

HYDROSTATIC SYSTEM

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**HYDROSTATIC
SYSTEM**

HYDROSTATIC SYSTEM (Cont'd)

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3 HYDROSTATIC SYSTEM

TROUBLESHOOTING

The following troubleshooting chart will help to locate and correct problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service Personnel only.

PROBLEM	CAUSE
No drive on one side, in one direction.	1, 2, 3, 4, 5
No drive on one side in both directions.	2, 3, 5, 6, 7, 8
The loader does not move in a straight line.	2, 3, 4, 6, 8, 9, 10
The hydrostatic system is overheating.	4, 11, 12, 13, 14, 15
The oil light comes "ON".	16, 17, 18

KEY TO CORRECT THE CAUSE
<ol style="list-style-type: none"> 1. The hydrostatic system has a fluid leak. 2. The steering linkage needs adjustment. 3. The high pressure replenishing valve(s) are defective. 4. The shuttle valve in the hydrostatic motor has a defect. 5. The balance plate in the hydrostatic motor seals is defective. 6. The hydrostatic pumps have a defect. 7. The final drive chain is broken. 8. The hydrostatic motor has a defect. 9. The tires do not have the correct air pressure. 10. The tires are not the same size. 11. The hydrostatic fluid is not at the correct level. 12. The oil cooler has a restriction. 13. The temperature switch is not operating correctly. 14. The control valve is not operating correctly. 15. The engine is not being operated at the correct RPM. 16. One of the switches is defective. 17. There is low charge pressure. 18. The relief valve has a defect.

HYDROSTATIC SYSTEM INFORMATION

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

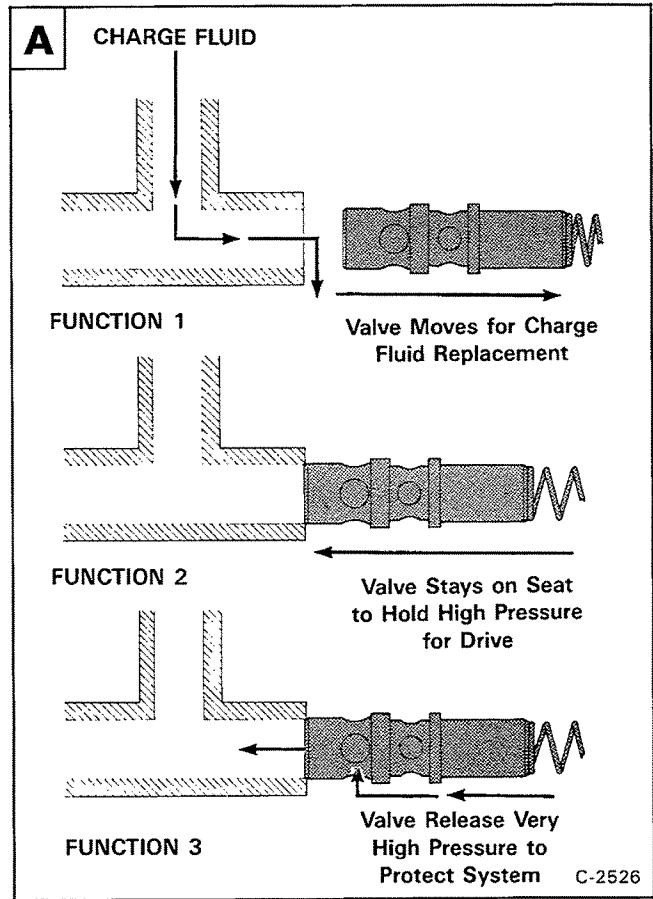
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High Pressure Relief/Replenishing Valves Function

The high pressure relief replenishing valves are used both in forward and reverse travel **A**.

The functions of the high pressure relief replenishing valves are as follows:

1. Give replacement fluid to the low pressure side of the closed hydrostatic circuit (Function 1) **A**.
2. To keep the high pressure flow of fluid out of the low pressure side of the closed hydrostatic circuit (Function 2) **A**.
3. They will also release very high pressure caused by overload when traveling in a forward or reverse direction (Function 3) **A**.



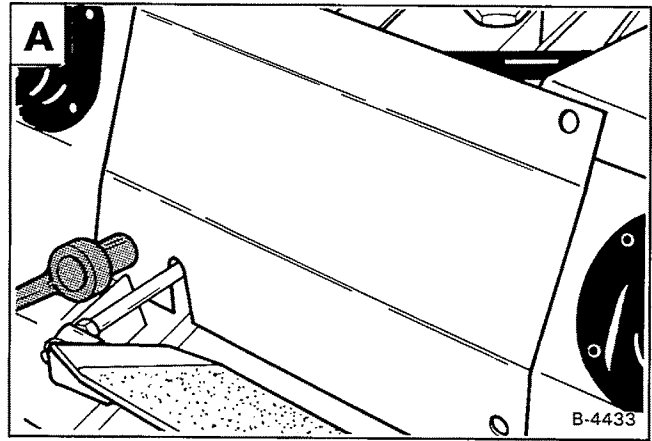
FRONT AND SIDE PANELS (S/N 19999 & Below)

Removal and Installation

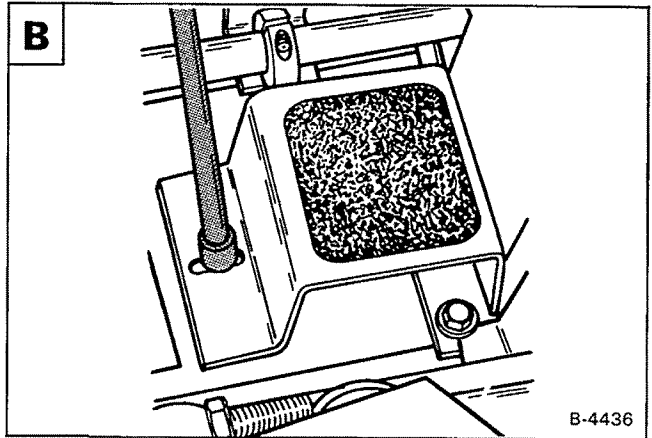
Raise the operator cab (See Page 1-7 for the correct procedure).

Remove the bolts from the front of the panel **A**.

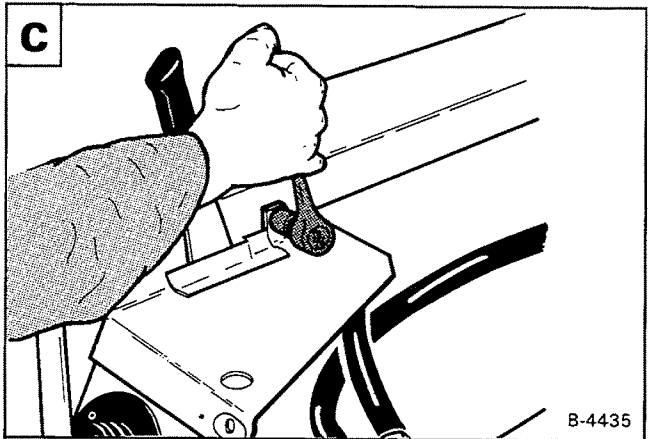
Remove the front panel.



Remove the bolt from the foot rest (both sides) **B**.

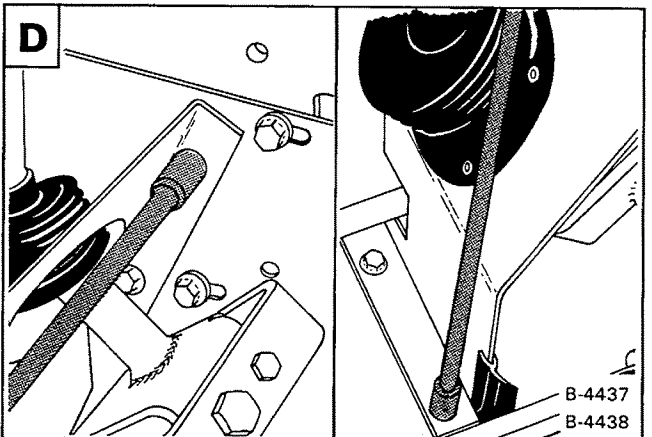


Remove the bolts and remove the side shields (both sides) **C**.



Remove the bolts from the steering lever shields (both sides) **D**.

Remove the shields from the steering levers.



STEERING LEVERS (S/N 16191 & Below)

Removal and Installation

Disconnect the steering linkage from the steering levers **A**.

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

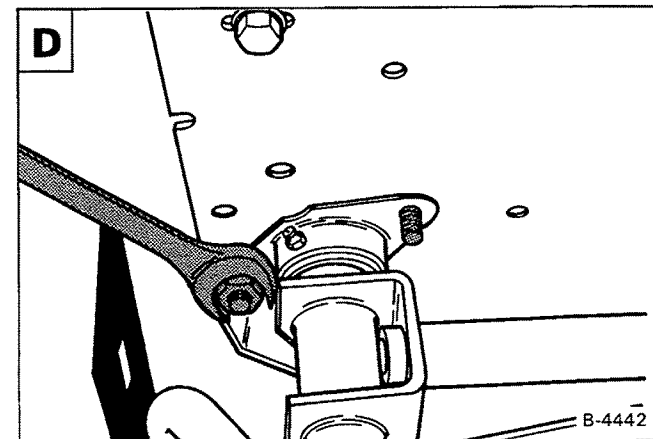
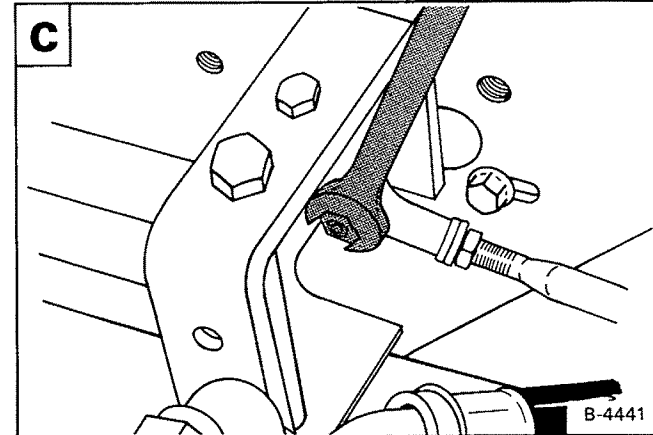
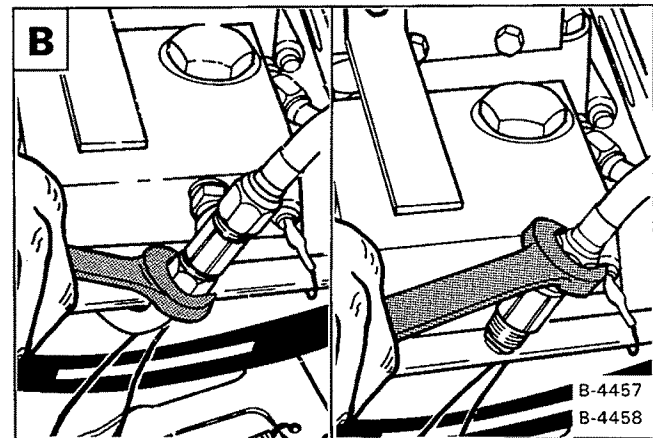
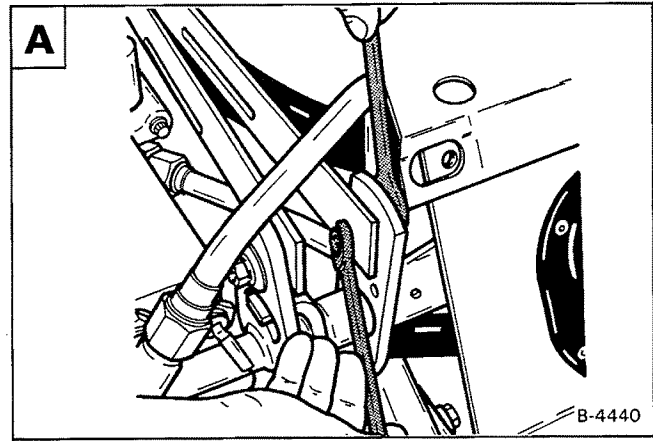
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Disconnect the charge tubelines from the port block **B**.

Disconnect the auxiliary linkage from the right steering lever **C**.

Remove the nuts and bolts from the left side pivot bearing **D**.

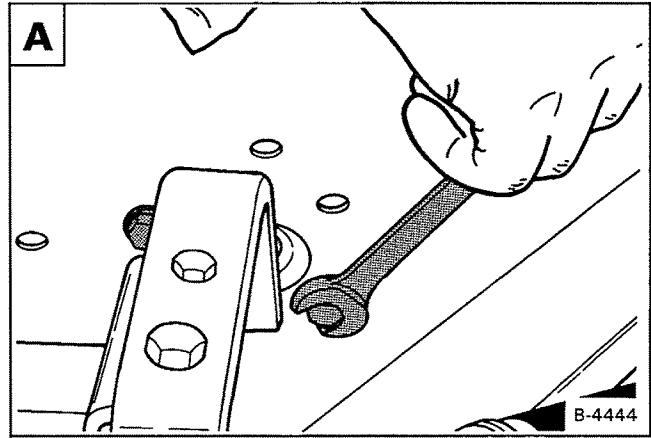
Installation: Tighten the bolts to 25 - 28 ft.lbs. (34 - 38 Nm) torque.



STEERING LEVERS (S/N 16191 & Below) (Cont'd)

Remove the nuts and bolts from the right side pivot bearing **A**.

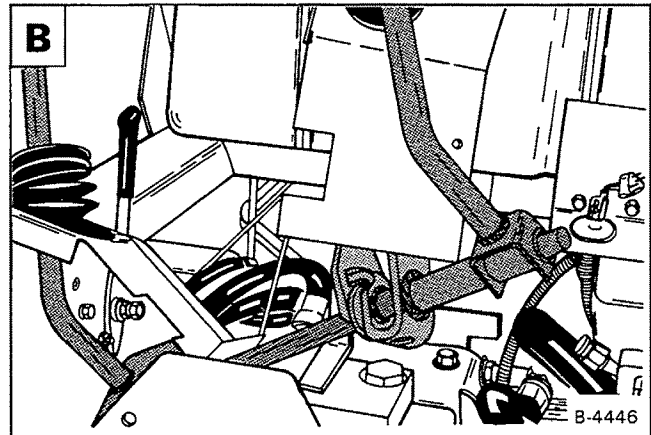
Installation: Tighten the bolts to 25 - 28 ft.lbs. (34 - 38 Nm) torque.



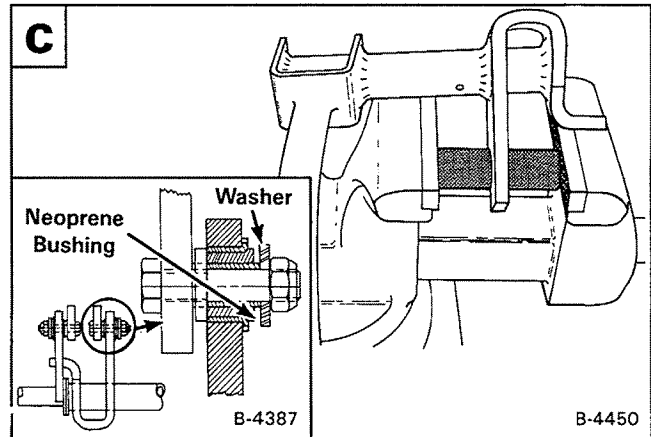
Remove the steering lever assembly from the loader **B**.

Repairing the Steering Levers

Remove the rubber bushings and the teflon bushings from the steering levers.

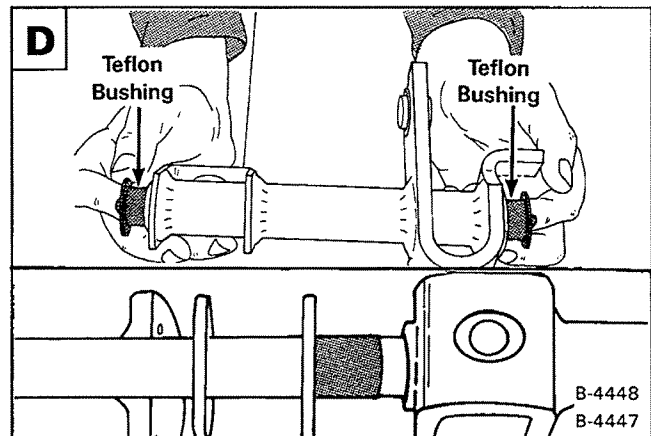


Install new rubber bushings into the steering levers, using two sockets and a vise **C**.



Install new teflon bushings into the steering levers **D**.

Check the pivot bearings and replace as needed.

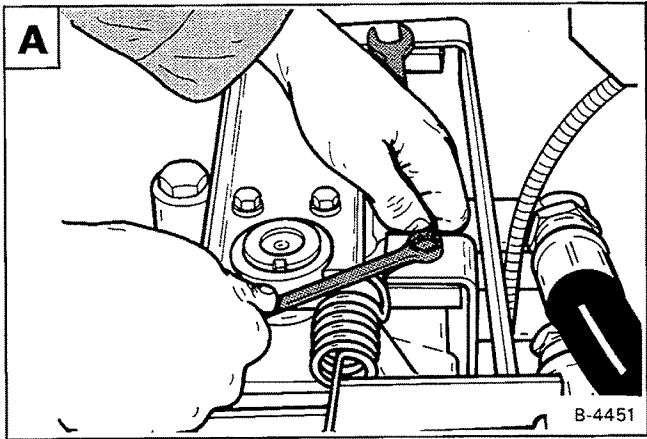


STEERING LINKAGE (S/N 16191 & Below) (Cont'd)

Steering Linkage Adjustment

Lift and block the loader (See Page 1–2 for the correct procedure).

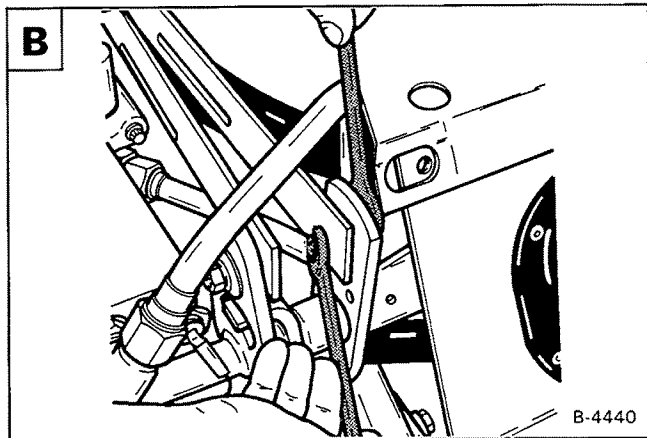
Loosen the nuts from the pintle lever **A**.



Loosen the nuts on the steering levers **B**.

Connect the remote start switch.

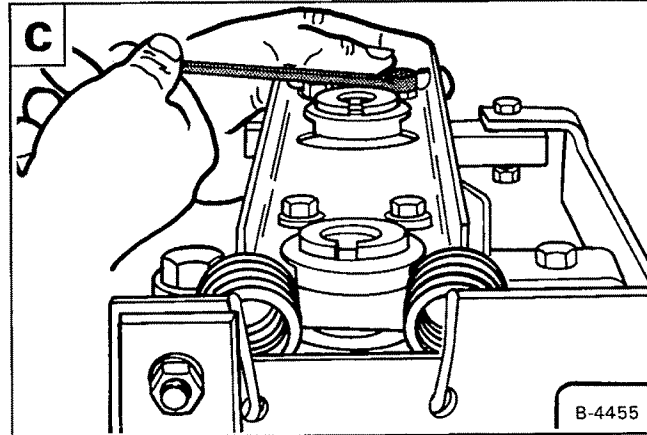
Start the engine and run at a slow speed.



Move the left steering lever until the tires do not turn (neutral). Adjust the rear pintle bar so that the bar is tight against both lobes of the pintle lever and the transmission is still in neutral **C**.

Tighten the bolts on the pintle bar to 28 ft.lbs. (38 Nm) torque.

Move the left steering lever backward and forward and let the transmission return to neutral. If the transmission does not go back to neutral, repeat the adjustment.



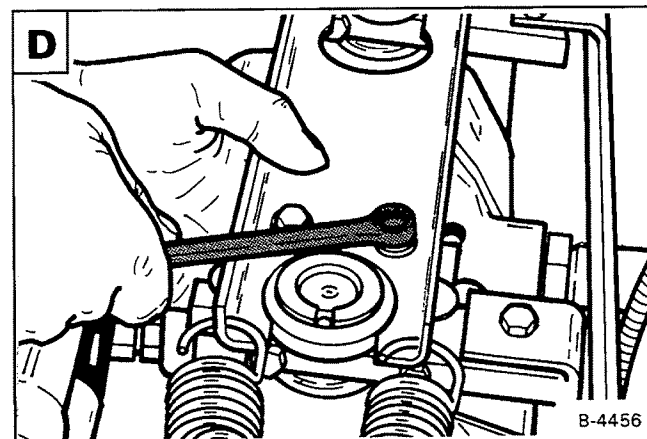
Move the right steering lever until the tires do not move (neutral). Adjust the front pintle bar so the bar is tight against the lobes of the pintle lever and the transmission is still in neutral **D**.

Tighten the bolts on the pintle bar to 28 ft.lbs. (38 Nm) torque.

Move the right steering lever backward and forward and let the transmission return to neutral. If the transmission does not return to neutral, repeat the adjustment.

Install new lock nuts on the steering linkage.

Tighten the bolts and nuts to 23 ft.lbs. (31 Nm) torque.

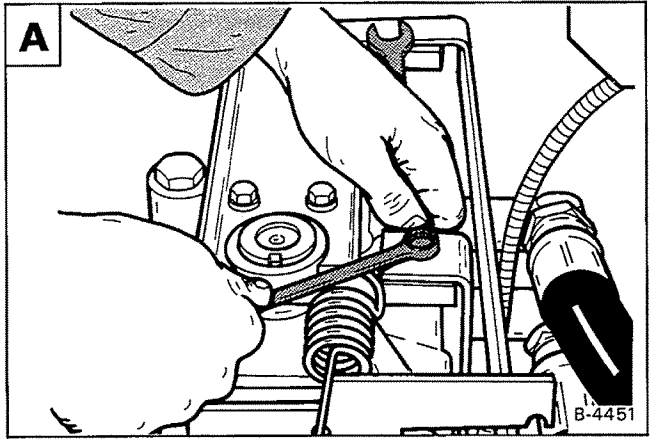


STEERING LINKAGE (S/N 16191 & Below) (Cont'd)

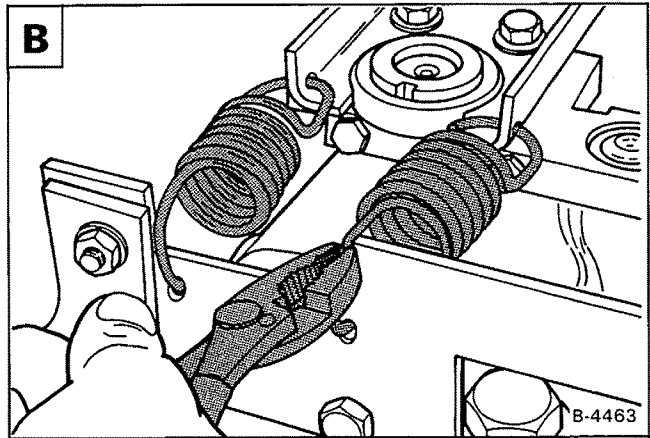
Removal and Installation

Raise the operator cab.

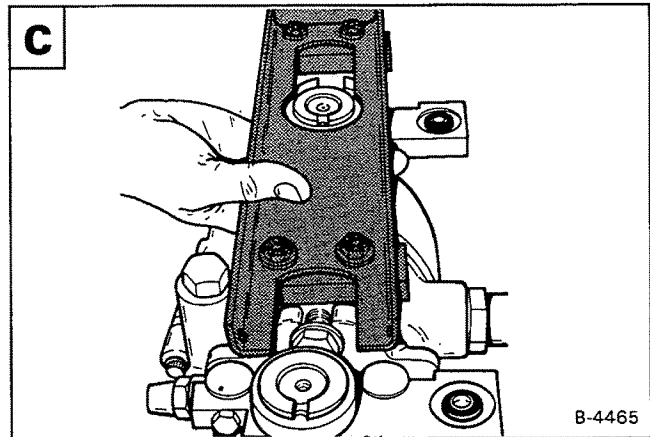
Disconnect the steering linkage from the steering levers and pintle levers **A**.



Disconnect the springs from the centering bar **B**.

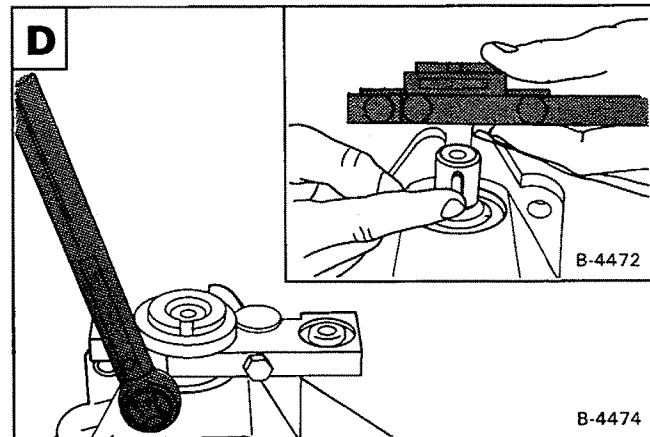


Slide the centering bar toward the rear and lift up and remove it from the transmission **C**.



