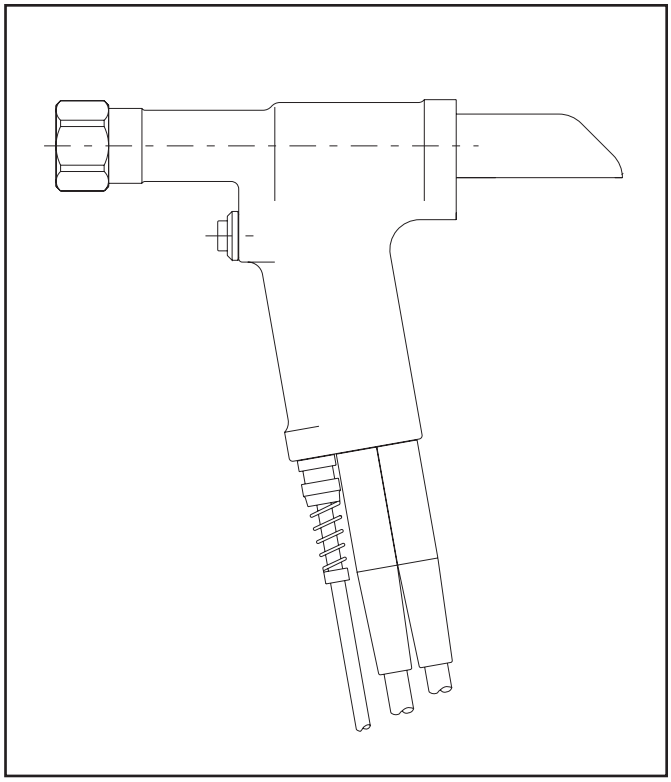
Alcoa Fastening Systems

ALCOA

INSTRUCTION MANUAL

2503 & A2503 SERIES

HYDRAULIC INSTALLATION TOOLS



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

08-23-2005
HK840

HUCK®

EU Declaration of Conformity

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

Description of Machinery:
Model numbers **2503 series** fastener installation tools

Relevant provisions complied with:
Council Directive related to Machinery, (89/392/EEC), (91/368/EEC), (93/44/EEC), (93/68/EEC)
Council Directive related to EMC/EMI, (89/336/EEC)

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: June, 2005

Sound Levels

Models: 2503 Series

SEL dB (A)	Peak Value dB (C)	Leq dB (A)
92	116	77.4

Leq reflects the equivalent noise level result of installing 1,000 typical Huck fasteners for an eight hour work day.

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

Models: 2503 Series

For an eight hour work day, installing 1,000 typical Huck fasteners will result in an equivalent weighted RMS vibration level A(8) of:

$2.65\ m/s^2$

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

Equivalent Vibration Level, A8 (m/s^2) = (n/480) x 15.25

where **n** = number of fasteners in eight hours,
and **15.25(m/s^2)** = 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

SAFETY

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

1. Safety Glossary

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

 — Read manual prior to using equipment.

 — Eye protection required while using this equipment.

 — Hearing protection required while using this equipment.

WARNINGS - Must be understood to avoid severe personal injury.

CAUTIONS - *show conditions that will damage equipment and or structure.*
Notes - are reminders of required procedures.
Bold, Italic type and underlining - emphasizes a specific instruction.

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

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

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

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

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

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

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

9. Never remove any safety guards or pintail deflector.

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

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

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

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

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

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

16. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet of correct positioning.

DESCRIPTION

Huck Models 2503 and A2503 Hydraulic Installation Tools are designed to install a wide range of Huck Blind Fasteners and HUCKBOLT® Fasteners. This mini-tool is a lightweight and compact tool which particularly adapts it to install fasteners in limited clearance areas.

The tool is designed to be powered by a Huck POWERIG® Hydraulic Unit set to operate at a maximum of (*) 5,700 psi (39,300 kPa) **PULL** and 2,200 psi (15,180 kPa) **RETURN** pressures.
CAUTION: To install-12 diameter fasteners in MG, GP and LGP, only, PULL pressure must be set at 8400 psi. See (*) below.

Model 2503 has an electric switch for POWERIG Hydraulic Unit Models 918, 918-5, 940, 943-913, or equivalent.
Model A2503 has an air trigger for POWERIG Hydraulic Unit Model 942 and Model 970-3. Model 970-3 may be used when lower PULL and RETURN pressures are sufficient.

A nose assembly is required for each fastener type and size. Nose assemblies must be ordered separately. See your Huck representative for available Nose Assembly Selection Chart and additional Fastener Selection Chart.

Each tool is complete with 12 ft. hydraulic hoses and couplings, electric switch and cord (2503) or air trigger and tubing (A2503). The tool is basically a cylinder and piston assembly. An unloading valve, designed to relieve the hydraulic pressure at end of PULL stroke, is positioned by the piston. The end of the piston rod is threaded and a retaining nut and stop are included for attaching nose assemblies.

TABLE 1 - SPECIFICATIONS (1)

Length	9.25 in.	(235 mm)
Width	2.00 in.	(51.5 mm)
Height (incl. handle)	5.88 in.	(150 mm)
Weight	4.62 lbs.	(2.09 kg)
Max. PULL press.	5700/8400 psi (*)	(39,300/57,900 kPa)
Max. RETURN press.	2400 psi	(16,500 kPa)
Stroke	1.50 in.	(38.10 mm)

(1) Lengths and weights do not include nose assemblies.

Power Source: Huck POWERIG Hydraulic Unit
Fasteners Installed: See *"TABLE 3 - FASTENER SELECTION CHART"*
Hydraulic Fluid: Automatic transmission fluid. DEXRON II, or equivalent

