

Alcoa
Fastening
Systems



INSTRUCTION MANUAL

256BT

PNEUDRAULIC INSTALLATION TOOL



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

07-10-2013
HK1109





EC Declaration of Conformity

Manufacturer:

Alcoa Fastening Systems, Industrial Products Group, 1 Corporate Drive, Kingston, NY, 12401, USA

Description of Machinery:

Model numbers **256BT series** fastener installation tools and specials based on 256 series design (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 (EN 792-1)

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:

Larry M. Krieg

Position:

Product Engineer
Installation Systems Division

Place:

Kingston, New York, USA

Date:

August, 2010

Declared dual number noise emission values in accordance with ISO 4871

A weighted sound power level, LWA: 88 dB (reference 1 pW)
Uncertainty, KWA: 3 dB

A weighted emission sound pressure level at the work station, LpA: 77 dB
(reference 20 μ Pa)
Uncertainty, KpA: 3 dB

C-weighted peak emission sound pressure level, LpC, peak: 96.2 dB
(reference 20 μ 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: .56 m/s²

Uncertainty, K: .12 m/s²

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.



WARNINGS: Must be understood to avoid severe personal injury.



CAUTIONS: show conditions that will damage equipment and or structure.

Notes: are reminders of required procedures.

Bold, Italic type and underlining: emphasizes a specific instruction.

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 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:

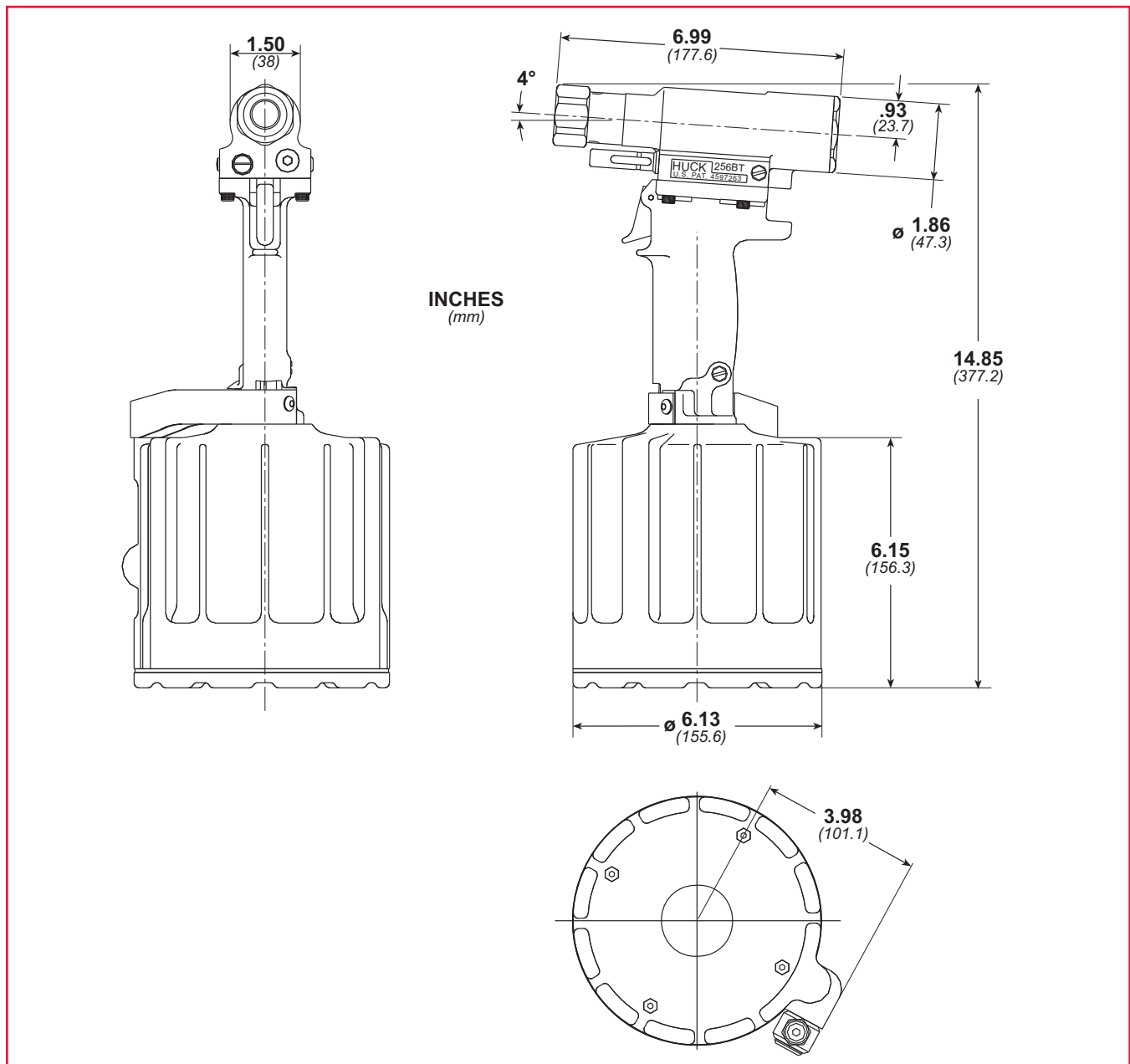
1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your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



SPECIFICATIONS



Power Source: Huck POWERIG Hydraulic Unit

Hydraulic Fluid: ATF meeting DEXRON III, DEXRON IV, MERCON, Allison C-4 or equivalent specifications. Fire resistant hydraulic fluid may also be used and is required to comply with OSHA regulation 1926.302 paragraph (d): "the fluid used in hydraulic power tools shall be fire resistant fluid approved under schedule 30 of the US Bureau of Mines, Department of Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed."

