

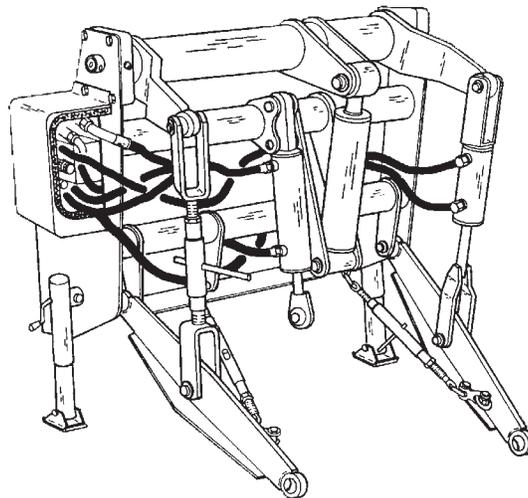
Product: 2002 Bobcat Three Point Hitch Service Repair Workshop Manual
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Bobcat®

THREE POINT HITCH

Service Manual



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MAINTENANCE SAFETY



WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0903



Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



B-10731a

-  Never service attachments without instructions. See Operation & Maintenance Manual and Attachment Service Manual.
-  Cleaning and maintenance are required daily.
-  Never service or adjust attachment with the engine running unless instructed to do so in manual.
-  Always lower the attachment to the ground before lubricating or servicing.
-  Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate skin or eyes.
-  Stop, cool and clean engine of flammable materials before checking fluids.
-  Keep body, loose objects and clothing away from moving parts, electrical contacts, hot parts and exhaust.
-  Safety glasses are needed for eye protection from electrical arcs, battery acid, compressed springs, fluids under pressure and flying debris or when tools are used. Use eye protection approved for type of welding.



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**SAFETY AND
MAINTENANCE**

**HYDRAULIC
SYSTEM**

**MAIN
FRAME**

**SPECIFICATIONS
AND
SCHEMATICS**

**CALIFORNIA
PROPOSITION 65 WARNING**

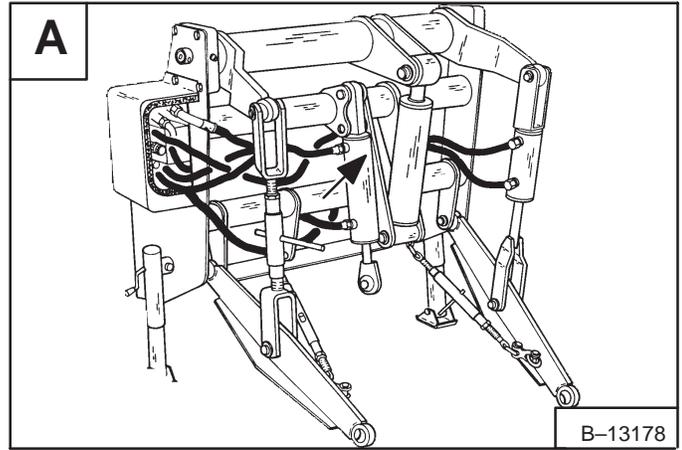
Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.



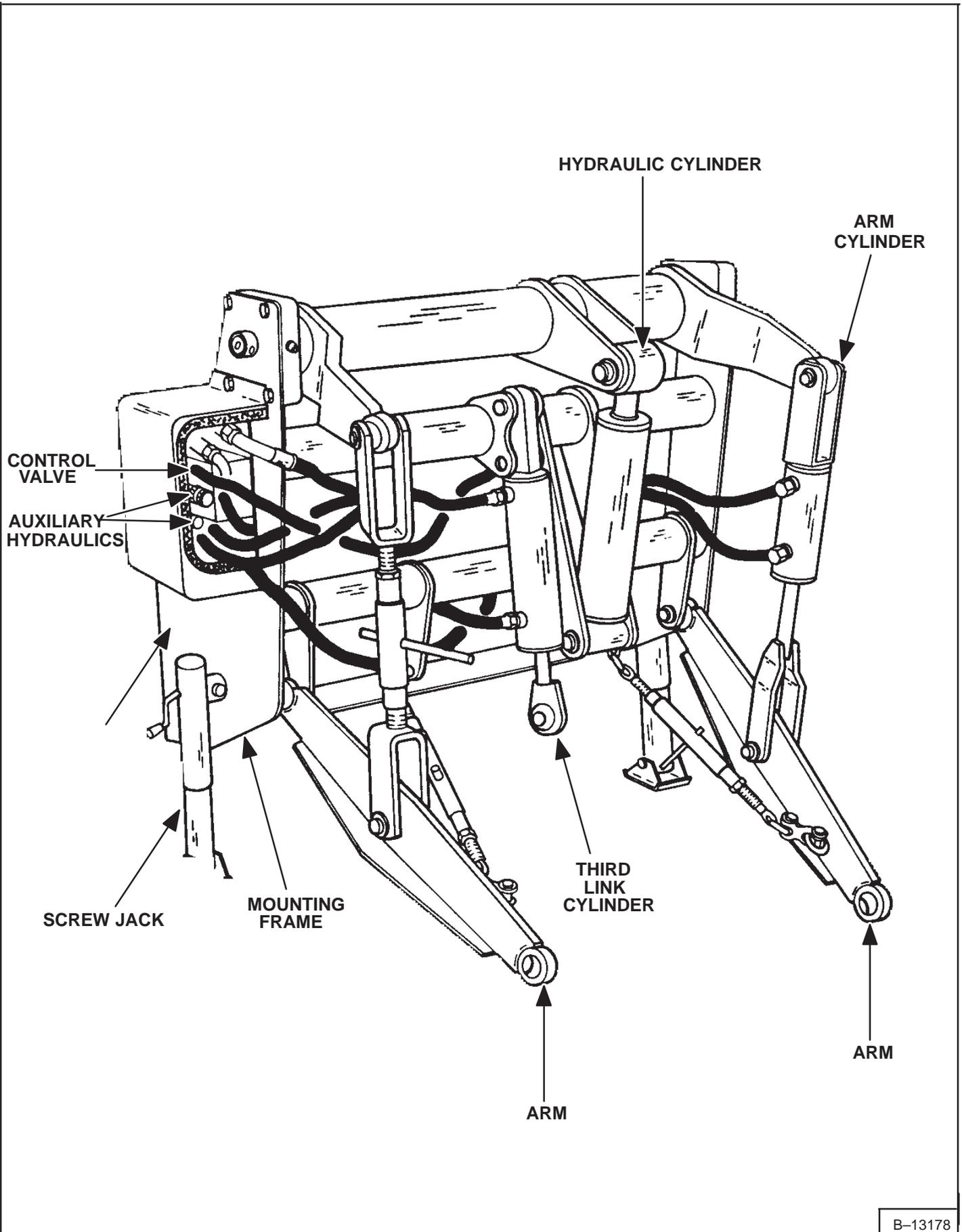
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SERIAL NUMBER LOCATION

Always use the serial number of the attachment when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation [A].



