HOWMET AEROSPACE

200 series
Pneudraulic Installation Tools
Instruction Manual



Standard 200 tool

(shown without Nose Assembly which is sold separately)

Actual models may vary.

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

December 29, 2025
HK154

HOWMET AEROSPACE

EC Declaration of Conformity

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

Description of Machinery:
Model 200 family of pneudraulic installation tools and specials based on their 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 (ISO 11148-1:2011)

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

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

Signature:

Full Name: Nicholas Gougoutris

Position: Engineering Manager

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

Date: 10/14/25 Oct. 14, 2025

UKCA Declaration of Conformity

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

Description of Machinery:
Model 200 family of pneudraulic installation tools and specials based on their design (e.g. PR####).

Relevant provisions complied with:
- British Standard related to hand held, non-electric power tools (ISO 11148-1:2011)
- Supply of Machinery (Safety) Regulations 2008

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

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Full Name: Nicholas Gougoutris

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

Date: 10/14/25 Oct. 14, 2025

Declared dual number noise emission values in accordance with ISO 4871			
A weighted sound power level, LWA: **100.2** dB (reference 1 pW) Uncertainty, KWA: 3 dB			
A weighted emission sound pressure level at the work station, LpA: **89.2** dB (reference 20 µPa) Uncertainty, KpA: 3 dB			
C-weighted peak emission sound pressure level, LpC, peak: **106.5** dB (reference 20 µPa) 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:	**.66** m/s^2	Uncertainty, K:	**.075** m/s^2
Values measured and determined according to ISO 28662-1, ISO 5349-2, and EN 1033			

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

Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

- Product complies with requirements set forth by the relevant UK and European directives.
- Read manual before using equipment.
- Eye protection is required while using this equipment.
- Hearing protection is required while using this equipment.

Notes: are reminders of required procedures. ***Bold, Italic type, and underline:*** emphasize a specific instruction.

WARNINGS: Must be understood to avoid severe personal injury.

CAUTIONS: Show conditions that will damage equipment or structure.

I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Howmet equipment.
2. Howmet equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Howmet procedures.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the tool.
5. Do not modify this 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 tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Howmet representative.
11. Only genuine Howmet parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and preventing an accident which may cause severe personal injury.
17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled without 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 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 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 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 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 tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

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

IX. PNEUMATIC / PNEUDRAULIC TOOL SAFETY INSTRUCTIONS:

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

Description

The Huck 200 Installation Tool installs a wide range of fasteners requiring a double-action or single-action installation tool. Power, speed, and accuracy are obtained through a pneumatic-hydraulic intensifier system powered by 90–100 psi (6.2–6.9 bar) air. The tool consists of three major subassemblies (see Figure 6):

1. The **Head Assembly** includes a pull piston and nose gland to hold a variety of nose assemblies required for the installation of specific fasteners.
2. The **Handle Assembly** includes the triggering system and the pneumatic and hydraulic pistons.
3. The **Cylinder Assembly** includes an adjustable shift valve mechanism to control the installation of fasteners requiring a double-action tool.

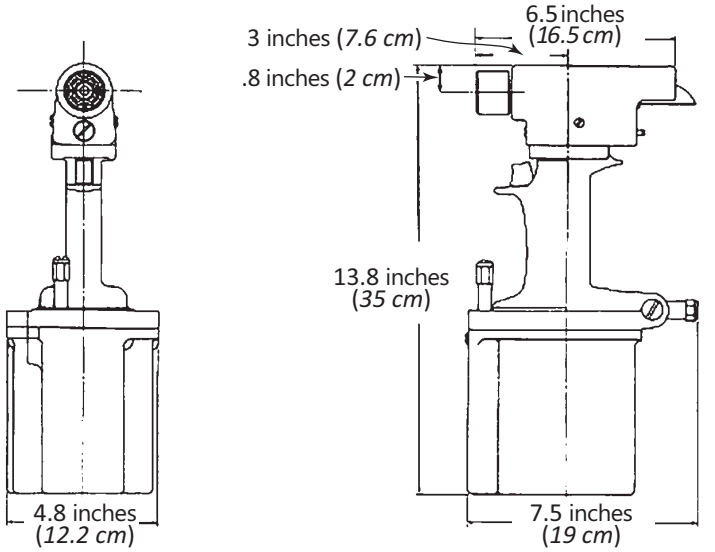
Adapters are supplied with the tool, which allow nose assemblies to be attached to the nose assembly gland.

Nose assemblies are sold separately.

Tool Specifications

Hydraulic fluid: Hydraulic fluid shall meet DEXRON III, DEXRON VI, MERCON, Allison C-4 or equivalent Automatic Transmission Fluid (**ATF**) specifications. Fire resistant fluid may be used if it's an ester based fluid such as Quintolubric® HFD or equivalent. Water based fluid shall NOT be used as serious damage to equipment will occur.

DESCRIPTION	DETAIL		DESCRIPTION	DETAIL	
POWER SOURCE	90 PSI Shop Air (6.2 bar)		MAX AIR PRESSURE	90 psi	6.2 bar
MAX OPERATING TEMP	125 ° F	52 ° C	MAX FLOW RATE	18 scfm	510 l/m
STROKE	1.1875 in	3 cm	SPEED/CYCLES	30 per minute	
WEIGHT	10 lbs 8 oz	4.8 kg			



Actual tool model may vary from figures shown.

Where the following trade names are used in this manual, please note:
DEXRON *is a registered trademark of General Motors Corporation.*
Loctite *is a registered trademark of Henkel Corporation, U.S.A.*
LUBRIPLATE *is a registered trademark of Fiske Brothers Refining Co.*
MERCON *is a registered trademark of Ford Motor Corp.*
Quintolubric *is a registered trademark of Quaker Chemical Corp.*
Slic-tite *is a registered trademark of LA-CO Industries, Inc.*
Teflon *is a registered trademark of E. I. du Pont de Nemours and Company.*
Threadmate *is a registered trademark of Parker Intangibles LLC.*
TRUARC *is a trademark of TRUARC Co. LLC.*
Vibra-Tite *is a registered trademark of ND Industries, Inc. USA.*

Spare Parts and Accessories

For CE conformity, only CE compatible equipment should be used with these tools. Installation tools and nose assemblies are the only CE components unless otherwise noted. Controls and other hardware shown in the manual are for domestic use only. These components are available independently. ***Service Parts Kits*** *include all perishable seals, O-rings, and Back-up rings. A spare Service Parts Kit should be kept on hand at all times.*

There are also several ***Installation Kits*** *for the 200 tool which contain the tool, a Carrying Case, and a Service Kit. Larger kits also include Nose Assemblies, Gauges, and other spare & replacement parts.*

200-52 KIT - PART LIST					
DESCRIPTION	PART #	DESCRIPTION	PART #	DESCRIPTION	PART #
Installation Tool	200	Grip Gauge 3/16 & 1/4	G58-2	Thrust Bushing -5	83295
Nose Assembly 100V-4	78972	Nose Assy. Brush	105805	Inner Anvil -6	100799
Nose Assembly 100V-5	78973	Nose Assy. Brush	105806	Outer Anvil -6	83296
Nose Assembly 100V-6	78974	Inner Anvil -4	104271	Thrust Bushing -6	83297
Nose Assy. -05 GP Tens	99-2804T	Outer Anvil -4	83289	Nose Assy. -8 Rivet	PR2698
Nose Assy. -06 GP Chis	99-2555CH	Thrust Bushing -4	83290	Service Kit	42-233
Nose Assy. -08 OSR	99-86	Inner Anvil -5	100820	Carrying Case	110206
Grip Gauge 1/8 & 5/32	G58-1	Outer Anvil -5	83294		

continued...

Spare Parts and Accessories continued...

200-53 KIT - PART LIST					
DESCRIPTION	**PART #**	**DESCRIPTION**	**PART #**	**DESCRIPTION**	**PART #**
Installation Tool	200	Nose Assembly 100V-5	78973	Service Kit	42-233
Nose Assembly 100V-4	78972	Nose Assembly 100V-6	78974	Carrying Case	110206

200-54 KIT - PART LIST					
DESCRIPTION	**PART #**	**DESCRIPTION**	**PART #**	**DESCRIPTION**	**PART #**
Installation Tool	200	Service Kit	42-233	Carrying Case	110206

200-55 KIT - PART LIST					
DESCRIPTION	**PART #**	**DESCRIPTION**	**PART #**	**DESCRIPTION**	**PART #**
Installation Tool	200	Grip Gauge 1/8 & 5/32	G58-1	Outer Anvil -6	83296
Nose Assembly 100V-4	78972	Grip Gauge 3/16 & 1/4	G58-2	Thrust Bushing -6	83297
Nose Assembly 100V-5	78973	Nose Assy. Brush	105805	Service Kit	42-233
Nose Assembly 100V-6	78974	Nose Assy. Brush	105806	Carrying Case	110206
Nose Assy. -05 GP Tens	99-2804T	Inner Anvil -4	104271	Outer Anvil P-4	83300
Nose Assy. -06 GP Chis	99-2555CH	Inner Anvil -5	100820	Outer Anvil P-5	83301
Nose Assembly -08 OSR	99-86	Inner Anvil -6	100799	Outer Anvil P-6	83302
Nose Assy. -8 Rivet	PR2698	437 Anvil, Outer, -06	83289	Bushing, Thrust	83290

KITS	
DESCRIPTION	**PART #**
SERVICE PARTS KIT This kit contains replacement parts for overhauling 1 (one) Model 200 tool, or for replacing a damaged or worn O-ring, etc.	42-236
SERVICE TOOL KIT This kit contains the tools that are required (in addition to standard screwdrivers, etc.) to disassemble and re-assemble the Model 200 tool.	42-233
SERVICE PARTS KIT These kits are used for checking the spindle load and the hydraulic fluid pressure at shift. For more information, see Shift Setting Kits and Spindle Loads and Hydraulic Pressures at Shift.	107569 - **and** - 101300

ACCESSORIES	
DESCRIPTION	**PART #**
PROTECTIVE CASE Protective case for storing tool and accessories.	110206
FILL AND BLEED UNIT Use the Fill and Bleed Unit to rapidly and efficiently fill the Model 200 tool with hydraulic fluid, and to bleed air from its hydraulic system.	Model 970-100

DESCRIPTION	PART #
LOCTITE® 243	508567
Anti-Seize Lubricating Stick	508183
Fill Bottle Assembly (Figure 9)	120337
Gauge, Pressure Setting, CE	T-124833CE

42-233 SERVICE TOOL KIT - PART LIST					
DESCRIPTION	**PART #**	**DESCRIPTION**	**PART #**	**DESCRIPTION**	**PART #**
Lubriplate® 130-AA	502723	Rear Gland Wrench	100556	Hex Key, 9/64"	502655
Collet Wrench	111239	Wrench, 7/16"	502912	Fill bottle	100931
Hex Key, 3/16"	502296	Wrench, 9/16"	502914	Truarc Pliers	502857
Shift Cartridge Wrench	100878	Hex Key, 1/8"	502294	Carrying Case	110206



Actual tool model may vary from figures shown. Component part numbers may change without notice.

continued...

