EU Declaration of Conformity

Manufacturer:
Huck International, Inc., Installation Systems Division, 85 Grand Street, Kingston, NY, 12401, USA

Description of Machinery:
Model number 230,230UK family of fastener installation tools

Relevant provisions complied with:

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

Authorized Signature/date:

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

Signature:  
Renno W. Budziak 8/21/96
Full Name:  Renno Budziak
Position:  Vice President of Engineering, Installation Systems Division
Place:  Kingston, New York, USA
Date:  August, 1996
In order to ensure ease of assembly of back caps and air pistons, among other components of HUCK installation equipment, it is recommended that wherever Vibra-Tite® has been mentioned in a HUCK instruction manual or product bulletin procedure, the product Loctite® 243 Threadlocker be used instead.

This oil-tolerant, removable, medium-strength blue threadlocker is designed for locking and sealing threaded components. It can be applied smoothly and will now be the HUCK recommended standard for these applications. For best results, follow manufacturer’s recommendations for use.

Loctite® 243 Threadlocker is available for purchase from HUCK in a .5 mL tube as part number 508567.

Locite is a registered trademark of Henkel Corporation, U.S.A.
Vibra-Tite is a registered trademark of ND Industries, Inc. USA.

For more information or to order, please contact your local distributor or call direct:
Alcoa Fastening Systems
1 Corporate Drive
Kingston, NY 12401
800-278-4825
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SAFETY

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

1. Safety Glossary

   - Product complies with requirements set forth by the relevant European directives.
   - Read manual prior to using equipment.
   - Eye protection required while using this equipment.
   - Hearing protection required while using this equipment.

   **WARNINGS** - Must be understood to avoid severe personal injury.

   **CAUTIONS** - show conditions that will damage equipment and or structure.
   **Notes** - are reminders of required procedures.

   **Bold, Italic type and underlining** - emphasizes a specific instruction.

2. Huck equipment must be maintained in a safe working condition at all times and inspected on a regular basis for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.

3. Repairman and Operator must read manual prior to using equipment and understand any Warning and Caution stickers/labels supplied with equipment before connecting equipment to any primary power supply. As applicable, each of the sections in this manual have specific safety and other information.

4. See MSDS Specifications before servicing the tool. MSDS Specifications are available from you Huck representative or on-line at www.huck.com. Click on Installation Systems Division.

5. When repairing or operating Huck installation equipment, always wear approved eye protection. Where applicable, refer to ANSI Z87.1 - 1989

6. Disconnect primary power source before doing maintenance on Huck equipment.

7. If any equipment shows signs of damage, wear, or leakage, do not connect it to the primary power supply.

8. Make sure proper power source is used at all times.

9. Never remove any safety guards or pintail deflector.

10. Never install a fastener in free air. Personal injury from fastener ejecting may occur.

11. When using an offset nose always clear spent pintail out of nose assembly before installing the next fastener.

12. If there is a pinch point between trigger and work piece use remote trigger. (Remote triggers are available for all tooling).

13. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and in preventing an accident which may cause severe personal injury.

14. Never place hands between nose assembly and work piece.

15. Tools with ejector rods should never be cycled with out nose assembly installed.

16. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet of correct positioning.
**Huck Model 230, 230UK Sound Level**

\[ \text{SEL} = 100 \text{ dB (A)} \]
\[ \text{peak value} = 130 \text{ dB (C)} \]

For an eight hour work day, installing 800 typical Huck fasteners will result in an equivalent noise level (Leq) of 84.4 dB (A).

To calculate equivalent noise level for other quantities of fasteners in an eight hour period, use the formula:

\[ \text{Leq} = \text{SEL} + 10 \log \left( \frac{n}{28,800} \right) \]

where \( n \) = number of fasteners in eight hours.

**Huck Model 230, 230UK Vibration Level**

For an eight hour work day, installing 800 typical Huck fasteners will result in an equivalent weighted RMS vibration level (Aeq) of 1.5m/s².

To calculate the equivalent vibration level for other quantities of fasteners in an eight hour period, use the formula:

**Equivalent Vibration Level, Aeq (m/s²)** = \( \frac{n}{480} \times 0.9 \)

where \( n \) = number of fasteners in eight hours, and \( 0.9 \text{ (m/s}^2\text{)} \) = Aeq for 60 seconds.

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Test data to support the above information is on file at Huck International, Inc., Kingston, NY, USA. Vibration measurements are frequency weighted in accordance with ISO 8041 (1990).
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td>1</td>
</tr>
<tr>
<td>Principle of Operation</td>
<td>3</td>
</tr>
<tr>
<td>Preparation for Use</td>
<td>4</td>
</tr>
<tr>
<td>Operating Instructions</td>
<td>5</td>
</tr>
<tr>
<td>Maintenance</td>
<td>6</td>
</tr>
<tr>
<td>Preventive Maintenance</td>
<td>6</td>
</tr>
<tr>
<td>Good Service Practices</td>
<td>6</td>
</tr>
<tr>
<td>Filling Tool</td>
<td>9</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>11</td>
</tr>
<tr>
<td>Spare Parts and Service Parts Kit</td>
<td>8</td>
</tr>
<tr>
<td>General Precautions</td>
<td>13</td>
</tr>
<tr>
<td>Disassembly</td>
<td>16</td>
</tr>
<tr>
<td>Assembly</td>
<td>18</td>
</tr>
</tbody>
</table>
An important notice:

Operator must read and understand any WARNING and Caution stickers/labels supplied with equipment before connecting equipment to any primary power supply — as applicable, the following sections each have specific safety, and other, information:

- **WARNINGS and CAUTIONS**
- **DESCRIPTION**
- **SPECIFICATIONS**
- **PRINCIPLE OF OPERATION**
- **PREPARATION FOR USE**
- **PREVENTIVE MAINTENANCE**
- **OPERATION AND TOOL HANDLING**

As applicable, the disassembly and assembly sections contain specific overhaul and safety procedures.

