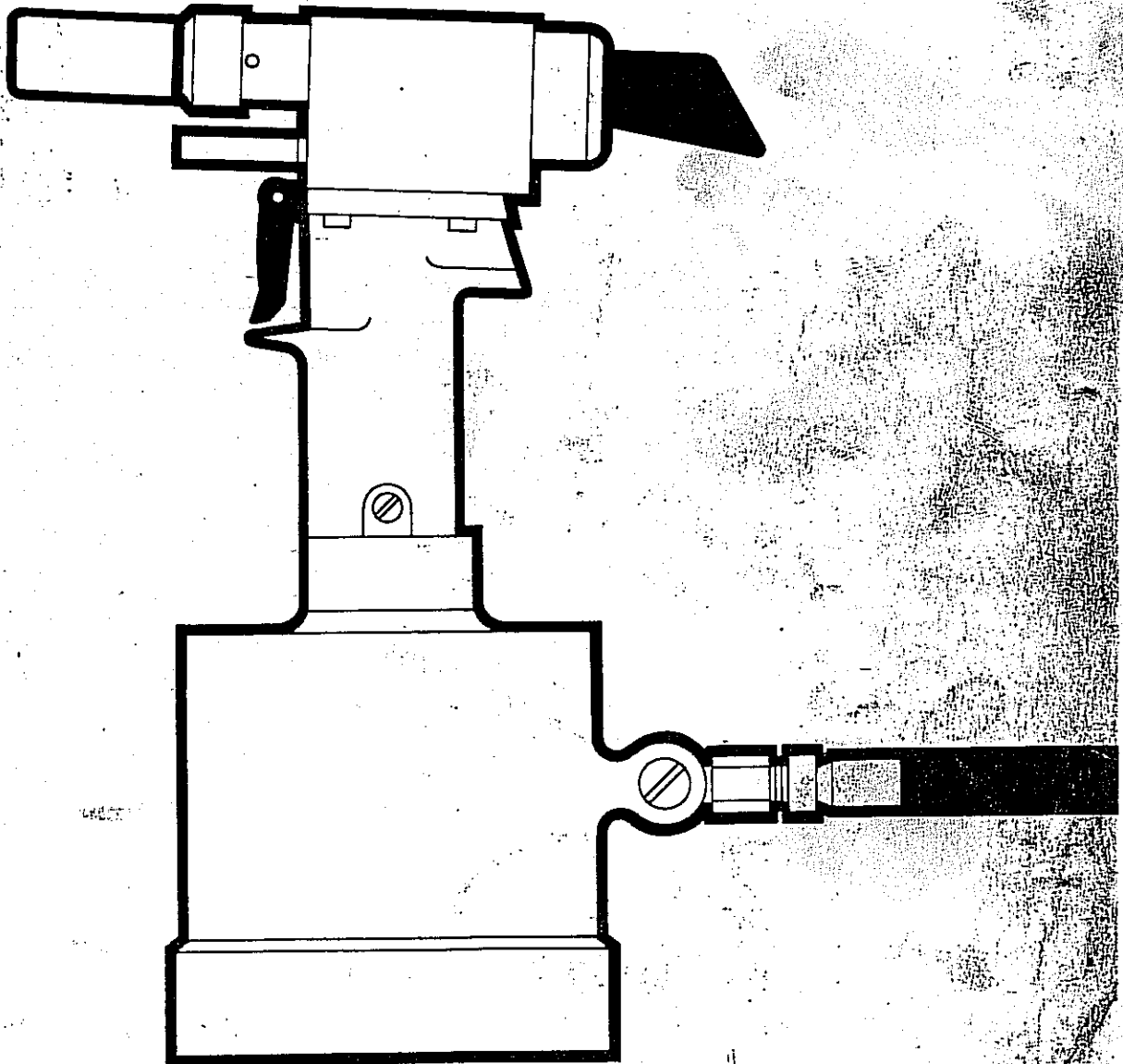




Instruction Manual

Model 226

Pneudraulic Installation Tool



WARNING

When operating Huck installation equipment, always wear approved eye protection.

Note

Please read this manual before servicing or using the tool. Comply with WARNINGS and CAUTIONS to prevent personal injury or damage to tool.

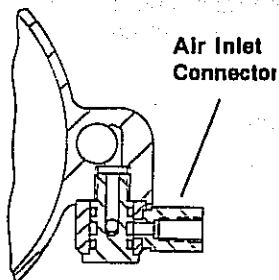
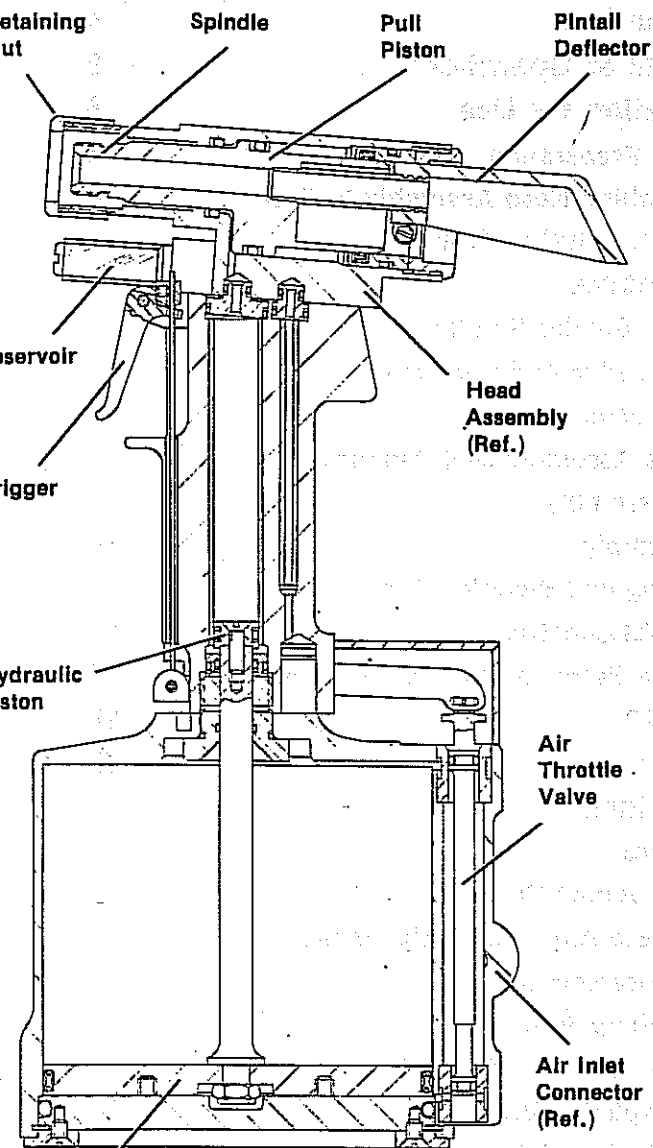
This manual applies to Huck Model 226 Installation Tools, Serial Number 0489 and above.

If you need more information, please contact your Huck representative or the nearest Huck office listed on the back cover.