PARTS IDENTIFICATION



B-13178

SAFETY AND MAINTENANCE

INSPECTION

Daily Inspection 10-10-2

LUBRICATION

Lubrication Points 10-10-1

**SAFETY AND
MAINTENANCE**



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LUBRICATION

Lubrication Points

! **WARNING**

AVOID INJURY OR DEATH

Always lower the attachment on the Three-Point Hitch to the ground before lubricating or servicing.

Always use a good quality lithium base grease when lubricating the 3-point hitch. Apply the lubricant until extra grease shows.

IMPORTANT

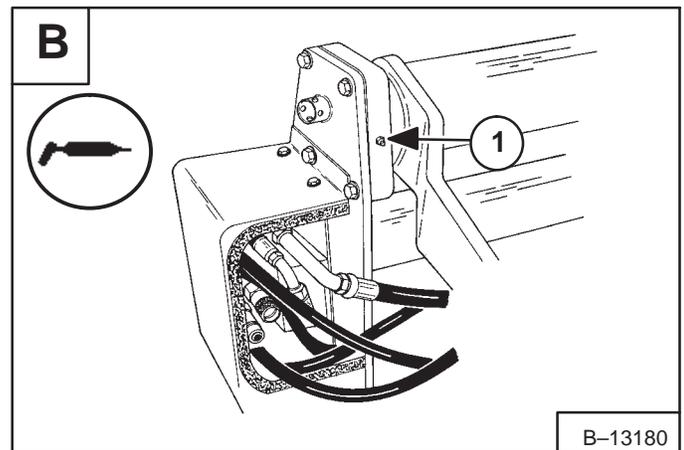
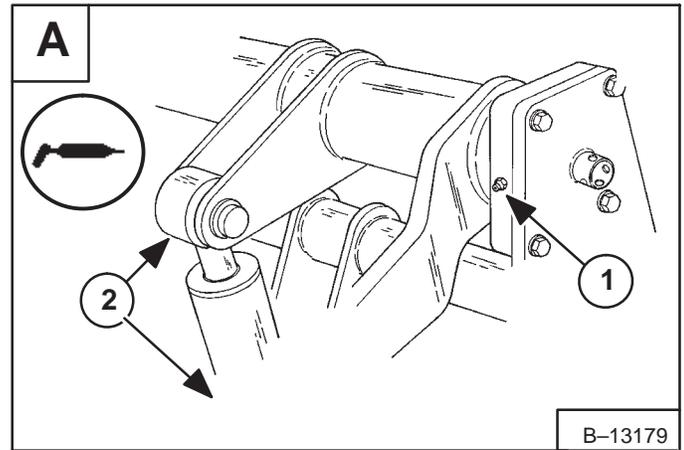
Fluid such as engine oil, hydraulic fluid, coolants, grease, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state and federal regulations for the correct disposal.

I-2067-0499

Lubricate the following fittings every eight hours of operation.

Rockshaft mount blocks (Item 1) [A] & [B].

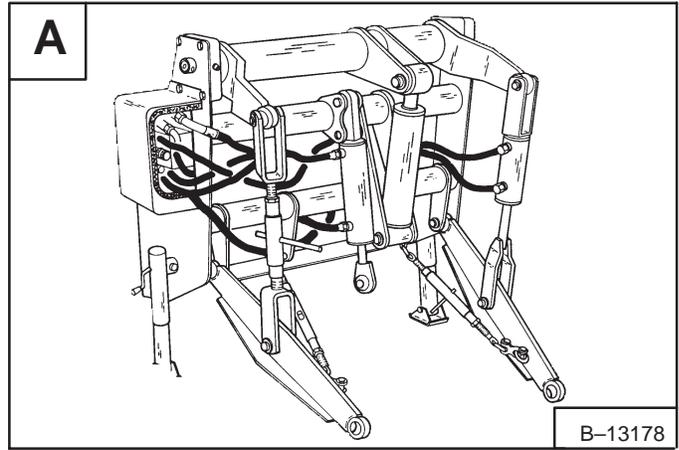
Lift cylinder base and rod end (Item 2) [A].



INSPECTION

Daily Inspection

Inspect the mounting frame **[A]** and linkages for excessive wear, damage or cracked welds. Replace any parts, including decals, that are damaged, bent or missing. Keep all fasteners tight.



HYDRAULIC SYSTEM

PAGE NUMBER

HYDRAULIC CONTROL VALVE

Disassembly And Assembly	20-20-3
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HYDRAULIC CYLINDER

Arm Cylinder Checking	20-10-1
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HYDRAULIC SYSTEM



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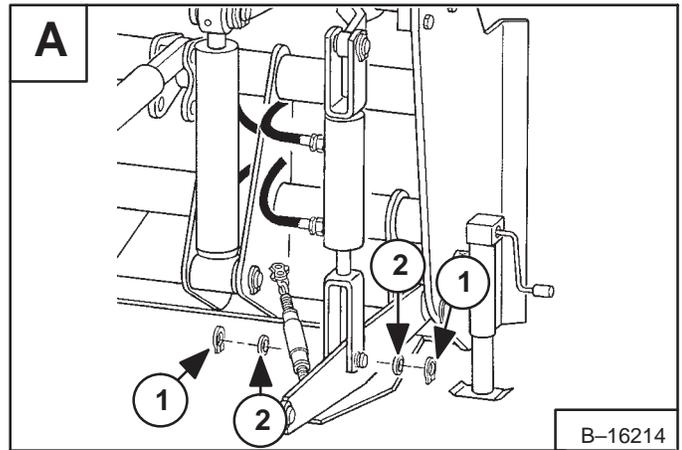
HYDRAULIC CYLINDER

Arm Cylinder Checking

Place the attachment on the work surface.

Stop the engine, relieve hydraulic pressure, remove the seat belt and exit the loader.

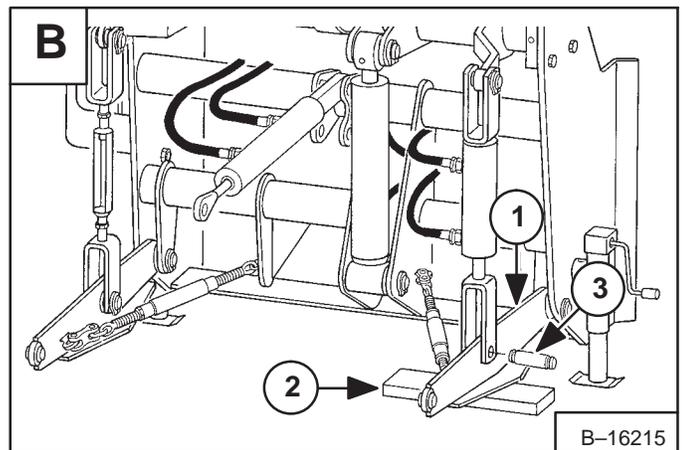
Remove the two snap rings (Item 1) [A] and washers (Item 2) [A] from the pin on the rod end of the arm cylinder.