Only persons who have read and understood all applicable manuals or received training approved by Huck International, Inc. will be able to use Huck equipment with personal safety and efficiency.

If you require additional information, contact your local Huck representative or the nearest office listed on the back cover.

**SAFETY GLOSSARY**

**WARNINGS** must be understood to avoid severe personal injury.

**Cautions** show conditions that will damage equipment and/or structure.

**Notes** are reminders of required procedures.

*Italic type and underlining strengthens a specific instruction.*

**WARNINGS**

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

Whenever within the working environment, wear approved eye protection, with side shields, to protect from anything that breaks on the fastening system including: Erupting fluid lines, flying fastener particles or any other dirt/debris that could cause eye injury. Where applicable, refer to ANSI Z87.1 - 1989.

**Disconnect primary power source before doing maintenance on Huck equipment.**

- For electrically operated POWERIG® Hydraulic Units, unplug the power cord from the socket. If there is no plug, turn off the power at the disconnect switch. Follow lockout/tagout procedures in force by your employer.
- For equipment powered by compressed air, disconnect the air hose before doing any maintenance.
- For hydraulic tools, or other hydraulic equipment, disconnect the hydraulic hoses from the hydraulic unit before doing any maintenance.

If any equipment shows signs of damage or leakage, *DO NOT* connect it to the primary power supply (either electrical or compressed air) — and do not continue to use equipment that develops erratic symptoms. If equipment is damaged, or there are other serious discrepancies, affected equipment may rupture violently — parts may strike the operator, and/or other personnel, and cause severe personal injury. Ensure that *ALL* air and/or hydraulic hose and/or electrical plugs/connectors are correctly connected before switching on power supply to equipment. If incorrectly connected, the tool may respond erratically and cause severe personal injury.
FILL PROCEDURE WHEN REPLACING CHECK VALVE P/N 119425, WITH RELIEF VALVE P/N 123739

1. LOOSEN CHECK VALVE, P/N 119425. HOLD TOOL HEAD DOWN OVER A LARGE CONTAINER AND UNSCREW CHECK VALVE UNTIL FLUID LEAKS OUT—THIS RELIEVES PRESSURE IN TOOL.

2. LOOSEN SIDE AND TOP BLEED PLUG SCREWS. REMOVE CHECK VALVE, SIDE AND TOP BLEED PLUG SCREWS—DISCARD CHECK VALVE.

3. ATTACH AIR SUPPLY TO TOOL. HOLD TOOL OVER CONTAINER AND CYCLE SEVERAL TIMES TO REMOVE OIL FROM TOOL.

4. WITH HYDRAULIC PISTON IN FULL FORWARD POSITION, INSTALL RELIEF VALVE P/N 123739, INTO CHECK VALVE PORT—TIGHTEN CHECK VALVE.

5. WITH TOOL LYING HORIZONTAL, AND SIDE FILL PORT FACING UP, SCREW FILL BOTTLE INTO SIDE PORT. CYCLE TOOL SEVERAL TIMES.

6. REMOVE FILL BOTTLE. INSTALL BLEED SCREW TWO TURNS INTO SIDE PORT. DEPRESS TRIGGER AND HOLD WHILE TIGHTENING SCREW. CAUTION: DO NOT RELEASE TRIGGER UNTIL SIDE PORT SCREW IS TIGHTENED AS FLUID WILL BE LOST FROM AROUND THREADS OF SCREW.

7. STAND TOOL UPRIGHT. SCREW FILL BOTTLE INTO TOP PORT. CYCLE TOOL SEVERAL TIMES REMOVE FILL BOTTLE. INSTALL FILL PORT BLEED SCREW.

8. CYCLE TOOL AS IT IS MOVED INTO AS MANY POSITIONS AS POSSIBLE—RIGHT SIDE UP, UPSIDE DOWN ETC.—REPEAT SEVERAL TIMES. REMOVE TOP BLEED SCREW AND ADD FLUID AS NECESSARY. REPEAT PROCEDURE UNTIL ALL AIR IS REMOVED AND OIL CAN NO LONGER BE ADDED.

THRU HOLE

VALVE IDENTIFICATION

CHECK VALVE 119425

RELIANCE VALVE 123739

NO THRU HOLE

HUCK® THIOKOL COMPANY

Installation Systems Division
P.O. Box 2270
Kingston, New York 12401-0250

3-25-96

406
Description

The Huck Model 230 is a lightweight (only 6.1 lbs) production tool designed to install Huck MAGNA-GRIP® and various other Huck fasteners. Pulling action of the pull piston is provided by a pneumatic-hydraulic (pneudraulic) intensifier system powered by 100 psi (690 kPa) maximum air pressure.

