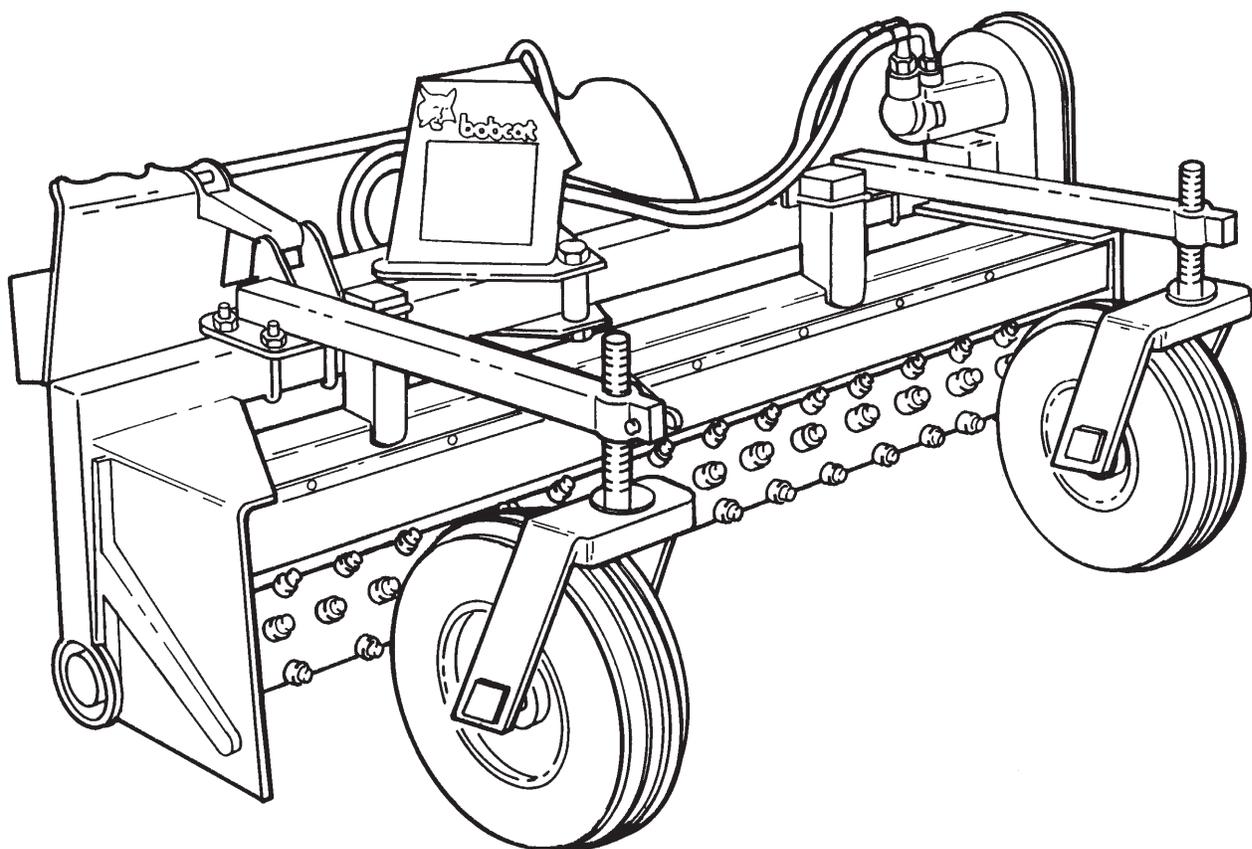




POWER RAKE

S/N 925100101 & Above

Service Manual



Product: Bobcat Power Rake Service Repair Workshop Manual

Full Download: <https://www.arepairmanual.com/downloads/bobcat-power-rake-service-repair-workshop-manual/>

Sample of manual. Download All 60 pages at:

<https://www.arepairmanual.com/downloads/bobcat-power-rake-service-repair-workshop-manual/>

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.



Bobcat®

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**PREVENTIVE
MAINTENANCE**

**HYDRAULIC
SYSTEM**

MAIN FRAME

**SPECIFICATIONS
AND
SCHEMATICS**

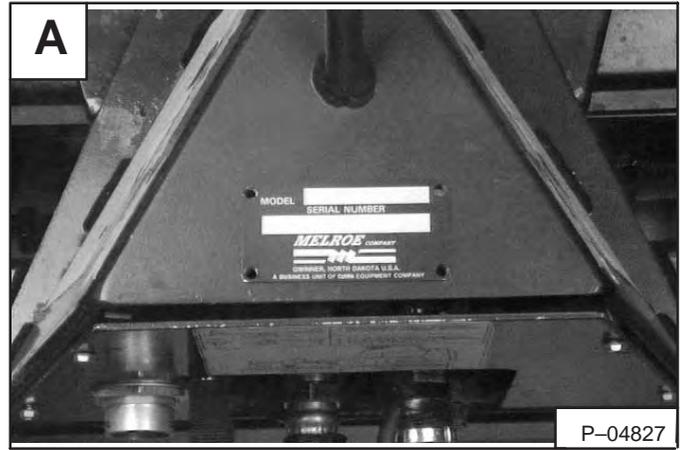
**CALIFORNIA
PROPOSITION 65 WARNING**

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

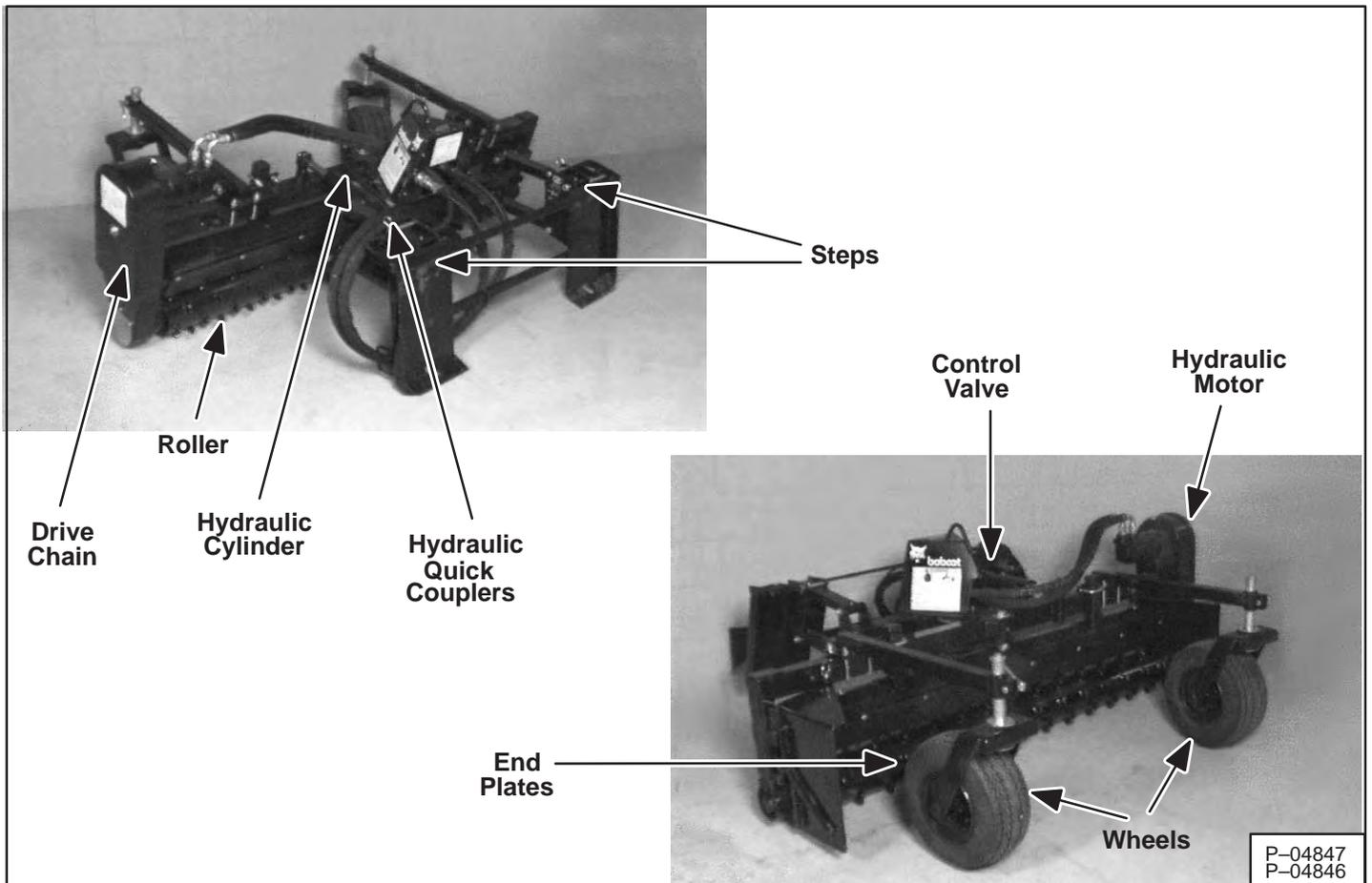


SERIAL NUMBER LOCATION

Always use the serial number of the machine 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].