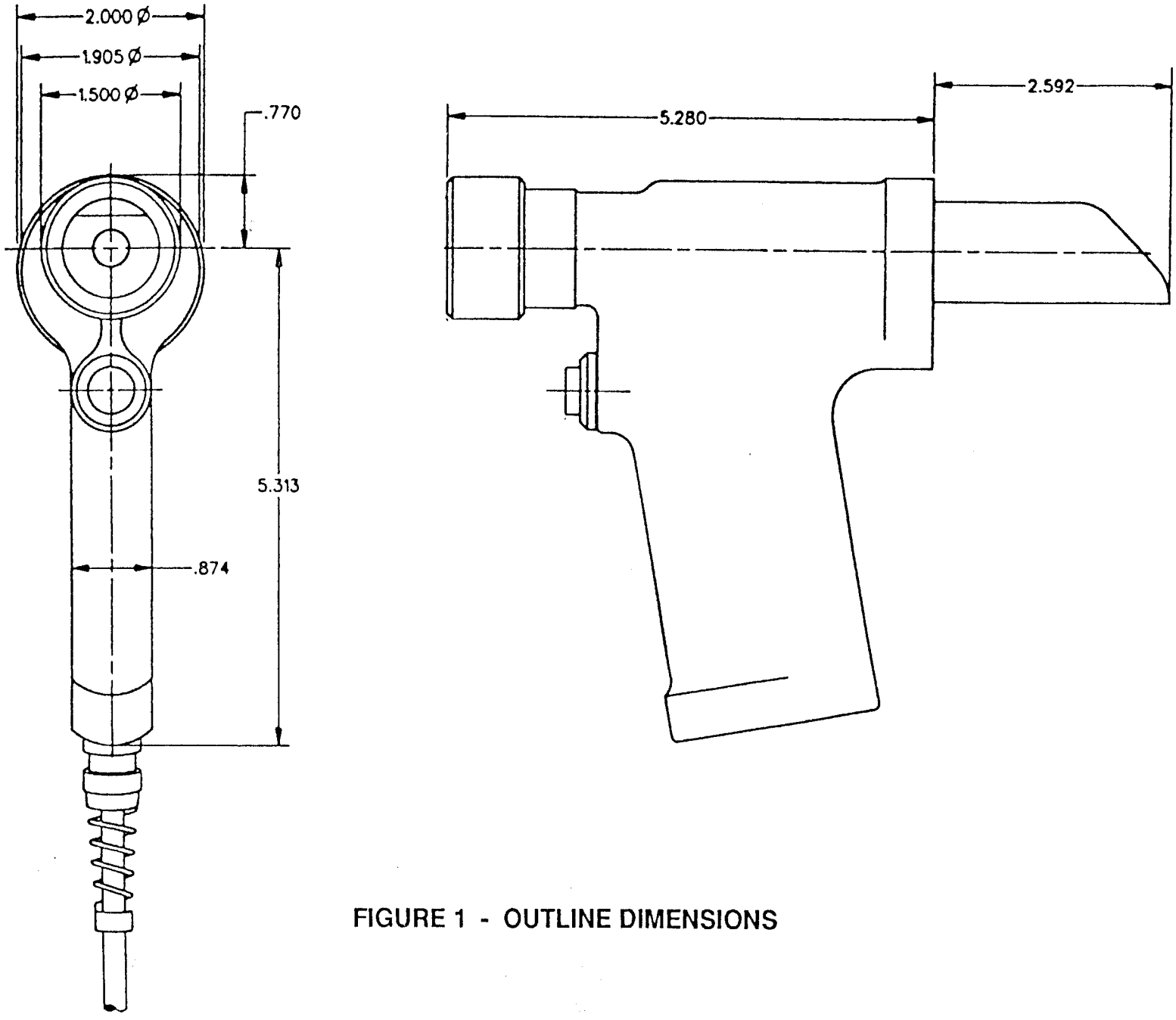


FIGURE 1 - OUTLINE DIMENSIONS

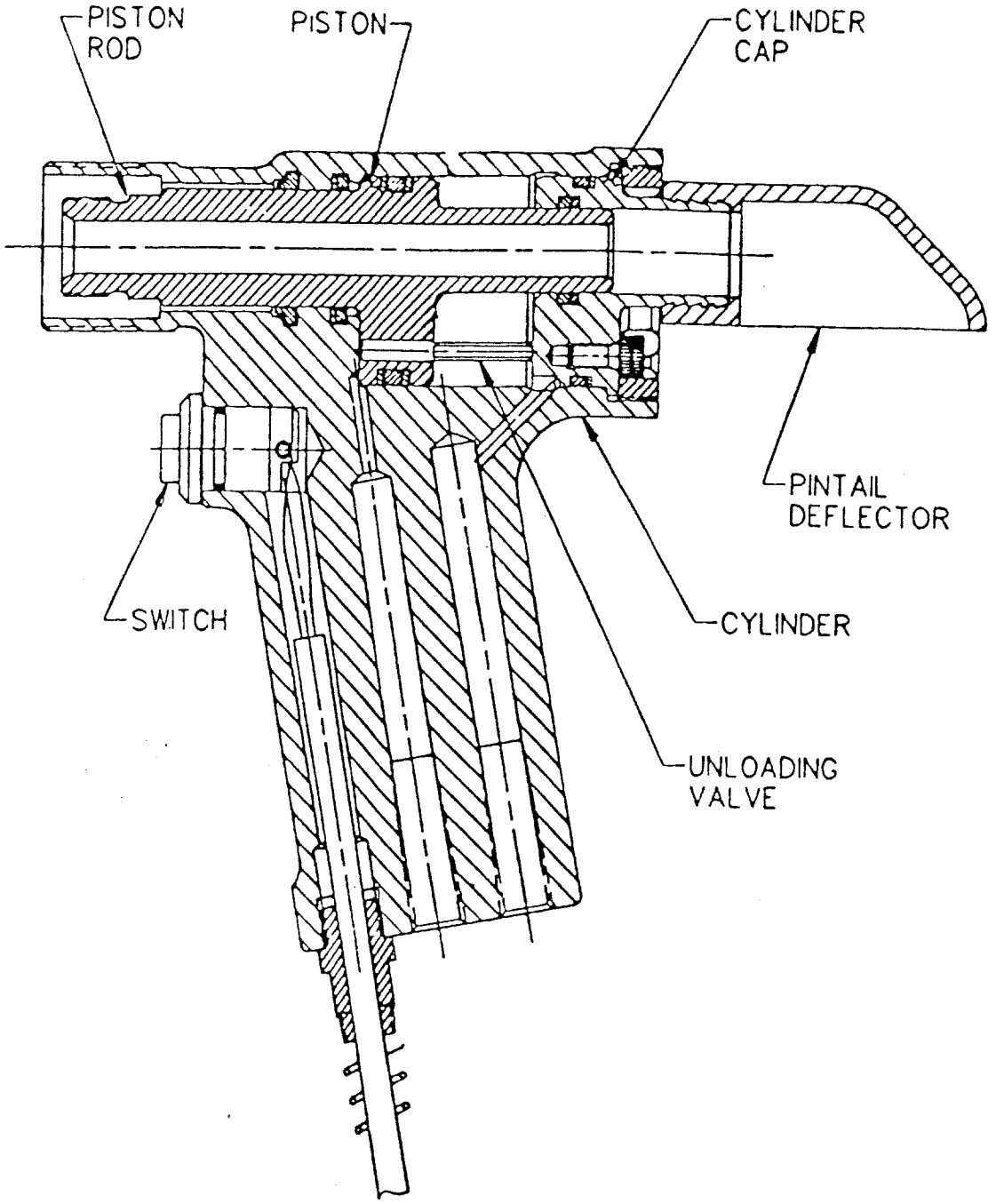


FIGURE 2
SECTIONAL VIEW I

PRINCIPLE OF OPERATION

When hydraulic hoses and trigger control are connected to POWERIG Hydraulic Unit, an air or electric trigger controls PULL and RETURN strokes of tool. Trigger is depressed and hydraulic pressure is directed to PULL side of Piston. Fastener installation begins.

When fastener installation is completed, the trigger is released. Hydraulic pressure is directed to RETURN side of piston moving piston forward. Nose assembly, with tool, is pushed off installed fastener.

At end of PULL stroke, piston uncovers flats of unloading valve. When flat is uncovered, pressure is unloaded by allowing fluid to flow back to POWERIG hydraulic unit.

WARNINGS

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

Huck recommends that only Huck POWERIG Hydraulic Units be used as the power source for Huck installation equipment. Hydraulic power units that deliver high pressure for both PULL and RETURN, and are not equipped with relief valves are specifically not recommended, and may be dangerous.

Proper PULL and RETURN pressures are important for proper function of Installation Tools. Severe personal injury, or damage to equipment may occur without correct pressures. Gauge Set-up, P/N T-10280, is available for checking these pressures using instructions furnished with T-10280 and in applicable POWERIG Hydraulic Unit instruction manuals - - see "*TABLE 1 - SPECIFICATIONS*" for pressures.

CAUTION

Keep dirt and other foreign matter out of hydraulic systems of the tools, hoses, couplers and POWERIG Hydraulic Unit. Do not let hose fittings and couplers contact a dirty floor or unclean working surface. Foreign matter in hydraulic fluid may cause tool and hydraulic unit valves to malfunction.

PREPARATION FOR USE

CAUTION: Do not let disconnected hoses and couplers contact a dirty floor. Dirt/debris in hydraulic fluid causes valve failure in the POWERIG® Hydraulic Unit. See CAUTION in *"DESCRIPTION"* and in *"FIGURE 3 - SECTIONAL VIEW II"*

Rub SLIC-TITE TEFLON thread compound, or equivalent, on pipe threads to prevent leaks and for ease of assembly -- ***CAUTION: Do not use TEFLON tape on pipe threads*** -- particles of shreaded tape cause failure of hydraulic unit valve. (SLIC-TITE -- in stick form, P/N 503237; manufactured by Markal Co.)
Note: Where a part number (P/N) is given, Huck sells that part.

Checking and Adjusting Output Pressures

WARNINGS: **Correct PULL and RETURN pressures are required for operator's safety and for Installation tool's function. Gauge Set-Up, T-10280, is available for checking pressures -- see tool's *"TABLE 1 - SPECIFICATIONS"* and *"Instruction Manual, T-10280"*. Failure to verify pressures may result in severe personal injury.**

Be sure to connect tool's hydraulic hoses to POWERIG Hydraulic Unit before connecting tool's switch control cord to unit. *IF NOT CONNECTED IN THIS ORDER*, severe personal injury may occur.

1. Use Huck POWERIG Hydraulic Unit, or equivalent, that has been prepared for operation per INSTRUCTION MANUAL. Check both PULL and RETURN pressures, and if required, adjust to pressures given in *"TABLE 1 - SPECIFICATIONS"* of this manual. See both hydraulic unit's and T-10280's instruction manuals before and during checking procedure.

2. First, turn hydraulic unit to OFF, and then, disconnect power supply from hydraulic unit. Connect tool's hoses to hydraulic unit.

3. Connect tool's control switch electrical cord to hydraulic unit.

4. Connect hydraulic unit to power supply. Turn hydraulic unit to ON. Hold Tool trigger depressed for 30 seconds; depress trigger a few times to cycle tool and to circulate hydraulic fluid. Observe action of tool and check for leaks. Turn hydraulic unit to OFF.

5. Select nose assembly from *"NOSE ASSEMBLY SELECTION CHART"* for fastener to be installed. Disconnect tool's control switch electrical cord from hydraulic unit; disconnect hydraulic unit from power supply. Attach nose assembly to tool as given by instructions on *"NOSE ASSEMBLY DATA SHEET"*.

6. Reconnect hydraulic unit to power supply; reconnect tool's switch control cord to unit. Check operation of nose assembly -- see *"NOSE ASSEMBLY DATA SHEET"* -- install fasteners in test plate of correct thickness with proper size holes. Inspect installed fasteners. If fasteners do not pass inspection, see *"TROUBLESHOOTING"* to locate and correct tool malfunction.

OPERATING INSTRUCTIONS

For safe operation, please read completely

PLEASE NOTE

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

WARNINGS

To avoid severe personal injury:

Wear approved eye and ear protection.

Be sure of adequate clearance for operator's hands before proceeding with fastener installation.

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

HUCKBOLT® Fastener Installation:

WARNING

Do not pull on a pin without placing fastener/collar in a workpiece, and also, collar chamfer *MUST* be out toward tool - - these conditions cause pin to eject with great velocity and force when the pintail breaks off or teeth/grooves strip. This may cause severe personal injury.

CAUTION

Remove excess gap from between the sheets. This permits enough pintail to emerge from collar for ALL jaw teeth to engage with pintail - - if ALL teeth do not engage properly, jaws will be damaged.