Spare Parts and Accessories continued...

42-236 SERVICE KIT - PART LIST								
DESCRIPTION	QTY	PART#	DESCRIPTION	QTY	PART#	DESCRIPTION	QTY	PART#
Diaphragm	1	100378	O-Ring	7	504547	Quad Ring	1	501170
Deflector	1	100341	O-Ring	3	500776	Quad Ring	3	501172
Insert	3	100313	O-Ring	2	500777	Quad Ring	1	501408
Gasket	1	100346	O-Ring	4	500778	Quad Ring	1	501409
Compression Spring	1	100349	O-Ring	1	500779	Quad Ring	2	501410
Spring	1	100353	O-Ring	4	500780	Quad Ring	3	501414
Piston Wiper	1	111073	O-Ring	2	500781	Quad Ring	2	501417
Balance Valve Spring	1	100381	O-Ring	1	500786	Quad Ring	1	501460
Ball Check Seat "B"	1	100858	O-Ring	4	500793	Pin, Slotted	2	502135
Relief Valve Seat	1	100859	O-Ring	1	500808	Truarc Retg. Ring	1	502259
Ball Check Spring	2	100874	O-Ring	1	500872	Steel Ball	1	502509
Balance Valve Seat	1	100889	Truarc Retg. Ring	1	500933	Stainless Steel Ball	3	502929
Shim	4	100891	Back-up Ring	2	501078	Stainless Steel Ball	3	502934
Spring, Relief Valve	1	100968	Back-up Ring	1	501079	Back-up Ring	1	503160
Plug Assembly	1	104285	Back-up Ring	3	501082	Back-up Ring	5	503167
Ball Check Seat "A"	1	111139	Back-up Ring	6	501099	Back-up Ring	1	503168
SHCS Screw	12	500056	Back-up Ring	1	501102	Back-up Ring	2	503195
SHCS Screw	1	500071	Back-up Ring	1	501105	STS Screw	4	504378
O-Ring	1	500772	Back-up Ring	1	501138			
O-Ring	7	504547	Back-up Ring	5	501140			

SHIFT SETTING KITS

The Shift Setting Kit is used to check the spindle load (pounds) at shift and the Shift Pressure Setting Kit is used to check the hydraulic fluid pressure (PSI) at shift. See the sections Setting and Checking the Shift Valve Using a Shift Setting Kit and Spindle Loads and Hydraulic Pressures at Shift. The gauge, adapters and tester are housed in a sheetmetal case. See Figures 2 or 3, as relevant for your kit.

107569 SHIFT SETTING KIT PREFFERED METHOD		
DESCRIPTION	QTY	PART#
Skidmore-Wilhelm Model S Tester	1	107573
Adapter	1	107564
Plate	1	107565
Socket Head Cap Screw #5-40 X ¼	2	503910
Air Metering Fitting	1	101303
and 1 Carrying Case - *not sold separately*		

Actual tool model may vary from figures shown. Component part numbers may change without notice.

101300 SHIFT PRESSURE SETTING KIT ALTERNATE METHOD		
DESCRIPTION	QTY	PART#
Pressure Gauge & Adapter Assembly contains the 3 items directly below:	1	107892
Pressure Gauge	1	101301
Gauge Adapter	1	101302
O-ring	1	500772
Air Metering Fitting	1	101303
Stop Nut	1	101304
O-ring	5	500772
and 1 Carrying Case - *not sold separately*		

Principle of Operation

CAUTIONS: Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency and in reducing down-time.

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

CAUTIONS: Be sure there is adequate clearance for the tool and the operator's hands before proceeding.

The pintail deflector must always be in place before using the tool.

continued...

Principle of Operation continued...

Double-Action Tool Operation

(Figures 6-9) When the tool is connected to an air supply and the trigger is pressed, air pressure acts on the air piston and moves it forward. This causes the small hydraulic piston to act on a volume of hydraulic fluid in the handle assembly. Pressurized fluid is forced into the head assembly to move the pull piston in conjunction with the nose assembly to start the fastener installation. Pressurized fluid is also acting on the shift piston and shift valve, whose shift force is controlled by the shift spring and adjustment of the shift valve adjusting screw. As the fluid pressure increases, the shift valve opens and allows the fluid resisting movement of the shift piston to exhaust. The shift piston moves forward and acts on the thrust bushing and inner anvil of the nose assembly to drive the lock of the fastener. Continued travel of the air piston increases the hydraulic pressure, causing the pull piston to continue its travel. This causes the pintail of the fastener to break off, and the installation is complete. The trigger is released and all components return to their original position and the cycle is complete.

Single-Action Tool Operation

The tool operates similarly for installing other blind rivets and HuckBolt® Fasteners, except that the shift valve mechanism does not have a function.

Preparation and Use

The 200 tool ships with a plug in the air inlet connector. This connector has ¼"-18 female pipe threads to accept the hose fittings. Huck recommends quick-disconnect fittings and a ¼" inside-diameter air hose. The air supply should have a filter-regulator-lubricator unit and access to a 90–100 psi (6.2–6.9 bar) air supply capable of a flow rate of 18 cfm (510 l/m). (Based on 30 tool cycles per minute). The air connector bolt has a built-in air relief valve to exhaust air at 100–110 psi (6.9–7.5 bar).

Note: Air quick-disconnect fittings and air hoses are not available from Huck International, Inc. Huck includes an air hose (P/N 115436) to facilitate immediate tool use.

1. Remove the shipping plug from air inlet connector and add a small quantity of an approved Automatic Transmission Fluid. Assemble the hose fittings to be used.

2. Set the air pressure on the regulator to 90–100 psi (6.2–6.9 bar).

3. Blow out the air hose and connect to the tool.

4. Hold the tool upside-down, and press and release the trigger 8 or 10 times to cycle the tool.

5. Set the tool upright and remove the filler plug; check the hydraulic fluid level. Add fluid if necessary.

6. **Single-Action Application:** If the tool is to be used in this application, back out the shift valve adjusting screw until its surface is ⅛" below the surface of the cylinder.

Double-Action Application: If the tool is to be used in this application to install one of the following fasteners, the shift valve must be set.

- **AF540911-460 & 461/CKL-X**
- **NA51919 & 1921/MLS**
- **MS21140 & 21141/Huck Blind Bolt**
- **M590353 & 90354/Huck Blind Bolt**

Oversize Huck Blind Bolt

Consult **Table 1** to select the shift valve setting for the fastener to be installed, and the method of setting and checking to be used: (1) Spindle Load at Shift Using Setting Kit **107569** (preferred method) or (2) Hydraulic Pressure at Shift Using Setting Kit **101300**.

7. Select a nose assembly for the fasteners to be installed. Install the nose assembly to the tool.

8. Install a few fasteners in a test plate of the proper thickness and having the proper size holes. Observe the action of the tool and nose assembly, the bulbing of the fastener sleeve, and the driving of the lock (for a double-action fastener) or the swaging of the collar (for a single-action fastener).

Note: If the tool has been disassembled for repair, the hydraulic system must be replenished before preparing it for use. See **Fill and Bleed** for instructions.

Double-Action Application and/or Blind Rivet Application

The fastener may be placed in the work hole or in the end of the nose assembly. In either case, the tool and nose assembly must be held against the work and at a right angle to it. Press and hold the trigger until a sound denoting the pintail breaking is heard.

Single-Action Application

Place a pin in the work hole and the collar over the the pin. (If the collar has only one end tapered, that end should be out towards the tool). Hold the pin and push the nose assembly onto the pin protruding through the collar until the nose assembly anvil touches the collar. Press and hold the trigger until the collar is swaged and a sound denoting the pintail breaking is heard.

WARNING: Never push the nose assembly onto the pin of a HuckBolt® fastener without the collar in place. Injury to workers and damage to the nose assembly could result when the pintail breaks because the pin will eject forcibly from the other side of the work.