- **Stroke:** 1.275 in (3.24 cm)
- **Weight:** 11 lbs (5 kg)
- **Max Air Pressure:** 90 psi (6.2 BAR)
- **Max Flow Rate:** 22.4 scfm
- **Capacity:** 6700 lbs (29.8 kN) @ 90 psi (6.2 BAR)
- **Speed/Cycles:** 30 per minute
- **Max Operating Temp:** 125°F (52°C)



PRINCIPLE OF OPERATION

When the trigger is depressed the throttle valve moves to down position, pressurized air is directed to the bottom of the air piston, causing the piston to move upward. The air above the piston is exhausted and directed through the center of the throttle valve and out the bottom of the tool. The air piston has a rod and a hydraulic piston attached. When the air piston rod moves upward, a column of pressurized fluid is forced into head, which moves the pull piston back. The attached nose assembly moves with the pull piston spindle to start fastener installation.

When fastener installation is completed, the trigger is released. Air pressure with the assistance of a spring causes the throttle valve to return to its up position. Pressurized air is re-directed to the top of the air piston, causing the piston to move downward. The air from below the piston is exhausted through bottom of tool. The rod and hydraulic piston move downward; hydraulic pressure is reversed and the pull piston is returned forward. Return pressure relief valve protects tool against pressure spikes. The reservoir replenishes hydraulic system as needed.

OPERATING INSTRUCTIONS

For safe operation. Please read completely



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.

GENERAL

Operators should receive training from qualified personnel.

Do not bend tool to free if stuck.

Tool should only be used to install fasteners. NEVER use as a jack/spreader or hammer.

BOBTAIL® Fastener Installation:



WARNING: Do not pull on a pin without placing fastener/collar in a workpiece, and also, collar chamfer **MUST** be out toward tool. These conditions cause pin to eject with great velocity and force when the pintail breaks off or teeth/grooves strip. This may cause severe personal injury.



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.

Place pin in workpiece 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 anvil touches collar. Depress trigger and hold until collar is swaged and pintail breaks. Release trigger. Tool will go into its return stroke. Tool/nose are ready for next installation cycle.

- Length of tool increases during fastener installation. Allow adequate tool and anvil clearance before installing fasteners.
- Check pin for correct grip. Place pin in work hole.
- Place collar over pin. See WARNINGS. If collar has only one tapered end, that end should be outward toward tool.
- Hold pin in hole. Push tool onto pin protruding from collar until anvil touches collar.
- Move hands away from pin and structure. Keep hands away from front of tool during operation. Tool anvil advances forward.
- Hold tool at right angle (90 degrees) to work. Press and hold trigger down until collar is swaged.
- Release trigger. Tool returns to starting position.
- Tool is ready for next installation cycle.



MAINTENANCE



CAUTIONS:

- Consult MSDS before servicing tool.
- Keep dirt and other material out of hydraulic system.
- Separated parts must be kept away from dirty work surfaces.
- Dirt/debris in hydraulic fluid causes Dump Valve failure in Tool and in POWERIG® Hydraulic Unit's valves.



CAUTION: Always replace seals, wipers, and back-up rings when tool is disassembled for any reason.



CAUTION: Do not use TEFLON®* tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Slic-Tite is available in stick form as Huck P/N 503237.)

Note:

See **SPECIFICATIONS** for fluid type. Dispose of fluid in accordance with local environmental regulations. Recycle steel, aluminum, and plastic parts in accordance with local lawful and safe practices.

GENERAL

1. 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.
2. A clean, well lit area should be available for servicing the tool. Special care must be taken 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. Disassembly and assembly procedures outlined in this manual should be followed.
5. **Service Parts Kit** includes consumable parts and should be available at all times. Other components, as experience dictates, should also be available.



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

DAILY

1. 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.
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 per applicable Nose Assembly Data Sheet.
2. Check the tool and all connecting parts for damage or oil/air leaks, tighten or replace if necessary.



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.

NOTE: The following procedure is for complete disassembly of tool. Disassemble only those components necessary to replace damaged O-rings, Quad-Rings, Back-up Rings, and worn or damaged components. Always use soft jaw vice to avoid damage to tool.

