HOWMET AEROSPACE

BTT35LS

BobTail® Hydraulic Installation Tool
Instruction Manual

Actual model may vary.

Table of Contents

HUCK IS FOREVER™

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

November 5, 2024
HK1107

HOWMET AEROSPACE

EC Declaration of Conformity

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

Description of Machinery:
Models BTT25, 35, 57 and BT 60 families of hydraulic installation tools and specials based on their design (e.g. PR####).

Relevant provisions complied with:
- Council Directive related to Machinery (2006/42/EC)
- British Standard related to hand held, non-electric power tools (ISO 11148-1:2011)

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

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

Signature:

Full Name: Nicholas Gougoutris

Position: Engineering Manager

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

Date: 11/2/2023 November 2, 2023

UKCA Declaration of Conformity

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

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

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

Authorized Signature/date:
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Kingston, New York, USA

Date: 11/2/2023 November 2, 2023

Declared dual number noise emission values in accordance with ISO 4871			
A weighted sound power level, LWA: **79** dB (reference 1 pW) Uncertainty, KWA: 3 dB			
A weighted emission sound pressure level at the work station, LpA: **68** dB (reference 20 µPa) Uncertainty, KpA: 3 dB			
C-weighted peak emission sound pressure level, LpC, peak: **96** dB (reference 20 µPa) Uncertainty, KpC: 3 dB			
Values determined according to noise test code ISO 15744, using as basic standards ISO 3744 and ISO 11203. The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements.			
Declared vibration emission values in accordance with EN 12096			
Measured Vibrations emission value, a:	**.32** m/s^2	Uncertainty, K:	**.06** m/s^2
Values measured and determined according to ISO 28662-1, ISO 5349-2, and EN 1033			

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

Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

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

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

WARNINGS: Must be understood to avoid severe personal injury.

CAUTIONS: Show conditions that will damage equipment or structure.

I. GENERAL SAFETY RULES:

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

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. The operator should adopt a comfortable posture, maintain 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 no electrical cables, gas pipes, etc. 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 it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

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

IX. 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.

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 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 hose is kinked, abraded, cut, bulged or leaking. Do not attempt to repair hose.
- Do not carry tool by hoses. • Store hose assemblies in a clean dry area.
- Refer to a HUCK hydraulic tool manual for hose inspection & maintenance intervals.

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

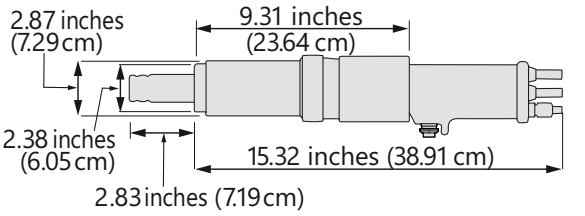
Description

Huck® Model BTT35LS is a Hydraulic Installation Tool that installs and removes BobTail® fasteners in limited clearance applications.

This tool design consists of a cylinder housing with two chambers to accommodate two tandem pull pistons. This feature increases pull capacity while maintaining optimum centerline-to-edge clearance and lightweight.

The tool is intended for use with Huck standard industrial Powerig® Hydraulic Units (models 913H, 918, 940 and 968) or equivalent - sold separately. Except for nose assembly, tool is complete with hydraulic hoses, couplings and electric control cord ready to be attached to Powerig® Hydraulic Units hoses and control cord.

Dimensions (not including hose, cord, or nose assembly)



Tool Specifications

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

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

DESCRIPTION	DETAIL	DESCRIPTION	DETAIL
POWER SOURCE	Huck Powerig® Hydraulic Unit	MAX OPERATING TEMP	125 ° F 51.7 ° C
WEIGHT	17.58 lbs (8 kg)	MAX FLOW RATE	2 gpm 7.5 l/m
MAX PULL PRESSURE	8400 psi 580 bar	MAX RETURN PRESSURE	6,500 psi 450 bar
PULL CAPACITY	35,000 lbs @ 8400 psi (155 kN @ 580 bar)	STROKE	2.5 inches (6.35 cm)

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

Spare Parts & Accessories

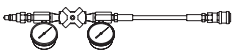
To maintain CE conformity, only CE compatible equipment should be used with these tools. Installation tools and nose assemblies are the only CE components, unless otherwise noted. Controls and other hardware shown in the manual are for domestic use only. These components are available independently.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

INDIVIDUAL HOSE - PART #: HPHX02-AA11

2 Foot long, lightweight, high-pressure hydraulic hose without reducing bushings or quick connect fittings on the ends; rated for 10,150 PSI (700 bar). Interchangeable with the 118944-2 hose.

DESCRIPTION	PART #
Trigger Cord Assembly, 2.5 ft (see Fig. 7)	119812-2
Teflon® Stick	503237
Lubriplate® 130-AA	502723
Anti-Seize Lubricant	508183
High Pressure Right Angle Connector Kit	122002
Relief Valve	128904
3-Tool BobTail® Controller	128441-3

T-124833CE
Gauge, Pressure Setting, CE



SERVICE PARTS KIT - PART #: BTT35KIT

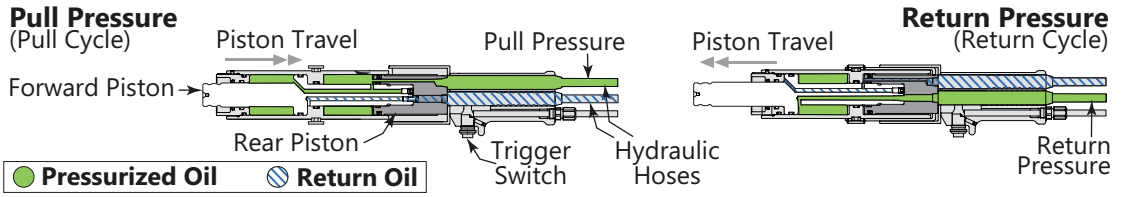
Includes all perishable seals, O-rings & Back-up rings. Keep a service parts kit on hand at all times.