Fill and Bleed

The Model 200 Tool does not require filling and bleeding often. When it is necessary—due to loss of fluid because of a damaged seal, or when the tool has been overhauled— there are two approved methods: Manual Fill and Bleed and Using Fill and Bleed Unit 970-100 (preferred method). (See Figures 1 & 7-9)

MANUAL FILL AND BLEED (See Figures 4, 5 & 8)

1. Remove the air hose from the tool.
2. Fully insert the balancing valve bleed screw (Figure 4).
3. Remove the filler plug & magnet assembly, P/N 101294, (Fig. 5 & 8) and fill with an approved Automatic Transmission Fluid or equivalent until the fluid level is at the bottom of the filler hole threads. (A filler bottle and fluid are available from Huck, P/N 100932. They are included in Service Tool Kit 42-233).
4. Wipe the filler plug with a clean, lint-free cloth; replace and tighten.
5. Attach the air hose to the tool, turn the tool upside-down, and cycle it 12 times by pressing and releasing the trigger.
6. Set the tool upright and remove the air hose.
7. Back out the balancing valve bleed screw fully. Leave this screw backed out.
8. Remove the filler plug and again add fluid until the level reaches the bottom of the filler hole threads.
9. Replace the filler plug and tighten.
10. Attach the air hose to the tool, turn the tool upside-down again, and cycle it 50 times, permitting full stroke for each cycle.
11. Set the tool upright again and repeat steps 8–10 until the fluid level remains at the bottom of the filler hole threads, the foam and bubbles have disappeared, and the fluid is clear.

USING FILL AND BLEED UNIT 970-100

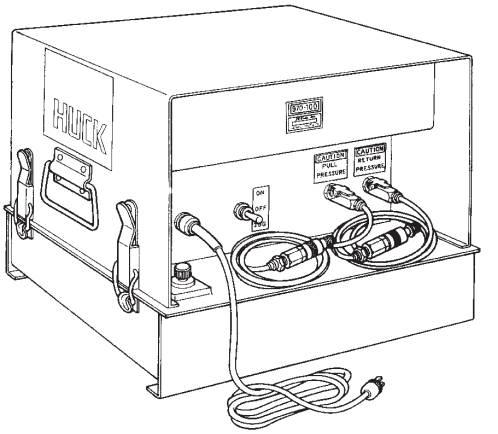
(Preferred Method) (See Figures 4, 5 & 8)

1. Fill the unit with hydraulic fluid, approved Automatic Transmission Fluid or equivalent.
2. Plug the unit into a 110 volt, single-phase, 50/60 hertz outlet.
3. Remove the filler plug & magnet assembly, P/N 101294, (Figures 5 & 8). Screw in the adapter of the Pull Pressure Tube Assembly.
4. Remove the ball check screw plug assembly, P/N 104285, (Figure 4) from valve B. Use a magnet in the filler plug to remove the spring and ball. Screw in the adapter of the Return Pressure Tube Assembly.
5. Unscrew the bleed screw all the way out. The Balance Valve will be closed. (Figure 4)
6. Turn ON the unit switch. Adjust the relief valve to 50–60 psi. Hold the tool in all positions until air bubbles stop flowing in the RETURN tube. Hold the tool in the upright position for the final portion of the bleeding. Back out the relief valve retainer, P/N 100392, (Figure 4) a few turns until clear fluid (free of air) flows out. Use a combination of "RUN" and "JOG". Total time for this step is approximately three minutes. Turn OFF the unit switch.
7. Unscrew the adapter from the filler port and replace the filler plug & magnet assembly, P/N 101294, (Figures 5 & 8).
8. Remove the Tube Assembly from the PULL pressure port of the unit and install the other Tube Assembly (P/N 110777).
9. Remove the bleed plug, P/N 104293, (Fig. 9) from the front of the cylinder. Screw in the adapter of the PULL Pressure Tube Assembly.
10. Turn the bleed screw all the way in. The Balance Valve will be open. (Figure 4)
11. Turn ON the unit switch. When air bubbles stop flowing in the RETURN tube, back out the bleed screw. The balance valve will be closed and the pull piston will move back full stroke. When the flow stops out of valve B (Figure 4), screw in the bleed screw to open the balance valve and re-establish flow. Hold the tool head down to flush all the air out of valve B. Use a combination of "RUN'' and "JOG''. Total time for this step is approximately five minutes. Turn OFF the unit switch.
12. Remove the Tube Assembly from the bleed port in the cylinder and re-assemble the bleed plug.
13. Remove the ball check screw and guide from valve A (Fig. 4). Leave the spring and ball in place. Screw in the adapter of the Tube Assembly installed in the PULL pressure port of the unit.
14. Turn ON the unit switch. Back out the shift valve adjusting screw, in the bottom of the cylinder, until there is flow out of valve B (Fig. 4). Hold the tool in all positions, especially head down, until air bubbles stop flowing in the RETURN tube. Total time for this step is ten minutes minimum. Turn OFF the unit switch.
15. Remove the tube assemblies. Reassemble the components in the ports of valves A & B (Fig. 4). Fill the ports to the bottom of the threads with hydraulic fluid. Assemble ball check screw in valve A port and ball check screw in valve B port.
16. If the pull piston is in the back position, turn in the bleed screw, remove the filler plug, and manually return the pull piston to the forward position.
17. Assemble the filler plug and back out the bleed screw. Turn in the shift valve adjusting screw a few turns.

The tool is now ready to set and check the shift valve adjustment.

Figure 1

FILL AND BLEED UNIT, MODEL 970-100



continued...

Fill and Bleed continued...

FILL AND BLEED UNIT, MODEL 970-100

The Fill and Bleed Unit (Figure 1) is designed to rapidly and efficiently fill a tool with hydraulic fluid, and to bleed air from its hydraulic system. It can be used to fill and bleed Model 200, as well as other Huck tools. The unit weighs 50 pounds (22.68 kg) as shipped, without hydraulic fluid; the outside dimensions are 14" wide x 16" long x 14" high (35.5 cm x 40.6 cm x 35.5 cm). It operates on 110 volt, single-phase, 50/60 hertz electrical power.

Setting and Checking the Shift Valve

USING A SHIFT SETTING KIT
(See Figures 2, 3, 5 & 7-9)

PREFERRED METHOD - KIT 107569 (Figure 2)

1. Use only a tool that has been prepared for use as instructed in Preparation and Use and Fill and Bleed.
2. A filtered-regulated-lubricated air supply capable of supplying 18 CFM @ 90–100 psi (510 l/m @ 6.2–6.9 bar) must be available.
3. Screw Retaining Nut 100530 against Head.
4. Assemble Adapter 107564 through Skidmore-Wilhelm Tester 107573 and engage the threads of the tool's pull piston; finger tighten.
5. Screw Air Metering Fitting 101303 into the air connector and air supply hose. Set the regulator for 90–100 psi (6.2–6.9 bar).
6. Use Wrench 100878 to back out the shift valve adjusting screw, P/N 110559, (Figures 5 & 8), keep the surface of the screw approximately ⅛" below the surface of the cylinder.
7. Press the tool trigger and quickly release it. Watch the needle on Gauge 101301; Full Spindle Load will be shown. There will not be a pause indicating shifting of the shift valve because it is inoperative when the adjusting screw is backed out.
8. Consult **Table 1** to select the Spindle Load At Shift for the Huck fastener to be installed.
9. Turn the adjusting screw in until the needle of the gauge pauses before reaching full spindle load when the trigger is pressed.

   This is Spindle Load at Shift.
10. Adjust the screw to obtain the desired Spindle Load At Shift.
11. Trigger the tool 10 times to verify the setting.

Note: The needle will bounce slightly when shift occurs. Do not confuse this bounce with the pause indicating shift.

12. Disconnect the air supply and remove the setting kit and Air Metering Fitting 101303 from the tool.
13. Attach the nose assembly.
14. Install a few fasteners in a test plate of proper thickness and with proper size holes to verify that the shift valve has been properly set and that the nose assembly is functioning properly.

ALTERNATE METHOD - KIT 101300 (Figure 3)

1. Use only a tool that has been prepared for use as instructed in Preparation and Use and Fill and Bleed.
2. A filtered-regulated-lubricated air supply capable of supplying 18 CFM @ 90–100 psi (510 l/m @ 6.2–6.9 bar) must be available.
3. Screw Stop Nut 101304 onto the threads of the pull piston; finger tighten.
4. Remove the bleed plug from the side of the cylinder and screw in Adapter 101302 with Gauge 101301.

Note: Be sure there is an O-ring on the Adapter.

5. Screw Air Metering Fitting 101303 into the air connector .
6. Attach the air supply hose to the tool. Set the regulator for 90–100 psi (6.2–6.9 bar).
7. Use Wrench 100878 to back out the shift valve adjusting screw, P/N 110559, (Figures 5 & 8), until it is flush with the bottom of the cylinder.
8. Press the tool trigger and quickly release it. Watch the needle on Gauge 101301; Full Spindle Load will be shown. There will not be a pause indicating shifting of the shift valve because it is inoperative when the adjusting screw is backed out.
9. Consult **Table 1** to select the Hydraulic Pressure At Shift for the Huck fastener to be installed.
10. Turn the adjusting screw in until the needle of the gauge pauses before reaching full spindle load when the trigger is pressed.

    This is Hydraulic Pressure at Shift.
11. Adjust the screw to obtain the desired Hydraulic Pressure At Shift.
12. Trigger the tool 10 times to verify the setting.

