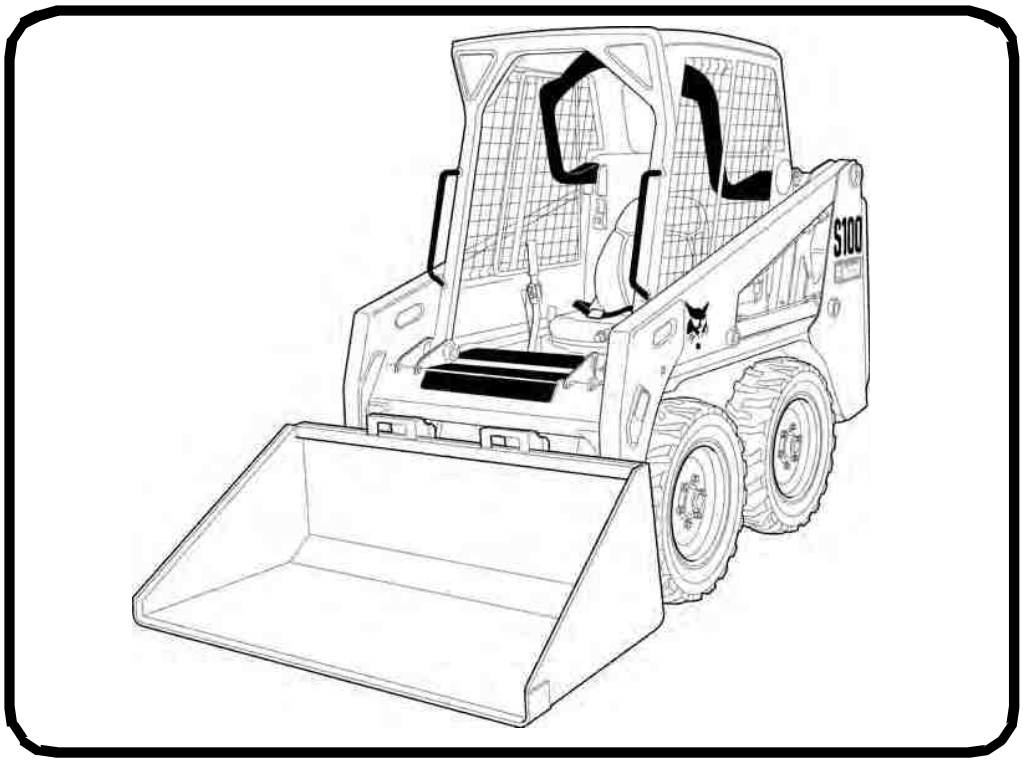
Bobcat®

Service Manual
S100 Skid-Steer Loader

S/N A8ET20001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6987403-EN (10-12)

Printed in U.S.A.

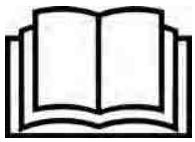
MAINTENANCE SAFETY

WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death. W-2003-0807

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

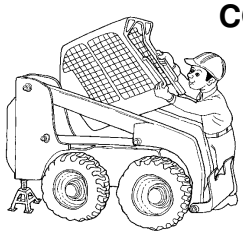
CORRECT



P-90216

Never service the Bobcat Skid-Steer Loader without instructions.

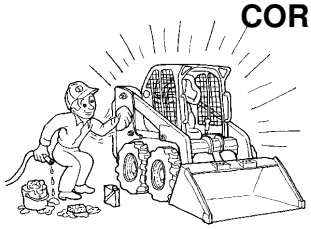
CORRECT



B-15590

Use the correct procedure to lift or lower operator cab.

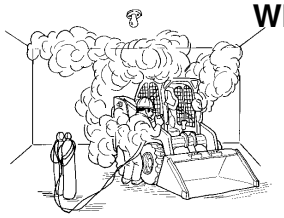
CORRECT



B-15591

Cleaning and maintenance are required daily.

WRONG



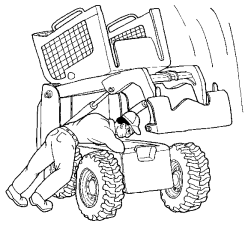
B-15592

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.

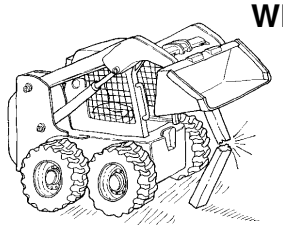
WRONG



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.

WRONG

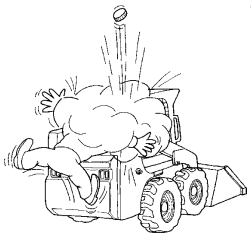


B-15599

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.

WRONG



B-15600

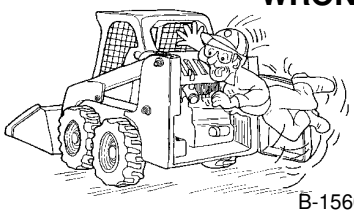
Stop, cool and clean engine of flammable materials before checking fluids.

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.

WRONG



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.

WRONG

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.

MSW08-0409

CONTENTS

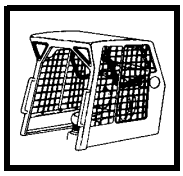
FOREWORD

FOREWORD

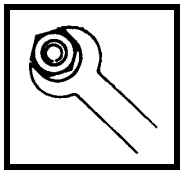
This manual is for the Bobcat loader mechanic. It provides necessary servicing and adjustment procedures for the Bobcat loader and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

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

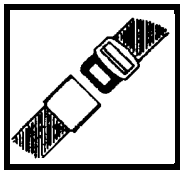
1. Check that the ROPS/FOPS (Including side screens) is in good condition and is not modified.



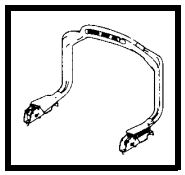
2. Check that ROPS mounting hardware is tightened and is Bobcat approved.



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



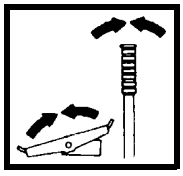
4. The seat bar must be correctly adjusted, clean and lubricated.



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

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

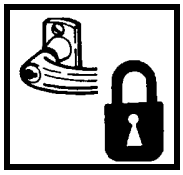
7. Steering levers, hand controls and foot pedals must return to neutral (as applicable).



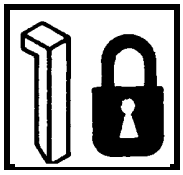
8. Check for correct function of the work lights.

9. The parking brake must function correctly.

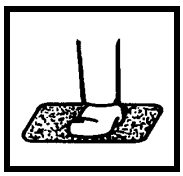
10. Enclosure door latches must open and close freely.



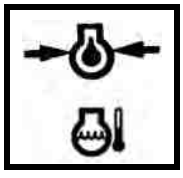
11. Bob-Tach™ wedges and linkages must function correctly and be in good condition.



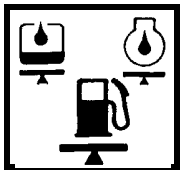
12. Safety treads must be in good condition.



13. Check for correct function of indicator lamps.



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

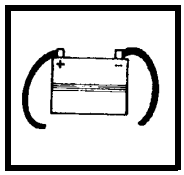


15. Inspect for fuel, oil or hydraulic fluid leaks.

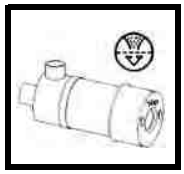
16. Lubricate the loader.

FW SSL-1008 SM

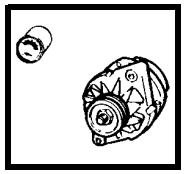
17. Check the condition of the battery and cables.



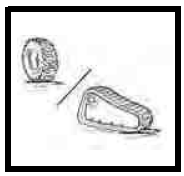
18. Inspect the air cleaner for damage or leaks. Check the condition of the element.



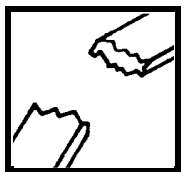
19. Check the electrical charging system.



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

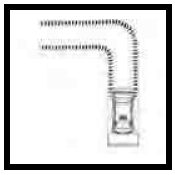


21. Inspect for loose or broken parts or connections.

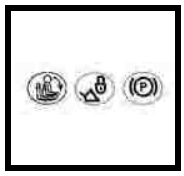


22. Check for any field modification not completed.

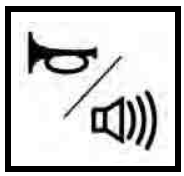
23. Operate the machine and check all functions.



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

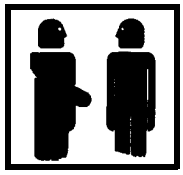


25. Check for proper function of front horn and back-up alarm (if equipped).



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.



SAFETY INSTRUCTIONS

Before Operation

Carefully follow the operating and maintenance instructions in this manual.

The Bobcat loader is highly maneuverable and compact. It is rugged and useful under a wide variety of conditions. This presents an operator with hazards associated with off motorway, rough terrain applications, common with Bobcat loader usage.

The Bobcat loader has an internal combustion engine with resultant heat and exhaust. All exhaust gases can kill or cause illness so use the Loader with adequate ventilation.

The dealer explains the capabilities and restrictions of the Bobcat loader and attachment for each application. The dealer demonstrates the safe operation according to Bobcat instructional materials, which are also available to operators. The dealer can also identify unsafe modifications or use of unapproved attachments. The attachments and buckets are designed for a Rated Operating Capacity (some have restricted lift heights). They are designed for secure fastening to the Bobcat loader. The user must check with the dealer, or Bobcat literature, to determine safe loads of materials of specified densities for the machine - attachment combination.

The following publications and training materials 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 and attachment is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment gives 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 is fastened to the operator cab of the loader. Its brief instructions are convenient to the operator. See your Bobcat dealer for more information on translated versions.

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.

SI SSL EMEA-0213

Safe Operation Is The Operator's Responsibility

Safety Alert Symbol

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

WARNING

Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502

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 Bobcat loader and attachment must be in good operating condition before use.

Check all of the items on the Bobcat Service Schedule Decal under the 8-10 hour column or as shown in the Operation & Maintenance Manual.

Safe Operation Needs A Qualified Operator

For an operator to be qualified, he or she must not use drugs or alcoholic drinks which impair alertness or co-ordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.

A Qualified Operator Must Do The Following:

Understand the Written Instructions, Rules and Regulations

- The written instructions from Bobcat Company include the Delivery Report, Operation & Maintenance Manual, Operator's Handbook, Safety Manual and machine signs (decals).
- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. For driving on public roads, the machine must be equipped as stipulated by the local regulations authorising operation on public roads in your specific country. Regulations may identify a hazard such as a utility line.

Have Training with Actual Operation

- Operator training must consist of a demonstration and verbal instruction. This training is given by your Bobcat dealer before the product is delivered.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine and attachment safely under all conditions of the work area. Always fasten seat belt before operating.

Know the Work Conditions

- Know the weight of the materials being handled. Avoid exceeding the Rated Operating Capacity (ROC) of the machine. Material which is very dense will be heavier than the same volume of less dense material. Reduce the size of the load if handling dense material.
- The operator must know any prohibited uses or work areas, for example, he or she needs to know about excessive slopes.
- Know the location of any underground lines.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service. Safety glasses, respiratory equipment, hearing protection or Special Applications Kits are required for some work. See your Bobcat dealer about Bobcat Safety Equipment for your model.

SI SSL EMEA-0213

Avoid Silica Dust

Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Use a respirator, water spray or other means to control dust.

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.

SI SSL EMEA-0213

FIRE PREVENTION (CONT'D)

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 petrol or diesel fuel for cleaning parts. Use commercial non-flammable 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 Arrester Exhaust System

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

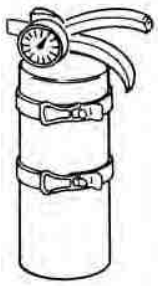
Welding And Grinding

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 non-metallic 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

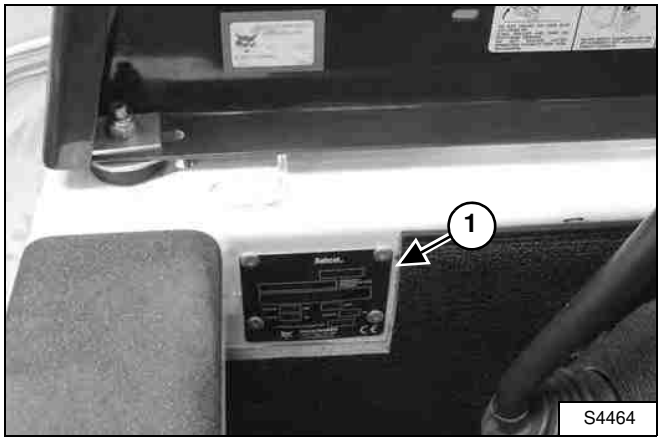


Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

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) can use different parts, or it can be necessary to use a different procedure in doing a specific service operation.

Figure 1



Loader Serial Number

The loader serial number plate (Item 1) **[Figure 1]** is located inside the cab on the right-hand side.

Explanation of loader Serial Number:

XXXX XXXXX

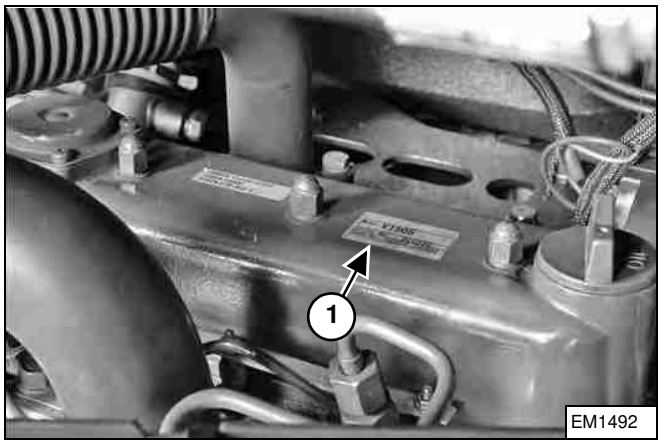
- XXXXX — Module 2. - Production Sequence (Series)
- XXXX — Module 1. - Model / Engine Combination

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

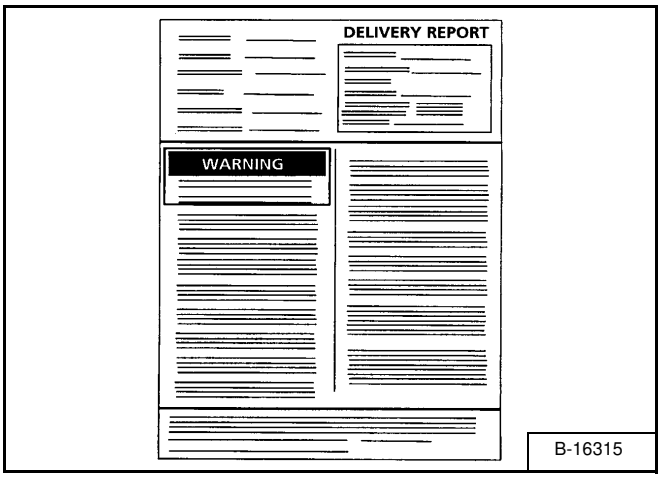
Figure 2



The engine serial number is located on top of the engine (Item 1) **[Figure 2]**.

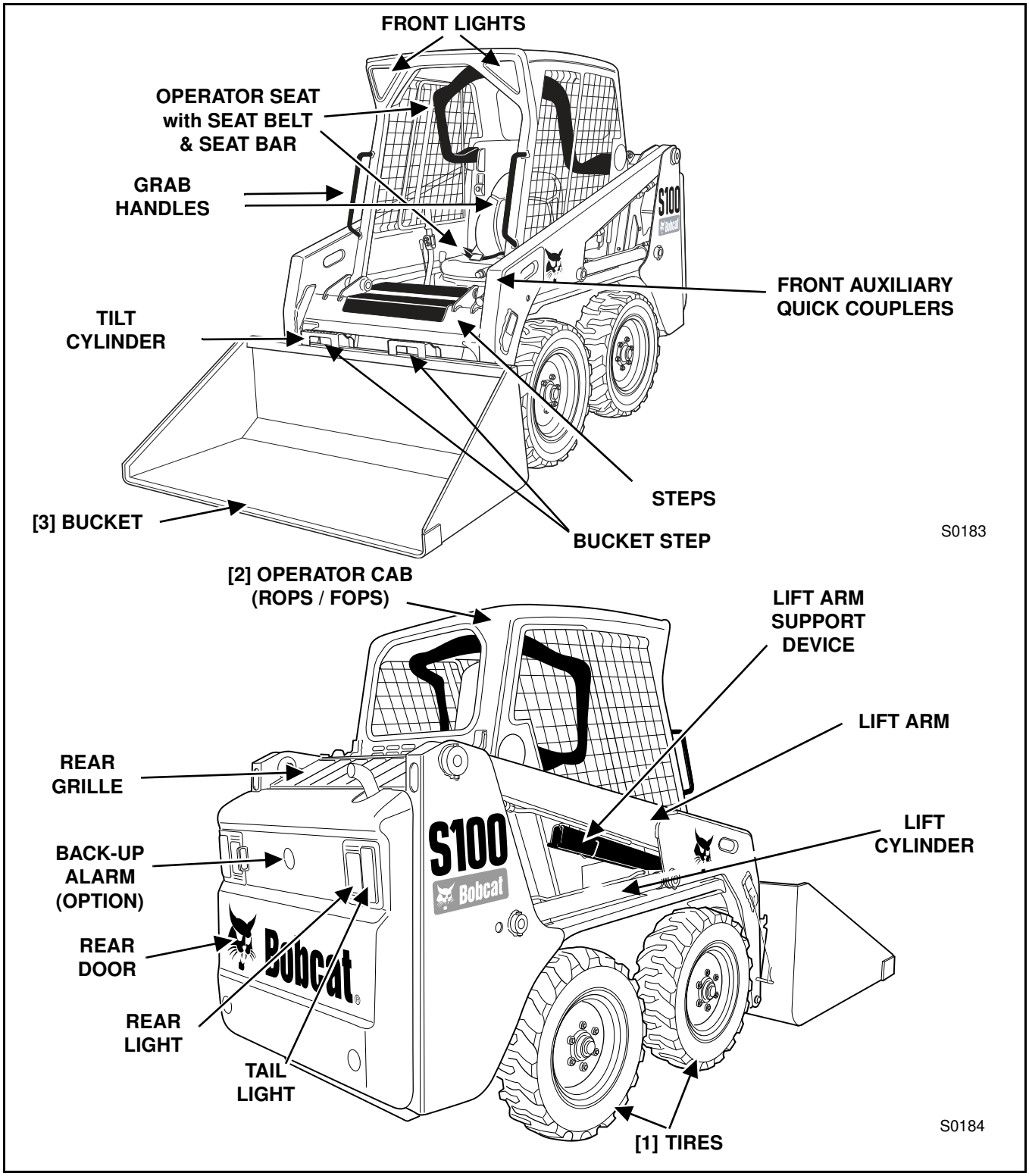
DELIVERY REPORT

Figure 3



The delivery report **[Figure 3]** must be completed 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.

LOADER IDENTIFICATION



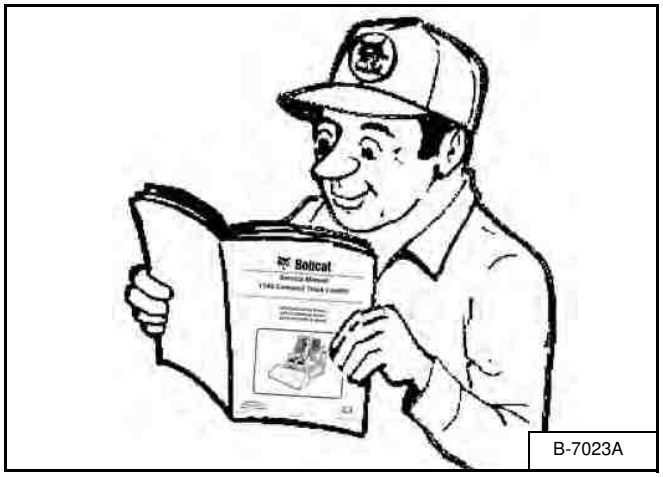
[1] TIRES - Tires shown may not be standard. The machine is factory equipped with standard tires. Other tires are available.
[2] ROPS, FOPS - Roll Over Protective Structure, per ISO 3471, and Falling Object Protective Structure per ISO 3449, Level I. Level II is available.
[3] BUCKET - Several different Buckets and other Attachments are available.

SAFETY AND MAINTENANCE

LIFTING AND BLOCKING THE LOADER

Procedure

Figure 10-10-1



⚠ WARNING

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

Always park the loader on a level surface.

⚠ WARNING

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 the floor jack under the rear of the loader.

Lift the rear of the loader and install jack stands **[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 jack stands under the axle tubes **[Figure 10-10-3]**.