Loosen the bolt on the pintle lever **D**.

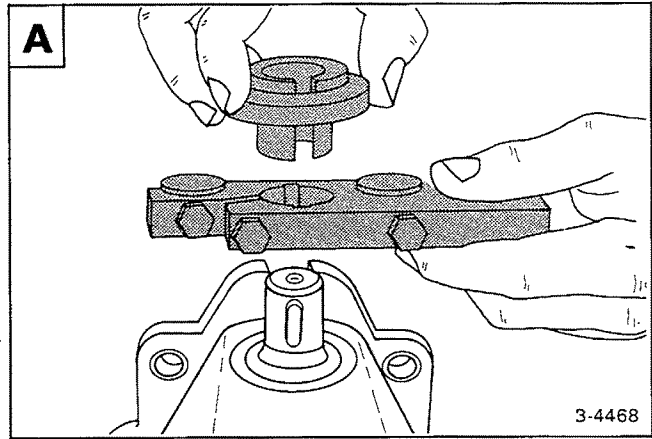
Installation: Install the key in the pintle shaft **D**. Tighten the pintle lever bolt to 18-20 ft.-lbs. (24-27 Nm) torque.



STEERING LINKAGE (S/N 16191 & Below) (Cont'd)

Remove the guide, bushing and pintle lever **A**.

Installation: Adjust the steering linkage for neutral (See Page 3-6).

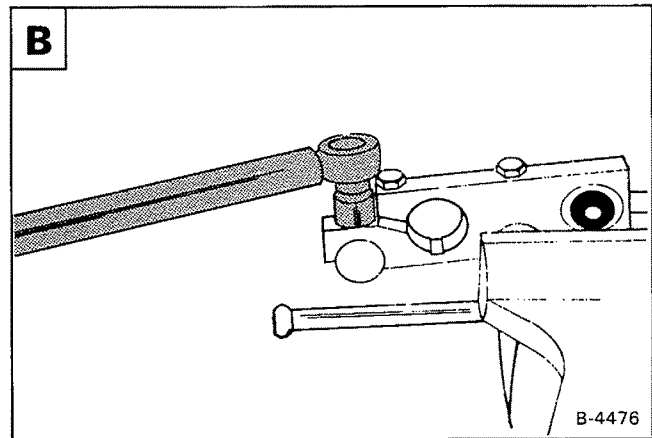


Repairing the Pintle Lever

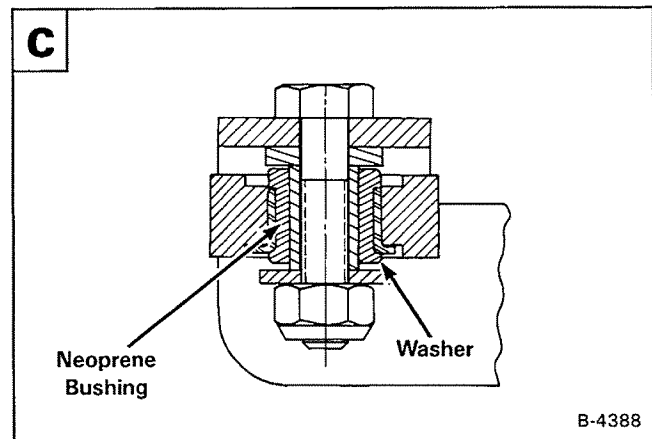
Remove the bolts from the lobes on the pintle lever **B**.

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

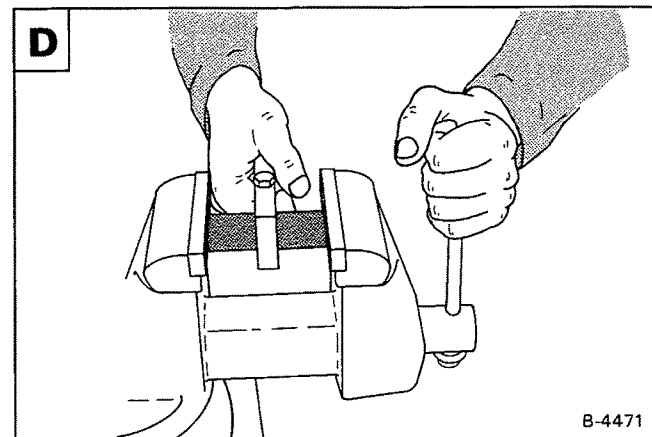
Remove the rubber bushing from the pintle lever.



Install new rubber bushing into the pintle lever **C**.



Press the rubber bushing into the pintle lever, using two sockets and a vise **D**.



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**FRONT AND SIDE PANEL (ONE PIECE) (S/N 20001 & Above)
& 843B**

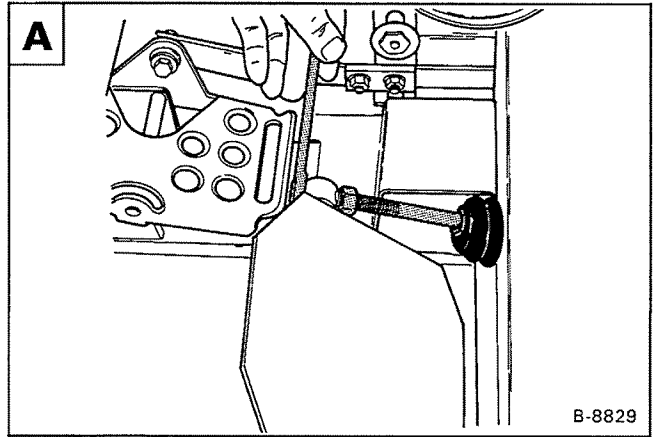
Removal and Installation

Raise the lift arms and have a second person install a lift arm stop (See Page 1-4) for the correct procedure).

Stop the engine.

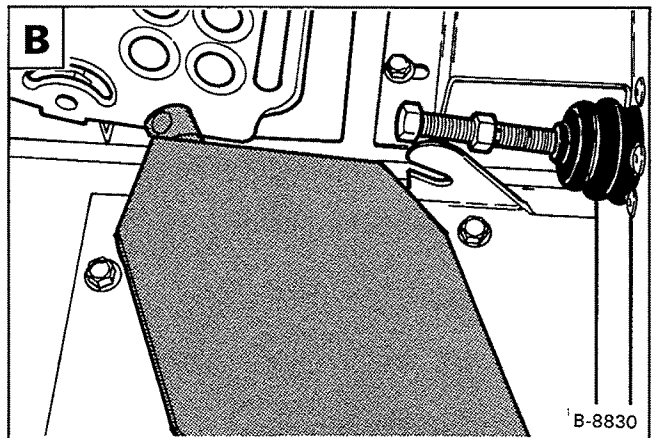
Raise the operator cab (See Page 1-7) for the correct procedure).

Remove the nuts from the parking brake pedal **A**.

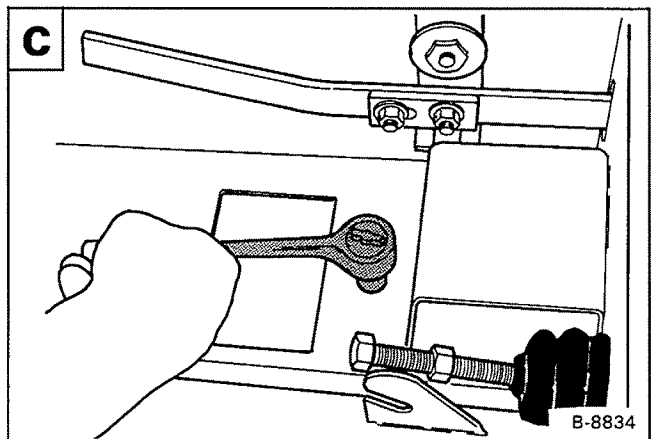


Remove the brake pedal **B**.

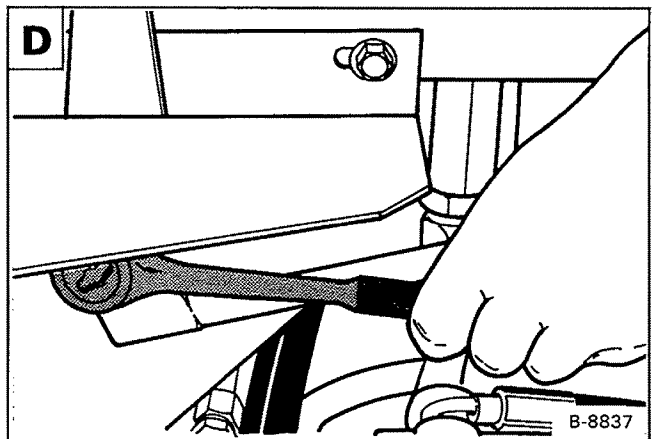
Remove the hydraulic foot pedals and linkage (See Page 2-60 or 2-61 for the correct procedure).



Remove the foot rest (both sides) **C**.

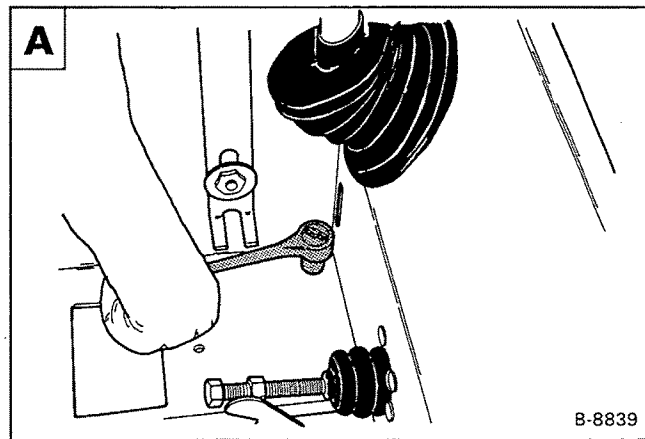


Disconnect the throttle linkage and remove the throttle lever **D**.

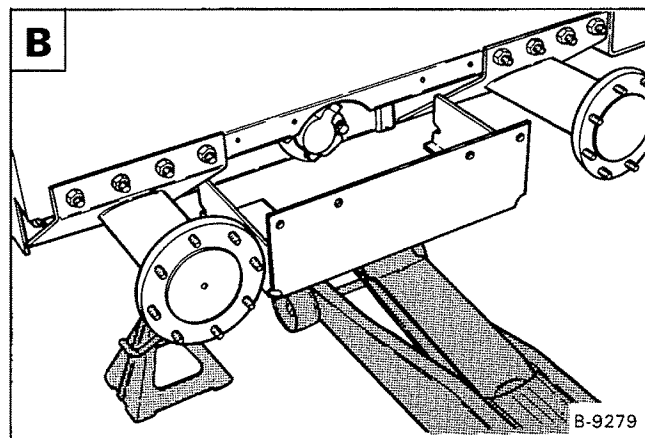


FRONT AND SIDE PANEL (ONE PIECE)
(S/N 20001 & Above) & 843B (Cont'd)

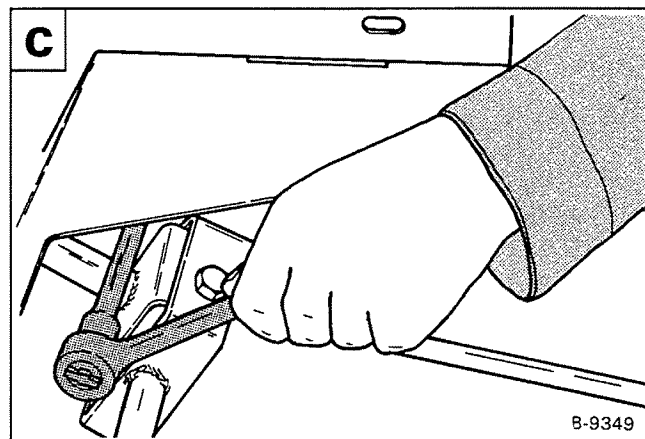
Remove the bolts from the bottom of the front panel (both sides) **A**.



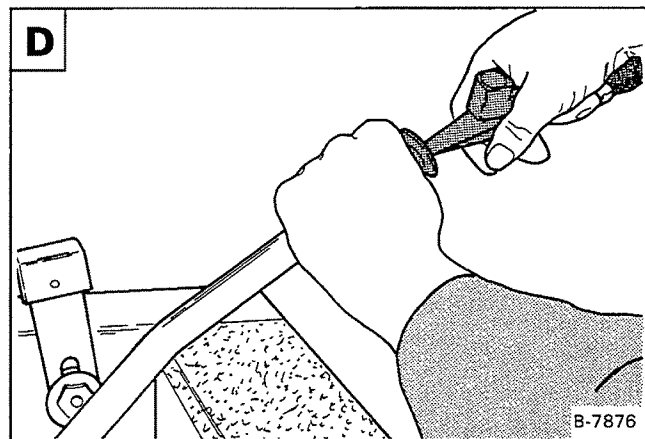
Remove the hydrostatic motor cover (both sides) **B**.



Now remove the bolts from the side of the loader frame and side panel (both sides) **C**.



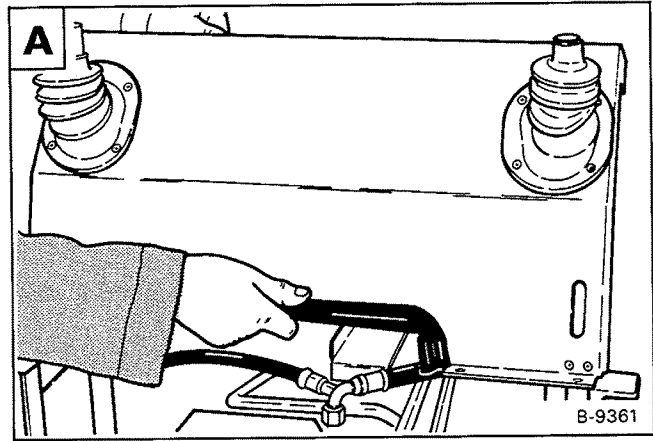
Remove the hand grip by plugging the hole in the bottom of the steering lever and using air pressure to remove the hand grip (both sides) **D**.



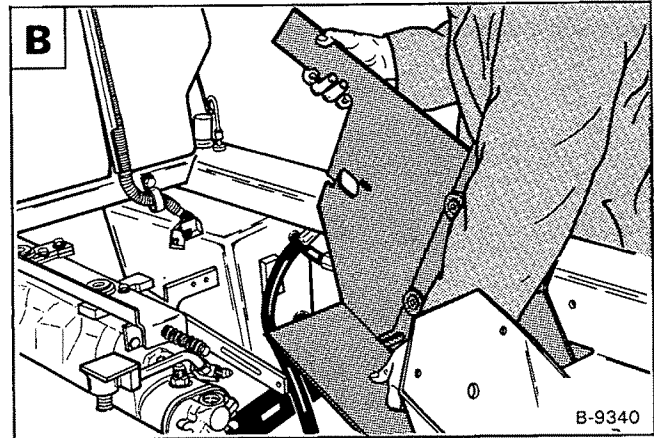
**FRONT AND SIDE PANEL (ONE PIECE) (S/N 20001 & Above)
& 843B (Cont'd)**

Lift and remove the front panel from the loader frame **A**.

Remove the steering levers (See Page 3—4 for the correct procedure).



Remove the bolts and remove the side panel from the loader frame **B**.



STEERING LEVERS

843 (S/N 16192 thru 25999)
843 (Starting with S/N 34222)
843B

Removal and Installation

Remove the front panel (See Page 3—9).

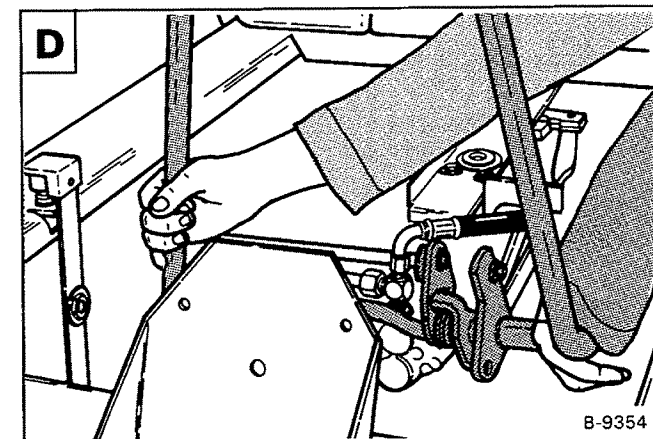
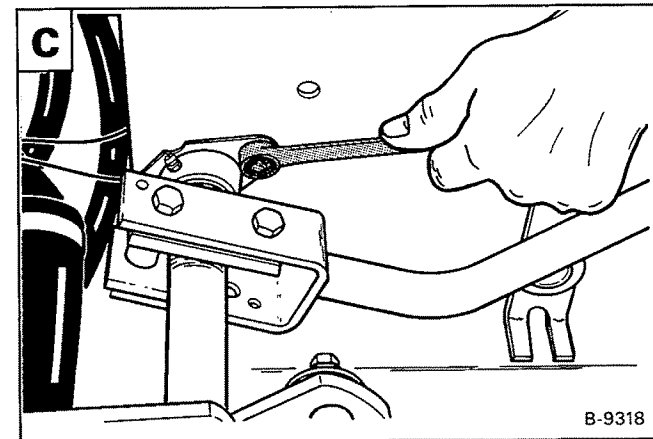
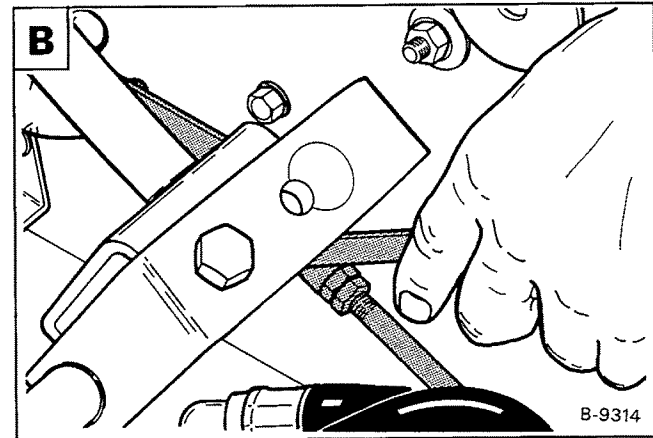
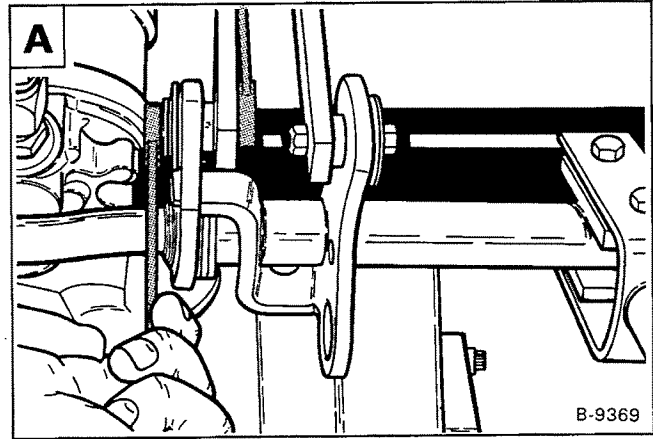
Disconnect the steering linkage from the steering levers **A**.

Installation: Tighten the bolts and nuts to 23 ft.lbs. (31 Nm) torque.

Disconnect the auxiliary linkage from the right steering lever **B**.

Remove the bolts and nuts from the pivot bearings **C**.

Lift and remove the steering lever assembly from the loader **D**.



STEERING LEVERS (Cont'd)

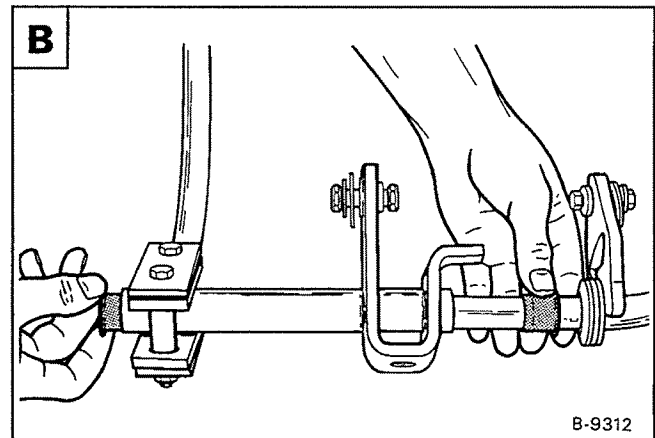
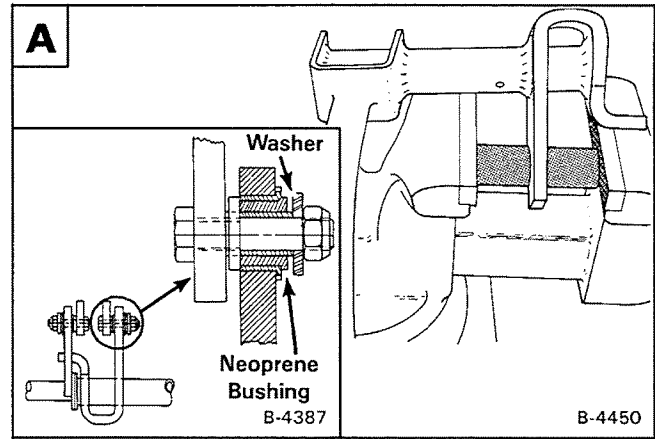
843 (S/N 16192 thru 25999)
843 (Starting with S/N 34222)
843B

Repairing the Steering Levers

Remove the rubber bushings and teflon bushings from the steering levers.

Install new rubber bushings into the steering levers, using two sockets and a vise **A**.

Install new teflon bushings when installing the two steering assemblies together **B**.



STEERING LINKAGE

843 (S/N 16192 thru 25999)
843 (Starting with S/N 34222)
843B

Steering Linkage Adjustment

Lift and block the loader (See Page 1–2 for the correct procedure).

Raise the operator cab (See Page 1–7 for the correct procedure).

Loosen the nuts and bolts connecting both pintle levers to the steering levers **A**.

Connect a remote start switch (See Page 1–9 for the correct procedure).

Loosen the bolts from the front bar **B**.

Loosen the bolts from the rear bar.

Start the engine and run at idle.

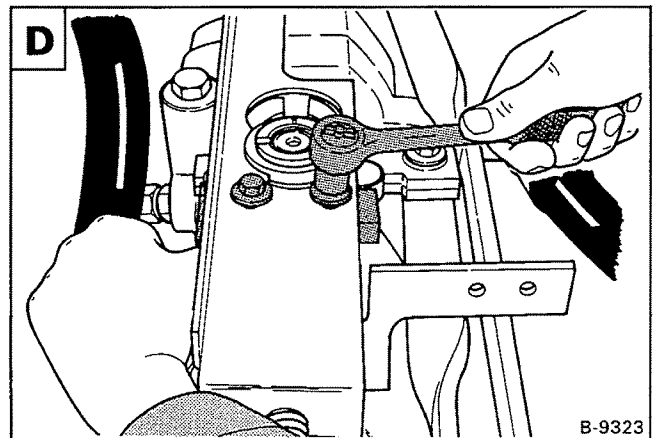
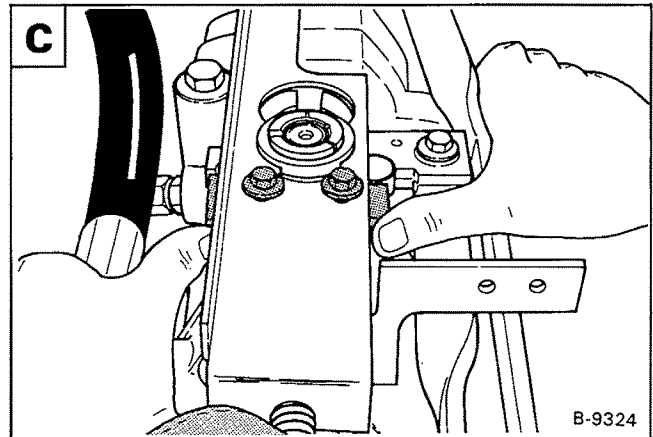
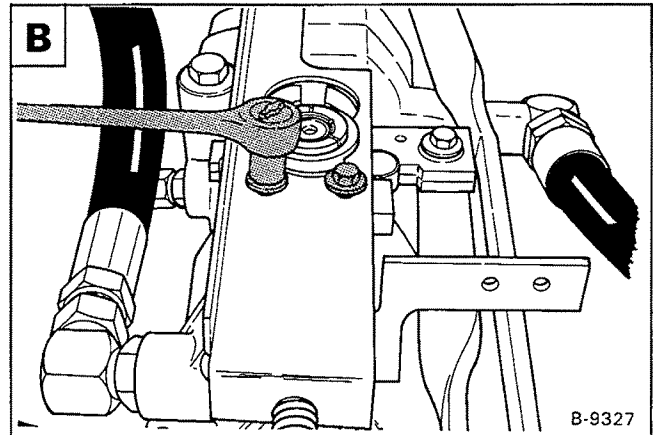
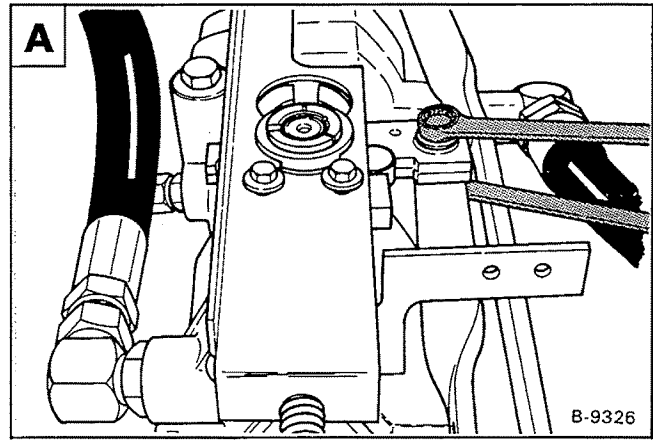
Stand clear of the tires. Move the steering lever for the rear arm, until the tires do not turn (neutral). Push the rear bar against both lobes of the lever with transmission in neutral. Tighten the rear bar bolts to 28 ft.-lbs. (38 Nm) torque.

