

Product: Bobcat Rotating Grapple Service Repair Workshop Manual

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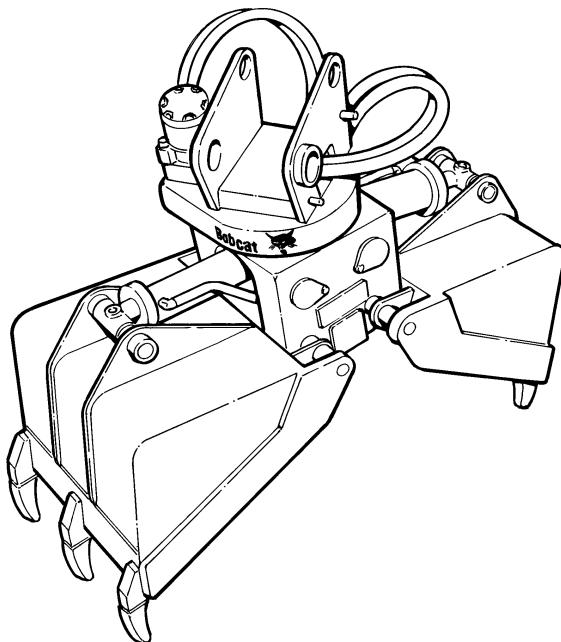


Bobcat®

Rotating Grapple

Service Manual

(Model 30) - S/N 775400101 & Above
(Model 30) - S/N 775700101 & Above
(Model 40) - S/N 775300101 & Above
(Model 40) - S/N 775600101 & Above



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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.

CORRECT



B-10731a

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



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**SAFETY &
MAINTENANCE**

**HYDRAULIC
SYSTEM**

**MAIN
FRAME**

SPECIFICATIONS

**CALIFORNIA
PROPOSITION 65 WARNING**

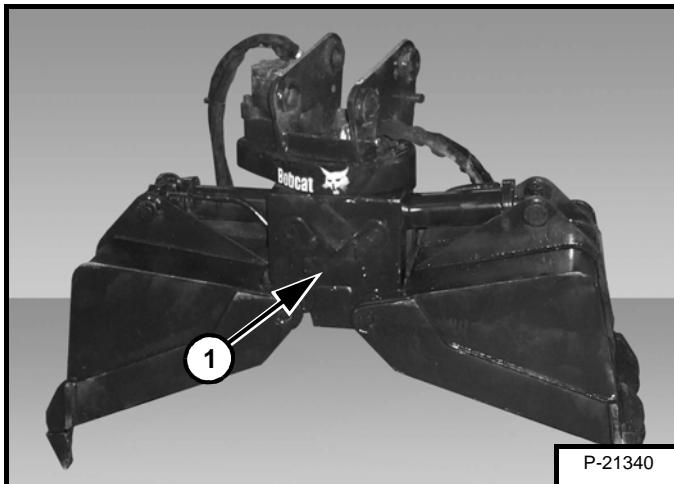
Diesel engine exhaust and some of its constituents
are known to the State of California to cause cancer,
birth defects and other reproductive harm.



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SERIAL NUMBER LOCATION

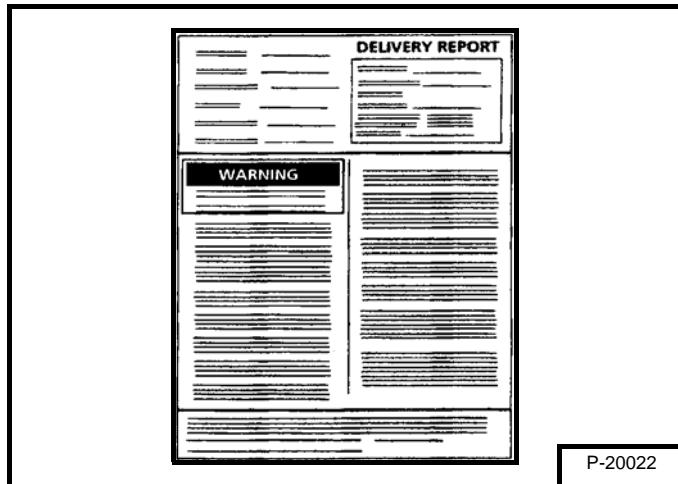
Figure 1



Always use the serial number (Item 1) [Figure 1] of the Rotating Grapple when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

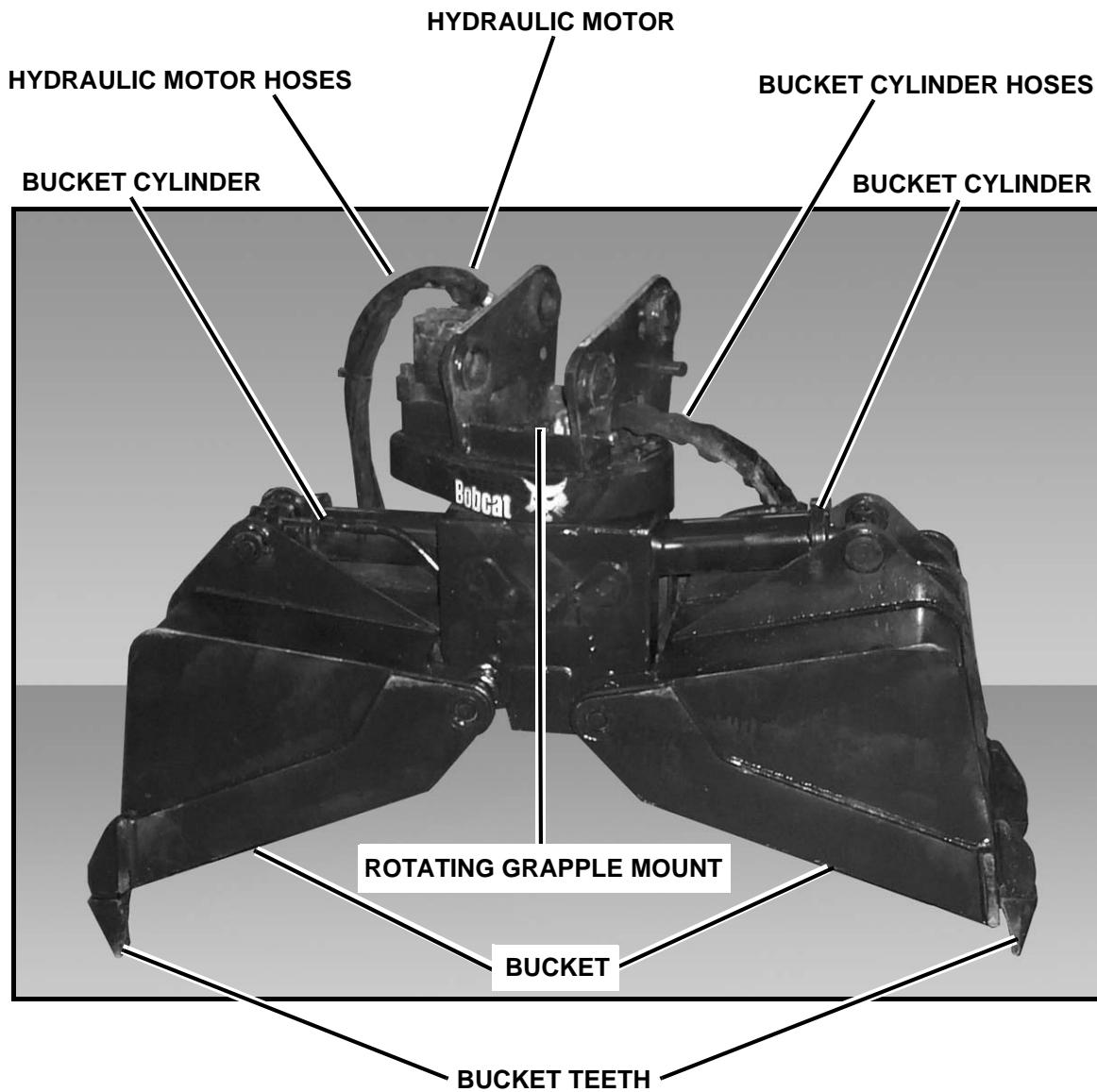
ATTACHMENT DELIVERY REPORT

Figure 2



The attachment delivery report [Figure 2] must be filled out by the dealer and signed by the owner or operator when the Rotating Grapple is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely.

