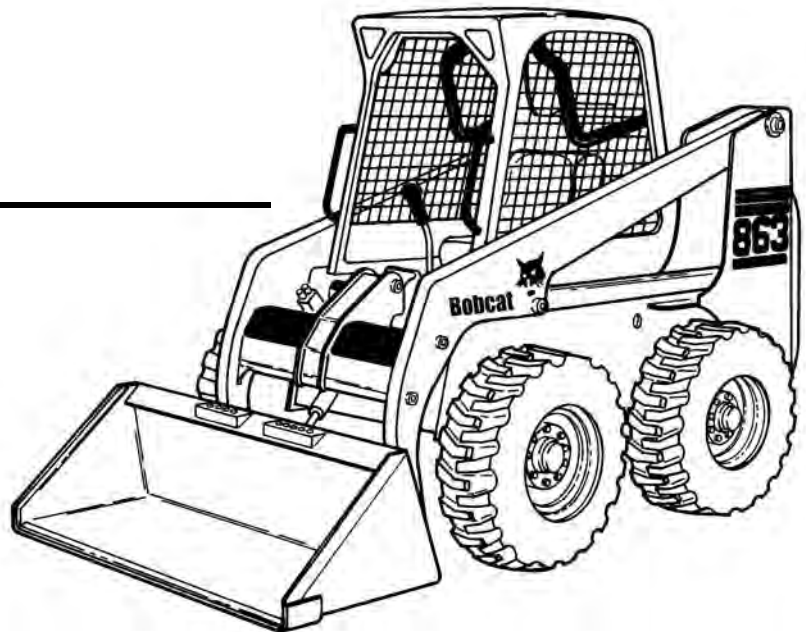


Bobcat®

Service Manual

S/N 514440001 & Above
S/N 514540001 & Above
S/N 514640001 & Above



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**EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)**

MAINTENANCE SAFETY



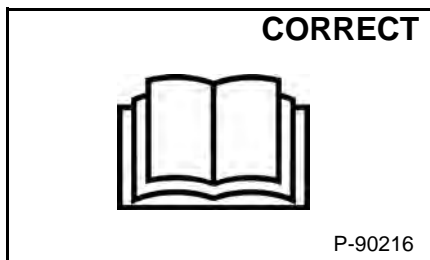
WARNING

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

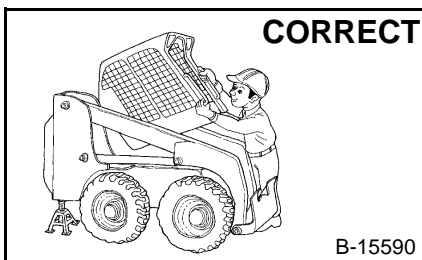


Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



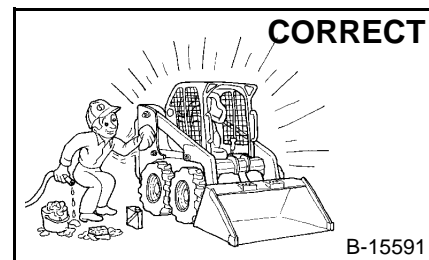
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⚠ Never service the Bobcat Skid-Steer Loader without instructions.



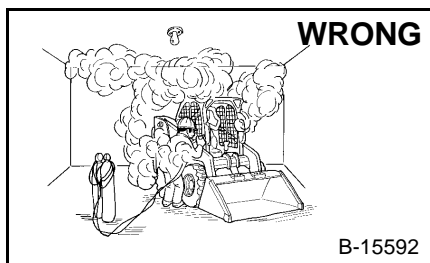
B-15590

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



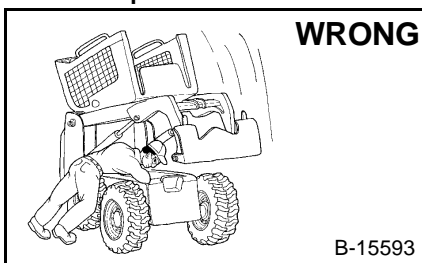
B-15591

⚠ Cleaning and maintenance are required daily.



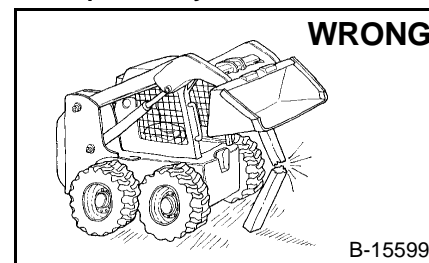
B-15592

- ⚠ 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.



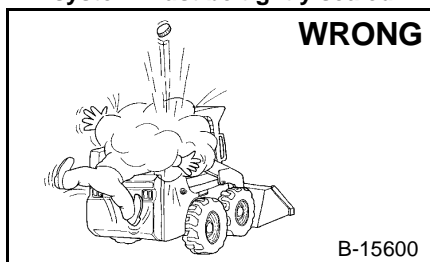
B-15593

- ⚠ 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.



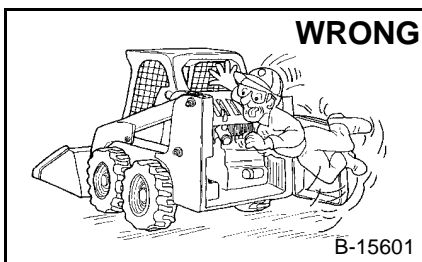
B-15599

- ⚠ 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.



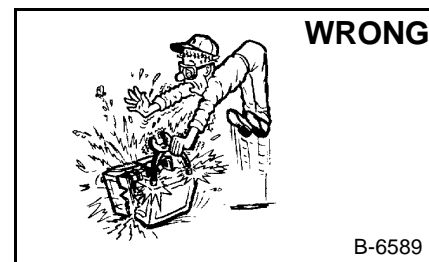
B-15600

- ⚠ 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-15601

- ⚠ 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.



Bobcat®

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**SAFETY AND
MAINTENANCE**

**HYDRAULIC
SYSTEM**

**HYDROSTATIC
SYSTEM**

**DRIVE
SYSTEM**

MAINFRAME

**ELECTRICAL
SYSTEM &
ANALYSIS**

**ENGINE
SERVICE**

HVAC

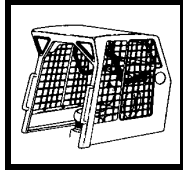
SPECIFICATIONS

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.



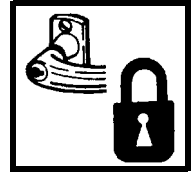
9. The parking brake must function correctly.



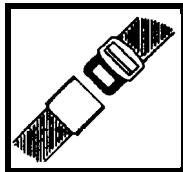
2. Check that ROPS mounting hardware is tightened and is Bobcat approved.



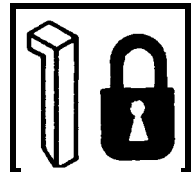
10. Enclosure door latches must open and close freely.



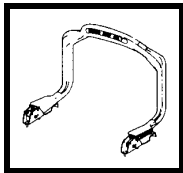
3. The seat belt must be correctly installed, functional and in good condition.



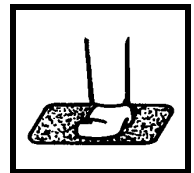
11. Bob-Tach wedges and linkages must function correctly and be in good condition.



4. The seat bar must be correctly adjusted, clean and lubricated.



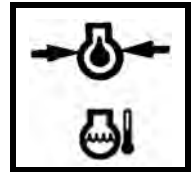
12. Safety treads must be in good condition.



5. Check lift arm support device, replace if damaged.



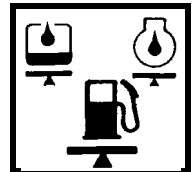
13. Check for correct function of indicator lamps.



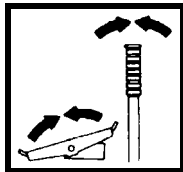
6. Machine signs (decals) must be legible and in the correct location.



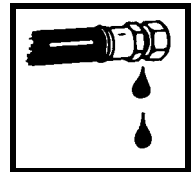
14. Check hydraulic fluid level, engine oil level and fuel supply.



7. Steering levers, hand controls and foot pedals must return to neutral (as applicable).



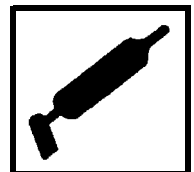
15. Inspect for fuel, oil or hydraulic fluid leaks.



8. Check for correct function of the work lights.



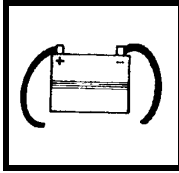
16. Lubricate the loader.



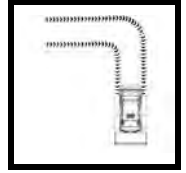
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Service Manual

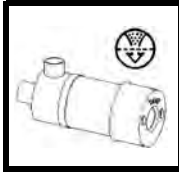
17. Check the condition of the battery and cables.



23. Operate the machine and check all functions.



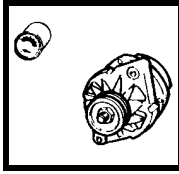
18. Inspect the air cleaner for damage or leaks. Check the condition of the element.



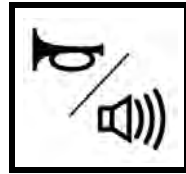
24. Check for correct function of the Bobcat Interlock Control System (BICS™) before the machine is returned to the customer.



