

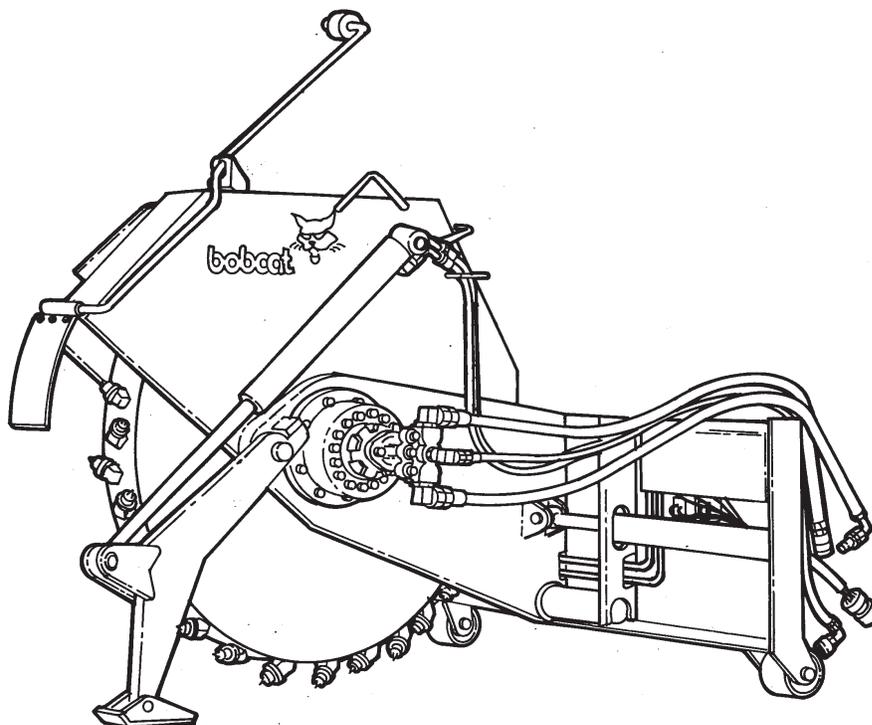
Product: 1999 Bobcat WS12/WS18 Wheel Saw Service Repair Workshop Manual
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WHEEL SAW

WS 12 (S/N 561500101 & Above)
WS 18 (S/N 561600101 & Above)

Service Manual



Sample of manual. Download All 62 pages at:

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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.



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

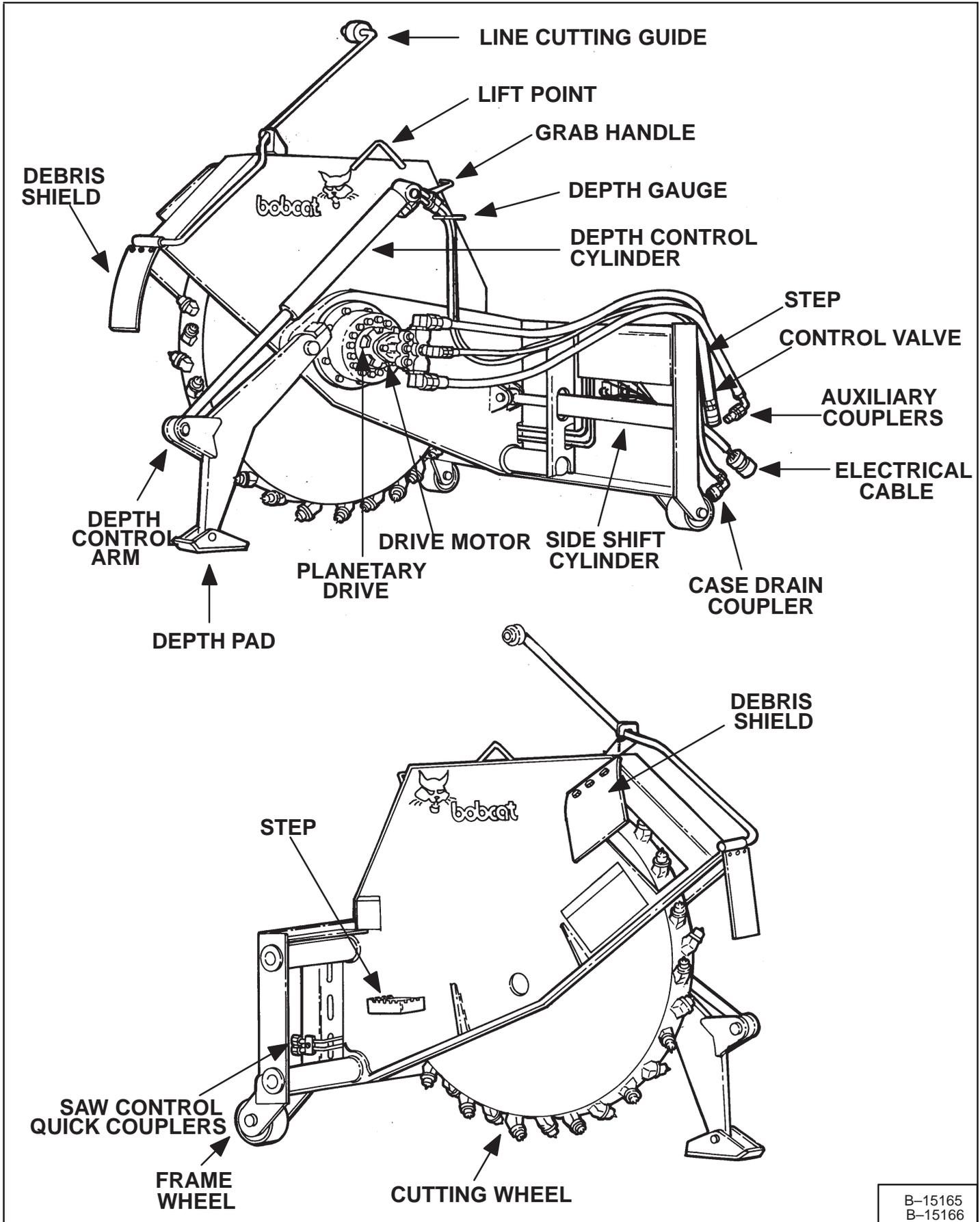
It is important to make the correct reference to the serial number (Item 1) **[A]** of the Wheel Saw when making repairs or ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

The Wheel Saw serial number plate is located on the back of the side shift frame in the left corner.



IDENTIFICATION

NOTE: WS 18 Shown



B-15165
B-15166

PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE

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Hardening The Wheel And Carbide Holders	10-10-5
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LUBRICATION	10-10-4
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TROUBLESHOOTING



WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, 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-2003-0199

If the Wheel Saw is not working correctly, check the hydraulic system of the machine thoroughly before making any repairs on the Wheel Saw. Wheel Saw problems can be affected by a hydraulic system that is not operating to specifications. Connect a flow meter to the loader to check the hydraulic pump output, relief valve setting and tubelines to check flow and pressure. (See the loader Service Manual for the correct procedure to connect the flow meter.)

