EU Declaration of Conformity

Manufacturer:
Alcoa Fastening Systems, Commercial Products Division, 1 Corporate Drive, Kingston, NY, 12401, USA

Description of Machinery:
Model numbers 2480RI 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: __________________________
Full Name: Henk Rosier
Position: Engineering Manager
Installation Systems Division
Place: Kingston, New York, USA
Date: January, 2005

Sound Levels
Model: 2480RI
SEL = 82 dB (A)
peak value = 108.2 dB (C)

For an eight hour work day, installing 5000 typical Huck fasteners will result in an equivalent noise level (Leq) of 74.5 dB (A).

To calculate equivalent noise level for other quantities of fasteners in an eight hour period, use the formula:
Leq = SEL + 10 log (n/28,800)
where n = number of fasteners in eight hours.

Vibration Levels
Model: 2480RI

For an eight hour work day, installing 5000 typical Huck fasteners will result in an equivalent weighted RMS vibration level (Aeq) of 4.3m/s².

To calculate equivalent vibration level for other quantities of fasteners in an eight hour period, use the formula:
Equivalent Vibration Level, Aeq (m/s²) = (n/480) x 2.00
where n = number of fasteners in eight hours, and 2.00(m/s²) = Aeq for 60 seconds.

Test data to support the above information is on file at Alcoa Fastening Systems, Commercial Products Division, Kingston Operations, Kingston, NY, USA. Vibration measurements are frequency weighted in accordance with ISO 8041 (1990).
# Contents

**EU Declaration of Conformity** ........................................... 2  
**Contents** ................................................................. 3  
**Specifications** ........................................................... 4  
**Safety** .................................................................... 5  
**Tool Danger Zones** ....................................................... 6  
**Principle of Operation** .................................................. 7  
**Preparation for Use** ..................................................... 8  
**Servicing the Tool** ....................................................... 9  
General ................................................................. 8  
Daily ................................................................. 8  
Weekly ............................................................... 8  
Disassembly ........................................................ 9-12  
Assembly .......................................................... 13-16  
Fill and Bleed ..................................................... 17-18  
**Service Notes** .......................................................... 19  
**Assembly Drawing** ..................................................... 20  
**Parts List** .............................................................. 21  
**Troubleshooting** ....................................................... 22  
**Accessories** ............................................................. 22
• **Stroke**: .875 (.500 without Stroke Limiter)

• **Weight**: 2.2 lbs (Tool Head only)

• **Air Pressure**: 90 psi

• **Pull Capacity**: 3946 lbs @ 90 psi

• **Intensifier Displacement**: .8298526 cu. in.

• **Operating Pressure @ 90 psi**: 5745.6
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 your 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.
TOOL DANGER ZONES

KEEP THIS AREA CLEAR

DANGER ZONE

TOOL AND NOSE ASSEMBLY SHOWN ENGAGED ON FASTENER CYLINDER HOME POSITION

SHEET LINE

SHEET LINE

SPENT PIN/STUB EJECTION

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

**PULL**

**RETURN**

When fastener installation is completed, the trigger is released. Air pressure, with the assistance of an air valve, causes the throttle valve to return to its down position. Pressurized air is re-directed to the bottom of the air piston, causing the piston to move upward. The air from below the piston is exhausted through bottom of tool. The rod and hydraulic piston move upward; hydraulic pressure is reversed and the pull piston is returned forward.
Preparation for Use

The Model 2480RI Installation Tool is shipped with a plastic plug in the air swivel connector. The swivel has 1/4-18 female pipe threads to accept the air hose fitting. Quick disconnect fittings and 1/4" inside diameter air hose are recommended. An air supply of 90-100 psi capable of 11.5 CFM must be available. Air supply should be equipped with a filter-regulator-lubricator unit.

1. Remove plastic shipping plug from Air Inlet Connector and screw quick disconnect fitting into Air Inlet Connector.
2. Set air pressure on regulator to 90-100 psi.
3. Connect air hose to tool.
4. Cycle tool a few times by depressing and releasing trigger.
5. Select proper Nose Assembly for fastener to be installed.
6. Attach nose assembly to tool.
7. Install fastener(s) in test plate of proper thickness with proper size holes and inspect fastener(s).