NOTE: Make sure the jack stands do not touch the tires. Make sure tires clear floor or any obstacles.

LIFT ARM SUPPORT DEVICE

Installing

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.

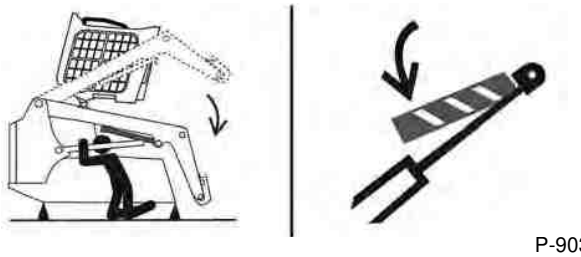
⚠ WARNING

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.

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

⚠ 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

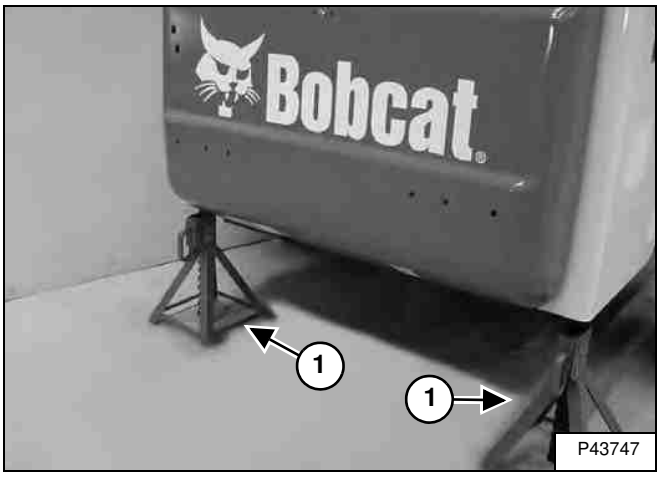
Remove attachment from the loader.

⚠ WARNING

Before the cab or the lift arms are raised for service, jackstands must be put under the rear corners of the frame. Failure to use jackstands can allow the machine to tip backward causing injury or death.

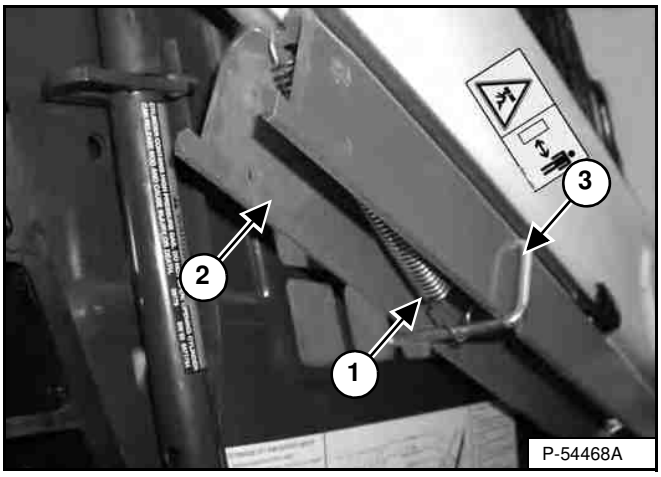
W-2014-0895

Figure 10-20-1



Install jackstands (Item 1) **[Figure 10-20-1]** under the rear corners of the loader frame.

Figure 10-20-2

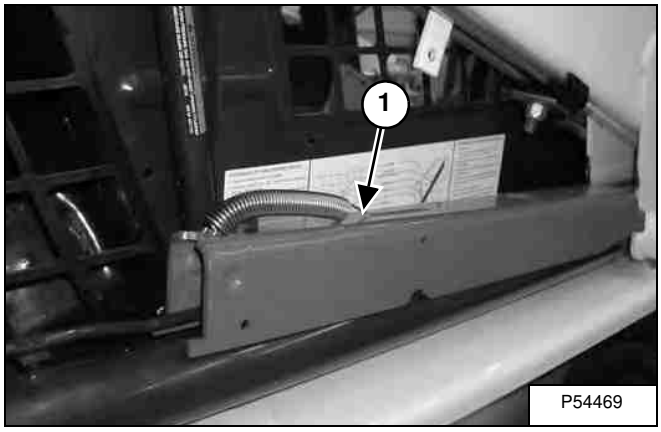


Disconnect the spring (Item 1) from the lift arm support device retaining pin Support the lift arm support device (Item 2) with your hand and remove the retaining pin (Item 3) **[Figure 10-20-2]**.

LIFT ARM SUPPORT DEVICE (CONT'D)

Installing (Cont'd)

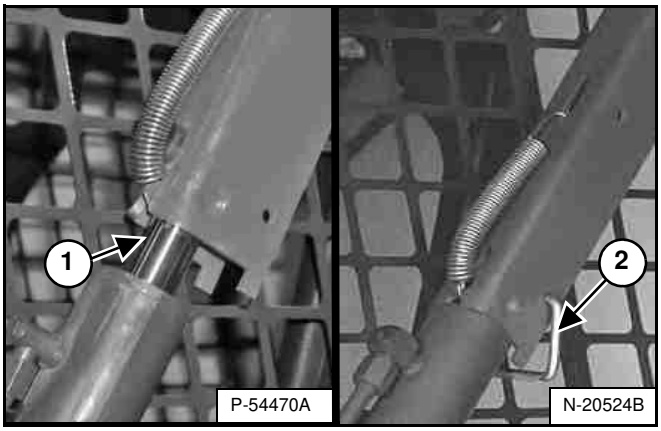
Figure 10-20-3



Lower the lift arm support device to the top of the lift cylinder. Hook the free end of the spring (Item 1) **[Figure 10-20-3]** to the lift arm support device so the spring does not interfere with the support device engagement.

Sit in the operator seat, fasten the seat belt and lower the seat bar. Start the engine.

Figure 10-20-4



Raise the lift arms until the lift arm support device drops onto the lift cylinder rod (Item 1) **[Figure 10-20-4]**.

Lower the lift arms slowly until the support device is held between the lift arm and the lift cylinder. Stop the engine.

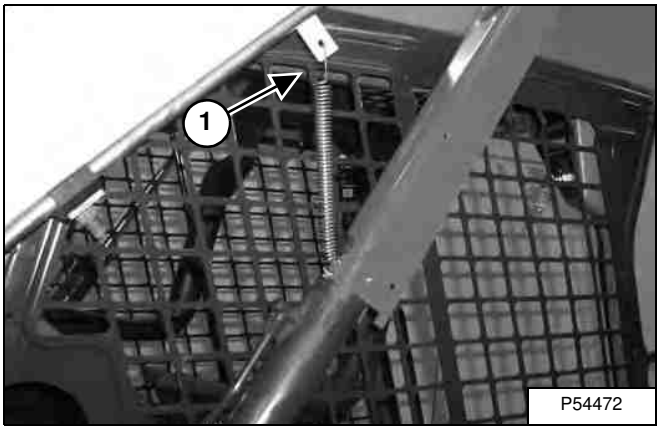
Raise the seat bar, disconnect the seat belt and move the pedals until both lock.

Install the retaining pin (Item 2) **[Figure 10-20-4]** into the rear of the lift arm support device below the cylinder rod.

Removing

Remove the retaining pin (Item 1) **[Figure 10-20-4]** from the lift arm support device.

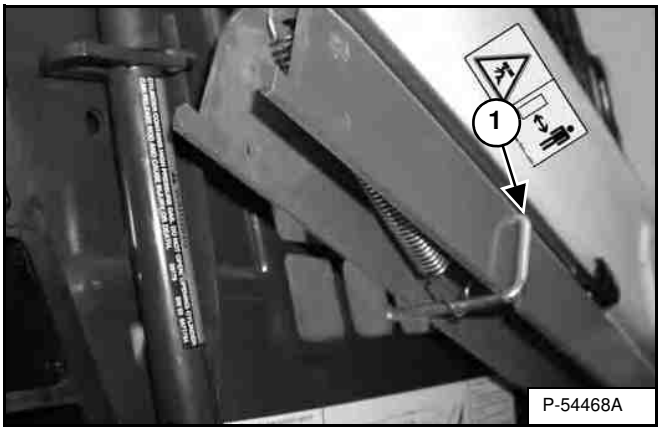
Figure 10-20-5



Connect the spring (Item 1) **[Figure 10-20-5]** from the lift arm support device to the bracket below the lift arms.

Sit in the operator's seat, fasten the seat belt and lower the seat bar. Start the engine.

Figure 10-20-6



Raise the lift arms a small amount. The spring will lift the support device off the lift cylinder rod. Lower the lift arms. Stop the engine.

Raise the seat bar, unbuckle the seat belt, move the pedals until both lock and exit the cab.

Disconnect the spring from the bracket.

Raise the support device into storage position and insert the retaining pin (Item 1) **[Figure 10-20-6]** through the lift arm support device and through the bracket. Connect the spring to the retaining pin.

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. The seat belt must be worn for rollover protection.

Check the cab, mounting, and hardware for damage. Never modify the cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS - Roll-Over Protective Structure per ISO 3471 and FOPS - Falling-Object Protective Structure per 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 motorway maintenance, landscaping, and other construction sites.

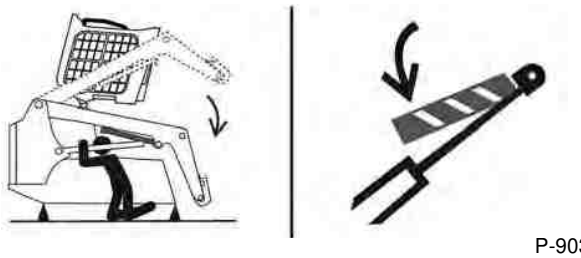
Level II - Protection from falling trees, rocks: for machines involved in site clearing, overhead demolition or forestry.

⚠ WARNING

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

⚠ 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

Raising

Always stop the engine before raising or lowering the cab.

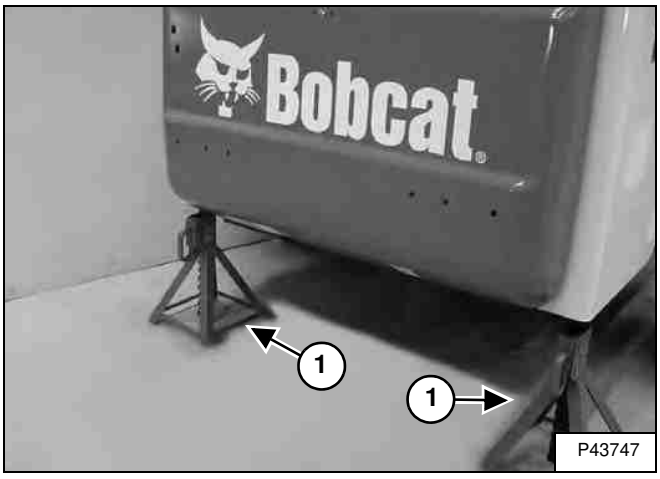
Stop the loader on a level surface and lower the lift arms. If the lift arms must be up while raising the operator cab, install the lift arm support device. (See LIFT ARM SUPPORT DEVICE on Page 10-20-1.)

⚠ WARNING

Before the cab or the lift arms are raised for service, jackstands must be put under the rear corners of the frame. Failure to use jackstands can allow the machine to tip backward causing injury or death.

W-2014-0895

Figure 10-30-1

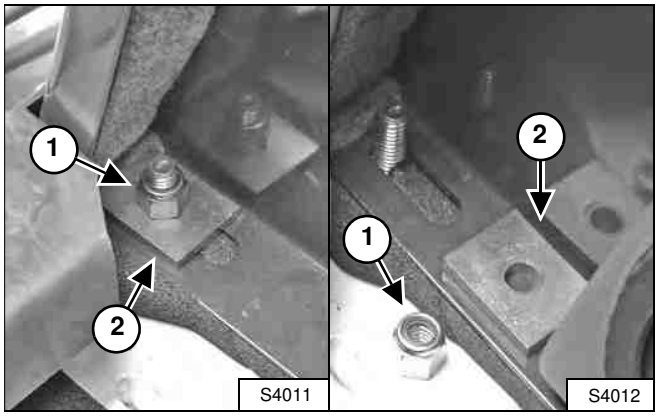


Install jackstands (Item 1) **[Figure 10-30-1]** under the rear corners of the loader frame.

OPERATOR CAB (CONT'D)

Raising (Cont'd)

Figure 10-30-2



Remove the nut and plate (Items 1 and 2) **[Figure 10-30-2]** on the inside front corner of the cab (Both sides).

NOTE: Move the engine speed control lever forward before raising the operator cab to prevent damage to lever or cab.

Figure 10-30-3

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

Lowering

Always stop the engine before raising or lowering the cab.

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

NOTE: Move the engine speed control lever forward before lowering the operator cab to prevent damage to lever or 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.

⚠ WARNING

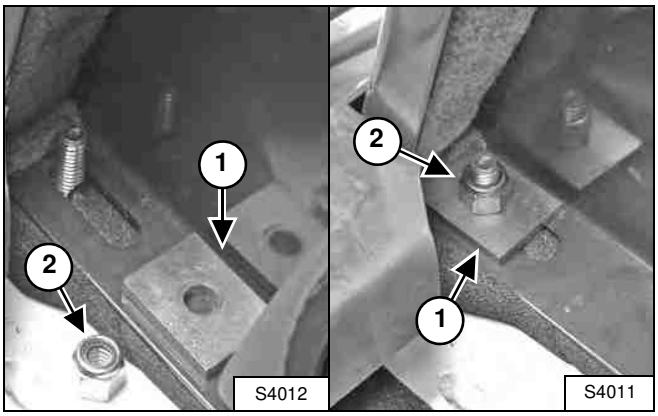
PINCH POINT CAN CAUSE INJURY
Remove your hand from the latching mechanism when the cab is past the latch stop.

W-2469-0803

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

Lowering (Cont'd)

Figure 10-30-5



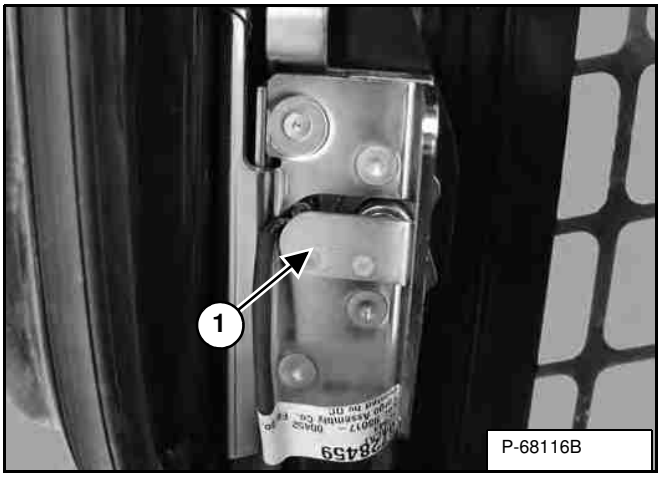
Install the plates and nuts (Items 1 and 2) **[Figure 10-30-5]** (both sides).

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

Cab Door Sensor

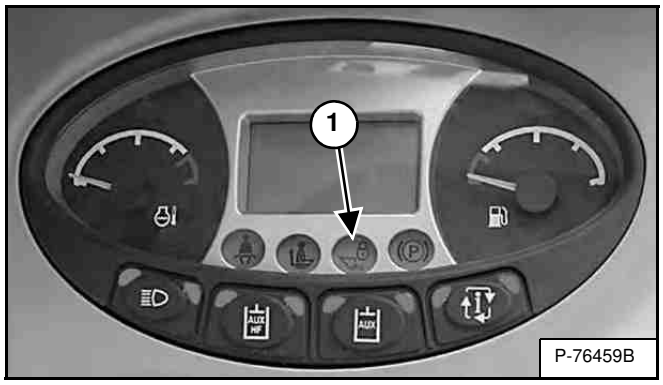
This machine can be equipped with a Cab Door Sensor.

Figure 10-30-6



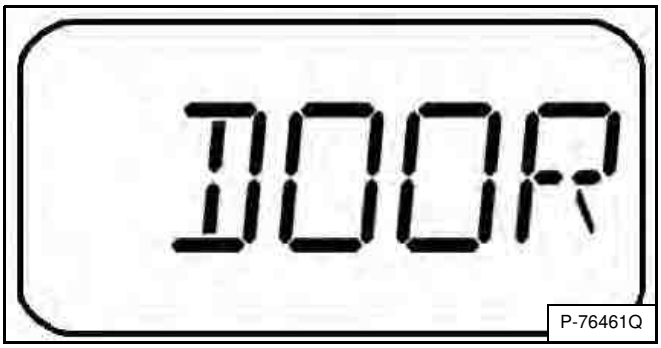
The cab door (option) has a sensor (Item 1) **[Figure 10-30-6]** installed which deactivates the lift and tilt valves when the door is open.

Figure 10-30-7



The LIFT & TILT VALVE light (Item 1) **[Figure 10-30-7]** will be OFF when the door is closed, the key switch is turned to RUN or the RUN / ENTER button is pressed, the seat bar is lowered and the PRESS TO OPERATE LOADER button is pressed.

Figure 10-30-8



The LIFT & TILT VALVE light (Item 1) **[Figure 10-30-7]** will be ON when the door is open, the key switch is turned to RUN or the RUN / ENTER button is pressed, the seat bar is lowered and the PRESS TO OPERATE LOADER button is pressed.

[DOOR] will appear in the data display **[Figure 10-30-8]**.

Special Applications Kit

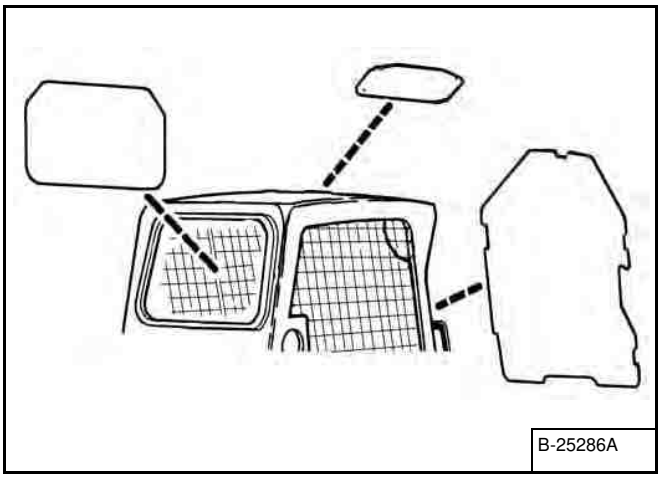
WARNING

AVOID INJURY OR DEATH

Some attachment applications can cause flying debris or objects to enter front, top or rear cab openings. Install the Special Applications Kit to provide added operator protection in these applications.

W-2737-0508

Figure 10-30-9



Available for special applications to restrict material from entering cab openings. Kit includes 12,7 mm (0.5 in) poly carbonate front door, top and rear windows.

See your Bobcat dealer for availability.

Special Applications Kit Inspection And Maintenance

- 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 clean with metal blades or scrapers.

TRANSPORTING THE LOADER ON A TRAILER

Loading And Unloading

⚠ WARNING

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

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

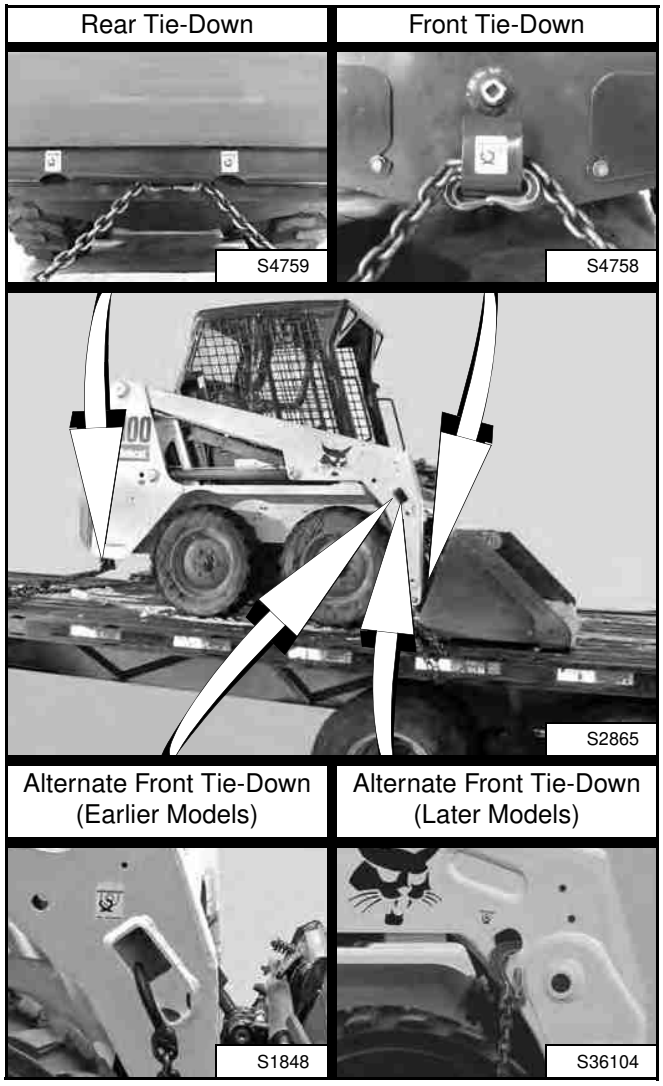
Figure 10-40-1

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

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

Fastening

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]**.