HOSE ASSEMBLY AND CORD KITS

Contains 2 hydraulic hoses with 1 male & 1 female quick connect fitting at each end & 1 control cable with 1 male connector & 1 female connector

HOSE LENGTH	PART # WITHOUT SLEEVE	PART # WITH SLEEVE
6 FT	HAY06-ECA03	N/A
12 FT	HAY12-ECA03	HAY12-ECA33
26 FT	HAY26-ECA03	HAY26-ECA33
38 FT	HAY38-ECA03	HAY38-ECA33
52 FT	HAY52-ECA03	HAY52-ECA33

Principle of Operation

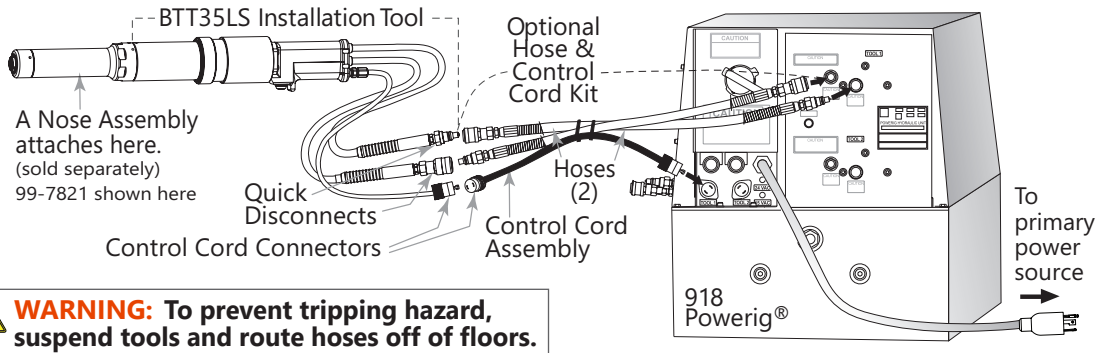


The operator pushes the Tool Nose over the end of the BobTail® lockbolt fastener until the Tool Puller bottoms on the fastener. When the trigger's pressed, a solenoid-operated valve in the Powerig® directs pressurized fluid through the PULL hose to both the front of the Forward Piston & the front of the Rear Piston, allowing fluid on the RETURN side to flow back to the tank. The Cylinder Assembly, Forward Gland Assembly, Anvil Holder, Anvil Assembly & Handle Assembly (when applicable), which are mechanically connected, move forward simultaneously to start the swaging process. As the Anvil Assembly moves forward over the puller the puller closes & locks onto the fastener.

After the fastener is fully swaged, the operator must release the trigger which de-energizes the solenoid. The valve directs pressurized fluid through the RETURN hose to the back side of the forward piston (but not the back of the rear piston). Fluid on the PULL side of the Forward Piston & the Rear Piston flows back to the tank, causing the Cylinder Assembly, Forward Gland Assembly, Anvil Holder, Anvil Assembly & Handle Assembly (when applicable) to move back, pulling the Tool's Anvil Assembly off the swaged (installed) collar. When the Tool reaches the end of the return stroke the puller opens up. The Tool can be removed from the fastener.

When the Tool reaches the end of the RETURN stroke, the RETURN pressure builds, causing the Powerig® to shut off (940 & 968 series) or to kick down to an idle pressure.

Tool-to-Powerig® Setup



⚠ WARNING: To prevent tripping hazard, suspend tools and route hoses off of floors.

Only use compatible equipment with this tool.

1. Set Pull and Return pressures on Powerig® according to Pressure Settings chart on previous page using Huck® Gauge **T-124883CE**.
2. Connect Hydraulic Hoses to the Powerig® first.
3. Connect the other end of the Hose Assembly to the installation tool.
4. Connect the Trigger/Control Cord from the Tool to the Hose Assembly.
5. Connect the Trigger/Control Cord from the Hose Assembly to the Powerig®.
6. Once the system is set up, turn on Powerig® and install a test fastener. Check to be sure that the fastener is installed correctly. This can be checked by using the appropriate swage gauge.

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

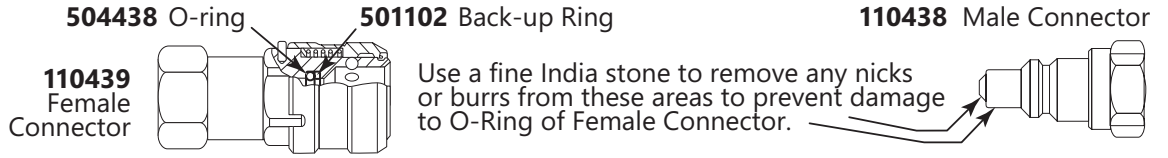
1) Apply Threadmate™ to male & female threads which do not have pre-applied sealant per manufacturer's recommendations. (Proceed to All Fittings step 2)

Thread Size	Final thread engagement at full make-up
⅛-27 NPTF	**.235 inch** *(.59 cm)*
¼-18 NPTF	**.339 inch** *(.86 cm)*
⅜-18 NPTF	**.351 inch** *(.89 cm)*

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.

