

Alcoa  
Fastening  
Systems & Rings



## INSTRUCTION MANUAL

# 244 SERIES

## PNEUDRAULIC INSTALLATION TOOLS



244X



244OSX

Makers of Huck®, Marson®, Recoil®  
Brand Fasteners, Tools & Accessories

March 11, 2015  
HK989





# EC Declaration of Conformity

**Manufacturer:**

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

**Description of Machinery:**

Models 24# and 25# pneudraulic installation tools and specials based on their designs (e.g. PR#####).

**Relevant provisions complied with:**

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

British Standard related to hand held, non-electric power tools (ISO 11148-1:2011)

**European Representative:**

Rob Pattenden, Huck International, Ltd. Unit C Stafford Park 7, Telford Shropshire TF3 3BQ, England, United Kingdom

**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: Robert B. Wilcox

Position: Engineering Manager

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

Date: 27/03/2013


**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  $\mu$ Pa)  
Uncertainty, KpA: 3 dB

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

Values determined according to noise test code ISO 15744, using as basic standards ISO 3744 and ISO 11203. 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: **.63** m/s<sup>2</sup>

Uncertainty, K: **.72** 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 Alcoa Fastening Systems, Industrial Products Group, Kingston Operations, Kingston, NY, USA.



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# SAFETY INSTRUCTIONS



## GLOSSARY OF TERMS AND SYMBOLS:

 - Product complies with requirements set forth by the relevant 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 underlining:*** emphasizes 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 Huck equipment.
2. Huck 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 Huck 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 Huck representative.
11. Only genuine Huck 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 ejection 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:

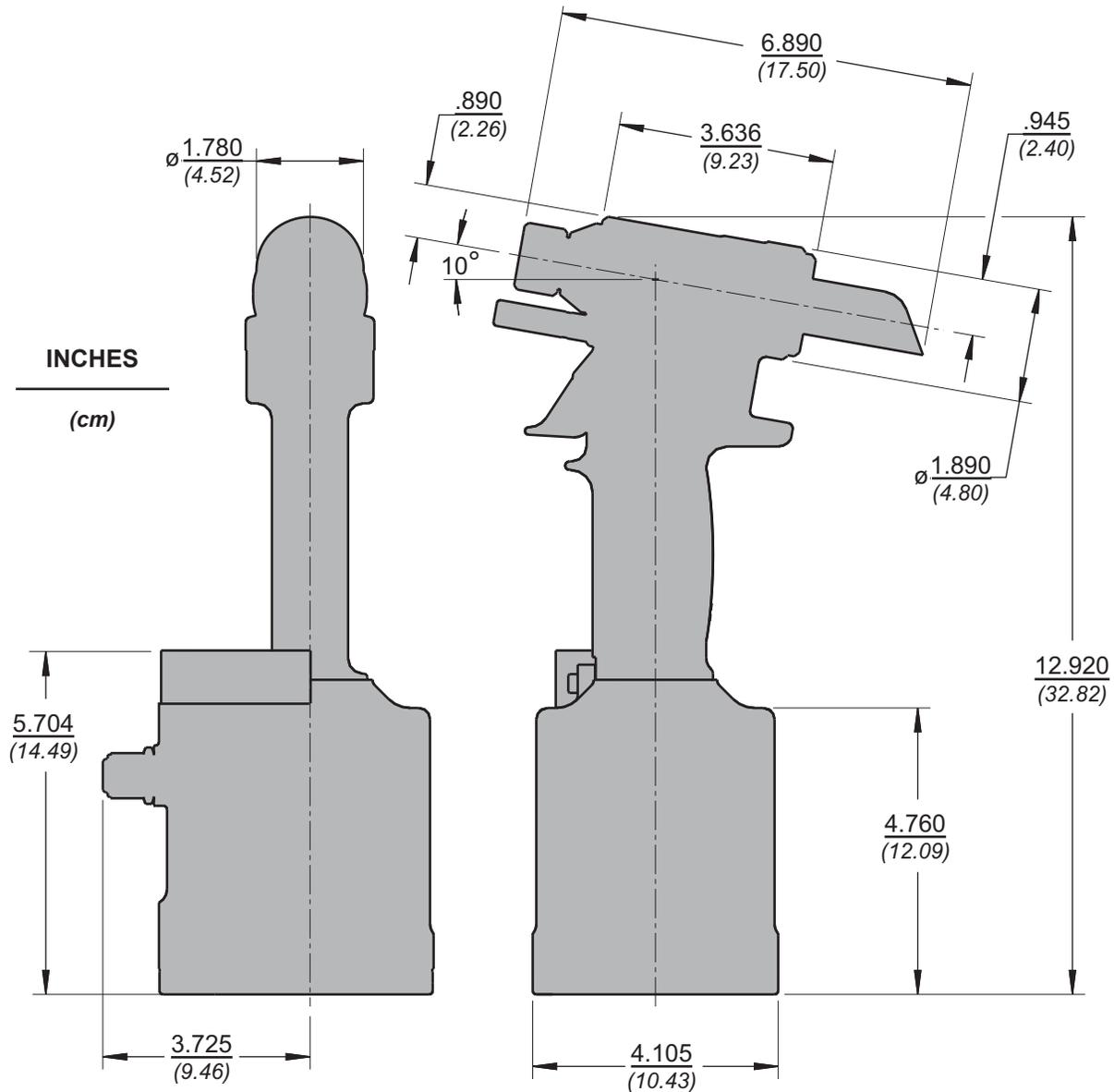
1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your 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 whipcheck 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.



# MODEL 244X SPECIFICATIONS

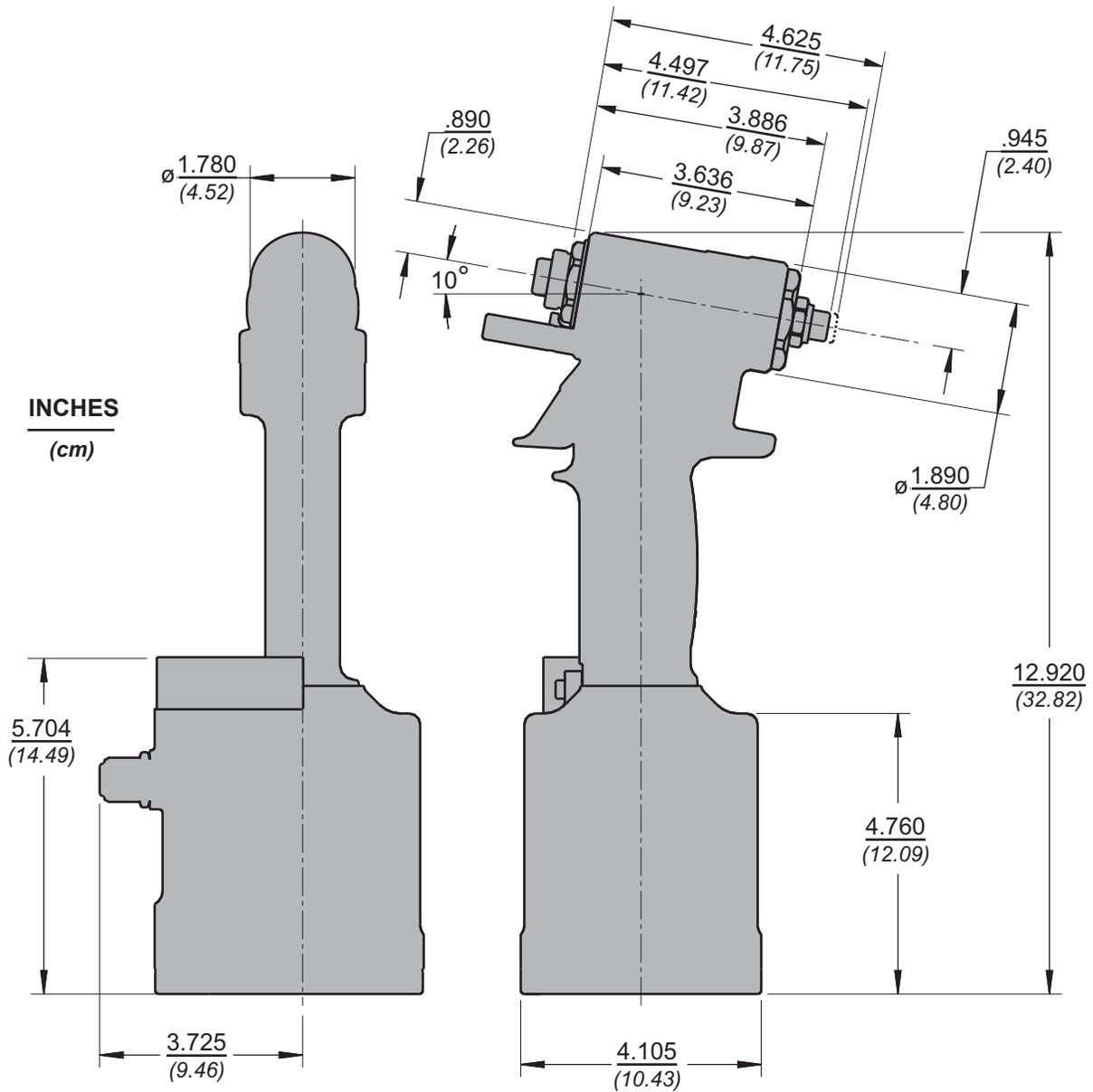


**Power Source:** 90 psi shop air

**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:** .562 in (1.43 cm) at full load with losses
- **Weight:** 5 lbs 11 oz (2.58 kg)
- **Max Air Pressure:** 90 psi (6.2 BAR)
- **Max Flow Rate:** 6.3 scfm (178 L/m)
- **Capacity:** 4606 lbs (20.49 kN) @ 90 psi (6.2 BAR)
- **Speed/Cycles:** 30 per minute
- **Max Operating Temp:** 125°F (52°C)