Place pin in workpiece and place collar over pin - - see **WARNING**. (If Collar has only one tapered end, that end *MUST* be out toward tool - - not next to sheet.) Hold pin and push nose assembly onto pin protruding through collar until nose anvil touches collar. Depress trigger - - hold trigger depressed until collar is swaged and pintail breaks. Release trigger. Tool will go into its return stroke. Tool/nose are ready for next installation cycle.

Blind Fastener Installation:

WARNING

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

CAUTION

Remove excess gap from between the sheets to permit correct fastener installation and prevent jaw damage.

ALL jaw teeth must engage pintail to avoid damageing teeth.

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

CAUTIONS

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

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

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

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

MAINTENANCE

CAUTION: Keep dirt and other harmful material out of hydraulic system -- this includes tool, hoses, couplers and POWERIG® Hydraulic Unit. Parts must be kept away from unclean work surfaces. Dirt in hydraulic fluid causes valve failure in POWERIG Hydraulic Unit.

Good Service Practices

The efficiency and life of your Installation Tool depends upon proper maintenance and good service practices. Using the manual will help give a clear understanding of your tool and basic maintenance procedures -- please read entire page before proceeding with maintenance/repair. Use proper hand tools in a clean well-lighted area -- always be careful to keep dirt/debris out of pneumatic and hydraulic systems. Only standard hand tools are required in most cases; where a special tool is required, the description and part number are given.

While clamping installation tool and/or parts in a vise, and when parts require force, use suitable soft materials to cushion impact -- for example, using a half-inch brass drift, wood block and/or vise with soft jaws greatly diminishes the possibility of a damaged tool. Remove components in a straight line without bending, cocking or undue force -- reassemble tool with the same care.

CAUTION: Parts must be handled carefully and examined for damage or wear. Replace parts where required. *Always replace O-rings and back-up rings when the tool is disassembled for any reason*.
Note: Where a part number (P/N) is given, Huck sells that part.
Consult manual's "*TROUBLESHOOTING*" if malfunction occurs -- then see "*DISASSEMBLY*" ; "*ASSEMBLY*" ; "*SECTIONAL VIEWS*" etc. for further details.

Sealants; Lubricants; Hydraulic Fluid; Service Kits

Rub SLIC-TITE TEFLON thread compound, or equivalent, on pipe threads to prevent leaks and for ease of assembly -- ***CAUTION: Do not use TEFLON tape on pipe threads*** -- particles of shreaded tape cause hydraulic unit valve failure or malfunction. (SLIC-TITE -- in stick form, P/N 503237.)

Smear LUBRIPLATE 130AA, or equivalent lubricant, on O-rings and mating surfaces. This prevents nicking/pinching O-rings on any rough/tight spot and increases ease of assembly. (LUBRIPLATE 130AA -- in tube, P/N 502723.)

Service Kit contains perishable parts -- see "*TABLE 2 - SERVICE KIT*". For convenience, and as experience verifies, keep extra Service Kits (O-rings; back-up rings; other standard items) and tool parts on hand. When in short supply, you can obtain O-rings and back-up rings from any regular retailer of these items. Ask for: O-ring size (AS 568-number); material and durometer. For this and additional information on O-rings and back-up rings, see "*SPECIFICATIONS for STANDARD PARTS*" and "*TABLE 2 - SERVICE KIT*".

PREVENTIVE MAINTENANCE

System Inspection

Operating efficiency of the tool is directly related to performance of complete system including tool with nose assembly, hydraulic hoses, switch and control cord, and POWERIG® Hydraulic Unit. An effective preventive maintenance program includes scheduled inspections of the system to detect and correct minor troubles.

1. Inspect tool and nose assembly for external damage.

2. Verify that hose fittings, couplings and electrical connections are secure.

3. Inspect hydraulic hoses for signs of damage or deterioration. Do not carry tool suspended from hoses coupled together. Replace hoses as required.

4. Observe/monitor tool, hoses and POWERIG Hydraulic Unit during operation to detect abnormal heating, leaks or vibration.

POWERIG® Hydraulic Unit Maintenance

Maintenance and repair instructions are in applicable POWERIG Hydraulic Unit Instruction Manual.

Tool/Nose Assembly Maintenance and Precautions

Whenever disassembled, and also at regular intervals (depending on severity and length of use), ***replace all O-rings and back-up rings*** - - Service Kits should be kept on hand. Inspect cylinder bore, piston and rod, and unloading valve for scored surfaces; excessive wear or damage -- replace parts as necessary.

Nose assembly with UNITIZED™ jaws must be disassembled and cleaned in ***MINERAL SPIRITS or ISOPROPYL ALCOHOL***. **Do not let UNITIZED jaws (urethane) soak in the solvent**. Do not use solvents that cause urethane to swell. Use a sharp pointed "pick" to remove particles packed in pull grooves of jaws. ***IMMEDIATELY*** after cleaning, completely dry the parts.

TROUBLESHOOTING

Always check out the simplest possible cause of a malfunction first. For example, switch turned off or power cord not connected. Then proceed logically, eliminating each possible cause until the defective circuit or part is located. Where possible, substitute known good parts for suspected bad parts. Use the chart below, as an aid, for locating and correcting malfunctions.

1. Tool fails to operate when trigger is depressed.
   a. Inoperative POWERIG® Hydraulic Unit. See applicable instruction manual.
   b. Loose or disconnected control cord, or air hose.
   c. Damaged trigger assembly.
   d. Loose or faulty hydraulic hose couplings.
   e. Unloading valve not installed in tool.

2. Tool operates in reverse.
   a. Reversed hydraulic hose connections between hydraulic unit and tool.

3. Tool leaks hydraulic fluid.
   a. Depending on where leak occurs, defective or worn O-rings, or loose hydraulic hose connection at tool.

4. Hydraulic couplers leak fluid.
   a. Damaged or worn O-ring in coupler body. See Figure 4.

5. Hydraulic fluid overheats.
   a. Hydraulic unit not operating properly. See applicable POWERIG Hydraulic Unit Instruction Manual.
   b. Unloading valve installed backwards.

6. Tool operates erratically and fails to install fastener properly.
   a. Low or erratic hydraulic pressure supply - - air in system. See applicable POWERIG Instruction Manual.
   b. Damaged or excessively worn piston O-ring in tool.
   c. Unloading valve installed backwards.
   d. Excessive wear or scoring of sliding surfaces of tool parts.
   e. Excessive wear of unloading valve.

TROUBLESHOOTING (Continued)

7. Pull grooves on fastener pintail stripped during pull stroke.
   a. Operator not sliding jaws completely onto fastener pintail.
   b. Incorrect fastener length.
   c. Worn or damaged jaw segments.
   d. Metal particles accumulated in pull grooves of jaw segments.
   e. Excessive sheet gap.
   f. Nose assembly not properly attached - - see Nose Assembly Data Sheet.

8. Collar of HUCKBOLT® Fastener not completely swaged.
   a. Improper tool operation. See 6.
   b. Scored anvil in nose assembly.

9. Shear collar on Huck blind fastener not properly installed.
   a. Improper tool operation. See 6.
   b. Worn or damaged driving anvil in nose assembly.

10. Tool "hangs-up" on swaged collar of HUCKBOLT Fastener.
    a. Improper tool operation. See 6.
    b. RETURN pressure too low.
    c. Nose assembly not properly attached - - see Nose Assembly Data Sheet.

11. Pintail of fastener fails to break.
    a. Improper tool operation. See 6.
    b. Pull grooves on fastener stripped. See 7.
    c. Worn piston and/or unloading valve.
    d. Hydraulic pressure too low.
    e. Damaged O-ring on piston.

12. Operator cannot slide nose assembly (completely) onto fastener pintail.
    a. Broken pintails jammed in tool. Install pintail tube if broken pintails will pass through.

SPARE PARTS and SERVICE KIT

The quantity of spare parts that should be kept on hand varies with the application and number of tools in service. Service kits containing perishable parts, such as O-rings, back-up rings, etc. , should be kept on hand at all times. Parts included in Service Kit, 2502/2503KIT, are shown in "*TABLE 2 - SERVICE KIT*".

DISASSEMBLY

Refer to appropriate illustrations and *"Good Service Practices"*. The following procedure is for complete disassembly. **Disassemble only components necessary to check and replace damaged O-rings, back-up rings or components - - *always replace seals, wipers, O-rings and back-up rings of disassembled components.***

WARNING

Be sure electric control cord (or air trigger) hose is disconnected from POWERIG® Hydraulic Unit *BEFORE* disconnecting Tool's hydraulic hoses from unit. Before any maintenance, *DISCONNECT IN THIS ORDER* to avoid possible severe personal injury.