110440 Hydraulic Couplings



Preparation for Use

WARNINGS: Read entire manual before tool use. Before using Huck® equipment, a 30-minute training session with qualified personnel is recommended. When using Huck® equipment, always wear approved eye and hearing protection.

Ensure adequate clearance for operator's hands before proceeding.

Only Huck Powerig® Hydraulic Units should be used to power Huck® tools. Hydraulic units that deliver high PULL and RETURN pressures must be equipped with relief valves; units not equipped with relief valves aren't recommended and may be dangerous.

Set PULL and RETURN pressures according to Specifications. Not setting pressures properly may result in serious personal injury. Use Pressure Gauge T-124833CE, following its instruction manual.

Connect tool hoses to the Powerig before connecting tool switch-control cord to the Powerig. Serious personal injury may occur if not connected in this order & disconnected in the reverse order.

1. Rub Parker Threadmate™ on pipe threads to prevent leaks & ease assembly.
2. Use a Huck Powerig® Hydraulic Power Source, or equivalent, prepared for operation per instruction manual. Check the PULL & RETURN pressures, ensuring they meet pressures shown in the **Specifications** section. Use the Powerig® & **T-124883CE** instruction manuals before & during the checking procedure.
3. Turn Off Powerig®, then disconnect it from the power supply. Disconnect the trigger control system from the Powerig®.
4. Connect the tool hoses to the hydraulic unit. If needed, adjust the position of the trigger assembly on the return pressure hose. Connect the trigger control system to Powerig®.
5. Connect hydraulic unit to power supply (air or electric). Turn ON Powerig®. Hold Tool trigger down for 30 seconds; press trigger a few times to cycle tool and to circulate hydraulic fluid. Observe Tool in action, checking for leaks.
6. Select the appropriate nose assembly for the fastener to be installed. Disconnect hydraulic unit from power supply. Disconnect tool's trigger control system from hydraulic unit. Attach the nose assembly to the tool.
7. Reconnect tool's trigger control system to hydraulic unit; reconnect unit to power supply. Check operation of nose assembly. Install fasteners in test plate of correct thickness with proper size holes. Inspect installed fasteners & if they don't pass inspection, see **Troubleshooting** section of this manual to locate and correct malfunction.
8. Operator should receive training on proper use of Huck® equipment from qualified personnel.

CAUTIONS: Don't use Teflon® tape on pipe threads. Pipe threads can cause tape to shred, resulting in tool malfunctions. Use Parker Threadmate™.

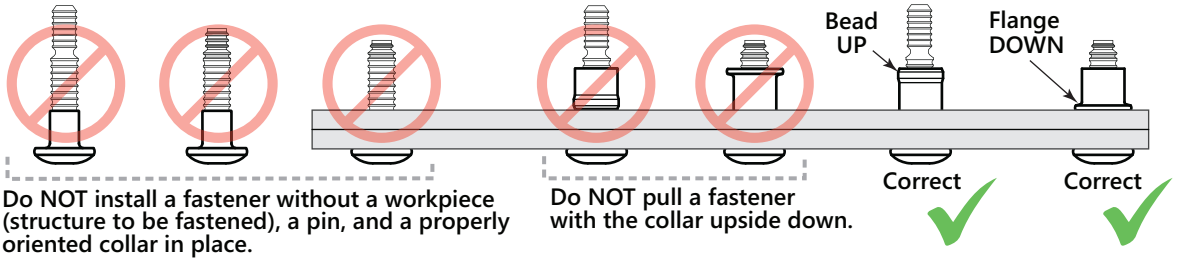
Keep disconnected hoses, couplers & hydraulic fluid free of foreign matter. Contaminated fluid can cause valve failures.

Hose couplers must be completely screwed together to ensure that ball checks in both nipple & body are completely open. Improperly assembled couplers cause overheating and malfunctions in the tool and Powerig.

Hand tighten couplers. Do NOT use a pipe wrench. Don't abuse the tool by dropping it, using it as a hammer or otherwise causing unnecessary wear & tear. Never carry the tool by attached hoses.

Operating Instructions

FOR SAFE OPERATION, THIS SECTION MUST BE READ AND UNDERSTOOD.



Do NOT install a fastener without a workpiece (structure to be fastened), a pin, and a properly oriented collar in place.

Do NOT pull a fastener with the collar upside down.

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.

WARNINGS: To avoid pinch point, never place hand between nose assembly and work piece.

Only use compatible equipment with this tool.

If the tool comes with a pintail deflector or bottle, make sure it is attached to the tool and directed away from all personnel.

Do NOT attempt to install a pin without placing the fastener and collar in the work piece (structure to be fastened).

Do NOT attempt to install a pin without a properly oriented collar in place.

The collar flange must be against work piece.

If these safety measures are not followed, the fastener could eject with great velocity and cause severe personal injury.