Notes:
1. Air quick disconnect fittings and air hoses are not available from Huck International, Inc.

General
1. The efficiency and life of any tool depends upon proper maintenance. Regular inspection and correction of minor problems will keep tool operating efficiently and prevent downtime. The tool should be serviced by personnel who are thoroughly familiar with how it operates.
2. A clean, well-lit area should be available for servicing the tool. Special care must be taken to prevent contamination of pneumatic and hydraulic systems.
3. Proper hand tools, both standard and special, must be available.
4. All parts must be handled carefully and examined for damage or wear. Always replace Seals, when tool is disassembled for any reason. Components should be disassembled and assembled in a straight line without bending, cocking, or undue force. Disassembly and assembly procedures outlined in this manual should be followed.
5. Service Parts Kit 2480RIKIT includes consumable parts and should be available at all times. Other components, as experience dictates, should also be available.

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

Daily
1. If a Filter-Regulator-Lubricator unit is not being used, uncouple air disconnects and put a few drops of Automatic Transmission Fluid or light oil into the air inlet of the tool. If the tool is in continuous use, put a few drops of oil in every two to three hours.
2. Bleed the air line to clear it of accumulated dirt or water before connecting air hose to the tool.
3. Check all hoses and couplings for damage or air leaks, tighten or replace if necessary.
4. Check the tool for damage or air/hydraulic leaks, tighten or replace if necessary.
5. Check the nose assembly for tightness or damage, tighten or replace if necessary.
6. Check oil level in tool reservoir, replenish if necessary.

Weekly
1. Disassemble and clean nose assemblies and reassemble per applicable NOSE ASSEMBLY DATA SHEET.
2. Check the tool and all connecting parts for damage or oil/air leaks, tighten or replace if necessary.
DISASSEMBLY

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

WARNING: Be sure to disconnect Tool’s control trigger system from POWERIG® Hydraulic Unit before disconnecting Tool’s hydraulic hoses from unit. If not disconnected in this order before any maintenance or cleaning is done, severe personal injury may occur.

DISASSEMBLY OF HEAD
For list of Item Numbers and their locations, refer to complete Tool Assembly Drawing and Parts List.

1. See WARNING above. Disconnect tool’s electrical connector from hydraulic unit. Uncouple tool’s hydraulic hoses.

2. Remove nose assembly from tool.

3. Remove four Socket Head Cap Screws (99) and Locknuts (100) from handle assembly. Separate Handle (19) halves. (Figure 1)

4. Lift Air Trigger Assembly (1) from Handle half. Pull Air Hose out of handle’s built-in strain relief. (Figure 1)

5. Unscrew Hydraulic Hoses (63) from tool. (Figure 9) Drain hoses into container. Piston (4) can be pushed to rear of Cylinder (12) to drain fluid. Discard fluid.

6. Disassemble cylinder and piston assembly as follows:
   a.) Place Spacer over threaded end of Piston (Figure 2a). Thread Piston Assembly Tool onto Piston. If Cylinder contains fluid, push Piston to rear and drain into container. Discard fluid.
   b.) Remove Pintail Deflector (18) from tool by twisting and pulling in one motion. With a 1 5/16 open end wrench, unscrew End Cap (17).
   c.) Thread Piston Insertion Tool into back of Cylinder. (Figure 2b)
   d.) Supporting tool as shown, press (or drive) Piston, Rear Gland (13) assembly and Front Gland (10) assembly out of Cylinder. (Figure 2c) continued
6. e.) Remove Piston Assembly Tool and Spacer from Piston. Remove Rear Gland assembly and Front Gland assembly. Remove Piston Insertion Tool from Cylinder. (Figure 2d)
f.) Use a small diameter dull pointed rod to remove all O-rings and seals. Clean parts, including O-ring grooves. Examine all components for wear or defects. Replace parts as required.