1. Lower the bucket or attachment to the floor.
2. Stop the engine.
3. Engage the parking brake.
4. Install chains at the front and rear loader tie down positions.
5. Fasten each end of the chain to the transport vehicle.
6. Use chain binders to tighten the chains.

TOWING THE LOADER

Procedure

Because of the design of the loader, there is not a recommended towing procedure.

- The loader can be lifted onto a transport vehicle.
- The loader can be skidded a short distance to move for service (EXAMPLE: Move onto a transport vehicle.) without damage to the hydrostatic system. (The wheels will not turn.) There might be slight wear to the wheels when the loader is skidded.

  The towing chain (or cable) must be rated at 1.5 times the weight of the loader. (See Performance on Page SPEC-10-2.)

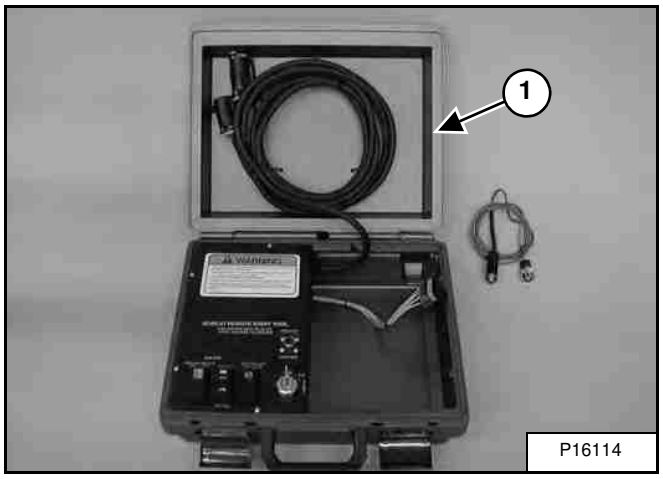
REMOTE START TOOL KIT-MEL1563

Tools that will be needed to complete the following steps are:

MEL1563 - Remote Start Tool
MEL1565 - Service Tool Harness Control
MEL1566 - Service Tool Harness Communicator (Computer Interface)

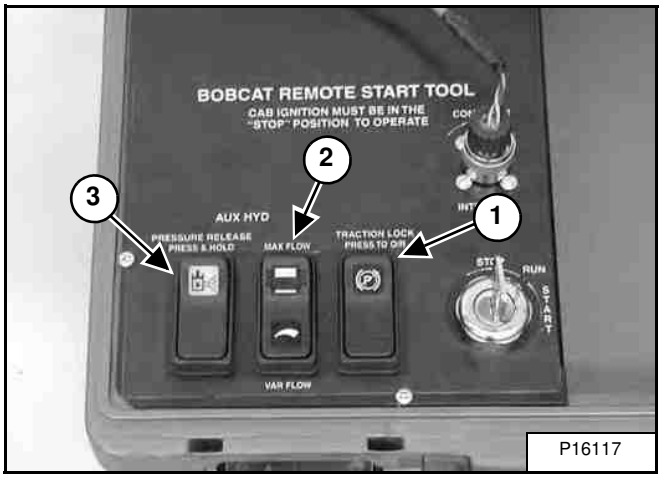
Remote Start Tool - MEL1563

Figure 10-60-1



The remote start tool (Item 1) **[Figure 10-60-1]** is required when the service technician is inspecting the hydraulic / hydrostatic system or adjusting the steering linkage.

Figure 10-60-2



The Traction Lock switch (Item 1) **[Figure 10-60-2]** is used to turn traction lock ON or OFF. Push the switch to the override position. The switch will illuminate to indicate traction lock OVERRIDE, in this position the wheels are able to turn.

The Maximum Flow / Variable Flow switch (Item 2) **[Figure 10-60-2]** is used to activate the auxiliary hydraulics. Pressing the switch once will activate maximum flow. Pressing the switch again will activate variable 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 10-60-2]** is used to release hydraulic pressure to the front and/or rear auxiliary couplers. To release pressure; push and hold the switch for a few seconds.

NOTE: With the engine running; pushing and holding the Pressure Release switch will cause the engine to stop. To relieve the pressure; press the switch until the engine stops.

REMOTE START TOOL KIT-MEL1563 (CONT'D)

Remote Start Tool - MEL1563 (Cont'd)

Figure 10-60-3

Figure 10-60-4

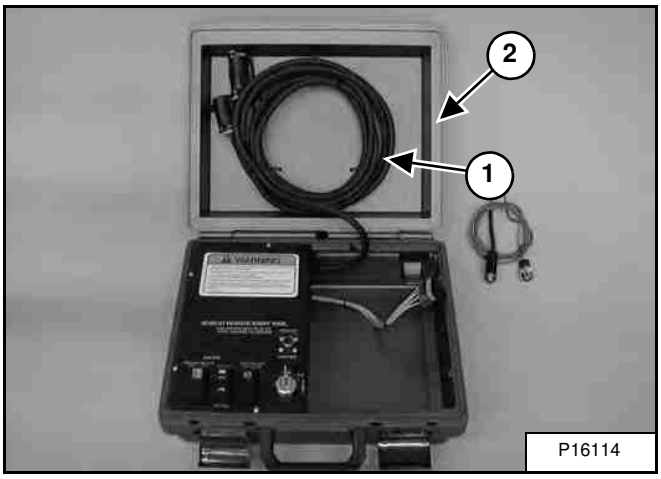
The 10-pin rectangular connector (Item 1) **[Figure 10-60-3]** is used to update software in the Deluxe Instrumentation Panel (Item 1) **[Figure 10-60-4]**.

NOTE: The Service PC must be connected to the remote start tool to update the deluxe panel software.

The panel must be removed from inside the operator cab and plugged into this connector **[Figure 10-60-4]**.

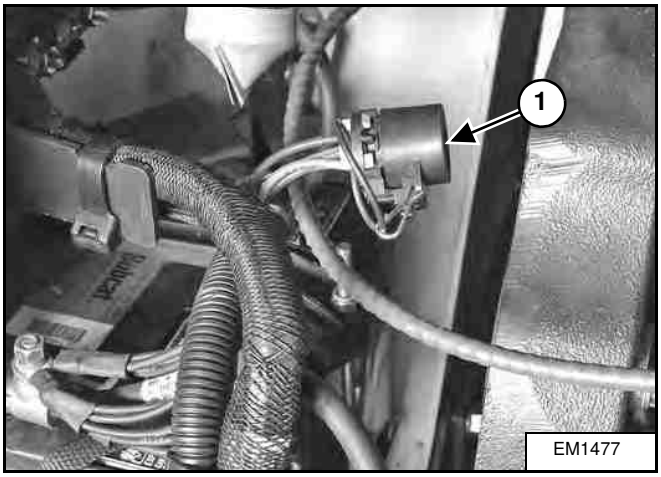
Service Tool Harness Control - MEL1565

Figure 10-60-5



The service tool harness control (Item 1) is used to connect the remote start tool (Item 2) **[Figure 10-60-5]** to the electrical system on the loader.

Figure 10-60-6



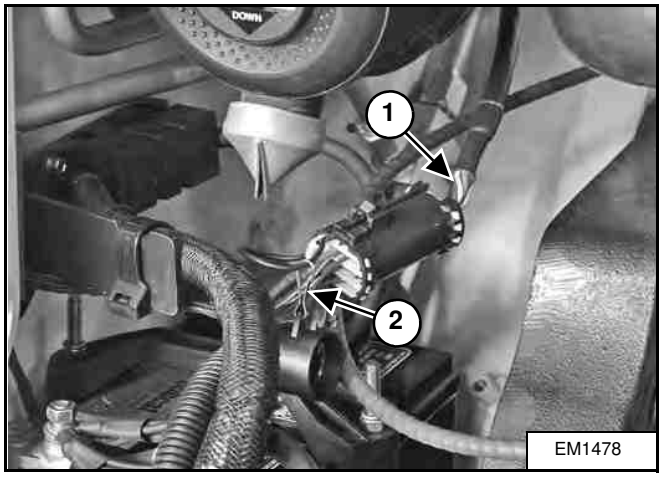
Remove the cap (Item 1) **[Figure 10-60-6]** from the loader harness connector.

Connect the service tool harness control to the loader harness connector.

REMOTE START TOOL KIT-MEL1563 (CONT'D)

Service Tool Harness Control - MEL1565 (Cont'd)

Figure 10-60-7



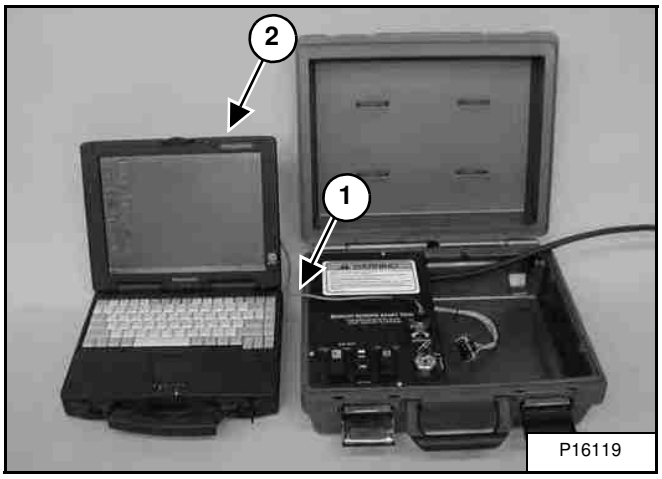
Loaders equipped with an attachment harness (Item 1) must disconnect the attachment harness from the loader harness (Item 2) **[Figure 10-60-7]**.

Connect the service tool harness to the ACD connector and the loader harness connector.

NOTE: To monitor, diagnose or load new software the Service PC must be connected to the Remote Start Tool switch.

Service Tool Harness Communicator - MEL1566

Figure 10-60-8



The service tool harness communicator (Item 1) is required to connect remote start tool to the Service PC (Item 2) **[Figure 10-60-8]**.

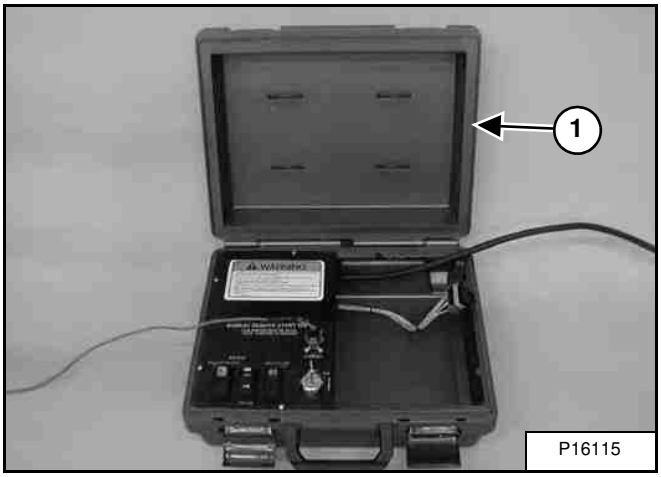
REMOTE START TOOL KIT-MEL1563 (CONT'D)

Remote Start Procedure

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

MEL1563: Remote Start Tool Kit

Figure 10-60-9



The remote start tool (Item 1) **[Figure 10-60-9]** 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.

Raise the lift arms (if required by the procedure) and install an approved lift arm support device.

Raise the operator cab (if required by the procedure).

Open the rear door of the loader.

Figure 10-60-10

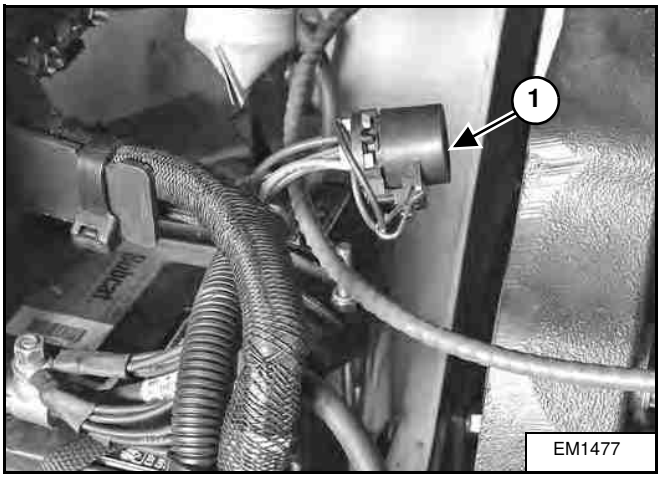
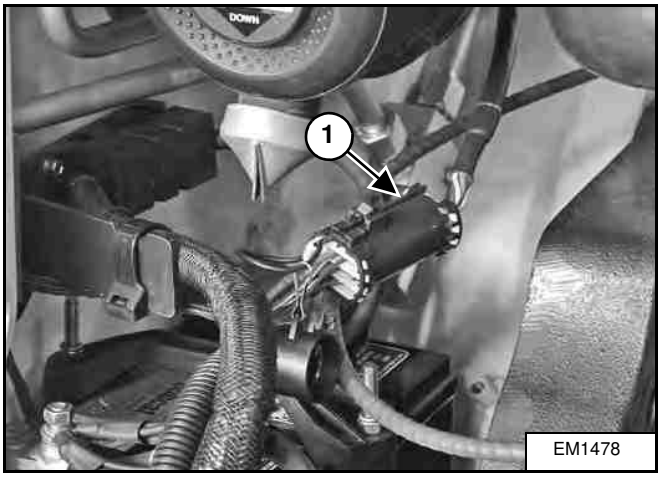


Figure 10-60-11

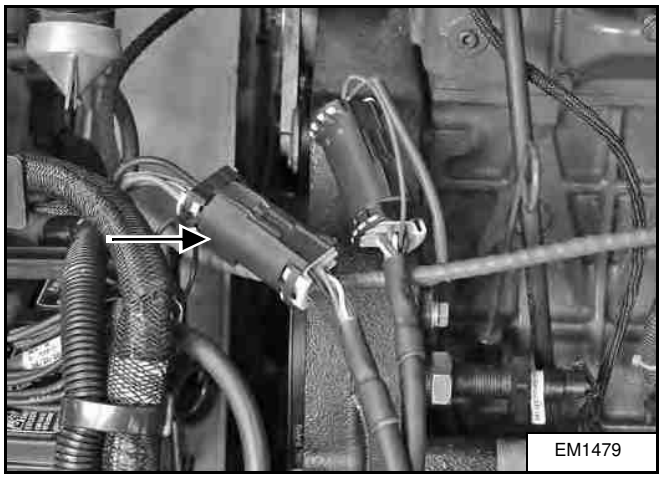


Remove the cap (Item 1) **[Figure 10-60-10]** or disconnect the attachment control harness (Item 1) **[Figure 10-60-11]** if connected.

REMOTE START TOOL KIT-MEL1563 (CONT'D)

Remote Start Procedure (Cont'd)

Figure 10-60-12



Connect the remote start tool to the loader harness connector **[Figure 10-60-12]**.

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.

⚠ WARNING

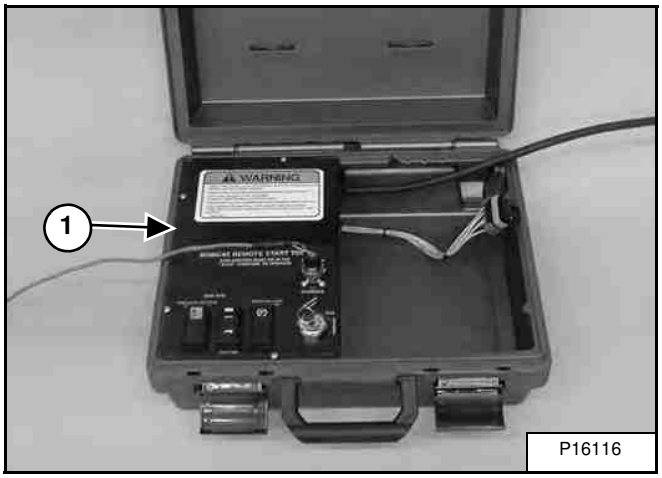
UNAUTHORIZED AND UNEXPECTED ENGINE START-UP CAN CAUSE SERIOUS INJURY OR DEATH

With the 7-pin connector plugged into the machine and Remote Start Tool Key Switch in the OFF position, the engine can be started from the operator panel inside the cab.

- **Place the key switch of the Remote Start Tool in the RUN position to disconnect the operator panel from the start circuit.**
- **Remove the operator panel key (key switch), lock the keypad with a unique password (keyless) or otherwise disable the starter before working in the engine area.**

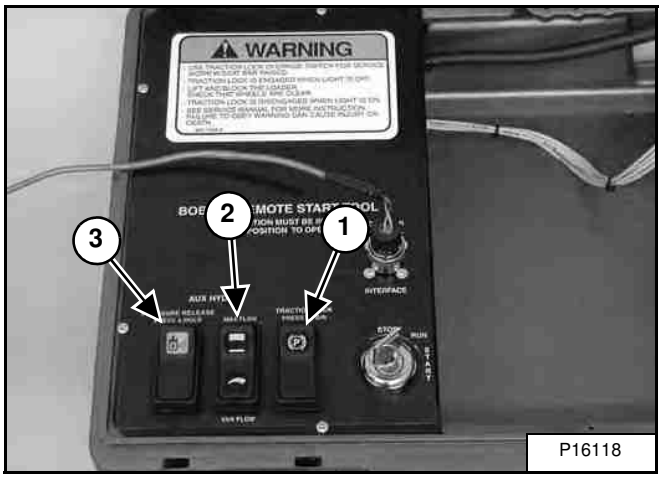
W-2457-1110

Figure 10-60-13



The remote start tool (Item 1) **[Figure 10-60-13]** has three rocker switches.

Figure 10-60-14



The Traction Lock switch (Item 1) **[Figure 10-60-14]** is used to turn traction lock on or off. Push the switch to the override position. The switch will illuminate to indicate traction lock OVERRIDE, in this position the wheels are able to turn.

The Maximum Flow / Variable Flow switch (Item 2) **[Figure 10-60-14]** 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 10-60-14]** is used to release hydraulic pressure to the front and/or rear auxiliary couplers. To release pressure; push and hold the switch for 3 seconds.

REMOTE START TOOL KIT-MEL1563 (CONT'D)

Remote Start Procedure (Cont'd)

NOTE: With the engine running; pushing and holding the Pressure Release switch will cause the engine to stop in 3 seconds. To relieve the pressure; continue to press the switch after the engine has stopped.

⚠ WARNING

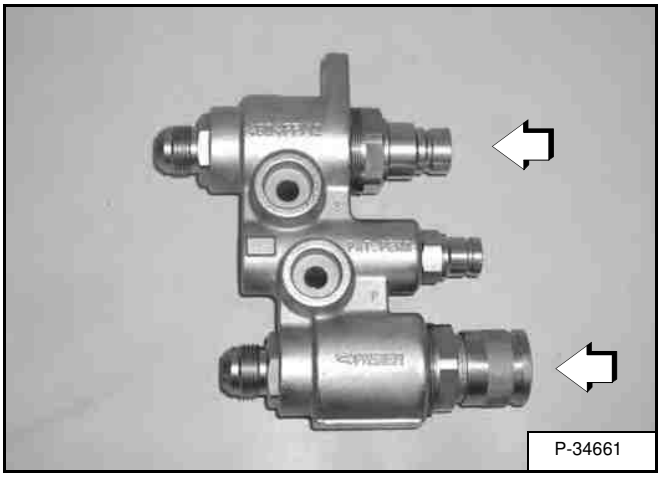
AVOID INJURY OR DEATH

- **Use traction lock override switch for service work with seat bar raised.**
- **Traction lock is engaged when light is OFF.**
- **Lift and block the loader. Check that wheels are clear.**
- **Traction lock is disengaged when light is ON.**
- **See Service Manual for more instruction.**

W-2785-0209

NOTE: With the engine running; pushing and holding the Pressure Release switch will cause the engine to stop in 3 seconds. To relieve the pressure at the rear or right hand auxiliary (if equipped), continue to hold the switch for 3 seconds after the engine has stopped.

Figure 10-60-15



Push the couplers on the front auxiliary block toward the block and hold for 5 seconds to release the front auxiliary pressure **[Figure 10-60-15]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666

Description

The Remote Start Tool (Service Tool) Kit is a replacement tool for MEL 1563 Remote Start Tool and MEL 1400B - BOSS® Diagnostic Tool.