**MODEL 244OSX SPECIFICATIONS**

**Power Source:** 90 psi shop air

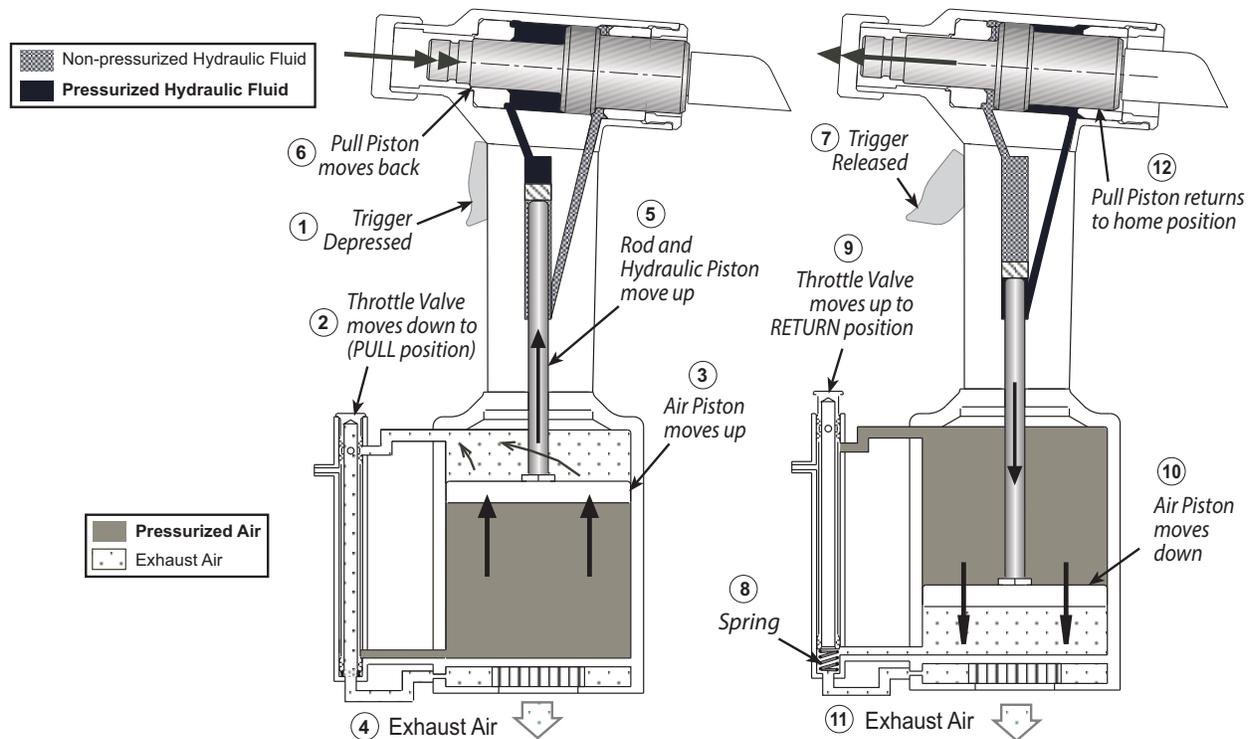
**Hydraulic Fluid:** Hydraulic fluid shall meet DEXRON III, DEXRON VI, MERCON, Allison C-4 or equivalent ATF specifications.

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:** Adjustable 0-.562 in (0-1.43 cm)
- **Weight:** 5 lbs 11 oz (2.58 kg)
- **Max Air Pressure:** 90 psi (6.2 BAR)
- **Max Flow Rate:** 6.3 scfm (178 L/m)
- **Capacity:** 4606 lbs (20.49 kN) @ 90 psi (6.2 BAR)
- **Speed/Cycles:** 30 per minute
- **Max Operating Temp:** 125°F (52°C)



## PRINCIPLE OF OPERATION



### PULL

When the trigger is depressed (1), the throttle valve moves to down position (2), and pressurized air is directed to the bottom of the air piston, causing the piston to move upward (3). The 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, the 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.



## MAINTENANCE

### GENERAL

- The efficiency and life of any tool depends upon proper maintenance. Regular inspection and correction of minor problems will keep tool operating efficiently and prevent downtime. The tool should be serviced by personnel who are thoroughly familiar with how it operates.
- A clean, well-lit area should be used for service, and to prevent contamination of pneumatic and hydraulic systems.
- Proper hand tools, both standard and special, must be available.
- 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. Disassembly and assembly procedures outlined in this manual should be followed.
- Service Parts Kit 244KIT** includes consumable parts and should be available at all times. Other components, as experience dictates, should also be available.

### DAILY

- If a Filter-Regulator-Lubricator unit is not being used, uncouple air disconnects and put a few drops of Automatic Transmission Fluid 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.
- Bleed the air line to clear it of accumulated dirt or water before connecting air hose to the tool.
- Check all hoses and couplings for damage or air leaks, tighten or replace if necessary.
- Check the tool for damage or air/hydraulic leaks, tighten or replace if necessary.
- Check the nose assembly for tightness or damage, tighten or replace if necessary.
- Check oil level in tool reservoir, replenish if necessary.

### WEEKLY

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



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

## PREPARATION FOR USE



The Model 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.



**CAUTION: Do not use TEFLON® tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Threadmate™ is available from Huck in a 4oz. tube as part number 508517.)**

3. Set air pressure on regulator to 90-100 psi.
4. Attach optional Air Hose (Huck 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 Model:**  
Set stroke required for Nose Assembly selected. Refer to Adjust Stroke section of this manual for adjustment procedure (**Fig 11**).
11. **244X Model:**  
Attach Nose Assembly per Nose Assembly Data Sheet.  
**244OSX Model:**  
**Attach nose assembly per instructions on page 21 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 Huck International, Inc.
- 2 On old style nose assemblies with lock collars, Loctite® 243 threadlocker (Huck P/N 508567) should be used on collet threads, since there is no staking hole provided on the pull piston. Refer to nose assembly data sheets.

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

\* *TEFLON is a registered trademark of DuPont Corp.*

\* *Loctite is a registered trademark of Henkel Corporation, U.S.A.*

## OPERATING INSTRUCTIONS



**READ ALL WARNINGS AND CAUTIONS PRIOR TO USING YOUR SYSTEM. Failure to understand WARNINGS may cause serious personal injury. Failure to understand CAUTIONS may cause damage to structure and Tool. Additional safety information can be found on page 4.**

### LOCKBOLT® FASTENER INSTALLATION:



**WARNING: Do not pull on a pin without a collar. The pin will eject with velocity and force when the pintail breaks off. This may cause serious injury.**



**CAUTION: 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 stripped and/or damaged.**

Place pin in work hole and place collar over pin. See **WARNING**. (If Collar has only one tapered end, that end must be out toward tool, not next to sheet.) Hold pin and push nose assembly onto pin protruding through collar until nose assembly anvil touches collar. Depress trigger and hold depressed 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:



**WARNING: Do not pull on a fastener's pin without first placing fastener in a work piece. The fastener will eject forcibly when the pintail breaks off. This may cause serious injury.**

Remove excess gap from between the sheets to permit correct fastener installation. Fastener may be placed in work hole or in end of nose assembly. See **WARNING**. In either case, tool and nose assembly must be held against work and at right angles to it. Depress trigger and hold it depressed until fastener is installed and pintail breaks. Release trigger and tool will go into its return stroke. The tool and nose assembly are ready for next fastener installation cycle.



**CAUTION: 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.**



# DISASSEMBLY

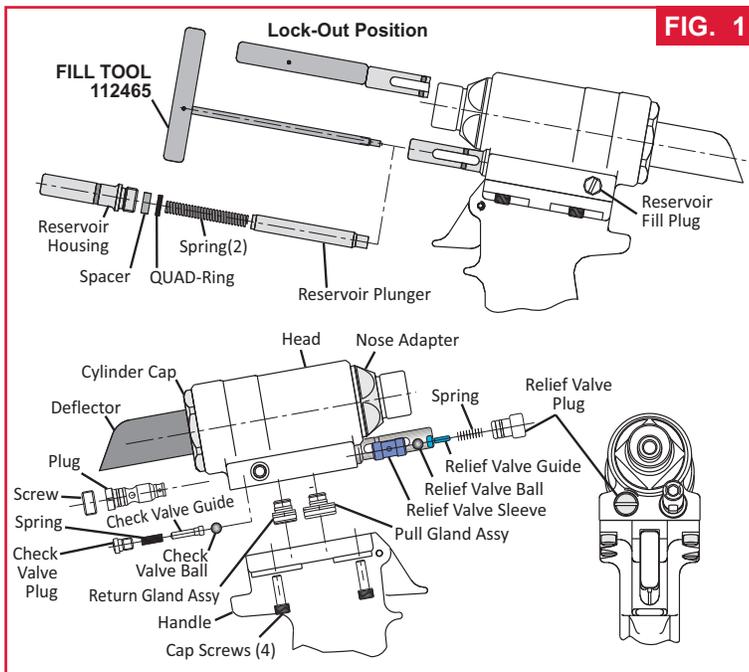


**WARNING:** Be sure air hose is disconnected from tool before cleaning, or performing maintenance. Severe personal injury may occur if air hose is not disconnected.

(Refer to Figures 1-3, 9a/b & 10)

**NOTE:** The following procedure is for complete disassembly of tool. 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.

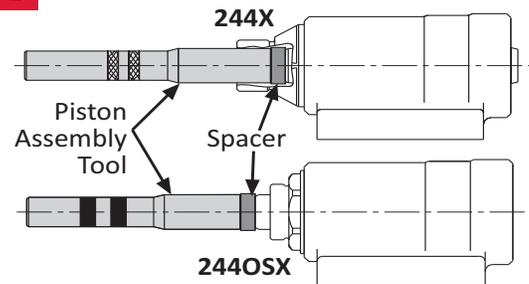
1. Disconnect air hose from tool.
2. Remove nose assembly.
3. Insert Fill Tool through reservoir housing and screw into Reservoir Plunger, locking it in the out position (Fig1).