7. Disassemble Air Trigger and Hose Assembly as follows: (Figure 3)
   NOTE: When removing Air Hose from either fitting, slice hose lengthwise, at fitting, just enough to remove easily. Then cut hose squarely across to be ready for assembly.
a.) Remove Air Hose from Hose Fitting, and unscrew Hose Fitting from Trigger Housing.
b.) Unscrew Air Trigger Assembly from Trigger Housing. Pull Trigger Stem out of Trigger Body, and remove O-rings from Trigger Stem and Trigger Body.
DISASSEMBLY OF BASE
(Figure 4)
1. Disconnect Top Guard (95) from Manifold Block (68) by unfastening two Screws (96), and slide it over the Hydraulic Hoses out of the way.

2. Disconnect Air Fitting (64) from Manifold Block.

3. Unscrew both Swivel Assemblies (20) from Manifold Block.

4. Remove Lower Guard (97) from Cylinder Assy (53) by unfastening two Screws (98).

5. Remove Retaining Ring (76) from top of Cylinder.

6. Remove End Cap (77) from Cylinder.

7. Remove Throttle Valve (36) from Cylinder.

8. Remove four Socket Head Screws (69) from Manifold Block (68) at top of Handle (21), and carefully lift Manifold Block straight up from Handle.

9. Remove two Reservoir Plugs (75) from top of Manifold Block.

10. Remove Pull Gland Assembly (90) and Return Gland Assembly (22) from the separated Handle and Manifold Block, and remove seals from glands.

11. Hold remaining Handle and Cylinder Assembly inverted in a vice and unscrew three Button Head Screws (45) with 1/8 hex key.

12. Remove Muffler End Cap (42), Bottom Exhaust Gasket (46), Muffler (43) and O-ring (44).

13. Remove Retaining Ring (47) from Cylinder Assembly (53).

14. Screw Button Head Screws (45) into Cylinder Head (49). Carefully pry under screws to remove Cylinder Head.

15. Push Air Piston (51) all the way down in Cylinder. Lay the tool on its side. Hold Nut (41) with a 9/16 socket and extension, and with 7/64 hex key, remove piston Screw (32). (Figure 6)

16. Turn Cylinder and Handle upside down again and secure in a vise.

continued
DISASSEMBLY OF BASE (continued)

17. Grip Self-locking Nut (41) under Air Piston with pliers and pull piston and rod assembly from handle and cylinder assembly. **CAUTION: Care must be taken not to scratch piston rod or cylinder during removal.** (Figure 6)

18. With a 1 3/8 socket and extension, remove Gland Assembly (54). Handle and Cylinder will now separate.

19. Remove Plug (78).

20. Push hydraulic Piston Assembly (31) out of handle. Push out from top to bottom. **CAUTION: A plastic or wooden drift must be used to avoid damaging the handle bore.**

21. To remove Polyseal (61) from Gland Assembly (54), remove Retaining Ring (59) and Spacer (60).
ASSEMBLY

GENERAL ASSEMBLY GUIDELINES
Clean all tool components with mineral spirits or similar solvent. Inspect for wear/damage and replace as necessary. Always replace all seals on/in disassembled components. Use O-rings and back-up rings supplied in SERVICE PARTS KIT 2480RIKIT. Smear LUBRIPLATE 130AA or equivalent on O-rings, back-up rings and mating components for ease of assembly. Assemble Tool taking care not to damage either O-rings or back-up rings.

ASSEMBLY OF HEAD (Figures 7 & 8)
NOTE: Be sure that all seals are in place and oriented correctly in the Cylinder (12) and on the Piston (4) and Gland (10) prior to assembling.

1. Thinly coat SUPER 0-LUBE, or equivalent, on seals and mating surfaces. Assemble O-rings and back-up rings to piston, front gland, and rear gland. Press Polyseal into front gland housing. Caution: Be careful that Polyseal does not hang up on the edge of the Piston chamfer. Seal will be damaged and leakage may result.

