HOWMET AEROSPACE

Instruction Manual

507

Hydraulic Installation Tool

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DANGER - IMPORTANT

DO NOT EXCEED HOSE MINIMUM BEND RADIUS

Failure to heed the warnings below could lead to a damaged hose, damaged tool, damaged property, personal injury, or death.

- This high pressure hose is not to be used other than assembled in a genuine HUCK tool or hose assembly or used as a replacement for the hose of a genuine HUCK tool or hose assembly.
- Improper use of this product can cause ***property damage***, ***personal injury***, and ***death***, including but not limited to ***electrocution***, ***fluid injection*** or ***loss of limb*** caused by ***high pressure leak***, ***dangerously whipping hose*** or contact with suddenly moving or falling objects.
- Do not exceed rated working pressure ***(700 bar/10150 psi)*** or minimum bend radius (see chart below). Do not use in temperatures less than ***-40°C (-40°F)*** or greater than ***+100°C (+212°F)***. Do not exceed fluid working temperature of ***+70°C (+158°F)***.
- Do not use if the hose is kinked, abraded, cut, bulged, or leaking. Do not attempt to repair the hose.
- Do not carry tool by hoses.
- Refer to a HUCK hydraulic tool manual for hose inspection and maintenance intervals.
- Store hose assemblies in a clean dry area.

Hose Type	Minimum Bend Radius	
126107 Series	2.76 Inches	70 mm
118944 and 124881 Series	2.17 Inches	55 mm
HA and HPH Series	1.97 Inches	50 mm

Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

-Product complies with requirements set forth by the relevant UK and European directives.

-Read manual prior to using this equipment.

-Eye protection is required while using this equipment.

-Hearing protection is required while using this equipment.

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

WARNINGS: Must be understood to avoid severe personal injury.

CAUTIONS: Show conditions that will damage equipment or structure.

I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.
2. Huck equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the assembly power tool.
5. Do not modify this assembly power tool. This can reduce effectiveness of safety measures and increase operator risk.
6. Do not discard safety instructions; give them to the operator.
7. Do not use assembly power tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Huck representative.
11. Only genuine Huck parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and preventing an accident which may cause severe personal injury.
17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled with out nose assembly installed.
19. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet for correct positioning.

II. PROJECTILE HAZARDS:

1. Risk of whipping compressed air hose if tool is pneudraulic or pneumatic.
2. Disconnect the assembly power tool from energy source when changing inserted tools or accessories.
3. Be aware that failure of the workpiece, accessories, or the inserted tool itself can generate high velocity projectiles.
4. Always wear impact resistant eye protection during tool operation. The grade of protection required should be assessed for each use.
5. The risk of others should also be assessed at this time.
6. Ensure that the workpiece is securely fixed.
7. Check that the means of protection from ejection of fastener or pintail is in place and operative.
8. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

III. OPERATING HAZARDS:

1. Use of tool can expose the operator's hands to hazards including: crushing, impacts, cuts, abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly and be ready to counteract normal or sudden movements with both hands available.
4. Maintain a balanced body position and secure footing.
5. Release trigger or stop start device in case of interruption of energy supply.
6. Use only fluids and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these not to allow counteracting of normal or unexpected tool movement.
8. If the assembly power tool is fixed to a suspension device, make sure that fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

Continued on next page...

Safety Instructions (continued)

IV. REPETITIVE MOTION HAZARDS:

1. When using assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. When using tool, the operator should adopt a comfortable posture while maintaining a secure footing and avoid awkward or off balanced postures.
3. The operator should change posture during extended tasks to help avoid discomfort and fatigue.
4. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warnings should not be ignored. The operator should tell the employer and consult a qualified health professional.

V. ACCESSORIES HAZARDS:

1. Disconnect tool from energy supply before changing inserted tool or accessory.
2. Use only sizes and types of accessories and consumables that are recommended. Do not use other types or sizes of accessories or consumables.

VI. WORKPLACE HAZARDS:

1. Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line or hydraulic hose.
2. Proceed with caution while in unfamiliar surroundings; there could be hidden hazards such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive environments.
4. Tool is not insulated against contact with electrical power.
5. Ensure there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

VII. NOISE HAZARDS:

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems such as tinnitus, therefore risk assessment and the implementation of proper controls is essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpiece from 'ringing'.
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain tool as recommended in the instruction handbook to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable / inserted tool as recommended to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

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

X. HYDRAULIC TOOL SAFETY INSTRUCTIONS:

WARNINGS:
Do not exceed maximum pull or return settings on tool.
Be sure all hose connections are tight. All tool hoses must be connected.

1. Carry out a daily check for damaged or worn hoses or hydraulic connections and replace if necessary.
2. Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.
3. Ensure that couplings are clean and correctly engaged before operation.
4. Use only clean oil and filling equipment.
5. Power units require a free flow of air for cooling purposes and should therefore be positioned in a well ventilated area free from hazardous fumes.
6. Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
7. Be sure all hose connections are tight.
8. Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.