Features incorporated in Model 230 include: one piece, high impact polymer handle -- cylinder design; in-line Piston extending the life of Cylinder and O-ring seals; Pull Piston Wiper preventing abrasive particles from damaging seals; air porting and muffler exhausts air from bottom of tool.

Tool has a 15/16 inch working stroke. Pull Capacity at 90 psi. is 4800 lbs at 100 psi. pull capacity is 5200 lbs plus.

A Nose Assembly is required for each fastener type and size. Nose Assemblies must be ordered separately.

The Model 230 hydraulic system is recharged by removing Fill Screw located at top of cylinder -- fill to top of fill port (See page 8 for filling instructions). Hydraulic fluid is automatic transmission fluid, DEXRON II, or equivalent.

**FIGURE 1 OUTLINE DIMENSIONS**

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>INCHES</th>
<th>MILLIMETERS</th>
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<tbody>
<tr>
<td>A</td>
<td>1.44</td>
<td>37</td>
</tr>
<tr>
<td>B</td>
<td>6.00</td>
<td>152</td>
</tr>
<tr>
<td>C</td>
<td>7.13</td>
<td>181</td>
</tr>
<tr>
<td>D</td>
<td>14.50</td>
<td>368</td>
</tr>
<tr>
<td>E</td>
<td>6.50</td>
<td>165</td>
</tr>
<tr>
<td>F</td>
<td>5.20</td>
<td>132</td>
</tr>
<tr>
<td>G</td>
<td>7.60</td>
<td>193</td>
</tr>
<tr>
<td>H</td>
<td>1.75</td>
<td>45</td>
</tr>
</tbody>
</table>
PRINCIPLE OF OPERATION

Refer to Figure 2

When the Model 230 Tool is connected to 100 psi air supply maximum (1) Hydraulic Piston (4) is held forward. Air Piston (3) is at the top of Air Cylinder (7).

Trigger (2) is depressed, the installation cycle begins, Spool (5) in Air Housing Assembly (6) shifts and allows air to enter Air Cylinder (7) above Air Piston (3) forcing it downward.

The downward motion of Air Piston (3) causes the air trapped below it to exhaust to atmosphere via the exhaust port in Housing (6). The Air Piston (3) moves the Hydraulic Rod (9) down forcing the oil in the Reservoir below it to move through a port and up to the Head (10) of the tool in front of the Hydraulic Piston (4).

The Hydraulic Piston (4) moves rearward causing the pulling action of the tool, which continues until the fastener is installed and Pinbreak is achieved.

The Trigger (2) is released. The Spool (5) returns to the rest position. The Hydraulic Piston (4) returns to the front of the tool and the Air Piston (3) returns to the top of the Air Cylinder (7) ready for the next fastener installation cycle.

WARNING:
Inspect tool for damage before each use. Do not operate if damaged as severe personal injury may occur.
Preparation for Use

The Model 230 Installation Tool is shipped with a plastic plug in the air inlet connector. This connector has 1/4-18 female pipe threads. A quick connect fitting and 1/4 inch inside diameter air hose are recommended. An air supply of 100 psi. maximum capable of 6 CFM must be available. The air supply should be equipped with a filter-regulator unit.

1. Remove plastic plug from air inlet Connector and drop in a few drops of Automatic Transmission Fluid, Dexron II, or equivalent.

2. Using TEFOLON --- thread compound, screw quick disconnect fitting into inlet and tighten to 6 ft./lbs.

3. Set air pressure on regulator to 100 psi. maximum.

4. Connect air hose to tool.

5. Cycle tool a few times by depressing and releasing Trigger.

6. Disconnect air hose from tool.

7. Install nose assembly on tool per applicable Nose Assembly Data Sheet.

8. Connect air hose to tool and install fastener in test plate of proper thickness with proper size holes. Inspect installed fastener.

WARNING
Be sure there is adequate clearance for tool and operator's hands before proceeding. Severe personal injury may result if not enough clearance is provided.

WARNING
When operating Huck Installation Equipment, always wear approved eye protection.
OPERATING INSTRUCTIONS

WARNING

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

PLEASE READ THIS MANUAL CAREFULLY

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

Blind 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.

HUCKBOLT® Fastener Installation

Place pin in work hole and place collar over pin.

(If collar has only one end tapered, that end should be out towards tool.) Hold pin and push Nose Assembly onto pin protruding thru collar until Nose Assembly anvil touches collar. Depress Trigger. Hold Trigger depressed until collar is swaged and pintail breaks.

CAUTION

Do not abuse tool by dropping it or using it as a hammer. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime and in preventing accidents which may cause severe personal injury.

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.

Maintenance

Preventive Maintenance

The Model 230 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.
Remove and clean Nose Assemblies at regular intervals, Nose Assembly collet and tool spindle must be cleaned of oil and abrasive particles.
Cleaning prevents spindle seal failure. Particles of black phosphate finish from installed fasteners mix with residual oil on spindle—the abrasive paste formed causes excessive seal and wiper wear. To prevent seal wear and fluid loss, clean wiper at regular intervals. Wiper should be changed before it becomes too worn and is no longer effective.