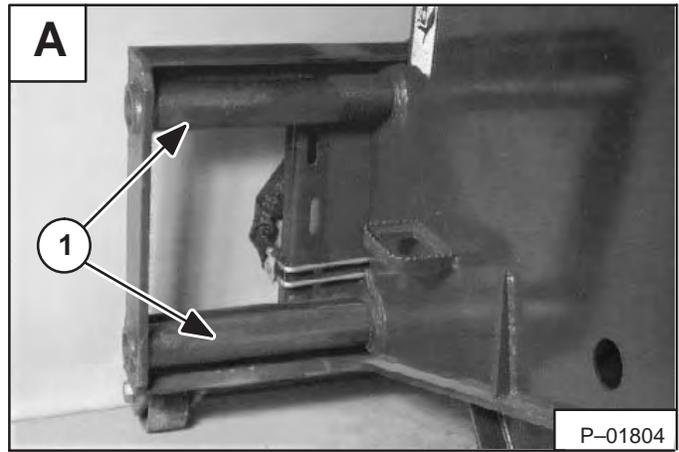
Use the following troubleshooting chart to locate and correct problems which most often occur with the Wheel Saw.

PROBLEM	CAUSE	CORRECTION
Wheel Saw loses power.	Wheel Saw control valve solenoid failure.	Remove/clean or replace solenoid cartridge or replace O-rings.
	Auxiliary system relief pressure too low.	Check and replace any relief valve. Check settings.
	Loader/auxiliary pump failure.	Replace auxiliary pump.
Auxiliary power fails to disengage.	Auxiliary mode switch failure. Wheel Saw control valve solenoid failure.	Check/replace switch and control valve solenoid.
Wheel continues to rotate with power disengaged.	Residual system pressure sufficient for drive motor creep.	Add supplemental load check to pressure line of drive motor in the direction of flow.
Wheel Saw drive motor leaks at shaft seal.	Excess motor case drain pressure.	Replace motor shaft seal and check coupler connection on loader.

LUBRICATION

The side shift bars (Item 1) [A] need to be cleaned periodically.

Keep the side shift bars greased on a daily basis.



CUTTING WHEEL

Replacing Carbide Bits

Use MEL1302 Bit Removal and Installation Tool to replace the worn or damaged carbide bits on the cutting wheel.

The tool for installing and removing the carbide tips is stored on the back of the Bob-Tach mounting frame [B].

Lower the lift arms fully and tilt the wheel forward until it rests on the ground.

Stop the engine and engage the parking brake.

NOTE: During normal use, bits located on the outer sides of the cutting wheel will wear out the quickest. Check the bits every 3 hours of operation.

The carbide bits must rotate freely in the holder.

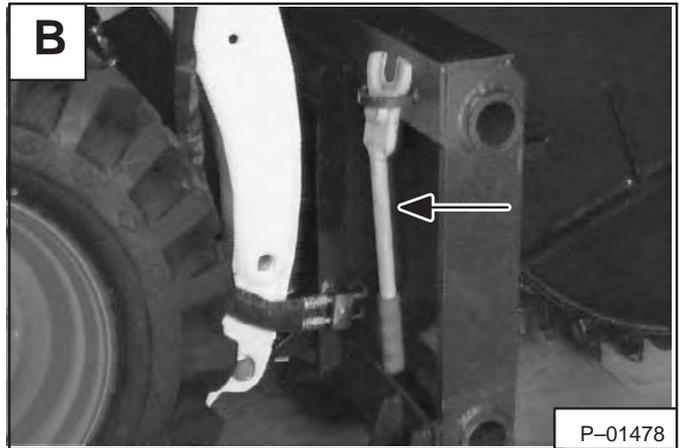
If the bit does not rotate freely in the holder, tap the holder to loosen dirt or foreign particles from the bit.

Install the removal/installation tool under the flange of the bit as shown for removal [C].

Use a hammer to free the bit from the holder [C].

Place the removal/installation tool above the flange on the bit as shown for installation [D].

Use a hammer to hit the tool to drive the bit into the holder [D].

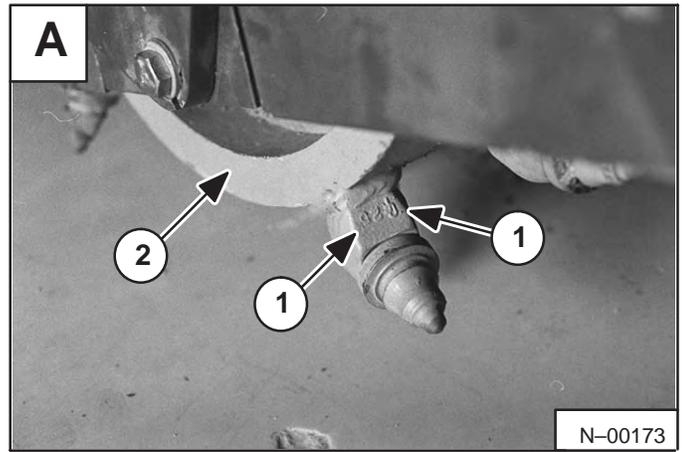


CUTTING WHEEL (Cont'd)

Hardening The Wheel And Carbide Holders

Hardening the surfaces of the carbide holders and the edge of the wheel will improve the surface life of the equipment. Harden the surfaces as follows:

Apply hard surface welding along the contact edges of the carbide tip holders (Item 1) **[A]** and along the edge of the wheel (Item 2) **[A]** to minimize wear.





HYDRAULIC SYSTEM

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HYDRAULIC SYSTEM



SIDE SHIFT CYLINDER

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

Disconnect the side shift hoses (Item 1) [A] from the control valve.

