

Alcoa
Fastening
Systems



INSTRUCTION MANUAL

212

PNEUDRAULIC INSTALLATION TOOL



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

05-20-2004
Form HK838



SAFETY

This instruction manual must be read with particular attention to the following safety guide lines, by any person servicing or operating this tool.

1. Safety Glossary



— Product complies with requirements set forth by the relevant European directives.



— Read manual prior to using equipment.



— Eye protection required while using this equipment.



— Hearing protection 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.

2. Huck equipment must be maintained in a safe working condition at all times and inspected on a regular basis for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.
3. Repairman and Operator must read manual prior to using equipment and understand any Warning and Caution stickers/labels supplied with equipment before connecting equipment to any primary power supply. As applicable, each of the sections in this manual have specific safety and other information.
4. See MSDS Specifications before servicing the tool. MSDS Specifications are available from you Huck representative or on-line at www.huck.com. Click on Installation Systems Division.
5. When repairing or operating Huck installation equipment, always wear approved eye protection. Where applicable, refer to ANSI Z87.1 - 1989
6. Disconnect primary power source before doing maintenance on Huck equipment.
7. If any equipment shows signs of damage, wear, or leakage, do not connect it to the primary power supply.
8. Make sure proper power source is used at all times.
9. Never remove any safety guards or pintail deflector.
10. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
11. When using an offset nose always clear spent pintail out of nose assembly before installing the next fastener.
12. If there is a pinch point between trigger and work piece use remote trigger. (Remote triggers are available for all tooling).
13. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and in preventing an accident which may cause severe personal injury.
14. Never place hands between nose assembly and work piece.
15. Tools with ejector rods should never be cycled with out nose assembly installed.
16. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet of correct positioning.

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DESCRIPTION

The Model 212 is a lightweight, high speed production tool designed to install a wide range of Huck blind fasteners, and HUCKBOLT® Fasteners, including 3/16" and 1/4" diameter MAGNA-GRIP® Fasteners and MAGNA-LOK® Fasteners.

Pulling action of the pull piston is provided by a pneumatic-hydraulic (pneudraulic) intensifier

system powered by 90-100 psi air pressure. The air inlet is equipped with a connector with 1/4-18 female pipe threads to accept your air hose or quick connect fitting. The piston return stroke is spring actuated.

A nose assembly is required for each fastener type and size. Nose assemblies must be ordered separately.

SPECIFICATIONS

Weight	8.50 pounds (3.0 kg.)
Length of Head (1)	9.00 inches (228 mm)
Width of Head (1)	1.44 inches (37 mm)
Edge to Centerline	72 inches (18 mm)
Cylinder Diameter	4.63 inches (118 mm)
Height	13.00 inches (330 mm)
Air Pressure	90-100 psi (620-690 kPa)
Air Consumption*	6 CFM (0.003 m ³ /s)
Minimum Stroke	.812 (20.6 mm)
Minimum Pull Force @90 psi	5,200 psi (35,535 kPa)

* (based on 30 fastener installations per minute.)

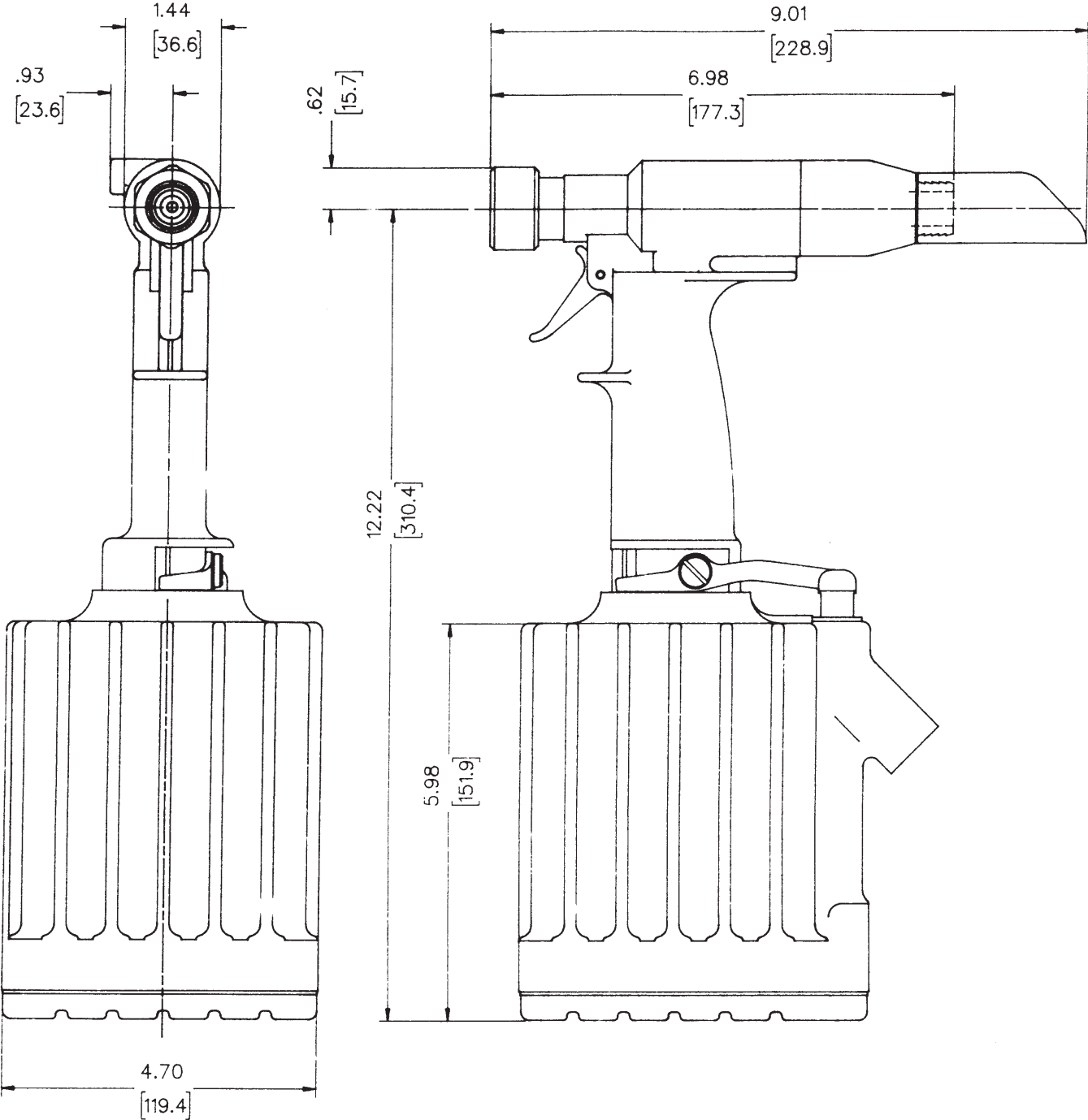
(1) Weight and length of tool does not include nose assembly.

Fasteners installed: See SELECTION CHARTS or your Huck representative.

Hydraulic Fluid: Automatic Transmission fluid, *DEXRON II, III or equivalent.

DEXRON II & III are registered trademarks of General Motors Corporation.

Fig. 1



Outline Drawing

PRINCIPLE OF OPERATION



When tool is connected to air supply, air pressure holds throttle valve in up position - - air pressure is directed to top of piston keeping it down. Depressing trigger moves throttle valve to down position - - air is directed to bottom of piston moving it upward. Air from above piston is exhausted downward through throttle valve and exits muffler at bottom of tool. Air piston rod is a hydraulic piston - - pressurized fluid is forced into head moving pull piston rearward.

When fastener installation is completed, trigger is released. Air pressure causes throttle valve to return to its up position, reversing airflow. Air piston and rod move down to their starting position - - air is exhausted from below piston through muffler at bottom of tool. As rod moves downward and hydraulic pressure is released from pull piston, a spring behind pull piston returns it to its starting position.