Good Service Practices

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 are required. A half-inch brass drift, wood block and vise with soft jaws will prevent damaging tool.

All parts must be handled carefully and examined for damage or wear. Always replace O-rings, POLYSEALS and LIPSEALS 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.

WARNING:
Inspect tool for damage before each use. Do not operate if damaged as severe personal injury may occur.
Smear LUBRIPLATE* 130AA, or equivalent lubricant, on seals and mating surfaces to facilitate assembly and to prevent damage to seals. (LUBRIPLATE 103AA is available, in a tube as Part Number 502723, from Huck Manufacturing Company.)

*LUBRIPLATE is a trademark of Fiske Brothers Refining Co.

Rub SLIC-TITE TEFLON* thread compound, or equivalent, on threads of pipe plug and quick disconnect fitting, to aid assembly and sealing. DO NOT USE TEFLON TAPE ON PIPE THREADS. TAPE CAN GET INTO VALVES AND RENDER THEM INOPERABLE. (TEFLON thread compound is available from Huck Manufacturing Co in stick form as P/N 503237.)

*TEFLON is a trademark of E.T. DuPont De Nemours & Co.

Table 1. Standard tools available from Huck

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>502296</td>
<td>hex key, 3/16 across flats</td>
</tr>
<tr>
<td>502293</td>
<td>hex key, 3/32 across flats</td>
</tr>
<tr>
<td>502450</td>
<td>hex key, 5/32 across flats</td>
</tr>
<tr>
<td>502865</td>
<td>TRU-ARC pliers #0200</td>
</tr>
</tbody>
</table>

NOTES SPECIFICATIONS STANDARD HARDWARE

1. All part numbers shown in this manual are available from Huck Manufacturing Co. The 500000 series part numbers are standard parts which generally can be purchased locally.

2. Asterisks (*) indicate parts in Service Parts Kit, P/N 230KIT

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. Materials for O-rings:
   a. 500820-500776-500806-500773-500786 and 500780 are MINN. RUBBER CO. Compound 366Y
   b. 505438 is DISOGRIN INDUSTRIES Compound 9250 90 Durometer.
   c. LIPSEAL P/N 120839 is # A20600
   d. POLYSEALS are MICRODOT CO. compounds of Polyurethane and Nitrile P/N 505441, 505829, 505817, 505826 and 505827.

**SERVICE PARTS**

The quantity of spare parts that should be kept on hand varies with the application and number of tools in service. Service parts kit containing perishable parts such as O-ring, back-up rings, etc., should be kept on hand at all times. Parts included in Service Parts Kit, P/N 230KIT, are listed below.

**TABLE No. 2 SERVICE PARTS KIT--PART NO. 230KIT**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>500786</td>
<td>O-Ring AS568-020</td>
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<tr>
<td>505441</td>
<td>Polyseal SQB 125-00.437</td>
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<tr>
<td>500820</td>
<td>O-Ring AS568-123</td>
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<tr>
<td>505829</td>
<td>Polyseal 125-01.125 SQB 882</td>
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<tr>
<td>505817</td>
<td>Rod Wiper .625 Id.</td>
<td>1</td>
</tr>
<tr>
<td>505826</td>
<td>Polyseal187-00.375-312 SQB 888</td>
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<tr>
<td>500776</td>
<td>O-Ring AS568-010</td>
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<tr>
<td>121353</td>
<td>D-Ring</td>
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<td>500780</td>
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<td>505438</td>
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<td>120839</td>
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<td>505966</td>
<td>O-Ring AS568-044</td>
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<td>500819</td>
<td>O-Ring AS 568-122</td>
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<tr>
<td>118469</td>
<td>Gasket Housing</td>
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<tr>
<td>119975</td>
<td>Cap Seal</td>
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<tr>
<td>122930</td>
<td>Deflector</td>
<td>1</td>
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</tbody>
</table>
FILL AND BLEED MODEL 230 AND 230UK
(Refer to fig. 3)

Drain tool - start bleeding empty.

1. Attach airline to tool first.
2. Slowly loosen top fill screw to relieve pressure, remove fill screw and place tool over a container with head down. Cycle tool to remove oil.
3. Remove check valve (older tools - prior to 3/96) or relief valve slowly to relieve pressure. Dump oil in container. Check valve is located above trigger.
4. Slowly remove side fill screw and drain oil into container. No cycling required.
5. Be sure pull piston is in full forward position (pull forward if not *) and install relief valve. **NOTE: Discard old style check valve and use part number 123739 relief valve.**

![Diagram](https://via.placeholder.com/150)

6. Lay tool on bench with side fill port (rear) facing up. Screw fill bottle in port and cycle tool several times.
FILL AND BLEED MODEL 230 AND 230UK  (Continued)
(Refer to fig. 3)

7. Remove fill bottle, depress and hold trigger depressed. Install bleed screw and tighten.  
   **CAUTION:**  *Do not release trigger until screw is tightened or fluid will be forced out of tool port. DO NOT add any additional fluid to fill port after fill bottle is removed as this will cause an overfill condition and will prevent tool from functioning properly.*

8. Stand tool upright and install fill bottle in top bleed port. Tip tool slightly forward at an angle and cycle tool several times.