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Description



The Huck Model 226 is a lightweight, high speed production tool designed to install a wide range of Huck Blind Fasteners and HUCKBOLT® Fasteners. Pull and return action of the tool pull piston is provided by a pneumatic-hydraulic (pneudraulic) intensifier system powered by 105-110 psi air pressure.

A design feature of this tool is a reservoir for hydraulic fluid that automatically keeps the hydraulic system replenished. The importance of this feature is that full stroke, both pull and return, is maintained for proper fastener installation.

The air inlet is equipped with a connector with 1/4-18 female pipe threads for accepting the user's air hose fitting.

A Nose Assembly is required for each fastener type and size. Nose Assemblies must be ordered separately. See nose assemblies listed under Table 3. Selection Chart or under 226 in Selection Charts, Forms 639 and 640.

Specifications

Table 1.

Weight	12.30 lbs.	(5.6 kg)
Length of Head	8.40 in.	(213 mm)
Width of Head	2.25 in.	(57 mm)
Edge to Centerline	.73 in.	(19 mm)
Cylinder Diameter	6.13 in.	(156 mm)
Height	14.62 in.	(371 mm)
Air Pressure	105-110 psi	(720-760 kPa)
Air Consumption	30 CFM	(0.014 m ³ / s)

(Based on 30 fastener installations per minute.)

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

Figure 1. Sectional View

Principle of Operation

When tool is connected to proper air supply, air pressure holds throttle valve in the up position. Air pressure on top of piston keeps it at bottom of cylinder. Trigger is depressed and moves throttle valve to the down position. Air pressure is directed against bottom of piston. As piston moves upward, air from above piston is exhausted.

Air piston rod has a hydraulic piston attached. Pressurized fluid is forced into head moving pull piston. Attached nose assembly moves with pull piston spindle to start fastener installation.

When fastener installation is completed, trigger is released. Air pressure causes throttle valve to return to its up position. Reversed air flow moves air piston, rod and hydraulic piston downward to its starting position, exhausting air from below piston thru bottom of tool at throttle valve. As the hydraulic piston moves downward, hydraulic pressure is reversed and pull piston is returned to its starting position. Return pressure relief valve operates to keep proper amount of fluid in pull system. Reservoir replenishes hydraulic system as needed.

Preparation for Use

(See Good Services Practices)

Model 226 Installation Tool is shipped with plastic plug in air inlet connector. Connector has 1/4-18 female pipe threads to accept air hose fitting. Quick disconnect fittings and 1/4 inch inside diameter air hose are recommended. An air supply of 105-110 psi capable of 30 CFM must be available. Air supply should be equipped with filter-regulator-lubricator unit.

Tool Preparation

1. Before first time operation of tool, remove screw from end of reservoir—see tag attached to tool.
2. Remove plastic plug from air inlet connector and drop in a few drops of Automatic Transmission Fluid, DEXRON II, or equivalent. Screw quick disconnect fitting into air inlet connector.
3. Set air pressure on regulator to 105-110 psi. Connect air hose to tool.
4. Stake hole in head **must** be aligned with stake hole in piston rod. See **Assembly and Filling and Bleeding Tool**, paragraph 27, for aligning holes.

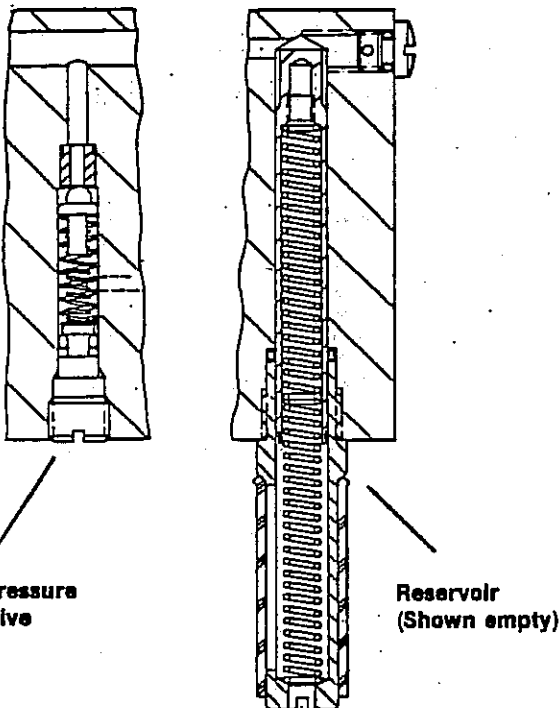
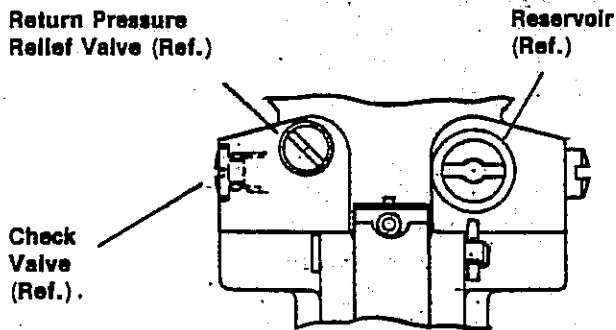
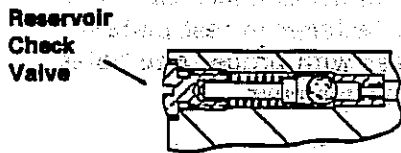


Figure 1. Sectional View
(Auxiliary Section)

CAUTION

Stake holes in head and piston rod must be aligned to prevent damage to nose assembly and tool.

Attaching Nose Assembly to Tool

Remove retaining nut and stop. Select proper nose assembly from **Table 3. Selection Chart for Model 226 Installation Tool**. Use pintail tube as specified in **Table 3**.

Nose Assemblies with lock collars:

1. Push anvil into nose adapter of tool.
Measure "X" dimension and record for use in steps 2. and 3. See **Figure 2**.

CAUTION

Installation tool piston rod must be in full forward position and tool must not be cycled to retract piston rod when attaching anvil. Lock collars must be staked to prevent damage to nose assembly and tool.

2. With tool piston in forward position, screw collet assembly onto piston rod. Tighten with wrench—just snug-up. Slide anvil over collet assembly. Measure "X" dimension. If "X" is greater than recorded dimension, remove collet assembly and shim. Leave shim out and reinstall collet assembly. To adjust collet when "X" is equal to recorded dimension, see step 3.

3. When "X" dimension is equal to recorded dimension, remove collet assembly and add a second shim. Reinstall collet assembly. Slide anvil over collet assembly. Measure "X" dimension again. If "X" is now greater remove one shim. Reinstall collet assembly. If "X" is equal to recorded dimension, leave second shim in and tighten collet with wrench—just snug-up.

4. Lock collars must be staked to piston rod and extension to insure proper fastener installation. (Collet assembly is locked to spindle to maintain adjustment for proper function of nose assembly and tool.) See **Figures 2a** and **2b**. For staking operation, use staking tool, P/N 84212, which must be purchased separately. Remove anvil. Firmly support collet assembly and tool. Place staking tool against lock collar. Hit staking tool a light blow with hammer to stake lock collar to spindle. Reinstall anvil.

5. Collet assemblies and/or spindle extensions with staked lock collars can be removed with a wrench. Lock collars are generally reusable a few times.

