Alcoa Fastening Systems

ALCOA

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

INSTRUCTION MANUAL

HYDRAULIC COLLAR CUTTER

MODELS

516, 520, 524, 528, 532, 536, & M524

01-14-2010
HK269

HUCK®

EC Declaration of Conformity

Manufacturer:
Alcoa Fastening Systems, Industrial Products Group, 1 Corporate Drive, Kingston, NY, 12401, USA

Description of Machinery:
500 Series Hand-Held Hydraulic Cutting Tools

Relevant provisions complied with:
Council Directive related to Machinery (2006/42/EC)
British Standard related to hand held, non-electric power tools (EN 792-1)

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

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

Signature:

Full Name: Larry M. Krieg

Position: Engineering Manager
Installation Systems Division

Place: Kingston, New York, USA

Date: January, 2010

Declared dual number noise emission values in accordance with ISO 4871
A weighted sound power level, LWA: 91 dB (reference 1 pW) Uncertainty, KWA: 3 dB
A weighted emission sound pressure level at the work station, LpA: 80 dB (reference 20 µPa) Uncertainty, KpA: 3 dB
C-weighted peak emission sound pressure level, LpC, peak: 106 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*:	.48 m/s^2
Uncertainty, K:	.15 m/s^2
Values measured and determined according to ISO 8662-1, ISO 5349-2, and EN 1033	

Test data to support the above information is on file at Alcoa Fastening Systems, Industrial Products Group, Kingston Operations, Kingston, NY, USA.

CONTENTS

SAFETY

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

1. Glossary

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

 — Read manual prior to using equipment.

 — Eye protection required while using this equipment.

 — Hearing protection required while using this equipment.

WARNINGS - Must be understood to avoid severe personal injury.

CAUTIONS - show conditions that will damage equipment and or structure.

Notes - are reminders of required procedures.
Bold, Italic type and underlining **-** emphasizes a specific instruction.

2. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.

3. 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.

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

5. Read MSDS Specifications before servicing the tool. MSDS Specifications are available from the product manufacturer or your Huck representative.

6. When repairing or operating Huck installation equipment, always wear approved eye protection. Where applicable, refer to ANSI Z87.1 - 2003

7. Disconnect primary power source before performing maintenance on Huck equipment or changing Nose Assembly.

8. Tools and hoses should be inspected for leaks at the beginning of each shift/day. If any equipment shows signs of damage, wear, or leakage, do not connect it to the primary power supply.

9. Mounting hardware should be checked at the beginning of each shift/day.

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

11. Release tool trigger if power supply is interrupted.

12. Tools are not to be used in an explosive environment unless specifically designed to do so.

13. Never remove any safety guards or pintail deflectors.

14. Ensure deflector or pintail collector is installed and operating prior to use.

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

16. Always clear spent pintail out of nose assembly before installing the next fastener.

17. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

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

19. Unsuitable postures may not allow counteracting of normal expected movement of tool.

20. 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 in preventing an accident which may cause severe personal injury.

21. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.

22. There is a risk of crushing if tool is cycled without Nose Assembly installed.

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

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

25. Tool is only to be used as stated in this manual. Any other use is prohibited.

DESCRIPTION

Huck 500 series Collar Cutters are used to remove the collars from 1/2 through 1-1/8 installed HUCKBOLT® Fasteners. These Collar Cutters cut through the swaged collars. Hydraulic pressure is supplied by HUCK hydraulic Powerig®s at maximum of 5700 psi.

Collar Cutters are accessories and use installation tool's operating switch and hose. An auxiliary switch and control cord is available separately and is used where a tool switch is not accessible.

SPECIFICATIONS

Power Source: Huck POWERIG Hydraulic Unit

Hose Kits: Use only genuine HUCK Hose Kits rated @ 10,000 psi working pressure.

Max Operating Temp: 125*F (51.7*C)

Max Flow Rate: 2 gpm (7.6 l/m)

Max Inlet Pressure: 5700 psi, (393 bar)

Hydraulic Fluid: ATF meeting DEXRON III, DEXRON IV, MERCON, Allison C-4 or equivalent specifications.

Fire resistant hydraulic fluid may also be used, and is required to comply with OSHA regulation 1926.302 paragraph (d): "the fluid used in hydraulic power tools shall be fire resistant fluid approved under schedule 30 of the US Bureau of Mines, Department of Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed."