2. Thread Piston Assembly Tool onto Piston. Lubricate Polyseal inside diameter and external diameters of Piston and Piston Assembly Tool. Press evenly against Gland Cap to slide Front Gland Assembly over Piston Assembly Tool and into Piston. Slide Wiper onto Piston as shown.

3. Thread Piston Insertion Tool into cylinder. Lightly coat internal surfaces of tool and Cylinder with lubricant.

4. Lightly coat Cylinder, Piston O-Rings, and Front Gland O-Rings with lubricant. While supporting tool, as shown, press assembled Piston and components into Cylinder. (Figure 7) Remove Piston Assembly Tool.

5. Lightly coat Cylinder and Rear Gland O-rings with lubricant. Hold Cylinder upright on a bench or in a vice fitted with soft jaws. Install Rear Gland Assembly using suitable spacer, plate, and soft mallet. Remove Piston Insertion Tool.

6. Press Wiper into groove of End Cap. Thread End Cap into Cylinder and tighten. Install Pintail Deflector. (Figure 8) continued
ASSEMBLY OF HEAD (continued)

7. Assemble Hydraulic Hoses to Cylinder head assembly. Use SLIC-TITE TEFLON thread compound, or equivalent, on pipe threads.

8. Assemble Air Trigger Assembly as follows: (Figure 3)
   NOTE: For ease of assembly, heat end of hose before pushing onto fittings. When using a new quick disconnect, remove and discard plastic ferrule from nut before attaching air hose to quick disconnect.
   a.) Push O-Ring 500777 over threads of Trigger Body.
   b.) Push Trigger Stem through Trigger Body, then Stretch O-Ring 500772 over Trigger Stem and into first groove.
   c.) Screw Trigger Body with Stem in place into Trigger Housing.
   d.) Screw Hose Fitting into Trigger Housing. Push Air Hose onto Hose Fitting.
   e.) Slide Quick Disconnect nut over Air Hose. Push Hose onto Quick Disconnect and tighten nut.

9. Assemble Handle as follows: (Figure 9)
   a.) Position Air Trigger Assembly into left handle half. Press air hose into handles built-in strain relief.
   b.) Position assembled Cylinder and hoses in left handle half. Align right handle half with left (locators help align halves).
   c.) Insert Locknuts and Screws into Handle. Tighten Screws.
ASSEMBLY OF BASE (Figures 10 & 14)

NOTE: See Fill and Bleed Procedure for Disassembled Tools before proceeding.

1. Insert Plug (78).

2. Holding handle inverted in a vice, Place Cylinder (53) on Handle (21) with Dowel (79) and Plug (78) with O-Rings (74) in place positioned in matching holes. (Figure 10a)

3. Assemble Gland Assembly (54) with Vibratite 505125. Screw complete Gland Assembly into Handle. Torque to 100-120 ft. lbs. using 1-3/8 socket wrench. (Figure 10b)

4. Push Air Piston/Rod assembly with Quad Ring (50) in place into Air Cylinder (51) until it bottoms at top of Cylinder (53). (Figure 10b)

5. Turn tool upright. Install Hydraulic Piston (34) (with O-ring (33) and Back-up rings (38) in place) in handle. Press in from top of handle taking care not to damage seals. (Figure 14)

6. Push Screw (32) with O-ring (35) in place through Hydraulic Piston (34) and screw into top of piston rod. Hold Nut (41) with 9/16 socket and extension and torque Screw (32) using 7/64 hex key to 55-60 in. lbs. Torque Nut (41) to 28-32 ft. lbs.

7. Hold handle in vise with bottom facing up. Push Cylinder Head (49) with O-ring (48) in place squarely into cylinder. Install Retaining Ring (47).

8. Position O-ring (44) and Muffler (43) on center of Cylinder Head (49). Place Gasket (46) on Cylinder Assembly (53). NOTE: Lip must face Bottom Plate (42). Place Muffler End Cap (42) on top of Gasket (46) and secure with 3 Button Head Screws (45) using 1/8 hex key.