Move the steering lever, for the front arm, until the tires do not turn (neutral). Push the bar against both lobes of the lever with the transmission in neutral **C**.

Tighten the bolts at the pintle bar to 28 ft.-lbs. (38 Nm) torque **D**.

Move both steering levers backward and forward and let the transmission return to neutral. If the transmission does not return to neutral, repeat the adjustment again.

Install new lock nuts onto the steering linkage and tighten to 23 ft.-lbs. (31 Nm) torque.



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STEERING LINKAGE (Cont'd)

843 (S/N 16192 thru 25999)
843 (Starting with S/N 34222)
843B

Removal and Installation

Raise the operator cab (See Page 1-7 for the correct procedure).

Disconnect the steering linkage from both pintle levers **A**.

Installation: Install new lock nuts and tighten to 23 ft.lbs. (31 Nm) torque.

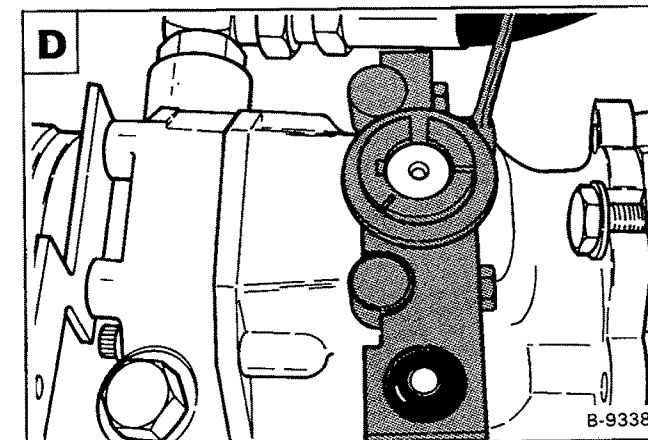
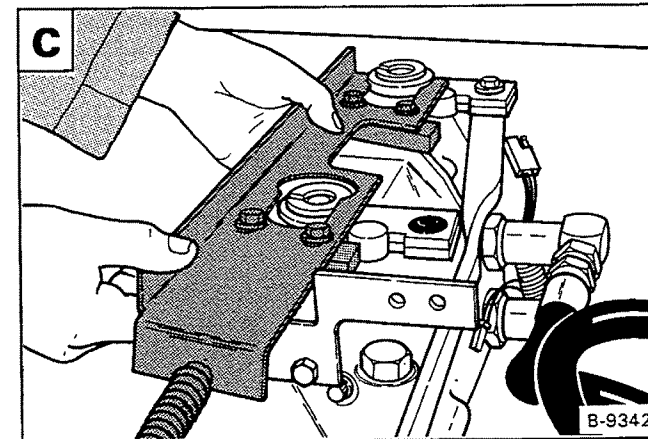
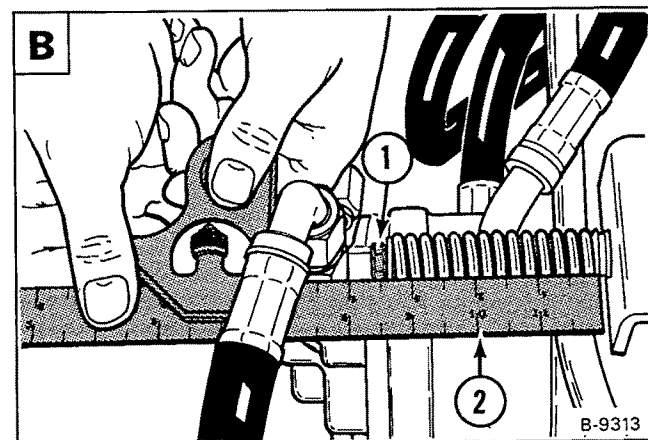
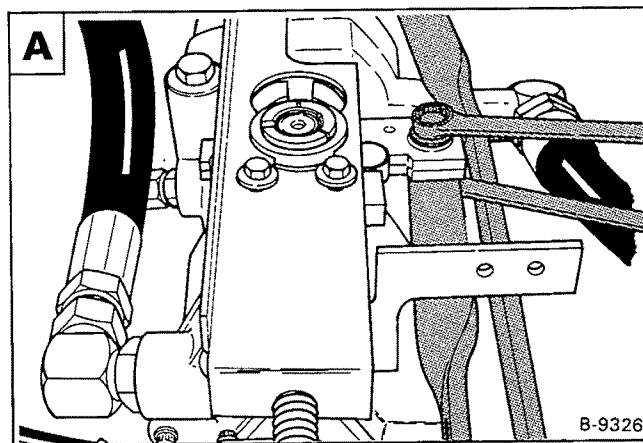
Loosen the locknut on the centering spring bolt (Item 1) and turn the bolt out of the rear bracket **B**.

Installation: Turn the centering spring bolt (Item 1) into the rear bracket until the spring measures (Item 2) 3.20" (81,3 mm) and tighten the locknut **B**.

Slide the centering bar toward the front and lift up and remove it from the transmission **C**.

Loosen the bolt on the pintle lever **D**.

Installation: Install the key in the pintle shaft. Tighten the pintle lever bolt to 18 - 20 ft.lbs. (24 - 27 Nm) torque.

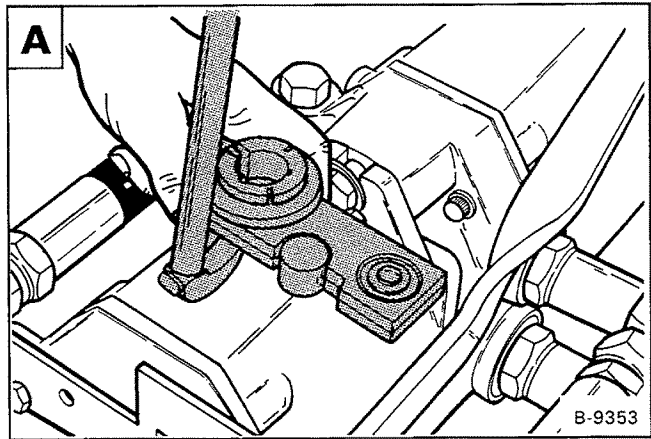


STEERING LINKAGE (Cont'd)

843 (S/N 16192 thru 25999)
843 (Starting with S/N 34222)
843B

Remove the guide, bushing and pintle lever **A**.

Installation: Adjust the steering linkage for neutral (See Page 3-14).

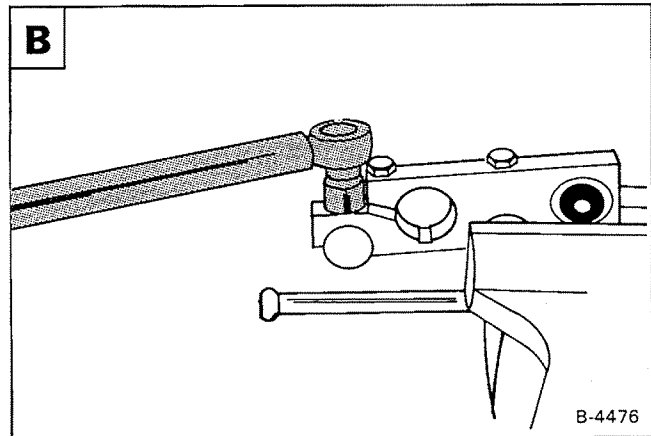


Repairing the Pintle Lever

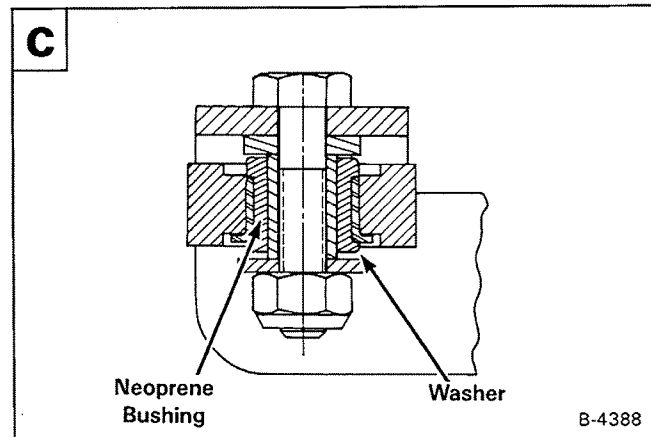
Remove the bolts from the lobes on the pintle lever **B**.

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

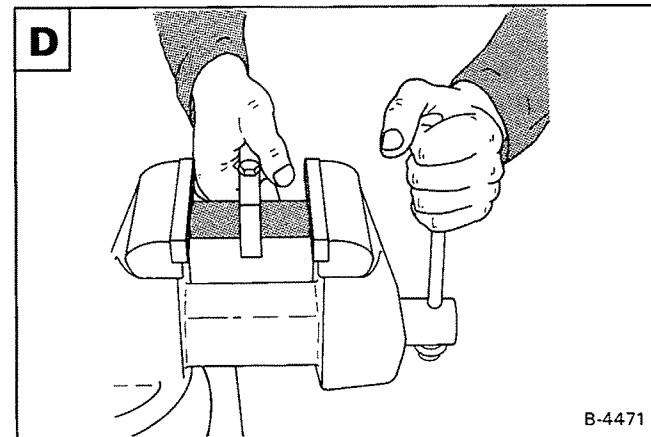
Remove the rubber bushing from the pintle lever.



Install a new rubber bushing into the pintle lever **C**.



Press the rubber bushing into the pintle lever, using two sockets and a vise **D**.



STEERING LINKAGE (S/N 26000 Thru 29869)

Description

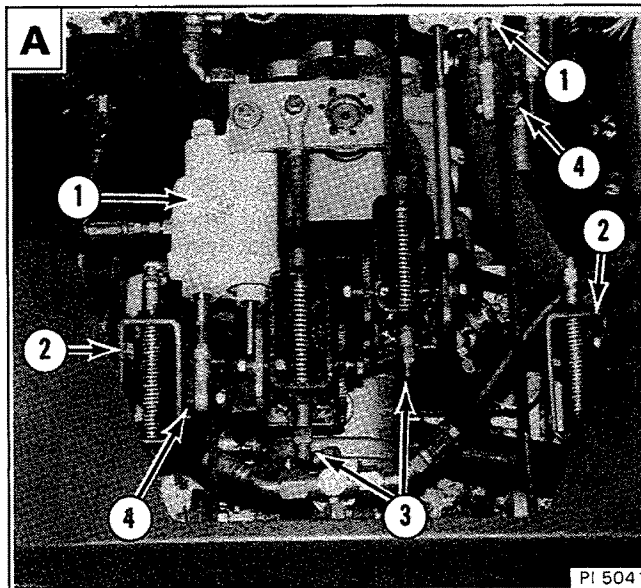
A hydraulic servo control cylinder (Item 1) is used to stroke each hydrostatic pump pintle lever **A**. The hydraulic servos are controlled by steering levers and the fluid to activate them comes from the charge circuit **A**.

The steering levers are centered by two centering spring mechanisms (Item 2) **A**. Neutral setting for the hydrostatic pumps is achieved through the servo spool adjustment on the centering spring mechanism (Item 3) for the pintle levers **A**.

Neutral Adjustment

Use the following procedure to adjust the hydrostatic pumps to neutral:

1. Lift and block the loader (See Page 1–2).
2. Raise the operator cab (See Page 1–7).
3. Remove the bolt from the servo spool (Item 4) and steering linkage (both sides) **A**.



WARNING

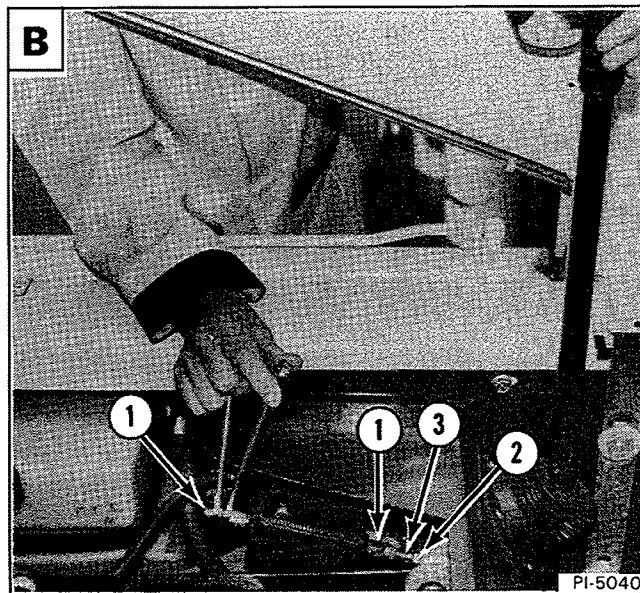
AVOID INJURY

Stay clear of the loader wheels. They will turn whenever the pump is not centered.

4. Adjust one side at a time. Adjust the centering spring mechanism for the steering lever so that there is no free play. Loosen the two jam nuts (Item 1) and turn them in or out **B**. When there is no more free play in the centering spring mechanism, lock the jam nuts together.


NOTE: If there is any free play in the centering spring mechanism, the correct adjustment of positive neutral can not be obtained.

5. Position the steering lever by loosening the jam nut (Item 2) and turning the centering rod (Item 3) in or out of the ball joint **B**. When the steering lever is in a perpendicular position, lock the jam nut (Item 2) **B**. Check the centering spring mechanism again to make sure that the adjustment (no free play) has been maintained.



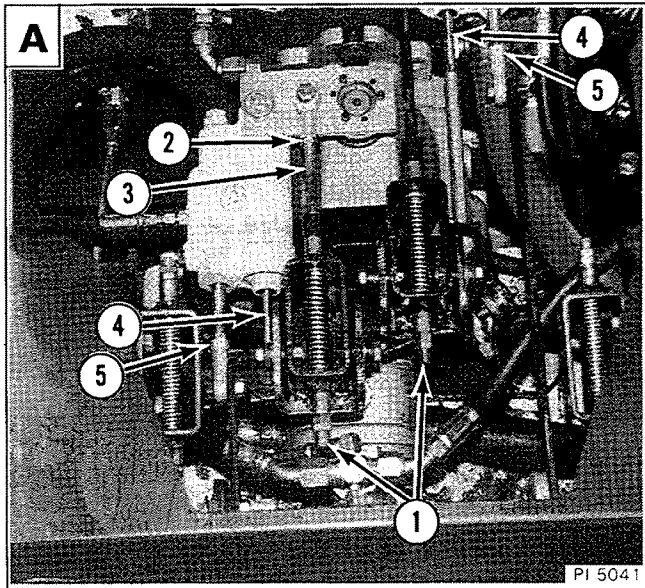
STEERING LINKAGE (S/N 26000 Thru 29869) (Cont'd)

6. To adjust the free play in the centering spring mechanism of the pintle lever, loosen the jam nuts (Item 1) **A**. Turn the jam nuts until there is no free play and tighten the jam nuts.
7. Loosen the jam nut from the connector end of the centering spring rod of the pintle lever (Item 2) **A**.
8. Connect the Remote Start Switch (See Page 1-9). Start the engine and run at low idle.

 **WARNING**

AVOID INJURY

Stay clear of the loader wheels. They will turn whenever the pump is not centered.



9. Adjust the wheel creep to neutral by turning the centering rod (Item 3) in or out of the connector rod end **A**.

NOTE: Always maintain at least 3/8" (9,5 mm) thread contact in the rod end.

10. Check the neutral setting by hand stroking the servo spool (Item 4) **A**. Stroke the servo spool forward and backward allowing it to return to neutral each time. Repeat this several times. If wheel creep is still present, repeat Step 9.
11. Tighten the jam nut (Item 2) **A**. Connect the steering linkage to the servo spool.
12. Loosen the lock nut on the servo spool (Item 5) **A**.
13. Turn the servo spool in or out to obtain servo neutral.

NOTE: The servo spool has a neutral band of approximately 0.10" (0,25 mm) in width. Turn the servo spool so that it is positioned in the center of the neutral band.

14. Stroke the steering lever forward and backward letting it return to neutral by itself several times. If the wheels do not creep the adjustment is completed.
15. Tighten the jam nut (Item 5) on the servo spool **A**.
16. Repeat the Steps 3 through 15 to adjust natural for the other side of the loader.

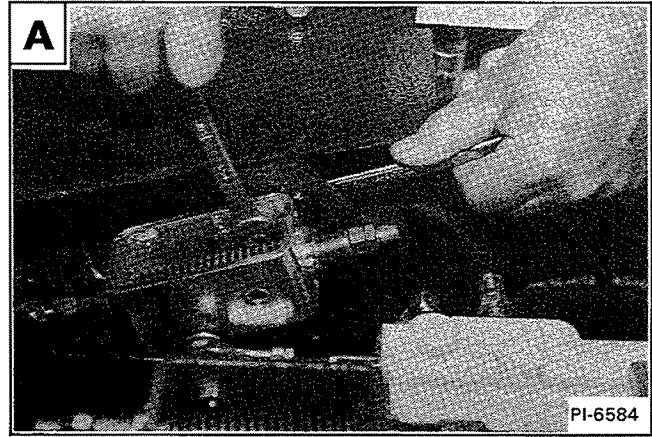
STEERING LINKAGE (S/N 16000 Thru 29869) (Cont'd)

NOTE: TORQUE ALL STEERING LINKAGE HARDWARE TO GRADE 5 SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.

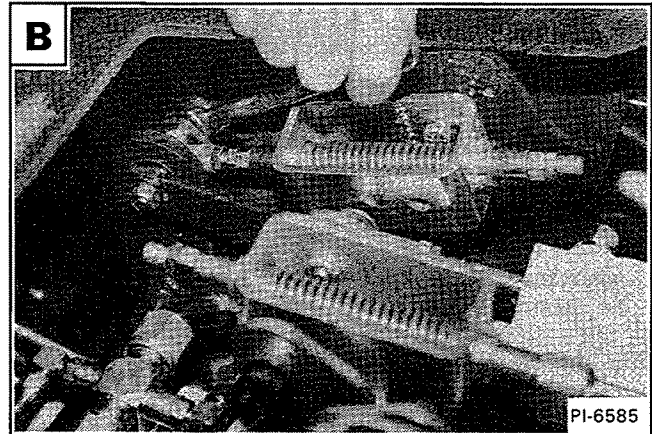
Steering Lever Centering Spring Mechanism

To remove, install or repair the centering spring mechanism, use the following procedure:

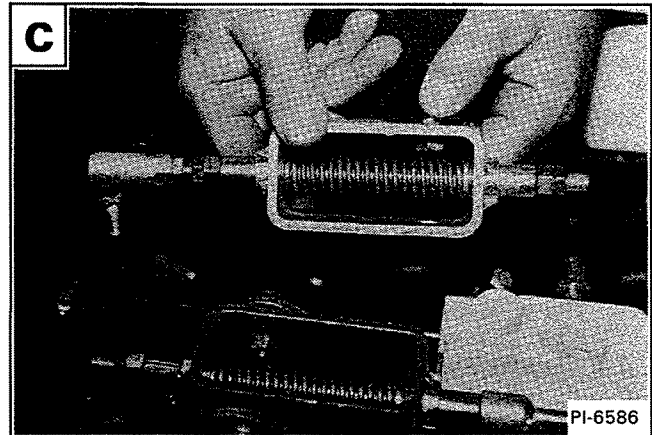
Remove the bolt and nut from the mounting bracket **A**.



Remove the bolt and nut from the steering lever **B**.



Remove the centering spring assembly **C**.



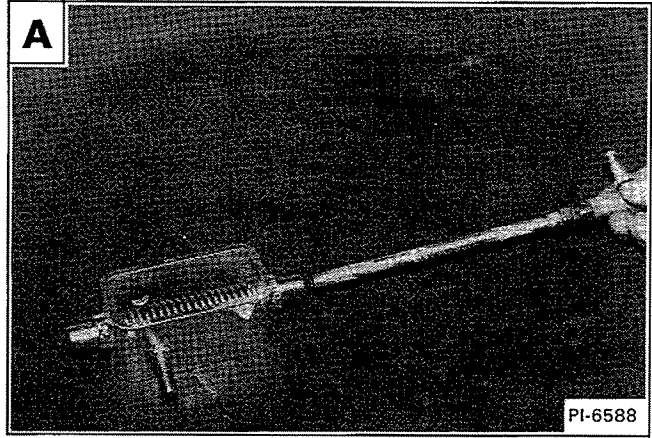
Remove the lock nuts **D**.

Installation: Tighten the lock nuts to 16-20 ft.-lbs. (22-27 Nm) torque.

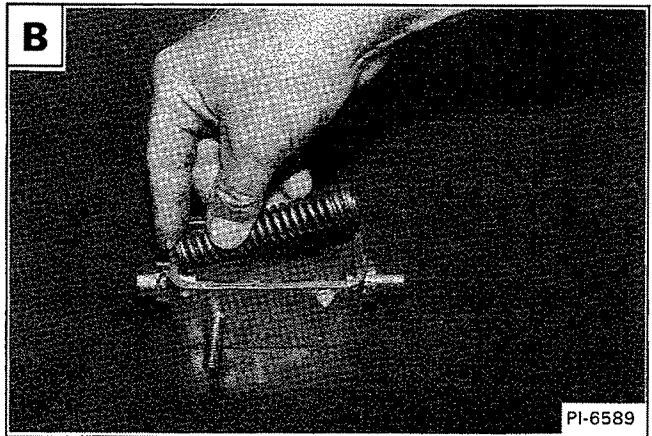


STEERING LINKAGE (S/N 26000 Thru 29869) (Cont'd)

Remove the spring rod and rod end assembly **A**.

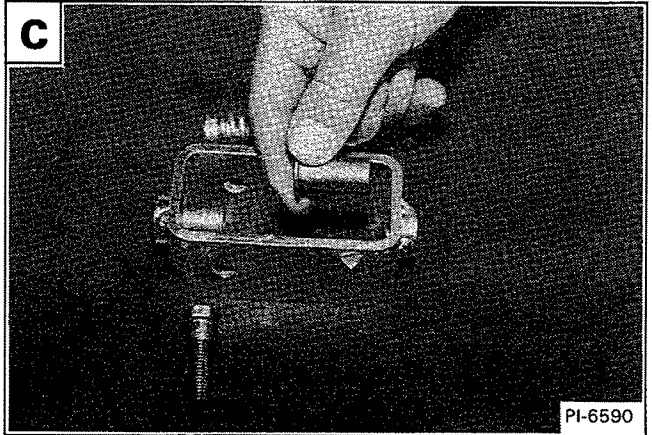


Remove the spring **B**.



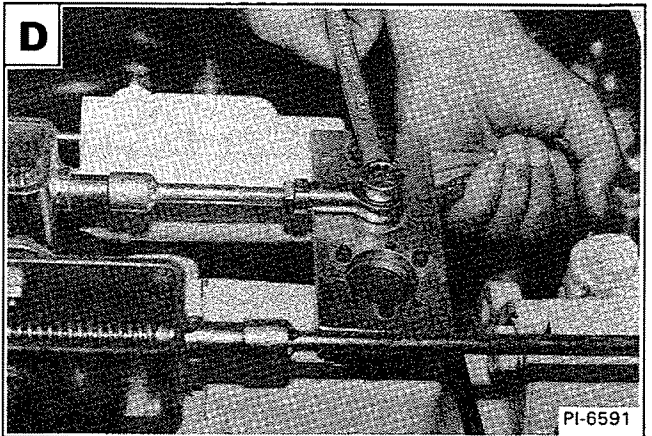
Remove the bushings **C**.

Check all parts for wear or damage and replace as needed.



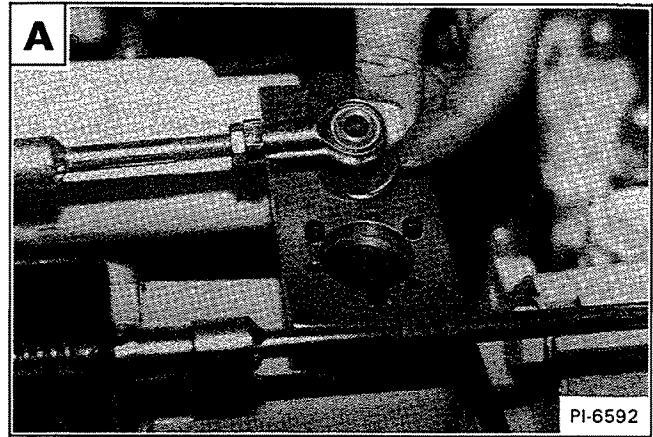
Removal and Installation (Creep Mechanism)

Remove the bolt and nut from the pintle lever and spring rod end **D**.



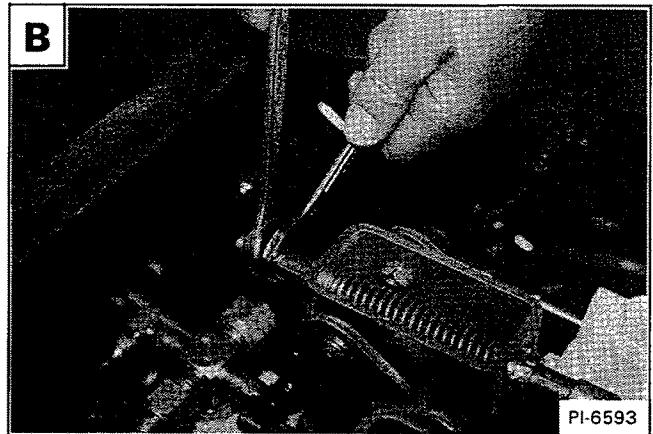
STEERING LINKAGE (S/N 26000 Thru 29869) (Cont'd)

Remove the rod end washer **A**.

