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# Bobcat®

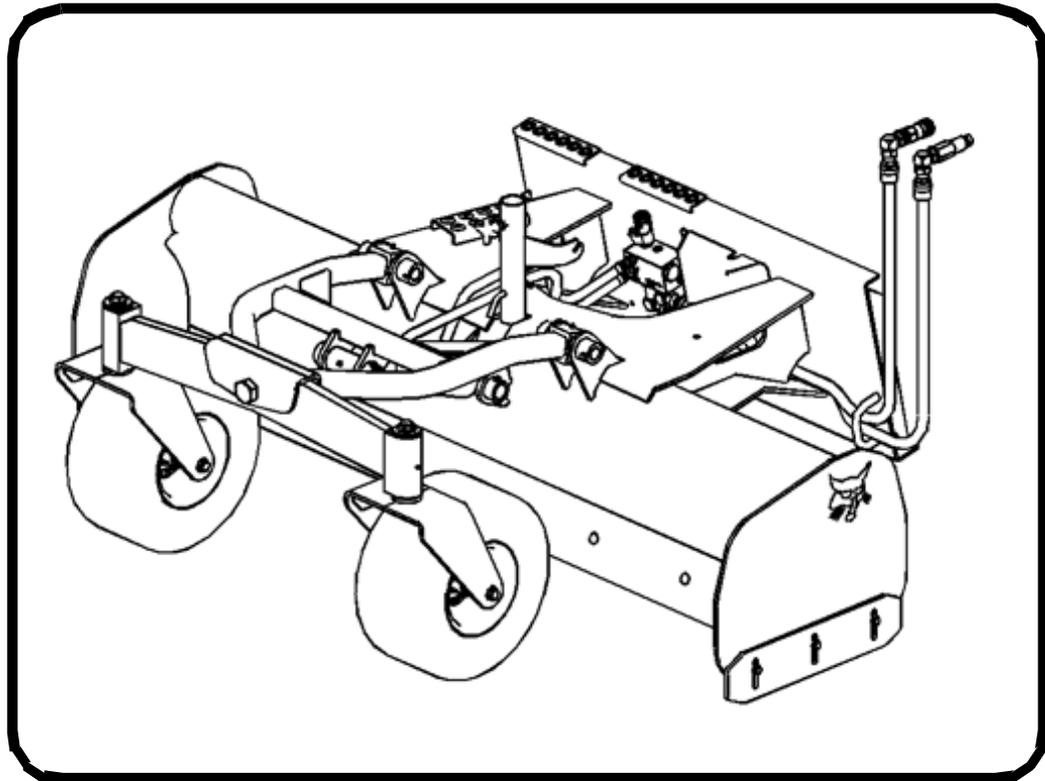
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## Service Manual

# Box Blade

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**Box Blade S/N 657400101 & Above**  
**Box Blade Laser S/N 657500101 & Above**



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# MAINTENANCE SAFETY



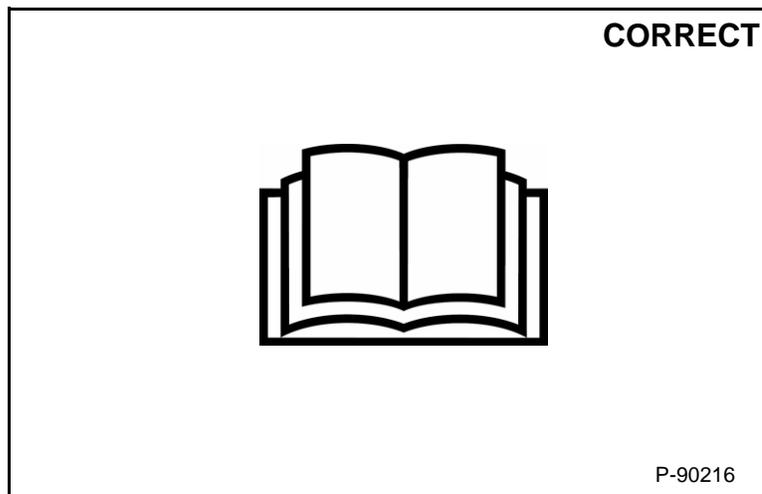
## WARNING

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-2003-0807



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



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



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**SAFETY AND  
MAINTENANCE**

**HYDRAULIC  
SYSTEM**

**MAIN  
FRAME**

**SPECIFICATIONS  
AND  
SCHEMATICS**

## REFERENCE INFORMATION

Write the correct information for YOUR box blade in the spaces below. Always use these numbers when referring to your box blade.

Box Blade Serial Number

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NOTES:

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YOUR BOBCAT® DEALER:

ADDRESS:

PHONE:

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Bobcat Company  
P.O. Box 128  
Gwinner, ND 58040-0128

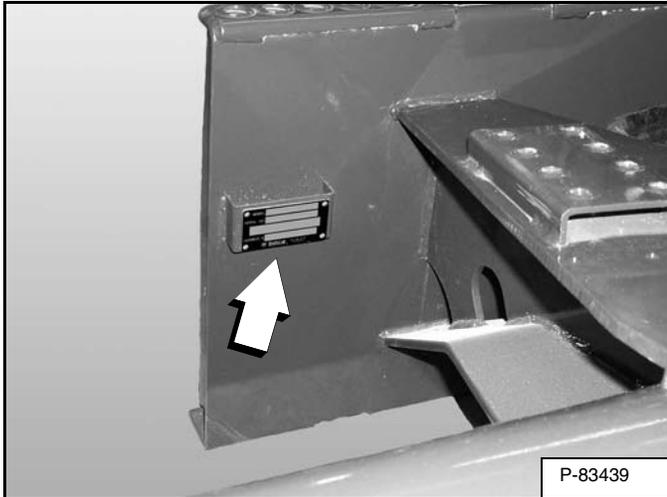
Bobcat Company Europe  
Drève Richelle 167  
B-1410 WATERLOO  
Belgium