IDENTIFICATION





PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE

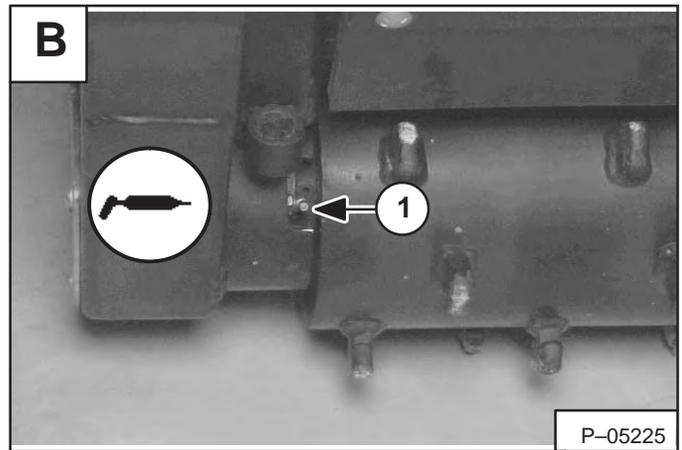
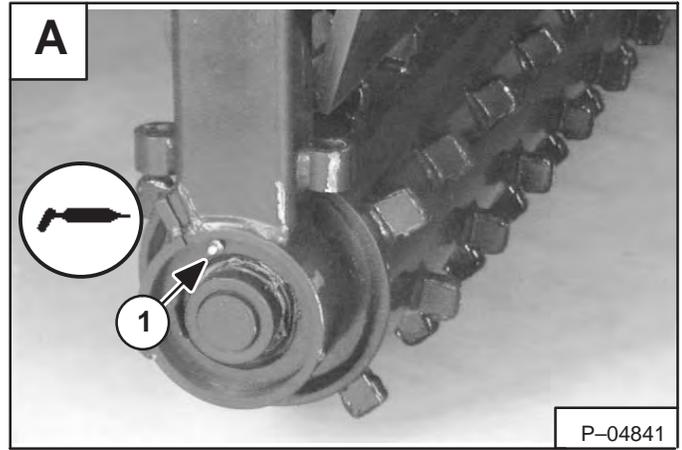
	Page Number
LUBRICATION	
Daily Lubrication	10-10-3
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LUBRICATION

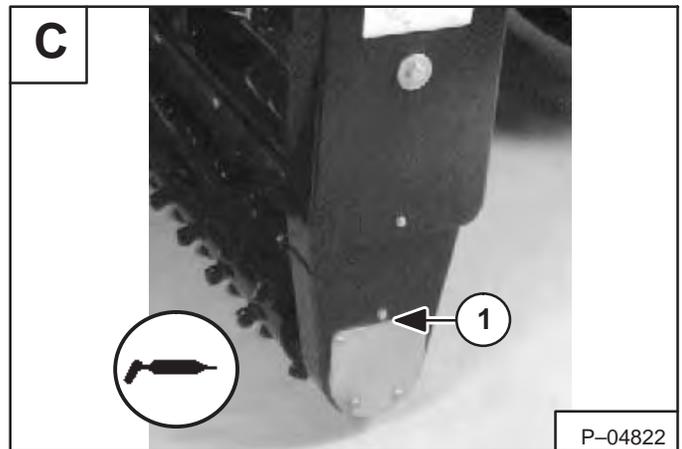
Daily Lubrication

Lubricate the bearings at each end of the roller (Item 1) **[A]** & **[B]**.

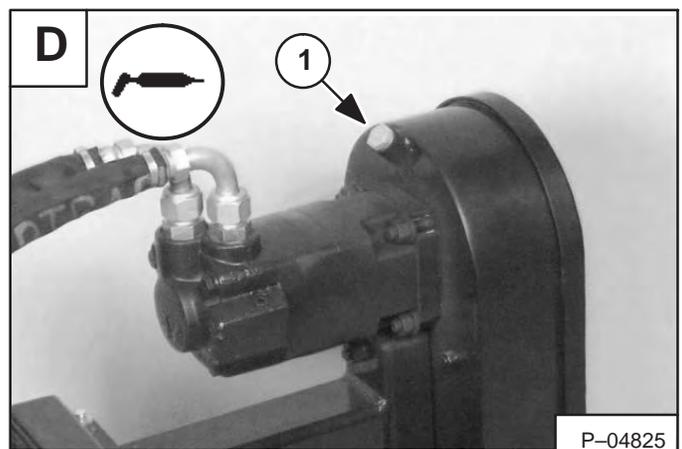


Check the oil level in the chain case by removing the plug (Item 1) **[C]**.

Oil must be at the hole when the plug is removed.



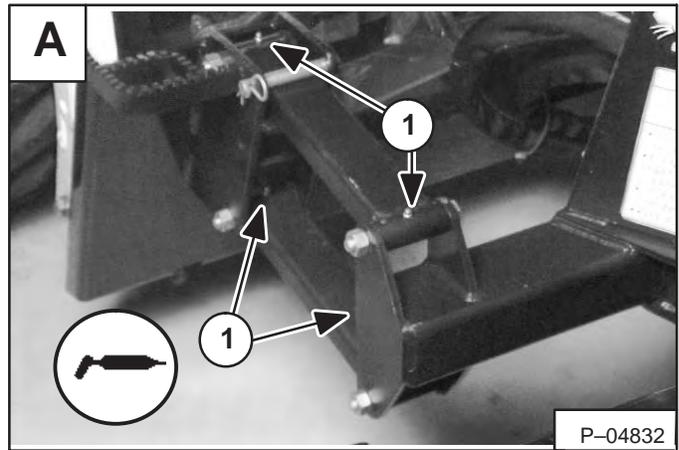
If oil is not at the check plug (Item 1) **[C]**, remove plug (Item 1) **[D]** and add 140 wt. oil until oil is at the check plug hole.



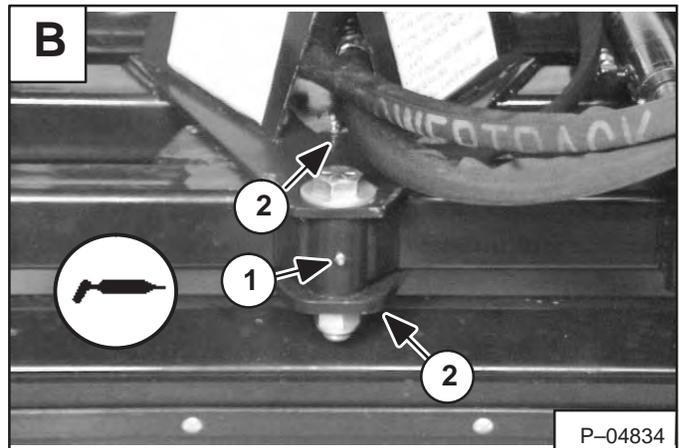
LUBRICATION (Cont'd)

Weekly Lubrication

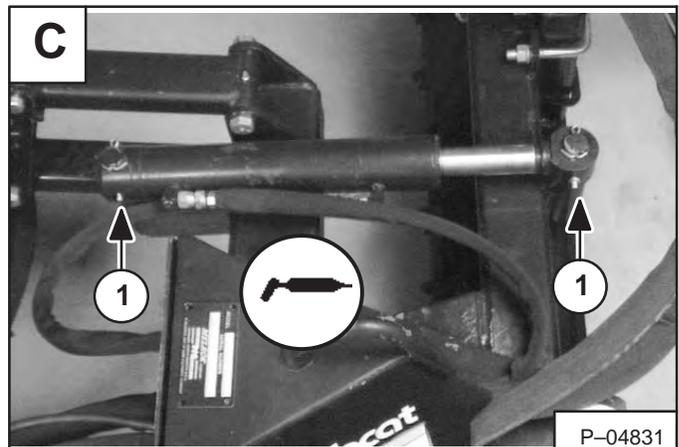
Add grease to the eight fittings (four on each side) (Item 1) [A] on the parallel arms.



Add grease to the center pivot bushing (Item 1) [B] and pivot plate (Item 2) [B] top and bottom.

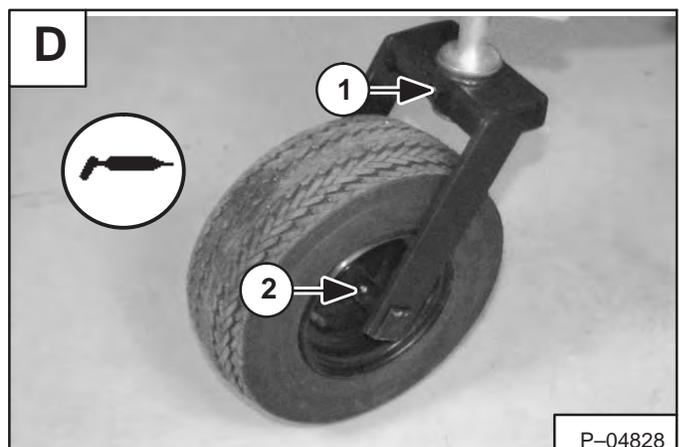


Add grease to the fittings (Item 1) [C] on both ends of the cylinder.



Add grease to the fitting on the caster wheel pivot bearing (Item 1) [D] and the wheel bearing fitting (Item 2) [D].

NOTE: Tire pressure is 45 PSI (310 kPa).



