

Product: 2009 Bobcat S250,S300 Skid-Steer Loader Service Repair Workshop Manual(S/N A5GM11001 - A5GM19999,S/N A5GN11001 - A5GN19999,S/N A5GP11001 - A5GP19999,S/N A5GR11001 - A5GR19999)
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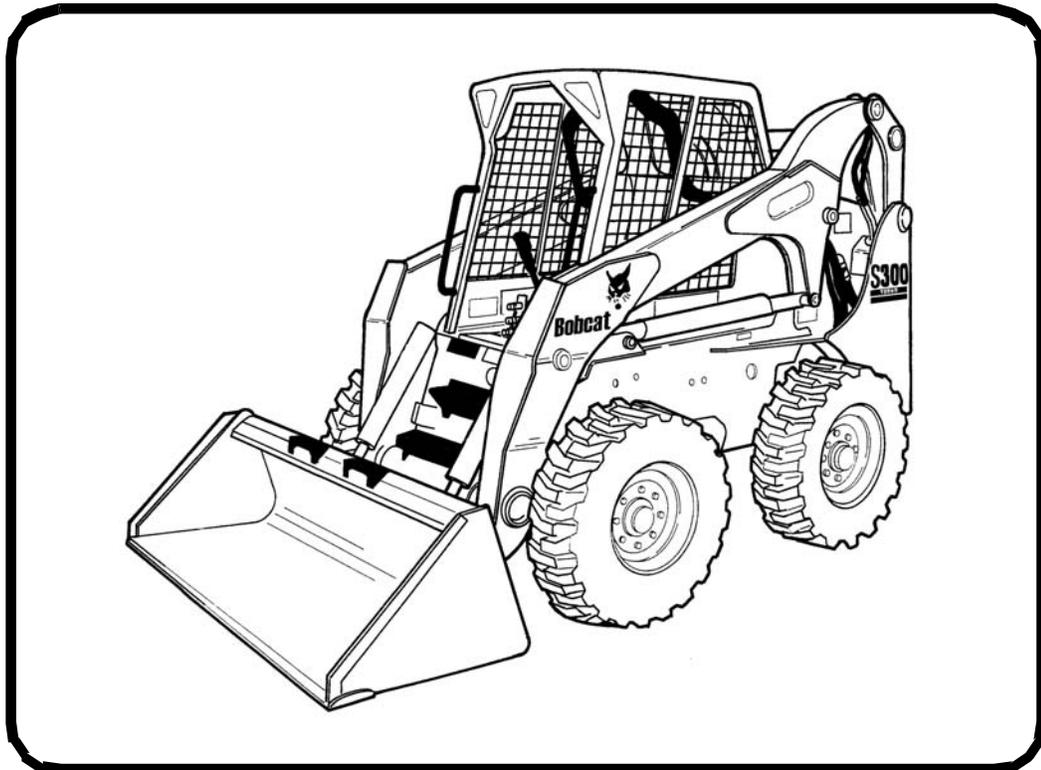


Bobcat®

Service Manual

S250, S300 Skid-Steer Loader

S/N A5GM11001 - A5GM19999
S/N A5GN11001 - A5GN19999
S/N A5GP11001 - A5GP19999
S/N A5GR11001 - A5GR19999



**EQUIPPED WITH
BOBCAT INTERLOCK**

CONTROL SYSTEM (BICS™) 139 pages at:

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MAINTENANCE SAFETY



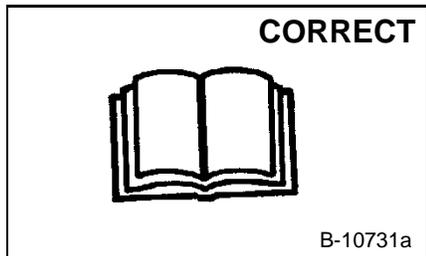
WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

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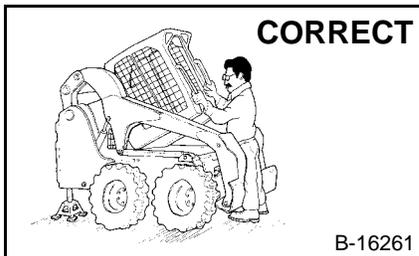


Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



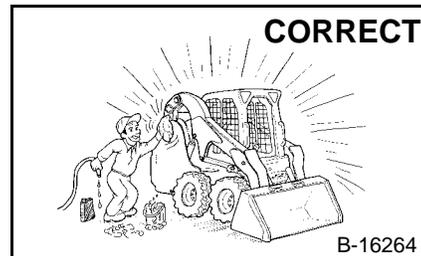
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⚠ Never service the Bobcat Skid-Steer Loader without instructions.



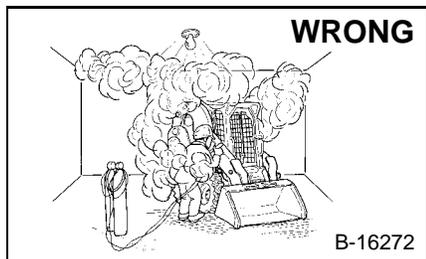
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⚠ Use the correct procedure to lift or lower operator cab.



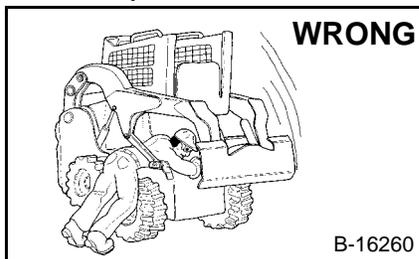
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⚠ Cleaning and maintenance are required daily.



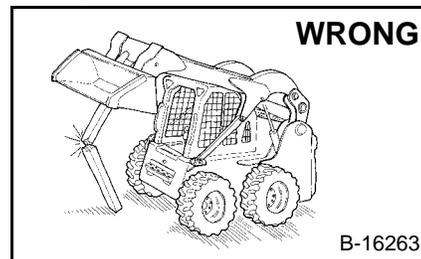
B-16272

- ⚠ Have good ventilation when welding or grinding painted parts.
- ⚠ Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
- ⚠ Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.



B-16260

⚠ Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace it if damaged.



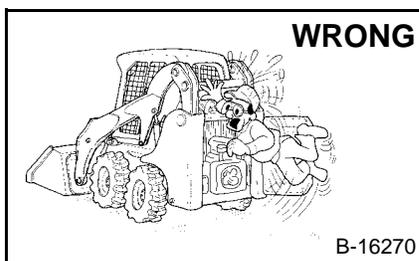
B-16263

- ⚠ Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace if damaged.
- ⚠ Never modify equipment or add attachments not approved by Bobcat Company.