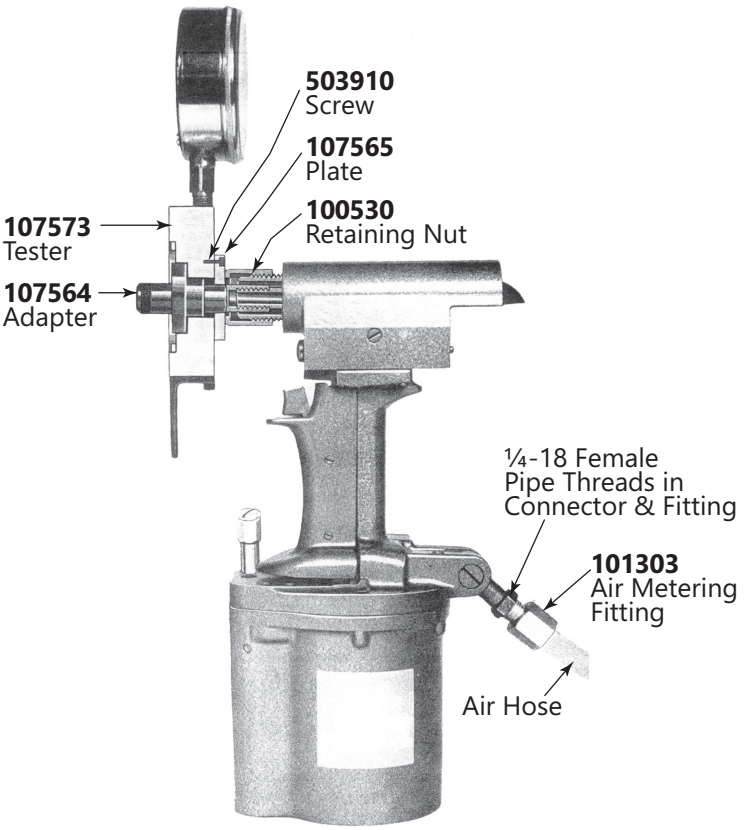
Note: The needle will bounce slightly when shift occurs. Do not confuse this bounce with the pause indicating shift.

13. Disconnect air supply and remove setting kit including Air Metering Fitting 101303.
14. Attach the nose assembly.
15. Install a few fasteners in a test plate of proper thickness and with proper size holes to verify that the shift valve has been properly set and that the nose assembly is functioning properly.

Shift Setting Kits

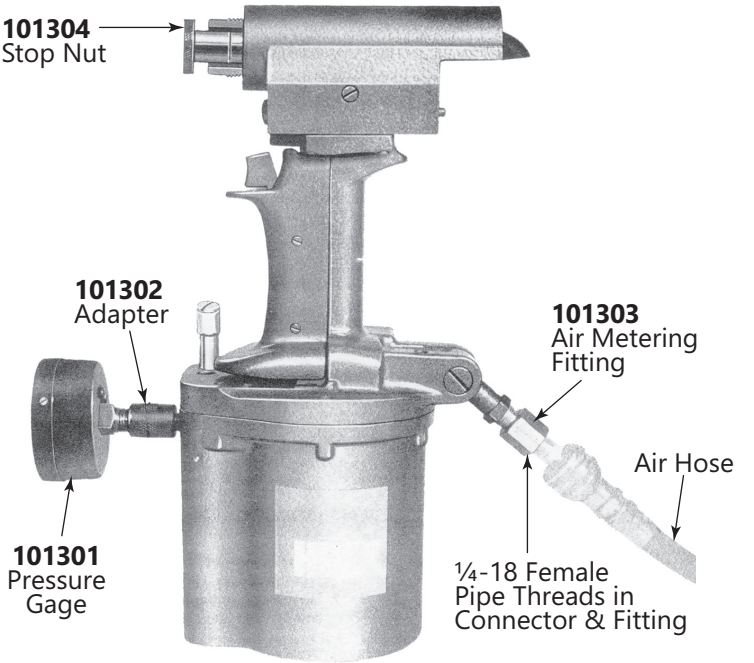
Using Shift Pressure Setting Kit - 107569

Figure 2



Using Shift Pressure Setting Kit - 101300

Figure 3



Actual model may vary from figures shown.

Spindle Loads and Hydraulic Pressures at Shift

When used to install double-action fasteners, the shift valve of the Model 200 tool must be adjusted to ensure the proper installation of various fasteners. The two methods of checking the shift valve setting are:

Method #1: Shift Setting Kit **107569** uses a Skidmore-Wilhelm Tension Tester to check the **Spindle Load at Shift**, in pounds.

Method #2: Shift Setting Kit **101300** uses a hydraulic pressure gauge to check the **Hydraulic Pressure at Shift**, in pounds per square inch (psi).

The table below shows the **Spindle Load at Shift** and **Hydraulic Pressure at Shift** for various fasteners.

See **Shift Setting Kits** in **Spare Parts & Accessories** for the Parts Lists of these kits.

TABLE 1 - SPINDLE LOADS AND HYDRAULIC PRESSURES AT SHIFT

FASTENERS		POUNDS Spindle Load At Shift Using Setting Kit 107569		PSI [2] Hydraulic Pressure At Shift Using Setting Kit 101300
AFS 40911-460 AFS 40911-461	CKL-X4	O-Ring		425 [1]
	CKL-X5	CKL-X5	±25	CKL-X5
	CKL-X6	CKL-X6	±25	CKL-X6
	OCKL-X4	OCKL-X4		OCKL-X4
	OCKL-X5	OCKL-X5	±25	OCKL-X5
	OCKL-X6	OCKL-X6	±25	OCKL-X6
NAS1919 & 1921				
B04	MLS-B04	350 [1]	±25	450 [1]
B05	MLS-B05	500	±25	650
B06	MLS-B06	725	±25	950
B08	MLS-B08	1275	±25	1650
C04	MLS-EU04	875	±25	1125
C05	MLS-EU05	1175	±25	1525
C06	MLS-EU06	1875	±25	2450
M04	MLS-M04	775	±25	1000
M05	MLS-M05	1125	±25	1475
M06	MLS-M06	1775	±25	2325
MS21140	B-EU5	1260	±35	1650
MS21141	B-EU6	1845	±65	2400
MS90353	B-T5	1425	±25	1850
MS90354	B-T6	2200	±50	2875
—	OB-T5	1425	±25	1850
—	OB-T6	2200	±50	2875

[1] Set as close as possible to the **POUNDS** or **PSI** indicated.

[2] Plus or minus 50psi, unless otherwise specified.

Maintenance

GOOD SERVICE PRACTICES

The efficiency and life of any tool depends upon proper maintenance and good service practices. The tool should be serviced by personnel who are thoroughly familiar with it and how it operates. If possible, the tool should be serviced by personnel trained specifically in servicing the Model 200 Huck Installation Tool. (See notice inside back cover of this manual.)

- Service the tool in a clean, well-lighted area. Take special care to prevent contamination of pneumatic and hydraulic systems.
- Have available all necessary hand tools (standard and special), a brass drift and wood block, and a soft-jaw vise. See **Service Tool Kit 42-233** in **Spare Parts & Accessories**.
- Carefully handle all parts. Before reassembly, examine them for damage and wear.
- Inspect seals and rings; replace if nicks or wear is detected.

CAUTION: Replace all seals, wipers, and rings when the tool is disassembled for any reason, and at regular intervals, depending on severity and duration of use.

- Have Spare Parts Service Kit (42-236) available when servicing the tool; it includes important perishable parts. Other components, as experience dictates, should also be available. See **Spare Parts & Accessories**.
- Smear Lubriplate® 130-AA or Super-O-Lube® on rings and mating parts to ease assembly.
- Disassemble and assemble tool components and assemblies in a straight line. Do NOT bend, cock, twist, or apply undue force.
- Disassembly and assembly procedures outlined in this manual should be followed.

PREVENTIVE MAINTENANCE

The 200 Huck Installation Tool is a production tool, requiring a minimum amount of maintenance. Adherence to the Preventive Maintenance Chart below, however, will help ensure longer life with maximum operating efficiency, and eliminate unnecessary breakdowns.

For supplementary information, see **Troubleshooting, the Parts Lists,** and the **Disassembly** and **Assembly** procedures in this manual.

TABLE 2 - PREVENTIVE MAINTENANCE CHART

CHECK	DAILY	WEEKLY	MONTHLY	AS REQUIRED
Air Supply System				
Air line pressure (90–100 psi)	√			
Moisture traps & filters		√		
Lubricator		√		
Air hose (blow out dirt and moisture)	√			
Air hose & fittings (deterioration			√	
Model 200 Tool				
Air leaks				√
Hydraulic leaks				√
Screws, head to handle (tightness)				√
Screws, handle to cylinder (tightness)				√
Nose Assembly				
Chuck jaws (clean with mineral spirits, using small pistol brush)	√			
Adjustment	√			

Note: Huck recommends using mineral spirits for the general cleaning of tool components. Do NOT use chlorinated solvents; strong solvents may damage O-ring and seal materials.

Air Leakage Cause and Remedy

Always check the simplest possible cause of an air leak. Use the information below to aid in correcting trouble. (See Figures 4, & 7-9)

TABLE 3 - AIR LEAKAGE

SYMPTOM & LOCATION	Cause & Remedy																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Air valve leak with trigger in idle position.	√		√																
Air valve leak with trigger in idle position.	√	√																	
Air valve leak with trigger pressed.	√			√	√														
Air valve leak with trigger pressed.	√			√															
Leakage at intensifier gland bleed hole.						√	√	√	√										
Leakage at air intake swivel fitting assembly.										√	√								
Leakage between Handle Subassembly 101103 and Cylinder Assembly 100875 faces.												√	√	√					
Leakage into hydraulic system.														√	√	√	√	√	√

A. Trigger linkage not properly adjusted. With air on tool and trigger in the idle position, it should have some free motion before actuating air valves. With the trigger in pressed position, the trigger, lever, and cross bar should not bottom on the handle casting or the hand grip. If either of these conditions occurs, replace worn, bent, or broken parts (Figure 8).

B. Brass air valve seat leaking. Lap or reseal with an 11/32" ball. Replace the seat if leaking persists (Figure 8).

C. Right rear insert leaking. Replace the spring, if broken. Reseat the insert with ball by tapping against the insert. Replace if leakage persists (Figure 8).

D. Left insert leaking. Reseat the ball against the insert. Replace the insert if leaking persists. (Figure 8)

E. Right front insert leaking. (See Step D.)

F. Slight leakage at this point is permissible.

G. If leakage is excessive, remove the handle assembly from the cylinder assembly and check the intensifier gland O-ring. Huck recommends that steps H and I also be performed at this time.