This condition can cause pin to eject with great velocity and force if the pintail breaks off or teeth/grooves strip. This may cause severe personal injury.

CAUTIONS: 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.

Don't use Teflon® tape on pipe threads as tape can shred, resulting in tool problems. Instead use Parker Threadmate™ on threads.

NOTE: In certain situations, it may be permissible to use a BobTail® tool and fastener without a collar to remove sheet gap prior to full installation with a collar. Consult qualified Huck® engineering personnel before attempting this operation

This section details installing BobTail® fasteners. Review all CAUTIONs & WARNINGs before installing fasteners. If the tool has problems, consult **Troubleshooting** before attempting repairs.

TO INSTALL A BOBTAIL® FASTENER:

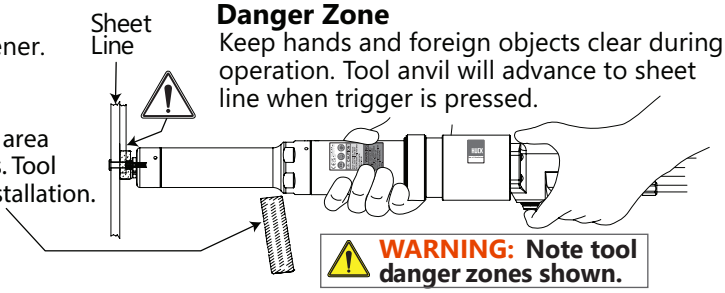
1. Push the tool's nose over the end of the fastener until it bottoms out.
2. Press the trigger and hold until the collar is swaged and the tool's anvil is ejected off the collar and the tool is released from the fastener.

   NOTE: The tool and nose assembly must be at right angles (90°) to the workpiece.

Tool Operation: Tool & Nose Assembly Shown Engaged On Fastener. Cylinder Home Position (Returned)

Keep this Area Clear: This area must be free of fixed obstructions. Tool moves forward during fastener installation.

Max distance moved = tool stroke. See manual for tool stroke length.



Danger Zone
Keep hands and foreign objects clear during operation. Tool anvil will advance to sheet line when trigger is pressed.

WARNING: Note tool danger zones shown.

Pressure Settings

1. All pressures from the Pressure Setting chart on the next page are starting points. Pressures may need to be adjusted up or down due to application and tooling setup.
2. Use pressures from this chart for both installation and removal.
3. When the 918 or 918-5 Powerig® hydraulic power source is used, and pull pressure from chart is equal to or below 2500 psi, the 128904 Relief Valve is required.
4. If the 128441-3 BobTail® Controller is to be used, please refer to the controller manual for details.

continued...

Pressure Settings continued...

INCH/ METRIC	SIZE	NOSE ASSEMBLY	COLLAR MATERIAL	PULL PSI (BAR)	RETURN PSI (BAR)
Metric	12mm BT	99-7820	Grade 8.8	2200 psi 150 bar	1500 psi 100 bar
			Grade 10.9	2800 psi 190 bar	2100 psi 140 bar
	14mm BT	99-7824	Grade 8.8	3000 psi 210 bar	2200 psi 150 bar
			Grade 10.9	3500 psi 240 bar	2600 psi 180 bar
Inch	-16 BT (½")	99-7825	Grade 5	2300 psi 160 bar	1700 psi 120 bar
			Grade 8	3100 psi 210 bar	2300 psi 160 bar
Metric	16mm BT	99-7821	Grade 8.8	3700 psi 260 bar	2600 psi 180 bar
			Grade 10.9	4600 psi 320 bar	3400 psi 230 bar
Inch	-20 BT (⅝")	99-7821	Grade 5	3700 psi 260 bar	2200 psi 150 bar
			Grade 8	4600 psi 320 bar	3400 psi 230 bar
Metric	20mm BT	99-7822	Grade 10.9	7200 psi 500 bar	5300 psi 370 bar
Inch	-24 BT (¾")	99-7826	Grade 5	5200 psi 360 bar	3700 psi 260 bar
			Grade 8	7000 psi 480 bar	5100 psi 350 bar

Maintenance

CAUTIONS: Replace all seals, wipers, O-rings and Back-up rings when the tool is disassembled for any reason, and also at regular intervals, depending on severity and length of use.

Don't use Teflon® tape on pipe threads. Tape can shred, resulting in malfunctions. Apply Parker Threadmate to male pipe threads per manufacturer's instructions.

The operating efficiency of a tool is directly related to the performance of the entire system. Regular inspection and the immediate correction of minor problems will keep the tool operating efficiently, and prevent downtime. A schedule of preventive maintenance of the tool, nose assembly, hoses, trigger and control cord, and Powerig® hydraulic power source will ensure the tool's proper operation, extend its life, and reduce the risk of personal injury to those who operate it.

NOTE: Huck® tools should be serviced only by personnel who are thoroughly familiar with their operation. Consult MSDS before servicing tool.

Please read this section completely before proceeding with maintenance and repair. Use proper hand tools in a clean and well-lit area. Only standard hand tools are required in most cases. Where a special tool is required, the description and part number are given.

Service the tool in a clean, well-lighted area. Take special care to prevent contamination of pneumatic and hydraulic systems. Keep separated parts away from dirty work surfaces. Carefully handle all parts. Before reassembly, examine them for damage and wear. Disassemble and assemble tool components in a straight line. Reassemble tool with the same care.