6. Slide stop and retaining nut over anvil and tighten (hand-tight). Connect tool to air supply. Install fastener in test plate of proper thickness with proper size holes. Inspect installed fastener.

Nose Assemblies without lock collars:

VIBRA-TITE was applied to collet threads at factory. VIBRA-TITE, P/N 505125, is available from Huck and must be reapplied to maintain effectiveness of compound and prevent damage to tool after removing collet a few times. Follow directions on bottle. Dry by applying heat (5 minutes at 150° F) or allow drying overnight. Threads must be at least half-full of dry VIBRA-TITE before assembling collet to spindle. Disconnect air hose and screw collet assembly onto spindle. Tighten collet assembly against spindle shoulder with wrench. Slide anvil over collet assembly.

Slide stop and retaining nut over anvil and tighten (hand-tight). Connect tool to air supply. Install fastener in test plate of proper thickness with proper size holes. Inspect installed fastener.

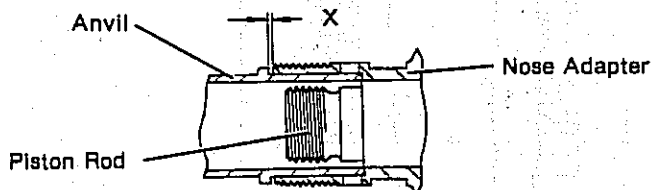


Figure 2. Nose Assembly Adjustment

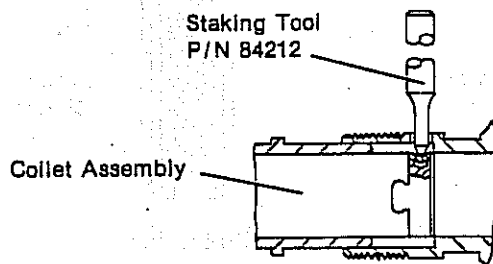


Figure 2a
(staking collet assembly)

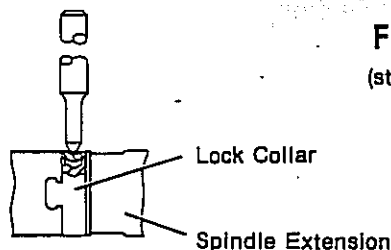


Figure 2b
(staking collet assembly
with spindle extension)

WARNING

Do not pull on pin without collar, as pin will eject forcibly when pintail breaks off and severe personal injury may result.

If deflectors are removed or damaged, broken pintails may eject forcibly from rear of tool and severe personal injury may result.

Be sure there is adequate clearance for tool and operator's hands before proceeding as severe personal injury may result without clearance.

CAUTION

Do not abuse 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 in reducing downtime.

Operating Instructions

HUCKBOLT® Fastener Installation:

Remove excessive gap between sheets to allow enough pintail to protrude through collar for nose assembly jaws to grab onto. Place pin in work hole and place collar over pin. (If collar has only one tapered end, that end should be out towards tool.) Hold pin and push nose assembly onto pin protruding through collar until nose assembly anvil touches collar. Depress trigger. Hold trigger depressed until collar is swaged and pintail breaks. Release trigger and tool will go into its return stroke.

Blind Fastener Installation:

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

Maintenance

Good Services 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 tool 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 Manufacturing Company.

All parts must be handled carefully and examined for damage or wear. **Always replace O-rings, QUAD RINGS and Back-up Rings 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.

LUBRIPLATE 130AA, or equivalent lubricant should be used to facilitate assembly of O-rings, Quad Rings, Back-up Rings and other components. (LUBRIPLATE 130AA is available from Huck Manufacturing Company in a tube as P/N 502723.)

Use TEFLON thread compound on pipe threads. (TEFLON thread compound is available from Huck Manufacturing Company in stick form as P/N 503237.)

Apply 3M Company's industrial adhesive #847 to Muffler (105) if replacement is required. (3M #847 is available from Huck Manufacturing Company, in a tube, as P/N 505220). Follow instructions on tube for cleaning parts and applying adhesive.

Service Parts Kit, P/N 113701, includes perishable parts and should be available at all times. Other components, as experience dictates, should also be available.

Use VIBRA-TITE on Gland (77) threads. VIBRA-TITE, P/N 505125, is available from Huck. Follow directions on bottle.

Preventive Maintenance

Note

Refer to the applicable section for Assembly or Disassembly. For supplementary information refer to Troubleshooting and Table 4, Parts List.

Tool Maintenance

The Model 226 Huck Installation Tool 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: (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 QUAD RINGS, O-rings and Back-up rings in tool. **Service Parts Kits** should be kept on hand. (See **Spare Parts and Service Parts Kits and Notes.**) Inspect both hydraulic pistons, and their piston rods for scored surfaces, excessive wear or damage, and replace as necessary. **Always replace O-rings, QUAD RINGS and Back-up Rings when tool is disassembled for any reason.**

Nose Assembly Maintenance

Frequent cleaning of the nose assembly is recommended. Nose assemblies **with** UNITIZED jaws must be disassembled and cleaned in **mineral spirits or isopropyl alcohol**. Do not let UNITIZED jaws (urethane) soak in solvent. Do not use solvents that cause urethane to swell. Use a sharp pointed "pick" to remove particles packed in pull grooves of jaws. Dry components immediately after cleaning.

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.

Table 2. Standard Tools Available from Huck and Their Use

Part No.	Description	Used On	
		Ref. No.	Part No.
502294	Hex Key, 1/8 across flats	48	504125
		88	504282
502444	Hex Key, 5/64 across flats	51	501781
		56	501613
502295	Hex Key, 5/32 across flats	103	501102
		108	501267

Disassembly

Refer to Figures 1 and 6

For component identification, refer to Figure 6.

Exploded View and Table 4. Parts List.

Numbers in parenthesis () are reference numbers shown in Figure 6.

WARNING

Be sure air hose is disconnected from tool before cleaning, or when replacing worn or damaged components. Severe personal injury may occur if air hose is not disconnected.

The following procedure is for complete disassembly of tool. **Disassemble only components necessary to replace damaged O-rings, Quad Rings and Back-up Rings, and worn or damaged components.**

