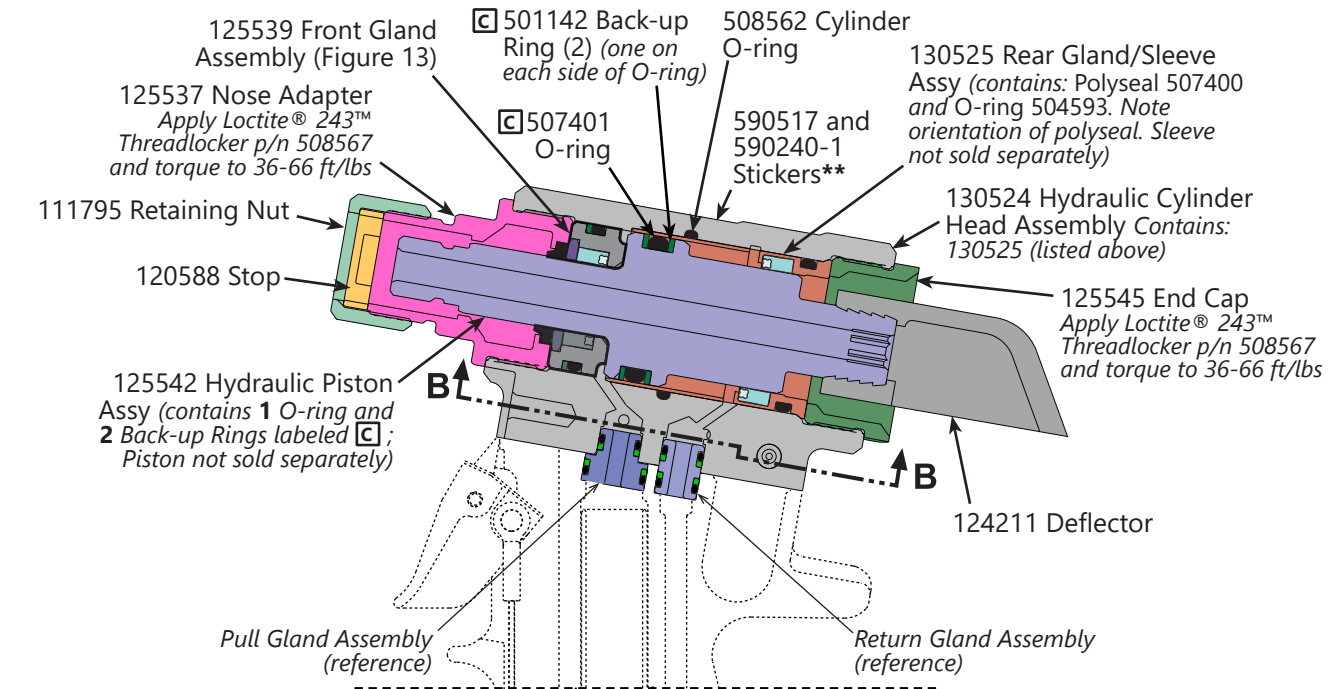
Figure 10





# 244X Tool Head

Figure 11