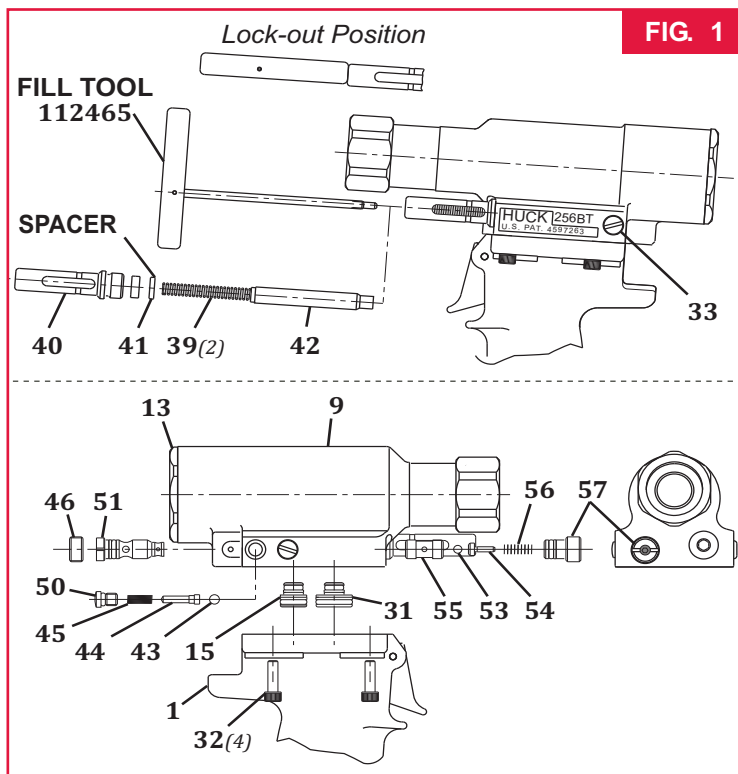


FIG. 1

1. Disconnect air hose from tool.
2. Remove nose assembly.
3. Insert Fill Tool part no. 112465 through reservoir housing and screw into Reservoir Plunger (42) locking it in the out position. *Figure 1*
4. Unscrew Cap Screws (32) with 5/32 hex key. Carefully lift Head (9) straight up from Handle (1), remove Pull Gland Assy (31) and Return Gland Assy (15) from separated Head and Handle assembly. Remove seals from glands. *Figure 1*
5. Unscrew Plug (57) of return Pressure Relief Valve from front of head. Remove Spring (56), Valve Guide (54), Sleeve (55) and Steel Ball (53). A small magnet is helpful. *Figure 1*
6. Unscrew Bleed Plug (33). Hold over waste oil container and release fill tool slowly. *Figure 1*
7. Unscrew Reservoir Housing (40) from head. Remove two Springs (39). Slide Reservoir Plunger (42) from head. Remove spacer and Quad Ring (41). A pick may be used to remove the quad ring. *Figure 1*
8. Unscrew Plug (50) of reservoir check valve from side of head. Remove Spring (45), Check Valve Guide (44) and Stainless Steel Check Valve Ball (43). *Figure 1*
9. If Check Valve Seat (52) is damaged contact your Huck representative. If Seat (52a) is damaged it can be removed by using the following procedure. **NOTE: If seat is taken out it cannot be reused; it must be replaced.** *Figure 9*
10. **Seat Assy (52) Removal:** **NOTE: All parts in the reservoir check valve must be removed before Plug (51) can be removed.** Using a 3/16 Allen wrench, remove Screw (46). Insert a #10 screw in the thread of Plug (51). Pull to remove. Using optional Seat Removal Tool p/n 126136 or a small drift and hammer, from the rear side of the head, drive Seat Assy (52) out towards the front of the head. *Figure 9*
11. Unscrew Cylinder Cap (13) from Head (9) with 1 11/16 open end wrench. U n s c r e w Cylinder Cap (13) from Head (9) with with 1 11/16 open end wrench.
12. Remove Piston (11) through rear of tool. **NOTE: Piston should push out front and rear gland assemblies.**
13. Remove two Screws (34) from Throttle Arm Guard (37) and remove guard.
14. Remove Screw (35) from Throttle Arm (36). Remove throttle arm. Pull Throttle Valve (17a) out of cylinder. Remove Spring (17d). *Figure 9*
15. With a small punch and hammer, drive Roll Pin (5) that retains the trigger from Handle (1). Remove Trigger Pin (4). Remove ball end of cable (2) from Throttle Arm (36), and pull cable out of handle. *Figure 9*
16. Remove Bleed Plug (33) from handle. *Figure 1*



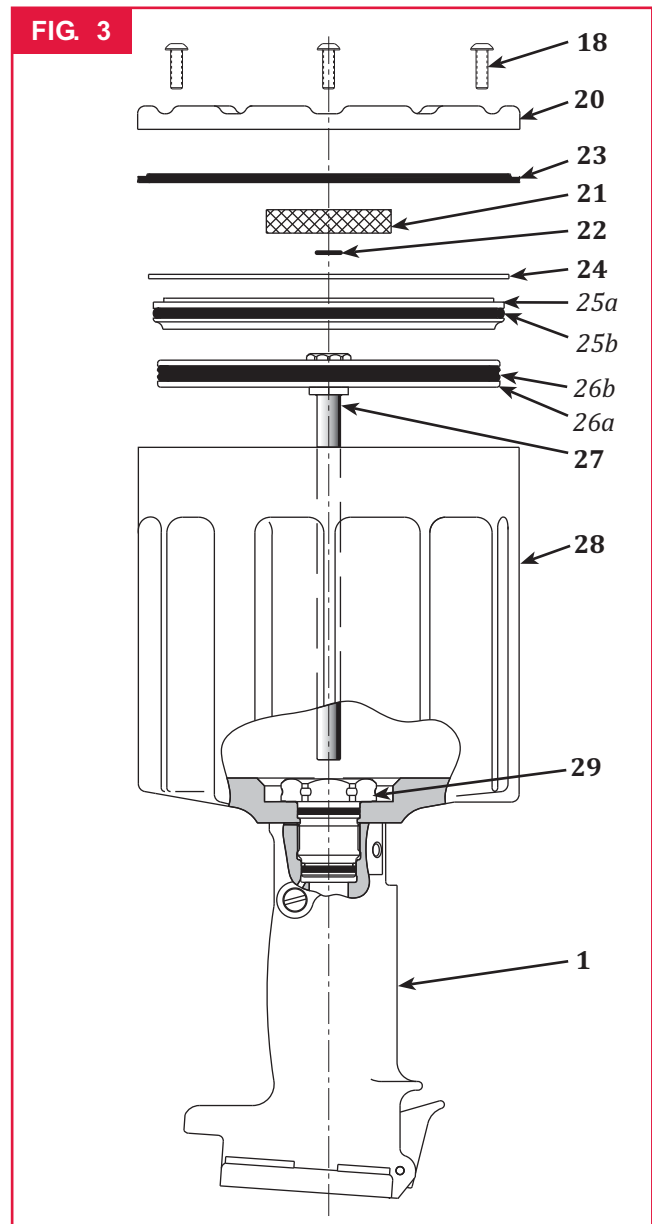
DISASSEMBLY (continued)

17. Hold tool inverted in vice. Unscrew four Button Head Screws (18) with 1/8 hex key. (Fig. 3)
18. Remove Muffler End Cap (20), Bottom Exhaust Gasket (23), Muffler (21) and O-ring (22). (Fig. 3)
19. Remove Retaining Ring (24) from Cylinder Assembly (28). (Fig. 3) **NOTE:** Tap cylinder head down into cylinder for easier removal of retaining ring.
20. Screw Button Head Screws (18) into Cylinder Head (25a). Carefully pry under screws to remove cylinder head.
21. Push air piston all the way down in cylinder and lay tool on its side. Hold Self-locking Nut (19) with a 9/16 socket and extension and, with 7/64 hex key, remove piston Screw (30b). (Fig. 4 & 9)
22. Return cylinder and handle to upside down position, and secure in a vise.
23. Grip Self-locking Nut (19) under Air Piston (26) with pliers and pull piston and rod assembly from handle and cylinder assembly. (Fig. 3 & 4)

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

24. With a 1 3/8 socket and extension, remove Gland Assembly (29). Handle and cylinder will now separate. (Fig. 3)
25. Push Hydraulic Piston (31) out of handle. Push out from top to bottom.