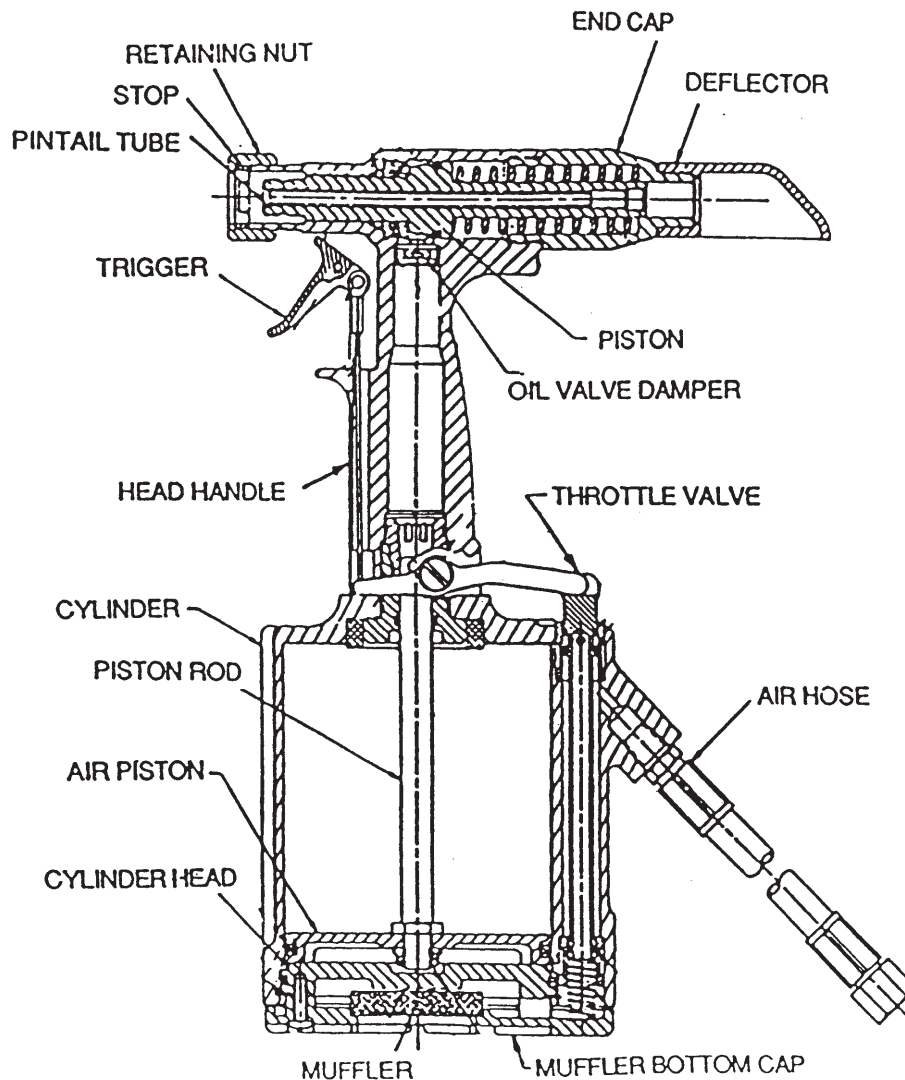


Fig. 2

Sectional View

PREPARATION FOR USE



WARNINGS

Do not pull on a pin without a collar. If a pin is pulled without a collar, pin will eject forcibly when pintail separates. Severe personal injury may result.

If deflectors are removed or damaged, separated pintails may eject forcibly from rear of tool. Severe personal injury may result.

To avoid pinch points, be sure there is adequate clearance for tool and operator's hands before proceeding. Tool moving toward structure may cause severe personal injury if clearance is limited.

Tool is shipped with a plastic plug in air inlet connector. This connector has 1/4-18 female pipe threads to accept hose fitting. Quick connect fittings and 1/4 inch inside diameter air hose are recommended. An air supply of 90 - 100 psi capable of 6 CFM must be available. The air supply should be equipped with a filter-regulator-lubricator unit.

1. Remove plastic plug from air inlet connector and drop in a few drops of automatic transmission fluid, DEXRON II, III or equivalent.
 2. Screw whip air hose and quick-connect fitting into air inlet connector.
 3. Set air pressure on regulator to 90 psi.
 4. Connect air hose to tool.
 5. Cycle tool a few times by depressing and releasing trigger.
 6. Disconnect air hose from tool.
 7. Remove retaining nut.
 8. Use pintail tube(s) as specified on NOSE ASSEMBLY DATA SHEET and/or *FIGURE 2*.
 9. Select nose assembly from SELECTION CHART for fastener to be installed, or see Huck representative. Attach nose assembly to tool following applicable NOSE ASSEMBLY DATA SHEET.
- (1) Quick connect fittings and air hoses are not available from Huck.

OPERATING INSTRUCTIONS



PLEASE NOTE

Failure to understand WARNINGS may cause severe personal injury and failure to understand CAUTIONS may cause damage to structure and tool.



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. Be sure that pintail deflector is on tool and directed away from all personnel.



Blind Fastener Installation:

WARNING

Do not pull on a pin without placing fastener in a workpiece - - fastener will eject from front with velocity and force when pintail breaks off or teeth/grooves strip - - this may cause severe personal injury.

CAUTION

Remove excess gap from between the sheets to permit correct fastener installation and prevent jaw damage. ALL jaw teeth must engage pintail to avoid damaging teeth.

HUCKBOLT® 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.

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 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 - - hold trigger depressed until collar is swaged and pintail breaks. Release trigger. Tool will go into its return stroke. Tool/nose are ready for next installation cycle.

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

CAUTIONS

BOM® blind fasteners jam in nose assembly if pulled when not in workpiece.

To avoid structural and tool damage, be sure enough clearance is allowed for nose assembly at full stroke.

Do not abuse tool by dropping it, using it as a hammer or otherwise causing unnecessary wear and tear.

Reasonable care of tools by operators is an important factor in maintaining efficiency and reducing downtime.

MAINTENANCE

Good Service Practices



The efficiency and life of any tool depends upon proper maintenance and good service practices. Tool should be serviced by personnel who are thoroughly familiar with it and how it operates.

A clean, well-lighted area should be available for servicing the tool. Special care must be taken to prevent contamination of pneumatic and hydraulic systems. Proper hand tools and soft materials to protect tools must be available. Only standard hand tools, brass drift and wood block are required. Vise with soft jaws should be available. See *Table 2* for tools available from Huck.

ALWAYS REPLACE ALL SEALS AND BACK-UP RINGS WHEN TOOL IS DISASSEMBLED FOR ANY REASON.

All parts must be handled carefully and examined for damage and/or wear. Components should be disassembled and assembled in straight line without bonding, cocking or undue force. *DISASSEMBLY* and *ASSEMBLY* procedures outlined in this manual should be followed.

Rub SLIC-TITE TEFLON* thread compound, or equivalent, on pipe plug threads and quick connect fitting. **CAUTION: Do not use Teflon tape on pipe threads. Pipe threads may cause tape to shred, resulting in tool malfunction. SLIC-TITE, 503237, is available in stick form from Huck.** Smear LUBRIPLATE 130AA*, or equivalent, on seals (O-rings etc.) and mating surfaces to aid assembly and to prevent damage to seals. LUBRIPLATE 130AA, 502723, is available in a tube from Huck.

Use VIBRA-TITE* on Gland (29) threads. VIBRA-TITE, 505125, is available from Huck. Follow directions on bottle.

Apply LOCTITE Adhesive/Sealant to Nut, 505420. LOCTITE, 503657, - - in a tube - - is available from Huck. Service Kit, 212KIT, includes perishable parts and should be kept on hand. Other components, as experience dictates, should also be readily available for replacements.

LUBRIPLATE is a trademark of Fiske Brothers Refining Co.

TEFLON is a trademark of E. I. DuPont de Nemours & Co.

VIBRA-TITE is a trademark of the Oakland Corporation.

LOCTITE is a trademark of Loctite Corp.

MAINTENANCE (CONT.)



Preventive Maintenance

Tool Maintenance

The 212 requires a minimum amount of maintenance. Regular inspection and correction of minor problems will keep the tool operating efficiently and prevent downtime.

If a filter-regulator-lubricator unit is not being used in the air supply:

- (1) Remove hose fitting from air inlet connector and drop in a few drops of automatic transmission fluid or light oil.
- (2) Blow out air line to remove dirt and water before connecting air hose to tool.

At regular intervals, depending upon use, replace all seals in tool. Service Kits should be kept on hand. (See *SPARE PARTS AND SERVICE KIT; NOTES*.) Inspect both hydraulic pistons, and their piston rods for scored surfaces, excessive wear or damage, and replace as necessary.

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

Nose Assembly Maintenance

To extend jaw life: Disassemble nose assembly periodically; clean and inspect components - - use a pick to clean jaw grooves. **CAUTION:** Wash pads in **mineral spirits or isopropyl alcohol ONLY**. Dry O-rings; urethane jaw assemblies **IMMEDIATELY** after cleaning as prolonged contact with solvent causes swelling - - dry other parts.

In nose assemblies without UNITIZED™ jaws, dip nose assembly in mineral spirits, isopropyl alcohol, or other suitable solvent, to clean jaws and wash away metal chips and dirt. If more thorough cleaning or maintenance is necessary, disassemble nose assembly. Use pick to remove particles packed in jaw grooves. Reassemble per instructions on applicable NOSE ASSEMBLY DATA SHEET.

STANDARD TOOLS AVAILABLE FROM HUCK

<u>PART</u>	<u>DESCRIPTION</u>	<u>REF.</u>	<u>P/N</u>
502294	Hex Key, 1/8 across flats	45	504127
505898	Hex Key, 7/16 across flats	35	116136
503904	Screw Driver	4	104293

FILLING AND BLEEDING PROCEDURE



Equipment Required:

- Shop airline with 90- 100 psi max.
- Air regulator
- Fill bottle, 120337, (supplied with tool).
- Large flat blade screwdriver
- Nose assembly or optional stall nut
- Fasteners
- Optional stall nut, 124090

Stall nut is used to load tool during bleeding and for measuring stroke.