## SECTION B-B

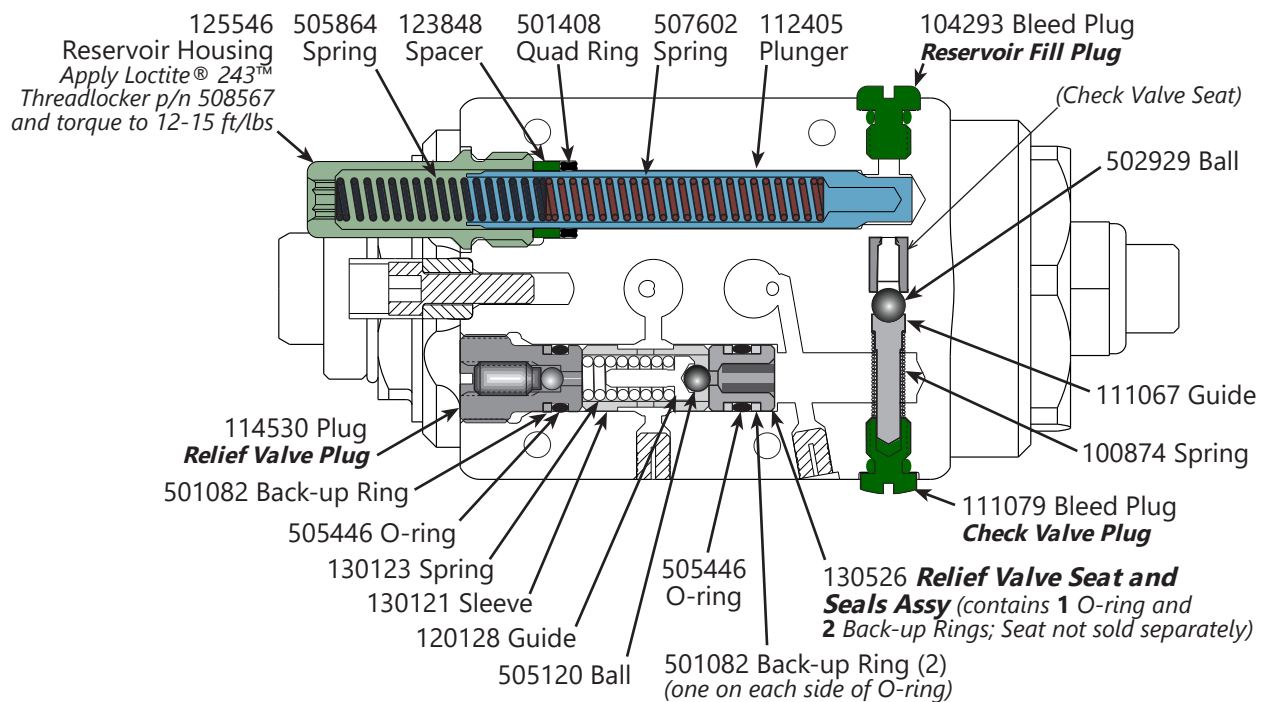
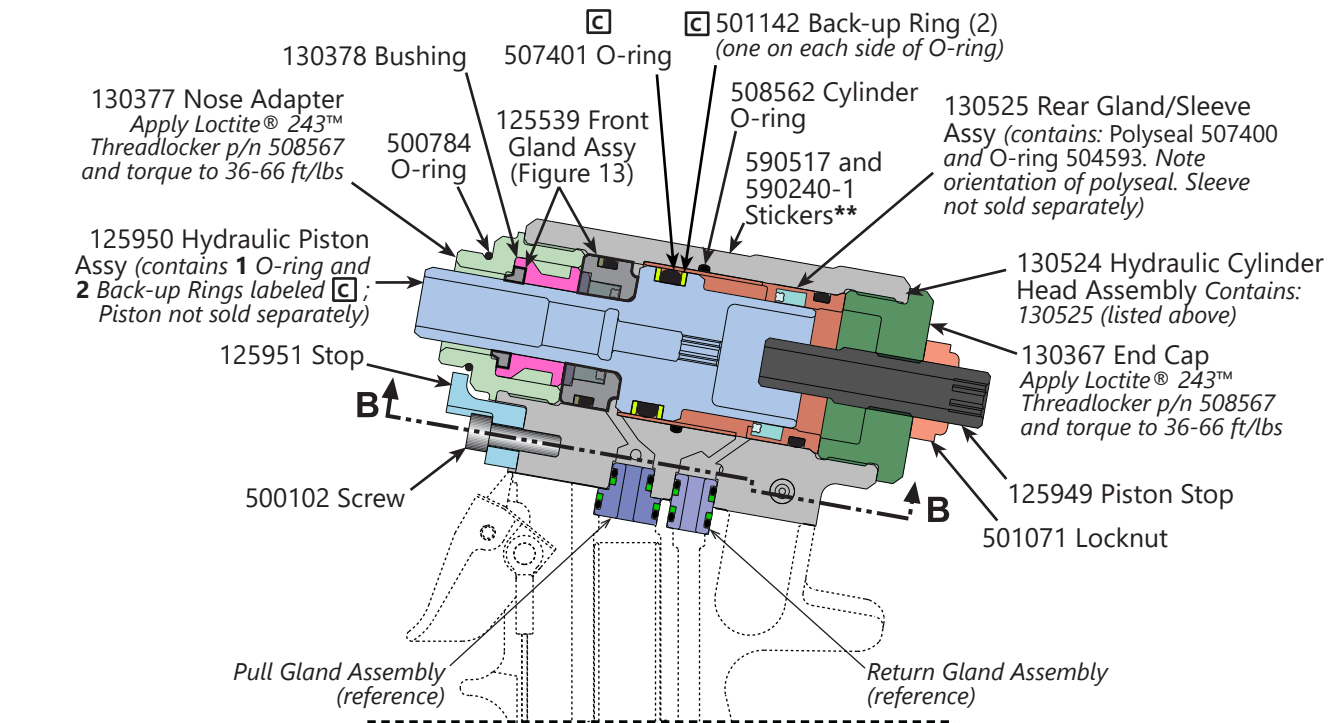


