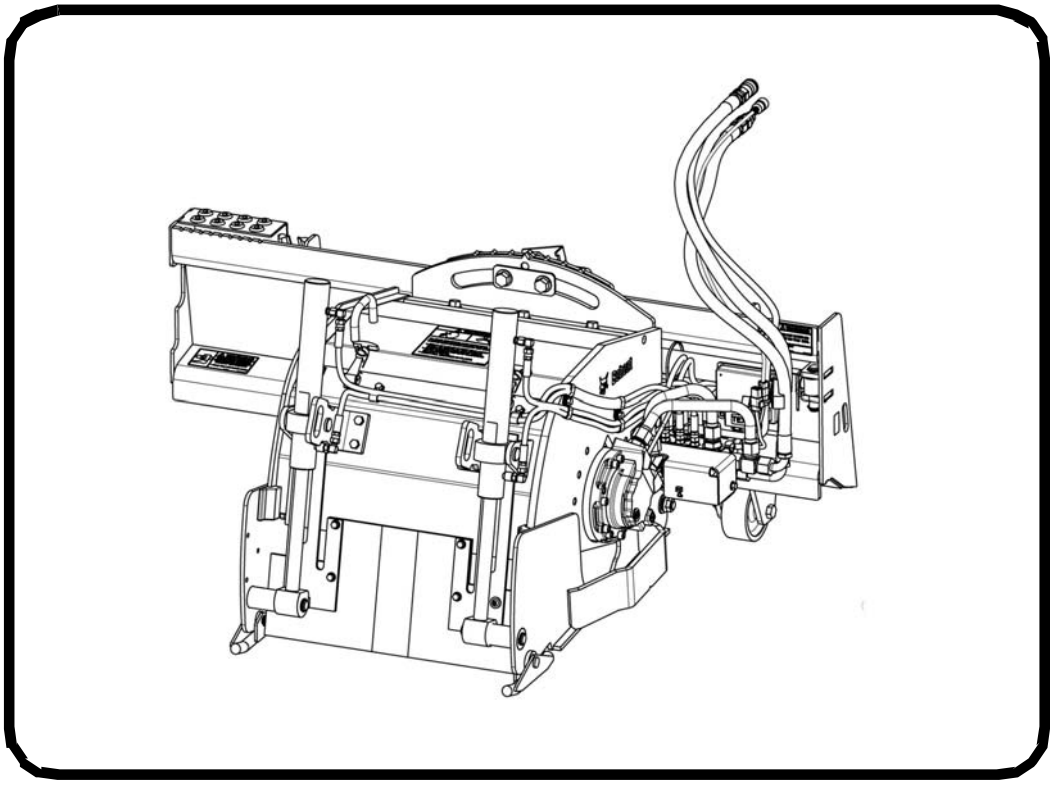
Bobcat®

Service Manual
Planer

(18PLA) S/N AKS200101 & Above
(24PLA) S/N AJN700101 & Above
(PNSFL) S/N AKS300101 & Above



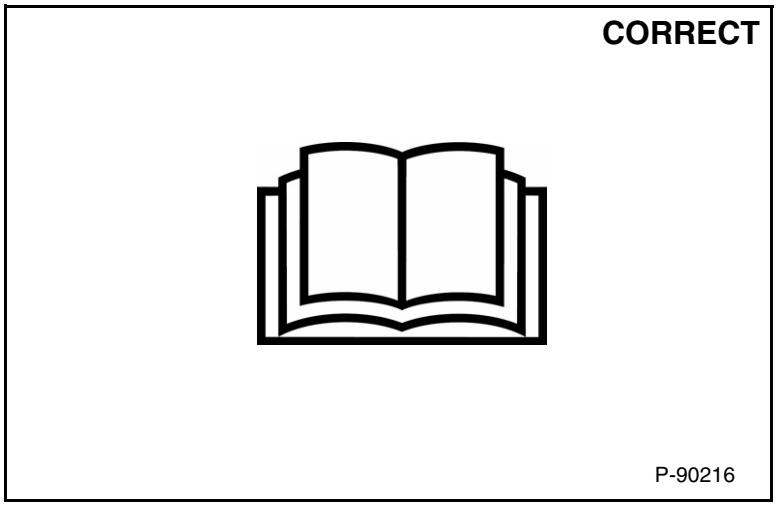
6989705 (8-10)
Printed in U.S.A.

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.

MSW30-0409


Bobcat®

CONTENTS

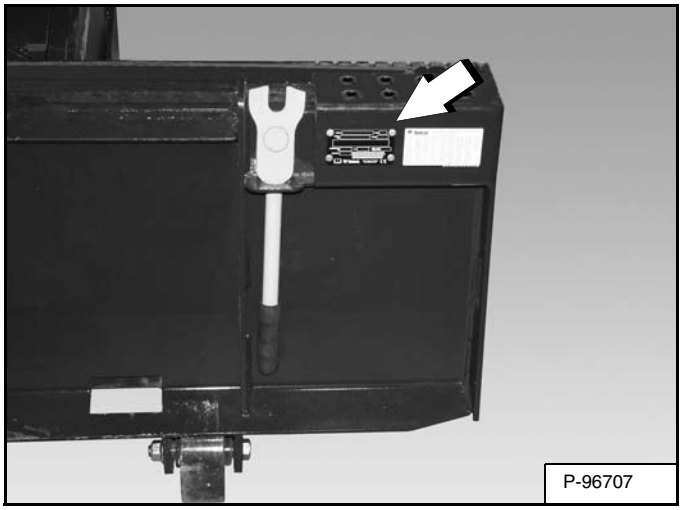

Bobcat®


Bobcat®

SERIAL NUMBER LOCATION

Attachment Serial Number

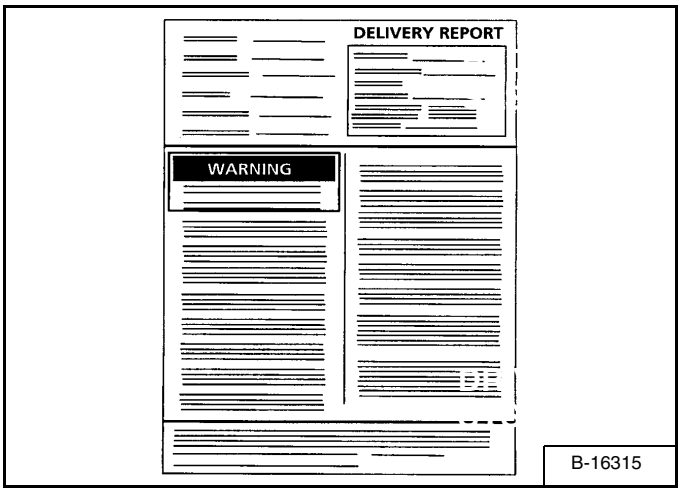
Figure 1



Always use the serial number of the planer 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