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



26. To remove Polyseal (29e) from Gland Assembly (29). Remove Retaining Ring (29k) and Spacer (29a). (Fig. 9)



ASSEMBLY

WARNING: Do not omit any seals during servicing, leaks will result and personal injury may occur.

WARNING: Tool must be fully assembled with all components included.

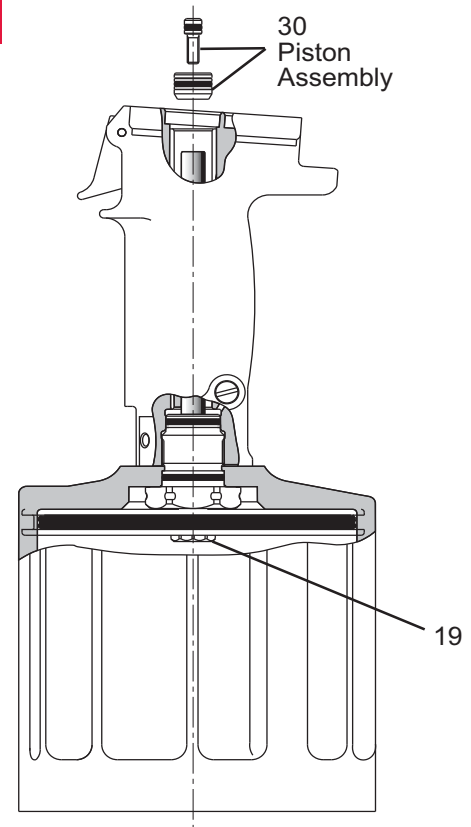
Clean components with mineral spirits, or similar solvent. Inspect for wear/damage and replace as necessary. Replace all seals of disassembled components. Use O-rings, Quad rings and Back-up rings in **Service Parts Kit, P/N 256BTKIT**. Smear LUBRIPLATE 130AA or PARKER-O-LUBE on O-rings, Quad rings, Back-up rings and mating parts to ease assembly. Assemble tool taking care not to damage O-rings, Quad rings, or Back-up rings.

1. Holding handle inverted in a vice, Place Cylinder (28) on handle with Timing Pin positioned in matching hole. Assemble Gland Assembly (29) and screw it into handle. (Fig. 9) Torque to 100 - 120 ft. lbs. using 1 3/8 socket wrench.
2. Push Air Piston/Rod assembly with Quad Ring (26b) in place into air cylinder until it reaches top of cylinder. (Fig. 3)

CAUTION: Do NOT scratch piston rod.

3. Turn tool upright. Install Hydraulic Piston Assembly (30) (with O-ring (30c) and Back-up Rings (30d) in place) in handle. Press in from top of handle taking care not to damage seals. (Fig. 4)
4. Push Screw (30b) with O-ring (30e) in place through Hydraulic Piston (30a) and screw into top of piston rod. Hold Nut (19) with 9/16 socket and extension and torque Screw (30b) using 7/64 hex key to 55 - 60 in. lbs.
5. Hold handle in vise with bottom facing up. Push Cylinder Head (25a) with O-ring (25b) in place squarely into cylinder. Install Retaining Ring (24). (Fig. 3 & 9)
6. Position O-ring (22) and Muffler (21) on center of Cylinder Assy (25). Place Gasket (23) on Cylinder Assembly (28). **NOTE: Lip must face Muffler End Cap (20).** Place Muffler End Cap (20) on top of Gasket (23), and secure with 3 Button Head Screws (18) using 1/8 hex key. (Fig. 3)
7. Turn tool upright. Drop Spring (17d) into Throttle Valve hole in cylinder. Push Throttle Valve (17a) with O-rings (17b & 17c) in place into cylinder. (Fig. 9)