**\*\* Any time a sticker becomes worn, damaged, unreadable, or missing; or if the hydraulic cylinder is being replaced, the sticker(s) must be ordered and placed where indicated on the tool.**



# 244OSX Tool Head

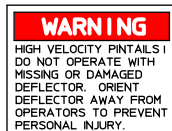
Figure 12



## SECTION B-B



590517



590240-1

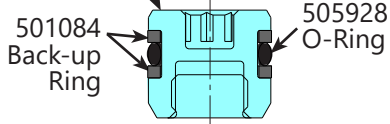
**\*\* Any time a sticker becomes worn, damaged, unreadable, or missing; or if the hydraulic cylinder is being replaced, the sticker(s) must be ordered and placed where indicated on the tool.**



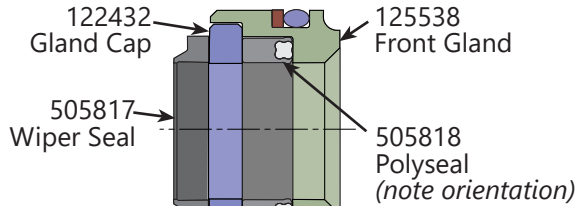
# Common Subassemblies

Figure 13

(Intensifier Piston not sold separately)

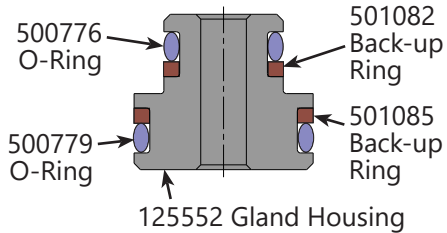


**130494 Intensifier Piston Assembly**  
Apply Loctite® 243™ Threadlocker p/n 508567 and torque to 175-195 inch/lbs

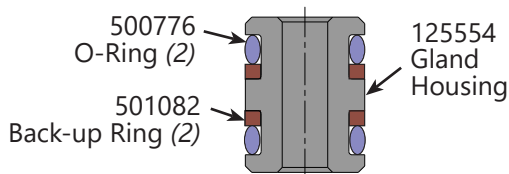


501113 Back-up Ring 500819 O-Ring

**125539 Front Gland Assembly**



**125553 PULL Gland Assembly**

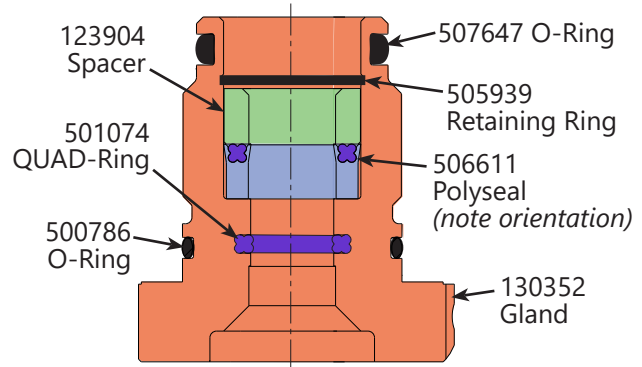