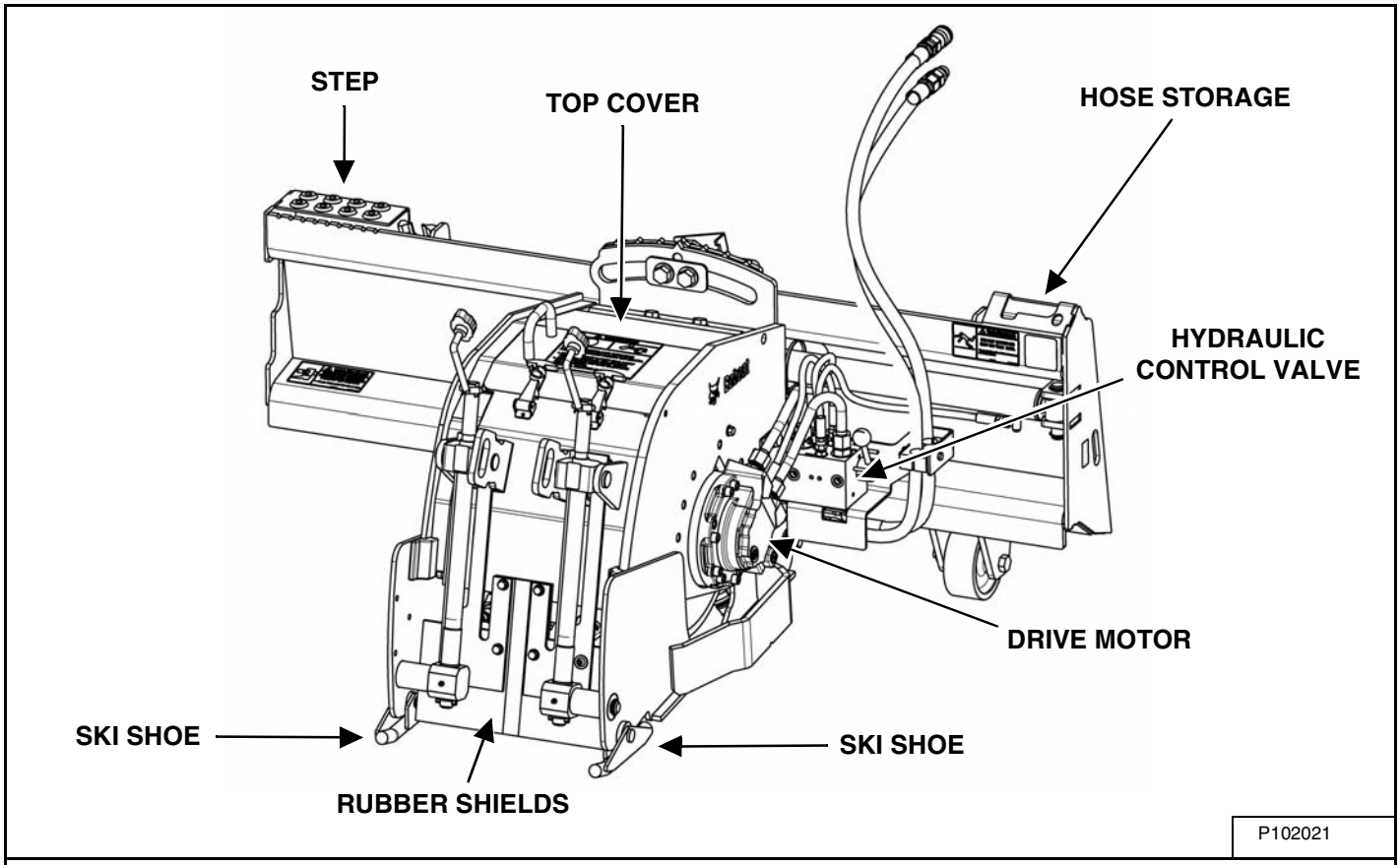
Figure 2

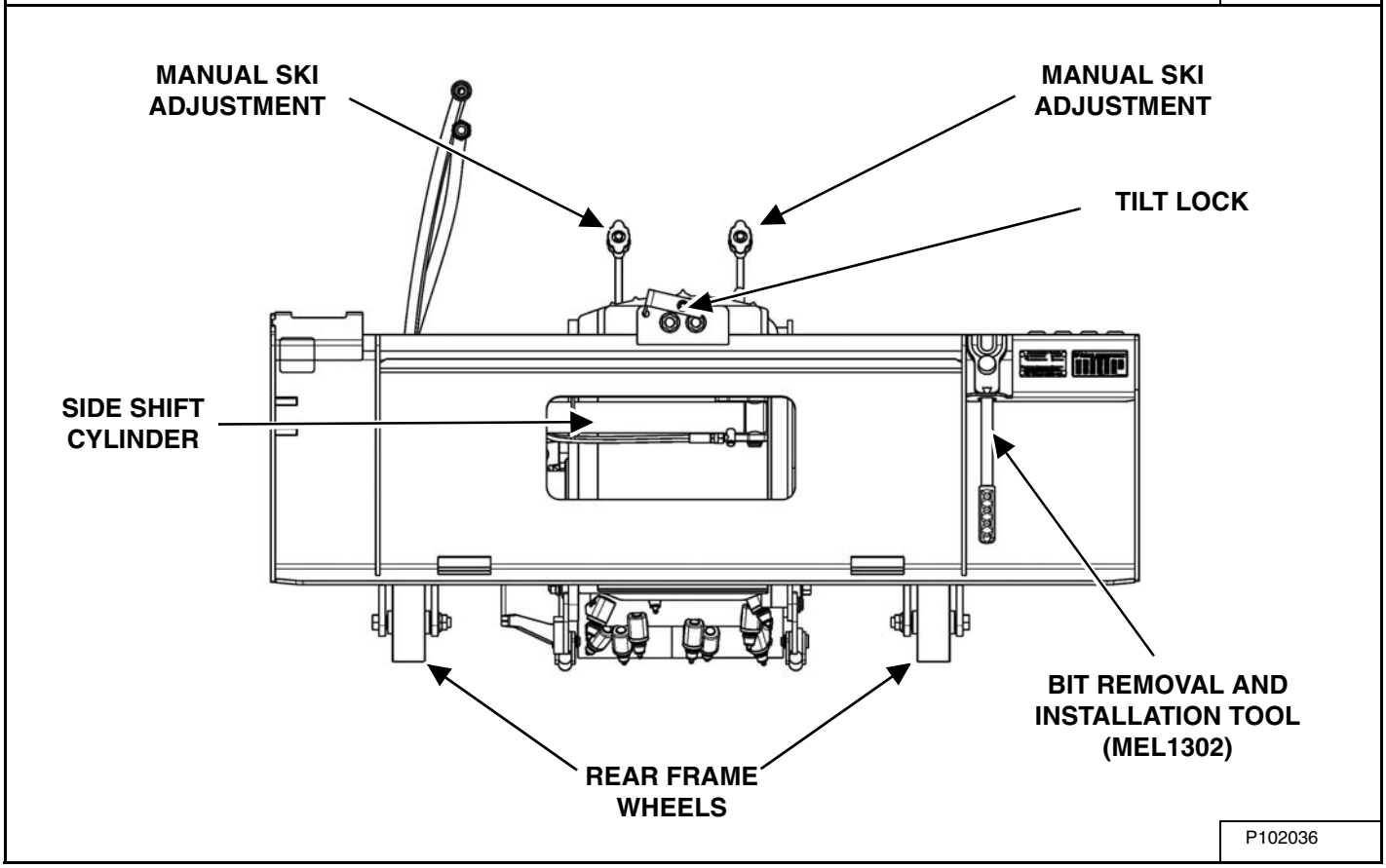


The delivery report **[Figure 2]** must be completed by the dealer and signed by the owner or operator when the Bobcat planer is delivered. An explanation of the form must be given to the owner.