IDENTIFICATION



P-21340

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Rotating Grapple Mount Inspection	10-20-1
LUBRICATION	10-30-1
Daily Lubrication	10-30-1
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TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Grapple will not rotate.	Secondary auxiliary switch not activated.	Push switch to the right. Check fuses.
	Offset load is to heavy.	Lighten load or reposition load.
	Motor shaft broken.	Replace motor. Check relief valves for correct setting.
	Broken gear teeth.	Replace pinion or main gear.
	Control valve malfunction.	Check plumbing. Check for contamination. Check solenoid.
	Plugged or broken orifice.	Replace orifice fitting at quick coupler.
Grapple will not clamp.	Secondary auxiliary switch not activated.	Push switch to the right.
	Malfunctioning swivel.	Reseal swivel.
	Debris lodged in grapple.	Clear debris.

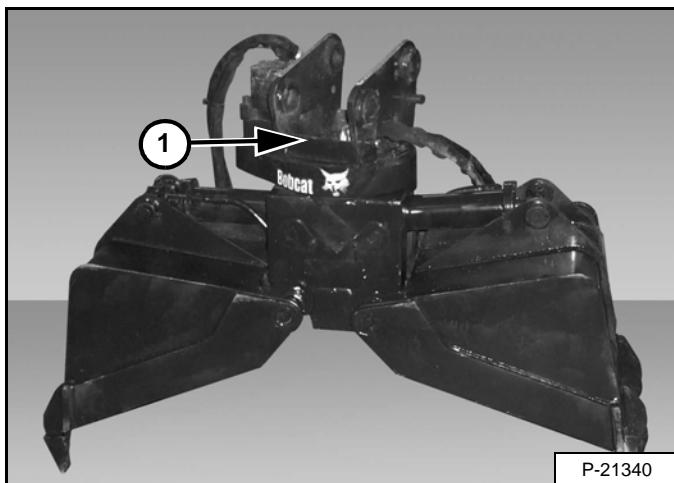


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INSPECTION

Rotating Grapple Mount Inspection

Figure 10-20-1



Inspect the Rotating Grapple mount (Item 1) [Figure 10-20-1] and all welds on the Rotating Grapple for wear or damage each time the Rotating Grapple is removed from the excavator. Check for loose or damaged hoses and fittings, leaking swivel, leaking cylinders and replace damaged teeth.



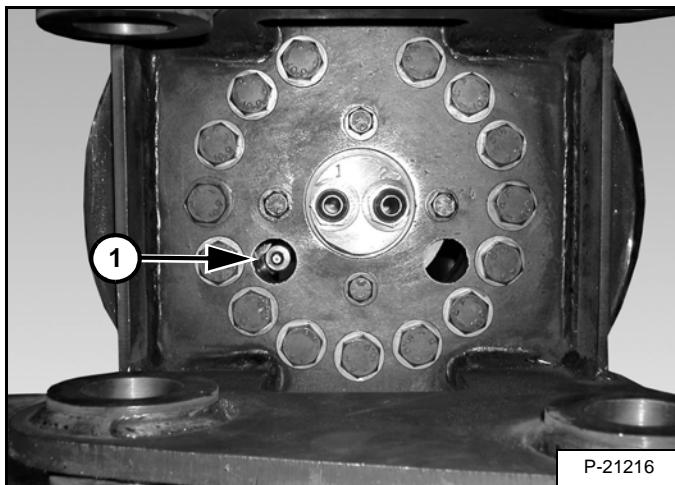
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LUBRICATION

Always use a good quality lithium base grease when lubricating the Rotating Grapple. Apply the lubricant until extra grease shows.

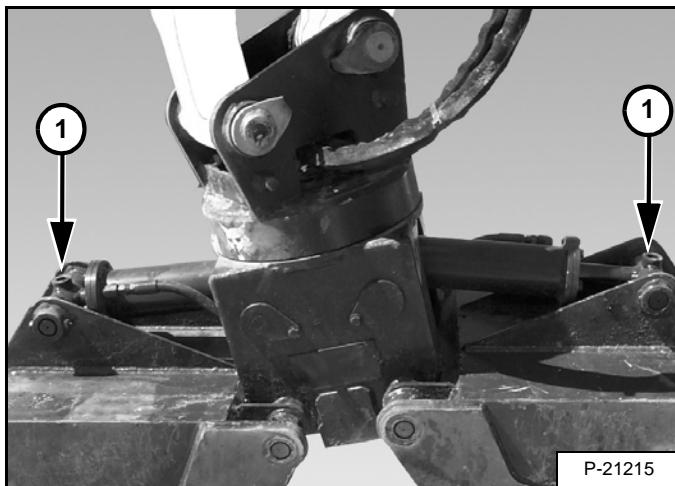
Daily Lubrication

Figure 10-30-1



Add grease to the fitting (Item 1) [Figure 10-30-1] on the bottom of rotating mount.

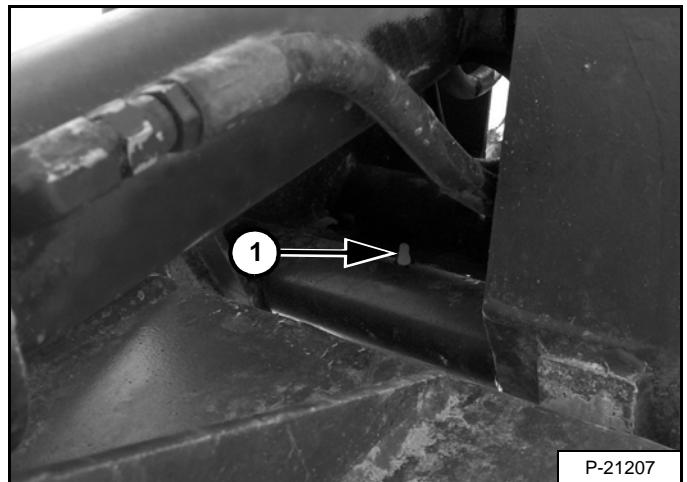
Figure 10-30-2



Add grease to both ends of the bucket cylinders.

NOTE: Rod end (Item 1) [Figure 10-30-2] of bucket cylinders shown

Figure 10-30-3



Add grease to both bucket pivot pins (Item 1) [Figure 10-30-3].