**125555 RETURN Gland Assembly**

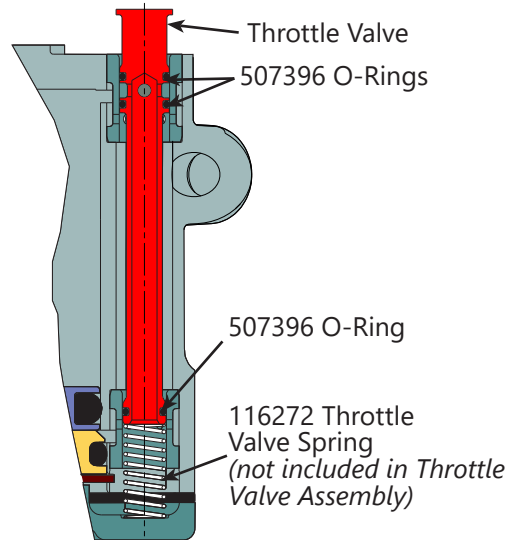


590350 CE Sticker 590351 Max Pressure and Flow Sticker 590347 HUCK Address Sticker

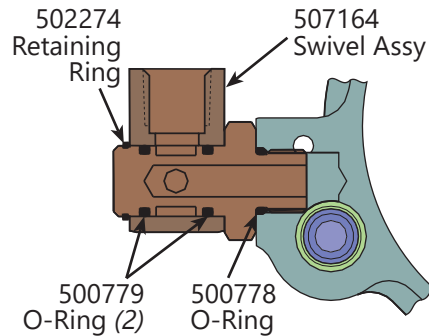
**Detail of Stickers on Bottom of Air Cylinder**



**130353 Main Gland Assembly**  
Apply anti-seize compound, HUCK part number 508183, and torque gland to 36-66 ft/lbs



**125563 Throttle Valve Assembly**  
(Valve not sold separately)



**Detail of Swivel Assembly**



**115436 Air Hose** (shipped with tool)





## Measuring and Adjusting Stroke - 244OSX

See Figure 14.

### MEASURING STROKE:

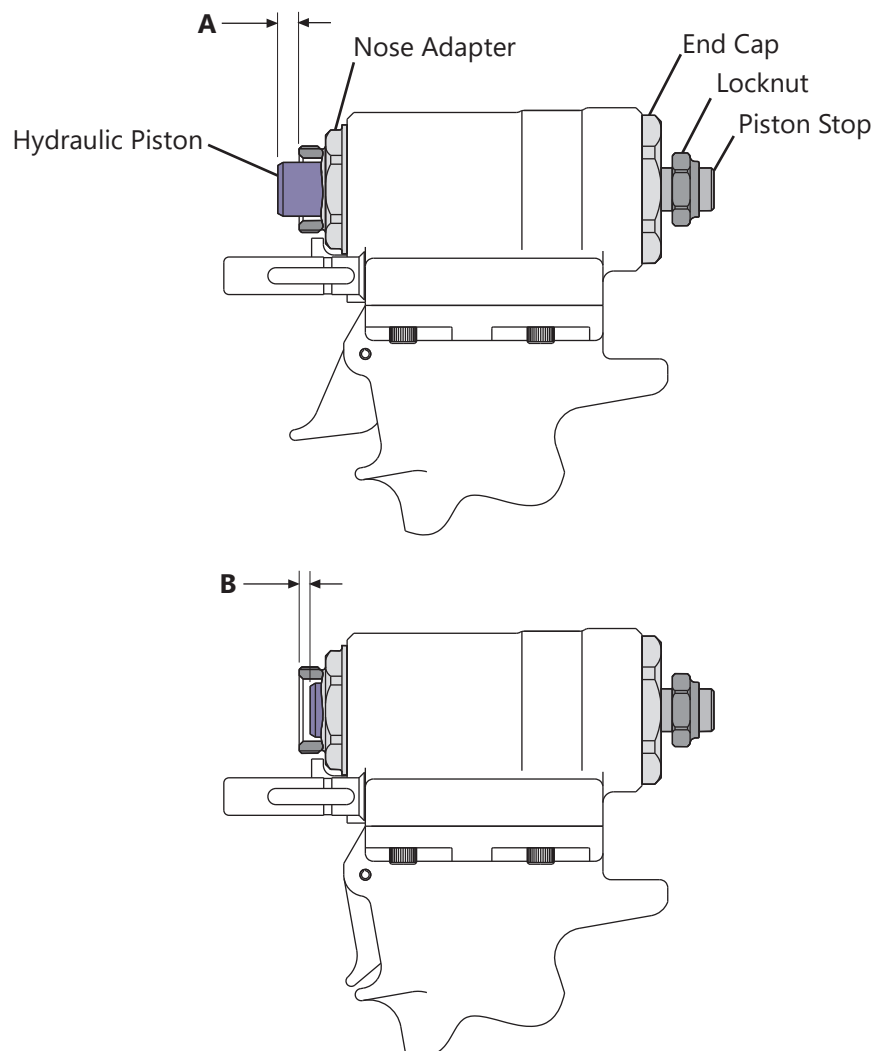
1. Measure distance "A" from face of Hydraulic Piston to face of Nose Adapter. This distance should be approximately equal to .247 inches.
2. Cycle the tool, and hold piston back by keeping the trigger pressed. Measure distance "B" from face of Hydraulic Piston to face of Nose Adapter.