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## SERIAL NUMBER LOCATION

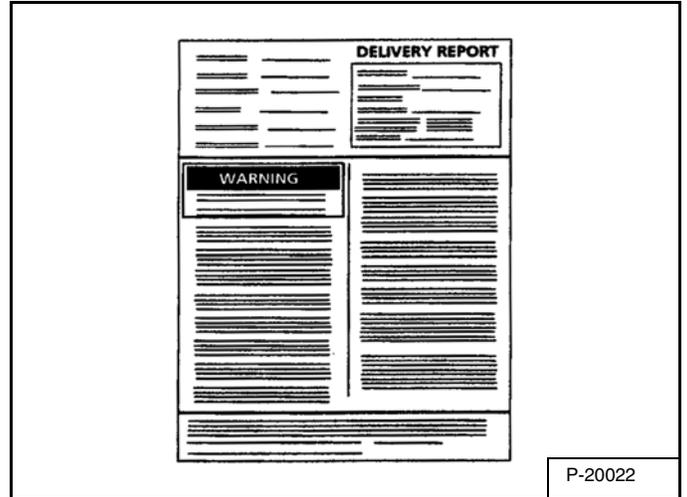
Figure 1



Always use the serial number of the box blade 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 [Figure 1].

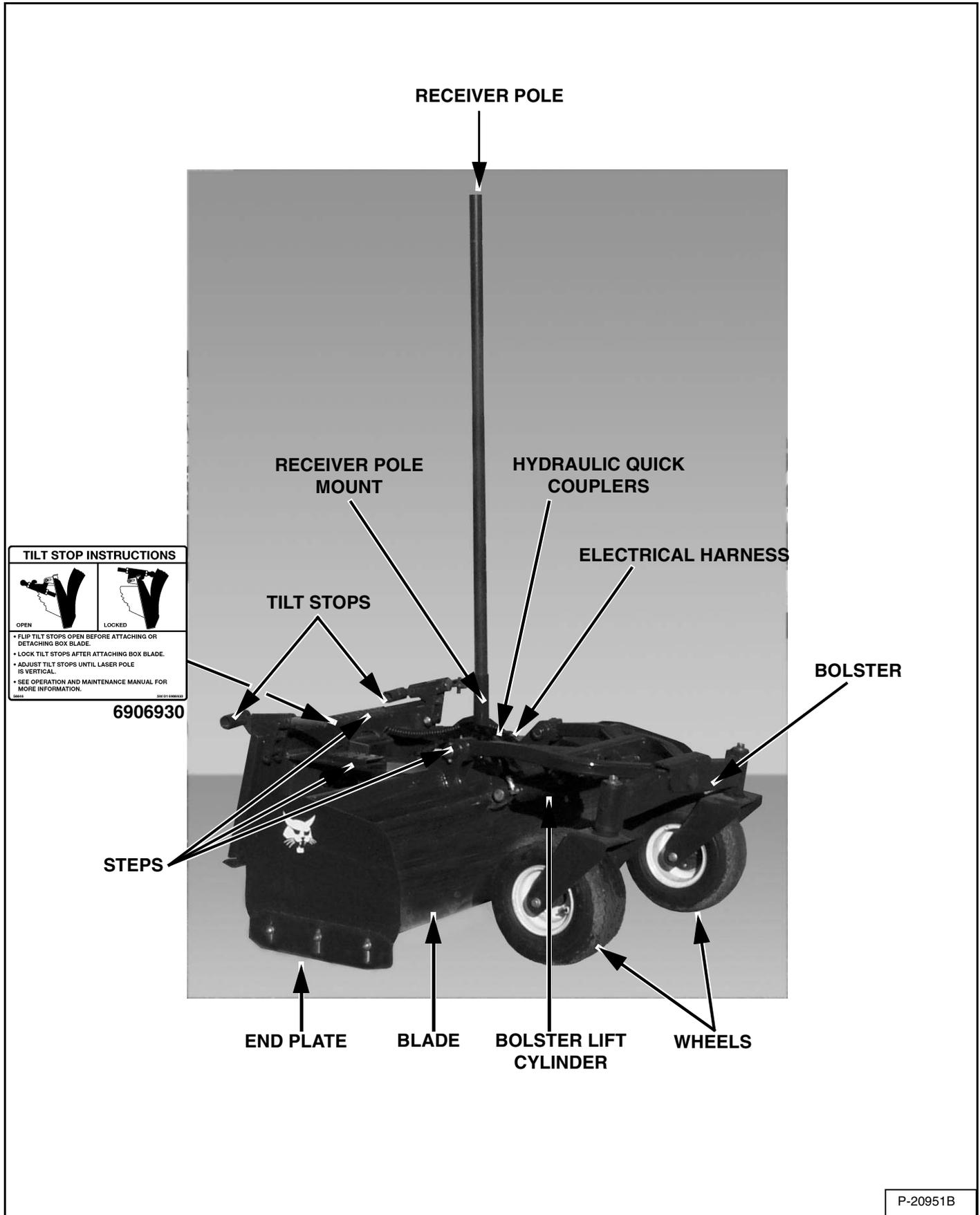
## DELIVERY REPORT

Figure 2



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

# IDENTIFICATION AND MACHINE SIGNS (DECALS)



## SAFETY AND MAINTENANCE

## SAFETY AND MAINTENANCE

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## TROUBLESHOOTING

### Box Blade Chart

TROUBLESHOOTING THE BOX BLADE		
PROBLEM	CAUSE	CORRECTION
Box Blade does not seat properly on the Bob-Tach.	Bob-Tach pins are not fully retracted prior to installation.	Retract Bob-Tach pins before installation.
	Mud, dirt or stones are lodged between the Bob-Tach and the box blade.	Dislodge object from between Bob-Tach and box blade.
Bolster cylinder does not raise or lower.	No hydraulic flow.	Activate loader front auxiliary hydraulics.
		Check quick couplers connection. Check for damaged hose ends and fittings.
Laser graded surface is uneven.	Excessive ground speed.	Drive slower.
	Tilt stops not set.	Set tilt stops.
	Laser pole not vertical.	Adjust laser pole and set tilt stops.
	Receiver correction speed set too slow for ground speed.	Drive slower or increase correction speed.
Trimble Support Machine Control - Construction Instructions Americas: 1 - 800 - 538 - 7800 (Option 3 For Support) Outside Of Americas: 1 - 303 - 323 - 4111 E-Mail: Trimble_Support@Trimble.com		

## TROUBLESHOOTING (CONT'D)

### GCR Receiver Chart

TROUBLESHOOTING THE GCR RECEIVER		
PROBLEM	CAUSE	CORRECTION
Unit will not turn on.	No power to the unit.	Make sure the system's Power Cable is connected to the machine's battery.
	Not enough power to the unit.	Make sure the machine has enough power (9 to 30 V DC required).
	Receiver cable loose.	Make sure the Grade Control Receiver cable is secure at both ends.
	Bad fuse.	Check the fuse.
	Receiver cable is bad.	If you have a spare, try a different Grade Control Receiver cable.
NOTE: For other problems related to the laser products, see Trimble Operation Manual or contact your Bobcat Dealer.		
Trimble Support Machine Control - Construction Instructions Americas: 1 - 800 - 538 - 7800 (Option 3 For Support) Outside Of Americas: 1 - 303 - 323 - 4111 E-Mail: Trimble_Support@Trimble.com		

### BLR2 Receiver Chart

TROUBLESHOOTING THE BLR2 RECEIVER		
PROBLEM	CAUSE	CORRECTION
