

100 Series Hydraulic Cylinders

TECHNICAL MANUAL 100 Series Hydraulic Cylinders


TM-H100A 30NOV01 (ENGLISH)

Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

 This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

See machine technical manual for procedure to remove and install cylinders.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic types of failures and their causes.

Cylinder Technical Manuals are concise service guides written as stand-alone manuals, supporting a specific series of hydraulic cylinders.

This Cylinder Technical Manual covers recommended repair procedures for the John Deere 100 Series Hydraulic Cylinder.

CED,OUO1032,1193 -19-04JAN99-1/1

Contents

SECTION —100 Series Hydraulic Cylinders

- Group 05—Safety
- Group 10—Hydraulic Cylinder Diagnostics
- Group 15—100 Wire Locked Cylinder
- Group 20—100 External Snap Ring
- Group 25—100C External Snap Ring

INDX

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Section 100 Series Hydraulic Cylinders

Contents

	Page
Group 05—Safety	05-1
Group 10—Hydraulic Cylinder Diagnostics	
Hydraulic Cylinder Diagnostics	10-1
Hydraulic Cylinder Drift Diagnostics	10-1
Group 15—100 Wire Locked Cylinder	
Other Material	15-1
Disassemble and Assemble Cylinder	15-1
Group 20—100 External Snap Ring	
Other Material	20-1
Disassemble and Assemble Cylinder	20-1
Group 25—100C External Snap Ring	
Other Material	25-1
Disassemble and Assemble Cylinder	25-1

Handle Fluids Safely—Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



TS227 -JUN-23AUG88

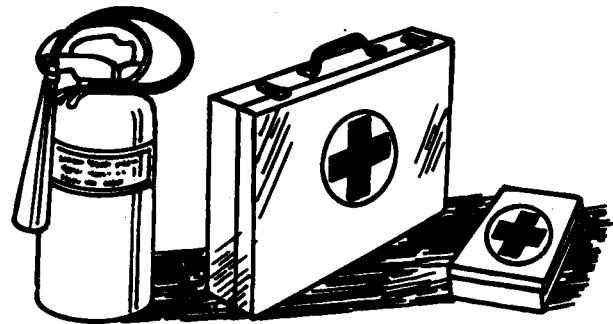
DX,FLAME -19-29SEP98-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -JUN-23AUG88

DX,FIRE2 -19-03MAR93-1/1

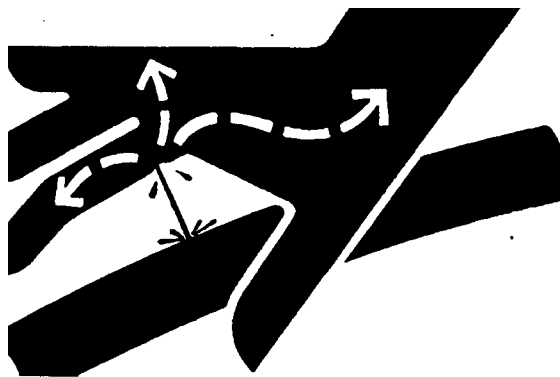
Avoid High-Pressure Fluids

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 -UN-23AUG88

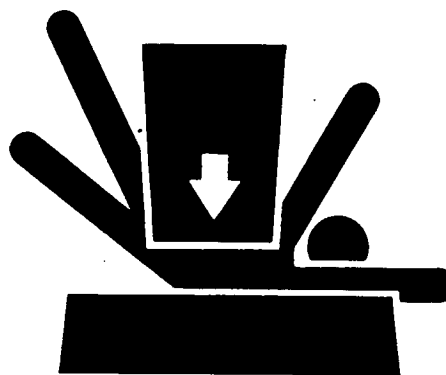
DX,FLUID -19-03MAR93-1/1

Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.