$$\text{STROKE} = \text{A} + \text{B}$$

### ADJUSTING STROKE:

1. Adjust Piston Stop clockwise to decrease stroke (reduce dimension "B"). Adjust Piston Stop counterclockwise to increase stroke (increase dimension "B"). Repeat step 2 of MEASURING STROKE.
2. When desired stroke has been achieved, hold Piston Stop with a 1/4" hex key and, with a 3/4" open end wrench, tighten Locknut against End Cap.

Figure 14

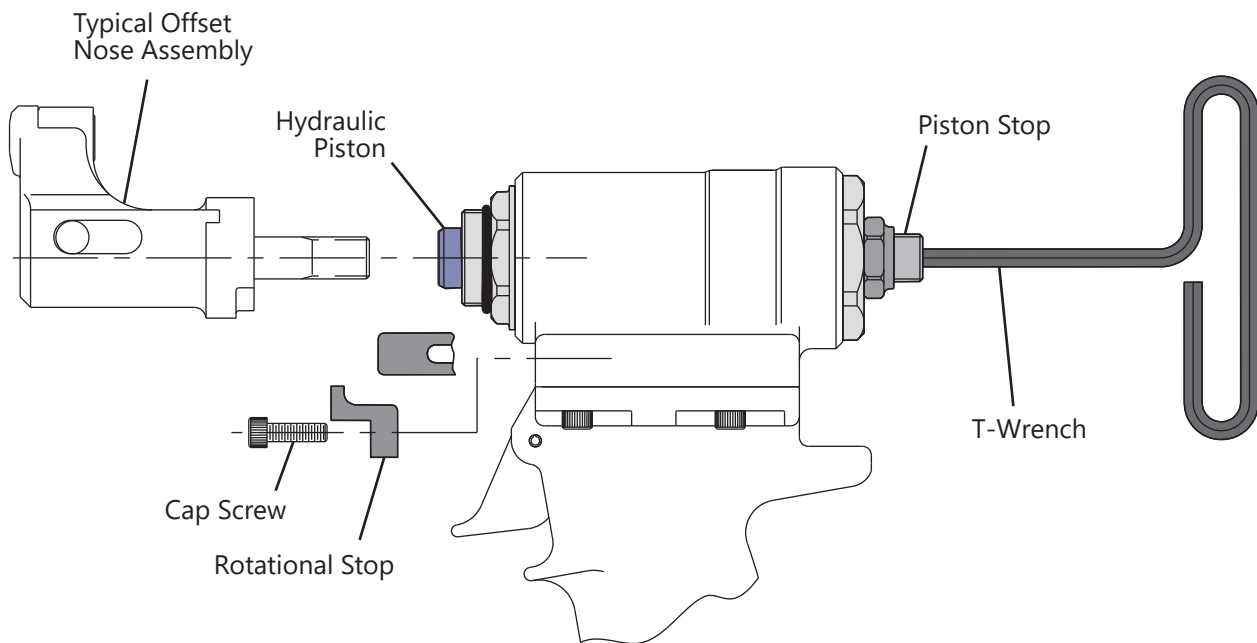




## Attaching Nose Assembly - 244OSX

1. Remove Cap Screw and Rotational Stop.
2. Insert a 3/16" hex T-Wrench through Piston Stop until it engages internal hex in Hydraulic Piston.
3. Thread the nose assembly onto the tool until it bottoms out. Then back it off half to one full turn.
4. Install Rotational Stop and secure with Cap Screw. The nose should be free to rotate approximately 45 degrees from the vertical in either direction (90 degrees included).

Figure 15





## Limited Warranties

### Limited Lifetime Warranty on BobTail® Tools:

Howmet Aerospace, Inc. warrants to the original purchaser that its BobTail® installation tools manufactured after 12/1/2016 shall be free from defects in materials and workmanship for its **useful lifetime**. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

### Two Year Limited Warranty on Installation Tools:

Howmet Aerospace, Inc. warrants that its installation tools and Powerig® hydraulic power sources manufactured after December 1, 2016 shall be free from defects in materials and workmanship for a period of two years from date of purchase by the end user. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

### 90 Day Limited Warranty on Nose Assemblies and Accessories:

Howmet Aerospace, Inc. warrants that its nose assemblies and accessories shall be free from defects in materials and workmanship for a period of 90 days from date of purchase by the end user. This warranty does not cover special clearance noses, or special order / non-standard product, or part failure due to normal wear, abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