Unit will not turn on.	No power to the unit.	Make sure the system's Power Cable is connected to the machine's battery.
	Not enough power to the unit.	Make sure the machine has enough power (9 to 30 V DC required).
	Receiver cable loose.	Make sure the Grade Control Receiver cable is secure at both ends.
	Bad fuse.	Check the fuse.
	Receiver cable is bad.	If you have a spare, try a different Grade Control Receiver cable.
Erratic display of arrows.	Receivers are not properly initialized.	Shut off carrier and restart.
	ACD harness damaged.	Replace the harness.
	Receiver harness damaged or not properly installed.	Check connections or replace harness as required.
NOTE: For other problems related to the laser products, see Trimble Operation Manual or contact your Bobcat Dealer.		

## TROUBLESHOOTING (CONT'D)

### Laser Beacon Chart

TROUBLESHOOTING THE LASER BEACON		
PROBLEM	CAUSE	CORRECTION
Laser Beacon will not operate.	No power.	Press power button.
	Batteries are bad.	Check or replace batteries.
	Laser needs servicing.	Return laser to service center for inspection.
Laser Beacon out-of-level indicator does not shut off.	Laser not mounted securely.	Make sure the laser is mounted to stable surface.
	Laser in wrong mode.	Press the mode button so that the laser is in automatic self-leveling or grade mode.
	Leveling screws not turning.	Make sure the leveling screws are free to turn.
	Laser not level.	Allow the laser to re-level.
	Laser needs servicing.	Return laser to service center for inspection.
SafeGuard LED is on.	Calibration is off.	Check and adjust laser plane calibration as necessary.
	Laser needs servicing.	Return laser to service center for inspection.
Laser Beacon plane not accurate.	Calibration is off.	Check and adjust laser plane calibration as needed.
	Laser needs servicing.	Return laser to service center for inspection.
NOTE: For other problems related to the laser products, see Trimble Operation Manual or contact your Bobcat Dealer.		
Trimble Support Machine Control - Construction Instructions Americas: 1 - 800 - 538 - 7800 (Option 3 For Support) Outside Of Americas: 1 - 303 - 323 - 4111 E-Mail: Trimble_Support@Trimble.com		

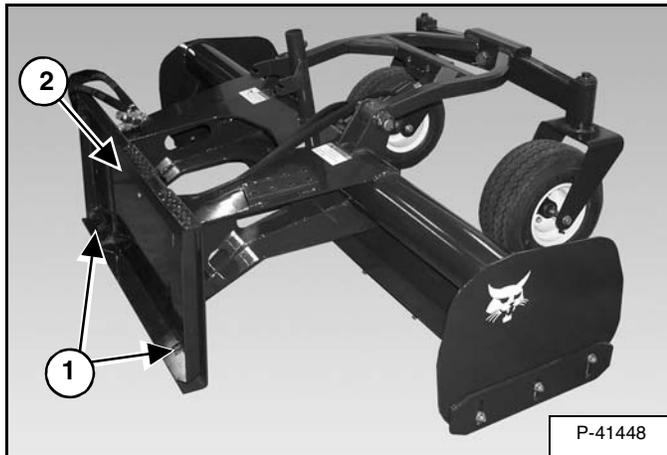


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## DAILY INSPECTION

### Attachment Mounting Frame

Figure 10-20-1



Inspect the Bob-Tach wedge mounts (Item 1), mounting flange (Item 2) [Figure 10-20-1] and all welds on the box blade mount for wear and damage each time the box blade is removed from the machine.