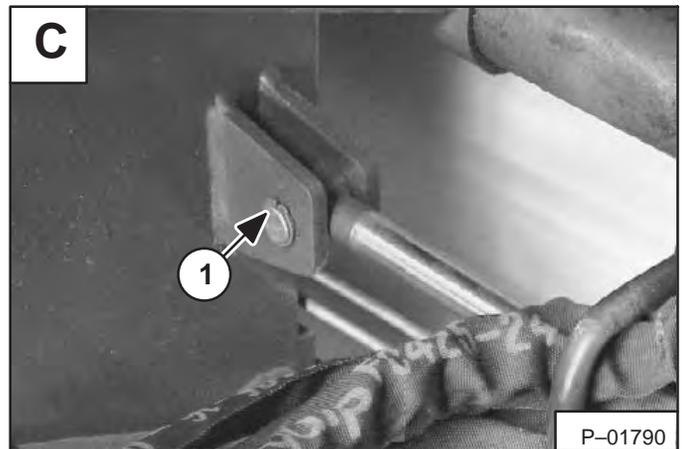
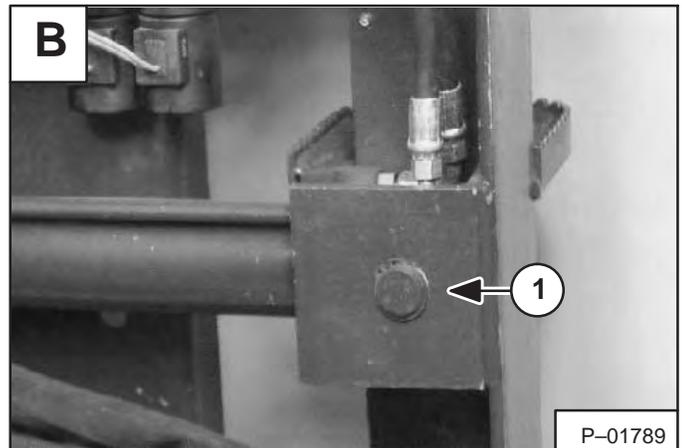
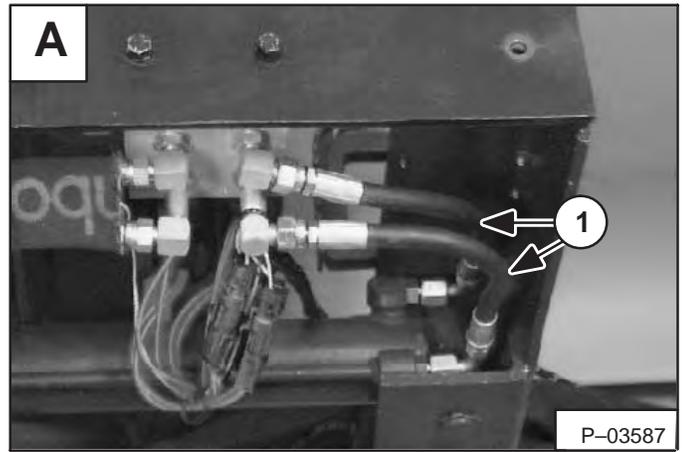
NOTE: Mark the rod and base ends of the hoses connected to the control valve.

Remove the hoses from the cylinder after the cylinder is removed from the mounting frame.

Remove the snap ring and cylinder pin (Item 1) [B] from the base end of the cylinder.

Remove the snap ring and cylinder pin (Item 1) [C] from the rod end of the cylinder.

Remove the cylinder from the mounting frame.



DEPTH ADJUSTMENT CYLINDER

Removal And Installation

Remove the snap ring and cylinder pin (Item 1) [A] from the rod end of the cylinder.

IMPORTANT

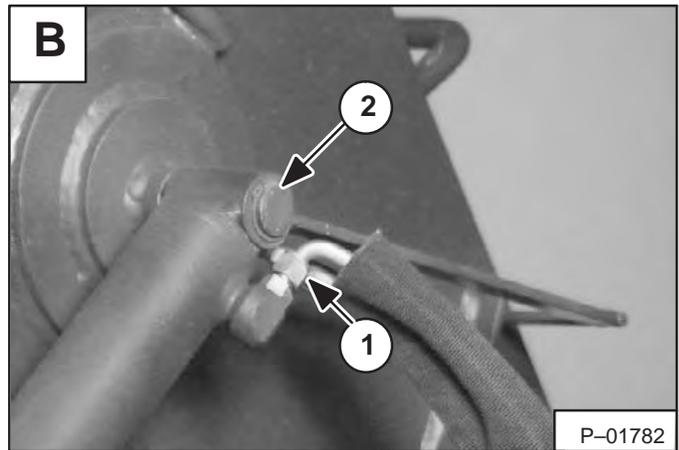
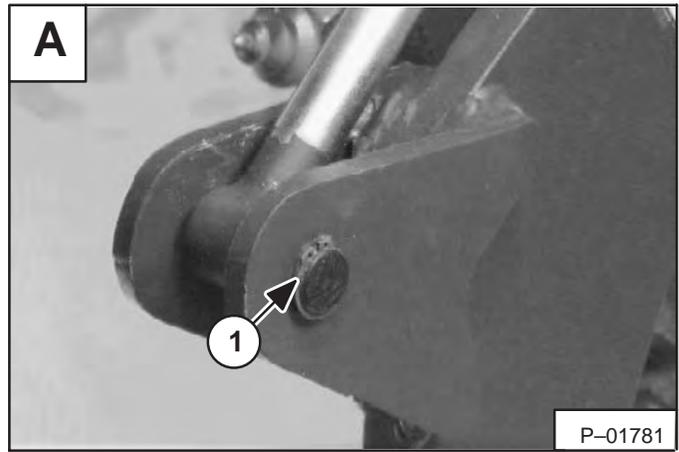
When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2003-0888

Disconnect the hydraulic hoses (Item 1) [B] from the base end of the cylinder.

Remove the snap ring (Item 2) [B] from the base end of the cylinder.

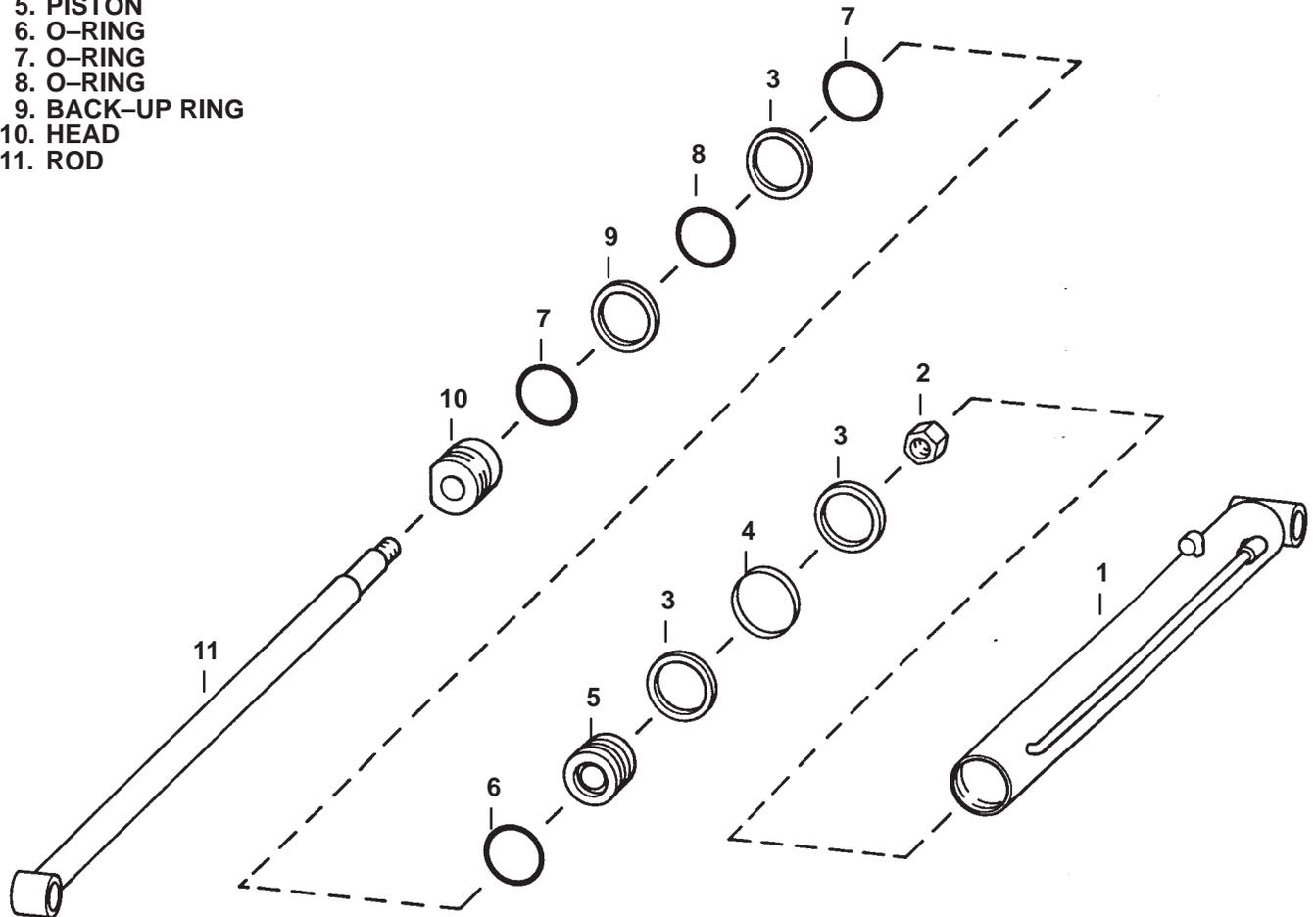
Remove the cylinder.