19. Check the electrical charging system.



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



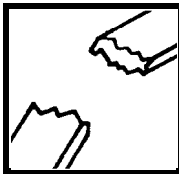
20. Check tires for wear and pressure. Check tracks for wear and tension. Use only approved tires or tracks.



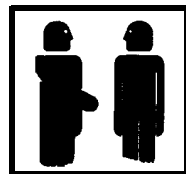
26. Check function or condition of all equipped options and accessories (examples: fire extinguisher, rotating beacon, lift kits, etc.).



21. Inspect for loose or broken parts or connections.



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



22. Check for any field modification not completed.



**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.

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Service Manual

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)

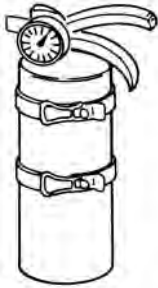
Welding And Grinding

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



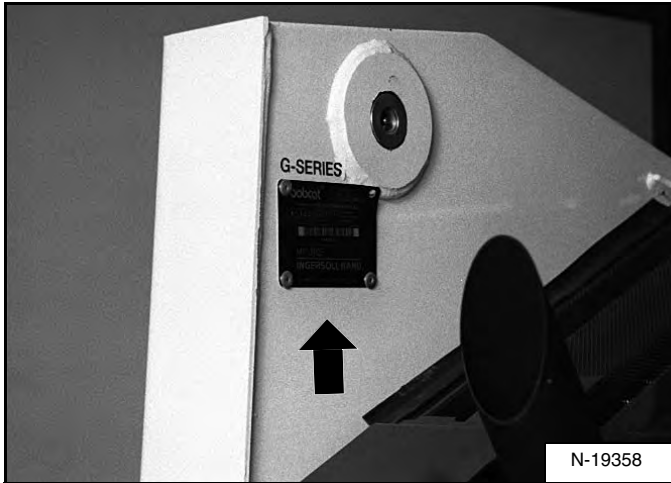
Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

SERIAL NUMBER LOCATIONS

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 inside of the operator cab on the right fender and in front of the seat [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

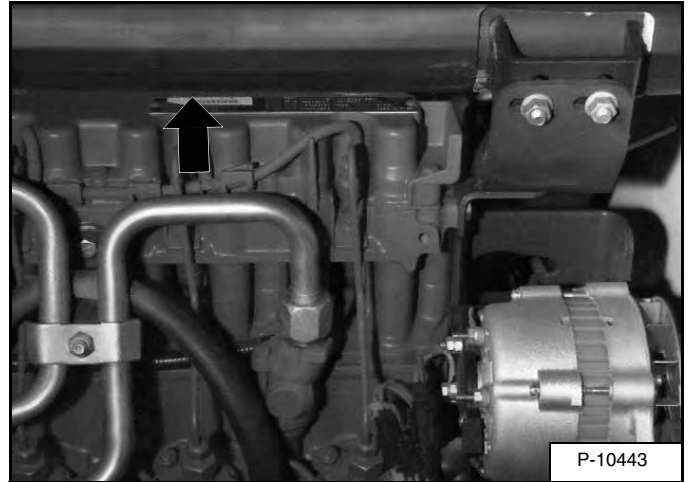
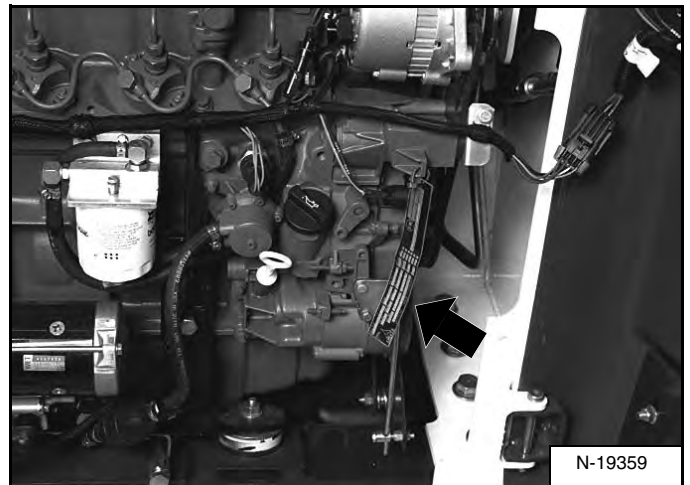


Figure 3



The engine serial number is located on the valve cover at the right side of the engine [Figure 2]. There is also an extra S/N tag attached to the engine [Figure 3].

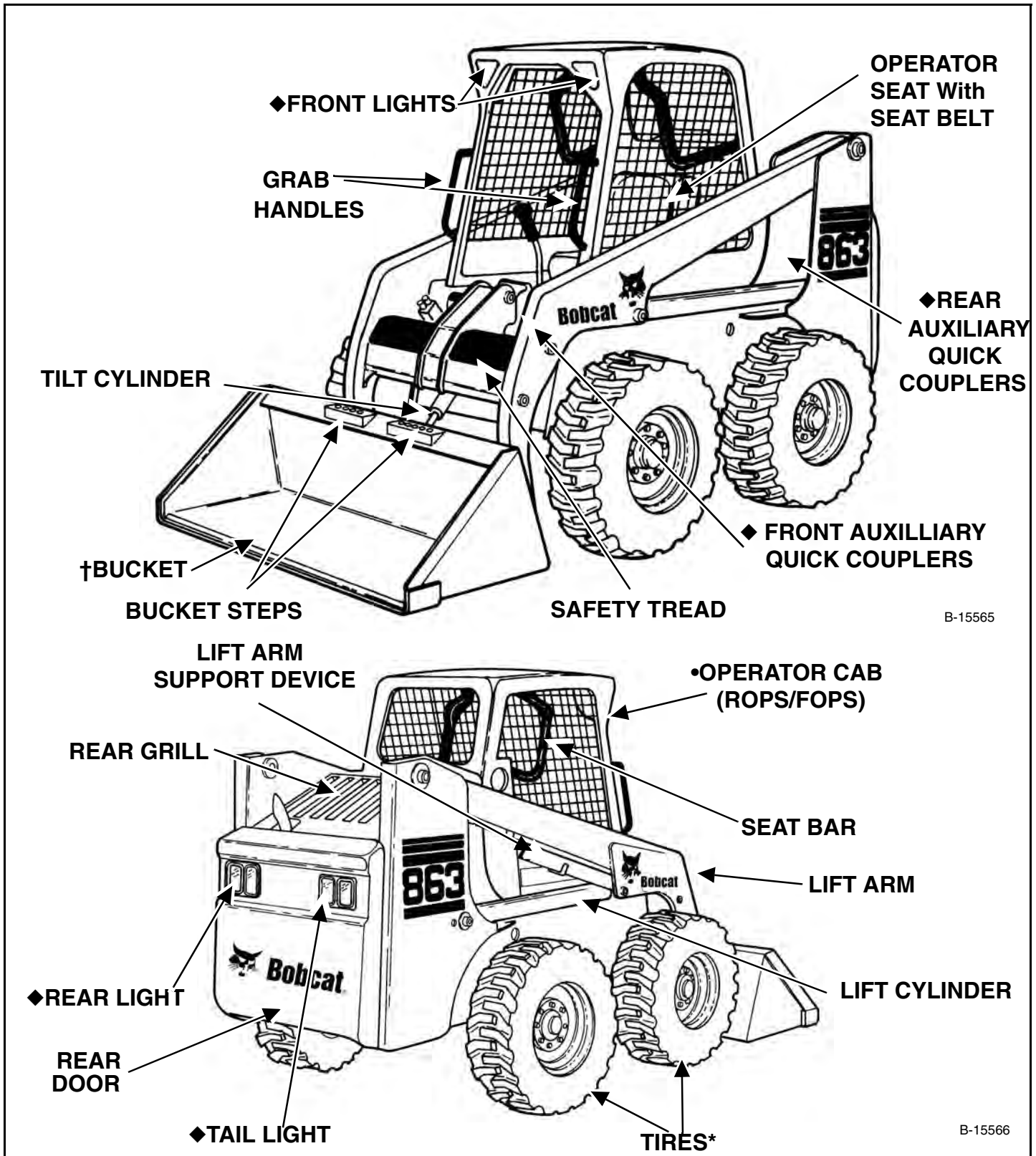
DELIVERY REPORT

Figure 4

The diagram shows a form layout for a delivery report. It includes a title 'DELIVERY REPORT' at the top right, a 'WARNING' section with a dark header, and various areas with horizontal lines representing text input fields. A reference code 'B-16315' is located in the bottom right corner of the form's frame.

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 4]**.

BOBCAT LOADER IDENTIFICATION



B-15565

B-15566

◆ OPTIONAL OR FIELD ACCESSORY (Not Standard Equipment)

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

† BUCKET - Several different buckets and other attachments are available for the Bobcat loader.

• ROPS, FOPS - Roll-Over Protective Structure, per SAE J1040 and ISO 3471, and Falling Object Protective Structure per SAE J1043 and ISO 3449, Level 1. 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).