1. Disconnect air hose from tool.
2. Unscrew Retaining Nut (5). Remove nose assembly with Stop (4). Remove pintail tube.
3. Screw Fill Tool, P/N 112465, Into Plunger (39). Lock plunger out—see Figure 3.
4. Unscrew Cap Screws (103) with 5/32 Hex Key. Carefully lift Head (1) straight up from Handle (45). Remove Pull Gland (93) and Return Gland (98) from separated assemblies.
5. Unscrew Plug (27) of Return Pressure Relief Valve from front of head. Remove Spring (30) and Spring (31) Remove Valve Guide (32) and Steel Ball (33).
6. Unscrew Bleed Plug (25). Release fill tool slowly, and fluid will drain out.
7. Unscrew Housing and Cover Assembly (41) from head. Remove two Springs (40). Slide Reservoir Plunger (39) from head. Remove Cover (42) from housing.
8. Unscrew Plug (19) of Check Valve from side of head. Remove Spring (21), Check Valve Guide (22) and Stainless Steel Ball (23).
9. Place brass drift against end of Piston (7) spindle. Tap or press spindle until piston is back against Spacer (10).
10. Loosen Hose Clamp (17) until Pintail Deflector (18) can be pulled off deflector tube.
11. Hold a spanner wrench, or .25 inch bar, in slots of Cylinder Head (16), and unscrew cylinder head.
12. With brass drift, tap or press piston out of head.
13. Pull Cylinder Head Gland (11) and Spacer (10) off piston.
14. Inspect Ballcheck Seat (24) and Relief Valve Seat (35).
15. Unscrew Cap Screws (106) with 5/32 Hex Key. Pull Throttle Arm Cover (104) away from handle.
16. Do not remove Mufflers (105) from Cover (104) unless Replacement mufflers and 3M #847 adhesive is on hand.
17. See step 14. of Assembly for cleaning mufflers.
18. Loosen Set Screw (51) with 5/64 Hex Key, in Adjustable End (52).
19. Unscrew Button Head Screw (48) with 1/8 Hex Key. Slip Bushing (47) from throttle arm. Swing throttle arm as far as it will go. Pull Throttle Valve (61) from cylinder.
20. Loosen Set Screw (56) with 5/64 Hex Key, in Wire Link (55). Slide throttle arm from wire link. Slide Throttle Wire (54) from wire link.
21. Pull throttle wire from handle.

1

22. Remove Cotter Pin (49) from Throttle Pin (50). Pull throttle pin from ears of handle and Trigger (53).
 23. Hold tool with bottom up and drain fluid from handle. Remove four Flat Head Screws (88) with 1/8 Hex Key. Remove Plate (87).
 24. Remove Retaining Ring (86) from Cylinder (64).
 25. Screw flat head screws thru wear plate and into Cylinder Head (84). Carefully pry under plate to remove head.
 26. Screw 1/4-20 UNC screws into Piston (81).
 27. Push piston assembly into cylinder until it stops. Unscrew Flat Head Screw (68).
 28. Pull evenly on 1/4 inch screws in piston to remove piston assembly from cylinder. Remove 1/4 inch screws.
 29. Hold hex of Piston Rod (80) with wrench. **Do not scratch piston rod.** Unscrew Self Locking Nut (83), and pull rod from piston.
 30. Unscrew Lower Gland (77) with Spanner Wrench, P/N 411807. 113359.
 31. Push Hydraulic Piston (69) with Upper Gland (72) out of handle, from the top, with a soft rod.
33. Use wrench to unscrew Swivel Bolt (89) from Cylinder (64). Remove O-ring (91), and push swivel bolt from Connector (92).
 34. Lower Bushing (67) and Upper (66) may be pressed out of cylinder if damaged. Use flat end brass rods that are at least six inches long. Press out lower bushing first, with rod having diameter between .38 and .43 inches. Press out upper bushing with rod having diameter between .48 and .55 inches.
 35. Discard hydraulic fluid drained from head and handle.

Assembly, and Filling and Bleeding Tool

Refer to Figures 1, 2, 3, 4, 5, 6 and 7

Clean all components with mineral spirits, and inspect for wear or damage. Replace as necessary. **Replace all seals on/in disassembled components.** Use O-rings, Quad Rings and Back-up Rings supplied in Service Parts Kit 113701—see Notes. Smear LUBRIPLATE 130AA or PARKER-O-LUBE on O-rings, Quad Rings, Back-up Rings and mating components to facilitate assembly. Assemble tool taking care not to damage O-rings, Quad Rings or Back-up Rings.

1. Use an arbor press. Place chamfered end of Upper Bushing (66) in top of Cylinder (64). Carefully press bushing squarely into cylinder. Repeat procedure for Lower Bushing (67).
2. Carefully push Hydraulic Piston (69) into top of Handle (45) with screw countersink facing up.
3. Hold handle in vise with soft jaws, with bottom up. O-ring (73) and Back-up Ring (74) of Upper Gland (72) must be positioned as shown. Push gland into handle.

WARNING
Relief Valve (57) is set at the factory and must not be adjusted. If installation tool loses excessive stroke and fails to break pintail replace the entire relief valve. Severe personal injury may result if the relief valve is adjusted rather than replaced. Refer to Troubleshooting page 14, item 2.

32. To replace Relief Valve Assembly (57), screw 7/32-20 ANF bolt into bottom of valve. Pull on bolt until valve slides from handle.

WARNING

Relief Valve (57) is set at the factory and must not be adjusted. If installation tool looses excessive stroke and fails to break pintail, replace the entire relief valve. Severe personal injury may result if the relief valve is adjusted rather than replaced. Refer to Troubleshooting page 14, item 2.

4. Push Relief Valve Assembly (57) into handle.
5. Place Cylinder (64) on handle with Pin (65) positioned in matching hole. See VIBRA-TITE note on P.7. Screw in Lower Gland (77). Tighten to 140 ft. lbs. torque using Spanner Wrench, P/N 444807. 113959.
6. Push Piston Rod (80) thru Piston (81) from flat side, and screw Self Locking Nut (83) onto rod. **Do not scratch piston rod.** Hold hex of rod with wrench, and tighten nut to 190 in. lbs.
7. Push piston rod thru glands until it stops. Push Flat Head Screw (68) thru hydraulic piston, and screw into top of piston rod. Hold Nut (83) and tighten screw.
8. Push Cylinder Head (84) squarely into cylinder. Install Retaining Ring (86).
9. Place Plate (87) in cylinder and against retaining ring. Screw in four Flat Head Screws (88) and tighten with 1/8 Hex Key.
10. Turn tool upright. Push Throttle Valve (61) into cylinder. Drop Throttle Wire (54) into handle. Slide Wire Link (55) over wire and hold wire even with bottom of link. Tighten Set Screw (56) with 5/64 Hex Key.
11. Slide Throttle Arm (46) into wire link. Swing arm until other end fits into slot in throttle valve. Slide Bushing (47) into arm. Push Button Head Screw (48) thru bushing, and tighten with 1/8 Hex Key. Install Cotter Pin (60) thru valve and arm.
12. Drop Trigger (53) over throttle wire. Slide Adjustable End (52), with Set Screw (51), over wire. Hold adjustable end at end of wire, and tighten screw with 5/64 Hex Key. Push Throttle Pin (50) thru ears of handle and trigger. Install Cotter Pin (49) thru throttle pin.
13. Loosen set screw in adjustable end. Hold trigger part-way out, and lightly tighten set screw with wire end against trigger. Press trigger firmly—wire end slides up wire and trigger hits handle. Tighten wire end screw.
14. Clean Mufflers (105) with mineral spirits and forced air while assembled to Throttle Arm Cover (104). Replacement mufflers are glued to cover with 3M #847 adhesive—follow instructions on tube.
15. Fasten Throttle Arm Cover (104) to Cylinder (64) and Handle (45) with Cap Screws (106). Use 5/32 Hex Key.
16. Push O-ring (91) onto Swivel Bolt (89) threads. Slide Connector (92) over swivel bolt. Screw assembled bolt and connector into cylinder. Tighten bolt.
17. Relief Valve Seat (35) and Check Valve Seat (24) can be polished with a fine India stone. If Seat (24) must be replaced, remove with broken screw extractor (Besly EZY-OUT).
18. Hold Head (1) in vise with soft jaws. Push Piston (7) into head. Slip Spacer (10) over piston skirt and into head. Slide Gland (11) into head. Quad Ring (12) must be against spacer. Screw in Cylinder Head (16) with spanner wrench or bar .25 thick.
19. Drop Stainless Steel Ball (23) into head. Slip Check Valve Guide (22) into head. Slide Spring (21) over guide stem. Screw Plug (19) into head.
20. Push Cover (42) onto Housing (41). Slide Quad Ring (38) and Plunger (39) into head. Push one Spring (40) into head, and the other Spring (40) into housing. Screw Housing (41) into head.
21. Screw Bleed Plug (25) into head.
22. Drop Steel Ball (33) into head. Push inner Spring (30) onto Valve Guide (32) stem. Slide outer Spring (31) over inner spring. Drop assembled springs and guide into head. Screw in Plug (27).