H. Remove the intensifier gland and check the O-rings. Replace if damaged. (Figure 8)

I. Remove screw and then remove the small hydraulic piston from the rod. Remove the intensifier gland from the piston rod. (Figure 8)

CAUTION: Take care not to score the Rod. Remove the Gland and replace the lower internal Quad Ring.

J. If leakage occurs at the small hole in acorn nut on the swivel fitting, reduce the air supply (90–100 psi [6.2–6.9 bar] air pressure recommended.) If the leak stops but the air pressure is then too low, add shims as required to obtain seal at the proper pressure. If air leak still occurs, replace valve.

K. If leakage occurs at a point other than the hole in the acorn nut, disassemble the nut and swivel bolt from the assembly. Replace O-ring, Quad Rings, and flat gasket as required.

L. Socket head screws are loose; tighten.

M. O-ring seals between faces are leaking; replace.

N. Insufficient bleeding can appear as a leak into the hydraulic system. Rebleed.

O. The screws that secure the Head Assembly to the Handle Assembly and/or Handle Assembly to Cylinder Assembly are loose; tighten.

P. Improper hydraulic fluid. Poor substitutes can damage O-rings and seals, and cause foaming. See Specifications for information on huck-recommended hydraulic fluids.

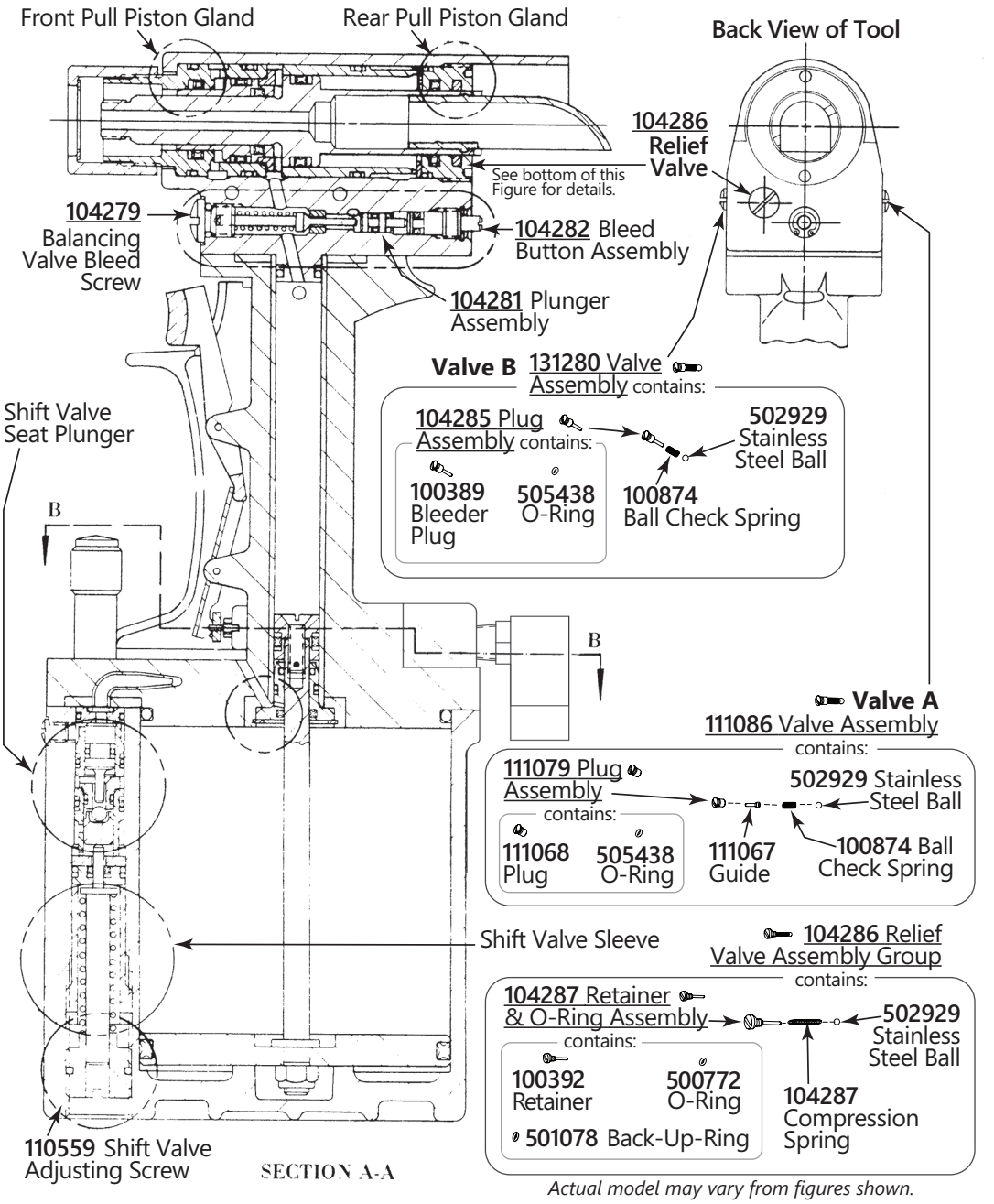
Q. Rubber reservoir diaphragm is leaking; replace. (Figure 9)

R. Sheared or worn O-rings or seals in oil-to-air joints. Replace as required.

S. Leakage in weldment or Handle Subassembly or at plugs in Cylinder Subassembly 100875.

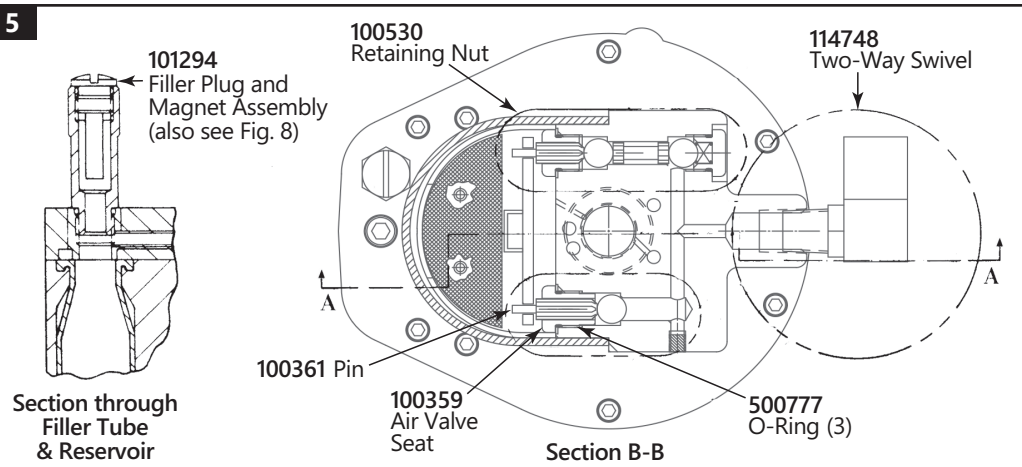
Sectional Views

Figure 4



Actual model may vary from figures shown.

Figure 5



Hydraulic Fluid Leakage Cause and Remedy

Always check the simplest possible cause of an air leak. Use the table below to aid in correcting trouble.

TABLE 4 - HYDRAULIC FLUID LEAKAGE

SYMPTOM & LOCATION	Cause & Remedy										
	A	B	C	D	E	F	G	H	I	J	K
Excessive hydraulic fluid exhausting with air.	√										√
Leakage at intensifier gland bleed hole.						√	√				
Leakage at rear pull piston gland.		√						√		√	
Leakage at front pull piston gland.								√		√	
Leakage between Head Assembly, Handle Assembly, and Cylinder Assembly faces.			√	√							√
Leakage past shift adjusting screw.					√				√		

A. Hydraulic fluid reservoir diaphragm is leaking; replace (Figure 9).

B. Rear pull piston gland (Figure 4) is loose. Tighten with Wrench, P/N 100556.

C. Socket head screws are loose; tighten.

D. O-ring seals between faces are leaking; replace.

E. Shift valve sleeve (Figure 4) is loose. Tighten with Wrench, P/N 100878.

F. Intensifier gland rings not sealing. Upper internal O-ring and external O-ring are defective; replace (Figure 8).

G. Piston rod is scored or worn; replace (Fig. 8).

H. O-rings and/or Quad Rings are leaking. Remove gland and shift piston. Replace the internal and external rings (Figure 4).

I. O-ring and/or Quad Ring seals in the shift valve assembly group (Figure 9) are leaking. Disassemble the tool and replace the rings.

J. Pull piston (Fig. 7) is scored or worn; replace.

K. Hydraulic system leak in Handle Assembly weldment. Replace the handle (Figure 8) (contains inserts).

Tool Disassembly Procedure (See Figure 6)

1. Connect the tool to the air supply.
2. Press the trigger and remove the air supply. (This moves the air and hydraulic pistons to their "full stroke" position.)
3. Disconnect the air supply.

HANDLE ASSEMBLY FROM CYLINDER ASSEMBLY

1. Remove the 8 socket head cap screws, P/N 500056 (Figure 6).
2. Remove the 1 socket head cap screw, P/N 500071 (Figure 6).
3. Carefully pull the Handle and Piston Assembly from the Cylinder Assembly in a straight line. (This will prevent binding of the air piston and bending of the piston rod.)

HEAD ASSEMBLY FROM HANDLE ASSEMBLY

1. Remove the 4 socket head cap screws, P/N 500056 (Figure 6).
2. Carefully pull the Head Assembly from the Handle Assembly.
3. Drain the hydraulic fluid.