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HYDRAULIC SYSTEM

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**HYDRAULIC
SYSTEM**



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RELIEF VALVE

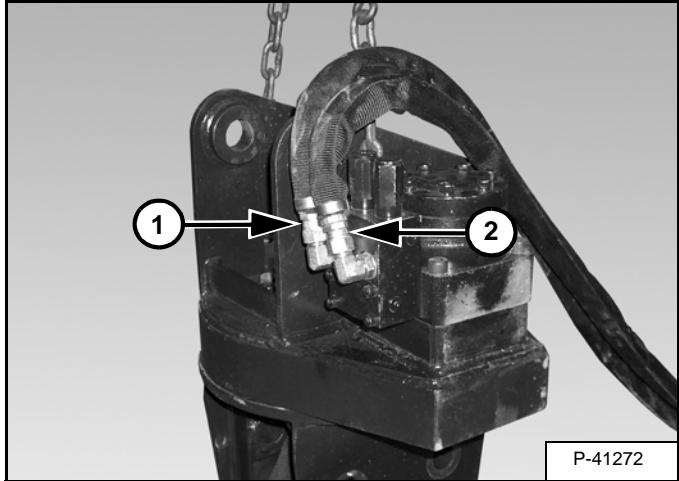
Removal And Installation

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.

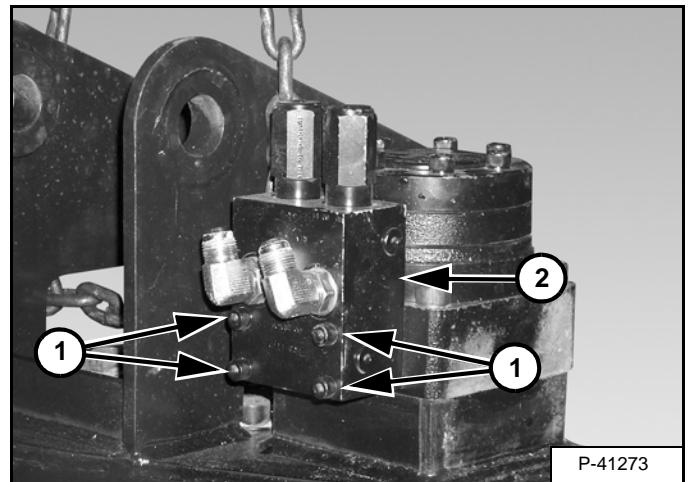
I-2003-0888

Figure 20-10-1



Remove hydraulic hoses (Items 1 and 2) [Figure 20-10-1].

Figure 20-10-2



Remove bolts (Item 1) [Figure 20-10-2].

Installation: Tighten bolts to 180-200 In.-lb. (21-23 N•m) torque.

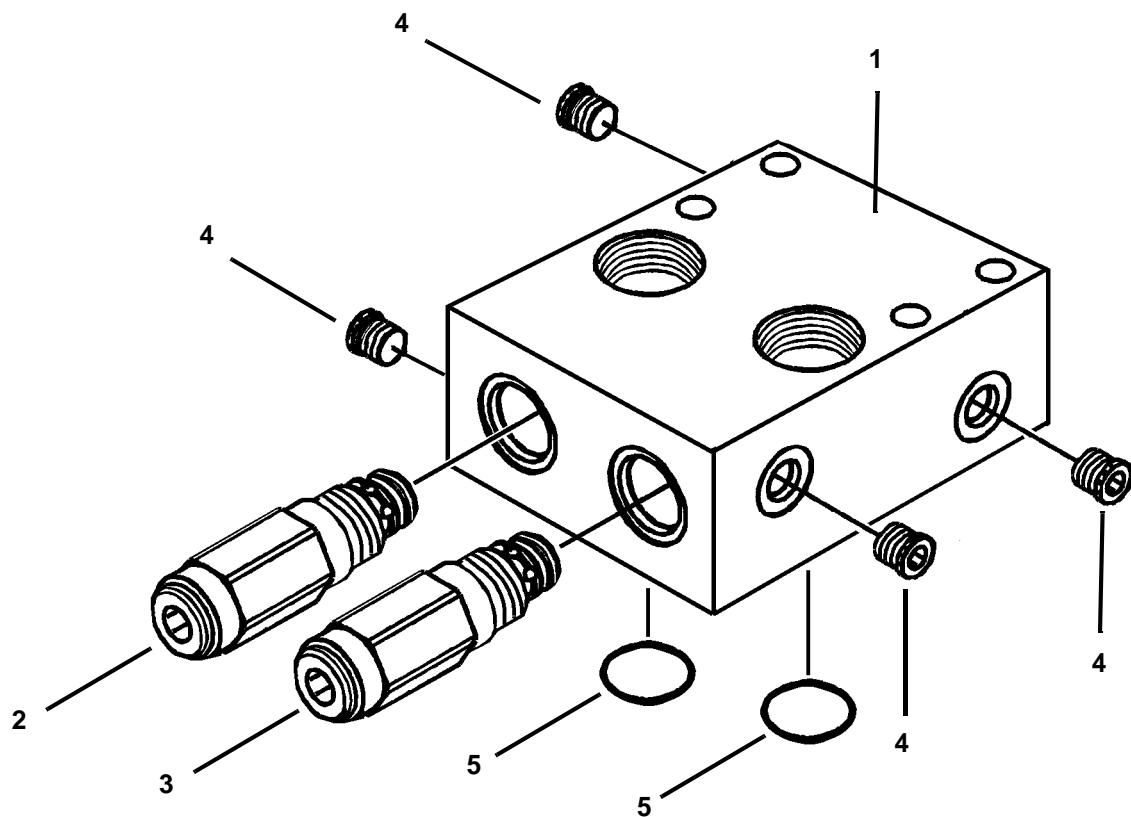
Remove the control valve (Item 2) [Figure 20-10-2].

Installation: When installing the control valve, make sure the two O-rings between the control valve and motor are in their correct position.

RELIEF VALVE (Cont'd)

Parts Identification

1. Manifold Block
2. Relief Valve
3. Relief Valve
4. Plug
5. O-ring



P-41446

RELIEF VALVE (Cont'd)

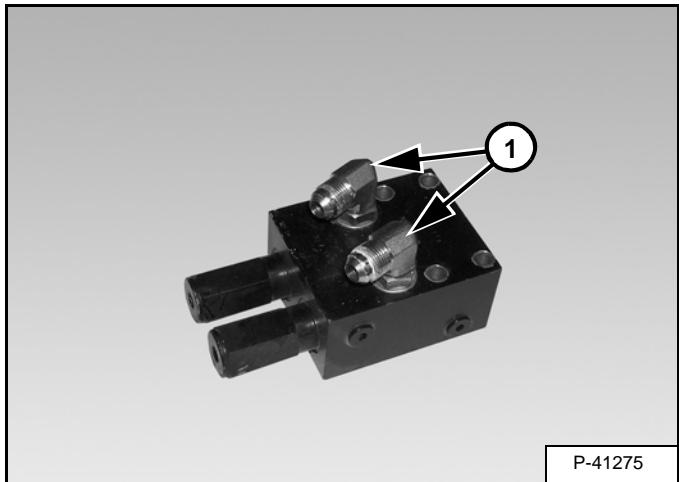
Disassembly And Assembly

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.