3

Plunger Midpoint Position



Figure 3. Reservoir Gauge

Bleed Plug

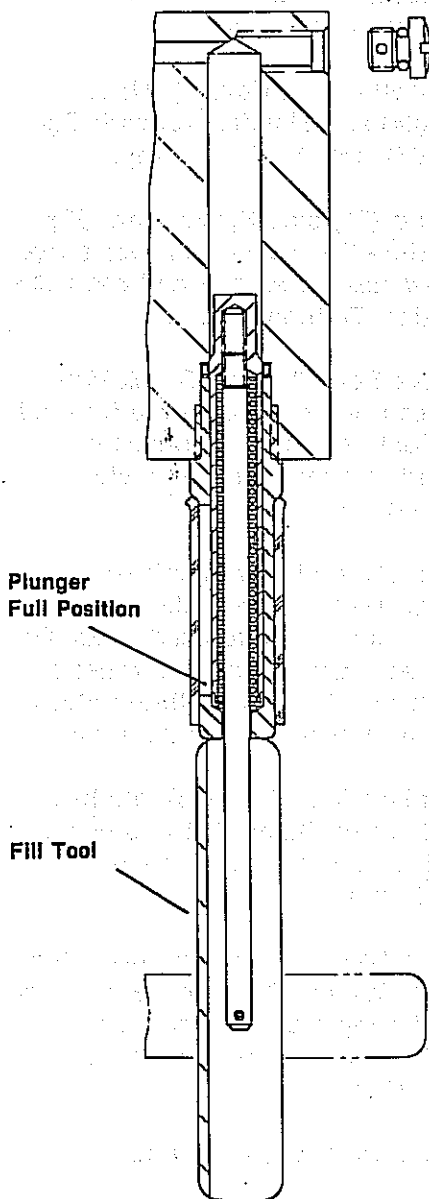


Figure 4. Filling Reservoir

Note
 Use Automatic
 Transmission Fluid,
 DEXRON II, or
 equivalent.

23. Filling tool manually: With handle and head separated, push hydraulic piston down. Fill pull and return holes in handle. Allow time for air to circulate out of fluid in handle before assembling.

To fill head:

- a. Screw Stall Nut, P/N 84213, or nose assembly collet onto pull piston spindle.
- b. With pull and return holes up, hold head submerged in container of clean hydraulic fluid.
- c. Use stall nut or collet to slowly cycle piston 15-20 times. **Piston must be returned to full forward position.**
- d. Lift head from fluid with pull and return holes up. Hold head in this position. Push Return Gland (98) and Pull Gland (93) into head. Align glands with handle and press head into place.
- e. Push Cap Screws (103) thru handle and screw into head. Tighten to 40 in. lbs. torque.

24. Filling tool reservoir: Fill when red fluid level line on Plunger (39) is below midpoint of sight gauge housing—see Figure 3.

- a. Unscrew Bleed Plug (25), and remaining fluid will drain out of reservoir.
- b. Screw Fill Tool, P/N 112465, into plunger—see Figure 4. Pull plunger into housing, and lock in full position by tilting handle.
- c. Fill reservoir, using Fill Bottle, P/N 100931. Push rod into bleed hole to allow air to escape. Screw in bleed plug.
- d. Unlock fill tool. Loosen Plug (19) and allow a few drops of fluid to drain out. Tighten plug. Refill reservoir and unlock fill tool.
- e. Filling procedure must be repeated until plunger stays in full position after unlocking fill tool. Remove fill tool.

25. Filling tool with 970-100 Fill and Bleed Unit: (See Figure 5.)

- a. Unscrew Bleed Plugs (25) in head and (43) in handle.
- b. Remove Plug (27), Springs (30) and (31), Valve Guide (32), and Steel Ball (33). Reinstall Plug (27).

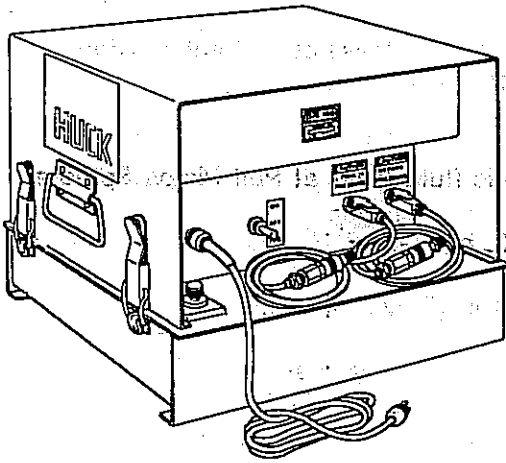


Figure 5. Fill and Bleed Unit 970-100

- c. Use the two hydraulic lines with identical fittings. Attach hose assembly to **PULL PRESSURE** outlet of unit and bleed port in handle.
- d. Attach hose assembly to **RETURN PRESSURE** outlet of unit and bleed port in head.
- e. Operate unit for approximately ten minutes. Reinstall return pressure relief valve and bleed plugs. Fill reservoir—see paragraph 24.

26. Connect air hose to tool. Adjust air pressure to 105-110 psi.

CAUTION

Stake hole in head and piston rod must be aligned to prevent damage to nose assembly and tool. Do not install fasteners until all instructions, including paragraph 27, are followed.

27. To prevent malfunctions, staking holes in Head (1) and Piston (7) spindle must be aligned and stroke must not be less than .850 inch. Pull piston and air piston must be at end of their strokes at the same time to be in phase and have full stroke of pull piston. When stake hole in head lines up with stake hole in spindle, both pistons are in phase:

To align stake holes:

- a. Screw Stall Nut, P/N 84213, or nose assembly collet onto spindle. Loosen Return Pressure Relief Valve Plug (27) until fluid seeps out.
- b. Pull on piston until it stops. **Piston must be in full forward position.** Tighten relief valve plug.
- c. Reservoir plunger will be in the empty position. Refill reservoir—see paragraph 24.