1. Disconnect electrical connector. Uncouple tool hydraulic hoses.

2. Remove nose assembly.

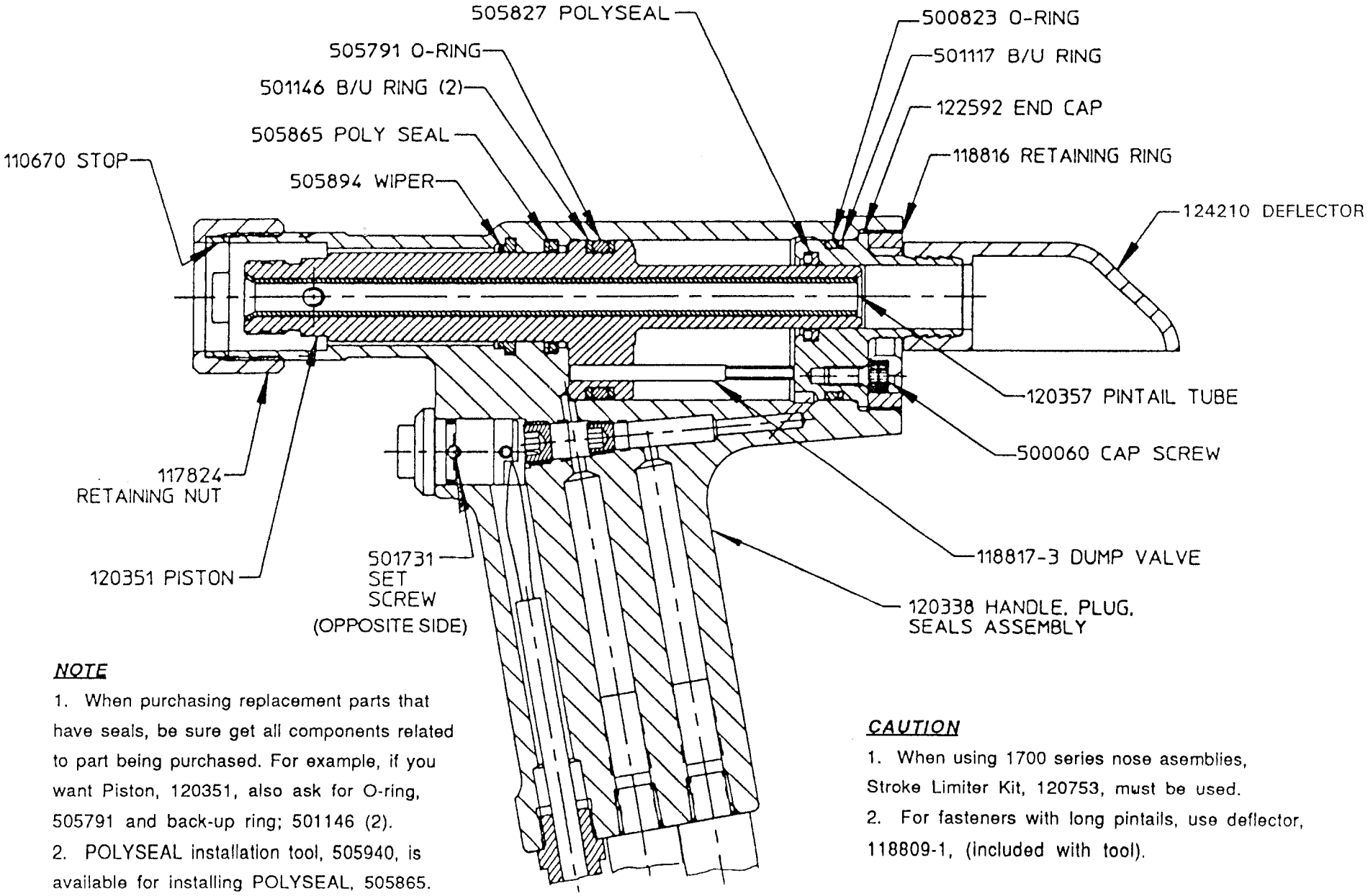
3. Unscrew coupling nipple and coupling body. Drain hydraulic hoses into container.

4. Push rearward on piston until remaining hydraulic fluid is drained into container. Discard fluid.

5. ***NOTE: Do not remove hydraulic hoses from tool unless replacing.*** Remove protective hose sleeve from hoses. To reach hose fittings, slide plastic shrouds back.

6. ***2502:*** Loosen strain relief grommet. Remove switch - - loosen set screw and carefully pry switch out with a small screw driver. Loosen two wires at rear of switch and remove it from cord. Pull cord out and remove grommet. Disassemble electrical connector to replace connector, or to rewire it.

   A2502: Unscrew air trigger assembly. Loosen air fitting. Pull out air trigger hose. Loosen air quick disconnect and remove it.



NOTE

1. When purchasing replacement parts that have seals, be sure get all components related to part being purchased. For example, if you want Piston, 120351, also ask for O-ring, 505791 and back-up ring; 501146 (2).
2. POLYSEAL installation tool, 505940, is available for installing POLYSEAL, 505865.

CAUTION

1. When using 1700 series nose asemblies, Stroke Limiter Kit, 120753, must be used.
2. For fasteners with long pintails, use deflector, 118809-1, (included with tool).

FIGURE 3 - ECTIONAL VIEW II

DISASSEMBLY (continued)

7. Remove deflector from end cap. Remove socket head cap screw from cap.

8. Hold a spanner wrench in slots of retaining ring - - loosen and remove ring.

9. Push piston, with unloading valve, and end cap out of tool - - see *"FIGURE 6 - PISTON DISASSEMBLY/ASSEMBLY TOOL" and "FIGURE 7 - PISTON DISASSEMBLY DETAIL".*

10. Slide end cap and unloading valve from piston.

11. Use a small diameter pointed rod to remove all seals, wipers, O-rings and back-up rings from components.

ASSEMBLY

Refer to appropriate illustrations and *"Good Service Practices".* Clean out O-ring grooves and reinstall perishable parts (O-rings, etc.). Use Service Kit - - ***always replace seals, wipers, O-rings and back-up rings of disassembled components.***

1. See *"FIGURE 8 - PISTON ASSEMBLING DETAIL"* and follow instructions carefully.

2. Slide unloading valve through hole in piston - - ***the valve flats must be to the rear of the tool.***

3. Push end cap assembly over piston extension.

4. Screw in retaining ring - - tighten with spanner wrench. Install socket head cap screw in end cap .

5. Push pintail deflector over end cap - - it engages ribs on cap.

ASSEMBLY (continued)

6. ***CAUTION: Do not use TEFLON tape on pipe threads*** - - see *"MAINTENANCE, Sealants".*

   Thread hydrauic hoses into handle. Slide shrouds over fittings.

7. ***2502:*** Assemble electrical cord to connector. Screw strain relief grommet into handle. Push cord through grommet. Attach cord to trigger switch. Press switch into handle and tighten set screw against switch. Pull excess cord down through handle and grommet. Tighten strain relief grommet.

   A2502: Thread air fitting into handle. Attach quick disconnect to air line. Attach air line to handle's air fitting. Screw air trigger assembly into handle's trigger fitting and tighten set screw against fitting.

8. Slide protective hose sleeve onto assembled hoses and control cord/air hose.

9. See ***CAUTION*** in 6. - - screw coupling nipple onto PULL pressure hose (from "P" port of tool). Screw coupling body onto RETURN pressure hose.

10. Install nose assembly per applicable instructions on *"NOSE ASSEMBLY DATA SHEET".*

11. Connect electrical connector (or air hose) and hydraulic couplers to POWERIG® Hydraulic Unit .

12. See ***WARNING*** in *"DISASSEMBLY"* and reverse the given procedure i.e. ***CONNECT HOSES FIRST*** , and then, connect electrical cord (or air hose). See *"PREPARATION FOR USE"* before operating tool.

HYDRAULIC QUICK-DISCONNECT COUPLINGS

O-ring "A" and back-up ring "B" must be replaced if leakage occurs when hydraulic couplings are connected. Use a pick with a long point, of approximately .060 diameter, to lift out O-ring and back-up ring.

O-ring "A" and back-up ring "B" are in Service Kit. Use a fine India stone to remove any nicks or burrs from diameter "C" and leading edge to prevent damage to 0-ring.