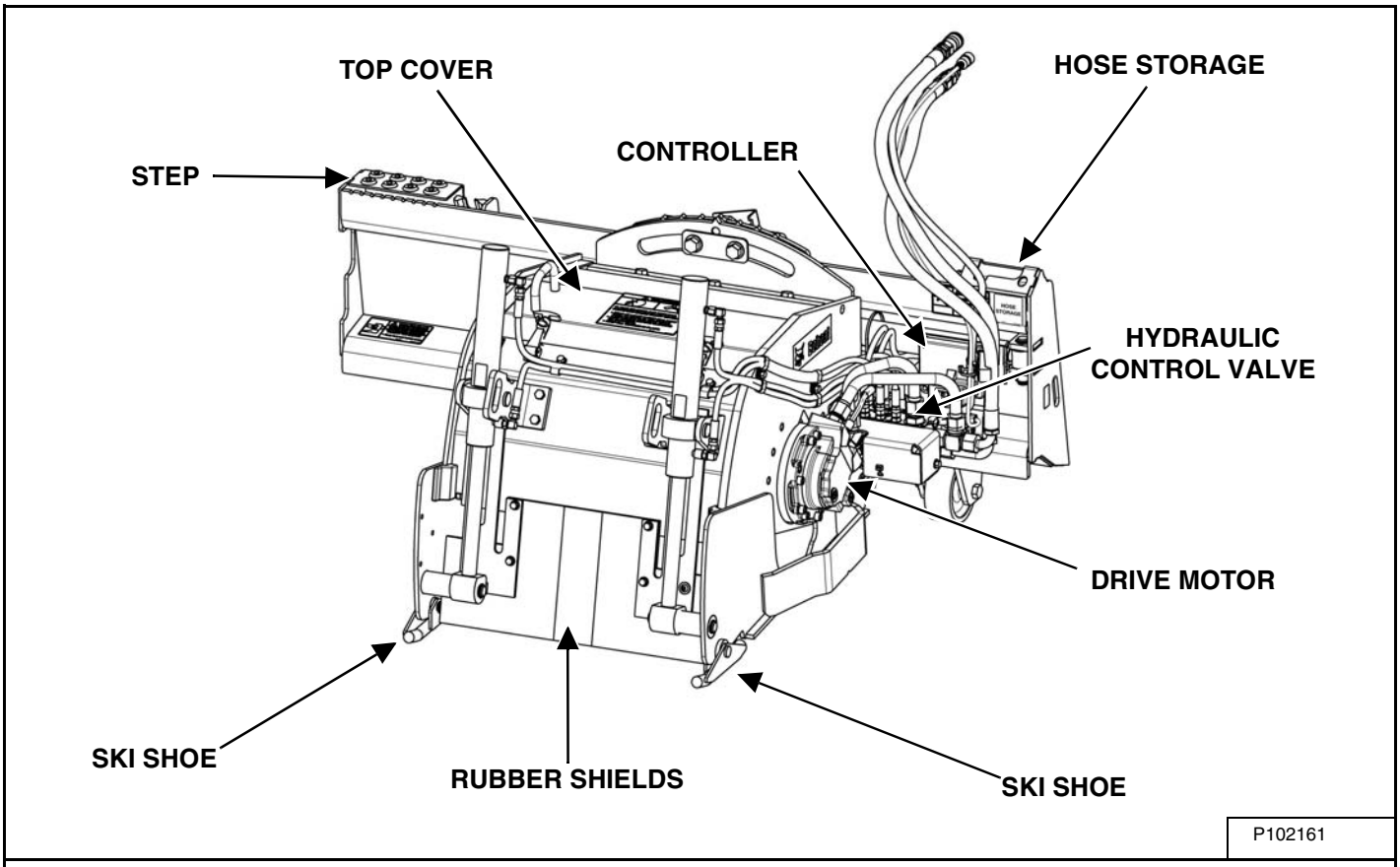
ATTACHMENT IDENTIFICATION

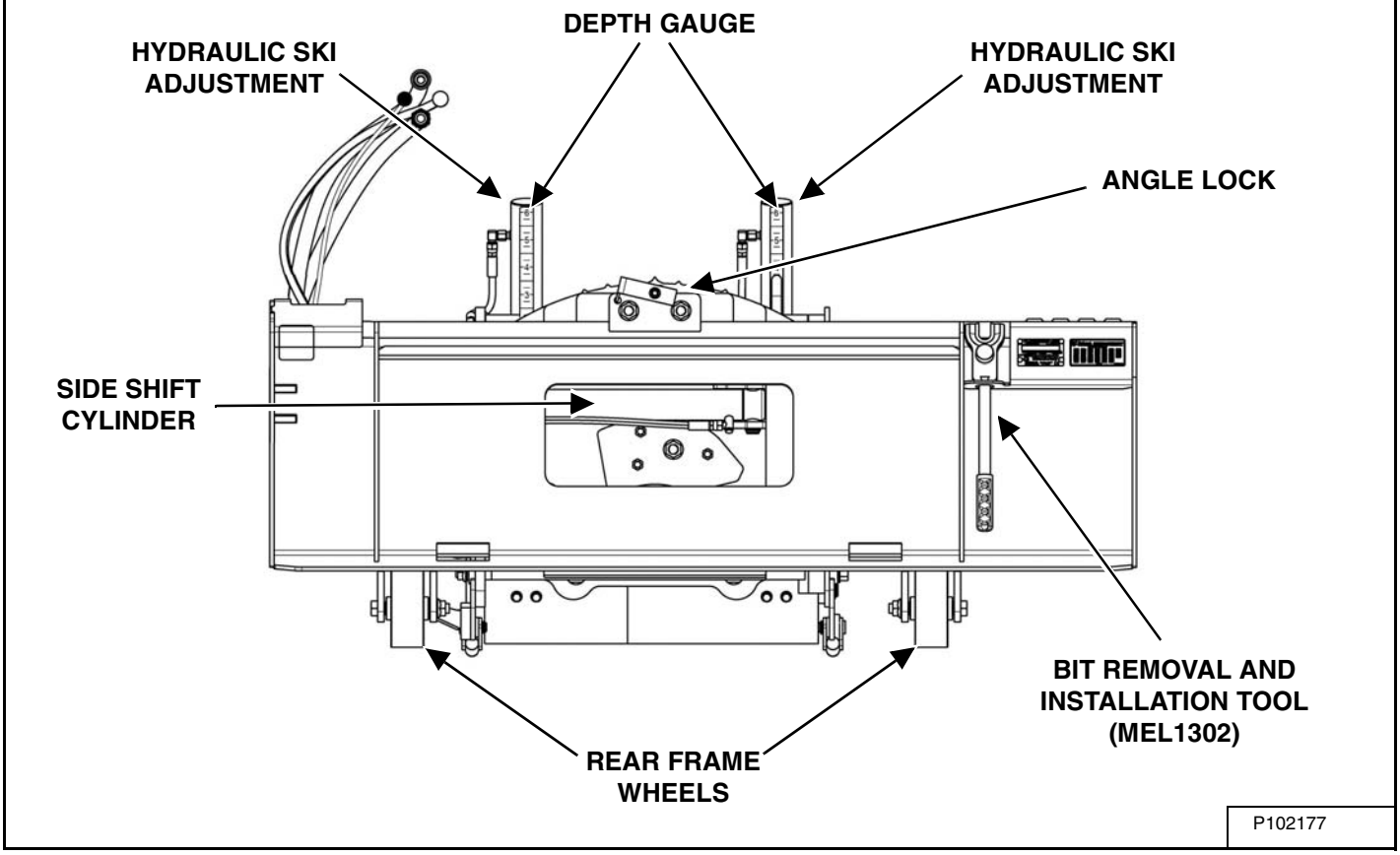
(PNSFL) Planer





(18PLA & 24PLA) Planer






Bobcat®

SAFETY & MAINTENANCE


Bobcat®

TROUBLESHOOTING

Chart

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

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

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

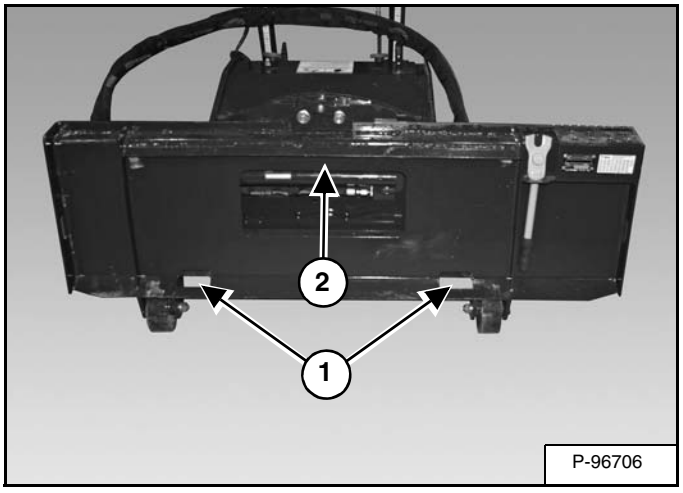
PROBLEM	CAUSE	CORRECTION
Planer cut is inadequate.	Carbide bits worn or missing.	Replace the carbide bits.
Noisy motor (with load).	Vibration; loose bolts.	Check torque.
External oil leaks.	Motor case pressure too high.	Check the case drain line.
	Defective assembly.	Check case drain line for blockage.
	Damaged O-rings.	Replace O-rings as needed.
Planer will not side shift.	Damage to wiring or electrical connectors.	See your Bobcat dealer.
	Not enough hydraulic pressure.	Test loader hydraulics for flow and pressure.
	Planer housing seized or rusted in place.	Remove rust or material interference.
Drum motor with load does not turn.	Hydraulic pressure is low.	Check relief valve setting.
	Internal hydraulic leaks.	Check motor.
Noisy motor (with no load).	Humming; worn bearings.	Replace bearings.
Loaded motor does not turn at normal speed.	Not enough hydraulic flow.	Check pump flow and rotation speed. Check Hi Flow diverter valve. Make sure Hi Flow is ON.
	Internal leaks.	Check cylinder block and valve block assembly.
		Check motor.
Drum motor does not rotate.	Front auxiliary hydraulics not engaged.	Engage the loader front auxiliary.
	Excessive hydraulic leakage.	Check hoses and tubelines.
	Hydraulic leaks.	Check cylinder and valve block assembly.
	No hydraulic flow.	Check pump drive and pump inlet.
	No hydraulic pressure.	Valves damaged or corroded.
Planer does not mill to correct depth.	Carbide bits worn depth.	Replace the carbide bits.
	Decals misplaced or missing.	Replace with new depth decals.
	Ski pivot bushings worn or missing.	Install new ski pivot bushings.
	Ski worn.	Replace ski.
Planer function(s) will not operate.	Valve contamination.	Check internal valve orifices.


Bobcat®

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 attachment. for wear and damage each time the attachment is removed from the machine.