B-16271

- ⚠ Stop, cool and clean engine of flammable materials before checking fluids.
- ⚠ Never service or adjust loader with the engine running unless instructed to do so in the manual.
- ⚠ Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate the skin or eyes.
- ⚠ Never fill fuel tank with engine running, while smoking or when near open flame.



B-16270

- ⚠ Keep body, jewelry and clothing away from moving parts, electrical contact, hot parts and exhaust.
- ⚠ Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protection approved for type of welding.
- ⚠ Keep rear door closed except for service. Close and latch door before operating the loader.



B-6589

- ⚠ Lead-acid batteries produce flammable and explosive gases.
- ⚠ Keep arcs, sparks, flames and lighted tobacco away from batteries.
- ⚠ Batteries contain acid which burns eyes or skin on contact. Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

Maintenance procedures which are given in the Operation & Maintenance Manual can be performed by the owner/operator without any specific technical training. Maintenance procedures which are **not** in the Operation & Maintenance Manual must be performed **ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL**. Always use genuine Bobcat replacement parts. The Service Safety Training Course is available from your Bobcat dealer.

MSW14-0805



Bobcat®

ALPHABETICAL INDEX

ACCESS PANEL (LEFT).....	50-01	ENGINE SPEED CONTROL (SJC).....	70-01
ACCESS PANEL (INSIDE) SJC)	50-01	EVAPORATOR	80-01
ADVANCED CONTROL SYSTEM (ACS)	60-01	EVAPORATOR / HEATER UNIT.....	80-01
AIR CLEANER	70-01	EXHAUST GAS RECIRCULATION (EGR)	
AIR CLEANER SERVICE	10-01	SYSTEM.....	80-01
AIR CONDITIONING SYSTEM FLOW	80-01	EXPANSION VALVE	80-01
ALTERNATOR	60-01		
		FAN GEARBOX.....	10-01
BACK-UP ALARM SYSTEM.....	60-01	FINAL DRIVE TRANSMISSION (CHAINCASE) ..	10-01
BATTERY	60-01	FLYWHEEL AND HOUSING	70-01
BLOWER FAN	80-01	FLYWHEEL RPM SENSOR	60-01
BOBCAT CONTROLLER (ACS)	60-01	FRONT AUXILIARY HYD. COUPLER BLOCK	20-01
BOBCAT CONTROLLER (MAIN).....	60-01	FUEL SYSTEM.....	10-01, 70-01
BOBCAT CONTROLLER (SJC) (DRIVE)	60-01	FUEL TANK	50-01
BOBCAT INTERLOCK CONTROL			
SYSTEM (BICS)	60-01	HEATER COIL.....	80-01
BOB-TACH (HAND LEVER)	10-01, 50-01	HEATER VALVE	80-01
BOB-TACH (POWER) BLOCK	20-01	HYDRAULIC CONNECTION SPECS	SPEC-01
BOB-TACH (POWER-OPTION).....	10-01, 50-01	HYDRAULIC CONTROL VALVE (ACS) OR (SJC)..	20-01
BRAKE	40-01	HYDRAULIC CONTROL VALVE (STANDARD)	20-01
BRAKE (TWO-SPEED).....	40-01	HYDRAULIC FLUID RESERVOIR	20-01
BUCKET POSITION VALVE	20-01	HYDRAULIC / HYDROSTATIC FLUID	
		SPECIFICATIONS.....	SPEC-01
CAB DOOR.....	50-01	HYDRAULIC / HYDROSTATIC FILTERS	20-01
CALIBRATION	60-01	HYDRAULIC / HYDROSTATIC SYSTEM.....	10-01
CAMSHAFT AND TIMING GEARS.....	70-01	HYDRAULIC PUMP (STANDARD) (HIGH FLOW)..	20-01
CASE DRAIN FILTER	30-01	HYDRAULIC PUMP (STANDARD)	20-01
CHAINCASE	40-01	HYDRAULIC PUMP (SJC) (HIGH FLOW).....	20-01
CHARGE PRESSURE.....	30-01	HYDRAULIC PUMP (SJC)	20-01
COMPRESSOR	80-01	HYDRAULIC SYSTEM INFORMATION	20-01
CONDENSER	80-01	HYDROSTATIC MOTOR	30-01
CONTROL HANDLE / LEVER	50-01	HYDROSTATIC MOTOR (TWO SPEED)	30-01
CONTROL HANDLE / LEVER (ACS)	50-01	HYDROSTATIC MOTOR CARRIER.....	30-01
CONTROL HANDLE (ACS)	50-01	HYDROSTATIC MOTOR CARRIER (SJC).....	30-01
CONTROL HANDLE (SJC).....	50-01	HYDROSTATIC PUMP	30-01
CONTROL PANEL.....	50-01	HYDROSTATIC PUMP (SJC)	30-01
CONTROL PANEL (SJC).....	50-01	HYDROSTATIC SYSTEM INFORMATION	30-01
CONTROL PANEL SETUP	60-01		
CONTROL PEDALS (ACS)	50-01	INSTRUMENT PANELS	60-01
CONTROL PEDALS AND LINKAGES.....	50-01		
CONTROL SYSTEM (ACS).....	60-01	JOYSTICK CONTROL	50-01
CONVERSIONS	SPEC-01		
CRANKSHAFT AND PISTONS	70-01	LIFT ARMS.....	50-01
CYLINDER HEAD.....	70-01	LIFT ARM BYPASS CONTROL VALVE	20-01
CYLINDER (LIFT).....	20-01	LIFT ARM SUPPORT DEVICE	10-01
CYLINDER (BOB-TACH)	20-01	LIFTING AND BLOCKING THE LOADER.....	10-01
CYLINDER (TILT)	20-01	LIGHTS	60-01
		S250 LOADER SPECIFICATIONS.....	SPEC-01
DIAGNOSTICS SERVICE CODES	60-01	S300 LOADER SPECIFICATIONS.....	SPEC-01
DRIVE BELT	30-01	LOADER STORAGE AND RETURN TO SERVICE	10-01
DRIVE COMPONENTS	40-01	LUBRICATION SYSTEM.....	10-01, 70-01
		LUBRICATING THE LOADER.....	10-01
ELECTRICAL / HYDRAULIC CONTROLS	60-01		
ELECTRICAL/HYDRAULIC CONTROLS (SJC).....	60-01	MAIN RELIEF VALVE	20-01
ELECTRICAL SYSTEM INFORMATION	60-01	MAIN RELIEF VALVE (FOOT CONTROL)	20-01
ENGINE COOLING SYSTEM.....	10-01, 70-01	MAIN RELIEF VALVE	
ENGINE INFORMATION	70-01	(SELECTABLE JOYSTICK CONTROL) (SJC).....	20-01
ENGINE LUBRICATION SYSTEM.....	10-01	MAINTENANCE CLOCK.....	60-01
ENGINE SPEED CONTROL	70-01	MUFFLER.....	70-01