4. Unscrew 4 Cap Screws with 5/32 hex key. Carefully lift Head straight up from Handle. Remove Pull and Return Gland Assemblies from separated head / handle (Fig1).
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 (Fig1).
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 (Fig1).

9. **244X ONLY (Fig. 1, 9a, 10)**  
Pintail Deflector can be pulled at rear of Tool.
10. **244X: (Fig. 1, 9a, 10)**  
Unscrew End Cap (21) from Head, Plug & Seat Assembly (15) with 1 9/16 open end wrench.
- 244OSX: (Fig. 1, 9b, 10)**  
Loosen and remove Locknut (92) from Piston Stop (89). Unscrew Piston Stop (89) from End Cap (21), then unscrew End Cap from Head, Plug & Seat Assembly (15) with 1 9/16 open end wrench.
11. (Fig2) 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 causes rear gland/sleeve assy (Item 19, Fig. 9a/b) to be pushed out as well. Slide sleeve off of piston in order to replace seals on piston and to replace O-ring (Item 103, Fig. 9a/b) inside cylinder head.
13. Remove Nose Adapter (9) from front of Head, Plug & Seat Assembly (15). (Figs. 1, 9a/b & 10).
14. If Seat (74) is damaged, contact your Huck representative. If Seat Assembly (80) is damaged, it can be removed by using Seat Removal Tool (126136) optionally available. **NOTE: Seats should not be reused. They should be replaced.**
15. With a small punch and hammer, drive Roll Pin (4) that retains the Trigger (5) from the Handle. Remove Trigger Pin (3). Remove ball cable end from Throttle Arm (68) and pull Cable Assembly (2) out of Handle. (Fig. 3)
16. Remove Pivot Screw (64) and Lever Guard (94) from Throttle Arm (68). Remove Throttle Arm. Pull Throttle Valve (67) out of cylinder. Remove Spring (65) (Fig3).

FIG. 2



TOOL	SPACER	PISTON ASSEMBLY TOOL	KIT (CONTAINS SPACER AND PISTON ASSY TOOL)
244X	123112-2	123111-2	123110-11
244OSX	123112-8	123111-8	123110-10

**DISASSEMBLY (CONTINUED)**

17. Remove Bleed Plug (40) from handle (Fig3).
18. Hold tool inverted in vice. Unscrew three Button Head Screws (55) with 1/8 hex key (Fig3).
19. Remove Bottom Plate (56), Gasket (54) and Muffler (57) (Fig3).
20. Remove Retaining Ring (62) from Cylinder Assembly (51) (Fig3).
21. Install Screws (55) into Cylinder Head (60). 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 (58) with a 9/16 socket and extension and with 7/64 hex key, remove piston Screw (34).

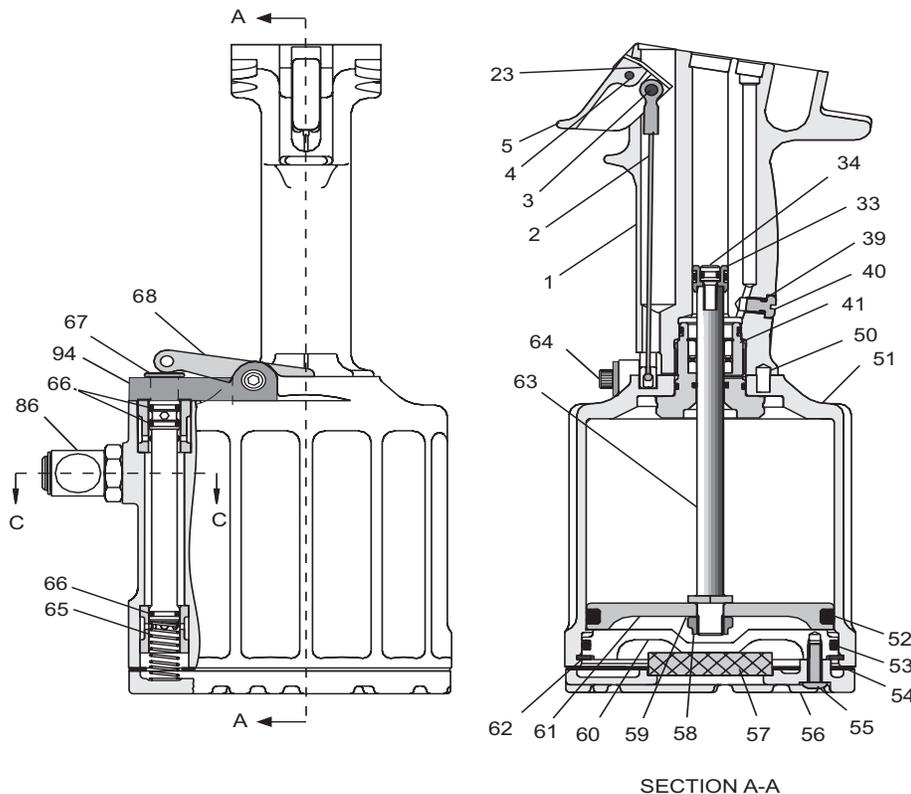
**CAUTION: Care must be given not to scratch piston rod or cylinder during removal.**

23. Grip Locknut (58) 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 (41). Handle and cylinder will now separate (Fig3).
26. Push Piston Assembly (33) 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.

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

28. Remove Swivel Assembly (86) from cylinder. Swivel Assembly may be disassembled to replace seals (32 & 87) if necessary. (Fig. 9)
29. To remove Polyseal (43) from Gland Assembly (41), remove Retaining Ring (45) and Spacer (44). (Fig. 9a/b)

**FIG. 3**

SECTION A-A

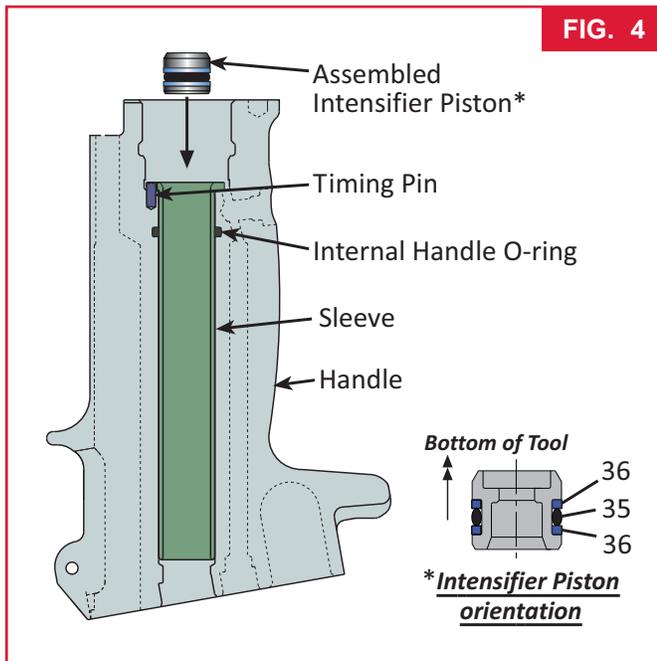


# ASSEMBLY

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.

LUBRIPLATE is a registered trademark of LUBRIPLATE Lubricants Company.

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. (Fig. 4)

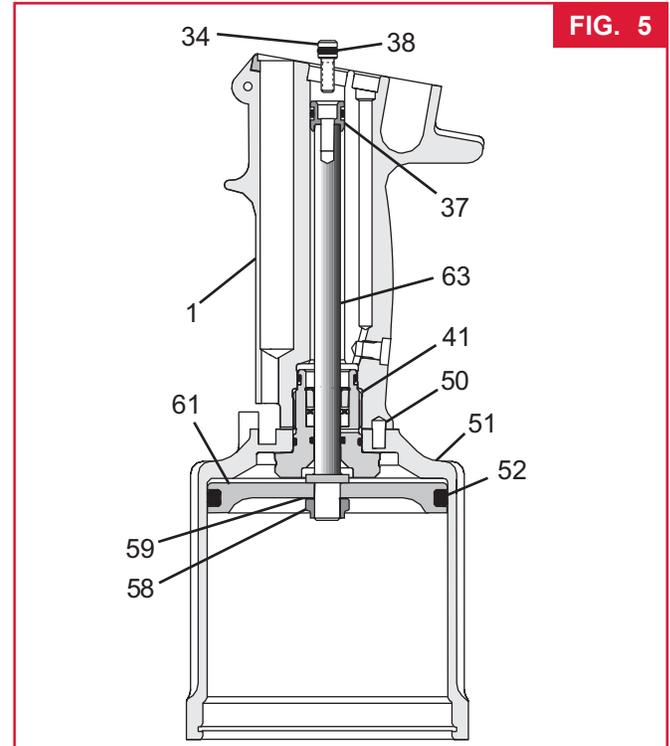


2. With handle still inverted in a vice, install Intensifier Piston (37), with O-ring (35) and Back-up rings (36) in place into handle. (Fig. 4)

**NOTE: The Intensifier piston must be pressed in from bottom of handle to avoid damaging seals.**

**NOTE: Ensure intensifier piston is correctly oriented prior to installation, as shown in Fig. 4.**

3. Place Cylinder Assembly (51) on handle with Timing Pin (50) positioned in matching hole. Assemble Gland Assembly (41) (Fig. 9a/b). Screw complete Gland assembly into handle. Torque to 75-80 ft. lbs. using a 1 3/8 socket wrench. (Fig. 5)
4. Push Piston Rod (63) through Air Piston (61) from flat side. Drop Washer (59) over thread and screw Locknut (58) onto rod. Using 9/16 wrench and socket, hold rod hex and torque nut using 9/16 socket to 28-32 ft. lbs. (Fig. 5)



5. Push assembled Air Piston and Rod into Air Cylinder and Gland Assembly (41) until it stops. Apply Loctite® 243™ to threads of Screw (34), and press Screw, with O-ring (38) in place through hydraulic Piston Assembly (33), and screw into top of piston rod. Hold Locknut (58) with 9/16 socket and extension and torque Screw (34) using 7/64 hex key to 55-60 in. lbs.  
*Loctite is a registered trademark of Henkel Corporation.*

6. Push Cylinder Head (60) with O-ring (53) in place squarely into Cylinder. Install Retaining Ring (62). (Fig. 6)
7. Hold handle upside down in vise. Position Muffler (57) on center of Cylinder Head (60), Place Gasket (54) on Cylinder Assembly (51), place Bottom Plate (56) on top of Gasket and secure with 3 Button Head Screws (55) using 1/8 hex key. (Fig. 6)
8. Turn tool upright. Drop Spring (65) into Throttle Valve hole in Cylinder. Push Throttle Valve (67) with O-rings (66) in place into Cylinder. (Fig. 6)
9. Assemble Trigger (5), Cable Assembly (2) and Trigger Pin (3) together and slide cable into Handle (1). Align hole in Trigger and hole in handle ears and install Roll Pin (4) with a hammer and punch. (Fig. 6)
10. Slide Throttle Arm (68) onto ball end of Throttle Cable. Swing arm until other end fits over throttle valve. Place Lever Guard (94) over Throttle Arm and install Pivot Screw (64) through Throttle Arm. Tighten with 5/32 hex key.