Do NOT bend, cock, twist, or apply undue force. Keep any relevant hand tools and Huck® Spare Parts Service Kits available. They include important consumable parts. 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.

When clamping tool or parts in a vise, and when parts require force, use suitable soft materials to cushion impact. For example, using a brass drift, wood block and vise with soft jaws greatly reduces possibility of damaging tool.

DAILY

- Check tools and nose assemblies for damage and air or hydraulic leaks; tighten, repair, or replace if necessary.
- Inspect the tool, hoses & Powerig when in use to detect abnormal heating, leaks or vibration.
- Verify that hydraulic hose fittings, couplings, and electrical connections are secure.
- Inspect hydraulic hoses for damage and deterioration. Do not use hoses to carry tool. Replace hoses if damaged.
- Clean nose assemblies in mineral spirits to clear jaws and rinse metal chips and dirt. For a more thorough cleaning, disassemble the nose assembly. Use a dull-pointed "pick" to remove embedded particles from the pull grooves of the jaws. Clean all parts of any assembly, and Unitized™ Jaws, in mineral spirits or isopropyl alcohol only. Do not let the jaws come in contact with other solvents. Do not soak jaws; dry them immediately after cleaning. Dry other parts before re-assembling.

WEEKLY

Disassemble, clean & reassemble nose assemblies according to applicable instructions. Check the tool and all connections for damage & fluid/air leaks. Tighten or replace if necessary. Inspect the cylinder bore, piston & rod/extension, and the dump valve for scored surfaces, excessive wear or damage; replacing as necessary.

continued...

Maintenance continued...

STICKERS
Stickers display important safety & pressure details & must always be legible. For more info, see **Sticker Locations**.

SPARE PARTS SERVICE KITS
Huck® Spare Parts Service Kits contain replacements or perishable tool parts. Huck® recommends having the appropriate kit accessible. For more information, see **Spare Parts and Accessories**.

FLUID MAINTENANCE & RECYCLED MATERIALS
See **Specifications** for information on approved fluid types. For fluid maintenance please refer to NAS 1638 class 9 or ISO CODE 18/15 or SAE level 6. Dispose of fluid in accordance with local environmental regulations. Recycle steel, aluminum, and plastic parts in accordance with local lawful and safe practices.

Standard Sealants and Lubricants
Coat hose fitting threads with a non-hardening Teflon® thread compound such as Parker Threadmate™.

Smear Lubriplate® 130AA (Huck® P/N 502723) or equivalent lubricant, on O-rings & mating surfaces. This prevents nicking/pinching O-rings on any rough/tight spot and makes assembly easier.

Tool Disassembly Procedure

WARNING: Disconnect the tool control cord from the Powerig® 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 in order to replace damaged seals, wipers, back-up rings and components. Always replace seals, wiper, O-rings and back-up rings of disassembled subassemblies. Always use a soft-jaw vise to avoid damage to tool.

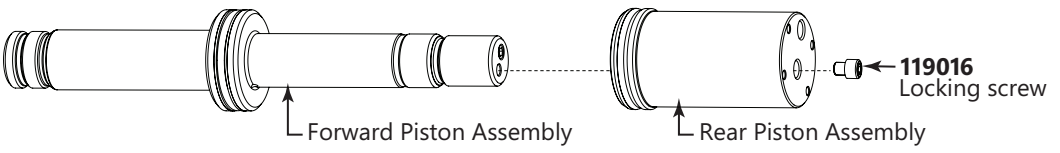
NOTE: "P/N" indicates a Huck® number.

1. Remove 4 cap screws attaching handle to rear piston, if necessary.
2. Slide handle and guard back over hoses, if necessary.
3. Remove front retaining ring, and slide suspension sleeve off front of tool.

WARNING: Do NOT re-use seals, wipers or rings; irreparable tool damage could occur. Discard these parts & use replacements (see Spare Parts & Accessories).

4. Remove 2 locater buttons from rear piston shield, and slide shield back over hoses.
5. Remove hoses from rear piston assembly. Unscrew and remove lock screw from front piston (Figure 1).
6. Push front piston toward back of main housing; then unscrew rear piston from front piston and pull rear piston out of main housing.
7. Loosen setscrews in main housing, and unscrew front gland assembly from housing.
8. Pull front piston assembly from main housing.
9. Using a small diameter, dull-pointed rod, remove and discard all O-rings, back-up rings, wipers, and seals from the disassembled components.

Figure 1



Tool Assembly Procedure

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

CAUTION: Don't use Teflon® tape on pipe threads. It may shred, resulting in malfunctions. Use Parker Threadmate™.

For part identification, see Component Drawings.

Before re-assembling the tool, have these items handy. **NOTE:** "P/N" indicates a Huck® part item.

- Huck® Spare Parts Service Kit (P/N **BTT35KIT**)
- Parker Threadmate™ thread compound
- Lubriplate® 130-AA (P/N **502723**) or Parker Super O-Lube®.

NOTE: When re-assembling the tool, always replace damaged and defective parts, seals, wipers, O-rings and Back-up rings in sub-assemblies.