9. Turn tool upright. Install O-Ring (74) at top of Handle (21).


11. Push Manifold Block down on Handle (21). Place tool in a vise Head down and install 4 Screws (69) and torque to 170 inch pounds.

continued
12. Install two Cutoff Valves (70) with O-Rings (71) in place, Relief Valve (72) with O-Ring (71) in place, and Bleed Plug Assembly (73).

13. Drop Spring (40) into Throttle valve hole in cylinder. Push Throttle Valve (36) with O-rings (37 & 39) in place into Cylinder.

14. Carefully press Throttle Valve (79) with O-rings (37, 39 and 55) in place into Cylinder until seated.

15. Push End Cap (77) with O-ring (81) in place into Cylinder and secure with Retaining Ring (76).

16. Attach Lower Guard (97) with two screws (98).

17. Slide Top Guard (95) over ends of Swivel Assemblies (17) and Air Fitting (64), and screw Swivel Assemblies and Air Fitting into Manifold Block (68). Secure Top Guard in place with two Screws (96).

18. Install two Reservoirs (66) with O-Rings (91) in place into Manifold Block.

NOTE: See SERVICING THE TOOL section of this manual for WARNINGS, CAUTIONS, procedure for tool set-up, reference to nose assembly, and checking installed fasteners. Tool is now completely assembled and ready for Fill & Bleed.
**FILL AND BLEED PROCEDURE**

**Equipment Required:**
- Shop airline with 90 - 100 psi max.
- Air regulator
- Fill Bottle (94), Tube (93), and Connector (92) (supplied with tool).
- Large flat blade screwdriver
- Nose assembly
- Fasteners (Optional)

**Preparation:**
1. Install air regulator in airline and set pressure to 20-40 psi.
2. Fill bleed Bottle (94) almost full of DEXRON III ATF or equivalent and secure Bottle cap. *(Figure 11)*
3. Install Plastic Tube (93) and Connector (92) on tip of Bottle Cap.

**USE AUTOMATIC TRANSMISSION FLUID DEXRON III, OR EQUIVALENT.**

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**FILL AND BLEED PROCEDURE FOR ASSEMBLED TOOLS THAT NEED RE-BLEEDING** *(Figure 12)*

If the tool is not developing full stroke or is not developing enough force to either install a fastener or eject off an installed fastener, it may be necessary to add oil to the pull and return system of the tool.

1. To add fluid to the PULL or RETURN side ports, first make sure Cutoff Valves (70) are in the fully closed position.
2. Remove Reservoir Plugs (75) and thread two Reservoirs (66) with O-Rings (91) in place into the ports of the Manifold Block (68).
3. Remove the Caps (65) and Piston Assys (67) from the Reservoirs, and add fluid to the Reservoirs. **NOTE: Do not fill past the inside shoulder of the Reservoirs (NO higher than Vent Hole). See Step 2 of figure 6**
4. Replace Piston Assemblies and Caps on Reservoirs.
5. Open the Cutoff Valves 1/4 turn counterclockwise. Thread Piston Assemblies down to force fluid into the system, and until Piston Assemblies cannot be turned further.
6. Close Cutoff Valves tightly, and check tool stroke. Repeat Steps 3 through 5 if necessary. If stroke is correct, install a test fastener.
7. Remove the Reservoir Assemblies and replace the two Reservoir Plugs (75) and tighten. **CAUTION: Oil may be present in Reservoir tubes. Remove with care.**

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

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**Figure 11**

- **Figure 12**

---

**Equipment Required:**
- Shop airline with 90 - 100 psi max.
- Air regulator
- Fill Bottle (94), Tube (93), and Connector (92) (supplied with tool).
- Large flat blade screwdriver
- Nose assembly
- Fasteners (Optional)

**Preparation:**
1. Install air regulator in airline and set pressure to 20-40 psi.
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3. Install Plastic Tube (93) and Connector (92) on tip of Bottle Cap.