Bobcat®

SAFETY AND MAINTENANCE

SAFETY & MAINTENANCE

AIR CLEANER SERVICE	10-80-1
Replacing Filter Element	10-80-1
BOB-TACH	10-150-1
Inspection And Maintenance	10-150-1
ENGINE COOLING SYSTEM	10-90-1
Cleaning The Cooling System	10-90-1
ENGINE LUBRICATION SYSTEM	10-110-1
Checking Engine Oil	10-110-1
Replacing Oil And Filter	10-110-1
FAN GEAR BOX	10-140-1
Checking And Adding Oil	10-140-1
FINAL DRIVE TRANSMISSION (CHAINCASE)	10-130-1
Checking And Adding Oil	10-130-1
Replacing The Oil	10-130-1
FUEL SYSTEM	10-100-1
Filling The Fuel Tank	10-100-1
Fuel Filter	10-100-2
Fuel Lift Pump Strainer	10-100-3
Fuel Specifications	10-100-1
Removing Air From The Fuel System	10-100-3
HYDRAULIC / HYDROSTATIC SYSTEM	10-120-1
Breather Cap	10-120-4
Checking And Adding Fluid	10-120-1
Replacing The Hydraulic / Hydrostatic Fluid	10-120-2
Replacing Hydraulic Fluid And Case Drain Filters	10-120-2
LIFT ARM SUPPORT DEVICE	10-20-1
Disengaging The Lift Arm Support Device	10-20-2
Engaging The Lift Arm Support Device	10-20-1
LIFTING AND BLOCKING THE LOADER	10-10-1
Procedure	10-10-1
LUBRICATING THE LOADER	10-160-1
Procedure	10-160-1

SAFETY AND MAINTENANCE (CONT'D)

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Adjusting The Bumper	10-40-1
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LIFTING AND BLOCKING THE LOADER

Procedure



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.

W-2003-0807

Figure 10-10-1



Read the removal and installation, disassembly and assembly, etc., completely to become familiar with the procedure before beginning [Figure 10-10-1].

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

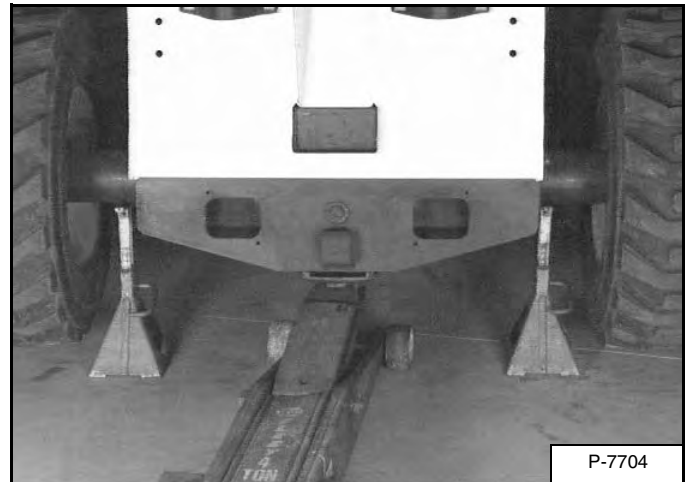
Figure 10-10-2



Put a floor jack under the rear of the loader [Figure 10-10-2].

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

Figure 10-10-3



Put the floor jack under the front of the loader [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

Engaging The Lift Arm Support Device

! WARNING

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.

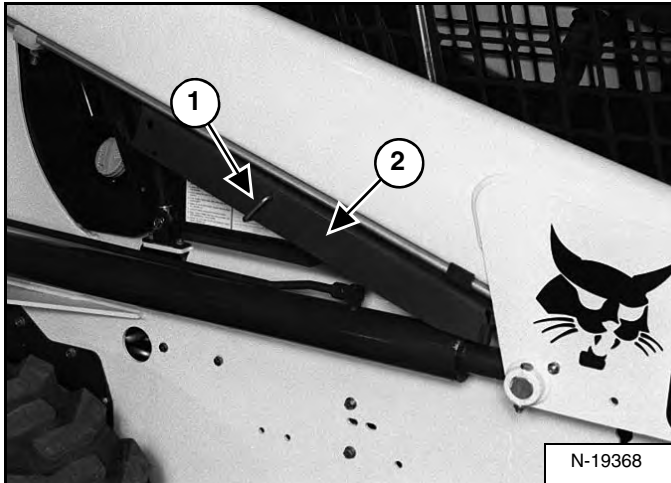
W-2059-0598

! WARNING

Repair the support device if damaged or if parts are missing. Using a damaged support device or with missing parts can cause lift arms or boom to fall causing serious injury or death.

W-2271-1007

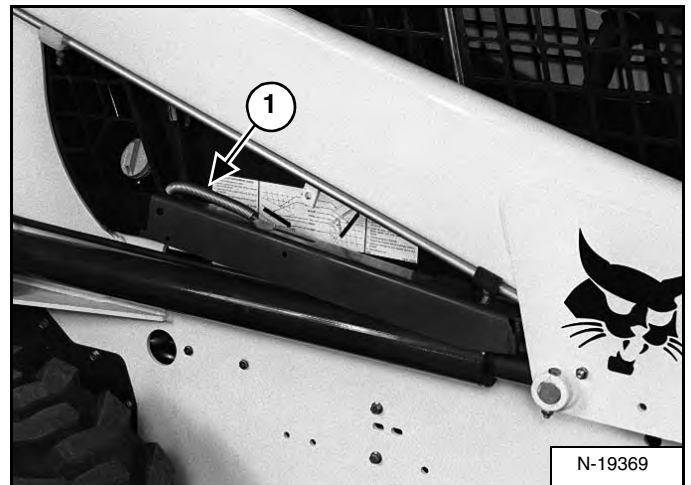
Figure 10-20-1



Maintenance and service work can be done with the lift arms lowered. If the lift arms are raised, use the following procedures to engage and disengage an approved lift arm support device:

Install jackstands under the rear of the loader frame. Disconnect the spring from the lift arm support device retaining pin (Item 1) [Figure 10-20-1]. Support the lift arm support device (Item 2) [Figure 10-20-1] with your hand and remove the retaining pin.

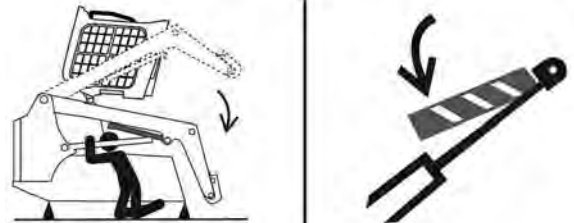
Figure 10-20-2



Lower the lift arm support device on top of the lift cylinder. Hook the free end of the spring (Item 1) [Figure 10-20-2] to the lift arm support device so there will be no interference with the support device engagement.

With the operator in the seat, seat belt fastened and seat bar lowered, start the engine.

! DANGER



P-90328

AVOID DEATH

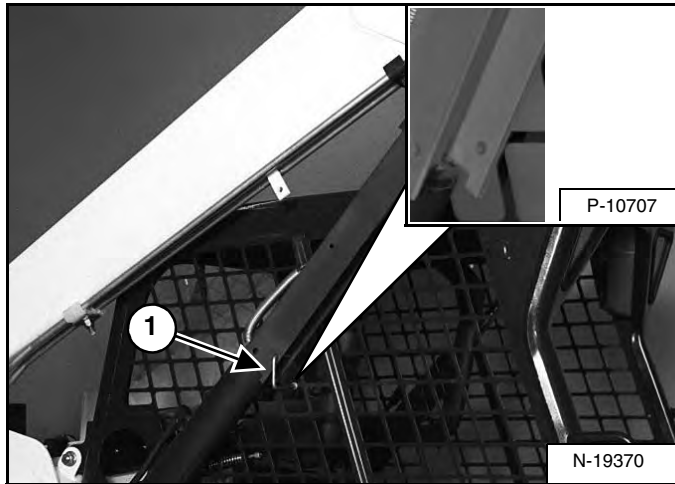
- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

LIFT ARM SUPPORT DEVICE (CONT'D)

Engaging The Lift Arm Support Device (Cont'd)

Figure 10-20-3



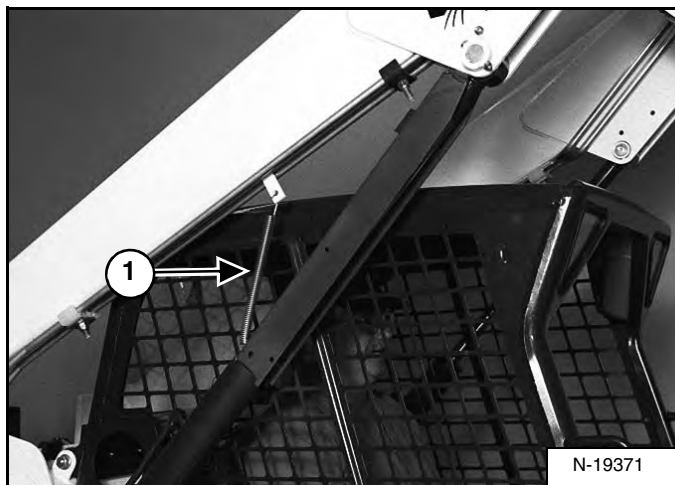
Raise the lift arms, until the lift arm support device drops onto the lift cylinder rod (Inset) [Figure 10-20-3].