MODEL NO.	COLLAR REMOVED INCHES *(millimeters)*	LENGTH INCHES *(millimeters)*	WIDTH INCHES *(millimeters)*	HEIGHT INCHES *(millimeters)*	WEIGHT
516	1/2	**6.60** *(168)*	**3.40** *(86)*	**4.20** *(107)*	6.50 lbs 2.9 kg
520	**5/8** *(16)*	**6.80** *(173)*	**3.40** *(86)*	**4.20** *(107)*	6.75 lbs 3.1 kg
524	3/4	**7.50** *(191)*	**3.75** *(95)*	**4.50** *(114)*	8.75 lbs 4.0 kg
528	**7/8** *(22)*	**8.00** *(203)*	**4.00** *(102)*	**4.80** *(122)*	10.75 lbs 4.9 kg
532	1	**9.40** *(239)*	**4.25** *(108)*	**5.50** *(140)*	14.25 lbs 6.5 kg
536	1-1/8	**9.40** *(239)*	**4.25** *(108)*	**5.50** *(140)*	14.25 lbs 6.5 kg

Principle of Operation

WARNING: Huck recommends that only Huck Powerig Hydraulic Units be used as a power source for Huck installation equipment. Hydraulic power units that deliver high pressure for both PULL and RETURN, AND ARE NOT EQUIPPED WITH RELIEF VALVES ARE SPECIFICALLY NOT RECOMMENDED AND MAY BE DANGEROUS.

The PULL Pressure hose of an installation tool is connected to a Collar Cutter. Cutting stroke is controlled by installation tool switch or an auxiliary switch. When switch is depressed, a solenoid-operated valve in the Powerig directs pressurized hydraulic fluid through hose and against Cutter Piston. Piston with Blade moves forward. When Cutter is positioned on swaged collar, moving Blade presses collar against stationary Blade. Cutting begins and continues until Piston stroke is completed. Opposing force of Blades cuts Collar on opposite sides.

When cutting is completed, switch is released. Solenoid is de-energized, and valve releases pressure from Piston and Blade. Powerig idling valve diverts hydraulic fluid to reservoir. Return Spring moves Piston to rear of Cylinder, and Blades are opened. The Cutter is removed from cut collar and is ready to cut next swaged collar.

Checking Hydraulic Pressures

WARNING: Huck recommends that only Huck POWERIG® Hydraulic Units be used as a power source for Huck Installation Equipment. Hydraulic power units that deliver high pressure for both PULL and RETURN, AND ARE NOT EQUIPPED WITH RELIEF VALVES ARE SPECIFICALLY NOT RECOMMENDED, AND MAY BE DANGEROUS.

Conditions that require checking and adjusting output pressures:

1. If tool with higher pressure has been used.
2. When changing collar cutter size.
3. When changing tools, if pressure requirements differ.
4. First time startup.
5. After overhauling unit.
6. When troubleshooting.

WARNING: Correct PULL and RETURN pressures are required for operator's safety and forCollar Cutter's function.Pressure gauges T-124833 and T-124833CE are available for checking pressures, see Specifications section and applicable gauge instruction manual.

WARNING: For adjusting the pressure, see the applicable POWERIG® instruction manual. Neglecting to verify pressures may lead to catastrophic failure of hoses, tool or other part of system. This could cause severe or fatal injury to anyone nearby.

Preparation for checking pressures:

Prime and bleed hydraulic unit per the applicable POWERIG® instruction manual.

WARNING: When hydraulic unit is running, be sure to connect tool's hoses to unit before connecting tool's control cord to unit. If a malfunctioning cord switch is connected first, tool may begin to cycle unexpectedly. An accidentally cycling tool could severely injure a hand.

When disconnecting hoses, switch control cord *must* be disconnected first, before disconnecting hoses.

PREPARATION FOR USE

WARNINGS:
Read full manual before using tool.

A half-hour training session with qualified personnel is recommended before using Huck equipment.

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

Be sure there is adequate clearance for the operator's hands before proceeding.

CAUTION: Do not let disconnected hoses and couplers contact a dirty floor. Keep harmful material out of hydraulic fluid. Dirt in hydraulic fluid causes valve failure In Tool and In POWERIG Hydraulic Unit.

Note: Where a part number (P/N) is given, Huck sells that part.

CAUTION: Do not use TEFLON®* tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Slic-Tite is available in stick form as Huck P/N 503237.)

WARNING: Correct PULL and RETURN pressures are required for operator's safety and for Installation Tool's function. Gauge Set-Up, T-124833 and T-124833CE, Is available for checking pressures. See Tool SPECIFICATIONS and Gauge Instruction Manual. Failure to verify pressures may result in severe personal injury.

WARNING: Be sure to connect Tool's hydraulic hoses to POWERIG Hydraulic Unit before connecting Tool's switch control cord to unit. If not connected in this order, severe personal Injury may occur.