The Remote Start Tool (Service Tool) Kit, P/N 7217666, can be used to service older loaders with the BOSS® system using the supplied BOSS® Service Tool Harness P/N 6689745.

The Remote Start Tool (Service Tool) Kit, P/N 7217666, can be used to service newer loaders using the supplied harness P/N 6689747.

A computer can be connected to the Remote Start Tool (Service Tool) for diagnostics and software updates using the computer harness P/N 6689746 in conjunction with the loader harness.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 (CONT'D)

Remote Start Tool (Service Tool) - 7022042

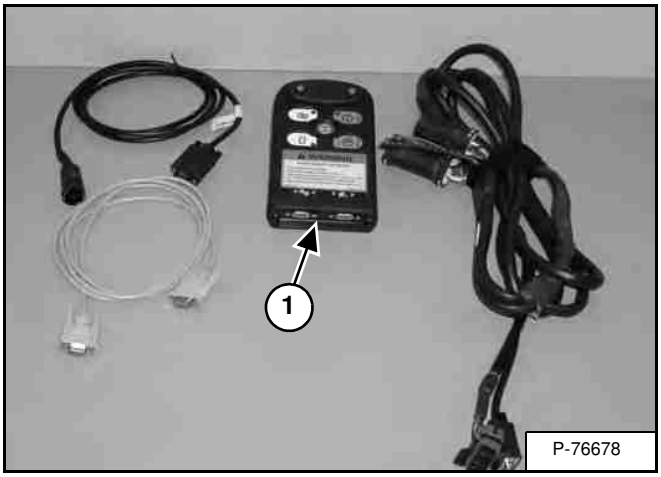
Tools that will be needed to complete the following steps are:

Order from Bobcat Parts P/N: 7217666 - Remote Start Tool (Service Tool) Kit

Kit Includes:

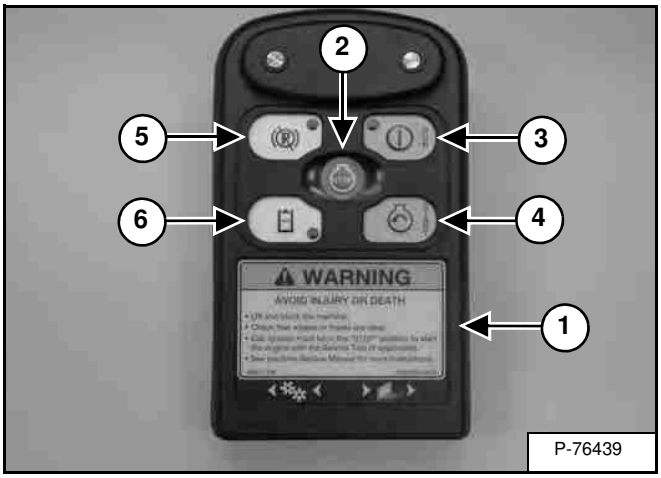
7022042 - Remote Start Tool (Service Tool)
6689747 - Loader Service Tool Harness
6689746 - Computer Service Tool Harness
6689745 - BOSS® Service Tool Harness

Figure 10-61-1



The remote start tool (Item 1) **[Figure 10-61-1]** is required when the service technician is inspecting the hydraulic / hydrostatic system or adjusting the steering linkage.

Figure 10-61-2



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-2]** has five buttons.

The STOP button (Item 2) **[Figure 10-61-2]** is used to stop the Remote Start Tool (Service Tool) from communicating and stop the loader engine.

The RUN button (Item 3) **[Figure 10-61-2]** is used to turn the Remote Start Tool (Service Tool) on and activates the loader ignition power. The button will illuminate to indicate the service tool is active.

The START button (Item 4) **[Figure 10-61-2]** is used to start the loader engine.

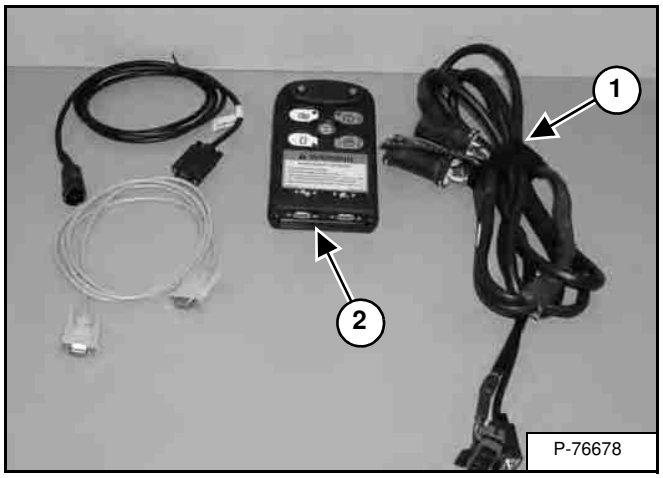
The Traction Lock button (Item 5) **[Figure 10-61-2]** is used to turn traction lock ON or OFF. Push the button and the button will illuminate indicating the traction lock is disabled in which the wheels or tracks are able to turn.

The Auxiliary button (Item 6) **[Figure 10-61-2]** is used to activate the auxiliary hydraulics. The button will illuminate to indicate the auxiliary hydraulics are active. Pressing the button a second time will turn the flow OFF. The button is used when checking pressures and flow rate.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 (CONT'D)

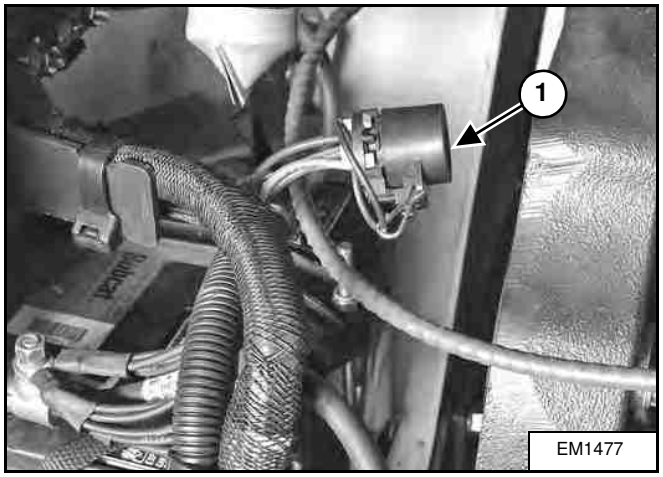
Loader Service Tool Harness - 6689747

Figure 10-61-3



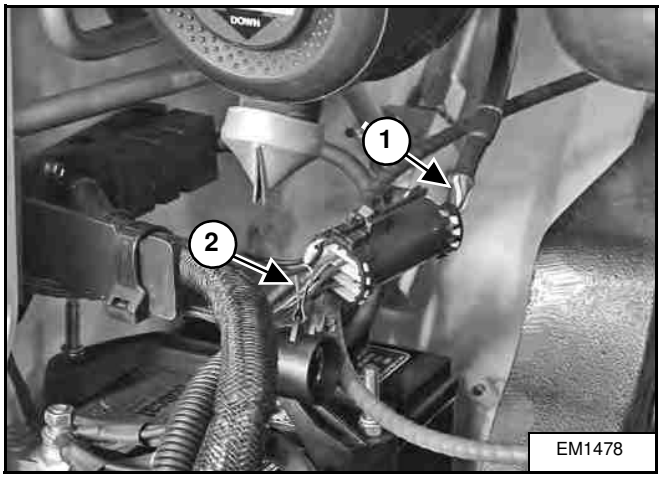
The loader service tool harness (Item 1) is used to connect the remote start tool (service tool) (Item 2) **[Figure 10-61-3]** to the electrical system on the loader.

Figure 10-61-4



Loaders without an attachment control harness, remove the loader harness cap (Item 1) **[Figure 10-61-4]** and connect the Loader Service Tool Harness, from the Remote Start Tool (Service Tool), to the loader harness connector.

Figure 10-61-5



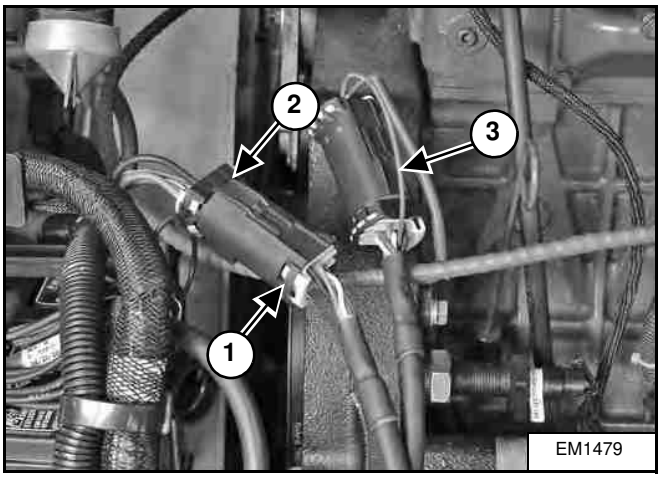
Loaders with an attachment control harness (7 pin or 14 pin), the attachment harness (Item 1) must be disconnected from the loader harness (Item 2) **[Figure 10-61-5]**.

When the remote start procedure is completed, replace the loader connector cap (Item 1) **[Figure 10-61-4]** or connect the attachment control harness to the loader harness **[Figure 10-61-5]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666(CONT'D)

Loader Service Tool Harness - 6689747 (Cont'd)

Figure 10-61-6



NOTE: The Remote Start Tool (Service Tool) connection harness has two connectors (Item 1) and (Item 3). The main connector (Item 1) [Figure 10-61-6] is always used for connection to the loader harness.

The second connector (Item 3) [Figure 10-61-6] is used for attachment ACD upgrades or attachment operational diagnostics only. This connector has a cap attached to it to prevent damage or corrosion when not in use. This connector is not used on the S100 model.

Connect the Remote Start Tool (Service Tool) connector (Item 1) to the loader harness connector (Item 2) and the other Remote Start Tool (Service Tool) connector to the ACD harness connector (Item 3) **[Figure 10-61-6]**.

NOTE: The right instrument panel (Standard Key Panel or Deluxe Instrumentation Panel) must be in the off position or the Remote Start Tool (Service Tool) will not operate.

⚠ WARNING

AVOID INJURY OR DEATH

- **Lift and block the machine.**
- **Check that wheels or tracks are clear.**
- **Cab ignition must be in the "STOP" position to start the engine with the Service Tool (if applicable).**
- **See machine Service Manual for more instructions.**

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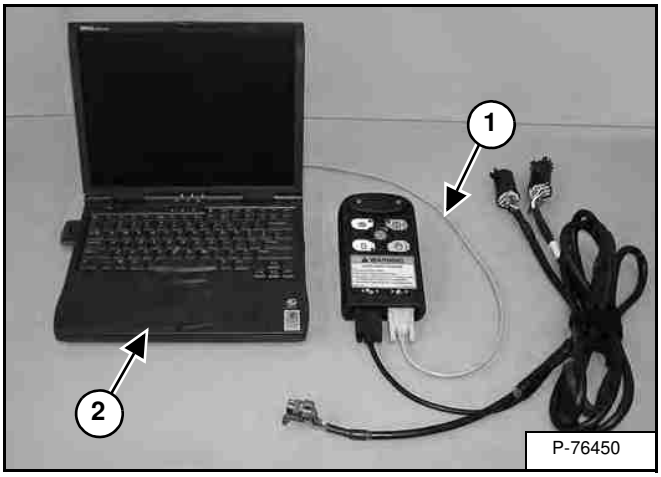
Computer Service Tool Harness - 6689746

Figure 10-61-7



The computer service tool harness (Item 1) is required to connect remote start tool (service tool) to the Service PC (Item 2) **[Figure 10-61-7]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 (CONT'D)

Remote Start Procedure

⚠ WARNING

UNAUTHORIZED AND UNEXPECTED ENGINE START-UP CAN CAUSE SERIOUS INJURY OR DEATH
With the 7-pin connector plugged into the machine and Remote Start Tool RUN button not illuminated, the engine can be started from the operator panel inside the cab.

- **Press the RUN button of the Remote Start Tool to disconnect the operator panel from the start circuit.**
- **Remove the operator panel key (key switch), lock the keypad with a unique password (keyless) or otherwise disable the starter before working in the engine area.**

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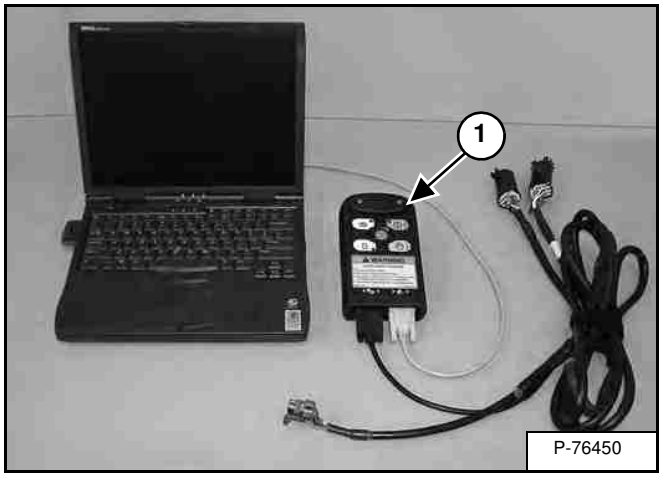
The tool listed will be needed to do the following procedure:

7217666: Remote Start Tool (Service Tool) Kit

Figure 10-61-8



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-8]** is required when the operator cab is in the raised position for service and the service technician needs to turn on the loader or start the engine. Example: adjusting the steering linkage.

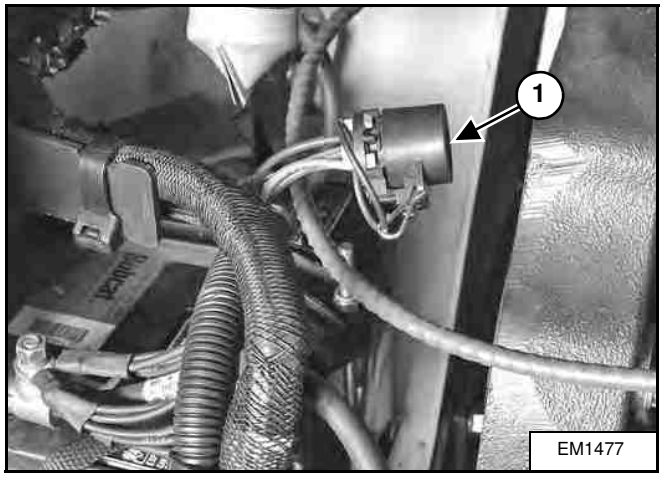
Lift and block the loader.

Raise the lift arms (if required by the procedure) and install an approved lift arm support device.

Raise the operator cab (if required by the procedure).

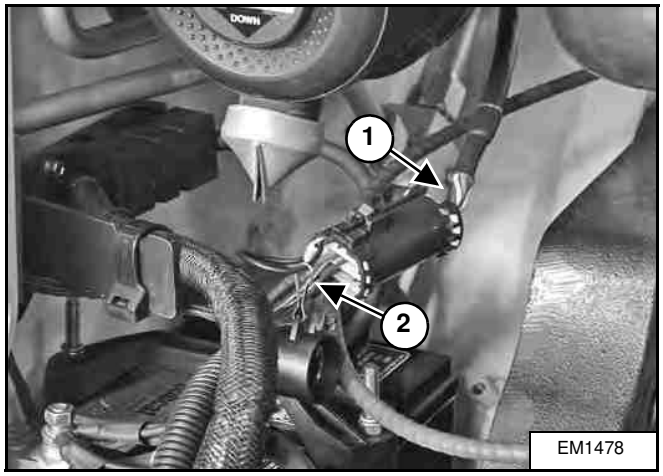
Open the rear door of the loader.

Figure 10-61-9



Loaders without an attachment control harness, remove the loader harness cap (Item 1) **[Figure 10-61-9]** and connect the Loader Service Tool Harness, from the Remote Start Tool (Service Tool), to the loader harness connector.

Figure 10-61-10



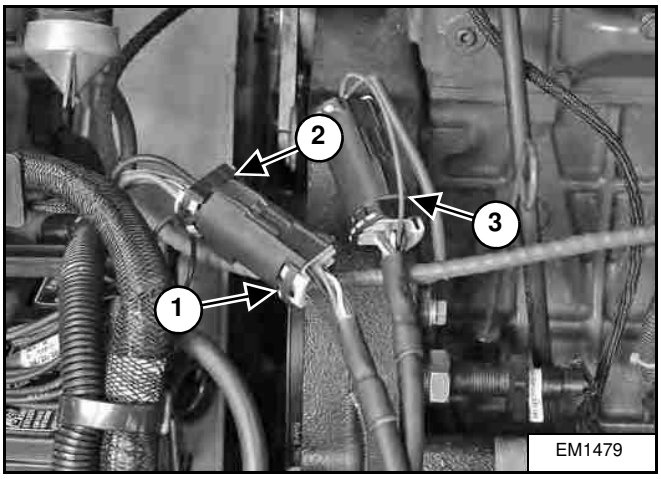
Loaders with an attachment control harness (7 pin or 14 pin), the attachment harness (Item 1) must be disconnected from the loader harness (Item 2) **[Figure 10-61-10]**.

When the remote start procedure is completed, replace the loader connector cap (Item 1) **[Figure 10-61-10]** or the attachment control harness to the loader harness **[Figure 10-61-10]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 (CONT'D)

Remote Start Procedure (Cont'd)

Figure 10-61-11



NOTE: The Remote Start Tool (Service Tool) connection harness has two connectors (Item 1) and (Item 3). The main connector (Item 1) [Figure 10-61-11] is always used for connection to the loader harness.

The second connector (Item 3) [Figure 10-61-11] is used for attachment ACD upgrades or attachment operational diagnostics only. This connector has a cap attached to it to prevent damage or corrosion when not in use.

Connect the Remote Start Tool (Service Tool) connector (Item 1) to the loader harness connector (Item 2) and the other Remote Start Tool (Service Tool) connector to the ACD harness connector (Item 3) **[Figure 10-61-11]**.

NOTE: The right instrument panel (Standard Key Panel or Deluxe Instrumentation Panel) must be in the off position or the Remote Start Tool (Service Tool) will not operate.

⚠ WARNING

AVOID INJURY OR DEATH

- **Lift and block the machine.**
- **Check that wheels or tracks are clear.**
- **Cab ignition must be in the "STOP" position to start the engine with the Service Tool (if applicable).**
- **See machine Service Manual for more instructions.**

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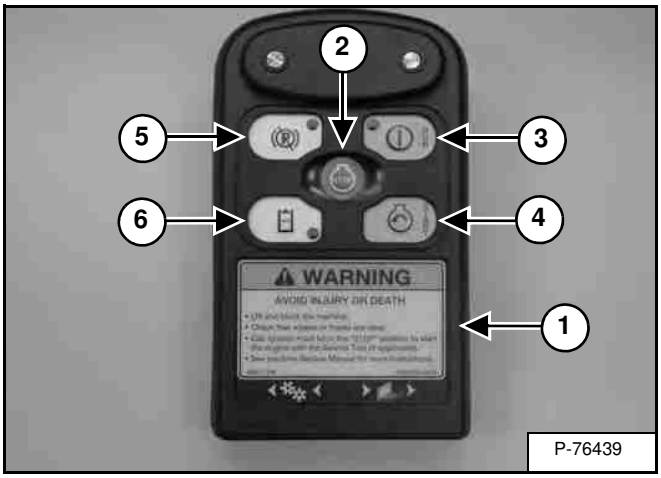
Figure 10-61-12



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-12]** has five buttons.

The STOP button (Item 2) **[Figure 10-61-12]** is used to stop the Remote Start Tool (Service Tool) from communicating and stop the loader engine.

The RUN button (Item 3) **[Figure 10-61-12]** is used to turn the Remote Start Tool (Service Tool) on and activates the loader ignition power. The button will illuminate to indicate the service tool is active.

The START button (Item 4) **[Figure 10-61-12]** is used to start the loader engine.

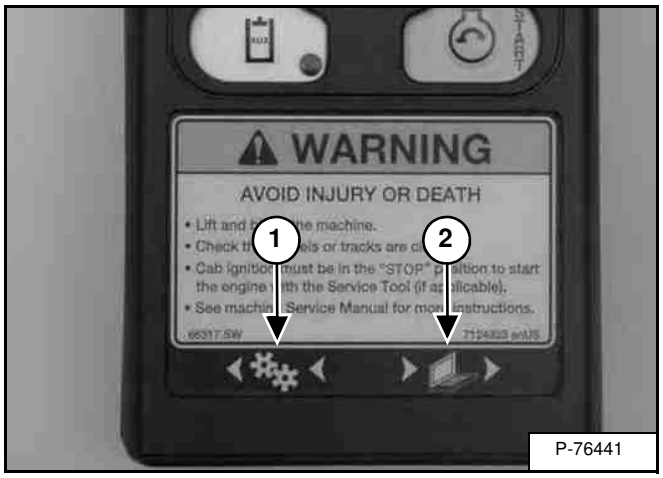
The Traction Lock button (Item 5) **[Figure 10-61-12]** is used to turn traction lock ON or OFF. Push the button and the button will illuminate indicating the traction lock is disabled in which the wheels or tracks are able to turn.