HYDRAULIC CYLINDER

Parts Identification

1. CASE
2. NUT
3. BACK-UP RING
4. DUST SEAL
5. PISTON
6. O-RING
7. O-RING
8. O-RING
9. BACK-UP RING
10. HEAD
11. ROD



HYDRAULIC CYLINDER (Cont'd)

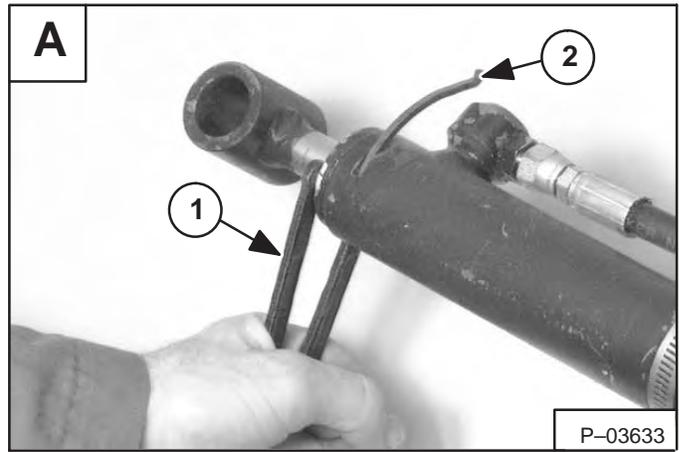
Disassembly And Assembly

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

Put the base end of the cylinder in a vise.

Using a spanner wrench (Item 1) [A] turn the head to remove the retainer wire (Item 2) [A].

NOTE: The wire may need to be guided out as the head is turned.



Remove the rod assembly from the cylinder case.

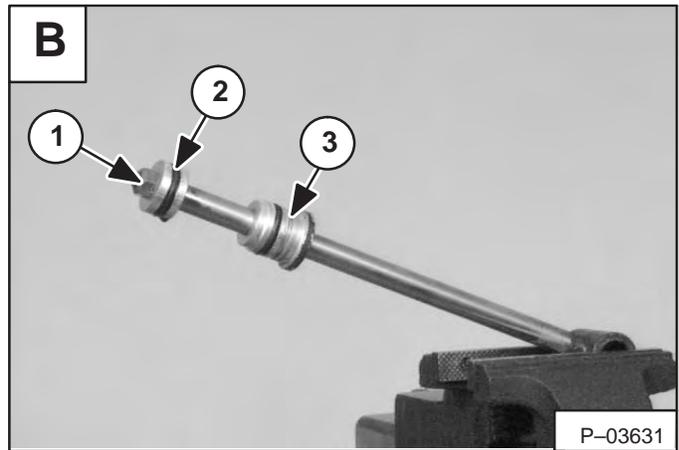
Remove the cylinder case from the vise. Put the rod end in the vise [B].

Remove the nut (Item 1) [B] from the piston end of the rod.

Installation: Tighten the nut to 65–70 ft.-lbs. (88–95 Nm) torque.

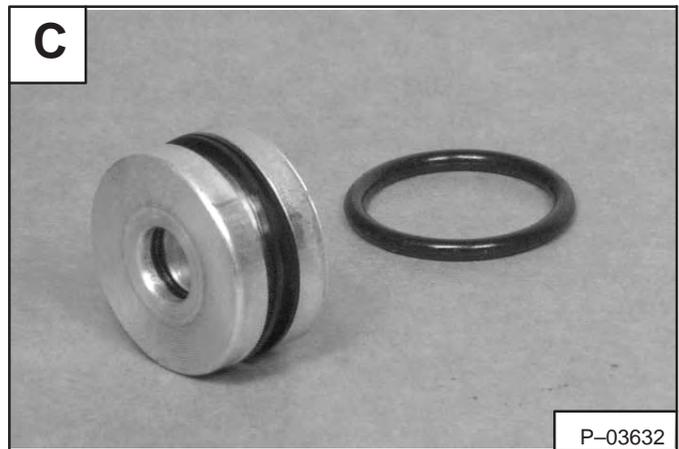
Remove the piston (Item 2) [B] and head (Item 3) [B].

NOTE: The piston can be installed in either direction.



Remove the O-rings and back-up washers from the piston [C].

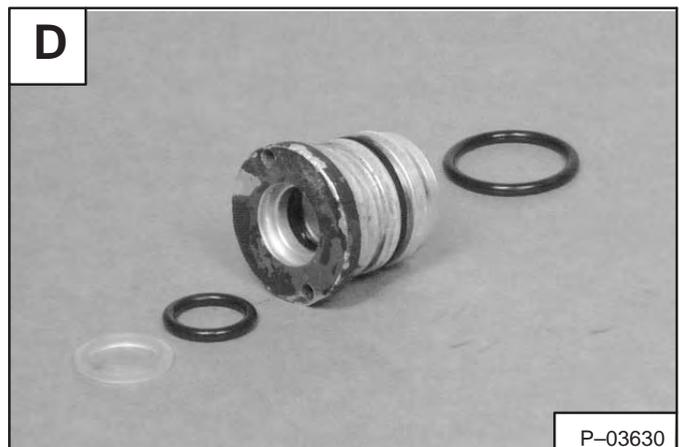
NOTE: Install a back-up washer on each side of the O-ring during assembly.