Before re-assembling the tool:

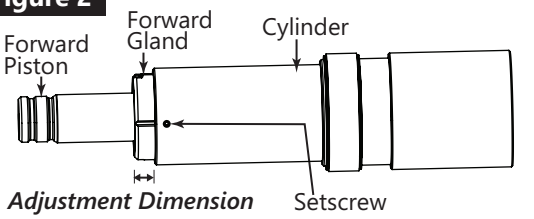
- Clean components in mineral spirits or other solvent compatible with O-ring seals.
- Clean out O-ring grooves.
- Inspect components for scoring, excessive wear, and damage; replace as necessary.
- Replace O-rings and Back-up rings. See Assembly Drawings for guidance on positioning O-rings and Back-up rings.
- When assembling the tool, take care not to damage O-rings and Back-up Rings.
- Smear Lubriplate® 130-AA (P/N **502723**) or Super O-Lube® on rings and mating parts to ease assembly.

continued...

Tool Assembly Procedure continued...

1. Install O-ring & back-up rings in main housing.
2. Install O-ring and back-up rings on front piston.
3. Slide assembled front piston assembly into the front of the main housing assembly.
4. Noting the correct orientations, install the internal o-rings & back-up rings of the rear piston.
5. Noting the correct orientation, install the rear piston polyseal.
6. Slide assembled rear piston assembly into back of main housing. Thread the rear piston fully onto the front piston, then back it off until the piston installation of the lock screw by attempting to loosen and tighten the two pistons. When these components are installed correctly, rotational movement between them should not be possible. Reinstall hoses.
7. Noting the correct orientations, install the o-rings, back-up rings & wiper of the front gland.
8. Slide assembled gland over front piston rod and thread it into the main housing; then check the dimension from the face of the gland to the face of the main housing (Fig. 2) and adjust it so the lock screw can be installed. (Figure 2) Verify the following range by aligning the groove in the gland closest to the setscrew hole in the main housing and fastening the two together with the setscrew.

Figure 2



Adjustment Dimension Range:
.480-.520 in. (1.22-1.32 cm)

9. Slide rear piston shield over main housing, align the locater button holes and install the buttons.
10. Slide the sleeve into place and install the retaining rings to secure it.
11. Slide the handle and guard in place and secure with 4 cap screws.

WARNING: Make sure the tool has been properly re-assembled prior to use. Failure to do so could result in serious personal injury.

Nose Assembly Installation and Removal

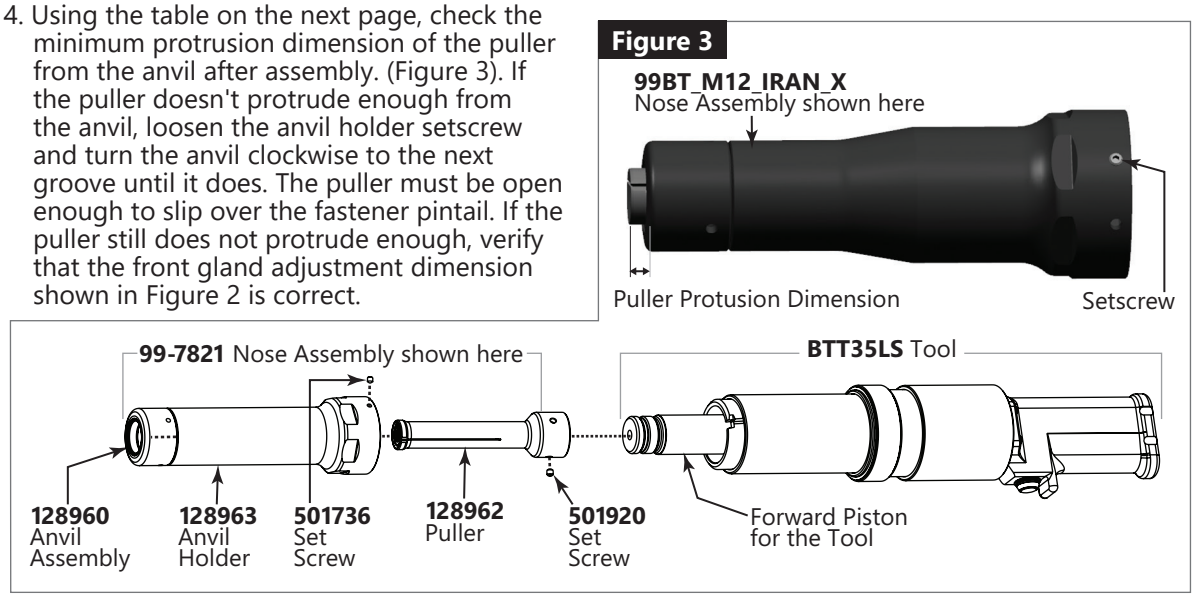
ATTACHING INSTALLATION NOSE ASSEMBLY:

1. Thread puller fully onto front piston and tighten setscrews to lock in place.
2. Apply anti-seize lubricant (Huck p/n 508183) to outside of puller and inside of anvil where they would contact each other.
3. Slide anvil assembly and anvil holder over puller, and thread anvil holder fully onto gland; then unscrew until setscrew in anvil holder lines up with closest groove on gland; then tighten setscrew to lock in place.
4. Using the table on the next page, check the minimum protrusion dimension of the puller from the anvil after assembly. (Figure 3). If the puller doesn't protrude enough from the anvil, loosen the anvil holder setscrew and turn the anvil clockwise to the next groove until it does. The puller must be open enough to slip over the fastener pintail. If the puller still does not protrude enough, verify that the front gland adjustment dimension shown in Figure 2 is correct.