9. Remove fill bottle and install fill screw (top).

10. Cycle to several times in all positions (range of motion) upside down, sideways left and right and right side up. Repeat cycling and motion several times.

11. Remove top bleed screw and top off oil in head. Repeat step (10) until all air is out of the head. Front of the tool is now full.  
   **CAUTION:** *Do not remove rear fill screw and add any oil as the model 230 requires approximately 20% air in rear of piston to function correctly.*

* Use a collet threaded on piston to do so.
TROUBLESHOOTING

Table 3 - Troubleshooting Chart (refer to Figure 4)

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.

Because of the high sealing properties of the Air Piston LIPSEAL and the POLYSEALS on the Hydraulic Piston Rods, an unusual condition may occur during normal operation. This condition may produce a vibration, or dragging sound, during operation. The sound will increase in intensity when the loss of fluid on the front, or pull side of the tool, occurs during normal tool service. This condition is normal unless tool fails to properly install fasteners. If fasteners are not installed as required, the tool should be refilled according to directions.

1. Tool fails to operate when trigger is depressed.
   a. Air hose not connected.
   b. Spool Valve not shifting. Foreign matter blocking air flow at Air Trigger (1), restricting hole (2) and Air Cylinder cross port (3). Clean suspected areas and force compressed air through all orifices.

2. Tool does not complete fastener installation and break pintail.
   b. Nose Assembly improperly adjusted.
   c. Improper anvil insert in nose assembly.
   d. Air pressure too low.
   e. Damaged LIPSEAL on Air Piston (5). Replace.
   f. Damaged seals on Spool Valve. Replace.
   g. Air pressure in excess of 100 psi. Causing air to blow by LIPSEAL. Regulate air pressure.

3. Hydraulic fluid leaks out in front of Pull Piston.
   a. Damaged seal in Head or on Back Cap. Inspect lead angles for sharp edges (8). Replace seals.
   b. Scored Piston Rod. Replace.

4. Pull Piston will not return to full forward position.
   a. Hydraulic Reservoir over filled in front of Piston. With air supplied to tool, remove top fill plug (9). Pull Piston to full forward position using a collet hreaded onto the Piston. Replace the Fill Screw.

5. Hydraulic fluid leaking between surface of Air Cylinder and Head (10).
   a. Damaged seal in Damper valve. Replace seal.
6. Hydraulic Fluid leaking into Air Cylinder.
   a. Damaged Damper Valve Seal (11). Replace.
   b. Damaged Gland Seal (12). Replace.

7. Air leaks between Air Cylinder and Head surface (10).
   a. Damaged Air Seal in Air Cylinder. Replace (13).
   b. Damaged seal on Head. Replace (14).

8. Excessive air exhausts from Muffler in idle position (15).
   a. Damaged O-rings on Spool (6).
   b. Damaged Gasket (14). Replace Gasket.
   c. Damaged Lip Seal on Piston (5)
   d. Damaged O-ring on Cap (17).

9. Air leaks from Air Cap (18).
   a. Improper torque values. Re-torque to correct values.
   b. Damaged seal on Cap. Replace (19).
   c. Seal on Cap not lubricated. Lubricate.

    a. Damaged O-ring. Replace (21).

11. Hydraulic leaks from Fill Screws or Check Valve.
    a. Damaged O-rings on Fill Screws. Replace (22).
    b. Damaged seal in Check Valve. Replace Check Valve.

12. Excess stroke loss or erratic Pull Piston movement.
    a. Replace seals on Piston (23) and Intensifier Rod (24).
    b. Refill tool - see FILL AND BLEED PROCEDURE.

The following is a description of the normal operating and bleed conditions.

During normal service there will be a necessary fluid loss from the pull side of the hydraulic reservoir - this increases seal and piston rod life. After a certain amount of fluid is lost, a dragging, or vibrating sound will begin to be heard. This sound is produced by seal vibration when there are low fluid levels and seals become drier as more fluid is lost. To eliminate vibration, the pull reservoir is topped off with hydraulic fluid or is completely re-bled. This is a periodic and normal occurrence.

For overnight, as well as longer storage, tool should be stored with the Air Piston in the down, or bottom position, and the Hydraulic Piston in the rear, or back, position. This is done to prevent the air piston seal from taking a set and allowing temporary air leakage. These piston positions are obtained by disconnecting the air supply while holding trigger depressed.
GENERAL PRECAUTIONS

During disassembly and assembly, take the following precautions to avoid damaging tool or components:

(A) 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.

(B) Use soft materials, such as brass, aluminum or wood, to protect the tool when applying pressure. Only standard hand tools are required. Brass drifts, wood blocks, a vise with soft jaws and an arbor press will prevent damaging tool. Standard tools available from Huck Manufacturing are listed in this manual.

(C) Apply continuous strong pressure, rather than sharp blows, to disassemble or assemble a component. An arbor press provides steady pressure to press a component in or out of an assembly.

(D) Never continue to force a component if it "hangs-up" due to misalignment. Reverse the procedure to correct misalignment and start over.

(E) Smear LUBRIPLATE\textsuperscript{*} 130AA, or equivalent lubricant, on seals and mating surfaces to facilitate assembly and to Prevent damage to seals (Lubriplate 103AA is Available, in a tube as Part Number 502723, from Huck Manufacturing Company.)