Remove the O-rings and back-up washers from the head [D].

NOTE: Be sure the back-up washers are installed toward the outside of the head [D].

Assemble the cylinder in reverse order.



HYDRAULIC CONTROL VALVE

Removal And Installation

Remove the control valve shield mounting bolts and remove the shield [A].

Installation: Tighten the mounting bolts to 25–28 ft.-lbs. (34–38 Nm) torque.

NOTE: The ground wire from the electrical harness is connected to one of the shield mounting bolts. Reinstall during installation procedure.

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

Installation: Mark the hydraulic hoses and electrical connectors for proper installation.

Disconnect the depth adjustment cylinder hoses (Item 1) [B] from the control valve.

Disconnect the side shift cylinder hoses (Item 2) [B] from the control valve.

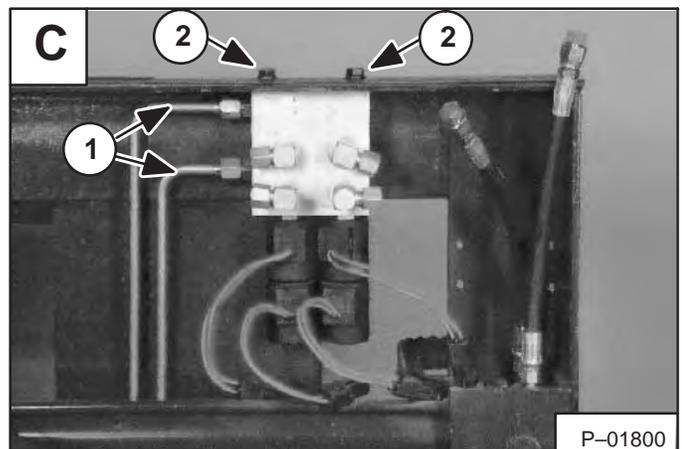
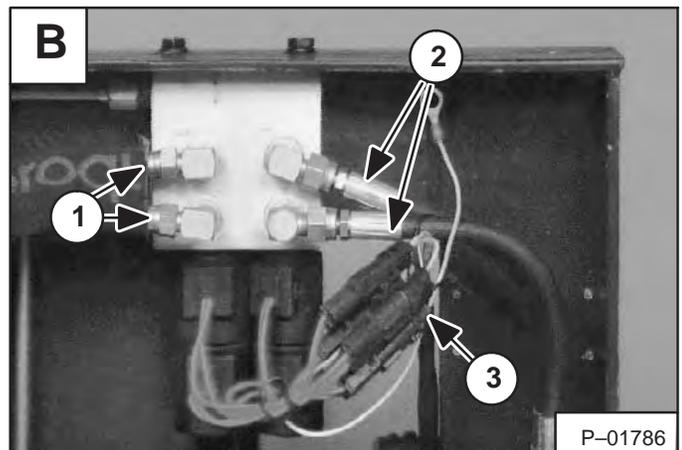
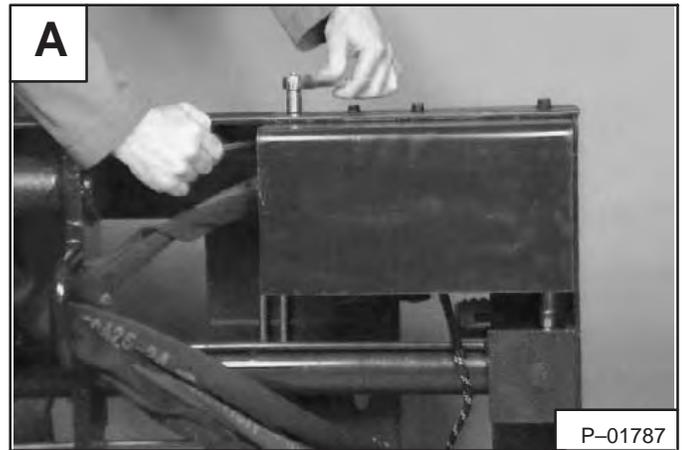
Disconnect the four electrical connectors (Item 3) [B] from the control valve.

Remove the auxiliary tubelines (Item 1) [C] from the control valve.

Remove the control valve mounting bolts (Item 2) [C].

Installation: Tighten the mounting bolts to 25–28 ft.-lbs. (34–38 Nm) torque.

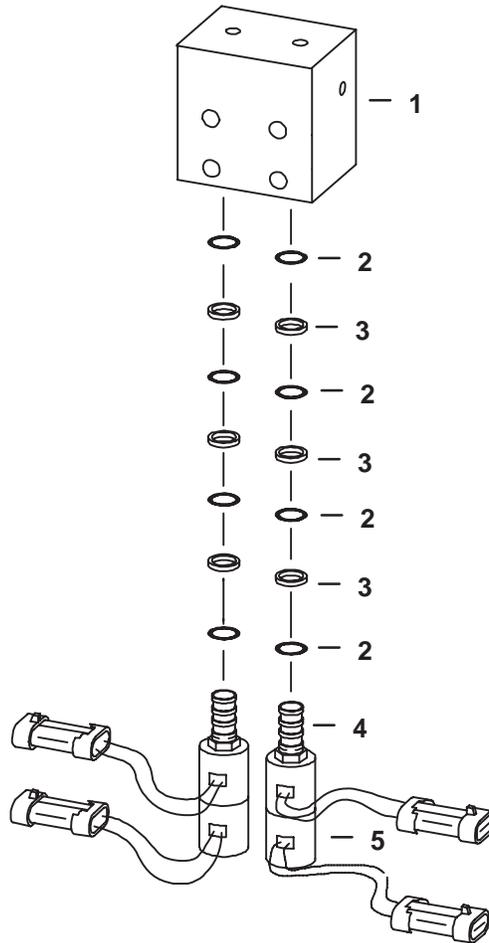
Remove the control valve from the mounting frame.



HYDRAULIC CONTROL VALVE (Cont'd)

Parts Identification

1. VALVE BODY
2. O-RING
3. BACK-UP RING
4. SPOOL
5. SOLENOID



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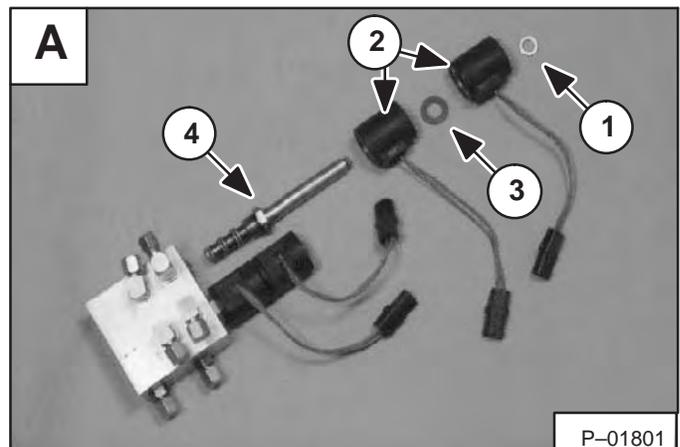
Disassembly And Assembly

Remove the nut (Item 1) [A] from the end of the control valve spool.