REMOVING INSTALLATION NOSE ASSEMBLY:

1. Unplug trigger cord from Powerig® hydraulic power source; then disconnect hoses from Powerig.
2. Loosen setscrew in anvil holder and unscrew anvil holder from front gland.
3. Pull anvil and anvil holder off over puller.
4. Loosen setscrews on puller and unscrew puller from front piston.

Figure 3



continued...

Nose Assembly Installation and Removal continued...

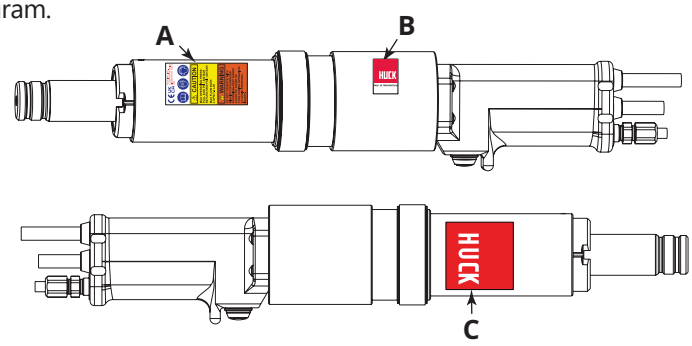
FASTENER SIZE	NOSE ASSEMBLY	NOSE TYPE	MINIMUM PULLER PROTRUSION DIMENSION (INCHES)
12 mm	99-7820	Installation	.19
	99-7820CX	Cutter	.20
⅝" & 16 mm	99-7821	Installation	.19
	99-7821CX	Cutter	.24
	99-7821X	Installation	.19
20 mm	99-7822	Installation	.25
	99-7822CX	Cutter	.24
14 mm	99-7824	Installation	.19
	99-7824CX	Cutter	.21
½"	99-7825	Installation	.19
	99-7825CX	Cutter	.20
¾"	99-7826	Installation	.25

Sticker Locations

HUCK hydraulic tools come labeled with stickers which contain safety and pressure settings information. Stickers must remain on the tool and readable. If a sticker becomes damaged or worn, or if it has been removed from the tool, or when replacing the hydraulic Cylinder, it must be ordered and placed in the location shown in this diagram.

A.

590512-15 CE and Warning Sticker



B.

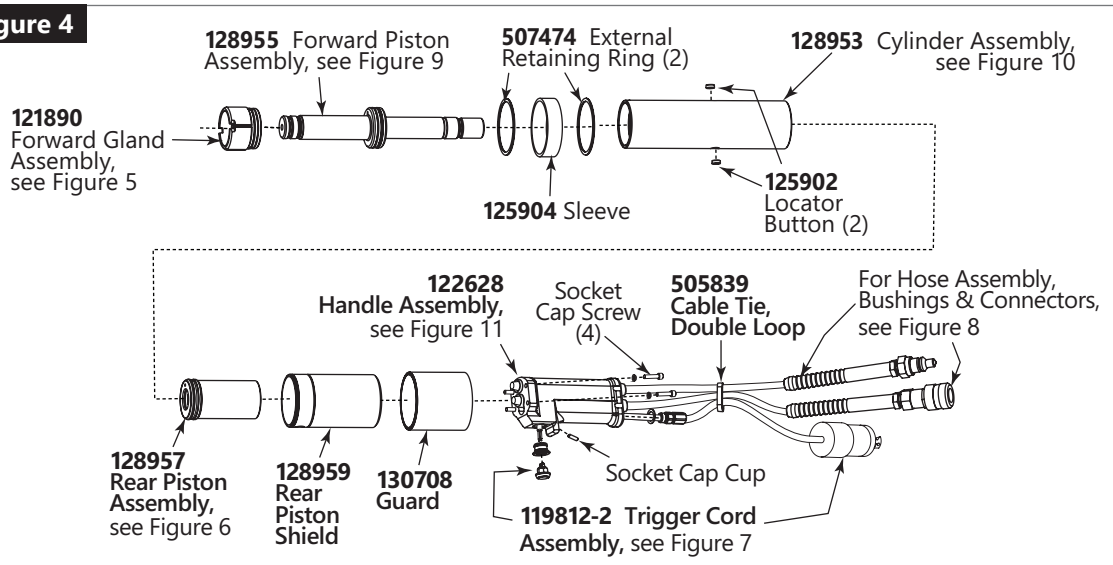
590517 Huck® Trademark & Year of Manufacture Sticker

C.

590059 Huck® Trademark Sticker

Component Drawings

Figure 4

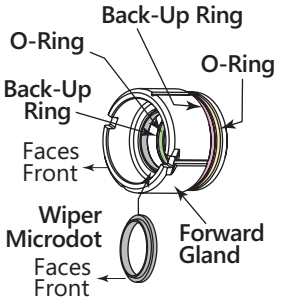


continued...

Component Drawings continued...