\* LUBRIPLATE is a trademark of Fiske Brothers Refining Co.

(F) Rub SLIC-TITE TEFLON\textsuperscript{*} thread compound, or equivalent, on threads of pipe plug and quick disconnect fitting, to aid assembly and sealing.

\textbf{DO NOT USE TEFLON TAPE ON PIPE THREADS.}

(TEFLON thread compound is available from Huck Manufacturing Co in stick form as P/N 503237.)

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

(G) 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.
FIGURE 4 -- Troubleshooting Guide 1
FIGURE 5 -- Troubleshooting Guide II
DISASSEMBLY

Refer to figures for location of parts.

1. Remove nose assembly and Retaining Nut (28) from tool.

2. Loosen Valve (31) several turns to relieve pressure at rear of tool. See Figure 3.

3. Remove side fill screw (not shown in Figure 6, see Figure 3).

4. Remove Fill Screw (4). Drain oil from head. Tip tool down over a proper container.

5. Place tool in a soft jawed vise with Cap (40) facing up.

6. Connect tool to air source. While holding trigger depressed, remove airline. 
   WARNING 
   After step no. 6, disconnect tool’s airline from air source before any disassembly or maintenance. Severe personal injury may result if airline is not disconnected.
   Remove airline fitting (22) from Air Housing (19). Remove Cylinder Cover (45). 
   Note: Cylinder cover may be removed more easily by warming the outside of the cover in warm water.

7. Remove Bottom Cap (40) from tool using a 1-1/4 six-point socket wrench.

8. Use 1/8 hex key to hold Piston Rod (35) while removing Nut (39) and Washer (18). Tap Piston Rod down flush to face of counterbore in piston (use a soft mallet).

9. Use a 3/32 punch to drive piston rod down to clear bottom of air piston (see figure 6-A). Install 1/4-20 screw in hole in Air Piston (36) and use to pull Piston out of Cylinder (34). Tilt piston at an angle away from cylinder air inlet port and pull out of cylinder bore (see Figure 6-B).


11. Remove Air Cylinder Assembly (34) from Head/handle Assembly (9).

12. Put Washer on Hydraulic Rod and Thread Nut (39) part-way, use this to pull Hydraulic Rod from Handle.
FIGURE 6--AIR PISTON REMOVAL

Use a 3/32 punch to drive piston rod down to clear bottom of air piston. Install 1/4-20 screw in hole in Air Piston (36) and use to pull Piston out of Cylinder (34). Tilt piston at an angle away from cylinder air inlet port (edge of air inlet port is very sharp and can cut Lipseal) and pull out of cylinder bore.
DISASSEMBLY (continued)

Refer to figures for location of parts.

14. Remove Wiper Housing (1) from Head Assembly (9) - - use 7/8 open end wrench.

15. Remove Deflector (11) from Hydraulic Cap (10). Remove Hydraulic Cap from rear of Head /Handle Assembly (9) with 1-9/16 wrench.

16. Push Piston out of rear of Head with a brass drift or other soft material. Remove seal (2) from Head/handle Assembly (9).

17. Remove Damper Valve (41) from Handle base - - pry out Cap with a flat screw driver on either side of Cap, Valve will then drop out.

Note: Remove Valve (41) only if there is evidence of oil leakage in this area.

18. Remove Boot ( protective cover). Remove Air Housing Screws (20) and Plate (44), then remove Air Housing (19) from rear of Cylinder. Remove Gasket (21) from housing (19), remove hose (22) from housing (19).

19. Remove Dowel Pin (30) from bottom of Air Housing Assembly (19) - - pick out Muffler (27).

20. Remove Exhaust Cap (26) using a 5/16 x 18 screw.

21. Remove spool using a 5/16 x 18 screw.

Caution
Prior to assembly, refer to GENERAL PRECAUTIONS, Page13
1. If damper valve has been removed, install Damper Valve (41) in handle with square end to top of tool (head end).

_Caution_

If Damper Valve (41) is installed incorrectly, or if left out, internal parts of tool will be damaged.

2. Press in Damper Valve Cap.

3. Apply LUBRIPLATE to all O-rings and seals prior to assembly.

4. To protect Piston (12) while installing it, first install Wiper Housing (1) (without wiper).

5. To install Piston: Grease seals with LUBRIPLATE. Place a cloth over end of piston, and then, tap Piston in with a rubber hammer. "Use care not to damage seals."

6. Remove Wiper Housing. Check front of piston after installation for any evidence that front seal (2) may have been damaged. Install Wiper in Housing and install on Head/Handle Assembly.

7. Install Hydraulic Cap (10) and seals, tighten cap onto shoulder with 1-9/16 wrench.

8. Install Polyseals (13) onto Hydraulic Rod (35) (top), making sure one seal cup is facing the top of the tool and the other one faces the bottom of the tool. Grease seals and bore in the Head/Handle Assembly around the cross ports before installing. Place Head/Handle Assembly in a vise (head end).

9. Place Spacer (15) onto Hydraulic Rod with cone end toward Polyseals on top of Rod.

10. Apply grease to D-ring (43). Place D-ring on end of bent needle nose pliers. Insert pliers/seal down into trigger air passage - - hold in position behind trigger hole in cylinder. Push trigger into cylinder and through D-ring until D-ring is into trigger's groove. Install Cap Seal (32) into Cylinder (top).