ALPHABETICAL INDEX (CONT'D)

OIL COOLER.....	30-01
OPERATOR CAB.....	10-01, 50-01
OPERATOR SEAT.....	50-01
OPERATOR SEAT (SUSPENSION).....	50-01
PASSWORD SETUP (IF EQUIPPED WITH KEYLESS START).....	
PIVOT PINS.....	10-01
REAR AUXILIARY DIVERTER VALVE.....	
REAR DOOR.....	50-01
REAR GRILL.....	50-01
RECEIVER / DRIER.....	80-01
REGULAR MAINTENANCE.....	80-01
REMOTE START.....	10-01
REMOTE START (SERVICE TOOL).....	10-01
SEAT BAR.....	
SEAT BAR SENSOR.....	60-01
SRVCE PC (LAPTOP COMPUTER).....	60-01
SERVICE SCHEDULE.....	10-01
SPEED SENSOR (SJC).....	60-01
SPARK ARRESTOR MUFFLER.....	10-01
STARTER.....	60-01
STEERING DRIFT COMPENSATION.....	60-01
STOPPING THE ENGINE AND LEAVING THE LOADER.....	
SYSTEM CHARGING AND RECLAMATION.....	80-01
THERMOSTAT.....	
TIRE MAINTENANCE.....	10-01
TORQUE SPECIFICATIONS FOR BOLTS.....	SPEC-01
TOWING THE LOADER.....	10-01
TRACTION LOCK.....	60-01
TRANSPORTING THE LOADER ON A TRAILER..	10-01
TROUBLESHOOTING.....	80-01
TURBOCHARGER.....	70-01
WINDOW (FRONT DOOR).....	
WINDOW (REAR).....	50-01
WINDOW (SIDE).....	50-01
WINDOW (TOP).....	50-01

CONTENTS

FOREWORD.....	III
SAFETY INSTRUCTIONS	VI
FIRE PREVENTION	VIII
SERIAL NUMBER LOCATION	X
DELIVERY REPORT.....	X
BOBCAT LOADER IDENTIFICATION.....	XI
SAFETY AND MAINTENANCE.....	10-01
HYDRAULIC SYSTEM	20-01
HYDROSTATIC SYSTEM.....	30-01
DRIVE SYSTEM	40-01
MAIN FRAME	50-01
ELECTRICAL SYSTEM & ANALYSIS.....	60-01
ENGINE SERVICE	70-01
HEATING, VENTILATION, AIR CONDITIONING	80-01
SPECIFICATIONS.....	SPEC-01

**SAFETY &
MAINTENANCE**

**HYDRAULIC
SYSTEM**

**HYDROSTATIC
SYSTEM**

**DRIVE
SYSTEM**

MAIN FRAME

**ELECTRICAL
SYSTEM &
ANALYSIS**

**ENGINE
SERVICE**

HVAC

SPECIFICATIONS

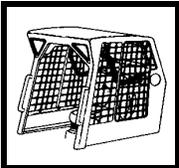
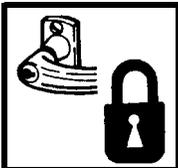
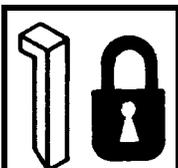
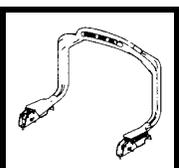
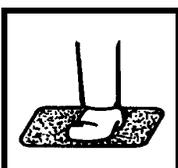
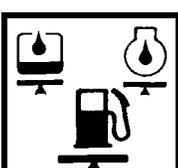
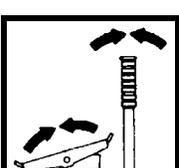
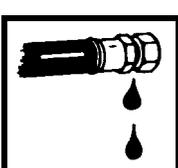


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FOREWORD

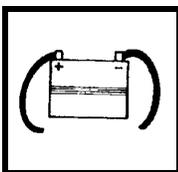
This manual is for the Bobcat loader mechanic. It provides necessary servicing and adjustment procedures for the Bobcat loader and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

A general inspection of the following items must be made after the loader has had service or repair:

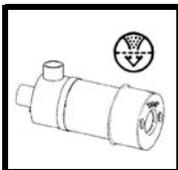
- | | | | |
|--|---|--|---|
| 1. Check that the ROPS/FOPS (Including side screens) is in good condition and is not modified. |  | 9. The parking brake must function correctly. |  |
| 2. Check that ROPS mounting hardware is tightened and is Bobcat approved. |  | 10. Enclosure door latches must open and close freely. |  |
| 3. The seat belt must be correctly installed, functional and in good condition. |  | 11. Bob-Tach wedges and linkages must function correctly and be in good condition. |  |
| 4. The seat bar must be correctly adjusted, clean and lubricated. |  | 12. Safety treads must be in good condition. |  |
| 5. Check lift arm support device, replace if damaged. |  | 13. Check for correct function of indicator lamps. |  |
| 6. Machine signs (decals) must be legible and in the correct location. |  | 14. Check hydraulic fluid level, engine oil level and fuel supply. |  |
| 7. Steering levers, hand controls and foot pedals must return to neutral (as applicable). |  | 15. Inspect for fuel, oil or hydraulic fluid leaks. |  |
| 8. Check for correct function of the work lights. |  | 16. Lubricate the loader. |  |

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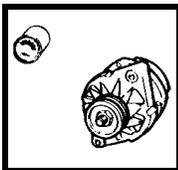
17. Check the condition of the battery and cables.



18. Inspect the air cleaner for damage or leaks. Check the condition of the element.



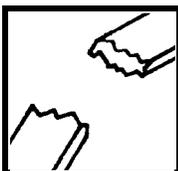
19. Check the electrical charging system.



20. Check tires for wear and pressure. Check tracks for wear and tension. Use only approved tires or tracks.



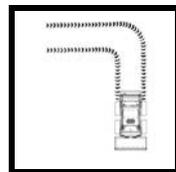
21. Inspect for loose or broken parts or connections.