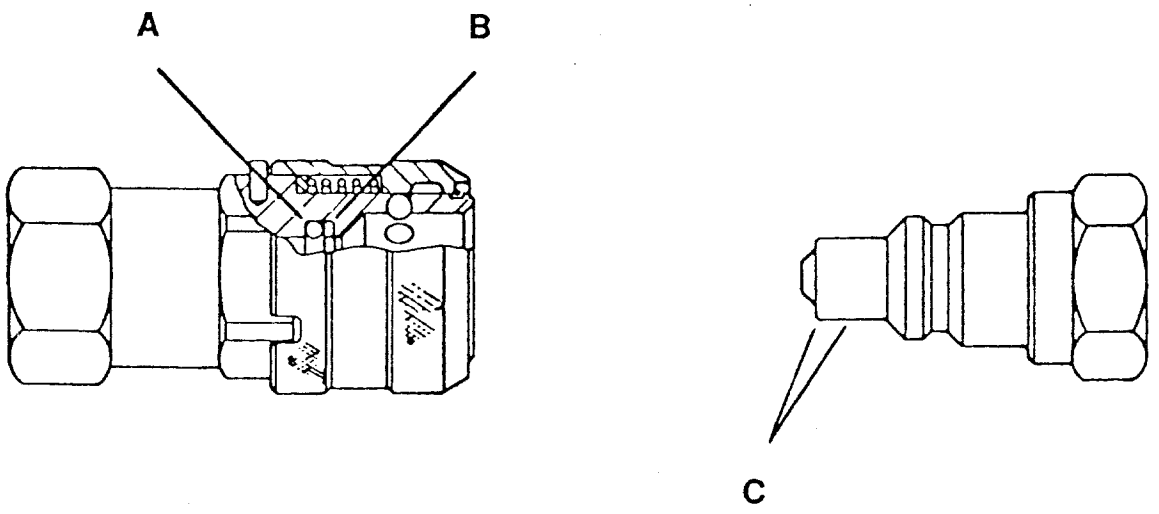


FIGURE 4 - HYDRAULC COUPLER SET, 110440

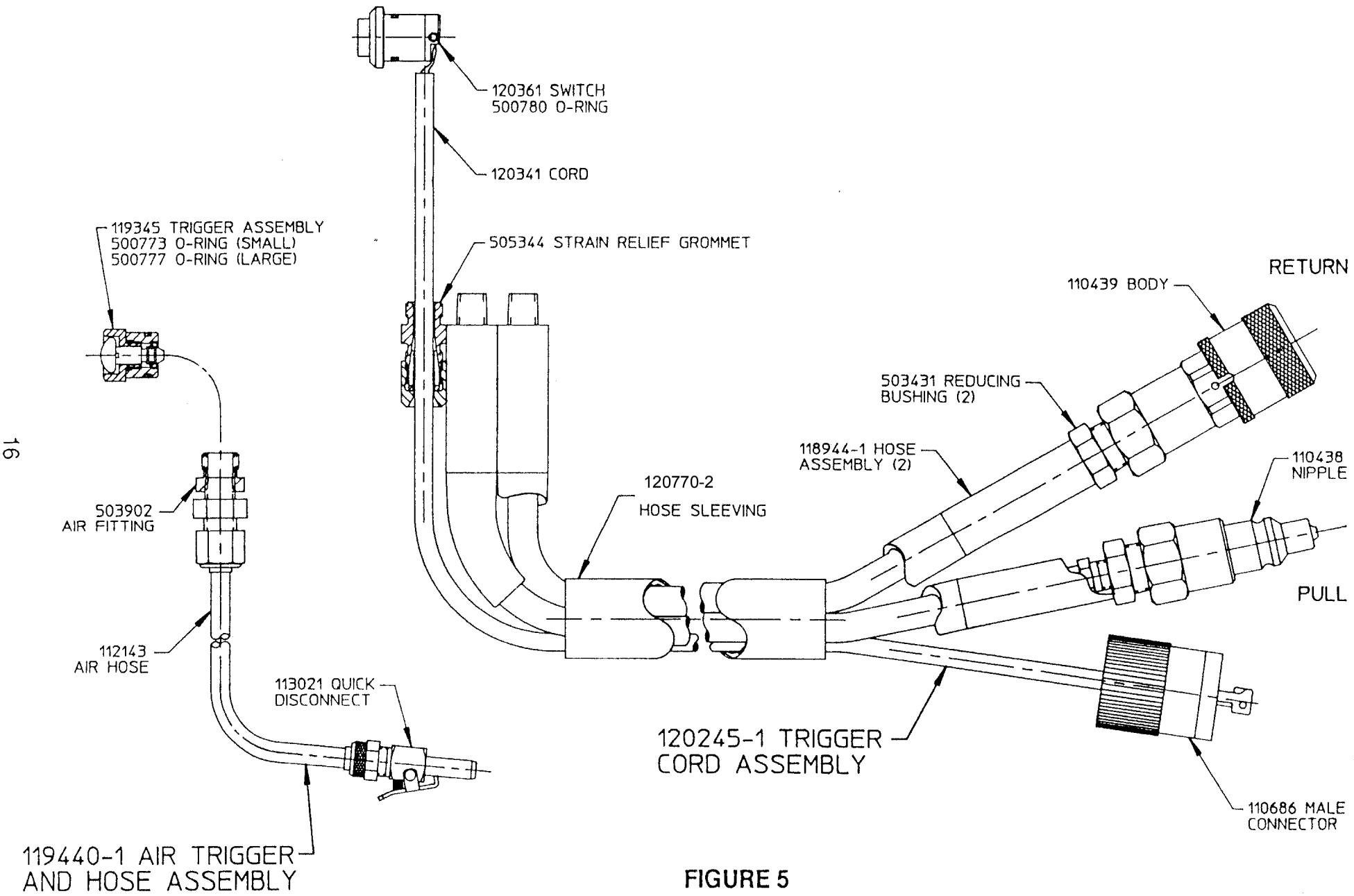


FIGURE 5
ELECTRIC/AIR CONTROLS and HYDRAULIC HOSES

TABLE 2 - SERVICE KIT (part no. 2502/2503KIT)

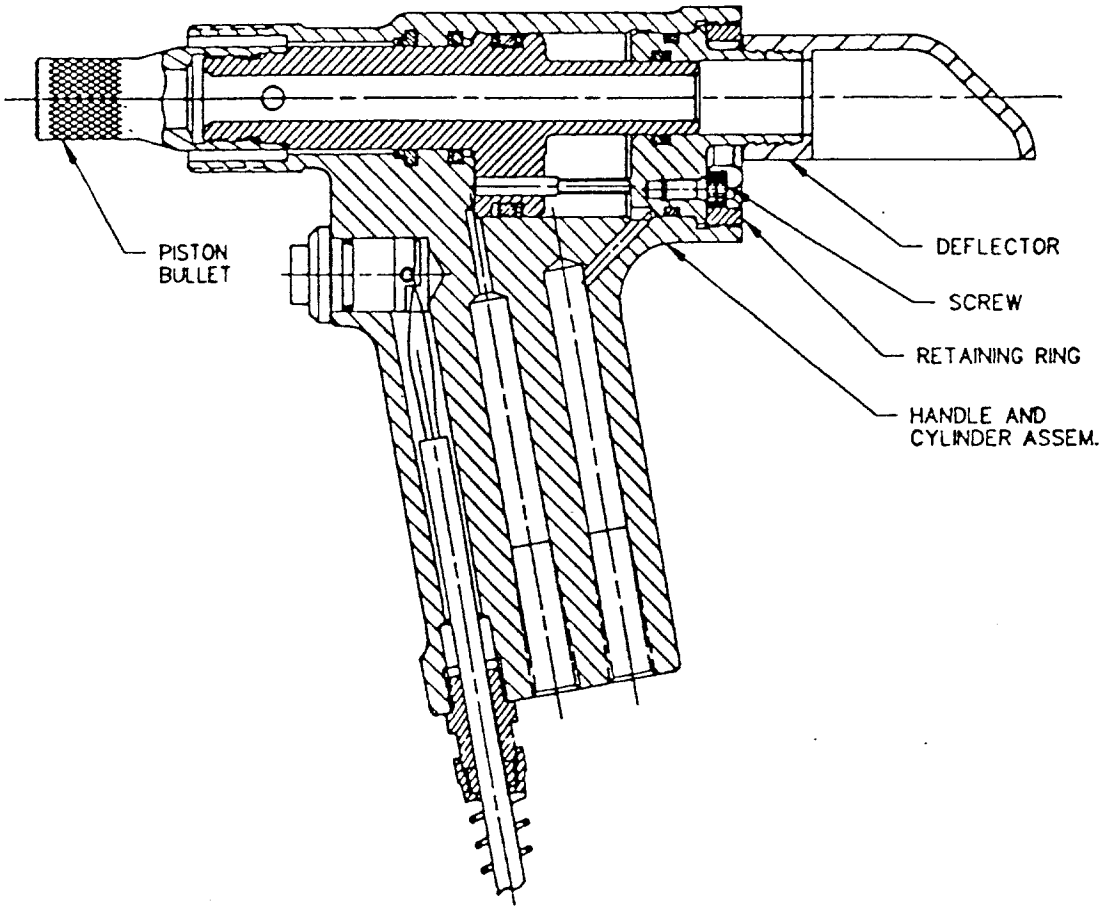
Part No.	Description	Qty. per Assembly
504438 (A)	O-RING AS 568-111 CV747 75D	1.000
501102 (B)	BACK-UP RING S-11248-111	1.000
500773	O-RING AS 568-007 C366Y 70D	1.000
500777	O-RING AS 568-011 C366Y 70D	1.000
505791	O-RING AS 568-219 DISO C6865 70D	1.000
505790	O-RING AS 568-126 DISO C6865 70D	1.000
500823	0-RING AS 568-126 C366Y 70 DURO	1.000
505758	O-RING AS 568-114 DISO C9250 90D	1.000
501105	BACK-UP RING S-11248-114	1.000
501117	BACK-UP RING S-11248-126	1.000
501146	BACK-UP RING S-11248-219	2.000
505827	MICRODOT P/S 125-00.625 SQB	1.000
505865	MICRODOT P/S 125-00.875 SQB	1.000
505894	WIPER-MICRODOT 957-7	1.000
500060	SCREW-SOC HD CAP 10-24 X 3/8 LONG	1.000

SPECIFICATIONS for STANDARD PARTS

1. All part numbers are available from Huck. The 500000 series part numbers are standard parts which can generally be purchased locally