507 Hydraulic Installation Tool (HK480)

Description

The Huck 507 inline Hydraulic Installation Tool installs C50L HUCKBOLT® Fasteners and HLC50L HUCKLOK® Fasteners. When equipped with the proper (optional) nose assembly, it can install:

-32 (1" diameter) and
-36 (1-1/8" diameter) fasteners.

Each tool has a cylinder and piston assembly. A relief valve, designed to relieve the hydraulic pressure at both ends of the stroke, is situated near the piston. The pintail ejector ejects broken pintails from the nose assembly. The end of the piston rod is threaded, and a nose adapter and retaining rings are included for attaching nose assemblies.

The operating pressures for the 507 tool are:

- PULL: 5400–5700 psi (372–393 bar) and
- RETURN: 2200–2400 psi (152–165 bar)

as supplied by a Huck POWERIG® Hydraulic Unit, models 940 and 918—or an equivalent hydraulic unit.

The correct PULL and RETURN pressures are important for the proper function of the tool and Nose Assemblies, as well as for the safety of the operator. Huck has available a gauge (P/N T-124833CE) for checking hydraulic pressures; instructions for its use are included with the gauge and the Powerig.

UPDATING OLDER TOOLS

Changes were made to the 507 tool, starting with serial number 0847. Replacement parts are still available for the earlier models. If your tool's serial number is lower than 0847, Huck recommends that the tool be updated to the current configuration. Call your Technical Support representative for the part numbers.

OPTIONAL ACCESSORY

A Suspension Bracket that alleviates operator fatigue is available from Huck. When the bracket is used with a balance spring suspension system, much of the tool's weight is supported. Contact Huck Customer Service for the part number and availability. See Kits & Accessories.

Specifications

MAX OPERATING TEMP: 125° F (51.7° C)

MAX FLOW RATE: 2 gpm (7.5 l/m)

PULL CAPACITY: 75,500 lbs @ 5,700 psi
(337 kN @ 393 bar)

MAX PULL PRESSURE: 5,700 psi (393 bar)

MAX RETURN PRESSURE: 2,400 psi (165 bar)

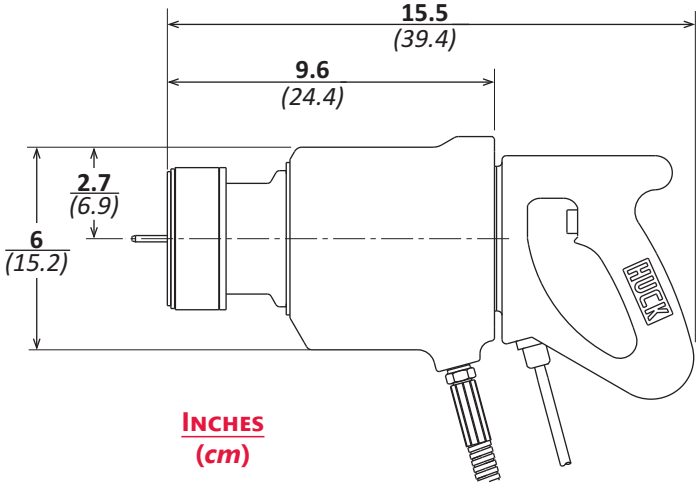
STROKE: 2.5 inches (6.3 cm)

WEIGHT: 43 lbs (19.5 kg)

POWER SOURCE: Huck POWERIG® Hydraulic Unit

HOSE KITS: Use only genuine HUCK Hose Kits rated @ 10,000 psi (689.5 bar) working pressure.

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



Where the following trade names are used in this manual, please note:

DEXRON *is a registered trademark of General Motors Corporation.*
Loctite *is a registered trademark of Henkel Corporation, U.S.A.*
LUBRIPLATE *is a registered trademark of Fiske Brothers Refining Co.*
MERCON *is a registered trademark of Ford Motor Corp.*
Never-Seez *is a registered trademark of Bostik, Inc.*
Quintolubric *is a registered trademark of Quaker Chemical Corp.*
Slic-tite *is a registered trademark of LA-CO Industries, Inc.*
Spirolox *is a registered trademark of Smalley Steel Ring Company*
Teflon *is a registered trademark of E. I. du Pont de Nemours and Company.*
Threadmate *is a registered trademark of Parker Intangibles LLC.*
TRUARC *is a trademark of TRUARC Co. LLC.*
Vibra-Tite *is a registered trademark of ND Industries, Inc. USA.*

Principle of Operation

WARNING: Huck recommends that a Huck POWERIG® be used to power Huck tools. Hydraulic power units that deliver high PULL and RETURN pressures—but which are NOT equipped with RELIEF VALVES—are specifically NOT RECOMMENDED and may be dangerous.

Set the PULL and RETURN pressures as specified in SPECIFICATIONS. Failure to properly set these pressures may result in serious personal injury.

Huck Pressure Gauge (P/N T-124883CE) is available, and should be used as indicated in its instruction manual.

When tool hoses and cord are connected to POWERIG hoses and control cord, PULL and RETURN strokes of tool are controlled by a Trigger in the handle.