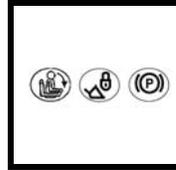
22. Check for any field modification not completed.



23. Operate the machine and check all functions.



24. Check for correct function of the Bobcat Interlock Control System (BICS™) before the machine is returned to the customer.



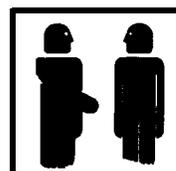
25. Check for proper function of front horn and back-up alarm (if equipped).



26. Check function or condition of all equipped options and accessories (examples: fire extinguisher, rotating beacon, lift kits, etc.).



27. Recommend to the owner that all necessary corrections be made before the machine is returned to service.



**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.



Bobcat®

SAFETY INSTRUCTIONS



Safety Alert Symbol

This symbol with a warning statement means: “Warning, be alert! Your safety is involved!” Carefully read the message that follows.



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

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.

I-2019-0284



DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107



WARNING

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

The following publications provide information on the safe use and maintenance of the Bobcat machine and attachments:

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment contains operating information as well as routine maintenance and service procedures. It is a part of the machine and can be stored in a container provided on the machine. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat dealer.
- Machine signs (decals) instruct on the safe operation and care of your Bobcat machine or attachment. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat dealer.
- An Operator’s Handbook fastened to the operator cab. It’s brief instructions are convenient to the operator. The handbook is available from your dealer in an English edition or one of many other languages. See your Bobcat dealer for more information on translated versions.
- The AEM Safety Manual delivered with the machine gives general safety information.
- The Service Manual and Parts Manual are available from your dealer for use by mechanics to do shop-type service and repair work.
- The Skid-Steer Loader Operator Training Course is available through your local dealer or at www.training.bobcat.com or www.bobcat.com. This course is intended to provide rules and practices of correct operation of the Skid-Steer Loader. The course is available in English and Spanish versions.
- Service Safety Training Courses are available from your Bobcat dealer or at www.training.bobcat.com or www.bobcat.com. They provide information for safe and correct service procedures.
- The Skid-Steer Loader Safety Video is available from your Bobcat dealer or at www.training.bobcat.com or www.bobcat.com.

SI SSL-1008 SM

SAFETY INSTRUCTIONS (CONT'D)

The dealer and owner / operator review the recommended uses of the product when delivered. If the owner / operator will be using the machine for a different application(s) he or she must ask the dealer for recommendations on the new use.



Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other job site Rules and Regulations. Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the state of California to cause cancer.

Call Before You Dig
Dial 811 (USA Only)
1-888-258-0808 (USA & Canada)

When you call, you will be directed to a location in your state / province, or city for information about buried lines (telephone, cable TV, water, sewer, gas, etc.).

FIRE PREVENTION



Maintenance

The machine and some attachments have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcs or sparks.

Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential fire hazard.

The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.

All fuels, most lubricants and some coolants mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

Operation

Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Electrical



Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part or wires that are loose or frayed.

Battery gas can explode and cause serious injury. Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting. Do not jump start or charge a frozen or damaged battery. Keep any open flames or sparks away from batteries. Do not smoke in battery charging area.

Hydraulic System

Check hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. Hydraulic tubes and hoses must be properly routed and have adequate support and secure clamps. Tighten or replace any parts that show leakage.

Always clean fluid spills. Do not use gasoline or diesel fuel for cleaning parts. Use commercial nonflammable solvents.

Fueling



Stop the engine and let it cool before adding fuel. No smoking! Do not refuel a machine near open flames or sparks. Fill the fuel tank outdoors.

Starting

Do not use ether or starting fluids on any engine that has glow plugs or air intake heater. These starting aids can cause explosion and injure you or bystanders.

Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting.

Spark Arrestor Exhaust System

The spark arrestor exhaust system is designed to control the emission of hot particles from the engine and exhaust system, but the muffler and the exhaust gases are still hot.

Check the spark arrestor exhaust system regularly to make sure it is maintained and working properly. Use the procedure in the Operation & Maintenance Manual for cleaning the spark arrestor muffler (if equipped).

FIRE PREVENTION (CONT'D)

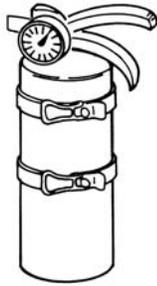
Welding And Grinding

Always clean the machine and attachment, disconnect the battery, and disconnect the wiring from the Bobcat controllers before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.

Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.

Dust generated from repairing nonmetallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

Fire Extinguishers



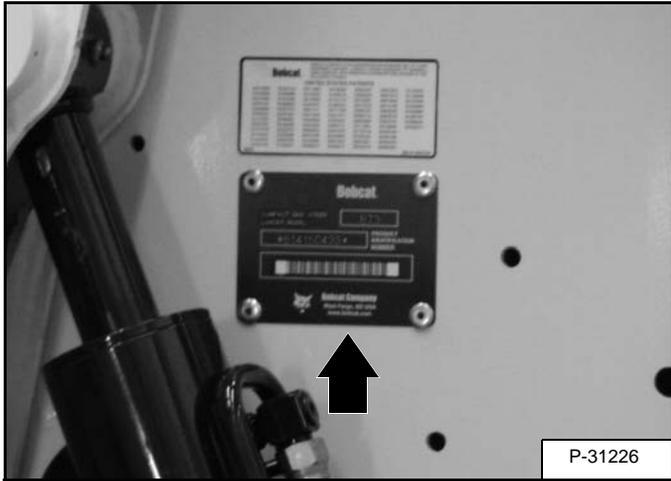
Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

SERIAL NUMBER LOCATION

Always use the serial number of the loader 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.

Loader Serial Number

Figure 1



The loader serial number plate is located on the outside of the loader frame [Figure 1].