Assembly Instructions (See Figure 6 - 9)

HEAD ASSEMBLY TO HANDLE ASSEMBLY

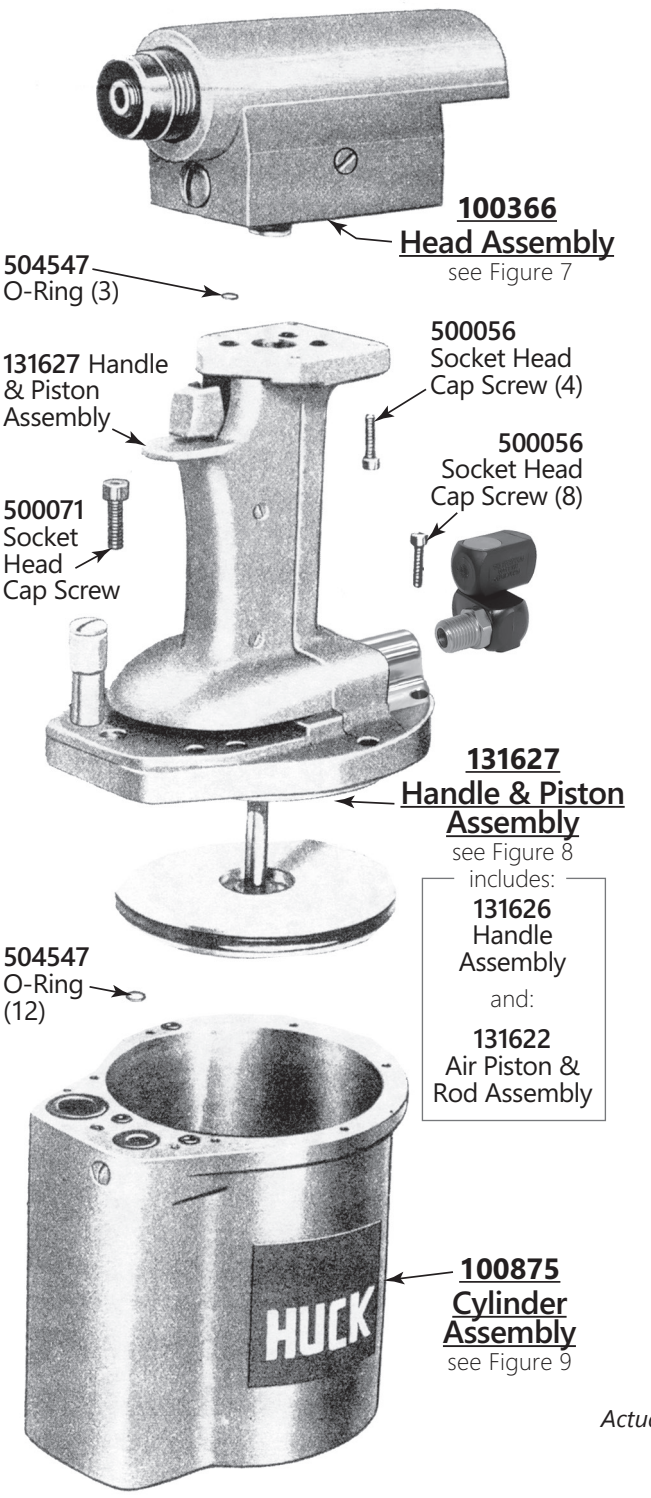
1. Smear Lubriplate® 130-AA on the pilot, new O-ring, and new Back-up Ring (Figure 7).
2. Assemble O-ring and Back-up Ring to the pilot of the head (Figure 7).
3. Smear Lubriplate® 130-AA on and place 3 new O-rings in the counterbores in the mating surface of Handle (Figure 6).
4. Carefully push Head Assembly and Handle Assembly together.
5. Install 4 socket head cap screws, P/N 500056 (Figure 6); torque to 34 inch-pounds.

HANDLE ASSEMBLY TO CYLINDER ASSEMBLY

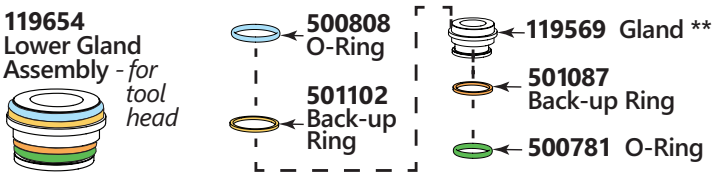
1. Use Wrench, P/N 100878, to remove (unscrew) shift valve adjusting screw, P/N 110559, (Fig. 9) in bottom of cylinder. Remove spring & spring guide.
2. Use Wrench 100878 to remove/unscrew spring sleeve to remove pressure on cap (Figure 9).
3. Place 4 new O-rings in the counterbores in the mating surface of cylinder, P/N 100366, (Figure 6).
4. Assemble new Quad Ring on air piston, P/N 100315, (Figure 8).
5. Assemble new O-ring to pilot of Handle, P/N 500872, (Figure 8).
6. Smear Lubriplate® in cylinder bore, on air piston, on piston rod, and on pilot of Handle and O-ring.
7. Carefully push piston & handle pilot into cylinder.
8. Install 8 socket head cap screws, P/N 500056, and 1 socket head cap screw P/N 500071, (Fig. 6). Tighten the 8 screws to 34 inch-pounds torque and the one screw to 6–9 foot-pounds torque.
9. Tighten sleeves, P/N 101101, to 1.75 inch-pounds torque (Figure 9).
10. Reassemble spring guide, P/N 110414, and spring, P/N 111071 (Figure 9).
11. Reassemble adjusting screw. Screw in just far enough put some pressure on the spring, P/N 110559 (Figure 9).
12. Refill the tool with hydraulic fluid and adjust the shift valve adjusting screw per the instructions in this manual.

Major Sub-Assemblies

Figure 6



Actual model may vary from figure.

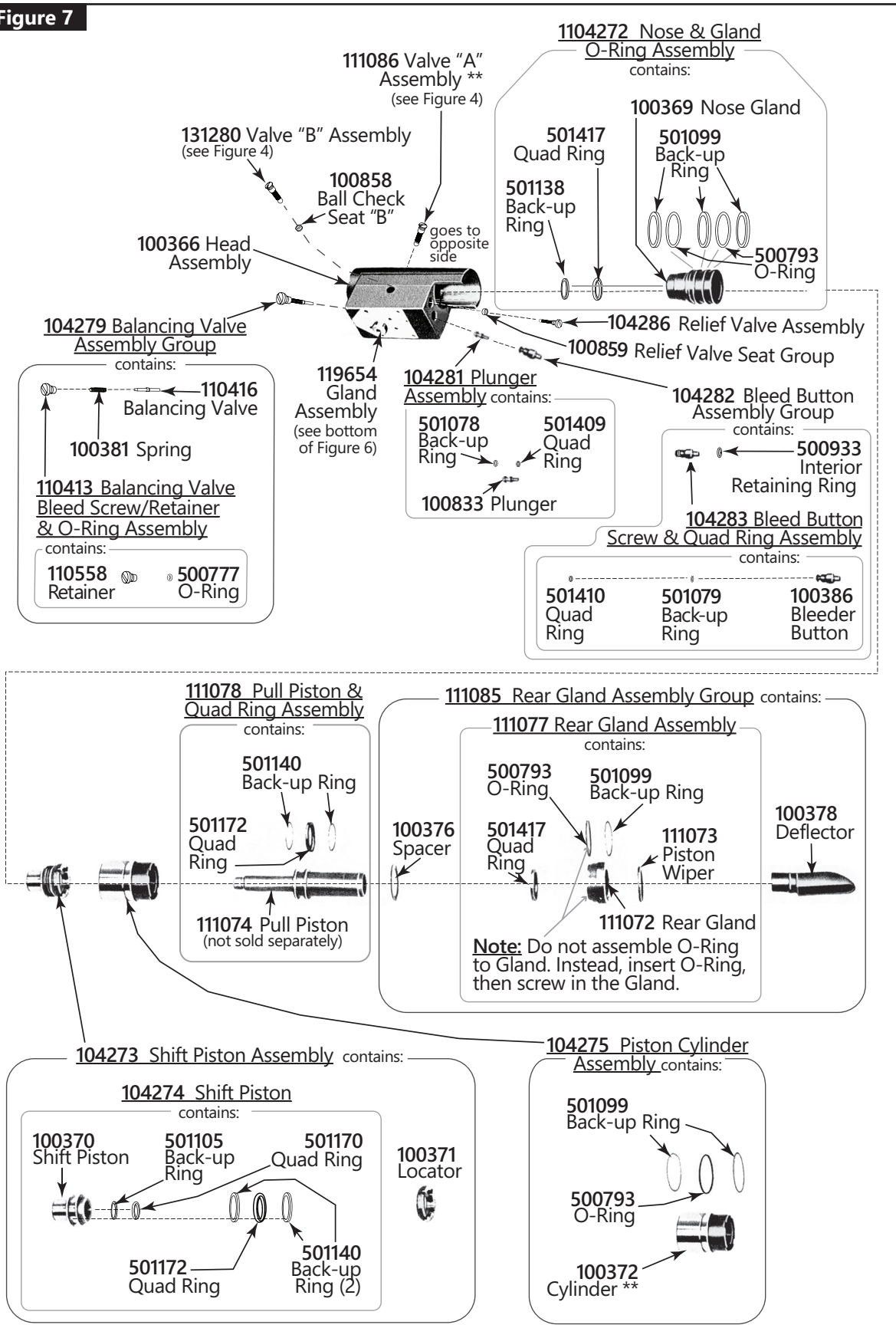


Note: *** Part not sold separately. Only sold as part of Upper Assembly.*

Colors are only used to show the different parts contained in the Assembly and do not represent the actual colors of the items.

Head Assembly - 100366

Figure 7



Note: ** *Part not sold separately. Only sold as part of Upper Assembly..*

Head Disassembly and Assembly (See Figure 7)

HEAD DISASSEMBLY

Typically, it should not be necessary to completely disassemble the Head Assembly. However, over time, the O-ring seals may wear out and the tool will not function at maximum capacity. The following instructions are for complete disassembly.