HYDRAULIC SYSTEM

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HYDRAULIC SYSTEM



HYDRAULIC CYLINDER

Checking For Internal Leakage

NOTE: Be sure to retract the cylinder rod fully when pressuring the rod end.

Check only one cylinder at a time.

Disconnect the hose (Item 1) [A] from the cylinder base end port.

Install a plug in the hose and tighten the plug.

Get in the operator seat.

Lower the seat bar, engage the parking brake and start the engine.

Engage the auxiliary hydraulics and pressurize the rod end of the cylinder until system relief pressure is reached. Hold for one minute over the system relief pressure.

There should be no leaks at the base end port.

If there is leakage from the open base end port of the lift cylinder, remove the lift cylinder for repair.

Removal And Installation

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly 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-2003-0888

Remove the hoses (Item 1) [B] from the cylinder fittings.

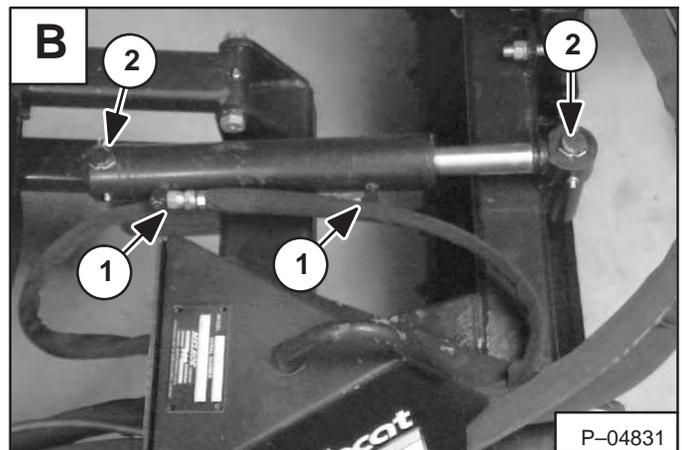
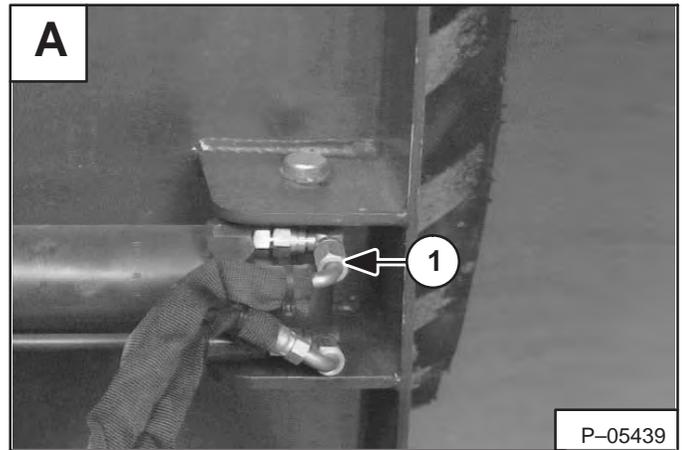
IMPORTANT

Contain and dispose of any oil leakage in an environmentally safe manner.

I-2066-0395

Remove the retainers from the cylinder mounting pins (Item 2) [B].

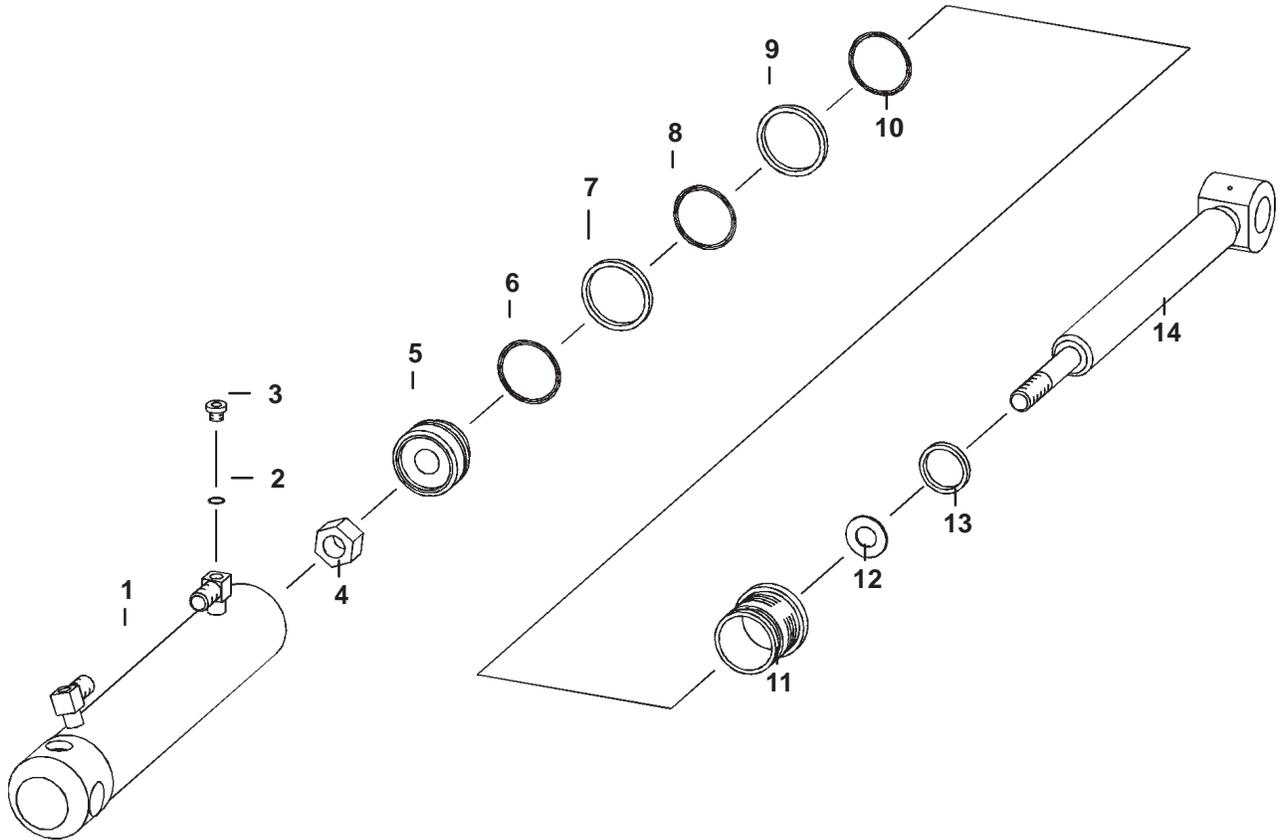
Remove the cylinder.



HYDRAULIC CYLINDER (Cont'd)

Parts Identification

1. Case
2. O-ring
3. Plug
4. Nut
5. Piston
6. O-ring
7. Seal
8. O-ring
9. Backup ring
10. O-ring
11. Head
12. Seal
13. Wiper
14. Rod



TS-01128

HYDRAULIC CYLINDER (Cont'd)

Disassembly

Use the following tools to disassemble and assemble the hydraulic cylinder:

MEL1074 – O-Ring Seal Hook
MEL1396 – Seal Installation Tool
MEL1032 or MEL1033 – Rod Seal Installation Tool
MEL1075 – Adjustable Gland Nut Wrench
MEL1076 – Cylinder Wrench
Torque Multiplier

NOTE: The drawings may not show the cylinder exactly as it appears, but the procedure is correct for all the cylinders.

Put the base end of the hydraulic cylinder in a drain pan. Move the rod in and out to remove the fluid from the cylinder. Move the rod slowly so the fluid will go directly into the drain pan.

Put the base end of the cylinder in a vise.

Use a adjustable gland nut wrench to loosen the head **[A]**.