FIG. 4

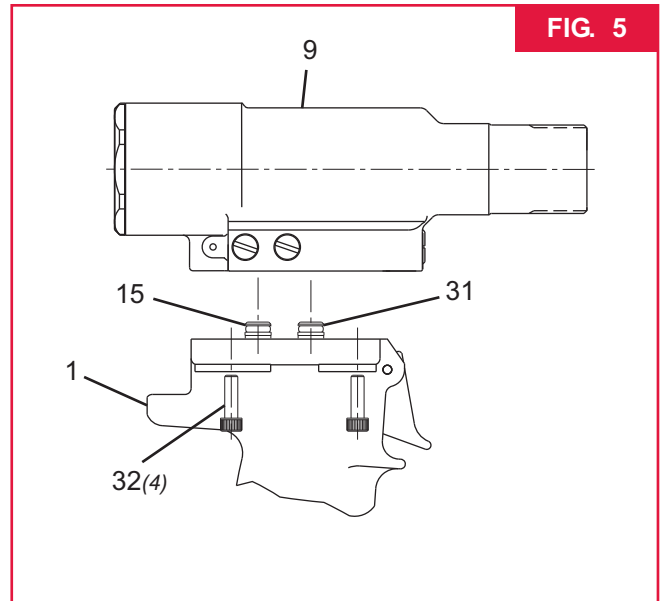


8. Assemble Trigger (3) Cable (2) and Trigger Pin (4), and slide cable into Handle (1). Align hole in trigger with hole in handle and install Roll Pin (5) with a hammer and punch. (Fig. 9)
9. Slide Throttle Arm (36) onto ball end of throttle cable. Swing arm until other end fits over throttle valve. Push Screw (35) through Throttle Arm (36). Tighten with 5/32 hex key.
10. If Air Hose Assembly (38) was removed, reinstall in Cylinder Assembly (28).
11. **{If Seat Assy (52) is being replaced}**: Push Plug (51) (with O-ring 48 & Back-up Ring 47 in place) into head. Install Screw (46). (Fig. 9)
12. Install O-ring (52c) and Back-up Rings (52b) onto Seat (52a). Drive Seat Assy (52) in using soft drift taking care not to damage Relief Valve Ball (53) surface. (Fig. 9, Section A-A)
13. Assemble Pull Piston (11a) with new Seals (11b & 11c). Lubricate with LUBRIPLATE or PARKER SUPER-O-LUBE and install. (Fig. 9 & 10)
14. Push Front Gland Assy (10) with all seals, housing and wiper in place (Figure 2) over Assembly Bullet and onto Pull Piston Assy (11). (Fig. 9 & 10)



ASSEMBLY (continued)

15. Install O-rings (12d & 12b) and Back-up Rings (12e & 12c) on Rear Gland (12a). Push complete assembly into head. Screw in End Cap (13) and tighten. (Fig. 9 & 10)
16. Install O-ring (48) & Back-up Ring (47) on Plug (57). Install Ball (53), Valve Guide (54), Sleeve (55), Spring (56) and Plug (45) into head. (Fig. 1 & 9)
17. Install O-ring (49) on Plug (50). Install Check Valve Ball (43), Check Valve Guide (44), Spring (45) and Plug (50) into head.
18. Push Pintail Deflector (14) onto barbed end of Pull Piston (11a). (Fig. 9)
19. Place O-rings (33b) on Bleed Plugs (33a) and screw assemblies into Handle (Qty. 1) and Cylinder Head (Qty. 2). (Fig. 9)
20. Install O-rings (31c & 31e) & Back-up Rings (31b & 31d) on Pull Gland (31a). Install O-rings (15c & 15d) and Back-up Rings (15b & 15e) on Return Gland (15a). Push Gland Assemblies (15 & 31) into handle. Push Head (9) down on glands. Place tool in a vise, head down, and install 4 Screws (32) and torque to 170 inch pounds. (Fig. 5)
21. Tool is now completely assembled and ready for Fill & Bleed.





FILL AND BLEED

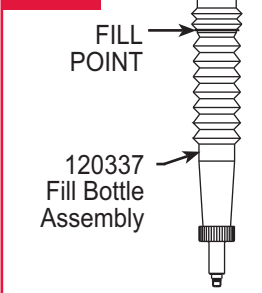
Equipment Required:

- Shop airline with 90 - 100 psi max.
- Air regulator
- Fill bottle, 120337, (supplied with tool).
- Large flat blade screwdriver
- Optional Stall Nut 120824
- Nose assembly
- Fasteners (Optional)

Preparation:

1. Install air regulator in airline and set pressure to 20-40 psi.
2. Fill bleed bottle almost full of DEXRON III - ATF or equivalent. (Fig.6)

FIG. 6



WARNING: Avoid contact with hydraulic fluid. Hydraulic fluid must be disposed of in accordance with Federal, State and Local Regulations. Please see MSDS for Hydraulic fluid shipped with tool.

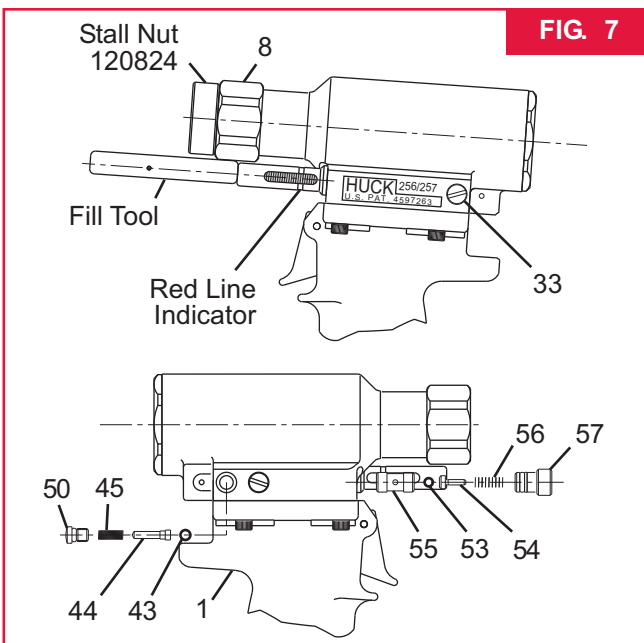
Refill tool only when red line on plunger drops below the red line on the reservoir housing or when tool is rebuilt.

USE: AUTOMATIC TRANSMISSION FLUID DEXRON III, OR EQUIVALENT.

Step 1

Screw Fill Tool 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. (Fig. 7)

FIG. 7



Step 2

Remove Plugs (57) and (50) and all guides, springs and balls from ports in head. Reinstall Plug (57) in head in Relief Valve port (front of tool). (Fig. 7 & 8).

Step 3

Screw retaining nut onto head assembly. Screw Stall Nut (optional see note:) 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. **Note:** If Stall Nut is not used, piston must be pushed to the full forward position before installing valves.

Step 4

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

Step 5

Install fill bottle in head fill port (check valve hole). (Fig. 7 & 8)

Step 6

Connect tool to shop air regulated to 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.