Support the arm (Item 1) [B] with a wood block (Item 2) [B] and remove the pin (Item 3) [B].

Fasten the seat belt, start the loader and retract the arm cylinder.

Stop the engine, relieve hydraulic pressure, remove the seat belt and exit the loader.



WARNING

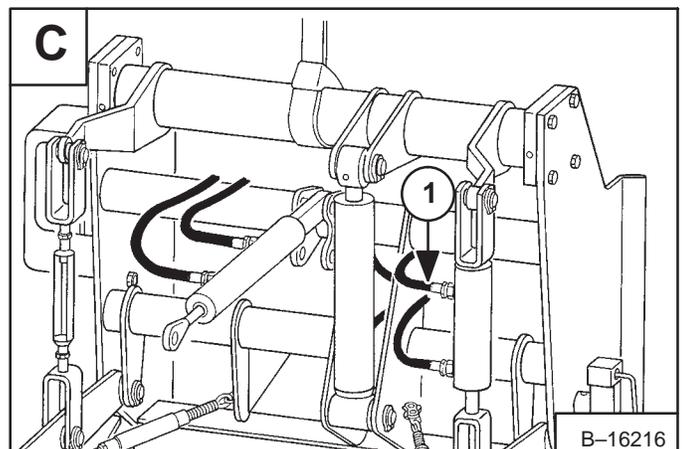
Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possibly death if proper medical treatment by a physician familiar with this injury is not received immediately.

W-2145-0290

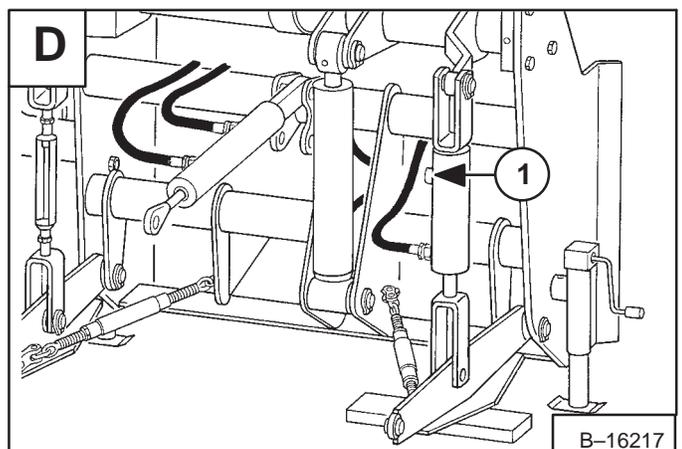
Remove the hose (Item 1) [C] from the base end of the cylinder.

Install a plug on the hose and tighten.

Fasten the seat belt, start the engine and retract the cylinder.



If there is any leakage from the base end fitting (Item 1) [D] of the cylinder, remove the cylinder for repair or replacement.



HYDRAULIC CYLINDER (Cont'd)

Arm Cylinder Removal And Installation

! WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possibly death if proper medical treatment by a physician familiar with this injury is not received immediately.

W-2145-0290

IMPORTANT

When making repairs on hydraulic system, clean the work area before disassemble and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2056-0793

Place the attachment on the work surface.

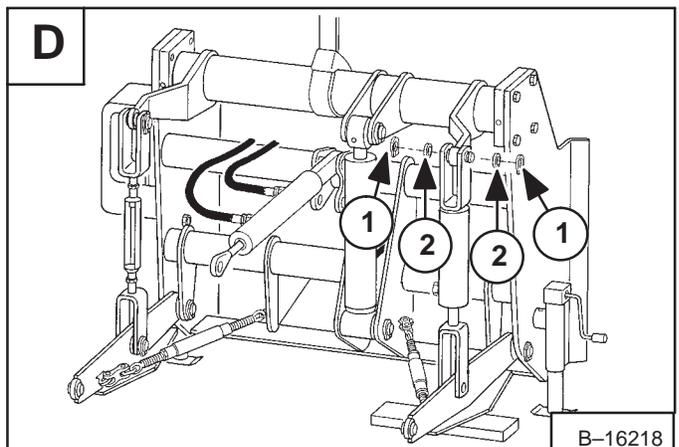
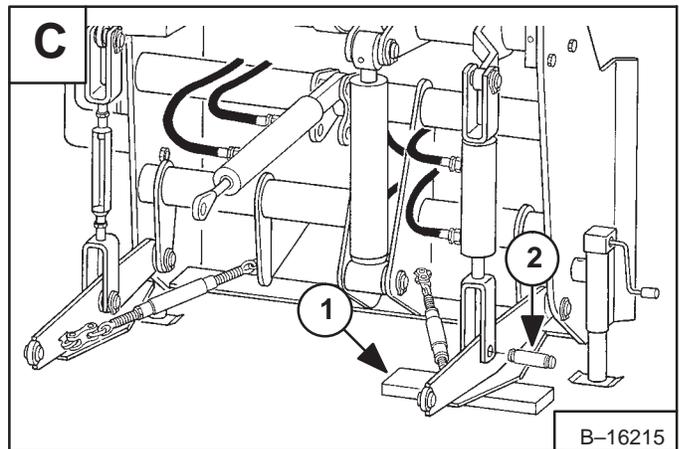
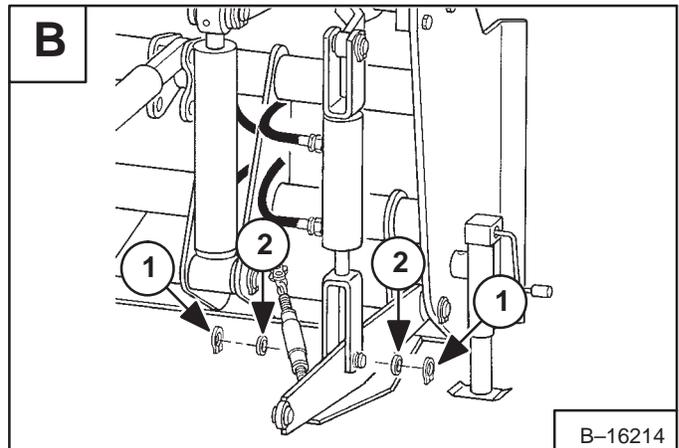
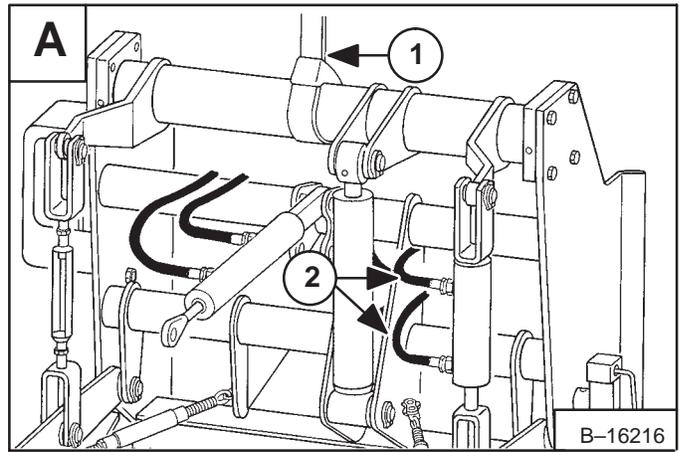
Install a hoist (Item 1) [A].