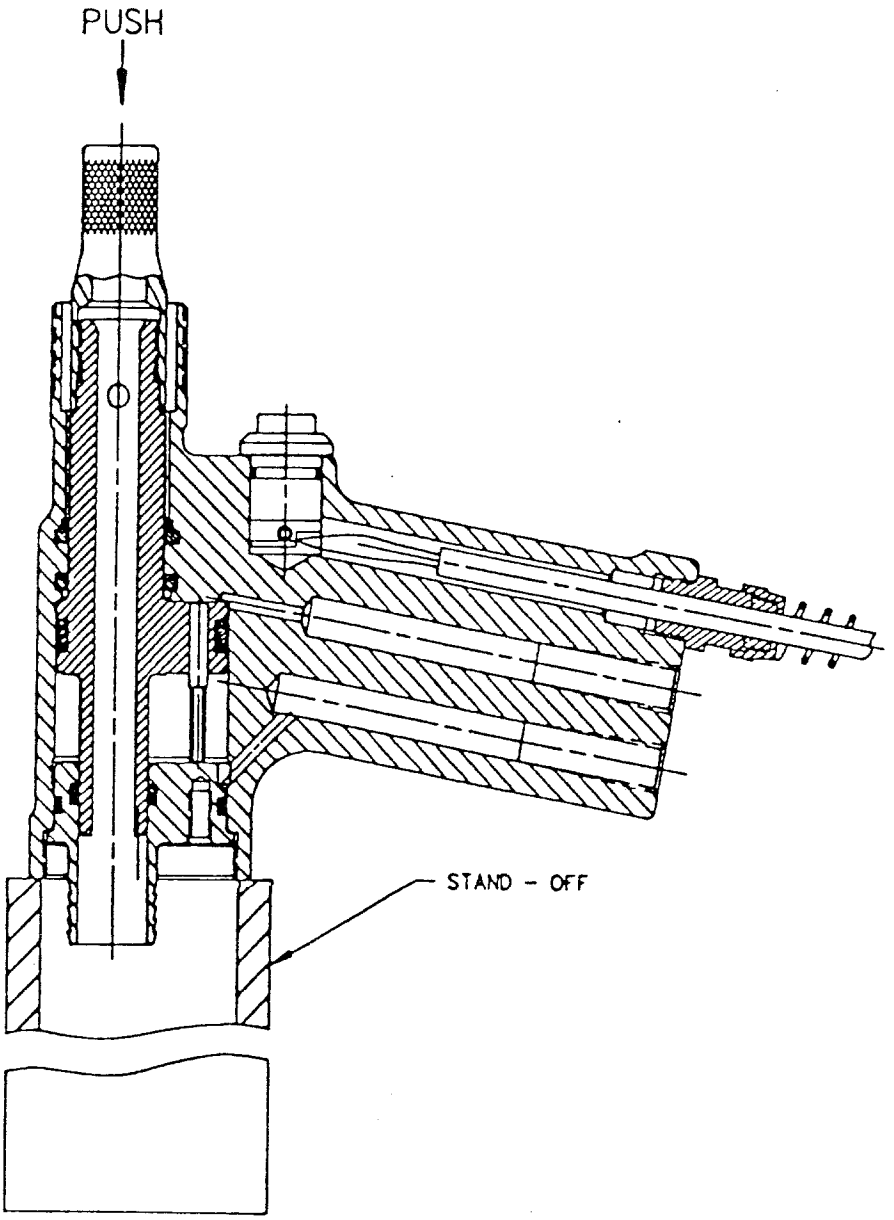
2. O-ring sizes are specified AS 568- dash numbers (AS 568- is an Aerospace Size Standard for O-rings and formerly was known as ARP 568-). *"TABLE 2"* has specific material and durometer just after the identifying AS 568-000 number.

3. Back-up rings are W.S. Shamban & Co. series S-11248, single turn TEFLON (MS-28774), or equivalent. The dash numbers correspond to the O-ring AS 568- dash numbers.



SECTION VIEW FOR PISTON
DISASSEMBLY & ASSEMBLY

FIGURE 6
PISTON DISASSEMBLY/ASSEMBLY TOOL



DISASSEMBLY OF PISTON:

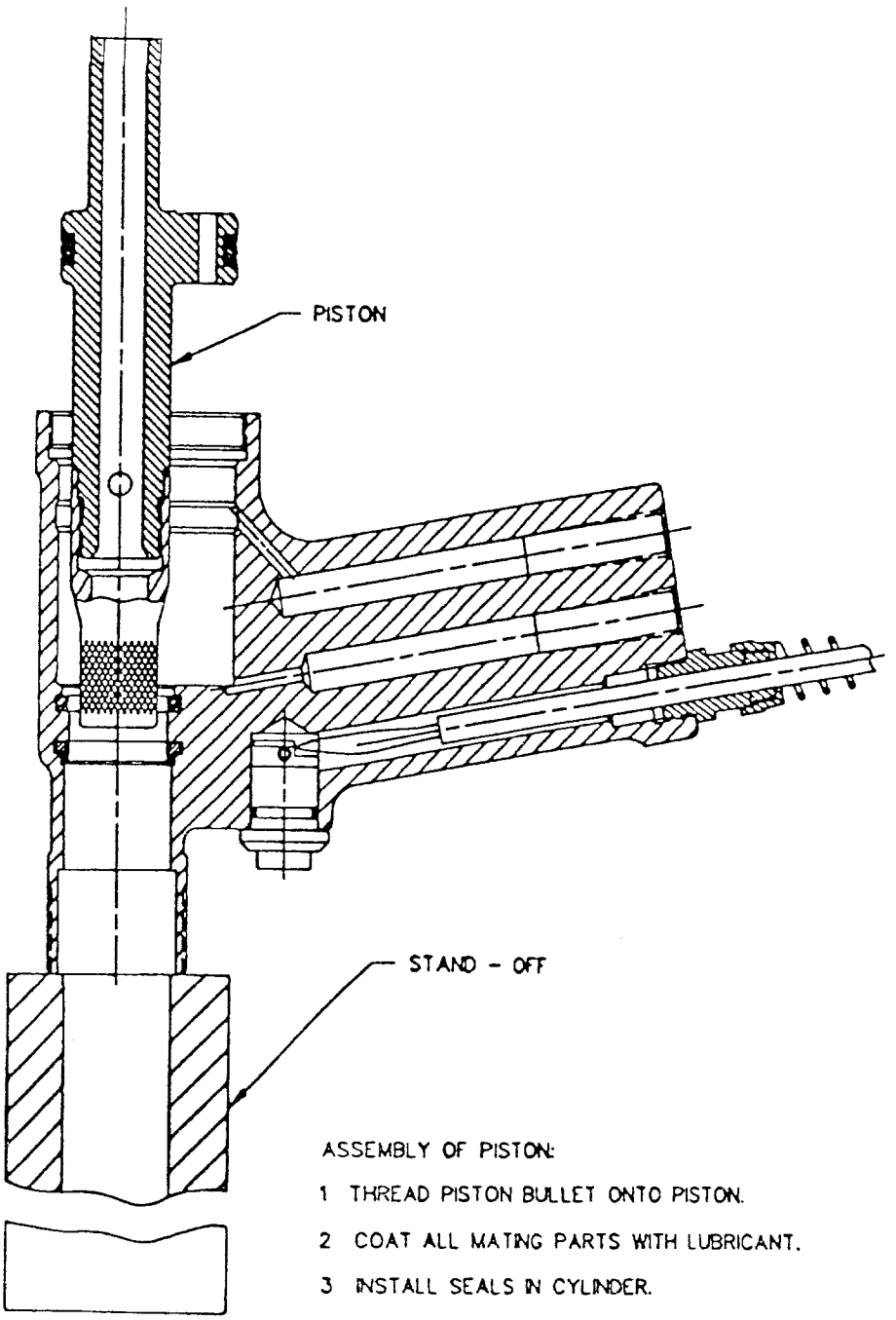
1 REMOVE PINTAIL TUBE (NOT SHOWN), DEFLECTOR, SCREW, AND RETAINING RING.

2 THREAD PISTON BULLET, P/N 120792, ONTO PISTON.

3 HOLD TOOL, WITH END CAP FACING DOWN, ON A SUITABLE STAND – OFF. PUSH PISTON (WITH PISTON BULLET ATTACHED) AND REAR CAP FROM CYLINDER.

4 DISASSEMBLE SUB – ASSEMBLIES, CLEAN COMPONENTS AND REPLACE ALL SEALS.

FIGURE 7
PISTON DISASSEMBLY DETAIL



ASSEMBLY OF PISTON:

1 THREAD PISTON BULLET ONTO PISTON.

2 COAT ALL MATING PARTS WITH LUBRICANT.

3 INSTALL SEALS IN CYLINDER.

4 PUSH SUB - ASSEMBLIES GENTLY INTO TOOL, FROM REAR, USING A PRESS OR SOFT MALLET AND DRIFT. USE A SUITABLE STAND - OFF.

5 INSTALL UNLOADING VALVE (FLATS TO REAR), END CAP ASSEMBLY, RETAINING RING AND LOCK SCREW.

6 REMOVE PISTON BULLET FROM PISTON.

FIGURE 8
PISTON ASSEMBLING DETAIL

TABLE 3 - FASTENER SELECTION CHART

A large variety of Nose Assemblies are available for Huck Installation Tools, therefore, please refer to the appropriate Nose Assembly Selection Chart for specific information - - sizes installed and clearance dimensions for each specific nose assembly are given.