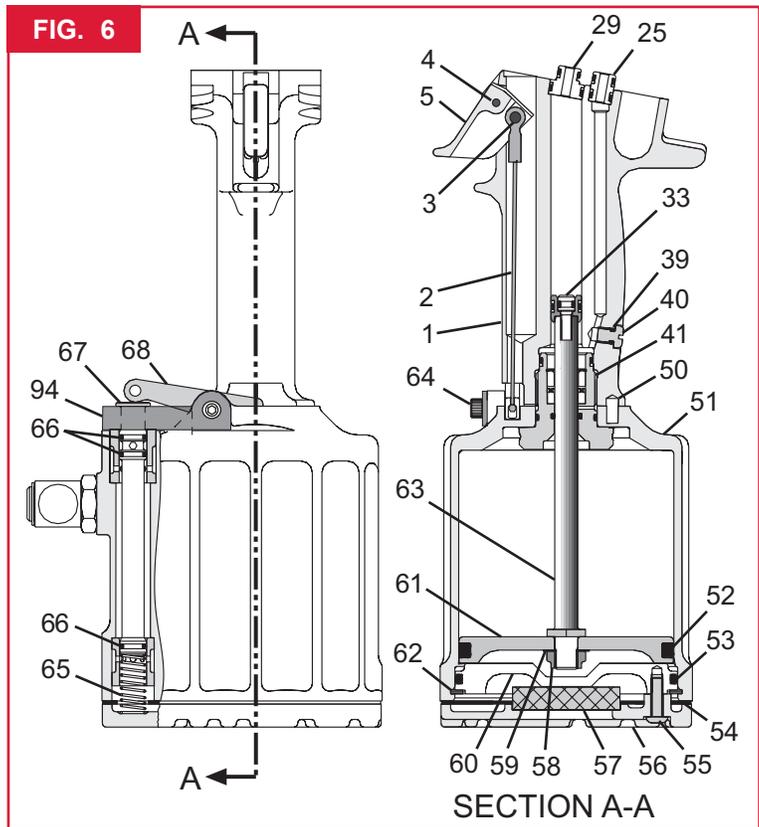
**CAUTION: Do NOT scratch piston rod.**

continued

# ASSEMBLY (CONTINUED)



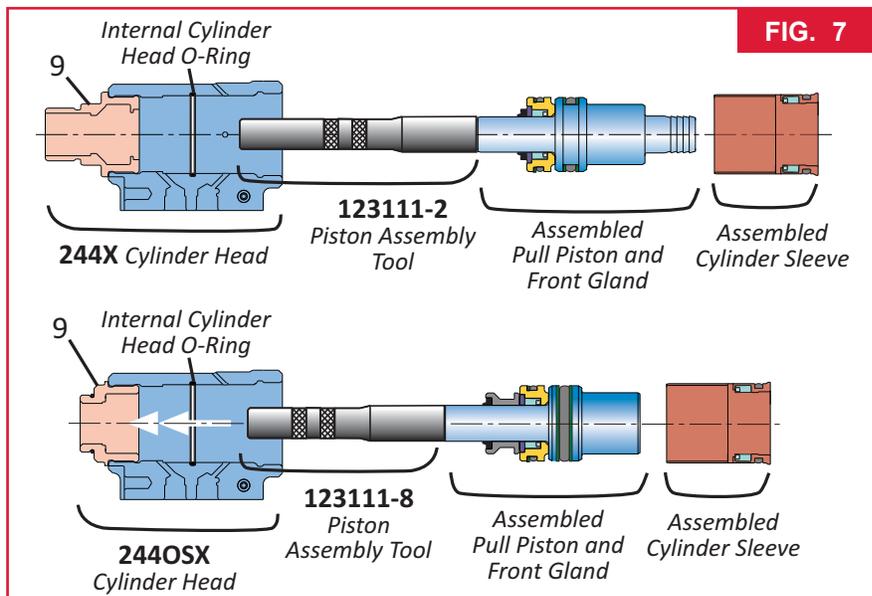
11. Install Swivel Assembly (86) in Cylinder Assembly (51), and reattach air hose (if removed). (Fig. 9a/b)
12. If Seat Assembly (80) is being replaced, push seat and seal assembly in using soft drift. Take care not to damage ball seat surface. (Fig. 9)
13. Assemble hydraulic Piston (18) with new seals (16,17). Lubricate with LUBRIPLATE or PARKER SUPER-O-LUBE. (Fig. 9a/b)
14. Install Nose Adapter (9) on front of head. Apply Loctite® 243™ threadlocker to threads per manufacturer's instructions. Torque to 50-60 ft. lbs. (Fig. 7) *Loctite is a registered trademark of Henkel Corporation.*
15. Install internal Cylinder Head O-ring.
16. Place seals on rear gland/sleeve
17. 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 Fig.7, over Piston Assembly Tool onto Piston.



18. Press entire piston, gland assembly, and components into head. Remove Piston Assembly Tool from piston.
19. **244X:** (Fig. 9a) Place Seals (20) and (24) on Rear Gland (19). Push complete assembly into head and screw in End Cap (21), and torque to 50 - 60 ft. lbs.
- 244OSX:** (Fig. 9b) Place seals (20 & 24) on Rear Gland (19). Push complete assembly into head and screw in End Cap (21), torque to 50-60 ft. lbs. Thread Stop (89) into End Cap two turns. Thread Locknut (92) onto Piston Stop (89) and leave loose. For adjustment, refer to **MEASURING TOOL STROKE** section of this manual (Page 20).

22. Place O-ring (39) on Plug (40) and screw assembly into Handle (1). (Fig. 6)
23. Install Pull (29) and Return (25) Gland Assemblies in handle. Push head down on glands. Place tool in a vise Head down and install 4 Screws (69) and torque to 170 inch pounds. (Fig. 6 & 9a/b)
24. Tool is now completely assembled except for relief and check valves. See **FILL AND BLEED** procedure for replacement of valve components.

20. Install Quad-Ring (72) and Spacer. Slide Reservoir Plunger (73) in.
  - 244X:** Install two Springs (71)
  - 244OSX:** Install Spring (93) first, then Spring (71).
21. Screw Housing/Spacer Assembly into head. (Fig. 1)
22. **244X ONLY:** (Fig. 1 & 9a/b) Push Pintail Deflector (22) onto rear of Piston (18).





# FILL AND BLEED

## Equipment Required:

- Shop airline with 90-100 psi max.
- Air regulator
- Fill Bottle 120337 (supplied with tool).
- Fill Tool Assy 112465 (244X)
- Fill Tool Assy 112465 (244OSX)
- Large flat blade screwdriver
- Stall Nut 124090 (244X)

## Preparation:

1. Install air regulator in airline and set pressure to 20-40 psi.
2. Fill bleed bottle almost full of DEXRON III - ATF (automatic transmission fluid) (See Fig. 8.)

Refill tool only when red line on plunger drops below the red line on the reservoir housing or when tool is rebuilt. **REFILL: AUTOMATIC TRANSMISSION FLUID DEXRON III, OR EQUIVALENT.**

## 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 (85) and sleeve (83) in head in Relief Valve port (front of tool).

## Step 3

**244X** (Fig. 8)

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** (Fig. 8)

Loosen Locknut (92). Screw Piston Stop (89) in until it pushes and holds the piston in the full forward position. *Piston must be all the way forward and locked in place with Stop.*