Remove the hoses (Item 2) [A]. Install caps and plugs.

Remove the two snap rings (Item 1) [B] and washers (Item 2) [B].

Support the arm (Item 1) [C] and remove the pin (Item 2) [C].

Remove the two snap rings (Item 1) [D] and washers (Item 2) [D].

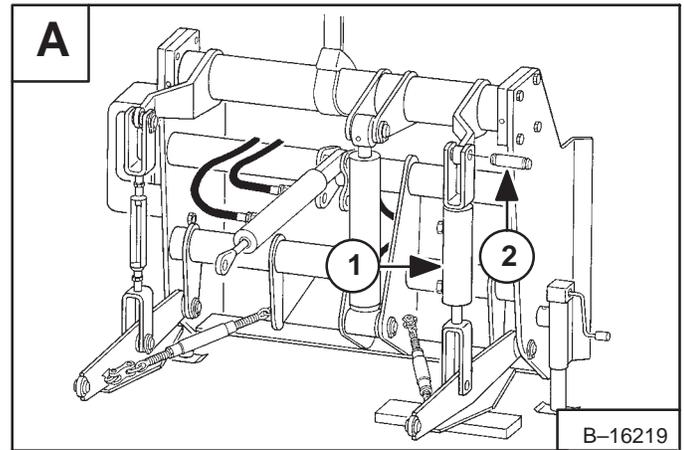


HYDRAULIC CYLINDER (Cont'd)

Arm Cylinder Removal And Installation (Cont'd)

Support the cylinder (Item 1) [A] and remove the pin (Item 2) [A].

Remove the cylinder.



HYDRAULIC CYLINDER (Cont'd)

Lift Cylinder Checking (Cont'd)

Place the attachment on the work surface.

Retract the lift cylinder.

Stop the engine, relieve hydraulic pressure, remove the seat belt and exit the loader.

WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possibly death if proper medical treatment by a physician familiar with this injury is not received immediately.

W-2145-0290

Install a hoist (Item 1) [A].

Remove the two snap rings (Item 2) [A] and washers (Item 3) [A] from the pin on the rod end of the lift cylinder.

Remove the pin (Item 1) [B].

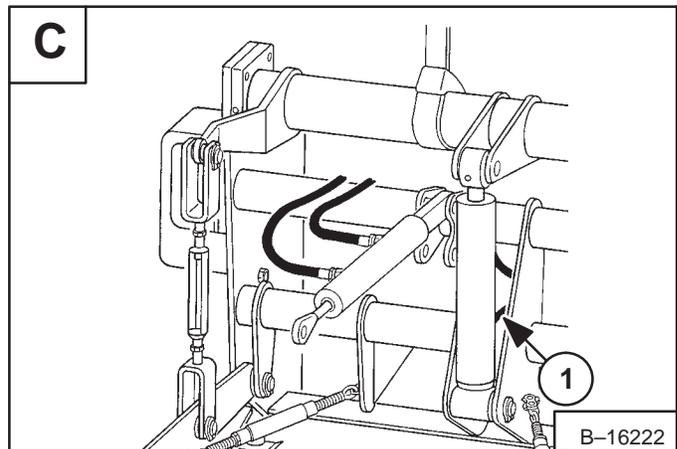
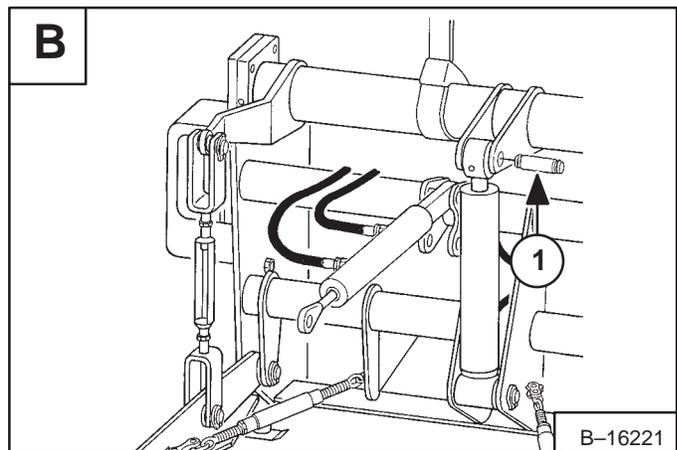
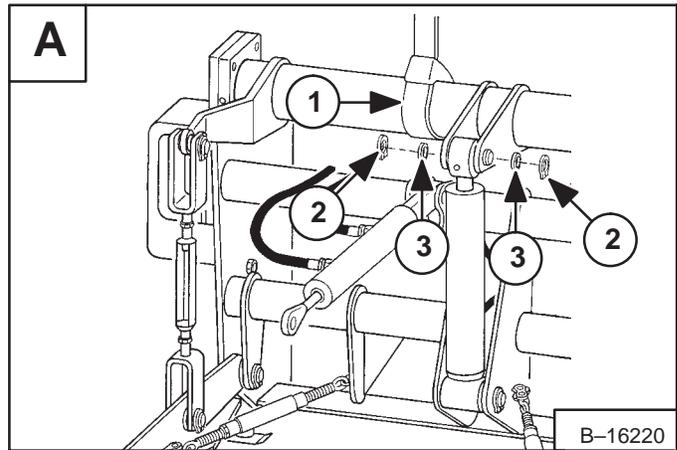
Support the cylinder so it does not rotate and fall.

Remove the hose (Item 1) [C] from the base end of the cylinder.

Install a plug on the hose and tighten.

Fasten the seat belt, start the engine and retract the cylinder.

If there is any leakage from the base end fitting of the cylinder, remove the cylinder for repair or replacement.



HYDRAULIC CYLINDER (Cont'd)

Lift Cylinder Removal And Installation

! WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possibly death if proper medical treatment by a physician familiar with this injury is not received immediately.

W-2145-0290

IMPORTANT

When making repairs on hydraulic system, clean the work area before disassemble and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2056-0793

Lower the attachment to the work surface.