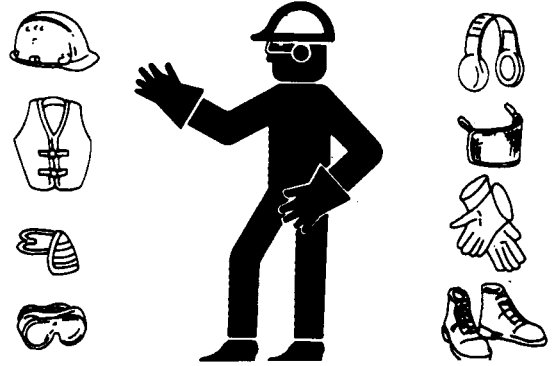
TS229 -UN-23AUG88

DX,LOWER -19-24FEB00-1/1

Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



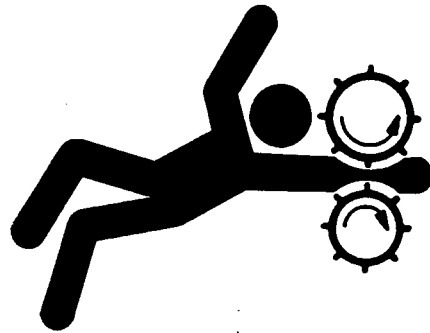
DX,WEAR2 -19-03MAR93-1/1

TS206 -JUN-23AUG88

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

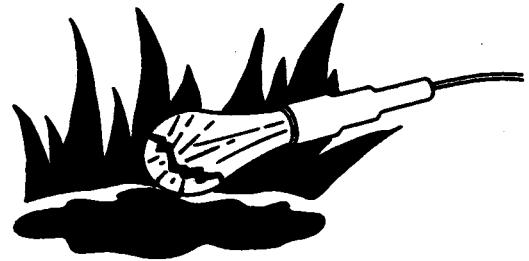


DX,LOOSE -19-04JUN90-1/1

TS228 -JUN-23AUG88

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



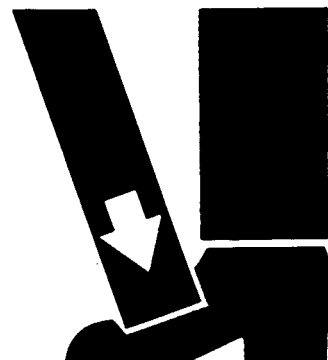
DX,LIGHT -19-04JUN90-1/1

TS223 -JUN-23AUG88

Use Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



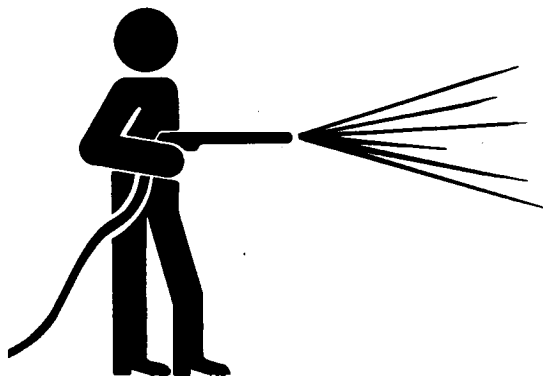
DX,LIFT -19-04JUN90-1/1

TS226 -JUN-23AUG88

Work In Clean Area

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90-1/1

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. **DO NOT** use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



TS779 -UN-08NOV89

DX,REPAIR -19-17FEB99-1/1

Dispose of Waste Properly

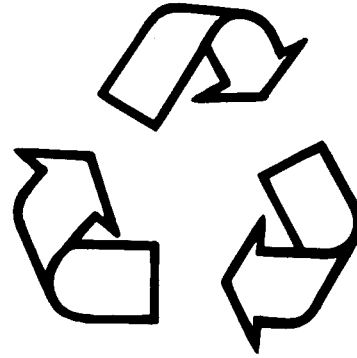
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 -UN-26NOV90