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

Bob-Tach

Hand Lever Bob-Tach

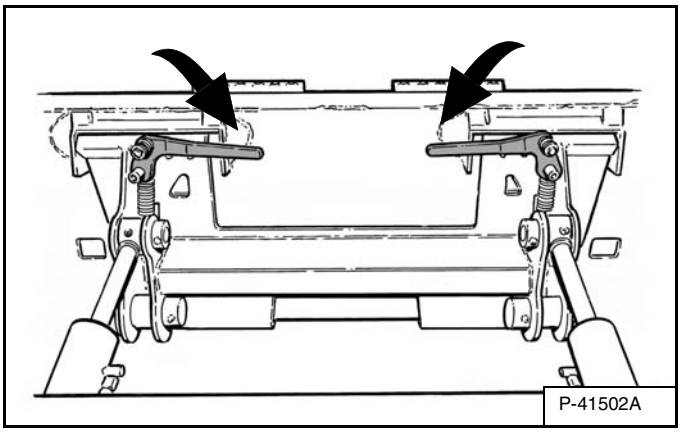
⚠ WARNING

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

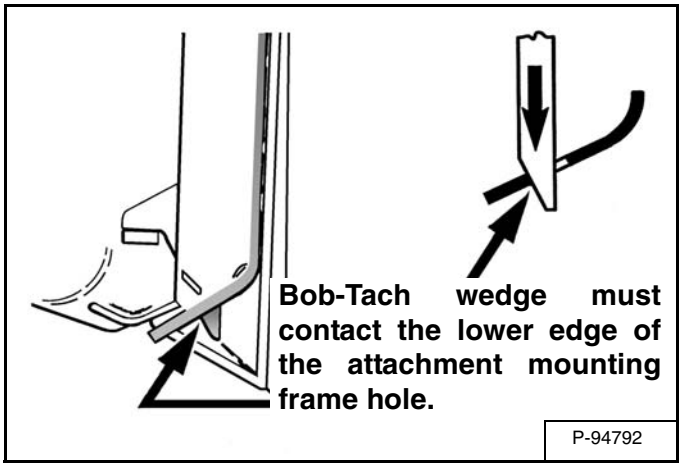
Figure 10-20-2



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 planer. (See the loader's Operation and Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds.

Lubricate the wedges. (See the loader'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

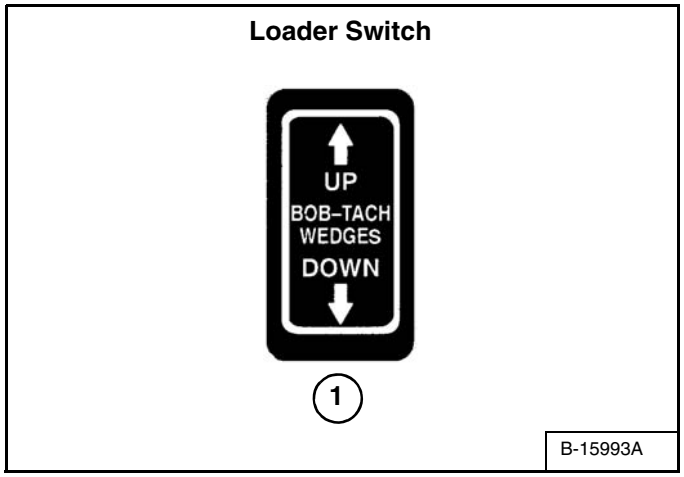
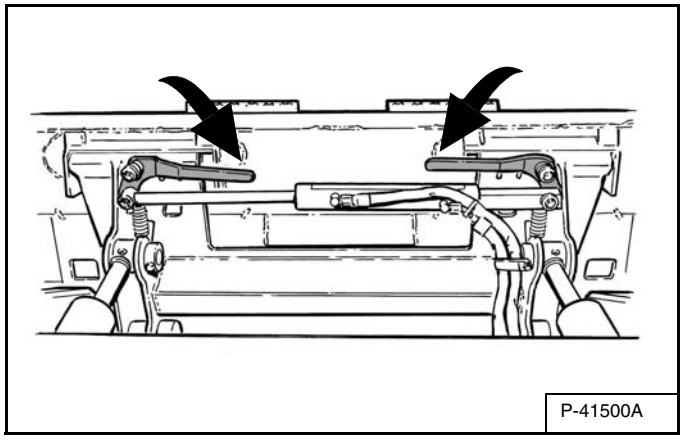
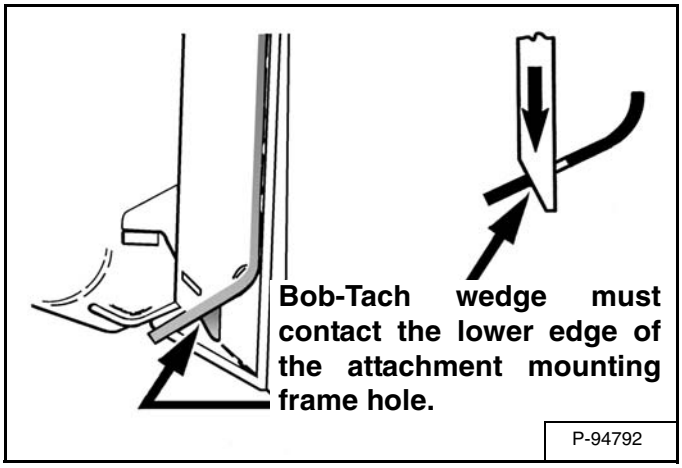


Figure 10-20-5



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

Figure 10-20-6



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach **[Figure 10-20-6]**.

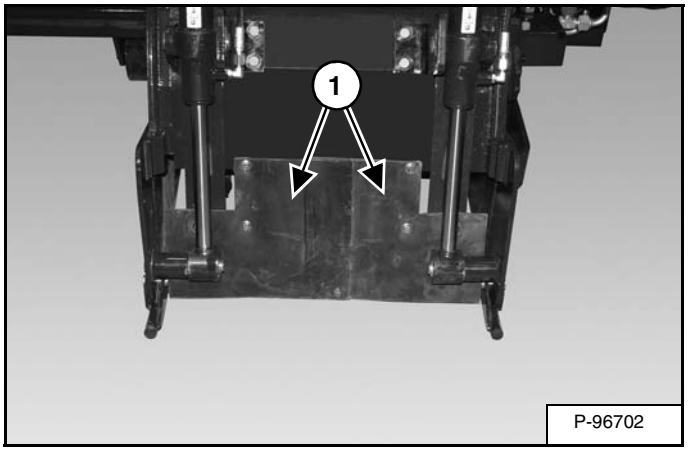
NOTE: If the wedge does not contact the lower edge of the hole, the attachment will be loose and can come off the Bob-Tach.