The Auxiliary button (Item 6) **[Figure 10-61-12]** is used to activate the auxiliary hydraulics. The button will illuminate to indicate the auxiliary hydraulics are active. Pressing the button a second time will turn the flow OFF. The button is used when checking pressures and flow rate.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 (CONT'D)

Remote Start Procedure (Cont'd)

Figure 10-61-13

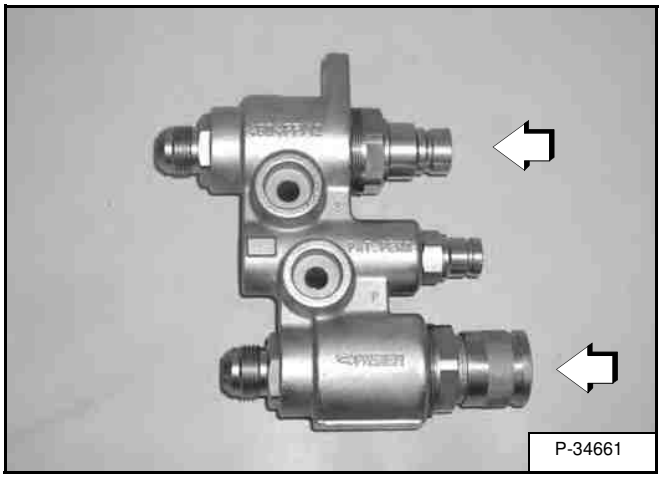


The gear icon with the left facing arrows (Item 1) **[Figure 10-61-13]** will illuminate and blink when the RUN button is pressed and the loader is communicating with the service tool.

The computer icon with the right facing arrows (Item 2) **[Figure 10-61-13]** will illuminate and blink when the Remote Start Tool (Service Tool) is transmitting data to and from the computer.

NOTE: To relieve the pressure at the rear or secondary front auxiliary, (if equipped) press the RUN button on the remote start tool. Then press the Auxiliary (AUX) Hydraulics button on the remote start tool and move the AUXILIARY Hydraulic switch to the right and left several times.

Figure 10-61-14



Push the couplers on the front auxiliary block toward the block and hold for 5 seconds to release the front auxiliary pressure **[Figure 10-61-14]**.

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. W-2003-0807

SERVICE SCHEDULE		HOURS					
ITEM	SERVICE REQUIRED	8-10	50	100	[1] 250	[1] 500	[1] 1000
Engine Oil	Check the oil level and add as needed. Do not overfill.						
Engine Air Filter and Air System	Check indicator. Service only when required. Check for leaks and damaged components.						
Engine Cooling System	Clean debris from oil cooler, radiator and grille. Check coolant level COLD and add premixed coolant as needed.						
Fuel Filter	Remove the trapped water.						
Lift Arms, Cylinders, Bob-Tach Pivot Pins and Wedges	Lubricate with multipurpose lithium based grease.						
Tyres	Check for damaged tyres and correct air pressure. Inflate to MAXIMUM pressure shown on the sidewall of the tyre.						
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 for correct function. Lift and Tilt functions MUST NOT operate with seat bar raised. See details in this Manual.						
Front Horn	Check for proper function.						
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.						
Heater Filters (If Equipped)	Clean or replace filters as needed.						
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),	Check fluid level and add as needed.						
Parking Brake, Foot Pedals, Hand Controls and Steering Levers or Joysticks	Check for correct operation. Repair or adjust as needed.						
Wheel Nuts	Check for loose wheel nuts and tighten to correct torque. (See TYRE MAINTENANCE in this manual.)	**[3]**					
Spark Arrester Muffler	Clean the spark chamber.						
Battery	Check cables, connections and electrolyte level. Add distilled water as needed.						
Steering Lever Pivots	Grease fittings.						
Fuel Filter	Replace filter element.						
Engine / Hydro. Drive Belt	Check for wear or damage. Check idler arm stop.		**[2]**				
Drive Belts (Alternator, water pump)	Check condition and tension. Adjust or replace as needed.						
Bobcat Interlock Control System (BICS™)	Check the function of the lift arm bypass control.						
Engine Oil and Filter	Replace oil and filter.		**[2]**	**[5]**			
Hydraulic / Hydrostatic Filter, Charge Filter, Reservoir Breather	Replace the hydraulic / hydrostatic filter, charge filter, and the reservoir breather.		**[4]**				
Final Drive Trans. (Chaincase)	Replace the fluid.						
Hydraulic Reservoir	Replace the fluid.						
Case Drain Filters	Replace the filters.		**[2]**				
Engine Valves	Adjust the engine valves.					**[6]**	
Coolant	Replace the coolant	Every 2 years					

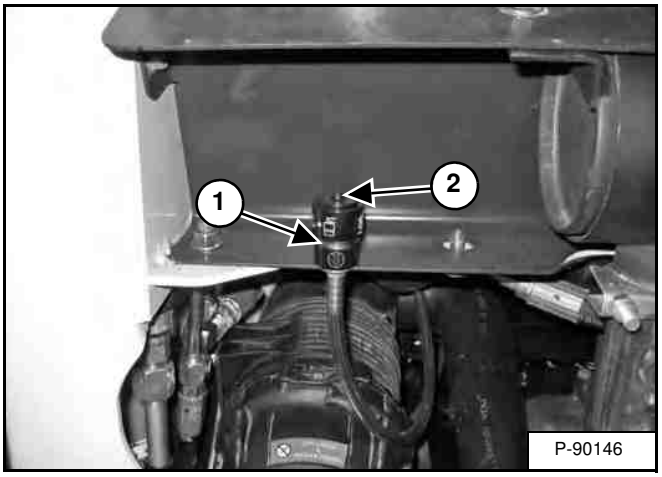
[1] Or every 12 months.
[2] Perform at first 50 hours, then as scheduled.
[3] Check every 8 - 10 hours for the first 24 hours, then at 50 hour intervals.
[4] Replace the hydraulic / hydrostatic filter element after the first 50 hours, then when service code [M0217] is displayed or as scheduled.
[5] Change oil and filter every 100 hours when operating under severe conditions.
[6] Perform at first 500 hours, then as scheduled.

NOTE: The Inspection Checkbook can be ordered for you by your local dealer. Part number 4420300.

AIR CLEANER SERVICE

Replacing Filter Elements

Figure 10-80-1

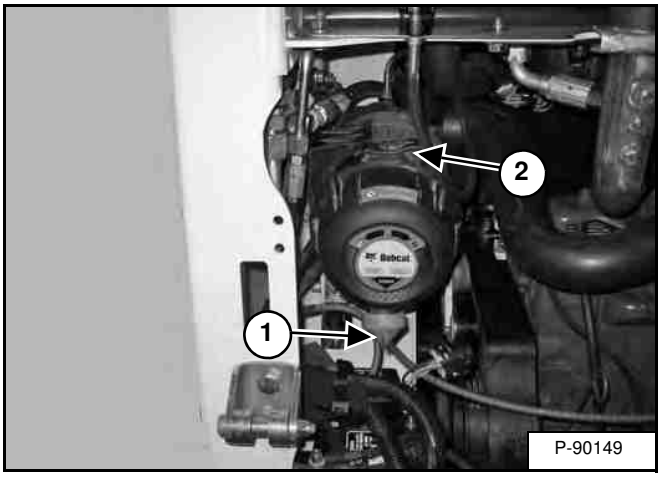


Replace the large (outer) filter element only when the red ring shows in the window of the condition indicator (Item 1) **[Figure 10-80-1]**.

NOTE: Before replacing the filter element, push the button on the condition indicator (Item 2) [Figure 10-80-1]. Start the engine. If the red ring does not show, do not replace the filter element.

Outer Filter

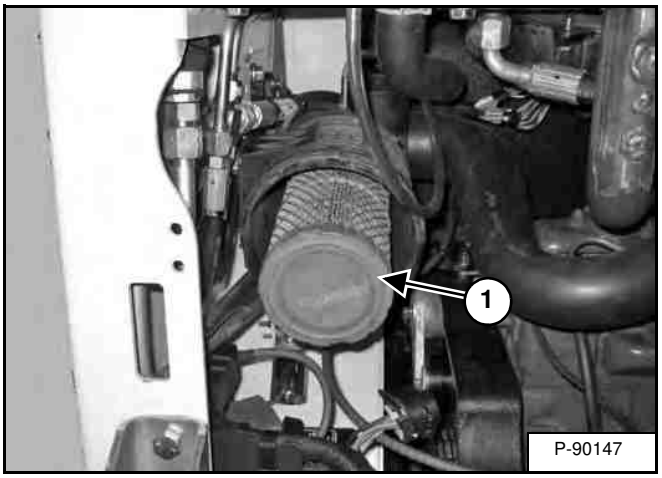
Figure 10-80-2



Open the evacuator valve (Item 1) **[Figure 10-80-2]** to get rid of large particles of dust and dirt.

Remove the dust cover by lifting the lever (Item 2) **[Figure 10-80-2]** and rotating the dust cover.

Figure 10-80-3



Pull the outer element (Item 1) **[Figure 10-80-3]** straight out.

Install a new outer element.

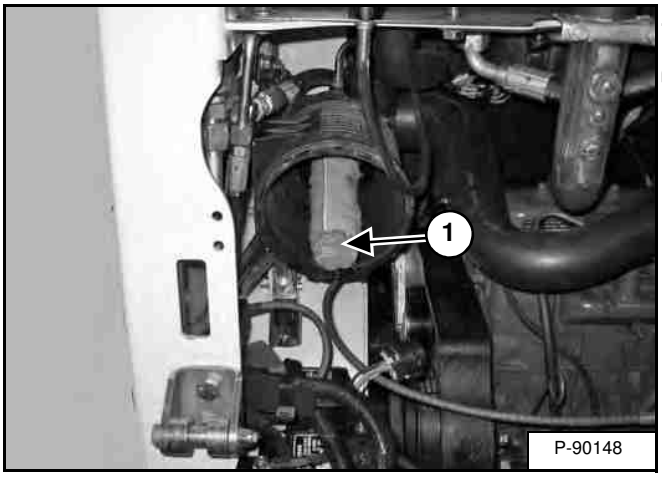
Install the dust cover.

Check the air intake hose and the air cleaner housing for damage. Make sure all connections are tight.

Inner Filter

Replace the inner filter every third time the outer filter is replaced or when the red ring still shows in the indicator window after the outer filter has been replaced.

Figure 10-80-4



Remove the inner filter (Item 1) **[Figure 10-80-4]**.

NOTE: Make sure all sealing surfaces are free of dirt and debris. DO NOT use compressed air.

Install a new inner element.

Install the outer element and the dust cover.

ENGINE COOLING SYSTEM

Inspect the cooling system every day to prevent overheating, loss of performance or engine damage.

Cleaning

Open the rear door and raise the rear grille.

NOTE: Be careful when raising and lowering the rear grille so that it does not fall on the radiator and damage the fins.

⚠ WARNING

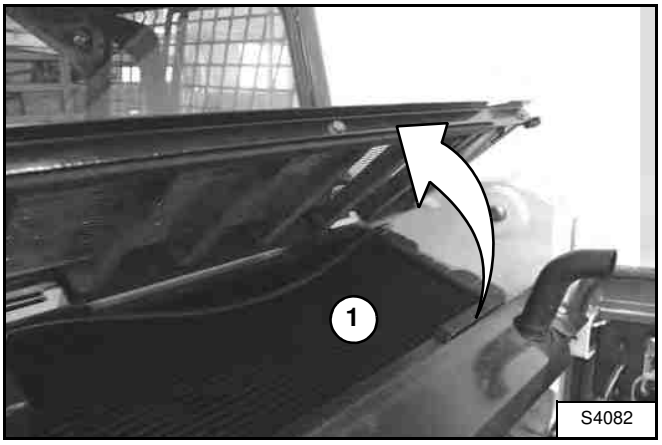
AVOID INJURY OR DEATH

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

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

W-2019-0907

Figure 10-90-1



Use low air pressure or water pressure to clean the top of the radiator (Item 1) **[Figure 10-90-1]**.

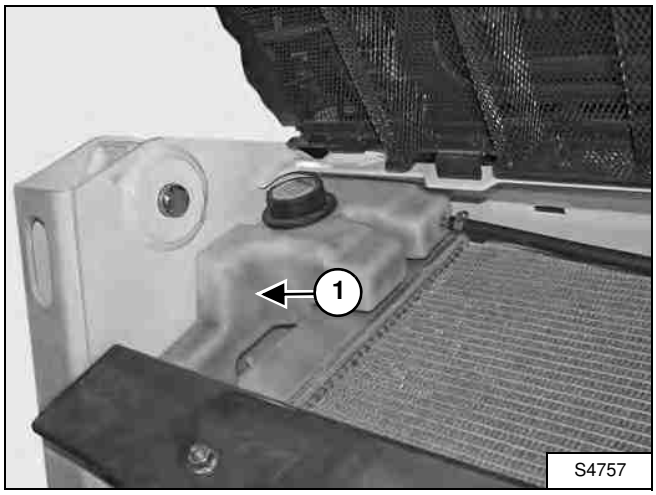
Inspect the cooling system for leaks.

Lower the rear grille and close the rear door.

Checking Level

Open the rear door and remove the rear grille.
(See Removal And Installation on Page 50-60-1.)

Figure 10-90-2



Check coolant level using the level markers (Item 1) **[Figure 10-90-3]** on the tank. Coolant must be at the bottom marker when the engine is cold; top marker when hot.

Close the rear door before operating the loader.

IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

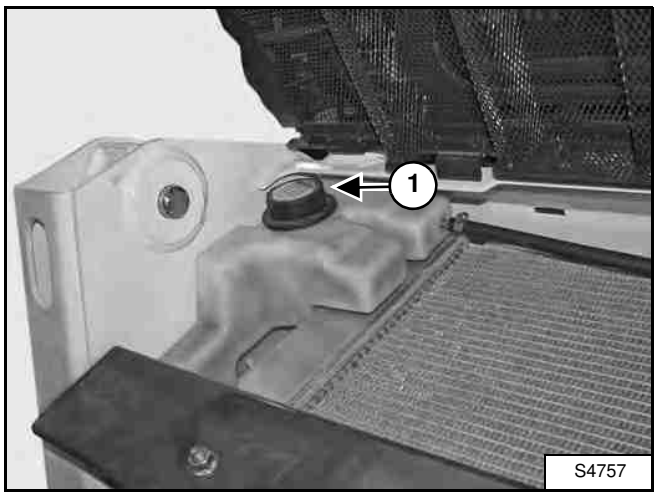
I-2124-0497

ENGINE COOLING SYSTEM (CONT'D)

Removing And Replacing Coolant

Open the rear door and remove the rear grille.
(See Removal And Installation on Page 50-60-1.)

Figure 10-90-3



Remove the coolant fill cap (Item 1) **[Figure 10-90-3]**.

Connect a hose to the engine block drain valve. Open the drain valve and drain the coolant into a container.

After all the coolant is removed, close the drain valve and remove the hose.

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

Mix the coolant in a separate container. (See Specifications on Page SPEC-40-1.)

NOTE: The loader is factory filled with propylene glycol coolant (purple color). DO NOT mix propylene glycol with ethylene glycol.

Add premixed coolant, 47% water and 53% propylene glycol to the recovery tank. (See Checking Level on Page 10-90-1.)

The correct mixture of coolant to provide a -37°C (34°F) freeze protection is 5 L propylene glycol mixed with 4,4 L of water OR 1 U.S. gal propylene glycol mixed with 3.5 qt of water.

Fill the tank until it is at the lower marker on the tank.

Use a refractometer to check the condition of propylene glycol in your cooling system and reinstall the coolant fill cap.

NOTE: When installing the coolant fill cap, the cap must be tightened until it clicks.

Run the engine until it is at operating temperature. Stop the engine. Check the coolant level when cool. Add coolant as needed.

Reinstall the rear grille and close the rear door.

IMPORTANT

AVOID ENGINE DAMAGE
Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

I-2124-0497

FUEL SYSTEM

Fuel Specifications

Use only clean, high quality diesel fuel, Grade No. 2 or Grade No. 1.

The following is one suggested blending guideline which should prevent fuel gelling during cold temperatures:

TEMPERATURE °C (°F)	NO. 2	NO. 1
-9° (+15°)	100%	0%
Down to -29° (-20°)	50%	50%
Below -29° (-20°)	0%	100%

At a minimum, Low Sulfur (500 ppm sulfur) Diesel Fuel must be used in this machine:

The following fuels can also be used in this machine:

- Ultra Low Sulfur (15 ppm sulfur) Diesel Fuel.
- Biodiesel Blend Fuel - Must contain no more than five percent biodiesel mixed with low sulfur or ultra low sulfur petroleum based diesel. This is commonly marketed as B5 blended diesel fuel. B5 blended diesel fuel must meet ASTM D975 (US Standard) or EN590 (EU Standard) specifications.

Biodiesel Blend Fuel

Biodiesel blend fuel has unique qualities that should be considered before using in this machine:

- Cold weather conditions can lead to plugged fuel system components and hard starting.
- Biodiesel blend fuel is an excellent medium for microbial growth and contamination which can cause corrosion and plugging of fuel system components.
- Use of biodiesel blend fuel can result in premature failure of fuel system components, such as plugged fuel filters and deteriorated fuel lines.
- Shorter maintenance intervals can be required, such as cleaning the fuel system and replacing fuel filters and fuel lines.
- Using biodiesel blended fuels containing more than five percent biodiesel can affect engine life and cause deterioration of hoses, tubelines, injectors, injector pump and seals.

Apply the following guidelines if biodiesel blend fuel is used:

- Ensure the fuel tank is as full as possible at all times to prevent moisture from collecting in the fuel tank.
- Ensure that the fuel tank cap is securely tightened.
- Biodiesel blend fuel can damage painted surfaces, remove all spilled fuel from painted surfaces immediately.
- Drain all water from the fuel filter daily before operating the machine.
- Do not exceed engine oil change interval. Extended oil change intervals can cause engine damage.
- Before machine storage; drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabilizer and run the engine for at least 30 minutes.

NOTE: Biodiesel blend fuel does not have long term stability and should not be stored for more than three months.

Filling The Fuel Tank

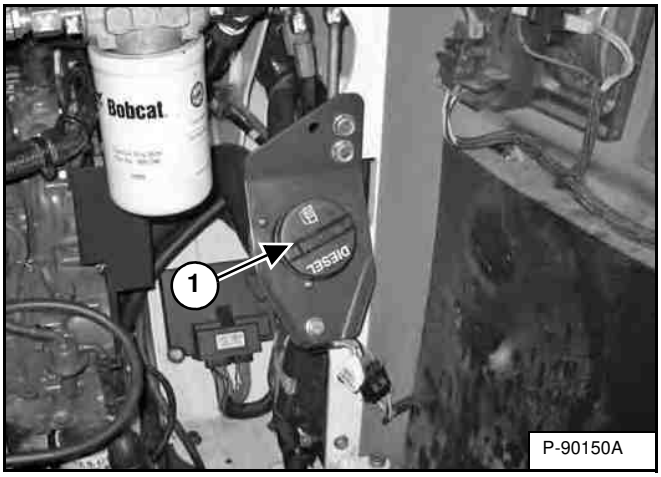
⚠ WARNING

AVOID INJURY OR DEATH

Stop and cool the engine before adding fuel. NO SMOKING! Failure to obey warnings can cause an explosion or fire.

W-2063-0807

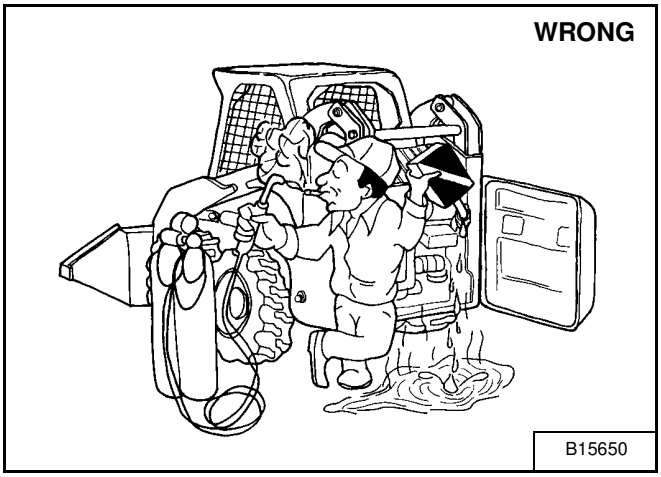
Figure 10-100-1



Open the rear door.