11. Install Polyseal (17) on Hydraulic Rod with cup end toward Head. Install Hydraulic Rod and seals into Handle, gently move rod back and forth while pushing down into the handle bore. Thread Gland Nut on to force lower Polyseal (17) into handle bore - - remove Gland Nut.
12. Install Head/handle Assembly into Cylinder, screw Gland (10) by hand to prevent cross threading, push rod about 3/4 of the way in the handle so that the shoulder of the Piston is visible. Make sure Gland is torqued to 35 ft. lbs. + 5 ft. lbs.

13. Install Washer (18) with radius facing threaded end of rod. Install Nut (39) on Rod and pull up until it is about half-way up cylinder bore (ref. Fig. 6).


15. Install 1/4-20 screw in Air Piston (36), use it to hold Air Piston during installation. Hold Piston in Cylinder at an angle that will allow Piston Lipseal (37) to contact Cylinder wall below the square air inlet port. Once one side of the Air Piston is below the air port, gently work the Piston down until it is level and the Hydraulic Rod is through the air piston. See Figure 6 - Air Piston Removal.

*Caution:* The edges of the air Inlet port are extremely sharp and will cut the Lipseal (37) if care is not exercised.

16. Install Washer (18) on Hydraulic Rod, and over Air Piston (36), with radiused edge facing Air Piston.

17. Install Nut (39) on rod and torque to 50 +10/-0 in. lbs.

18. Install Air Cap (40) with O-ring (42) - grease Cylinder edge and O-ring - torque Cap to 40 ft. lbs. +5 ft. lbs.

19. Install O-rings on Spool (24) and Exhaust Cap (26). Coat bore of Spool Housing with LUBRIPLATE and press Spool into Housing Assembly (19).

20. Install Muffler (27) and both Dowel Pins (30) into Housing (19).

21. With a new Gasket (21), assemble Air Housing (19) to Handle and Cylinder Assembly - gently position Housing over Gasket to avoid pinching during assembly, install Plate (44) and 8 screws (20). Torque to 14.5 in. lbs. (cross-tighten). Install Cylinder Cover (45) over air cylinder. It may be necessary to warm the boot in hot water prior to sliding over Cylinder.

22. Replace Airline (22). Refill and bleed tool prior to testing.

23. Install Pintail Deflector.
NOTES FOR 230

1. ASSEMBLE ALL POLYSEALS AND WIPER IN DIRECTION SHOWN.

2. TORQUE GLAND P/N 118738 TO 35+5/-0 FT/LBS.

3. ASSEMBLE WASHERS WITH LARGE OUTSIDE RADII FACING TOWARDS EACH OTHER.

4. TORQUE NUT P/N 119429 TO 50+10/-0 INCH LBS.

5. APPLY LUBRIPLATE P/N 502723 TO O-RING AND THREADS AFTER ASSEMBLY ONTO CAP.

6. TORQUE CAP P/N 122153 TO 40+5/-0 FT/LBS.

7. USE SHIPPING CARTON P/N 590253

8. DAMPER P/N 118737 TO BE PLACED IN HEAD/TUBE WITH SMALL END DOWN AS SHOWN.

9. USE FILL BOTTLE P/N 120337 AND HYDRAULIC FLUID DEXRON II OR EQUIVALENT.
   TO FILL TOOL SEE INSTRUCTION MANUAL.

10. PLACE SERIAL NO. STICKER P/N 120721 IN DEPRESSED AREA WITH LETTERS FACING
    REAR HOUSING. BOND USING EASTMAN 910 OR EQUIVALENT.

11. TORQUE SCREWS P/N 502473 TO 14+1/2 INCH LBS.

12. P/N 119424 HEAD/TUBE ASSEMBLY INCLUDES:
    P/N 118455 HEAD/TUBE
    P/N 118737 DAMPER
    P/N 118769 PLUG
    P/N 505438 O-RING
    P/N 500819 O-RING
    P/N 505827 POLYSEAL
    P/N 590240 STICKER

13. P/N 104293 BLEED PLUG ASSEMBLY INCLUDES:
    P/N 100309 BLEED PLUG
    P/N 505438 O-RING

14. WHERE PART NUMBERS ARE NOT LISTED AS AN ASSEMBLY, SEALS ARE NOT INCLUDED
    AND MUST BE PURCHASED SEPARATELY.

15. P/N 123739 RELIEF VALVE ASSEMBLY INCLUDES:
    123645 RELIEF VALVE
    505438 O-RING

16. TEST PER HUCH SPEC 42-463.

17. PINTAIL BOTTLE ASSEMBLY P/N 123633 OPTIONALLY AVAILABLE FOR THIS TOOL.

18. PRINT THE FOLLOWING VALUES ON STICKER 590351 IN INDELIBLE INK.
    100 PSI, 7 BAR, 6 SCFM, 170 L/M AND CROSS OUT GPM BLOCK.
NOTES FOR 230SS