Frequently inspect the box blade to ensure that all components are secure and that all bolts and nuts are thoroughly tightened.

### Bob-Tach

*Hand Lever Bob-Tach*

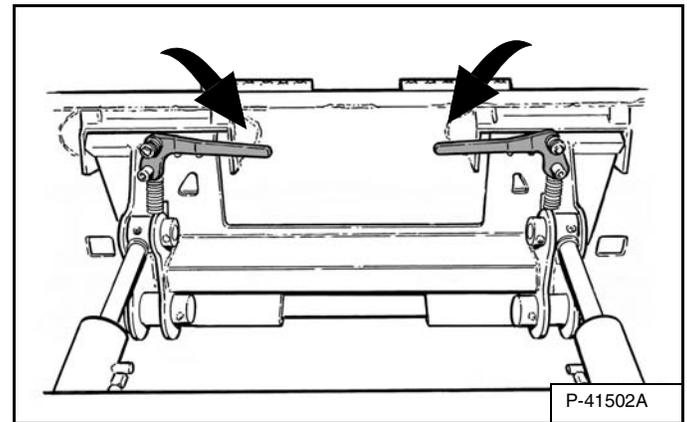


#### AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

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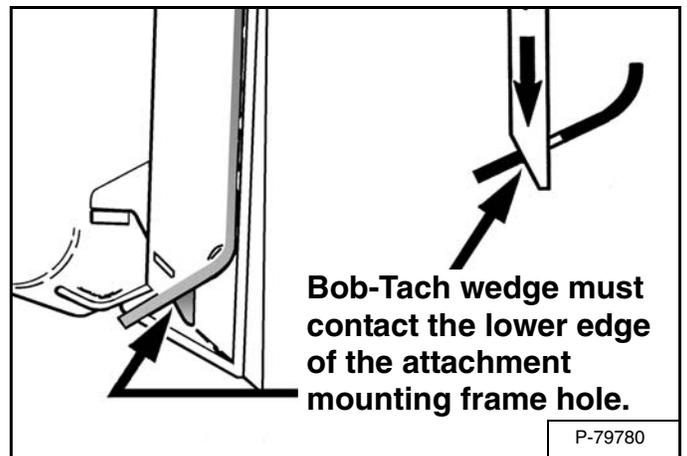
Figure 10-20-2



Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 10-20-2] (wedges fully extended through the attachment mounting frame holes).

The levers and wedges must move freely [Figure 10-20-2].

Figure 10-20-3



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 10-20-3].

**NOTE:** If the wedge does not contact the lower edge of the hole, the attachment will be loose and can come off the Bob-Tach.

Inspect the mounting frame on the attachment. (See the machine's Operation & Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See the machine's Operation & Maintenance Manual for the correct procedure.)