Preparation:

1. Install air regulator in airline and set pressure to 20-40 psi.
2. Fill bleed bottle almost full of DEXRON II or III - - ATF (automatic transmission fluid) - - see *FIGURE 3*.

Procedure to Fill Empty Tool (new or rebuilt) - - as Applicable:

1. Attach the tool air source momentarily to seat air piston at bottom of cylinder - - disconnect tool. With fillport facing up, lay tool on its side.
2. With a screwdriver, remove bleed plug from fillport.



WARNING

Air pressure **MUST** be set to 20 - 40 psi to prevent possible injurious **high pressure** spray. Never cycle tool without bleed plug tightened, fill bottle tightened in tool, or fillport held over a receptacle (see *FIGURE 3.1*). **When not properly contained any fluid present in tool will spray out. Severe injury may result.**

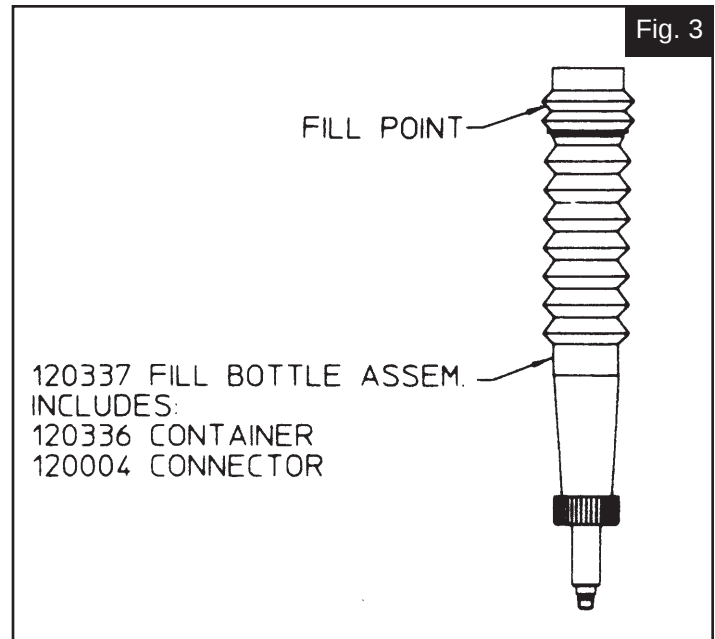


Fig. 3

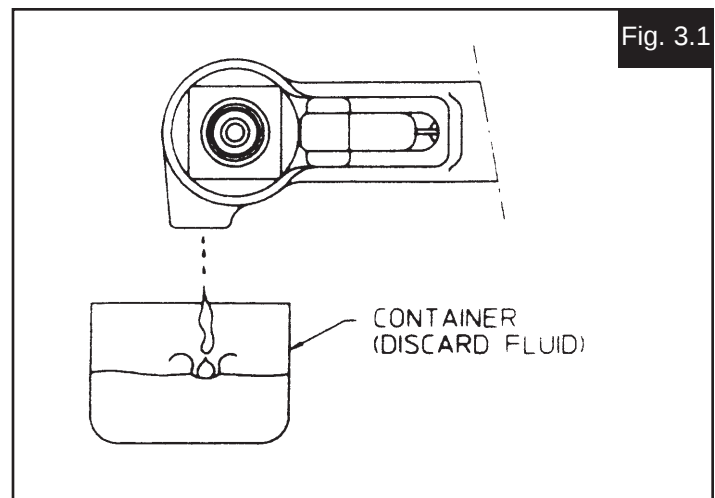


Fig. 3.1

3. Screw fill bottle into fillport in the head.
4. Set airline pressure to 20 - 40 psi and connect airline to tool.

FILLING AND BLEEDING PROCEDURE (CONT.)

- Stand tool upright on bench. While triggering tool slowly (20 - 30 cycles), bend fill bottle at right angles to tool- - see FIGURE 3.2. Air bubbles will emerge from tool. When bubbles stop, cycling may be discontinued.

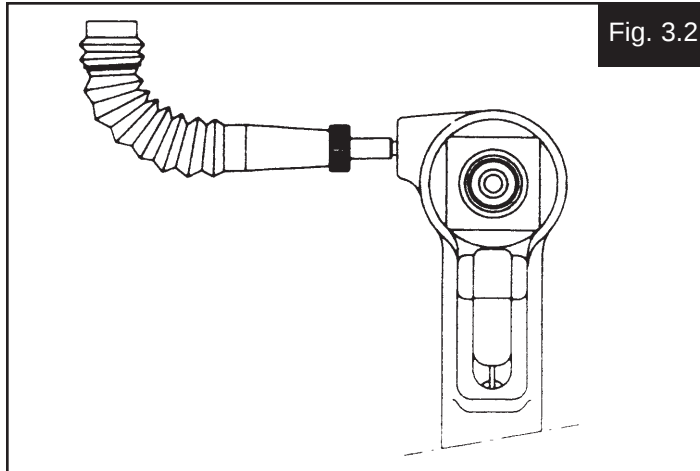


Fig. 3.2

- When trigger is released, pull piston returns to idle position (full forward). Disconnect tool from airline.
- Lay tool on its side. Remove fill bottle. Top off fluid in fillport. Install bleed plug and tighten.
- Connect airline to tool. There is a choice of two procedures for measuring the stroke - - with and without a stall-nut - - see appropriate section and follow the selected procedure. If stroke is less than specified, remove bleed plug and top off fluid. Reinstall bleed plug.
- Increase air pressure to specification. Install two fasteners to check function and installation in a single stroke, or cycle tool with stall-nut fully threaded onto piston to load up tool. Measure stroke again. Remove plug and top off fluid. Reinstall plug and cycle again - - measure again. Continue this process until stroke meets minimum requirements,

Bleed Procedure for Partially Filled Tool in Field Use - - as Applicable:

- Disconnect tool from airline. With fillport facing up, lay tool on its side.
- Remove bleed plug from bleed port.
- Hold tool over suitable container with fillport facing into container.



WARNING

Air pressure **MUST** be set to 20- 40 psi to prevent possible injurious high pressure spray. Never cycle tool without bleed plug tightened, fill bottle tightened in the tool, or the fillport held over a receptacle (see FIGURE 3.3). **When not properly contained any fluid present in tool will spray out. Severe injury may result.**

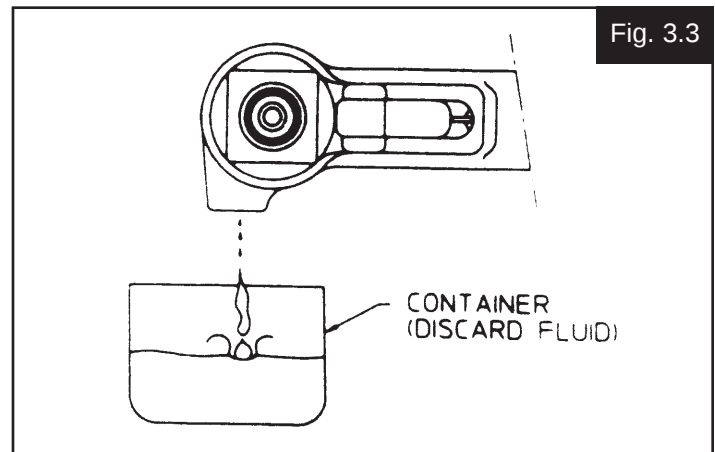


Fig. 3.3

- Connect tool to airline. cycle tool several times to drain the old fluid, air and foam.
- Screw fill bottle into fillport.
- See warning above. With air pressure set at 20 - 40 psi, connect airline to tool

FILLING AND BLEEDING PROCEDURE (CONT.)

7. Stand tool upright on bench. While actuating the trigger slowly (20 - 30 cycles), bend fill bottle at right angles to tool - - see *FIGURE 3.4*. Observe that air bubbles emerge from tool. When bubbles are no longer observed, cycling may be discontinued.
8. When trigger is released, pull piston returns to idle position (full forward). Disconnect tool from airline with piston full forward.
9. Lay tool on its side. Remove fill bottle. Top off fluid in fillport. Install bleed plug and tighten with screwdriver.
10. Connect airline to tool. There is a choice of two procedures for measuring the stroke - - with and without a stall-nut - - see appropriate section and follow the selected procedure. If stroke is less than specified, remove bleed plug and top off fluid. Reinstall bleed plug.
11. Install two fasteners to check function and installation in a single stroke, or cycle tool with stall nut fully threaded onto piston. Measure stroke again. Remove plug and top off fluid. Reinstall plug and cycle again - - measure again. Continue this process until stroke meets minimum requirements.