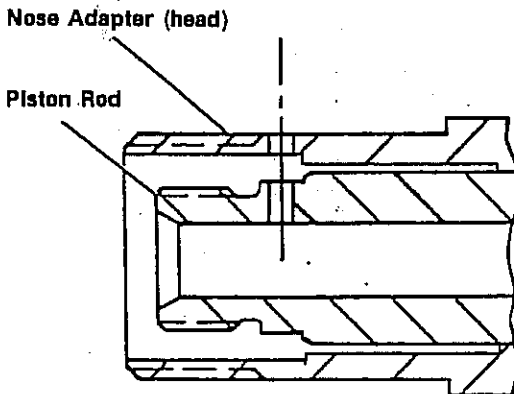


Figure 7. Staking Holes Aligned

28. Hold tool trigger depressed and remove air hose. Slip Hose Clamp (17) over deflector (18). Push deflector, with clamp, onto deflector tube until it stops. Tighten clamp. Attach air hose and piston will move forward. For final check, see next step.

29. Final check. Stake holes in piston and head must be in alignment. See Figure 7. If holes are not aligned, repeat paragraph 27.

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 **Troubleshooting** chart as an aid in locating and correcting malfunction.

1. Tool fails to operate when trigger is depressed.
 - a. Throttle Valve O-ring (62), or O-ring (63) worn or damaged.
 - b. Throttle Wire (54) not adjusted properly.
2. Tool does not complete fastener installation and break pintail. (Tool does not have full stroke.)
 - a. Stake hole in head and piston rod not aligned. See **Assembly, and Filling and Bleeding Tool**, paragraph 27, for aligning stake holes.
 - b. Air pressure too low.
 - c. Air Piston Quad Ring (82) worn or damaged.
 - d. Reservoir empty. See **Assembly, and Filling and Bleeding Tool**, paragraph 24, for refilling.
 - e. Air in hydraulic system.
 - f. Damaged Springs (30) and (31) or damaged Steel Ball (33) in Return Pressure Relief Valve.
 - g. Reservoir Spring(s) (40) damaged
 - h. Throttle Wire (54) not adjusted properly.
 - i. Loose collet assembly.
 - j. Inoperative Relief Valve (57). See **WARNING**, page 11.
3. Pintail stripped and/or swaged collar not ejected.
 - a. Stake hole in head and piston rod not aligned. See **Assembly, and Filling and Bleeding Tool**, paragraph 27, for aligning stake holes.
 - b. Worn or damaged O-ring (2) and Back-up Ring (3) at front of head.
 - c. Worn or damaged O-ring (14) and Back-up Ring (15) or Quad Ring (12) and Back-up Ring (13) at rear gland.
 - d. Worn or damaged O-ring (73) and Back-up Ring (74) or Quad Ring (75) and Back-up Ring (76) in upper gland. O-ring (79) damaged in lower gland.
 - e. Worn or damaged O-ring (9) and Back-up Rings (8) on pull piston, or worn or damaged O-ring (71) and Back-up Rings (70) on hydraulic piston.
 - f. See 2., d. and f.
 - g. Loose anvil Retaining Nut (5).
4. Hydraulic fluid exhausts with air, or leaks at base of handle.
 - a. See 3. d.
5. Hydraulic fluid leaks at hydraulic cylinder Head (16).
 - a. See 3. c.
6. Hydraulic fluid leaks at Pull Piston Spindle (7).
 - a. See 3. b.
7. Pull Piston (7) will not return.
 - a. See 2.
 - b. Throttle Valve (61) stuck. (Lubricate O-rings (62) and (63).
 - c. Throttle Lever (46) binding.
8. Air leaks at air Cylinder Head (84).
 - a. O-ring (85) damaged.
9. Hydraulic fluid leaks between base of handle and top of cylinder.
 - a. Worn or damaged O-ring (73) and Back-up Ring (74) on upper gland.
 - b. Worn or damaged O-ring (59) and Back-up Ring (58) on Relief Valve (57).
 - c. High pressure opened Relief Valve (57). See 3. e.
 - d. Low pressure opened Relief Valve (57). (This is a malfunction of the relief valve and it should be replaced with a factory set valve.) See **Assembly, and Filling and Bleeding Tool**, paragraph 3.
10. Staking holes not aligned. See **Figure 7**. To align stake holes:
 - a. Screw stall nut, P/N 84213, or nose assembly collet onto piston rod. Loosen Return Pressure Relief Valve Plug (27) until fluid seeps out.
 - b. Pull on stall nut until piston stops. Piston should be in full forward position. Tighten relief valve plug.
 - c. Reservoir will be empty position. Refill reservoir.

Spare Parts and Service Parts 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 at all times. Parts included in **Service Parts Kit**, P/N 113701, are indicated by asterisks (*) in **Parts List—Table 4**.