## DAILY INSPECTION (CONT'D)

### Bob-Tach (Cont'd)

Power Bob-Tach

# ! WARNING

## AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 10-20-4

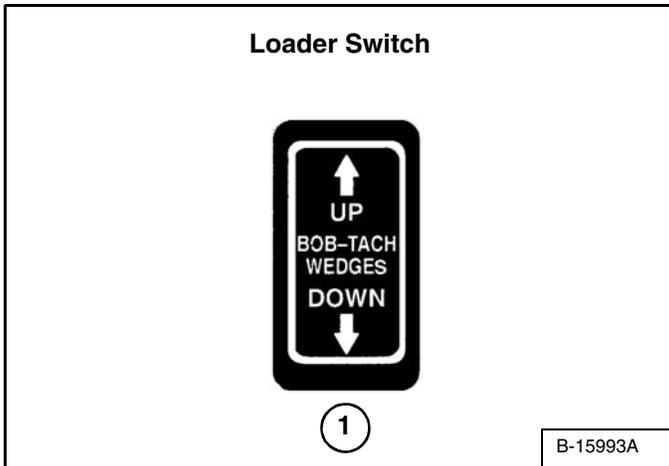


Figure 10-20-5

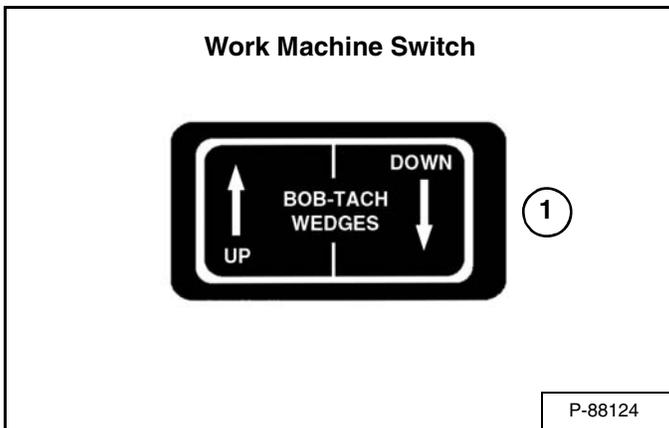
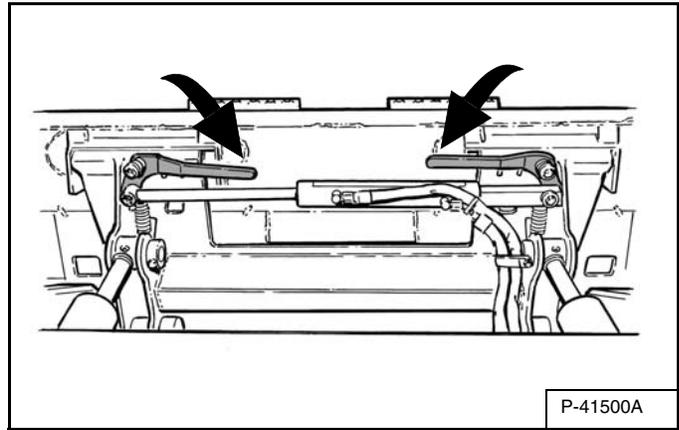
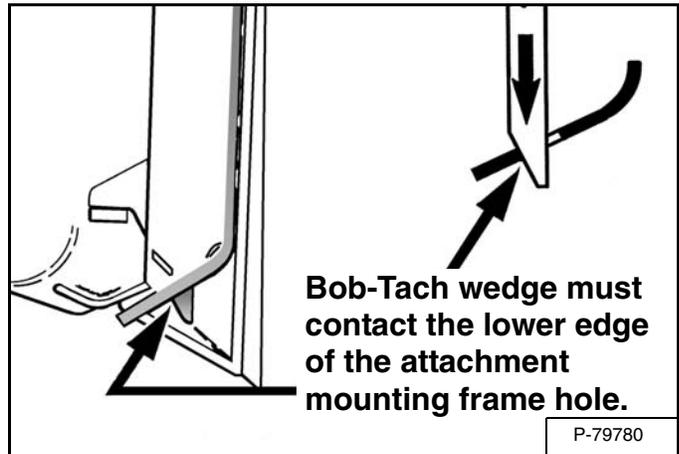


Figure 10-20-6



Push and hold the BOB-TACH “WEDGES DOWN” switch (Item 1) [Figure 10-20-4] and [Figure 10-20-5] until the levers are fully engaged in the locked position [Figure 10-20-6] (wedges fully extended through the attachment mounting frame holes).

Figure 10-20-7



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 10-20-7].

**NOTE: If the wedge does not contact the lower edge of the hole, the attachment will be loose and can come off the Bob-Tach.**

Inspect the mounting frame on the attachment. (See the machine's Operation & Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See the machine's Operation & Maintenance Manual for the correct procedure.)

## LUBRICATING THE ATTACHMENT

### Lubrication Points

Always use a good quality lithium base multi purpose grease when lubricating the attachment. Apply lubricant until extra grease shows.

# IMPORTANT

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

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# ! WARNING

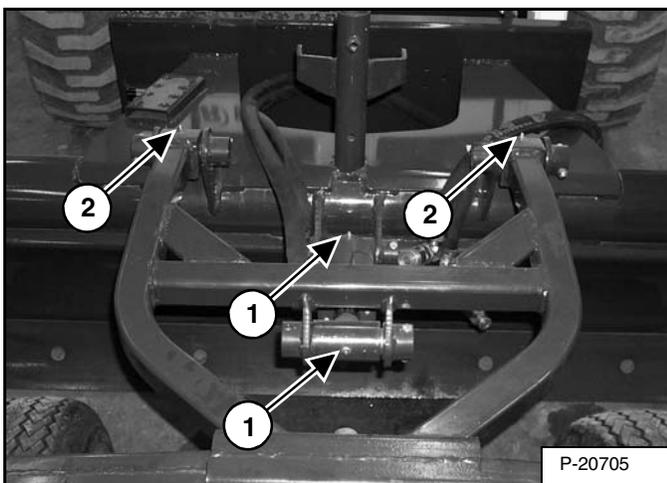
## AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