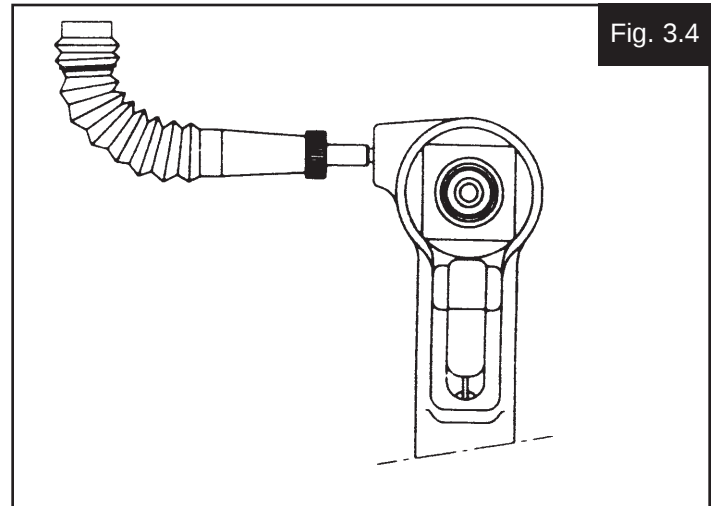


Fig. 3.4

HOW TO MEASURE STROKE



To measure stroke of tool with stall-nut threaded onto piston:

1. Disconnect tool from airline -- remove nose from tool.
2. With piston fully forward (end of RETURN stroke), bottom the stall-nut on piston. Back stall-nut off five (5) turns.
3. Cycle tool and hold trigger depressed - - this keeps piston fully to the rear and at end of PULL stroke. Thread stall-nut back onto piston until it contacts stop.
4. Release trigger. Stall-nut will move forward with piston. See *FIGURE 4* and measure "X" dimension. This is the tools stroke.
5. If stroke is less than .812, refer to appropriate previous section. Follow filling and topping off instructions

To measure stroke of tool without stall-nut:

1. Disconnect tool from airline - - remove nose from tool.
2. With piston fully forward (end of RETURN stroke), measure and record "X" dimension - - see *FIGURE 4.1*.
3. Hold trigger depressed. Piston is now fully to the rear and at end of PULL stroke. Measure and record "Y" dimension.
4. Subtract "X" dimension from "Y" dimension.
5. If stroke is less than .812, refer to appropriate previous section. Follow filling and topping off instructions.

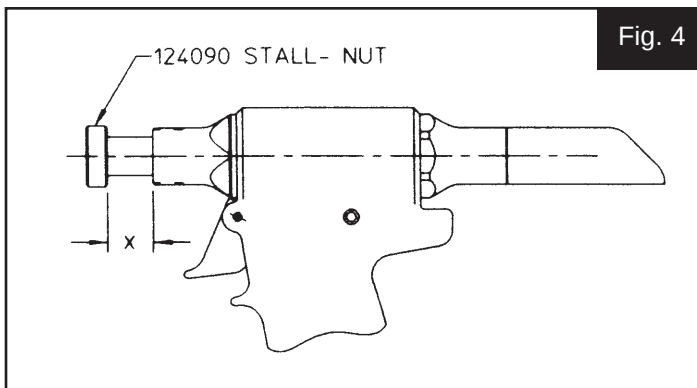


Fig. 4

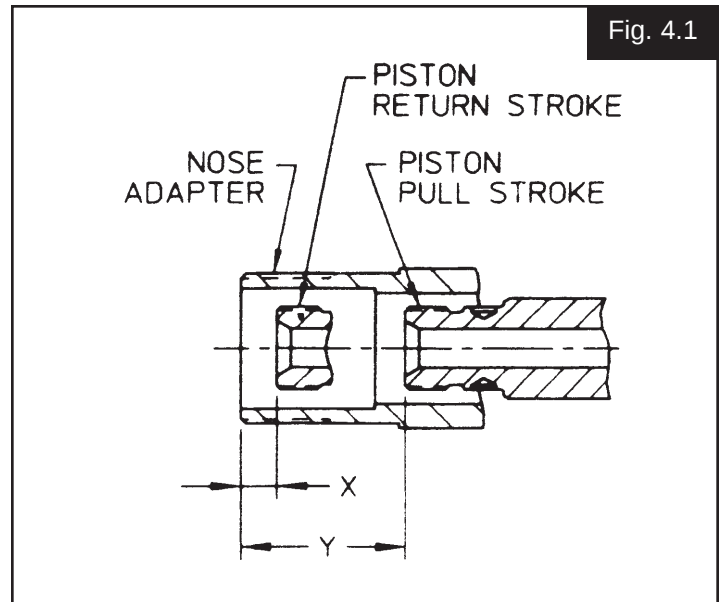


Fig. 4.1

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 defective part is

located. Where possible, substitute known good parts for suspected bad parts. Use this page as an aid in locating and correcting malfunction:

1. Tool fails to operate when trigger is depressed.
 - a. Throttle valve O-ring (53) or O-ring (54) worn or damaged.
 - b. Broken throttle cable.
2. Tool does not complete fastener installation or break pintail.
 - a. Air pressure too low. Set to 90 psi.
 - b. Hydraulic fluid low causing short stroke.
 - c. Air piston QUAD Ring (40) worn or damaged.
 - d. Air in hydraulic system (see *FILLING AND BLEEDING TOOL*).
3. Hydraulic fluid exhausts with air.
 - a. Worn or damaged O-ring (37) and Back-up Ring (36) or O-ring (30); O-ring (33) and Back-up Ring (34); POLY-SEAL (32) or QUAD Ring (31).
4. Hydraulic fluid leaks at Hydraulic Cylinder Head (14).
 - a. Worn or damaged Pull Piston Rod POLY-SEAL (7).
5. Hydraulic fluid leaks at Pull Piston Rod (6).
 - a. Worn or damaged Pull Piston Rod POLY-SEAL (7).
6. Pull Piston (6) will not return.
 - a. Broken or weak Spring (13).
7. Air leaks at air Cylinder Head (43).
 - a. O-ring (44) damaged.

SPARE PARTS AND SERVICE KIT

The quantity of spare parts that should be kept on hand varies with application and number of tools in service. Service parts kit containing perishable parts such as O-rings, back-up rings,

etc., should be kept on hand. Parts included in *SERVICE KIT 212KIT*, are indicated by asterisks (*) in *PARTS LIST*.

DISASSEMBLY

See applicable illustrations.

For parts identification, refer to applicable figures, tables and parts lists. Numbers in parentheses () are reference numbers shown in manual.



WARNING

Be sure air hose is disconnected before cleaning or when replacing worn or damaged tool components. Tool may be actuated if not disconnected and cylinder is under pressure. Severe personal injury may result.

The following procedure is for complete disassembly of tool. Disassemble ONLY those components necessary to replace damaged or worn O-rings, QUAD rings, back-up rings and other components.

1. Disconnect tool from air source.
2. Unscrew Retaining Nut (2) and remove Nose Assembly. Remove Pintail Tube (1).
3. Unscrew Bleed Plug (4) including O-ring (5) from top of Handle/Head (3). Turn tool over and allow fluid to drain into container - - tool may be cycled to clear tool more completely. Discard fluid.



WARNING

Never cycle tool without bleed plug installed and tightened, the bottle installed and tightened in tool head, or the fillport held over a suitable container. *If fluid is present it will spray out of tool. Severe eye injury may result.* Air pressure **MUST** be set at 20 - 40 psi.



4. Pull Deflector (17) off End Cap (14).
5. Using wrench, unscrew End Cap (14). Slide out Spring (13)
6. **CAUTION - - to prevent damage to Piston Seals and Gland Seals when removing them - - install *OPTIONAL* POLY-SEAL Insertion Tool (121694-212).**

Thread POLY-SEAL Insertion Tool, 121694-212, into head/handle.
7. Slide Spacer, 123112-2, over piston rod.
8. Thread Piston Assembly Tool, 123111-2, onto piston.
9. Push complete piston from front using brass drift - -allow clearance for piston as it exits tool.
10. Remove Piston Assembly Tool, Spacer, and POLY-SEAL Insertion Tool.
11. Inspect Piston (6) for wear, scoring or damage. Replace when necessary. Remove Retaining Ring (64) and Washer (63). Hold tool securely with bottom up.
12. Remove three Button Head Screws (51) with 1/8 hex key. Remove Muffler End Cap (50) and Bottom Exhaust Gasket (48). Remove Muffler (47) with O-ring (46) from end cap.
13. Remove Retaining Ring (45) from Cylinder (24).
14. Screw Button Head Screws (51) back into Cylinder Head (43). Carefully pull on screws to remove Cylinder Head (43).

DISASSEMBLY (CONT.)



15. Screw 1/4-20 UNC screws into Piston (39). Pull evenly on screws to remove assembled Piston and Rod - - as an alternative, pull on Lock Nut (42) with VISE-GRIP pliers.