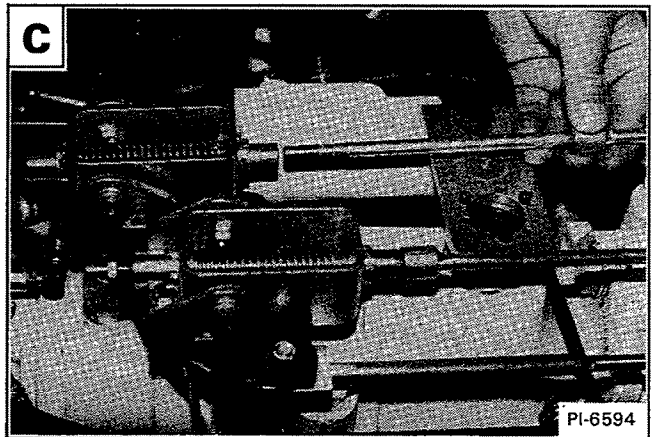


Remove the lock nuts **B**.

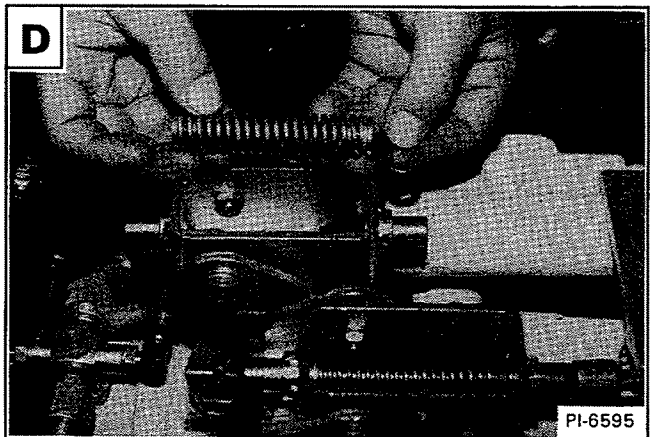
Installation: Tighten the lock nuts to 16 - 20 ft.-lbs. (22-27 Nm) torque.



Remove the spring rod and rod end assembly **C**.

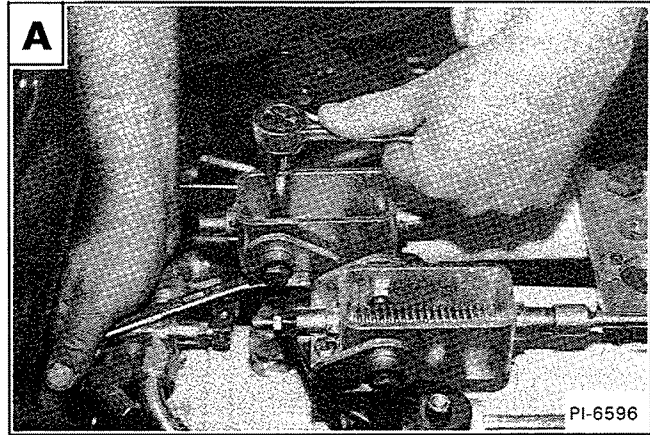


Remove the centering spring and washers **D**.

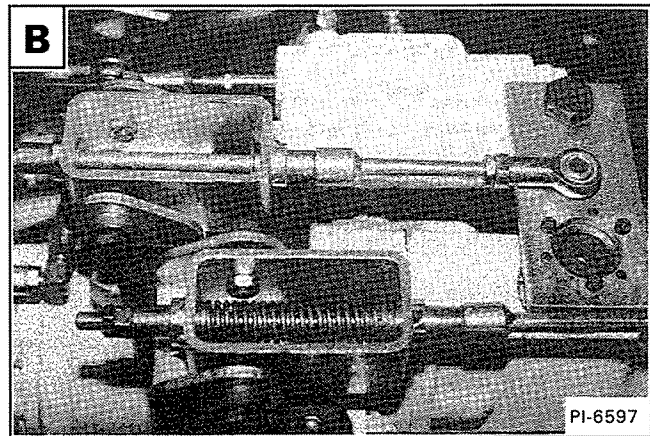


STEERING LINKAGE (S/N 26000 Thru 29869) (Cont'd)

Remove the bolts and nuts from the centering spring mounting bracket **A**.



Installation: Before tightening the bolts and nuts, install the spring rod and align the rod end hole and the hole in the pintle lever **B**.



Remove the centering spring mounting bracket **C**.

NOTE: The centering spring mechanism must be adjusted for neutral after installation, See Page 3-17 for the correct procedure.

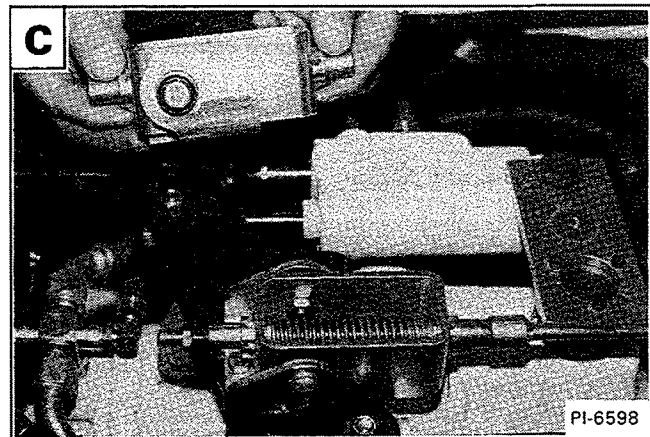


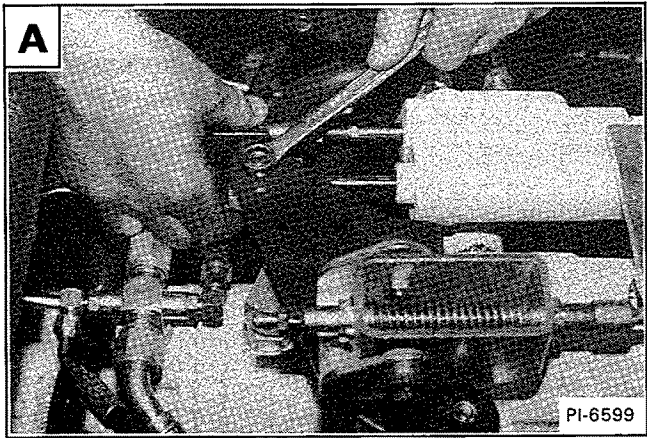
FIGURE 3-17 - SUBPRINTEMENTS - 04/10/2005 4:15:56 PM - REVISED BY ARII, CROOK, CO. - 04/10/2005 4:15:56 PM - 07/20/2007

SERVO CONTROL

Removal and Installation

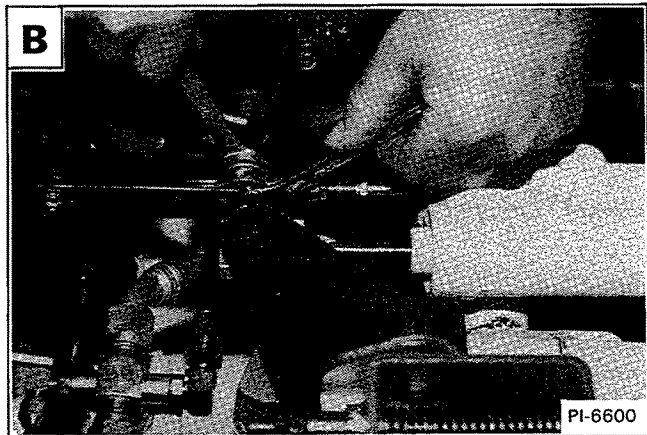
Remove the centering spring mechanism (Page 3-20).

Remove the bolt and nut from the piston rod end **A**.

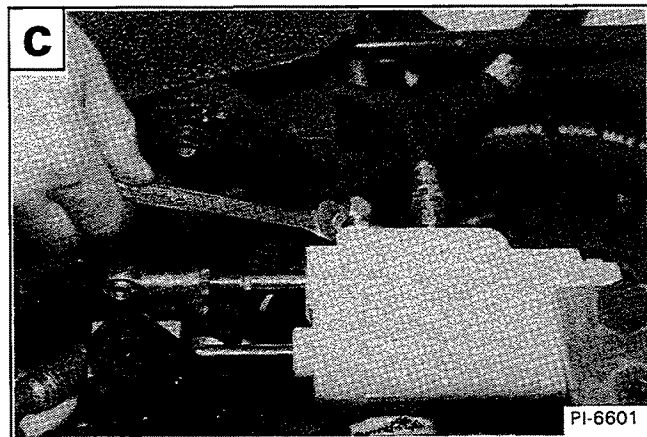


Disconnect the linkage from the spool end of the servo control **B**.

Installation: Tighten the bolt and nut to 25 ft.-lbs. (34 Nm) torque.

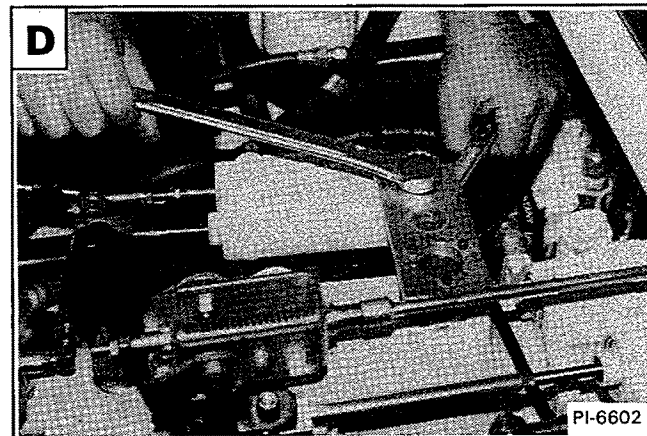


Disconnect both hoses from the servo control **C**.



Remove the bolt and nut from the pintle arm and servo control body **D**.

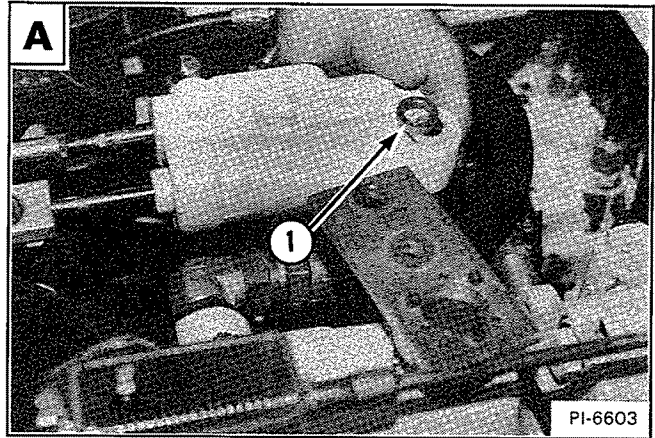
Installation: Tighten the bolt and nut to 100 - 110 ft.-lbs. (136 - 149 Nm) torque.



SERVO CONTROL (Cont'd)

Remove the servo control and spacer (Item 1) **A**.

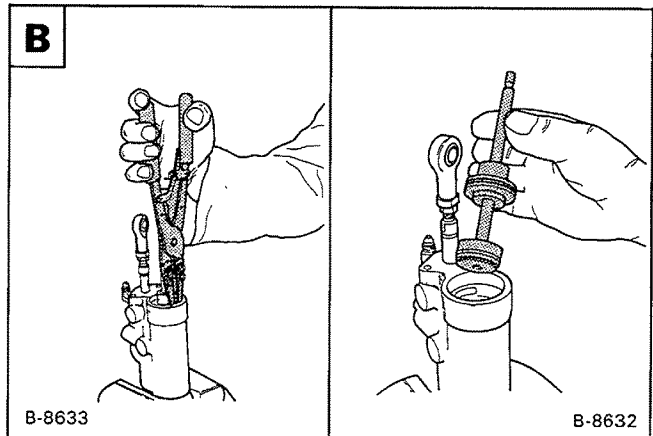
See Page 3—17 for neutral adjustment of the servo controls and steering linkage.



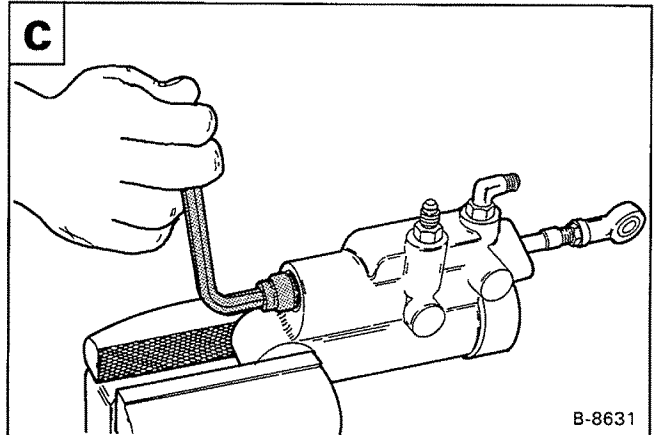
Disassembly and Assembly

Use a snap ring plier, remove the snap ring from the housing **B**.

Remove the rod and piston assembly **B**.



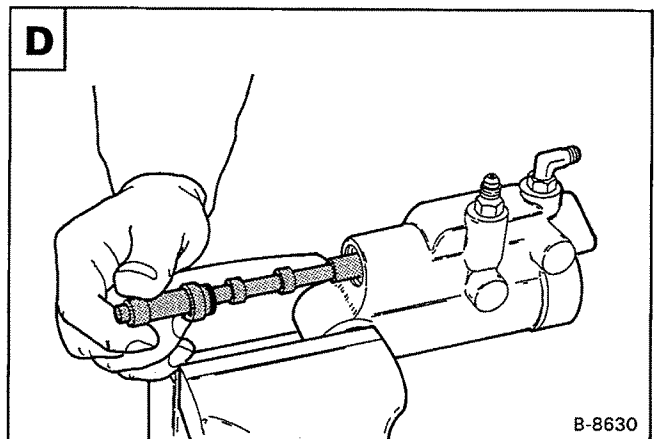
Remove the cap from the servo housing. Use an allen wrench and remove the plug **C**.



Remove the spool from the housing **D**.

Clean and inspect all the parts for wear or damage. Replace the parts as needed.

Always use new O-rings and seals when assembling the servo control.



PINTLE LEVER ARMS (S/N 26000 Thru 29869)

Removal and Installation

Remove the servo control (Page 3-23).

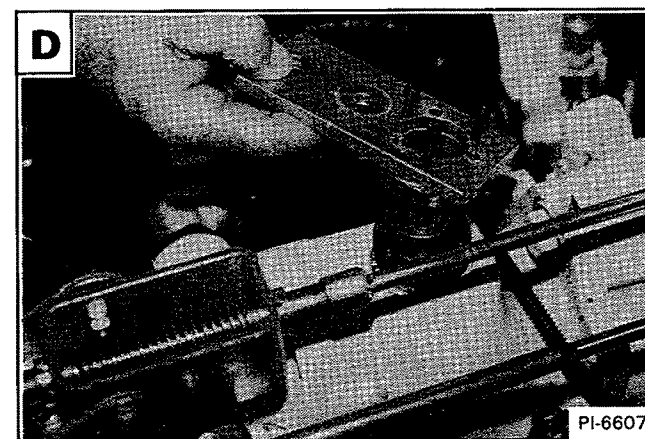
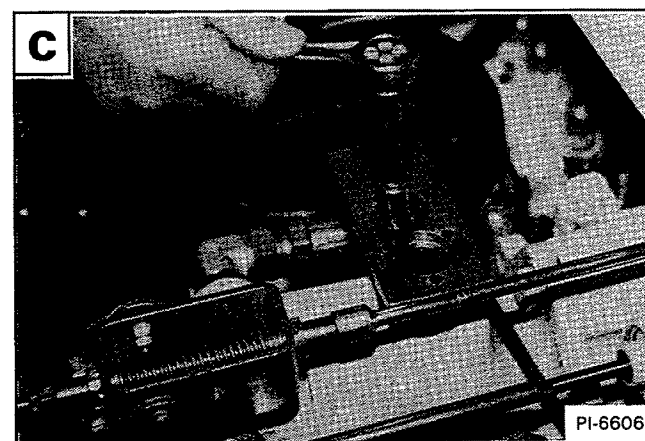
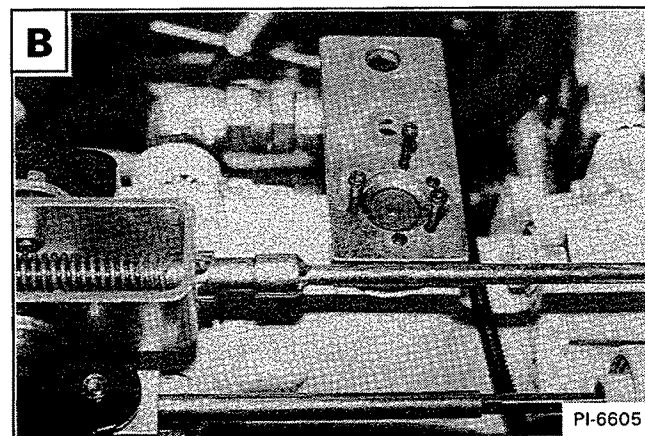
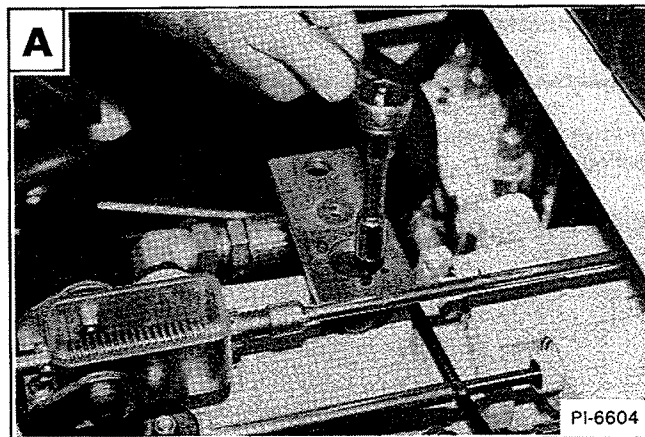
Remove the three screws from the pintle lever arm **A**.

Installation: Tighten the screws to 60 - 65 in.-lbs. (6,8 - 7,3 Nm) torque. Re-torque several times until screws stay at 60 - 65 in.-lbs. (6,8 - 7,3 Nm) torque.

Install the three screws in the holes next to the ones they were removed from **B**.

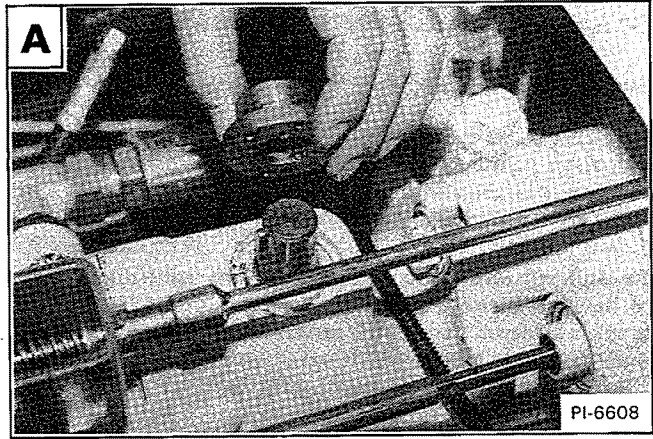
Turn the screws in to remove the pintle lever arm from the hub **C**.

Remove the pintle lever arm **D**.



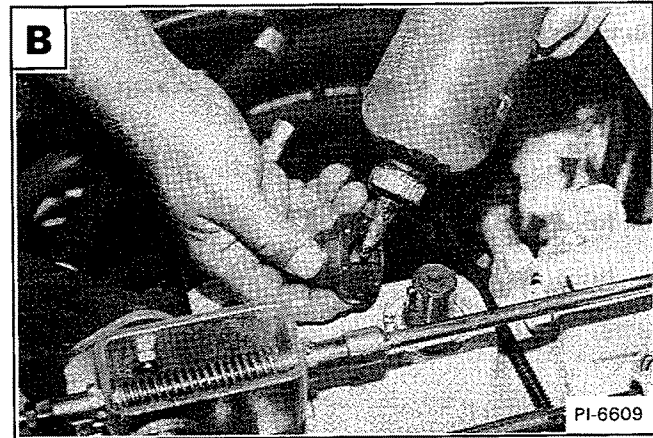
PINTLE LEVER ARMS (S/N 26000 Thru 29869) (Cont'd)

Remove the hub from the pintle lever shaft **A**.



Installation: Use solvent to clean the pintle shaft & hub. Put loctite (P/N 6649654) on the inside diameter of the hub. Make sure the key is in the slot of the pintle lever shaft and the hub is aligned **B**.

NOTE: Thread locking adhesive must cure at room temperature for 8 hours without primer (or 3 hours with primer (P/N 6649655)).



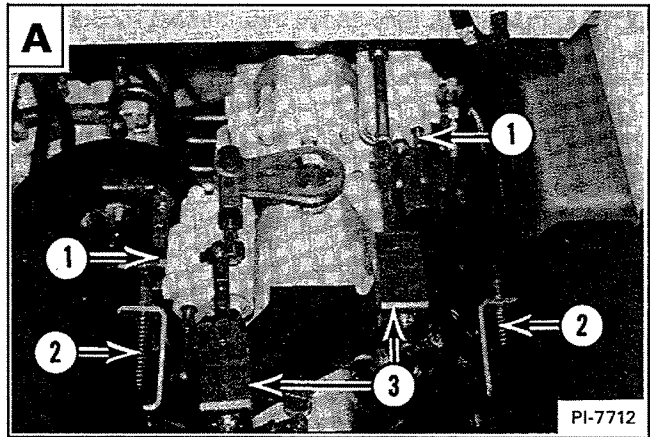
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STEERING LINKAGE (S/N 29870 Thru 31863)

Description

A hydraulic servo control cylinder (Item 1) is used to stroke each hydrostatic pump pintle lever **A**. The hydraulic servo system is controlled by the steering levers and the fluid to activate them comes from the charge circuit.

The steering levers are centered by two centering spring mechanisms (Item 2) **A**. Neutral setting for the hydrostatic pumps is achieved through the servo spool adjustment with the centering spring mechanism (Item 3) on the pintle levers **A**.

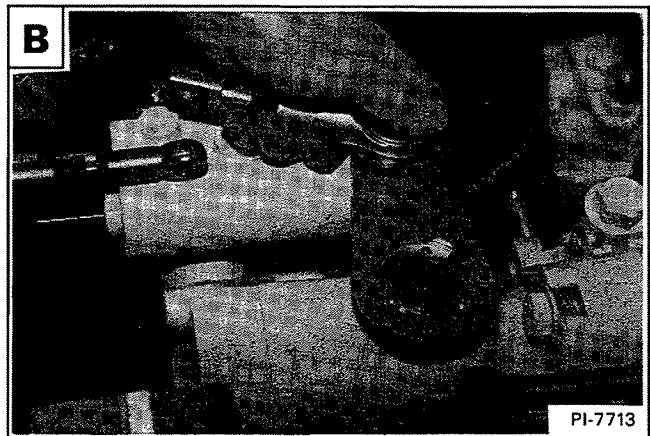


Neutral Adjustment

Use the following procedure to adjust neutral on the hydrostatic pumps:

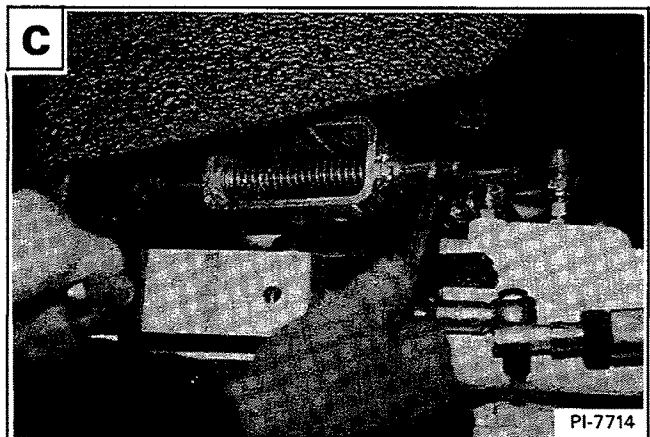
1. Lift and block the loader (Page 1–2).
2. Raise the operator cab (Page 1–7).
3. Disconnect the pintle arm steering linkage (both sides) **B**.

NOTE: Adjust one side of the loader at a time.



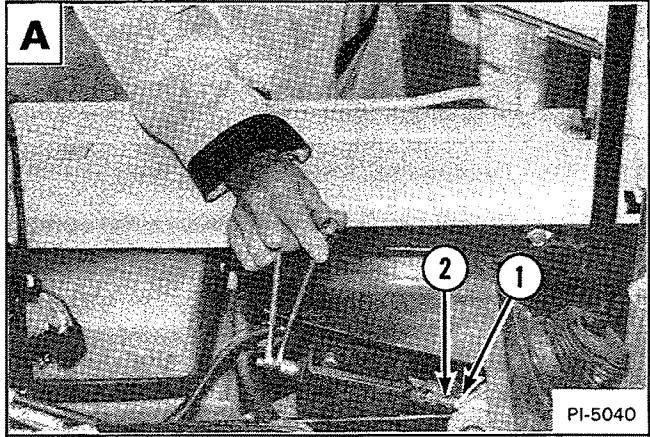
4. Adjust the centering spring mechanism for the steering lever so that there is no free play. Loosen the two jam nuts and turn them in or out. When there is no more free play in the centering spring mechanism, lock the jam nuts against each other **C**.