Lower the lift arms slowly until the support device is held between the lift arm and the lift cylinder. Stop the engine. Raise the seat bar and move pedals until both pedals lock.

Install the pin (Item 1) [Figure 10-20-3] into the rear of the lift arm support device below the cylinder rod.

Disengaging The Lift Arm Support Device

Figure 10-20-4



Remove the pin from the lift arm support device.

Connect the spring (Item 1) [Figure 10-20-4] from the lift arm support device to the bracket below the lift arms.

With the operator in the seat, seat belt fastened and seat bar lowered, start the engine.

Figure 10-20-5



Raise the lift arms a small amount and the spring will lift the support device off the lift cylinder rod [Figure 10-20-5]. Lower the lift arms. Stop the engine.

Raise the seat bar and move pedals until both pedals lock.

Disconnect the spring from the bracket.

Raise the support device into storage position and insert pin through lift arm support device and bracket. (See Engaging The Lift Arm Support Device on Page 10-20-1.) (Item 1) [Figure 10-20-1 on Page 1].

Connect spring to pin. (See Engaging The Lift Arm Support Device on Page 10-20-1, [Figure 10-20-1 on Page 1].)

OPERATOR CAB

Raising The Operator Cab



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.

W-2069-0200



UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT MOVEMENT CAUSED BY CAB CONTACT WITH CONTROLS CAN CAUSE SERIOUS INJURY OR DEATH

- **STOP ENGINE** before raising or lowering cab.

W-2758-0908

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 roll over protection.

ROPS / FOPS Roll Over Protective Structure per SAE J1040 and ISO 3471, and Falling Object Protective Structure per SAE J1043 and ISO 3449, Level 1. Level II is available.

Level 1 - Protection from falling bricks, small concrete blocks and hand tools encountered in operations such as highway maintenance, landscaping, and other construction site services.

Level II - Protection from falling trees, rocks; for machines involved in site clearing, overhead demolition or forestry.

Always stop the engine before raising or lowering the cab.

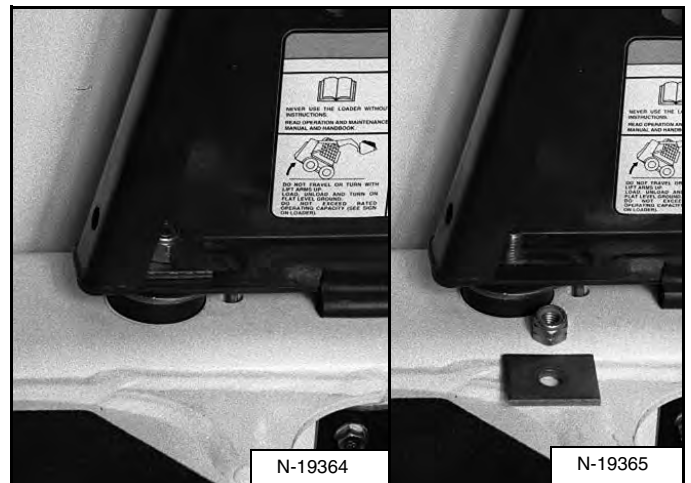
Stop the loader in a level surface. Lower the lift arms. If the lift arms must be up while raising the operator cab, install the lift arm support device. (See Engaging The Lift Arm Support Device on Page 10-20-1.) (See Engaging The Lift Arm Support Device on Page 10-20-1.)

Figure 10-30-1



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

Figure 10-30-2



Loosen the nut (both sides) at the front corners of the operator cab [Figure 10-30-2].

Remove the nuts and plates (both sides) [Figure 10-30-2]

OPERATOR CAB (CONT'D)

Raising The Operator Cab (Cont'd)

Figure 10-30-3

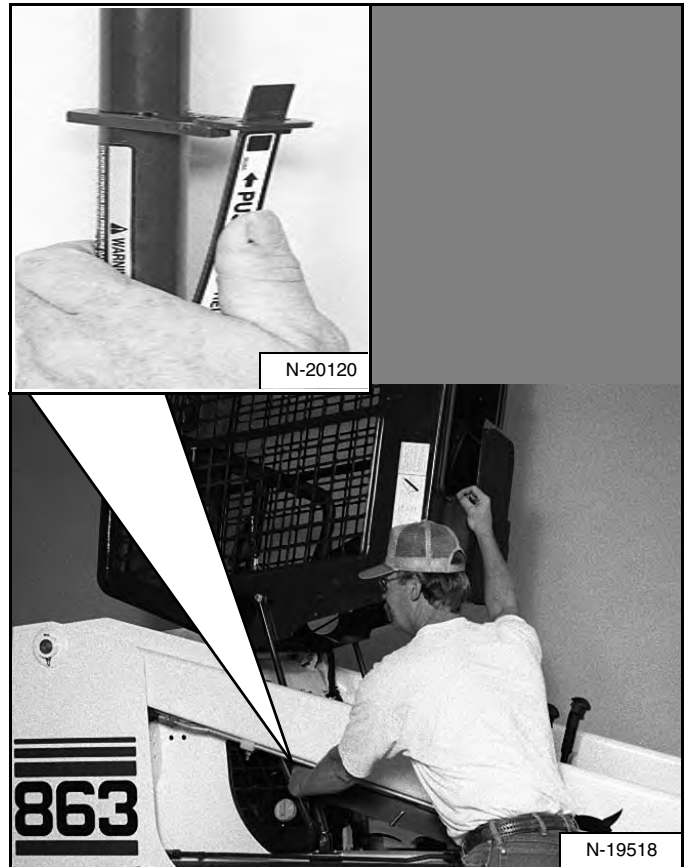


Lift on the grab handles and bottom of the operator cab slowly until the cab is all the way up and the latching mechanism engages [Figure 10-30-3].

Advanced Control System (ACS) And Advanced Hand Control (AHC)

Lowering The Operator Cab

Figure 10-30-4



Always stop the engine before raising or lowering the cab.

NOTE: Make sure the seat bar is fully raised or lowered when lowering the cab. Always use the grab handles to lower the cab.

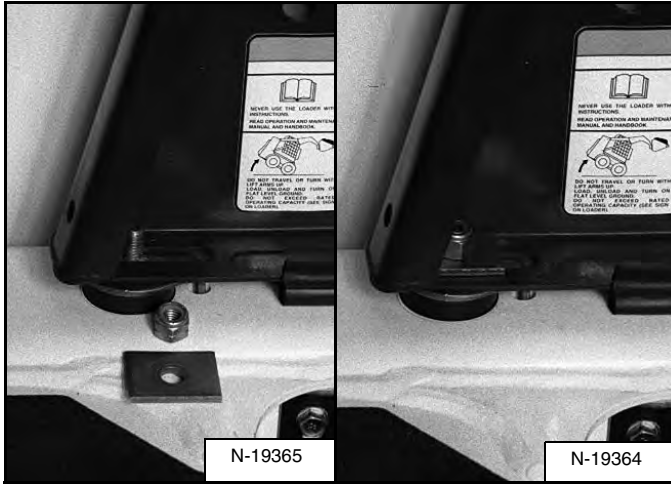
Pull down on the bottom of the operator cab until it stops at the latching mechanism [Figure 10-30-4].

Release the latching mechanism (Inset) [Figure 10-30-4] and pull the cab all the way down.

OPERATOR CAB (CONT'D)

Lowering The Operator Cab (Cont'd)

Figure 10-30-5



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

Tighten the nuts to 40 - 50 ft.-lb. (54 - 68 N•m) torque.

Emergency Exit

The front opening on the operator cab and rear window provide exits.

Rear Window (If Equipped)

Figure 10-30-6



Pull on the tag on the top of the rear window to remove the rubber cord [Figure 10-30-5].

Push the rear window out of the rear of the operator cab.

Figure 10-30-7



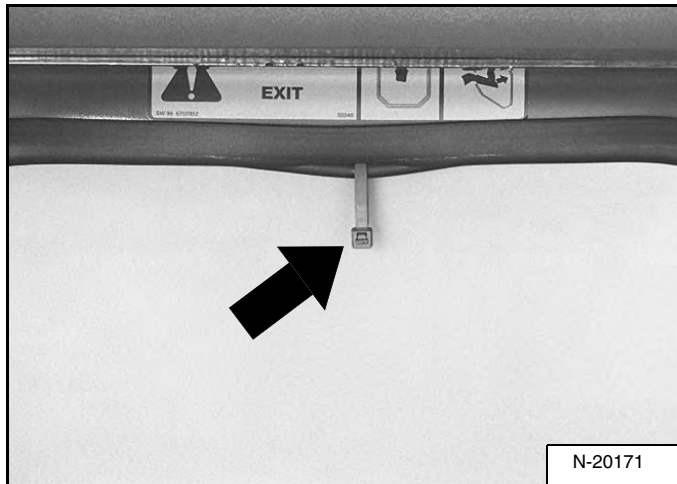
Exit through the rear of the operator cab [Figure 10-30-7].