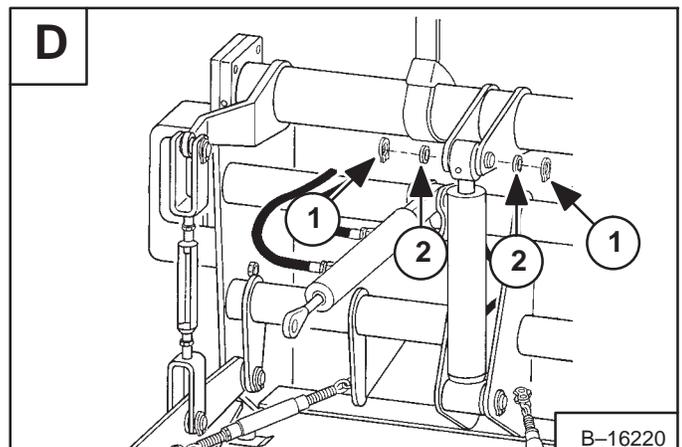
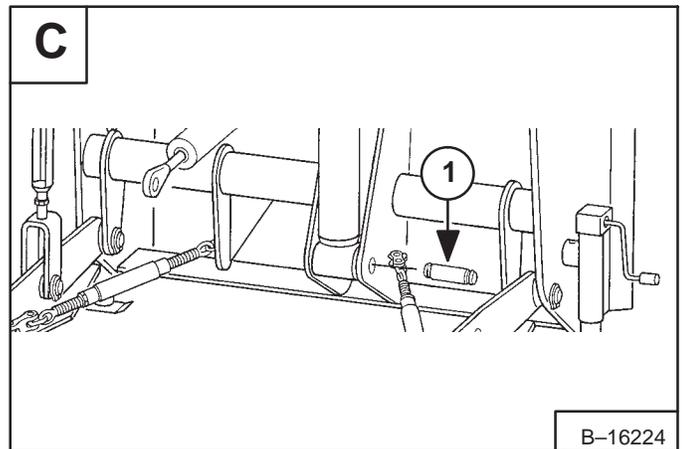
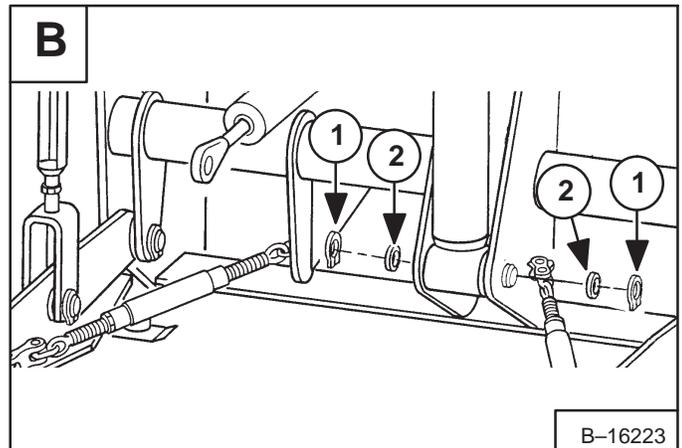
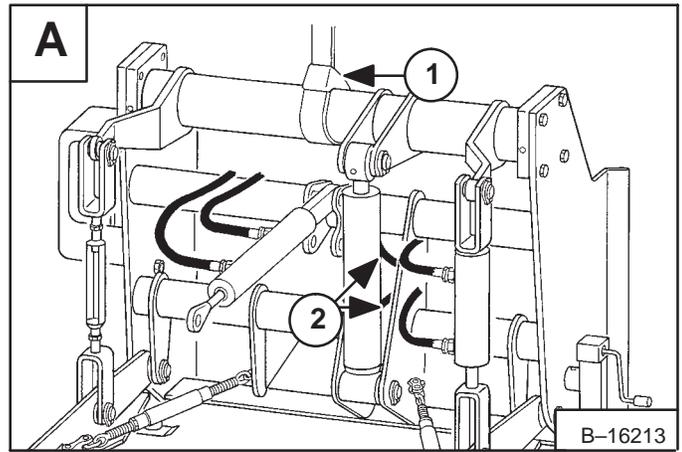
Install a hoist (Item 1) [A].

Remove the two hoses (Item 2) [A]. Install caps and plugs.

Remove the two snap rings (Item 1) [B] and washers (Item 2) [B].

Remove the pin (Item 1) [C].

Remove the two snap rings (Item 1) [D] and washers (Item 2) [D].

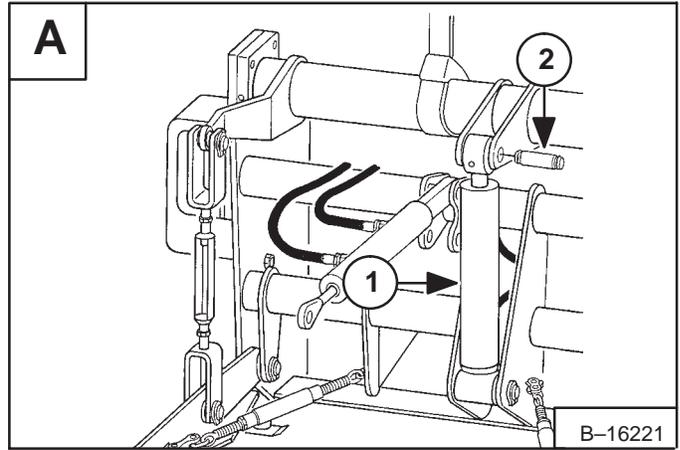


HYDRAULIC CYLINDER (Cont'd)

Lift Cylinder Removal And Installation (Cont'd)

Support the cylinder (Item 1) **[A]** and remove the pin (Item 2) **[A]**.

Remove the cylinder.



HYDRAULIC CYLINDER (Cont'd)

3rd Link Cylinder Checking

Retract the 3rd link cylinder.

Lower the attachment to the work surface.

WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possibly death if proper medical treatment by a physician familiar with this injury is not received immediately.