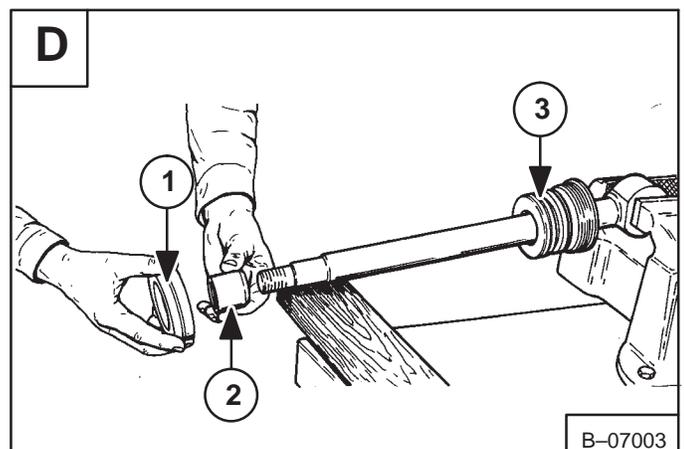
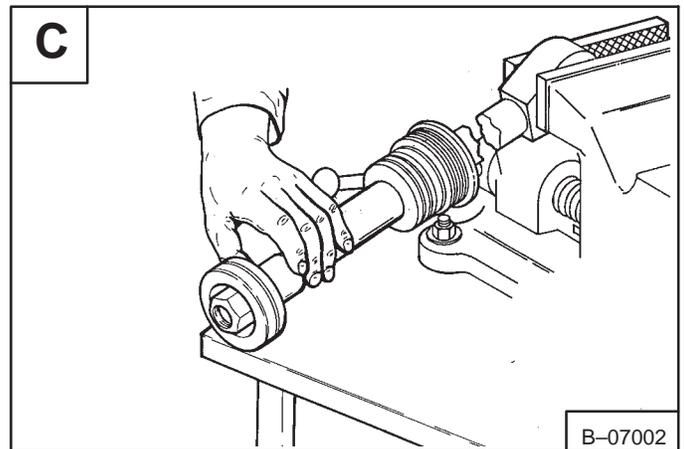
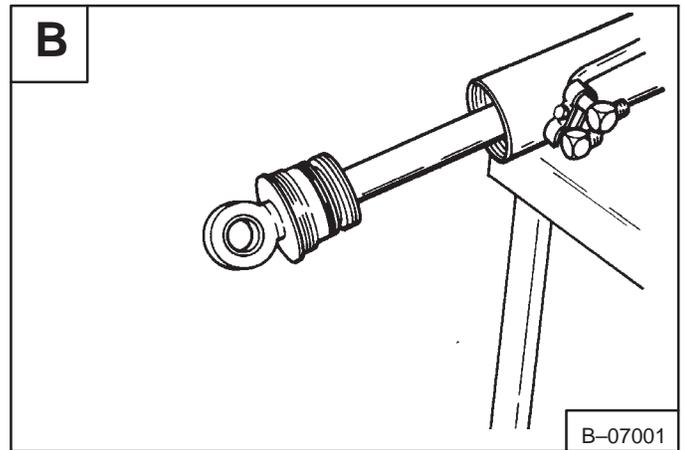
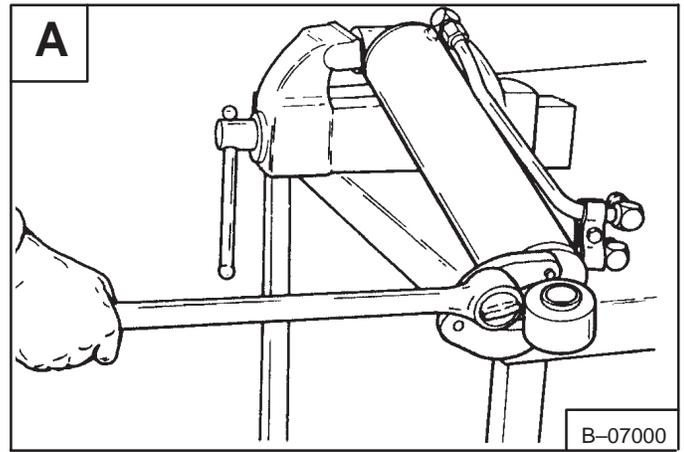
Remove the rod assembly from the cylinder case **[B]**.

Remove the cylinder case from the vise

Put the rod end in the vise

Remove the nut from the piston end of the rod **[C]**.

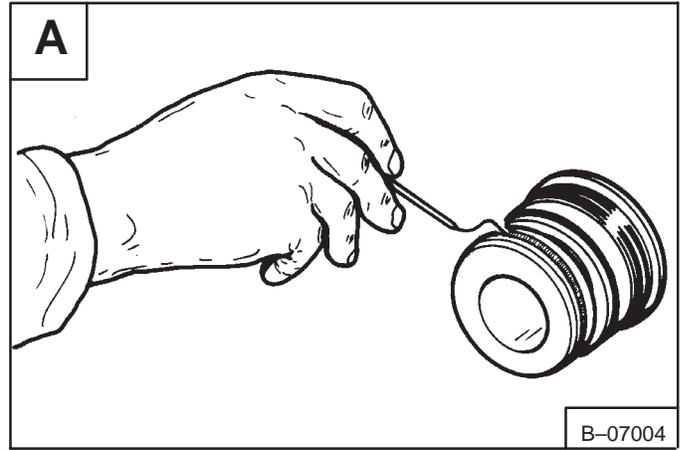
Pull the piston off the rod (Item 1) **[D]**. If the cylinder has a cushion sleeve (Item 2) **[D]**, pull it off the rod. Pull the head (Item 3) **[D]** off the rod.



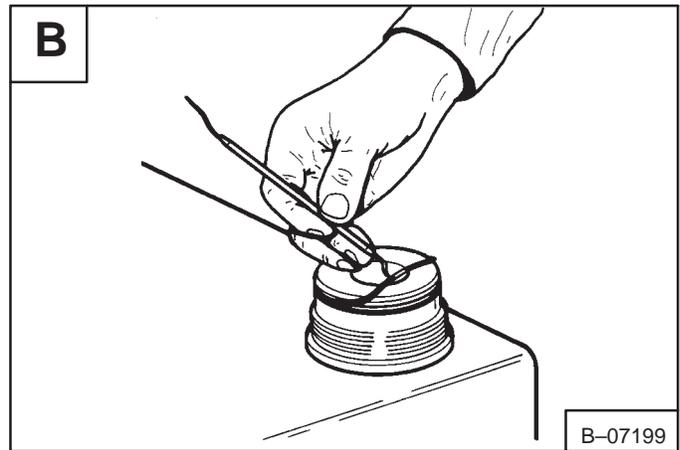
HYDRAULIC CYLINDER (Cont'd)

Disassembly (Cont'd)

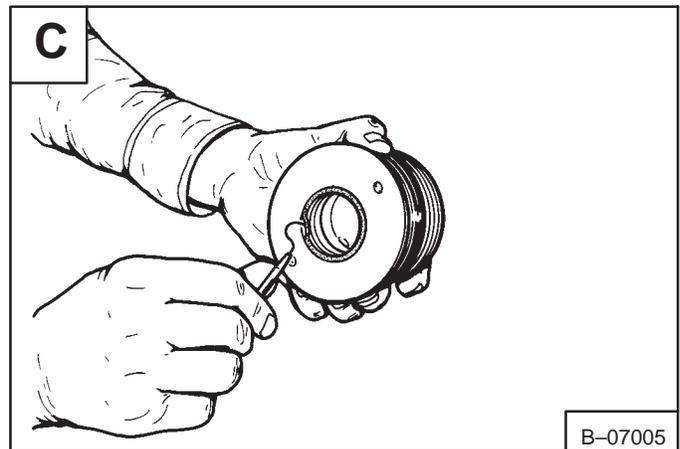
If the head has a seal, remove the seal from the head [A].



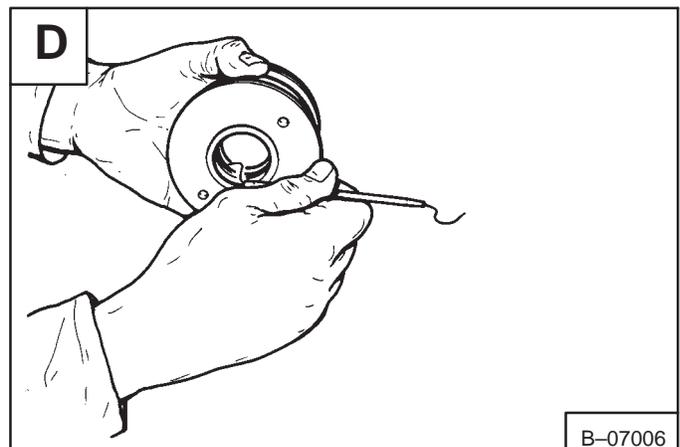
Remove the O-ring and back-up washer from the head [B].



Remove the wiper seal [C].



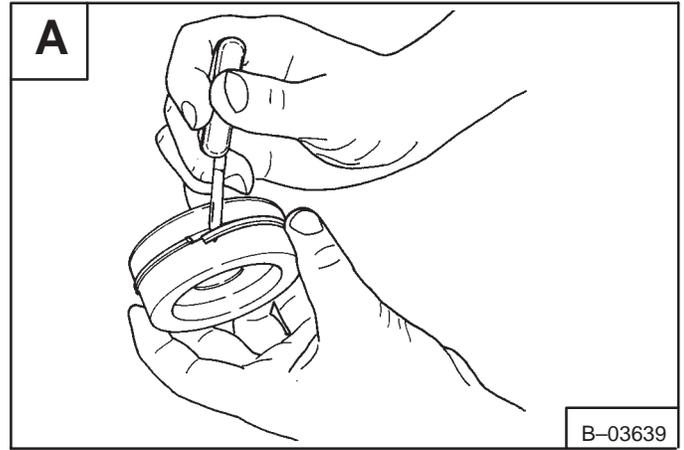
Remove the oil seal from the head [D].



HYDRAULIC CYLINDER (Cont'd)

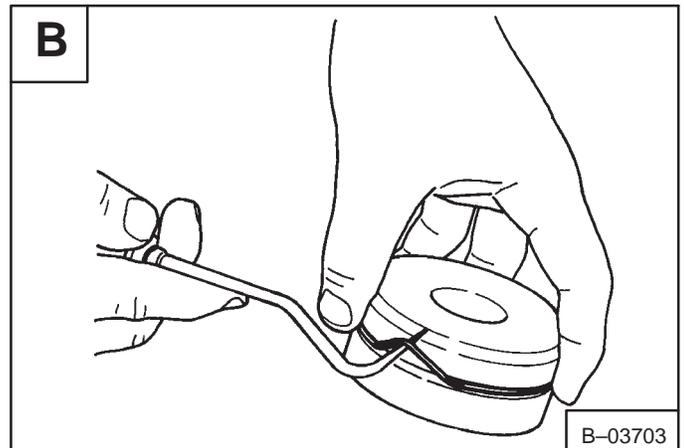
Disassembly (Cont'd)

Remove the piston seal from the piston [A].