Remove the fuel fill cap (Item 1) **[Figure 10-100-1]**.

Figure 10-100-2



Use a clean, approved safety container to add fuel of the correct specification. Add fuel only in an area that has free movement of air and no open flames or sparks. *NO SMOKING!* **[Figure 10-100-2]**.

Install and tighten the fuel fill cap (Item 1) **[Figure 10-100-1]**.

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

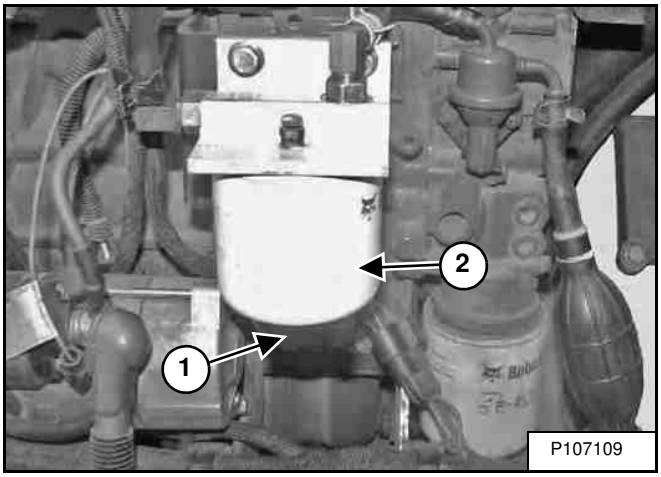
W-2103-0508

Fuel Filter

For the service interval for removing water from, or replacing the fuel filter. (See SERVICE SCHEDULE on Page 10-70-1.)

Removing Water

Figure 10-100-3



Loosen the drain (Item 1) **[Figure 10-100-3]** at the bottom of the filter element to remove water from the filter.

Replacing Element

Remove the filter element (Item 2) **[Figure 10-100-3]**.

Clean the area around the filter housing. Put clean oil on the seal of the new filter element. Install the fuel filter, and hand tighten.

Remove air from the fuel system. (See Removing Air From The Fuel System on Page 10-100-3.)

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

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Removing Air From The Fuel System

After replacing the filter element or when the fuel tank has run out of fuel, the air must be removed from the fuel system before starting the engine.

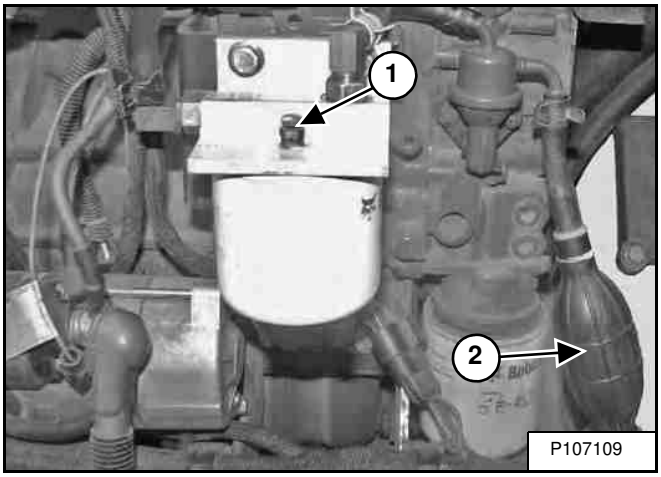
⚠ WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

Figure 10-100-4



Open the vent (Item 1) **[Figure 10-100-4]** on the fuel filter housing.

Squeeze the hand pump (priming bulb) (Item 2) **[Figure 10-100-4]** until air bubbles do not come up any more.

Close the vent (Item 1) **[Figure 10-100-4]** on the fuel filter housing.

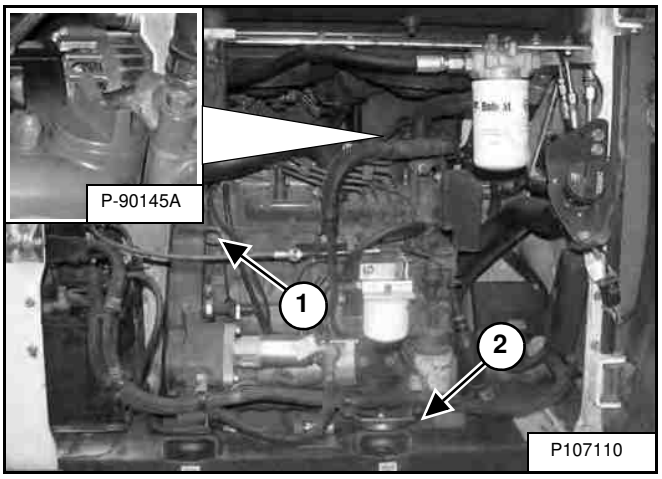
Close the rear door before starting the engine.

ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

Check the engine oil level every day before starting the engine for the work shift.

Figure 10-110-1

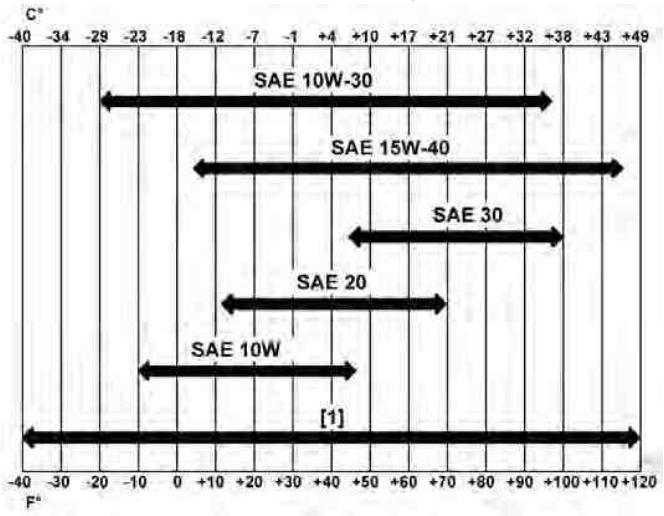


Park the machine on level ground. Open the rear door and remove the dipstick (Item 1) **[Figure 10-110-1]**. Keep the oil level between the marks on the dipstick. Do not overfill.

Engine Oil Chart

Figure 10-110-2

ENGINE OIL
RECOMMENDED SAE VISCOSITY NUMBER
(LUBRICATION OILS FOR DIESEL ENGINE CRANKCASE)



TEMPERATURE RANGE ANTICIPATED BEFORE NEXT OIL CHANGE (DIESEL ENGINES MUST USE API CLASSIFICATION CI-4 OR BETTER)

[1] Synthetic Oil - Use recommendation from Synthetic Oil Manufacturer.

Use good quality engine oil that meets API Service Classification of CI-4 or better **[Figure 10-110-2]**.

ENGINE LUBRICATION SYSTEM (CONT'D)

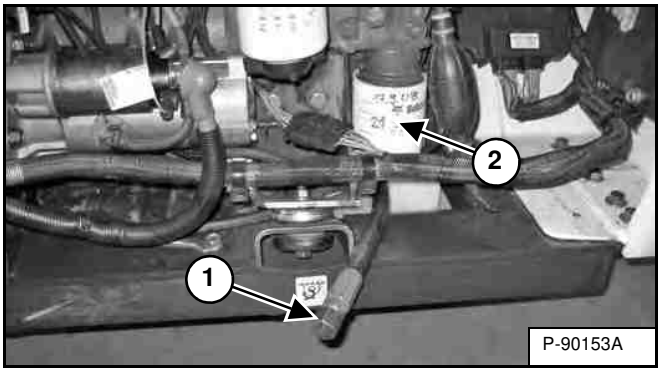
Removing And Replacing Oil And Filter

For the service interval for replacing the engine oil and filter. (See SERVICE SCHEDULE on Page 10-70-1.)

Run the engine until it is at operating temperature. Stop the engine.

Open the rear door and remove the drain hose (Item 2) **[Figure 10-110-1]** from its storage position.

Figure 10-110-3



Remove the oil drain cap (Item 1) **[Figure 10-110-3]** and drain the oil into a container. Recycle or dispose of used oil in an environmentally safe manner.

Install and tighten the oil drain cap and return the drain hose to the stored position.

Remove the oil filter (Item 2) **[Figure 10-110-3]** and clean the filter housing surface. Use genuine Bobcat filter only. Put clean oil on the new oil filter gasket, install the filter and hand tighten.

Remove the fill cap (Inset) **[Figure 10-110-1]**. Put oil in the engine. For the correct quantity (See Capacities on Page SPEC-10-4.) Do not overfill.

Start the engine and let it run for several minutes. Stop the engine and check for leaks at the filter.

Remove the dipstick (Item 1) **[Figure 10-110-1]** and check the oil level. Add oil as needed if it is not at the top mark on the dipstick. Install the dipstick and close the rear door.

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

HYDRAULIC / HYDROSTATIC SYSTEM

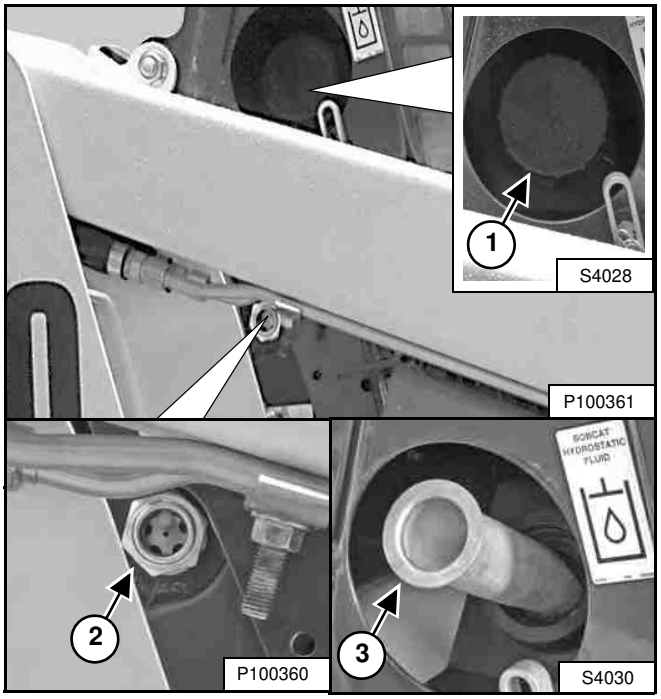
Checking And Adding Fluid

Stop the loader on a level surface.

Lower the lift arms and tilt the Bob-Tach™ fully back.

Stop the engine.

Figure 10-120-1



Remove the fill cap (Item 1) **[Figure 10-120-1]**.

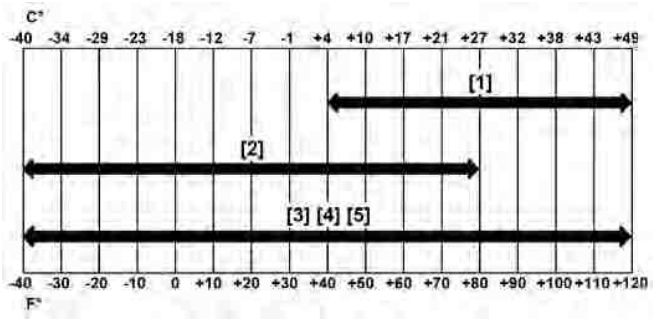
Add oil until it is at the center of the sight gauge (Item 2) **[Figure 10-120-1]**. Do not overfill.

Remove the screen (Item 3) **[Figure 10-120-1]** and clean with solvent as needed.

Reinstall the fill cap (Item 1) **[Figure 10-120-1]**.

Hydraulic / Hydrostatic Fluid Chart

Figure 10-120-2
HYDRAULIC / HYDROSTATIC FLUID RECOMMENDED ISO VISCOSITY GRADE (VG) AND VISCOSITY INDEX (VI)



TEMPERATURE RANGE ANTICIPATED DURING MACHINE USE

[1] VG 100; Minimum VI 130
[2] VG 46; Minimum VI 150
[3] BOBAT All-Season Fluid
[4] BOBCAT Synthetic Fluid
[5] BOBCAT Biodegradable Hydraulic / Hydrostatic Fluid (Unlike biodegradable fluids that are vegetable based, Bobcat biodegradable fluid is formulated to prevent oxidation and thermal breakdown at operating temperatures.)

Use only recommended fluid in the hydraulic system **[Figure 10-120-2]**. (See Specifications on Page SPEC-40-1.)

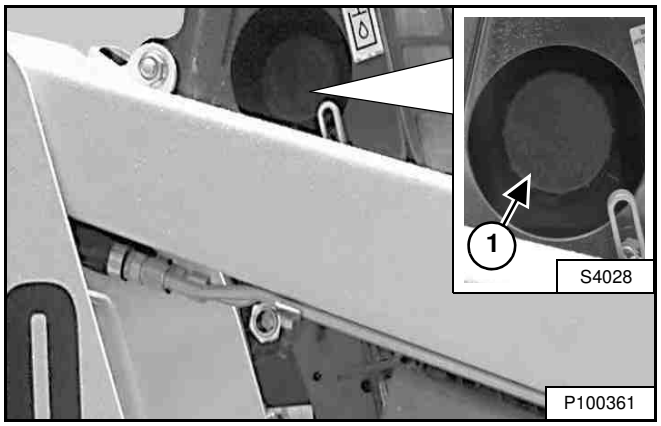
Removing And Replacing Hydraulic Fluid

For the correct service interval. (See Chart on Page 10-70-1.)

Replace the fluid if it becomes contaminated or after major repair.

Always replace the hydraulic / hydrostatic filter, the case drain filters and the hydraulic charge filter whenever the hydraulic fluid is replaced. (See Removing And Replacing Hydraulic / Hydrostatic Filter on Page 10-120-3.)

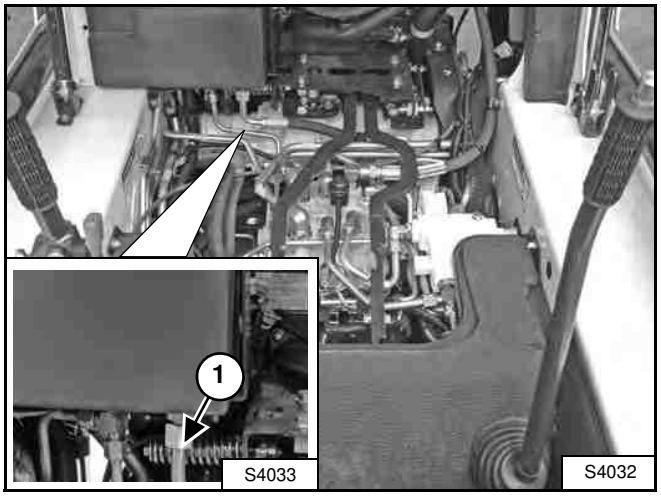
Figure 10-120-3



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

Remove the fill cap (Item 1) **[Figure 10-120-3]**.

Figure 10-120-4



Disconnect the hose (Item 1) **[Figure 10-120-4]** from the hydraulic reservoir and drain the fluid into a container.

Connect the hose when the reservoir is empty.

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

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

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Recycle or dispose of used fluid in an environmentally safe manner.

Add the correct fluid to the reservoir until the fluid level is at the center of the sight gauge. (See Checking And Adding Fluid on Page 10-120-1.)

Install the fill cap.

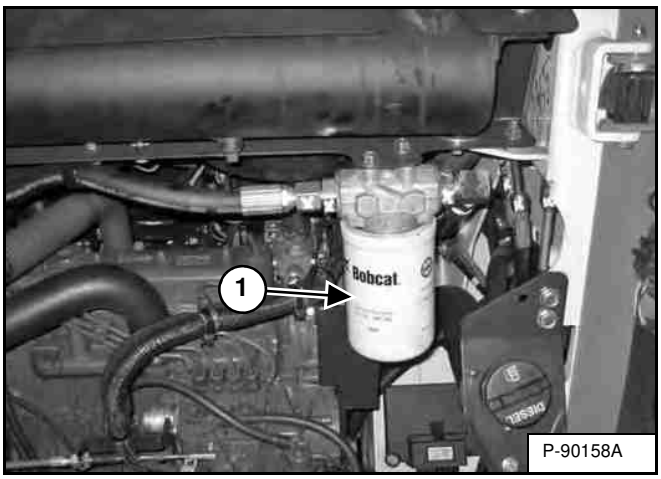
Lower the operator cab. (See Lowering on Page 10-30-2.)

Removing And Replacing Hydraulic / Hydrostatic Filter

For the correct service interval (See Chart on Page 10-70-1.)

Stop the engine and open the rear door.

Figure 10-120-5



Remove the filter (Item 1) **[Figure 10-120-5]**.

Clean the surface of the filter housing where the filter seal contacts the housing.

Put clean oil on the seal of the new filter. Install and hand tighten the new filter.

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

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Close the rear door before operating the loader.

Start the engine and operate the loader hydraulic controls.

⚠ WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

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Stop the engine and check for leaks at the filter.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 10-120-1.)

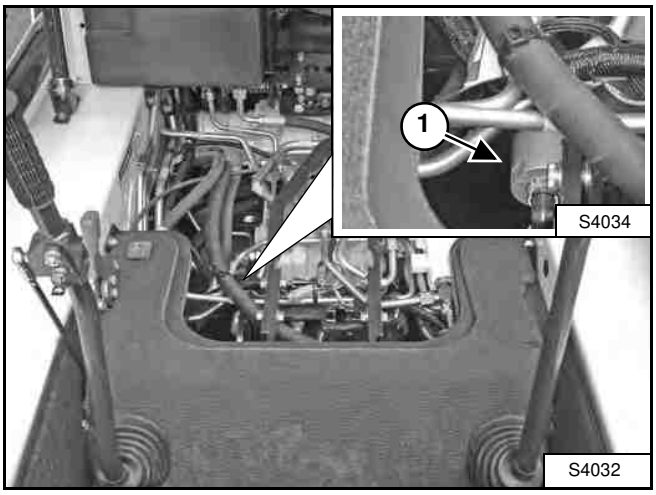
Close the rear door.

Removing And Replacing Case Drain Filters

For the correct service interval. (See SERVICE SCHEDULE on Page 10-70-1.)

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

Figure 10-120-6



The case drain filters are located under the cab, next to the transmission, one on each side (Item 1) **[Figure 10-120-6]**.

Disconnect the fittings at the end of the case drain filters and remove both filters.

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

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Disassemble the case drain filters and discard the filter elements. Thoroughly clean the filter housings with solvent. Install new filter elements and reassemble. Install the filters into the loader and connect the fittings.

Lower the operator cab. (See Lowering on Page 10-30-2.)

Start the engine and operate the loader hydraulic controls. Stop the engine and check for leaks.

⚠ WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possible death if proper medical treatment by a doctor familiar with this injury is not received immediately.

W-2145-EN-0210

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 10-120-1.)

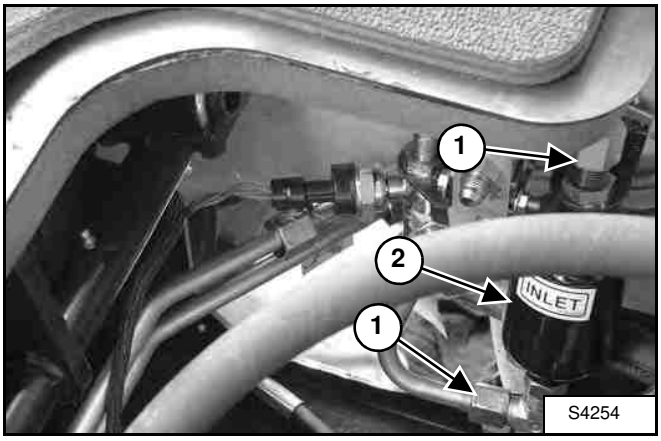
Removing And Replacing Hydraulic Charge Filter

For the correct service interval. (See Chart on Page 10-70-1.)

NOTE: SJC equipped machines do not have a Hydraulic Charge Filter.

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

Figure 10-120-7



Disconnect the hydraulic connections (Item 1) and remove the charge filter (Item 2) **[Figure 10-120-7]**.

Install new filter.

Connect and tighten hydraulic connections.

⚠ WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

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Lower the operator cab. (See Lowering on Page 10-30-2.)

Start the engine and operate the loader hydraulic controls.

⚠ WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

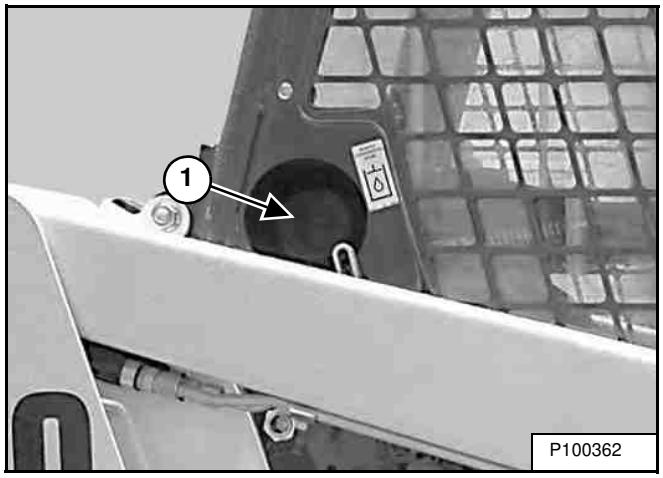
Stop the engine and check for leaks.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 10-120-1.)