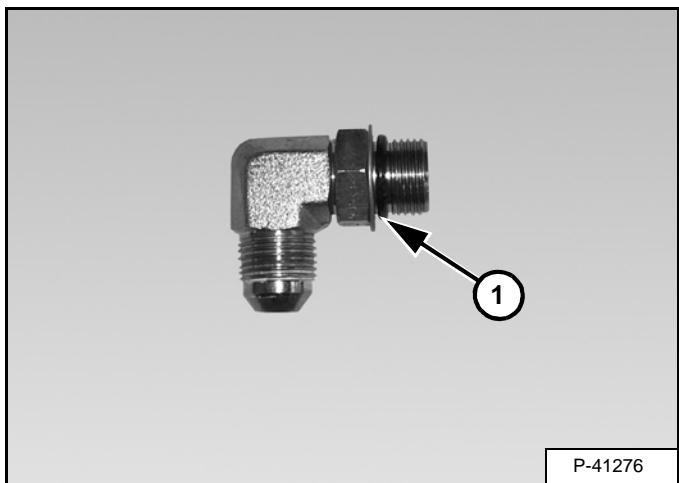
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Figure 20-10-3



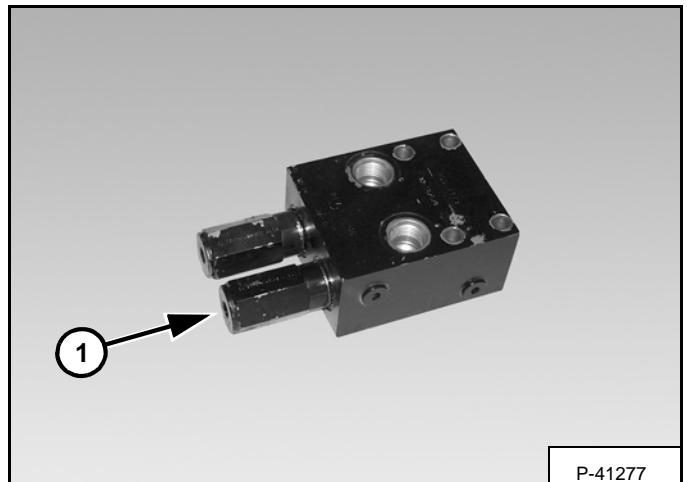
Remove fittings (Item 1) [Figure 20-10-3].

Figure 20-10-4



Remove o-ring (Item 1) [Figure 20-10-4] from both fittings.

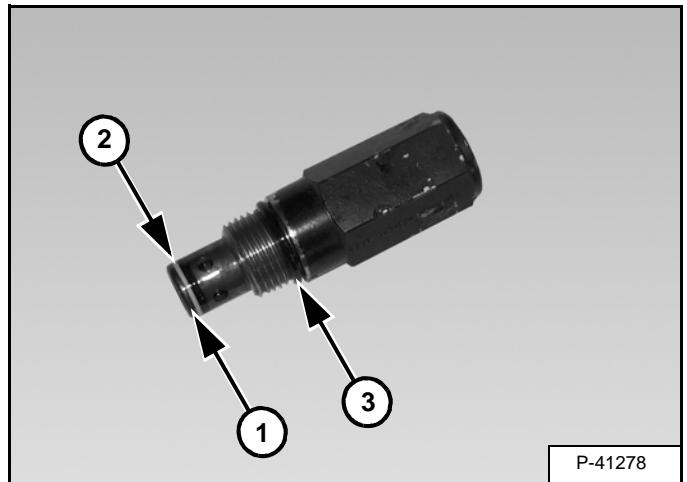
Figure 20-10-5



Remove relief valve (Item 1) [Figure 20-10-5].

Installation: Tighten relief valve to 25-30 ft.-lb. (34-41 N•m) torque.

Figure 20-10-6



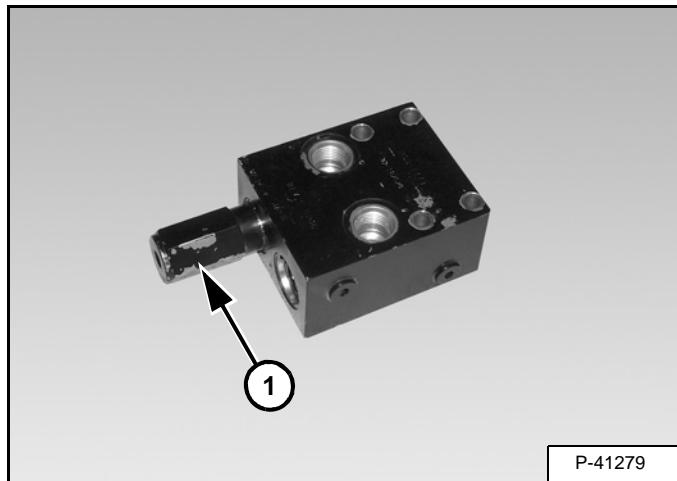
Remove o-ring (Item 1) [Figure 20-10-6] and back-up ring (Item 2) [Figure 20-10-6].

Remove o-ring (Item 3) [Figure 20-10-6].

RELIEF VALVE (Cont'd)

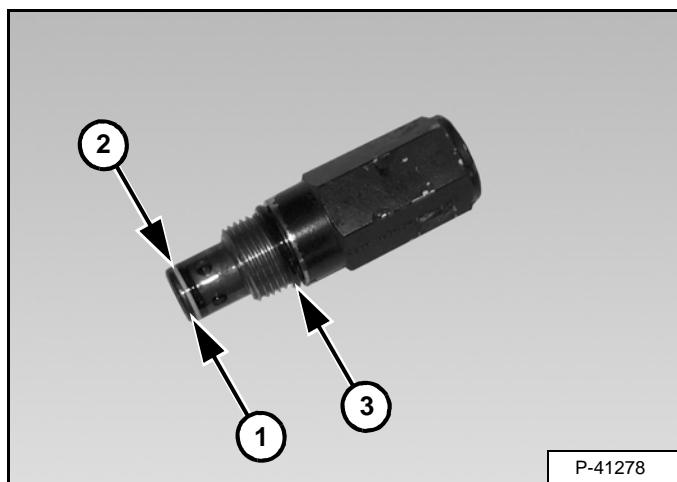
Disassembly And Assembly

Figure 20-10-7



Remove the relief valve (Item 1) [Figure 20-10-7].

Figure 20-10-8



Remove o-ring (Item 1) [Figure 20-10-8] and back-up ring (Item 2) [Figure 20-10-8].

Remove o-ring (Item 3) [Figure 20-10-8].

BUCKET CYLINDER

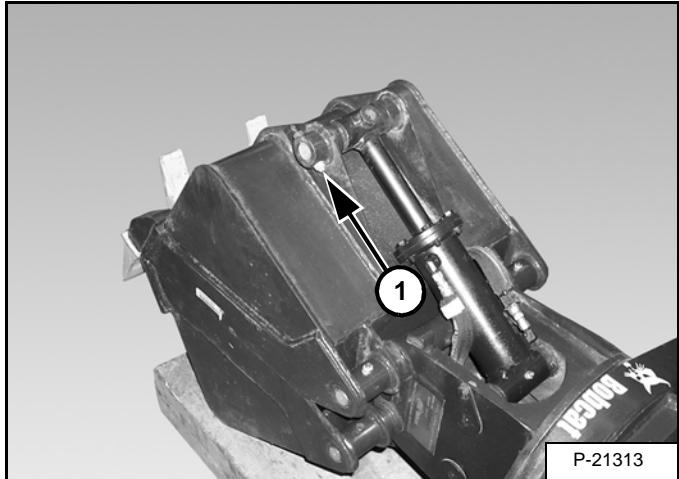
Removal And Installation

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.