When the trigger is pressed, a solenoid-operated valve in the POWERIG directs pressured fluid through the FILL Hydraulic Hose to the front side of piston, and allows fluid on the RETURN side to flow back to tank.

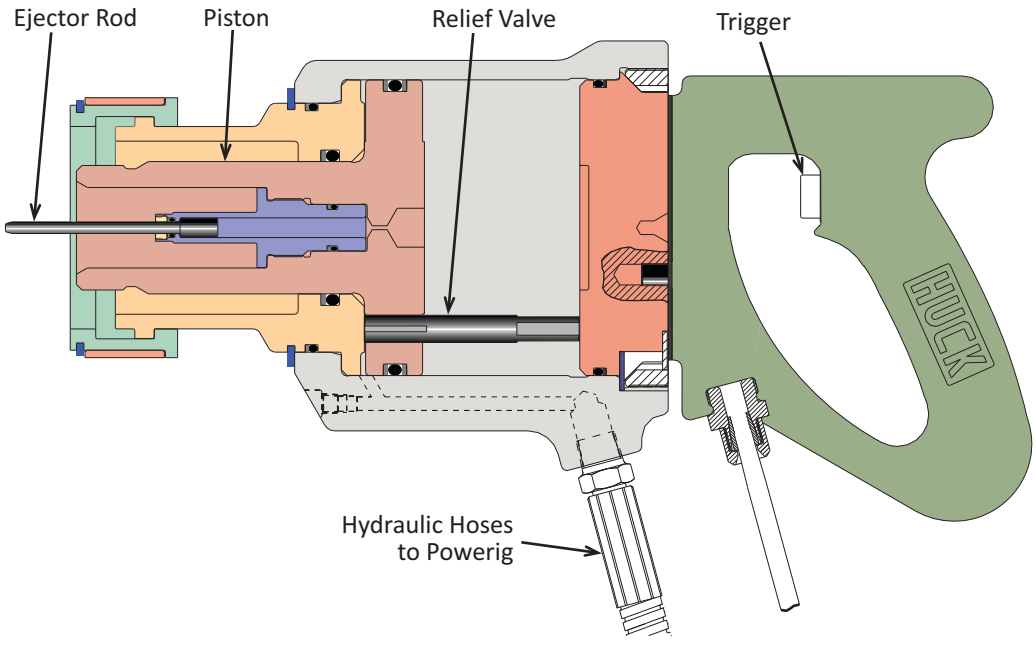
The piston and nose assembly collet moves rearward causing follower O-rings and/or spring to impart a forward motion to the follower.

If tool and nose assembly is in position on a fastener pin and collar, this forward motion causes the jaws to clamp onto pintail of fastener and installation cycle begins.

Clamping pressure is applied to the sheets. The anvil is forced forward, swaging the collar into locking grooves of the fastener. When the anvil hits the sheet, continued pull causes the pintail to break off. When the Piston reaches the end of its PULL stroke, it uncovers flats on the rear end of the Relief Valve. These flats were designed to provide a passage for hydraulic fluid from PULL side to RETURN side of piston, "unloading" ("dumping") the pressurized fluid back to tank. When the trigger is released, the solenoid is de-energized and the valve directs pressurized fluid to rear side of the piston and allows fluid on PULL side to flow back to tank.

This causes piston and collet to move forward and pushes nose assembly and tool off the swaged (installed) fastener. Nose assembly jaw release contacts jaws, causing them to open and release the broken-off pintail. The Ejector Rod hydraulically ejects the pintail out the front of the nose assembly. When the piston reaches the end of its RETURN stroke, pressure is built up causing the POWERIG idler valve (except on models 910 and 911) to go to idling pressure. Idling pressure keeps the tool piston and nose assembly collet, jaws, etc. in the forward position ready for the next installation cycle.

A flat on the front end of the relief valve was designed to provide a passage for hydraulic fluid from RETURN side of piston to PULL side of piston and back to tank.



Preparation for Use

WARNINGS:

- **Read entire manual before using tool.**
- **A 30-minute training session with qualified personnel is recommended before using Huck equipment.**
- **When operating Huck equipment, always wear approved eye and hearing protection.**
- **Be sure there is adequate clearance for the operator's hands before proceeding.**
- **Connect the tool's hydraulic hoses to the POWERIG® Hydraulic Unit before connecting the tool's switch control cord to it. If not connected in this order, severe personal injury may occur.**
- **Correct PULL and RETURN pressures (see SPECIFICATIONS) are required for operator's safety and proper tool function. Huck Pressure Gauge (P/N T-124883CE) is available, and should be used as indicated in its instruction manual. Improper pressure settings may result in severe personal injury.**

NOTE: Model 507 tools with a serial numbers 0847 and higher have a deeper pocket in the end of the piston rod. This allows clearance for the pintail. A longer jaw follower cap (P/N 122686) is required in the nose assembly. Cap P/N 104411 is required for earlier models of the tool.