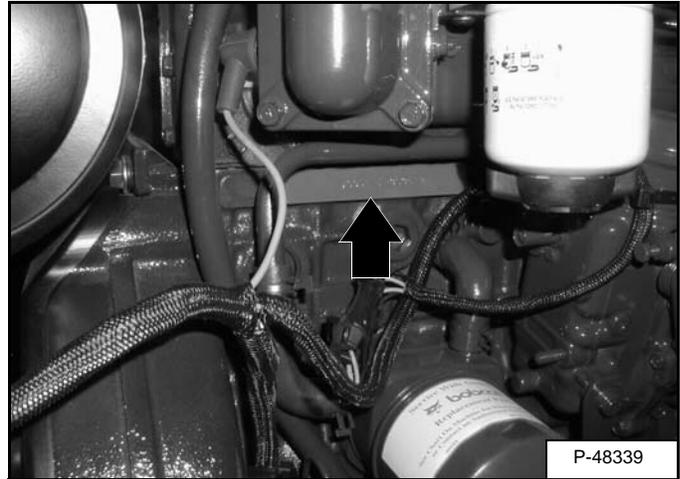
Explanation of loader Serial Number:

XXXX	XXXXX
Model 1.-Model/ Engine Combination	Model 2.-Production Sequence (Series)

1. The four digit Model/Engine Combination Module number identifies the model number and engine combination.
2. The five digit Production Sequence Number identifies the order which the loader is produced.

Engine Serial Number

Figure 2



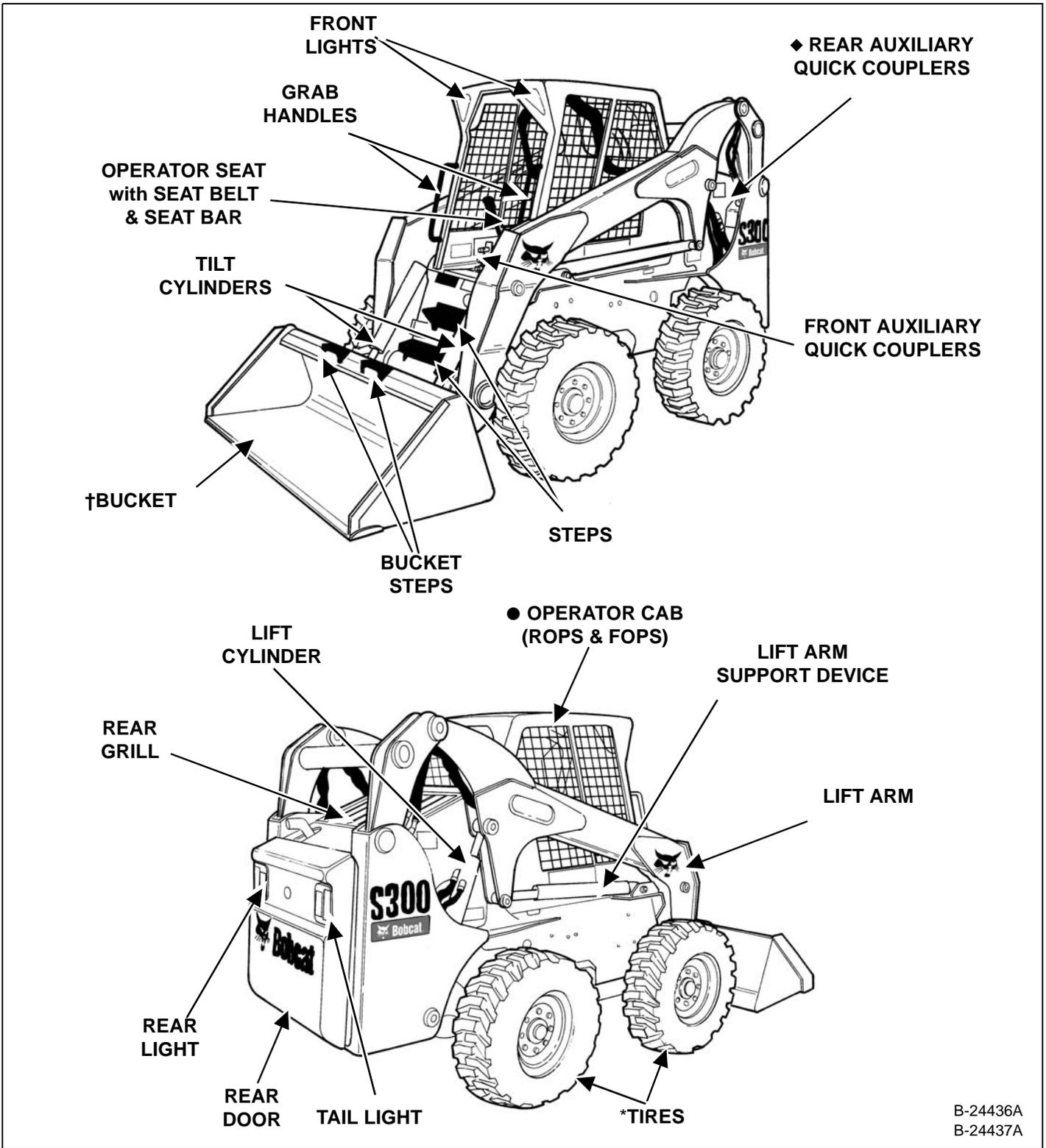
The engine serial number is located on the engine block [Figure 2].

DELIVERY REPORT

Figure 3

The Delivery Report must be filled out by the dealer and signed by the owner or operator when the Bobcat loader is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely [Figure 3].

BOBCAT LOADER IDENTIFICATION



◆ Optional or Field Accessory (Not Standard Equipment)

* TIRES - Flotation tires are shown. The Bobcat Loader is factory equipped with standard tires

† BUCKETS - Several different buckets and other attachments are available for the Bobcat Loader.

● ROPS, FOPS - Roll Over Protective Structure, per ISO 3471, and Falling Object Protective Structure per ISO 3449, Level I. Level II is available. The Bobcat Loader is base-equipped with a standard operator cab as shown. Extra insulated cab is available as an option (Reduced noise level).

B-24436A
B-24437A

SAFETY AND MAINTENANCE

SAFETY & MAINTENANCE

AIR CLEANER SERVICE	10-80-1
Replacing Filter Elements	10-80-1
BOB-TACH (HAND LEVER)	10-140-1
Inspection And Maintenance	10-140-1
BOB-TACH (POWER)	10-141-1
Inspection And Maintenance	10-141-1
ENGINE COOLING SYSTEM	10-90-1
Checking Level	10-90-2
Cleaning	10-90-1
Removing And Replacing Coolant	10-90-2
ENGINE LUBRICATION SYSTEM	10-110-1
Checking And Adding Engine Oil	10-110-1
Engine Oil Chart	10-110-1
Removing And Replacing Oil And Filter	10-110-2
FINAL DRIVE TRANSMISSION (CHAINCASE)	10-130-1
Checking And Adding Oil	10-130-1
Removing And Replacing Oil	10-130-1
FUEL SYSTEM	10-100-1
Biodiesel Blend Fuel	10-100-1
Filling The Fuel Tank	10-100-2
Fuel Filter	10-100-2
Fuel Specifications	10-100-1
Removing Air From The Fuel System	10-100-3
HYDRAULIC / HYDROSTATIC SYSTEM	10-120-1
Breather Cap	10-120-6
Checking And Adding Fluid	10-120-1
Hydraulic / Hydrostatic Fluid Chart	10-120-1
Removing And Replacing Hydraulic Charge Filter	10-120-5
Removing And Replacing Hydraulic Fluid	10-120-2
Removing And Replacing Case Drain Filters	10-120-4
Removing And Replacing Hydraulic / Hydrostatic Filter	10-120-3
LIFT ARM SUPPORT DEVICE	10-20-1
Installing	10-20-1
Removing	10-20-2
LIFTING AND BLOCKING THE LOADER	10-10-1
Procedure	10-10-1