DX,DRAIN -19-03MAR93-1/1

Live With Safety

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



TS231 -19-07OCT88

DX,LIVE -19-25SEP92-1/1

Hydraulic Cylinder Diagnostics

AG,HX00517,18 -19-06AUG99-1/1

Hydraulic Cylinder Drift Diagnostics

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<p>❶ Cylinder Identification</p>	<p>Is the cylinder you are working with a rephasing cylinder?</p>	<p>YES: GO TO ❷</p> <p>NO: GO TO ❸</p>
<p>-- -1/1</p>		
<p>❷ Preparing Cylinder for Testing</p>	<p>Relieve all pressure from the cylinder by either putting the valve, that controls the cylinder, into the float position or by turning off the machine's engine and moving the valve controlling the cylinder(s) from extend to retract positions.</p> <p><i>NOTE: If machine has pilot operated or electro-hydraulic valves see machine manual for instructions on how to relieve all pressure from the cylinder.</i></p> <p>Disconnect the cylinder from the machine by removing the pin at the ROD END.</p> <p>RETRACT the cylinder fully and shut off the machine.</p> <p><i>NOTE: To check individual cylinders, disconnect the hoses or lines from the cylinder not being tested and cap off the fittings on the lines for those cylinders to allow you to isolate the cylinder you are testing.</i></p>	<p>YES: GO TO ❹</p>
<p>-- -1/1</p>		

10
2

3 Testing Cylinder for Leaks

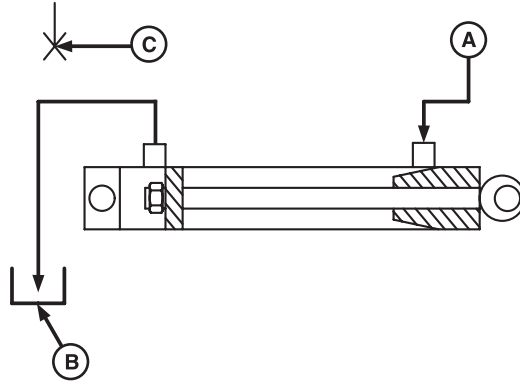
Disconnect the **PISTON END** line from the machine, and remove coupler if necessary, and place the line in a pail or pan.

Cap line remaining on machine.

Start the machine and move the valve slowly in the direction to retract the cylinder.

Does oil continue to escape out of the return line as you hold the valve in the retract position?

Note: A small amount of oil may escape from the fitting or line do to oil being trapped in the line when it was disconnected.



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A—Pressure
B—Pail
C—Cap

YES: Cylinder is leaking around the piston seal or the cylinder bore is scored.

Repair or Replace Cylinder.

GO TO **1**

NO: Cylinder is good.

Test the other cylinders in this system with this same procedure.

GO TO **1**

OR refer to machine manual to test the valve.

---1/1

4 Rephasing Cylinder Identification

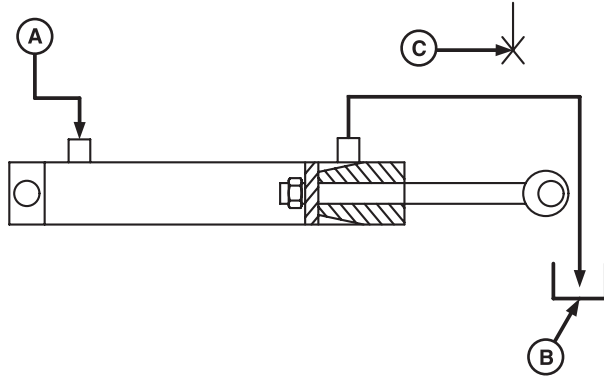
Does this rephasing cylinder rephase in the **RETRACT** position?