CAUTIONS:

- **Keep disconnected hoses, couplers, and huydraulic fluid away from dirty surfaces and free of foreign matter. Contaimated fluid can cause failures in toll and POWERIG.**
- **Apply Parker Threadmate®, Loctite® 567, or Slic-Tite® to male pipe threads per manufacturer's instructions.**
- **Hose couples must be securely attached to ensure that the ball checks in the nipple and the body are completely open. Improperly assembled couplers will cause overheating and malfunctions in the tool and POWERIG.**
- **Hand tighten couplers; do NOT use a pipe wrench.**

POWER SOURCE CONNECTIONS

Apply Parker Threadmate®, Loctite® 567, or Slic-Tite® to male pipe threads per manufacturer's instructions.

CAUTION: Do NOT use Teflon® tape on pipe threads. Tape can shred and break free into fluid lines, resulting in malfunctions.

1. Screw PULL pressure hose (P/N 104490), with coupler nipple (P/N 103391), into tool port "P." Screw RETURN pressure hose (P/N 104490), with coupler body (P/N 103392), into tool port ''R.''

2. Use a Huck POWERIG (or equivalent hydraulic unit) that has been prepared for operation per applicable instruction manual. Check the PULL and RETURN pressures, and adjust as necessary. Use Huck Gauge (P/N T-124833CE) to check POWERIG pressures.

3. Turn OFF the POWERIG, and couple the tool hoses to the POWERIG hoses. (Be sure that the larger hoses run from tool port "P" to POWERIG port "P" and the smaller hoses run from tool port "R" to POWERIG port "R".).

4. Connect trigger control cord assembly to the POWERIG cord.

5. Turn ON the POWERIG, and press and release the trigger a few times to circulate the hydraulic fluid. Observe action of tool. Check for fluid leaks.

6. Attach the proper Nose Assembly to the tool.

If fasteners do not pass inspection, see TROUBLESHOOTING to investigate possible causes.

Operating Instructions

WARNINGS:

- **Wear approved eye and hearing protection.**
- **Ensure adequate clearance for operator's hands before installing fasteners.**
- **Operators should receive training from qualified personnel.**
- **Be sure that pintail deflector is attached to the tool and directed away from all personnel.**
- **Do not pull on a pin without placing a fastener/collar in a workpiece. Make sure that the collar chamfer is out, toward the tool. Pins eject with great velocity when pintails break off or teeth/grooves strip, which could cause serious injury.**
- **Do NOT bend tool to free if stuck.**
- **Use tool to install fasteners ONLY; never use tool as a jack/spreader or hammer.**

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 damaging teeth.

TO INSTALL A HUCKBOLT® FASTENER:

1. Check work and remove excessive gap.
   NOTE: ***"Gap" is the space between sheets. It is excessive if not enough of the pintail sticks through the collar for the nose assembly jaws to grasp.***
2. Put a HuckBolt pin in the hole.
3. Slide HuckBolt collar over the pin.
   NOTE: ***The beveled end of the collar must be towards the nose assembly and tool.***
4. Push the nose assembly onto the pin until the nose assembly anvil stops against the collar. The tool and nose assembly must be held at right angles (90 degrees) to the work.
5. Press the trigger to start the installation cycle.
6. When the forward motion of the nose assembly anvil stops and pintail breaks off, release the trigger.

The tool will go into its return stroke, push off the installed fastener, and eject the pintail.
The tool and nose assembly are ready for the next installation cycle.

Maintenance

CAUTIONS:
Consult the Material Safety Data Sheet (MSDS) before servicing tool.

Keep foreign matter out of hydraulic system, and separated parts away from dirty work surfaces. Dirt and debris in hydraulic fluid causes valve failures in tool and Powerig®.

Check the Assembly Drawings in this manual for the proper direction of the flats on the dump valve.

Do NOT use Teflon® tape on pipe threads. Tape can shred and break free into fluid lines, resulting in malfunctions.

Always replace all seals, wipers, and rings when the tool is disassembled for any reason.

See SPECIFICATIONS for fluid type. Dispose of fluid in accordance with local environmental regulations. Recycle steel, aluminum, and plastic parts in accordance with local lawful and safe practices.

PREVENTIVE MAINTENANCE

For supplementary information, see TROUBLESHOOTING, the DISASSEMBLY and ASSEMBLY procedures, and the ASSEMBLY DRAWING in this manual.

SYSTEM INSPECTION

Operating efficiency of the tool is directly related to performance of the entire system, including the tool, nose assembly, hydraulic hoses, control trigger assembly, and Powerig Hydraulic Unit. Therefore, an effective preventive maintenance program includes scheduled inspections of the system to detect and correct minor troubles.