1. Unscrew rear gland, P/N 111085, (Fig. 7) using Gland Wrench, P/N 100556, (Fig. 4). Examine rear gland interior Quad Ring for cuts or extreme wear. Also examine rear gland exterior O-ring and Back-up Ring. Replace these rings where necessary.

2. Remove spacer, P/N 100376, (Fig. 7) and pull piston. Push on the threaded end of the pull piston. Examine piston Quad Ring and two Back-up Rings; replace if cut or damaged.

3. The pull piston cylinder may be removed by pushing on the projecting end of shift piston. Be careful not to damage the inside of nose gland or to cut Quad Ring in the nose gland. The shift piston locator will slide out with the pull piston cylinder. Check all Quad Rings for damage.

4. Remove nose gland by pushing on the threaded projecting end. The return pressure relief valve, P/N 104286, is removed by unscrewing retainer. The relief valve spring and ball can now be removed. Check O-ring and Back-up Ring on the relief valve retainer for damage.

5. Disassemble the bleed valve from both ends of the head housing. Remove retainer, P/N 110413, (Fig. 4) at the front end of the housing. Next, remove spring, P/N 100381, and balancing valve, P/N 110416. The valve cone face should be free of score marks. Do not remove valve seat, P/N 100859, unless it appears to be damaged. Check O-ring for damage.

6. Remove retaining ring, P/N 500933, and unscrew bleed screw, P/N 104283 (Fig. 4). Push out plunger, P/N 104281, from the other end with small diameter rod. Check all O-rings and Quad Rings for damage.

7. Unscrew ball check screw and remove ball check spring and ball (Valve A, Fig. 4). Check O-ring for damage. Do not remove ball check seat unless it appears to be damaged.

8. Unscrew ball check screw and remove ball check spring, guide, and ball (Valve B, Fig. 4). Check O-ring for damage. Do not remove ball check seat unless it appears to be damaged.

HEAD ASSEMBLY

Before assembling the Head Assembly, thoroughly clean all parts with mineral spirits and lightly lubricate with Lubriplate® 130-AA. Then assemble, using Figure 7 for guidance and taking care not to damage seals. Assemble the Ball Check Assemblies last.

CAUTION: Do NOT assemble O-ring (500793) to gland (111072) (Fig.7). Instead, insert the O-ring and then screw in the gland.

Handle Disassembly and Assembly (See Figure 6 & 8)

HANDLE DISASSEMBLY

The Handle and Piston Assembly contains a four-way air valve, high pressure air relief valve, trigger components, hydraulic cylinder, and piston and rod assembly. The following instructions are for complete disassembly.

1. Separate head assembly and cylinder assembly from handle assembly per the instructions in the Major Subassemblies - Disassembly.

2. Using Truarc Pliers #0100, Part No. 502857, remove retaining ring (502259). Remove air piston & rod assembly, piston rod, intensifier gland assembly and air piston by pulling piston and rod free of handle.

3. Remove nut, P/N 121241, from rod and slip air piston, P/N 100315, and intensifier gland, P/N 100319, off rod. Exercise care to prevent scoring rod.

4. Examine piston, rod, intensifier gland, hydraulic piston and all seals for damage. Replace parts as required.

5. Hand grip is removed by unscrewing four screws, P/N 505210. Push out pins, P/N 502135, and remove trigger, P/N 100364, and lever, P/N 100363. Remove cross bar, P/N 100362, and four-way air valve actuating pins, P/Ns 100360/100361.

6. Remove air valve seat, front plugs (100357 and 100359) and balls. Remove rear plug (100354), spring and ball. Inserts are press fit.

7. Unscrew filler plug (101294) and collector tube (110999) and check O-rings (500778).

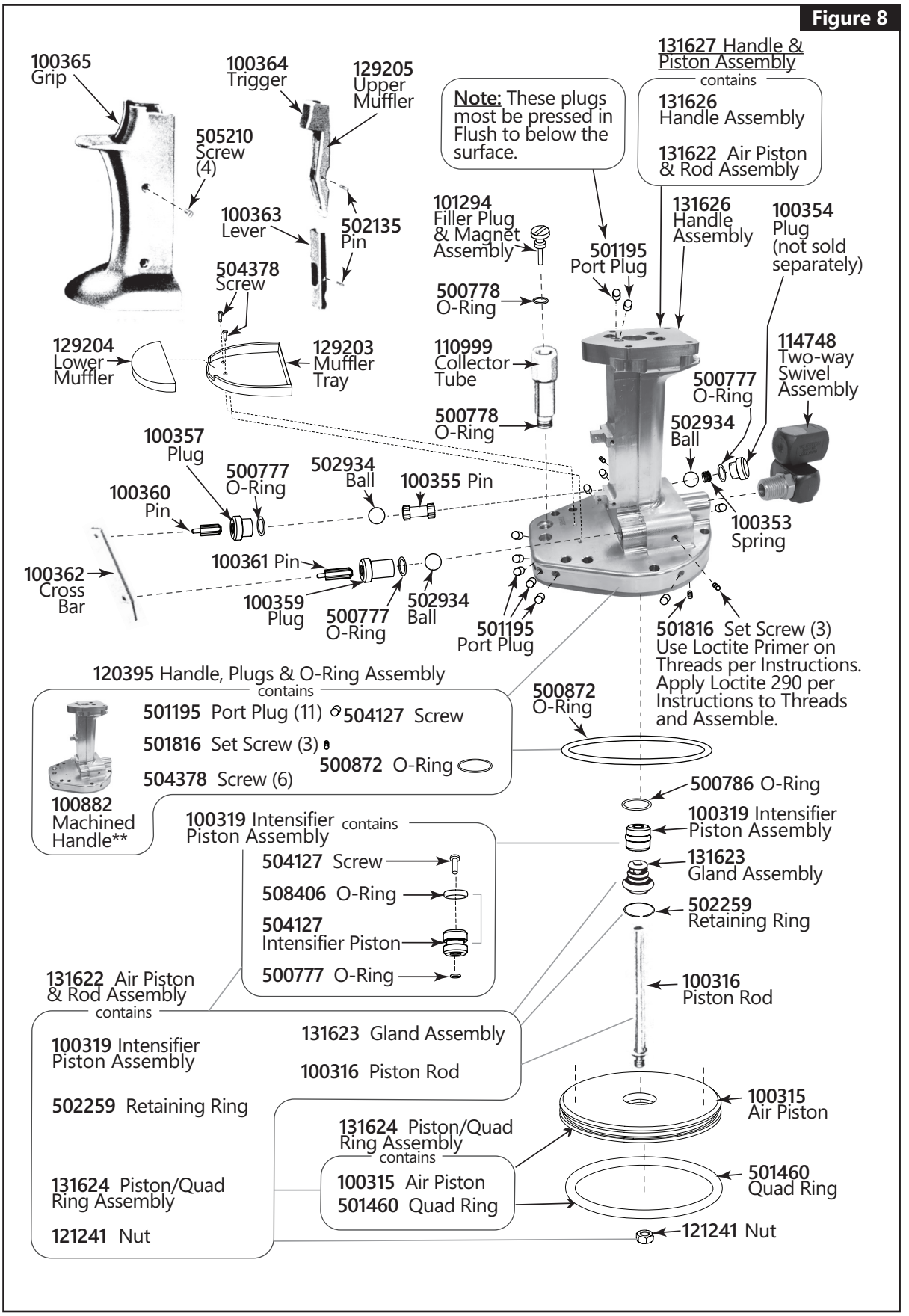
HANDLE ASSEMBLY

Before assembling the Handle Assembly, thoroughly clean all parts with mineral spirits and lightly lubricate with Lubriplate® 130-AA. Then assemble, using Figure 8 for guidance. Assemble the Piston and Rod Assembly last, inserting the hydraulic piston in the bottom of the handle.

CAUTION: Take care that rings are not cut or sheared in assembly. Use Truarc pliers #0100 (P/N 502857) to install the retaining ring (502259).