OPERATOR CAB (CONT'D)

Emergency Exit (Cont'd)

Front Door (If Equipped)

Figure 10-30-8

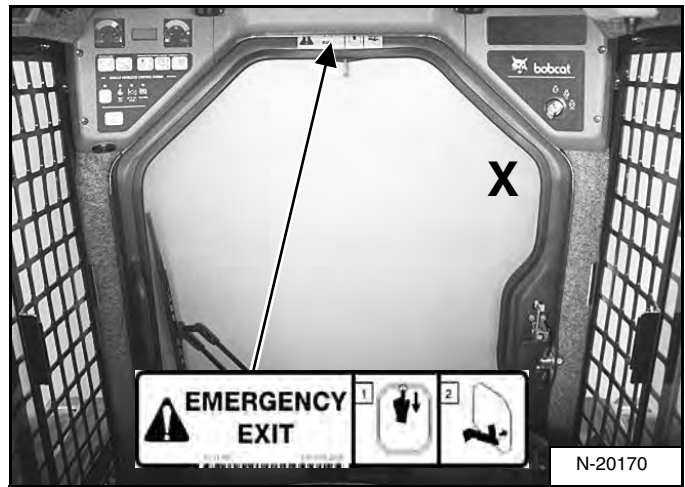


NOTE: When an Operator Cab Enclosure Kit is installed, the window of the front door can be used as an emergency exit [Figure 10-30-8].

NOTE: When the special applications kit is installed, the front door cannot be used for an emergency exit.

Pull the plastic loop at the top of the window in the front door to remove the rubber cord [Figure 10-30-8].

Figure 10-30-9



Push the window out with your foot [Figure 10-30-9] at any corner of the window.

Exit through the front door.

TRANSPORTING THE LOADER

Procedure



AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Figure 10-40-1



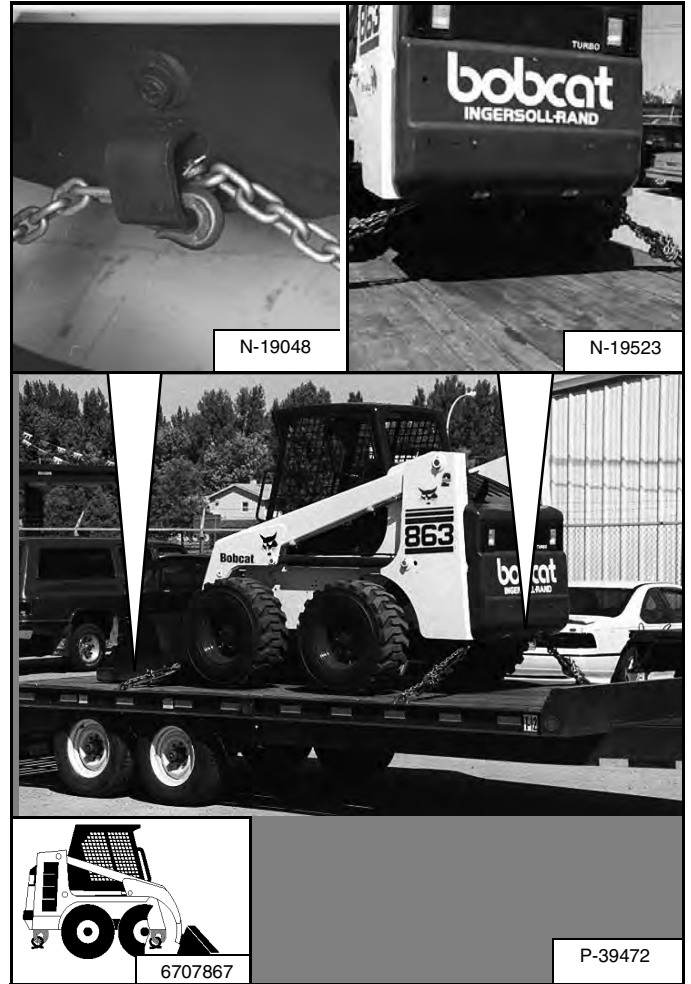
A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle [Figure 10-40-1].

Be sure the transport and towing vehicles are of adequate size and capacity (See Performance on Page SPEC-10-2.) for weight of loader.

The rear of the trailer must be blocked or supported (Item 1) [Figure 10-40-1] when loading or unloading the loader to prevent the front end of the trailer from raising up.

Adjusting The Bumper

Figure 10-40-2



Use the following procedure to fasten the Bobcat loader to the transport vehicle to prevent the loader from moving during sudden stops or when going up or down slopes [Figure 10-40-2].

- Lower the bucket or attachment to the floor.
- Stop the engine.
- Engage the parking brake.
- Install chains at the front and rear loader tie down positions (Inset) [Figure 10-40-2].
- Fasten each end of the chain to the transport vehicle.



Bobcat®

TOWING THE LOADER

Procedure For Non-Two-Speeds

IMPORTANT

Do not push or pull the machine at more than 2 MPH (3,2 km/h) or for a distance of more than 25 feet (7,6 meters) with the towing tool in place.

I-2017-0389

Figure 10-50-1

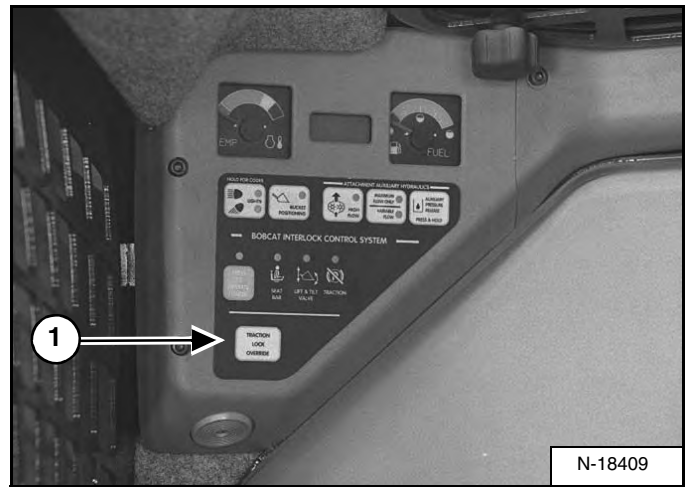


To prevent damage to the loader's hydrostatic system, the loader must be towed only a short distance at slow speed. (Example: Moving the loader onto a transport vehicle.)

The towing chain (or cable) must be rated at 1 & 1/2 times the weight of the loader. (See Performance on Page SPEC-10-2.)

- Turn the key switch to RUN (Item 1) [Figure 10-50-1] (Standard Panel) OR press the RUN / ENTER Button (Deluxe).

Figure 10-50-2



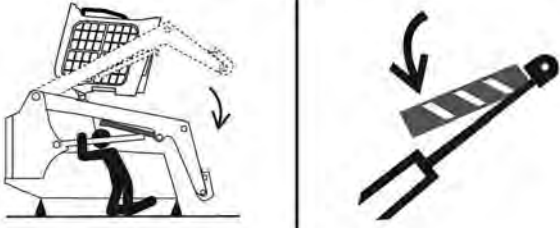
- Press the TRACTION LOCK OVERRIDE Button (Item 1) [Figure 10-50-2].
- Tow the Bobcat at 2 MPH (3,2 km/hr.) or less for not more than 25 feet (7,6 meters).

If the electrical system is not functioning, contact your local Bobcat dealer.

TOWING THE LOADER (CONT'D)

Procedure For Two-Speeds (S/N 51464170, 514540172, 514449389 And Below)

! DANGER



P-90328

AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

! WARNING

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.

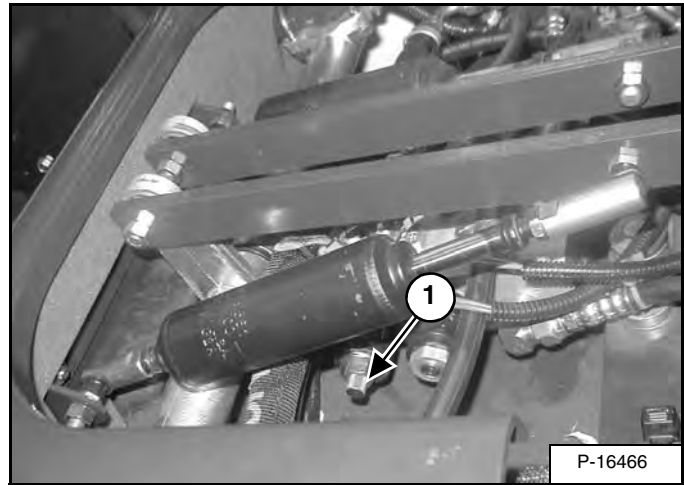
W-2059-0598

! WARNING

Unexpected loader movement.
Can cause serious injury or death.
Push in and turn red traction lock bypass knob clockwise to the engaged position before operating loader. Read Operation and Maintenance Manual for more instructions.