Figure 5

121890 Forward Gland Assembly contains:

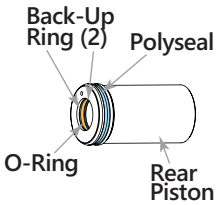


Note the orientation of the Wiper Microdot

- **121878** Forward Gland **
- **506065** Wiper Microdot *
- **501144** Back-Up Ring *
- **506079** O-Ring *
- **501151** Back-Up Ring *
- **506089** O-Ring *

Figure 6

128957 Rear Piston Assembly contains:



- **128958** Rear Piston **
- **505918** Polyseal *
- **500818** O-Ring *
- **501112** Back-Up Ring (2) *

Figure 7

119812-2 Trigger Cord Assembly contains:

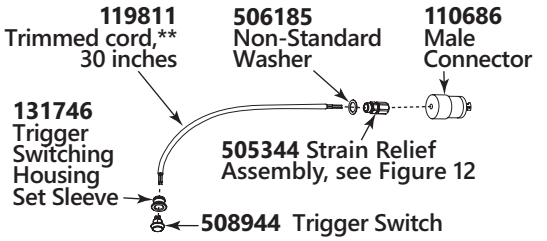


Figure 8

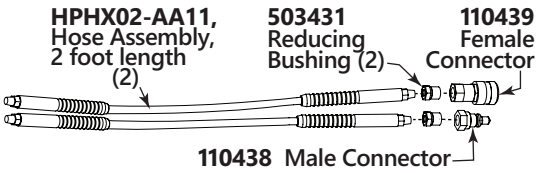
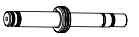
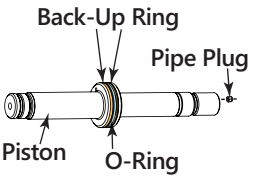


Figure 9



128955 Forward Piston Assembly contains:



- **128956** Forward Piston **
- **506089** O-Ring *
- **501151** Back-Up Ring (2) *
- **503703** Pipe Plug

Figure 10

128953 Cylinder Assembly contains:

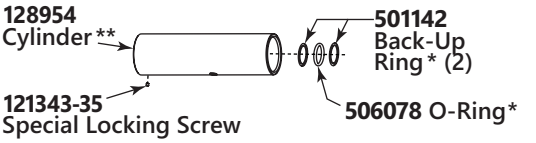


Figure 11

122628 Handle Assembly contains:

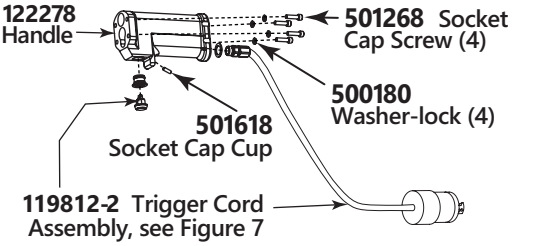
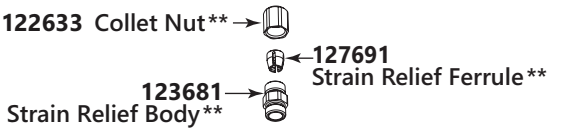


Figure 12

505344 Strain Relief Assembly contains:



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

* Part contained in the **BTT35KIT** Service Kits.

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

Troubleshooting

Always check the simplest possible cause of a malfunction first. For example, a loose or disconnected trigger line. Then proceed logically and eliminate each possible cause until the defect is found. Where possible, substitute known good parts for suspected defective parts. Use chart as an aid in troubleshooting.

1. Tool fails to operate when trigger is pressed.
   a. Inoperative Powerig® Hydraulic Unit. See applicable instruction manual.
   b. Loose air or electrical connections.
   c. Damaged trigger assembly.
   d. Loose or faulty hydraulic hose couplings.

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

3. Tool leaks hydraulic fluid.
   a. Defective Tool O-rings or loose hose connections at tool.

4. Hydraulic couplers leak fluid.
   a. Damaged or worn O-rings in coupler body. See **Hydraulic Coupler** 110440.

5. Hydraulic fluid overheats.
   a. Powerig® Hydraulic Unit not operating properly. See applicable instruction manual.
   b. 918 or 918-5 Powerig® Hydraulic Unit running in reverse. See unit's instruction manual.

6. Tool operates erratically and fails to install fastener properly.
   a. Low or erratic hydraulic pressure: Air in system.
   b. Damaged or worn piston seal, damaged or worn piston O-ring in tool.
   c. Excessive wear on sliding surfaces of Tool parts.

7. Pull grooves on fastener pintail stripped during PULL stroke.
   a. Operator not sliding anvil completely onto fastener pintail.
   b. Incorrect fastener grip.
   c. Worn or damaged jaw segments.
   d. Metal particles in pull grooves of jaw segments.
   e. Excessive sheet gap.

8. Collar of fastener not completely swaged.
   a. Improper Tool operation. See **Troubleshooting**, number 6.
   b. Scored anvil.

9. Tool "hangs-up" on swaged collar of Fastener.
   a. Improper Tool operation. See **Troubleshooting** item #6.
   b. RETURN pressure too low.
   c. Not enough collar lubricant.
   d. Nose assembly not installed correctly.

10. Pintail of fastener fails to break.
    a. Improper Tool operation. See **Troubleshooting**, number 6.
    b. Pull grooves on fastener are stripped. See **Troubleshooting**, number 7.
    c. PULL pressure too low.

11. Nose will not release broken pintail.
    a. Nose assembly not installed correctly.

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

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

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

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 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.

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ISO 9001-2015
CERTIFIED MANAGEMENT SYSTEM
ISO 14001-2015

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