Handle & Piston Assembly 131627

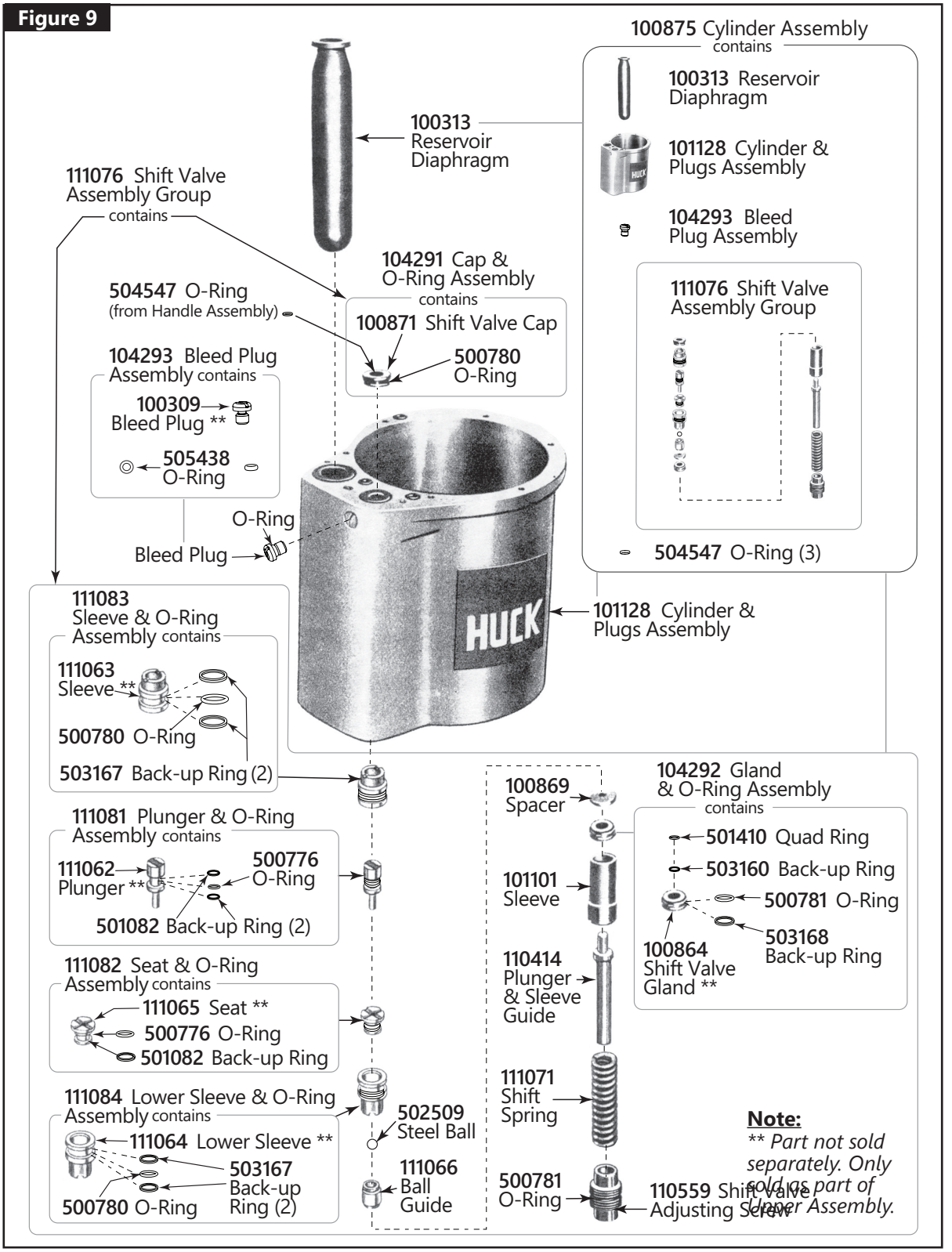
Figure 8



Note: ** *Part not sold separately. Only sold as part of Upper Assembly..*

Cylinder Assembly 100875

Figure 9



Cylinder Disassembly and Assembly

CYLINDER DISASSEMBLY

The Cylinder Assembly contains the air cylinder and the shift valve components. The Handle Assembly must be removed from the Cylinder Assembly when disassembling the shift valve components. Disassemble the Cylinder Assembly as described here.

See Figures 6-9 to identify Component Parts.

1. Separate Handle Assembly from Cylinder Assembly per the instructions in the Major Subassemblies - Disassembly. Remove adjustment screw, shift spring, and plunger (110414).

continued...

Cylinder Disassembly and Assembly continued...

2. Screw in sleeve (101101) a few turns using Wrench 100878 to dislodge cap (104291). Remove cap.
3. Carefully remove hydraulic fluid diaphragm (100313).
4. Remove sleeve (101101) with Wrench 100878, and push the remaining valve parts out of the bottom of the cylinder using a brass rod.

   Note: If Quad Ring (501410) or O-ring (500781) require replacement, a soft brass rod with a tapered end can be used to remove gland (104292) and spacer (100869) without removing the Cylinder Assembly from the Handle Assembly. The brass rod also facilitates the assembly of the gland and spacer.
5. Remove bleed plug (104293).
6. Remove and discard all O-rings and Quad Rings. Replace Back-up Rings and diaphragm if damaged.

CAUTION: Do not push sleeves past the bleed plug (104293) hole.

CYLINDER ASSEMBLY

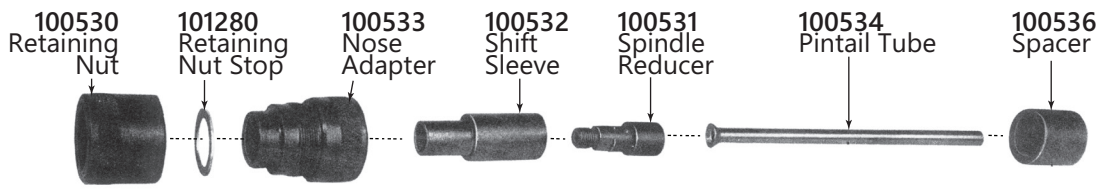
Before assembling the Cylinder Assembly, thoroughly clean all parts with mineral spirits and lightly lubricate with Lubriplate® 130-AA. Inspect all parts for damage; replace parts as required.

1. Dip the new O-rings and Quad Rings supplied in Service Parts Kit 42-236 in hydraulic fluid or lubricate them with Lubriplate® 130-AA.
2. Assemble the O-rings, Quad Rings, and Back-up Rings as follows.
   a. O-ring (505438) to bleed plug (104293).
   b. O-ring (500780) to cap (104291).
   c. O-ring (500780) and 2 Back-up Rings (503167) to upper sleeve (111063).
   d. O-ring (500776) and 2 Back-up Rings (501082) to plunger (111062).
   e. O-ring (500776) and Back-up Ring (501082) to seat (111065).
   f. O-ring (500780) and 2 Back-up Rings (503167) to lower sleeve (111064).
   g. Quad Ring (501410) and Back-up Ring (503610) to inner diameter and Back-up Ring (503168) to outer diameter of shift valve gland (100864).
   Note: Do **NOT** assemble O-ring (500781) at this time.
   h. O-ring (500781) to adjustment screw (110559).
3. Install cap (104291) from top side of cylinder.
4. Push plunger (111081) into upper sleeve (111083). Drop into cylinder from the bottom side of cylinder.
5. Push seat (111082) into lower sleeve (111084). Turn over and drop ball (502509) into the sleeve. Smear Lubriplate on guide (111066) and insert into sleeve. Drop into cylinder.
6. Install spacer (100869) and O-ring (500781).
7. Push Back-up Ring (503618) on gland (104292). Use plunger (110414) as a guide and install gland in the cylinder. Remove the plunger. (A brass rod may be used to tap the components into place.)
8. Install sleeve (101101) loosely using Wrench 100878. Do not tighten sleeve, as this will unseat cap (104291).
9. Install reservoir diaphragm (100313) and bleed plug (104293).
10. Assemble Cylinder Assembly to Handle Assembly per instructions in Major Subassemblies - Assembly. Sleeve (101101) will be tightened and plunger (110414), spring (111071) and adjustment screw (110559) installed during this operation.

If Handle Assembly is not being installed on the Cylinder Assembly at this time, the plunger, spring, and adjusting screw may be installed loosely for storage purposes.

Nose Assembly Adapter Group

Figure 10



Parts to use for each specific Nose Assembly.

NOSE ASSEMBLY SERIES	PARTS TO USE (See Figure 10)
Series 200 (Double-Action)	Use Retaining Nut (and Pintail Tube as applicable)
Series 352 (Single-Action)	Use Retaining Nut, Retaining Nut Stop (and Pintail Tube as applicable) and Spacer
Series 350 (Double-Action)	Use all parts above (including Pintail Tube, if applicable)

Troubleshooting

Always check the simplest possible cause of a malfunction first. Then proceed logically, eliminating other possible causes until the cause is discovered. Where possible, substitute known good parts for suspected defective parts. Use the alphabetic references in the table below to locate possible causes and to aid in correcting trouble.

SYMPTOM	A	B	C	D	E	F	G	H	I	J	K	L	M
Fails to develop full pressure. Pins don't break.	√	√						√				√	
Fails to eject or complete the return stroke.		√	√			√			√			√	
Fails to shift; CKL or MLS fastener collars not driven.	√	√	√	√				√				√	√
Shifts before blind head is formed.		√			√	√	√			√	√	√	√
Erratic shift. Fails to shift or shifts too soon without changing shift valve adjustment.		√				√	√			√	√	√	
Stroke short (less than 1-3/16”).	√	√				√							

A. Air supply pressure low. Air pressure of 90–100 psi required.
B. Air in hydraulic system. Refill and bleed tool the per instructions in Fill and Bleed.
C. Check nose assembly for completeness and proper installation per instructions.
D. Shift valve adjustment screw set too high. Re-adjust counter-clockwise per instructions.
E. Shift valve adjustment screw set too low. Re-adjust clockwise per instructions.
F. Relief valve not sealing. Check Relief Valve seat for foreign particles. Clean if dirty. Replace seat if damaged.
G. Check valve A (Fig. 9) for leakage. Clean and reseat ball by tapping. If ball or seat is damaged, replace.
H. Bleed screw (104279) valve assembly group not backed out to stop (Bleed Screw/Balance Valve). Balance valve (100416) is stuck in the open position or there is foreign material between valve and seat. Free the valve and remove foreign particles. If relief valve or relief valve seat is damaged, replace.
I. Check valve B (Fig. 9) for leakage. Clean valve and reseat ball by tapping. If ball or seal are damaged, replace.
J. Shift valve sleeve (101101) is loose. Tighten with Wrench 100878.
K. Shift valve seat (111082) not sealing (shift valve plunger). Replace seat if foreign particles are embedded in seal, or if seat is damaged.
L. Shift plunger (111081) sticky in sleeve (111083). Remove plunger from sleeve. If plunger or sleeve bore is scored, replace shift valve plunger.
M. Extreme temperature variation. Adjust shift valve adjustment screw as necessary.

CAUTION: Make certain that Valve components are not magnetized.

Limited Warranties

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

Two Year Limited Warranty on Battery Powered Installation Tools:
Huck International, Inc. warrants that its Battery Powered installation tools sold after September 1, 2018 shall be free from defects in materials and workmanship for a period of two years from date of purchase by the end user. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

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

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

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Huck Installation Equipment:
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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.

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

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

Outside USA and Canada
Contact your nearest Huck International location (see reverse).

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

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