6803932

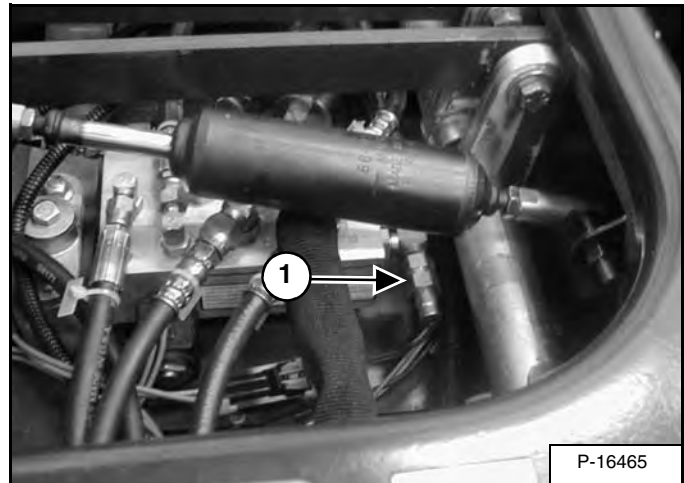
Figure 10-50-3



Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Disengage the parking brake solenoid valve by pushing **IN** on the red Traction Lock Bypass Knob (Item 1) [Figure 10-50-3] and turning it **1/4 TURN counterclockwise**. The knob will come out to release the solenoid valve.

Figure 10-50-4

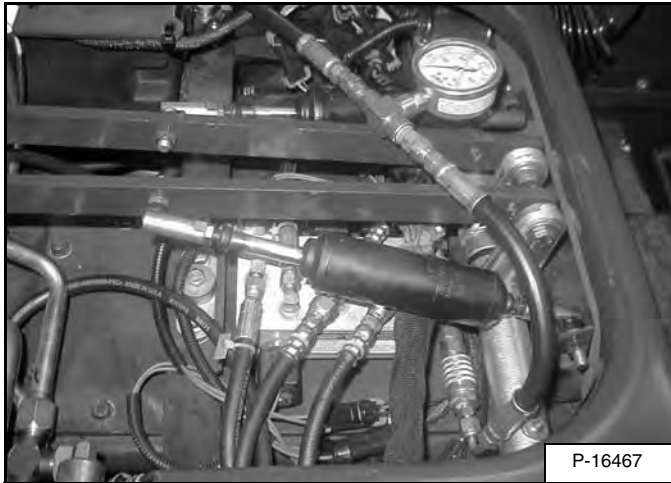


Connect a Port-a-Power to the coupler (Item 1) [Figure 10-50-4].

TOWING THE LOADER (CONT'D)

Procedure For Two-Speeds (S/N 51464170, 514540172, 514449389 And Below) (Cont'd)

Figure 10-50-5



Operate the Port-a-Power 350-400 PSI (2413-2758 kPa) to release the brake [Figure 10-50-5].

Lower the operator cab and tow the loader.

Before operating the loader again, disconnect the Port-a-Power.

Engage the parking brake solenoid valve, by pushing **IN** the red Traction Lock Bypass Knob (Item 1) [Figure 10-50-3] and turning it 1/4 TURN clockwise.

Procedure (S/N 51451171, 514540173, 514449390 and Above)

! DANGER



P-90328

AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

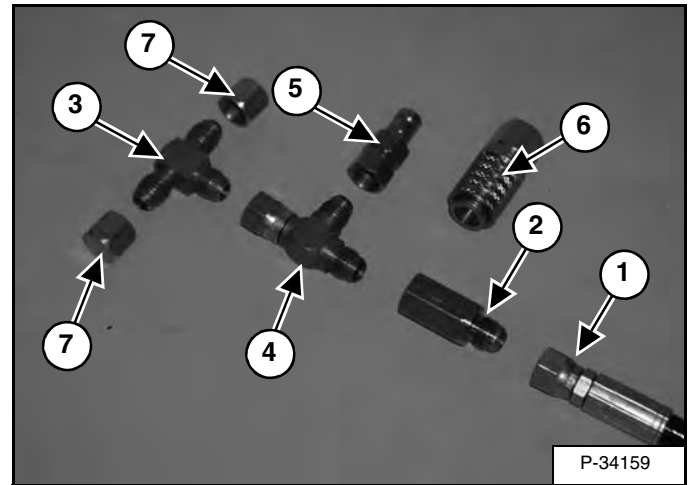
D-1009-0409

! WARNING

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.

W-2059-0598

Figure 10-50-6



Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

The parts from the list below are required to complete the towing tool needed in this procedure [Figure 10-50-6]:

- 1 - 2 ft. common drain hose (Item 1)
- 1 - 6678026 - Check relief valve (500 PSI) (Item 2)
- 1 - 10K5 - Tee fitting (Item 3)
- 1 - 13K5 - Swivel fitting (Item 4)
- 1 - 6661753 - Coupler, male (Item 5)
- 1 - MEL1218 - Coupler, female (Item 6)
- 2 - 36K5 - Caps (Item 7)

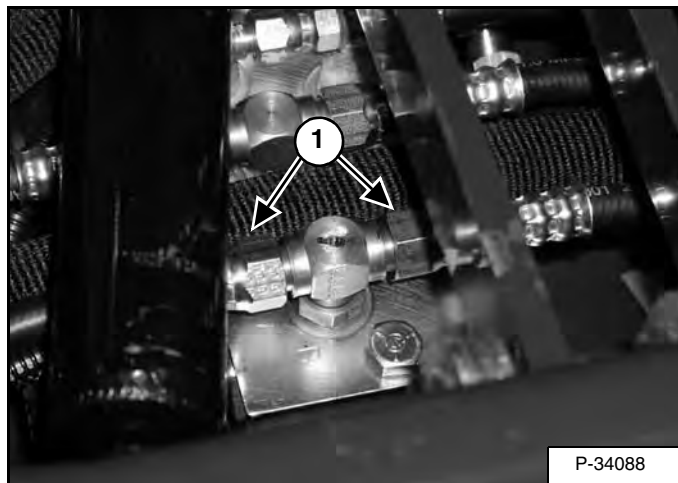
Connect the drain hose (Item 1) [Figure 10-50-6] to the check valve (Item 2) [Figure 10-50-6].

Connect the Tee fitting (Item 3) [Figure 10-50-6], check valve (Item 2) [Figure 10-50-6], and the coupler (Item 5) [Figure 10-50-6] to the swivel fitting (Item 4) [Figure 10-50-6].

TOWING THE LOADER (CONT'D)

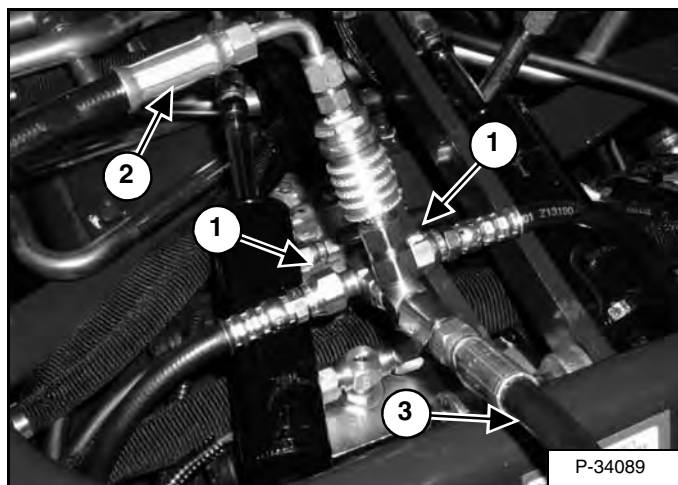
Procedure (S/N 51451171, 514540173, 514449390 and Above) (Cont'd)

Figure 10-50-7



Disconnect the two hoses (Item 1) [Figure 10-50-7] from the parking brake solenoid valve that go to the right and left brake housings on the hydrostatic motors.

Figure 10-50-8

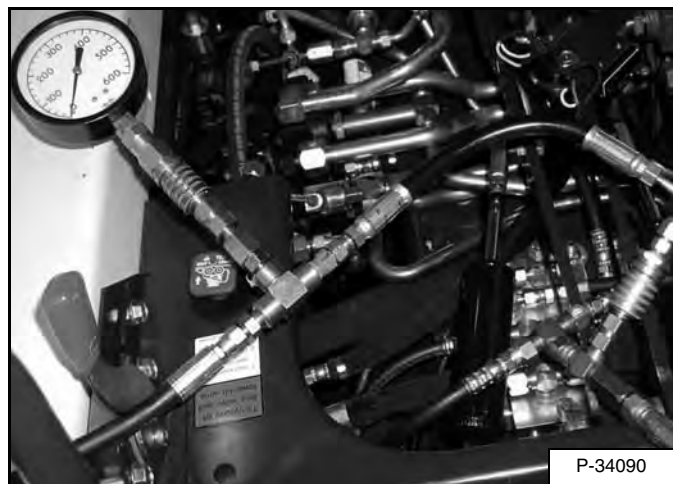


Connect the two hoses (Item 1) [Figure 10-50-8] to the tee fitting of the towing tool.

Connect the Port-a-Power (Item 2) [Figure 10-50-8] (with an attached pressure gauge 600 PSI (4137 kPa) or larger) to the quick coupler on the towing tool.

Route the drain hose (Item 3) [Figure 10-50-8] into a bucket.

Figure 10-50-9



Operate the Port-a-Power to 350-400 PSI (2413-2758 kPa) to release the brakes [Figure 10-50-9].

Lower the cab and tow the loader.

Release the port-a-power pressure to apply the brakes.