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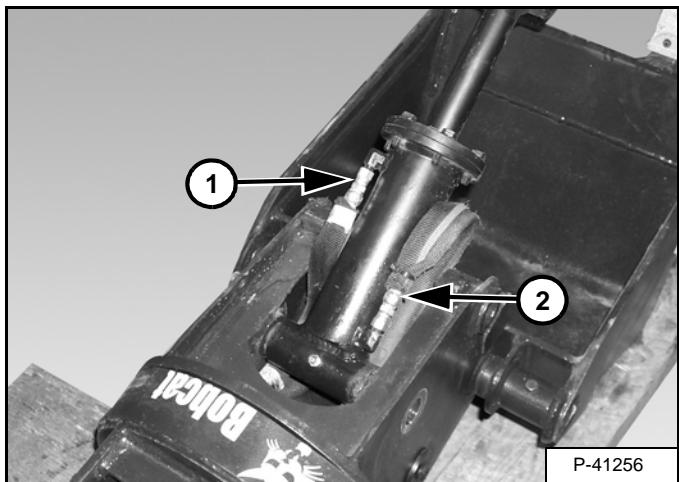
Figure 20-20-1



Remove retaining bolt (Item 1) [Figure 20-20-1].

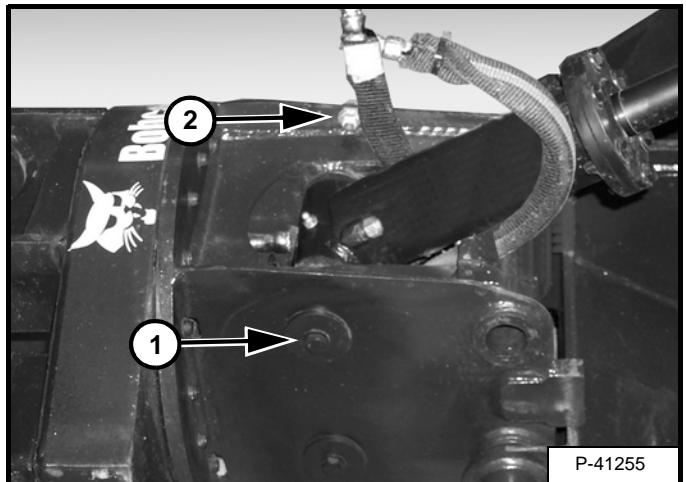
Installation: Tighten bolt to 25-28 ft.-lb. (34-38 N•m) torque.

Figure 20-20-2



Remove hydraulic hoses (Items 1 and 2) [Figure 20-20-2].

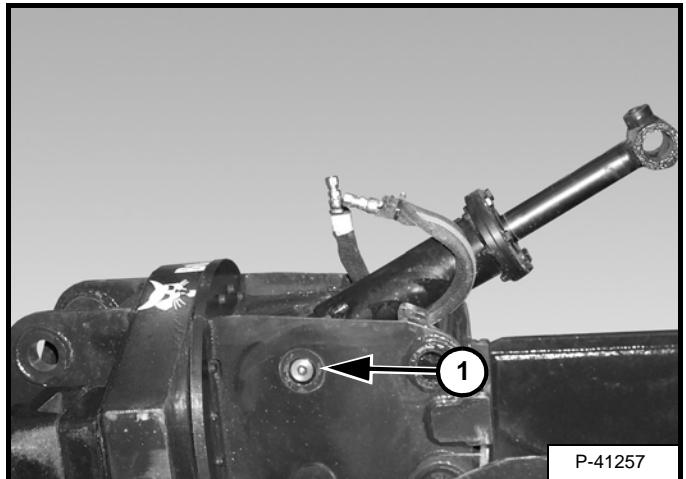
Figure 20-20-3



Remove bolts (Item 1 and 2) [Figure 20-20-3].

Installation: Tighten bolts to 25-28 ft.-lb. (34-38 N•m) torque.

Figure 20-20-4

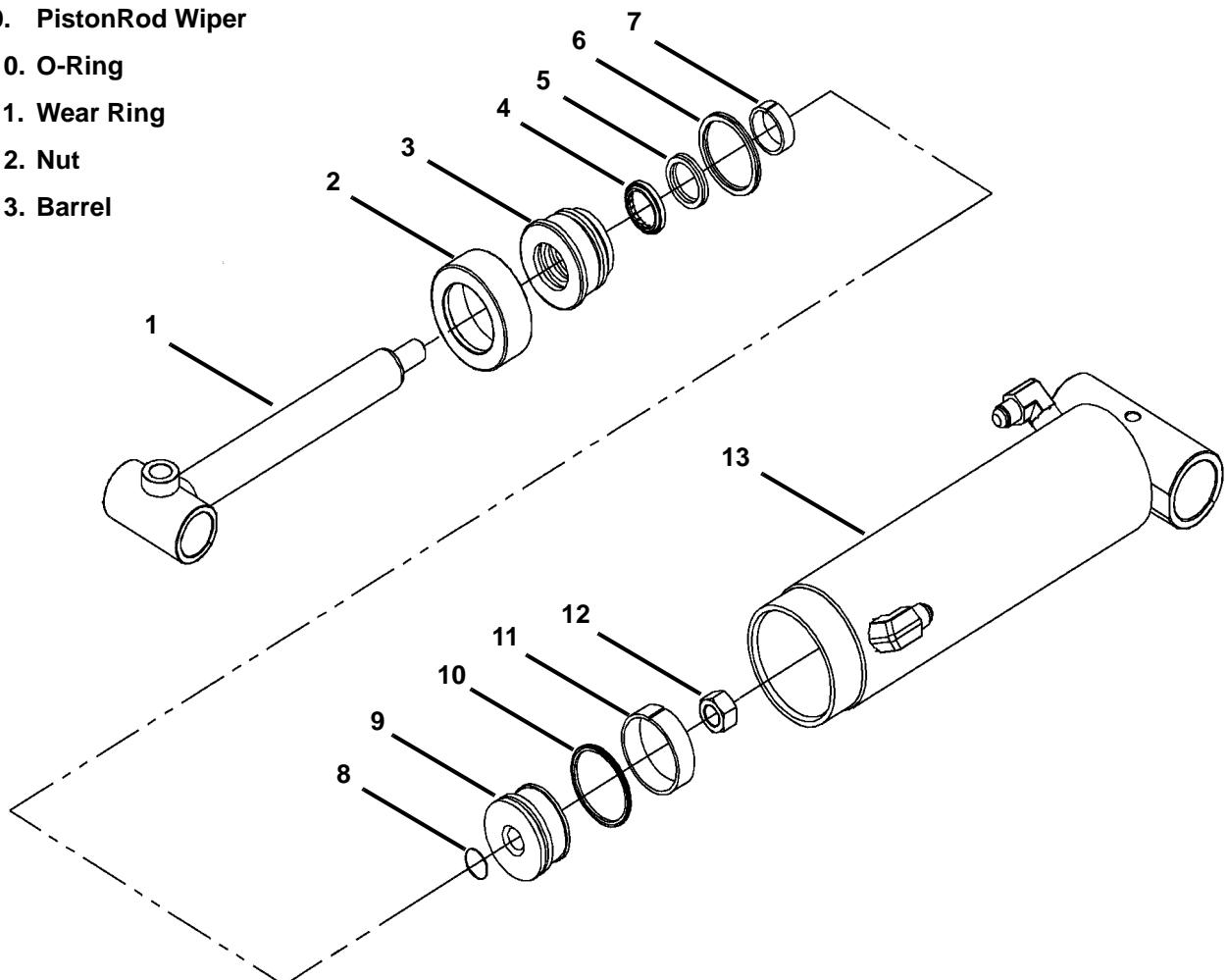


Remove pivot pin (Item 1) [Figure 20-20-4]. Remove cylinder.