Rub Slic-Tite®* with PTFE thread compound, or equivalent, on pipe plug threads and quick connect fitting.

1. Use Huck POWERIG Hydraulic Unit, or equivalent, that has been prepared for operation per instruction manual. Check both PULL and RETURN pressures and, if required, adjust to pressures given in **SPECIFICATIONS** section of this manual.
2. First, turn hydraulic unit to OFF. Then disconnect power supply from hydraulic unit. Disconnect trigger control system from hydraulic unit.
3. Connect PULL pressure hose, with coupler nipple, into Cutter. Use only with HUCK supplied hoses rated at 10,000 psi or greater. Check trigger assembly for apparent damage or wear. If required, adjust position of trigger assembly on return pressure hose. Connect trigger control system to hydraulic unit. If auxiliary switch and control cord is used, installation tool is not required to actuate powerig. With auxiliary switch and control cord, the tool hose alone, or an equivalent hose, may be coupled to cutter. The RETURN pressure port must be plugged with a steel pipe plug HUCK Part No. 502375 (3/8-18 NPTF).

WARNING: RETURN pressure port on Powerig must be plugged with a steel 3/8-18 NPTF (HUCK Part No. 502375) pipe plug to prevent hydraulic fluid from being discharged.

4. Connect tool switch cord to Powerig cord, or connect auxiliary switch cord to powerig cord.
5. Turn hydraulic unit to ON. Depress and release switch a few times to cycle tool and to circulate hydraulic fluid. Observe action of Cutter and check for fluid leaks.

* *Slic-Tite is a registered trademark of LA-CO Industries, Inc.*
* *TEFLON is a registered trademark of DuPont Corp.*

OPERATING INSTRUCTIONS

For safe operation. Please read completely

General

Operators should receive training from qualified personnel.

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.**
- **Cutters are not generally insulated for coming into contact with electric power sources.**
- **Stored gas or fluid energy can pose a hazard.**
- **There is a risk when using cutters of large dimensions, due to the larger opening of cutting end.**
- **Cutter shall not be operated if directed toward the operator or any person.**
- **Beware of ejection of cutting material or chips; turn head in each operation to avoid exposure.**
- **Working on brittle material can cause harmful splinter.**
- **Do not bend cutter to free if stuck.**

To remove installed HUCKBOLT® fastener:

1. Place Collar Cutter over swaged collar. Hold bottom flat against sheet surface.

CAUTION: Tool must be centered on collar to assure proper cutting action.

2. Depress installation tool switch or auxiliary switch. The moving blade cuts through side of collar as stationary blade is pulled into, and simultaneously cuts, opposite side.

3. Release switch when cut is completed. Return spring pushes the piston back to starting position, and causes blades to open.

4. Cutter can now be removed from cut collar, and cutting cycle repeated on next swaged collar.

WARNING: Cutter must be disconnected prior to clearing collar segments.

CAUTIONS: Check Cutter for collar segments after each stroke. Segments not removed from Cutter will cause damage to Cutter and to fastened structure.

MAINTENANCE

CAUTIONS:
- **Consult MSDS before servicing tool.**
- **Keep dirt and other material out of hydraulic system.**
- **Separated parts most be kept away from dirty work surfaces.**
- **Dirt/debris in hydraulic fluid causes failure in POWERIG® Hydraulic Unit's valves.**

Good Service Practices
The efficiency and life of any installation or removal tool depends upon proper maintenance and good service practices. Tools should be serviced by personnel who are thoroughly familiar with them and how they operate.

A clean well lighted area should be available for servicing the tool. Special care must be taken to prevent contamination of hydraulic systems.

All parts must be handled carefully and examined for damage or wear. Perishable parts such as o-rings and seals should be kept on hand for replacement whenever tool is disassembled.

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.

CAUTION: Always replace seals, wipers, and back-up rings when tool is disassembled for any reason.

CAUTION: Do not use TEFLON®* tape on pipe threads. Pipe threads may cause tape to shred resulting in tool malfunction. (Slic-Tite is available in stick form as Huck P/N 503237.)

Components should be disassembled and assembled in a straight line without bending, cocking or undue force.

Disassembly and assembly procedures outlined in this manual should be followed. Appropriate hand tools and soft materials to protect tools must be available. Only standard hand tools are required. A half inch brass drift, wood block and a vise with soft jaws will prevent damaging tool.

Preventive Maintenance
Refer to the applicable section for **ASSEMBLY** and **DISASSEMBLY**. For supplementary information refer to **TROUBLESHOOTING** and illustrations.

With proper care, the cutter will remove 100 collars before it may be necessary to replace the blades. The estimated life of the Collar Cutter is 10,000 cycles or 5 years, depending on service conditions.