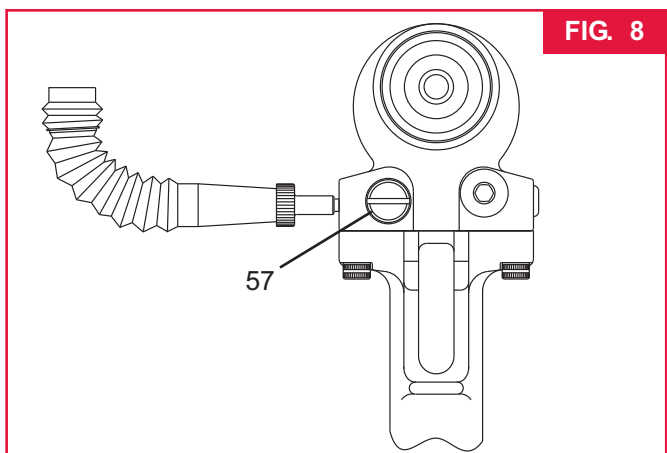


WARNING: Air pressure **MUST** be set to 20 to 40 psi to prevent possible injury from high pressure spray. If plug (50) is removed, fill bottle must be in place before cycling tool.

Step 7

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

FIG. 8





FILL AND BLEED (CONTINUED)

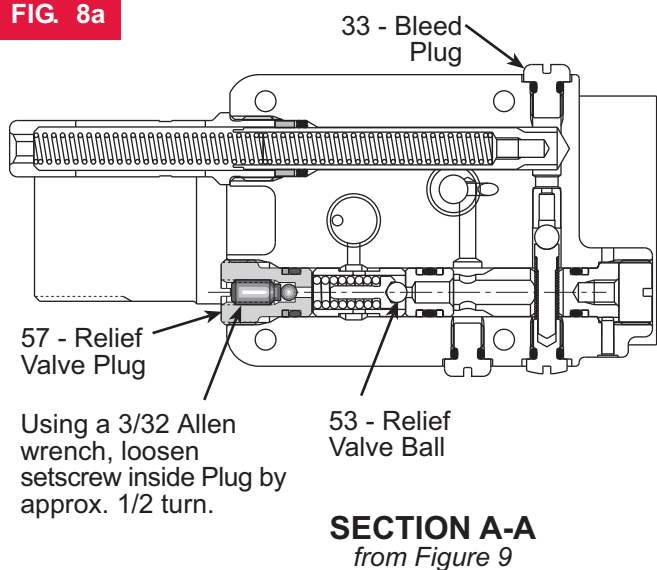
Step 8

Install the check valve Ball (43), Guide (44) and Spring (45). Replace the Plug (50). (Fig. 7) **Note:** *When cycling tool, always hold bottle up as shown in Figure 8 to prevent drawing in air from empty part of bottle.*

Step 9

Turn tool so front of head faces you and remove the Relief Valve Plug (57). Prior to removing Plug (57), 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 (53), Guide (54), Sleeve (55) and Spring (56). Replace the Relief Valve Plug (57) and, after bleeding, re-tighten setscrew.

FIG. 8a



Step 10

Unlock Fill Tool and check Reservoir red line. At this point cycle tool with Stall Nut attached (Optional. See note) and retaining nut locked in the full forward position ("Dead Stall"). Reservoir should not drop below the red line on the reservoir housing. **NOTE:** *Dead Stalling is not necessary if Optional Stall nut was not used; just cycle tool.*

Step 11

Re-lock the fill tool in out position. Lay tool on its side with the reservoir on the high side, and remove Bleed Plug (33) from the reservoir side. Top off reservoir by placing a few drops of oil in hole and wait for air bubbles to escape. Push a pin or a scribe into hole to check for trapped air bubbles. Replace plug. (Figs. 7 & 8a)