- Inspect the tool and nose daily for damage and wear. Inspect the tool before each use for leaks.
- Verify that hydraulic hoses, fittings, couplings, and electrical connections are secure, and free of leaks and damage. (Replace hoses at six-month to one-year intervals, depending on use.) Clear air-lines of dirt and water.
- Inspect tool, hoses, and POWERIG during operation to detect abnormal heating, leaks, or vibration.
- Service the tool in a clean, well-lighted area. Be sure to prevent contamination of pneumatic and hydraulic systems.
- Carefully handle all parts and components. Before reassembly, examine for damage and wear; replace when necessary.
- Have available all necessary hand tools (standard and special); a half-inch brass drift and wood block; arbor press; and soft-jaw vise. Unsuitable hand tools could cause tool damage.
- Follow the disassembly and assembly procedures in this manual. If Huck recommended procedures are not followed, the tool could be damaged.
- Disassemble and assemble tool components in a straight line. Do NOT bend, twist, or apply undue force. Never force a component if it is misaligned; reverse the procedure to correct the misalignment and start again.
- Apply continuous steady pressure to components. An arbor press provides steady pressure to press a component into or out of an assembly.
- Apply Parker Threadmate®, Loctite® 567, or Slic-Tite® to male pipe threads per manufacturer's instructions (to ease assembly and to prevent leaks).
- Smear LUBRIPLATE® 130-AA (P/N 502723) or SUPER-O-LUBE® (P/N 505476) on rings and mating parts to ease assembly to prevent nicking/pinching rings on rough/tight spots.

POWERIG MAINTENANCE

Maintenance instructions and repair procedures are in the appropriate POWERIG Instruction Manual.

TOOL MAINTENANCE

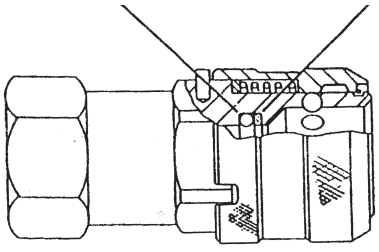
Whenever disassembled, and at regular intervals depending on use, replace all O-rings and Back-up rings. Keep Spare Parts Service Kit, 507KIT, on hand.
Inspect cylinder bore, piston, piston rod, and unloading valve for scored surfaces, excessive wear, and damage; replace as necessary.

NOSE ASSEMBLY MAINTENANCE

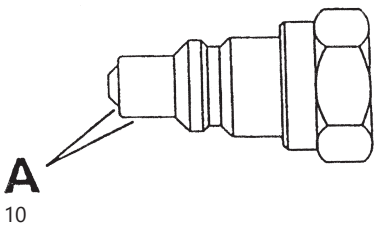
Clean nose assemblies daily in mineral spirits (or other suitable solvent) to clear jaws and rinse metal chips and dirt. For a more thorough cleaning, disassemble the nose assembly. Use a pointed "pick" to remove embedded particles from the pull grooves of the jaws.

Hydraulic Couplings

O-ring (P/N **504438**) Back-up ring (P/N **501102**)



TIP: Use a fine India stone to remove nicks and burrs from diameter A and leading edge to prevent damage to O-ring.



General Disassembly and Assembly Guidelines

Take the following precautions to avoid damaging tool or components:
Always work on a clean surface.

Use relatively soft materials, such as brass, aluminum, or wood to protect the tool when applying pressure.

Apply a 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.

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

Smear LUBRIPLATE® 130-AA (Huck P/N 502723) or equivalent, on O-rings and mating surfaces to aid assembly and prevent damage to O-rings.

A special Spanner Wrench is available from Huck to aid in the disassembly and assembly of Locking Ring, reference No. 11. A Piston Rod Guide is available to prevent damage to the piston rod seals when assembling the piston. See Kits & Accessories.

Standard hand tools, such as wrenches, drifts, copper or lead hammers, screwdrivers, socket screw hexagon keys, long forceps (tweezers), etc., which may be purchased at most local supply firms, are required. Huck also recommends having available an arbor press and a vise with soft jaws.

Disassembly

WARNING: Disconnect the tool's control trigger system from the POWERIG® Hydraulic Unit before disconnecting the hydraulic hoses from it. If not disconnected in this order, serious personal injury may occur.

This procedure is for complete disassembly of the tool. Disassemble only those components necessary to replace damaged rings, and worn or damaged components. Always replace O-rings, Back-up rings, and wipers of disassembled sub-assemblies. Always use a soft-jaw vise to avoid damaging the tool. For component identification, see Figure 1.
NOTE: Be sure POWERIG is OFF when removing the nose assembly to clean or replace components. See applicable Nose Assembly Data Sheet for additional instructions.
To disassemble the tool:

1. Remove the retaining ring from the split ring. Slide off sleeve and remove split ring segments. Pull off the nose assembly anvil and unscrew the nose collet assembly.
2. Remove the four socket-head screws and lock-washers from the handle. The handle assembly and cushion are now separated from the tool.
3. Remove one locater button and unscrew locking ring using spanner wrench. Remove the second locater button.
4. Screw the locking ring partially in. Screw two socket-head screws into the cylinder cap. Use pry bars under the heads of the screws to gradually pry the cylinder cap out of the cylinder assembly.
5. Remove the unloading valve.
6. Drain hydraulic fluid from cylinder assembly.
7. Unscrew the hoses.
8. Press the piston out of the cylinder assembly. Use an arbor press if available.
9. Unscrew the ejector cartridge assembly using a 7/16" socket wrench. Slide the ejector out of the cartridge assembly. Unscrew the retaining screw from cartridge assembly using 3/16" Allen wrench.
10. Remove the retaining ring.
11. Press the adapter out of the cylinder assembly.
12. Use a small dull-pointed rod to remove the O-rings and Back-up rings from all components.