W-2145-0290

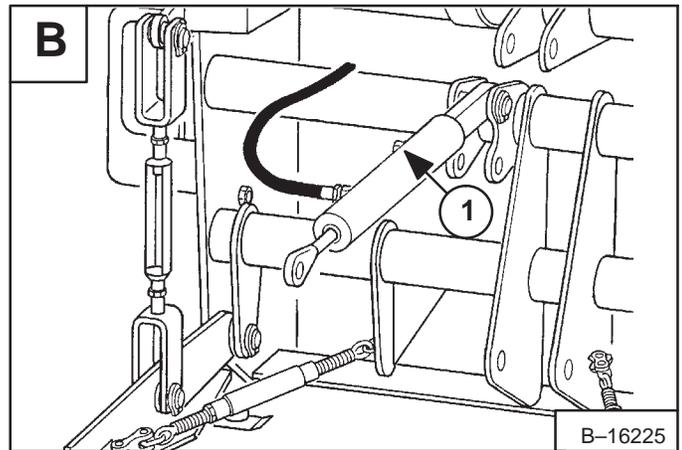
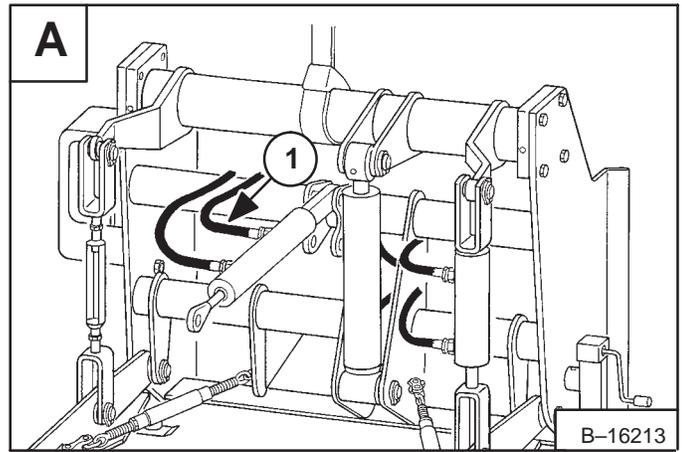
Stop the engine, relieve hydraulic pressure, remove the seat belt and exit the loader.

Remove the hose (Item 1) [A] from the base end of the cylinder.

Install a plug on the hose and tighten.

Fasten the seat belt, start the engine and retract the cylinder.

If there is any leakage from the base end fitting (Item 1) [B] of the cylinder, remove the cylinder for repair or replacement.

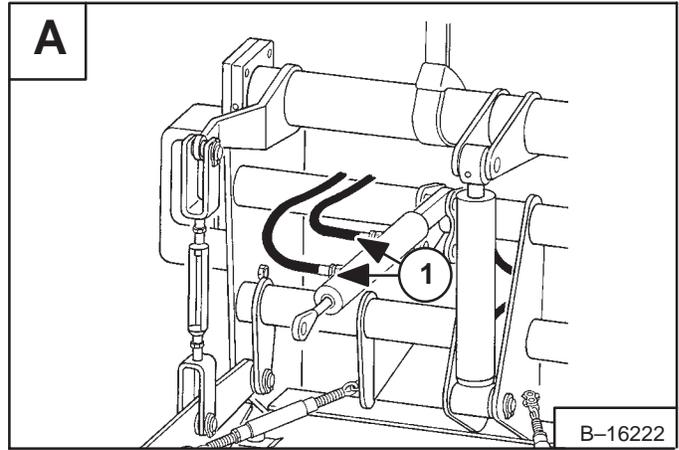


HYDRAULIC CYLINDER (Cont'd)

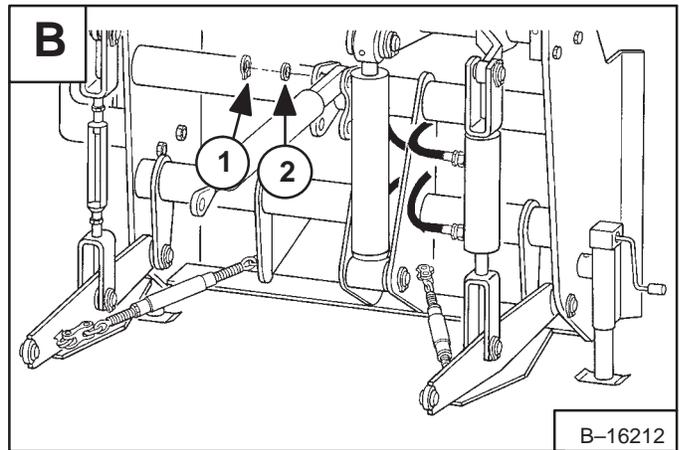
3rd Link Cylinder Removal And Installation

Lower the attachment to the work surface.

Remove the two hoses (Item 1) [A]. Install caps and plugs.

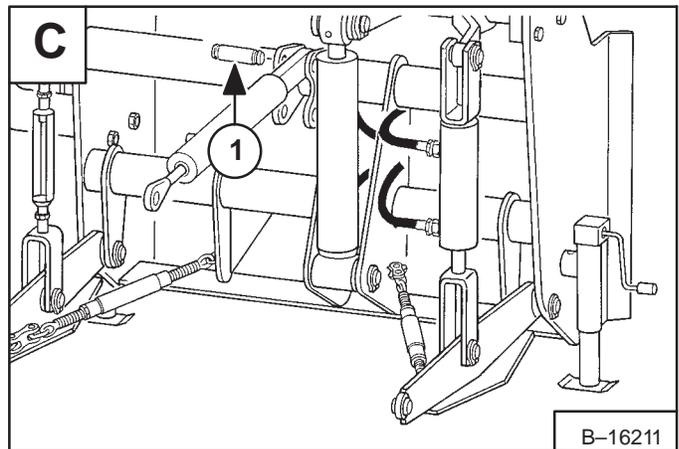


Remove the two snap rings (Item 1) [B] and washers (Item 2) [B].



Support the cylinder and remove the pin (Item 1) [C].

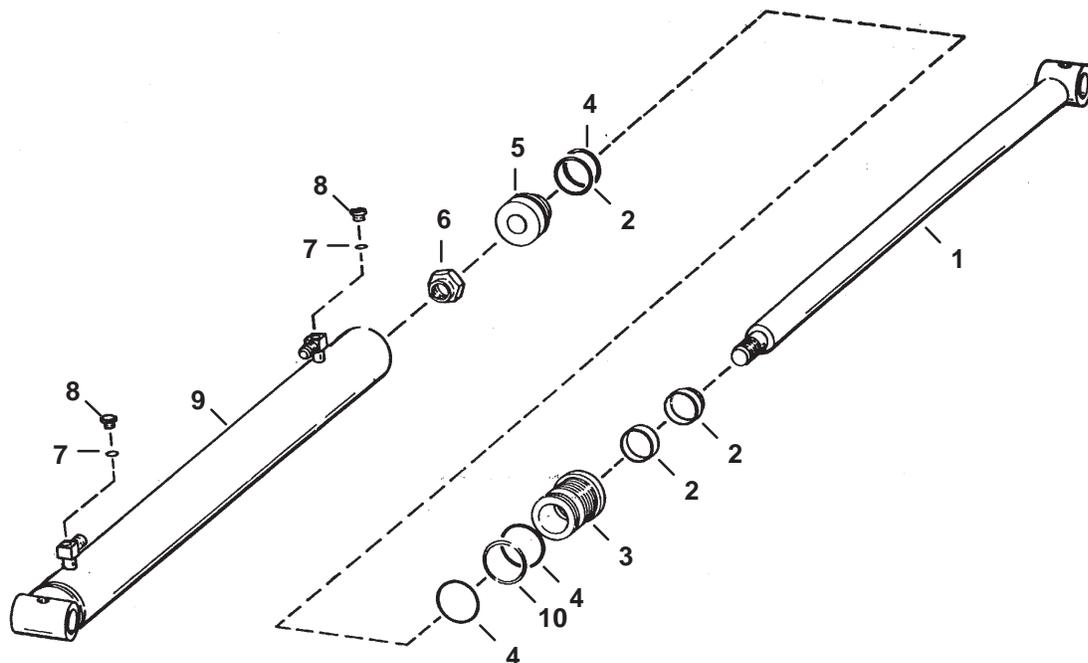
Remove the cylinder.