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

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

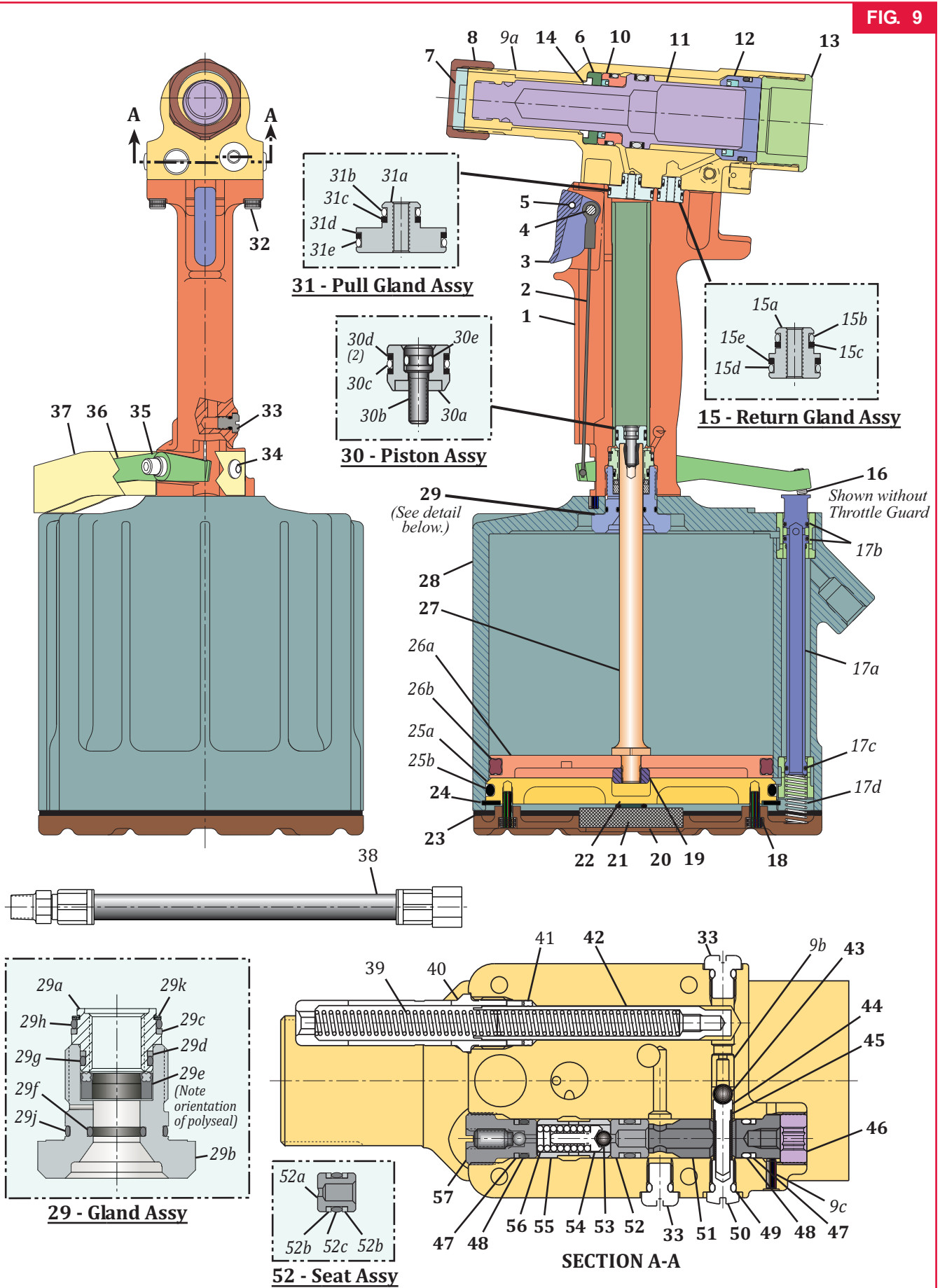


WARNING

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.



FIG. 9

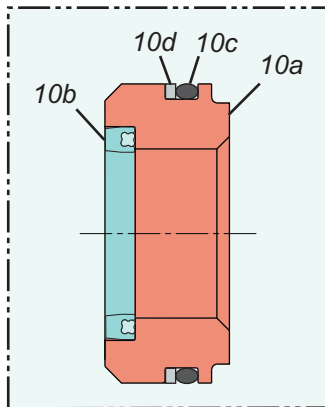




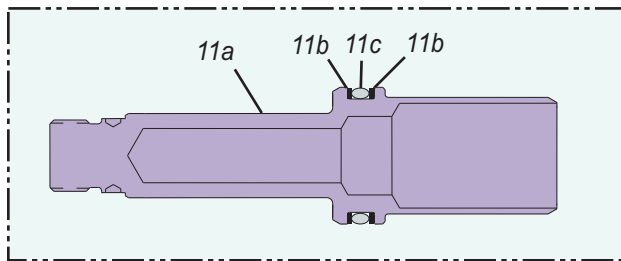
PARTS LIST

(Refer to Figures 9 and 10)

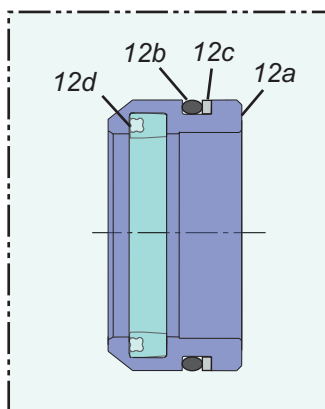
FIG. 10



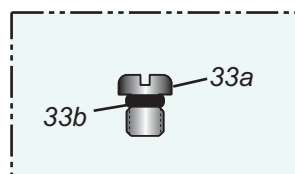
10 - Front Gland Assy



11 - Pull Piston Assy



12 - Rear Gland Assy



33 - Bleed Plug / O-Ring Assy

Item	Description	Part No.	Qty.
1	Handle & Sleeve Assy	125642	1
2	Cable	125643	1
3	Trigger	124333-2	1
4	Trigger Pin	505496	1
5	Roll Pin	500621	1
6	Wiper Housing	129549	1
7	Stop	110670	1
8	Retaining Nut	117824	1
9	Head Assy contains:	129552	1
9a	Cylinder Head *	n/a	1
9b	Seat	111139	1
9c	Pin	120203	1
10	Front Gland Assy contains:	129556	1
10a	Front Gland *	n/a	1
10b	Polyseal	505865	1
10c	O-Ring	500820	1
10d	Back-up Ring	501114	1
11	Pull Piston Assy contains:	129555	1
11a	Pull Piston *	n/a	1
11b	Back-up Ring	501144	2
11c	O-Ring	500850	1
12	Rear Gland Assy contains:	129557	1
12a	Rear Gland *	n/a	1
12b	O-Ring	505887	1
12c	Back-up Ring	501118	1
12d	Polyseal	508428	1
13	Cylinder Cap	129550	1
14	Wiper	505894	1
15	Return Gland Assy contains:	112502	1
15a	Return Gland *	n/a	1
15b	O-Ring	500776	1
15c	Back-up Ring	501082	1
15d	O-Ring	500778	1
15e	Back-up Ring	501084	1
16	Throttle Arm Setscrew	502053	1
17	Throttle Valve Assy contains:	115558	1
17a	Throttle Valve *	n/a	1
17b	O-Ring	504408	2
17c	O-Ring	504407	1
17d	Spring	116272	1
18	Button Head Screw	500101	4
19	Self-locking Nut	121241	1
20	Muffler End Cap	120076	1

Parts list continued on next page.

* When replacing these parts, the assembly must be ordered. They are not sold separately.