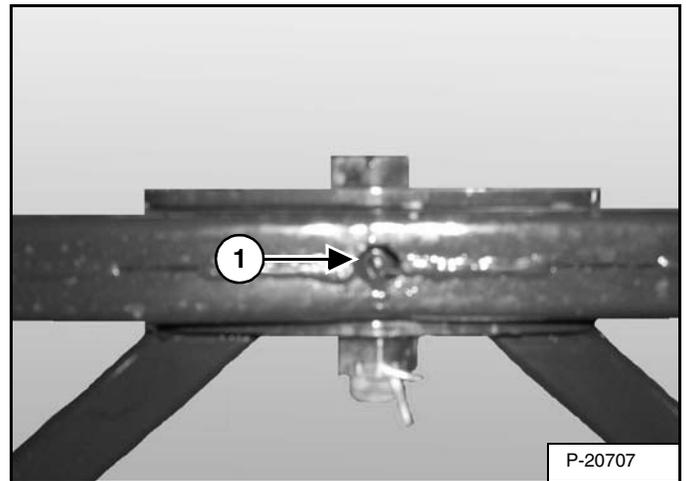
W-2019-0907

Figure 10-30-1



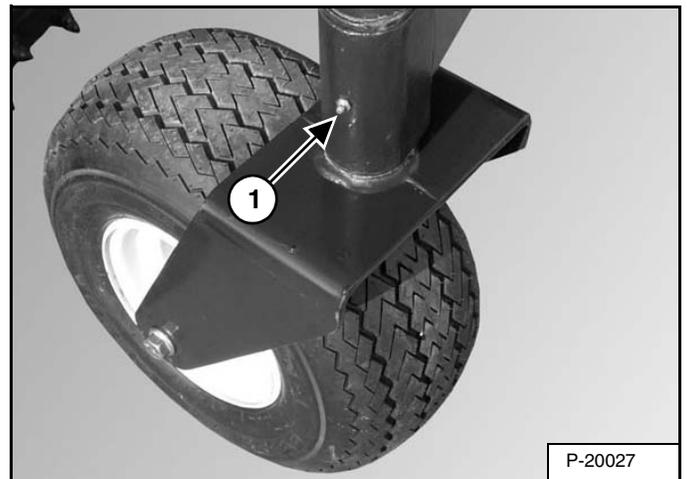
Add grease to the fittings on each end of the bolster cylinder (Item 1) and to the rear bolster pivot bushings (Item 2) [Figure 10-30-1].

Figure 10-30-2



Add grease to the wheel assembly pivot bushing (Item 1) [Figure 10-30-2] on front of bolster.

Figure 10-30-3



Add grease to wheel pivot bushing (Item 1) [Figure 10-30-3].



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## REGULAR MAINTENANCE ITEMS

### Cutting Edge

# ! WARNING

### AVOID INJURY OR DEATH

Securely block up the attachment before working underneath.

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# ! WARNING

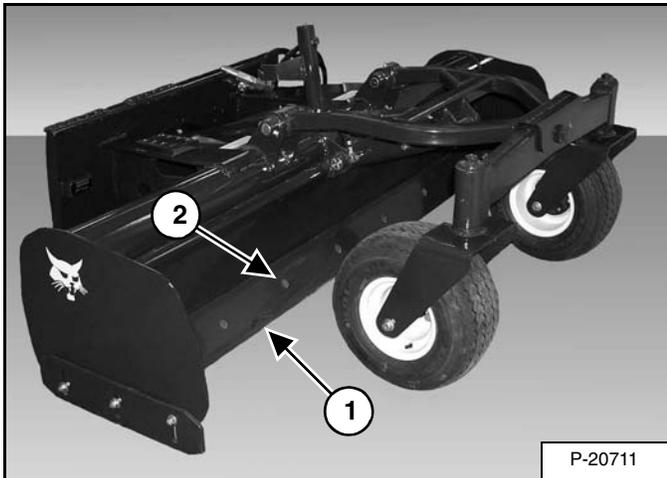
### AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

Figure 10-40-1



Inspect the cutting edge (Item 1), replace if any damage or excessive wear is visible. Tighten or replace any loose or missing bolts or nuts (Item 2) [Figure 10-40-1]. (See REMOVAL AND INSTALLATION OF CUTTING EDGE on Page 10-50-1.)

### Laser System

Be sure to store the laser receiver(s) in the case when not in use.

Be sure to store the laser beacon in its case when not in use.

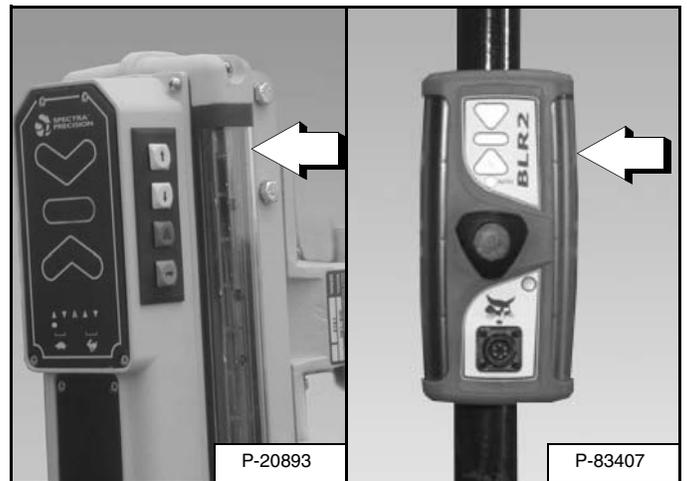
**NOTE:** Do not store the laser receiver or laser beacon in a wet carrying case. If the case gets wet, open it and let it dry before storing.

**NOTE:** Remove the batteries from the laser beacon (if equipped) when storing the equipment more than 30 days.

Figure 10-40-2



Figure 10-40-3



Use only a good quality glass cleaner and a soft cloth to clean all external optical components [Figure 10-40-2] and [Figure 10-40-3]. A dry cloth used on the laser exit windows, laser receiving window, or displays could scratch or damage these surfaces.

As needed, wipe off with a moist, clean cloth any dust or dirt from the laser beacon and receiver's outer surface. Blow off any loose debris before cleaning any surfaces to prevent scratching the optical surfaces.



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## REMOVAL AND INSTALLATION OF CUTTING EDGE

### Procedure

# WARNING

### AVOID INJURY OR DEATH

Securely block up the attachment before working underneath.