NOTE: Disassemble control trigger systems only when necessary to rewire or replace the switch/trigger. Once the tool has been properly disassembled, store all re-usable parts (screws and disassembled components) in a clean, dry area.

Assembly of NPTF Threaded Components

AIR FITTINGS

1) Apply TEFLON® stick to male threads which do not have pre-applied sealant per manufacturer's recommendations. (Proceed to All Fittings step 2)

HYDRAULIC FITTINGS

1) Apply Threadmate™ to male and female threads which do not have pre-applied sealant per manufacturer's recommendations. (Proceed to All Fittings step 2)

ALL FITTINGS:

2) Tighten to finger-tight condition.
3) Wrench tighten to 2-3 turns past finger-tight condition.
4) Final thread engagement can be checked (optional) by measuring the dimension from the flange of male fitting to the end of the thread before assembly and subtracting the distance under the flange after assembly.

Thread size	Final thread engagement at full make-up
1/8-27 NPTF	.235 inch (.59 cm)
1/4-18 NPTF	.339 inch (.86 cm)
3/8-18 NPTF	.351 inch (.89 cm)

Assembly

For component identification, see Figure 1. Before re-assembling the tool:
NOTE: ***When re-assembling the tool, always replace damaged and defective parts, and all seals, wipers, and rings of sub-assemblies.***

- Inspect components for scoring, excessive wear, and damage; replace as necessary.
- Clean components in mineral spirits or other solvent compatible with O-ring seals. Clean O-ring grooves.

WARNING: Do not omit any seals during servicing or re-assembly; leaks will result and serious personal injury can occur.

- Replace all O-rings, Quad-rings, and Back-up rings. See Figure 1 for guidance on positioning these rings. Take care not to damage rings. Use the rings that are in Spare Parts Service Kit **507KIT**.
- Specifications for O-rings, Back-up rings, and other standard components are shown in Table 5 so that they may be purchased locally.
- Smear LUBRIPLATE® 130-AA (P/N **502723**) or SUPER-O-LUBE® (P/N **505476**) on rings and mating parts to prevent damage and to ease assembly.
- Apply Parker Threadmate®, Loctite® 567, or Slic-Tite® to male pipe threads per manufacturer's instructions.

CAUTION: Do not use TEFLON® tape on threads. Tape can shred and break free into fluid lines, resulting in malfunctions.

To re-assemble the tool:

1. Press nose assembly adapter into the cylinder.
2. Place the O-ring and washer into the ejector cartridge. Use a 3/16" Allen wrench to install the retaining screw. Push the pintail ejector into the ejector cartridge. Install O-ring and Back-up ring on outside of cartridge. Screw cartridge assembly into piston; tighten with a 7/16" socket wrench.
   NOTE: ***Step 4 can be completed before assembling pintail ejector and ejector cartridge to piston.***
3. Place Piston Rod Guide (P/N **102862**) over the threads of piston rod and press the piston into the cylinder and adapter.
4. Place the relief valve in the hole in the piston.
5. Press the cylinder cap into the cylinder so that the locater scallop in the cap matches the scallop in the cylinder.
6. Place one locater in matching scallops.
   NOTE: ***The cap can be turned by putting a screw into one of the tapped holes to use as a handle.***
7. Use the spanner wrench to screw the locking ring into the cylinder.
8. Unscrew the locking ring 1/4 turn (or less) until the scallop in the locking ring matches the scallop in the cylinder cap. Place locater in matching scallops.
9. Position the cushion and handle assembly, and insert four socket-head screws with lockwashers. Torque the screws to: **490 in-lbs** (if screws are plated) or **655 in-lbs** (if not plated).
10. Apply Parker Threadmate®, Loctite® 567, or Slic-Tite® to the hose fitting threads (per manufacturer's instructions), and screw the hoses into the cylinder.

CAUTION: Do not use TEFLON® tape on threads. Tape can shred and break free into fluid lines, resulting in malfunctions.

11. Screw the coupler nipple onto the hose that is attached to cylinder port "P".
12. Screw the coupler body onto the hose that is attached to cylinder port "R".
    NOTE: ***The tool will malfunction if the coupler nipple and body are not properly assembled.***
13. Attach the tool hoses to the POWERIG hoses and actuate the tool a few times to check its operation; inspect for leaks caused by damaged O-rings.
14. Assemble the split ring, sleeve, and retaining ring when attaching the nose assembly.