HYDRAULIC CYLINDER (Cont'd)

Parts Identification

- 1. Rod
- 2. Seal
- 3. Head
- 4. O-ring
- 5. Piston
- 6. Nut
- 7. O-ring (Arm Cylinder Only)
- 8. Plug (Arm Cylinder Only)
- 9. Housing
- 10. Backup Ring



HYDRAULIC CYLINDER (Cont'd)

Disassembly

Use the following tools to disassemble the cylinder:

MEL1074—O-ring Seal Hook

The cylinder shown may appear different, but the procedure is the same.

Hold the hydraulic cylinder over a drain pan and move the rod in and out slowly to remove the fluid from the cylinder.

Clamp the base end of the cylinder in a vise.

Be careful not to damage the cylinder tube.

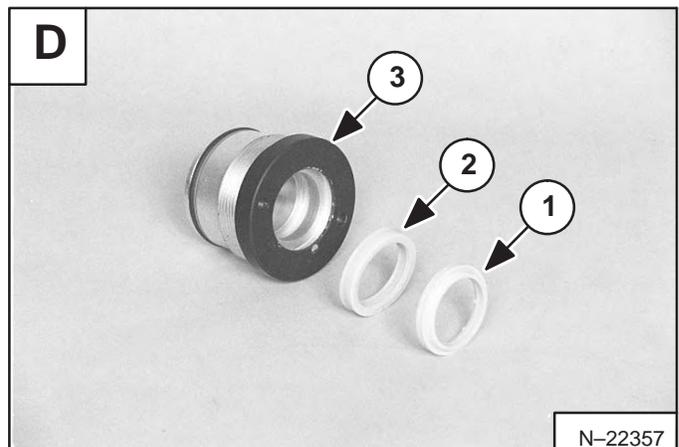
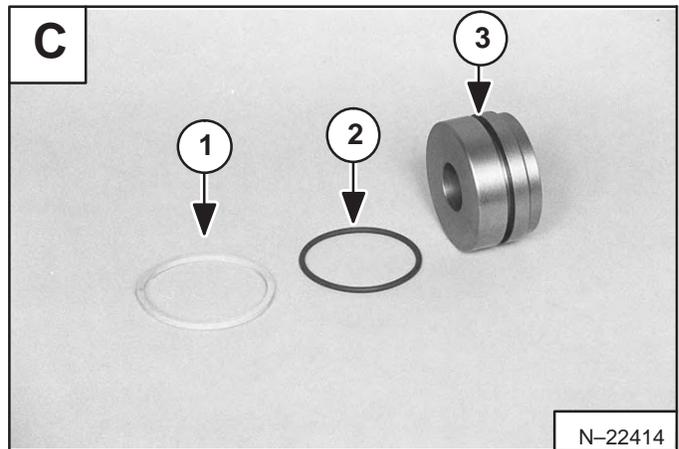
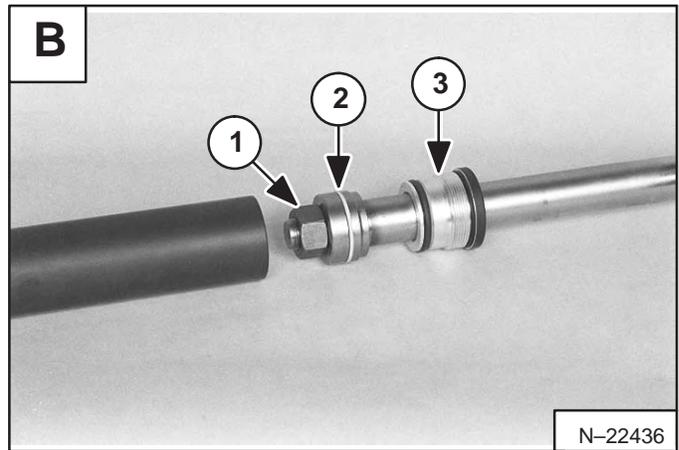
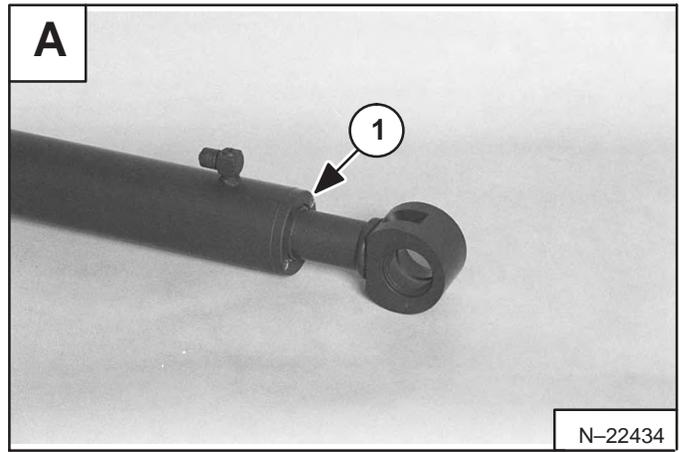
Loosen the head (Item 1) [A].

Remove the head and the rod assembly from the cylinder [B]. Clamp the rod end in a vise.

Remove the nut (Item 1) [B], piston (Item 2) [B] and head (Item 3) [B]. Discard the nut.

Remove the seal (Item 1) [C] and O-ring (Item 2) [C] from the piston (Item 3) [C].

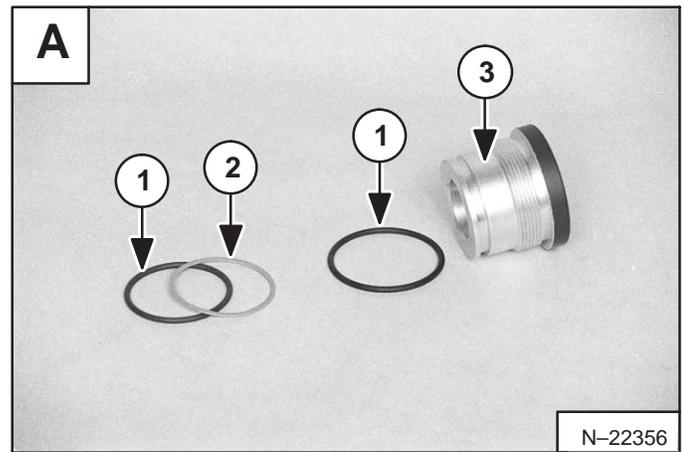
Remove the wiper seal (Item 1) [D] and rod seal (Item 2) [D] from the inside of the head (Item 3) [D].