NOTE: If there is any free play in the centering spring mechanism, the correct adjustment of positive neutral can not be obtained.



STEERING LINKAGE (S/N 29870 Thru 31863) (Cont'd)

5. Position the steering lever by loosening the jam nut (Item 1) and turning the centering rod (Item 2) in or out of the clevis **A**. When the steering lever is in a perpendicular position, lock the jam nut. Check the centering spring mechanism again to make sure that the adjustment (no free play) has been maintained.
6. Connect the Remote Start Switch (Page 1–9). Start the engine and run at low idle.

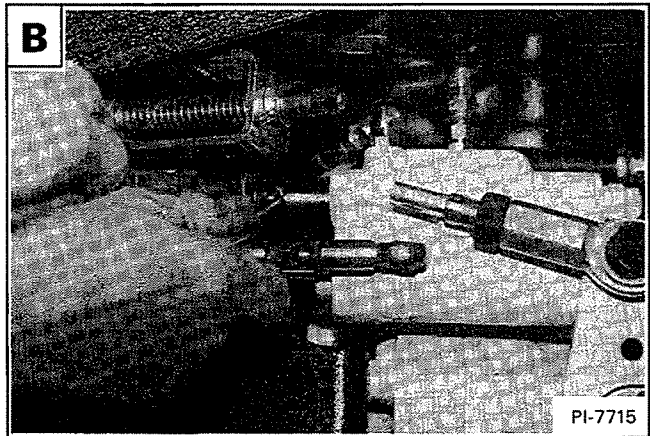


 **WARNING**

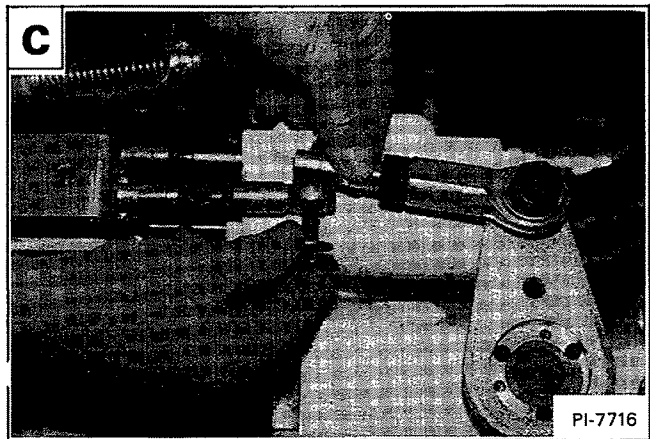
AVOID INJURY

Stay clear of the loader wheels. They will turn whenever the pump is not centered.

7. Loosen the jam nut on the servo control spool. Turn the spool in or out to find the neutral band in the servo control cylinder **B**. Tighten the jam nut.



8. Loosen the jam nut connector rod end. Turn the rod in or out until the bolt is a drop fit in the pintle steering linkage **C**. Install and tighten the lock nut.



NOTE: Always maintain at least 3/8" (9,5 mm) thread contact in the rod end.

page 201 - 000002/24/01/0001 - 04/10/2005 4:17:00:13 - #11111111 by user: user - 04/10/2005 4:17:00:13 - #11111111

STEERING LINKAGE (S/N 29870 Thru 31863) (Cont'd)

9. Make a final adjustment on the clevis threaded rod **A**. Tighten the clevis jam nut.

NOTE: The servo spool has a neutral band of approximately 0.10" (0,25 mm) in width. The steering lever centering should position the spool near the center of this neutral band when the pintle levers are positioned at absolute neutral by their centering springs.

10. Stroke the steering lever forward and backward letting it return to neutral by itself several times. If the wheels do not creep the adjustment is correct.
11. Repeat the above steps to adjust neutral of the other pump.

Steering Lever Centering Spring Mechanism

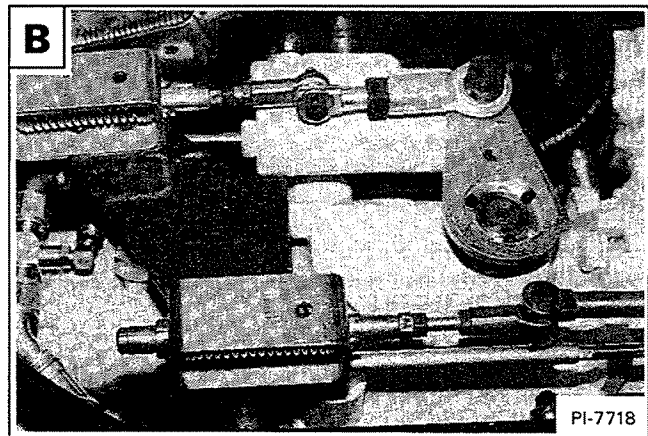
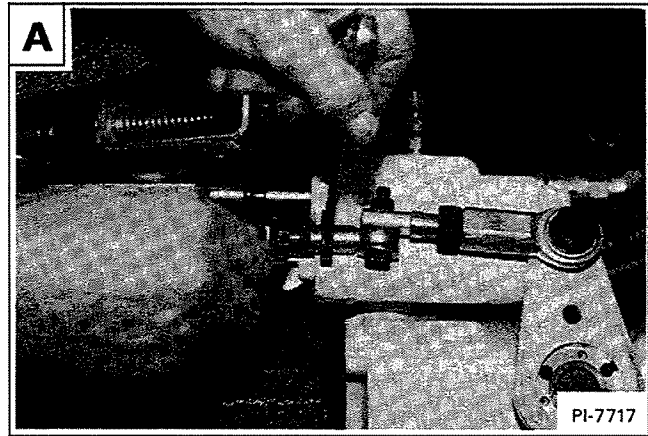
The remove and disassemble the steering lever centering spring mechanism, See Page 3—19 (S/N 2600 thru 29869) for the procedure.

Creep Centering Spring Mechanism

To remove and disassemble the spring mechanism, See Page 3—20 (S/N 26000 thru 29869), the photo's may look different but the procedure is the same **B**.

Pintle Arm

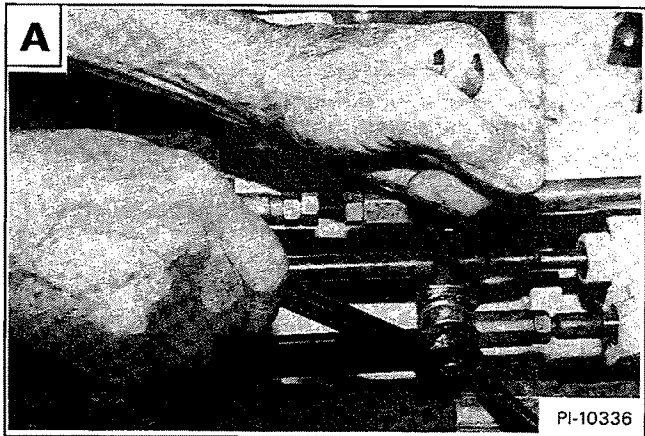
To remove and install the hydrostatic pump pintle arm See Page 3—25 (S/N 26000 thru 29869), the photo's may be different by the procedure is the same **B**.



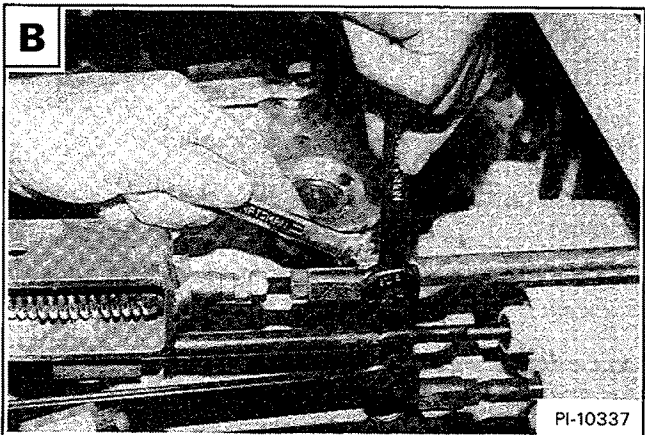
STEERING LINKAGE (S/N 31864-34221) (Cont'd)

Hydrostatic Pump Centering Spring Adjustment

Remove the bolt at connects the steering linkage bar to the servo control spool **A**.

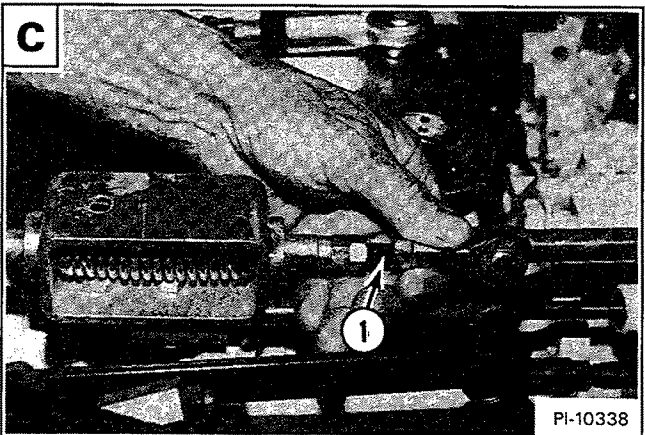


Loosen the hydrostatic pump linkage bolt **B**. DO NOT remove the bolt.



Check for freeplay in the hydrostatic pump centering spring mechanism **C**.

NOTE: Freeplay will exist in the centering spring adjustment rod (Item 1) if the adjusting nut is too loose, or in the centering spring bushing if the adjusting nut is too tight **C**.

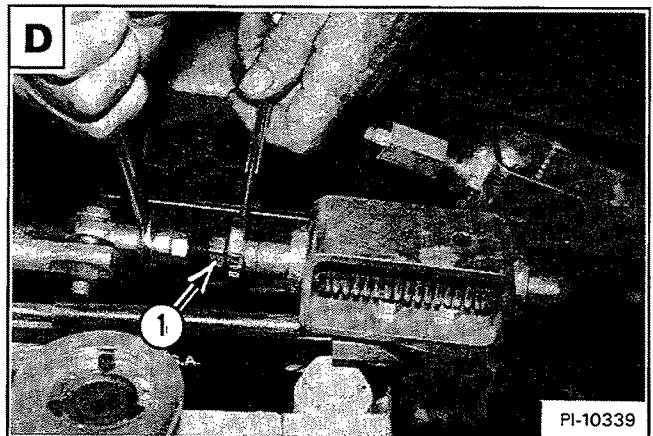


To remove the freeplay, adjust the hydrostatic pump centering spring by loosening the jam nut (Item 1) and turning the adjusting nut in or out **D**.

Adjust the centering spring mechanism so there is no freeplay.

Tighten the jam nut after the adjustment is made.

Re-tighten the hydrostatic pump linkage bolt.

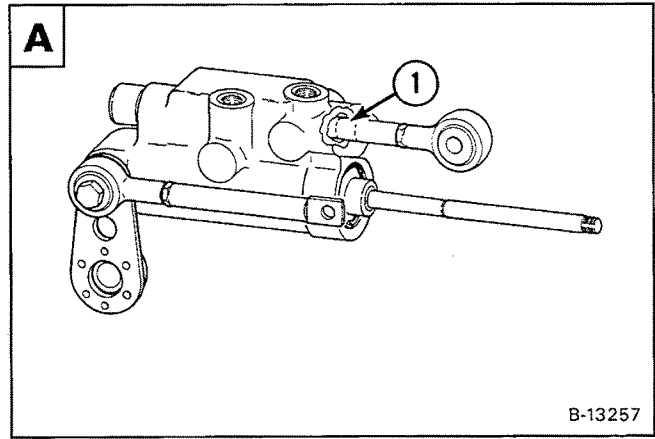


STEERING LINKAGE (S/N 31864-34221) (Cont'd)

Servo Control Unit Adjustment

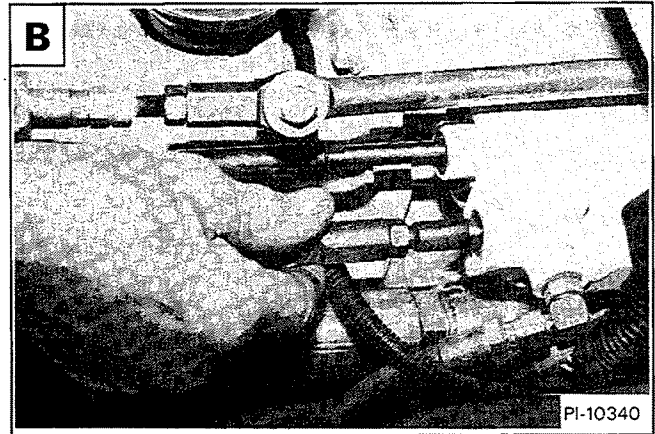
Start the engine with the remote start switch and increase the speed to 2750 RPM (See Page 1—9 for the correct procedure).

Locate the neutral band (Item 1) on the servo control spool **A**.



Move the servo control spool back and forth several times to find the width of the neutral band.

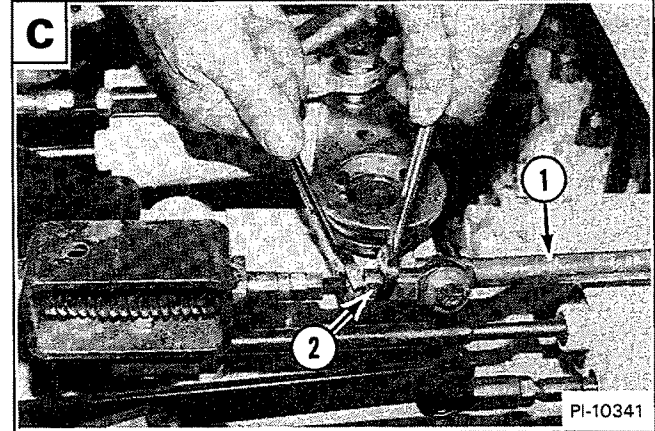
Position the spool in the center of the neutral band **B**.



NOTE: Adjustment to the hydrostatic pump linkage rod (Item 1) is necessary only if wheel creep is present **C**.

Loosen the hydrostatic pump linkage rod jam nut (Item 2) to adjust the rod **C**.

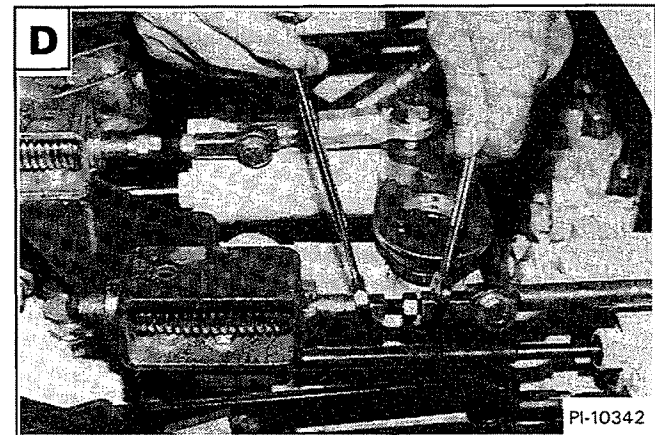
Lengthening the linkage rod will give reverse creep.



Adjust the rod to the mid point between forward and reverse creep **D**.

Tighten the jam nut.

NOTE: The mid point adjustment is a preliminary adjustment and may need to be adjusted again, shorter or longer.



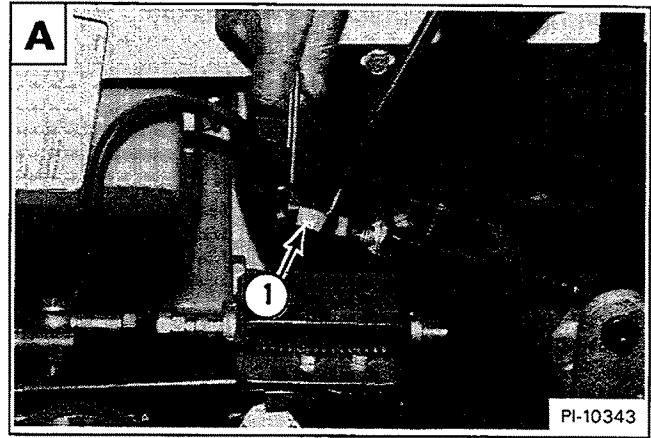
STEERING LINKAGE (S/N 31864-34221) (Cont'd)

Steering Lever Centering Spring Adjustment

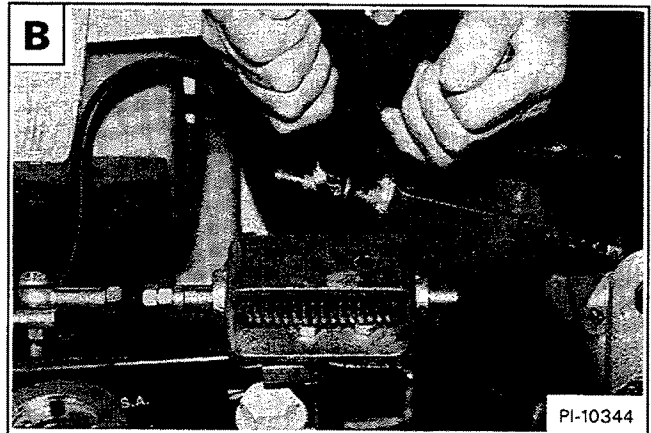
Check for freeplay in the steering lever centering spring mechanism.

To remove the freeplay, remove the mechanical stop (Item 1) from the steering lever centering spring adjusting rod **A**.

NOTE: Freeplay will exist in the centering spring adjusting rod if the adjusting nut is too loose, or in the centering spring bushing if the adjusting nut is too tight.

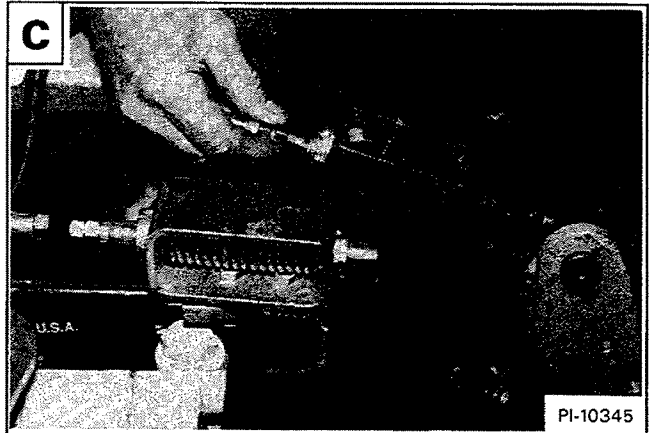


Loosen the jam nut on the steering lever centering spring adjusting rod **B**.



Turn the adjusting nut in or out to adjust the centering spring mechanism so there is no freeplay **C**.

Tighten the jam nut.

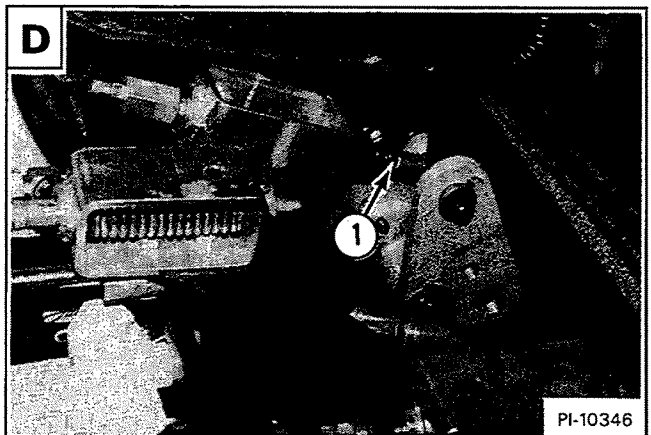


Adjust the steering lever if it is not straight up and down.

Loosen the jam nut (Item 1) on the steering lever linkage rod **D**.

Turn the rod in or out until the steering lever is straight up and down and tighten the jam nut **D**.

After completing the steering lever adjustment, reinstall the bolt that connects the steering linkage bar to the servo control spool and tighten the nut (See figure **A** Page 3-31).



STEERING LINKAGE (S/N 31864-34221) (Cont'd)

Start the engine and increase engine speed to 2750 RPM.

Recheck the servo control spool neutral band center position and the hydrostatic pump linkage adjustment.

NOTE: It may be necessary to alternate from the servo spool adjustment to the hydrostatic pump linkage adjustment to stop the wheel creep completely.

To make a final check of the wheel creep, pull the steering lever all the way forward and let the lever snap back into neutral **A**.

NOTE: The wheels should stop instantly with no wheel creep.

Repeat the lever snap back procedure 3 to 4 times in both forward and reverse direction.

Stop the engine.

Repeat the complete adjustment procedure for the other side of the loader.

Wheel RPM Adjustment (Left to Right)

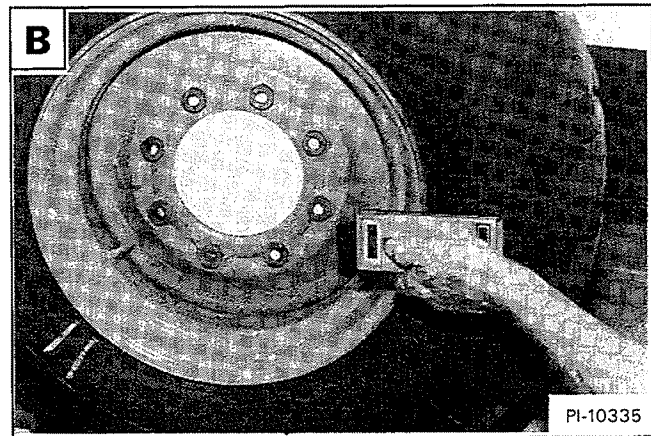
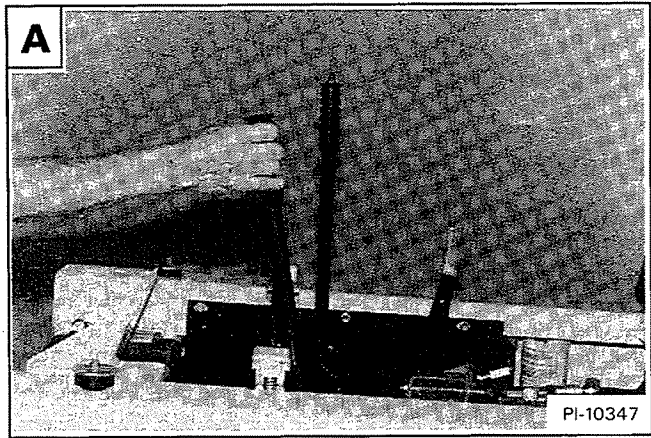
When the steering linkage adjustment procedure is completed, it is necessary to adjust the forward wheel RPM for the right and left wheels.

Start the engine and increase the engine speed to 2750 RPM.

Take a wheel speed reading on both left and right sides **B**.

If the two sides are different, adjustment is needed.

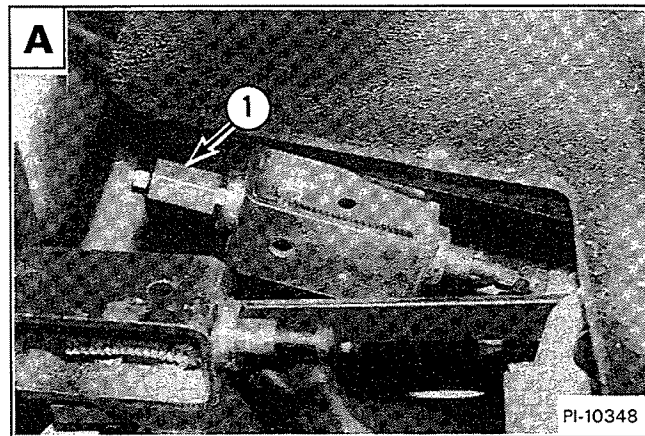
NOTE: There is no adjustment available for increasing wheel RPM. A mechanical stop should be installed on the side which has the faster of the two readings.



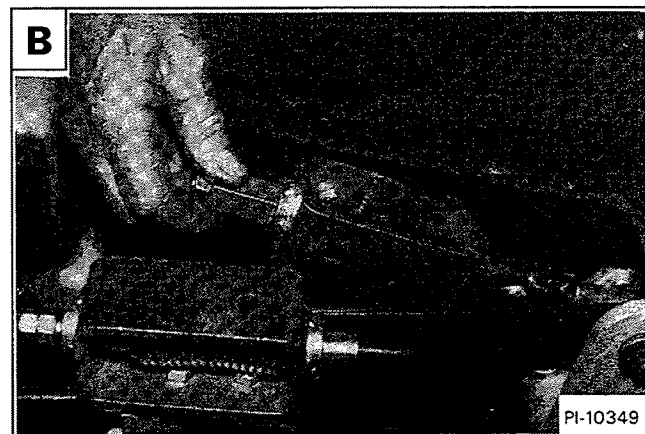
STEERING LINKAGE (S/N 31864-34221) (Cont'd)

Install the mechanical stop (Item 1) on the steering lever centering spring mechanism (fast side) **A**.