BUCKET CYLINDER (Cont'd)

Parts Identification

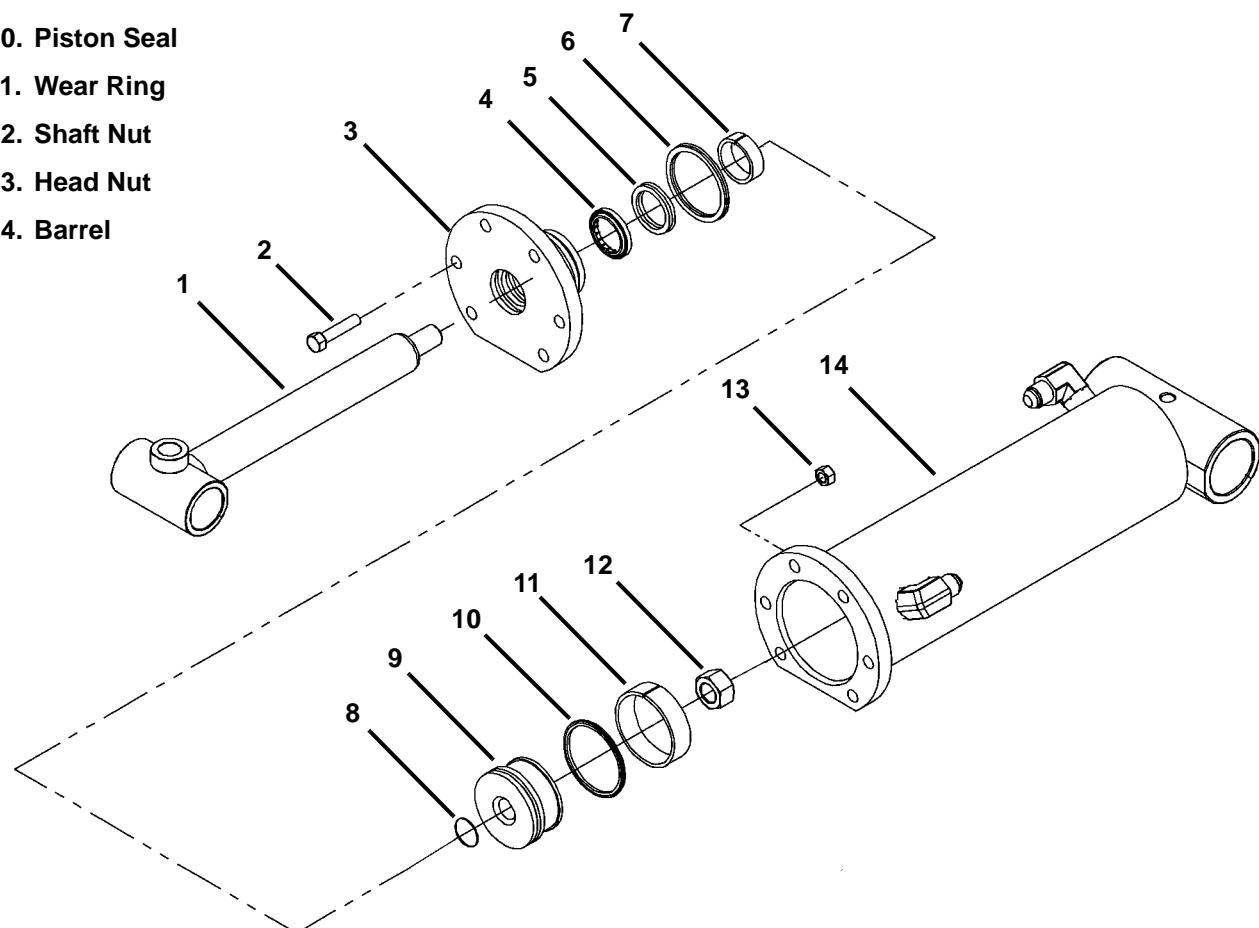
1. Shaft
2. Cap
3. Head
4. Seal
5. Rod Seal
6. O-Ring
7. Wear Ring
8. O-ring
9. PistonRod Wiper
10. O-Ring
11. Wear Ring
12. Nut
13. Barrel



BUCKET CYLINDER (Cont'd)

Parts Identification

1. Shaft
2. Head Bolt
3. Head
4. Seal
5. Rod Wiper
6. O-ring
7. Wear Ring
8. O-ring
9. Piston
10. Piston Seal
11. Wear Ring
12. Shaft Nut
13. Head Nut
14. Barrel



BUCKET CYLINDER (Cont'd)

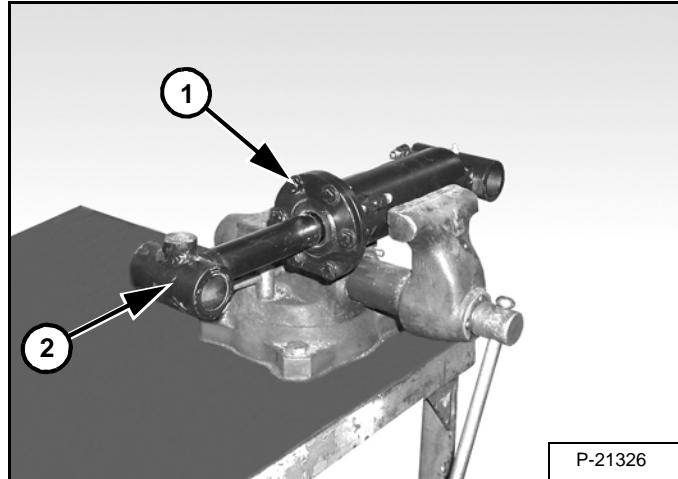
Disassembly

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.

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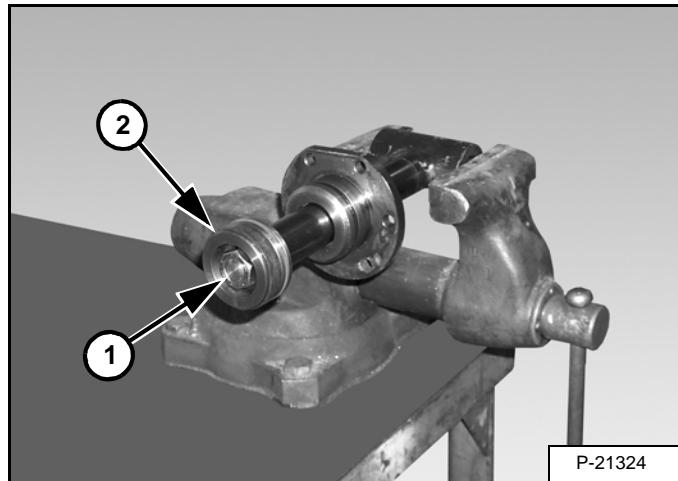
Figure 20-20-5



Remove bolts (Item 1) [Figure 20-20-5].

Remove rod assembly (Item 2) [Figure 20-20-5].