**USE AUTOMATIC TRANSMISSION FLUID DEXRON III, OR EQUIVALENT.**
**FILL AND BLEED PROCEDURE FOR DISASSEMBLED TOOLS**  
*(Figures 11-13)*

1. Before assembling Manifold Block onto Cylinder and Handle assembly, push Air Piston (51) and intensifier Piston Rod (52) assembly down to its full bottom position. Use a nonmetallic rod to prevent damage to handle bores and intensifier rods.

2. Fill handle pull and return ports with hydraulic fluid.

3. Install hose sleeves onto hoses and airline.  
   **NOTE:** Identify each end of one hose before assembly. Assemble the Manifold Block with Hoses and Reservoirs onto the Handle.

4. Attach Fill Bottles with Connector (Figure 11) to ends of each Hydraulic Hose (63). With Handle lower than the end of the Hoses and Fill Bottles, connect Tool to 40psi air, and cycle the intensifier to remove all air from the Hoses. Remove fill bottles and keep Hoses vertical. Disconnect Tool from air supply.

5. Push tool Piston (4) into the full forward position and hold tool upside down. Fill PULL and RETURN ports with hydraulic fluid.

6. With tool still upside down, carefully attach Hydraulic Hoses. **NOTE:** A slight amount of fluid will be lost from the Hoses at this point. This is acceptable.  
   **CAUTION:** Use protection under Tool and Base to catch or absorb any hydraulic fluid which may drip or spill. See WARNING in Figure 11.

7. Attach plastic Handle halves (19), with Air Trigger Assembly attached, to sides of tool.

8. Connect 60 psi air to the Cylinder and cycle the tool and measure the specified stroke.

9. To properly pressurize the system follow all instructions in the **FILL AND BLEED PROCEDURE FOR ASSEMBLED TOOLS THAT NEED RE-BLEEDING** section of this manual.
Figure 14
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**TRoubleshooting**

Always check out the simplest possible cause of a malfunction first. For example, an air hose not connected. Then proceed logically, eliminating each possible cause until the cause is located. Where possible, substitute known good parts for suspected bad parts. Use Troubleshooting chart as an aid in locating and correcting malfunction.

**NOTE:**

Piston Drift is when the air piston is in the down position, but the hydraulic pull piston is not in the full forward position. This causes an out of sequence condition.

1. **Tool fails to operate when trigger is depressed.**
   
   a) Air line not connected.
   
   b) Vent hole in air cylinder (78) is blocked.
   
   c) Vent hole in air valve (79) is blocked.

2. **Tool does not complete fastener installation and break pintail.**
   
   a) Air pressure too low
   
   b) Air Piston Quad-ring (50) worn or damaged.
   
   c) Insufficient fluid on pull side: Refer to Fill and Bleed section.
   
   d) Air in hydraulic system: Refer to Fill and Bleed section.

3. **Pintail stripped and/or swaged collar not ejected.**
   
   a) Check for broken or worn jaws in nose assembly: Refer to nose assembly data sheet.
   
   b) Insufficient fluid on return side: Refer to Fill and Bleed section.

4. **Tool has piston drift.**
   
   a) Worn or damaged Piston Assembly (31): Inspect O-rings (33 & 35), and Back-up Rings (38). Replace if necessary.

5. **Hydraulic fluid exhausts with air or leaks at base of handle.**
   
   a) Worn or damaged Gland Assembly (54): Inspect Polyseal (61), O-rings (55 & 58), Quad-ring (56), and Back-up Ring (57). Replace if necessary.

6. **Hydraulic fluid leaks at rear of Pull Piston (4)**
   
   a) Worn or damaged Rear Gland (8): Inspect O-rings (9 & 11) and Back-up Ring (10). Replace if necessary.

7. **Hydraulic fluid leaks at front of Pull Piston (4).**
   
   a) Worn or damaged front seal: Inspect Back-up Ring (2) and O-ring (3). Replace if necessary.

8. **Pull Piston (4) will not return.**
   
   a) Throttle Valve (36) stuck: Lubricate O-rings (37, 39, 55, & 80).

9. **Air leaks at air Cylinder Head (49).**
   
   a) Worn or damaged O-ring (48): Replace if necessary.

---

**Accessories**

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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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