W-2795-0409

# WARNING

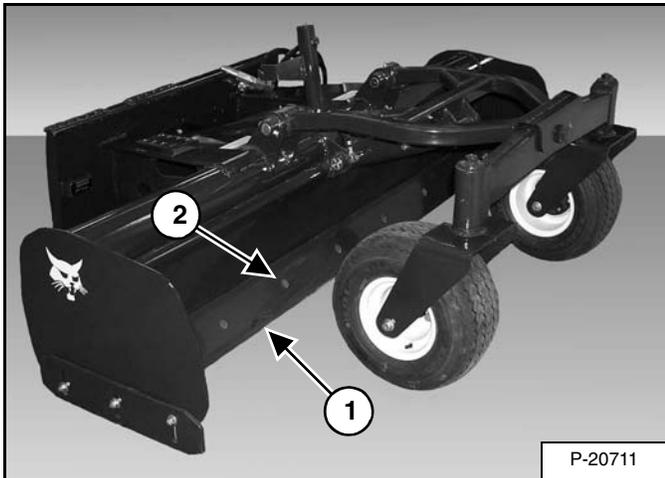
### AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

Figure 10-50-1



The cutting edge (Item 1) [Figure 10-50-1] is reversible.

When the cutting edge becomes worn or damaged, remove the nuts and bolts (Item 2) [Figure 10-50-1] from the cutting edge, rotate it 180° and reinstall.

**Installation:** Tighten bolts to 65 - 70 ft.-lb. (88 - 95 N•m) torque.



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## ATTACHMENT STORAGE AND RETURN TO SERVICE

### Storage

Sometimes it may be necessary to store your Bobcat attachment for an extended period of time. Below is a list of items to perform before storage.

- Thoroughly clean the attachment.
- Lubricate the attachment.
- Inspect the Bob-Tach wedge mounts, mounting flange and all welds on the attachment for wear and damage.
- Check for loose hardware, missing guards, or damaged parts.
- Replace worn or damaged parts.
- Check for damaged or missing decals. Replace if necessary.
- Place the attachment in a dry protected shelter.
- Place the attachment flat on the ground.
- Put all controls in neutral position.

**NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the machine.**

### Return to Service

After the Bobcat attachment has been in storage, it is necessary to follow a list of items to return the attachment to service.

- Be sure all shields and guards are in place.
- Lubricate the attachment.
- Install and operate attachment, check for correct function.
- Check for leaks. Repair as needed.



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Disassembly .....	20-10-3
Parts Identification .....	20-10-2
Removal and Installation .....	20-10-1

**HYDRAULIC  
SYSTEM**



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## HYDRAULIC CYLINDER

### Removal and Installation

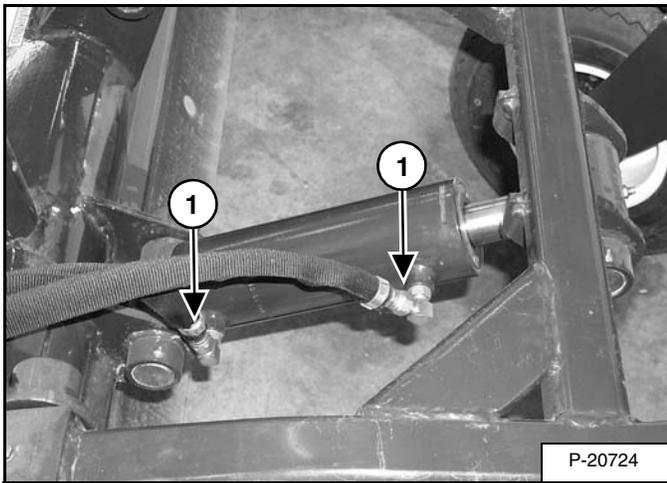
# IMPORTANT

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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Lower the bolster setting the tires on the ground.

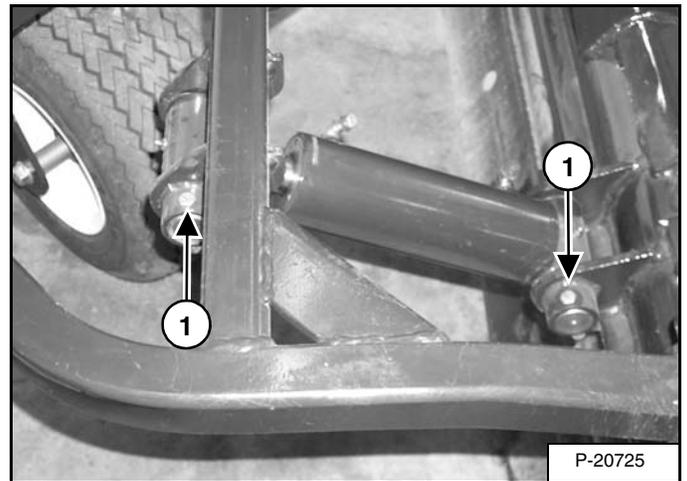
Figure 20-10-1



Mark location and remove the hydraulic hoses (Item 1) [Figure 20-10-1].