Remove the O-ring from the piston [B]. Wash the cylinder parts in clean solvent and dry with compressed air.

NOTE: While servicing the cylinder do not damage the parts. Inspect for nicks, scratches or otherwise damaged or bent parts before assembling the cylinder. Replace parts that appear damaged in any way. The cylinder may not function correctly if there is damage to any of the parts.

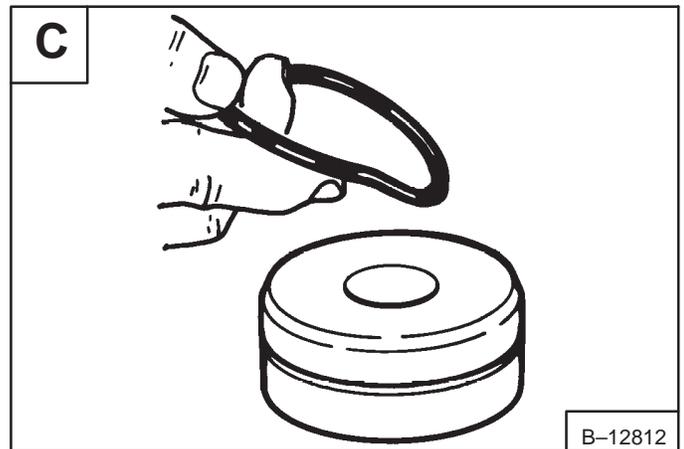


Destroy all the O-rings and seals and replace them with NEW O-rings and seals.

Assembly

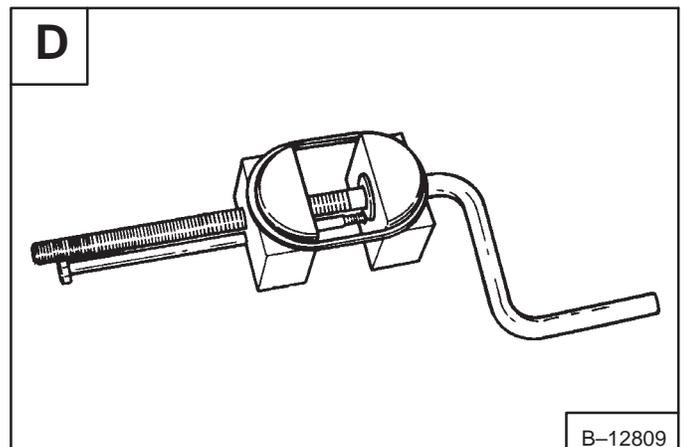
Install the O-ring on the piston [C].

NOTE: Do not overstretch the seal.



Install the seal on the tool and stretch it until it fits the piston [D].

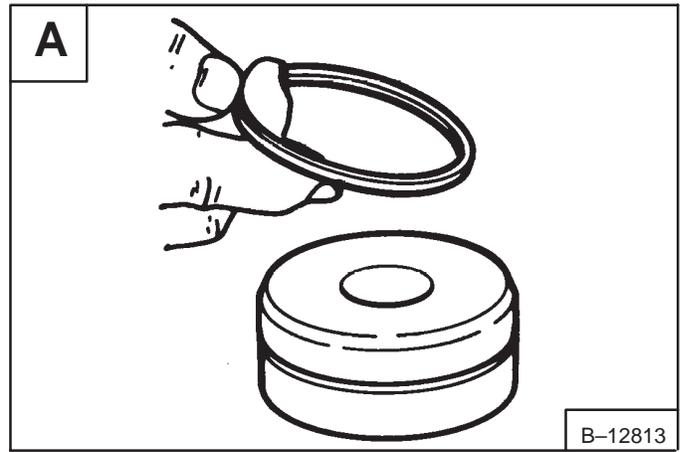
Allow the O-ring to stretch for 30 seconds before removing it from the tool.



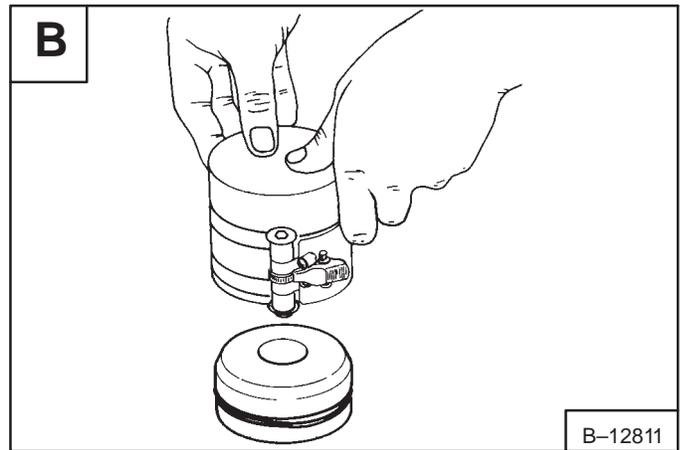
HYDRAULIC CYLINDER (Cont'd)

Assembly (Cont'd)

Install the seal on the piston [A].

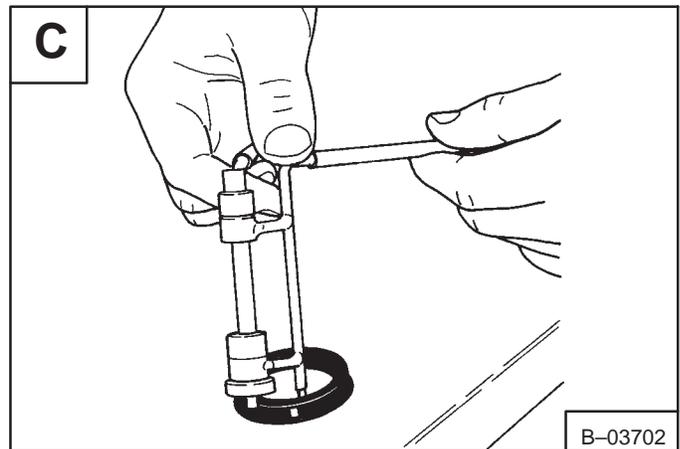


Use the ring compressor to compress the seal to the correct size [B]. Leave the piston in the ring compressor for three minutes.

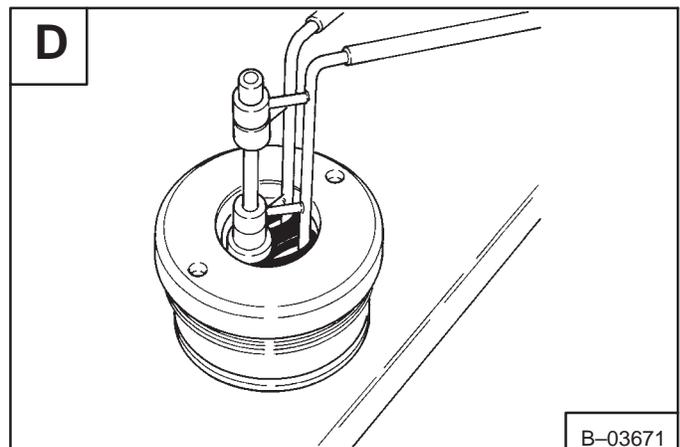


Install the oil seal on the rod seal tool [C].

NOTE: The O-ring side of the oil seal goes toward the inside of the cylinder.



Install the oil seal in the head [D].



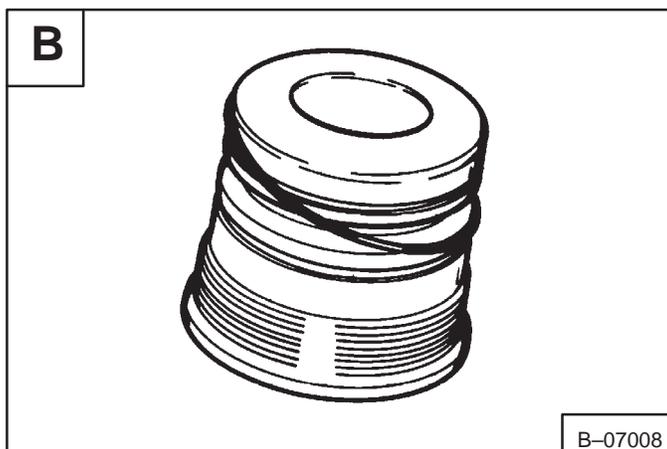
HYDRAULIC CYLINDER (Cont'd)

Assembly (Cont'd)

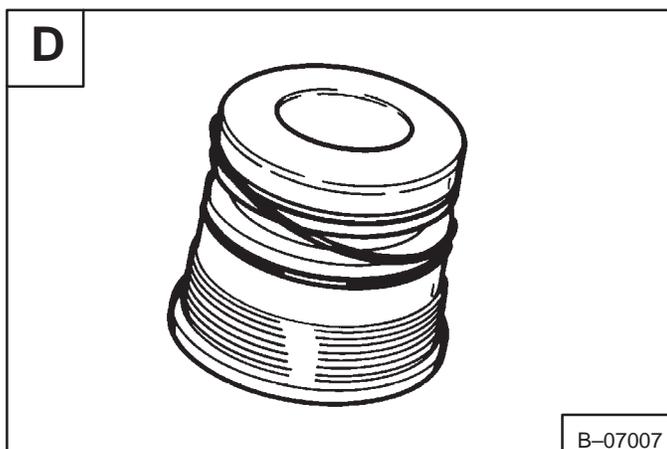
Install the wiper seal with the lip toward the outside of the head [A].