System Inspection
Operating efficiency of the cutter is directly related to the performance of the complete system, including the cutter, hydraulic hoses, trigger assembly and the POWERIG® Hydraulic Unit. Therefore, an effective preventive maintenance program includes scheduled inspections of the system to detect and correct minor defects.

1. Inspect cutter for external damage.
2. Verify that hoses, fittings and trigger connections are secure.
3. Inspect hydraulic hoses for signs of damage. Replace if required.
4. Inspect cutter, hoses and POWERIG® during operation to detect abnormal heating, leaks or vibration.

POWERIG® Hydraulic Unit Maintenance
Hydraulic fluid should have a maximum contamination level of ISO CODE 18/15 or SAE LEVEL 6. Portable filtration on smaller powerigs and maintaining filters on larger powerigs is recommended. Maintenance and repair instructions are in applicable POWERIG Hydraulic Unit instruction manuals.

Cutter Maintenance
At regular intervals, depending upon use, replace all seals in the cutter. Spare seals and parts should be kept on hand. Inspect cylinder bore and piston for scored surfaces, excessive wear or damage, and replace as necessary.

Notes and Specifications for Standard Parts
All part numbers shown are available from Huck. The 500000 series numbers are standard parts which can generally be purchased locally.

Needle Valve Adjustment
A needle valve has been designed into the hydraulic cylinder of some of the cutters. The adjustment provides for the proper piston RETURN stroke when using various hydraulic units and hose combinations. Tool is shipped with the valve set in the closed position.

Needle Valve Adjustment for the 940 POWERIG® Hydraulic Unit: Turn needle valve clockwise to the closed position.

Needle Valve Adjustment for the 918 POWERIG® Hydraulic Unit:
1. Close needle valve clockwise. Depress trigger until piston stops forward.
2. Open needle valve by turning slightly counterclockwise. Jog or activate switch. If valve is correctly adjusted, piston will return to rear and pump shuts off. Repeat procedure until cutter cycles normally.
3. If normal cutter operation cannot be attained, close needle valve completely and start over at 1. Repeat until requirements are met.

Needle Valve Adjustment Trouble-shooting:
Note: A normal piston cycle is when the piston goes fully forward and fully back with one actuation of the switch.

Q. Piston partially returns and pump shuts off.
A. Needle valve not open enough.

Q. Piston partially or fully returns and pump will not shut off.
A. Needle valve is open too far.

* *Slic-Tite is a registered trademark of LA-CO Industries, Inc.*
* *TEFLON is a registered trademark of DuPont Corp.*

Disassembly and Assembly

General

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

(a) Always work on a clean surface.

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

(c) 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.

(d) Never continue to force a component if it “hangs up” due to misalignment. Reverse the procedure to correct misalignment and start over.

(e) Smear Lubriplate 130AA ,™ or equivalent, on O-rings and mating surfaces to aid assembly and prevent damage to O-rings. (Lubriplate is manufactured by Fiske Brothers Refining Co. and is available in most localities. A handy tube of Lubriplate 130AA is available from Huck as part number 502723).

Disassembly and Assembly Tools

Standard hand tools such as wrenches, drifts, copper or lead hammers, screwdrivers, socket screw hexagon keys, long forceps (tweezers), etc. Which can be purchased at most local supply firms are required. If possible, an arbor press and vise with soft jaws should be available. Standard tools available from Huck are shown in Table 3.

This series of Collar Cutters is designed in two slightly varying configurations. In two smaller sizes, piston blade slides in from top of cylinder, and pin on side prevents blade rotation. Larger sizes have blade pushed into cylinder from bottom, and pin on top prevents rotation.

For component identification, refer to Assembly Drawings and Parts Lists.

DISASSEMBLY

The following procedure is for complete disassembly. Disassemble only those parts necessary. Check and replace damaged/worn components. ***Always replace O-rings, wipers, and back-up rings of disassembled subassemblies.***

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

WARNING: Be sure Powerig is turned OFF before removing Cutter for cleaning or for replacing worn or damaged components.

1. Uncouple hydraulic hose at Cutter, and disconnect electrical control cord.

2. Remove Screw*(s)* (1) from Blade*(s)* (2). Remove blade from Cylinder Body (3).

3. Remove four Flat Head Cap Screws (12) from Cylinder Head (7), and lift out Keeper Plate (11).

WARNING: Hold Piston (17) or Cylinder Head (7) in Cylinder Body (3) when Retaining Ring (10) or Shoulder Screw (21) is removed. Return Spring (5) may cause either or both to eject from Cylinder.