1. ASSEMBLE ALL POLYSEALS AND WIPER IN DIRECTION SHOWN.
2. TORQUE GLAND P/N 118738 TO 35±5/0 FT/LBS.
3. ASSEMBLE WASHERS WITH LARGE OUTSIDE RADI IN FACING TOWARDS EACH OTHER.
4. TORQUE NUT P/N 119429 TO 50 ±10/0 INCH LBS.
5. APPLY LUBRIPLATE P/N 502723 TO O-RING AND THREADS AFTER ASSEMBLY ONTO CAP.
6. TORQUE CAP P/N 122153 TO 40±5/0 FT/LBS.
7. USE SHIPPING CARTON P/N 590253
8. DAMPER P/N 118737 TO BE PLACED IN HEAD/TUBE WITH SMALL END DOWN AS SHOWN.
9. USE FILL BOTTLE P/N 120337 AND HYDRAULIC FLUID DEXRON II OR EQUIVALENT.
   TO FILL TOOL SEE INSTRUCTION MANUAL.
10. PLACE SERIAL NO. STICKER P/N 120721 IN DEPRESSED AREA WITH LETTERS FACING
    REAR HOUSING. BOND USING EASTMAN 910 OR EQUIVALENT.
11. TORQUE SCREWS P/N 502473 TO 14±1/2 INCH LBS.
12. P/N 119424 HEAD/TUBE ASSEMBLY INCLUDES:
   P/N 118455 HEAD/TUBE
   P/N 118737 DAMPER
   P/N 118769 PLUG
   P/N 505438 O-RING
   P/N 500819 O-RING
   P/N 505827 POLYSEAL
   P/N 590240 STICKER
13. P/N 104293 BLEED PLUG ASSEMBLY INCLUDES:
    P/N 100309 BLEED PLUG
    P/N 505438 O-RING
14. WHERE PART NUMBERS ARE NOT LISTED AS AN ASSEMBLY, SEALS ARE NOT INCLUDED
    AND MUST BE PURCHASED SEPARATELY.
15. P/N 123739 RELIEF VALVE ASSEMBLY INCLUDES:
    123645 RELIEF VALVE
    505438 O-RING
16. TEST PER HUCH SPEC 42-463.
17. PINTAIL BOTTLE ASSEMBLY P/N 123633 OPTIONALLY AVAILABLE FOR THIS TOOL.
18. PRINT THE FOLLOWING VALUES ON STICKER 590351 IN INDELIBLE INK,
    100 PSI, 7 BAR, 6 SCFM, 170 L/M AND CROSS OUT GPM BLOCK.
NOTES FOR 230UK

1. ASSEMBLE ALL POLYSEALS AND WIPER IN DIRECTION SHOWN.
2. TORQUE GLAND P/N 118738 TO 35+/-0 FT/LBS.
3. ASSEMBLE WASHERS WITH LARGE OUTSIDE RADII FACING TOWARDS EACH OTHER.
4. TORQUE NUT P/N 119429 TO 50 +10/-0 INCH LBS.
5. APPLY LUBRIPLATE P/N 502723 TO O-RING AND THREADS AFTER ASSEMBLY ONTO CAP.
6. TORQUE CAP P/N 122153 TO 40+5/-0 FT/LBS.
7. USE SHIPPING CARTON P/N 590253
8. DAMPER P/N 118737 TO BE PLACED IN HEAD/TUBE WITH SMALL END DOWN AS SHOWN.
9. USE FILL BOTTLE P/N 120337 AND HYDRAULIC FLUID DEXRON II OR EQUIVALENT.
10. PLACE SERIAL NO. STICKER P/N 120721 IN DEPRESSED AREA WITH LETTERS FACING REAR HOUSING. BOND USING EASTMAN 910 OR EQUIVALENT.
11. TORQUE SCREWS P/N 502473 TO 14+1/2 INCH LBS.
12. P/N 119424 HEAD/TUBE ASSEMBLY INCLUDES:
   P/N 118455 HEAD/TUBE
   P/N 118737 DAMPER
   P/N 118769 PLUG
   P/N 505438 O-RING
   P/N 500819 O-RING
   P/N 505827 POLYSEAL
   P/N 590240 STICKER
13. REMOVE SPRING FROM POLYSEAL AND DISCARD BEFORE ASSEMBLY.
14. P/N 104293 BLEED PLUG ASSEMBLY INCLUDES:
   P/N 100309 BLEED PLUG
   P/N 505438 O-RING
15. WHERE PART NUMBERS ARE NOT LISTED AS AN ASSEMBLY, SEALS ARE NOT INCLUDED AND MUST BE PURCHASED SEPARATELY.
16. P/N 123739 RELIEF VALVE ASSEMBLY INCLUDES:
   123645 RELIEF VALVE
   505438 O-RING
17. TEST PER HUCH SPEC 42-463.
18. PINTAIL BOTTLE ASSEMBLY P/N 123633 OPTIONALLY AVAILABLE FOR THIS TOOL.
19. PRINT THE FOLLOWING VALUES ON STICKER 590351 IN INDELIBLE INK, 100 PSI, 7 BAR, 6 SCFM, 170 L/M AND CROSS OUT GPM BLOCK.
230UK Sectional View - See Notes section
230 Series Sticker Location on Head - See Notes section
LIMITED WARRANTIES

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

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Contact your nearest Huck International Office, see back cover.

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