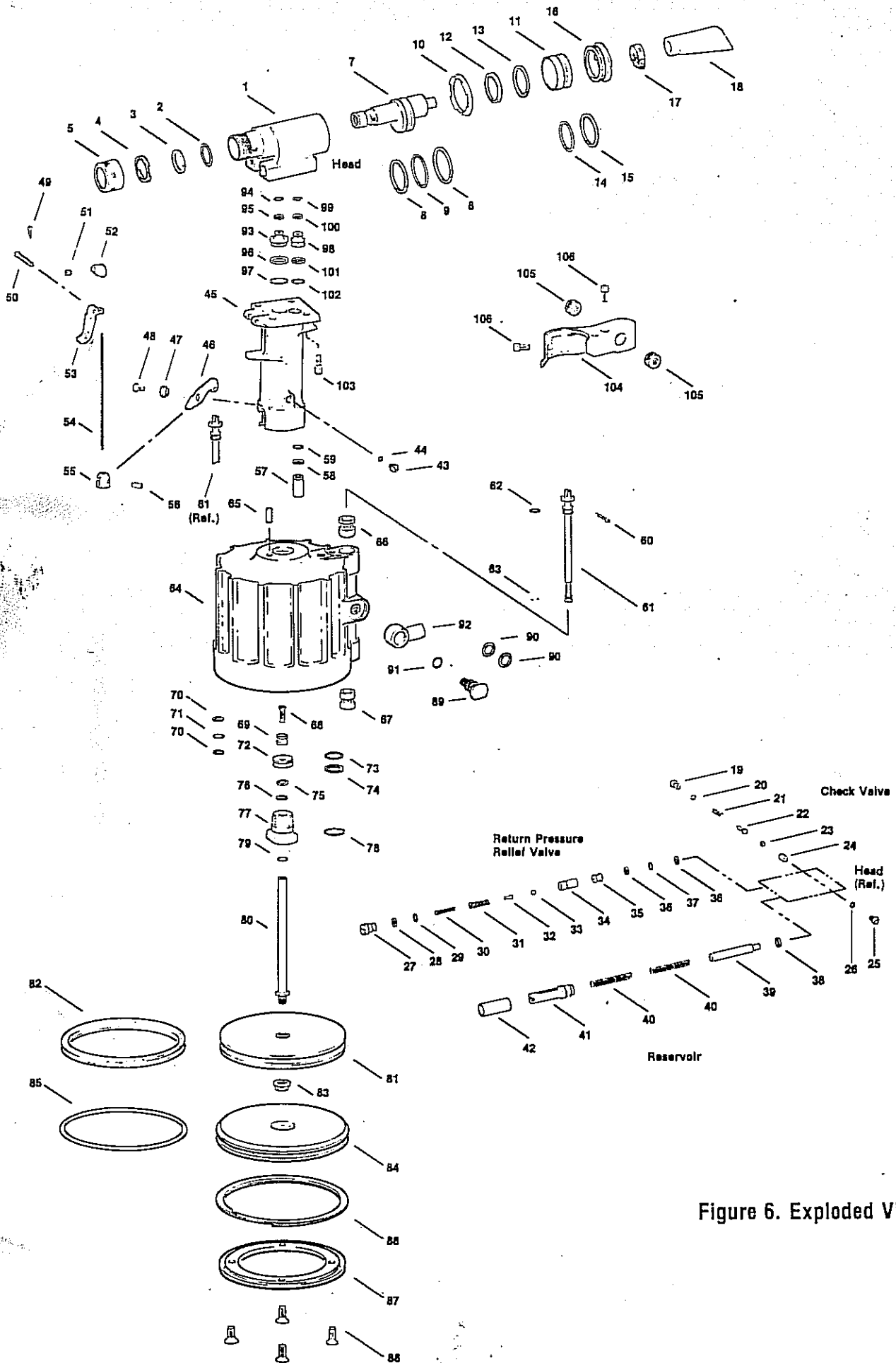


Figure 6. Exploded View

Table 4. Parts List

Model 226 Parts List, Ser. No. 0489 and Above

Ref. No.	Part No.	No. Req.	Description
---	113332	1	Head Assembly (incl. 1 thru 42)
1	-----	1	Head (incl. 2,3 & 24)
2*	500845	1	O-ring--AS 568-212
3*	501139	1	Back-up Ring--S-11248-212
4	110670	1	Stop
5	104633	1	Nut-Retaining
6	113753	1	Nut-Retaining (not shown)
7	113524	1	Piston (incl. 8 & 9)
8*	113251	2	Back-up Ring--Special
9*	500851	1	O-ring--AS 568-219
10	112558	1	Spacer
11	112490	1	Head Gland (incl. 12,13,14 & 15)
12*	501423	1	Quad Ring--MR Q4219
13*	113754	1	Back-up Ring--Special
14*	500824	1	O-ring--AS 568-127
15*	113253	1	Back-up Ring--Special
16	112491	1	Head-Cylinder
17*	504701	1	Clamp-Hose
18*	110703	1	Deflector-Pintail
19	111079	1	Plug Assembly (incl. 20)
20*	500772	1	O-ring--AS 568-006
21*	111069	1	Spring
22	111067	1	Guide-Check Valve
23*	502929	1	Ball-St. Steel--3/16 dia.
24	111139	1	Seat-Ballcheck
25	104293	1	Bleed Plug Assembly (incl. 26)
26*	500772	1	O-ring--AS 568-006
27	114536	1	Plug-Assembly (incl. 28 & 29)
28*	501082	1	Back-up Ring--S-11248-10
29*	500776	1	O-ring--AS 568-010
30*	113984	1	Spring (inner)
31*	113983	1	Spring (outer)
32	113723	1	Guide-Ball
33*	502506	1	Ball-Steel

Ref. No.	Part No.	No. Req.	Description
34	114529	1	Sleeve
35	114537	1	Seat Assembly (incl. 36 & 37)
36*	501082	2	Back-up Ring -- S-11248-10
37*	500776	1	O-ring--AS 568-010
38*	501408	1	Quad Ring--MR Q4011
39	112405	1	Plunger-Reservoir
40*	112422	2	Spring
41	112524	1	Housing & Cover (incl. 42)
42	112523	1	Cover-Housing
43	104293(2)	1	Bleed Plug Assembly (incl. 44)
44*	500772	1	O-ring--AS 568-006
--	113347	1	Handle & Trigger Assem. (incl. 45 thru 56)
45	115317	1	Handle
46	113321	1	Arm-Throttle
47-	111814	1	Bushing
48	504125	1	Screw-Button Hd. Cap--#10-32 x 3/8 long
49*	501308	1	Cotter Pin--1/16 dia. x 1/2 long
50	112448	1	Pin-Throttle
51	501781	1	Screw-Flat Pt. Set--#8-32 x 3/16 long
52	82844	1	End-Adjustable
53	82841	1	Trigger
54	112464	1	Wire-Throttle
55	113013	1	Link-Wire
56	501613	1	Screw-Cup Pt. Set--#8-32 x 3/16 long
57	112612	1	Relief Valve Assembly (incl. 58 & 59)
58*	501084	1	Back-up Ring--S-11248-12
59*	500778	1	O-ring--AS 568-012
60*	501310	1	Cotter Pin--1/16 dia. x 1" long
61	114733	1	Throttle Valve Assem. (incl. 62 & 63)
62*	505092	1	O-ring--AS 568-108
63*	505091	1	O-ring--AS 568-105
64	114973	1	Cylinder (incl. 65, 66 & 67)
65	501352	1	Pin--.187 x 1/2 long
66	114732	1	Bushing-Upper
67	114634	1	Bushing-Lower
68	100321	1	Screw-Flat Hd. Machine--Special

Ref. No.	Part No.	No. Req.	Description
69	113531	1	Piston-Hydraulic (incl. 70 & 71)
70	501086	2	Back-up Ring--S-11248-12
71	500780	1	O-ring--AS 568-014
72	113529	1	Gland-Upper (incl. 73, 74, 75 & 76)
73*	500784	1	O-ring--AS 568-018
74*	501090	1	Back-up Ring--S-11248-18
75*	501414	1	Quad Ring--MR Q4111
76*	501102	1	Back-up Ring--S-11248-111
77	113530	1	Gland-Lower (incl. 78 & 79)
78*	500786	1	O-ring--AS 568-020
79*	500779	1	O-ring--AS 568-013
80	113344	1	Rod-Piston
81	113526	1	Piston-Air (incl. 82)
82*	501472	1	Quad Ring--MR Q4429
83	501069	1	Nut-Thin Self Locking--3/8 - 24
84	113528	1	Cylinder Head Assem. (incl. 85)
85*	505147	1	O-ring--AS 568-355
86*	505139	1	Retaining Ring--Spirolox RRN 562
87	113342	1	Plate
88	504282	4	Screw-Flat Hd. Cap--#10-32 x 1/2 long
89	109780	1	Swivel Bolt Assembly (incl. 90, 91, 92 & 93)
--	110134	1	Bolt-Swivel
90*	500808	2	O-ring--AS 568-111
91*	500777	1	O-ring--AS 568-011
92	100933	1	Connector
93	113532	1	Gland-Pull (incl. 94, 95, 96 & 97)
94*	500776	1	O-ring--AS 568-010
95*	501082	1	Back-up Ring--S-11248-10
96*	501090	1	Back-up Ring--S-11248-18
97*	500784	1	O-ring--AS 568-018
98	112502	1	Gland-Return (incl. 99, 100, 101 & 102)
99*	500776	1	O-ring--AS 568-010
100*	501082	1	Back-up Ring--S-11248 10
101*	501084	1	Back-up Ring--S-11248-18

Ref. No.	Part No.	No. Req.	Description
102*	500778	1	O-ring--AS 568-018
103	500102	4	Screw-Socket Hd. Cap--#10-32 x 5/8 long
104	114193	1	Throttle Arm Cover (incl. 105)
105	113736	2	Muffler
106	501267	2	Screw-Socket Hd. Cap--#10-32 x 1/2 long
--	112465	1	Fill Tool-Reservoir

(2) When Bleed Plug, P/N 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 bleed plug to prevent hydraulic fluid loss.