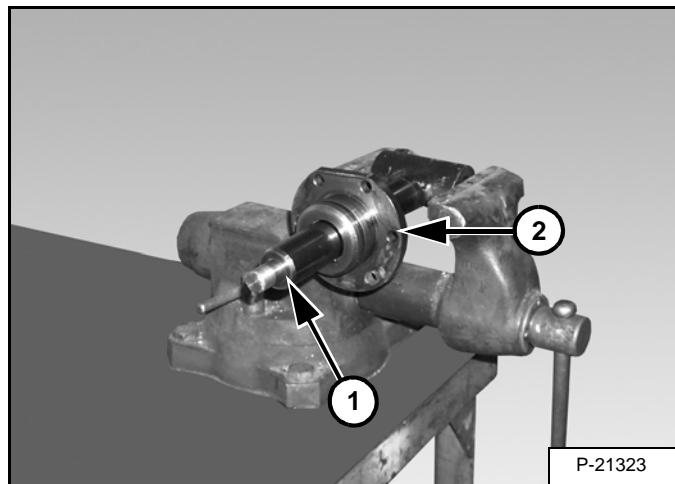
Figure 20-20-6



Remove nut (Item 1) [Figure 20-20-6]. Remove piston (Item 2) [Figure 20-20-6].

Installation: Tighten nut to 230 ft.-lbs. (310.5 N•m) torque.

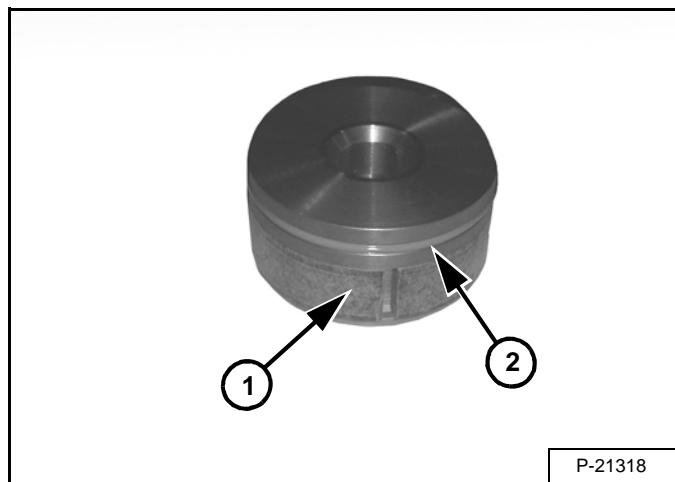
Figure 20-20-7



Remove o-ring (Item 1) [Figure 20-20-7].

Remove head (Item 2) [Figure 20-20-7].

Figure 20-20-8



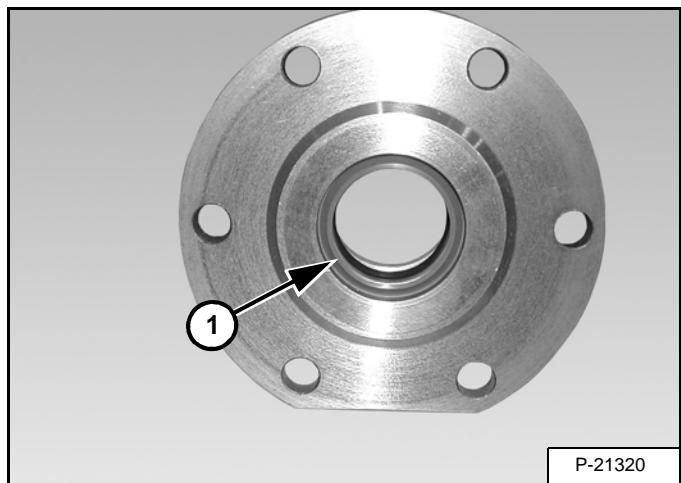
Remove wear ring (Item 1) [Figure 20-20-8].

Remove seal (Item 2) [Figure 20-20-8].

BUCKET CYLINDER (Cont'd)

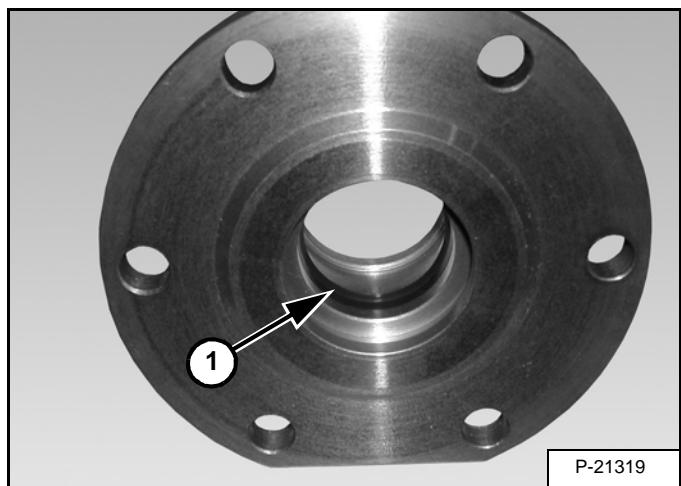
Disassembly (Cont'd)

Figure 20-20-9



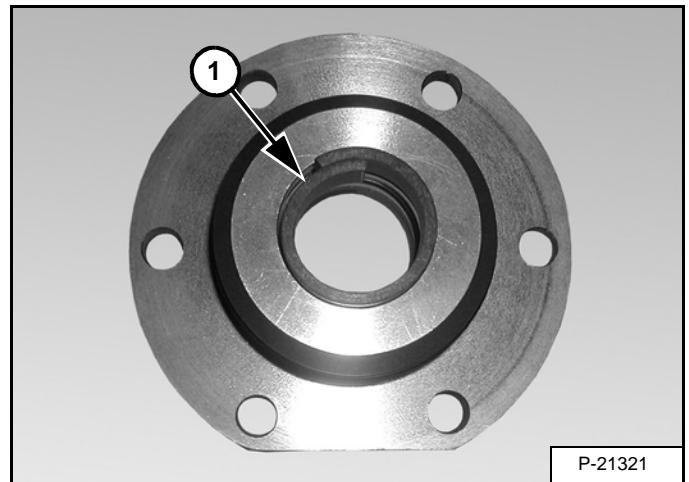
Remove rod wiper (Item 1) [Figure 20-20-9].

Figure 20-20-10



Remove rod seal (Item 1) [Figure 20-20-10].

Figure 20-20-11



Remove wear ring (Item 1) [Figure 20-20-11].

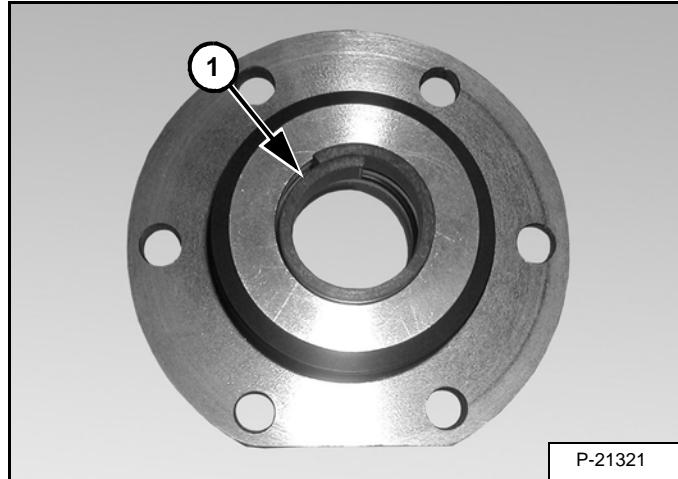
Assembly

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.