Continued On Next Page

SAFETY AND MAINTENANCE (CONT'D)

LOADER STORAGE AND RETURN TO SERVICE	10-190-1
Return To Service	10-190-1
Storage	10-190-1
LUBRICATING THE LOADER	10-150-1
Lubrication Locations	10-150-1
OPERATOR CAB	10-30-1
Cab Door Sensor	10-30-4
Description	10-30-1
Lowering	10-30-3
Raising	10-30-2
Special Applications Kit Inspection And Maintenance	10-30-4
PIVOT PINS	10-180-1
Inspection And Maintenance	10-180-1
REMOTE START TOOL KIT-MEL1563	10-60-1
Remote Start Procedure	10-60-4
Remote Start Tool - MEL1563	10-60-1
Service Tool Harness Communicator - MEL1566	10-60-3
Service Tool Harness Control - MEL1565	10-60-2
REMOTE START TOOL (SERVICE TOOL) KIT - 6689779	10-61-1
Computer Service Tool Harness - 6689746	10-61-4
Description	10-61-1
Loader Service Tool Harness - 6689747	10-61-3
Computer Service Tool Harness - 6689746	10-61-4
Remote Start Tool (Service Tool) - 6689778	10-61-2
SERVICE SCHEDULE	10-70-1
Chart	10-70-1
SPARK ARRESTOR MUFFLER	10-170-1
Cleaning Procedure	10-170-1
STOPPING THE ENGINE AND LEAVING THE LOADER	10-200-1
Emergency Exit	10-200-2
Procedure	10-200-1
TIRE MAINTENANCE	10-160-1
Mounting	10-160-2
Rotating	10-160-1
Wheel Nuts	10-160-1

Continued On Next Page

SAFETY AND MAINTENANCE (CONT'D)

TOWING THE LOADER	10-50-1
Procedure	10-50-1
TRANSPORTING THE LOADER ON A TRAILER	10-40-1
Fastening	10-40-1
Loading And Unloading	10-40-1

TIGHTEN ALL HARDWARE PER SIZE TO GRADE 5 TORQUE (SEE STANDARD TORQUE SPECIFICATIONS FOR BOLTS, SECTION SPEC-01) UNLESS OTHERWISE SPECIFIED.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE AND STANDARD ITEMS MAY VARY.

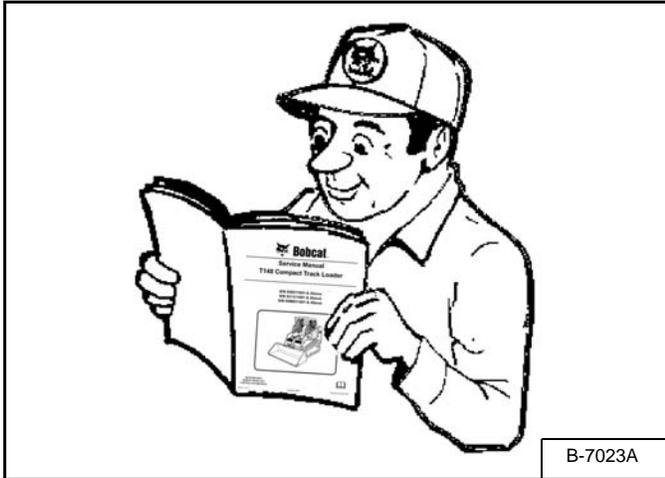


Bobcat®

LIFTING AND BLOCKING THE LOADER

Procedure

Figure 1



AVOID INJURY OR DEATH

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.

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Read the Removal & Installation, Disassembly & Assembly, etc. completely to become familiar with the procedure before beginning [Figure 1].

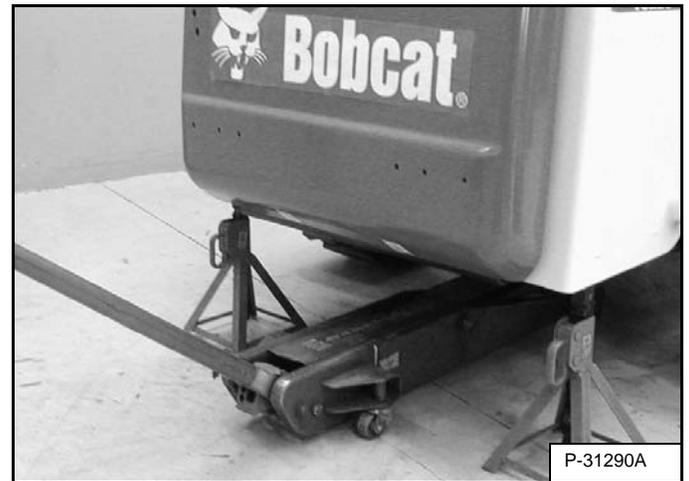
Always park the loader on a level surface.



Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Figure 10-10-2



Lift the rear of the loader and install jackstands [Figure 10-10-2].

Figure 10-10-3



Lift the front of the loader and put jackstands under the axle tubes [Figure 10-10-3].

NOTE: Make sure the jackstands do not touch the tires.