Fastener Selection List

C6L HUCKBOLT®
MAGNA-GRIP® HUCKBOLT
HP8 HUCKBOLT® (1)

C50L HUCKBOLT® (1)
HUCK-FIT™ FASTENER (1)

NAS SHEAR HUCKBOLT®
GPL LOCKBOLT® (1)

NAS TENSION HUCK BOLT®
LGPL LOCKBOLT® (1)

9SP & MS BLIND RIVET

RAK BLIND RIVET®

MAGNA-LOK® BLIND RIVET

MAGNA-BULB™ BLIND RIVET

Asp® FASTENER

OSR BLIND RIVET

UNIMATIC® BLIND BOLT
MS21140U & MS21140S
MS21141U & MS21141S
MS90353U & MS90353S

UNIMATIC® BLIND RIVET
NAS 1919U & NAS 1919S
NAS 1921U & NAS 1921S
MS90354U & MS90354S

DOUBLE ACTION BLIND BOLT
MS90353 & MS90354
MS21140 & MS21141

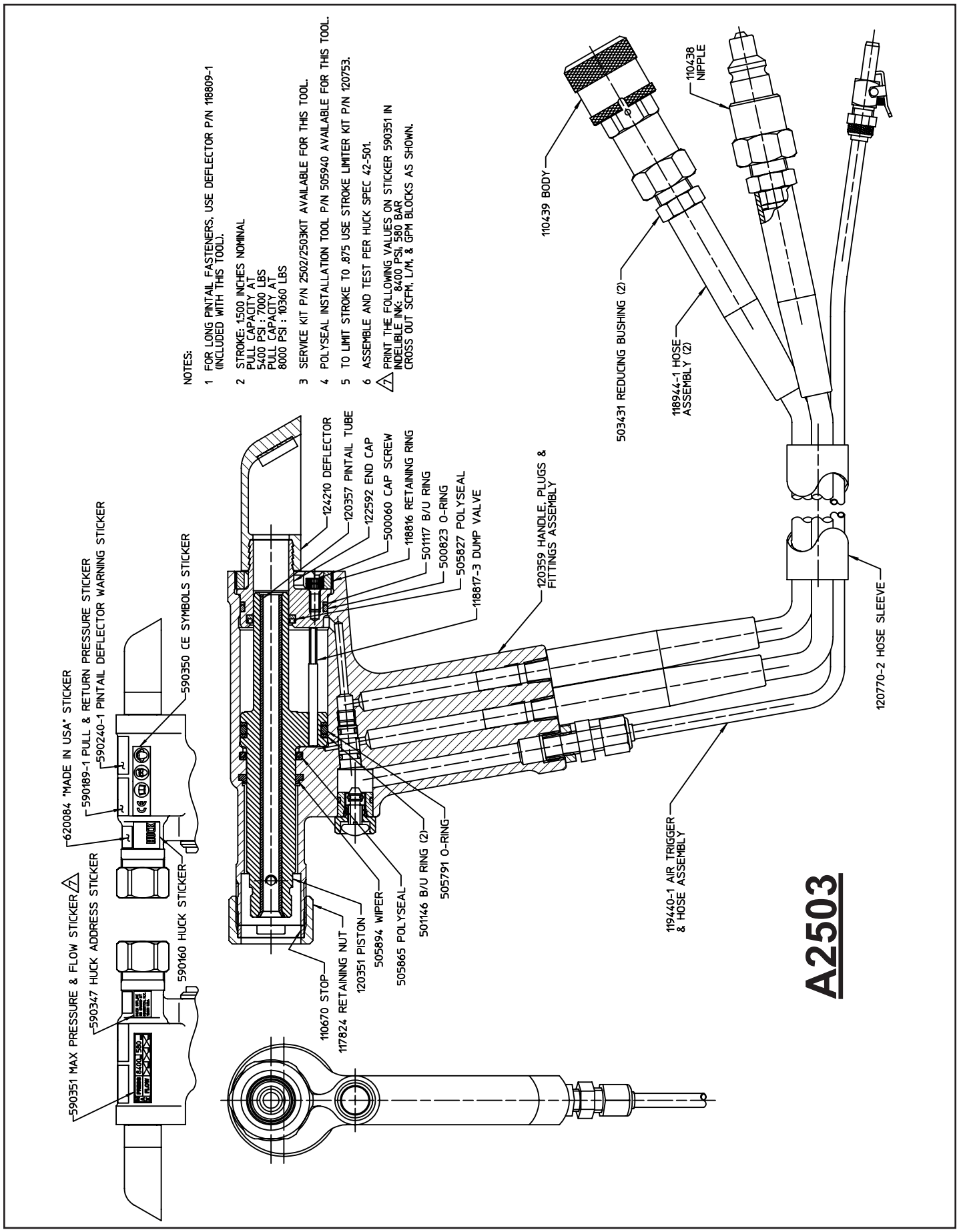
DOUBLE ACTION BLIND RIVET
NAS1919 & NAS1921

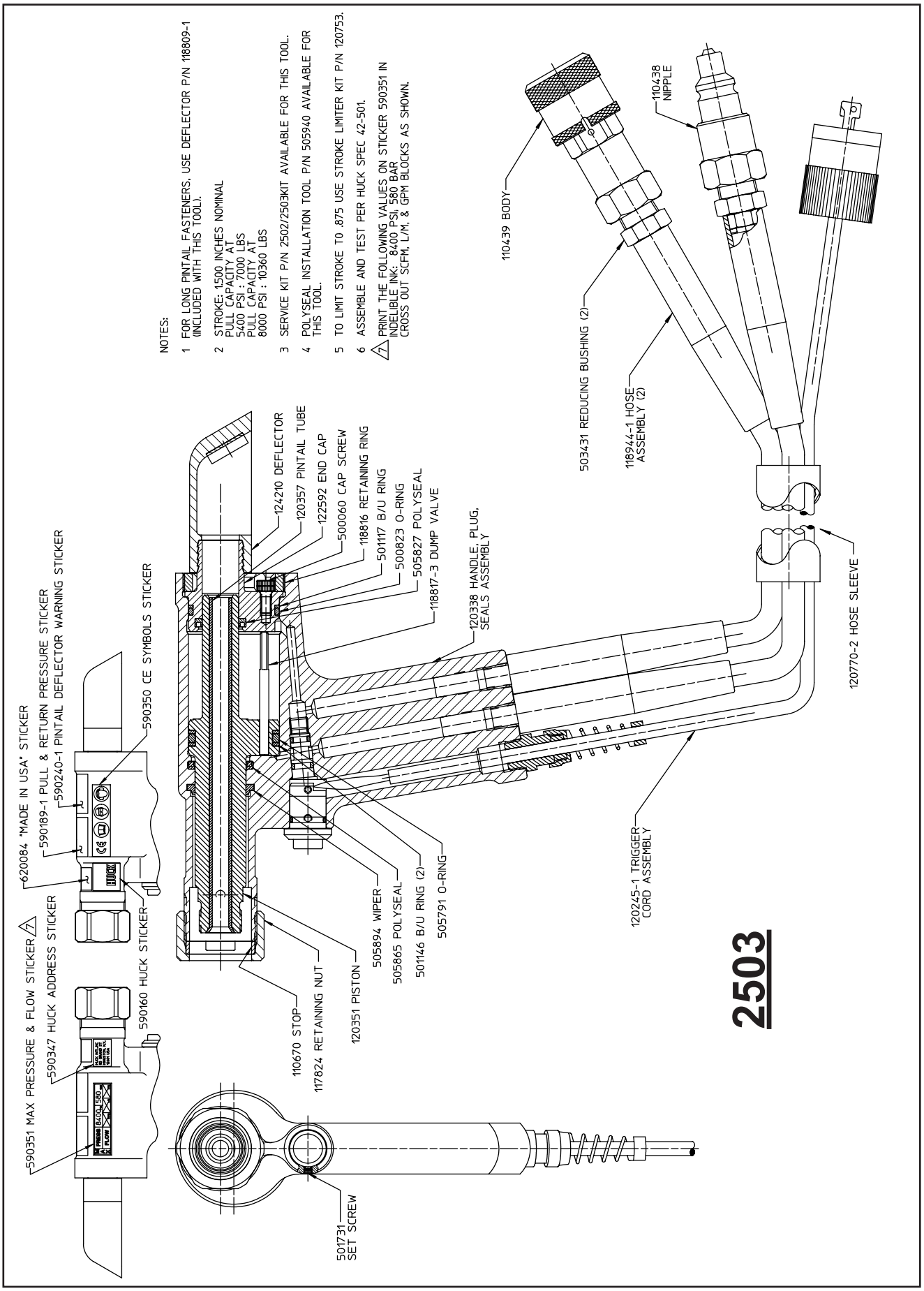
OVERSIZE BLIND RIVET
OSMLSP & OSMLS100

(1) Available in inch & metric sizes

This list is intended as a general guide to the types of fasteners available from Huck. It is not all inclusive nor does it imply that the tool covered by this manual will install all types of fasteners.