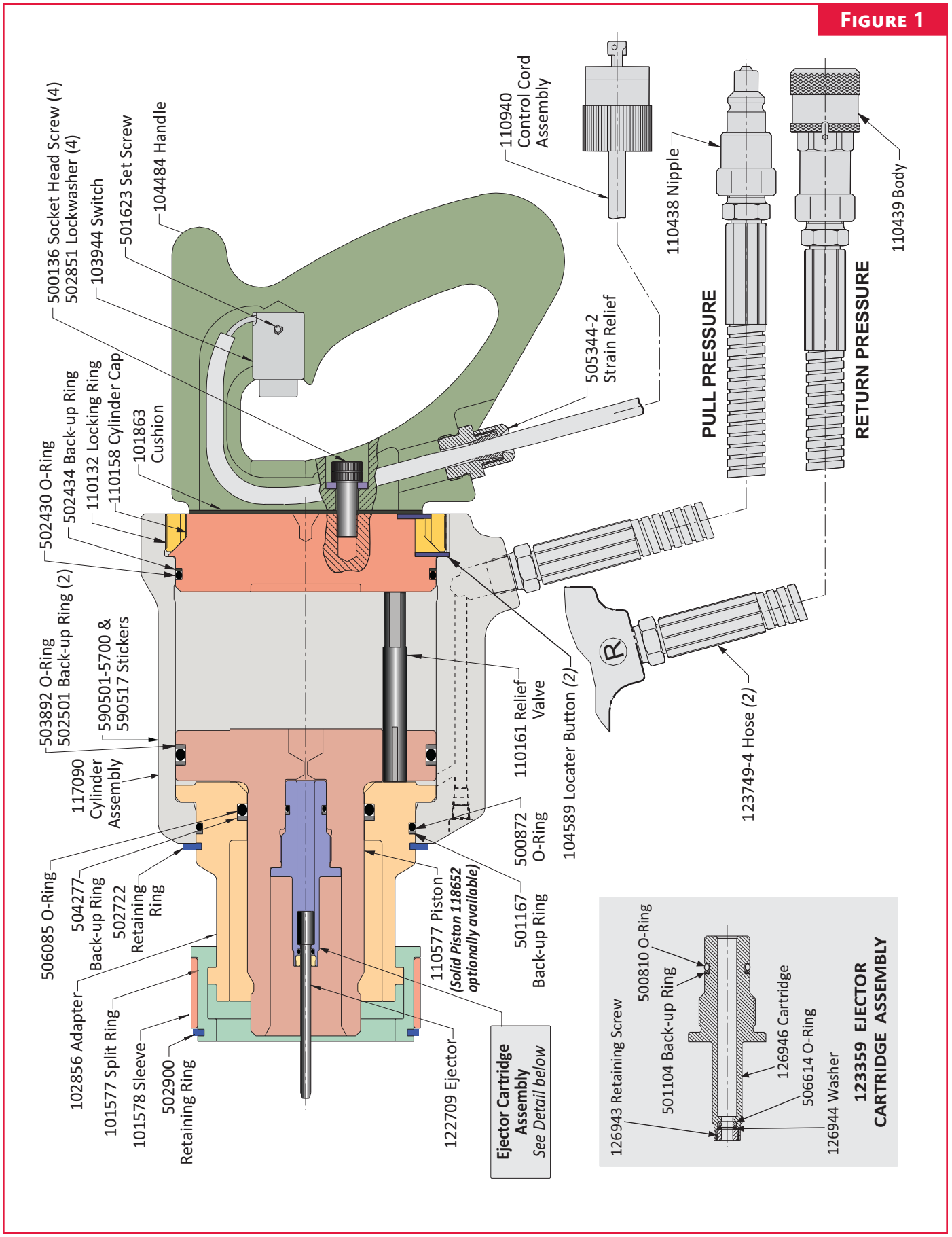
HANDLE ASSEMBLY

1. Screw the body of the cord grip part of the strain relief into the handle.
2. Slide the strain relief cap over the cord.
3. Slide the strain relief grommet over the cord.
4. Place the cord in the handle so that leads come out the switch pocket.
5. Assemble the leads to the rear of the switch.
6. Push the switch into the handle and retain with set screw.
7. Slide the cover (not shown) over the other end of the cord.
8. Assemble the cap (two-prong plug) to the cord, and slide the cover over the cap.

WARNING: Make sure the tool is properly re-assembled, with all components included.

Components Drawing

Figure 1



Troubleshooting

Always check the simplest possible cause (such as a loose or disconnected trigger line) of a malfunction first. Then proceed logically, eliminating other possible causes until the cause is discovered. Where possible, substitute known good parts for suspected defective parts. Use this troubleshooting information to aid in locating and correcting trouble.