Breather Cap

For the correct service interval (See Chart on Page 10-70-1.)

Figure 10-120-8



Remove the hydraulic fill / breather cap (Item 1) **[Figure 10-120-8]** and discard.

Install a new cap.

FINAL DRIVE TRANSMISSION (CHAINCASE)

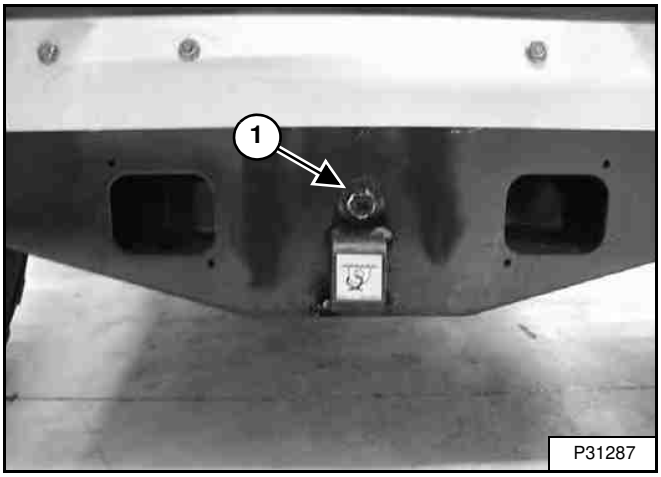
Checking And Adding Oil

The chaincase contains the final drive sprockets and chains. Use the same type of oil as the hydraulic / hydrostatic system. (See Specifications on Page SPEC-40-1.)

Stop the loader on a level surface.

Stop the engine.

Figure 10-130-1



Remove the check plug (Item 1) **[Figure 10-130-1]** from the front of the chaincase housing.

If oil can be reached with the tip of your finger through the hole, the oil level is correct.

If the level is low, add lubricant through the check plug hole until it reaches the desired level.

Install and tighten the plug.

Removing And Replacing Oil

Remove the check plug (Item 1) **[Figure 10-130-1]** from the front of the chaincase housing.

Figure 10-130-2

Use a pump to suction the oil from the chaincase **[Figure 10-130-2]**.

Recycle or dispose of the used oil in an environmentally safe manner.

Add new oil until you can reach the oil with the tip of your finger through the hole.

Reinstall and tighten the plug.

⚠ WARNING

AVOID INJURY OR DEATH

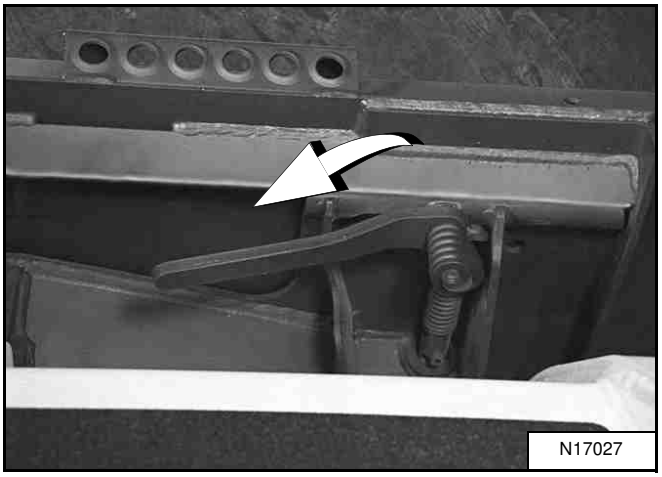
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

BOB-TACH (HAND LEVER)

Inspection And Maintenance

Figure 10-140-1



Move the Bob-Tach™ levers down to engage the wedges **[Figure 10-140-1]**.

The levers and wedges must move freely.

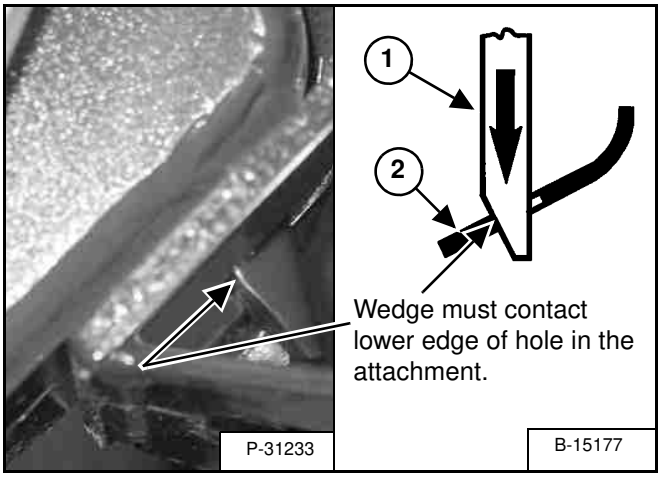
⚠ WARNING

AVOID INJURY OR DEATH

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

W-2715-0208

Figure 10-140-2

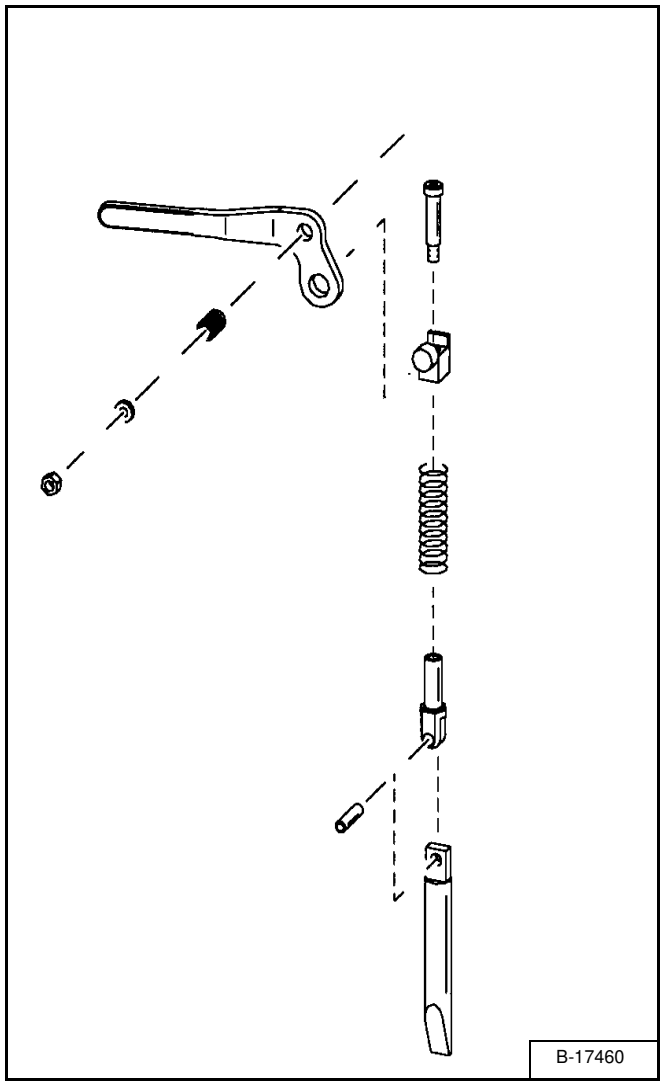


The wedges (Item 1) **[Figure 10-140-2]** must extend through the holes in the attachment mounting frame.

The spring loaded wedge (Item 1) must contact the lower edge of the hole in the attachment (Item 2) **[Figure 10-140-2]**.

If the wedge does not contact the lower edge of the hole **[Figure 10-140-2]**, the attachment will be loose and can come off the Bob-Tach.

Figure 10-140-3



Inspect the mounting frame on the attachment and Bob-Tach, linkages and wedges for excessive wear or damage **[Figure 10-140-3]**. Replace any parts that are damaged, bent or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

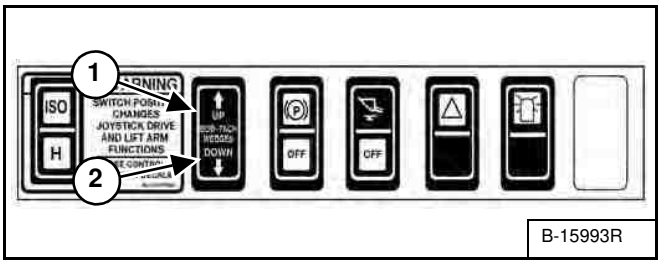
Lubricate the wedges. (See Chart on Page 10-70-1.) (See LUBRICATING THE LOADER on Page 10-150-1.)

BOB-TACH (POWER)

This machine may be equipped with a Power Bob-Tach™.

Inspection And Maintenance

Figure 10-141-1



Push and hold the BOB-TACH “WEDGES UP” switch (Item 1) until wedges are fully raised. Push and hold the BOB-TACH “WEDGES DOWN” switch (Item 2) **[Figure 10-141-1]** until the wedges are fully down.

The levers and wedges must move freely.

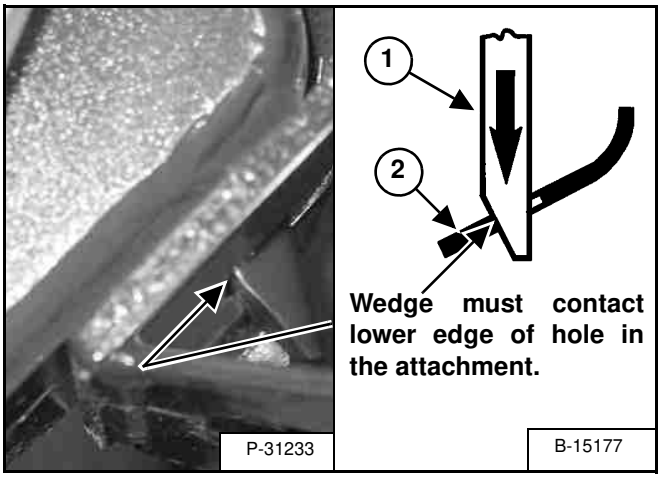
⚠ WARNING

AVOID INJURY OR DEATH

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

W-2715-0208

Figure 10-141-2

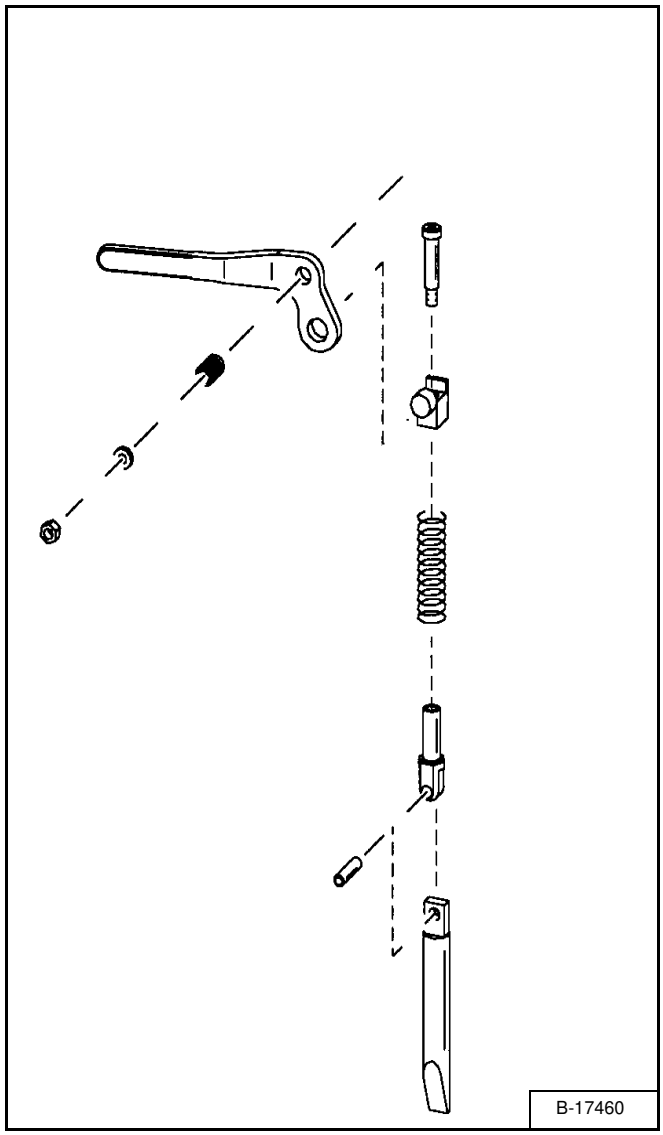


The wedges (Item 1) **[Figure 10-141-3]** must extend through the holes in the attachment mounting frame.

The spring loaded wedge (Item 1) must contact the lower edge of the hole in the attachment (Item 2) **[Figure 10-141-2]**.

If the wedge does not contact the lower edge of the hole **[Figure 10-141-2]**, the attachment will be loose and can come off the Bob-Tach.

Figure 10-141-3



Inspect the mounting frame on the attachment and the Bob-Tach, linkages and wedges for excessive wear or damage **[Figure 10-141-3]**. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See SERVICE SCHEDULE on Page 10-70-1.) and (See LUBRICATING THE LOADER on Page 10-150-1.)

LUBRICATING THE LOADER

Lubrication Locations

Lubricate the loader as specified for the best performance of the loader. (See SERVICE SCHEDULE on Page 10-70-1.)

Record the operating hours each time you lubricate the Bobcat Loader.

Always use a good quality lithium based multipurpose grease when you lubricate the loader. Apply the lubricant until extra grease shows.

Lubricate the following locations on the loader:

Figure 10-150-1

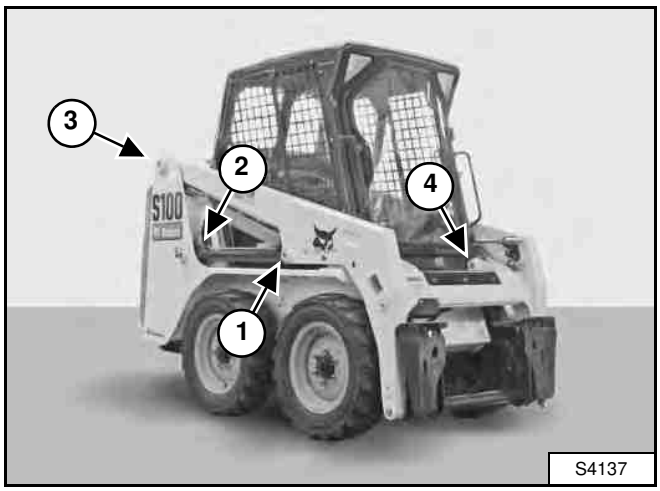
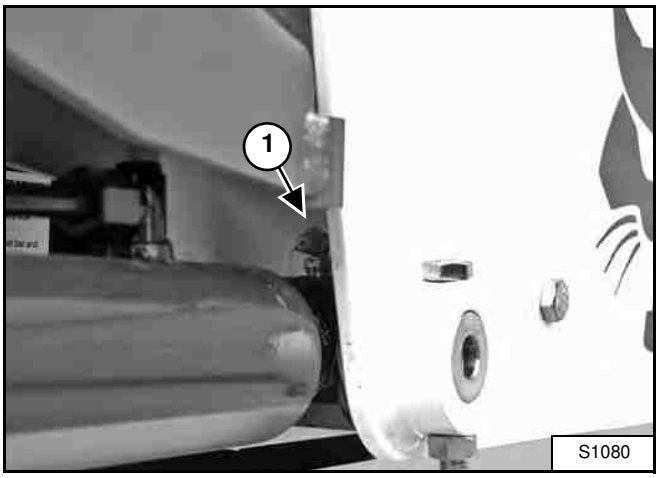
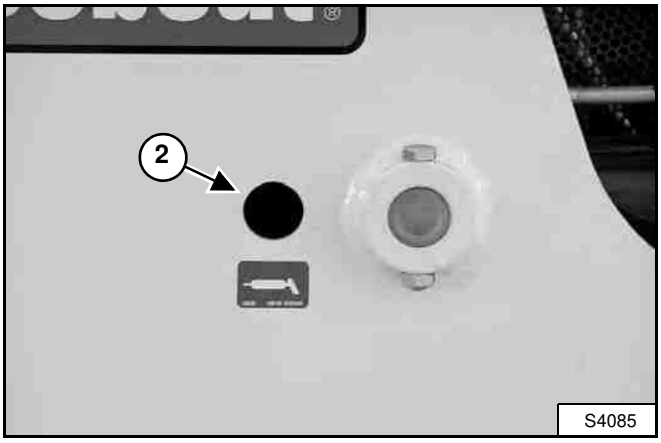


Figure 10-150-2



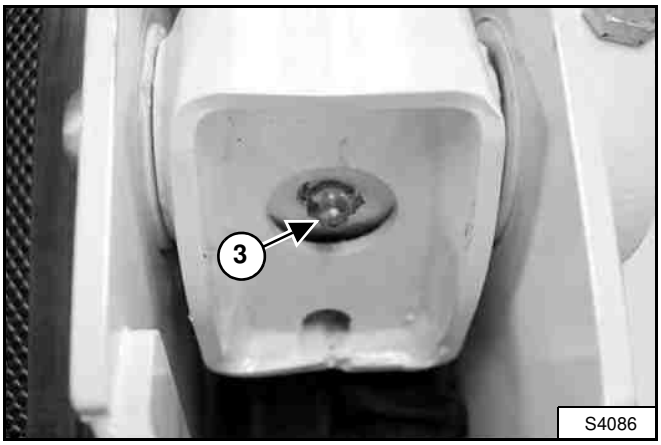
1. Rod End Lift Cylinder (Both Sides) (Item 1) **[Figure 10-150-1]** and **[Figure 10-150-2]**.

Figure 10-150-3



2. Base End Lift Cylinder (Both Sides) (Item 2) **[Figure 10-150-2]** and **[Figure 10-150-3]**.

Figure 10-150-4

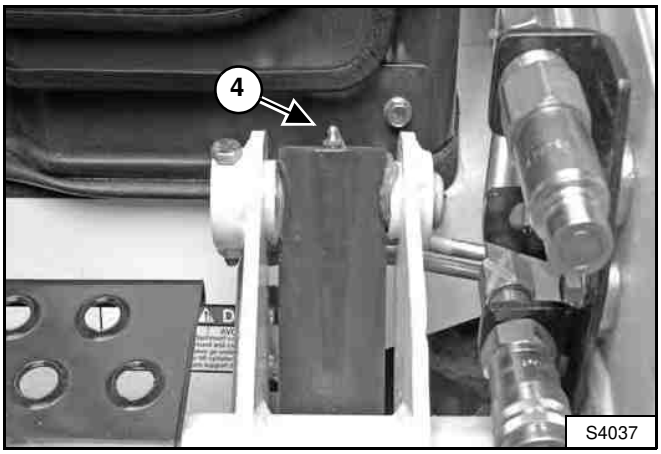


3. Lift Arm Pivot Pin (Both Sides) (Item 3) **[Figure 10-150-1]** and **[Figure 10-150-4]**.

LUBRICATING THE LOADER (CONT'D)

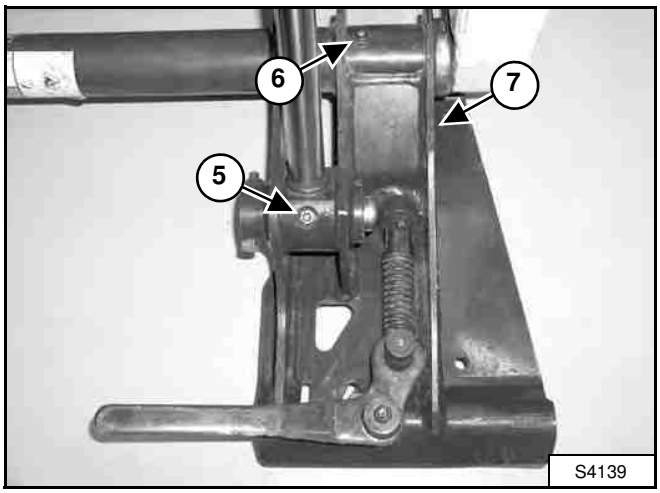
Lubrication Locations (Cont'd)

Figure 10-150-5



4. Base End Tilt Cylinder (Both Sides) (Item 4) **[Figure 10-150-1]** and **[Figure 10-150-5]**.

Figure 10-150-6

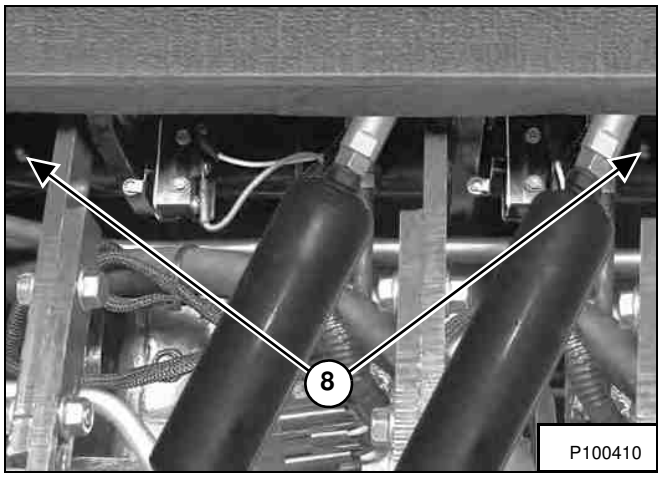


5. Rod End Tilt Cylinder (Both Sides) (2) **[Figure 10-150-6]**.

6. Bob-Tach Pivot Pin (Both Sides) (2) **[Figure 10-150-6]**.

7. Bob-Tach Wedge (Both Sides) (2) **[Figure 10-150-6]**.

Figure 10-150-7

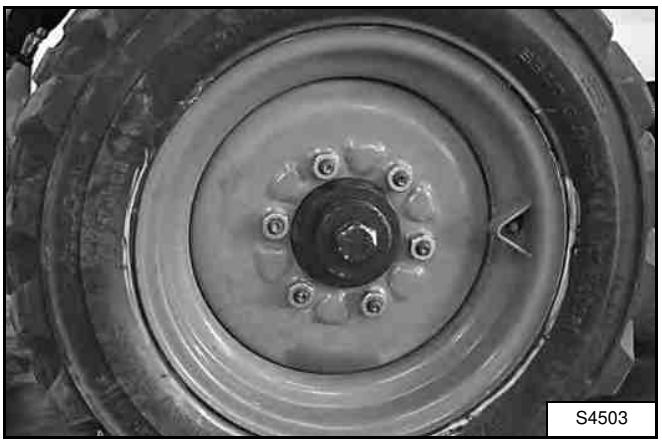


8. 250 Hours: Steering Lever Shaft (2) under the operator cab **[Figure 10-150-7]**.