CAUTION

Do not scratch, nick, or ding Piston Rod (41). This will cause permanent hydraulic leakage.

16. **CAUTION:** *DO NOT remove Gland (29) before throttle arm pivot Shoulder Screw (23) is removed. These parts will be damaged if this removal sequence is not followed.*

Remove bumper (38) from Gland (29). Unscrew Gland (29) with 1 3/8 socket wrench.

17. Lift Cylinder (24) from Handle/head (3). Turn handle/head over, and drain hydraulic fluid into container. Discard fluid.

Note: Do not attempt to remove Oil Damper Valve (56 & 57) - - no service is required on these parts

18. Remove Throttle Arm (22). Detach ball end of Cable Assembly (21) from throttle arm. Drive Slotted Pin (18) from Handle (3) and remove Trigger (20) with attached Cable Assembly (21) and Linkage Pin (19). Push out linkage pin and remove cable assembly from trigger.

19. Pull Throttle Valve (52) out of Cylinder (24).

20. **NOTE:** Do not remove bushings unless air leakage cannot be stopped by replacing all three throttle valve O-rings.

If bushing replacement is necessary, press out Lower Bushing (59) and Upper Bushing (58). Use square ended brass rods at least six inches long. With proper size rod, press out lower bushing first, press out upper bushing using a larger diameter rod.

ASSEMBLY



See applicable illustrations.

Clean all components with mineral spirits, and inspect for wear or damage. Replace as necessary. **Always replace all seals and back-up rings on/in disassembled components.** Use O-rings, QUAD rings and back-up rings supplied in Service Kit, 212KIT - - see *NOTES*. Smear LUBRIPLATE 13OAA or PARKER-O-LUBE on seals.

1. If bushings are being replaced:

Note: Use LOCTITE 609, (Huck 503377) on bushings when pressing into cylinder.

Use an arbor press. Place chamfered end of Upper Bushing (58) in top of Cylinder (24). Carefully press bushing squarely into cylinder. Repeat procedure for Lower Bushing (59).

2. After new bushings are installed they may have to be reamed, lapped, and honed to bring their inside diameters to size for correct fit and alignment with throttle valve.
3. Position Cable Assembly (21) in Trigger (20) slot and push Linkage Pin (19) through holes in trigger and cable assembly. Position assembled trigger in Handle (3) and push Slotted Pin (18) through holes in handle and trigger.
4. Hold Head/handle (3) securely with lower end pointing up. Turn Cylinder (24) bottom up, and line up cylinder pin with handle hole. Press Handle onto cylinder.
5. Assemble Gland Assembly - - see *FIGURE 12*

Note: Cup of POLY-SEAL (32) must face toward top of tool when installed in Gland (29).

Use new replacement POLY-SEAL (32), Spacer and SPIRO-LOX Retaining Ring (34).

6. **CAUTION: DO NOT install Throttle Arm Pivot Shoulder Screw (23) before Gland (29) is installed to avoid damage to these parts.**

Apply VIBRATITE (Huck 505125) to threads of Gland Assembly (29) - - follow directions on container. Screw gland into head/handle. Using 1 3/8 socket wrench, tighten gland to 90 ft. lbs. + 10 lbs.

7. Push Bumper (38) firmly over Gland (29) - - face of bumper with two slots must face toward bottom of tool.
8. Carefully press assembled Piston (39). Rod (41). Nut (42), and QUAD Ring (40) into Cylinder/handle (3) through Gland Assembly, 116134.
9. Push Cylinder Head (39) squarely into head/handle taking care not to damage O-ring (44). Install Retaining Ring (45).
10. Position O-ring (46) and Muffler (47) on center of Cylinder Head (43). Position Gasket (48) on cylinder and Spring (28) in lower bushing.
11. Carefully position Muffler End Cap (50) on cylinder - - be certain that muffler is properly positioned in recess of muffler end cap.
12. Hold end cap down and screw in three Button Head Screws (51) and tighten with 1/8 hex key.
13. Place tool upright on level surface. Push Throttle Valve (52) into cylinder.
14. Place ball end of Throttle Cable (21) in end of Throttle Arm (22).
15. Slide throttle arm into slot on Throttle Valve (52).

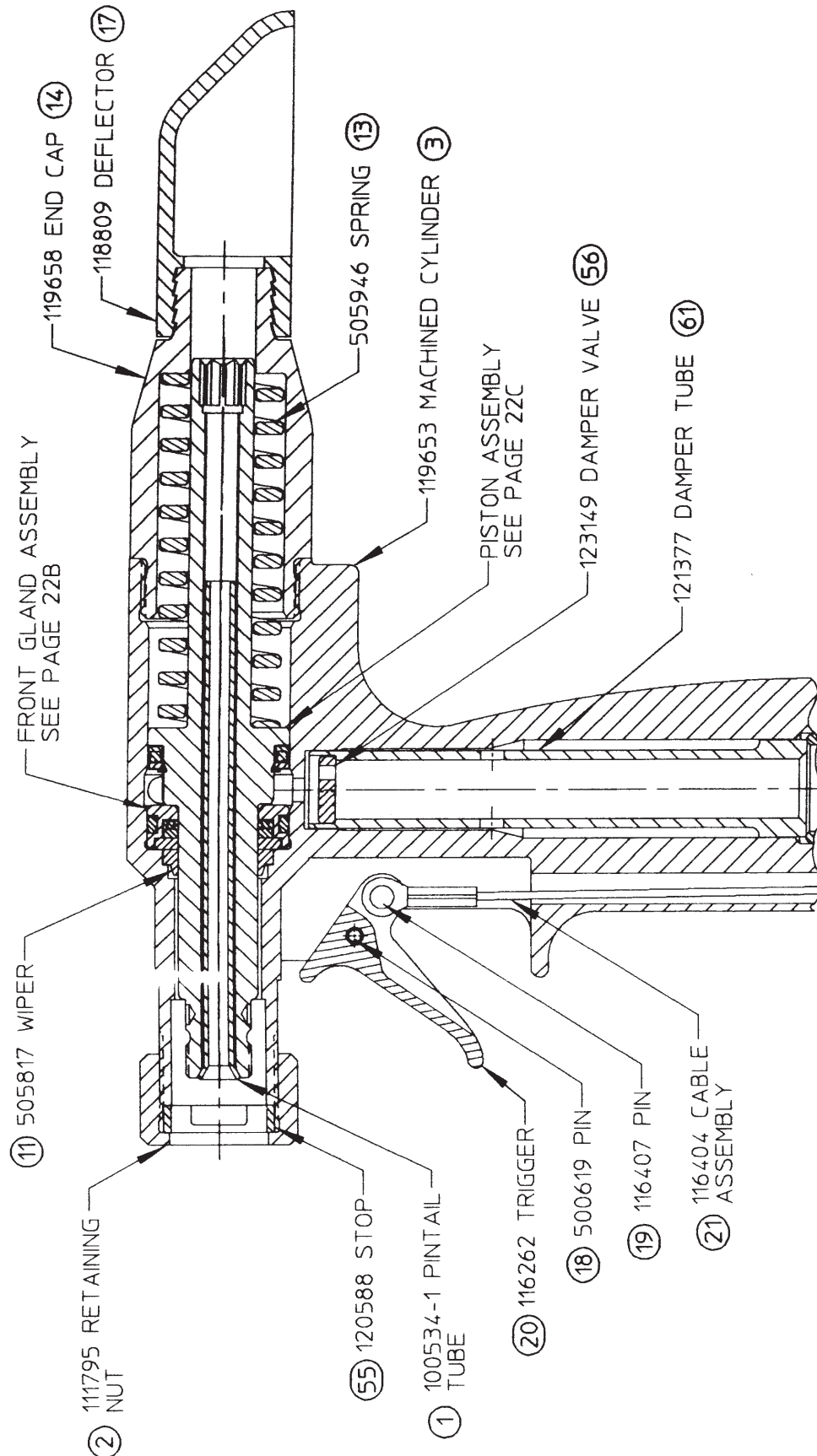
ASSEMBLY (CONT.)



16. Install Shoulder Screw (23) in head/handle (3) to retain throttle arm.
17. Install POLY-SEAL (7), Washer (63) and Retaining Ring (64) into Piston (6).
18. **Caution:**
To prevent damage to piston POLY-SEAL and gland POLY-SEAL, use OPTIONAL POLY-SEAL Insertion Tool .

Thread POLY-SEAL Insertion Tool, 121694-212, into head/handle.
19. Thread Piston Assembly Tool, 123111-2, onto partially assembled piston.
20. Push gland assembly onto piston rod.
21. Push wiper onto piston rod.
22. Push assembled components in gently from rear of tool using a press or a soft mallet and drift.
23. Remove Piston Assembly Tool and POLY-SEAL Insertion Tool Slide Spring (13) over piston extension. Screw End Cap (50) into cylinder and tighten.
24. Push Deflector (17) onto end cap.