YES: GO TO **5**

NO: GO TO **2**

---1/1

<p>5 Preparing Cylinder for Testing</p>	<p>Relieve all pressure off of the cylinder by either putting the valve, that controls the cylinder, into the float position or by turning off the machine's engine and moving the valve controlling the cylinder(s) from extend to retract positions.</p> <p>Disconnect the cylinder from the machine by removing the pin at the ROD END.</p> <p>CAUTION: Make sure you have room on the machine to fully extend the cylinder with out the rod contacting anything. If there is insufficient room remove the cylinder completely from the machine.</p> <p>EXTEND the cylinder fully and shut off the machine.</p> <p>CAUTION: If the piston nut is missing off of the rod, the rod could be propelled out of the cylinder.</p> <p><i>NOTE: To check individual cylinders, disconnect the hoses or lines from the cylinder not being tested and cap off the fittings on the lines for those cylinders to allow you to isolate the cylinder you are testing.</i></p>	<p>YES: GO TO 6</p> <p style="text-align: right;">10 3</p> <p style="text-align: right;">-- -1/1</p>
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<p>6 Testing Cylinder for Leaks</p>	<p>Disconnect the ROD END line from the machine, and remove coupler if necessary, and place the line in a pail or pan.</p> <p>Cap line remaining on machine.</p> <p>Start the machine and slowly move the valve in the direction to extend the cylinder.</p> <p>CAUTION: If the piston nut is missing off of the rod, the rod could be propelled out of the cylinder.</p> <p>Does oil continue to escape out of the ROD END as you hold the valve in the extend position?</p> <p><i>NOTE: A small amount of oil may escape from the fitting or line do to oil being trapped in the line when it was disconnected.</i></p>  <p>HCD1094 -UN-28NOV01</p> <p>A—Pressure B—Pail C—Cap</p>	<p>YES: Cylinder is leaking around the piston seal or the cylinder bore is scored.</p> <p>Repair or Replace Cylinder.</p> <p>GO TO 1</p> <p>NO: Cylinder is good.</p> <p>Test the other cylinders in this system with this same procedure or refer to machine manual to test the valve.</p> <p>GO TO 1</p> <p style="text-align: right;">-- -1/1</p>
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Other Material

Number	Name	Use
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Used to lock threads during assembly

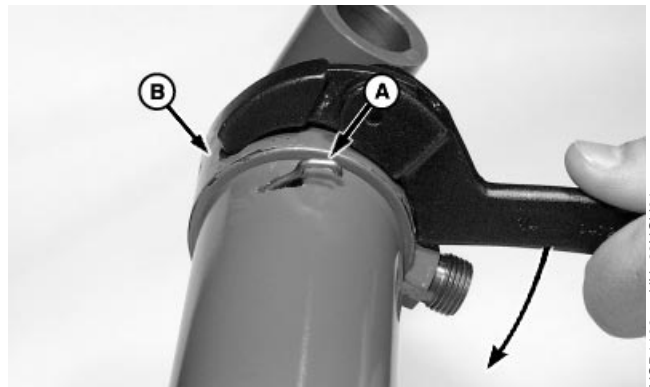
LOCTITE is a trademark of Loctite Corp.

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Disassemble and Assemble Cylinder

IMPORTANT: Clamping cylinder in a vise at the middle or rod end of barrel may damage the barrel. Clamp only at the cylinder base end.

Extend rod to remove oil or air between rod piston and rod guide. Excessive amounts of trapped oil or air will expand seals and make disassembly more difficult.



A—Lock Ring
B—Rod Guide

1. Open both ports and drain all oil from the cylinder.
2. Extend rod fully.
3. Clean outside surface of cylinder with suitable solvent and dry to prevent dirt and debris from entering cylinder barrel.
4. Lift lock ring (A) out of slot using screwdriver.

NOTE: Spraying penetrating oil in access slot may ease in disassembly.

5. Rotate end of rod guide (B) in same direction end of lock ring is pointing, to rotate lock ring out of slot, while pulling on lock ring.