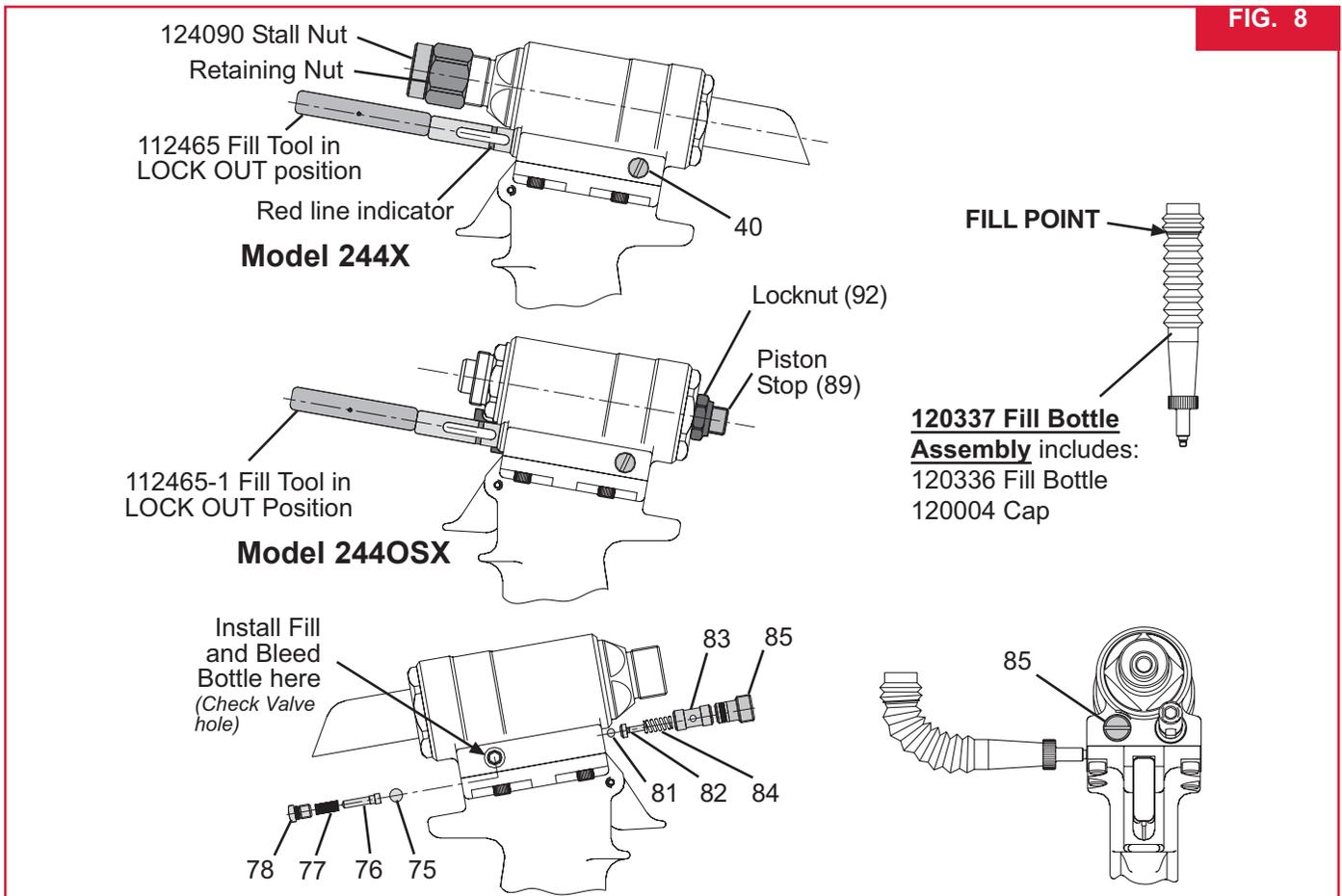
## Step 4

Attach the tool air source momentarily to seat air piston at bottom of cylinder, and disconnect tool. With fill port facing up, (check valve on side) lay tool on its side. (Fig. 8)

## Step 5

Install fill bottle in head fill port (check valve hole) (Fig. 8).

continued



**FILL AND BLEED (CONTINUED)****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. (You may rock the tool to free trapped air in the tool.) Do not allow the air to re-enter the tool. When cycling tool, always hold bottle up as shown in Figure 8 to prevent drawing in air from empty part of bottle.



**WARNING:** Air pressure **MUST** be set to 20 to 40 psi to prevent possible injury from high pressure spray. If plug (78) is removed, fill bottle must be in place before cycling tool.

**Step 7**

When air bubbles no longer appear in bottle, remove fill bottle while tool is lying on its side.

**Step 8**

Install the check valve Ball (75), Check Valve Guide (76) and Spring (77). Replace the Plug (78).

**Step 9**

Turn tool so front of head faces you and remove the relief valve Plug (85). Prior to removing Plug (85), it is advisable to back out setscrew inside of plug by approximately 1/2 turn counterclockwise. (See Figure 8a). This ensures that the Piston will remain in full-forward position. Install relief valve Ball (81), Guide (82), Sleeve (83) and Spring (84). Replace the Plug (85).

**Step 10**

**244X** (Fig. 8)

Unlock Fill Tool and check Reservoir red line. At this point cycle the tool the with Stall Nut attached and retaining nut locked in the full forward position ("Dead Stall"). Reservoir should not drop below the red line on the reservoir housing.

**244OSX** (Fig. 8)

Unlock Fill Tool and check Reservoir red line. At this point cycle the tool with the Stop still holding the piston in the full forward position ("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 left side and remove Plug (40). 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 hole to check for trapped air bubbles. Replace plug.



**WARNING:** Failure to re-lock the fill tool will result in oil being ejected from the head under pressure during the topping off of the reservoir. Severe personal injury may result.

**Step 12**

Unlock the fill tool and cycle tool as in step 10. Reservoir may drop slightly. If so, repeat step 11 until when you touch the fill tool handle, it 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.**

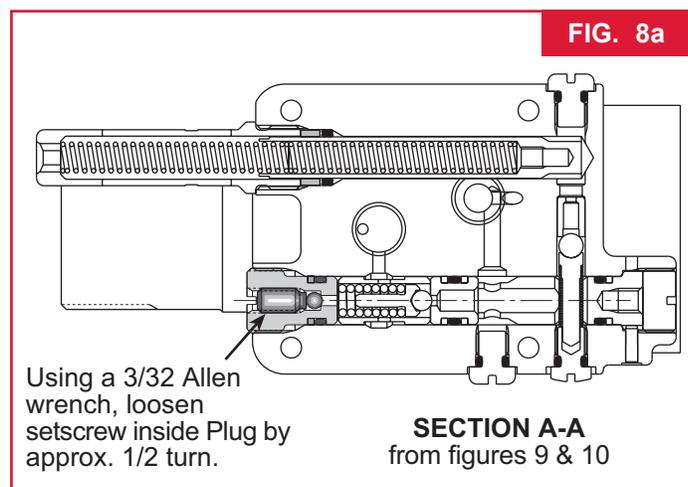
**Step 13**

**244X** (Fig. 8)

Remove fill tool and stall nut. Install a nose assembly and pull several fasteners to test function.

**244OSX** (Fig. 8)

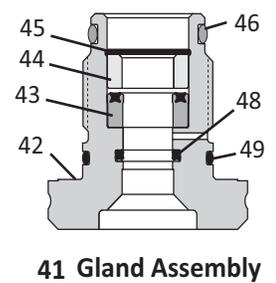
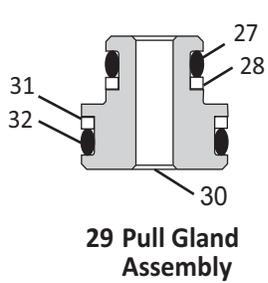
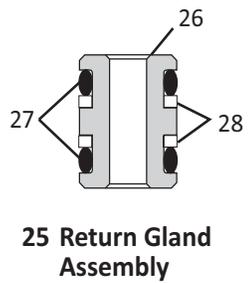
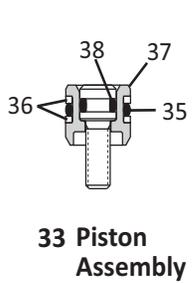
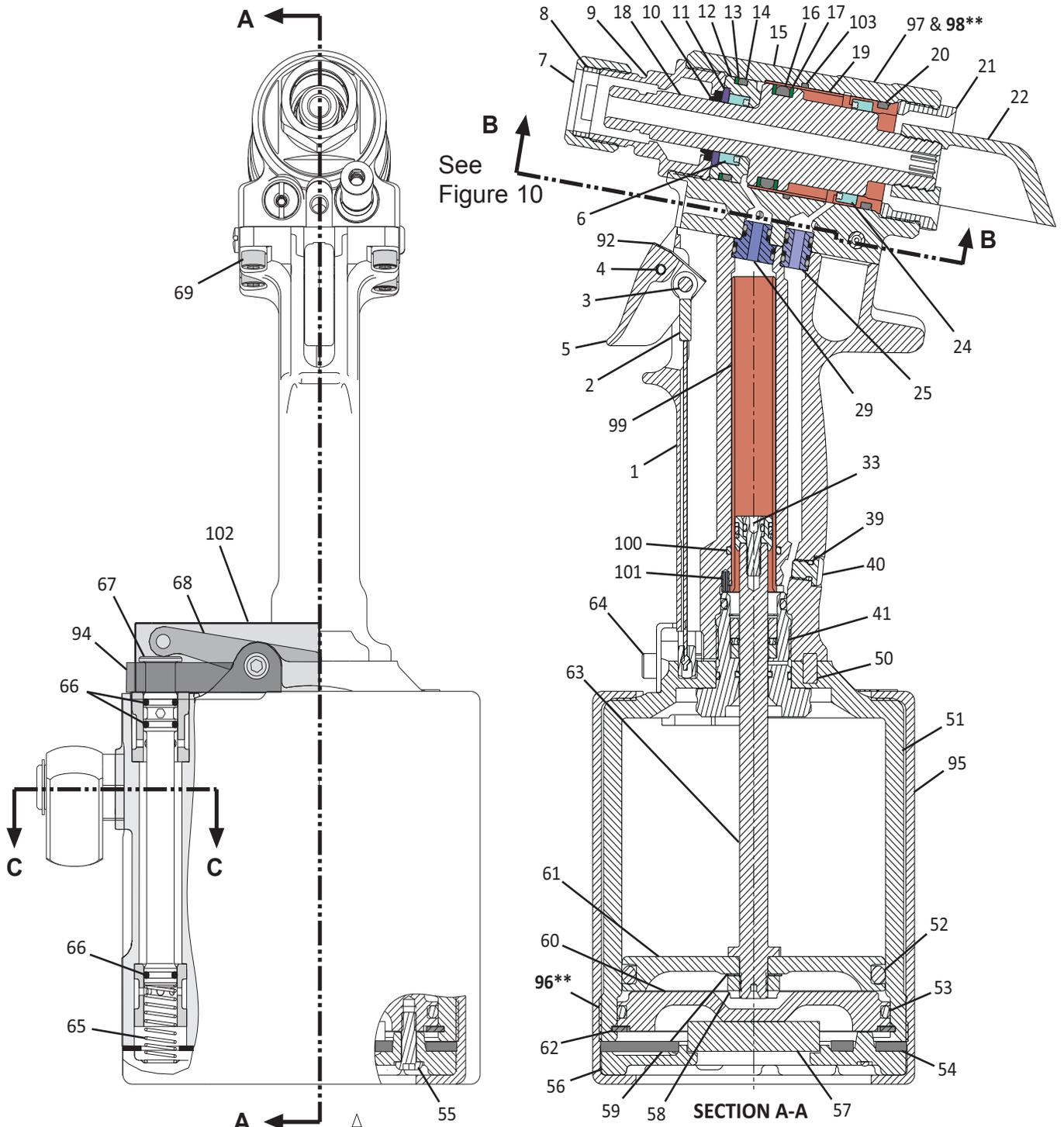
Remove fill tool. Adjust the tools stroke for the Nose Assembly being used by threading out Piston Stop (89). Refer to **Measuring Tool Stroke** section for the stroke adjustment procedure.