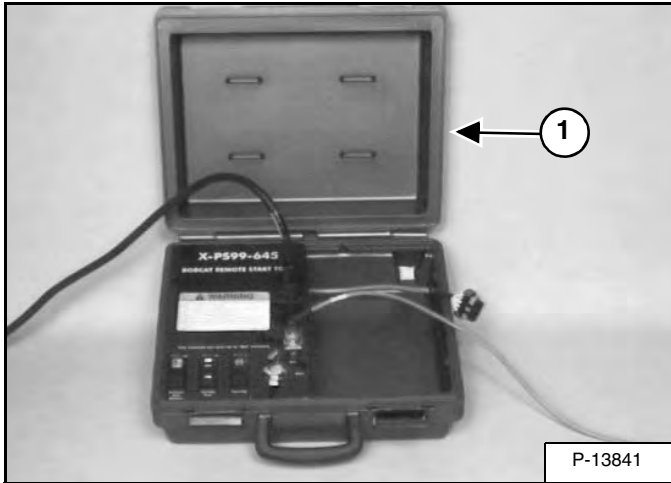
Remove the towing tool from the brake hoses.

Install the two hydraulic hoses to the parking brake solenoid valve.

REMOTE START

Procedure For Loader Without, Attachments Control Harness

Figure 10-60-1



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

MEL1563: Remote Start Tool Kit

The remote start (Item 1) [Figure 10-60-1] is required when the operator cab is in the raised position for service and the service technician needs to turn the key switch on or start the engine. Example: adjusting the steering linkage.

Lift and block the loader. (See LIFTING AND BLOCKING THE LOADER on Page 10-10-1.)

Raise the lift arms (if required by the procedure) and install an approved lift arm support device. (See Engaging The Lift Arm Support Device on Page 10-20-1.)

Raise the operator cab (if required by the procedure). (See Raising The Operator Cab on Page 10-30-1.)

Open the rear door of the loader.

Figure 10-60-2

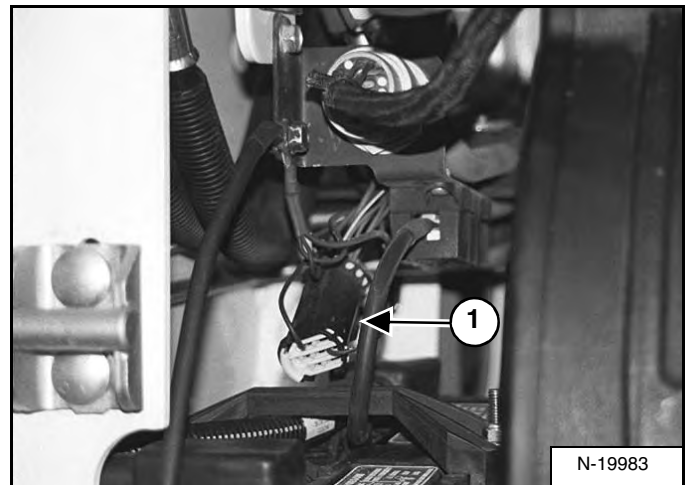
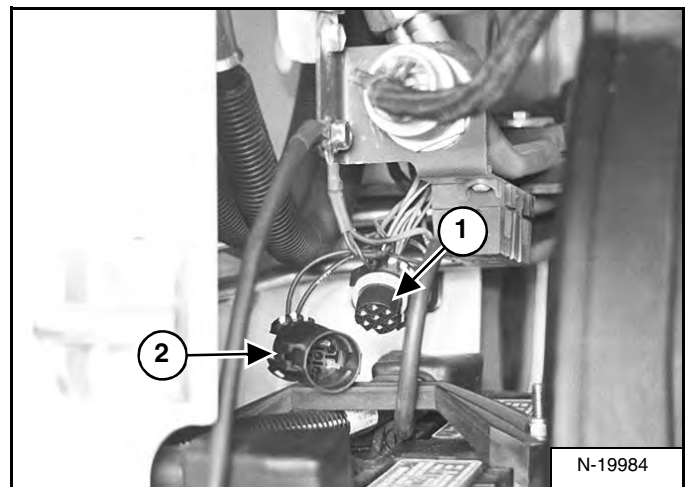


Figure 10-60-3



Remove the cap (Item 1) [Figure 10-60-2] from the loader harness (Item 1) [Figure 10-60-3].

When the remote start procedure is completed, replace the loader connected cap (Item 2) [Figure 10-60-3].

REMOTE START (CONT'D)

Procedure For Loader Without, Attachments Control Harness (Cont'd)

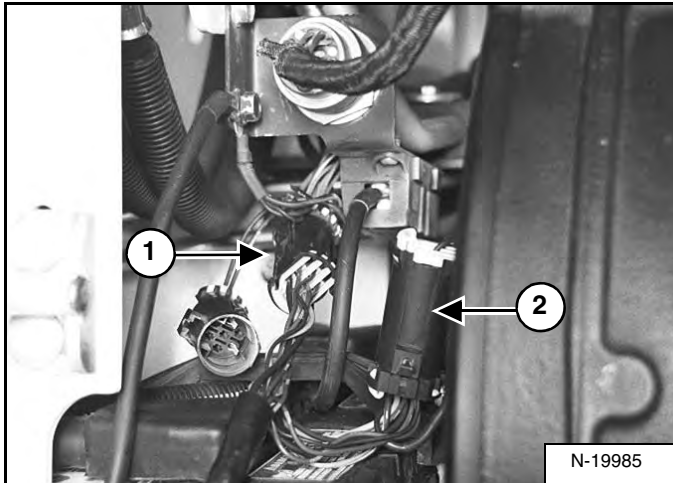
! WARNING

AVOID INJURY OR DEATH

With the 7-pin connector plugged into the loader and Remote Start Key Switch in the OFF position, the loader can still be started from the operator panel inside the cab. Placing the key switch of the remote start tool in the run position disconnects the operator panel key switch from the start circuit. If the service technician will be working the engine area it is important to remove the operator panel keys.

W-2357-0899

Figure 10-60-4



Connect the remote start tool to the engine harness connector (Item 1) [Figure 10-60-4].

The connector (Item 2) [Figure 10-60-4] from the remote start harness is not used in the remote start procedure and should remain capped.

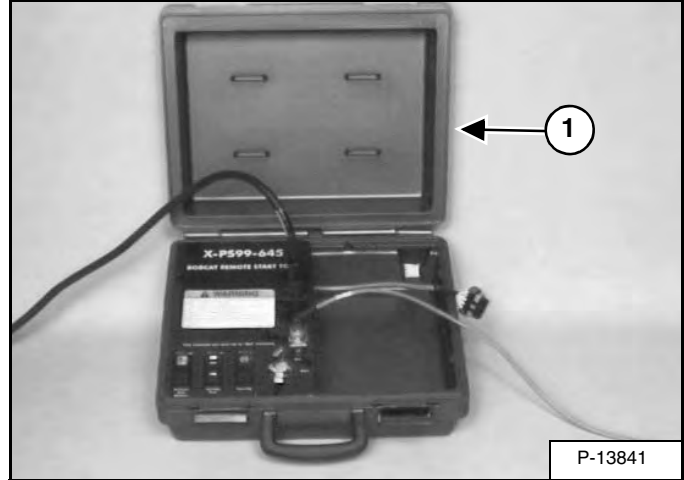
NOTE: The key switch on the right-hand side operator panel must be in the off position or the Remote Start Kit will not operate.

Procedure For Loader With, Attachments Control Harness

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

MEL 1563: Remote Start Tool Kit

Figure 10-60-5



The remote start (Item 1) [Figure 10-60-5] is required when the operator cab is in the raised position for service and the service technician needs to turn the key switch on or start the engine. Example: adjusting the steering linkage.

Lift and block the loader. (See LIFTING AND BLOCKING THE LOADER on Page 10-10-1.)

Raise the lift arms (if required by the procedure) and install an approved lift arm support device. (See Engaging The Lift Arm Support Device on Page 10-20-1.)

Raise the operator cab (See Raising The Operator Cab on Page 10-30-1.)

Open the rear door of the loader.

REMOTE START (CONT'D)

Procedure For Loader With, Attachments Control Harness (Cont'd)

WARNING

AVOID INJURY OR DEATH

With the 7-pin connector plugged into the loader and Remote Start Key Switch in the OFF position, the loader can still be started from the operator panel inside the cab. Placing the key switch of the remote start tool in the run position disconnects the operator panel key switch from the start circuit. If the service technician will be working the engine area it is important to remove the operator panel keys.