Remove the solenoids (Item 2) [A] and spacer (Item 3) [A] from the control valve spool.

Remove the spool (Item 4) [A] from the control valve.

Installation: Check the valve parts for wear and damage and replace if necessary. Replace the O-rings and back-up rings on the valve spools.



P-01801

HYDRAULIC MOTOR

Removal And Installation

Mark the hydraulic hoses for correct 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.

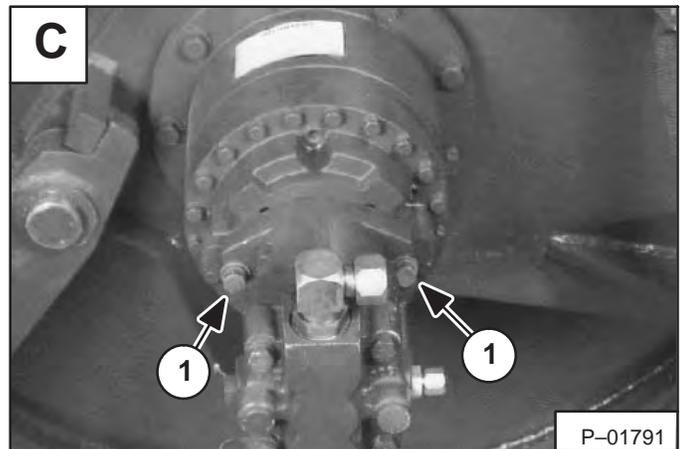
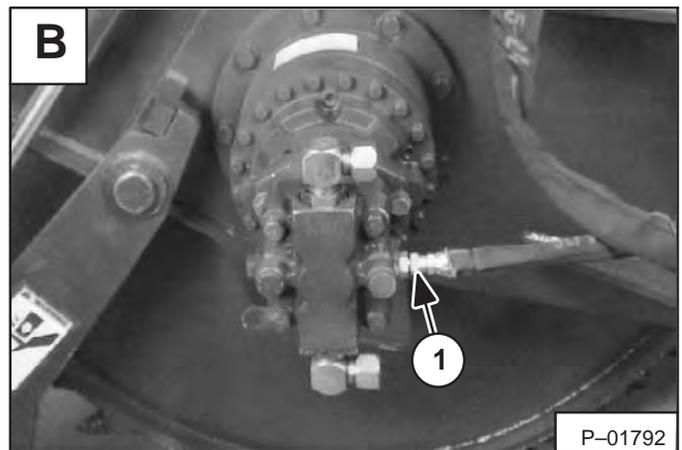
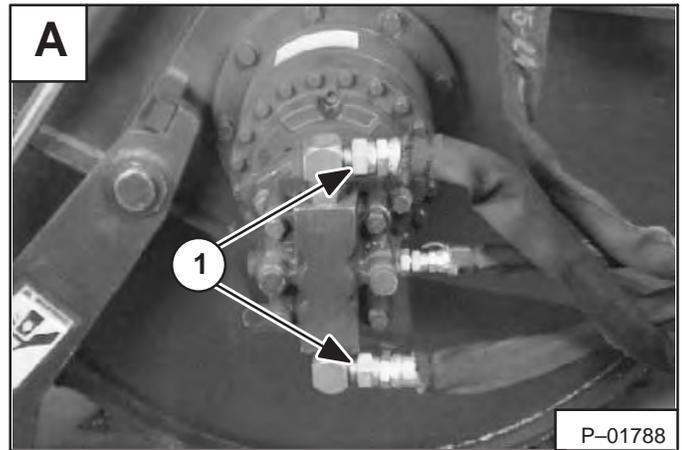
I-2003-0888

Disconnect the pressure and return hoses (Item 1) [A] from the hydraulic motor.

Disconnect the case drain hose (Item 1) [B] from the hydraulic motor.

Remove the two mounting bolts (Item 1) [C] for the motor and remove the motor from the planetary drive.

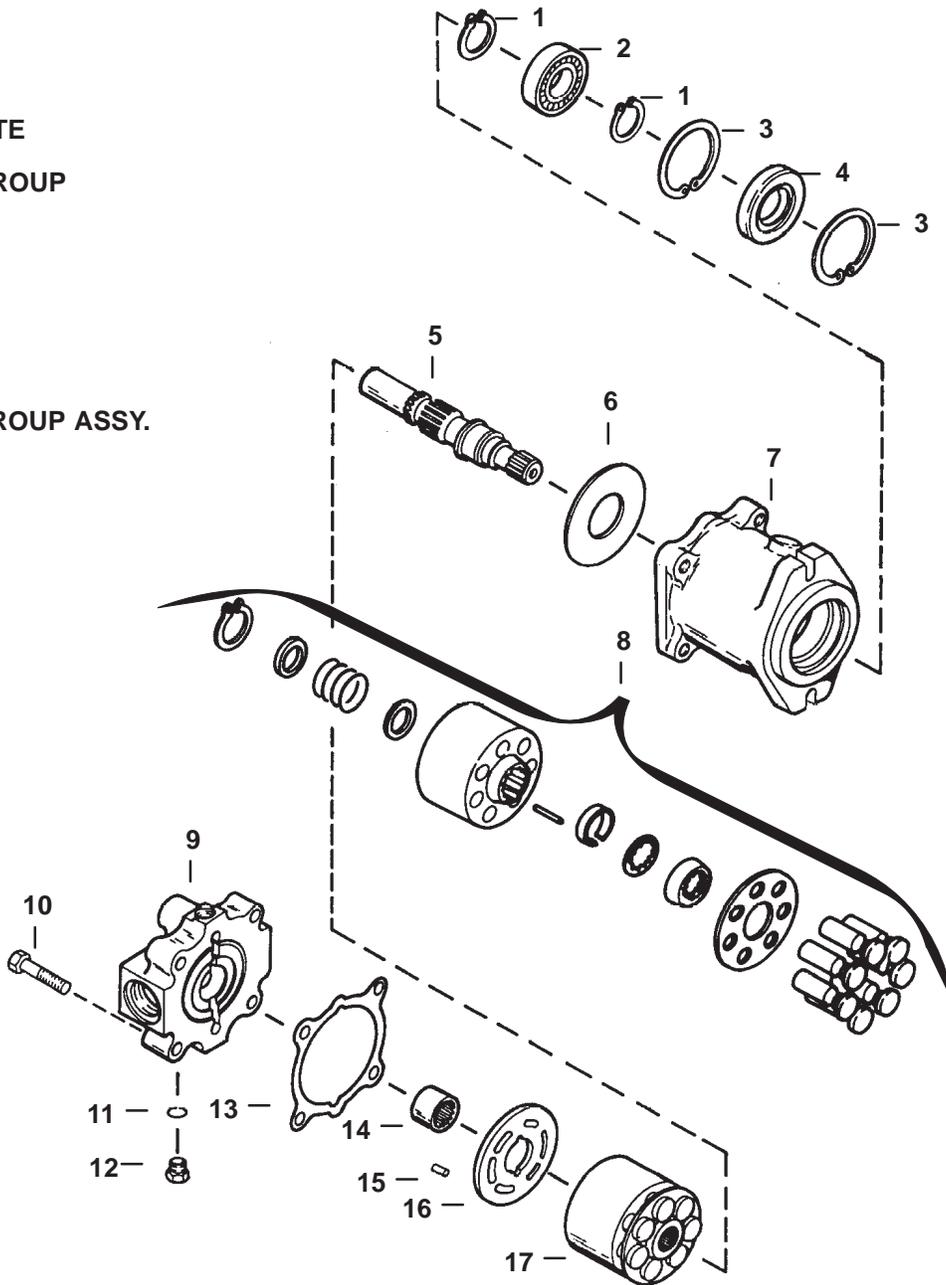
Installation: Tighten the mounting bolts to 55–60 ft.-lbs. (75–82 Nm) torque.