4. Remove Retaining Ring (10) while observing the above WARNING.

5. Pull on hydraulic Coupler (14) to remove cylinder bead from cylinder. Unscrew Coupler and Pipe Nipple (13) from Cylinder Head.

6. On 516 and 520 Collar Cutters, pull assembled Piston (7) and Blade (6) from Cylinder. Lift Return Spring (5) out.

7. On 524 and 536 Cutters, remove Shoulder Screw (9) and Washer (8) while observing WARNING above. Remove Piston (15) and Spring (5).

8. Pull Piston Blade (6) from cylinder body.
   516, 520, 524, 528, 532, 536:
   Push Pin (4) through hole and into body.
   M524:
   Remove Screw (4).

9. Use a small diameter, dull-pointed rod to remove O-Rings and Back-up Rings from all components.

ASSEMBLY

Before assembling tool:

(a) Clean components In mineral spirits or other solvent compatible With O-Ring seals.

(b) Clean out O-Ring grooves.

(c) Inspect components for scoring, excessive wear or damage.

(d) Replace O-Rings and Back-up Rings. Be sure that relative positions of the O-Rings and Back-up Rings are as shown in Cutter assembly drawing.

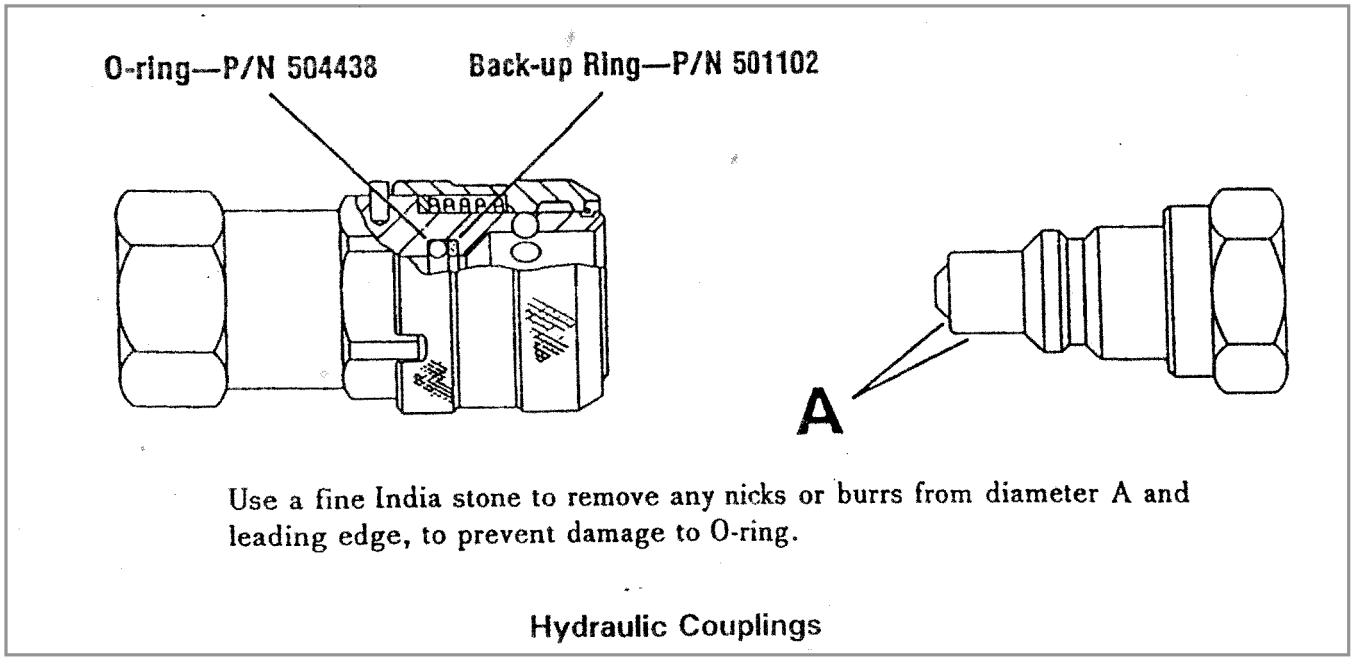
(e) Smear Lubriplate 130AA on O-Rings and mating surfaces to prevent damage to O-Rings and to aid assembly.

WARNING: Do not omit any seals during servicing, leaks will result and personal injury may occur.

CAUTION: Do not use TEFLON tape.

WARNING: Tool must be fully assembled with all components included.