Table 6. Service Parts List

Model 226 Service Parts Kit, P/N 113701, Ser. No. 0489 and Above

Ref. No.	Part No.	No. Req.	Description
2	500845	1	O-ring--AS 568-212
3	501139	1	Back-up Ring--S-11248-212
8	113251	2	Back-up--Special
9	500851	1	O-ring AS 568-219
12	501423	1	Quad-Ring--MR Q4219
13	113754	1	Back-up Ring--Special
14	500824	1	O-ring--AS 568-127
15	113253	1	Back-up Ring--Special
17	504701	1	Clamp-Hose
18	110703	1	Deflector-Pintail
20,26,44	500772	3	O-ring--AS 568-006
21	111069	1	Spring
23	502929	1	Ball-St. Steel--3/16 dia.
28,36,95,100	501082	5	Back-up Ring--S11248-10
29,37,94,99	500776	4	O-ring--AS 568-010
30	113984	1	Spring (inner)
31	113983	1	Spring (outer)
33	502506	1	Ball-Steel--5/32 dia.
38	501408	2	Quad Ring--MR Q4011
40	112422	2	Spring
49	501308	1	Cotter Pin--1/16 dia. x 1/2 long
58	501084	4	Back-up Ring--S-11248-12
59,102	500778	2	O-ring--AS 568-012
60	501310	1	Cotter Pin--1/16 dia. x 1" long
62	505092	1	O-ring--AS 568-108
63	505091	1	O-ring--AS 568-105
70	501086	2	Back-up Ring--S-11248-12
71	500780	1	O-ring--AS 568-014
73,97	500784	2	O-ring--AS 568-018
74,96	501090	2	Back-up Ring--S-11248-18
75	501414	1	Quad Ring--MR Q4111
76	501102	1	Back-up Ring--S-11248-111
78	500786	1	O-ring--AS 568-020

Ref. No.	Part No.	No. Req.	Description
79	500779	1	O-ring--AS 568-013
82	501472	1	Quad Ring--MR Q4429
85	505147	1	O-ring--AS 568-355
86	505139	1	Retaining Ring--Spirolox RRN 562
90	500808	2	O-ring--AS 568-111
91	500777	1	O-ring--AS 568-011

Notes

Specifications for Tables

1. All part numbers shown in this manual are available from Huck Manufacturing Co. the 500000 series part numbers are standard parts which can generally be purchased locally.
2. Asterisks (*) indicate parts in **Service Parts Kit**, P/N 113701.
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).
4. QUAD RING sizes are specified Q4 plus 3 digits. The last three digits correspond to O-ring dash numbers. Quad Rings are manufactured by Minnesota Rubber Co.
5. Back-up Rings, except ref. nos. 6, 11 and 15 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:
 - (a) All ref. nos. except 60 and 61, are Nitrile or Buna N (Minnesota Rubber Co., compound 366Y, or equivalent), 70 durometer.
 - (b) Ref. nos. 60 and 61 are Minnesota Rubber Co. compound 525EX, 70 durometer, or equivalent.

Table 5. Accessories

Part No.	Description
84212	Lock Collar Punch
108279	Pintail Tube (incl. in 226 H.I.T.)
113253 111807	Spanner Wrench
502723	LUBRIPLATE 130AA - Tube
503237	TEFLON Thread Compound - Stick
970-100	Fill and Bleed Unit - - see Figure 5
112465	Fill and Bleed Tool (incl. in 226 H.I.T.)
100932	Filler Bottle
84213	Stall Nut (353)

Warranties

Warranty

THE NINETY DAY WARRANTY HEREIN EXPRESSED SHALL BE THE EXCLUSIVE WARRANTY ON ITEMS MANUFACTURED BY SELLER AND SHALL BE IN THE PLACE AND STEAD OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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

All warranty claims must be submitted to the seller in writing, within 90 days from date of shipment, and no returns will be accepted without written permission.

Other provisions hereof notwithstanding, seller shall not be liable for any loss of business profits or any incidental or consequential damages incurred by Buyer or any third person in connection with the items or use thereof, however caused.

Tool Warranty

Seller expressly disclaims any warranty express or implied, as to the condition, design, operation, merchantability or fitness for use of any tool, or part(s) thereof not manufactured by seller. The only warranties made with respect to such tool or part(s) thereof are those made by the manufacturer thereof and seller agrees to cooperate with buyer in enforcing such warranties when such action is necessary. Seller agrees to repair or replace F.O.B. seller's plant, any tool or part(s) thereof manufactured by it and proved to seller to be defective due to faulty workmanship or material.

Warranty on "Other Items"

With regard to items other than FASTENERS and TOOLS ("OTHER ITEMS"), seller expressly disclaims any warranty, express or implied, as to the condition, design, operation, merchantability or fitness for use of any "OTHER ITEMS", or part(s) thereof not manufactured by seller. The only warranties made with respect to such "OTHER ITEMS" or part(s) thereof are those made by the manufacturer thereof and seller agrees to cooperate with buyer in enforcing such warranties when such action is necessary.

Seller agrees to repair or replace F.O.B. seller's plant, any "OTHER ITEMS" or part(s) thereof manufactured by it and proved to seller to be defective due to faulty workmanship or material.

Huck Installation Equipment

Huck Manufacturing Company reserves the right to make changes in specifications and design and to discontinue models without notice.

Huck Installation Equipment should be serviced by trained servicemen only.

Always give the Serial No. of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Huck Manufacturing Company. Please contact one of the offices listed below.

Eastern

85 Grand St., Kingston, New York 12401-0250
Tel: 914-331-7300 Telex: 92-6486

Western

900 Watsoncenter Rd., Carson, California 90745
Tel: 213-830-8200 Telex: 68-6299

Canada

326 Humber College Blvd.,
Rexdale, Ontario M9W 5P4, Canada
Tel: 416-675-3400 Telex: 06-989105

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 located throughout the United States. These service centers offer repair services, spare parts, Service Parts Kits, Service Tool Kits and Nose Assemblies. Please contact your Huck representative or the nearest Huck office listed on the back cover for the Authorized Tool Service Center in your area.

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Huck Manufacturing Company maintains company offices throughout the United States and Canada with subsidiary offices in many foreign countries. Sales engineers and systems specialists are located in your area to offer the assistance you require in solving your fastener problems.

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Telex 92-6486

Industrial Fastener Sales
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Waco, TX 76714-8117
Telephone 817-776-2000
Telex 73-0985

Aerospace Fastener Sales
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Carson, CA 90749
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Telex 68-6299

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Huck Manufacturing Co.
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