**Installation:** Position and install hydraulic hoses according to previously made marks.

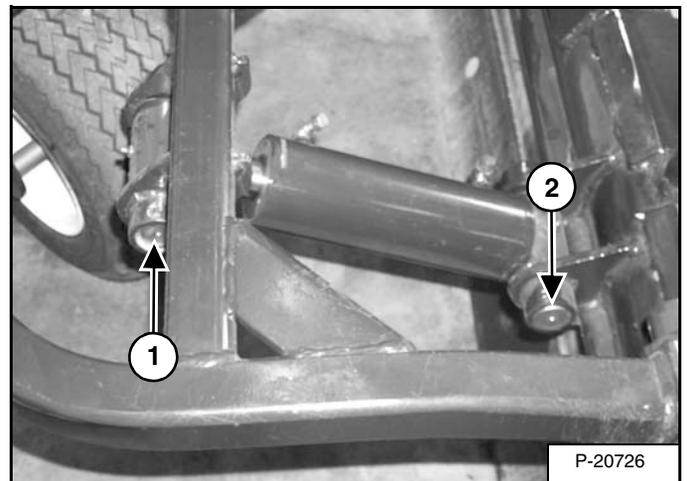
Figure 20-10-2



Remove the retaining bolt and nut (Item 1) [Figure 20-10-2] from each end of the cylinder.

**Installation:** Install and tighten the bolts to 25 - 28 ft.-lb. (34 - 38 N•m) torque.

Figure 20-10-3



Remove the pin (Item 1) from the rod end of the cylinder first, then remove the pin (Item 2) [Figure 20-10-3] from the base of the cylinder.

Remove the cylinder.

**Installation:** Align base end of cylinder with mounts and install retaining pin.

Align rod end of cylinder with mounts and install retaining pin.

# HYDRAULIC CYLINDER (CONT'D)

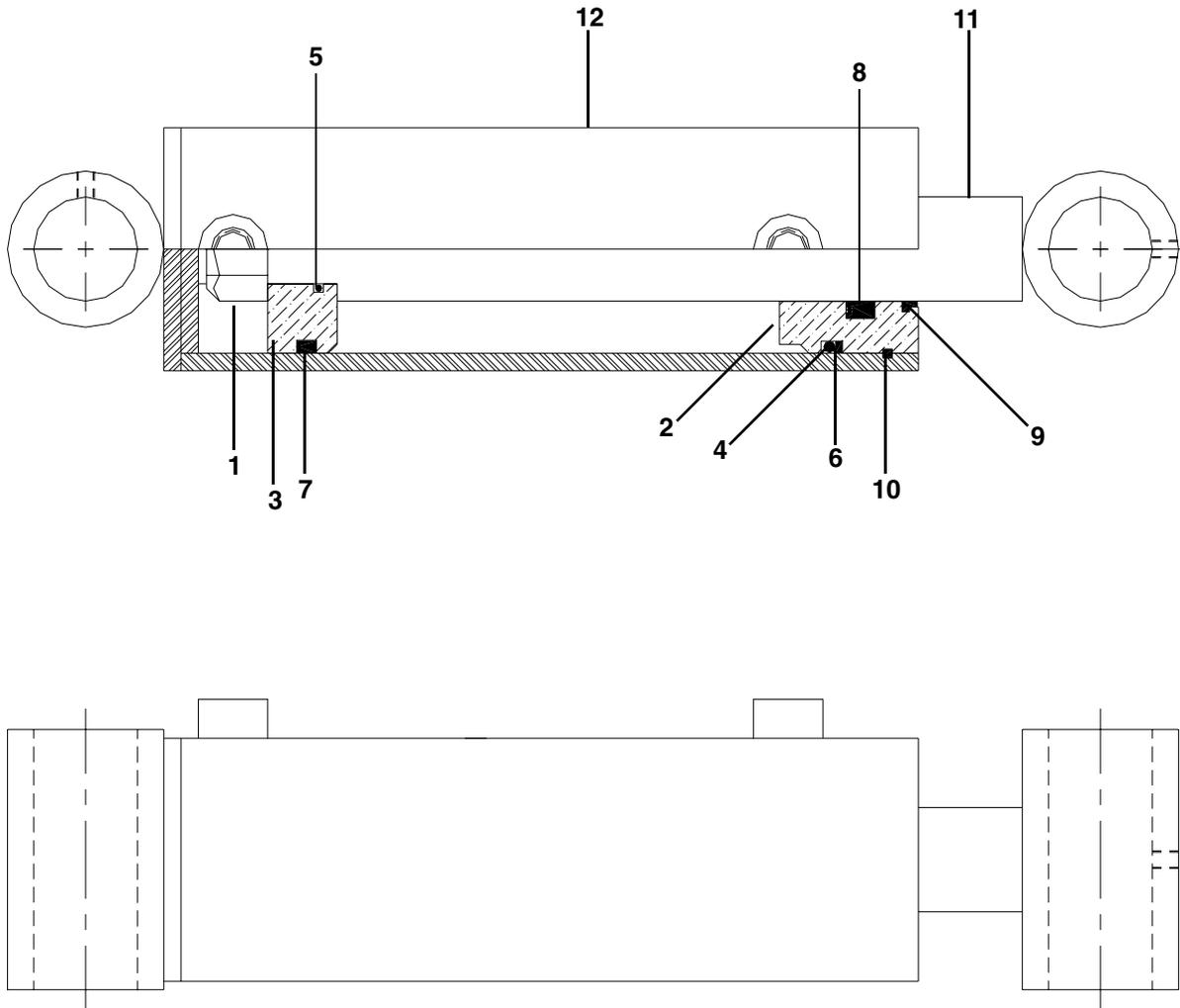
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## Parts Identification

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1. Nut
2. Head
3. Piston
4. O-Ring
5. O-Ring
6. Back-up ring
7. PSP Seal
8. Polypak
9. Dust Seal
10. Retaining Ring
11. Shaft With Clevis
12. Barrel With Clevis & Ports



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PAS-23