Install the back-up washer on the head [B] & [C].



Install the O-ring next to the back-up ring as shown [D].



HYDRAULIC CYLINDER (Cont'd)

Assembly (Cont'd)

If a seal was removed from the head, use the following procedure to install a new seal.

Install the guide with a pilot and an adapter, if they are required, on the head [A].

Install the seal on the head using the guide [A].

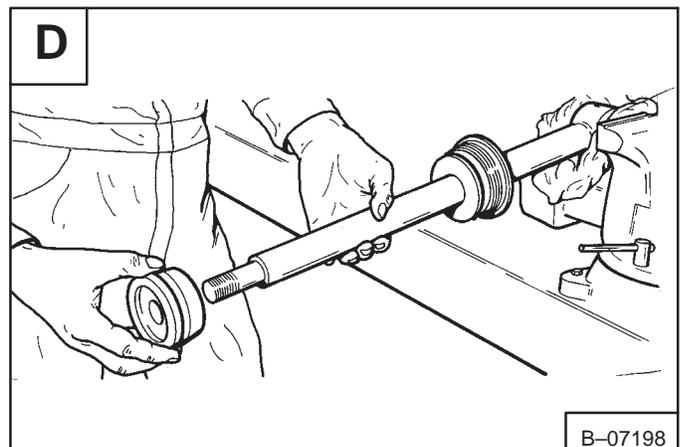
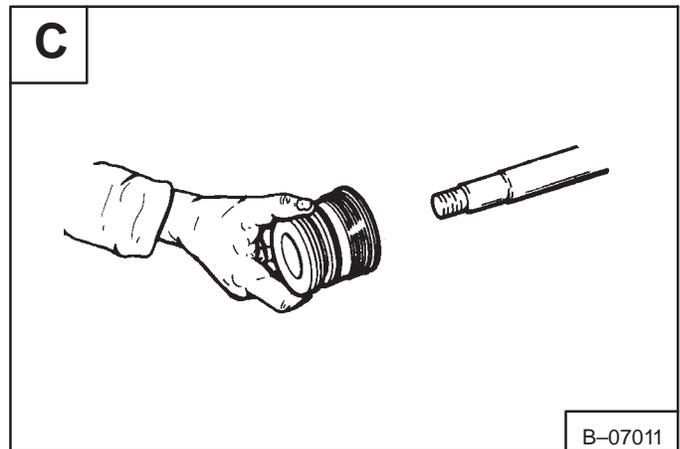
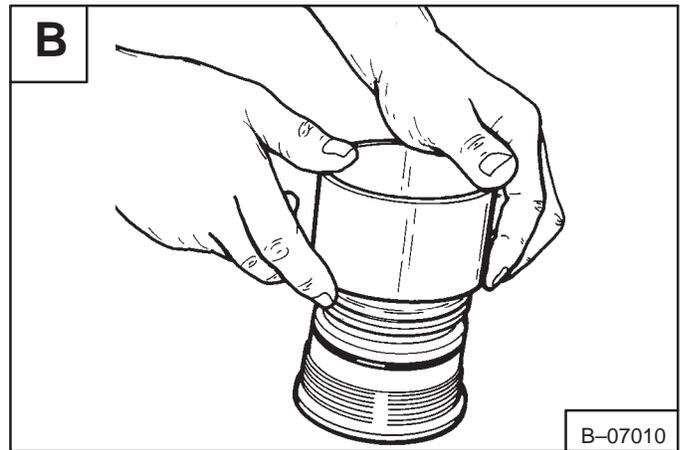
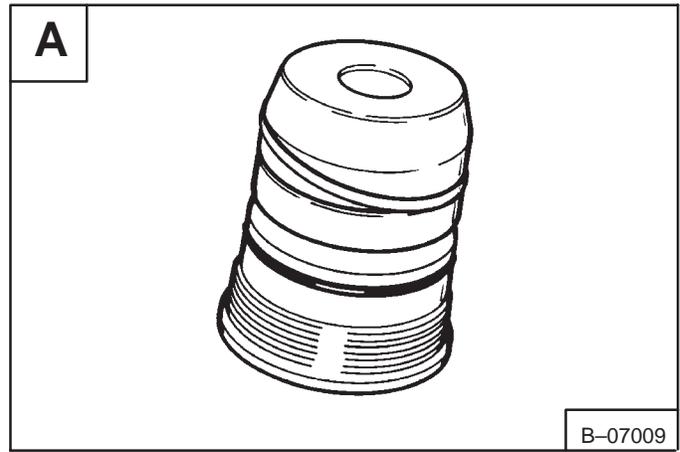
NOTE: Do not turn (roll) the seal as you install it. Damage to the seal may result.

Use a ring compressor to compress the seal to the correct size [B]. Leave the tool over the Teflon seal for five minutes.

Install the head on the rod [C].

Cylinders With Cushioned Piston:

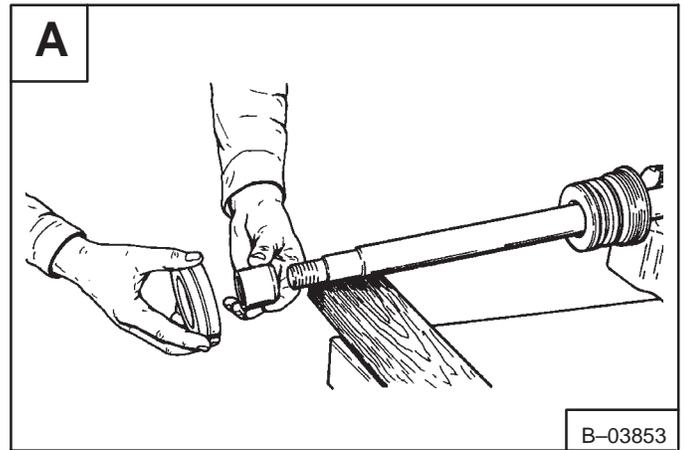
Install the piston on the rod with the tapered end first (toward the head) [D].



HYDRAULIC CYLINDER (Cont'd)

Assembly (Cont'd)

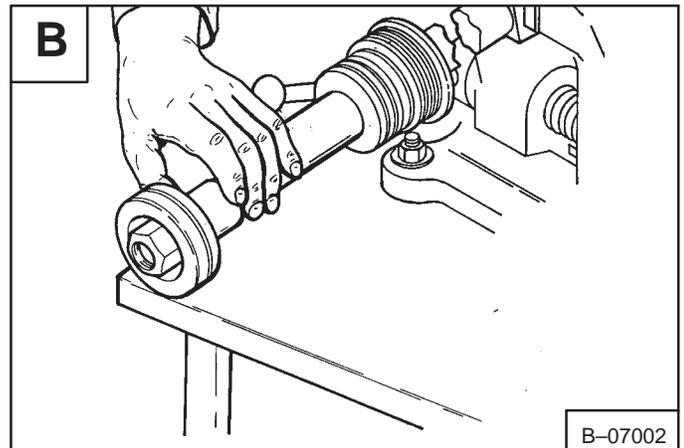
Install the stop (if so equipped) and piston on the rod [A].



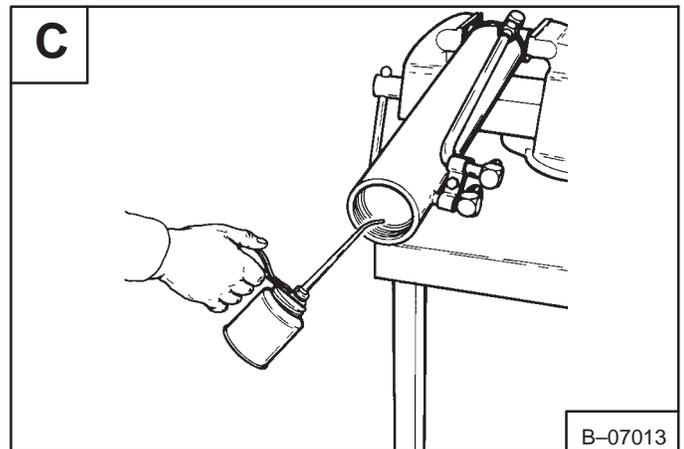
(See Page 10-20-13 for the correct torque specifications and nut application procedure.)

Remove the rod from the vise.

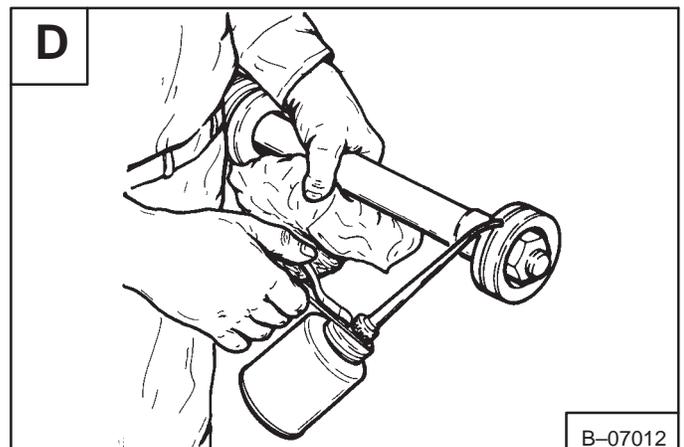
Install the cylinder case in the vise.