1. Fasten Piston Blade (6) to Piston (17) with Washer (8) and Shoulder Screw (9). Tighten screw to 390 in./lbs.
2. Drop Return Spring (5) into Cylinder Body (3). Align slot in blade with Pin (4) hole in Cylinder and push assembled Piston (15), including Back-up Rings and O-Rings (15a-15d) and blade into Cylinder.
3. Depending on which model is being assembled, install Pin (4) or Screw (4).
4. Attach Pipe Nipple (13) and hydraulic Coupler (14) to Cylinder Head (7).
5. Push assembled Cylinder Head (7), including Back-up Rings and O-Rings (7a & 7b), into Cylinder Body (3). While holding Cylinder Head in position, install Retaining Ring (10).
6. Install Keeper Plate (11) in Cylinder Head with four Flat Head Cap Screws (12). Tighten Screws to 75 in./lbs.
7. Hold Body Blade*(s)* (2) in Cylinder Body while installing Screw*(s)* (1). Tighten Screw*(s)* to 245 in./lbs.
8. Couple hydraulic hose to Cutter, and connect electrical control cord.

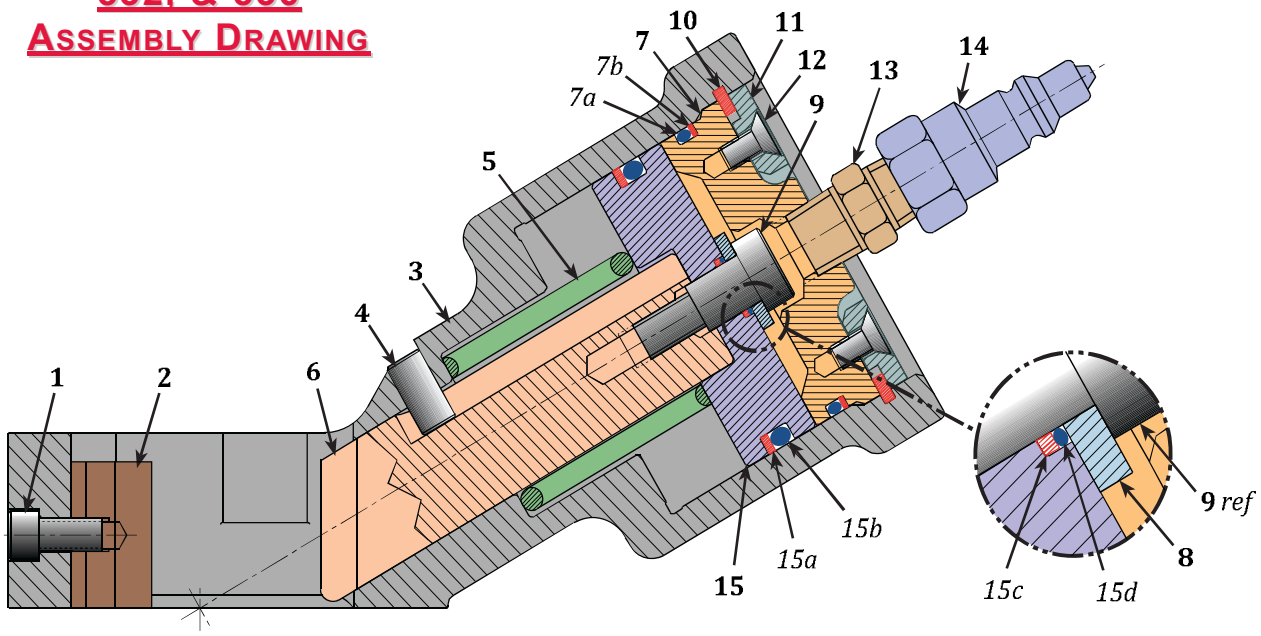


Use a fine India stone to remove any nicks or burrs from diameter A and leading edge, to prevent damage to O-ring.