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Thank you very much for your reading. Please Click Here. Then Get COMPLETE MANUAL. NO WAITING

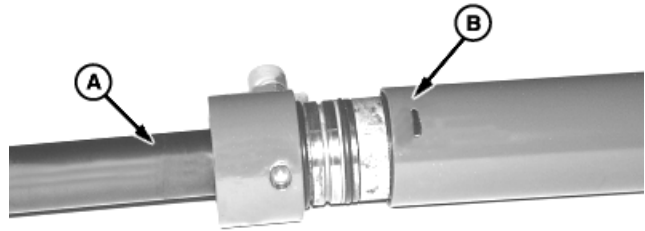


NOTE:

If there is no response to click on the link above, please download the PDF document first and then click on it.

6. Pull rod assembly (A) from cylinder barrel (B).

A—Rod
B—Barrel



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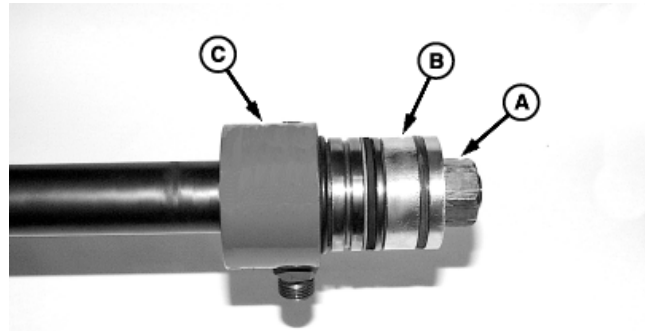
NOTE: Install rod end in soft-jawed vise in order to remove nut.

7. Remove nut (A), piston (B) and rod guide (C).

NOTE: When removing seals from piston and rod guide, do not damage, mark or score any surfaces that contact the seals.

8. Remove all seals and rings from piston and rod guide.

9. Inspect piston and rod guide for nicks or burrs. Repair or replace as necessary.



HCD1060 -UN-27NOV01

A—Nut
B—Piston
C—Rod Guide

OUO6046,00016AC -19-05NOV01-3/10

10. Inspect groove in cylinder barrel. If necessary, clean groove and remove nicks, burrs, or rust from inside of barrel using emery cloth.

11. Clean inside of barrel using a safe solvent and blow dry using compressed air.



HCD1084 -UN-19NOV01

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OUO6046,00016AC -19-05NOV01-4/10

NOTE: All parts must be clean and dry before assembly.

12. Install O-ring (B).

NOTE: The cap seal (A) can be made more pliable by putting the seal in hot water for approximately 5 minutes.

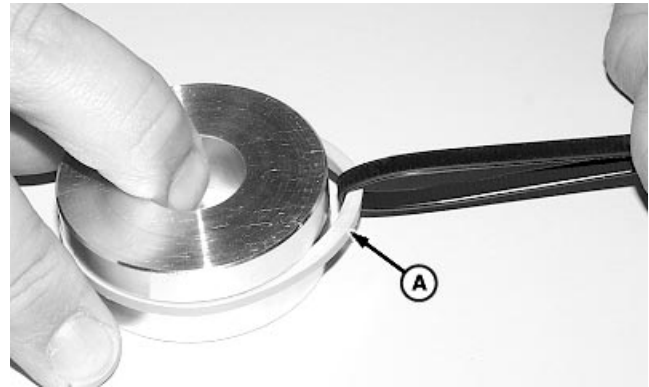
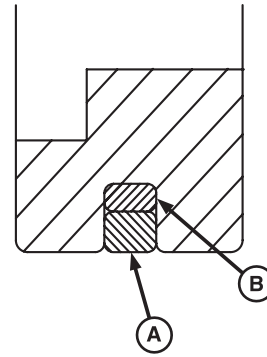
Install cap seal as quickly as possible once it has been removed from the water and dried to keep the amount of time that seal is stretched to a minimum.

13. Push seal on end of piston.

14. Install a plastic tie band around cap seal with the smooth side against seal.

15. Pull cap seal across land into position over O-ring using the plastic tie band.

A—Piston Seal
B—O-Ring



HCD1096 -UN-27NOV01

HCD1099 -UN-26NOV01

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