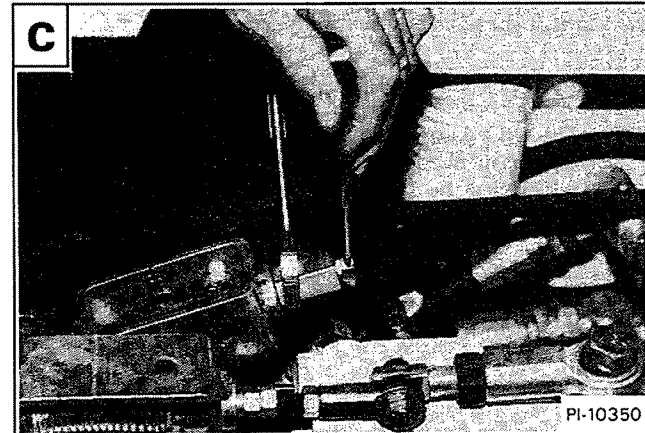
With the engine running at 2750 RPM, push the steering lever (lever on the fast side) as far forward as possible.



Turn the mechanical stop in until the forward RPM matches the slower side **B**.



Install the jam nut and tighten **C**.



Install a mechanical stop on the steering lever centering mechanism (slow side) **D**.

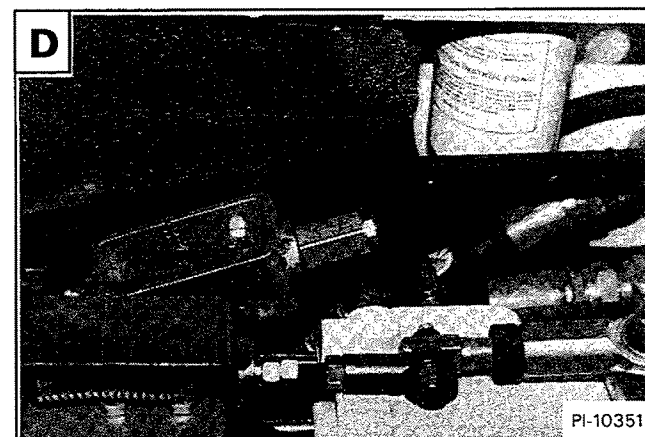
With the engine running at 2750 RPM, push the steering lever (lever on the slow side) as far forward as possible.

Turn the mechanical stop in until it just makes contact with the spring mechanism as shown **D**.

NOTE: DO NOT over tighten or the wheel RPM will be reduced.

Release the steering lever.

Install the jam nut and tighten.



HYDROSTATIC MOTOR

Removal and Installation

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

I-2021-0284

Lift and block the loader (See Page 1–2 for the correct procedure).

Use a floor jack, remove the motor cover bolts, and lower the motor cover **A**.

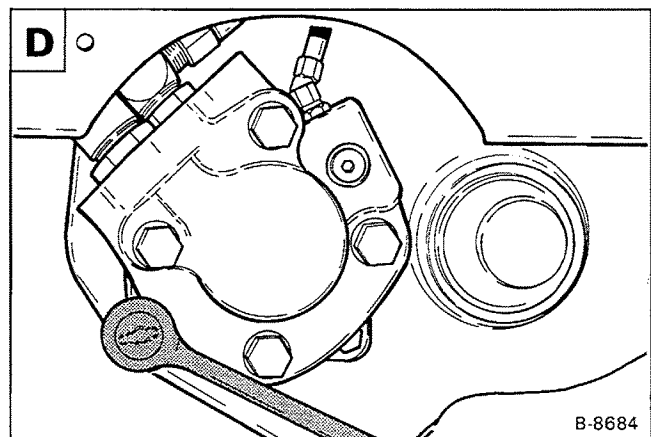
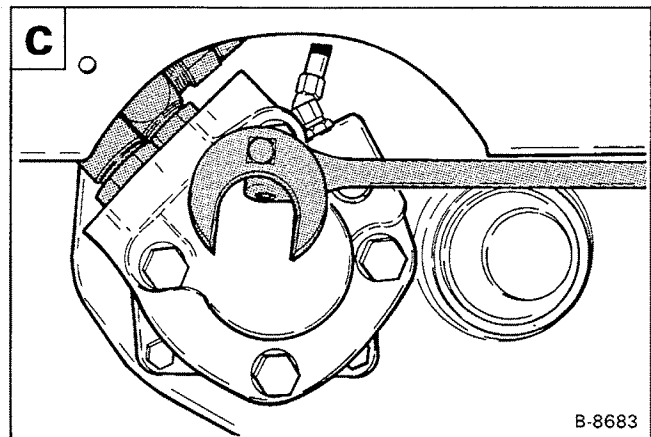
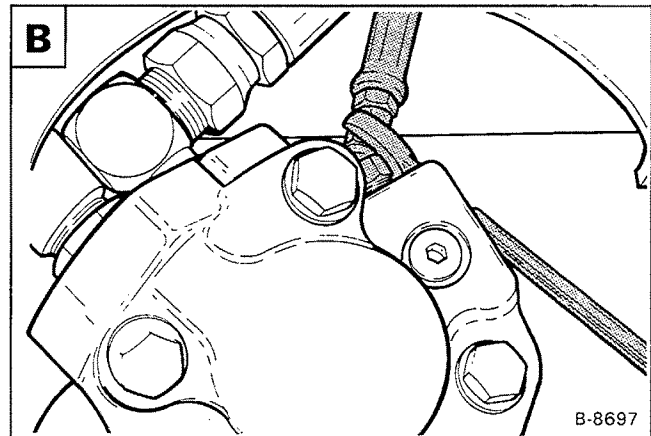
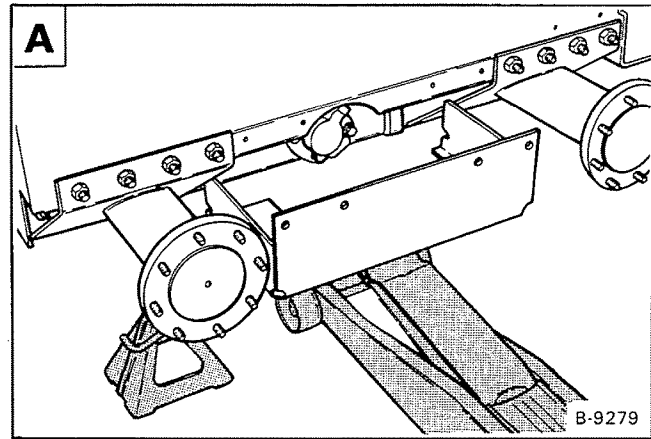
Remove the case drain hose **B**.

Use a crowsfoot wrench and remove the high pressure hoses **C**.

Remove the bolts from the motor mounting flange **D**.

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

NOTE: When connecting the high pressure hoses, See Page 3–42 for the correct hose routing.



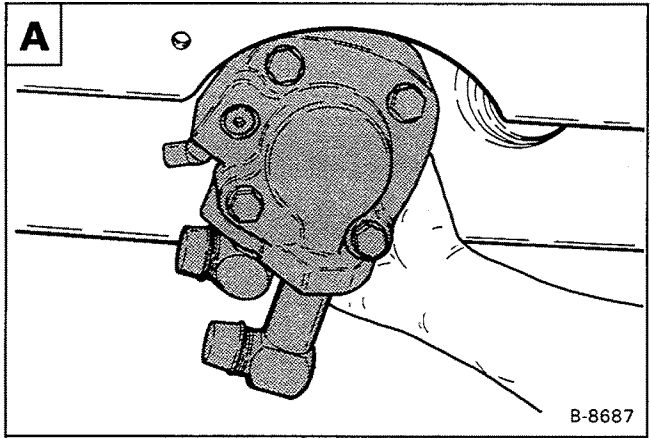
HYDROSTATIC MOTOR (Cont'd)

Turn the motor so there is clearance for the fittings, remove the motor from the reduction gearcase **A**.

Disassembly and Assembly

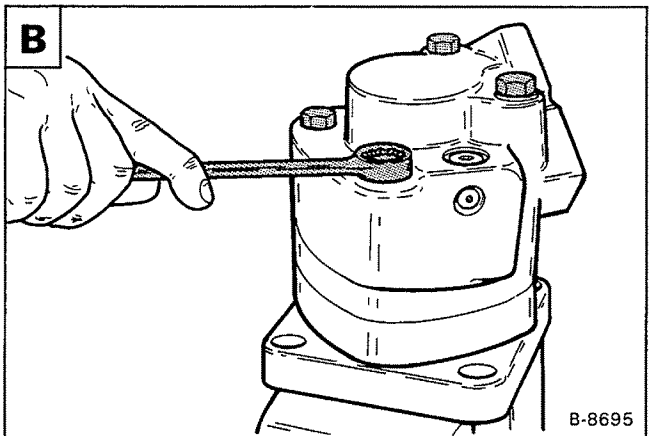
NOTE: Clean the outside of the motor before disassembly. Keep all the parts clean.

Put a mark across the sections of the motor for correct assembly.



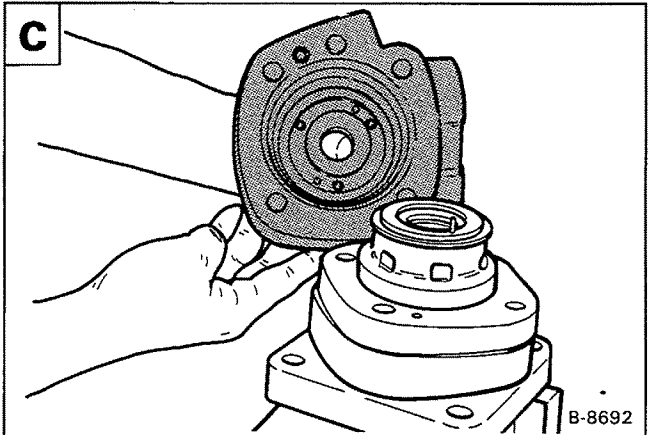
Remove the four bolts from the motor **B**.

Assembly: Tighten the bolts to 65 - 70 ft.-lbs. (88 - 95 Nm) torque.

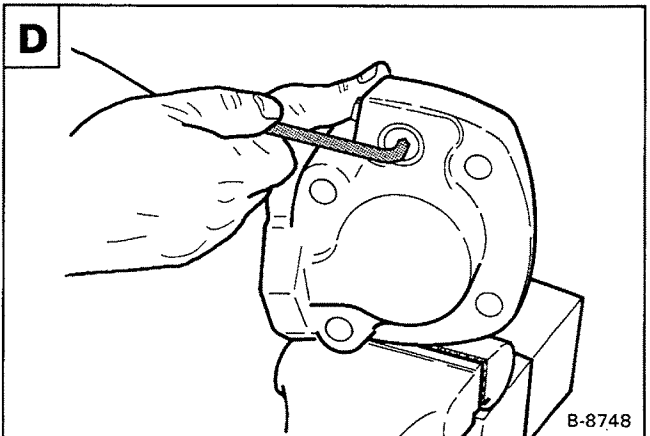


Lift the valve housing straight up. If done carefully, the springs and balance plate will stay on the valve **C**.

Remove the O-rings.

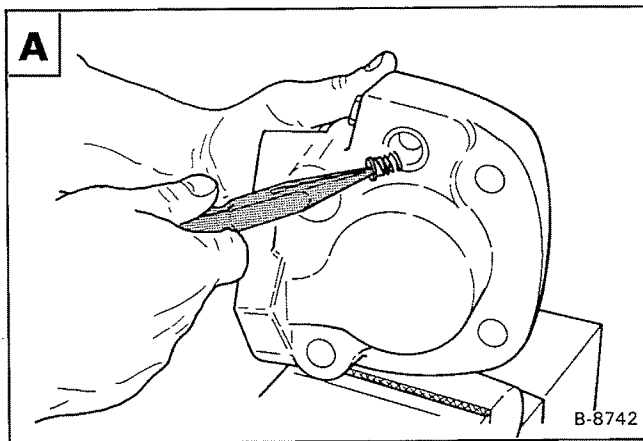


Remove the plug from the shuttle valve **D**.

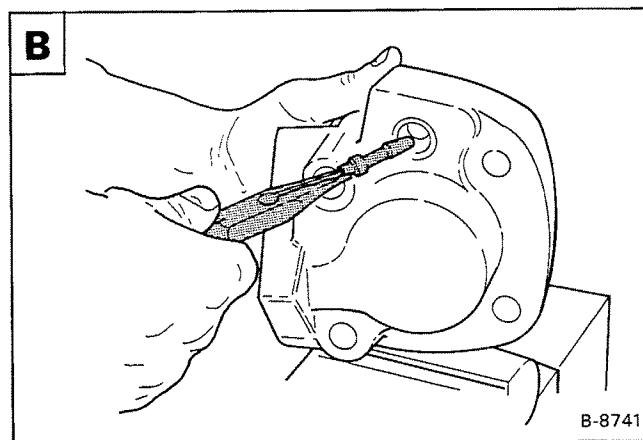


HYDROSTATIC MOTOR (Cont'd)

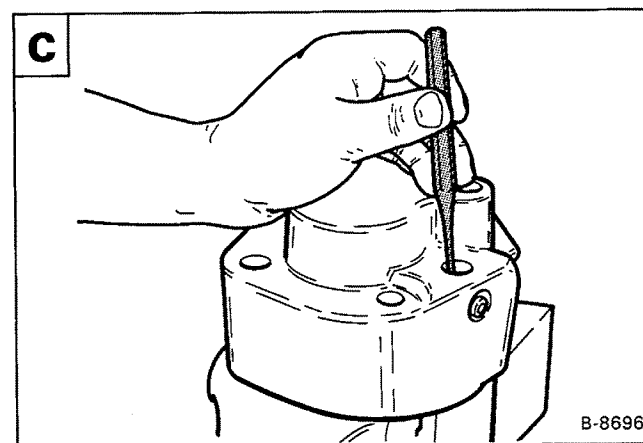
Remove the spring and sleeve **A**.



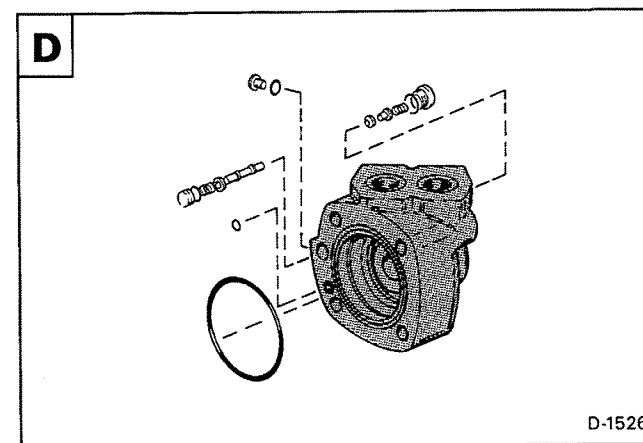
Remove the shuttle valve spool **B**.



Use a punch, through the housing and remove the poppet, spring, O-ring and plug from the other side of the housing **C**.



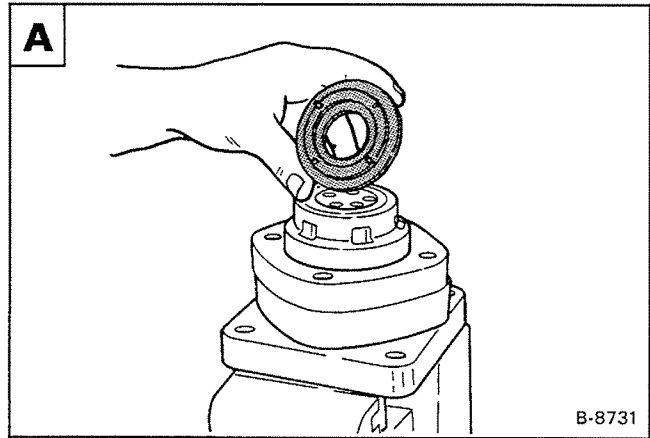
Assembly: Make sure all the parts are cleaned and check for wear. Assemble as shown **D**.



page 111 - 8080042/04/0003 - 04/10/2003 4:15:01.14 - PRTFILETEXT (VZ.04.3 0/25/2008)

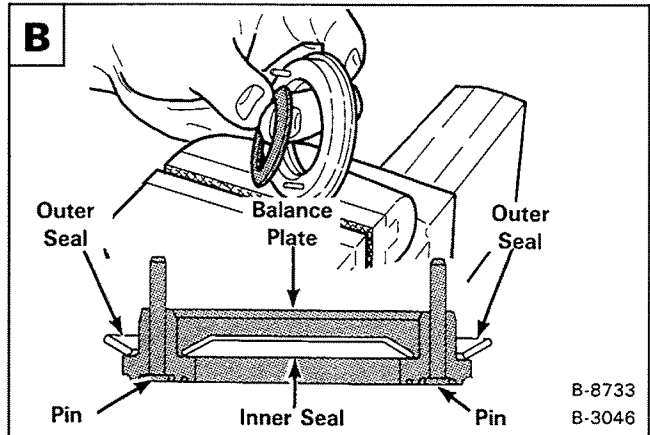
HYDROSTATIC MOTOR (Cont'd)

Remove the balance plate **A**.



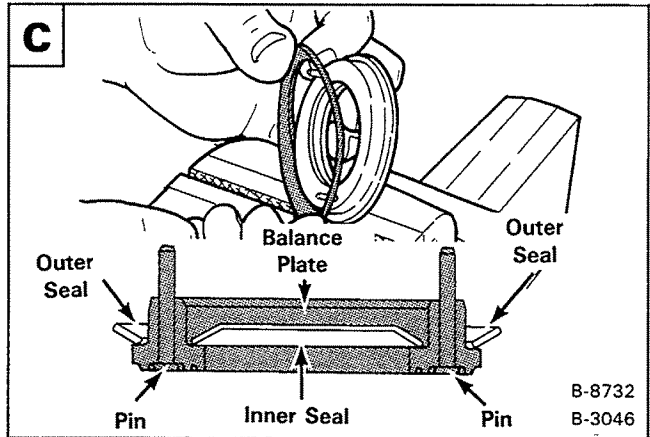
Remove the inner seal from the balance plate **B**.

Assembly: Put grease on the inner seal and install as shown **B**.

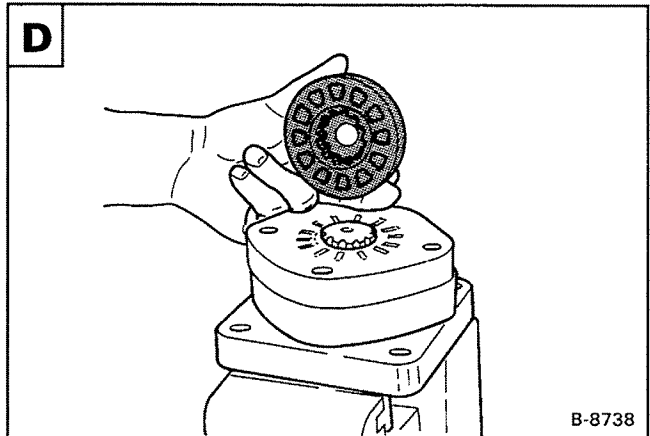


Remove the outer seal from the balance plate **C**.

Assembly: Put grease on the outer seal and install as shown **C**.



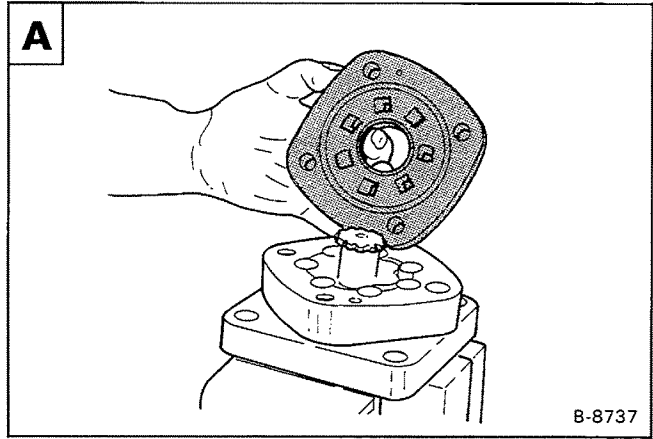
Remove the valve **D**.



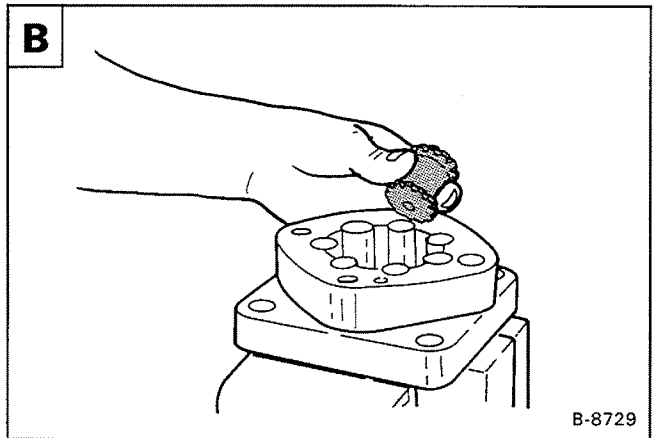
HYDROSTATIC MOTOR (Cont'd)

NOTE: See Page 3-42 for timing the motor when installing the valve, valve drive and geroler.

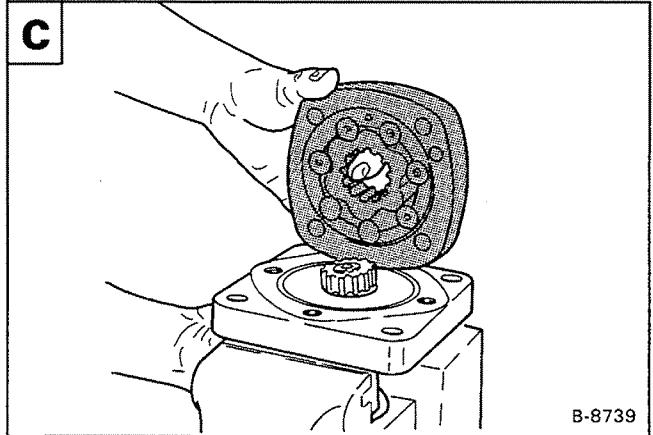
Remove the valve plate **A**.



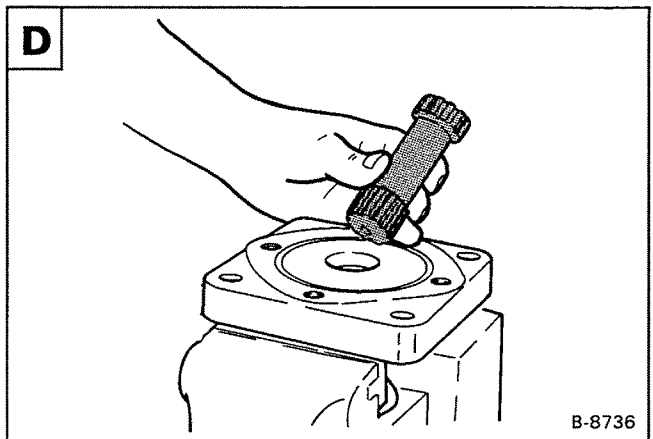
Remove the valve drive **B**.



Remove the geroler **C**.



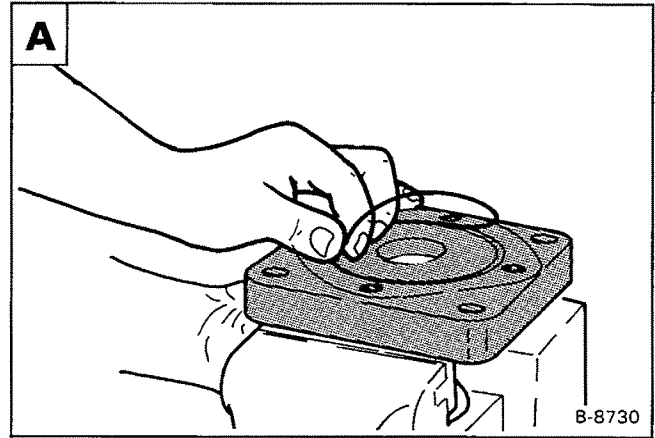
Remove the drive shaft **D**.



HYDROSTATIC MOTOR (Cont'd)

Remove all the O-rings from the motor **A**.

NOTE: Always use new O-rings when assembling the hydrostatic motor.

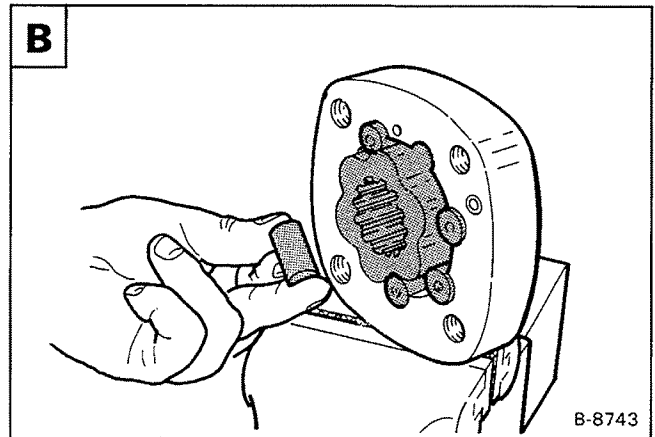


Inspection

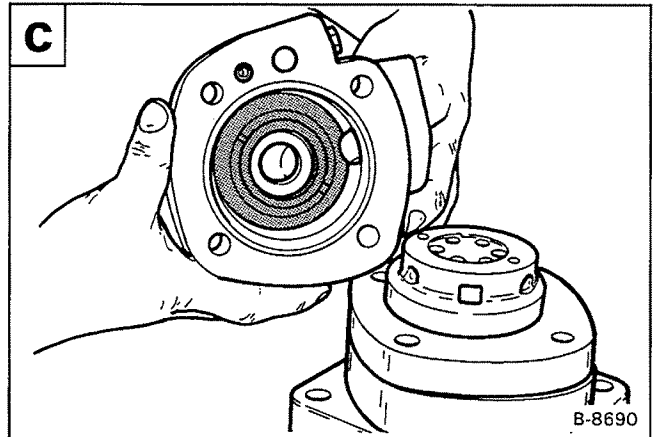
Before the motor is assembled check the following items:

1. Check the geroler roller and rotor for wear and scratches **B**.
2. Check the valve plate, valve and balance plate for scratches.
3. Valve drive and main drive shaft.
4. Check the end plate surface for scratches.