PARTS LIST

(Refer to Figures 9 and 10)

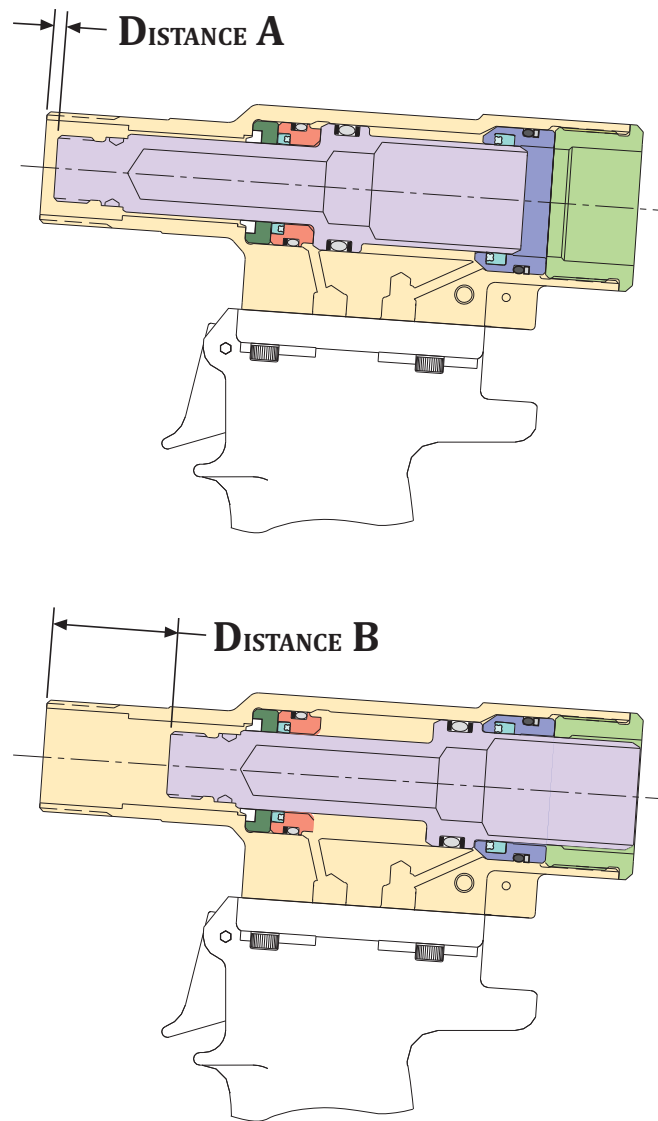
Item	Description	Part No.	Qty.	Item	Description	Part No.	Qty.
21	Muffler	115554	1	32	Cap Screw	500102	4
22	O-Ring	500777	1	33	Bleed Plug / O- Ring Assy contains:	104243	3
23	Gasket	126941-3	1	33a	Bleed Plug *	n/a	1
24	Retaining Ring	505139	1	33b	O-Ring	505438	1
25	Cylinder Head Assy contains:	113528	1	34	Screw	502482	2
25a	Cylinder Head *	n/a	1	35	Screw & Bushing Assy	127029	1
25b	O-Ring	505147	1	36	Throttle Arm	127688	1
26	Piston / Quad Ring Assy contains:	113526	1	37	Guard	125657	1
26a	Air Piston *	n/a	1	38	Air Hose Assy	115436	1
26b	Quad Ring	501472	1	39	Spring	505864	2
27	Piston Rod	113344	1	40	Housing / Spacer Assy	112403	1
28	Cylinder Assy	120372	1	41	Quad Ring	501408	1
29	Gland Assy contains:	127326	1	42	Reservoir Plunger	112405	1
29a	Gland	127324	1	43	Check Valve Ball	502929	1
29b	Gland Housing	127325	1	44	Check Valve Guide	111067	1
29c	Back-up Ring	127327	1	45	Spring	100874	1
29d	Back-up Ring	127328	1	46	Screw	120129	1
29e	Polyseal	127329	1	47	Back-up Ring	501082	2
29f	O-Ring	500779	1	48	O-Ring	505446	2
29g	O-Ring	500781	1	49	O-Ring	505438	1
29h	O-Ring	500784	1	50	Plug	111068	1
29j	O-Ring	500786	1	51	Plug	120204	1
29k	Retaining Ring	502821	1	52	Seat & Seals Assy Assy contains:	114537	1
30	Hydraulic Piston Assy contains:	118866	1	52a	Seat *	n/a	1
30a	Hydraulic Piston *	n/a	1	52b	Back-up Ring	501082	2
30b	Screw	117773	1	52c	O-Ring	505446	1
30c	O-Ring	503770	1	53	Relief Valve Ball	502506	1
30d	Back-up Ring	501086	2	54	Relief Valve Guide	120128	1
30e	O-Ring	500773	1	55	Sleeve	120127	1
31	Pull Gland Assy contains:	113532	1	56	Spring	505863	1
31a	Pull Gland *	n/a	1	57	Relief Valve Plug	114530	1
31b	O-Ring	500776	1				
31c	Back-up Ring	501082	1				
31d	Back-up Ring	501090	1				
31e	O-Ring	500784	1				

* When replacing these parts, the assembly must be ordered. They are not sold separately.



MEASURING TOOL STROKE

FIG. 11



1. With the Piston in the fully forward position, measure **DISTANCE A** from face of the Cylinder to the face of the Piston.
2. Cycle tool and keep Piston in the full rearward position by keeping the trigger depressed. Measure **DISTANCE B** as above.
3. **TOOL STROKE = DISTANCE B - DISTANCE A**



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 this 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 Fastener installation incomplete; No broken pintail.**
 - a) Air pressure too low
 - b) Air Piston Quad-Ring worn or damaged.
 - c) Reservoir empty or low. See Fill and Bleed section.
 - d) Air in hydraulic system. See 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, causing the relief valve to open allowing the piston to drift. Tighten the collet and see 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 (36). 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. 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 (60).**
 - a). Worn or damaged O-ring. Replace if necessary.

ACCESSORIES

Fill and Bleed Bottle	- 120337
Seat Removal Tool	- 126136
Fill Tool Assy for reservoir	- 112465
Stall Nut	- 120824



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