Bobcat®

LIFT ARM SUPPORT DEVICE

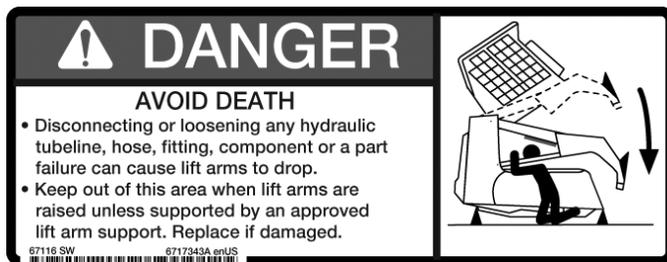
Installing



Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

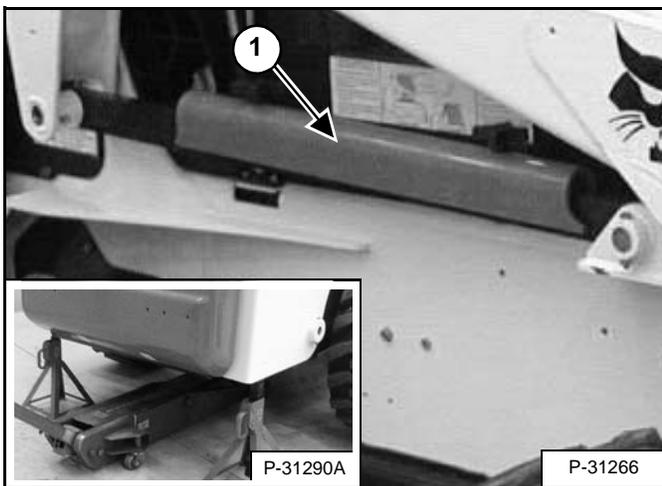
Service lift arm support device if damaged or if parts are missing. Using a damaged lift arm support or with missing parts can cause lift arms to drop causing injury or death.

W-2572-0407



Remove attachment from the loader. (See Removal And Installation on Page 50-40-1.) **OR** (See Removal And Installation on Page 50-41-1.)

Figure 10-20-1



Put jackstands under the rear corners of the loader frame (Inset) [Figure 10-20-1].

Remove the lift arm support device (Item 1) [Figure 10-20-1] from the storage position.

The operator must stay in the operator seat with the seat belt fastened and the seat bar lowered until the lift arm support device is installed.

Start the engine and raise the lift arms all the way up.

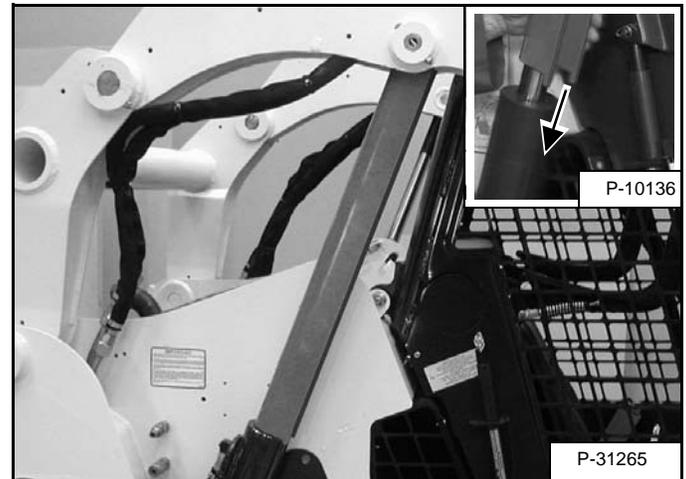
Figure 10-20-2



Have a second person install the lift arm support device over the rod of one of the lift cylinders [Figure 10-20-2].

The lift arm support device must be tight against the cylinder rod.

Figure 10-20-3



Lower the lift arms slowly until the lift arm support device is held between the lift arms and the lift cylinder [Figure 10-20-3]. The tabs of the lift arm support device must go under the cylinder (Inset) [Figure 10-20-3].

LIFT ARM SUPPORT DEVICE (CONT'D)

Removing

The operator must be in the operator's seat, with the seat belt fastened and seat bar lowered, until the lift arm support device is removed and the lift arms are lowered all the way.

Start the engine and raise the lift arms all the way up.

Have a second person remove the lift arm support device.

Lower the lift arms all the way and stop the engine.

Return the lift arm support device to the storage position and secure with clamping knobs.

Remove the jackstands.

OPERATOR CAB

Description

The Bobcat Loader has an operator cab (ROPS and FOPS) as standard equipment to protect the operator from rollover and falling objects. Check with your dealer if the operator cab has been damaged. The seat belt must be worn for rollover protection.

ROPS / FOPS - Roll Over protective Structure per ISO 3471, and Falling Object Protective Structure per SAE J1043 and ISO 3449, Level I. Level II is available.

Level I

Protection from falling bricks, small concrete blocks, and hand tools encountered in operations such as highway maintenance, landscaping, and other construction sites.

Level II

Protection from falling trees, rocks: for machines involved in site clearing, overhead demolition or forestry.



Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.

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OPERATOR CAB (CONT'D)

Raising

Always stop the engine before raising or lowering the cab.

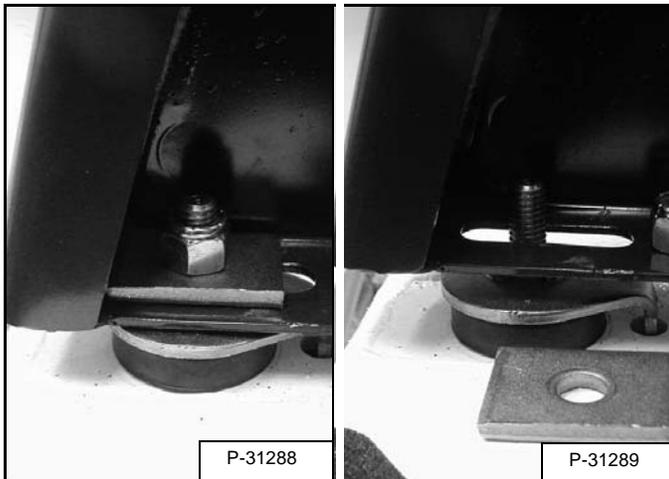
Stop the loader on a level surface. Lower the lift arms. If the lift arms must be up while raising the operator cab, install the lift arm support device. (See LIFT ARM SUPPORT DEVICE on Page 10-20-1.)

Figure 10-30-1



Install jackstands under the rear of the loader frame [Figure 10-30-1].

Figure 10-30-2



Remove the nuts and plates [Figure 10-30-2] (both sides) at the front corners of the cab.



NOTE: On Advanced Control System (ACS) equipped machines, the steering levers could contact the cab frame while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the cab.

Figure 10-30-3



Lift on the grab handles and bottom of the operator cab [Figure 10-30-3] slowly until the cab is all the way up and the latching mechanism engages.