NOTE: Put all the rollers back in their original position.



When installing the balance plate in the end housing, put your finger through the hole and hold it in position until the housing is in position **C**.



HYDROSTATIC MOTOR (Cont'd)

Timing the Hydrostatic Motor

The timing of the motor controls the direction of rotation of the drive shaft of the motor. The timing parts are as follows:

1. Geroler (Item 1) **A**.
2. Valve Drive (Item 2) **A**.
3. Valve Plate (Item 3) **A**.
4. Valve (Item 4) **A**.

Find the largest opening between the geroler star and the geroler ring and mark the outside of the geroler ring at this point **A**.

Align the two drain holes and the three pressure holes in the geroler ring with the same holes in the mounting flange and install the geroler assembly.

Install all new O-rings.

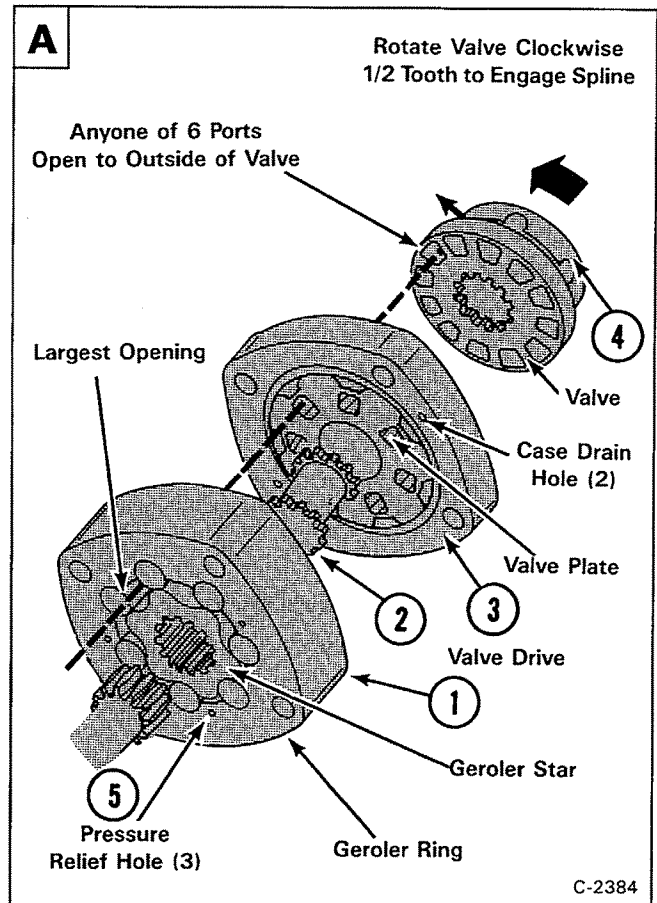
Install the valve drive **A**.

Align the drain hole in the valve plate with the drain hole in the geroler. Install the valve plate with the O-ring toward the geroler. Make sure the slot opening of the valve plate is in alignment with the largest opening of the geroler.

Install the valve plate.

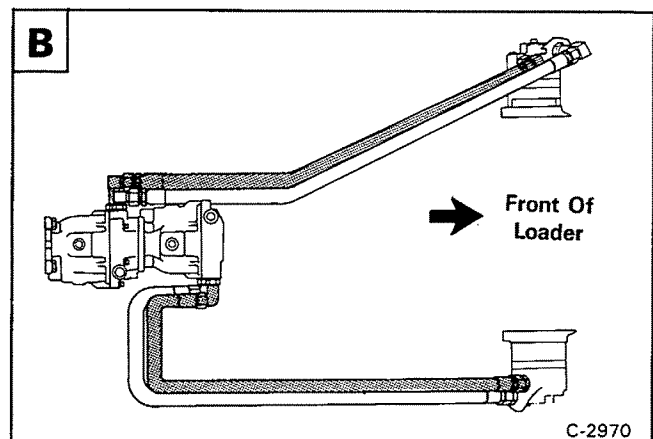
Install the valve on the valve plate. Make alignment with one of the side openings with the mark on the geroler. Turn the valve clockwise a small amount until the teeth on the valve drive engage.

Continue with the rest of the assembly procedure.



High Pressure Hose Routing

Make sure to connect the high pressure hoses to the correct ports of the hydrostatic pumps and motors **B**.



HYDROSTATIC PUMPS

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

I-2021-0284

Checking the High Pressure Relief/Replenishing valve

Lift and block the loader (See Page 1-2 for the correct procedure).

Raise the operator cab (See Page 1-7 for the correct procedure).

If there is a loss of drive in one direction, to one side of the loader, use this procedure to check the valves:

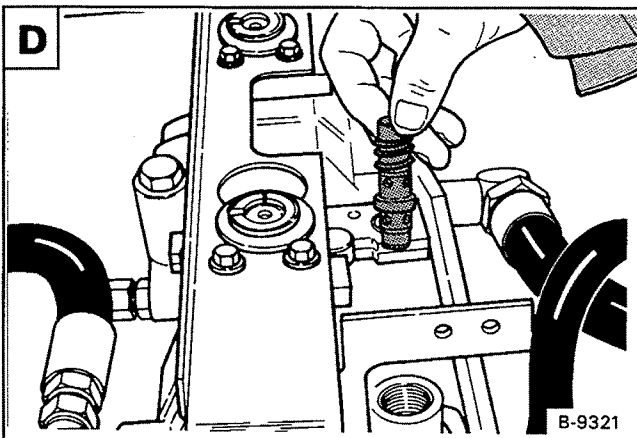
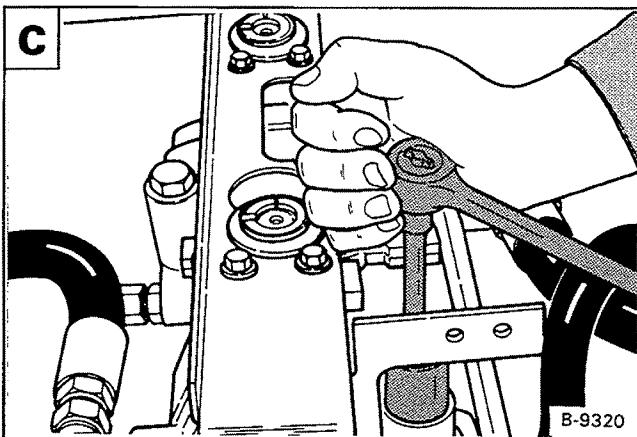
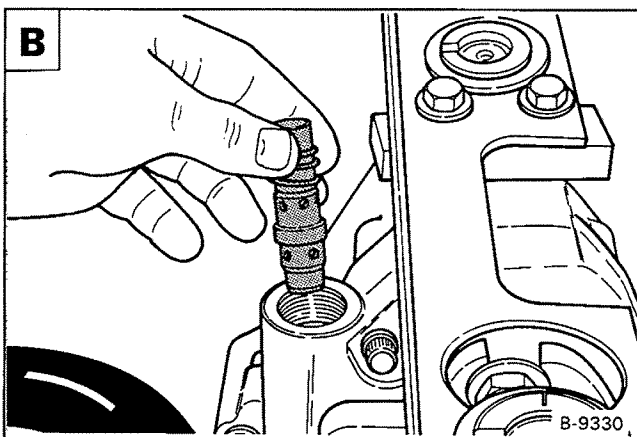
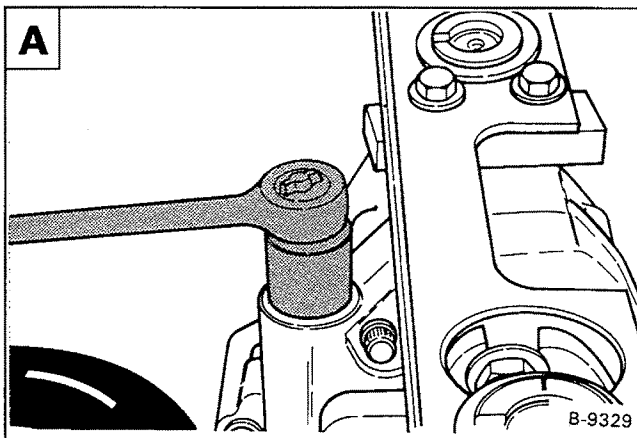
Remove the plug at the top and bottom **A C**.

Remove the high pressure relief valves from the top and bottom and switch them around **B D**.

Install the plugs and tighten.

Start the engine and check the drive.

If the loss of drive goes to the other side, the relief/replenishing valve which controls that side of the loader must be replaced.



HYDROSTATIC PUMPS (Cont'd)

Checking Charge Pressure

The tools listed will be needed to do the following procedure:

- MEL-1173 — Test Kit
- MEL-1218 — Diagnostic Coupler

Open the rear door.

Connect a gauge at the diagnostic coupler, located at the bottom of the hydrostatic filter **A**.

Start the engine and run it at full RPM.

The correct pressure is as follows, with no hydraulic action:
S/N 12999 & Below: 120 - 140 PSI (827 - 965 kPa)
S/N 24001 & Above: 180 - 200 PSI (1241 - 1379 kPa)

NOTE: If the hydrostatic pumps need repairing, See Page 3-45 for the procedure.

Removal and Installation

Lift and block the loader (See Page 1-2 for the correct procedure).

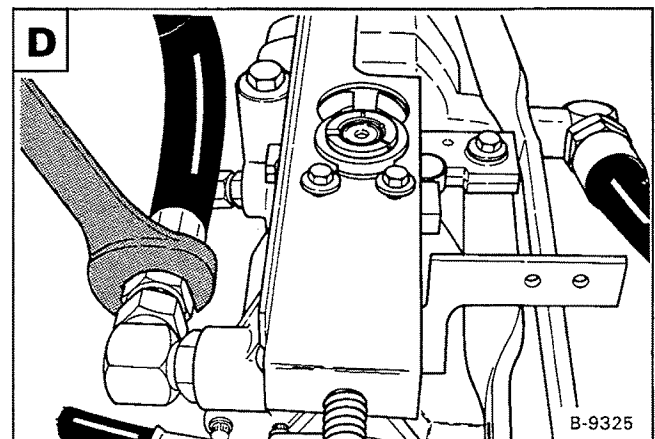
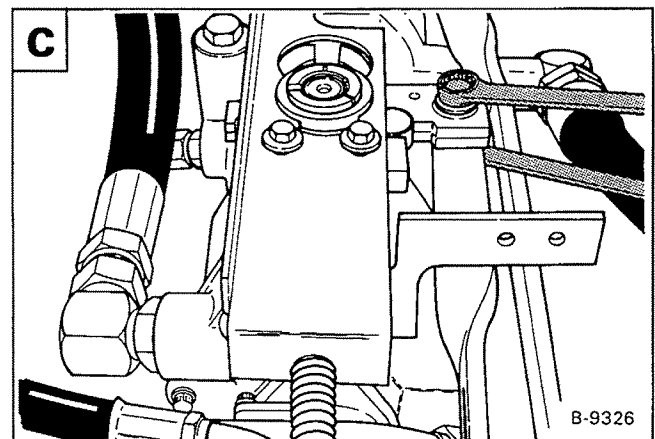
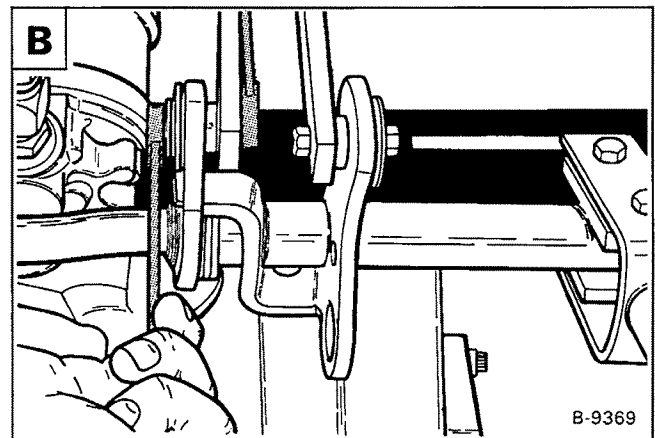
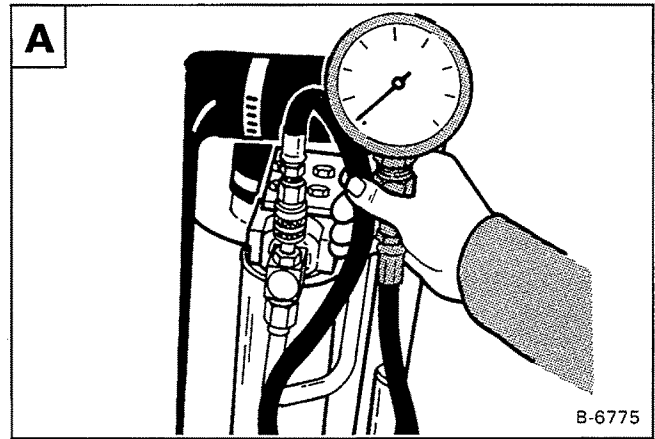
Raise the operator cab (See Page 1-7 for the correct procedure).

Disconnect the steering linkage at the steering levers (both sides) **B**.

Disconnect the steering linkage at the pintle levers **C**.

Installation: Tighten the bolts and nuts to 23 ft.lbs. (31 Nm) torque. See Page 3-14 for neutral adjustment. Remove the steering mechanism and pintle arms from the hydrostatic pumps (See Page 3-7 or 3-15 for the correct procedure). Installation: See Page 3-6 or 3-14 for the neutral adjustment. Disconnect the high pressure hoses at the hydrostatic pumps (both sides) **D**.

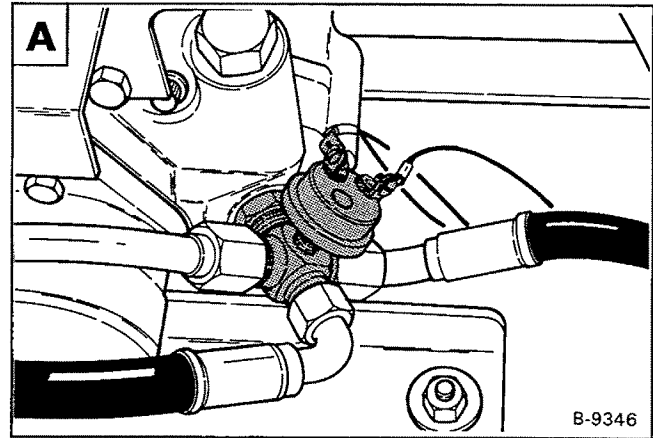
NOTE: When connecting the high pressure hoses, See Page 3-42 for the correct hose routing.



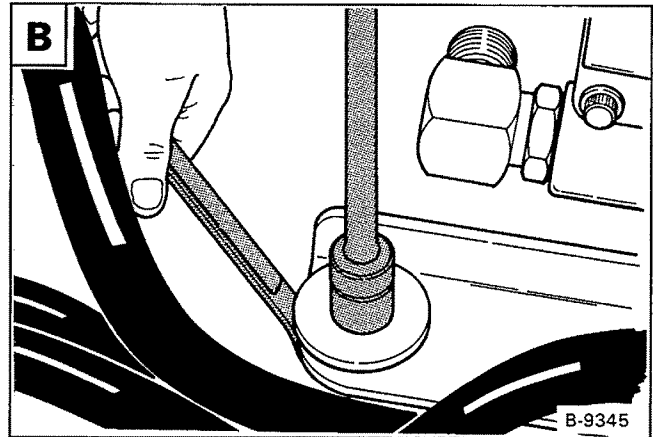
HYDROSTATIC PUMPS (Cont'd)

Disconnect all the hoses from the hydraulic pump.

Disconnect the hoses and wire from the charge pressure switch fitting **A**.



Remove the nuts from the front mounting bolts **B**.



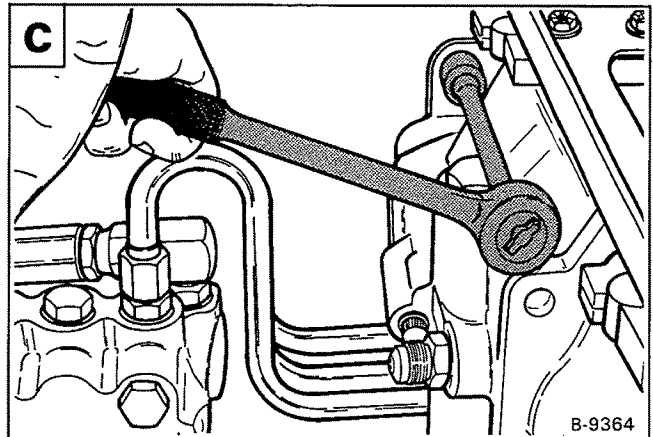
Remove the four bolts and nuts from the rear mounting flange for the pumps **C**.

Slide the hydrostatic pumps forward and out of the u-joint on the engine.

Lift the pumps from the loader.

Installation: Align the splines on the hydrostatic pump shaft and the u-joint.

NOTE: If the rear mount for the hydrostatic pump is removed See Page 3-52 for the correct installation specifications.



Disassembly and Assembly

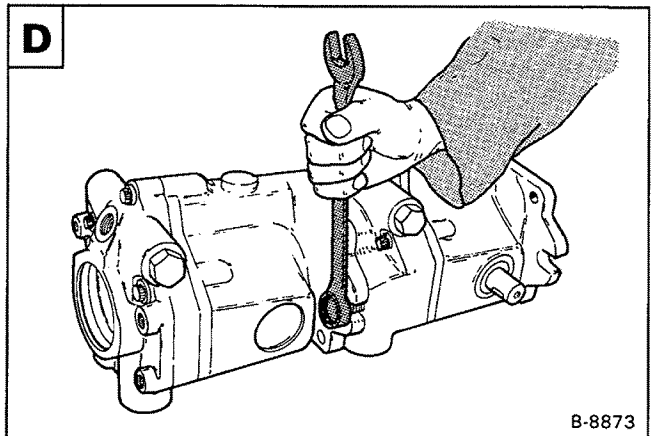
IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

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Remove the two bolts from the center section **D**.

Installation: Tighten the bolts to 110-115 ft.-lbs. (149-156 Nm) torque.

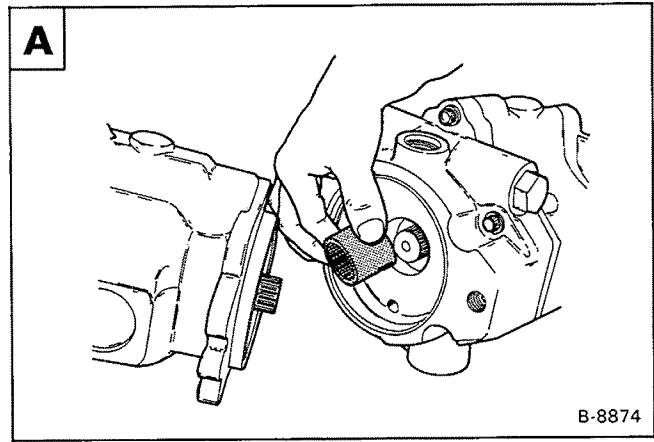


HYDROSTATIC PUMPS (Cont'd)

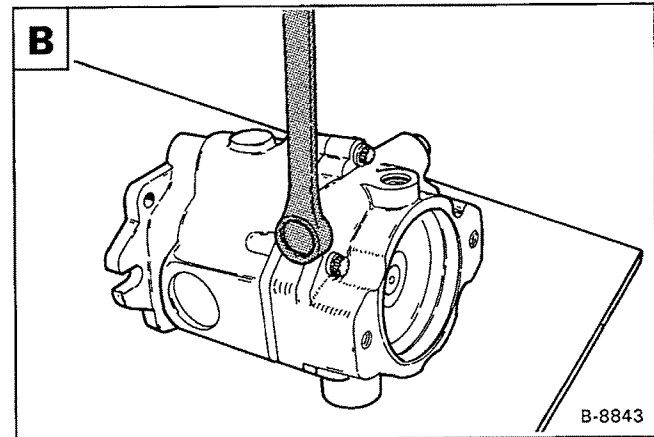
Pull the front and rear pumps apart **A**.

Remove the O-ring and coupler between the two pumps **A**.

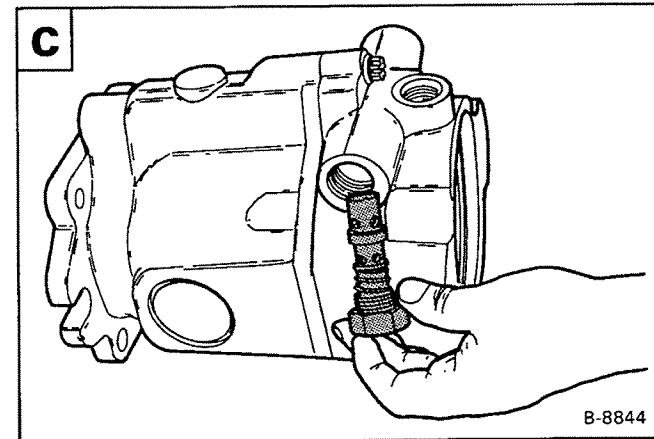
NOTE: The hydrostatic pump front and rear pump internal parts are the same. Some of the external parts are different and the copy will list the different procedures.



Remove the plugs from the high pressure relief valves **B**.

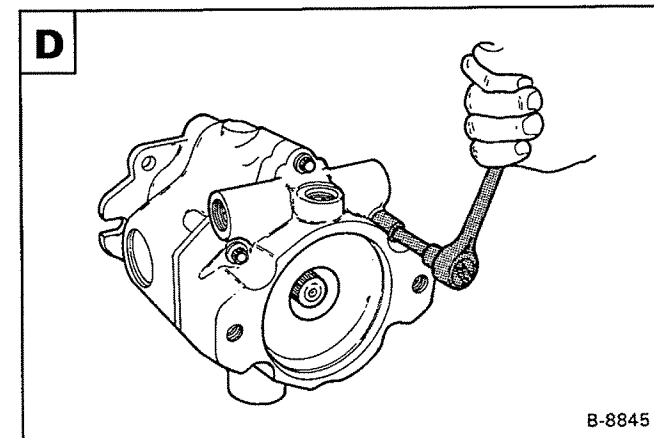


Remove the high pressure relief replenishing valves (both sides) **C**.



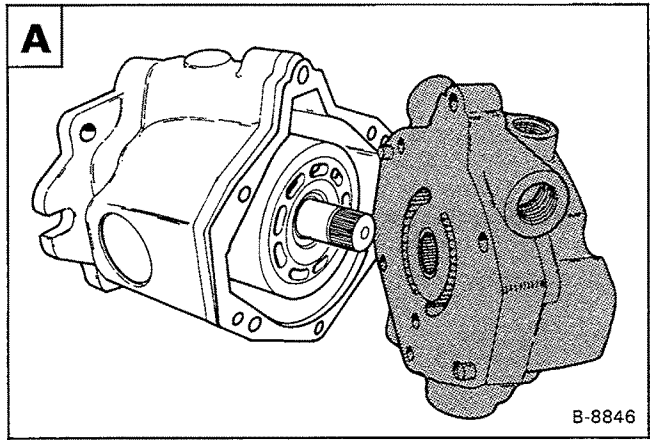
Remove the bolts from the center section **D**.

Installation: Tighten the bolts to 35-40 ft.-lbs. (47-54 Nm) torque.



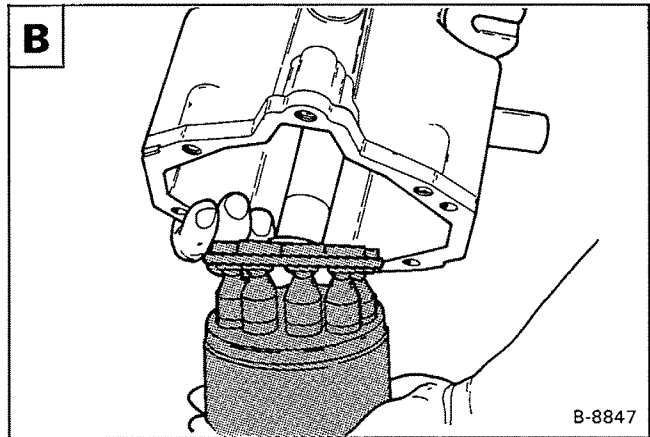
HYDROSTATIC PUMPS (Cont'd)

Remove the section from the pump housing **A**.



Remove the rotating group **B**.

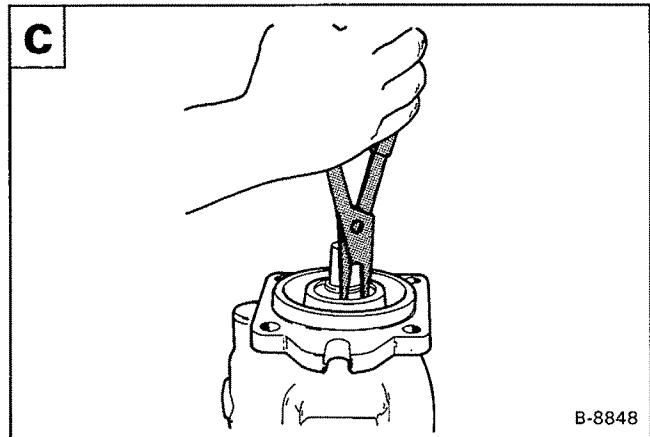
Put your hand under the rotating group and turn the pump housing around so the rotating group will slide into your hand.