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Figure 10-60-6

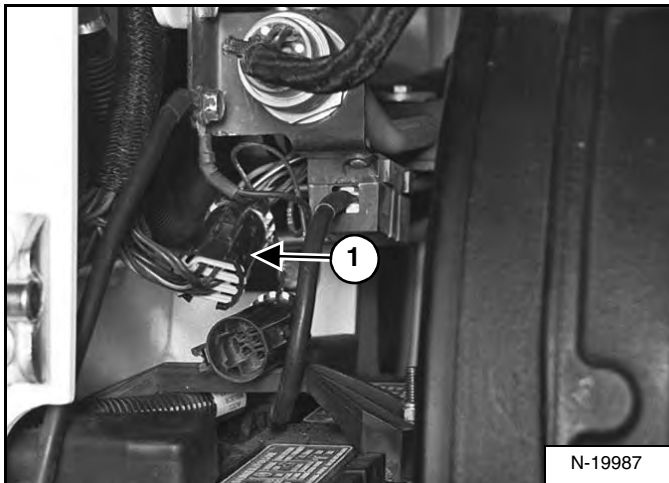
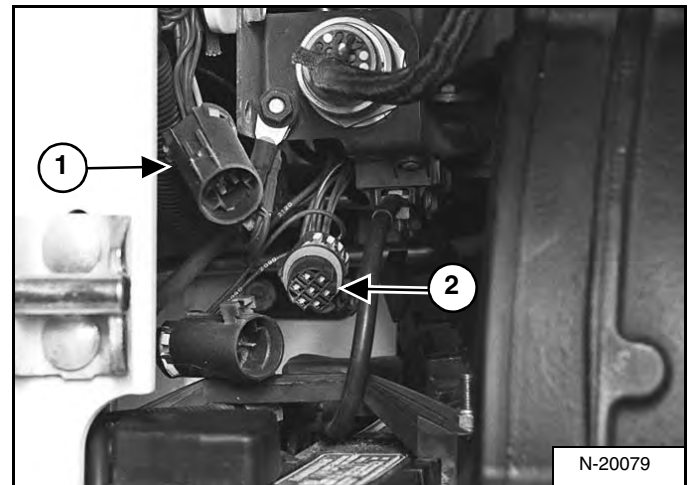
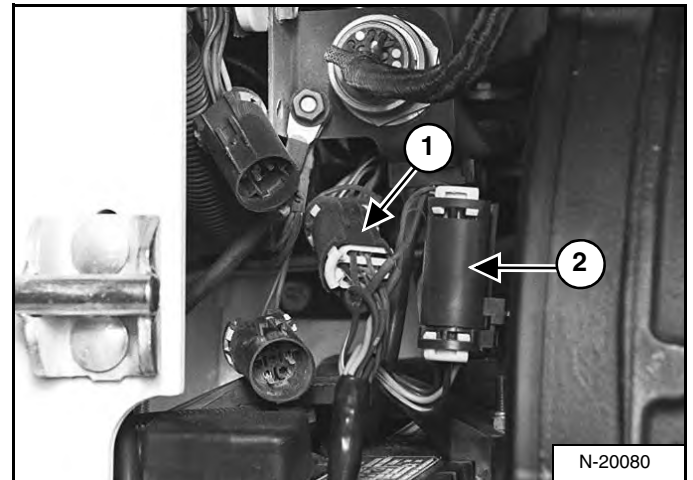


Figure 10-60-7



Disconnect the attachment control harness (Item 1) [Figure 10-60-6] & [Figure 10-60-7] from the loader harness (Item 2) [Figure 10-60-7].

Figure 10-60-8



Connect the remote start tool (Item 1) [Figure 10-60-8] to the loader harness connector (Item 2) [Figure 10-60-7].

The connector (Item 2) [Figure 10-60-8] on the remote start harness is not used in the remote start procedure and should remain capped.

NOTE: The key switch on the right-hand side operator panel must be in the off position or the Remote Start Kit will not operate.

REMOTE START (CONT'D)

Procedure

Figure 10-60-9



The remote start tool (Item 1) [Figure 10-60-9] has three rocker switches.

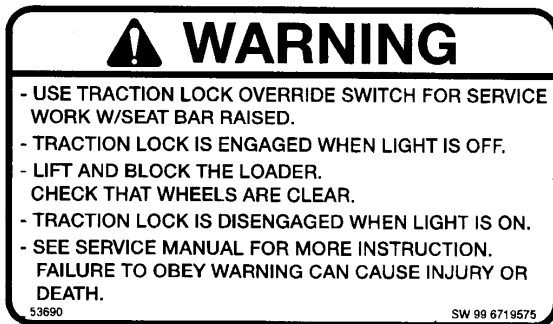
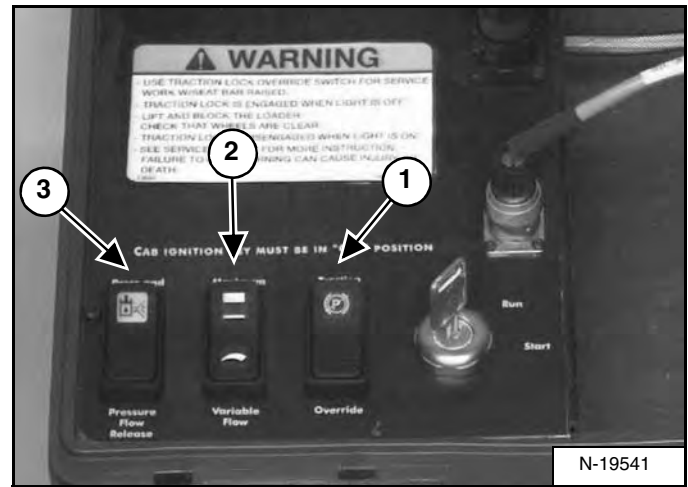


Figure 10-60-10



The traction lock switch (Item 1) [Figure 10-60-10] is used to turn traction lock on or off. Push the switch to the override position. The switch will illuminate to indicate traction lock **VERRIDE**, in this position the wheels are able to turn.

The maximum flow / variable flow switch (Item 2) [Figure 10-60-10] is used to activate the auxiliary hydraulics. Pressing the switch once will activate variable flow. Pressing the switch again will activate maximum flow. The switch will illuminate to indicate which flow rate is active. Pressing the switch a third time will turn the flow **OFF**. The switch is used when checking pressures and flow rate.

The auxiliary pressure release (Item 3) [Figure 10-60-10] is used to release hydraulic pressure to the front and / or rear auxiliary couplers. To release pressure; push and hold the switch for three seconds.

NOTE: With the engine running; pushing and holding the pressure release switch this will cause the engine to stop in three seconds. To relieve the pressure; continue to press the switch after the engine has stopped.

SERVICE SCHEDULE

Chart

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the Bobcat loader.



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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SERVICE SCHEDULE		HOURS						
ITEM	SERVICE REQUIRED	8-10	50	100	250	500	1000	3000
Engine Oil	Check the oil level and add as needed.							
Engine Air Filter and Air System	Check display panel. Service only when required. Check for leaks and damaged components.							
Engine Cooling System	Clean debris from oil cooler, radiator & grill.							
Lift Arms, Cylinders, Bob-Tach Pivot Pins and Wedges	Lubricate with multi-purpose lithium based grease (14 places).							
Tires	Check for damaged tires and correct air pressure.							
Seat Bar, Control Interlocks, Seat Belt, Seat Belt Retractors	Check the condition of seat belt. Clean or replace seat belt retractors as needed. Check the seat bar and control interlocks for correct operation. Clean dirt and debris from moving parts.							
Bobcat Interlock Control Systems (BICS™)	Check that four (4) BICS™ indicator lights and functions are activated. See details in this Manual.							
Safety Signs and Safety Treads	Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn.							
Operator Cab	Check the fastening bolts, washers and nuts. Check the condition of the cab.							
Indicators and Lights	Check for correct operation of all indicators and lights.							
Fuel Filter	Remove the trapped water.							
Heater and A/C Filters	Clean or replace filters as needed during heating / cooling season.							
Hydraulic Fluid, Hoses and Tubelines	Check fluid level and add as needed. Check for damage and leaks. Repair or replace as needed.							
Final Drive Trans. (Chaincase), Foot Pedals or Hand Controls, and Steering Levers	Check oil level. Check for correct operation. Repair or adjust as needed.							
Wheel Nuts	☐ Check for loose wheel nuts and tighten to 105 - 115 ft.-lb. (142 - 156 N•m) torque							
Parking Brake	Check operation.							
Battery	Check cables, connections and electrolyte level. Add distilled water as needed.							
Engine / Hydro. Drive Belt	*Check for wear or damage. Check idler arm stop.							
Alternator Belt	Check tension and adjust as needed.							
Air Conditioner Belt	Check belt for wear. Adjust or replace as needed.							
Bobcat Interlock Control System (BICS™)	Check the function of the lift arm bypass control.							
Fuel Filter	Replace filter element.							
Steering Shaft	Grease three fittings.							
Fan Drive Gearbox	Check gear lube level.							
Hydraulic Reservoir Breather Cap	Replace the reservoir breather cap.							
Hyd. / Hydro. Filter	● Replace the filter element.							
Engine Oil and Filter	^Replace oil and filter. Use CD or better grade oil and Bobcat filter.		^		○			
Final Drive Trans. (Chaincase)	Replace the fluid.							
Hydraulic Reservoir	Replace the fluid.							
Case Drain Filters	Replace the filters.							
Engine Valves	#Adjust the engine valves.							
Engine Timing Belt	▼ Replace the timing belt and belt tensioner assy.							

☐ Check wheel nut torque every 8 hours for the first 24 hours.

* Inspect the new belt after first 50 hours.

● Also replace hydraulic / hydrostatic filter element when the transmission warning light comes ON.

^ First oil and filter change must occur at 50 hours; 500 hours thereafter.

○ When operating under severe conditions, change oil and filter every 250 hours.

After the first 500 hours on new engine, adjust engine valves; 1000 hours thereafter.

■ Or every 12 months.

▼ Or every 5 years.



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