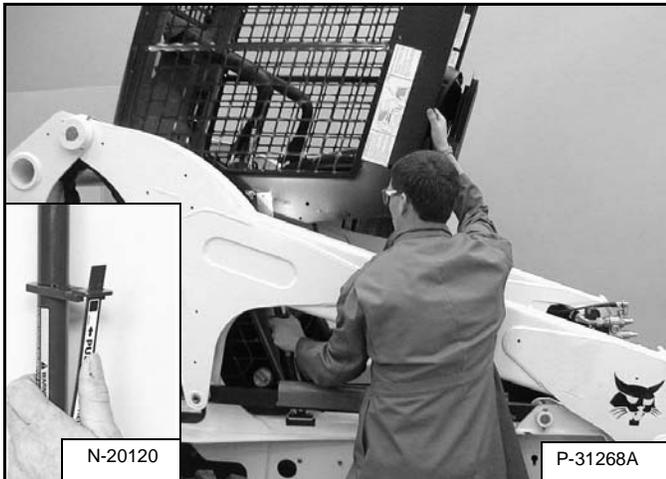
OPERATOR CAB (CONT'D)

Lowering

Always stop the engine before raising or lowering the cab.

NOTE: Always use the grab handles to lower the cab.

Figure 10-30-4



Pull down on the bottom of the operator cab until it stops at the latching mechanism [Figure 10-30-4].

NOTE: The weight of the cab increases when equipped with options and accessories such as cab door, heater, air conditioning, etc. In these cases, the cab may need to be raised slightly from the latch to be able to release the latch.



NOTE: On Advanced Control System (ACS) equipped machines, the steering levers could contact the cab frame while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the cab.

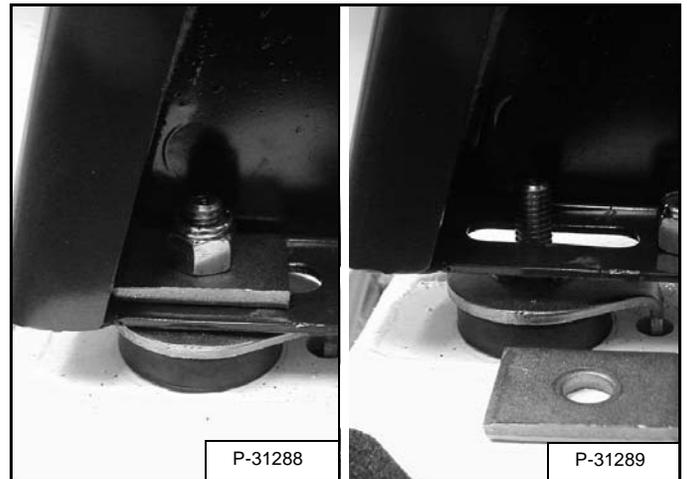
Support the cab and release the latching mechanism (Inset) [Figure 10-30-4]. Remove your hand from the latch mechanism when the cab is past the latch stop. Use both hands to lower the cab all the way down.



PINCH POINT CAN CAUSE INJURY
Remove your hand from the latching mechanism when the cab is past the latch stop.

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Figure 10-30-5



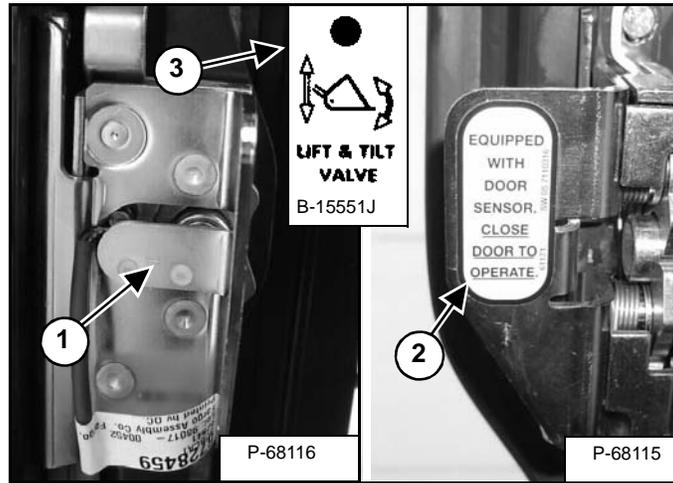
Install the plates and nuts (both sides) [Figure 10-30-5].

Tighten the nuts to 40 - 45 ft.-lb. (54 - 61 N•m) torque.

Cab Door Sensor

This machine may be equipped with a Cab Door Sensor.

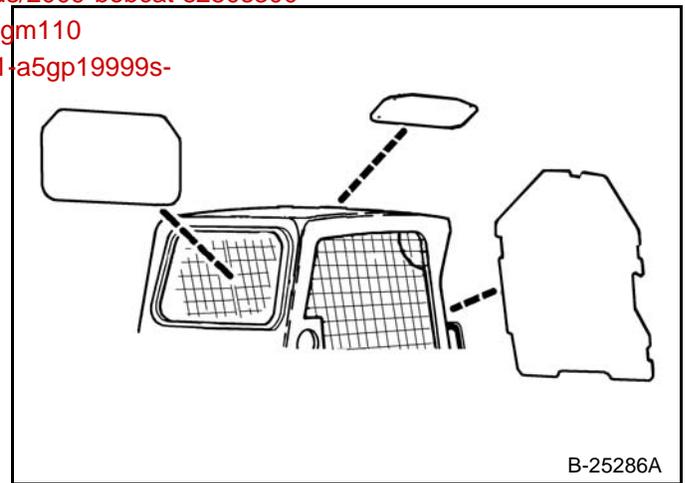
Figure 10-30-6



The cab door has a sensor (Item 1) [Figure 10-30-6] installed which deactivates the lift and tilt valves when the door is open.

A decal is located on the latch mechanism (Item 2) [Figure 10-30-6].

The LIFT & TILT VALVE light (Item 3) [Figure 10-30-6] will be ON when the door is closed and the PRESS TO OPERATE LOADER button is pressed.



Available for special applications to restrict material from entering cab openings. Kit includes 1/2 inch Lexan® front door, top and rear windows.

See your Bobcat dealer for availability.

- Inspect for cracks or damage. Replace if required.
- Pre-rinse with water to remove gritty materials.
- Wash with a mild household detergent and warm water.
- Use a sponge or soft cloth. Rinse well with water and dry with a clean soft cloth or rubber squeegee.
- Do not use abrasive or highly alkaline cleaners.
- Do not operate windshield wipers on a dry surface.
- Do not clean with metal blades or scrapers.