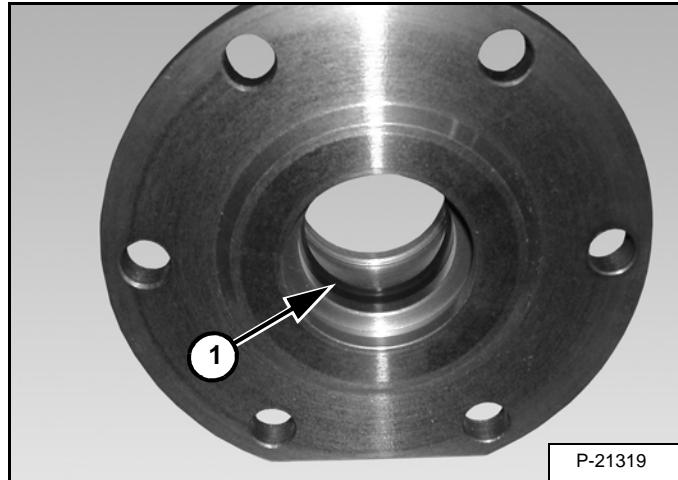
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Figure 20-20-12



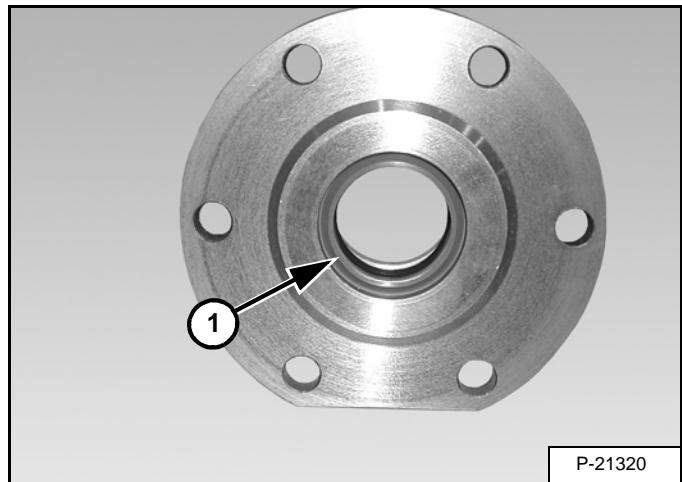
Install wear ring (Item 1) [Figure 20-20-12].

Figure 20-20-13



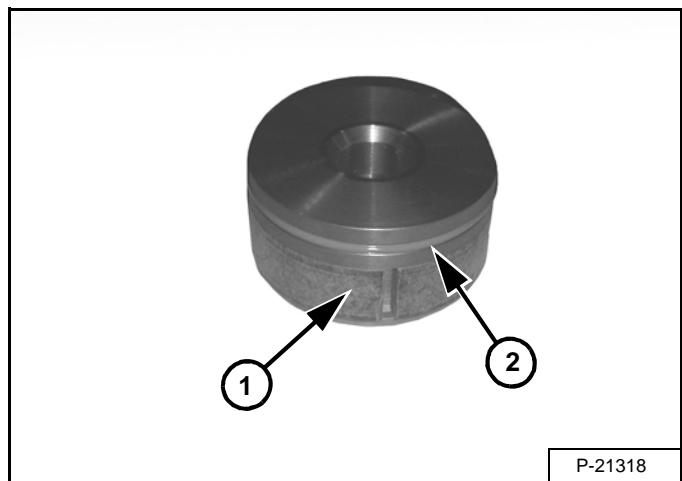
Install rod seal (Item 1) [Figure 20-20-13].

Figure 20-20-14



Install rod wiper (Item 1) [Figure 20-20-14].

Figure 20-20-15



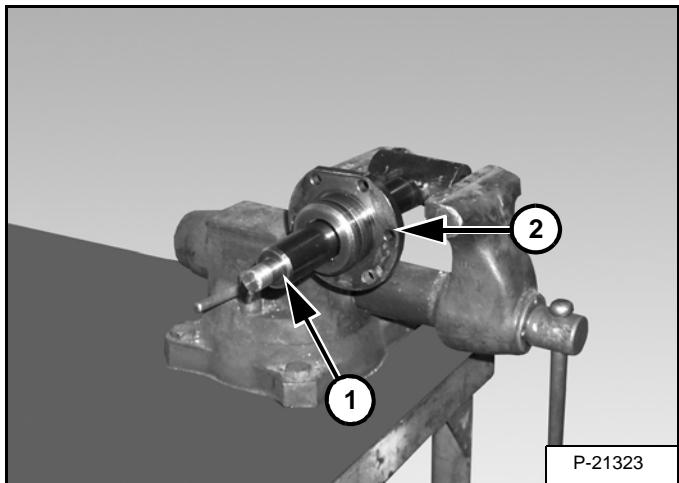
Install wear ring (Item 1) [Figure 20-20-15].

Install seal (Item 2) [Figure 20-20-15].

BUCKET CYLINDER (Cont'd)

Assembly (Cont'd)

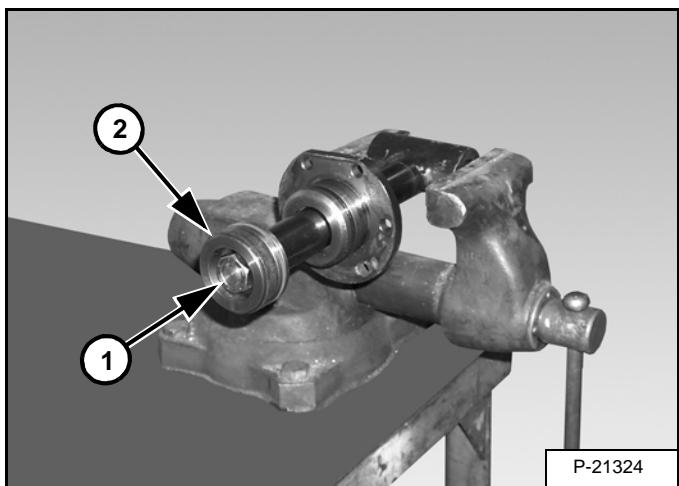
Figure 20-20-16



Install o-ring (Item 1) [Figure 20-20-16].

Install head (Item 2) [Figure 20-20-16].

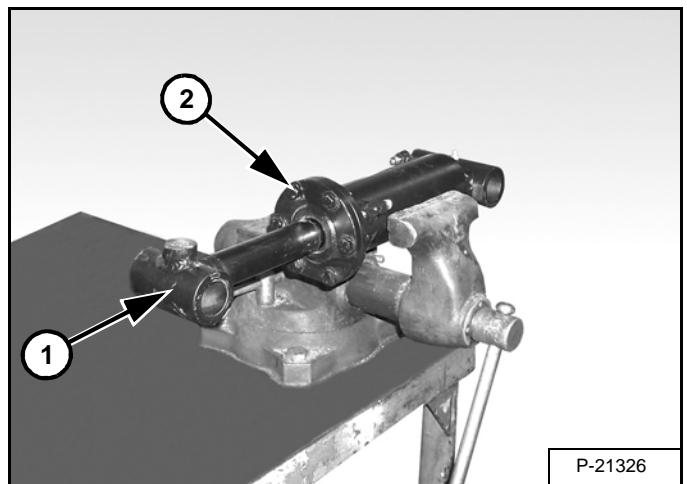
Figure 20-20-17



Install piston (Item 1) [Figure 20-20-17]. Install nut (Item 2) [Figure 20-20-17].

Installation: Tighten bolt to 230 ft.-lb. (310.5 N•m) torque.

Figure 20-20-18



Install rod assembly (Item 1) [Figure 20-20-18].

Install bolts (Item 2) [Figure 20-20-18].

Installation: Tighten bolts to 25-28 ft.-lb. (34-38 N•m) torque.

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