HYDRAULIC MOTOR (Cont'd)

Parts Identification

1. SNAP RING
2. BEARING
3. SNAP RING
4. SEAL
5. SHAFT
6. THRUST PLATE
7. HOUSING
8. ROTATING GROUP
9. END CAP
10. BOLT
11. O-RING
12. PLUG
13. GASKET
14. BEARING
15. PIN
16. PLATE
17. ROTATING GROUP ASSY.



C-03237

HYDRAULIC MOTOR (Cont'd)

Disassembly And Assembly

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 four bolts [A].

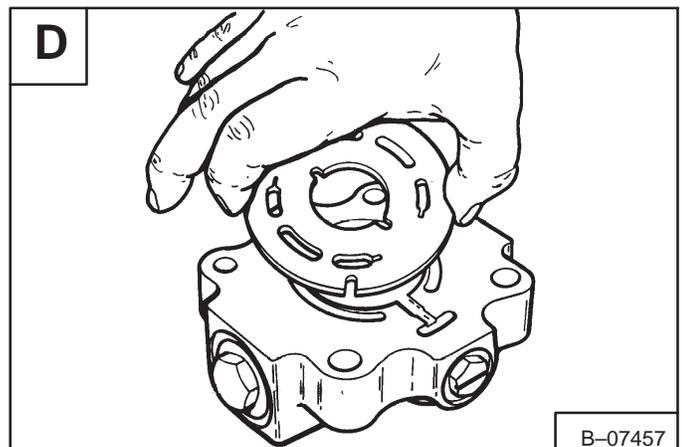
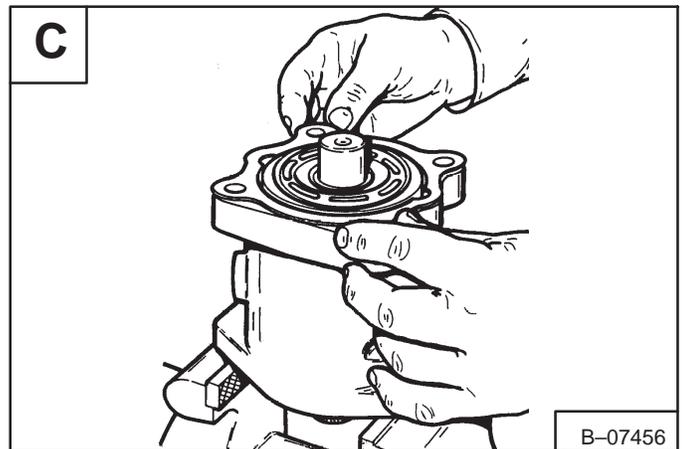
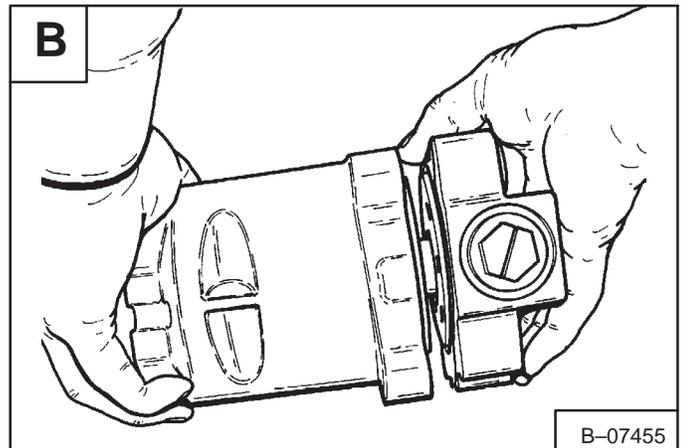
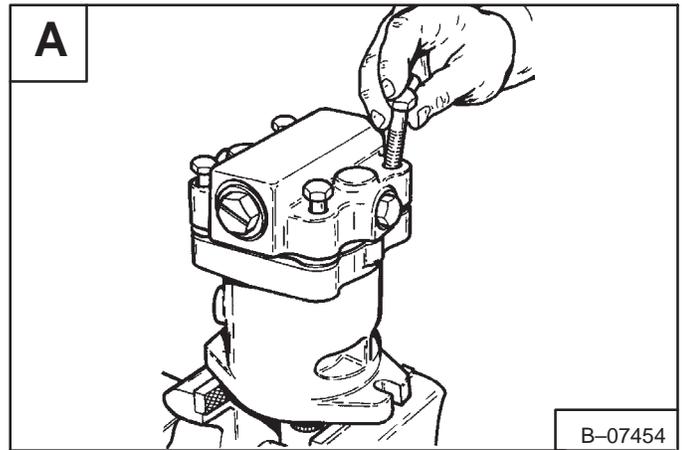
Installation: Tighten the bolts to 51–62 ft.-lbs. (69–84 Nm) torque.

Remove the end cap [B].

Remove the gasket [C].

Remove the valve plate [D].

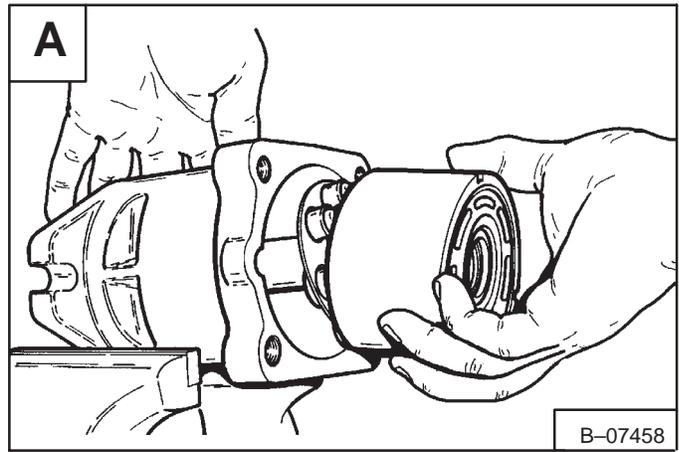
Installation: Make sure the dowel pin goes into the notch in the valve plate. The valve plate centers on the bearing which extends from the housing about 0.15 inch (3,8 mm).