Fig. 5



Handle Assembly

Fig. 6

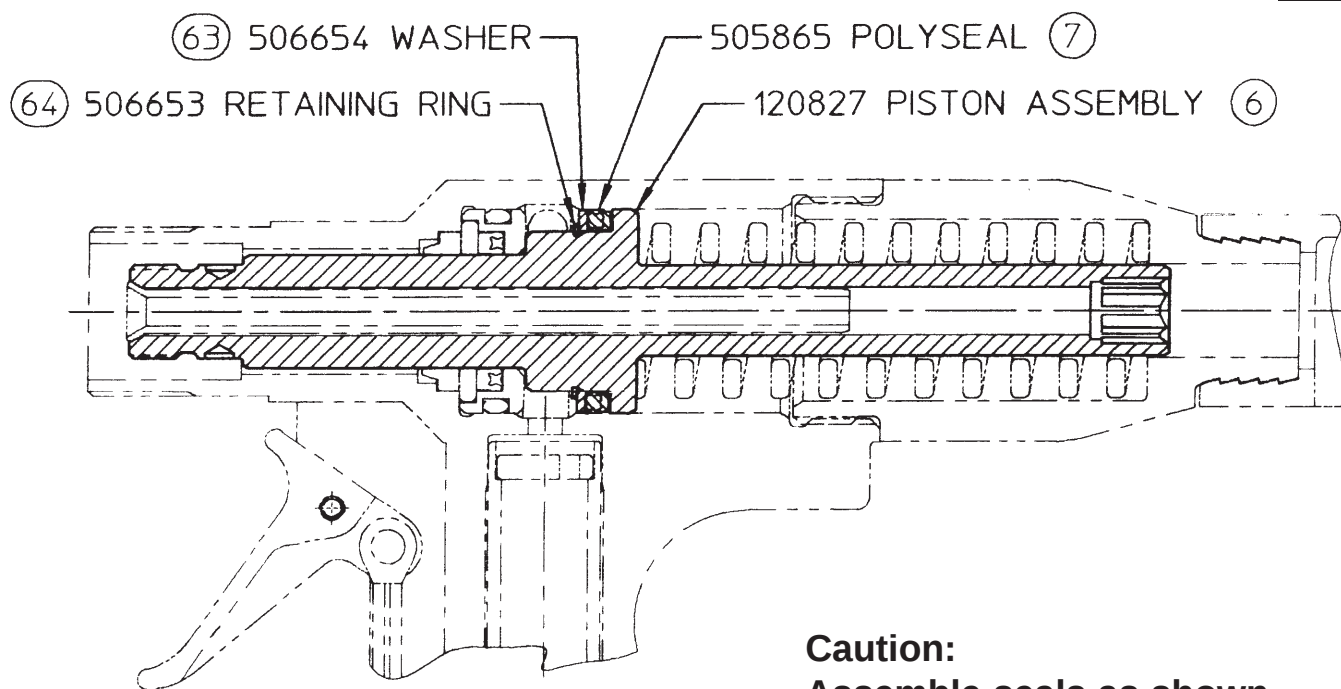
**Piston Assembly**

Fig. 9

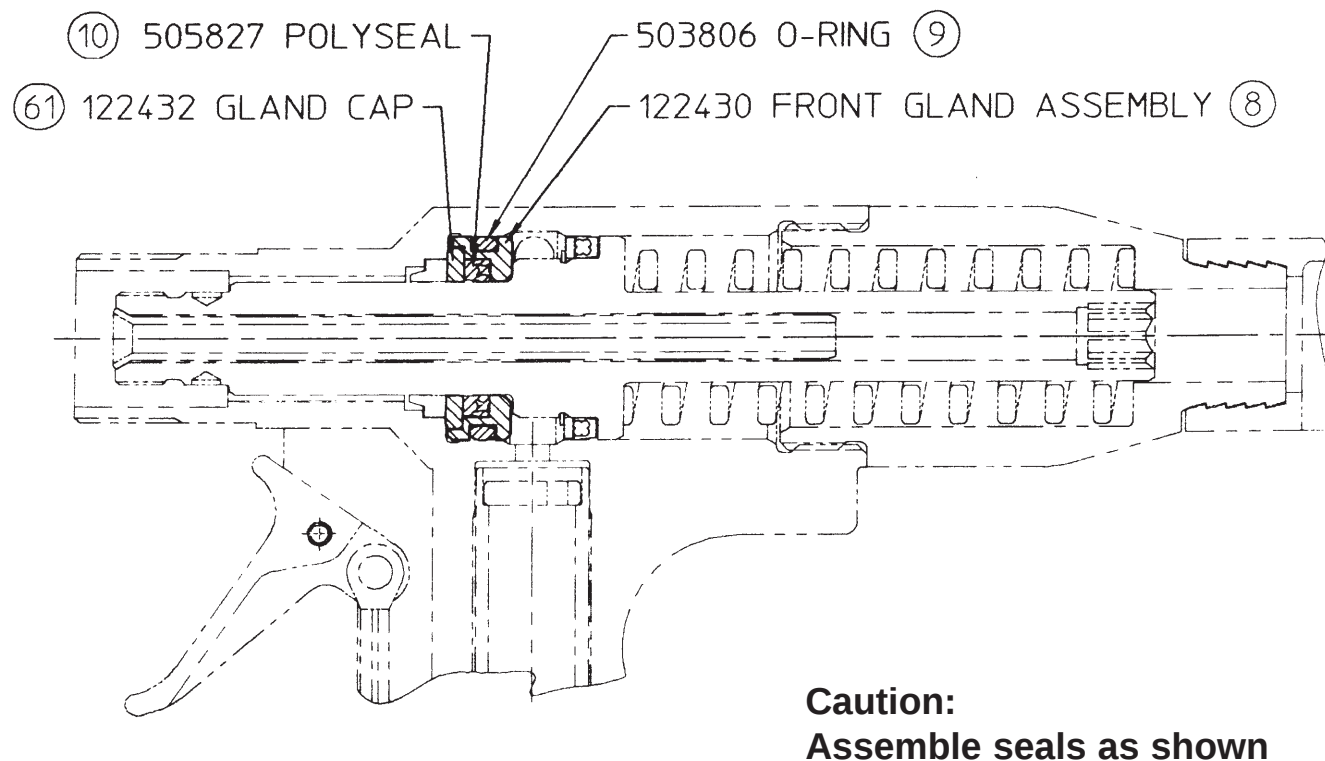
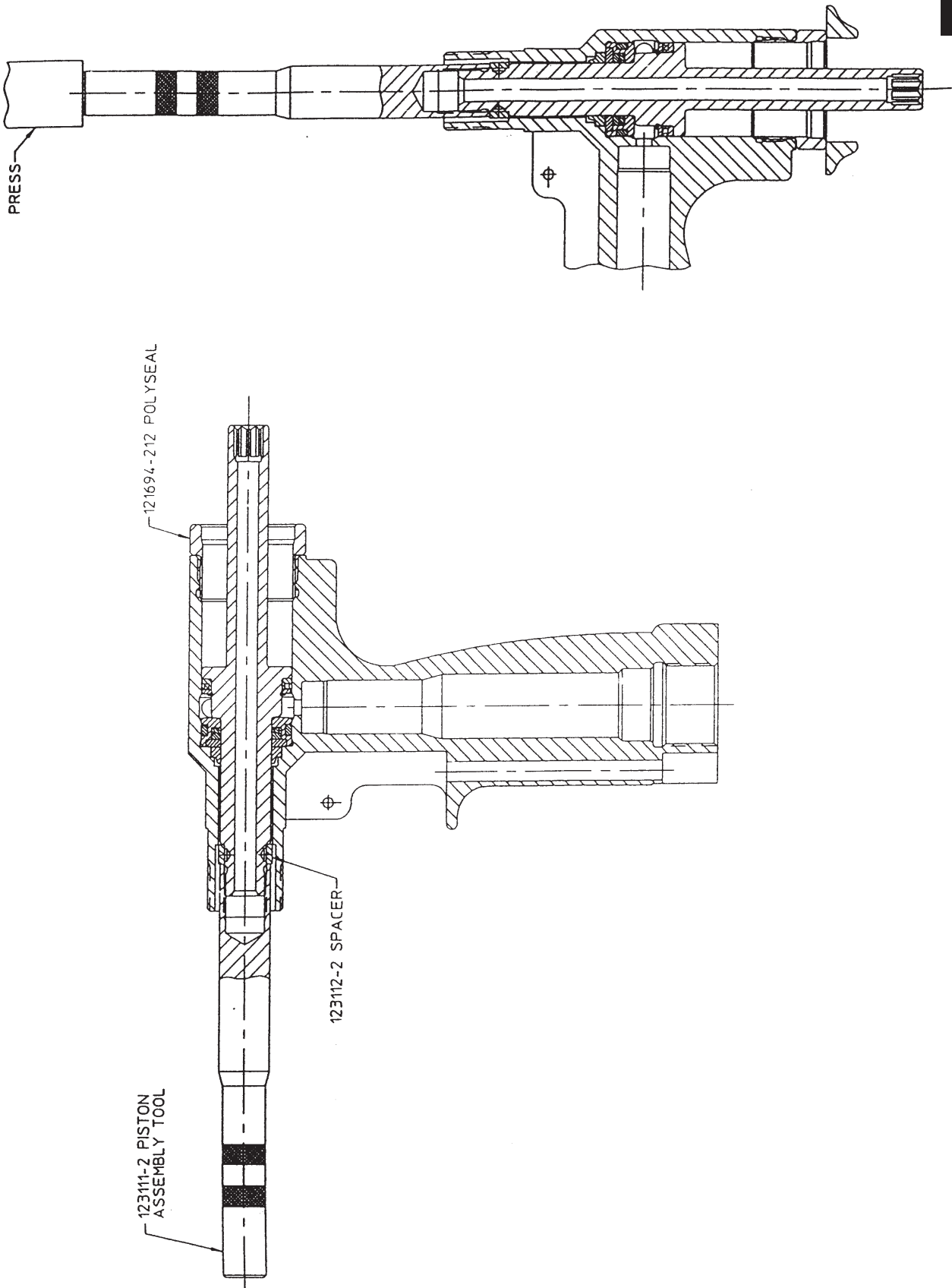
**Front Gland Assembly**