Put oil on the seal surface of the cylinder case [C].



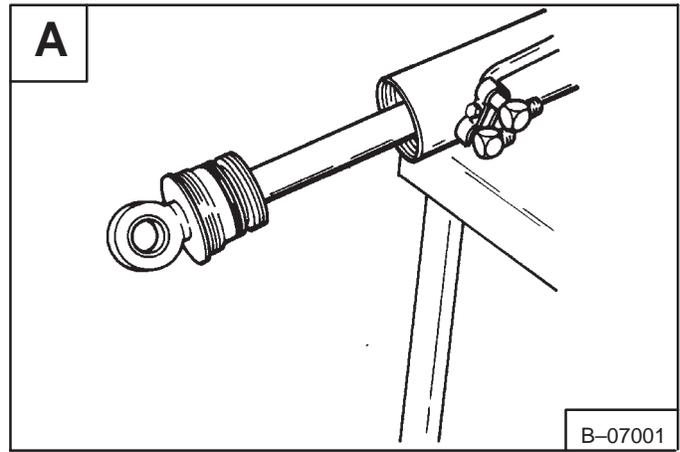
Put oil on the Teflon seal on the piston [D].



HYDRAULIC CYLINDER (Cont'd)

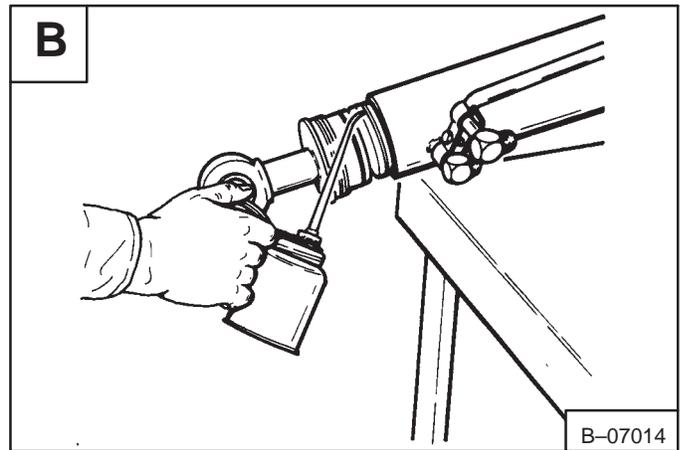
Assembly (Cont'd)

Install the rod assembly in the cylinder case **[A]**.

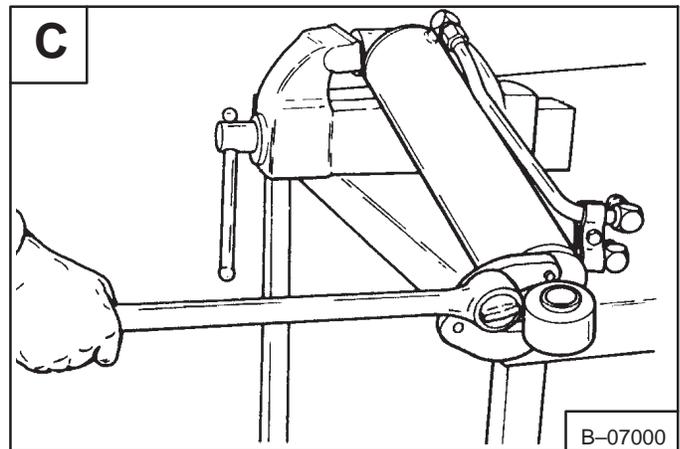


Put oil on the seals on the head **[B]**.

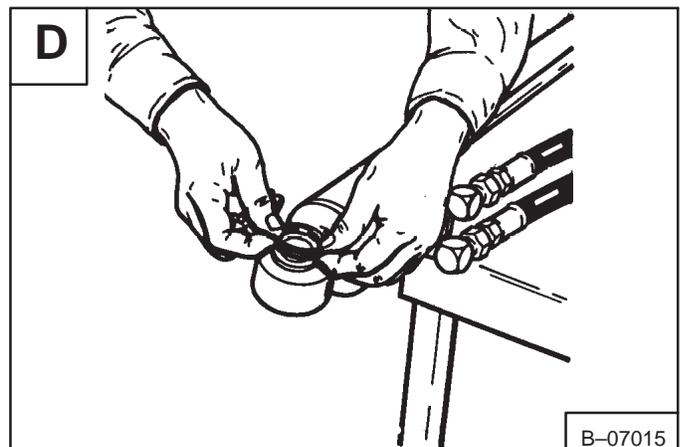
Put oil on the threads of the head.



Use the adjustable gland nut wrench to tighten the head until the head is flush with the case **[C]**.



Replace the seal on the rod end (if so equipped) if it shows signs of wear or damage **[D]**.



HYDRAULIC CYLINDER (Cont'd)

Torque Specifications

Always clean and dry the threads on the cylinder rod and the piston nut. **Do not oil the threads.** Use a new piston nut when available. Always use the correct nut part number shown below. When a nut is reused, thoroughly clean the pre applied locking agent from the nut. Apply LOCTITE 242 adhesive on the threads.

To determine the proper tightening torque, find the piston nut part number or thread diameter, shaft diameter and piston material. Measure the thread diameter to find the nut part number.

When servicing an older cylinder that uses a pre-torque nut, clean the threads and apply LOCTITE 242 adhesive.

Torque Chart

Thread Diameter	Nut Wrench Size	Shaft Diameter	Piston Material	Torque Ft.-lbs.	Torque Nm
0.625	15/16	1.000/1.250	Iron/Steel	Aluminum 90	122
90.750	1-1/8	1.000	Iron/Steel	Aluminum 105	142
0.750	1-1/8	1.250/1.500	Iron/Steel	Aluminum 180	244
0.875	1-5/16	1.250	Iron/Steel	300	407
0.875	1-5/16	1.375	Aluminum	250	339
0.875	1-5/16	1.750	1.375/1.500 Iron/Steel	350	475
1.000	1-1/2	1.500	Iron/Steel	400	542

HYDRAULIC CONTROL VALVE

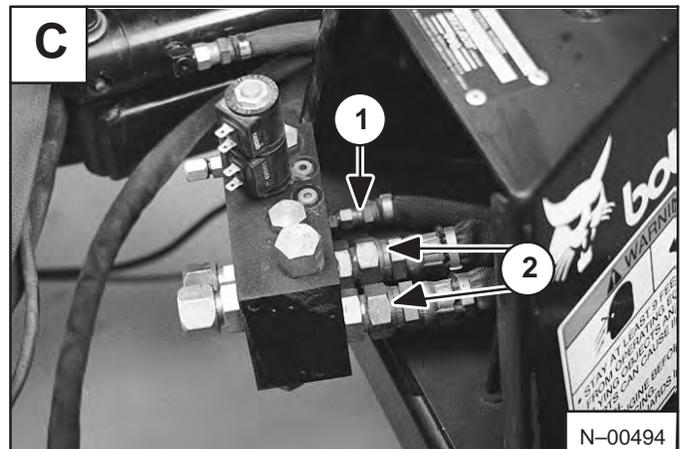
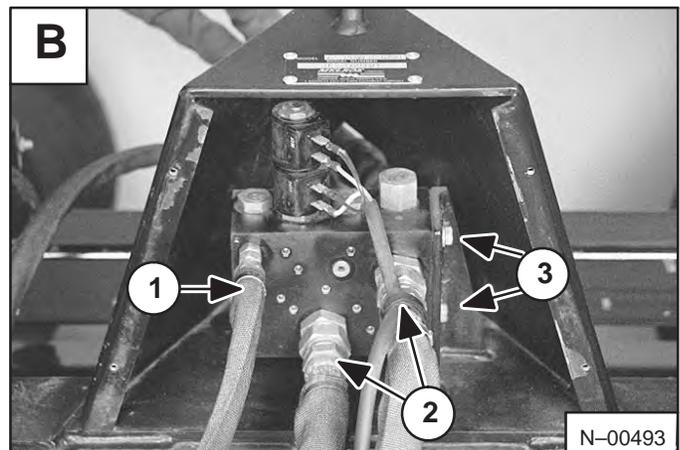
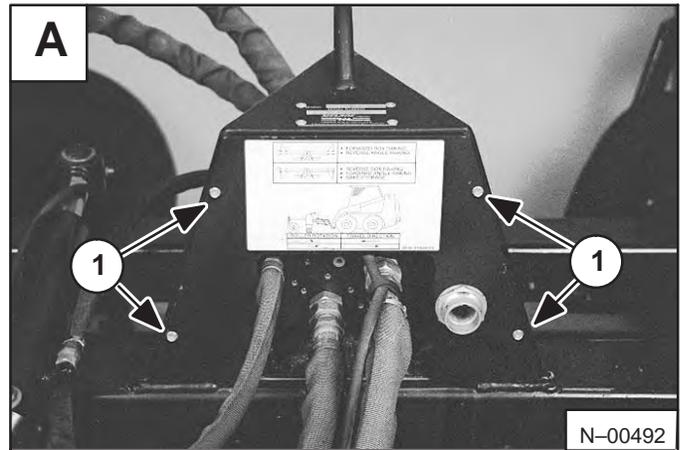
Removal And Installation

Relieve hydraulic pressure in the auxiliary system. (Refer to the loader Operation & Maintenance Manual.)