Rear Pump

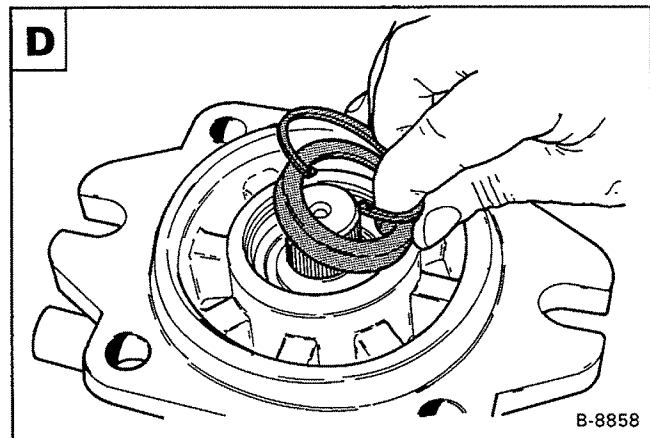
Remove the snap ring from the drive shaft **C**.

Remove the seal.



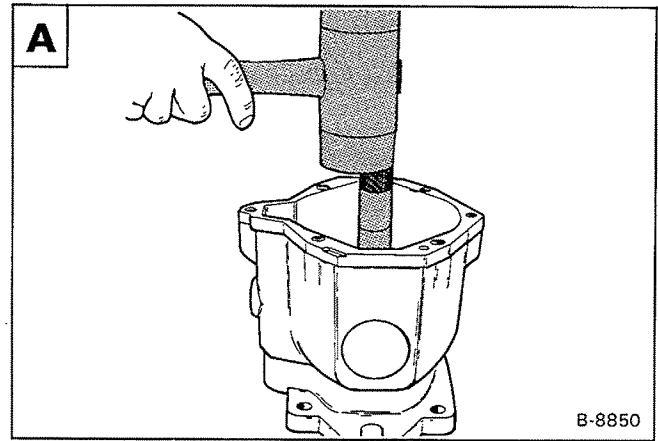
Front Pump

Remove the snap ring and spacer **D**.

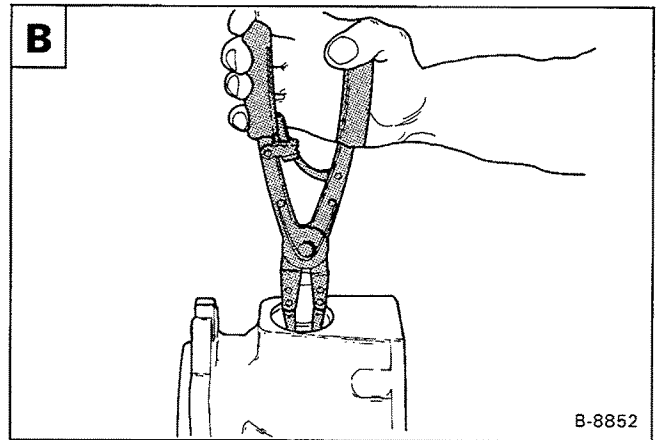


HYDROSTATIC PUMPS (Cont'd)

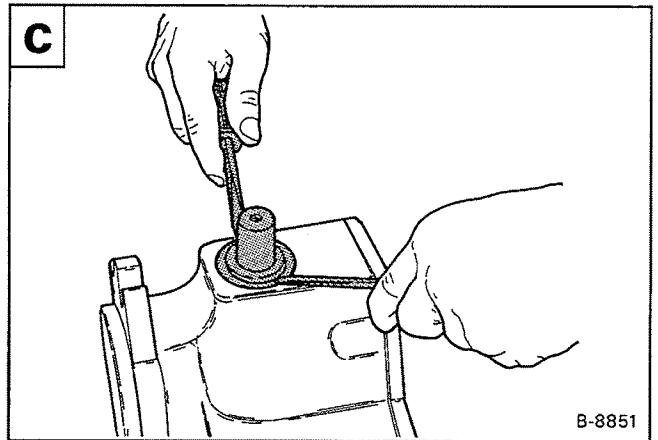
Remove the drive shaft and bearing from the housing **A**.



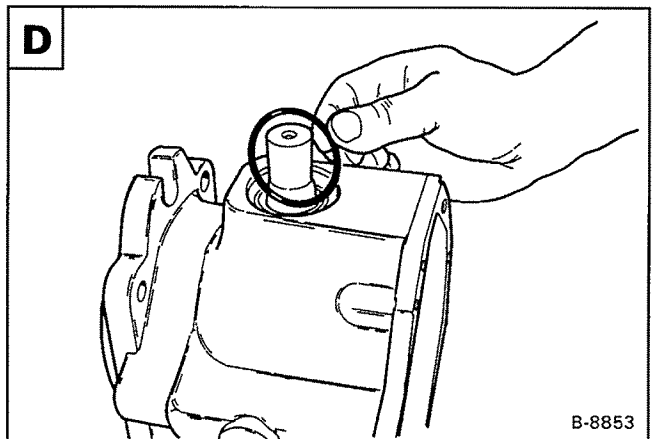
Remove the snap ring from the pintle shaft cover **B**.



Remove the pintle shaft cover **C**.



Remove the O-ring **D**.

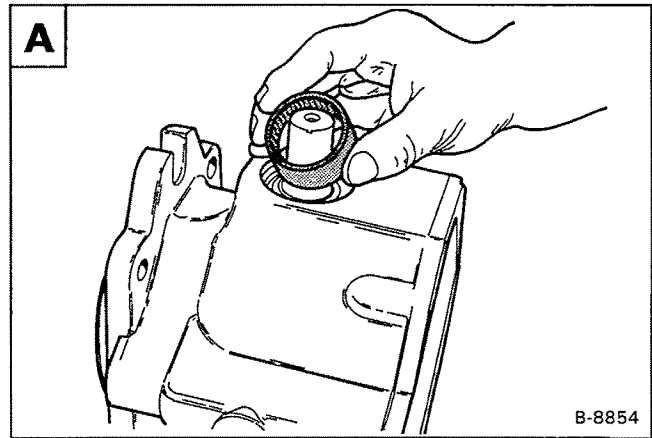


page 484 - BUSHING 24542A1002 - 04/10/2009 4:15:14 - FILED BY KEN COOK CO. - EXP. 03.06.10 12.25.3 8/25/2009

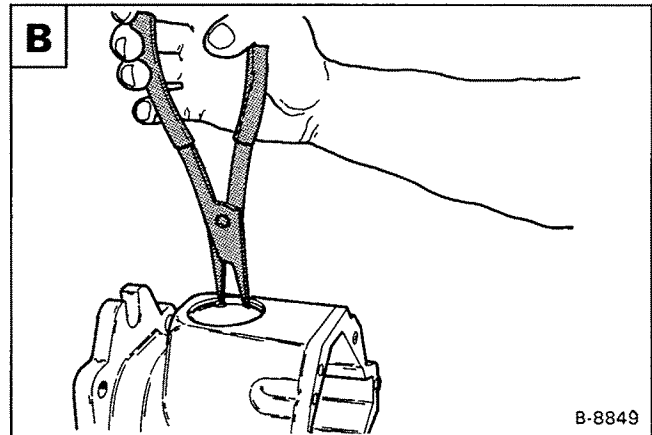
HYDROSTATIC PUMPS (CONT'D)

Remove the bearing from the pintle shaft **A**.

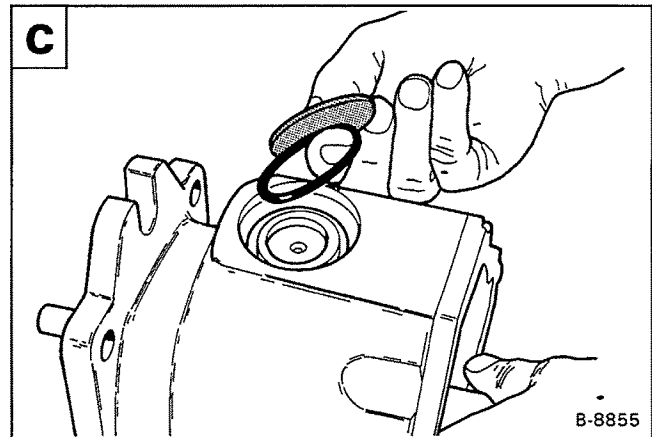
Assembly: When installing the bearing, make sure the number side of the bearing is toward the outside.



Remove the snap ring from the camplate shaft on the other side.
Remove the cover **B**.

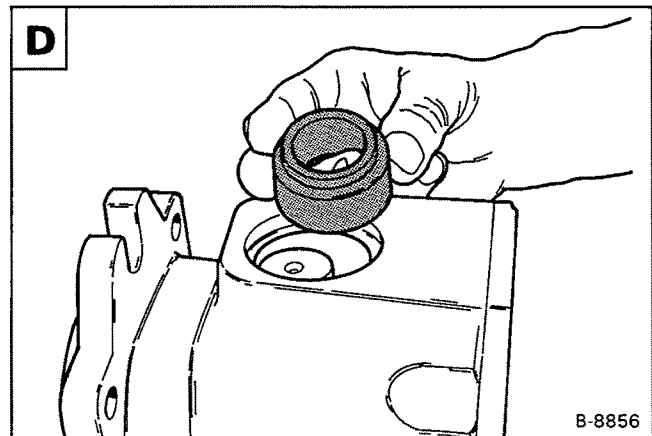


Remove the O-ring **C**.



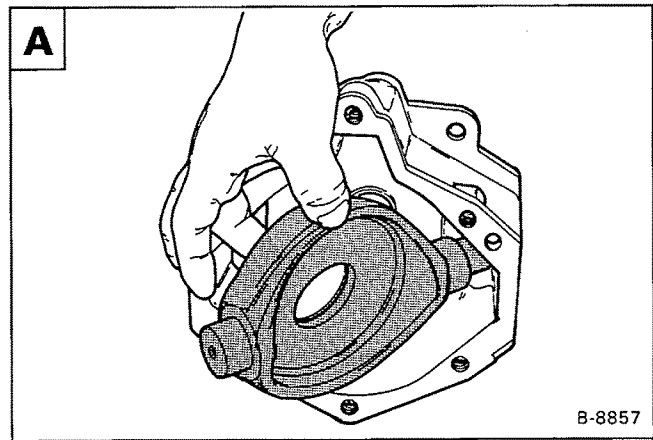
Remove the bearing and race **D**.

Assembly: When installing the race make sure the chamfer side is toward the camplate.



HYDROSTATIC PUMPS (Cont'd)

Remove the camplate from the housing **A**.



Inspection

NOTE: Keep all the parts for one pump separated from the parts for the other pump.

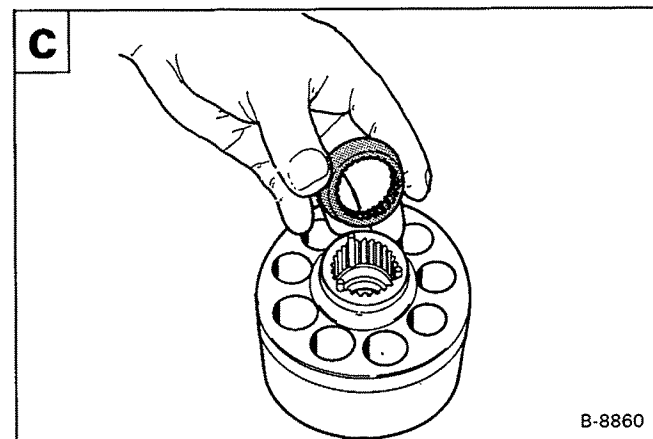
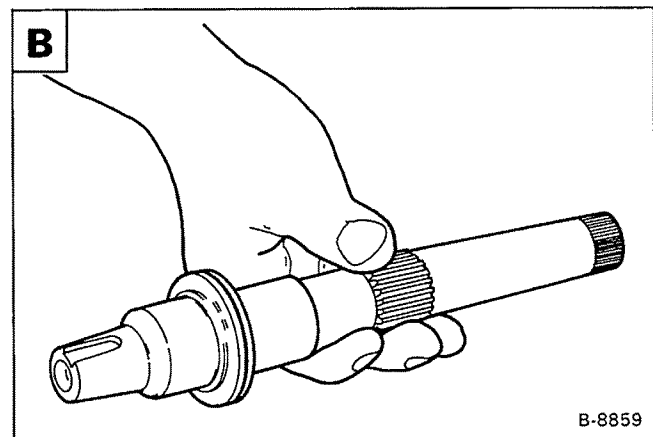
Inspect the input drive shaft, bearings and races for wear and damage to the shaft splines **B**. End play must not exceed 0.090" (2,29 mm).

The bearings in the center section and housing only have to be removed if they are loose and show wear. Use a press to remove and replace the bearings.

Inspect the flat surface of the sections. The finish must be smooth and free of grooves. If the grooves can be felt on the finished surface with a fingernail, replace the section. Inspect the camplate for wear. The finish must be smooth and free of grooves. If grooves can be felt with a fingernail, replace the camplate.

Inspect the rotating group for the following: Check each piston in its bore. The piston must move freely.

Check the pins for wear or damage **C**. All the pins must be the same length and must not be bent. Check the spherical washer for sharp edges, wear or scratches **C**.

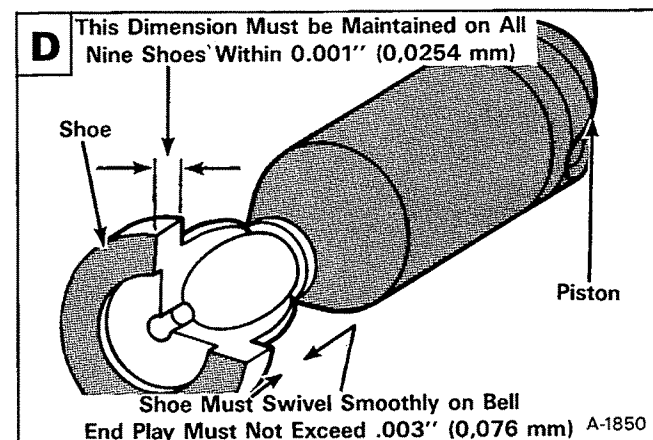


Check the piston shoes for scratches. Check the end play of each piston assembly **D**. Measure the thickness of each shoe. All shoes must be within 0.001" (0,025 mm) of each other **D**. Inspect the shoe plate for wear or cracks.

If there is any defect in the rotating group, the complete unit must be replaced.

Clean all the parts in solvent and use air pressure to dry them. DO NOT use cloth or paper because small pieces of material can get into the system and cause damage.

DO NOT use sandpaper or a file to remove scratches.



HYDROSTATIC PUMPS (Cont'd)

Tow Valves

The tool listed will be needed to do the following procedure:

MEL-1197 — Towing Kit

The loader can be moved for a short distance at a slow speed if it is unable to do so under its own power, use the following procedure to install the tow valve kit:

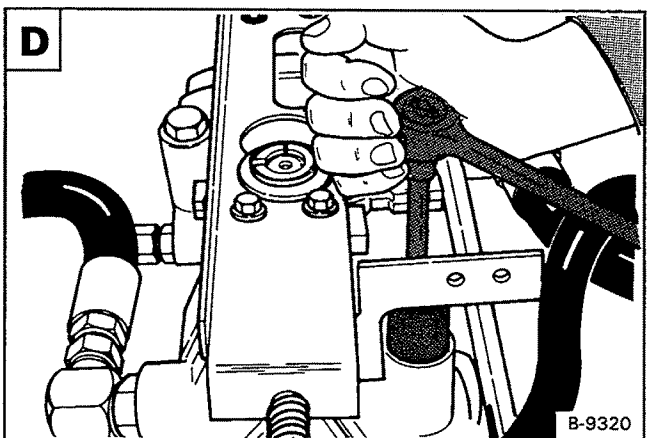
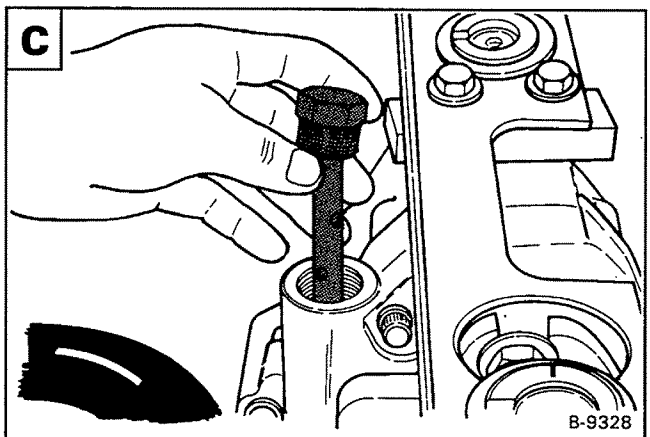
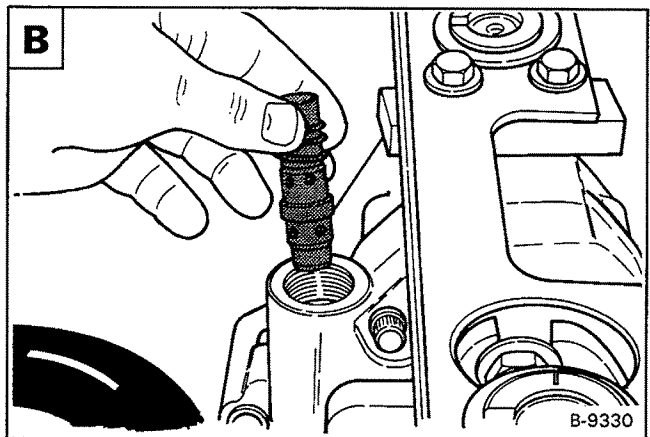
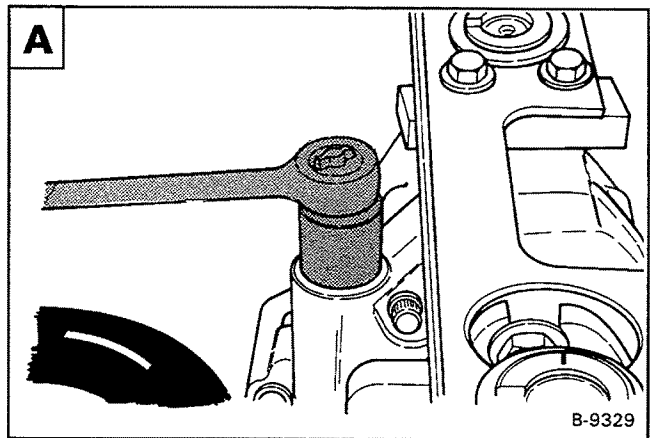
Raise the operator cab (See Page 1-7 for the correct procedure).

Remove the high pressure relief plug **A**.

Remove the high pressure relief valve **B**.

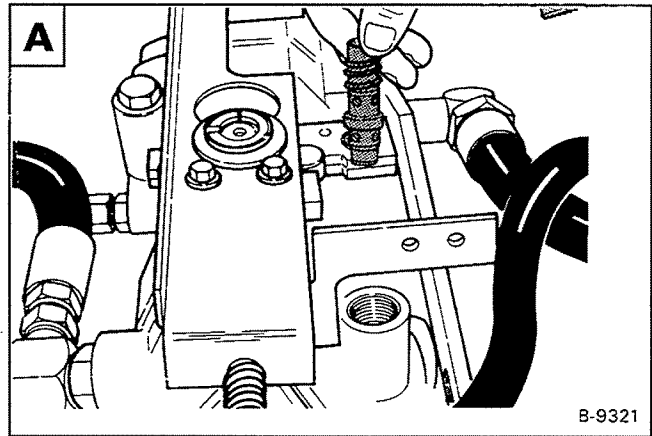
Install the tow bar and tighten the plug **C**.

Remove the other high pressure relief plug **D**.



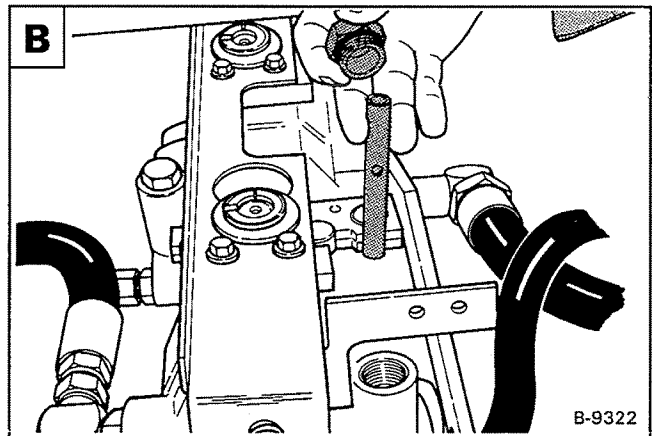
HYDROSTATIC PUMPS (Cont'd)

Remove the high pressure relief valve **A**.



Install the tow bar and tighten the plug **B**.

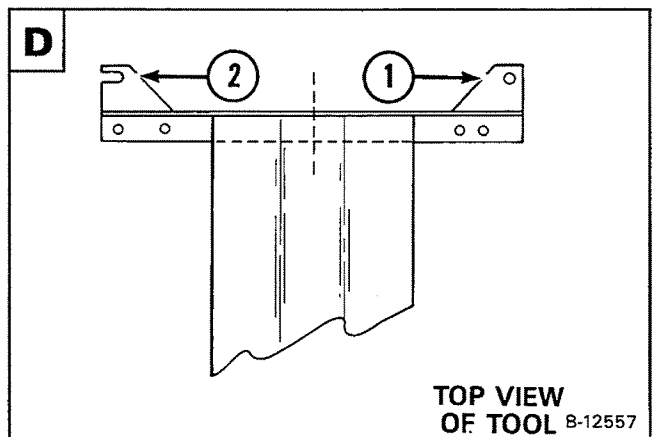
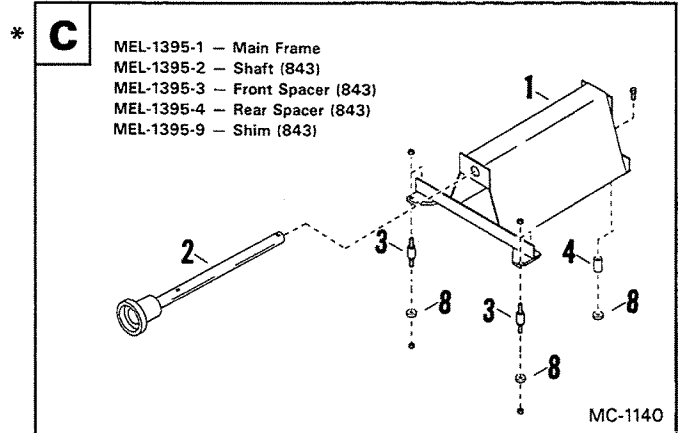
The loader can now be moved. Be sure to remove the tow bars before operating the loader.



Hydrostatic Pump Rear Mount (S/N 21574 & Above)

The tool has more than one application. Assembly parts needed for the 843 loader are listed in figure **C**.

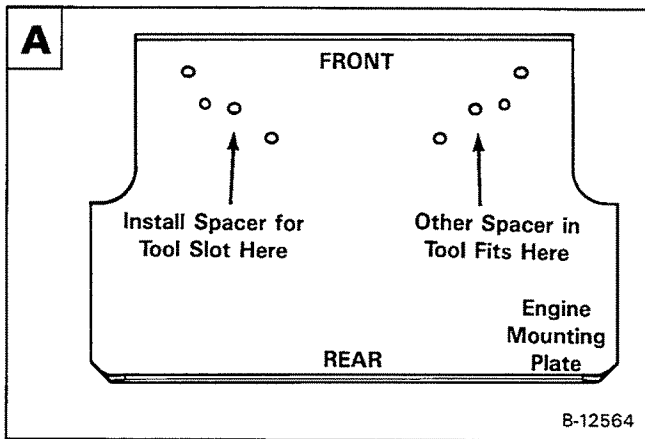
1. Remove the engine from the loader (Page 7C-17).
2. Install the spacer (Item 3) **C** in the right hand hole in the belly pan as shown figure **A**; Page 3-53. Install the nut to hold the spacer in place.
3. Install the second spacer (Item 3) **C** in the slotted hole in the belly pan as shown in figure **A**; Page 3-53. Push the spacer fully to the left end of the hole.
4. Install the bolt through the spacer (Item 4) at the rear of the tool main frame **C**.
5. Install the shaft (Item 2) into the main frame **C**.
6. Install the tool into the loader so the slot (Item 2) **D** fits on the spacer in the belly pan and align the tool so the spacer in the hole (Item 1) **D** fits in the belly pan hole (Fig. **A**, Page 3-53).
7. From under the loader, install the nuts on the spacer and tighten.



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HYDROSTATIC PUMPS (Cont'd)

8. Loosen the pump mounting bolts. Slide the tool shaft forward and rotate until its aligned with the pump coupler.
9. Tighten the pump mounting bolts. Pull the tool shaft from the pump splines and check alignment by sliding the tool shaft forward onto the pump shaft. Adjust pump height with spacers (Item 1) as needed **B**.
10. Remove the alignment tool.



HYDROSTATIC FLUID FILTER HOUSING

Removal and Installation

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

I-2021-0284

Lift and block the loader (See Page 1–2 for the correct procedure).

Open the rear door.

Disconnect the wire from the sending switch.

■ Disconnect the tubelines from the filter housing **C**.

■ Remove the mounting bolts **D**.

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

■ Remove the differential pressure switch **D**.

Inspect all the parts for damage and replace as needed.

NOTE: 843 (S/N 20992 & Above) use a higher pressure rating of the switch. Make sure to install the correct switch if it is replaced (See Parts Microfiche).