Fig. 10



Piston and Gland Removal

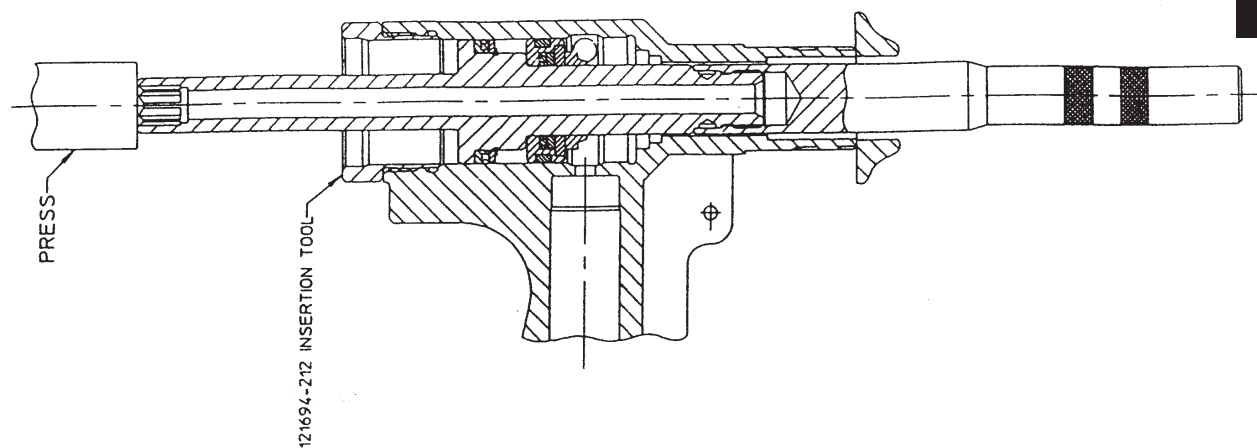
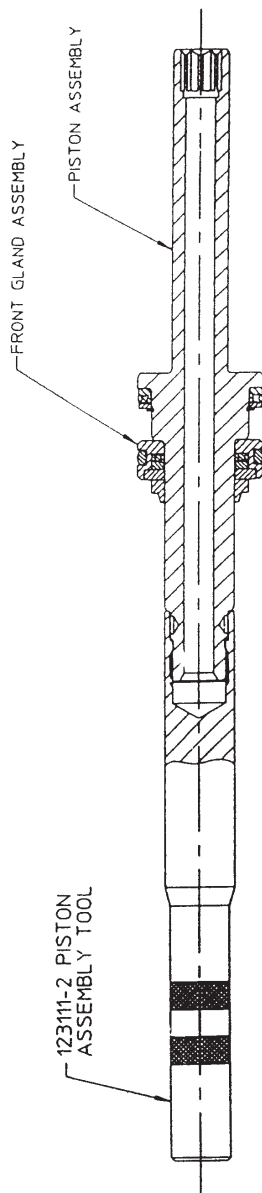
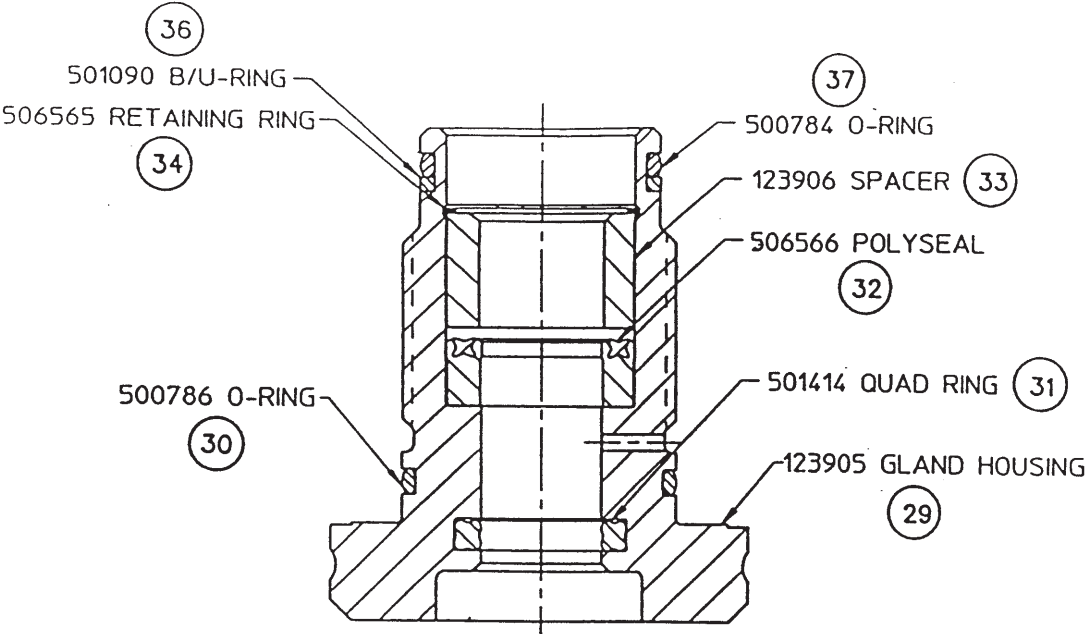