Hydraulic Couplings

Figure AA

516, 520, 524, 528, 532, & 536 Assembly Drawing

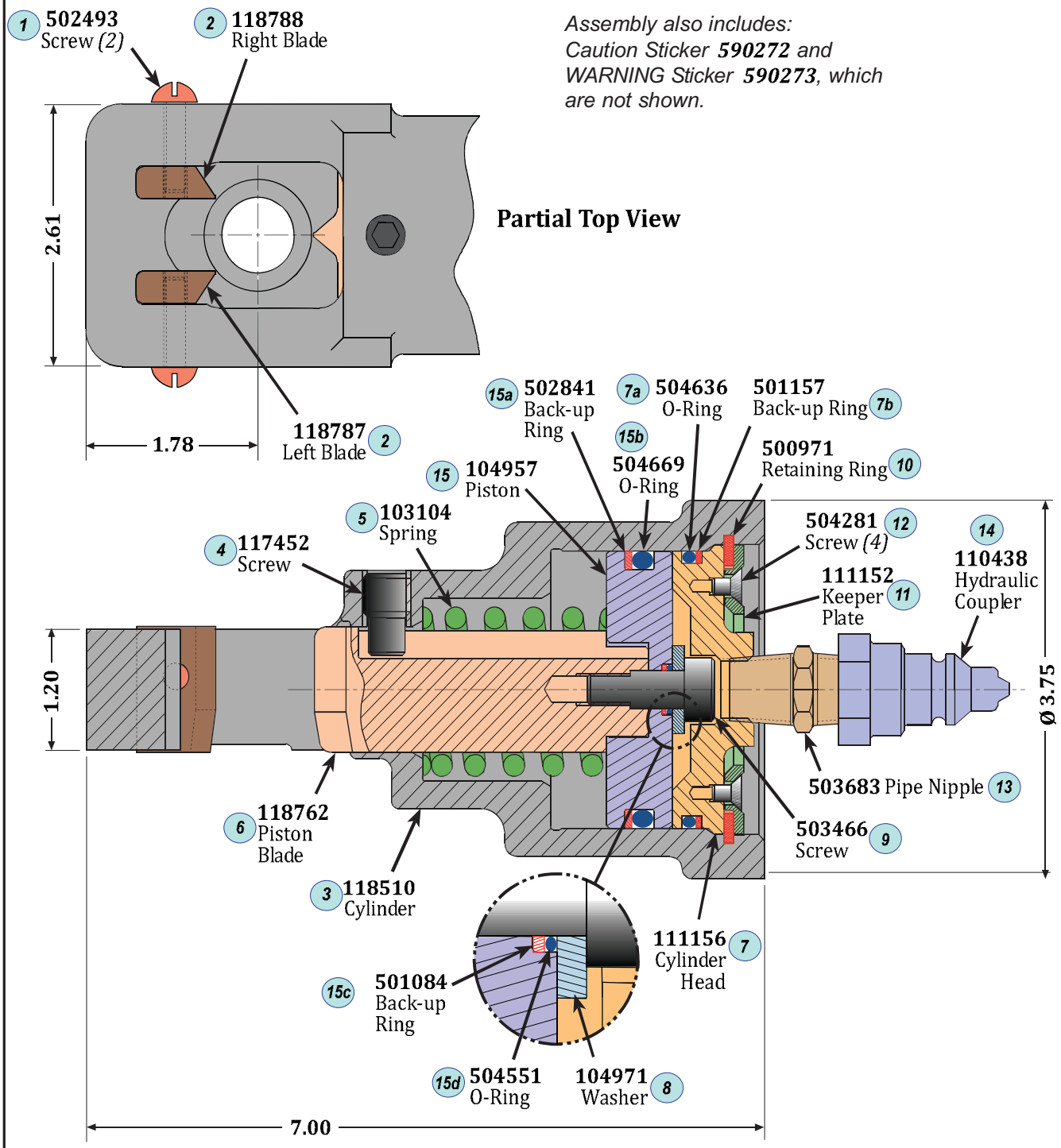


ITEM	DESCRIPTION	QTY	516	520	524	528	532	536
1	Cap Screw	1	500069	500069	500069	500077	500078	500077
2	Body Blade	1	105042	105042	105045	105051	105057	105057-1
3	Body Assembly	1	105017	105021	105025	105029	105033	105033-1
4	Guide Pin	1	503523	503523	503523	503532	503532	503532
5	Piston Return Spring	1	102693	102693	102693	102590	103104	103104
6	Piston Blade	1	105041	105041	104970	105050	105056	105056
7	Cylinder Head	1	111155	111155	111156	111157	111158	111158
7a	O-Ring	1	504634	504634	504636	504638	504639	504639
7b	Back-up Ring	1	501155	501155	501157	501159	501160	501160
8	Washer	1	104971	104971	104971	105052	105052	105052
9	Shoulder Screw	1	503466	503466	503466	503476	503476	503476
10	Retaining Ring	1	500967	500967	500971	502118	502120	502120
11	Keeper Plate	1	111151	111151	111152	111153	111154	111154
12	Flat Head Screw	4	504281	504281	504281	504287	504287	504287
13	Pipe Nipple	1	503683	503683	503683	503683	503683	503683
14	Hydraulic Coupler	1	110438	110438	110438	110438	110438	110438
15	Piston	1	105037	105037	104957	105046	105036	105036
15a	Back-up Ring	1	502855	502855	502841	502804	502938	502938
15b	O-Ring	1	504667	504667	504669	504671	504672	504672
15c	Back-up Ring	1	501084	501084	501084	501086	501086	501086
15d	O-Ring	1	504551	504551	504551	504553	504553	504553
16	Caution Sticker *(not shown)*	1	590272	590272	590272	590272	590272	590272
17	Warning Sticker *(not shown)*	1	590273	590273	590273	590273	590273	590273
18								