# 244X COMPONENTS - FIGURES 9a & 10

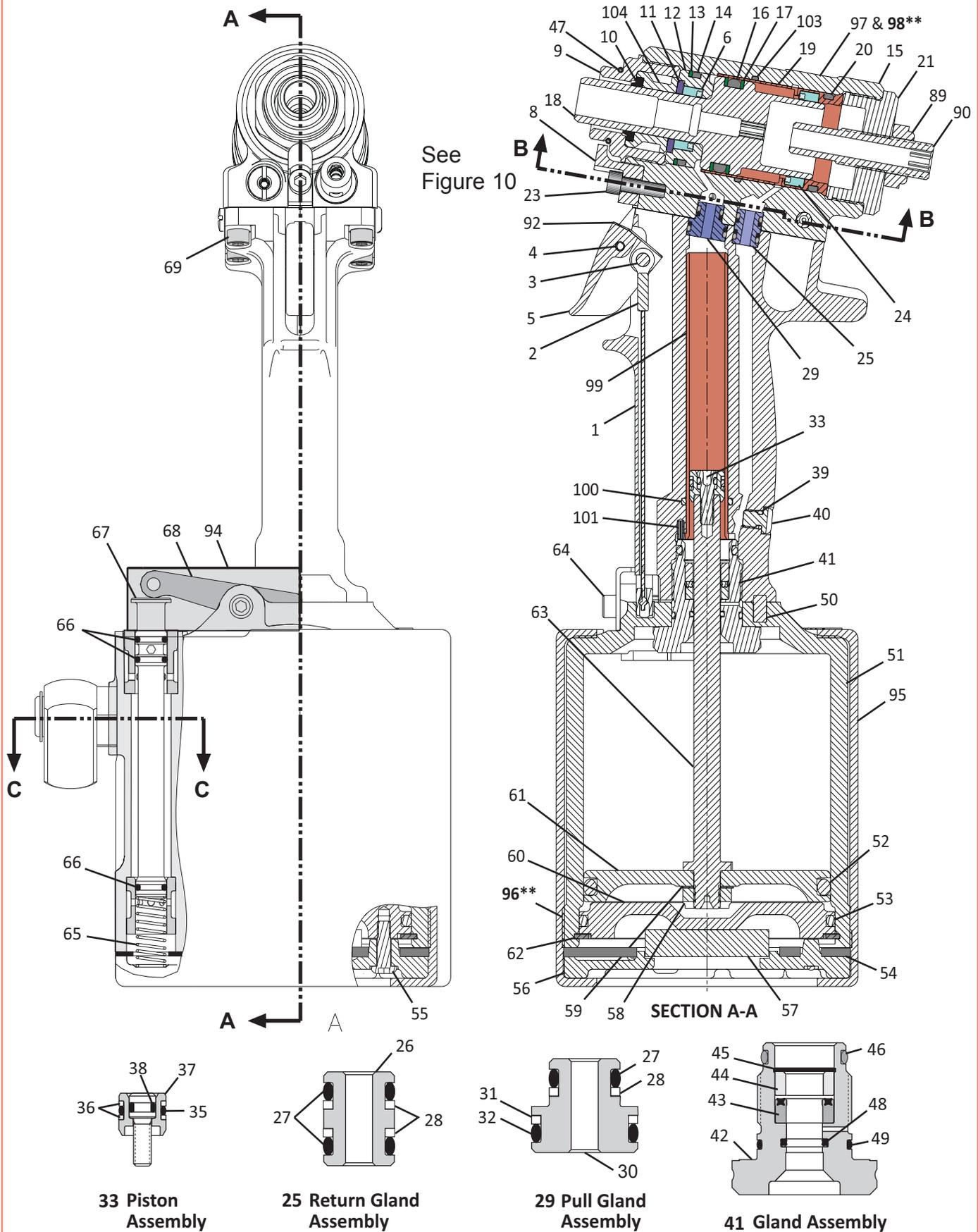
FIG. 9a



# 244OSX COMPONENTS - FIGURES 9b & 10

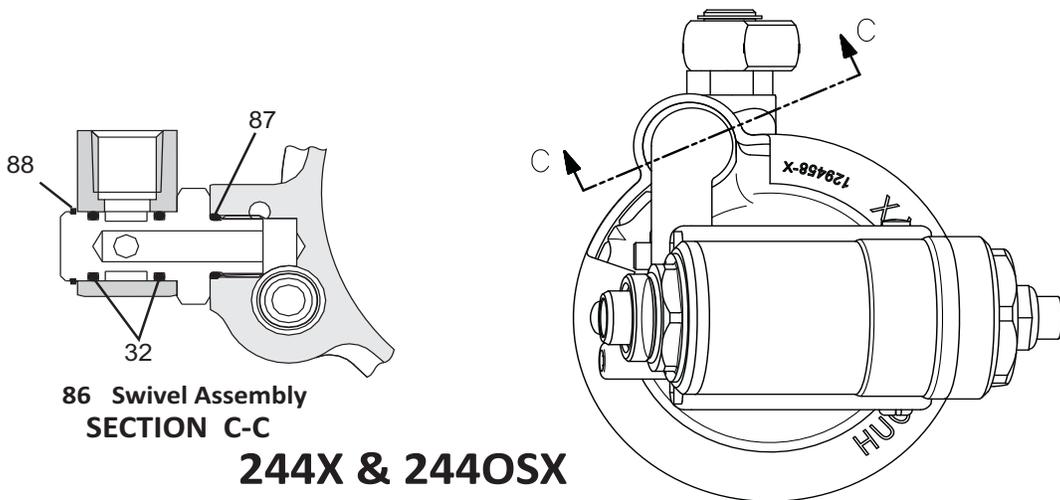
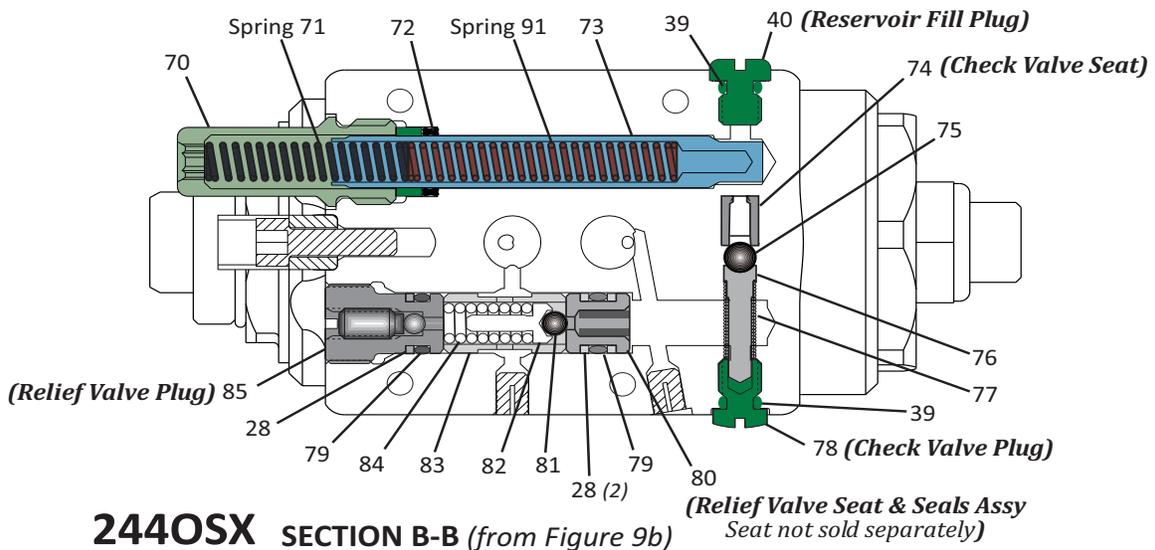
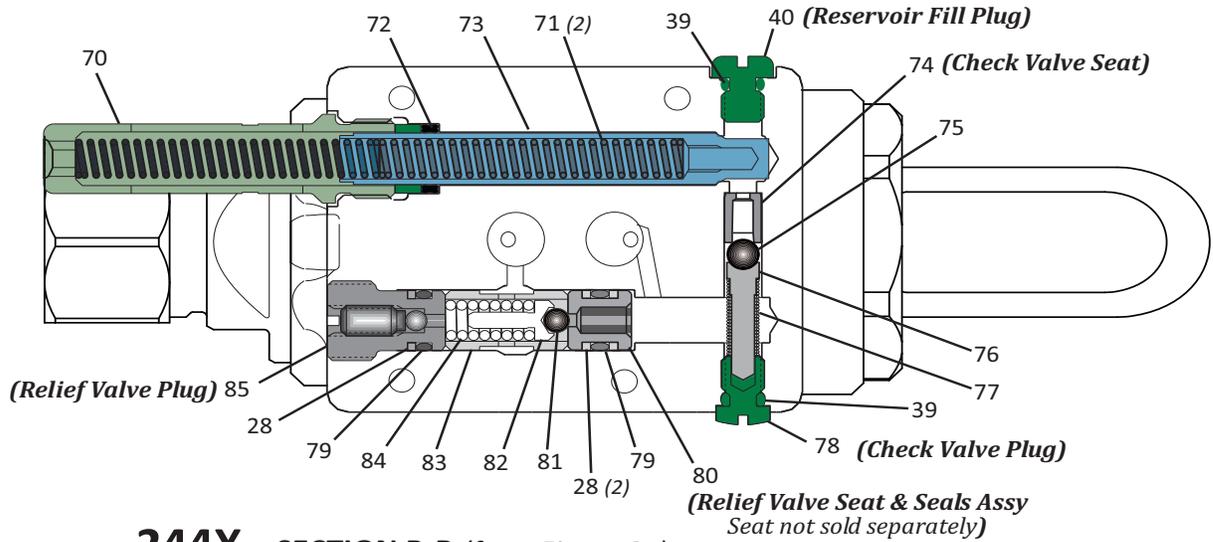