**Useful lifetime** is defined as the period over which the product is expected to last physically, up to the point when replacement is required due to either normal in-service wear, or as part of a complete overhaul. Determination is made on a case-by case basis upon return of parts to Howmet Aerospace, Inc. for evaluation.

### Tooling, Part(s) and Other Items not manufactured by Howmet:

Howmet makes no warranty with respect to the tooling, part(s), or other items manufactured by third parties. Howmet expressly disclaims any warranty expressed or implied, as to the condition, design, operation, merchantability, or fitness for use of any tool, part(s), or other items thereof not manufactured by Howmet. Howmet shall not be liable for any loss or damage, directly or indirectly, arising from the use of such tooling, part(s), or other items or breach of warranty or for any claim for incidental or consequential damages.

Howmet shall not be liable for any loss or damage resulting from delays or non-fulfillment of orders owing to strikes, fires, accidents, transportation companies or for any reason or reasons beyond the control of the Howmet or its suppliers.

### Howmet Installation Equipment:

Howmet Aerospace, Inc. reserves the right to make changes in specifications and design and to discontinue models without notice.

Howmet Installation Equipment should be serviced by trained service technicians only.

Always give the serial number of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Howmet Aerospace, Inc. Please contact one of the offices listed below.

#### Eastern

One Corporate Drive Kingston, New York 12401-0250  
Telephone (845) 331-7300 FAX (845) 334-7333

#### Outside USA and Canada

Contact your nearest Howmet Aerospace location (see reverse).

In addition to the above repair facilities, there are Authorized Tool Service Centers (ATSC's) located throughout the United States. These service centers offer repair services, spare parts, Service Parts Kits, Service Tool Kits and Nose Assemblies. Please contact your Howmet Representative or the nearest Howmet Aerospace location (see reverse) for the ATSC in your area.



Howmet Inc. (NYSE: HWM) creates breakthrough products that shape industries. Working in close partnership with our customers, we solve complex engineering challenges to transform the way we fly, drive, build and power. Through the ingenuity of our people and cutting-edge advanced manufacturing, we deliver these products at a quality and efficiency that ensures customer success and shareholder value.

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