1. ***Tool fails to operate when trigger is pressed.***
   a. Inoperative POWERIG® Hydraulic Unit. Check power source. See applicable instruction manual.
   b. Loose or disconnected control cord.
   c. Damaged trigger assembly.
   d. Loose or faulty hydraulic hose couplings.
2. ***Tool leaks hydraulic fluid.***
   a. Defective O-rings or loose hose connections at tool.
3. ***Hydraulic couplers leak fluid.***
   a. Damaged or worn O-rings in coupler body.
4. ***Hydraulic fluid overheats.***
   a. POWERIG not operating properly.
   b. Hydraulic couplers not completely tightened.
   c. Restriction in hydraulic line.
5. ***Tool operates erratically and fails to install fastener properly.***
   a. Low or erratic hydraulic pressure; air in system.
   b. Damaged or worn piston/anvil O-ring in tool.
   c. Excessive wear on sliding surfaces of tool parts.
   d. Relief Valve too short, worn, or peened over.
6. ***Collar of HuckBolt® Fastener not completely swaged.***
   a. Improper tool operation. See Trouble 5.
   b. Scored anvil.
7. ***Tool "hangs-up" on swaged collar of HuckBolt Fastener.***
   a. Improper tool operation. See Trouble 5.
   b. RETURN pressure too low.
8. ***Pintail of fastener fails to break.***
   a. Improper tool operation. See Trouble 5.
   b. Pull grooves on fastener stripped. See Trouble 10.
   c. PULL pressure too low.
9. ***Jaw segments do not maintain proper position in piston.***
   a. Incorrect amount of follower O-rings. Clean before reassembling.
10. ***Pull grooves on fastener pintail stripped during PULL stroke.***
    a. Broken pintail not removed from tool.
    b. Anvil was not slid completely onto fastener pintail.
    c. Incorrect fastener length.
    d. Worn or damaged jaw segments.
    e. Metal particles accumulated in pull grooves of jaw segments.
    f. Excessive sheet gap.
11. ***Tool operates in reverse.***
    a. Reversed hydraulic hose connections between POWERIG and tool.
12. ***Anvil will not slide completely over fastener pintail.***
    a. Broken pintail not removed from tool.
    b. Incorrect fastener length.

Kits & Accessories

Huck has created product-specific **Spare Parts Service Kits** that contain various perishable parts. The types and quantities of spare parts that should be available vary with the application and tools in use. Have the appropriate kit accessible when using this tool and when performing maintenance on it.
Huck also recommends having the following **Accessories** available when preparing, using, and performing maintenance on this tool.

KITS

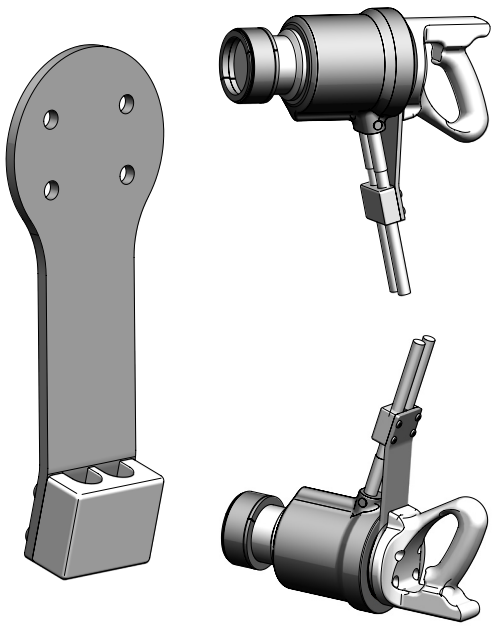
Service Kit

Use **507KIT** when using this tool and when performing maintenance on it.

Clamp and Bracket Kit (P/N 130029)

This kit contains the following parts, and is shown below.

PART NO.	DESCRIPTION	QTY.
130027	Hose Bracket	1
130028	Hose Clamp	1
502492	Button Head Screw 1/4-20	4
500137	Socket-head Cap Screw .38-24	4



ACCESSORIES

Hex Keys
- 5/16" across flats - **502446**
  (*for socket-head screws in the handle*)
- 3/32" across flats - **501623**
  (*for setscrew in the trigger switch*)

Spanner Wrench - 110362
(*to disassemble/assemble the locking ring*)

Piston Rod Guide - 102862
(*for assembling the piston*)

Notes

Limited Warranties

Limited Lifetime Warranty on BobTail® Tools:

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

Two Year Limited Warranty on Installation Tools:

Huck International, Inc. warrants that its installation tools and Powerigs® manufactured after 12/1/2016 shall be free from defects in materials and workmanship for a period of two years from date of purchase by the end user. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

90 Day Limited Warranty on Nose Assemblies and Accessories:

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

Useful lifetime is defined as the period over which the product is expected to last physically, up to the point when replacement is required due to either normal in-service wear, or as part of a complete overhaul. Determination is made on a case-by case basis upon return of parts to Huck International, Inc. for evaluation.

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.

Huck shall not be liable for any loss or damage resulting from delays or non-fulfillment 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

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

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

HOWMET AEROSPACE

Howmet Inc. (NYSE: HWM) creates breakthrough products that shape industries. Working in close partnership with our customers, we solve complex engineering challenges to transform the way we fly, drive, build and power.
Through the ingenuity of our people and cutting-edge advanced manufacturing, we deliver these products at a quality and efficiency that ensures customer success and shareholder value.

ISO 9001-2015
CERTIFIED MANAGEMENT SYSTEM
ISO 14001-2015

Howmet Fastening Systems
Kingston Operations

HUCK®

Huck provides technical assistance regarding the use and application of Huck fasteners and tooling. **NOTICE:** The information contained in this publication is only for general guidance with regard to properties of the products shown and/or the means for selecting such products, and is not intended to create any warranty, express, implied, or statutory; all warranties are contained only in Huck's written quotations, acknowledgments, and/or purchase orders. It is recommended that the user secure specific, up-to-date data and information regarding each application and/or use of such products.