Figure BB

M524
Assembly Drawing

*Assembly also includes: Caution Sticker **590272** and WARNING Sticker **590273**, which are not shown.*



TROUBLESHOOTING

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

1. **Cutter Fails to operate:**
   (a) Inoperative Powerig - See Powerig Instruction Manual
   (b) Loose or disconnected control cord
   (c) Defective tool switch assembly or auxiliary switch assembly
   (d) Loose or faulty hydraulic hose coupling

2. **Cutter blades do not completely cut through collar:**
   (a) RETURN pressure hydraulic hose connected to cutter

3. **Cutter leaks hydraulic fluid:**
   (a) Depending on where the leak occurs - defective or worn O-Rings and/or loose hydraulic hose connection at cutter

4. **Hydraulic Couplers leak fluid:**
   (a) Defective or worn O-Ring in coupler body (See Hydraulic Couplings Figure in **ASSEMBLY** section.)

5. **Hydraulic Fluid overheats:**
   (a) Powerig not operating properly - Pump motor rotation reversed
   (b) Restriction in hydraulic line

6. **Gutter operates erratically and does not cut collar quickly:**
   (a) Low or erratic hydraulic fluid supply
   (b) Defective or excessively worn piston O-Ring in cutter
   (c) Excessive wear or scoring of sliding surfaces
   (d) Blades are dull or damaged

7. **Cutter blades fail to open when switch is released:**
   (a) Return spring is weak or broken

Back-up Rings

Part No.	Dash No.	Part No.	Dash No.
501084	12	501160	233
501086	14	502855	330
501102	111	502841	332
501155	228	502804	334
501157	230	502938	335
501159	232		

O-Rings*

Part No.	Dash No.	Part No.	Dash No.
504551	12	504639	233
504553	14	504667	330
504438	111	504669	332
504634	228	504671	334
504636	230	504672	335
504638	232		

* *O-Ring material, with the exception of Part No. 504438 is 90 durometer Viton or equivalent. Part No. 504438 is 75 durometer Viton or equivalent.*

Miscellaneous Parts

Part No.	Description
500069	Cap Screw 1/4-20 X 1/2
500077	Cap Screw 5/16-18 X 1/2
500078	Cap Screw 5/16-18 X 5/8
500967	Retaining Ring
500971	Retaining Ring
502118	Retaining Ring
502120	Retaining Ring
503683	Pipe Nipple 3/8 NPTF
503466	Shoulder Screw 3/8 dia X 1/2
503476	Shoulder Screw 1/2 dia X 5/8
503523	Pin
503532	Pin
504281	Flat Head Cap Screw 10-32 X 3/8
504287	Flat Head Cap Screw 1/4-20 X 1/2

Spare Parts Kits

TOOL	516-520	524	528	532-536
KIT Part No.	112124	112125	112126	112127
Description	Part No.			
Piston Return Spring	102693	102693	102590	103104
O-Ring	504634	504636	504638	504639
Back-up Ring	501155	501157	501159	501160
Back-up Ring	501084	501084	501086	501086
O-Ring	504551	504551	504553	504553
Back-up Ring	502855	502841	502804	502938
O-Ring	504667	504669	504671	504672

The quantity of spare parts that should be kept on hand varies with the number of tools in service. Spare Parts Kits containing perishable parts such as O-Rings and Back-up Rings should always be kept available to replace worn items.

Standard Service Tools

Part No.	Description
502296	Hex Key 3/16
502445	Hex Key 1/4
502294	Hex Key 1/8
502295	Hex Key 5/32
502859	Truarc Pliers 0500
502860	Truarc Pliers S6700

Also available are:

Auxiliary Electric Trigger Assembly - 113056

Slic-Tite Stick - 503237

Lubriplate 130A - 502723

Never-Seez - 505565

* *Slic-Tite is a registered trademark of LA-CO Industries, Inc.*
* *Never-Seez is a registered trademark of Bostik, Inc.*
* *Lubriplate is a registered trademark of Lubriplate Lubricants Co.*

LIMITED WARRANTIES

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

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

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

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Huck Installation Equipment

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

Huck Installation Equipment should be serviced by trained service technicians only.

Always give the Serial Number of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Huck International, Inc. Please contact one of the offices listed below.

Eastern
One Corporate Drive Kingston, New York 12401-0250
Telephone (845) 331-7300 FAX (845) 334-7333

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

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

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