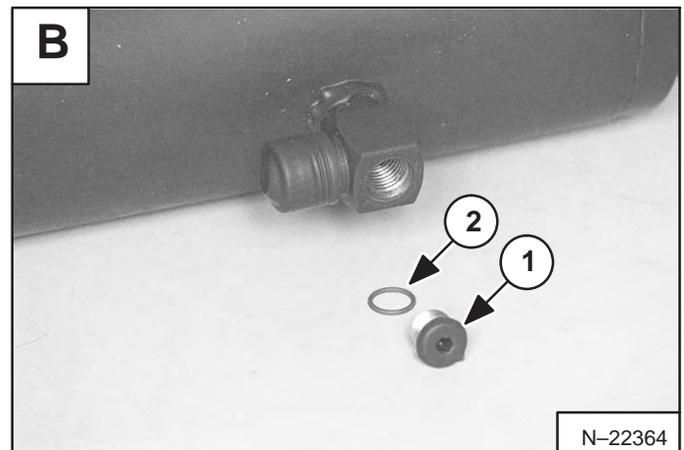
HYDRAULIC CYLINDER (Cont'd)

Disassembly (Cont'd)

Remove the O-rings (Item 1) **[A]** and backup ring (Item 2) **[A]** from the head (Item 3) **[A]**.



Remove the plug (Item 1) **[B]** and O-ring (Item 2) **[B]**. (Arm Cylinder Only)



HYDRAULIC CYLINDER (Cont'd)

Use the following tools to assemble the cylinder.

MEL1396—Universal Seal Expander
MEL1033—Rod Seal Installation Tool
Piston Ring Compressor

The cylinder shown may appear different, but the procedure is the same.

Wash the cylinder parts in solvent and dry them with compressed air.

Inspect the cylinder parts for nicks, scratches or other damage. Replace any damaged parts.

Always install new O-rings, seals and nut during assembly.

Lubricate all O-rings and seals with hydraulic oil during installation.

Install the new seal on the tool and slowly stretch it until it fits the piston [A].

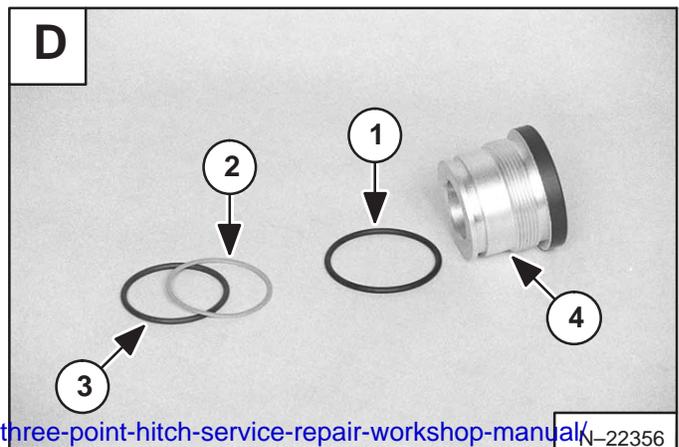
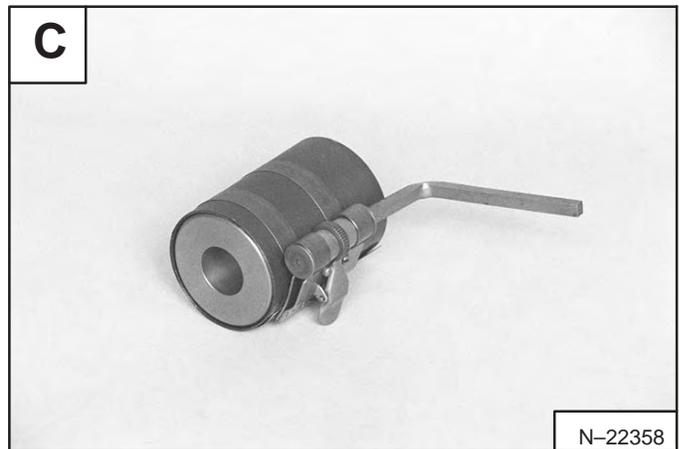
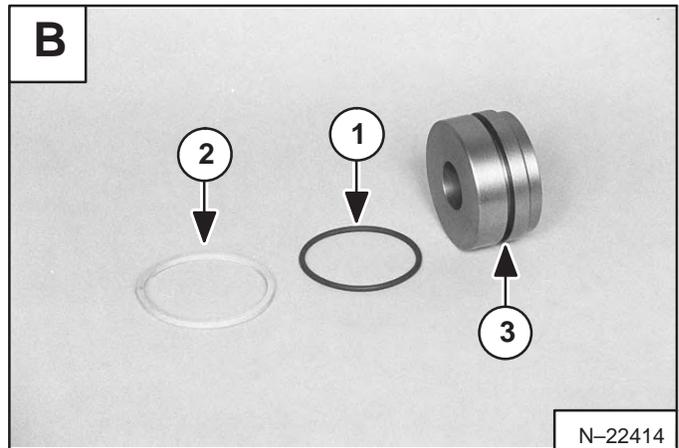
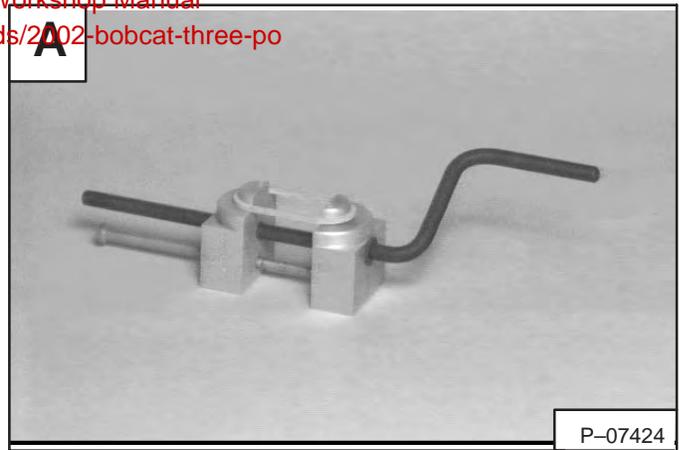
Allow the seal to stretch for 30 seconds before installing it on the piston.

Install the O-ring (Item 1) [B] and seal (Item 2) [B] on the piston (Item 3) [B].

Use a ring compressor to compress the seal to the correct size. Leave the piston in the compressor for about three minutes [C].

Install the O-ring (Item 1) [D].

Install the backup ring (Item 2) [D] and O-ring (Item 3) [D] on the head (Item 4) [D].



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