REFER TO OTHER AVAILABLE FASTENER and NOSE ASSEMBLY SELECTION CHARTS for ADDITIONAL DATA


NOTES:
1 FOR LONG PINTAIL FASTENERS, USE DEFLECTOR P/N 118809-1 (INCLUDED WITH THIS TOOL).
2 STROKE: 1500 INCHES NOMINAL
PULL CAPACITY AT 5400 PSI : 7000 LBS
PULL CAPACITY AT 8000 PSI : 10360 LBS
3 SERVICE KIT P/N 2502/2503KIT AVAILABLE FOR THIS TOOL.
4 POLYSEAL INSTALLATION TOOL P/N 505940 AVAILABLE FOR THIS TOOL.
5 TO LIMIT STROKE TO .875 USE STROKE LIMITER KIT P/N 120753.
6 ASSEMBLE AND TEST PER HUCK SPEC 42-501.
7 PRINT THE FOLLOWING VALUES ON STICKER 590351 IN INDELIBLE INK: 8400 PSI, 580 BAR CROSS OUT SCFM, L/M, & GPM BLOCKS AS SHOWN.
620084 "MADE IN USA" STICKER
590189-1 PULL & RETURN PRESSURE STICKER
590240-1 PINTAIL DEFLECTOR WARNING STICKER
590350 CE SYMBOLS STICKER
590351 MAX PRESSURE & FLOW STICKER
590347 HUCK ADDRESS STICKER
590160 HUCK STICKER
110670 STOP
117824 RETAINING NUT
120351 PISTON
505894 WIPER
505865 POLYSEAL
501146 B/U RING (2)
505791 O-RING
124210 DEFLECTOR
120357 PINTAIL TUBE
122592 END CAP
500060 CAP SCREW
118816 RETAINING RING
501117 B/U RING
500823 O-RING
505827 POLYSEAL
118817-3 DUMP VALVE
120359 HANDLE, PLUGS & FITTINGS ASSEMBLY
119440-1 AIR TRIGGER & HOSE ASSEMBLY
110439 BODY
503431 REDUCING BUSHING (2)
118944-1 HOSE ASSEMBLY (2)
110438 NIPPLE
120770-2 HOSE SLEEVE
A2503


NOTES:
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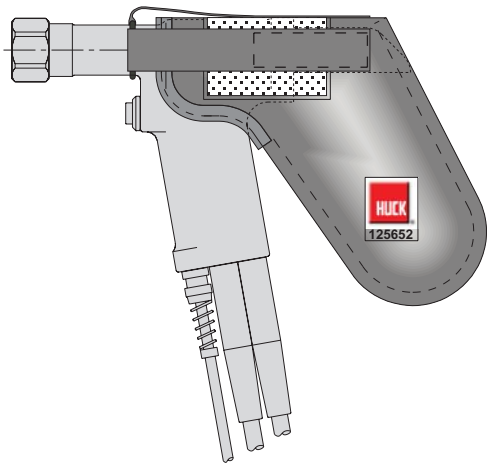
2 STROKE: 1500 INCHES NOMINAL
PULL CAPACITY AT 5400 PSI : 7000 LBS
PULL CAPACITY AT 8000 PSI : 10360 LBS
3 SERVICE KIT P/N 2502/2503KIT AVAILABLE FOR THIS TOOL.
4 POLYSEAL INSTALLATION TOOL P/N 505940 AVAILABLE FOR THIS TOOL.
5 TO LIMIT STROKE TO .875 USE STROKE LIMITER KIT P/N 120753.
6 ASSEMBLE AND TEST PER HUCK SPEC 42-501.
7 PRINT THE FOLLOWING VALUES ON STICKER 590351 IN INDELIBLE INK:. 8400 PSI, 580 BAR, CROSS OUT SCFM, L/M, & GPM BLOCKS AS SHOWN.
590351 MAX PRESSURE & FLOW STICKER 7
590347 HUCK ADDRESS STICKER
590160 HUCK STICKER
620084 "MADE IN USA" STICKER
590189-1 PULL & RETURN PRESSURE STICKER
590240-1 PINTAIL DEFLECTOR WARNING STICKER
590350 CE SYMBOLS STICKER
501731 SET SCREW
117824 RETAINING NUT
110670 STOP
120351 PISTON
505894 WIPER
505865 POLYSEAL
501146 B/U RING (2)
505791 O-RING
118817-3 DUMP VALVE
505827 POLYSEAL
500823 O-RING
501117 B/U RING
118816 RETAINING RING
500060 CAP SCREW
122592 END CAP
120357 PINTAIL TUBE
124210 DEFLECTOR
120338 HANDLE, PLUG, SEALS ASSEMBLY
120245-1 TRIGGER CORD ASSEMBLY
503431 REDUCING BUSHING (2)
110439 BODY
118944-1 HOSE ASSEMBLY (2)
110438 NIPPLE
120770-2 HOSE SLEEVE
2503

ACCESSORIES

Pintail Collection Bag 125652:

>Tailor made to fit the tool
>Made from tough, lightweight material.
>Fits over the Pintail Deflector.
>Velcro closure for secure fit /easy removal.
>Eliminates messy pintail debris from work floor.



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.

Warranty on "non standard or custom manufactured products": With regard to non-standard products or custom manufactured products to customer's specifications, Huck warrants for a period of ninety (90) days from the date of purchase that such products shall meet Buyer's specifications, be free of defects in workmanship and materials. Such warranty shall not be effective with respect to non-standard or custom products manufactured using buyer-supplied molds, material, tooling and fixtures that are not in good condition or repair and suitable for their intended purpose.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. HUCK MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES AS TO MERCHANTABILITY OR AS TO THE FITNESS OF THE TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS FOR ANY PARTICULAR PURPOSE AND HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, OTHER ITEMS, NONSTANDARD OR CUSTOM MANUFACTURED PRODUCTS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Huck's sole liability and Buyer's exclusive remedy for any breach of warranty shall be limited, at Huck's option, to replacement or repair, at FOB Huck's plant, of Huck manufactured tooling, other items, nonstandard or custom products found to be defective in specifications, workmanship and materials not otherwise the direct or indirect cause of Buyer supplied molds, material, tooling or fixtures. Buyer shall give Huck written notice of claims for defects within the ninety (90) day warranty period for tooling, other items, nonstandard or custom products described above and Huck shall inspect products for which such claim is made.

Tooling, Part(s) and Other Items not manufactured by Huck.

HUCK MAKES NO WARRANTY WITH RESPECT TO THE TOOLING, PART(S) OR OTHER ITEMS MANUFACTURED BY THIRD PARTIES. HUCK EXPRESSLY DISCLAIMS ANY WARRANTY EXPRESSED OR IMPLIED, AS TO THE CONDITION, DESIGN, OPERATION, MERCHANTABILITY OR FITNESS FOR USE OF ANY TOOL, PART(S), OR OTHER ITEMS THEREOF NOT MANUFACTURED BY HUCK. HUCK SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH TOOLING, PART(S) OR OTHER ITEMS OR BREACH OF WARRANTY OR FOR ANY CLAIM FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

The only warranties made with respect to such tool, part(s) or other items thereof are those made by the manufacturer thereof and Huck agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

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

Huck Installation Equipment

Huck International, Inc. reserves the right to make changes in specifications and design and to discontinue models without notice.

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

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

Outside USA and Canada
Contact your nearest Huck International Office, see back cover.

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

HUCK

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Alcoa Fastening Systems (AFS) maintains company offices throughout the United States and Canada, with subsidiary offices in many other countries. Authorized AFS distributors are also located in many of the world's industrial and Aerspace centers, where they provide a ready source of AFS fasteners, installation tools, tool parts, and application assistance.

Alcoa Fastening Systems world-wide locations:

Americas

Alcoa Fastening Systems
Aerospace Products
Tucson Operations
3724 East Columbia
Tucson, AZ 85714
800-234-4825
520-747-9898
FAX: 520-748-2142

Alcoa Fastening Systems
Aerospace Products
Carson Operations
PO Box 5268
900 Watson Center Rd.
Carson, CA 90749
800-421-1459
310-830-8200
FAX: 310-830-1436

Alcoa Fastening Systems
Commercial Products
Waco Operations
PO Box 8117
8001 Imperial Drive
Waco, TX 76714-8117
800-388-4825
254-776-2000
FAX: 254-751-5259

Alcoa Fastening Systems
Commercial Products
Kingston Operations
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Kingston, NY 12401
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845-331-7300
FAX: 845-334-7333
www.hucktools.com

Alcoa Fastening Systems
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Canada Operations
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Canada
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FAX: 905-564-1963

Alcoa Fastening Systems
Commercial Products
Latin America Operations
Avenida Parque Lira. 79-402
Tacubaya Mexico, D.F.
C.P. 11850
FAX: 525-515-1776
TELEX: 1173530 LUKSME

Far East

Alcoa Fastening Systems
Commercial Products
Australia Operations
14 Viewtech Place
Rowville, Victoria
Australia 3178
03-764-5500
Toll Free: 008-335-030
FAX: 03-764-5510

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Alcoa Fastening Systems
Commercial Products
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Unit C, Stafford Park 7
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England TF3 3BQ
01952-290011
FAX: 0952-290459

Alcoa Fastening Systems
Aerospace Products
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Clos D'Asseville
BP4
95450 Us Par Vigny
France
33-1-30-27-9500
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