FIG. 9b



# 244X & 244OSX COMPONENTS

FIG. 10



**PARTS LISTS - FIGURES 9a/b & 10**

Item	Description	244X	244OSX	Qty
1	Handle	130351	130351	1
2	Cable Assy	116404-1	116404-1	1
3	Trigger Cable Pin	505496	505496	1
4	Roll Pin	500621	500621	1
5	Trigger	124333-2	124333-2	1
6	Polyseal	505818	505818	1*
7	Retaining Nut	111795	n/a	1
8	Stop	120588	125951	1
9	Nose Adapter	125537	130377	1
10	Wiper Seal	505817	505817	1*
11	Gland Cap	122432	122432	1
12	Front Gland Assembly	125538	125538	1
13	Back-up Ring	501113	501113	1*
14	O-Ring	500819	500819	1*
15**	<b>Head Plug Seat Assy</b>	130524	130524	1
16	O-Ring	507401	507401	1*
17	Back-up Ring	501142	501142	2*
18	Hydraulic Piston	125885	125946	1
19	Rear Gland/Sleeve Assembly	130525	130525	1
20	O-Ring	500820	500820	1*
21	End Cap	125545	130367	1
22	Pintail Deflector	124211	n/a	1
23	Screw	n/a	500102	1
24	Polyseal	507400	507400	1*
25	Return Gland Assy	125555	125555	1
26	Gland Housing	125554	125554	1
27	O-Ring	500776	500776	3*
28	Back-up Ring	501082	501082	6*
29	Pull Gland Assy	125553	125553	1
30	Pull Gland Housing	125552	125552	1
31	Back-up Ring	501085	501085	1*
32	O-Ring	500779	500779	3*
33	Piston Assy	118865	118865	1
34	Screw	117773	117773	1
35	O-Ring	503768	503768	1*
36	Back-up Ring	501084	501084	2*
37	Intensifier Piston	117774	117774	1
38	O-Ring	500773	500773	1*
39	O-Ring	505438	505438	3*
40	Plug Assy(incl item 39)	104293	104293	2
41	Gland Assy	125557	130353	1
42	Gland	126311	130352	1
43	Polyseal	506611	506611	1*
44	Spacer	123904	123904	1
45	Retaining Ring	505939	505939	1*
46	O-Ring	507647	507647	1*
47	O-Ring	n/a	500784	1*
48	Quad Ring	501074	501074	1*
49	O-Ring	500786	500786	1*
50	Timing Pin	505496	505496	1
51**	<b>Cylinder Assy</b>	125560	125560	1
52	Quad or O-Ring	500901	500901	1*
53	O-Ring	500869	500869	1*
54	Gasket	126941-1	126941-1	1*
55	Screw	504127	504127	3

Item	Description	244X	244OSX	Qty
56	Bottom Plate	128790	128790	1
57	Muffler	115554-1	115554-1	1
58	Locknut	505420	505420	1
59	Washer	506493	506493	1
60	Cylinder Head	123778	111959-1	1
61	Air Piston	123776	123753	1
62	Retaining Ring	506490	506490	1
63	Piston Rod	125561	125561	1
64	Pivot Screw	125118	125118	1
65	Spring	116272-244	116272-244	1*
66	O-Ring	507396	507396	3*
67	Throttle Valve	125562	125562	1
68	Throttle Arm	123754	123754	1
69	Screw	500062	500062	4
70	Housing Spacer Assy	112403	112403-1	1
71	Spring	505864	505864	1+
72	Quad Ring	501408	501408	1*
73	Reservoir Plunger	112405	112405	1
74	Seat	111139	111139	1
75	Ball	502929	502929	1*
76	Check Valve Guide	111067	111067	1
77	Spring	100874	100874	1
78	Plug Assy (incl item 39)	111079	111079	1
79	O-Ring	505446	505446	2*
80	Seat Assy	130526	130526	1*
81	Ball	505120	505120	1*
82	Guide	120128	120128	1
83	Sleeve	130121	130121	1
84	Spring	130123	130123	1
85	Plug	114530	114530	1
86	Swivel Assy	507164	507164	1
87	O-Ring	500778	500778	1*
88	Retaining Ring	502274	502274	1
89	Locknut	n/a	501071	1
90	Stop	n/a	125949	1
91	Spring	n/a	507602	1
92	Trigger Stop	125766	125766	1
93	Stall Nut ( <i>not shown</i> )	124090	n/a	1*
94	Lever Guard	130368	130368	1
95	Cylinder Boot	129458	129458	1
96**	<b>Max pressure/flow Sticker</b>	590351	590351	1
97	HUCK / Yr of Mfr Sticker	590517	590517	1
98**	<b>WARNING Sticker</b>	590240-1	n/a	1
99	Handle Sleeve	130360	130360	1
100	Handle O-ring	508541	508541	1
101	Handle Sleeve Locater Pin	508533	508533	1
102	Throttle Arm Guard	130368	130368	1
103	Cylinder O-ring	508562	508562	1
104	Bushing	n/a	130378	1

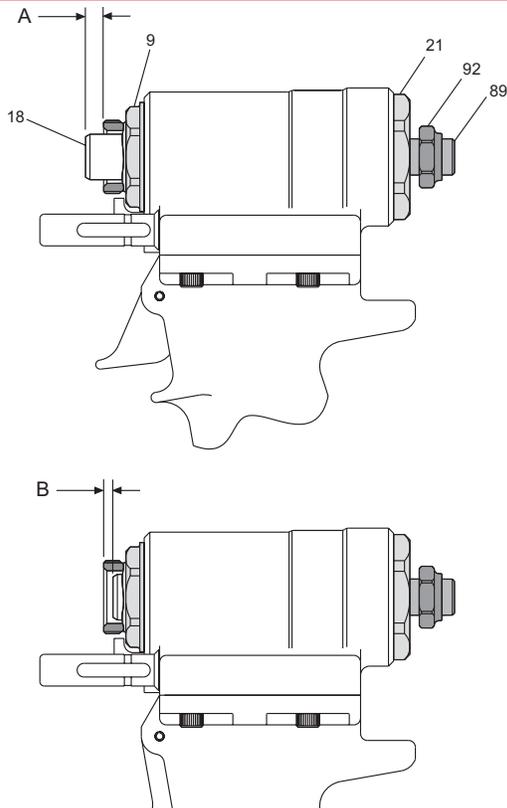
\* These parts are included in optional Service Kit 244KIT.

\*\* These tools come labeled with important stickers which contain safety information. These stickers must remain on the tool and easily read. If any sticker becomes damaged or worn, or when replacing a cylinder, new stickers must be ordered and placed in the locations shown.



## MEASURING & ADJUSTING STROKE (244OSX)

FIG. 11



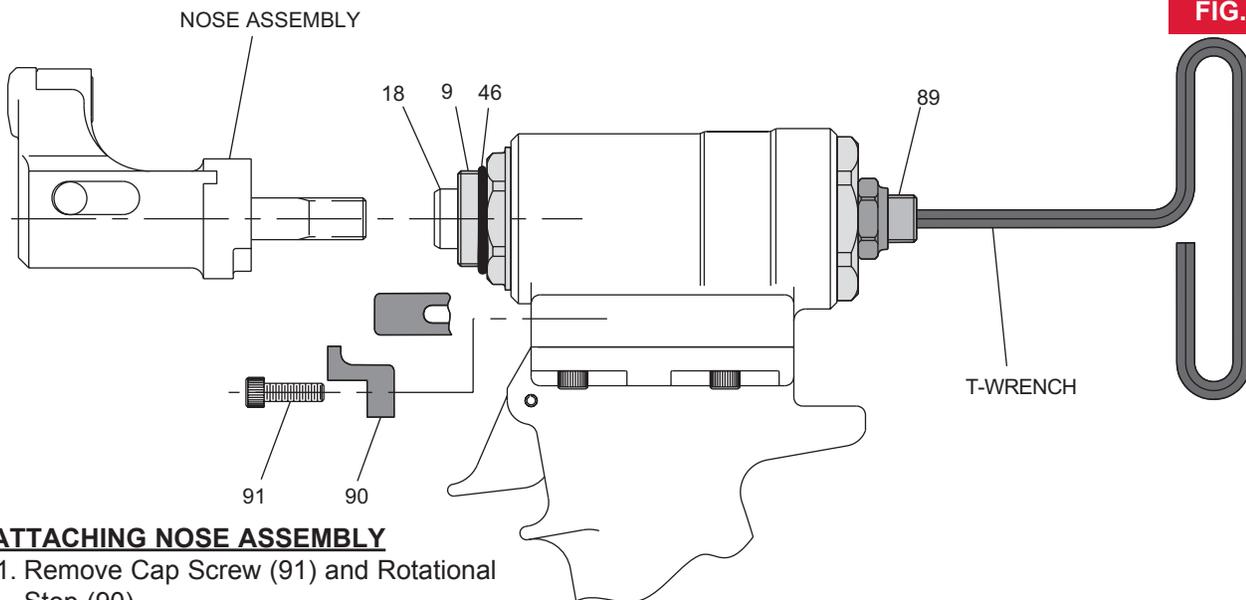
### ADJUSTING STROKE

1. Measure distance "A" from face of Hydraulic Piston (18) to face of Nose Adapter (9). This distance should be approximately equal to .247 inches.
2. Cycle tool and hold piston back by keeping the trigger depressed. Measure distance "B" as above.
3.  $STROKE = A+B$
4. Adjust Piston Stop (89) clockwise to reduce dimension "B" (decreasing stroke) and counterclockwise to increase "B" (increasing stroke). Repeat step 2.
5. When desired stroke has been reached, hold Piston Stop (89) with a  $\frac{1}{4}$ " hex key and with a  $\frac{3}{4}$ " open end wrench tighten Locknut (92) against End Cap (21).