Fig. 11

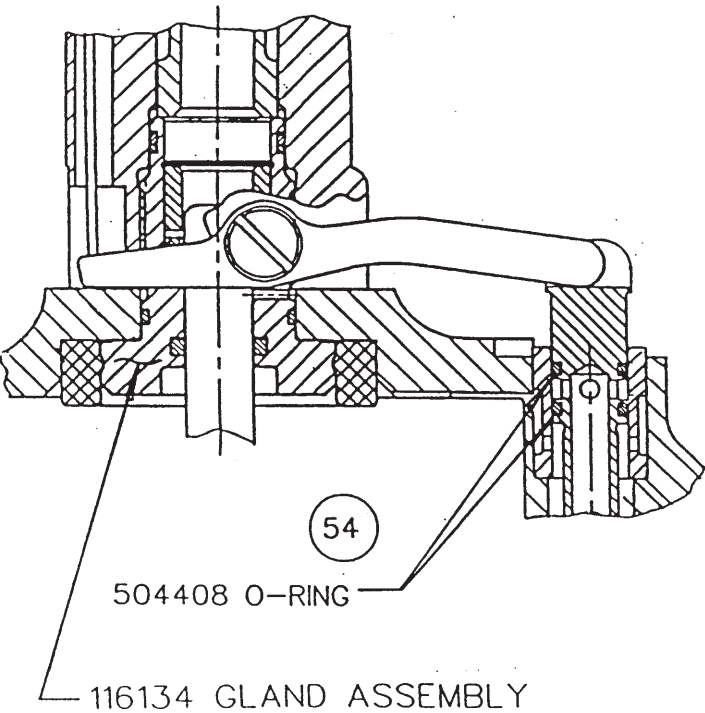


Piston and Gland Insertion/assembly

Fig. 12

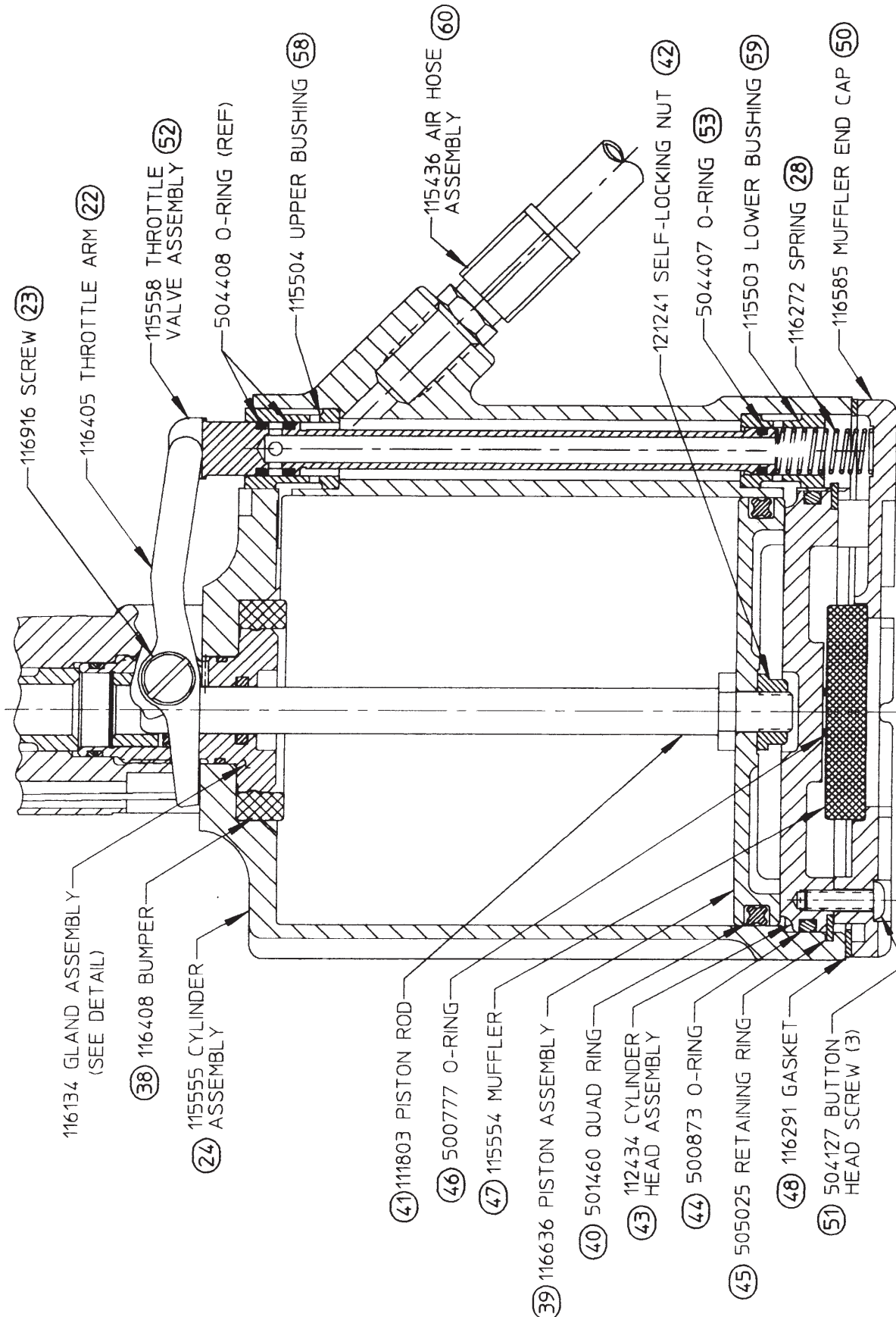


Gland Assembly, 116134



Gland Assembly

Fig. 13



Cylinder Assembly

PARTS LIST

<u>Ref.</u>	<u>P/N</u>	<u>Qty.</u>	<u>Description</u>
1	100534-1	1	Pintail Tube
2	111795	1	Retaining Nut
3	119653	1	Handle/head (see footnote 1)
4	104293	1	Bleed Plug Assem. (incl. ref. 5; see footnote 1)
5*	505438	1	O-ring
6	120827	1	Piston Assembly (incl. ref. 7, 63, 64)
7*	505865	1	POLY-SEAL
8	122430	1	Front Gland Assembly (incl. 9,10,61)
9*	503806	1	O-ring
10*	505827	1	POLY-SEAL
11*	505817	1	Wiper
12	Not Used	--	----
13	505946	1	Spring
14	119658	1	End Cap
15	Not Used	--	----
16	Not Used	--	----
17*	118809	1	Deflector
18	500619	1	Slotted Pin - - .125 x 5/8 long
19	116407	1	Linkage Pin
20	116262	1	Trigger
21	116404	1	Cable Assembly
22	116405	1	Throttle Arm
23	116916	1	Shoulder Screw
24	115555	1	Cylinder Assembly (incl. 25, 58, 59)
--	501352	1	Dowel Pin (not shown)

PARTS LIST (CONT.)

<u>Ref.</u>	<u>P/N</u>	<u>Qty</u>	<u>Description</u>
26	Not Used	--	----
27	Not Used	--	----
28	116272	1	Return Spring
--	116134	1	Gland Assembly (incl. 29 through 37)
29	123905	1	Gland Housing
30*	500786	1	O-ring
31*	501414	1	QUAD Ring
32*	506566	1	POLY-SEAL
33*	123906	1	Spacer
34*	506565	1	Retaining Ring
35	Not Used	--	----
36*	501090	1	Back-up Ring
37*	500784	1	O-ring
38	116408	1	Bumper
39	116636	1	Piston Assembly (incl. 40)
40*	501460	1	QUAD Ring
41	111803	1	Piston Rod
42	121241	1	Nut
43	112434	1	Cylinder Head Assembly (incl. 44)
44*	500873	1	O-ring
45	505025	1	Retaining Ring - - Spirolox PR 412
46*	500777	1	O-ring
47	115554	1	Muffler
48	118291	1	Bottom Exhaust Gasket
49	Not Used	--	----

PARTS LIST (CONT.)

<u>No.</u>	<u>P/N</u>	<u>Qty</u>	<u>Description</u>
50	116585	1	Muffler End Cap
51	504127	3	Screw-Button Hd.- -10-32 x 5/8 long
52	115558	1	Throttle Valve Assem. (incl. 28, 53, 54)
53*	504407	1	O-ring
54*	504408	2	O-ring
55	120588	1	Anvil Stop
56	123149	1	Damper
57	Not Used	- -	- - - -
58	115504	1	Bushing Upper
59	115503	1	Bushing Lower
60	115436	1	Air Hose
61	121377	1	Damper Tube
62	122432	1	Gland Cap
63*	506654	1	Washer
64*	506653	1	Retaining Ring

(1) For replacement of machined handle/head only, Handle/head, 119653 and Bleed Plug Assembly, 104293 are required.

(2) When Bleed Plug Assem. 104293, has been removed and reinstalled in tool 5 times, NYLOK locking element in plug becomes worn out, therefore, worn out bleed plug must be replaced with new plug to prevent hydraulic fluid loss.

Rev 6-20-94 includes:
(29)(32)(33)(34)(35)

Rev 9-1 -94 includes:
(6)(7)(42)(43)(56)(63)(64)

NOTES AND SPECIFICATIONS FOR STANDARD PARTS

1. All part numbers shown in this manual are available from Huck.
The 500000 series part numbers are standard parts which generally can be purchased locally.
2. Asterisks (*) indicate parts in Service Kit, 212KIT.
3. O-ring sizes are specified AS 568 dash numbers. (AS 568- is an AEROSPACE SIZE STANDARD FOR O-RINGS and formerly was known as ARP 568-).
4. QUAD ring sizes are specified Q4 plus 3 digits. The last 3 digits correspond to O-ring dash numbers. QUAD rings are manufactured by Minnesota Rubber Co. unless otherwise specified.
5. Back-up rings are W. S. Shamban & Co. series S-11248, single turn TEFLON (MS-28774), or equivalent. The dash numbers correspond to the O-ring AS 568 dash numbers.
6. Material for O-rings and QUAD rings:
 - a. Ref. nos. 15, 30, 31, 40, 37, 44 and 46 are Nitrile or Buna N (Minnesota Rubber Co., compound 386Y, or equivalent), 70 durometer.
 - b. Ref. nos. 53 and 54 are VITON, (Parker Seal Co., compound V747-75, or equivalent) 75 durometer.
 - c. Ref. nos. 5 and 9 are Disogrin Industries. Compound 9250, or equivalent., 90 durometer.

ACCESSORIES

120809 Assembly Tool Kit includes:

123111-2 Piston Assembly Tool
123112-2 Spacer
121694-212 POLY-SEAL Insertion Tool

Full articulated air swivel: 114748

Fill and Bleed Bottle: 120337

100534-1 Pintail Tube: to be used with
-04(1/8) and -05(5/32) diameter
fasteners.

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.

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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.

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Canada

6150 Kennedy Road Unit 10, Mississauga, Ontario, L5T2J4, Canada.
Telephone (905) 564-4825 FAX (905) 564-1963

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.



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