Inspect the mounting frame on the planer. (See the loader's Operation and Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds.

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

Rubber Shield Inspection

Figure 10-20-7



Make sure the rubber shield(s) (Item 1) **[Figure 10-20-7]** are in good condition to provide protection from flying debris.

DRUM

Checking The Carbide Tips

Check the bits every three hours of operation.

The bits must be free to rotate in their holders. If the bit will not rotate, uneven and rapid wear will result.

Removing Carbide Bits

Lower the lift arms fully and tilt the planer forward until the skis contact the surface.

⚠ WARNING

AVOID INJURY OR DEATH

DO NOT open cover while running. You could be drawn into the machine.

W-2181-0395

⚠ WARNING

Do not strike the cutter bit with a hammer. The hard bit can shatter and cause serious injury. Use the correct bit installation tool.

W-2114-1191

⚠ 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.**

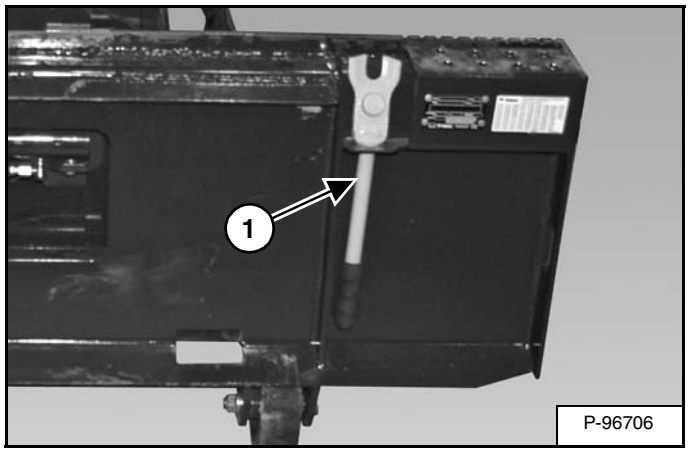
W-2019-0907

Stop the engine and engage the parking brake.

Unfasten the seat belt, raise the seat bar and exit the loader.

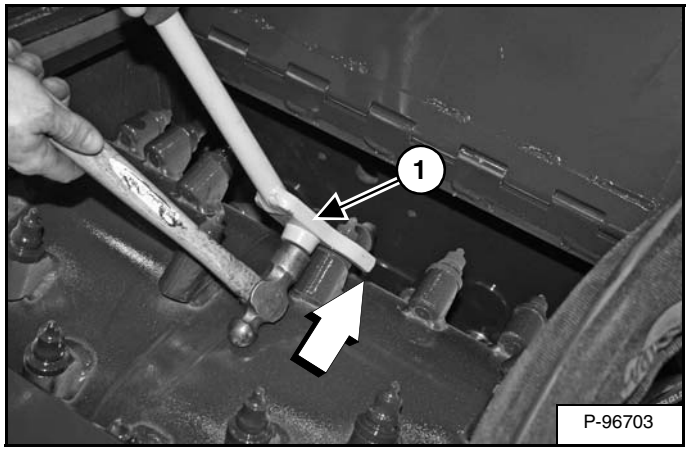
MEL1302 – Bit Removal And Installation Tool

Figure 10-30-1



The tool listed (which is stored on the planer frame) (Item 1) **[Figure 10-30-1]** is used for the following procedure:

Figure 10-30-2



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

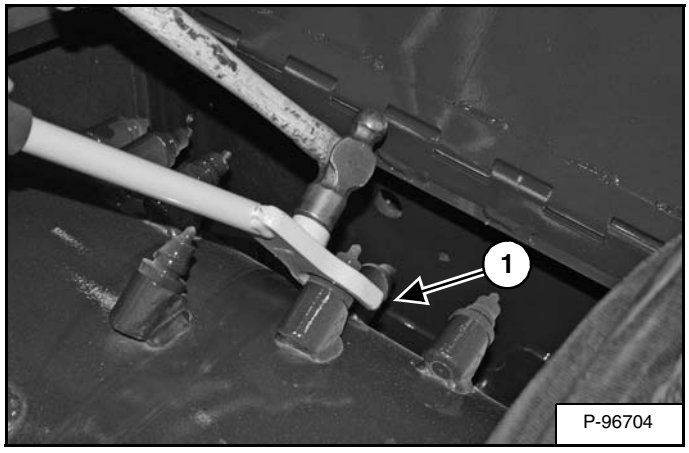
Place the tool (Item 1) **[Figure 10-30-2]** on the bit flange and rap the tool with a hammer to remove the bit from the holder.

DRUM (CONT'D)

Installing Carbide Bits

6678074 – Bit Removal Tool (Optional)

Figure 10-30-3



MEL1302 – Bit Removal And Installation Tool

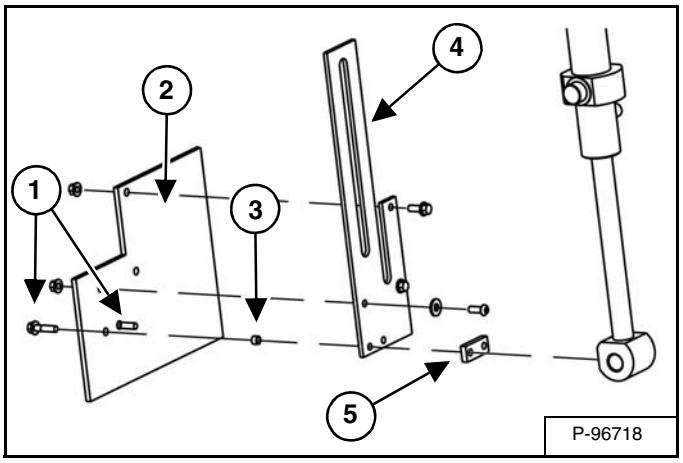
Place the tool (Item 1) **[Figure 10-30-3]** on the flange of the new bit and install the bit into the holder by rapping the tool with a hammer.