## ATTACHING NOSE ASSEMBLY (244OSX)

FIG. 12



### ATTACHING NOSE ASSEMBLY

1. Remove Cap Screw (91) and Rotational Stop (90).
2. Insert a  $\frac{3}{16}$ " hex T-Wrench through Piston Stop (89) until it engages internal hex in Hydraulic Piston (18).
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 (90) and secure with Cap Screw (91). The nose should be free to rotate approximately 45 degrees from the vertical in either direction (90 degrees included).

# TROUBLESHOOTING



Always check out the simplest possible cause of a malfunction first. For example, an air hose not connected. Then proceed logically, eliminating each possible cause until the cause is located. Where possible, substitute known good parts for suspected bad parts. Use TROUBLESHOOTING CHART as an aid in locating and correcting malfunction.

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 depressed.**
  - a) Air line not connected
  - b) Throttle Valve O-rings worn or damaged.
  - c) Throttle valve Cable Assembly is broken.
- 2 Tool does not complete fastener installation and break pintail.**
  - a) Air pressure too low
  - b) Air Piston Quad-Ring worn or damaged.
  - c) Reservoir empty or low, refer to Fill and Bleed section.
  - d) Air in hydraulic system, refer to Fill and Bleed section.
  - e) Reservoir Springs worn or damaged
  - 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 Tool has piston drift.**
  - a) Loose collet crashing into the front of the anvil, this causes the relief valve to open allowing the piston to drift. Tighten the collet and refer to Fill and Bleed section.
  - b) Worn or damaged Return Pressure Relief Valve in tool, inspect Seat Assembly, O-ring, Back-up Rings, Steel Ball and Valve Spring. Replace if necessary.
  - c) Worn or damaged Piston Assembly; Inspect O-rings and Back-up Rings, and replace if necessary.
- 5 Hydraulic fluid exhausts with air or leaks at base of handle.**
  - a) Worn or damaged Gland Assembly; Inspect Polyseal, O-rings, and Quad-Ring, and replace if necessary.
- 6. Hydraulic fluid leaks at rear of Pull Piston**
  - a) Worn or damaged Rear Gland; inspect Polyseal and O-ring, and replace if necessary.

- 7. Hydraulic fluid leaks at front of Pull Piston**
  - a) Worn or damaged Front Gland; Inspect Polyseal, O-ring, and Back-up Ring, and replace if necessary.
- 8. Pull Piston (18) will not return**
  - a) Throttle Valve stuck; Lubricate O-rings.
  - b) Throttle Arm, Cable Assembly or Trigger binding.
- 9. Air leaks at air Cylinder Head**
  - a). Worn or damaged O-ring. Replace if necessary.

# ACCESSORIES



## 244X TOOL

<b>Fill and Bleed Bottle (Fig.8)</b>	-	<b>120337</b>
<b>Seat Removal Tool</b>	-	<b>126136</b>
<b>Fill Tool Assy for reservoir (Fig.8)</b>	-	<b>112465</b>
<b>Stall Nut (Fig.8)</b>	-	<b>124090</b>
<b>Retaining Nut (for "Jiffy" style noses)</b>	-	<b>125412</b>
<b>Piston Assy Tool Kit Includes:</b>	-	<b>123110-11</b>
Piston Assembly Tool (Fig. 2)	-	123111-2
Spacer (Fig. 2)	-	123112-2
<b>Service Tool Kit Includes:</b>	-	<b>120352-244</b>
Fill and Bleed Bottle (Fig.8)	-	120337
Fill Tool for reservoir (Fig.8)	-	112465
Stall Nut (Fig.8)	-	124090
<b>Pintail Collection Bag</b>	-	<b>125655</b>
<b>Pintail Tube (for -05 fastener)</b>	-	<b>100534-1</b>
<b>Air Cylinder Boot</b>	-	<b>129458</b>

## 244OSX TOOL

<b>Fill and Bleed Bottle (Fig.8)</b>	-	<b>120337</b>
<b>Seat Removal Tool</b>	-	<b>126136</b>
<b>Fill Tool Assy for reservoir (Fig.8)</b>	-	<b>112465-1</b>
<b>Main Piston Assembly Tool Kit</b>	-	<b>123110-10</b>
Includes:		
Piston Assembly Tool (Fig. 2)	-	123111-8
Spacer (Fig. 2)	-	123112-8
<b>Service Tool Kit Includes:</b>	-	<b>120352-244OS</b>
Fill and Bleed Bottle (Fig.8)	-	120337
Fill Tool Assy (Fig.8)	-	112465
<b>Air Cylinder Boot</b>	-	<b>129458</b>



## LIMITED WARRANTIES

### TOOLING WARRANTY:

Huck warrants that tooling and other items (excluding fasteners, and hereinafter referred as "other items") manufactured by Huck shall be free from defects in workmanship and materials for a period of ninety (90) days from the date of original purchase.

### WARRANTY ON "NON-STANDARD OR CUSTOM MANUFACTURED PRODUCTS":

With regard to non-standard products or custom manufactured products to customer's specifications, Huck warrants for a period of ninety (90) days from the date of purchase that such products shall meet Buyer's specifications, be free of defects in workmanship and materials. Such warranty shall not be effective with respect to non-standard or custom products manufactured using buyer-supplied molds, material, tooling and fixtures that are not in good condition or repair and suitable for their intended purpose.

**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. HUCK MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES AS TO MERCHANTABILITY OR AS TO THE FITNESS OF THE TOOLING, OTHER ITEMS, NON-STANDARD OR CUSTOM MANUFACTURED PRODUCTS FOR ANY PARTICULAR PURPOSE AND HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

Huck's sole liability and Buyer's exclusive remedy for any breach of warranty shall be limited, at Huck's option, to replacement or repair, at FOB Huck's plant, of Huck manufactured tooling, other items, nonstandard or custom products found to be defective in specifications, workmanship and materials not otherwise the direct or indirect cause of Buyer supplied molds, material, tooling or fixtures. Buyer shall give Huck written notice of claims for defects within the ninety (90) day warranty period for tooling, other items, nonstandard or custom products described above and Huck shall inspect products for which such claim is made.

### TOOLING, PART(S) AND OTHER ITEMS NOT MANUFACTURED BY HUCK:

**HUCK MAKES NO WARRANTY WITH RESPECT TO THE TOOLING, PART(S) OR OTHER ITEMS MANUFACTURED BY THIRD PARTIES. HUCK 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 HUCK. HUCK 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.**

The only warranties made with respect to such tool, part(s) or other items thereof are those made by the manufacturer thereof and Huck agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

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

### HUCK INSTALLATION EQUIPMENT:

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

Huck 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 Huck International, 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 Huck International Office, see back cover.

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 Tools Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck office listed on the back cover for the ATSC in your area.

# Alcoa Fastening Systems & Rings



**About Alcoa Fastening Systems & Rings,** a business unit of Alcoa, is a leading worldwide designer and manufacturer of fastening systems and rings, including specialty fasteners, fluid fittings, assembly components, installation systems, and seamless rings for aerospace

and industrial applications. Headquartered in Torrance, California, the company has over 8,300 employees at 39 manufacturing and distribution/logistics locations in 13 countries. For more information, visit [afsr.alcoa.com](http://afsr.alcoa.com)

## Alcoa Fastening Systems & Rings world-wide locations:

### AMERICAS

**Alcoa Fastening Systems & Rings**  
**Aerospace Fasteners Division**  
3724 East Columbia  
Tucson, AZ 85714  
800-234-4825  
520-747-9898  
FAX: 520-748-2142

**Alcoa Fastening Systems & Rings**  
**Aerospace Fasteners Division**  
PO Box 5268  
900 Watson Center Rd.  
Carson, CA 90749  
800-421-1459  
310-830-8200  
FAX: 310-830-1436

**Alcoa Fastening Systems & Rings**  
**Industrial Fasteners Division**  
PO Box 8117  
8001 Imperial Drive  
Waco, TX 76714-8117  
800-388-4825  
254-776-2000  
FAX: 254-751-5259

**Alcoa Fastening Systems & Rings**  
**Fasteners Division**  
1 Corporate Drive  
Kingston, NY 12401  
800-278-4825  
845-331-7300  
FAX: 845-334-7333

**Alcoa Fastening Systems & Rings**  
**Industrial Products**  
**Latin America Operations**  
Avenida Parque Lira. 79-402  
Tacubaya Mexico, D.F.  
C.P. 11850  
FAX: 525-515-1776  
TELEX: 1173530 LUKSME

### EUROPE

**Alcoa Fastening Systems & Rings**  
**Industrial Products**  
**United Kingdom Operations**  
Unit C, Stafford Park 7  
Telford, Shropshire  
England TF3 3BQ  
01952-290011  
FAX: 0952-290459

**Alcoa Fastening Systems & Rings**  
**Aerospace Products**  
**France Operations**  
Clos D'Asseville  
BP4  
95450 Us Par Vigny  
France  
33-1-30-27-9500  
FAX: 33-1-34-66-0600

### FAR EAST

**Alcoa Fastening Systems & Rings**  
**Industrial Products**  
**Australia Operations**  
14 Viewtech Place  
Rowville, Victoria  
Australia 3178  
03-764-5500  
Toll Free: 008-335-030  
FAX: 03-764-5510

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