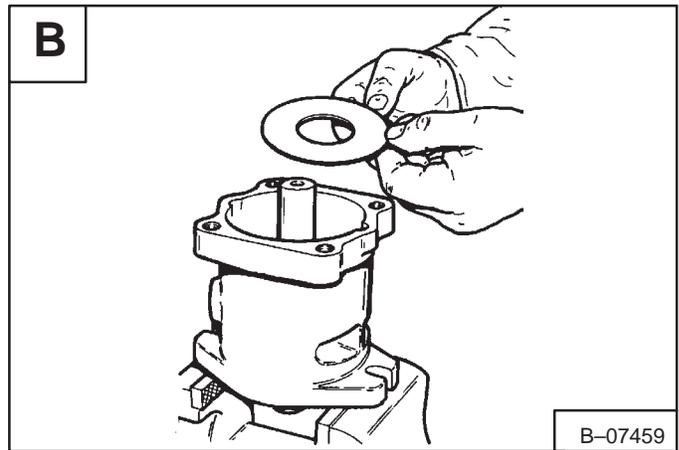
HYDRAULIC MOTOR (Cont'd)

Disassembly and Assembly (Cont'd)

Remove the rotating group assembly [A].



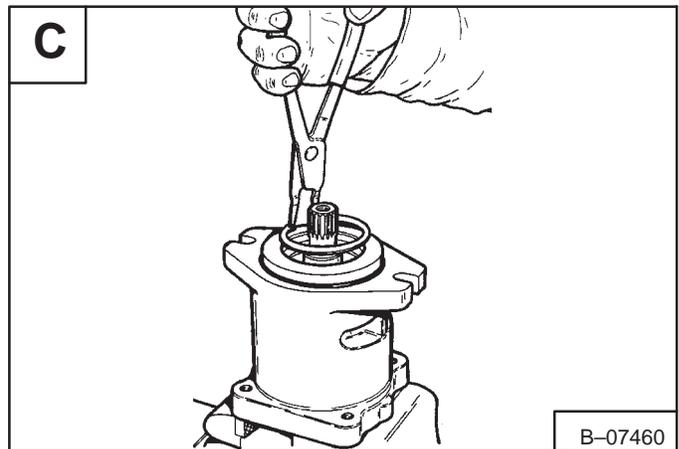
Remove the wear plate [B].



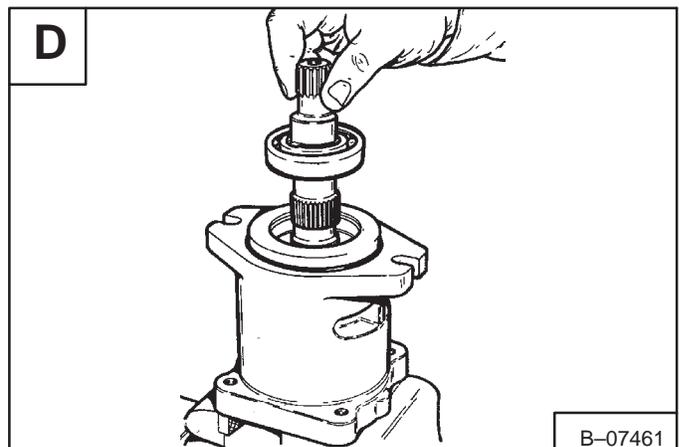
Remove the first snap ring [C].

Use a seal puller, remove the seal from the housing

Remove the second snap ring (under the seal) [C].



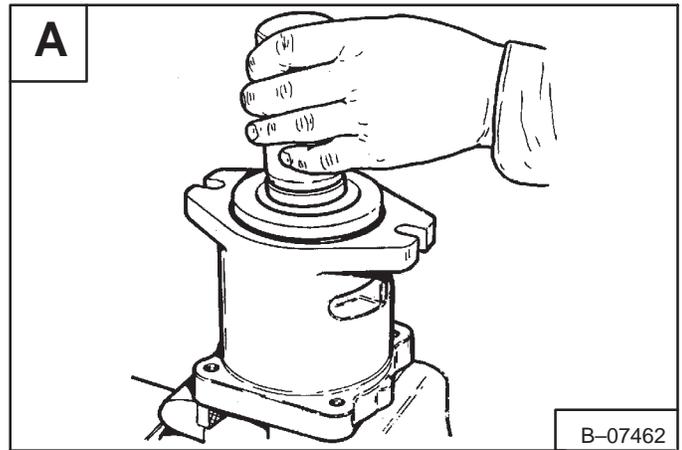
Remove the shaft and bearing assembly [D].



HYDRAULIC MOTOR (Cont'd)

Disassembly and Assembly (Cont'd)

Installation: Use the correct size seal driver tool to install the new seal [A].



The rotating group is disassembled and assembled as shown [B]. If any of the parts show wear or damage the complete unit must be replaced.

Inspection

Before the hydraulic motor is assembled, check the following items: (See Parts Identification Page 10-20-10.)

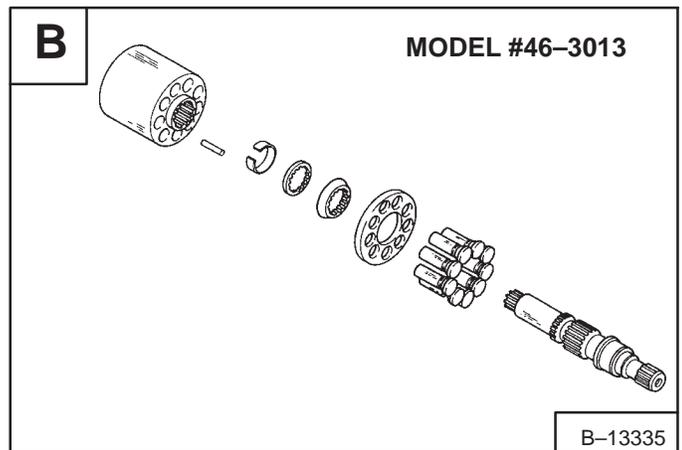
1. Valve Plate
2. Rotating Group Pistons
3. Piston Shoes
4. Wear Plate
5. Shaft Bearing and Splines

Check all the contact surfaces. Replace any parts that have scratches or are worn.

Clean all parts in clean solvent and dry with compressed air. Do not use cloth or paper because small pieces of material can get into the system. Do not use sandpaper or a file to remove scratches on any of the parts.

NOTE: Always use new gaskets and seals when assembling the motor.

NOTE: Before the first hydraulic start up after assembly, be sure to fill the motor with clean hydraulic fluid oil through the case drain hole.



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