RUBBER SHIELDS

Removal

Use the following procedure to remove the left and right rubber shields;

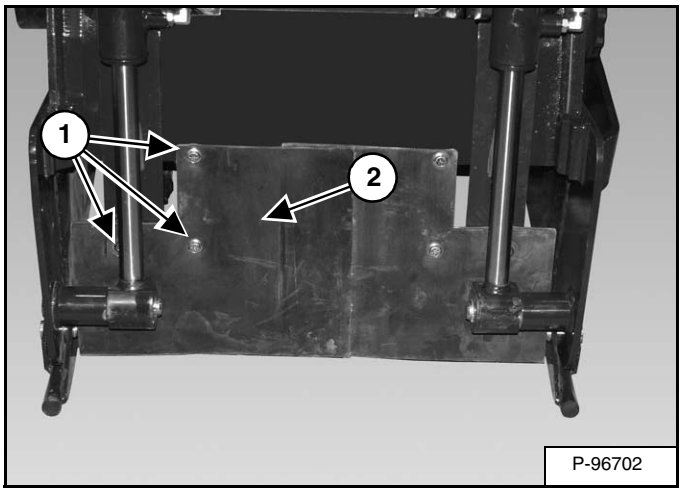
Figure 10-40-1



Remove the two bolts (Item 1) **[Figure 10-40-1]** and spacer.

NOTE: The two mounting bolts (Item 1) are located behind the rubber shield(s) (Item 2). These two bolts are inserted through the rubber shield and shield bushings (Item 3), shield mounting bracket (Item 4), spacer (Item 5) [Figure 10-40-1] and fasten into the rod end of the ski cylinder.

Figure 10-40-2



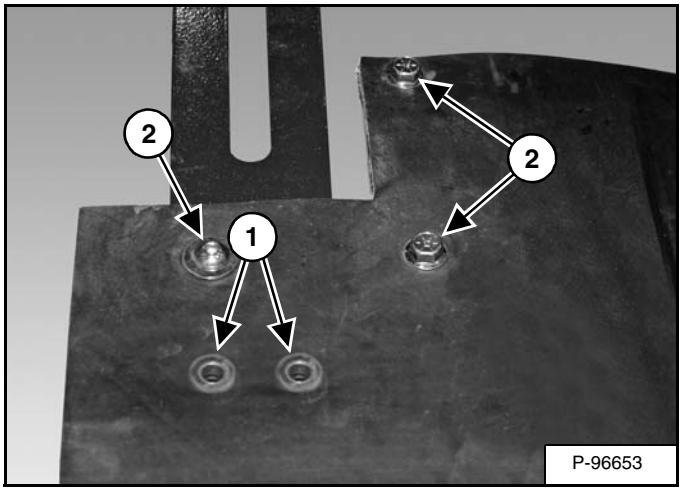
Remove the three mounting bolts (Item 1) **[Figure 10-40-2]** and nuts, from the right shield mounting bracket.

Remove the right rubber shield (Item 2) **[Figure 10-40-2]**.

Repeat procedure for the left rubber shield.

Installation

Figure 10-40-3



Install the two bushings (Item 1) **[Figure 10-40-3]** in the rubber shield.

Align the rubber shield with the shield mounting bracket.

Install the three mounting bolts (Item 2) **[Figure 10-40-3]** and nuts.

Install the two bolts (Item 1) and spacer (Item 5) **[Figure 10-40-1]**.

Installation: Apply Loctite® 242 or equivalent. Tighten the mounting bolts to 25 ft.-lb. (34 N•m) torque.

Repeat procedure for the left rubber shield.


Bobcat®

DRIVE CARRIER

Oil Change

Change the planer drive carrier oil after the first 300 hours of operation and every 500 hours thereafter.

⚠ 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.**

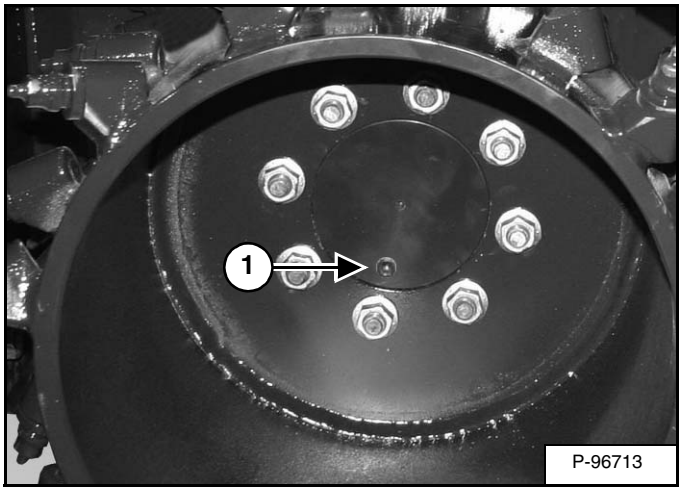
W-2019-0907

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.

I-2067-0499

Figure 10-50-1

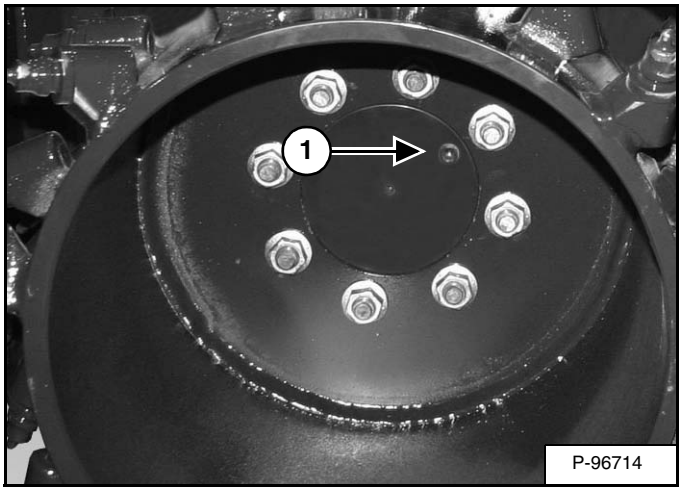


Position the drum with the plug (Item 1) **[Figure 10-50-1]** at the 6 o'clock position. Remove the plug and drain the oil into a suitable container.

NOTE: Always use Bobcat Synthetic Gear and Bearing Oil when changing or adding oil to the planer drive carrier.

NOTE: Avoid substituting other fluids containing additives that can cause damage to the drive carrier seal, causing rapid oil loss and bearing failure.

Figure 10-50-2



Rotate the drum so the filler hole (Item 1) **[Figure 10-50-2]** is 45° from the 12 o'clock position. Fill the drive carrier with Bobcat Synthetic Gear and Bearing Oil until the oil is at the bottom of the filler hole.