Disconnect the quick couplers and the electrical connector from the loader.

Remove the attachment hoses from the hose guide on the loader lift arm.

Remove the four screws (Item 1) [A] from the control valve cover plate.



IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly 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-2003-0888

NOTE: Mark the electrical connections on the coils, for correct location during assembly [B].

NOTE: Refer to the electrical schematic of this manual, for the coil wiring connections if necessary. (See Page 10-40-1).

Remove the wires from the coil terminals [B].

Remove the cylinder hose (Item 1) [B], and the auxiliary hoses (Item 2) [B] from the control valve.

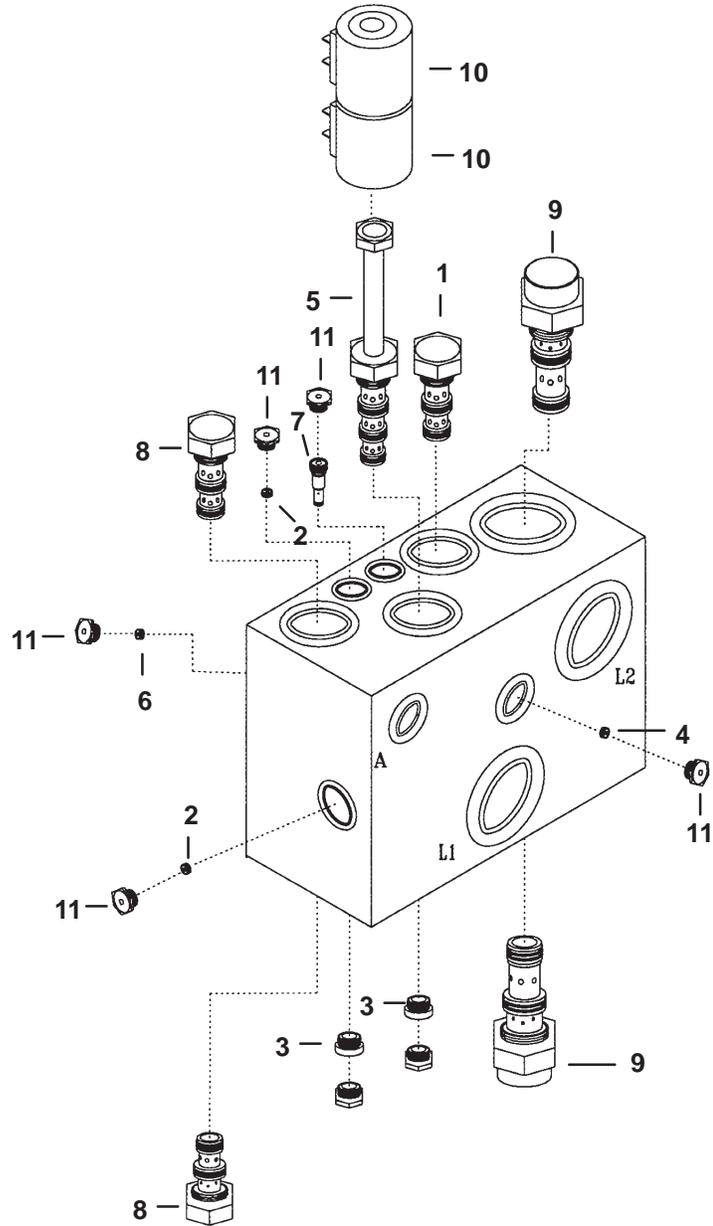
Remove the two mounting bolts (Item 3) [B] from the control valve mounting bracket.

Pull the control valve from the housing and remove the cylinder hose (Item 1) [C] and the motor hoses (Item 2) [C].

HYDRAULIC CONTROL VALVE (Cont'd)

Parts Identification

- 1. SHUTTLE VALVE
- 2. .020" ORIFICE
- 3. CHECK VALVE
- 4. .040" ORIFICE
- 5. SOLENOID SPOOL
- 6. .030" ORIFICE
- 7. LOAD SENSING SHUTTLE
- 8. PILOT CHECK VALVE
- 9. PILOT FLOW VALVE
- 10. SOLENOID COIL
- 11. PLUG



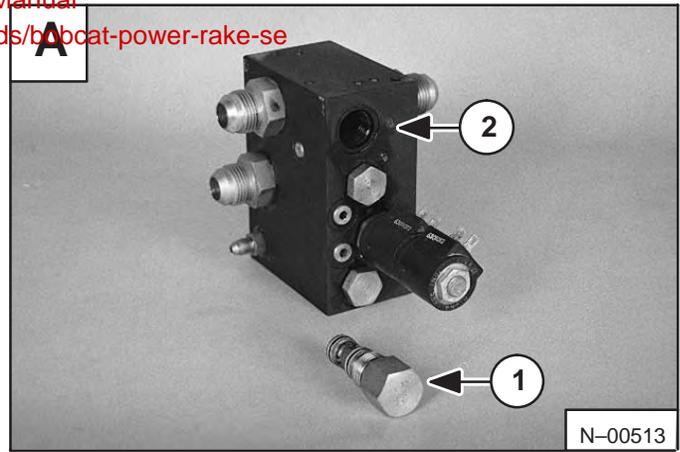
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HYDRAULIC CONTROL VALVE (Cont'd)

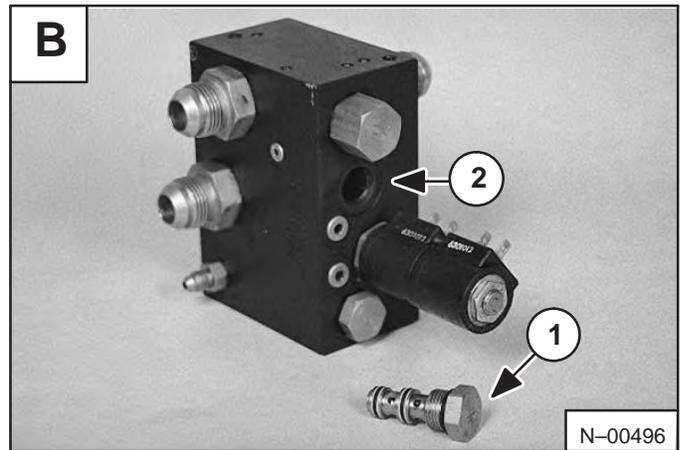
Disassembly And Assembly

Remove the pilot flow valve (Item 1) [A] from the control valve (Item 2) [A].

NOTE: Always replace the O-rings and back-up rings when the control valve is disassembled. Always install them in the original locations during assembly.

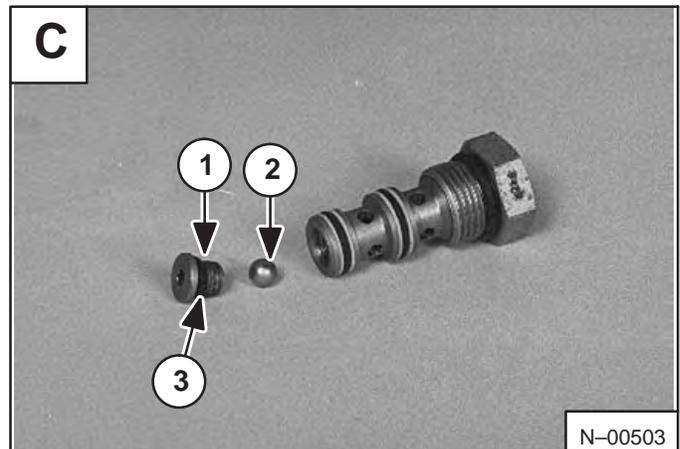


Remove the shuttle valve (Item 1) [B] from the control valve (Item 2) [B].

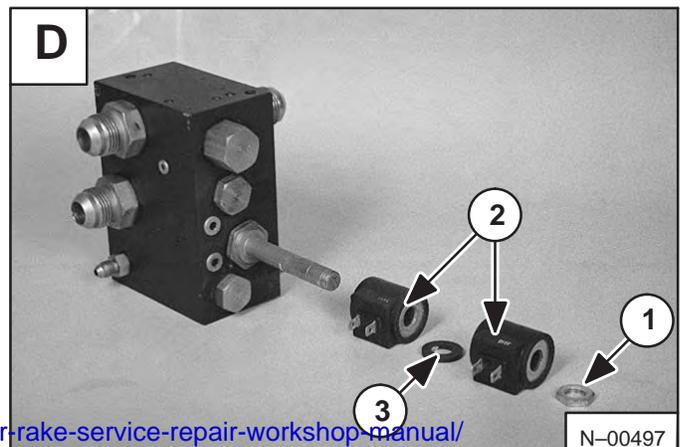


Remove the plug (Item 1) [C] and ball (Item 2) [C] from the shuttle valve.

Remove the O-ring (Item 3) [C] from the plug.



Remove the nut (Item 1) [D], the coils (Item 2) [D], and the spacer (Item 3) [D] from the spool.



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