TIRE MAINTENANCE

Wheel Nuts

Figure 10-160-1



See the SERVICE SCHEDULE for the service interval to check the wheel nuts **[Figure 10-160-1]**. (See SERVICE SCHEDULE on Page 10-70-1.)

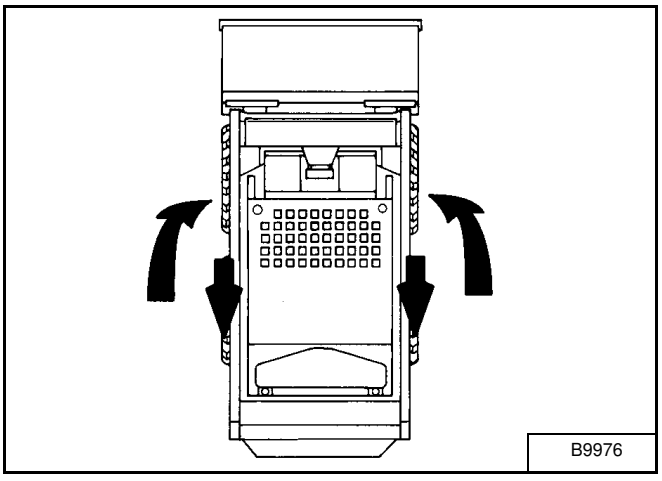
When installing wheel nuts, tighten to 217 N•m (160 ft-lb) torque.

When checking wheel nut torque, set the torque wrench to 190 N•m (140 ft-lb) torque to prevent over-tightening.

Rotating

Check the tires regularly for wear, damage and pressure. Inflate tires to the maximum pressure shown on the sidewall of the tire.

Figure 10-160-2



Rear tires usually wear faster than front tires. To keep tire wear even, move the front tires to the rear and rear tires to the front **[Figure 10-160-2]**.

It is important to keep all tires the same size. If different sizes are used, each tire will be turning at a different rate and cause excessive wear. The tread bars of all the tires must face the same direction.

Recommended tire pressure must be maintained to avoid excessive tire wear and loss of stability and handling capability. Check for the correct pressure before operating the loader.

Mounting

Tires are to be repaired only by an authorized person using the proper procedures and safe equipment.

Tires and rims must always be checked for correct size before mounting. Check rim and tire bead for damage.

The rim flange must be cleaned and free of rust.

The tire bead and rim flange must be lubricated with a rubber lubricant before mounting the tire.

Avoid excessive pressure which can rupture the tire and cause serious injury or death.

During inflation of the tire, check the tire pressure frequently to avoid over inflation.

⚠ WARNING

AVOID INJURY OR DEATH

Do not inflate tyres above specified pressure. Failure to use correct tyre mounting procedure can cause an explosion which can result in injury or death.

W-2078-EN-0909

IMPORTANT

Inflate tyres to the MAXIMUM pressure shown on the sidewall of the tyre. DO NOT mix brands of tyres used on the same machine.

I-2057-EN-1010

SPARK ARRESTER MUFFLER

Cleaning Procedure

See the SERVICE SCHEDULE for service interval for cleaning the spark arrester muffler. (See Chart on Page 10-70-1.)

Do not operate the loader with a defective exhaust system.

IMPORTANT

This machine is factory equipped with a spark arrester exhaust system.

The spark arrester muffler, if equipped, must be cleaned to keep it in working condition. The spark arrester muffler must be serviced by dumping the spark chamber every 100 hours of operation.

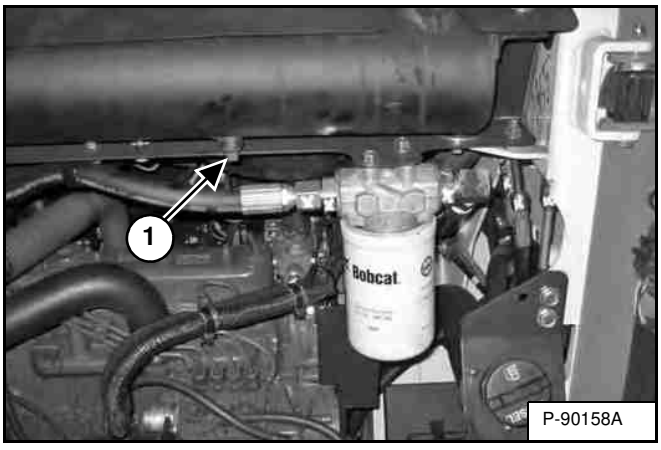
On some models, the turbocharger functions as the spark arrester and must operate correctly for proper spark arrester function.

If this machine is operated on flammable forest, brush, or grass covered land, a spark arrester attached to the exhaust system may be required and must be maintained in working order. Refer to local laws and regulations for spark arrester requirements.

I-2284-EN-0909

Stop the engine and open the rear door.

Figure 10-170-1



Remove the plug (Item 1) **[Figure 10-170-1]** from the bottom of the muffler.

WARNING

When the engine is running during service, the driving and steering controls must be in neutral and the parking brake engaged. Failure to do so can cause injury or death.

W-2006-1209

Start the engine and run for about 10 seconds while a second person, wearing safety goggles, holds a piece of wood over the outlet of the muffler.

This will force contaminants out through the cleanout hole.

Stop the engine.

Reinstall and tighten the plug.

Close the rear door.

WARNING

AVOID INJURY OR DEATH

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

WARNING

Stop engine and allow the muffler to cool before cleaning the spark chamber. Wear safety goggles. Failure to obey can cause serious injury.

W-2011-1285

WARNING

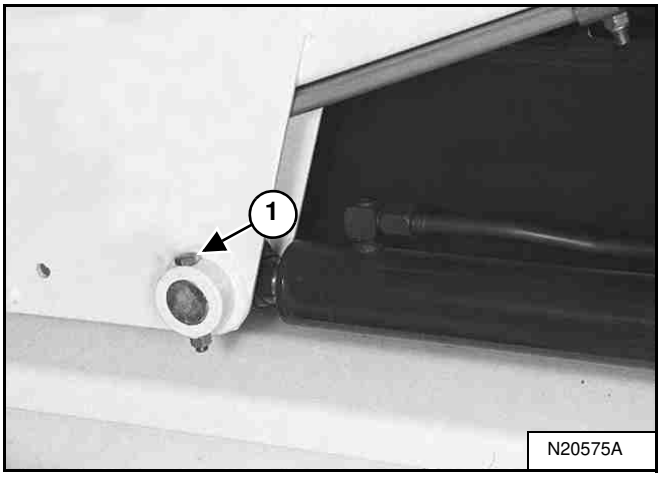
Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

W-2068-1285

PIVOT PINS

Inspection And Maintenance

Figure 10-180-1



All lift arm and cylinder pivots have a large pin held in position with a retainer bolt and lock nut (Item 1) **[Figure 10-180-1]**.

Figure 10-180-2

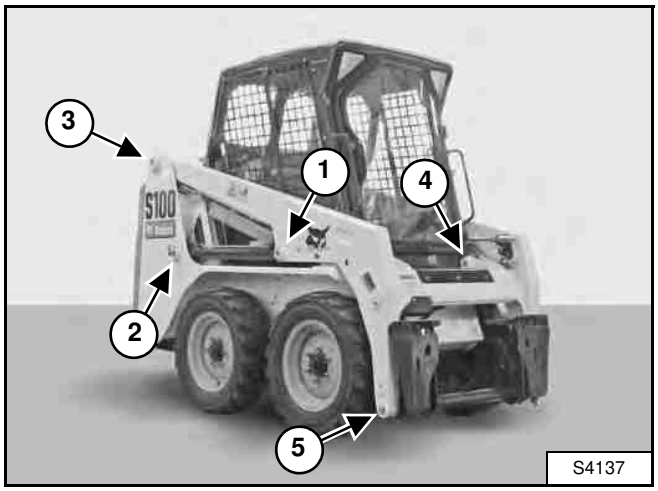
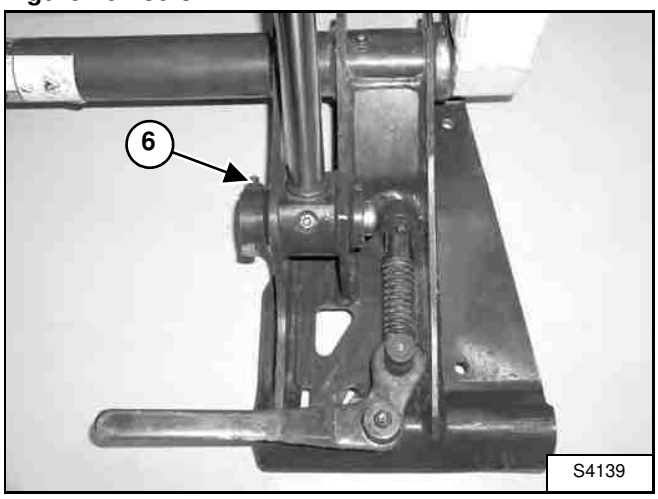


Figure 10-180-3



Check that the lock nuts are tightened to 48 - 54 N•m (35 - 40 ft-lb) torque (Both Sides) (Items 1 - 6) **[Figure 10-180-2]** and **[Figure 10-180-3]**.

LOADER STORAGE AND RETURN TO SERVICE

Storage

Sometimes it can be necessary to store your Bobcat Loader for an extend period of time. Below is a list of items to perform before storage.

- Thoroughly clean the loader including the engine compartment.
- Lubricate the loader.
- Replace worn or damaged parts.
- Park the loader in a dry protected shelter.
- Lower the lift arms all the way and put the bucket flat on the ground.
- Put blocks under the frame to remove weight from the tires.
- Put grease on any exposed cylinder rods.
- Put fuel stabilizer in the fuel tank and run the engine a few minutes to circulate the stabilizer to the pump and fuel injectors.

  If biodiesel blend fuel has been used, perform the following:

  Drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabilizer and run the engine for at least 30 minutes.
- Drain and flush the cooling system. Refill with premixed coolant.
- Replace all fluids and filters (engine, hydraulic / hydrostatic).
- Replace air cleaner, heater and air conditioning filters.
- Put all controls in neutral position.
- Remove the battery. Be sure the electrolyte level is correct then charge the battery. Store it in a cool dry place above freezing temperatures and charge it periodically during storage.
- Cover the exhaust pipe opening.
- Tag the machine to indicate that it is in storage condition.

Return To Service

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

- Check the engine and hydraulic oil levels; check coolant level.
- Install a fully charged battery.
- Remove grease from exposed cylinder rods.
- Check all belt tensions.
- Be sure all shields and guards are in place.
- Lubricate the loader.
- Check tire inflation and remove blocks from under frame.
- Remove cover from exhaust pipe opening.
- Start the engine and let run for a few minutes while observing the instrument panels and systems for correct operation.
- Operate machine, check for correct function.
- Stop the engine and check for leaks. Repair as needed.

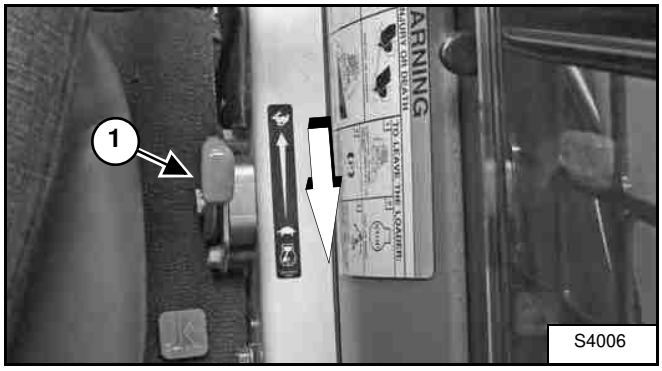
STOPPING THE ENGINE AND LEAVING THE LOADER

Procedure

Stop the loader on level ground.

Lower the lift arms fully and put the attachment flat on the ground.

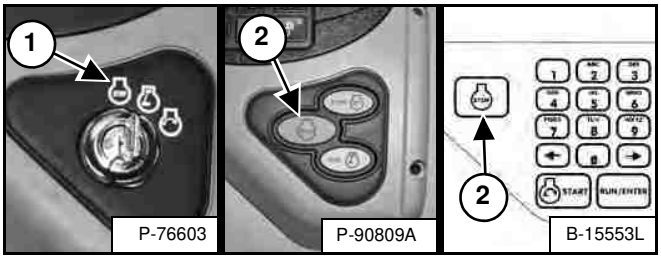
Figure 10-200-1



Pull the engine speed control lever (Item 1) **[Figure 10-200-1]** fully backward to decrease the engine speed.

Engage the parking brake.

Figure 10-200-2



Turn the key switch to the STOP position (Item 1) or press the STOP button (Item 2) **[Figure 10-200-2]**.

NOTE: If the loader lights are ON, they will remain ON for approximately 90 seconds after turning the loader OFF.

Move auxiliary control out of detent position.

Raise the seat bar and make sure the lift and tilt functions are deactivated.

Unbuckle the seat belt.

Remove the key from the switch (Standard Key Panel) to prevent operation of the loader by unauthorized personnel.

NOTE: Activating the Password Lockout Feature on machines with the Keyless Start Panel or the Deluxe Instrumentation Panel allows operation of the loader without using a password.

Figure 10-200-3

Exit the loader using grab handles, safety tread and steps (maintaining a 3-point contact) **[Figure 10-200-3]**.

⚠ WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- **Lower the lift arms and put the attachment flat on the ground.**
- **Stop the engine.**
- **Engage the parking brake.**
- **Raise the seat bar.**
- **Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.**

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

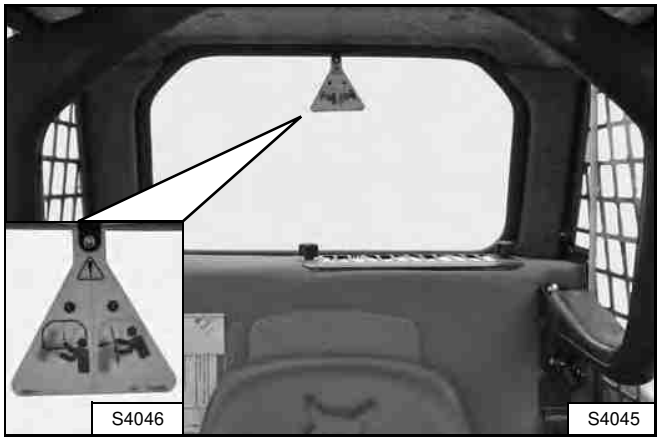
W-2463-1110

EMERGENCY EXIT

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

Rear Window

Figure 10-210-1



Pull the tag on the top of the rear window to remove the rubber cord **[Figure 10-210-1]**.

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

Figure 10-210-2

Exit through the rear of the operator cab **[Figure 10-210-2]**.

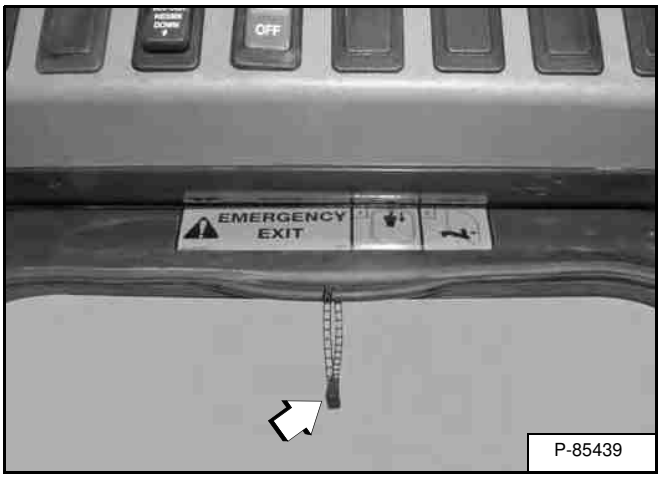
Front Door

The Bobcat loader can be equipped with a front door.

NOTE: When an Operator Cab Enclosure Kit is installed, the window of the front door can be used as an emergency exit [Figure 10-210-3].

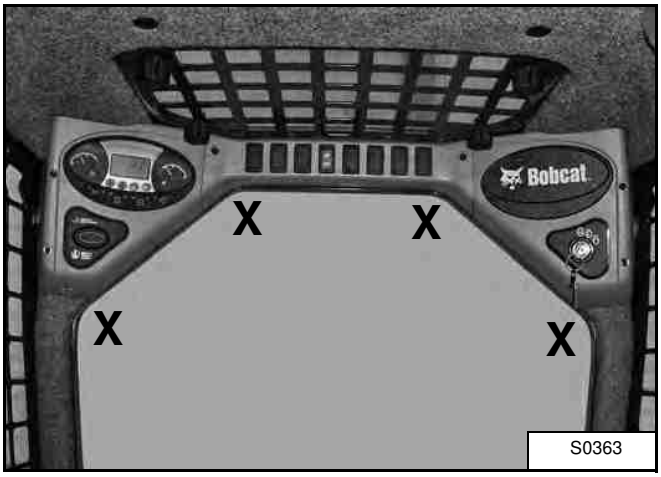
NOTE: If the loader has a Special Application Door Kit installed, the window of the front door is NOT an emergency exit.

Figure 10-210-3



Pull the plastic loop at the top of the window in the front door to remove the rubber cord **[Figure 10-210-3]**.

Figure 10-210-4



Push the window out with your foot at any corner of the window **[Figure 10-210-4]**.

Exit through the front door.

SEAT BELT

Inspection And Maintenance

⚠ WARNING

Failure to properly inspect and maintain the seat belt can cause lack of operator restraint resulting in serious injury or death.

W-2466-0703

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly at least once each year or more often if the machine is exposed to severe environmental conditions or applications.

Any seat belt system that shows cuts, fraying, extreme or unusual wear, significant discolorations due to ultraviolet UV exposure, dusty / dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), hardware or any other obvious problem should be replaced immediately.

The items below are referenced in **[Figure 10-220-1]**.

1. Check the webbing. If the system is equipped with a retractor, pull the webbing completely out and inspect the full length of the webbing. Look for cuts, wear, fraying, dirt and stiffness.

2. Check the buckle and latch for correct operation. Make sure latch plate is not excessively worn, deformed or buckle is not damaged or casing broken.

3. Check the retractor web storage device (if equipped) by extending webbing to determine if it looks correct and that it spools out and retracts webbing correctly.

4. Check webbing in areas exposed to ultraviolet (UV) rays from the sun or extreme dust or dirt. If the original color of the webbing in these areas is extremely faded and / or the webbing is packed with dirt, the webbing strength can have deteriorated.

See your Bobcat dealer for seat belt system replacement parts for your machine.

Figure 10-220-1