Bobcat®

LUBRICATING THE ATTACHMENT

Lubrication Locations (PNSFL)

IMPORTANT

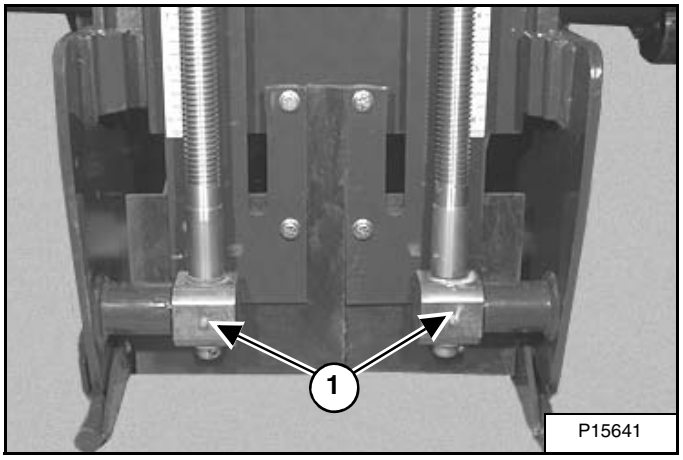
Fluid such as engine oil, hydraulic fluid, coolants, grease, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state and federal regulations for the correct disposal.

I-2067-0499

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

Lubricate the following locations **every 8 - 10 hours**.

Figure 10-60-1



1. Ski Shaft Pivot **[Figure 10-60-1]**.


Bobcat®

HYDRAULIC SYSTEM


Bobcat®

Glossary Of Hydraulic / Hydrostatic Symbols

SYMBOL DESCRIPTION

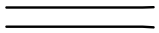
FLOW LINES and CONNECTIONS

WORKING CIRCUITS - Continuous, Solid Line - Working (Main) Line, Return Line (line conducting fluid from working devices to the reservoir) and Feed line (main line conductor).

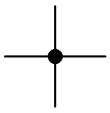
PILOT PRESSURE - Dashed Line - Pilot Line (Line which conducts control fluid).

DRAIN CIRCUITS - Dotted Line - Drain Line (drain or bleed line - line conducting fluid from a component housing to the reservoir.

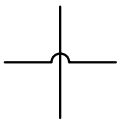
COMPONENTS - Long Chain Line - Enclosure outline for several components assembled in one unit.



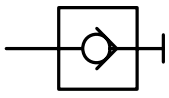
MECHANICAL CONNECTIONS - Double Line (Shaft, Lever, Piston Rod).



CONNECTED JUNCTION OF OIL LINES (Flow Line Connection).



OIL LINES CROSSING (NOT Connected).

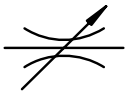


COUPLER - Quick - Acting Coupling (uncoupled, closed by non-return valve).

SYMBOL DESCRIPTION

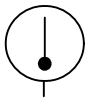
BASIC and MISCELLANEOUS SYMBOLS

RESTRICTION - Line with Fixed Restriction - Affected by Viscosity (property of resistance to flowing fluid).

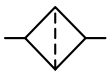


VARIABLE ADJUSTMENT RESTRICTION - Regulated or Variable Restriction.

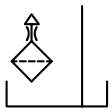
TEMPERATURE CONTROL - (Indication of temperature).



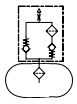
TEMPERATURE INDICATOR - (temperature measurement - thermometer).



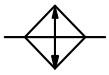
FILTER (strainer or screen) - For fluid conditioning.



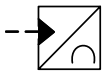
VENTED AND FILTERED RESERVOIR (reservoir open to atmosphere).



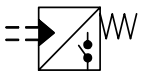
PRESSURIZED, VENTED AND FiLTERED RESERVOIR (Reservoir uses a pressured cap).



OIL COOLER (heat exchanger) - The arrows in the diamond indicate the extraction of heat (heat dissipation).

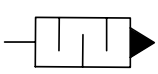


PRESSURE SENSOR - Varies electric signal with pressure.



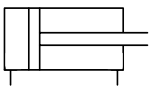
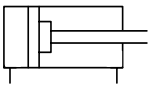
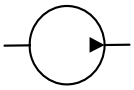
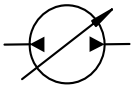
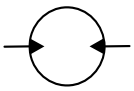
DIFFERENTIAL PRESSURE SWITCH - Switch activates when pressure difference reaches specified level.

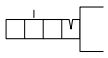
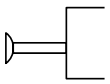
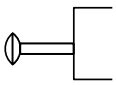
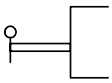
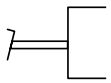
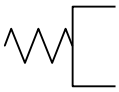
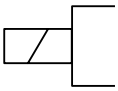
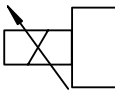
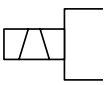
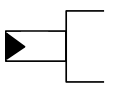
PRESSURE SWITCH - Switch activates when pressure reaches specified level.



MUFFLER (silencer) - Reduces noise.

Glossary Of Hydraulic / Hydrostatic Symbols (Cont'd)

SYMBOL	DESCRIPTION
	CYLINDER: Equipment to convert hydraulic energy into linear energy and in which the fluid pressure operates alternately in both directions (forward and backward strokes).
	DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT - With single piston rod.
	DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT and CUSHION ON ONE END - With single piston rod.
	PUMP: To convert mechanical energy into hydraulic energy.
	FIXED CAPACITY DISPLACEMENT HYDRAULIC PUMP - With one direction of flow.
	VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC PUMP - With two directions of flow (bidirectional).
	MOTOR: To convert hydraulic energy into rotary mechanical energy.
	FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC MOTOR - With two directions of flow (bidirectional.

SYMBOL	DESCRIPTION
	CONTROL MECHANISMS
	CONTROL VALVE WITH DETENT (Holds Valve in Position) - device for maintaining a given position (mechanical).
	CONTROL VALVE ACTIVATED BY A PULL BUTTON (manual).
	CONTROL VALVE ACTIVATED BY A PUSH-PULL BUTTON (manual).
	CONTROL VALVE ACTIVATED BY A LEVER (manual).
	CONTROL VALVE ACTIVATED BY A PEDAL (manual).
	CONTROL VALVE WITH SPRING RETURN (mechanical).
	CONTROL VALVE ACTIVATED BY AN ELECTRIC SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY A PROPORTIONAL ELECTRICAL SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY DUAL ELECTRICAL SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY PILOT PRESSURE (indirect control, pilot actuated by application of pressure).